SOLID AIR®
INTERNATIONAL

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6809532-202112

Good climate, better performance!

INSTRUCTIONS FOR CONTRACTORS

TYPE: **CRO**
Englisch | Subject to modifications

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TABLE OF CONTENTS

1. ABOUT THIS DOCUMENT

>> Read this document before you begin working on the appliance.
>> Follow the instructions in this document.
Failure to observe these instructions voids any Solid Air Climate Solutions warranty.

1.1 Scope

This document is for the Solid Air CRO comfort compact ventilation unit.

1.2 Target group

This document is intended for air conditioning, ventilation and electricity contractors.

1.3 Other applicable documents

- Wiring diagram for control.
- WRS-K instructions.
- Configuration assistant.
- Notes in the form of labels.
- The documents for all accessory modules and other accessories also apply where relevant.

1.4 Safekeeping of these documents

Documents must be kept in a suitable location and must be available at all times.
The user is responsible for the safekeeping of all documents.
The documents are provided by the contractor.

1.5 Symbols

The following symbols are used in this document:

Symbol	Meaning
>>	An action which must be taken..
1	Indicates a step in images: The numbering indicates the order in which steps are taken.
	A necessary requirement.
✓	The outcome of an action.
	Important information regarding the proper use of the appliance.
	A reference to other relevant documents.

Table 1.1 Meaning of the symbols.

1.6 Warnings

	“Safety information” identifies instructions that must be observed to the letter, to prevent risks and injuries to individuals and damage to the appliance.
	Danger through 'live' electrical components. Please note: Turn off the ON/OFF switch before removing the casing. Never touch electrical components or contacts when the ON/OFF switch is in the ON position. There is a danger of electrocution, resulting in a risk to health or death. The main terminals are 'live', even when the ON/OFF switch is in the OFF position.
Please note	"Please note" designates technical instructions which you must observe to prevent the unit malfunctioning or being damaged.

Table 1.2 Meaning symbols.

2. SAFETY

2.1 Intended use

The ventilation unit is designed for air intake temperatures between -20 °C and +40 °C. For safety reasons, the room temperature in technical equipment rooms must not fall below 5 °C (risk of frost) or exceed 40 °C. The unit should be operated in room conditions of between 22 °C and 28 °C at approx. 55 % relative humidity.

The use of these units in wet rooms or rooms with explosive atmospheres is not permissible. Handling very dusty or aggressive media is not permissible.

Any onsite modification or improper use of the unit is not permissible and Solid Air accepts no liability for any damage caused as a result.

Ventilation units intended for internal installation must be placed in rooms that meet the requirements of VDI 2050 (VDI 2050, Requirements for technical equipment rooms - Planning and execution).

In accordance with DIN 1886, tools are required to open the unit. Wait for the fan to reach standstill (2 minutes wait). When the doors are opened, negative pressure may draw in loose objects, which could destroy the fan or even cause a risk to life if items of clothing are drawn in.

2.2 Safety measures

>> Removal and disabling of safety and monitoring equipment is prohibited.
>> The system must only be operated if it is in perfect technical condition.
>> Ensure that any faults or damage that may impact on safety are rectified immediately.

2.2.1 Power supply

>> Make the electrical connection in accordance with local regulations.

>> Once electrical connection work is complete, the installation must be subjected to a safety test in accordance with VDE 0701-0702 and VDE 0700 part 500, as otherwise there would be a risk of electric shock that could result in injury or death.

>> **Before working on the unit, shut it down via the isolator.**

>> Even when the unit has been shut down, voltage will still be present at terminals and connections of the EC fans.

>> This means there is a risk of electric shock that could result in injury or death.
>> Do not touch the EC fans for five minutes after disconnecting the power across all poles.

2.2.2 What to do in the event of a fire

The unit does not present a direct risk of fire.The small numbers of seals fitted inside the unit can burn away if subjected to external influences. Wear respiratory equipment if you fight a fire. The usual extinguishing agents such as water, extinguishing foam or extinguishing powder can be used to extinguish fires. As there are only a small number of flammable seals, the level of pollutants that could be released in a fire is minimal.

2.3 General safety information

In addition to installation and maintenance instructions, there are notes attached to the unit in the form of labels. These must also be observed.

Only qualified and trained personnel may be appointed for the installation, commissioning, maintenance and operation of the unit.
Only qualified electricians are permitted to work on the electrical system.
VDE regulations (or local regulations) and those of your local power supply utility are applicable to electrical installation work.
Only operate the unit within its output range, which is stated in the technical documentation supplied by Solid Air.

Only operate the appliance if it is in perfect technical condition. Any faults or damage that impact or might impact upon the safety or correct function of the unit must be remedied immediately by qualified personnel.
Only replace faulty components and equipment with original Solid Air spare parts.

Please note

It may only be used for handling air. This air must not contain any harmful, combustible, explosive, aggressive, corrosive or otherwise dangerous substances, as these would be distributed throughout the duct system or building, where they could cause a risk to the health of, or even kill the occupants, animals or plants living there.

2.4 Other technical documents

- Operating instructions WRS-K.
- MicroMax 370 W TWHE control unit operating instructions.
- Wiring diagram.
- Configuration assistant WRS-K.
- Commissioning report/parameter list.

3. STANDARDS AND REGULATIONS

3.1 Applicable standards and regulations

The following standards and regulations apply to the ventilation units:

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- ErP Directive 2009/125/EC
- DIN EN ISO 12100 ..... Safety of machinery - General principles for design
- DIN EN ISO 13857 ..... Safety of machinery - Safety distances
- DIN EN 349 ..... Safety of machinery - Minimum clearances
- DIN EN 953 ..... Safety of machinery - Guards
- DIN EN 1886 ..... Ventilation for buildings - Central airhandling units
- DIN ISO 1940-1 ..... Mechanical vibration - Balance quality requirements
- VDMA 24167 ..... Fans - Safety requirements
- DIN EN 60204-1 ..... Safety of machinery - Electrical equipment of machines
- DIN EN 60730 ..... Automatic electrical controls
- DIN EN 61000-6-2 ..... Electromagnetic - Compatibility

3.2 The following standards and regulations apply to installation and operation

- DIN EN 50106 (VDE 0700-500) ..... Safety of electrical appliances - tests
- DIN VDE 0100 ..... Regulations regarding the installation of high voltage systems up to 1000V
- DIN EN 50110-1 (VDE 0105-1) ..... Operation of electrical installations
- DIN VDE 0105-100 ..... Operation of electrical systems - general stipulations

4. DESCRIPTION

4.1 CRO-iD

Comfort thermal wheel heat exchanger ventilation unit for internal installation with vertical/horizontal duct connection (example provided is CRO-iD-3500 with boost damper).

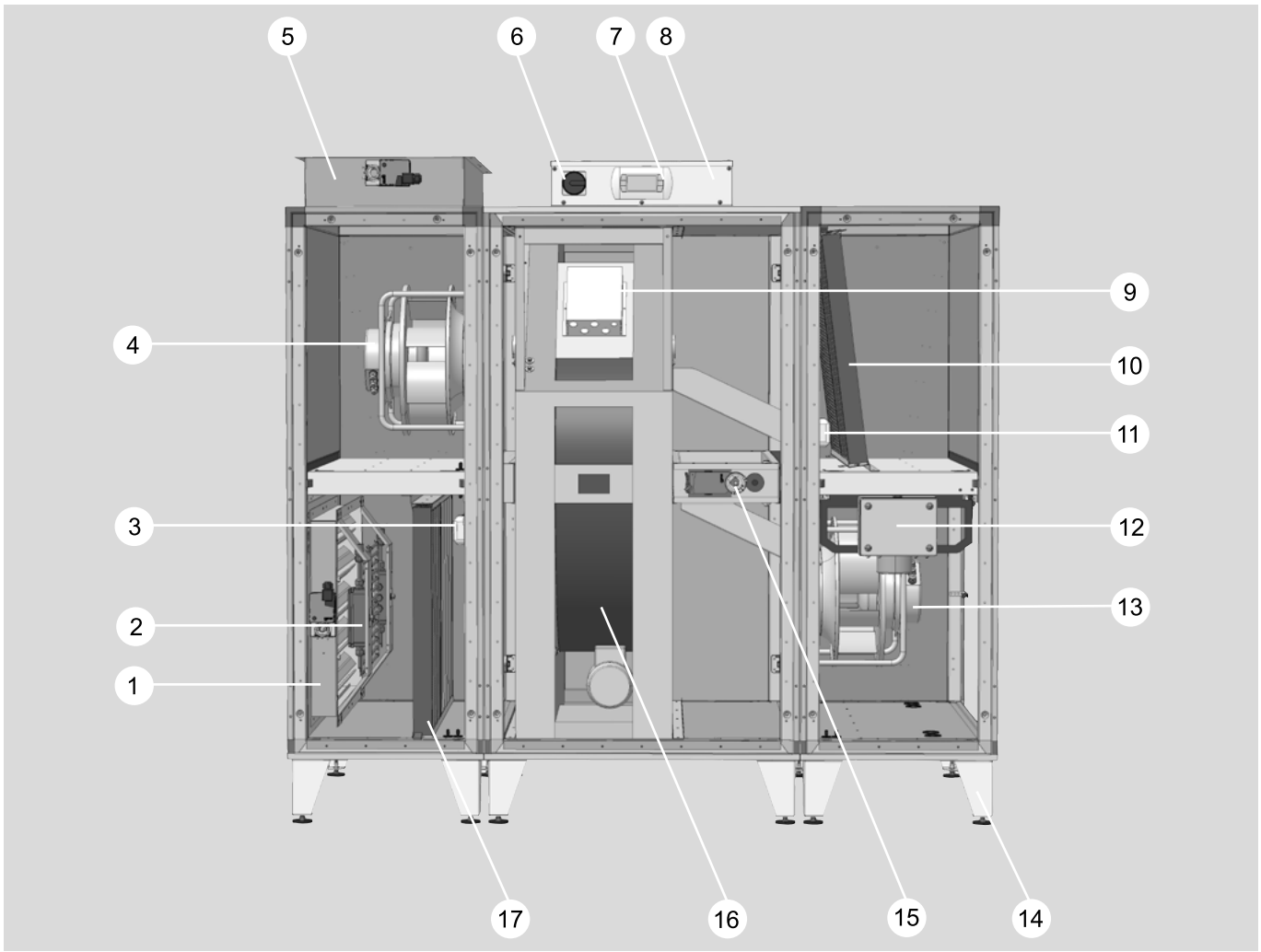


Fig. 4.1 CRO-iD description

1 Outdoor air damper with servomotor
2 Filter pre-dryer (accessory)
3 Differential pressure switch for filter monitoring
4 EC fan, extract air
5 Ventilation air damper with servomotor
6 Unit isolator
7 BMK programming unit
8 Control panel
9 TWHE control unit
10 Compact filter, extract air
11 Differential pressure switch for filter monitoring
12 Electric reheating coil available for CRO-1300/-2500/-3500 (accessory))
13 EC fan, supply air
14 Adjustable feet
15 Boost damper with servomotor optional for CRO-1300/-2500/-3500
16 TWHE thermal wheel heat exchanger
17 Compact filter, outdoor air

4.1.1 Technical data/Dimensions CRO-iD

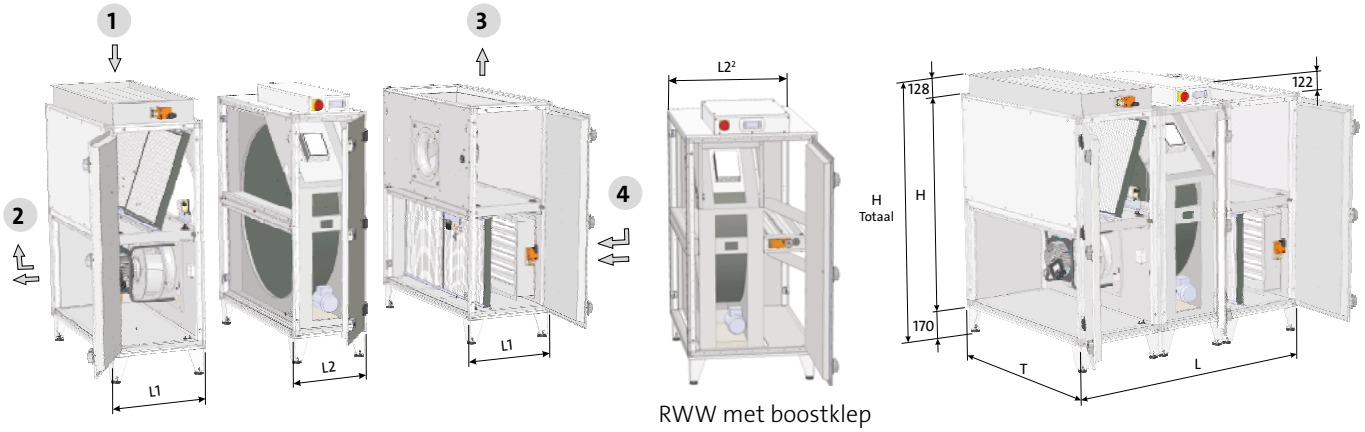


Fig. 4.2 CRO-iD dimensions

1 Outdoor air
2 Exhaust air
3 Supply air
4 Extract air

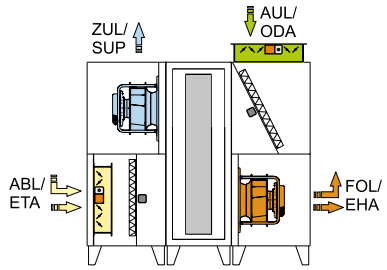
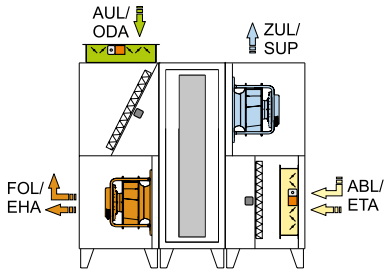
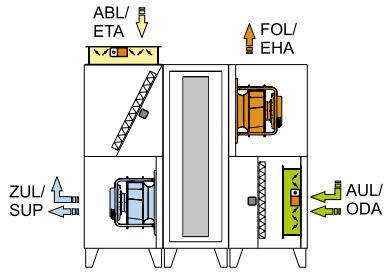
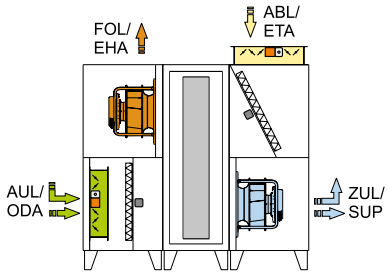
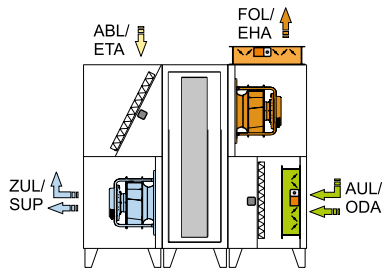
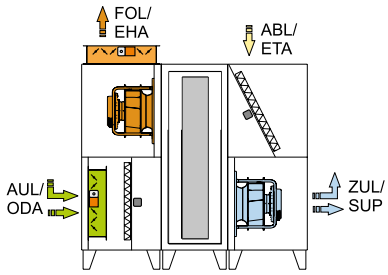
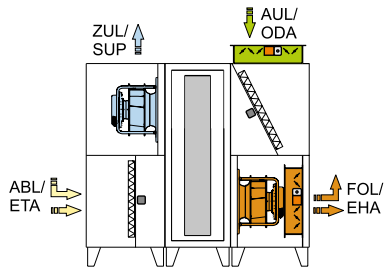
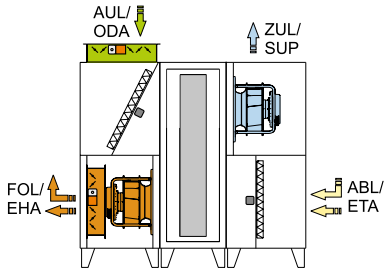
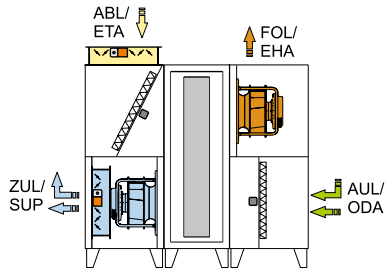
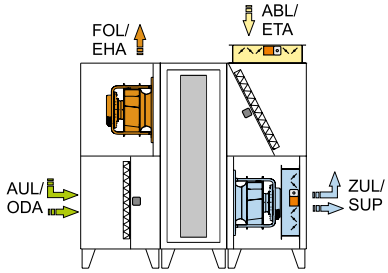
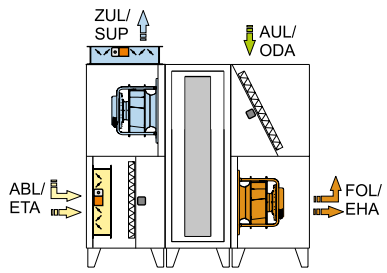
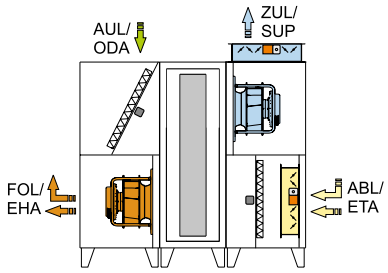
Technical data

Type	CRO-iD-1300	CRO-iD-2500	CRO-iD-3500
Unit layout	Single piece	Single piece	Three piece
Length L (mm)	15.25/1.525[2]	1.626/1.626[2]	1.626/1.830[2]
Length L[1] (mm)	-	-	508
Length L[2] (rotor part) (mm)	-	-	610/814[2]
Depth D (incl. locks) (mm)	750	950	1.155
Total height (mm)	1.315	1.722	1.722
Height H (mm)	1.017	1.424	1.424
Foot height (mm)	170	170	170
Control unit height (mm)	122	122	122
Duct connection dimensions, horizontal air routing[1] (mm)	612 x 409	815 x 612	1.019 x 612
Duct connection dimensions, vertical air routing[1] (mm)	596 x 307	799 x 307	1.019 x 408
Weight (kg)	266/266[2]	381/381[2]	470/490[2] (130 + 210 + 130) (130 + 230 + 130)[2]
Nominal flow rate (m³/h)	1.300 bij 460 Pa (ext.)	2.500 bij 600 Pa (ext.)	3.500 bij 980 Pa (ext.)

Type	CRO-iD-4800	CRO-iD-6200	CRO-iD-9000
Unit layout	Three piece	Three piece	Three piece
Length L (mm)	1.728	1.932	2.136
Length L[1] (mm)	610	712	814
Length L[2] (rotor part) (mm)	508	508	508
Depth D (incl. locks) (mm)	1.360	1.665	2.070
Total height (mm)	1.722	1.722	1.925
Height H (mm)	1.424	1.424	1.627
Foot height (mm)	170	170	170
Control unit height (mm)	122	122	122
Duct connection dimensions, horizontal air routing[1] (mm)	1.222 x 612	1.527 x 612	1.934 x 714
Duct connection dimensions, vertical air routing[1] (mm)	1.222 x 510	1.527 x 612	1.934 x 714
Weight (kg)	590 (180 + 230 + 180)	715 (220 + 275 + 220)	845 (275 + 295 + 275)
Nominal flow rate (m³/h)	4.800 bij 450 Pa (ext.)	6.200 bij 680 Pa (ext.)	9.000 bij 1.000 Pa (ext.)

[1] Internal dimensions [2] With boost damper

4.1.2 CRO-iD appliance versions

Access side in supply air direction, left		Access side in supply air direction, right	
	-L1		-R1
	-L2		-R2
	-L3*		-R3*
	-L4*		-R4*
	-L5		-R5
	-L6		-R6

*For CRO-1300/-2500/-3500, these versions are available with a boost damper.

4.2 CRO-iH

Comfort thermal wheel heat exchanger ventilation unit for internal installation with horizontal duct connection (example provided is CRO-iH-3500 with boost damper).

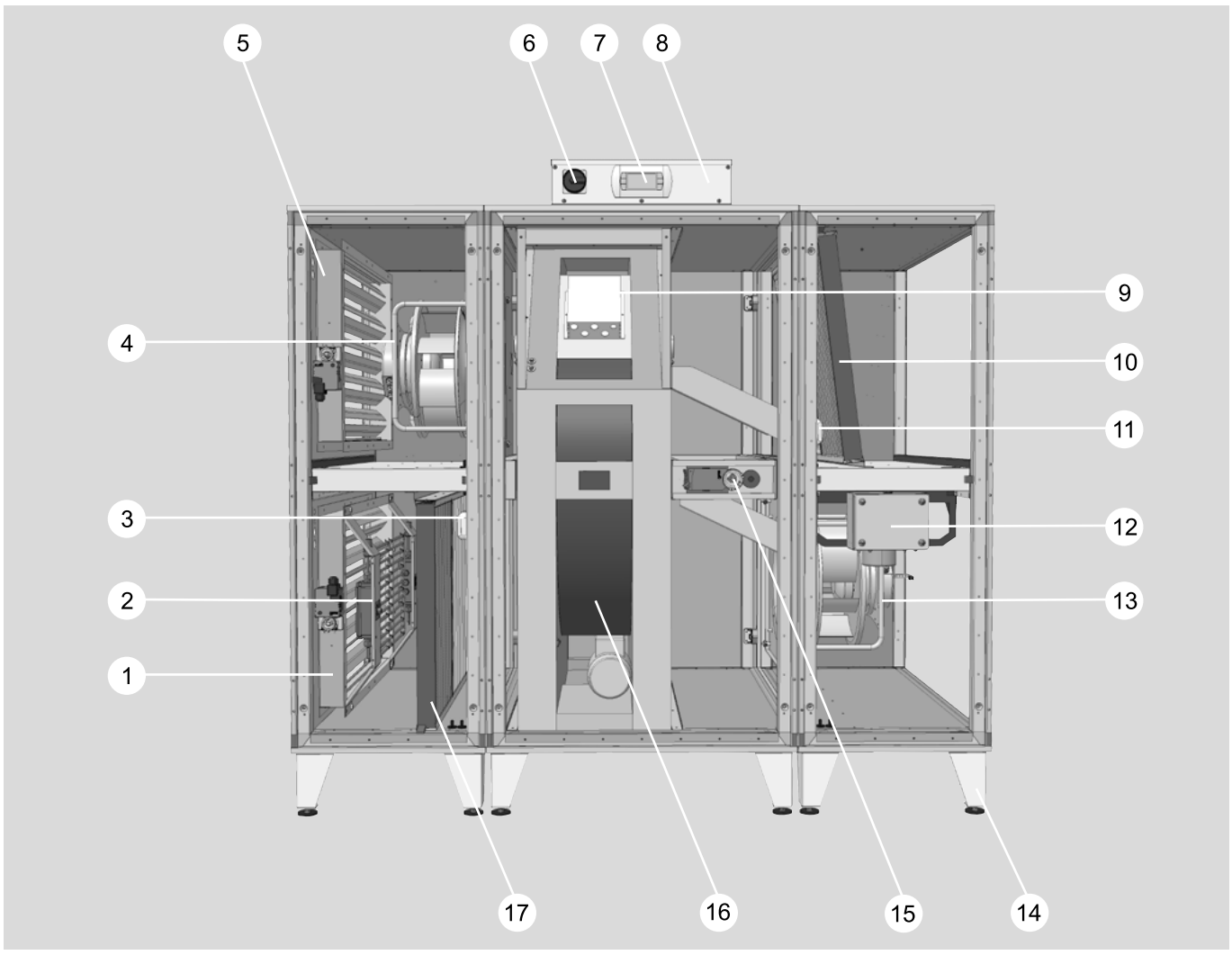
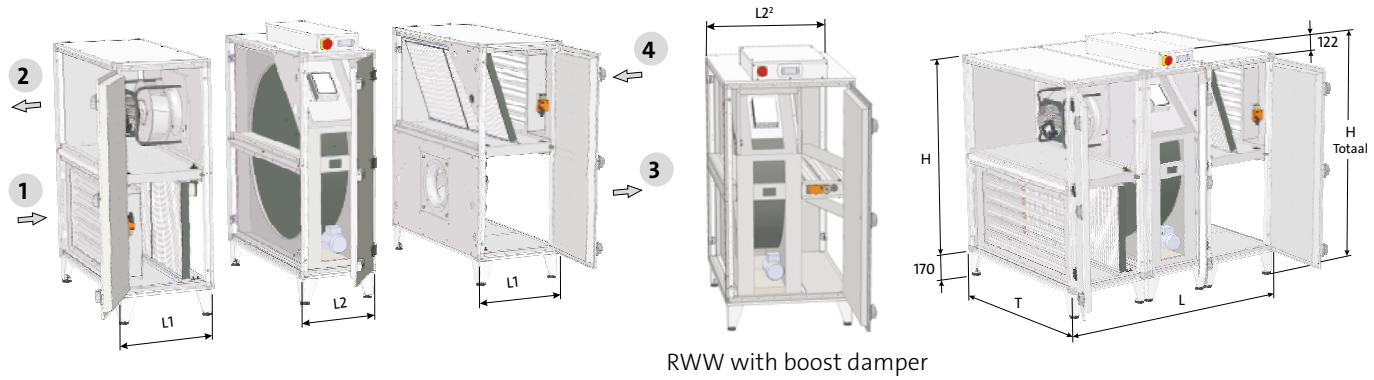


Fig. 4.3 CRO-iH description

1 Outdoor air damper with servomotor
2 Filter pre-dryer (accessory)
3 Differential pressure switch for filter monitoring
4 EC fan, extract air
5 Ventilation air damper with servomotor
6 Unit isolator
7 BMK programming unit
8 Control panel
9 TWHE control unit
10 Compact filter, extract air
11 Differential pressure switch for filter monitoring
12 Electric reheating coil available for CRO-1300/-2500/-3500 (accessory)
13 EC fan, supply air
14 Adjustable feet
15 Boost damper with servomotor optional for CRO-1300/-2500/-3500
16 TWHE thermal wheel heat exchanger
17 Compact filter, outdoor air

4.2.1 Technical data/Dimensions CRO-iH



RWW with boost damper

Fig. 4.4 CRO-iH dimensions

1 Outdoor air
2 Exhaust air
3 Supply air
4 Extract air

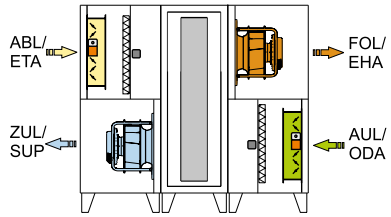
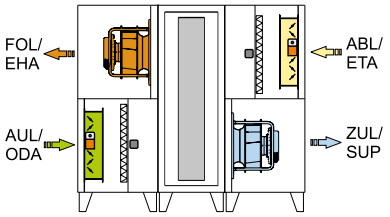
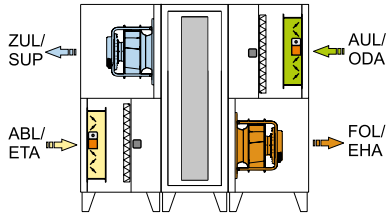
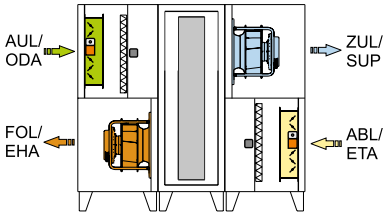
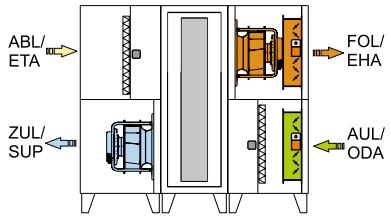
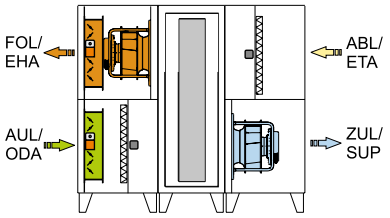
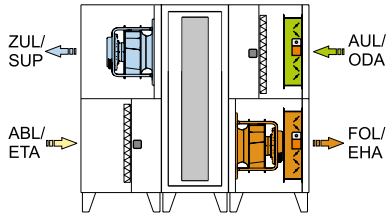
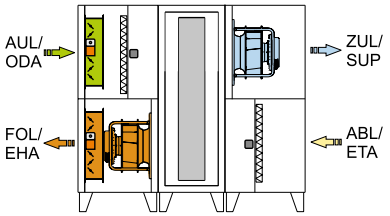
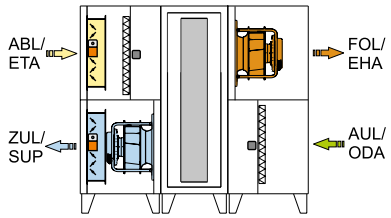
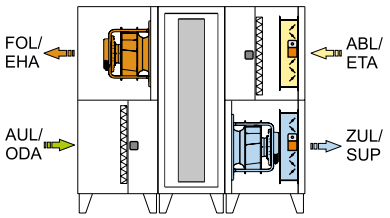
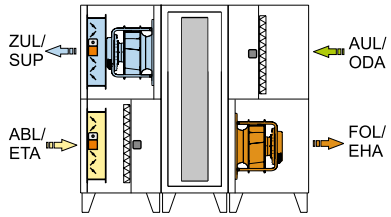
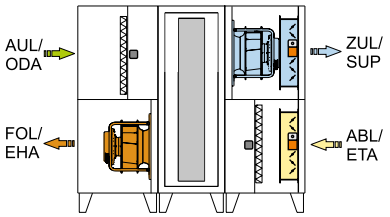
Technical data

Type	CRO-iH-1300	CRO-iH-2500	CRO-iH-3500
Unit layout	Single piece	Single piece	Three piece
Length L (mm)	1.525/1.525[2]	1.626/1.626[2]	1.626/1.830[2]
Length L[1] (mm)	-	-	508
Length L[2] (rotor part) (mm)	-	-	610/814[2]
Depth D (incl. locks) (mm)	750	950	1.155
Total height (mm)	1.309	1.716	1.716
Height H (mm)	1.017	1.424	1.424
Foot height (mm)	170	170	170
Control unit height (mm)	122	122	122
Duct connection dimensions, horizontal air routing [1] (mm)	612 x 409	815 x 612	1.019 x 612
Weight (kg)	266/266[2]	381/381[2]	470/490[2] (130 + 210 + 130) (130 + 230 + 130)[2]
Nominal flow rate (m³/h)	1.300 bij 460 Pa (ext.)	2.500 bij 600 Pa (ext.)	3.500 bij 980 Pa (ext.)

Type	CRO-iH-4800	CRO-iH-6200	CRO-iH-9000
Unit layout	Three piece	Three piece	Three piece
Length L (mm)	1.728	1.932	2.136
Length L[1] (mm)	610	712	814
Length L[2] (rotor part) (mm)	508	508	508
Depth D (incl. locks) (mm)	1.360	1.665	2.070
Total height (mm)	1.716	1.716	1.919
Height H (mm)	1.424	1.424	1.627
Foot height (mm)	170	170	170
Control unit height (mm)	122	122	122
Duct connection dimensions, horizontal air routing[1] (mm)	1.222 x 612	1.527 x 612	1.934 x 714
Weight (kg)	590 (180 + 230 + 180)	715 (220 + 275 + 220)	845 (275 + 295 + 275)
Nominal flow rate (m³/h)	4.800 bij 450 Pa (ext.)	6.200 bij 680 Pa (ext.)	9.000 bij 1.000 Pa (ext.)

[1] Internal dimensions [2] With boost damper

4.2.2 CRO-iH appliance versions

Access side in supply air direction, left	Access side in supply air direction, right
 **-L1**	 **-R1**
 **-L2**	 **-R2**
 **-L3***	 **-R3***
 **-L4***	 **-R4***
 **-L5**	 **-R5**
 **-L6**	 **-R6**

*For CRO-iH-1300/-2500/-3500, these versions are available with a boost damper.

4.3 CRO-iDH

Comfort thermal wheel heat exchanger ventilation unit energy efficient and comfortable ventilation with vertical/ horizontal duct connection (example provided is CRO-iDH-3500 with boost damper).

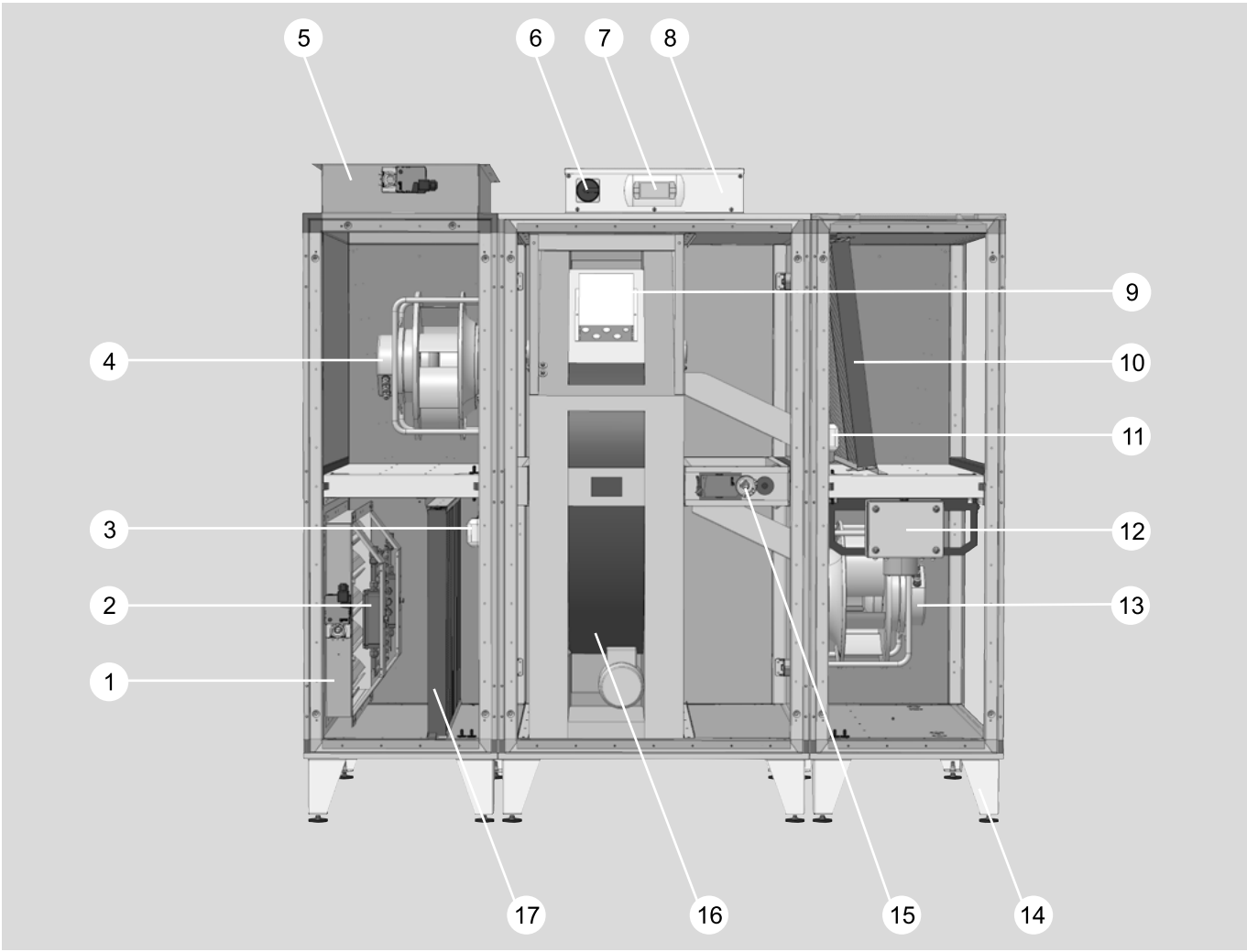
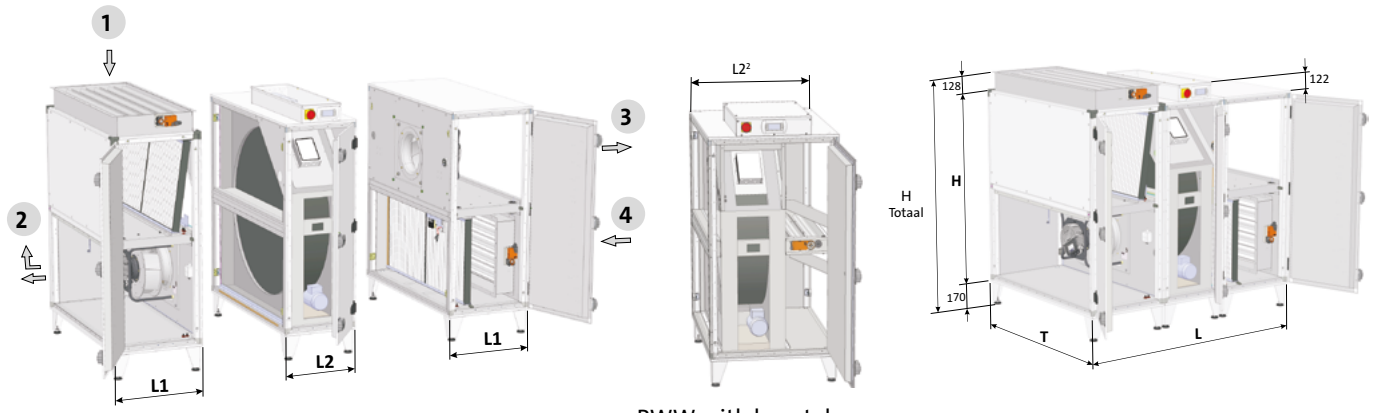


Fig. 4.5 CRO-iDH description

1 Outdoor air damper with servomotor
2 Filter pre-dryer (accessory)
3 Differential pressure switch for filter monitoring
4 EC fan, extract air
5 Ventilation air damper with servomotor
6 Unit isolator
7 BMK programming unit
8 Control panel
9 TWHE control unit
10 Compact filter, extract air
11 Differential pressure switch for filter monitoring
12 Electric reheating coil available for CRO-1300/-2500/-3500 (accessory)
13 EC fan, supply air
14 Adjustable feet
15 Boost damper with servomotor optional for CRO-1300/-2500/-3500
16 TWHE thermal wheel heat exchanger
17 Compact filter, outdoor air

4.3.1 Technical data/Dimensions CRO-iDH



RWW with boost damper

Afb. 4.6 CRO-iDH dimensions

1 Outdoor air
2 Exhaust air
3 Supply air
4 Extract air

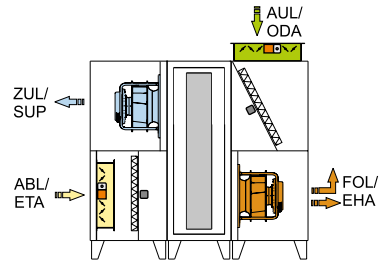
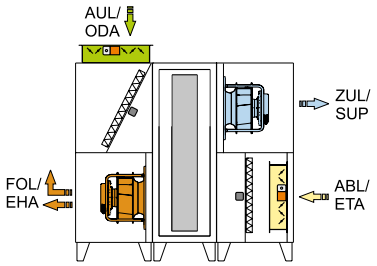
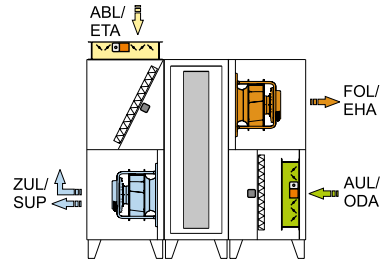
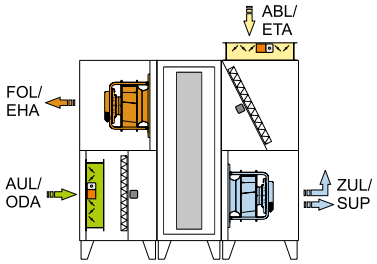
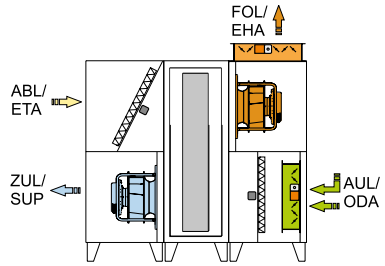
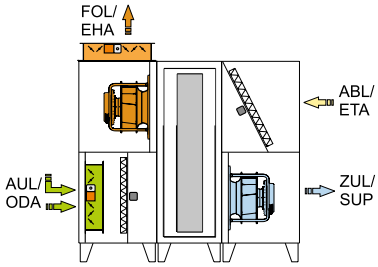
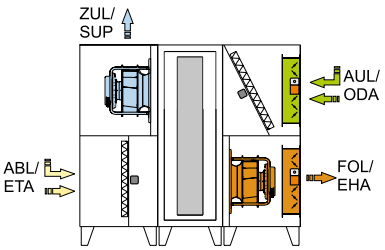
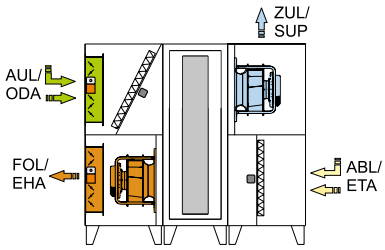
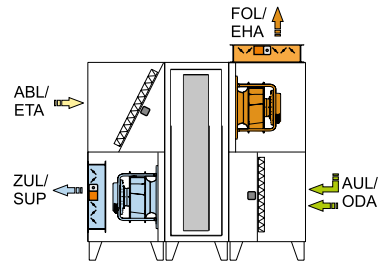
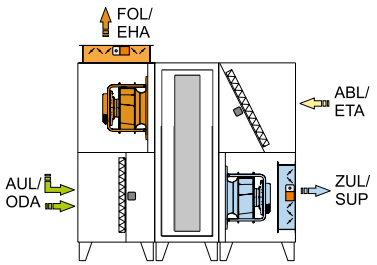
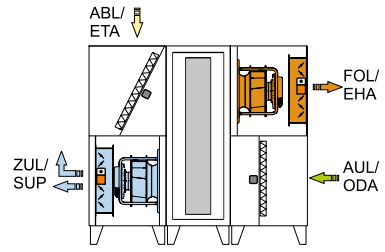
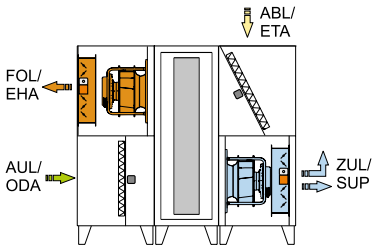
Technical data

Type	CRO-iDH-1300	CRO-iDH-2500	CRO-iDH-3500
Unit layout	Single piece	Single piece	Three piece
Length L (mm)	1.525/1.525²	1.626/1.626²	1.626/1.830²
Length L¹ (mm)	-	-	508
Length L² (rotor part) (mm)	-	-	610/814²
Depth D (incl. locks) (mm)	750	950	1.155
Total height (mm)	1315	1722	1.722
Height H (mm)	1017	1424	1.424
Foot height (mm)	170	170	170
Control unit height (mm)	122	122	122
Duct connection dimensions, horizontal air routing¹ (mm)	612 x 409	815 x 612	1.019 x 612
Duct connection dimensions, vertical air routing¹ (mm)	596 x 307	799 x 307	1.019 x 408
Weight (kg)	266/266²	381/381²	470/490² (130 + 210 + 130) (130 + 230 + 130)²
Nominal flow rate (m³/h)	1.300 bij 460 Pa (ext.)	2.500 bij 600 Pa (ext.)	3.500 bij 980 Pa (ext.)

Type	CRO-iDH-4800	CRO-iDH-6200	CRO-iDH-9000
Unit layout	Three piece	Three piece	Three piece
Length L (mm)	1.728	1.932	2.136
Length L¹ (mm)	610	712	814
Length L² (rotor part) (mm)	508	508	508
Depth D (incl. locks) (mm)	1.360	1.665	2.070
Total height (mm)	1.722	1.722	1.925
Height H (mm)	1.424	1.424	1.627
Foot height (mm)	170	170	170
Control unit height (mm)	122	122	122
Duct connection dimensions, horizontal air routing¹ (mm)	1.222 x 612	1.527 x 612	1.934 x 714
Duct connection dimensions, vertical air routing¹ (mm)	1.222 x 510	1.527 x 612	1.934 x 714
Weight (kg)	590 (180 + 230 + 180)	715 (220 + 275 + 220)	845 (275 + 295 + 275)
Nominal flow rate (m³/h)	4.800 bij 450 Pa (ext.)	6.200 bij 680 Pa (ext.)	9.000 bij 1.000 Pa (ext.)

¹ Internal dimensions ² With boost damper

4.3.2 CRO-iDH appliance versions

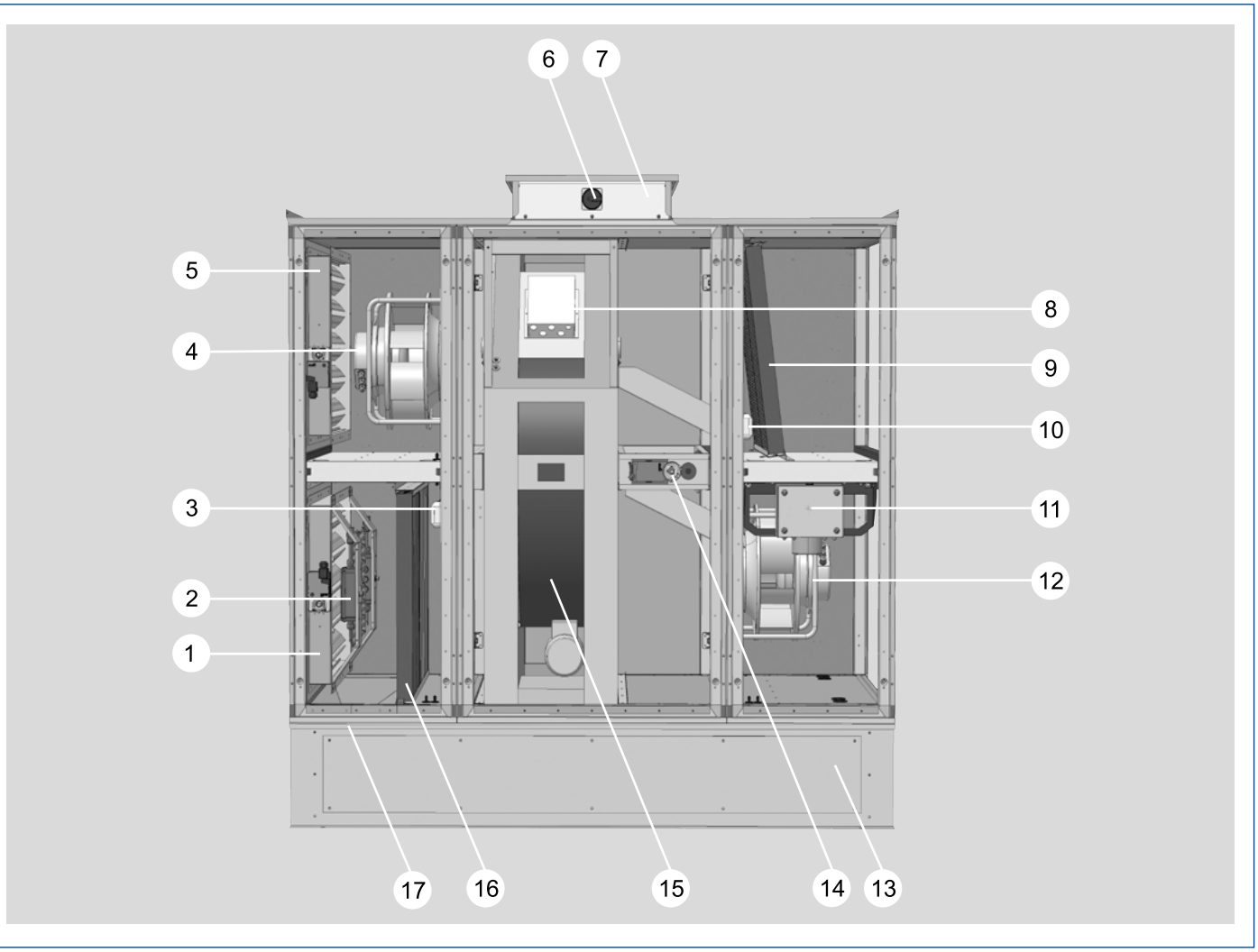
Access side in supply air direction, left		Access side in supply air direction, right	
	-L1		-R1
	-L2		-R2
	-L3*		-R3*
	-L4*		-R4*
	-L5		-R5
	-L6		-R6

Other versions available; see the Solid Air Climate Solutions sizing program.

*For CRO-1300/-2500/-3500, these versions are available with a rapid heat-up damper.

4.4 CRO-A

Comfort thermal wheel heat exchanger ventilation unit for external installation (weather-resistant) with horizontal duct connection (example provided is CRO-A-3500 with boost damper).



Afb. 3.7 CRO-A description

1 Outdoor air damper with servomotor
2 Filter pre-dryer (accessory)
3 Differential pressure switch for filter monitoring
4 EC fan, extract air
5 Ventilation air damper with servomotor
6 Unit isolator
7 Control panel
8 TWHE control unit
9 Compact filter, extract air
10 Differential pressure switch for filter monitoring
11 Electric reheating coil available for CRO-1300/-2500/-3500 (accessory)
12 EC fan, supply air
13 Base frame
14 Boost damper with servomotor optional for CRO-1300/-2500/-3500
15 TWHE thermal wheel heat exchanger
16 Compact filter, outdoor air
17 Connectors for DN 50 trap

4.4.1 Technical data/Dimensions CRO-A

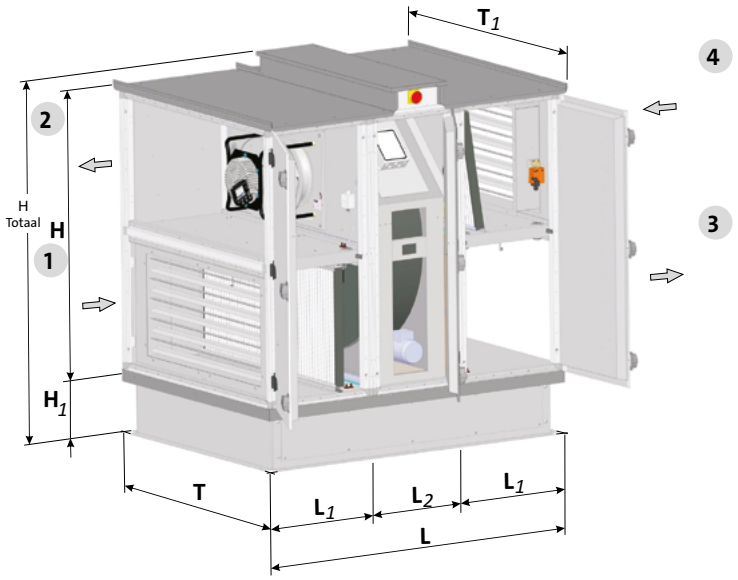


Fig. 4.8 CRO-A dimensions

1 Outdoor air
2 Exhaust air
3 Supply air
4 Extract air

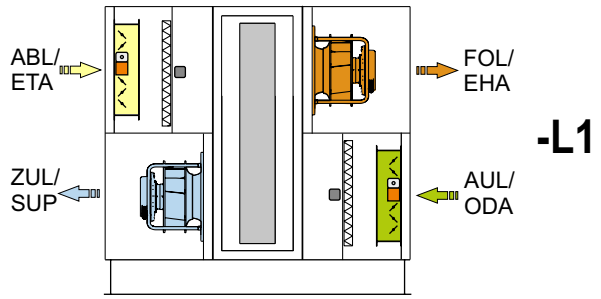
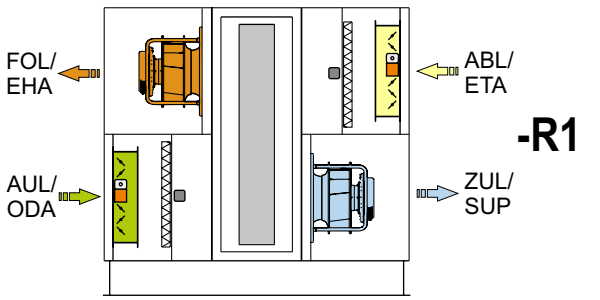
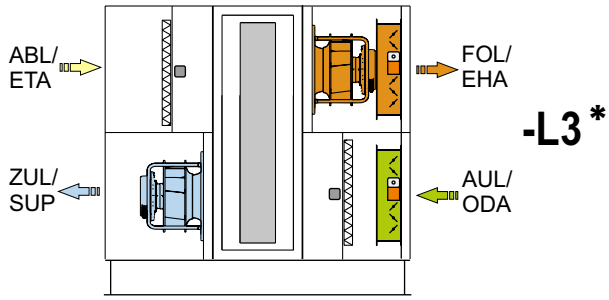
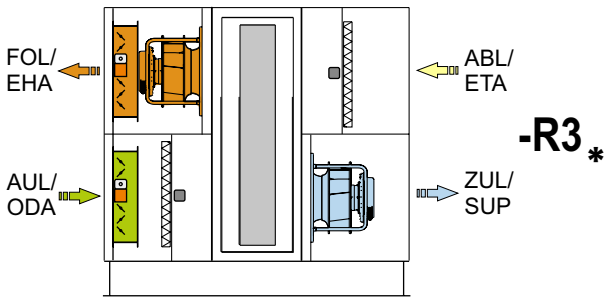
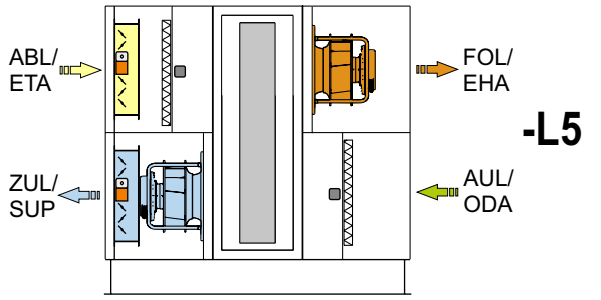
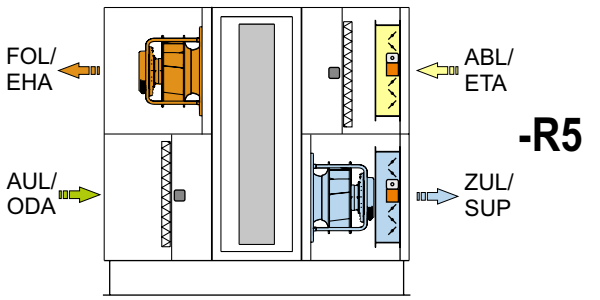
Technical data

Type	CRO-A-1300	CRO-A-2500	CRO-A-3500
Unit layout	Single piece	Single piece	Three piece
Length L (mm)	1.525/1.525[2]	1.626/1.626[2]	1.626/1.830[2]
Length L[1] (mm)	-	-	508
Length L[2] (rotor part) (mm)	-	-	610/814[2]
Depth D (mm)	712	915	1.118
Total depth T[1] (mm)	812	1.015	1.218
Total height (mm)	1.457	1.864	1.864
Height H (mm)	1.017	1.424	1.424
Base frame H[1] (mm)	305	305	305
Duct connection dimensions, horizontal air routing[1] (mm)	612 x 409	815 x 612	1.019 x 612
Weight (kg)	320/320[2]	445/445[2]	530/550[2]
Nominal flow rate (m³/h)	1.300 bij 460 Pa (ext.)	2.500 bij 600 Pa (ext.)	3.500 bij 980 Pa (ext.)

Type	CRO-A-4800	CRO-A-6200	CRO-A-9000
Unit layout	Three piece	Three piece	Three piece
Length L (mm)	1.728	1.932	2.136
Length L[1] (mm)	610	712	814
Length L[2] (rotor part) (mm)	508	508	508
Depth D (mm)	1.322	1.626	2.034
Total depth T[1] (mm)	1.422	1.726	2.134
Total height (mm)	1.864	1.864	2.067
Height H (mm)	1.424	1.424	1.627
Base frame H[1] (mm)	305	305	305
Duct connection dimensions, horizontal air routing[1] (mm)	1.222 x 612	1.527 x 612	1.934 x 714
Weight (kg)	660	800	960
Nominal flow rate (m³/h)	4.800 bij 450 Pa (ext.)	6.200 bij 680 Pa (ext.)	9.000 bij 1.000 Pa (ext.)

[1] Internal dimensions [2] With boost damper

4.4.2 CRO-A appliance versions

Access side in supply air direction, left	Access side in supply air direction, right
	
	
	

*For CRO-A-1300/-2500/-3500, these versions are available with a boost damper.

5. INSTALLATION

5.1 Delivered condition

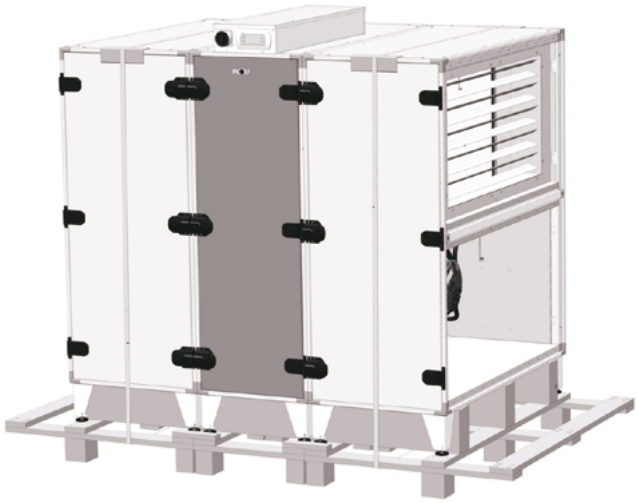


Fig. 4.1 Delivered condition

- CRO ventilation units are supplied in packaging that protects them from dirt and damage.
- Upon receipt of the goods, check the unit for possible transport damage.

>> If there is any damage or even a suspicion of damage, the recipient must indicate this on the consignment note and have it countersigned by the haulier.

>> The recipient of the goods must notify Solid Air of the relevant facts without delay.

>> Dispose of the transport packaging in accordance with local regulations.

5.1.1 Storage

>> Only store the ventilation unit in dry rooms at an ambient temperature between -25 °C and +55 °C.

>> If it is stored for a long time, ensure that all apertures are sealed against air and water ingress.

5.2 Transport

- Units are supplied fully assembled and fully wired.
- Only transport units in their installation position.

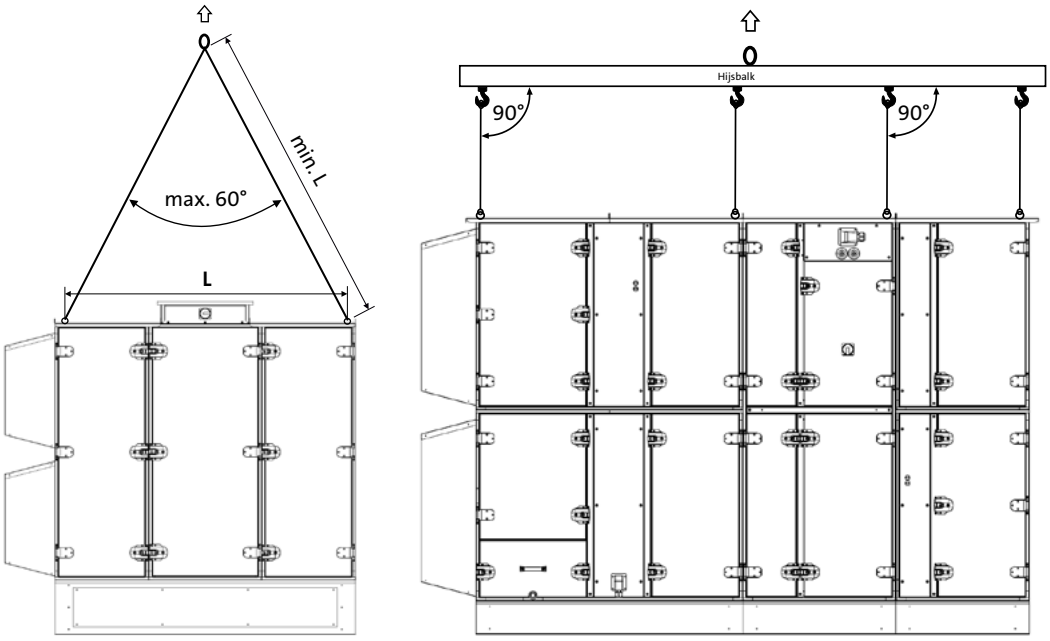
>> Never tilt the unit when transporting it through doorways or in narrow stairwells (lifts).

>> Failure to observe these instructions can damage internal components irreparably.

Transport external units

>> Transport ropes with a minimum length equivalent to the eye bolt distance L must be used when transporting external CRO units with eye bolts.

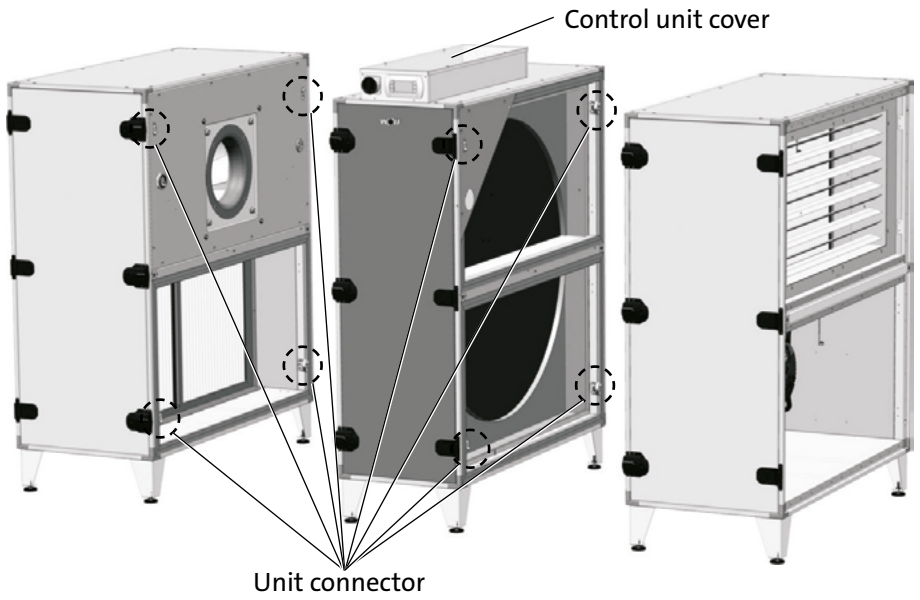
>> CRO outdoor units as a complete unit may only be lifted with a crane traverse with vertical and simultaneous pull on all existing eye bolts.



Transport Internal units

>> The 3500, 4800, 6200 and 9000 versions of the CRO internal units can be split into three sections for easier handling. (Delivered as a transport unit)

>> Unit connectors, hexagon bolts and nuts are used to connect the parts together. Electric lines and control cables can be disconnected and connected again quite simply by means of plug-in connections in the control unit casing.



5.3 Disposal and recycling

>> When the unit reaches the end of its service life, it must only be dismantled by qualified personnel.
>> Before starting to dismantle the unit, disconnect the power supply.
>> Power cables must be removed by qualified electricians.
>> Sort and dispose of metal and plastic parts according to material types and in compliance with local regulations.
>> Dispose of electrical and electronic components as electrical waste.

5.4 Disassembly of internal units (CRO-3500/-4800/-6200/-9000)

>> Undo the unit connector bolts with an SW13 spanner to dismantle the unit.
>> Remove filters before dismantling in order to reach the rear unit connectors.
>> It may be necessary to remove the dampers in order to gain better access to the rear unit connectors in this area.

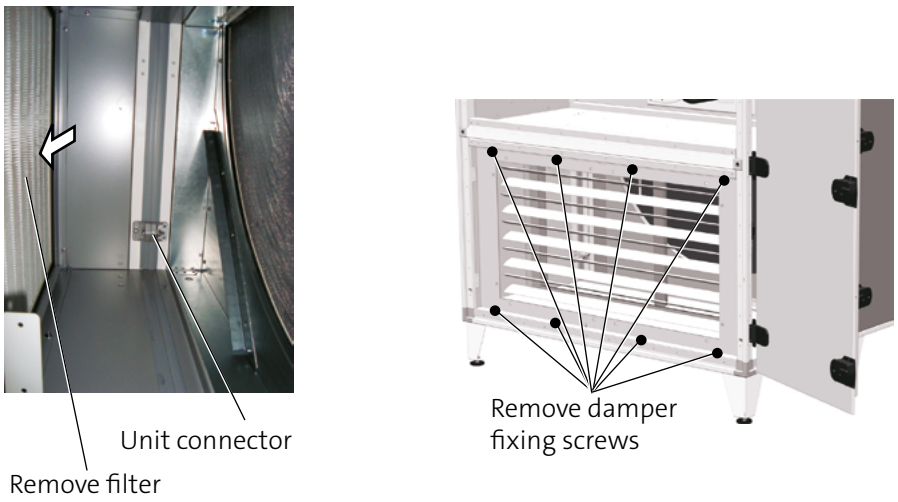


Fig. 5.1 Disassembly of external units

>> Before dismantling the unit, disconnect the wiring harnesses from the control unit.

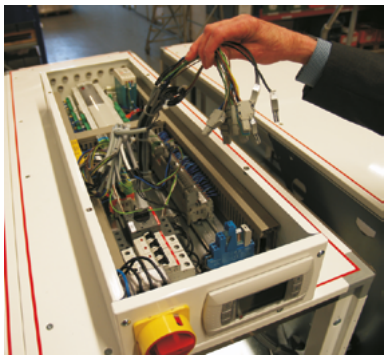


Fig. 5.2 Remove control unit cover and disconnect the cables.

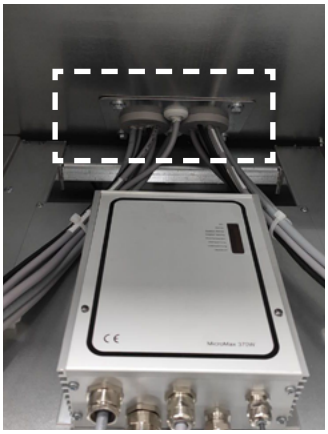


Fig. 5.3 Remove plate

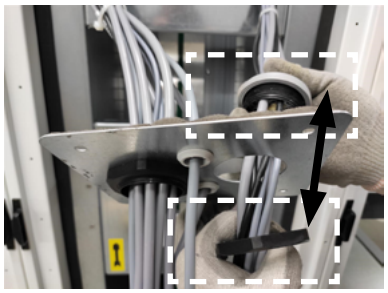


Fig. 5.4 Open up the cable entries in the plate.

Fig. 5.5 Pull wiring harnesses into the slant of the thermal wheel heat exchanger.

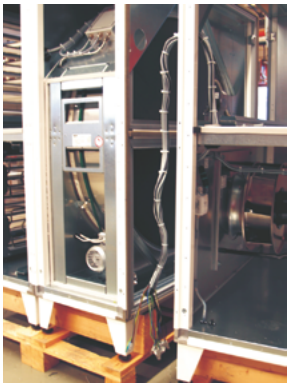


Fig. 5.6 Pull wiring harnesses left and right into the external parts.

5.5 Assembling unit sections

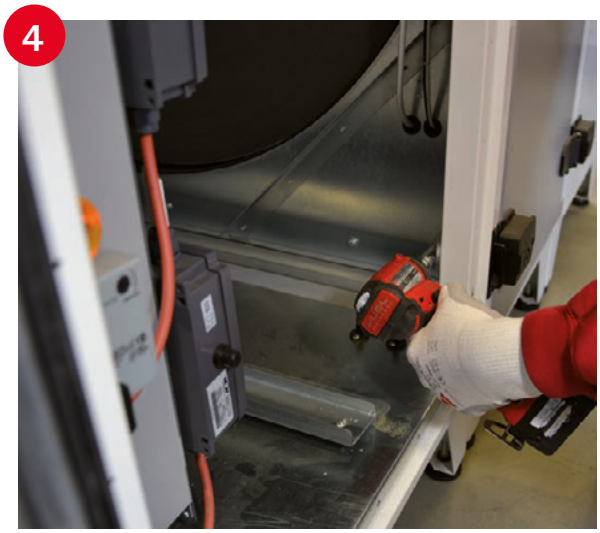
>> **Before assembling the individual unit sections, ensure that they are pushed together completely.**
>> The assembly of cube components can be simplified by using lashing straps.
>> Position unit sections next to each other and pull them together with lashing straps.
>> Then screw the components together via the unit connectors.
>> In order to ensure a secure threaded connection, screw the hexagon bolts manually into the captive nuts during assembly.
>> Only then should they be tightened, for example, with an electric screwdriver.
>> Subsequently, route the wiring harnesses back to the control unit and plug them in (observe the cable designations).

1

2

3

4



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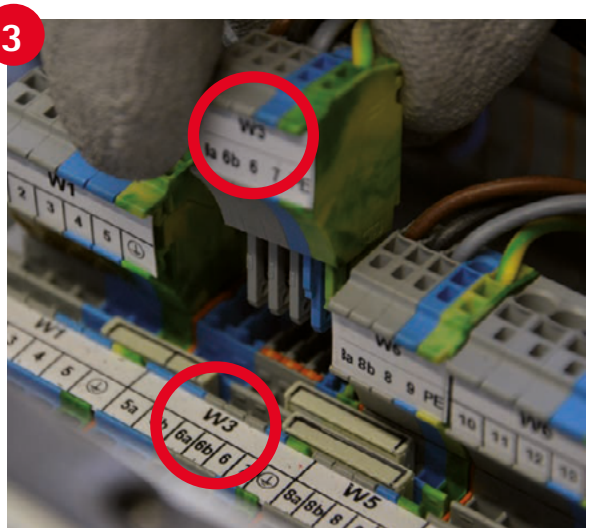

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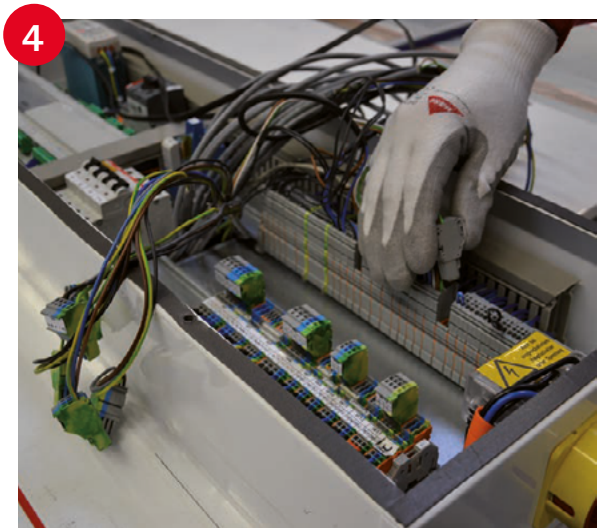

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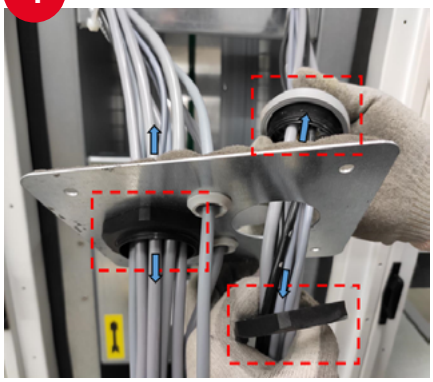

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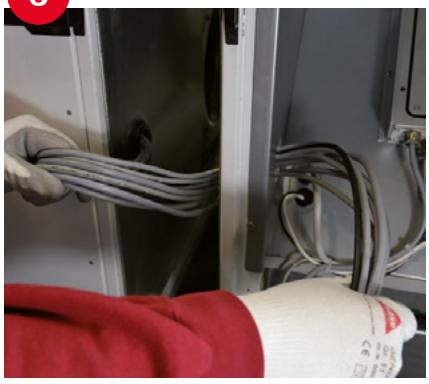


5.6 Installation information for external units

- **Weatherproof units must not be used for any load-bearing building functions or as a replacement for any part of the roof (VDI 3803 5.1/DIN EN 13053 6.2).**

>> A level, horizontal load-bearing surface is required for siting and installing the external units.

>> Base frames must be levelled horizontally (check with a spirit level).

>> To prevent the inspection doors from jamming, the entire base frame must sit on the foundation; point loads are not permissible.

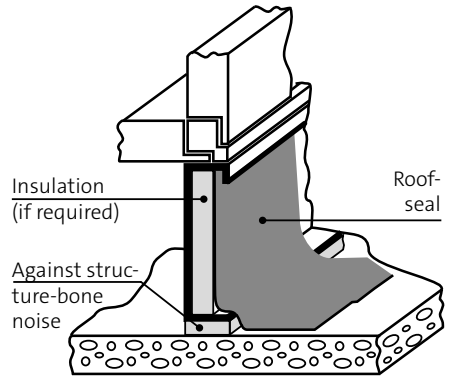


Fig. 5.7 Structure-borne noise insulation to the building

>> To prevent structure-borne noise transmission from the CRO to the building, insert a permanently flexible intermediate layer between the foundation and the base frame.

>> This intermediate layer should preferably take the form of insulation strips, fitted lengthwise below the base frame.

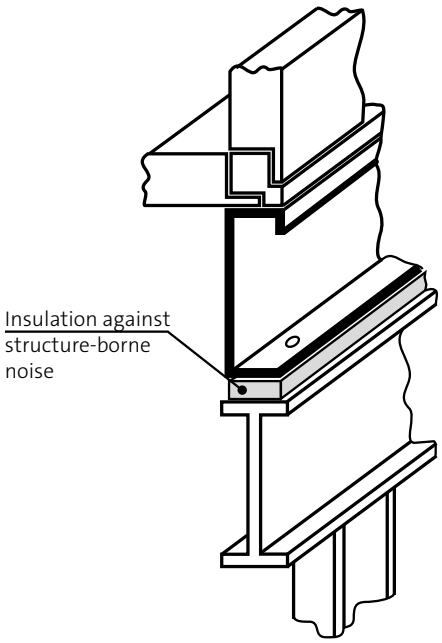
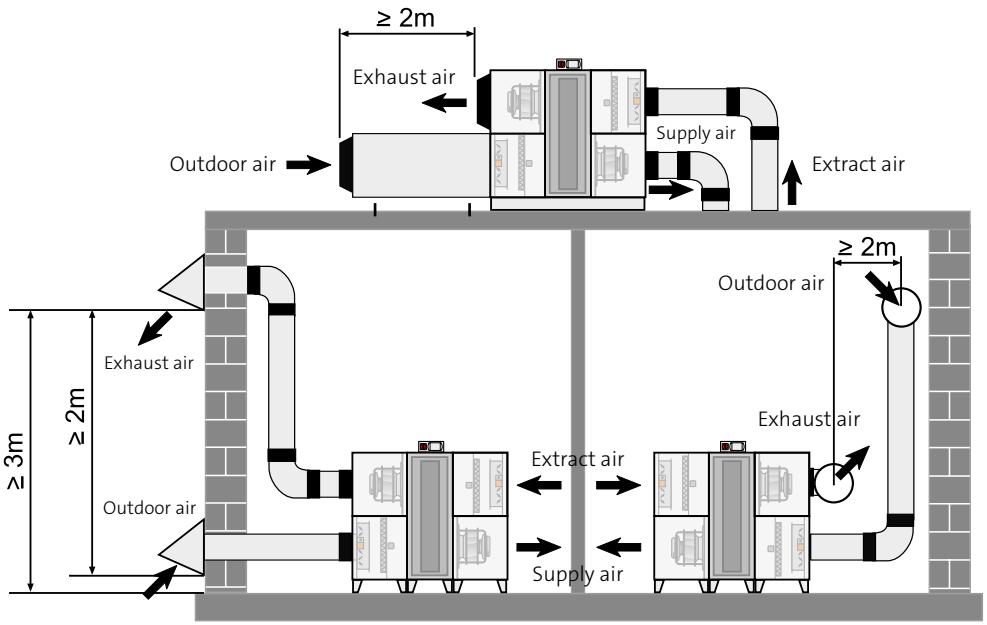
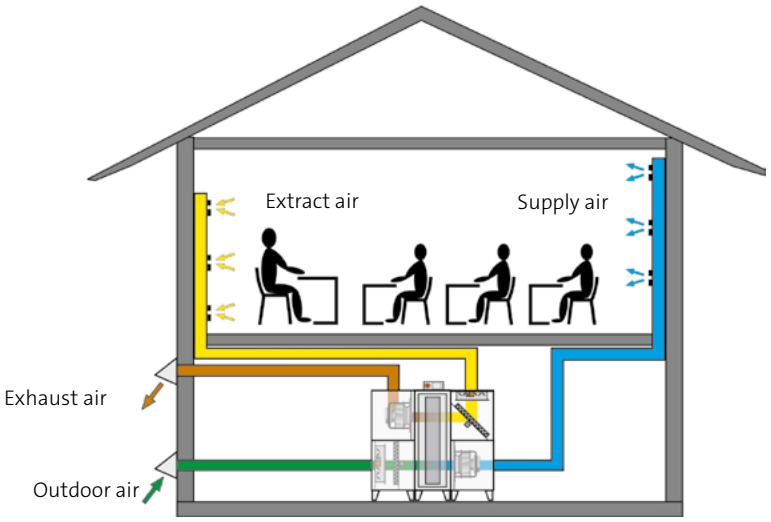
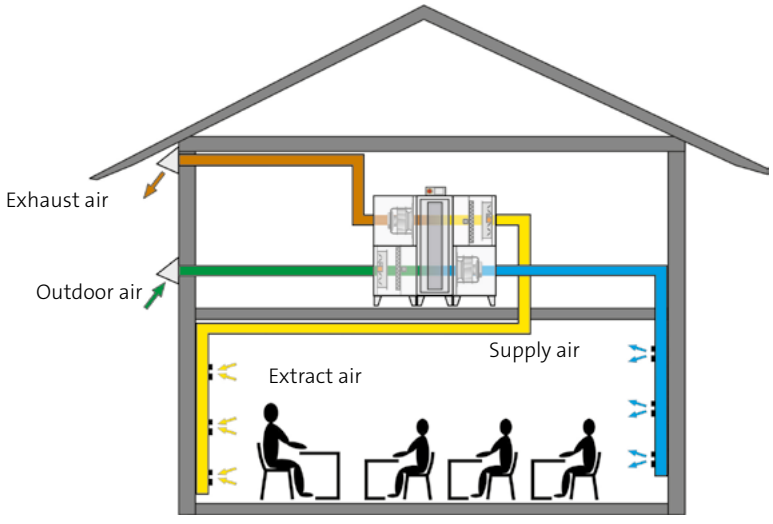


Fig. 5.8 Structure-borne noise insulation to the frame

>> The Solid Air base frame and its integration into the roof membrane must be insulated onsite.

>> In the case of elevated positioning (CRO on onsite framework), the CRO must be secured against wind load.

5.6.1 Siting

Minimum clearance between outdoor air intake and exhaust air aperture to prevent an "air short circuit" (DIN 13779).	
Functional illustration of air inflow: CRO-iD	
Functional illustration of air inflow: CRO-iH	

5.6.2 Installation location CRO Indoor unit

>> The installation location must be level and have adequate load bearing capacity (see data sheets for individual unit weights).
>> Level the unit horizontally (align using the adjustable feet).
>> The installation site must be able to bear the load of the ventilation unit without vibrations on a long term basis.
>> Provide sufficient space at the front of the unit for maintenance work.
>> Site the unit in a room that is free from the risk of frost.

CRO	1300	2500	3500	4800	6200	9000
Clearance for opening the inspection doors (mm)	700	700	700/900*	700	800	900
Clearance for changing the thermal wheel heat exchanger (mm)	800	1000	1200	1400	1700	2100
Clearance for air duct connections above the unit (mm)	500	500	600	700	800	900

*Unit with boost damper.

5.7 Duct connections (onsite)

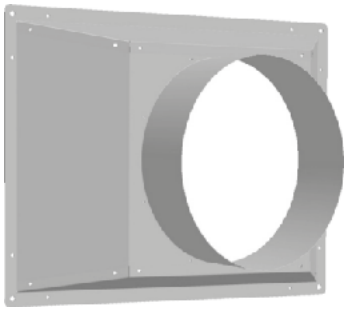
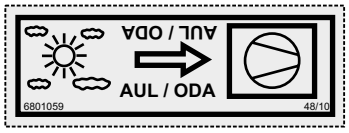
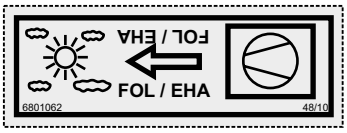
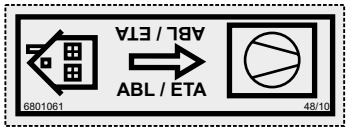
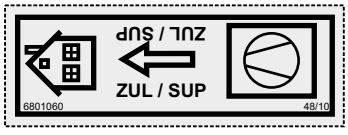
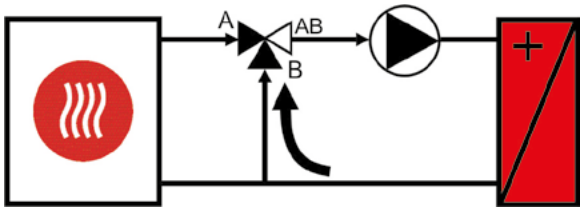


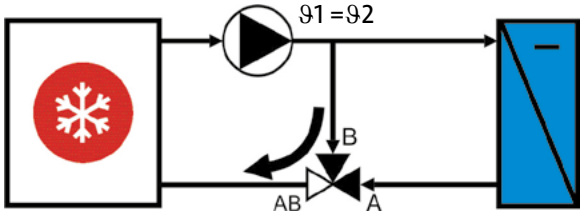
Fig. 5.7 Adaptor insulating collar rectangular to round

>> The unit connectors are rectangular.
>> Round ducts can be connected directly to the connectors using an adaptor insulating collar (from square to round).
>> Insulate the ducts in accordance with applicable regulations and industry standards.
>> Adaptor insulating collar for round duct connection on internal unit with vertical and horizontal duct connection (accessory).

Air duct connections are identified with the following labels:	
Outdoor air	Exhaust air
	
Extract air	Supply air
	

5.8 Hydraulic connection

Heating coil: Hydraulic connection example	
Admixing circuit Benefits: good control characteristics, low risk of freezing.	

Cooling coil: Hydraulic connection example	
Diverting circuit Benefits: constant flow temperature in cooling coil, good dehumidification even at partial load.	

Note: Positioning valves close to the heat exchanger improves the control characteristics.

5.9 Electrical connection

5.9.1 General instructions

- The electrical connection may only be made by electricians in accordance with local regulations.
- When connecting the control unit and control accessories, observe the instructions and wiring diagrams provided.
- If, due to structural requirements, additional protective equipotential bonding is required, this should be provided on site. The user or the certified electrician is obliged to ensure correct earthing of the units in accordance with the applicable national and local electrical and installation regulations.
- Once electrical connection work is complete, the installation must be subjected to a safety test in accordance with VDE 0701-0702 and VDE 0700 part 500, as otherwise there would be a risk of electric shock that could result in injury or death.

Before working on the unit, shut it down via the isolator.

5.9.2 The control panel has cable entries for connecting the onsite cables

Size	Standard units **without** Integral Elec. heating coil		Standard units **with** Integral Elec. heating coil	
	Main supply cable	**Onsite fuse/MCB**	**Power cable**	**Onsite fuse/MCB**
CRO-1300	3 x 1,5 mm²	16 A	5 x 1,5 mm²	10 A
CRO-2500	5 x 1,5 mm²	16 A	5 x 2,5 mm²	20 A
CRO-3500	5 x 2,5 mm²	20 A	5 x 6,0 mm²	35 A
CRO-4800	5 x 2,5 mm²	20 A	-	-
CRO-6200	5 x 4,0 mm²	25 A	-	-
CRO-9000	5 x 6,0 mm²	35 A	-	-

- Even when the unit has been shut down, voltage will still be present at terminals and connections of the EC fans. This means there is a risk of electric shock that could result in injury or death.
- Do not touch the EC fans for five minutes after disconnecting the power across all poles.
- Use a rubber mat if working on the unit when it is electrically charged.

- Only use cables that meet local wiring regulations with regard to voltage, current, insulation material, load etc. Always fit an earth conductor. The cables used by the unit are silicon-free and cadmium-free. They meet Eca fire safety standards (DIN EN 60332-2).

5.9.3 RCDs

- Only AC/DC-sensitive fault current safety devices, type B, with 300 mA are permissible. There is no personal safety protection if the unit is operated with RCDs.
- To ensure the functionality of the RCD, the test button must be pressed every 6 months.
- Regularly check the perfect function of all electrical equipment.
- Observe the specified electrical fuse/MCB protection ratings.
- Any damage or loss resulting from technical modifications to Solid Air control units is excluded from our warranty.
- Run the customer-supplied cables (mains supply cable, field device connections, etc.) to the integrated control panel using a cable duct that allows cables to enter from above or below.
- Recommended dimensions for the cable channel 110 x 60 mm (W x H).
- A preview is shown for mounting the cable channel using a CRO-iH-11000.

Size	Rated voltage	Max. fan power consumption	Max. fan current draw	Fan speed	IP rating/ protection class
CRO-1300	1 x 230V (50/60 Hz)	1,0 kW	4,6 A	3.080 tpm	IP55/Iso F
CRO-2500	3 x 400V (50/60 Hz)	2,1 kW	3,2 A	3.400 tpm	IP55/Iso F
CRO-3500	3 x 400V (50/60 Hz)	5,0 kW	8,0 A	3.100 tpm	IP54/Iso F
CRO-4800	3 x 400V (50/60 Hz)	3,4 kW	5,2 A	2.600 tpm	IP54/Iso F
CRO-6200	3 x 400V (50/60 Hz)	6,0 kW	9,2 A	2.550 tpm	IP54/Iso F
CRO-9000	3 x 400V (50/60 Hz)	11,0 kW	17 A	22.00 tpm	IP54/Iso F

6. COMMISSIONING

>> Commissioning and maintenance work must only be carried out by trained personnel.
>> Only work on the unit with it being at zero volt.

>> According to EN 50110-1, only qualified electricians may carry out the installation and commissioning of the ventilation control unit and connected accessories.

>> A conductive or non-conductive connection can be established between the individual modules (functional units) depending on the appliance configuration.
>> Modules with electrical equipment must always be connected with the earth conductor.
>> Observe all local EMC regulations and all VDE regulations.

>> DIN VDE 0100 regulations regarding the installation of high voltage systems up to 1000 V
>> DIN VDE 0105-100 Operation of electrical systems
>> Only original Solid Air accessories may be used (electric coils, servomotors, etc.), otherwise Solid Air cannot accept any liability.
>> In addition, ÖVE regulations and the local building code apply to Austria.
>> Before commissioning, check whether the operating data on the type plate is adhered to.
>> The unit must not be operated before all necessary safety equipment has been fitted and connected. Intake and discharge apertures must be connected to ensure contact protection.
>> The unit must be level and safely secured.
>> Commissioning must be carried out by authorised personnel (Solid Air service).
>> Record the date of commissioning, e.g. in a log book.

>> In accordance with DIN 1886, tools are required to open the unit. Wait for the fans to come to a complete standstill before opening the inspection doors. When opening the doors, negative pressure may draw in loose objects, which could damage the fan irreparably or even cause a risk to life if items of clothing are drawn in. Use tools to tightly seal the doors before commissioning (unit tightness)..

6.1 Preparation for commissioning

>> Connect the power cable and accessories in accordance with the wiring diagram provided.

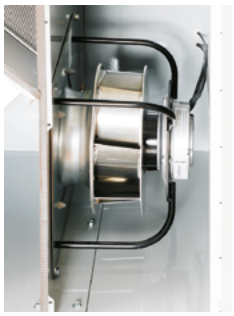
>> A high leakage current can be expected due to the EC motors.
>> Ensure that a secure earth connection is in place before connecting the power supply and commencing commissioning.

>> If control voltage is present or a set speed is saved, the EC fans will restart automatically after power failure.

6.2 Commissioning installation

>> Switch ON the unit isolator.
>> Wait until the BMK programming unit initialises and switches to display mode.
>> Select the required operating mode at the BMK
✓ The system will start with the preset parameters.
>> To modify functions and parameters, see the installation and operating instructions provided.

>> Where the system is not commissioned by Solid Air, check all inputs and outputs for correct wiring and function.
- Frost protection function.
- Fan rotational direction.
- Outdoor air/extract air damper rotational direction.
- Plausible sensor values (room sensor, supply air sensor, extract air sensor, outdoor air sensor).
- Check motor currents.
- Motor protection (thermal cut-outs/thermistors).
- Air flow monitoring.
- Filter monitor.
- Actuator, heating/cooling.
- Heating circuit pump/cooling circuit pump.
- As well as all other system-specific functions.


Ventilatoren

The Solid Air warranty will be void if the function test is not carried out correctly.

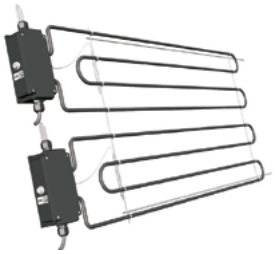
6.2.1 Activating fans

>> Use tools to tightly seal the doors before commissioning (unit tightness), otherwise there is a risk of motor overload.
>> Carry out air flow rate tests with the doors closed.

Please note

>> Route test hose connections out of the unit (see flow rate calculation).
>> Changes are made via the BMK programming unit (see relevant operating instructions)

6.2.2 Commissioning the electric preheating register (optional)

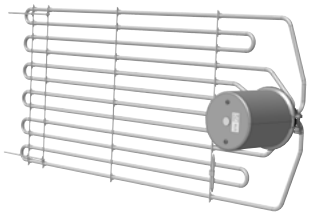


>> To prevent the electric heating coil from switching off, never operate the CRO below its minimum air flow rate.
- Recomm. minimum air volume:

CRO-1300	=	600 m³/h
CRO-2500	=	1200 m³/h
CRO-3500	=	1800 m³/h
CRO-4800	=	2400 m³/h
CRO-6200	=	3100 m³/h
CRO-9000	=	4500 m³/h

>> Follow the relevant safety regulations for electric heating coils.
>> The electric heating coil must be protected from moisture and water.
- The filter pre-dryer is activated by the control unit based on the outside temperature.

6.2.3 Electric reheating coil (optional)



>> To prevent the electric heating coil from switching off, never operate the CRO below its minimum air flow rate.
>>Follow the relevant safety regulations for electric heating coils. The electric heating coil must be protected from moisture and water.
>> Recomm. Minimum air volume

CRO-1300	=	600 m^3/h
CRO-2500	=	1200 m^3/h
CRO-3500	=	1800 m^3/h

6.2.4 Condensate pan

>> Provide a trap for the condensate drain and route the condensate into the sewerage system.
>> Protect the condensate drain from frost.
>> Fill the trap with water..

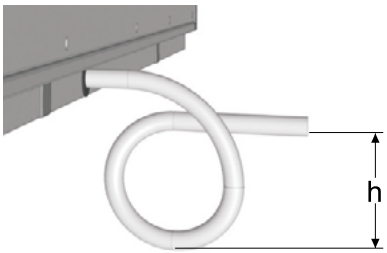
6.2.5 Trap

The effective height of the trap h (mm) must exceed the maximum underpressure or overpressure at the condensate connector (1mm WC = 10 Pa).

h = 1,5 x p (mm WC) + 50 mm (min.)	
p	= Under- or overpressure in mmWC acc. to appliance design.
50 mm (WC)	= Reserve (inaccuracy in design, evaporation).
1,5	= Additional safety factor.

- The trap drain line must not be connected directly to the public sewage system, but rather must be able to run out freely.
- Vent longer drain lines to prevent condensate backing up in the line (provide additional vent in trap drain line).

Base trap



Trap

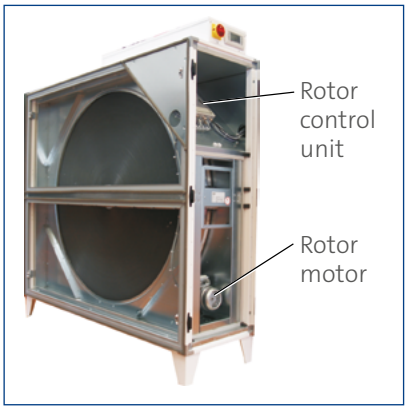
6.3 Heat recovery function with thermal wheel heat exchanger

>> A rotating cylinder mass (rotor material corrosion-resistant aluminium alloy, wound in corrugated and smooth layers) absorbs heat from the extract air flow and transfers it to the outdoor air.
>> The rotor mass is sealed by a circumferential labyrinth seal.
>> Output is controlled by varying the speed of the drive motor.
>> Force is transmitted from the motor to the rotor by a circumferential V-belt.
>> There is no need for frost protection, a defrosting device or air preheating.

6.3.1 Layout and function of the TWHE control unit

The MicroMax 370W rotor control unit includes the following functions:

- Automatic interval mode
- Variable speed control
- Acceleration and deceleration ramp
- Motor brake on standstill
- Rotation monitor with rotation sensor
- Alarm relay
- Test switch



>> In principle, the thermal wheel heat exchanger is maintenance-free.
>> The rotational direction of the TWHE has no effect on heat recovery.
>> When the TWHE control unit is switched off, interval mode ensures further rotation in order to prevent fin soiling.

6.3.2 Function for mode Quick heat-up (optional for CRO-1300/-2500/-3500 and CRO units)

>> 100 % of the extract air flows over the rapid heat-up damper and is routed directly back into the room.
>> In order to achieve the required set room temperature as quickly as possible, the air temperature is raised to a maximum via a reheating coil.
>> In this operating mode, the ODA and EHA dampers are completely closed; the ETA fan and heat recovery (TWHE) are not operational.
>> The SUP fan is running and delivers the required flow rate.
>> When the set room temperature has been achieved, the unit switches back into standard control mode.

6.4 Flow rate calculation

>> The flow rate is calculated using the effective pressure method.

- This involves comparing the static pressure upstream of the inlet nozzle with the static pressure in the inlet nozzle.
- The flow rate can be calculated from the effective pressure Δp w (differential pressure of the two static pressures) using the following equation.
- The doors must be closed to determine the correct flow rate.

$$\dot{V} = k \cdot \sqrt{\Delta p_w}$$

$\dot{V}$ in [m³/h] und Δp_w in [Pa]

- Guide the test hoses over the test connectors towards the outside.

6.4.1 Measuring pressure difference

Δp = effective pressure (symbolic representation).

6.4.2 Effective pressure CRO-1300

K value of fan 76.

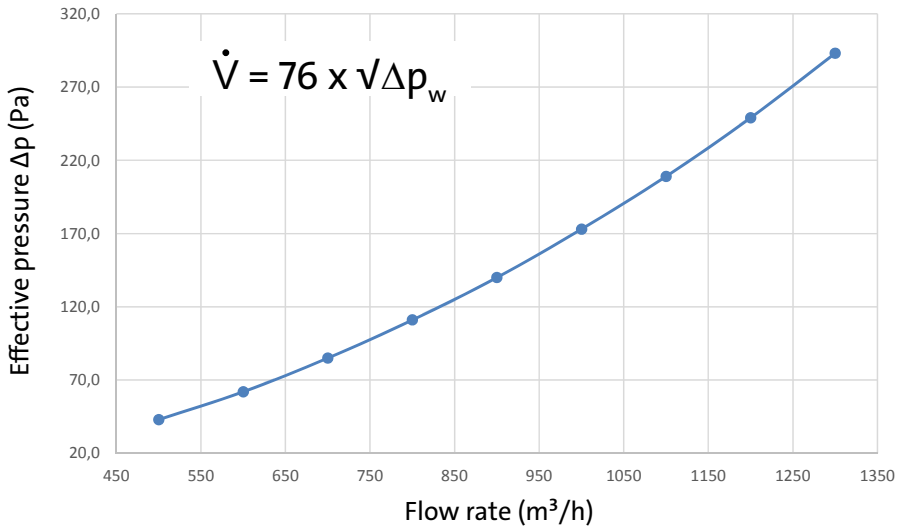


Fig. 6.1 Effective pressure CRO-1300

Δp	(Pa)	43	62	85	111	140	173	209	249	293
$\dot{V}$	(m³/h)	500	600	700	800	900	1.000	1.100	1.200	1.300

6.4.3 Effective pressure CRO-2500

K value of fan 77.

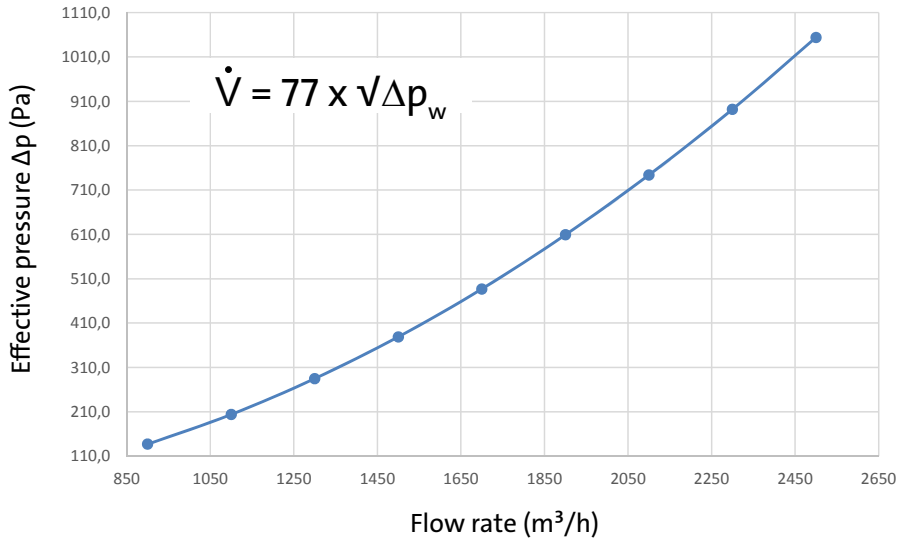


Fig. 6.2 Effective pressure CRO-2500

Δp	(Pa)	137	204	285	379	487	609	744	892	1054
$\dot{V}$	(m³/h)	900	1.100	1.300	1.500	1.700	1.900	2.100	2.300	2.500

6.4.4 Effective pressure CRO-3500

K value of fan 140.

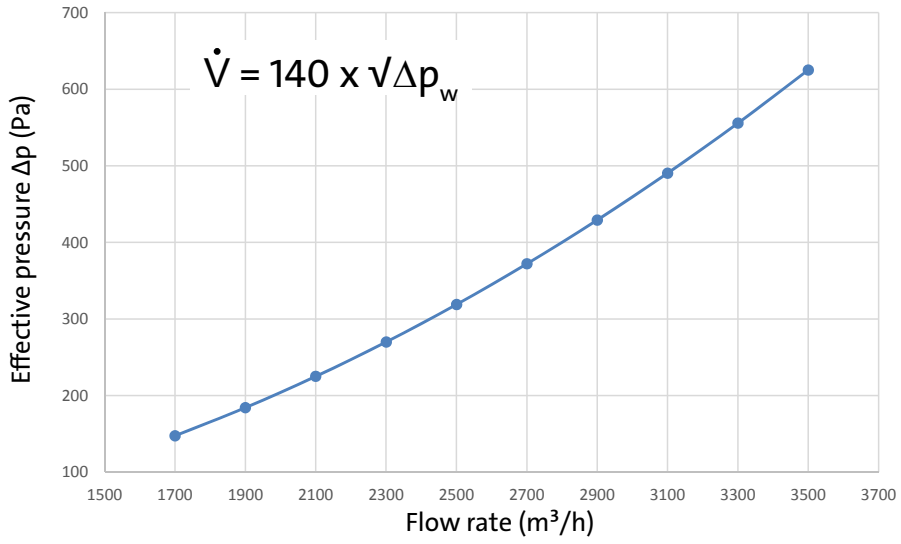


Fig. 6.3 Effective pressure CRO-2500

Δp	(Pa)	147	184	225	270	319	372	429	490	556	625
$\dot{V}$	(m³/h)	1.700	1.900	2.100	2.300	2.500	2.700	2.900	3.100	3.300	3.500

6.4.5 Effective pressure CRO-4800

K value of fan 148.

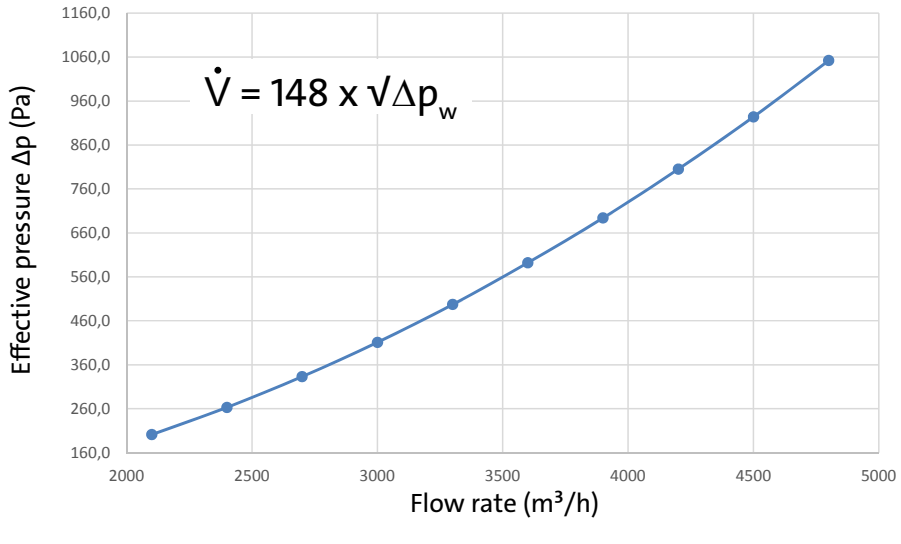


Fig. 6.4 Effective pressure CRO-4800

Δp	(Pa)	201	263	333	411	497	592	694	805	924	1052
$\dot{V}$	(m³/h)	2.100	2.400	2.700	3.000	3.800	3.600	3.900	4.200	4.500	4.800

6.4.6 Effective pressure CRO-6200

K value of fan 188.

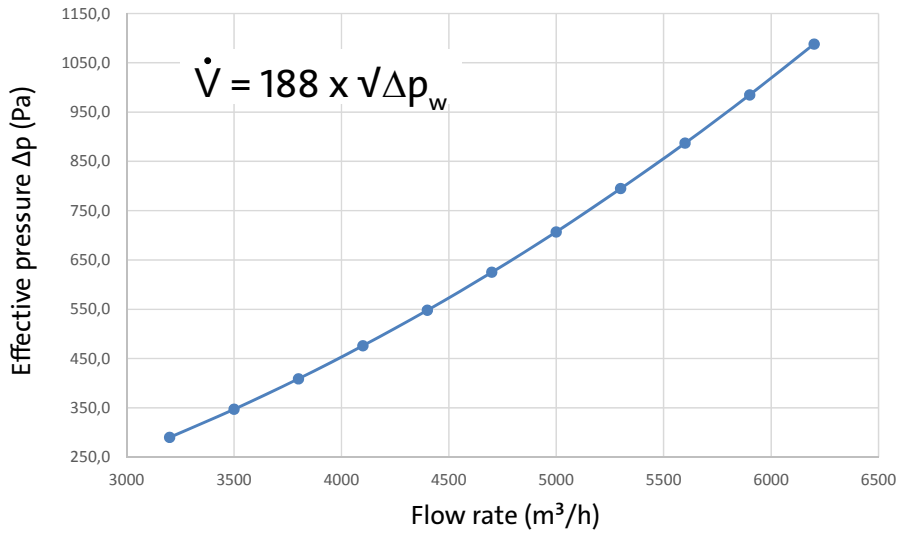


Fig. 6.5 Effective pressure CRO-6200

Δp	(Pa)	290	347	409	476	548	625	707	795	887	985	1088
$\dot{V}$	(m³/h)	3.200	3.500	3.800	4.100	4.400	4.700	5.000	5.300	5.600	5.900	6.200

6.4.7 Effective pressure CRO-9000

K value of fan 240.

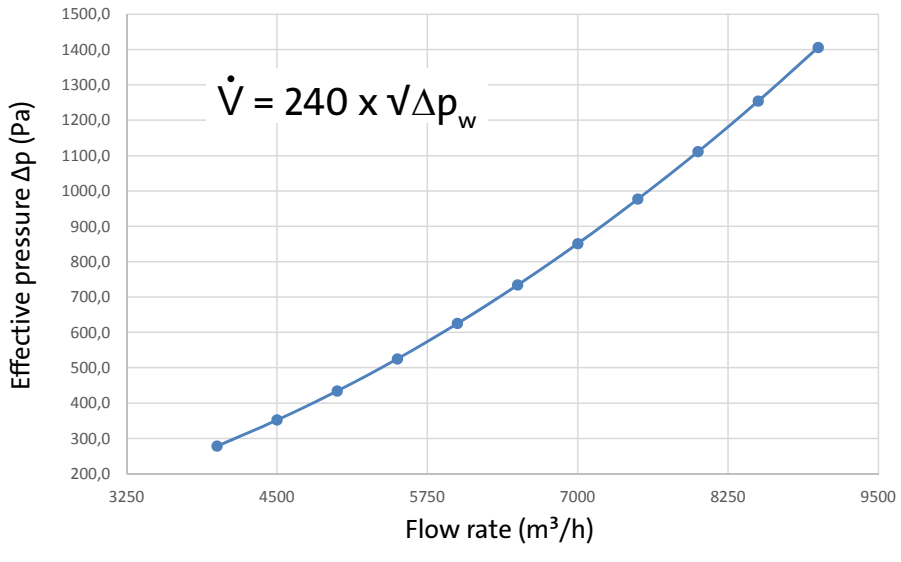


Fig. 6.6 Effective pressure CRO-9000

Δp	(Pa)	278	352	434	525	625	734	851	977	1111	1254	1406
$\dot{V}$	(m³/h)	4.000	4.500	5.000	5.500	6.000	6.500	7.000	7.500	8.000	8.500	9.000

7. MAINTENANCE

7.1 General instructions for maintenance

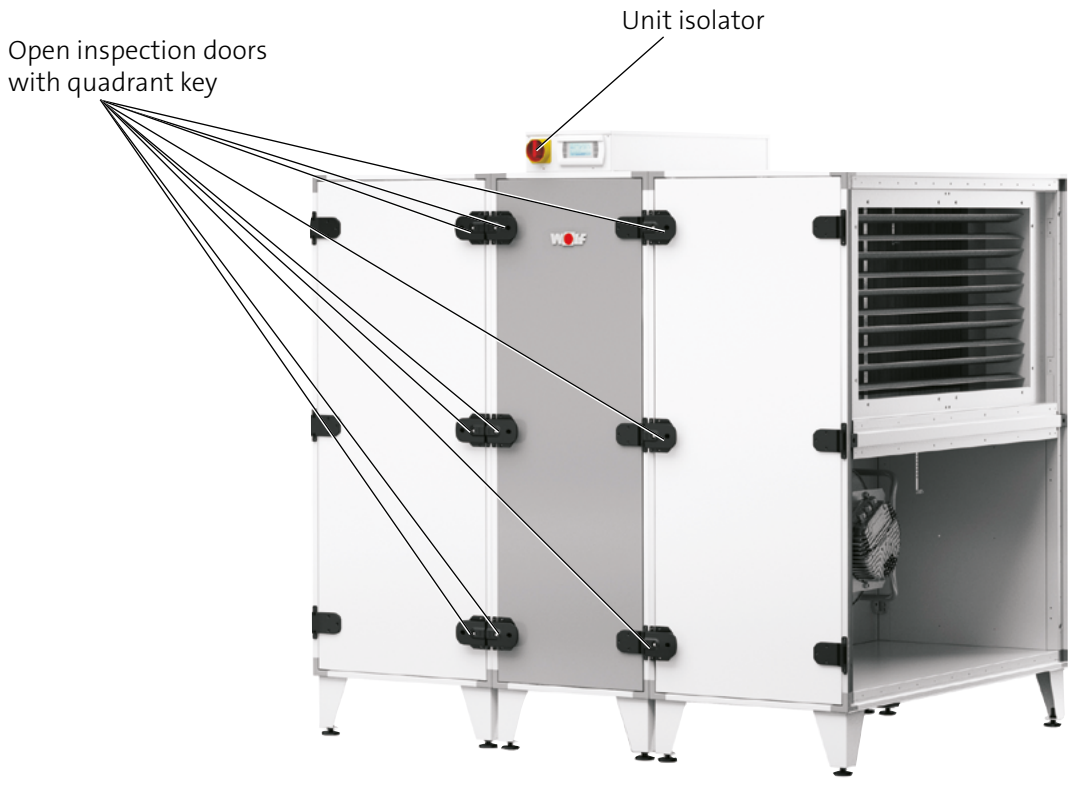
>> Before starting any maintenance work, switch OFF the isolator and safeguard against unauthorised reconnection.
>> If the isolator is switched back on unintentionally, maintenance staff or others in the vicinity could be at risk from rotating parts.
>> Wait for the fans to come to a complete standstill before opening the doors (approx. 2 minutes).
>> When the doors are opened, negative pressure may draw in loose objects, which could destroy the fan or even cause a risk to life.

DANGER

Even when the unit has been shut down, voltage will still be present at terminals and connections of the EC fans.
This means there is a risk of electric shock that could result in injury or death.

- Do not touch the EC fans for five minutes after disconnecting the power across all poles.
- Use a rubber mat if working on the unit when it is electrically charged.

7.2 Decommissioning for maintenance



>> Regularly check that the ventilation unit is functioning correctly.
>> Replace the air filters in the unit at least once a year.
>> Wear a suitable dust mask when handling the air filters.
>> Dispose of the air filters in accordance with local regulations.

7.3 Hygiene checklist

Hygiene checklist (extract from VDI 6022, sheet 1)
System commissioned: Date

Activity	Action if required	Months				
		1	3	6	12	24
Hygiene inspection.						X
Outdoor air intakes						
Check for contamination, damage and corrosion.	Clean and repair.				X	
Structural units/unit casing						
Check for contamination, damage and corrosion on the air side.	Clean and repair.				X	
Check for condensation.	Clean.			X		
Check casing for contamination, damage and corrosion.	Clean and repair.				X	
Air vents						
Check air vents, integral perforated plates, wire mesh or sieves for contamination, damage and corrosion (spot check).	Clean or replace.				X	
Spot check filter.	Replace.				X	
Spot check air vents with indoor air induction and extract air intakes for deposits.	Clean.				X	
Air filters						
Check for impermissible contamination, damage (leaks) and odours.	Changing the affected filters (Never operate the unit without filters!).		X			
Longest filter replacement interval.					X	
Air ducts						
Check accessible air duct sections for damage.	Repair.				X	
Check inner air duct surface for contamination, corrosion and condensation at two or three representative points.	Inspect the duct network at further points and decide whether cleaning is necessary (not only the visible areas).				X	
Silencer						
Check silencers for contamination, damage and corrosion.	Repair or replace; contact spotting if required.				X	
Fan						
Check for contamination, damage and corrosion.	Clean and repair.			X		
Heat exchanger (including heat recovery)						
Visual inspection of air/air plate heat exchanger for contamination, damage and corrosion.	Visual inspection.			X		
	Clean, remove if necessary (undo spacer and clean out plate heat exchanger).				X	
Heating coil: Check for contamination, damage, corrosion and tightness.	Clean and repair.			X		
Check condensate pan for contamination, corrosion, damage and tightness.	Clean and repair.		X			
Check the function of the drain and trap.	Clean and repair.		X			

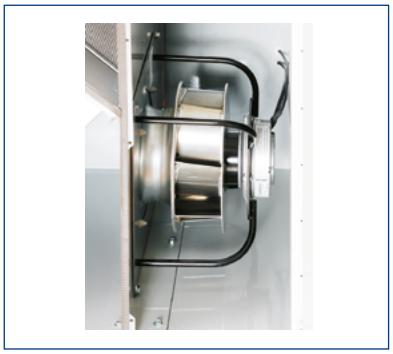
Repairs

>> Only qualified personnel may remove faults or repair damage.

>> Only replace faulty components with original Solid Air spare parts.

7.4 Maintenance

7.4.1 Fan motor unit



- Motor and bearing are maintenance-free.

>> If necessary, clean the impeller with a soapy solution.

Please note

>> Check that the test lead is seated firmly at the test connector on the inlet nozzle.

>> Loose seating can result in faulty measurements.

7.4.2 Electrical equipment

>> Regularly check the electrical equipment of the unit.

>> Replace loose connections and faulty cables immediately.

>> Regularly check the earth conductor.

7.4.3 Thermal wheel heat exchanger (TWHE)

>> In normal operating conditions, the actuator and rotor bearing are maintenance-free.

>> Before starting any maintenance work, disconnect the power supply across all poles and secure against reconnection, so that the persons charged with maintenance work cannot be exposed to any risk of crushing or abrasion injuries due to the rotor starting up suddenly if it is switched on unintentionally, the automatic cleaning run commences or the rotor restarts automatically after power failure.

>> Maintenance work (approx. every 3 months or more frequently if required)

>> Check rotor cylinder mass for hygienic condition, damage, corrosion, contamination and foreign bodies, and clean if required.

>> Compressed air (max. pressure 5 bar) or, for stubborn contamination, a pressure washer (water only; no chemical additives) may be used for cleaning the rotor cylinder mass.

>> When cleaning, ensure that the cleaning jet hits the cylinder mass at an angle of 90°. Remove dirty water carefully.

>> Check seals for hygienic condition, contamination and foreign bodies, and clean if required.

>> Check drive belt for wear and tension.
If necessary, have it adjusted or replaced by a contractor or the manufacturer.

>> Check rotor for imbalance and lateral trueness, and balance or realign it if required.

>> Check bearing for impermissible heating, vibration and bearing noise.
If necessary, have it replaced by a contractor or the manufacturer.

7.4.4 Electric coil (optional)

>>Check and clean at regular intervals.

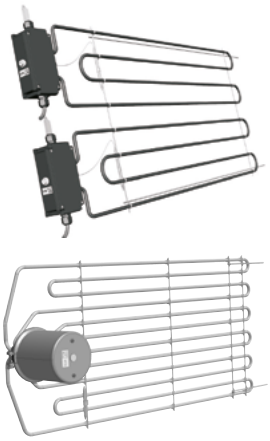
Cleaning the electric coils:

- Vacuum, taking care not to bend the heating coils
- Blast with compressed air, max. 1 bar

Please note

>> If the cleaning pressure is too high, there is a risk of irreparable mechanical damage to the electric coils.

>> The electric coils must be protected from moisture and water.



7.4.5 Air dampers

>> Check the dampers for ease of movement.

>> Never lubricate the dampers.
This could destroy the plastic used and compromise the damper function.

>> To clean, wipe down with a soapy solution; otherwise maintenance-free.

7.4.6 Filter

>> The filters are not renewable. They must be replaced when they are dirty, or no later than after 12 months.

>> The filters can be removed from the unit once the inspection doors have been opened (see spare parts).

>> **Never operate the CRO ventilation unit without filters!**

7.4.7 Servomotors on the dampers

>> The motors are maintenance-free.
>> At regular intervals, check that the connection from the servomotor to the damper drive is firmly seated.

7.4.8 Condensate pan

>> Regularly check the condensate pan for possible soiling and clean if required (see checklist).

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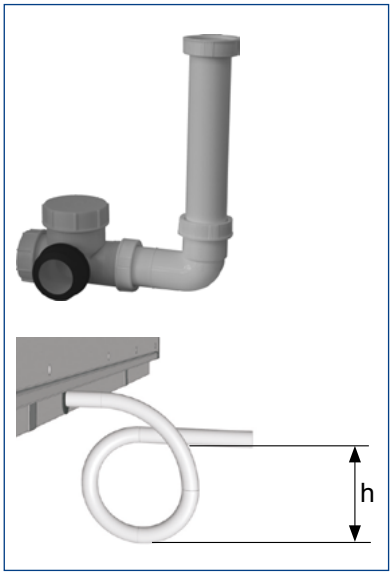
7.4.9 Trap



>> Regularly check the DN 50 trap (accessory) for possible soiling and clean if required (see checklist).
>> Refill the trap with water before returning into use.