178 051 35-4 2015-03-10

Installation- and maintenance instruction

BFG1

Bentone®
Enertech Group

Table of contents

Important to think about!

Read this manual

- This manual should be taken into account by all who, for whatever reason, work with the apparatus and associated system parts.
- This manual is aimed specifically at authorized personnel.
- This manual should be viewed as a part of the burner and should always be kept close to the installation site.

Safety instructions

The electrical installation should be performed in accordance with the power wiring regulations and in accordance with professional standards, in order to avoid leaking gas, fire, and injuries.

Warning

- The manual should be read before the burner is installed and placed into service.
- The burner should be installed by authorized personnel only.
- Ensure that the burner is adapted to the efficiency range of the boiler.
- The burner should be installed in such a manner as to meet local regulations for electric safety, boiler and fuel distribution.
- Ensure that the burner is approved for the intended gas quality and connection pressure.
- No safety systems on the burner may be disconnected.
- The installer must ensure that the boiler room has sufficient fresh air ventilation as per local norms.
- Before servicing, close the fuel supply and switch off the power to the burner.
- The surface temperature on the burner components can exceed 60°C.
- Be careful when servicing: a pinch risk may be present.
- Ensure that the burner is protected against direct wet spraying, since the construction is not adapted for this.
- Only spare parts recommended by Enertech should be used.
- This burner cannot be used for biogas without first contacting Enertech.

Safety instruction

- If an electric connector other than the one recommended by Enertech is used, a risk of damage and injury can arise.
- In order to avoid leaking gas, fire, and injuries, the electrical installation should be performed in accordance with the power wiring regulations and in accordance with professional standards.
- Accuracy should be observed in order not to pinch or damage electric cables or gas pipes during installation or service.
- If the boiler is equipped with an opening door, this should be interlocked with a door switch.

Delivery check

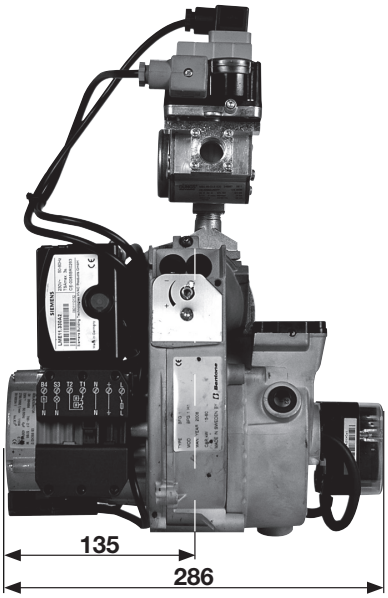
- Check that all has been delivered and that the goods have no transport damages.
- If something is wrong with the contents of the delivery, please notify the delivery company.
- Transport damages should be reported to the forwarding agency.

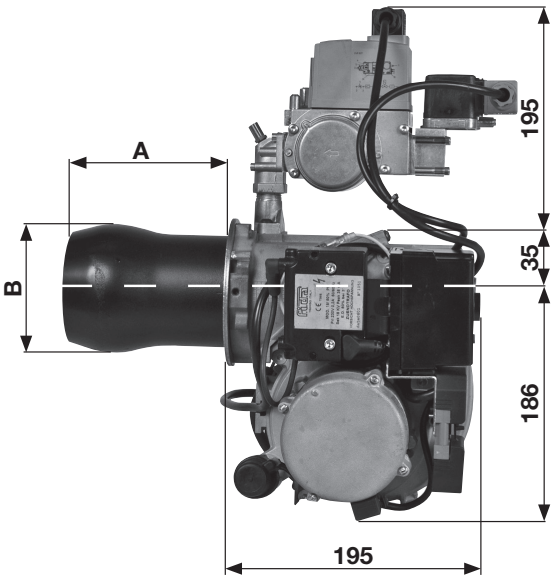
Preparations for installation

- Check that the measurements and capacity range of the burner are compatible with the boiler.
- The power ratings on the type plate refer to the min. and max. power of the burner.

1. TECHNICAL DATA

1.1 Dimensions BFG1

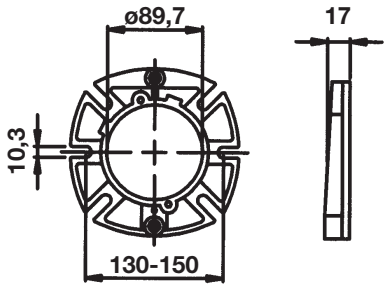




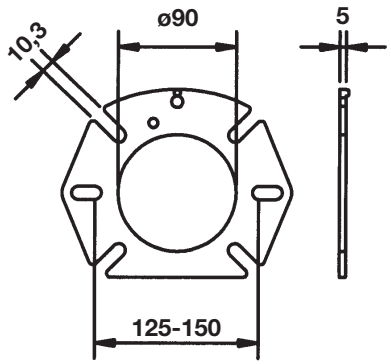
The above-mentioned measurements are maximum measurements. They can vary, depending on which components are used.

1.1.1 Dimensions flanges

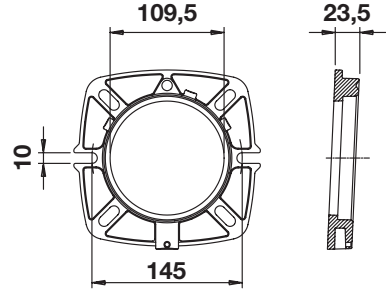
Flange 1
BFG1 H1 and BFG1 H2



Flange 2
BFG1 H1 and BFG1 H2



Flange 3
BFG1 H3



1.2 Capacity range BFG1 H1, BFG1 H2 and BFG1 H3

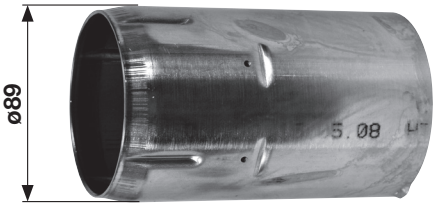
Capacity kW		Gas quantity at min. power Nm³/h [1]	Gas quantity at max. power Nm³/h [1]	Max. inlet pressure mbar	Nominal inlet pressure mbar
15 - 60	BFG1 H1				
	G 20	1,59	6,35	60/360 [2]	20
	G 25	1,86	7,44	60/360 [2]	25
	G 30	0,47	1,86	60/360 [2]	30
	G 31	0,61	2,45	60/360 [2]	30
15 - 65	BFG1 H2				
	G 20	1,59	6,88	60/360 [2]	20
	G 25	1,86	8,06	60/360 [2]	25
	G 30	0,47	2,02	60/360 [2]	30
	G 31	0,61	2,66	60/360 [2]	30
25 - 100	BFG1 H3				
	G 20	2,65	10,58	60/360 [2]	20
	G 25	3,10	12,41	60/360 [2]	25
	G 30	0,75	3,10	60/360 [2]	30
	G 31	1,02	4,09	60/360 [2]	30

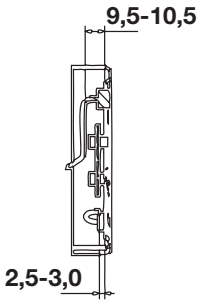
Type	kWh/Nm³ [1]	kWh/kg
G20 : Natural gas H	9,45	
G25 : Natural gas L	8,06	
G30 : Butane	32,24	12,68
G31 : Propane	24,44	12,87

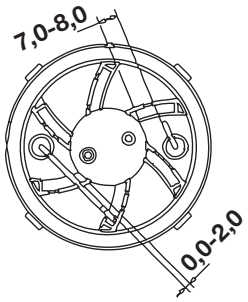
Fitting [3]	Motor	Ignition transformer [4]
BFG1 H1 / H2 / H3 Natural gas, Propane ½" - 1"	110 W 230 V, 50/60 Hz 0,9 A	Prim. 230/240 V, 0,15 A 50-60 Hz Sec. 26 kV Peak 40 mA E.D. 50% in 3 min

1. Normal state at 15°C 1013,25 mbar (acc. to EN676).
2. Max inlet pressure can vary depending on choice of multiblock. Indicated pressure applies to Dungs standard block type MBC...
3. The dimension should be adapted in accordance with capacity, gas quality and inlet pressure.
4. Data apply to Fida model 26/40 50%.

1.3 Model BFG1 H1





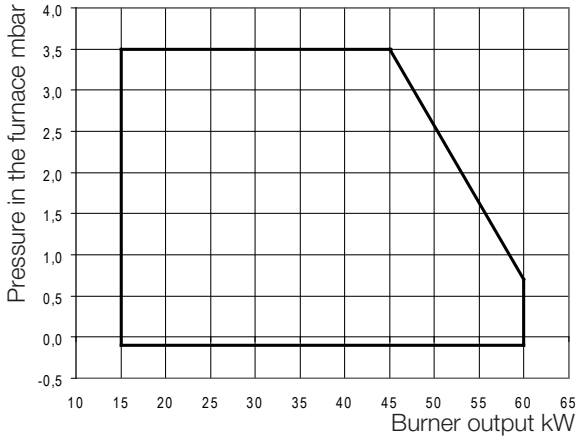


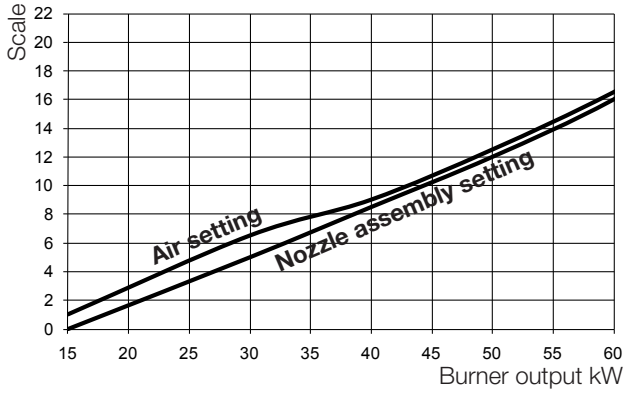
Blast tube length mm	Blast tube Dimension A mm	Flange Dimension B ø
108	81	89
140	113	89

The above-mentioned measurements are maximum measurements. They can vary, depending on which components are used.

1.3.1 Burner output/ Basic settings

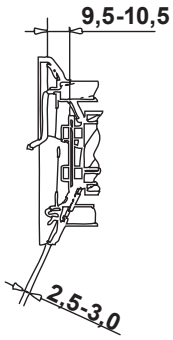
15 - 60 kW

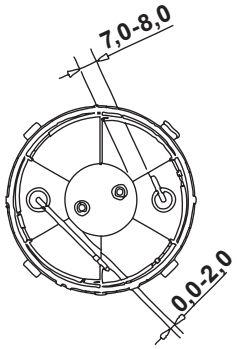




Scale value valid at 0 mbar in furnace pressure.

1.4 Model BFG1 H2



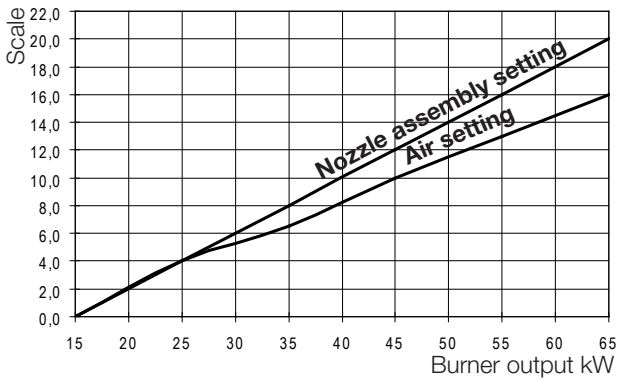


Blast tube length mm	Blast tube Dimension A mm	Flange Dimension B ø
115	88	89
147	120	89

The above-mentioned measurements are maximum measurements. They can vary, depending on which components are used.

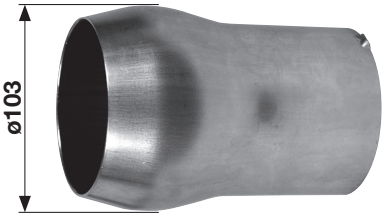
1.4.1 Burner output/ Basic settings

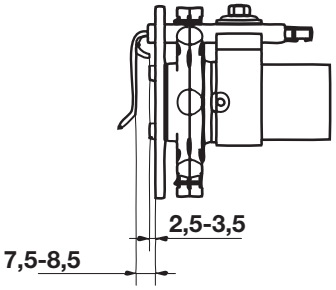
15 - 65 kW

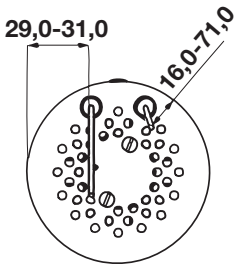


Scale value valid at 0 mbar in furnace pressure.

1.5 Model BFG1 H3





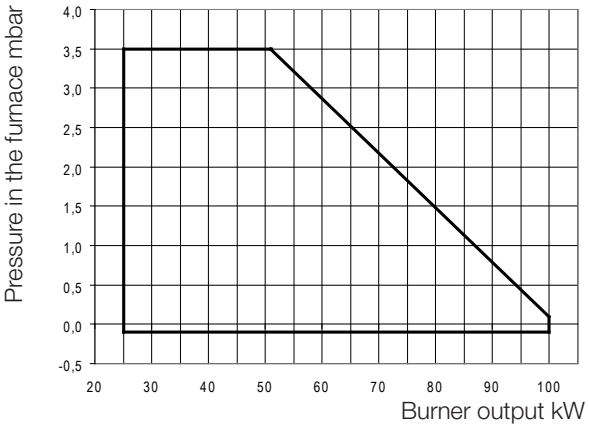


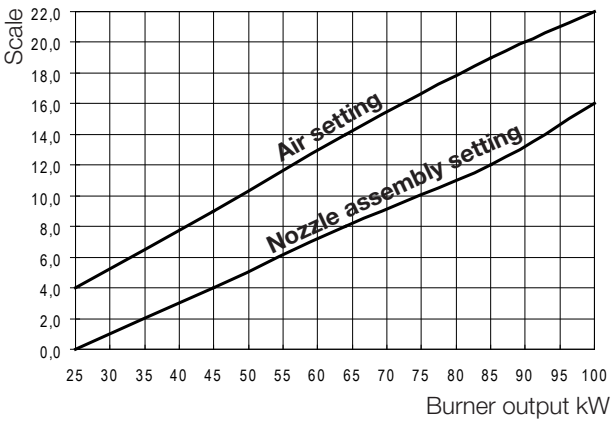
Blast tube length mm	Blast tube Dimension A mm	Flange Dimension B ø
145	121,5	103
245	221,5	103

The above-mentioned measurements are maximum measurements. They can vary, depending on which components are used.

1.5.1 Burner output/ Basic settings

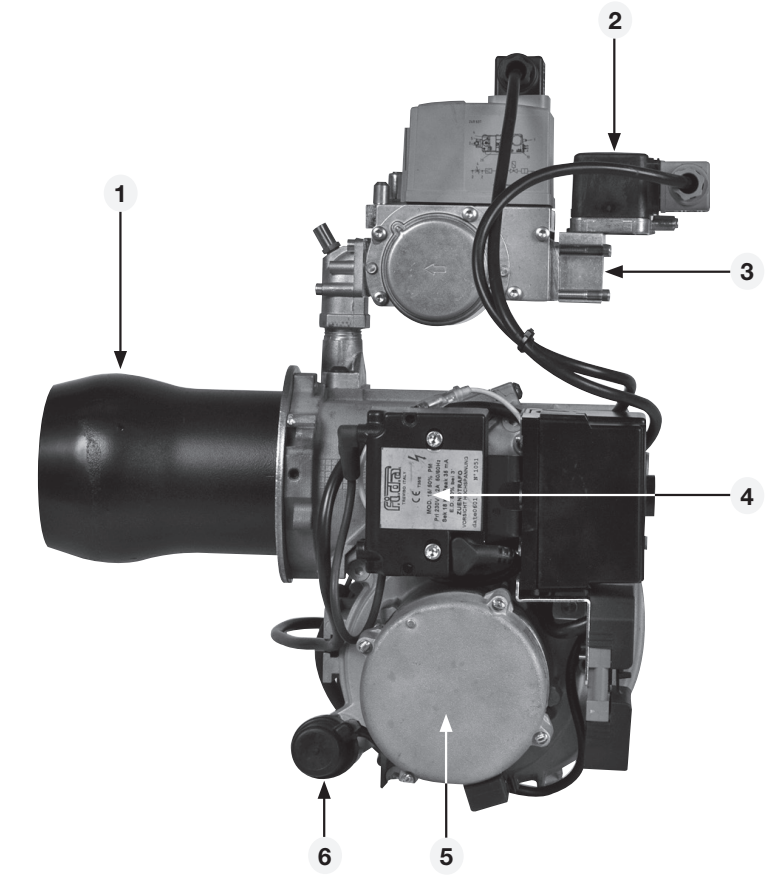
25 - 100 kW

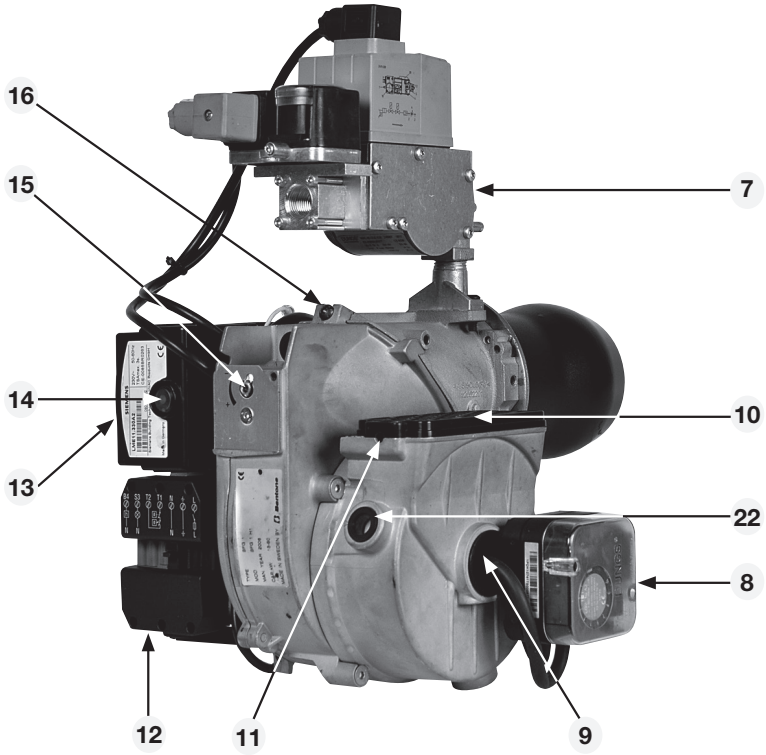




Scale value valid at 0 mbar in furnace pressure.

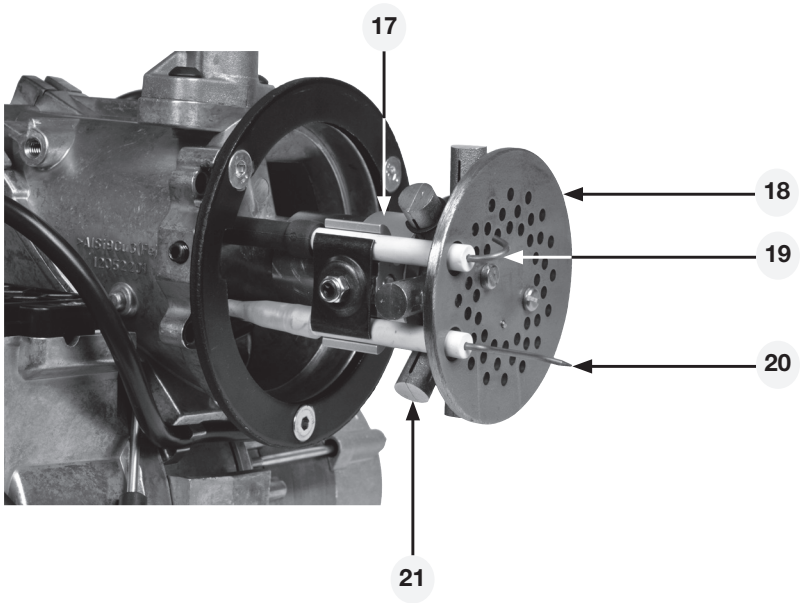
1.6 Description





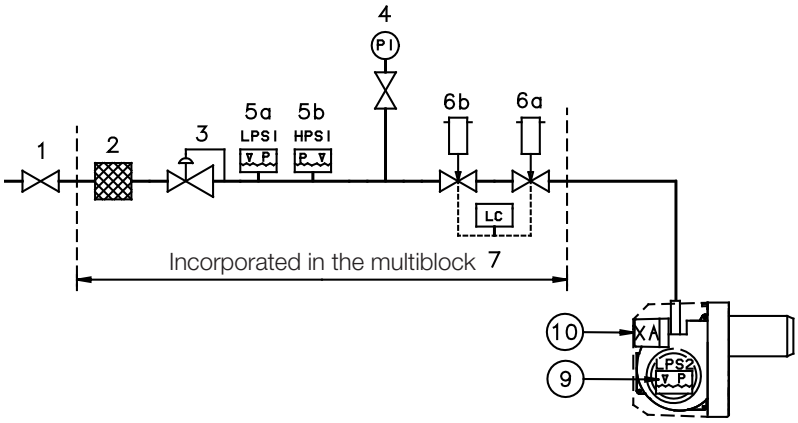
1.6.1 Components

1. Blast tube
2. Gas pressure switch
3. Connection multiblock
4. Ignition transformer
5. Motor
6. Capacitor
7. Multiblock
8. Air pressure switch
9. Test point for the air pressure switch on the low-pressure side
10. Air intake
11. Air regulation
12. Electric connection
13. Gas burner control
14. Reset button
15. Nozzle assembly adjustment
16. Screw for division of burner in front and rear part
17. Nozzle assembly
18. Brake plate
19. Ignition electrode
20. Ionisation electrode
21. Nozzle
22. Air flow indicator (indicates the air setting)



2. INSTALLATION

2.1 Skeleton diagrams



1. Ball valve
2. Filter
3. Pressure regulator
4. Outlet for gas pressure measuring

5a. Gas pressure switch, min.

5b. Gas pressure switch, max.

6a. Main valve

6b. Safety valve

[1)]7. Leakage control

9. Air pressure switch

10. Gas burner control

Pos. 5b: Components not required acc. to EN 676.
[1)]Required above 1200 kW acc. to EN 676.

2.2 Delivery check

Check that all has been delivered and that the goods have not been damaged during transport. If that is not the case, please notify the delivery company. Transport damages should be reported to the forwarding agency.

2.3 Preparations for installation

Check that the measurements and capacity range of the burner are compatible with the boiler. The power ratings on the type plate refer to the min. and max. power of the burner.

2.4 Gas supply

For good operating safety, it is important that the gas supply system is installed correctly.
Consider the following:

1. Check that the burner is approved for the gas quality of the installation. If not, please contact the supplier.
2. Check that the gas components of the burner are approved for indicated gas pressure.
3. The gas supply system should be installed in accordance with current standards.
4. Pipe lines should be run so that service on boiler and burner is facilitated.
5. Pipe lines should be run so that eventual contaminants cannot come into contact with the gas components.

2.5 Electric connection

Before starting the electric installation, the main switch must be turned off.
If the boiler has a 7-pole and a 4-pole Eurostecker connector, these usually fit directly to the burner. If not, use the connectors included.
(Refer to connection under Electric equipment)

If an electric connection other than the one recommended by Enertech is used, a risk of damage and injury can arise.

2.6 Setting brake plate and air flow

Before the placing into service, the burner should be initially set according to diagram.
(Refer to Basic settings). Note that it is only a question of a basic setting which should be adjusted once the burner has been started.

2.7 Burner installation

2.7.1 Hole pattern

Check that the hole pattern on the boiler matches that of the flange.
(Refer to Technical data.)

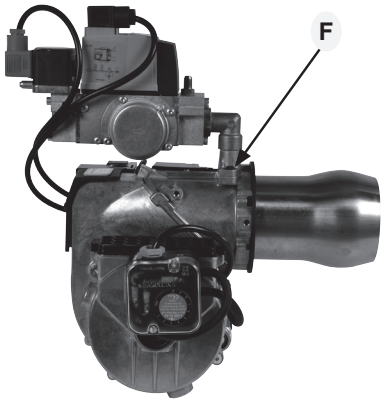
2.7.2 Burner installation

1. Install the flange with gasket on the boiler.
2. Insulate between the blast tube and the boiler door to minimize heat radiation.
3. Check the ignition electrode and ionisation electrode.
   (Refer to Technical data).
4. Install the burner on the boiler and lock into the flange (E).
5. Install the gas line on the burner. Check that the O-ring has not been damaged during installation, fasten with the screws (F).
6. Where support for the multiblock is included, this should be installed.

2.7.3 Gas connections

1. Check the gas pipe dimensions. (According to local regulations).
2. Connect the gas pipe to the gas flange of the multiblock.
3. A manual gas valve should be installed in the vicinity of the burner.
4. No mechanical stresses/forces should exist in the gas connection.
5. Check the sealing of the gas connections, including the multiblock and flanges.

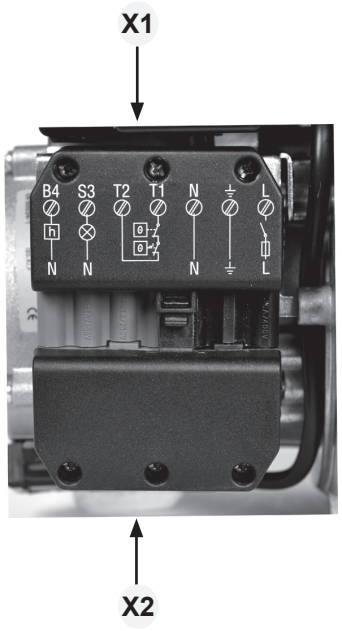
NOTE!
If the gas connection is via a hose, the support for the multiblock that is supplied with the burner should be mounted (F). Install the support so that the underneath of the multiblock rests on it.



2.7.4 Electric connection

If the boiler does not have a pre-wired connector, connect in the included connector, X2 according to the wiring diagram.

1. Turn off the main switch.
2. Connect the Eurostecker X2 acc. to Alt. 1 - 3 (Refer to Electric equipment).
3. Install the Eurostecker X2 on the burner.
4. Turn on the main switch.



2.8 Control measures

2.8.1 Gas quality

Check that the combustion head is intended for the gas quality to be used (refer to Technical data).

2.8.2 Bleeding

Bleeding of the gas pipe can be achieved by removing the screw on the test nipple for the inlet pressure. Connect a plastic hose and lead out the gas into nature. When the bleeding in completed,
don't forget to install the screw in the test nipple again.

2.8.3 Function test

The electric function test can be done as follows:

When connecting to the mains, check that the phase and zero are not switched. The gas tap should be closed. To prevent the gas pressure switch from blocking, it should be bridged temporarily.

After the main switch has been turned on and the max. and control thermostats have been set, the prepurging period lasts for 30-35 secs. After this, the pre-ignition is started (0.5-2.5 secs. depending on the design of the gas burner control). The ignition spark should then be able to operate faultlessly at the required quantity of air for combustion. The gas valve is energized and opens. After the end of the safety period (2-3 secs.), the gas burner control blocks.

The solenoid valve and motor become de-energized. Remove the bridge after completed testing.

Check that no safety functions are disconnected before placing the burner into service.

2.8.4 Leakage testing

When leakage testing the gas fittings with test points between the valves, the solenoid valve should be closed. A pressure gauge should be connected to the test nipple Pa. The test pressure in the fittings should be 1.5 x max inlet pressure or min. 150 mbar. If leakage is observed when measuring, localise the leaking site with soapy water or leak detection spray. After sealing, leak test the fittings again. After completed trimming, all joints, branching points and outlets on the gas line should be tested for leaks.

3. BASIC SETTINGS

3.1 Determination of gas quantity for the system

Indicated values are default values.

For further details, please contact the gas supplier.

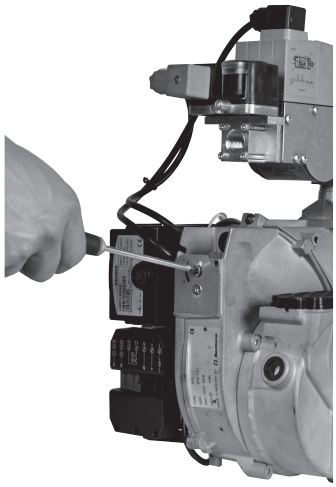
Lower heat value				
Gas quality		kWh/Nm³	kJ/Nm³	kcal/Nm³
Natural Gas	G 20	9,45	34 056	8 147
Natural Gas	G 25	8,06	29 046	6 948
Butane	G 30	32,24	116 064	27 793
Propane	G 31	24,44	87 984	21 069
Biogas		6,0	21 600	5 172

3.1.1 Example of how to calculate the gas quantity (natural gas):

$V_\circ$	=	Desired gas quantity	[Nm³/h]
Q	=	Boiler output	[kW]
H_μ	=	Gas heat value	[kJ/Nm³] alt. [kWh/Nm³]
η	=	Boiler efficiency	[%]
Calculation example:			
Q	=	60 kW	
H_μ	=	34 056 kJ/Nm³ alt. 9.45 kWh/Nm³	
η	=	90%	
$V_\circ = \frac{Q \times 3600}{H_\mu \times (\eta/100)} = \frac{60 \times 3600}{34056 \times (90/100)} \approx$			7,05 Nm³/h
$V_\circ = \frac{Q}{H_\mu \times (\eta/100)} = \frac{60}{9{,}45 \times (90/100)} \approx$			7,05 Nm³/h
If the height of the barometer (altitude), pressure and temperature of the gas deviate from normal values, this should be taken into account as follows.			
t	=	Temperature of gas at gas meter	[°C]
B	=	Height of barometer	[mbar]
P_μ	=	Pressure of gas at gas meter	[mbar]
f	=	Calculated factor for multiplication with flow in Nm³ to arrive at actual gas flow	
V	=	Actual gas flow	[m³/h]
$f = \frac{(273 + t)}{273} \times \frac{1013{,}25}{(B + P_\mu)}$			
Calculation example:			
t	=	15°C	
B	=	945 mbar	
P_μ	=	15,0 mbar	
$f = \frac{(273 + 15)}{273} \times \frac{1013{,}25}{(945 + 15)} \approx$			1,11
V	=	$V_\circ \times f \Rightarrow V = 7.05 \times 1.11 \approx 7.83$ m³/h gas flow to be read at the gas meter	

3.1.2 Nozzle assembly adjustment

The burner is equipped with a control which changes the position of the brake plate in the blast tube. This is used to set the correct pressure differential across the combustion device and thereby get a good combustion without pulsations. The setting to be used depends on the set effect and the overpressure in the boiler. (For basic setting, see Technical data).



Setting brake plate
H1 och H2

- Smaller gap: turn the screw to the left
- Larger gap: turn the screw to the right

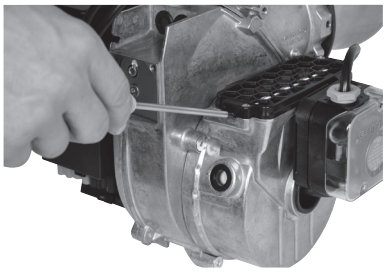
H3

- Smaller gap: turn the screw to the right
- Larger gap: turn the screw to the left

The setting of the brake plate position affects the air flow. Therefore, the air must always be readjusted with the air regulation device of the burner.

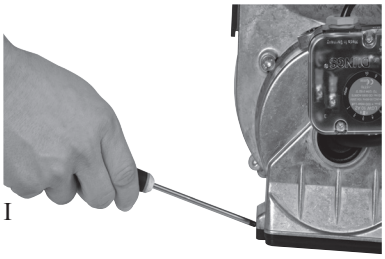
3.1.3 Air intake adjustment

The air setting is very important to get good combustion with neither too much nor too little air. The air flow for combustion is adjusted by turning the air adjusting screw with an Allen key. How open the air control should be is determined by the fired-in effect and overpressure in the boiler, as well as other settings on the burner such as the position of the brake plate.
(For basic setting, see Technical data).



3.1.4 Air quantity setting procedure

The setting of the air control depends on how the screw, with which the air adjustment is done, is installed. If the air intake is pointing downwards as in Fig. I, a clockwise turn gives a decrease in the air flow and a counter-clockwise turn an increase in the air flow.
If the air intake is pointing upwards as in Fig. Π, a clockwise adjustment increases the air flow and a counter-clockwise adjustment decreases it.



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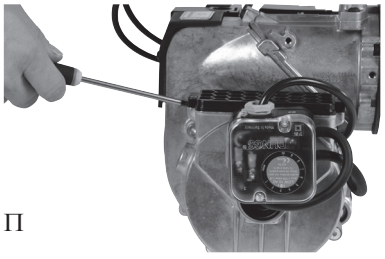
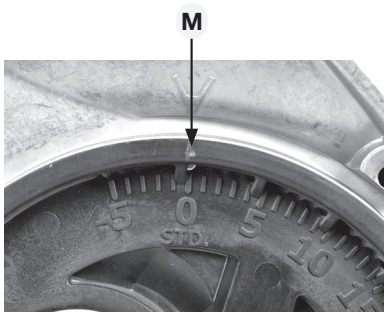


Π

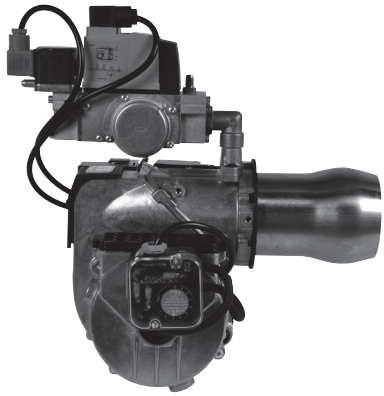
3.1.5 Inlet cone, air control

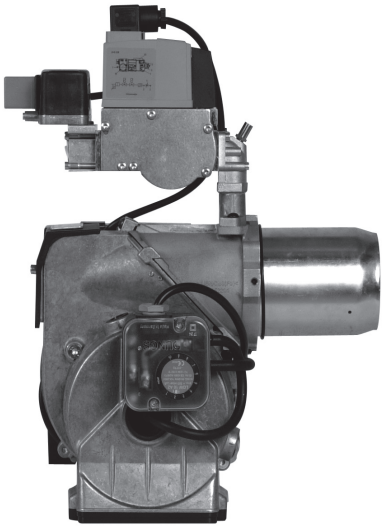
The air flow is also affected by the position of the intake cone. This rarely needs adjustment, however, and should be maintained in the standard position ”STD” for good operation and starts. (A cast-in arrow on the fan housing indicates the position of the inlet cone. In addition to the scale on the inlet cone casting, there is also a mark (M) indicating the factory setting.)



3.1.6 Rotation of air intake

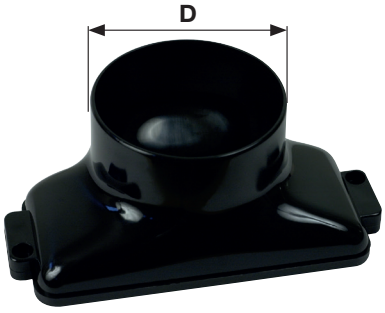
The air intake can be rotated in order to fit the burner into different environments. The intake can be rotated into various positions, not just the ones shown to the left.
To rotate the air intake, loosen the three screws securing the air intake and the two screws fastening the air pressure switch. Then rotate the air intake to the desired position and tighten the screws.
The air intake position does somewhat affect the air flow through the burner. The position giving the largest flow is with the air intake downwards.





3.1.7 Air duct

A hose connection via a air duct is available in three different dimensions, 48, 68 and 78 mm outer diameter ”D”. The air duct is installed on the air intake at the place where the grid is installed in the standard design.



4. BURNER SERVICE

4.1 Service

Service should be performed after approx. 3000 working hours, but no less than once a year.

Only authorized personnel should perform the service.

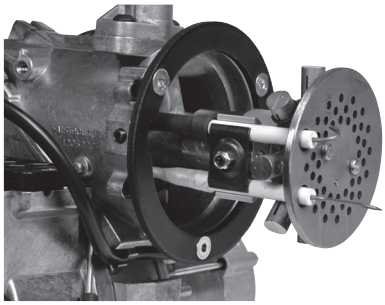
Before any kind of service is performed, switch off the current with the line breaker and turn off the gas supply.

Be careful: certain parts exposed after the separation of the burner can be warmer than 60°C.

Be careful not to pinch or damage any electric cables or gas pipes during installation or service.

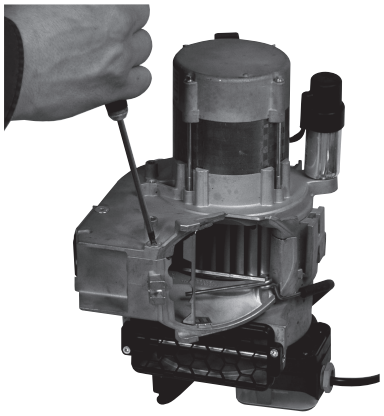
4.1.1 Combustion device service

1. Switch off the main current, disconnect the Eurostecker from the burner and turn off the gas.
2. Remove the gas pipe after ensuring that the gas is turned off.
3. Remove the burner from the burner flange. Pull out the burner. Disconnect the blast tube and remove it.
4. If necessary, clean the brake plate and nozzle.
5. Check the ignition electrode and ionisation electrode. Replace if necessary. (Refer to Technical data for setting of electrodes)
6. Install on the blast tube and fasten the burner on the burner flange.
7. Install the gas pipe.
8. Check the gas pipe for leakage.
9. Install the Eurostecker; switch on the main current and open the gas flow.
10. Start the burner and check the combustion.

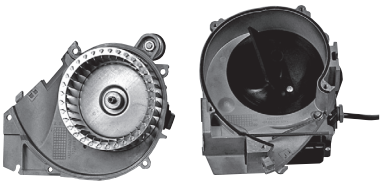


When servicing/replacing components which affect the combustion, gas side leakage analysis and check should be performed on the system.

4.1.2 Fan motor replacement



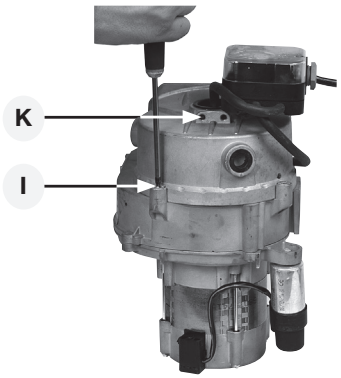
1. Switch off the main current, disconnect the Eurostecker from the burner and turn off the gas.
2. Loosen the screw assembling the front piece of the burner and the fan housing, but not more than that the fan housing can be removed from the front piece. Disconnect the cables to the multiblock.
3. Remove the fan housing from the front piece and pull it backwards until the cables to the ignition electrode and ionisation electrode can be loosened.
4. Disconnect the electric bracket to the motor.
5. Loosen the screw holding the electrical bracket.
6. Remove the cable conduit for the ignition electrode and ionisation electrode.
7. Loosen the screws (H) holding the motor flange, 5 pcs.
8. Lift off the motor.
9. Disconnect and remove the fan wheel.
10. Install the fan wheel on the new motor and tighten the locking screw. The fan wheel should be installed in the bottom position against the motor shaft.



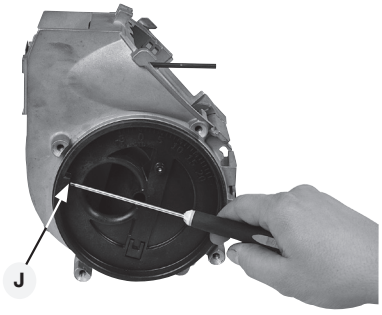
11. Fit in the motor flange against the fan housing.
12. Assemble the motor flange and the fan housing. Tighten the screws alternatively and not one at a time.
13. Place the cable conduit and the hose for the air pressure switch in position.
14. Install the screws in the electrical bracket.
15. Connect the motor cable. Connect the ignition electrode and ionisation electrode.
16. Assemble the fan housing and the front piece.
17. Install the Eurostecker; switch on the main current and open the gas flow.
18. Start the burner and check the combustion.

! When servicing/replacing components which affect the combustion, gas side leakage analysis and check should be performed on the system.

4.1.3 Air intake and inlet cone service



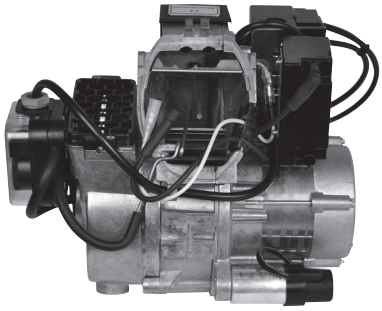
1. Switch off the main current, disconnect the Eurostecker from the burner and turn off the gas.
2. Loosen the screw assembling the front piece of the burner and the fan housing, but not more than that the fan housing can be removed from the front piece. Disconnect the cables to the multiblock.
3. Remove the fan housing from the front piece and pull it backwards until the cables to the ignition electrode and ionisation electrode can be loosened.
4. Loosen the screws (K) holding the air switch, 2 pcs. Remove the air switch.
5. Loosen the screws (I) holding the air intake, 3 pcs.
6. Remove the air intake.
7. Loosen the screw (J) holding the inlet cone and note the inlet cone position.



8. Remove the inlet cone from the fan housing.
9. Check the function and appearance of the different components in the air regulation. Clean and replace the components as needed.
10. Assemble the burner. Be careful when installing the inlet cone - install it in the same position as it was before being removed.
11. Fit the O-ring in the groove between the fan housing and inlet cone. Ensure that it is properly located in the groove and is not damaged when the air intake is fitted.
12. Install the Eurostecker; switch on the main current and open the gas flow.
13. Start the burner and check the combustion*.

4.1.4 Fan wheel check

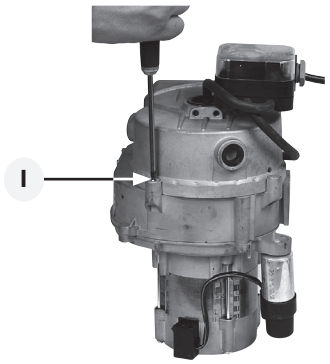
4.1.4.1 Inspection



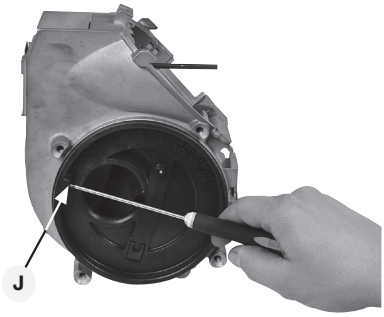
1. Switch off the main current, disconnect the Eurostecker from the burner and turn off the gas.
2. Loosen the screw assembling the front piece of the burner and the fan housing, but not more than that the fan housing can be removed from the front piece. Disconnect the cables to the multiblock.
3. Remove the fan housing from the front piece and pull it backwards until the cables to the ignition electrode and ionisation electrode can be loosened.
4. Visually check the fan wheel. Carefully rotate the fan wheel with your fingers or a tool.
5. If possible, carefully clean the fan wheel if it is not heavily soiled.
6. If thorough cleaning is deemed necessary, proceed to point 5.1.7.2.
7. If cleaning is not necessary, assemble the burner.
8. Install the Eurostecker, switch on the main current and open the gas flow.
9. Start the burner and check the combustion*.

! When servicing/replacing components which affect the combustion, gas side leakage analysis and check should be performed on the system.

4.1.5 Fan wheel service



1. Switch off the main current, disconnect the Eurostecker from the burner and turn off the gas.
2. Loosen the screw assembling the front piece of the burner and the fan housing, but not more than that the fan housing can be removed from the front piece. Disconnect the cables to the multiblock.
3. Remove the fan housing from the front piece and pull it backwards until the cables to the ignition electrode and ionisation electrode can be loosened.
4. Loosen the screws (I) holding the air intake, 3 pcs.
5. Remove the air intake.
6. Loosen the screw (J) holding the inlet cone and note the inlet cone position.
7. Remove the inlet cone from the fan housing.
8. Clean the fan wheel. If necessary, disconnect and remove the fan wheel for more thorough cleaning of the fan and fan housing.
9. Install the fan wheel and tighten the screw. The fan wheel should be installed in the bottom position against the motor shaft.
10. Assemble the burner. Be careful when installing the inlet cone – install it in the same position as it was before being removed.
11. Fit the O-ring in the groove between the fan housing and inlet cone. Ensure that it is properly located in the groove and is not damaged when the air intake is fitted.
12. Install the Eurostecker; switch on the main current and open the gas flow.
13. Start the burner and check the combustion.



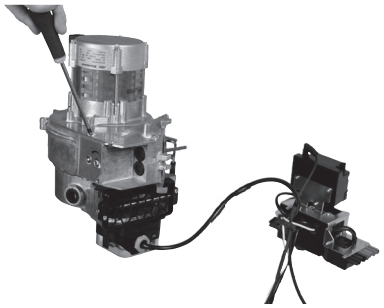
4.1.6 Electrical package

Check that the screw holding the electrical bracket is tightened so that good earth connection between the package and the burner body is obtained.

Use only electric components recommended by Enertech.

When servicing/replacing components which affect the combustion, gas side leakage analysis and check should be performed on the system.

4.1.6.1 Complete electrical package replacement



1. Switch off the main current, disconnect the Eurostecker from the burner and turn off the gas.
2. Loosen the screw assembling the front piece of the burner and the fan housing, but not more than that the fan housing can be removed from the front piece. Disconnect the cables to the multiblock.
3. Remove the fan housing from the front piece and pull it backwards until the cables to the ignition electrode and ionisation electrode can be loosened.
4. Disconnect the electric contact to the motor and the multiblock.
5. Open the air pressure switch and disconnect the cables. Note how the air pressure switch is connected.
6. Loosen the screw holding the electrical bracket.
7. Disconnect the ignition electrode and ionisation electrode cables from the electrical package.
8. Attach the new electrical package.
9. Connect the ignition electrode and ionisation electrode in the new electrical package.
10. Install the screws in the electrical bracket.
11. Connect the cables to the air pressure switch and install the cover. Ensure correct connection.
12. Connect the motor cable and multiblock.
13. Assemble the fan housing and front piece.
14. Install the Eurostecker; switch on the main current and open the gas flow.
15. Start the burner and check the combustion.

! When servicing/replacing components which affect the combustion, gas side leakage analysis and check should be performed on the system.

4.1.6.2 Single electrical package component replacement

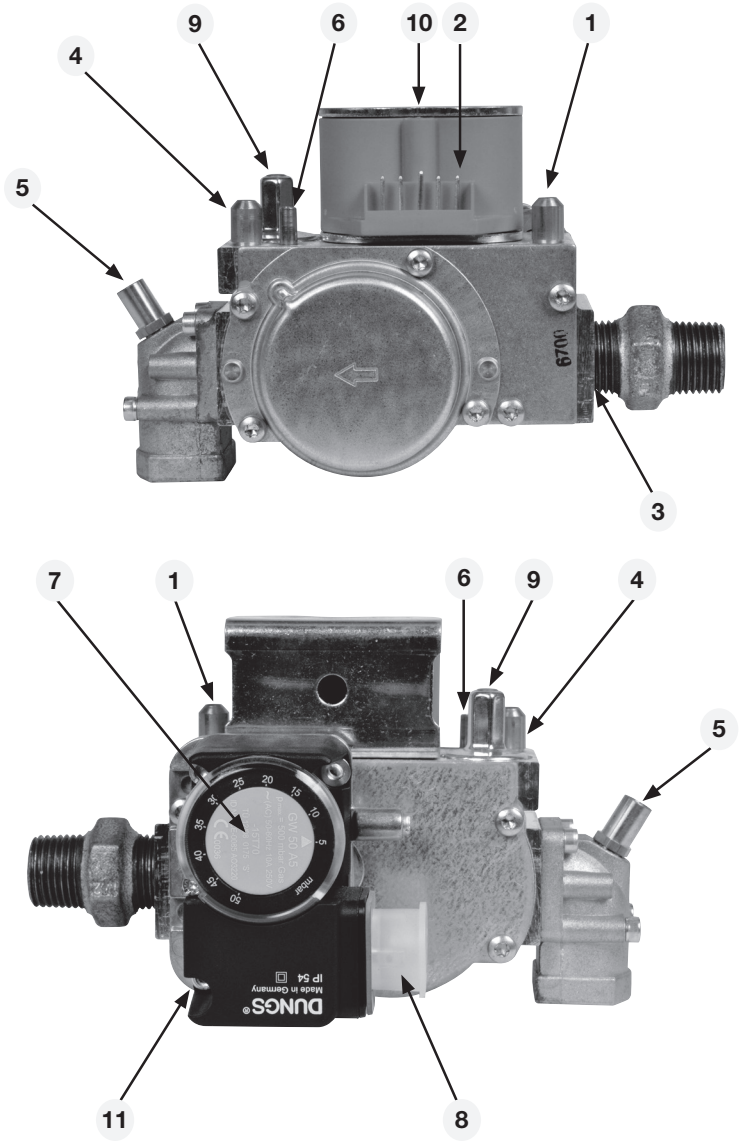
1. Switch off the main current, disconnect the Eurostecker from the burner and turn off the gas.
2. Loosen the screw assembling the front piece of the burner and the fan housing, but not more than that the fan housing can be removed from the front piece. Disconnect the cables to the multiblock.
3. Remove the fan housing from the front piece and pull it backwards until the cables to the ignition electrode and ionisation electrode can be loosened.
4. Remove the gas burner control.
5. Remove the cable of components to be replaced. Disconnect the cable in the terminal board.
6. Insert the new cable.
7. Check that all wires enter the terminal board and that they are securely fastened.
8. Switch on the gas burner control.
9. Assemble the fan housing and front piece.
10. Install the Eurostecker; switch on the main current and open the gas flow.
11. Start the burner and check the combustion.

When the ignigtion transformer, air switch, gas switch and gas burner control contained in the electrical package are being replaced, no work needs to be done in the socket.

! When servicing/replacing components which affect the combustion, gas side leakage analysis and check should be performed on the system.

5. MULTIBLOCK

5.1 GB-LD055 D01...



Components

1. Test nipple for inlet pressure
2. Coil + electric connector
3. Gas filter (non replaceable)
4. Test nipple for regulator pressure
5. Test nipple for nozzle pressure
6. Quantity setting via gas throttle
7. Gas pressure switch, min.
8. Electric connector, gas pressure switch
9. Setting of pressure regulator
10. Screw for coil 4 mm Allen key
11. Screw, gas pressure switch

5.1.1 Setting multiblock, GB-LD055 D01...

- Connect a pressure gauge to the test nipples

  (1) Inlet pressure

  (4) Regulator pressure

  (5) Nozzle pressure
- Ensure the presence of air-free gas at the ball valve
- Start the burner

5.1.1.1 Setting the gas flow

- The gas flow can be changed with a 2 mm Allen key on the adjustment screw (6)
- Greater gas flow, turn counter-clockwise +
- Lesser gas flow, turn clockwise -

Note!
When the gas flow is changed, a new check of the combustion must be performed. Use a flue-gas instrument for this check.

5.1.1.2 Setting the pressure regulator

A higher outlet pressure from the regulator can be required if, for instance, the quantity setting is max. open and the factory setting 10 mbar is not sufficient.

- The regulator pressure can be changed with a 2 mm Allen key on the adjustment screw (9)
- Adjustment clockwise gives higher pressure
- Adjustment counter-clockwise gives lower pressure

5.1.1.3 Coil replacement

- Loosen screw (10)
- Remove the coil (2)
- Install a new coil
- Attach the coil with screw (10)

5.1.1.4 Replacement of gas pressure switch (GW...A5)

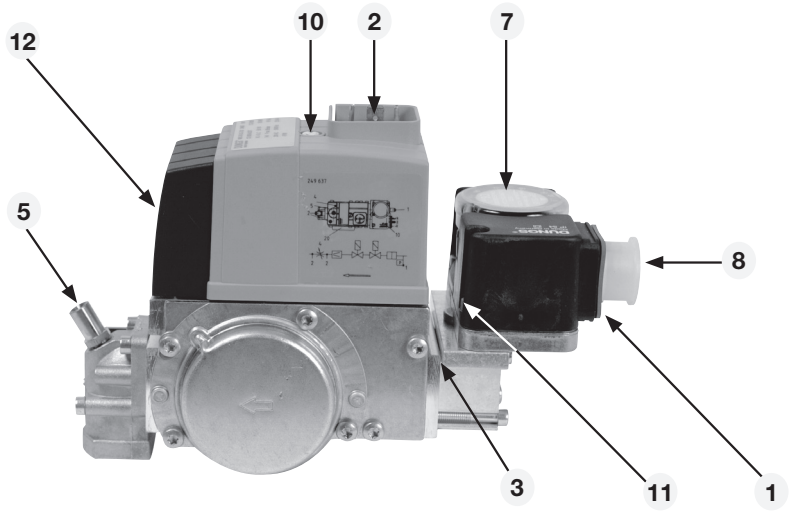
- Loosen the two screws (11)
- Carefully remove the gas pressure switch
- Install a new gas pressure switch
- Attach the gas pressure switch with the two screws (11)

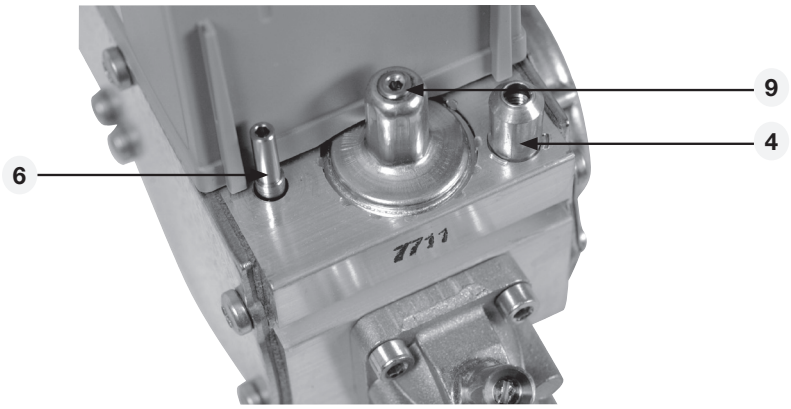
5.1.1.5 Important

When replacing gas pressure switches, inspecting filters via the gas connection, etc., ensure that the O-rings and gaskets are positioned correctly and that leak testing is performed after each operation. Also check the function of the gas pressure switch and set it.

! After completion of the jobs on the gas components, perform leakage control and function control.

5.2 MBC-65-DLE-S20





Components

1. Test nipple for inlet pressure
2. Electric connector coil
3. Gas filter (non replaceable)
4. Test nipple for regulator pressure
5. Test nipple for nozzle pressure
6. Quantity setting via gas throttle
7. Gas pressure switch, min.
8. Electric connector, gas pressure switch
9. Setting of pressure regulator
10. Screws for coil
11. Screw, gas pressure switch
12. Cover adjustment control

5.2.1 Setting multiblock, MBC-65-DLE-S20

- Connect a pressure gauge to the test nipples

  (1) Inlet pressure

  (4) Regulator pressure

  (5) Nozzle pressure
- Ensure the presence of air-free gas at the ball valve
- Start the burner

5.2.1.1 Setting gas flow

- The gas flow can be changed with the help of a 2 mm Allen key on the adjustment screw (6)
- Greater gas flow, turn counter-clockwise +
- Lesser gas flow, turn clockwise -.

NOTE!

When the gas flow is changed, a new check of the combustion must be performed. Use a flue-gas instrument for this check.

5.2.1.2 Setting pressure regulator

A higher outlet pressure from the regulator can be required if, for instance, the quantity setting is max. open and the factory setting is not sufficient.

- The regulator pressure can be changed with a 2 mm Allen key on the adjustment screw (9)
- Adjustment clockwise gives higher pressure
- Adjustment counter-clockwise gives lower pressure

5.2.1.3 Replacement of coil

- Loosen screw (10)
- Remove the cover
- Remove the circuit board
- Disconnect the solenoid valve from the valve with a hexagonal screw
- Install and fasten the new coil
- Install and fasten the circuit board and cover

5.2.1.4 Replacement of gas pressure switch (GW...A5)

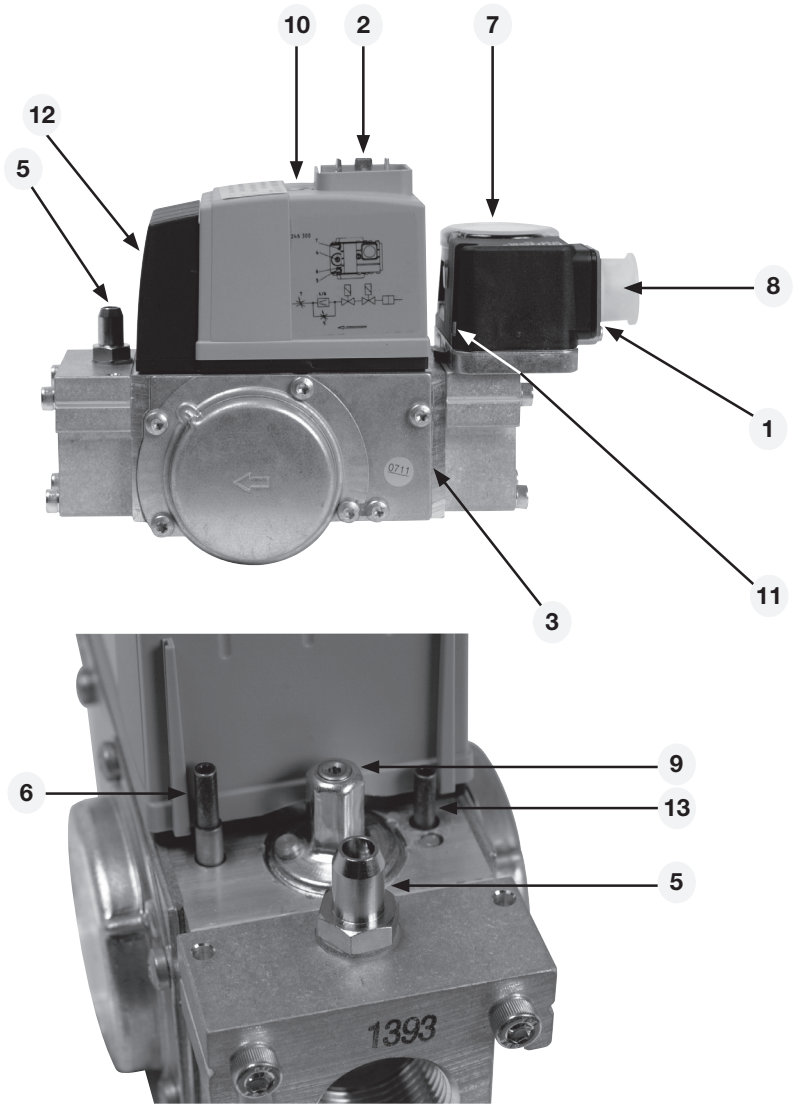
- Loosen the two screws (11)
- Carefully remove the gas pressure switch
- Install a new gas pressure switch
- Attach the gas pressure switch with the two screws (11)

5.2.1.5 Important

When replacing gas pressure switches, inspecting filters via the gas connection, etc., ensure that the O-rings and gaskets are positioned correctly and that leak testing is performed after each operation. Also check the function of the gas pressure switch and set it.

After completion of the jobs on the gas components, perform leakage control and function control.

5.3 MBC-120-DLE-S20



Components

1. Test nipple for inlet pressure
2. Electric connector coil
3. Gas filter (non replaceable)
4.
5. Test nipple for nozzle pressure
6. Quantity setting via gas throttle
7. Gas pressure switch, min.
8. Electric connector, gas pressure switch
9. Setting of pressure regulator
10. Screw for cover over coil
11. Screw, gas pressure switch
12. Cover adjustment control
13. Quantity setting of start gas via gas throttle

5.3.1 Setting multiblock, MBC-120-DLE-S20

- Connect a pressure gauge to the test nipples

  (1) Inlet pressure

  (5) Nozzle pressure
- Ensure the presence of air-free gas at the ball valve
- Start the burner

5.3.1.1 Setting gas flow

- The gas flow can be changed with the help of a 2 mm Allen key on the adjustment screw (6)
- Greater gas flow, turn counter-clockwise +
- Lesser gas flow, turn clockwise -

NOTE!
After changing the gas flow, a new check of the combustion must be performed. Use a flue-gas instrument for this check.

5.3.1.2 Setting pressure regulator

A higher outlet pressure from the regulator can be required if, for instance, the quantity setting is max. open and the factory setting is not sufficient.

- The regulator pressure can be changed with a 2 mm Allen key on the adjustment screw (9)
- Adjustment clockwise gives higher pressure
- Adjustment counter-clockwise gives lower pressure

5.3.1.3 Setting start gas flow

The multiblock is set with the slow opening at start.
The start gas flow can be changed with a 2 mm Allen key on the adjustment screw (13).

- For quicker opening, turn counter-clockwise +
- For slower opening, turn clockwise -

It is important that the regulator pressure be higher than the start gas pressure. This is checked by turning.

- The adjustment screw (13) counter-clockwise 2 turns during operation.

The nozzle pressure (5) must not increase. If the nozzle pressure has increased, the adjustment screw (13) should be turned clockwise until the nozzle pressure no longer is affected. Then turn another 2 turns clockwise to achieve a stable nozzle pressure.

After completion of the jobs on the gas components, perform leakage control and function control.

5.3.1.4 Replacement of coil

- Loosen screw (10)
- Remove the cover
- Remove the circuit board
- Loosen the hexagonal screw which holds the solenoid coil and the valve together
- Install and fasten the new coil
- Install and fasten the circuit board and cover

5.3.1.5 Replacement of gas pressure switch (GW...A5)

- Loosen the two screws (11)
- Carefully remove the gas pressure switch
- Install a new gas pressure switch
- Attach the gas pressure switch with the two screws (11)

5.3.1.6 Important

When replacing gas pressure switches, inspecting filters via the gas connection, etc., ensure that the O-rings and gaskets are positioned correctly and that leak testing is performed after each operation. Also check the function of the gas pressure switch and set it.

! After completion of the jobs on the gas components, perform leakage control and function control.

5.4 MB-DLE 403

Max. inlet pressure

MB-DLE 403: 200 mbar
Adjustable governor pressure:
4-50 mbar.

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

Components

1. Protective cover start load adjustment
2. Hydralic damping
3. Fixing screw
4. Test nipple (inlet pressure)
5. Test nipple (pressure after governor)
6. Test nipple (pressure in inner assembly)
7. Governor
8. Filter
9. Gas pressure switch
10. Solenoid valve

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 abore.

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

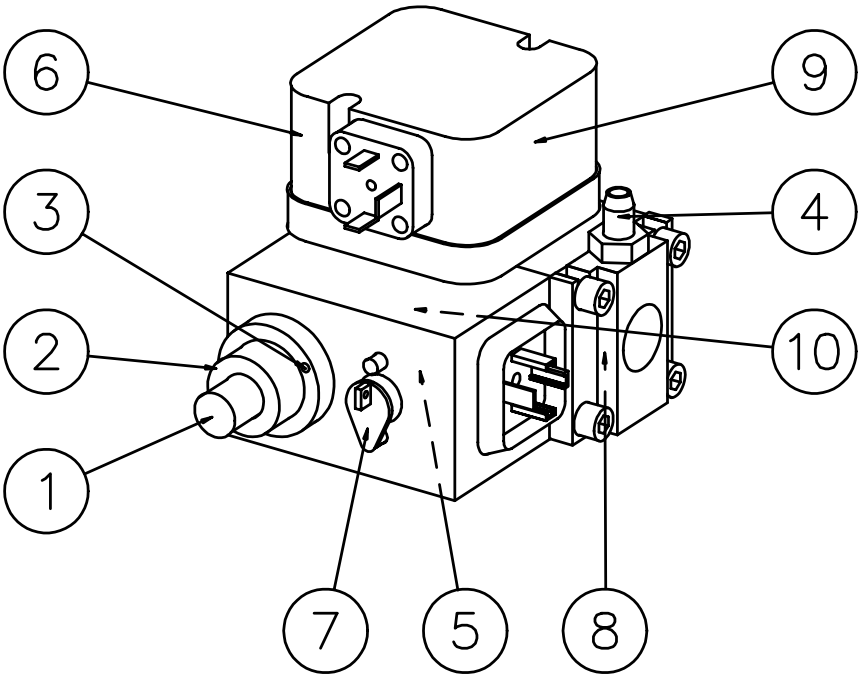
Turn to the left = the start gas flow is increased

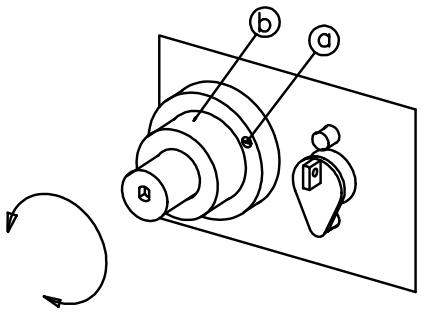
Adjustment of governor

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.

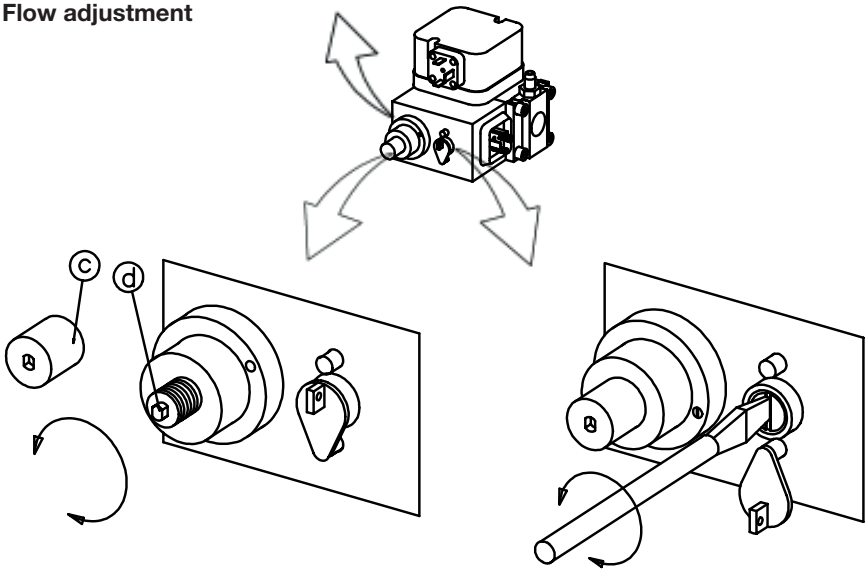
Turn to the right = the outlet pressure is increased

Turn to the left = the outlet pressure is reduced





Flow adjustment



Adjustment of start gas flow

Adjustment of governor

5.5 MB-DLE 405-420

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. Protective cover start load adjustment
2. Hydralic damping
3. Fixing screw
4. Test nipple (inlet pressure)
5. Test nipple (pressure after governor)
6. Test nipple (pressure in inner assembly)
7. Governor
8. Filter
9. Gas pressure switch
10. Solenoid valve

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

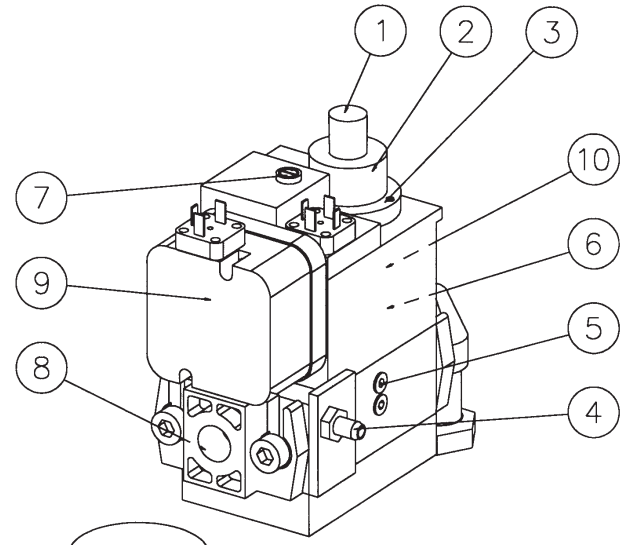
Adjustment of start gas flow

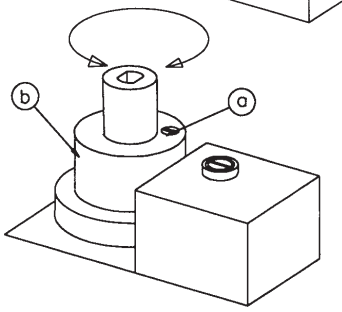
Remove the protective cover c.

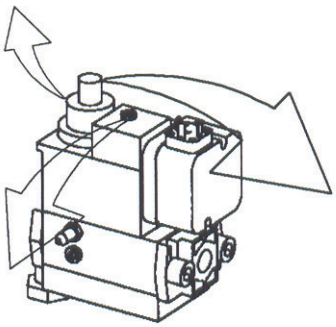
Turn the adjustment knob d (use the protective cover as a tool) to the desired start gas flow.

Turn to the right = the start gas flow is reduced

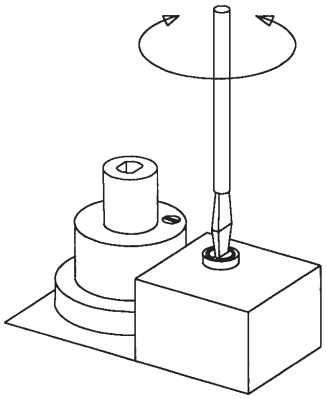
Turn to the left = the start gas flow is increased



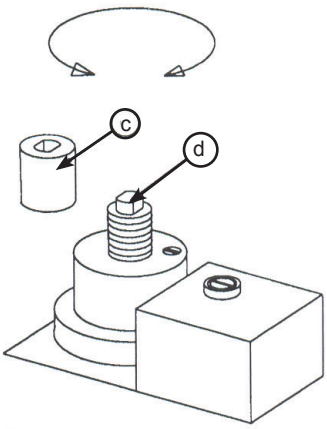




Flow adjustment



Adjustment of governor



Adjustment of start gas flow

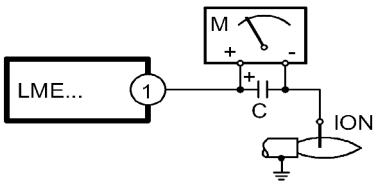
6. GENERAL INSTRUCTIONS

6.1 Flame monitoring and ionisation current check

The burner is monitored according to the ionisation principle. The ionisation current should be checked at initial starting and at each service visit.
The reason for low ionisation current can be leakage current, poor connection to earth, fouling or incorrectly placed ionisation electrode in the combustion head. Sometimes incorrect gas-air mixture can also be the cause of poor ionisation current.
The ionisation current is measured with a microamperemeter (µA DC) which is connected in series with the ionisation electrode and gas burner control. Connect the µA-meter as in (see Fig. 6.1.1) Min. required ionisation current for different gas control units is indicated in the table below. In reality, this current must be significantly higher, preferable more than 15 µA. The connection of the µA instrument is facilitated by the fact that all gas burners are equipped with a detachable ionisation cable.

Gas burner control	Connection to the board in gas burner control	Min. required ionisation current	Normal ionisation current
LME	1	5 µA	15 - 25 µA
LGB	1	10 µA	15 - 25 µA

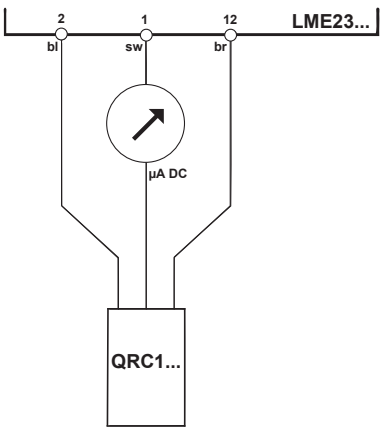
6.1.1 Flame monitoring ionisation



6.1.2 UV –detector (QRC)

Should not be exposed to temperatures higher than 60 °C. The current passing through the UV-detector, when it is lighted, should be at least 70 µA. The current can be measured with a moving coil instrument. A check is necessary only if a malfunction is suspected.

6.1.3 Flame monitoring UV-detector (QRC)



6.1.4 Setting of air pressure switch

The air pressure switch should block the burner if the air quantity is insufficient. The air monitoring device should be set so that, if there is missing air supply at the burner's max. or min. capacity, it reacts before the monitored pressure is less that 80% of the pressure on the controlled stage and before the CO-level in the flue gases exceeds 1 per cent by volume.

To set, turn the scale on the air pressure switch clockwise. When the break point is reached and the burner stops, read the value on the scale. Then turn the scale counter-clockwise to the determined pressure, at which point the air pressure switch should open according to valid norms. If nothing else is indicated, decrease 20%. Perform repeated starts to ensure that the air pressure switch is not set too narrow.

Setting area approx.:	Type	Max. pressure
1-10 mbar	LGW 10 A2	500 mbar
2,5-50 mbar	LGW 50 A2	500 mbar

6.1.5 Setting gas pressure switch min

The min. switch should react to a gas pressure that is too low and prevent start of the burner.

Too low a gas pressure during operation should stop the burner. The burner can start again when the nominal gas pressure has been corrected. Remove the protective cover. Connect a pressure gauge for measuring the nominal pressure. Determine the pressure at which the gas switch should break according to current local standards; if nothing is indicated, lower approx. 20%. Set this pressure with the ball valve. Carefully turn the knob (see Fig. 6.1.7) until the gas pressure switch breaks.

The value on the scale should then approximately correspond to the pressure gauge reading. Tolerance on the scale approx. ± 15 %. Open the ball valve.

6.1.6 Setting gas pressure switch max

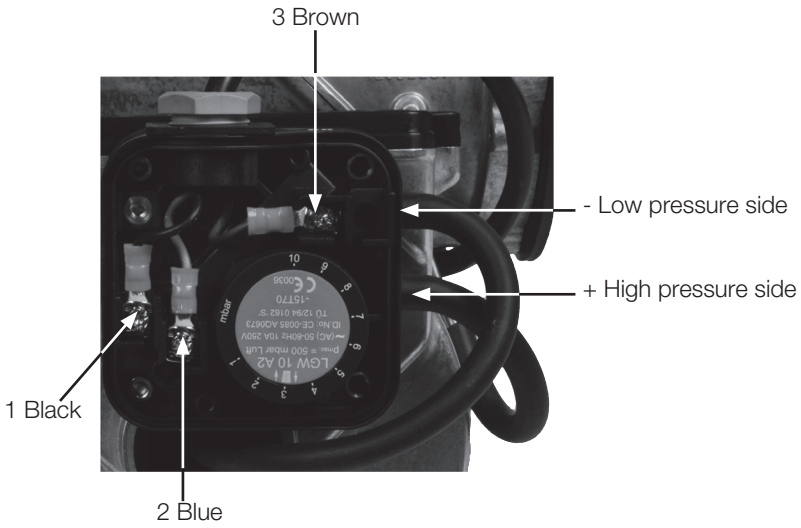
(Accessories)

The gas pressure switch should block the burner if the gas pressure exceeds the set value. Starting can then take place only through manual resetting (gas burner control or gas pressure switch).

Remove the protective cover. Connect a pressure gauge for measuring the nominal gas pressure. Check the function of the pressure switch by slowly turning it down until it breaks. Determine the pressure at which the gas switch should break according to current local standards; if nothing is indicated, increase 20%. Turn the wheel to this value. Tolerance on the scale ±15 %

Setting area approx.:	Type	Max. pressure
2-10 mbar	GW 10 A5	500 mbar
5-50 mbar	GW 50 A5	500 mbar
5-150	GW 150 A5	500 mbar

6.1.7 Air pressure switch, gas pressure switch

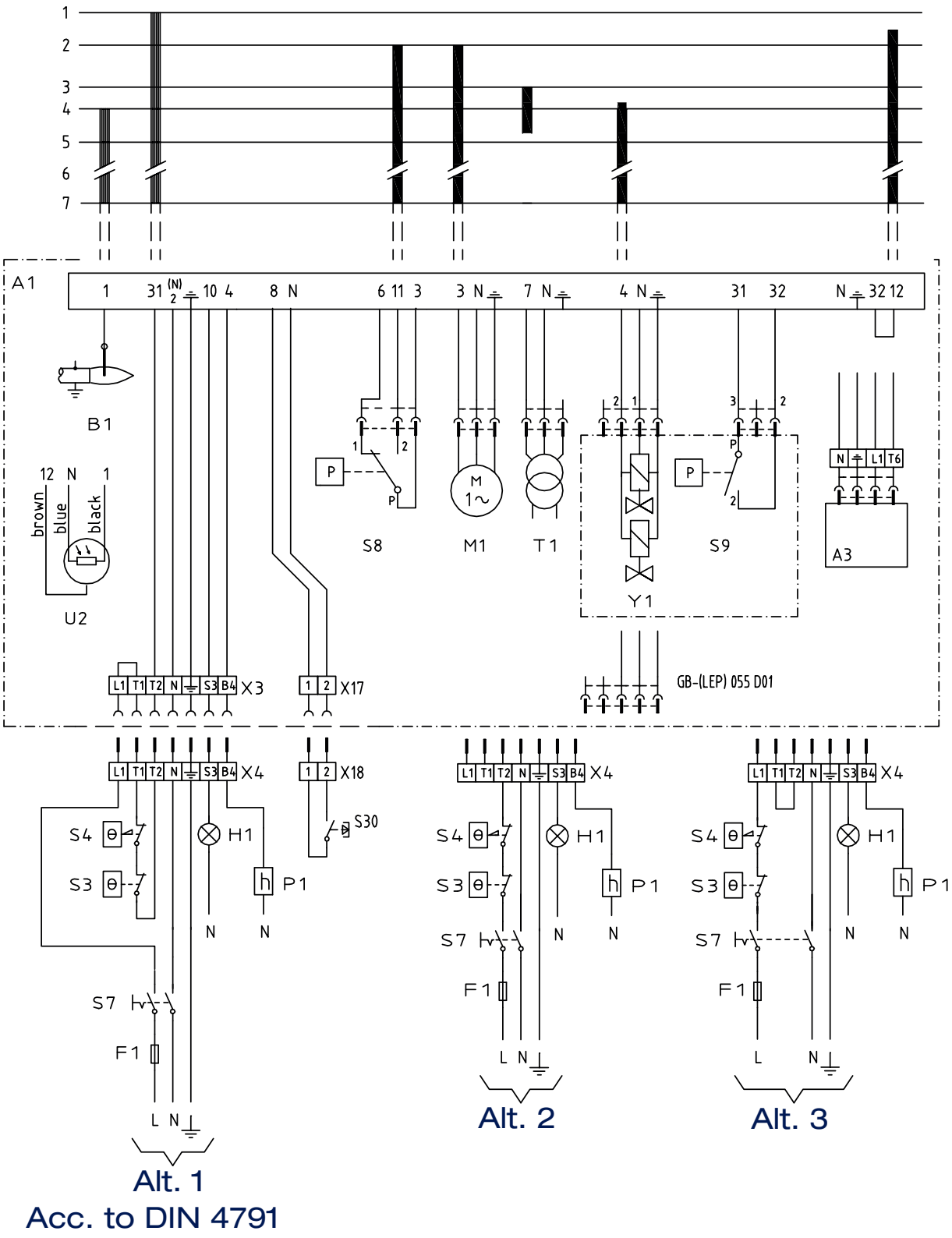


6.1.8 Handing over of the installation

- Perform repeated start tries to check that the settings work.
- Close the ball valve during operation to check that the gas pressure switch breaks at set value.
- Remove the hoses for the air pressure switch to check that the burner goes into blocking.
- Check the gas installation for leaks.
- Check that all protective covers and test nipples are installed and tightened.
- Fill out required test protocols.
- Instruct operating staff in the care and maintenance of the system and how to react in case of breakdown.
- Review and service should be performed by authorized personnel only.

7. ELECTRIC EQUIPMENT LME...

7.1 Wiring diagram



7.1.1 List of components

A1	Gas burner control	S7	Main switch
A3	Valve, leak tester, Dungs VPS504 (optional)	S8	Air pressure switch
B1	Ionisation electrode	S9	Gas pressure switch
U2	UV-detectorQRC (LME23...)	S30	External reset
F1	Fuse	T1	Ignition Transformer
H1	Lamp, operation	Y1	Solenoid valve
M1	Burner motor	X3	Plug-in contact, burner
P1	Timer total operating time	X4	Plug-in contact, boiler
S3	Control thermostat	X17	Plug-in contact, burner external reset (optional)
S4	Temperature limiter	X18	Plug-in contact, boiler external reset (optional)

7.1.2 Function LME...

1.	**Operating switch ON-Thermostat ON-Gas pressure switch ON** A check that the air pressure switch **does not** indicate fan pressure is carried out
2.	**Burner motor starts** A check that the air pressure switch indicates sufficient fan pressure is carried out
3.	**The ignition spark is created**
4.	**The gas solenoid valve is open** The gas is ignited. The ionisation electrode now indicates a flame
5.	**The safety time expires** The ignition spark ceases. The safety period ceases. If the spark is missing or it disappears after this time limit, the gas burner control is blocked
6.	**Operating position**
7.	**Stop** The operation of the burner can now be stopped with the control switch or thermostat
	If the gas burner control is blocked Red light in the gas burner control is lit. The burner is restarted by pushing the reset button

7.2 Control program at faults; fault mode indicator LME ....

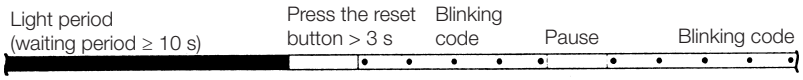
7.2.1 Colour codes

Table colour codes for multi-coloured signal light (LED)		
Status	Colour codes	Colours
Waiting period «tw», other waiting periods	○.....	Off
Ignition phase, ignition controlled	•○ •○ •○ •○ •○ •	Blinking yellow
Normal operation	□.....	Green
Operation, poor flame signal	□○□○□○□○□○	Blinking green
Illegal flame signal during start-up	□▲□▲□▲□▲□▲	Green-Red
Undervoltage	●▲●▲●▲●▲●▲	Yellow-Red
Fault, alarm	▲.....	Red
Blinking code for fault codes	▲○ ▲○ ▲○ ▲○	Blinking red
Interface diagnostics	▲▲▲▲▲▲▲▲	Red flicking

.....	Continuous
○	Off
▲	Red
●	Yellow
□	Green

7.2.1.1 Diagnosing alarm causes

After alarm disconnection, the red alarm signal light is lit continuously.
The diagnosing of the alarm cause can be read according to the following sequence:



7.2.1.2 Limiting of starting repetitions

LME 11... has a function with start repetition if the flame is not created at start or disappears during operation.. LME 11... allows max. three repetitions during continuous starting cycle.

7.2.1.3 Alarm code table

Red blinking code on signal lamp (LED)	Possible causes
Blinking 2 x ..	No flame creation at End of “TSA” - defective or fouled flame monitoring - defective or fouled fuel valves - poor burner setting - defective firing device
Blinking 3 x ...	“LP” defective - No air pressure switch signal after “t10” - “LP” is welded in open position
Blinking 4 x	Illegal flame signal during start-up
Blinking 5 x	Time out “LP” - “LP” is welded in open position
Blinking 6 x	Free
Blinking 7 x	Too many flame disappearances during operation - poor burner setting - defective or fouled fuel valves - defective or fouled flame monitoring
Blinking 8 x	Free
Blinking 9 x	Free
Blinking 10 x	Connection fault or internal fault, outgoing contacts or other faults
Blinking 14 x	CPI contact not closed

During the diagnosing of the alarm cause, the control outputs are voltage-free.

- The burner is disconnected
- Exception, alarm signal «AL» at board 10
- Reconnection of the burner happens after resetting only.
- Press the reset button 0.5...3 s

7.2.1.4 Interface diagnostics

To change to interface mode, press and hold the reset button longer than 3 s. To go back to the normal position, press and hold the reset button longer than 3 s. If the gas burner control is in the alarm position, it is reset by pressing the reset button 0.5...3 s.

8. FAULT LOCATION GUIDE

8.1 Gas Burner

A system's prerequisites for trouble-free operation can be secured only by the tuned interaction of the three factors, electricity, gas flow and air supply. Should any one of these factors change, this can cause a breakdown. It has been shown that most breakdowns are caused by rather uncomplicated things.

Before asking for service you should therefore make sure of the following:

1. Are the gas taps to the system open?
2. Are the fuses OK and the current switched on?
3. Are the controls (room thermostat, boiler thermostat, etc.) correctly set?
4. Is the gas pressure sufficient all the way to the burner?
5. Is the gas burner control ready to start and not in blocking mode?
6. Is correct air supply to the burner provided?

To facilitate the troubleshooting we have provided a table of the most common faults that can arise on a gas burner system and how they are corrected.

Cause	**Corrective Action**
The burner does not start	
No gas	Check that all gas taps are open, check the supply gas pressure.
No voltage	Check the fuse, thermostat and electrical connections.
The burner motor does not start	Motor defective
Gas burner control defective	Replace
The burner motor works, no ignition spark is created after the end of the pre-ventilation period	
No voltage on the terminal clamps	Check the contact. Replace defective gas burner control.
Ignition electrodes in contact with each other or with earth.	Adjust
Porcelain on ignition electrodes broken.	Replace the ignition electrode(s)
Cable terminals have poor contact	Improve the contact
Ignition cables damaged	Replace
Ignition transformer damaged, no voltage on the secondary side.	Replace the ignition transformer
Ignition cable and ionisation cable mixed up.	Switch

Cause	Corrective Action
No flame creation in spite of faultless start	
Gas solenoid valve defective	Replace
The gas solenoid valve does not open in spite of receiving voltage.	Replace the solenoid valve coil, possibly the entire valve.
No voltage to the solenoid valve	Check the contact
No electric connection through the air pressure switch.	Check the setting and function of the air pressure switch.
Start load not correctly set	Adjust the gas supply to correct quantity. Adjust the air quantity to correct combustion.
Gas burner control defective	Replace
Air pressure switch maladjusted or defective.	Check the setting and readjust it.
No acknowledge signal because the control motor cams are not correctly adjusted or have been displaced.	Readjust the control motor. If defective, replace.
The burner locks out after the end of the safety period, although a flame is created	
No ionisation current or the UV-detector in wrong position.	Adjust the ionisation electrode and the UV-detector. Check cables and connections .
Monitoring part in the gas burner control defective.	Replace the gas burner control
Voltage lower than 185 V	Contact electricity supplier
The ignition electrodes interfere with the ionisation current.	Adjust the ignition electrodes. If needed, repolarize the ignition transformer.
Poor earth connection	Provide for proper earth contact
Phase and neutral mixed up	Refer to the wiring diagram and change.
The burner locks out during pre-purge	
The air switch defective or maladjusted.	Adjust. Replace
Starting load not correctly set	Reduce or increase the gas supply. Reduce the air quantity.
Gas pressure too low	Increase the pressure. Contact the gas supplier.
Condensation formation in the boiler and in the chimney	
Flue-gas temperature too low or gas quantity too small.	Increase the flue-gas temperature by increasing the gas quantity. Insulate the stack.

Cause	Corrective Action
Pulsations at start	
Ignition electrodes maladjusted	Readjust.
Gas pressure too high	Check and adjust with a pressure gauge and pressure regulating valve.
Flue-gas side blocked	Check the stack flue
Incorrectly adjusted burner	Adjust the burner
The burner pulsates during operation	
The burner is maladjusted	Readjust
The burner is dirty	Clean the burner.
Incorrect chimney	Check and possibly change the dimension.
The burner works correctly but sometimes it goes into blockage	
The ionisation current too weak	Check. Should be at least 5 µA according to the gas burner control manufacturer, but ought to be at 15-25 µA.
The UV-detector in wrong position	Adjust
Voltage drop at certain periods	Must not drop more than 15% of the rated voltage.
Incorrect setting or defective air switch.	Adjust the air switch. If defective, replace
Spar-oven in the ignition electrodes.	Replace
The gas burner control ambient temperature is too high.	Insulate for heat, max. 60°
Ignition spark too weak	Check the ignition transformer

Cause	Corrective Action
Poor combustion	
Poor draught conditions	Check the stack
Flue-gas temperature too high	The boiler is too loaded. Decrease the gas quantity. Adjust correct burner power.
CO_2 amount too low	Throttle the air. Check the boiler for leakage. Throttle the draught if it is too high.
CO-content too high	
Air surplus at natural gas and gasol (propane, butane).	Throttle the air
Air deficit	Open for the air. Check the stack damper.
Holes in the gas nozzle blocked by dirt.	Clean
Fresh air intake too poor	Check and make it bigger
Crocked flame caused by an out of position combustion head.	Check the combustion head and readjust it.

9. DECLARATION OF CONFORMITY

Declaration of conformity

Gas burner
Zertifi kat TÜV Süddeutschland

Certifi cate No	Burner	Certifi cate No	Burner
CE-0085 BT 0064	BFG1	CE-0085 BP 0352	BG550
CE-0085 AO 0230	BG100	CE-0085 BP 0353	BG550LN
CE-0085 AP 0623	BG150	CE-0085 AO 0084	BG600LN
CE-0085 AP 0624	BG200	CE-0085 BP 0354	BG650
CE-0085 AT 0192	STG120, STG146	CE-0085 AT 0313	BG700
CE-0085 AP 0625	BG300	CE-0085 AT 0314	BG800
CE-0085 AP 0626	BG400	CE-0085 BR 5754	BG950
CE-0085 AU 0156	BG450		

Enertech AB declares that the above-mentioned products comply with the following standards or other normative documents and meet applicable sections of the EU directive.

Enertech AB försäkrar under eget ansvar att ovannämnda produkter är i överensstämmelse med följande standarder eller andra regelgivande dokument och uppfyller tillämpliga delar i EU direktiv.

Enertech AB erklärt hiemit, dass oben genannten Produkte mit den folgenden Normen oder anderen normativen Dokumenten übereinstimmen und die anwendbaren Teile der EU-Richtlinie erfüllen.

Enertech AB déclare que les produits ci-dessus mentionnés sont conformes aux normes ou autres documents normatifs suivants, et répondent aux sections applicables de la directive EU.

Document:	EN 676	
	DIN EN 60335-2-102	
EU Directive	90 / 396 / EEC	Gas Directive
	2004 / 108 / EC	EMC Directive
	2006 / 95 / EC	Low voltage Directive

By conforming to the above-mentioned standards and directives, the burner will receive the CE marking.

Genom att brännaren uppfyller ovannämnda standarder och direktiv erhåller brännaren CE - märkningen.

Durch Übereinstimmung mit den oben genannten Normen und Richtlinien erhalt der Brenner die CE-Kennzeichnung.

De par sa conformité aux normes et directives mentionnées ci-dessus, le brûleur recevra le marquage CE de conformité.

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Enertech AB Bentone Division är kvalitetscertifierat enligt SS-EN ISO 9001

Enertech AB Bentone Division ist nach SS-EN ISO 9001qualitätszertifiziert.

Enertech AB Bentone Division a reçu la certification d'assurance qualité SS-EN ISO 9001qualitätszertifiziert.

Ljungby, Sweden, 141127 (27/11/14)

ENERTECH AB Bentone Division
Box 309
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Håkan Lennartsson

Bentone®
Enertech Group

10. 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 ther mostat, 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:

_____

Address:_____

Tel:_____

SERVICE AND INSPECTION CARD

Installation	**Boiler**	
Name:	Type:	Efficiency kW:
Address:		
	Burner	
	Type:	Efficiency kW:
Installed by:	Date:	

Date										
	Nm^3 gas/h	Governor		CO_2	CO	Flue gas temp	Ionisa-tion current	Pressure		Efficiency
								Fire room	Chimney	
Measure-ment		Before	After	%	%	°C	µ A	mbar		mbar %
	Small flame									
	Large flame									
Measures										

Date										
	Nm^3 gas/h	Governor		CO_2	CO	Flue gas temp	Ionisa-tion current	Pressure		Efficiency
								Fire room	Chimney	
Measure-ment		Before	After	%	%	°C	µ A	mbar		mbar %
	Small flame									
	Large flame									
Measures										

Date										
	Nm^3 gas/h	Governor		CO_2	CO	Flue gas temp	Ionisa-tion current	Pressure		Efficiency
								Fire room	Chimney	
Measure-ment		Before	After	%	%	°C	µ A	mbar		mbar %
	Small flame									
	Large flame									
Measures										

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