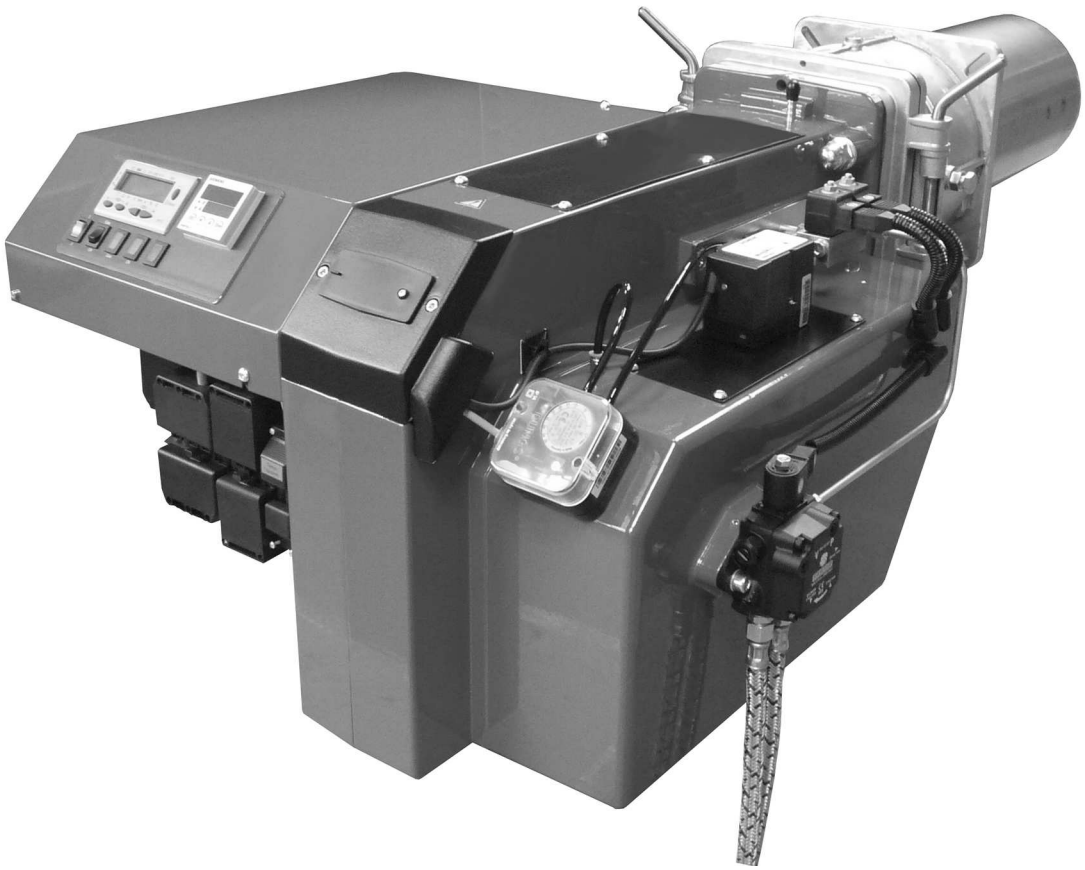
GIERSCH

Technical Information • Installation Instructions

MK2

March 2024 edition
In the interests of continuous product improvement, technical specifications are subject to change without prior notice!

Oil / gas



CE

GB

Contents

E. 06.09.18 • G. 07.03.24

1. General information

Installation of a combined gas/oil burner must be performed in accordance with extensive 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.
Heating oil EL in accordance with DIN 51603 must be used.
The duel-fuel burners are ideal for the combustion of natural gas or liquid gas in accordance with EN 437 and fuel oil EL and complies with European Standards EN 676 and EN 267.

Manually operable shut-off valve

A manually operable shut-off valve for disconnecting the burner must be installed upstream of the burner and/or control equipment. It must be easy to access.

Filter and venting device

A filter must be installed upstream of the burner to prevent entry of foreign matter. Suitable equipment must be provided to vent the fuel supply line.

2. Scope of delivery

Before installing the combined gas/oil burner, please check that all the items included in the scope of delivery are present.
Scope of delivery:
burner, mounting kit, separate operating instructions, technical information, separate circuit diagram, flange seal, one 7- pin connector and one 4- pin plug connector (Wieland connector).

Caution !
Oil nozzles are not included in the scope of delivery.

For gas:

Gas fitting

Gas installation and commissioning are subject to the applicable Technical Regulations of the DVGW (DVGW-TRGI).
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 throughflow direction of fittings

3. Maintenance and customer service

The complete system should be checked once a year for correct functioning and leaks in accordance with DIN 4755 by a representative of the manufacturer or other suitably qualified person.
According to DIN EN 267 it is not permissible to perform repairs on components with a safety function. On the other hand, the replacement of parts with genuine parts or approved equivalent parts is permitted.
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.

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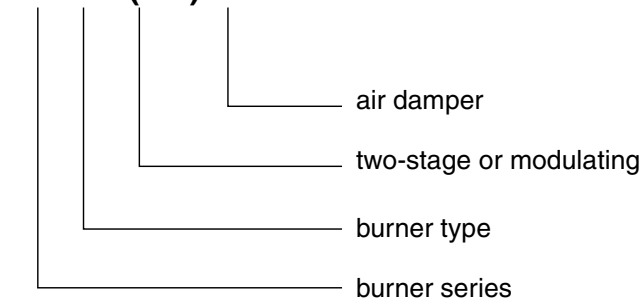
5. Instruction of operating personnel

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

MK 2-Z(-M)-L

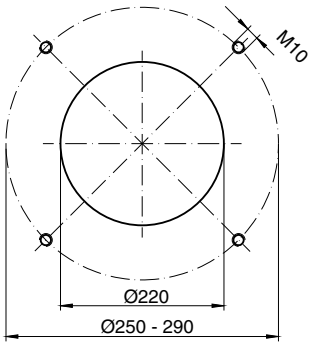


7. Technical specifications

	Burner type	
Technical specifications	**MK2.1**	**MK2.2**
Burner output in kW (in gas-fired operation)	279- 760	415 - 1071
Burner output (in oil-fired operation) in kg/h (in kW)	 23.6 - 64.1 (280 - 760)	 39.5 - 90.2 (469 - 1070)
Fuel	Heating oil in accordance with DIN 51603, natural gas LL + E, liquid gas	
Mode of operation	Optionally oil/gas two-stage or gas modulating, oil two-stage	
Voltage	3 / N / PE ~ 50 Hz / 400 V	
Power consumption at start / during operation *	6.5 A max./ 3.6 A eff.	
Electric motor power (at 2800rpm) in kW	1.1	2.2
Flame detector	KLC1000	
Control box	LMV26	
Emission class gas	2	MPC
NOx limit value gas	< 120 mg/Nm^3	< 100 mg/Nm^3
Emission class oil	2	MPC
NOx limit value oil	< 185 mg/Nm^3	< 200 mg/Nm^3

* The power consumption of the version with external oil pump is 2.7 A higher.

8. Boiler connecting dimensions (All dimensions are given in mm)



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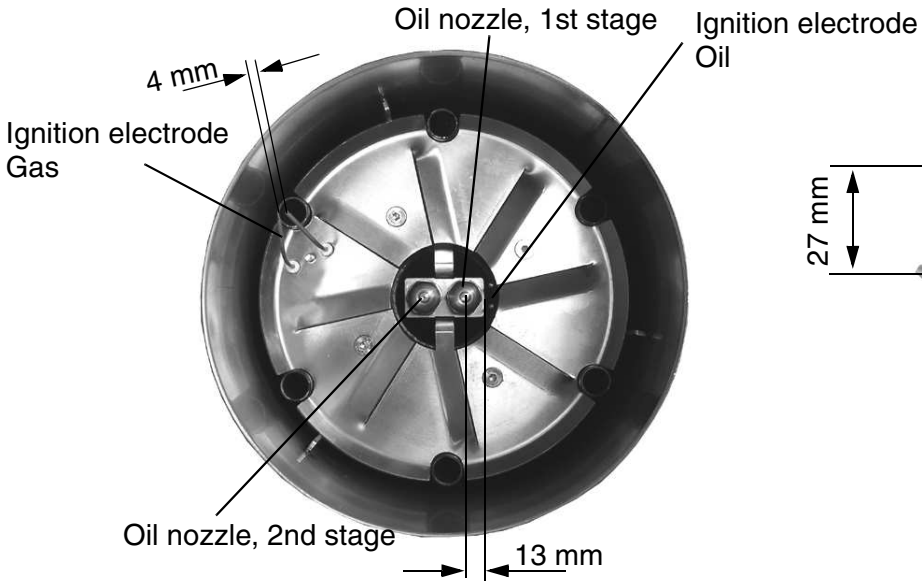
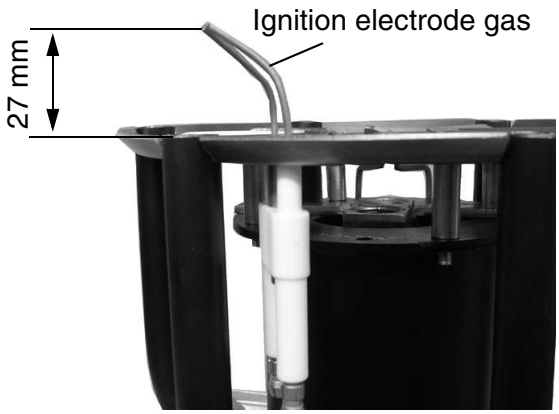
9. Ignition electrode

The following clearances between the nozzle and ignition electrode should be observed:

The given dimensions are intended for checking purposes after making necessary corrective adjustments or replacing an electrode.





10. Flame detector KLC 1000

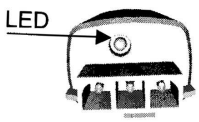
A safety inspection of the flame detector must be performed after commissioning and after any maintenance that is carried out.

When doing so:

- The flame detector must be covered up for the start-up attempt - after completion on the safety time, the control box must go into a fault condition!
- Illuminate the flame detector with an ext. UV light during the start-up attempt, e.g. cigarette lighter or lamp (existing room lighting is not sufficient) - the control box must go into fault condition during the pre-ventilation phase!
- Cover up the flame detector in burner operation - depending on the control box design, the control box must go into fault condition either at the end of the safety time or directly after covering up control box.

Status indication of LED flame detector

The status of the KLC 1000 flame detector is indicated by the built-in LED.

No burner operation	LED OFF	No heating request	
Pre-ventilation	LED OFF	No flame present	
Burner operation	LED flashes continuously	Flame present	

For maintenance, the inspection glass of the KLC 1000 should be cleaned regularly using a clean, lint-free cloth. Never use burner cleaning sprays. As internal checks are made of the KLC 1000. no further tests are necessary. The KLC is a safety component and must not be opened.

11. Oil connection

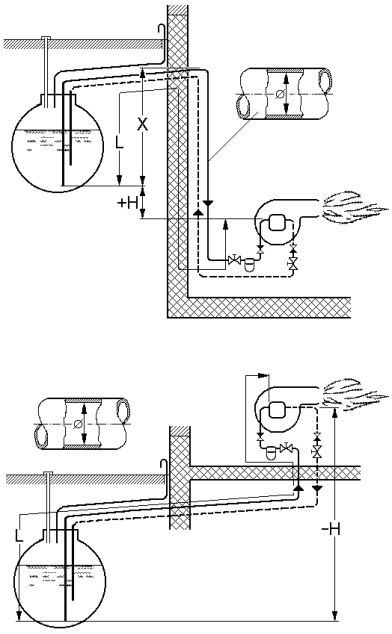
Oil lines must be routed to the burner as far as necessary to allow the oil hoses to be connected without tension. It must be ensured that the burner can easily be brought to the service position.

Important: an oil filter must be installed before the oil pump.

The tables for dual and single feed line installation show the maximum possible piping lengths dependent on 3 factors relative to fuel oil EL 4.8 cST.

- Height difference between pump and tank,
- Nozzle throughput and/or pump type,
- Pipe diameter.

4 brackets, 1 valve and 1 non-return valve were included for the resistance with the suction line length. Due to possible oil gas emissions, the dimension "X" should not exceed a length of 4 m.



Twin-pipe system

H (m)	Suntec AJ4 L (m)			
∅ mm	10	12	14	16
4.0	23	49	91	100
3.0	20	43	80	100
2.0	17	37	69	100
1.0	14	31	58	100
0.5	13	28	53	91
0	11	25	47	81
-0.5	10	22	42	72
-1.0	9	19	36	62
-2.0	6	13	25	43
-3.0	3	7	14	24
-4.0	-	-	-	5

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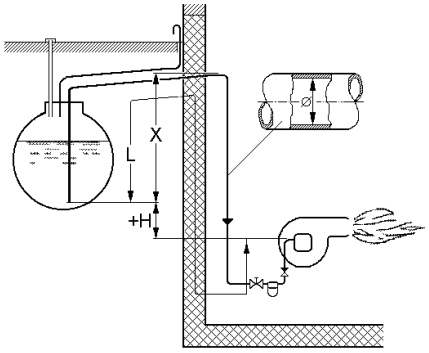
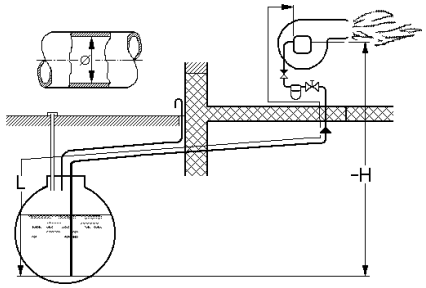
Single-line system





Nozzle	14 (gph)			20 (gph)				30 (gph)				45 (gph)			
.Ø mm	8	10	12	8	10	12	14	10	12	14	16	10	12	14	16
H (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)	L (m)
4.0	21	52	100	14	36	75	100	23	49	92	-	15	32	61	100
3.0	18	45	95	12	31	66	100	20	43	81	-	13	28	53	92
2.0	16	39	82	11	27	57	100	17	37	70	-	11	24	46	79
1.0	13	33	69	9	23	48	89	15	31	59	-	9	20	38	66
0.5	12	30	62	8	20	43	81	13	28	53	-	8	18	35	60
0	11	27	56	7	18	39	72	12	25	48	82	7	16	31	54
-0.5	9	23	49	6	16	34	64	10	22	42	72	-	14	27	47
-1.0	8	20	43	5	14	30	55	9	19	36	63	-	12	23	41
-2.0	5	14	30	3	10	21	39	6	13	25	44	-	8	16	28
-3.0	3	8	17	-	5	11	22	3	7	14	25	-	4	8	15
-4.0	-	-	4	-	-	-	5	-	-	-	5	-	-	-	-

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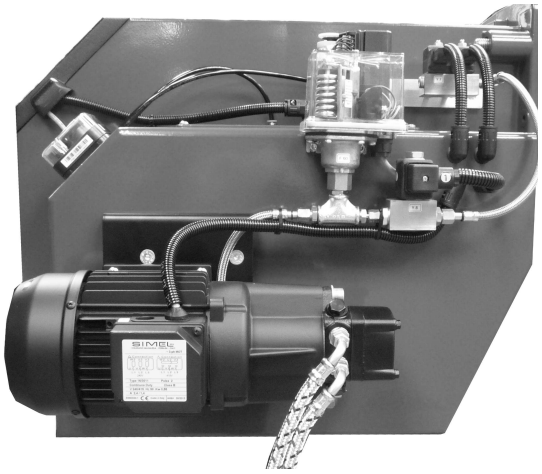
12. Pump unit

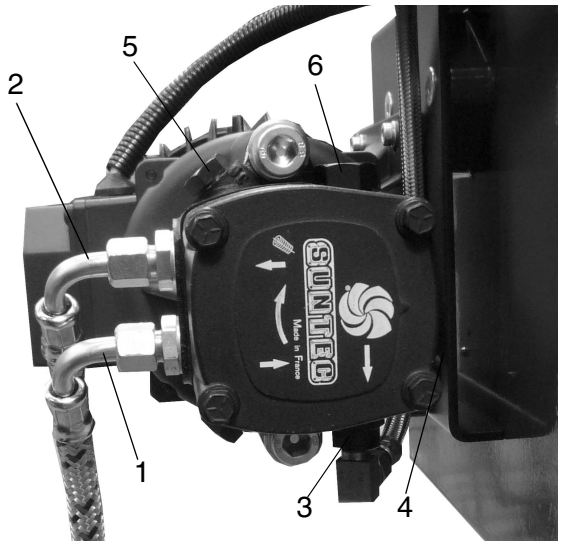
Oil lines must be routed to the burner as far as necessary to allow the oil hoses to be connected without tension. It must be ensured that the burner can easily be brought to the service position.

Important: an oil filter must be installed before the oil pump.



Pump unit for MK2.1 / MK2.2

To convert the pump for operation on a single line system, the following points must be observed:
remove the return line and the connection nipple. Unscrew the bypass plug in the return line port and tightly seal the port with a sealing plug. The pump suction flow will then be identical to the flow rate through the nozzle.



Oil pump AJ4-CC (MK2.2)

1 Flow
2 Return
3 Nozzle connection
4 Transducer connection
5 Vacuum measuring connection
6 Pressure setting

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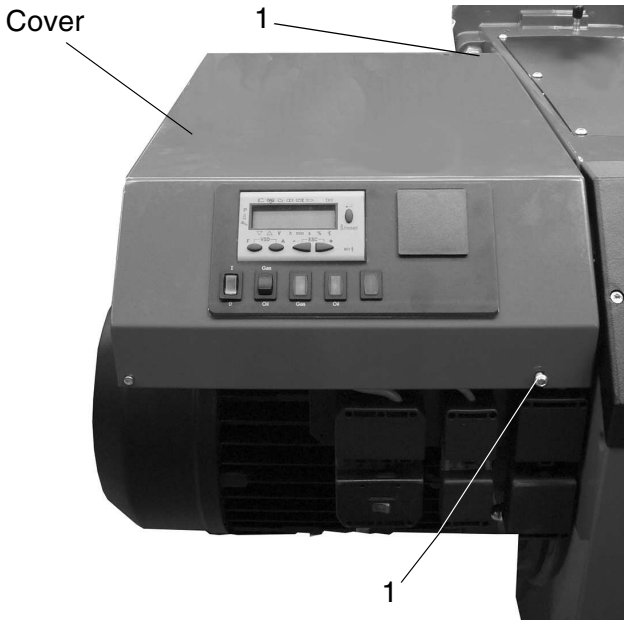
13. Electrical connection



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.

See separate circuit diagram

The cover has to be removed and set to the service position in order to permit access to the control unit. Remove the 2 securing screws (1) and fold the cover down to the left.

If the gas train was **not** ordered together with the burner and the gas train is an MB-VEF 407 or MB-VEF 412, one parameter must be modified in the LMV. See LMV description, page 13 et seq.

In addition, the bridge at the AGM between X-22: 02 and X22-02: 03 are removed.

Now unscrew the two luster terminals on the wires of the density control and connect the wires to terminals X-22: 02 and X22-02: 03 (see wiring diagram).

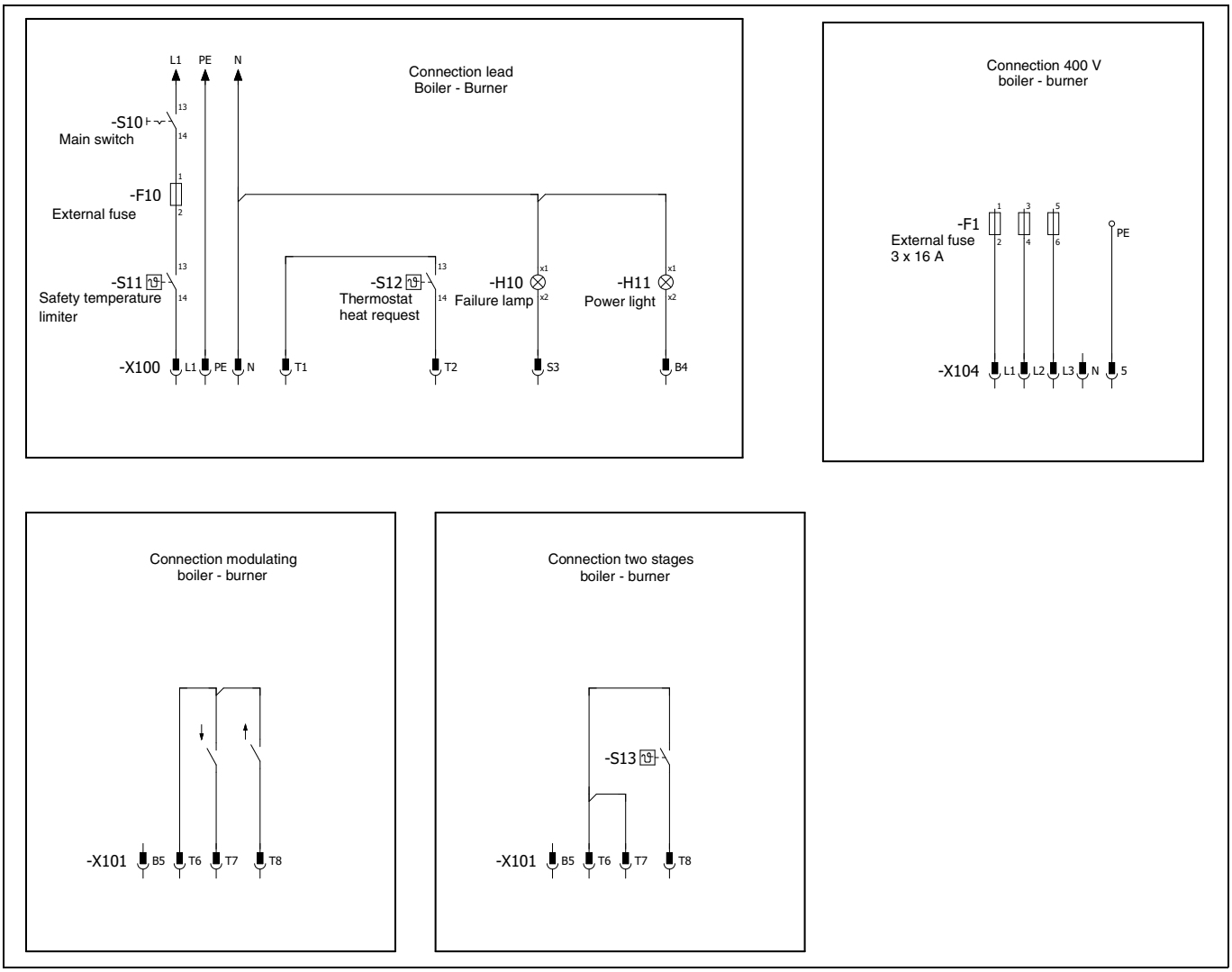
If the gas train MB-VEF 407 or MB-VEF412 was ordered together with the burner, the LMV is fully programmed and it is not necessary to modify any parameters.

14. Terminal diagram - connector pin assignments

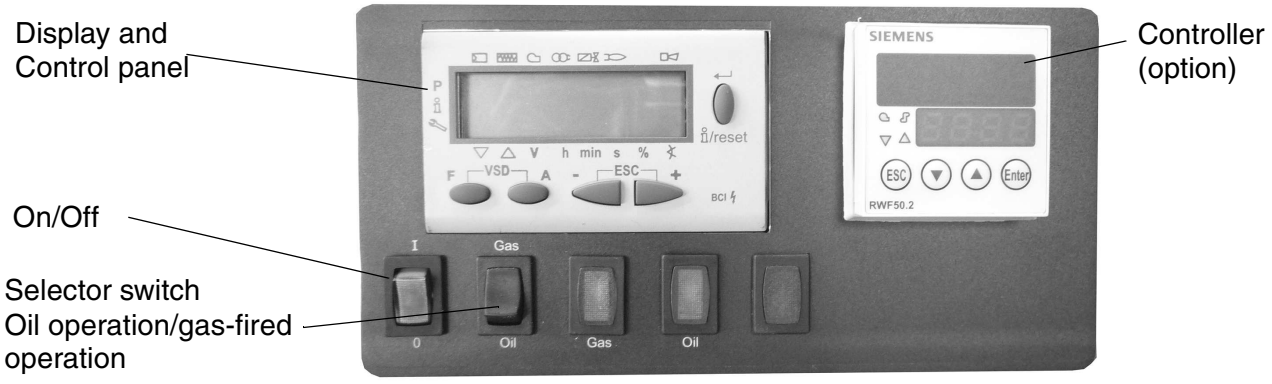
If the male connector has already been wired:
check the connections according to the connection diagram!

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.

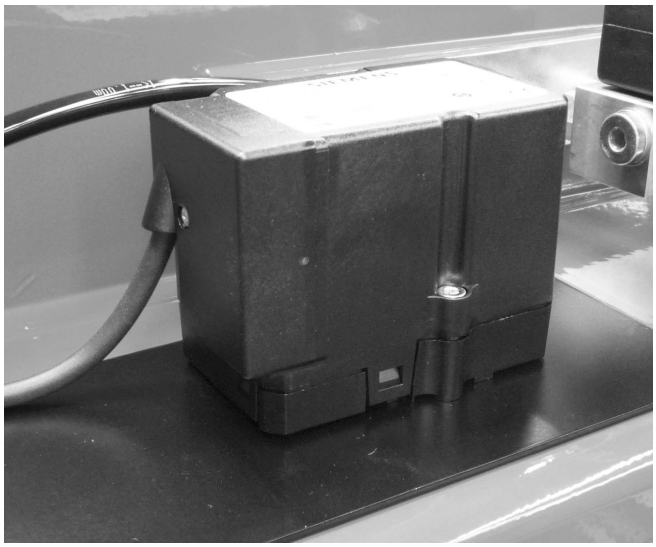
The supply cable must be fused with max. 10 A fast blow or 6.3 A slow blow and must be routed using flexible cable.



15. Front panel



16. Air flap positioning motor

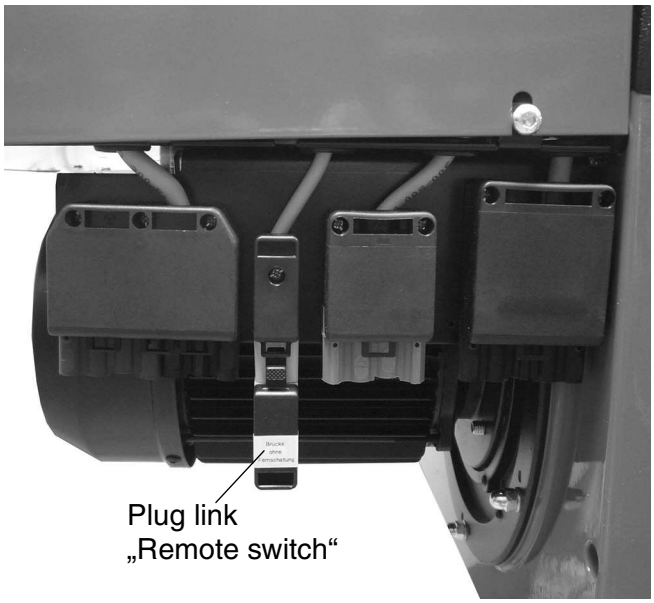


The air flap positioning motor is designed for air flap adjustment on progressive two-stage burners or modulating burners. The motor is activated electronically via the microprocessor-controlled control box.

Caution

The housing must not be opened under voltage, as the light that enters could destroy the drive.

17. Remote switching



Caution:

When operating without remote switching, do not remove the "Remote switching" jumper.

When operating with remote switching, the "Remote switching" jumper must be replaced with the remote switching connection and the selector switch must be in the **Gas** position.

If the selector switch is set to oil position with the remote switch connected, remote switching is not possible.

18. Air pressure monitor

The air pressure switch is a differential pressure switch and monitors pressure at the forced-air burner. The air pressure switch is preset at the factory to 8 mbar.

Note

Check that the burner does not produce CO above the stipulated value when the air pressure is too low before the cut-off point.

Causes:

- Incorrect setting
- Motor does not run
- Motor runs in the wrong direction.

19. Gas pressure switch

19.1 Gas pressure switch min. with leakage check

The gas pressure switch at the gas train serves to monitor the gas input pressure and test the valves for leaks. The gas pressure switch must be set to 50% of the static gas input pressure.

19.2 Gas pressure switch min. with leakage check only for KEV 407 = MB-VEF 407 and KEV 412 = MB-VEF 412

The gas pressure switch at the gas train serves to monitor the gas inlet pressure. The burner is shut down if the gas inlet pressure drops below the set minimum value (factory default). The burner starts up automatically again when the minimum pressure is exceeded. Gas pressure switch as leakage check serves to test the valves and must be set to 50% of the static gas input pressure.

20. Function test

A safety inspection must be carried out on the flame detector directly after start-up as well as after a service or lengthy shut-down.

Start-up with covered flame sensor:
When the safety interval elapses, the burner must switch to lockout mode.

Start-up with exposed flame sensor:
The burner must go into lockout mode after approx. 20 s of pre-ventilation.

to ISO standards. Start-up; if burner in operation, cover up the flame sensor:
New start-up attempt; the burner must go into fault condition after the safety time.

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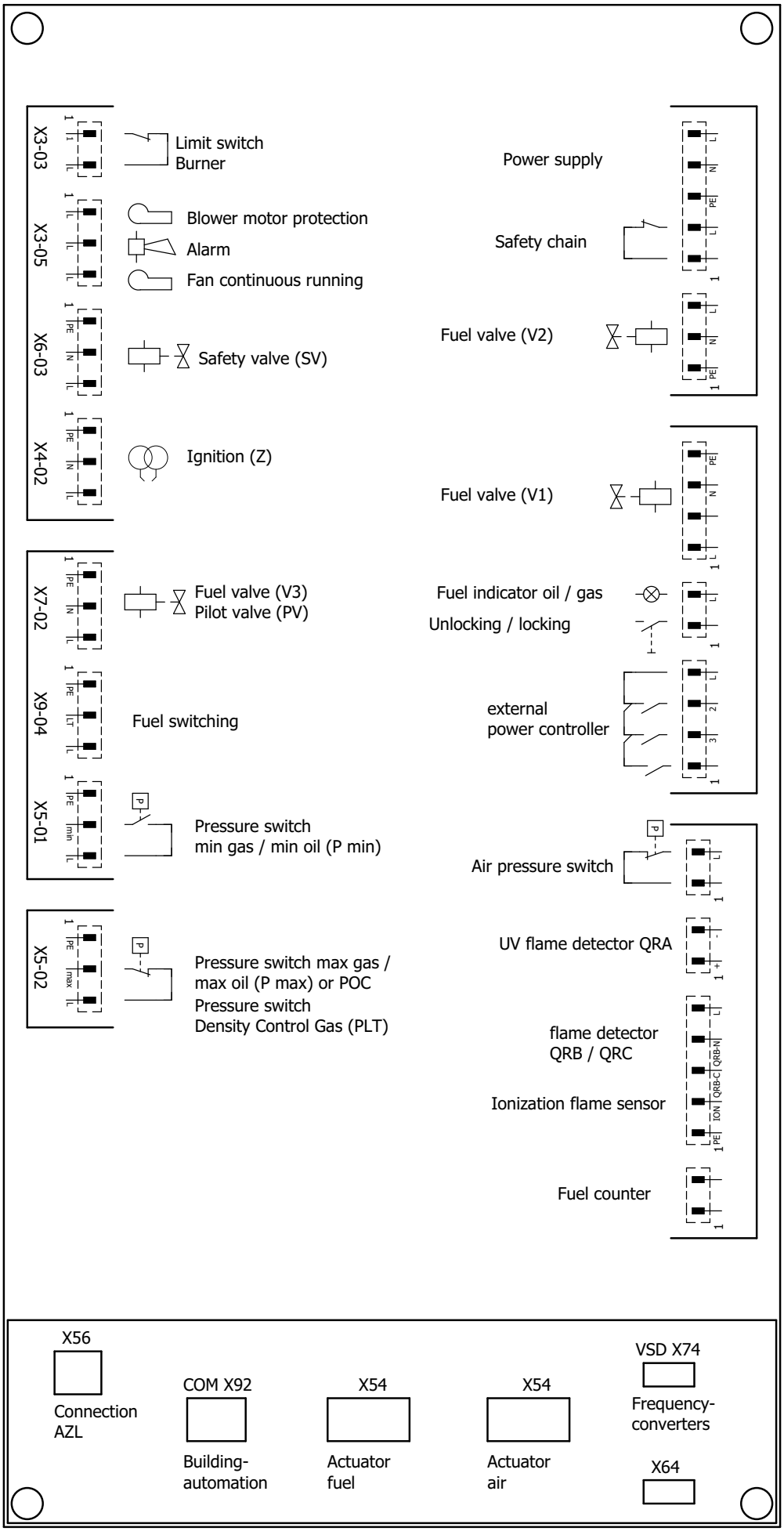
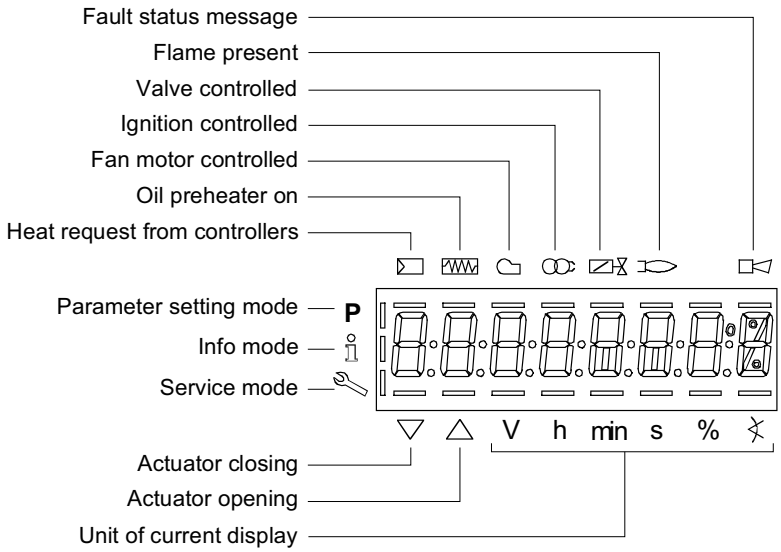
21. Connection diagram LMV



22. 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**)
VSD 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
ESC - +	**- and + button: Escape function** (Press **- and + button** simultaneously) - Do not accept the value - One menu level higher

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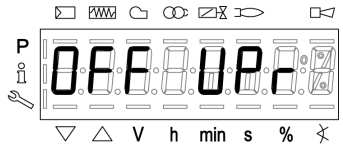
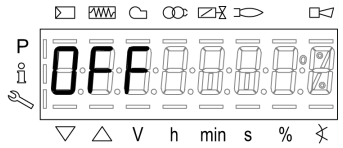
23. Start-up and calibration

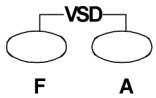
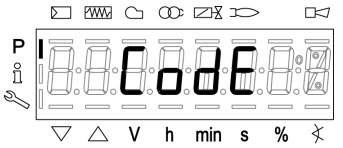
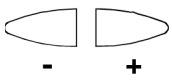
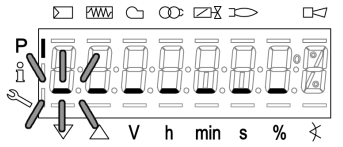
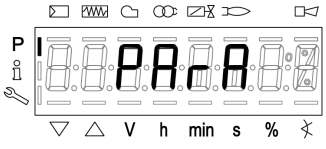
The oil mode s always active when switching on the burner from a de-energized state. When the burner is at the Gas position, it switches automatically to Gas mode after a certain time.

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.

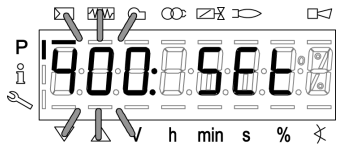
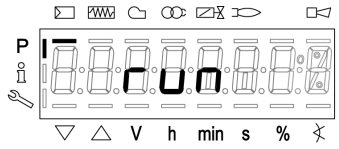
Action button	Display	Description
		**OFF UPr** means burner off and non-programmed.
		**OFF** means burner off and programmed.

Enter password

Action button	Display	Description
		Press **F and A button** simultaneously. The display **CodE** appears
  **i/reset**		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**.
 **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

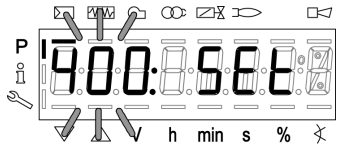
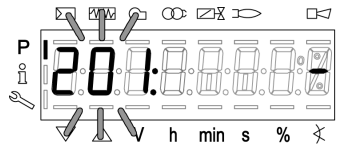
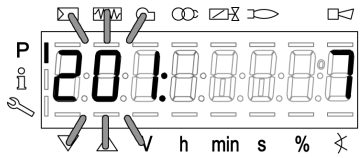
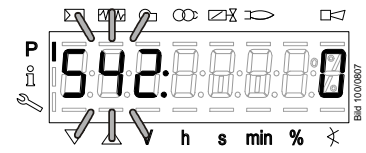
Set the operating mode for gas as burner fuel

Continuous heat requirement is necessary for further start-up!
LMV programmed

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

Set operating mode / LMV non-programmed

If the firing machine is non-programmed, the operating mode must be set:
7 = Gas direct ignition, pneumatic modulating group.

Action button	Display	Description
i/reset		
i/reset - +		Use the **- or + button** to select the desired setting; in this case, 7 for gas direct ignition, pneumatic group
i/reset ESC - +		Use **i/reset** to save the desired setting. Press **ESC -and + button** (press briefly) to return to the parameter level
+		Continue to the next parameter with the **+ button**
		If a frequency converter is present, it must be activated. 0= Without frequency converter - deactivate 1 = With frequency converter - activate
+		Continue to the next parameter with the **+ button**

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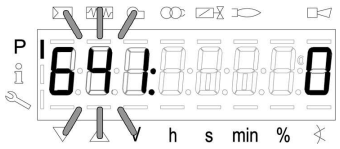
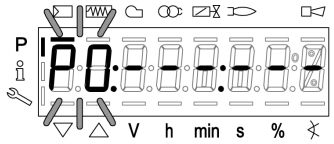
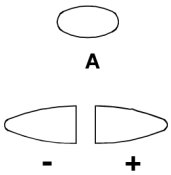
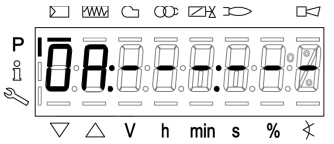
Speed standardization of the frequency converter

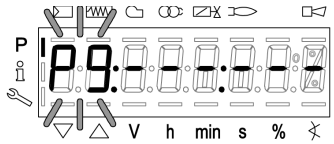
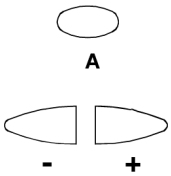
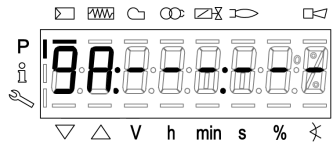
Action button	Display	Description
		The next step may only be started with frequency converter. If there is not frequency converter, skip with speed standardization.
		Continue to the next parameter with the **+ button**

Start load preset

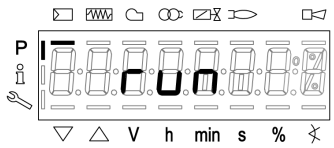
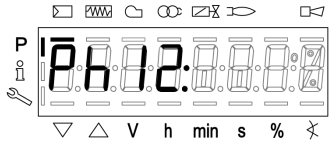
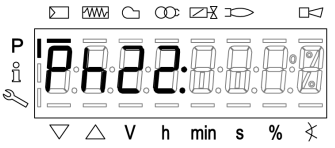
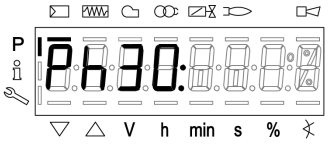
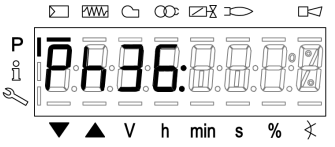
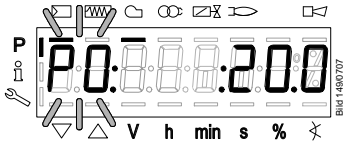
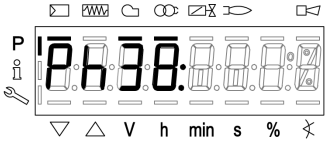
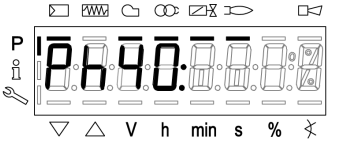
Use the values from the setting tables to preset the values.

Action button	Display	Description
		Set the start position air flap.
		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
 **i/reset**		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.		
		Run in ignition position
 **+**		Commissioning stops in phase 36. The air flap position can still be modified once when cold. Press **+ Taste** to continue
		Ignition ON
		Valves ON

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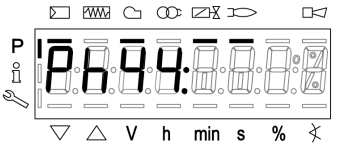
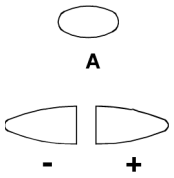
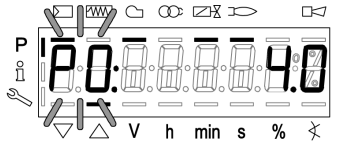
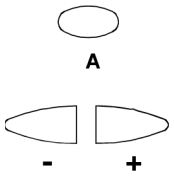
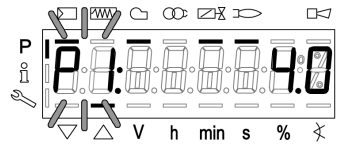
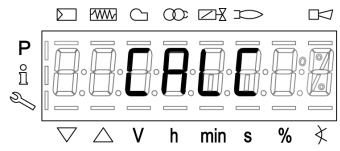
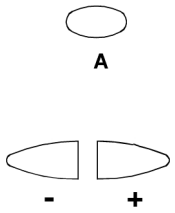
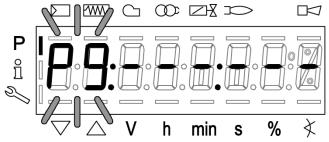
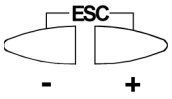
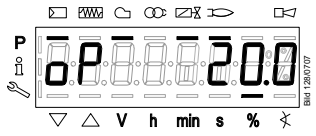
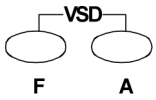
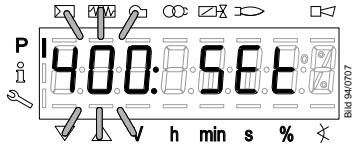
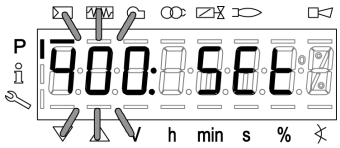
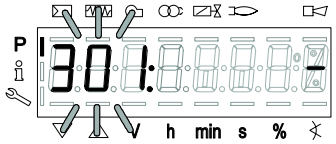
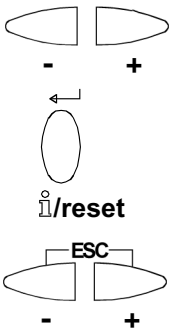
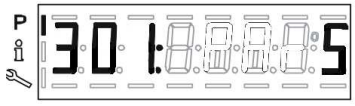
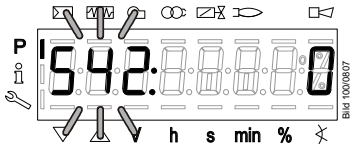
Action button	Display	Description
		Ignition OFF
		Flame in start position
		Hold down **button A** and set the value for the start load with **the - or + button**.
		Move to the next curve point, P1 low load
		Hold down **button A** and set the value for the low load with **the - or + button**.
		Move to the next curve point.P2
		When transferring **P1 to P2** for the first time, **CALC** appears briefly The curve points **P2 to P9** are calculated automatically as a straight line.
		Use **+ button** to confirm all curve points up to curve point P9. In curve point **P9**, set the excess air for the high load at the gas ramp using the adjusting screw **"V" or "large flame"** . The CO_2 value should be 9-10% for natural gas.
		Use the **- button** to select curve point **P1**. In curve point **P1**, set the excess air for the low load at the gas ramp 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 ramp and correct using the adjusting screw **"V" or "large flame"** .

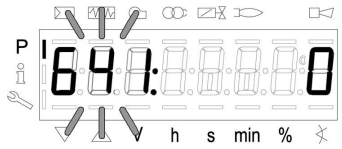
Setting the output in high and low-load operation

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 the 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 low-load setting via the gas flow at the gas meter or compare the nozzle pressure with the values stated in the 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
		OP 0 … 100 Burner output stage (automatic mode)

Set the operating mode for oil as burner fuel

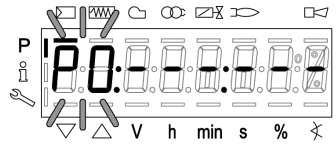
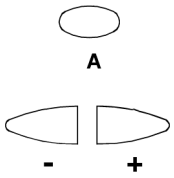
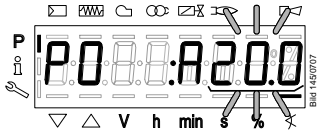
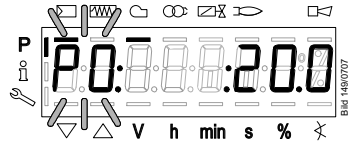
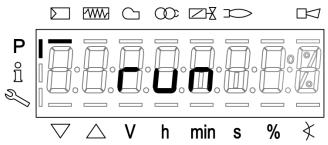
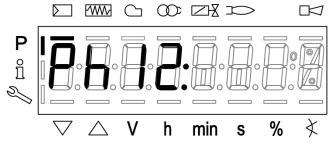
Action button	Display	Description
		After pressing the key combination, the following display appears
		Continuous heat requirement is necessary for further start-up!
		When the control box has been reprogrammed, the operating mode must be set: 5 = Oil 2-stage (Lo 2-stage)
		Use **i/reset** to save the desired setting. Press **ESC -and + button** (press briefly) to return to the parameter level.
		Continue to the next parameter with the **+ button**
		If a frequency converter is present, it must be activated: 0 = Without frequency converter - deactivate 1 = With frequency converter - activate
		Continue to the next parameter with the **+ button**

Speed standardization of the frequency converter

Action button	Display	Description
		The next step may only be started with frequency converter. If there is not frequency converter, skip with speed standardization.
 **+**		Continue to the next parameter with the **+ button**

Start load preset

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

Action button	Display	Description
		
 **A** **-** **+**		Hold down **button A** and set the value with the **- or + button**.
 **A**		Set the start position air flap. Release the **A button**
 **+**		Press the **+ button** to continue
 **i/reset**		Run oil is displayed Activate oil as fuel with existing demand for heat. With **i/reset** to heat demand of the burner.
		The burner starts with pre-ventilation

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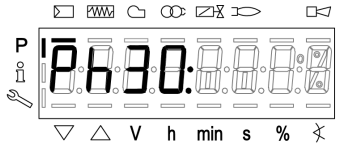
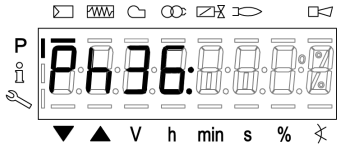
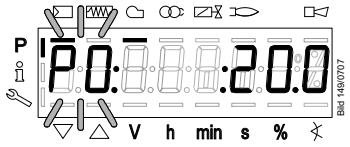
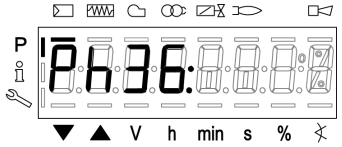
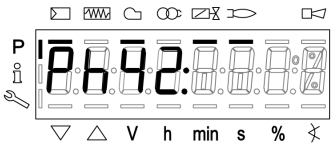
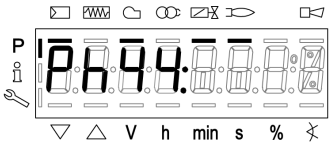
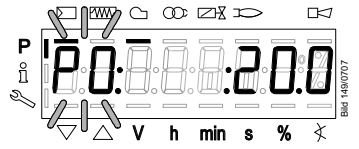
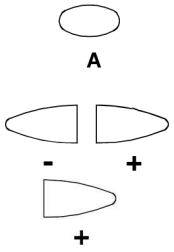
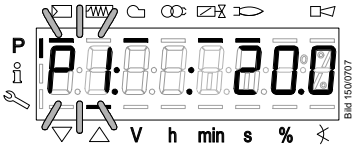
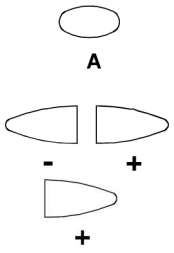
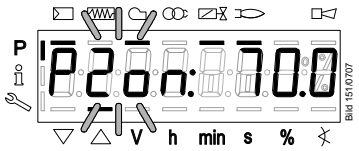
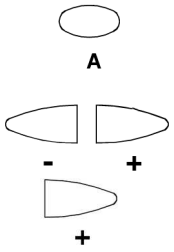
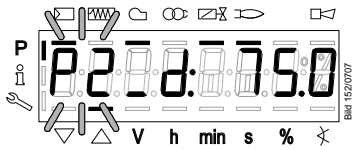
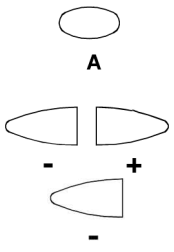
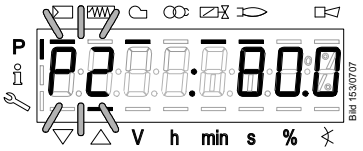
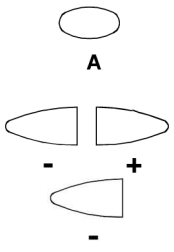
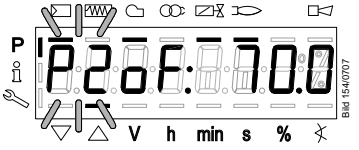
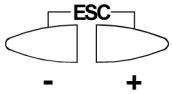
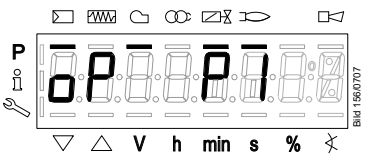
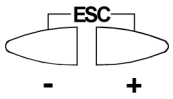
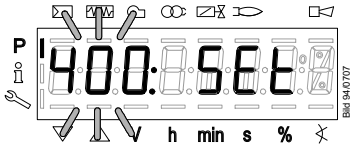
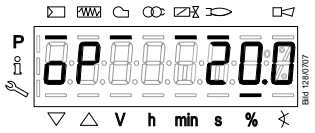
Action button	Display	Description
		Blower start-up and safety valve ON
		Run in pre-ventilation position
		Pre-ventilation
		Run in ignition position
+		Commissioning stops in phase 36. The air flap position can still be modified once when cold. Press **+ Taste** to continue
		Run in ignition position
		Ignition ON
		Valves ON
		Ignition OFF
		Flame in start position

Action button	Display	Description
		The air flap position can still be modified once when cold. Press **+ Taste** to continue
		Set the operating point P1 with **A and + or - button**. (Air damper 1st stage) Press **+ Taste** to continue
		Set the switch-on point MV2 (2nd stage) with **A and + or - button**. Press **+ Taste** to continue
		Set the preset point P2 MV2 (2nd stage) with **A and + or - button**. Press **+ Taste** to continue Should be 5 ° higher than P2 on
		Set the operating point P2 with **A and + or - button**. (Air damper 2nd stage) Press **- Taste** to continue
		Set the switch-off point MV2 with **A and + or - button**. Use the **- button** to select curve point P1
		Press the **ESC button** briefly

Action button	Display	Description
		Enable automatic mode with **ESC button** (press briefly
		OP 0 … 100 Burner output stage (automatic mode)

The heat setting of the burner is completed.

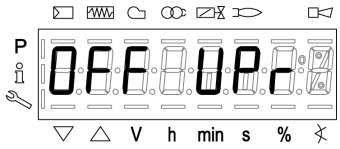
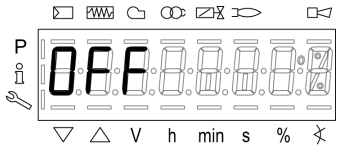
Gas train MB-VEF (KEV412 1 ½", KEV407 ¾")

Attention, refer to additional information on page 12.

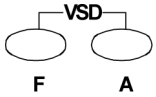
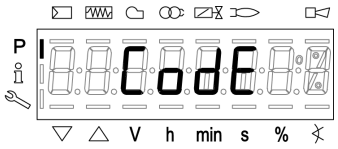
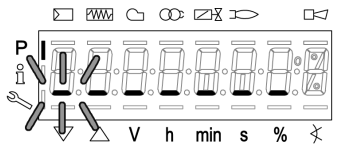
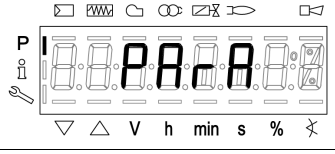
If gas train MB-VEF is used, one parameter in the LMV must be modified, since two gas pressure switches are used.

From:
Parameter: 236 fuel 1 gas: pressure switch-min input must be set tot he value 1 (pressure switch-min upstream of burner valve 1 V1).

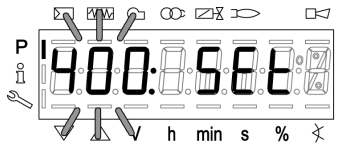
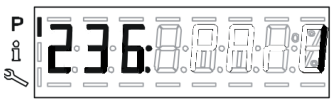
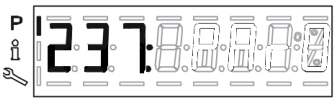
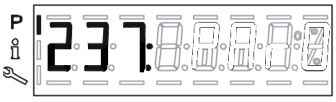
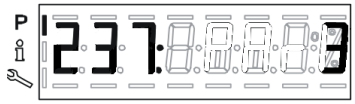
Parameter: 237 burner 1 gas: pressure switch-max / POC input must be set tot he value 3 (pressure switch leakage test).

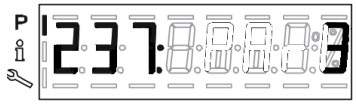
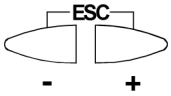
Action button	Display	Description
		**OFF UPr** means burner off and non-programmed.
		**OFF** means burner off and programmed.

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

Gas: Pressure switch min input

Action button	Display	Description
-		Go to parameter set 200.
i/reset		Confirm
+		Go to parameter set 236.
i/reset		Confirm parameter 236.
-		Set parameter 236 to the value 1.
i/reset		Confirm value 1
ESC - +		Press the **ESC button** three times to move back
+		Go to parameter set 237.
i/reset		Confirm parameter 237.
- +		Set parameter 237 to the value 3.

Action button	Display	Description
 **i/reset**		Confirm value 3
		Press the **ESC button** three times to move back

LMV phase display

Phase	Function
Ph00	Fault phase
Ph02	Safety phase
Ph10	Go home
PH12	Standby (stationary)
Ph22	Blower start-up time (122) (blower motor = ON, auxiliary 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 V1 and fuel valve V2)
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	Max. time, low load (operation 2, preparation for decommissioning, run at low load)
Ph70	After-burn time
Ph72	Run in post-ventilation position
Ph74	Post-ventilation time (no foreign light check)
Ph78	Post-ventilation time 3 (abort when power controller ON)
Ph80	Leakage check idle time
Ph81	Leakage check test time atmospheric pressure, atmosphere test
Ph28	Leakage check filling test, filling
Ph83	Leakage check test time gas pressure, pressure test
Ph90	Gas shortage waiting time

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Fault code list LMV

Press i/reset button for two seconds to acknowledge fault.

loc.C:	loc.d:	Description	Measure
		No communication between basic device AZL2…	Check wiring for interruptions/loose contacts
2	1 - 2	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)	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 he 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	Pressure switch max (Pmin) / heavy fuel - immediate start	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) / heavy fuel - immediate start	Check wiring for interruption (X5-01) and (X9-04)
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 - 76		Internal fault group	
80	1 - 2	Control range restriction of the frequency converter	1. Basic device is not standardized for this motor > Repeat standardization 2. The group setting must be checked
81	1	Frequency converter fault	Too many interference pulses on the probe line > Improve EMC measures
82	1 - 2	Frequency converter fault	Internal error

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loc.C:	loc.d:	Description	Measure
82	3	Sensor interrupt	The basic device does not receive pulses from the speed sensor: 1. Motor does not turn 2. Speed sensor not connected 3. Speed sensor is not actuated by the encoder disk (check distance)
82	4	Frequency converter fault	Internal error
82	5	Incorrect direction of rotation	The direction of rotation of the motor is incorrect 1. Motor does actually rotate in the wrong direction > Re-parameterize the direction of rotation or exchange 2 phases 2. Encode disk is fitted reversed > Turn the encoder disk
82	6	Frequency converter fault	The required pulse pattern (60°, 120°, 180°) has not been recognized correctly 1. Speed sensor does not detect all cams of the encoder disk > Check the distance 2. When turning the motors, other mechanical parts are detected in addition to the cams > Correct the installation 3. Faults on the sensor lines > Check the routing, improve EMC
82	7	Invalid standardization speed	The measured standardization speed does not lie in the permitted range > Motor turns to slowly or too fast.
82	15	Speed deviation	Carry out standardization again and check the group setting
82	20	Incorrect phase of the phase manager	Standardization performed in a wrong phase. Only phases <12 are permissible > Controller off, re-start standardization
82	21	Safety chain / burner flange opened	Repeat standardization with safety chain closed
82	22	Air drive not referenced	The air drive is not referenced or has lost its reference 1. Check whether the reference position can be approached 2. Check whether the drives have been exchanged 3. If the fault does not occur until after referencing, the drive is overloaded and cannot reach its target
82	23	Frequency converter deactivated	Standardization was started with frequency converter deactivated > Activate frequency converter and repeat standardization
82	24 - 255	Frequency converter fault	Perform standardization
83	0 - 1	Control range restriction of the frequency converter	1. Basic device is not standardized for this motor > Repeat standardization
83	2	Frequency converter fault	Too many interference pulses on the probe line > Improve EMC measures
83	3	Frequency converter fault	Internal error
83	4	Speed signal interrupted	No speed detected despite actuation. 1. Check that the motor is turning 2. Check whether the speed encoder is supplying a signal (check LED / distance from encoder disk) 3. Check wiring of the frequency converter
83	5	Frequency converter fault	Internal error
84	0 - 2	Frequency converter fault	Internal error

loc.C:	loc.d:	Description	Measure
85	0	Error group fuel 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 overloaded
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 overloaded
86	0 - 1	Error group fuel drive	Unable to achieve the target position within the required tolerance. -> Check whether the drive is blocked or overloaded. A line break was detected at the drive connections. -> Check wiring (voltage X54 between Pin 5 or 6 and Pin 2 >0.5 V).
86	3	Error group fuel drive	Internal error
86	4	Step deviation compared to last referencing	The drive was overloaded and/or mechanically distorted. 1. Check the setting of the drive type 2. Check whether the drive is blocked on one side in the drive area 3. Check whether the torque is sufficient for the application
87	0 - 1	Error air drive	Unable to achieve the target position within the required tolerance. -> Check whether the drive is blocked or overloaded. A line break was detected at the drive connections. -> Check wiring (voltage X53 between Pin 5 or 6 and Pin 2 >0.5 V).
87	3	Error group air drive	Internal error
87	4	Step deviation compared to last referencing	The drive was overloaded and/or mechanically distorted. 1. Check the setting of the drive type 2. Check whether the drive is blocked on one side in the drive area 3. Check whether the torque is sufficient for the application
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.

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loc.C:	loc.d:	Description	Measure
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 trans-former 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	

24. 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 kWh/m^3
Natural gas type LL $H_{i,n}$ = 9.3 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
Barometric air pressure B (acc. to. table)	989 mbar
Gas pressure P_G at counter	20 mbar
Gas temperature ϑ_G	16°C
Boiler output Q_n	430 kW
Efficiency h_K (assumed)	90%
Calorific value $H_{i,n}$	10.4 kWh/m^3

Gas flow in standard state (V_n)

$$V_n = \frac{Q_n}{\eta_k \times H_{i,n}} = \frac{430 kW}{0,90 \times 10,4 \frac{kWh}{m^3}} = 46 \frac{m^3}{h}$$

Gas flow in operating state (V_B)

$$V_B = \frac{V_n}{f} = \frac{46 \frac{m^3}{h}}{0,94} = 49 \frac{m^3}{h}$$

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]
h_K = Efficiency [%]
$H_{i,n}$ = Lower standard calorific value [kWh/m^3]
f = Conversion factor
B = Barometric air pressure [mbar]
p_G = Gas pressure at gas meter [mbar]
ϑ_G = Gas temperature at gas meter [°C]

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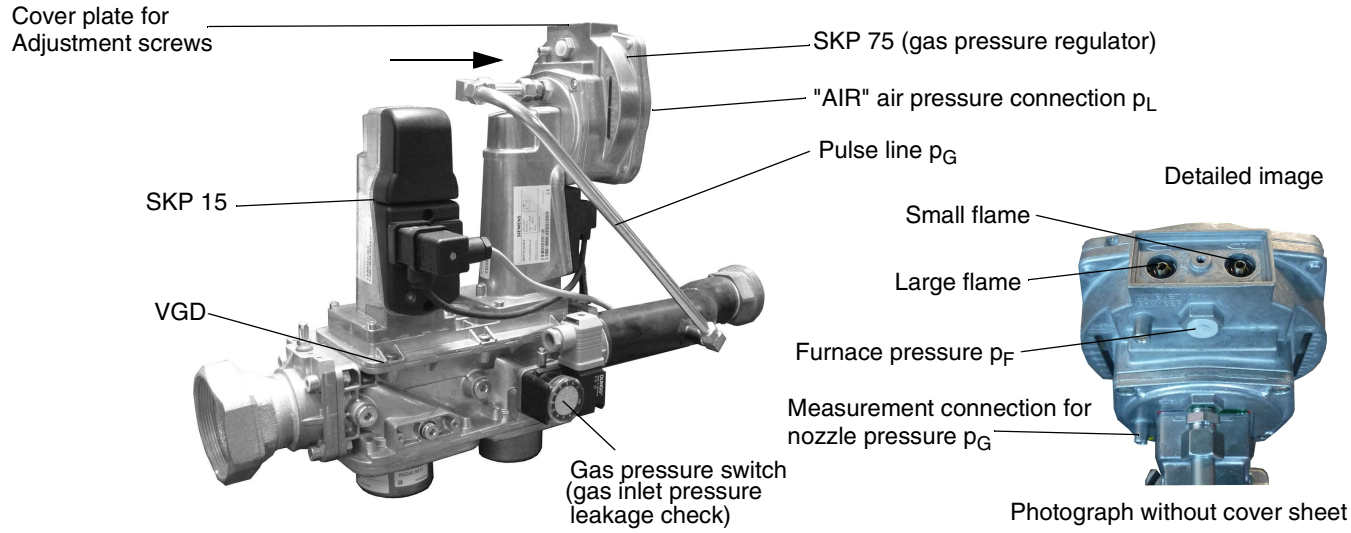
25. Gas burner with gas train

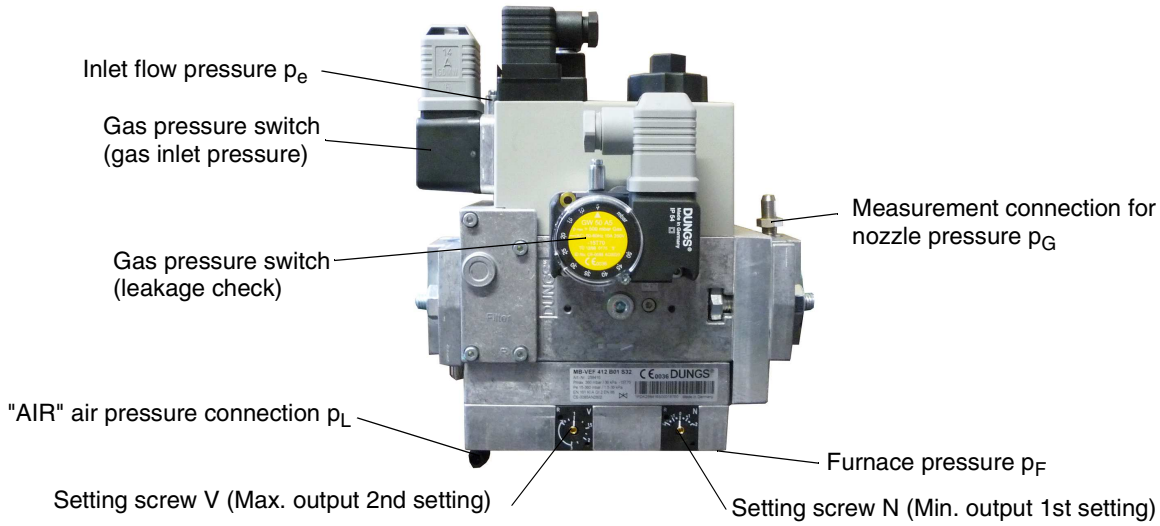
Installation of the gas train	
Installation position	only in horizontal line, not tilted.
Minimum distance to walling:	20 mm
Screw the measuring nipple for combustion chamber pressure into the gas jacket at the top. Route the connecting hose between the measuring nipple for combustion chamber pressure and the gas train in a loose loop.	

The air pressure connection nipple must be screwed into the gas jacket at the top.

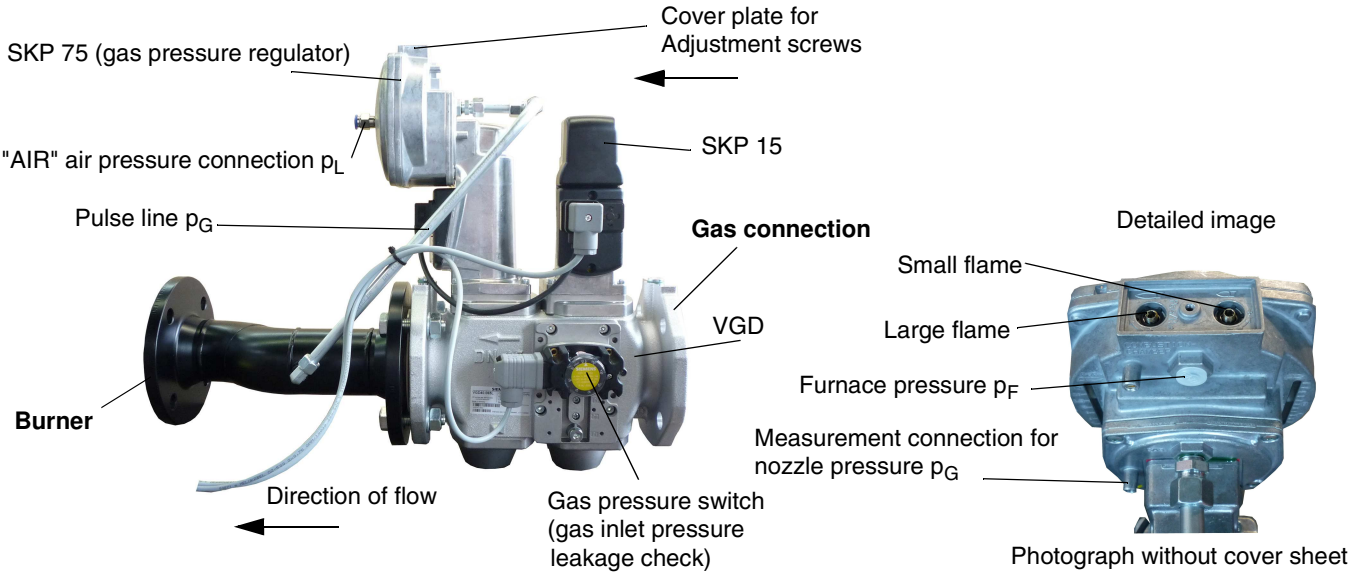
KEV 1 ½", KEV2", KEV DN65 (VGD20.40, VGD20.50, VGD40.65 all SKP15/75).



KEV412 1 ½"(MB-VEF 412)



KEV DN65, KEV DN80 (VGD40.65, VGD40.80 all SKP15/75)



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.

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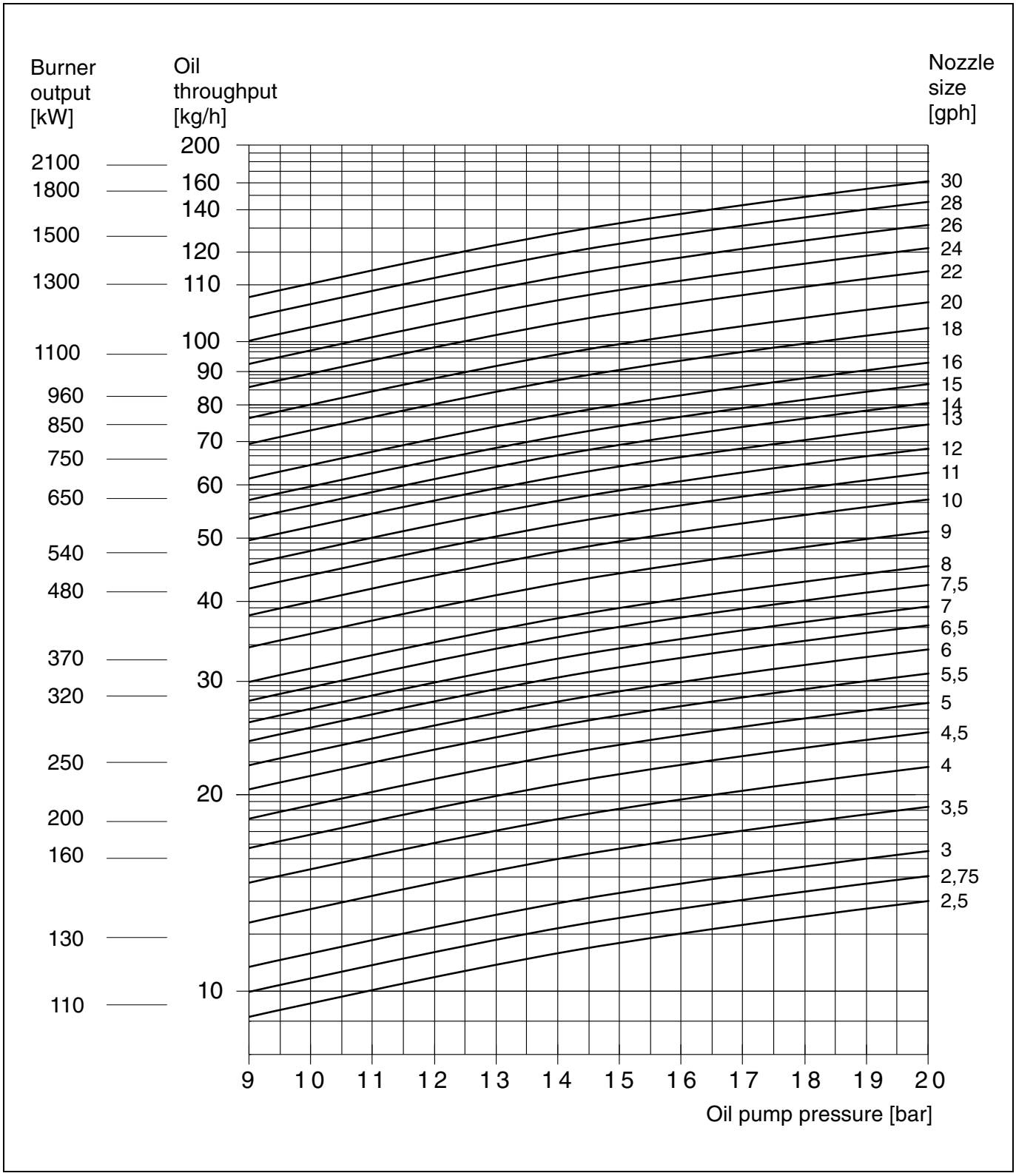
26. Nozzle selection diagram

If the desired output deviates from the values specified in the tables, the nozzle size and the pump pressure can be determined on the basis of the following diagram.



MK2.1-ZM-L					MK2.1-ZM-L-N								MK2.1-ZM-L-F			
					Natural gas L $H_{i,n}$ = 9.3 [kWh/m^3]				Natural gas H $H_{i,n}$ = 10.4 [kWh/m^3]				Liquid gas $H_{i,n}$ = 25.89 [kWh/m^3]			
Burner output [kW]		Boiler output η= 92% [kW] [kW]	Air flap position [°]		Gas nozzle pressure p_G [mbar]		Gas flow rate [m^3/h]		Gas nozzle pressure p_G [mbar]		Gas flow rate [m^3/h]		Gas nozzle pressure p_G [mbar]		Gas flow rate [m^3/h]	
2nd st.	1st st.	2nd st.	2nd st. P 9	1st st. P 1	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.
560	280	521	37	17.5	8	2.7	62.1	31.0	6.3	2.1	55.5	27.8	8.3	2.9	22.3	11.1
600	300	558	44	18	10	3.5	66.5	33.3	7.8	2.7	59.5	29.7	10.1	3.4	23.9	11.9
700	350	651	72	21	12.9	4	77.6	38.8	10.1	3.1	69.4	34.7	13.5	4.5	27.9	13.9
770	385	716	90	24	13.2	5	85.4	42.7	10.3	3.9	76.3	38.2	15.2	5.2	30.7	15.3

MK2.1-ZM-L												
								Heating oil EL H_i = 11.86 [kWh/kg]				
Burner output [kW]		Boiler output η= 92% [kW] [kW]	Air flap position [°]					Pump pressure [bar]	Oil nozzle Steinen		Oil flow rate [kg/h]	
2nd st.	1st st.	2nd st.	P0	P1	P2 on	P2 d	P2		2. St. SS/60°	1st st. SS/60°	2nd st.	1st st.
560	280	521	17.5	18.5	21	26	37	22	4/60°S	4/60°S	47.2	23.6
600	300	558	18	19	22	27	44	18	5/60°S	5/60°S	50.6	25.3
700	350	651	21	22	25	30	72	22	5/60°S	5/60°S	59.0	29.5
770	385	716	24	25	28	33	89.9	20	6/60°S	6/60°S	64.9	32.5

MK2.2-ZM-L					MK2.2-ZM-L-N								MK2.2-ZM-L-F			
					Natural gas L $H_{i,n}$ = 9.3 [kWh/m³]				Natural gas H $H_{i,n}$ = 10.4 [kWh/m³]				Liquid gas $H_{i,n}$ = 25.89 [kWh/m³]			
Burner output [kW]		Boiler output η= 92% [kW] [kW]	Air flap position [°]		Gas nozzle pressure p_G [mbar]		Gas flow rate [m³/h]		Gas nozzle pressure p_G [mbar]		Gas flow rate [m³/h]		Gas nozzle pressure p_G [mbar]		Gas flow rate [m³/h]	
2nd st.	1st st.	2nd st.	St. 2 P 9	St. 1 P 1	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.	2nd st.	1st st.
830	450	772	43	14	13	4	92.0	49.9	10.2	3.1	82.3	44.6	17.5	5.6	33.1	17.9
900	450	837	52	14	14	4.8	99.8	49.9	10.9	3.8	89.2	44.6	21.2	5.6	35.8	17.9
960	480	893	57	17	14.5	5	106.4	53.2	11.3	3.9	95.2	47.6	25.9	6.5	38.2	19.1
1070	540	995	85	26	16.5	7.6	118.6	59.6	12.9	5.9	106.1	53.5	29.9	7.8	42.6	21.5

MK2.2-ZM-L												
								Heating oil EL H_i = 11.86 [kWh/kg]				
Burner output [kW]		Boiler output η= 92% [kW] [kW]	Air flap position [°]					Pump pressure [bar]	Oil nozzle (Steinen)		Oil flow rate [kg/h]	
2nd st.	1st st.	2nd st.	P0	P1	P2 on	P2 d	P2		2nd st. SS/60°	1st st. SS/60°	2nd st.	1st st.
830	450	772	14	15	18	23	43	20	6/60°S	7/60°S	70.0	37.9
900	450	837	14	15	18	23	52	20	7/60°S	7/60°S	75.9	37.9
960	480	893	17	18	21	26	57	18	8/60°S	8/60°S	80.9	40.5
1070	540	995	26	27	30	35	85	22	8/60°S	8/60°S	90.2	45.5

28. 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				

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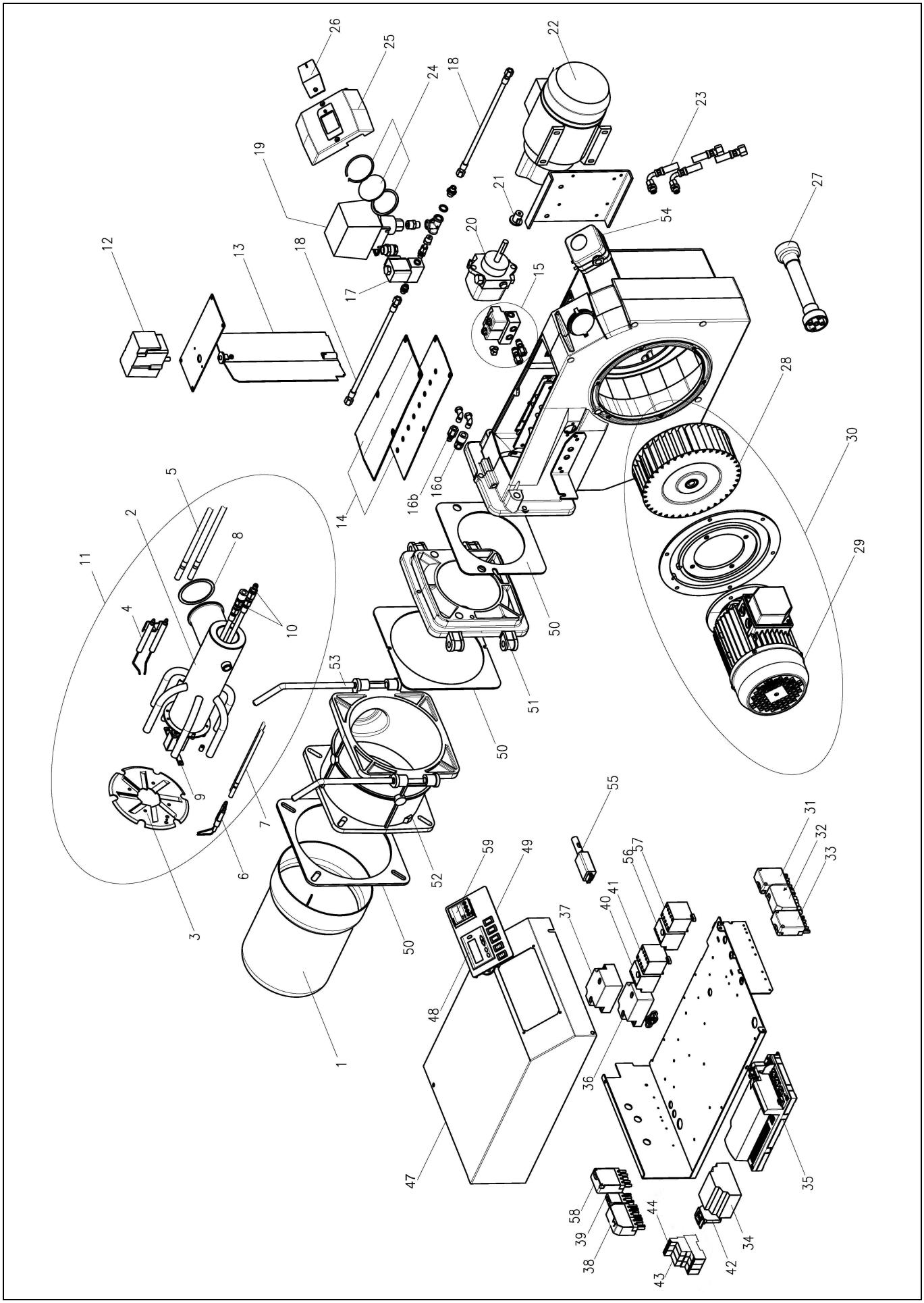
29. Explosion drawings / spare parts lists

MK2.1



Item	Designation	VE	Art. No.
1	Burner pipe MK2.1	1	47-90-25517
1	Burner pipe MK2.1, 100 mm extended	1	47-90-25514
1	Burner pipe MK2.1, 200 mm extended	1	47-90-26419
2	Mixing head MK2, welded	1	47-90-27084
2	Mixing head MK2, welded, 100 mm extended	1	47-90-27085
2	Mixing head MK2, welded, 200 mm extended	1	47-90-27086
3	Baffle plate MK2	1	47-90-25515
4	Ignition electrodes oil cpl.	1	47-90-26213
5	Ignition cable set oil	2	47-50-26104
5	Ignition cable set oil, 100 mm extended	2	47-50-25134
5	Ignition cable set oil, 200 mm extended	2	47-50-25005
6	Ignition electrode, gas cpl.	1	47-90-24921
7	Ignition cable set, gas	2	47-50-25134
7	Ignition cable set, gas, 100 mm extended	2	47-50-25004
7	Ignition cable set, gas, 200 mm extended	2	47-50-25005
8	Mixing head seal MK2	5	47-50-25521
9	Nozzle holder MK2 cpl. pre-assembled	1	47-90-25548
9	Nozzle holder MK2 cpl. pre-assembled, 100 mm extended	1	47-90-25561
9	Nozzle holder MK2 cpl. pre-assembled, 200 mm extended	1	47-90-26240
10	Hydraulics set	1	47-90-27087
11	Mixing head MK2 cpl., pre-assembled, without ignition cable	1	47-90-25473
11	Mixing head MK2 cpl., pre-assembled, 100 mm extended, without ignition cable	1	47-90-25562
11	Mixing head MK2 cpl., pre-assembled, 200 mm extended, without ignition cable	1	47-90-26108
12	Positioning drive SQN 13	1	47-90-29095
13	Air flap MG20	1	47-90-27030
14	Cover for MG20 with seals	1	47-90-10698
15	Conversion kit double solenoid valve M+MK	1	47-90-30413
16a	Hydraulic plug T2320V, cpl.	1	47-90-25465
16b	Hydraulic coupling cpl.	1	47-90-25464
17	Solenoid valve R1/4“	1	36-90-11583
18	Pressure hose NW4 cpl.	1	47-90-28797
19	Oil pressure switch 0-40 bar with cable	1	47-90-28330
20	Oil pump Aj4 cpl.	1	47-90-26063
21	Pump-motor coupling	1	47-90-28851
22	Motor 0.55 kW	1	47-90-28787
23	Metal hose NW6 1200 mm long	1	47-90-11347
24	Inspection glass with seal	1	36-90-11544
25	Hood MG20	1	47-90-24857
26	Sight glass cover	5	47-50-12106
27	Coupling cpl.	1	36-90-11539
28	Fan wheel Ø 218 x 80	1	36-90-11540-01
29	Motor 1.1 kW 400 V / 50 Hz	1	47-90-29347
30	Motor 1.1 kW with fan wheel	1	47-90-29240
31	Socket 4-pin. green	1	37-90-20744
32	Socket 7-pin. black/brown	1	37-90-20731
33	5-pole female connector, black	1	37-90-20748
34	Fuel switchover unit AGM60	1	47-90-29099

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Item	Designation	VE	Art. No.
35	Control box LMV 26	1	47-90-29094-02
36	Ignition transformer Mod. 26/35 incl. ignition cable 460 mm lg.	1	47-90-24469
37	Ignition transformer Mod. 26/48 incl. ignition cable 460 mm lg.	1	47-90-26930
38	Socket 7-pin. green	1	37-90-10831
39	3-pole female connector, black	1	37-90-20739
40	Small motor contactor B7-30-10	1	47-90-25171
41	Thermal overcurrent relay 2.4 - 4 A	1	47-90-25172-01
42	Remote-manual toggle switch	1	47-90-25040
43	Relay CR-P230AC2	1	47-90-25199
44	Base CR-PLSx	1	47-90-26713
47	Electronic unit hood	1	47-90-29307
48	Display unit AZL	1	47-90-29098
49	Panel	1	47-90-29421
49	Cover MK with controller	1	47-90-29420
50	Gasket set	1	47-90-26722
51	Gas jacket MG20 Part 2	1	44-90-30242
52	Gas jacket MG20 Part 1	1	44-90-33245
53	Mounting rod MG20	2	46-50-21085
54	Differential pressure switch LGW50	1	44-90-20793
55	Flame detector KLC1000	1	47-90-27184
56	Small motor contactor B7-30-10 for pump unit	1	47-90-25171
57	Thermal overcurrent relay for pump unit 2.4 - 4 A	1	47-90-25172-01
58	5-pole connector part, black for pump unit	1	37-90-20753
59	Digital controller RWF50 (optional temperature)	1	47-90-28819-1
-	Inlet nozzle	1	36-90-11541
-	Motor connection cable	1	47-90-25340

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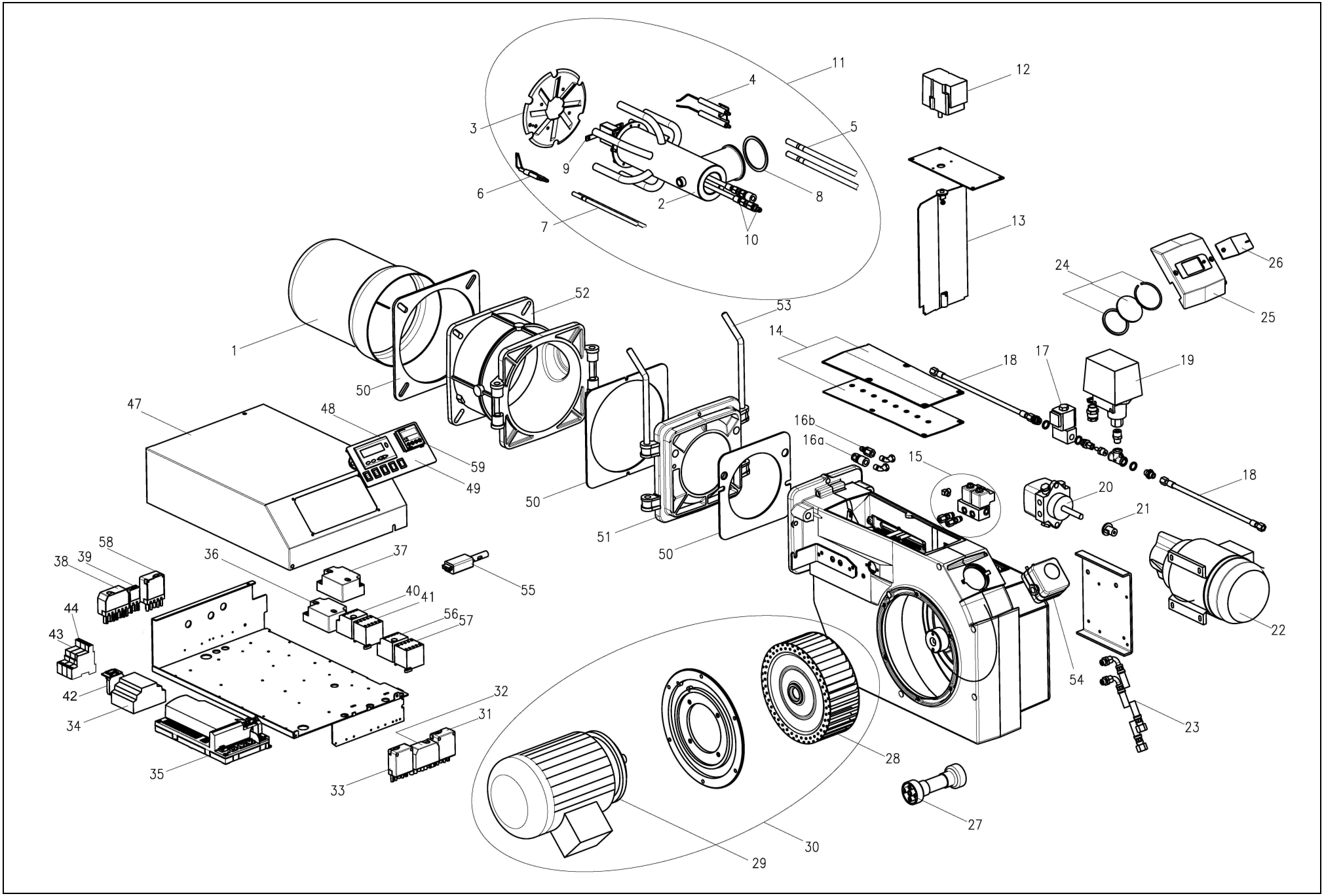
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Item	Designation	VE	Art. No.
1	Burner pipe MK2.2	1	47-90-25472
1	Burner pipe MK2.2, 100 mm extended	1	47-90-26420
1	Burner pipe MK2.2, 200 mm extended	1	47-90-26421
2	Mixing head MK2, welded	1	47-90-27084
2	Mixing head MK2, welded, 100 mm extended	1	47-90-27085
2	Mixing head MK2, welded, 200 mm extended	1	47-90-27086
3	Baffle plate MK2	1	47-90-25515
4	Ignition electrodes oil cpl.	1	47-90-26213
5	Ignition cable set oil	2	47-50-26104
5	Ignition cable set oil, 100 mm extended	2	47-50-25134
5	Ignition cable set oil, 200 mm extended	2	47-50-25005
6	Ignition electrode, gas cpl.	1	47-90-24921
7	Ignition cable set, gas	2	47-50-25134
7	Ignition cable set, gas, 100 mm extended	2	47-50-25004
7	Ignition cable set, gas, 200 mm extended	2	47-50-25005
8	Mixing head seal MK2	5	47-50-25521
9	Nozzle holder MK2 cpl. pre-assembled	1	47-90-25548
9	Nozzle holder MK2 cpl. pre-assembled, 100 mm extended	1	47-90-25561
9	Nozzle holder MK2 cpl. pre-assembled, 200 mm extended	1	47-90-26240
10	Hydraulics set	1	47-90-27087
11	Mixing head MK2 cpl., pre-assembled, without ignition cable	1	47-90-25473
11	Mixing head MK2 cpl., pre-assembled, 100 mm extended, without ignition cable	1	47-90-25562
11	Mixing head MK2 cpl., pre-assembled, 200 mm extended, without ignition cable	1	47-90-26108
12	Positioning drive SQN 13	1	47-90-29095
13	Air flap MG20	1	47-90-27030
14	Cover for MG20 with seals	1	47-90-10698
15	Conversion kit double solenoid valve M+MK	1	47-90-30413
16a	Hydraulic plug T2320V, cpl.	1	47-90-25465
16b	Hydraulic coupling cpl.	1	47-90-25464
17	Solenoid valve R 1/4“ cpl. for MK burner	1	47-90-27106
18	Pressure hose NW4 cpl.	1	47-90-28797
19	Oil pressure switch 0- 40 bar with cable	1	47-90-28330
20	Oil pump AJ4 cpl.	1	47-90-26063
21	Pump-motor coupling	1	47-90-28851
22	Motor 0.55 kW	1	47-90-28787
23	Metal hose NW6 1200 mm long	1	47-90-11347
24	Inspection glass with seal	1	36-90-11544
25	Hood MG20	1	47-90-24857
26	Sight glass cover	5	47-50-12106
27	Coupling MK2.2 cpl.	1	47-90-27179
28	Fan wheel Ø 224 x 82	1	47-90-24847
29	Motor 2.2 kW 400 V / 50 Hz	1	47-90-24846
30	Motor 2.2 kW with fan wheel	1	47-90-25508
31	Socket 4-pin. green	1	37-90-20744
32	Socket 7-pin. black/brown	1	37-90-20731
33	5-pole female connector, black	1	37-90-20748
34	Fuel switchover unit AGM60	1	47-90-29099

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Item	Designation	VE	Art. No.
35	Burner management system LMV 26	1	47-90-29094-02
36	Ignition transformer Mod. 26/35 incl. ignition cable 460 mm lg.	1	47-90-24469
37	Ignition transformer Mod. 26/48 incl. ignition cable 460 mm lg.	1	47-90-26930
38	Socket 7-pin. green	1	37-90-10831
39	3-pole female connector, black	1	37-90-20739
40	Small motor contactor B7-30-10	1	47-90-25171
41	Thermal overcurrent relay 4 -6 A	1	47-90-25173-01
42	Remote-manual toggle switch	1	47-90-25040
43	Relay CR-P230AC2	1	47-90-25199
44	Base CR-PLSx	1	47-90-26713
47	Electronic unit hood	1	47-90-29307
48	Display unit AZL	1	47-90-29098
49	Panel	1	47-90-29421
49	Cover MK with controller	1	47-90-29420
50	Gasket set	1	47-90-26722
51	Gas jacket MG20 Part 2	1	44-90-30242
52	Gas jacket MG20 Part 1	1	44-90-33245
53	Mounting rod MG20	2	46-50-21085
54	Differential pressure switch LGW50	1	44-90-20793
55	Flame detector KLC 1000	1	47-90-27184
56	Small motor contactor B7-30-10 for pump unit	1	47-90-25171
57	Thermal overcurrent relay for pump unit 2.4 - 4 A	1	47-90-25172-01
58	5-pole connector part, black for pump unit	1	37-90-20753
59	Digital controller RWF50, temperature (optional)	1	47-90-28819-1
-	Inlet nozzle	1	36-90-11541
-	Motor connection cable	1	47-90-24889

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30. Declaration of conformity for dual-fuel burner for heating oil EL and natural gas or liquid gas

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 **MK2/…**

is conform with the regulations of these directives

MD2006/42/EG
EMV2014/30/EG
GAD 2016/426/EG
MCP2015/2193/EU
RoHS 2011/65/EU
DIN EN 676

and is marked with:

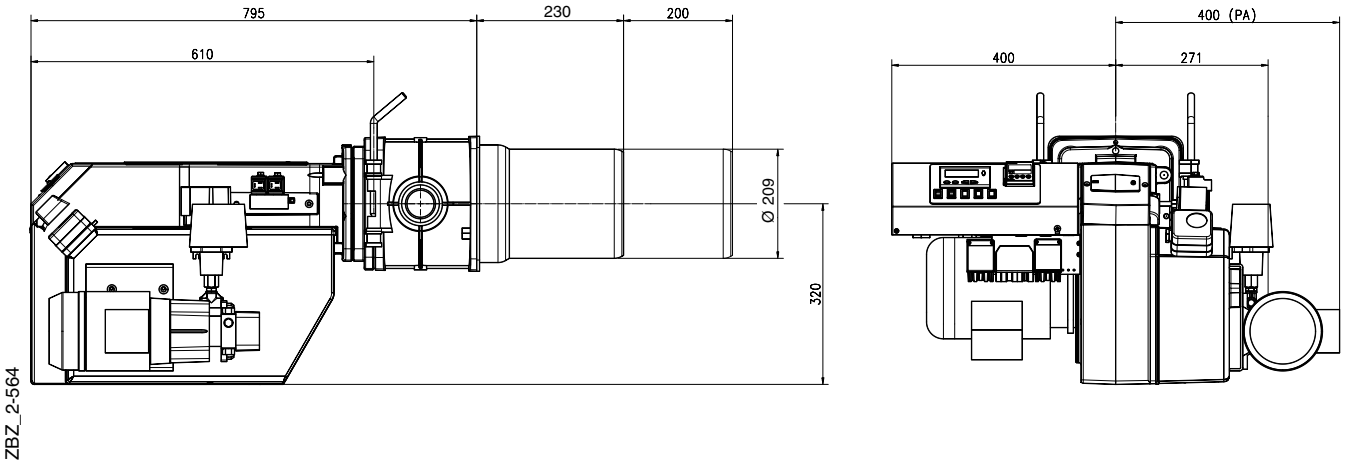
CE

CE-0085

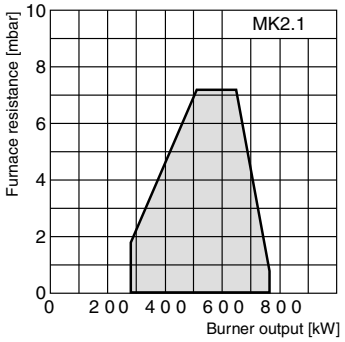
Hemer, 12.01.2024

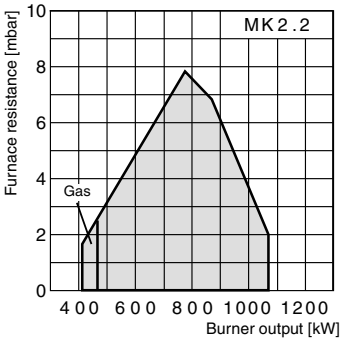
Dr. Josef Becker
Managing Director

31. Dimensions (All dimensions are given in mm)



32. Working ranges





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Print No. 03-2024 • Art.No. 70-10-58284-GB • Printed in Germany • Giersch GmbH