

Weishaupt gas burners G1 to G7 Version LN (Low NO_x)

1/2003 CA

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Description

The Weishaupt G1 to G7 version LN gas burners fulfil the requirements for operational safety, simple installation and reliability. They are energy efficient and environmentally friendly. The burners are in compliance with most applicable European and North American standards.

The burners have numerous excellent features such as:

- Compliance with the most stringent requirements and NO_x emission limits.
- Broad operating range; suitable for many applications
- Automatic sequence of operations
- Safe flame monitoring
- Stable fan reference line - good combustion characteristic
- Quiet operation
- Burner housing can be hinged open
- As with the standard burners - easy to install, set and service thanks to easily accessible components
- Automatic air shut off on burner shut down

Construction

All the components are brought together in a single unit. The burner motor's axis is at right angles to the direction of the air flow and drives the fan wheel's axle. All the fuel and air regulating components are clearly arranged and easily accessible. The burners can be hinged open to the left or right which facilitates easy access to the combustion head, diffuser and ignition electrodes.

Fuels

The gas burners have been tested for operation with natural gas.

Application

The burners can be used with heat exchangers such as hot water boilers, steam boilers and air heaters, and for various process applications. As the burners are capable of overcoming high combustion chamber resistances, they are used primarily on high efficiency boilers.

Regulation

Depending on fuel, burner size and requirements, the regulation of air and fuel is by:

- Sliding two stage Z
- Sliding two stage ZM
- Modulation (utilizing an appropriate controller, the sliding two stage ZM burner can modulate with a servomotor runtime of 42 s).

Sliding two stage Z burners operate with a faster capacity regulation. They are equipped with a servomotor with a runtime of 8 s. The air damper and the gas butterfly valve are operated in compound connected to each other by a regulating cam. The proportional amount of gas and air prevents start-up or change-over impact in the combustion chamber or main gas.

Sliding two stage ZM and modulating burners operate with a slower capacity regulation. The air damper and the gas butterfly valve are operated in compound by means of a regulating cam. The runtime from low fire to high fire depending on the servomotors can be a maximum of 20 or 42 s.

For sliding two stage control, low and high fire are adjusted within the regulation range. The burner's firing rate slides between the two load points, depending on the heat demand. Therefore there are no sudden large increases or decreases in the amount of fuel being burned.

Modulating burners operate at any point within the regulation range, depending on the heat demand.

Reduced capacity at start-up with gas operation

The burners start at ignition position. In this way only a small amount of gas flows into the combustion chamber. After a short delay the gas for the main flame is released.

Controlled shut downs from low fire.

The controlled shut down of the burner always takes place from the low fire position, this prevents impact on the main gas line.

Flame safeguard

The burner flame safeguard sequences and controls the operation of the burner automatically. The flame safeguard can be located in either the remote control panel or mounted directly on the burner (ISG burner version).

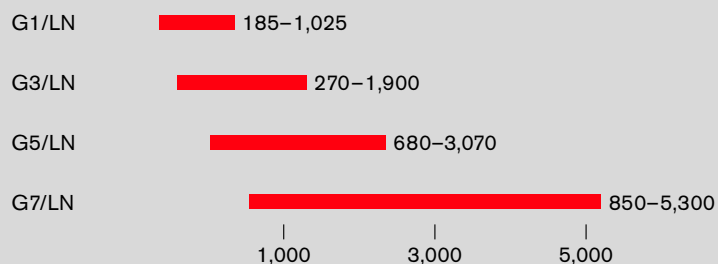
Gas trains

As standard Weishaupt gas burners are always supplied with two (2) safety shut off valves in the gas train.

Installation sites

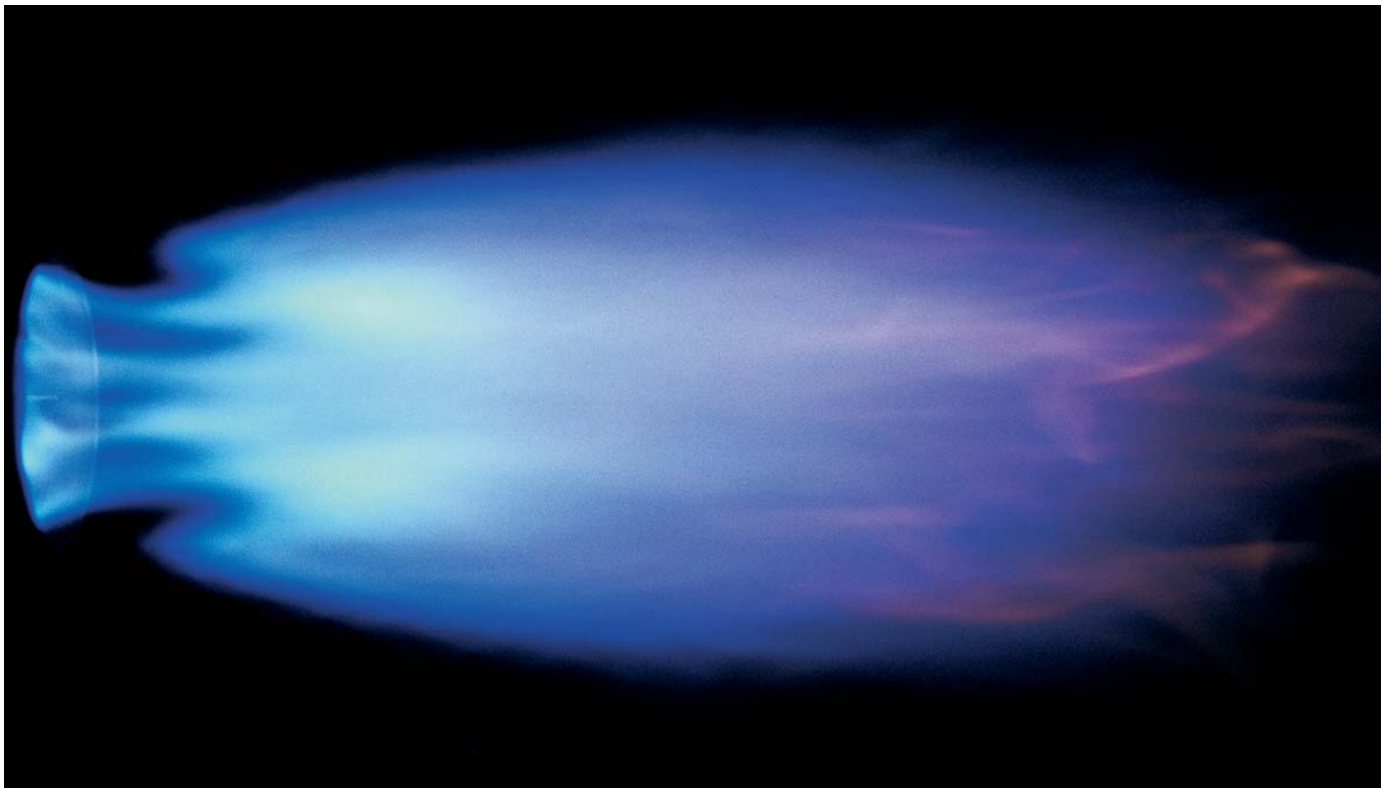
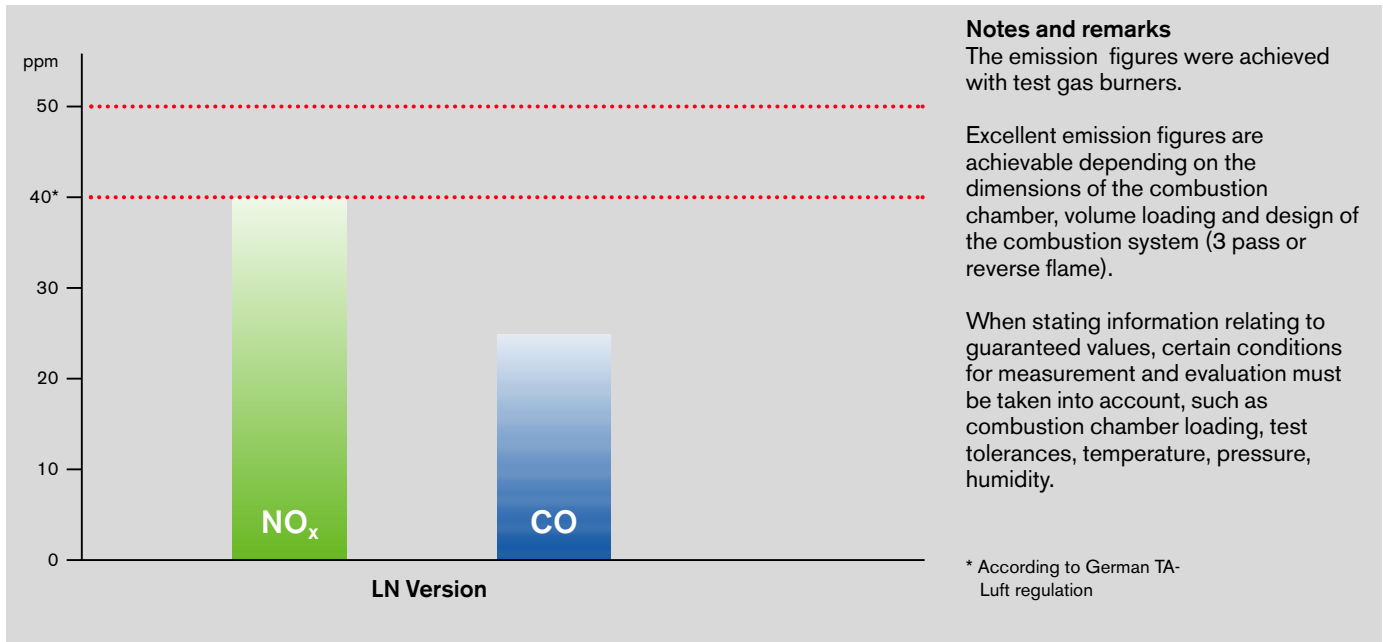
In standard version (materials, construction, protection), the burners are suitable only for use indoors at temperatures between 5°F and 100°F (-15°C and +40°C).

Burner overview – rating in MBH

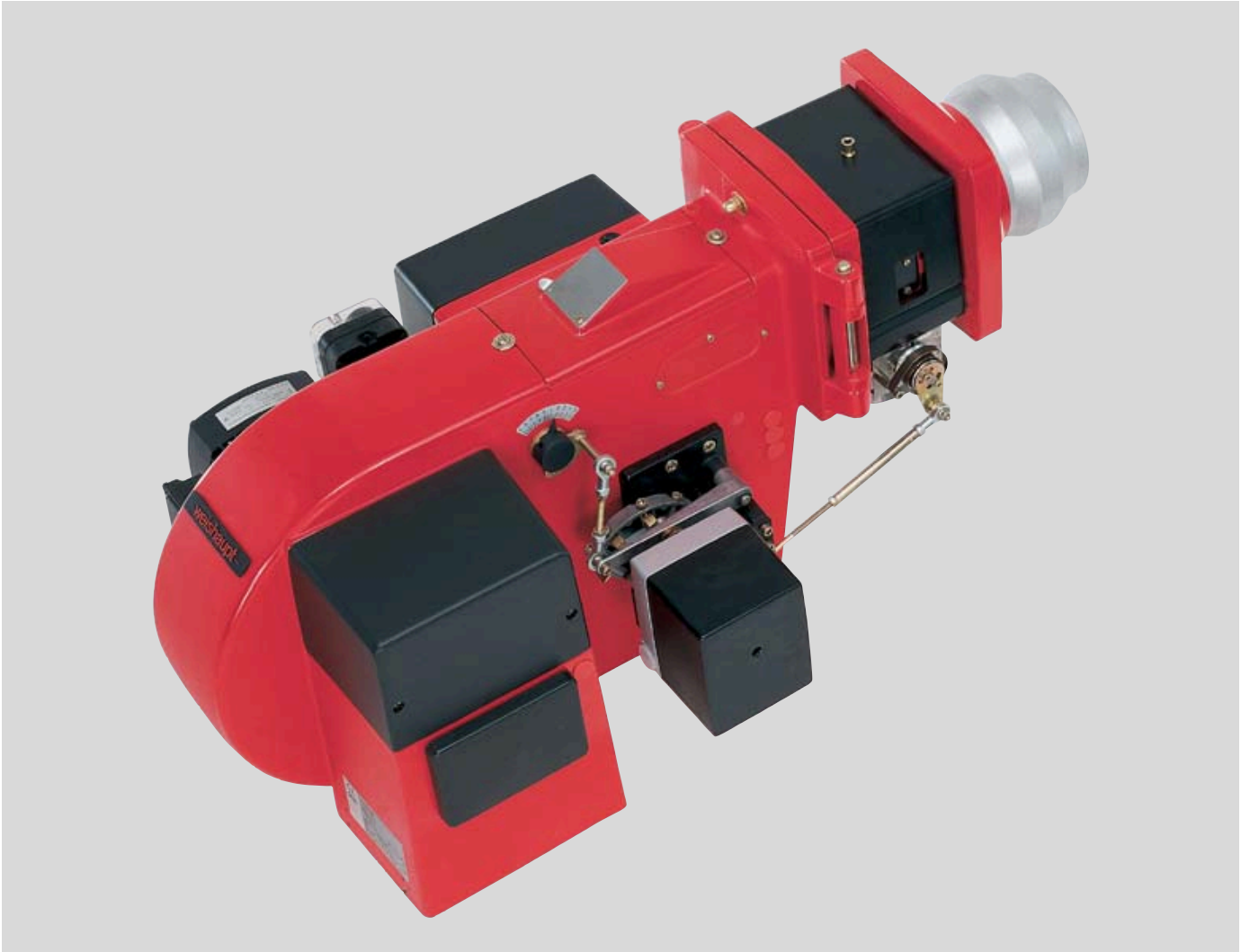


Exemplary emission figures with G1 to G7 LN (LowNO_x) version gas burners

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Typical flame formation for LN (LowNO_x) version gas burners



G3/1-E gas burner, version Z-LN



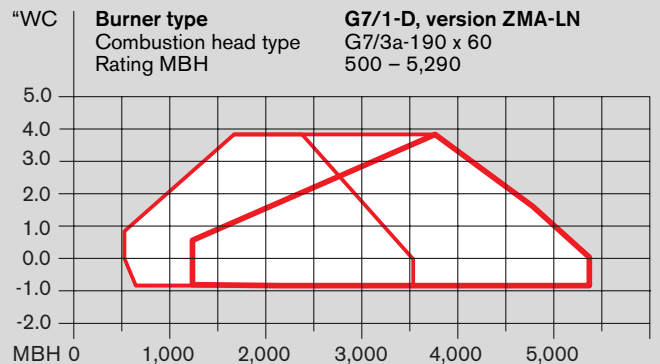
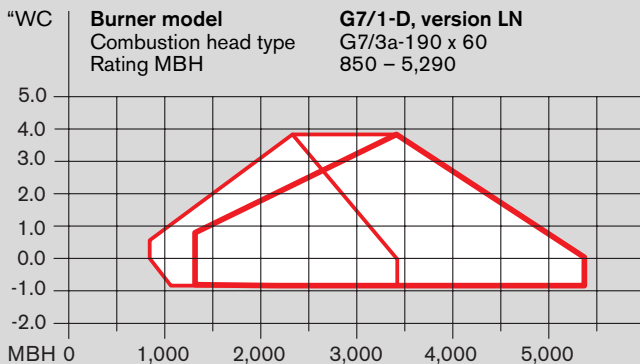
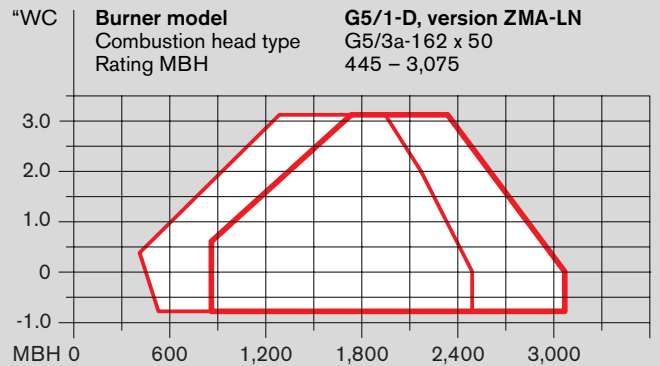
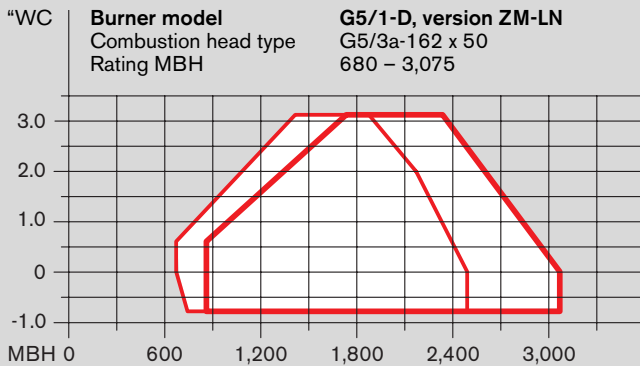
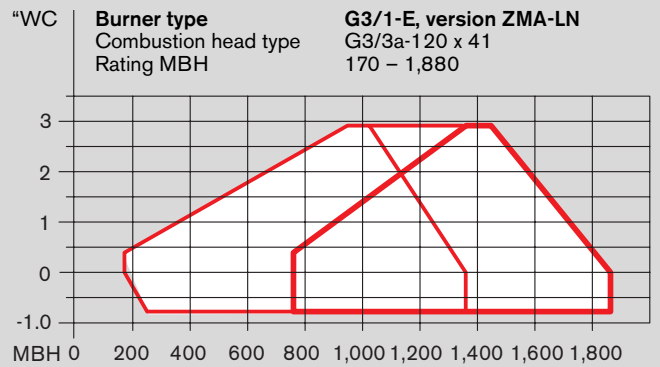
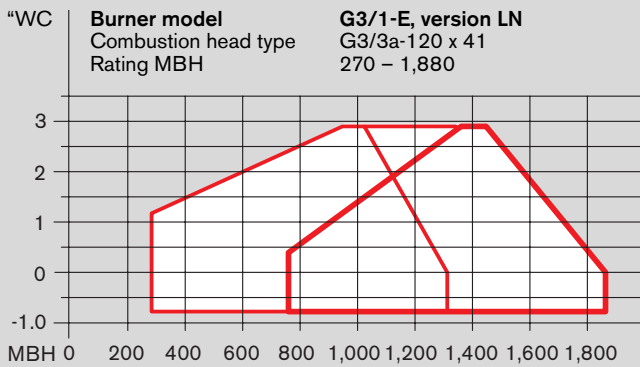
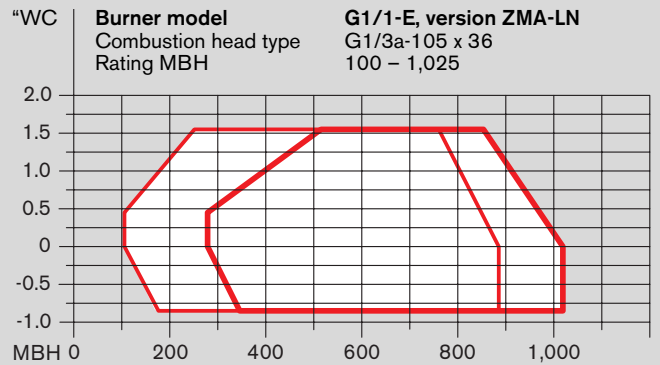
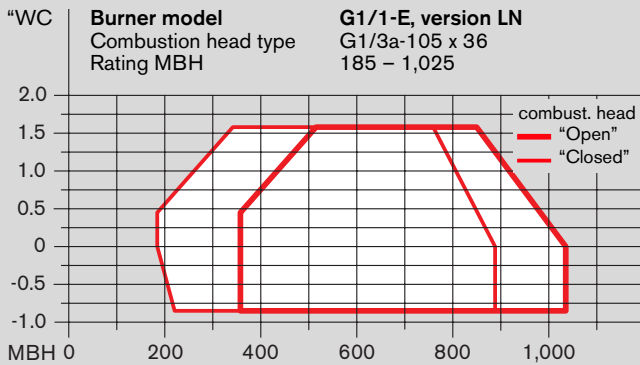
LN version gas burner: the mixing assembly is very good accessible.

Burner rating dependent on combustion chamber resistance

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Depending on the altitude of the installation, reduction in capacity of approx. 1% for every 328 ft (100 m) above sea level should be taken into account.

All ratings given are based on fuel with low calorific value, an air temperature of 68°F (20°C) and an installation altitude of 1,640 ft (500 m)



Special equipment

Sizes 1 to 3

No.	Description	G1-LN Order No.	G3-LN Order No.
1	Downward firing burner version	standard	standard
2	Air intake flange for connection of an air duct	210 000 67	210 000 67
3	Combustion head extension by 4" (100 mm) by 8" (200 mm) by 12" (300 mm)	250 002 83	250 002 86
		250 002 84	250 002 87
		250 002 85	250 002 88
4	Integral switchgear (ISG) G, version ZE G, version ZD G, version ZME G, version ZMD	250 000 02	250 000 06
		250 000 04	250 000 08
		250 001 31	250 001 29
		250 001 32	250 001 30
5	Flame sensor (UV cell) instead of ionization electrode	250 002 95	250 002 95
6	Potentiometer on servomotor ZM 220 Ohm ZM 1000 Ohm	110 002 86	110 002 86
		110 003 03	110 003 03
7	Solenoid valve for air pressure switch test for continuous run fan	250 000 54	250 000 54

Sizes 5 to 7

No.	Description	G5-LN Order No.	G7-LN Order No.
1	Downward firing burner version	standard	standard
2	Air intake flange for connection of an air duct	110 001 05	110 001 06
3	Combustion head extension by 4" (100 mm) by 8" (200 mm) by 12" (300 mm)	150 012 53	150 012 78
		150 012 54	150 012 79
		150 012 55	150 012 80
4	Integral switchgear (ISG) G, version ZE G, version ZD G, version ZME G, version ZMD	–	–
		150 006 54	150 006 56
		–	–
		150 010 22	150 010 93
5	Flame sensor (UV cell) instead of ionization electrode	150 012 63	150 012 63
6	Potentiometer on servomotor ZM 220 Ohm ZM 1000 Ohm	110 002 86	110 002 86
		110 003 03	110 003 03
7	Solenoid valve for air pressure switch test for continuous run fan	150 010 07	150 010 07

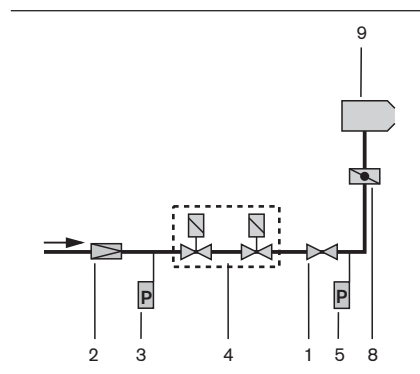
Burner specifications and Standard scope of supply

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Description	for burner				
		G1 .. LN	G3 .. LN	G5 .. LN	G7 .. LN
Burner motor 1 ~ 120V, 60 Hz	Model	EC90/50-2	EC90/90-2	–	–
Nominal capacity	HP	0.8	2	–	–
Full load current at 120V	A	7.5	18	–	–
Speed	1/min	3450	3450	–	–
Capacitor	µF	16	16+16	–	–
Burner motor 3 ~ 460V	Model	D90/50-2	D90/50-2	D90/90-2	D112/110-2/1
Nominal capacity	HP	1.14	1.14	2.1	4.8
Full load current at 460V	A	2.3	2.3	3.4	6.3
Speed	1/min	3400	3400	3360	3500
Fan wheel		galvanized	galvanized	galvanized	galvanized
Ignition unit	Model	W-ZG02/2	W-ZG02/2	W-ZG02/1	W-ZG02/1
Burner flame safeguard for – single and sliding two stage Z, sliding two stage ZM and modulating burners G and GL	Model	LFL 1.335	LFL 1.335	LFL 1.335	LFL 1.335
Servomotor					
– single and sliding two stage Z (run time 8 s)	Model	-w- 1055/80	-w- 1055/80	-w- 1055/80	-w- 1055/80
– sliding two stage ZM (run time 20 s)	Model	SQM 10.15561	SQM 10.15561	SQM 10.15561	SQM 10.15561
– modulating burners (run time 42 s)	Model	SQM 10.16561	SQM 10.16561	SQM 10.16561	SQM 10.16561
Weight					
Gas burner (without gas train)	lbs/ kg (approx.)	86/ 39	95/ 43	121/ 55	167/ 76

Standard burner motor version: Isolation Class F, type of protection IP54. Other motor voltages and frequencies are available upon request

Burner model	G1 to 3 version LN	G5 to 7 version LN
Burner housing with integrated sound dampened air inlet	●	
Burner housing, air control housing		●
Hinged flange, housing with sight glass, Weishaupt burner motor, pressure side air regulation, fan wheel, air pressure switch, servomotor, gas/air compound regulation with regulating cam(s), ignition unit, terminal rails, flange gasket, fixing screws	●	●
Mixing head for NO _x reduction	●	●
Limit switch on hinged flange	●	●
Burner flame safeguard with flame sensor (ionization electrode) loose for installing in the control panel or mounted on burner (ISG)	●	●
Double main gas valves	●	●
Gas butterfly valve	●	●
Gas pressure switch	●	●



Legend

- 1 Isolating ball valve
- 2 Gas pressure regulator
- 3 Low gas pressure switch
- 4 Double main gas valves
- 5 High gas pressure switch
- 8 Integrated gas butterfly valve
- 9 Gas burner

Dimensions

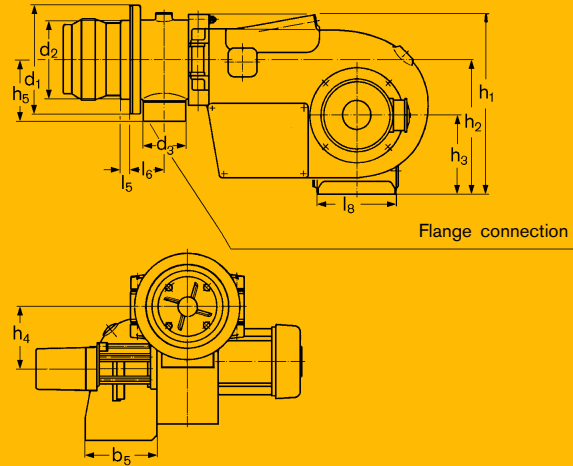
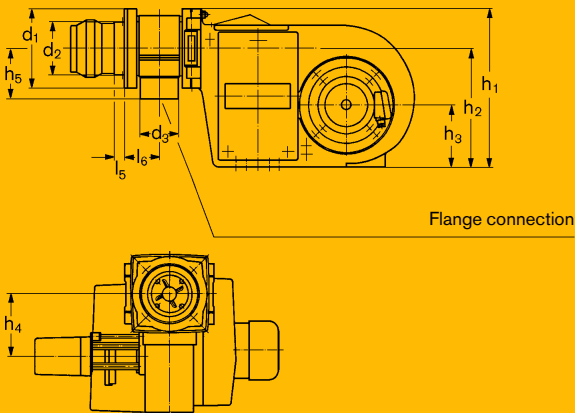
Weishaupt Corporation
6280 Danville Road
Mississauga, ON L5T 2H7
Ph: (905) 564 0946, Fax: (905)564 0949
www.weishaupt-corp.com

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Sizes 1 and 3

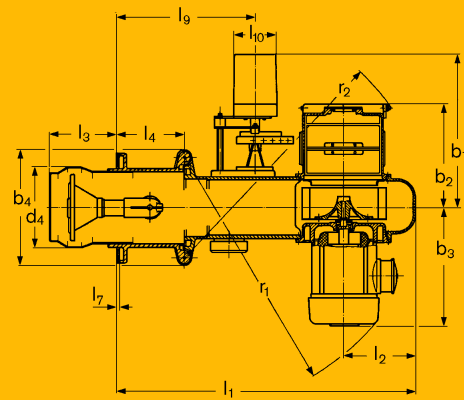
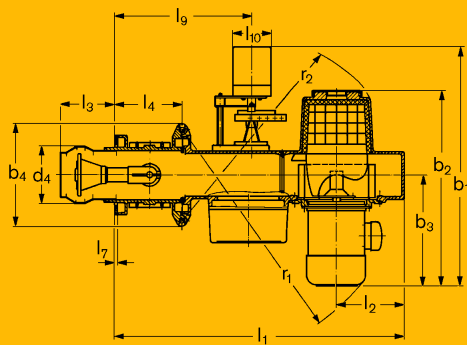
Sizes 5 and 7



Drilling dimensions of the burner plate



Drilling dimensions of the burner plate



Size	Dimensions in inches and (mm)															
	l1	l2	l3	l4	l5	l6	l7	l8	l9 ①	l9 ②	l10 ①	l10 ②	b1 ①	b1 ②	b2	b3
1	27.0 (685)	6.6 (168)	5.7 (144)	6.6 (168)	1.4 (35)	3.5 (88)	0.3 (8)	–	12.3 (312)	13.5 (342)	4.3 (110)	4.7 (120)	21.4 (543)	25.7 (653)	19.7 (501)	10.8 (275)
3	31.7 (805)	7.4 (188)	5.8 (147)	7.4 (188)	1.1 (28)	3.9 (98)	0.3 (8)	–	15.4 (392)	15.0 (382)	4.3 (110)	4.7 (120)	22.4 (570)	26.8 (680)	20.8 (529)	11.6 (295)
5	34.2 (868)	7.9 (200)	7.8 (197)	8.2 (208)	1.7 (42)	4.3 (108)	0.3 (8)	9.4 (238)	17.8 (451)	16.6 (421)	4.3 (110)	4.7 (120)	10.8 (275)	15.4 (390)	10.8 (275)	12.0 (305)
7	38.0 (965)	8.9 (225)	10.9 (277)	9.0 (228)	2.0 (52)	4.6 (118)	0.3 (8)	9.9 (251)	20.2 (514)	19.1 (484)	4.3 (110)	4.7 (120)	12.0 (305)	16.3 (415)	12.8 (326)	13.0 (330)
	b4	b5	h1	h2	h3	h4	h5	d1	d2	d3	d4	d5	d6	d7	r1	r2
1	9.8 (248)	–	15.3 (388)	11.4 (290)	5.9 (150)	6.9 (175)	5.1 (130)	7.7 (195)	5.1 (129)	DN25	5.0 (127)	M8	6.3-6.7 (160-170)	5.3 (135)	21.7 (550)	23.2 (590)
3	11.0 (280)	–	16.9 (430)	12.8 (325)	6.7 (170)	6.9 (175)	5.5 (140)	8.7 (220)	6.1 (154)	DN40	6.3 (160)	M10	7.3 (186)	6.5 (165)	25.6 (650)	26.4 (670)
5	12.3 (312)	7.9 (200)	19.4 (494)	14.7 (373)	8.7 (220)	7.7 (195)	6.4 (162)	10.2 (260)	7.7 (195)	DN50	7.9 (200)	M10	9.3 (235)	8.3 (210)	26.8 (680)	28.5 (725)
7	14.0 (355)	9.0 (229)	22.0 (560)	16.3 (415)	9.6 (245)	7.7 (195)	7.2 (182)	13.0 (330)	9.3 (235)	DN65	9.8 (250)	M12	11.7 (298)	10.6 (270)	28.3 (720)	31.5 (800)

① Sliding two stage Z burner
② Sliding two stage ZM burner