–weishaupt–

product

Information on monobloc industrial burners

WKmono-series industrial burners

Monobloc industrial burners • 1200–17 000 kW

For more than six decades, Weishaupt burners have proven themselves on a wide variety of heat generators and process plant. Their success stems from a relentless demand for high-quality materials and workmanship, and uncompromising quality control standards.

Weishaupt continually establishes new benchmarks with its well-engineered products, facilitated by the ever-constant efforts of its own Research and Development Centre.

Such efforts produced the WKmono 80, which shares its platform with the duobloc WK 80. The large 1200 to 17 000 kW range of the WKmono 80, which is available in NR and multiflam® versions and is suitable for natural gas, LPG, and gas oil, is particularly impressive.

All Weishaupt burners are manufactured at the company's main plant in Schwendi in southwestern Germany. Modern production facilities enable a rapid response to individual requirements, while experienced employees and a high proportion of in-house production ensure high levels of quality.

Of course, Weishaupt's product range also runs the gamut of modern instrumentation and control equipment, including fully comprehensive solutions for complex building automation projects.

Future-oriented, economical, flexible.

Compact and powerful

WKmono burners are a synergy of monobloc and duobloc burner design. They utilise various components and housing elements from the modular system of the existing duobloc WK-series burners while retaining a compact and service-friendly design.

A rail system, for example, makes it easy for the technician to withdraw and insert the mixing assembly of the 80/2-size burner during servicing. Tried-and-tested safety shutoff devices, oil regulators, pump stations, and other components from the WK burner range provide a high degree of safety and reliability.

Flexibility

The standard air inlet draws air from below, but is also optionally available in a rotated position for sites with limited floor clearance. Furthermore, the burner can be constructed with the positions of its motor and air inlet interchanged when necessary to suit the design of the heat generator.

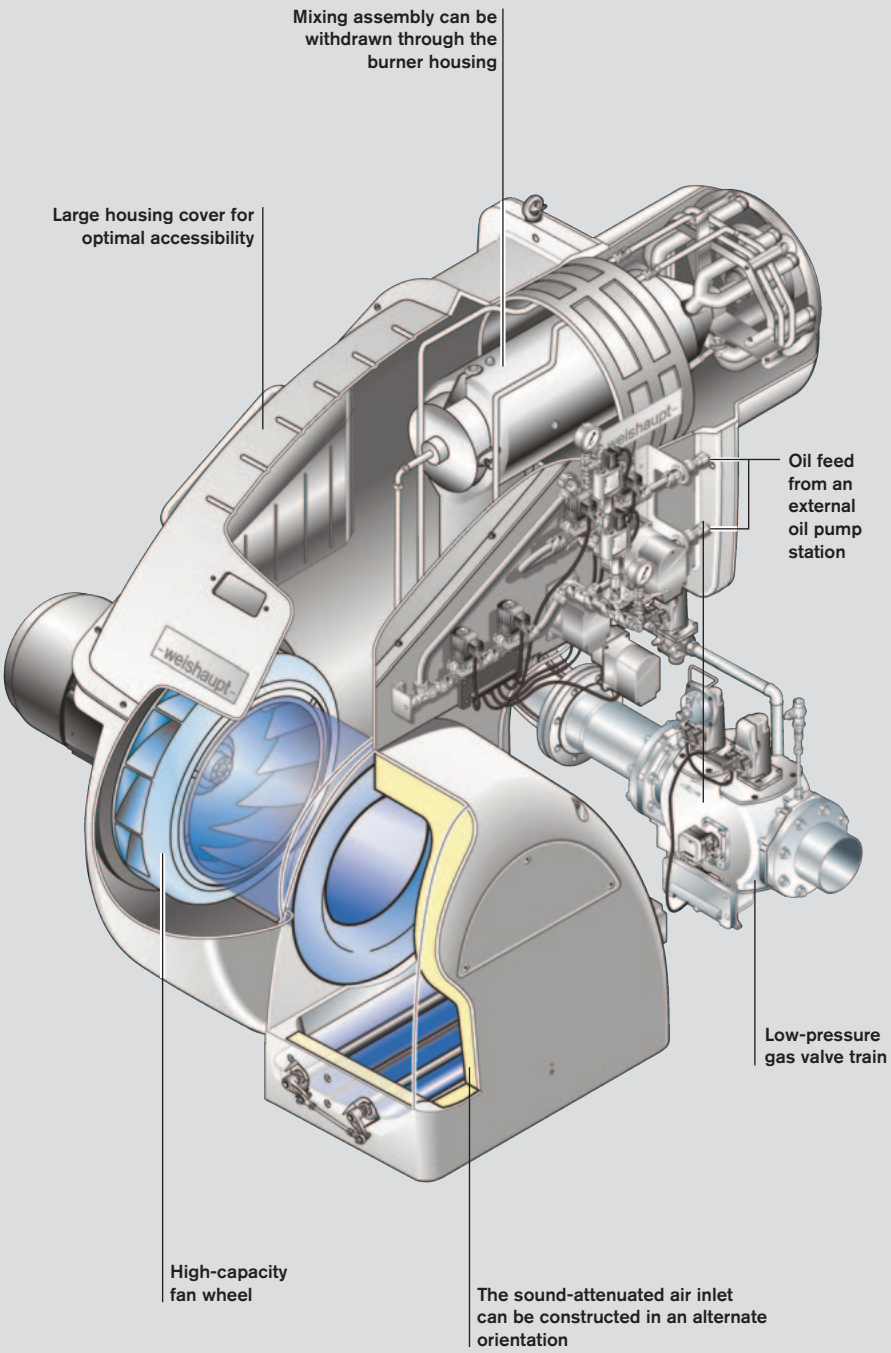
Digital reliability

These two words describe combustion managers in a nut-shell. Their adaptability and versatility leave nothing to be desired. VSD, CO monitoring, O_2 trim, and combined CO control with O_2 trim are tried-and-tested options. There is also a data interface for communication with superordinate control systems.

No one fuel is the same as the next

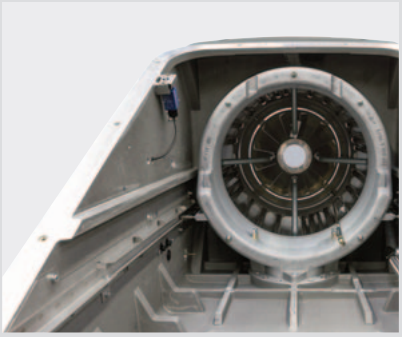
Various different mixing assemblies have been specially developed for use with particular fuels. Reliable combustion with a wide range of gases and oils is thereby guaranteed.

This next generation of monobloc burner shares in Weishaupt's guiding principles of cost-effectiveness, efficiency, and reliability.



WKmono-GL80/2-A ZM-R-3LN

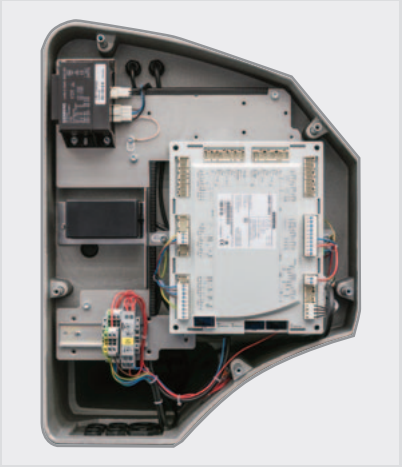
Simplified installation and servicing



Rail system for the mixing assembly

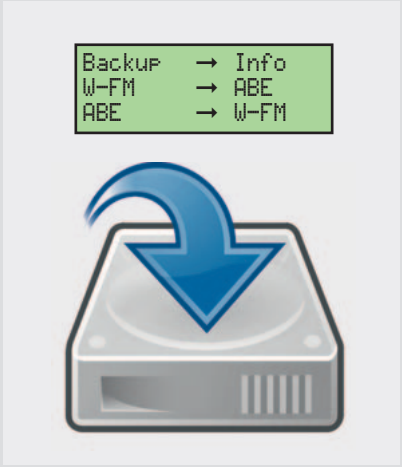
Mixing assembly in the servicing position

Readily accessible oil-side components



Integral switchgear and combustion manager

Control and display unit with error display



Data backup to the control and display unit

ACS 450 commissioning software

To keep maintenance from having to be a feat of strength, the WKmono 80/2 has an integrated rail system that makes it very much easier to insert and remove the mixing assembly. In addition, the mixing assembly can be tipped into a servicing position, which considerably improves access to the wear-and-tear parts.

An error message display puts fault finding quickly onto the right path so the burner can be returned to operation without delay. Internal data backup to the control and display unit, or external backup via the commissioning software, is an ideal precaution.

Use

Fuels
Natural gas
LPG
Class D gas oil per BS 2869 / IS 251
Class A2 gas oil per BS 2869 / IS 251
10 % biodiesel blends (B10)

The suitability of fuels of differing quality must be confirmed in advance with Weishaupt.

Applications
Weishaupt WKmono 80 burners are suitable for intermittent and continuous firing on:
- EN 303-compliant heat generators
- LTHW boilers
- HTHW boilers
- Steam boilers
- Air heaters
- Thermal fluid heaters
- Certain process applications

Permissible ambient conditions
- Ambient temperature
  -15 to + 40 °C for gas firing
  -10 to + 40 °C for oil firing
- Maximum 80 % relative humidity, no condensation
- The combustion air must be free of aggressive substances (halogens, chlorides, fluorides etc.) and impurities (dust, debris, vapours, etc.)
- Adequate ventilation is required for operation in enclosed spaces
- For plant in unheated areas, certain further measures may be required

Use of the burner for other applications or in ambient conditions not detailed above is not permitted without the prior written agreement of Max Weishaupt GmbH. Burner service intervals will be reduced to accord with the more extreme operational conditions.

Protection Class
IP 54

Standards compliance
The burners are tested by an independent body and fulfil the applicable requirements of the following European Union directives and applied standards:

EMC EMC Directive 2014/30/EU
Applied standards
- EN 61000-6-1 : 2007
- EN 61000-6-2 : 2005
- EN 61000-6-4 : 2007

LVD Low-Voltage Directive 2014/35/EU
Applied standards
- EN 60335-1 : 2010
- EN 60335-2-102 : 2010

MD Machinery Directive 2006/42/EC
Applied standards
- EN 267 Annex J
- EN 676 Annex J

GAR Gas Appliances Regulation 2016/426/EU
Applied standards
- EN 676 : 2008

PED[1)] Pressure Equipment Directive 2014/68/EU
Applied standards
- EN 267 Annex K
- EN 676 Annex K
- Conformity assessment procedure: Module B

[1)] With the selection of appropriate equipment.

The burners are labelled with
- CE Mark
- CE-PIN per 2009/142/EC
- Identification No. of the notified body

Gas supply
EN 88-compliant regulators with safety diaphragms are used for low-pressure supplies.

For high-pressure supplies, an EN 334-compliant high-pressure regulator should be selected from the following technical booklets:
- Regulators up to 4 bar, Print No. 83001202
- Regulators with safety devices, Print No. 83197902

Refer to the burner's rating plate for the maximum connection pressure.

Gas valve train design
Low-pressure valve trains are normally used for gas flow pressures up to a maximum of 300 mbar and a maximum operating pressure (MOP) of 500 mbar. This allows for pressure losses between the transfer station and the valve train. Furthermore, it is assumed that the transfer station utilises components (SSV, regulator) that are not of the highest class of accuracy. In individual cases, following consideration and approval by Weishaupt's headquarters, a gas flow pressure of up to 360 mbar can be approved if the appropriate conditions exist. The supplier must safeguard the gas flow pressure such that it cannot exceed the MOP of the burner's gas valve train.

High-pressure valve trains are normally used for gas flow pressures greater than 300 mbar. The supplier must safeguard the gas flow pressure such that, in the event of failure, it cannot exceed the maximum incidental pressure (MIP*) of the burner's gas valve train.

*MIP = MOP x 1.1

Gas / dual-fuel burner capacity graphs
The capacities as a function of combustion chamber pressure are maximum values measured in accordance with EN 676 on idealised flame tubes.

The burner capacity graphs are certified in accordance with EN 676. The stated ratings are based on an air temperature of 20 °C and an installation at sea level. For installations at higher altitudes, a reduction in capacity of 1 % per 100 m above sea level should be taken into account.

The combustion chamber pressure of the heat generator must be added to the flow pressure determined from the chart when sizing the gas valve train. Minimum flow pressure 15 mbar.

The LHV is referenced to 0 °C and 1013 mbar atmospheric pressure. All pressures are in mbar.

The LPG charts are based on propane, but may also be used for butane.

Double gas valve assemblies

Flanged	
DN 65	DMV5065/12
DN 80	DMV5080/12
DN 100	DMV5100/12
DN 125	
DN 150	VGD40.150

Oil burner capacity graphs
The capacities as a function of combustion chamber pressure are maximum values measured in accordance with EN 267 on idealised flame tubes.

The burner capacity graphs are certified in accordance with EN 267. The stated ratings are based on an air temperature of 20 °C and an installation altitude of 500 m above sea level. For installations at higher altitudes, a reduction in capacity of 1 % per 100 m above sea level should be taken into account.

Stated oil throughputs are for gas oil with a LHV of 11.9 kWh/kg.

DIN CERTCO certification
The burners have been type-tested by an independent body (TÜV-Süd) and certified by DIN CERTCO.

Digital combustion management: Precise, simple, and reliable

Setting via the ABE control and display unit

Digital combustion management means optimal combustion figures, continuously reproducible setpoints, and ease of use.

All Weishaupt WKmono-series burners are equipped with digital combustion management and electronic compound regulation as standard . Modern combustion technologies demand the precise and continually reproducible dosing of fuel and combustion air. This optimises combustion efficiency and saves fuel.

Simple operation
Setting and control of the burner is achieved using a control and display unit. This is linked to the combustion manager via a bus system, enabling the user-friendly setting of the burner. The control and display unit has a clear text display with a choice of languages. An English/Chinese dual-screen version is available as an option should a Chinese-character display be desired.

Measures for saving energy and increasing safety and reliability

Variable speed drive provides multiple benefits. It facilitates a soft start of the burner fan, keeping the start current to a minimum. Fan speed is matched to the combustion air volume during operation, which saves electrical energy and reduces noise emissions.

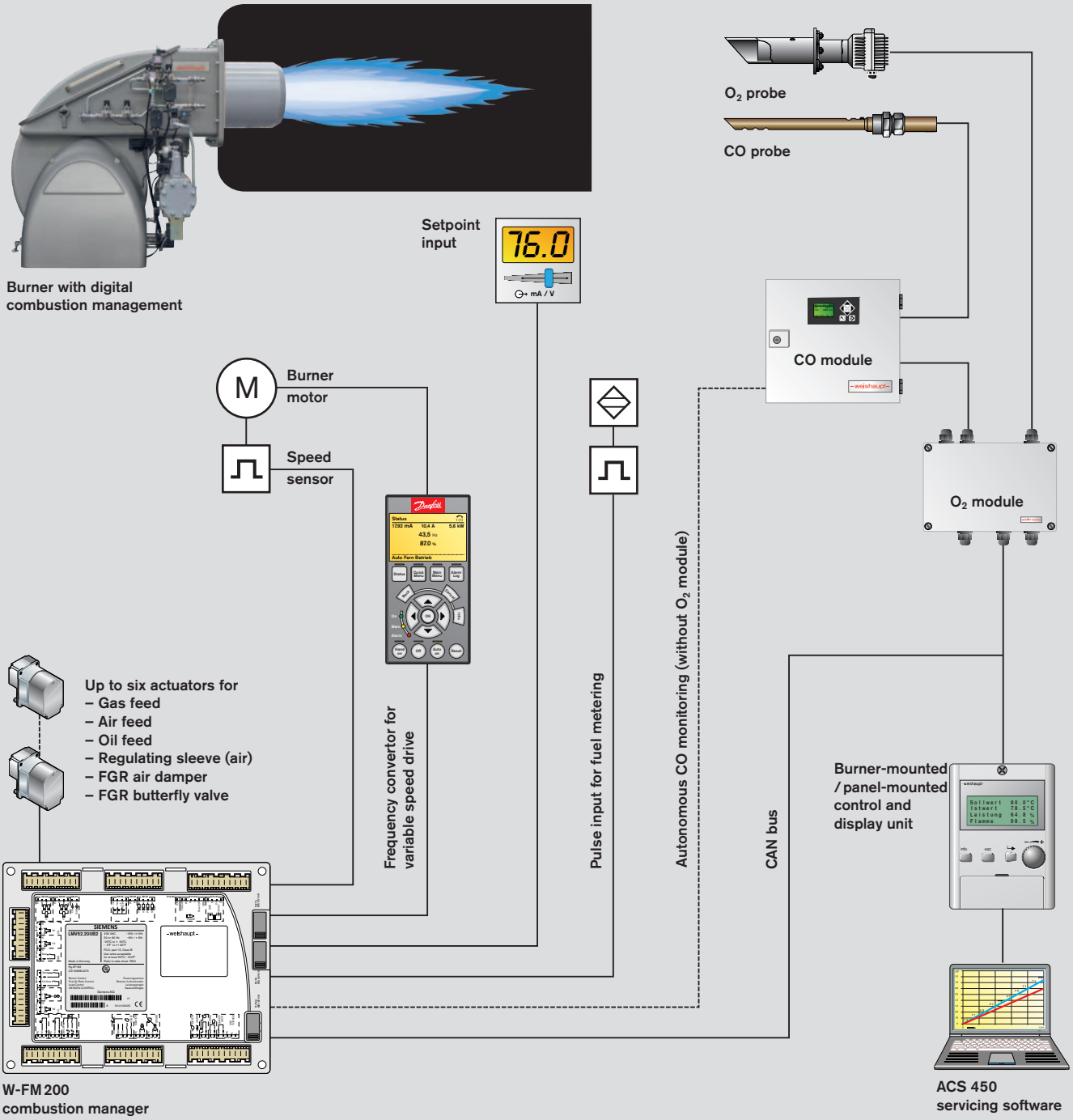
O_2 trim saves fuel through a continual and extremely efficient optimisation of the combustion air. Control is effected by a system with a Lambda probe, which continually measures the oxygen content of the flue gas.

CO monitoring executes a safety shut-down of the burner if a predefined CO limit is exceeded, thereby ensuring the very highest degree of safety.

Combined CO control / O_2 trim ensures an ultimate degree of safety. CO emissions are continually monitored and, if the defined limit is exceeded, the burner is operated with an increased amount of excess air for a short period of time before the O_2 trim returns the burner to its preset O_2 set-point. Should external influences prevent a non-critical condition from being reached, then the burner will undergo a controlled shutdown.

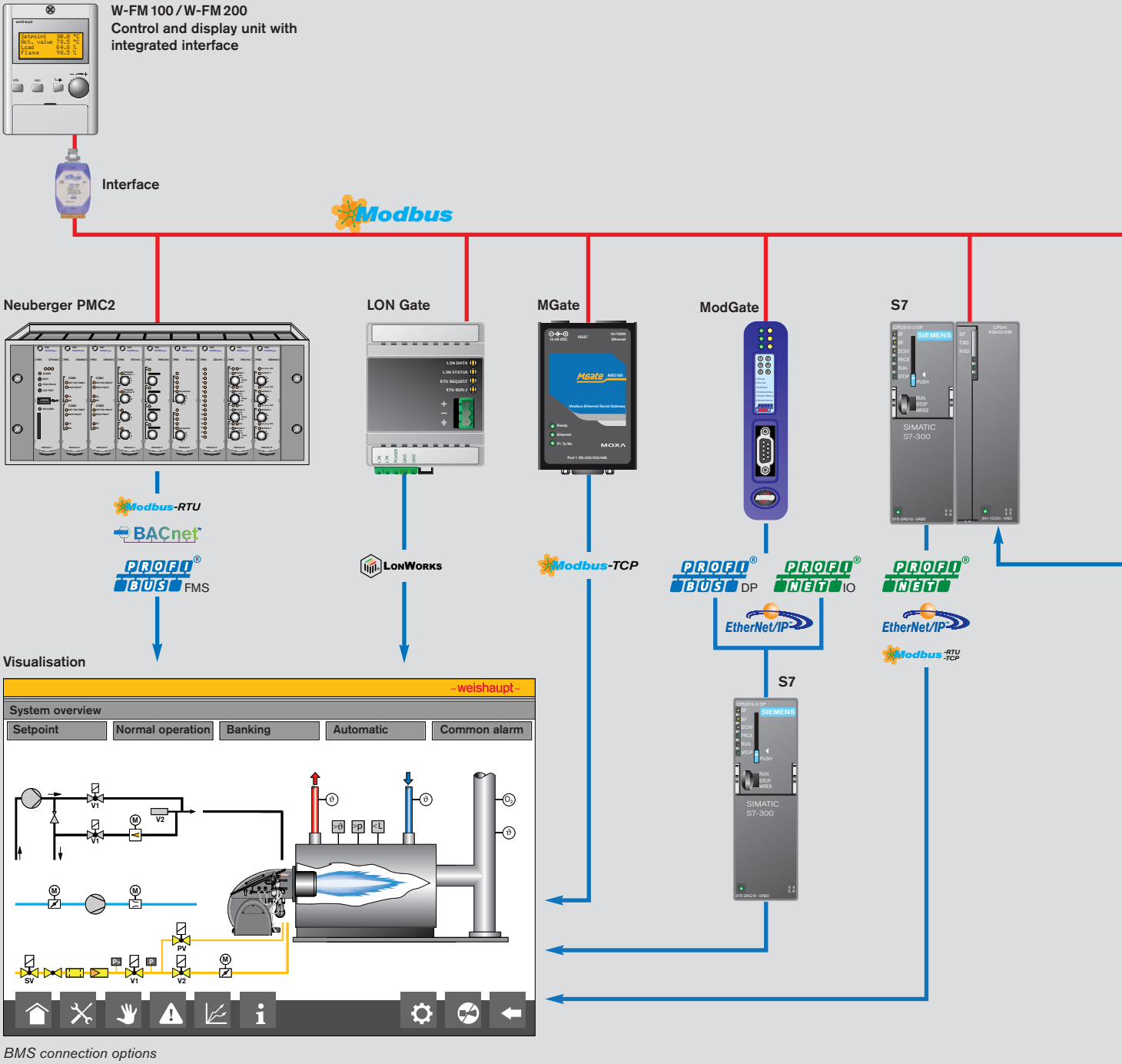
Features – digital combustion management	W-FM 100	W-FM 200
Single-fuel operation	●	●
Dual-fuel operation	●	●
Continuous firing >24 h	●	●
Variable speed drive available	–	●
O_2 trim available	–	●
CO monitoring	–	○
Combined O_2 trim and CO control	–	○
Temperature-compensated flue gas recirculation	–	○
ION/QRI/QRA 73 flame sensor for continuous firing	●	●
W-FC 4.0 flame monitoring	●	●
W-FC 5.0 flame monitoring	–	●
Maximum number of actuators	4	6
Gas valve proving	●	●
Integrated PID controller with automatic adaption. Pt / Ni temperature sensor, 0 / 2–10 V, and 0 / 4–20 mA inputs for temperature / pressure	○	●
0 / 2–10 V and 0 / 4–20 mA setpoint input for temperature / pressure	○	●
Configurable 0 / 4–20 mA analogue output	○	●
ABE control unit with 20 available languages (any one ABE limited to 6)	●	●
Dual-language / script ABE control unit (Chinese / English)	○	○
Removable ABE control unit (max. length of connecting bus line)	100 m	100 m
Fuel consumption meter (switchable)	–	●
Combustion efficiency display in conjunction with O_2 trim	–	●
eBUS / Modbus-RTU interface	●	●
PC-supported commissioning	●	●

● Standard
○ Optional

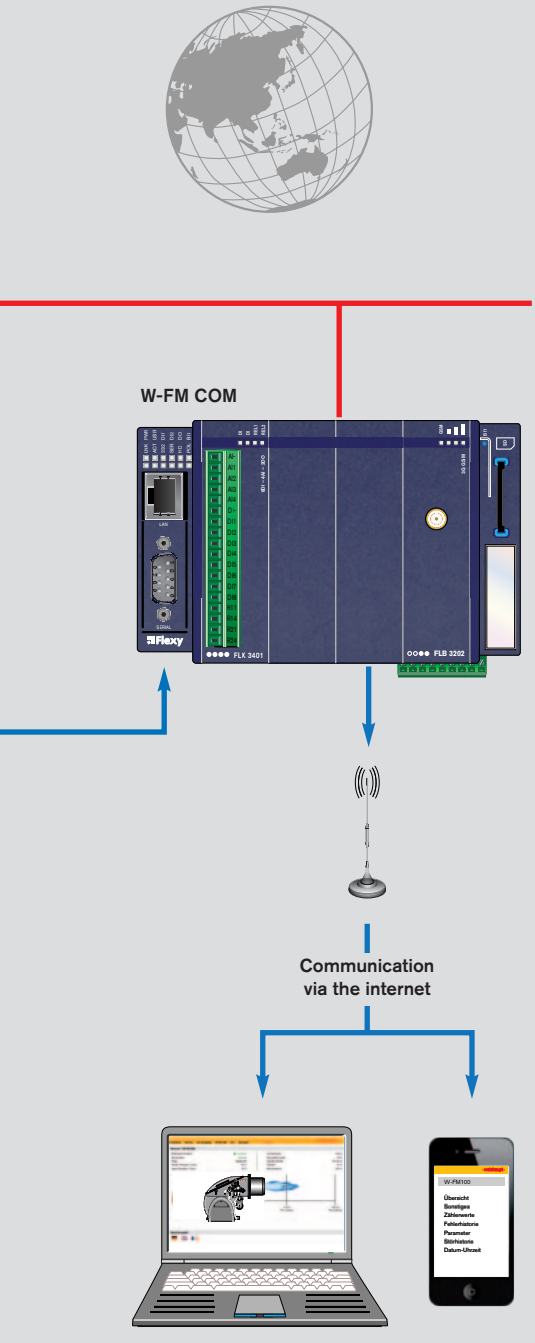


Schematic representation with W-FM 200

Flexible communications:
Compatible with building management systems



BMS connection options



Remote monitoring made easy via tablet or laptop

The digital combustion manager is the basis of communications with superordinate systems. This is generally achieved using the eBus or Modbus protocols.

All the usual burner and, optionally, boiler functions can be monitored and controlled through a direct connection with a building management system.

A graphical HMI is available to provide a user-friendly overview of the system with its setpoints and actual values. The touchscreen display allows specific functions to be adjusted and monitored, such as the system parameters and the setpoints of individual and multi-boiler plant and other ancillary equipment.

The controls specialists, Neuberger, who are a part of the Weishaupt Group, are able to design and implement complex control solutions.

Further optional components enable connections to be made to systems using commonplace industrial standards, such as Profibus-DP, LON-Bus, and Modbus RTU, and network protocols such as Profinet I/O, Modbus TCP, BacNet, etc.

A recent addition to Weishaupt's portfolio is the W-FM COM communications module. It transmits data securely over the internet so that it can be called up and displayed in a browser window on a PC, tablet, or smartphone, facilitating accurate service planning for example. Even away from the internet you can be kept up to date with the operation of the burner: In the event of a safety shutdown or other predefined trigger, an SMS text message is sent automatically.

Overview of burner regulation
Model designation

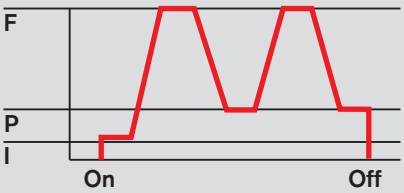
Gas and oil-fired operation
Weishaupt WKmono burners can have sliding-two-stage or modulating operation when firing gas or oil, depending on the method of load control employed.

Sliding-two-stage regulation (ZM, R)
- Two-term switching (e.g. temperature or pressure stat) causes actuators to drive the burner to partial load or full load in response to heat demand.

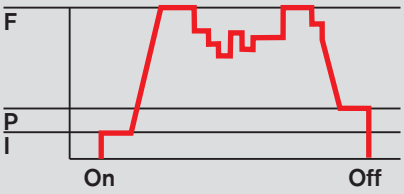
  Combustion remains CO and smoke-free between load points.

Modulating regulation (ZM, R)
- An electronic load controller causes actuators to make infinitely variable load adjustments in response to heat demand.
- Modulating operation:
  – W-FM 100 with an optional integral load controller
  – W-FM 200 with its standard integral load controller
- Alternatively, a PID controller can be fitted into the control panel.

Sliding-two-stage

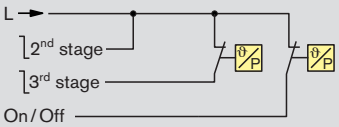


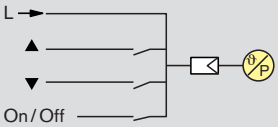
Modulating



F = Full load (nominal load)
P = Partial load (minimum load)
Z = Ignition load

Control [1)]





[1)] Alternatively, staged control can also be effected by an electronic PID controller. In this case, appropriate temperature sensors or pressure transducers will be required.

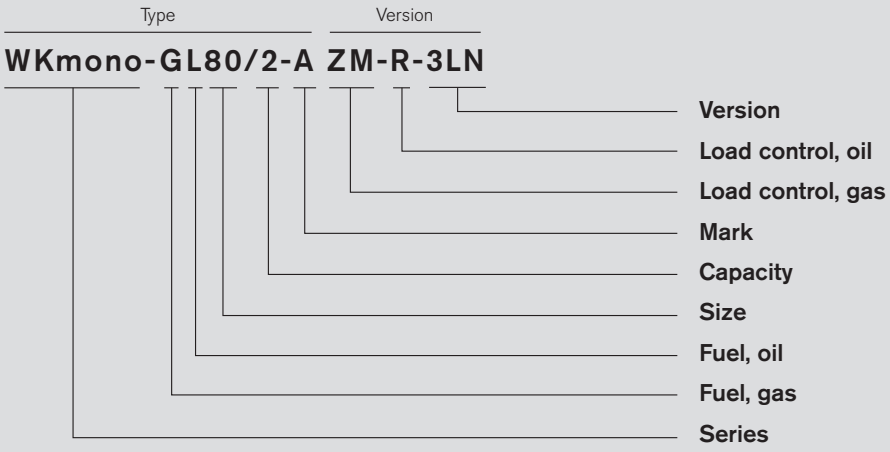
Turndown ranges for gas, oil, and dual-fuel burners

Burner	Version		Natural Gas	LPG	Gas Oil
WKmono 80/1	ZM-(R-)NR, R		10:1	9:1	5:1
WKmono 80/1	ZM-(R-)3LN, R-3LN		10:1	7:1	5:1
WKmono 80/1	ZM-4LN		10:1	–	–

Burner	Version		Natural Gas	LPG	Gas Oil
WKmono 80/2	ZM-(R-)NR, R		7:1	5:1	4:1
WKmono 80/2	ZM-(R-)3LN, R-3LN		10:1	8:1	5:1
WKmono 80/2	ZM-4LN		10:1	–	–

Burners equipped with flue gas recirculation (FGR) have a reduced operating capacity. The extent of this reduction in capacity has to be calculated on a case-by-case basis.

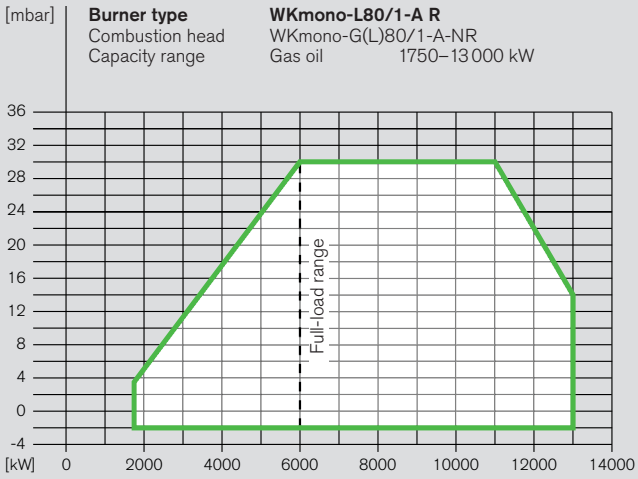
Model designation

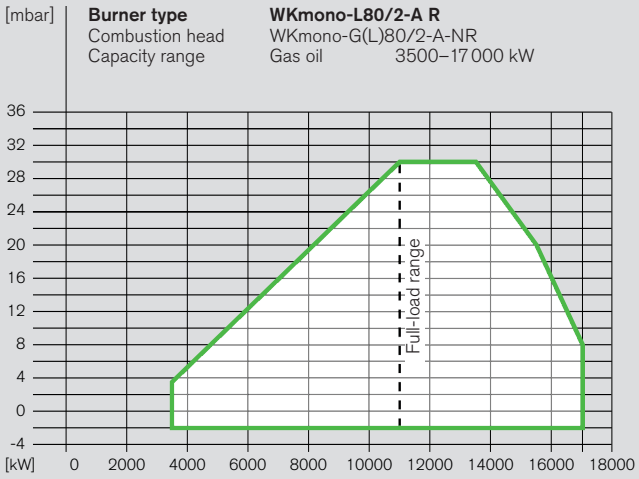


Details	Code	Meaning	Associated fuel
Series	WKmono	WK monobloc burner	
Fuel *	G L	Gas Class D / Class A2 gas oil	
Load control *	ZM R	Sliding-two-stage / modulating Sliding-two-stage / modulating	Gas Oil
Version	– NR 3LN 4LN	Standard NO_x-reduced gas firing multiflam® Ultra-low NO_x with FGR	Oil Gas / oil Gas / oil Gas
Suffix	r	Motor on right-hand side	

*) Dual-fuel burners use a combination of codes (GL, ZM-R).

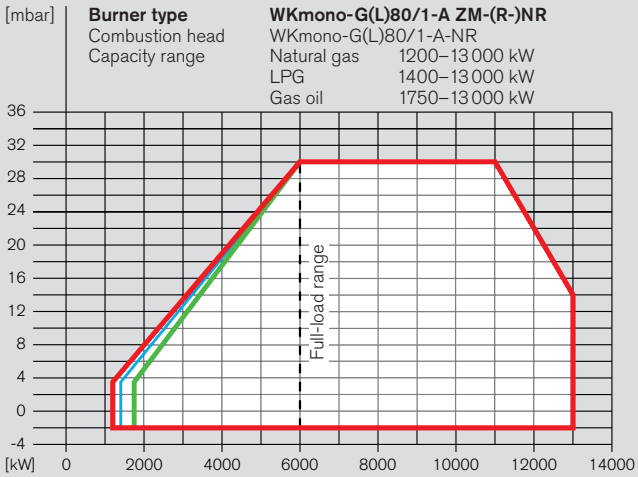
Burner selection
WKmono-L80, version R





Please refer to page 7 for notes on the capacity graphs.

Burner selection
WKmono-G(L)80, versions ZM-NR and ZM-R-NR



Please refer to page 7 for notes on the capacity graphs and gas supply.

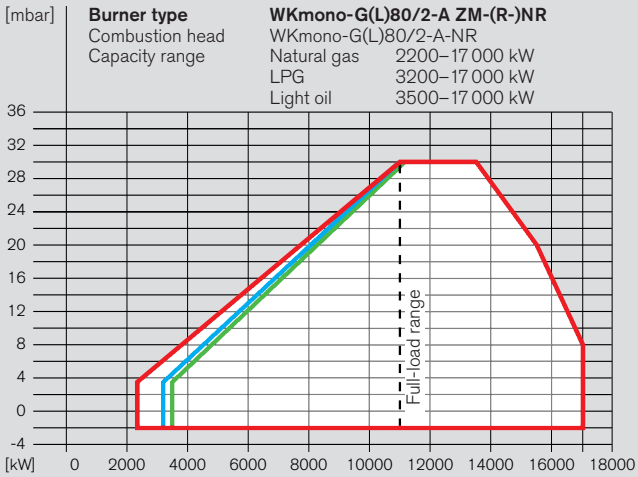
Natural gas
LPG
Gas oil

WKmono-G(L)80/1-A ZM-(R-)NR

Burner rating kW	Low-pressure supply **(LP1)** (with FRS regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 65	80	100	125	150 Nominal diameter of gas butterfly 150	150	150	150	150	High-pressure supply **(HP)** (with HP regulator) F. p. into double valve assembly **Nominal valve train diameter** 65	80	100	125	150 Nominal diameter of gas butterfly 150	150	150	150	150
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606																		
6000	202	117	72	57	51	100	71	51	46	44
6500	231	132	78	61	53	112	78	54	48	46
7000	263	148	86	66	57	125	8	58	51	48
7500	298	166	95	72	62	140	95	64	55	52
8000	–	186	105	79	67	157	105	70	60	57
9000	–	231	128	96	80	195	129	84	72	68
10000	–	283	156	116	97	239 *	158	103	88	82
11000	–	–	189	140	117	289 *	191	124	106	100
12000	–	–	226	168	141	346 *	230 *	150	128	121
13000	–	–	268	200	168	–	273 *	179	154	145
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641										
6000	276	153	87	66	56	129	87	58	50	47
6500	–	177	99	75	63	149	100	66	56	53
7000	–	203	113	84	71	171	113	74	63	60
7500	–	231	128	95	79	195	129	83	71	67
8000	–	261	143	106	88	220 *	145	93	79	74
9000	–	–	178	131	109	276 *	181	115	98	92
10000	–	–	218	159	132	339 *	221 *	141	119	111
11000	–	–	261	191	158	–	267 *	169	143	133
12000	–	–	–	226	186	–	316 *	200	169	158
13000	–	–	–	264	218	–	–	235 *	198	185
LPG LHV = 25.89 kWh/Nm³; d = 1.555										
6000	108	73	54	49	46	65	53	44	42	41
6500	119	79	57	50	46	69	55	45	43	42
7000	131	84	59	51	47	73	57	46	43	42
7500	145	90	61	52	48	78	60	47	43	42
8000	159	97	64	53	48	84	62	48	44	43
9000	189	112	69	56	50	95	68	50	45	43
10000	227	131	79	62	54	111	78	55	49	47
11000	274	157	95	75	65	134	94	67	59	57
12000	–	186	111	87	76	159	111	78	70	67
13000	–	216	128	101	87	185	129	91	80	76

*) So → High-pressure regulator for $p_o \leq 350$ mbar.

Burner selection
WKmono-G(L)80, versions ZM-NR and ZM-R-NR



Please refer to page 7 for notes on the capacity graphs and gas supply.

Natural gas
LPG
Gas oil

WKmono-G(L)80/2-A ZM-(R-)NR

Burner rating kW	Low-pressure supply **(LP1)** (with FRS regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 65	80	100	125	150	High-pressure supply **(HP)** (with HP regulator) F. p. into double valve assembly **Nominal valve train diameter** 65	80	100	125	150
	Nominal diameter of gas butterfly 150	150	150	150	150	150	150	150	150	150
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606										
11000	–	–	177	129	106	278 *	180	113	95	88
11500	–	–	187	134	109	297 *	190	117	97	90
12000	–	–	197	139	112	317 *	201	121	100	92
12500	–	–	208	145	115	338 *	212 *	125	102	94
13000	–	–	219	151	119	–	224 *	130	105	96
13500	–	–	230	157	122	–	235 *	135	107	98
14000	–	–	242	163	126	–	248 *	139	110	100
15000	–	–	267	176	134	–	274 *	149	116	104
16000	–	–	293	190	142	–	302 *	160	122	108
17000	–	–	–	213	158	–	339 *	179	136	120
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641										
11000	–	–	250	179	146	–	255 *	158	132	122
11500	–	–	264	187	150	–	270 *	163	135	124
12000	–	–	278	194	155	–	285 *	169	138	127
12500	–	–	293	202	159	–	301 *	175	141	129
13000	–	–	–	210	164	–	317 *	181	144	131
13500	–	–	–	219	169	–	334 *	187	148	134
14000	–	–	–	228	174	–	–	194	152	136
15000	–	–	–	246	184	–	–	208 *	159	142
16000	–	–	–	266	195	–	–	223 *	167	147
17000	–	–	–	297	217	–	–	248 *	186	163
LPG LHV = 25.89 kWh/Nm³; d = 1.555										
11000	–	210	147	127	118	187	147	119	112	109
11500	–	220	151	130	119	195	151	121	113	110
12000	–	231	156	132	121	204	156	123	114	111
12500	–	242	160	135	123	213 *	161	125	116	112
13000	–	253	165	137	124	222 *	166	127	117	113
13500	–	265	170	140	126	231 *	171	130	118	114
14000	–	277	175	143	128	241 *	176	132	120	115
15000	–	290	186	149	132	262 *	188	136	123	118
16000	–	–	197	155	135	282 *	199	141	126	120
17000	–	–	210	162	140	308 *	212 *	147	129	123

*) So → High-pressure regulator for $p_o \leq 350$ mbar.

WKmono-G(L)80/2-A ZM-(R-)NR

Burner rating kW	Low-pressure supply **(LP2, LP3)** (with SKP25 regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 125	150	SKP25 setting pressure F. p. at the flanged bend
	Nominal diameter of gas butterfly 150	150	
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606			
11000	110	98	77
11500	113	101	77
12000	117	103	78
12500	121	106	79
13000	125	109	79
13500	129	111	80
14000	133	114	81
15000	141	120	82
16000	150	126	83
17000	168	141	92
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641			
11000	152	135	105
11500	157	139	106
12000	162	142	106
12500	167	145	107
13000	172	149	108
13500	178	153	108
14000	183	156	109
15000	195	164	110
16000	208	173	111
17000	231	192	123
LPG LHV = 25.89 kWh/Nm³; d = 1.555			
11000	119	115	104
11500	121	116	105
12000	123	117	106
12500	125	119	106
13000	127	120	107
13500	129	121	107
14000	131	123	108
15000	135	126	109
16000	139	129	110
17000	144	133	111

Order numbers

Oil burners, version R

Burner type	Version	Order No.
WKmono-L80/1-A	R	281 814 10
WKmono-L80/2-A	R	281 824 10

DIN CERTCO: 5G1057

Gas burners, version ZM-NR

Burner type	Version	Gas valve assembly size	Order No.
WKmono-G80/1-A	ZM-NR	DN 65	287 814 14
		DN 80	287 814 15
		DN 100	287 814 16
		DN 125	287 814 17
		DN 150	287 814 18
WKmono-G80/2-A	ZM-NR	DN 65	287 824 14
		DN 80	287 824 15
		DN 100	287 824 16
		DN 125	287 824 17
		DN 150	287 824 18

CE-PIN: CE-0085 CQ 4017

Dual-fuel burners, version ZM-R-NR

Burner type	Version	Gas valve assembly size	Order No.
WKmono-GL80/1-A	ZM-R-NR	DN 65	288 814 14
		DN 80	288 814 15
		DN 100	288 814 16
		DN 125	288 814 17
		DN 150	288 814 18
WKmono-GL80/2-A	ZM-R-NR	DN 65	288 824 14
		DN 80	288 824 15
		DN 100	288 824 16
		DN 125	288 824 17
		DN 150	288 824 18

DIN CERTCO: 5G1056M
CE-PIN: CE-0085 CQ 4017

Fuel systems
Gas and dual-fuel burners (gas side)

Limits				LP1	LP2	LP3	HP	
							Standard	So
Gas flow pressure into shutoff valve at max. burner load				≤ 300 [1] mbar	≤ 300 [1] mbar	300–500 mbar	300–10 000 [2] mbar	
Regulated gas pressure p_o				≤ 200 mbar	≤ 250 mbar	≤ 360 mbar	≤ 210 mbar	> 210–350 mbar
Maximum operating pressure (MOP) of the gas supply				500 mbar	500 mbar	700 mbar	5000 / 10 000 / 16 000 [3] mbar	
Minimum MOP rating for components downstream of the gas pressure regulator				500 mbar	500 mbar	700 [4] mbar	500 mbar	500 mbar
Nominal valve train size	Gas valve assembly type	WKmono 80/1	WKmono 80/2	Low-pressure supply with FRS regulator	Low-pressure supply with SKP25 regulator on the VGD valve assembly	Low-pressure supply with SKP25 regulator on the VGD valve assembly	High-pressure supply with HP regulator	
DN 100	DMV 5100/12	●	●	●			●	●
DN 125	VGD 40.125	●		●			●	
			●	●	●	● [4]	●	●
DN 150	VGD 40.150	●		●			●	
			●	●	●	● [4]	●	●

[1] **Exceptions**
Normally, valve train layouts LP1 and LP2 are used for gas flow pressures up to a maximum of 300 mbar. This allows for pressure losses between the transfer station and the valve train. Furthermore, it is assumed that the transfer station utilises components (SSV, SRV, regulator) that are not of the highest class of accuracy. In individual cases, following consideration and approval by Weishaupt's headquarters, a gas flow pressure of up to 360 mbar can be approved if the appropriate conditions exist.

[2] Dependent on the MOP rating of the high-pressure gas regulator.

[3] Specific MOP depends on the high-pressure gas regulator type.

[4] Requires the use of a VGD double gas valve assembly, pressure switches and ignition gas valve with an MOP rating ≥ 700 mbar.

[5] WKmonoG(L)80/1-A ZM-(R-)NR burners do not have a pilot line.

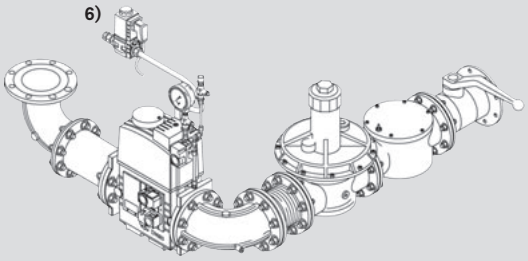
Safeguarding of the high-pressure gas supply in the event of a failure
The supplier must safeguard the gas flow pressure such that, in the event of failure, it cannot exceed the maximum incidental pressure (MIP*) of the burner's gas valve train.

*MIP = MOP x 1.1

Valve train selection
Details

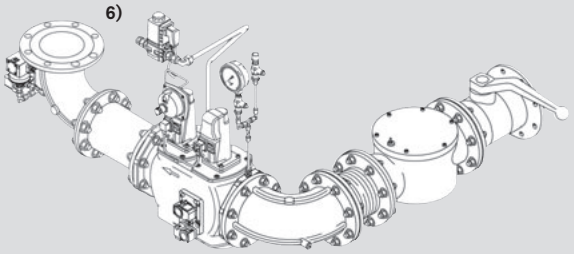
LP1

Low-pressure gas supply with FRS regulator
Used when:
– The gas flow pressure at maximum burner load is ≤ 300 mbar.[1)]
– The regulated pressure p_o together with the combustion chamber resistance does not exceed 200 mbar.
– The MOP [5)] does not exceed 500 mbar.



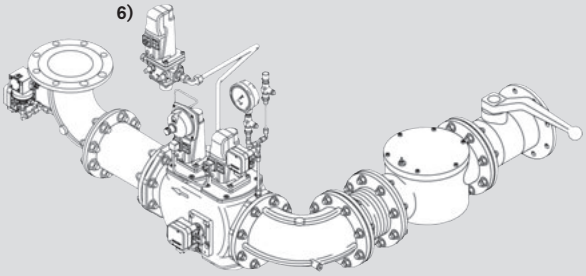
LP2

Low-pressure gas supply with SKP25 regulator
For VGD valve assemblies. Used when:
– The gas flow pressure at maximum burner load is ≤ 300 mbar.[1)]
– The regulated pressure p_o together with the combustion chamber resistance does not exceed 250 mbar.
– The MOP [5)] does not exceed 500 mbar.



LP3

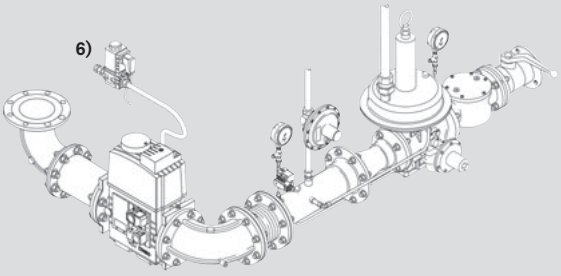
Low-pressure gas supply with SKP25 regulator
For VGD valve assemblies. Used when:
– The gas flow pressure at maximum burner load is in the range of 300–500 mbar.
– The regulated pressure p_o together with the combustion chamber resistance does not exceed 360 mbar.
– The MOP [5)] does not exceed 700 mbar.



HP Standard

High-pressure gas supply, standard version
Used when:
– The gas flow pressure at maximum burner load is > 300 mbar.
– The regulated pressure p_o together with the combustion chamber resistance does not exceed 210 mbar.
– The MOP [5)] does not exceed 1000, 2500, 4000, or 5000 mbar, depending on regulator type.

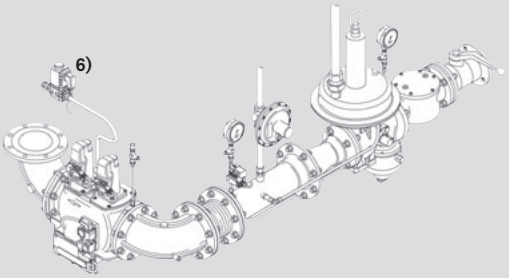
Refer to Print No. 83**0012**02 for component layout.



HP So

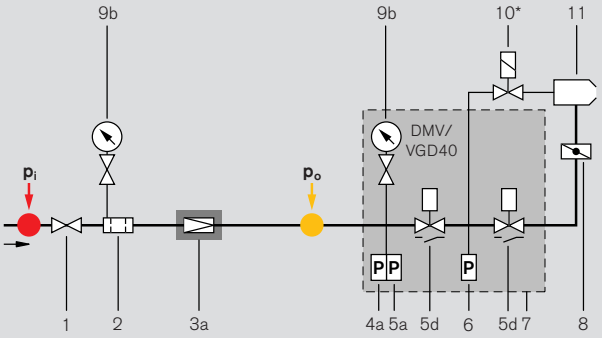
High-pressure gas supply, So version
Used when:
– The gas flow pressure at maximum burner load is > 500 mbar.
– The regulated pressure p_o together with the combustion chamber resistance is in the range of 210–350 mbar.
– The MOP [5)] does not exceed 4000, 5000, 10 000, or 16 000 mbar, depending on regulator type.

Refer to Print No. 83**5259**02 for component layout.

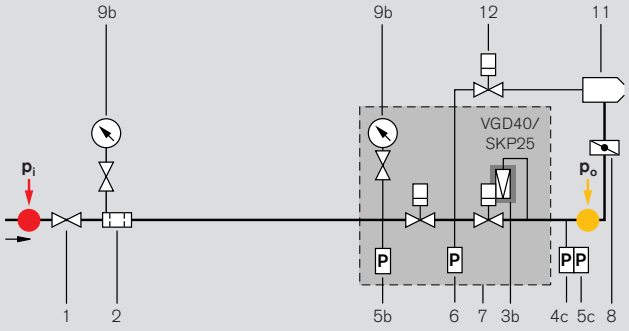


Gas-side fuel system

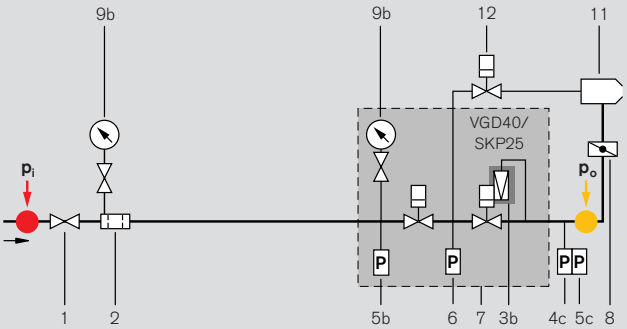
LP1



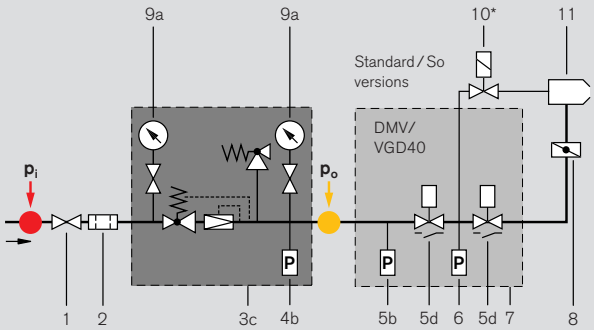
LP2



LP3



HP



Standard version: Regulated pressure $p_o \leq 210$ mbar
So version: Regulated pressure p_o 210–350 mbar

* WKmono-G(L)80/1-A ZM-(R-)NR burners do not have a pilot line.

1 Ball valve
2 Gas filter
3a Low-pressure FRS regulator
3b Low-pressure SKP25 regulator
3c High-pressure regulator incl. SSV / SRV
4a High gas pressure switch (mounted on the valve assembly inlet)
4b High gas pressure switch (mounted on the outlet side of the assembly)
4c High gas pressure switch (mounted on the elbow)
5a Low gas pressure switch (mounted on the valve assembly inlet)
5b Low gas pressure switch (mounted on the valve assembly inlet)
5c Additional low gas pressure switch in conjunction with VGD40 and SKP15 & 25 (mounted on the elbow)
5d "Open" position indicator switch in conjunction with VGD40 and 2 x SKP15
6 Valve proving pressure switch (mounted on the valve assembly)
7 Double gas valve assembly
8 Gas butterfly valve
9a Pressure gauge with push-button valve (standard)
9b Pressure gauge with push-button valve (accessory)
10 SV-D ignition gas solenoid valve
11 Burner
12 VGG10 ignition gas valve with SKP15


General actuator/coil


Solenoid coil


Hydraulic actuator


Burner

p_i Inlet pressure before the ball valve

p_o Outlet pressure after the regulator


Pressure regulator


Shutoff assembly

Layout of the valve train
On boilers with hinged doors, the gas valve train must be mounted on the opposite side to the boiler door hinges.

Break points in the valve train
Break points in the gas valve train should be provided to enable the door of the heat generator to be swung open. The main gas line is best separated at the compensator.

Support of the valve train
The gas valve train should be properly supported in accordance with site conditions. See the Weishaupt accessories list for various gas valve train support components.

Gas meter
A gas meter must be installed to measure gas consumption during commissioning and servicing.

Compensator
To enable a tension-free mounting of the gas valve train, the fitting of a compensator is strongly recommended.

Optional thermal shutoff (when required by local regulations)
A separate component with HTB seals fitted before the ball valve on flanged gas valve trains.

Scope of delivery

Description	WKmono-L80 version R	WKmono-G80 version ZM-NR	WKmono-GL80 version ZM-R-NR
Burner housing, housing cover, burner motor, air inlet housing, fan wheel, combustion head, ignition unit, ignition cable, ignition electrodes, combustion manager with control unit, flame sensor, actuators, flange gasket, fixing screws	●	●	●
Digital combustion manager W-FM 100 W-FM 200	● ○	● ○	● ○
Gas valve proving via the combustion manager	–	●	●
Class-A double gas valve assembly	–	●	●
Gas butterfly valve	–	●	●
Air pressure switch	●	●	●
Low gas pressure switch High gas pressure switch	– –	● ●	● ●
Regulating sleeve in the mixing assembly	●	●	●
Actuators for compound regulation of fuel and air via W-FM: Air damper actuator Gas butterfly valve actuator Oil regulator actuator Mixing assembly actuator	 ● – ● ●	 ● ● – ●	 ● ● ● ●
Max. oil pressure switch in return Min. oil pressure switch in supply	● ●	– –	● ●
MDK80 safety shutoff device with solenoid nozzle assembly, solenoid and pre-installed regulating nozzle, 2 oil solenoid shutoff valves, oil regulator	●	–	●
Motor on left-hand side of burner (as viewed from behind burner)	●	●	●
Burner-mounted oil pump	–	–	–
IP 54 protection	●	●	●

● Standard
○ Optional

EN 676 stipulates that gas ball valves, gas filters, and gas pressure regulators form part of the burner supply (see Weishaupt accessories list). Please enquire or see the special equipment section of this brochure for further burner executions.

Voltages and frequencies:
Other voltages and frequencies are available on application.

Standard burner motor:
Insulation Class F, IP 55 protection.
Premium-efficiency IE3 in accordance with Commission Regulation (EC) No. 640/2009
The necessary motor starter and protection must be fitted in a control panel.

Special equipment
WKmono 80, versions R, ZM-NR, and ZM-R-NR

Burner		WKmono-L80 version R	WKmono-G80 version ZM-NR	WKmono-GL80 version ZM-R-NR
W-FM 100 supplied loose		O	O	O
Integral load controller and analogue signal convertor for W-FM 100		O	O	O
W-FM 200 in lieu of W-FM 100, with integral load controller, analogue signal convertor, and VSD module (burner mounted)		O	O	O
W-FM 200 in lieu of W-FM 100, with integral load controller, analogue signal convertor, and VSD module (supplied loose)		O	O	O
W-FM 200 with extended O_2 trim / CO control functionality		O	O	O
110 V control voltage		O	O	O
W-FC 4.0 flame monitoring		O	O	O
W-FC 5.0 flame monitoring		O	O	O
ABE with Chinese-character display, supplied loose		O	O	O
VSD with separate frequency convertor (W-FM 200 required) (See accessories list for frequency convertor)		O	O	O
Pt1000 air temperature sensor for combustion efficiency display with W-FM 200 and O_2 trim		O	O	O
Solenoid valve for air pressure switch test with continuous-run fan or post-purge		O	O	O
Low-pressure variant 2 (LP2)		–	O	O
Low-pressure variant 3 (LP3)		–	O	O
0–40 bar pressure gauge with ball valve in supply		O	–	O
0–40 bar pressure gauge with ball valve in return		O	–	O
Separate oil pump station		O	–	O
Motor on right-hand side of burner, air inlet on left-hand side (as viewed from behind burner)		O	O	O
Inverted air inlet (air supply from above)		O	O	O
Air inlet positioned at an angle other than 0° or 180°		Please enquire	Please enquire	Please enquire
Air inlet with LGW air pressure switch for ducted extraneous air supply		O	O	O
Combustion head extension	by 150 mm	O	O	O
	by 300 mm	O	O	O

Please enquire regarding further special equipment, or refer to the price list.
Country-specific executions and special voltages on application.

Technical data
WKmono 80, versions R, ZM-NR, and ZM-R-NR

Fuel-independent			**WKmono 80/1-A**	**WKmono 80/2-A**
Burner motor 400 V, 3~, 50 Hz		Type	AF 225M/2L - 24LS 45K0	AF 225M/2L - 24LS 45K0
Motor power output		kW	45	45
Nominal current		A	75	75
Burner without VSD [1)] Motor protection switch or motor prefusing	 Star-delta DOL	 Type (e.g.) A minimum A minimum	 NZMN1-M80 100 A gG (by others) 160 A gG (by others)	 NZMN1-M80 100 A gG (by others) 160 A gG (by others)
Burner with VSD [2)] Motor protection switch or motor prefusing		Frequency convertor Type (e.g.) A minimum	PK37 NZMN1-M80 125 A gG (by others)	PK37 NZMN1-M80 125 A gG (by others)
Speed (50 Hz)		rpm	2955	2955
Combustion manager Prefusing		Type A	W-FM 100 16 A B	W-FM 100 16 A B
Air damper actuator Mixing assembly actuator		Type Type	SQM48 (20 Nm) SQM48 (20 Nm)	SQM48 (20 Nm) SQM48 (20 Nm)

Oil			**WKmono-L80/1-A R**	**WKmono-L80/2-A R**
Ignition unit		Type	W-ZG02 (2-pole)	W-ZG02 (2-pole)
Flame monitoring		Type	QRI	QRI
Oil actuator		Type	SQM48 (20 Nm)	SQM48 (20 Nm)
NO_x Class per EN 267		Cat.	2	2
Mass		kg	865	925
Maximum weight moment		kNm	10	10
Oil solenoid valves	110–120 V DN 20 (supply) 20 W 110–120 V DN 20 (return) 20 W	Type Type	5406 NC 5407 NC	5406 NC 5407 NC
Oil press. switch	0–25 bar (supply – 18 bar) 1–10 bar (return, gas oil – 5 bar)	Type Type	DSB 158 DSB 146	DSB 158 DSB 146

Gas		**WKmono-G80/1-A ZM-NR**	**WKmono-G80/2-A ZM-NR**
Ignition unit	Type	W-ZG02 (2-pole)	W-ZG02 (2-pole)
Ignition gas valve Ignition gas valve (LP3)	Type Type	– –	SV-D 507 VGG10 with SKP15
Flame monitoring	Type	ION	ION
Gas actuator	Type	SQM45 (3 Nm)	SQM45 (3 Nm)
NO_x Class per EN 676	Cat.	3	3
Mass (excl. double gas valve assembly and fittings)	kg	835	895
Maximum weight moment	kNm	10	10
Mass of the double gas valve assembly incl. ignition gas valve and connection pieces	DN kg	100 125 150 approx. 61 approx. 51 approx. 70	

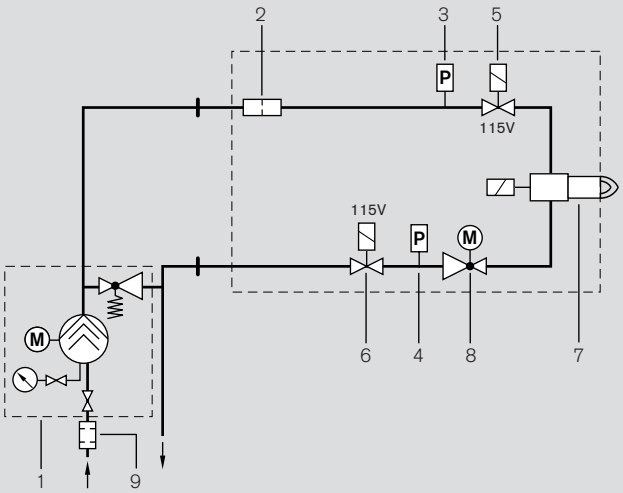
Dual-fuel			WKmono-GL80/1-A ZM-R-NR	WKmono-GL80/2-A ZM-R-NR
Ignition unit		Type	W-ZG03 (3-pole)	W-ZG02 (2-pole)
Ignition gas valve Ignition gas valve (LP3)		Type Type	– –	SV-D 507 VGG10 with SKP15
Flame monitoring		Type	QRI	QRI
Actuator	gas oil	Type Type	SQM45 (3 Nm) SQM48 (20 Nm)	SQM45 (3 Nm) SQM48 (20 Nm)
NO_x Class per EN 676 / EN 267		Cat.	3 / 2	3 / 2
Mass (excl. double gas valve assembly and fittings)		kg	865	925
Maximum weight moment		kNm	10	10
Oil solenoid valves	110–120 V DN 20 (supply) 20 W 110–120 V DN 20 (return) 20 W	Type Type	5406 NC 5407 NC	5406 NC 5407 NC
Oil press. switch	0–25 bar (supply – 18 bar) 1–10 bar (return, gas oil – 5 bar)	Type Type	DSB 158 DSB 146	DSB 158 DSB 146

[1] The necessary motor protection can be provided either by a motor protection switch (supplied and fitted into a panel by others), or with integral motor overload protection (see special equipment).

[2] The necessary motor protection can be provided either by a motor protection switch or with motor prefusing (supplied and fitted into a panel by others).

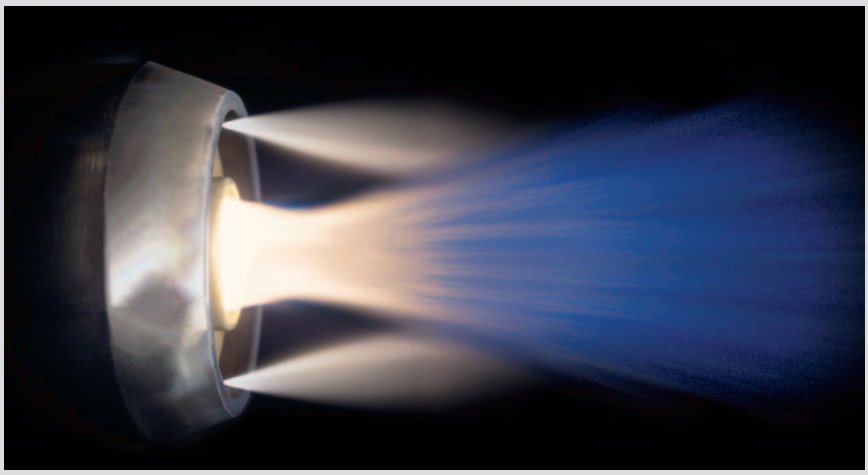
Oil-side fuel system

Versions R and ZM-R-NR

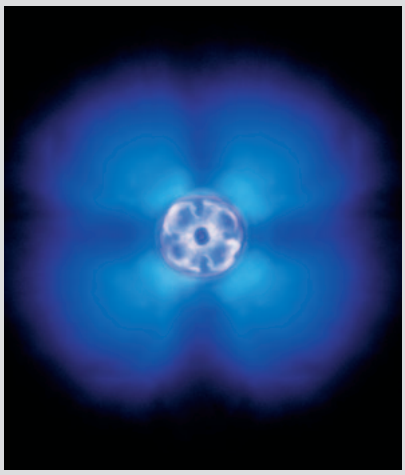


1 External pump with pressure maintenance
2 Strainer
3 Min. oil pressure switch
4 Max. oil pressure switch
5 Supply solenoid valve (fitted in direction of flow)
6 Return solenoid valve (fitted against direction of flow)
7 Solenoid nozzle assembly
8 Oil regulator
9 Filter

3LN-version burners:
Emissions reduced by the multiflam® principle



Primary and secondary flames



Flame image showing efficient combustion

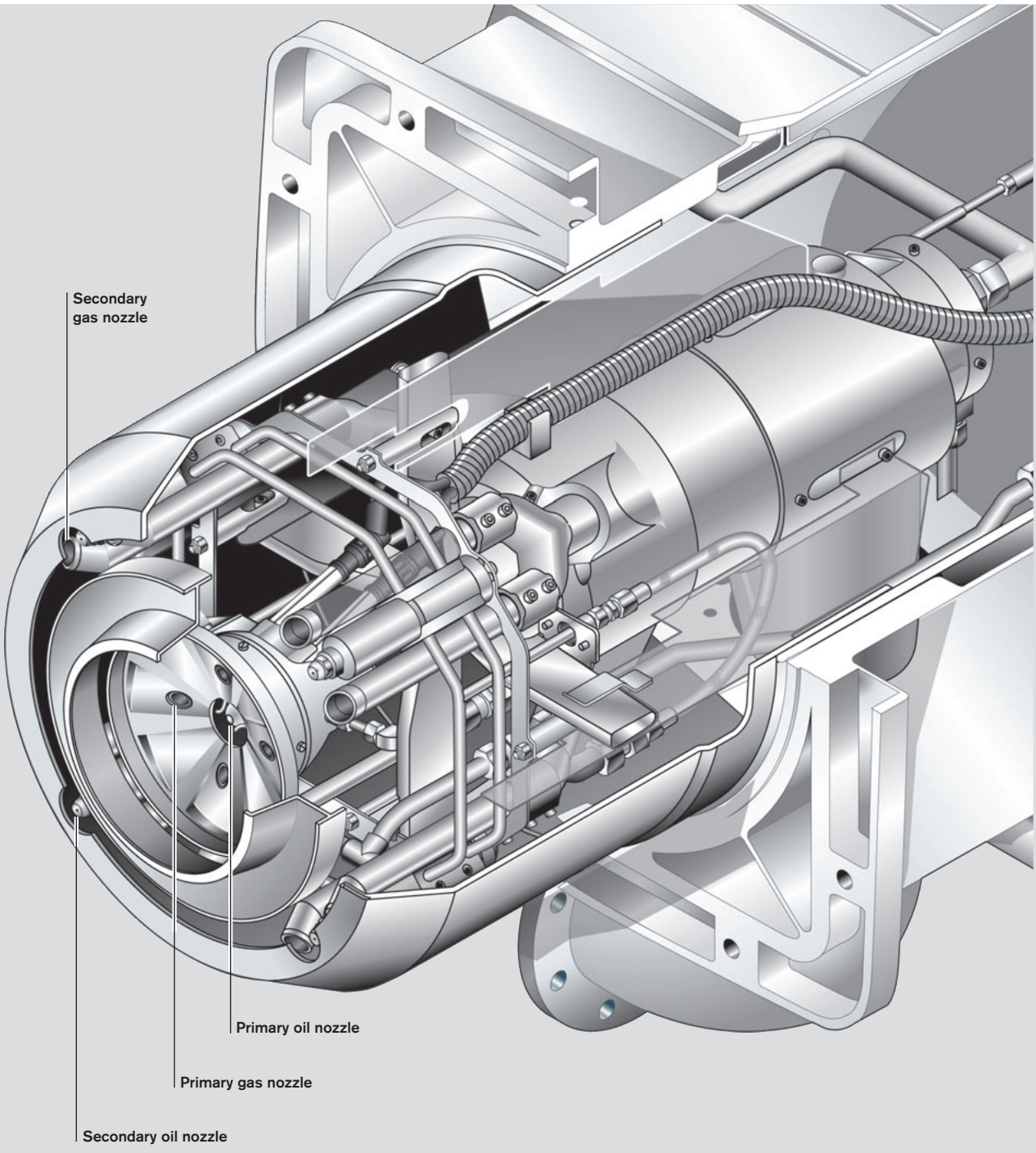
The multiflam® principle developed and patented by Weishaupt is an innovative way of reducing NO_x emissions from combustion plant to a minimal level.

At the heart of Weishaupt's multiflam® technology lies a special mixing assembly design. Fuel is distributed among several nozzles and combusted in a primary and a secondary flame. Temperature in the flame's core is considerably reduced, resulting in an effective reduction of nitrogen oxides.

The wide range of ratings across which multiflam® burners are now available is equally outstanding. All the way from the WM 10 monarch®-series burner right up to the WK 80 industrial-series burner, there is now a multiflam® burner for outputs ranging from 120 up to 23 000 kW.

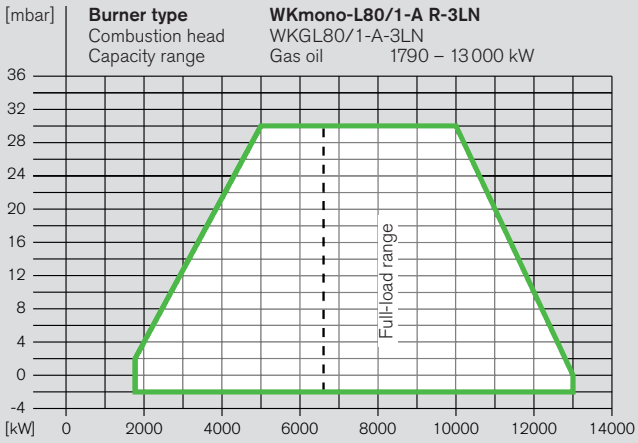
Weishaupt multiflam® burners have been proving themselves in the field for 20 years. As fully fledged gas, oil, and dual-fuel burners, they are always the first choice for achieving low NO_x emission limit values without resorting to external measures.

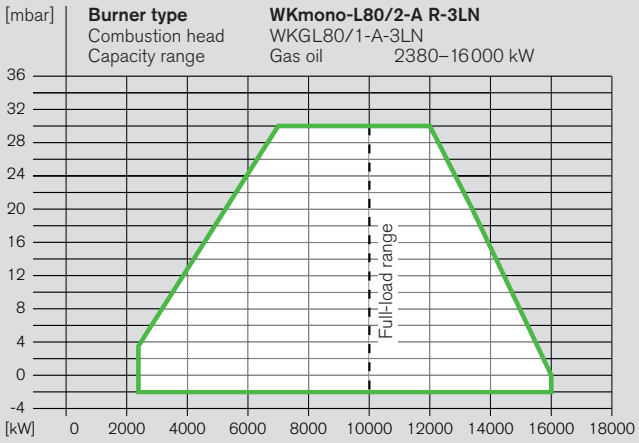
However, the achievement of good combustion figures depends on more than just the burner. There are numerous additional parameters, such as the design of the heat generator, and the geometry and the thermal loading of its combustion chamber, that also play an important role. Furthermore, the medium temperature, combustion air temperature, and the air humidity are decisive. When the NO_x emissions for a particular application are guaranteed, the guarantee will always be with reference to certain constraints and system parameters.



The multiflam® mixing assembly of a WKmono 80 burner

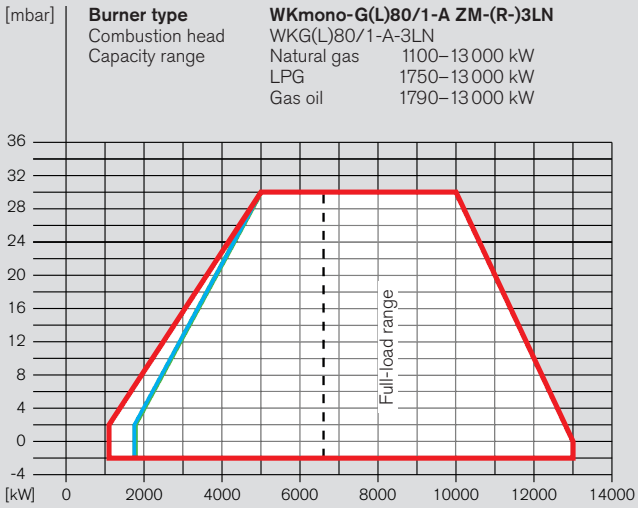
Burner selection
WKmono-L80, version R-3LN





Please refer to page 7 for notes on the capacity graphs.

Burner selection
WKmono-G(L)80, vers. ZM-3LN and ZM-R-3LN



Please refer to page 7 for notes on the capacity graphs and gas supply.

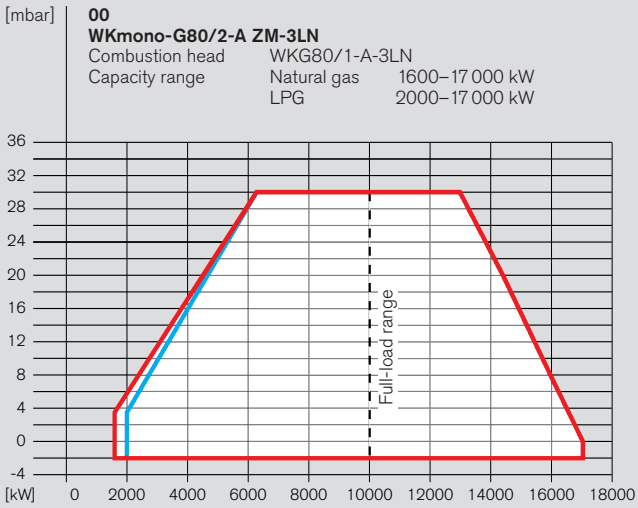
Natural gas
LPG
Gas oil

WKmono-G(L)80/1-A ZM-(R-)3LN

Burner rating kW	Low-pressure supply **(LP1)** (with FRS regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 65	80	100	125	150	High-pressure supply **(HP)** (with HP regulator) F. p. into double valve assembly **Nominal valve train diameter** 65	80	100	125	150
	Nominal diameter of gas butterfly 150	150	150	150	150	150	150	150	150	150
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606										
6600	271	168	113	96	87	148	113	88	82	80
7000	297	183	120	101	91	160	120	93	86	83
8000	–	221	140	114	102	192	140	105	95	92
9000	–	263	161	128	113	227 *	162	117	105	100
10000	–	–	183	143	124	266 *	185	130	115	109
11000	–	–	222	173	150	322 *	225 *	157	139	133
12000	–	–	262	204	177	–	265 *	186	164	156
13000	–	–	–	235	203	–	308 *	214 *	189	180
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641										
6600	–	231	151	125	113	202	151	116	107	103
7000	–	251	160	132	118	219 *	161	122	111	107
8000	–	–	186	149	131	263 *	188	136	122	117
9000	–	–	214	167	145	312 *	217 *	152	134	128
10000	–	–	245	186	159	338 *	248 *	168	146	138
11000	–	–	–	226	192	–	301 *	204	178	168
12000	–	–	–	–	227	–	–	241 *	210	199
13000	–	–	–	–	–	–	–	280 *	243 *	230 *
LPG LHV = 25.89 kWh/Nm³; d = 1.555										
6600	146	104	82	74	71	94	80	70	67	66
7000	157	110	85	77	73	99	83	72	69	68
8000	188	127	94	83	78	113	92	78	74	72
9000	223	145	103	90	83	129	102	83	78	77
10000	273	177	125	108	100	157	124	101	95	93
11000	–	211	148	129	119	188	148	121	113	111
12000	–	251	176	152	141	224 *	176	143	134	131
13000	–	–	207	179	166	263 *	207	169	159	155

*) So → High-pressure regulator for $p_o \leq 350$ mbar.

Burner selection
WKmono-G80, version ZM-3LN



Burner capacity is reduced for burners equipped with flue gas recirculation. The extent of the reduction is calculated individually for every application.

Please refer to page 7 for notes on the capacity graphs and gas supply.

Natural gas
LPG
Gas oil

WKmono-G80/2-A ZM-3LN

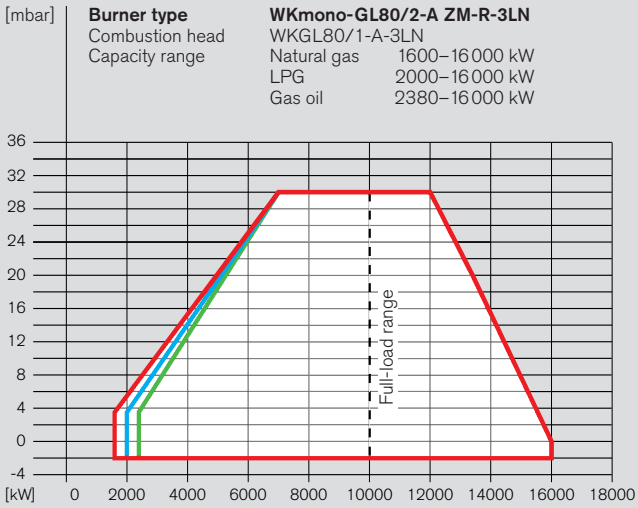
Burner rating kW	Low-pressure supply **(LP1)** (with FRS regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 65	80	100	125	150	High-pressure supply **(HP)** (with HP regulator) F. p. into double valve assembly **Nominal valve train diameter** 65	80	100	125	150
	Nominal diameter of gas butterfly 150	150	150	150	150	Nominal diameter of gas butterfly 150	150	150	150	150
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606										
10000	–	285	159	118	99	241 *	160	105	90	85
11000	–	–	178	129	106	278 *	181	113	95	89
12000	–	–	199	141	114	319 *	202	123	101	93
13000	–	–	228	160	128	–	233 *	139	114	105
14000	–	–	260	182	145	–	266 *	158	128	118
15000	–	–	295	204	162	–	302 *	177	144	132
16000	–	–	–	228	179	–	339 *	197	159	145
17000	–	–	–	252	197	–	–	218 *	175	159
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641										
10000	–	–	216	158	130	338 *	220	139	118	110
11000	–	–	244	173	140	–	249	152	126	116
12000	–	–	274	190	151	–	281	165	134	123
13000	–	–	–	217	171	–	324	188	151	138
14000	–	–	–	248	194	–	–	214 *	172	156
15000	–	–	–	279	217	–	–	241 *	192	174
16000	–	–	–	–	241	–	–	268 *	213 *	193
17000	–	–	–	–	266	–	–	297 *	234 *	211 *
LPG LHV = 25.89 kWh/Nm³; d = 1.555										
10000	264	168	116	99	91	148	115	92	86	84
11000	–	189	126	106	97	166	126	98	91	88
12000	–	212	137	113	102	185	137	105	96	93
13000	–	240	153	125	112	209	153	115	104	101
14000	–	276	174	142	127	240 *	175	131	119	114
15000	–	–	199	162	145	275 *	201	150	136	131
16000	–	–	226	184	164	313 *	228 *	170	154	148
17000	–	–	251	203	181	350 *	254 *	188	170	164

*) So → High-pressure regulator for $p_o \leq 350$ mbar.

WKmono-G80/2-A ZM-3LN

Burner rating kW	Low-pressure supply **(LP2, LP3)** (with SKP25 regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 125	150	SKP25 setting pressure F. p. at the flanged bend
	Nominal diameter of gas butterfly 150	150	
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606			
10000	103	93	75
11000	110	99	77
12000	118	105	79
13000	134	118	88
14000	151	133	99
15000	169	148	110
16000	188	164	121
17000	207	180	131
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641			
10000	135	121	96
11000	146	129	99
12000	158	138	102
13000	179	156	114
14000	203	176	129
15000	228	197	143
16000	254	218	157
17000	280	240	171
LPG LHV = 25.89 kWh/Nm³; d = 1.555			
10000	93	89	80
11000	98	94	83
12000	104	99	87
13000	114	107	94
14000	129	122	107
15000	148	139	122
16000	167	157	138
17000	185	174	153

Burner selection
WKmono-GL80, version ZM-R-3LN



Burner capacity is reduced for burners equipped with flue gas recirculation. The extent of the reduction is calculated individually for every application.

Please refer to page 7 for notes on the capacity graphs and gas supply.

Natural gas
LPG
Gas oil

WKmono-GL80/2-A ZM-R-3LN

Burner rating kW	Low-pressure supply **(LP1)** (with FRS regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 65	80	100	125	150	Nominal diameter of gas butterfly 150	150	150	150	150	High-pressure supply **(HP)** (with HP regulator) F. p. into double valve assembly **Nominal valve train diameter** 65	80	100	125	150	Nominal diameter of gas butterfly 150	150	150	150	150
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606																				
10000	–	285	159	118	99	241 *	160	105	90	85										
11000	–	–	178	129	106	278 *	181	113	95	89										
12000	–	–	199	141	114	319 *	202	123	101	93										
13000	–	–	228	160	128	–	233 *	139	114	105										
14000	–	–	260	182	145	–	266 *	158	128	118										
15000	–	–	295	204	162	–	302 *	177	144	132										
16000	–	–	–	228	179	–	339 *	197	159	145										
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641																				
10000	–	–	216	158	130	338 *	220	139	118	110										
11000	–	–	244	173	140	–	249	152	126	116										
12000	–	–	274	190	151	–	281	165	134	123										
13000	–	–	–	217	171	–	324	188	151	138										
14000	–	–	–	248	194	–	–	214 *	172	156										
15000	–	–	–	279	217	–	–	241 *	192	174										
16000	–	–	–	–	241	–	–	268 *	213 *	193										
LPG LHV = 25.89 kWh/Nm³; d = 1.555																				
10000	264	168	116	99	91	148	115	92	86	84										
11000	–	189	126	106	97	166	126	98	91	88										
12000	–	212	137	113	102	185	137	105	96	93										
13000	–	240	153	125	112	209	153	115	104	101										
14000	–	276	174	142	127	240 *	175	131	119	114										
15000	–	–	199	162	145	275 *	201	150	136	131										
16000	–	–	226	184	164	313 *	228 *	170	154	148										

*) So → High-pressure regulator for $p_o \leq 350$ mbar.

WKmono-GL80/2-A ZM-R-3LN

Burner rating kW	Low-pressure supply **(LP2, LP3)** (with SKP25 regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 125	150	Nominal diameter of gas butterfly 150	150	SKP25 setting pressure F. p. at the flanged bend
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606					
10000	103	93			75
11000	110	99			77
12000	118	105			79
13000	134	118			88
14000	151	133			99
15000	169	148			110
16000	188	164			121
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641					
10000	135	121			96
11000	146	129			99
12000	158	138			102
13000	179	156			114
14000	203	176			129
15000	228	197			143
16000	254	218			157
LPG LHV = 25.89 kWh/Nm³; d = 1.555					
10000	93	89			80
11000	98	94			83
12000	104	99			87
13000	114	107			94
14000	129	122			107
15000	148	139			122
16000	167	157			138

Order numbers

Oil burners, version R-3LN (multiflam®)

Brenner-typ	Ausf.	Bestell-Nr.
WKmono-L80/1-A	R-3LN	281 814 20
WKmono-L80/2-A	R-3LN	281 824 20

DIN CERTCO: 5G1057

Gas burners, version ZM-3LN (multiflam®)

Burner type	Version	Gas valve assembly size	Order No.
WKmono-G80/1-A	ZM-3LN	DN 65	287 814 24
		DN 80	287 814 25
		DN 100	287 814 26
		DN 125	287 814 27
		DN 150	287 814 28
WKmono-G80/2-A	ZM-3LN	DN 65	287 824 24
		DN 80	287 824 25
		DN 100	287 824 26
		DN 125	287 824 27
		DN 150	287 824 28

CE-PIN: CE-0085 CQ 4017

Dual-fuel burners, version ZM-R-3LN (multiflam®)

Burner type	Version	Gas valve assembly size	Order No.
WKmono-GL80/1-A	ZM-R-3LN	DN 65	288 814 24
		DN 80	288 814 25
		DN 100	288 814 26
		DN 125	288 814 27
		DN 150	288 814 28
WKmono-GL80/2-A	ZM-R-3LN	DN 65	288 824 24
		DN 80	288 824 25
		DN 100	288 824 26
		DN 125	288 824 27
		DN 150	288 824 28

DIN CERTCO: 5G1056M
CE-PIN: CE-0085 CQ 4017

Heat supply at an industrial premises (total steam generation: 37.4 t/h)

Scope of delivery

Description	WKmono-L80 version R-3LN	WKmono-G80 version ZM-3LN	WKmono-GL80 version ZM-R-3LN
Burner housing, housing cover, burner motor, air inlet housing, fan wheel, combustion head, ignition unit, ignition cable, ignition electrodes, combustion manager with control unit, flame sensor, actuators, flange gasket, fixing screws	●	●	●
Digital combustion manager W-FM 100 W-FM 200	● ○	● ○	● ○
Gas valve proving via the combustion manager	–	●	●
Class-A double gas valve assembly	–	●	●
Gas butterfly valve	–	●	●
Air pressure switch	●	●	●
Low gas pressure switch High gas pressure switch	– –	● ●	● ●
Modulating mixing assembly	●	●	●
Actuators for compound regulation of fuel and air via W-FM: Air damper actuator Gas butterfly valve actuator Oil regulator actuator Mixing assembly actuator	 ● – ● ●	 ● ● – ●	 ● ● ● ●
Max. oil pressure switch in return Min. oil pressure switch in supply	● ●	– –	● ●
Supply and return with 2 oil solenoid valves, oil regulator, nozzle head, pre-installed nozzles	●	–	●
Motor on left-hand side of burner (as viewed from behind burner)	●	●	●
Burner-mounted oil pump	–	–	–
IP 54 protection	●	●	●

● Standard
○ Optional

EN 676 stipulates that gas ball valves, gas filters, and gas pressure regulators form part of the burner supply (see Weishaupt accessories list). Please enquire or see the special equipment section of this brochure for further burner executions.

Voltages and frequencies:
Other voltages and frequencies are available on application.

Standard burner motor:
Insulation Class F, IP 55 protection.
Premium-efficiency IE3 in accordance with Commission Regulation (EC) No. 640/2009
The necessary motor starter and protection must be fitted in a control panel.

Special equipment
WKmono 80, vers. R-3LN, ZM-3LN, & ZM-R-3LN

Burner		WKmono-L80 version R-3LN	WKmono-G80 version ZM-3LN	WKmono-GL80 version ZM-R-3LN
W-FM 100 supplied loose		O	O	O
Integral load controller and analogue signal convertor for W-FM 100		O	O	O
W-FM 200 in lieu of W-FM 100, with integral load controller, analogue signal convertor, and VSD module (burner mounted)		O	O	O
W-FM 200 in lieu of W-FM 100, with integral load controller, analogue signal convertor, and VSD module (supplied loose)		O	O	O
W-FM 200 with extended O_2 trim / CO control functionality		O	O	O
110 V control voltage		O	O	O
Flue gas recirculation (requires W-FM 200 with extended functionality)		–	O	O
W-FC 4.0 flame monitoring		O	O	O
W-FC 5.0 flame monitoring		O	O	O
W-FC 6.0 flame monitoring		–	O	O
ABE with Chinese-character display, supplied loose		O	O	O
VSD with separate frequency convertor (W-FM 200 required) (See accessories list for frequency convertor)		O	O	O
Pt1000 air temperature sensor for combustion efficiency display with W-FM 200 and O_2 trim		O	O	O
Solenoid valve for air pressure switch test with continuous-run fan or post-purge		O	O	O
Low-pressure variant 2 (LP2)		–	O	O
Low-pressure variant 3 (LP3)		–	O	O
0–40 bar pressure gauge with ball valve in supply		O	–	O
0–40 bar pressure gauge with ball valve in return		O	–	O
Separate oil pump station		O	–	O
Motor on right-hand side of burner, air inlet on left-hand side (as viewed from behind burner)		O	O	O
Inverted air inlet (air supply from above)		O	O	O
Air inlet positioned at an angle other than 0° or 180°		Please enquire	Please enquire	Please enquire
Air inlet with LGW air pressure switch for ducted extraneous air supply		O	O	O
Combustion head extension	by 150 mm	O	O	O
	by 300 mm	O	O	O

Please enquire regarding further special equipment, or refer to the price list.
Country-specific executions and special voltages on application.

Technical data
WKmono 80, vers. R-3LN, ZM-3LN, & ZM-R-3LN

Fuel-independent		**WKmono 80/1-A**	**WKmono 80/2-A**
Burner motor 400 V, 3~, 50 Hz	Type	AF 225M/2L - 24LS 45K0	AF 225M/2L - 24LS 45K0
Motor power output	kW	45	45
Nominal current	A	75	75
Burner without VSD [1)] Motor protection switch or motor prefusing Star-delta DOL	 Type (e.g.) A minimum A minimum	 NZMN1-M80 100 A gG (by others) 160 A gG (by others)	 NZMN1-M80 100 A gG (by others) 160 A gG (by others)
Burner with VSD [2)] Motor protection switch or motor prefusing	Frequency convertor Type (e.g.) A minimum	PK37 NZMN1-M80 125 A gG (by others)	PK37 NZMN1-M80 125 A gG (by others)
Speed (50 Hz)	rpm	2955	2955
Combustion manager Prefusing	Type A	W-FM 100 16 A B	W-FM 100 16 A B
Air damper actuator Mixing assembly actuator	Type Type	SQM48 (20 Nm) SQM48 (35 Nm)	SQM48 (20 Nm) SQM48 (35 Nm)

Oil		**WKmono-L80/1-A R-3LN**	**WKmono-L80/2-A R-3LN**
Ignition unit	Type	W-ZG02 (2-pole)	W-ZG02 (2-pole)
Flame monitoring	Type	QRA 73	QRA 73
Oil actuator	Type	SQM48 (20 Nm)	SQM48 (20 Nm)
NOx Class per EN 267	Cat.	3	3
Mass	kg	915	925
Maximum weight moment	kNm	10	10
Oil solenoid valves 110–120 V DN 20 (supply) 20 W 110–120 V DN 20 (return) 20 W	Type Type	5406 NC 5407 NC	5406 NC 5407 NC
Oil press. switch 0–25 bar (supply – 18 bar) 1–10 bar (return, gas oil – 5 bar)	Type Type	DSB 158 DSB 146	DSB 158 DSB 146

Gas		**WKmono-G80/1-A ZM-3LN**	**WKmono-G80/2-A ZM-3LN**
Ignition unit	Type	W-ZG02 (2-pole)	W-ZG02 (2-pole)
Ignition gas valve Ignition gas valve (LP3)	Type Type	SV-D 507 –	SV-D 507 VGG10 with SKP15
Flame monitoring	Type	QRA 73	QRA 73
Gas actuator	Type	SQM45 (3 Nm)	SQM45 (3 Nm)
NOx Class per EN 676	Cat.	3	3
Mass (excl. double gas valve assembly and fittings)	kg	885	895
Maximum weight moment	kNm	10	10
Mass of the double gas valve assembly incl. ignition gas valve and connection pieces	DN kg	100 125 150 approx. 61 approx. 51 approx. 70	

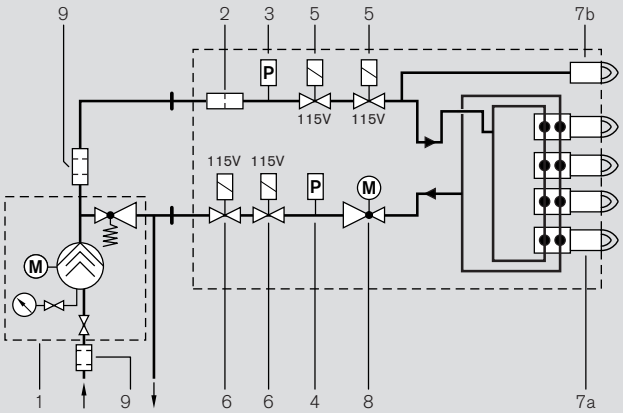
Dual-fuel			WKmono-GL80/1-A ZM-R-3LN	WKmono-GL80/2-A ZM-R-3LN
Ignition unit		Type	W-ZG02 (2-pole)	W-ZG02 (2-pole)
Ignition gas valve Ignition gas valve		Type Type	SV-D 507 –	SV-D 507 VGG10 mit SKP15
Flame monitoring		Type	QRA 73	QRA 73
Actuator	gas oil	Type Type	SQM45 (3 Nm) SQM48 (20 Nm)	SQM45 (3 Nm) SQM48 (20 Nm)
NOx Class per EN 676 / EN 267		Cat.	3 / 3	3 / 3
Mass (excl. double gas valve assembly and fittings)		kg	915	925
Maximum weight moment		kNm	10	10
Oil solenoid valves	110–120 V DN 20 (supply) 20 W 110–120 V DN 20 (return) 20 W	Type Type	5406 NC 5407 NC	5406 NC 5407 NC
Oil press. switch	0–25 bar (supply – 18 bar) 1–10 bar (return, gas oil – 5 bar)	Type Type	DSB 158 DSB 146	DSB 158 DSB 146

[1] The necessary motor protection can be provided either by a motor protection switch (supplied and fitted into a panel by others), or with integral motor overload protection (see special equipment).

[2] The necessary motor protection can be provided either by a motor protection switch or with motor prefusing (supplied and fitted into a panel by others).

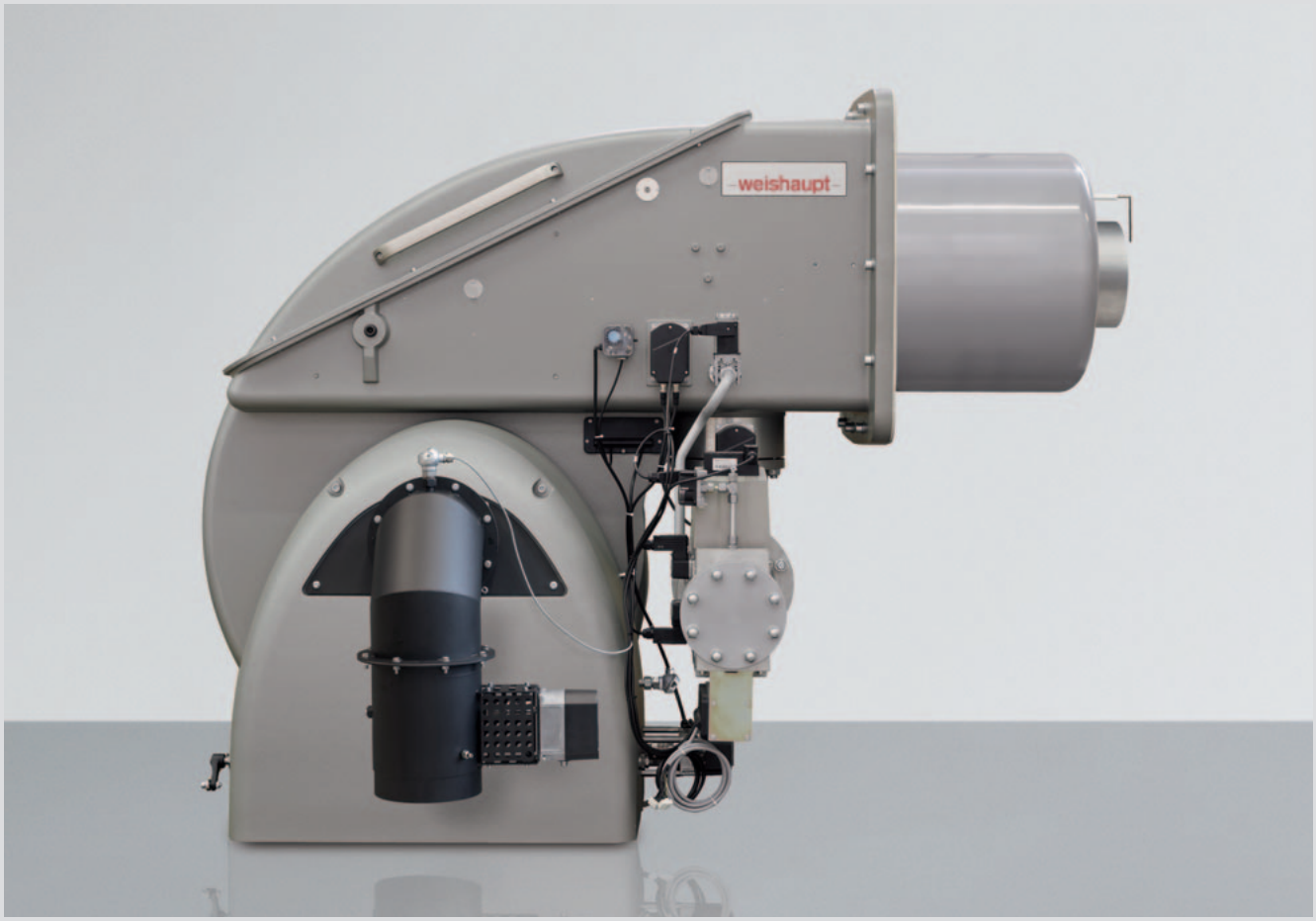
Oil-side fuel system

Versions R-3LN and ZM-R-3LN



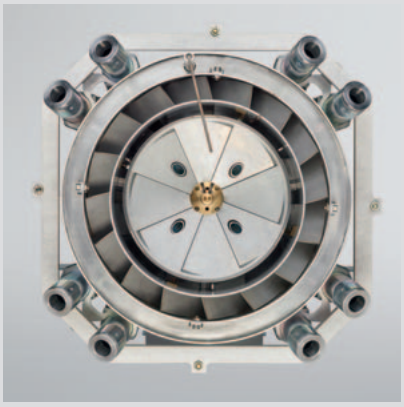
1 External pump with pressure maintenance
2 Strainer
3 Min. oil pressure switch
4 Max. oil pressure switch
5 Supply solenoid valve (fitted in direction of flow)
6 Return solenoid valve (fitted against direction of flow)
7a Hydraulic nozzle head with secondary nozzles
7b Nozzle assembly with primary nozzle
8 Oil regulator
9 100 µm filter (accessory)

Very high capacity, very low emissions: The 4LN-version WKmono 80



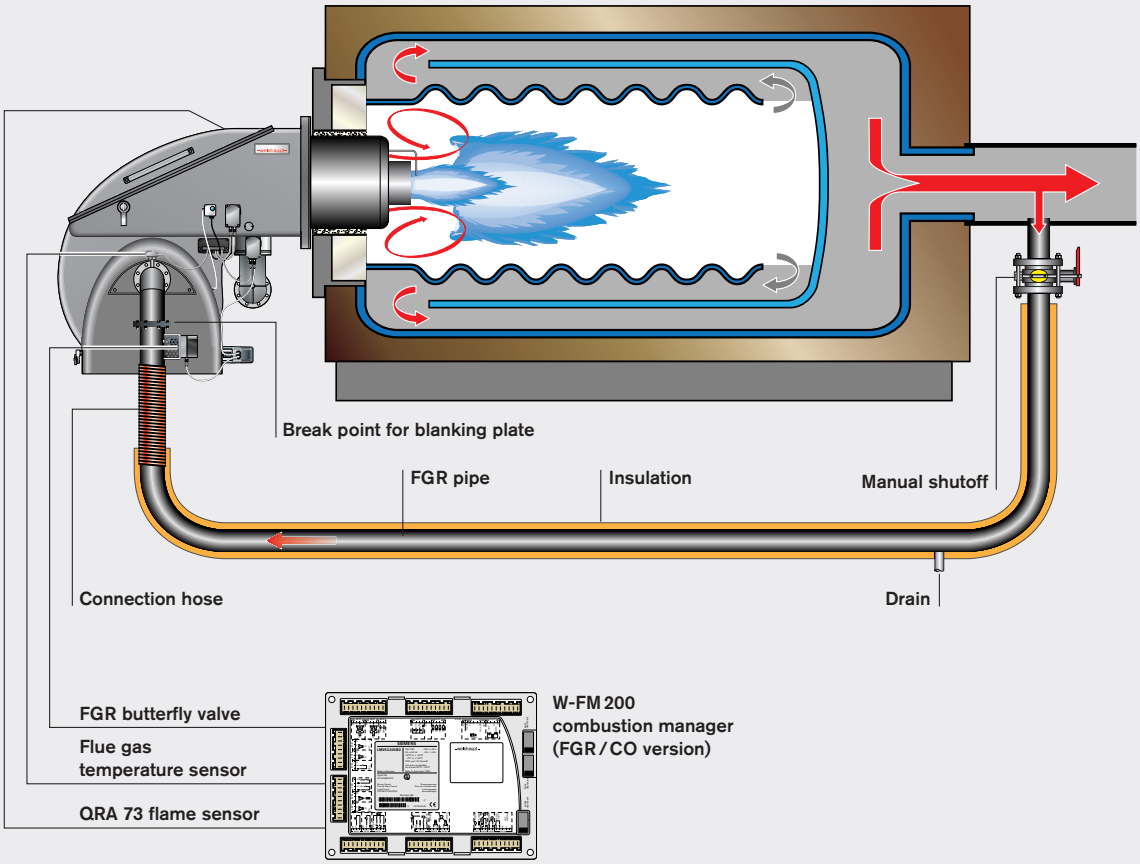
WKmono-G80 with flue gas recirculation

FGR connecting bend with actuator and Pt100



Gas-firing multiflam® mixing assembly

Flexibility with flue gas recirculation
Where stringent emission limits for oxides of nitrogen are in force, Weishaupt's various mixing assemblies for gas-fired burners can be combined with flue gas recirculation. Weishaupt takes advantage of the special properties of the flame geometry, and with it the adaption to the combustion chamber, to reduce NO_x levels.



General arrangement of a flue gas recirculation system with a WKmono-series burner

The multiflam® principle developed and patented by Weishaupt is a way to reduce nitrogen oxide emissions to a minimum.

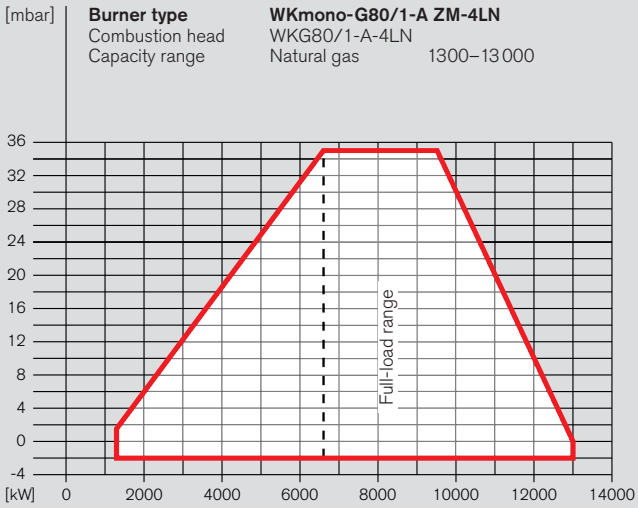
At the heart of Weishaupt's multiflam® technology is a special mixing assembly design. Distribution of the fuel between the primary and secondary flames, with additional flame recirculation directly at the mixing assembly, reduces oxides of nitrogen to a minimum.

If a specific market demands ultra-low NO_x emissions, Weishaupt combines multiflam® technology with external flue gas recirculation. This system, which is designed for gaseous fuels, reduces NO_x emissions to levels that will meet the most stringent of standards worldwide.

The compact FGR dosing unit is worth highlighting. The connecting bend incorporates the FGR butterfly valve and the associated temperature sensor. This packaged assembly allows the system to be fully tested at the factory and avoids additional installation work on site.

The FGR system is controlled by the W-FM 200 combustion manager. An additional software module ensures the return of a temperature-compensated volume of flue gas at all operating stages, reliable cold start behaviour, and the very highest degree of operational availability.

Burner selection
WKmono-G80, version ZM-4LN



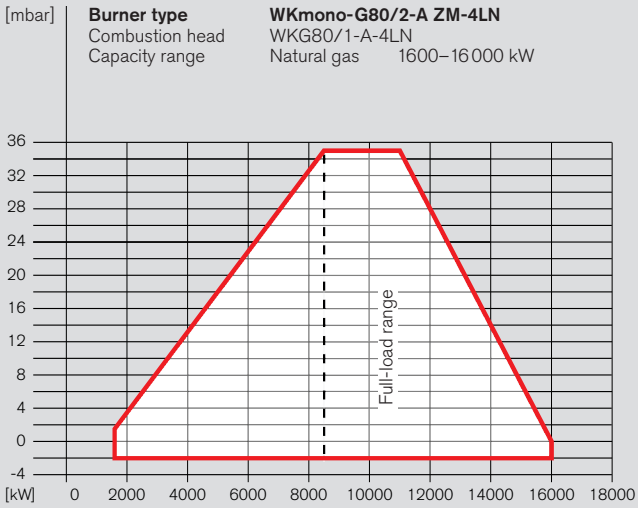
Burner capacity is reduced for burners equipped with flue gas recirculation. The extent of the reduction is calculated individually for every application.

Please refer to page 7 for notes on the capacity graphs and gas supply.

WKmono-G80/1-A ZM-4LN

Burner rating kW	Low-pressure supply **(LP1)** (with FRS regulator) Flow pressure into shutoff valve **Nominal valve train diameter**					High-pressure supply **(HP)** (with HP regulator) F. p. into double valve assembly **Nominal valve train diameter**				
	65	**80**	**100**	**125**	**150**	**65**	**80**	**100**	**125**	**150**
	Nominal diameter of gas butterfly					Nominal diameter of gas butterfly				
	150	150	150	150	150	150	150	150	150	150
Natural gas E	LHV = 10.35 kWh/Nm³; d = 0.606									
6600	290	188	133	115	107	167	132	108	101	99
7000	–	200	138	118	109	177	137	110	103	100
7500	–	216	144	122	111	190	144	113	105	102
8000	–	232	151	126	113	203	151	116	106	103
9000	–	268	165	133	118	232 *	166	121	109	105
10000	–	–	184	144	125	267 *	186	131	116	111
11000	–	–	210	161	139	311 *	213 *	146	128	121
12000	–	–	242	184	157	–	246 *	166	145	137
13000	–	–	281	213	181	–	268 *	192	167	158
Natural gas LL	LHV = 8.83 kWh/Nm³; d = 0.641									
6600	–	274	194	168	156	245 *	194	159	149	146
7000	–	–	201	172	159	259 *	201	162	151	147
7500	–	–	210	177	162	277 *	211 *	166	153	149
8000	–	–	220	182	165	296 *	221 *	170	156	151
9000	–	–	239	191	169	336 *	241 *	176	158	152
10000	–	–	264	206	178	–	268 *	187	166	158
11000	–	–	–	229	195	–	304 *	207	181	171
12000	–	–	–	–	220	–	–	234 *	203	192
13000	–	–	–	–	–	–	–	270 *	233 *	220 *

*) So → High-pressure regulator for $p_o \leq 350$ mbar.



Burner capacity is reduced for burners equipped with flue gas recirculation. The extent of the reduction is calculated individually for every application.

Please refer to page 7 for notes on the capacity graphs and gas supply.

WKmono-G80/2-A ZM-4LN

Burner rating kW	Low-pressure supply **(LP1)** (with FRS regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 65	80	100	125	150	High-pressure supply **(HP)** (with HP regulator) F. p. into double valve assembly **Nominal valve train diameter** 65	80	100	125	150
	Nominal diameter of gas butterfly 150	150	150	150	150	150	150	150	150	150
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606										
8500	–	235	144	115	101	–	144	104	93	90
9000	–	–254	151	119	103	–	152	107	95	91
10000	–	–294	168	127	108	–	169	114	99	94
11000	–	–	186	137	114	–	188	121	103	97
12000	–	–	205	147	120	–	–	129	108	100
13000	–	–	226	158	127	–	–	138	112	103
14000	–	–	–252	173	136	–	–	149	120	110
15000	–	–	–283	192	150	–	–	165	132	120
16000	–	–	–	216	168	–	–	186	147	134
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641										
8500	–	–	207	165	145	–	–	151	135	130
9000	–	–	218	171	148	–	–	155	138	131
10000	–	–	241	183	155	–	–	164	143	135
11000	–	–	267	196	163	–	–	175	148	139
12000	–	–	295	211	171	–	–	186	154	143
13000	–	–	–	227	180	–	–	197	161	148
14000	–	–	–	247	193	–	–	–	171	156
15000	–	–	–	273	212	–	–	–	186	169
16000	–	–	–	–	236	–	–	–	–	188

*) So → High-pressure regulator for $p_o \leq 350$ mbar.

WKmono-G80/2-A ZM-4LN

Burner rating kW	Low-pressure supply **(LP2, LP3)** (with SKP25 regulator) Flow pressure into shutoff valve **Nominal valve train diameter** 125	150	SKP25 setting pressure F. p. at the flanged bend
	Nominal diameter of gas butterfly 150	150	
Natural gas E LHV = 10.35 kWh/Nm³; d = 0.606			
8500	103	97	83
9000	106	98	83
10000	112	102	84
11000	118	107	85
12000	125	111	86
13000	132	116	87
14000	143	124	91
15000	157	136	98
16000	176	152	109
Natural gas LL LHV = 8.83 kWh/Nm³; d = 0.641			
8500	149	139	120
9000	152	141	120
10000	160	146	121
11000	169	152	122
12000	178	159	123
13000	188	165	124
14000	203	176	128
15000	223	192	137
16000	248	213	152

Order numbers

Gas burners, version ZM-4LN

Burner type	Version	Gas valve assembly size	Order No.
WKmono-G80/1-A	ZM-4LN	DN 65	287 814 44
		DN 80	287 814 45
		DN 100	287 814 46
		DN 125	287 814 47
		DN 150	287 814 48
WKmono-G80/2-A	ZM-4LN	DN 65	287 824 44
		DN 80	287 824 45
		DN 100	287 824 46
		DN 125	287 824 47
		DN 150	287 824 48

CE-PIN: CE-0085 CQ 4017

Scope of delivery

Description	WKmono-G80 version ZM-4LN
Burner housing, housing cover, burner motor, air inlet housing, fan wheel, combustion head, ignition unit, ignition cable, ignition electrodes, combustion manager with control unit, flame sensor, actuators, flange gasket, FGR connection with actuator, fixing screws	●
Digital combustion manager W-FM 200	●
Gas valve proving via the combustion manager	●
Class-A double gas valve assembly	●
Gas butterfly valve	●
Air pressure switch	●
Low gas pressure switch High gas pressure switch	● ●
Modulating mixing assembly	●
Actuators for compound regulation of fuel and air via W-FM: Air damper actuator Gas butterfly valve actuator Mixing assembly actuator	 ● ● ●
Motor on left-hand side of burner (as viewed from behind burner)	●
IP 54 protection	●

● Standard
○ Optional

EN 676 stipulates that gas ball valves, gas filters, and gas pressure regulators form part of the burner supply (see Weishaupt accessories list). Please enquire or see the special equipment section of this brochure for further burner executions.

Voltages and frequencies:
Other voltages and frequencies are available on application.

Standard burner motor:
Insulation Class F, IP 55 protection.
Premium-efficiency IE3 in accordance with Commission Regulation (EC) No. 640/2009
The necessary motor starter and protection must be fitted in a control panel.

Special equipment
WKmono-G80, version ZM-4LN

Burner	WKmono-G80 version ZM-4LN
W-FM 200 supplied loose	○
ABE with Chinese-character display, supplied loose	○
VSD with separate frequency convertor (W-FM 200 required) (See accessories list for frequency convertor)	○
Pt1000 air temperature sensor for combustion efficiency display with W-FM 200 and O_2 trim	○
Solenoid valve for air pressure switch test with continuous-run fan or post-purge	○
Combustion head extension by 50 mm	○
Air inlet with LGW air pressure switch for ducted extraneous air supply	○
Low-pressure variant 2 (LP2)	○
Low-pressure variant 3 (LP3)	○
Motor on right-hand side of burner, air inlet on left-hand side (as viewed from behind burner)	○
Inverted air inlet (air supply from above)	○
Air inlet positioned at an angle other than 0° or 180°	Please enquire
110 V control voltage	○

Please enquire regarding further special equipment, or refer to the price list.
Country-specific executions and special voltages on application.

Technical data
WKmono-G80, version ZM-4LN

Fuel-independent		**WKmono 80/1-A**	**WKmono 80/2-A**
Burner motor 400 V, 3~, 50 Hz	Type	AF 225M/2L - 24LS 45K0	AF 225M/2L - 24LS 45K0
Motor power output	kW	45	45
Nominal current	A	75	75
Burner without VSD 1) Motor protection switch or motor prefusing Star-delta DOL	 Type (e.g.) A minimum A minimum	 NZMN1-M80 100 A gG (by others) 160 A gG (by others)	 NZMN1-M80 100 A gG (by others) 160 A gG (by others)
Burner with VSD 2) Motor protection switch or motor prefusing	Frequency convertor Type (e.g.) A minimum	PK37 NZMN1-M80 125 A gG (by others)	PK37 NZMN1-M80 125 A gG (by others)
Speed (50 Hz)	rpm	2955	2955
Combustion manager Prefusing	Type A	W-FM 200 16 A B	W-FM 200 16 A B
Air damper actuator Mixing assembly actuator FGR actuator	Type Type Type	SQM48 (20 Nm) SQM48 (35 Nm) SQM48 (20 Nm)	SQM48 (20 Nm) SQM48 (35 Nm) SQM48 (20 Nm)

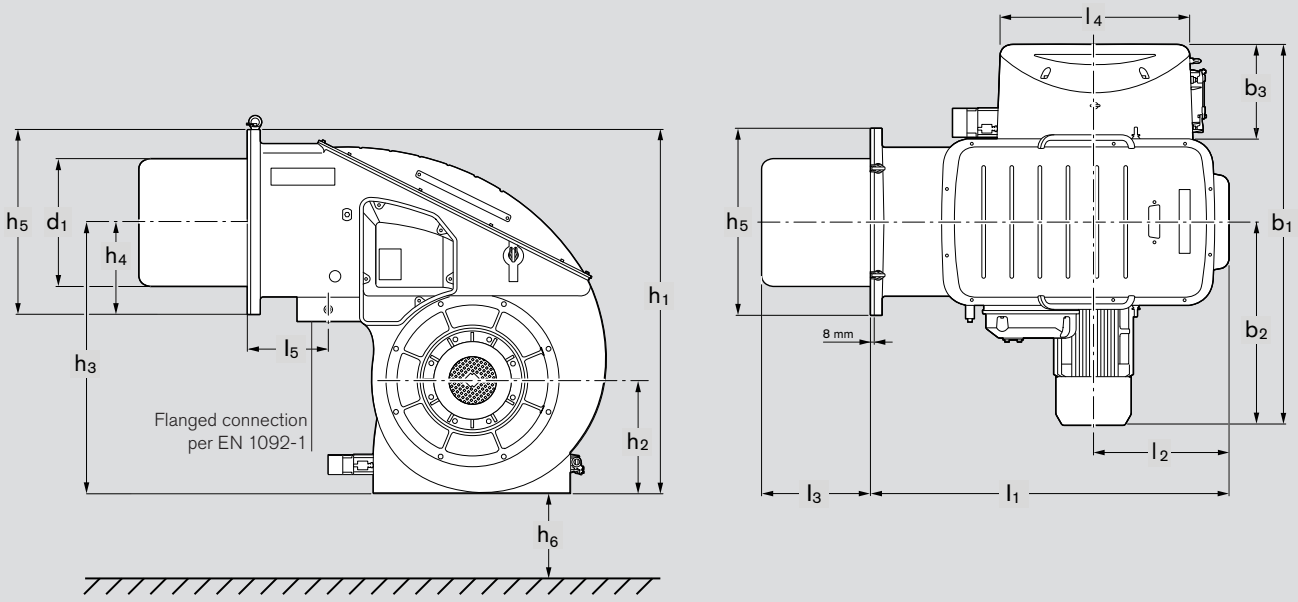
Gas		**WKmono-G80/1-A ZM-4LN**	**WKmono-G80/2-A ZM-4LN**
Ignition unit	Type	W-ZG02 (2-pole)	W-ZG02 (2-pole)
Ignition gas valve Ignition gas valve (LP3)	Type Typ	SV-D 507 –	SV-D 507 VGG10 with SKP15
Flame monitoring	Type	ION	ION
Gas actuator	Type	SQM45 (3 Nm)	SQM45 (3 Nm)
NOx Class per EN 676	Cat.	3	3
Mass (excl. double gas valve assembly and fittings)	kg	885	895
Maximum weight moment	kNm	10	10
Mass of the double gas valve assembly incl. ignition gas valve and connection pieces	DN kg	100 125 150 approx. 61 approx. 51 approx. 70	

[1] The necessary motor protection can be provided either by a motor protection switch (supplied and fitted into a panel by others), or with integral motor overload protection (see special equipment).

[2] The necessary motor protection can be provided either by a motor protection switch or with motor prefusing (supplied and fitted into a panel by others).

Dimensions

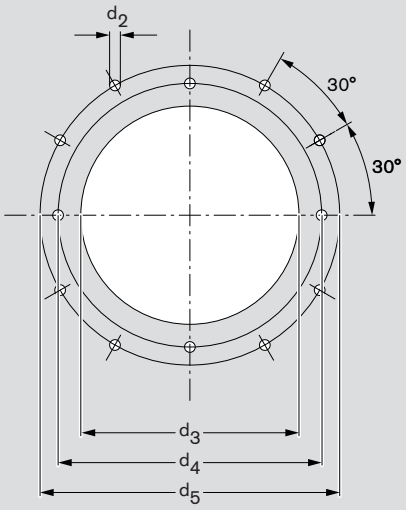
Standard housing configuration



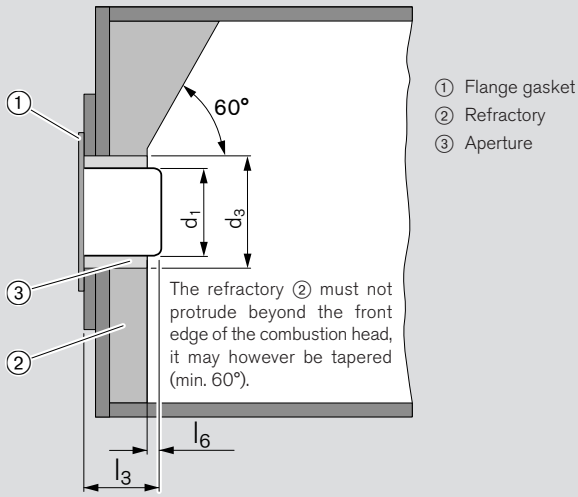
Burner type	Dimensions in mm l_1	l_2	l_3	l_4	l_5	l_6	b_1	b_2	b_3	h_1	h_2	h_3	h_4
WKmono-L80/1-A R	1635	615	425	900	368	≥ 0	1732	925	543	1661	515	1236	456
WKmono-L80/2-A R	1635	615	500	900	368	≥ 0	1732	925	543	1661	515	1236	456
WKmono-G80/1-A ZM-NR	1635	615	425	900	368	≥ 0	1732	925	543	1661	515	1236	456
WKmono-G80/2-A ZM-NR	1635	615	500	900	368	≥ 0	1732	925	543	1661	515	1236	456
WKmono-GL80/1-A ZM-R-NR	1635	615	425	900	368	≥ 0	1732	925	543	1661	515	1236	456
WKmono-GL80/2-A ZM-R-NR	1635	615	500	900	368	≥ 0	1732	925	543	1661	515	1236	456
WKmono-L80/1-A R-3LN	1635	615	444	900	368	≥ 50	1732	925	543	1661	515	1236	456
WKmono-L80/2-A R-3LN	1635	615	510	900	368	≥ 70	1732	925	543	1661	515	1236	456
WKmono-G80/1-A ZM-3LN	1635	615	444	900	368	≥ 50	1732	925	543	1661	515	1236	456
WKmono-G80/2-A ZM-3LN	1635	615	510	900	368	≥ 70	1732	925	543	1661	515	1236	456
WKmono-GL80/1-A ZM-R-3LN	1635	615	444	900	368	≥ 50	1732	925	543	1661	515	1236	456
WKmono-GL80/2-A ZM-R-3LN	1635	615	510	900	368	≥ 70	1732	925	543	1661	515	1236	456

All dimensions are approximate.
Weishaupt reserve the right to make changes in light of future developments.

Mounting-plate drilling dimensions



Heat generator preparation

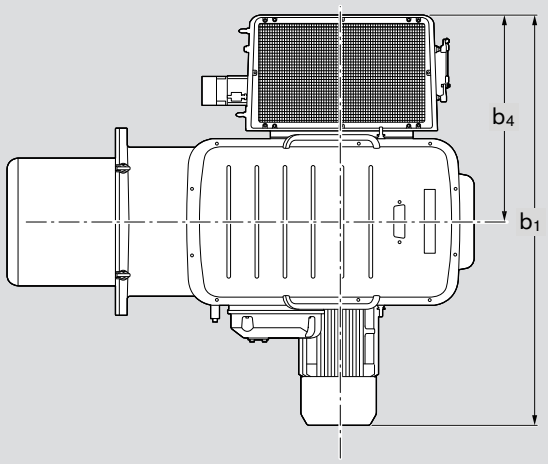


Burner type	Dimensions in mm h_5	h_6	d_1	d_2	d_3	d_4	d_5	Nominal diameter of gas butterfly
WKmono-L80/1-A R	850	200	485	M16	530	770	875	–
WKmono-L80/2-A R	850	200	590	M16	640	770	875	–
WKmono-G80/1-A ZM-NR	850	200	485	M16	530	770	875	DN 150
WKmono-G80/2-A ZM-NR	850	200	590	M16	640	770	875	DN 150
WKmono-GL80/1-A ZM-R-NR	850	200	485	M16	530	770	875	DN 150
WKmono-GL80/2-A ZM-R-NR	850	200	590	M16	640	770	875	DN 150
WKmono-L80/1-A R-3LN	850	200	480	M16	640	770	875	–
WKmono-L80/2-A R-3LN	850	200	540	M16	640	770	875	–
WKmono-G80/1-A ZM-3LN	850	200	480	M16	640	770	875	DN 150
WKmono-G80/2-A ZM-3LN	850	200	540	M16	640	770	875	DN 150
WKmono-GL80/1-A ZM-R-3LN	850	200	480	M16	640	770	875	DN150
WKmono-GL80/2-A ZM-R-3LN	850	200	540	M16	640	770	875	DN150

All dimensions are approximate.
Weishaupt reserve the right to make changes in light of future developments.

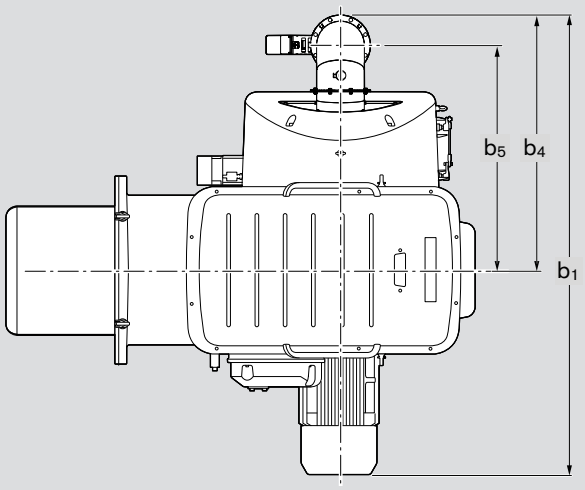
Dimensions

Air inlet with intermediate flange
Inverted air inlet



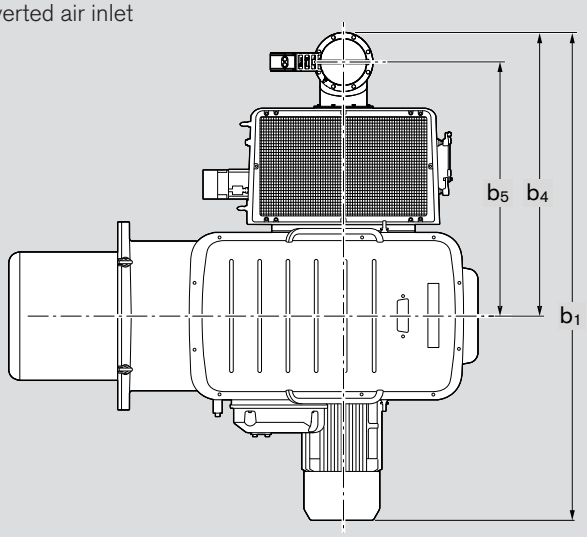
WKmono 80/2 burner	Dimensions in mm b_1	b_4
with intermediate flange	1892	967

WKmono 80/2 air inlet with FGR connecting bend



WKmono 80/2 burner	Dimensions in mm b_1	b_4	b_5
with FGR connecting bend	2085	1160	1023

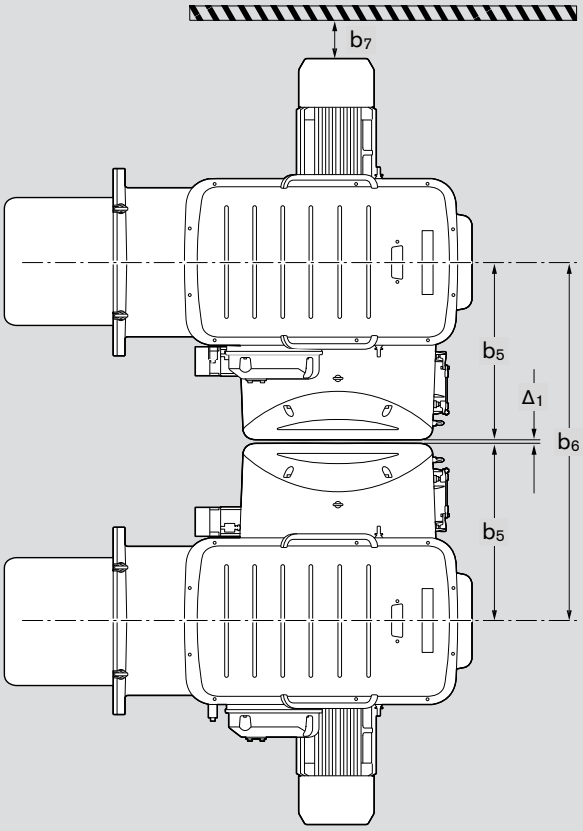
Air inlet with intermediate flange & FGR connecting bend
Inverted air inlet



WKmono 80/2 burner	Dimensions in mm b_1	b_4	b_4
with intermediate flange and FGR bend	2245	1320	1183

All dimensions are approximate. Weishaupt reserve the right to make changes in light of future developments.

Minimum clearances with multiple burners
Without intermediate flange



WKmono 80/2 burner	Dimensions in mm b_5	$b_{6\,(min)}$	b_7	Δ_1
without intermediate flange	807	1650	25* / 250**	35

*) Minimum clearance for air cooling of the burner motor
**) Servicing dimension (please enquire regarding smaller clearances)

All dimensions are approximate. Weishaupt reserve the right to make changes in light of future developments.

The Weishaupt Group stands for reliability

The Weishaupt Group has over 3400 employees and is a market leader for burners, condensing boilers, heat pumps, solar energy, and building automation.

The business, which was founded in 1932, encompasses three companies operating in the fields of energy technology, energy recovery, and energy management.

The core division is Max Weishaupt GmbH, which is located in the south-west German town of Schwendi, and which is where all burners are manufactured. It is also the group's administrative headquarters, and home to the Weishaupt Group's own Research and Development Institute.

Heating systems are manufactured by Weishaupt's sister company, Pyropac, which is located in the Swiss town of Sennwald.

Neuberger building automation, sited in Rothenburg ob der Tauber in Germany, has been a group subsidiary since 1995.

Germany's Bad Wurzach is home to the geothermal engineering company, BauGrund Süd, which has been part of the Weishaupt Group since 2009.

Clockwise from top left:
Heating system production in Sennwald
Neuberger building automation in Rothenburg o.d.T.
Geothermal drilling with BauGrund Süd
Weishaupt Group headquarters in Schwendi

–weishaupt–

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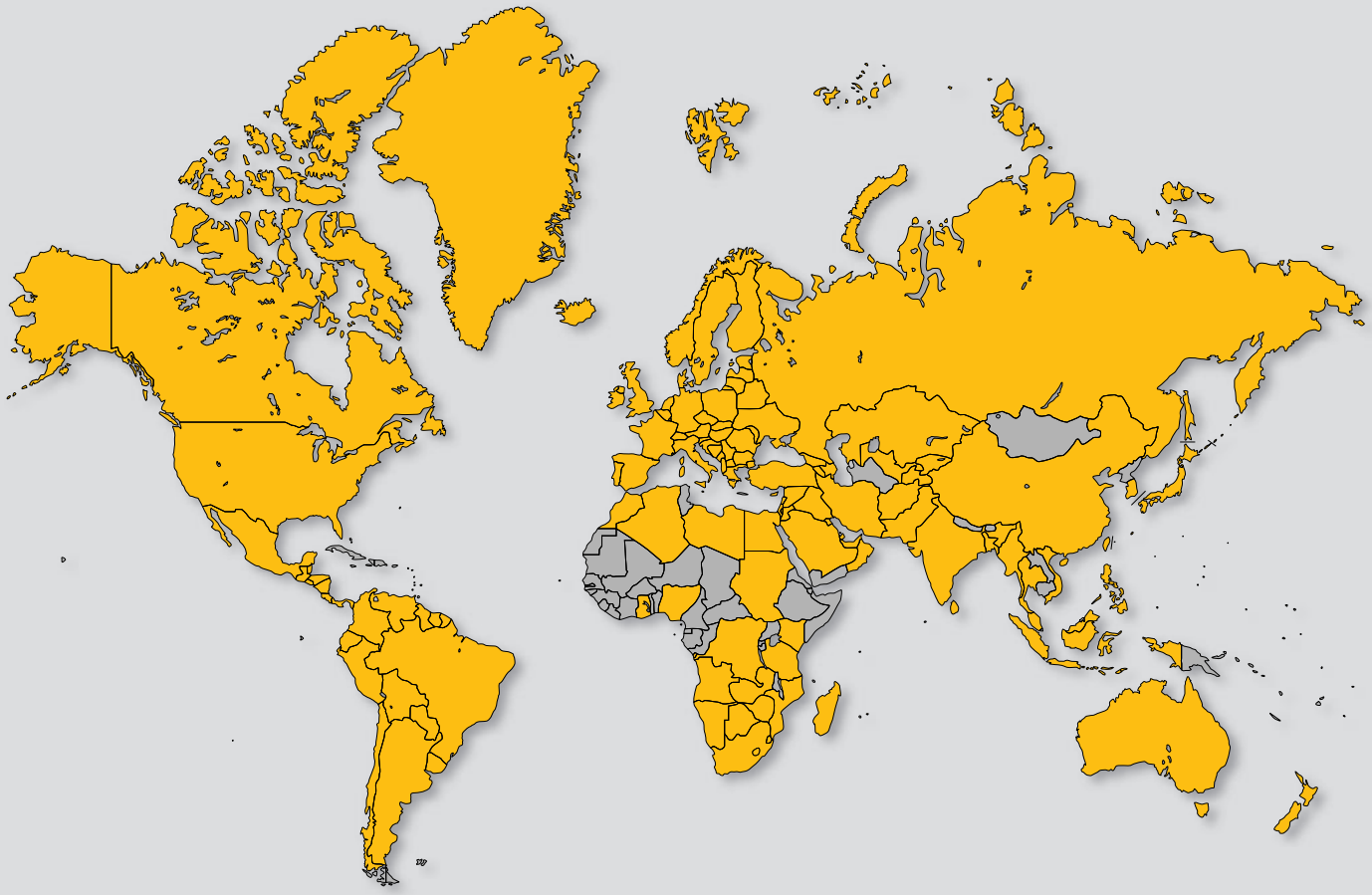

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