

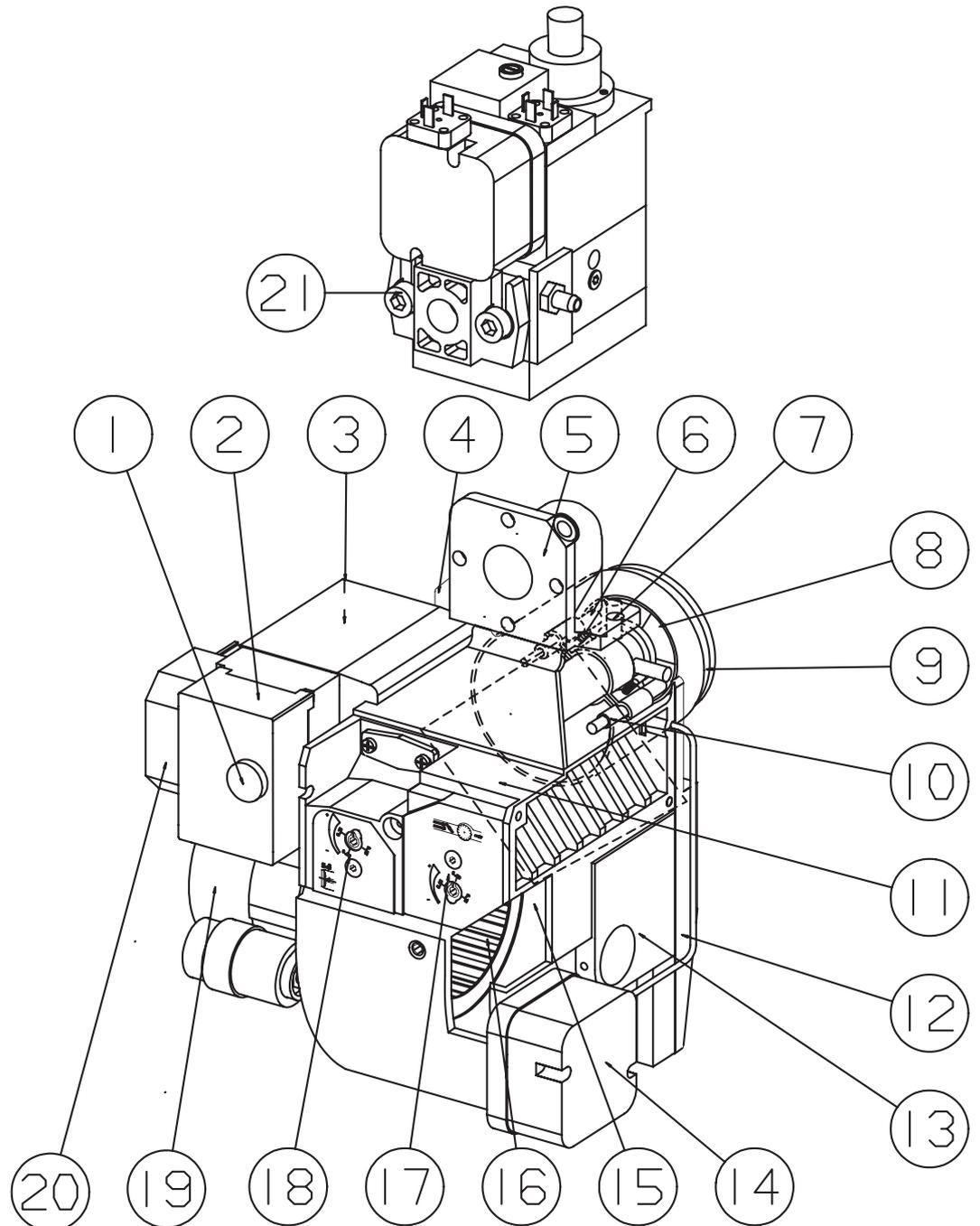
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Installation- and maintenance instruction  
**STG 146**



## DESCRIPTION

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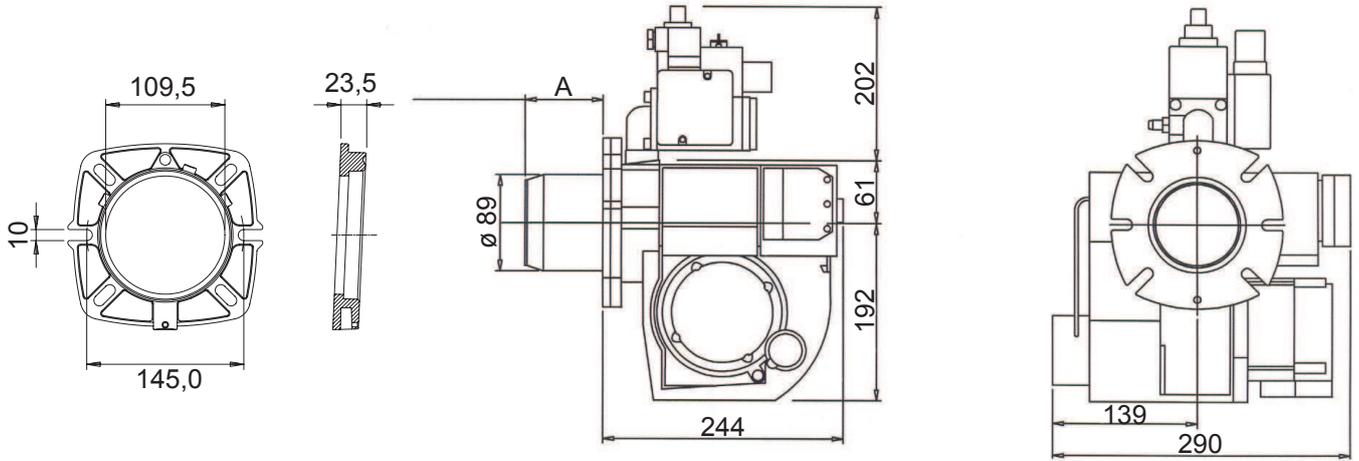


### Components

- |                         |                                       |                               |
|-------------------------|---------------------------------------|-------------------------------|
| 1. Reset button         | 10. Ignition electrode                | 17. Air adjustment            |
| 2. Gas burner control   | 11. Air damper                        | 18. Inner assembly adjustment |
| 3. Transformer          | 12. Front part fan housing            | 19. Motor                     |
| 4. Fixing flange        | 13. Rear part fan housing             | 20. Electric connection       |
| 5. Connection MultiBloc | 14. Air pressure switch               | 21. MultiBloc                 |
| 6. Ionisation electrode | 15. Shielding arrangement fan housing |                               |
| 7. Inner assembly       | 16. Fan wheel                         |                               |
| 8. Brake plate          |                                       |                               |
| 9. Burner tube          |                                       |                               |

# TECHNICAL DATA

Type designation **STG 146 Burner head 1**  
 in accordance with RAL UZ 80  
 Dimensions



	Length of burner tube	Flange A Measure A
Standard	108	81
Long design	140	113

The above dimensions are max. measurements. Depending on the components used, the measurements may vary.

## Out range

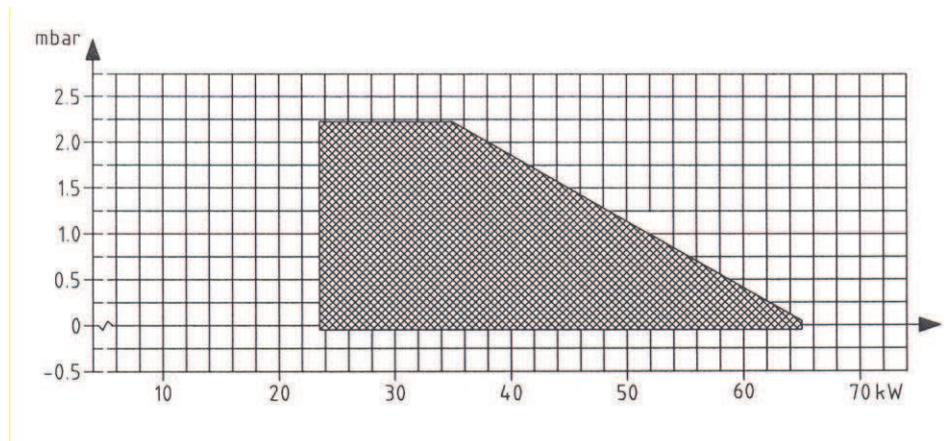
Type	Capacity	Nm <sup>3</sup> /h at min. output of burner <sup>1)</sup>	Nm <sup>3</sup> /h at max output of burner <sup>1)</sup>	Rated inlet pressures mbar
STG 146	Natural gas 23,5-65	Natural gas 2,35	Natural gas 6,5	Natural gas 20

Connection <sup>2)</sup>	Motor	Ignition transformer
Natural gas ½"	220/240V, 2800r/m, 50Hz, 70-90 W, 0,65A	Electronic 230/11000V, Ampl.

<sup>1)</sup> Calorific value:  
 Natural gas 10 kWh/Nm<sup>3</sup>

<sup>2)</sup> Depending on gas quality and available pressure

## Capacity chart according to EN 676

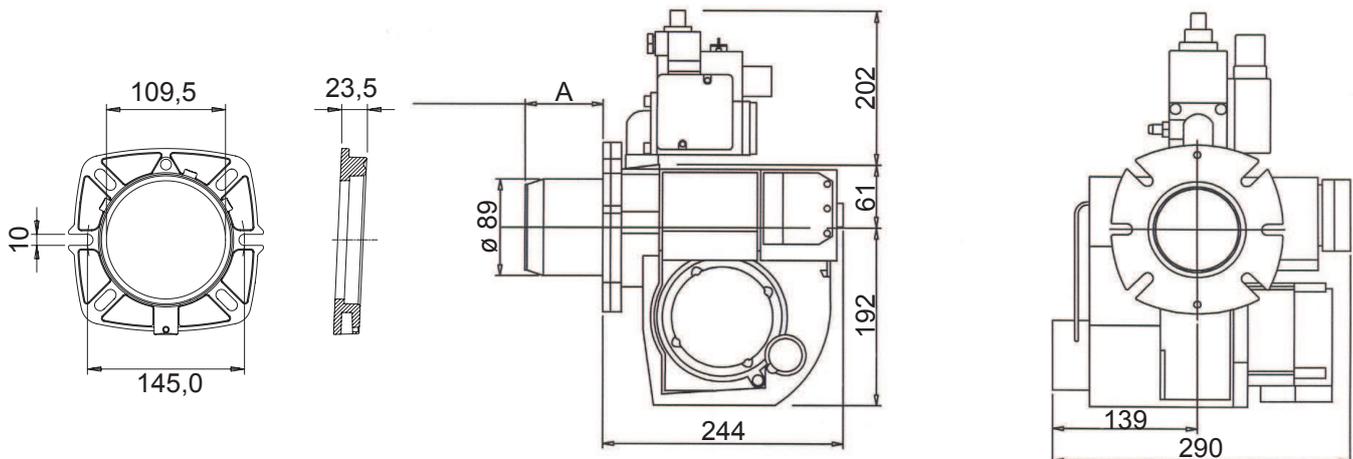


# TECHNICAL DATA

Type designation **STG 146**

Burner head 2

Dimensions



	Length of burner tube	Flange A Measure A
Standard	145	121,5
Long design	245	221,5

The above dimensions are max. measurements. Depending on the components used, the measurements may vary.

## Out range

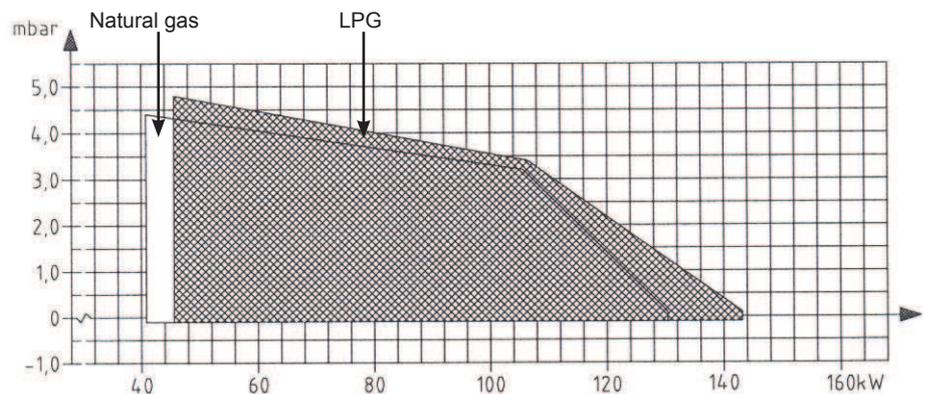
Type	Capacity		Nm <sup>3</sup> /h at min. output of burner <sup>1)</sup>		Nm <sup>3</sup> /h at max output of burner <sup>1)</sup>		Rated inlet pressures mbar	
	Natural gas	LPG	Natural gas	LPG	Natural gas	LPG	Natural gas	LPG
STG 146	41-133	47-144	4,1	1,8	13,3	5,5	20	30

Connection <sup>2)</sup>	Motor	Ignition transformer
Natural gas, LPG 1/2"	220/240V, 2800r/m, 50Hz, 70-90 W, 0,65A	Electronic 230/11000V, Ampl.

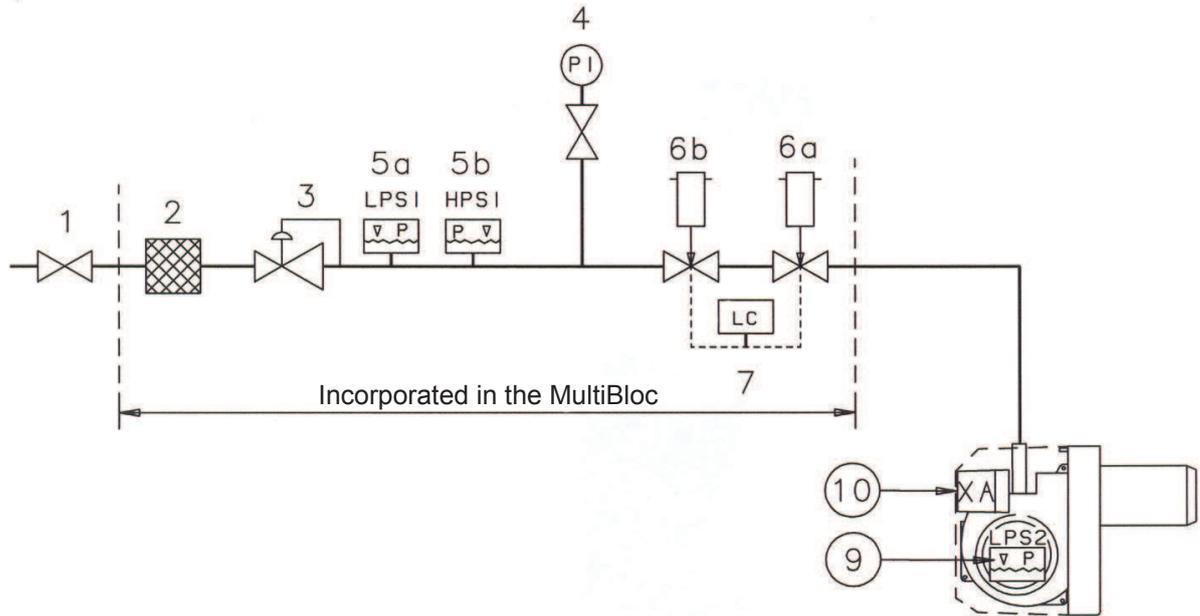
<sup>1)</sup> Calorific value:  
Natural gas 10 kWh/Nm<sup>3</sup>  
LPG 26 kWh/Nm<sup>3</sup>

<sup>2)</sup> Depending on gas quality and available pressure

## Capacity chart according to EN 676



# SKELETON DIAGRAMS



- 1. Ball valve
- 2. Filter
- 3. Governor
- 4. Pressure gauge with shut-off cock
- 5a. Gas pressure switch, mini
- 5b. Gas pressure switch, maxi

- 6a. Main valve
- 6b. Safety valve
- <sup>1)</sup>7. Valve proving system
- 9. Air pressure switch
- 10. Gas burner control

Pos. 5b, 7: Components not required according to EN 676.

<sup>1)</sup> Required over 1200 kW according to EN 676.



When Bio gas is used, Bentone shall always be contacted.

## MOUNTING ON THE BOILER

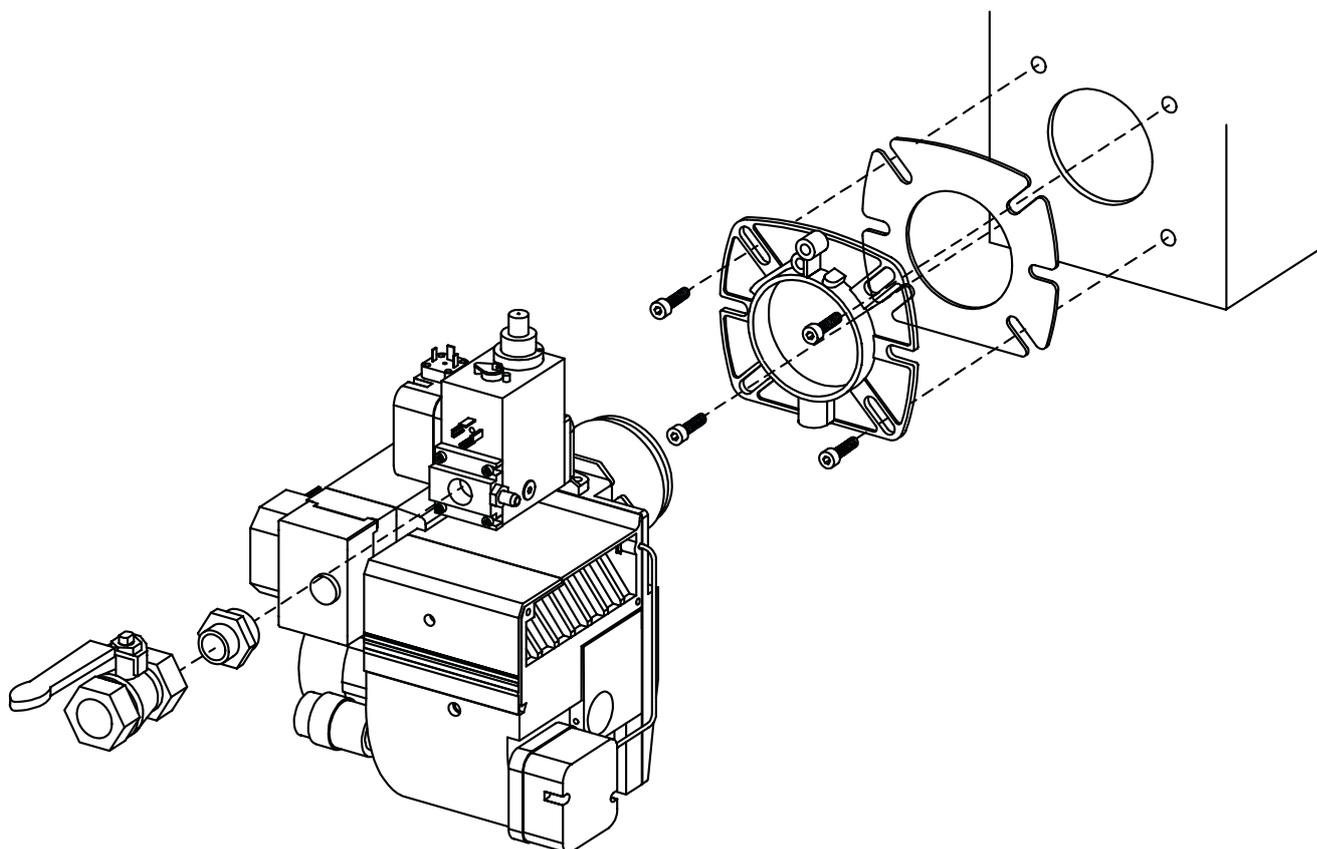
Fit the enclosed flange and gasket to the boiler. If new fixing holes must be drilled, use the fixing flange as a pattern. Use fixing screws M8-M10.

Push the burner into the flange and fix it by means of the screws in the flange. Ensure that the burner is fitted absolutely straight.

The gas armature is from the factory mounted in a horizontal position. The connection of the incoming gas line is made from the right side. Should it for some reason be necessary to make the gas connection in any other direction the armature can be turned 180° to the left and upwards. It is also possible to connect the gas to the multi-bloc straight backwards. The armature can also be extended so that it comes outside the boiler if there is not enough room. Ensure that the distance between the inner assembly and the gas armature is not too long. If the distance is too long there will not be time for the burner to light.

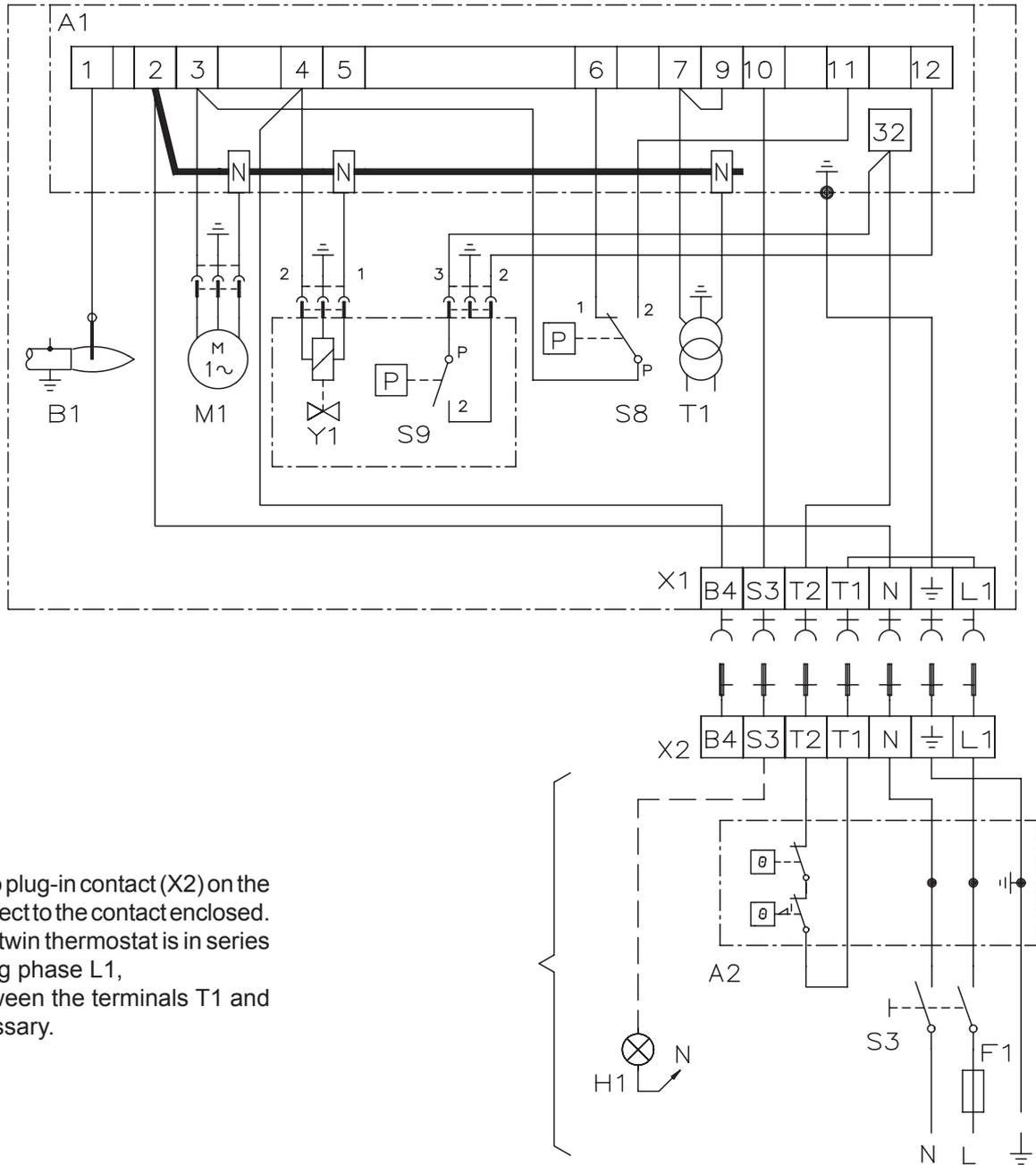
### Installation example

Connect the gas to the burner by means of the ball valve. To facilitate service a union nut is used between the gas supply system and the ball valve. Ensure that the union nut, ball valve and tubing make it easy to remove the burner for inspection and service.



# ELECTRIC EQUIPMENT

## Gas burner control: LME11/LME21 Wiring diagram



### Component list

A1 Gas burner control  
 A2 Twin thermostat  
 B1 Ionization electrode  
 F1 Fuse  
 H1 Alarm, 230 V

M1 Burner motor  
 S3 Main switch  
 S8 Air pressure switch  
 S9 Gas pressure switch  
 T1 Ignition transformer

X1 Plug-in contact, burner  
 X2 Plug-in contact, boiler  
 Y1 Gas solenoid valve



# ELECTRIC EQUIPMENT

## Control diagnosis under fault conditions and lockout indication

Gas burner control: LME...

### Alarm control table

Red flashing code on signal lamp (LED)	Possible causes
Flashing 2 x ••	<ul style="list-style-type: none"> <li>No flame at End of «TSA»</li> <li>Defective or obscured flame monitor</li> <li>Defective or obscured fuel valves</li> <li>Poor burner installation</li> <li>Defective ignition unit</li> </ul>
Flashing 3 x •••	«LP» defective <ul style="list-style-type: none"> <li>No air monitor signal after «t10»</li> <li>«LP» is welded in the open position</li> </ul>
Flashing 4 x ••••	Prohibited flame signal during start up
Flashing 5 x •••••	Time out «LP» <ul style="list-style-type: none"> <li>«LP» is welded in the closed position</li> </ul>
Flashing 6 x ••••••	Free
Flashing 7 x •••••••	Too many loss of flame during operation <ul style="list-style-type: none"> <li>Poor burner installation</li> <li>Defective or obscured fuel valves</li> <li>Defective or obscured flame monitor</li> </ul>
Flashing 8 x ••••••••	Free
Flashing 9 x •••••••••	Free
Flashing 10 x ••••••••••	Connections fault or internal fault, outgoing contacts or other fault
Flashing 14 x •••••••••• •••••	CPI contact not closed

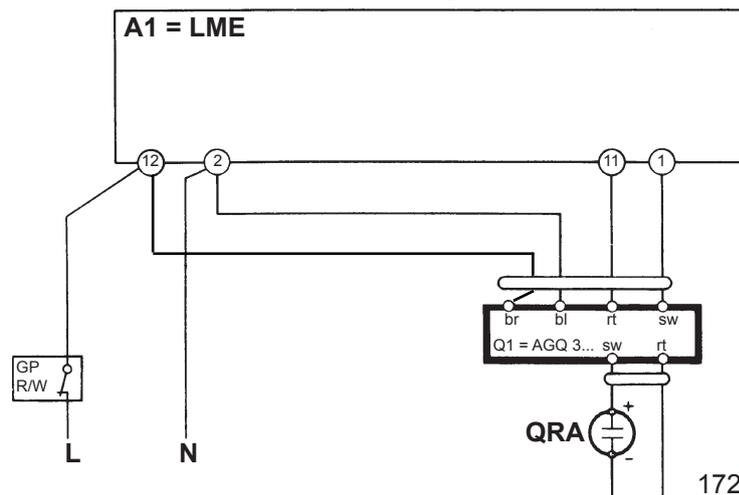
During alarm trigger diagnostics, control outputs are to be disconnected from all power.

- The burner is disconnected
- Exception, the «AL» alarm signal at connection block 10
- The burner is only to be reconnected after it is reset
- Press the reset button 0.5...3 s

### Interface diagnostics

To switch to interface mode, hold the reset button depressed for more than 3 s. To return to normal mode, hold the reset button depressed for more than 3 s. If the firing unit is in the alarm mode, it is reset by pressing the reset button 0.5...3 s.

### Connecting signal amplifier



# MEASURES AND CHECKS BEFORE START-UP

## General rules

Care should be taken by the installer to ensure that no electrical cables or fuel/gas pipes are trapped or damaged during installation or service/maintenance.

## Inner assembly

Ensure that the ignition and ionisation electrodes are correctly adjusted. The sketch shows the correct measurements.

## Gas quality

Ensure that the burner head is meant for the gas quality to be used (see fig.).

## Venting

The gas line is vented by loosening the screw on the test nipple for the inlet pressure. Connect a plastic hose and conduct the gas into the open. After having vented the gas line tighten the screw again.

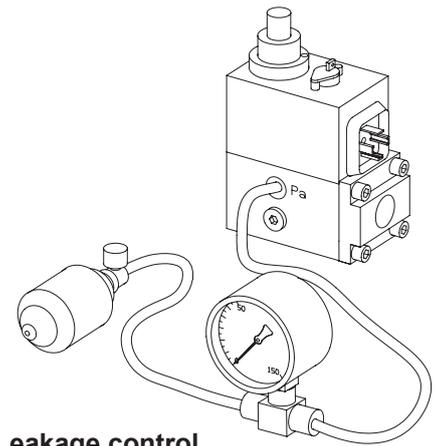
## Leakage control

When making a leakage control of the gas supply system the solenoid valve should be closed. Connect a pressure gauge to the test nipple Pa, see fig. The test pressure in the system should be 1,5x max. inlet pressure or min. 150 mbar. If any leakage, locate the source by means of soapy water or a leak location spray. After tightening repeat the test.

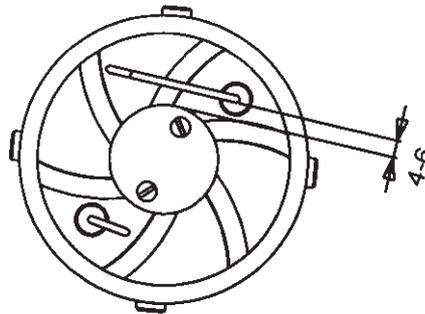
## Electric function test:

Ensure that phase and neutral are not reversed. The gas shut-off cock should be closed. To prevent the gas pressure switch from locking out it should be linked temporarily.

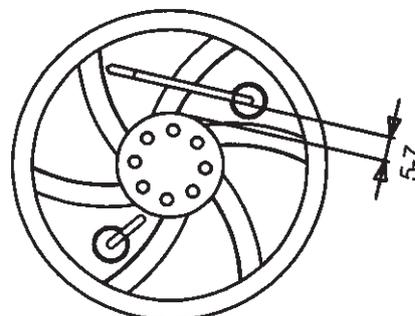
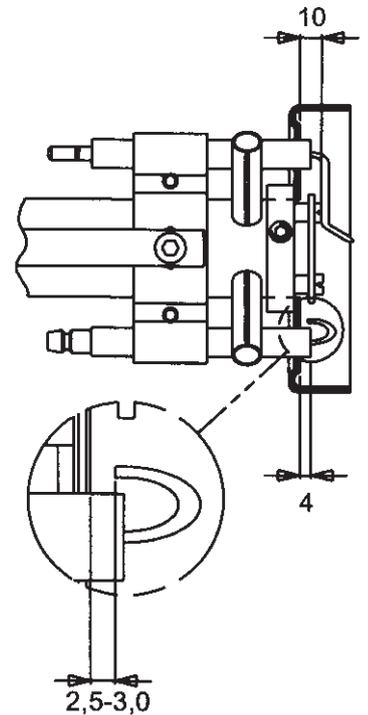
After the main switch has been switched on and the thermostats have been adjusted the pre-purging period begins (30-50 sec.). At the end of this period the pre-ignition period starts (0,5-3 sec. dependent on the design of the gas control). The gas valve is energized and opens. At the end of the safety time (2-3 sec.) the gas control locks out. The solenoid valve and the motor will be "dead". Remove the link from the gas pressure switch after the test is finished.



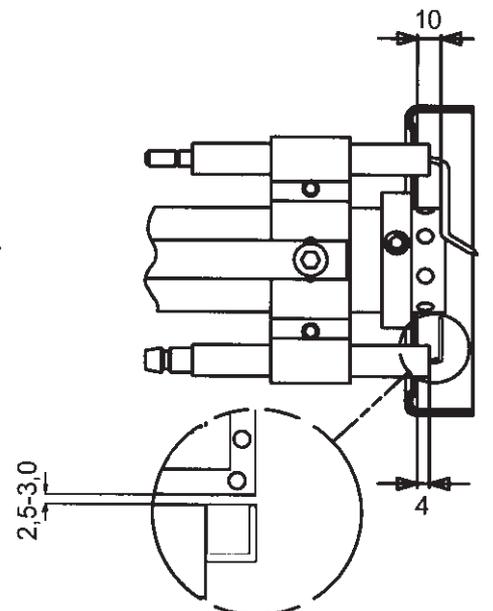
Leakage control



Inner assembly  
Natural, LPG



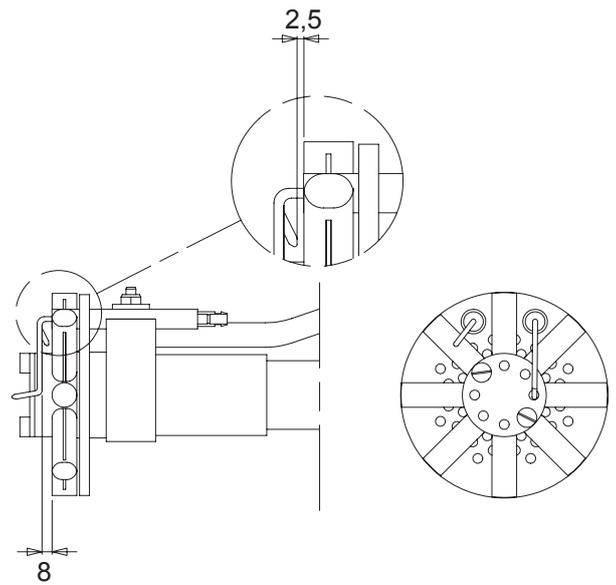
Inner assembly  
Town gas



# MEASURES AND CHECKS BEFORE START-UP

## Inner assembly

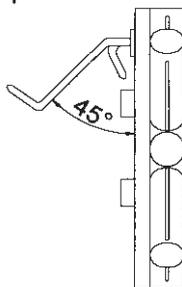
Town gas not CE approved



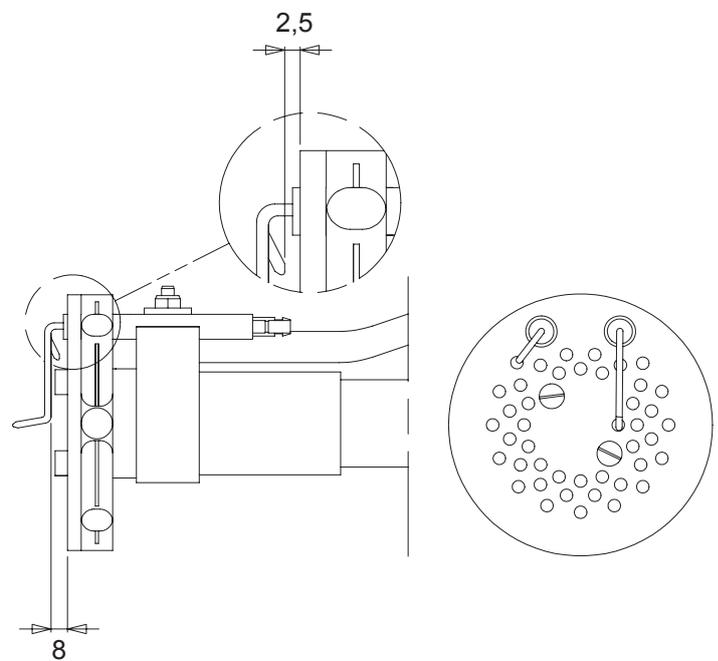
## Inner assembly

Natural gas, LPG

LPG Propan

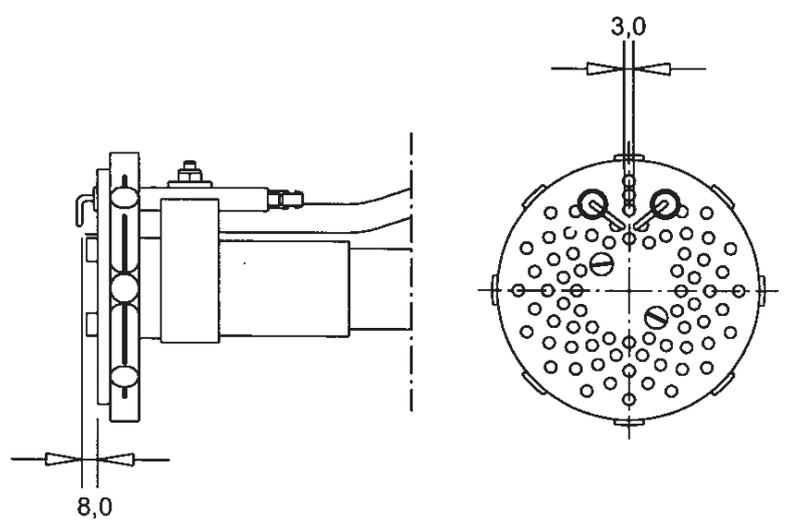


Natural gas



## Inner assembly

Biogas (UV-detector)



## DETERMINATION OF GAS VOLUME FOR THE INSTALLATION

Specifications on natural gas, town gas and bio gas vary. For more exact information please contact the gas distributor.

Gas quality	Net calorific value		
	kWh/Nm <sup>3</sup>	kJ/Nm <sup>3</sup>	kcal/Nm <sup>3</sup>
Natural gas	10,3	37 144	8 865
Propane	26,0	93 647	22 350
Butane	34,3	123 571	29 492
Town gas	4,9	17 653	4 213
Bio gas	7,0	25 219	6 019

### Example how to calculate the gas volume (natural gas)

V = Gas volume Nm<sup>3</sup>/h

Q = Boiler output 120 kW

H<sub>u</sub> = Calorific value of the gas A. 37 144 kJ/Nm<sup>3</sup>, B. 10.3 kWh/Nm<sup>3</sup>

η = Expected efficiency 90%

$$\text{Ex. A } v = \frac{Q \cdot 3\,600}{H_u \cdot \eta} = \frac{120 \cdot 3\,600}{37\,144 \cdot 0,90} \approx 12,9 \text{ Nm}^3/\text{h}$$

$$\text{Ex. B } v = \frac{120}{10,3 \cdot 0,90} \approx 12,9 \text{ Nm}^3/\text{h}$$

If the barometer height, pressure and temperature of the gas deviate very much from the normal values this must be taken into account as follows:

$$f = \frac{273+t}{273} \cdot \frac{1013,25}{B+P_u}$$

t = Temperature of the gas at the gas meter (15°C)

B = Barometer height (945 mbar)

P<sub>u</sub> = Pressure of the gas at the gas meter (15,0 mbar)

$$f = \frac{273+15}{273} \cdot \frac{1013,25}{945+15}$$

$$f = 11,1$$

The gas volume read on the gas meter actually reads  $1,11 \cdot 12,9 = 14,4 \text{ m}^3/\text{h}$ .

# ADJUSTMENT OF MULTI-BLOC, MB-DLE 405-407

## Flow adjustment

Loosen the fixing screw a. Turn the hydraulic device b:  
to the right = the gas flow is reduced  
to the left = the gas flow is increased

Do not forget to tighten the fixing screw again.

The flow adjustment can also be made by means of the governor. Adjust the outlet pressure to a value giving the desired gas flow on the fully open valve. At small capacities (gas flows) it is also necessary to adjust as above.

## Adjustment of governor

Adjust outlet pressure from governor by means of a screw. Min. and max. outlet pressures corresponds to appr. 60 turns of the spring. It is not possible to change pressure springs in order to change the outlet pressure.

Turn to the right = the outlet pressure is increased

Turn to the left = the outlet pressure is reduced

## Adjustment of start gas flow

Remove the protective cover c. Turn the adjustment knob d (use the protective cover as a tool) to the desired start gas flow.

Turn to the right = the start gas flow is reduced

Turn to the left = the start gas flow is increased

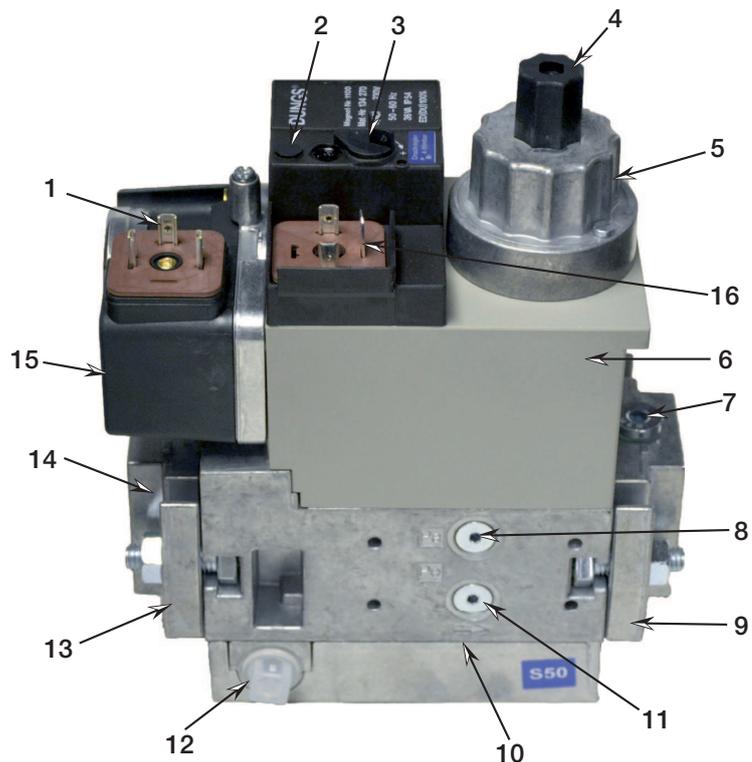
Max. inlet pressure: 360 mbar. Adjustable governor pressure:

405 - 412 S50 = 4 - 50 mbar

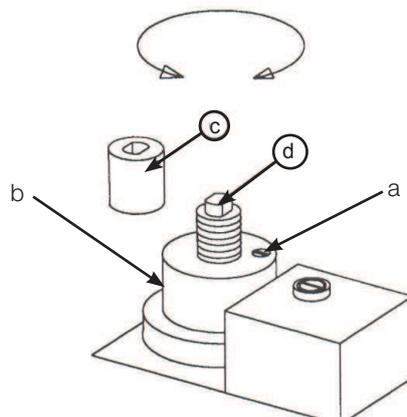
415 - 420 S20 = 4 - 20 mbar

415 - 420 S50 = 20 - 50 mbar

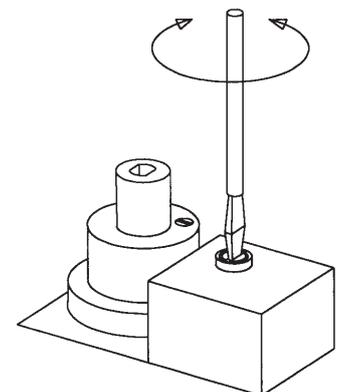
Solenoid valve: Slow opening valves with adjustable start load and max. flow.



- |  |  |
|--|--|
| 1. Electrical connection for valves (DIN EN 175 301-803 connector)           | 9. Output flange   |
| 2. Operation display V1, V2 (optional)                                       | 10. Gas flow direction   |
| 3. Lead seal eye, Gouvernor adjustment                                       | 11. Test point connection G 1/8 upstream of V1, possible on both sides       |
| 4. Setting cap   | 12. Vent nozzle, regulator   |
| 5. Hydraulic brake / setting plate   | 13. Filter (below flange)  |
| 6. Solenoid  | 14. Input flange   |
| 7. Test point connection G 1/8 possible                                      | 15. Pressure switch  |
| 8. Test point connection G 1/8 downstream of valve 1, possible on both sides | 16. Electrical connection for pressure switch (DIN EN 175 301-803 connector) |



Adjustment of start gas flow



Adjustment of governor

# GENERAL INSTRUCTIONS

## Adjustment of burner

The burner is from the factory pre-set to an average value that must then be adjusted to the boiler in question. All burner adjustments must be made in accordance with boiler manufacturers instructions. These must include the checking of flue gas temperatures, average water temperature and CO<sub>2</sub> or O<sub>2</sub> concentration

## General instructions

The installation of the gas burner must be carried out in accordance with current regulations and standards. The installers of gas burners should therefore be acquainted with all regulations and ensure that the installation complies with the requirements. The installation, mounting and adjustment should be made with the greatest care and only the correct gas should be used.

## Operating instructions

The operating instructions accompanying the burner should be left in a prominent position in the boiler room.

## Instructions

The user should be thoroughly instructed in the function of the gas burner and the whole installation. The supplier must instruct the user.

## Inspection and maintenance

Daily inspection is advisable.

## Service

Service should only be carried out by qualified personell. Replacement parts should be of the same make and approved by the same authorities as the original. If the burner is converted to fire another gas quality it must be re-commissioned. If town gas is to be fired the combustion head must be converted and the gas train adjusted to suit, (e.g.a larger gas armature or a different spring in the governor may be required).

## Start up

After the burner has been fitted to the boiler and the electric connection, the leakage control, the venting and the electric function test have been carried out, the burner will be ready for start-up.

Hower, study the sections dealing with adjustments of multi-bloc, combustion air and combustion head.

Open the ball valve and switch on the main switch. If the burner starts the actual adjustment can be made.

## Air adjustment

On all burners the air adjustment can be made with or without the cover fitted. Final fine adjustment must be made with the cover on.

## Adjustment of burner head

The burners are equipped with an adjustment device changing the position of the brake plate in the burner head. This is used to adjust the corect pressure drop over the combustion device and thereby obtain a good pulsation free combustion.

Which position to use depends on input and overpressure in the boiler.

A general rule is that the lower capacity the smaller the opening between brake plate and combustion device.

## Adjustment of brake plate

– Turn by means of an allen key the screw in the desired direction.

### STG120/1, STG120/2, STG146/1

- To reduce the opening: turn the screw to the left.
- To increase the opening: turn the screw to the right.

### STG146/2

- To reduce the opening: turn the screw to the right.
- To increase the opening: turn the screw to the left.

The adjustment of the position of the brake plate affects the air flow. It is therefore always necessary to make a fine adjustment of the air by means of the adjustment device of the burner.

## Control of burner head

To check the burner head, brake plate and electrodes proceed as follows: Remove the cover. Loosen the union nut between inner assembly and multi-bloc. Loosen the burner from the flange and withdraw the burner from the boiler. If it is necessary to remove the burner tube, loosen the two allen screws, turn and withdraw the burner tube.

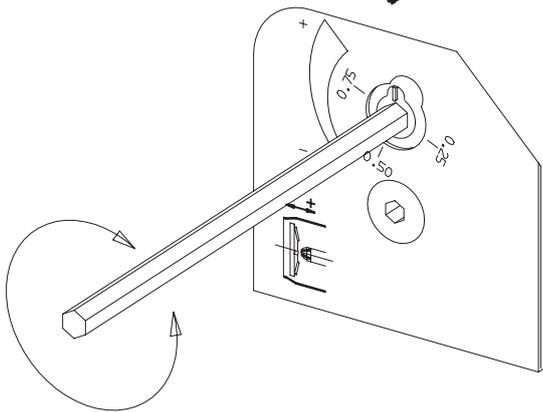
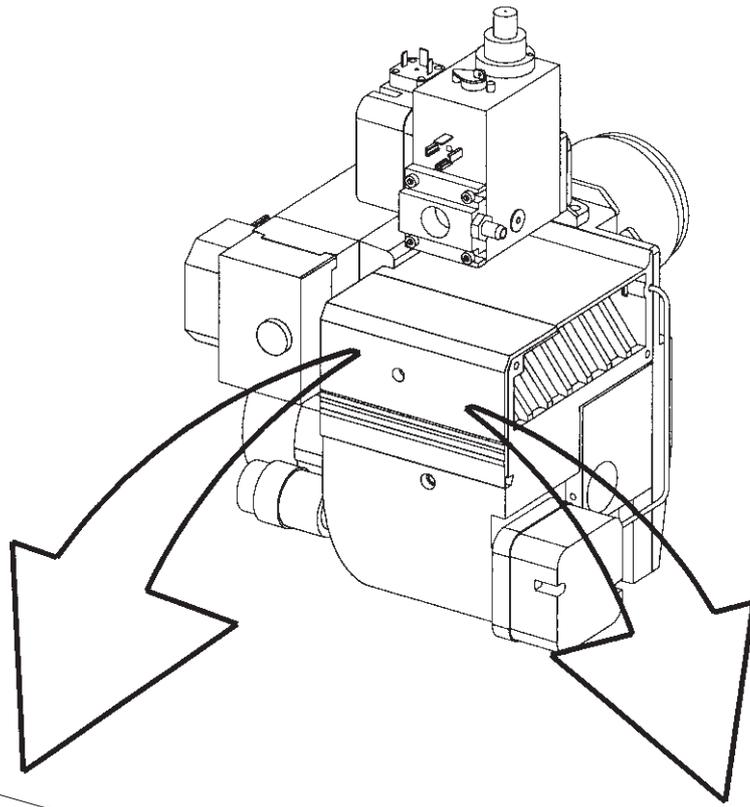
## Commissioning of installation

Control of the combustion. The combustion quality is checked by means of a flue gas analysis device. Adjust the burner to appr. 20% excess air in accordance with the table. Check the flue gas temperature. Calculate the efficiency. Check also the actual gas volume on the gas meter so that the correct input is achieved.

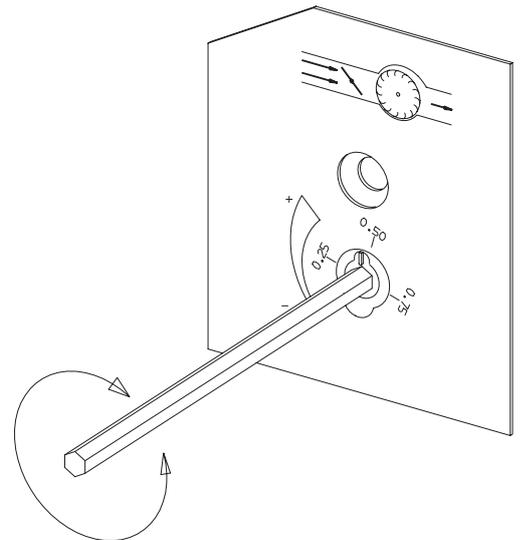
Gas quality	CO <sub>2</sub> % lambda 1,2	O <sub>2</sub> %	max CO <sub>2</sub> %
Natural gas	10,0	3,5	11,9
LPG	11,5	3,5	13,9

# GENERAL INSTRUCTIONS

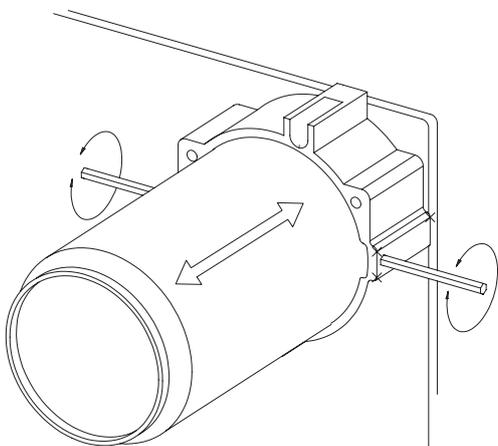
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**Adjustment of inner assembly**



**Air adjustment**



**Control of burner head**

# GENERAL INSTRUCTION

## Flame monitoring and measurement of ionisation current

The burner is monitored according to the ionisation principle. Check the ionisation current on start-up and on each service call.

The reason for a low ionisation current may be leaking currents, bad connection to earth, dirt or a faulty position of the flame electrode in the burner head. Sometimes also a faulty gas/air mixture may cause too weak a ionisation current.

The ionisation current is measured by means of a microampere meter ( $\mu\text{A}$ ) connected in series with the flame electrode and the gas burner control.

Connect the  $\mu\text{A}$ -meter, see figure. Min. required ionisation current according to table. In practice this current must be considerably higher, preferably more than  $10 \mu\text{A}$ . All the gas burners are equipped with a ionisation cable that can be slit which facilitates the connection of the  $\mu\text{A}$ -device.

## Gas pressure switches:

Adjustment range:

- 2,5-50 mbar GW 50
- 5-150 mbar GW 150

## Adjustment of min. gas pressure switch

The min. pressure switch should react if the gas pressure is too low and prevent the burner from starting. Too low a gas pressure during operation should stop the burner. The burner may start again when the rated gas pressure has been reached.

Remove the protective cover. Connect a pressure gauge for measuring the rated pressure. Decide on pressure at which the gas switch should switch off. Set this pressure by means of the valve. Carefully turn the knob (see figure) until the gas pressure switch switches off. The value shown on the scale should then approximately correspond with the value shown on the pressure gauge. Tolerance on scale appr.  $\pm 15 \%$ . Open the ball valve.

## Adjustment of max. gas pressure switch

The burner is equipped with a max. gas pressure switch only on request. It should stop the burner if the gas pressure exceeds the set value. The burner can then only be re-started manually (gas burner control or overpressure switch).

Remove the protective cover. Connect a pressure gauge for measuring the rated gas pressure. Decide on pressure at which the gas pressure switch should switch off. Turn the adjustment knob to this value. Tolerance on the scale  $\pm 15\%$ .

## Adjustment of air pressure switch

The air pressure switch should stop the burner if the air volume is reduced.

The air proving device shall be adjusted in such a way that if there is insufficient air supply at the highest or lowest burner operating stage, the device operates before the supervised pressure is less than 80% of the pressure at the controlled stage and the CO content of the combustion products exceeds 1% by volume.

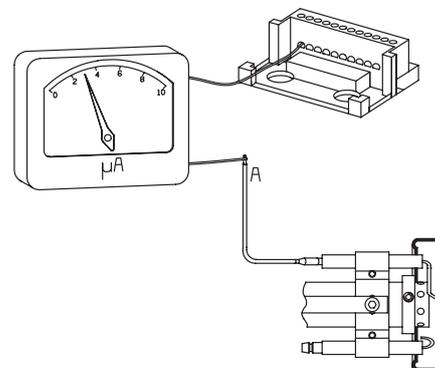
## Air pressure switch:

Adjustment range ca:

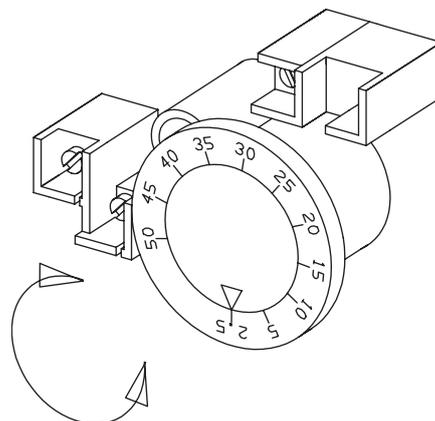
- 1-10 mbar LGW 10
- 2,5-50 mbar LGW 50

Gas control	Connection to terminal in gas control	Min. ionisation current required
LME	1	$5 \mu\text{A}$
LFL	24	$10 \mu\text{A}$

## Flame monitoring



## Gas pressure switch, air pressure switch



# FINAL TEST OF THE INSTALLATION

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- Make repeated start attempts to ensure that the adjustments function.
- Close the ball valve during operation to check that the gas switch switches off at the set value.
- Remove the hose for the air pressure switch to check that the burner locks out.
- Check that all protective covers and measurement nipples are mounted and fastened.
- Fill out necessary test reports.
- Instruct the persons in charge of the operation on the service and maintenance of the installation and what to do should any troubles occur.
- Inspection and service must only be carried out by authorized people.

## **Fault location, functional troubles**

Trouble free operation is dependent on three factors: electricity, gas and air supply. Should there be any changes in the ratio between these three factors there is a risk of break downs. It has been proved that most break downs are caused by simple faults. Before calling the service engineer, the following should therefore be checked:

- Is the gas cock open?
- Are all fuses in order and the current switched on?
- Are the thermostats correctly set?
- Are pressostats, overheating protection etc. in operating position and not locked-out?
- Is the gas pressure sufficient?
- Is the gas burner control in start position?
- Has the gas control or the motor protector locked out? - Reset.
- Is the circulation pump in operation?
- Is there a supply of fresh air to the installation?

If integral components are of a different make from what is stated in this manual, see the enclosed loose-leaf.

# 1. Fault location guide

## Gas burner

The basis for a trouble free operation can only be ensured by the correct combined effect of the three factors: electricity, gas flow and combustion air. Should any of these factors change, troubles may arise.

It has been proved that many troubles have rather simple causes. Before calling the serviceman, the following checks should be made:

To facilitate fault location we have drawn up a scheme showing the most frequent faults in a gas burner installation and the remedies.

1. Are the gas cocks of the installation open?
2. Are the fuses in order and the current switched on?
3. Are the controls (room thermostat, boiler thermostat etc.) correctly adjusted?
4. Is the gas pressure to the burner sufficient?
5. Is the gas relay of the burner ready for start and not locked out?
6. Is the air supply to the burner sufficient?

Cause	Remedy
<b>The burner does not start</b>	
No gas	Check that all gas cocks are open.
No voltage	Check fuses, thermostats and electrical connections.
The burner motor fails to start	The thermal protection has locked out. Motor defective.
The gas relay is defective	Replace
<b>Burner motor is running but no ignition after the pre-purge time has elapsed</b>	
No voltage on the terminals	Check the contact. Replace faulty relay
The ignition electrodes in contact with each other or with earth	Adjust
The porcelain of the electrodes is broken	Replace the electrodes
The cable shoes have bad contact	Improve the contact
The ignition cables are damaged	Replace
The ignition transformer is damaged, no voltage on the secondary side	Replace the transformer
The ignition cable and the ionisation cable have been transposed.	Change
<b>No flame establishment despite a trouble free start</b>	
The gas solenoid valve defective	Replace
The gas solenoid valve does not open despite its obtaining voltage	Replace coil or the whole valve if necessary.
No voltage to the solenoid valve	Check the contact

Cause	Remedy
No electrical connection through the air pressure switch	Test the adjustment and the function of the air pressure switch.
The starting load is not correctly adjusted	Reduce or increase the gas supply, reduce the quantity of air.
Gas relay defective	Replace
Air pressure switch incorrectly adjusted or defective	Check the adjustment and readjust.
No response as the cams of the servomotor are not correctly adjusted or out of position.	
<b>The burner locks out after the safety time has elapsed in spite of flame establishment</b>	
No ionisation current or the UV-cell in wrong position	Adjust the ionisation electrode and the UV-cell, examine cables and connections.
The supervision part of the gas relay is defective	Replace the relay
Voltage lower than 185 V	Contact the electricity authorities.
The ignition electrodes are disturbing the ionisation current	Adjust the ignition electrodes, repole the ignition transformer if necessary.
Bad earthing	Arrange for proper earthing.
Phase and neutral transposed	See wiring diagram and change.
<b>The burner locks out during pre-purge</b>	
Air pressure switch defective or incorrectly adjusted	Reduce or increase the gas supply. Reduce the quantity of air.
The starting load is not correctly adjusted	Reduce or increase the gas supply. Reduce the quantity of air.
The gas pressure is too low	Increase the pressure. Contact the gas supply company if necessary.
<b>Pulsations at start</b>	
The ignition electrodes are wrongly adjusted	Readjust
The gas pressure is too high	Check and adjust by means of a pressure gauge and a pressure adjustment valve.
The flue gas side is blocked	Check the chimney flue.
<b>Pulsations during operation</b>	
The burner is not correctly adjusted	Readjust
The burner is dirty	Clean the burner.
Defective chimney	Check and change the dimensions if necessary.

Cause	Remedy
<b>The burner is operating correctly but locking out now and then</b>	
The ionisation current is too low	Check. Must be at least 4 $\mu$ A according to the relay manufacturer but should be 8-20 $\mu$ A.
The UV-cell is in a wrong position	Adjust
Voltage drop at certain times	Must not drop more than 15% of the rated current. Contact the electricity authorities if necessary.
Air pressure switch defective or incorrectly adjusted	
Spark-over in ignition electrodes	Replace the electrodes
The ambient temperature of the gas relay is too high	Heat insulate, max. 60° C.
The ignition spark is too weak	Check the transformern
<b>Bad combustion</b>	
Bad draught conditions	Check the chimney
The flue gas temperature is too high	The boiler is overloaded. Reduce the quantity of gas.
The CO <sub>2</sub> -content is too low	Check the boiler with regard to leaks. Choke the draught if it is too high.
<b>The CO-content is too high</b>	
Excess air when using natural gas and gasoil (propane, butane)	Choke the air.
Air shortage	Open the air supply. Check the flue gas damper.
The holes in the gas nozzle are clogged	Clean
The fresh air intake is too small	Check and enlarge.
The flame is not burning straight because the burner head is out of position	Check the burner head and readjust.
<b>Condensation in boiler and chimney</b>	
The flow gas temperature is too low or the quantity of gas is not sufficient	Increase the flue gas temperature by increasing the gas supply. Insulate the chimney

# EU Declaration of conformity



## Bentone Gasburners

Certificate No.	Type	Certificate No.	Type
CE-0085 BT 0064	BFG 1	CE-0085 BP 0352	BG 550
CE-0085 AT 0192	STG 120	CE-0085 BP 0354	BG 650
CE-0085 AT 0192	STG 146	CE-0085 AT 0313	BG 700
CE-0085 AP 0625	BG 300	CE-0085 AT 0314	BG 800
CE-0085 AP 0626	BG 400	CE-0085 BR 5754	BG 950
CE-0085 AU 0156	BG 450		

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration described above is in conformity with:

**Gas Appliance Directive 2009/142 EC** (–2018-04-20)

**Gas Appliance Regulation 2016/426/EU** (2018-04-21–)

**Machinery Directive 2006/42/EC**

**EMC 2014/30/EU**

**Restriction of the use of certain hazardous substances (RoHS) Directive 2011/65/EU**

References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:

EN 676+A2:2008 (excluded Annex J/K) Automatic forced draught burners for gaseous fuels

Additional information can be downloaded at:

[www.bentone.com](http://www.bentone.com)

**Enertech AB**  
**Box 309**  
**S-341 26 LJUNGBY**

Ljungby September 26<sup>th</sup>, 2017

Håkan Lennartsson

Managing Director

Enertech AB

# GENERAL INSTRUCTIONS FOR GASBURNERS

## Installation

1. Follow standards and instructions applicable to the installation of gas burners
2. Ensure that the electric installation is made in accordance with existing regulations
3. Check that the fresh air intake of the boiler room is sufficiently dimensioned
4. Check by studying the data plate that the efficiency of the burner is adapted to the boiler output
5. Check that the burner is adapted to the gas quality in question
6. Check that the input pressure of the gas is correct
7. Check that the dampers of the boiler are open
8. Check that there is water in the system
9. Check that thermostats etc. are correctly adjusted
10. Read the instructions and follow the directions given for the burner as to starting-up and service

## Maintenance

### General instructions

1. Keep the boiler room clean
2. Ensure that the fresh air intake of the boiler room is not restricted
3. Switch off the current and shut off the gas supply if the burner must be withdrawn from the boiler
4. Do not use the boiler for burning paper and waste if there is no special arrangement ( fire room ) for this

### If the burner has stopped

1. Press the reset button of the relay
2. Check that the max. thermostat has not cut out
3. Check other thermostats for example room thermostat, if any
4. Check that the gas pressure to the burner is sufficient
5. Check that the electric fuses have not blown
6. Make a new attempt to start the burner and check the counter of the gas meter to find out whether the solenoid valve opens
7. If the burner does not start in spite of repeated starting attempts call the installer

### Normal operation

1. Ensure that the air supply to the burner is not obstructed by dust and dirt
2. Have the installer make a yearly overhaul of the installation so that safety is not jeopardized
3. Have the installer at the yearly overhaul also adjust the burner to ensure optimal combustion economy
4. Check periodically that there is water in the system ( fill up if necessary ) and that thermostats etc. are normally adjusted
5. Ensure that there is no water or dampness in contact with the burner

### Shut-Off

1. Switch off the current with the main switch
2. Shut-off the gas supply with the shut-off cock on the burner

### Warning

1. Never keep your face in front of the fire room door when starting up the burner
2. Do not use naked flame when inspecting the fire room

Authorized installer:

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Address: \_\_\_\_\_

Tel: \_\_\_\_\_

## SERVICE AND INSPECTION CARD

<b>Installation</b> Name:  Address:  Installed by:	<b>Boiler</b> Type: Efficiency kW:  <b>Burner</b> Type: Efficiency kW:  Date:
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Date										
	Nm <sup>3</sup> gas/h	Governor		O <sub>2</sub>	CO	Flue gas temp	Ionisation current	Pressure		Efficiency
		Before	After	%	ppm	°C	µ A	Fire room	Chimney	mbar %
Measurement								mbar		
	Small flame									
	Large flame									
Measures										

Date										
	Nm <sup>3</sup> gas/h	Governor		O <sub>2</sub>	CO	Flue gas temp	Ionisation current	Pressure		Efficiency
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Measurement								mbar		
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	Large flame									
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	Nm <sup>3</sup> gas/h	Governor		O <sub>2</sub>	CO	Flue gas temp	Ionisation current	Pressure		Efficiency
		Before	After	%	ppm	°C	µ A	Fire room	Chimney	mbar %
Measurement								mbar		
	Small flame									
	Large flame									
Measures										







