

# INSTRUCTION MANUAL

[de.elektrodesign.cz](http://de.elektrodesign.cz)

**RME, RMW, RMK Ekonovent<sup>®</sup>**  
supply units without heating, with heating

**SALE PRAGUE**

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## 1. GENERAL INFORMATION

### 1.1 INTRODUCTION

This manual is intended for RME, RMW and RMK Ekonovent® supply units. Its purpose is to provide as much information as possible for the safe installation, commissioning and use of this equipment. Due to the fact that our products are constantly evolving, we reserve the right to change this manual without prior notice.

### 1.2 GUARANTEE

We do not guarantee the suitability of the devices for special purposes, the determination of suitability is fully in the competence of the customer and the designer. The warranty for the devices is in accordance with valid legal regulations. The warranty is only valid if all installation and maintenance instructions, including protection, are observed. The warranty covers manufacturing defects, material defects or malfunctions of the device.

**The warranty does not cover defects caused by:**

- improper use and design
- improper handling (does not apply to mechanical damage)
- during transport (compensation for damage caused during transport must be claimed from the carrier)
- incorrect installation, incorrect electrical connection or protection
- incorrect operation
- unprofessional intervention in the device
- disassembling the device
- use in unsuitable conditions or in an unsuitable manner
- wear and tear caused by normal use
- third party intervention
- due to a natural disaster

**When claiming the warranty, it is necessary to submit a report containing:**

- data on the complaining company
- date and number of the sales document
- exact specification of the defect
- wiring diagram and fuse details
- measured values when starting the device
  - voltage
  - current
  - air temperature

The warranty repair is carried out in principle at the discretion of ELEKTRODESIGN ventilátory spol. s r.o. at the company's service centre or at the installation site. The method of eliminating the defect is solely at the discretion of the service company ELEKTRODESIGN ventilátory spol. s r.o. The complaining party will receive a written statement on the result of the complaint. In the event of an unjustified complaint, the complaining party pays all costs of its implementation.

**Warranty conditions**

The device must be installed by a professional air handling service company. **The RME, RMW, RMK Ekonovent® devices, including the DVAV, DCAV, DCOP and MVAV control systems, must be put into operation exclusively by the Seller or a person designated by the Seller. Failure to comply with this condition will result in the termination of the Buyer's rights from defective performance and from the Quality Warranty. Detailed terms are specified in the Seller's Complaint Procedure.** The electrical connection must be made by a specialist electrical company. Installation and location of the device must be unconditionally performed in accordance with relevant EU norms. The device must be subjected to an initial electrical inspection according to EU norms. **The device must be regulated to the designed air-conditioning parameters.** When starting the device, it is necessary to measure the above-specified values and make a record of the measurement, confirmed by the company putting the device into operation. In the event of a complaint about the equipment, it is necessary to submit a record of the above-mentioned parameters from commissioning together with the declaration protocol together with the initial revision, which the operator acquires within the commissioning and maintenance of the electrical installation.

During the operation, it is necessary to perform regular inspections of electrical equipment within the deadlines according to EU norms and inspection, maintenance and cleaning of air-conditioning equipment.

When taking over the device and unpacking it from the transport packaging, the customer is obliged to perform the following inspections. It is necessary to check the integrity of the device, as well as whether the delivered device exactly agrees with the ordered device. It is always necessary to check whether the label and identification data on the transport packaging, equipment or engine correspond to the designed and ordered parameters. Due to the continuous technical development of the equipment and changes in technical parameters reserved by the manufacturer, and the time lag between the project and the implementation of own sales, fundamental differences in the parameters of the equipment at the date of sale cannot be ruled out. The customer is obliged to inform the manufacturer or supplier about such changes before ordering the goods. Subsequent complaints cannot be taken into account.

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## 1.3 CIVIL LIABILITY

Supply units with or without heating RME, RMW and RMK Ekonovent® are designed for ventilation of commercial premises. Neither the manufacturer nor the seller is liable for defects caused by:

- inappropriate use
- normal wear and tear of components
- failure to observe the instructions for safety, use and commissioning specified in this manual
- not using the manufacturer's original components

## 1.4 SAFETY REGULATIONS

Adherence to these instructions should not pose any safety, health or environmental risks in accordance with EC directives (CE marked). The same applies to other products used in the device or during installation. Consider the following warnings:

- Observe the safety instructions to prevent damage to the device or personal injury.
- The technical information in this manual must not be changed.
- It is forbidden to interfere with the motor of the device.
- In order for the device to comply with EC directives, the device must be connected to the mains in accordance with the applicable regulations.
- The device must be installed in such a way that, under normal operating conditions, it cannot come into contact with any moving or live part.
- The device complies with the applicable regulations for the operation of electrical equipment.
- Always disconnect the device from the power supply before carrying out any work on it.
- Appropriate tools must be used when handling or maintaining the device.
- The device must only be used for the purposes for which it is intended.
- This appliance is not intended for use by children under 8 years of age and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a responsible person. The user must ensure that children do not play with the device. Cleaning and maintenance of the appliance must not be carried out by children without supervision.

## 2. UNIT DESCRIPTION

### 2.1 UNIT DETAILS

#### CABINET

The 45 mm thick wall panels are made of galvanized sheet steel with external coating in RAL 9002 colour. The panels are lined with acoustic and thermal insulation from inflammable glass mineral wool. To facilitate service, the unit cabinet is equipped with a removable door with locks. The unit frame is made from aluminium profiles with wall panels screwed to the frame. The connection sockets of the water heaters are led to the outer casing of the unit. The cabinet is fitted with 4 pieces of hinges with holes Ø 12 mm for under-ceiling mounting of the unit.

#### FAN

The unit is fitted with a fan with backward curved blades, the impeller is made of composite material. The impeller is statically and dynamically balanced.

#### MOTOR

EC motor is assembled directly on the fan impeller. The fan motor can be continuously controlled by an external signal 0 to 10 V or PWM. The motor is equipped with its own built-in thermal protection. Electric motor protection of IP44.

#### HEATER

Water heaters are designed for heating water temperature drop of  $dT = 20 \text{ K}$  (80/60 °C) for inlet air temperature  $t_e = -12 \text{ °C}$  / 90 % RH at the nominal air flow. Electric heaters are designed for inlet air temperature  $t_e = -12 \text{ °C}$  / 90 % RH at nominal air flow and are fitted with an operation and emergency thermostat.

#### FILTERS

One or more filter elements of filtration class F7 (optional filter class G4 to F9) are located in the unit; they are situated in one filter wall. The filter is made from polypropylene filter material. Access to the filters is provided through inspection door at the unit operation side. In the case of multi-stage filtration, the unit can be supplemented with MFL filter cartridges with MFR filter inserts, which are intended for installation in pipes.

#### ELECTRICAL CONNECTION

The supply voltage of the units is 1x230 V / 50 Hz or 3x400 V / 50 Hz and depends on the equipment of the unit. Supply cables, cables to the sensors, the power cables to the fans are fed to the unit via plastic bushings in the wall of the unit, which are not part of the unit delivery. The terminal block of the electric heater for RME units is accessible after removing the outer cover. The electric motor of the fan has the supply power cable led to a plastic switchboard with a terminal block, which is located inside the unit.

#### CONTROL

The unit is supplied without control as standard. If required, the unit is equipped with Minireg® control. For comfortable control with a requirement for external communication, it is necessary to select higher levels of Digireg® control sets. In case the unit is fitted with I&C system from the factory, it is electrically connected and all sensors and drives are tested. The control box is located on the wall of the unit according to the current space requirements of the specific project (the location of the control box of the I&C system must be specified in the order).

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## INSTALLATION

is possible in a horizontal position with the operating side from the side of the unit (designation in unit code H2) or from the underside of the unit (designation in unit code H1). It is also possible to distinguish between the right (P) and left design (L) according to the position of the water heater outlets or the position of the connection terminal block of the electric heater (for size 2400, 3000, 4000, 6000). The L or P position is determined by looking at the front inlet surface of the heater in the direction of air flow. There must be a handling space next to the unit for removal of the lid and filters and for performing periodic wiring inspections.

## VARIANTS

- RME with built-in water heating and filter
- RMW with built-in water heating and filter
- RMK with filter, without heater

## 2.2 UNIT DESIGN

R M W 2 4 0 0 F 7 D V A V H 1 P  
 1 2 3 4 5 6 7

Unit design:

1 – RMW – unit with water heater

RME – unit with electric heater

RMK – unit without heater

2 – unit size according to the table of technical parameters (e.g. 800/315 or 3000)

3 – filter filtration class (standard F7, optional G4 – F9)

4 – type of control system:

M – Minireg®

D – Digireg®

5 – airflow control type:

VAV – variable air flow

CAV – constant air flow

COP – constant static pressure supplied to the HVAC piping network

6 – operating side position:

H1 – lower operating lid

H2 – side operating lid

7 – position of the connection sockets of the heater (or the connection terminals of the electric heater):

L – left

P – right

The position of the connection sockets can only be selected for sizes RMW/E 2400, 3000, 4000, 6000!

## 2.3 TECHNICAL INFORMATION

Type	Nominal airflow [m³/h]	Speed / control voltage** [min⁻¹/V]	EC motor			Heater			Weight [kg]	Control system	
			Voltage [V/Hz]	Current NOM/MAX*** [A]	Power NOM/MAX*** [W]	Voltage [V/Hz]	Current [A]	Power* [kW]		Minireg®	Digireg®
RME 250/200	250	2791/8,6	1x230 V/50 Hz	0,25/0,3	28/34	1x230 V/50 Hz	9	2	32	E6-2	M1-E2
RMW 250/200	250	2791/8,6	1x230 V/50 Hz	0,25/0,3	28/34	-	-	4,4	33	Wx	M3-Vx
RME 500/250	500	2870/9,2	1x230 V/50 Hz	0,46/0,5	61/67	1x230 V/50 Hz	13	3	37	E6-2	M1-E8-2
RMW 500/250	500	2870/9,2	1x230 V/50 Hz	0,46/0,5	61/67	-	-	8,5	38	Wx	M3-Vx
RME 800/315	800	2730/9,4	1x230 V/50 Hz	0,72/0,8	101/113	3x400 V/50 Hz	8,5	5,4	51	E6-2	M1-E8
RMW 800/315	800	2730/9,4	1x230 V/50 Hz	0,72/0,8	101/113	-	-	13,7	52	Wx	M3-Vx
RME 900/355	900	2395/7,1	1x230 V/50 Hz	0,6/1,1	96/170	3x400 V/50 Hz	16,5	10,8	55	-	M3-E15
RMW 900/355	900	2395/7,1	1x230 V/50 Hz	0,6/1,1	96/170	-	-	14,8	56	Wx	M3-Vx
RME 1200/400	1200	2045/7,5	1x230 V/50 Hz	0,9/1,4	146/222	3x400 V/50 Hz	16,5	10,8	68	-	M3-E15
RMW 1200/400	1200	2045/7,5	1x230 V/50 Hz	0,9/1,4	146/222	-	-	20,7	70	Wx	M3-Vx
RME 2400	2400	1270/8,4	1x230 V/50 Hz	0,9/1,5	214/360	3x400 V/50 Hz	34	22,5	92	-	M3-E24
RMW 2400	2400	1270/8,4	1x230 V/50 Hz	0,9/1,5	214/360	-	-	35,8	98	Wx	M3-Vx
RME 3000	3000	1420/9,4	1x230 V/50 Hz	1,25/1,5	299/360	3x400 V/50 Hz	45	30	111	-	M3-E36
RMW 3000	3000	1420/9,4	1x230 V/50 Hz	1,25/1,5	299/360	-	-	47,5	118	Wx	M3-Vx
RME 4000	4000	1480/10	1x230 V/50 Hz	1,6/1,6	388/388	3x400 V/50 Hz	45	30	122	-	M3-E36
RMW 4000	4000	1480/10	1x230 V/50 Hz	1,6/1,6	388/388	-	-	62,8	131	Wx	M3-Vx
RME 6000	5800	1450/9,6	1x230 V/50 Hz	2,7/3,0	638/720	3x400 V/50 Hz	70	45	161	-	M3-E72
RMW 6000	5800	1450/9,6	1x230 V/50 Hz	2,7/3,0	638/720	-	-	93,9	173	Wx	M3-Vx

\* water heater output at nominal air flow, at  $t_e = -12$  °C/90 % RH and for a water temperature drop of 80/60 °C

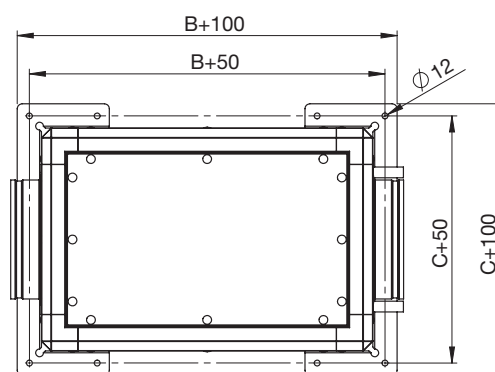
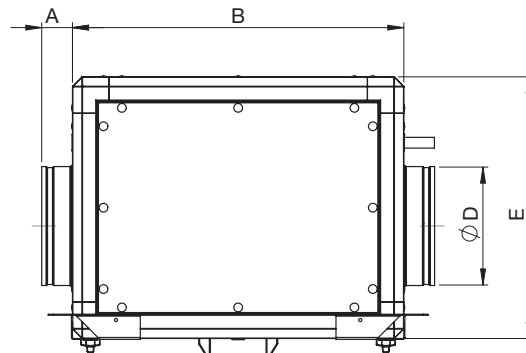
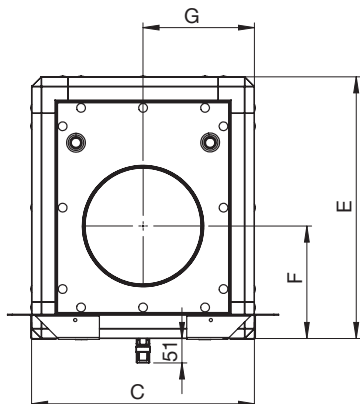
\*\* EC motor speed and control voltage at nominal air flow

\*\*\* NOM – power and current at minimum air flow and nominal speed, MAX – power and current at maximum air flow of the fan in the unit

# RME, RMW, RMK Ekonovent®

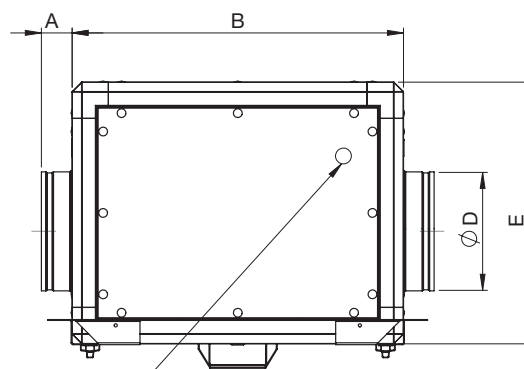
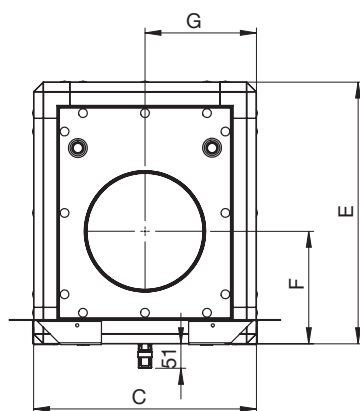
## 2.4 DIMENSIONS

RMW 250/200; 500/250; 800/315; 900/355; 1200/400 - position H1



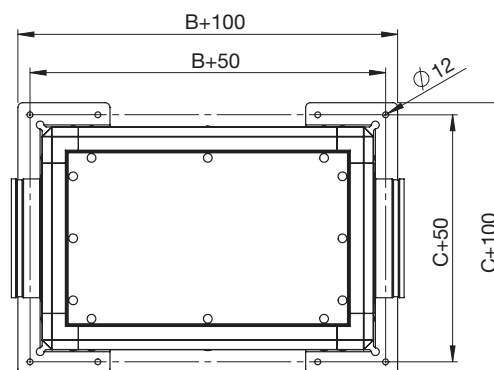
Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
RMW 250/200	63	664	400	200	460	200	200
RMW 500/250	63	684	460	250	540	230	230
RMW 800/315	63	754	550	315	615	275	275
RMW 900/355	63	850	550	355	615	275	275
RMW 1200/400	63	930	620	400	680	290	310

RME 250/200; 500/250; 800/315; 900/355; 1200/400 - position H1



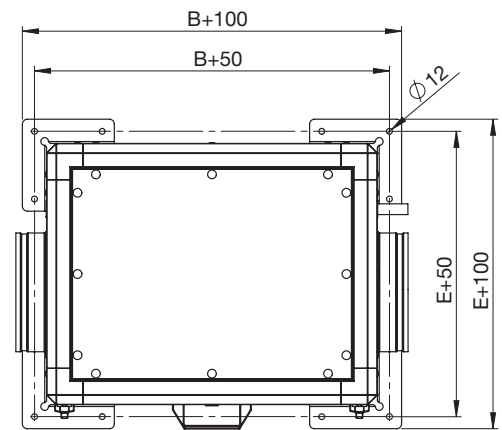
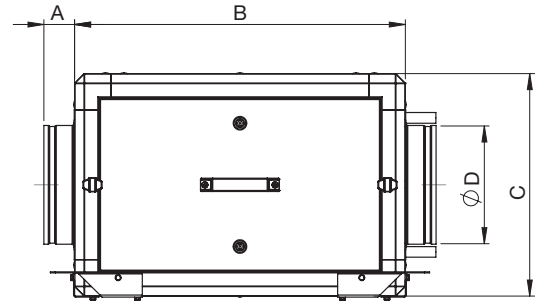
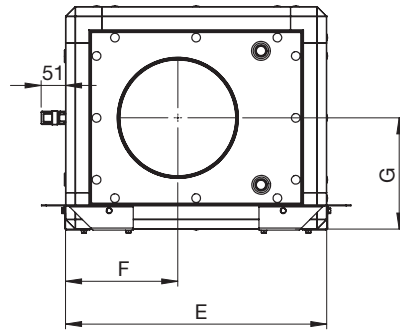
Electric heater thermal fuse release button, located on the outer unit panel

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
RME 250/200	63	664	400	200	460	200	200
RME 500/250	63	684	460	250	540	230	230
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RME 900/355	63	850	550	355	615	275	275
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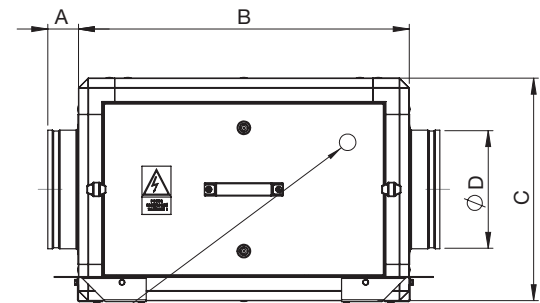
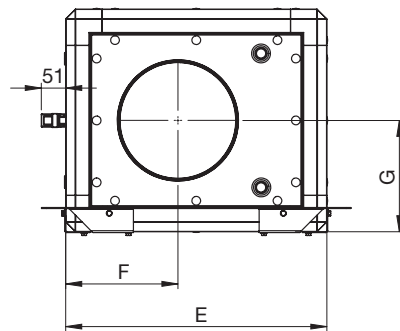
# RME, RMW, RMK Ekonovent®

RMW 250/200; 500/250; 800/315; 900/355; 1200/400 - position H2

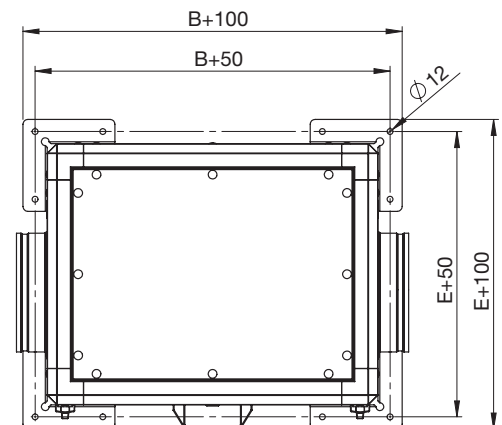


Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
RMW 250/200	63	664	400	200	460	200	200
RMW 500/250	63	684	460	250	540	230	230
RMW 800/315	63	754	550	315	615	275	275
RMW 900/355	63	850	550	355	615	275	275
RMW 1200/400	63	930	620	400	680	290	310

RME 250/200; 500/250; 800/315; 900/355; 1200/400 - position H2



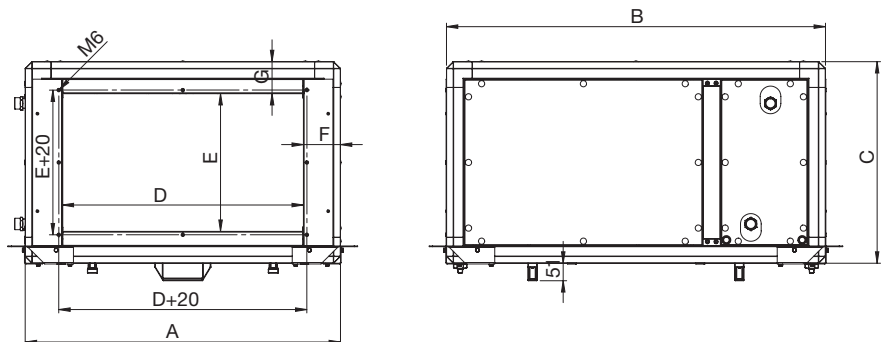
Electric heater thermal fuse release button, located on the outside unit panel



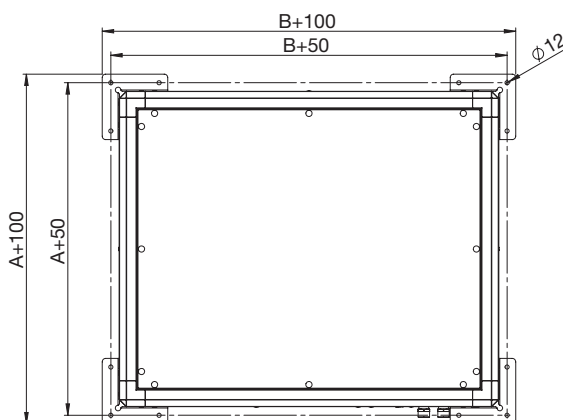
Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
RME 250/200	63	664	400	200	460	200	200
RME 500/250	63	684	460	250	540	230	230
RME 800/315	63	754	550	315	615	275	275
RME 900/355	63	850	550	355	615	275	275
RME 1200/400	63	930	620	400	680	290	310

# RME, RMW, RMK Ekonovent®

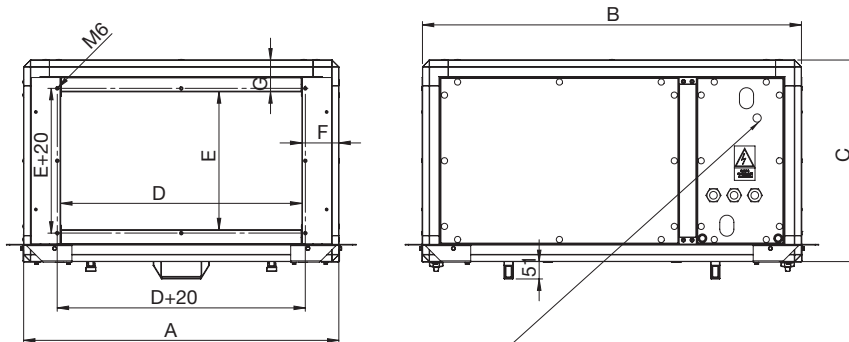
RMW 2400; 3000; 4000; 6000 - position H1



Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
RMW 2400	915	1100	585	700	400	107,5	92,5
RMW 3000	1015	1100	685	800	500	107,5	92,5
RMW 4000	1215	1050	685	1000	500	107,5	92,5
RMW 6000	1465	1100	785	1200	600	132,5	92,5

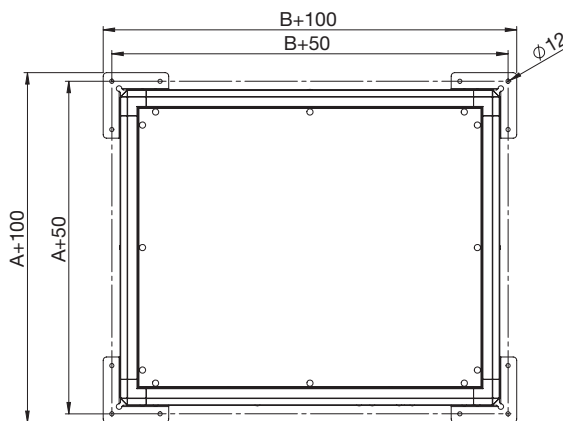


RME 2400; 3000; 4000; 6000 - position H1



Electric heater thermal fuse release button, located on the outer unit panel

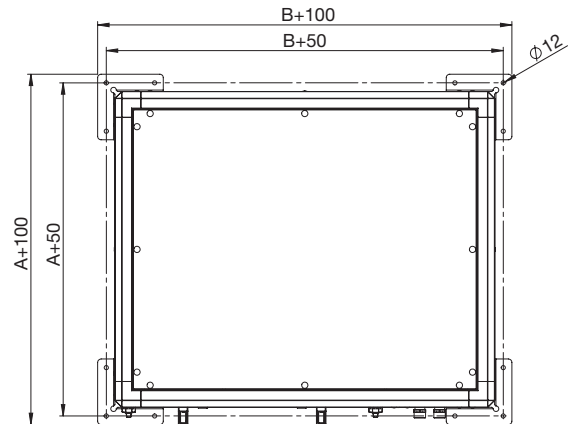
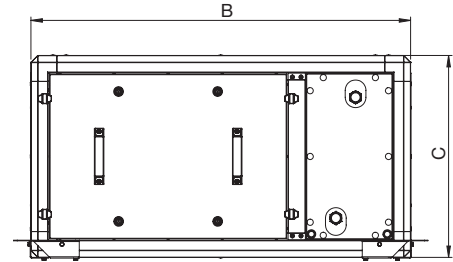
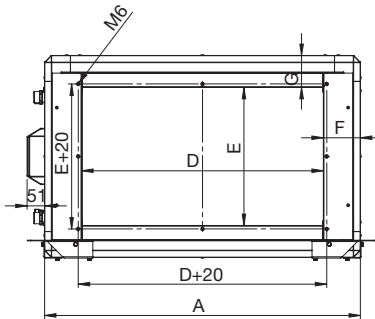
Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
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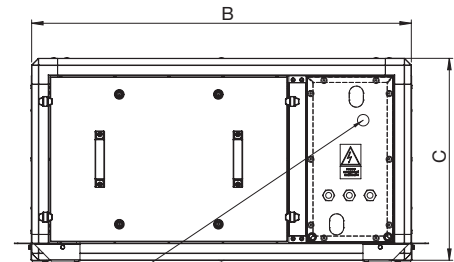
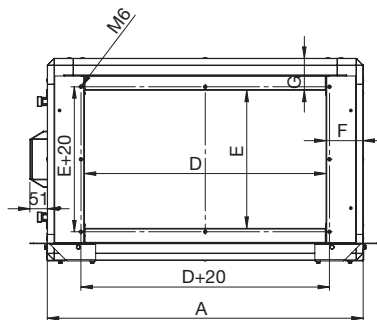
# RME, RMW, RMK Ekonovent®

RMW 2400; 3000; 4000; 6000 - position H2

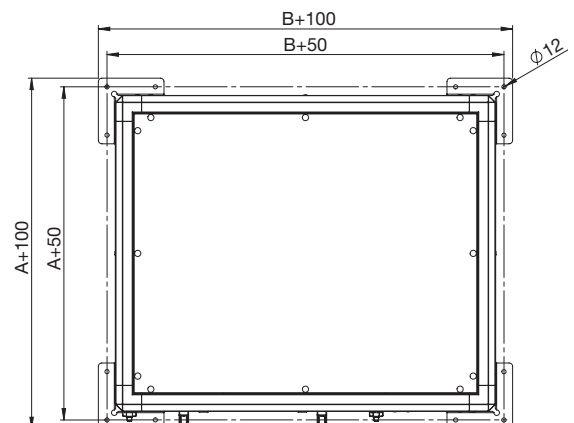


Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
RMW 2400	915	1100	585	700	400	107,5	92,5
RMW 3000	1015	1100	685	800	500	107,5	92,5
RMW 4000	1215	1050	685	1000	500	107,5	92,5
RMW 6000	1465	1100	785	1200	600	132,5	92,5

RME 2400; 3000; 4000; 6000 - position H2



Electric heater thermal fuse release button, located on the outer unit panel

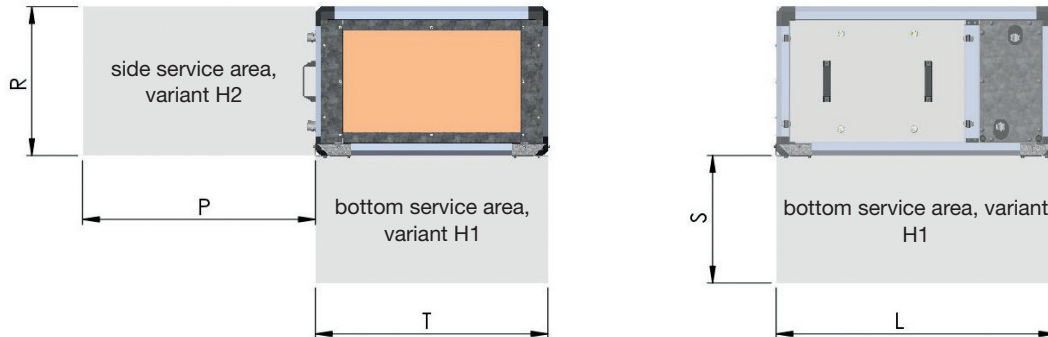


Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
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RME 6000	1465	1100	785	1200	600	132,5	92,5

# RME, RMW, RMK Ekonovent®

## 2.5 SERVICE AND INSTALLATION AREA

The unit must always be mounted in such a way that the correct installation position for the electric or water heater is maintained. At the same time, during installation, it is necessary to make sure that there is enough space to remove the cover of the unit, replace the filters and to perform periodic inspections of the electrical installation.



Type	position H1					position H2				
	P [mm]	R [mm]	S [mm]	T [mm]	L [mm]	P [mm]	R [mm]	S [mm]	T [mm]	L [mm]
RMW/E 250/200	200	460	460	400	664	460	400	-	-	664
RMW/E 500/250	200	540	540	460	684	540	460	-	-	684
RMW/E 800/315	200	615	615	550	754	615	550	-	-	754
RMW/E 900/355	200	615	615	550	850	615	550	-	-	850
RMW/E 1200/400	200	680	680	620	930	680	620	-	-	930
RMW/E 2400	300	585	585	915	1100	915	585	-	-	1100
RMW/E 3000	300	685	685	1015	1100	1015	685	-	-	1100
RMW/E 4000	300	685	685	1215	1050	1215	685	-	-	1050
RMW/E 6000	300	785	785	1465	1100	1465	785	-	-	1100

## 2.6 STORAGE

The unit is stored according to the type of packaging in warehouses according to EN 60721-3-1 Classification of the environment - Part 3: „Classification of the environment parameter groups and their strictness levels – Section 1: Storage“.

## 2.7 CHARACTERISTICS OF SUPPLY UNITS (UVU) ACC. TO EC REGULATION NO. 1253/2014

Unit type	Nominal airflow [m³/h]	SFP <sub>int</sub> LIMIT 2018 [W/(m³/s)]	SFP <sub>int</sub> [W/(m³/s)]	external pressure [Pa]
RMW/E 250/200	250	230	174	50
RMW/E 500/250	500	230	152	50
RMW/E 800/315	800	230	210	50
RMW/E 900/355	900	230	148	50
RMW/E 1200/400	1200	230	125	50
RMW/E 2400	2400	230	155	50
RMW/E 3000	3000	230	160	50
RMW/E 4000	4000	230	179	50
RMW/E 6000	6000	230	188	50

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## 2.8 PARAMETERS OF WATER AND ELECTRIC HEATERS

### Water heater – RMW 250/200

Airflow (m <sup>3</sup> /h)	70	100	150	200	250
Outlet air temperature (°C)	57,8	53,3	47,6	43,3	39,9
Heater power (kW)	1,6	2,2	2,9	3,7	4,34
Water flow (m <sup>3</sup> /h)	0,07	0,1	0,13	0,16	0,19
Pressure loss at water side (kPa)	1	2	4	6	7

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 250/200

Heater power (kW)	-	-	2	2	2
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	-	-	27,6	17,7	11,8
Minimum air flow through the heater (m <sup>3</sup> /h)	150				

### Water heater – RMW 500/250

Airflow (m <sup>3</sup> /h)	200	250	300	400	500
Outlet air temperature (°C)	51,9	48,9	46,2	41,9	38,4
Heater power (kW)	4,3	5,1	5,9	7,2	8,4
Water flow (m <sup>3</sup> /h)	0,19	0,22	0,26	0,32	0,37
Pressure loss at water side (kPa)	2,5	3	4	4	5

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 500/250

Heater power (kW)	-	3	3	3	3
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	-	23,6	17,7	10,3	5,8
Minimum air flow through the heater (m <sup>3</sup> /h)	250				

### Water heater – RMW 800/315

Airflow (m <sup>3</sup> /h)	500	550	600	700	800
Outlet air temperature (°C)	46	44,6	43,2	40,9	38,8
Heater power (kW)	9,7	10,4	11,1	12,4	13,6
Water flow (m <sup>3</sup> /h)	0,43	0,46	0,49	0,54	0,6
Pressure loss at water side (kPa)	3	3	3	4	5

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 800/315

Heater power (kW)	5,4	5,4	5,4	5,4	5,4
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	20,1	17,2	14,7	10,9	8,0
Minimum air flow through the heater (m <sup>3</sup> /h)	500				

### Water heater – RMW 900/355

Airflow (m <sup>3</sup> /h)	500	600	700	800	900
Outlet air temperature (°C)	46	43,2	40,9	38,8	36,9
Heater power (kW)	9,7	11,1	12,4	13,6	14,8
Water flow (m <sup>3</sup> /h)	0,43	0,49	0,54	0,6	0,65
Pressure loss at water side (kPa)	3	3	4	5	6

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 900/355

Heater power (kW)	-	10,8	10,8	10,8	10,8
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	-	41,5	33,8	28,1	23,6
Minimum air flow through the heater (m <sup>3</sup> /h)	600				

### Water heater – RMW 1200/400

Airflow (m <sup>3</sup> /h)	800	900	1000	1100	1200
Outlet air temperature (°C)	45,6	43,8	42,2	40,7	39,9
Heater power (kW)	15,4	16,8	18,1	19,4	20,6
Water flow (m <sup>3</sup> /h)	0,68	0,74	0,8	0,85	0,91
Pressure loss at water side (kPa)	6	6	6	6	7

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 1200/400

Heater power (kW)	10,8	10,8	10,8	10,8	10,8
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	28,1	23,6	20,1	17,2	14,7
Minimum air flow through the heater (m <sup>3</sup> /h)	600				

### Water heater – RMW 2400

Airflow (m <sup>3</sup> /h)	1100	1500	2000	2200	2400
Outlet air temperature (°C)	44,5	39,7	35,2	33,7	32,3
Heater power (kW)	20,8	26	31,6	33,7	35,6
Water flow (m <sup>3</sup> /h)	0,91	1,14	1,39	1,48	1,56
Pressure loss at water side (kPa)	3	3	4	4	5

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 2400

Heater power (kW)	-	22,5	22,5	22,5	22,5
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	-	32,6	21,4	18,4	15,8
Minimum air flow through the heater (m <sup>3</sup> /h)	1400				

### Water heater – RMW 3000

Airflow (m <sup>3</sup> /h)	1600	2100	2400	2700	3000
Outlet air temperature (°C)	44,8	40,7	38,6	36,7	35
Heater power (kW)	30,5	37	40,6	44	47,2
Water flow (m <sup>3</sup> /h)	1,34	1,63	1,79	1,93	2,07
Pressure loss at water side (kPa)	3	3	4	4	5

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 3000

Heater power (kW)	30	30	30	30	30
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	43,7	30,4	25,1	21,0	17,7
Minimum air flow through the heater (m <sup>3</sup> /h)	1600				

### Water heater – RMW 4000

Airflow (m <sup>3</sup> /h)	2000	2500	3000	3500	4000
Outlet air temperature (°C)	45,5	42,1	39,2	36,7	34,6
Heater power (kW)	38,5	45,3	51,4	57,1	62,4
Water flow (m <sup>3</sup> /h)	1,69	1,99	2,26	2,51	2,74
Pressure loss at water side (kPa)	3	4	5	6	6

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 4000

Heater power (kW)	30	30	30	30	30
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	32,6	23,6	17,7	13,5	10,3
Minimum air flow through the heater (m <sup>3</sup> /h)	1800				

### Water heater – RMW 6000

Airflow (m <sup>3</sup> /h)	3000	4000	5000	5500	6000
Outlet air temperature (°C)	46,5	42,1	38,5	37	35,6
Heater power (kW)	58,8	72,5	84,6	90,2	95,6
Water flow (m <sup>3</sup> /h)	2,58	3,18	3,72	3,96	4,2
Pressure loss at water side (kPa)	6	6	8	9	9

Values for air inlet temperature  $t_e = -12\text{ °C}$  and  $t_w = 80/60\text{ °C}$ .

### Electric heater – RME 6000

Heater power (kW)	45	45	45	45	45
Outlet air temperature (°C) at $t_e = -12\text{ °C}$	32,6	21,4	14,7	12,3	10,3
Minimum air flow through the heater (m <sup>3</sup> /h)	2500				

### 3. COMMISSIONING

The device may only be put into operation for the first time by a suitably qualified specialist.

#### 3.1 OPERATION CONDITIONS

The ambient temperature must be between -20 and +40 °C.

The unit can transport air without solid, fibrous, sticky, aggressive chemical and explosive additives. The maximum permissible supply air temperature must not exceed +40 °C.

#### 3.2 INSTALLATION AND CONNECTION CHECK

Before the first commissioning, it is necessary to check:

- Equipment cleanness, installation completeness/quality
- Fan free rotation
- Operating voltage of electric motor acc. to type plate
- Actuator control and operating voltage
- Cleanness of filter cartridges
- Damper movability
- Tight connection to distribution lines
- Closing of all doors and service holes

Any faults must be rectified before starting the unit for the first time.

#### 3.3 TRIAL OPERATION

The material content of the comprehensive testing includes the commissioning of the device for a pre-agreed time and its continuous inspection. In order to comply with the required air parameters depending on the operation of the building and the technology, it is necessary to fine-tune the device during the test operation, or during the warranty tests.

The company putting the unit into operation is obliged to demonstrably train the user's staff. Without proof of operator training, the warranty will not take effect and the device must not be operated.

### 4. OPERATION AND MAINTENANCE

These instructions serve as an aid for professionals, operators of air handling units, or investors who are assumed to already have experience with the operation of air conditioning systems. The instructions are especially important for the start-up period of the entire system, when more detailed operating regulations are not available. The purpose of these instructions is to allow temporary operation of air handling units and to prevent possible operator errors. Final operating regulations must be prepared in accordance with the operating regulations of the entire building.

#### 4.1 SAFETY INSTRUCTIONS FOR OPERATION AND MAINTENANCE

Follow all safety recommendations to prevent damage to the fans or personal injury. The technical characteristics of this manual must not be changed. The motors of the unit must not be changed. The unit can be connected to single phase network 230 V / 50 Hz. For installation in accordance with EC regulations, the units may only be connected to the mains in accordance with the applicable regulations. The device must be installed in such a way that, under normal operating conditions, it cannot come into contact with any moving or live part. RMW/E/K units comply with the applicable regulations for electrical equipment. Before carrying out any work on the device, always disconnect the device from the power supply. Always use the appropriate tools. Use the device only for its intended purpose.

# RME, RMW, RMK Ekonovent®

## 4.2 ELECTRIC HEATER

The RME unit equipped with an electric heater is connected to the relevant control system and further to the electrical network. The general safety regulations for the assembly and installation of electrical equipment apply to this equipment. The non-automatic thermal release button is located on the side panel side (for sizes RME 250 - 1200 in position H1). For sizes RME 250 - 1200, position H2, the non-automatic thermal release button is fitted on the removable panel. For sizes RME 2400 - 6000, the non-automatic thermal release button is fitted on the external panel. The non-automatic thermal fuse reacts in the event of overheating of the heater's heating block (temperature above +120 °C). The electric heater is also equipped with an operating thermostat with automatic reset (set temperature is +60 °C, when it is exceeded, the operating thermostat opens and switches off the heater, after cooling below +60 °C the heater automatically switches on again).



### Caution!

It is forbidden to remove, bypass or disconnect safety devices, safety functions and protective devices! Any intervention in the internal connection of the heater is forbidden!



### Caution!

Before service works:

- The unit shall be disconnected from power supply
- The fan impellers shall not rotate
- The electric heater heating bars shall be cooled to min. 30 °C

During maintenance, it is necessary to check the tightening of the terminals, clean the space of the heater terminal block from dust and dirt, monitor whether some components show signs of excessive warming, water leakage, mechanical or other damage. Increased attention must be paid to safety circuits, especially the thermal protection of the heater, including the correct response of the control system or power supply switchboard. Faults found must be rectified immediately. These inspections are carried out at least once a year (or more often according to local conditions) by an authorized professional service company.

## 4.3 WATER HEATER

The RMW unit fitted with the water heater is to be connected to the heating water by means of the 3-way or 4-way mixing nozzle (see „Types of ESU control units“). The water heater outlets are located on the side panel of the unit and are threaded. The heat exchanger must be connected in counter-current to the air flow.

The water exchangers can be used also for water with antifreeze mixture (based on propylene-glycol, ethylene-glycol etc.). We recommend e.g. concentrated antifreeze liquid FRITERM E STABIL or FRITERM P PLUS (recommended dilution for temperature resistance to -18 °C is 1:2, 1 part of FRITERM E STABIL to 2 parts of water). The recommended dilution for each type of coolant and the required frost resistance is included in the packaging of these antifreeze concentrates. For water exchangers, we always recommend filling with antifreeze mixture with min. concentration of 20:80 as the liquids contain also other corrosion inhibitors and at least minimum resistance of the mixture to the frost of ca -5 °C.



### Caution!

After connecting the water exchangers and filling the system with heating or cooling water, it is necessary to vent them on the heat exchangers.

## 4.4 ESU WATER HEATER CONTROL NODE



The control node is not part of the delivery - it must be ordered separately!

The mixing node is used to control the flow of heating water to the water heaters. Marking of ESU Cxx – Vyy, where xx in the type mark specifies the pump type, yy specifies the Kv value of the mixing valve. The control is provided by a BELIMO servomotor. Version A is with an analogue controlled actuator 0–10 V, it is designed primarily for control from a customer control system. Version A features a three-point actuator, designed for control by Digireg® controller. New version MC is designed for the Minireg® control system.

In addition to power regulation, the control system also provides protection of the water heater against freezing. The power control is ensured by mixing of inlet water with return line at the water constant flow. The mixing node, in conjunction with other components of the system, provides protection of the heater against freezing. The water flowing through the unit may not contain impurities, solid admixtures and aggressive chemicals that damage copper, brass, stainless steel, zinc, plastics, rubber. The highest permitted operating parameters of the heating water are as follows:

- Maximum medium temperature +110 °C
- Minimum medium temperature +2 °C
- Maximum water pressure 1 MPa
- Minimum water pressure 20 kPa
- Air relative humidity 90 %, non-condensing

The water temperature must not fall below the ambient air temperature during operation, as there is a risk of condensation in the pump motor. The minimum operating water pressure ensures that no air is sucked in by the vent valve, which must be mounted at the highest point of the water circuit.

# RME, RMW, RMK Ekonovent®

## 4.4.1 CONTROL NODE RECOMMENDED TYPES

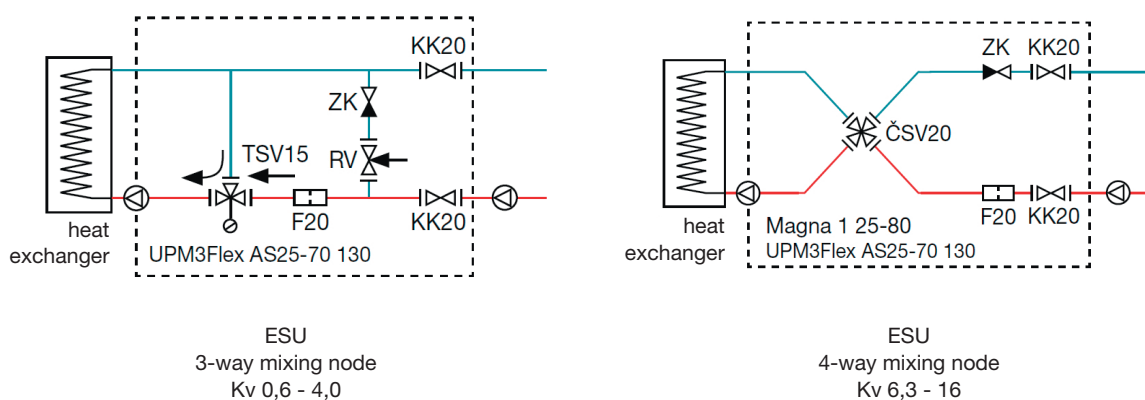
Unit type	control node type	pump	pipng [mm]
RMW 250/200	ESU C40-V1.0	UPM3Flex AS25-70 130	22
RMW 500/250	ESU C40-V1.6	UPM3Flex AS25-70 130	22
RMW 800/315	ESU C40-V2.5	UPM3Flex AS25-70 130	22
RMW 900/355	ESU C40-V2.5	UPM3Flex AS25-70 130	22
RMW 1200/400	ESU C40-V4.0	UPM3Flex AS25-70 130	22
RMW 2400	ESU C80-V6.3	Magna 1 25-80	28
RMW 3000	ESU C80-V6.3	Magna 1 25-80	28
RMW 4000	ESU C80-V10	Magna 1 25-80	28
RMW 6000	ESU C80-V16	Magna 1 25-80	28

DCA 80/60 °C



The design of a suitable mixing unit must be individually adapted to the conditions of the application in order to ensure sufficient valve authority!

## 4.4.2 CONTROL NODE CONNECTION



The mixing unit is connected to the heater. The mixing unit must never be loaded by tension and twisting of the connected piping. Mixing units should be mounted on separate hinges using heating sleeves on the wall, pipes or on an auxiliary structure. When placed under the ceiling, it is necessary to maintain control and service access to the mixing unit for easy cable connection. The filter requires regular inspection, maintenance and cleaning. When assembling the node, it is necessary to turn the filter downwards with the sludge pan. If the position is incorrect, there is a risk of increased clogging/choking of the filter. Reduced throughput or even impermeability of the filter results in a significant reduction in heater performance and increases the risk of the heater freezing.

Especially during the test operation, it is necessary to check and clean the sludge pan. If the filter is often clogged, the entire heating circuit must be cleaned. Even during normal operation of the device, it is necessary to check the filter regularly. When cleaning the filter, all water lines must be closed to minimize water leakage from the system. Always install the mixing unit so that air can escape to the heater vent points or the boiler circuit vent points.

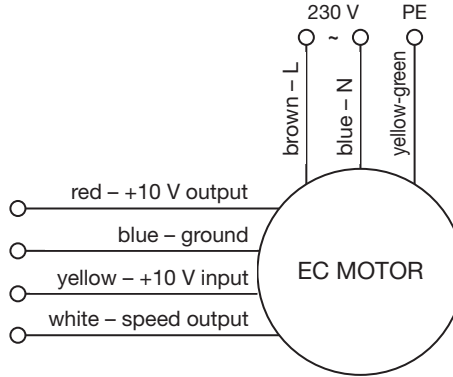
The mixing node must be fixed so that the pump motor shaft is in a horizontal position. After flooding the system, the circulation pump must be bled according to the manufacturer's instructions (Grundfos). The required pump speed is indicated for each mixing nozzle. It is set by rotating plastic wheel at the pump during installation. When connecting the mixing unit, it is necessary to check the correct setting of the valve and actuator. With an assembled mixing unit, the position of the inner segment of the mixer can be identified by the shoulder on the front of the shaft extension. The perpendicular line to the shoulder surface for a three-way valve points to the axis of the inner segment, for a four-way valve the perpendicular points to the axis of the inner segment.

For the version with a three-way valve, proceed as follows. Of the three paths, the valve always has the path to which the bevelled surface on the valve shaft points. With an assembled mixing unit, the setting can be identified by the notch on the face of the shaft extension. The notch always points to a closed water line. For the version with a four-way valve, proceed as follows. Of the four paths, closed way is the one pointed to by the notch at the actuator shaft face.

**5. CONTROL AND CONNECTION**

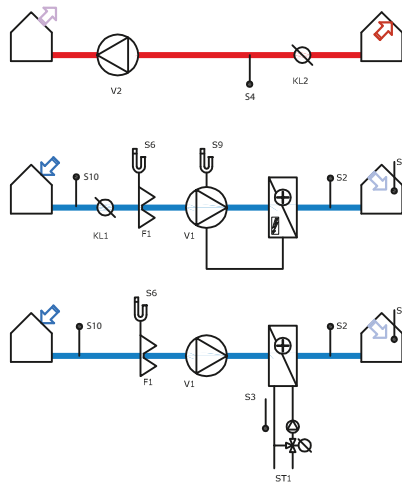
**5.1 EC MOTOR WIRING DIAGRAM**

EC motor is assembled directly on the fan impeller. The fan motor can be continuously controlled by an external signal 0 to 10 V or PWM. The motor is equipped with its own built-in thermal protection. Electric motor protection of IP44.



**5.2 MINIREG® CONTROL SET**

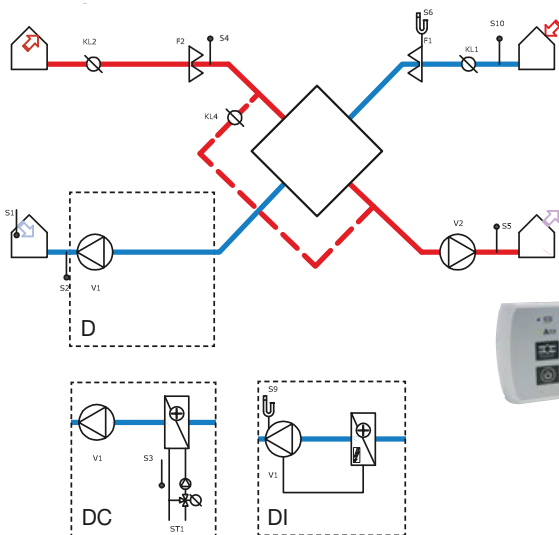
supply + extract unit



**Legend to schemes**

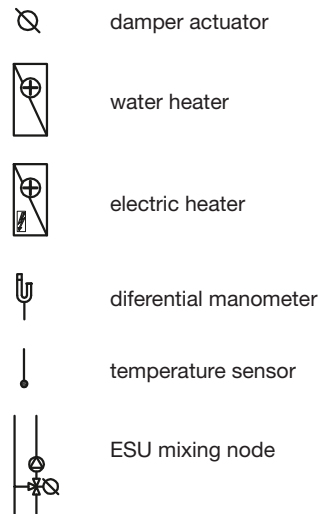
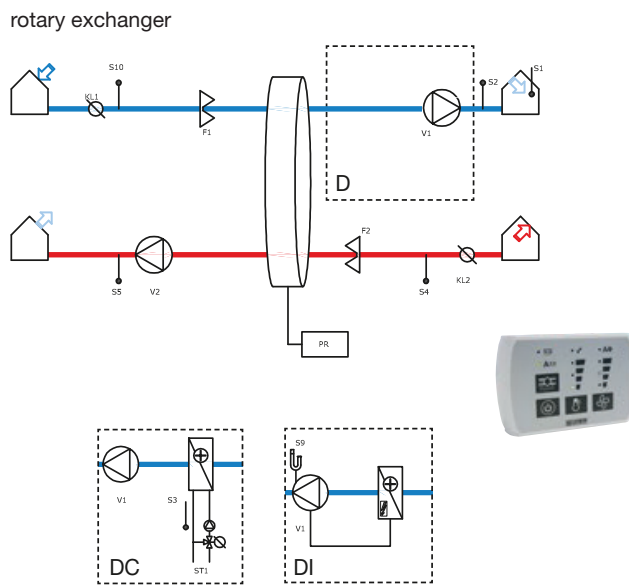
- S1 room temperature sensor in the controller
- S2 inlet air temperature sensor
- S3 frost protection temperature sensor of water heating
- S4 discharge air temperature sensor
- S5 waste air temperature sensor
- S6 inlet filter pressure sensor
- S9 inlet fan pressure sensor (mandatory, monitors the fan running)
- S10 suction air temperature sensor
- V1 supply fan
- V2 exhaust fan
- KL1 inlet flap actuator (circulation)
- KL2 outlet flap actuator (can be coupled with KL1)
- KL3 recuperator bypass actuator
- ST1 mixing valve actuator of heating water
- PR control of the rotary exchanger drive

plate exchanger



- fresh air
- supply air
- exhaust air
- waste air
- supply / exhaust fan
- supply / exhaust filter

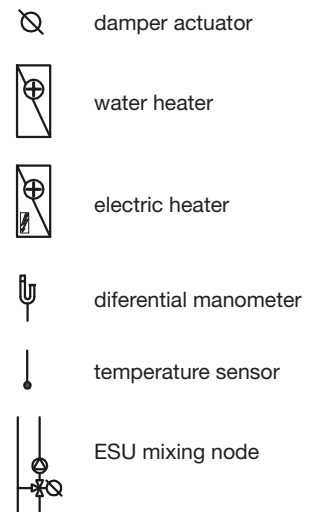
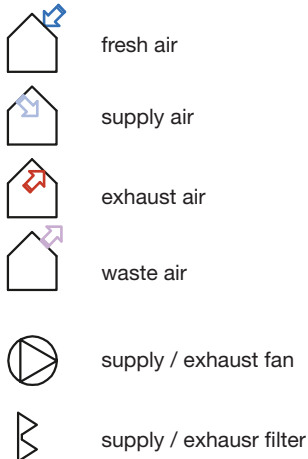
# RME, RMW, RMK Ekonovent®



## 5.3 DIGIREG® CONTROL SET

### Legend to schemes

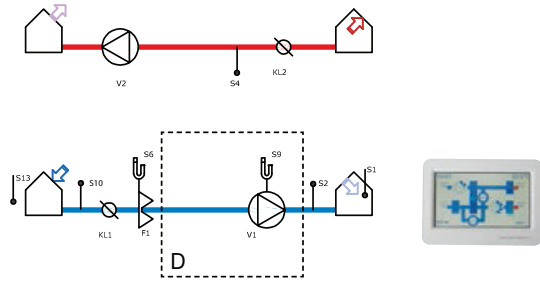
- S1 spatial temperature sensor
- S2 inlet air temperature sensor
- S3 temperature sensor of frost protection of water heating
- S4 exhaust air temperature sensor
- S5 waste air temperature sensor
- S6 pressure sensor on the supply filter
- S7 drain filter pressure sensor (optional)
- S8 thermostat as protection against freezing of the direct evaporator
- S9 inlet fan pressure sensor (mandatory – monitors the fan running)
- S10 suction air temperature sensor
- S11 recuperator icing sensor
- S13 outdoor temperature sensor (enable condenser unit operation)
- V1 supply fan
- V2 exhaust fan
- KL1 supply damper actuator (circulation)
- KL2 exhaust damper actuator (can be coupled with KL1)
- KL3 recuperator bypass actuator
- KL4 actuator of mixing built-in valver
- ST1 heating water mixing valve actuator
- ST2 cooling water mixing valve actuator
- KJ condensing unit
- PR control of the rotary exchanger drive





# RME, RMW, RMK Ekonovent®

supply + extract unit



HVAC function variants

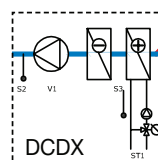
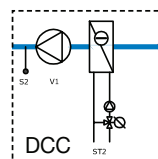
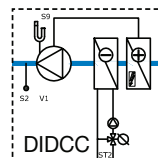
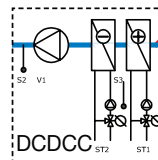
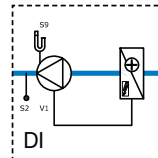
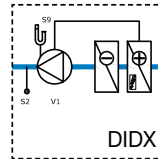
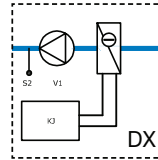
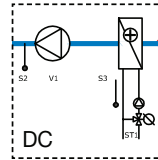
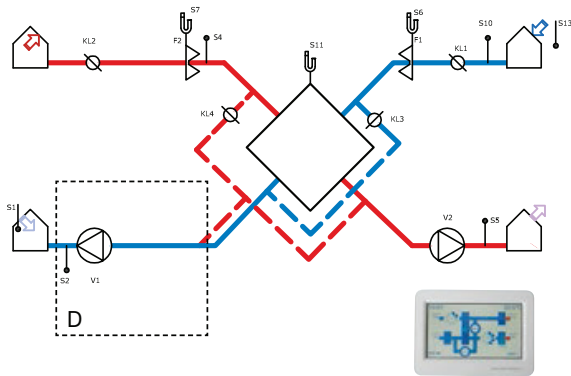
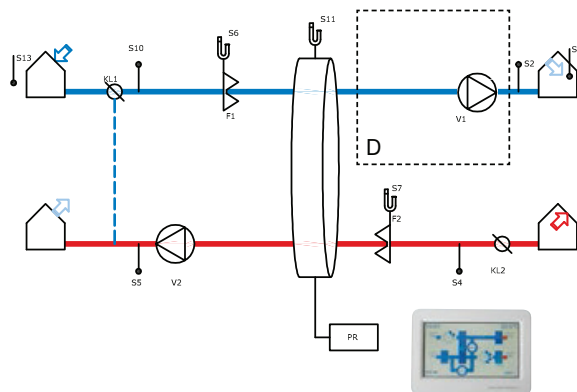


plate exchanger



rotary exchanger



Necessary installation of outdoor temperature sensor S13 for variants with heat pump and for all additional functions (e.g. ground collector, free cooling, direct cooling, mixing).

# RME, RMW, RMK Ekonivent®

## 6. SERVICE

### 6.1 FILTER REPLACEMENT AND MAINTENANCE

The filter replacement interval can vary considerably depending on the operating conditions and where the unit is located (the level of outdoor pollution depends on the location near industrial areas, roads or highways, forests or agricultural areas). The filter change interval ranges generally from 6 to 12 months. After unlocking the locks, open the relevant door of the unit. Pull together to remove and then replace all filters on the unit.

### 6.2 PERIODIC INSPECTIONS AND REVISIONS

Perform periodic inspections at least once a year as part of a summer service inspection. It is optimal to carry out inspections twice a year, usually before and after the end of the winter season.

Regularly:

- Perform regular inspection and cleaning of the heat exchange surfaces of the exchangers
- Clean or replace filter inserts in air filters
- Check the condition of the damping inserts, especially their tightness, and replace them in time
- Perform inspections and checks of the function of electrical components (contactors contacts, tightening of terminals, condition of insulation...)
- Check the hinges and supports of the device
- Carry out regular inspections of those facilities for which the applicable laws, decrees, standards and rules so require
- Keep proper records and monitoring of the outcome of inspections and revisions and monitor the implementation of the measures taken

### 6.3 SPARE PARTS

Warranty, post-warranty service and spare parts can be ordered from ELEKTRODESIGN ventilátory spol. s r.o. The manufacturer may entrust service to trained authorized service companies, whose list is given at [www.elektrodesign.cz](http://www.elektrodesign.cz). **Contact details for authorized service are indicated on the yellow labels on each unit.**



#### AUTHORISED SERVICE CENTER

ELEKTRODESIGN ventilátory s.r.o.

Tel.: +420 326 909 038

E-mail: [servis@elektrodesign.cz](mailto:servis@elektrodesign.cz)

- repairs and service of ELEKTRODESIGN HVAC units
- repairs and service of HVAC units from other manufacturers
- sale of spare parts, replacing of filters

MO–FR 8:00–16:00



#### WARNING

Do not start and/or use the unit during constructions works (drilling, grinding etc.). There is a risk of unrepairable damage of the unit and distribution lines! The unit must be commissioned by an authorized person only!

If these instructions are violated, the manufacturer has no responsibility for any subsequent losses and the warranty for the HVAC unit becomes void!

## 7. TECHNICAL SUPPORT

S&P's extensive technical assistance network guarantees sufficient technical assistance. If any fault is detected on the device, contact any technical assistance service. Any handling with the device by persons other than trained S&P service personnel will make it impossible to claim the warranty.

In case of any questions regarding our products, please contact any branch of ELEKTRODESIGN ventilátory spol. s r.o. To find your nearest dealer, visit our website [www.elektrodesign.cz](http://www.elektrodesign.cz).

## 8. DECOMMISSIONING

If you do not plan to use the device for a long time, it is recommended to return it to its original packaging and store it in a dry, dust-free area. The manufacturer accepts no liability for damage to health or property caused by non-compliance with these instructions.

S&P reserves the right to modify products without prior notice.

## 9. RECYCLING



EU law and our responsibility to future generations oblige us to recycle used materials; do not forget to dispose of all unwanted packaging materials at the appropriate recycling points and dispose of obsolete equipment at the nearest waste disposal site.

In case of any questions please contact any branch of ELEKTRODESIGN ventilátory spol. s r.o. To find your nearest dealer, visit our website [www.elektrodesign.cz](http://www.elektrodesign.cz).

# RME, RMW, RMK Ekonivent®

## Annex 1 – Equipment alignment protocol

Unit position

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### UNIT POSITION SKETCH

Front-view	Top-view (side-view)
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### INSTALLATION

anti-vibration pads under the unit	YES	NO
flexible cuffs:		
supply	YES	NO
extract	YES	NO
exhaust	YES	NO
outdoor	YES	NO
Digireg® control system:		
M3-Vx	YES	NO
M3-Exx	YES	NO
condensate drain	YES	NO
unit chassis (frame) grounding	YES	NO

### Installation notes

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## Annex 2 – Operator training protocol

### Training subject

Unit type: .....

Unit operator: .....

Day of training: .....

### Trained person

Name and surname: .....

Identification no.: .....

Company: .....

### Trained by

Company name: .....

Subject: .....

Trainer name and surname: .....