

# GoGaS Bright Radiator Technical Instructions

## KOMBIMAX M

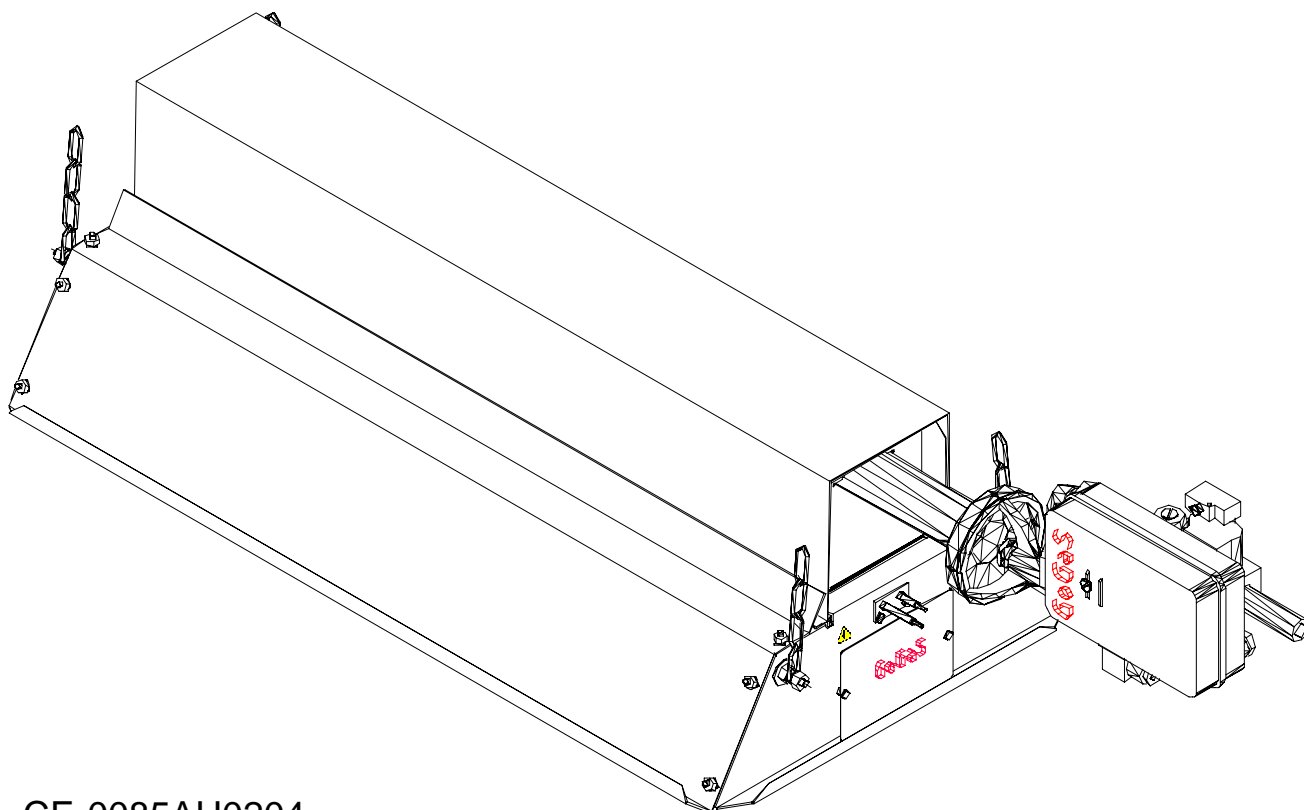
<b>M 06 -1</b> (single-stage)	<b>M 06 -2</b> (two-stage)
<b>M 12 -1</b>	<b>M 12 -2</b>
<b>M 18 -1</b>	<b>M 18 -2</b>
<b>M 24 -1</b>	<b>M 24 -2</b>
<b>M 36 -1</b>	<b>M 36 -2</b>

**"Before using this appliance, please read the instructions carefully"**

Should you have any questions regarding these instructions, please contact:

**GoGaS Goch GmbH & CO. KG**  
Zum Ihnedieck 18  
44265 Dortmund

Phone    +49 231 46505-0  
Fax       +49 231 46505-88



**CE-0085AU0204**  
Product ID number

## Preface

GoGaS bright radiators represent an efficient and comfortable alternative to conventional heating systems. The infrared gas fired bright radiator is an atmospherically operated radiant heater which converts most of the energy applied (natural gas or LPG) into thermal radiation. The sensible radiation component within the vicinity of persons allows a reduction in the air temperature, thus leading to energy savings.

### The technology

The GoGaS **KOMBIMAX M** has a high-quality stainless steel combustion chamber. Modern injector burners, almost pollution-free combustion as well as a wide performance range of from 6 kW to 36 kW characterize this component. The radiation is specifically reflected towards the vicinity of persons by means of an easy-to-install reflector with high reflective properties.

Waste gas slots for controlled prewarming of the mixture, located laterally beside the combustion chamber, lead to high efficiency levels. The waste gas flowing around the combustion chamber cools down and causes heat to enter the combustion chamber.

### Regulation

The **KOMBIMAX M** can be used as a single or as a two-stage unit. A double gas nozzle allows two-stage operation with constant pressure at the gas nozzle. Performance regulation is effected by means of adjustable nozzle cross-sections.

Subject to technical alterations

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## 1. Safety instructions

### Symbols and instructions used

The following marks and symbols are used in these operating instructions to indicate hazards.



Warning about risks that can lead to personal injury and damage to property if disregarded.



Warning about work on electrical equipment

**All work on the radiator must be carried out by trained and qualified personnel only.**



**This appliance must be installed in accordance with current connection and installation regulations and may only be used in adequately ventilated rooms. The installation and operating instructions must be read and understood before installation and before start-up.**



**Before installation it must be checked whether local gas distributions, gas types and gas pressures as well as the settings of the appliance are compatible.**

## 2. General information

GoGaS infrared radiators are manufactured in accordance with DIN EN 419. Each appliance is subjected to a function test before it leaves the factory and is preset to the relevant gas type, and must be examined and if necessary adjusted before start-up. For setting up and operating radiation equipment, the following regulations and guidelines must be complied with.

## 3. Energy supply

Gas connection ½ in male thread

Connection	Gas pressures	
	maximum	minimum
Natural gas	1.45 psi	0.3 psi

Electrical connection

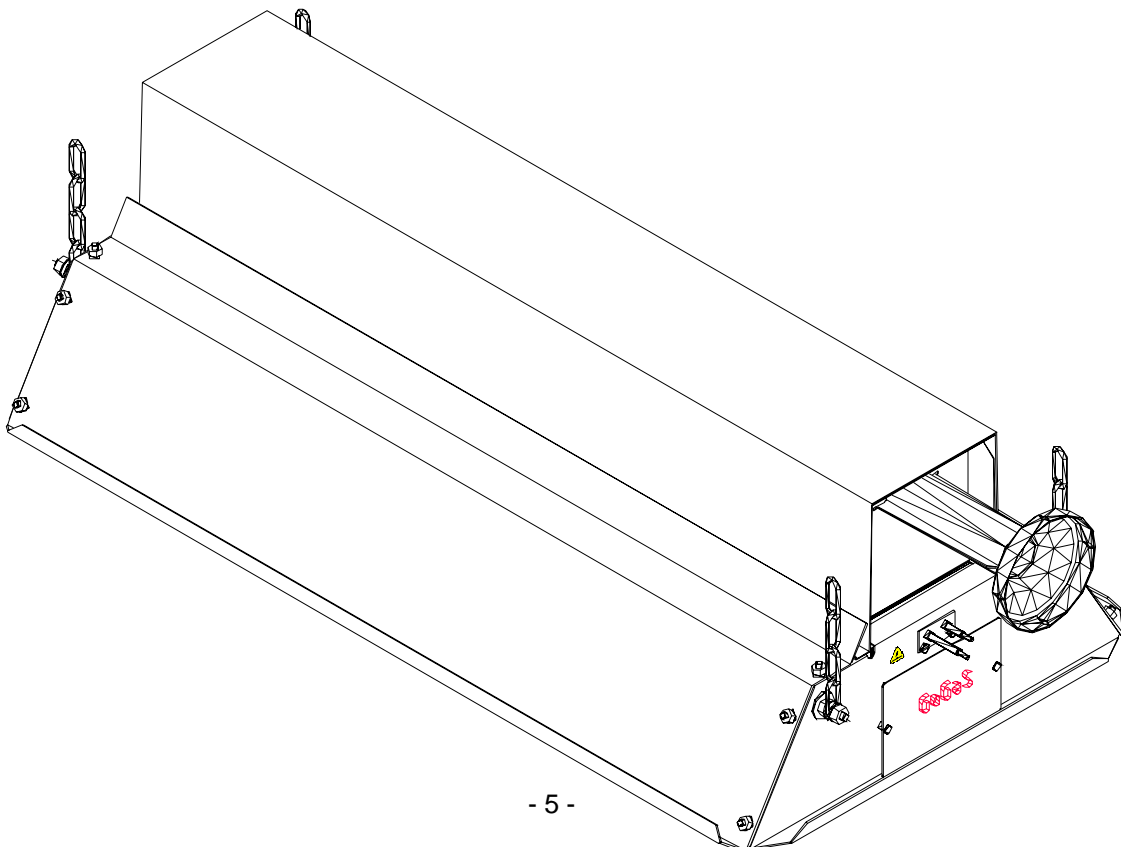
Alternating current, voltage 230 V, 60 Hz with L, N and PE

Power consumption:      12 W for single-stage radiators  
                                      32 W for two-stage radiators

## 4. Assembly of the radiator

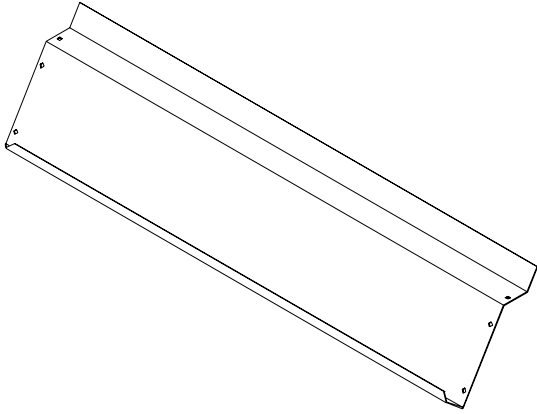
GoGaS radiators of the M series are delivered in component parts and must be assembled before they are installed.

You will find the instructions for this on the next page.



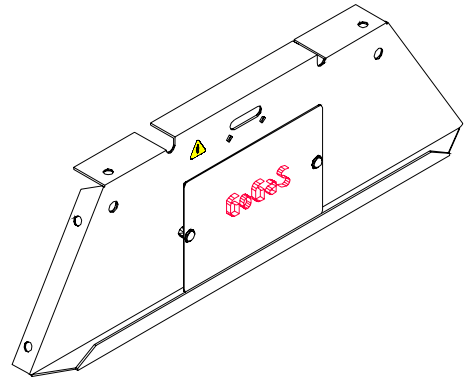
Parts overview

Item 1



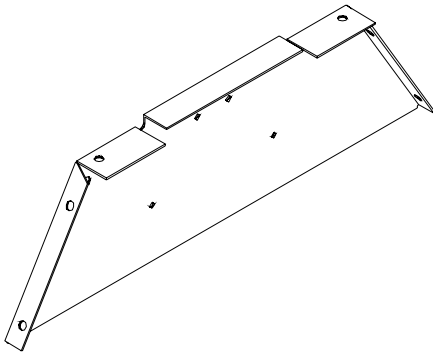
2 x long reflector part, M 06-36

Item 2



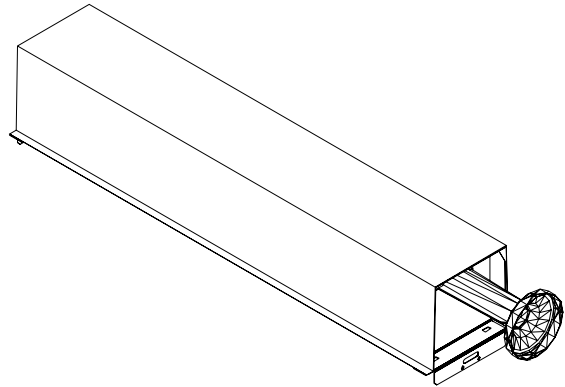
1 x end reflector part M 06-36 with type plate

Item 3



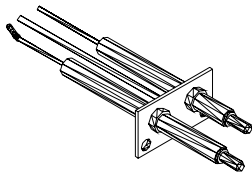
1 x end reflector part M 06-36 without type plate

Item 4



1 x combustion chamber N 06-36

Item 5



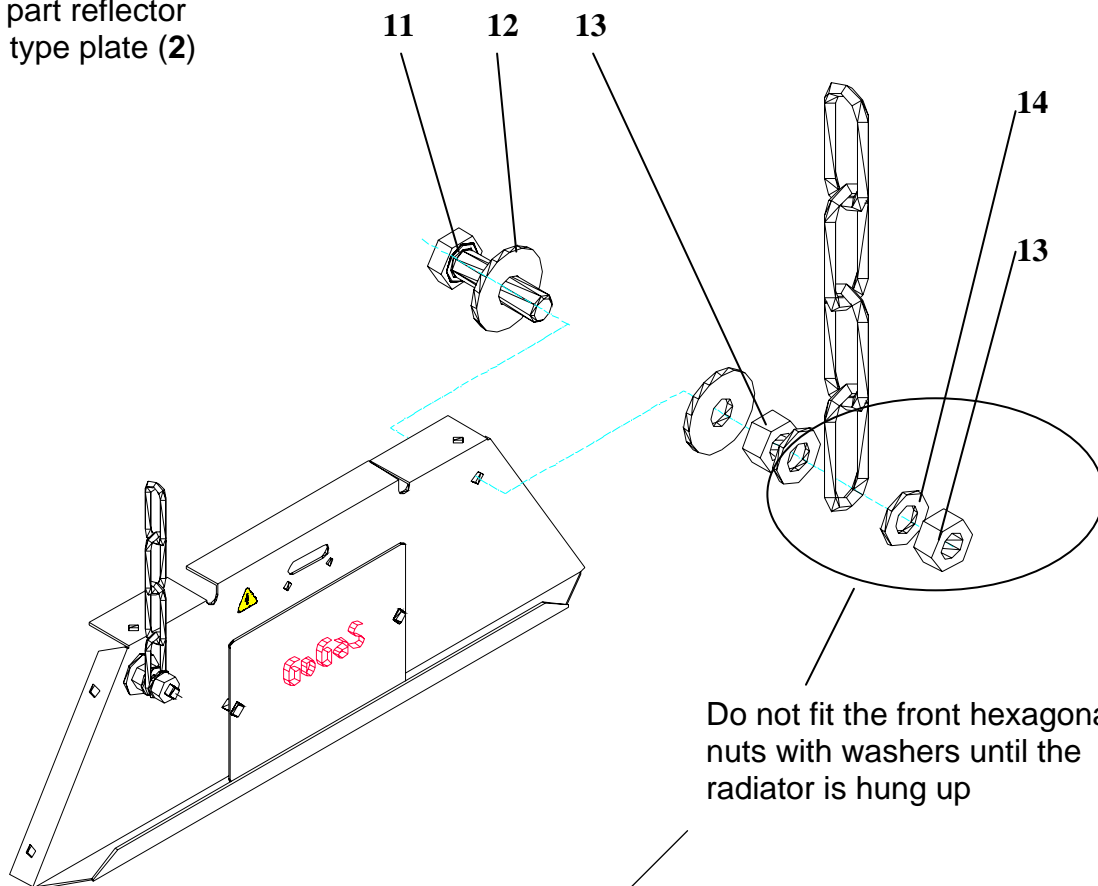
1 x Electrode block

## Connecting elements

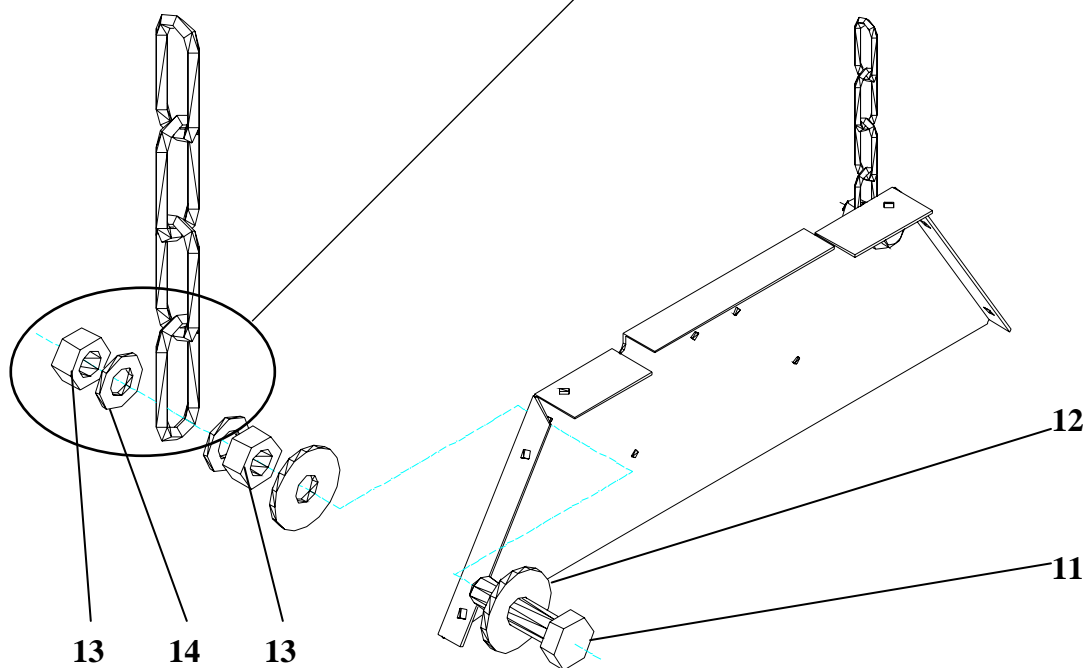
Item	Quantity	Description	Size	DIN / EN	Drawing
6	12 pcs.	Hexagonal bolt	M 6 x 12	24017	
7	12 pcs.	Hexagonal nut	M 6	24034	
8	12 pcs.	Washer	6.4	125	
9	2 pcs.	Pan head bolt with slot	M 5 x 16	1207	
10	2 pcs.	Hexagonal nut	M 5	24034	
11	4 pcs.	Hexagonal bolt	M 8 x 30	24017	
12	8 pcs.	Washer	8.4	9021	
13	8 pcs.	Hexagonal nut	M 8	24034	
14	8 pcs.	Washer	8.4	125	

**Assembly in the illustrated sequence**

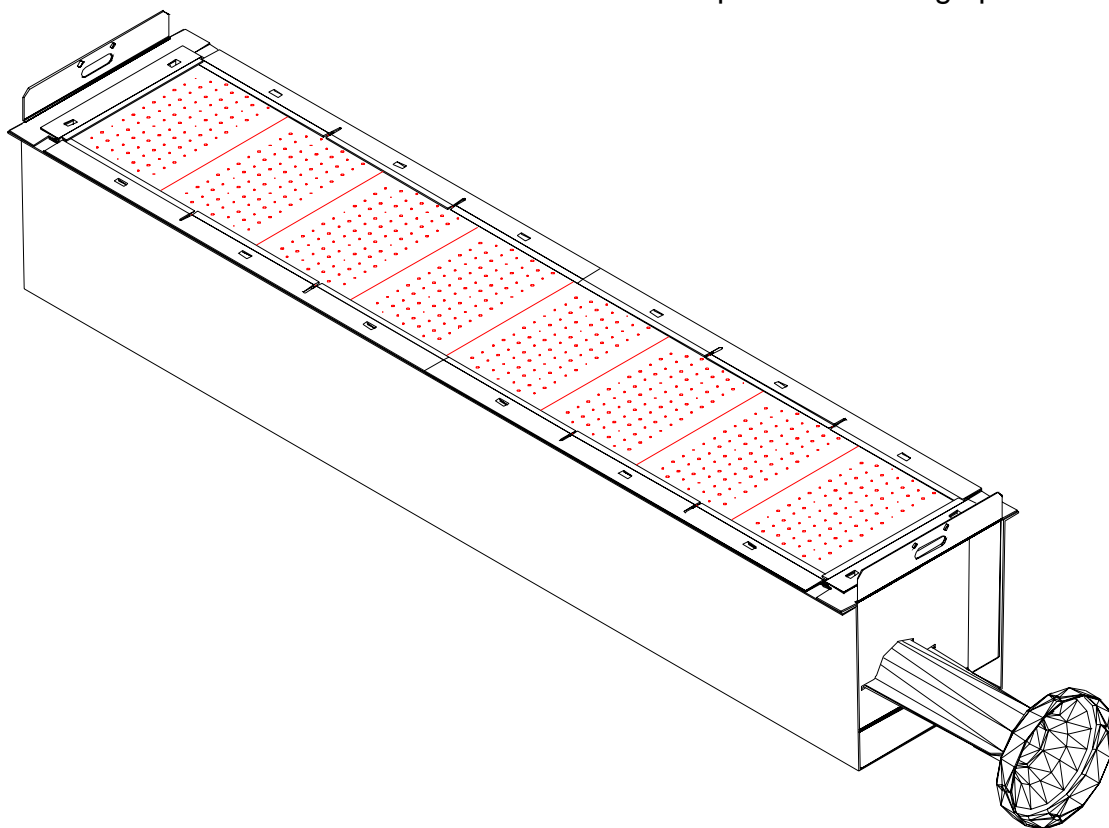
1. Pre-assembly  
end part reflector  
with type plate (2)



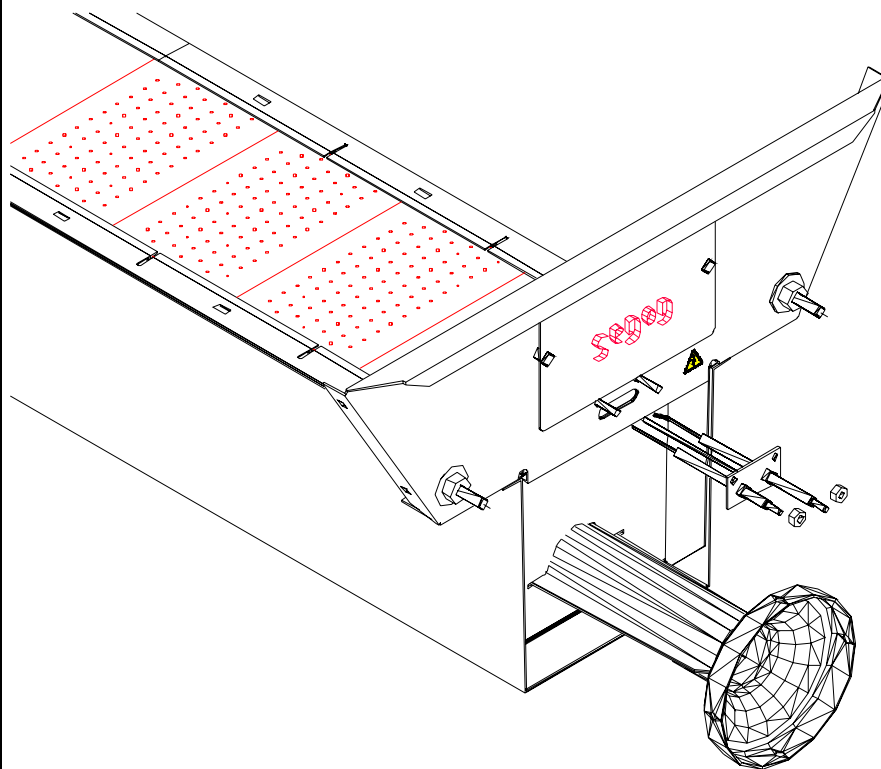
2. Pre-assembly  
End part reflector (3)



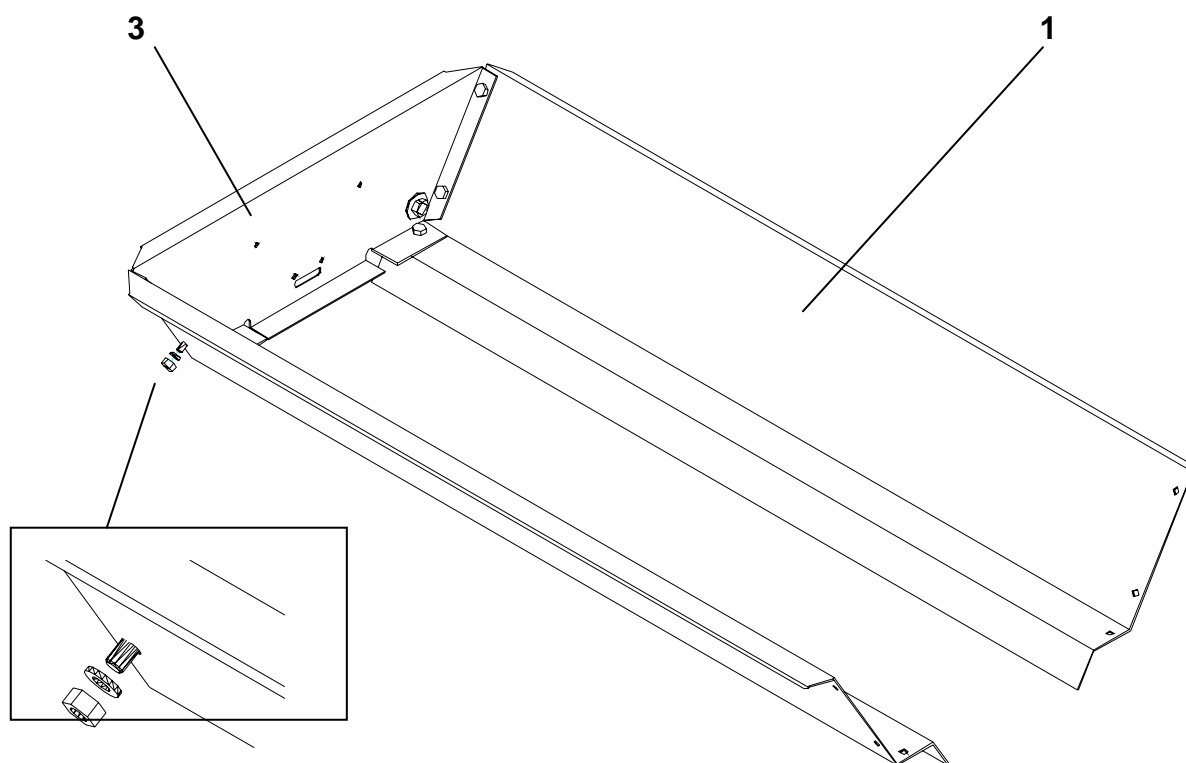
3. Position the combustion chamber so that the ceramic plates are facing upwards.



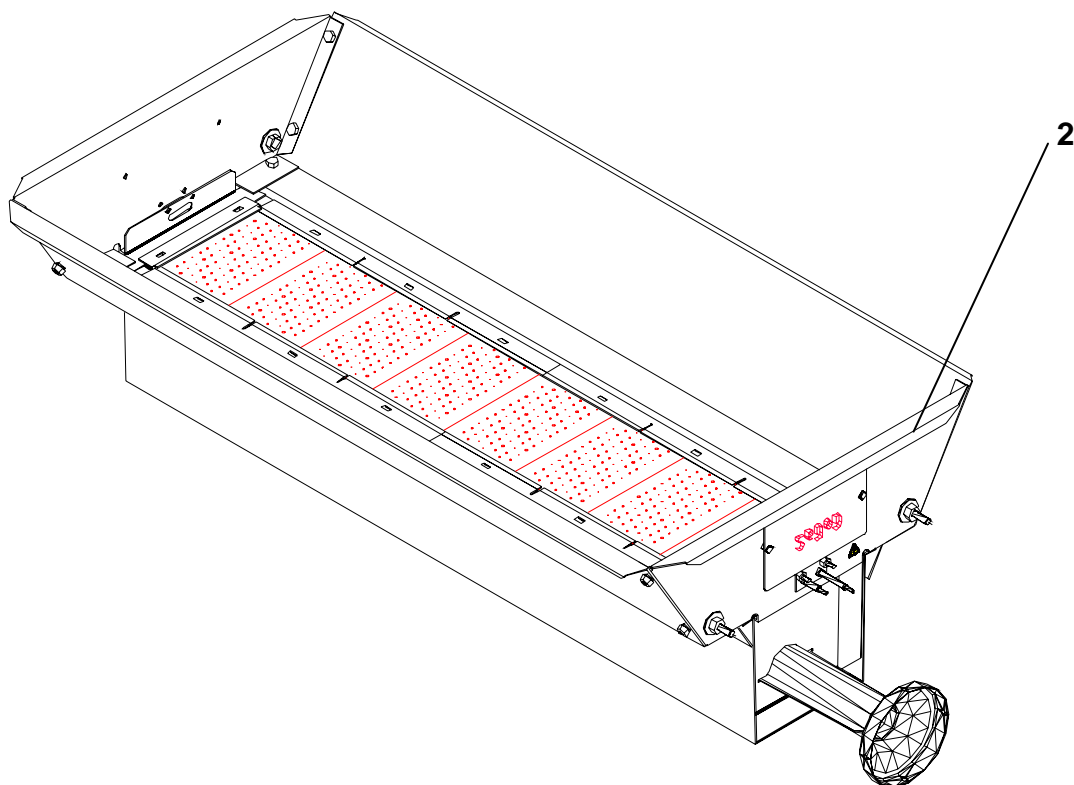
4. Secure the end reflector part with type plate (2) and electrode block.  
Caution! The heads of the screws must be on the inside.



5. Preassemble the long reflector part (1) with the end reflector part (3).  
Caution! The heads of the screws must be on the inside.

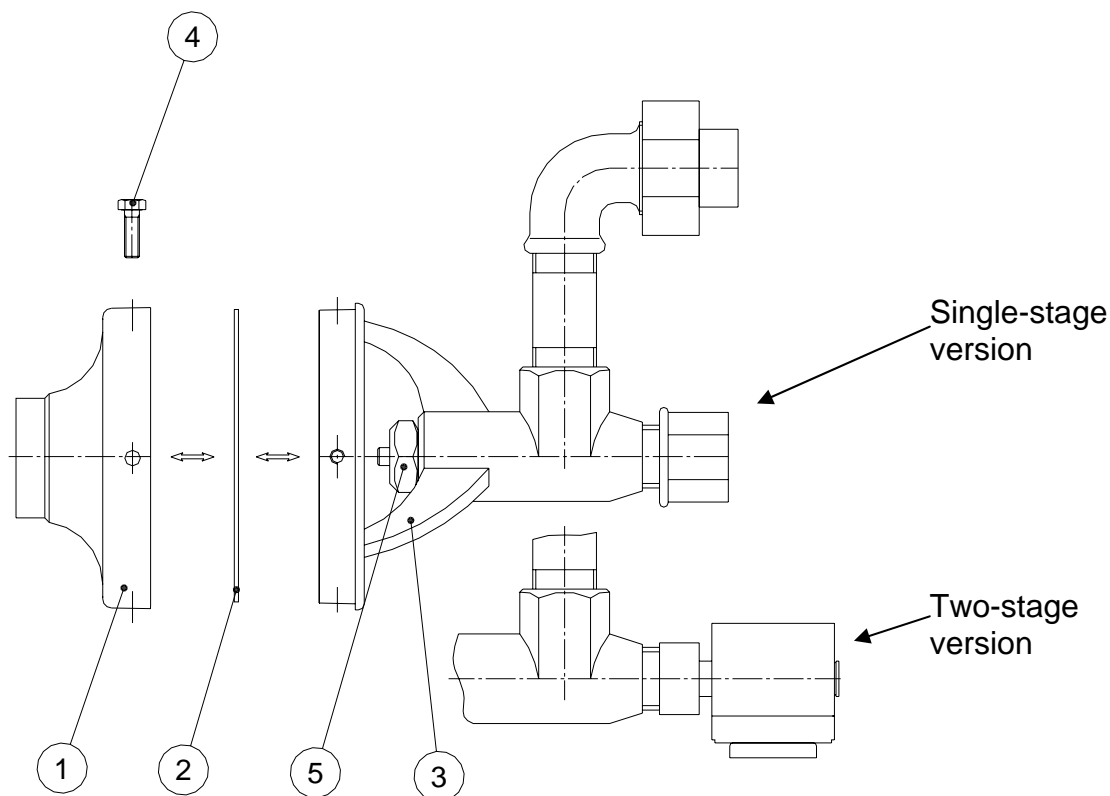


6. Mount the preassembled reflector parts on the combustion chamber and screw them to the end reflector part with type plate (2). Caution! The heads of the screws must be on the inside.



## 5. Mounting the nozzle connector for single and two-stage radiators

**KMI / M-1** (single-stage) Art. No.: 21004003  
**KMI / M-2** (two-stage) Art. No.: 21004004



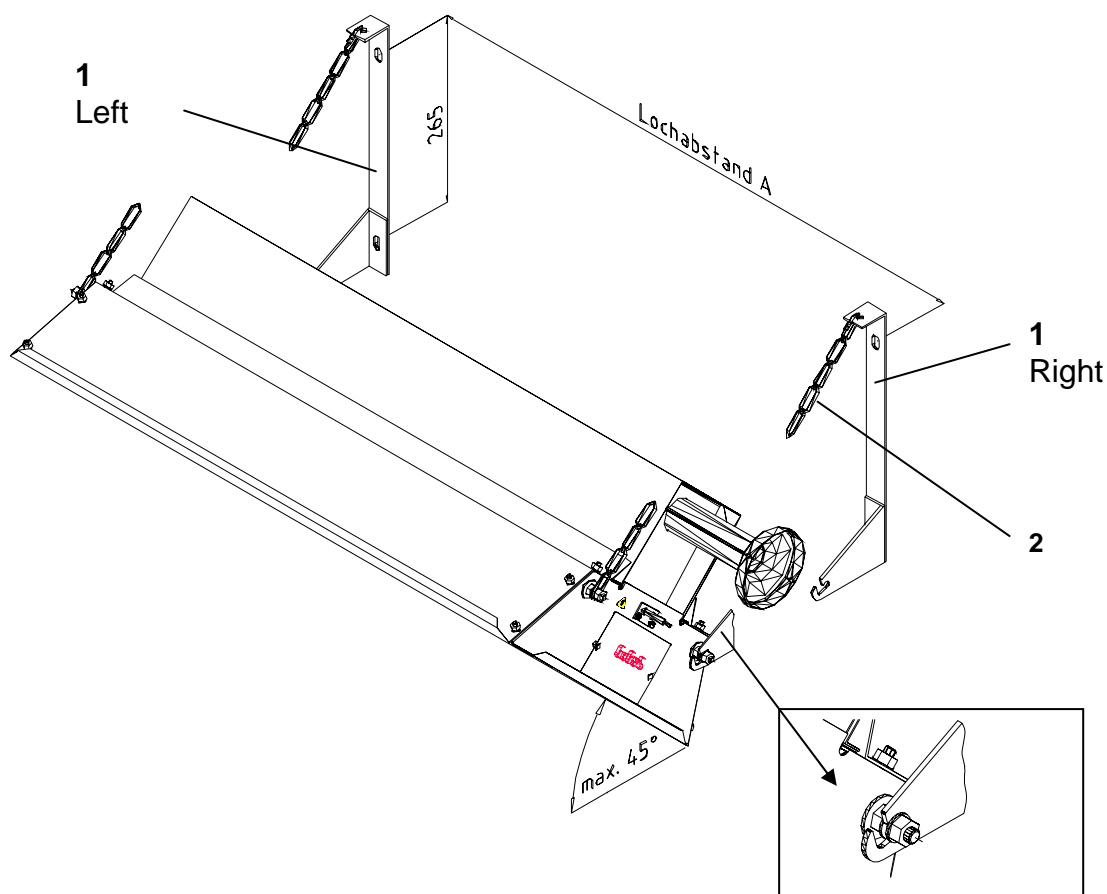
Before the nozzle housing is mounted, the diaphragms (2) and nozzle sizes (5) must be compared with the type plate specifications.

### Procedure:

- Remove the securing clips from the injector (some radiators do not have any air diaphragms, and therefore no securing clips)
- Push the nozzle housing (3) into the injector (1) and screw it tight using four M 5 hexagonal nuts (4).

## 6. Hanging up the radiator

GoGaS infrared radiators can be operated as angled or as vertical radiators. When the radiator is hung up at an angle (construction kit AW 84/II) the permitted angles of inclination of max. 45° must be adhered to. No other angles are permitted. The material for hanging up the radiator must be ordered separately. No plastic plugs may be used during installation! Hang up the radiators using the attachment points provided.



Item	Quantity	Description	Type
1	1 set	Angled suspension	AW 84/II
2	1 set	Accessories	AW 84/II

Type	M 6	M 12	M 18	M 24	M 36
Hole spacing <b>A (inches)</b>	17.6	32.126	46.653	61.181	90.354
Weight (pounds)	15.432	28.66	37.478	48.501	68.343

7. Installation of the switching and control system (single and two-stage)



Before the beginning of work it must be ensured that the gas network is free of gas and remains so. The electric supply lead must be off circuit and must be secured against reclosure.

Fig. 1 single-stage version

natural gas

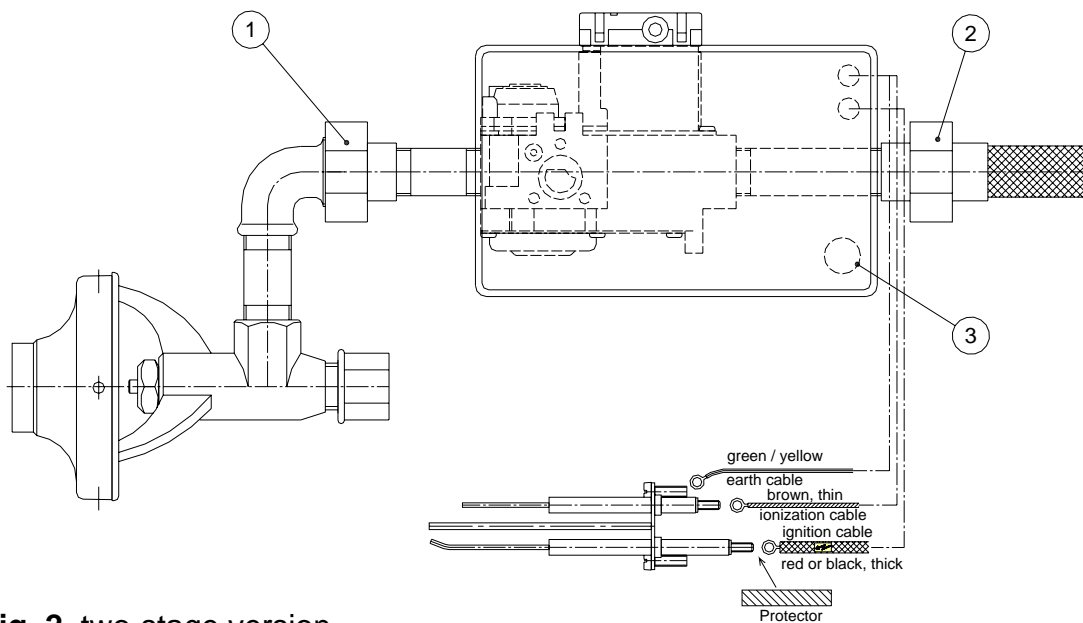
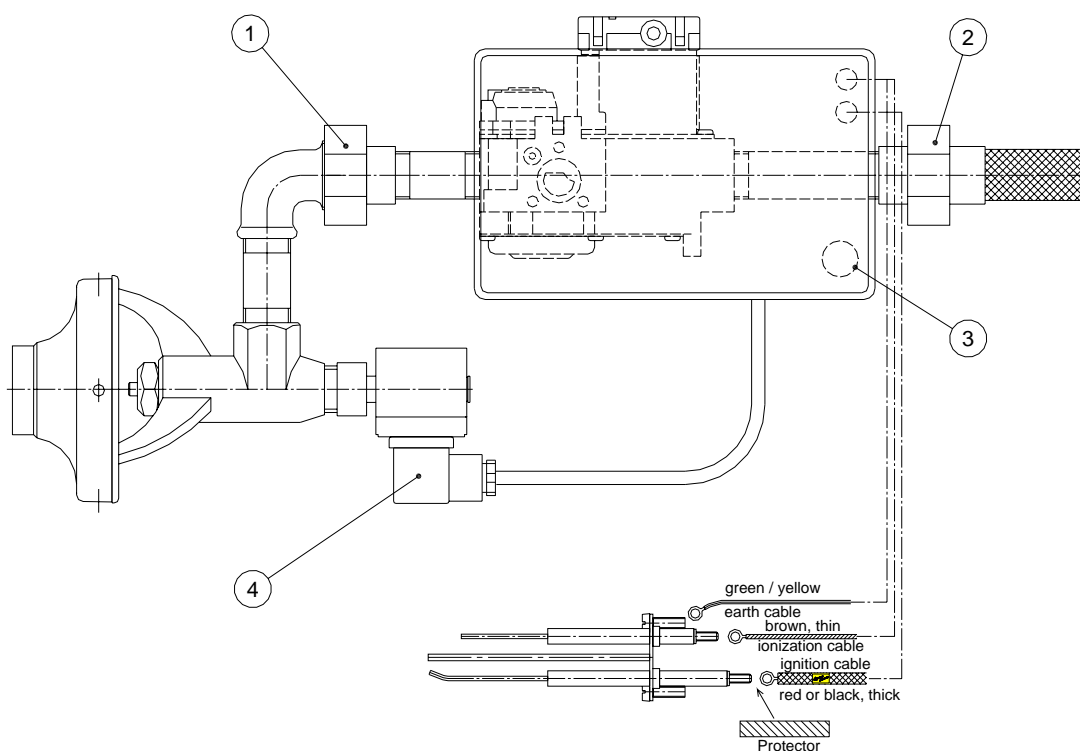


Fig. 2 two-stage version

natural gas




- Screw the switching and control system to the locating fixture using the screw connection (1).
- Connect the electrode block as illustrated.



Do **not** join together the ignition, ionisation and earth cables!



The ignition cable connection is marked with a  sticker on the radiator.



The hexagonal nuts for the ignition and monitor electrodes should only be tightened slightly.

- Push the insulating hose (protector) over the ignition cable and push it over the ignition electrode after connection.
- With the two-stage switching and control system screw the plug (4) tightly onto the solenoid.
- The gas connection is manufactured with an assembly unit. Fit the ball valve of the assembly unit to the gas line before the control system and close the ball valve.



Route the flexible assembly unit as shown in Fig. 3 so that it is not under tension.



The connection to the control system may only be carried out after the leak test of the gas line, otherwise the combination-type valve will be damaged by the excessive test pressure.

- Connect the combination-type valve to the screw connection of the assembly unit. Make sure that the combination-type valve is installed in such a way that the coils face upwards (see drawing) or are positioned horizontally, but that they **never hang**.
- Open the ball valve and carry out the leak test of the gas bearing parts as far as the combination-type valve.

### Single-stage electrical connection

- Insert the mains supply lead into the M screw connection (3) of the control unit and connect to L1, N and the earth terminal.
- The switching and control system is designed for an input voltage of 230 V, 60 Hz alternating current with N, and operates in the VDE-approved tolerance range of  $-15\%$  to  $+10\%$ . Power consumption 12 W. The input voltage must be checked before start-up.

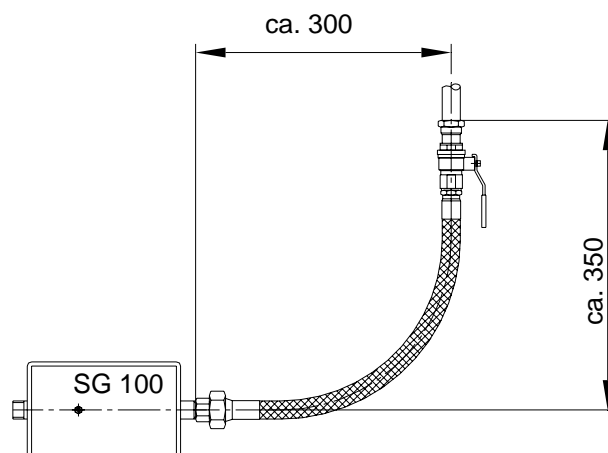


The connection must be effected in such a way that the phases are correct. A correctly functioning network earth is a precondition for trouble-free operation!

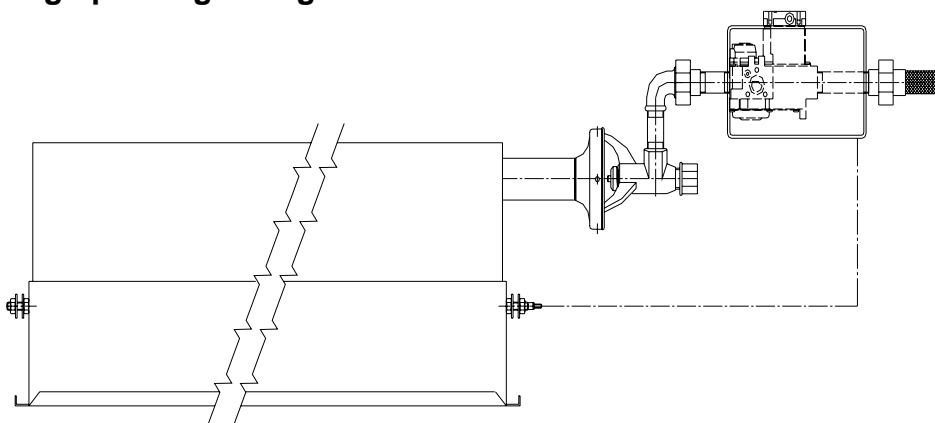
## Two-stage electrical connection

- Insert a four-conductor cable into the M screw connection (3) of the control unit. Connect the control unit to L1, N, PE and the multiple contact circuit to terminal 4.

Fig. 3



## 8. Starting up a single-stage radiator



- a) Open the gas shut-off device and check the connection pressure at the test connector (see top view of combination-type valve Page 20). It must not exceed 1.45 psi.

If there is sufficient connection pressure, the device can be put into operation using the electric switching device (switchbox or control system) and the nozzle pressure can be checked at the test gas connector.



If the gas connection pressure (gas pressure 0.3 psi) is not sufficient, the gas infrared radiators must not be put into operation.

## b) Functional process control unit SG 100

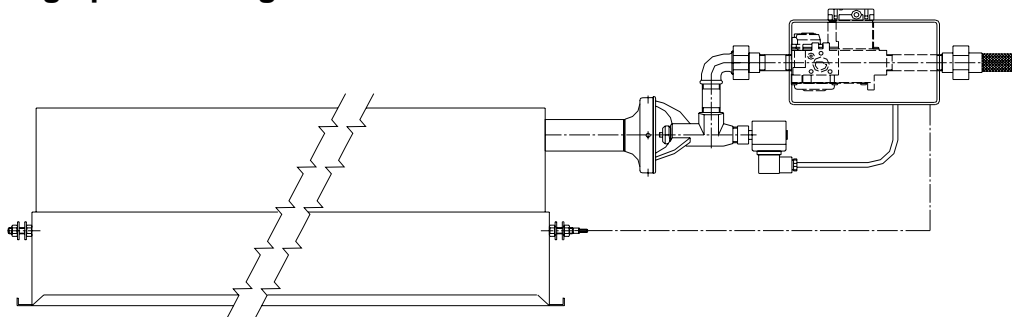
- Switch on mains voltage.  
After a waiting time of 5 sec. the high-voltage ignition starts, with simultaneous opening of the solenoid valve. If no flaming occurs, the ignition switches itself off after 30 sec. and the solenoid valve closes (shut-down on fault). If the flame forms an ionization current greater than or equal to  $0.4 \mu\text{A}$  within 30 sec., the ignition is switched off and the device is in operation.
- Reconnection after shut-down on fault  
The device must be disconnected from the mains for a period of at least 5 sec. Then it must be switched on again as described above.
- Re-ignition  
If a malfunction occurs during operation, the ignition is switched on for the maximum duration of 30 sec. If no ionization current is created within this period, the device shuts down on fault.

## c) Nozzle pressure control

- Connect the pressure gauge to the nozzle pressure test nipple (see top view of combination-type valve, Page 20).
- Switch on the radiator.
- Compare the nozzle pressure with the specifications on the type plate and if necessary correct using the pressure controller.

## d) Carry out the leak test on the gas-bearing parts (from the ball valve to the nozzle) while the radiator is switched on.

## 9. Starting up a two-stage radiator



The performance of the two-stage radiators Types M and KMI is not regulated by means of pressure levels, as is usual, but by means of a **double nozzle with a hi-low valve and constant gas pressure**. At full performance, both nozzle bores are open. Under partial load, an electrically operated slide closes the centre bore. In this position, the radiator is only operated at 50% nominal heat load.

- a) Open the gas shut-off device and check the connection pressure at the test connector (see top view of combination-type valve Page 20). It must not exceed 1.45 psi.

If there is sufficient connection pressure, the device can be put into operation using the electric switching device (switchbox or control system) and the nozzle pressure can be checked at the test gas connector.



If the gas connection pressure (gas pressure 0.3 psi) is not sufficient, the gas infrared radiators must not be put into operation.

- b) Functional process of control unit SG 100 and multiple contact circuit.

- Switch on mains voltage.

The radiator is switched to full load by means of the voltage applied to the solenoid.



The radiator only ignites correctly under full load.

After a waiting time of 5 sec. the high-voltage ignition starts, with simultaneous opening of the solenoid valve. If no flaming occurs, the ignition switches itself off after 30 sec. and the solenoid valve closes (shut-down on fault). If the flame forms an ionization current greater than or equal to 0.4  $\mu$  A within 30 sec., the ignition is switched off and the device is in operation.

- Reconnection after shut-down on fault

The device must be disconnected from the mains for a period of at least 5 sec. Then it must be switched on again as described above.

- Re-ignition

If a malfunction occurs during operation, the ignition is switched on for the maximum duration of 30 sec. If no ionization current is created within this period, the device shuts down on fault.

- c) Nozzle pressure control

- Connect the pressure gauge to the nozzle pressure test nipple (see top view of combination-type valve, Page 20).



Switch on radiator to full load.

- Compare the nozzle pressure with the specifications on the type plate and if necessary correct using the pressure controller.

- d) Checking the multiple contact circuit.

- Switch on the radiator at full load and let it burn for approx. 10 to 15 min. until the ceramic plates glow brightly.
- Switch the radiator to half load and allow it to burn for 15 min. The ceramic plates slowly become noticeably darker.
- Then switch to full load.

- e) Carry out the leak test on the gas-bearing parts (from the ball valve to the nozzle) while the radiator is switched on.

## 10. Malfunctions and fault clearance

Type of fault	Possible causes
Radiator does not ignite (no ignition spark)	<ul style="list-style-type: none"> <li>• no mains voltage</li> <li>• fuse blown in control unit</li> <li>• control unit defective</li> <li>• ignition electrode defective</li> <li>• ignition cable defective or loose</li> </ul>
Radiator ignites, but no flaming occurs	<ul style="list-style-type: none"> <li>• no gas</li> <li>• combination-type valve does not open</li> <li>• check nozzle pressure</li> <li>• nozzle dirty or blocked</li> <li>• hi-low valve jams</li> <li>• <b>only with two-stage radiator</b></li> <li>• hi-low valve solenoid defective</li> <li>• <b>only with two-stage radiator</b></li> </ul>
Flaming occurs, radiator continues to ignite and goes out again after approx. 30 sec.	<ul style="list-style-type: none"> <li>• device not connected so that phases are correct</li> <li>• monitor electrode defective</li> <li>• ionization cable defective or loose</li> <li>• control unit defective</li> </ul>
Flaming occurs, radiator burns for some minutes and then goes out. After a restart the radiator remains in operation.	<ul style="list-style-type: none"> <li>• monitor electrode defective</li> </ul>
Radiator burns and after some time deflagration occurs	<ul style="list-style-type: none"> <li>• plate broken</li> <li>• plate seal not in order</li> </ul>

## 11. Setting the nozzle pressure for single-stage and two-stage radiators

- Set the radiator to full load.
- Open the nozzle pressure test nipple, connect up the measuring equipment.
- Unscrew the cap from the pressure controller.  
To the right, pressure rises / to the left, pressure falls.
- Set the specified nozzle pressure.
- Close the pressure controller with the cap.
- Close the test nipple.

### Top view of combination valve

