

**DAIKIN**



# INSTALLATION MANUAL

## Packaged water-cooled water chillers

EWWP045KAW1M  
EWWP055KAW1M  
EWWP065KAW1M

ECB1MUW  
ECB2MUW  
ECB3MUW



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Thank you for purchasing this Daikin air conditioner.



**READ THIS MANUAL ATTENTIVELY BEFORE STARTING UP THE UNIT. DO NOT THROW IT AWAY. KEEP IT IN YOUR FILES FOR FUTURE REFERENCE.**

IMPROPER INSTALLATION OR ATTACHMENT OF EQUIPMENT OR ACCESSORIES COULD RESULT IN ELECTRIC SHOCK, SHORT-CIRCUIT, LEAKS, FIRE OR OTHER DAMAGE TO THE EQUIPMENT. BE SURE ONLY TO USE ACCESSORIES MADE BY DAIKIN WHICH ARE SPECIFICALLY DESIGNED FOR USE WITH THE EQUIPMENT AND HAVE THEM INSTALLED BY A PROFESSIONAL.

IF UNSURE OF INSTALLATION PROCEDURES OR USE, ALWAYS CONTACT YOUR DAIKIN DEALER FOR ADVICE AND INFORMATION.

**INTRODUCTION**

The Daikin EWWP-KA packaged water-cooled water chillers are designed for indoor installation and used for cooling and/or heating applications. The units are available in 14 standard sizes with nominal cooling capacities ranging from 43 to 195 kW.

The EWWP units can be combined with Daikin fan coil units or air handling units for air conditioning purposes. They can also be used for supplying chilled water for process cooling.

The present installation manual describes the procedures for unpacking, installing and connecting the EWWP units.

**Technical specifications <sup>(1)</sup>**

Hp	= unit	+ control box
16Hp	1x EWWP045KAW1M	ECB1MUW
20Hp	1x EWWP055KAW1M	ECB1MUW
24Hp	1x EWWP065KAW1M	ECB1MUW
32Hp	2x EWWP045KAW1M	ECB2MUW
36Hp	1x EWWP045KAW1M+ 1x EWWP055KAW1M	ECB2MUW
40Hp	2x EWWP055KAW1M	ECB2MUW
44Hp	1x EWWP055KAW1M+ 1x EWWP065KAW1M	ECB2MUW
48Hp	2x EWWP065KAW1M	ECB2MUW
52Hp	2x EWWP045KAW1M+ 1x EWWP055KAW1M	ECB3MUW
56Hp	1x EWWP045KAW1M+ 2x EWWP055KAW1M	ECB3MUW
60Hp	3x EWWP055KAW1M	ECB3MUW
64Hp	2x EWWP055KAW1M+ 1x EWWP065KAW1M	ECB3MUW
68Hp	1x EWWP055KAW1M+ 2x EWWP065KAW1M	ECB3MUW
72Hp	3x EWWP065KAW1M	ECB3MUW

Hp		16	20	24	32	36
Dimensions HxWxD	(mm)	600 x 600 x 1200			1200 x 600 x 1200	
Machine weight	(kg)	300	320	334	600	620
Connections						
• chilled water inlet and outlet	(inch)	FBSP 1.5			2x FBSP 1.5	
• condenser water inlet and outlet	(inch)	FBSP 1.5			2x FBSP 1.5	

Hp		40	44	48	52	56
Dimensions HxWxD	(mm)	1200 x 600 x 1200			1800 x 600 x 1200	
Machine weight	(kg)	640	654	668	920	940
Connections						
• chilled water inlet and outlet	(inch)	2x FBSP 1.5			3x FBSP 1.5	
• condenser water inlet and outlet	(inch)	2x FBSP 1.5			3x FBSP 1.5	

Hp		60	64	68	72
Dimensions HxWxD	(mm)	1800 x 600 x 1200			
Machine weight	(kg)	960	974	988	1002
Connections					
• chilled water inlet and outlet	(inch)	3x FBSP 1.5			
• condenser water inlet and outlet	(inch)	3x FBSP 1.5			

**Electrical specifications <sup>(1)</sup>**

Hp		16~72
Power circuit		
• Phase		3N~
• Frequency	(Hz)	50
• Voltage	(V)	400
• Voltage tolerance	(%)	±10

**Options and features <sup>(1)</sup>**

**Options**

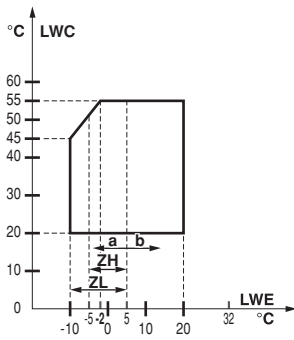
- Glycol application for leaving evaporator water down to -10°C or -5°C
- BMS-Connection (MODBUS/J-BUS, BACNET)
- Low noise operation kit (field installation)


**Features**

- Voltage free contacts
  - general operation/pump/contact
  - alarm
- Remote inputs
  - remote start/stop
  - remote change-over cooling/heating

(1) Refer to the operation manual or engineering data book for the complete list of specifications, options and features.

## OPERATION RANGE



LWC	Leaving water temperature condenser
LWE	Leaving water temperature evaporator
a	Glycol
b	Water
	Continuous operation range

## MAIN COMPONENTS

(refer to the outlook diagram supplied with the unit)

- 1 Compressor
- 2 Evaporator
- 3 Condenser
- 4 Switchbox
- 5 Chilled water in
- 6 Chilled water out
- 7 Condenser water out
- 8 Condenser water in
- 9 Evaporator entering water temperature sensor
- 10 Freeze-up sensor
- 11 Condenser entering water temperature sensor
- 12 Digital display controller
- 13 Power supply intake

## SELECTION OF LOCATION

The units are designed for indoor installation and should be installed in a location that meets the following requirements:

- 1 The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
- 2 The space around the unit is adequate for servicing.
- 3 There is no danger of fire due to leakage of inflammable gas.
- 4 Select the location of the unit in such a way that the sound generated by the unit does not disturb anyone.
- 5 Ensure that water cannot cause any damage to the location in case it drips out of the unit.

## INSPECTING AND HANDLING THE UNIT

At delivery, the unit should be checked and any damage should be reported immediately to the carrier claims agent.

## UNPACKING AND PLACING THE UNIT

- 1 Cut the straps and remove the cardboard box from the unit.
- 2 Remove the four screws fixing the unit to the pallet.
- 3 Level the unit in both directions with the lifting lugs which are delivered with the control box (ECB\*MUW).
- 4 Use four anchor bolts with M8 thread to fix the unit in concrete (directly or using the floor standing supports).

## IMPORTANT INFORMATION REGARDING THE REFRIGERANT USED

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.

Refrigerant type: R407C  
GWP<sup>(1)</sup> value: 1652.5

<sup>(1)</sup> GWP = global warming potential

The refrigerant quantity is indicated on the unit name plate.

## CHECKING THE WATER CIRCUIT

The units are equipped with water inlets and water outlets for connection to a chilled water circuit and to a hot water circuit. These circuits must be provided by a licensed technician and must comply with all relevant European and national regulations.

Before continuing the installation of the unit, check the following points:

- 1 A circulation pump must be provided in such a way that it discharges the water directly into the heat exchanger.
- 2 A flow switch must be installed in the water outlet pipe to prevent the unit from operating at a water flow which is too low. A terminal is provided in the switch box for the electrical connection of the flow switch.
- 3 A wire mesh strainer (<1 mm) must be installed at the pump suction as to protect the pump and the heat exchanger from foreign matter.
- 4 Drain taps must be provided at all low points of the system to permit complete drainage of the circuit during maintenance or in case of shut down.
- 5 Air vents must be provided at all high points of the system. The vents should be located at points which are easily accessible for servicing.
- 6 Shut-off valves should be provided at the unit so that normal servicing can be accomplished without draining the system.
- 7 Vibration eliminators in all water piping connected to the chiller are recommended to avoid straining the piping and transmitting vibration and noise.

## WATER QUALITY SPECIFICATIONS

		evaporator water		condenser water		tendency if out of criteria
		circulating water [ $<20^{\circ}\text{C}$ ]	supply water	circulating water [ $20^{\circ}\text{C}\sim 60^{\circ}\text{C}$ ]	supply water	
<b>Items to be controlled</b>						
pH	at $25^{\circ}\text{C}$	6.8~8.0	6.8~8.0	7.0~8.0	7.0~8.0	A + B
Electrical conductivity	[mS/m] at $25^{\circ}\text{C}$	<40	<30	<30	<30	A + B
Chloride ion	[mg Cl <sup>-</sup> /l]	<50	<50	<50	<50	A
Sulfate ion	[mg SO <sub>4</sub> <sup>2-</sup> /l]	<50	<50	<50	<50	A
M-alkalinity (pH4.8)	[mg CaCO <sub>3</sub> /l]	<50	<50	<50	<50	B
Total hardness	[mg CaCO <sub>3</sub> /l]	<70	<70	<70	<70	B
Calcium hardness	[mg CaCO <sub>3</sub> /l]	<50	<50	<50	<50	B
Silica ion	[mg SiO <sub>2</sub> /l]	<30	<30	<30	<30	B
<b>Items to be referred to</b>						
Iron	[mg Fe/l]	<1.0	<0.3	<1.0	<0.3	A + B
Copper	[mg Cu/l]	<1.0	<0.1	<1.0	<0.1	A
Sulfide ion	[mg S <sup>2-</sup> /l]	not detectable				A
Ammonium ion	[mg NH <sub>4</sub> <sup>+</sup> /l]	<1.0	<0.1	<0.3	<0.1	A
Remaining chloride	[mg Cl/l]	<0.3	<0.3	<0.25	<0.3	A
Free carbide	[mg CO <sub>2</sub> /l]	<4.0	<4.0	<0.4	<4.0	A
Stability index		—	—	—	—	A + B

A = corrosion

B = scale

## CONNECTING THE WATER CIRCUIT

The evaporator and condenser are foreseen of GAS male pipe thread for the water inlet and outlet (refer to the outlook diagram). Evaporator and condenser water connections are to be made in accordance with the outlook diagram, respecting the water in- and outlet.

If air, moisture or dust gets in the water circuit, problems may occur. Therefore, always take into account the following when connecting the water circuit:

1. Use clean pipes only.
2. Hold the pipe end downwards when removing burrs.
3. Cover the pipe end when inserting it through a wall so that no dust and dirt enter.

## WATER CHARGE, FLOW AND QUALITY

To assure proper operation of the unit a minimum water volume is required in the system and the water flow through the evaporator must be within the operation range as specified in the table below.

	Minimum water volume (l)	Minimum water flow	Maximum water flow
16Hp	205	62 l/min	247 l/min
20Hp	268	80 l/min	321 l/min
24Hp	311	93 l/min	373 l/min
32Hp	205	123 l/min	493 l/min
36Hp	268	142 l/min	568 l/min
40Hp	268	161 l/min	642 l/min
44Hp	311	173 l/min	694 l/min
48Hp	311	186 l/min	745 l/min
52Hp	205	204 l/min	814 l/min
56Hp	205	222 l/min	889 l/min
60Hp	268	241 l/min	963 l/min
64Hp	268	254 l/min	1015 l/min
68Hp	268	267 l/min	1066 l/min
72Hp	311	280 l/min	1118 l/min



The water pressure should not exceed the maximum working pressure of 10 bar.

### NOTE



Provide adequate safeguards in the water circuit to make sure that the water pressure will never exceed the maximum allowable working pressure.

## PIPING INSULATION

The complete water circuit, inclusive all piping, must be insulated to prevent condensation and reduction of the cooling capacity.

Protect the water piping against water freezing during winter period (e.g. by using a glycol solution or heatertape).

## FIELD WIRING



All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.

The field wiring must be carried out in accordance with the wiring diagram supplied with the unit and the instructions given below.

Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.

### Installing the control box (ECB \*MUW)

Follow instructions in "Annex I" (16~24Hp) + "Annex II" (32~72Hp) at the very end of this manual when installing the control box into the unit.

### Parts table

F1,2,3U .....	Main fuses for the unit
H1P .....	Indication lamp alarm
H3P .....	Indication lamp operation compressor
PE .....	Main earth termina
S7S .....	Remote cooling/heating change-over valve
S9S .....	Remote start/stop switch
S10L.....	Flowswitch
S11L.....	Contact that closes if the pump is working
S12S .....	Main isolator switch
- - -.....	Field wiring

### Power circuit and cable requirements

- 1 The electrical power supply to the unit should be arranged so that it can be switched on or off independently of the electrical supply to other items of the plant and equipment in general.
- 2 A power circuit must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a circuit breaker, a slow blow fuse on each phase and an earth leak detector. Recommended fuses are mentioned on the wiring diagram supplied with the unit.



Switch off the main isolator switch before making any connections (switch off the circuit breaker, remove or switch off the fuses).

### Connection of the water-cooled water chiller power supply

- 1 Using the appropriate cable, connect the power circuit to the N, L1, L2 and L3 terminals of the unit.
- 2 Connect the earth conductor (yellow/green) to the earthing terminal PE.

### Interconnection cables

- In addition to the power supply cable, a cable must be provided for the connection of the flow switch. Be sure to interlock so, that the compressor will not come into operation unless the waterpump is operated. For this purpose 2 spare terminals are provided in the switch box. Refer to the wiring diagram supplied with the unit.
- Voltage free contacts  
The controller is provided with some voltage free contacts to indicate the status of the unit. These voltage free contacts can be wired as described on the wiring diagram.

- Remote inputs  
Besides the voltage free contacts, there are also possibilities to install remote inputs. They can be installed as shown on the wiring diagram.

## BEFORE STARTING



The unit should not be started, not even for a very short period of time, before the following pre-commissioning checklist is filled out completely.

tick ✓ when checked	standard steps to go through before starting the unit
<input type="checkbox"/>	1 Check for <b>external damage</b> .
<input type="checkbox"/>	2 Install <b>main fuses, earth leak detector and main switch</b> . Recommended fuses: aM according to IEC standard 269-2. <i>Refer to the wiring diagram for size.</i>
<input type="checkbox"/>	3 Supply the main voltage and check if it is within the allowable $\pm 10\%$ limits of the nameplate rating. The electrical <b>main power supply</b> should be arranged so, that it can be switched on or off independently of the electrical supply to other items of the plant and equipment in general. <i>Refer to the wiring diagram, terminals N, L1, L2 and L3.</i>
<input type="checkbox"/>	4 Supply water to the evaporator and verify if <b>waterflow</b> is within the limits as given in the table under " <b>Water charge, flow and quality</b> " on page 3
<input type="checkbox"/>	5 The piping should be completely <b>purged</b> . See also chapter " <b>Checking the water circuit</b> " on page 3
<input type="checkbox"/>	6 Connect the <b>flowswitch</b> and <b>pumpcontact</b> in series, so that the unit can only come in operation when the waterpumps are running and the waterflow is sufficient.
<input type="checkbox"/>	7 Connect the optional field wiring for <b>pumps start-stop</b> .
<input type="checkbox"/>	8 Connect the optional field wiring for <b>remote control</b> .

#### NOTE



- Try to reduce the drilling in the unit to a minimum. If drilling is imprevntable, remove the iron filling thoroughly in order to prevent surface rust!
- It is necessary to read the operation manual delivered with the unit before operating the unit. It will contribute to understand the operation of the unit and its electronic controller.
- Verify on the wiring diagram all electrical actions mentioned above, in order to understand the operation of the unit more deeply.
- Close all switch box doors after installation of the unit.

I do confirm having executed and checked all the above mentioned items.

Date

Signature

Keep for future reference.

## HOW TO CONTINUE

After installation and connection of the packaged water-cooled water chiller, the complete system should be checked and tested as described in "Checks before initial start-up" in the operation manual supplied with the unit.

Fill out the brief operation instructions form and fix it visibly near the operating site of the refrigeration system.

# BRIEF OPERATION INSTRUCTIONS

## EWWP-KA Packaged water-cooled water chiller

Equipment supplier : \_\_\_\_\_

Service department : \_\_\_\_\_

.....  
 .....  
 .....

.....  
 .....  
 .....

Phone : .....

Phone : .....

### EQUIPMENT TECHNICAL DATA

Manufacturer	: DAIKIN EUROPE .....	Power supply (V/Ph/Hz/A)	: .....
Model	: .....	Maximum high pressure	: .....31 bar
Serial Number	: .....	Charging weight (kg) R407C	: .....
Year of construction	: .....		

### START-UP AND SHUT DOWN

- Start-up by switching on the circuit breaker of the power circuit. The operation of the water chiller is then controlled by the Digital Display Controller.
- Shut-down by switching off the controller and the circuit breaker of the power circuit.



#### WARNINGS

**Emergency shut down** : Switch off the **circuit breaker** located on .....

.....

.....

**Air inlet and outlet** : Always keep the air inlet and outlet free to obtain the maximum cooling capacity and to prevent damage to the installation.

**Refrigerant charge** : Use refrigerant R407C only.

**First aid** : In case of injuries or accidents immediately inform:

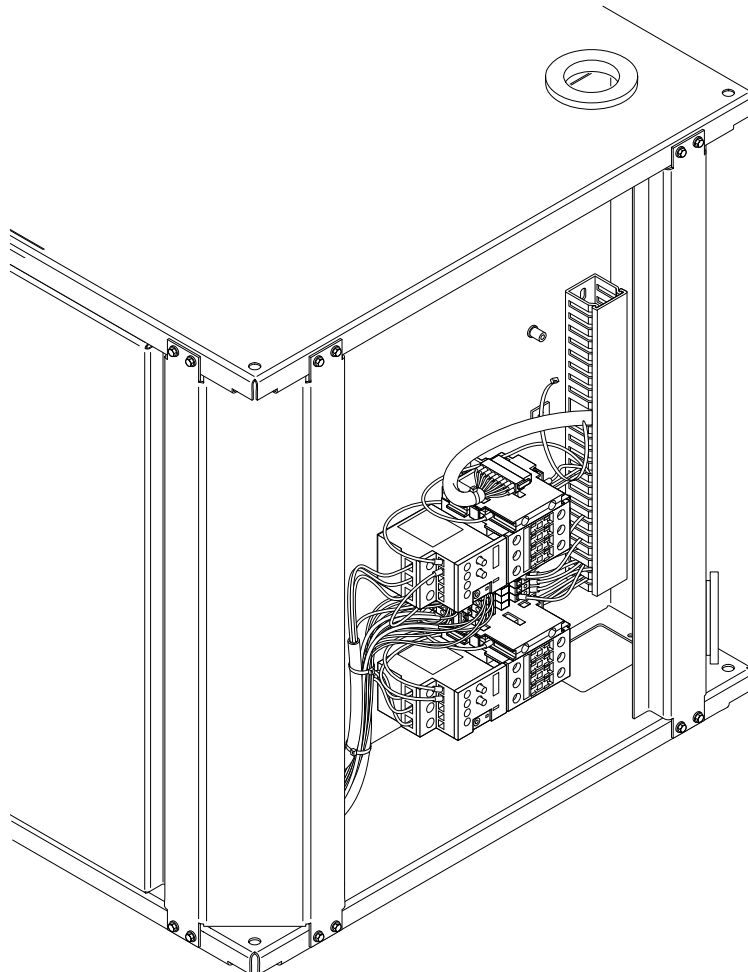
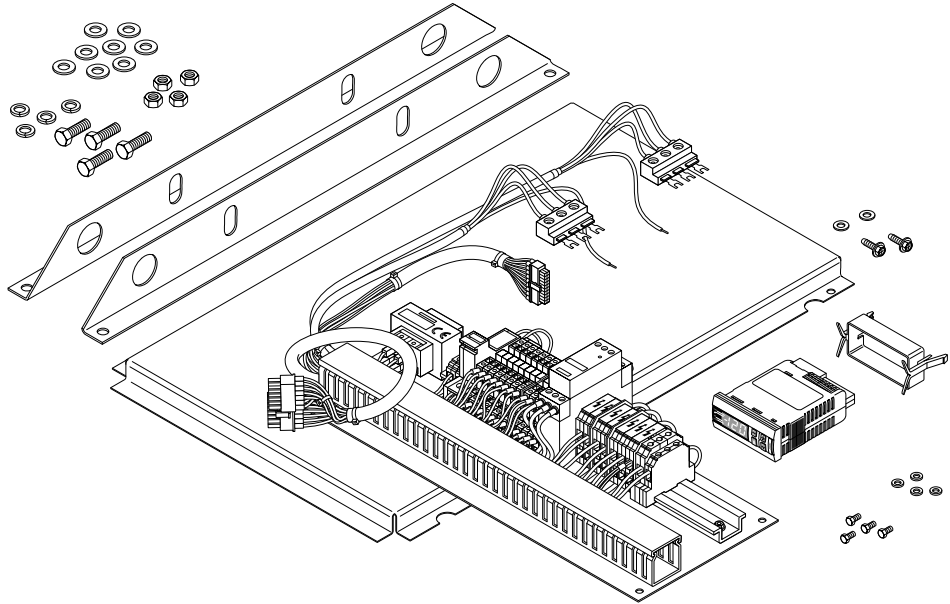


➤ **Company management** : **Phone** .....

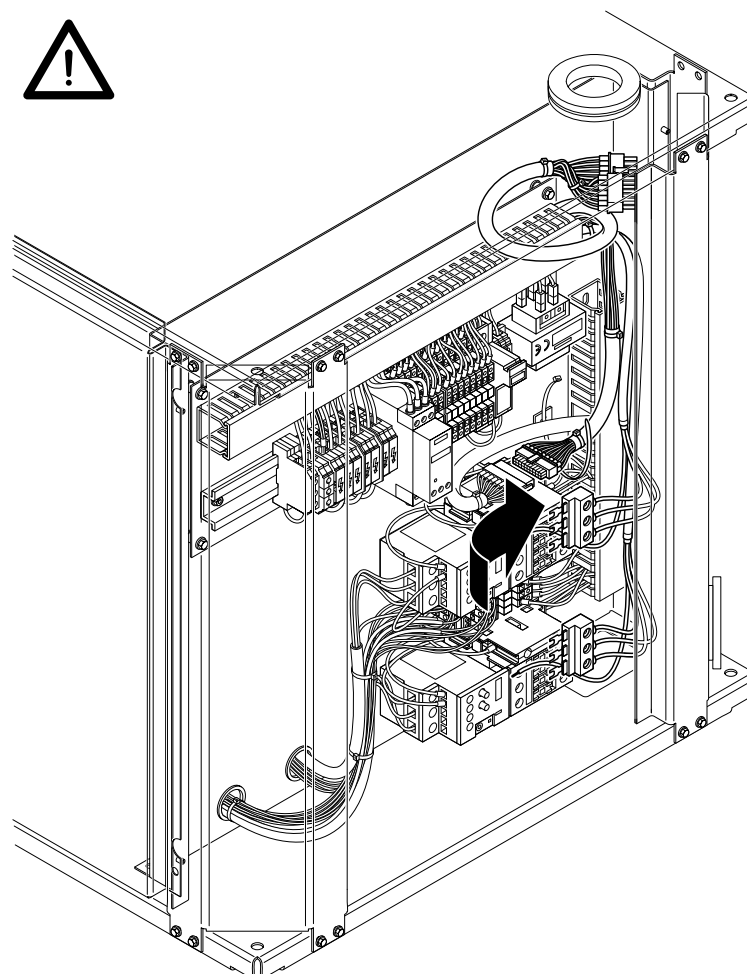
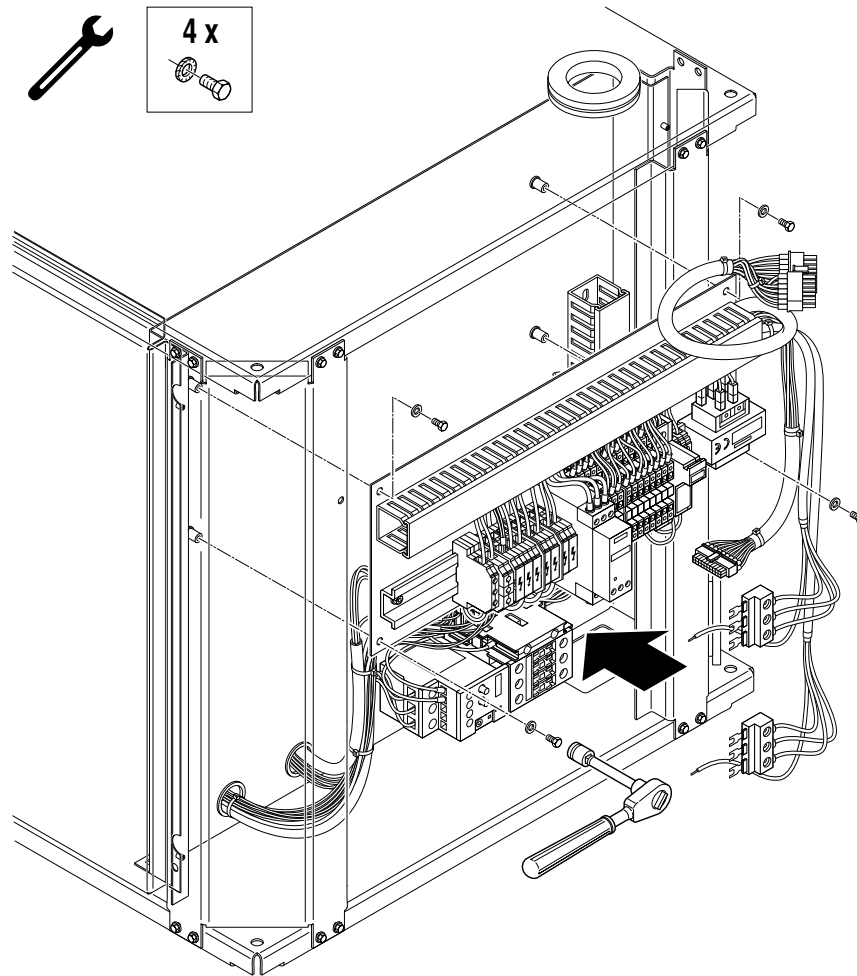
➤ **Emergency physician** : **Phone** .....

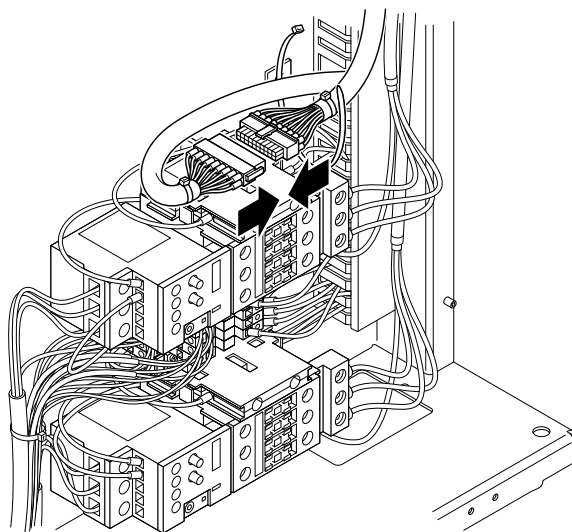
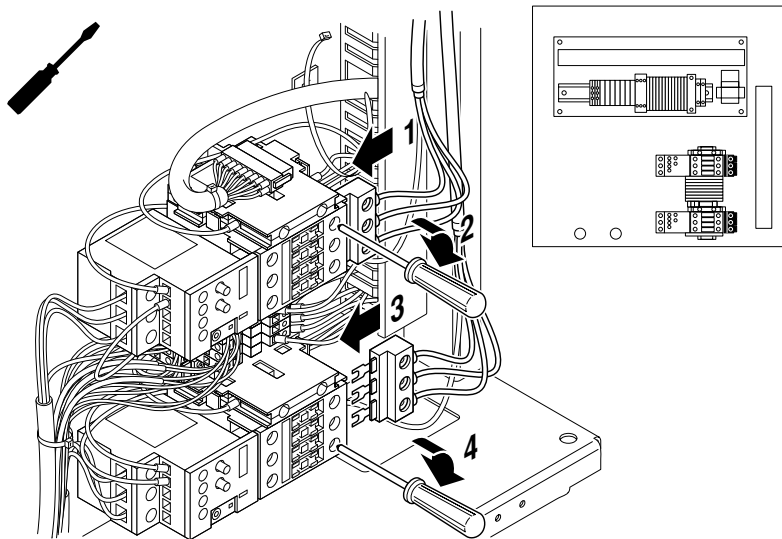
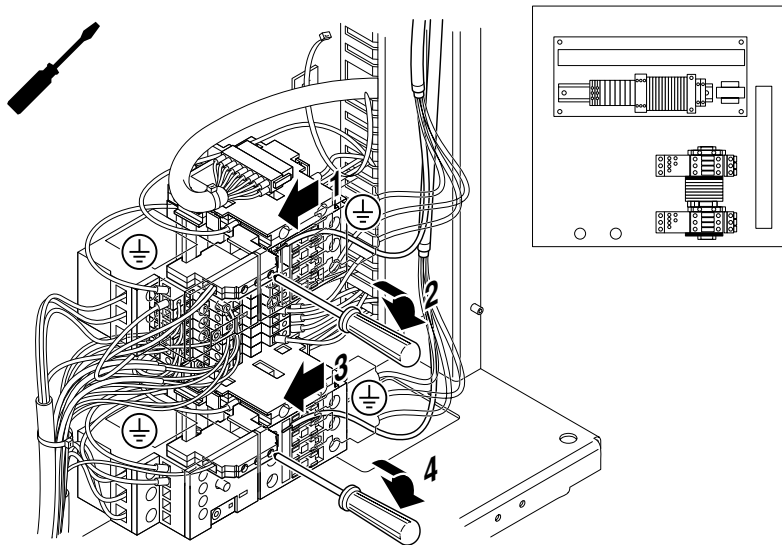
➤ **Fire service** : **Phone** .....

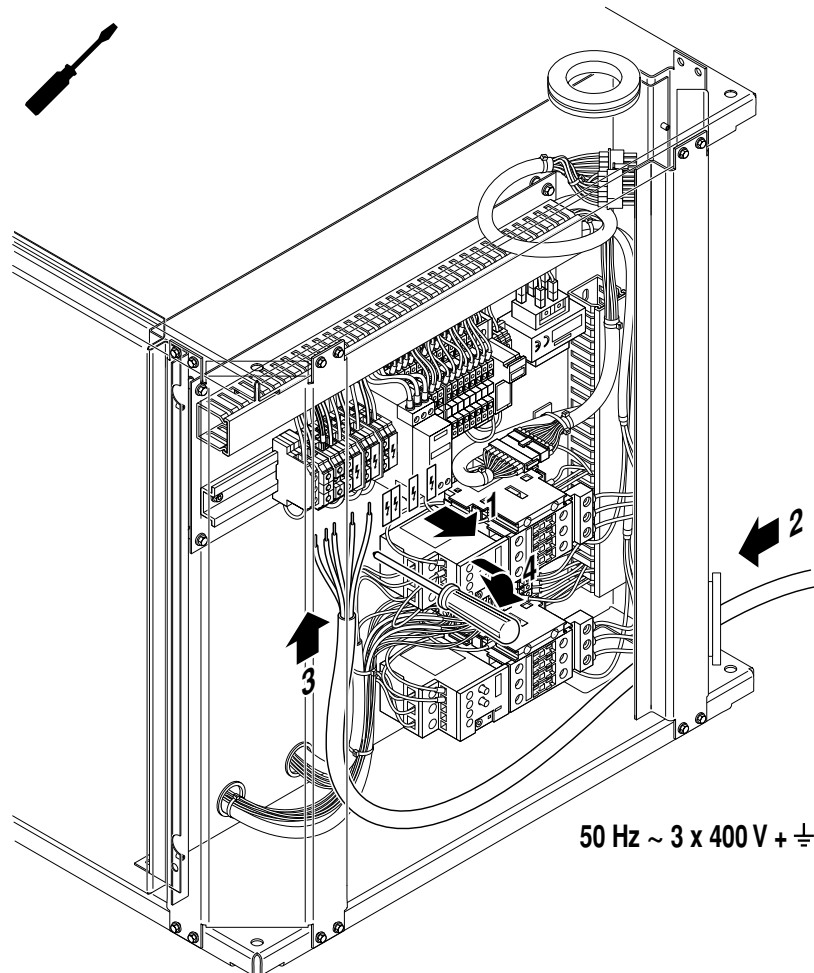
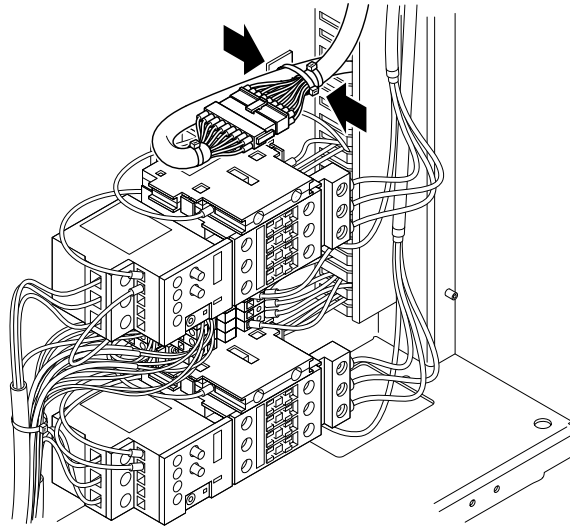


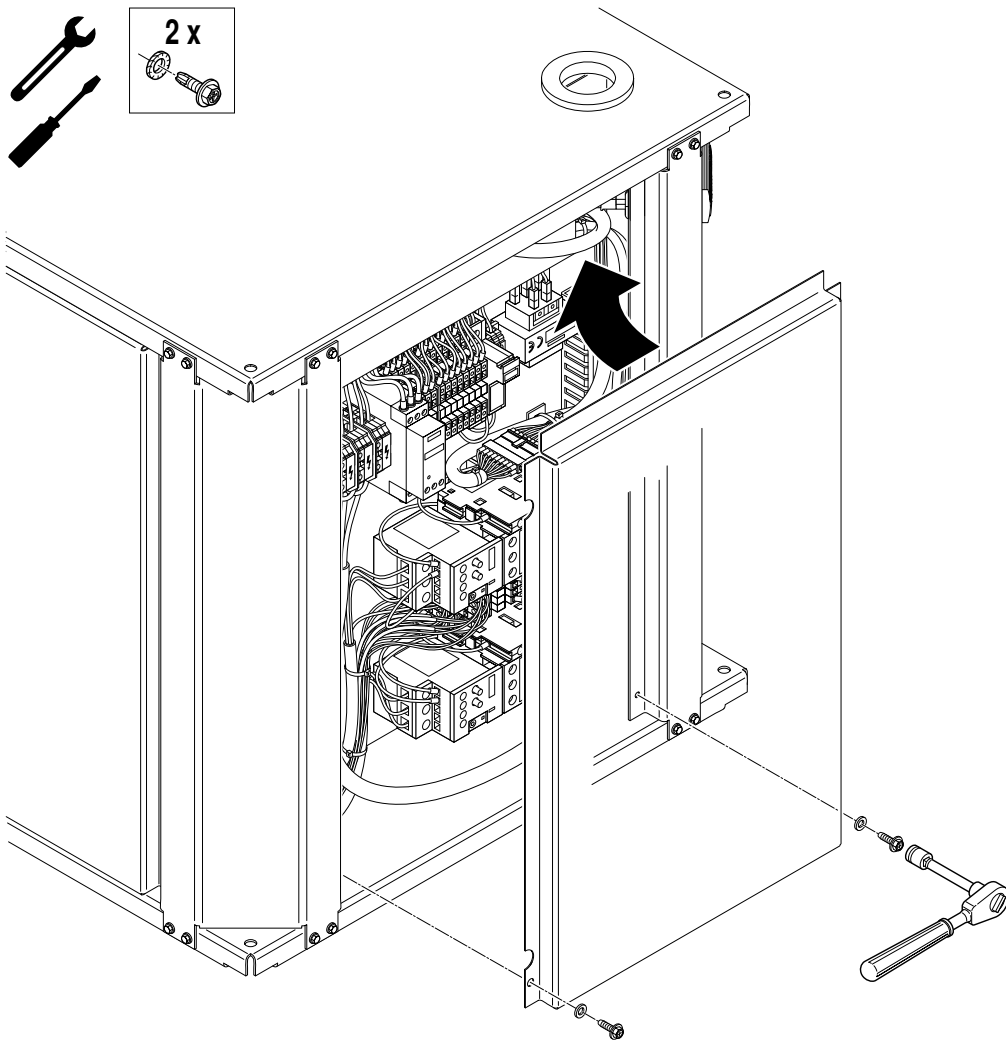
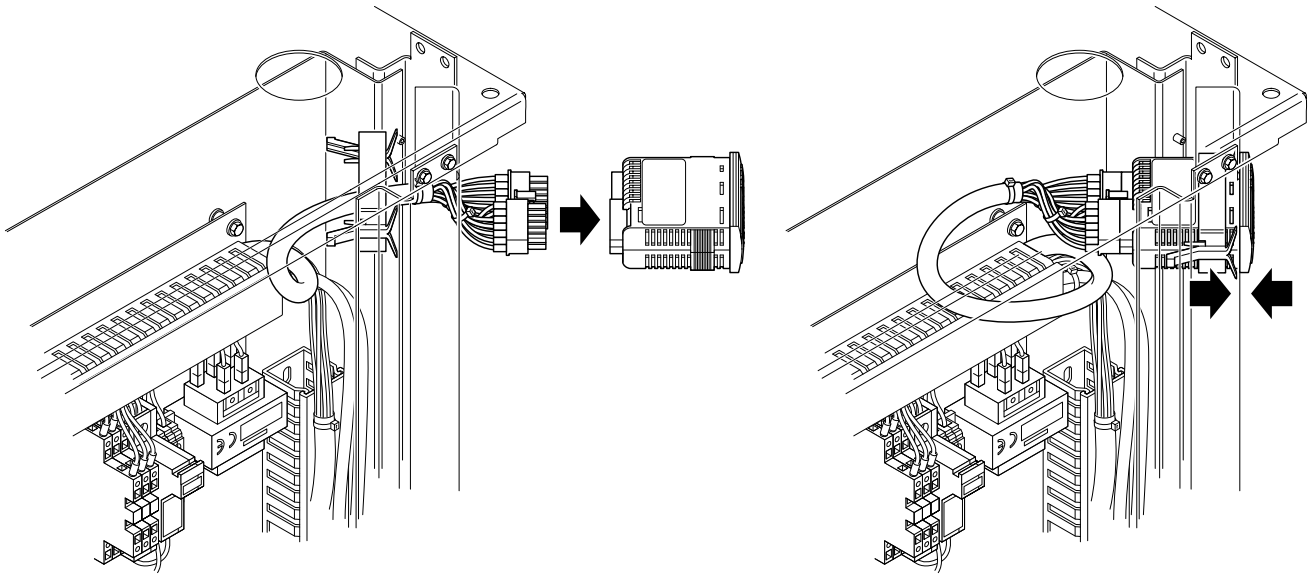


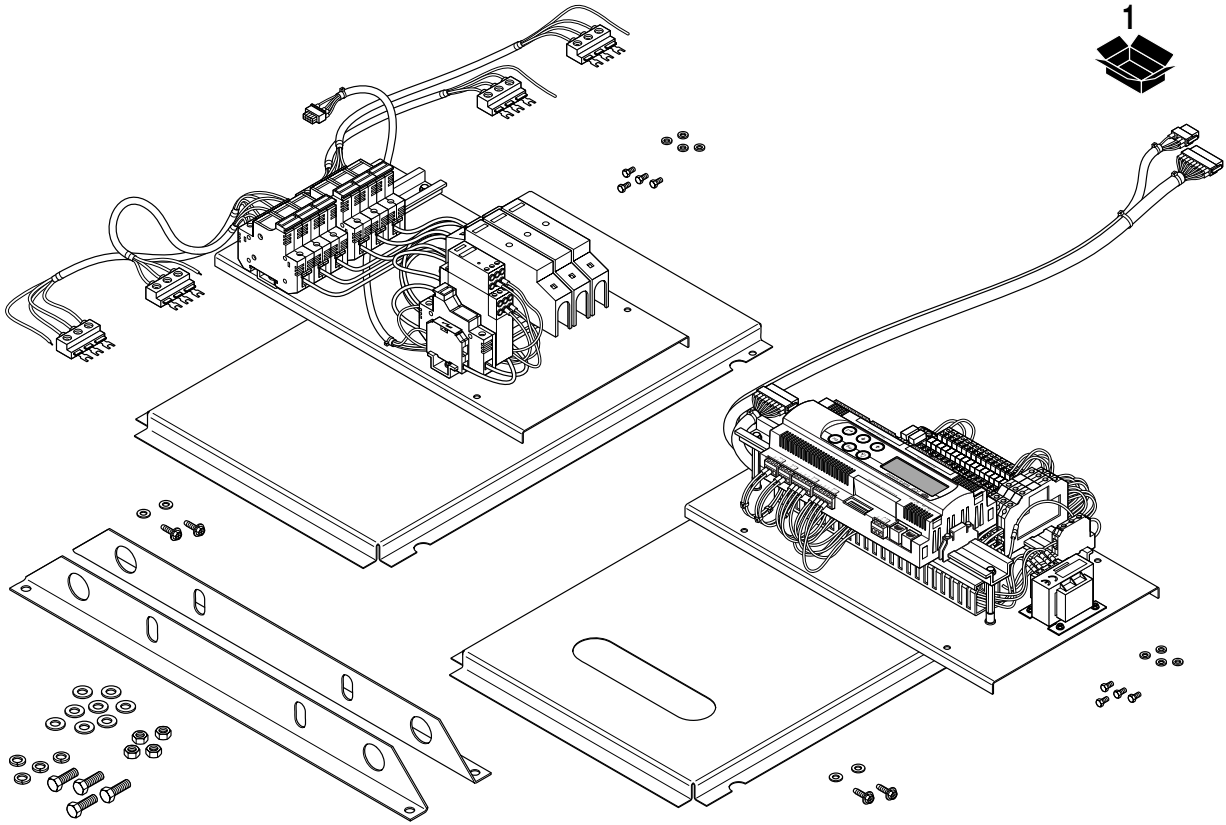




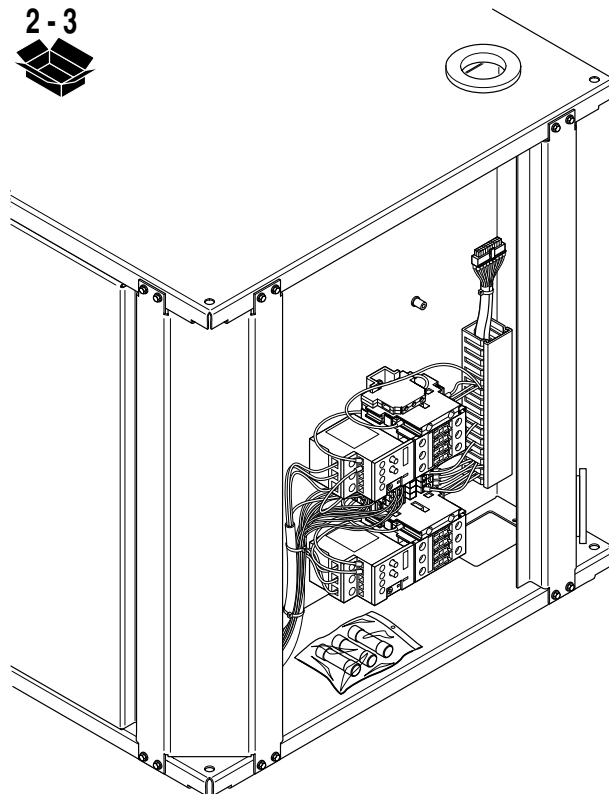


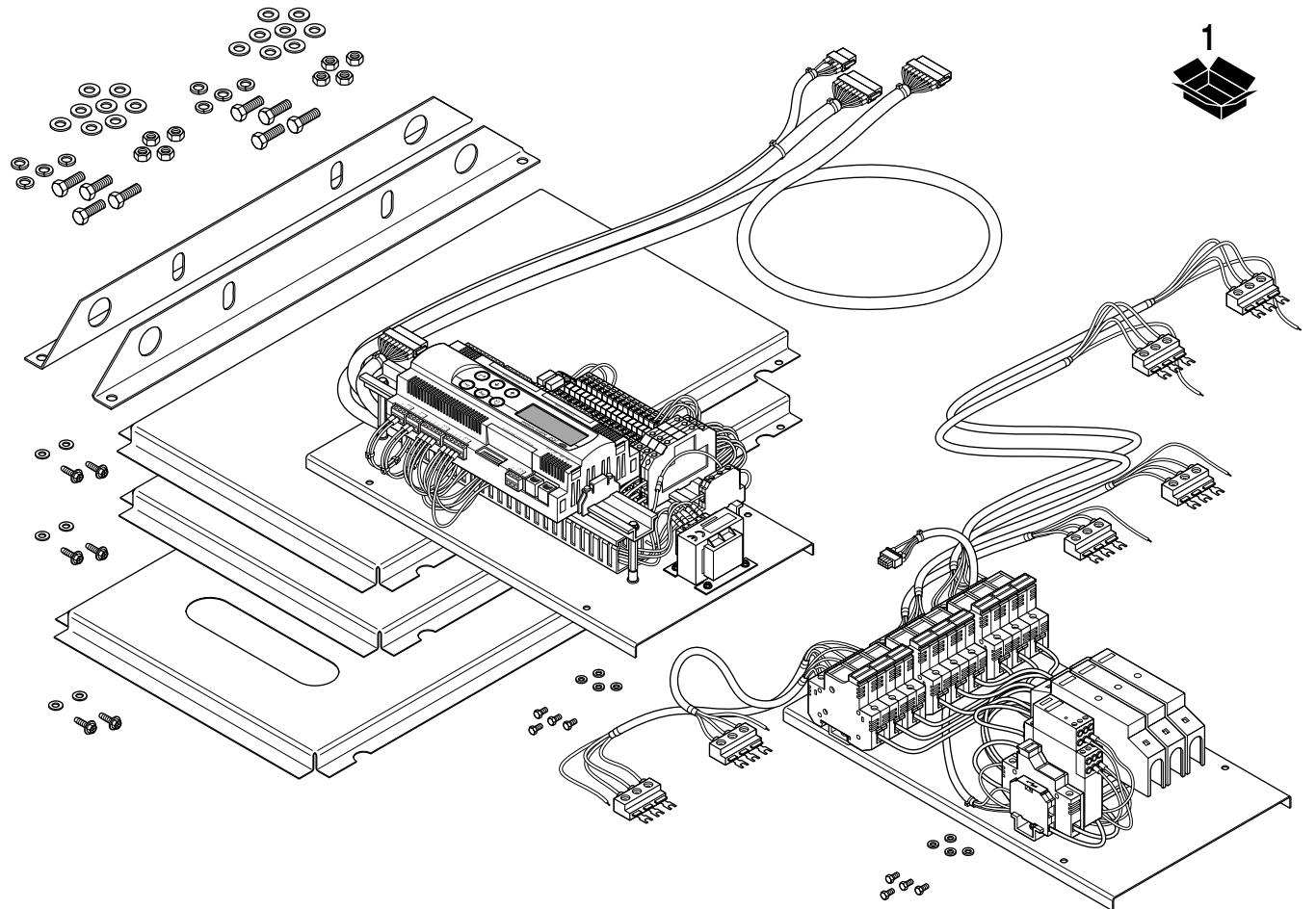






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