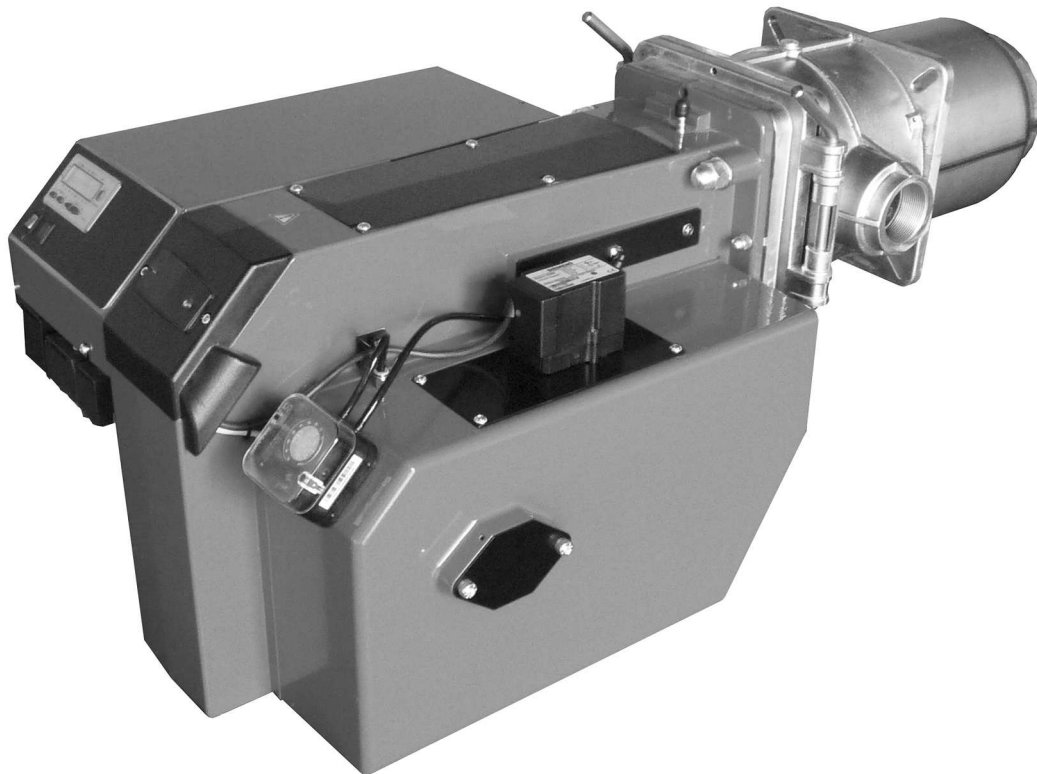


MG20-ZM-L-LN

Issued in June 2020
Subject to tech. modifications
to improve the product!

Gas



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1 General information

Installation of a gas-fired heating system must be performed in accordance with the applicable regulations and guidelines. It is therefore the duty of the installer to be fully familiar with all regulations. Installation, start-up and maintenance must be performed with utmost care.

The burner must not be operated in rooms with high levels of air humidity (laundry rooms), dust or corrosive vapours. The boiler room must be ventilated accordingly with ventilation air.

Giersch MG Series gas burners are suitable for combustion of natural gas in accordance with DIN EN 437 and are in compliance with the DIN EN 676 European standard.

2 Checking scope of supply and electrical ratings

Before installing the gas burner, please check the scope of delivery.

Scope of delivery:

burner housing, gas jacket with burner pipe, mounting kit, documentation and gas train.

Gas installation and commissioning are subject to the applicable national regulations, e.g. in Germany the Technical Regulations of the DVGW (DVGW-TR-GI).

The following must be observed for Switzerland: SVGW Gas Provisions G1, G3: Gas installation EKAS Form.

1942: Liquefied gas regulation, Part 2 Regulations of cantonal authorities (e. g. fire department regulations).

The gas pipe must be designed to conform to the flow rate and the available gas flow pressure and routed with the lowest pressure loss over the shortest distance to the burner.

The loss of gas pressure via the gas train and the burner as well as the resistance on the fuel gas side of the heat generator must be less than the connection flow pressure.

Caution !

Observe sequence and through-flow direction of valves and fittings.



3 Maintenance and customer service

The complete system should be checked once a year for proper functioning and leak tightness by an authorised representative of the manufacturer or by another expert.

Only qualified personnel may open only for maintenance, not during on-going operation. Prior to opening/swinging out, de-energise the burner and let it cool down. After completion of work, close the burner again.

Wear protective clothing/hearing protection when working in the boiler house

We accept no liability for consequential damage in cases of incorrect installation or repair, the fitting of non-genuine parts or where the equipment has been used for purposes for which it was not intended.

4 Operating instructions

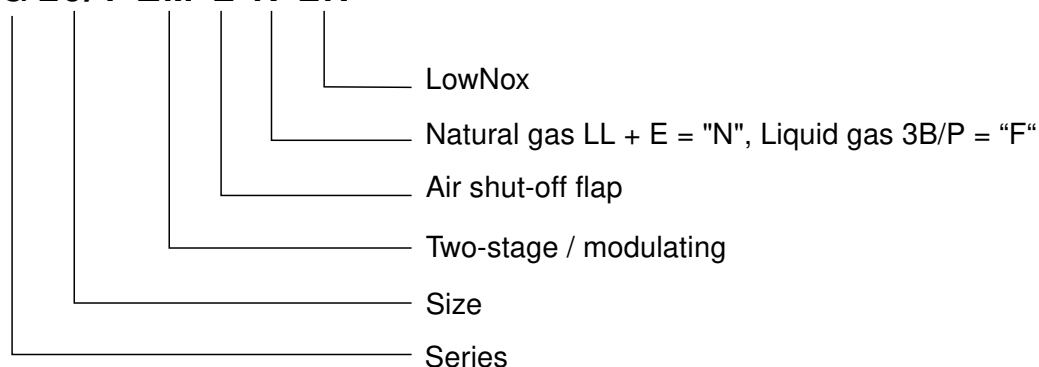
The operating instructions together with this technical information leaflet must be displayed in a clearly visible position in the boiler room. The address of the nearest customer service centre must be displayed on the back of the operating instructions.

5 Instruction of operating personnel

Failures are often caused by operator error. The operating personnel must be properly instructed in how the burner works. In the event of recurring faults, Customer Service should be notified.

6 Key for code designation

MG 20/1-ZM-L-N-LN

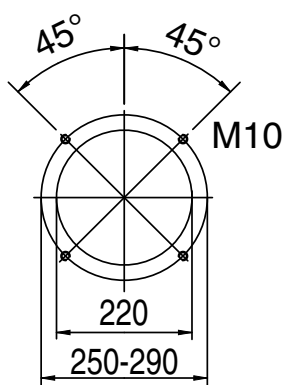


7 Technical specifications

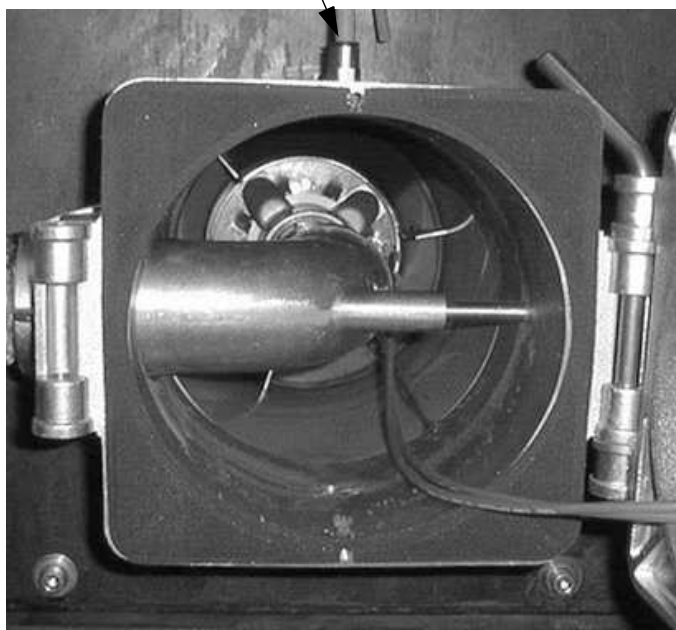
Technical specifications	Burner type	
	MG20/1-ZM-L-LN	MG20/2-ZM-L-LN
Burner output in kW	224 - 860	247 - 1350
Gas type	Natural gas LL + E= "N", liquid gas 3B/P = "F"	
Mode of operation	Progressive two-stage or modulating	
Voltage	3 / PE ~50 Hz 400 V / T16 A	
Max. power consumption at start / during operation	6.5 A max./ 3.6 A eff.	8.0 A max./ 4.6 A eff.
Electric motor power (at 2800rpm) in kW	1.1	2.2
Flame control	Ionisation	
Burner management system	LMV27	
Weight in kg	56	58
Noise emission in db(A)	≤ 78	≤ 78
Gas burner class	3	
NOx limit	≤ 80 mg/kWh	

8 Boiler connection dimensions

Dimensions in mm



Air pressure connection



9 Mounting the gas jacket on the boiler

The boiler connection plate must be prepared according to the dimensions specified for the boiler connection dimensions. You can use the gas-jacket gasket as a template.

Screw the gas jacket to the boiler using the four M10 fastening screws with washers and a size Allen key. The air pressure switch for the gas train must be at the top.

10 Mounting the burner housing on the gas jacket (service position)

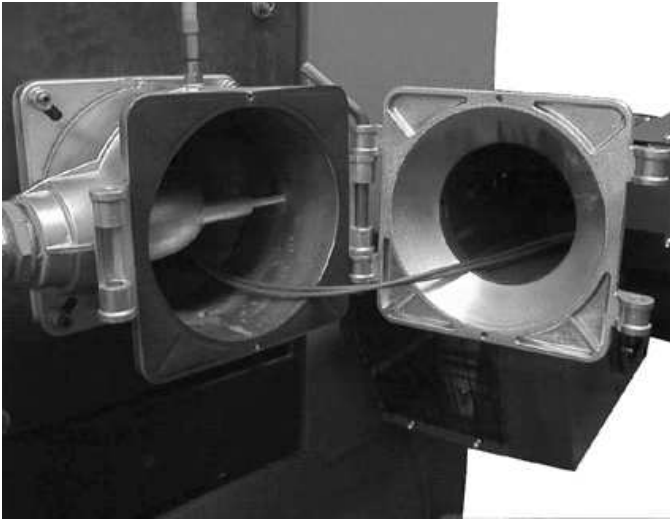
Position the burner housing in the gas-jacket hinge and secure it with a rod. The burner is now in the service position.

Attach the ignition and ionisation cable to the ignition and ionisation electrodes.



**Carefully swing the burner closed.
Do not pinch electrical cables.**

Insert the second mounting rod into the hinge. Tighten the screw at the top to secure the burner in position.



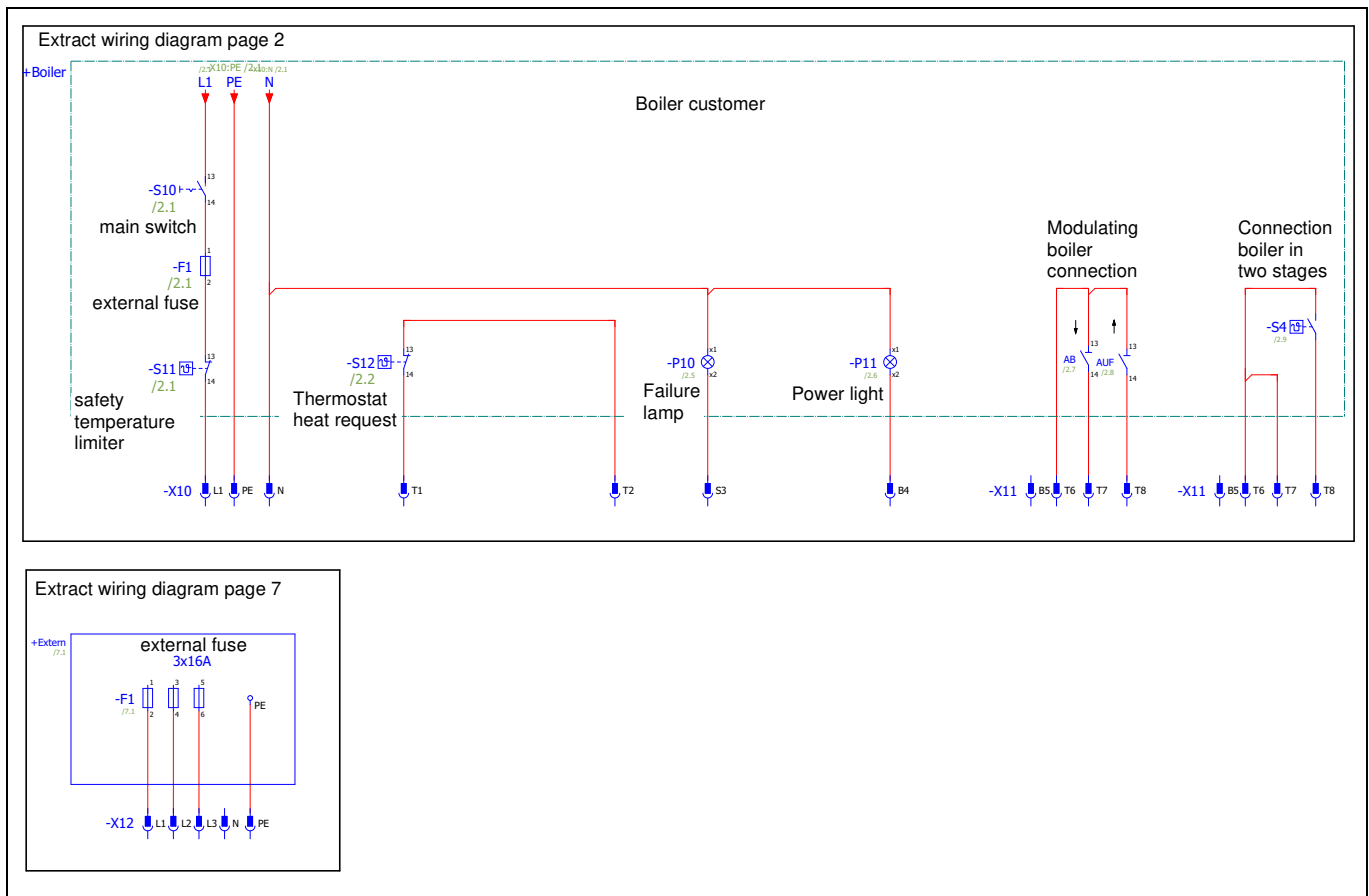
11 Terminal diagram - connector pin assignments



If the male connector has already been wired: check the connections according to the connection diagram!

The electrical connection of the burner must be made in the male connector included according to the connection diagram, taking account of the local regulations.

The supply cable must be fused with max. 10 A fast blow or 6.3 A slow blow and must be routed using flexible cable.



12 Electrical connection

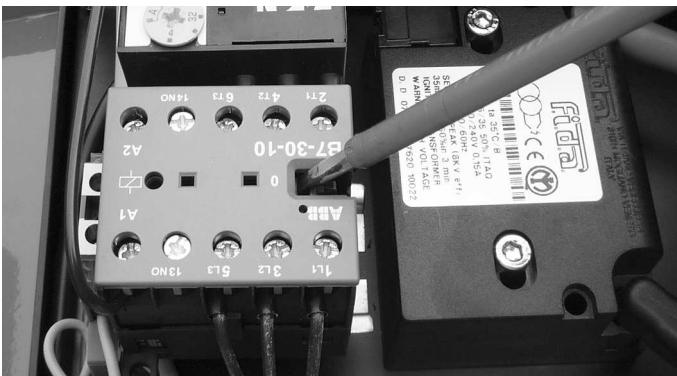


De-energise the burner when carrying out connection work and removing electrical parts!

The burner must be connected to the electricity supply in accordance with the wiring diagram. This work must be performed by trained, qualified electricians. The supply cable to the burner must be of the flexible type.



To access the firing unit, the cover must be brought to the service position. To do this, remove the securing screws (1) and fold the cover down to the left.



After wiring has been completed, check the direction of rotation of the burner motor by actuating the motor contactor with an insulated screwdriver.

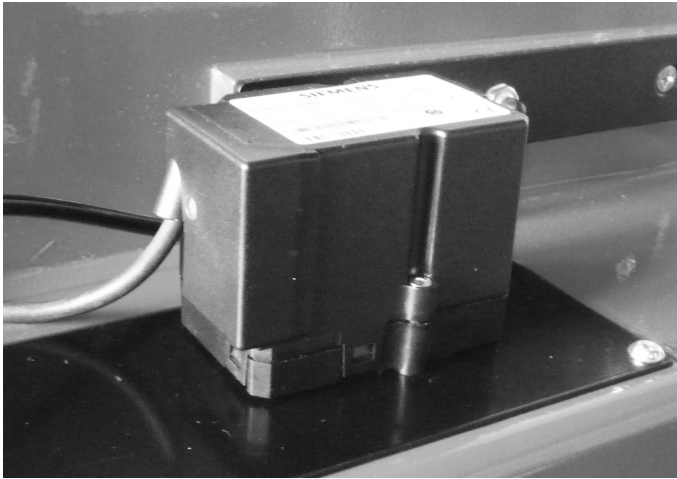
The direction of rotation is correct when the fan wheel turns towards the boiler (also see arrow on the motor flange).

IMPORTANT !



The motor protection relay is set at the factory. The set value should not be modified.

13 Air flap positioning motor



The air flap positioning motor is designed for air flap adjustment on progressive two-stage burners or modulating burners. The motor is activated electronically via the microprocessor-controlled control box.



Do not open the air flap actuator while it is under voltage. The internal optics would be destroyed. No warranty if the seal is broken!

14 Air pressure monitor

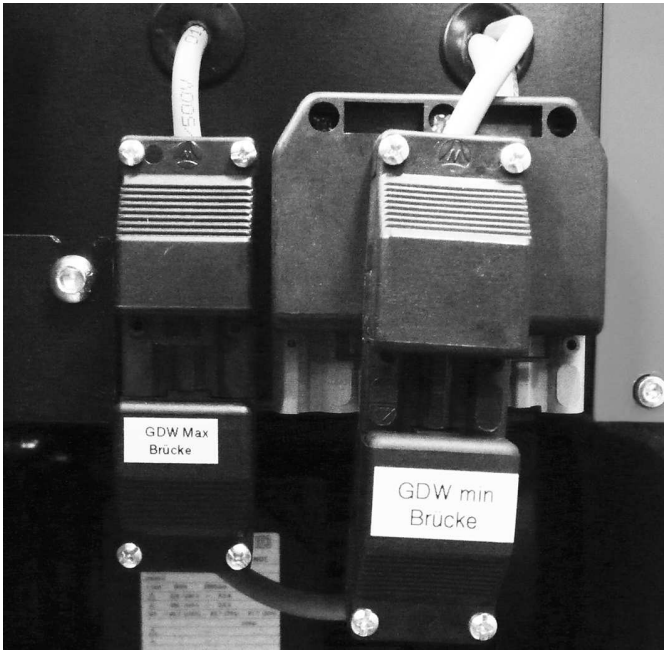


The air pressure switch is a differential pressure switch and monitors the air pressure at the forced-air burner.

The air pressure switch is pre-set at the factory.

15 Gas pressure monitor

15.1 Gas pressure switch min.



The **gas pressure switch MIN** at the gas fitting serves to monitor the gas inlet pressure. If the minimum gas inlet pressure is not reached (factory setting), the burner is switched off. The burner automatically starts again when the minimum pressure is exceeded. The gas pressure monitor as **density control DK** generally serves to check the valves and must be set to 50% of the static gas inlet pressure.

The monitoring of the gas inlet pressure and the tightness control are either carried out only with the gas pressure monitor DK (**the jumper GDW MIN must not be removed**) or with the gas pressure switch MIN and the gas pressure switch DK (**the GDW MIN jumper has to be replaced with the connection of the gas pressure switch MIN**).

When using the gas cycle MB-VEF 412, the connection is made via the 7-pin connector and is only evaluated as DK MIN. The plug bridge must not be removed



Additional parameterization of the LMV is not required here.

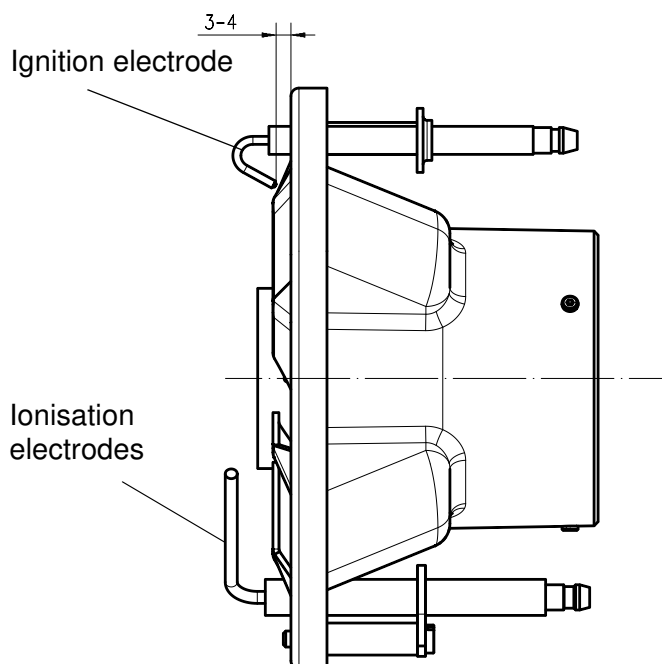
15.2 Gas pressure monitor max.

Optionally a gas pressure switch max. can be incorporated.

The LMV and the wiring have been prepared such that only the jumper in the socket part (brown) at the burner needs to be removed. In addition, the male connector and the gas pressure switch max. must be wired in accordance with the circuit diagram. If the gas pressure switch max. has tripped, a fault is shown in the display (AZL).

First, the gas pressure switch max. must be unlocked; to do this the lid of the gas pressure switch max. must be unscrewed and the red button pressed.

Then, the fault in the display can be deleted (press the **i/reset** button for 3 sec.).



16 Set the electrodes

The electrodes are preset at the factory.

17 Flame monitor with ionisation control

If an AC current is applied between the burner and the ionisation rod, a DC current flows due to the rectifying effect of the flame. This ionisation current forms the flame signal and is amplified and passed to control box. A flame cannot be faked because the rectifying effect no longer works if there is a short-circuit between the sensor electrode and the burner.

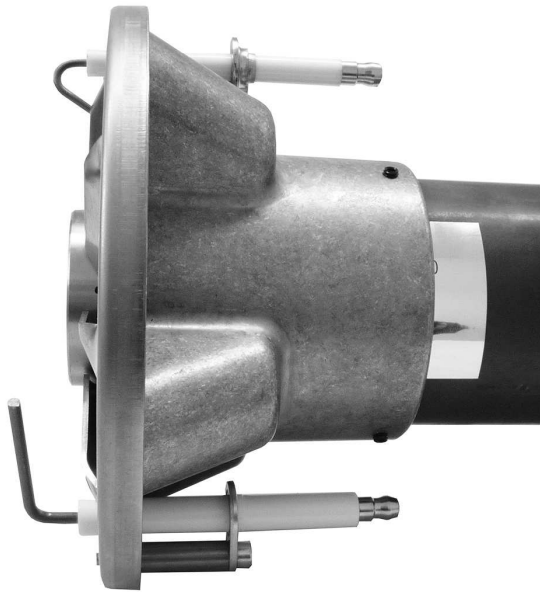
Measuring the ionisation current

The ionisation current must be measured during burner start-up and maintenance or after a fault indication in the control box. This done by disconnecting the plug in the ionisation cable and connecting it to the ionisation measuring cable.

The measurement must be carried out directly after post-ignition during the safety time!

The ionisation current must be at least 1.5 μA . Values below 1.5 μA will result in unreliable operation or a direct fault shut-down. In this case, the ionisation rod and the baffle plate must be cleaned. Bend ionisation rod if necessary. If the ionisation rod is defective, replace it. Possibly reverse the polarity of the ignition transformer on the primary side. Check the cable for moisture and dry it if necessary.

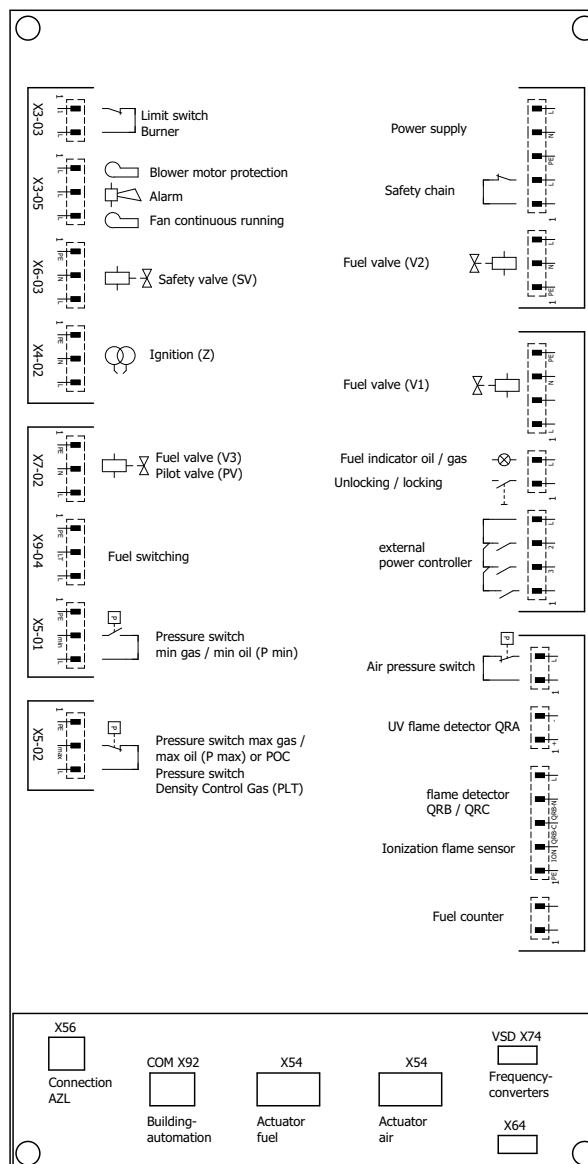




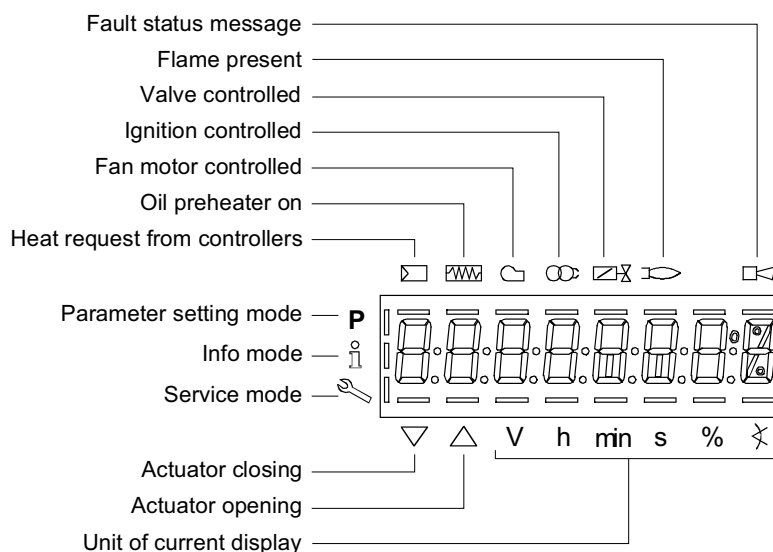
18 Adjustment of the mixer head



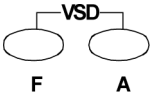



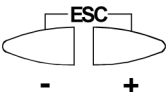
Set the position of the mixer head according to burner output in accordance with the table on page 23ff.

19 Connection diagram LMV27/37 (continuous load)



20 Operating instructions and equipment description LMV



Button	Function
 F	F button - To adjust the fuel drive (Hold down the F button and set the value with the - or + button)
 A	A button - To adjust the air drive (Hold down the A button and set the value with the - or + button)
 F A	F and A button - To shift to parametrisation mode P (F and A button press simultaneously with - or + button) - To adjust the speed for frequency converter operation (FC) (F and A button press simultaneously with - or + button)
 i/reset	Information and enter button - To navigate in information and service mode * Selection (flashing symbol) increment (press button < 1 s) * To switch to a lower menu level (press button < 1 ... 3 s) * To switch to a lower menu level (press button < 3 ... 8 s) * To switch the operating mode (press button > 8 s) - Enter in parametrisation mode - Unlock in case of fault - One menu level down
 -	- Button - Reduce value - For navigating in curve setting, information and service mode
 +	+ Button - Increase value - For navigating in curve setting, information and service mode
 - +	- and + button: Escape function (Press - and + button simultaneously) - Do not accept the value - One menu level higher

21 Start-up and calibration

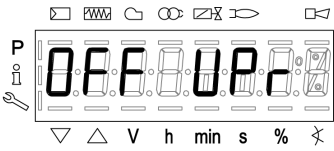
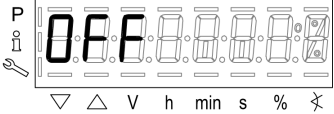
Determine the burner output according to the table on page 23 ff. P0 = Start stage, P1 = 1st stage / min. output, P9 = 2nd stage / max. output.

Normally, P0 = P1. For the condensing boiler, P0 must be set higher than P1. The setting is dependent on the boiler. The mixer head must be set according to the table.

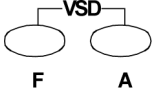
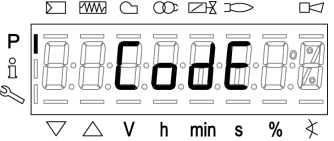
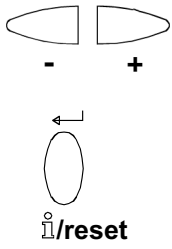
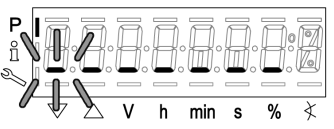


To enter this adjustment mode, the burner must be on standby.

Standby means that the burner is supplied with voltage, gas pressure is built up and there is no demand for heat.

The firing managers are parametrized in the factory. OFF UPr appears in the display during first start-up.

Action button	Display	Description
		OFF UPr means burner off and non-programmed.
		OFF means burner off and programmed.


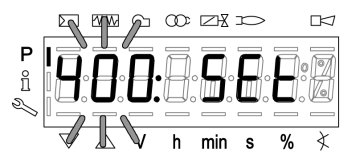

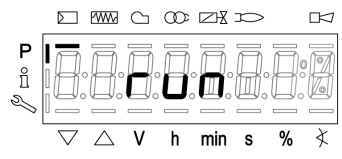
Enter password

Action button	Display	Description
		Press F and A button simultaneously. The display CodE appears
		After releasing the buttons, 7 bars appear and the first one flashes. Use the - or + button to select a number or letter. Confirm each value with i/reset .
		Confirm the password 1234 with i/reset after the last input.
		After correct input, the following appears for a max. of two seconds

Switch on the burner

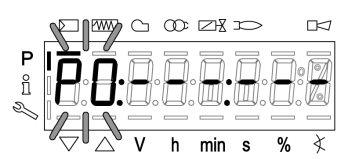

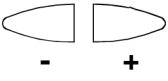
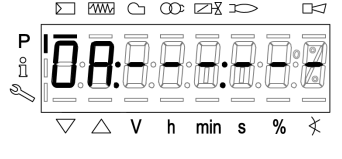

Continuous heat requirement is necessary for further start-up!

LMV programmed

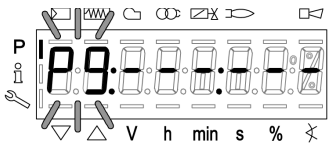
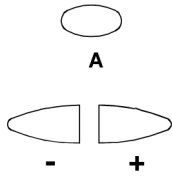
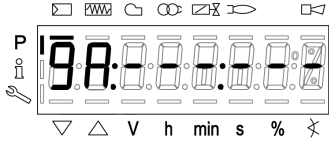

Action button	Display	Description
 i/reset		
 i/reset		<p>When the firing machine is programmed, run is displayed.</p> <p>i/reset skips the next steps and continues at the section Start heat settings with curve point P1 Small load.</p>

Start load preset

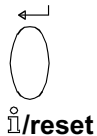
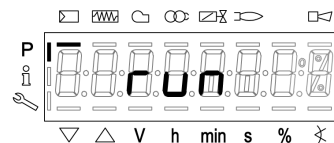

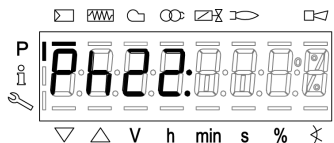


Use the values from the setting tables to preset the values.


Action button	Display	Description
		Set the start position air flap.
 A  - +		Hold down button A and set the value with the - or + button.
 +		Move to the next curve point.

High load preset




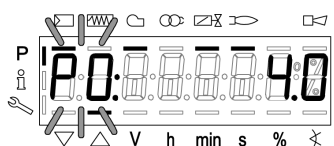

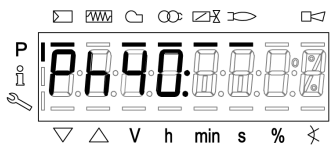
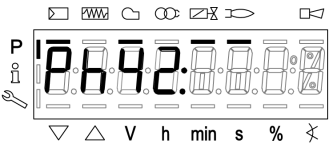
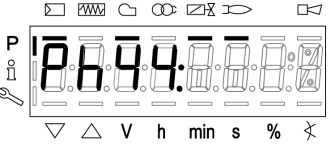


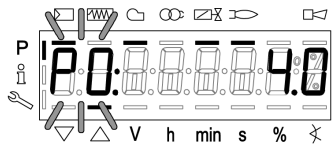

Action button	Display	Description
		Set the high load air flap.
		Hold down button A and set the value with the - or + button .
		Move to the next curve point.



Start identifier for curve programming - Calibration with flame

Action button	Display	Description
		When heat demand is present. Confirm with i/reset button .
		Burner start with pre-ventilation.
		Blower start-up and safety valve ON
		Run in pre-ventilation position
		Pre-ventilation
If the leakage check is activated, Ph80, Ph81, Ph82 and Ph83 are displayed first.		





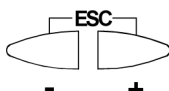
Action button	Display	Description
		Driving in ignition position

Start heat setting

Action button	Display	Description
 A  - +  +		<p>The ignition position P0 cannot be set until the symbols ▼▲ disappear.</p> <p>Hold down A button a set the value with the - or + button. Press + button to confirm.</p>
		Ignition ON
		Valves ON
		Ignition OFF
		Flame in start position
 A  - +		<p>When transferring P1 to P2 for the first time, CALC appears briefly</p> <p>The curve points P2 to P9 are calculated automatically as a straight line.</p>
 +		<p>Use + button to confirm all curve points up to curve point P9.</p> <p>In curve point P9, set the excess air for the high load at the gas train using the adjusting screw "V" or "large flame" . The CO₂ value should be 9-10% for natural gas.</p>

Action button	Display	Description
		Use the - button to select curve point P1 . In curve point P1 , set the excess air for the high load at the gas train using the adjusting screw " N " or " small flame ". The CO2 value should be 9-10% for natural gas.
		Use the + button to select curve point P9 again. In curve point P9 , check the excess air for the high load at the gas train and correct using the adjusting screw " V " or " large flame ".

Setting the output in high and low-load operation

Action button	Display	Description
 		Check the high-load setting via the gas flow at the gas meter or compare the nozzle pressure with the values stated in 24. Adjustment tables. Hold down A button and use the - or + button to set the output for curve point P9 . The air surplus is not affected by this adjustment.
		Use the - button to select curve point P1. Check the small-load setting via the gas flow at the gas meter or compare the nozzle pressure with the values stated in 24. Adjustment tables.
		Back to curve point P9
		After setting all curve points, the burner is ready for operation. Press the ESC button briefly 3x to save all curve points and access automatic mode.

LMV phase display

Display	Description
Ph00	Fault phase
Ph01	Safety phase
Ph10	Go home
Ph12	Standby (stationary)
Ph22	Blower start-up time (blower motor = ON, safety valve = ON)
Ph24	Run in pre-air position
Ph30	Pre-air time
Ph36	Run in ignition position
Ph38	Pre-ignition phase
Ph39	Leakage check filling time (test pressure switch min for installation between fuel valve 1 and fuel valve 2)
Ph40	First safety time (ignition transformer ON)
Ph42	First safety time (ignition transformer OFF)
Ph44	Interval 1
Ph50	Second safety time
Ph52	Interval 2
Ph60	Operation 1 (stationary)
Ph62	Maximum time small-load setting (operation 2, preparation decommissioning, run in small-load setting)
Ph70	After-burn time
Ph72	Run in post-ventilation position
PH74	Post-ventilation time (no external leak test)
Ph78	Post-ventilation time (abort when power controller ON)
Ph80	Leakage check idle time
Ph81	Leakage check test time atmospheric pressure, atmosphere test
Ph82	Leakage check filling test, filling
Ph83	Leakage check test time gas pressure, pressure test
Ph90	Gas shortage waiting time

22 Gas burner with gas train

Installation of the gas train	
Installation position	only in horizontal line, not tilted.
Minimum distance to masonry	20 mm

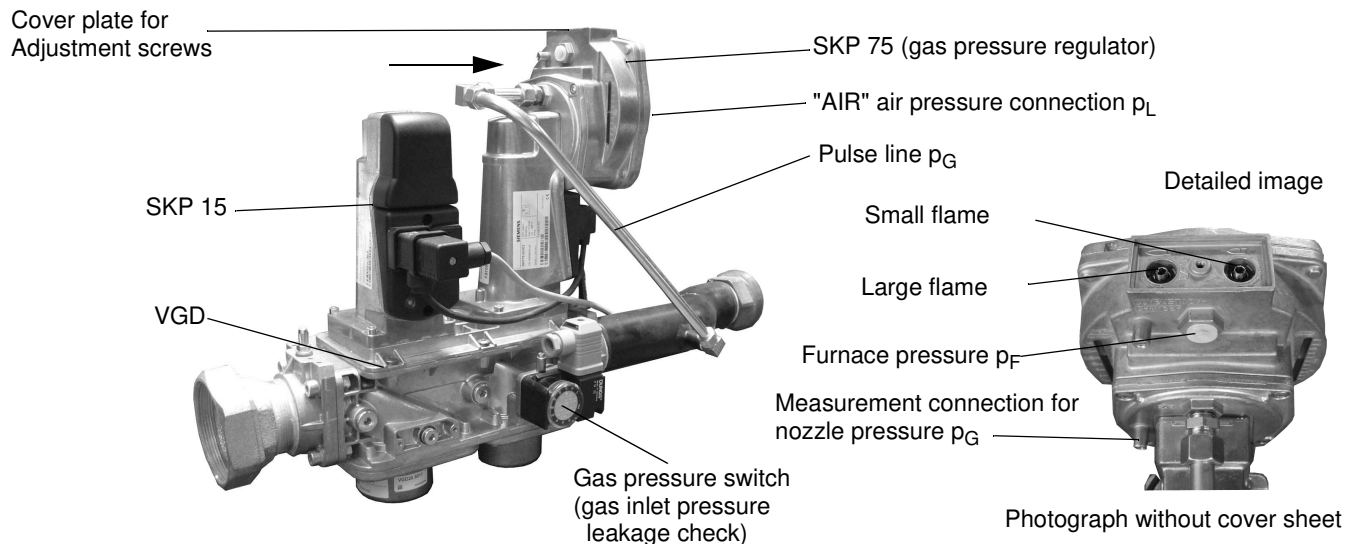
The nipple for the compressed air connection P_L must be screwed in at the top of the gas jacket (see 9. Mounting the gas jacket at the boiler).

Connect the blue hose at the "AIR" connection of the gas train and at the air pressure connection at the gas jacket. The blue hose serves as a control line for the gas train and must be routed in a loose loop without kinking.

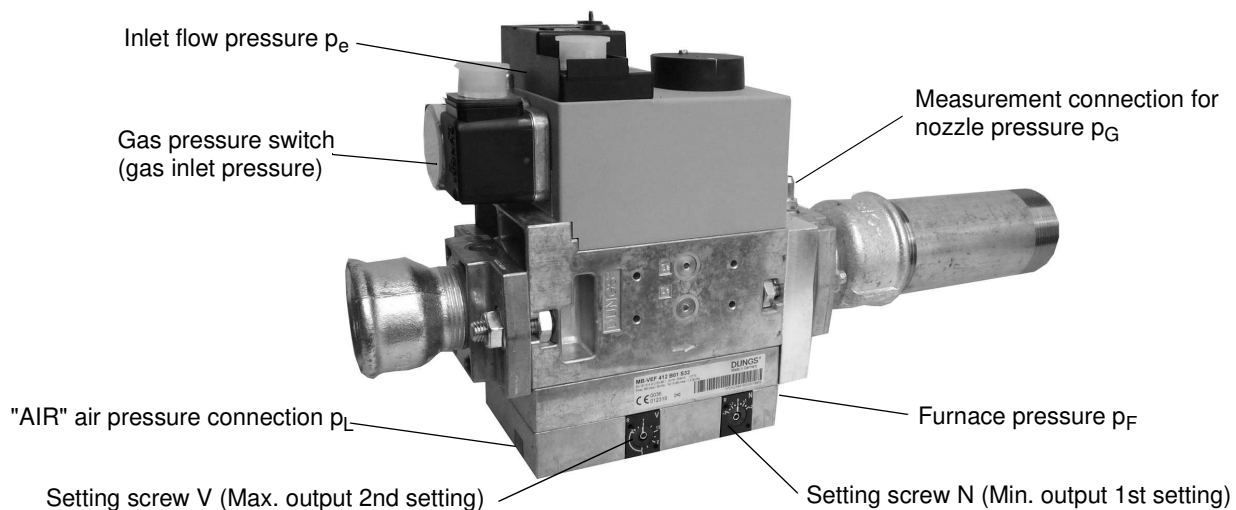
Burner start:

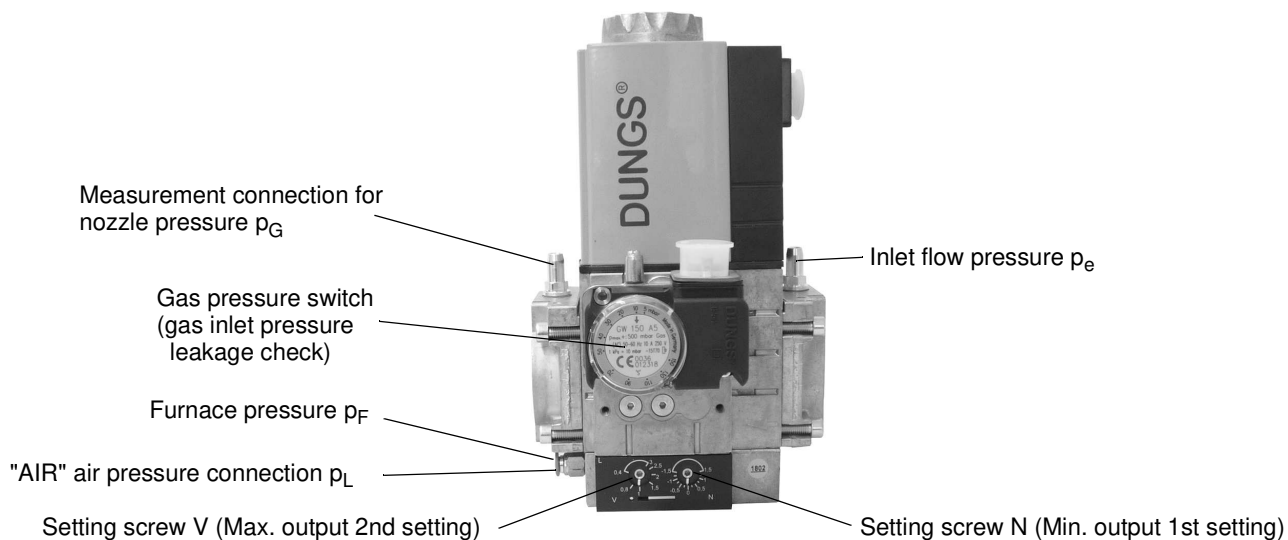
If the burner does not go into operation, turn adjusting screw **N** or small flame slightly in the direction "+" and repeat start.

KEV 1 ½", KEV2", KEV DN65 (VGD20.40, VGD20.50, VGD40.65 all SKP15/75).



KEV412 1 ½"(MB-VEF 412)



KEV 300 1" (MBC-300-VEF)

Large flame / "V" setting	Exhaust gas analysis values	
Change in "+" direction if:	CO ₂ too low	O ₂ too high
Change in "-" direction if:	CO ₂ too high	O ₂ too low

Small flame / "N" setting	Exhaust gas analysis values	
Change in "+" direction if:	CO ₂ too low	O ₂ too high
Change in "-" direction if:	CO ₂ too high	O ₂ too low

**Caution !**

Difference between baffle plate pressure p_L - furnace pressure p_F must be at least 0.3 mbar.

23 Calculation principles for gas burner adjustment

The values given in the tables are setting values for start-up.

The necessary system adjustment must be newly determined in each case.

General:

The calorific value ($H_{i,n}$) of fuel gases is generally specified for the normal state (0°C, 1013 mbar).

Natural gas type E $H_{i,n} = 10.4 \text{ kWh/m}^3$

Natural gas type LL $H_{i,n} = 9.3 \text{ kWh/m}^3$

Gas counters measure the volume of gas in the operational state.

Gas flow determination:

To allow the heat generator load to be adjusted correctly, the gas flow rate must be determined in advance.

Example:

Height above sea level	230 m
Atmospheric pressure B (acc. to Tab.)	989 mbar
Gas pressure P_G at gas meter	20 mbar
Gas temperature ϑ_G	16°C
Boiler output Q_n	220 kW
Efficiency η_K (assumed)	92%
Calorific value $H_{i,n}$	10.4 kWh/m ³

Gas flow in standard state (V_n)

$$V_n = \frac{Q_n}{\eta_K \times H_{i,n}} = \frac{220 \text{ kW}}{0,92 \times 10,4 \frac{\text{kWh}}{\text{m}^3}} = 23 \frac{\text{m}^3}{\text{h}}$$

Gas flow in operating state (V_B)

$$V_B = \frac{V_n}{f} = \frac{23 \frac{\text{m}^3}{\text{h}}}{0,94} = 24 \frac{\text{m}^3}{\text{h}}$$

Conversion factor (f)

$$f = \frac{B + P_G}{1013} \times \frac{273}{273 + \vartheta_G}$$

Annual average air pressure

Average geodetic altitude of the supply region above sea level [m]	from to	0	1 50	51 100	101 150	151 200	201 250	251 300	301 350	351 400	401 450	451 500	501 550	551 600	601 650	651 700	701 750
Annual average of air pressure	(mbar)	1016	1013	1007	1001	995	989	983	977	971	965	959	953	947	942	936	930

Legend:

Q_n =	boiler output [kW]
η_K =	efficiency [%]
$H_{i,n}$ =	lower standard calorific value [kWh/m ³]
f =	conversion factor
B =	atmospheric pressure [mbar]
P_G =	gas pressure at gas meter [mbar]
ϑ_G =	gas temperature at gas meter [°C]



The values given in the tables are only setting values for start-up. The necessary system adjustment must be newly determined in the case of deviating data such as boiler output, calorific value and altitude.

A correction is required in any case.

The maximal burner output can only be achieved in mixing head position 0. Due to the variable mixing head position, the operating behaviour of the burner can be optimised for different heat generators.

						MG20/1-ZM-L-LN								MG20/2-ZM-L-LN			
						Natural gas LL $H_{i,n} = 9.3 \text{ [kWh/m}^3\text{]}$				Natural gas E $H_{i,n} = 10.4 \text{ [kWh/m}^3\text{]}$				LPG $H_{i,n} = 25.89 \text{ [kWh/m}^3\text{]}$			
						Gas nozzle pressure [mbar]		Gas flow rate [m ³ /h]		Gas nozzle pressure [mbar]		Gas flow rate [m ³ /h]		Gas nozzle pressure [mbar]		Gas flow rate [m ³ /h]	
Burner output [kW]		Boiler output $\eta = 92\%$ [kW]	Air flap position [°]		Burner heat pos. [mm]												
Stage 2	Stage 1		Stage2	Stage1		Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1
450	224	419	26.0	9	22	7.3	2.1	49.9	24.8	5.7	1.6	44.6	22.2	7.4	2.0	17.4	8.7
520	260	484	33.0	12	22	9.6	2.7	57.6	28.8	7.5	2.1	51.5	25.8	9.5	2.7	20.1	10.0
600	300	558	40.0	14	22	12.0	3.5	66.5	33.3	9.4	2.7	59.5	29.7	12.1	3.6	23.2	11.6
740	370	688	90.0	19	22	14.7	5.0	82.0	41.0	11.5	3.9	73.4	36.7	17.4	5.2	28.6	14.3
560	280	521	30.5	13	10	7.9	2.7	62.1	31.0	6.2	2.1	55.5	27.8	9.4	2.9	21.6	10.8
640	320	595	36.0	17	10	10.3	3.5	70.9	35.5	8.1	2.7	63.4	31.7	11.8	3.6	24.7	12.4
760	380	707	51.0	21	10	14.5	4.8	84.2	42.1	11.3	3.8	75.3	37.7	16.0	4.8	29.4	14.7
813	410	756	90.0	22.5	10	16.2	5.2	90.1	45.4	12.7	4.1	80.6	40.6	18.0	5.5	31.4	15.8
600	300	558	30.0	10	0	9.1	2.8	66.5	33.3	7.1	2.2	59.5	29.7	9.0	2.9	23.2	11.6
680	340	632	34.0	13	0	11.2	3.5	75.4	37.7	8.8	2.7	67.4	33.7	11.3	3.5	26.3	13.1
780	390	725	44.0	17	0	14.3	4.3	86.5	43.2	11.2	3.4	77.3	38.7	14.5	4.3	30.1	15.1
860	430	800	90.0	20	0	17.4	5.0	95.3	47.7	13.6	3.9	85.2	42.6	17.4	5.1	33.2	16.6

						MG20/2-ZM-L-LN								MG20/2-ZM-L-LN			
						Natural gas LL $H_{i,n} = 9.3 \text{ [kWh/m}^3\text{]}$				Natural gas E $H_{i,n} = 10.4 \text{ [kWh/m}^3\text{]}$				LPG $H_{i,n} = 25.89 \text{ [kWh/m}^3\text{]}$			
Burner output [kW]		Boiler output $\eta = 93\%$ [kW]	Air flap position [°]		Mixer head position [mm]	Gas nozzle pres- sure [mbar]		Gas flow rate [m ³ /h]		Gas nozzle pres- sure [mbar]		Gas flow rate [m ³ /h]		Gas nozzle pres- sure [mbar]		Gas flow rate [m ³ /h]	
Stage 2	Stage 1		2nd stage P 9	1st stage P 1		Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1
440	220	405	22	9	22	4.9	1.3	48.8	24.6	3.8	1.0	43.6	22.0	4.3	1.6	17.0	8.5
600	300	552	30	13	22	6.9	2.5	66.5	33.3	5.4	2.0	59.5	29.7	7.5	2.4	23.2	11.6
800	400	736	40	20	22	12.8	4.2	88.7	44.3	10.0	3.3	79.3	39.7	12.8	3.7	30.9	15.4
1000	500	920	90	25	22	19.6	5.2	110.9	55.4	15.3	4.1	99.1	49.6	19.5	5.4	38.6	19.3
500	250	460	25	9	10	5.0	1.2	55.4	27.5	3.9	0.9	49.6	24.6	4.5	1.5	19.3	9.7
660	330	607	32	17	10	7.0	3.0	73.2	36.6	5.5	2.3	65.4	32.7	7.4	2.2	25.5	12.7
860	430	791	41	22	10	13.0	4.2	95.3	47.7	10.2	3.3	85.2	42.6	12.3	3.4	33.2	16.6
1080	540	994	90	27	10	20.3	5.3	119.7	59.9	15.9	4.1	107.1	53.5	19.2	5.1	41.7	20.9
600	300	552	21	10	0	5.1	1.4	66.5	33.3	4.0	1.1	59.5	29.7	4.9	1.5	23.2	11.6
800	400	736	26	14	0	8.6	2.4	88.7	44.3	6.7	1.9	79.3	39.7	8.6	2.4	30.9	15.4
1100	550	1012	43	19	0	16.0	4.9	121.9	61.0	12.5	3.8	109.0	54.5	16.2	4.2	42.5	21.2
1350	680	1242	90	24	0	24.6	6.3	149.7	75.4	19.2	4.9	133.8	67.4	24.5	6.2	52.1	26.1

25 Error code list LMV

loc.C:	loc.d:	Description	Measure
		No communication between basic unit LMV27... and AZL2...	Check wiring for interruptions/loose contacts
2	1 - 4	No flame at the end of the safety time	
3	0 - 84	Compressed air fault	No compressed air
4	0 - 86	External light	
7	0 - 255	flame cut-off	
12	0	Fuel valve 1 leaking (fuel valve 2 for leakage check 9	For leakage check via X5-01 (gas pressure switch min) - Check whether valve on burner side is leaking - Check whether pressure switch for leakage check is closed when gas pressure is applied - Check wiring for short-circuit
	1	Fuel valve 2 leaking (fuel valve 1 for leakage check via X5-01)	For leakage check via X5-01 (gas pressure switch min) - Check whether valve on gas side is leaking - Check wiring for short-circuit
	2- 5	Leakage check not possible	Leakage check activated but no input assigned
	81	V1 leaking	Check whether valve on gas side is leaking Check the wiring for interruptions
	83	V2 leaking	Check whether the valve on the burner side is leaking Check whether the pressure switch for the leak test is closed when gas pressure is applied Check wiring for short-circuit
14	0	POC open	Check whether valve NC contact is closed
	1	POC closed	Check wiring Check whether valve NC contact opens when the valve is activated
	64	POC open start prevention	Check wiring for interruptions Check whether valve NC contact is closed
19	80	Combustion pressure, POC start prevention	Check whether the pressure switch is closed without combustion pressure being present Check wiring for short-circuit
20	0 - 1	Pressure switch min no minimum gas pressure/oil pressure	Check wiring for interruption
21	0- 64	Pressure switch max/POC	Check wiring for interruption. POC: Check whether valve NC contact is closed
22 OFF S	0 - 87	Safety chain	
23	0 - 2	Gas pressure switch min (Pmin)	Check wiring for interruption (X5-01)
50 - 67	#	Internal error	
70	26 - 26	Error group	Set all curve points for gas and air actuators, and for the FC
71	0 - 3	Special position undefined	Parametrise actuators
75-84		Internal fault group	
85	0	Error group fuel drive	Referencing of fuel drive not possible. Unable to reach reference point. 1. Check whether the drives have been exchanged 2. Check whether the drive is blocked or over-loaded

loc.C:	loc.d:	Description	Measure
85	1	Error group air drive	Referencing of fuel drive not successful. Unable to reach reference point. 1. Check whether the drives have been exchanged 2. Check whether the drive is blocked or over-loaded
86	0 - 1	Error group fuel drive	Unable to achieve the target position within the required tolerance. -> Check whether the drive is blocked or over-loaded. A line break was detected at the drive connections. -> Check wiring (voltage X54 between Pin 5 or 6 and Pin 2 >0.5 V).
87	0 - 4	Error air drive	Unable to achieve the target position within the required tolerance. -> Check whether the drive is blocked or over-loaded. A line break was detected at the drive connections. -> Check wiring (voltage X53 between Pin 5 or 6 and Pin 2 >0.5 V).
90 - 92	#	Internal fault group	
93	3	Short-circuit of probe	Short-circuit at QRB... 1. Check wiring 2. Flame probe possible defective
95	3 Ignition transformer 4 Fuel valve 1 5 Fuel valve 2 6 Fuel valve 3	External supply NOC	Check wiring
96	3 Ignition transformer 4 Fuel valve 1 5 Fuel valve 2 6 Fuel valve 3	Relay welded	Measure the contacts: 1. Device at voltage: Blower output must be de-energised 2. Deactivated voltage: Disconnect blower. There must be no ohmic connection between blower output and N. If one of the two tests fails, replace the unit, since the contacts are definitely welded and safety can no longer be guaranteed.
97	0	Safety relay welded or external voltage at safety contact	Measure the contacts: 1. Device at voltage: Blower output must be de-energised 2. Deactivated voltage: Disconnect blower. There must be no ohmic connection between blower output and N. If one of the two tests fails, replace the unit, since the contacts are definitely welded and safety can no longer be guaranteed.
98	2 Safety valve 3 Ignition transformer 4 Fuel valve 1 5 Fuel valve 2 6 Fuel valve 3	Replay does not pick up	Unlock; if it recurs, replace the unit
99 - 250	#	Internal error	

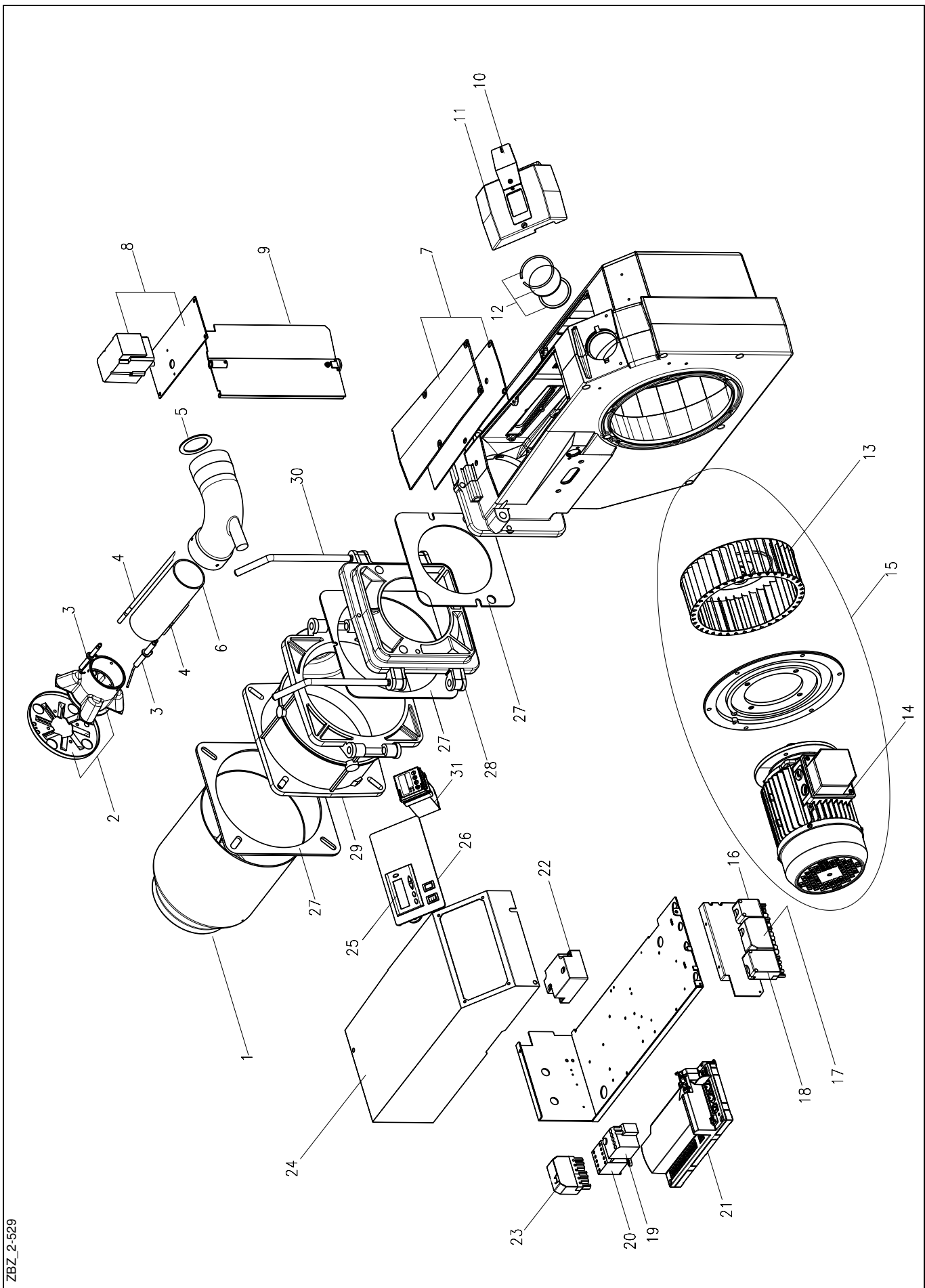
26 Adjustments log

Please enter the measured values into the Adjustments log.

Boiler type	Gas fitting

Measured values		min.	max.	Date
P0 (start point)				
P1 (min load)				
P9 (max load)				
Flue gas temperature	°C			
Carbon dioxide (CO ₂ level)	%			
O ₂ content	%			
CO level	%			
Flue	mbar			
Nozzle pressure	mbar			
Boiler pressure	mbar			
Room temperature	°C			
Gas type				
Setting value V at the fitting				
Setting value N at the fitting				

27 Exploded view drawing / spare parts list



ZBZ_2-529

Position	Designation	VE	Art. no.
1	Burner tube MG20/1-LN, 271 mm long	1	47-90-24880
1	Burner tube MG20/1-LN, 371 mm long (100 mm extended)	1	47-90-25260
1	Burner tube MG20/1-LN, 471 mm long (200 mm extended)	1	47-90-25261
1	Burner tube MG20/2-LN, 271 mm long	1	47-90-24878
1	Burner tube MG20/2-LN, 371 mm long (100 mm extended)	1	47-90-25258
1	Burner tube MG20/2-LN, 471 mm long (200 mm extended)	1	47-90-25559
2	Mixer head assembly with electrodes MG20-N-LN	1	47-90-28854
2	Mixer head assembly with electrodes MG20-F-LN	1	47-90-28858
3	Ignition and ionisation electrodes set	1	47-90-28857
4	Ignition and ionisation electrodes set	1	47-90-28880
4	Ignition and ionisation cable set, 100 mm extended	1	47-90-28881
4	Ignition and ionisation cable set, 200 mm extended	1	47-90-28882
5	Seal for gas nozzle MG20-LN	5	47-50-25500
6	Gas nozzle tube MG20	1	47-90-25037
6	Gas nozzle tube MG20, 100 mm extended	1	47-90-25037-01
6	Gas nozzle tube MG20, 200 mm extended	1	47-90-25037-02
7	Cover MG20 with seal	1	47-90-10698
8	Positioning drive SQN 13	1	47-90-29095
9	Air flap MG20	1	47-90-27030
10	Sight glass cover	5	47-50-12106
11	Hood MG20	1	47-90-24857
12	Inspection glass with seal	5	36-50-11544
13	Fan wheel Ø218 x 80 for MG20/1	1	36-90-11540-01
13	Fan wheel Ø224 x 82 for MG20/2	1	47-90-24847
14	Motor 1.1 kW 400 V / 50 Hz	1	47-90-29347
14	Motor 2.2 kW 400 V / 50 Hz	1	47-90-29691
15	Motor 1.1 kW cpl. with fan wheel	1	47-90-29240
15	Motor 2.2 kW cpl. with fan wheel	1	47-90-29692
16	4-pin receptacle, green	1	37-90-20774
17	7-pin receptacle, black/brown	1	37-90-20731
18	5-pin receptacle, black	1	37-90-20748
19	Thermal over-current relay 2.4 - 4,0 A for MG20/1	1	47-90-25172
19	Thermal over-current relay 4.0 - 6.0 A for MG20/2	1	47-90-25173
20	Small motor contactor B7-30-10	1	47-90-25171
21	Burner management system LMV 27.100A2	1	47-90-29079-02
22	Ignition transformer	1	47-90-24469
23	7-pin receptacle, green	1	37-10-10831
24	Electronic unit hood MG20	1	47-90-24852
25	Display and operating unit AZL 21.00A9	1	47-90-29098
26	Cover MG20-ZM	1	47-90-29089
27	Gasket set	1	47-90-26722
28	Gas jacket MG20 Part 2	1	44-90-30242
29	Gas jacket MG20 Part 1	1	44-90-30245
30	Mounting rod MG20	2	46-50-21085
-	Inlet nozzle	1	36-90-11541
-	Protective grid	1	47-90-10696
-	Bridges male connector 3-pol. brown gas max.	1	47-90-27382
-	Bridges male connector 3-pol. black gas min	1	47-90-27399
-	Female part 3-pol. brown	1	47-90-27203
-	Female part 3-pol. black	1	37-90-20739

28 Declaration of Conformity for Gas Burners



Enertech GmbH, Postfach 3063, 58662 Hemer

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Declaration of Conformity for Gas Burners

We, Enertech GmbH, Adjutantenkamp 18 in D-58675 Hemer declare under our responsibility that

gas burner type **MG20/..**

is conform with the regulations of these directives

MD2006/42/EG

EMC2014/30/EU

GAD 2016/426/EU

LVD2014/35/EU

MCP2015/2193/EU

RoHS 2011/65/EU

DIN EN 676

and is marked with:



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Hemer, 15.01.2018

ppa.

Wendel
Sales director

i.V.

Rebbe
Technical management

Art.-Nr. 89-10-80875 Druck-Nr. 4/2017

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Dr. Josef Wrobel

Amtsgericht Iserlohn
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DE 215685219

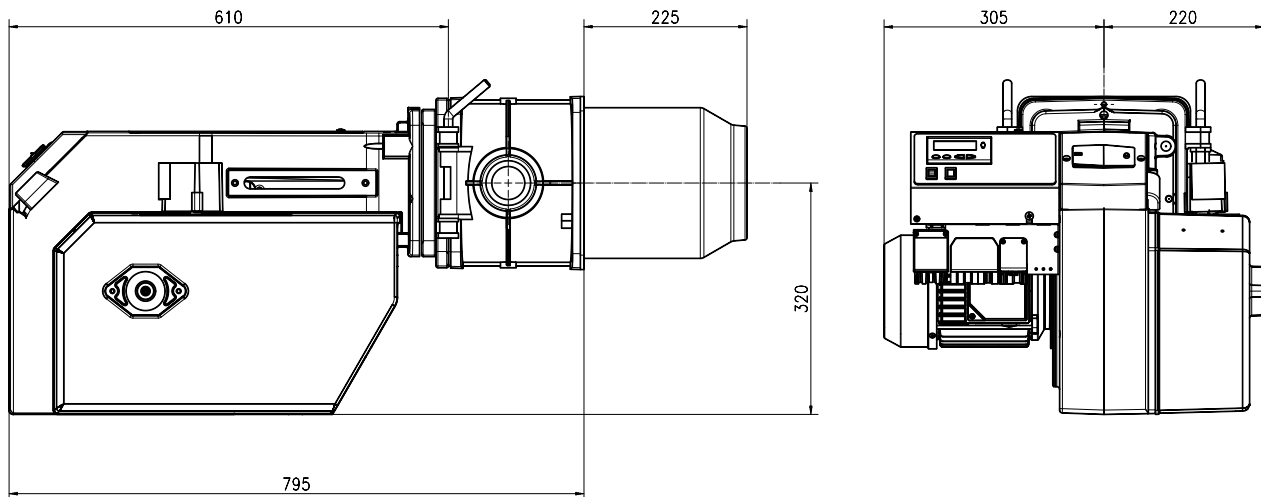
Hausanschrift
Adjutantenkamp 18
58675 Hemer

Lieferanschrift
An der Iserkühle 27
58675 Hemer

Bankverbindung
ENERTECH GmbH
IBAN: DE04 2032 0500 4989 1886 07
BIC: PARAF333XXX

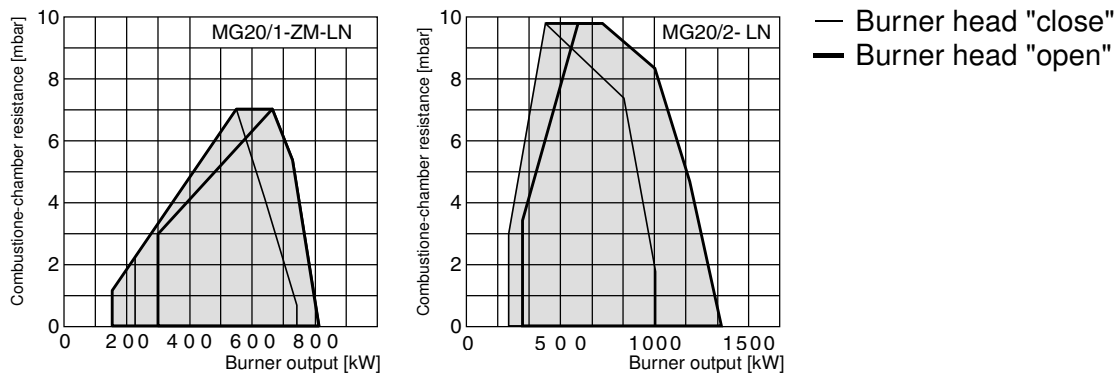
29 Dimensions

(all dimensions are given in mm)



Burner tube extension 100 mm and 200 mm

30 Working ranges



Working ranges acc. to DIN EN 676. The working ranges are referred to 15°C and 1013 mbar.

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Subject to alterations.

GIERSCH

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