Operating and installation instructions

REMKO ELT-HT series

High temperature electric heaters

ELT 10-HT, ELT 18-HT

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

0208-2019-01 Edition 1, en_GB

Read the instructions prior to performing any task!

Read these operating instructions carefully before commissioning / using this device!

These instructions are an integral part of the system and must always be kept near or on the device.

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

Translation of the original

Table of contents

1 Safety and usage instructions

1.1 General safety notes

Carefully read the operating manual before commissioning the units for the first time. It contains useful tips and notes such as hazard warnings to prevent personal injury and material damage. Failure to follow the directions in this manual not only presents a danger to people, the environment and the system itself, but will void any claims for liability.

Keep this operating manual and the refrigerant data sheet near to the units.

1.2 Identification of notes

This section provides an overview of all important safety aspects for proper protection of people and safe and fault-free operation.The instructions and safety notes contained within this manual must be observed in order to prevent accidents, personal injury and material damage.

Notes attached directly to the units must be observed in their entirety and be kept in a fully legible condition.

Safety notes in this manual are indicated by symbols. Safety notes are introduced with signal words which help to highlight the magnitude of the danger in question.

DANGER!

Contact with live parts poses an immediate danger of death due to electric shock. Damage to the insulation or individual components may pose a danger of death.

DANGER!

This combination of symbol and signal word warns of a situation in which there is immediate danger, which if not avoided may be fatal or cause serious injury.

WARNING!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may be fatal or cause serious injury.

CAUTION!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause injury or material and environmental damage.

NOTICE!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause material and environmental damage.

This symbol highlights useful tips and recommendations as well as information for efficient and fault-free operation.

1.3 Personnel qualifications

Personnel responsible for commissioning, operation, maintenance, inspection and installation must be able to demonstrate that they hold a qualification which proves their ability to undertake the work.

1.4 Dangers of failure to observe the safety notes

Failure to observe the safety notes may pose a risk to people, the environment and the units. Failure to observe the safety notes may void any claims for damages.

In particular, failure to observe the safety notes may pose the following risks:

- The failure of important unit functions.
- The failure of prescribed methods of maintenance and repair.
- Danger to people on account of electrical and mechanical effects.

1.5 Safety-conscious working

The safety notes contained in this manual, the existing national regulations concerning accident prevention as well as any internal company working, operating and safety regulations must be observed.

1.6 Safety instructions for the operator

The operational safety of the units and components is only assured providing they are used as intended and in a fully assembled state.

- 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.

  If defects are discovered these must be reported to the supervisor!
- In the event of defects that endanger the operational safety of the unit, operation must be discontinued immediately.
- Do not operate units or components with obvious defects or signs of damage.
- The units must not be left unattended during operation.
- Observe the respective local regulations and the relevant electrical safety measures when using the units.
- The relevant safety guidelines of the Employer's Liability Insurance Association or property insurer must be observed.
- Safety devices must not be bypassed or disabled.
- The units may not be installed or operated in potentially flammable or explosive environments.
- **The units must not be operated in locations where:**

  Combustible gaseous, air or dust-air mixtures could be produced; flammable small parts could be sucked in, set alight on the heating coil and blown out in a glowing state.
- Maintain safety distances to combustible materials;

  0.5 m on the sides and suction side

  2.0 m outlet side
- The units must be installed in a stable position and must not topple over or slide out of position during operation.
- Never insert foreign objects into the units.
- The units must not be covered during operation.
- An unobstructed air inlet and air outlet must be guaranteed at all times.
- 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 operated in an environment with an ambient temperature of over 60 °C.
- The units and components must not be exposed to any mechanical load, extreme levels of humidity or extreme temperatures.
- Never allow water to enter the units.
- Protective covers (grilles) over moving parts must not be removed from units that are in operation.
- Contact with equipment parts or components can lead to burns or injury.
- All housing parts and unit openings, e.g. air inlets and outlets, must be free from foreign objects.
- The air outlet must not be constricted or equipped with pipe or hose lines.
- All electrical cables for the units must be protected against damage, including damage caused by animals.
- Extensions to the connection cable must only be conducted by authorised specialist electricians, taking into consideration the unit capacity, cable length and local use.
- Flooring and ceilings must be fire retardant.
- The units must be inspected by a service technician to ensure that they are safe to use and fully functional at least once yearly. Visual inspections and cleaning may be performed by the operator when the units are disconnected from the mains.

1.7 Safety notes for installation, maintenance and inspection work

- The units and components may only be set up, installed and maintained by qualified personnel.
- Appropriate hazard prevention measures must be taken to prevent risks to people when performing installation, repair, maintenance or cleaning work on the units.
- The setup, connection and operation of the units and its components must be undertaken in accordance with the usage and operating conditions stipulated in this manual and comply with all applicable regional regulations.
- Regional regulations and laws must be observed.
- The units must be installed and operated in such a way that personnel are not endangered by warm air and radiant heat and that no fires can occur
- A safety zone of 1.5 m should be maintained around the units - including non-combustible items
- The power supply should be adapted to the requirements of the units.
- Mobile units must be set up securely on suitable non-combustible surfaces.
- The units and components should not be operated in areas where there is an increased risk of damage. Observe the minimum clearances.

- The units and components must be kept at an adequate distance from flammable, explosive, combustible, abrasive and dirty areas.
- The units must not be installed or operated in atmospheres containing oil, sulphur or salt.
- The units must not be exposed to direct jets of water, e.g. pressure washers etc.
- Safety devices must not be bypassed or disabled.

1.8 Unauthorised modification and changes

Modifications or changes to units and components are not permitted and may cause malfunctions. Safety devices may not be modified or bypassed. Original replacement parts and accessories authorised by the manufactured ensure safety. The use of other parts may invalidate liability for resulting consequences.

1.9 Intended use

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

Any different or additional use is a non-intended use. The manufacturer/supplier assumes no liability for damages arising from a non-intended use. The user bears the sole risk in such cases. Intended use also includes working in accordance with the operating and installation instructions and complying with the maintenance requirements.

The threshold values specified in the technical data must not be exceeded.

1.10 Warranty

For warranty claims to be considered, it is essential that the ordering party or its representative complete and return the "certificate of warranty" to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The warranty conditions are detailed in the "General business and delivery conditions". Furthermore, only the parties to a contract can conclude special agreements beyond these conditions. In this case, contact your contractual partner in the first instance.

1.11 Transport and packaging

The devices are supplied in a sturdy shipping container. Please check the equipment immediately upon delivery and note any damage or missing parts on the delivery and inform the shipper and your contractual partner. For later complaints can not be guaranteed.

⚠ WARNING!

Plastic films and bags etc. are dangerous toys for children!

Why:

- Leave packaging material are not around.

- Packaging material may not be accessible to children!

1.12 Environmental protection and recycling

Disposal of packaging

All products are packed for transport in environmentally friendly materials. Make a valuable contribution to reducing waste and sustaining raw materials. Only dispose of packaging at approved collection points.

Disposal of equipment and components

Only recyclable materials are used in the manufacture of the devices and components. Help protect the environment by ensuring that the devices or components (for example batteries) are not disposed in household waste, but only in accordance with local regulations and in an environmentally safe manner, e.g. using certified firms and recycling specialists or at collection points.

2 Technical data

2.1 Unit data

Unit type	Symbol	Unit	ELT 10-HT	ELT 18-HT
Nominal heat capacity	P_{nom}	kW	10.5	18.0
Minimum heat capacity	P_{min}	kW	7.0	12.0
Maximum continuous heating power	$P_{max,c}$	kW	10.5	18.0
Switchable heating capacity		kW	stepless, thermally controlled	
Air volume flow		m^3/h	400-900	750-1600
Air outlet temperature		°C	up to 120	
Power supply		V/Ph/Hz	400/3~N / 50	
Max. rated current consumption		A	15.9	27.8
Auxiliary power consumption				
at nominal heating capacity	el_{max}	kW	11.000	18.500
at minimum capacity	el_{min}	kW	7.500	12.500
in Stand-By mode	el_{SB}	kW	0.000	
Fuse protection (provided by the customer, slow-blow)		A	16	32
Sound pressure level, LpA 1m [1)]		dB(A)	70	72
Type of room temperature control			Room temperature control with electric thermostat (external)	
Dimensions (length/width/height)		mm	750/305/500	880/355/500
Weight		kg	18.0	25.2
EDP no.:			114440 (114450)	114420 (114430)

[1)] Noise level measurement DIN 45635 - 01 - KL 3

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

3 Design and function

3.1 Unit description

The units are portable electric heating units for industrial applications at various locations.

The units are operated exclusively with electric power and have been designed for high-temperature applications with an air outlet temperature of up to 120 °C.

The air outlet temperature is altered by manually adjusting the fan speed.

The units can be operated using a maximum of one high-temperature hose (accessories) with a length of 7.6 m.

The units are equipped with special-purpose, highly efficient electrical heating coils for immediate and consistent heat generation, low-maintenance axial fans, a safety thermostat, a room thermostat socket and a mains cable with earthed safety plug.

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

The units are dependable and offer ease of operation.

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

- Drying heat-resistant materials
- Generating process heat for industrial applications
- Curing of plastics
- Pest control
- Drying out construction work/heating

4 Electrical wiring

4.1 Electrical wiring diagram

Connection ELT 10-HT

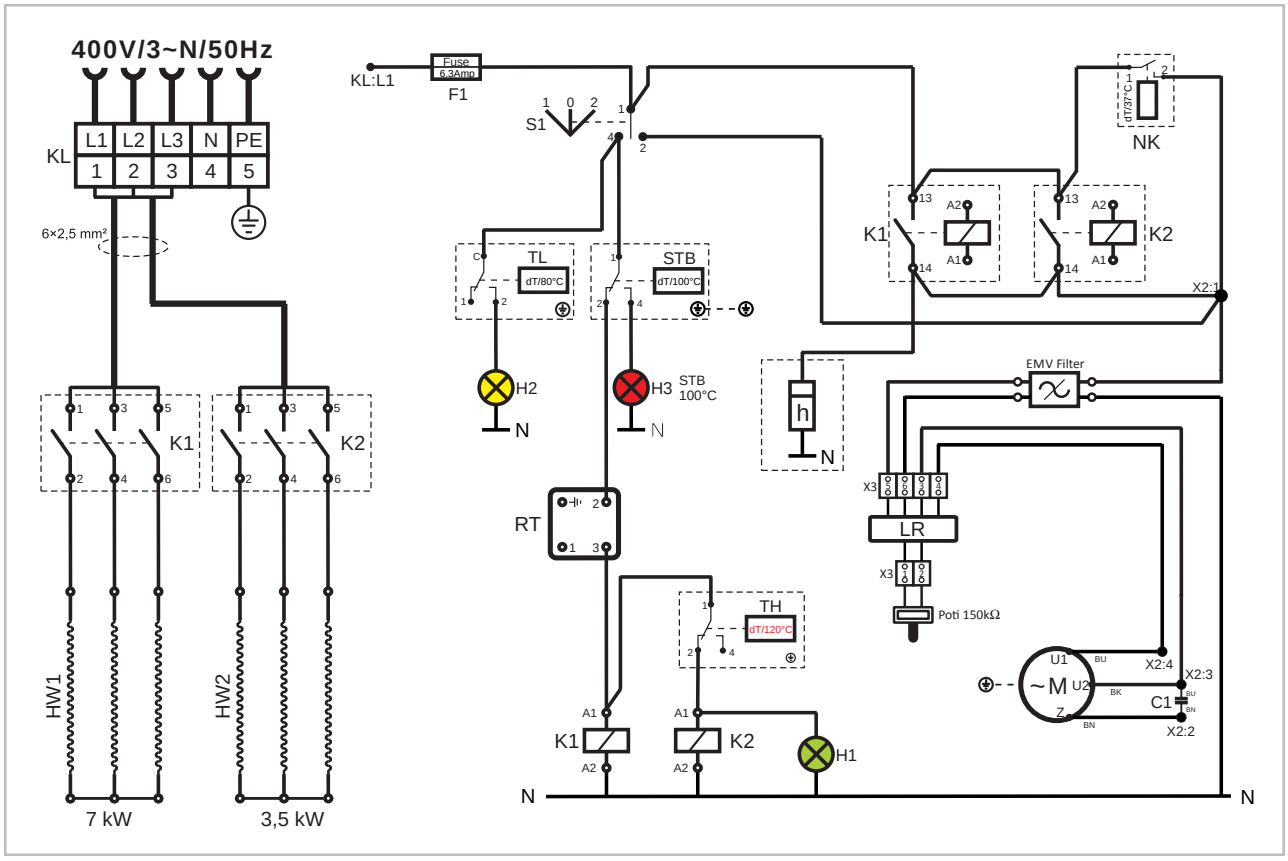

Fig. 1: Electrical wiring diagram

C1: Capacitor
H1: Green - Green light on = 18 kW power
From 120 °C, green light off = 12 kW power
H2: Yellow - HT mode from 80 °C
H3: Red - STB 100 °C
HW: Special-purpose heating insert
KL: Connection terminal strip
K1: Contactor 1
K2: Contactor 2
LR: Power controller
M: Fan motor
N: Operating hours counter (optional)
NK: Aftercooler thermostat
RT: Thermostat socket
S1: Operating switch
1 = Fan / 2 = Heating
STB: Safety thermostat
TH: Temperature controller
TL Temperature controller

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REMKO ELT-HT series

Connection ELT 18-HT

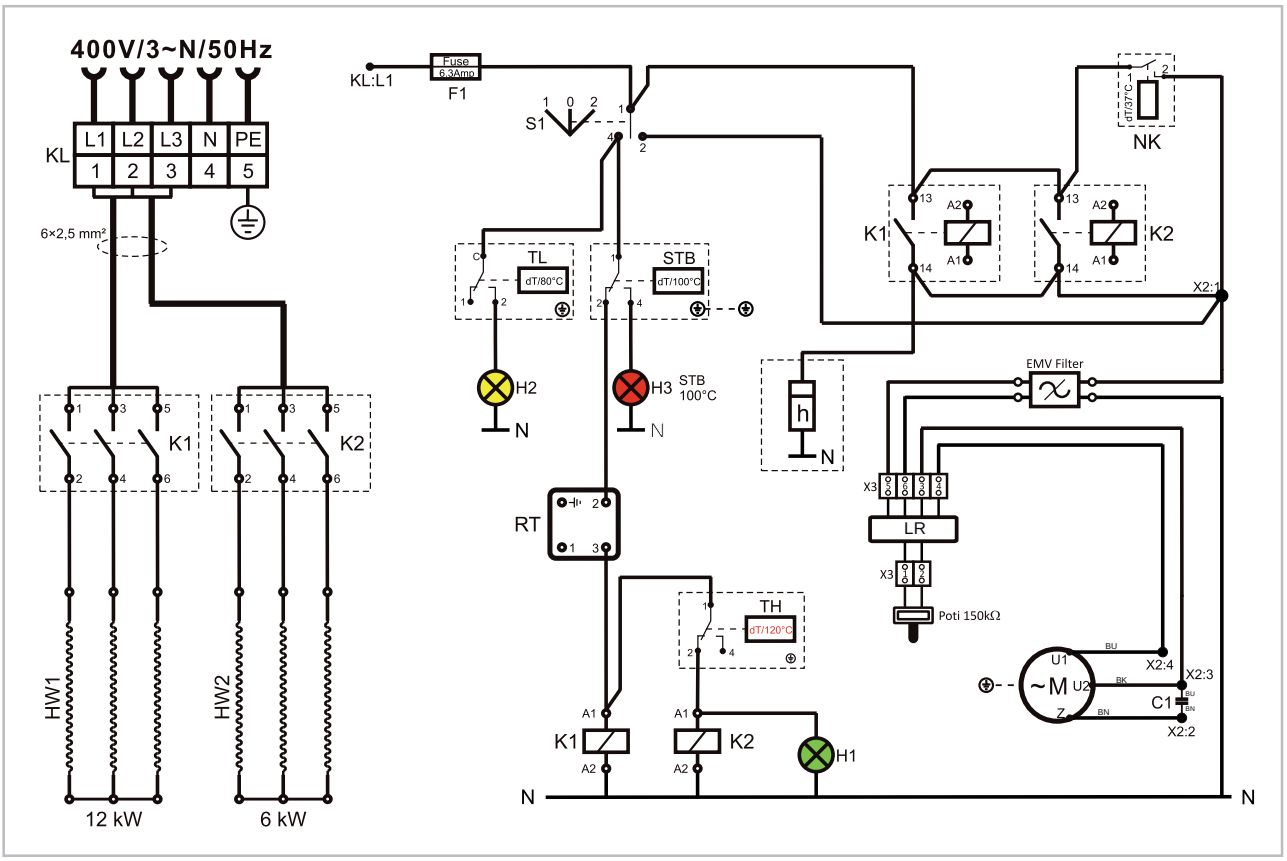

Fig. 2: Electrical wiring diagram

C1: Capacitor
H1: Green - Green light on = 18 kW power
From 120 °C, green light off = 12 kW power
H2: Yellow - HT mode from 80 °C
H3: Red - STB 100 °C
HW: Special-purpose heating insert
KL: Connection terminal strip
K1: Contactor 1
K2: Contactor 2
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S1: Operating switch
1 = Fan / 2 = Heating
STB: Safety thermostat
TH: Temperature controller
TL Temperature controller

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5 Commissioning the unit

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

The units are equipped with a 3-stage operating switch.

Fig. 3: Operating switch

0: Off
1: Ventilation
2: Heating

1. Move the operating switch to the “0” position.
2. Connect the unit's power plug to a properly installed 16 A (ELT 10-HT), or 32 A (ELT 18-HT) mains socket.

⚠ WARNING!

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.

Operating mode settings

The operating mode settings can be selected using a switch or a rotary selector switch.

However, a room thermostat is always required for operation.

In position “1” only the fan becomes active. This adjustment can also be changed without a room thermostat.

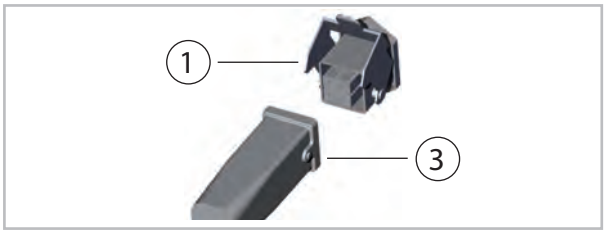
No operation takes place in position “0”.

In position “2” the fan and the heating elements become active. This setting is only permitted with an electric room thermostat.

Heating with a special purpose HT room thermostat or duct thermostat (accessories)

The units operate fully automatically and according to the room temperature.

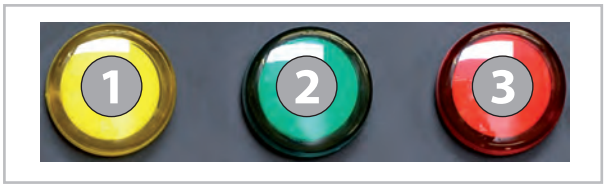
1. Pull out the strapping plug [2].
2. Connect the plug [3] of the relevant thermostat to the thermostat socket [1] on the unit.



3. Place the probe in a suitable position according to the type of thermostat used. The thermostat probe must not be located directly in the warm air flow and must not be placed directly on the cold floor.
4. On the room thermostat, set the temperature required for the application at hand.
5. Move the operating switch to the “2” (Heating) position.

   GREEN indicator light on!

Operating lights



1: Yellow = HT mode
2: Green = max. heating capacity
3: Red = STB malfunction

Adjust the air outlet temperature

Upon start-up, set the fan speed to the maximum setting.

If the **YELLOW** light does not light up after an operating time of approx. 5 minutes, please decrease the fan speed by approx. 10 %.

If the **YELLOW** light has still not lit up after another 5 minutes, repeat the previous procedure until the **YELLOW HT operating light** is continuously lit.

The unit has now been optimally adapted to the ambient conditions and is operating in high-temperature mode at approx. 100-120 °C.

Safety in the event of excessive temperature

If the operating conditions change in permanent operating mode and the temperature at the air outlet exceeds 120 °C, the unit reverts back to a heating capacity of 7 kW automatically at ELT 10-HT and 12 kW at ELT 18-HT.

The **GREEN** indicator light goes out, the **YELLOW** one remains lit.

In this case, we recommend checking the operating conditions or increasing the speed by 10 % until the max. heating capacity is reactivated.

GREEN indicator light on!

In the event of serious heat build-up caused by, for example, a constricted air outlet, a lack of unrestricted air intake or the fan being at a standstill, the safety thermostat switches the unit off. This needs to be manually unlocked once the fault has been rectified and the unit has cooled down.

Ventilation only operation

Only the supply air fan operates in this setting. Thermostatic regulation and heating operation are not possible in this operating mode. Move the operating switch to the “1” position.

The fan speed can likewise be changed in this mode.

6 Operation with a warm air hose

The units are equipped with a special-purpose high performance axial fan.

This opens up the possibility of operating the unit with an HT warm air hose with a length of 7.6 m to transport the heated air efficiently and effectively to the place where it is required.

Only warm air hoses (accessories) that have been approved by Remko may be used as these have been designed specifically for these high temperature units.

Information about the assembly of the warm air hose

- Only special-purpose high-temperature hoses may be used.
- Make sure that the unit's outlet nozzle is securely fastened.
- There should be no kinks or bends in the layout of the hoses in order to prevent hot-spots forming.
- Make sure that the air outlet at the end of the hose is clear at all times.

7 Shutdown

! NOTICE!

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

1. Switch the operating switch to the "0" (off) position.

2. If shut down for an extended period, disconnect the units from the mains power supply.
3. The supply air fan may run on to cool the units and only switch off after the cooling down phase is complete.
4. If the units need to be stored, clean them and, if necessary, cover them with a plastic sheet/film or cotton cloth and store in a sheltered and dry storage location.

8 Troubleshooting and customer service

DANGER!

Vor allen Arbeiten an den Geräten muss der Netzstecker aus der Netzsteckdose gezogen werden.

Reparaturen bzw. Änderungen an der Elektroinstallation sowie der Zuleitung dürfen aus sicherheitstechnischen Gründen ausschließlich durch autorisiertes Fachpersonal ausgeführt werden.

The unit has been manufactured using state-of-the-art production methods and has been tested several times to ensure that it works properly. However, in the event that malfunctions should occur, the unit should be checked against the following list. Please inform your dealer if the unit is still not working correctly after all of the functional checks have been performed.

The unit (fan) does not start

1. Check the mains fuses provided by the customer.
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. Check the operating switch.
2. Check that the contactor is functioning correctly.
3. Check that the temperature controller is functioning correctly and check the capillary tube for damage.
4. Check that the thermal cut-out or capillary tube are functioning correctly and check for damage.
5. Check whether the thermostat or strapping plug are plugged in.
6. In case of unit operation with a room thermostat, set the thermostat to a value that is higher than the room temperature.

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

9 Care and maintenance

9.1 General

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

DANGER!

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

NOTICE!

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

- 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 subject to direct jets of water. **such as high-pressure cleaners etc.**
- Never use abrasive or solvent-based cleaners
- Even with heavy contamination, use only suitable cleaners
- Check the inlet and outlet grille for contamination on a regular basis
- Check the units for mechanical damage and have defective parts properly replaced
- Check that the safety devices and the protective devices are operating correctly at regular intervals
- Keep the probe for the safety devices free of dust and dirt
- Be careful not to damage the temperature limiter's probe or capillary tube when removing or mounting the protective outlet grille
- Observe maintenance and care intervals

WARNING!

An electrical safety check must be carried out in accordance with VDE 0701 after any work on the units.

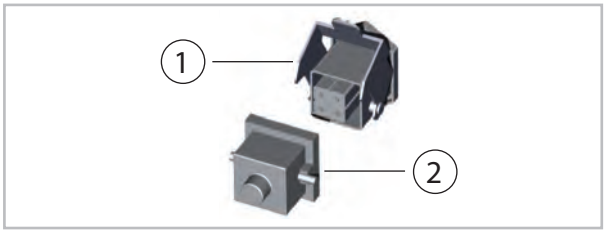
NOTICE!

Replace defective or damaged parts immediately and only with original spare parts.

Testing

The strapping plug enclosed with the unit is for maintenance or testing purposes according to VDE 0701. To test, perform the following steps:

1. Connect the strapping plug supplied [2] to the thermostat socket [1] on the unit



2. Perform the test on the unit
3. Remove the strapping plug again

9.2 Maintenance protocol

Unit type: ----------	**Unit number:** ----------																			
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
Unit cleaned - outside -																				
Unit cleaned - inside -																				
Fan blade cleaned																				
Combustion chamber cleaned																				
Heat exchanger cleaned																				
Exhaust gas suppressors replaced																				
Inspection cover seal replaced																				
Fuel filter insert replaced																				
Safety equipment checked																				
Safety devices checked																				
Unit checked for damage																				
Electrical safety check																				
Burner maintenance *)																				
Test run																				

Comments: .....

.....

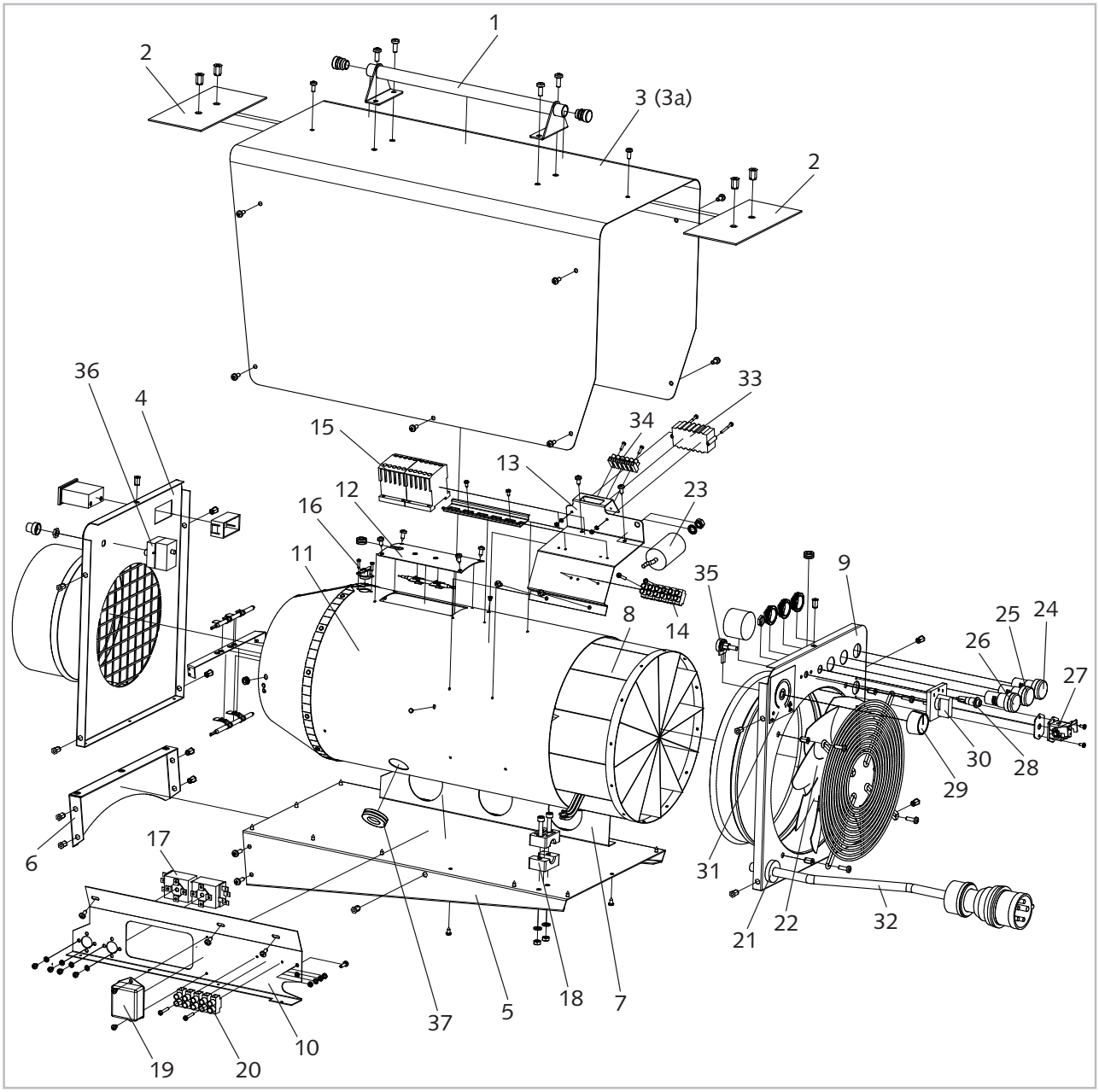
01. Date: .... Signature	02. Date: .... Signature	03. Date: .... Signature	04. Date: .... Signature	05. Date: .... Signature
06. Date: .... Signature	07. Date: .... Signature	08. Date: .... Signature	09. Date: .... Signature	10. Date: .... Signature
11. Date: .... Signature	12. Date: .... Signature	13. Date: .... Signature	14. Date: .... Signature	15. Date: .... Signature
16. Date: .... Signature	17. Date: .... Signature	18. Date: .... Signature	19. Date: .... Signature	20. Date: .... Signature

*) Have the forced-air burner maintained and adjusted only by authorised specialists and in accordance with the legal provisions (1st BImSchV.). A corresponding measurement log should be generated.

Unit to be maintained only by authorised specialists in accordance with the statutory regulations.

10 Exploded view and spare parts lists

10.1 Exploded view of the unit ELT 10-HT



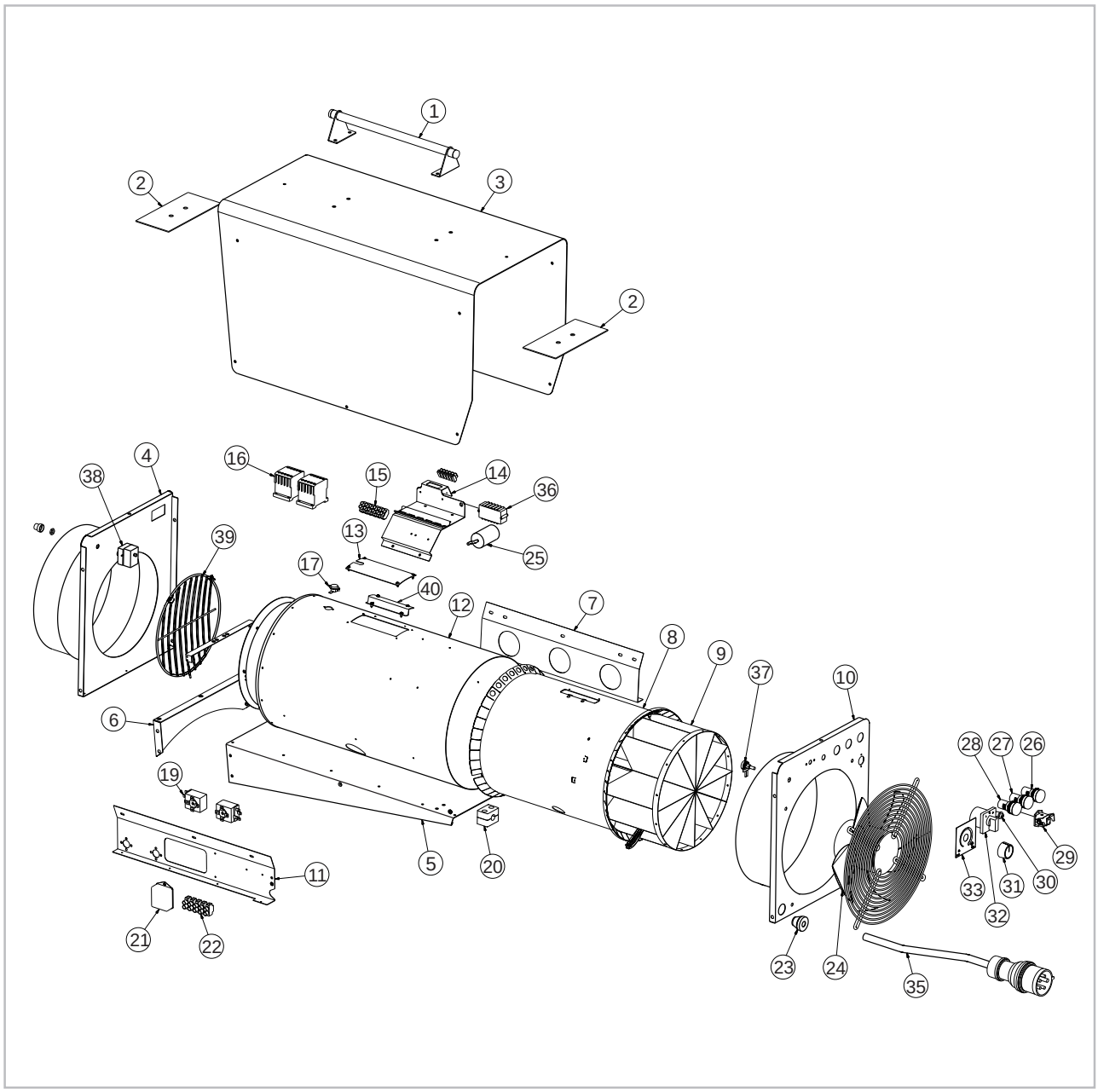
We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

10.2 Spare parts list ELT 10-HT

No.	Designation	EDP no.
1	Transport handle	upon request
2	Reinforcement plate	
3	Outer casing ELT 10-HT	
3a	Outer casing ELT 10-HT INOX	
4	Front panel with outlet nozzle	
5	Floor panel	
6	Front plate of floor panel	
7	Support plate, right	
8	Heating insert assembly	
9	Back wall	
10	Support plate, left	
11	Inner casing with outlet cone	
12	Cover plate for STB	
13	Mounting plate	
14	Terminal block 6x (6 mm^2)	
15	Contactor	
16	Aftercooler thermostat	
17	Control thermostat with probe	
18	Safety clamp for mains cable	
19	EMC filter	
20	Terminal block 5x (16 mm^2)	
21	Grommet for mains cable	upon request
22	Fan with motor and protection grid	
23	3 µF capacitor	
24	“RED” light (STB malfunction)	
25	“GREEN” light (max. heating capacity)	
26	“YELLOW” light (HT mode)	
27	Thermostat receptacle assembly	
28	6.3 A control fuse	
29	Speed controller adjusting knob	
30	Operating switch 1-0-2	
31	Speed control film	
32	Mains cable with plug	
33	M012 speed control	
34	Terminal block 6x (1.5 mm^2)	
35	Speed controller	
36	Safety thermostat STB	
37	Cable passage	
	Not illustrated	
	Thermostat plug	upon request
	Strapping plug	
	Operating hours counter	

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

10.3 Exploded view of the unit ELT 18-HT



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

10.4 Spare parts list ELT 18-HT

No.	Designation	EDP no.
1	Transport handle	upon request
2	Reinforcement plate	
3	Outer casing ELT 18-HT	
3a	Outer casing ELT 18-HT INOX	
4	Front panel with outlet nozzle	
5	Floor panel	
6	Front plate of floor panel	
7	Support plate, right	
8	Insulating shell	
9	Heating insert assembly	
10	Back wall	
11	Support plate, left	
12	Inner casing with outlet cone	
13	Cover plate for STB	
14	Mounting plate	
15	Terminal block 6x (6 mm^2)	
16	Contactor	
17	Aftercooler thermostat	
19	Control thermostat with probe	
20	Safety clamp for mains cable	
21	EMC filter	
22	Terminal block 5x (16 mm^2)	
23	Grommet for mains cable	upon request
24	Fan motor with blades and suction protection grid	
25	8 µF capacitor	
26	“RED” light (STB malfunction)	
27	“GREEN” light (max. heating capacity)	
28	“YELLOW” light (HT mode)	
29	Thermostat receptacle assembly	
30	6.3 A control fuse	
31	Speed controller adjusting knob	
32	Operating switch 1-0-2	
33	Speed control film	
35	Mains cable with plug	
36	M012 speed control	
37	Speed controller	
38	Safety thermostat STB	
39	Protective outlet grille	
40	STB retaining plate	
	Not illustrated	
	Thermostat plug	upon request
	Strapping plug	
	Operating hours counter	

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

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REMKO ELT-HT series

REMKO QUALITY WITH SYSTEMS

Air-Conditioning | Heating | New Energies

REMKO GmbH & Co. KG
Klima- und Wärmetechnik

Im Seelenkamp 12
32791 Lage

Telephone +49 (0) 5232 606-0
Telefax +49 (0) 5232 606-260

E-mail info@remko.de
URL www.remko.de

Hotline within Germany
+49 (0) 5232 606-0

Hotline International
+49 (0) 5232 606-130