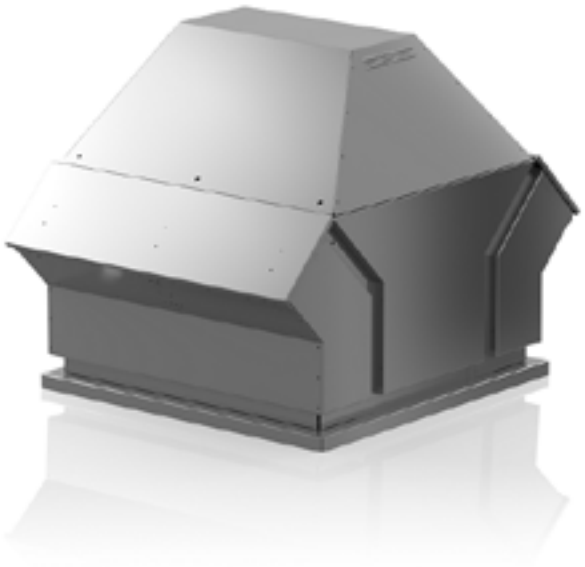
# MIRUVENT®

Power roof ventilator with 13 different airflow variants up to 8.5 m³/s (30,600 m³/h)



## General

MIRUVENT is a power roof ventilator with a casing made of corrosion-resistant aluminium.

The power roof ventilator is available in 5 physical sizes with 13 different airflow variants up to 8.5 m³/s (30,600 m³/h).

## Quick facts

- Several sizes and variants with fan speed control and EC motors offer energy efficient operation
- The vertical air stream prevents fouling of the roof
- Intelligent control of up to three power roof ventilators from GOLD
- Stand-alone fan control as an option

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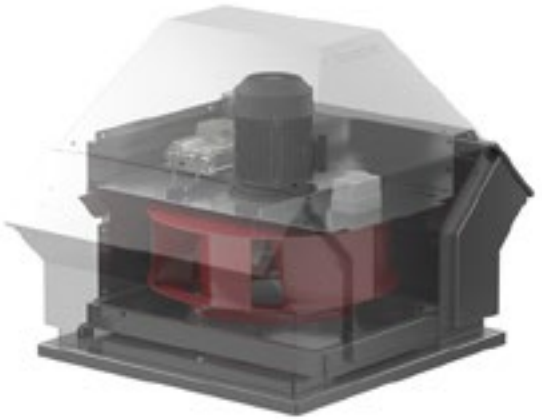
# The power roof ventilator with smart solutions and intelligent control options!

- **Several sizes and variants with fan speed control and EC motors offer energy efficient operation**
- **The vertical air stream prevents fouling of the roof**
- **Intelligent control of up to three power roof ventilators from GOLD**
- **Stand-alone fan control as an option**



Swegon's new MIRUVENT power roof ventilator is available in several different sizes and with several different fan impeller and motor variants. The power roof ventilator can be selected for the best possible operating economy.

The outlet openings on both sides of the power roof ventilator are covered with self opening and self closing airstream operated dampers. This smart solution functions both as a weather guard and counteracts heat losses when the fan is stationary. The turbulence-free, vertical airflow protects the roof from fouling.

All types of EC motors/motor control are located outside the airflow and are designed for exhaust air temperatures up to 60°C.

The casing is made of corrosion-resistant aluminium conforming to Environmental class C4.

Roof ducts and connection spigots are available as accessories.

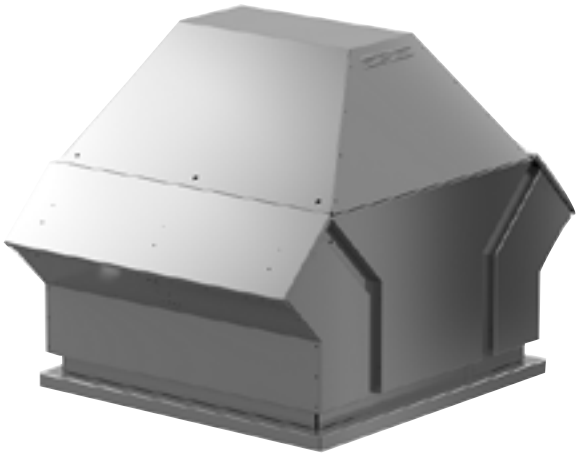
The power roof ventilator's cover and fan impeller with motor are easy to dismantle for inspection and maintenance. Power roof ventilators in sizes 25-45 is hinged for simple access (requires accessory roof penetration collar TBFT or connecting sleeve TBFS).

# Description of the power roof ventilator

## Application area

MIRUVENT is an extract air fan, designed for use in most extract air systems in comfort ventilation systems, in which the air has a low content of impurities.

The power roof ventilator should preferably be mounted on an LBFT roof penetration collar. This provides a fire-resistant and sound-absorbent extraction passage through the roof and a tight connection to the extract air duct. As an alternative the power roof ventilator can be mounted on an existing roof penetration collar across a TBFS connection fitting.



## Design

Closed, discretely designed casing made of corrosion-resistant aluminium, Environment class C4.

The load-bearing design is made of galvanised sheet steel for mounting a connection fitting, with wide overhang for accommodating the connection fitting insulation.

Radial impeller with backwards inclined blades.

Outlet openings covered with self-opening and self-closing airstream-operated dampers as protection against bad weather when the fan is idle. The airstream-operated dampers also counteract heat losses.

Upward air stream with a long throw length protects the roof from fouling.

Lifting eye bolts are supplied with the ventilator.

All the fans are as standard equipped with a safety isolating switch, located within the fan casing. Electric power connection is made to the safety isolating switch.

The electric equipment conforms to the provisions of the EMC Directive and is tested according to EN 60204-1, EN 61800-3, EN 61000-3-12 and EN 61000-3-2.

MIRUVENT satisfies the efficiency requirements according to provision no. EU 1253/2014 ErP 2018 for ventilation units.

## Motors

Highly efficient EC-motors with integrated motor control in efficiency class IE4.

Min. exhaust air temperature -20°C, max. exhaust air temperature +60°C when operating continuously.

Max. ambient temperature +40°C.

## Sizes

The power roof ventilator is available in 5 physical sizes with 13 different airflow variants up to 30,600 m3/h.

## Pressure/flow measurements

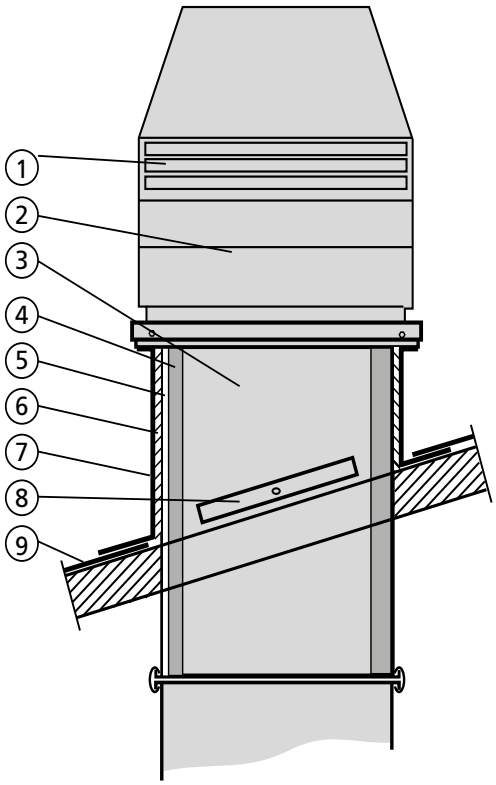
The power roof ventilator is equipped with external tappings for pressure/airflow measurement with an inaccuracy of ±5%.

# Description of the power roof ventilator

## Installation examples

1. Outlet openings covered with self-opening and self-closing airstream-operated dampers (standard) as protection against bad weather when the fan is idle. The airstream-operated dampers also counteract cold down draughts and heat loss.
2. MIRUVENT power roof ventilator
3. TBFT roof penetration collar including TBFS connection fitting
4. 50 mm thick insulation conforming to the provisions of Fire-resistance Class EI 30 alt. EI 60, internally lined with perforated sheet steel.
5. Cable protection
6. Structural panel (not supplied by Swegon).
7. Roofing felt, sheet sheel or similar weatherproof roofing material (not supplied by Swegon).
8. Pivotable mounting brackets (supplied as separate items).
9. Existing roofing (not supplied by Swegon)

The TBFT roof penetration collar is equipped with slip-clamp profiled sections for connection of a rectangular duct.





Swegon reserves the right to alter specifications.

# Description of fan control

## External equipment
MIRUVENT can be equipped with external control equipment for starting and stopping the fan.

## Variable speed control
MIRUVENT has integrated fan motor control that can be controlled with 0-10 V, also via communications (Modbus RTU).

## Fan control, TBMZ
Fan control, with integrated pressure sensor, is designed for installation close to the power roof ventilator. Enclosure class IP 54, min. ambient temperature is -30°C, max. ambient temperature is +50°C.

Fan control's supply voltage is 230 VAC. External component equipment such as pressure hoses and temperature sensors are connected to the fan control.

Communications with an external supervisory system can take place via Modbus RTU.

*Functionality:*
The fan control measures the differential pressure and regulates the power roof ventilator via a 0-10 V signal. Outdoor temperature compensation of the setpoint occurs via the supplied outdoor temperature sensor which is connected tot he fan control.

Fan control has a clock module for setting an alternative pressure setpoint. The date and week schedule can be set. Minimum schedule time is one hour and is selected graphically in a weekly table in the menu system.

There is an input for overtime operations.

Alarms in plain text are shown on the fan control's display. Common alarms can be forwarded. The ten most recent alarms are saved in an alarm log.

The operating status of the power roof ventilator is shown on the display screen.

All settings/readings can easily be read on the front-mounted display.

*Fan control TBMZ with control panel and display.*


Swegon reserves the right to alter specifications.

# Power roof ventilator MIRUVENT – Air handling unit GOLD

## Intelligent control via GOLD

The control equipment in the GOLD unit is fully pre-programmed to control the MIRUVENT power roof ventilator. Communications occur via the bus cable from GOLD to MIRUVENT. It is possible to connect up to three power roof ventilators MIRUVENT to one GOLD air handling unit.

*Functionality:*
The following functions fare possible to control/monitor via the GOLD air handling unit's hand-held terminal:

Possibility to set the time and schedule from the GOLD air handling unit's hand-held terminal. Alternatively the power roof ventilator/power roof ventilators can be run concurrently with the GOLD air handling unit, stop – low speed – high speed.

The fan can be regulated for constant airflow or constant negative pressure in the duct system. Requires the accessory pressure sensor TBLZ-23-aa. For maintaining constant pressure, it is also possible to supplement with additional pressure sensors for reading the airflow.

Outdoor temperature compensation of flow/pressure setpoint is possible. Setting is made via four breakpoints. Requires the accessory temperature sensor TBLZ-1-24-3.

On an increase/decrease of the airflow through the power roof ventilators, the extract airflow or supply airflow is compensated by a corresponding volume of air in the GOLD unit. In this way the total extract airflow is kept in balance with the supply airflow of the GOLD unit.

There is a possibility, via GOLD air handling unit's hand-held terminal, to set the power roof ventilator's flow/pressure setpoint and energy reading and reading of the current flow/pressure. Alarms are shown in plain text.

Connection via GOLD gives the possibility of communications with a main control system via BACNet, Modbus, Exoline and LON Works.

Possibility of setting and reading the power roof ventilator's parameters on the GOLD air handling unit's integrated web page.

# Description of functions MIRUVENT – GOLD

Power roof ventilator MIRUVENT can be controlled by the control equipment in a GOLD air handling unit. The control equipment of the GOLD unit is fully pre-programmed for controlling the MIRUVENT. Communications occur via bus cable.

Below is a description of what functions are possible to act upon/obtain information about, via the GOLD unit hand-held terminal or via communications with a main control system.

## Control

Up to three power roof ventilators can be connected to one GOLD air handling unit by means of bus communications. Each power roof ventilator obtains its own menu group in the hand-held micro terminal of the GOLD unit.

It is possible in the hand-held terminal to select whether the power roof ventilator should be controlled in parallel with the GOLD unit, and whether it should follow the low-speed/high-speed operating modes of the air handling unit.

A weekly clock with four time channels for each power roof ventilator give the possibility of separate control independent of the GOLD air handling unit's operation.

All the time channels can be set separately for each connected power roof ventilator via the GOLD unit hand-held terminal.

There is also provision for an external control system via terminal blocks or timer (accessory mechanical timer ELQZ-1-406-1 or electronic timer TBLZ-2-47). Requires the accessory IQlogic+ module TBIQ-3-2-aa.

## Flow/pressure regulation

### Flow regulation

Flow regulation involves operating the power roof ventilator to keep the preset airflow constant. The power roof ventilator fan speed is automatically regulated to provide correct airflow.

The flow is measured by an external pressure sensor that is installed in or by the power roof ventilator. Measurement tappings are also provided for airflow measurement. The sensor must be connected to the GOLD air handling unit's bus communications. The required setpoint (separate for low speed and high speed) is set on the GOLD air-handling unit's hand-held terminal.

### Pressure regulation

The airflow automatically varies to provide constant pressure in the ducting. This type of control is also called VAV regulation (Variable Air Volume).

Pressure regulation is used when e.g. damper operations increase the air volume in sections of the ventilation system.

The duct pressure is measured by an external in-duct pressure sensor which is connected to the GOLD air handling unit's bus communications. The set point required (separate for low speed and high speed) is preset in Pa.

The function can be limited so that the fan speed will not exceed the preset max. values.

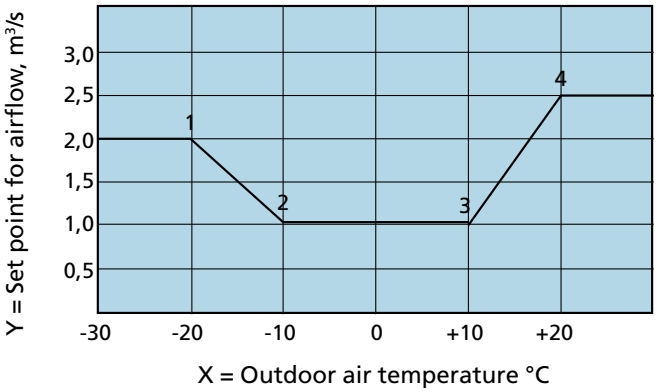
# Description of functions MIRUVENT – GOLD

## Outdoor air compensation

Outdoor air compensation of the airflow can be activated if you want to change the airflow for specific outdoor air temperatures. An individually adjusted curve regulates the ratio between the airflow and the outdoor air temperature. The curve has four adjustable breakpoints.

If the function is selected solely for low speed or high speed operation, the curve will regulate only one of these. The airflow for the operating case that has not been selected will then be according to the preset set point for airflow/duct pressure.

In the flow regulation mode, the current set point for airflow is changed. When pressure regulation is selected, the current set point for pressure is changed.




*Example:*

*Flow regulated power roof ventilator. The same principle can be applied to a pressure regulated power roof ventilator, however this will cause a reduction in pressure in Pa.*

*If the outdoor air temperature is under -20 °C (X1), the flow set point will be a constant 2.0 m³/s (Y1).*

*If the outdoor air temperature is between -20 °C (X1) and -10 °C (X2), the airflow will decrease from 2.0 m³/s (Y1) to 1.0 m³/s (Y2) as shown in the curve.*

*If the outdoor air temperature is between -10 °C (X2) and 10 °C (X3), the flow set point will be a constant 1.0 m³/s (Y2 and Y3).*

*If the outdoor air temperature is between 10 °C (X3) and 20 °C (X4), the airflow will increase from 1.0 m³/s (Y3) to 2.5 m³/s (Y4) as shown in the curve.*

*If the outdoor air temperature is over 20 °C (X4), the flow set point will be a constant 2.5 m³/s.*

## Balanced ventilation

The balanced ventilation function can be used if the power roof ventilators are used for variable flow. It is then possible to select which power roof ventilator(s) is/are to be included in the function.

In the case of balanced extract air, all the air flows of the activated power roof ventilators are added together. The extract air flow in the GOLD unit is decreased by the corresponding volume. In this way the supply air flow will be the same as the total extract air flow and balanced ventilation will be achieved inside the building.

In the case of balanced supply air, all the air flows of the activated power roof ventilators are added together. The supply air flow in the GOLD unit is increased by the corresponding volume. In this way the supply air flow will be the same as the total extract air flow and balanced ventilation will be achieved inside the building.

## Status

The following values can be read in the GOLD unit hand-held micro terminal for each power roof ventilator:

Air flow*. Duct pressure*. Current set point for flow/pressure*. SFP. Power. Power consumption in kWh. Operating mode. Active alarm and alarm history.

**Shown depending on which sensor is connected.*

## Base setting

The fan size can be set. Flow regulation or pressure regulation can be selected.

When pressure regulation and air flow are activated, the power roof ventilator is controlled by pressure regulation and the air flow can be read at the same time.

## Communications

This also offers you the opportunity of communications with a main control system via Modbus TCP, Modbus RTU, Exoline or BACnet IP for all the connected power roof ventilators.

You can then read and set the values for pressure and flow. All of the time channels can be set for each power roof ventilator. Provision for reading energy and common alarms.

## Web page

There is an icon on the GOLD unit's built-in web page for navigating to the MIRUVENT power roof ventilators. The required power roof ventilator (1-3) can be selected under this icon for entering and reading the settings.

You can then read and set the values for pressure and flow. All of the time channels can be set for each power roof ventilator. Provision for reading energy and common alarms.

You also have the capability via the web page to parallel control with GOLD, stop, set to unit for low speed, high speed and manually reset tripped alarms.

# Sizing

## Additional data

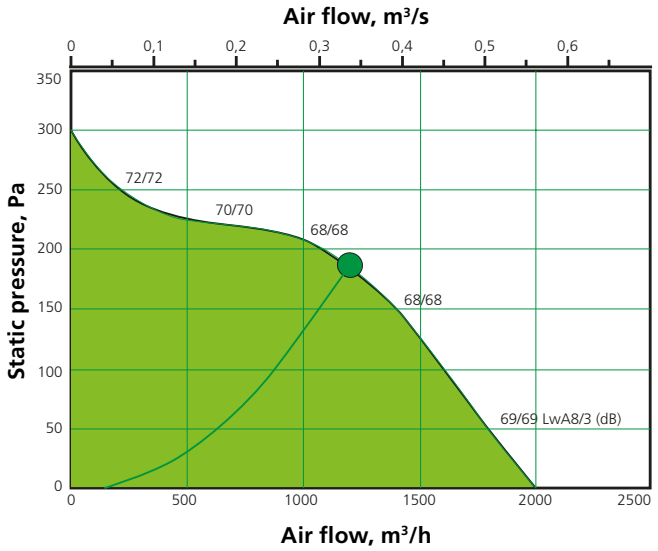
For additional data, please contact your Swegon representative.

## Min- och maxflöden

The specified flows refer to the theorethical limits of the fan and what can be set in the GOLD hand-held micro terminal. The practical flow limits are determined by the external pressure drop.

| MIRUVENT | Min. airflow (on airflow regulation) | | Max. airflow | |
|---|---|---|---|---|
| | m³/h | m³/s | m³/h | m³/s |
| -3-25-28-1-1 | 150 | 0,042 | 2000 | 0,56 |
| -3-25-31-1-1 | 200 | 0,056 | 2900 | 0,81 |
| -3-35-35-1-1 | 300 | 0,083 | 4000 | 1,11 |
| -3-35-40-1-1 | 400 | 0,11 | 5900 | 1,64 |
| -3-35-45-1-1 | 500 | 0,14 | 7500 | 2,08 |
| -3-45-50-1-1 | 500 | 0,14 | 9800 | 2,72 |
| -3-45-56-1-1 | 500 | 0,14 | 10400 | 2,89 |
| -3-45-56-2-1 | 500 | 0,14 | 13600 | 3,78 |
| -3-56-63-1-1 | 500 | 0,14 | 13600 | 3,78 |
| -3-56-71-1-2 | 600 | 0,17 | 18300 | 5,08 |
| -3-71-80-1-2 | 800 | 0,22 | 24300 | 6,75 |
| -3-71-80-2-2 | 800 | 0,22 | 27200 | 7,56 |
| -3-71-90-1-2 | 1000 | 0,28 | 33000 | 9,17 |

## MIRUVENT-3-25-28-1-1



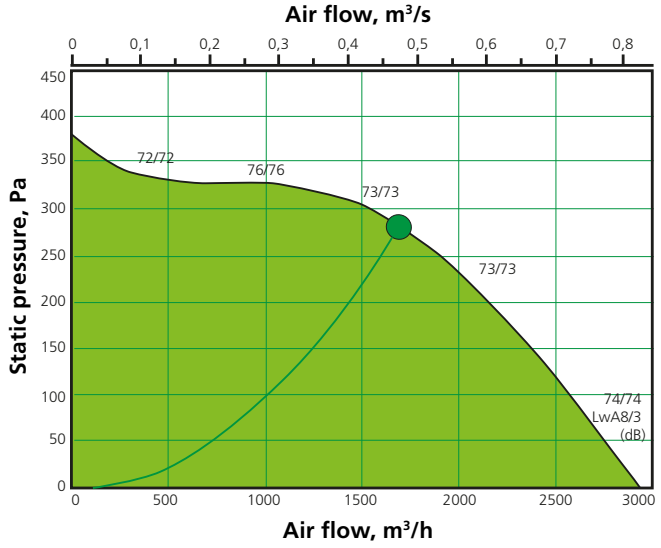

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 0,37 | 1,4 | 1 x 230 | 10 |

* Delayed

## MIRUVENT-3-25-31-1-1



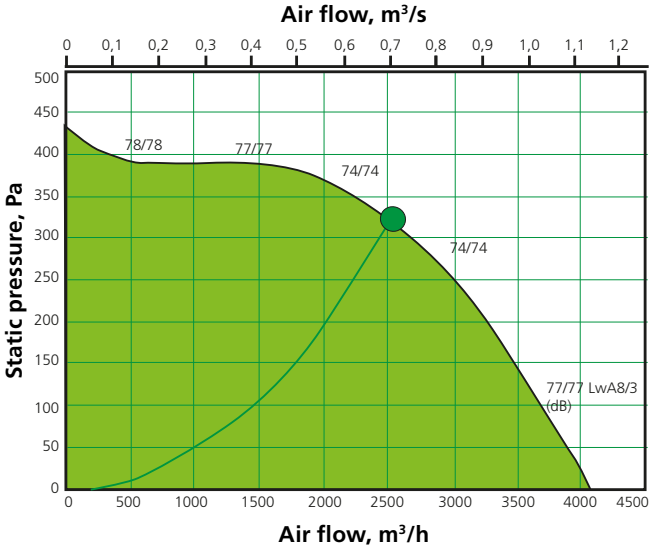

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 0.37 | 1.4 | 1 x 230 | 10 |

* Delayed

## MIRUVENT-3-35-35-1-1




*Optimal duty point*

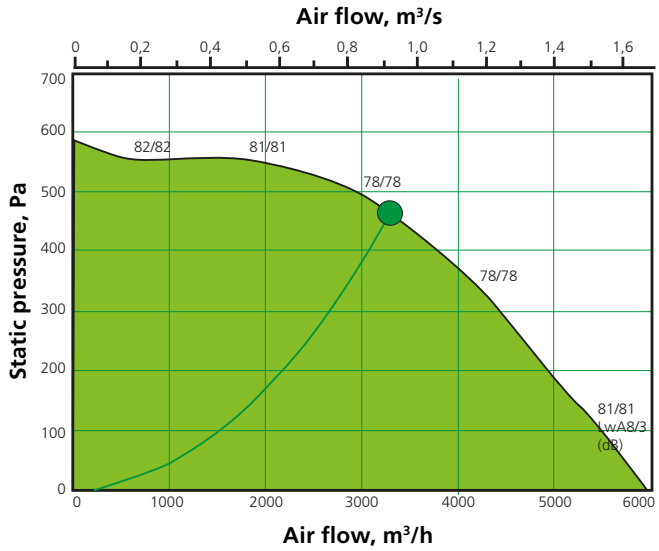
### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 0.37 | 1.4 | 1 x 230 | 10 |

* Delayed

# Sizing

## MIRUVENT-3-35-40-1-1



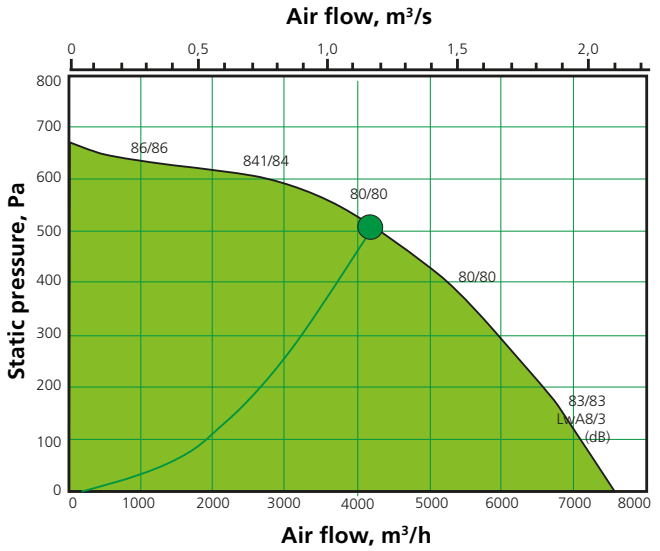

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 0.75 | 2.8 | 1 x 230 | 10 |

* Delayed

## MIRUVENT-3-35-45-1-1



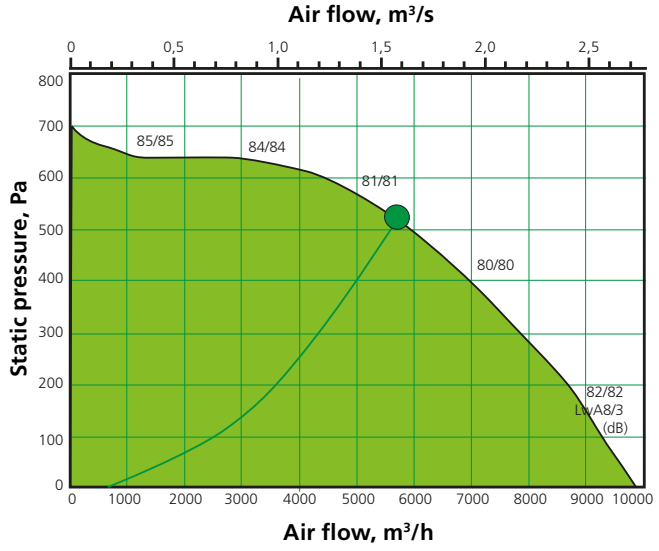

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 1.1 | 4.4 | 1 x 230 | 10 |

* Delayed

## MIRUVENT-3-45-50-1-1



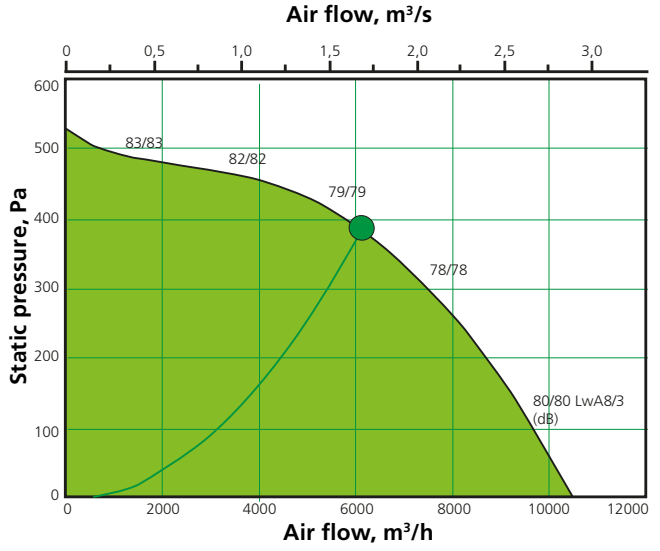

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 1.5 | 3.4 | 3 x 400 | 10 |

* Delayed

## MIRUVENT-3-45-56-1-1




*Optimal duty point*

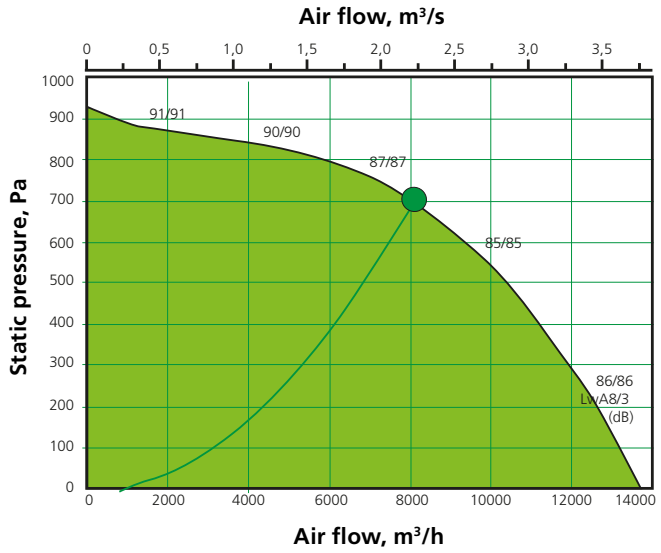
### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 1.5 | 3.2 | 3 x 400 | 10 |

* Delayed

# Sizing

## MIRUVENT-3-45-56-2-1



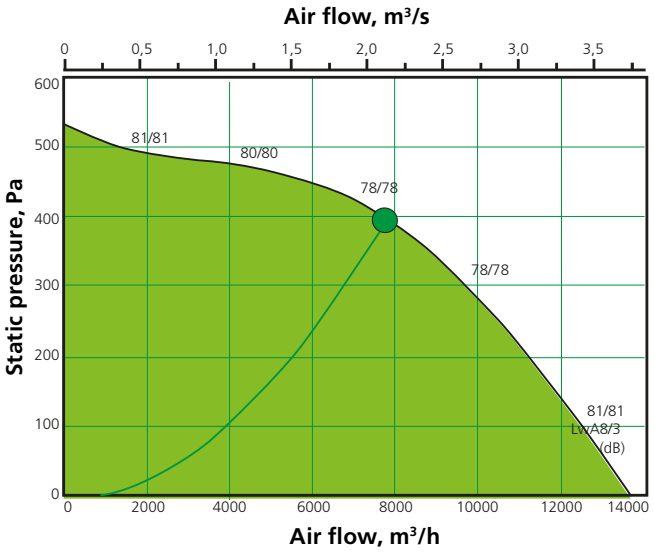

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 3 | 6.5 | 3 x 400 | 10 |

* Delayed

## MIRUVENT-3-56-63-1-1



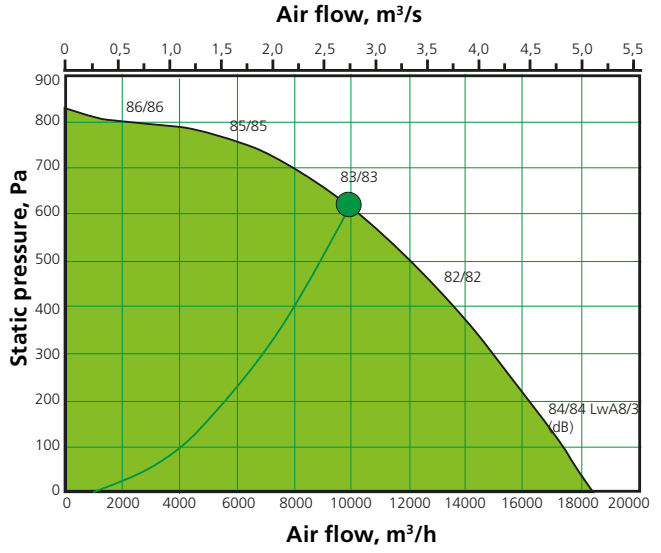

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 1.5 | 3.2 | 3 x 400 | 10 |

* Delayed

## MIRUVENT-3-56-71-1-2



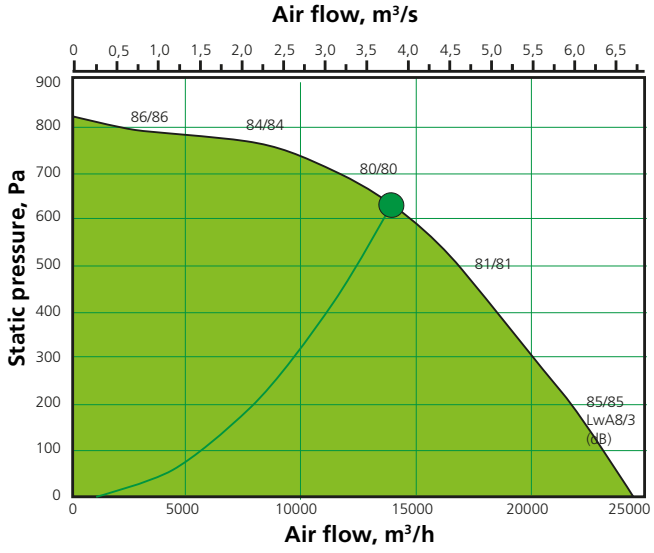

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 3 | 6.4 | 3 x 400 | 10 |

* Delayed

## MIRUVENT-3-71-80-1-2




*Optimal duty point*

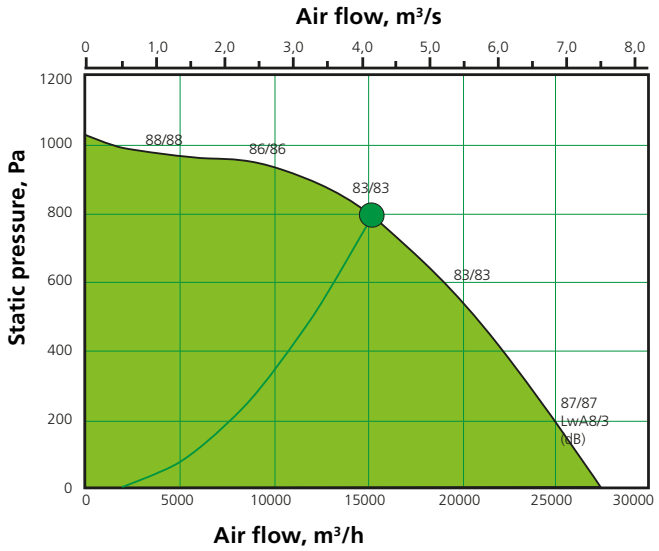
### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 4 | 8.5 | 3 x 400 | 10 |

* Delayed

# Sizing

## MIRUVENT-3-71-80-2-2



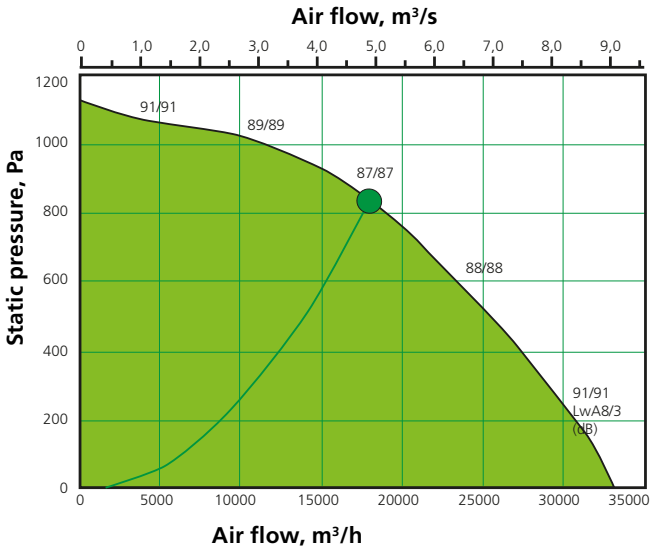

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 5.5 | 11.5 | 3 x 400 | 16 |

* Delayed

## MIRUVENT-3-71-90-1-2



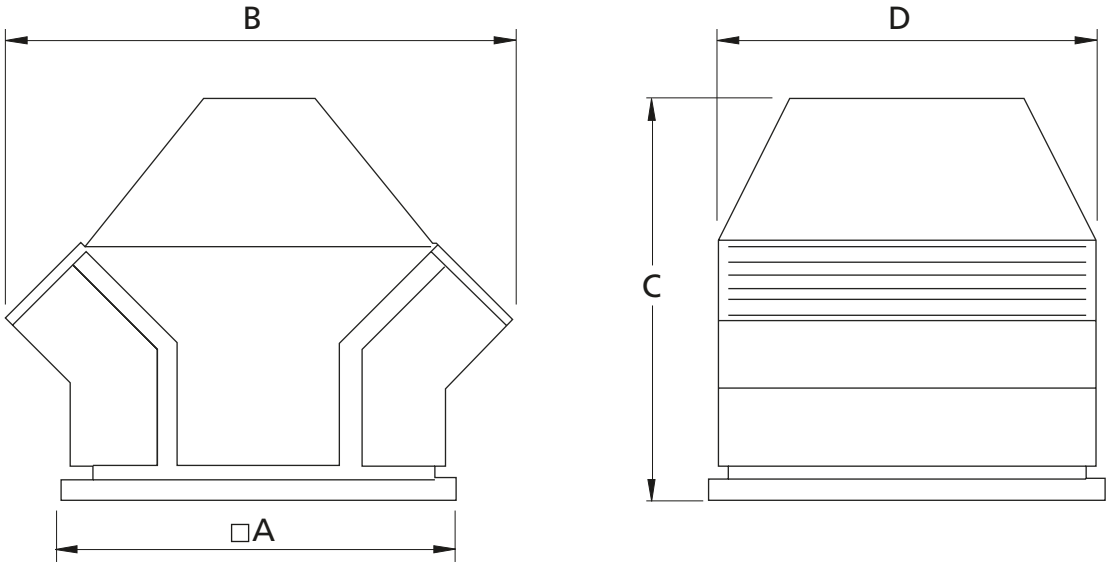

*Optimal duty point*

### Motor data

| Rated output (kW) | Rated current, motor (A) | Rated voltage V | Rec. fuse* (A) |
|---|---|---|---|
| 7.5 | 16.4 | 3 x 400 | 16 |

* Delayed

# Dimensions and weight




| MIRU | A | B | C | D | kg |
|---|---|---|---|---|---|
| **-3-25-28-1-1** | 440 | 600 | 543 | 440 | 26 |
| **-3-25-31-1-1** | 440 | 600 | 543 | 440 | 26 |
| **-3-35-35-1-1** | 600 | 770 | 635 | 570 | 37 |
| **-3-35-40-1-1** | 600 | 770 | 635 | 570 | 38 |
| **-3-35-45-1-1** | 600 | 770 | 635 | 570 | 39 |
| **-3-45-50-1-1** | 750 | 985 | 775 | 730 | 50 |
| **-3-45-56-1-1** | 750 | 985 | 775 | 730 | 61 |
| **-3-45-56-2-1** | 750 | 985 | 775 | 730 | 61 |
| **-3-56-63-1-1** | 940 | 1125 | 946 | 920 | 120 |
| **-3-56-71-1-2** | 940 | 1125 | 946 | 920 | 143 |
| **-3-71-80-1-2** | 1270 | 1625 | 1195 | 1230 | 260 |
| **-3-71-80-2-2** | 1270 | 1625 | 1195 | 1230 | 260 |
| **-3-71-90-1-2** | 1270 | 1625 | 1195 | 1230 | 312 |

# Accessories

## TBFT roof penetration collar and TBFS connection fitting

### Application area

The TBFT roof penetration duct can be used as a ventilation chimney for the MIRUVENT power roof ventilator.

It is sound-attenuating and therefore the level of sound generated by the fan is low.

The TBFS connection fitting is included if an order is placed for a roof penetration collar, but it is also available as a separate part for the replacement of existing roof penetration collars. The connection fitting is hinged for simple access for inspection and servicing.

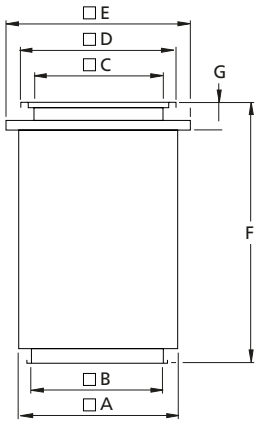
### Design

The roof penetration collar consists of a galvanized sheet-steel duct, internally insulated with 50 mm thick mineral wool slabs and lined with perforated sheet steel. The insulation meets the provisions of Fire-resistance Class EI 30 or EI 60.

The duct penetration collar is equipped with pivotal mounting brackets on two sides. The angle brackets can be positioned to suit the slope of the roof.

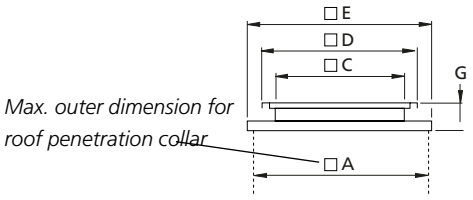
The roof penetration collar is equipped with a cable conduit.

### TBFT roof penetration collar




| Size | A | B | C | D | E | F | G | kg |
|---|---|---|---|---|---|---|---|---|
| **25** | 505 | 400 | 360 | 433 | 600/608 | 1035 | 120 | 29 |
| **35** | 605 | 500 | 490 | 593 | 700/708 | 1035 | 120 | 35 |
| **45** | 805 | 700 | 640 | 743 | 900/908 | 1035 | 120 | 46 |
| **56** | 905 | 800 | 830 | 933 | 1000 | 1035 | 120 | 52 |
| **71** | 1105 | 1000 | 1000 | 1243 | 1200 | 1035 | 120 | 64 |

### TBFS connection fitting




| Size | A | C | D | E | G | kg |
|---|---|---|---|---|---|---|
| **25** | 495 | 360 | 433 | 500 | 120 | 5 |
| **35** | 695 | 490 | 593 | 700 | 120 | 6 |
| **45** | 895 | 640 | 743 | 900 | 120 | 8 |
| **56** | 990 | 830 | 933 | 1000 | 120 | 10 |
| **71** | 1190 | 1000 | 1243 | 1280 | 120 | 12 |

# Specification

**MIRUVENT power roof ventilator** **MIRU-3-aa-bb-c-d**

Size 25, 35, 45, 56, 71

| Fan impeller size | For size | |
|---|---|---|
| 280 mm | 25 | = 28 |
| 310 mm | 25 | = 31 |
| 350 mm | 35 | = 35 |
| 400 mm | 35 | = 40 |
| 450 mm | 35 | = 45 |
| 500 mm | 45 | = 50 |
| 560 mm | 45 | = 56 |
| 630 mm | 56 | = 63 |
| 710 mm | 56 | = 71 |
| 800 mm | 71 | = 80 |
| 900 mm | 71 | = 90 |

Motor
Motor option 1 = 1
Motor option 1 = 2

Fan impeller
Type 3S = 1
Type FS = 2

Possible combinations:
*MIRU-3-25-28-1-1, MIRU-3-25-31-1-1, MIRU-3-35-35-1-1, MIRU-3-35-40-1-1, MIRU-3-35-45-1-1, MIRU-3-45-50-1-1, MIRU-3-45-56-1-1, MIRU-3-45-56-2-1, MIRU-3-56-63-1-1, MIRU-3-56-71-1-2, MIRU-3-71-80-1-2, MIRU-3-71-80-2-2, MIRU-3-71-90-1-2*

**Roof penetration collar for power roof ventilator** **TBFT-1-aa-bb**

Sizes 25, 35, 45, 56, 71

Fire-resistance class EI30 = 30
EI60 = 60

**Connecting sleeve** **TBFS-1-aa**

Sizes 25, 35, 45, 56, 71

**Pressure sensor** **TBLZ-1-23-aa**
Contains pressure sensor and connection cable.

Design: 1 m = 01
3 m = 03
5 m = 05
10 m = 10
15 m = 15

**Temperature sensor** **TBLZ-1-24-3**
For outdoor installation, degree of protection IP54.

**Timer** **ELQZ-1-406-1**
0-2 hour prolonged operation, for surface mounting.

**Timer, electronic** **TBLZ-2-47**
0-6 hour prolonged operation, for flush or surface mounting.

**IQlogic⁺ module** **TBIQ-3-2-aa**
Functional module and connection cable

Length, connection cable: 0.45 m = 00
1 m = 01
3 m = 03
5 m =05
10 m = 10
15 m = 15

**Connection kit for GOLD** **TBLZ-1-64**
Adapter modules/terminal blocks. Incl. cable 0.25 metres.

**Enclosure EK54** **TBLZ-1-73-1**
To connection kit TBLZ-1-64.

**Addressing card MIRUVENT** **TBLZ-1-84**
For installing in power roof ventilator MIRUVENT 2 and 3.

**Auxiliary relay MIRUVENT** **TBLZ-1-85**
Two changeover contacts. Supply voltage 10VDC.

**Pressure regulator MIRU** **TBMZ-2-1**
Fan control including pressure sensor and outdoor temperature sensor.
Degree of protection IP54.
Power supply: 230 V AC.