

## Installation and maintenance instructions for contractors

# CRL Comfort ventilation unit with thermal wheel heat exchanger

(Translation of the original)



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## General information

These installation and maintenance instructions only apply to Wolf CRL ventilation units. Authorised personnel should read these instructions before any commissioning or maintenance work. Observe the instructions given in this document. Installation, commissioning and maintenance work must only be carried out by trained personnel.

**These instructions should be considered an integral part of the unit supplied, and should always be easily accessible.**

Failure to observe these installation and maintenance instructions voids any Wolf GmbH warranty.

## Reference symbols

The following symbols are used in these instructions. This important information concerns personal as well as operational safety.



"Safety information" is a set of instructions which you must follow exactly, to prevent risks or injuries to individuals, and damage to the unit.



**Danger through "live" electrical components.**

**Caution: 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. This carries a risk of electrocution that could result in injury 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.

## 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 Wolf.



Only operate the unit when it is in perfect technical condition. Any faults or damage which 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 WOLF spare parts.

Please  
note

**The unit 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.**

According to DIN 1886, tools must be used to open the unit. Wait for the fan to reach standstill (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 if items of clothing are drawn in.

## Electrical connection



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.

## Intended use

Wolf CRL ventilation units are designed to heat and filter normal air. Max. air intake temperature: +40 °C. 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 on-site modification or improper use of the unit is not permissible and Wolf GmbH 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).

## 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. If there is a fire, disconnect the unit from the power supply, for example via an on-site smoke detector. 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.

## Warnings

Removal and disabling of safety and monitoring equipment is prohibited.

Only operate the system in perfect technical condition. Ensure that any faults or damage that may impact on safety are rectified immediately.

## Recommended temperatures

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.

## Other technical documents

- Wolf WRS-K control unit operating instructions
- MicroMax 370W TWHE control unit operating instructions
- Wiring diagram
- Configuration wizard
- Parameter list

### Standards and regulations

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/30/EC
- ErP Directive 2009/125/EC
- DIN EN ISO 12100 Safety of machinery;  
general design principles
- DIN EN ISO 13857 Safety of machinery;  
safety distances
- DIN EN 349 Safety of machinery;  
minimum gaps
- DIN EN 953 Safety of machinery;  
guards
- DIN EN 1886 Ventilation for buildings;  
central air handling units
- DIN ISO 1940-1 Mechanical vibration;  
balance quality requirements
- VDMA 24167 Fans; safety requirements
- DIN EN 60204-1 Safety of machinery;  
electrical equipment
- DIN EN 60730 Automatic electrical controls
- DIN EN 61000 -6-2+3 Electromagnetic compatibility
- DIN EN 60335-1 (VDE 0700-1) Safety of electrical appliances; general  
requirements

In addition, ÖVE regulations and the local building code apply to Austria.

The following standards and regulations apply to installation and operation:

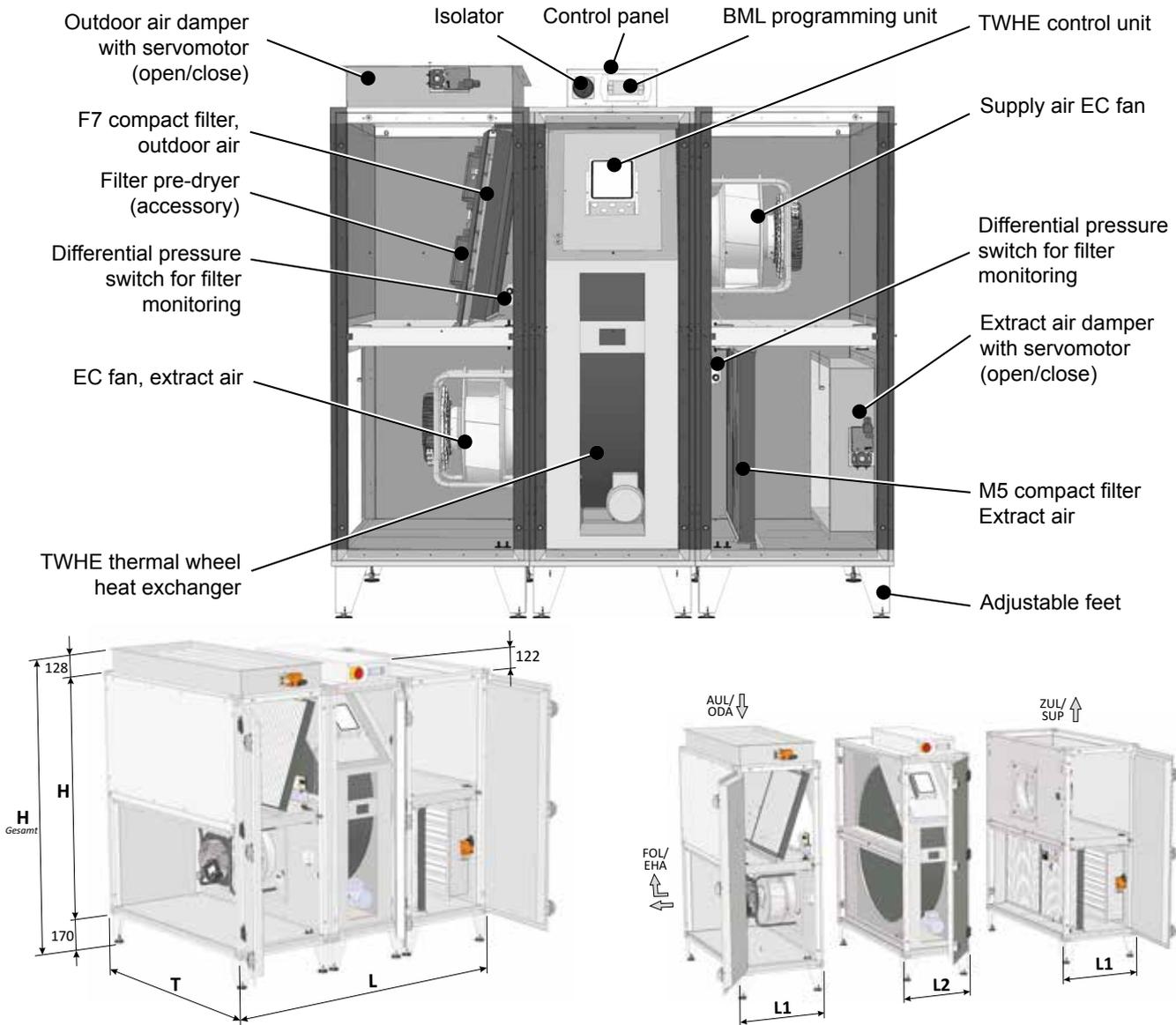
- DIN EN 50106 (VDE 0700-500) Safety of electrical appliances; tests
- DIN VDE 0100 Regulations regarding the installation of  
high voltage systems up to 1000 V
- DIN EN 50110-1 (VDE 0105-1) Operation of electrical systems
- DIN VDE 0105-100 Operation of electrical systems; general  
stipulations
- DIN VDE 0701-0702 Testing following repair and modification  
of electrical appliances; repeat testing of  
electrical appliances
- VDI 2050 Requirements for technical equipment  
rooms; planning and execution

### 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.

### 3. CRL-iD unit layout

#### CRL-iD Comfort thermal wheel heat exchanger ventilation unit for internal installation with vertical/horizontal duct connection



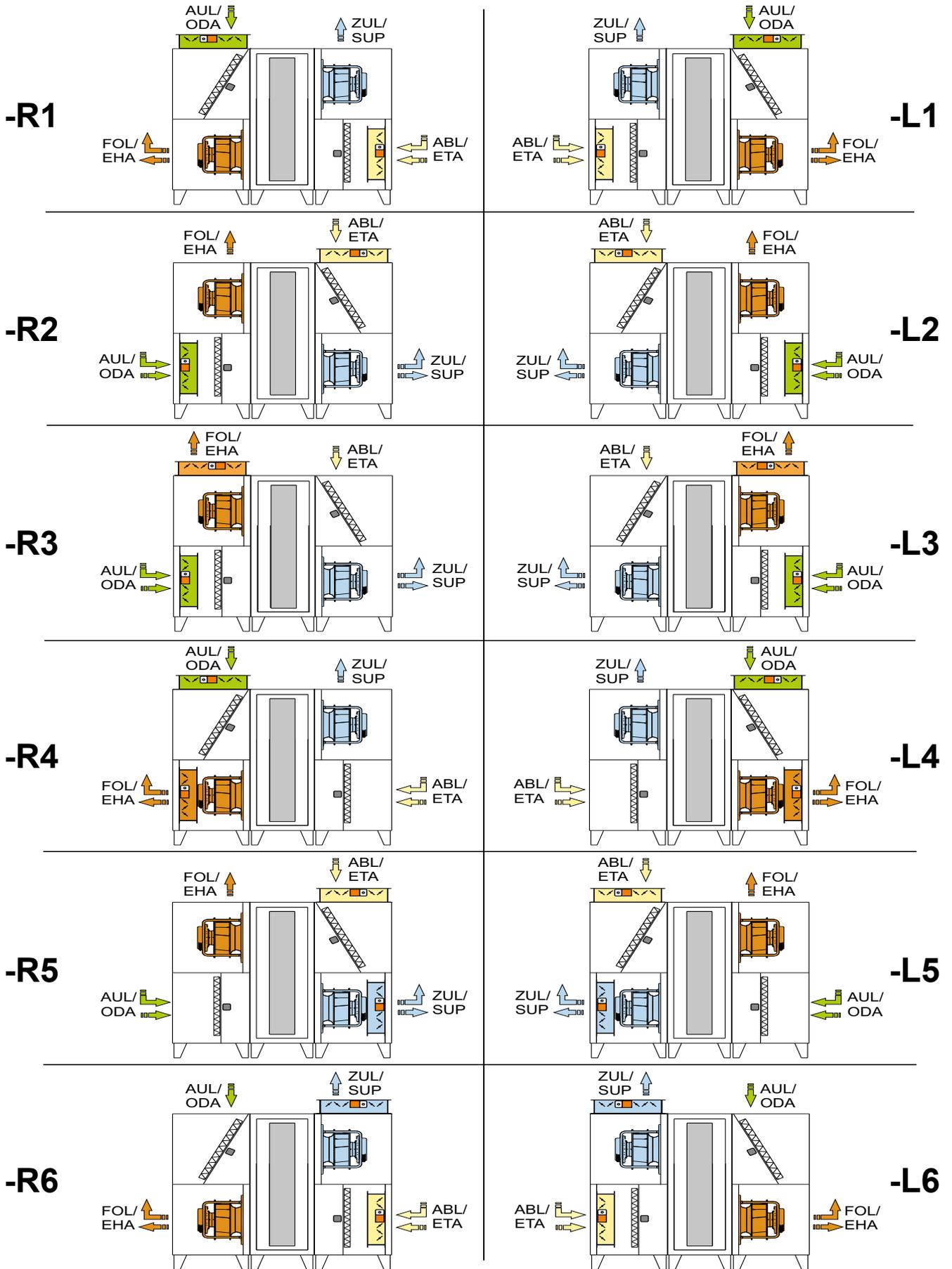
Type		CRL-iD-4800	CRL-iD-6200	CRL-iD-9000
Length L	mm	1728	1932	2136
Length L1	mm	610	712	814
Length L2 (rotor part)	mm	508	508	508
Depth T (incl. locks)	mm	1360	1665	2070
Overall height	mm	1722	1722	1925
Height H	mm	1424	1424	1627
Foot height	mm	170	170	170
Control unit height	mm	122	122	122
Duct connection dimensions, horizontal air routing	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Duct connection dimensions, vertical air routing	mm	Li 1222x510 *	Li 1527x612 *	Li 1934x714 *
Weight	kg	590 (180 + 230 + 180)	715 (220 + 275 + 220)	845 (275 + 295 + 275)
Nominal flow rate	m³/h	4800 at 450 Pa (ext.)	6200 at 680 Pa (ext.)	9000 at 1000 Pa (ext.)
Max. flow rate	m³/h	5100 at 295 Pa (ext.)	7500 at 270 Pa (ext.)	11250 at 600 Pa (ext.)

\* Duct connection dimensions

## 4. CRL-iD appliance versions

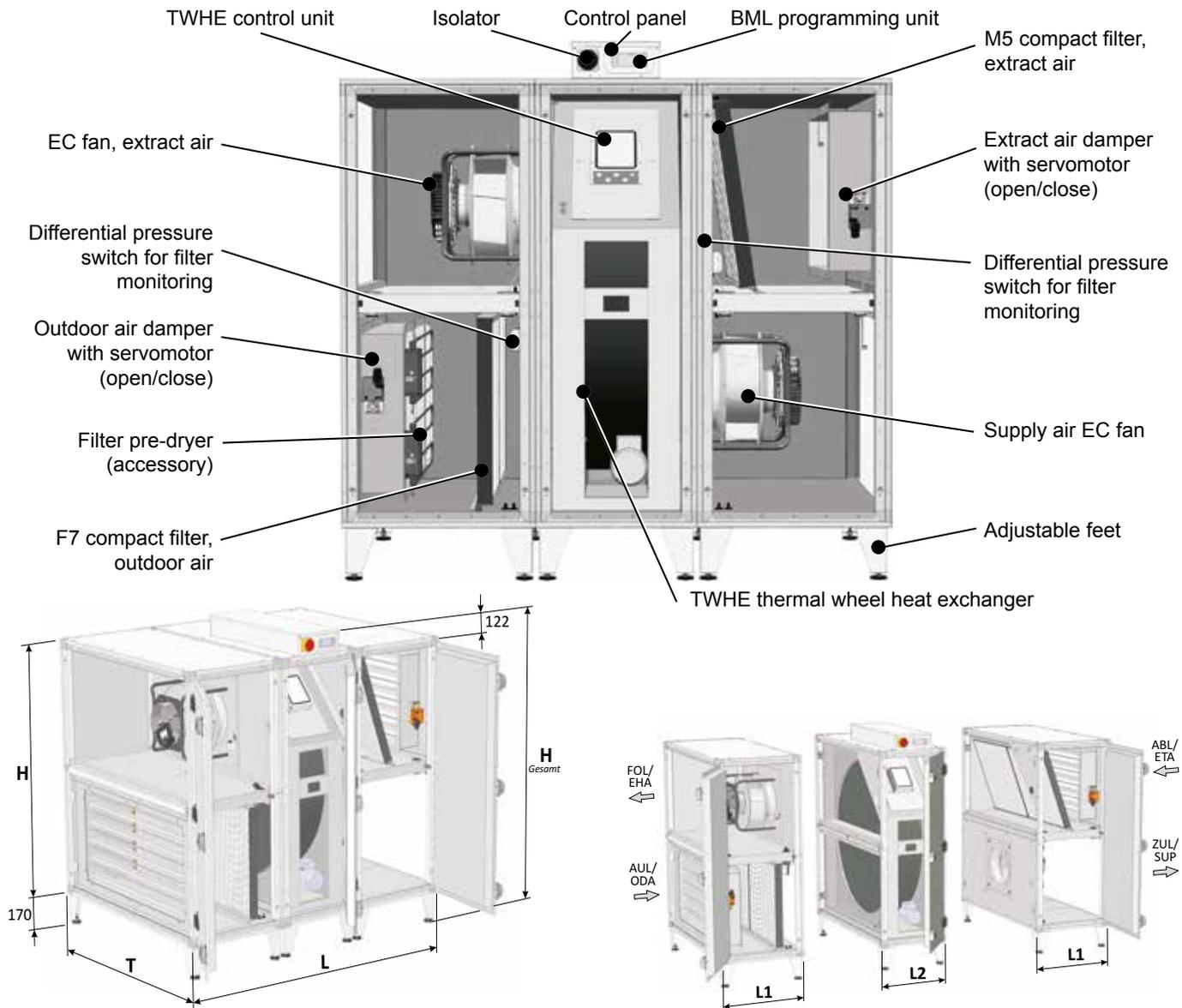
Access side in supply air direction, right

Access side in supply air direction, left



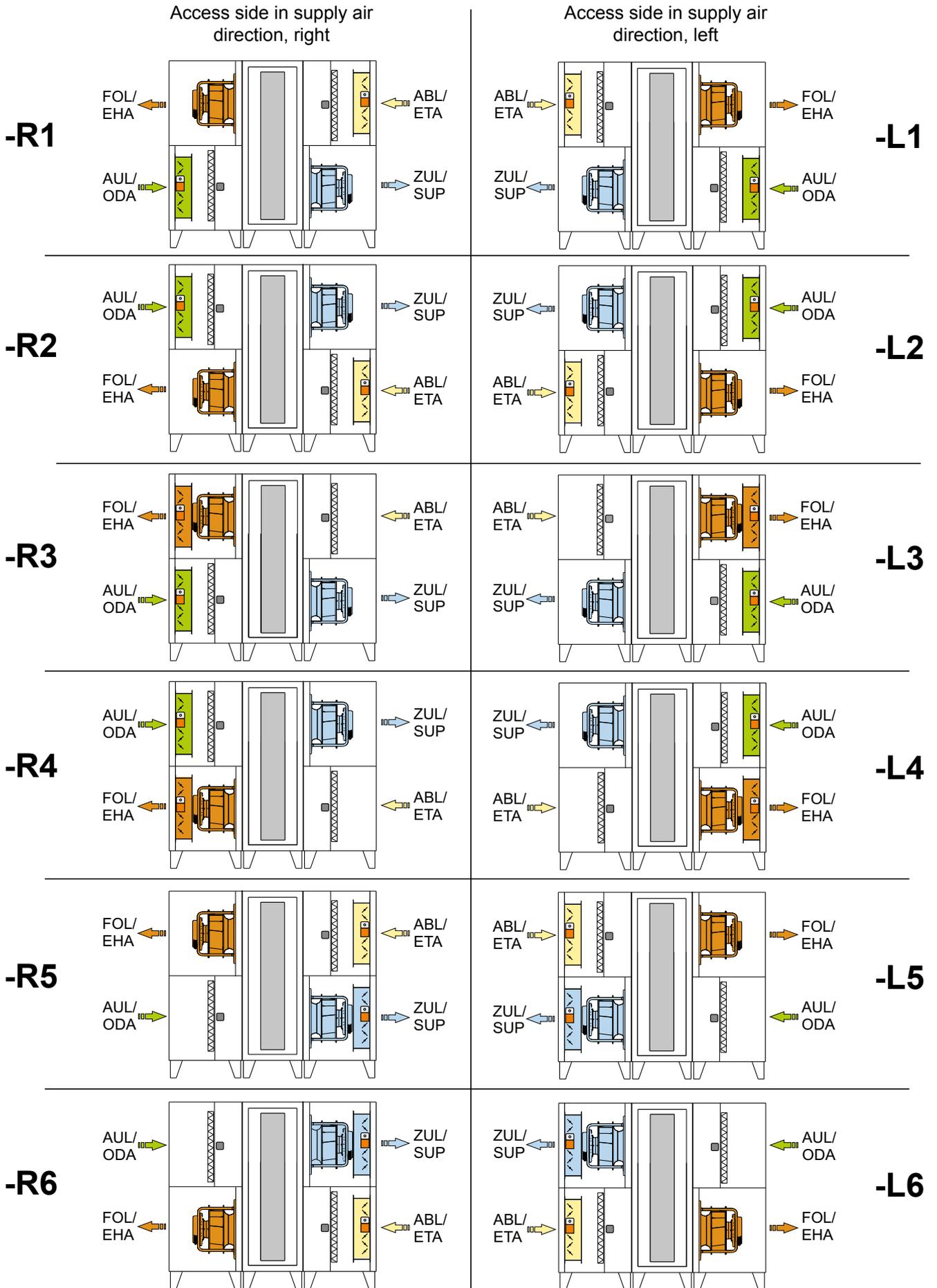
## 5. CRL-iH unit layout

**CRL-iH Comfort thermal wheel heat exchanger ventilation unit for internal installation with horizontal duct connection**



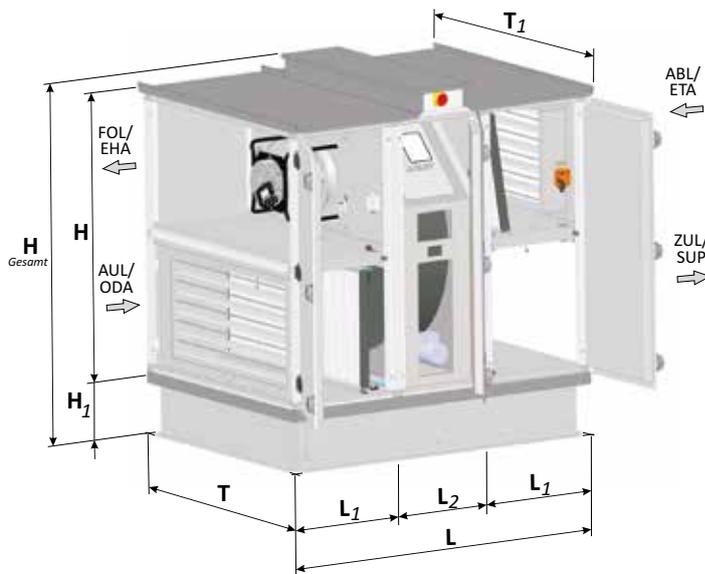
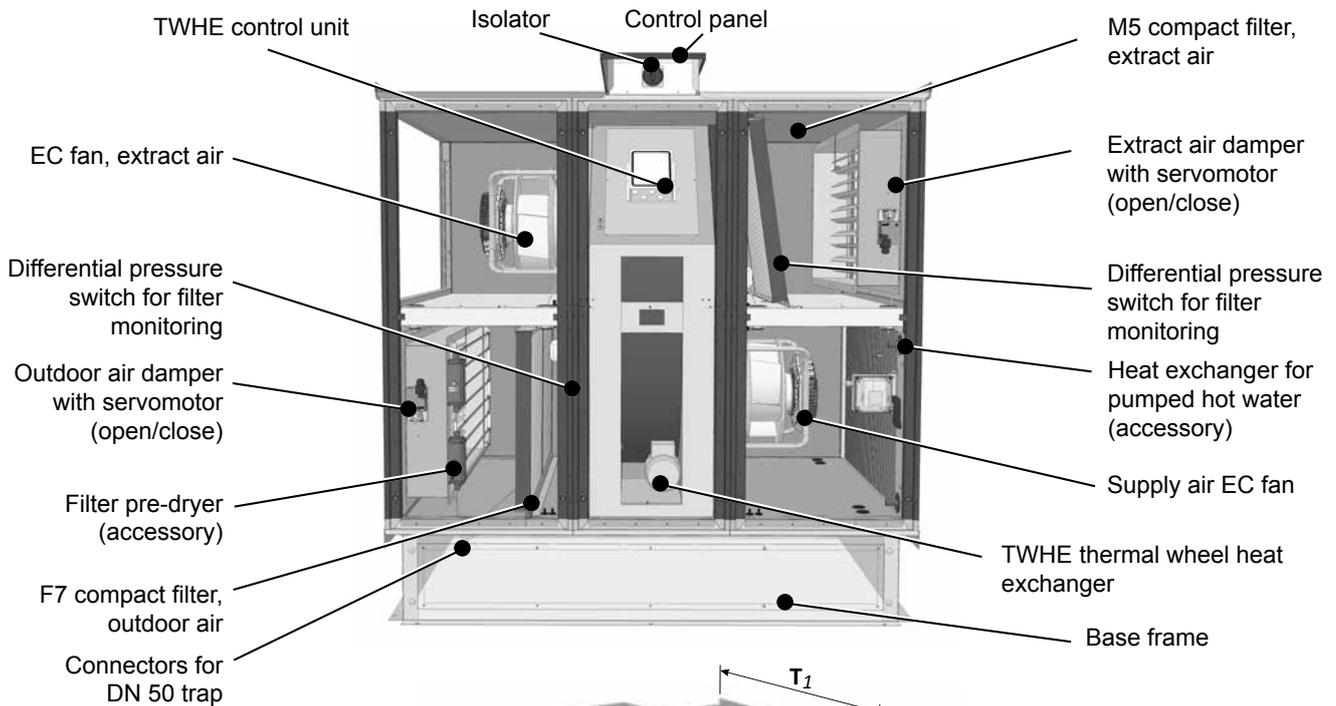
Type		CRL-iH-4800	CRL-iH-6200	CRL-iH-9000
Length L	mm	1728	1932	2136
Length L1	mm	610	712	814
Length L2 (rotor part)	mm	508	508	508
Depth T (incl. locks)	mm	1360	1665	2070
Overall height	mm	1716	1716	1919
Height H	mm	1424	1424	1627
Foot height	mm	170	170	170
Control unit height	mm	122	122	122
Exhaust air EHA	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Outdoor air ODA	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Extract air ETA	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Supply air SUP	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Weight	kg	590 (180 + 230 + 180)	715 (220 + 275 + 220)	845 (275 + 295 + 275)
Nominal flow rate	m <sup>3</sup> /h	4800 at 450 Pa (ext.)	6200 at 680 Pa (ext.)	9000 at 1000 Pa (ext.)
Max. flow rate	m <sup>3</sup> /h	5100 at 295 Pa (ext.)	7500 at 270 Pa (ext.)	11250 at 600 Pa (ext.)

\* Duct connection dimensions



## 7. CRL-A unit layout

**CRL-A Comfort thermal wheel heat exchanger ventilation unit for external installation (weatherproof) with horizontal duct connection**



Type		CRL-A-4800	CRL-A-6200	CRL-A-9000
Length L	mm	1728	1932	2136
Length L1	mm	610	712	814
Length L2 (rotor part)	mm	508	508	508
Depth T	mm	1322	1626	2034
Overall depth T1	mm	1422	1726	2134
Overall height	mm	1864	1864	2067
Height H	mm	1424	1424	1627
Base frame H1	mm	300	300	300
Exhaust air EHA	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Outdoor air ODA	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Extract air ETA	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Supply air SUP	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Weight	kg	660	800	960
Nominal flow rate	m <sup>3</sup> /h	4800 at 450 Pa (ext.)	6200 at 680 Pa (ext.)	9000 at 1000 Pa (ext.)
Max. flow rate	m <sup>3</sup> /h	5100 at 295 Pa (ext.)	7500 at 270 Pa (ext.)	11250 at 600Pa (ext.)

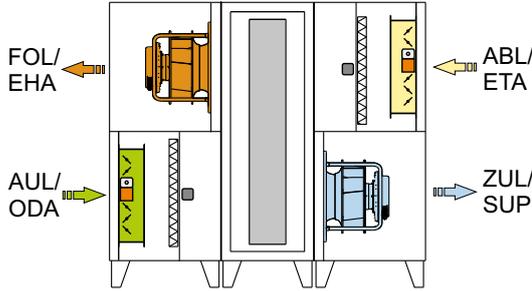
\* Duct connection dimensions

## 8. CRL-A appliance versions

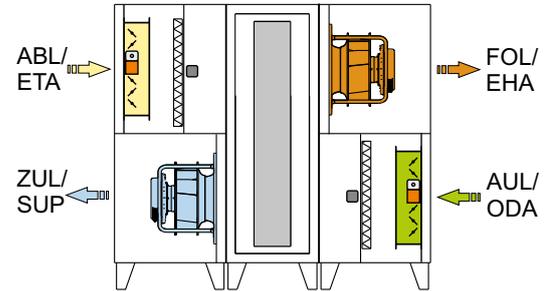
Access side in supply air direction, right

Access side in supply air direction, left

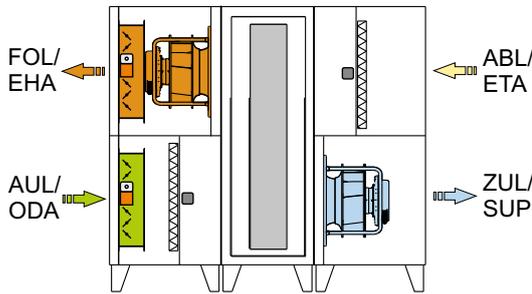
**-R1**



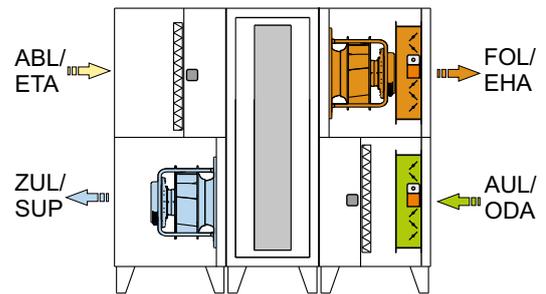
**-L1**



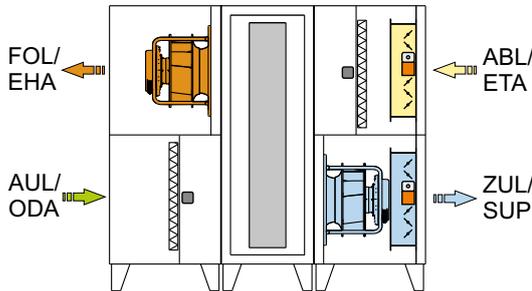
**-R3**



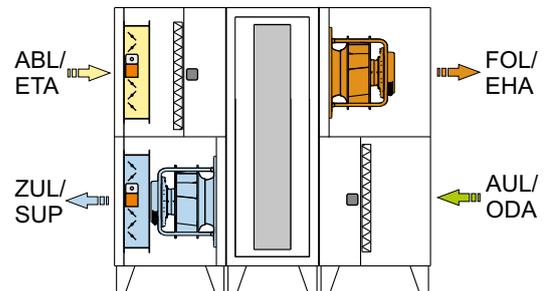
**-L3**



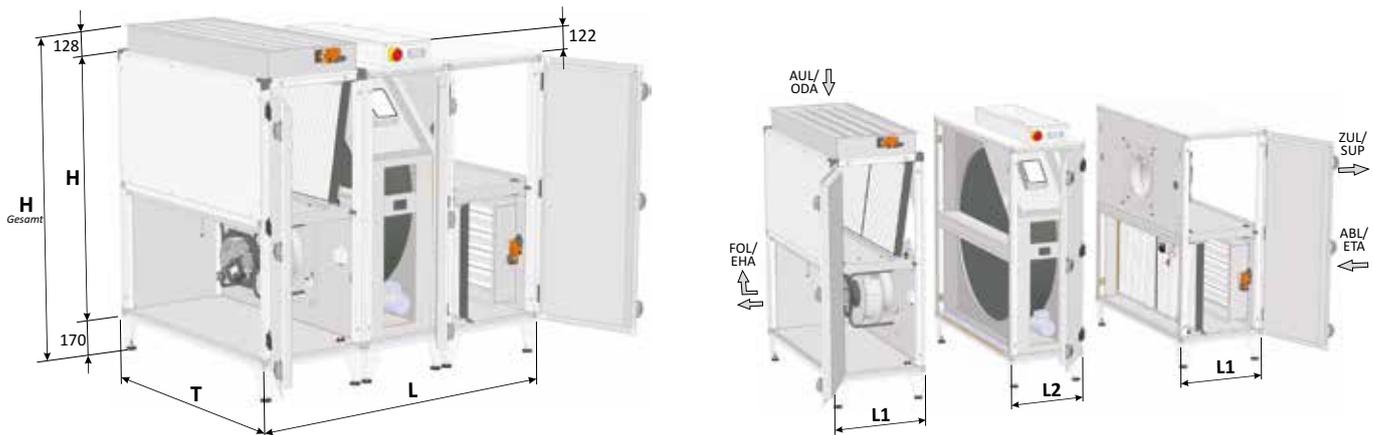
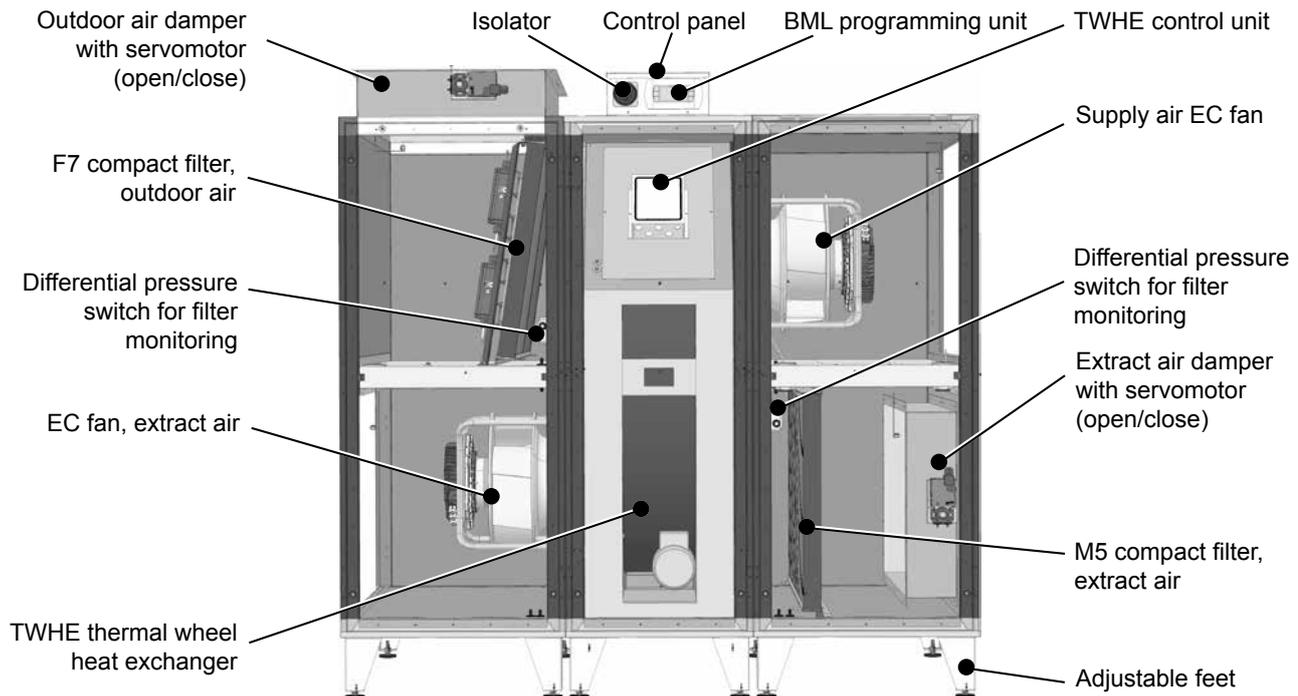
**-R5**



**-L5**



### CRL-iDH Comfort thermal wheel heat exchanger ventilation unit, energy saving and convenient ventilation with vertical/horizontal duct connection



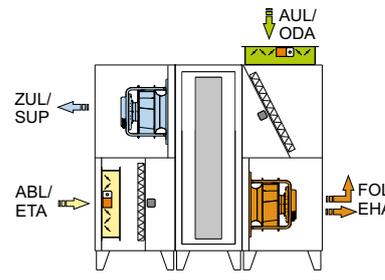
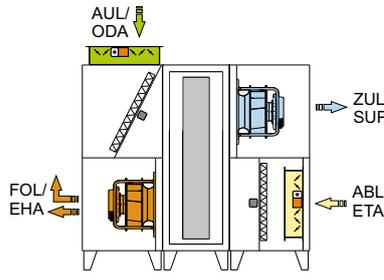
Type		CRL-iDH-4800	CRL-iDH-6200	CRL-iDH-9000
Length L	mm	1728	1932	2136
Length L1	mm	610	712	814
Length L2 (rotor part)	mm	508	508	508
Depth T (incl. locks)	mm	1360	1665	2070
Overall height	mm	1722	1722	1925
Height H	mm	1424	1424	1627
Foot height	mm	170	170	170
Control unit height	mm	122	122	122
Duct connection dimensions, horizontal air routing	mm	Li 1222x612 *	Li 1527x612 *	Li 1934x714 *
Duct connection dimensions, vertical air routing	mm	Li 1222x510 *	Li 1527x612 *	Li 1934x714 *
Weight	kg	590 (180 + 230 + 180)	715 (220 + 275 + 220)	845 (275 + 295 + 275)
Nominal flow rate	m <sup>3</sup> /h	4800 at 450 Pa (ext.)	6200 at 680 Pa (ext.)	9000 at 1000 Pa (ext.)
Max. flow rate	m <sup>3</sup> /h	5100 at 295 Pa (ext.)	7500 at 270 Pa (ext.)	11250 at 600 Pa (ext.)

\* Duct connection dimensions

Access side in supply air direction, right

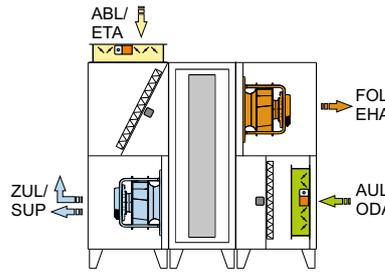
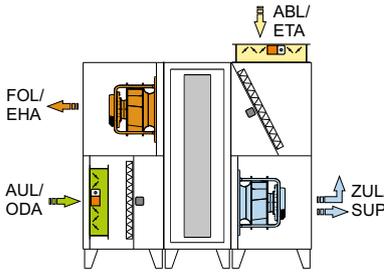
Access side in supply air direction, left

**-R1**



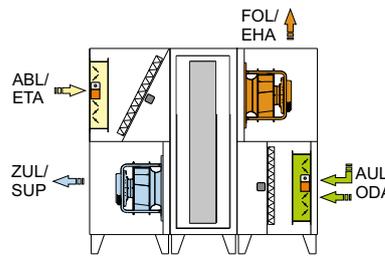
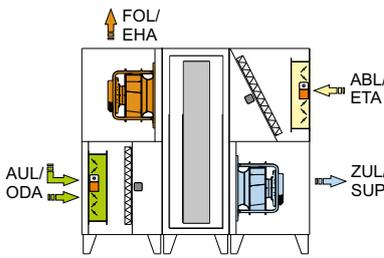
**-L1**

**-R2**



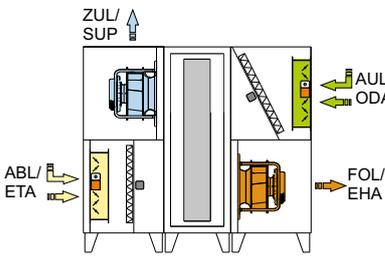
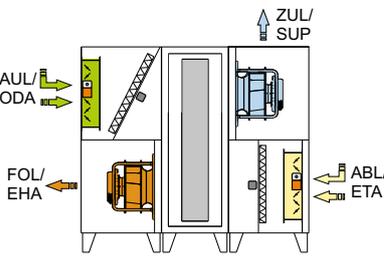
**-L2**

**-R3**



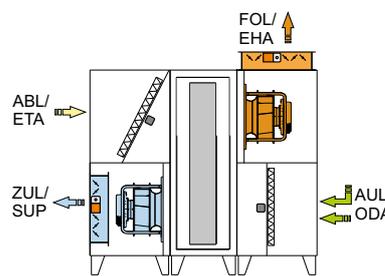
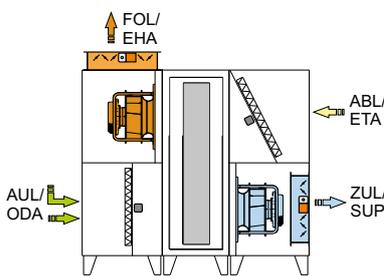
**-L3**

**-R4**



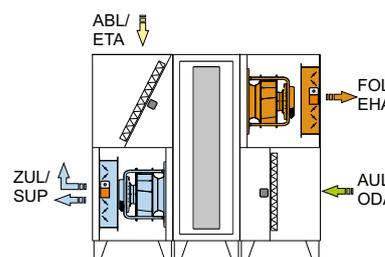
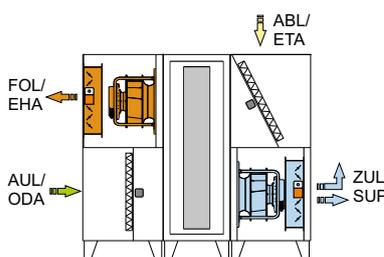
**-L4**

**-R5**



**-L5**

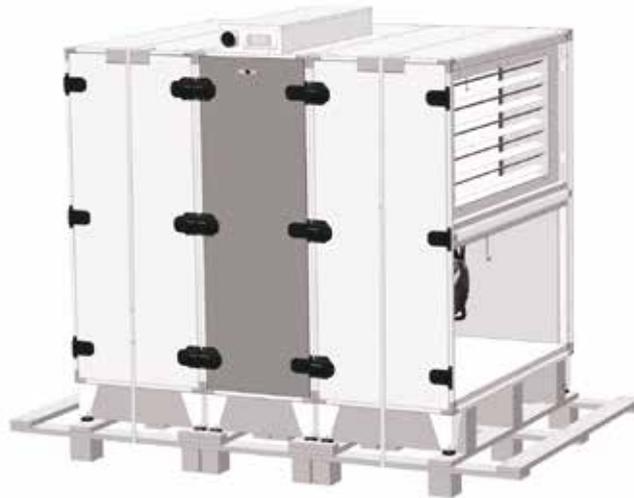
**-R6**



**-L6**

Other versions available, see Wolf sizing program

### Delivered condition



### Delivery

CRL 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 Wolf of the relevant facts without delay.

Dispose of the transport packaging in accordance with local regulations.

### 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.

**General handling information**

Units are supplied fully assembled and fully wired.

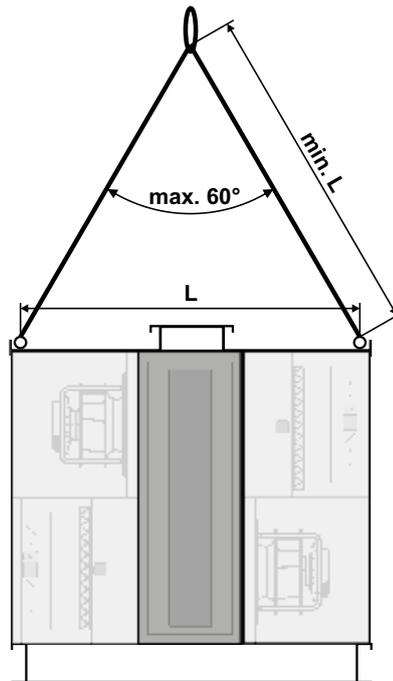
Only transport units in their installation position.

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

Failure to observe these instructions can damage internal components irreparably.

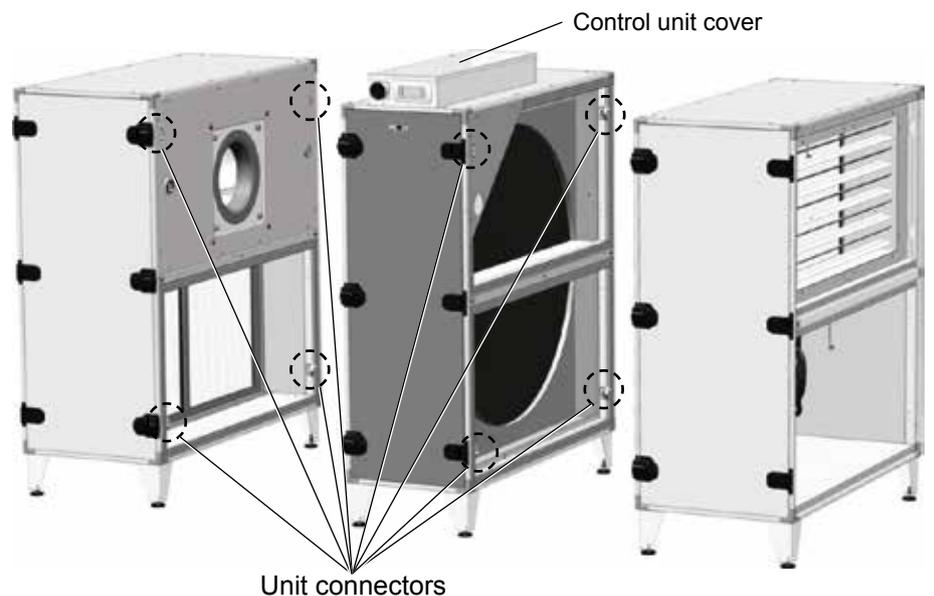
**CRL-A handling**

When lifting the CRL-A external units with the aid of eyebolts, use lifting ropes that provide a minimum eyebolt distance  $L$ . Keep ropes at the same length.

**CRL-iD/iH/iDH handling**

CRL-iD/iH/iDH internal units can be split into three sections for easier handling (narrow stairwells, lifts, etc.).

The unit sections are connected with hexagon bolts at unit connectors with captive nuts. Electric lines and control cables can be disconnected and connected again quite simply by means of plug-in connections in the control unit casing.

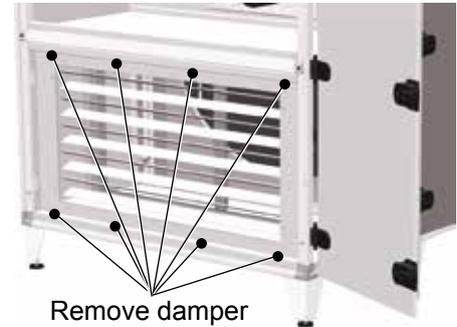


## 12. Unit splitting for handling purposes

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.



Remove filter  
Unit connector



Remove damper fixing screws

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

- Remove control unit cover
- Undo cable plug-in connections (Fig. 1)
- Pull wiring harnesses into the slant of the thermal wheel heat exchanger (Fig. 2)
- Pull wiring harnesses left and right into the external parts (Fig. 3)

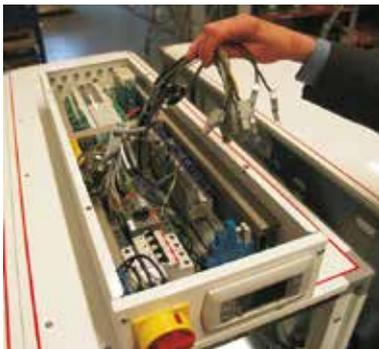


Fig. 1



Fig. 2



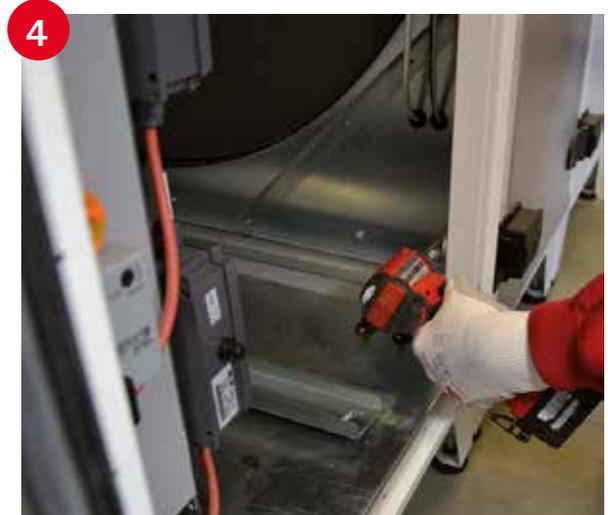
Fig. 3

### Assembling unit sections

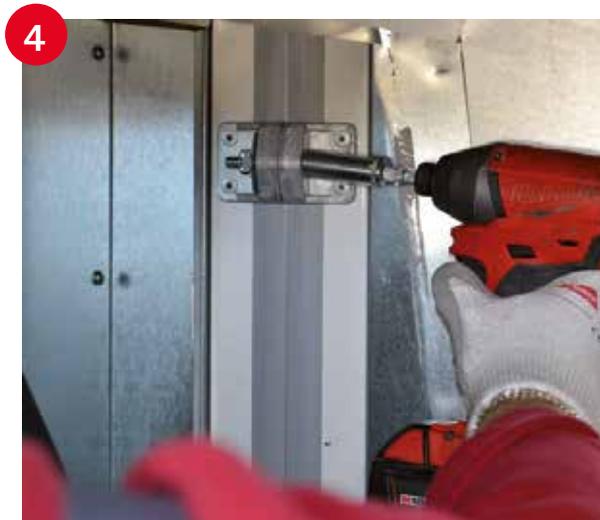
**Before assembling the individual unit sections, ensure that they are pushed together completely.**

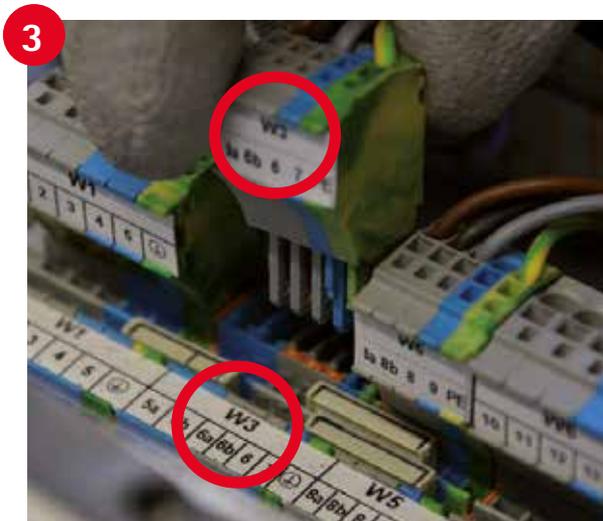
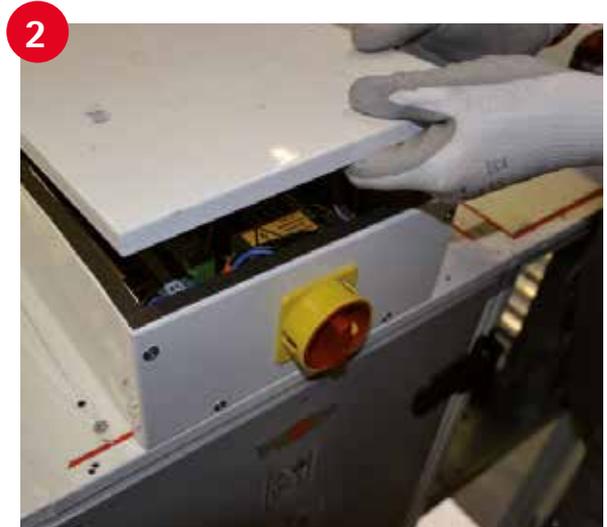
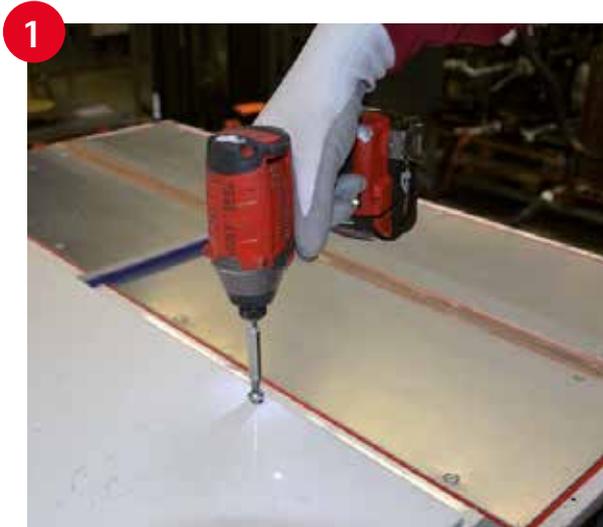
The assembly of cube components can be simplified by using lashing straps. Position unit sections next to each other and pull them together with lashing straps. Then screw the components together via the unit connectors. In order to ensure a secure threaded connection, screw the hexagon bolts manually 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).

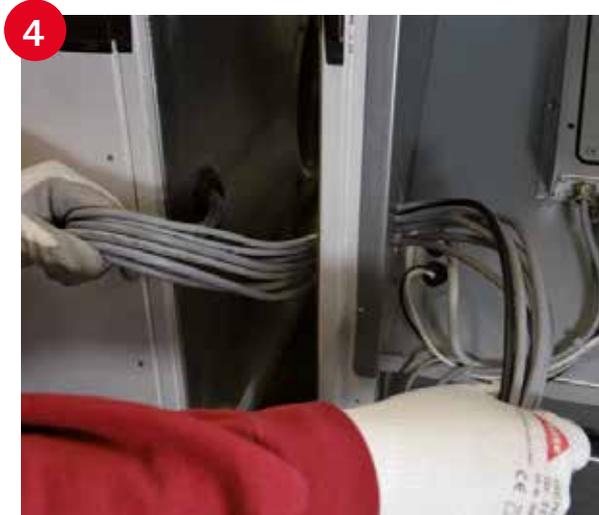


## 12. Unit splitting for handling purposes





## 12. Unit splitting for handling purposes



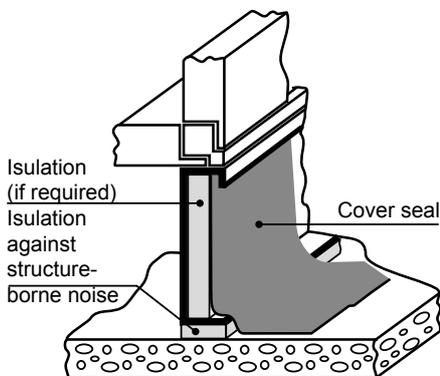


**Weatherproof units must not be used for any load-bearing building functions or as a replacement for any part of the roof (VDI 3803 5.1 / DIN EN 13053 6.2).**

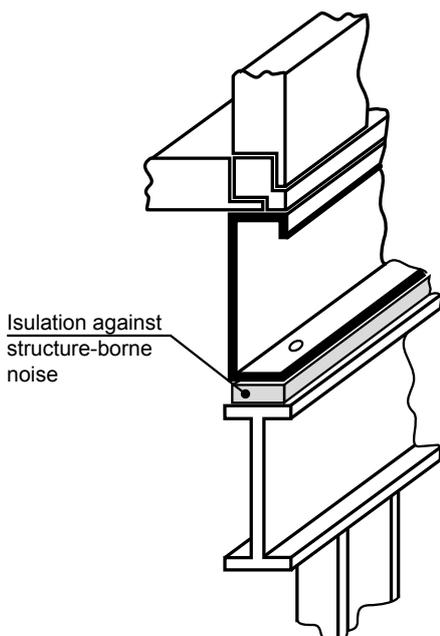
A level, horizontal load-bearing surface is required for siting and installing the external units.

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.



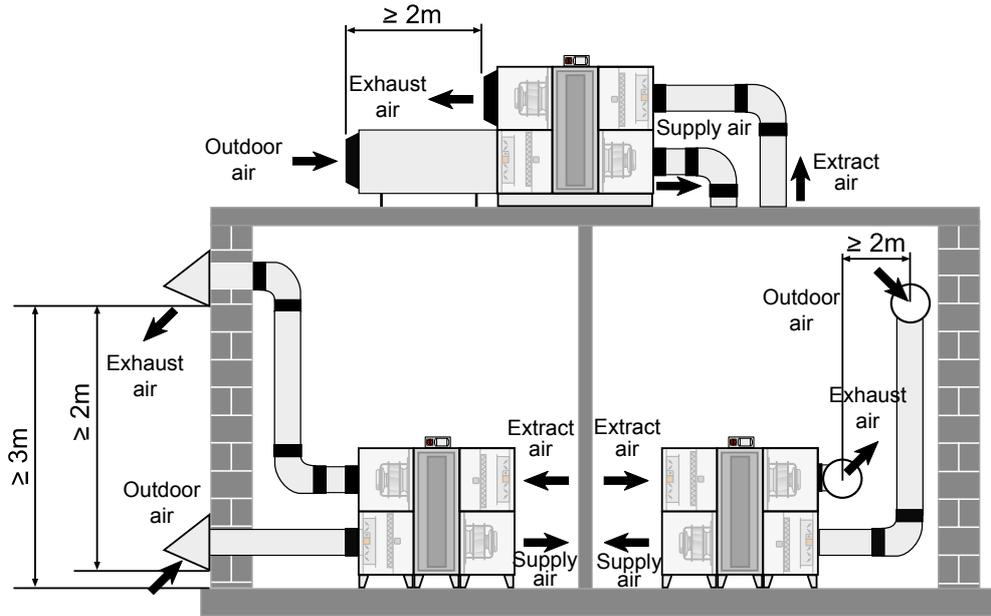
To prevent structure-borne noise transmission from the CRL to the building, insert a permanently flexible intermediate layer between the foundation and the base frame. This intermediate layer should preferably take the form of insulation strips, fitted lengthwise below the base frame.



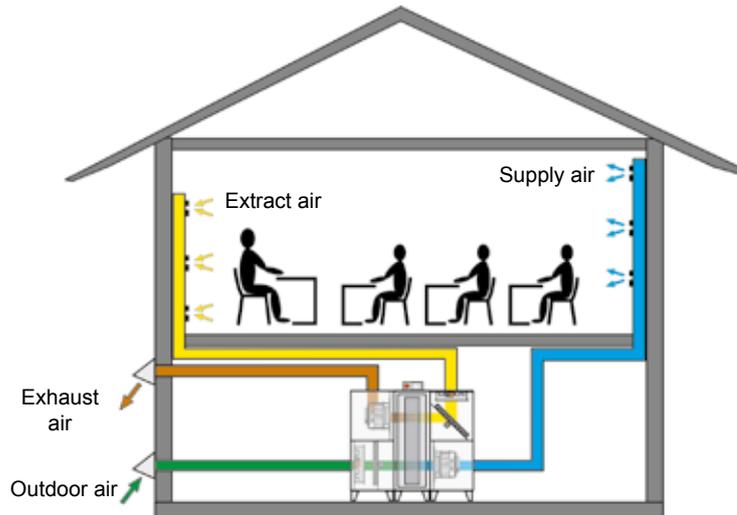
The WOLF base frame and its integration into the roof membrane must be insulated on site.

In the case of elevated positioning (CRL on on-site framework), the CRL must be secured against wind load.

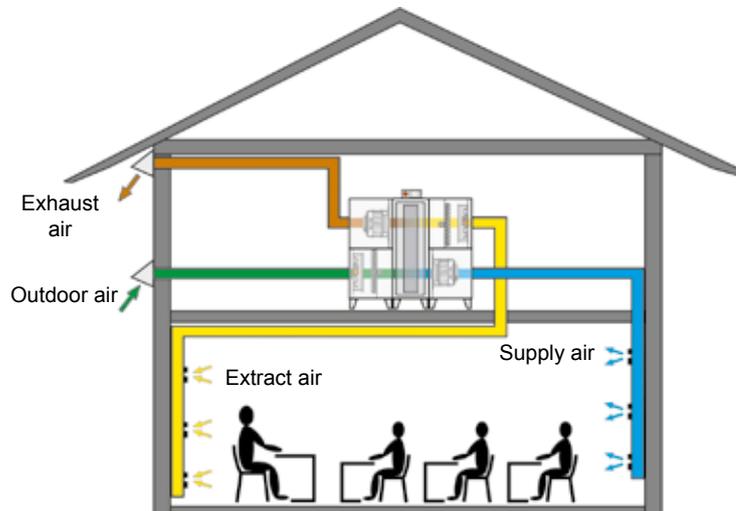
Minimum clearance between outdoor air intake and exhaust air aperture to prevent an "air short circuit" (DIN 13779)



View of air intake function:  
CRL-iD



View of air intake function:  
CRL-iH



## 14. Positioning

### Siting the CRL internal unit

The installation site must be level and sufficiently load-bearing (at least 450 kg). 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.

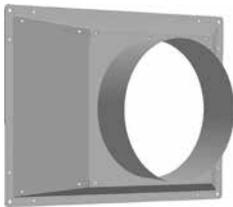
Clearance for opening the inspection doors:

- CRL-4800 min. 700 mm
- CRL-6200 min. 800 mm
- CRL-9000 min. 900 mm

Clearance for air duct connections above the unit:

- CRL-4800 min. 500 mm
- CRL-6200 min. 500 mm
- CRL-9000 min. 900 mm

### Duct connections (on site)



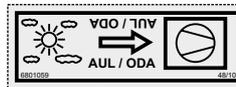
The unit connectors are rectangular.

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.

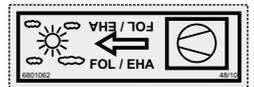
Adaptor insulating collar for round duct connection on internal unit with vertical and horizontal duct connection (accessory)

Air duct connections are identified with the following labels:

Outdoor air:



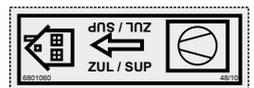
Exhaust air:



Extract air:

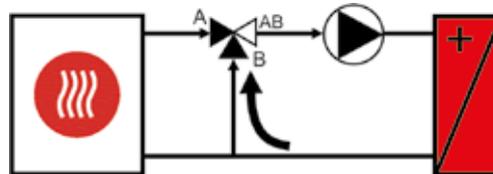


Supply air:



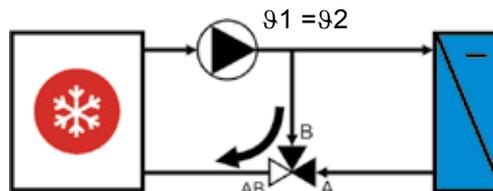
### Hydraulic connection

**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

### Electrical connection

Inlet for on-site cables



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.

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.

The control panel has cable entries for connecting the on-site cables.

Power cable for    CRL-4800: 5 x 2.5 mm<sup>2</sup>; on-site fuse/MCB protection 20 A  
                           CRL-6200: 5 x 4.0 mm<sup>2</sup>; on-site fuse/MCB protection 25 A  
                           CRL-9000: 5 x 6.0 mm<sup>2</sup>; on-site fuse/MCB protection 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.

### 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.

Regularly check the perfect function of all electrical equipment.

Observe the specified electrical fuse/MCB protection ratings.

We accept no liability for any damage or loss resulting from technical modifications to Wolf control units.

Motor data	CRL-4800	CRL-6200	CRL-9000
Rated voltage	3 x 400 V (50/60 Hz)	3 x 400 V (50/60 Hz)	3 x 400 V (50/60 Hz)
Max. power consumption of both fans	3.4 kW	6.0 kW	11.0 kW
Max. current draw of both fans	5.2 A	9.2 A	17 A
Fan speed	2600 rpm	2550 rpm	2200 rpm
IP rating / safety category	IP54 / ISO F	IP54 / ISO F	IP54 / ISO F

### Commissioning regulations

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 DIN EN 50110-1 (VDE 0105-1), only qualified electricians may carry out the installation and commissioning of the ventilation control unit and connected accessories.

Observe all regulations stipulated by your local power supply utility 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 Wolf accessories may be used (electric coils, servomotors, etc.), otherwise Wolf 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 (Wolf service).

Record the date of commissioning, e.g. in a log book.



According to DIN 1886, tools must be used 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).

### Commissioning procedure

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.

- 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 Wolf, 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)
- Measure motor currents
- Motor protection (thermal cutouts / thermistor)
- Airflow monitoring
- Filter monitoring
- Actuator, heating / cooling
- Heating circuit pump / cooling circuit pump
- As well as all other system-specific functions



**The Wolf warranty will be void if the function test is not carried out correctly.**

### Fans



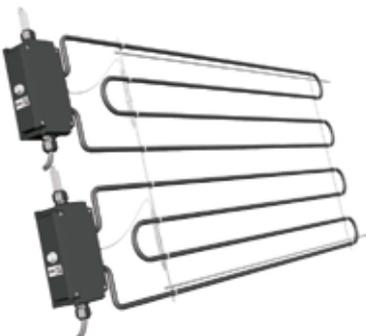
**Please  
note**

Use tools to tightly seal the doors before commissioning (unit tightness), otherwise there is a risk of motor overload.

- (3 x 400 V / 50 Hz; 2.6 A for CRL-4800)
- (3 x 400 V / 50 Hz; 4.6 A for CRL-6200)
- (3 x 400 V / 50 Hz; 8.4 A for CRL-9000)

Carry out air flow rate tests with the doors closed.  
Route test hose connections out of the unit (see flow rate calculation).  
Changes are made via the BMK programming unit (see relevant operating instructions).

### Filter pre-dryer (accessory)



To prevent the electric heating coil from switching off, never operate the CRL 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.

The filter pre-dryer starts automatically at outside temperatures below 5 °C.

Rec. min. air flow rate	CRL-4800 = 2400 m <sup>3</sup> /h
	CRL-6200 = 3100 m <sup>3</sup> /h
	CRL-9000 = 4500 m <sup>3</sup> /h

### 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.

### Trap



The effective trap head  $h$  (mm) must be greater than the maximum under- or overpressure at the condensate connector (1 mmWC = 10 Pa).

$$h = 1.5 \times p \text{ (mmWC)} + 50 \text{ mm (min.)}$$

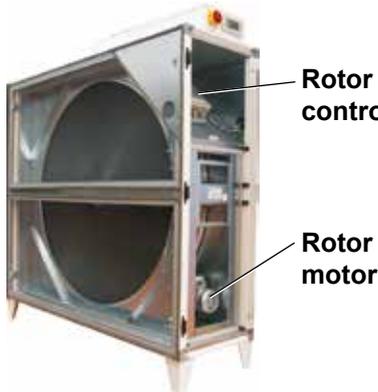
$p$	=	Under- or overpressure in mmWC acc. to appliance design
50 mm (WC)	=	Reserve (inaccurate sizing, evaporation)
1.5	=	Additional safety factor

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).

### Heat recovery function with thermal wheel heat exchanger

A rotating accumulator 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.

### 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.

### Flow rate calculation

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

$\dot{V}$  in [m<sup>3</sup>/h] und  $\Delta p_w$  in [Pa]

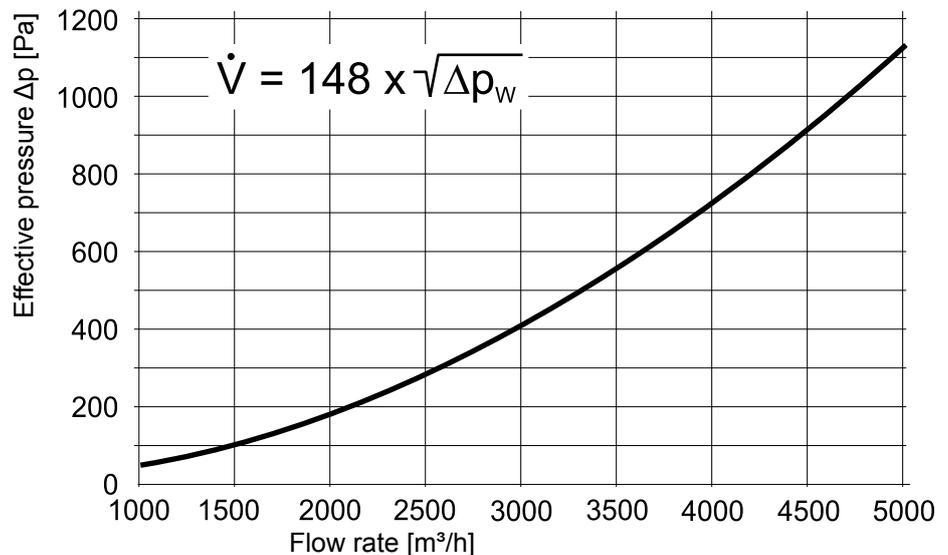
The flow rate is calculated using the effective pressure method. This involves comparing the static pressure upstream of the inlet nozzle with the static pressure in the inlet nozzle.

The flow rate can be calculated from the effective pressure  $\Delta p_w$  (differential pressure of the two static pressures) using the following equation. The doors must be closed to determine the correct flow rate. Route the test hoses through the unit floor to the outside when conducting the test.

### CRL-4800 effective pressure



The fans used for the CRL-4800 have a k value of 148.

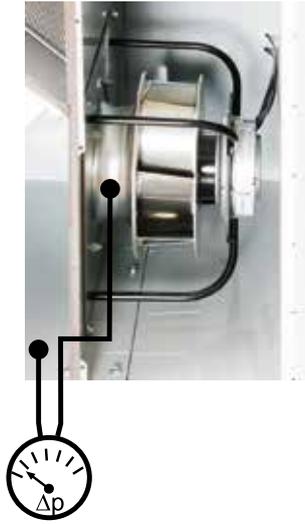


$\Delta p$  = effective pressure (symbolic representation)

$\Delta p$ [Pa]	100	200	300	400	500	600	700	800	900	1000
$\dot{V}$ [m <sup>3</sup> /h]	1480	2093	2563	2960	3309	3625	3916	4186	4440	4680

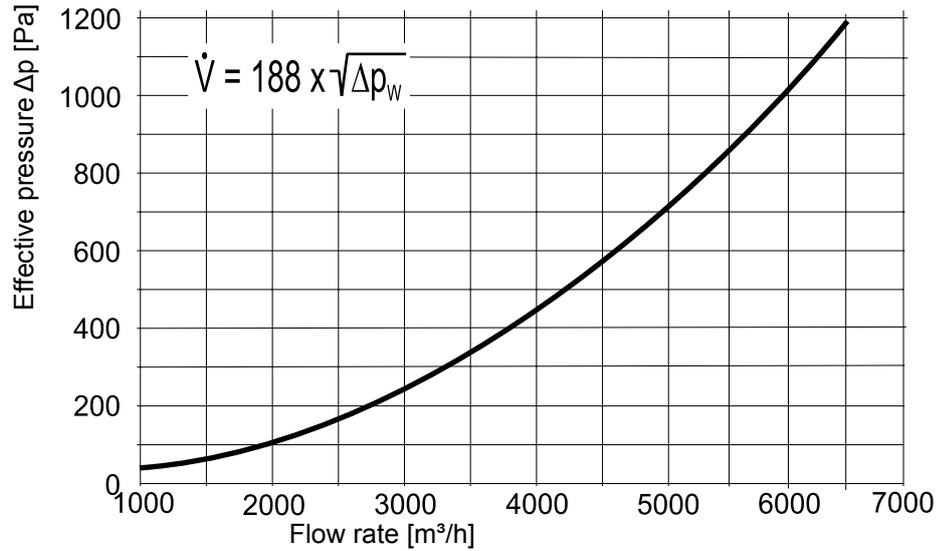
## 16. Commissioning

### CRL-6200 effective pressure



$\Delta p$  = effective pressure  
(symbolic representation)

The fans used for the CRL-6200 have a k value of 188.



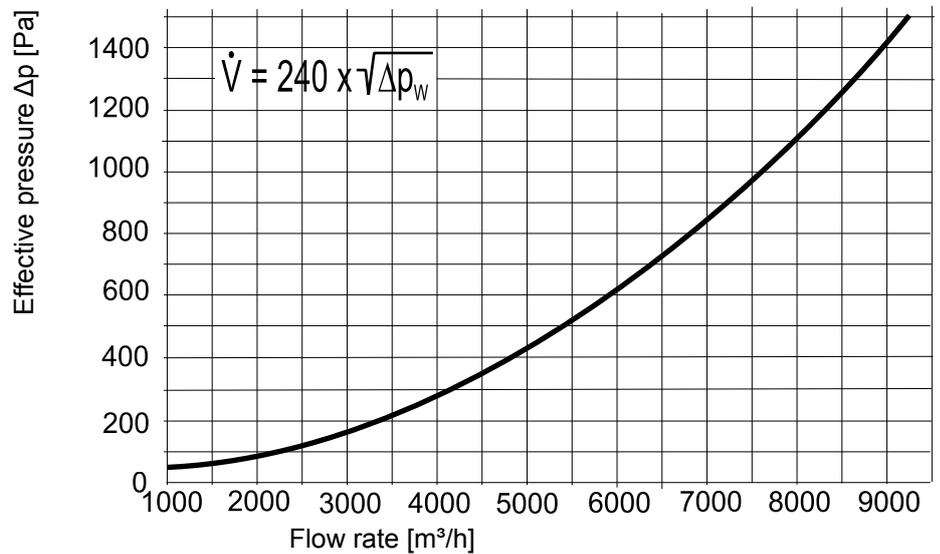
$\Delta p$ [Pa]	100	200	300	400	500	600	700	800	900	1000	1100
$\dot{V}$ [m <sup>3</sup> /h]	1880	2660	3256	3760	4200	4600	4974	5317	5640	5945	6235

### CRL-9000 effective pressure



$\Delta p$  = effective pressure  
(symbolic representation)

The fans used for the CRL-9000 have a k value of 240.



$\Delta p$ [Pa]	300	400	600	800	1000	1200	1400
$\dot{V}$ [m <sup>3</sup> /h]	4157	4800	5879	6788	7589	8314	8980

### Further settings for the BMK and accessories

Further settings for the BMK programming unit can be found in the operating instructions for the WRS-K control unit.

Accessories are installed in accordance with separate instruction manuals which are provided with the relevant accessories.

## 17. Maintenance shutdown

### Shutdown

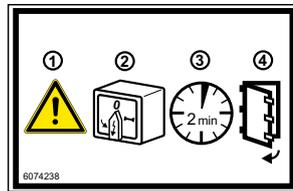
Before starting any maintenance work, switch OFF the isolator and safeguard against unauthorised reconnection. If the isolator is switched back on unintentionally, maintenance staff or others in the vicinity could be at risk from rotating parts.

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.



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.



Open inspection doors using a quadrant key

Isolator



# 18. Hygiene checklist

## 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.

## Hygiene checklist (extract from VDI 6022, sheet 1)

System commissioning: date \_\_\_\_\_

Activity	Action if required	1 month	3 months	6 months	12 months	24 months
<b>Hygiene inspection</b>						X
<b>Outdoor air intakes</b>						
Check for contamination, damage and corrosion	Clean and repair				X	
<b>Structural units / unit casing</b>						
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	
<b>Air vents</b>						
Check air vents, integral perforated plates, wire mesh or sieves for contamination, damage and corrosion (spot check)	Clean or replace				X	
Spot check filter fleece	Replace				X	
Spot check air vents with indoor air induction and extract air intakes for deposits	Clean				X	
<b>Air filters</b>						
Check for impermissible contamination, damage (leaks) and odours	Replace affected air filters (never operate the system without filters)		X			
Longest filter replacement interval					X	
<b>Air ducts</b>						
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	
<b>Silencer</b>						
Check silencers for contamination, damage and corrosion	Repair or replace; contact spotting if required				X	
<b>Fan</b>						
Check for contamination, damage and corrosion	Clean and repair			X		
<b>Heat exchanger (including heat recovery)</b>						
Visual inspection of rotor accumulator mass for contamination, damage and corrosion	Visual inspection			X		
	Clean and repair				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 Wolf spare parts.**

### Fan motor unit



Please  
note

Motor and bearing are maintenance-free.  
If necessary, clean the impeller with a soapy solution.

Check that the test lead is seated firmly at the test connector on the inlet nozzle.  
Loose seating can result in faulty measurements.

### Electrical equipment



- Regularly check the electrical equipment of the unit
- Replace loose connections and faulty cables immediately
- Regularly check the earth conductor

### Thermal wheel heat exchanger (TWHE)



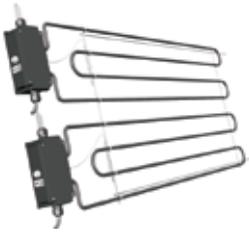
In normal operating conditions, the actuator and rotor bearing are maintenance-free.

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 accumulator 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 accumulator mass. When cleaning, ensure that the cleaning jet hits the accumulator 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.

### Filter pre-dryer (accessory)



**Please  
note**

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

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.

### Extract air damper / outdoor air damper



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.

### Compact filter



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

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

**Never operate the CRL ventilation unit without filters.**

### Servomotors (open/close) 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.

### Condensate pan



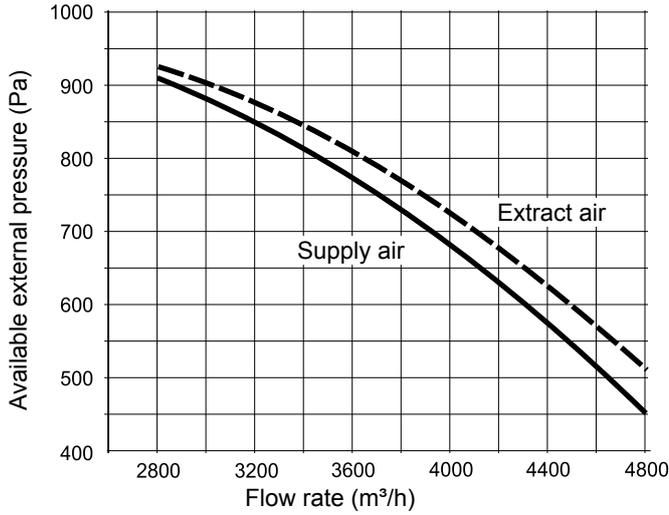
Regularly check the condensate pan for possible soiling and clean if required (see checklist).

### Trap

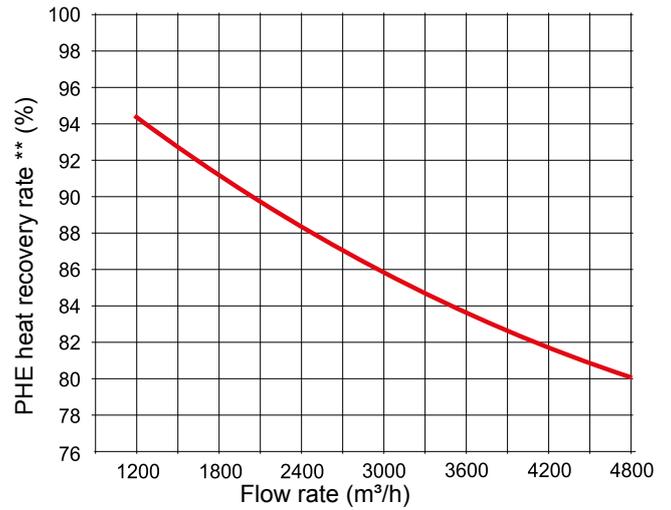


Regularly check the DN 50 trap (accessory) for possible soiling and clean if required. (see checklist).  
Refill the trap with water before returning into use.

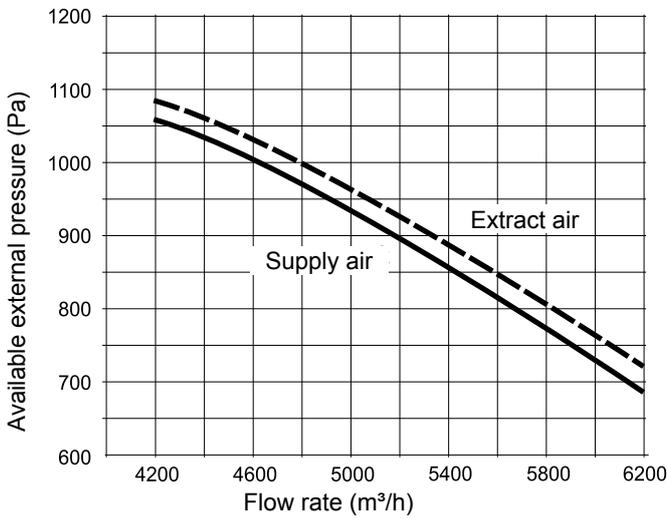
**CRL-4800 available external pressure**



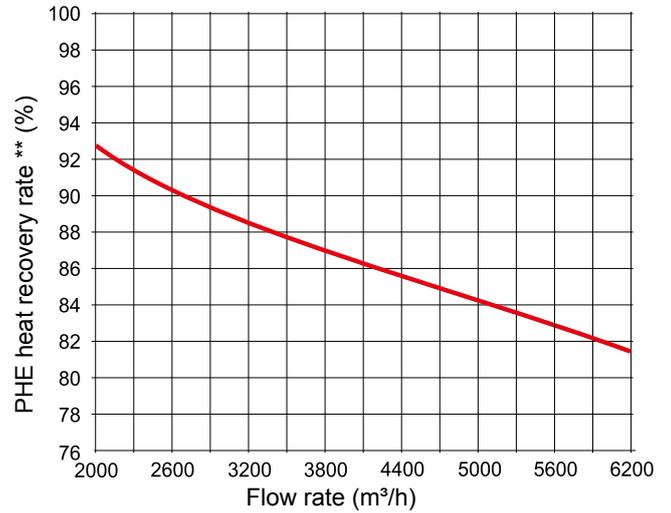
**CRL-4800 TWHE heat recovery**



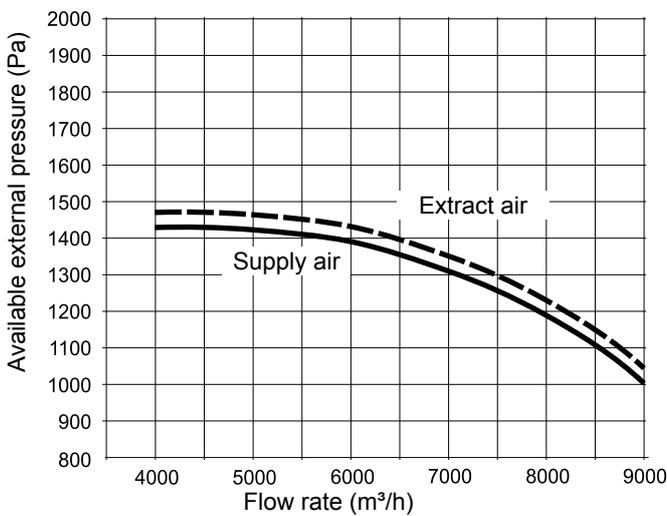
**CRL-6200 available external pressure**



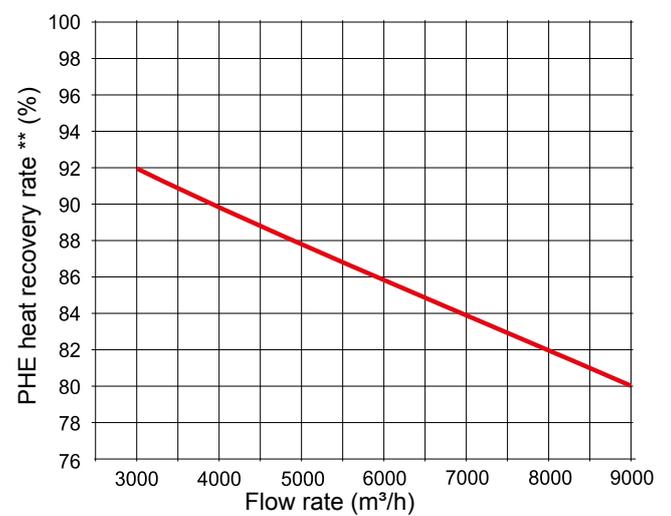
**CRL-6200 TWHE heat recovery**



**CRL-9000 available external pressure**



**CRL-9000 TWHE heat recovery**



DIN EN 308 conditions  
 ETA +25 °C, 25 % rel. hum.  
 ODA +5 °C  
 $\rho=1.2 \text{ kg/m}^3$

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