Operating and installation instructions

REMKO GPC series
Gross calorific value wall-mounted automatic heaters with modulating gas burner with condensing design

GPC 20, GPC 40, GPC 60, GPC 80

Contents

CE

Carefully read this operating manual prior to commissioning or using the units!
This operating manual is a translation of the German original.

These instructions are 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!

Safety notes

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

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

- The units may only be operated by persons that have been instructed in their operation
- In case of defects that endanger the operational safety of the units, operation must be discontinued
- The units must be installed and operated so that the emerging flow of warm air does nothave harmful effects on either the units or the surroundings
- Do not expose the units to atmospheric influences (rain, sun, etc.)
- Do not touch the units with damp or wet body parts, e.g. hands
- Protect the units from spray water or other liquids
- Do not use gas lines for the grounding of electrical devices
- Do not touch hot parts of the units, such as the flue gas pipe
- Do not touch moving parts of the units
- Never insert foreign objects into the units
- The units may only be mounted on stable structures or ceilings made of non-flammable construction materials and with sufficient bearing capacity
- The units may only be mounted at the points provided for this purpose in the factory
- The units may not be installed or operated in potentially flammable or explosive environments
- The units must be installed away from traffic zones - by crane, for example. A safety zone with a clearance of 1 m must be ensured
- Do not set down any objects on the unit
- The protective grille of the intake must always be kept free of dirt and loose objects
- The units may not be exposed to direct jets of water
- The units must be inspected by a service technician at least once yearly
- Safety devices must not be bypassed or disabled!
- Prior to maintenance or repair work, the gas supply must be sealed off and the unit must be disconnected from the mains at all poles. (Remove fuse and switch off customer-provided main/emergency shut-off switch).
- The gas supply must comply with the specifications on the name plate and the fuel flow setting must correspond to the required power
- The equipment may only be used with all safety and monitoring installations, corresponding tothe applicable standards

Preventative measures when a gas odour is noticed

1. Immediately switch off the unit.
2. Close the gas shut-off device(s).
3. Warn all directly endangered persons.
4. Open windows and doors.
5. Do not actuate electrical equipment such as light switches or electrical plug-in contacts.
6. If the room in which the gas odour has emerged cannot be entered, immediately contact the fire brigade, police and the local responsible municipal gas supplier.

NOTE

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.

CAUTION

Assembly, adjustment and maintenance work may only be carried out by authorised and qualified technicians.

Unit installation

Application area

With the REMKO gas wall heaters from the GPC range, it is possible to heat small rooms, such as workshops, right through to large spaces such as industrial warehouses, sports halls, etc. For efficient heating it is therefore essential to determine the necessary heat output by professionally calculating the heat requirement for the respective space.

⚠ CAUTION

The units must not be set up or installed in areas with explosive or corrosive atmospheres.

General prerequisites

With the installation of the units, the local and federal state-specific provisions and guidelines must be observed in the respective valid version as a basic rule.

Work such as the following:

- gas and electrical installation
- conversion of the gas type
- commissioning
- adjustments or maintenance may only be carried out by qualified technicians

In addition to a faultless electrical and gas installation, it is also ensured through this measure that all necessary measurements and test are conducted.

- The units must be inspected by an authorised service technician at least once yearly. For this purpose, concluding a service contract with a service company is recommended
- During planning and installation of the flue gas routeing, the structural possibilities as well as the applicable local and country-specific regulations must be consistently adhered to
- In heavily contaminated environments, care and maintenance measures must be carried out in accordance with the respective conditions. The combustion air must be fed from outside as a basic rule

Selection of the installation location

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

- Fire protection and operational hazard
- Function: Space heating, underpressure and/ or overpressure in the installation space, etc.
- Operational concerns, heat requirement, nominal air flow rate, air recirculation requirement, humidity, room temperature, air distribution, spatial requirements
- Installation, repair and maintenance possibilities. The units must be installed in such a way that they are always easily accessible for maintenance and repair work.

With improper installation and operation, hazards may arise from the units. Prior to the planning and during the unit installation, the following points must absolutely be observed.

- The units must be installed and operated in such a way that personnel are not endangered by flue gas and radiant heat and no fires may occur
- During installation of the units it must be ensured that the flow of warm air does not have damaging effects on the surroundings
- Fire hazards must be eliminated through the selection of materials for the installation and position surfaces. For this purpose, see TRGI, Section 5.1.3.3
- The wall or ceiling intended for installation must also consist of non-flammable materials. Its load capacity must be checked; reinforcements must beinstalled when necessary
- Brackets must be securely anchored to the wall or ceiling and the units must be attached to the brackets at the points provided for this purpose in the factory
- Appropriate maintenance possibilities for heat exchangers, burners, fan and flue gas evacuation must be planned for
- It must be possible to actuate control elements for the units and fuel supply from the ground. Maintenance and repair possibilities must be ensured by the operator

Unit description

Definition of the unit

Pursuant to EU Directives, the unit is defined as: "*Gas fan-assisted heater (WLE) without flow-operated safety device, equipped with a fan in front of the heat exchanger*".
The unit is a fully-automatic, directly-fired fan-assisted air heater for wall and ceiling installation.
It can be fuelled with natural gas or liquid gas.

The unit is used for continuous and temporary heating of open and closed spaces, e.g. in:

halls, workshops,

greenhouses,

storage rooms, etc.

Classification of the units

The units have been classified by the European standardised regulations EN 437, EN1196 and EN 1020 according to:

The gas category:

Determination according to the type of gases with which they may be operated.

For Germany DE II2ELL3B/P

The gas type:

The burner can be operated with gases of the second family (natural gas - group H and L) and with gases of the third family (butane and propane).

The type of gas fireplace:

Differentiation according to the possibilities of the discharge of the combustion products or the supply of the combustion air. (ambient-air-dependent/independent)
Additional notes can be found in the chapter "Installation of the flue gas evacuation and the combustion air supply".

Design of the units

The exterior cladding of the units is made from coated steel sheet, which guarantees durability.
The outlet grille is found in the front section.
In order to ensure an optimal distribution of warm air in the installation location, the horizontal fins of the outlet grille can be manually adjusted.
On the rear side of the unit you will find the fan(s) with protection grid, the connection nozzles for the removal of the flue gas and supply of the combustion air, the gas connection nozzles, the cable passages for the electrical lines as well as the plug connection for the power supply.
In the right-hand side section the necessary components for the control and safety are found behind the inspection door, including e.g.:

- the electrical circuitry with the cabling
- the control electronics
- the gas valve
- the modulating gas burner

In the interior of the unit, directly in the circulation air flow, is the combustion chamber with heat exchanger. The combustion chamber is manufactured entirely from Inox stainless steel, AISI 441. For increased resistance to corrosion from damp vapours, Inox stainless steel, AISI 441 is used for the heat exchanger. The special form and the large surface area of the combustion chamber and heat exchanger guarantee a high level of efficiency and long service life.
The gas burner is likewise manufactured entirely from special, mechanically-processed stainless steel.

Function of the units

The modulating, gas wall-mounted automatic heaters of the GPC series has been developed for the heating of industrial and commercial spaces.
The electronic control of the unit regulates the heat output according to the actual requirement, between minimum and maximum output.
With the pre-mix and modulation technology, efficiency of up to 108% can be achieved.

The nominal heating capacity of the REMKO GPC series lies between 4.7 and 82.0 kW.

The units consist primarily of the combustion chamber with heat exchanger and the fan(s).
The ambient air is drawn in by the fan(s) and efficiently channelled through the combustion chamber with heat exchanger. The combustion chamber is heated by the gas burner operation and releases its heat to the air flowing past.
The air heated in this manner is blown out of the front side of the unit through an adjustable outlet grille.
Operation of the unit as intended is only possible with a connected temperature controller, e.g. ATR-10 (accessory).

Fans

The switching on of the fans is time-controlled by the control board, whereby the timing begins with the switching-on of the main burner.

The delayed switch-on prevents cold air from being blown into the room.

Switching off the unit

If there is no longer a heat requirement (room temperature above the adjusted setpoint), the control board switches off the burner.
The burner fan runs for the secondary ventilation of the combustion chamber for a fixed, pre-set time.

The fan(s) likewise run afterwards on a time-controlled basis until the heat exchanger is cooled.
If a new heat requirement should take place during the follow-up phase, the control board will wait for the fans to switch off and then proceed with a reset and begin a new cycle.

⚠ 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!

IMPORTANT NOTE!
The interruption of the current supply during burning operation or in the follow-up cooling phase is not permitted, because lack of a secondary ventilation of the heat exchanger can lead to significant damage:

- Overheating of the unit with the resulting expiration of the guarantee
- Damage to the fan of the burner and its components
- Tripping of the safety thermostat and the associated lock-out of the safety thermostat (STB).
  Therefore no new unit start without manual resetting
- Damage to electrical lines

Air/gas premix

The units are equipped with a burner with complete air/gas premix.
This mixing process takes place in the fan of the burner motor. The air drawn in by the fan flows through the Ventura tube, where an underpressure is created, which draws in the gas. In the process, a constant air/gas mixture is created.
The ratio of air and gas pressure is 1:1.
This value can be changed through the offset regulating screw found on the gas valve.
The amount of gas is already adjusted upon delivery of the units and the screw is sealed.
With the adjusting screw located at the Venturi tube, a fine adjustment can take place, which regulates the maximum gas flow rate and thus determines the carbon dioxide (CO_2) content of the flue gases
The screw is not sealed in order to enable conversion of the fan-assisted air heater to another type of gas.

PLEASE NOTE:
For the offset and CO_2 adjustment.

The control board of the units enables the speed regulation of the burner motor with DC depending on the heat output required in the space.
By changing the speed the air flow rate and thus the gas flow rate are changed.
Minimum and maximum speeds of the fan are two values that cannot be changed.

REMKO GPC series

Cycle of operation

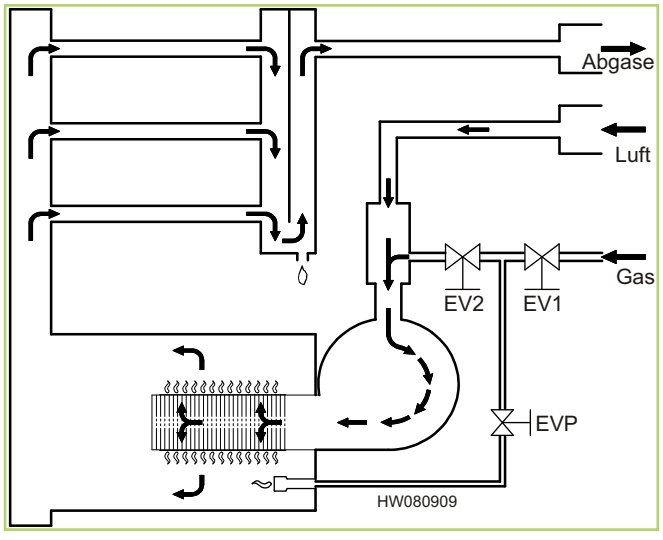
The units from the GPC range are fully-automatic hot air heaters, which are equipped with an electronic device with self-testing and with a microprocessor board for control and adjustment of the burner output. This guarantees a high degree of reliability and safety.

Burner operation

The burner is ignited when the following preconditions are fulfilled:

- The unit is supplied with power and is not in a fault lock-out state (lock-out)
- The gas supply valve is open
- The contact between terminal ID2 and IDC2 on the GPC board is closed
- The thermostat contact between terminal ID2 and IDC2 is closed
- The **On** option in the **Fun** function menu of the control panel is selected

Under these conditions, the burner fan starts immediately. After the pre-flushing process is complete, the flame is ignited with an ignition output that is 50% of the maximum output. After subsequently waiting for the stabilisation phase to pass, the burner modulates to the required heating output, depending on the inlet temperature.



If the flame cannot be ignited then 4 further ignition attempts take place. With the fifth ignition attempt, the GPC board triggers a fault lock-out. If the burner ignites, the cooling fan starts up after 30 seconds and conveys the warm air into the room.
For the shut-down of the hot air generator, the contact between terminals ID2 and IDC2 is to be separated by an additional switch in addition to a thermostat, the thermostat is to be switched off or the **OFF** option in the function menu of the control panel should be selected. It is prohibited to switch off the unit by disconnecting the power supply. This process must be used exclusively in emergencies. With an instructed switch-off of the hot air heater, the burner fan continues to operate for a further 90 seconds, in order to flush the burner chamber of flue gases. The cooling fan runs on for 120 seconds after the switch-off, to ensure that the heat exchanger "cool down" takes place. If the cool down process is not completed then this reduces the service life of the heat exchanger and therefore also invalidates the guarantee. Furthermore, the safety thermostat may also be triggered and necessitate a manual reset.
If, during the cool down phase, a new heating request is issued then the unit waits until the cooling fan has switched off, performs a reset and then starts a new heating cycle.

⚠ CAUTION

It is prohibited to switch off the unit power supply as long as the unit is in the cool down phase and the unit is set to "On". Non-compliance with this prohibition voids the warranty and increases wear of the heat exchanger.

Efficiency

The advantages of the units lie in the modular mode of operation, meaning the heat output created and thus the gas flow (consumption of fuel) are changed corresponding to the actual requirement. If there is a reduced heat requirement in the heated space, the hot air generator consumes less fuel, whereby its efficiency is increased up to 108%.

Intrinsic safety

The increase in efficiency with minimum output is achieved through the use of a modern air/gas mixture technology and the simultaneous flow rate regulation of combustion air and gas.
This technology increases the safety of the unit, because the gas valve feeds the fuel depending on the amount of air in accordance with its factory settings.
Unlike atmospheric burners, the CO_2 content remains the same through the entire operating range and allows an increase in efficiency with reduction of the heat output.
With no combustion air, the valve does not release gas.
With reduction of the combustion air, the gas valve automatically reduces the amount of gas and keeps the combustion parameters at an optimal level.

Modulation

The gas wall heaters are units with modulated gas burners, whereby every output between the minimum and maximum settings are possible during operation.
The highest output serves for raising the room temperature quickly when switching on the units.
If the room temperature approaches the desired value, the unit begins to continuously reduce the heat output so that only the actual requirement is covered.
The air is heated less heavily due to the lower heat output, which limits the physical emergence of layer formation (tendency of the warm to rise). This creates temperature layering of approx. 0.5°C per metre.
These results can only be achieved through a precise monitoring of the climactic spatial conditions and an optimal control of the unit.
With the dimensioning of heating systems with fan-assisted air heaters, it is important to observe the number of hourly air renewals.
In this regard, please note the following: Gas wall heaters should, in general, be arranged so that the air flow rate ensures air recirculation at least twice hourly, even if this would not be necessary for the heat output.

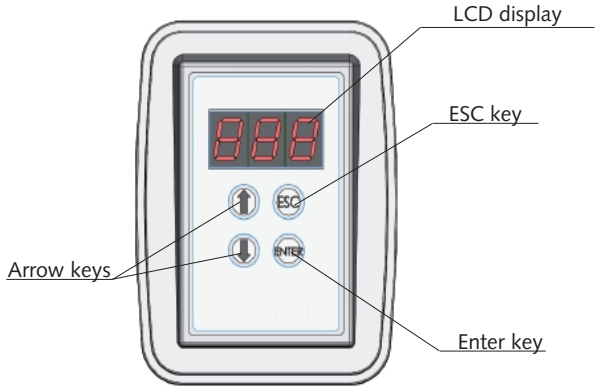
Minimal pollutant emissions:
The premix burner provides for "clean" burning with low pollutant emissions with the air/gas valve.

REMKO GPC series

User manual

Accessories

The hot air heaters from the GPC series are fitted as standard with a control panel on the front of the unit. All unit information or fault indications are displayed on this control panel or can be accessed from the panel.
It should be noted, however, that the control panel is not suitable for use as a remote control.

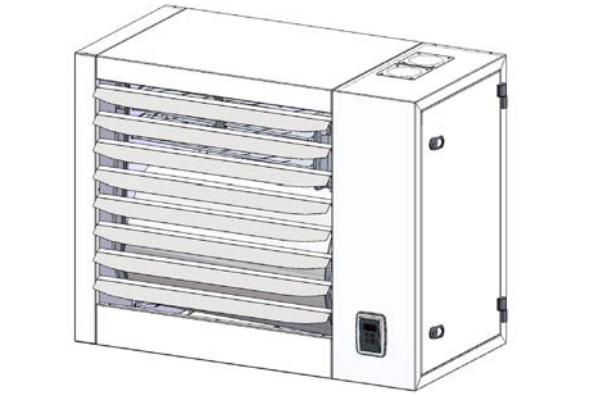


Room temperature control

The hot-air generators of the GPC series are delivered without a remote control or room thermostat, as various room thermostats available for the devices: For optimum operation, the use of ATR Smart Basic or ATR Smart Web electronic room temperature controllers is recommended.
For correct use of the accessories, please read the corresponding operating manual.

Fin alignment

Before switching the unit on, open the fins at least 45°, in order to avoid overheating the combustion chamber.



Operation with the ATR Smart Basic and with the ATR Smart Web

The room temperature controllers **ATR Smart Basic** and **ATR Smart Web** can be used for the control of an individual temperature zone at constant temperature. These have the following properties:

- Control of up to 32 GPC units
- TFT with colour screen with 4.3" with touch display
- Generously proportioned screen layout
- Up to 3 additional external temperature sensorsfor mixed temperature formation
- Master switch for turning control on and off supported
- Monitoring of burner operation
- Week and year calendar with daily programming to the nearest minute
- Comprehensive management of all plant functions, including of the reset of individual units via Ethernet interface and internet browser are possible (only with **ATR Smart Web**)

In this regard, see the operating manual for the **ATR Smart Basic** and **ATR Smart Web "REMKO room temperature ATR Smart Basic and ATR Smart Web"**

Safety thermostat

The GPC unit series is equipped with a safety thermostat with automatic reset function and positive safety device as standard. This means that the safety equipment also triggers with a breakage.
If the thermostat is tripped, the burner is stopped via the flame monitoring unit and a subsequent fault lock-out of the flame monitoring unit is triggered. Fault lock-out is indicated on the LCD display with F20. The thermostat probe is located behind the top outflow fins, in the centre of the housing. Because this is a safety-relevant error, the fault lock-out is permanent and requires a manual reset.

In addition to the safety thermostat, there is the NTC-1 probe which is set to the value ST1 and when the setpoint is reached, the heat output of the burner is adjusted downwards, regardless of other incoming signals. The NTC1 probe controls the heat output.
The ST1 value should not be modified unless in consultation with REMKO Customer Service.

⚠ CAUTION

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

Connection of room thermostat and remote control

The hot air heaters from the GPC series must always be connected to a thermostat, a timer or a room temperature controller, so that the user can switch the unit on and off. The operator or installer is required to install the unit circuitry in the room.
If multiple switches for turning off the burner are present, these must be connected in series.

Fault detection

The GPC board distinguishes between 30 different locking modes and faults. This makes precise diagnosis of the cause possible. The corresponding faults numbers, cause and how to clear them are described later in this guide.
For heavy lockouts requiring manual release, either press and hold the two arrow keys on the LCD for more than 5 seconds, or press the corresponding button on the ATR Smart room temperature controller.

⚠ 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!

Control panel

The LCD multifunction display installed as standard at the front of the GPC units for the control, configuration and diagnosis of all operating parameters. The display consists of three segment displays and four function keys: Up and down arrow keys for scrolling in the menu, ENTER for confirming and accessing a menu item and ESC to return the previous menu level.
Customer Service can also edit the most important operating parameters via the LCD display. However, editing of the parameters is password protected.

Display of the unit status

The unit status appears as follows in the display:

rdy Unit switched on without flame on burner, is in standby to **On** or heat demand by the control system of room temperature control;
On Unit switched on with flame on burner or in the ignition phase;
OFF Unit switched off via the LCD display. Any heat dissipation is not taken into account. To turn the burner on, set the mode to **On** on the LCD display;
Fxx Fault present.

During normal operation, the display shows **On** when the burner is switched on. In the switch-off phase or when room temperature is reached, **rdy** appears.

Air **EST** mode (ventilation) has been selected in the **Fun** menu; set **Fun** to **On** or **OFF**;
Axx Address of the GPC hot air generator; If the address of the hot air generator is not zero, the current operating mode andthe address assigned to the hot air generator are shown alternately on the display.

In the event of a connection problems between the board and the CPU indicator flashes on the LCD display if the problem is with the CPU; three flashing dots indicate that the display board is the cause. In this case, make sure that the display and board are connected properly and that the cable RJ11 is firmly seated in the plug.

Scrolling through menu

The menu is divided into three levels, the first is displayed without password input, the second and the third require the input of a second and third level password.
If the board of the GPC hot air generator is connected to an ATR Smart Basic or ATR Smart Web, i.e. with an address other than zero, the parameters are only displayed and cannot be modified.
The customer service, which must have access to all menu items, proceeds as follows:

Isolate unit from power supply;
Set the board address to zero;
Reconnect the power supply;
After completion of the work, remember to reset the switch as before.

Use the arrow keys (up) and (down) to scroll through the menu; to select a menu or parameter hold down ENTER, press the arrow keys to modify the parameters and press ENTER to confirm the change.

To quit a parameter or menu level, press the ESC key. If a key has not been held down for 10 minutes, the unit automatically switches back to the operating mode.
To change a parameter, press the arrow keys; with the up key, the parameter is increased by 1, and the down key the parameter is decreased by 1, if both arrow keys are pressed for at least three seconds, the running speed of the parameters is increased.
To confirm the parameter change, hold down the ENTER key for at least 3 seconds. The parameter change is confirmed by the flashing of the display.
All submenus run from bottom to top, at the end of the menu they start over again.

First level menu
The following menus are available on the first level:

Unit status provides information on operation (e.g. **rdy**, **On**, **OFF**);
Fun Under **Fun** the following operating modes can be selected: **On**, **OFF** or **EST** (summer mode);
rEg With this menu, the burner can be induced to minimum or maximum power during combustion tests; after the pre-set time (10 minutes), it returns to automatic mode;
tin For reading out the value of the signal 0/10 Vdc (if present) at the hot air generator input;
Pra Not used;
Abi For password input to access the second and third level menus.

By entering the password 001, you access the second level, where the menus **Set** menu for setting the setpoint, **I/O** for setting inputs and outputs, **Par** for the parameters and **FLt** for faults are available.

Password input
On the home screen (**On/OFF/rdy/Fxx**) use the arrow keys (up) and (down) to access the ABI function; hold down the ENTER key for 3 seconds
Set the password in the ABI menu and confirm with ENTER, hold down the key for approx. 3 seconds (the display flashes to indicate that the parameter has been saved);
Press the ESC key and return to the home screen (**On/ OFF/rdy/Fxx**) with the arrow keys and ENTER; hold down ENTER for 3 seconds;
Use the arrow keys and ENTER to select the desired menu line (**Flt, I/O, SEt, Par**);
Press ENTER to access the function;
Use the arrow keys and ENTER to select the parameters to be displayed or modified;
Press ENTER to display the value of the parameter;
Use the arrow keys and ENTER to change the value (**SEt** and **Par** only);
Press ENTER to confirm the change;
To quit the parameter and menu, press ESC until the start screen (**On/OFF/rdy/Fxx**) appears.
Switch to be reset as before.

Menu of the second and third levels

The menus of the second and third level are intended for technical customer service and are only accessible by a password to be obtained from the manufacturer's customer service. For further details, see "Programming with LCD display".

Fault directory

In the event of a lock-out (fault), the unit board indicates the nature of the problem by means of a code.
To unlock the hot air generator, hold down the two arrow buttons on the LCD panel for at least 3 seconds, or actuate one of the remote controls, if installed.
Faults are classified according to type of fault, the most common faults, which can be directly remedied by the user are:

F1x In case of failure of the burner to ignite, manual unlocking necessary.
F20 Lock-out of the safety thermostat of the hot air generator, manual unlocking necessary.
F21 No bridging between terminals ID1 and IDC1 or tripping of the fire protection flap connected to terminals ID2 and IDC2.
F3x Lock-outs due to faults in the exhaust gas fan.
F4x Fault lock-outs due to a fault or absence of a temperature probe, intervention of the customer service required.
F51 If the inlet temperature of the air has exceeded the limit set with parameter TH1, the temperature drops, the fault lockout occurs automatically; No manual reset required.
F60 Only on LCD panel, the hot air generator is connected to an ATR Smart Basic or ATR Smart Web, however there is no signal. When the connection is re-established, the lock-out is cancelled, manual unlocking is not required.

For the directory and explanation of all faults, see the FAULT table in "Faults and fault analysis".

Resets

The modulation board supports the detection of over 30 different lock-out causes. This means that the causative event can be dealt with perfectly.
To reset a lock-out, press both arrow buttons simultaneously for a couple of seconds.
The lock-out can be remotely cleared as follows:
Via the digital input ID4-IDC4 - N.O. key;
via the optional ATR Smart control;
Use of the ModBus protocol.
If there is no ignition, four further ignition attempts are carried out by the flame monitoring board, and lock-out and the display F10 do not take place until after the fourth attempt.
The fault code and possible cause of the lock-out are indicated in the FAULT table in "Fault and fault analysis".
If the flame monitoring device is locked out, faults F10 and F20, the device can also be unlocked by means of the button on the device itself; this lock-out is also indicated by the LED on the device.

CAUTION: The flame monitoring device incrementally saves the number of manual resets. In the event of five resets within 15 minutes without detected flame ignition, there is a "temporary" fault lock-out (F13). In this case another 15 minutes are required, before the unit can be reset again.
By pressing the reset button on the unit, this status can be immediately reset.

NOTE: If the safety thermostat (STB) is "open" before the start of the ignition phase, the flame monitoring device remains in the "standby state" and displays the fault F15 after 300 seconds.
This can occur, for example, in the cases of low temperatures.

Resets

The output of the GPC hot air generators can be adjusted in three different ways:

- 0-10 Vdc;
- ModBus;
- NTC1 temperature probe.

For the correct setting of the control parameters, the parameter d0 must be previously programmed; this determines the regulation assigned to the hot air generator

Parameter adjustment for flame modulation		
Function	Parameter	System
Flame modulation	d0=2	NTC1
	d0=5	0-10Vdc
	d0=7	Modbus - H71

Operation with room temperature controller
The hot air generator operates fully automatically with the aid of a room temperature controller, by means of which the room temperature is adjusted.
The room temperature controller and the board monitor all control and regulation functions, whereas the flame monitoring unit and the safety thermostat assume the safety functions.

Operation with the ATR Smart Basic / Web
Control of the hot air generator circuits of the can be transferred to the ATR-Smart-Basic or Web.
All systems use the ModBus protocol and can control up to 32 hot air generators.
To use the ATR Smart, Web or Basic for temperature control, the parameter d0 with default setting 2 for NTC1 control only has to be set to 7 (ModBus control) on each unit.
The room temperature controllers of the "Smart" series can be used for monitoring / display and control (active part of the control).

The ATR Smart controller has an internal temperature probe that can be connected to a remote control probe for control. The ATR Smart Basic / Web have an internal temperature probe and can be supplemented by three additional remote control probes.
The remote probes can be programmed as a main or additional element to the internal probe to obtain a mean value between both measurements.

When an "ATR Smart Controller" panel, the following is also required for control of the adjustment:
- Index unit modules from 1 to 32 by entering the addresses of the individual modules via DIP switches;
- Connect at least one NTC probe to the ATR Smart controller (or use an internal probe);
- Set the control parameters both on the board and on the Smart.

The connectable NTC remote probes must be 10 k of the 3435 type.
The probes must be connected to the NTC/ NTC terminals and can be placed in the room or at the air intake, depending on the control requirement.

NOTE: The respective NTC probes are optional external probes, not to be confused with the NTC1 modulation probe.

The ATR Smart Basic or Web is supplied with a voltage of 12 Vdc (12 Vdc + 10%/-15%).
To activate the heating request, the input ID1 of the ATR Smart controller must be closed.
For the ATR Smart Basic, these are terminals 5 and 6 of the terminal block. For the ATR Smart Web, thisisterminal block M2, terminals 1 and 2.
The contacts are bridged as standard.

The ignition status of the burner, the percentage modulation, the fault messages and the reset can be displayed via the ATR Smart Basic / Web.

The ATR Smart Basic / Web require the following:
Indication of whether the probe is an external probe (remote control), internal probe or both;
The number of connected devices (slave devices) must be changed as required;
ON-OFF or PID control must be set;
The heating function (mode: "Heating") and the desired setpoint in the room or of the preheat must be set;
The switch-on times must be set.

For further information on remote operation of the controllers via ATR Smart Basic or Web, please refer to the operating manuals.

The ATR Smart Basic or Web calculate the percentage modulation via the PID control and transmit this value to the individual modules. The percentage modulation transmitted to the modules is always the same.
If the setpoint is exceeded, the generators are switched off.

The ATR Smart Web version supports the complete management of all system functions, including the reset of the devices directly via a PC.

Intended use

The units are designed exclusively for heating and ventilation purposes in industrial or commercial use (no living space heating) on the basis of their structural design and equipment.

The unit design allows for the use of the unit accessories approved by the manufacturer.

The units must only be operated by appropriately instructed personnel.

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

Any improper use of the units is prohibited.
The units must be installed by a qualified technician, who is responsible for the observance of the existing regulations, rules and guidelines.

NOTE

Operation other than the types listed in this operating manual is prohibited. With non-observance, any manufacturer liability or warranty claims are voided.

Customer service and guarantee

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

CAUTION

Environmental protection and recycling

Disposing 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 byensuring 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.

Transport and handling

The units from the GPC series are delivered fixed to a wooden pallet and covered with suitable robust cardboard packaging. Suitable transport vehicles, capable of bearing the load, must be used to transport the units. All transport work must be performed by experienced personnel, who are familiar with the applicable health and safety regulations.
The unit can be unpacked once it has been transported to the installation site.

Installation

The following instructions for installation and set-up of the units are intended exclusively for authorised technicians.
All safety notes must be observed without exception.

General information

Normally the units can be installed directly in the room to be heated.
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 installation of fan-assisted heaters operated with gas burners is prohibited in the following spaces:

- In public function rooms or in rooms with a concentration of persons greater than 0.4 per square metre
- In rooms where gas or dust can accumulate through the processing that takes place there or through the materials stored there, which could lead to fire or explosion

So that no dangerously high temperatures are reached, the distance between the exterior surface of the unit and flue gas pipe and any accumulated flammable material must be no less than 1.5 m, with a ground clearance of 2.5 m or greater.

Units with gas burners for gas with a thickness greater than 0.8 (liquid gas, propane, butane) may only be installed in rooms where the floor does not lie below ground level.

Condensate drain
The hot air generators are equipped with a built-in siphon and condensate draining system. The siphon is an essential component of the device and is classified as a safety device. Replacement of the siphon by a model not approved by the manufacturer is prohibited. The discharge of the condensate must comply with the regulations and laws applicable at the place of installation.

Ventilation openings

The rooms where gas-powered units are operated must have one or more permanent openings (windows or doors).

These openings must be arranged in the following places:
- directly below the ceiling with gases with a density less than 0.8
- directly above the floor with gases with a density greater than or equal to 0.8.

The openings must be arranged on exterior walls in open air. For the size of the cross-section, the installed heat output is authoritative.

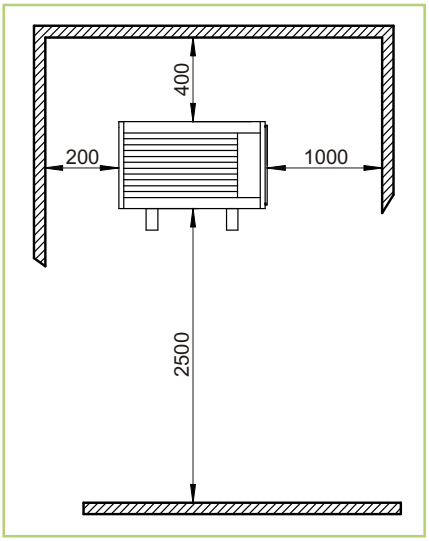
Installation instructions

The minimum height and clearance of the fan-assisted heater from the walls and floor can be gathered from the drawing below.

The minimum clearances are the necessary distances for maintenance. All measurements are given in mm. The height [2500 mm] corresponds to the minimum height indicated for "Hanging units" by the guidelines.

Two different types of brackets are available for theinstallation as accessories:
Fixed and pivoting.

NOTE
Ensure sufficient distance between fan and wall (unhindered air flow).



Permanent wall installation

Align the wall brackets in a suitable place on the wall (spirit level) and fix securely.
Mark the boreholes to be made with a pencil.

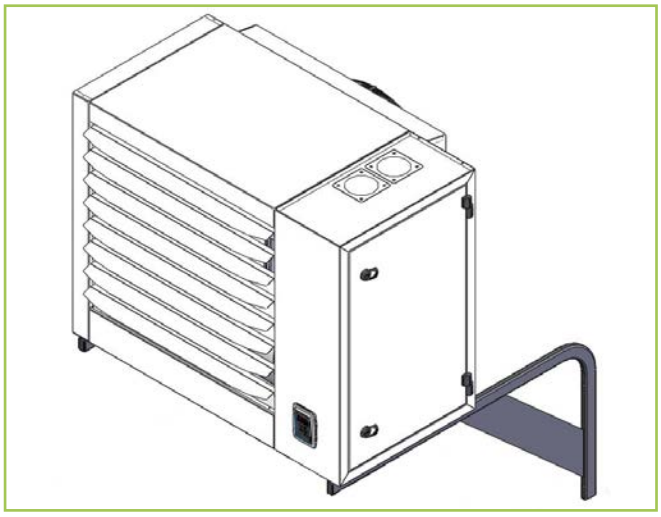
- Securely attach the wall brackets with suitable anchors and screws - M10 or greater.

NOTE

Make sure that the type of anchor and size of the screws are appropriate for the type of masonry, in order to bear the weight of the unit.

- Install the two bracket pairs with the supplied material as shown in the figure

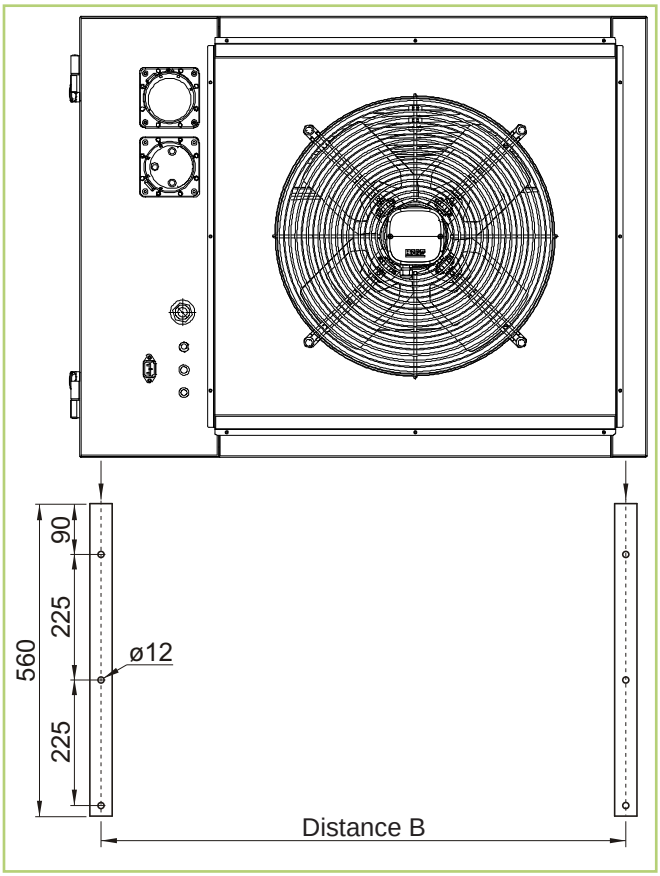
- When installing the brackets, lock the nuts with a locking ring between the bracket and nut.



Brackets for wall installation (standard design) EDP no.: 228780 GPC 20 - 80

- Position the unit on the brackets so that the holes of the unit line up with those of the brackets, whereby the corners of the brackets must be flush with the front edge of the unit.

- Fasten the units with the M8 screws provided; in the process, insert a locking ring between the screw and bracket.



Distance between the wall brackets	
Model	Distance B
GPC 20	719 mm
GPC 40	910 mm
GPC 60	1241 mm
GPC 80	1241 mm

The unit should be affixed “decoupled”.

CAUTION

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

The wall console must be affixed securely using screws and wall plugs in accordance with the customer's type of wall and the unit weight.

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

Pivoting wall installation

The instructions for installation of the pivoting brackets are included with the packaging.
The use of pivoting brackets is appropriate for the following cases:

a) Installation of the unit in a corner

b) Installation of the unit at a right angle to the wall it is mounted on

c) Installation of the unit on a column

NOTE

The brackets must be connected to the unit and the wall in a de-energised state.

CAUTION

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

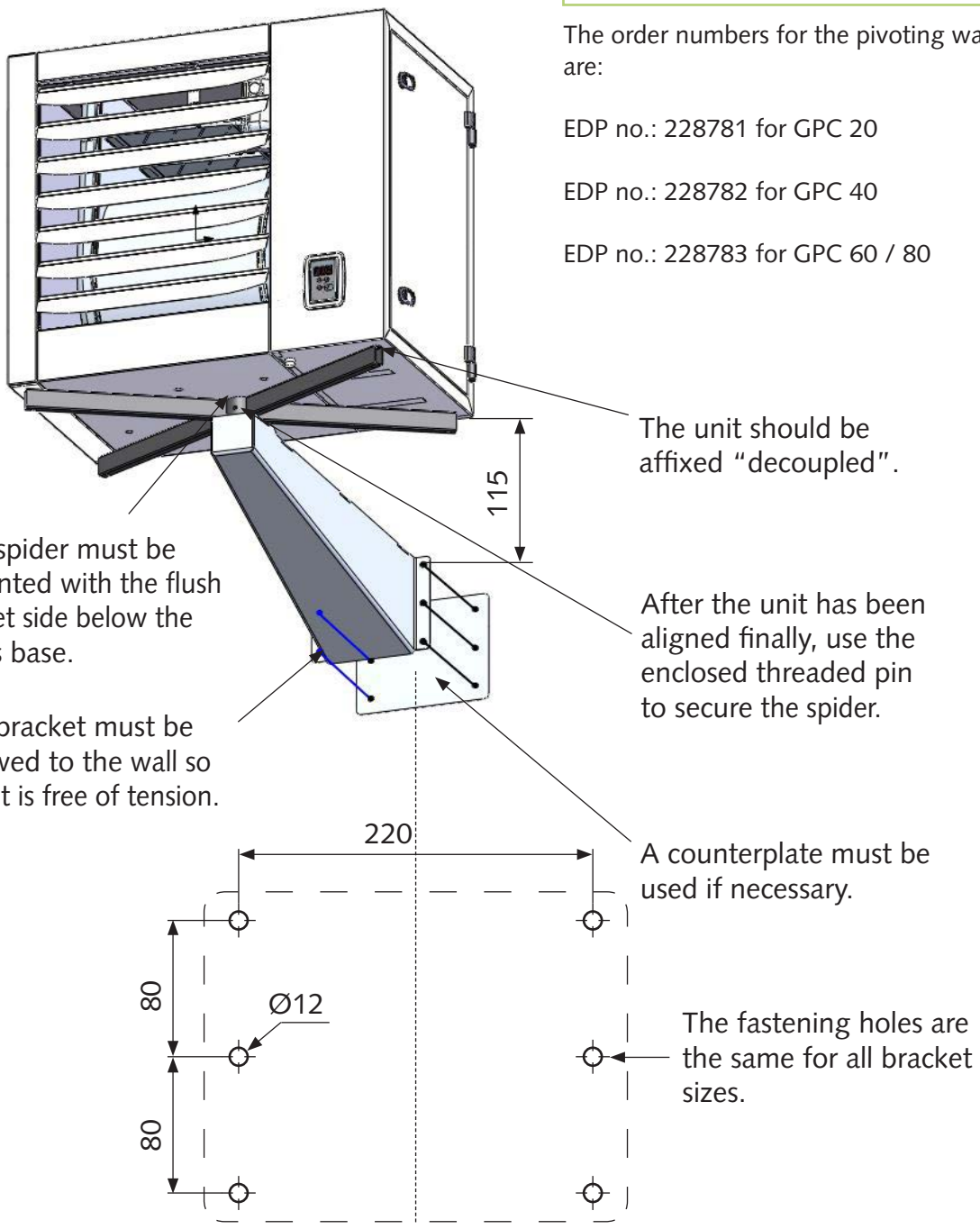
The wall console must be affixed securely using screws and wall plugs in accordance with the customer's type of wall and the unit weight.

The order numbers for the pivoting wall installation are:

EDP no.: 228781 for GPC 20

EDP no.: 228782 for GPC 40

EDP no.: 228783 for GPC 60 / 80



The unit should be affixed "decoupled".

The spider must be mounted with the flush socket side below the unit's base.

After the unit has been aligned finally, use the enclosed threaded pin to secure the spider.

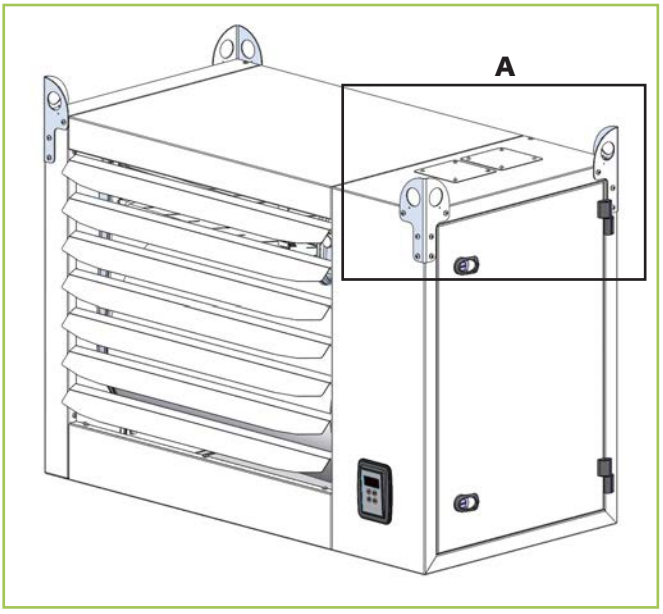
The bracket must be screwed to the wall so that it is free of tension.

A counterplate must be used if necessary.

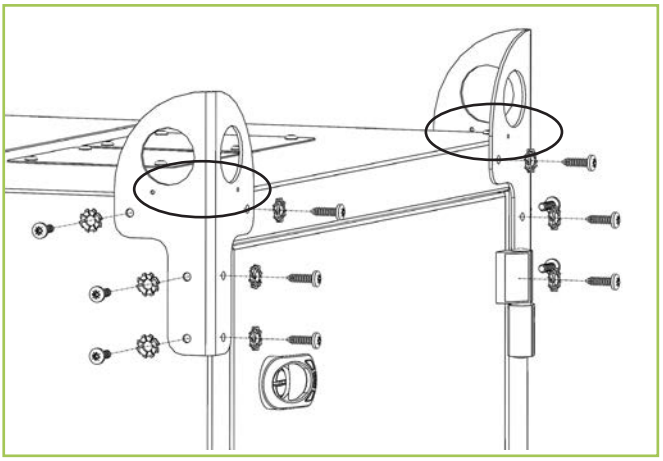
The fastening holes are the same for all bracket sizes.

Suspension from the ceiling

The accessory assembly kit ceiling suspension, with 4 universal suspension brackets, is available for installation as a suspended unit.
When fastening to the ceiling with chains or ropes provided by the customer, use appropriate fastening materials that are appropriate for the weight of the unit.



Detailed view A:
Horizontal air flow



NOTE:
Small guide holes are provided for correct arrangement of the suspension brackets.
These must be aligned at the top edge of the unit.
Refer to corresponding figure here.

Condensate drain

Correct implementation of the condensate trap is particularly important, a poorly designed trap impairs proper functioning of the unit.
The following points should be observed:

- Danger of accumulation of the condensate in the heat exchanger;
- Danger of freezing of the condensate in the pipes;
- Danger of exhaust gas discharge via the condensate drain.

Condensate accumulation in the heat exchanger

The condensate should not accumulate in the heat exchanger when the unit is operating correctly.
A monitoring electrode in the siphon inside the hot-air generator GPC locks out burner operation before water can accumulate in the exhaust gas collection hood.
When installing the hot air generator, make sure that the surface is perfectly level, so that the characteristic inclination of the tube bundle is not affected.

Connection of condensate discharge pipe

The GPC hot air generators are equipped with a condensate drain at the back of the unit.
Depending on the installation type, the condensate drain can take one of the following forms:

- as free discharge;
- as discharge into rain gutters;

NOTE

Disconnect the cap of the condensate drain before commissioning to allow regular operation.

Preventative measures

The following materials should be used for condensate drains:

- Aluminium, stainless steel, silicone, Viton or EPDM hoses for hot pipes through which smoke is discharged;
- For cold pipes, through which only water flows, PVC pipes.

Do not use copper or galvanized iron.

Anti-freeze protection

The condensate disposal system must be effectively protected against the freezing of the circulating condensate.
It is recommended to install the condensate collection system within heated rooms. In the case of outdoor installations, the pipes must be connected by means of an open connection downstream of the siphon to prevent any ice formation in the outdoor installation from affecting the drainage of the condensate.
It is nevertheless advisable that the largest possible section is located inside the heated room, for example by collecting the condensate near the ground with a sloping pipeline in the room.

Free discharge

When the unit is installed outside and if the outside temperatures are not particularly low, no additional line needs to be connected to the condensate discharge line. It must be verified that the water discharge does not accumulate in the unit.
If the discharge is to occur via a pipe, an open port (cup-shaped) must be created to prevent the formation of ice in the pipe obstructing drainage of the condensate, thereby causing an accumulation of water in the heat exchanger.
In the case of drainage pipes in outdoor areas, it may be necessary to heat these by means of a heating element.

Discharge via rain gutters

Laying the condensate drain in the space to be heated is a good solution to prevent the formation of ice; the drainage of the condensate can take place via rain gutters or it can be collected and treated with alkaline solutions.

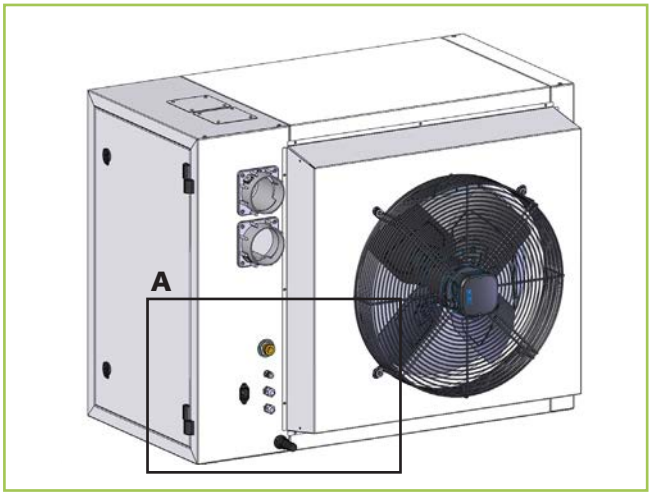
Neutralisation of the condensate

The condensate produced by the combustion of natural gas has a pH of 3.5-3.8.
If neutralization of the condensate is necessary, the corresponding articles are available as accessories.
The following articles are available as accessories:

Neutralization box including calcium carbonate
EDP no.: 260400

Acid-resistant condensate pump
EDP no.: 260410

Further information can be obtained from Customer Service.



Detailed view A:
Condensate connection port

Flue gas connection

The units work with a closed combustion cycle.
The fan is located in front of the heat exchanger.

The flue gas evacuation and/or combustion air supply must be planned and executed in observance of the respective local guidelines.
In addition, installation on outside walls must be coordinated with the responsible district flue & chimney inspector.
The classification of the different installation versions takes place pursuant to the European Standard EN 1020 and/or DVGW-TRGI Directive 2008 and is a component of the EC authorisation in the factory-supplied design.
Only authorised pipes and end pieces may be used.
The end pieces of the supply air and exhaust pipes must be dimensioned so that no sphere with a diameter greater than 12 mm can enter the system.

Installing the end pieces

The warm air heaters from the GPC range are equipped in the rear and top section of the burner box with openings for the extraction and flue gas pipe.
Depending on which type of installation has been selected, it is possible to fit or relocate the end pieces at the back or top.
The end pieces are mounted ex works on the rear side of the unit. If top openings should be required then the connections must be detached from the rear side and the cover and seal unscrewed from the top openings. Now screw the 90° bend inside the burner box, in the respective direction. Insert the end pieces in the desired position and screw the cover and seals into the seats that are not used. Make sure that the seal is guaranteed on the burner box and in particular on the flue gas pipe.

Fitting the end piece seals

The scope of supply includes two seals to seal the end pieces with the flue gas pipe and fresh air line. These are fitted on the end pieces of the GPC units for correct sealing.

⚠ CAUTION

The use of plastic flue gas pipe is not permitted.

Since the automatic heaters are GPC condensing devices, the following material must be used for the exhaust gas line:

- Aluminium with a wall thickness of at least 1.5 mm
- Stainless steel with a wall thickness of 0.6 mm or more with a carbon content below 0.2%.

NOTE

The installer of the exhaust system is obliged to complete the system identification (name plate) enclosed with the exhaust system in accordance with applicable standards and visibly attach it to the exhaust system.

Only pipes and gaskets suitable for temperatures between 25°C and 210°C are to be used to present the escape of exhaust gas.

Individually, the units are classified for the following versions:
B23/C13/C33/C43/C53/C63

The installation of the flue gas and supply air duct can take place in different ways.
e.g. Gas fireplace type B:
The combustion cycle is not sealed compared to the environment in which it has been installed.
The combustion air is taken directly from the installation space.
This version may only be installed in rooms that have at least one door or window that can be opened to the outside and have a volume of at least 4 m³ per kW total nominal heat output of the unit; or a combustion air opening of at least 150 cm² leading outside or two openings that have an open cross-section of at least 75 cm² each.

e.g. Gas fireplace type C:
The combustion cycle is sealed compared to the environment in which it is installed.
The combustion air is fed from outside.

The units may only be operated with appropriate flue gas pipes.
The factory components available as serial accessories correspond to all requirements.

⚠ CAUTION

If the end piece seals are not used then there is a high risk that flue gases will be fed into the room to be heated.

Condensate water

In the case of GPC units, no thermal insulation of the flues is required, as the condensate that is formed collects in the condensate collection tank and thus does not cause any problems.

NOTE

The horizontal flue sections of the healing air generator must be installed with a slight inclination of 1° to 3° towards the hot air generator, so that the condensate formed cannot accumulate in the exhaust pipe.

Guide to selection

If the flue gas end piece is not connected directly to the unit, but rather longer flue gas sections must be overcome, ensure - according to the total length and geometry of the flue gas ducting - that the end and extension pieces, as well as the elbows, exhibit the correct diameter.

After fastening the flue gas ducting, the pressure loss for the respective unit must be determined.

The pressure loss is different with each unit, because the flue gas flow rate depends on the output.

Add up the determined pressure losses of the individual flue gas components and make sure that the sum total does not exceed the value available for the unit type to be used.

Note:
With the internal installation of coaxial tubes, a maximum tube length of 3 m is permitted. The end piece of the flue gas pipe must be installed in accordance with the relevant national guidelines.

If there is a combustion air supply duct, the pressure losses must be added to those of the flue gas pipe.

If the sum total of the pressure losses lies above the available unit pressure, flue gas and fresh air pipes with a larger diameter must be used. The calculation must be performed once more for this.

NOTE

Exceeding the permissible pressure losses in the pipework reduces the heat output and safe operation of the unit.

The maximum possible duct lengths between the unit and end piece are shown in the table.

When using flue gas elbows, it is necessary to take the respective pressure losses into consideration.

Examples of pressure losses:

A 90° elbow with Ø 80
equates to 1.6 m straight pipe length

A 45° elbow with Ø 80
equates to 0.8 m straight pipe length

A 90° elbow with Ø 100
equates to 2.3 m straight pipe length

A 45° elbow with Ø 100
equates to 1.0 m straight pipe length

On the following pages, examples of the configuration of the exhaust gas lines and combustion air ducts are presented and the corresponding authorised supply air and exhaust pipe lengths are state in tables, so that power losses of the hot air generator can be prevented.

CAUTION

Installation work may only be carried out by authorised qualified technicians.

Installation examples

Gas fireplace type B23

Room-air-dependent combustion system.

The combustion cycle is not sealed compared to the environment in which it has been installed. The combustion air is taken directly from the installation space.
The guidance of the flue gas can take place in two variants:

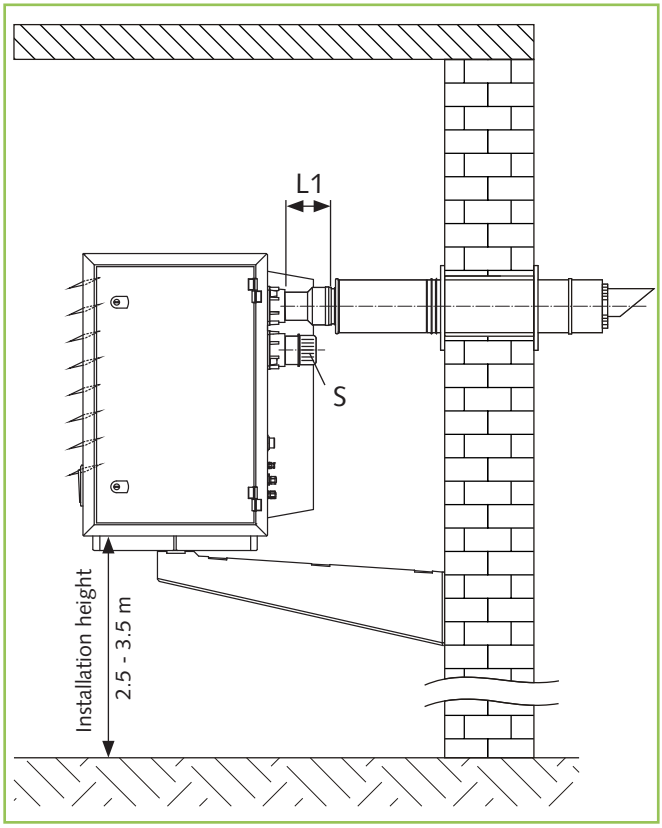
a) with the aid of horizontal ductwork (outside wall installation) straight through the outside wall
or
b) with a vertical duct through the roof, if the ceiling is also the roof.

With these installation variants, sufficient ventilation of the installation space must be ensured in order to guarantee the correct supply of combustion air. This takes place through openings in the walls of the room.
The dimensions and characteristics determined in the standards must be adhered to.
In particular, DVGW-TRGI 2008 Sec. 5.2.2 and TRF Sec. 7.2.2. should also be observed.

The combustion air supply must be made from the outside as a basic rule:

- With mechanical suction plants in the installation space
- If over or underpressure can occur in the installation space
- If the unit is installed in environments with large amounts of dust
- In operations working with motor vehicles

Type B23 horizontal through the outside wall.



Type B23 horizontal		
L1 maximum duct length without end pieces		
	ø 80	ø 100
Model	Metres	
GPC 20	30	-
GPC 40	30	-
GPC 60	15	-
GPC 80	-	30

⚠ CAUTION

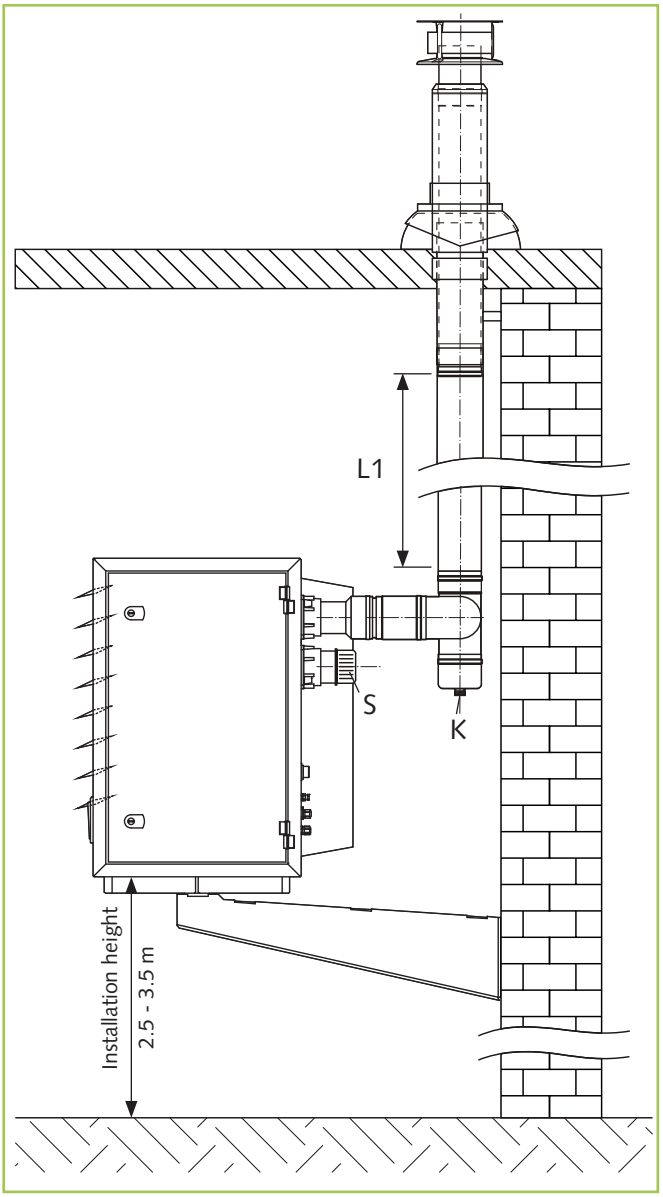
In this version a protection grid should be affixed on the combustion air supply duct so that the penetration of solid objects with a diameter greater than 12 mm is prevented.

Protection grid [S] for combustion air intake

GPC 20 - 60; EDP no.: 228960
GPC 80; EDP no.: 229060

REMKO GPC series

Type B23 vertical through the ceiling.

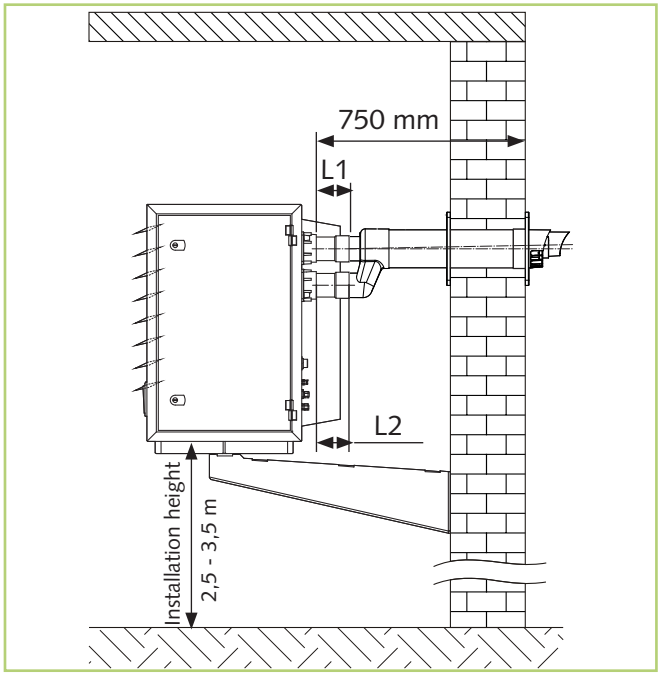


Gas fireplace type C
Room-air-independent combustion system.
The combustion cycle is sealed compared to the environment in which it is installed.
The combustion air is fed from outside.
The ductwork runs horizontally through the outside wall or vertically through the roof.

NOTE

According to Section 4-1-2 of the FeuVO (German Fire Ordinance), only fireplaces that are self-contained from indoor air may be operated in garages.

Type C13
Room-air-independent combustion system.
Exhaust/ and combustion air are led through an LAS end piece through the outside wall.



Type B23 vertical		
L1 maximum duct length without end pieces		
	ø 80	ø 100
Model	Metres	
GPC 20	30	-
GPC 40	30	-
GPC 60	15	-
GPC 80	-	30

Type C13 horizontal / coaxial		
L1 + L2 maximum duct length without end pieces		
	ø 80	ø 100
Model	Metres	
GPC 20	30 + 30	-
GPC 40	30 + 30	-
GPC 60	5 + 5	15 + 15
GPC 80	-	5 + 5

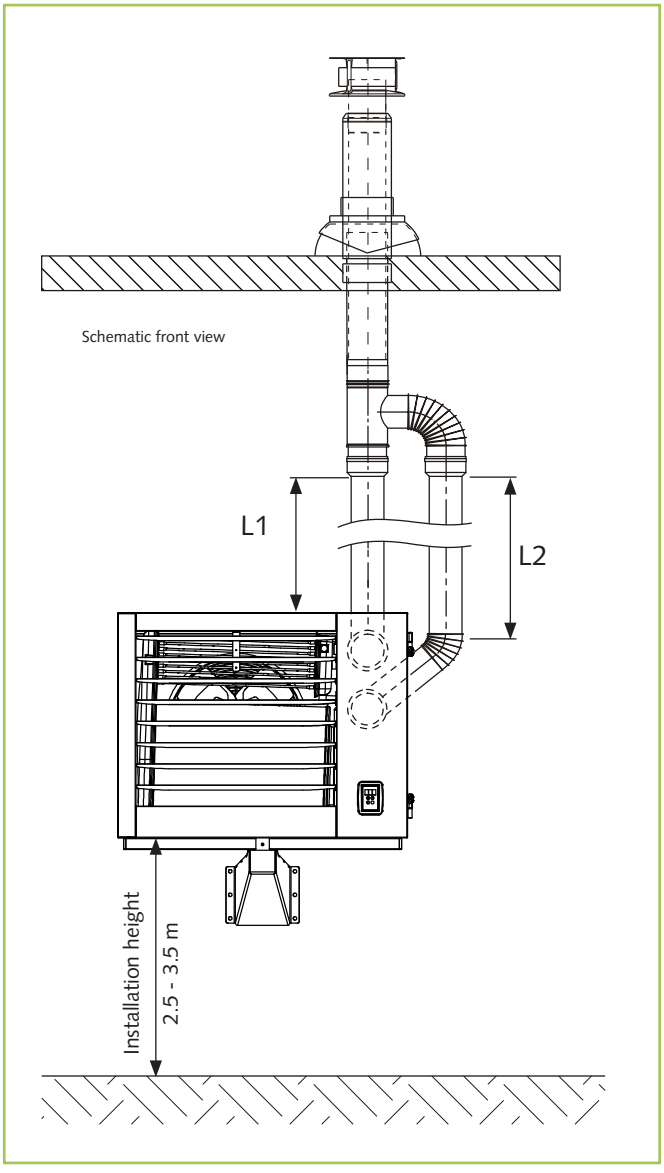
NOTE

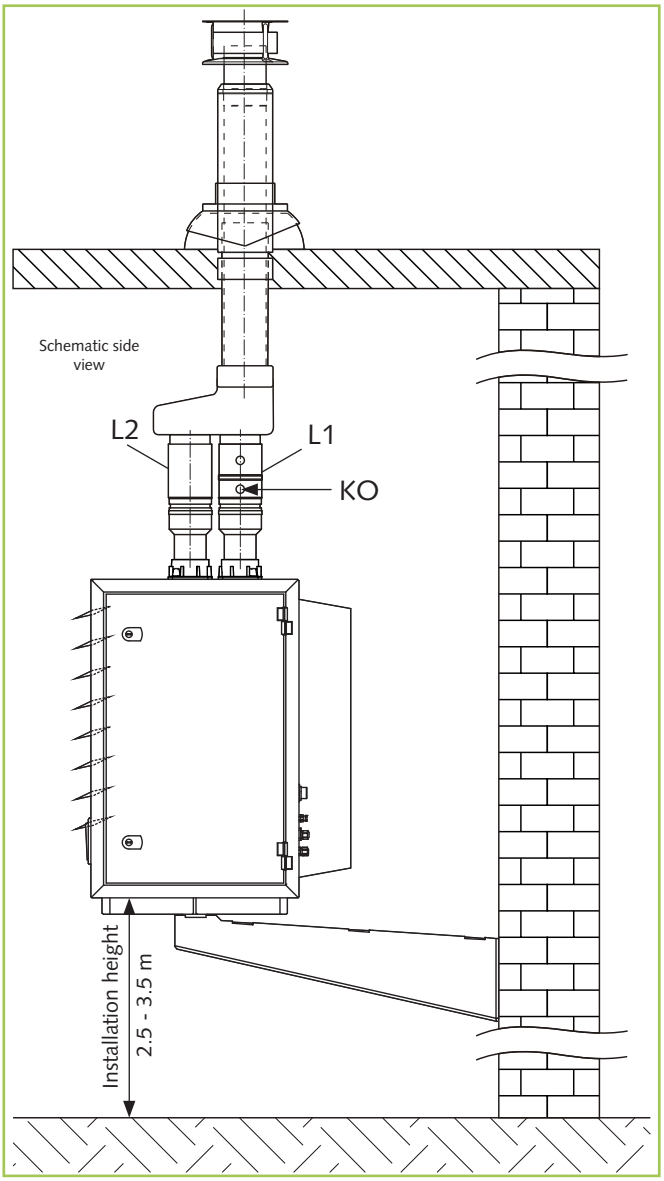
Condensate drainage connection [K] = M 20 external thread

Flue gas and fresh air adapter piece Ø80 to Ø100
GPC 60 - 80; EDP no.: 228916
The GPC 80 is equipped as standard with two adapter pieces.

Type C33

Room-air-independent combustion system.
Exhaust/ and combustion air are fed out through an LAS end piece through the roof.





Type C33 vertical / coaxial		
L1 + L2 maximum duct length without end pieces		
	ø 80	ø 100
Model	Metres	
GPC 20	30 + 30	-
GPC 40	10 + 10	-
GPC 60	1 + 1	15 + 15
GPC 80	-	8 + 8

NOTE

In this version the position of the connections to the unit must be changed, meaning they must be repositioned from behind to above. ***This variant is executed at the factory and must be indicated when ordering.***

NOTE

Condensate drainage connection [KO] = M 30 external thread

NOTE

The installation of the exhaust gas routeing through the outside wall must correspond to the regulations of DVGW - TRGI and TRF as a basic rule and must be approved by the responsible district flue & chimney inspector.

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

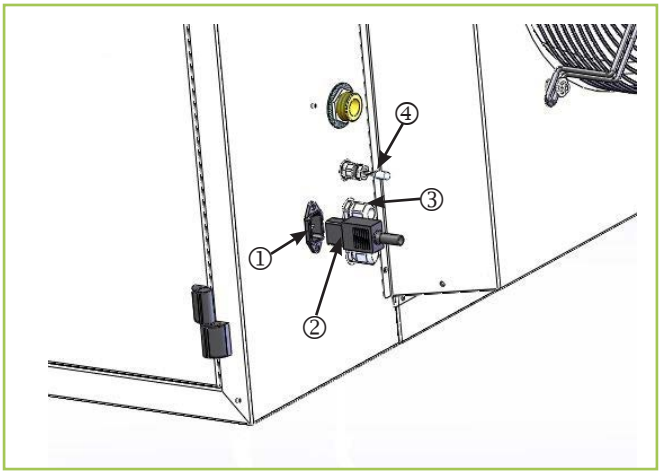
Electrical wiring

The electrical connection of the unit may only be carried out by authorised technicians (electrical power company-approved) in accordance with the applicable regulations. A main/emergency shut-off switch should be installed in an easily accessible position on the visible side of the unit and protected against unintended actuation. The switch must disconnect all poles of the unit with a minimum contact opening of 3 mm from the power supply.
Keep the power cables away from heat sources, secure them with strain relief clamps and do not pull them.

⚠ CAUTION

A multi-pole isolator with appropriate electrical protection must be connected upstream to the units. This must placed in a highly visible and accessible location within 3 m of the control box. The wire cross-section must be at least 1.5 mm².

The units must be connected to the power supply protected against polarity reversal. The electrical system, in particular the cable sections, must be rated according to the maximum power draw.
Power supply 230V/50Hz,
Minimum cross-section of the power supply 1.5 mm².

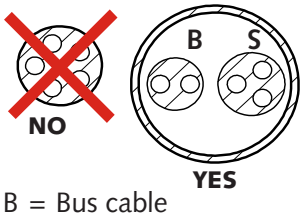


Rear panel parts:

① = Unit power outlet
② = Unit plug
③ = Cable guides
④ = Unit temperature probe

Connection of room thermostat and remote control

The hot air heaters from the GPC series must always be connected to a thermostat, a timer or a room temperature controller, so that the user can switch the unit on and off. The operator or installer is required to install the unit circuitry in the room. If multiple switches serve to switch off the burner, these must be connected in series.



B = Bus cable
S = Live cable

⚠ CAUTION

The main/emergency shut-off switch may only be used in emergency situations or with extended periods of non-use.
If it is switched off during the operation of the unit, the electrical supply-air fan cannot cool the combustion chamber. This can result in damage to the unit.

NOTE

Phase and neutral lines must not be interchanged during connection, because the flame monitoring device will otherwise interrupt unit operation for safety reasons.
Alarm F1X is displayed.

NOTE

The condensate contact must be potential-free.

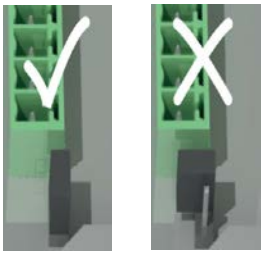
Connection of the ATR Smart controller

The ATR Smart controller is connected with its own plug. When connecting to the power supply, make sure that the polarity is correct.
Connect the RS485 power supply to the appropriate terminals with the correct polarity.
If several hot-air generators are connected, the terminals D + and D- must be connected to one another, observing the correct polarity, whereby the network can be connected in both series and star configurations.

NOTE: The correct address MUST be set on each board. The addresses go from 1 to N consecutively, without interruption in the numbering. The address of each card that is not equal to zero is displayed on the LCD as Axx, where xx is the address.
For programming the ATR Smart controller, the manual supplied with the accessories must be observed.

⚠ CAUTION

The integrated buffer battery of the controller must be activated by moving the "JP3" jumper. Otherwise, the date setting will not be saved in the event of a power failure!

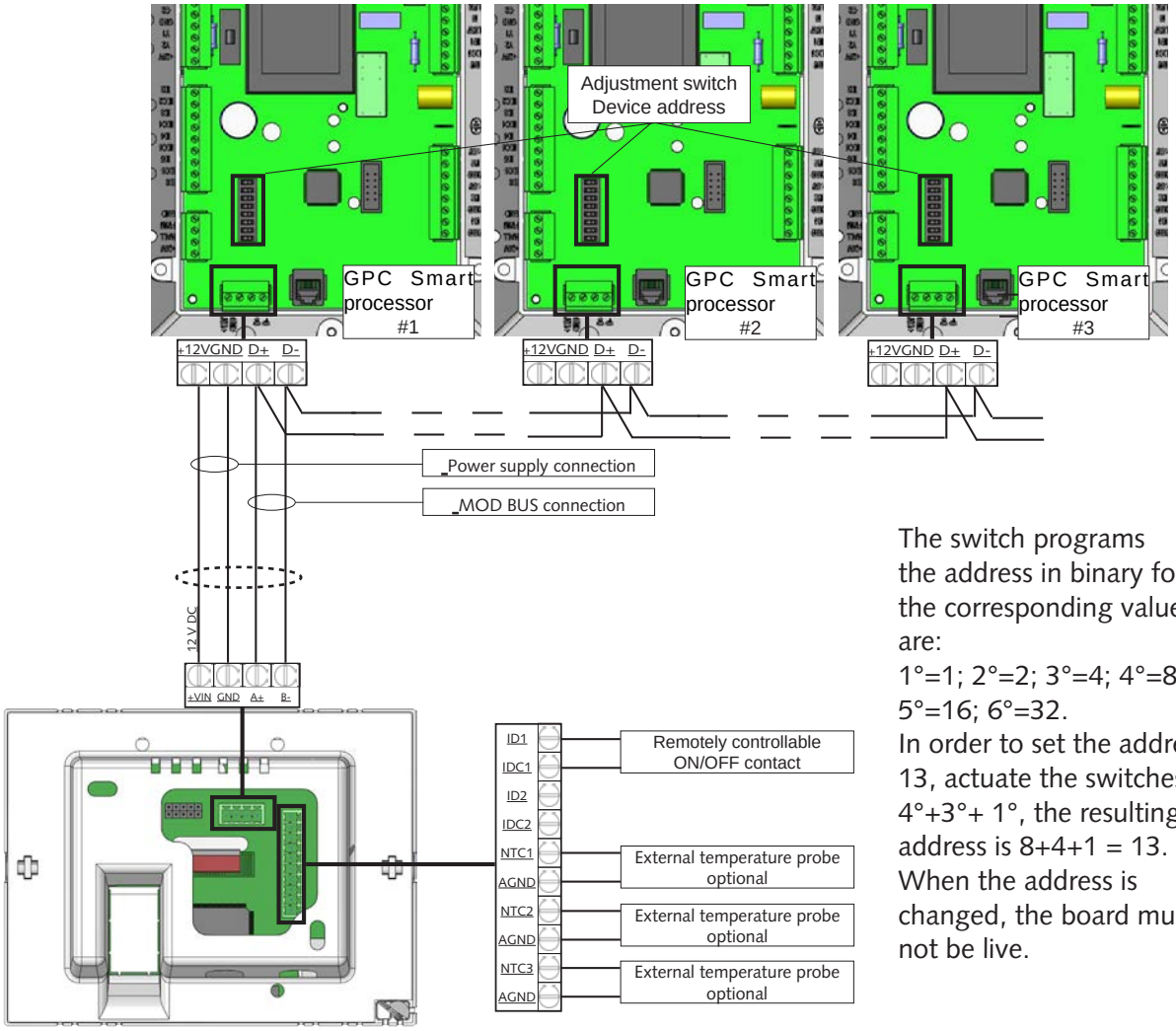


Ventilation (summer)

There are different control options for activating only the fans (ventilation in summer with the burner switched off, **Est** mode):
- with the contact ID3-IDC2;
- with ATR Smart Basic / Web;
- manually via the LCD switch on the unit.

NOTE: **Est** mode can be accessed via the **Fun** menu of the LCD display. See Programming via the LCD display and the navigation card for more information.

NOTE: The hot air generator always conducts follow-up ventilation before the fans are switched off.



The switch programs the address in binary form, the corresponding values are:
1°=1; 2°=2; 3°=4; 4°=8; 5°=16; 6°=32.
In order to set the address 13, actuate the switches 4°+3°+ 1°, the resulting address is 8+4+1 = 13.
When the address is changed, the board must not be live.

REMKO GPC series

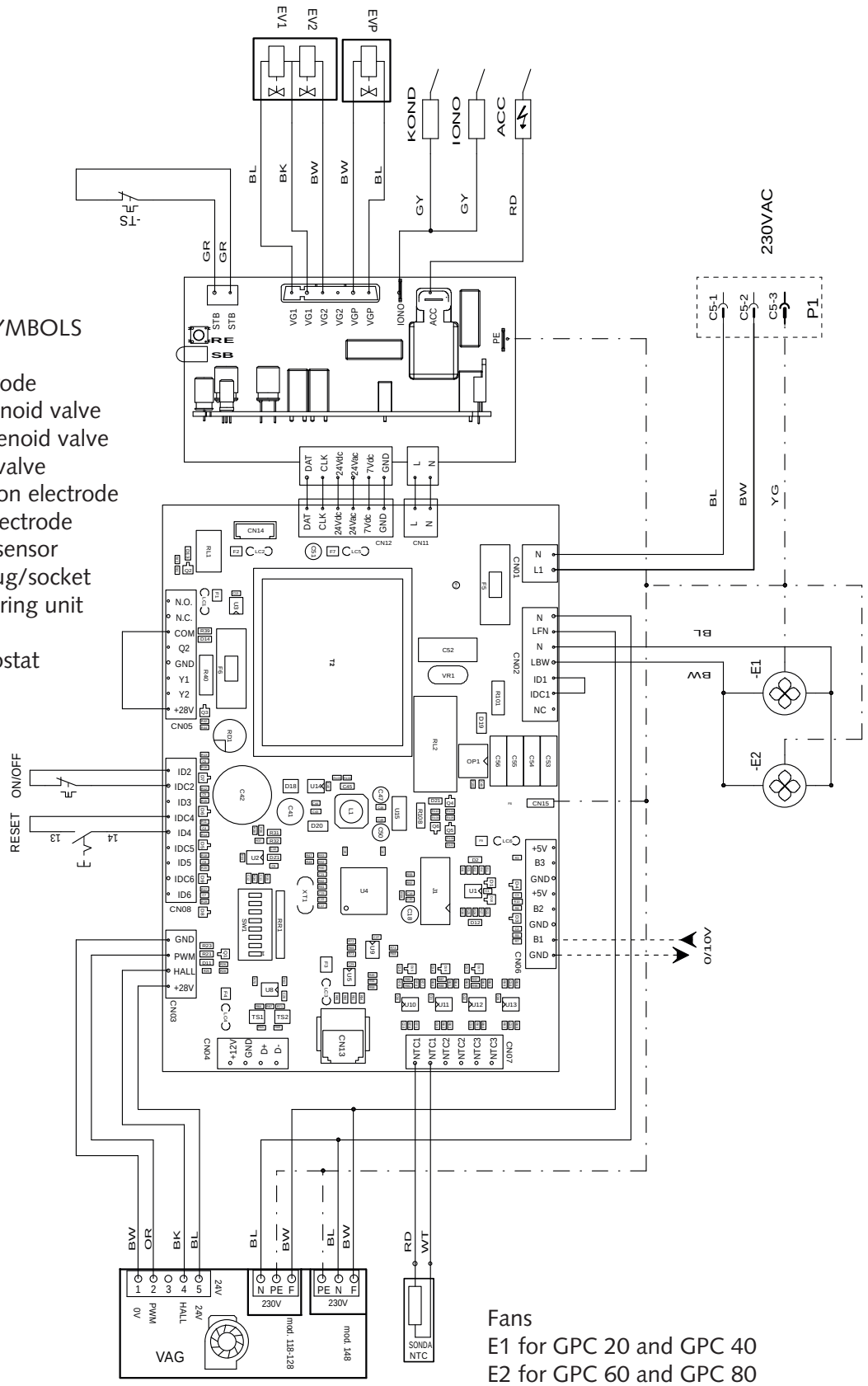
Electrical wiring diagram

EXPLANATION OF SYMBOLS

ACC	Ignition electrode
EV1 -	First GAS solenoid valve
EV2	GAS main solenoid valve
EVP	GAS ignition valve
IONO	Flame detection electrode
KOND	Monitoring electrode
NTC1	Temperature sensor
P1	Connector plug/socket
TER	Flame monitoring unit
VAG	Burner fan
TS	Safety thermostat

CABLE COLOURS

WT	white
OR	orange
RD	red
PK	pink
BL	blue
GR	green
YG	yellow/green
BW	brown
GY	grey
BK	black
YL	yellow



Parameters of GPC board

All parameter values of the GPC board are provided for all GPC hot air generator models.
(1) Indicates that the parameters can be changed with the password 001.
(2) Indicates that the parameters can be changed with the level two password to be obtainable from the manufacturer's customer service.
(3) Indicates that the parameters can only be changed with ATR Smart Basic / Web or via Modbus.

Parameters of GPC board

Symbol	Level	Menu	Unit	Value	Description
					Control parameter
d0	(2)	Par		2	Flame modulation: 2=NTC1; 5=0-10 V dc; 7=Modbus (ATR Smart Basic / Web and PID)
d1	(2)	Par		0	Unit type: 0=Hot air generator
d2	(2)	Par		1	Output remote signalling lock-out (Q1): 0=off; 1=on
d3	(2)	Par	Sec	45	(RL2): 0÷255
d4	(2)	Par	Sec	30 (=150 sec)	(RL2): 0(2)55 (1=5 s 60=300 s)
d5	(2)	Par		0	Activation exhaust gas T-control (NTC3): 0=off; 1=on
d6	(2)	Par	Sec	5	Interval between off and on (off timer): 0÷255
d7	(2)	Par		0	Rest fault counter: 0÷1
d8	(2)	Par		0	Activation boiler anti-freeze protection (NTC1): 0=off; 1=on NOT USED
d9	(2)	Par		0	Activation flaps: 0=off; Do not change
					Burner parameters
b1	(2)	Par	rpm	see table	MINIMUM motor speed (PWM1): 90÷999 (1=10 rpm)
b2	(2)	Par	rpm	see table	MAXIMUM motor speed (PWM1): 90÷999 (1=10 rpm)
b3	(2)	Par	rpm	see table	IGNITION motor speed (PWM1): 90÷999 (1=10 rpm)
b4	(2)	Par		2	Divider HALL signal: 2÷3
b5	(2)	Par	rpm	50	Fault F3x; speed x10 (50=500 rpm): 0÷300
b6	(2)	Par	Sec	20	Fault F3x; persistence of fault before fault F3x: 0÷255
b7	(2)	Par	Sec	20	Pre-breathing time at maximum output: 0÷255 DO NOT CHANGE PRESET VALUE
b8	(2)	Par	Sec	10	Duration of flame stabilisation (ignition): 0÷255
b9	(2)	Par	Sec	90	Combustion chamber follow-on venting time (FAN ON): 0÷255
b10	(2)	Par	%	5	Increase in motor speed every b11 seconds in %: 1÷100
b11	(2)	Par	Sec	5	Time to increase in motor speed: 1÷100
b12	(2)	Par	%	30	FAN motor modulation with anti-freeze protection mode in %: 30÷100
b13	(2)	Par	pwm	65	Value of the integral factor (ki_pwm) for the calculation of PWM1 - (exA36):0(2)49
b14	(2)	Par	pem	45	Value of the proportional factor (kp_pwm) for the calculation of PWM1 - (exA37): 0÷249
b15	(2)	Par	Sec	0	Duration of flow control at ignition 0(2)55
b16	(2)	Par		0	Control input ID5: 0 = input disabled; 1 = activated with required input N.C.; 2 = activated with the required input N.O.
b17	(2)	Par		0	Control input ID6: 0 = input disabled; 1 = activated with required input N.C.; 2 = activated with the required input N.O.

REMKO GPC series

Parameters of GPC board					
Symbol	**Level**	**Menu**	**Unit**	**Value**	**Description**
NTC1 modulation probe control d0 = 2; for limiting at d0 = 5 or 7					
S1	(2)	Par		1	Activation of NTC1 probe: 0=off; 1=on
ST1	(1)	Set	°C	40	Modulation temperature
SP1	(2)	Par	°C	5	SP1 hysteresis: 0÷10
XD1	(3)	-	%	6	Bandwidth as percentage from 4 to 100
TN1	(3)	-	Sec	15	Integral time: 1÷255
AC1	(3)	-		0	0 = modulation only; 1 = ON/OFF if D0 = 5 or 7, modulation 0/10 V or MODBUS
TH1	(2)	Par	°C	60	Upper limit of the tripping temperature for fault F51: 10÷95
Control 0 / 10 Vdc - d0=5					
H51	(1)	Set		1	Only on at D0 = 5 (0/10 V) 0 = modulation only; 1 = modulation and ON/OFF
H52	(1)	Set	V	0.5	OFF voltage, burner shut-down if H51=1:
H53	(1)	Set	V	0.5	Difference in voltage when burner start ON
H54	(3)	-	Sec	10	Voltage maintained at lower input: 0÷255
H55	(3)	-	Sec	10	Voltage maintained at upper input: 0÷255

Parameters of GPC board								
Symbol	**Level**	**Menu**	**Unit**	**Value**				**Description**
				GPC 20	**GPC 40**	**GPC 60**	**GPC 80**	
Burner parameter - motor speed								
b1	(2)	Par	rpm	213	210	195	172	MINIMUM motor speed (PWM1): 90÷999 (1=10 rpm)
b2	(2)	Par	rpm	660	710	651	655	MAXIMUM motor speed (PWM1): 90÷999 (1=10 rpm)
b3	(2)	Par	rpm	320	300	340	355	IGNITION motor speed (PWM1): 90÷999 (1=10 rpm)

Faults and fault analysis

The GPC board supports two types of lock-out:
- Pre-warning, advises the customer that the GPC hot air generators must be serviced;
- Function stop, stops the GPC hot air generator for safety reasons or to protect the device itself.

Some function lock-outs require manual resetting, others are automatically resetting if the problem that triggered the lock-out has been cleared. Below is a complete list of lock-outs, their possible causes and remedies.

Error	Description	Cause	Unlocking
F10	No ignition after 4 consecutive attempts by the unit	• Polarity of phase and neutral lines reversed • Earth conductor not connected • Phase connection without neutral line • Ignition electrode defective or incorrectly positioned • Monitoring electrode defective or incorrectly positioned • Monitoring electrode wobbles or generates voltage flow when it is hot • Condensate monitoring electrode defective or on ground	Manual reset
F11	Sudden flame		
F12	Missing ignition; not visible. The count that can be called up from the history shows whether the boiler had ignition problems in the past.		
F13	The TER device does not accept the reset of the GPC board	• The TER has completed the 5 reset attempts in 15 minutes.	Wait 15 minutes or actuate the reset button of the unit
F14	No transmission between TER and CPU lasting over 60 seconds	• TER unit or GPC board is defective	Automatic reset
F15	The GPC board has sent the ignition signal to the TER unit, but the unit has not switched to "Operation" status after 300 seconds and no lockout occurred.	• Safety thermostat open on ignition • Pressure of mains gas is insufficient • Low CO_2 value	Check contact connection
F16	General device lockout	• Defective TER unit	Manual reset, automatic reset after 5 minutes
F17	Internal defect of the TER device that does not allow resetting by the GPC board.	• Defective TER unit	Manual reset, automatic reset after 5 minutes
F20	Tripping of the safety thermostat STB	• Air temperature too high due to insufficient air circulation • Safety thermostat defective or not connected	Manual reset
F21	(NOT USED - bypassed)	• Input ID1 open • ID1 - IDC1 bridging missing	Manual reset

Error	Description	Cause	Unlocking
F30	Fan speed too slow at start - VAG	• Burner fan defective • FAN power cable interrupted, not connected or incorrectly connected	Manual reset
F31	Fan speed too high in stand-by VAG		Manual reset
F32	Speed of the fan during operation outside the set minimum and maximum parameters - VAG		Manual reset, automatic reset after 5 minutes
F35	Alarm from input ID5:	• Contact ID5 open / closed if b16 deviates from 0; • Contact opening at b16 = 1; contact closure at b16 = 2;	Manual reset
F38	Alarm from input ID6	• Contact ID6 open / closed if b17 deviates from 0; • Contact opening at b17 = 1; contact closure at b17 = 2;	Manual reset
F41	NTC1 probe fault, supply air temperature	• Probe signal missing or probe defective	Automatic reset
F51	Temperature of air feed probe NTC1>TH1	• The minimum heat output of the hot air generator module is too high in relation to the heat output required in space. • Check parameter TH1 (supply air setpoint). • Fan does not function / functions • if NTC1< TH1-15	Automatic reset if NTC1< TH1-15
F60	Transmission error between GPC board and ModBus network	• The Modbus network is not connected. • The DIP switch position or the addressing of the unit is wrong. • The board address is incorrect or not configured in the ModBus network	Automatic reset
F75	Power failure during operation (except in stand-by); The fault is not displayed on the remote control, but only counted.	• Power failure during operation	Automatic reset
F00	Internal malfunction of the GPC board	• Reset board by hand, if the problem persists, replace the GPC board.	Manual reset

In the event of a connection problems between the GPC board and the LCD display, the message CPU flashes on the screen, if the problem is with the CPU; three flashing dots indicate that the display board is the cause. In this case, make sure that the display and board are connected properly and that the cable RJ11 is firmly seated in the connector.

Gas connection

The installation of the gas connection may only be executed by authorised technicians (authorised by the municipal gas supplier) in observance of the applicable provisions for the respective gas type.
The cross-section of the ductwork should be determined according to the connection value of the unit, the total output resistance as well as the amount of gas supply pressure.
The necessary gas supply pressure (depending on gas type) should be ensured by the customer.
The necessary amount of gas and the necessary gas pressure must be continuously available during operation of the unit according to its output.
The unit connection takes place through an R 3/4" external thread connection.
The gas supply should be executed with a suitable, removable screw connection free of voltage and vibration.
The components described in the applicable gas guidelines as well as the locally required components in the gas supply, such as gas pressure regulators, isolation devices, etc., are not included in the scope of delivery and must be provided by the customer.
Installing a high-output compatible gas filter without pressure regulator is also recommended, because the filter area of the serial filter installed above the gas valve is limited.
The applicable standards allow a maximum pressure of **40 mbar** in the heating room; higher pressure values must be reduced prior to entrance to the heating or installation room of the unit.
Prior to the initial commissioning, the gas supply line must be thoroughly cleaned and bled through appropriate measures.

It must be ensured that the connection of the unit to the gas supply line is executed gas-tight.
All screw connections of the unit and the gas supply must be inspected for leakage integrity.
If leak detection sprays are used, these must correspond to DIN 30657 (corrosion-free).

⚠ CAUTION

The supply of the gas circuit with pressures above 60 mbar is strictly prohibited. Otherwise there is a risk of a valve rupture.

⚠ CAUTION

Installation work on the gas system and the supply lines may only be performed by licensed technicians.

LEGEND

1 = Electrical gas solenoid valve *main burner*

2 = Electrical gas solenoid valve *ignition burner*

3 = Pressure regulator

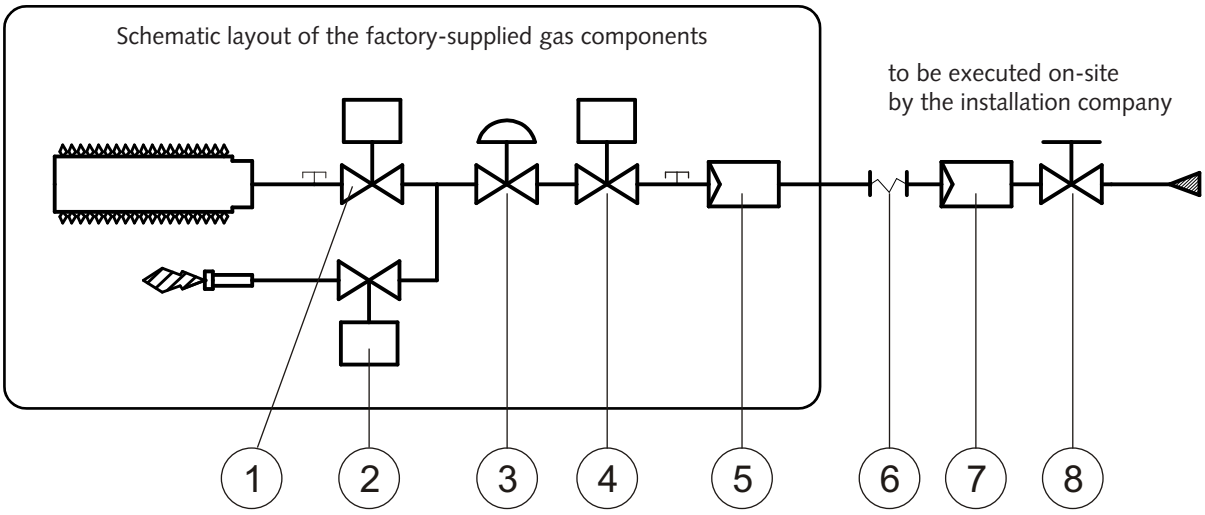
4 = Electrical gas safety valve

5 = Gas filter (small filter area)

6 = Vibration-inhibiting connection piece (provided by the customer)

7 = Gas filter with large filter area (provided by the customer) with pressure controller

8 = Gas stopcock (provided by the customer)



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

Commissioning

The initial commissioning may only be carried out by a contract installation company or the factory customer service department.
Carry out the following steps prior to the initial commissioning:

⚠ CAUTION

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

1. Inspect all connections and screw connections of the unit and the gas connections for leakage integrity.

2. The pressure of the inflowing gas measured at the diameter opening "IN" of the gas valve must correspond to the value prescribed for the type of gas used.

3. Check all electrical screw and plug connections within reach are correctly connected and in accordance with the circuit diagram.

4. Check the contact between terminal ID2 and IDC2. CAUTION: Disconnect from power supply before working.

5. Check the electrical connection for polarity and the power supply according to the name plate (230V/50Hz).

6. Check whether the unit is properly connected to an effective grounding system that corresponds to the applicable safety standards.
   Only then is the electrical safety and function of the unit guaranteed.

⚠ CAUTION

Gas lines must never be used for the grounding of electrical equipment!

The units are pre-set ex works according to the name plate and the desired type of gas.

It must be ensured that a gas supply pressure that conforms to standards is continuously present in accordance with the locally available gas type. The gas of the network must be consistent with the gas category to which the unit is adjusted.

For commissioning of the burner, proceed as follows:

1. Loosen the lock screw in the pressure tap of the burner.
   Do not unscrew completely!

2. Connect a suitable pressure measurement device, e.g. U-pipe pressure gauge, min. resolution 0.1 mbar.

3. Open the gas shut-off devices.

4. Switch on the main/emergency switch.

5. Check whether the display shows the status**rdy**, if OFF appears, set the device to On via the Fun function menu.

6. Switch on the room thermostat or press the remote control switch.

7. Set the heat requirement temperature higher than the temperature measured by the room thermostat or the electronic temperature regulation.

8. As soon as **On** appears on the hot air generator, this starts with the heating cycle.

If the conditions are fulfilled and the unit is not blocked, pre-ventilation of the combustion chamber starts, followed by ignition of the burner. The cooling fan subsequently starts.

It is possible that the ignition burner does not ignite with the initial commissioning, because there is still air in the gas line, whereby the unit triggers a malfunction. The unit must be unlocked and the starting procedure repeated.

⚠ CAUTION

A functional inspection of the entire unit including leak testing of all gas-conveying connections must be conducted.

Combustion analysis

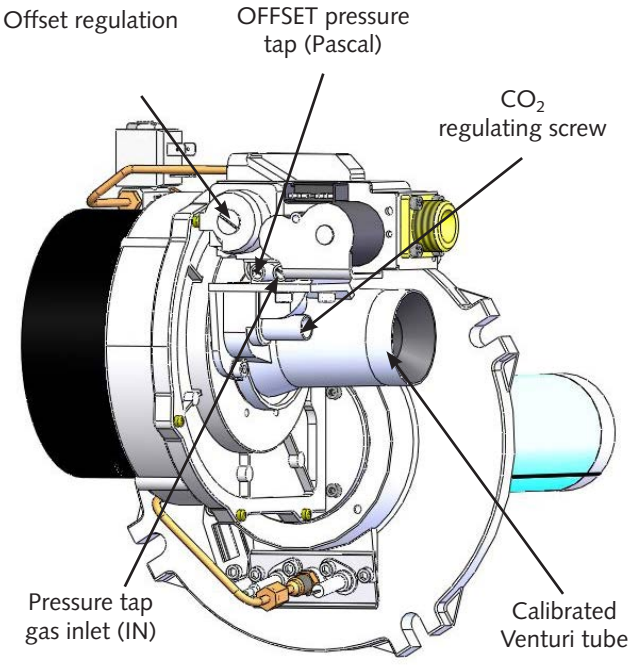
Start the unit and make sure that the pressure at the valve intake corresponds with the prescribed value. Otherwise adjust. Check whether the hot air generator is running at full power, otherwise select the "rEg" menu item via the LCD display and request the maximum or minimum line with "Hi" or "Lo". If the hot air generators are controlled via the ATR Smart Basic or ATR Smart Web, set the switch for the device address to zero and make the setting via the LCD display menu.

After approx. two minutes connect a flue gas analytical device to the flue gas pipe and read the CO_2 value.

Compare this value to the information in the table "Gas settings" for the type of gas in use.

If the value lies outside the indicated range, make adjustments with the CO_2 regulating screw at the Venturi tube.

- When tightening, the gas flow rate is reduced and the CO_2 value along with it
- When loosening, the CO_2 value increases.



Then set the burner to "minimum output" by setting the internal thermostat to a low temperature.

Wait until the minimum output at the burner has stabilised and check that the CO_2 value is the same or slightly below the CO_2 value of the high flow rate (up to -0.3%).

With deviating values, use the offset screw.
To change the values, pull out the metal plug and use the regulating screw:

- When loosening, the CO_2 value is reduced.
- When tightening, it increases.

After any changes to the offset regulation, the CO_2 value at the high output must be checked again through the steps indicated above.

After these steps, set the temperature on the internal thermostat back to the desired room temperature value.

After completion of all steps for the initial commissioning, the user is instructed on the use of the unit and its controller.

⚠ CAUTION

The inlet of the Venturi tube may in no case be covered with your hands or other objects. This can lead to flashback of the premix burner.

⚠ CAUTION

If the unit should not be used for extended periods of time, the gas cocks must be closed and the main switch of the unit must be switched off.

NOTE

The unit always conducts follow-up ventilation prior to switching off the fans.

NOTE

If the unit is not set to "Normal" operation, the control board automatically resets the unit after 20 minutes.

Programming via LCD display

Without password input, the values that can be called up via the LCD display can only be read. To get access to the parameters the password must be set in the menu item **Abi** and the address of the board set to zero.

Activation of setpoints and parameters in the "Abi" menu item

The password for the first and second setpoint or parameter level can be entered in the **Abi** menu item. This enables access to these values. For the third level, an ATR Smart Basic or ATR Smart Web is required in any event.

Use the arrow keys to toggle between the menu items, select a specific menu item by pressing or holding down Enter. To change a parameter, select the setpoint and hold down the ENTER key for at least 3 seconds to confirm the value. The flashing of the display indicates that the value has been accepted. Each time ESC is pressed, a higher selection level is reached.

The password for the first setpoint and parameter level is: 001
This enables the parameters in the **Set** menu item

The password for the second setpoint and parameter level is required by the maintenance service and is known to the customer service.
This enables the parameters in the **Par** menu item

If the key is not pressed within 10 minutes ofpassword input, the program automatically returns to the operating state.

Setpoint menu

The meaning and the standard values can be seen, if relevant, in the parameter table.

H51	controller 0/10 Vdc
H52	controller 0/10 Vdc
H53	controller 0/10 Vdc
St1	modulation temperature
St2	not used
H43	not used
H44	not used
H45	not used
ST5	not used
ST6	not used

Parameter menu
The submenu **Par** enable access to the parameters **b** and **d**

- from **b1** to **b17** Burner parameters
- from **d1** to **d9** Configuration of hot air generator operation

The meaning and the standard values can be seen, if relevant, in the parameter table. In addition, access to the following parameters is possible:

S1	activation of the modulation probe
SP1	ST1 hysteresis (only when the probe is used as temperature limiter)
tH1	maximum temperature of the modulation probe, turns off the burner independently of the other set conditions
S2	not used
P2	not used
S5	not used
P5	not used
S6	not used
P6	not used
H11	not used
H41	not used

I/O menu Inputs and Outputs
With the **I/O** menu, the measured values of the individual measuring probes can be viewed.

NTC1	air inlet temperature
NTC2	not used (shows -10)
NTC3	not used
An1	0/10 Vdc input, if used
PrH	not used
FLH	not used
rPu	FAN speed
Pu2	not used
uSA	not used
IOn	ionisation current, value from 0 to 100 means 0 to 2 microamps

Flt menu (fault memory)
The fault history is saved and displayed here. Use the arrow keys to scroll to the fault and confirm with ENTER. The number of the fault is then displayed. The first value displayed in the Flt menu is rst and is used to reset the fault history. However, this should only be done by the maintenance service in order to be able to investigate frequently occurring errors. The reset is effected by setting the rst value to 1 and confirming with ENTER (holding down for 3 seconds). If this is successful, the rst value is reset to 0. The recognizable faults together with explanation and fault number are to be found under "Malfunctions and faults".

Flue gas temperature control
This function checks whether the flue gas temperature during flame modulation remains within a range of a characteristic curve corresponding to an assigned heat output. To enable the control, the parameter d5 = 1 must be set. If the NTC3 probe is not present, the fault F43 is displayed. If the probe is present and the value d5 = 0, the fault F99 "configuration error "is displayed.

Flue & chimney inspector

The unit must be set as follows for measurement by the flue & chimney inspector:

1) Disconnect unit from power supply

2) Open unit and board housing

3) Set the board address to zero

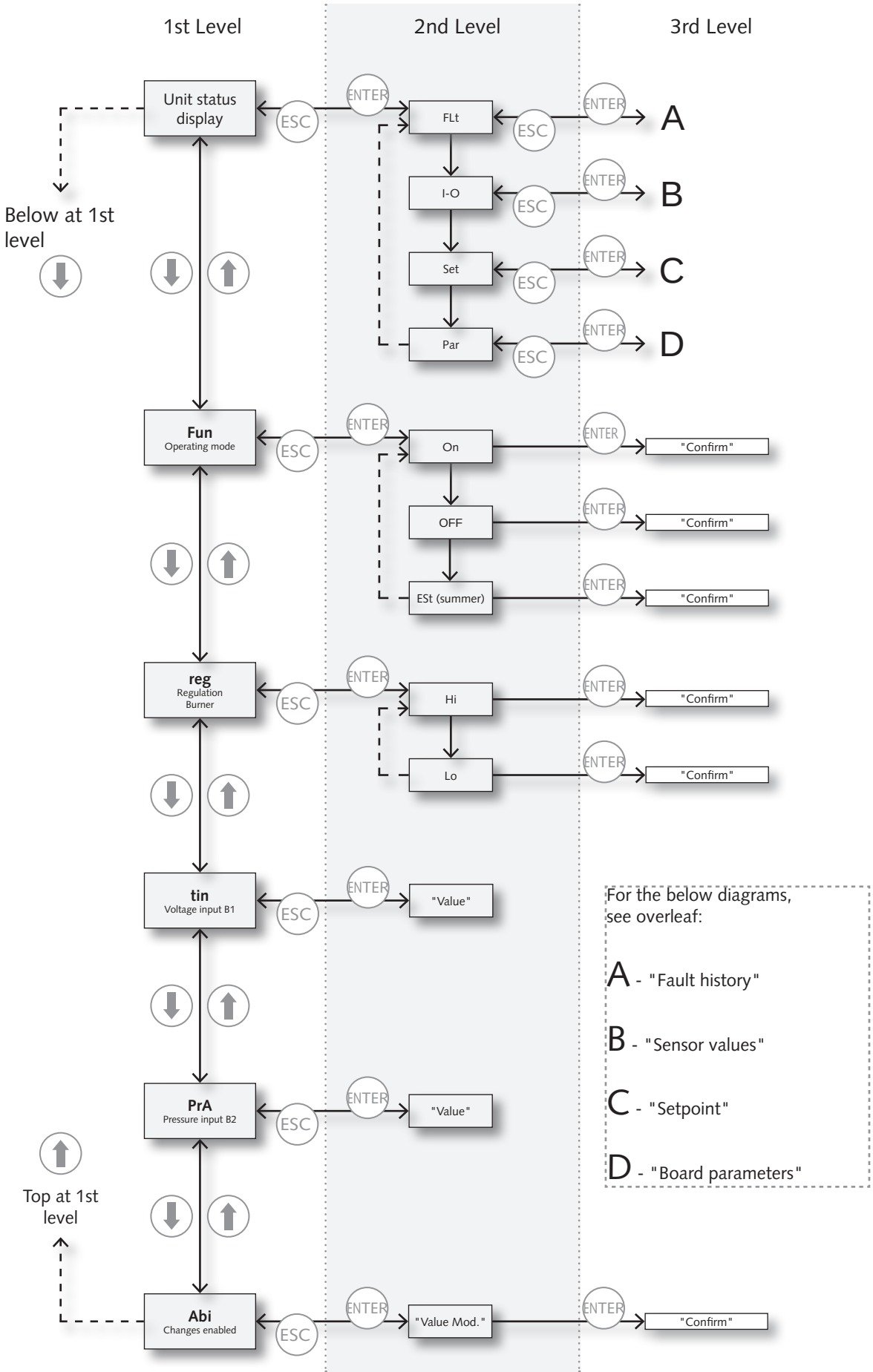
4) Reconnect unit to power supply

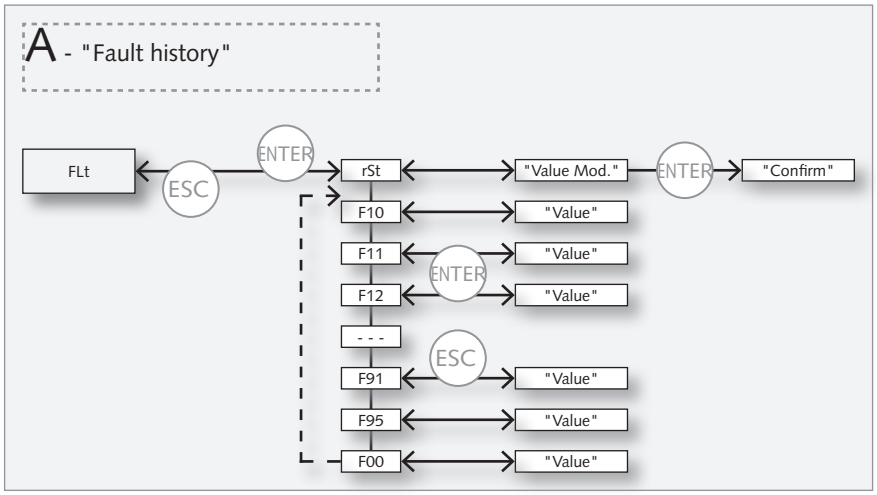
5) Select the option "reg" on the control panel and set it to "Hi" or "Lo" to obtain maximum or minimum power

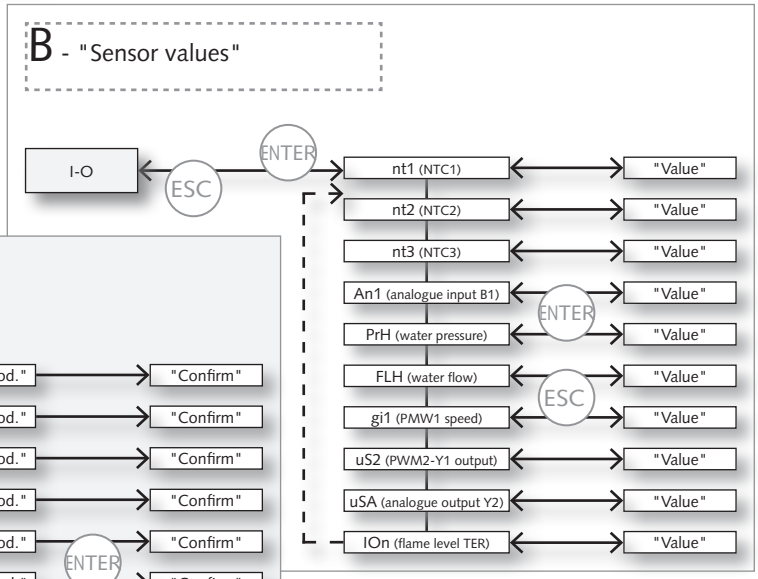
Once the unit has ignited it is possible to take the measurement approx. every 2 minutes ata measuring point in the flue gas pipe.

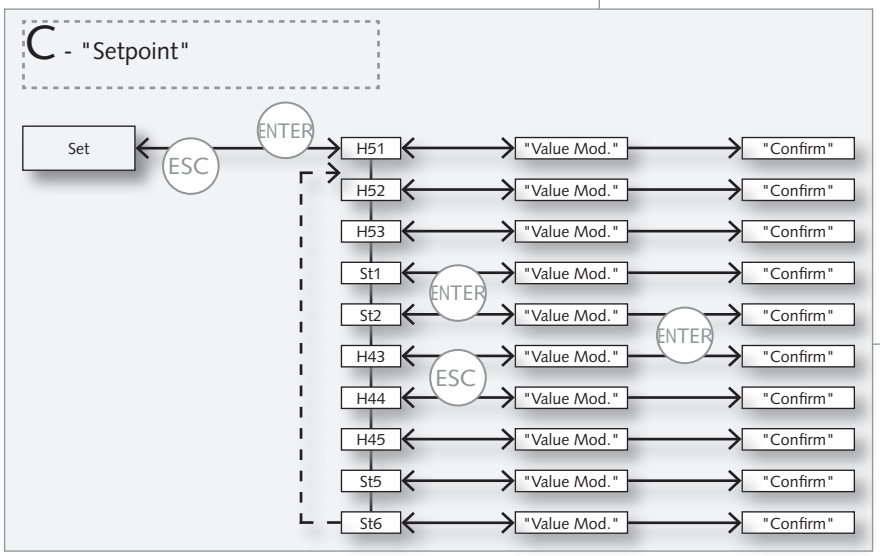
Once the measuring process is complete, return the unit to the previous condition.

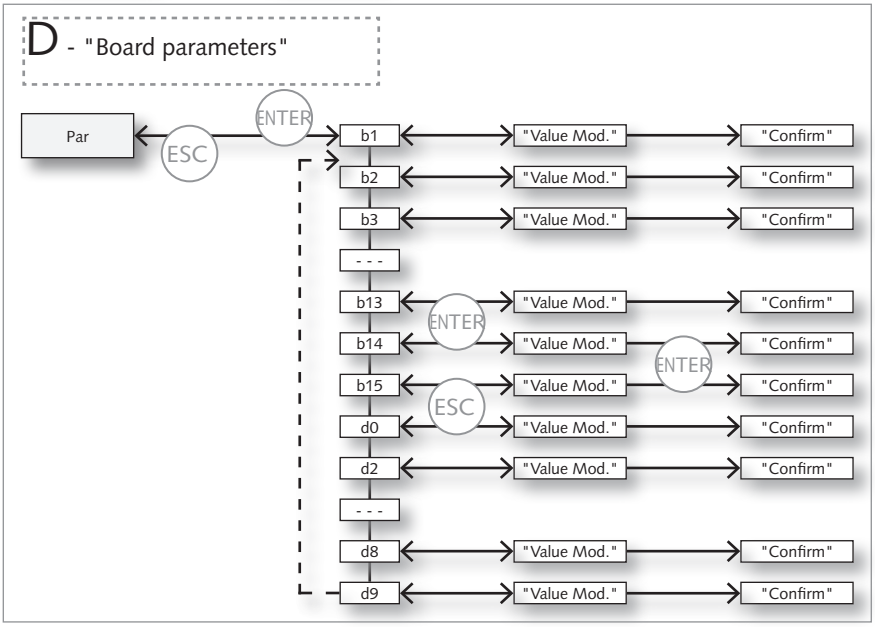
Navigation map of LCD display











Legend:

"Value" = value that cannot be changed, value only in display

"Value Mod." = changeable value, inputtable value

Maintenance

Repairs to the unit may only be carried out by authorised personnel and using original parts. Failure to do so could jeopardise the safety of the unit and thus result in the cancellation of the warranty claims.

If the unit is not used for a long time, shut off the gas supply and switch off the unit using the main switch. If the hot air generator is no longer to be used, in addition to the specified actions, other possible sources of danger are to be rendered harmless.

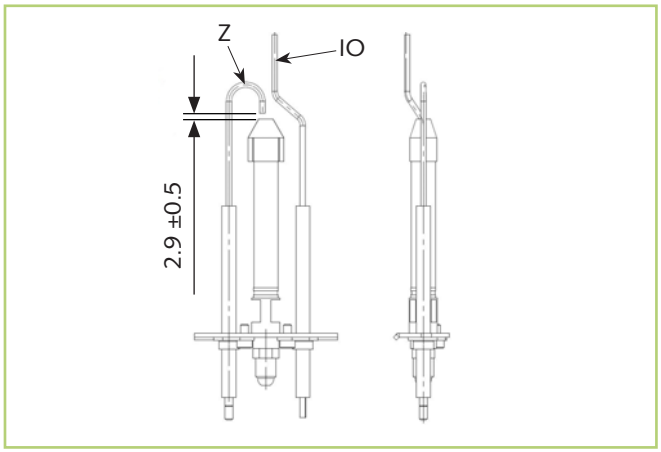
In order to preserve the performance and a long service life of the units, a number of mandatory checks must be carried out once yearly and in each case prior to the beginning of the heating season:

1) Check condition of the ignition and monitoring electrodes as well as the ignition gas burner.
2) Check condition of the supply and flue gas lines as well as the end pieces.
3) Inspect Venturi tube for dirt.
4) Inspect heat exchanger for dirt.
5) Check the siphon of the condensate collecting container and clean it.
6) Check gas pressure at the inlet to the gas valve.
7) Check function of the flame monitoring unit.
8) Check of the safety thermostat(s).
9) Check of the ionisation current (>2 microamps).

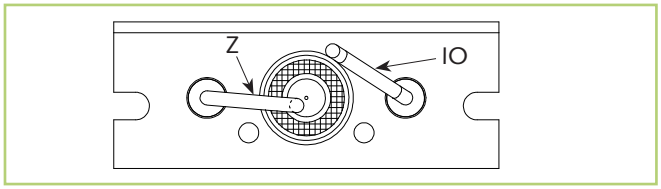
NOTE

With steps 1, 2, 3, 4 and 5 the power and gas supply to the unit must always be interrupted. Steps 6, 7, 8 and 9 take place in the unit heating mode.

1) Checks of the electrodes
Completely disassemble the ignition burner and clean gas system and gas nozzle with compressed air.
Check the ceramic of the electrodes for integrity.
Carefully remove any oxidation accumulation on the metal part of the electrodes with very fine emery paper.
Check electrodes for their positioning according to instructions (see figure).



It is important that the monitoring electrode [IO] is tangential to the ignition burner head and not within it.
The ignition electrode [Z] must discharge to the outside edge of the ignition burner at an appropriate distance to the monitoring electrode.



2) Checks of the flue gas and supply air lines
Carry out a visual inspection of the condition of all lines and connectors. Remove any accumulation of dirt that has formed on the end piece of the supply air line.

3) Checks and cleaning of the Venturi tube
Remove the dirt at the inlet of the Venturi tube with a small brush or other suitable tool.
Make sure that it does not fall into the Venturi tube.

4) Inspect heat exchanger and burner for dirt
No deposits collect due to the "clean" burning in the GPC hot air generators. Deposits only arise with "unclean" combustion, which occurs if the gas flow rate is too high or there is a lack of air. Cleaning is therefore only necessary in special cases.
If the gas flow rate is too high, this is due to the poor function of the gas valve.
If it is necessary to clean the burner or heat exchanger, it is necessary to replace all seals fitted between the burner and heat exchanger.

5) Check the siphon of the condensate collecting container and clean it

Free the siphon of soiling at least once a year and check the connections. No metal deposits may form, otherwise the inspection interval should be shortened.

6) Check of the gas input pressure

Make sure that the pressure at the inlet to the gas valve corresponds to the prescribed value for the respective gas type. This check must be carried out with the unit switched on at high output.

7) Check of the flame monitoring unit

Close the gas cock in the unit heating mode and make sure that the alarm F10 occurs. Open the gas cock again, unlock and wait for the unit to restart.

8) Check of the safety thermostat(s)

The check must be carried out in the unit heating mode. With an insulated tool (230V), open the thermostat series, disconnect the quick-action connection from the safety thermostat and wait until the fault indication F20 appears on the LCD display. Re-establish the thermostat connection and unlock the unit.

9) Check of the ionisation current

This test can be carried out directly on the LCD display of the device. Select the sub-item "I-O" in the menu and select the parameter "IOn". The value is to be interpreted as follows:

- The value is displayed as a percentage. Thus, the value from 0 to 100 corresponds to the value of 0 to 2 microamps.
- If a value of 100 is displayed, the value is over 2 microamps and is thus sufficient for device operation
- A value of 35 corresponds to 0.7 microamps and also represents the lower value which can be detected by the flame monitoring device

The value of the ionisation current must exceed 2 microamps (µA), i.e. always corresponding with areading of 100.

Lower values are a sign of poor positioning, oxidised electrodes or the presence of a defect.

The value of the ionisation current must exceed 2 microamps (µA).

Lower values are a sign of poor positioning, oxidised electrodes or the presence of a defect.

NOTE

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

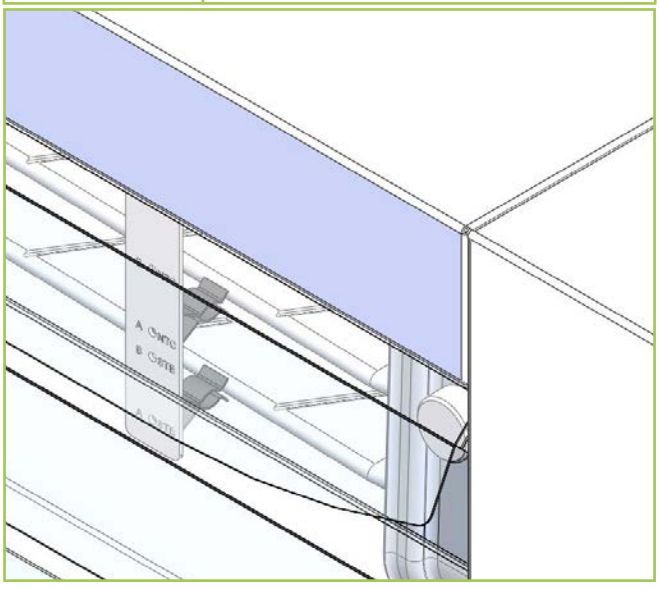
NOTE

Regular care and maintenance, at the latest after every heating period, is the basic requirement for a long service life and malfunction-free operation of the units.

Replacement of the STB

In order to replace the STB thermostat, refer to the following table and the corresponding labelling on the mounting bracket in the unit.

STB replacement	
Model	Position
GPC 20	A (STB)
GPC 40	B (STB)
GPC 60	D (STB)
GPC 80	E (STB)

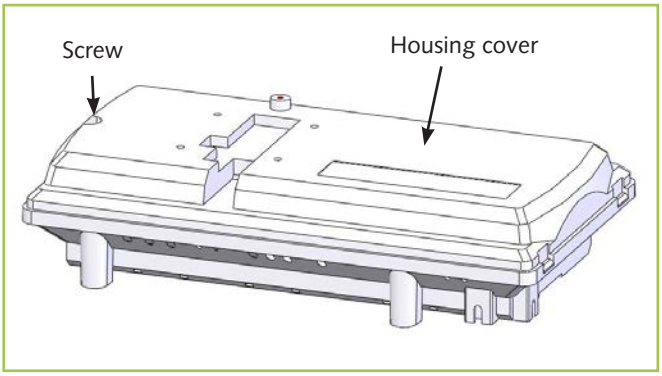


The mounting bracket for the STB is behind the front air fins.

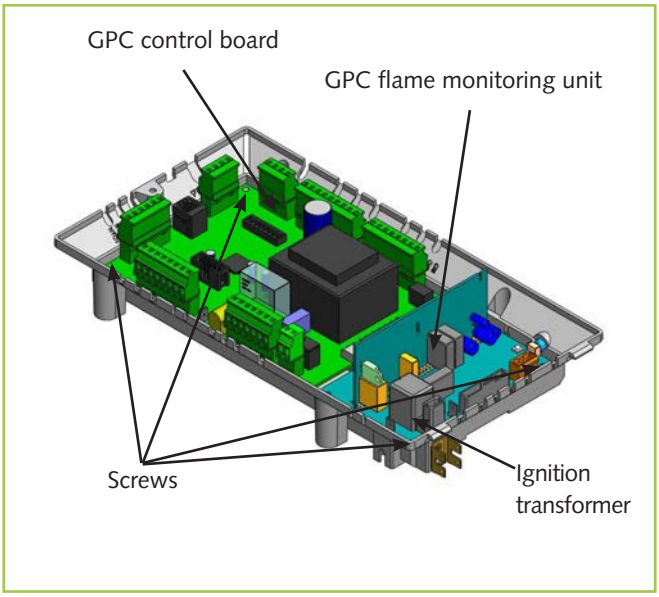
Replacement of boards

If it is necessary to replace the control board of the GPC unit, perform the following steps:

1) Unscrew the screw on the board housing and take off the housing cover



2) Undo all plugs and cable terminals of the GPC board and remove cables



3) Remove screws and detach board

4) Remove board and insert new board

5) Fasten new board to the housing with screws

6) Insert all plugs and connect the cables to the cable terminals according to the wiring diagram

7) Set the same address as for the old board

8) Hook in the housing cover on the right, fold down and fasten with the screw

9) Programming of parameters

Programming of parameters

Following values must be programmed in each case:

- d0, d1 and d5 to identify the unit
- b1, b2, b3 for speed control of the flue gas fan drive
- S1 for enabling NTC1 probe of warm air supply
- ST1 is the setpoint for NTC1
- H51, H52 and H53 for control via 10 Vdc (if present)
- S2, ST2 and P2 for the heating of the switching cabinet (if present)

Procedure for parameter setting

The parameters can be programmed via the LCD display at the front of the unit via the ATR Smart Basic or the ATR Smart Web.
With the ATR Smart controllers the parameters can be called up and changed (see previous pages). All the parameters can be viewed. A password is required to perform changes, depending on the parameter classification. The password of level (1) is 001. All other passwords are only known to the REMKO customer service.
To change the parameters via the ATR Smart controller, please refer to the separate operating manual.

NOTE

The burner must be switched off during parameter programming. The LCD display must show "rdy" or "Off".

Replacement of the gas valve and CO_2 and offset regulation

Unit with and without temperature controller

With replacement of the gas valve, the CO_2 and, if applicable, the offset value must be adjusted.

It is not advisable to change the offset calibration because this is set in the factory.

If necessary, perform a combustion analysis.

Start the unit and make sure that the pressure at the valve intake corresponds with the prescribed value. Otherwise adjust.

After approx. two minutes connect a flue gas analytical device to the flue gas pipe and read the CO_2 value.

Compare this value to the information in the table "Gas settings" for the type of gas in use.

If the value lies outside the indicated range, make adjustments with the CO_2 regulating screw at the Venturi tube.

- When tightening, the gas flow rate is reduced and the CO_2 value along with it
- When loosening, the CO_2 value increases

Then set the burner to "minimum output" by setting the internal thermostat to a low temperature.

Wait until the minimum output at the burner has stabilised and check that the CO_2 value is the same or slightly below the CO_2 value of the high flow rate (up to -0.3%).

With deviating values, use the offset screw.
To change the values, pull out the metal plug and use the regulating screw:

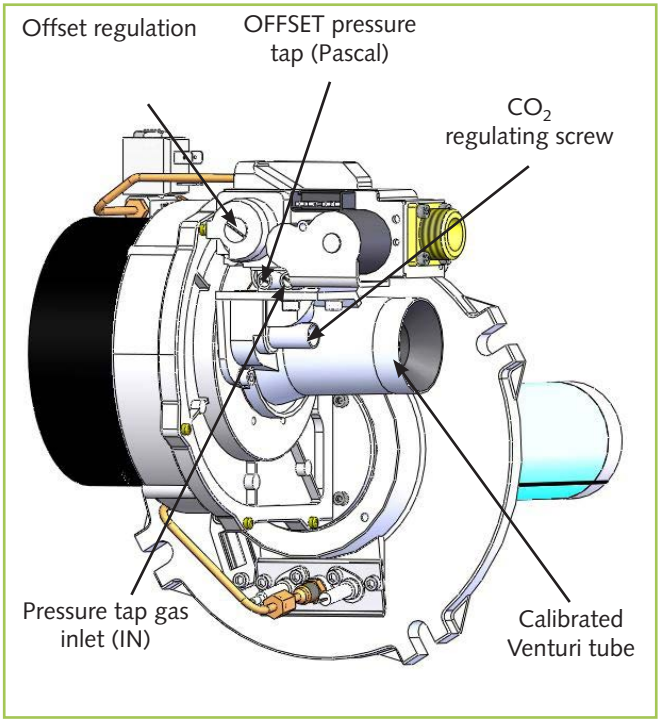
- When loosening, the CO_2 value is reduced.
- When tightening, it increases.

After any changes to the offset regulation, the CO_2 value at the high output must be checked again through the steps indicated above.

After these steps, set the temperature on the internal thermostat back to the desired room temperature value.

After completion of all steps for the initial commissioning, the user is instructed on the use of the unit and its controller.

This also happens if the power supply of the unit is switched off and then on again.



Conversion to liquid gas

The on-site conversion of the gas type may only be carried out by authorised, qualified technicians.

Prior to the conversion, the country-specific requirements must be fulfilled.
The kit for conversion from natural gas to liquid gas is described in the following.

Kit scope:

- Calibrated diaphragm
- Ignition flame nozzle
- Notice sticker "Unit converted to..."

Proceed as follows for the conversion:

- Disconnect power supply of the unit at all poles
- Carefully replace the calibrated diaphragm between gas valve and Venturi tube
- Carefully replace ignition nozzle

Gas type	G30/G31	G30	G31
	ø Ignition nozzle	ø Gas diaphragm	
Model	mm		
GPC 20	0.51	3.0	3.0
GPC 40	0.51	4.3	4.3
GPC 60	0.51	6.3	6.3
GPC 80	0.51	6.0	6.2

- Re-connect the power supply of the unit and prepare the unit to start
- Make sure during the ignition process that no gas emerges at the copper pipe connection to the outlet

⚠ CAUTION

The fan-assisted heater supplied for operation with liquid gas is adjusted for the gas G31. When operating with G30 the CO_2 must be checked and possibly adjusted.

NOTE

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

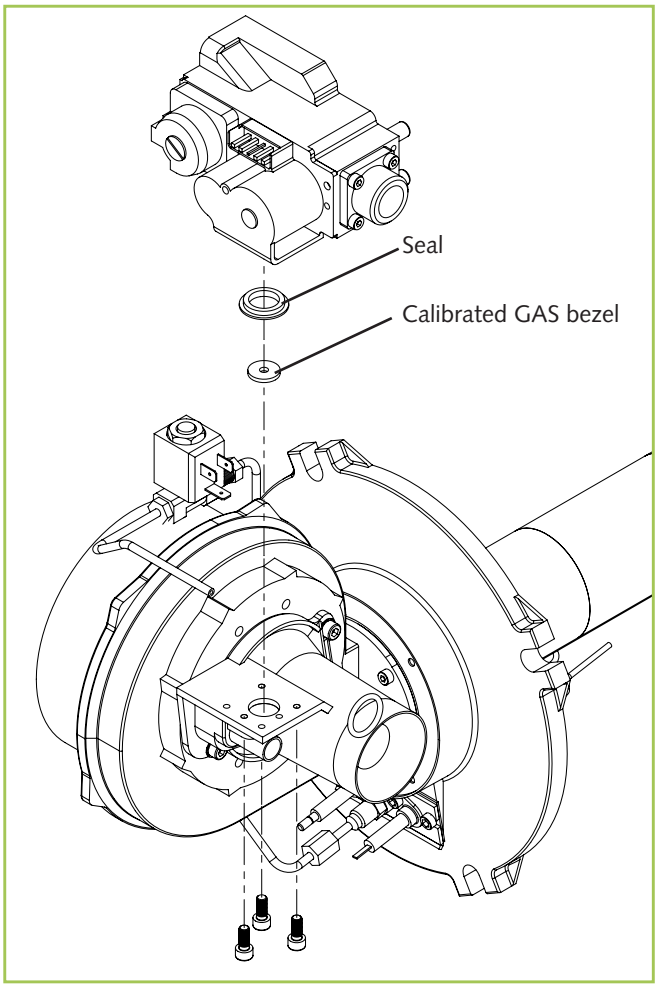
If the burner is in operation and working at high output, check:

1) that the pressure at the inlet to the gas valve corresponds to the prescribed value for the respective gas type.

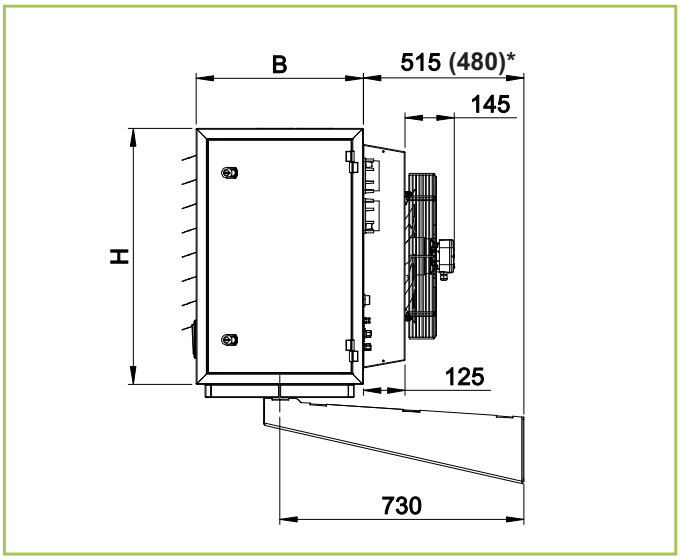
2) in accordance with the combustion analysis, check the CO_2 values at maximum and minimum output

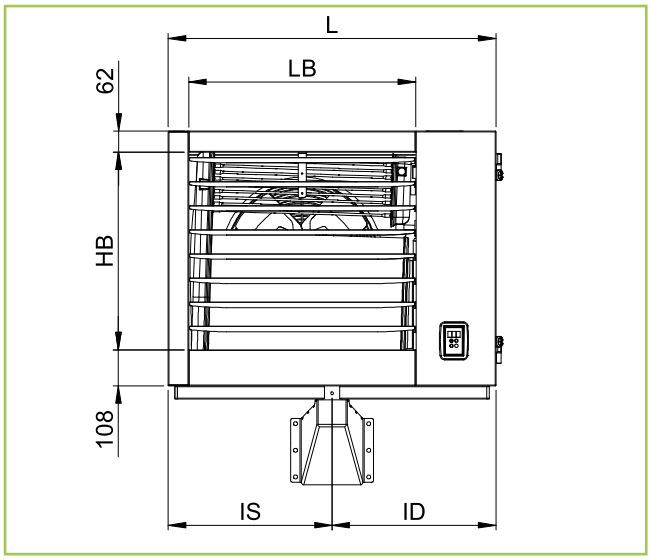
If the measured value deviates, it must be adjusted with the CO_2 adjusting screw.
If it is screwed in, the CO_2 value is reduced.
If it is unscrewed, the CO_2 value is increased.
Check the leakage integrity of the gas circuit again, especially between gas valve and Venturi tube.

After completion of settings, replace notice sticker "Unit set to ..." with the supplied sticker "Unit converted to ...".



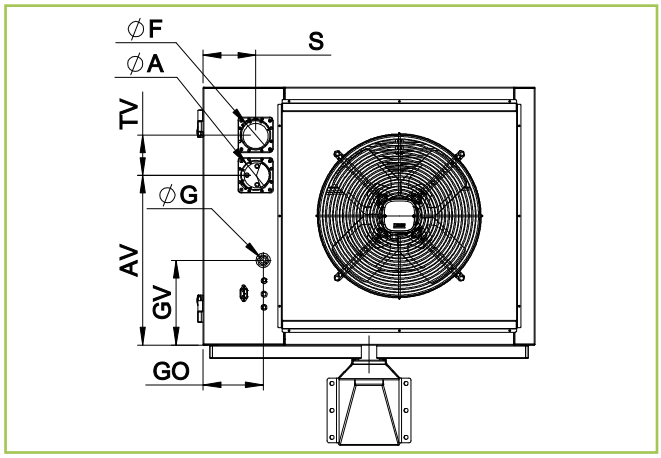
Unit dimensions





* Dimension for the fixed wall bracket

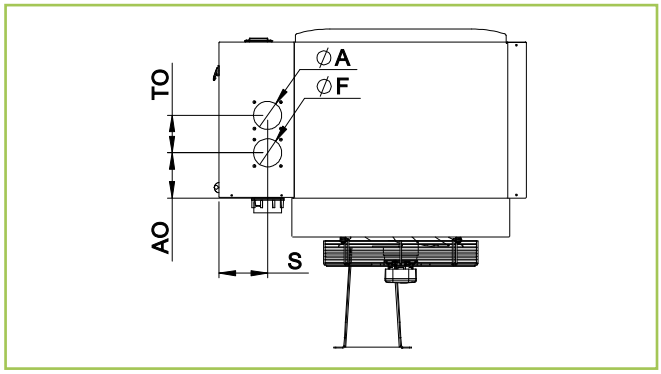
Series	Dimensions				Opening				Gas supply		
	L	B	H	V	HB	LB	IS	ID	ØG	GO	GV
GPC 20	795	500	690	145	520	490	395	400	3/4"	180	255
GPC 40	985	500	690	145	520	680	490	495	3/4"	180	255
GPC 60	1310	500	765	145	595	1010	655	660	3/4"	180	255
GPC 80	1515	500	845	145	675	1180	770	745	3/4"	210	275



Series	Horizontal discharge				
	A	F	AV	TV	S
GPC 20	80	80	430	120	155
GPC 40	80	80	430	120	155
GPC 60	80	80	505	120	155
GPC 80	100*	100*	560	140	185

A = Supply line

F = Flue gas line



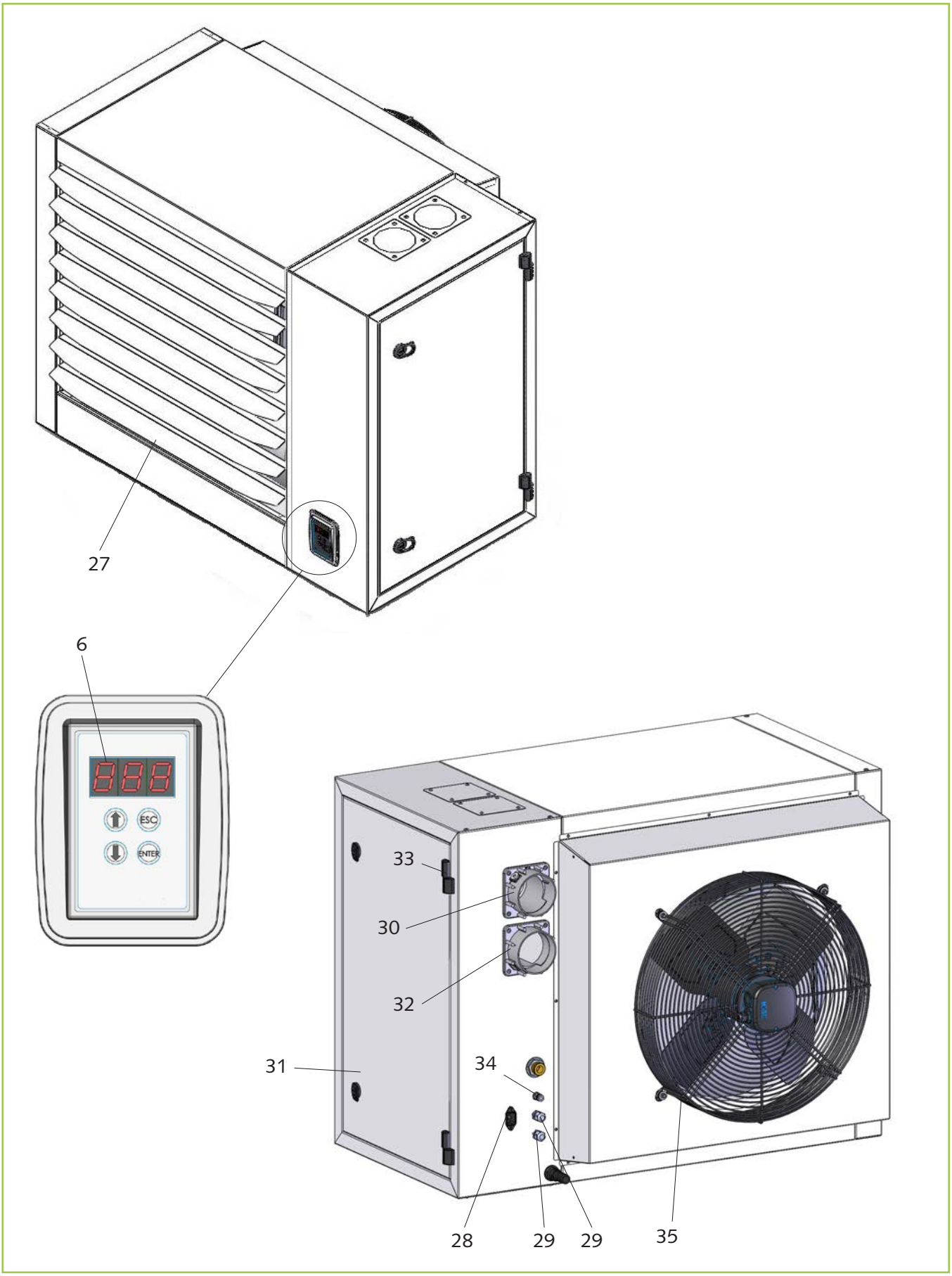
Series	Vertical discharge				
	A	F	AO	TO	S
GPC 20	80	80	145	120	155
GPC 40	80	80	145	120	155
GPC 60	80	80	145	120	155
GPC 80	100*	100*	145	140	185

* Diameter is achieved with adapter supplied as standard.

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

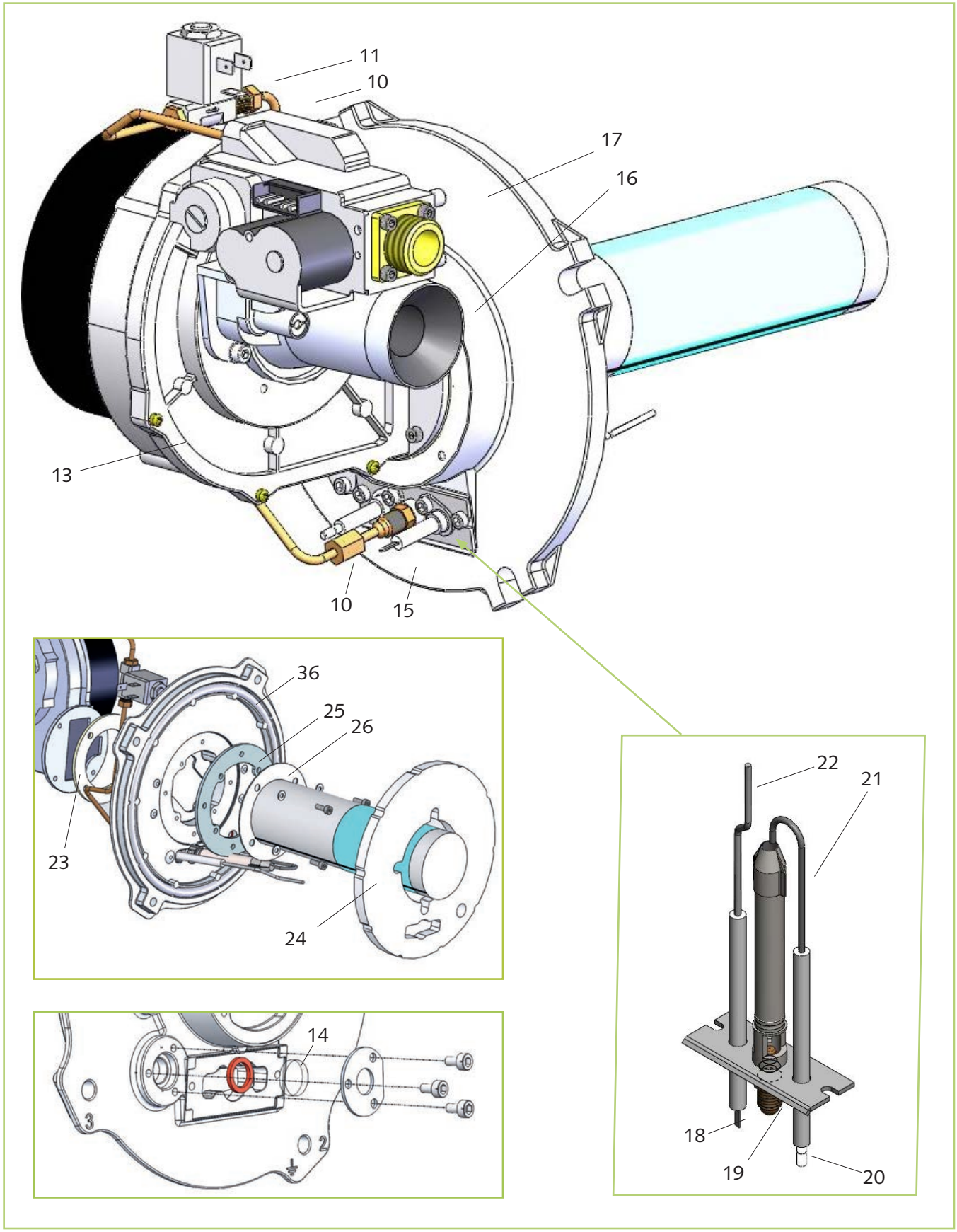
REMKO GPC series

Exploded view of the unit



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

Venturi burner



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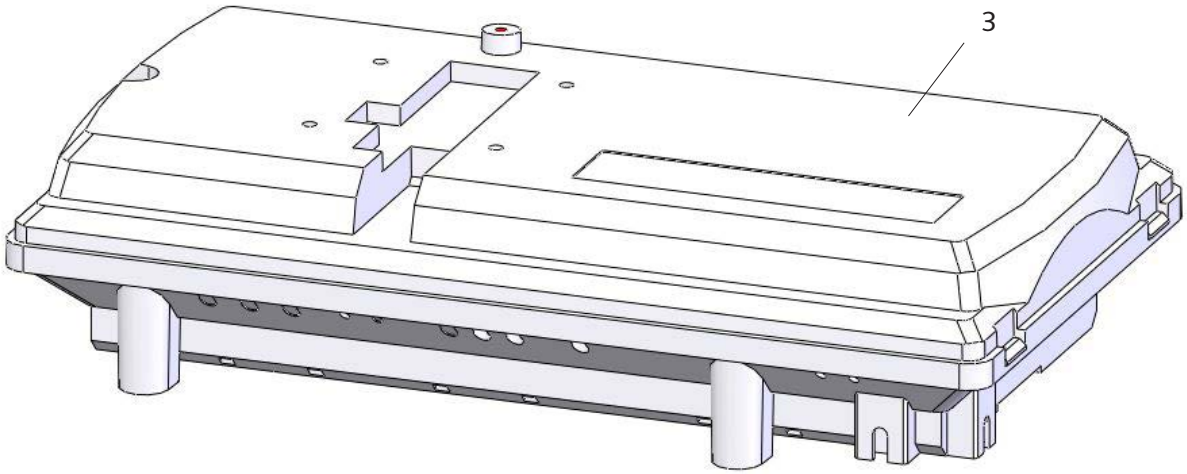
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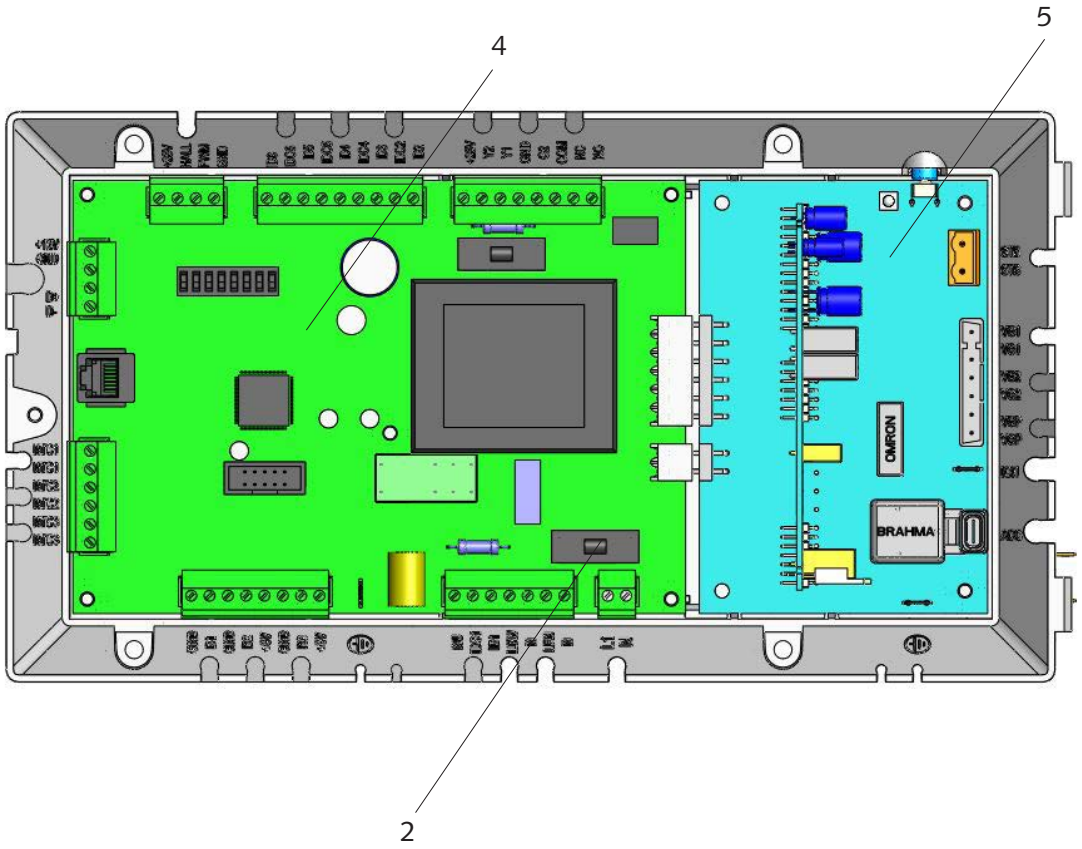
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5
2
OMRON
BRAHMA

Spare parts list

No.	Designation	GPC 20	GPC 40	GPC 60	GPC 80
1	Switch group, compl.				
2	F1 fuse 6.3 A				
3	Board housing				
4	Control board				
5	Flame monitoring unit				
6	LCD display				
7					
8					
9					
10	Ignition gas pipe				
11	Ignition burner solenoid valve				
12	Gas burner, compl.				
13	Burner fan				
14	Inspection glass with seal				
15	Ignition gas burner, compl.				
16	Venturi tube				
17	Gas valve				
18	Ionisation cable				
19	Natural gas ignition nozzle				
19a	Liquid gas ignition nozzle				
20	Ignition cable				
21	Ignition electrode				
22	Ionisation electrode				
23	Burner fan seal				
24	Burner flange seal				
25	Burner pipe seal				
26	Gas lance				
27	Air outlet fins				
28	Electrical connection bush				
29	Cable connections				
30	Flue gas connection				
31	Closure				
32	Air supply connection				
33	Door hinge				
34	Temperature probe (NTC1)				
35	Recirculating fan				
36	Burner flange cord seal				
Not shown	Safety temperature limiter				
Not shown	Gas valve seal				
Not shown	Gas supply pipe				
Not shown	Gas supply pipe seal				
Not shown	Counter nut				
Not shown	Electrical connection plug				
Not shown	Venturi burner, compl.				

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

REMKO GPC series

Country table of gas types

Country	Category	Natural gas	Pressure	LPG	Pressure
AT, CH	$II_{2H3B/P}$	G20	20 mbar	G30/G31	50 mbar
BE <70 kW	$I_{2E(S)B,I3P}$	G20/G25	20/25 mbar	G31	37 mbar
BE >70 kW	$I_{2E(R)B,I3P}$	G20/G25	20/25 mbar	G31	37 mbar
CY, MT	$I_{3B/P}$			G30/G31	30 mbar
DE	$II_{2ELL3B/P}$	G20/G25	20 mbar	G30/G31	50 mbar
DK, FI, GR, SE, NO, IT, CZ, EE, LT, SI, AL, MK, BG, RO, HR, TR	$II_{2H3B/P}$	G20	20 mbar	G30/G31	30 mbar
ES, GB, IE, PT, SK	II_{2H3P}	G20	20 mbar	G31	37 mbar
FR	II_{2Esi3P}	G20/G25	20/25 mbar	G31	37 mbar
HU	$II_{2HS3B/P}$	G20/G25.1	25 mbar	G30/G31	30 mbar
IS	I_{3P}			G31	37 mbar
LU	II_{2E3P}	G20/G25	20 mbar	G31	37/50 mbar
LV	$II_{2H3B/P}$	G20	20 mbar		
NL	$II_{2L3B/P}$	G25	25 mbar	G30/G31	30 mbar
PL	$II_{2ELwLs3B/P}$	G20/G2.350	20/13 mbar	G30/G31	37 mbar
RU	$II_{2H3B/P}$	G20	20 mbar	G30/G31	30 mbar

The initial commissioning may only be conducted by authorised technicians.
The initial commissioning also comprises the combustion analysis, which is mandatory.
The units are permitted in EU countries and outside of the EU for the types of gas listed above.

Gas burner adjustment values / flue gas analysis

Gas type		G20	G25	G30	G31
Category		according to country of destination (see table above)			
Supply pressure	[mbar]	20 (min.15-max.25)	25 (min.18-max.30)	30 - 50 (min.25-max.57.5)	30 - 50 (min.25-max.57.5)
Ignition gas nozzle Ø	[mm]	0.70	0.70	0.51	0.51
Carbon dioxide CO_2	[%]	8.7 ±0.1 (cat.H) 8.7 ±0.1 (cat.E)	8.8 ±0.2	9.9 ±0.4	9.7 ±0.2
Model		Ø Gas diaphragm [mm]			
GPC 20		4.4	5.3	3.0	3.0
GPC 40		6.0	7.2	4.3	4.3
GPC 60		10.0	not necessary	6.3	6.3
GPC 80		9.7	not necessary	6.0	6.2

Technical data

Series	Symbol	Unit	GPC 20	GPC 40	GPC 60	GPC 80
Nominal thermal load	$\dot{Q}_H$	kW	19.0	34.8	65.0	82.0
Nominal heat capacity	$P_{rated,h}$	kW	18.2	33.6	62.9	80.0
Minimum performance	P_{min}	kW	5.0	8.1	13.4	17.8
Nominal airflow volume	$\dot{V}_{nom}$	m^3/h	2700	4300	7800	9000
Air temperature increase		K	19.3	22.4	23.1	25.5
Fuel			Natural gas or liquid gas			
NOx class [EN1020:2009]	Cl		5			
CO_2 content [1]		%	9.1	9.1	9.1	9.1
CO_2 content [2]		%	8.8	8.7	8.7	8.7
CO_2 content [3]		%	9.8	9.7	9.6	9.6
CO_2 content [4]		%	9.3	9.2	9.4	9.3
Gas connection [6]		Inches	G 3/4“	G 3/4“	G 3/4“	G 3/4“
Gas flow rate (natural gas H) [5]		m^3/h	2.01	3.69	6.88	8.68
Gas flow rate (natural gas L) [5]		m^3/h	2.34	4.29	8.00	10.1
Gas flow rate (liq. gas G31) [5]		kg/h	1.58	2.90	5.39	6.80
Condensate max.		l/h	0.4	0.9	2.1	3.3
Flue gas flow [1]	$\dot{m}_{Af}$	kg/h	31	57	107	135
Flue gas flow [3]	$\dot{m}_{Af}$	kg/h	24	45	84	107
Available flue gas pressure		Pa	80	90	120	120
Exhaust gas temperature, approx.	t_{Af}	°C	111	94	86	70
reqd. draft intensity		Pa	0			
Efficiency at nominal heating capacity	η_{nom}	%	86.2	86.8	87.2	87.9
Efficiency at minimum capacity	η_{pl}	%	94.3	96.4	97.4	97.6
Case dissipation factor	F_{env}	%	0	0	0	0
Power consumption of the ignition flame	P_{ign}	kW	0	0	0	0
Nitrogen oxide emissions (Hi)	NO_x	mg/kWh	38	42	39	41
Nitrogen oxide emissions (Hs)	NO_x	mg/kWh	34	42	35	37
Efficiency of heat emission	$\eta_{s,flow}$	%	91.5	94.8	95.8	96.1
Room heating annual efficiency	$\eta_{s,h}$	%	88.9	92.1	93.2	93.1

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

REMKO GPC series

Series	Symbol	Unit	GPC 20	GPC 40	GPC 60	GPC 80
Power supply		V/Hz	230/1~/50			
Rated current		A	0.78	1.35	2.22	2.67
Rated power consumption		kW	0.180	0.310	0.510	0.613
Max. auxiliary energy consumption	el_{max}	kW	0.045	0.074	0.097	0.123
Min. auxiliary energy consumption	el_{min}	kW	0.011	0.011	0.015	0.040
Auxiliary energy consumption in sb.	el_{sb}	kW	0.005	0.005	0.005	0.005
Sound pressure level L_{pA} [7]		dB(A)	44	49	51	54
Combustion air connection Ø		mm	80	80	80	100 [8]
Flue gas connection Ø		mm	80	80	80	100 [8]
Installation variants		Type	B23 / B23P / C13 / C33 / C43 / C53 / C63			
EC approval		No.	0476CQ0451			
Weight		kg	58	72	98	129

1) Values when burning natural gas at the nominal heating capacity.
2) Values when burning natural gas at minimum capacity.
3) Values when burning liquid gas at the nominal heating capacity.
4) Values when burning liquid gas at minimum capacity.
5) Values pertain to 15°C 1013mbar.
6) The gas line must be measured on the basis of the length and route, and not according to the diameter of the unit gas connection. Connection thread in accordance with ISO 228.
7) Measured at a distance of 6 m from the unit.
8) Diameter is achieved with adapter supplied as standard.

Gross calorific values H_s in standard condition:

H natural gas	11.48	kWh/m³
L natural gas	9.75	kWh/m³
Propane gas	28.14	kWh/m³
Propane gas	14.00	kWh/kg

REMKO GmbH & Co. KG
Air conditioning and heating technology
Im Seelenkamp 12
32791 Lage

Additional specifications for fresh air and flue gas ducting

The following applies to all models in the GPC range:

B_1 air heating unit:	no
C_2 air heating unit:	no
C_4 air heating unit:	yes

REMKO QUALITY WITH SYSTEMS

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REMKO GmbH & Co. KG
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