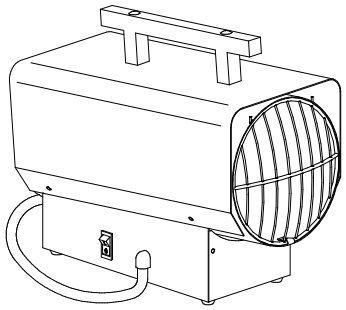
REMKO PGM 12 / 12 E
Propane gas heater



Operation
Technology
Spare Parts

Edition GB – M10

REMKO - powerful like a bear.

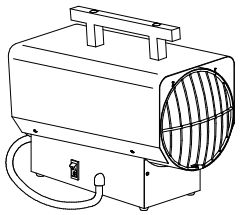
Operating instructions

Make sure to read these instructions carefully before starting/using the unit!

Our guarantee will become void when the unit supplied by us is used and installed for inadequate purposes, or maintained incorrectly, etc., or if it is changed without our prior consent!

Mobile propane gas heater
REMKO PGM 12 / 12 E

CE



Always keep these operating instructions near or on the unit!

Safety Instructions

When using this unit make sure always to observe the applicable building and fire protection regulations as well as the rules of the trade co-operative association.

Additionally please note the following safety instructions.

◊ The unit may be operated only by those persons who have been instructed accordingly.

◊ The unit is to be installed and operated in such a way as to ensure that the employees are not endangered by waste gases and radiation heat and that no fire can break out.

◊ The unit may only be installed and operated in rooms, when the air rate fed to the unit is sufficient for combustion.

◊ Make sure to install mobile liquid gas reservoir on a solid ground and in a vertical position.

◊ Liquid gas reservoir may never be used in a lying position while the unit is operating.
Explosion hazard: Gas exit in the liquid phase from the gas nozzle.

◊ The unit may be operated only in well aerated rooms.

◊ Persons may not stay permanently in the room where the unit has been installed.
Relevant prohibition signs are to be fastened to the entrances.

◊ The unit is to be installed and operated on a solid non combustible ground.

◊ It is to be ensured that no combustible objects/ materials can be sucked in.

◊ The unit may not be installed or operated in inflammable and explosive surroundings.

◊ A safety zone of 1.5 m around the unit and a minimum distance of 3 m at the unit's exhaust opening are to be observed, even regarding non combustible objects.

◊ The unit's exhaust opening may not be reduced or equipped with hoses or pipings.

◊ Make sure not to introduce foreign matters into the unit.

◊ The air suction grille is always to be kept free from dirt and loose objects.

◊ The units may not be exposed to direct water jets.

◊ All electric cables outside the unit are to be protected from damage (e.g. caused by animals, etc.).

◊ Make sure to cut off the gas supply and to pull the mains plug out of the mains socket when maintenance and repairs are carried out.

When any work is carried out on the gas supply line and when the gas cylinder is replaced, all stop valves must be closed and there may be no ignition sources in the direct surroundings.

Description of Device

The unit is a mobile, liquid gas fired heater without a combustion chamber and with a fan for transporting hot air.

The unit works without an exhaust system and is only suitable for industrial purpose.

The unit is directly heated and are suitable for a all-purpose and simple application.

The unit are equipped with noiseless maintenance-free axial fan, durable gas burner, electromagnetic valve, piezo electric ignition, ignition protection with thermoelectric flame monitoring and connecting cable with plug.

The unit is in accordance with the basic safety and health requirements of the relevant EU – regulation.

Areas of Application

◊ For drying new buildings.

◊ Spot heating of working places outside or in open, fireproof halls and production places.

◊ Permanent or temporary heating of rooms with sufficient fresh air intake.

◊ For defrosting of machines, vehicles and non flammable storage goods;

◊ for tempering frost-endangered parts.

Working of Device

When the unit has been switched on (operating switch in position "I" = heating operation), the supply air fan is started and the electromagnetic valve opens. However, the gas supply to the burner is still blocked.

The gas supply to the burner is released only after having pressed on the pin of the thermoelectric gas valve (safety pilot). The liquid gas is supplied by means of a nozzle under pressure to the burner pipe, where it is enriched with an adequate quantity of oxygen which has been adapted to the burner capacity concerned.

The generated gas-air-mixture is ignited at the burner head by an electric ignition spark. The spark is generated by the manual actuation of the piezo electric igniter.

The thermoelectric control of the flame is started by heating the thermocouple. The pin of the safety pilot is to be released.

Gas supply is interrupted in case of operating troubles or when the flame goes out. However, the supply air fan continues working. The unit has to be restarted.

The temperature limiter interrupts the gas intake when the unit is overheating. The automatic release of the temperature limiter occures after the unit has cooled down. A restart of the unit is necessary.

Safety devices may be neither bridged nor blocked.

General Instructions

◊ The unit may be operated only by those persons who have been instructed regarding the unit's operation and the handling of liquid gas.

◊ **When using the unit make sure always to observe the guiding principles of the countries and states concerned.**

◊ **The unit may only be operated in rooms when**

- the air rate fed to the unit is sufficient for combustion and
- the rooms are well ventilated and de-ventilated and
- the percentage of the substances which are injurious to health in the breathed in air has no inadmissible concentration.

◊ A **good and natural ventilation and deventilation** is given if e.g.

1. the room volume in m³ corresponds to at least 30 times the nominal heat load in kW of all the units being operated in the room, and if a natural air exchange through doors and windows is ensured, or
2. if there are permanently open ventilation possibilities for ingoing and outgoing air near the ceiling and the floor, of which the size in m² corresponds to at least 0.003 times the nominal heat load in kW of all the units being operated in the room.

◊ A uniform unit connection pressure of **0.3 bar (300 mbar)** of category $I_{3B/P}$ is necessary for all countries of the European Community.

◊ The connection pressure may not fall below or exceed the required value.

◊ When using longer hoses the corresponding pressure loss has to be considered.

◊ Make sure to use exclusively components, such as gas hose, pressure controller and tube security devices (protection against breakage) or safety devices against gas leakage, that have been tested and are suitable for the intended purpose.

◊ The pressure controllers must have a firmly regulated initial pressure of 300 mbar and are to be equipped with a security device against tube breakage.

◊ The unit may not be operated, if the gas occurs liquid in to the burner.

◊ In building site operation it is only allowed to use hoses which are suitable for liquid gas.
According to regional regulations.

◊ The length of the gas hose should not exceed 2 metres.

◊ If there are special operational reasons and if corresponding safety regulations are considered and the length of the hoses are as short as possible it is also possible to use longer hoses.

◊ Gas hoses are to be protected generally against chemical, thermal and mechanical damage.

◊ In uncontrolled operation hoses with hose-break protection must be used.

◊ The operating personnel has to check the function of operation and safety devices and the existence of safety devices before starting the unit.

◊ If any defects are stated the superintending person has to be informed.

◊ If any defect occurs which endangers the operating security of the unit, the unit has to be switched off!

◊ The unit may be only maintained by trained persons and only original spare parts may be used.

◊ Wearing and ageing parts of the unit have to be replaced regularly. This is not valid if an expert confirms the faultless function of the unit.

◊ If the unit has been switched off by the temperature limiter due to overheating, the reason for the fault has to be detected and eliminated.

☝ **For optimum unit operation, the device should not be operated at an ambient temperature above 25 °C.**

Before Starting

Make sure to charge a person with the operation of the unit and with the supervision of the reservoirs and of the bottle stock who has been instructed sufficiently regarding the handlings concerned.

Make sure to draw the operators‘ attention to possible dangers during the handling of liquid gas.

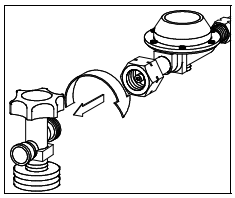
The persons charged with the operation of the units have to check the units before starting work to detect obvious defects on the operating and safety elements and to make sure that the safety devices have not been removed.

A constant unit connection pressure of 0.3 bar (300 mbar) must be ensured, also during continuous operation.

When any work is carried out on the gas supply line and when the gas cylinder is replaced, all stop valves must be closed and there may be no ignition sources in the direct surroundings.

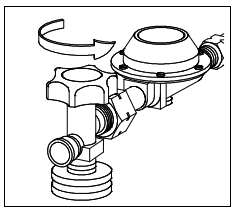
Connection of gas supply

Make the connection as follows:

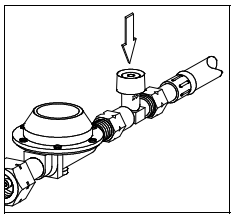


1. Connect pressure controller to the gas cylinder(s).

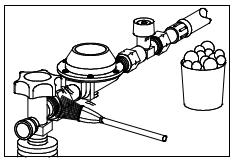
Attention!
left-handed thread!



2. Open cylinder(s) valve(s).
When gas is taken out of several gas cylinders simultaneously, all the valves have to be opened.



3. Press release button of the hose-break protection (protection against breakage) **after having opened** the valve(s).
This has also to be done after each replacement of cylinders.



4. Check after the installation and connection of the units all the gas bearing connections to make sure that they are tight.
Soap solution, leakage detecting spray etc.
Do not use open flames!

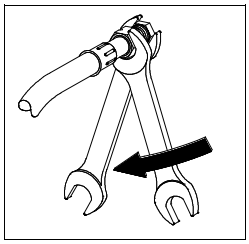
Install only in well ventilated rooms, not in rooms which people will be using for longer periods!

Important information about the installation

When installing or removing the gas hose make sure to exert a counterpressure on the gas connection nipple of the unit using an open-end spanner SW 17 and observing the left-handed thread.

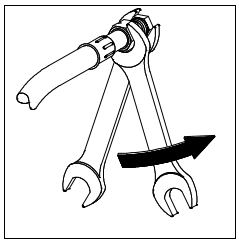
This procedure also refers to all further gas components, such as pressure controller, hose security device (protection against breakage), etc.

Unscrew gas hose



Turn union nut clockwise

Fasten gas hose



Turn union nut counter-clockwise

Important information about icing gas bottles

Insufficiently dimensioned supply plants can cause icing of the pressure gas or pressure reservoirs. When the gas pressure falls a proper gas supply to the consumer points can no longer be ensured in many cases.

This will result in imperfect combustion, harmful waste gases or extinction of the flame. Therefore the supply plant is to be dimensioned in such a way as to ensure that problems of this kind cannot be caused.

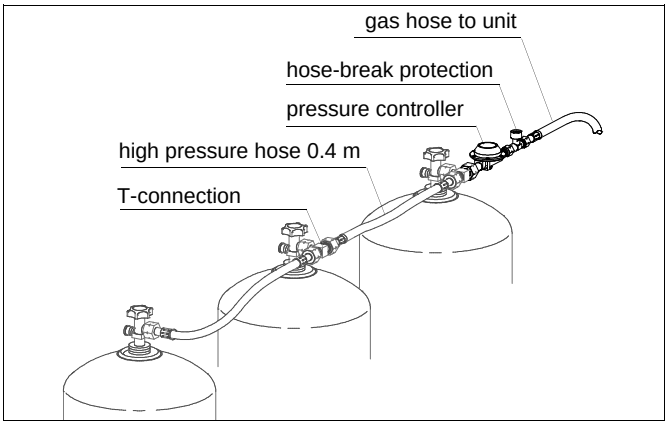
The crystalline white frost may not be removed by open fire, glowing objects or radiators.

Sufficient gas supply is to be ensured according to the unit power rating (see identification plate), service life and ambient temperature of the supply tanks.

In principle, we recommend that you use a set of at least 3 cylinders to avoid intensive icing of the reservoirs. The number of cylinders can be increased by using a set of several cylinders (accessories), depending on the unit capacity and the service life.

Assembly of Multi-cylinder Set

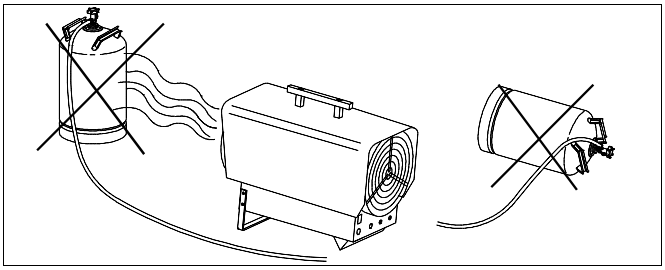
All cylinders valves must be open to ensure regular gas supply!



Starting

Important safety instructions

Make sure to place the gas reservoir only laterally behind the unit!

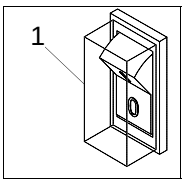


Never heat up or defrost gas reservoir through the unit's hot air current.
Danger of explosion.

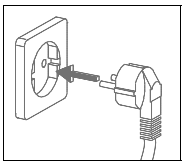
Never use the gas reservoir in a lying position when the unit is operating.
Danger of explosion.

The unit is to be installed only in well aerated rooms, but not in living rooms or similar recreation rooms!

Connecting the unit to the power supply



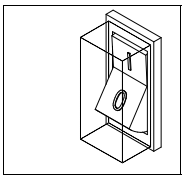
1. Put the operating switch into position "O" (Off)



2. Connect the unit plug to a properly connected power socket.
   230V/1~ 50Hz

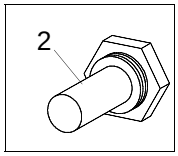
The electric connection of the units is to be carried out via a special supply point with fault current safety switch.

Heating

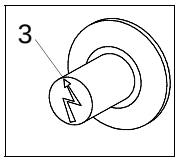


1. Put the operating switch into "I" position (heating operation)
   The supply air fan starts..

Make sure to keep the safety distance from combustible and inflammable materials and to observe the local fire protection codes.



2. Press down pressure pin 2 of thermoelectric gas valve (safety pilot) and keep the pin pressed.



3. After approx. 2 or 3 sec. the piezo electric igniter 3 is to be actuated (possibly several times) with the pressure pin still held down, until a formation of flames has occured.

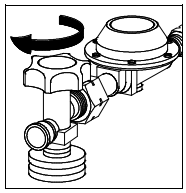
4. After the formation of flames still hold down the pressure pin for approx. 10 - 15 seconds, until the thermoelectric flame monitoring has started.
5. Do not release the pressure pin before this.
6. If the flame is extinguished after the pressure pin has been released, repeat the ignition procedure after having waited for approx. 1 minute.
7. Keep the pressure pin pressed down a little longer.

Important instructions

Make sure that the supply air can be freely sucked and the heated air can be blown off without problems.

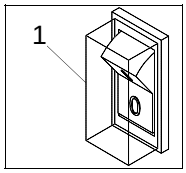
The suction and blower apertures of the unit may not be narrowed or equipped with hoses or conduits.

Unit Shut Down

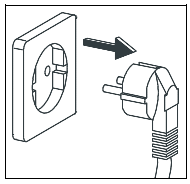


1. Close all the bottle valves.

2. Let the flame burn out.



3. Put operating switch 1 into “0” position (off).



4. Unplug mains plug from the mains socket.

Maintenance

Depending on the operation conditions the units are to be tested by an expert when necessary, but at least regularly every two years, to ensure their safe operation.

The test result is to be recorded in a test certificate which is to be safely kept until the next test so that it can be presented to the authorised persons for control purposes at any time.

Regular maintenance and care, at least after each heating period is the basic condition for a long service life and a faultless operation of the unit.

When the unit is being maintained, set or repaired, the gas supply has to be cut off and the mains plug has to be unplugged from the mains socket!

Setting and maintenance is to be carried out only by authorised experts!

Please pay attention to the following points:

◊ The unit is to be maintained and cleaned in regular intervals.

◊ The unit is to be kept free from dust and other deposits and is to be cleaned only with a dry or humid cloth.
Do not use water jet.

◊ Do not use any aggressive cleaning agents or those which are harmful or environmentally unfriendly.

◊ Do not use cleaning agents which contain solvents.

◊ Only use suitable cleaning agents to remove extreme dirt.

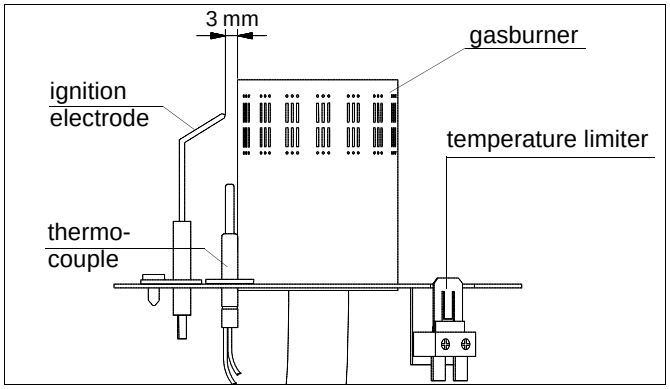
◊ Check suction and discharge grille regularly to see whether it is dirty and clean it, when necessary.

◊ Check the suction opening for combustion air as well as the injector fitted behind it and the gas nozzle regularly to make sure that they are not dirty.

◊ Check gas hoses and gaskets to see whether they are damaged and replace when necessary.

◊ Clean gas burner and gas nozzle regularly.

◊ Clean baffle plate regularly.



Intensive yellowish flames indicate that the fresh air supply is probably insufficient and that there is some dirt inside the unit, respectively.

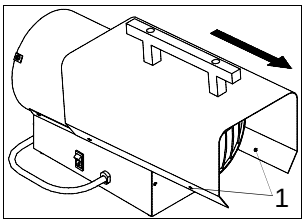
◊ Check ignition electrode and clean when necessary.

◊ Set the ignition electrode when necessary.
3 mm distance from the burnerhead.

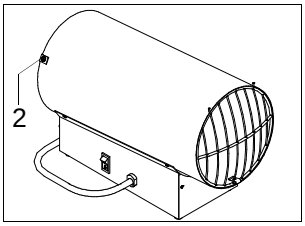
◊ Check thermocouple and clean when necessary.

The bi-metal spring may neither be damaged nor bent in or order not to affect the function of the temperature-limiter!

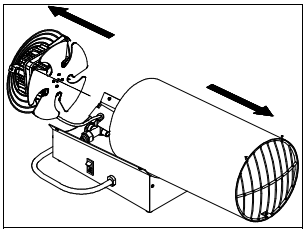
Disassembly for Cleaning



1. Remove four fastening screws 1.
2. Pull off the outside casing to the front.



3. Remove three fastening screws **2** of air suction grille.



4. Remove air suction grille with fan motor and fan blade
5. Pull the inner casing to the front.

Cleaning the unit

After disassembly all components are easily accessible for cleaning and maintenance purposes.

◊ Clean burner carefully.
Possibly use compressed air.

◊ Clean gas nozzle carefully when necessary.

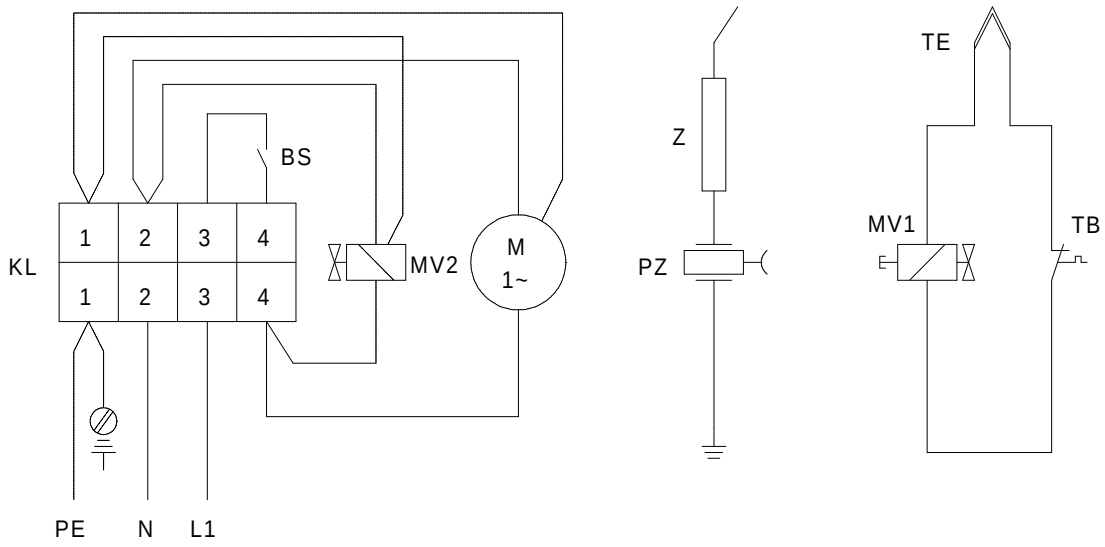
◊ Carefully remove dirt and dust from ignition electrode, thermocouple and temperature limiter.

◊ Remove deposits and other dirt from base of unit.

◊ Assemble all the parts thoroughly in reverse order.

Control the functions of the complete unit and carry out a tightness check for all gas-bearing connections using soap solution and leakage detection spray, respectively.

Wiring Diagram



KL = terminal strip
BS = operating switch
MV2 = gas valve (electromagnetic)
M = fan motor
Z = ignition electrode
PZ = piezo electric igniter
TE = thermocouple
MV1 = gas valve (thermoelectric)
TB = temperature limiter

Technical Data

Series			**PGM 12/12 E**
Nominal heat output		kW	12
Heating capacity		kW	12
Air output		m^3/h	250
Fuel/type of gas		liquid gas	Cat. $I_{3B/P}$
Gas pressure		mbar	300
Gas consumption		kg/h	0,95
Electrical connection		V	230
Frequency		Hz	50
Power consumption max.		W	60
Fuse protection		A	10
Kind of protection		IP	44
Sound pressure level L_{pA} 1m[1)]		dB(A)	57
Weight		kg	6,8
Dimensions total	length	mm	400
	width	mm	185
	height	mm	320

[1)] noise measuring DIN 45635-01-KI3 in heating operation

Service and Guarantee

Any claims under guarantee regarding materials can be accepted only when the orderer or his customer has filled in completely the “guarantee certificate” which is enclosed with every REMKO-heater and has returned it to REMKO GmbH & Co. KG in due time after the unit’s sale and commissioning.

The units are factory tested on faultless function. If any failure occurs though which cannot be eliminated by the operating person, please contact your dealer or contact person.

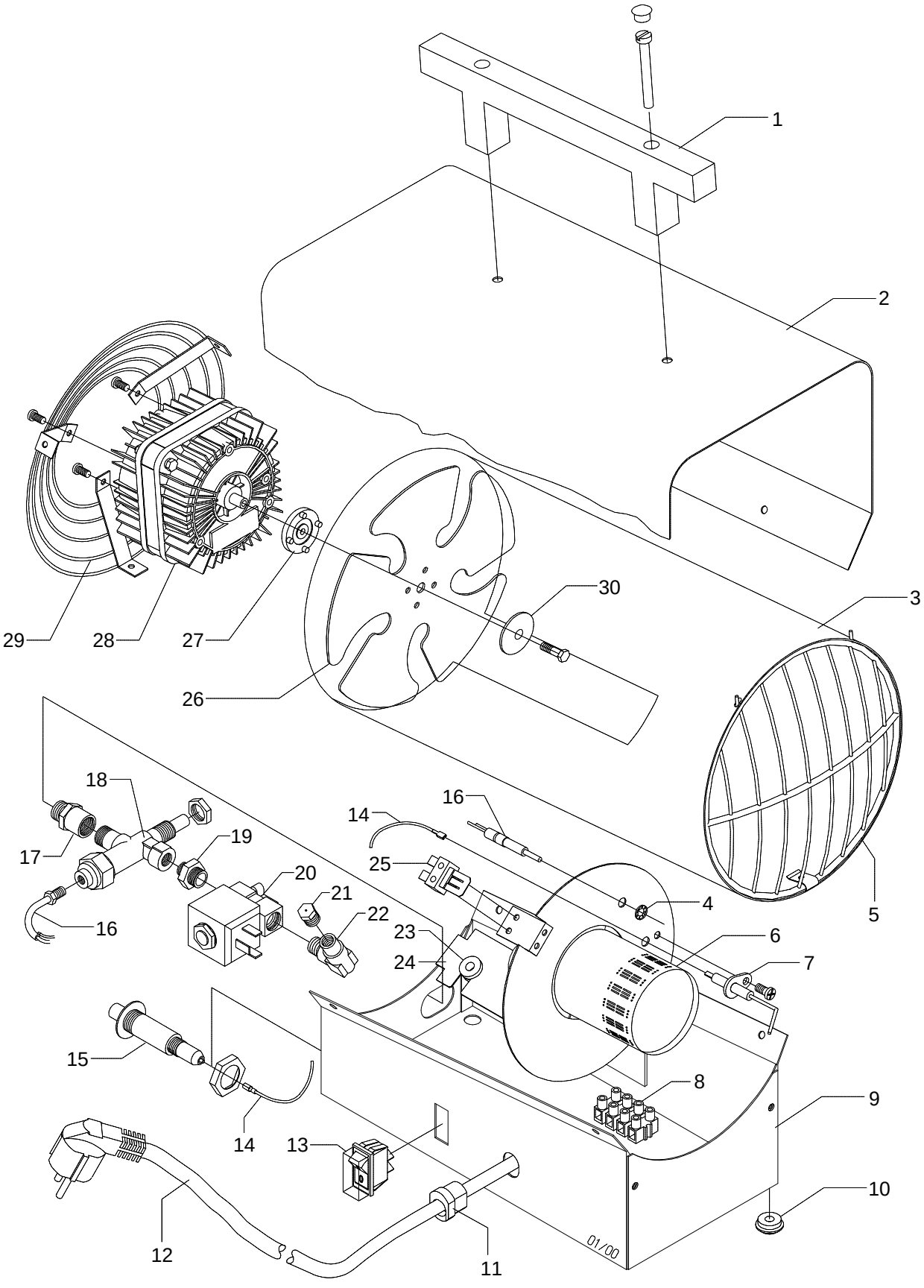
An operation/use other than that indicated in these instructions is prohibited!
In the case of non-observation we will not be held responsible and our guarantee will become void.

Correct usage

The units are to be used only for heating and ventilation purpose in industrial or commercial application because of their construction and equipment.

If specification of the manufacturer or legal regulations, are not followed or if unauthorised changes are made on the unit, the manufacturer is not liable for resulting damages.

Exploded View



We reserve the right to make modifications in dimensions and construction in the interests of technical progress.

Spare Part List

No.	Description	Ref.-No.
1	transport handle	1101142
2	outside casing PGM 12	1103801
2a	outside casing PGM 12 E (stainless steel)	1103832
3	inside casing	1103802
4	retaining ring	1103811
5	discharge protection grille	1103803
6	gas burner	1103804
7	ignition electrode	1103818
8	terminal strip, 4 x	1101442
9	base	1103805
10	foot rest	1103806
11	traction relief	1103904
12	connecting cable with plug	1103808
13	operating switch	1103809
14	ignition cable	1103810
15	piezo electric igniter	1101364
16	thermocouple	1103812
17	gas connection nipple	1103813
18	gas valve (thermoelectric)	1101169
19	reducing nipple	1103829
20	gas valve (electromagnetic)	1101376
21	gas nozzle	1103815
22	angled coupling	1103816
23	protection socket, small	1101304
24	cover plate	1103828
25	temperature limiter	1103817
26	fan blade	1103819
27	clutch plate B6ø	1108455
28	fan motor	1103820
29	air suction grille	1103821
30	clutch disk	1101375

not shown

	pressure controller with hose-break protection	1103825
	1,5 running metres gas hose	1103826
	2,0 running metres gas hose (HD for building sites)	1103827

When ordering spare parts it is necessary to indicate EDV-No. and machine no. (see data plate)!

Troubleshooting

trouble:	cause:
– unit doesn't start	1 – 2 – 3 – 4 – 7
– unit stops during operation	2 – 4 – 7 – 12 – 13
– fan blows, but gas supply is blocked resp. no ignition	4 – 5 – 8 – 9 – 12
– flame goes out after having released the pin of thermoelectric gas valve	8 – 10 – 11
– gas supply is blocked, resp. flame goes out	4 – 6 – 7 –10 – 11 – 12 – 13
– fuel consumption is too high	12 – 15
– unit can't be shut down	3 – 14
– heating capacity drops during continuous operation	13

cause:	remedy:
1. no electrical connection	- plug the mains into an appropriate mains socket (230V/1~ 50Hz)
2. fan motor is overcharged (fan blows irregularly or is blocked)	- check fan motor, fan blade and clutch plate and replace if necessary.
3. operating switch defect	- close gas supply, unplug the mains and replace defect operating switch
4. no gas pressure on solenoid valve	- check gas supply - check contents of gas bottle(s) - check gas hose(s) for damage - release hose-break protection resp. replace it
5. no ignition spark	- set ignition electrode - check ignition cable - check porcelain insulation of ignition electrode
6. air-suction grille dirty	- clean air-suction grille
7. unit is shut down by temperature limiter	- check air-suction and blow-out grille and clean if necessary - check fresh air supply
8. safety pilot does not open (resp. does not lock)	- replace safety pilot
9. piezo electric igniter defect	- replace piezo electric igniter
10. thermocouple resp. temperature limiter defect	- check position of thermocouple and adjust according to setting hints
11. loose or dirty connection between safety pilot and thermocouple	- check connection and clean if necessary
12. pressure controller defect or false pressure controller mounted resp. hose break protection is blocked	- mount original pressure controller - release hose-break protection resp. replace it
13 gas bottle(s) iced over due to low temperatures and too high gas taking	- replace empty gas bottle(s) and connect 2-3 bottles using multi bottle set (EDV-No. 1014050)
14. solenoid valve does not open	- close gas supply - let flame burn out - put operating switch in position „0" and unplug the mains - replace solenoid valve
15. leak gas hose(s)	- find leakage by foam forming mediums eliminate leakage

Make sure that the gas supply has been closed and the mains plug has been taken out of the mains socket before carrying out any work regarding the unit!
Setting and maintenance is to be carried out by authorised experts only!

Maintenance Log

Model: : ..... Model No.: : .....

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Clean unit -surface-																				
Clean unit -interior-																				
Clean fan blade																				
Clean combustion chamber																				
Clean gas burner																				
Set/replace ignition electrode																				
Check gas hose																				
Check gas leading parts for leaks																				
Check safety facility																				
Check protection guards																				
Check unit for damage																				
Check fastening screws																				
Electric safety-inspections																				
Test run																				

Remarks:.....

.....

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

Setting and maintenance work is to be carried out only by authorised specialists!

REMKO GmbH & Co. KG
Klima- und Wärmetechnik

D-32791 Lage • Im Seelenkamp 12
D-32777 Lage • PO Box 1827
Phone +49 (5232) 606 - 0
Fax +49 (5232) 606260