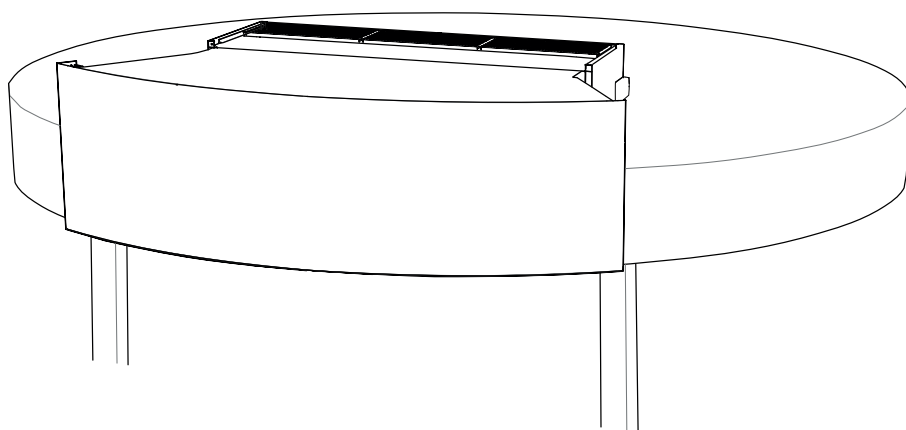


Original instructions

Ruwen

EN ... 13

SE ... 17

NO ... 21

FR ... 25

DE ... 30

NL ... 35

ES ... 40

IT ... 45

PL ... 50

RU ... 55

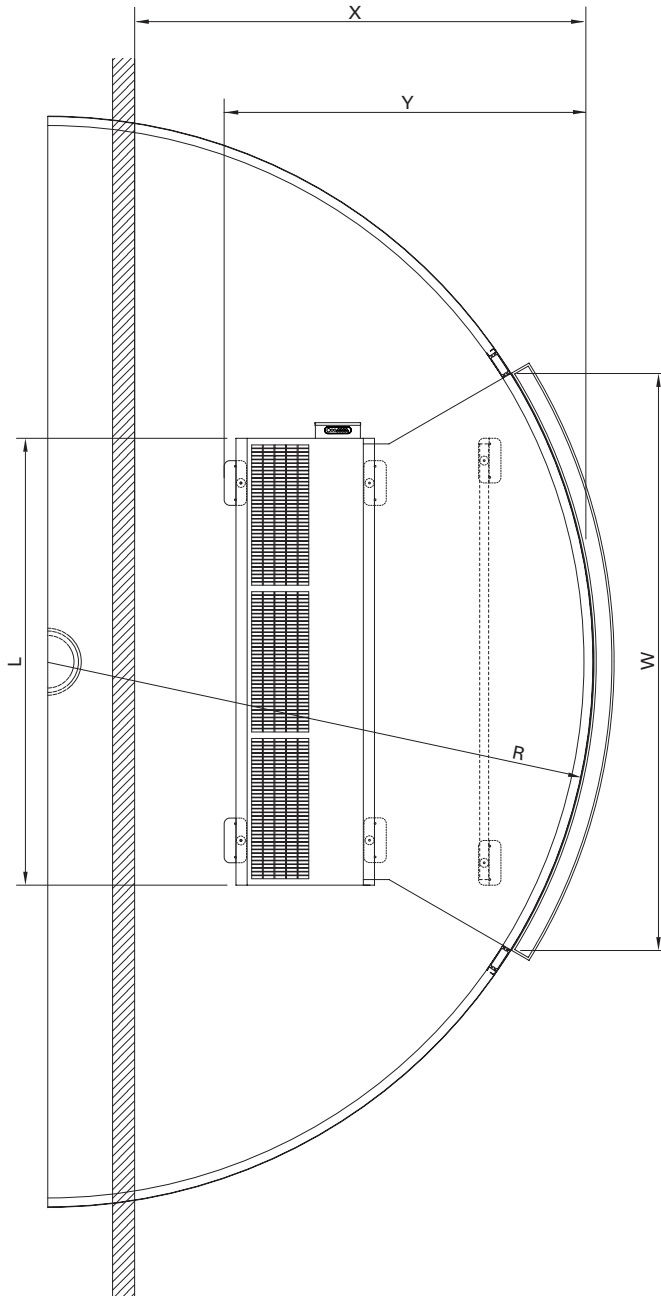
FI ... 60

DK ... 64

Ruwen

- 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.

Top view

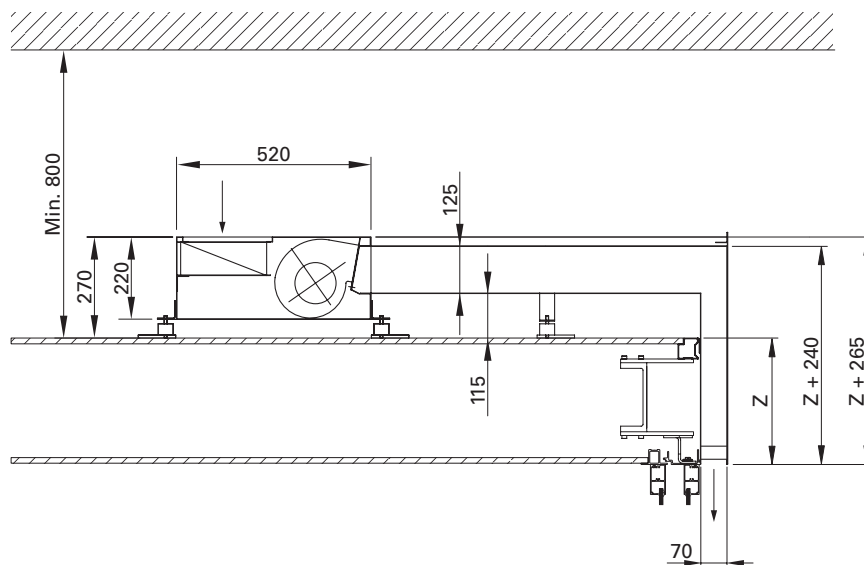


	L [mm]
RDFEC10	1000
RDFEC15	1500
RDFEC20	2000
RDFEC25	2500

- R** The outer radius of the revolving door above the entrance height.
- W** The opening width of the revolving door
- X** The largest distance between the outer radius **R** of the revolving door and the wall to the outside.
- Z** The height between the inner ceiling of the revolving door (the position of the outlet of the duct) up to the outer roof of the revolving door (where the air curtain is mounted).

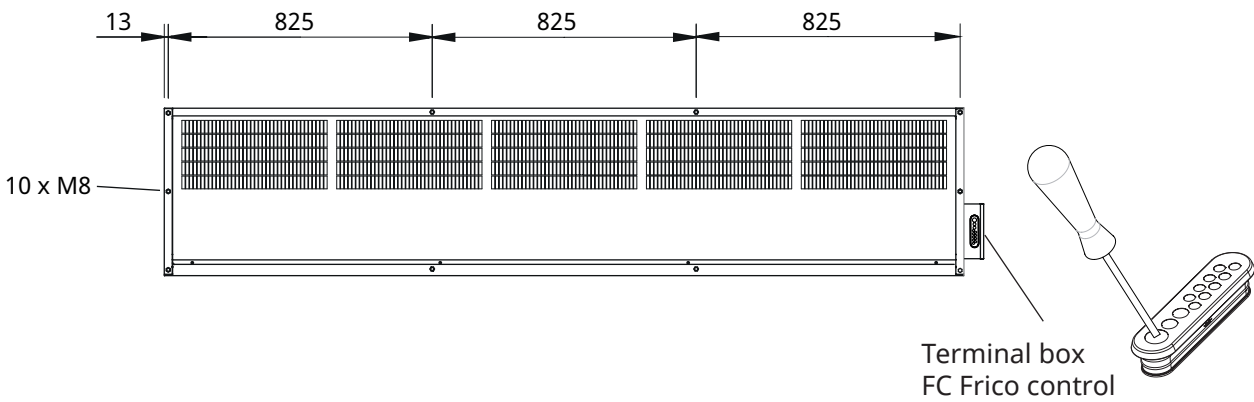
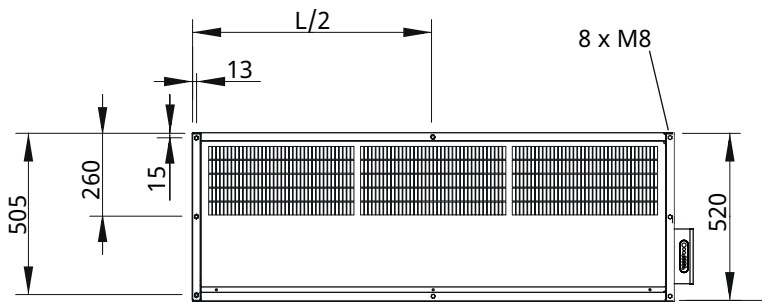
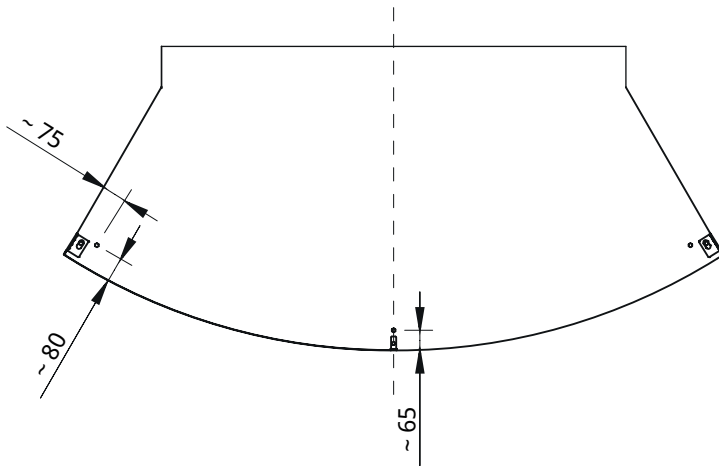
Y is variable, depending on the other dimensions in the product key.

Side view

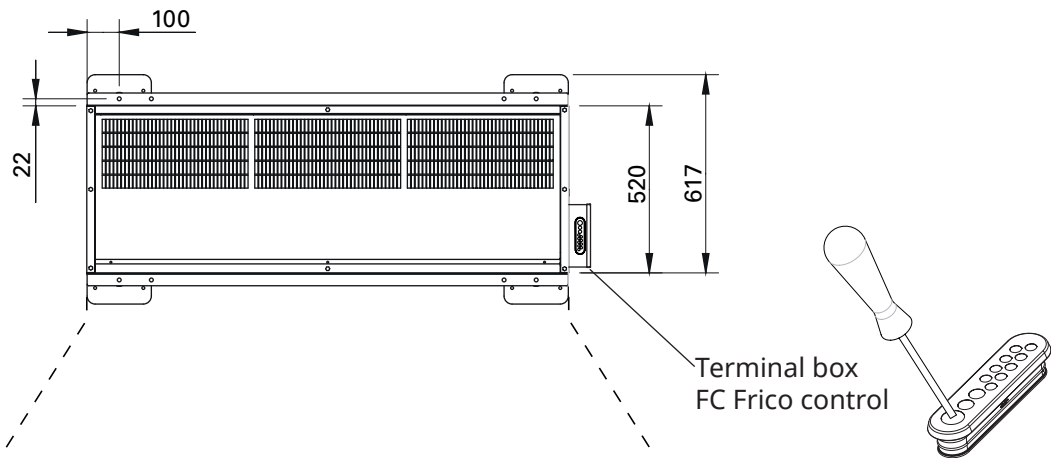


Ruwen


Suspended from ceiling

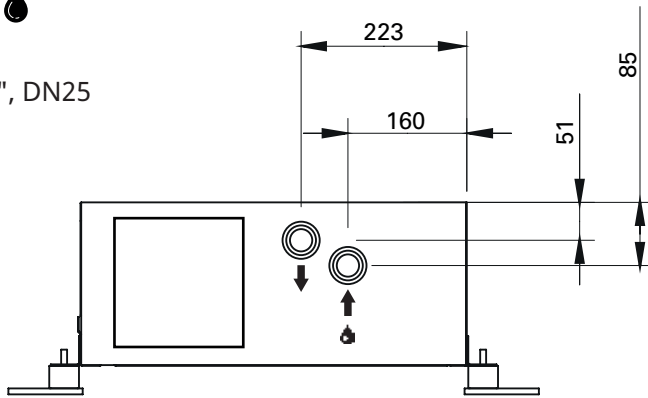


Mounted on revolving door

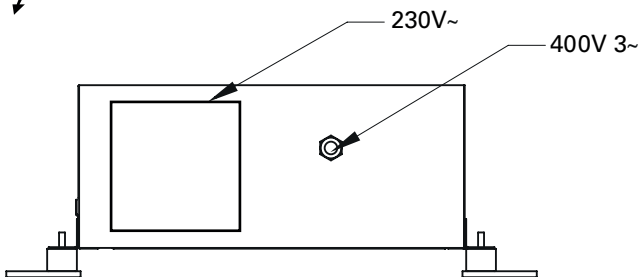


Connections W 

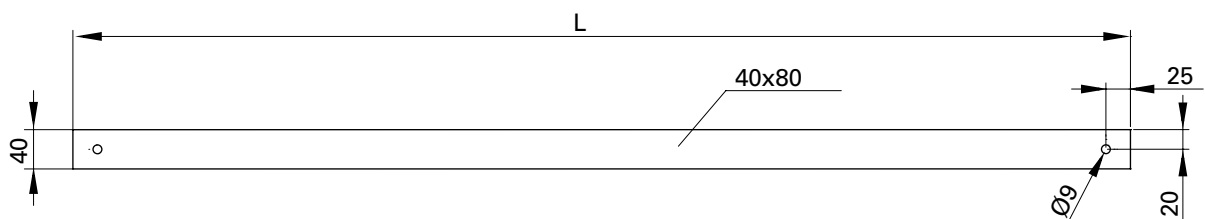
 Inside thread : 1", DN25



Connections E 

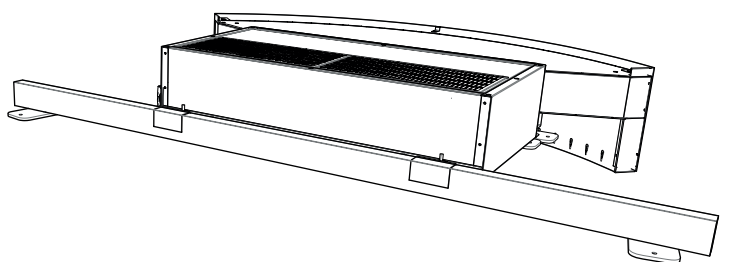
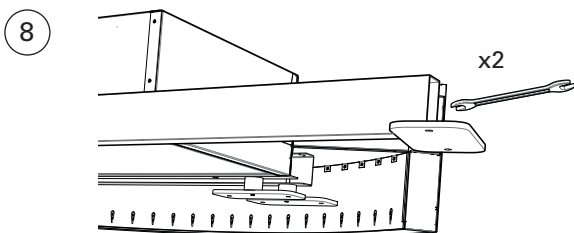
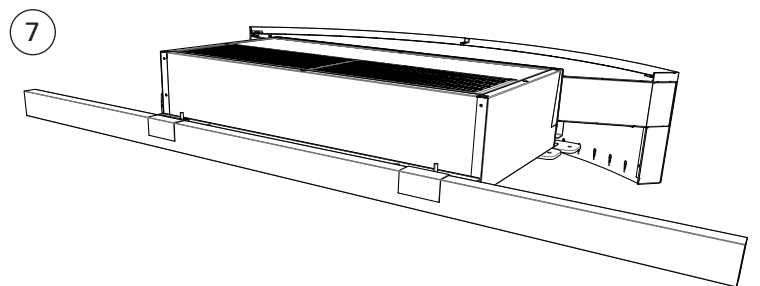
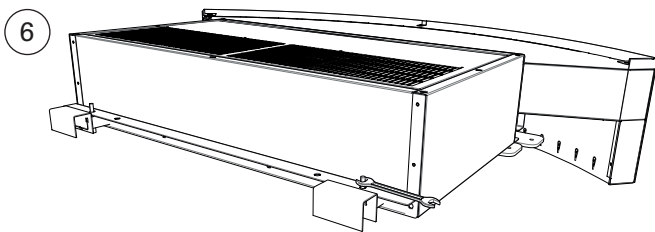
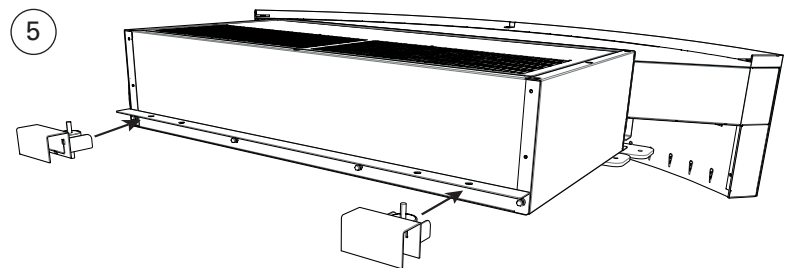
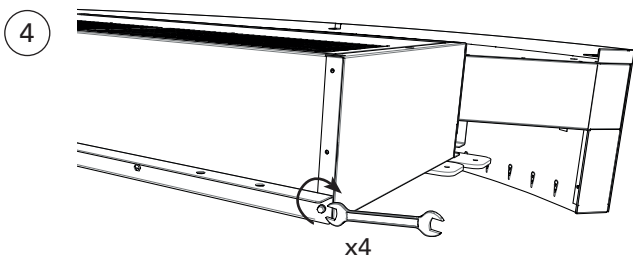
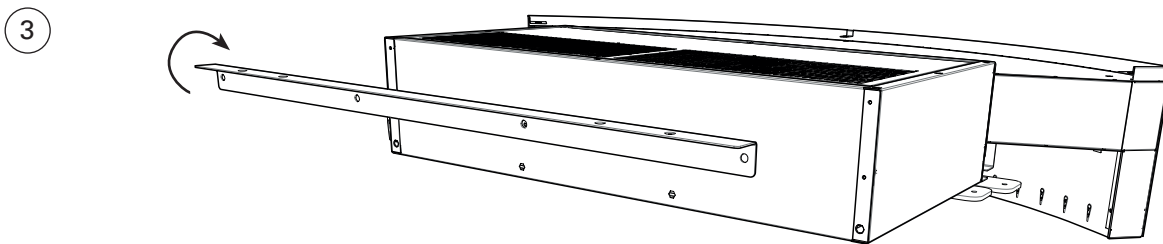
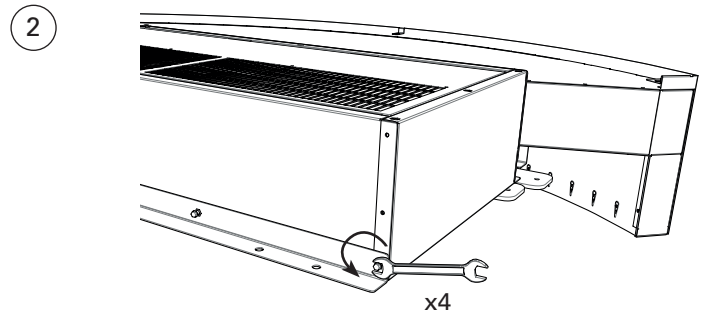
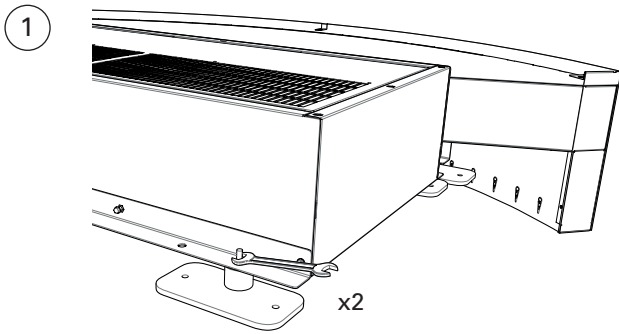
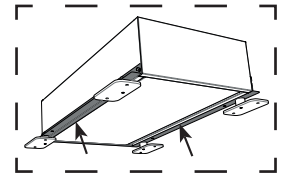


RDSB

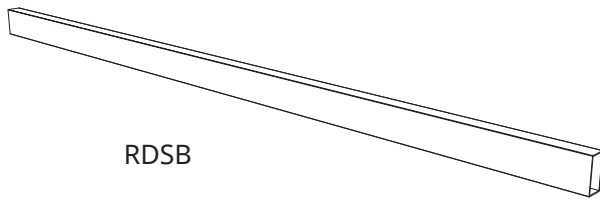


Ruwen

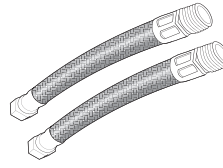
Ruwen + RDSB (beam)



Accessories



RDSB



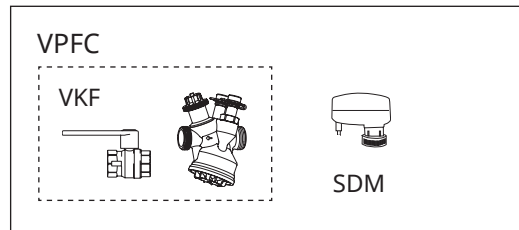
FH1025

Item number	Type	
FE10202	RDSB	40 x 60 mm
330955	FH1025	DN25, 1", 1000 mm

Valve systems

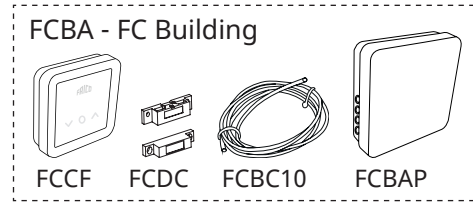
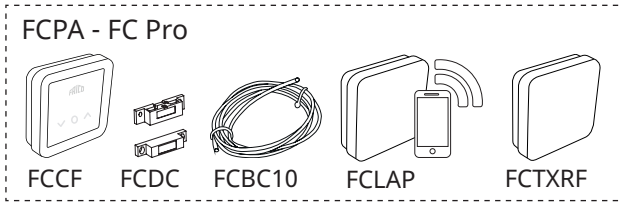
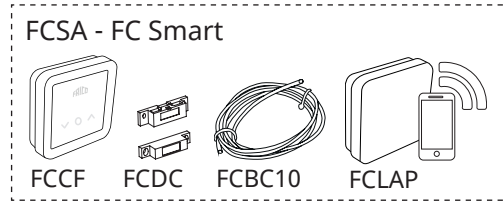
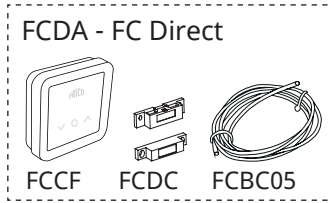
Item number	Type	Dimension valves	Flow range [l/s]
238293	VPFC15LF	DN15	0,012-0,068
238294	VPFC15NF	DN15	0,024-0,13
238295	VPFC20	DN20	0,058-0,32
238296	VPFC25	DN25	0,10-0,60
238297	VPFC32	DN32	0,22-1,03

See separate manual.



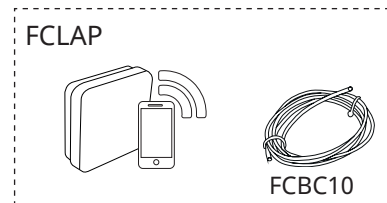
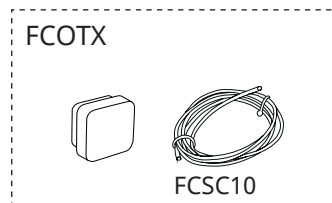
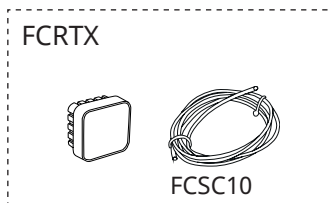
Control systems

The air curtain must be supplemented with a control system.

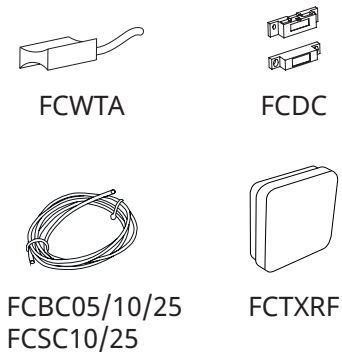


Item number	Type	Name	Dimensions
74684	FCDA	FC Direct	89x89x26 mm (FCCF)
74685	FCSA	FC Smart	89x89x26 mm (FCCF)
74686	FCPA	FC Pro	89x89x26 mm (FCCF)
74687	FCBA	FC Building	89x89x26 mm (FCCF)

Accessories



Item number	Type		Dimensions
74694	FCRTX		39x39x23 mm
74695	FCOTX		39x39x23 mm
74699	FCLAP		89x89x26 mm
74702	FCWTA	RDFEC 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



See separate manual for FC.

Technical specifications

Voltage motor: 230V~

✦ Ambient, no heat - RDFEC A (IP20)

Type	Output [kW]	Airflow* ¹ [m ³ /h]	Sound power* ² [dB(A)]	Sound pressure* ³ [dB(A)]	Amperage motor [A]	Weight* ⁷ [kg]
RDFEC10A	0	1200/2400	78	46/62	3,2	60
RDFEC15A	0	1800/3500	79	47/64	4,1	130
RDFEC20A	0	2300/4700	81	48/65	6,0	180
RDFEC25A	0	3100/6150	83	50/67	6,9	200

⚡ Electrical heat - RDFEC E (IP20)

Type	Output steps [kW]	Airflow* ¹ [m ³ /h]	Δt * ⁴ [°C]	Sound power* ² [dB(A)]	Sound pressure* ³ [dB(A)]	Amperage motor [A]	Voltage [V] Amperage [A] (heat)	Weight* ⁷ [kg]
RDFEC10E12	3,9/7,8/12	1200/2400	30/15	78	46/62	3,2	400V3~/17	80
RDFEC15E18	6/12/18	1800/3500	30/15	80	47/64	4,1	400V3~/26	130
RDFEC20E24	7,8/16/24	2300/4700	30/15	81	48/65	6,0	400V3~/34	180
RDFEC25E30	9,9/20/30	3100/6150	29/14	83	50/67	6,9	400V3~/43	200

💧 Water heat - RDFEC WL, coil for low water temperature (≤ 80 °C) (IP20)

Type	Output* ⁵ [kW]	Output* ⁶ [kW]	Airflow* ¹ [m ³ /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* ⁷ [kg]
RDFEC10WL	10	18	1100/2300	18/13	30/23	2,2	78	45/62	3,2	80
RDFEC15WL	16	28	1700/3400	18/14	31/24	3,4	80	46/64	4,1	130
RDFEC20WL	23	39	2200/4600	19/15	32/25	4,5	81	47/65	6,0	180
RDFEC25WL	30	50	2800/5750	20/15	33/26	5,7	83	49/67	6,9	200

*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) Approximate weight for air curtain and duct.

*^{5,6}) See www.frico.net for additional calculations.

Product key

Type - R - W - X - Z - Material / Colour, Example: RDFEC20WL - 2500 - 2900 - 2350 - 500 - P

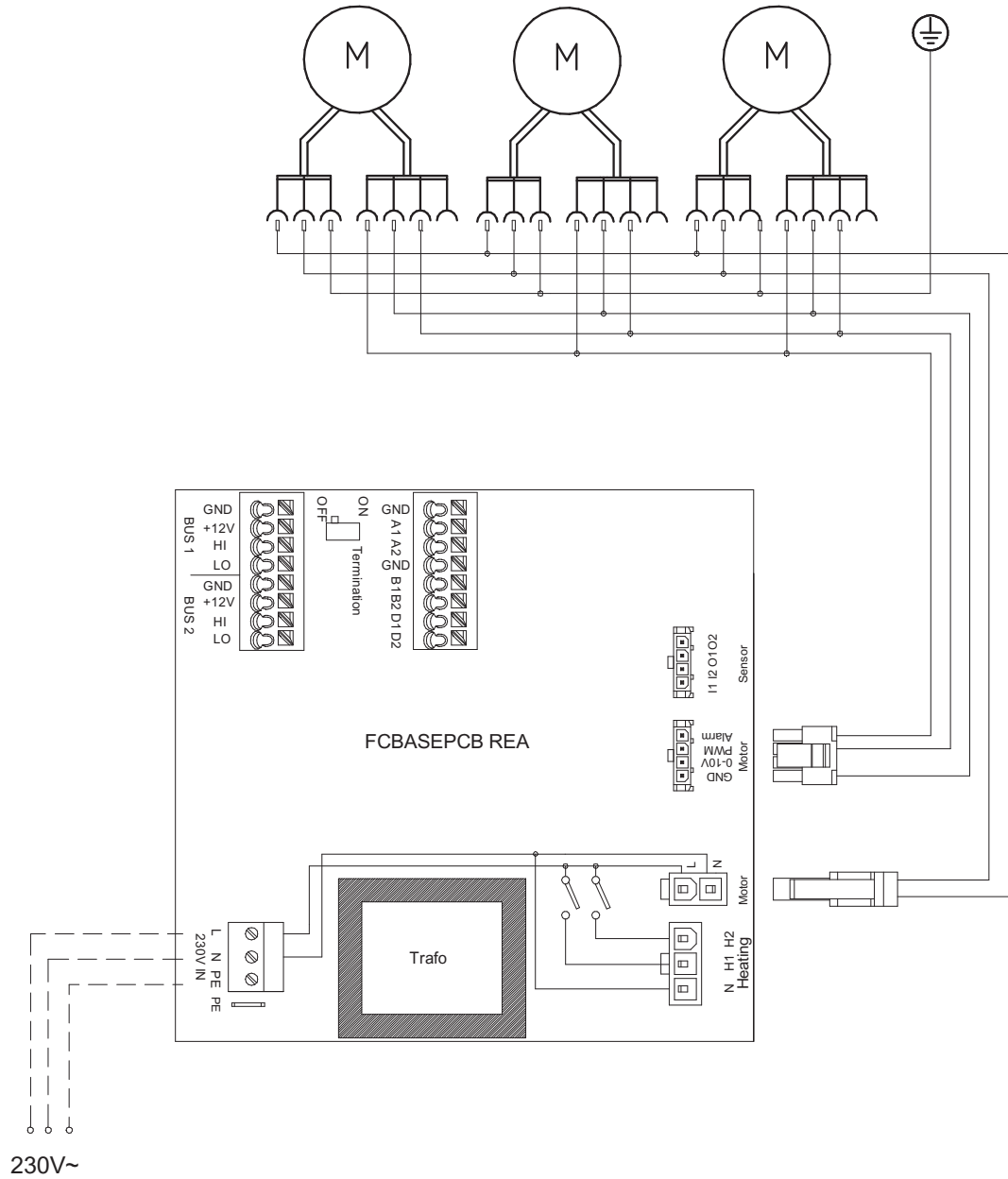
Type	See Technical specifications.
R	The outer radius of the revolving door above the entrance height.
W	The opening width of the revolving door
X	The largest distance between the outer radius R of the revolving door and the wall to the outside.
Z	The height between the inner ceiling of the revolving door (the position of the outlet of the duct) up to the outer roof of the revolving door (where the air curtain is mounted).
Material / Colour*	P = Polished stainless steel B = Brushed stainless steel MP = Mirror polished stainless steel State RAL code = Powder coating RAL State NCS code = Powder coating NCS

*) Only valid for duct cover plate. Air curtain and duct are made of powder coated steel panels, white, RAL9016.

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

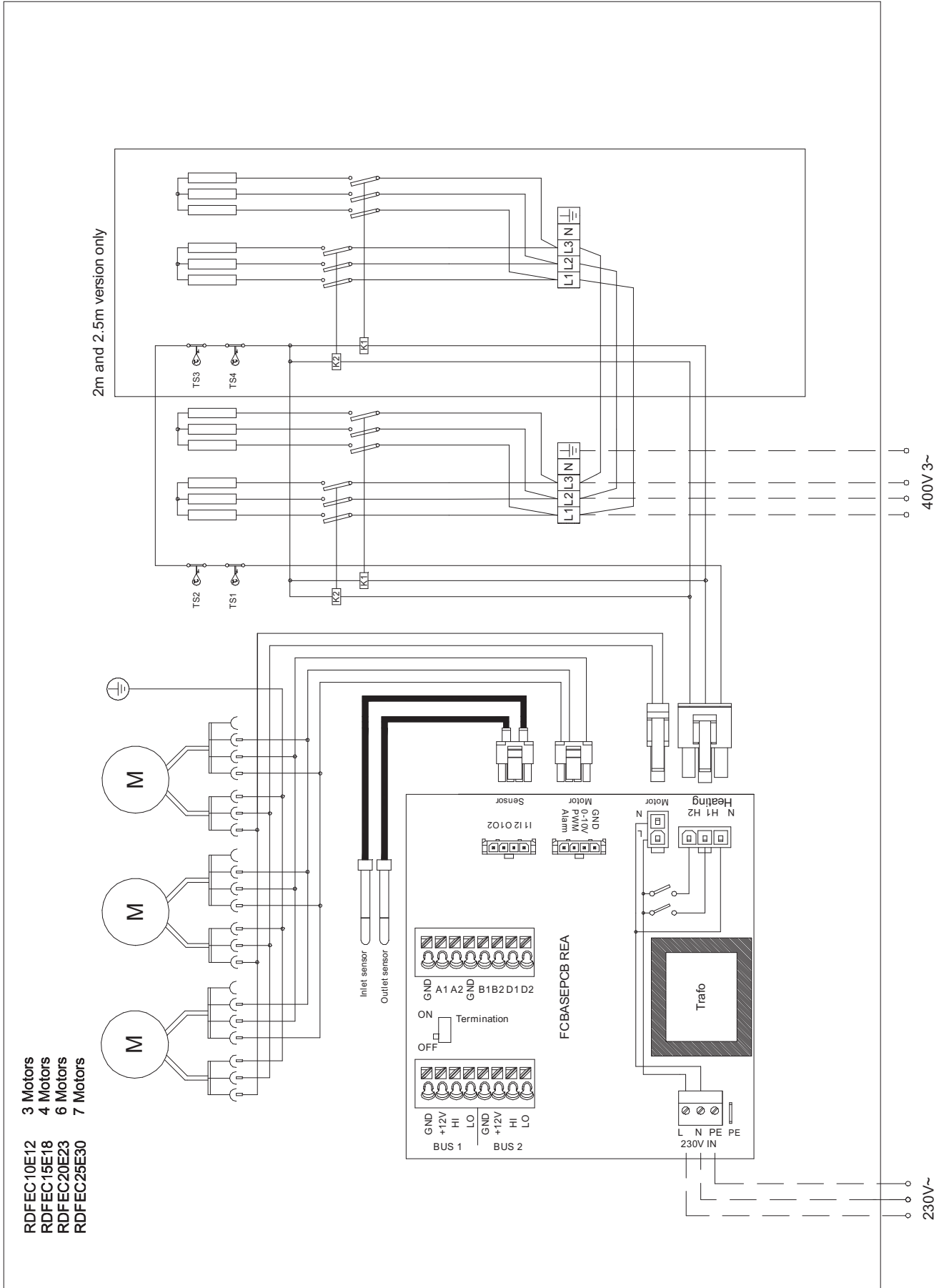
RDFEC A

- RDFEC10A 3 Motors
- RDFEC15A 4 Motors
- RDFEC20A 6 Motors
- RDFEC25A 7 Motors



Wiring diagrams for control system in the FC manual.

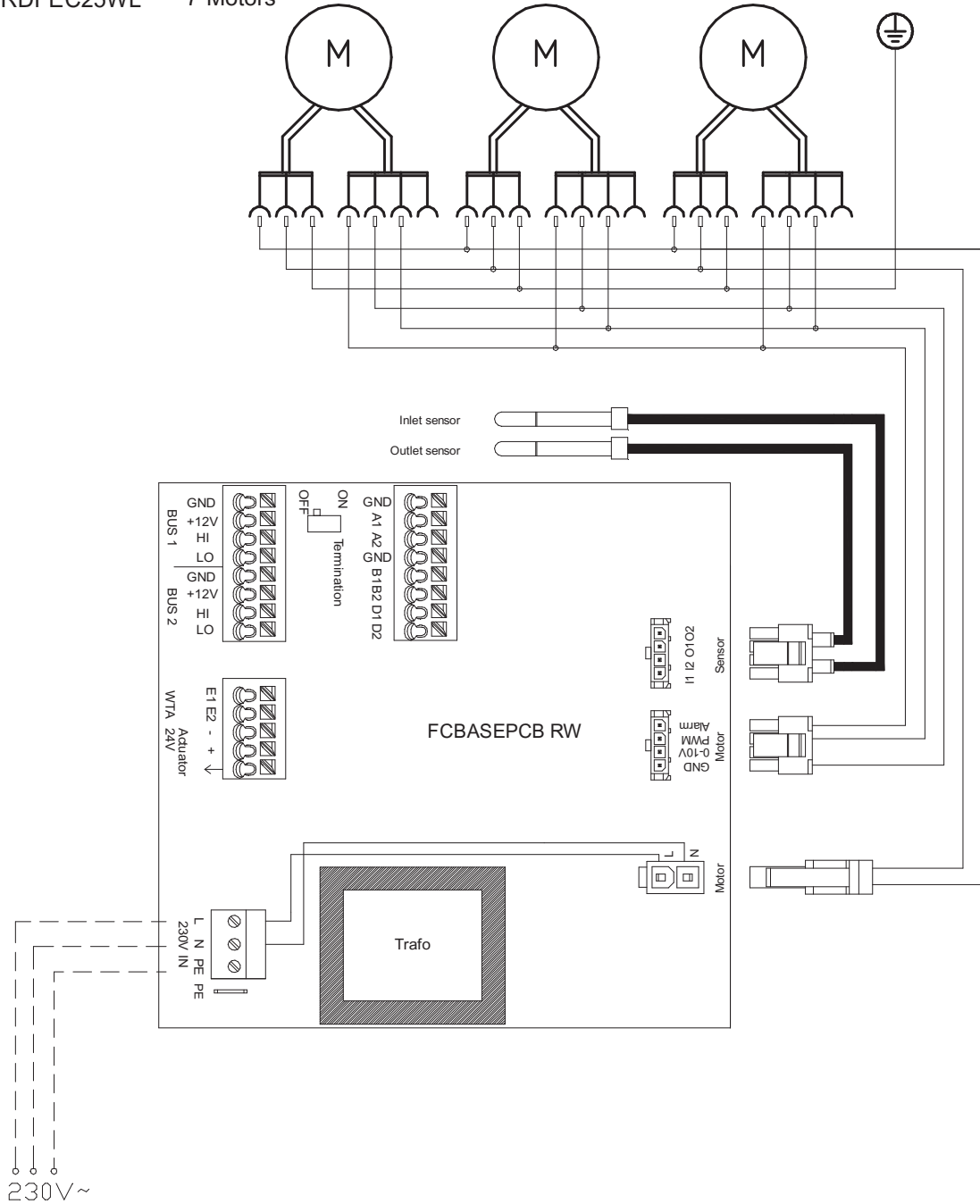
RDFEC E



Wiring diagrams for control system in the FC manual.

RDFEC W

- RDFEC10WL 3 Motors
- RDFEC15WL 4 Motors
- RDFEC20WL 6 Motors
- RDFEC25WL 7 Motors



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

Ruwen is a customized air curtain installed above your revolving door, with the exhaust duct adapted to the diameter of the door. The air curtain is available without heat, with electrical heating and with water heating. Protection class: IP20.

Operation

Air is drawn in at the top of the unit and blown downwards shielding the door opening and minimizing heat loss. To achieve the optimum curtain effect the unit must extend the full width of the door opening.

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 installed horizontally on the roof of the revolving door with vibration dampers on steel plates (100 x 200 mm) that distribute the weight.

The unit could alternatively be mounted on beams.

- Make sure that the air curtain fits on top of the revolving door.
- The distance between the roof of the revolving door and the inside ceiling must not be less than 800 mm, for installation and service to be possible.
- Ensure that the ceiling of the revolving door can carry the weight of the air curtain and duct. The total weight of the installation is stated in the Technical specifications. If the roof of the revolving door cannot take the weight, Ruwen can be mounted on a beam construction. Mounting brackets for beam included.
- Mounting with beam, see figure.

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 terminal box on the side of the unit.

For units with electrical heating, the power supply for heating (400V3~) is connected to the terminal block accessible by opening the top service hatch. The electrical connection is made on the side of the unit.

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* [mm ²]
Control	0	230V~	1,5
RDFEC10E12	12	400V3~	4
RDFEC15E18	18	400V3~	10
RDFEC20E24	24	400V3~	10
RDFEC25E30	30	400V3~	16

*) 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 side of the unit via connections DN25 (1"), internal thread. 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. A vent valve should be connected at a high point in the pipe system. Air valves are not included.

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. Ruwen has two service hatches that are opened by removing the screws on the top or bottom 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)

The elements/package must be replaced through the top service hatch.

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)

The coil must be replaced through the top service hatch.

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

Fans are replaced through the bottom service hatch. Alternatively the screws of the bottom service hatch are slackened and the fans are replaced through the top service hatch.

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 air free.
- That there is sufficient water flow and pressure.
- That incoming water is heated adequately.

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 should 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.



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