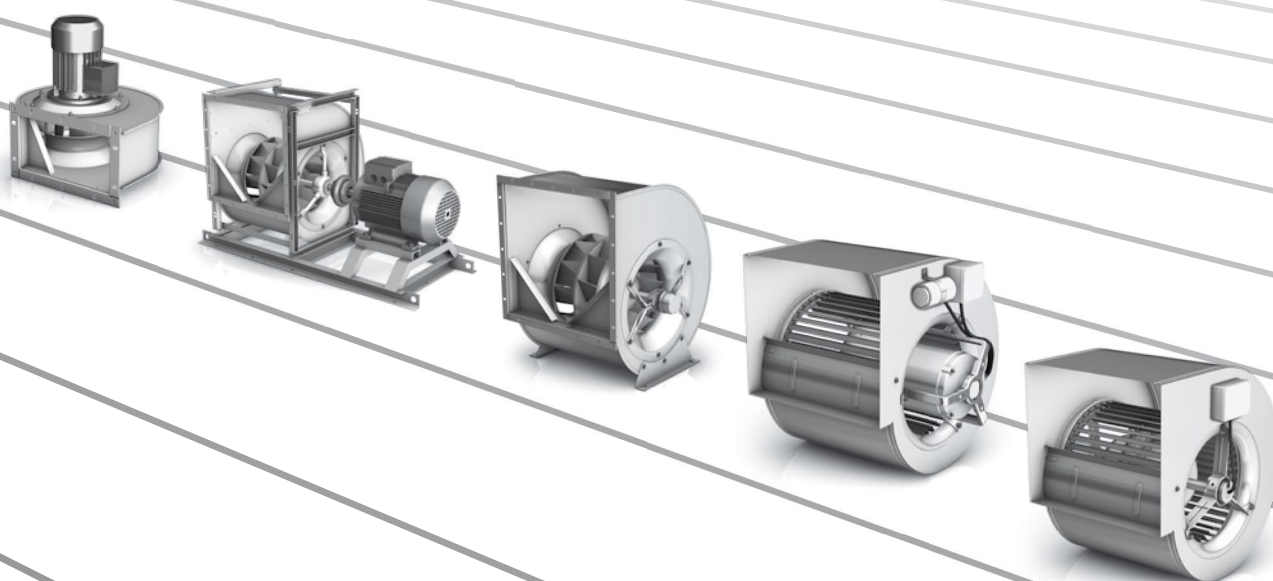


# Centrifugal Fans

direct driven  
with scroll

Issue 1.3  
November 2012

**LUFTBERG**  
WENTYLATORY



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**NICOTRA** || **Gebhardt**

fan|tastic solutions

# The overall picture will decide

Depending on the model of the fan, the efficiency grade "N" set in accordance with the ErP Directive must be achieved from 2013 and 2015 respectively.

Efficiency grade "N" to ErP-Directive

| Year | Centrifugal fans with backward curved blades |                     | total | Centrifugal fans with forward curved blades |       | total |
|------|----------------------------------------------|---------------------|-------|---------------------------------------------|-------|-------|
|      | without housing static                       | with housing static |       | with housing static                         | total |       |

The efficiency grade designates a parameter in the calculation of the target energy efficiency of a fan depending on the electric input power when operating at the optimal energy efficiency point. The figure of parameter "N" corresponds to the target energy efficiency with a power of 10 kW.

**To make the selection easier for our customers, we offer complete systems as defined by the ErP Directive!**

In order to compare the systems, the total efficiency  $\eta_e$  of the fan without speed regulation is considered.

$\eta_e$  = Total efficiency  
 $P_{u(s)}$  = Fan gas power when operating at the optimal energy efficiency point  
 $P_e$  = Electric input power when operating at the optimal energy efficiency point

If the system has speed regulation, it will be taken into account with the "part load compensation factor"  $C_c$  (see below):

$P_{ed}$  = Input power of speed regulator when operating at the optimal energy efficiency point  
 $C_c$  = part load compensation factor

- ▶ without speed regulation:  $C_c = 1$
- ▶ with speed regulation  $P_{ed} \geq 5$  kW:  $C_c = 1.04$
- ▶ with speed regulation  $P_{ed} < 5$  kW:  $C_c = -0.03 \ln(P_{ed}) + 1.088$

In order to take the speed regulation into account via the part load compensation factor  $C_c$ , the following mathematical losses arise in accordance with the formula prescribed by ErP for the following typical motor powers:

- ▶  $P_{ed} = 4.00$  kW:  $C_c = 1.05$  (5 %)
- ▶  $P_{ed} = 2.20$  kW:  $C_c = 1.06$  (6 %)
- ▶  $P_{ed} = 0.75$  kW:  $C_c = 1.10$  (10 %)

## Complete systems by Nicotra Gebhardt

Nicotra Gebhardt can supply complete systems in all product categories which meet the ErP requirements. We offer highly efficient fan systems

- ▶ with matching components and "high efficiency drives" – belt and direct drive.
- ▶ with integrated or external control to regulate speed.
- ▶ with IEC standard motors (IE2) or internal rotor motors with brushless DC technology.
- ▶ and with AC external rotor motors or brushless DC external rotor motors.

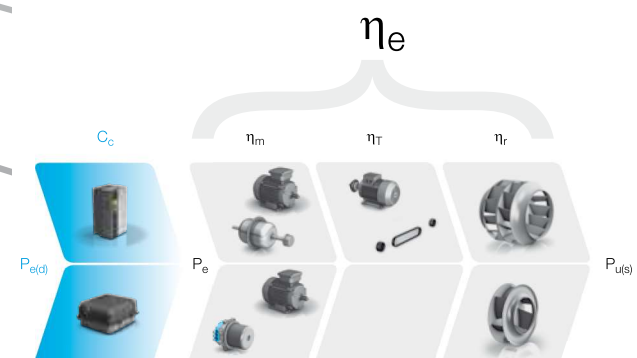
## Building blocks for best values

Thanks to the decades-long experience of Nicotra Gebhardt all the components of our fans contribute to their high performance.

Impellers and blades are optimised for turbulence and therefore particularly efficient. An example: With the latest development, the RLM Evo impeller, the free-running centrifugal fans of Nicotra Gebhardt achieve system efficiency grades never reached before.

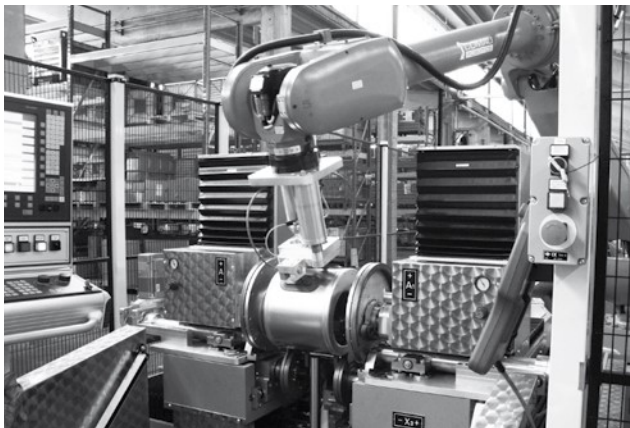
In addition, the brushless DC drives which Nicotra Gebhardt offers for its direct drive fans improve the system efficiency grades.

**The fan technology of Nicotra Gebhardt delivers highly efficient systems for all applications.**





# Nicotra Gebhardt technologies like ...



Automated manufacture of compact scroll and impeller with forward curved blades



Own AC and Brushless-DC motor production for optimal tuning of motor and fan!

## proSELECTA II

proSELECTA II is a technical selection program that allows you to configure your own individually designed fan. It provides you with the opportunity to choose from the entire range of fan types and their associated options.



### Simple and reliable selection

The result from proSELECTA II is the provision of all the technical data for your fan, including sound level data, dimension specifications and accessories. Apart from that, as a registered user, your purchase prices are provided. Additionally fully dimensioned drawings in dxf format are available, which can be downloaded and transferred straight into your CAD system.

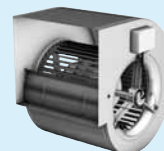
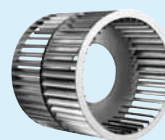
So that you can be sure. Models and options that are technically not permissible, are automatically excluded in proSELECTA II. So there is no chance that you will configure a "wrong" device option.

You can register as a proSELECTA II user with us, which enables us to offer you faster order processing. What this means for you is:

- ▶ The complete configuration of your fan with its associated system accessories and belt drive layout.
- ▶ The possibility to produce fans that operate via a frequency inverter.
- ▶ The option of saving your own fan configuration on our server.
- ▶ The opportunity to modify your saved configuration, even over the phone to your Nicotra Gebhardt representative.

**High performance centrifugal fans DDM**

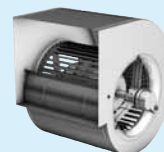
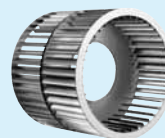
double width, double inlet, (DWDI),  
with built-in, optimised external rotor motor,  
made of galvanised sheet steel;  
available in various models;  
Impeller with forward curved blades of galvanised steel plate



DDM

**High performance centrifugal fans DDMB**

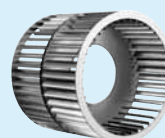
double width, double inlet, (DWDI),  
with built-in, brushless DC external rotor motor and external commutation unit,  
made of galvanised sheet steel;  
available in various models;  
Impeller with forward curved blades of galvanised steel plate



DDMB

**High performance centrifugal fans DD**

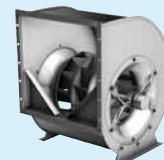
double width, double inlet, (DWDI),  
built-in, optimised internal rotor motor,  
made of galvanised sheet steel;  
available in various models;  
Impeller with forward curved blades of galvanised steel plate



DD

**High performance centrifugal fans RZA rotavent**

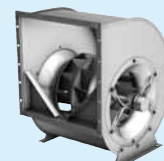
double inlet,  
with built-in, low-slip external rotor motor,  
made of galvanised sheet steel or welded and coated,  
with multi position feet and connecting flange at discharge;  
Impeller with true aerofoil blades, welded and painted – system rotavent



RZA

**High performance centrifugal fans RZP rotavent**

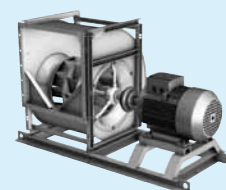
double inlet,  
with built-in, brushless DC external rotor motor and external commutation unit,  
made of galvanised sheet steel;  
with multi position feet and connecting flange at discharge;  
Impeller with true aerofoil blades, welded and painted – system rotavent



RZP

**High performance centrifugal fans RZM rotavent**

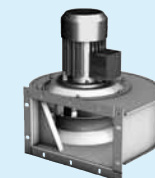
double inlet,  
fan with directly coupled motor fitted on pedestal and base frame,  
made of galvanised sheet steel with heavy duty reinforced side frame,  
connecting flange at discharge,  
Impeller with true aerofoil blades, welded and painted – system rotavent



RZM

**High performance centrifugal fans REM/TEM**

single inlet, with flanged IEC standard motor out of air stream,  
in unterschiedlichen Ausführungsvarianten,  
Impeller with true aerofoil blades, welded and painted (REM)  
or forward curved blades of galvanised steel plate (TEM),  
with or without pedestal for horizontal or vertical mounting

TEM  
REM**Fittings / Accessories**

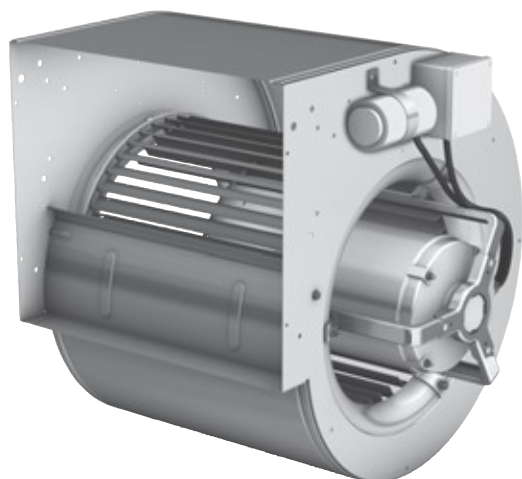
- ▶ complete system accessories
- ▶ fittings and options

Fittings  
Accessories**Technical Description**

- ▶ Descriptions
- ▶ Operating limits
- ▶ Notes

Technical  
Description





### The best fan for your application!

DD range – direct driven fans

Direct driven centrifugal fans of DD range with forward curved impeller directly mounted on the shaft of the internal rotor motor are the ideal solution for your applications in the HVAC business.

The fact of manufacturing by ourselves each fan component – the casing, the impeller and motor – enables us to create fans that perfectly meet the requirements of high performances and low power consumptions.

The wide range of different versions and motor types allows you to find the fan exactly matching what you really need.

You anyway get the generally recognized advantages of the direct drive technology :

- **Maintenance free**
- **No transmission losses**
- **Long fan life time**
- **High reliability**
- **Low operating costs**

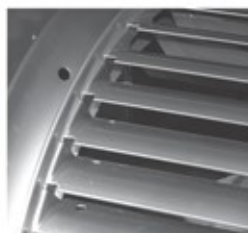
And, more, all the additional product advantages of the DD range are at your fingertips.



### Compact casing!

Aerodynamically optimized in terms of both airflow and design, scrolls are made of galvanized steel and automatically assembled using an innovative procedure, providing a sturdy and long-lasting product.

- **without welding points for no corrosion troubles**
- **high precision manufacturing process for high quality product**



### Real forward curved impeller!

The impeller has been optimized for the best efficiency, match to the special motor features.

We manufacture the high performance impellers through a highly – automated and innovative production process.

- **low noise level**
- **low power consumption**



### Optimized internal rotor motor

The fan impeller is directly mounted on the motorshaft thus providing efficient motor cooling by the fan airflow.

Motor speed can be adjusted either by the use of transformers and TRIAC regulators. Motors are generally fitted with thermal protector for protection against overheating.

- **high reliability and efficiency**
- **wide range of operative conditions**



### Easy electrical connection

All fans could be provided with connection box, terminal block or loose cable.

A wiring diagram sticker, placed on each fan, describes the correct electrical connection.

- **fast and easy wiring**
- **safe operation**

**Program overview:**

DD range

This kind of fans are specially conceived for use in dust-free environments, at temperatures up to +40°C, or higher on selected models. The performance data have been obtained in a laboratory registered by AMCA for AMCA 210/99 air performance testing. Data are not certified by AMCA.

**Fan range DD**

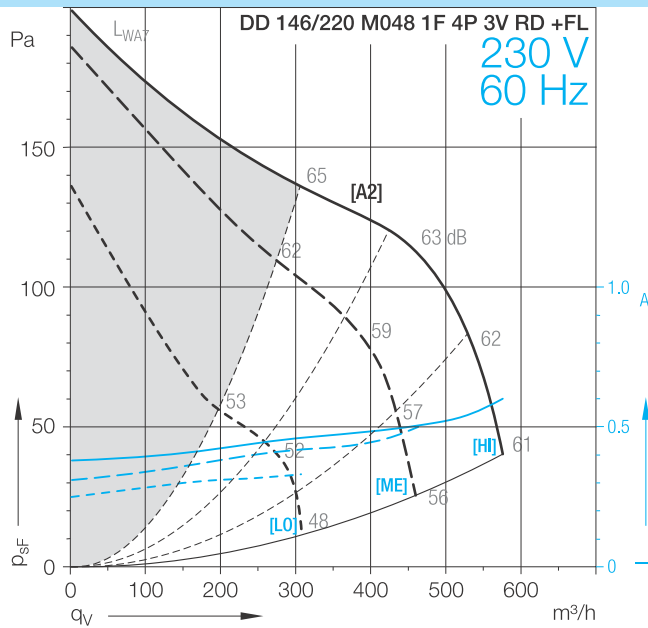
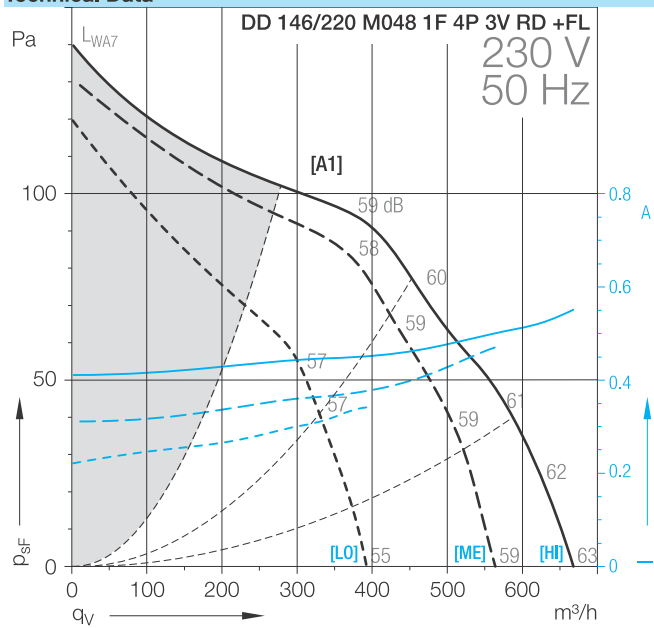
- Impeller size (width and diameter) up to 18"
- Speed variation either by step-transformers or stepless
- Internal rotor motor with intergrated thermal protector
- Fan models suitable for 60Hz supply are available
- Air Flow up to 18,000m³/h
- Static pressure up to 800Pa

**The variety of DD**

We have the right fan for all your application!

Many different sizes, versions and motor types are available in the DD range.

| Version     | Description                                                                                                                    | Figure                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>DD</b>   | Lap-jointed scroll made from galvanized steel and forward curved blades impeller, directly mounted on an internal rotor motor. |    |
| <b>+SCT</b> | with terminal box mounted                                                                                                      |  |
| <b>+FL</b>  | with discharge flange mounted                                                                                                  |  |
| <b>+SB</b>  | with housing feet either mounted or loose                                                                                      |  |

**DD-146/220****Technical Data**



DD-146/220

| Technical Data       |               |         |                     |       |        |            |                 |                        |                          |       |
|----------------------|---------------|---------|---------------------|-------|--------|------------|-----------------|------------------------|--------------------------|-------|
|                      | Speed control | Curves  | Nominal motor power | Poles | Phases | Connection | Mains frequency | Max. power consumption | Max. current consumption | Speed |
| DD 146/220           |               |         | W                   | —     |        |            | Hz              | W                      | A                        | 1/min |
| M048 1F 4P 3V RD +FL | *             | [A1/A2] | 40                  | 4     | 1~     |            | 50/60           | 123                    | 0.5                      | 1280  |

| Technical Data       |                     |                           |                        |                     |                    |                        |            |                  |                              |                |
|----------------------|---------------------|---------------------------|------------------------|---------------------|--------------------|------------------------|------------|------------------|------------------------------|----------------|
|                      | Operating Capacitor | Nominal capacitor voltage | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max. | Fan weight | Density of media | Installation type (ISO 5801) | Article number |
| DD 146/220           | µF                  | V                         |                        |                     |                    | °C                     | kg         | kg/m³            |                              |                |
| M048 1F 4P 3V RD +FL | 2                   | 450                       | IP32                   | B                   | INT                | 70                     | 6          | 1.2              | B                            | 61090R         |

(1) = Speed controllable via Transformer

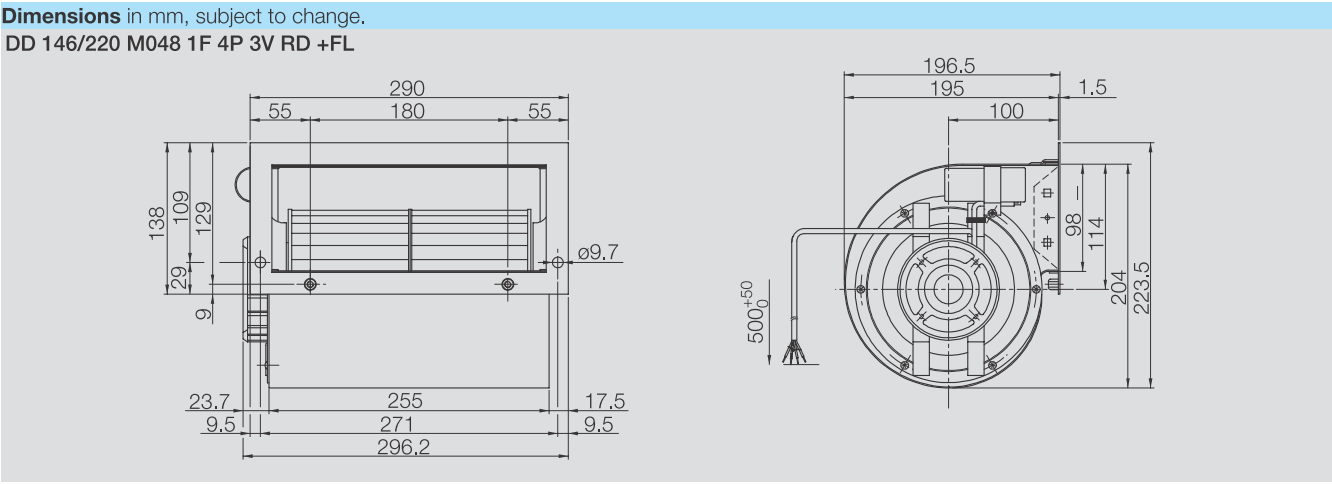
(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

\* = No speed control available

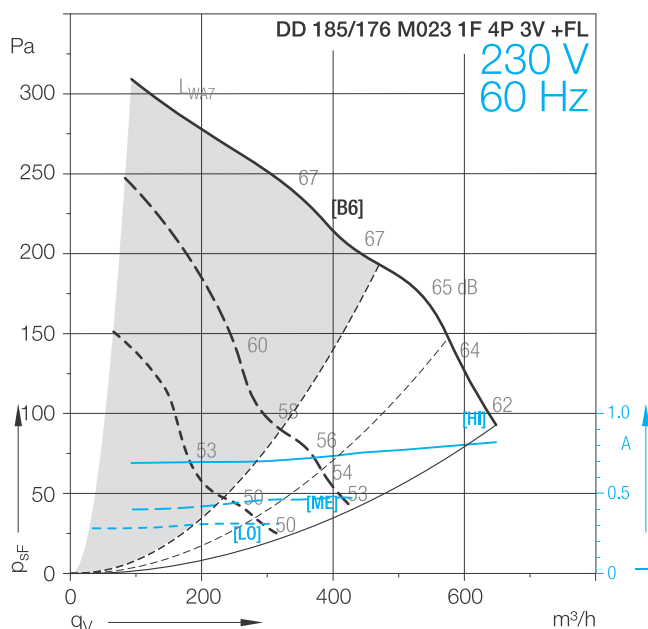
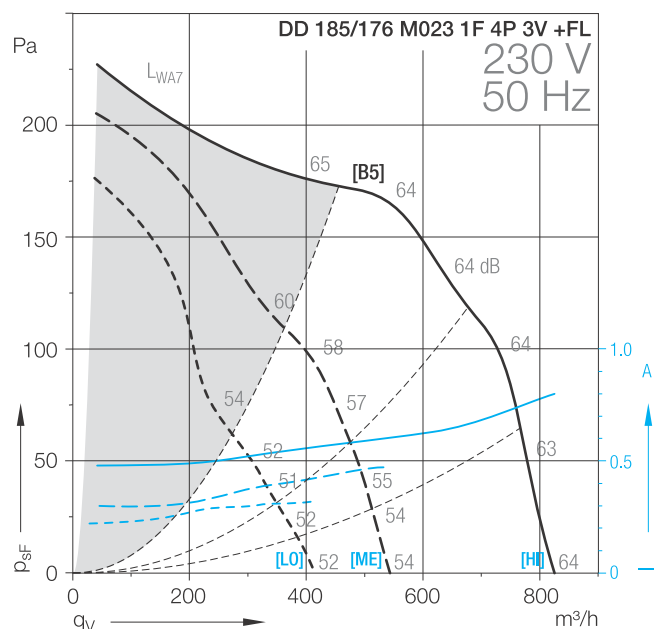
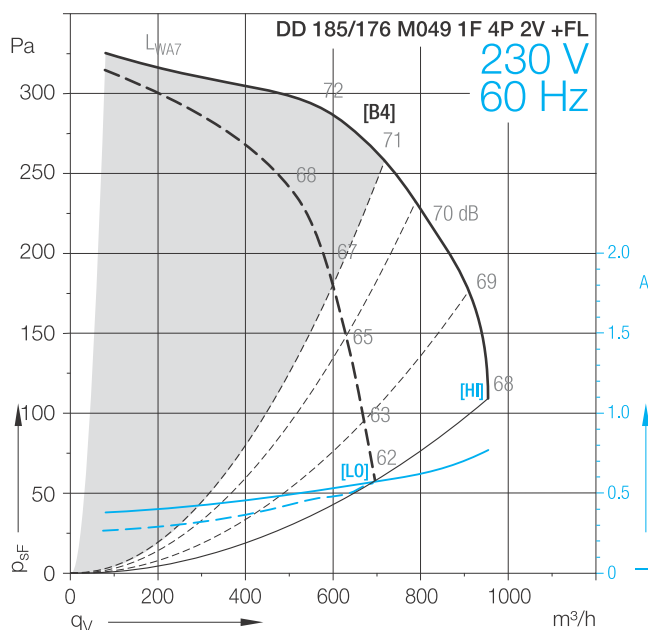
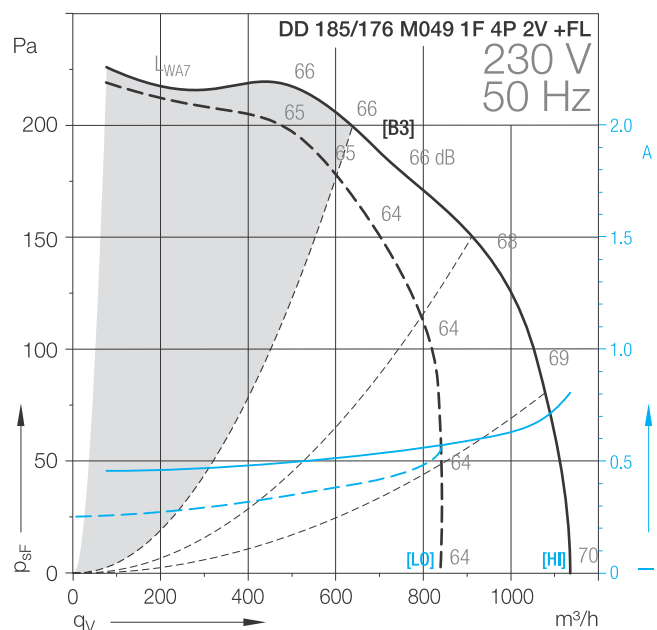
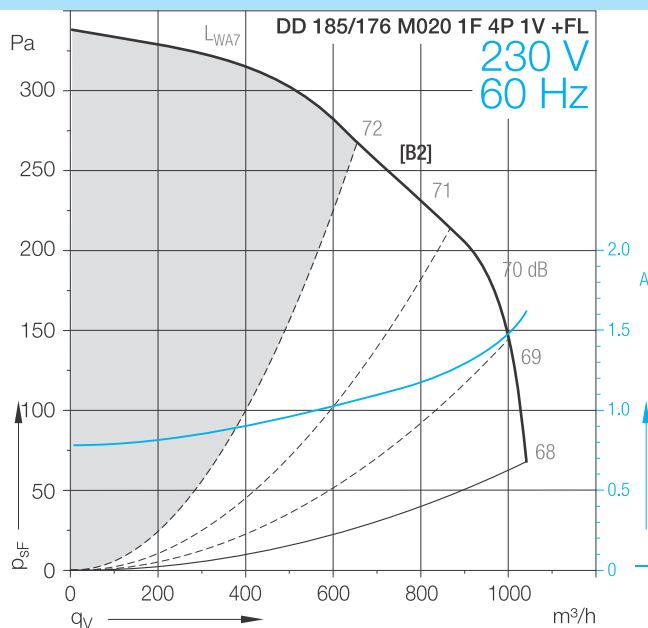
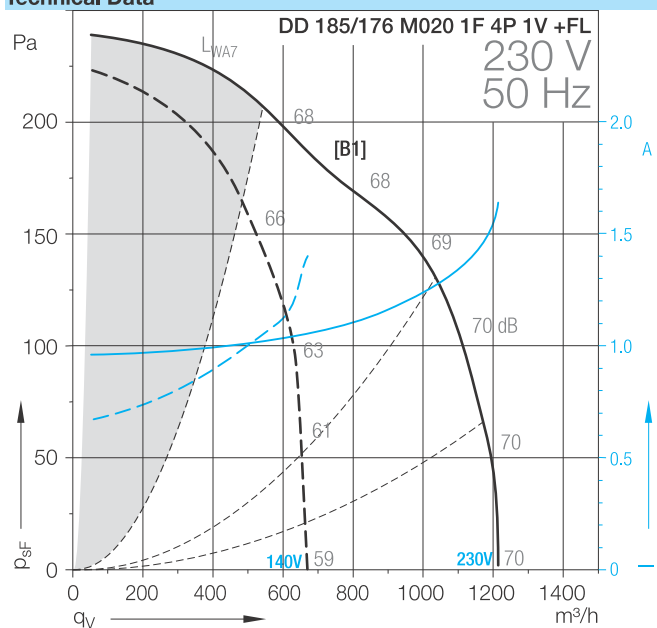
[HI] High speed, [ME] Medium speed, [LO] Low speed

**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.



## DD-185/176

## Technical Data



# DD-185/176

## Technical Data

|                   | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>-</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|-------------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 185/176        |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| M020 1F 4P 1V +FL | (2)           | [B1/B2] | 92                              | 4                 | 1~     |            | 50/60                        | 369                                | 1.6                                  | 1280                  |
| M049 1F 4P 2V +FL | *             | [B3/B4] | 105                             | 4                 | 1~     |            | 50/60                        | 355                                | 1.5                                  | 1300                  |
| M023 1F 4P 3V +FL | *             | [B5/B6] | 45                              | 4                 | 1~     |            | 50/60                        | 186                                | 0.7                                  | 1370                  |

## Technical Data

|                   | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|-------------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 185/176        |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M020 1F 4P 1V +FL | 4                                | 450                                   | IP20                   | B                   | INT                | 60                                  | 5                       | 1.2                              | B                            | 6109Y8         |
| M049 1F 4P 2V +FL | 4                                | 450                                   | IP32                   | B                   | EXT                | 40                                  | 5                       | 1.2                              | B                            | 610974         |
| M023 1F 4P 3V +FL | 4                                | 450                                   | IP32                   | B                   | INT                | 50                                  | 6                       | 1.2                              | B                            | 610937         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

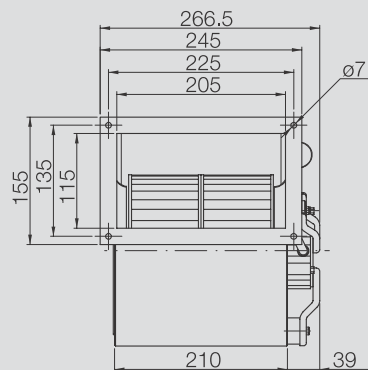
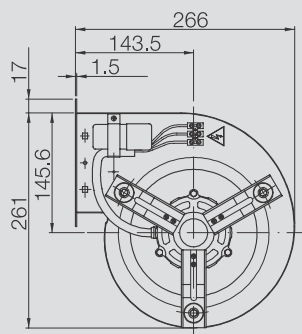
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

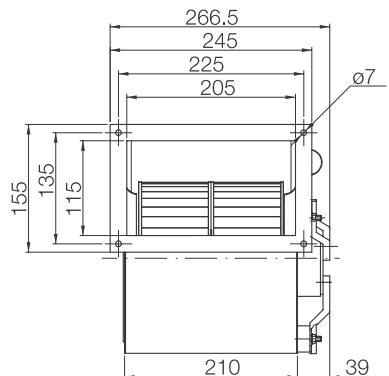
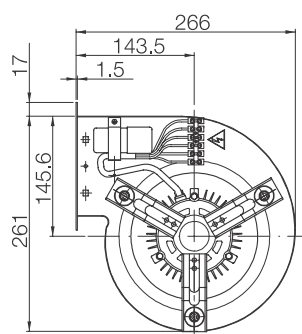
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

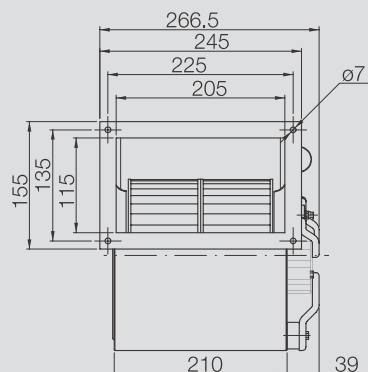
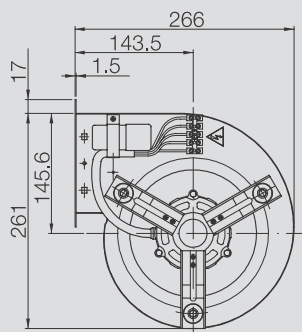
### DD 185/176 M020 1F 4P 1V +FL

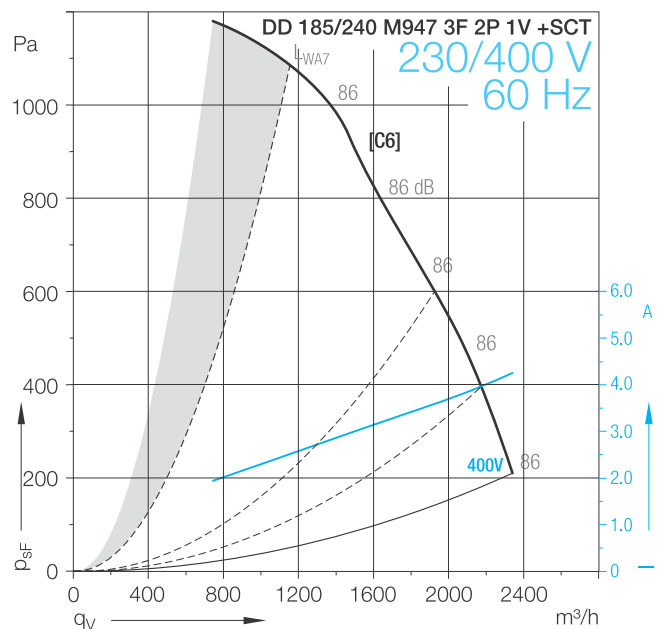


### DD 185/176 M049 1F 4P 2V +FL



### DD 185/176 M023 1F 4P 3V +FL





## DD-185/240

## Technical Data

|                           | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| <b>DD 185/240</b>         |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| <b>M953 1F 2P 1V +FL</b>  | *             | [C1]    | 1000                            | 2                 | 1~     |            | 50                           | 1804                               | 7.6                                  | 2700                  |
| <b>M923 1F 2P 1V +FL</b>  | (2)           | [C3]    | 900                             | 2                 | 1~     |            | 50                           | 1725                               | 7.1                                  | 2600                  |
| <b>M947 3F 2P 1V +SCT</b> | *             | [C5/C6] | 750                             | 2                 | 3~     | Δ/Y        | 50/60                        | 2100                               | 3.3                                  | 2900                  |

## Technical Data

|                    |                              | Nominal<br>capacitor<br>voltage | Motor<br>protection<br>class | Motor ther-<br>mal class | Thermal<br>protection | Media<br>Temperature<br>max. | Fan weight | Density of<br>media | Installation<br>type (ISO<br>5801) | Article<br>number |
|--------------------|------------------------------|---------------------------------|------------------------------|--------------------------|-----------------------|------------------------------|------------|---------------------|------------------------------------|-------------------|
|                    | Operating<br>Capacitor<br>μF | V                               |                              |                          |                       | °C                           | kg         | kg/m³               |                                    |                   |
| DD 185/240         |                              |                                 |                              |                          |                       |                              |            |                     |                                    |                   |
| M953 1F 2P 1V +FL  | 20                           | 450                             | IP20                         | B                        | INT                   | 40                           | 10         | 1.2                 | B                                  | 6109C7            |
| M923 1F 2P 1V +FL  | 20                           | 450                             | IP20                         | F                        | INT                   | 40                           | 10         | 1.2                 | B                                  | 6109GH            |
| M947 3F 2P 1V +SCT |                              |                                 | IP20                         | F                        | NO                    | 40                           | 8          | 1.2                 | B                                  | 610929            |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

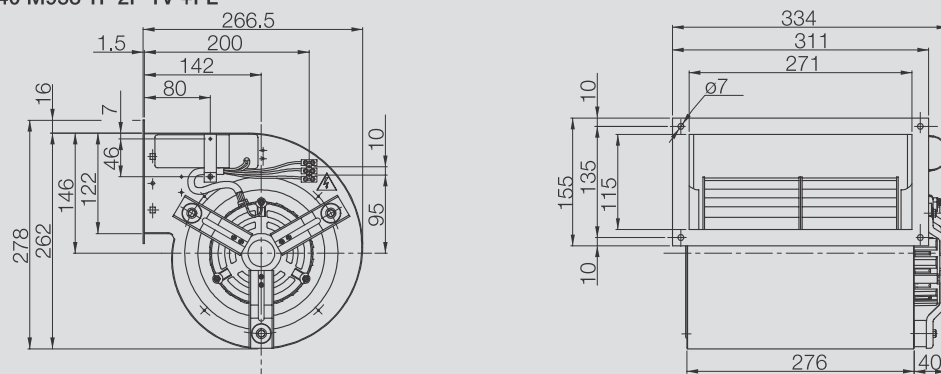
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

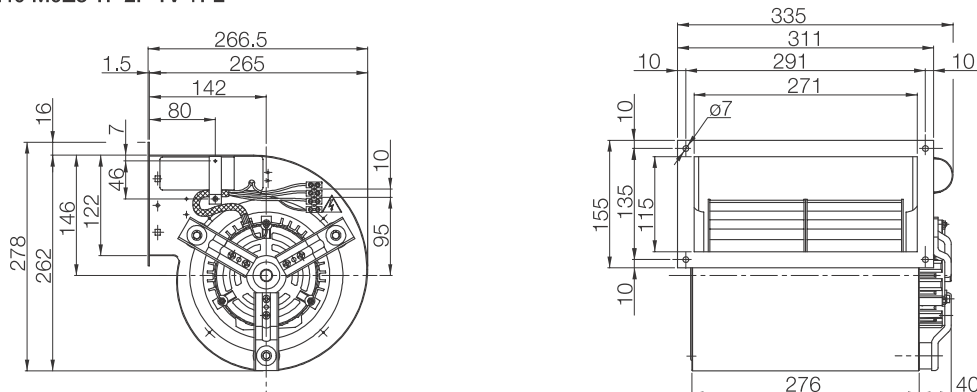
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

**Dimensions** in mm, subject to change.

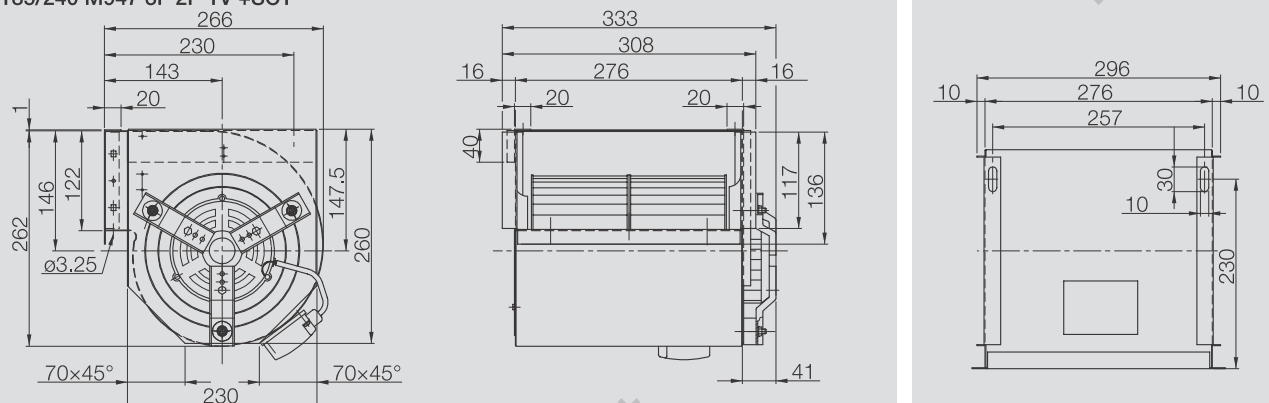
## DD 185/240 M953 1F 2P 1V +FL



## DD 185/240 M9Z3 1F 2P 1V +FL

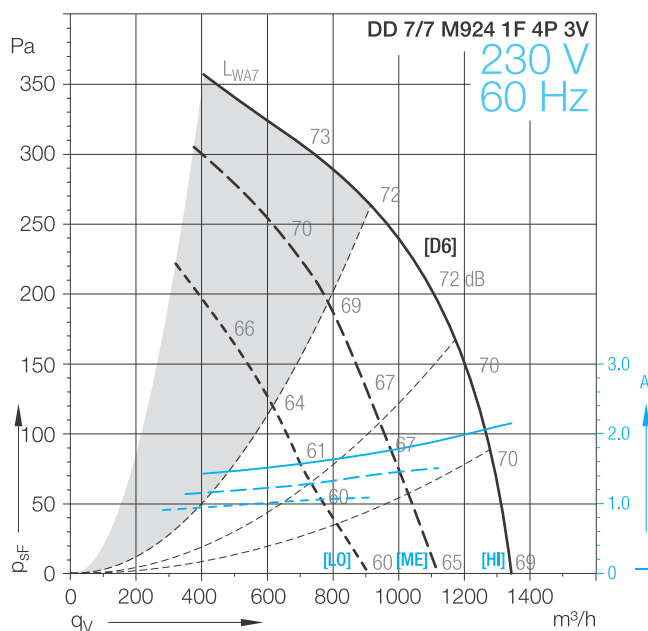
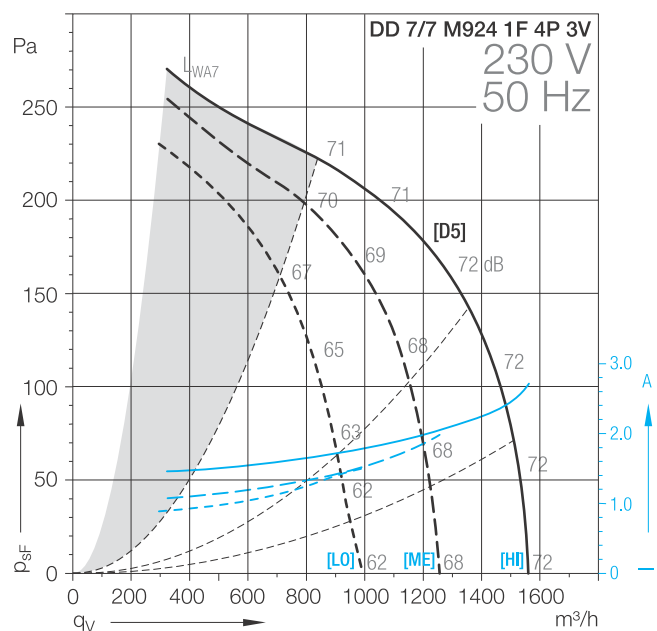
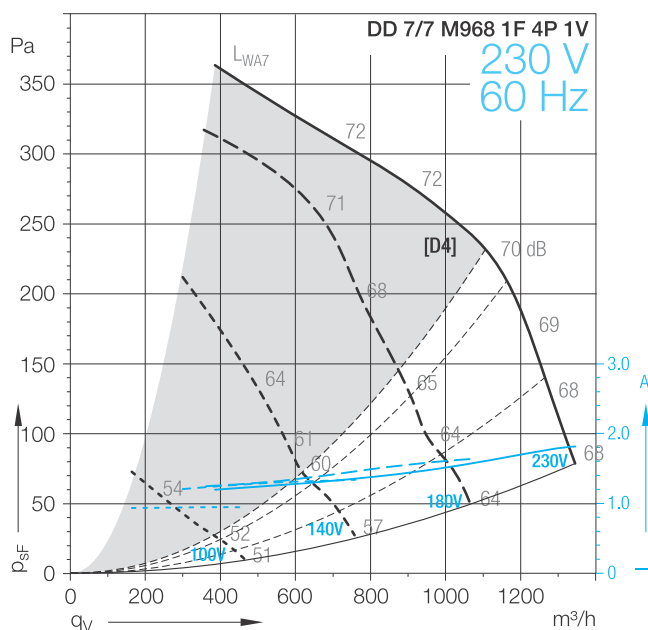
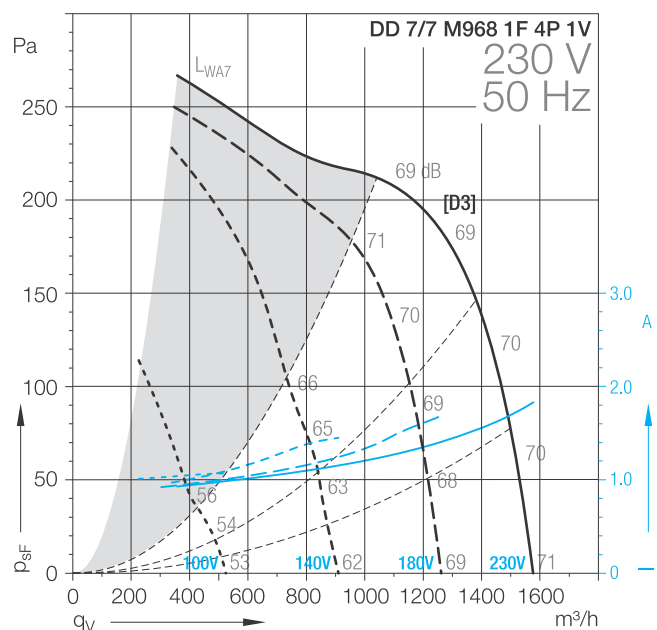
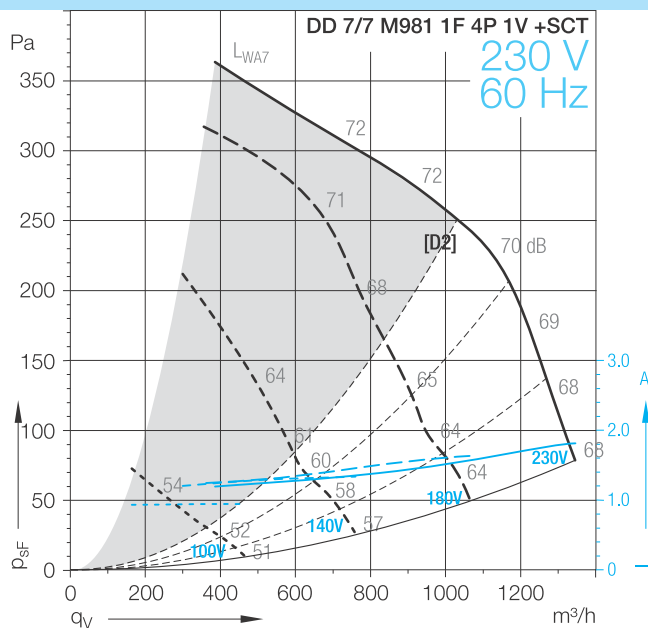
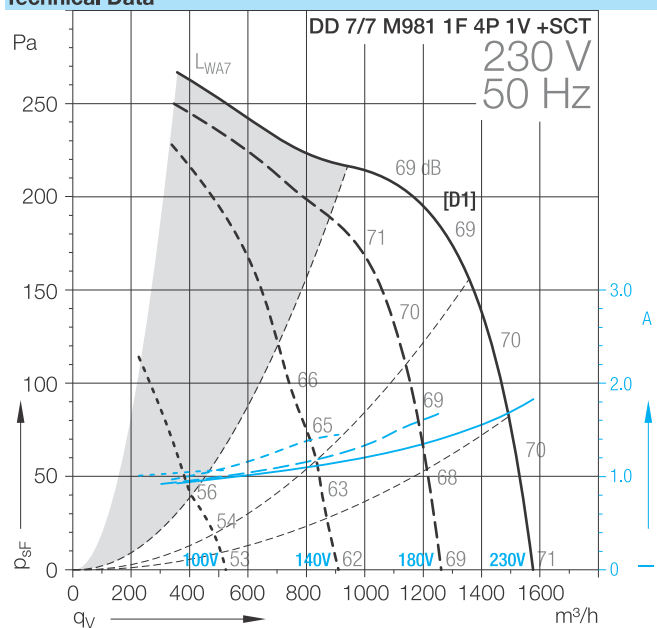


## DD 185/240 M947 3F 2P 1V +SCT



## DD-7/7

## Technical Data





## DD-7/7

## Technical Data

|                    | Speed control | Curves  | Nominal motor power<br>W | Poles<br>— | Phases | Connection | Mains frequency<br>Hz | Max. power consumption<br>W | Max. current consumption<br>A | Speed<br>1/min |
|--------------------|---------------|---------|--------------------------|------------|--------|------------|-----------------------|-----------------------------|-------------------------------|----------------|
| DD 7/7             |               |         |                          |            |        |            |                       |                             |                               |                |
| M981 1F 4P 1V +SCT | (2)           | [D1/D2] | 147                      | 4          | 1~     |            | 50/60                 | 415                         | 1.7                           | 1290           |
| M968 1F 4P 1V      | (2)           | [D3/D4] | 147                      | 4          | 1~     |            | 50/60                 | 422                         | 1.7                           | 1300           |
| M924 1F 4P 3V      | *             | [D5/D6] | 147                      | 4          | 1~     |            | 50/60                 | 456                         | 2                             | 1250           |

## Technical Data

|                    | Operating Capacitor<br>$\mu\text{F}$ | Nominal capacitor voltage<br>V | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br>$^{\circ}\text{C}$ | Fan weight<br>kg | Density of media<br>$\text{kg/m}^3$ | Installation type (ISO 5801) | Article number |
|--------------------|--------------------------------------|--------------------------------|------------------------|---------------------|--------------------|----------------------------------------------|------------------|-------------------------------------|------------------------------|----------------|
| DD 7/7             |                                      |                                |                        |                     |                    |                                              |                  |                                     |                              |                |
| M981 1F 4P 1V +SCT | 6.3                                  | 450                            | IP32                   | F                   | INT                | 40                                           | 9                | 1.2                                 | B                            | 6109HE         |
| M968 1F 4P 1V      | 6.3                                  | 450                            | IP20                   | F                   | INT                | 40                                           | 6                | 1.2                                 | B                            | 6106E7         |
| M924 1F 4P 3V      | 5                                    | 450                            | IP20                   | B                   | INT                | 50                                           | 7                | 1.2                                 | B                            | 6M0678         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

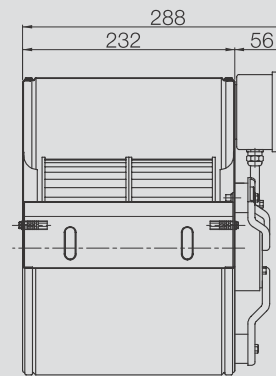
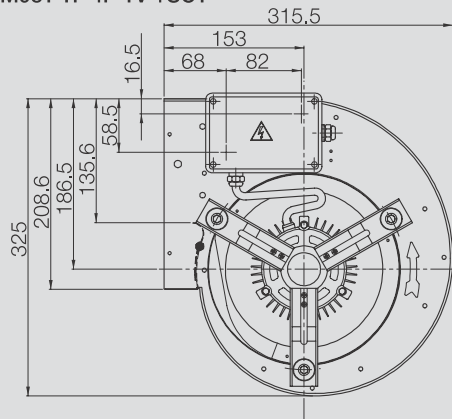
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

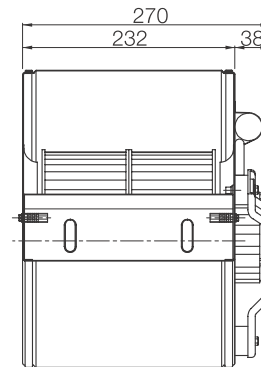
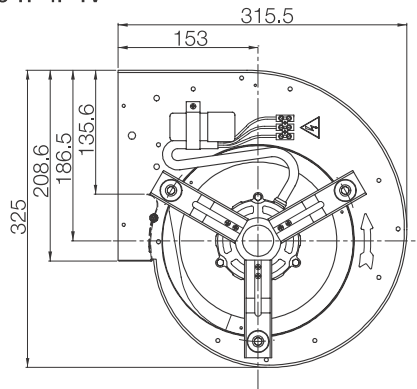
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

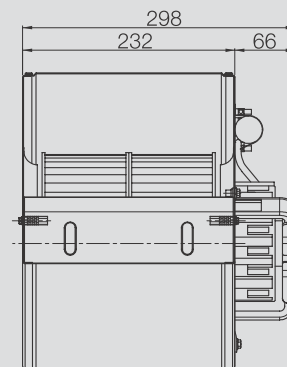
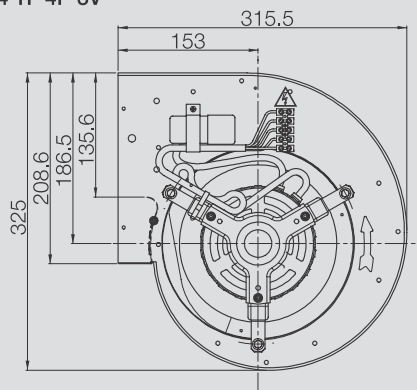
## DD 7/7 M981 1F 4P 1V +SCT



## DD 7/7 M968 1F 4P 1V

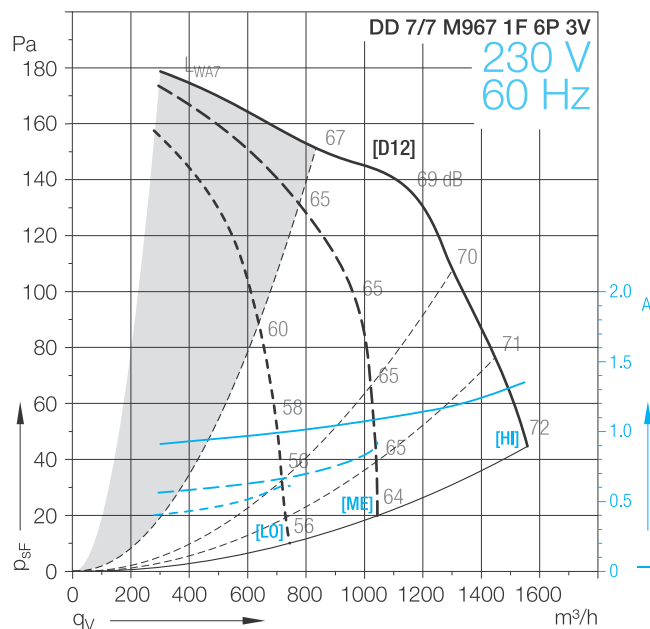
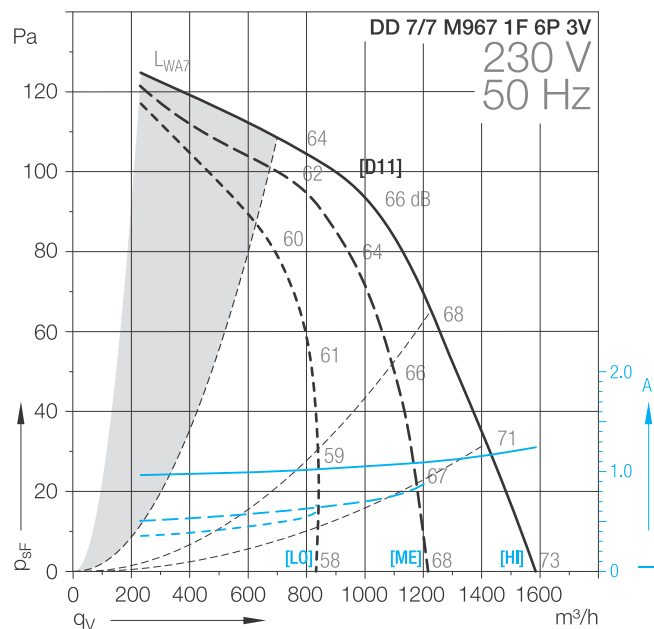
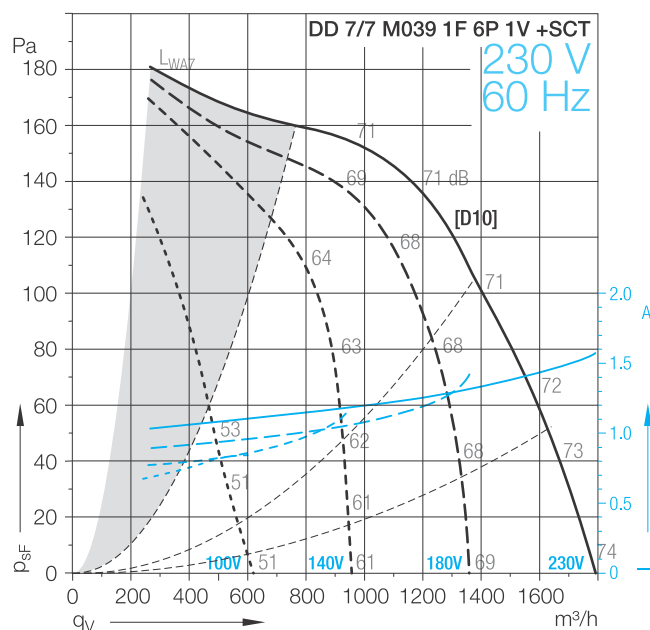
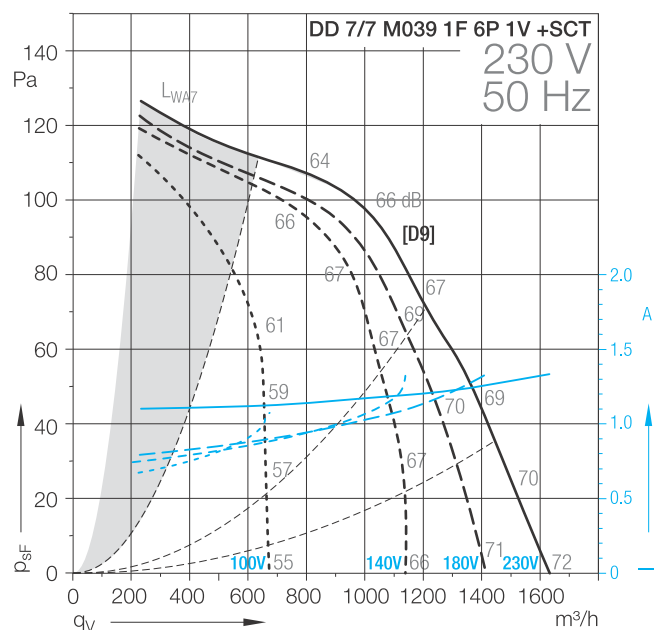
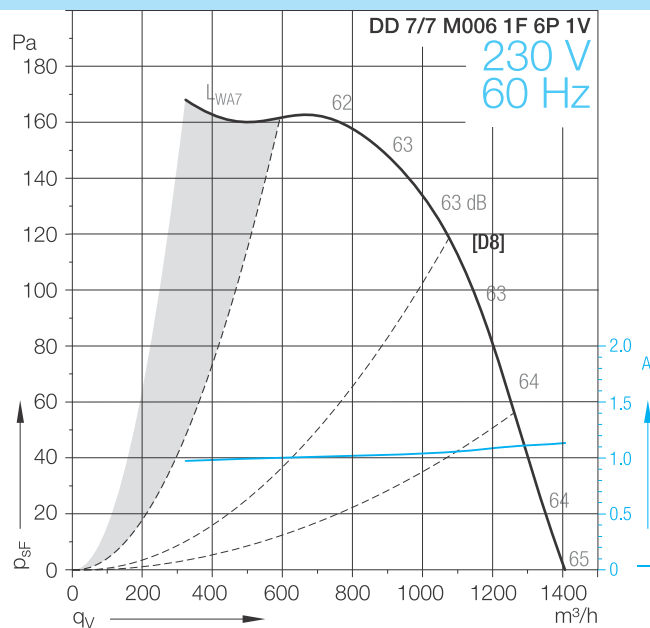
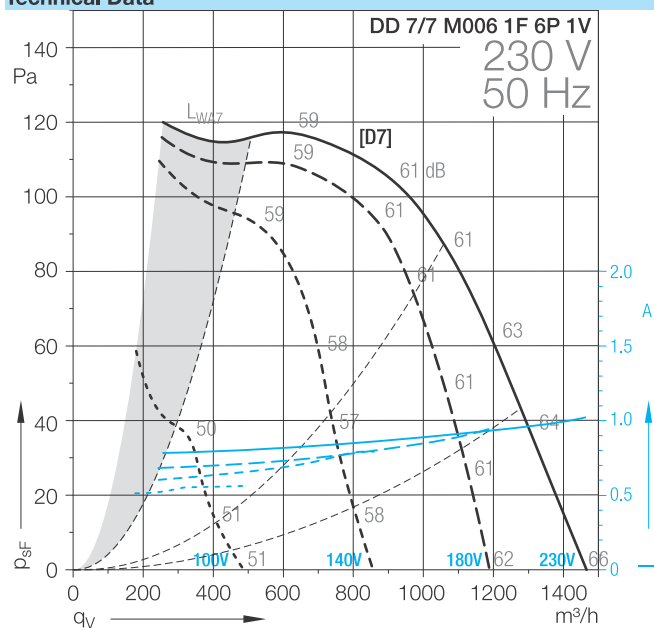


## DD 7/7 M924 1F 4P 3V



## DD-7/7

## Technical Data



## DD-7/7

## Technical Data

|                    | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|--------------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 7/7             |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M006 1F 6P 1V      | (2)           | [D7/D8]   | 62                              | 6                 | 1~     | 50/60      | 226                          | 1                                  | 900                                  |                       |
| M039 1F 6P 1V +SCT | (2)           | [D9/D10]  | 147                             | 6                 | 1~     | 50/60      | 282                          | 1.3                                | 860                                  |                       |
| M967 1F 6P 3V      | *             | [D11/D12] | 147                             | 6                 | 1~     | 50/60      | 271                          | 1.2                                | 860                                  |                       |

## Technical Data

|                    | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|--------------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 7/7             |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M006 1F 6P 1V      | 4                                | 450                                   | IP20                   | B                   | INT                | 50                                  | 7                       | 1.2                              | B                            | 610303         |
| M039 1F 6P 1V +SCT | 5                                | 500                                   | IP44                   | B                   | INT                | 40                                  | 7                       | 1.2                              | B                            | 6109CG         |
| M967 1F 6P 3V      | 5                                | 500                                   | IP32                   | B                   | INT                | 40                                  | 7                       | 1.2                              | B                            | 6106Z6         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

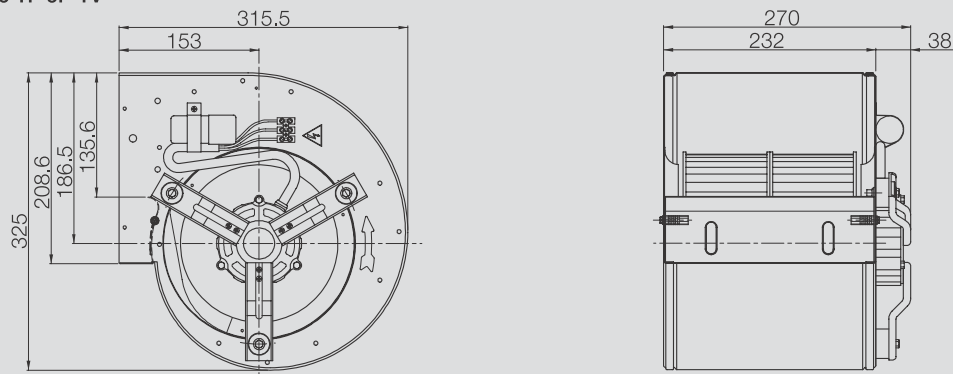
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

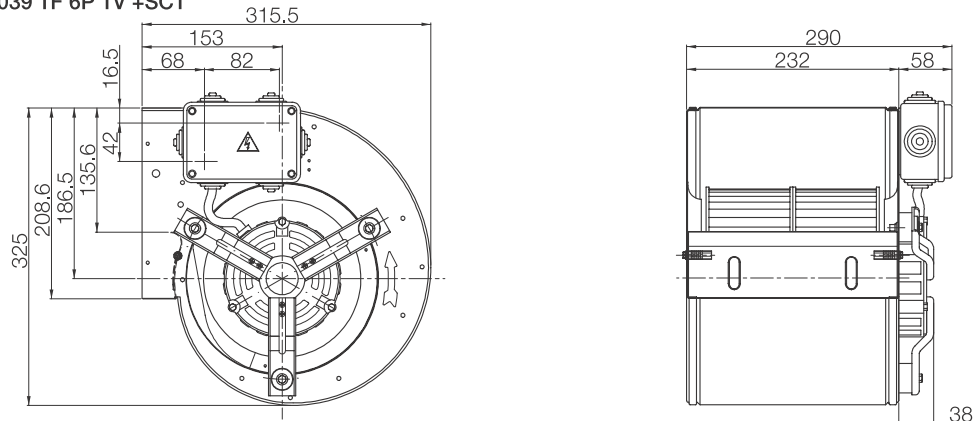
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

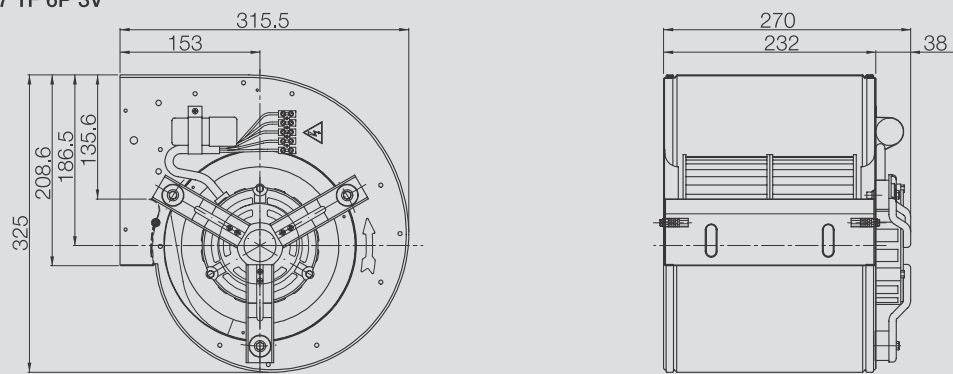
## DD 7/7 M006 1F 6P 1V



## DD 7/7 M039 1F 6P 1V +SCT

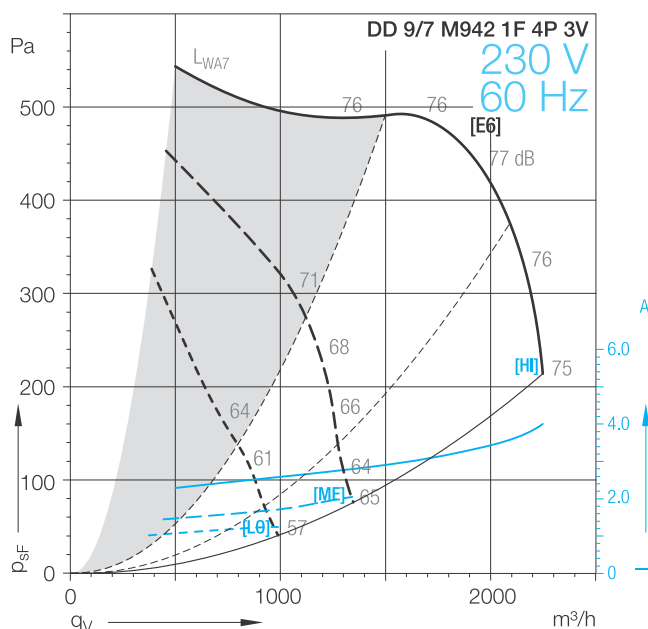
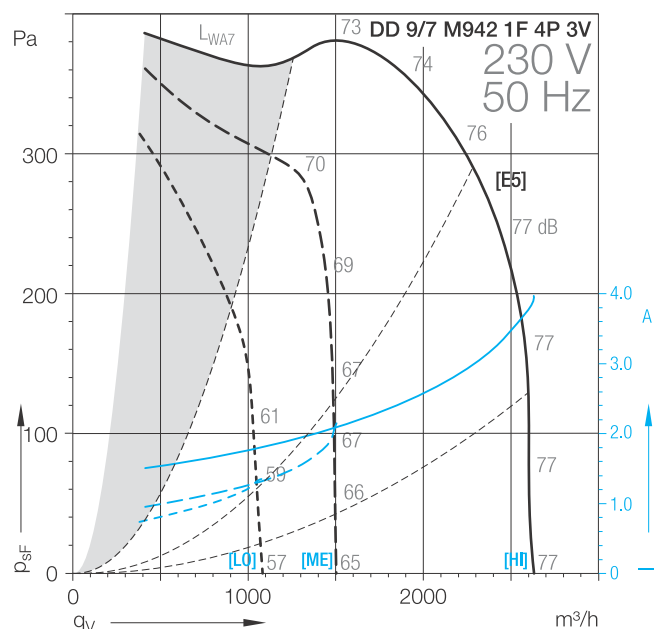
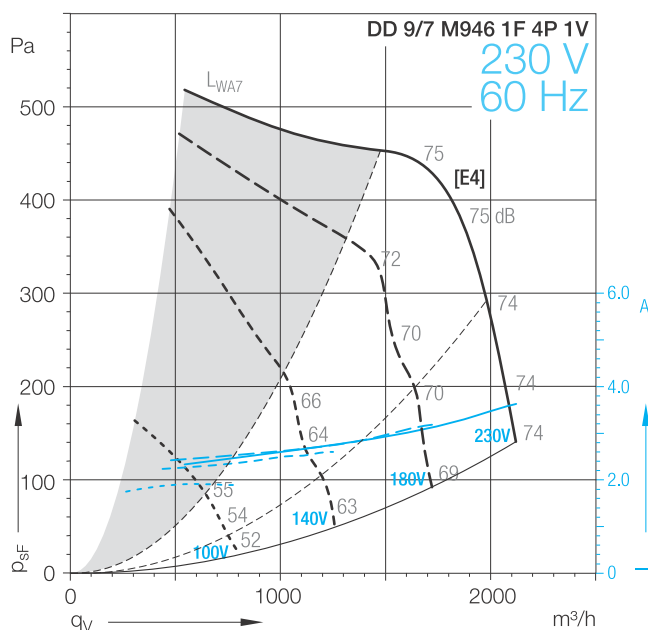
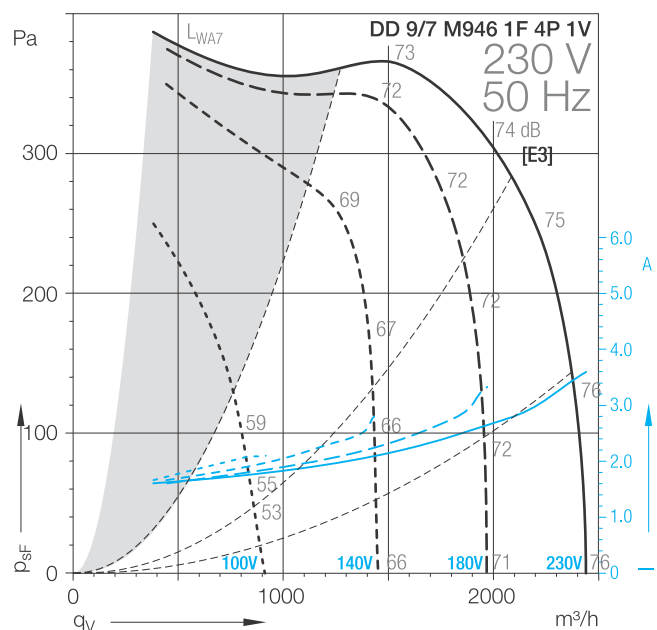
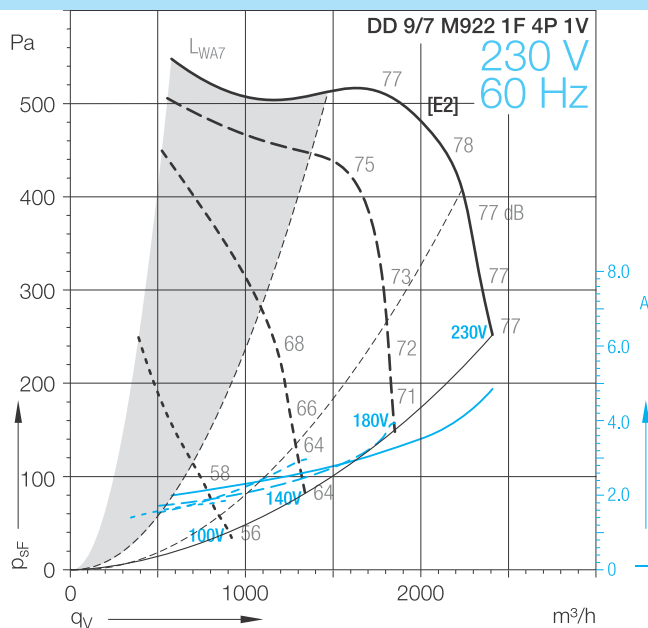
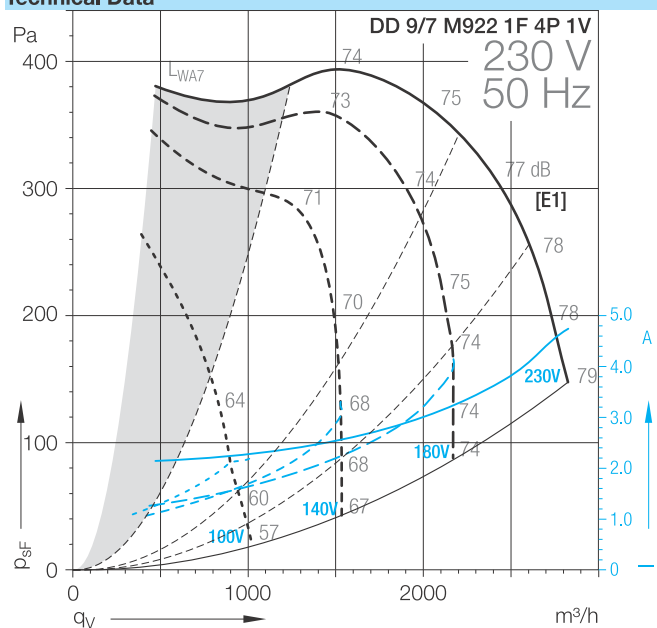


## DD 7/7 M967 1F 6P 3V



## DD-9/7

## Technical Data



# DD-9/7

## Technical Data

|               | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>-</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 9/7        |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| M922 1F 4P 1V | (2)           | [E1/E2] | 373                             | 4                 | 1~     | 50/60      | 1047                         | 5                                  | 1380                                 |                       |
| M946 1F 4P 1V | (2)           | [E3/E4] | 300                             | 4                 | 1~     | 50/60      | 811                          | 3.5                                | 1300                                 |                       |
| M942 1F 4P 3V | *             | [E5/E6] | 420                             | 4                 | 1~     | 50/60      | 902                          | 3.9                                | 1200                                 |                       |

## Technical Data

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 9/7        |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M922 1F 4P 1V | 10                               | 450                                   | IP20                   | B                   | INT                | 40                                  | 10                      | 1.2                              | B                            | 6M06E4         |
| M946 1F 4P 1V | 10                               | 500                                   | IP20                   | B                   | EXT                | 40                                  | 10                      | 1.2                              | B                            | 6M0671         |
| M942 1F 4P 3V | 12.5                             | 450                                   | IP20                   | B                   | EXT                | 40                                  | 10                      | 1.2                              | B                            | 6M0695         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

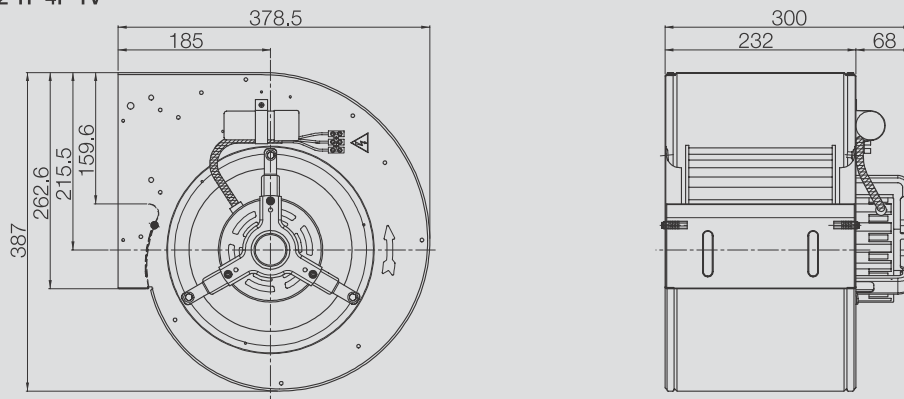
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

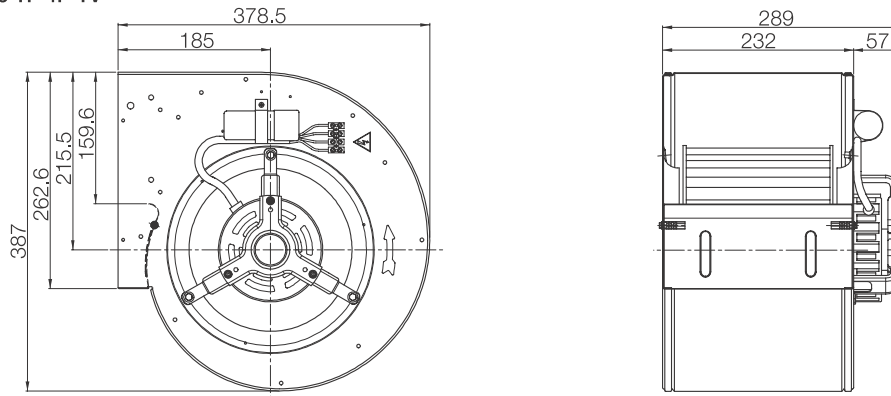
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

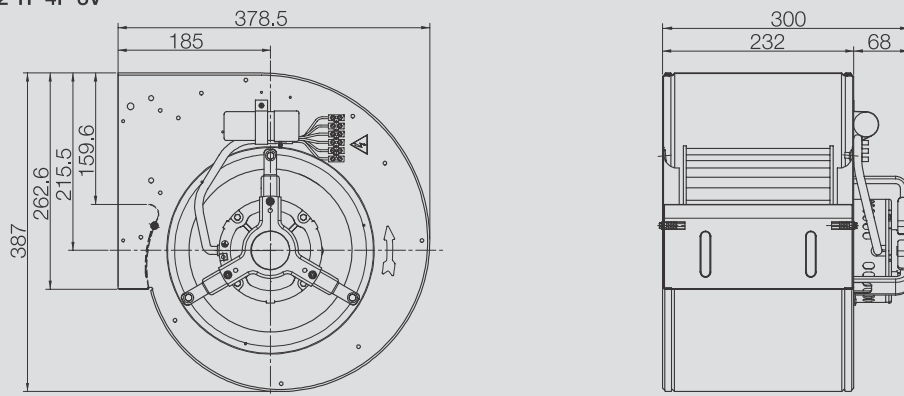
### DD 9/7 M922 1F 4P 1V



### DD 9/7 M946 1F 4P 1V

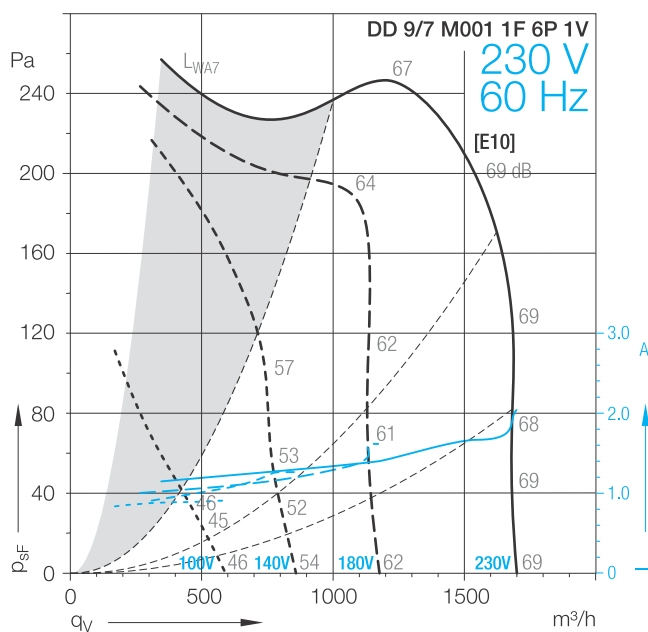
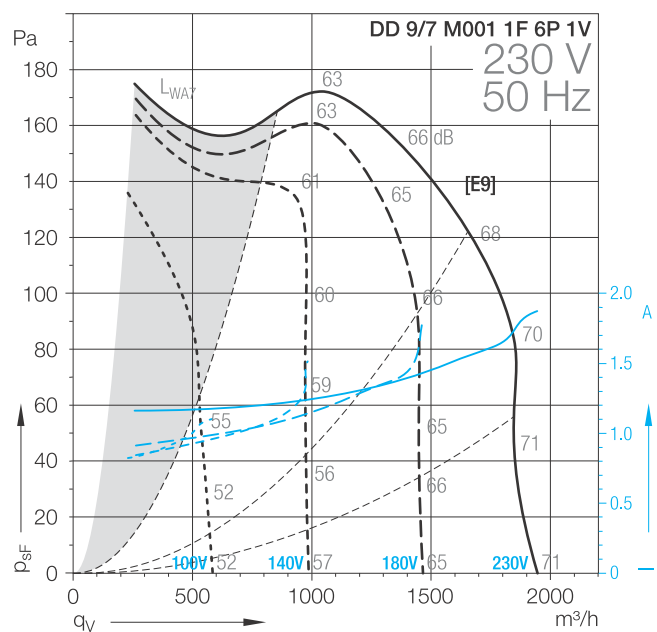
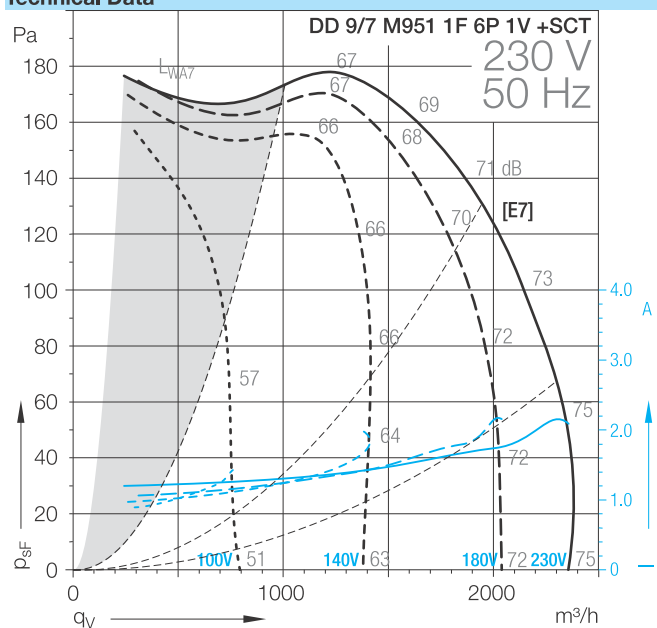


### DD 9/7 M942 1F 4P 3V



## DD-9/7

## Technical Data



DD-9/7

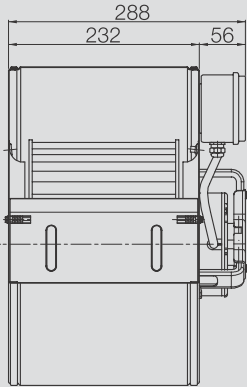
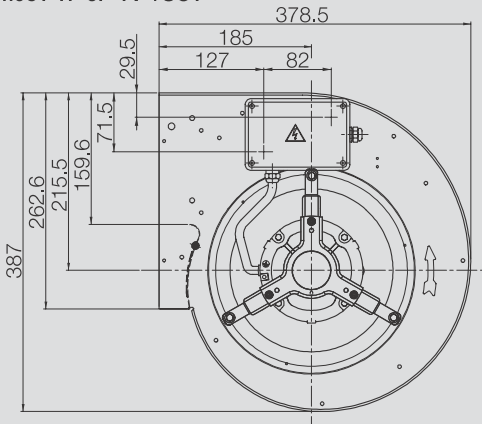
| Technical Data     |               |          |                          |            |        |            |                       |                             |                               |                |
|--------------------|---------------|----------|--------------------------|------------|--------|------------|-----------------------|-----------------------------|-------------------------------|----------------|
|                    | Speed control | Curves   | Nominal motor power<br>W | Poles<br>— | Phases | Connection | Mains frequency<br>Hz | Max. power consumption<br>W | Max. current consumption<br>A | Speed<br>1/min |
| DD 9/7             |               |          |                          |            |        |            |                       |                             |                               |                |
| M951 1F 6P 1V +SCT | (1)           | [E7]     | 245                      | 6          | 1~     | 50         | 454                   | 454                         | 2.1                           | 850            |
| M001 1F 6P 1V      | (1)           | [E9/E10] | 147                      | 6          | 1~     | 50/60      | 406                   | 406                         | 1.8                           | 825            |

| Technical Data     |                        |                                 |                              |                          |                       |                              |            |                     |                                    |                   |
|--------------------|------------------------|---------------------------------|------------------------------|--------------------------|-----------------------|------------------------------|------------|---------------------|------------------------------------|-------------------|
|                    | Operating<br>Capacitor | Nominal<br>capacitor<br>voltage | Motor<br>protection<br>class | Motor ther-<br>mal class | Thermal<br>protection | Media<br>Temperature<br>max. | Fan weight | Density of<br>media | Installation<br>type (ISO<br>5801) | Article<br>number |
| DD 9/7             | μF                     | V                               |                              |                          |                       | °C                           | kg         | kg/m³               |                                    |                   |
| M951 1F 6P 1V +SCT | 8                      | 500                             | IP32                         | F                        | INT                   | 40                           | 12         | 1.2                 | B                                  | 6M09HF            |
| M001 1F 6P 1V      | 5                      | 500                             | IP20                         | F                        | EXT                   | 40                           | 10         | 1.2                 | B                                  | 6M0306            |

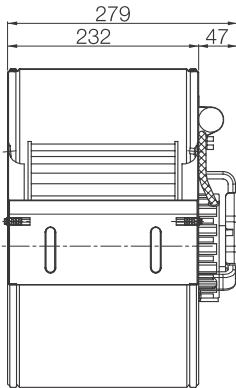
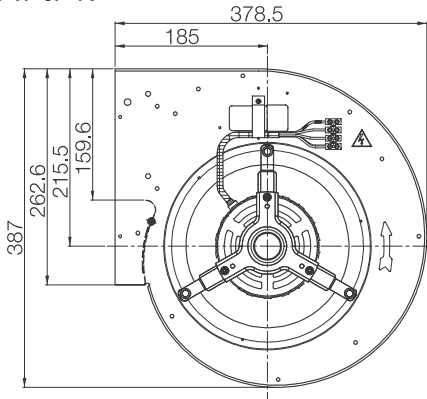
(1) = Speed controllable via Transformer  
(2) = Speed controllable via TRIAC or Transformer  
(3) = Speed controllable via Inverter  
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed  
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

Dimensions in mm, subject to change.  
DD 9/7 M951 1F 6P 1V +SCT



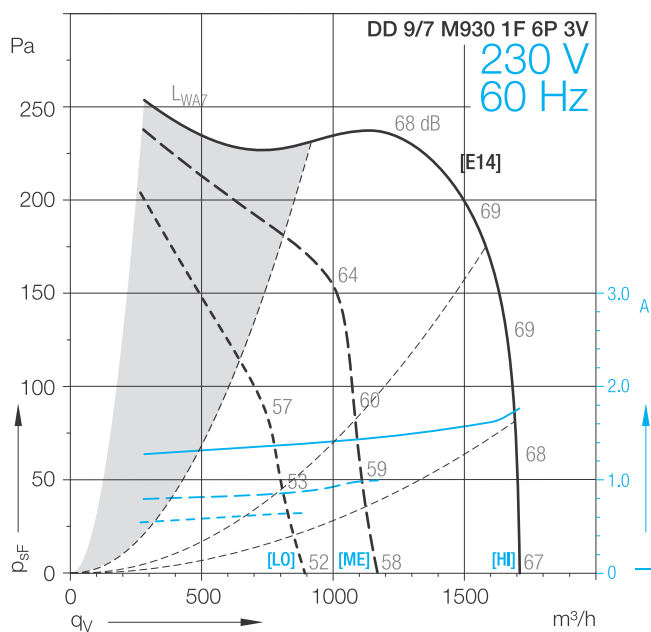
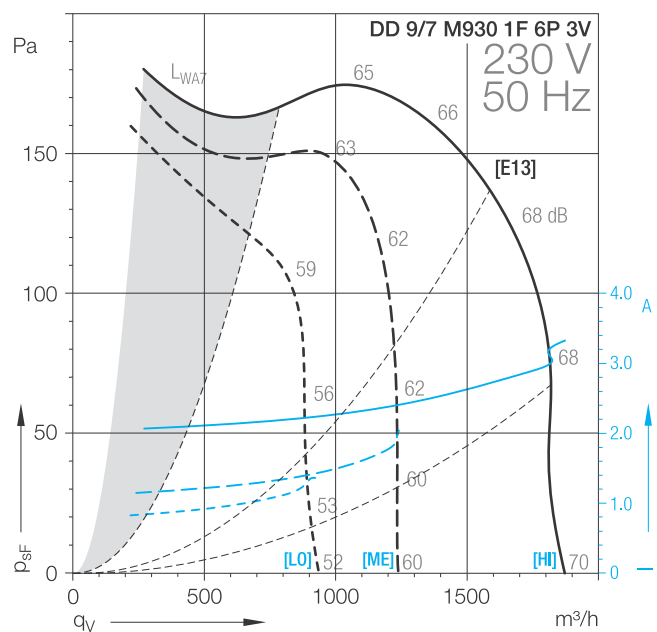
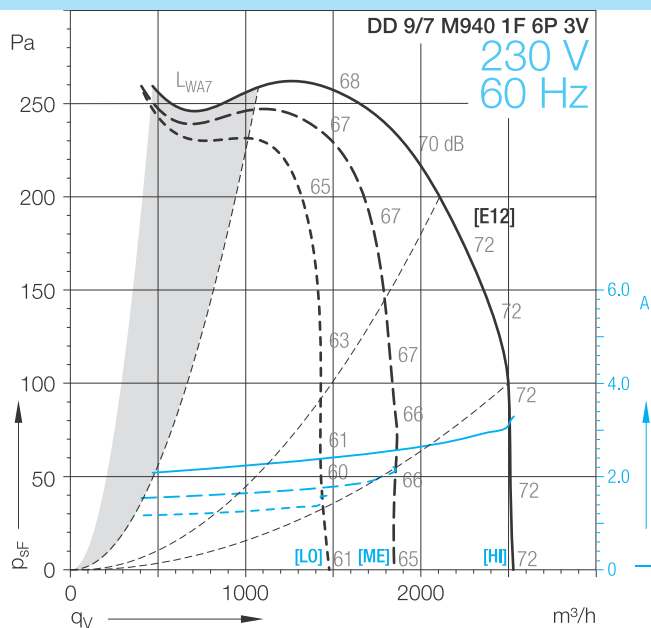
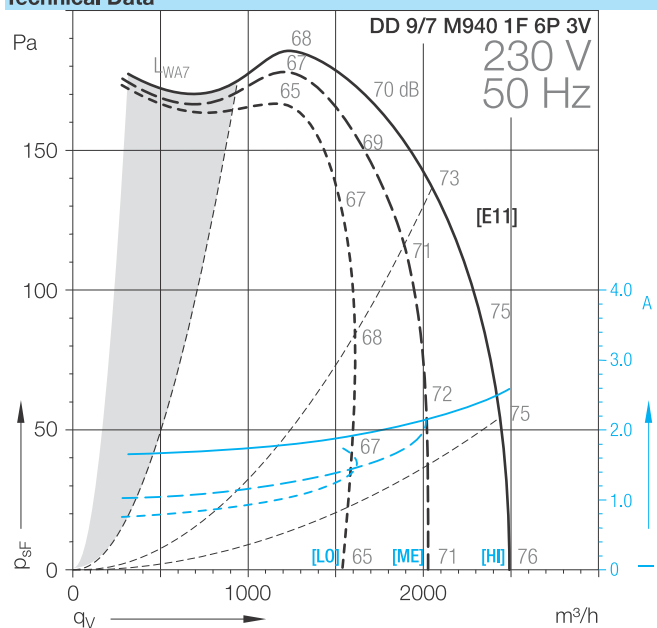
DD 9/7 M001 1F 6P 1V





## DD-9/7

## Technical Data



**DD-9/7****Technical Data**

|               | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 9/7        |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M940 1F 6P 3V | *             | [E11/E12] | 245                             | 6                 | 1~     |            | 50/60                        | 563                                | 2.6                                  | 880                   |
| M930 1F 6P 3V | *             | [E13/E14] | 147                             | 6                 | 1~     |            | 50/60                        | 386                                | 1.7                                  | 900                   |

**Technical Data**

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 9/7        |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M940 1F 6P 3V | 8                                | 500                                   | IP20                   | F                   | INT                | 40                                  | 10                      | 1.2                              | B                            | 6M0667         |
| M930 1F 6P 3V | 6.3                              | 500                                   | IP20                   | B                   | INT                | 40                                  | 11                      | 1.2                              | B                            | 6M06A3         |

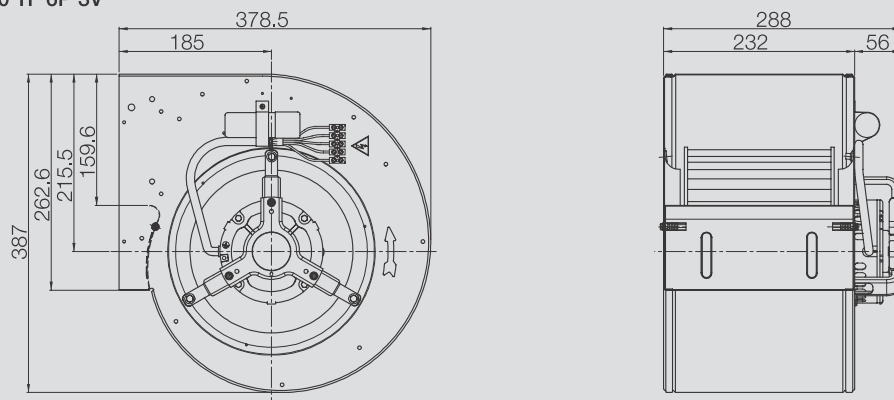
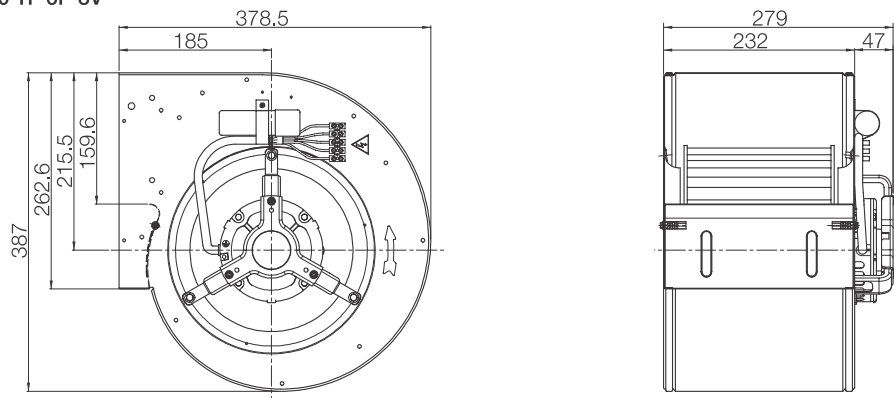
(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

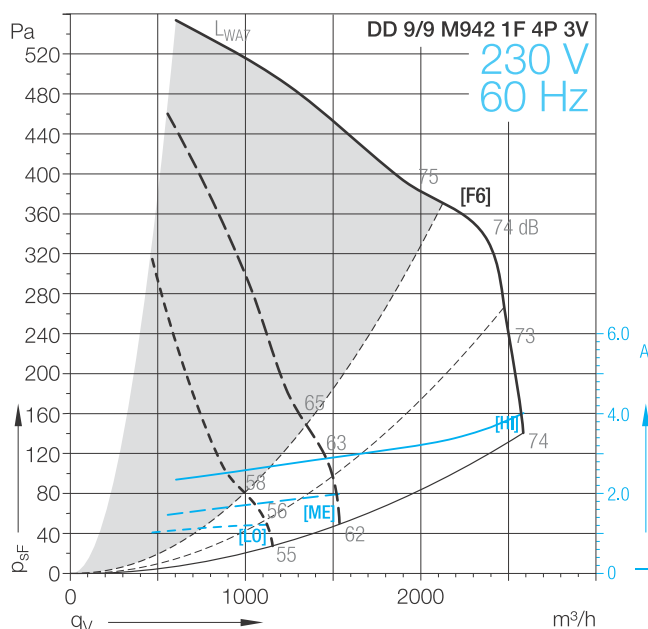
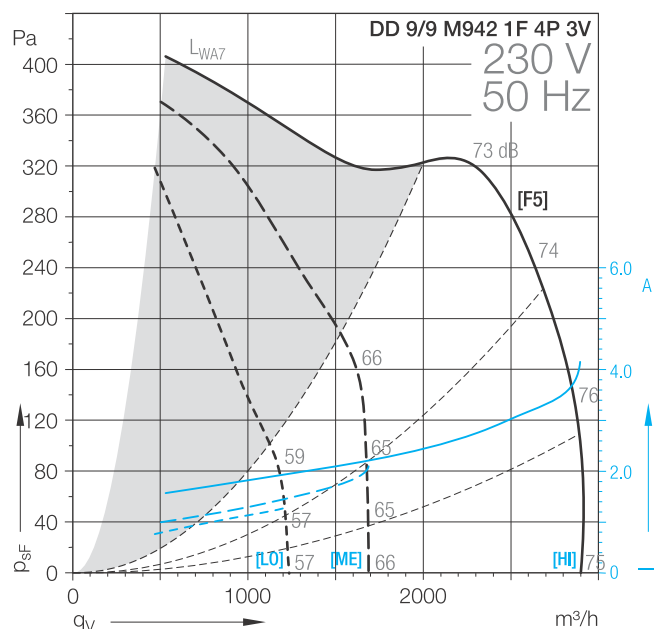
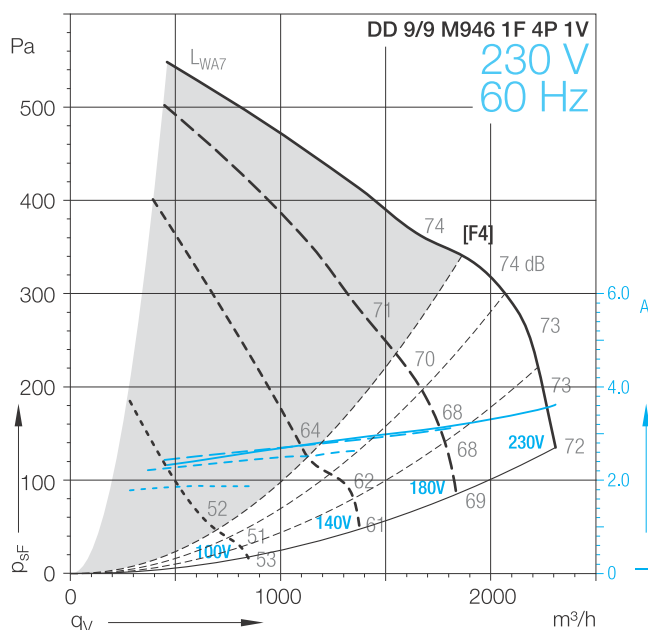
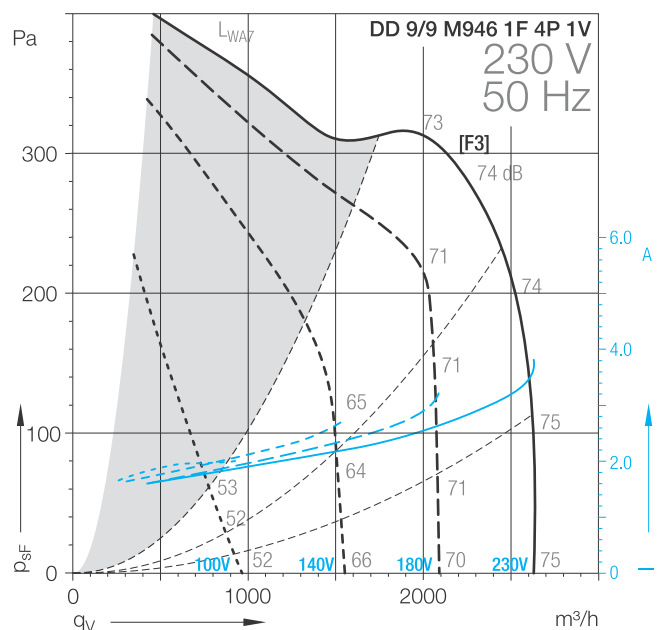
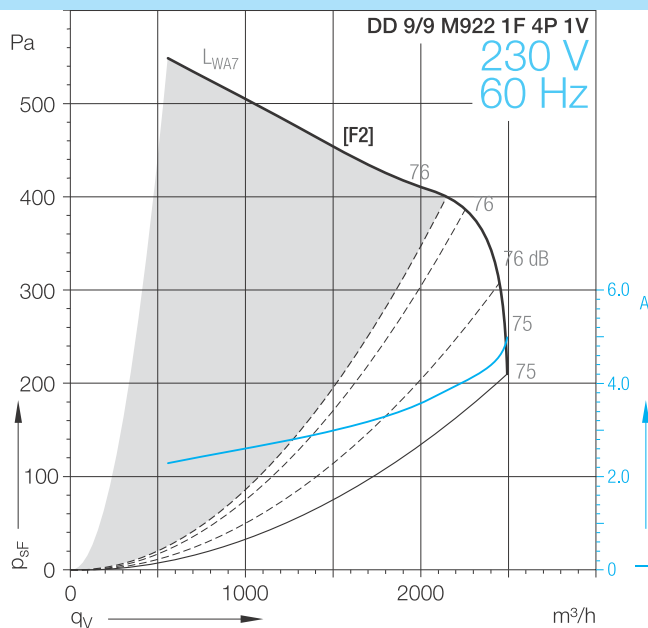
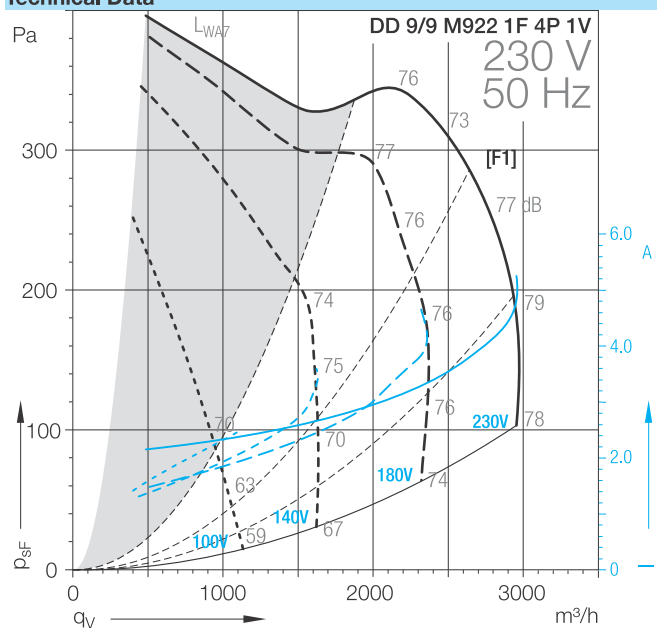
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.**Dimensions** in mm, subject to change.**DD 9/7 M940 1F 6P 3V****DD 9/7 M930 1F 6P 3V**

## DD-9/9

## Technical Data



# DD-9/9

## Technical Data

|               | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>-</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 9/9        |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| M922 1F 4P 1V | (2)           | [F1/F2] | 373                             | 4                 | 1~     |            | 50/60                        | 1165                               | 5.1                                  | 1380                  |
| M946 1F 4P 1V | (2)           | [F3/F4] | 300                             | 4                 | 1~     |            | 50/60                        | 877                                | 3.5                                  | 1300                  |
| M942 1F 4P 3V | *             | [F5/F6] | 420                             | 4                 | 1~     |            | 50/60                        | 962                                | 3.8                                  | 1200                  |

## Technical Data

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 9/9        |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M922 1F 4P 1V | 10                               | 450                                   | IP20                   | F                   | INT                | 40                                  | 13                      | 1.2                              | B                            | 6M0642         |
| M946 1F 4P 1V | 10                               | 500                                   | IP20                   | B                   | EXT                | 40                                  | 12                      | 1.2                              | B                            | 6M0661         |
| M942 1F 4P 3V | 12.5                             | 450                                   | IP20                   | B                   | EXT                | 40                                  | 14                      | 1.2                              | B                            | 6M0669         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

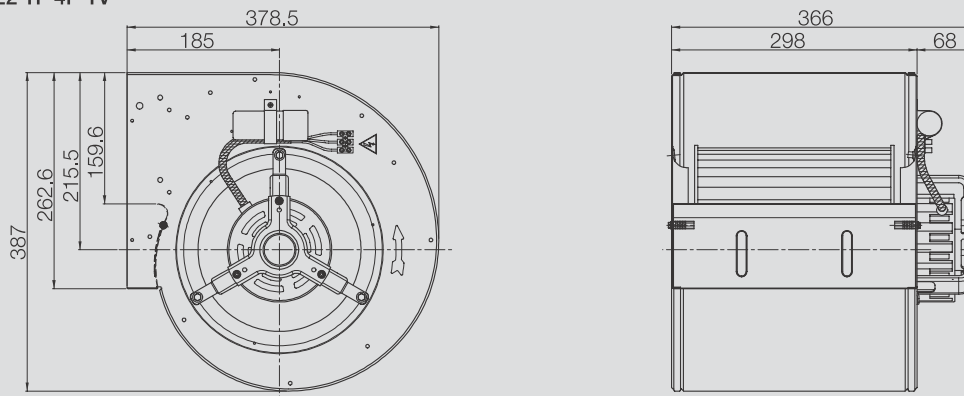
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

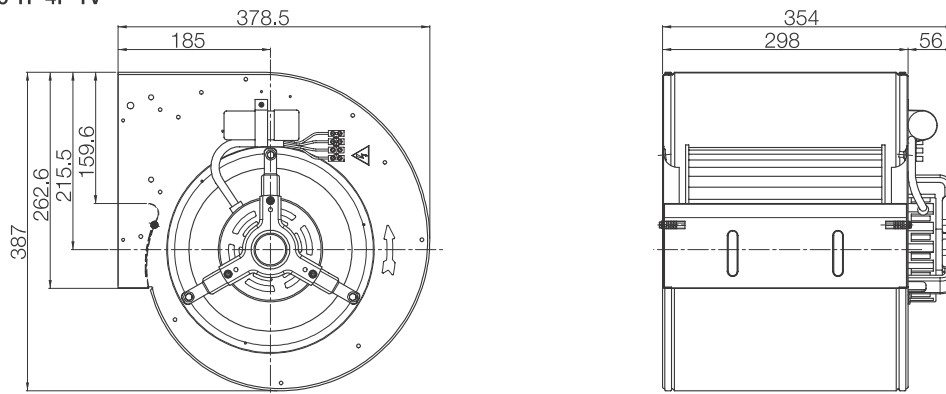
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

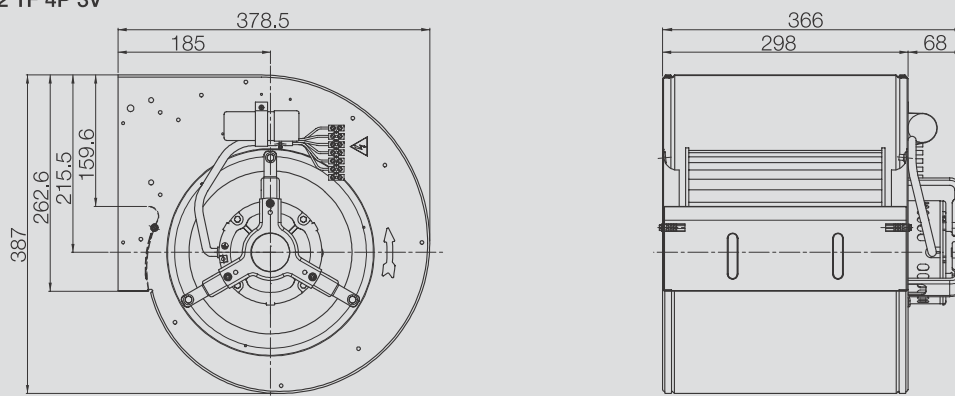
### DD 9/9 M922 1F 4P 1V

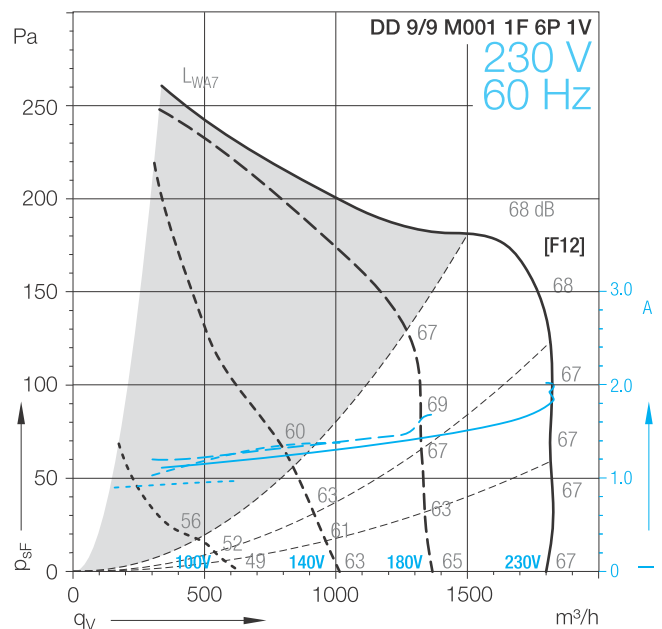
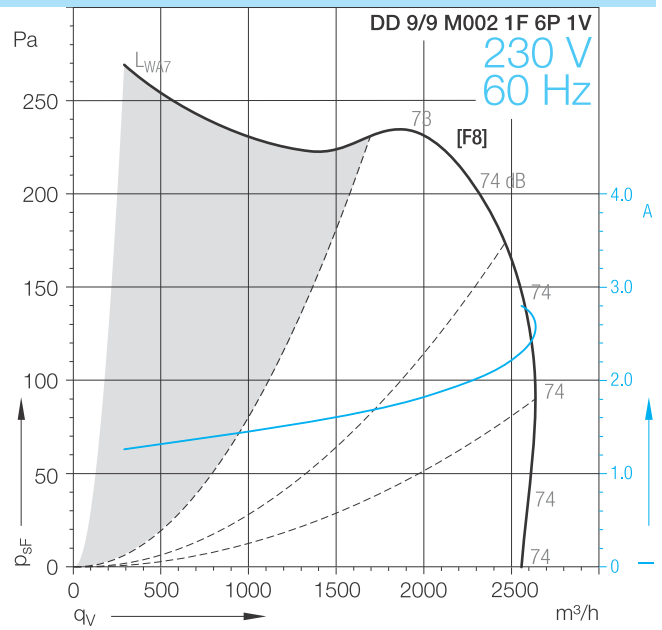


### DD 9/9 M946 1F 4P 1V



### DD 9/9 M942 1F 4P 3V





# DD-9/9

## Technical Data

|                    | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|--------------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 9/9             |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M002 1F 6P 1V      | (1)           | [F7/F8]   | 245                             | 6                 | 1~     |            | 50/60                        | 549                                | 2.6                                  | 850                   |
| M951 1F 6P 1V +SCT | (1)           | [F9]      | 245                             | 6                 | 1~     |            | 50                           | 483                                | 2.1                                  | 850                   |
| M001 1F 6P 1V      | (1)           | [F11/F12] | 147                             | 6                 | 1~     |            | 50/60                        | 438                                | 2                                    | 825                   |

## Technical Data

|                    | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|--------------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 9/9             |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M002 1F 6P 1V      | 8                                | 500                                   | IP20                   | F                   | INT                | 70                                  | 13                      | 1.2                              | B                            | 6M0698         |
| M951 1F 6P 1V +SCT | 8                                | 450                                   | IP32                   | B                   | INT                | 40                                  | 11                      | 1.2                              | B                            | 6M06G0         |
| M001 1F 6P 1V      | 5                                | 500                                   | IP20                   | F                   | EXT                | 40                                  | 11                      | 1.2                              | B                            | 6M0308         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

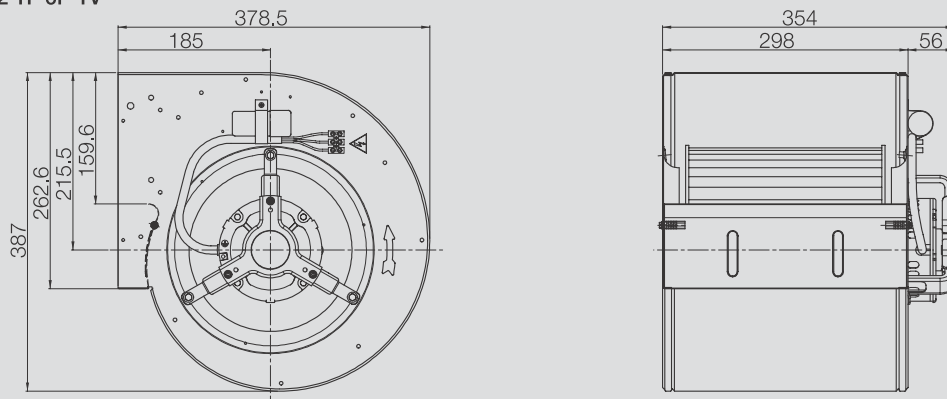
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

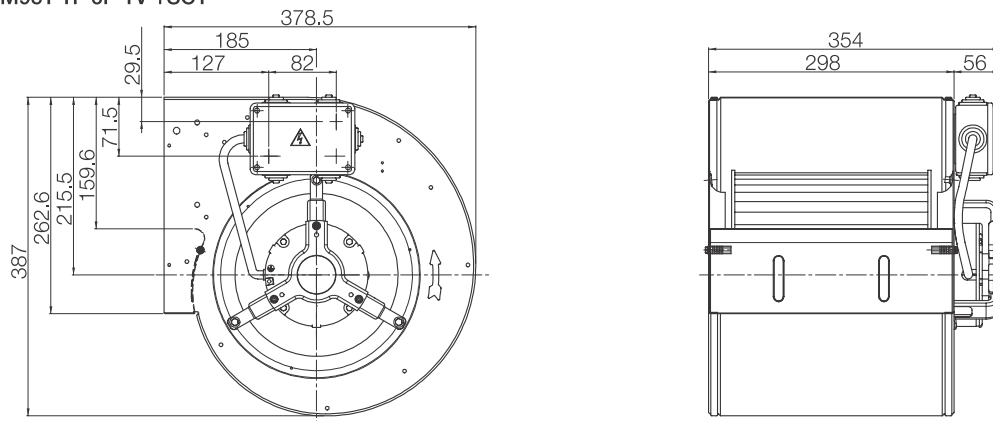
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

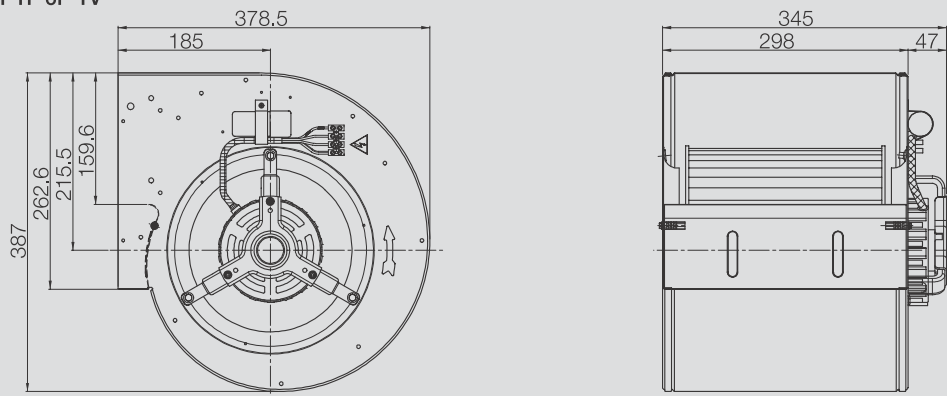
### DD 9/9 M002 1F 6P 1V



### DD 9/9 M951 1F 6P 1V +SCT

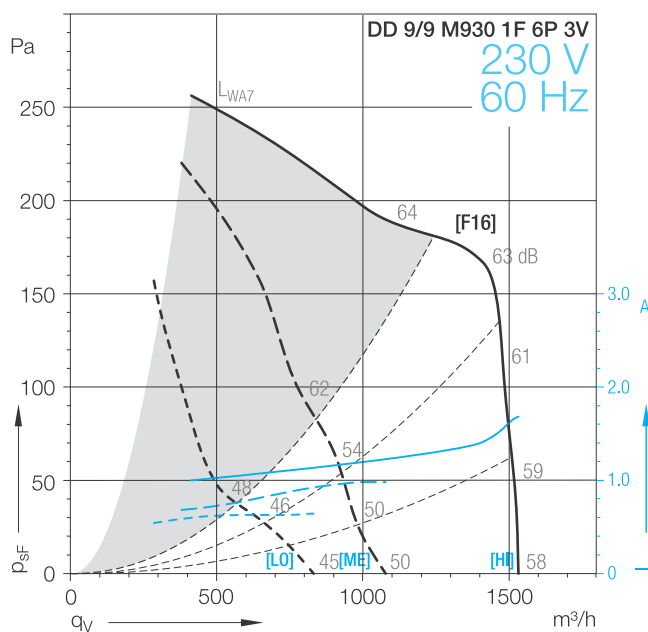
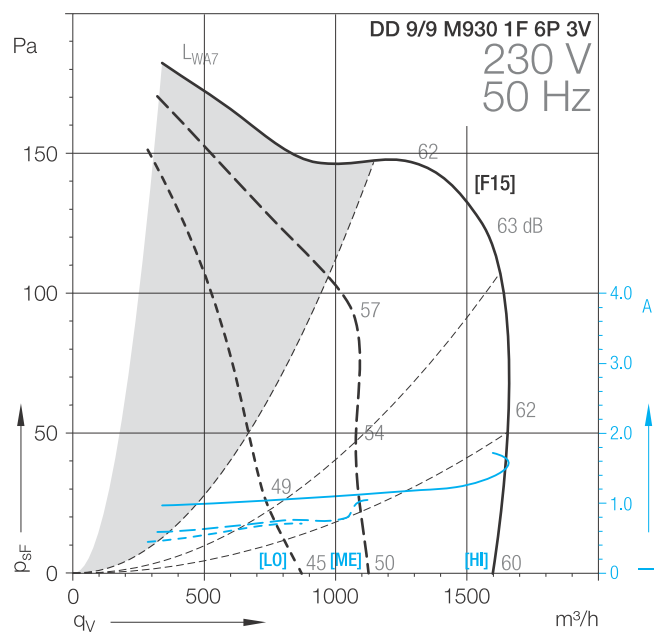
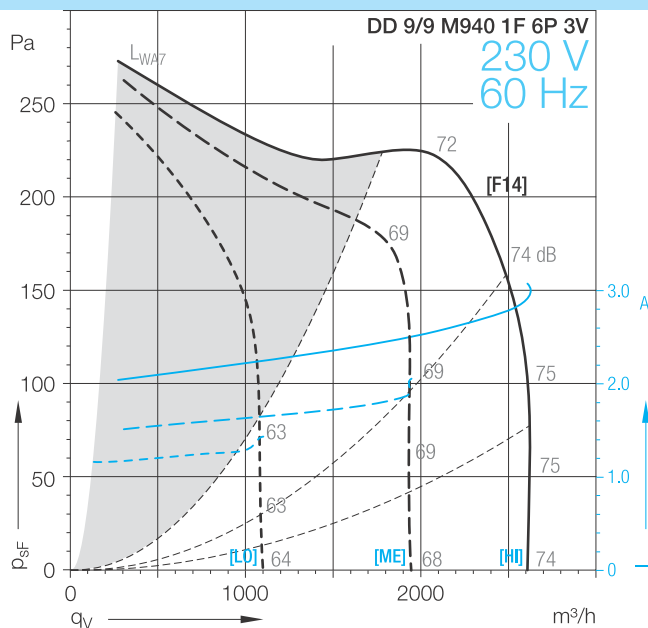
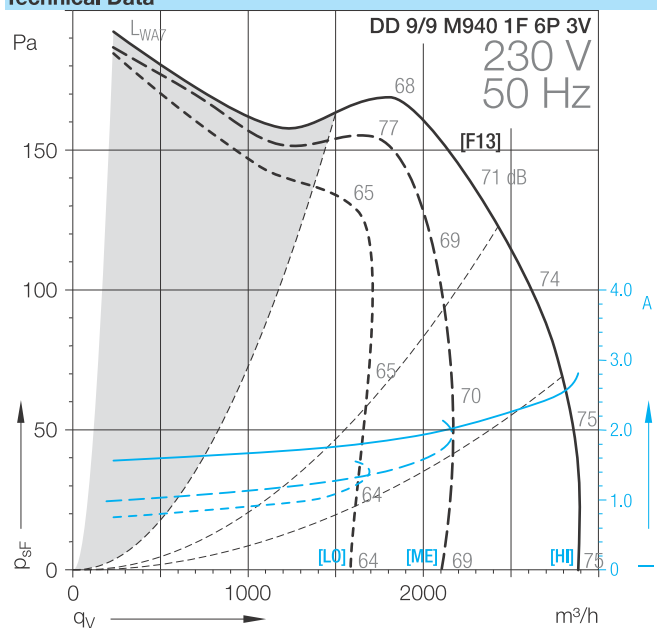


### DD 9/9 M001 1F 6P 1V



## DD-9/9

## Technical Data





# DD-9/9

## Technical Data

|               | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 9/9        |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M940 1F 6P 3V | *             | [F13/F14] | 245                             | 6                 | 1~     |            | 50/60                        | 605                                | 2.5                                  | 880                   |
| M930 1F 6P 3V | *             | [F15/F16] | 147                             | 6                 | 1~     |            | 50/60                        | 385                                | 1.7                                  | 900                   |

## Technical Data

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 9/9        |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M940 1F 6P 3V | 8                                | 500                                   | IP20                   | F                   | INT                | 50                                  | 13                      | 1.2                              | B                            | 6M0662         |
| M930 1F 6P 3V | 5                                | 450                                   | IP20                   | B                   | INT                | 40                                  | 11                      | 1.2                              | B                            | 6M0664         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

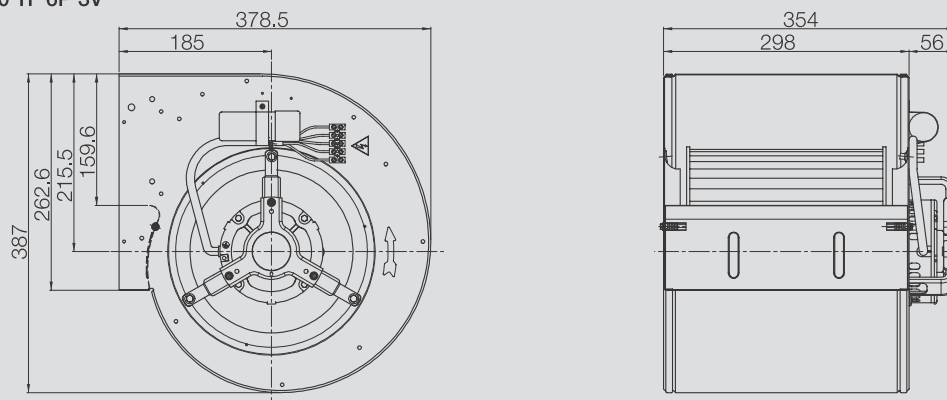
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

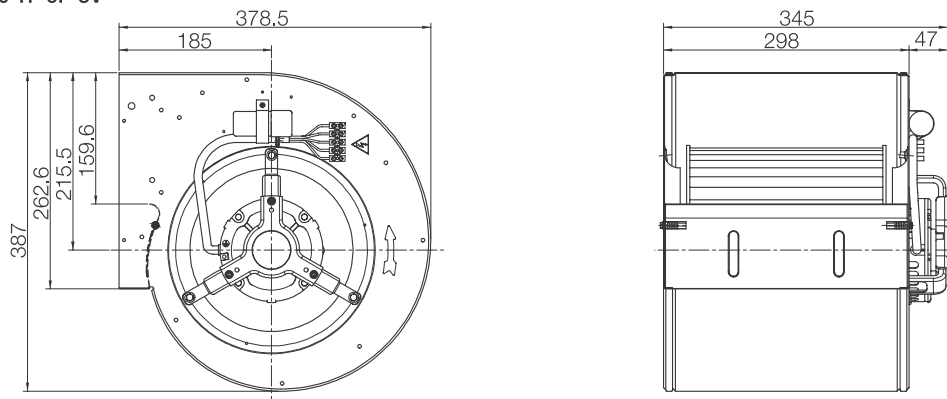
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

### DD 9/9 M940 1F 6P 3V

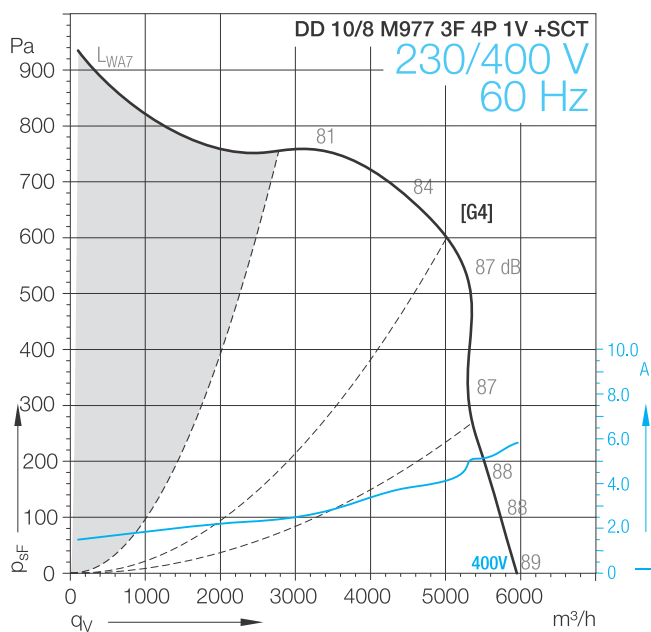
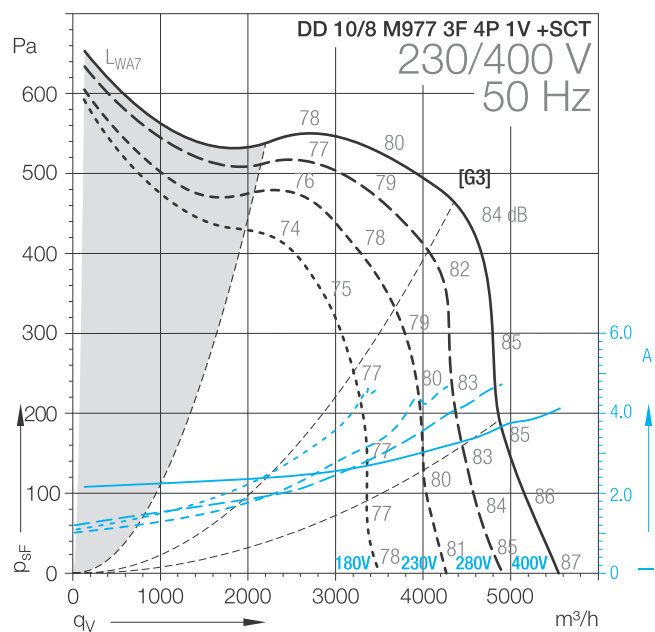
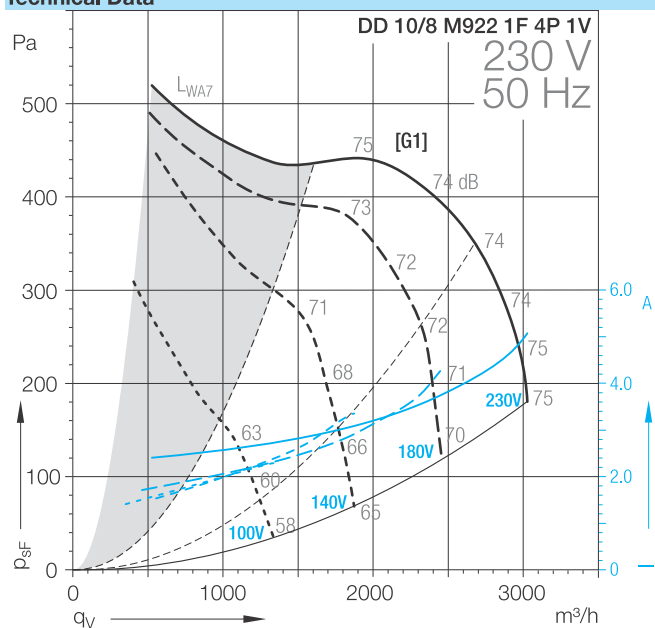


### DD 9/9 M930 1F 6P 3V



## DD-10/8

## Technical Data



# DD-10/8

## Technical Data

|                    | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|--------------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 10/8            |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| M922 1F 4P 1V      | (2)           | [G1]    | 373                             | 4                 | 1~     |            | 50                           | 1163                               | 4.8                                  | 1380                  |
| M977 3F 4P 1V +SCT | *             | [G3/G4] | 1500                            | 4                 | 3~     | Δ/Y        | 50/60                        | 2509                               | 4.7                                  | 1360                  |

## Technical Data

|                    | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|--------------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 10/8            |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M922 1F 4P 1V      | 12.5                             | 450                                   | IP20                   | F                   | INT                | 40                                  | 13                      | 1.2                              | B                            | 6M0652         |
| M977 3F 4P 1V +SCT |                                  |                                       | IP20                   | B                   | EXT                | 40                                  | 22                      | 1.2                              | B                            | 6M09Y3         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

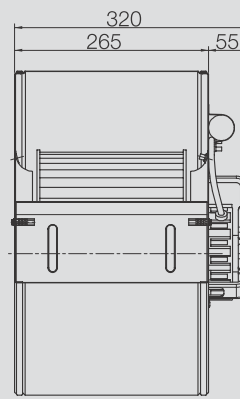
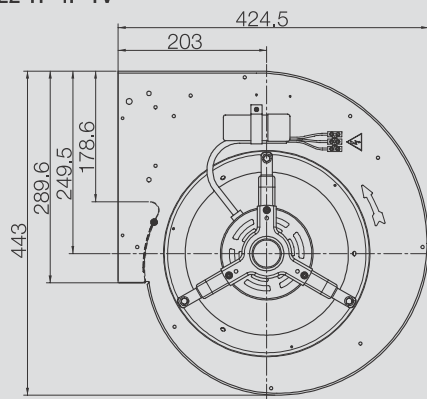
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

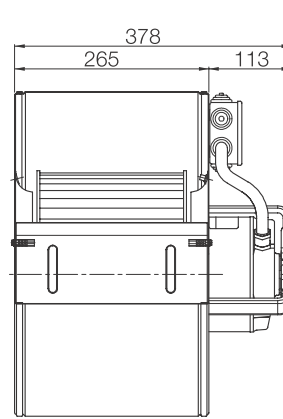
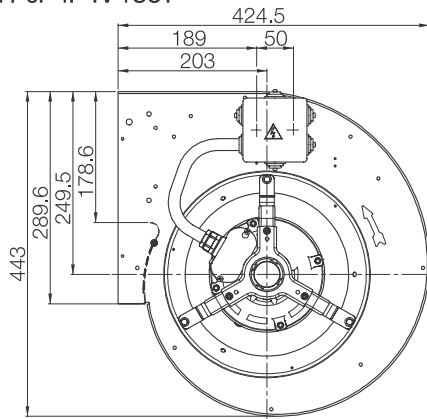
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

### DD 10/8 M922 1F 4P 1V

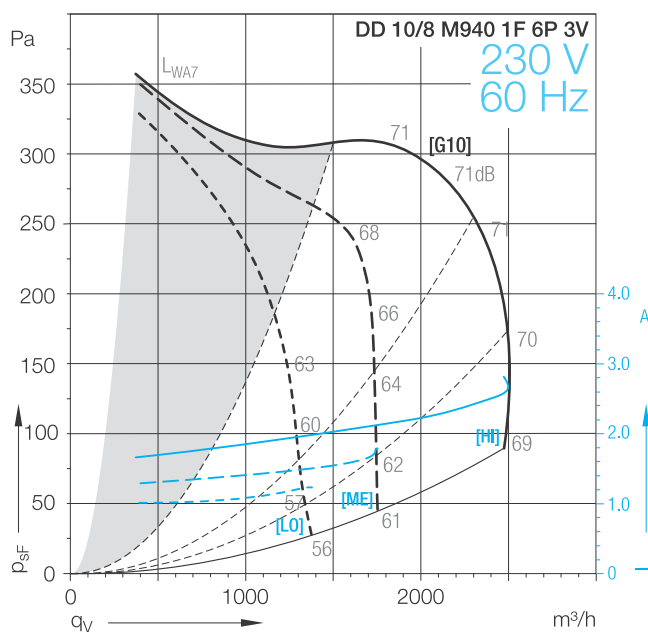
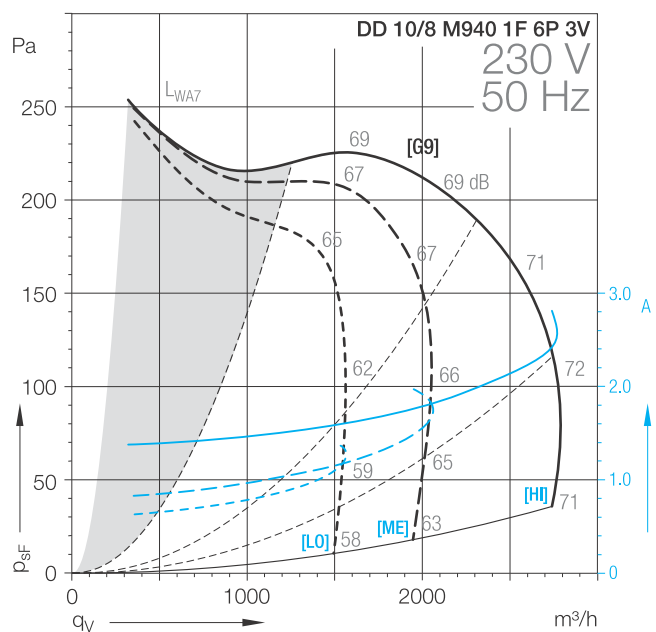
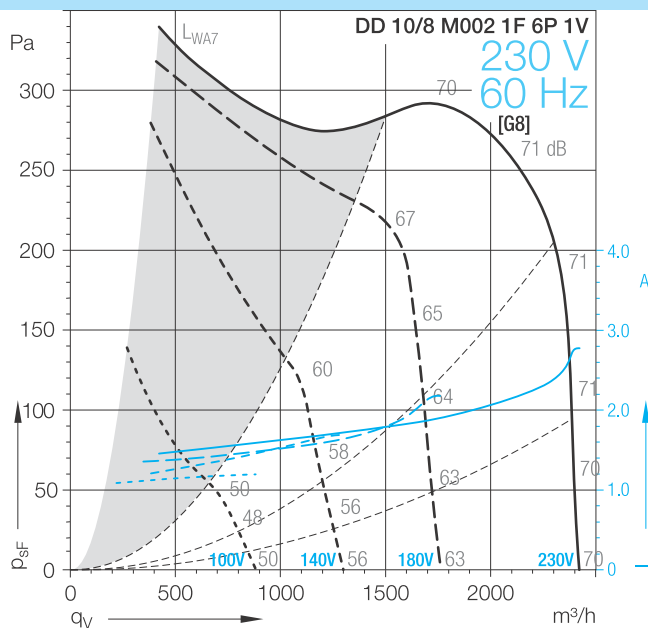
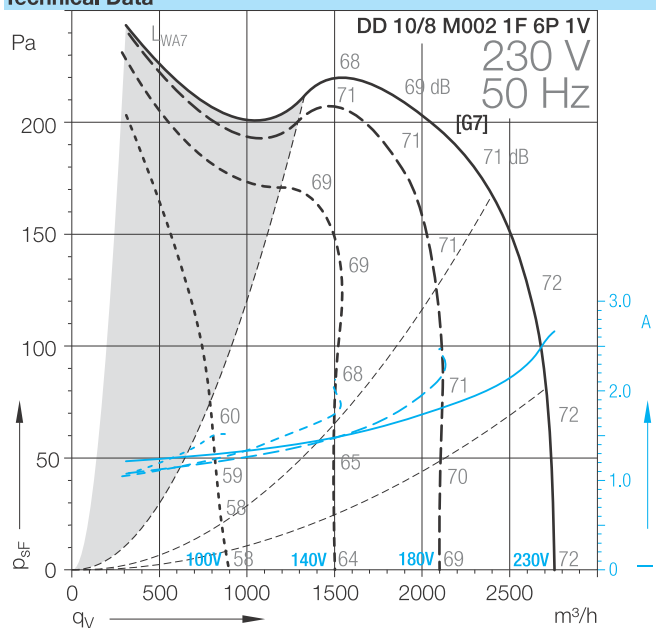


### DD 10/8 M977 3F 4P 1V +SCT



## DD-10/8

## Technical Data



# DD-10/8

## Technical Data

|               | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 10/8       |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| M002 1F 6P 1V | (1)           | [G5/G6] | 245                             | 6                 | 1~     | 50/60      | 591                          | 2.6                                | 850                                  |                       |
| M940 1F 6P 3V | *             | [G7/G8] | 245                             | 6                 | 1~     | 50/60      | 625                          | 2.6                                | 880                                  |                       |

## Technical Data

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 10/8       |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M002 1F 6P 1V | 8                                | 450                                   | IP20                   | F                   | INT                | 60                                  | 13                      | 1.2                              | B                            | 6M0312         |
| M940 1F 6P 3V | 8                                | 500                                   | IP20                   | F                   | INT                | 40                                  | 13                      | 1.2                              | B                            | 6M0648         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

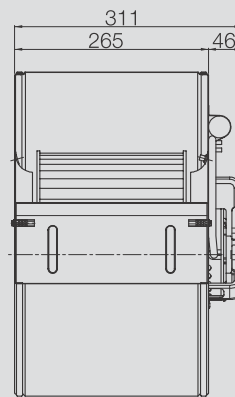
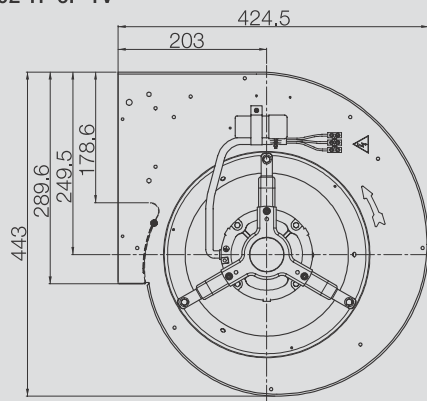
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

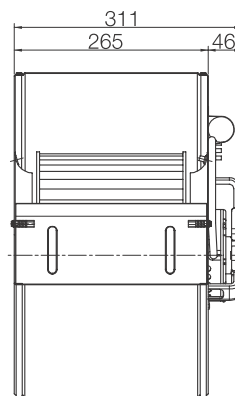
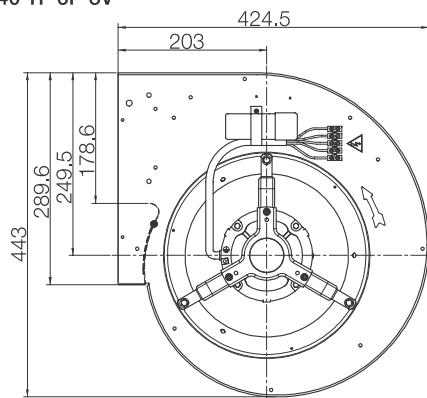
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

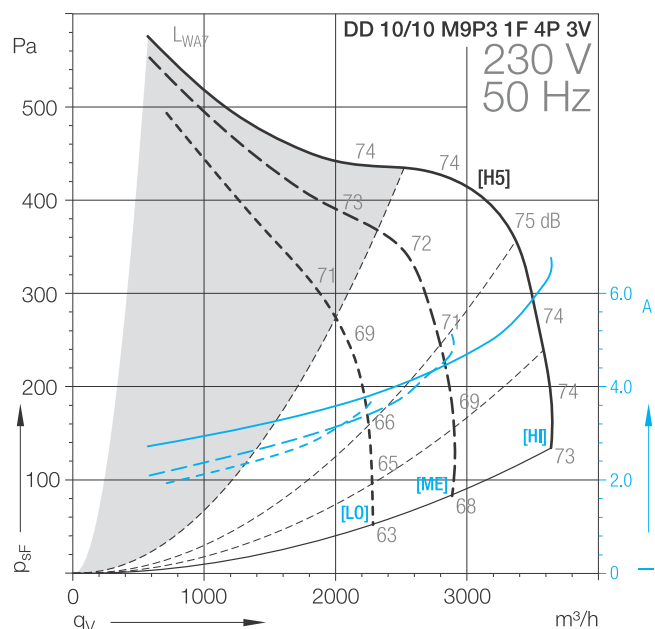
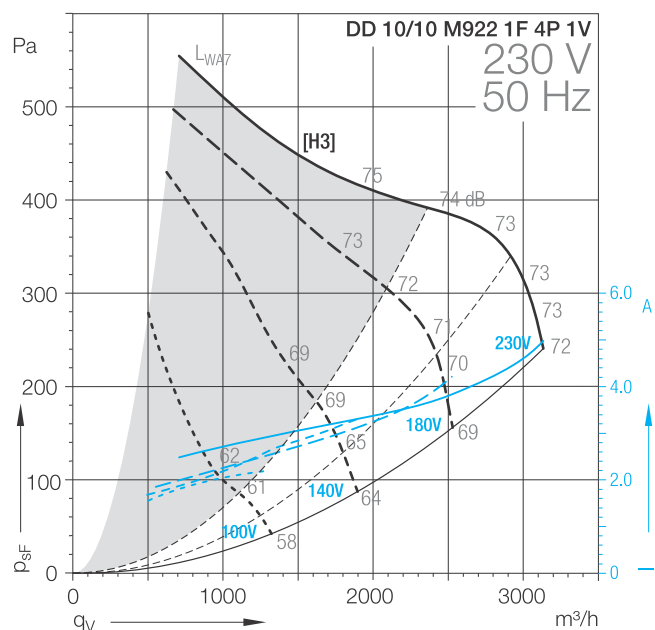
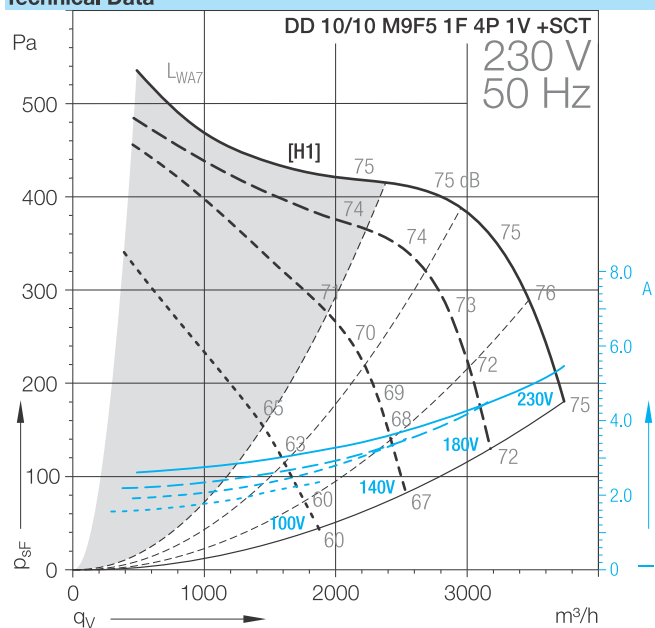
## Dimensions in mm, subject to change.

### DD 10/8 M002 1F 6P 1V



### DD 10/8 M940 1F 6P 3V



**DD-10/10****Technical Data**

# DD-10/10

## Technical Data

|                    | Speed control | Curves | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|--------------------|---------------|--------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 10/10           |               |        |                                 |                   |        |            |                              |                                    |                                      |                       |
| M9F5 1F 4P 1V +SCT | (2)           | [H1]   | 550                             | 4                 | 1~     |            | 50                           | 1238                               | 5.1                                  | 1200                  |
| M922 1F 4P 1V      | (2)           | [H3]   | 373                             | 4                 | 1~     |            | 50                           | 1141                               | 4.8                                  | 1380                  |
| M9P3 1F 4P 3V      | *             | [H5]   | 550                             | 4                 | 1~     |            | 50                           | 1494                               | 6.3                                  | 1370                  |

## Technical Data

|                    | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|--------------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 10/10           |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M9F5 1F 4P 1V +SCT | 16                               | 500                                   | IP44                   | F                   | EXT                | 40                                  | 15                      | 1.2                              | B                            | 6M09CU         |
| M922 1F 4P 1V      | 12.5                             | 450                                   | IP20                   | F                   | INT                | 40                                  | 15                      | 1.2                              | B                            | 6M0627         |
| M9P3 1F 4P 3V      | 16                               | 450                                   | IP20                   | F                   | INT                | 40                                  | 15                      | 1.2                              | B                            | 6M061U         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

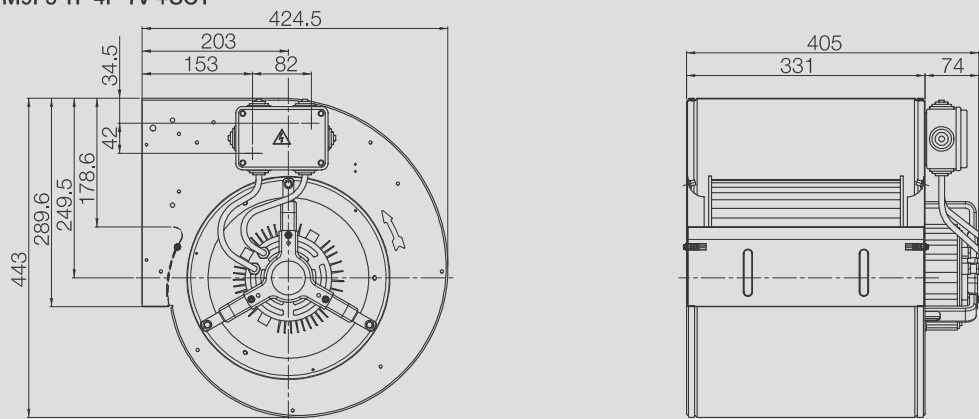
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

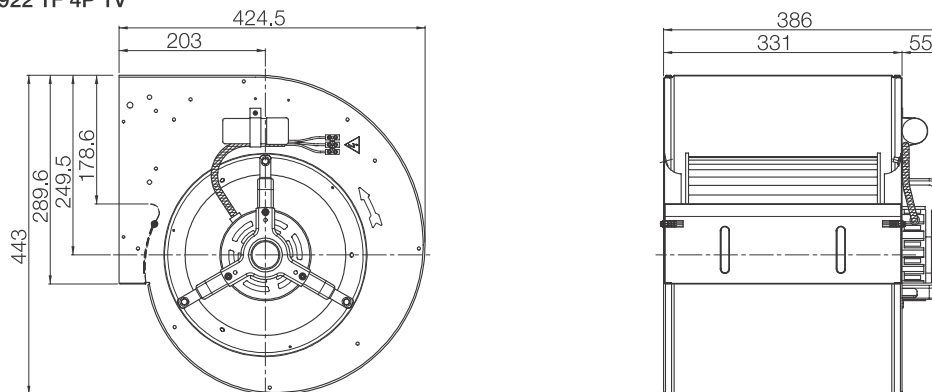
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

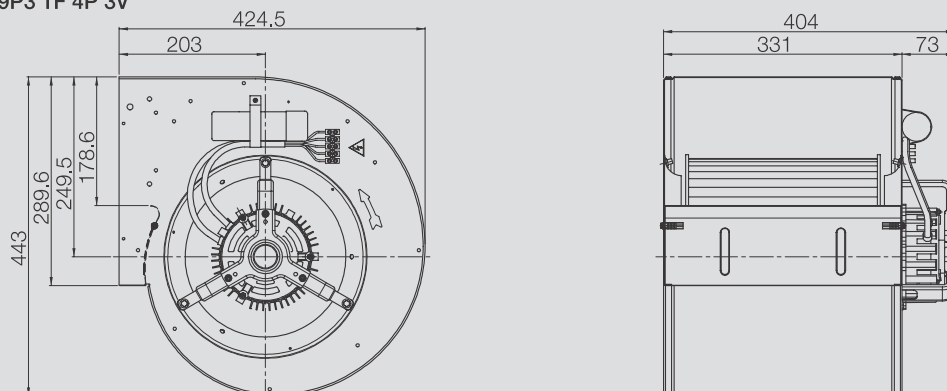
### DD 10/10 M9F5 1F 4P 1V +SCT



### DD 10/10 M922 1F 4P 1V



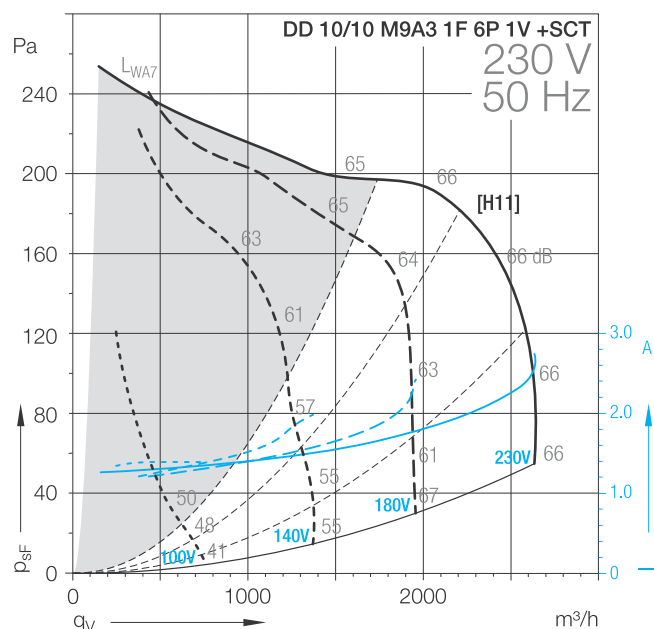
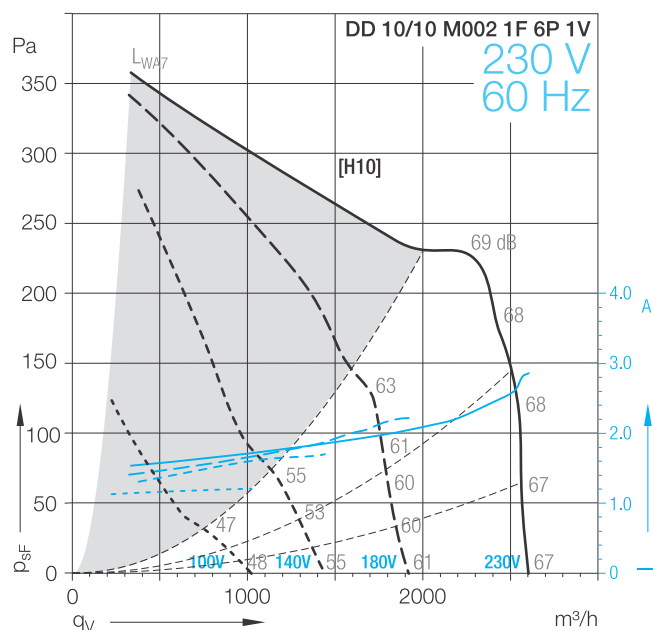
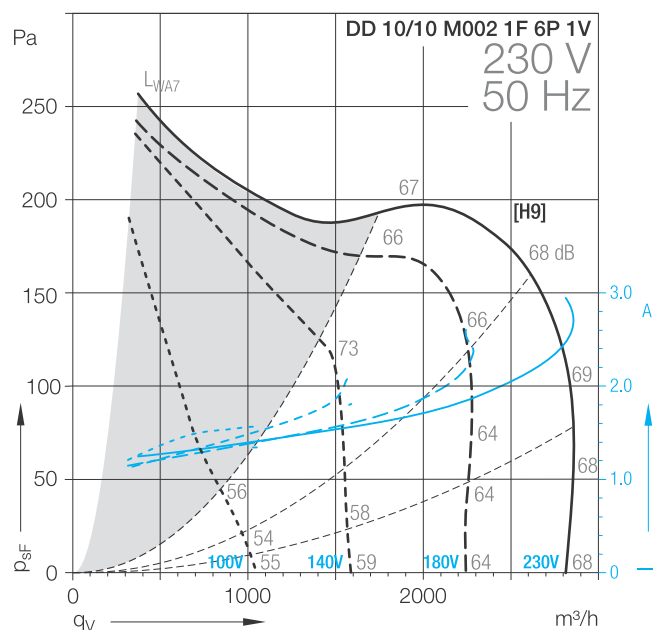
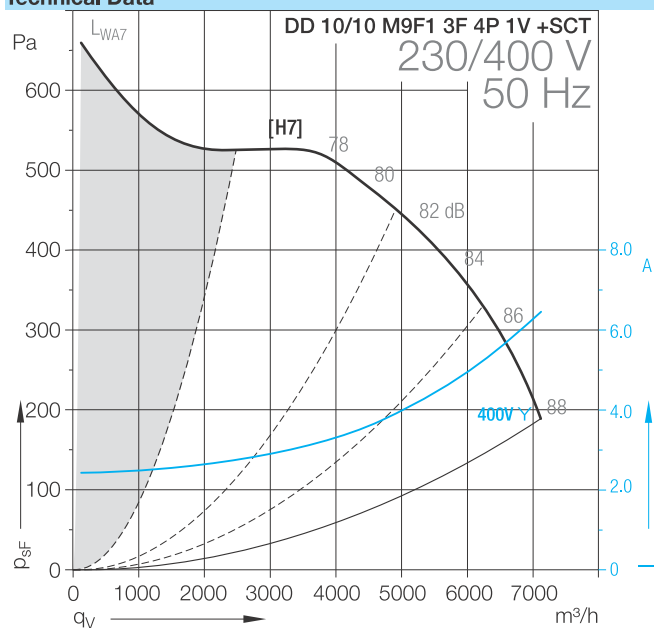
### DD 10/10 M9P3 1F 4P 3V





## DD-10/10

## Technical Data



# DD-10/10

## Technical Data

|                    | Speed control | Curves   | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|--------------------|---------------|----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 10/10           |               |          |                                 |                   |        |            |                              |                                    |                                      |                       |
| M9F1 3F 4P 1V +SCT | (3)           | [H7]     | 1500                            | 4                 | 3~     | Δ/Y        | 50/60                        | 3616                               | 5.6                                  | 1420                  |
| M002 1F 6P 1V      | (1)           | [H9/H10] | 245                             | 6                 | 1~     |            | 50/60                        | 643                                | 2.8                                  | 850                   |
| M9A3 1F 6P 1V +SCT | (2)           | [H11]    | 245                             | 6                 | 1~     |            | 50                           | 551                                | 2.6                                  | 830                   |

## Technical Data

|                    | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|--------------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 10/10           |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M9F1 3F 4P 1V +SCT |                                  |                                       | IP55                   | F                   | NO                 | 40                                  | 15                      | 1.2                              | B                            | 6109A9         |
| M002 1F 6P 1V      | 8                                | 450                                   | IP20                   | F                   | INT                | 40                                  | 15                      | 1.2                              | B                            | 6M0314         |
| M9A3 1F 6P 1V +SCT | 8                                | 450                                   | IP44                   | B                   | INT                | 40                                  | 15                      | 1.2                              | B                            | 6M0687         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

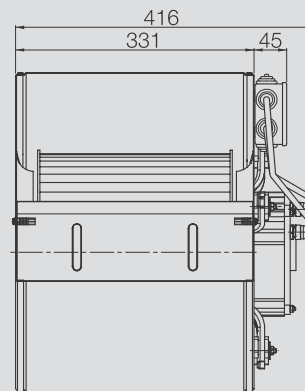
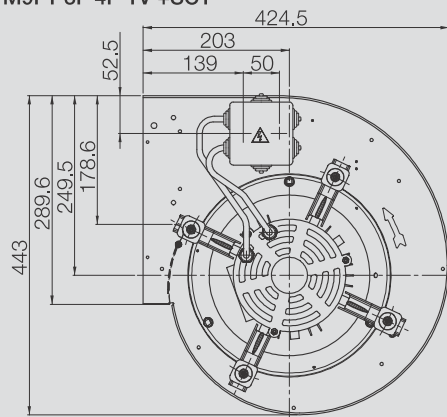
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

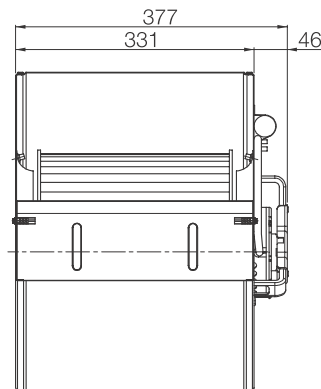
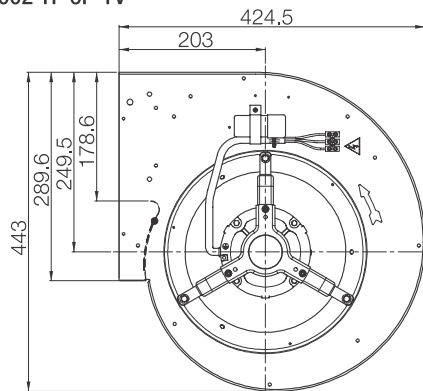
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

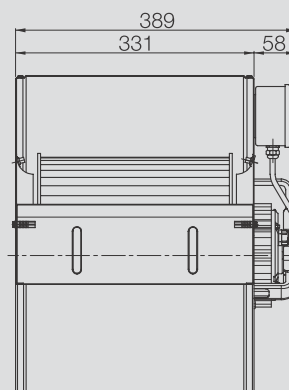
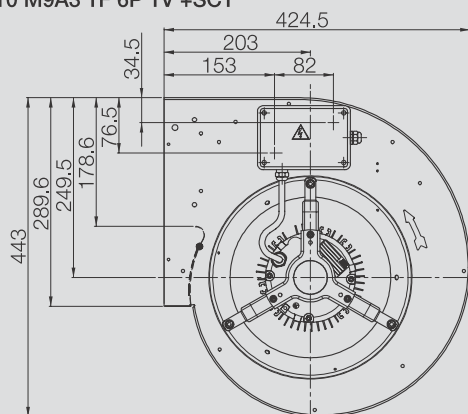
### DD 10/10 M9F1 3F 4P 1V +SCT



### DD 10/10 M002 1F 6P 1V

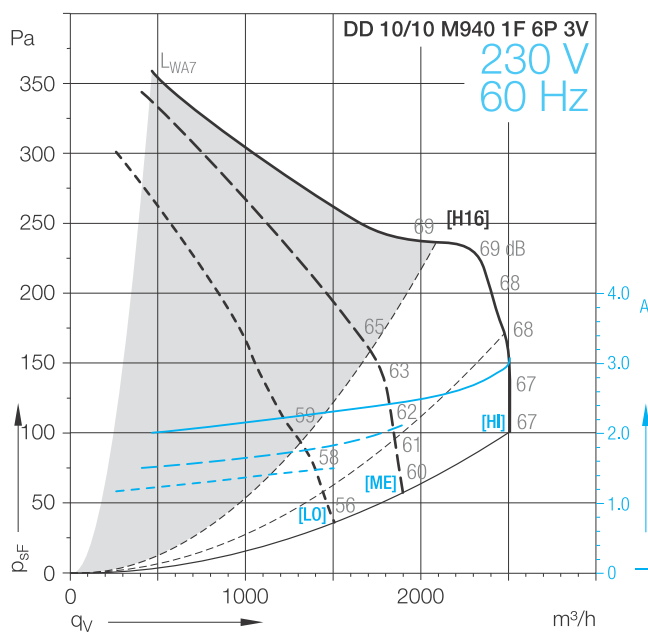
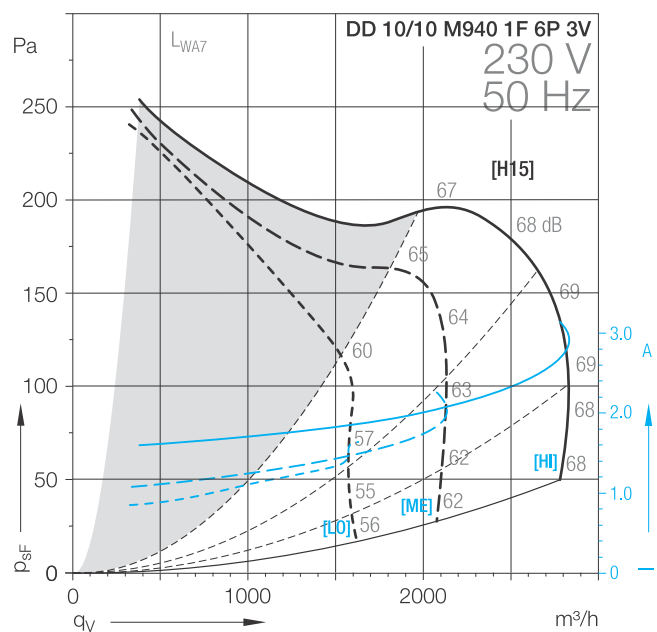
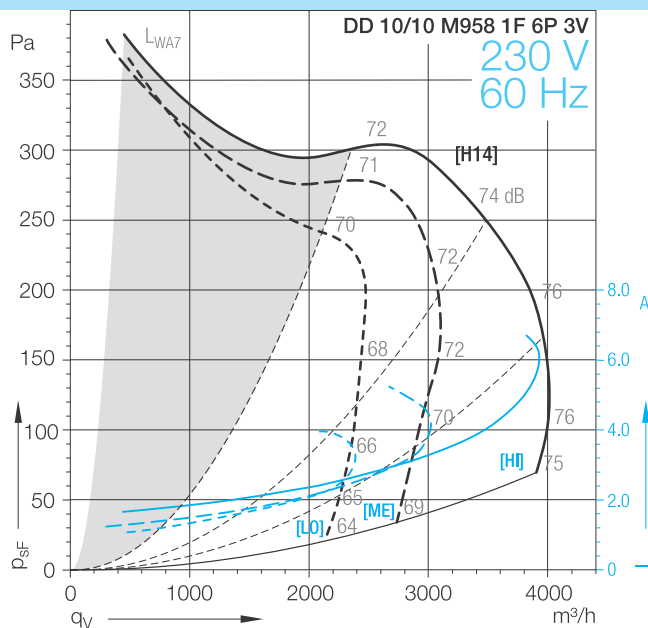
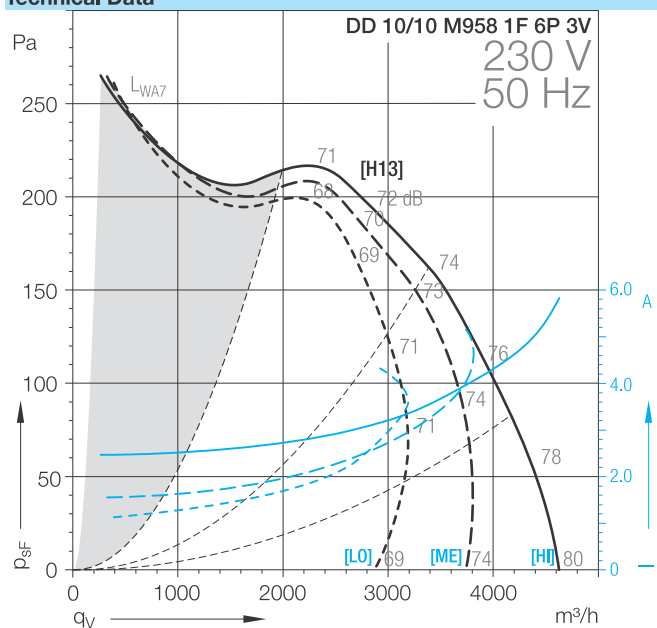


### DD 10/10 M9A3 1F 6P 1V +SCT



## DD-10/10

## Technical Data



**DD-10/10****Technical Data**

|               | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 10/10      |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M958 1F 6P 3V | *             | [H13/H14] | 500                             | 6                 | 1~     |            | 50/60                        | 1155                               | 5.7                                  | 930                   |
| M940 1F 6P 3V | *             | [H15/H16] | 245                             | 6                 | 1~     |            | 50/60                        | 687                                | 3                                    | 880                   |

**Technical Data**

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 10/10      |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M958 1F 6P 3V | 10                               | 450                                   | IP20                   | B                   | INT                | 40                                  | 21                      | 1.2                              | B                            | 6M06Z5         |
| M940 1F 6P 3V | 8                                | 500                                   | IP20                   | F                   | INT                | 40                                  | 15                      | 1.2                              | B                            | 6M06Z4         |

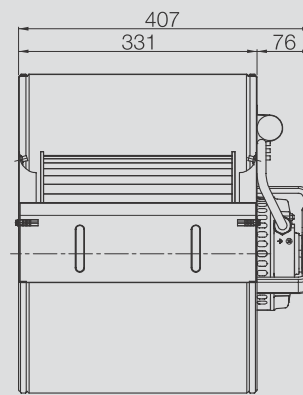
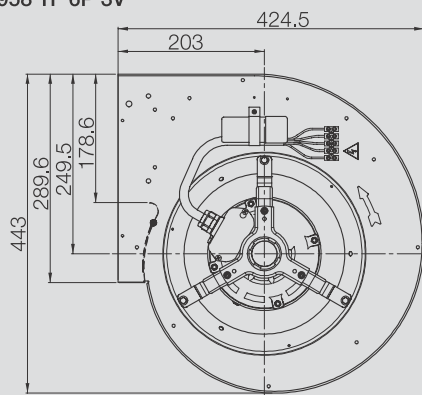
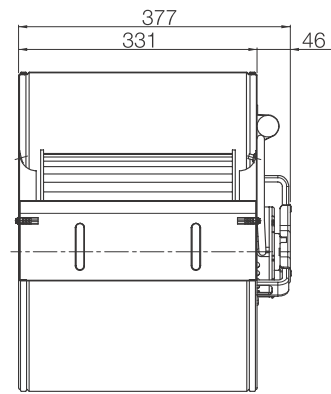
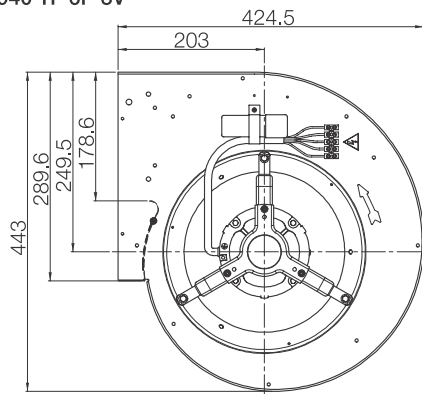
(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

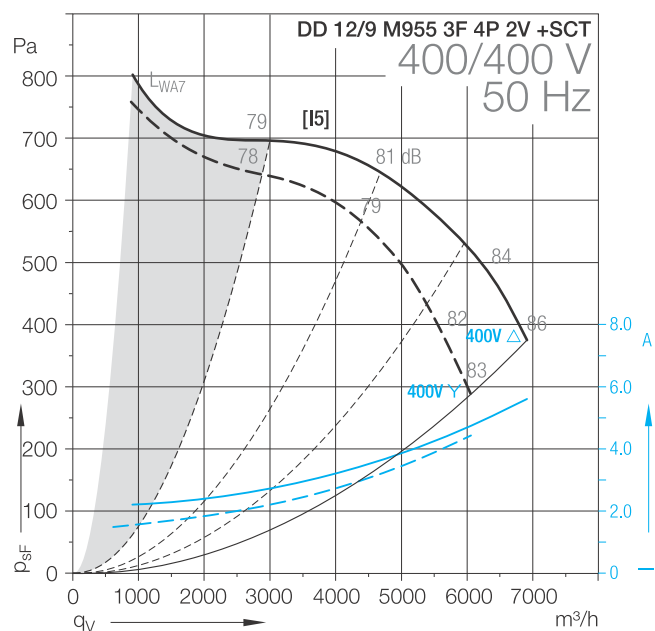
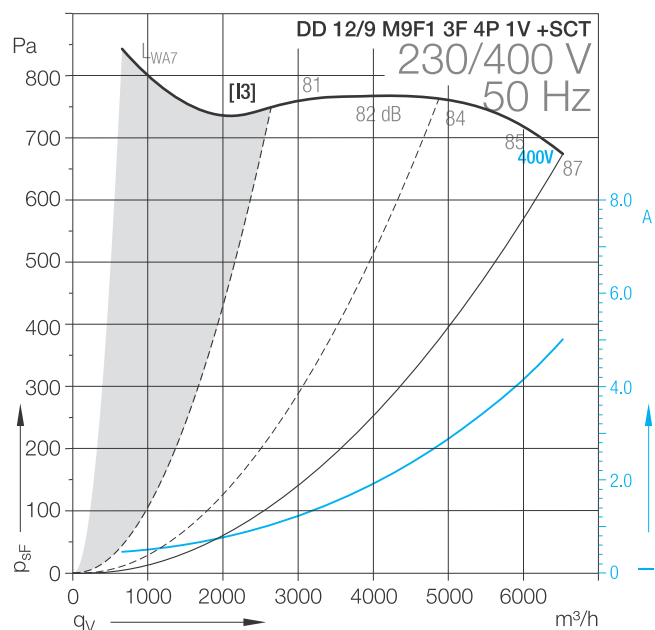
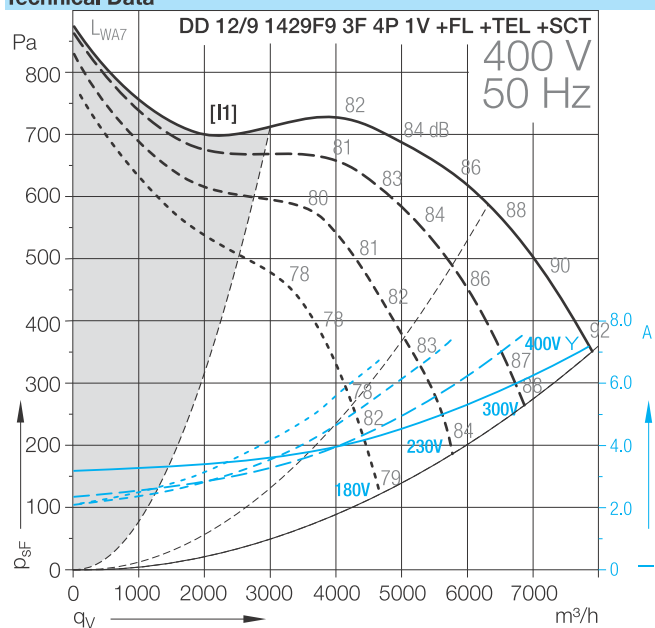
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.**Dimensions** in mm, subject to change.**DD 10/10 M958 1F 6P 3V****DD 10/10 M940 1F 6P 3V**

## DD-12/9

## Technical Data



# DD-12/9

## Technical Data

|                     | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>-</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 12/9             |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| 1429F9 3F 4P 1V +FL | (1)/(3)       | [I1]    | 2200                            | 4                 | 3~     | Y          | 50                           | 4375                               | 7                                    | 1390                  |
| M9F1 3F 4P 1V +SCT  | (3)           | [I3/I4] | 1500                            | 4                 | 3~     | Δ/Y        | 50                           | 3515                               | 5.6                                  | 1420                  |
| M955 3F 4P 2V +SCT  | (1)           | [I5]    | 1500                            | 4                 | 3~     |            | 50                           | 3489                               | 5                                    | 1300                  |

## Technical Data

|                     | Operating Capacitor | Nominal capacitor voltage | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------------|---------------------|---------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 12/9             |                     |                           |                        |                     |                    |                                     |                         |                                  |                              |                |
| 1429F9 3F 4P 1V +FL |                     |                           | IP55                   | F                   | NO                 | 40                                  | 38                      | 1.2                              | B                            | 6108P3         |
| M9F1 3F 4P 1V +SCT  |                     |                           | IP55                   | F                   | NO                 | 40                                  | 25                      | 1.2                              | B                            | 61092M         |
| M955 3F 4P 2V +SCT  |                     |                           | IP20                   | F                   | EXT                | 40                                  | 30                      | 1.2                              | B                            | 61099N         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

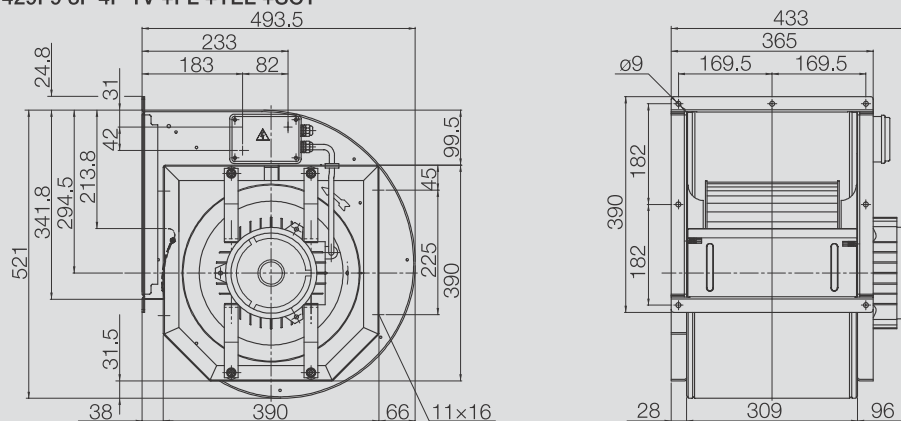
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

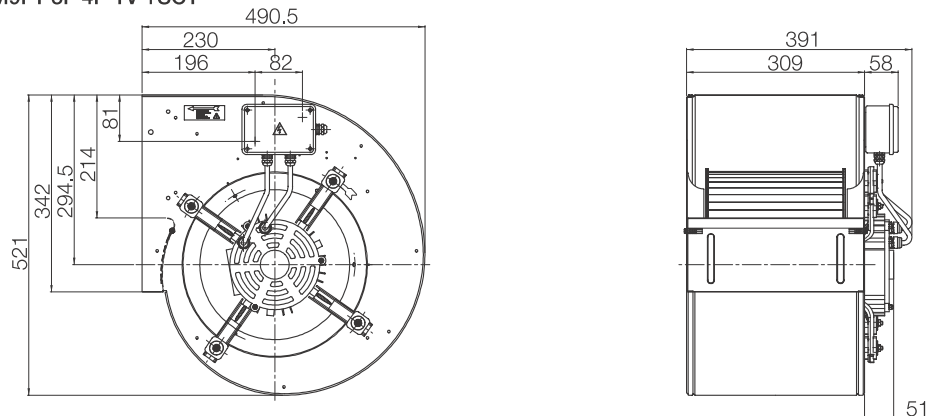
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

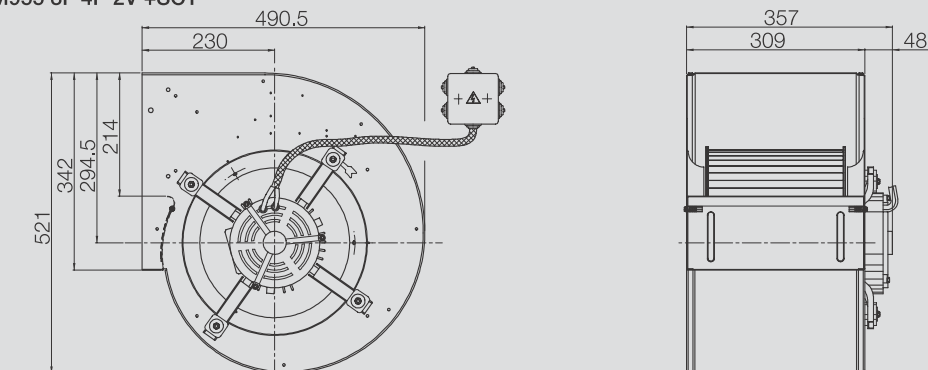
### DD 12/9 1429F9 3F 4P 1V +FL +TEL +SCT



### DD 12/9 M9F1 3F 4P 1V +SCT

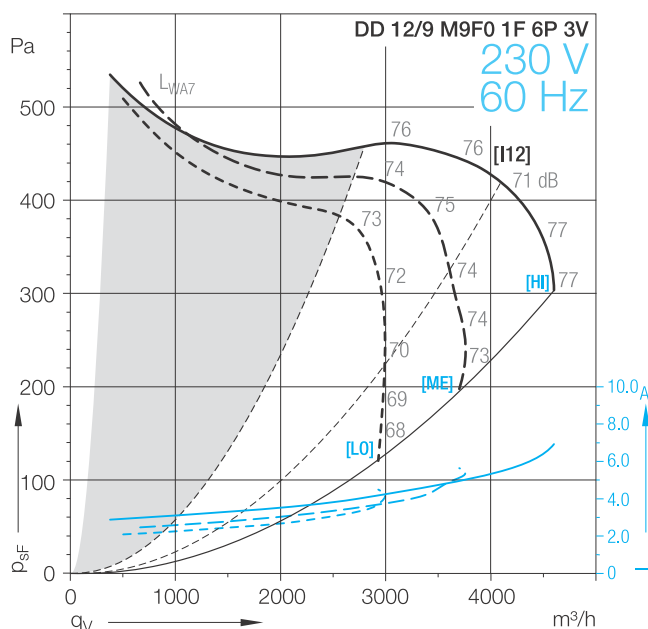
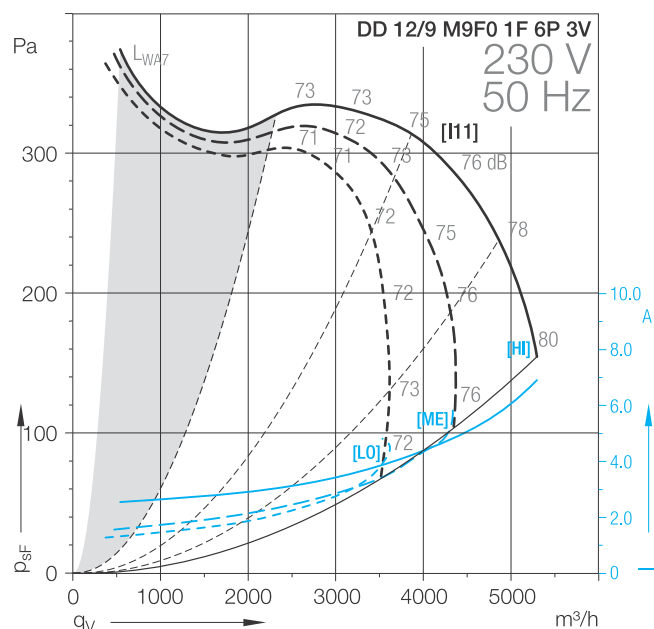
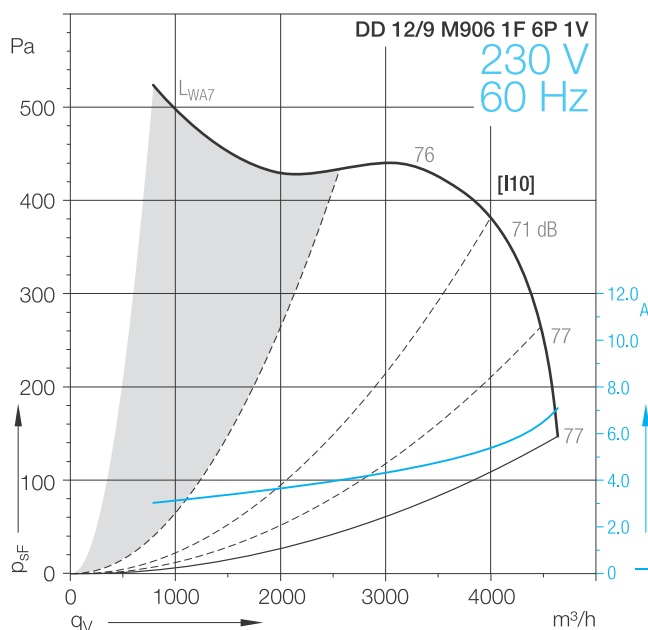
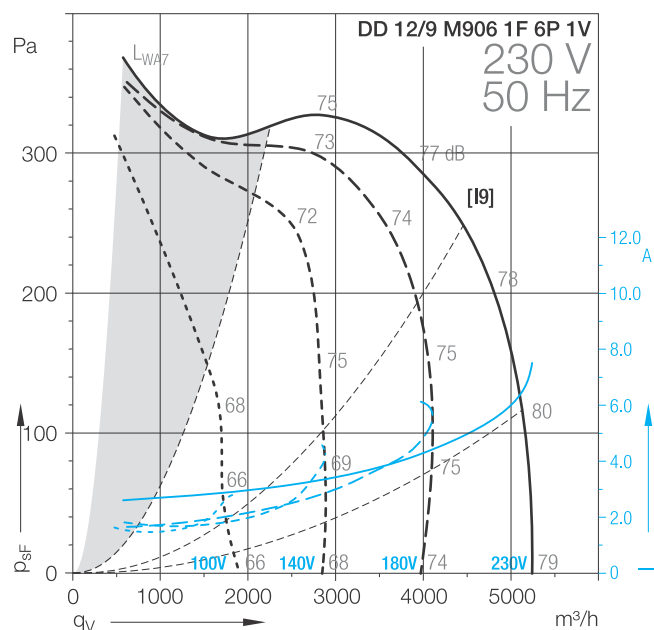
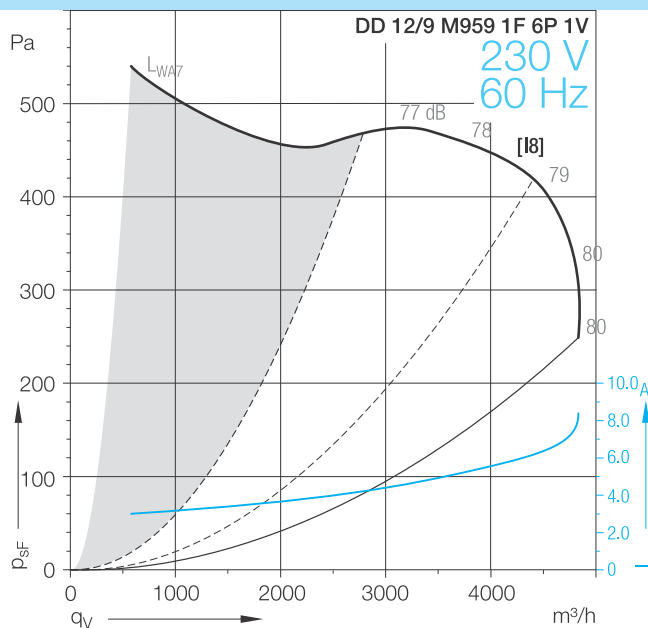
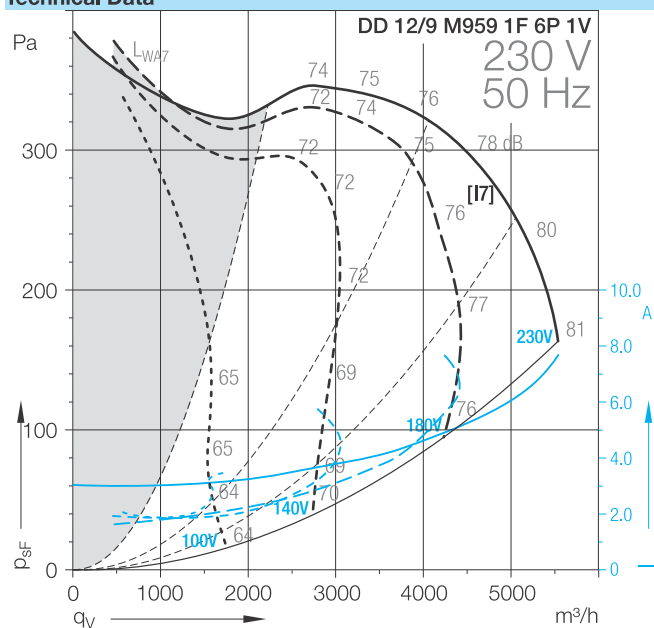


### DD 12/9 M955 3F 4P 2V +SCT



## DD-12/9

## Technical Data



# DD-12/9

## Technical Data

|               | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>-</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 12/9       |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M959 1F 6P 1V | (2)           | [I7/I8]   | 736                             | 6                 | 1~     |            | 50/60                        | 1659                               | 7.4                                  | 925                   |
| M906 1F 6P 1V | (2)           | [I9/I10]  | 590                             | 6                 | 1~     |            | 50/60                        | 1608                               | 6.8                                  | 910                   |
| M9F0 1F 6P 3V | *             | [I11/I12] | 736                             | 6                 | 1~     |            | 50/60                        | 1500                               | 6.5                                  | 930                   |

## Technical Data

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 12/9       |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M959 1F 6P 1V | 20                               | 450                                   | IP20                   | B                   | INT                | 40                                  | 26                      | 1.2                              | B                            | 6M09HG         |
| M906 1F 6P 1V | 16                               | 450                                   | IP20                   | B                   | INT                | 40                                  | 25                      | 1.2                              | B                            | 6M06L4         |
| M9F0 1F 6P 3V | 20                               | 450                                   | IP20                   | F                   | EXT                | 40                                  | 25                      | 1.2                              | B                            | 6M06A6         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

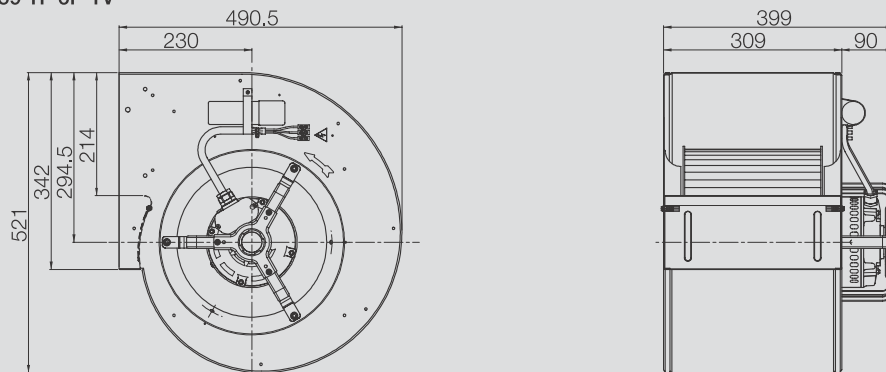
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

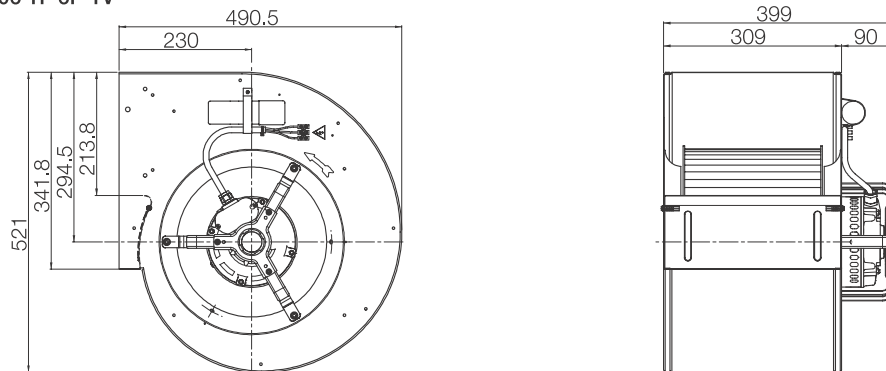
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

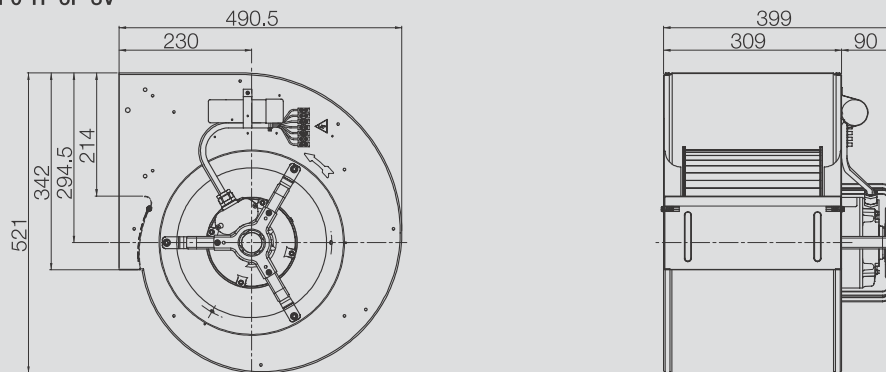
### DD 12/9 M959 1F 6P 1V



### DD 12/9 M906 1F 6P 1V



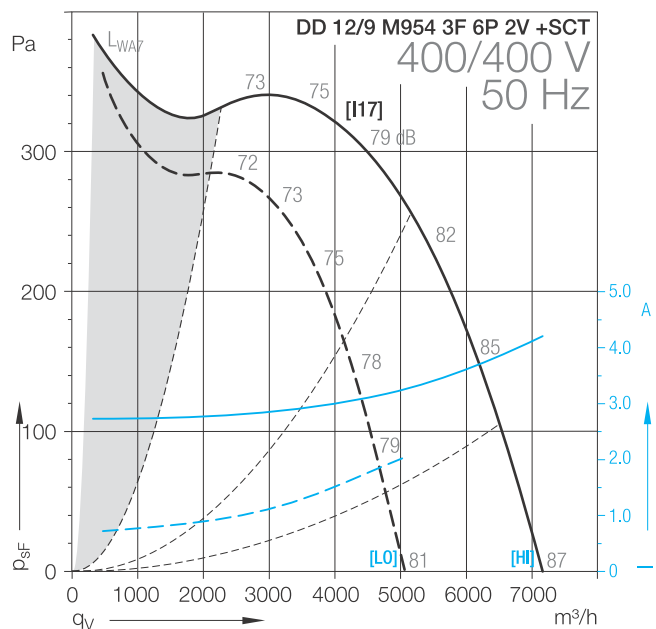
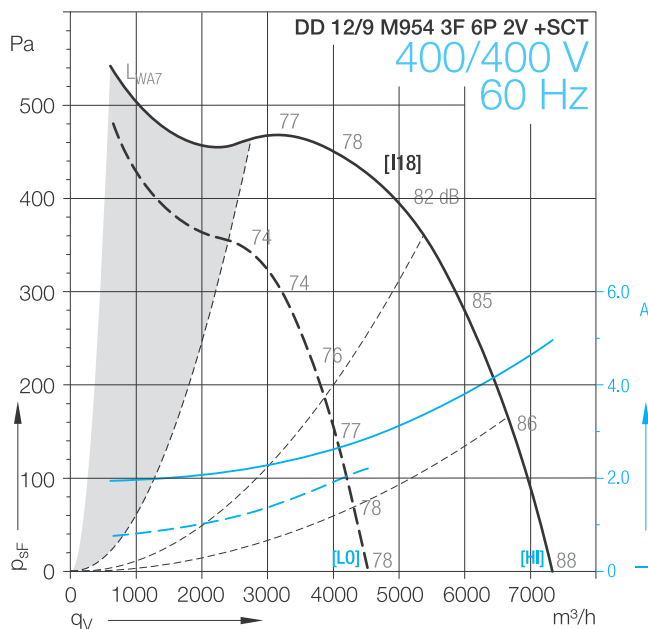
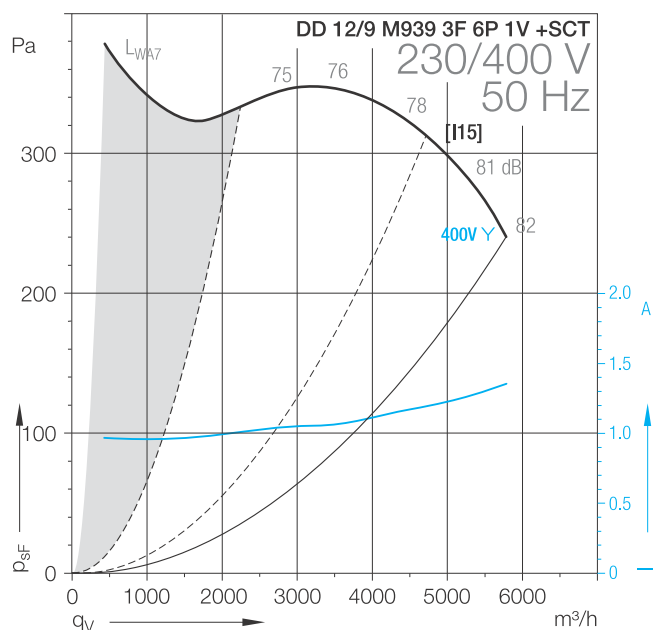
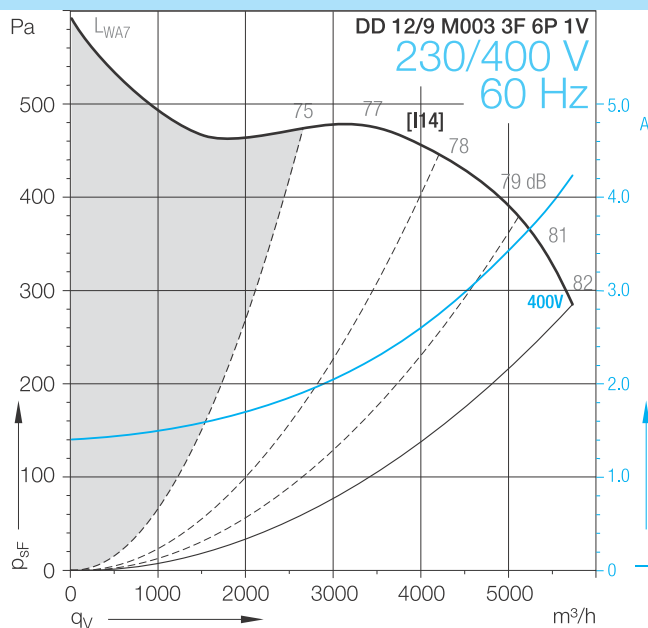
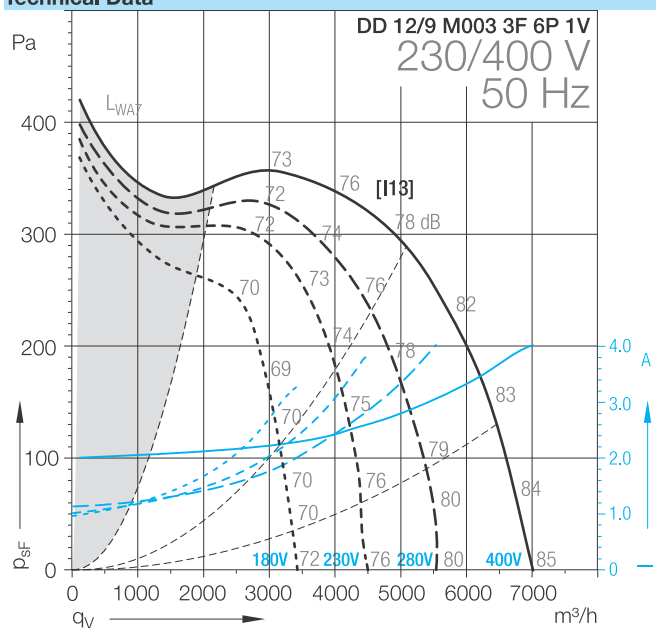
### DD 12/9 M9F0 1F 6P 3V





## DD-12/9

## Technical Data



# DD-12/9

## Technical Data

|                    | Speed control | Curves    | Nominal motor power kW | Poles | Phases | Connection | Mains frequency Hz | Max. power consumption W | Max. current consumption A | Speed 1/min |
|--------------------|---------------|-----------|------------------------|-------|--------|------------|--------------------|--------------------------|----------------------------|-------------|
| DD 12/9            |               |           |                        |       |        |            |                    |                          |                            |             |
| M003 3F 6P 1V      | (1)           | [I13/I14] | 1100                   | 6     | 3~     | Δ/Y        | 50/60              | 2231                     | 4.3                        | 900         |
| M939 3F 6P 1V +SCT | *             | [I15]     | 1300                   | 6     | 3~     | Δ/Y        | 50                 | 1617                     | 3.3                        | 900         |
| M954 3F 6P 2V +SCT | (2)/(3)       | [I17/I18] | 1100                   | 6     | 3~     | Δ/Y        | 50/60              | 2128                     | 4                          | 920         |

## Technical Data

|                    | Operating Capacitor | Nominal capacitor voltage | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max. °C | Fan weight kg | Density of media kg/m³ | Installation type (ISO 5801) | Article number |
|--------------------|---------------------|---------------------------|------------------------|---------------------|--------------------|---------------------------|---------------|------------------------|------------------------------|----------------|
| DD 12/9            |                     |                           |                        |                     |                    |                           |               |                        |                              |                |
| M003 3F 6P 1V      |                     |                           | IP20                   | B                   | NO                 | 40                        | 25            | 1.2                    | B                            | 6M0318         |
| M939 3F 6P 1V +SCT |                     |                           | IP44                   |                     | EXT                | 40                        | 25            | 1.2                    | B                            | 6M0656         |
| M954 3F 6P 2V +SCT |                     |                           | IP20                   | F                   | EXT                | 40                        | 25            | 1.2                    | B                            | 6109FT         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

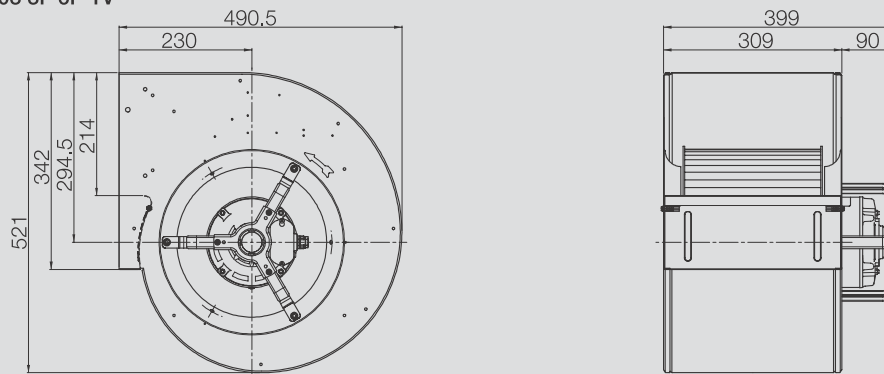
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

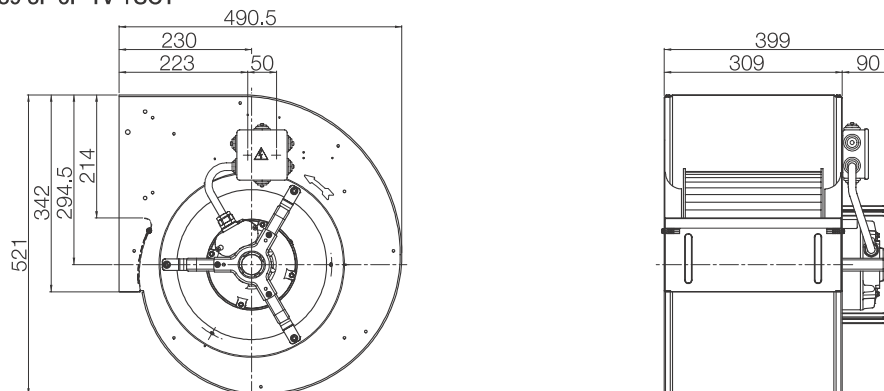
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

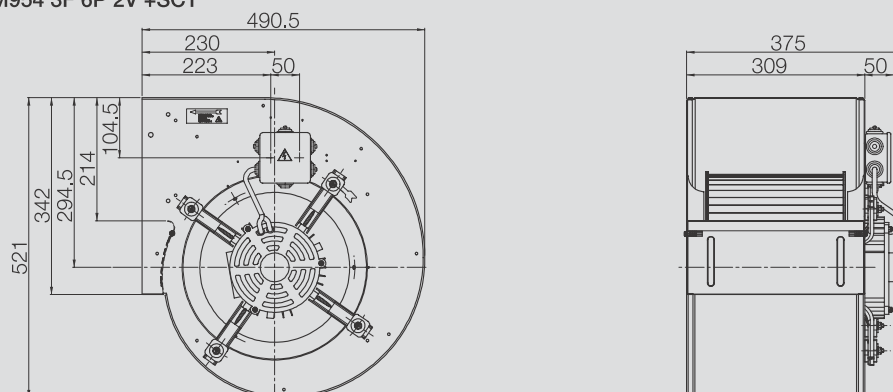
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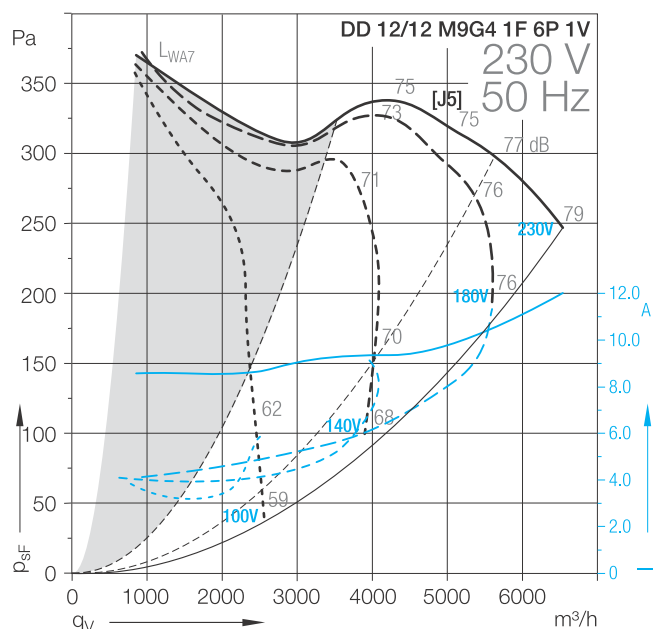
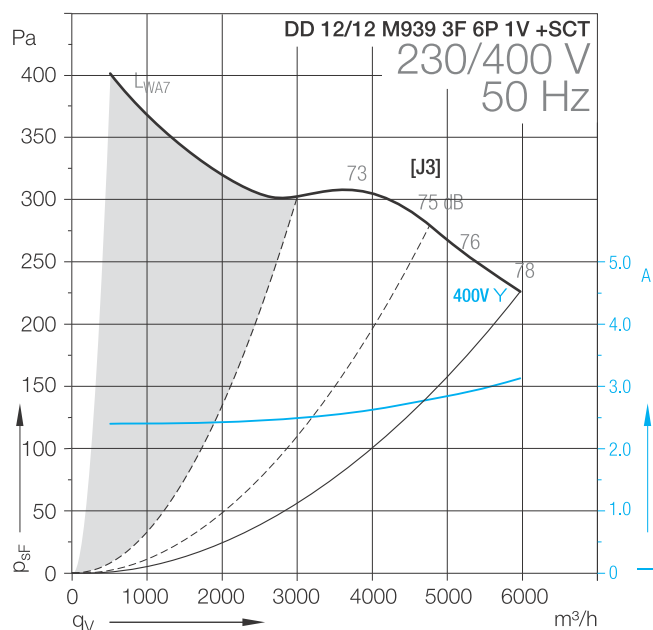
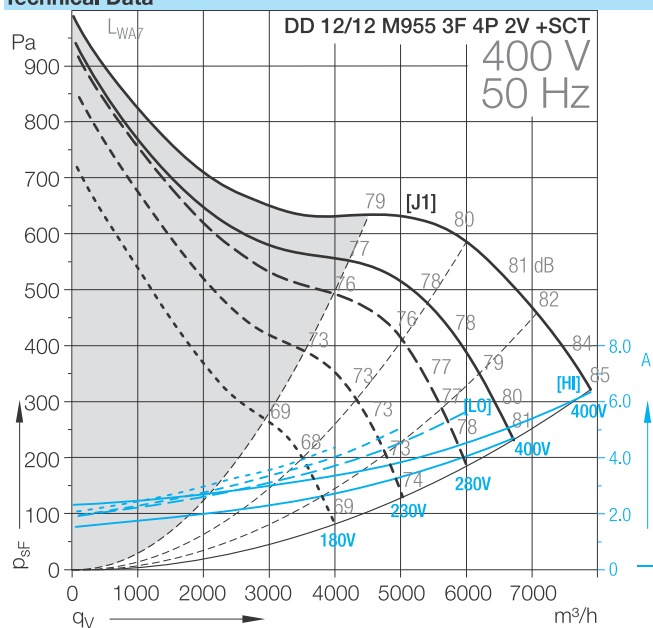


### DD 12/9 M939 3F 6P 1V +SCT



### DD 12/9 M954 3F 6P 2V +SCT



**DD-12/12****Technical Data**

**DD-12/12****Technical Data**

|                    | Speed control | Curves | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|--------------------|---------------|--------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 12/12           |               |        |                                 |                   |        |            |                              |                                    |                                      |                       |
| M955 3F 4P 2V +SCT | (1)           | [J1]   | 1500                            | 4                 | 3~     |            | 50                           | 3863                               | 5.4                                  | 1300                  |
| M939 3F 6P 1V +SCT | *             | [J3]   | 1300                            | 6                 | 3~     | Δ/Y        | 50                           | 1534                               | 3.2                                  | 900                   |
| M9G4 1F 6P 1V      | (1)           | [J5]   | 1100                            | 6                 | 1~     |            | 50                           | 2132                               | 10                                   | 940                   |

**Technical Data**

|                    | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|--------------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 12/12           |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M955 3F 4P 2V +SCT |                                  |                                       | IP20                   | F                   | EXT                | 40                                  | 29                      | 1.2                              | B                            | 61090P         |
| M939 3F 6P 1V +SCT |                                  |                                       | IP44                   | B                   | EXT                | 40                                  | 26                      | 1.2                              | B                            | 6M0677         |
| M9G4 1F 6P 1V      | 25                               | 450                                   | IP20                   | F                   | EXT                | 40                                  | 28                      | 1.2                              | B                            | 61091A         |

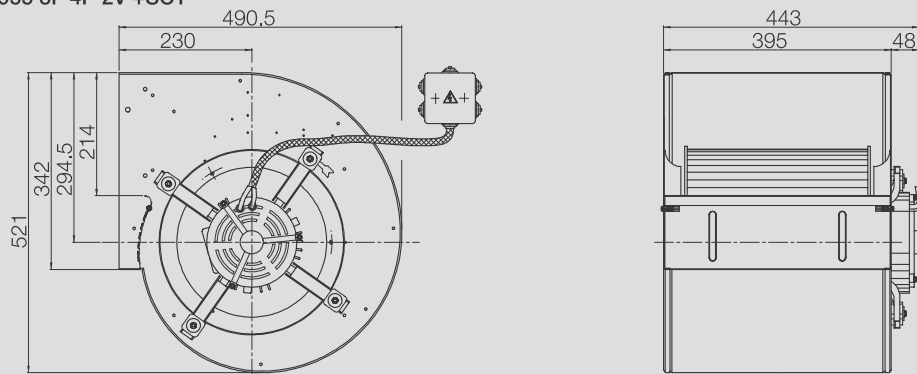
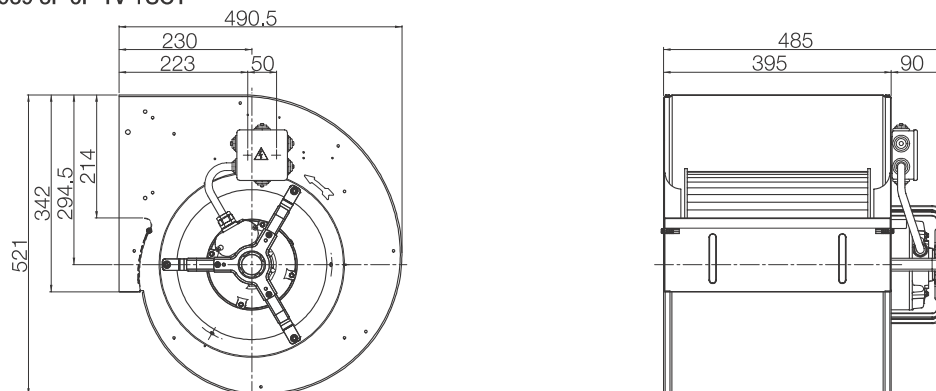
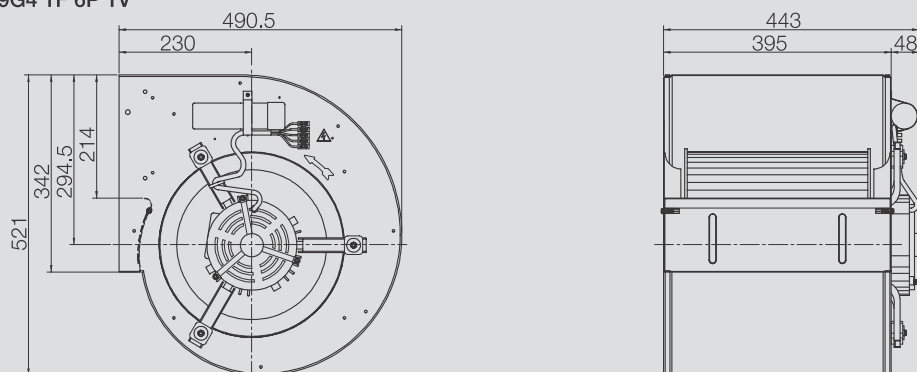
(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.**Dimensions** in mm, subject to change.**DD 12/12 M955 3F 4P 2V +SCT****DD 12/12 M939 3F 6P 1V +SCT****DD 12/12 M9G4 1F 6P 1V**



## DD-12/12

## Technical Data

|               | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|---------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 12/12      |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M959 1F 6P 1V | (2)           | [J7/J8]   | 736                             | 6                 | 1~     |            | 50/60                        | 1878                               | 7.6                                  | 925                   |
| M906 1F 6P 1V | (2)           | [J9/J10]  | 590                             | 6                 | 1~     |            | 50/60                        | 1600                               | 6.9                                  | 910                   |
| M9F0 1F 6P 3V | *             | [J11/J12] | 736                             | 6                 | 1~     |            | 50/60                        | 1500                               | 6.4                                  | 930                   |

## Technical Data

|               | Operating Capacitor<br><b>μF</b> | Nominal capacitor voltage<br><b>V</b> | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|---------------|----------------------------------|---------------------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 12/12      |                                  |                                       |                        |                     |                    |                                     |                         |                                  |                              |                |
| M959 1F 6P 1V | 20                               | 450                                   | IP20                   | B                   | INT                | 40                                  | 26                      | 1.2                              | B                            | 6M0961         |
| M906 1F 6P 1V | 16                               | 450                                   | IP20                   | B                   | INT                | 40                                  | 26                      | 1.2                              | B                            | 6M06L2         |
| M9F0 1F 6P 3V | 20                               | 500                                   | IP20                   | F                   | EXT                | 40                                  | 27                      | 1.2                              | B                            | 6M06N8         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

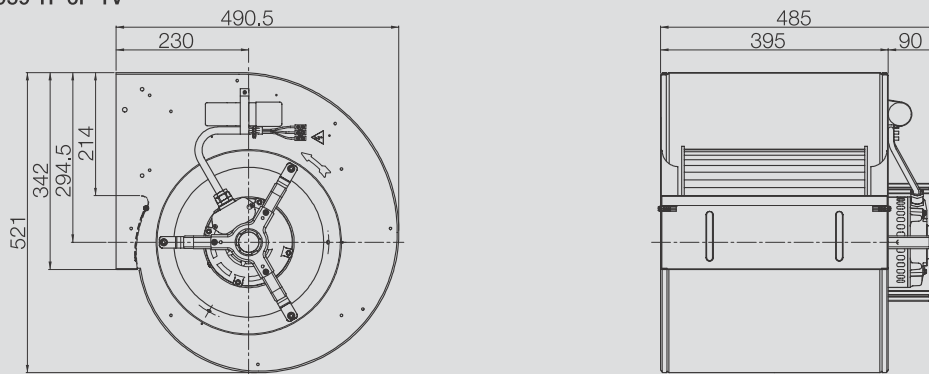
\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

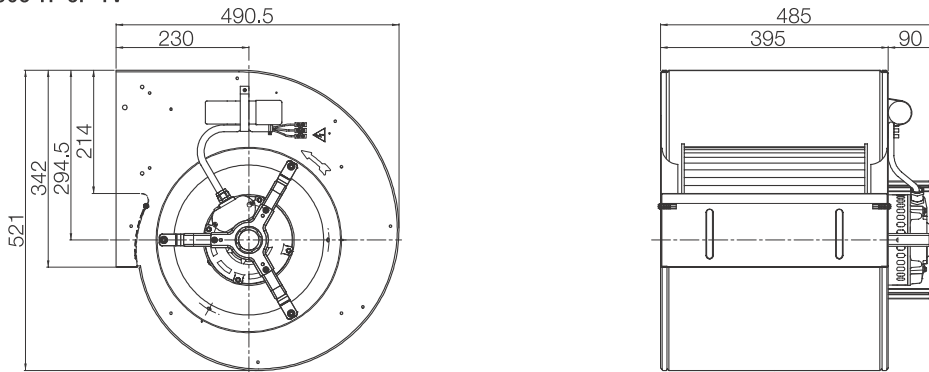
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

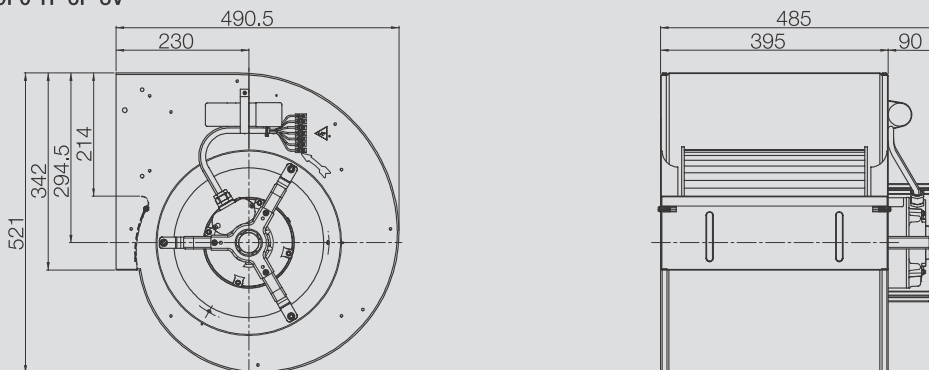
## DD 12/12 M959 1F 6P 1V



## DD 12/12 M906 1F 6P 1V

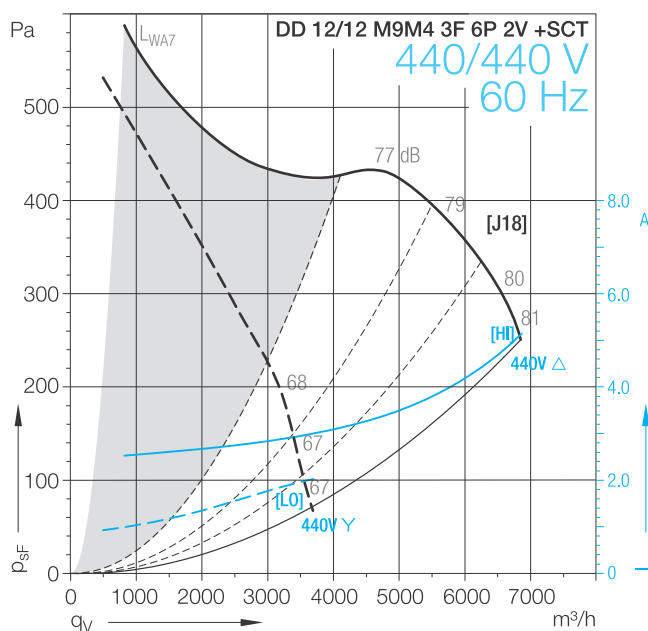
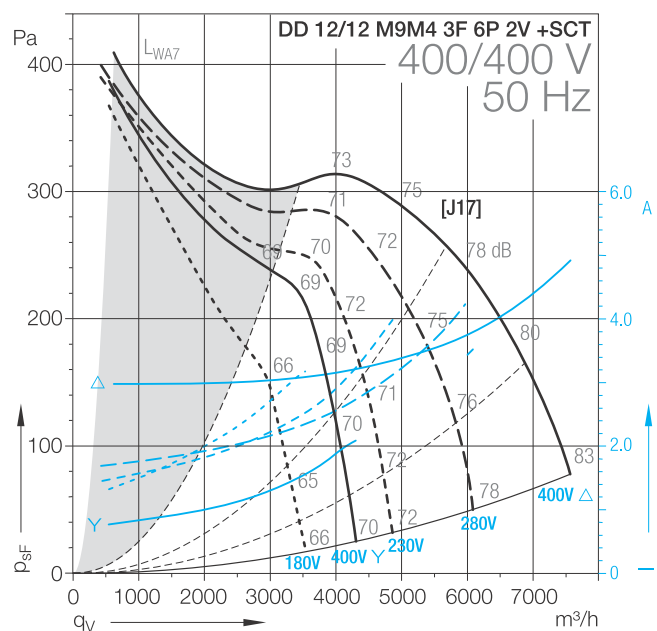
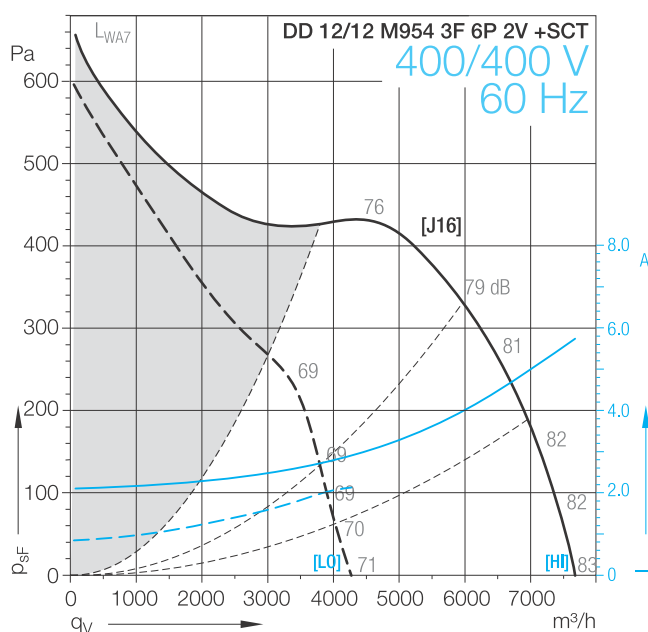
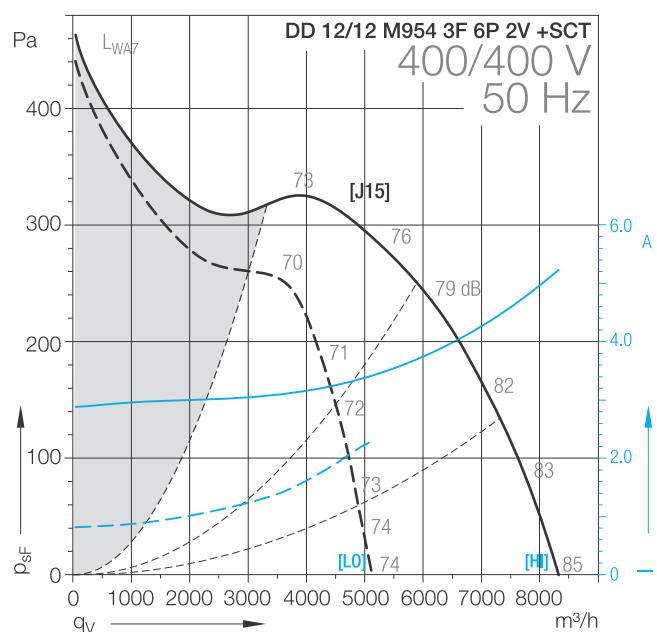
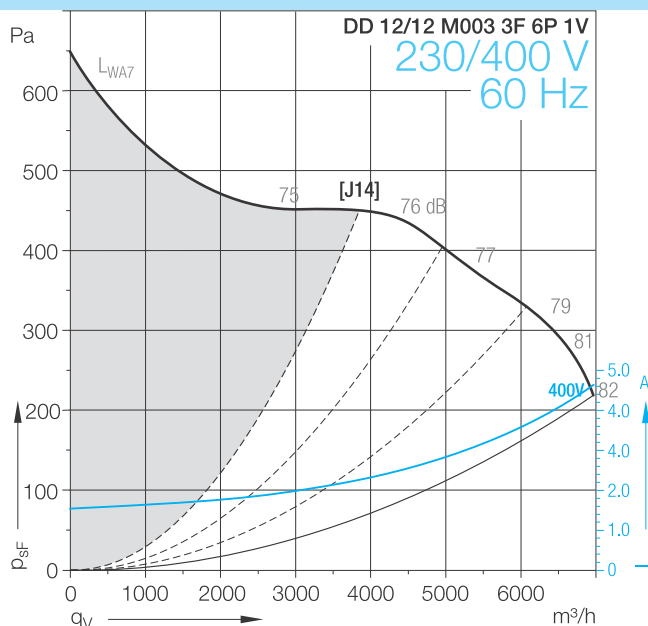
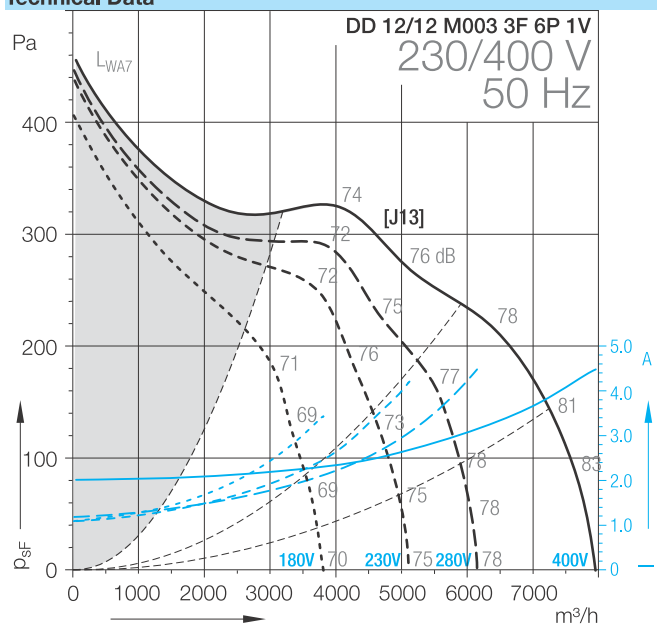


## DD 12/12 M9F0 1F 6P 3V



## DD-12/12

## Technical Data



**DD-12/12****Technical Data**

|                    | Speed control | Curves    | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|--------------------|---------------|-----------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 12/12           |               |           |                                 |                   |        |            |                              |                                    |                                      |                       |
| M003 3F 6P 1V      | (1)           | [J13/J14] | 1100                            | 6                 | 3~     | Δ/Y        | 50/60                        | 2455                               | 4.3                                  | 900                   |
| M954 3F 6P 2V +SCT | (2)/(3)       | [J15/J16] | 1100                            | 6                 | 3~     | Δ/Y        | 50/60                        | 2513                               | 4.9                                  | 920                   |
| M9M4 3F 6P 2V +SCT | (2)/(3)       | [J17/J18] | 1100                            | 6                 | 3~     | Δ/Y        | 50/60                        | 2300                               | 4.6                                  | 920                   |

**Technical Data**

|                    | Operating Capacitor | Nominal capacitor voltage | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|--------------------|---------------------|---------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 12/12           |                     |                           |                        |                     |                    |                                     |                         |                                  |                              |                |
| M003 3F 6P 1V      |                     |                           | IP20                   | B                   | NO                 | 40                                  | 26                      | 1.2                              | B                            | 6M0320         |
| M954 3F 6P 2V +SCT |                     |                           | IP20                   | F                   | EXT                | 40                                  | 28                      | 1.2                              | B                            | 61099Z         |
| M9M4 3F 6P 2V +SCT |                     |                           | IP55                   | F                   | EXT                | 40                                  | 27                      | 1.2                              | B                            | 6109GK         |

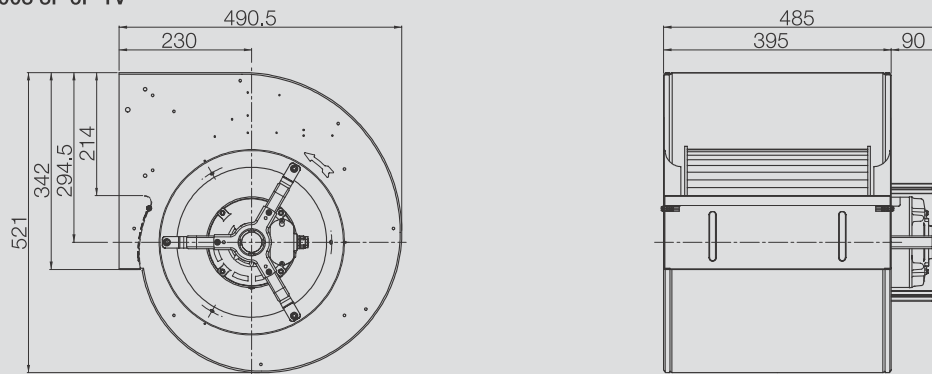
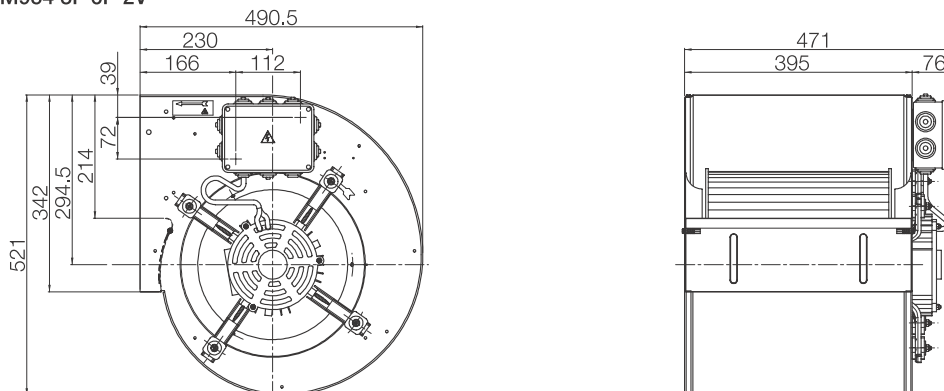
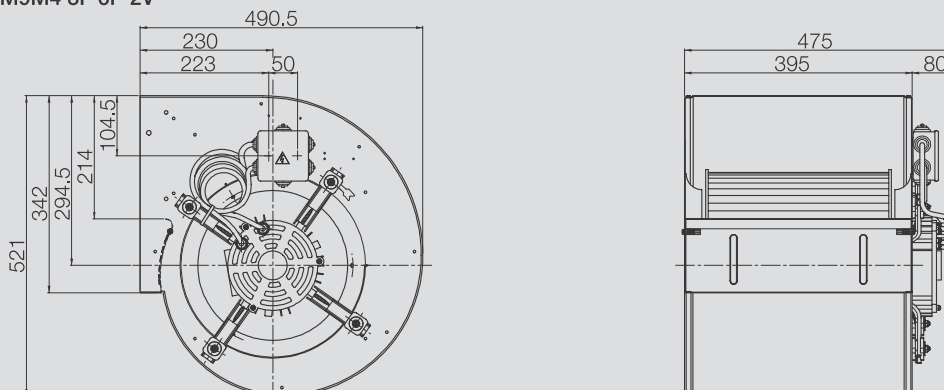
(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

\* = No speed control available

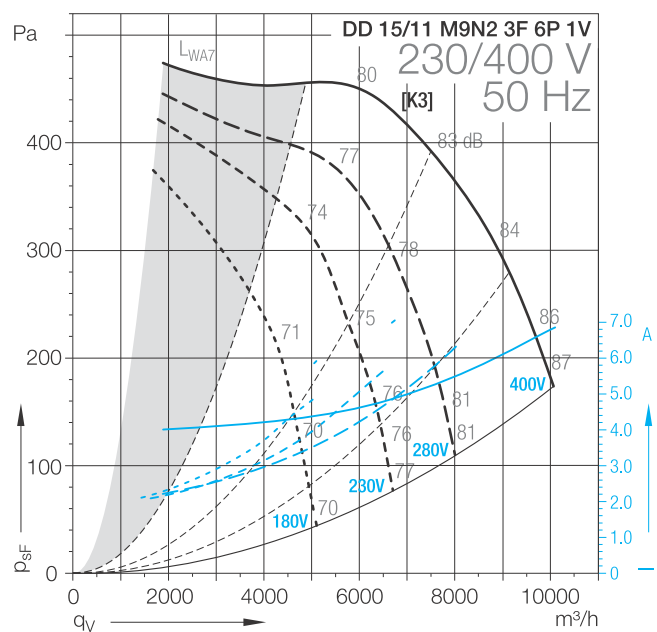
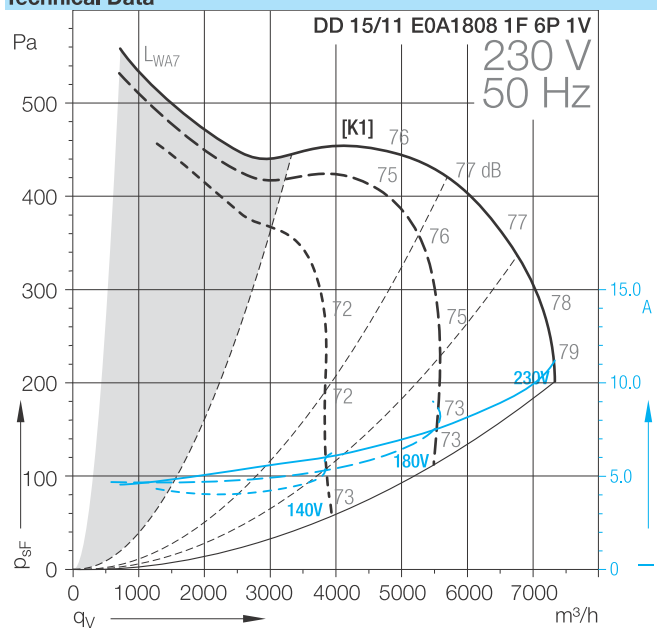
[H] High speed, [ME] Medium speed, [LO] Low speed

**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.**Dimensions** in mm, subject to change.**DD 12/12 M003 3F 6P 1V****DD 12/12 M954 3F 6P 2V****DD 12/12 M9M4 3F 6P 2V**



## DD-15/11

## Technical Data



## DD-15/11

## Technical Data

|                  | Speed control | Curves | Nominal motor power <b>W</b> | Poles <b>—</b> | Phases | Connection | Mains frequency <b>Hz</b> | Max. power consumption <b>W</b> | Max. current consumption <b>A</b> | Speed <b>1/min</b> |
|------------------|---------------|--------|------------------------------|----------------|--------|------------|---------------------------|---------------------------------|-----------------------------------|--------------------|
| DD 15/11         |               |        |                              |                |        |            |                           |                                 |                                   |                    |
| E0A1808 1F 6P 1V | (2)           | [K1]   | 1350                         | 6              | 1~     |            | 50                        | 2525                            | 10.8                              | 900                |
| M9N2 3F 6P 1V    | (2)           | [K3]   | 2200                         | 6              | 3~     | Δ/Y        | 50                        | 3621                            | 6.5                               | 900                |

## Technical Data

[illegible]

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

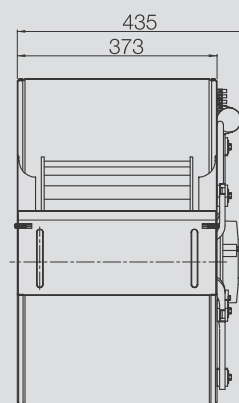
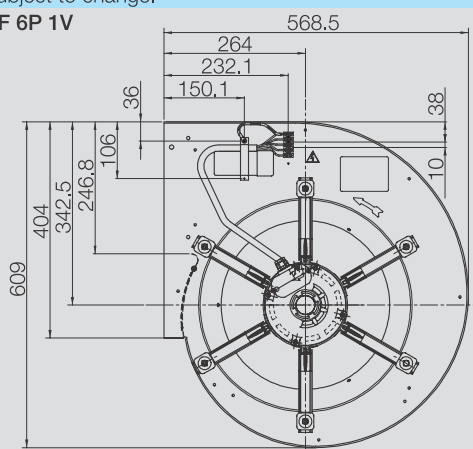
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

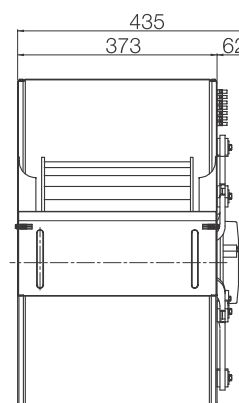
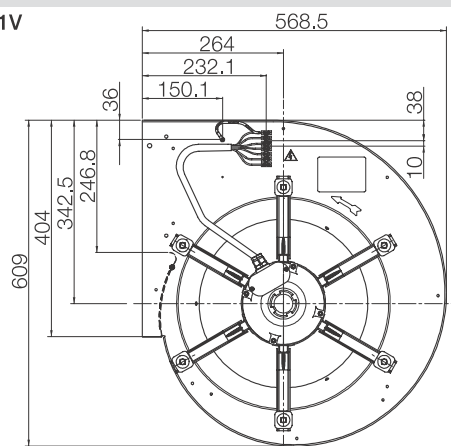
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

**Dimensions** in mm, subject to change.

DD 15/11 E0A1808 1F 6P 1V

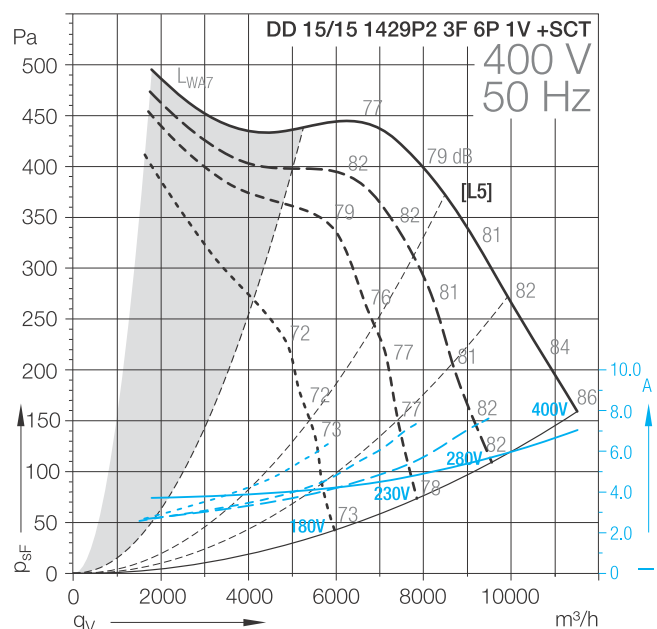
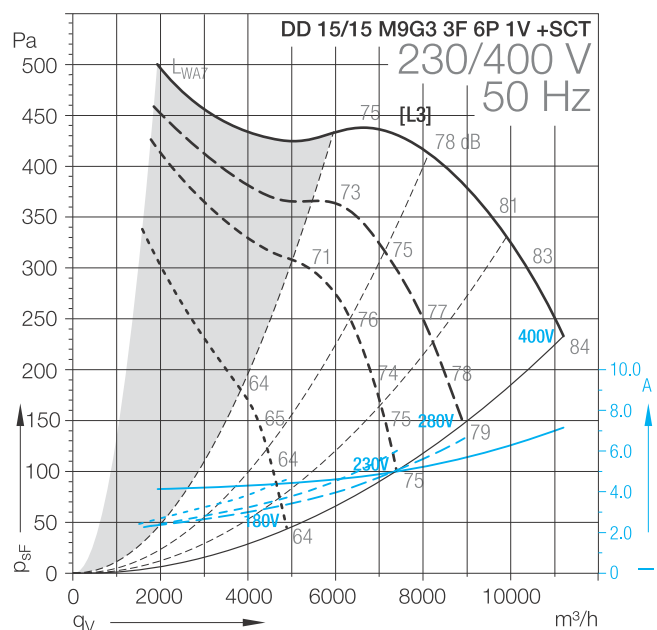
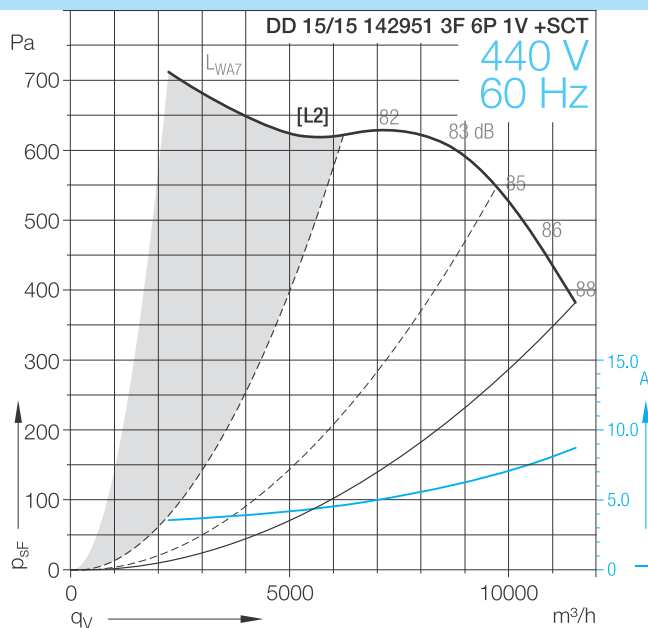
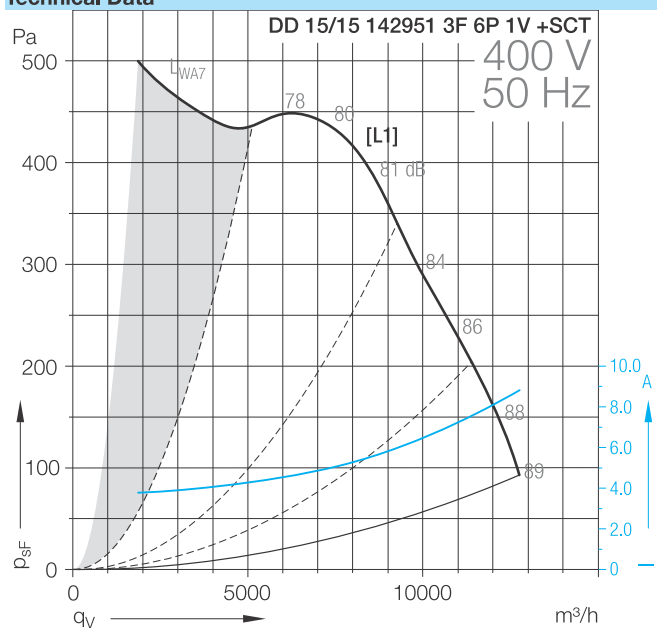


## DD 15/11 M9N2 3F 6P 1V



## DD-15/15

## Technical Data



**DD-15/15****Technical Data**

|                      | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|----------------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 15/15             |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| 142951 3F 6P 1V +SCT | *             | [L1/L2] | 2200                            | 6                 | 3~     | Y          | 50/60                        | 4594                               | 8.5                                  | 960                   |
| M9G3 3F 6P 1V +SCT   | (1)           | [L3]    | 2200                            | 6                 | 3~     | Δ/Y        | 50                           | 3877                               | 7                                    | 900                   |
| 1429P2 3F 6P 1V +SCT | (2)           | [L5]    | 2200                            | 6                 | 3~     | Y          | 50                           | 4140                               | 6.8                                  | 910                   |

**Technical Data**

|                      | Operating Capacitor | Nominal capacitor voltage | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|----------------------|---------------------|---------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 15/15             |                     |                           |                        |                     |                    |                                     |                         |                                  |                              |                |
| 142951 3F 6P 1V +SCT |                     |                           | IP55                   | F                   | NO                 | 40                                  | 60                      | 1.2                              | B                            | 6109C8         |
| M9G3 3F 6P 1V +SCT   |                     |                           | IP20                   | F                   | NO                 | 40                                  | 36                      | 1.2                              | B                            | 6109W2         |
| 1429P2 3F 6P 1V +SCT |                     |                           | IP55                   | F                   | EXT                | 40                                  | 51                      | 1.2                              | B                            | 6109GX         |

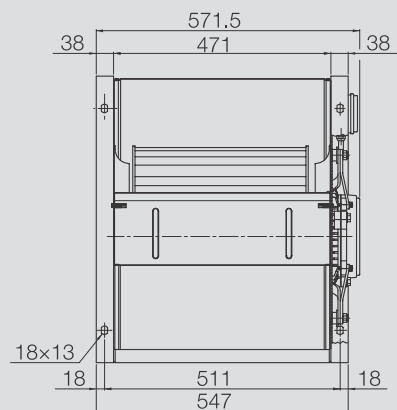
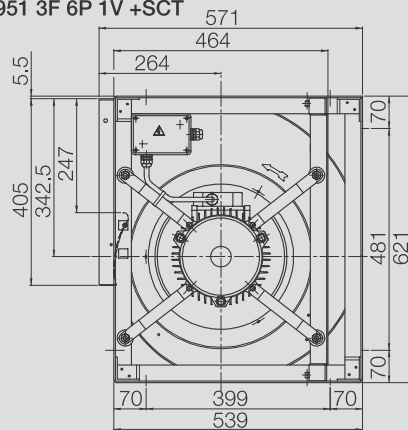
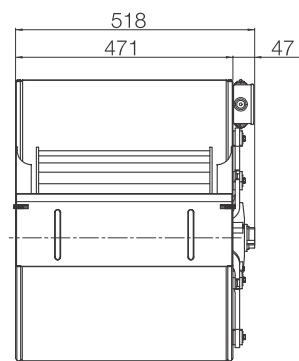
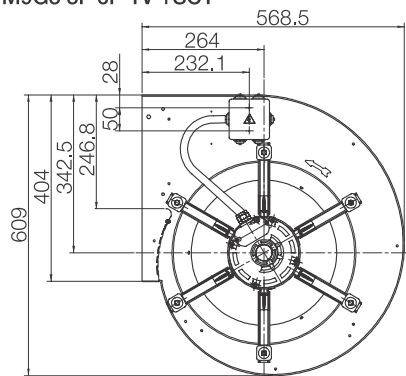
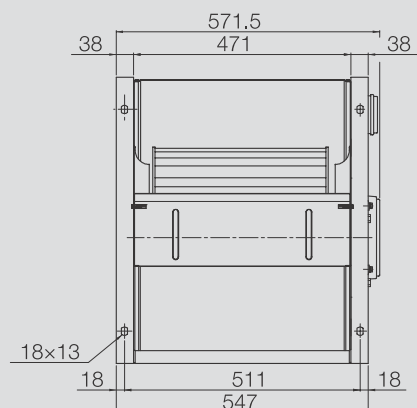
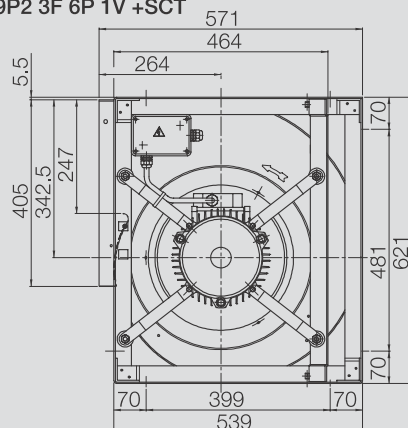
(1) = Speed controllable via Transformer

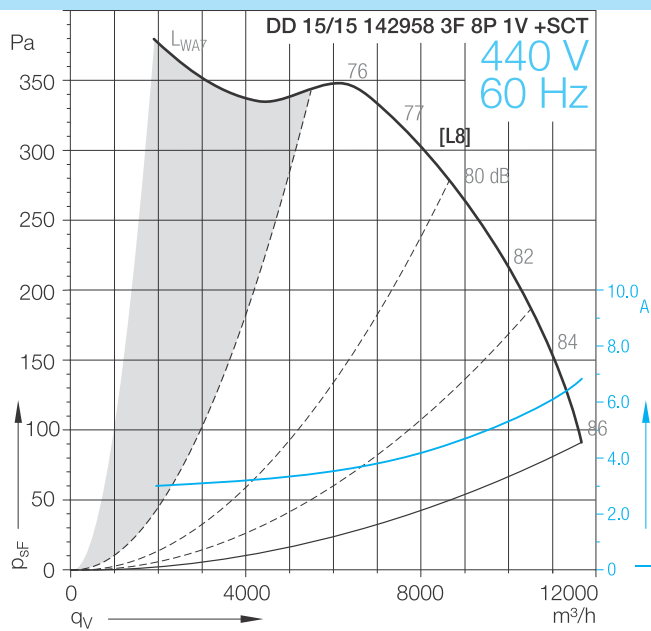
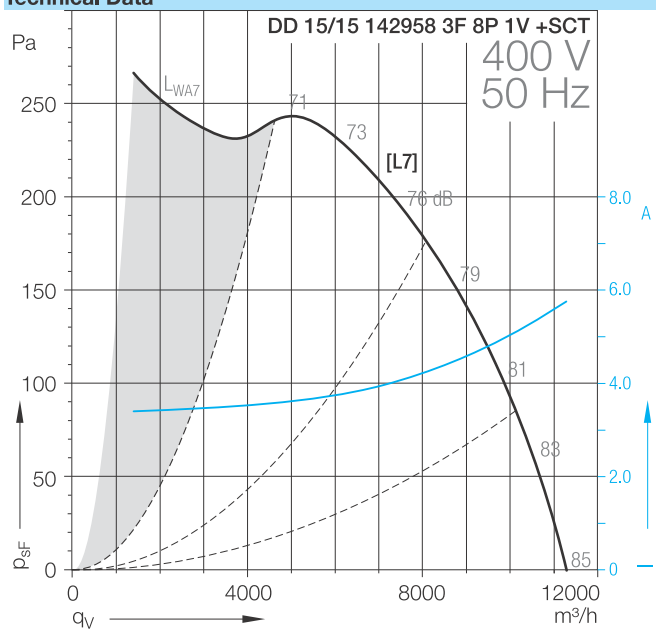
(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

\* = No speed control available

[H] High speed, [ME] Medium speed, [LO] Low speed

**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.**Dimensions** in mm, subject to change.**DD 15/15 142951 3F 6P 1V +SCT****DD 15/15 M9G3 3F 6P 1V +SCT****DD 15/15 1429P2 3F 6P 1V +SCT**

**DD-15/15****Technical Data**

# DD-15/15

## Technical Data

|                      | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|----------------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 15/15             |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| 142958 3F 8P 1V +SCT | *             | [L7/L8] | 1500                            | 8                 | 3~     | Y          | 50/60                        | 2865                               | 5.4                                  | 715                   |

## Technical Data

|                      | Operating Capacitor | Nominal capacitor voltage | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|----------------------|---------------------|---------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 15/15             |                     |                           |                        |                     |                    |                                     |                         |                                  |                              |                |
| 142958 3F 8P 1V +SCT |                     |                           | IP55                   | F                   | NO                 | 40                                  | 78                      | 1.2                              | B                            | 6109F6         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

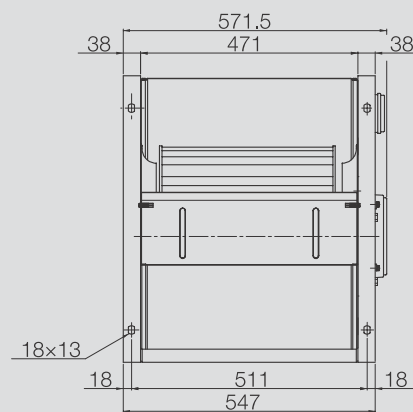
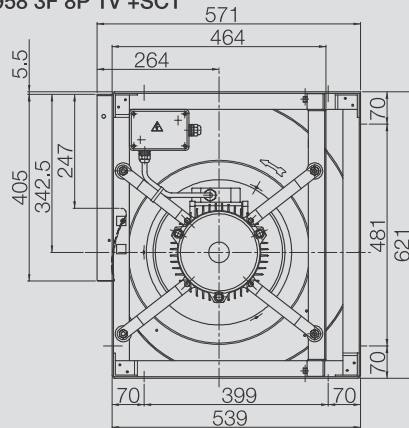
\* = No speed control available

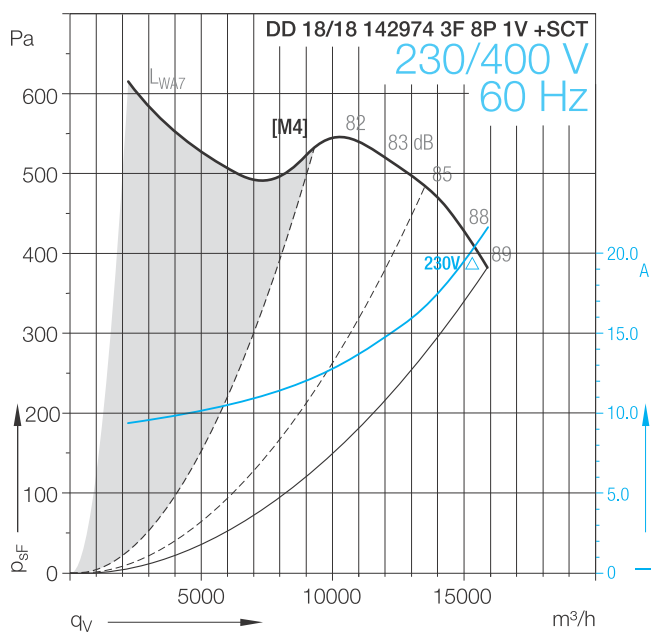
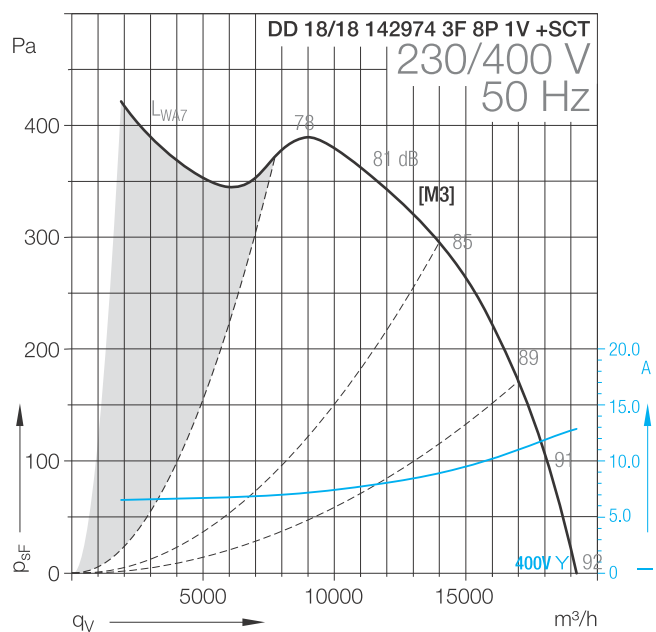
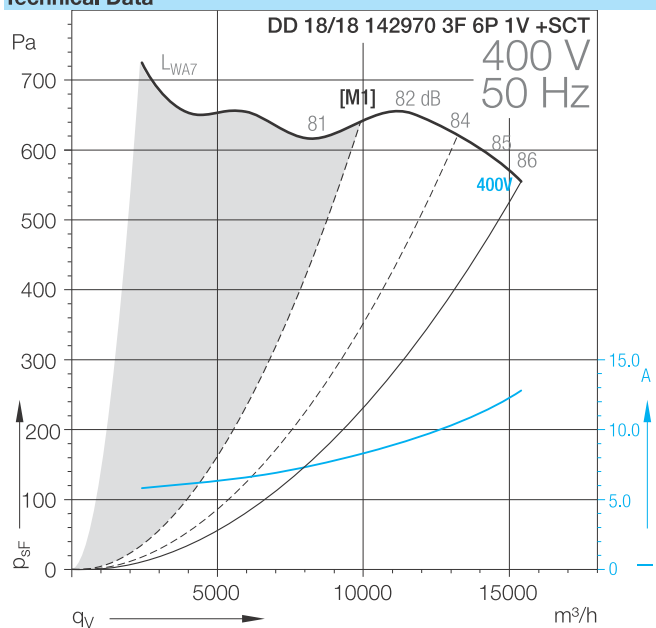
[HI] High speed, [ME] Medium speed, [LO] Low speed

**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

### DD 15/15 142958 3F 8P 1V +SCT



**DD-18/18****Technical Data**

# DD-18/18

## Technical Data

|                      | Speed control | Curves  | Nominal motor power<br><b>W</b> | Poles<br><b>—</b> | Phases | Connection | Mains frequency<br><b>Hz</b> | Max. power consumption<br><b>W</b> | Max. current consumption<br><b>A</b> | Speed<br><b>1/min</b> |
|----------------------|---------------|---------|---------------------------------|-------------------|--------|------------|------------------------------|------------------------------------|--------------------------------------|-----------------------|
| DD 18/18             |               |         |                                 |                   |        |            |                              |                                    |                                      |                       |
| 142970 3F 6P 1V +SCT | *             | [M1]    | 4000                            | 6                 | 3~     | Δ/Y        | 50                           | 7084                               | 12                                   | 965                   |
| 142974 3F 8P 1V +SCT | *             | [M3/M4] | 3000                            | 8                 | 3~     | Δ/Y        | 50/60                        | 6929                               | 12.4                                 | 700                   |

## Technical Data

|                      | Operating Capacitor | Nominal capacitor voltage | Motor protection class | Motor thermal class | Thermal protection | Media Temperature max.<br><b>°C</b> | Fan weight<br><b>kg</b> | Density of media<br><b>kg/m³</b> | Installation type (ISO 5801) | Article number |
|----------------------|---------------------|---------------------------|------------------------|---------------------|--------------------|-------------------------------------|-------------------------|----------------------------------|------------------------------|----------------|
| DD 18/18             |                     |                           |                        |                     |                    |                                     |                         |                                  |                              |                |
| 142970 3F 6P 1V +SCT |                     |                           | IP55                   | F                   | NO                 | 40                                  | 48                      | 1.2                              | B                            | 6109L1         |
| 142974 3F 8P 1V +SCT |                     |                           | IP55                   | F                   | NO                 | 40                                  | 98                      | 1.2                              | B                            | 6109N4         |

(1) = Speed controllable via Transformer

(2) = Speed controllable via TRIAC or Transformer

(3) = Speed controllable via Inverter

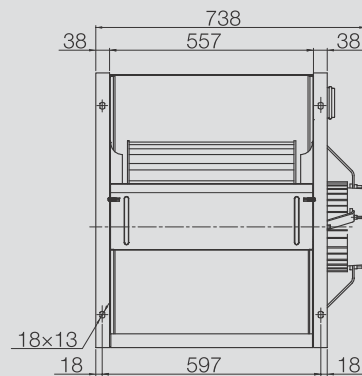
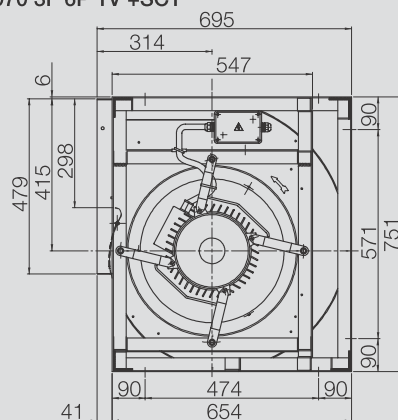
\* = No speed control available

[HI] High speed, [ME] Medium speed, [LO] Low speed

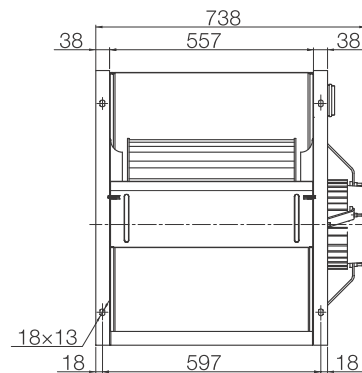
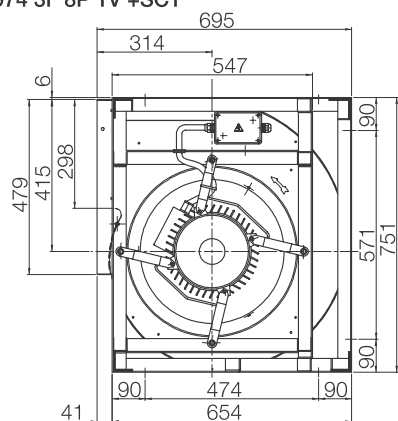
**Attention!** We suggest to do not use the fan in the grey marked area! The noise ratings given in the performance curves are sound power level  $L_{WA7}$ , see „Technical Description“.

## Dimensions in mm, subject to change.

### DD 18/18 142970 3F 6P 1V +SCT



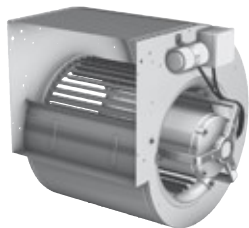
### DD 18/18 142974 3F 8P 1V +SCT





## DD

## Specifications

**High performance centrifugal fan DD**

Double width, double inlet (DWDI), direct driven forward curved blades fan. Lap-jointed scroll of galvanized steel (EN10142) assembled through a high technology roller-lock seaming (sizes  $\geq 7$  inches), spot-welded scroll of galvanized steel (sizes  $< 7$  inches).

Straight cut off plate at fan outlet.

Impeller with forward curved blades of galvanized steel, directly mounted on an "Internal Rotor" motor for optimal motor cooling and no transmission losses.

Open (IP20) **or** closed (IP32/IP44/IP55) motor frame;

Motors may be single- **or** three-phase; single- **or** multi speed, speed-adjustable by voltage regulation through transformers **or** TRIAC regulators. Motors suitable for use at 50Hz **or** 60Hz are available.

Built-in thermal protection devices either in series or wired out is standard fit.

Maintenance free self-aligning ball bearings, vibration isolation pads.

Impeller dynamically balanced according to ISO 1940.

Different fan options and accessories, motor types and sizes available - see technical data.

## Fan data

|                                |          |       |                   |
|--------------------------------|----------|-------|-------------------|
| Fan type                       |          | ..... |                   |
| Volume flow                    | $Q_V$    | ..... | m <sup>3</sup> /h |
| Static pressure                | $p_{sF}$ | ..... | Pa                |
| Air density at fan inlet       | $\rho_1$ | ..... | kg/m <sup>3</sup> |
| Air temperature                | t        | ..... | °C                |
| Max. power consumption         | $P_e$    | ..... | kW                |
| Speed                          | N        | ..... | 1/min             |
| Frequency                      | f        | ..... | Hz                |
| Sound power level (A weighted) | $L_{WA}$ | ..... | dB                |
| Weight                         | m        | ..... | kg                |

## Fittings / Accessories

- Outlet flange - O
- Outlet flexible connection - A (sizes  $\geq 7/7$ )
- Mounting feet - O/A (sizes  $\geq 7/7$ )
- Terminal box - O
- Inlet guard - O/A
- Outlet guard - O/A
- Powder-coating - O
- TRIAC electronic regulators - A

**Legend**

O = Options

A = Accessory

O/A = The item could be delivered as an option or an accessory

Please, check availability of each individual option or accessory on each specific fan model.

# Fittings / Accessories

## Accessories

All options and accessories must be specified separately.

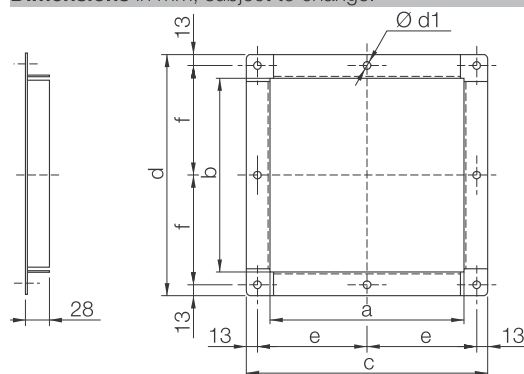
Please take the technical data and dimensions from the corresponding page of the catalogue.

## Flanges



Made from galvanized or painted steel, to connect ducts and system components to the fan outlet side.

**Dimensions** in mm, subject to change.

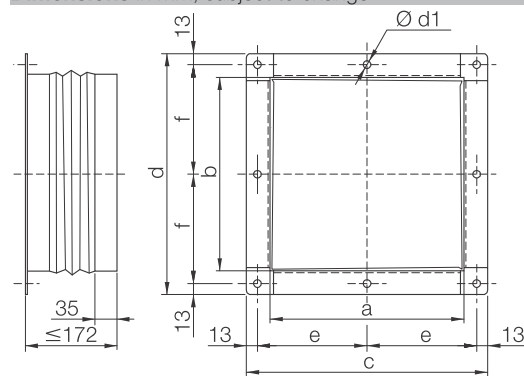


| DD    | a   | b   | c   | d   | e     | f     | Ø d1 |
|-------|-----|-----|-----|-----|-------|-------|------|
| 7/7   | 232 | 201 | 288 | 257 | 131   | 115.5 | 9    |
| 9/7   | 232 | 255 | 288 | 311 | 131   | 142.5 | 9    |
| 9/9   | 298 | 255 | 354 | 311 | 164   | 142.5 | 9    |
| 10/8  | 265 | 284 | 321 | 340 | 147.5 | 157   | 9    |
| 10/10 | 331 | 284 | 387 | 340 | 180.5 | 157   | 9    |
| 12/9  | 309 | 334 | 365 | 390 | 169.5 | 182   | 9    |
| 12/12 | 395 | 334 | 451 | 390 | 212.5 | 182   | 9    |
| 15/11 | 373 | 397 | 429 | 453 | 201.5 | 213.5 | 9    |
| 15/15 | 471 | 397 | 527 | 453 | 250.5 | 213.5 | 9    |
| 18/18 | 557 | 471 | 613 | 527 | 293.5 | 250.5 | 9    |

## Flexible connection

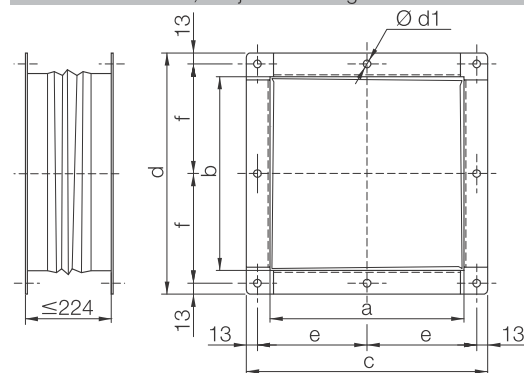
Flexible connection to connect the fan to system components or units, absorbing and stopping the vibration transmission.

**Dimensions** in mm, subject to change.



| DD    | a   | b   | c   | d   | e     | f     | Ø d1 |
|-------|-----|-----|-----|-----|-------|-------|------|
| 7/7   | 232 | 201 | 288 | 257 | 131   | 115.5 | 9    |
| 9/7   | 232 | 255 | 288 | 311 | 131   | 142.5 | 9    |
| 9/9   | 298 | 255 | 354 | 311 | 164   | 142.5 | 9    |
| 10/8  | 265 | 284 | 321 | 340 | 147.5 | 157   | 9    |
| 10/10 | 331 | 284 | 387 | 340 | 180.5 | 157   | 9    |
| 12/9  | 309 | 334 | 365 | 390 | 169.5 | 182   | 9    |
| 12/12 | 395 | 334 | 451 | 390 | 212.5 | 182   | 9    |
| 15/11 | 373 | 397 | 429 | 453 | 201.5 | 213.5 | 9    |
| 15/15 | 471 | 397 | 527 | 453 | 250.5 | 213.5 | 9    |
| 18/18 | 557 | 471 | 613 | 527 | 293.5 | 250.5 | 9    |

**Dimensions** in mm, subject to change.



| DD    | a   | b   | c   | d   | e     | f     | Ø d1 |
|-------|-----|-----|-----|-----|-------|-------|------|
| 7/7   | 232 | 201 | 288 | 257 | 131   | 115.5 | 9    |
| 9/7   | 232 | 255 | 288 | 311 | 131   | 142.5 | 9    |
| 9/9   | 298 | 255 | 354 | 311 | 164   | 142.5 | 9    |
| 10/8  | 265 | 284 | 321 | 340 | 147.5 | 157   | 9    |
| 10/10 | 331 | 284 | 387 | 340 | 180.5 | 157   | 9    |
| 12/9  | 309 | 334 | 365 | 390 | 169.5 | 182   | 9    |
| 12/12 | 395 | 334 | 451 | 390 | 212.5 | 182   | 9    |
| 15/11 | 373 | 397 | 429 | 453 | 201.5 | 213.5 | 9    |
| 15/15 | 471 | 397 | 527 | 453 | 250.5 | 213.5 | 9    |
| 18/18 | 557 | 471 | 613 | 527 | 293.5 | 250.5 | 9    |

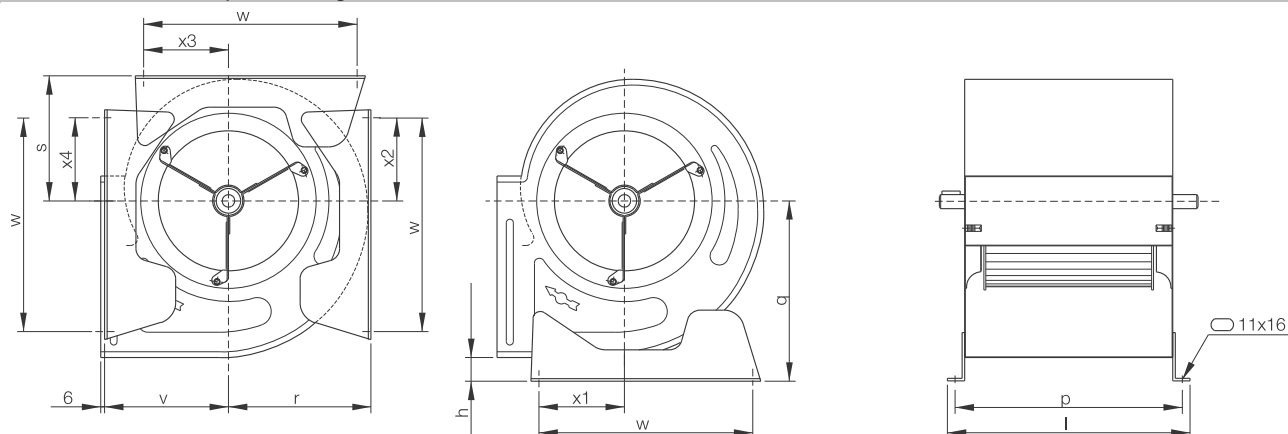
# Fittings / Accessories

## Mounting feet



Feet made from galvanized steel, either mounted or loose, enable the fan to be installed with a 0, 90 and 270 orientation.

**Dimensions** in mm, subject to change.



| DD    | h  | l   | p   | q   | r   | s   | v   | w   | x1  | x2  | x3  | x4  |
|-------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 7/7   | 17 | 282 | 258 | 203 | 169 | 145 | 147 | 225 | 117 | 86  | 88  | 47  |
| 9/7   | 38 | 282 | 258 | 253 | 199 | 177 | 179 | 300 | 119 | 124 | 123 | 120 |
| 9/9   | 38 | 348 | 324 | 253 | 199 | 177 | 179 | 300 | 119 | 124 | 123 | 120 |
| 10/8  | 38 | 315 | 291 | 287 | 227 | 198 | 197 | 340 | 136 | 132 | 135 | 132 |
| 10/10 | 38 | 381 | 357 | 287 | 227 | 198 | 197 | 340 | 136 | 132 | 135 | 132 |
| 12/9  | 38 | 359 | 335 | 332 | 266 | 232 | 224 | 408 | 161 | 153 | 161 | 153 |
| 12/12 | 38 | 445 | 421 | 332 | 266 | 232 | 224 | 408 | 161 | 153 | 161 | 153 |
| 15/11 | 38 | 423 | 399 | 380 | 309 | 272 | 258 | 495 | 197 | 211 | 201 | 200 |
| 15/15 | 38 | 521 | 497 | 380 | 309 | 272 | 258 | 495 | 197 | 211 | 201 | 200 |
| 18/18 | 42 | 607 | 583 | 457 | 376 | 340 | 307 | 608 | 262 | 283 | 278 | 288 |

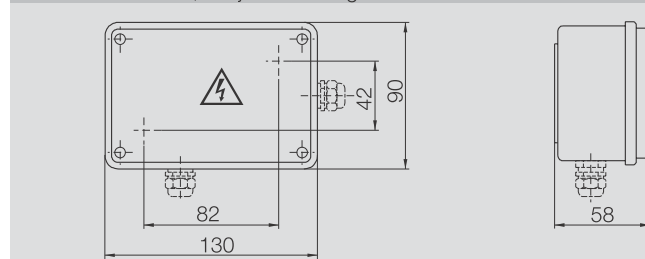
## Terminal box



Each fan is equipped with a loose cable, a terminal strip or a terminal box (see specific catalog data for details)

The terminal box is commonly fitted to the side plate of the fan. It is made of plastic material and provided with cable glands. A schematic diagram, always provided with the fan, displays the proper electrical connection.

**Dimensions** in mm, subject to change.



## Protection guards



Inlet or outlet protection guards are available as accessories from size 7/7 to 10/10, for bigger sizes and for further information, please contact Nicotra Gebhardt technical department.

# Fittings / Accessories

## Increased corrosion protection

Nicotra Gebhardt fans are provided – as a standard equipment – with a highly efficient corrosion protection but, in the event of extremely high corrosion risk, additional corrosion protections might be required.

Following to the application and corrosion stress conditions, special coatings of various types and thickness can be supplied on request.

## RVM - Single-phase manual regulator



Electronical speed control unit producing a stepless modulated output voltage for fans with speed controlled single phase motors

### Execution

Casing made of impact resistant plastic.

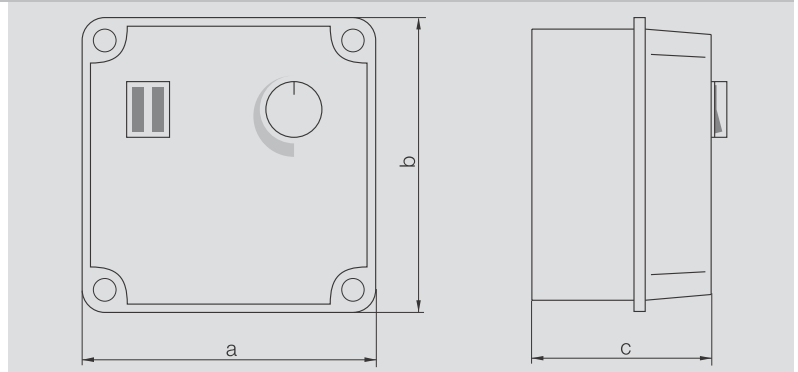
### Function

The speed controller is equipped with an EMC-filter, a turning knob for speed control starting at a fixed rpm-value, an operation indicating light (RVM 5I, RVM 9I, RVM 20I), and an internal fuse protection.

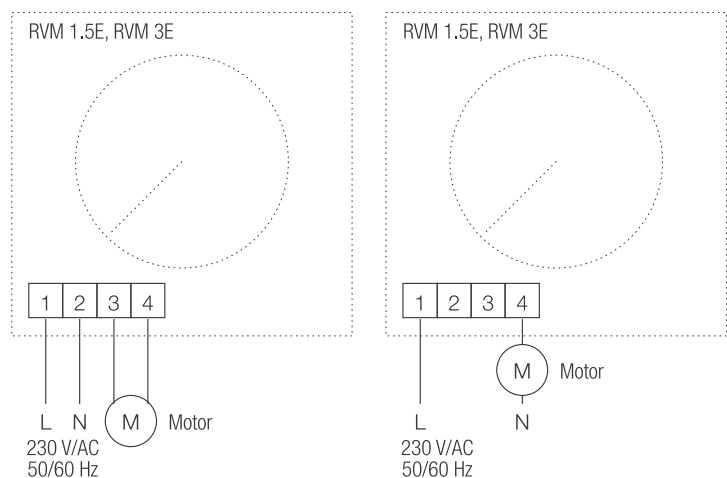
## Technical Data

|          | Article number | Nominal voltage<br>V | Max. current<br>A | Frequency<br>Hz | Protection class | Temperature range<br>°C | Fuse            | a<br>mm | b<br>mm | c<br>mm |
|----------|----------------|----------------------|-------------------|-----------------|------------------|-------------------------|-----------------|---------|---------|---------|
| RVM 1,5E | K43157         | 230                  | 1.5               | 50/60           | IP20             | +0/+40                  | 5X20 10A FAST   | 82      | 82      | 38      |
| RVM 3E   | K43142         | 230                  | 3                 | 50/60           | IP20             | +0/+40                  | 5X20 10A FAST   | 82      | 82      | 38      |
| RVM 5I   | K43143         | 230                  | 5                 | 50/60           | IP54             | -10/+40                 | 5X20 10A FAST   | 125     | 125     | 90      |
| RVM 9I   | K43144         | 230                  | 9                 | 50/60           | IP54             | -10/+40                 | 6,3X32 20A FAST | 125     | 125     | 105     |
| RVM 20I  | K43139         | 230                  | 20                | 50/60           | IP54             | -10/+40                 | 6,3x32 32A GL   | 175     | 175     | 105     |

## Dimensions

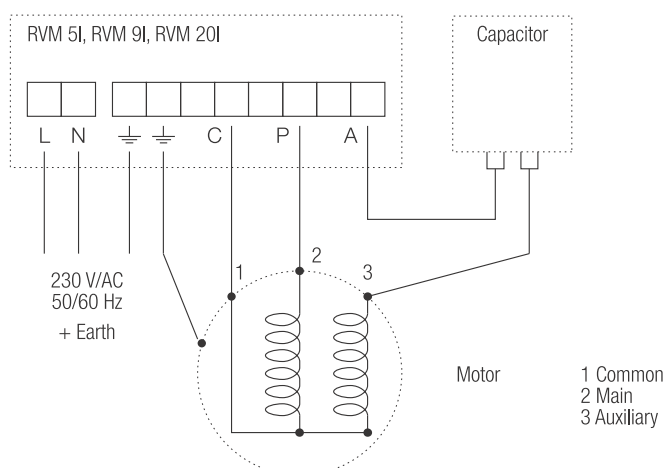


## Wiring Diagram



# Fittings / Accessories

## Wiring Diagram



## RVT - Three-phase manual regulator



Electronical speed control unit producing a stepless modulated output voltage for fans with speed controlled three phase motors.

### Execution

Plastic casing with cast aluminium base plate, IP54 protection class.

### Function

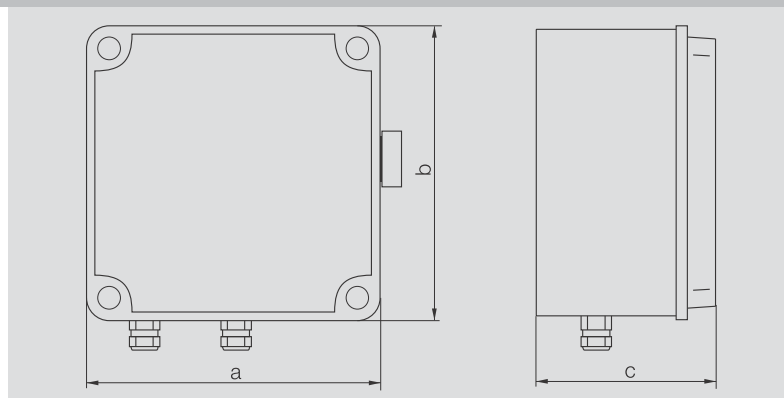
With the control unit a setting of the minimum speed value as well as the maximum speed is provided. It is equipped with an internal overload protection and, as an option, there are contacts provided for connecting the thermo contacts (PTO) in the motor winding.

Following to switching the unit on, the controller automatically is operating a softstart of the motor up to the speed which is set by the position of the potentiometer. By turning the potentiometer the motor speed will be changing due to driving it with a varying voltage through phase cutting.

## Technical Data

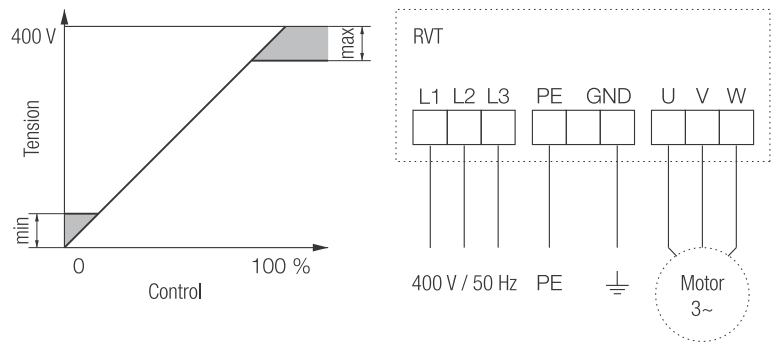
|        | Article number | Nominal voltage V | Nominal current V | Frequency Hz | Protection class | Temperature range °C | Fuse      | a mm | b mm | c mm |
|--------|----------------|-------------------|-------------------|--------------|------------------|----------------------|-----------|------|------|------|
| RVT 3A | K43114         | 400               | 3                 | 50/60        | IP54             | +0/+40               | 6x32 GF10 | 175  | 175  | 105  |
| RVT 6A | K43115         | 400               | 6                 | 50/60        | IP54             | +0/+40               | 6x32 GF20 | 175  | 175  | 105  |
| RVT 9A | K43116         | 400               | 9                 | 50/60        | IP54             | +0/+40               | 6x32 GF20 | 175  | 250  | 105  |

## Dimensions



# Fittings / Accessories

## Wiring Diagram



## Star-delta switch



Enclosed selector for star-delta motor configuration for three-phase motors.

### Execution

Insulated polycarbonate module, IP66 protection degree, front mounting, silver front panel, 60 switching angle, terminals accessible both from mounting direction or laterally, data rated according to IEC 60947.

### Function

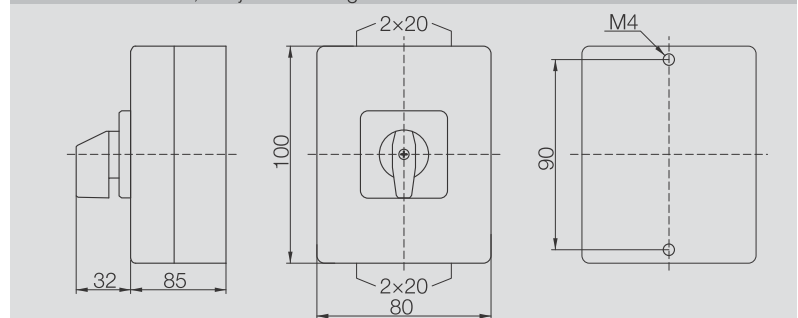
A 3-position changeover switch for 0 = Motor OFF, Y = STAR motor configuration, Δ = DELTA motor configuration. It must be installed between the 3-phase power supply (L1, L2, L3) and a 3-phase controllable motors, having the STAR-DELTA terminals externally available (U1, V1, W1 and U2, V2, W2 respectively). It provides a safe way to switch between the STAR and DELTA motor configurations, changing, in this way, between the high (DELTA) and low (STAR) motor speed.

**The switch can't be used as STAR/DELTA motor starter!**

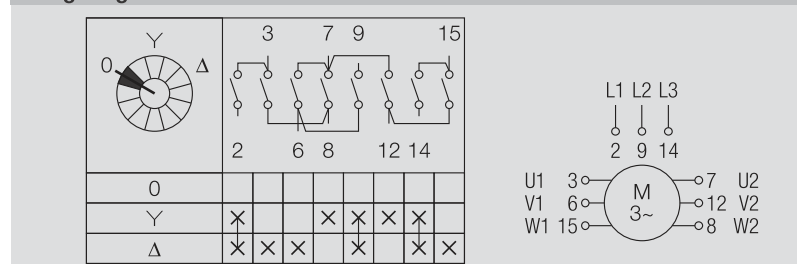
### Technical Data

|      | Article number | Nominal voltage<br>V | Nominal current<br>A | Frequency<br>Hz | Protection class | Temperature range<br>°C |
|------|----------------|----------------------|----------------------|-----------------|------------------|-------------------------|
| M200 | K43131         | 400                  | 16                   | 50/60           | IP66             | -25/+40                 |

### Dimensions in mm, subject to change.



### Wiring Diagram



# Description

## Safety

These fans are intended to be incorporated into finished products for the treatment of clean and filtered air, free of dust, particles, shavings, grease, etc., within the rated ranges of temperature and electrical supply.

The design of the installation shall guarantee the essential safety requirements, as specified by the locally enforceable legislation, including safety against human contact with moving parts, e.g. by application of the design principles stated in EN ISO 12100.

When the inlet and/or outlet of a fan are connected to a ducting system, or to a closed plenum, including integral filters or grids, these may be designed also to provide the specified protection level.

Otherwise, the fan must be protected by fitting appropriate inlet or outlet guards, designed in accordance with EN ISO 13857, available from Nicotra Gebhardt as accessories or options.

## Type code

| 1F<br>3F                    | 2P<br>4P<br>6P             | 1V<br>2V<br>3V<br>4V                        | FL            | SCT          | SP              | SB            | GRG         | GRGP         |
|-----------------------------|----------------------------|---------------------------------------------|---------------|--------------|-----------------|---------------|-------------|--------------|
| Single phase<br>Three phase | 2-pole<br>4-pole<br>6-pole | 1-Speed<br>2-Speeds<br>3-Speeds<br>4-Speeds | Outlet flange | Terminal box | Special version | Mounting Feet | Inlet guard | Outlet guard |

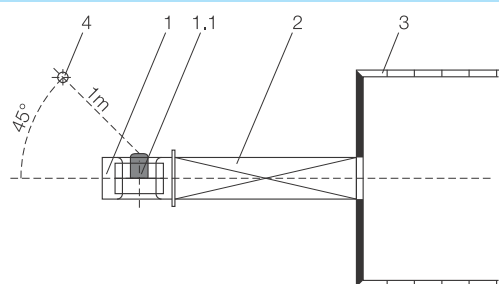
## Performance data

Air performance ratings shown in this catalogue have been derived from performance tests made with installation type "B", with free inlet and ducted outlet.

The performance data shall be obtained in a laboratory registered by AMCA for AMCA 210/99 air performance testing. Data are not certified by AMCA.

Ratings are referred to the standard air density of  $\rho_1 = 1.2 \text{ kg/m}^3$  at the fan inlet.

## Sound



In the diagrams, the A-weighted housing and free inlet sound power level  $L_{WA7}$  is given as the emission parameter for the ventilator.

The A-weighted noise level  $L_{pA7}$  for a distance of 1m (see sketch) is achieved approximately in that the correction value given below is subtracted from the respective A sound power level.

It should be noted that site acoustics, duct design, reverberation, natural frequencies etc. can all influence noise to a greater or a lesser extent.

$$L_{pA7} \approx L_{WA7} - dL$$

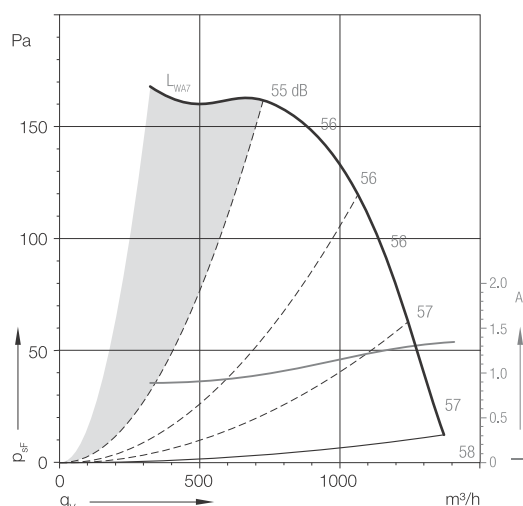
Correction values  $dL$ :

Size  $\leq 10/10$ :  $dL = 7 \text{ dB}$

Size  $\geq 12/9$ :  $dL = 8 \text{ dB}$

- 1 = Fan
- 1.1 = Motor
- 2 = duct on discharge
- 3 = Chamber
- 4 = Microphone position

## Fan operating area



For a proper fan selection the duty point in the grey area to the left of the leftmost dashed parabolic line drawn on each performance diagram should preferably be avoided. In this area the fan stall is producing fluctuating pressure and fluctuating loads on the fan and motor; some single-phase motors may also be overheating in this low-load condition.

When the performance curves of a fan are cut to the right with continuous-line parabola, a fan selection with the duty point located below of this parabola shall be carefully avoided, because the drive motor would be overloaded and would be overheating. Such an operating condition may be evidenced by a motor input current exceeding the maximum rated value.

# Description

## Fan lifespan

The high level of manufacturing technology and the use of selected materials provide a considerable fan operating lifetime.  
In most applications, the fan components more subjected to wear are the motor bearings.  
The bearings are sized to reach, using 80% of the maximum allowed current and working at an air temperature not higher than 40°C, a  $L_{10h}$  operating life of 20,000 hours. This means a 7 years fan lifetime, for fans running 8 hours a day.

## Media

This range of fans are specially designed for use into air handling units (AHU) and ventilation systems.  
The centrifugal fans are ideal for conveying clean air. The allowed air temperature comes from -20°C to +40°C.

## Motors

Most motors have "F" ISO insulation class but some of the smaller models have nevertheless "B" ISO insulation class.  
Motors could have IP32; IP44; IP54 or IP55 protection class (closed frame) or IP10; IP20 protection class (open frame).  
Detailed information for each fan model are provided with fan specification on the product pages.

## Motor protection

All standard production motors are equipped with an integrated thermal overload protectors (TOP), as protection against thermal overload.  
TOP may be wired internally to windings and then they'll automatically stop the motor, if a overheating event occurs, and start the motor again once it is cooled down.  
TOP may alternatively be externally wired, that means TOP terminals are available to the user in the motor terminal block or terminal box.  
In this case, the TOP terminals can be manually connected in series between power supply and motor windings or, alternatively, to an external device that switches off the mains to prevent that the motor be damaged by an overheating conditions.

## Speed regulation generally

All standard production motors can always be used with transformers or devices which do not modify the sinusoidal wave line to change the fan speed is always allowed.

### Speed regulation for fans equipped with single-phase motors

Single or multiple speed available. Single phase motors are generally suitable for speed regulation by changing the input voltage with our electronic single-phase RVM speed regulators (see chapter "Options/Accessories" for further information).  
The speed variable types are marked with an dot in the technical data tables.  
The reduced – voltage curves shown in the catalogue may be obtained by either using transformers or our RVM regulators. In the last case, we have commonly used a 2-wires connection for running currents up to 3 Ampere max and a 3-wires connection for higher running currents.  
Speed regulation of multi-speed fans is obtained by connecting the mains to the correct motor terminals according to the wiring diagram supplied with each fan.

### Speed regulation for fans equipped with three-phase motors

Single or double speed available. Performance diagrams of single speed fans usually shows only the curve referred to a 230V star – 400V delta configuration.  
Performance diagrams of double speed fans usually shows the curves referred to a 400V star (high speed) – 400V delta (low speed) configurations.  
The use of RVT controllers or inverter is only acceptable with special motors equipped with a reinforced insulation of the windings. In this case, these devices shall be in accordance with the requirements of IEC / TS 60034-17:2006.



# Accessories

## Frequency converter



### Design

Frequency inverter with variable output voltage and frequency, specially designed for the operation of centrifugal fans with induction motors. Due to the use of modern power semiconductors it is possible to achieve a speed of revolution with high efficiency. Switching frequencies up to 16kHz can be set with all types. If the highest switching frequencies are required (for example for reasons of noise reduction), the maximum output current is decreased, in which case the performance category should be specially checked.

**The overall package includes the frequency inverter, filter for class B (for residential and commercial uses) as well as a control unit.**

### General Performance characteristics

Motor protection feature for motors with thermistor temperature sensors, adjustable acceleration and deceleration ramps, minimum and maximum rotation speeds, fixed rotation speeds, trapping switch during operation, programmable inputs and PI-controller (MM420 and MM430 only), RS485 serial interface as well as a detailed operating instructions. Caution about combination with isolators (ESH)! Special EMC-action can be necessary, furthermore do not switch during operation, overvoltages can destroy the switch and the motor-winding.

### Performance range G110 1AC 230V (for single-phase AC supply)

0.25kW to 2.2kW rated motor power, 200V to 240V 10% single-phase AC, 47Hz up to 63Hz, three-phase current output 3×230V AC, protection class IP20. Permitted ambient temperature during operation: -10°C up to +40°C.

### Performance range MM420 3AC 400V (for three-phase AC supply)

0.55kW to 11kW rated motor power, 380V to 480V 10% three-phase AC, 47Hz up to 63Hz, three-phase current output 3×400V AC, protection class IP20. Permitted ambient temperature during operation: -10°C up to +50°C. The interference suppression filter required to comply with the EMC basic interference suppression standard EN 50081-1 (residential and commercial uses) is integrated into the package as substructure option. Power choke to comply with EN 61000-3-2 as additional component.

**Observe performance reduction when using high clock frequencies!**

### Performance range MM430 3AC 400V

(for three-phase AC supply)

15kW to 250kW rated motor power, 380V to 480V 10% three-phase AC, 47Hz up to 63Hz, three-phase current output 3×400V AC, protection class IP20.

Permitted ambient temperature during operation: -10°C up to +50°C. The interference suppression filter required to comply with the EMC basic interference suppression standard EN 50081-1 (industrial applications) is partially integrated. In order to attain EMC requirements Class B a frequency inverter without filter should be selected. The appropriate EMC-B filter is then required as an additional component.

**Observe performance reduction when using high clock frequencies!**

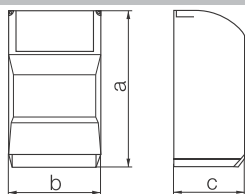
The indicated ratings of the units are made for a quick selection. The exact dedication of an inverter in this catalogue is made by taking into account of the max. admitted current at a pulse frequency of 4kHz. It is important to know that at higher pulse frequencies the supplied current of the inverter will be decreasing, with the possible consequences of having to select a larger inverter unit. Also longer feed lines or additional radio frequency filters may lead to the choice of a larger inverter size.

**The selected frequency inverters (G110 und MM420) are units contains the frequency inverter (as shown in the following tables) with the matching interference suppression filter (Class B) and a control panel. A further component is the line choke which is available as an accessory.** For more information the available frequency inverters are shown in the following tables.

# Accessories

## Frequency converter

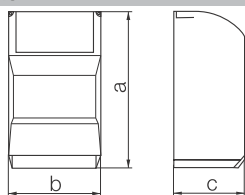
### Technical Data | Dimensions



For three-phase AC motors on the single-phase supply.

| 6SL3211-   | Nominal power<br>kW | Nominal current<br>A | a<br>mm | b<br>mm | c<br>mm | Weight<br>kg |
|------------|---------------------|----------------------|---------|---------|---------|--------------|
| 0AB12-5BA0 | 0.25                | 1.7                  | 150     | 90      | 116     | 0.8          |
| 0AB13-7BA0 | 0.37                | 2.3                  | 150     | 90      | 116     | 0.8          |
| 0AB15-5BA0 | 0.55                | 3.2                  | 150     | 90      | 131     | 0.9          |
| 0AB17-5BA0 | 0.75                | 3.9                  | 150     | 90      | 131     | 0.9          |
| 0AB21-1AA0 | 1.1                 | 6                    | 160     | 140     | 142     | 1.5          |
| 0AB21-5AA0 | 1.5                 | 7.8                  | 160     | 140     | 142     | 1.5          |
| 0AB22-2AA0 | 2.2                 | 11                   | 181     | 184     | 152     | 2.1          |

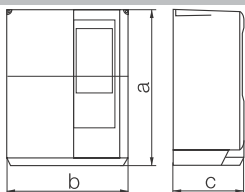
### Technical Data | Dimensions



For three-phase AC motors on the three-phase supply

| 6SE6420-   | Nominal power<br>kW | Nominal current<br>A | a<br>mm | b<br>mm | c<br>mm | Weight<br>kg |
|------------|---------------------|----------------------|---------|---------|---------|--------------|
| 2UD15-5AA1 | 0.55                | 1.6                  | 173     | 73      | 149     | 1            |
| 2UD17-5AA1 | 0.75                | 2.1                  | 173     | 73      | 149     | 1            |
| 2UD21-1AA1 | 1.1                 | 3                    | 173     | 73      | 149     | 1            |
| 2UD21-5AA1 | 1.5                 | 4                    | 173     | 73      | 149     | 1            |
| 2AD22-2BA1 | 2.2                 | 5.9                  | 202     | 149     | 172     | 3.3          |
| 2AD23-0BA1 | 3                   | 7.7                  | 202     | 149     | 172     | 3.3          |
| 2AD24-0BA1 | 4                   | 10.2                 | 202     | 149     | 172     | 3.3          |
| 2AD25-5CA1 | 5.5                 | 13.2                 | 245     | 185     | 195     | 5            |
| 2AD27-5CA1 | 7.5                 | 18.4                 | 245     | 185     | 195     | 5            |
| 2AD31-1CA0 | 11                  | 26                   | 245     | 185     | 195     | 5            |

### Technical Data | Dimensions



For three-phase AC motors on the three-phase supply

| 6SE6430-   | Nominal power<br>kW | Nominal current<br>A | a<br>mm | b<br>mm | c<br>mm | Weight<br>kg |
|------------|---------------------|----------------------|---------|---------|---------|--------------|
| 2AD31-5CA0 | 15                  | 32                   | 245     | 185     | 195     | 5.7          |
| 2AD31-8DA0 | 18.5                | 38                   | 520     | 275     | 245     | 17           |
| 2AD32-2DA0 | 22                  | 45                   | 520     | 275     | 245     | 17           |
| 2AD33-0DA0 | 30                  | 62                   | 520     | 275     | 245     | 17           |
| 2AD33-7EA0 | 37                  | 75                   | 650     | 275     | 245     | 22           |
| 2AD34-5EA0 | 45                  | 90                   | 650     | 275     | 245     | 22           |
| 2AD35-5FA0 | 55                  | 110                  | 1150    | 350     | 320     | 75           |
| 2AD37-5FA0 | 75                  | 145                  | 1150    | 350     | 320     | 75           |
| 2AD37-8FA0 | 90                  | 178                  | 1150    | 350     | 320     | 75           |
| 2UD41-1FA0 | 110                 | 180.4                | 1450    | 326     | 356     | 116          |
| 2UD41-3FA0 | 132                 | 220                  | 1450    | 326     | 356     | 116          |
| 2UD41-6GA0 | 160                 | 265.8                | 1533    | 326     | 545     | 116          |
| 2UD42-0GA0 | 200                 | 325.6                | 1533    | 326     | 545     | 116          |
| 2UD42-5GA0 | 250                 | 419.8                | 1533    | 326     | 545     | 116          |

## Motor protection unit



Motor protection unit EUM 33

Motor protection unit for three-phase current motors (standard motors) without thermal contacts.

### Design

Plastic casing in protection class IP55, permissible ambient temperature +40°C, 40Hz up to 60Hz, frontal operation, for wall mounting. Motor protection unit for single-speed, non-variable speed three-phase current motors without thermal contacts.

### Function

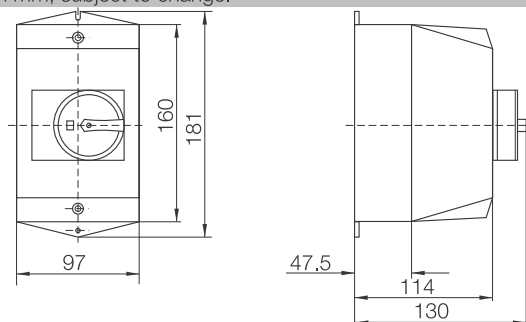
The motor protection units must be adjusted on site to the trigger current. If the preset trigger current is exceeded, the device disconnects the motor from the mains supply via a thermal overload release. Pressing the "on key" causes the unit to turn on again.

All motor protection units EUM33 are also suitable for the protection of EExe-motors (PTB-Prüfung Gesch-Nr. 3.35/386.3060). They must however be mounted outside of explosion endangered areas, since they are not themselves designed with explosion protection.

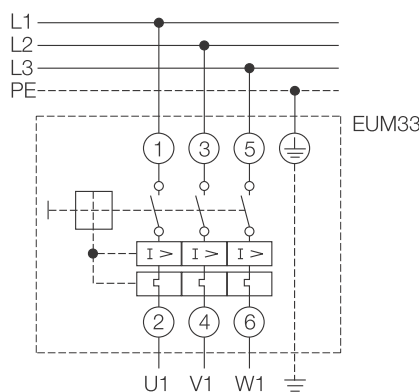
### Technical Data

| EUM 33- | Continuous current<br>A | Setting range<br>A | Max. nominal power<br>kW |
|---------|-------------------------|--------------------|--------------------------|
| 0004-8D | 0.4                     | +0.2/+0.4          | 0.09                     |
| 0006-8D | 0.6                     | +0.4/+0.6          | 0.12                     |
| 0010-8D | 1                       | +0.6/+1            | 0.25                     |
| 0016-8D | 1.6                     | +1/+1.6            | 0.55                     |
| 0024-8D | 2.4                     | +1.6/+2.4          | 0.8                      |
| 0040-8D | 4                       | +2.4/+4            | 1.5                      |
| 0060-8D | 6                       | +4/+6              | 2.5                      |
| 0100-8D | 10                      | +6/+10             | 4                        |
| 0160-8D | 16                      | +10/+16            | 7.5                      |
| 0200-8D | 20                      | +16/+20            | 9                        |
| 0250-8D | 25                      | +20/+25            | 12.5                     |
| 0500-8D | 50                      | +25/+50            | 25                       |
| 0580-8D | 58                      | +50/+58            | 30                       |

### Dimensions in mm, subject to change.



### Wiring Diagram



# Accessories

## Universal control device



Universal control device for installation in control cabinets Digital control module for controlling pressure, air velocity or volume flow (PI controller). For example, a transformer for fans is controlled via the 0...10V output. The device is designed for installation in control cabinets.

### Type

Multi functional LC-display for actual and nominal values (m/s, hPa = mbar, 100m³/h). Menuassisted adjustment via three function keys.

Actual value input 0...10V e. g. for:

- air speed sensors Type EIL in measuring ranges from 0...1m/s and 0...10m/s e. g. for Air velocity control in clean room technology
- Pressure sensors Type EIP in measurement ranges 50Pa up to 4000Pa e. g. for Pressure control in canal systems of air conditioning systems (VVS) and Flow control in centrifugal fans with pressure tapings in the inlet cone

The control module calculates the required flow (m³/h) from the differential measured pressure between the surrounding level and inlet cone.

- Output 0...10V e. g. for controlling a transformer
- Failure message is output via display (internal/external) and relay programmable
- External set value specification via potentiometer or 0...10V signal
- Specification of two set values (day/night), can be switched over externally or via keyboard
- Protection against unauthorised setting by keyboard code

### Application area

- Pressure regulation for centralised ventilation systems and variable volume flow systems for building air conditioning (VVS) e.g. in combination with a frequency inverter or a commutation unit or a transformer and a pressure sensor
- Volume flow regulation for centrifugal fans (with measuring stub in the inlet cone) e.g. in combination with a frequency inverter or a commutation unit or a transformer or a mini-interface inverter and a pressure sensor and the volume flow volumeter
- Air speed regulation for clean room systems, e.g. in combination with a transformer and an air speed sensor

### Electrical connection and installation

Connection to 230V, 50/60Hz. The control module can be installed in a control cabinet door. Admissible relative humidity: 85%, noncondensing. Power supply for the sensors included:

+24V, 20%,  $I_{\max} = 70\text{mA}$ .

#### Setting options

- Set values in the measurement range of the sensor (m/s, hPa = mbar), or in the volume flow range of the fan ( $\times 100\text{m}^3/\text{h}$ )
- Switch over of set value (day/night)
- Min./max. setting range
- Translation of performance curve (P component)
- Constant of integration can be selected (I component)
- Reversal of the effect of the control behaviour
- Rotation of the performance curve
- Switchover or programming of internal/external set value
- Sensor selection via keypad
- Programming for "Filter fault"
- Keypad code
- K factor entry (The K10-factor can be found in the current lists of our fan line)

### Technical Data

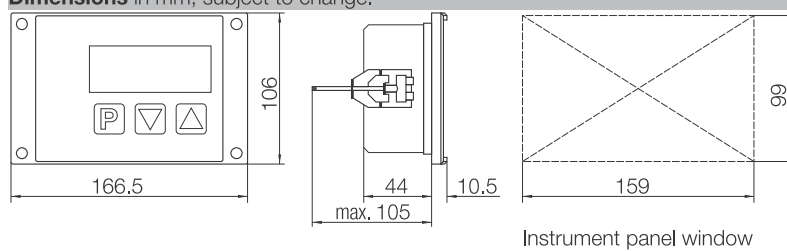
| ERA 02- | Input voltage<br>V | Output voltage<br>V | Max. output current<br>mA | Motor protection class | Operating consumption<br>VA | Operating temperature<br>°C |
|---------|--------------------|---------------------|---------------------------|------------------------|-----------------------------|-----------------------------|
| 4000-5E | 0/10               | 0/10                | 10                        | IP20                   | 10                          | +0/+40                      |

# Accessories

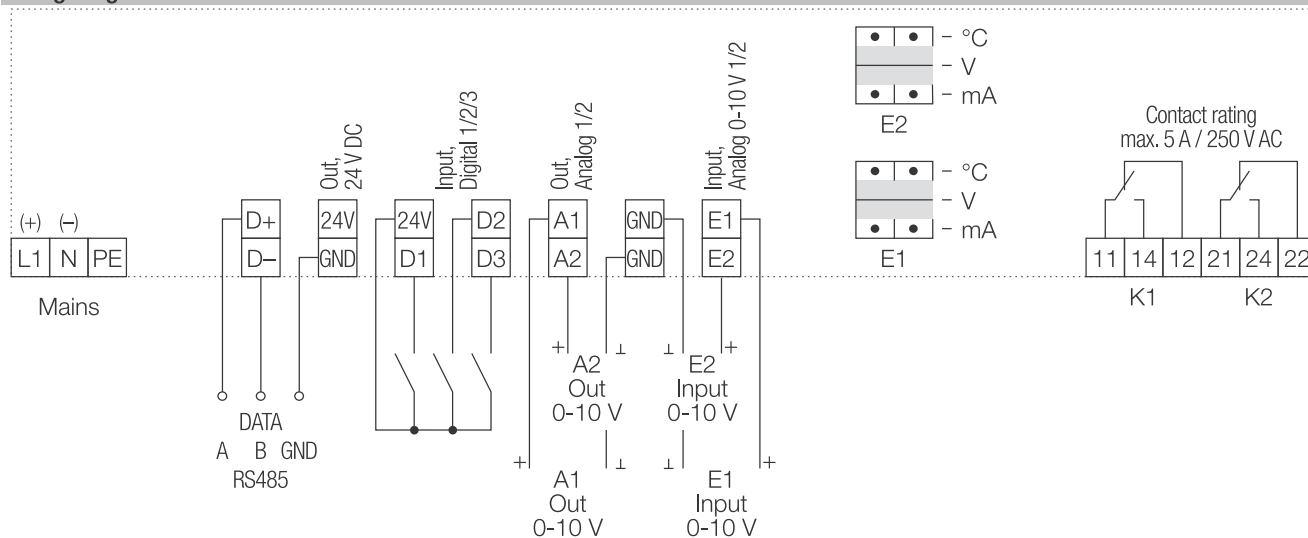
## Universal control device



Dimensions in mm, subject to change.



## Wiring Diagram



## Differential pressure sensor



Differential pressure sensor with membrane for measuring the pressure, negative pressure or differential pressure of nonaggressive gases.

### Type

The differential pressure to be measured acts transformed into an output signal of 0...10V by electronics (in SMD technology).

### Application ranges

Volume flow regulators in centrifugal fans (with volume flow measuring device IMV) in connection with a frequency inverter type G110, MM420, MM430, or a universal regulator appliance type ERA 02-4000-5E in connection with a frequency regulator.

### Electrical connection and installation

The differential pressure sensor delivers a starting signal (0...10V) by pressure increase at the "Plus" connection opposite pressure on the "Minus" connection.

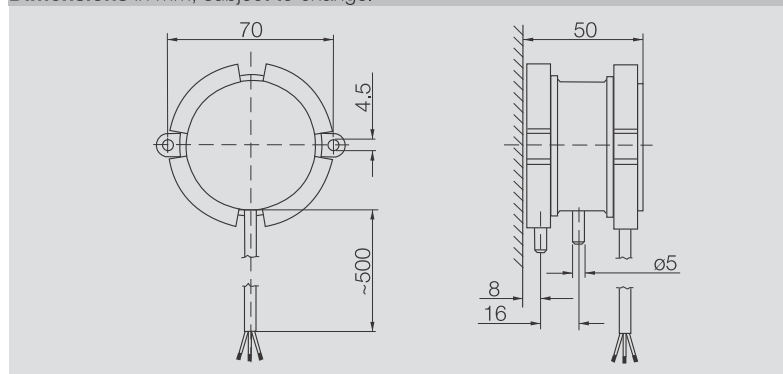
#### Voltage supply

- 15...30V DC or 24V AC, 15%
- Pressure connections must point downward, tube connection  $\varnothing 5\text{mm}$

#### Measuring accuracy

- Null drift: 0.75%
- Sum of linearity and hysteresis: 1%
- Temperature drift zero point: 0.3%/10K
- Temperature drift length of measurement: 0.2%/10K

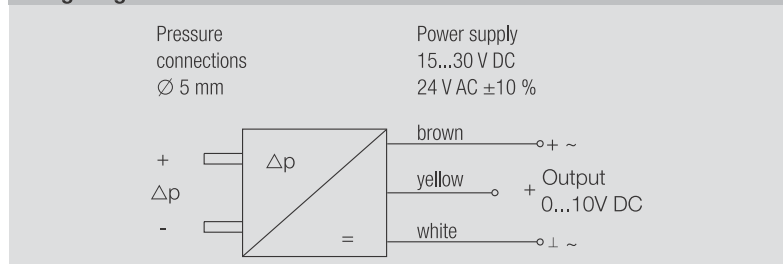
### Dimensions in mm, subject to change.



### Technical Data

| EIP 01- | Pressure range<br>Pa | Motor protection class | Max. current consumption<br>mA | Overload protection<br>Pa | Output signal proportional<br>V | Operating temperature<br>°C |
|---------|----------------------|------------------------|--------------------------------|---------------------------|---------------------------------|-----------------------------|
| 0200-12 | +0/+200              | IP65                   | 12                             | 20000                     | +0/+10                          | +0/+50                      |
| 0500-12 | +0/+500              | IP65                   | 12                             | 20000                     | +0/+10                          | +0/+50                      |
| 1000-12 | +0/+1000             | IP65                   | 12                             | 20000                     | +0/+10                          | +0/+50                      |
| 2000-12 | +0/+2000             | IP65                   | 12                             | 20000                     | +0/+10                          | +0/+50                      |
| 4000-12 | +0/+4000             | IP65                   | 12                             | 20000                     | +0/+10                          | +0/+50                      |

### Wiring Diagram

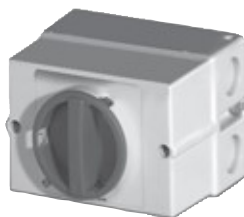


# Accessories

## Isolator ESH 21



Isolator ESH 21 (≤ 3kW)



Isolator ESH 21 (≥ 5.5kW)

### Design

Beautifully shaped, shock-resistant plastic casing. Protection class IP44/IP65, for surface mounting, switching symbols 0 and I. The isolator is fitted with connection terminals that are very accessible and has a connection diagram glued in the casing.

The **ESH21 up to 3kW** is designed to IP44. It is equipped with an integrated locking mechanism.

The **ESH21 up to 5.5kW** is designed to IP65. It is equipped with a coupling cover and an integrated locking mechanism. A padlock can in some cases be fitted to the rotary switch.

### Function

The isolator disconnects the fan safely from the mains in the event of cleaning, maintenance or repair work on site and thus avoids accidents due to uncontrolled activation of the unit by third parties. It is no main switch or emergency switch.

**All of the classified isolators are fitted with potential-free contacts (1 closer and 1 opener).**

The isolators for motors with a built-in thermal contact have on principle three supplementary auxiliary contacts, so that the pre-switched control device does not drop out during cleaning or servicing work due to motor.

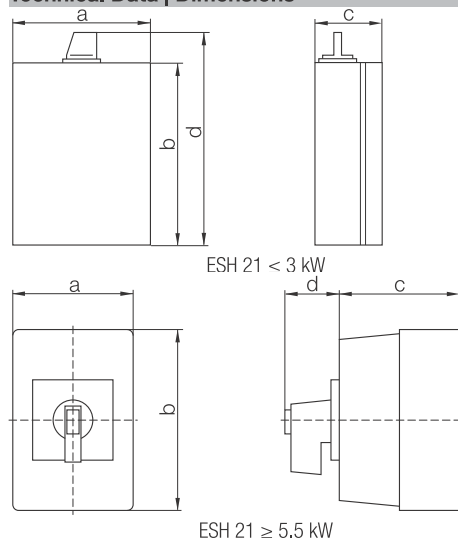
Caution about combination with frequency inverter!

Special EMC-action can be necessary, furthermore do not switch during operation, overvoltages can destroy the switch and the motor-winding.

The isolators are grouped according to motor rated power. All important characteristic data are evident from the model designation.

E.g.: **ESH 21-0030-65** = 3kW switch - 6 main contacts - 5 auxiliary contacts

## Technical Data | Dimensions



| ESH 21- | Permissible motor power kW | a mm | b mm | c mm | d   |
|---------|----------------------------|------|------|------|-----|
| 0030-22 | 3                          | 73   | 108  | 45   |     |
| 0030-25 | 3                          | 73   | 108  | 45   |     |
| 0030-32 | 3                          | 73   | 108  | 45   |     |
| 0030-35 | 3                          | 73   | 108  | 45   |     |
| 0030-62 | 3                          | 73   | 108  | 45   |     |
| 0030-65 | 3                          | 73   | 108  | 45   |     |
| 0055-32 | 5.5                        | 85   | 120  | 80   | 110 |
| 0055-65 | 5.5                        | 125  | 125  | 126  | 157 |
| 0075-32 | 7.5                        | 85   | 120  | 80   | 110 |
| 0075-35 | 7.5                        | 85   | 120  | 80   | 110 |
| 0075-62 | 7.5                        | 100  | 190  | 91   | 133 |
| 0075-95 | 7.5                        | 125  | 125  | 126  | 157 |
| 0110-32 | 11                         | 85   | 160  | 80   | 110 |
| 0110-62 | 11                         | 100  | 190  | 91   | 133 |
| 0150-32 | 15                         | 100  | 190  | 91   | 120 |
| 0150-62 | 15                         | 145  | 250  | 100  | 145 |
| 0220-32 | 22                         | 100  | 190  | 91   | 120 |
| 0220-62 | 22                         | 145  | 250  | 100  | 145 |
| 0300-32 | 30                         | 145  | 250  | 100  | 140 |
| 0300-62 | 30                         | 200  | 300  | 172  | 200 |
| 0370-32 | 37                         | 145  | 250  | 100  | 140 |
| 0370-62 | 37                         | 200  | 300  | 172  | 200 |
| 0450-32 | 45                         | 200  | 300  | 172  | 200 |
| 0450-62 | 45                         | 300  | 300  | 172  | 210 |
| 0550-32 | 55                         | 200  | 300  | 172  | 200 |
| 0550-62 | 55                         | 300  | 300  | 172  | 210 |
| 0900-32 | 90                         | 280  | 400  | 180  | 210 |
| 0900-62 | 90                         | 280  | 280  | 260  | 327 |

# Accessories

## Isolator ESH 22

### Design

Shock-resistant metal casing, black switch with symbols 0 and I. Protection class IP65 or IP54, for surface mounting (see determination in the tabular).

The isolator is fitted with connection terminals that are very accessible and has a connection diagram glued in the casing.

All isolators are equipped with a coupling cover and an integrated locking mechanism. In some cases a padlock can be fitted to the rotary switch.

### Function

The isolator disconnects the fan safely from the mains in the event of cleaning, maintenance or repair work on site and thus avoids accidents due to uncontrolled activation of the unit by third parties. It is no main switch or emergency switch.

**All of the classified isolators are fitted with potential-free contacts (1 closer and 1 opener).**

The isolators for motors with a built-in thermal contact have on principle three supplementary auxiliary contacts, so that the preswitched control device does not drop out during cleaning or servicing work due to motor.

### Use

The isolator ESH22 with metal casing is necessary, if screened components must be used. (e.g. frequency inverters or control engineering devices are used featuring electronic components).

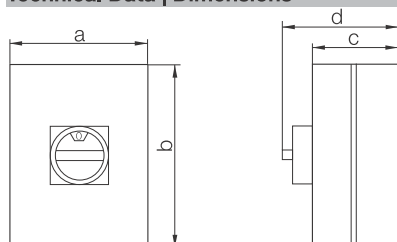
### Attention!

Do not switch during operation, overvoltages can destroy the switch and the motor winding!

The isolators are grouped according to motor rated power. All important characteristic data are evident from the model designation.

E.g.: **ESH 22-0075-65** = 7.5kW switch, 6 main contacts, 5 auxiliary contacts.

## Technical Data | Dimensions



| ESH 22- | Permissible motor power kW | a mm | b mm | c mm | d mm | Cable lead-through (top) | Cable lead-through (bottom) |
|---------|----------------------------|------|------|------|------|--------------------------|-----------------------------|
| 0075-32 | 7.5                        | 122  | 120  | 120  | 120  | 2xPG21                   | 2xPG21                      |
| 0110-32 | 11                         | 122  | 120  | 120  | 120  | 2xPG21                   | 2xPG21                      |
| 0150-32 | 15                         | 180  | 180  | 130  | 130  | 2xPG21                   | 2xPG21                      |
| 0220-32 | 22                         | 180  | 180  | 130  | 130  | 2xPG21                   | 2xPG21                      |
| 0300-32 | 30                         | 230  | 280  | 150  | 150  | 2xPG29/1xPG16            | 2xPG29                      |
| 0370-32 | 37                         | 230  | 280  | 150  | 150  | 2xPG36/1xPG16            | 2xPG36                      |
| 0075-62 | 7.5                        | 180  | 180  | 130  | 130  | 1xPG29/1xPG16            | 2xPG29                      |
| 0110-62 | 11                         | 180  | 180  | 130  | 130  | 1xPG36/1xPG16            | 2xPG36                      |
| 0150-62 | 15                         | 230  | 280  | 150  | 150  | 2xPG36/1xPG16            | 2xPG36                      |
| 0220-62 | 22                         | 230  | 280  | 150  | 150  | 2xPG36/1xPG16            | 2xPG36                      |
| 0300-62 | 30                         | 230  | 280  | 150  | 150  | 2xPG36/1xPG16            | 2xPG36                      |
| 0370-62 | 37                         | 230  | 280  | 150  | 150  | 2xPG36/1xPG16            | 2xPG36                      |
| 0055-35 | 5.5                        | 180  | 180  | 100  | 100  | 2xPG21                   | 2xPG21                      |
| 0075-65 | 7.5                        | 116  | 95   | 80   | 80   | 2xPG16                   | 2xPG16                      |
| 0075-95 | 7.5                        | 116  | 95   | 80   | 80   | 2xPG16                   | 2xPG16                      |



# Notes

## Quality management system

### DIN EN ISO 9001

Nicotra Gebhardt quality is the result of a continuous company policy intended to guarantee that our product properties and features are clearly superior to comparable products.

This already established company maxim led in April 1985 to the auditing and certification of the existing quality management system. In the following years it was updated to match the changing international and European standards. Modern production processes, monitored by our quality management system, guarantee a high repeat accuracy in production.

This ongoing high standard of quality permits the establishing of the performance data in classes of accuracy in accordance with DIN 24166.

The narrow tolerances ensure a high level of data reliability for our products.

## Machine Safety

The fans contained in this catalogue are not machines in the sense of the EC Machine Directive. They are delivered with a manufacturer "Declaration of incorporation".

The assessment of the dangers associated with the fan and necessary safety measures are based on the VDMA Unit sheet 24167 : Fans; Safety requirements.

The operating instructions give which safety measures are still necessary on assembly to ensure that the fans comply with the Machine Directive 2006/42/EC.

## Catalogue data

We reserve the right to change any measurements and technical data in this catalogue in accordance with further development of our products. All information valid at the time of printing.

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