Библиотека СОК

CIB UNIGAS

Lighting the future

50th ANNIVERSARY

CATALOGUE

PREMIX BURNER SERIES

PERFORMANCE CURVES

STANDARD VERSION



2023

www.cibunigas.com

Premix

50th ANNIVERSARY

CIB UNIGAS

Accendiamo il domani

The new generation of PREMIX burners by CIB UNIGAS SPA have been designed and assembled in order to anticipate future needs and markets.
The power regulation is accurate, with constant performance over time, thanks to the exclusive use of electronic burner control systems.
The burner uses a dedicated high-performance fan for the combustion air, abandoning the traditional concept of air / gas premixing inside the fan itself, with a consequent increase in the safety of the machine.
The mixing of the gas with the air takes place downstream of the fan, in a special mixing chamber upstream of the combustion head, obtaining excellent operating stability and safety in all applications.
PREMIX system by CIB UNIGAS SPA ensures the lowest values of NOx and CO emissions on the market and its flame distributed over a wide surface reduces the noise at the chimeny.



BURNER IDENTIFICATION FOR TYPE AND NEW MODELS

TYPE

C 70 N

- C — Model
- 70 — Output
- N — Premix combustion head

MODEL

M-. PR. SR. IT. A. 1. 50. EA. xxx.

FUEL

M - NATURAL GAS

OPERATION

PR - PROGRESSIVE

COMBUSTION HEAD AND AIR INLET

S - STANDARD

COUNTRY DESTINATION

IT - ITALY
... AVAILABLE FOR OTHER COUNTRIES UPON REQUEST

BURNER MANUFACTURE

A STANDARD

EQUIPMENT

0 2 GAS VALVES
1 2 GAS VALVES AND LEAKAGE CONTROL
8 2 GAS VALVES + LEAKAGE CONTROL AND MAXIMUM GAS PRESSURE SWITCH

GAS CONNECTION

32 1”¼	50 2”
40 1”½	65 DN65
	80 DN80

ELECTRONIC VERSION

EA Medium-small burners complete with electronic cam
EB Medium-small burners complete with electronic cam and inverter
EC Medium-small dual fuel burners complete with electronic cam
ED Medium-small dual fuel burners complete with electronic cam and inverter

ES Medium-small burners complete with electronic cam, without O_2 control, without Inverter
EO Medium-small burners complete with electronic cam and O_2 control, without Inverter
EI Medium-small burners complete with electronic cam and Inverter, without O_2 control
EK Medium-small burners complete with electronic cam with O_2 control and with Inverter

FLUE GAS RECIRCULATION

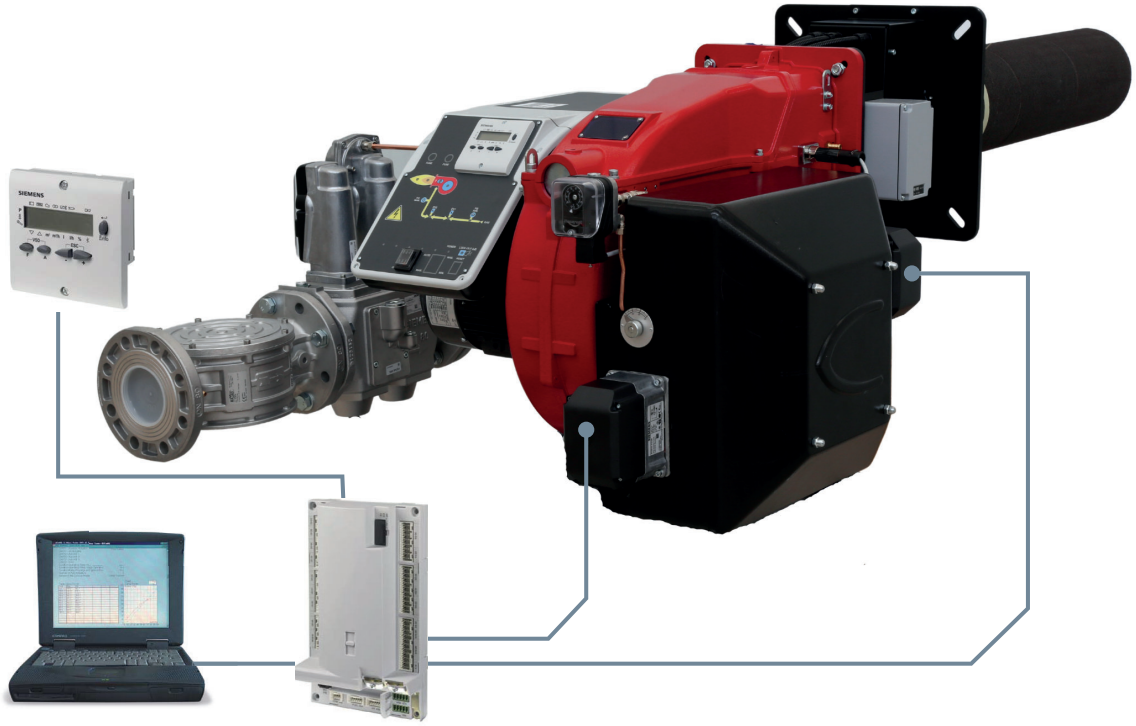
FGR Flue gas recirculation

WITH LMV 2... 3... MICROPROCESSOR.
for medium-small power burners

CIB UNIGAS S.p.A. can provide small and medium size burners (up to 2.700 kW) with an electronic control system.

Il sistema a controllo elettronico offre numerosi vantaggi:

- Burner control;
- Electronic cam;
- Power regulator;
- Gas valve leakage control system;
- Oxygen control;
- Inverter control;
- Dialogue with BMS systems or PLC (MOD Bus);
- Burner commissioning and configuration via PC-tool;
- Simple programming with AZL and PC-tool;
- Complete self-diagnostic function (error memory, number of firings, burner operation time, clock, etc.);
- 3 levels of parameter access: (manufacturer, servicing personnel, final user);
- Remote diagnostics;
- All components can be easily interchanged;
- Parameter upgrading with PC-tool;
- Dialogue with MOD Bus protocol.



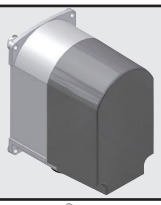
Modbus communication, system, only upon request, through the software (to be quoted separately), except the basic version.

Optimal air/fuel ratio regulation, with high precision and repeatability of the regulations made.

Easy programming, both through the AZL programmer, and the proper software.

WITH LMV 2... 3... MICROPROCESSOR
for medium-small power burners

	MODEL	EA	EB
	LMV 2	●	●
	AZL 23	●	●
	SQM 33 Air	●	●
	SQM 33 Gas	●	●
	INVERTER		●

	MODEL	ES	EO	EI	EK
	LMV 51.100	●			
	LMV 51.300			●	
	LMV 52.400		●		●
	AZL 5x	●	●	●	●
	SQM4x Air	●	●	●	●
	SQM4x Gas	●	●	●	●
	O_2 PROBE		●		●
	INVERTER			●	●

MATCHING LOW NOx BURNER AND HEAT GENERATOR

HOW TO READ THE BURNER "PERFORMANCE CURVE"

The procedure to match a burner and evaluate the emissions of a thermal unit can be divided in a few simple steps.
The first step consists in a rough choice of the burner, considering the operating point in reference to burner performance.
Then, in reference to the desired NOx emissions, determinate the O_2 concentration in the smokes.
At the end verify the proper burner choice considering the right curve between the three noted in the diagram.

To choose the proper burner, the following data are necessarily required:

- Boiler type
- Burner input
- Backpressure in the combustion chamber
- Furnace configuration
- Dimensions of the combustion chamber included the reverse smoke chamber
- NOx emissions requested, 80, 50, 30 mg/kWh.

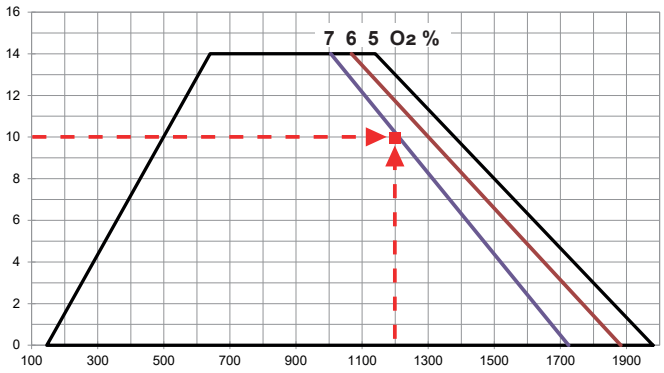
CHOOSING THE BURNER

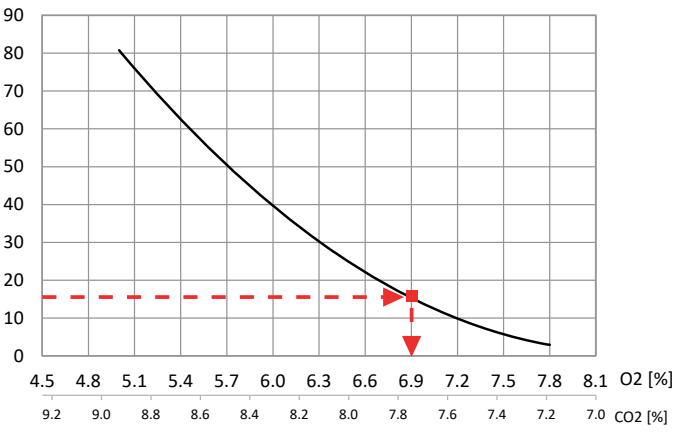
To clearly explain the procedure about choosing a suitable burner, please follow the example:

- Boiler type 3 pass
- Furnace input 1200 kW
- Backpressure in the combustion chamber 10 mbar
- NOx target 15 ppm @ 3% O_2 (about 30 mg/kWh)

Each performance curve is identified by the O_2 content in the smokes 5% 6% 7%. Increasing the O_2 content, the burner output decreases, so the performance curves.
According to the above data, a rough choice suggests a G200N burner could be a right choice.
From the O_2 / NOx diagram determinate the O_2 content in the smokes, so the O_2 curve of reference of the performance curve.
In our example, to have NOx = 15 ppm @ 3% O_2, we expect 6,9% O_2 at the stack.
We will consider the curve (7) in the G200N performance curve diagram.
The required operating point (1200 kW @ 10 mbar) is inside of G200N performance curve when O_2 is 7% at the stack.

G200N is the right choice.





Attention: - All the burner performances refer to laboratory tests with natural gas (net calorific value Hi = 34,02 MJ / Stm³); and density= 0,714 kg/Stm³, (Stm³ to refer at 1013 mbar e 15° C) and ambient conditions with 1013 mbar and 20° C.

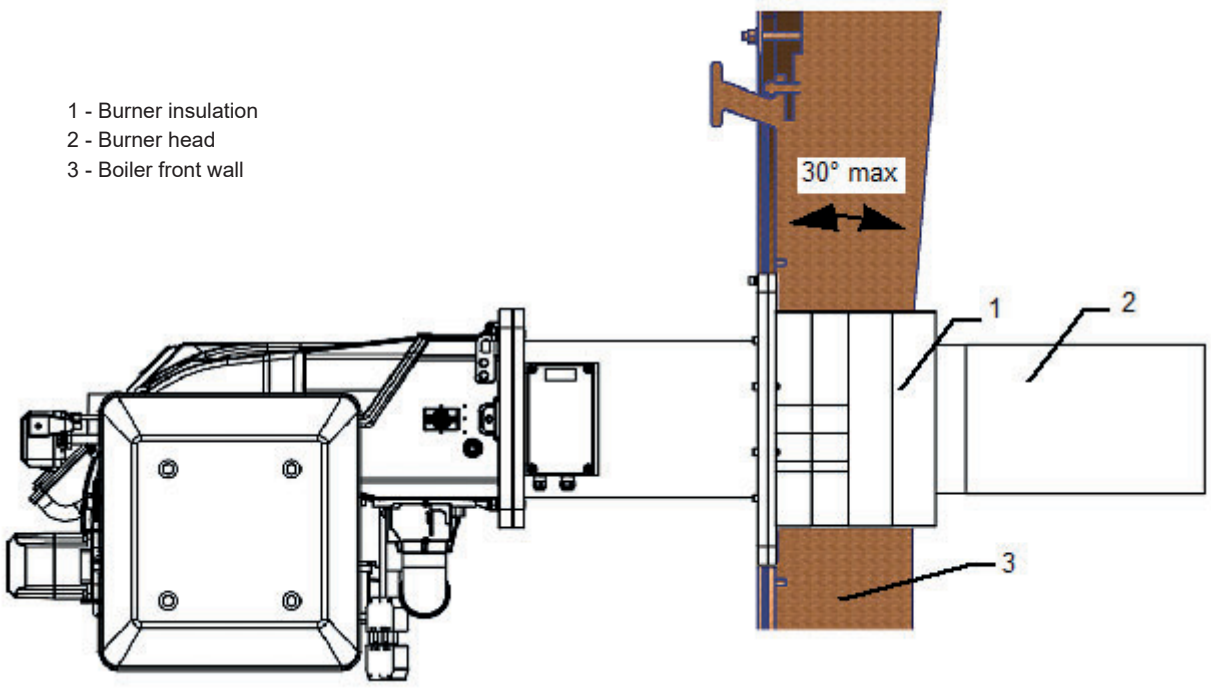
Reccomendations for the burner and boiler matching

The insulation of the head must exceed the thickness of the boiler front wall. The boiler front wall must have an angle of 60°÷90° to the flame axis.
Fill the gap between the boiler front wall (3) and the supplied refractory (1) with soft insulating mat; don't use rigid materials that can pressurise the parts.
Take off the head and its refractory from the owen before opening the boiler door in order not to damage the components itselves.

The burners described in this manual have been tested in combustion chambers complying with EN676.
If the burner has to be matched to boilers with combustion chambers of a smaller diameter or shorter length, contact our Technical Department to check if it is suitable for the application for which it is intended.
To correctly match the burner to the boiler, check if the required output and the backpressure are within the operating range.
Check that the neutral section of the head exceeds the refractory.
It could be necessary to use a spacer of a suitable size, in order to retract the burner and to meet the above conditions.
If the above requirements cannot be met, the choice of burner must be reviewed by consulting our Technical Department.

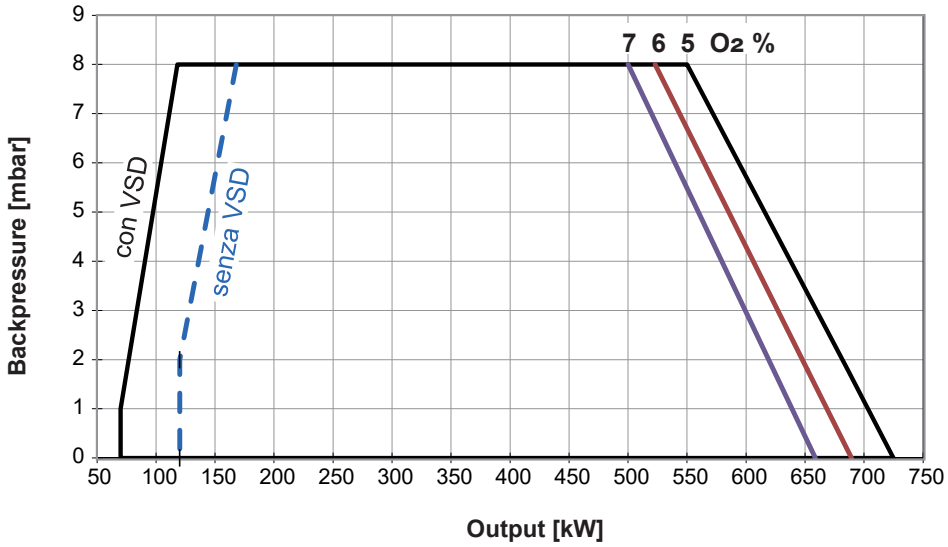
The neutral section of the combustion head must be protected against high temperatures. A special shaped panel for applications with operating temperatures up to 1200° C is supplied.

1 - Burner insulation
2 - Burner head
3 - Boiler front wall

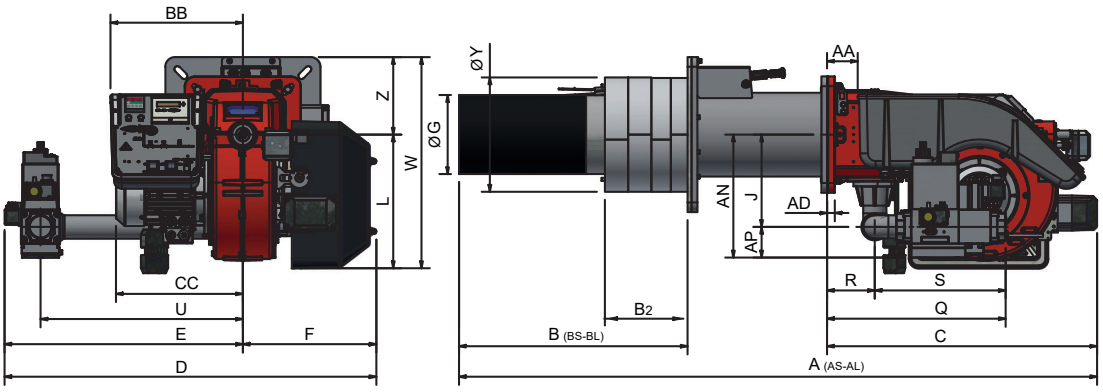


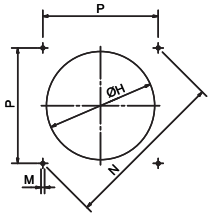
Type	Output kW		Power supply		Fan motor	Gas conections	Noise level
	min.	max.	(output)	(aux)	kW	Size	dBA@4,9 ft
C70N	70	725	400V 3 AC 60 Hz	120V 2 AC 60 Hz	1.2	1" ½, 2", 2"½ DN65	≤ 80

Performance curves

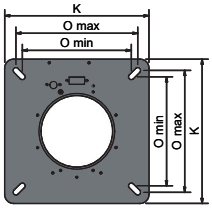


Silhouette for reference





Boiler recommended drilling template



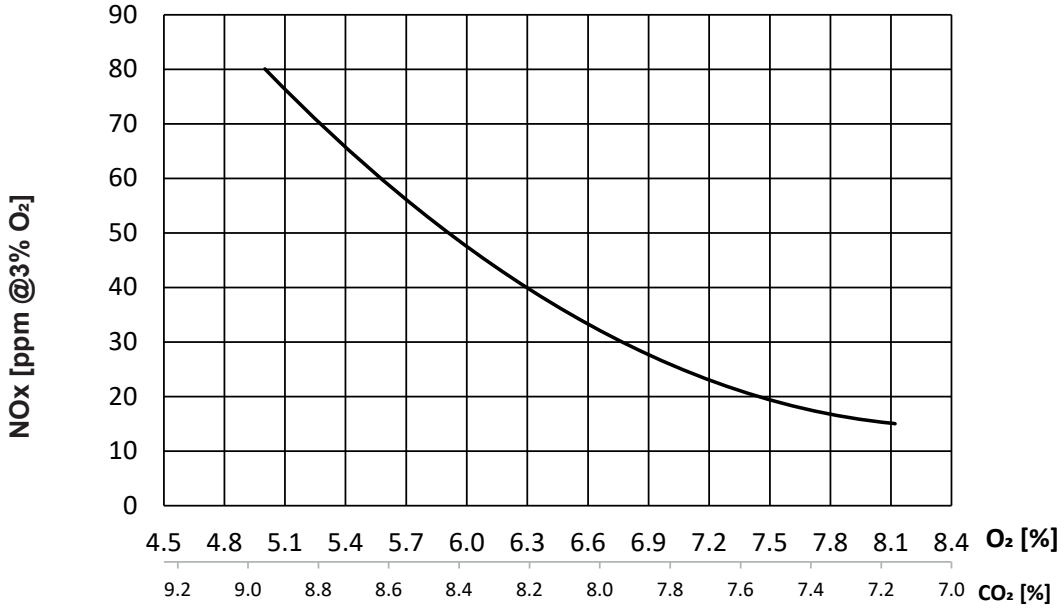
Burner flange

Dimensions in mm

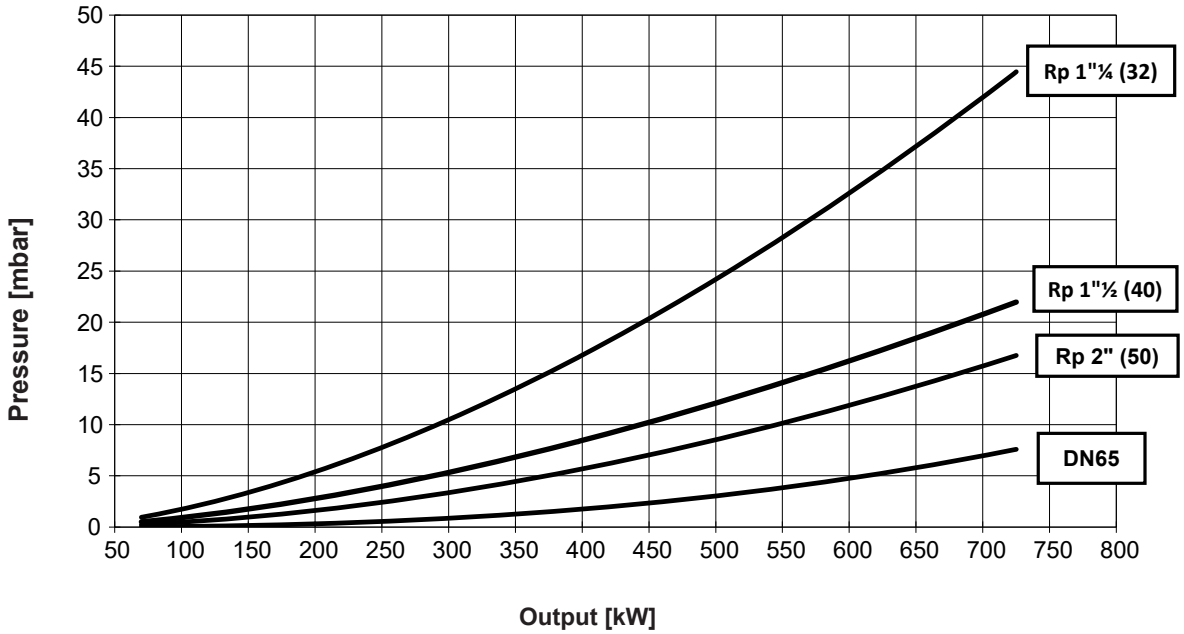
Tipo	DN	A		AA	AD	AN	AP	B		BB	B2	C	CC	D	E	F	G	H	J	K	L	M	N	O		P	Q	R	S	U	V	W	Y	Z
		(AS)	(AL)					(SL)	(BL)															min	max									
C70N	DN50	1647	-	79	20	317	79	590	-	342	376	697	327	960	615	345	204	300	238	400	345	M12	453	302	338	320	461	123	338	522	-	495	295	150

Attention: - Gas train dimension will change according to the gas train size and configuration.
- All the burner performances refer to laboratory tests with natural gas (net calorific value Hi = 34,02 MJ / Stm³); and density= 0,714 kg/Stm³, (Stm³ to refer at 1013 mbar e 15° C) and ambient conditions with 1013 mbar and 20° C.

NOx vs O_2 / CO_2 Diagram



Minimum net gas pressure at the burner inlet

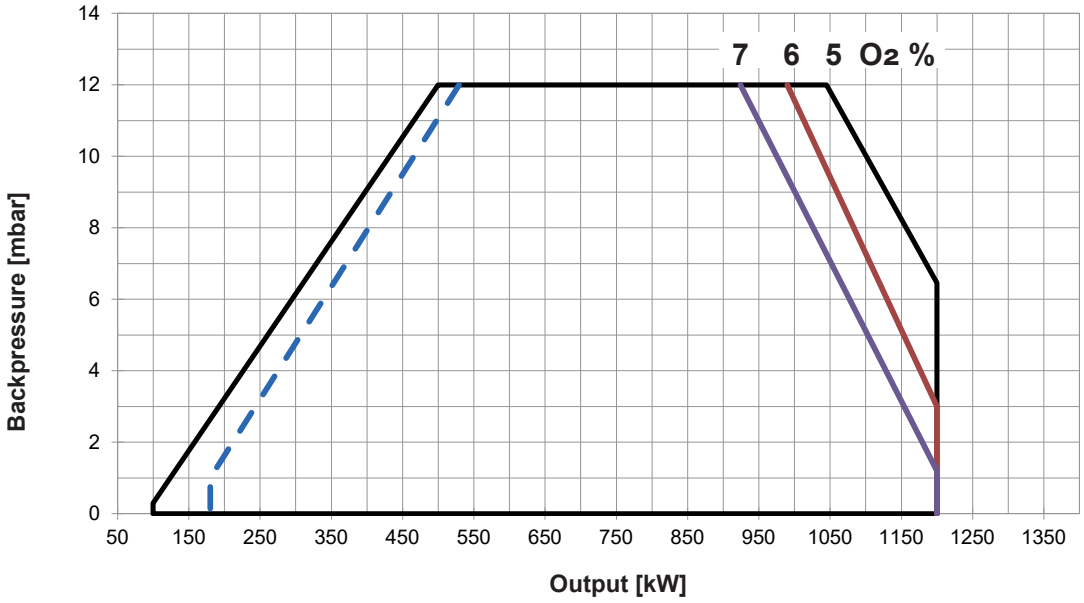


Attention: - To know the minimum gas pressure at the gas train, it is necessary to add the boiler back pressure to the value read on the curve.
- The pressure values change according to the configuration of the gas train. The minimum gas pressure curves in the net refer to a gas train assembled with standard supply valves (VGD or MBE).

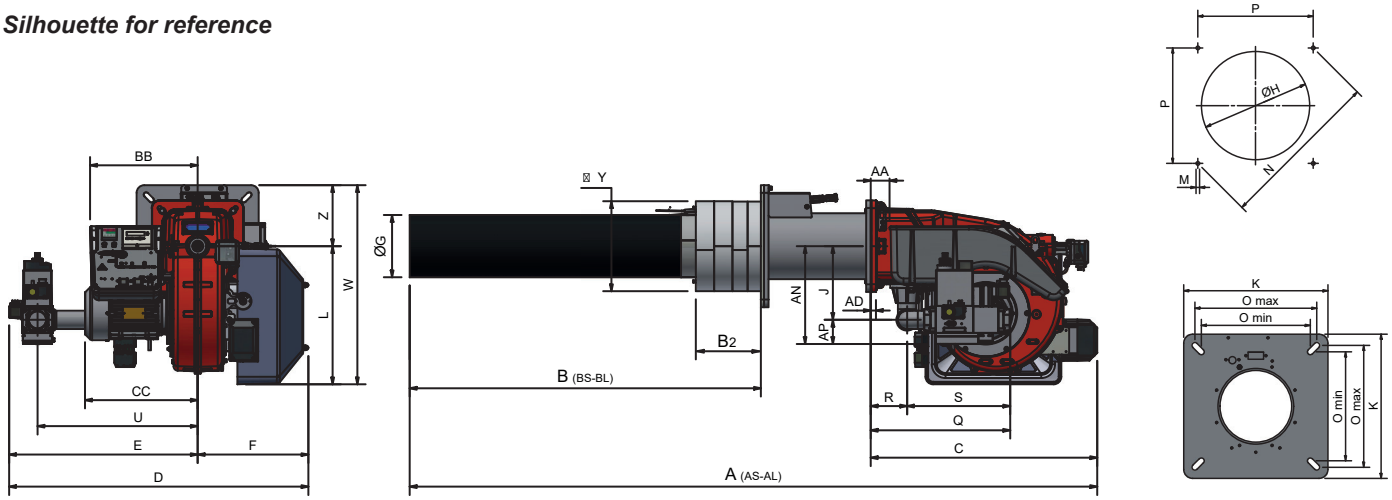
E120N

Type	Output kW		Power supply		Fan motor	Gas conections	Noise level
	min.	max.	(output)	(aux)	kW	Size	dBA@4,9 ft
E120N	100	1200	400V 3 AC 50 Hz	230V 2 AC 50 Hz	2.2	Rp 1" ½, Rp 2", DN65, DN80	≤ 80

Performance curves



Silhouette for reference

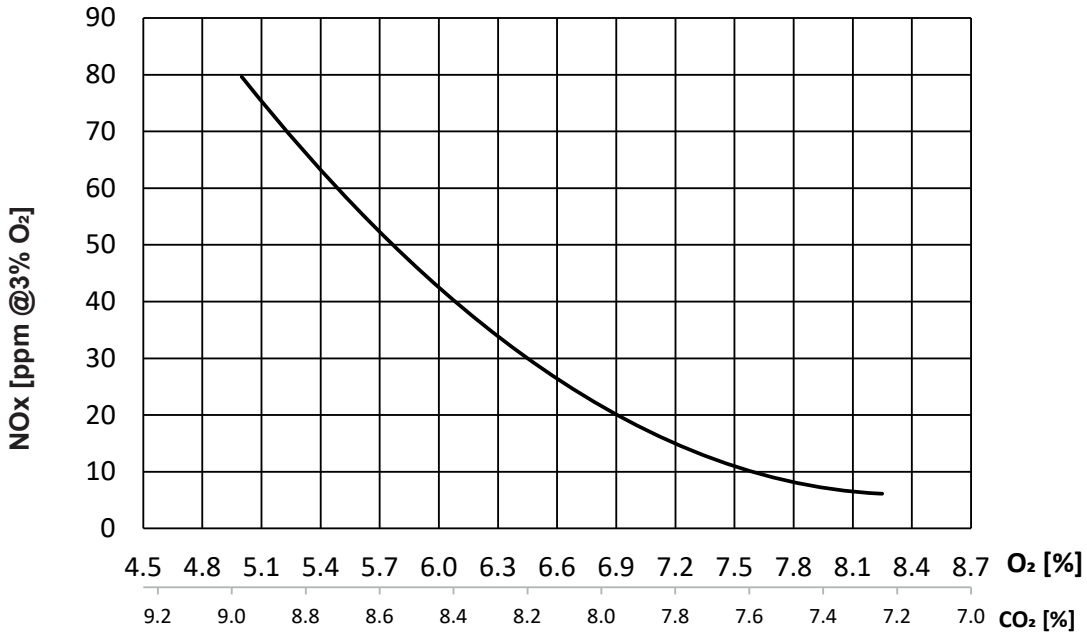


Dimensions in mm

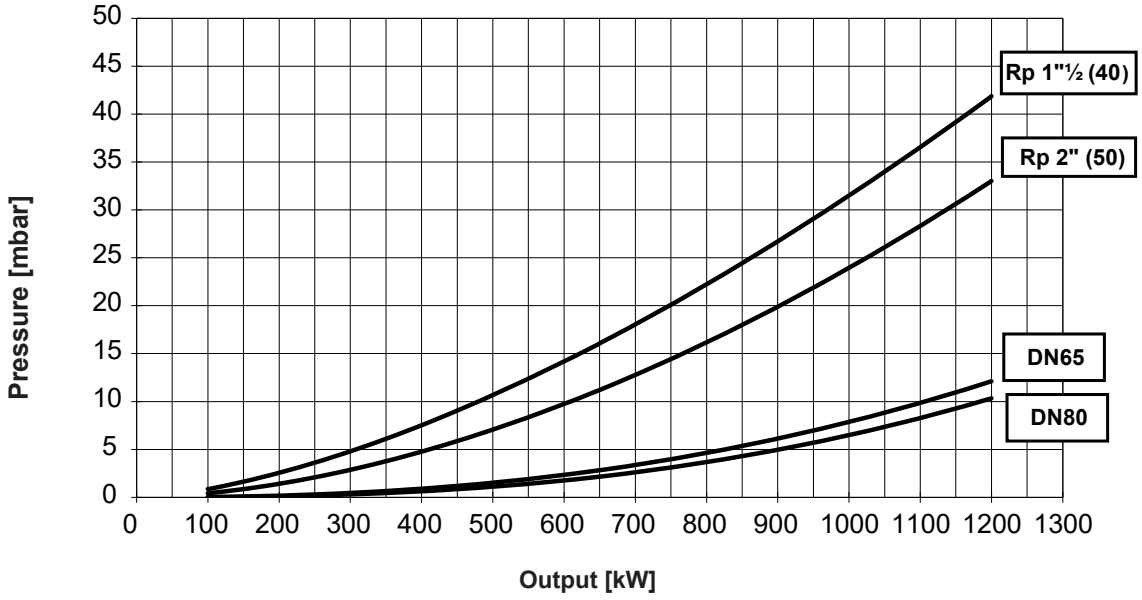
Type	dn	Overall dimensions (mm)																														
		A		AA	AD	AN	AP	B		BB	B2	C	CC	D	E	F	G	H	J	K	L	M	N	O		P	Q	R	S	U	V	W	Y	Z
		(AS)	(AL)					(SL)	(BL)															min	max									
E120N	DN50	2253	-	61	17	321	79	1151	-	369	214	742	353	981	618	363	204	305	242	400	453	M12	453	302	338	320	457	119	338	525	-	653	295	200

Attention: - Gas train dimension will change according to the gas train size and configuration.
- All the burner performances refer to laboratory tests with natural gas (net calorific value Hi = 34,02 MJ / Stm³); and density= 0,714 kg/Stm³, (Stm³ to refer at 1013 mbar e 15° C) and ambient conditions with 1013 mbar and 20° C.

NOx vs O_2 / CO_2 Diagram



Minimum net gas pressure at the burner inlet



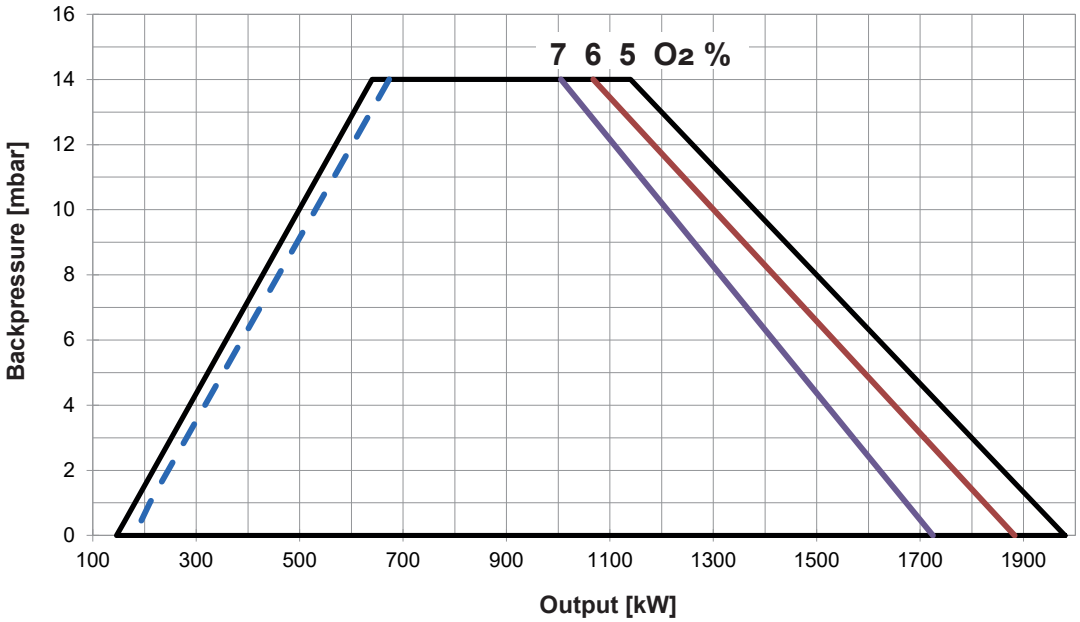
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Premix

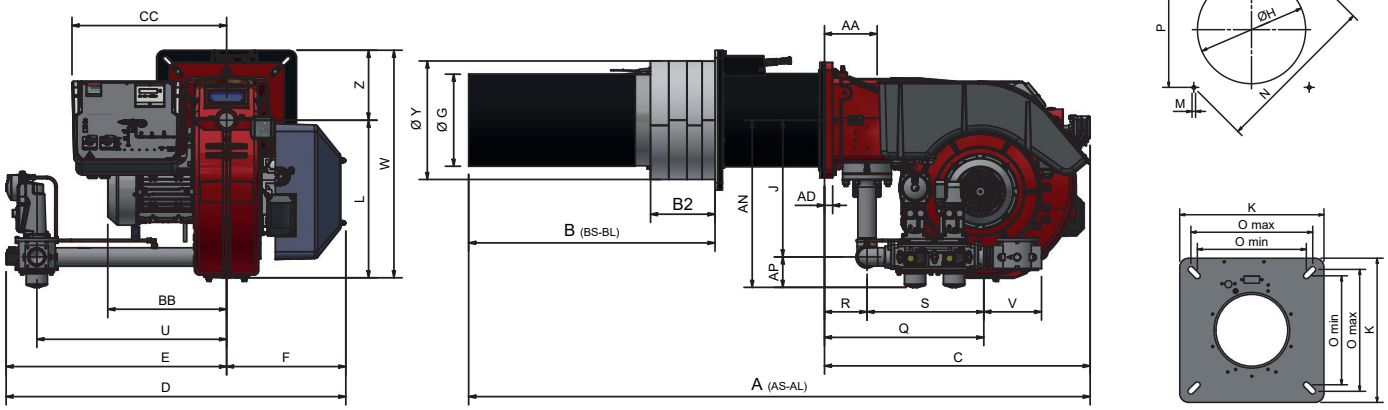
Dati tecnici

Type	Output kW		Power supply		Fan motor	Gas conections	Noise level
	min.	max.	(output)	(aux)	kW	Taglia	dBA@4,9 ft
G200N	146	1980	400V 3 AC 50 Hz	230V 2 AC 50 Hz	4	Rp 2", DN65, DN80, DN100	≤ 85

Performance curves



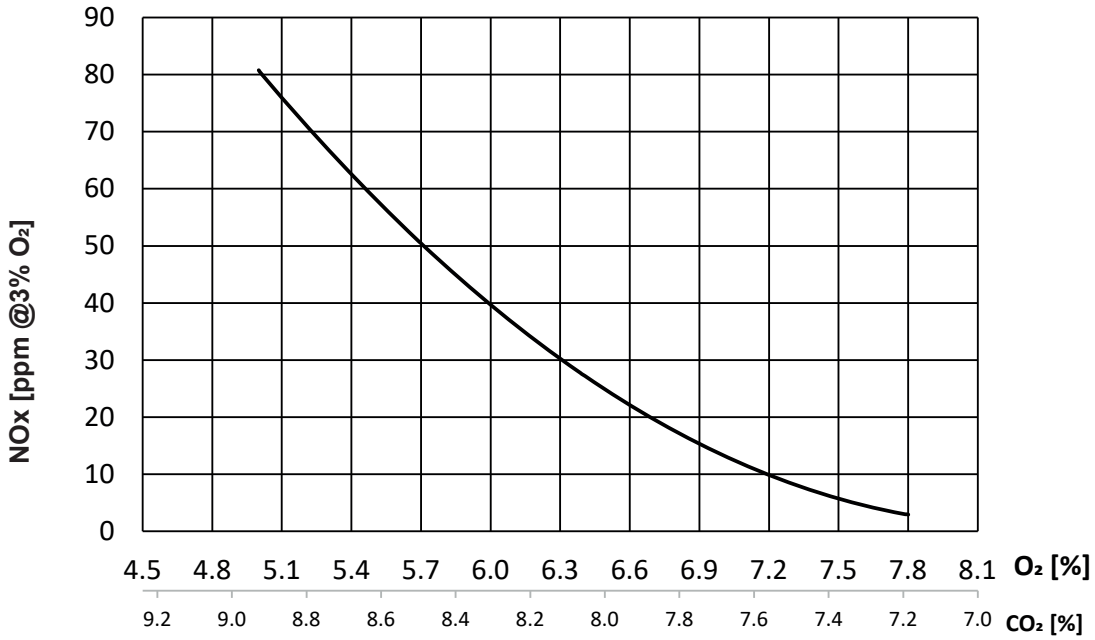
Silhouette for reference



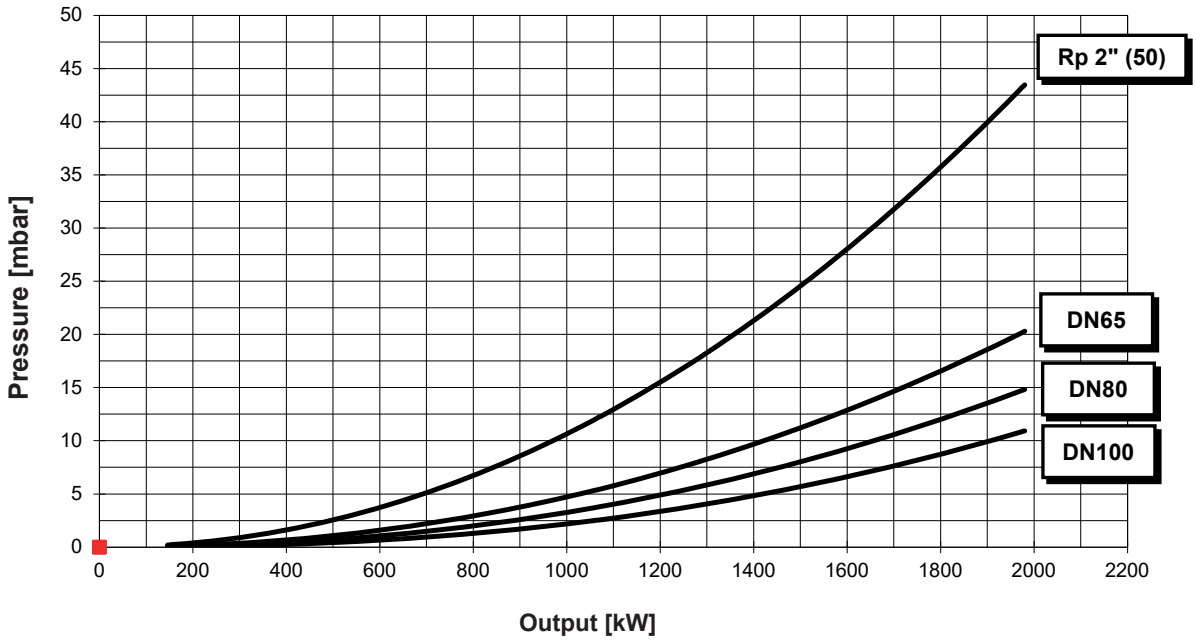
Tipo	DN	A (AS)	A (AL)	AA	AD	AN	AP	B (BS)	B (BL)	BB	B2	C	CC	D	E	F	G	H	J	K	L	M	N	O min	O max	P	Q	R	S	U	V	W	Y	Z
G200N	DN50	2044	-	173	27	550	100	810	-	390	212	874	509	1117	725	392	303	400	450	460	518	M12	552	375	405	390	524	140	384	624	190	748	390	230

Attention: - Gas train dimension will change according to the gas train size and configuration.
- All the burner performances refer to laboratory tests with natural gas (net calorific value Hi = 34,02 MJ / Stm³); and density= 0,714 kg/Stm³, (Stm³ to refer at 1013 mbar e 15° C) and ambient conditions with 1013 mbar and 20° C.

NOx vs O_2 / CO_2 Diagram



Minimum net gas pressure at the burner inlet



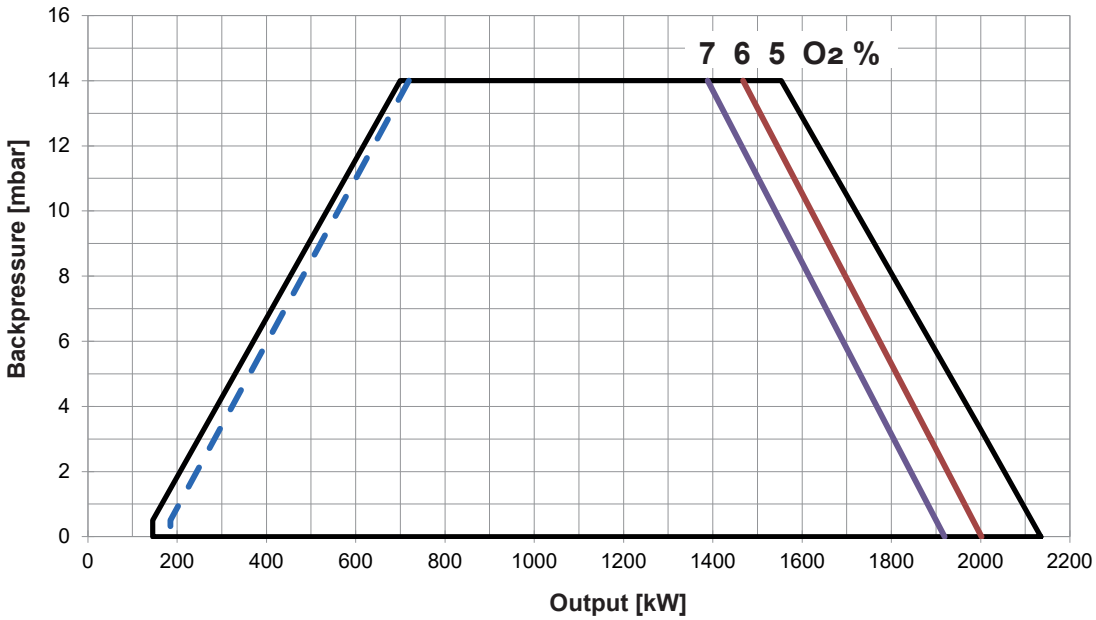
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SERIE premix **G215N**

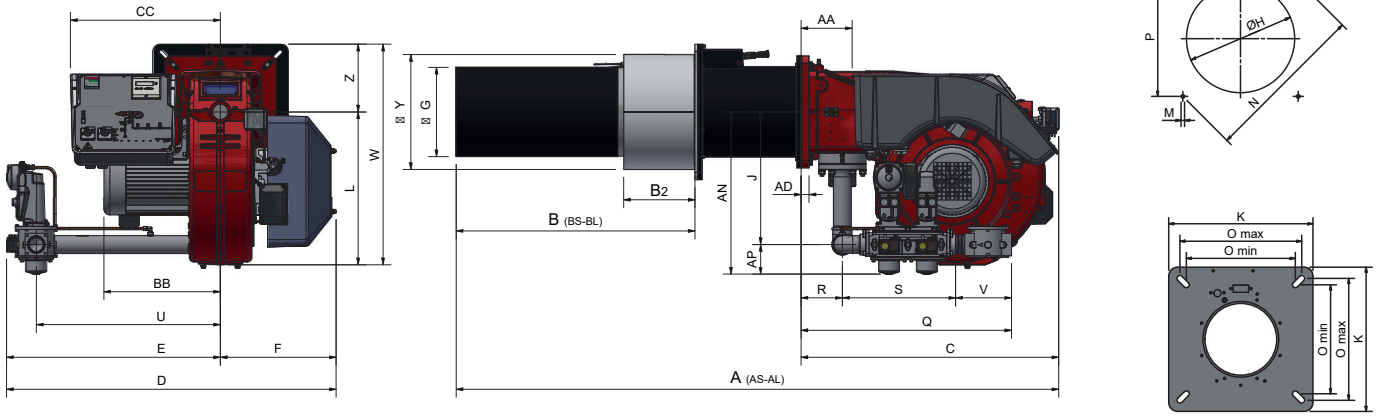
Dati tecnici

Type	Output kW		Power supply		Fan motor	Gas conections	Noise level
	min.	max.	(output)	(aux)	kW	Size	dBA@4,9 ft
G215N	145	2135	400V 3 AC 50 Hz	230V 2 AC 50 Hz	5.5	Rp 2" DN65, DN80, DN100	≤ 85

Performance curves



Silhouette for reference

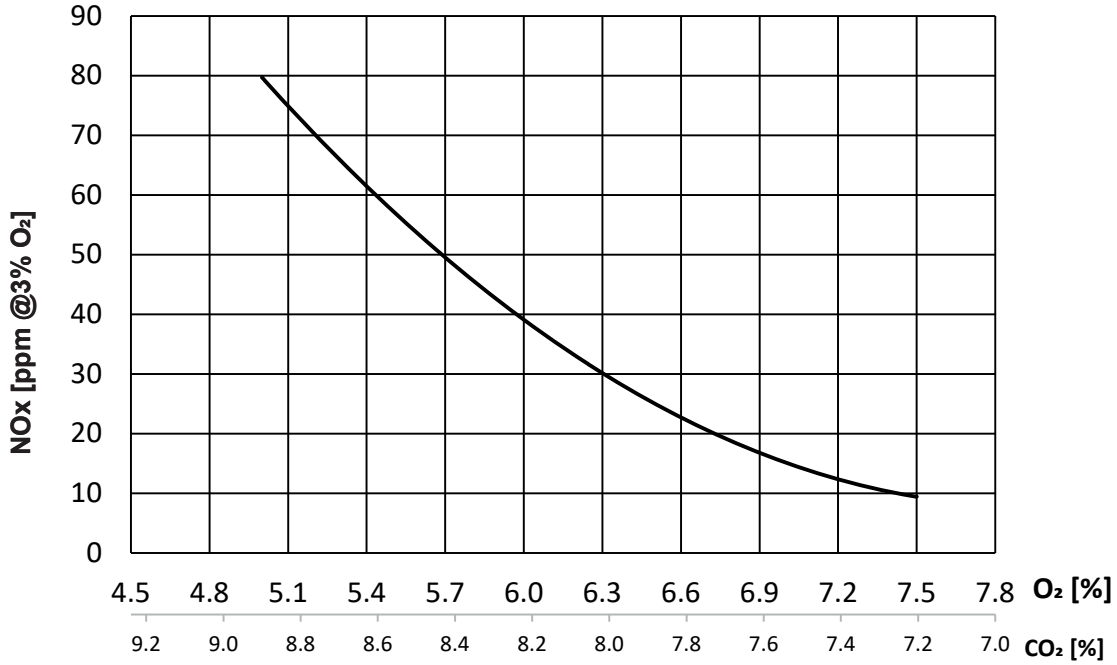


Dimensions in inc

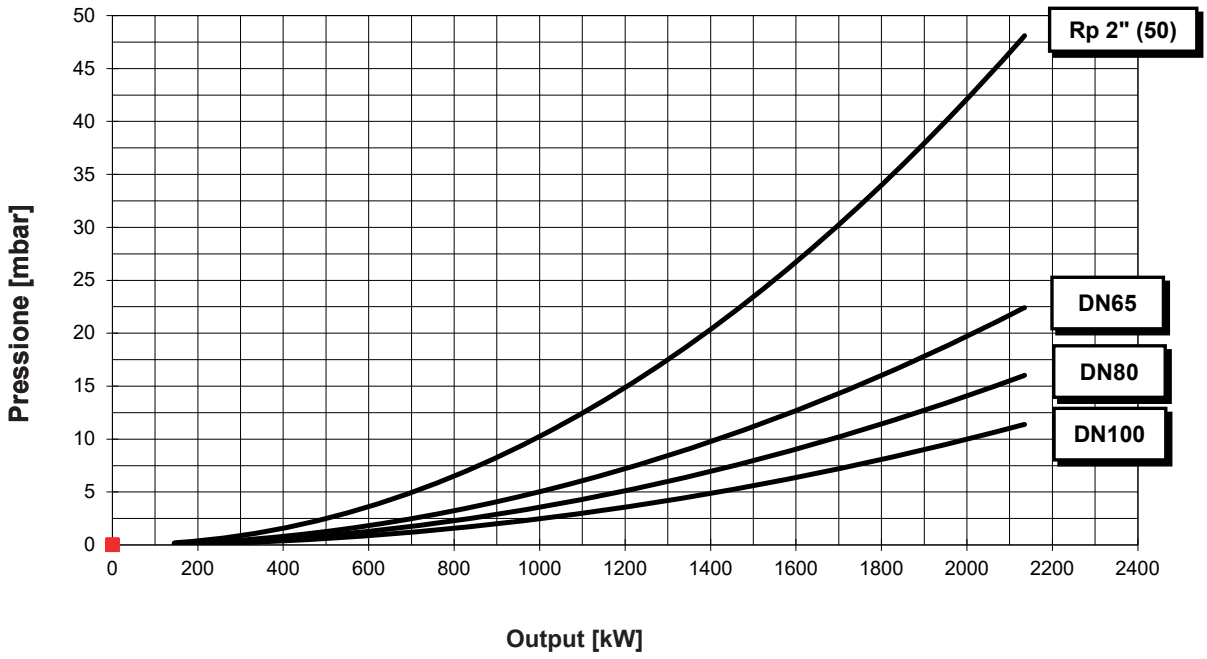
Tipo	DN	A		AA	AD	AN	AP	B		BB	B2	C	CC	D	E	F	G	H	J	K	L	M	N	O		P	Q	R	S	U	V	W	Y	Z
		(AS)	(AL)					(SL)	(BL)															min	max									
G215N	DN50	2044	-	173	27	550	100	810	-	395	212	874	509	1118	725	393	303	400	450	460	518	M12	552	375	405	390	714	140	384	624	190	748	390	230

Attention: - Gas train dimension will change according to the gas train size and configuration.
- All the burner performances refer to laboratory tests with natural gas (net calorific value Hi = 34,02 MJ / Stm³); and density= 0,714 kg/Stm³, (Stm³ to refer at 1013 mbar e 15° C) and ambient conditions with 1013 mbar and 20° C.

NOx vs O_2 / CO_2 Diagram



Minimum net gas pressure at the burner inlet

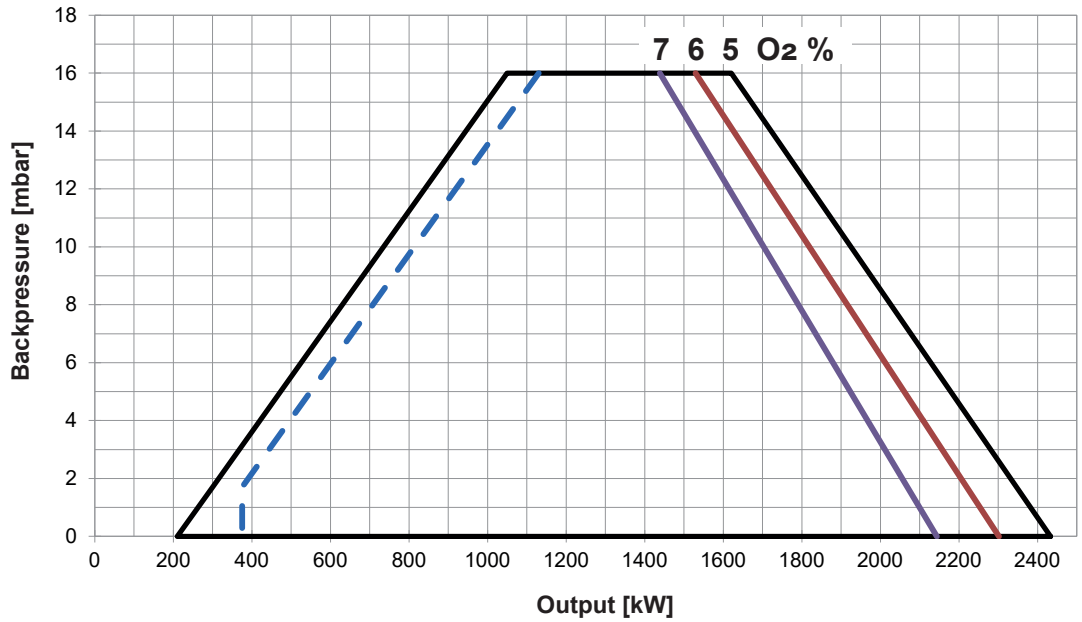


Attention: - To know the minimum gas pressure at the gas train, it is necessary to add the boiler back pressure to the value read on the curve.
- The pressure values change according to the configuration of the gas train. The minimum gas pressure curves in the net refer to a gas train assembled with standard supply valves (VGD or MBE).

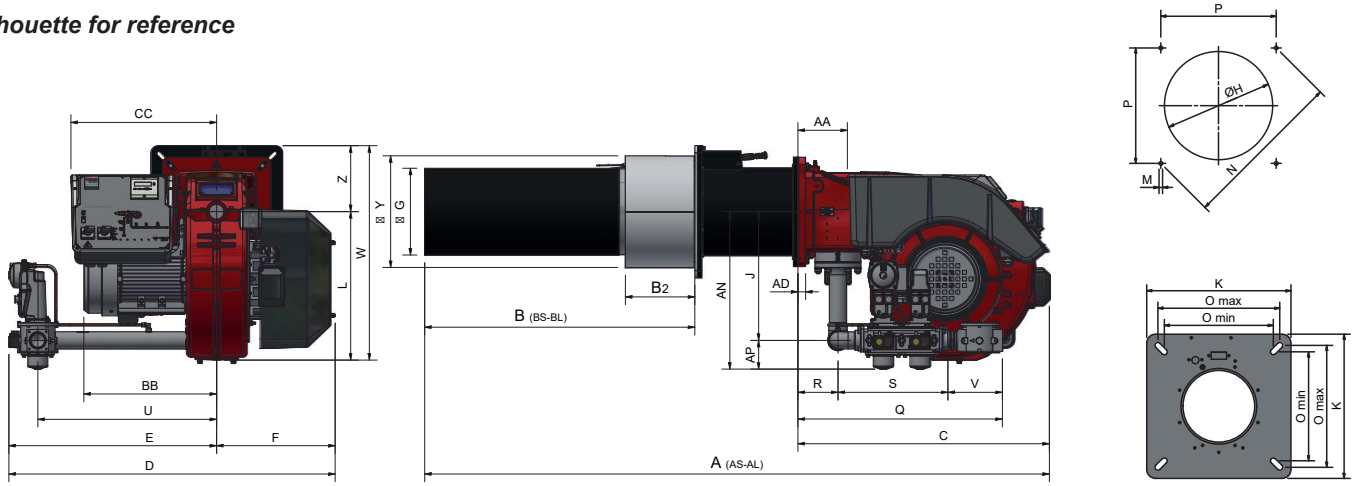
G240N

Type	Output kW		Power supply		Fan motor	Gas conections	Noise level
	min.	max.	(output)	(aux)	kW	Size	dBA@4,9 ft
G240N	210	2433	400V 3 AC 50 Hz	230V 2 AC 50 Hz	7,5	Rp 2”, DN65, DN80, DN100	≤ 85

Performance curves



Silhouette for reference

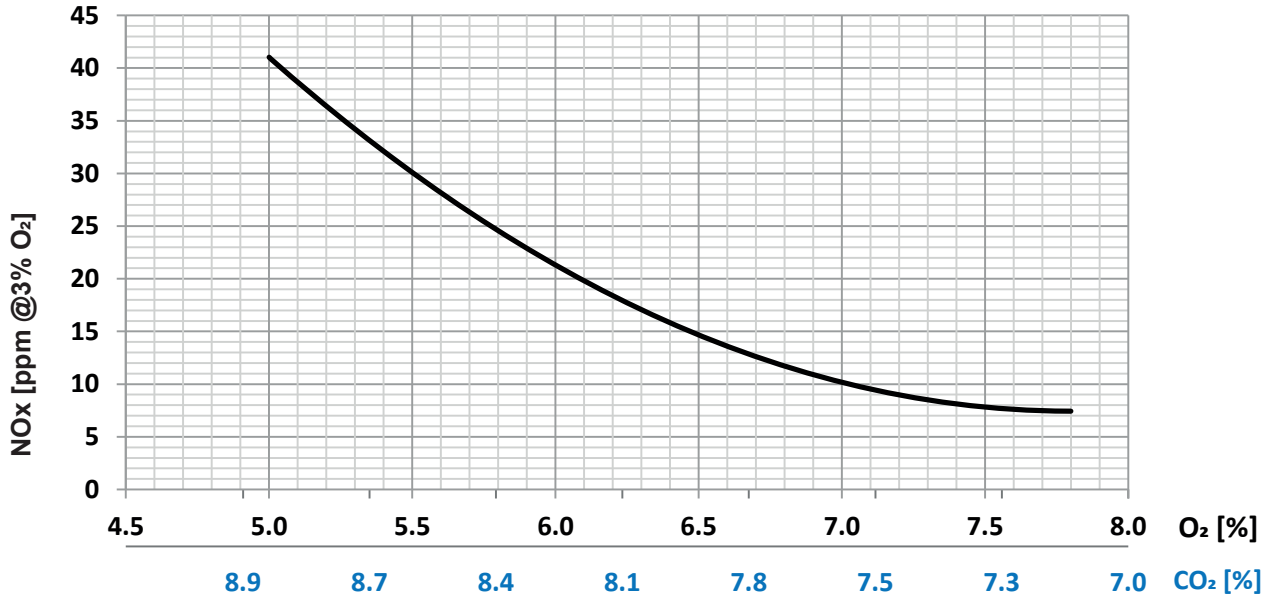


Dimensions in inc

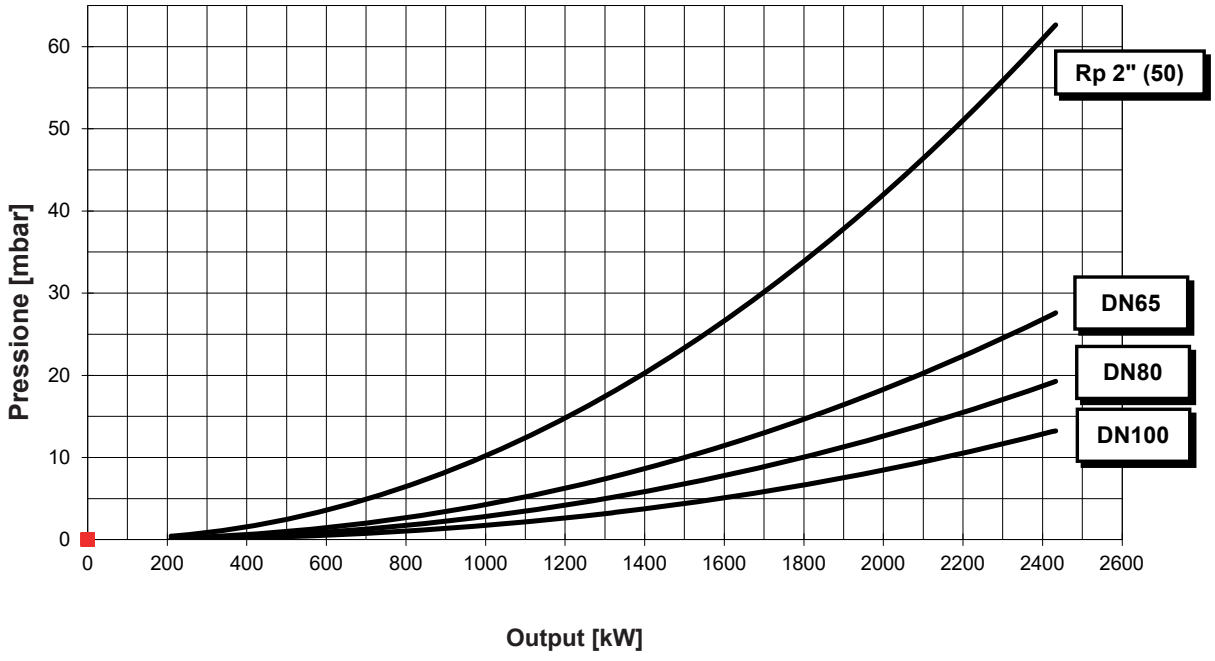
Tipo	DN	A		AA	AD	AN	AP	B		BB	B2	C	CC	D	E	F	G	H	J	K	L	M	N	O		P	Q	R	S	U	V	W	Y	Z
		(AS)	(AL)					(BS)	(BL)															min	max									
G240N	DN50	2181	-	173	27	550	100	943	-	461	212	878	509	1139	725	414	303	400	450	460	518	M12	552	375	405	390	714	140	384	624	190	748	390	230

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NOx vs O_2 / CO_2 Diagram



Minimum net gas pressure at the burner inlet



Attention: - To know the minimum gas pressure at the gas train, it is necessary to add the boiler back pressure to the value read on the curve.
- The pressure values change according to the configuration of the gas train. The minimum gas pressure curves in the net refer to a gas train assembled with standard supply valves (VGD or MBE).

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CATALOGUE - Premix burners

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