Operating and installation instructions

REMKO VRS EN series

Universal heating units for oil and gas firing

VRS 25 EN, VRS 50 EN, VRS 75 EN, VRS 100 EN, VRS 130 EN, VRS 170 EN,
VRS 200 EN, VRS 270 EN, VRS 340 EN, VRS 440 EN, VRS 540 EN





2025-03 Edition 4, EN

Read the instructions prior to performing any task!

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CE

Carefully read this 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 VRS EN 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 result from the units if they are used improperly or not as intended by untrained personnel.

Please observe the following notes:

- The units may only be operated by persons that have been instructed in the operation of the equipment
- The units must be installed and operated in such a way that personnel are not endangered by radiant heat and no fires may occur
- The units must only be operated in areas where the units can be supplied with an adequate amount of air for combustion **If this cannot be ensured, a separate burner fresh air intake from outside must be installed.**
- The units may only be installed on a non-combustible surface
- The units may only be mounted on stable structures or ceilings made of non-flammable construction materials and with sufficient bearing capacity
- The fastening must take place with bearing anchors, which are to be fastened to the unit
- The units may not be installed or operated in potentially flammable or explosive environments
- The units must be installed away from traffic zones - also by crane, for example.
- A safety zone with a clearance of 1 m must be ensured
- The protective grid of the intake must always be kept free of dirt and loose objects
- Never insert foreign objects into the unit
- The units must not be exposed to direct jets of water e.g. **pressure washers, etc.**
- Never allow water to enter the inside of the units
- All electrical cables for the units must be protected against damage (including damage caused by animals)
- Portable fuel containers must only be set up and used in observance of the technical rules for combustible liquids "TRbF 20".
- This unit can be used by children above the age of 8, as well as by people with impaired physical, sensory or mental capabilities or a lack of experience and knowledge if they are supervised or have received instruction in the safe operation of the unit, and if they understand the associated potential hazards. Children must never play with the unit. Cleaning and user maintenance must not be carried out by unsupervised children.

⚠ CAUTION

The brand-dependent suitability of the forced-air burner must be ensured for the respective type of fan-assisted heater.

NOTE

Only type-approved forced-air oil burners in WLE design per DIN EN 298 and DIN EN 267 (oil) as well as DIN EN 676 (gas) should be used.

Unit description

The units are stationary, directly fired fan-assisted heaters (WLE) with heat exchanger and exhaust gas connection.
The units can be directly fired with EL heating oil, diesel fuel, liquid gas or natural gas.

The units must also preferably be operated with biomass fuels to ensure environmentally friendly unit operation. The following biofuels are permitted:
- Biodiesel B7/B10 (FAME content less than 10%);
- Hydrogenated vegetable oils (HVO; compliance with DIN EN 590 required)

The units are designed exclusively for operation with separate fan burners.

For the safe discharge of exhaust gases above the roof, the units must be connected to a suitable exhaust system.

The units are equipped as standard with 1-stage, low-noise/low-maintenance centrifugal fans and with attached and electrically wired switching and control devices.
The switching and control devices consist of a fan controller (TR), two temperature monitors for controlling the outlet temperature (TW1/TW2) and a safety temperature limiter (STB). In the following, these units are described as "controller unit".

The robust construction and careful processing of the units, which are made exclusively of high-quality materials, guarantee many years of trouble-free operation.
Further plus points are the simple, fast and cost-effective installation and service-friendliness of the units.

The units conform to the fundamental health and safety requirements of the appropriate EU stipulations, and are simple to operate.

NOTE

The units are not suitable for the heating of living spaces or the like.

Locations at which units are used

As directly fired fan-assisted heaters (WLE), the units deliver instant heat.
The units are designed exclusively for industrial or commercial use.
The units can be equipped with air ducts on the intake/outlet side if designed accordingly.

As a rule, there are hardly any restrictions on their use with regard to the installation location.

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

- Heating / temperature control of workshops
- Heating / temperature control of warehouses
- Heating / temperature control of event halls
- Heating / temperature control of exhibition halls
- Heating / temperature control of lightweight-construction halls
- Heating / temperature control of sales rooms
- Heating or frost protection in garden/agricultural outbuildings

CAUTION

The units are to be used exclusively for industrial and commercial applications. They are not intended for the heating of living spaces or the like.

REMKO VRS EN Series

Mode of operation

After connecting the unit to the mains, the phase indicator lamp H1 on the control box illuminates.

The fan burner is switched on by pressing the heating selector switch. The heating signal lamp built into the heating selector switch illuminates.

The combustion chamber with heat exchanger is now heated up.

When the setpoint temperature is reached, the supply air fan switches on automatically. The setpoint temperature is specified by the fan controller TR.

The ventilation signal lamp in the ventilation selector switch illuminates. When the setpoint temperature is reached, the fan cannot be switched off by the ventilation selector switch.

When operating with a room thermostat, this process is repeated automatically depending on the heating requirement.

The controller unit and the automatic burner execute all unit functions fully automatically and ensures reliable monitoring.

When the burner function is enabled by the controller unit and the room thermostat, the burner operating lamp on the control box illuminates.

After switching off the units via the heater selector switch or the room thermostats, the supply air fan runs to cool the combustion chamber and the heat exchanger for a certain time and then switches off automatically.

In the event of irregularities or if the flame is extinguished, the automatic burner switches off and interlocks the burner.
The burner fault lamp of the automatic burner relay and the red burner fault lamp on the control box illuminate. The units can only be restarted after manually resetting the automatic burner.

The safety temperature limiter (STB) interrupts the burner function in the event of overheating. In this case, the burner is disconnected from the mains, the fan continues to run for post-cooling. Manually resetting of the STB can only be implemented after the unit has have cooled down.

The fan motor is monitored by a thermal cut-out (TMC). If this is triggered, the complete circuit of the burner is also interrupted. In this case, the motor indicator lamp on the control box extinguishes.

⚠ CAUTION

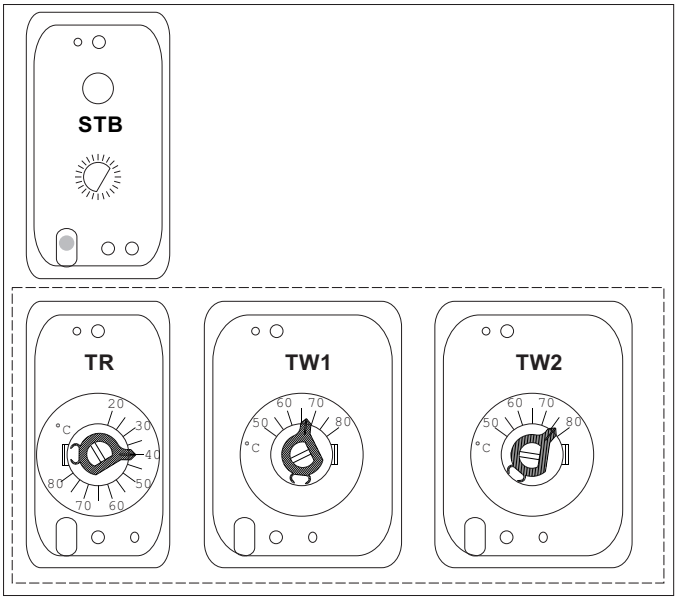
The units may never be disconnected from the mains prior to the completion of the follow-up cooling phase (except in emergencies).

NOTE

Before resetting the automatic burner relay or safety thermal cut-out, first always determine the causes of the fault shutdown.

Controller unit per DIN EN 14597

Oil-fired or gas-fired warm air heaters must be equipped with intrinsically safe control devices in accordance with DIN EN 14597.



The 4 functions of the controller unit:

1. **Fan controller (TR)**
   Controls the switching on and off of the fan. The switching point is set via the "setting lever TR".
   Setpoint value approx. 40°C

2. **Temperature monitor for the burner (TW 2)**
   The temperature monitor limits the discharge temperature.
   The switching point is set via the "setting lever TW 2".
   Setpoint value approx. 75 – 80°C

3. **Temperature switch for the second stage of the burner (TW 1)**
   The temperature switch controls the stage of the burner.
   If the set temperature is exceeded, the burner is switched to the lower stage (partial load operation). The switching point is set via the "setting lever TW1". Setpoint approx. 10-15 K below TW2

4. **Safety thermal cut-out (STB)**
   Takes over the control function of the temperature monitor.
   Switching point fixed at 100°C.
   A restart interlock prevents the burner from restarting after tripping. The reset button (RESET) must be operated manually from the outside with the housing cover closed.

⚠ CAUTION

In order to prevent a renewed exceedance of the triggering temperature the operating conditions of the unit should be checked before resetting the STB.

NOTE

When replacing the controller unit, only an original REMKO spare part may be used!

Thecontroller unit has a probe self-monitoring and is cold-proof down to -20°C. The unit switches off below -20°C, but switches on again when the temperature rises and is then fully functional.
In the event of the probe or the capillary tube being damaged, as well as if a temperature of approx. 220°C is reached, the filling medium will be emptied and the controller unit will switch off for safety. The controller unit is no longer fully functional and must be replaced.

To replace the controller unit, observe the following instructions, among others:

- The capillary tubes must not be damaged or kinked during installation
- Bends may only be made on the capillary tube and not on the probe
- For safe operation of the unit, the probes must always be exposed in the hot air flow
- The probes must always be free of dust and dirt
- Capillary tubes and probes must not show any damage
- The probes must not be in contact with the combustion chamber

⚠ CAUTION

Careful and professional installation or assembly must be ensured.

⚠ CAUTION

Safety devices may not be bypassed or disabled during unit operation!

Installation instructions

With the installation of the units, the local and country-specific regulations (LBO) and combustion plant order (FeuVO) of the respective state must be observed.

The first enactment of the (German) Federal Emission Control Act (1st BImSchG) and the statutory provisions of the ordinance governing small combustion plants (1st BImSchV) must also be applied.

The fuel supply must be installed in accordance with DIN 4755 for oil-fired warm air heaters, DVGW Code of Practice G 600 for gas-fired warm air heaters and TRF for liquid gas.

However, fan-assisted heaters in particular are excluded from some points.

NOTE

Only type-approved forced-air oil burners in WLE design (per DIN EN 267) or gas burners (per DIN EN 676) should be used.

CAUTION

The units must be set up and installed in such a way that they are easily accessible for monitoring, repair and maintenance work.

CAUTION

Overpressure and underpressure in the installation area should be avoided as this will inevitably lead to combustion-related malfunctions.

Selection of the installation location

With determination of the installation location, the requirements must be coordinated in regard to:

1. Fire protection and operational hazard.

2. Function:
   Space heating free-blowing or with duct system.
   Observe pressure conditions in the installation room.

3. Operational issues:
   Heat requirement, air volume flow, recirculation or fresh air operation, humidity, air distribution, room temperature, space requirement.

4. Facility for connecting to an exhaust gas system.

Oil and gas-fired fan-assisted heaters (also with a nominal heat output of more than 50 kW) may generally be installed outside of heating rooms in compliance with the FeuVo.

The building authority guideline for the "Erection and installation of combustion appliances" must be observed.

For rooms in which highly flammable substances or mixtures are processed, stored or produced in such quantities that ignition creates hazards, exceptions may be permitted if suitable measures are taken to ensure that the substances or mixtures cannot be ignited by the combustion appliance.

Combustion air supply

Sufficient supply of combustion air must be generally ensured by the respective building authority requirements.

Excerpts from the M-FeuVO (may differ slightly per federal state).

(1) For room-air dependent combustion appliances with a total nominal heat output of up to 35 kW, the combustion air supply shall be deemed to be verified if the combustion appliances are installed in a room that:
1. Has at least one door to the outside or a window that can be opened (rooms with connection to the outside) and a room volume of at least 4 m^3 per kW total nominal heat output or
2 . Has an opening leading to the outside with a clear cross-section of at least 150 cm^2 or two openings of 75 cm^2 each or pipes leading to the outside with cross-sections equivalent in terms of flow.

(2) For room-air dependent combustion appliances with a total nominal heat output of more than 35 kW and not more than 50 kW, the combustion air supply shall be deemed to be verified if the combustion appliances are installed in rooms that meet the requirements per paragraph 1 No. 2.

(3) For room-air dependent combustion appliances with a total nominal heat output of more than 50 kW, the combustion air supply shall be deemed to be verified,

if the units are installed in rooms that have an opening or pipe leading into the open air. The cross-section of the opening must be at least 150 cm^2 and 2 cm^2 more for each kW of nominal heat output exceeding 50 kW. The pipes must be dimensioned to be equivalent in terms of flow. The required cross-section may be divided between a maximum of two openings or lines.

(4) Combustion air openings and lines must not be closed or blocked unless special safety devices ensure that the combustion appliance can only be operated when the closure is open. The required cross-section must not be narrowed by the closure or grille.

(5) By way of derogation from paragraphs 1 to 3, a sufficient combustion air supply may be demonstrated in another way for room-air-dependent combustion appliances. For example through: A continuous pipe of sufficient cross-section connected to the burner or its casing to the outside. This cross-section must be adapted to the available suction power of the burner and the line resistances (including the intake guard) so that proper combustion is ensured.

Set-up

- The units must then only be installed and operated in areas where the units can be supplied with an adequate amount of air for the combustion and the exhaust gases can be routed to the outside via a suitable exhaust gas system
- Room-air dependent units may only be installed in rooms or buildings from which air is extracted by means of fans, such as ventilation or exhaust air systems, etc., if: 1. Simultaneous operation of the unit and the air extracting system(s) is prevented by safety devices, 2. The exhaust gas routing is monitored by special safety devices, 3. The exhaust gases from the unit are discharged via the air extraction system(s) or 4. The design or dimensioning of the system ensures that no dangerous negative pressure can occur
- The units must be set down stably on a non-combustible surface away from traffic zones - also by crane, for example
- The units must be installed and operated in such a way that personnel are not endangered by exhaust gases and radiant heat and no fires may occur
- The equipment must be installed in such a way that it does not cause any hazards or unacceptable nuisances, e.g. due to vibrations, oscillations or noise
- The units must be set up and installed in such a way that they are easily accessible for repair and maintenance work
- Operating elements whose improper operation can lead to dangerous operating conditions must be protected against unauthorised operation if they are generally accessible
- Direct intake of outside air is not recommended with the standard combustion chamber. When installing mixed air dampers (accessories), they must be coupled in opposite directions. The proportion of fresh air supplied should not exceed 30%
- The units may not be installed or operated in potentially flammable or explosive environments or areas

NOTE

The units are suitable for use with accessories on the intake/ outlet side.

CAUTION

The standard version of the units is not suitable for exclusive use as supply air units.

Mounting on the ground

The units must be set down stably on a non-combustible surface away from traffic zones - by crane, for example.

To protect the units from damage in commercial premises, for unhindered maintenance and repair on the unit and burner, and for unhindered air intake and exhaust, a protective zone of 1 m around the unit must be kept clear.

This protection zone shall be marked by a sign with the following inscription:

Protection zone
Keep a distance of 1 m

Fixed demarcation is recommended for frequently used areas.

Wall installation

The wall intended for installation must also consist of non-flammable materials. Its load capacity must be checked (reinforcements must be installed when necessary).

The brackets must be sufficiently anchored to the wall and the units must be securely fastened to them.

Sufficient clearances for maintenance of the heat exchanger, burner, fan and flue gas system must be provided.

- It must be possible to actuate control elements for the units and fuel supply from the ground
- If auxiliary equipment is required for monitoring, maintenance and repair work, this must be provided by the operator

Mounting hanging units

The units may only be mounted on stable structures or ceilings made of non-flammable construction materials and with sufficient bearing capacity.

The fastening must take place with suitable anchors, which are to be securely fastened to the unit.

The requirements listed in the "Wall mounting" section should also be observed.

Room heating

Fan-assisted heaters may only be operated in closed rooms and halls via a room thermostat.

Fuel supply

The fuel supply must be installed in accordance with DIN 4755 for oil-fired warm air heaters, DVGW Code of Practice G 600 for gas-fired warm air heaters and TRF for liquid gas.

Particularly in the case of heating oil pipes, care must be taken to ensure that their cross-section is sufficiently large.
The suction lift, the total line resistances and increased viscosity at lower temperatures must be taken into account in the determination.
Appropriate separate oil production units may need to be provided.

The lines must be laid in such a way that they can be easily bled and are protected against corrosion and mechanical damage.

⚠ CAUTION

The measured pressure of the suction pipe should not exceed minus 0.3 bar and must not exceed minus 0.4 bar.

Electrical installation

⚠ CAUTION

The electrical connection of the unit must be carried out by authorised specialists in accordance with DIN EN 60335-1 and DIN EN 50156-1.

Ensure that an impermissible undervoltage due to a mains overload is not possible, even if this is only temporary.

For the connection of the units, use cables with cross-sections that do not cause an impermissible drop in voltage even when the fan starts up.

When connecting the units in 400 V version, ensure the correct phase sequence of the rotating field (right).
An incorrectly made connection can lead to the fan turning in the wrong direction.

An emergency switch must be fitted in an easily accessible place in the room where the unit is installed for units with a rated heat power of 50 kW or more.

⚠ CAUTION

All switches, if generally accessible, must be protected against damage and unauthorised use!

Exhaust gas ducting

Annual inspection and maintenance

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.

For reasons of operational readiness, functional safety, economic efficiency and compliance with the emission limits, the operator must have the units inspected at least once a year by a representative of the installer company or another expert.
For the measurement of the combustion values, the legal provisions of the BImSchV. shall be applied.

If defects are found, the operator must be informed that they must have components repaired or replaced immediately.

The following applies to this:
Repair work on the limiting devices, the self-regulating devices and the flame monitoring devices as well as on other safety devices may only be carried out on the individual device by the respective manufacturer or their authorised representative.

NOTE

We recommend concluding a maintenance contract with an authorised specialist company for regular maintenance and cleaning work.

As a rule, the units must be connected to a suitable and type-approved exhaust gas system.

NOTE

The construction of the flue gas system is in any case subject to approval.

Exhaust systems are structural installations in or on buildings that are exclusively intended to safely discharge exhaust gases from combustion appliances via the roof.

For the planning and construction of flue gas systems, the following are of particular importance:

- The respective combustion systems ordinance [FeuVo]
- The respective state building code [LBO]
- DIN 18160 Part 1, Planning and execution
- DIN EN 13384 Part 1, Thermal and fluidic calculation methods
- Technical rules for gas installation DVGW-TRGI 2008

With the planning and installation of exhaust gas systems, the following points must be observed:

- The installation and assembly of the flue gas system must be carried out professionally and in accordance with the applicable regulations
- The dimensions of the flue pipe must be designed in accordance with the unit power rating and the structural conditions or requirements
- Exhaust systems must be dimensioned in terms of clear cross-section and height in such a way that the exhaust gases are discharged into the open air in all intended operating conditions and no dangerous positive pressure can occur with respect to rooms
- The mouths of exhaust systems must project at least 40 cm above the ridge or be at least 1 m away from the roof surface
- If dynamic pressures are to be expected, e.g. due to downdrafts or from neighbouring buildings, the chimney head must be designed accordingly
- In the case of roof or wall ducts, the flue gas system must be routed through a pipe sleeve or a shaft to allow free expansion of the flue gas pipe when it heats up
- The unit connection must be tight and secured against unintentional loosening by means of a rivet or screw
- Horizontal flue gas sections should preferably be kept as short as possible
- A resealable measuring opening at a distance of 2 x flue pipe D(Ø) behind the unit connection must be provided

CAUTION

There must be no counter pressure arising from incorrect installation of the exhaust gas ducting under any circumstances.

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Application examples:

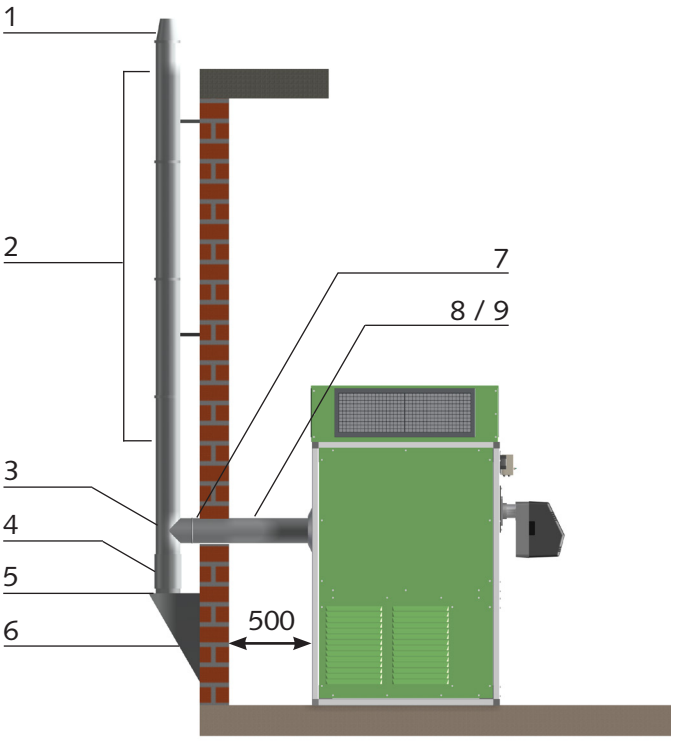
REMKO ASD exhaust system
Stainless steel, double-walled, outdoor mounting

REMKO ASE exhaust system
Stainless steel, single-walled, indoor mounting

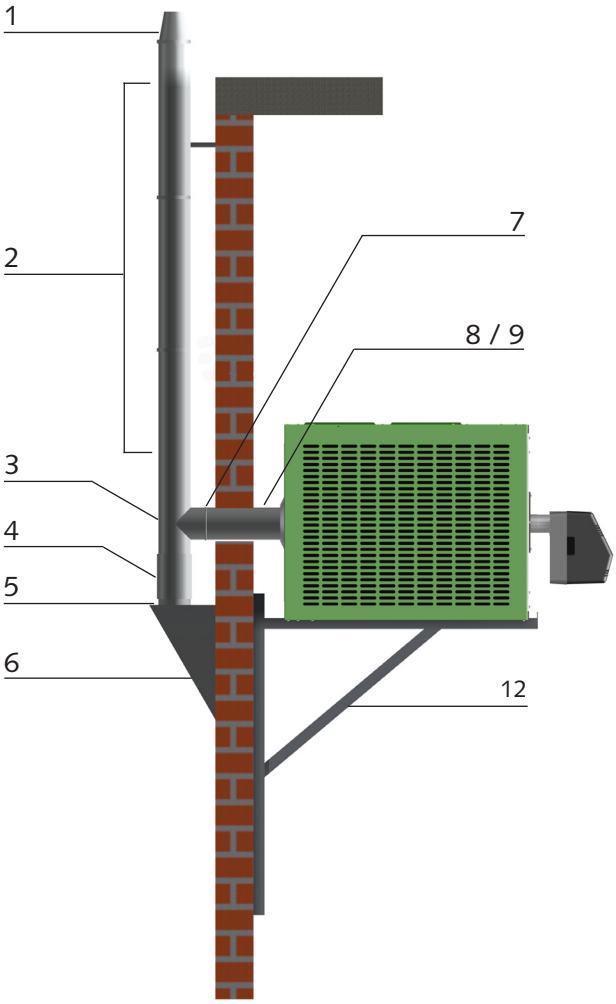
The exhaust gas system components are connected very simply through mating, and are secured with clamps.

All REMKO stainless steel flue systems are generally approved by the institute for construction technology [Institut für Bautechnik].

Example upright unit installation



Example horizontal unit installation



Legend:

1 = Outlet element,	AS-ME-D
2 = Chimney tube	AS-1000-D
3 = T-joint	AS-T90-D
4 = Cleaning component	AS-RT-D
5 = Base plate	AS-GI-D
6 = Wall bracket	AS-WK-D
7 = Junction piece	AS-ÜGI-D
8 = Chimney tube	AS-1000-E
9 = Chimney tube	AS-500-E
12 = Wall bracket	

Additional specifications for fresh air and flue gas ducting

The following applies to all models in the VRS EN range:

B_1-air heater:	no
C_2-air heater:	no
C_4-air heater:	no

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

Installation and assembly

When installing the units, the regulations and ordinances applicable to the respective federal state must always be observed.

It should also be noted:

⚠ CAUTION

The transport pallet or timbers must be removed before installation.

- The units must be installed in a stable position
- The units must be placed on the floor in a safe and stress-free manner, preferably on a separate vibration-damped base
- Make sure that the fan power (nominal pressure) is adapted to the respective air-side resistances **Measure nominal current!**
- Check that the inlet and outlet are free
- The supply of sufficient combustion air must be ensured
- If overpressure or underpressure or significant air impurities occur in the installation room, a separate burner fresh air intake (accessory) must be installed
- If significant air pollution is to be expected in the installation room, the recirculation air drawn in should be drawn in via appropriate filters (accessories) **The resistance on the suction side must be observed and the fan power must be adjusted accordingly!**

NOTE

The air intake may only take place via the intake openings provided.
If the bottom of the unit is not designed as an intake variant, it must always be closed to prevent false air intake.

Exhaust gas connection

The design must comply with DIN 18160 Part 1, the dimensions with DIN EN 13384 Part 1.

- Proper exhaust gas routing must be ensured
- The flue gas connection must be carried out professionally in accordance with the applicable regulations
- The flue gas connection may only be made to a previously approved flue gas system

Electrical connection

The electrical connection of the unit must be carried out by authorised specialists in accordance with DIN EN 60335-1 and DIN EN 50156-1.

- An emergency switch must be fitted in an easily accessible place on units with a nominal heat power rating of more than 50 kW
- The emergency switch must be protected against unauthorised operation

NOTE

All connection terminals of the electrical wiring are to be checked for firm seating and tightened as necessary.

Room thermostat connection

The room thermostat (accessory) must be placed in a convenient location for temperature control.

The thermostat probe must not be located directly in the warm/cold air flow and must not be mounted directly on a cold base.

The same procedure must be followed when installing an automatic day/night temperature control or other temperature controls available as accessories.

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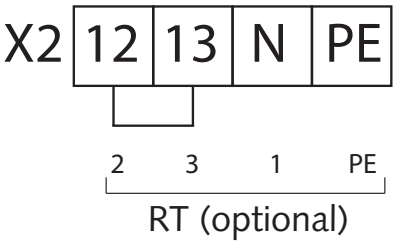
A room thermostat or a day/night temperature control is connected to the corresponding terminal block X2 in the control box for these versions.

The connection must be made as follows:

Remove the factory cable bridge and connect the terminals with the corresponding wires of the respective control system.

The respective separate connection diagrams of the control system and the unit must be observed!

Terminal block **X2**



Burner installation

The forced-air burner is mounted on the front of the unit with a clamping flange.
Observe the following points:

- Only type-tested forced-air oil burners per DIN EN 267 in WLE design or forced-air gas burners (per DIN EN 676) may be used
- It is essential to set the burner to the full heat load of the unit
- The combustion chamber must not be underloaded (increased condensate formation)
- The separate operating instructions for the burner must be observed
- The usability of the forced-air burner for the unit must be ensured (WLE version)

Heating oil connection

Sufficient and professional fuel supply must be ensured.

- The suction pipe in the heating oil tank must be fitted with a foot valve as a matter of principle
- Even at low outside temperatures it is necessary to ensure that there is an adequate supply of heating oil that is capable of flowing. Depending on the quality of the heating oil, paraffin formation can start from approx. 5°C.
  Appropriate measures must be taken to avoid this!

Gas connection

Adequate gas pressure and quantity of gas, in accordance with unit performance, must be continuously available during unit operation.

- Installation of the gas connection should be performed only by authorised specialists
- The DVGW Code of Practice G 600 for gas-fired fan-assisted heaters and the TRF for liquid gas must be observed
- Gas pressure regulators and shut-off valves must be provided by the customer as a matter of principle
- The cross-section of the pipework should be determined in accordance with the connection value of the unit, the total pipework resistance and the amount of gas supply pressure

NOTE

Before initial commissioning, the gas supply line must be thoroughly cleaned and checked for leaks!

CAUTION

Assembly, set-up and maintenance work on the gas supply may only be carried out by specialist personnel authorised by the gas supply company!

Commissioning

Commissioning the fan motor

Testing the drive

1. Check the fastening screws of the entire drive are firmly seated.

2. Check the pretension of the drive belt(s).

⚠ CAUTION

The correct rotating direction of the fan must be checked.

Measuring the current consumption

1. To avoid faulty measurements, open the grilles in the air duct or the exhaust hood.
   All intake or blanking plates provided are to be mounted on the unit.

2. Check the mains voltage for correctness.

3. Carry out the necessary measurements and adjust the settings if necessary.

NOTE

To exclude measurement errors, each phase should be measured separately.

- **Direct start-up**
  The measured rated current must not exceed the value specified on the motor's name plate.

- **Y/Δ – Start-up**
  The measured rated current must not exceed the value indicated on the motor's name plate.

Motor thermal cut-out (TMC)

To protect the fan motor, a thermal cut-out is installed in the motor winding. If too much heat is generated inside the motor, the circuit is interrupted.
The motor indicator lamp extinguishes.

Current consumption too high

If the fan motor draws too much current despite proper electrical connection and sufficient mains voltage, the air-side resistors (intake and outlet side) must be checked for correct dimensioning. Implement appropriate measures to remedy the situation

NOTE

The rated current of the drive motor must be multiplied by a factor of 0.58.

Initial commissioning

The initial commissioning of the units and their forced-air burners must be carried out by the manufacturer or another authorised expert appointed by him. In doing so, all regulating, control and safety equipment must be checked for correct function and correct settings.

- The commissioning of oil and gas-fired units must always be carried out by authorised specialist personnel

- All screws and nuts of the fan and burner fastening must be checked for firm seating

- All air outlet grilles must be opened and adjusted if necessary

- The settings and function of the controller unit are to be checked

- Switch on the local main switch or fuses/breakers

- Set the room thermostat higher than the existing room temperature

- Open the fuel supply and switch the "Heating" selector switch.

- The fuel oil or gas flow rate must be set in accordance with the heat load of the unit
  See unit name plate!

- The burner must be set to optimum values in accordance with the manufacturer's specifications, but at least to those of the federal emission control act
- A measurement report must be generated and handed over to the operator for safekeeping
- The operator must be familiarised with the operation of the system
- The specialist contractor declarationand the contractor certificate of the respective installation company carrying out the work must be submitted to the responsible authorities.

NOTE

If the units are not set to their nominal heat load (see name plate) or if the design is too large for the required heat demand, the burners operate in cycle mode.

Cycle operation can significantly reduce the efficiency of the equipment and the life of the components.

CAUTION

Before commissioning, the operating instructions for the burner must be observed! For setting values, please refer to the respective instructions!

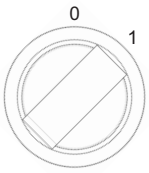
Heating mode

The units operate fully automatically and in accordance with the room temperature.

1. Switch on the local main switch or fuse(s)/breaker(s).
2. Open the fuel supply.
3. Set the desired temperature on the room thermostat.



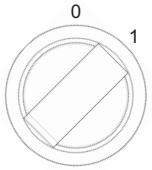
4. Switch the "Heating" selector switch.



It should be noted that the fan burner switches on immediately when heat is required, but the supply air fan is only switched on automatically after the setpoint temperature has been reached. **This prevents the unwanted blowing out of cold air.**

Ventilation

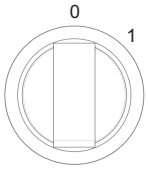
1. Turn the "Ventilate" selector switch.



In this switch position, the supply air fan runs permanently.
The units can be used for air recirculation or ventilation purposes.
Thermostatic control is not possible.

Shutdown

Move the two selector switches to the “0” position.



The supply air fan continues to run to cool down the heat exchanger and may start several times until it is finally switched off.

CAUTION

The unit may never be switched off via the main switch or an emergency switch prior to the completion of the cool-down phase (except in emergencies).

For longer periods of inactivity, the units should be disconnected from the mains and the fuel supply shut off.

Care and maintenance

For reasons of operational readiness, functional safety, economic efficiency and compliance with emission limits, the operator shall have the installation inspected by an authorised expert at least once a year.

⚠ CAUTION

Prior to maintenance or repair work, the unit must be disconnected from the mains power supply.

⚠ CAUTION

It is not sufficient to switch off the unit only via the operating switch!

- The entire unit, including the heat exchanger, combustion chamber and fan burner, must be cleaned of adherent dust or dirt
- The combustion residues in the combustion chamber and in the heat exchanger are to be removed by appropriate means
- The V-belt tension and the motor fastening must be checked regularly
- Wear parts such as flue gas brakes, seals, oil filter insert, oil nozzles etc. must be checked and replaced if necessary
- It is essential to follow the maintenance instructions for the separate forced-air burners.
- The restrictions on exhaust gas losses per §1 paragraph 1 of the ordinance on small furnace systems (1st. BImSchV must be observed
- Proof of the work carried out by authorised specialist personnel, together with the usual logs, is therefore mandatory

⚠ CAUTION

Adjustment and maintenance work on the unit and forced-air burner may only be carried out by authorised and qualified technicians!

NOTE

We recommend concluding a maintenance contract with an authorised specialist company for regular maintenance and cleaning work.

⚠ CAUTION

If the operational cleaning and burner adjustment intervals are not adhered to, all warranty claims will be invalidated!

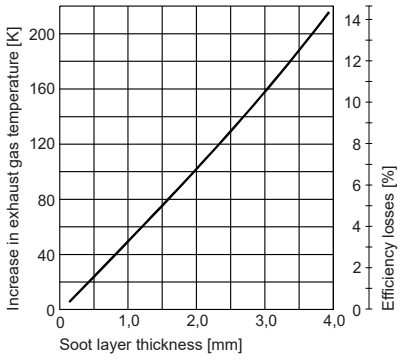
NOTE

Contact the unit manufacturer before you replace the parts with parts or components other than those listed in the spare parts list.

Soot deposits

Even small deposits of soot on the heat transfer surfaces of the combustion chamber and heat exchanger will insulate the heat output.
This results in a deterioration of the combustion efficiency.

A soot layer just 1 mm thick can cause an exhaust gas temperature increase of approx. 50 K (see diagram).



As can be seen from the above, optimal burner adjustment and regular maintenance are indispensable for maintaining efficiency and emission limits.

Cleaning the combustion chamber and heat exchanger

1. Disconnect the unit from the power supply.

⚠ CAUTION

It is not sufficient to switch off the unit only via the operating switch!

2. Shut off the fuel supply .

Dismantle the following components:

1. The fan burner.
2. Burner plate ❶ with burner flange.
3. Front ❷ cladding panel(s).
4. A lateral ❸ cladding panel (left or right, depending on the structural conditions).
5. The 2 front ❹ inspection covers.
6. The side ❺ access panel.
7. Pull the flue gas brakes ❻ out of the heat exchanger tubes and clean them or replace them if damaged.
   Note the arrangement of the exchanger tubes!
8. Clean the heat exchanger tubes ❼ with suitable cleaning agents to remove adherent combustion residues.
9. Remove combustion residues from the front and rear collection boxes ❽ with a suitable vacuum cleaner.
10. The combustion residues in the combustion chamber must also be removed through the burner opening with a suitable vacuum cleaner.

    A special boiler cleaning set for the REMKO industrial vacuum cleaner is available as an accessory.
11. After the cleaning work is complete all parts should be carefully re-fitted in reverse order.

⚠ CAUTION

The burner and all control devices must be checked for correct functioning.

12. Ensure that the exchanger tubes are correctly seated and that all seals are in good condition.

    Damaged or deformed seals must be replaced.
13. Burner maintenance must also be carried out in accordance with the burner's separate operating instructions.

NOTE

The restrictions on exhaust gas losses per §10 of the ordinance on small furnace systems (1st. BImSchV) must be observed.

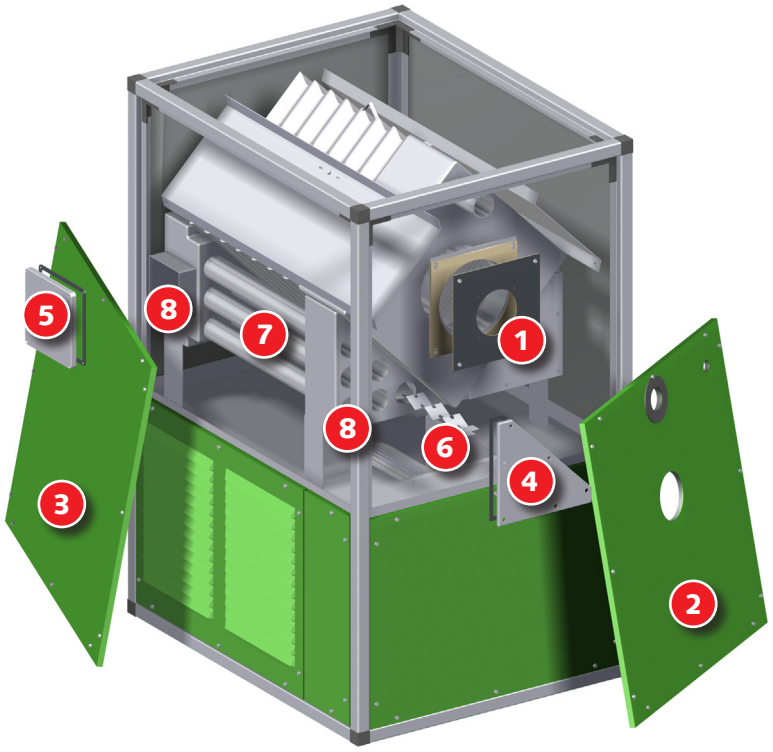


Fig. VRS 50 E - upright without burner

Troubleshooting

The unit does not start

- Check the customer-provided mains power supply
- Check the fuses in the switching cabinet. The phase indicator lamp must illuminate
- Move the "Heating" selector switch to the "I" position
- Check whether the "Burner" indicator light on the control box is illuminated
- Check the thermostat connection or, if necessary, the cables of the room thermostat
- Check the setting of the room thermostat.
  The temperature set must be higher than the current room temperature
- Check whether the safety thermal cut-out (STB) has tripped

⚠ CAUTION

Prior to maintenance or repair work, the unit must be disconnected from the mains power supply.

⚠ CAUTION

Before resetting safety equipment, the cause of the trigger must be identified and rectified.

NOTE

Safety devices may not be bypassed or disabled during operation of the unit!

The burner does not start

- Check the oil filter(s) for contamination. Replace contaminated oil filter(s)
- Check whether the shut-off cock on the oil filter is open
- Check the fuel tank for sufficient fuel level
- Check the fuel and the filter for paraffin precipitation.
  Paraffin precipitation is possible as soon as the temperature drops below 5°C!
- Check the oil hoses for damage and leaks
  Air may be sucked in!
- Check the safety thermal cut-out (STB)
- Check the temperature monitors (TW1/TW2)
- Check the capillary tubes and probes of the controller unit for damage and correct positioning of the probes
- Check whether the fault lamp of the automatic burner control unit illuminates
- If the fault lamp illuminates, unlock the automatic burner by pressing the fault button.
  The fault lamp extinguishes and the burner attempts to start!

⚠ CAUTION

If the burner should carry out a fault shut-down once again after the start phase, then another reset should be carried out after a waiting period of 5 minutes has passed.

Further reset procedures must be prohibited as there is a danger of deflagration.

The supply air fan does not start

Move the "Ventilate" selector switch to the "II" position.
The supply air fan should now start!

If not:

- Check the customer-provided mains power supply
- Check the fan and drive can move freely
- Check the fan drive V-belt
- Check the electrical cables on the fan motor for damage
- Check the fan to see if it was overloaded and the motor thermal cut-out tripped
- Check the operating capacitor of the fan of the 230 V version

NOTE

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

CAUTION

Repair work on the electrical installation and on the burner must be performed exclusively by authorised specialists for safety reasons.

CAUTION

Adjustment and maintenance work on the unit and forced-air burner may only be carried out by authorised and qualified technicians!

Possible causes of malfunction:

- The units were not able to cool down because the electrical connection was interrupted. Even a brief interruption of the power supply can cause the STB to trip
- Too high an outlet temperature due to incorrectly implemented air ducting or air louvre settings
- The fan was overloaded and the motor thermal cut-out has tripped
- The V-belt for the fan drive is loose or defective
- The air inlet or air outlet is not free
- Check the temperature controller (TR) for function and correct setting
- Check the temperature monitors (TW1/TW2) for function and correct setting. TW1 should be set at least 10K below the setting value of TW2. Otherwise, the unit may only operate in partial load mode.

Maintenance protocol

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 blades cleaned																				
V-belt tension checked																				
V-belt replaced																				
Combustion chamber cleaned																				
Heat exchanger cleaned																				
Exhaust gas suppressors replaced																				
Inspection cover seals replaced																				
Burner flange gasket replaced																				
Fuel filter replaced																				
Safety equipment checked																				
Unit checked for damage																				
All fastening screws checked																				
Electrical safety check																				
Burner maintenance *)																				
Test run																				

*) Have the forced-air oil or gas burner maintained and adjusted only by authorised specialist personnel and in accordance with the legal provisions (1st BImSchV.). An appropriate measurement log must be created and retained.

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

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

Intended use

The units are designed exclusively for heating and ventilation purposes in industrial or commercial use (not for living space heating in private use) on the basis of their structural design and equipment.

The unit design allows the use of air ducts on the intake and outlet side or unit accessories with the appropriate fan and motor design.

In the standard version, the units are not designed for exclusive use as supply air units.

The units must only be operated by appropriately instructed personnel.

The manufacturer shall not be liable for damage resulting from non-observance of the manufacturer's specifications, the respective local legal requirements or from unauthorised alterations to the units.

⚠ CAUTION

Copyright
Redistribution, even in part, or use of this documentation for purposes other than intended without the written authorisation of
REMKO GmbH & Co. KG.

Customer service and guarantee

As a prerequisite for any guarantee claims to be considered, it is essential that the ordering party or its representative completes and returns 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 specialist personnel.

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.

Environmental protection and recycling

Disposal of packaging

When disposing of packaging material, please consider our environment.
Our units are carefully packed and delivered in stable transport packaging and, if applicable, on a wooden pallet.
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.

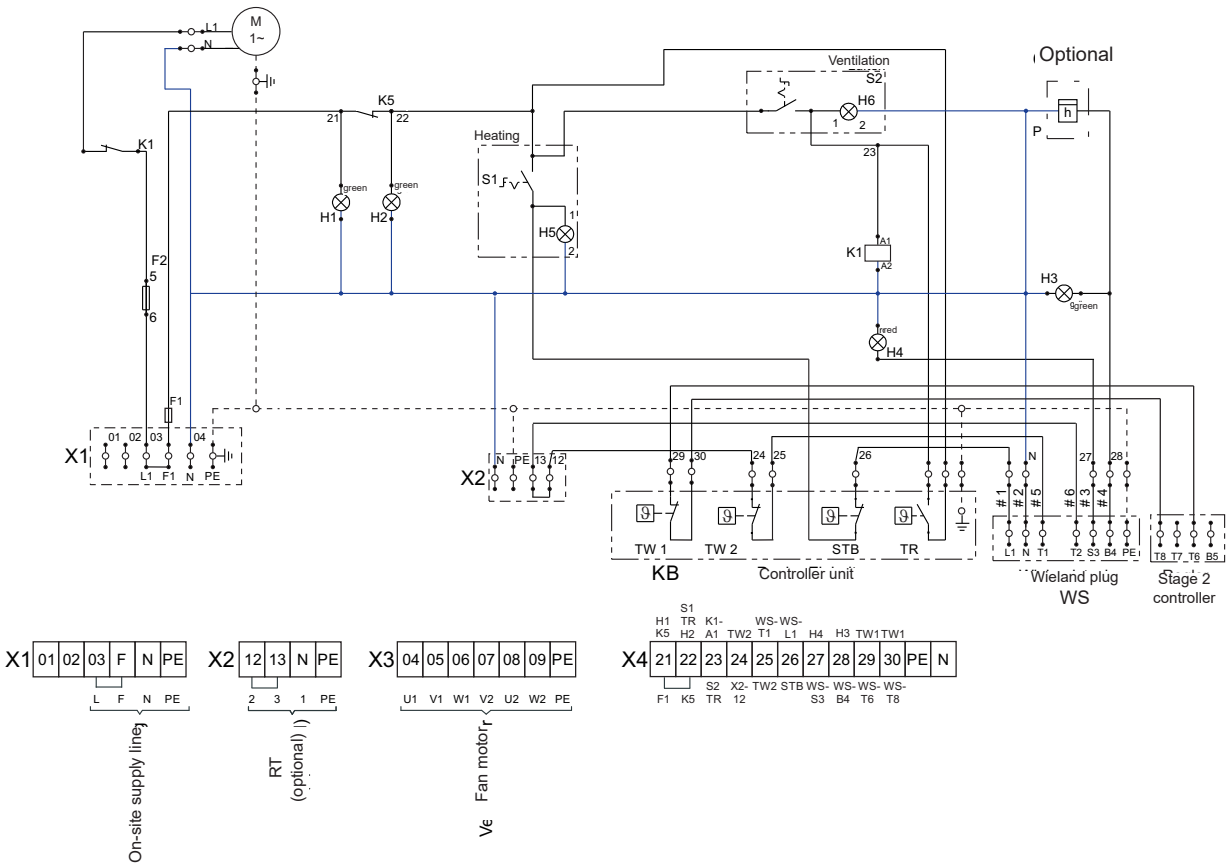
You also contribute to environmental protection by ensuring that your old equipment is only disposed of in an environment friendly manner.

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



Electrical wiring diagram 230 V

VRS 25-50 EN



Legend:

F1 = Fuse
F2 = Fuse block (fan motor)
H1 = Phase indicator lamp
H2 = Motor indicator lamp
H3 = Burner operating lamp
H4 = Burner fault lamp
H5 = Heating indicator lamp (in the switch)
H6 = Ventilate indicator lamp (in the switch)
K1 = Fan protection (mains)
K5 = Motor protection
(only with 400V version)

KB = Controller unit
M = Fan motor
P = Operating hours counter (optional)
RT = Room thermostat or regulation (optional)
S1 = Heating selector switch
S2 = Ventilate selector switch
STB = Safety thermal cut-out
TR = Fan controller
TW = Temperature monitoring device
X1 = Connection terminals supply line
X2 = Connection terminals room thermostat
X3 = Fan connection terminals
X4 = Fan-assisted heater connection terminals

⚠ CAUTION

The electrical unit connection must only be carried out by authorised specialist personnel in accordance with the specifications of the local power supplier.

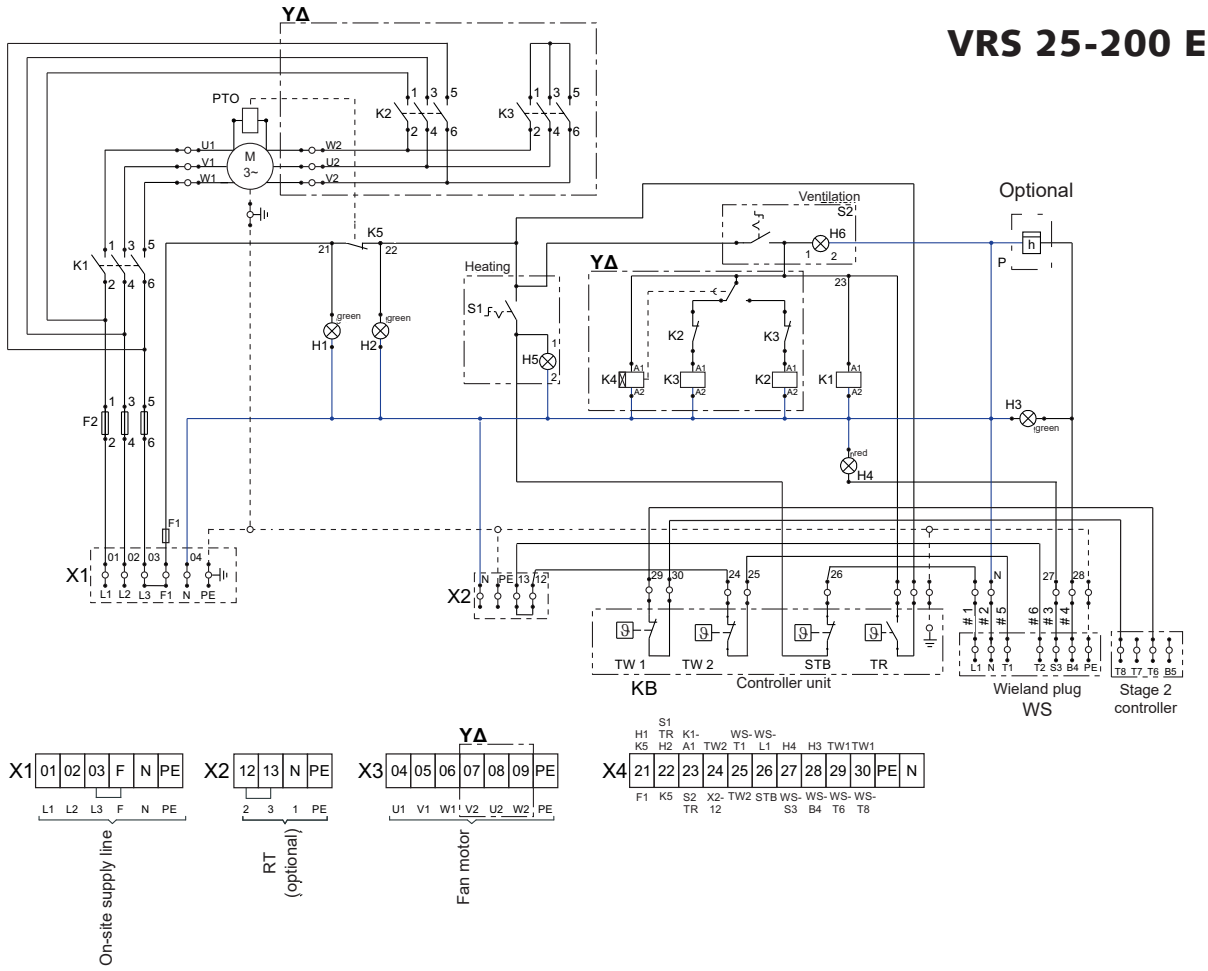
An emergency switch should be fitted in an easily accessible place in the installation room (however, outside any possible hazard zone).
This must be protected against damage and unauthorised use!

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

REMKO VRS EN Series

Electrical wiring diagram 400 V

VRS 25-200 EN



Legend:

F1 = Fuse
F2 = Fuse block (fan motor)
H1 = Phase indicator lamp
H2 = Motor indicator lamp
H3 = Burner operating lamp
H4 = Burner fault lamp
H5 = Heating indicator lamp (in the switch)
H6 = Ventilate indicator lamp (in the switch)
K1 = Fan protection (mains)
K2 = Fan protection (delta)
K3 = Fan protection (star)
K4 = Time relay
K5 = Motor protection

KB = Controller unit
M = Fan motor
P = Operating hours counter (optional)
PTO = Thermal cut-out (in the motor)
RT = Room thermostat or regulation (optional)
S1 = Heating selector switch
S2 = Ventilate selector switch
STB = Safety thermal cut-out
TR = Fan controller
TW = Temperature monitoring device
X1 = Connection terminals supply line
X2 = Connection terminals room thermostat
X3 = Fan connection terminals
X4 = Fan-assisted heater connection terminals

YΔ: Star-delta starting circuit for motors from 3.0 kW

⚠ CAUTION

The electrical unit connection must only be carried out by authorised specialist personnel in accordance with the specifications of the local power supplier.

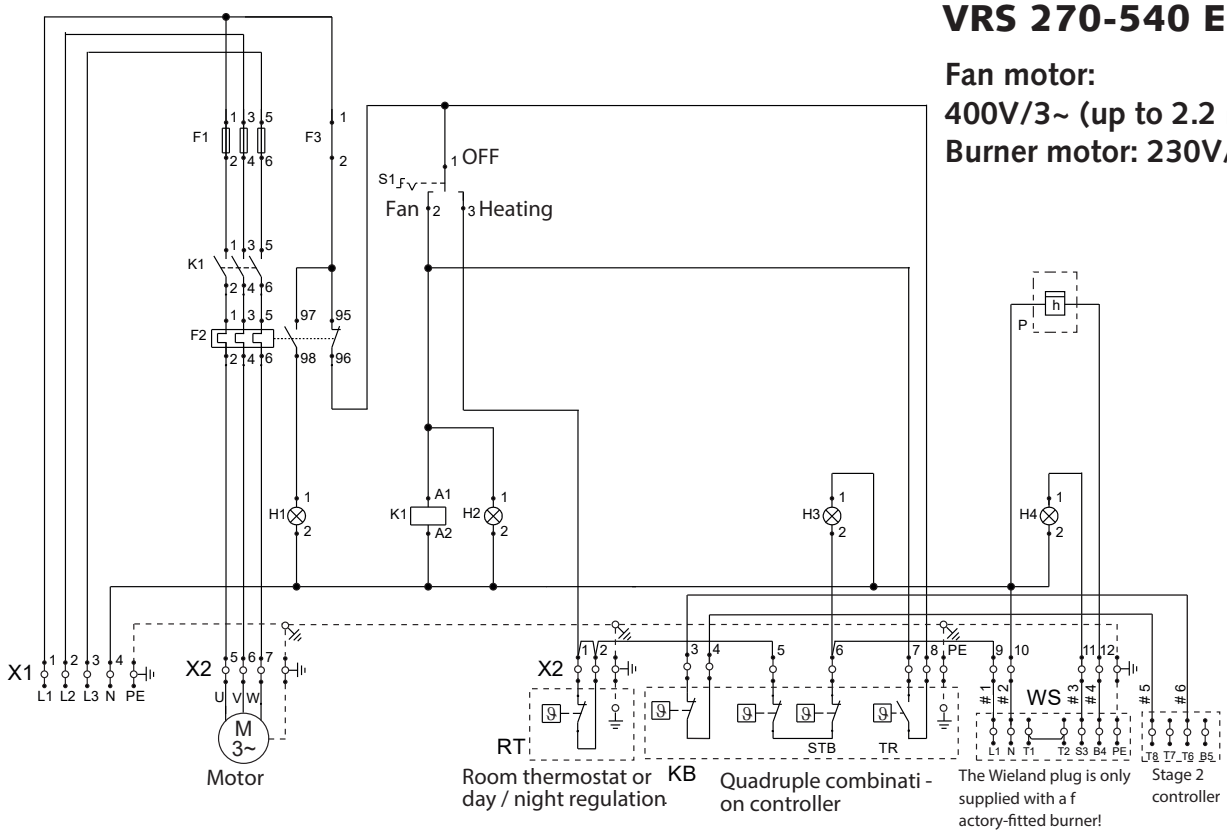
An emergency switch should be fitted in an easily accessible place in the installation room (however, outside any possible hazard zone).
This must be protected against damage and unauthorised use!

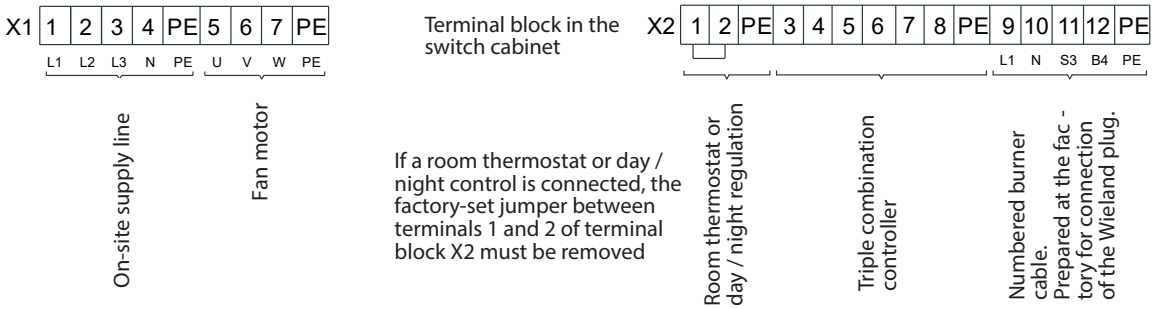
We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

Electrical wiring diagram 400 V direct starting

VRS 270-540 EN

Fan motor:
400V/3~ (up to 2.2 kW)
Burner motor: 230V/1~





Legend:

F1 = Fuse block (fan motor)
F2 = Thermal over current relay (fan motor)
F3 = Contr ol fuse
H1 = Fan fault indicator light
H2 = Fan operating indicator light
H3 = Burner operating indicator light
H4 = Burner fault indicator light
K1 = Fan contactor
KB = REMKO fourfold function combination controller
M = Fan motor
P = Time counter (optional)
RT = Room thermostat or contr ol (optional)
S1 = Switch
STB = Safety temperatur e limiter
TR = Fan contr oller
TW = Temperature monitor
X1 = Terminal strip 1 in control box
X2 = Terminal strip 2 in control box

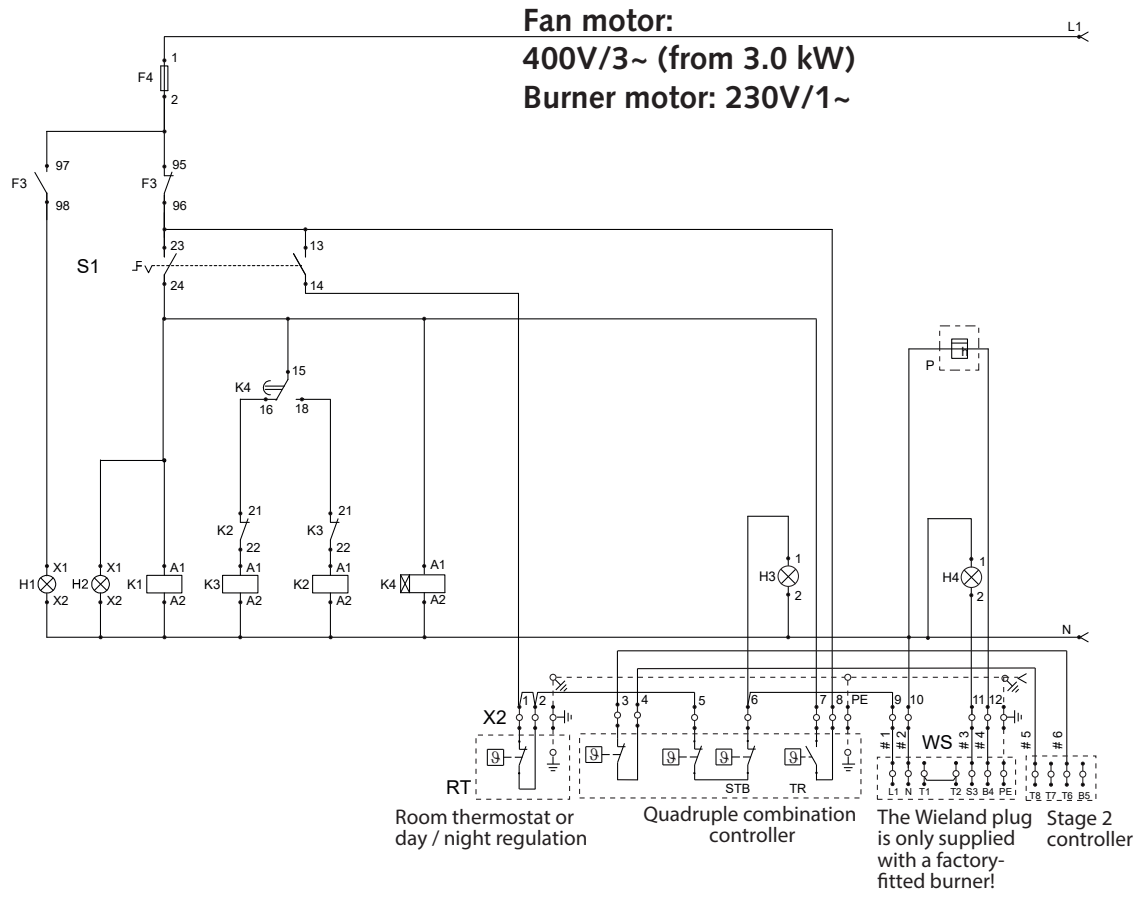
We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

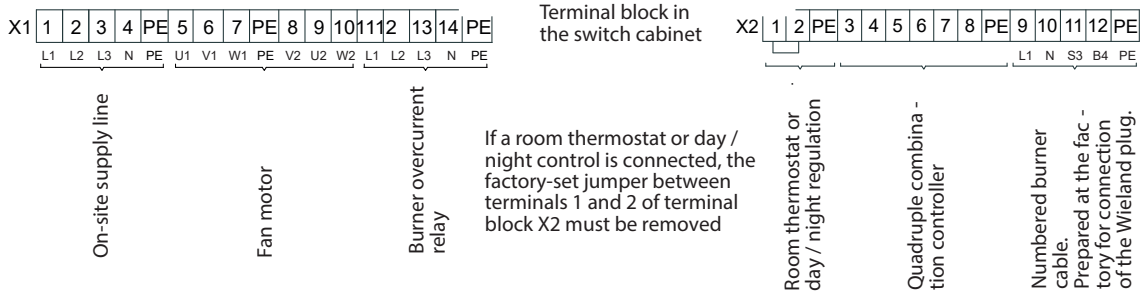
REMKO VRS EN Series

Wiring diagram 400V Y/Δ starting

Fan motor: 400V/3~ (up to 3.0 kW)
Burner motor: 230V/1~

VRS 270-440 EN





An emergency switch must be provided at an easily accessible point in the installation room for heaters with a nominal heat output from 50 kW..

The emergency switch must be protected against damage and unauthorised use!

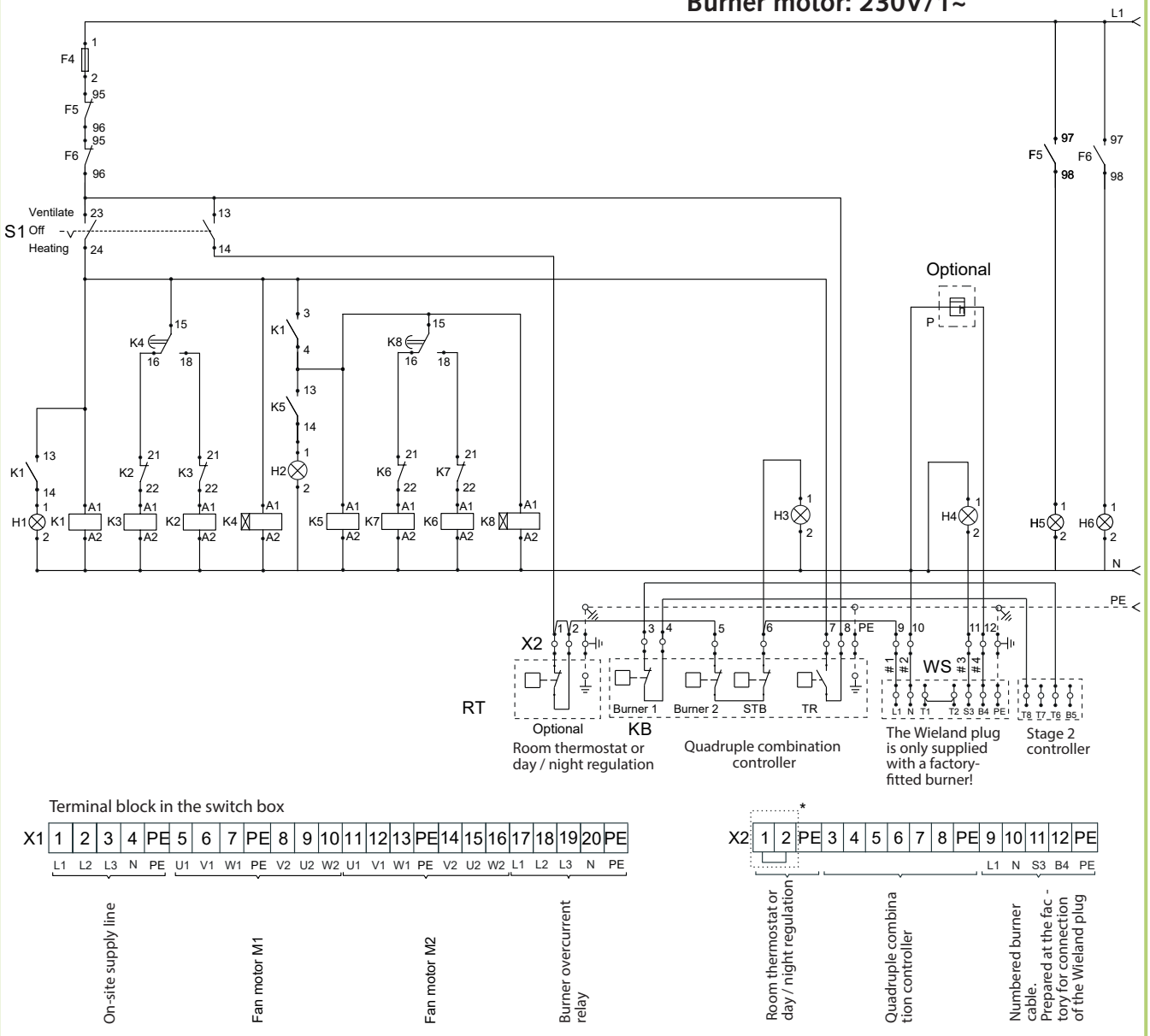
⚠ ATTENTION

Electrical appliance connection must only be carried out by authorised specialists in compliance with DIN EN 60335-1/VDE 0116.

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

VRS 540 EN

Fan motor: 400V/3~ (from 3.0 kW)
Burner motor: 230V/1~



Terminal block in the switch box

* If a room thermostat is connected, the factory-set jumper must be removed!

An emergency switch must be provided at an easily accessible point in the installation room for heaters with a nominal heat output from 50 kW..

The emergency switch must be protected against damage and unauthorised use!

⚠ ATTENTION

Electrical appliance connection must only be carried out by authorised specialists in compliance with DIN EN 60335-1/VDE 0116.

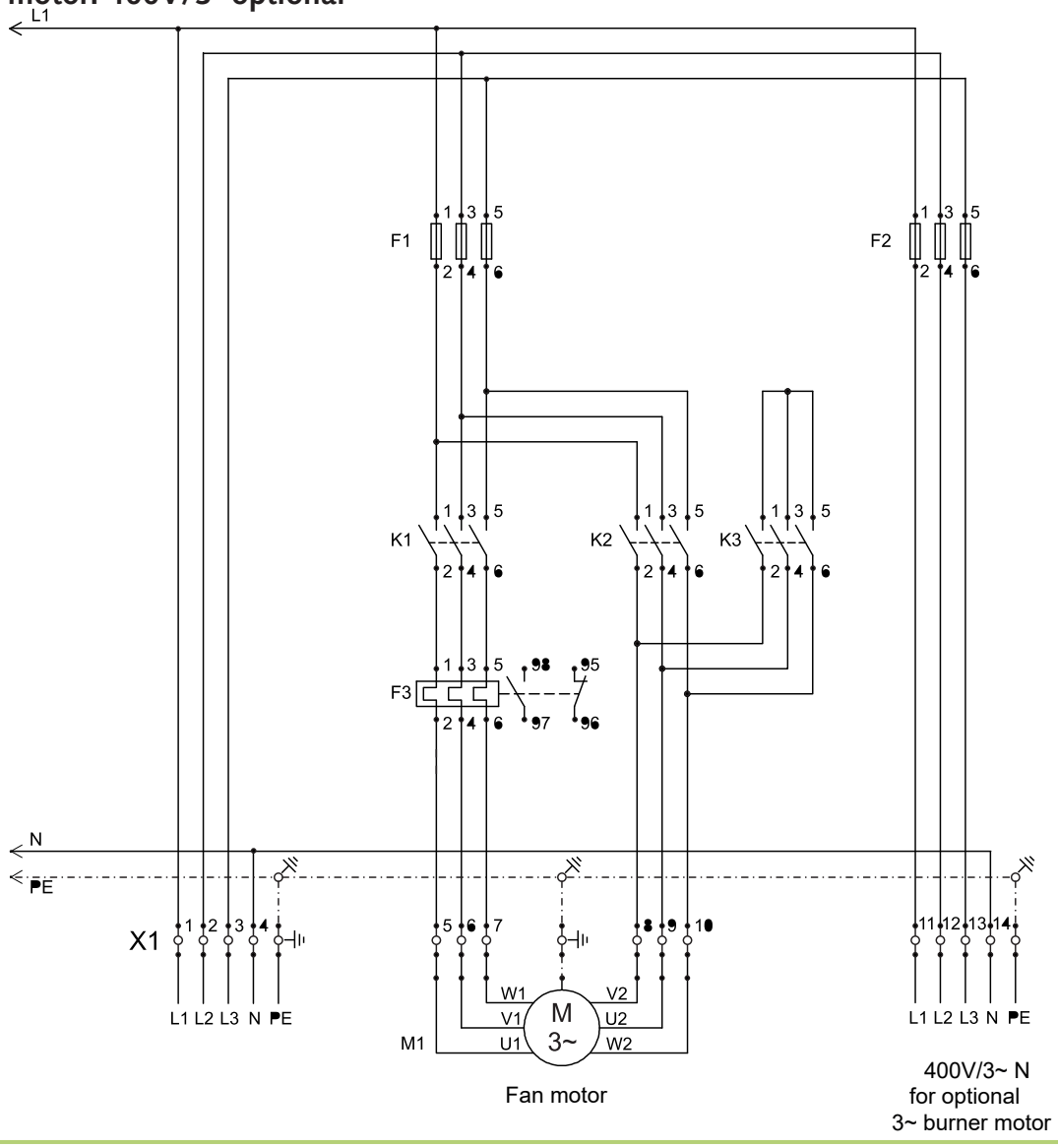
We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

REMKO VRS EN Series

Wiring diagram 400V fan motor

Fan motor: 400V/3~ (from 3.0 kW)
Burner motor: 400V/3~optional

VRS 270-440 EN



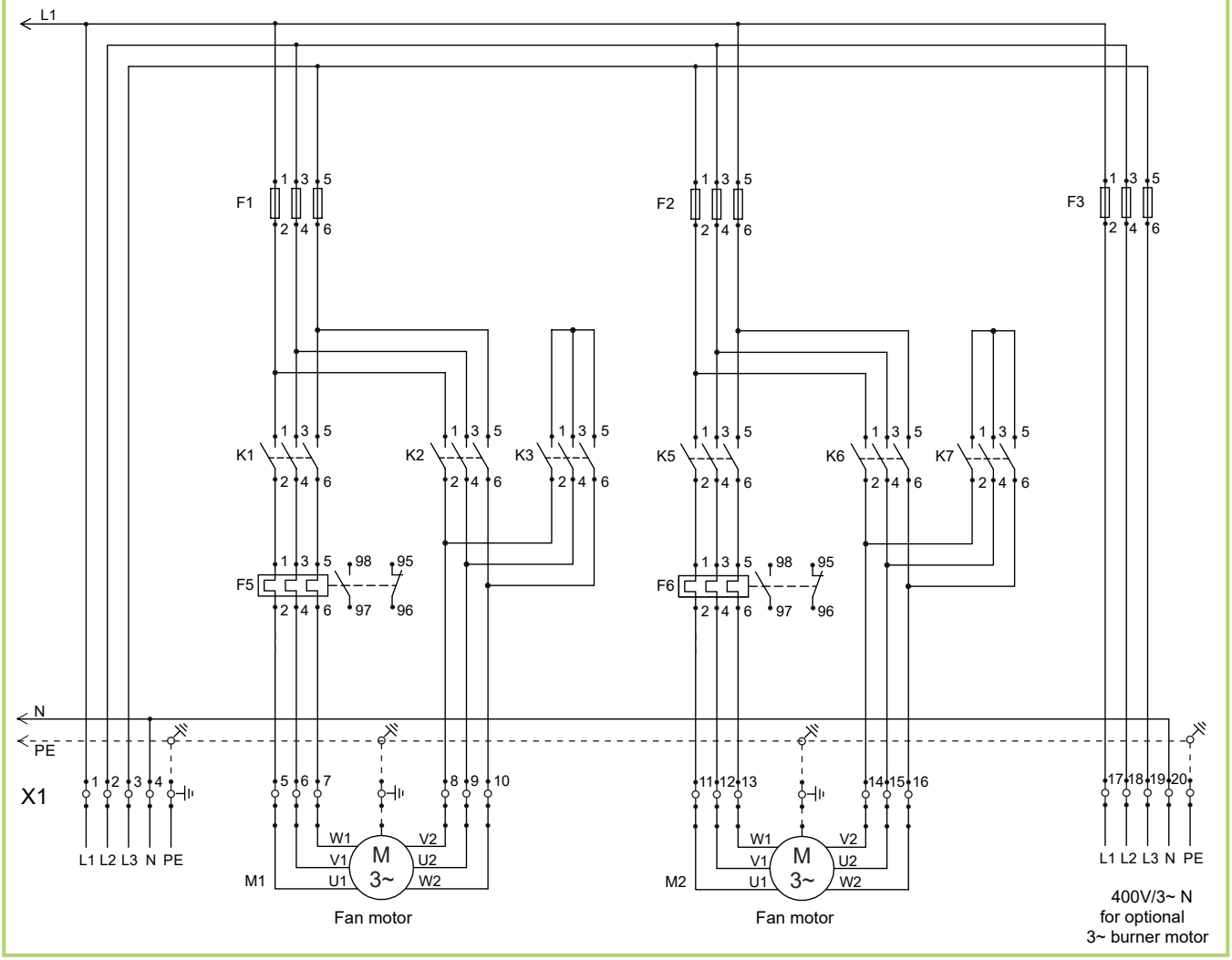
Legend:

F1 = Fuse block, fan motor
F2 = Fuse block, burner motor (optional)
F3 = Therm. overcurrent relay, fan motor
F4 = Control fuse
H1 = Fan fault indicator light
H2 = Fan operating indicator light
H3 = Burner operating indicator light
H4 = Burner fault indicator light
KB = Quadruple function combination controller
K1 = Supply contactor
K2 = Delta contactor,
K3 = Star contactor
K4 = Time limit relay
M1 = Fan motor
P = Time counter (optional)
RT = Room thermostat or control (optional)
S1 = Switch
STB = Safety temperature limiter
TR = Fan controller
TW = Temperature monitor
X1 = Terminal strip 1 in control box
X2 = Terminal strip 2 in control box

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

Fan motor: 400V/3~ (from 3.0 kW)
Burner motor: 400V/3~optional

VRS 540 EN



Legend:

F1 = Fuse block, fan motor 1
F2 = Fuse block, fan motor 2
F3 = Fuse block, burner motor (optional)
F4 = Control fuse
F5 = Therm. overcurrent relay, fan motor 1
F6 = Therm. overcurrent relay, fan motor 2
H1 = Fan 1 operating indicator light
H2 = Fan 2 operating indicator light
H3 = Burner operating indicator light
H4 = Burner fault indicator light
H5 = Fan 1 fault indicator light
H6 = Fan 1 fault indicator light
KB = Quadruple function combination controller
K1 = Supply contactor, fan motor 1
K2 = Delta contactor, fan motor 1
K3 = Star contactor, fan motor 1
K4 = Time limit relay, fan motor 1
K5 = Supply contactor, fan motor 2
K6 = Delta contactor, fan motor 2
K7 = Star contactor, fan motor 2
K8 = Time limit relay, fan motor 2
M1 = Fan motor 1
M2 = Fan motor 2
P = Time counter (optional)
RT = Room thermostat or control (optional)
S1 = Switch
STB = Safety temperature limiter
TR = Fan controller
TW = Temperature monitor
X1 = Terminal strip 1 in control box
X2 = Terminal strip 2 in control box

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

REMKO VRS EN Series

Exploded view of the VRS 25 EN - 200 EN unit

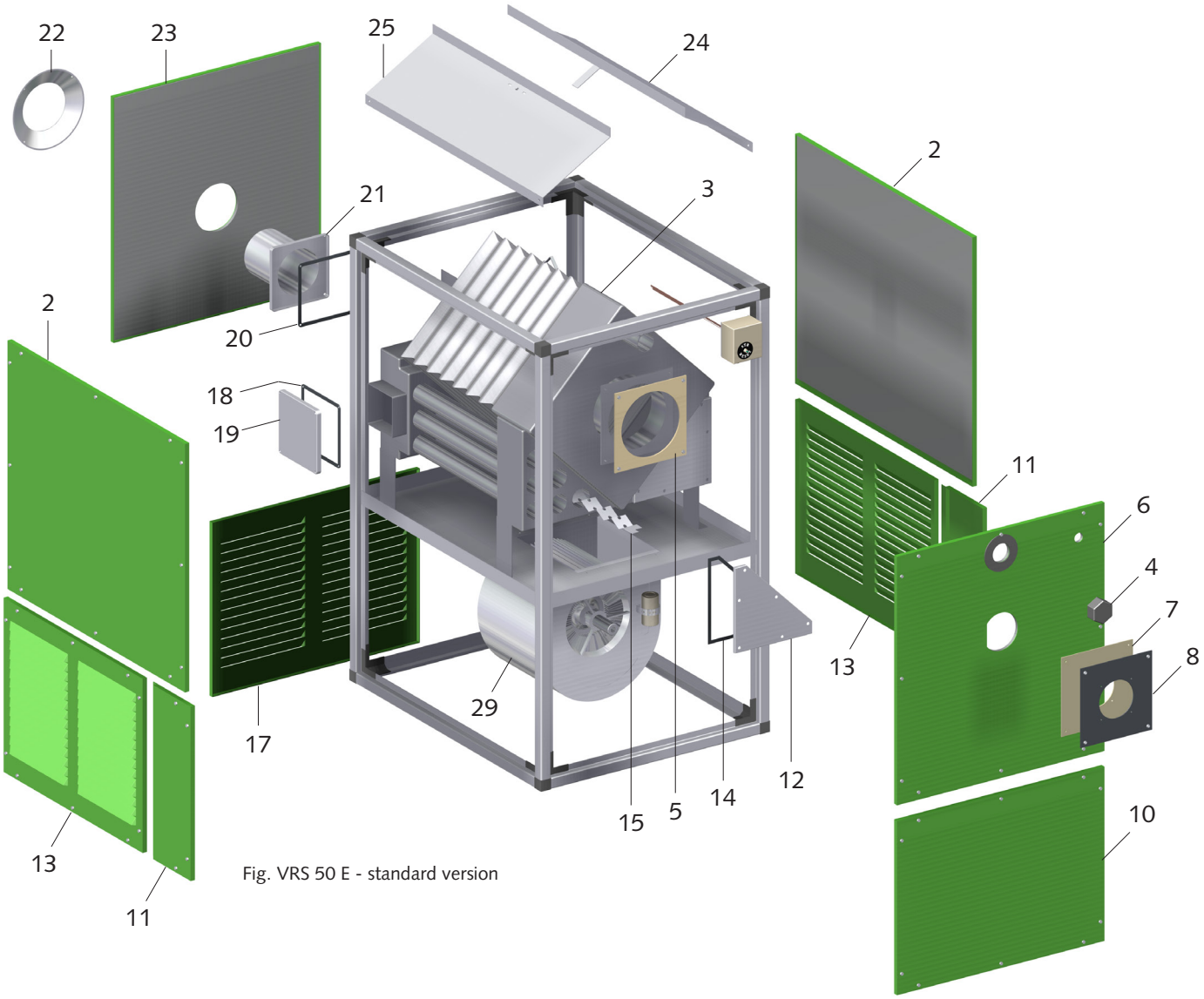
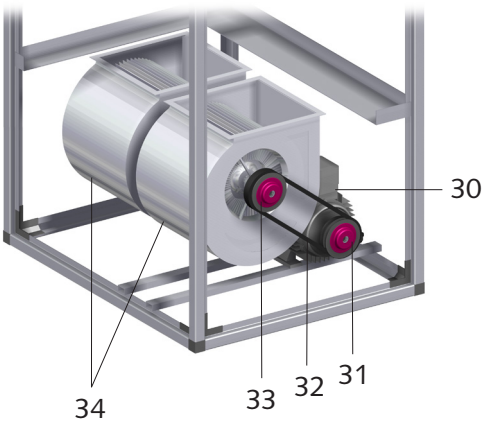
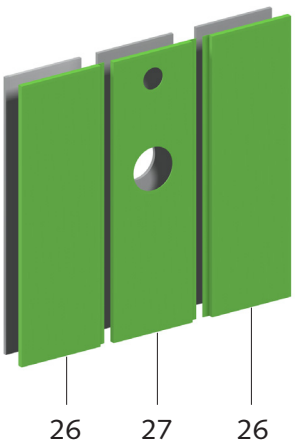


Fig. VRS 50 E - standard version

Fig. Fan with belt drive



Replacement for item 6 from size 130 to 200



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

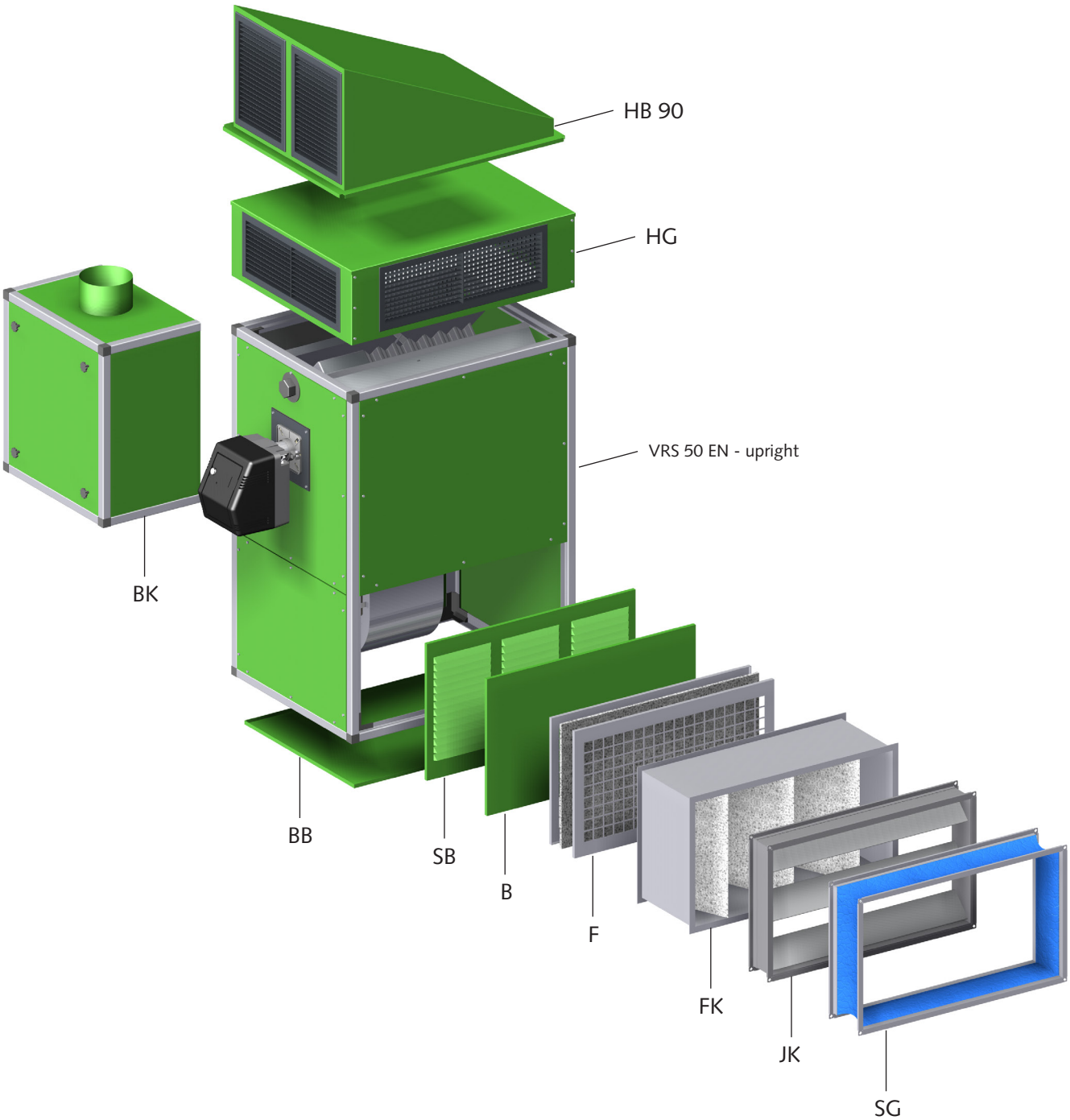
Spare parts list

No.	Designation	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN
		EDP no.	EDP no.	EDP no.	EDP no.	EDP no.	EDP no.	EDP no.
2	Insulated cladding panel	1103210	1103211	1103212	1103213	1103214	1103215	1103215
3	Combustion chamber compl.	1103170	1103171	1103172	1103173	1103174	1103175	1103176
4	Screw cap	1103219	1103220	1103220	1103220	1103220	1103220	1103220
5	Combustion chamber flange gasket	1102948	1102949	1102949	1102949	1102949	1102949	1102949
6	Insulated cladding panel	1103231	1103232	1103232	1103233	— —	— —	— —
7	Burner plate seal	1102950	1102951	1102951	1102951	1102951	1102951	1102951
8	Burner plate	1103235	1103236	1103236	1103237	1103237	1103237	1103237
10	Blank panel Pos. III/V	1103238	1103239	1103239	1103240	1103241	1103242	1103242
11	Additional blanking plate	1103256	1103257	1103258	1103259	— —	— —	— —
12	Front inspection cover	1103245	1103246	1103247	1103248	1103249	1103250	1103250
13	Intake panel Pos. I/II	1103260	1103261	1103261	1103262	1103263	1103264	1103264
14	Seal, linear metres	1103255	1103255	1103255	1103255	1103255	1103255	1103255
15	Flue gas brake	1102953	1102954	1102955	1102956	1102967	1102957	1102957
17	Intake panel Pos. III/V	1103260	1103261	1103261	1103262	1103268	1103269	1103269
18	Seal for inspection cover	1103273	1103273	1103274	1103274	1103275	1103275	1103275
19	Lateral inspection cover	1103278	1103278	1103279	1103279	1103280	1103280	1103280
20	Exhaust gas nozzle seal	1102947	1102947	1102947	1102947	— —	— —	— —
21	Exhaust gas nozzles	1103283	1103283	1103284	1103284	— —	— —	— —
22	Exhaust gas nozzle collar	1103285	1103285	1103286	1103286	1103287	1103287	1103287
23	Insulated cladding panel	1103290	1103291	1103291	1103292	1103293	1103294	1103294
24	Air baffle, right	1103180	1103181	1103182	1103182	1103183	1103184	1103184
25	Air baffle, left	1103180	1103181	1103182	1103182	1103183	1103184	1103184
26	Insulated cladding panel	— —	— —	— —	— —	1103190	1103191	1103191
27	Insulated intermediate plate	— —	— —	— —	— —	1103195	1103196	1103196
29	Fan (230 V/1~)							
30	Electric motor (400 V/3~)							
31	Motor belt pulley							
32	V-belt							
33	Fan belt pulley							
34	Radial fan	Depending on the respective unit design and unit pressure						
	Switch box cpl. (not shown)							
	Not shown:							
	Blank panel Pos. I/II	1103238	1103239	1103239	1103240	1102974	1102975	1102975
	Blank panel Pos. IV	290105	291105	292105	293105	294105	295105	296105
	Safety temperature limiter (STB)	1101197	1101197	1101197	1101197	1101197	1101197	1101197
	Fan controller (TR)	1103166	1103166	1103166	1103166	1103166	1103166	1103166
	Temperature monitor (TW1/TW2)	1103146	1103146	1103146	1103146	1103146	1103146	1103146
	Burner connection plug (7-pole)	1102537	1102537	1102537	1102537	1102537	1102537	1102537
	Burner connection plug (4-pole)	1108585	1108585	1108585	1108585	1108585	1108585	1108585
	Intake panel Pos. IV	290109	291109	292109	293109	294109	295109	296109

Spare parts for the unit size VRS 270 EN - 540 EN on request!
When ordering spare parts, please state the EDP number, the unit type and serial number (see name plate)!
Only original spare parts from the manufacturer are approved as replacement parts during the guarantee time.
Before parts are replaced with parts or components other than those cited in the servicing manual, it is necessary to contact the unit manufacturer.

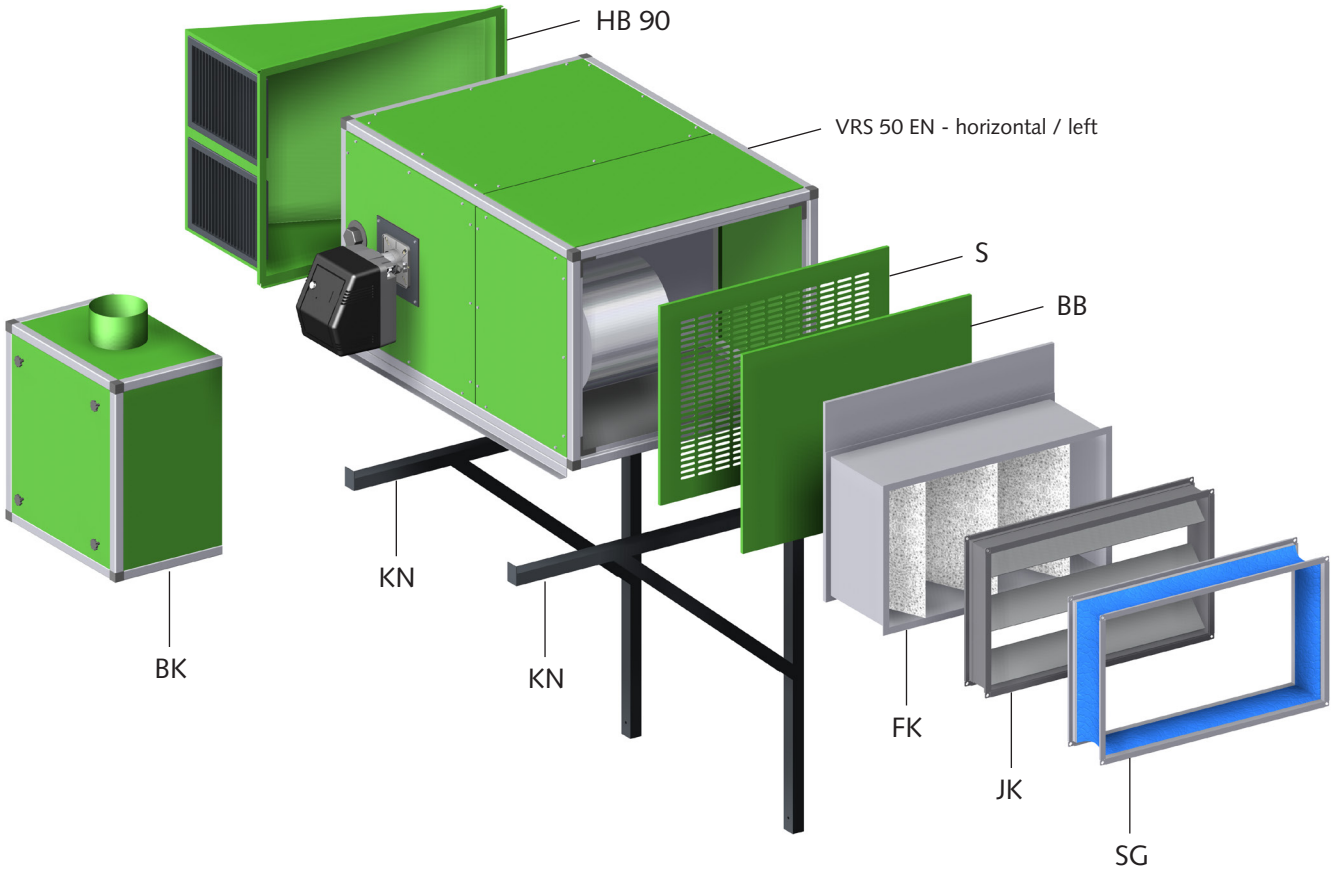
REMKO VRS EN Series

Unit specifications - upright



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

Unit specifications - horizontal



Legend:

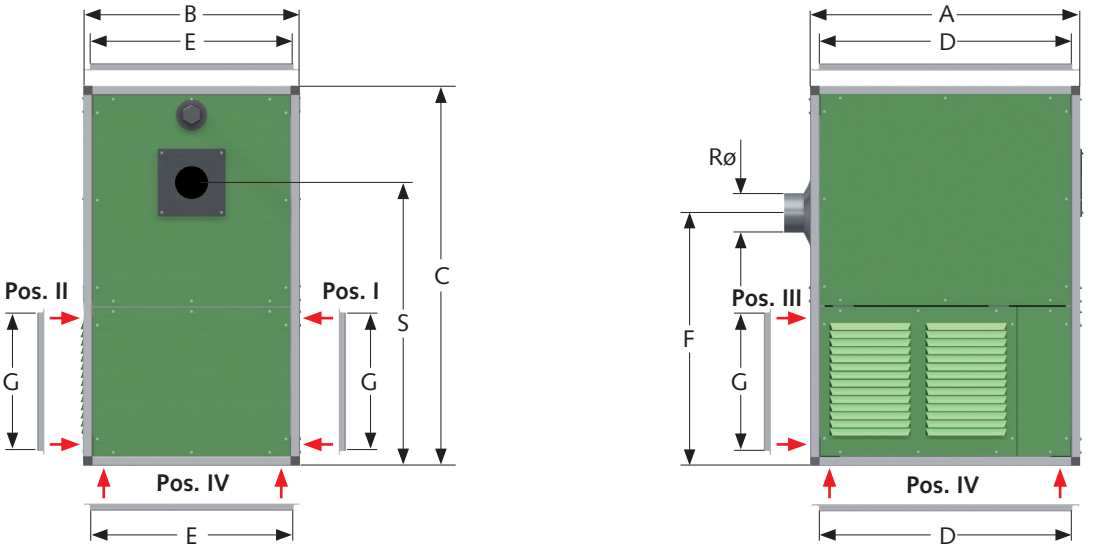
B	= Blank panel Pos. I – III
BB	= Blank panel Pos. IV
BK	= Burner box
F	= Dust filter 3-sided, for free suction
FK	= Dust filter for duct connection
HG	= 3 or 4-sided exhaust hood
S	= Intake guard Pos IV
SB	= Louvred intake panel Pos. I – III
SG	= Elastic nozzle
HB 90	= Exhaust hood for direct exhaust F/R
KN	= Wall bracket
JK	= Louvre dampers

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

REMKO VRS EN Series

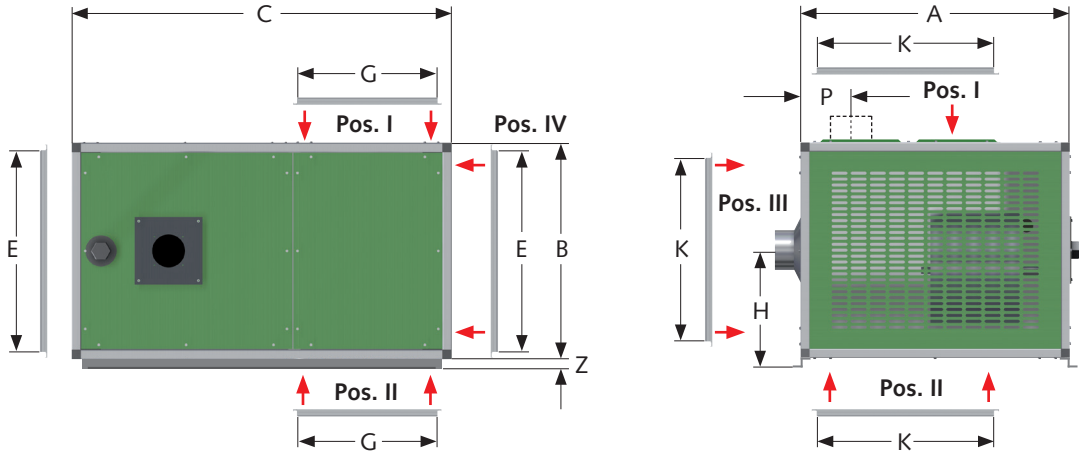
Unit dimensions

Upright unit



With horizontal units, use only the rear exhaust gas connection!

Horizontal unit



Schematic
Fig. VRS 50 EN

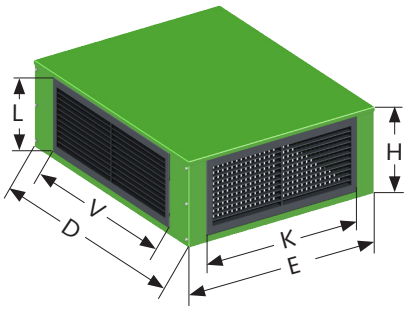
Measure-ments mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
A	850	1000	1250	1250	1525	1650	1650	1690	1690	2305	2305
B	600	800	800	900	1005	1190	1190	1290	1290	1770	1770
C	1200	1400	1400	1500	1735	1900	1900	2400	2400	3270	3270
D	755	925	1175	1175	1450	1580	1580	1570	1570	2155	2155
E	525	725	725	825	915	1115	1115	1170	1170	1620	1620
F	815	900	900	910	1075	1160	1160	2055	2055	2865	2865
G	550	550	550	550	590	590	590	695	695	1060	1060
H	335	435	435	485	540	635	635	685	685	925	925
K	525	725	725	780	930	1045	1045	1170	1170	1620	1620
P	190	190	190	190	270	240	240	- -	- -	- -	- -
R ø	150	150	180	180	200	200	200	300	300	350	350
S	955	1050	1050	1100	1230	1330	1330	1090	1090	1535	1535
Z	35	35	35	35	35	35	35	40	40	40	40

Dimensions D/E/K and G only refer to REMKO intake and exhaust accessories.

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

Accessories

Exhaust hood type HG



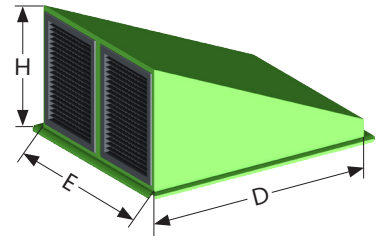
For direct exhaust to 2, 3 or 4 sides with built-in air directing louvres.
All louvres are individually adjustable both horizontally and vertically.

Dimensions in mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
D	850	1000	1250	1250	1525	1650	1650	1600	1600	2155	2155
E	600	800	800	900	1005	1190	1190	1200	1200	1620	1620
H	300	300	300	300	360	360	360	560	560	760	760
L	260	260	260	260	260	260	260	460	460	660	660
V	650	750	1050	1050	1250	1500	1500	1250	1250	1650	1650
K	450	650	650	750	850	850	1050	800	800	1250	1250

Casting distance in metres	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
front + rear	11	17	28	28	28	28	34	20	22	18	20
right + left	10	16	22	23	25	30	28	18	20	20	22

The specifications are always based on the respective specified positions only.

Exhaust hood type HB-90

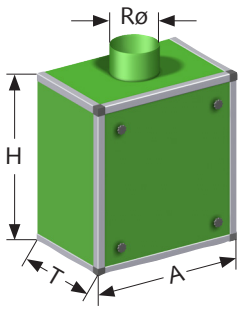


For direct exhaust to the front or rear, with built-in air directing louvres.
All louvres are individually adjustable both horizontally and vertically.

Dimensions in mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
D	800	950	1200	1200	1480	1600	1600	1570	1570	2155	2155
E	550	750	750	850	960	1150	1150	1170	1170	1620	1620
H	370	470	670	770	770	770	870	1135	1135	1500	1500

Casting distance in metres	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
front / rear	14	20	26	29	30	32	34	22	24	20	22

Burner box type BK



With connection nozzles for piping to the outside air intake of the combustion air. This is also recommended for installation rooms with a high dust content or possible air shortage.
The positioning of the connection nozzle can take place on any of the four side positions.

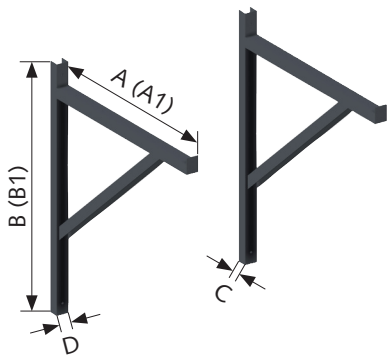
Dimensions in mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
A	600	800	800	900	900	900	900	880	880	1055	1055
H	620	820	820	920	900	900	900	880	880	1065	1065
Rø	150	150	150	150	200	200	200	200	200	200	200
T	400	400	500	500	600	600	600	750	750	900	900

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

REMKO VRS EN Series

Accessories

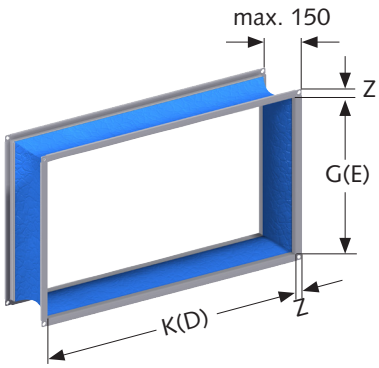
Wall bracket type KN



U-profile design for the fastening of upright or horizontal units to the wall.
Fastening only to walls at least 24 cm thick (check statics).
End-to-end M16 threaded pins with profiled steel on the underside should ideally be used (customer-provided fastening material).

Unit type Dimensions in mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
A (upright)	670	870	870	970	1070	1270	1270	1430	1430	--	--
A1 (horizontal)	970	1120	1430	1430	1780	2010	2010	2800	2800	--	--
B (upright)	820	1020	1020	1120	1220	1380	1380	2010	2010	--	--
B1 (horizontal)	1120	1320	1600	1600	2010	2200	2200	2200	2200	--	--
C	45							50			
D	55				80					120	

Elastic nozzle type SG



Flexible connection (vibration damping) between unit and air duct system.
Installation possibility, Pos. I, II, III, IV or even combined.

Dimensions in mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
D	790	940	1190	1190	1465	1590	1590	1170	1170	1620	1620
E	540	740	740	840	945	1130	1130	1570	1570	2155	2155
G	485	485	485	485	545	630	630	695	695	1060	1060
K	465	670	670	765	895	1085	1085	1170	1170	1620	1620
Z	30	30	30	30	30	30	30	30	30	35	35

Dimensions in brackets only for unit outlet and direct duct connection at intake Pos. IV

Dust filter type F for free intake

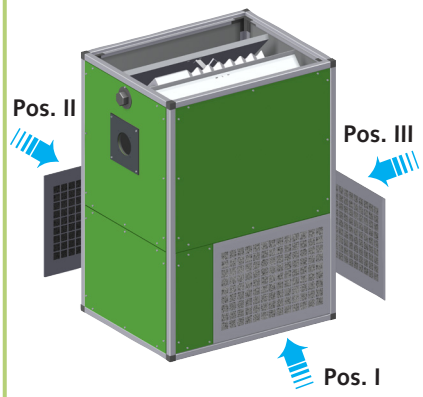


Plate filter comprised of two grating frames with intermediate, easily replaceable filter mats with the filter class G3.

Additional filter classes are also available on request.

1 dust filter F set always consists of intake Pos. I + II + III.

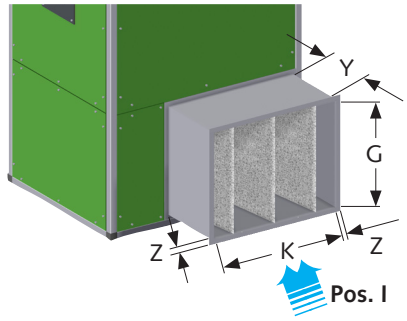
Techn. data	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
F m²	0.79	1.02	1.24	1.28	1.18	1.70	1.70	2.46	2.46	5.15	5.15
A m/s	1.4	1.3	1.2	1.4	2.1	1.8	2.1	2.1	2.6	1.6	2.0

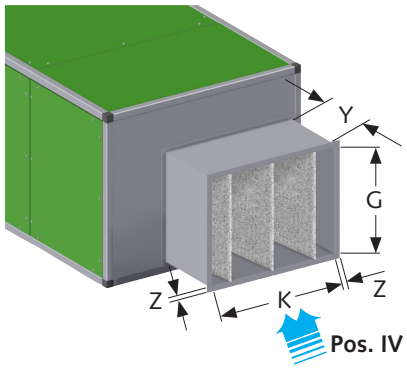
F m² = Filter surface in m²
A m/s = Flow in m/s
Starting pressure loss approx. 100 Pa with standard pressure.
With a change in filter class, the changed pressure loss must be taken into account!

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

Accessories

Dust filter type FK for duct intake





Duct filters with easily replaceable plug-in filters with filter class G3. Additional filter classes are also available on request.

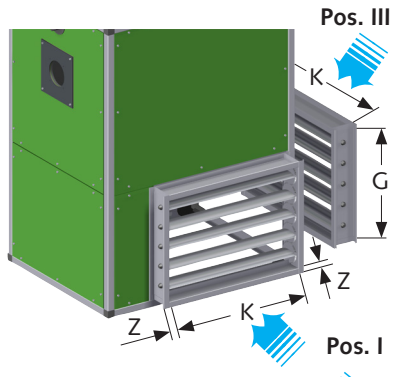
Any potentially remaining intake openings are to be closed with corresponding blank panels.

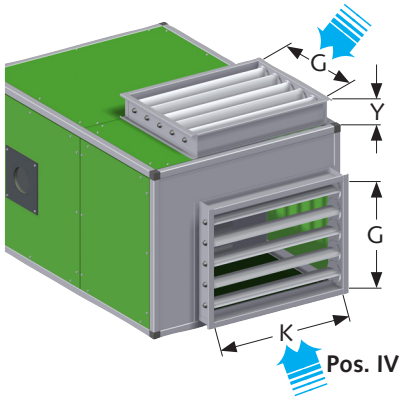
Dimensions in mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
G	485	485	485	485	545	630	630	695	695	1060	1060
K	465	660	660	765	895	1085	1085	1170	1170	1620	1620
Y	480	480	480	480	690	690	690	530	530	605	605
Z	30	30	30	30	30	30	30	30	30	35	35

Technical data	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
Filter surface [m^2]	0.72	0.96	1.36	1.76	2.16	2.88	2.88	4.82	4.82	9.18	9.18
Flow [m/s]	1.49	1.39	1.08	1.05	1.17	1.03	1.28	1.09	1.31	0.92	1.12

Starting pressure loss approx. 100 Pa with standard pressure and 2-sided intake. With a change in filter class, the changed pressure loss must be taken into account!

Louvre dampers, type JK





Louvre dampers in galvanised steel sheet housing with connection frame. The torsion-resistant aluminium slats can be seamlessly adjusted by means of a manual lever or electric louvre adjustment motor (accessory). Combined louvres for the regulation of the recirculated/outside air ratio are connected with a perpendicular rod.

Combination possibilities:

Pos. I + II	Pos. I + IV
Pos. I + III	Pos. II + IV
Pos. II + III	Pos. III + IV

Any potentially remaining intake openings are to be closed with corresponding blank panels.

Dimensions in mm	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
G	485	485	485	485	545	630	630	695	695	1060	1060
K	465	660	660	765	895	1085	1085	1170	1170	1620	1620
Y	120	120	120	120	120	120	120	180	180	180	180
Z	30	30	30	30	30	30	30	30	30	35	35

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

REMKO VRS EN Series

Technical data

Series	Symbol	Unit	VRS 25 EN	VRS 50 EN	VRS 75 EN	VRS 100 EN	VRS 130 EN	VRS 170 EN	VRS 200 EN	VRS 270 EN	VRS 340 EN	VRS 440 EN	VRS 540 EN
Nominal heat load [1]	$\dot{Q}_H$	kW	32	54	89	120	160	208	249	276	332	442	543
Nominal heat capacity	$P_{rated,h}$	kW	27.8	46.9	77.4	104	139	181	216	238	287	382	468
Nominal flow rate[2]	$\dot{V}_{nom}$	m^3/h	3920	4870	5890	7290	9850	11800	14900	18960	22680	30480	37170
Fuel			EL heating oil, diesel fuel, B7/B10 biodiesel [3], HVO biofuel [4]) Natural or liquid gas										
Oil flow rate (EL heating oil)		l/h	3.0	5.1	8.4	11.3	15.1	19.6	23.5	26.0	31.3	41.6	51.1
Gas flow rate (natural gas H)		m^3/h	2.8	4.7	7.8	10.5	14.0	18.2	21.8	24.2	29.1	38.7	47.5
Gas flow rate (natural gas L)		m^3/h	3.3	5.5	9.1	12.3	16.4	21.3	25.5	28.3	34.0	45.3	55.6
Gas flow rate (liquid gas)		m^3/h	1.2	1.9	3.2	4.3	5.8	7.5	9.0	10.0	12.0	15.9	19.6
Gas flow rate (liquid gas)		kg/h	2.3	3.9	6.4	8.6	11.4	14.9	17.8	19.7	23.7	31.6	38.8
Flue gas flow [5]	$\dot{m}_{Af}$	kg/h	44.9	75.8	124.9	168.5	224.6	292.0	349.6	387.5	466.1	620.5	762.3
Exhaust gas temperature, approx. [6]	t_{Af}	°C	120 - 200										
Max. exhaust gas loss			7 %										
Flue-gas side resistance		Pa	24	37	22	40	26	39	27	45	109	156	114
Nitrogen oxide emissions (HEL)	NO_x	mg/kWh	142	138	145	149	135	150	149	144	148	142	150
Nitrogen oxide emissions (EGH)	NO_x	mg/kWh	67	66	69	67	68	68	70	64	70	63	70
Power supply	U	V/Ph/Hz	230/1~/50		400/3~N / 50								
Max. power consumption	el_{max}	kW	0.780	0.840	1.410	1.860	2.050	2.050	2.750	4.830	6.330	8.950	13.050
Auxiliary power consumption max.	el_{max}	kW	0.230	0.290	0.310	0.360	0.550	0.550	0.550	0.830	0.830	1.450	2.050
Min. auxiliary energy consumption	el_{max}	kW	0.230	0.290	0.310	0.360	0.550	0.550	0.550	0.830	0.830	1.450	2.050
Power consumption, fan [7]	el, V	kW	0.550	0.550	1.100	1.500	1.500	1.500	2.200	4.000	5.500	7.500	11.000
Rated current consumption, max	I	A	6.800	8.000	2.800	3.700	3.700	3.700	5.200	8.800	11.400	15.500	22.800
Efficiency at nominal heating capacity [1]	η_{nom}	%	87.0	86.8	86.7	86.6	87.0	87.1	86.7	86.3	86.3	86.3	86.1
Efficiency at minimum capacity [1]	η_{pl}	%	89.3	89.3	89.5	89.3	89.3	89.8	90.5	89.2	89.3	89.3	89.2
Efficiency of heat emission	$\eta_{s,flow}$	%	94.3	93.2	91.9	91.7	91.8	91.0	90.7	92.1	91.9	92.1	92.2
Room heating- annual efficiency	$\eta_{s,h}$	%	78.0	78.0	78.1	78.0	78.1	78.0	78.0	78.0	78.0	78.0	78.0
Exhaust gas connection ø		mm	150	150	180	180	200	200	200	300	300	350	350
Weight [11]		kg	150	240	310	360	550	730	820	832	874	1542	1792

1) In relation to the calorific value (HS)

2) Air flow at 20°C

3) Maximum biodiesel admixture of 10%

4) Hydrogenated vegetable oils that meet the requirements of DIN EN 590

5) Approx. quantity with oil operation

6) Measured temperature minus room temperature

7) For standard pressing

8) Units without burner and other accessories

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

Max. intake temperature 40°C / max. exhaust temperature 100°C

Gross calorific values H_s in standard condition:

EL heating oil	12.61	kWh/kg
Natural gas H	11.48	kWh/m³
Natural gas L	9.75	kWh/m³
Propane gas	28.14	kWh/m³
Propane gas	14.00	kWh/kg

Additional specifications for fresh air and flue gas ducting

The following applies to all models in the VRS EN range:

B_1-air heater:	no
C_2-air heater:	no
C_4-air heater:	no

REMKO VRS EN Series

Drive technical data

		Electric motor(s)				Fan(s)		V-belt pulleys			
Type	Rated pressure - external	Electrical connection	Power consumption	Nominal flow	Nominal speed	Version	Speed	Version	Motor	Fan	Sound pressurelevel[G]
VRS EN	Pa	V	kW	A	min^{-1}		min^{-1}		mm Ø	mm Ø	dB(A)
25	170 [S]	230/1~	0.55	6.80	1400	DDM10/10	1360	Direct drive			60
	220	400/3~N	0.75	1.75	1410	10/10 E	1000	SPZ 1	112	140	62
	280	400/3~N	0.75	1.75	1410	10/10 E	1130	SPZ 1	125	140	64
50	60 [S]	230/1~	0.55	8.00	1400	DDM10/10	1400	Direct drive			62
	140	400/3~N	1.1	2.80	1420	10/10 E	1140	SPZ 1	100	125	64
	200	400/3~N	1.5	3.70	1420	10/10 E	1260	SPZ 2	100	112	65
	330	400/3~N	2.2	5.20	1440	10/10 E	1420	SPZ 2	112	112	66
	470	Y/Δ 400/3~N	3.0	7.00	1450	10/10 E	1620	SPZ 2	140	125	69
75	100 [S]	400/3~N	1.1	2.80	1420	10/8 Z	880	SPZ 1	100	160	63
	160	400/3~N	1.5	3.70	1420	10/8 Z	1010	SPZ 2	100	140	64
	230	400/3~N	1.5	3.70	1420	10/8 Z	1140	SPZ 2	100	125	65
	300	400/3~N	2.2	5.20	1440	10/8 Z	1290	SPZ 2	112	125	67
	430	Y/Δ 400/3~N	3.0	7.00	1450	10/8 Z	1440	SPZ 2	112	112	69
100	80 [S]	400/3~N	1.5	3.70	1420	10/10 Z	1010	SPZ 2	100	140	60
	170	400/3~N	2.2	5.20	1440	10/10 Z	1150	SPZ 2	112	140	62
	240	Y/Δ 400/3~N	3.0	7.00	1450	10/10 Z	1300	SPZ 2	112	125	63
	350	Y/Δ 400/3~N	3.0	7.00	1450	10/10 Z	1440	SPZ 2	112	112	64
130	100 [S]	400/3~N	1.5	3.70	1420	12/12 Z	780	SPZ 2	100	180	65
	170	400/3~N	2.2	5.20	1440	12/12 Z	900	SPZ 2	112	180	67
	260	400/3~N	2.2	5.20	1440	12/12 Z	1010	SPZ 2	112	160	69
170	50 [S]	400/3~N	1.5	3.70	1420	15/11 Z	630	SPZ 2	100	224	65
	130	400/3~N	2.2	5.20	1440	15/11 Z	720	SPZ 2	112	224	66
	170	Y/Δ 400/3~N	3.0	7.00	1450	15/11 Z	810	SPZ 2	112	200	68
	260	Y/Δ 400/3~N	3.0	7.00	1450	15/11 Z	900	SPZ 2	112	180	71
	410	Y/Δ 400/3~N	4.0	8.80	1445	15/11 Z	1030	SPZ 2	160	224	73
200	70 [S]	400/3~N	2.2	5.20	1440	15/15 Z	720	SPZ 2	125	250	65
	140	Y/Δ 400/3~N	3.0	7.00	1450	15/15 Z	830	SPZ 2	160	280	66
	220	Y/Δ 400/3~N	4.0	8.80	1445	15/15 Z	920	SPZ 2	160	250	68
	340	Y/Δ 400/3~N	5.5	11.40	1460	15/15 Z	1030	SPZ 2	160	224	71
270	50 [S]	Y/Δ 400/3~N	4.0	8.80	1445	AT15/15 GL2	810	SPZ 3	90	160	79
	90	Y/Δ 400/3~N	4.0	8.80	1445	AT15/15 GL2	910	SPZ 3	90	140	80
	210	Y/Δ 400/3~N	5.5	11.40	1450	AT15/15 GL2	1025	SPZ 2	140	200	81
	290	Y/Δ 400/3~N	5.5	11.40	1450	AT15/15 GL2	1025	SPZ 2	140	200	80
	400	Y/Δ 400/3~N	7.5	15.20	1450	AT15/15 GL2	1155	SPZ 3	125	160	80
340	60 [S]	Y/Δ 400/3~N	5.5	11.40	1450	AT15/15 GL2	910	SPZ 2	140	224	80
	100	Y/Δ 400/3~N	7.5	15.20	1450	AT15/15 GL2	1025	SPZ 3	125	180	81
	190	Y/Δ 400/3~N	7.5	15.20	1450	AT15/15 GL2	1025	SPZ 3	125	180	81
	280	Y/Δ 400/3~N	11.0	21.00	1470	AT15/15 GL2	1155	SPA 3	140	180	82
440	50 [S]	Y/Δ 400/3~N	7.5	15.20	1450	AT18/18 GL2	660	SPZ 3	125	280	82
	90	Y/Δ 400/3~N	11.0	21.00	1470	AT18/18 GL2	810	SPA 3	140	250	82
	200	Y/Δ 400/3~N	11.0	21.00	1470	AT18/18 GL2	820	SPA 3	140	250	81
	290	Y/Δ 400/3~N	11.0	21.00	1470	AT18/18 GL2	920	SPA 3	140	224	80
	380	Y/Δ 400/3~N	11.0	21.00	1470	AT18/18 GL2	930	SPA 3	140	224	80
540	50 [S]	Y/Δ 400/3~N	2 x 5.5	2 x 11.4	1450	TLZ 560A	515	SPZ 2	140	400	80
	90	Y/Δ 400/3~N	2 x 5.5	2 x 11.4	1450	TLZ 560A	580	SPZ 2	140	355	80
	210	Y/Δ 400/3~N	2 x 5.5	2 x 11.4	1450	TLZ 560A	580	SPZ 2	140	355	78
	300	Y/Δ 400/3~N	2 x 5.5	2 x 11.4	1450	TLZ 560A	650	SPZ 2	140	315	80
	390	Y/Δ 400/3~N	2 x 11.0	2 x 21.0	1470	TLZ 560A	815	SPA 3	140	250	83

[S] = unit with standard pressure

[G] = noise measurement (without burner) DIN 45635-01-KL3

REMKO VRS EN Series

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We reserve the right to make technical changes, and provide no guarantee as to the accuracy of this data!