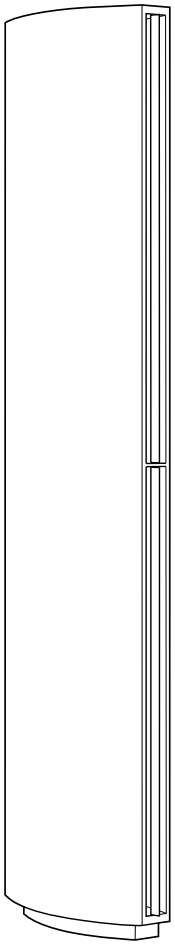
Original instructions

# Scand




EN .... 10

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EN The introduction pages consist mainly of pictures. For translation of the English texts used, see the respective language pages.

SE Introduktionssidorna består huvudsakligen av bilder. För översättning av de engelska texter som används, se respektive språksidor.

NO Introduksjonssidene består hovedsakelig av bilder. For oversettelse av de engelske tekstene, se de respektive språksidene

FR Les pages de présentation contiennent principalement des images. Consulter la page correspondant à la langue souhaitée.

DE Die Einleitungsseiten bestehen hauptsächlich aus Bildern. Für die Übersetzung der verwendeten Texte in englischer Sprache, siehe die entsprechenden Sprachseiten.

NL De inleidende pagina's bevatten hoofdzakelijk afbeeldingen. Voor een vertaling van de gebruikte Engelse teksten, zie de pagina's van de resp. taal.

ES Las páginas introductorias contienen básicamente imágenes. Consulte la traducción de los textos en inglés que las acompañan en las páginas del idioma correspondiente.

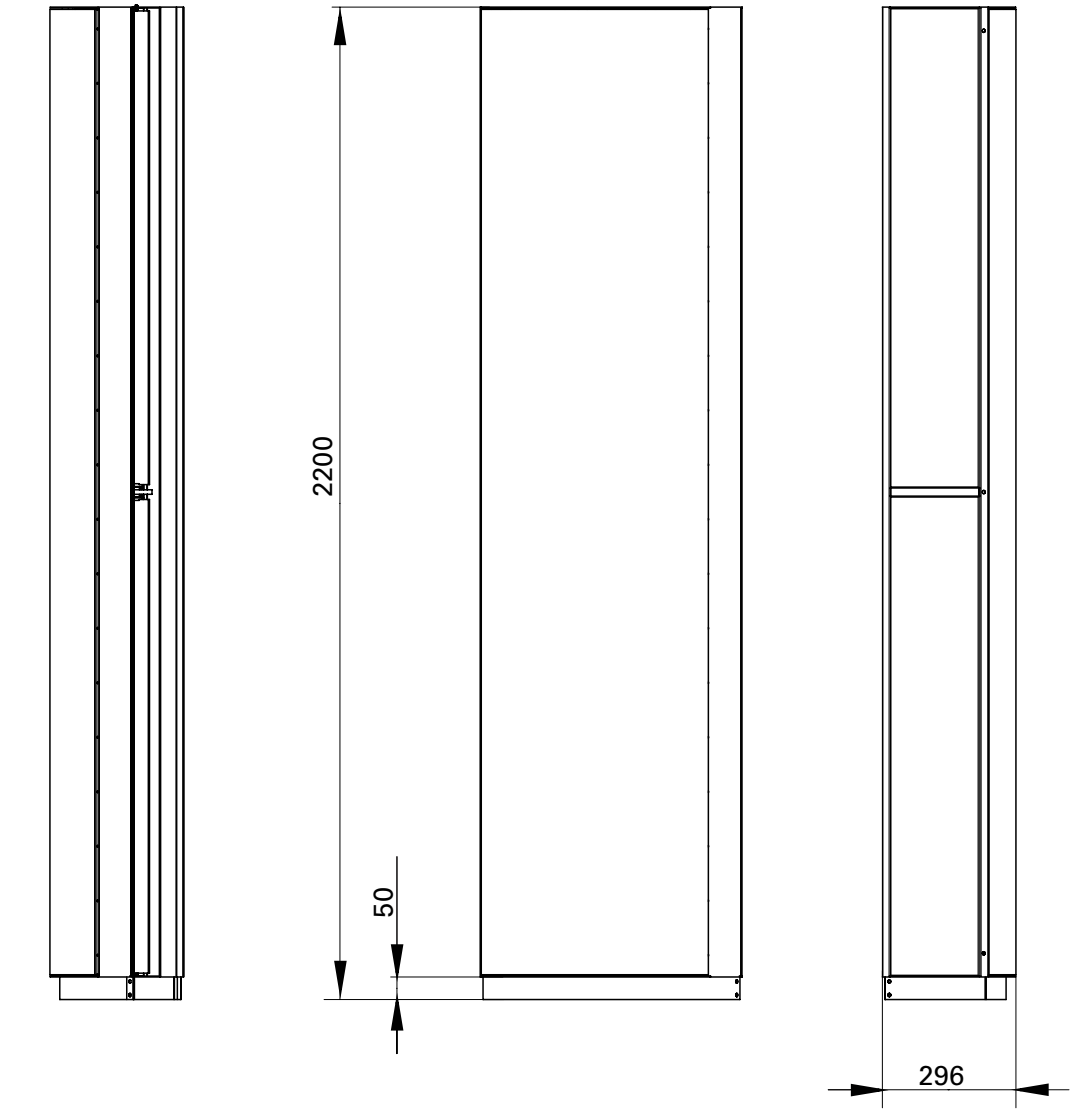
IT Le pagine introduttive contengono prevalentemente immagini. Per le traduzioni dei testi scritti in inglese, vedere le pagine nelle diverse lingue.

PL Początkowe strony zawierają głównie rysunki. Tłumaczenie wykorzystanych tekstów angielskich znajduje się na odpowiednich stronach językowych.

RU Страницы в начале Инструкции состоят в основном из рисунков, схем и таблиц. Перевод встречающегося там текста приведен в разделе RU.

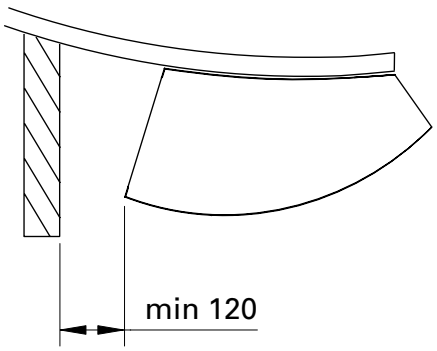
FI Esittelysivut koostuvat lähinnä kuvista. Suvuilla olevien enlanninkielisten sanojen käännökset löytyvät ko. kielisivuilta.

DK Introduktionssiderne består hovedsageligt af billeder. For oversættelse af de engelske tekster, se siderne for de respektive sprog.



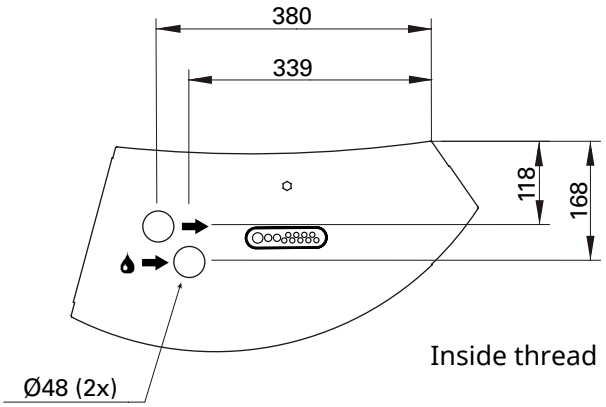

Inside thread : 1", DN25

Minimum distance

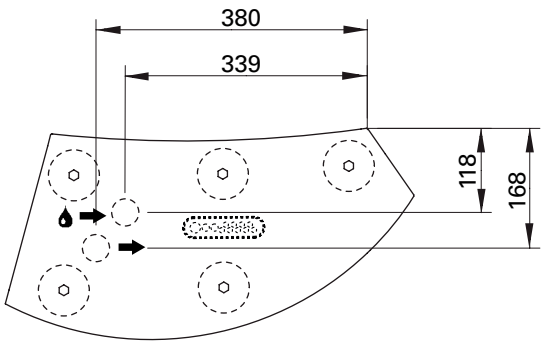


## Connections W

Top view of the top (connections from above)




Top view of the bottom (connections from below)

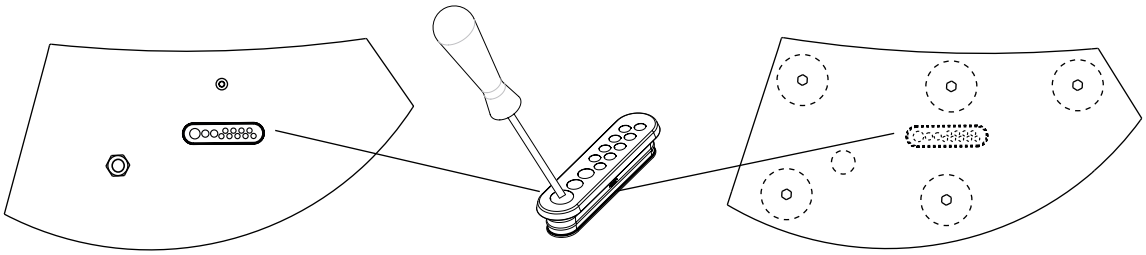



Inside thread : 1", DN25

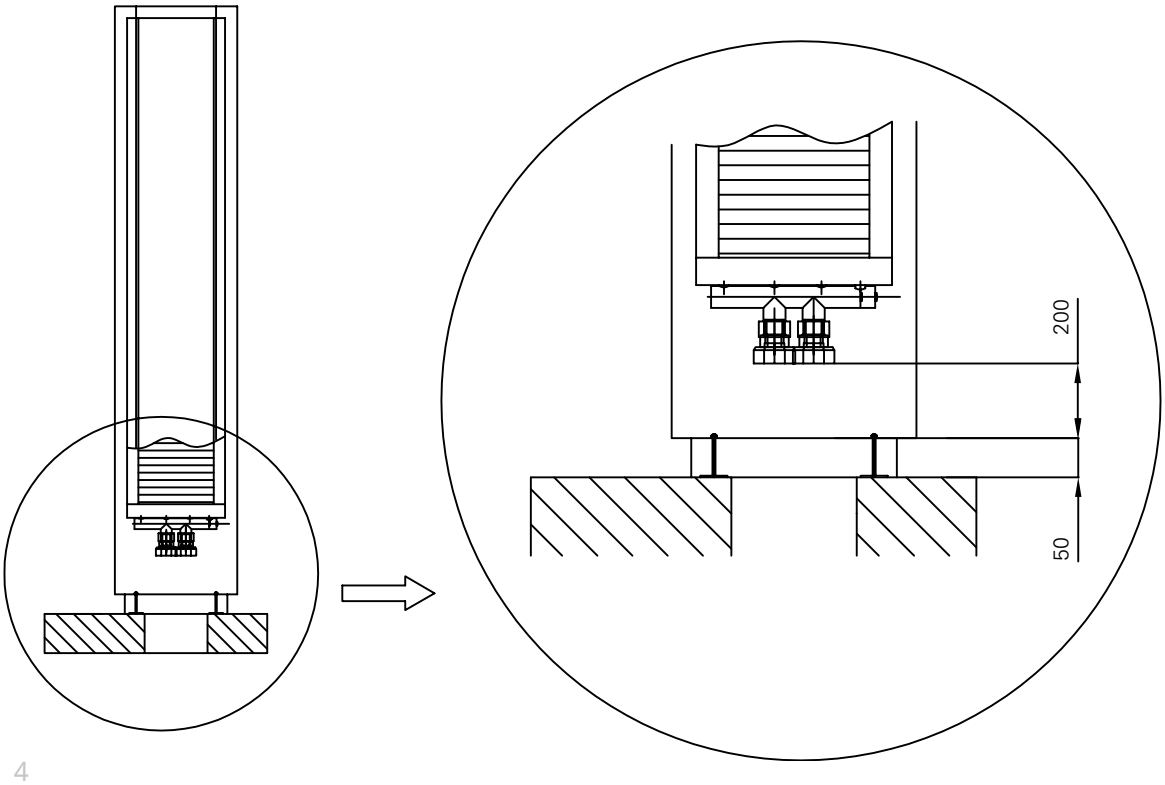
## Connections E

Top view of the top (connections from above)

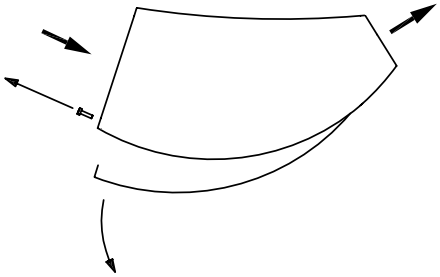
Top view of the bottom (connections from below)

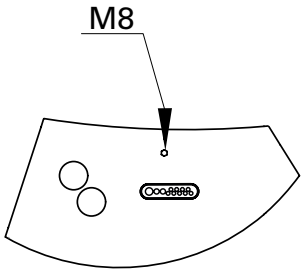


## Distance water connections - end

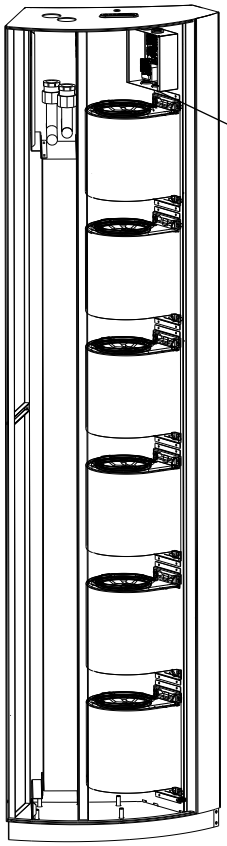


Open unit






Note! The air curtain must always be secured at the top.

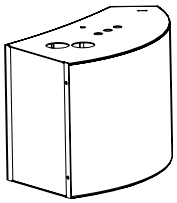


FC Frico Control

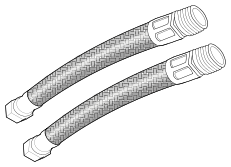
PC board FC is integrated within the air curtain at delivery.

## Accessories

| Item number | Type | |
|---|---|---|
| FE10129 | **SFFEH** | 100-1000 mm |
| 330955 | **FH1025** | DN25, 1”, 1000 mm |



SFFEH



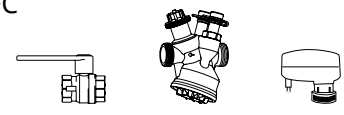
FH1025

## Valve systems

| Item number | Type | DN | Flow range [l/s] |
|---|---|---|---|
| 238293 | **VPFC15LF** | DN15 | 0,012-0,068 |
| 238294 | **VPFC15NF** | DN15 | 0,024-0,13 |
| 238295 | **VPFC20** | DN20 | 0,058-0,32 |
| 238296 | **VPFC25** | DN25 | 0,10-0,60 |
| 238297 | **VPFC32** | DN32 | 0,22-1,03 |

See separate manual.

VPFC

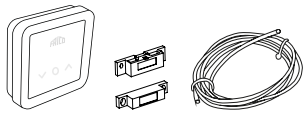


AV TAC SDM

# Control systems

The air curtain must be supplemented with a control system.

FCDA - FC Direct

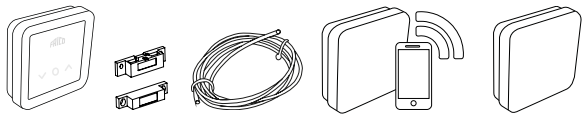


FCCF FCDC FCBC05

FCSA - FC Smart

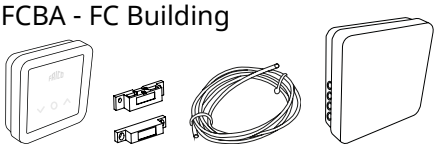
FCCF FCDC FCBC10 FCLAP

FCPA - FC Pro



FCCF FCDC FCBC10 FCLAP FCTXRF

FCBA - FC Building



FCCF FCDC FCBC10 FCBAP

| Item number | Type | Name | Dimensions |
|---|---|---|---|
| 74684 | **FCDA** | FC Direct | 89x89x26 mm (FCCF) |
| 74685 | **FCSA** | FC Smart | 89x89x26 mm (FCCF) |
| 74686 | **FCPA** | FC Pro | 89x89x26 mm (FCCF) |
| 74687 | **FCBA** | FC Building | 89x89x26 mm (FCCF) |

## Accessories

FCRTX

FCSC10

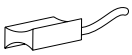
FCOTX

FCSC10

FCLAP

FCBC10

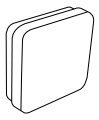
| Item number | Type | | Dimensions |
|---|---|---|---|
| 74694 | **FCRTX** | | 39x39x23 mm |
| 74695 | **FCOTX** | | 39x39x23 mm |
| 74699 | **FCLAP** | | 89x89x26 mm |
| 74702 | **FCWTA** | SFFEC W | |
| 17495 | **FCDC** | | |
| 74718 | **FCBC05** | | 5 m |
| 74719 | **FCBC10** | | 10 m |
| 74720 | **FCBC25** | | 25 m |
| 74721 | **FCSC10** | | 10 m |
| 74722 | **FCSC25** | | 25 m |
| 74703 | **FCTXRF** | for FC Smart, FC Pro | 89x89x26 mm |



FCWTA

FCDC

FCBC05/10/25
FCSC10/25



FCTXRF

See separate manual for FC.

# Technical specifications

## Electrical heat - SFFEC E (IP20)

| Item number | Type | Output steps [kW] | Airflow*[1] [m³/h] | Δt*[4] [°C] | Sound power*[2] [dB(A)] | Sound pressure*[3] [dB(A)] | Amperage motor [A] | Voltage [V] Amperage [A](heat) | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|
| FE10240 | **SFFEC4E16** | 5,4/11/16 | 1850/3600 | 26/13 | 82 | 48/66 | 4,1 | 400V3~/24 | 70 |
| FE10242 | **SFFEC6E24** | 7,8/16/24 | 2300/4700 | 30/15 | 83 | 50/67 | 6 | 400V3~/34 | 75 |

## Water heat - SFFEC WL (IP20)

| Item number | Type | Output*[5] [kW] | Output*[6] [kW] | Airflow*[1] [m³/h] | Δt*[4,5] [°C] | Δt*[4,6] [°C] | Water volume [l] | Sound power*[2] [dB(A)] | Sound pressure*[3] [dB(A)] | Amp. motor [A] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FE10241 | **SFFEC4WL** | 21 | 36 | 1650/3300 | 24/19 | 40/32 | 4,4 | 80 | 47/64 | 4,1 | 80 |
| FE10243 | **SFFEC6WL** | 26 | 44 | 2200/4600 | 22/17 | 37/28 | 4,4 | 81 | 47/65 | 6 | 90 |

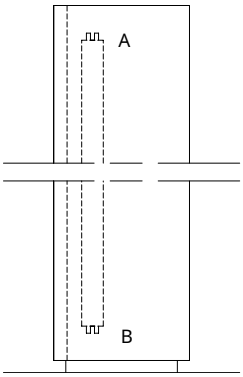
Voltage motor: 230V~
Height*[7]: 2200 mm

*[1]) Low/high airflow (2V/10V).
*[2]) Sound power ($L_{WA}$) measurements according to ISO 27327-2: 2014, Installation type E.
*[3]) Sound pressure ($L_{pA}$). Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At low/high airflow (2V/10V).
*[4]) Δt = temperature rise of passing air at maximum heat output and low/high airflow (2V/10V).
*[5]) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.
*[6]) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.
*[7]) Standard height. Max. height 3000 mm (extension without fans).
*[5,6]) See www.frico.net for additional calculations.

# Product key

Type - Connection position - Total height - Material / Colour
Example: SFFEC4WL - A - 2800 - P

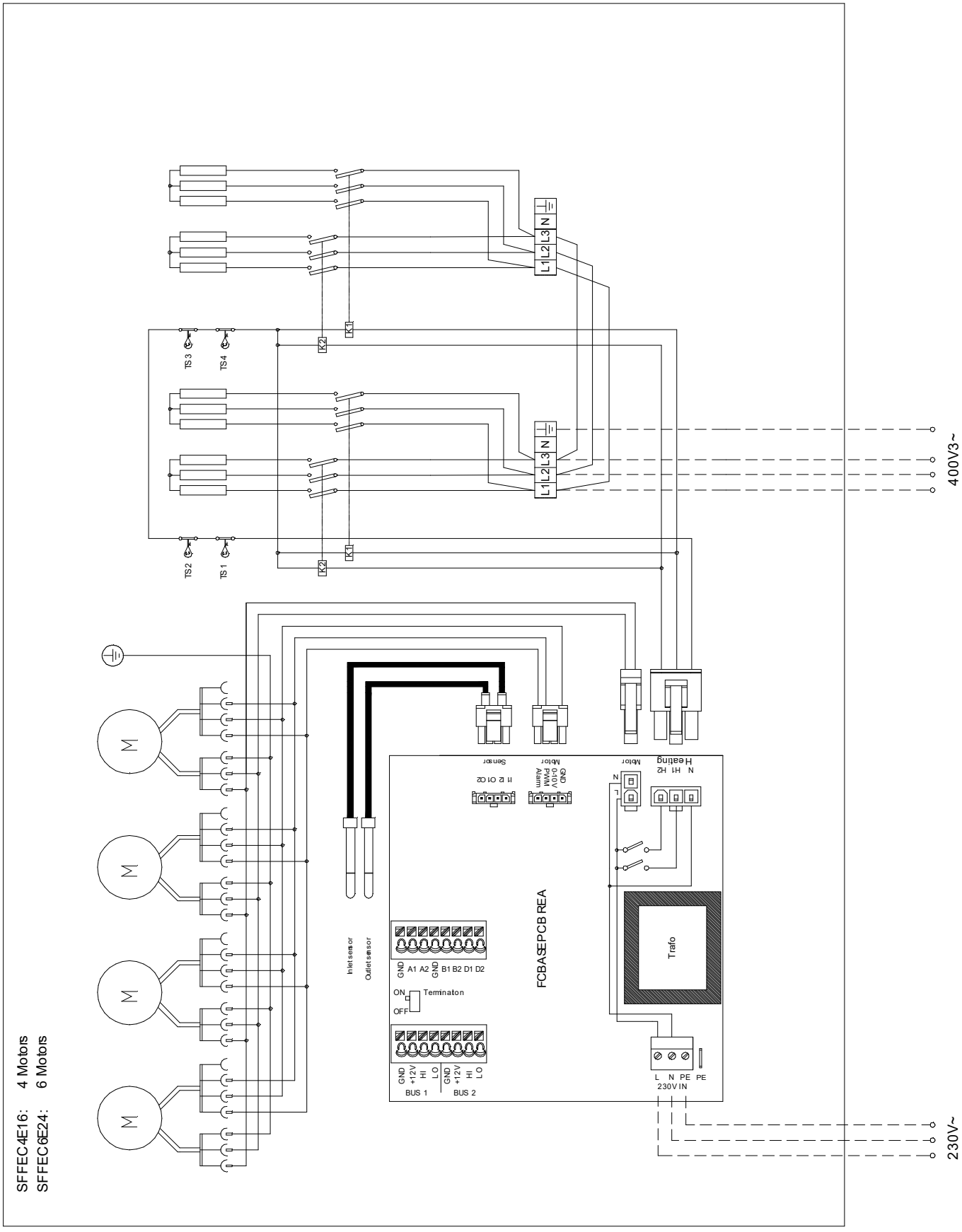
| | |
|---|---|
| **Type** | See Technical specifications. |
| **Connection position*** | A = from above<br>B = from below |
| **Total height** | Min. height 2200 mm.<br>Max height 3000 mm. Extension without fans |
| **Material / Colour** | P = Polished stainless steel<br>B = Brushed stainless steel<br>MP = Mirror polished stainless steel<br>State RAL code = Powder coating RAL<br>State NCS code = Powder coating NCS |




Contact Frico before ordering for more information about the product and special adaptations.

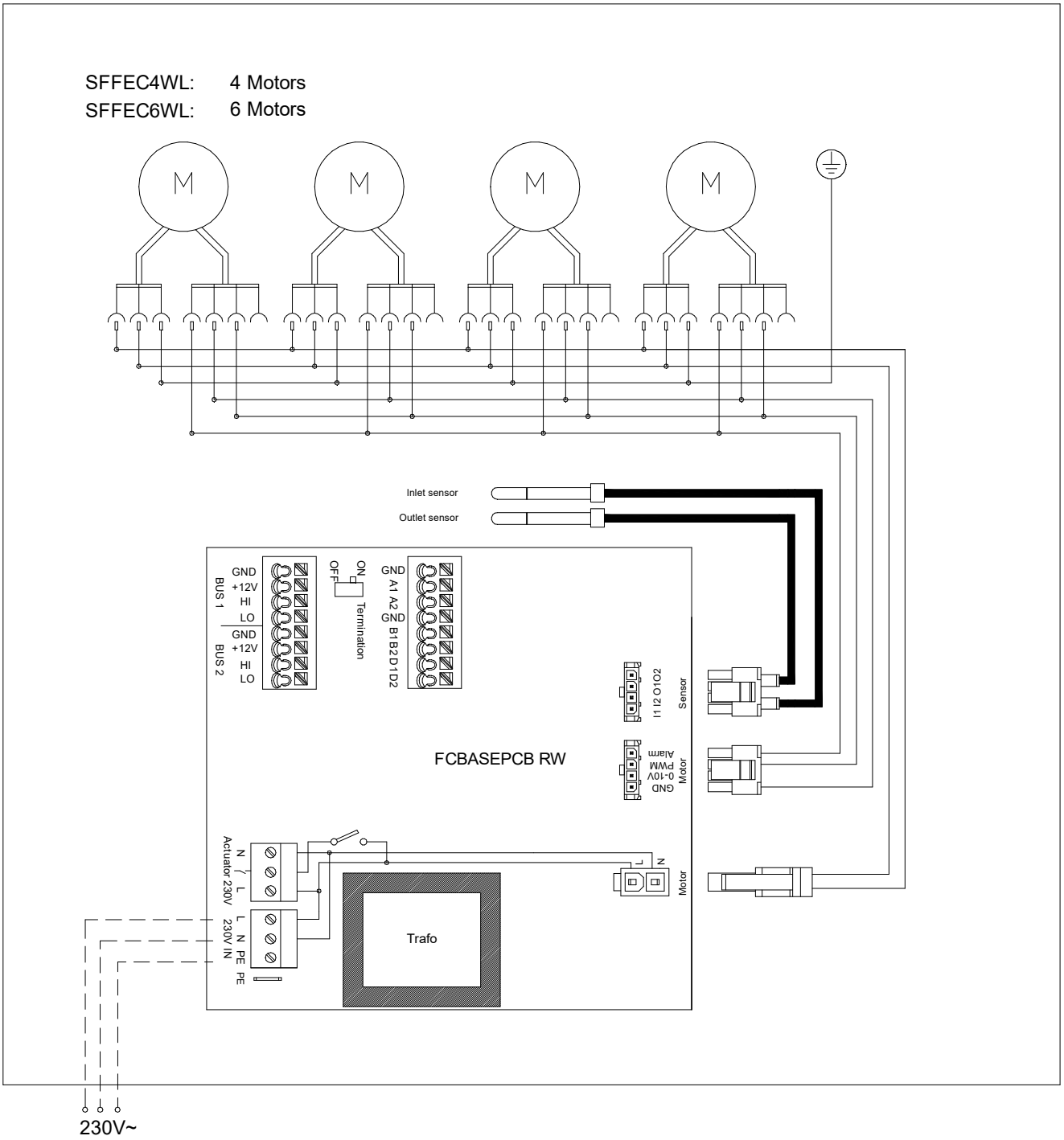
**EN Connection position***
SE Anslutningsposition
NO Tilkoblingsposisjon
DE Position der Anschlüsse
RU Место подключений
FR Position du raccord
ES Posición de la conexión
NL Positie aansluitingen
PL Położenie złączy
IT Posizione di collegamento
DK Tilslutningsposition

# SFFEC E




Wiring diagrams for control system in the FC manual.

# SFFEC W




Wiring diagrams for control system in the FC manual.

# Installation and operating instructions

## General Instructions

Read these instructions carefully prior to installation and use. Keep this manual for future reference.
*The product may only be used as set out in the assembly and operating instructions. The guarantee is only valid should the product be used in the manner intended and in accordance with the instructions.*

## Application

Scand is a vertical air curtain specially designed for revolving doors, with a curved design that integrates neatly with the door. The air curtain is available with electrical heating and with water heating.
Protection class: IP20.

## Operation

Air is drawn in at the side of the unit and blown out against the entrance, so that it shields the door opening and minimizes heat loss.

The grille for directing exhaust air is adjustable and is normally angled towards the revolving door to achieve the best protection against incoming cold air.

The efficiency of the air curtain depends on the air temperature, pressure differences across the doorway and any wind pressure.

*NOTE! Negative pressure in the building considerably reduces the efficiency of the air curtain. The ventilation should therefore be balanced.*

## Mounting

The air curtain is vertically mounted to the left of the door seen from inside. Air curtains for installation to the right can be specially ordered. The unit has a curved design which makes it an integrated part of the door. Standard length is 2200 mm. Lengths up to 3 m can be ordered according to the product key (extension without fans). Extension hoods, for heights up to 4 m , are available as an accessory.

The air curtain is installed on adjustable feet which makes it possible to compensate for any surface undulations. The feet are attached to the floor with fasteners appropriate to the surface and covered by a frame. Fasteners are not included.

The air curtain must always be secured at the top. The M8 press nut on the top of the unit is used for this, see figure.

The product must be mounted in such a way as to allow future service and maintenance.

When mounting a product in stainless steel, the protective plastic shall remain on the product. The plastic is removed only when mounting and installation are completed. Be careful to not damage the surfaces.

## Electrical installation

The installation, which should be preceded by an isolator switch with a contact separation of at least 3 mm, should only be wired by a competent electrician and in accordance with the latest edition of IEE wiring regulations.

The air curtain has an integrated PC board which is connected to the selected external control system FC. FC must be ordered separately. FC is supplied pre-programmed. Communication and sensor cables are connected to the PC board.

Should more than one air curtain be controlled by a single FC, an additional communication cable FCBC per unit will be required. See manual for FC.

Control is supplied by 230V~ to the PC board. The PC board is placed in the top of the unit and is accessed via cable glands on the top or bottom of the unit. Pierce the grommet with a screwdriver before entering the cable. Cables to the PC board should be routed through the unit when the connection is made from the bottom. Bundle the cables inside the unit to prevent that they will be drawn into the fans or get in contact with the heating elements.

For units with electrical heating, the power supply for heating (400V3~) is connected to the terminal block. The electrical connection may be done from above or below, according to ordering key. Connections made from below the unit must be prepared in the floor according to the drawing.

The largest cable diameter for the terminal block is 16 mm². The cable glands used must meet the protection class requirements. In the distribution board, it is to be indicated that ”the air curtains can be supplied from more than one connection”.

| Type | Output [kW] | Voltage [V] | Minimum area* [mm²] |
|---|---|---|---|
| **Control** | 0 | 230V~ | 1,5 |
| **SFFEC4E16** | 16 | 400V3~ | 6 |
| **SFFEC6E24** | 24 | 400V3~ | 10 |

*) Dimensioning of external wiring shall comply with applicable regulations and local deviations may occur.

## Start-up (E)
When the unit is used for the first time or after a long period of non-use, smoke or an odour may result from dust or dirt which has collected on the element. This is completely normal and disappears after a short time.

## Connecting the water coil (W)
The installation must be carried out by an authorised installer.

The water coil has copper tubes with aluminium fins and is suitable for connection to a closed water heating system. The heating coil must not be connected to a mains pressure water system or an open water system.

Note that the unit shall be preceded by a regulating valve, see Frico valve kit.

Valves must be installed outside the unit. Note that the actuator needs power supply and control signal from the integrated PC board.

The water coil is connected on the top or the bottom of the unit via connections DN25 (1’’), internal thread. See product key.

Connections made from below the unit must be prepared in the floor according to the drawing. Note the distance between the water connections and the end of the unit. See figure. Flexible hoses are available as accessories.

NOTE: Care must be taken when connecting the pipes. Use a pipe wrench or a similar tool to grip the air curtain connections to prevent straining of the pipes and subsequent water leakage during connection to the water supply pipe-work.

The connections to the heating coil must be equipped with shut off valves to allow trouble-free removal.

The coil is equipped with air valves.

## Adjustment of the air curtain and airflow
The direction and speed of the airflow should be adjusted considering the load on the opening. Pressure forces affect the airstream and force it inwards towards the premises (when the premises are heated and the outdoor air is cold).

The airstream should, therefore, be directed outwards to withstand the load. Generally speaking, the higher the load, the greater the angle required.

Protection of the exposed area just above the floor is essential, motors are placed from the bottom up. The airflow can therefore be slighlty less at the top of unit.

## Basic setting fan speed
The fan speed when the door is open is set using the control. Note that the airflow direction and the fan speed may need fine adjustment depending on the loading of the door.

## Filter (W)
The distance between the coil plates in combination with the hole diameter of the intake grille protects against dirt and blockage. This normally makes a separate filter unnecessary.

## Service, repairs and maintenance
For all service, repair and maintenance first carry out the following:

1. Disconnect the power supply.
2. The service hatch is opened by removing the screws on the side of the unit.

## Maintenance
Since fan motors and other components are maintenance-free, no maintenance other than cleaning is necessary. The level of cleaning can vary depending on local conditions. Undertake cleaning at least twice a year. Inlet and exhaust grilles, impeller and elements can be vacuum cleaned or wiped using a damp cloth. Use a brush when vacuuming to prevent damaging sensitive parts. Avoid the use of strong alkaline or acidic cleaning agents.

Vacuum the intake grille regularly from outside when dust is visible, for example as a part of the cleaning routine.

## Temperature control
Temperature control of FC maintains the exhaust temperature. Should the temperature exceed the preset value, the overheating alarm will activate. For more information see the FC manual.

## Overheating
The air curtain unit with electrical heating is equipped with an overheat protection. If it is deployed due to overheating, reset as follows:

1. Disconnect the power supply with the isolator switch.
2. Allow the electrical coil to cool.
3. Determine the cause of overheating and rectify the fault.
4. Reconnect the unit.

## Replacing heating elements/heating package (E)

1. Mark and disconnect the cables to the heating elements/package.
2. Remove the mounting screws securing the heating elements/package in the unit and lift the heating elements/package out.
3. Install the new heating elements/package in reverse order to the above.

## Replacing the water coil (W)

1. Shut off the water supply to the unit.
2. Disconnect the connections to the water coil.
3. Remove the mounting screws securing the coil in the unit and lift out.
4. Install the new coil in reverse order to the above.

## Safety cut-out

All motors are equipped with an integrated safety cut-out. This will operate, stopping the air curtain should the motor temperature rise excessively or the electronics fail or overheat. The cut-out will automatically reset when the motor temperature has returned to within the motor’s operating limits. Failure or damage to electronics components may require repair or replacement of such components or the entire product.

## Fan replacement

1. Determine which of the fans is not functioning.
2. Disconnect the cables from the relevant fan.
3. Remove the screws securing the fan and lift the fan out.
4. Install the new fan as above in reverse order.

## Replacing the PC board

1. The PC board is located in the terminal box.
2. Mark and disconnect the cables to the PC board.
3. Unhatch the board from its PCB snap-in spacers and lift out.
4. Install the new PC board as above in reverse order.

## Troubleshooting

*If the fans are not running or do not perform properly, check the following:*

- The power supply.
- That the intake grille/filter is not dirty.
- That the motor's safety cut-out has not been deployed.
- Functions and settings of the FC control system, see the FC manual.

*If there is no heat, check the following:*

- Functions and settings of the FC control system, see the FC manual.

*For units with electrical heating, also check the following:*

- Power supply to electric heater coil; check fuses and circuit-breaker (if any).
- That the overheat protection has not been deployed.

*For units with a water coil, also check the following:*

- That the water coil is vented
- That there is sufficient water flow and pressure.
- That incoming water is heated adequately.
- That the valves and the actuators are correctly installed and working.

If the fault cannot be rectified, please contact a qualified service technician.

## Residual current circuit breaker (E)

When the installation is protected by means of a residual current circuit breaker, which trips when the appliance is connected, this may be due to moisture in the heating element. When an appliance containing a heater element has not been used for a long period or stored in a damp environment, moisture can enter the element.

This should not be seen as a fault, but is simply rectified by connecting the appliance to the main supply via a socket without a safety cut-out so that the moisture can be eliminated from the element. The drying time can vary from a few hours to a few days. As a preventive measure, the unit should occasionally be run for a short time when it is not being used for extended periods of time.

## Packaging

Packaging materials are chosen with consideration to the environment and are therefore recyclable.

## Handling of product at end of working life

This product may contain substances necessary for the functionality of the product but potentially dangerous for the environment. The product should not be disposed of mixed with general household waste but delivered to a designated collection point for environmental recycling. Please contact the local authority for further details of your nearest designated collection point.

## Safety

- *For all installations of electrically heated products a residual current circuit breaker* 300 mA *for fire protection must be used.*
- *Keep the areas around the air intake and exhaust grilles free from possible obstructions!*
- *The unit must not be fully or partially covered as overheating can result in a fire risk!*
- *Lifting equipment must be used to lift the unit.*
- *This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.*
- *Children of less than 3 years should be kept away unless continuously supervised.*
- *Children aged from 3 years and less than 8 years shall only switch on/off the appliance provided that it has been placed or installed in its intended normal operating position and they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.*
- *Children aged from 3 years and less than 8 years shall not plug in, regulate and clean the appliance or perform user maintenance.*

**CAUTION — Some parts of this product can become very hot and cause burns. Particular attention has to be given where children and vulnerable people are present.**

**Main office**
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