

■ Operating manual

REMKO EM series Electric heating units

EM 6000, EM 10000, EM 18000



This product is suitable only for well-insulated rooms or for occasional use.

Contents

<i>Safety notes</i>	4
<i>Unit description</i>	4-5
<i>Commissioning</i>	5
<i>Shutdown</i>	6
<i>Care and maintenance</i>	6
<i>Troubleshooting</i>	6
<i>Intended use</i>	7
<i>Customer service and guarantee</i>	7
<i>Environmental protection and recycling</i>	7
<i>Exploded view of the unit</i>	8-9
<i>Spare parts list</i>	10
<i>Maintenance log</i>	11
<i>Technical data</i>	12
<i>Electrical wiring diagram</i>	13-14



Carefully read this original operating manual prior to commissioning / using the units!

This operating manual is a translation of the German original.

This manual is an integral part of the unit and must always be kept in the vicinity of the installation location or on the unit itself.

Subject to modifications. No liability accepted for errors or misprints!

REMKO EM series

Safety notes

Always observe the respective local building code and fire prevention guidelines as well as the guidelines of the accident prevention and insurance associations when using the units.

The units have been subjected to extensive material, functional and quality inspections prior to delivery. However, dangers can arise from the units if they are used improperly or not as intended by untrained personnel!

Please observe the following notes

- The personnel tasked with operating the units must check the units for visible defects on the operating and safety devices as well as the presence and function of the protective devices prior to starting work **Inform the supervisor if defects are discovered!**
- In the event of defects that endanger the operational safety of the unit, operation must be discontinued immediately
- Observe the respective local regulations and the relevant electrical safety measures when using the units
- Maintain safety distances to combustible materials
- An unobstructed air inlet and air outlet must be guaranteed at all times
- The air outlet must not be constricted or equipped with pipe or hose lines
- Never insert foreign objects into the units
- The units must not be covered during operation
- Safety devices must not be bypassed or disabled
- The units must not be operated in the vicinity of bathtubs, showers, swimming pools etc.
- The units must not be operated directly below a wall socket
- The units must not be exposed to direct jets of water e.g. **pressure washers, etc.**
- Never allow water to enter the units
- The units must not be installed or operated in potentially flammable or explosive environments
- The units must not be installed or operated in atmospheres containing oil, sulphur or salt
- All electrical cables for the units must be protected against damage, even damage caused by animals

Unit description

The units are portable electric heating units for industrial applications.

The units are operated exclusively with electric power and have been designed in such a way that they can be used fully automatically, universally and in a straightforward manner.

The units are equipped with specially enclosed electric heating resistors, low noise and low-maintenance axial fans, a safety and aftercooler thermostat, an integrated room thermostat and a power supply cable.

The units conform to the fundamental health and safety requirements of the appropriate EU regulations.

The units are dependable and offer ease of operation.

The units may be used among other things for the following:

- Drying newly completed buildings
- Spot heating outdoor workspaces or fire-proof manufacturing facilities and halls
- Continuous or temporary room heating
- De-icing machines, vehicles and non-combustible warehoused goods while adhering to the relevant safety distances



CAUTION

Safety devices must not be bypassed or disabled.

Commissioning

Operating sequence

The units can be used according to the relevant operating modes for air heating or simply for air circulation purposes (switch position 1).

The heating capacity can be set in 2 stages (switch position 2 and 3).

The units are equipped with an integrated thermostat to ensure that the room temperature is constant.

Once the set temperature has been reached, the thermostat switches the heating operation off. If the room temperature falls below the set temperature, the thermostat starts up the heating operation again.

The integrated thermal cut-out switches off the unit if the temperature is excessively high and switches it on again automatically after it has cooled down.

After switching off the units via the operating switch or the room thermostats, the supply air fan runs to cool the heating resistors for a certain time and then switches off automatically.

⚠ CAUTION

Never interrupt the power supply prior to the completion of the follow-up cooling phase. There is no guarantee entitlement in case of damage to the units due to overheating.

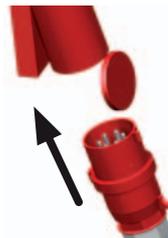
One person, who has been adequately trained in the handling of the units, should be tasked with the operation and monitoring of the units.

1. Check that the mains power supply matches the operating voltage of the unit. 400V/3~N/50 Hz.

2. Move the operating switch to the "0" (Off) position.



3. Connect the unit's power plug to a correctly installed mains socket. 400V/3~N/50Hz



💡 NOTE

The electrical connection for the units must be made at a separate feed point with a residual current device in accordance with VDE 0100, Section 55.

⚠ CAUTION

Extensions to the connection cable must only be conducted by authorised specialist electricians, taking into consideration the unit capacity, cable length and local use.

Heating

The units operate in a fully automatic manner subject to the temperature that is set on the thermostat.

1. Set the desired room temperature on the thermostat.



2. Depending on the desired heating capacity, move the operating switch to position "2" = 4.5 kW or "3" = 9 kW.



💡 NOTE

For optimum operation the units should not be operated above an ambient temperature of 25 °C.

Ventilate

Only the supply air fan operates in this setting. Thermostatic regulation and heating operation are not possible in this operating mode.

1. Move the operating switch to position "1", ventilate.



⚠ CAUTION

All cable extensions must only be used in a fully unrolled or reeled off condition.

REMKO EM series

Shutdown

1. Move the operating switch to the "0" position.



The supply air fan may run on to cool the units and only switches off after the cooling down phase is complete.

The fan can switch on and run several times before the final shutdown.

2. If the units are inactive for long periods, disconnect them from the mains power supply.



⚠ CAUTION

Never interrupt the power supply prior to the completion of the follow-up cooling phase. There is no guarantee entitlement in case of damage to the units due to overheating.

Care and maintenance

Regular care and observation of some basic requirements will ensure trouble-free operation and a long service life of the units.

⚠ CAUTION

Before undertaking any work on the units, the power plug must be removed from the mains socket.

- Observe the regular care and maintenance intervals
- In accordance with the operating conditions, the units must, if necessary, be checked at least yearly by a specialist to ensure that they are in a condition that is safe to use
- Keep the units free of dust and other debris
- Only clean the units with a dry or moistened cloth
- Never use direct jets of water. **Such as high-pressure cleaners etc.**
- Never use abrasive or solvent-based cleaners
- Check the inlet and outlet grille for contamination on a regular basis
- Check the safety equipment and protective devices on a regular basis
- Be careful not to damage the thermostat's probe or capillary tube when removing or mounting the rear panel of the unit

Troubleshooting

The unit (fan) does not start.

1. Check the mains fuses on site.
2. Check the power plug.
3. Check the operating switch.
4. Check that the fan can move freely.

The unit does not heat up

1. Set the thermostat to a value that is higher than the room temperature.
2. Check that the thermostat is functioning correctly.
3. Check the operating switch.
4. Check that the contactor is functioning correctly.
5. Check that the thermal cut-out is functioning correctly and check it for damage.

If all of the functional checks have been carried out without any findings, please contact an authorised service station.

⚠ CAUTION

After completing any work on the unit, an electrical inspection must be carried out according to VDE 0701.

💡 NOTE

Repair work may only be carried out by authorised qualified electricians.

Intended use

The units are designed exclusively for heating and ventilation purposes in industrial or commercial use (no living space heating) on the basis of their structural design and equipment. The units must only be operated by appropriately instructed personnel.

With non-observance of the manufacturer's specifications, the respective local legal requirements or after arbitrary alterations to the units, the manufacturer shall not be liable for resulting damages.

NOTE
Operation that differs from that specified in this operating manual is prohibited. Failing to observe this renders any manufacturer liability or guarantee claims void.

CAUTION
*Copyright
 The redistribution, even in part, or the use of this documentation for purposes other than intended without the written authorisation of
REMKO GmbH & Co. KG
 is prohibited.*

Customer service and guarantee

As a prerequisite for any guarantee claims to be considered, it is essential that the ordering party or its representative complete and return the **"Certificate of guarantee"** to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The units were tested at the factory several times to verify their correct function. However, if malfunctions should arise that cannot be remedied by the operator with the assistance of the troubleshooting section, please contact your specialist dealer or contractual partner.

NOTE
Adjustment and maintenance work may only be carried out by authorised and qualified technicians.



Environmental protection and recycling

Disposal of packaging

When disposing of packaging material, please consider our environment.

Our units are carefully packed and delivered in sturdy transport packaging made from cardboard and polystyrene.

The packaging materials are environmentally-friendly and can be recycled.

By recycling packaging materials, you make a valuable contribution to the reduction of waste and conservation of raw materials.

Therefore, only dispose of packaging material at appropriate collection points.

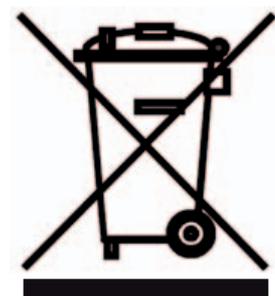
Disposal of the old unit

The manufacturing process for the units is subject to continuous quality control.

Only high-grade materials are processed, the majority of which are recyclable.

You also contribute to environmental protection by ensuring that your old equipment is only disposed of in an environment friendly manner.

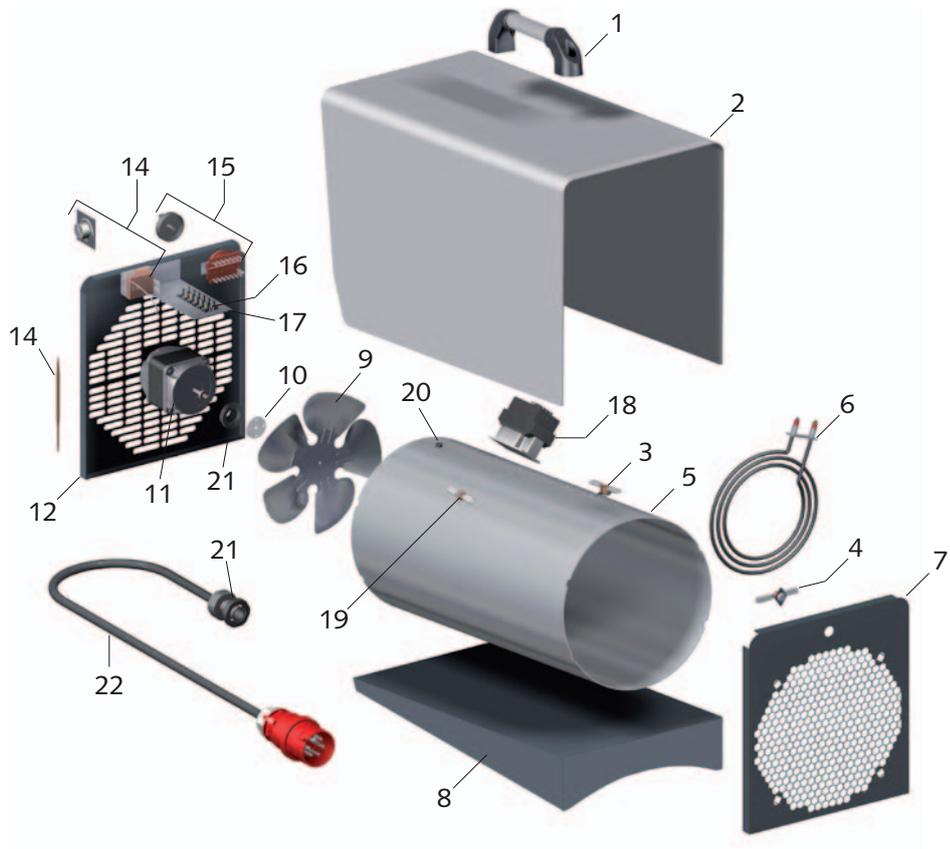
Therefore, only bring the old unit to an authorised recycling business or to an appropriate collection point.



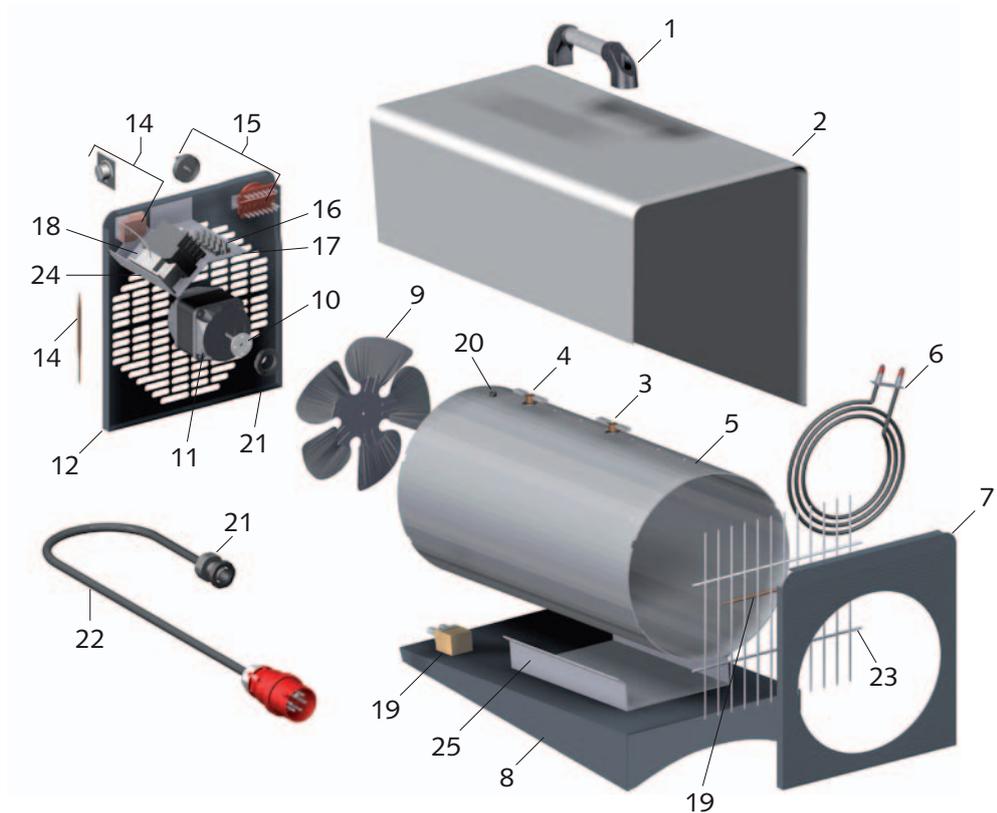
REMKO EM series

Exploded view of the unit

EM 6000

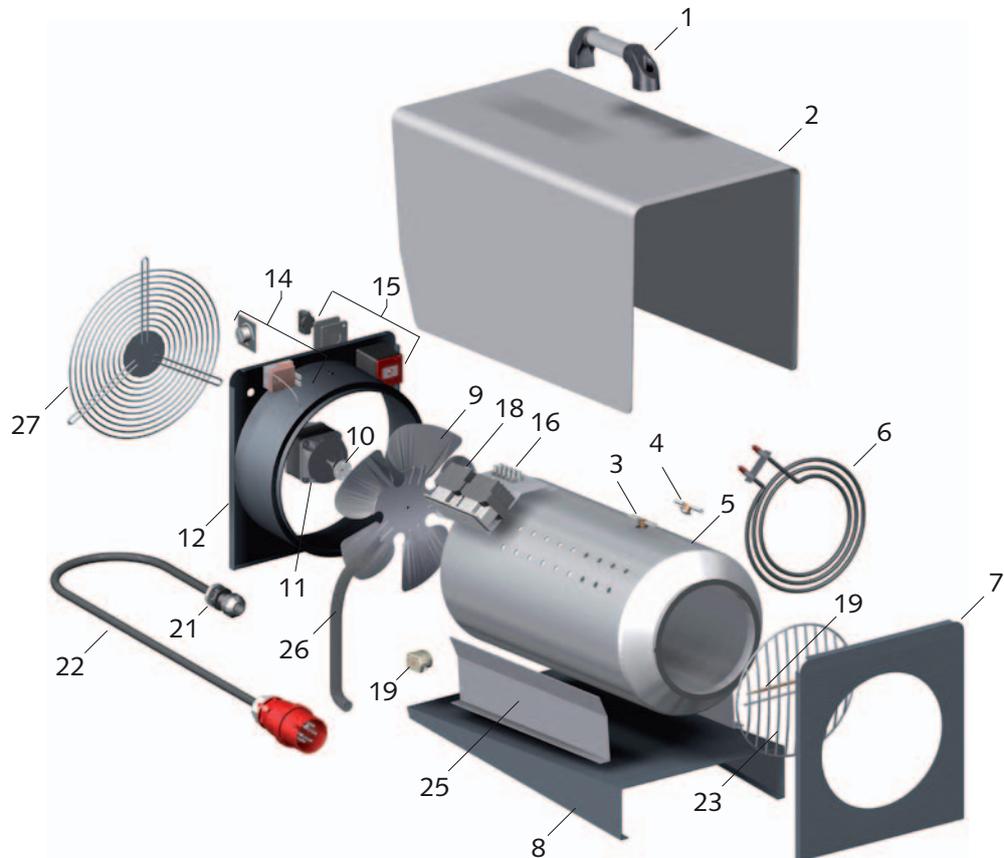


EM 10000



We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

EM 18000



REMKO EM series

Spare parts list

No.	Designation	EM 6000	EM 10000	EM 18000
		EDP no.	EDP no.	EDP no.
1	Transport handle	1111973	1111973	1111973
2	Exterior cladding	1111974	1103957	1108002
3	Aftercooler thermostat	1104065	1104065	1104065
4	77 °C thermal cut-out	1101161	1101161	1101161
5	Inner casing	1101082	1103951	1107953
6	Heating resistor	1111975	1103958	1107998
7	Front wall	1101084	1103953	1107921
8	Floor panel	1101085	1107913	1107950
9	Fan blade	1101086	1103950	1101153
10	Drive clutch	1108014	1103956	1103956
11	Fan motor	1101094	1101254	1101254
12	Back wall	1101099	1103959	1108003
14	Thermostat assembly	1101066	1101066	1108005
15	Operating switch cpl.	1101090	1101090	1108004
16	Terminal block	1101366	1101366	1107952
17	Mounting plate	1101091	1103961	---
18	Contacto	1101096	1101096	1101096
19	Thermal cut-out / STB	1101081	1107960	1107960
20	Grommet	1101304	1101304	---
21	Strain relief	1107944	1107944	1107961
22	Mains cable with plug	1101026	1101026	1107962
23	Protective outlet grille	---	1103952	1101353
24	Mounting bracket / mounting plate	---	1101031	---
25	Support plate	---	1107914	1107922
26	Protective hose	---	---	1107915
27	Protective intake grille	---	---	1107947

When ordering spare parts, please state the EDP no., unit number and type (see name plate)!

Maintenance log



Unit type: Unit number:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Unit cleaned - outside -																				
Unit cleaned - inside -																				
Fan blade cleaned																				
Protection grid cleaned																				
Safety equipment checked																				
Safety devices checked																				
Unit checked for damage																				
All fastening screws checked																				
Electrical safety check																				
Test run																				

Comments:.....

1. Date: Signature	2. Date: Signature	3. Date: Signature	4. Date: Signature	5. Date: Signature
6. Date: Signature	7. Date: Signature	8. Date: Signature	9. Date: Signature	10. Date: Signature
11. Date: Signature	12. Date: Signature	13. Date: Signature	14. Date: Signature	15. Date: Signature
16. Date: Signature	17. Date: Signature	18. Date: Signature	19. Date: Signature	20. Date: Signature

REMKO EM series

Technical data

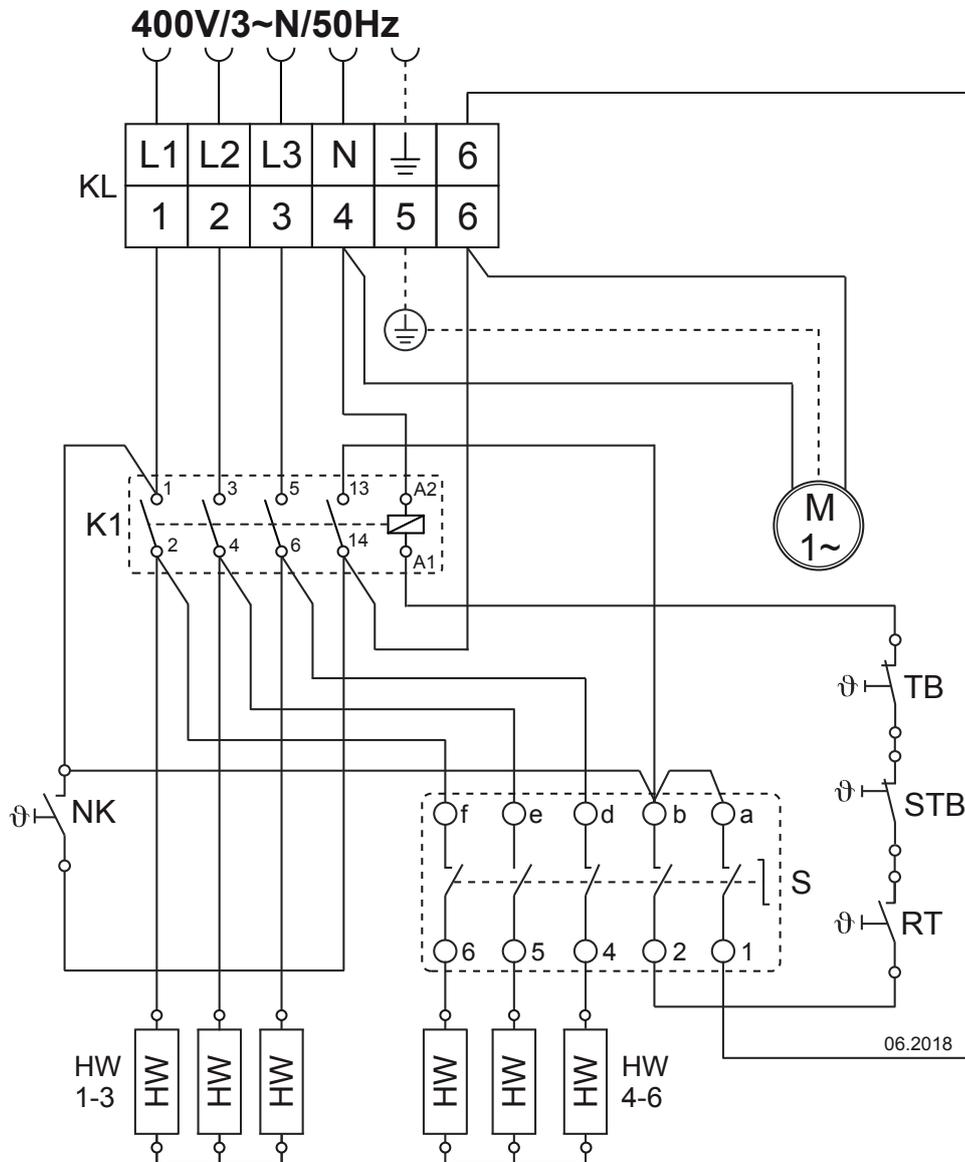
Series	Symbol	Unit	EM 6000	EM 10000	EM 18000
Nominal heat capacity	P_{nom}	kW	6.0	10.0	18.0
Minimum heat capacity	P_{min}	kW	3.0	5.0	6.0
Maximum continuous heating power	$P_{max,c}$	kW	6.0	10.0	18.0
Switchable heating capacity		kW	2 x 3.0	2 x 5.0	3 x 6.0
Air volume		m ³ /h	500	750	1000
Air outlet temperature ¹⁾		°C	71	85	80
Power supply		V/Hz	400/3~N / 50	400/3~N / 50	400/3~N / 50
Max. rated current		A	4.0 / 8.0	7.4/14.8	9.0/18.0
Max. power consumption		kW	6.1	10.6	18.1
Auxiliary current consumption at nominal heating power	$e_{l,max}$	kW	0.065	0.080	0.155
Auxiliary current consumption at minimum capacity	$e_{l,min}$	kW	0.065	0.080	0.155
Auxiliary current consumption in standby condition	$e_{l,SB}$	kW	0.000	0.000	0.000
Electrical protection (provided by the customer)		A (slow)	16	16	16
Sound pressure level, LpA 1m ²⁾		dB (A)	52	53	57
Dimensions: L/W/H		mm	510/300/455	675/300/455	740/375/500
Type of room temperature control			Room temperature control with mechanical thermostat (external)		
Weight		kg	16.5	20.5	27.0
EDP no.:			1614510	1614520	1614530

¹⁾ At 20 °C intake air temperature;

²⁾ Noise level measurement DIN 45635 - 01 - KL3

We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

Electrical wiring diagram for EM 6000, EM 10000



Legend:

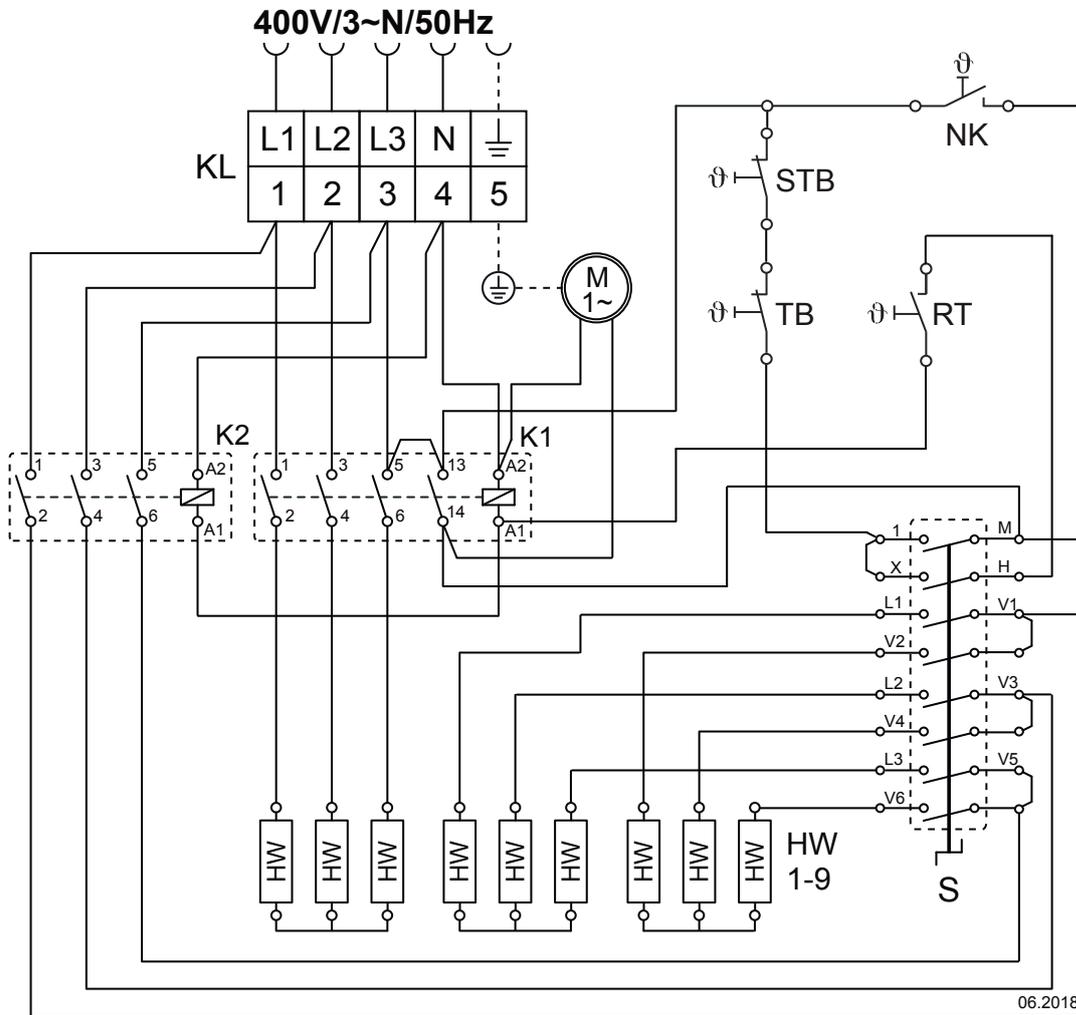
- HW = Heating resistor
- KL = Connection terminal strip
- K1 = Contactor
- M = Fan motor
- NK = Aftercooler thermostat
- HW1-3 = Heating resistors, 1st stage
- HW4-6 = Heating resistors, 2nd stage
- RT = Room thermostat
- S = Operating switch
- STB = Thermal cut-out
- TB = Thermal cut-out

Switching level for operating switch [S]

S	0	1	2	3
a 1		×	×	×
b 2			×	×
d 4				×
e 5				×
f 6				×

REMKO EM series

Electrical wiring diagram for EM 18000



Legend:

- HW = Heating resistor
- KL = Connection terminal strip
- K1 = Contactor
- M = Fan motor
- NK = Aftercooler thermostat
- HW1-3 = Heating resistors, 1st stage
- HW4-6 = Heating resistors, 2nd stage
- RT = Room thermostat
- S = Operating switch
- STB = Thermal cut-out
- TB = Thermal cut-out

Switching level for operating switch [S]

S		0	1	2	3	4
M	1		X			
H	X			X	X	X
V1	L1				X	X
V1	V2					X
V3	L2				X	X
V3	V4					X
V5	L3				X	X
V5	V6					X

REMKO INTERNATIONAL

*... and also right in your neighbourhood!
Take advantage of our experience and advice*



Consulting

Thanks to intensive training, our consultants are always completely up-to-date when it comes to technical expertise. This has given us the reputation of being more than just an excellent, reliable supplier: REMKO, a partner who helps to solve problems.

Sales

REMKO offers not just a well established sales network both nationally and internationally, but also has exceptionally highly-qualified sales specialists. REMKO employees in the field are more than just sales people: above all, they must be advisers to our customers in air conditioning and heating technology.

Customer service

Our units operate precisely and reliably. However, in the event of a malfunction REMKO customer service is quickly on the scene. Our comprehensive network of experienced dealers guarantees quick and reliable service.

REMKO GmbH & Co. KG Air conditioning and heating technology

Im Seelenkamp 12 D-32791 Lage
Postfach 1827 D-32777 Lage
Telephone +49 5232 606-0
Fax +49 5232 606-260
E-mail info@remko.de
Internet www.remko.de

