GIERSCH

Technical Information • Installation Instructions

GG20-LN

Issued April 2024

In the interests of continuous product improvement, technical specifications are subject to change without prior notice!

Gas

CE

GB

Contents

E.04.99 • G. 11.04.24

Overview

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 familiar with all applicable regulations and requirements. 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. The GG10-LN series of gas burners are suitable for burning natural gas or liquefied petroleum
gas in accordance with DIN EN 437 and comply with the European Standard DIN EN 676.

Scope of delivery and connection data

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

Scope of delivery:
Burner, sliding flange and gasket, 4 retaining screws, separate operating instructions,
technical information, one 7-pin connector, gas ramp and gasket.

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

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 ramp and the burner, and the resistance on the fuel gas side of the heat generator must be less than the connection flow pressure.

Caution !
Observe the through-flow direction of the gas ramp.

Operating instructions

The operating instructions together with this technical information leaflet must be displayed in a clearly visible position in the boiler room. It is essential to enter the address of the nearest customer service centre in the operating instructions.

Instruction of operating personnel

Faults 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.

Maintenance and customer service

The complete system should be checked once a year for correct functioning and leaks by a representative of the manufacturer or other suitably qualified person.

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.

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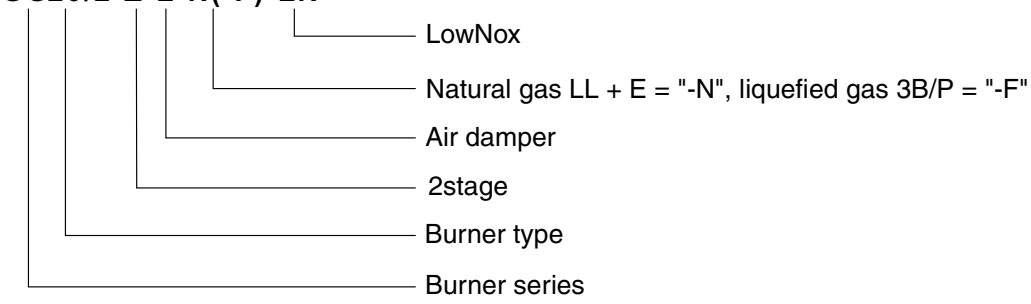
Key for code designation

GG20/2-Z-L-N(-F)-LN



Technical specifications

	Burner type	
Technical specifications	**GG20/1-Z-(M)-L-LN**	**GG20/2-Z-(M)-L-LN**
Product-ID-Nr.	CE-0085	
Burner output in kW	55 - 170	65 - 235
Gas type	Natural gas LL + E= "N", liquid gas 3B/P = "F"	
Gas inlet pressure with MB VEF 407 ¾“	20	
Gas inlet pressure with MBC 300 VEF 1“	20	
Gas inlet pressure with MB VEF 412 1“	20	
Mode of operation	Progressive two-stage or modulating	
Voltage	1 / N PE ~ 50 Hz 220 - 240 V	
Max. power consumption at start / during operation	1,9 / 1,3 A	3,9 / 2,6 A
Electric motor power (at 2800 rpm) in kW	0,18	0,37
Flame control	Ionisation	
Control box	LME22	
Weight in kg	15,0	18,7
Noise emission in db(A)	72	72
Gas burner class	5	
NOx limit	≤ 56 mg/kWh	

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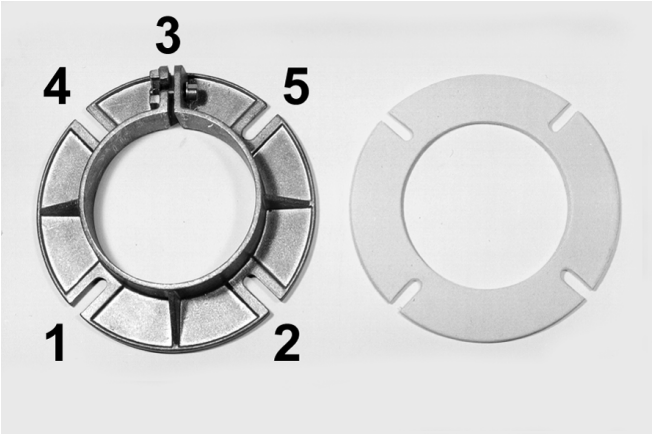


Installing flange and burner

Important: Secure the sliding flange so that the clamping screw 3 is positioned at the top.

When installing the sliding flange, only tighten screws 1 and 2 otherwise it will not be possible to secure the burner pipe with screw 3. Slide in the burner, adjust to furnace depth and tighten the screws in the following sequence: 3, 4, 5, raising the housing in the process.

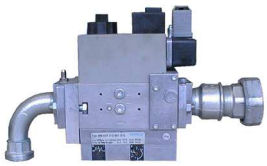
Checking electrode setting

- Move the burner into the service position as described on page 6.
- Check the setting of the ignition and ionisation electrodes (see page 11).

Installing gas assembly

- Remove plastic protective plug.
- Install unions including accompanying seals.
- Observe installation position.

Installation position MB...



Installation position MBC...

Installation position CG...

- Connect the blue hose to connection pL and measuring nipple for air pressure on the burner base plate.
  If this connection is not made, the solenoid valves will not open.
- Check the connection point of the gas ramp for leaks using foaming check for leaks using foaming agents that do not cause corrosion and vent the gas line.
- When venting, safely discharge the gas outside using a hose.

Installation of the gas ramp	
Installation position vertical cable	any
Installation position horizontal cable	Tilted up to a maximum of 90° to the left or right, not overhead
Minimum distance to masonry	20 mm

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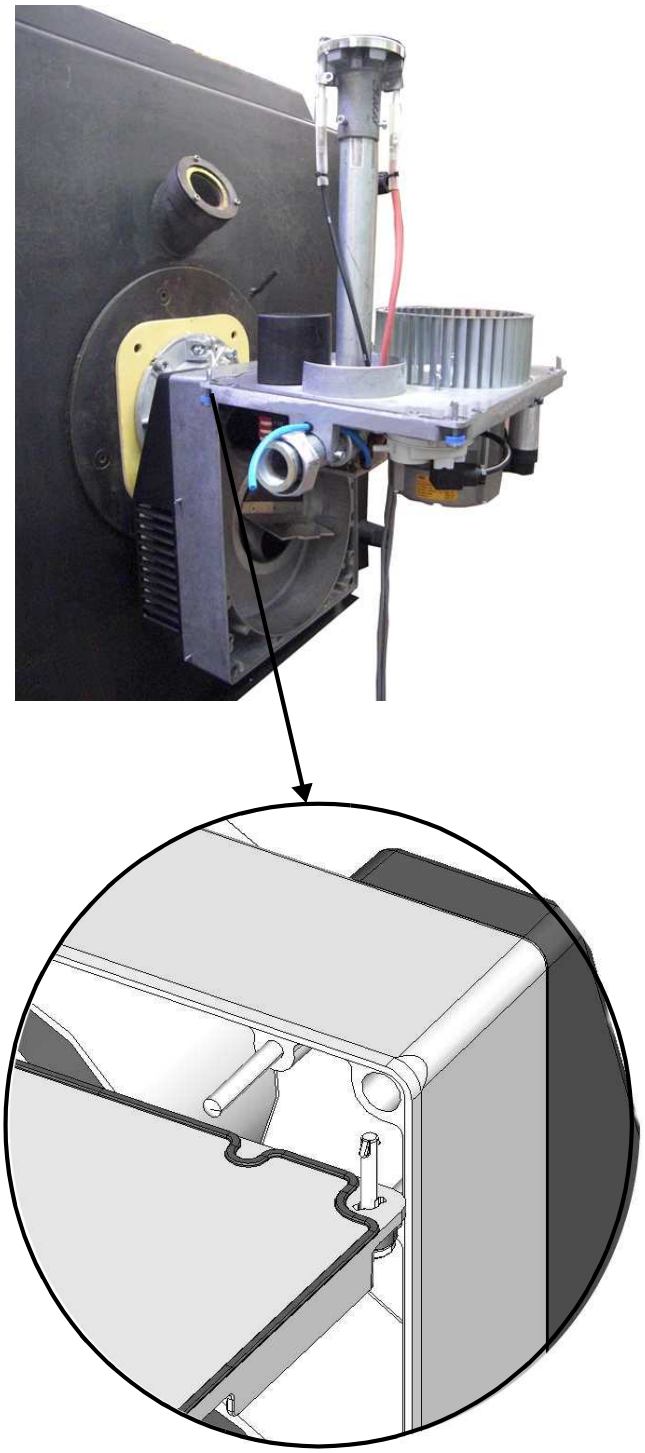

Service position

Risk of injury due to rotating fan wheel when switching on in the service position.

- Loosen the quick-release fasteners (5 pieces) and remove the base plate,
- Fit the keyhole openings of the base plate onto the cylinder head screws of the housing and snap into place.

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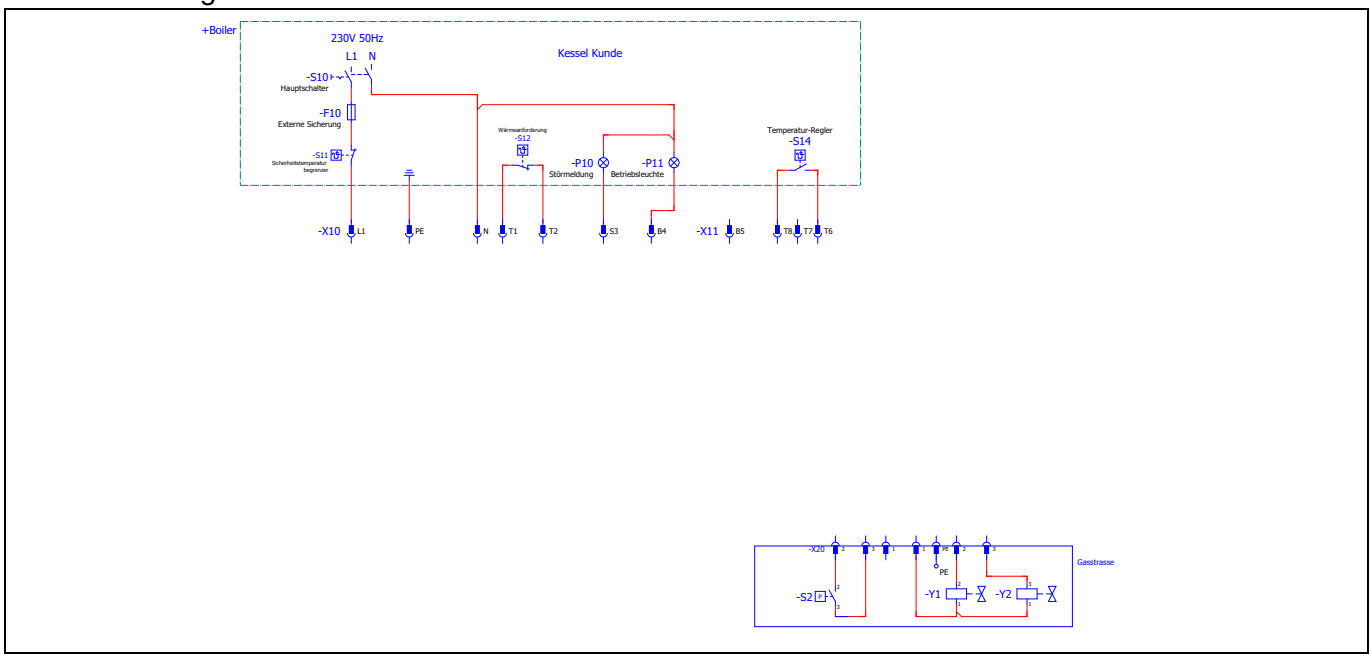
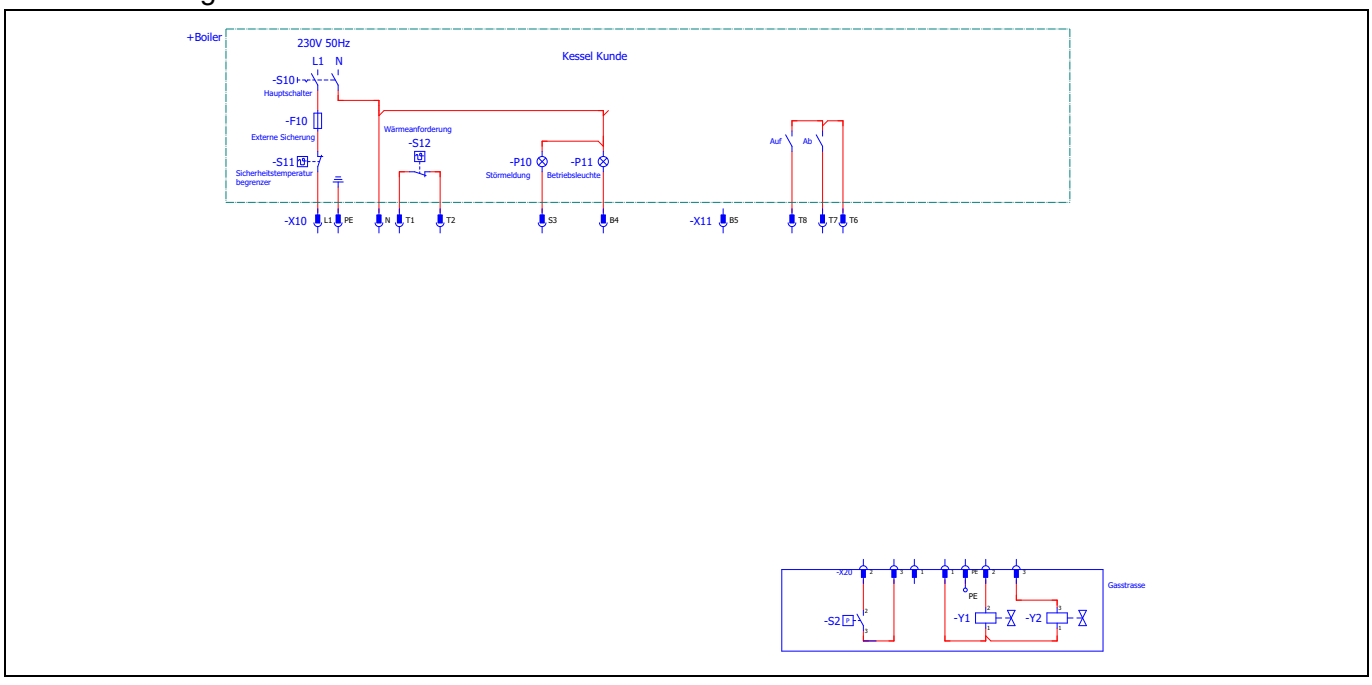
Connect to power supply

- De-energise the system. Main switch "OFF".
- Check polarity of all connectors.
- Wire the plug section according to the wiring diagram. Lay the flexible control line so that the boiler door can still be swivelled.
- Insert the cube connectors to the gas pressure switch connector A (grey) and to the solenoid valves B (black) and secure with a screw.
- Plug the 4-pin connector plug part for power control (X31) together with the black-green socket part on the burner (X32).
- If the connector plug part X11 and X31 are wired, check the correct assignment according to the wiring diagram.
- Plug the 7-pin connector plug part of the boiler control (X11) together with the black-brown socket part on the burner (X12).
- The supply line to the 7-pin connector plug part X11 must be fused with min. 6.3 A slow blow or max. 10 A fast blow.

Connection diagram GG20-Z:



Connection diagram GG20-M:



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Control box LME

Testing the control unit for proper functioning

Danger of fatal injury from electric shocks!

Disconnect electrical cable from power supply before carrying out any work on live parts! Troubleshooting may only be carried out by authorised and trained personnel! Unlocking may only be carried out by an authorised specialist.

After startup and after maintenance of the burner, the following controls to perform.

Burner startup with broken lines to the flame detector:

- Disconnect the cable to the flame monitor and restart the burner.
  At the end of the safety time the controller makes a lockout
- Reestablish the connection.

Burner operation with simulated loss of flame:

- Pull the compact unit the square plug from the gas pressure switch and jumper the contacts in the connector.
- Start the burner.
- Connect operation are the ball valve.
  After loss of flame, the controller makes a lockout.
- Remove the jumper in the connector and insert it back to the gas pressure switch of the compact unit.

Burner operation with simulated air pressure loss:

- Pull are the operation from the air hose to the "+" input of the air pressure switch.
  The controller makes a lockout.
- Insert the air hose back onto the air pressure switch

Display during commissioning

Color code table for multi-color signal lamp		
Status	**Color code**	**Color**
Waiting time (tw), other Waiting states	○.....	OFF
Air pressure switch waiting phase, Pre-ventilaton	●.....	Yellow
Ignition phase, ignition controlled	○●○●○●○●○●	Yellow flashing
Operation, flame OK	■.....	Green
Operation, flame poor	○■○■○■○■○■	Green flashing
External light on burner start	■▲■▲■▲■▲■▲	Green-red
Undervoltage	●▲●▲●▲●▲●	Yellow-red
Fault, alarm	▲.....	Red
Fault code output, see fault code table	○▲○▲○▲○▲○▲○	Red flashing
Interface diagnostics	▲▲▲▲▲▲▲▲▲▲▲▲	Red flickering light

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Key:

..... Permanent	▲ Red	□ Green
○ OFF	● Yellow	

Safety and switching functions

In the event of a flame failure during operation, the fuel supply is immediately switched off and the control box goes into fault mode. A restart takes place in all cases following a mains power failure. A fault is triggered immediately if there is flame detection during pre-ventilation. The position of the air pressure monitor is continuously checked. There can be no start-up if it is not in its neutral position. A fault is triggered if the working contact fails to close during pre-ventilation, or reopens. In the event of a lack of air during operation, the air pressure monitor contact opens and the valves close immediately. The device goes into fault mode.

Diagnostics of the cause of fault

After lockout, the red signal lamp will remain steady on. In that condition, visual diagnostics of the cause of fault according to the error code table can be activated by pressing the lockout reset button for more than 3 seconds. Pressing the lockout reset button again for at least 3 seconds, interface diagnostics will be activated. Interface diagnostics works only if the lockout reset button extension AGK20… is not fitted. If, by accident, interface diagnostics has been activated, in which case the slightly red light of the signal lamp flickers, it can be deactivated by pressing again the lockout reset button for at least 3 seconds. The instant of switching over is indicated by a yellow light pulse.

Error code table

Red blink code of signal lamp (LED)	Alarm at term. 10	Possible cause
2 x blinks	ON	No establishment of flame at the end of safety time - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner, no fuel - Faulty ignition equipment
3 x blinks	ON	Air pressure switch faulty - Loss of air pressure signal after specified time - Air pressure switch welded in normal position
4 x blinks	ON	Extraneous light when burner is started up
5 x blinks	ON	Air pressure switch time supervision - Air pressure switch welded in working position - Error with valve proving (only in conjunction with LDU11...)
6 x blinks	ON	Free
7 x blinks	ON	Too many losses of flame during operation (limitation of repetitions) - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner
8 x blinks	ON	Free
9 x blinks	ON	Free
10 x blinks	OFF	Wiring error or internal error, output contacts, other faults
14 x blinks	ON	CPI contact not closed

During the time the cause of fault is diagnosed, the control outputs are deactivated

- Burner remains shut down
- External fault indication remains deactivated
- Fault status signal (alarm) at terminal 10, according to the error code table

The diagnostics of the cause of fault is quit and the burner switched on again by resetting the burner control. Press the lockout reset button for about 1 second (<3 seconds).

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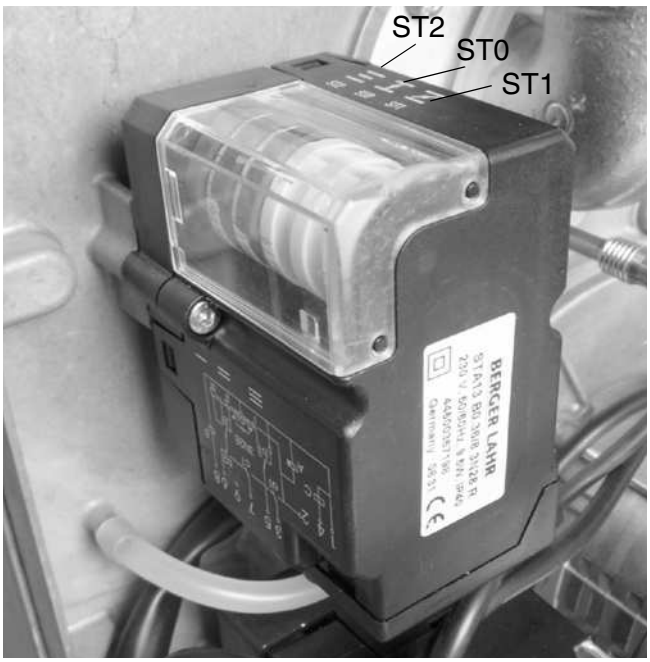

Air damper actuator STA

The STA 13 B0 servomotor is used to adjust air dampers on burners with 2-stage or modulating operation. The setting is made via limit switch cams on the actuator roller.

The servomotor moves to the air shut-off position (ST0) after each control switch-off.

To do this:

Remove the cover from the air flap actuator. Change the cam positions on the adjusting screws using a standard screwdriver.
The switching cams can be readjusted when adjusting the burner.

The cam positions for adjusting the burner to the required minimum/maximum output can be found in the presetting table.

see settings table page 13 ff

To do this:

Remove the cover from the air flap actuator. Change the cam positions on the adjusting screws using a standard screwdriver.
The switching cams can be readjusted when adjusting the burner.

larger number = more air

smaller number = less air

ST1 and ST2 settings only become effective after a short switchover between 1st and 2nd stage or activation up/down on the power controller.
Do not set cam ST1/min. larger than ST2/max.

After adjusting the burner, refasten the servomotor cover and set the switch on the connection socket to the 2nd stage position.

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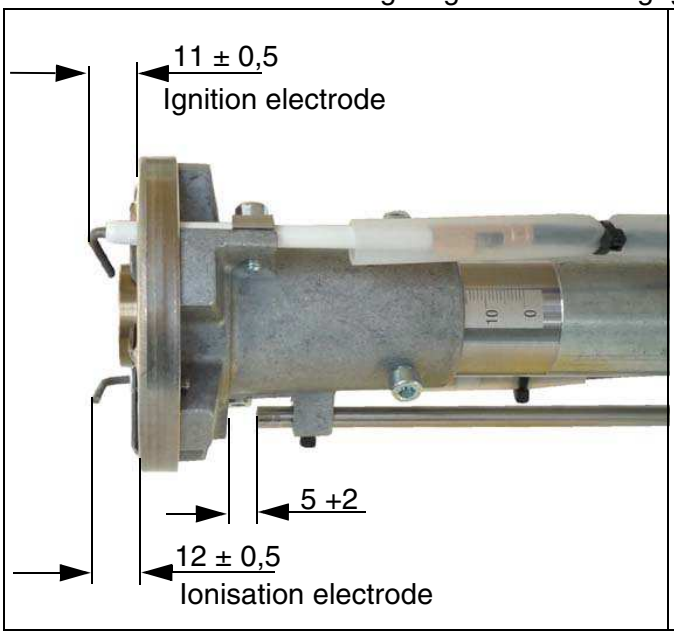
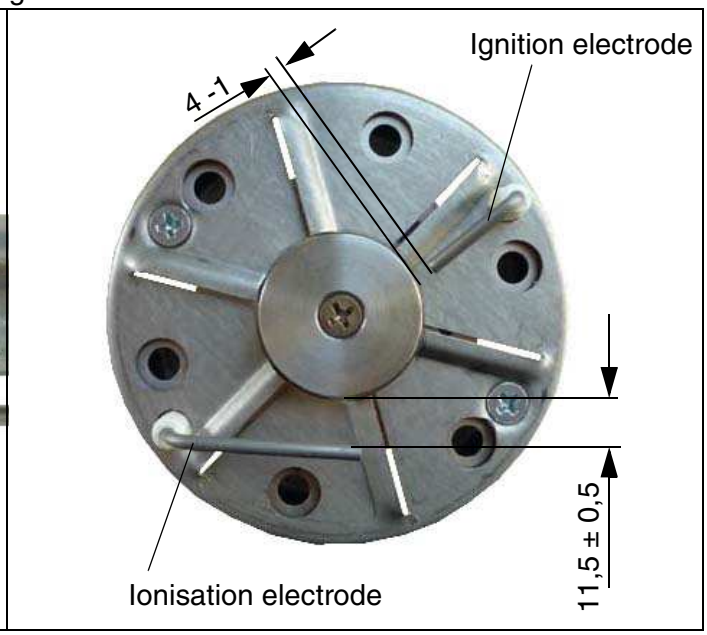
Adjusting the mixing head

The position of the mixing head is set according to the table on page 13.

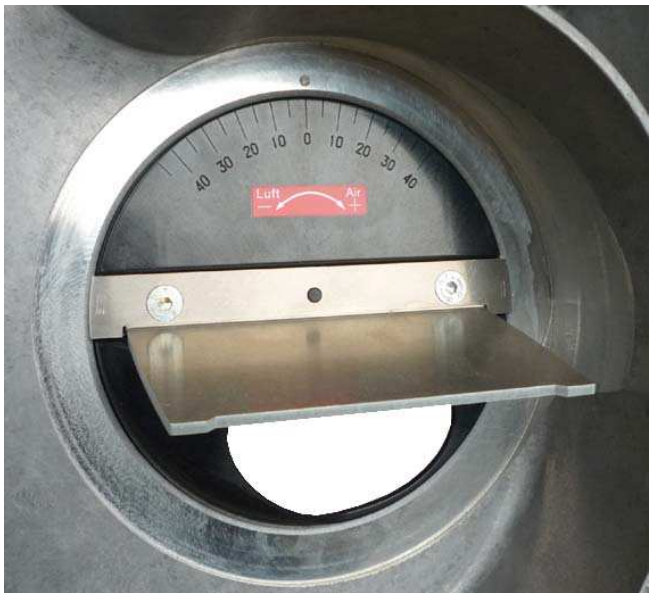
Setting the ignition electrode/ionisation electrode

Die Elektroden sind werkseitig eingestellt. Die angegebenen Maße dienen zur Kontrolle.





Adjusting the inlet nozzle



The position of the inlet nozzle is preset at the factory, but can be adjusted to suit different system conditions, altitudes and capacities.

To adjust, loosen the screws (see illustration). Set the new selected position using the scale and markings (see setting table for scale values).

Reattach the inlet nozzle in the new position.

Inlet nozzle position

- = low fan power (40°)
+ = maximum fan power (16°)

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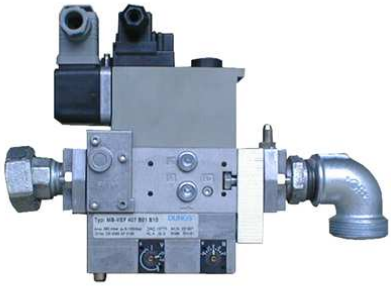
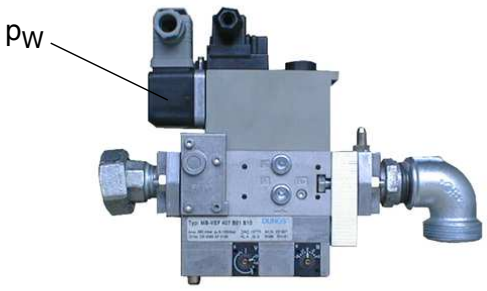
Gas burner with Gas ramp ....



MB version:
Precise pneumatic mixture control for optimum energy utilisation and combustion..

Technical data of the MB gas ramp...

Gas types:	Gas type family 1, 2 and 3, according to DIN EN 437/EN 2003-09
Inlett pressure:	pE : 15 to < 360 mbar
Perm. outlet pressure:	pG ³ 0,4 to < 100 mbar
Ambient temperature:	-15°C to +70°C
Connecting flanges::	The connecting flanges are fastened with 4 screws. The flanges can be rotated by 90° or 180° respectively. Pressure measuring points in the inlet and in the outlet.
Filters:	Plastic screen mesh



Gas pressure switch

The gas pressure switch is used to monitor the gas inlet pressure. If the pressure falls below the set minimum gas inlet pressure (preset at the factory to 12 mbar), the burner is switched off. The burner starts automatically when the minimum pressure is exceeded.

Carry out the following check during commissioning or maintenance:

Close the gas ball valve slowly during operation. The burner must be switched off by the gas pressure switch before a maximum CO concentration of 10,000 ppm is reached. If the burner does not switch off, slowly increase the switching point of the gas pressure switch until it switches off.
If the burner starts up again immediately after switching off with the gas ball valve fully open and switches off again after opening the solenoid valves, the required connection pressure is too low. flow pressure is too low. Another reason for this behaviour could be that the gas filter is heavily behaviour could be heavy soiling of the gas filter.

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Adjustment tables

The values given in the tables are only setting values for commissioning. The system settings required in each case must be redetermined if data such as boiler output, calorific value and altitude differ.

In any case, readjustment is necessary depending on the system.

The maximum output of the burner can only be achieved in the mixing head position pos. 17 mm. The variable mixing head position can be used to optimise the operating behaviour of the burner on different heat generators if necessary.

GG20/1-N-LN								**Natural gas LL: $H_{i,n}$ = 9,3 [kWh/m³]**			
Burner output [kW]		Boiler output η= 92% [kW]		Air flap position [°]		Burner heat position [mm]	Inlet nozzle position [°]	Gas nozzle pressure p_G [mbar]		Gas flow rate [m³/h]	
Stage 2	Stage 1	Stage 2	Stage 1	Stage 2 P9	Stage 1 P1			Stage 2	Stage 1	Stage 2	Stage 1
75	55	69	51	23	0	**27**	**0**	4,8	2,9	8,3	6,1
85	55	78	51	28	0	**27**	**0**	6,8	2,9	9,4	6,1
105	60	97	55	45	10	**27**	**0**	9,5	3,2	11,6	6,7
125	70	115	64	100	18	**27**	**0**	11,9	4,2	13,9	7,8
100	65	92	60	30	10	**17**	**0**	4,1	1,7	11,1	7,2
140	70	129	64	50	13	**17**	**0**	8,0	2,0	15,5	7,8
170	85	156	78	100	20	**17**	**0**	12	2,7	18,8	9,4

GG20/1-N-LN								**Natural gas E: $H_{i,n}$ = 10,4 [kWh/m³]**			
Burner output [kW]		Boiler output η= 92% [kW]		Air flap position [°]		Burner heat position [mm]	Inlet nozzle position [°]	Gas nozzle pressure p_G [mbar]		Gas flow rate [m³/h]	
Stage 2	Stage 1	Stage 2	Stage 1	Stage 2 P9	Stage 1 P1			Stage 2	Stage 1	Stage 2	Stage 1
75	55	69	51	23	0	**27**	**0**	3,8	2,3	7,4	5,5
85	55	78	51	28	0	**27**	**0**	5,3	2,3	8,4	5,5
105	60	97	55	45	10	**27**	**0**	7,4	2,5	10,4	5,9
125	70	115	64	100	18	**27**	**0**	9,3	3,3	12,4	6,9
100	65	92	60	30	10	**17**	**0**	3,2	1,3	9,9	6,4
140	70	129	64	50	13	**17**	**0**	6,3	1,6	13,9	6,9
170	85	156	78	100	20	**17**	**0**	9,4	2,1	16,9	8,4

GG20/1-F-LN								**LPG $H_{i,n}$ = 25,89 [kWh/m³]**			
Burner output [kW]		Boiler output η= 92% [kW]		Air flap position [°]		Burner heat position [mm]	Inlet nozzle position [°]	Gas nozzle pressure p_G [mbar]		Gas flow rate [m³/h]	
Stage 2	Stage 1	Stage 2	Stage 1	Stage 2 P9	Stage 1 P1			Stage 2	Stage 1	Stage 2	Stage 1
75	55	69	51	23	0	**27**	**0**	5,0	2,7	2,9	2,1
85	55	78	51	28	0	**27**	**0**	6,4	2,7	3,3	2,1
105	60	97	55	45	10	**27**	**0**	9,8	3,2	4,1	2,3
125	70	115	64	100	18	**27**	**0**	13,9	4,4	4,8	2,7
100	65	92	60	30	10	**17**	**0**	6,3	2,7	3,9	2,5
140	70	129	64	50	13	**17**	**0**	12,3	3,1	5,4	2,7
170	85	156	78	100	20	**17**	**0**	18,2	4,6	6,6	3,3

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GG20/2-N-LN								Natural gas LL: $H_{i,n}$ = 9,3 [kWh/m^3]			
Burner output [kW]		Boiler output η= 92% [kW]		Air flap position [°]		Burner heat position [mm]	Inlet nozzle position [°]	Gas nozzle pressure p_G [mbar]		Gas flow rate [m^3/h]	
Stage 2	Stage 1	Stage 2	Stage 1	Stage 2 P9	Stage 1 P1			Stage 2	Stage 1	Stage 2	Stage 1
107	70	98	64	40	0	**27**	**0**	8,4	3,6	11,9	7,8
130	70	120	64	58	0	**27**	**0**	12,1	3,6	14,4	7,8
140	70	129	64	100	10	**27**	**0**	13,0	6,1	15,5	7,8
140	100	129	92	38	20	**17**	**+ 16**	6,6	3,2	15,5	11,1
200	100	184	92	67	20	**17**	**+ 16**	11,8	3,2	22,2	11,1
235	120	216	110	100	28	**17**	**+ 16**	14,1	6,1	26,1	13,3

GG20/2-N-LN								Natural gas E: $H_{i,n}$ = 10,4 [kWh/m^3]			
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130	70	120	64	58	0	**27**	**0**	9,5	2,8	12,9	6,9
140	70	129	64	100	10	**27**	**0**	10,2	4,8	13,9	6,9
140	100	129	92	38	20	**17**	**+ 16**	5,2	2,5	13,9	9,9
200	100	184	92	67	20	**17**	**+ 16**	9,2	2,5	19,8	9,9
235	120	216	110	100	28	**17**	**+ 16**	11,0	4,8	23,3	11,9

GG20/2 -F-LN								LPG $H_{i,n}$ = 25,89 [kWh/m^3]			
Burner output [kW]		Boiler output η= 92% [kW]		Air flap position [°]		Burner heat position [mm]	Inlet nozzle position [°]	Gas nozzle pressure p_G [mbar]		Gas flow rate [m^3/h]	
Stage 2	Stage 1	Stage 2	Stage 1	Stage 2 P9	Stage 1 P1			Stage 2	Stage 1	Stage 2	Stage 1
107	70	98	64	40	0	**27**	**0**	7,2	3,1	4,1	2,7
130	70	120	64	58	0	**27**	**0**	10,6	3,1	5,0	2,7
140	70	129	64	100	10	**27**	**0**	12,3	3,1	5,4	2,7
140	100	129	92	38	20	**17**	**+ 16**	6,9	2,9	5,4	3,9
200	100	184	92	67	20	**17**	**+ 16**	14,1	3,5	7,7	3,9
235	120	216	110	100	28	**17**	**+ 16**	19,4	5,1	9,1	4,6

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Once the installation and assembly work has been completed, the burner can be put into operation.

- Measure the inlet pressure with a U-tube manometer on the "p_E" measuring connection.
  max. 100 mbar (static pressure) for KEV 220, KEV 225
  max. 360 mbar (static pressure) for MB407, MB412, MBC300
  min. 20 mbar (flow pressure) for -N
  min. 35 mbar (flow pressure) for -F
  The burner with gas ramp is preset to low output at the factory. This ensures a safe initial burner start.
- Adjust the burner to the desired nominal output in accordance with the setting tables.

For this purpose:
- Check the nozzle pressure with a U-tube pressure gauge on the "p_G" measuring nozzle.
- Set the gas pressures and the air volume dimension "A" according to the setting tables.
- It is essential to check the exhaust gas values (CO, CO_2 or O_2).

Exhaust gas values	Natural LL+E	LPG propane 3B/P
O_2-Content	3,5-5,0%	
CO_2-Content	9-10%	10,5-11,5%

- Depending on the system, the setting values must be corrected.
- Once the adjustment has been completed, the setting data must be recorded.
- After commissioning, the gas pressure switch must be checked. To do this, slowly close the ball valve close the ball valve slowly, the burner must switch off but not go into fault mode.

No tensile, compressive or torsional forces may act on the burner through the gas supply line and gas fitting, otherwise torsional forces on the burner, as otherwise the operational safety may be impaired.

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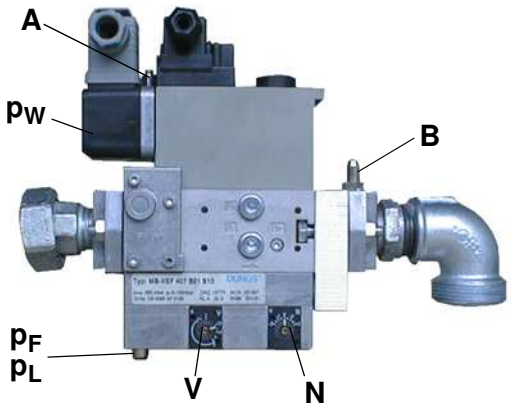
Modulating or 2-stage sliding gas burner with gas ramp...



Gas supply pressure measuring nozzle **A** (p_E)

Nozzle pressure measuring connection **B** (p_G)

N = zero point (gas nozzle pressure setting at min. output)

V = Nozzle pressure to air pressure ratio in the burner tube burner tube (gas nozzle pressure setting at max. output)

p_W = Gas pressure monitor
p_F = combustion chamber pressure
p_L = Stowage disc pressure

Presetting:

Select the appropriate line in the setting table according to the boiler output and accept the setting values.

- Air volume setting Air damper position according to setting table.
- The "V" and "N" settings are displayed on scales on the outside of the appliance and can be set from both sides. In the low load range of the burner, the gas/air mixture is set using the parallel shift of the characteristic curve (adjusting screw "N"). At full load, the transmission ratio is changed with the adjusting screw "V" so that the desired gas nozzle pressures p_G (see setting table) and flue gas analysis values (CO_2, CO) are achieved.

Burner start:

- Start the gas burner at low load - if the burner does not start, turn N slightly in the "+" direction and repeat the start.

Fine adjustment:

Max. Set maximum output:

- Measure gas nozzle pressure at B.
- Gradually set the burner to high load 2nd stage and correct the flue gas analysis at "V". To do this, set the output regulator to max. output (contact from "T6" to "T8" in socket section X32).
- Open the air flap until the max. position is reached (see setting table).
- For GG20-Z-L-LN, also set switch 1st/2nd stage to 2nd stage.

Setting „V“	Exhaust gas analysis values	
in the direction of "+" change if:	CO_2 too low	O_2 too high
in the direction of "-" change if:	CO_2 too high	O_2 too low

- Correct the exhaust gas values at "V" (see table).

Nozzle pressure Max. Output Adapt	Max. output
ST2/Max. power increase if:	Power/nozzle pressure too low
ST2/Max. power reduce if:	Power/nozzle pressure too high

- Adjust the nozzle pressure by adjusting the the air flap

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Nozzle pressure Min. Output Adapt	Min. output
ST1/min. output enlarge if:	Power/nozzle pressure too low
ST1/min. output reduce if:	Power/nozzle pressure too high

Set min. power 1st level:

- Set the burner to low load and correct the flue gas values at "N".
  for GG20-M-L-LN:
  To do this, set power controller to min. power (contact from "T6" to "T7" in socket section X32).
  for GG20-Z-L-LN:
  Set 1st/2nd stage switch to 1st stage.
- Set the nozzle pressure by adjusting the cam ST1/min. according to the table.

Setting „N“	Exhaust gas analysis values	
in the direction of "+" change if:	CO_2 too low	O_2 too high
in the direction of "-" change if:	CO_2 too high	O_2 too low

- Correct the exhaust gas values at "N .
- In order to move the actuator to the newly set cam position, the power controller must be set to max. power requirement (contact from "T6" to "T8") for a few seconds.
  The actuator moves up.
- Set the power controller back to the min. power requirement (contact from "T6 to "T7").
  The actuator moves to the newly set min. position.
  In the 2-stage sliding version, briefly set the 1st/2nd stage switch to 2nd stage and then set it back to 1st stage.
- Correct the exhaust gas values at "N".
- Adjust the cam position ST1/min. If necessary, repeat as described above until the desired atomiser pressure is achieved.
- As the "V" and "N" adjustments influence each other, the burner must be run up and down several times between the max. and min. heat requirement of the 1st/2nd stage power controller.
- At max. 2nd stage output, correct the flue gas emission by adjusting "V" and at min. 1st stage output by adjusting "N".
- Start the burner; if the burner does not start, change "N" to "+" and start the burner again, check the flue gas emission and change the min./start power if necessary.
- Close measuring connections "A" and "B" - Do not close any unused connection p_F.

Attention!

Differential exchange disc pressure pL - combustion chamber pressure pF must be at least 0.3 mbar.

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Calculation principle 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 E $H_{i,n}$ = 10.4 kWh/m^3
Natural gas LL $H_{i,n}$ = 9.3 kWh/m^3
Liquefied gas PB Hi,n = 25.89 kWh/m^3
Gas meters 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 (according to table)	989 mbar
Gas pressure P_G at meter	20 mbar
Gas temperature ϑ_G	16°C
Boiler rating Q_n	30 kW
Efficiency η_K (assumed)	92%
Calorific value $H_{i,n}$	10.4 kWh/m^3

Gas flow in standard state (V_n)1

$$V_n = \frac{Q_n}{\eta_k \times H_{i,n}} = \frac{30kW}{0,92 \times 10,4 \frac{kWh}{m^3}} = 3,1 \frac{m^3}{h}$$

Gas flow in operating state (V_B)

$$V_B = \frac{V_n}{f} = \frac{3,1 \frac{m^3}{h}}{0,94} = 3,3 \frac{m^3}{h}$$

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		1	51	101	151	201	251	301	351	401	451	501	551	601	651	701
	to	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	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 = efficienc [%]
$H_{i,n}$ = 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]

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Flow measurement
Determining flow duration at gas meter..

Calculated flow duration in seconds t_{spec} for a flow volume of 200 litres (corresponding to 0.2 m^3) for the example given above is::

V_B = 3.3 m^3/h

$$t_{soll} = \frac{0,2m^3 \times 3600\frac{s}{h}}{V_B\left[\frac{m^3}{h}\right]} = \frac{720m^3\frac{s}{h}}{V_B\left[\frac{m^3}{h}\right]} = \frac{720m^3\frac{s}{h}}{3,3\frac{m^3}{h}} = 218s$$

Gas flow setting

Measured flow duration in seconds [s]	Measures
Greater than calculated flow duration t_{set}	Increase gas flow
Less than calculated flow duration t_{set}	Reduce gas flow
Equal to calculated flow duration t_{set}	Gas flow achieved

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Flame monitoring with ionisation monitoring

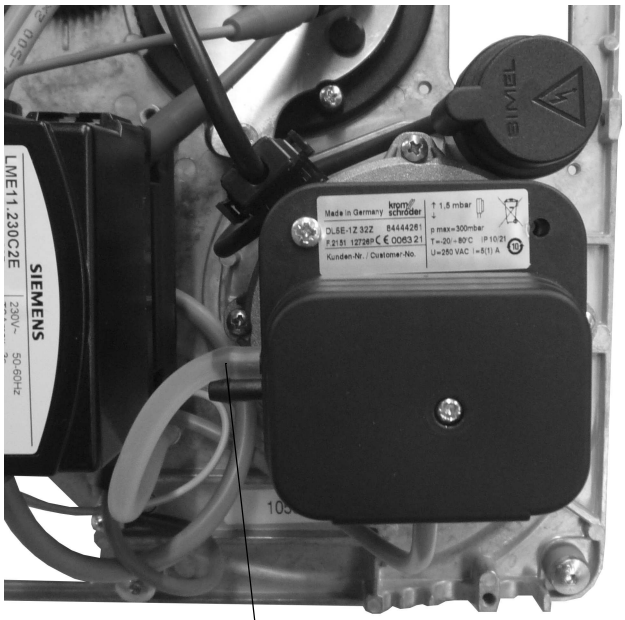
If an alternating voltage is applied between the burner and the ionisation bar, a direct current flows using the rectifying effect of the flame. This ionisation current forms the flame signal and is amplified and transmitted to the control unit. A flame cannot be faked, as the rectifier effect no longer works if there is a short circuit between the sensor electrode and the burner.

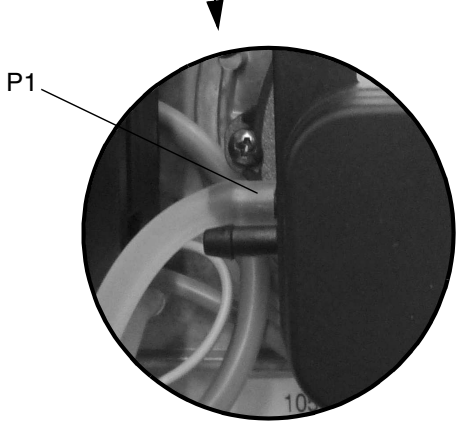
Measuring the ionisation current, LME control unit

During commissioning and maintenance of the burner or after a fault message from the control unit, the ionisation ionisation current must be measured. To do this, the plug connection in the ionisation cable is disconnected and a measuring device for current measurement is connected in series. Measuring range 0...200 µA DC.

The measurement must be carried out directly after the post-ignition time during the safety time! The ionisation current must be at least 5 µA. Values below 5 µA lead to unsafe operation (fault lamp flashes green) or directly to a fault. In this case, clean the inside of the ionising bar and the burner tube. If necessary, bend the ionising bar.

If the ionising bar is defective, replace the electrode. Reverse the polarity of the ignition transformer if necessary. Check the cable for moisture and dry if necessary.





Maintenance of the air pressure switch

- Remove and clean the silicone connection hose clean, check switching function.
- Replace the air pressure monitor if the switching function is no longer OK.

To do this:

- De-energise the burner (7-pin plug X11).
- Unscrew the cover.
- Disconnect the electrical plug connector.
- Loosen the fastening screws on the motor.
- Reassemble in reverse order.

"P1" indicates the pressure measurement connection for the the silicone hose!

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Wiring diagram

GG20-Z-L-LME22-IO

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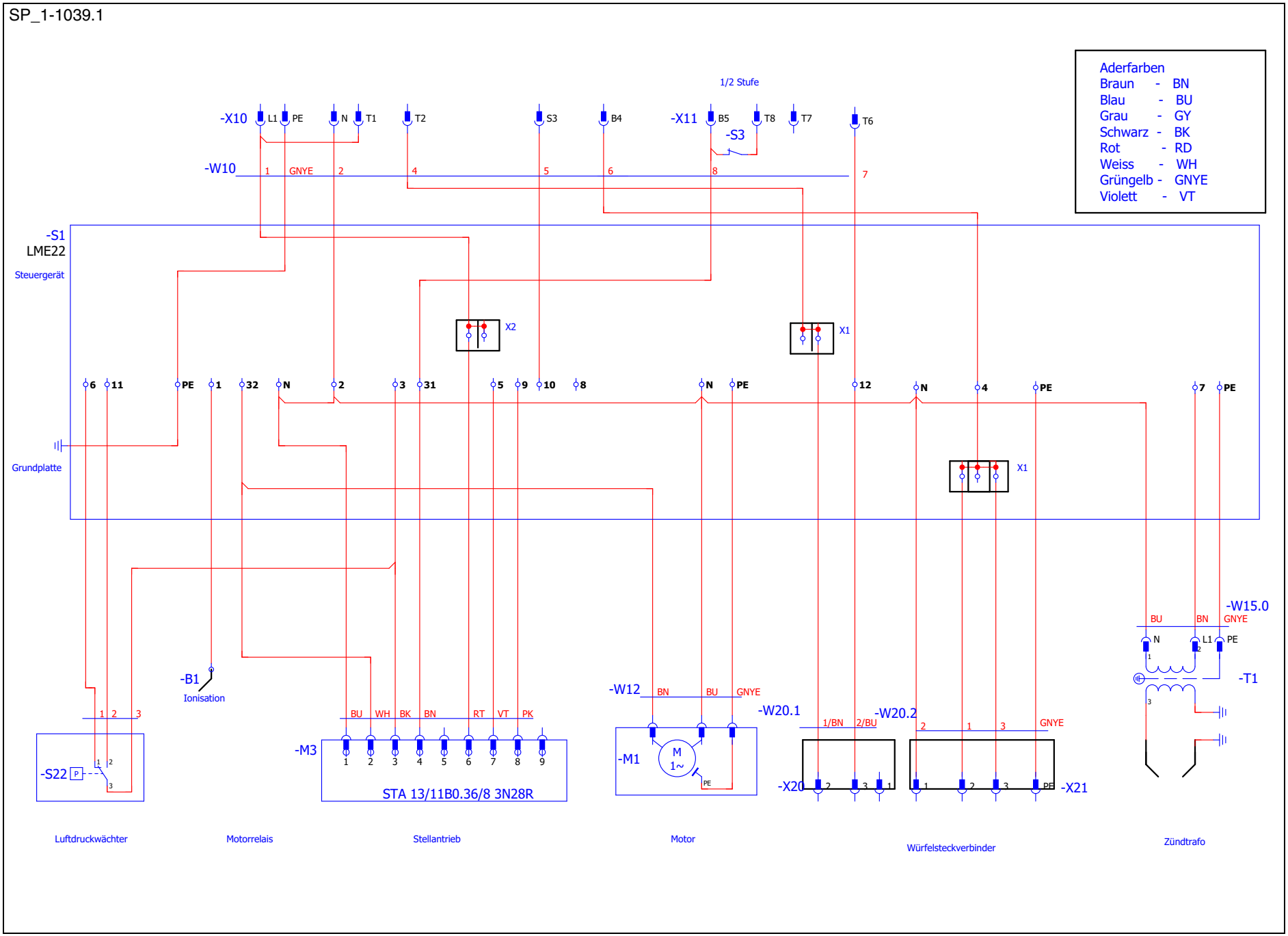

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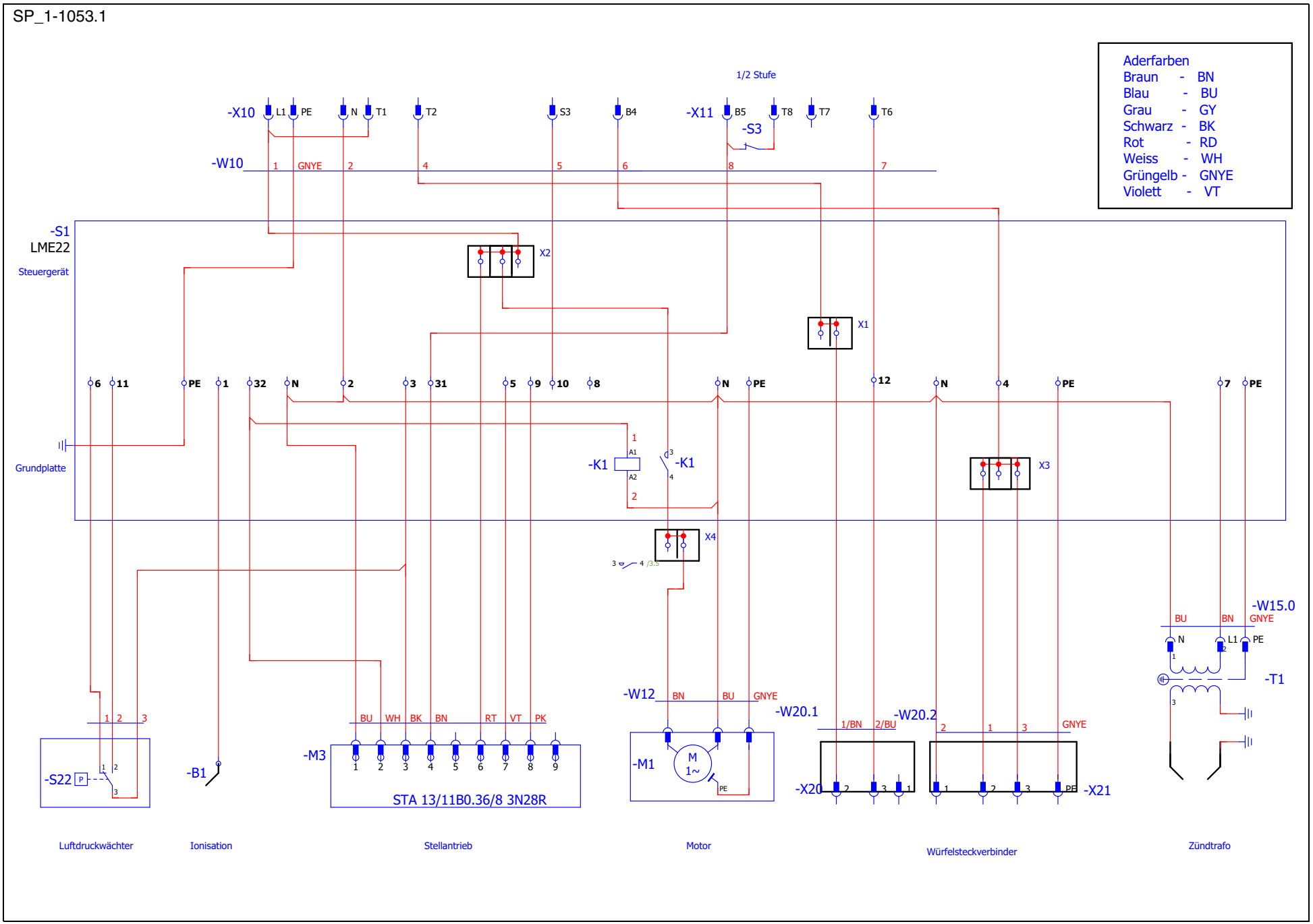
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Braun - BN
Blau - BU
Grau - GY
Schwarz - BK
Rot - RD
Weiss - WH
Grüngelb - GNYE
Violett - VT
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-X11
B5
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T6
-S3
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Ionisation
Stellantrieb
Motor
Würfelsteckverbinder
Zündtrafo

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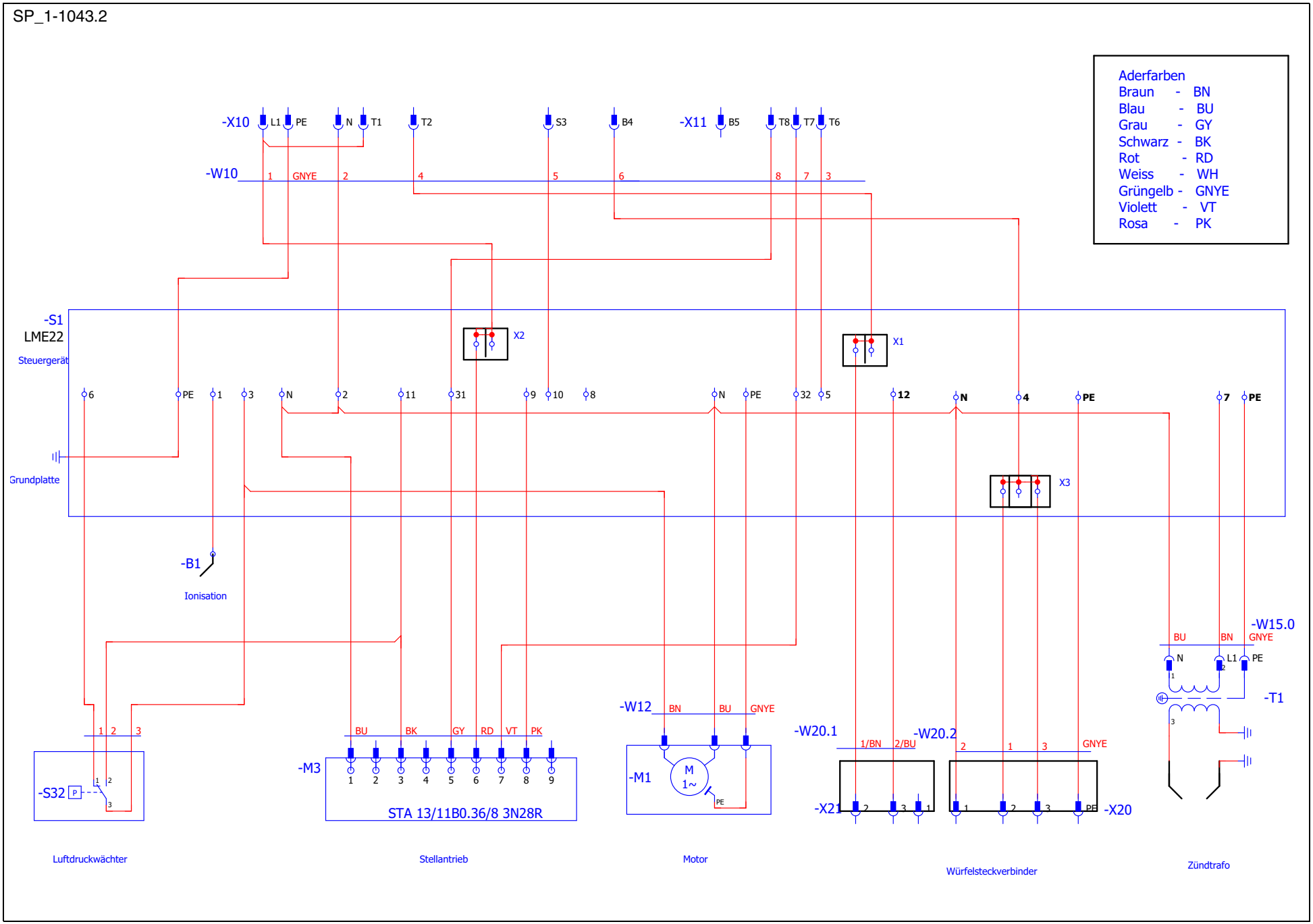
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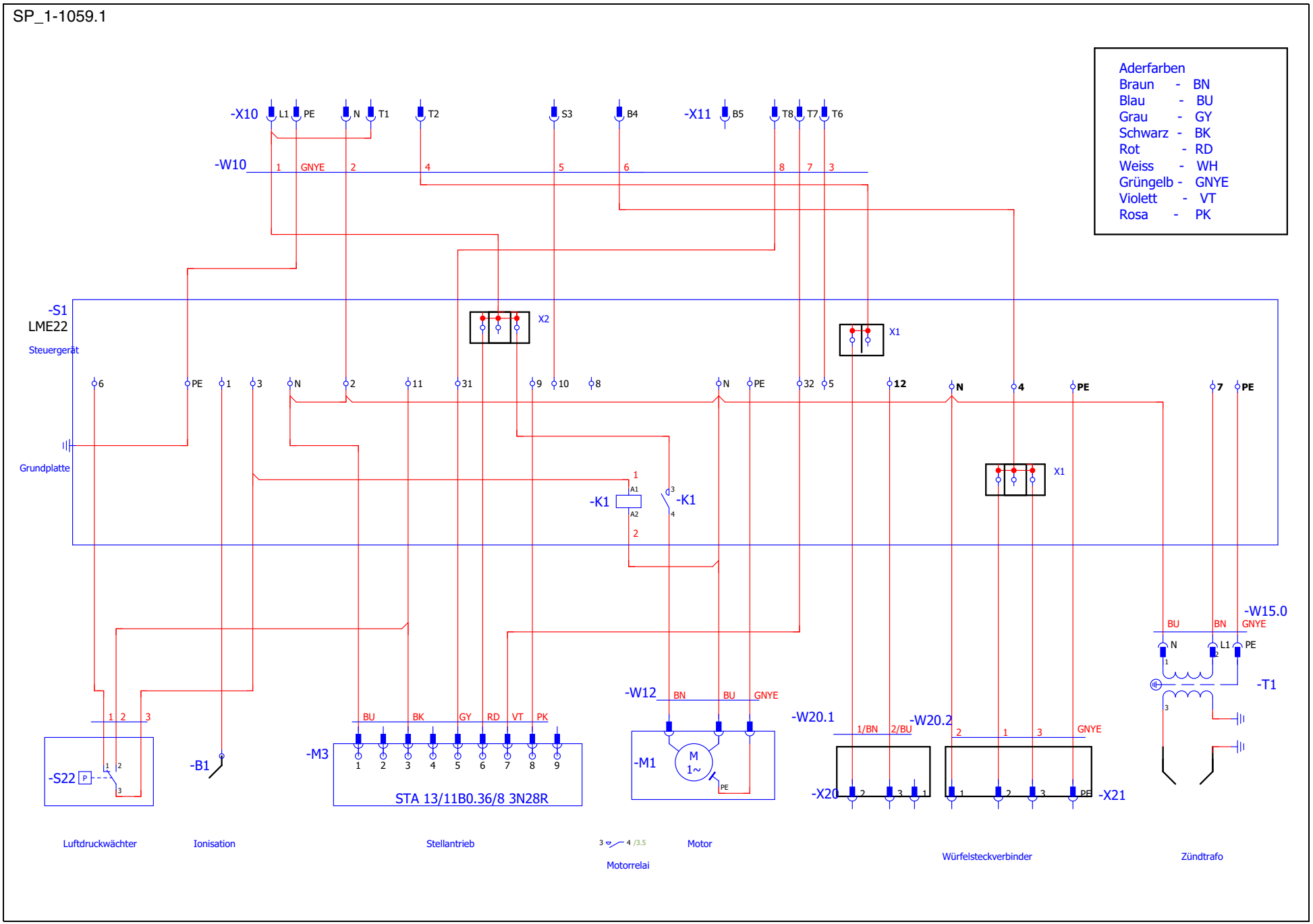
Luftdruckwächter
Stellantrieb
Motor
Würfelsteckverbinder
Zündtrafo

SP_1-1059.1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Blau - BU
Grau - GY
Schwarz - BK
Rot - RD
Weiss - WH
Grüngelb - GNYE
Violett - VT
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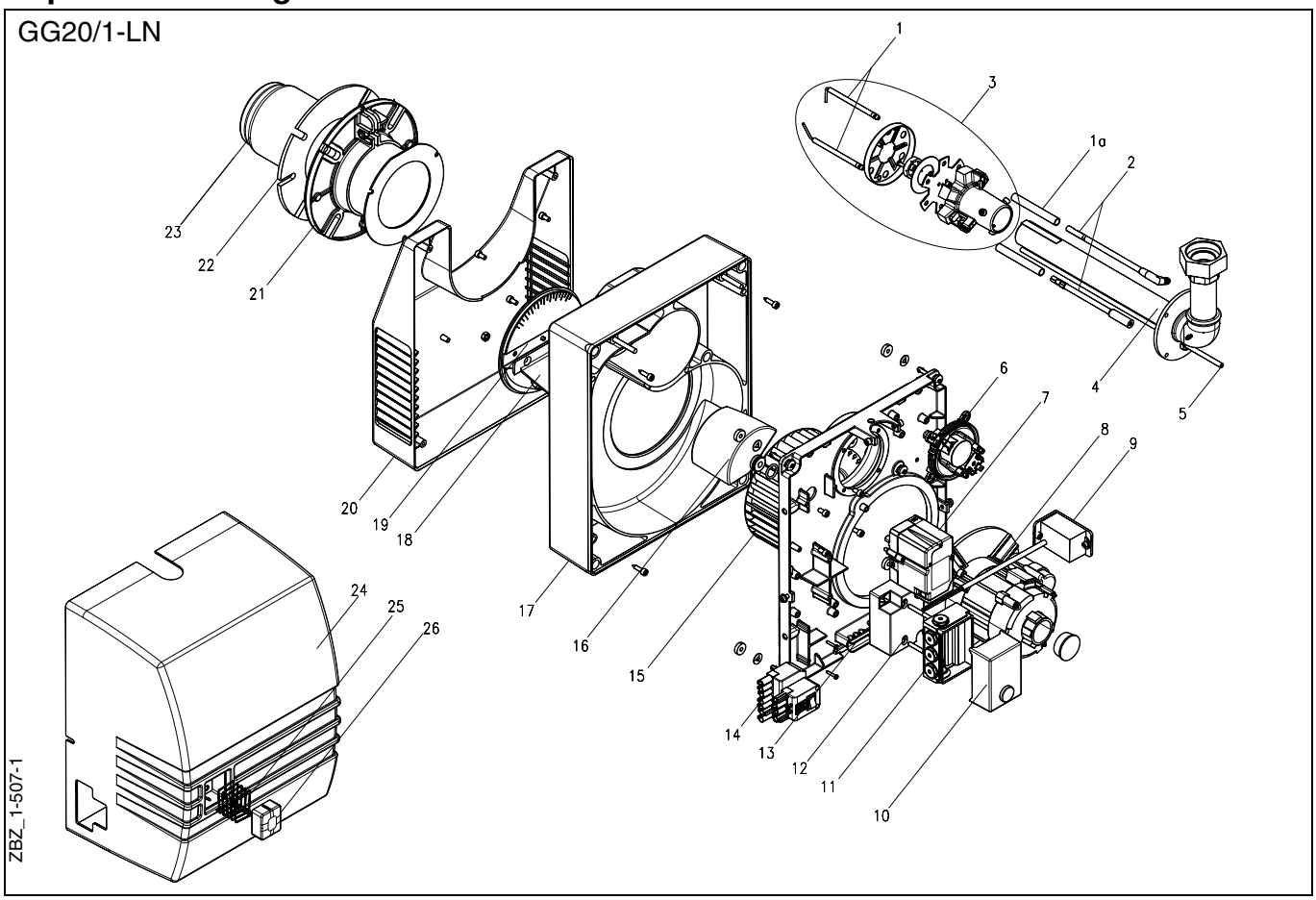
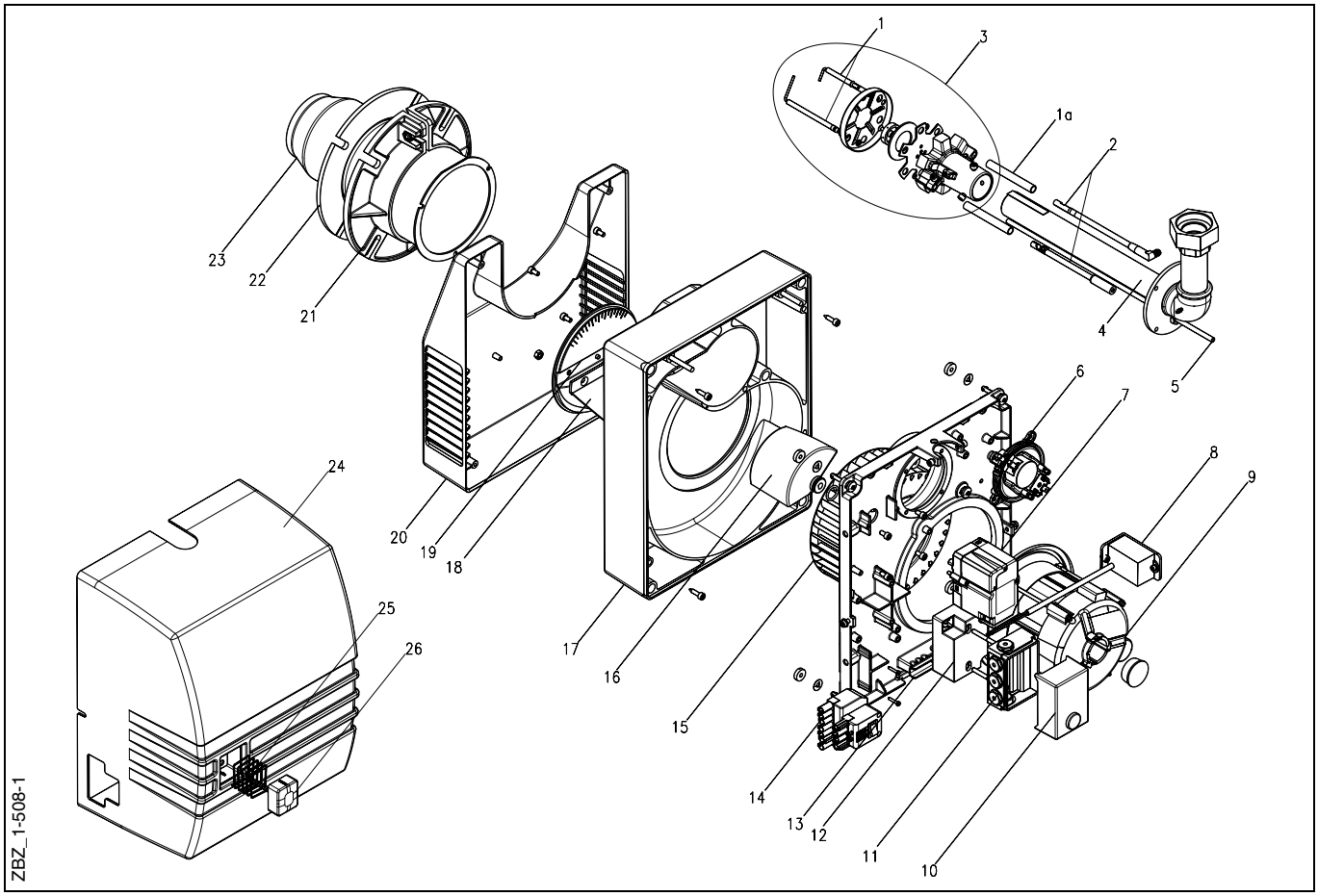
-X20
-X21
Luftdruckwächter
Ionisation
Stellantrieb
Motor
Motorrelai
Würfelsteckverbinder
Zündtrafo

Exploded drawing

GG20/1-LN



GG20/2-LN



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GG20/1-LN, GG20/2-LN

Seg.No	Designation	PU[1)]	Order no.
1	Ignition and ionisation electrode set		47-90-27757-01
1a	Silicone hose Ø 10 x 1 x 80 lg.		47-90-22466
2	Ignition and ionisation cable set		47-90-27758
2	Ignition and ionisation cable set, 100 mm long.		47-90-27759
3	Gas mixing head GG20/1-N-LN cpl. with baffle disc and electrodes		47-90-26831
3	Gas mixing head GG20/1-2-LN cpl. with baffle disc and electrodes		47-90-26832
3	Gas mixing head GG20/1-F-LN cpl. with baffle disc and electrodes		47-90-27706
3	Gas mixing head GG20/2-F-LN cpl. with baffle disc and electrodes		47-90-27707
4	Gas nozzle pipe GG20/1 and GG20/2 with connection and flange cpl.		47-90-26847
4	Gas nozzle pipe GG20/1 and GG20/2 with connection and flange cpl. 100 mm long		47-90-26912
5	Measuring tube Ø 6 x 1 x 370 lg.		47-90-26872
5	Measuring tube Ø 6 x 1 x 470 lg. (100 mm extended)		47-90-26911
6	Air pressure monitor DL5E1 32Z 1,5 mbar		47-90-29266
7	Actuator STA 13B0.36/8 3N28R		47-90-22472
8	Motor 180 W with flange 162 mm for GG20/1		47-90-27139
8	Motor 370 W with flange 162 mm for GG20/2		47-90-26066
9	Motor relay for motors > 180 W with additional capacitor		47-90-28065
10	Control unit LME 22		47-90-28741
11	Lower part AGK		37-90-11310-01
12	Ignition transformer mod. 26/35		47-90-25267
13	Clamping piece U-profile 80 lg.		47-90-27140
14	Socket part GG20-Z/ 11-pin cpl.		47-90-27068
14	Socket part GG20-M/ 11-pin cpl.		47-90-27068-01
-	Socket part black/brown		37-90-20731
15	Fan wheel TLR Ø 160 x 62 for GG20/1		47-90-23333
15	Fan wheel Ø 180 x 74 f. R3/R30 for GG20/2		33-90-10590
16	Air control sleeve-plastic GL20		47-90-25436
17	Housing GL20		47-90-25430
18	Air baffle inlet nozzle for GG20/1		47-90-27057
18	Air baffle inlet nozzle for GG20/2		47-90-26088
19	Inlet nozzle GL20		47-90-26299
20	Intake box with louvres and insulation insert		47-90-26858
21	Assembly kit complete as replacement for GG20/1 with flange gasket		34-90-10586
21	Assembly kit complete as replacement for GG20/2 with flange gasket		33-90-11010
22	Flange gasket for GG20/1	5	37-50-10137
22	Flange gasket for GG20/2	5	33-50-10191
23	Burner tube GG20/1 cpl., 260 mm long		47-90-26880
23	Burner tube GG20/1 cpl., 360 mm long (100 mm extended)		47-90-26880-01
23	Burner tube GG20/2 cpl., 260 mm long		47-90-26884
23	Burner tube GG20/2 cpl., 360 mm long (100 mm extended)		47-90-26884-01
24	Bonnet GG20 cpl.		47-90-26855
25	Rectangular spring		47-90-26966
26	Interference suppression button GB/GG V1	5	47-50-21766
-	3/2 way solenoid valve		47-90-21926
-	Valve mounting plate		47-90-27713
-	Angle screw-in connection R1/8" x 6 with silicone and Flexo-55 hoses		47-90-11872-01
-	Rectangular plug connector, grey		47-90-26452
-	Housing GL20 cpl. for air intake		47-90-26845-01
-	Flange intake box GL20		47-90-27037
-	Replacement set of quick-release fasteners G,GL10/GB/GL20/GG20		47-90-29352
-	Measuring tube combustion chamber pressure for KEV (CG and MBC)		47-90-30200

PU = packaging unit 1, 5, 10, 20, 50 pieces

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Declaration of conformity for the forced-air gas burner

GIERSCH
Wärme für die Zukunft.
Giersch GmbH | Adjutantenkamp 18 | 58675 Hemer
0 23 72/965-0 0 23 72/6 1240 info@giersch.de www.giersch.de

Declaration of Conformity for Gas Burners

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

gas burner type **GG20/…**

is conform with the regulations of these directives

MD2006/42/EG
EMV2014/30/EG
LVD2014/35/EG
GAR 2016/426/EG
1. BImSchV 2010
RoHS 2011/65/EU
DIN EN 676

and is marked with:

CE

CE-0085

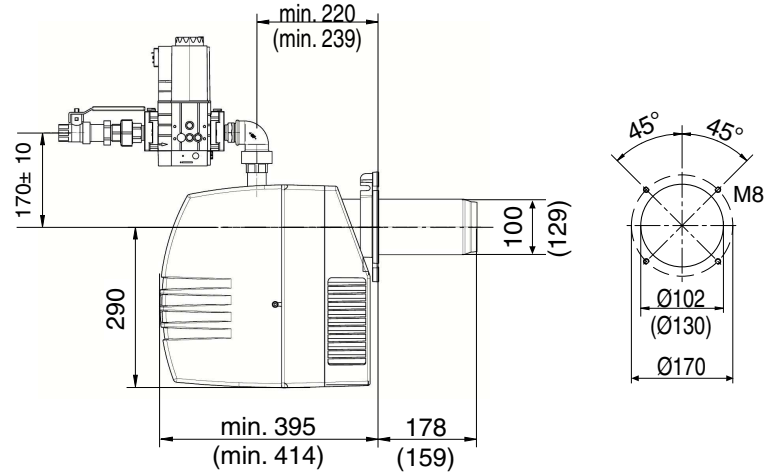
Hemer, 12.01.2024

Dr. Josef Becker
Managing Director

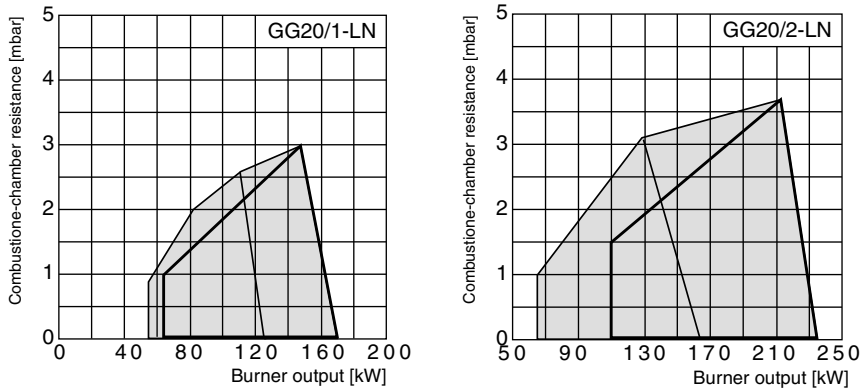
Overall dimensions / Boiler connection measures

(All dimensions in mm, dimensions in (...) GG20/2-LN)

GG20/1/2-LN



Working range



Working fields according to DIN EN 676 2008-11. The working fields refer to 15°C and 1013 mbar.

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