

METALLIC BURNERS

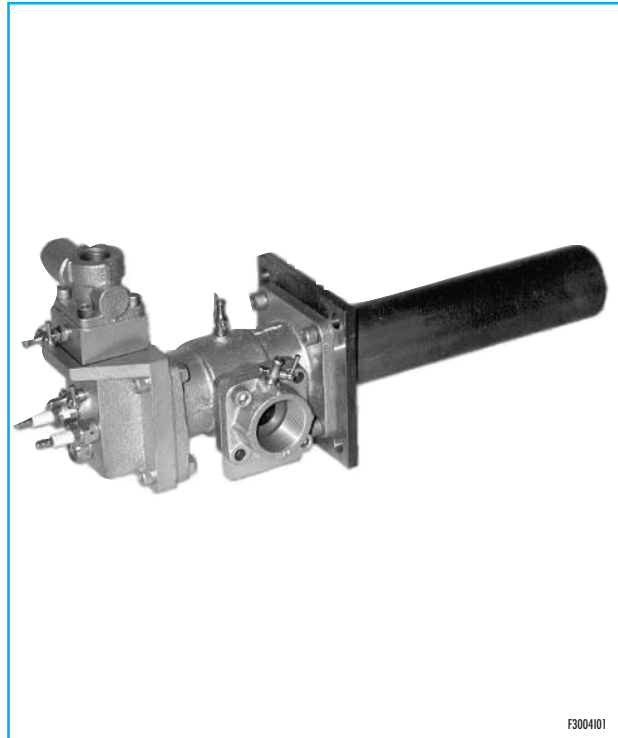
EMB SERIES

FEATURES

- Mixer body (*): cast iron G25
- Gas inlet block: cast iron G25
- Flame tube: AISI 310
- Nozzle: AISI 303
- Mounting flanges: iron
- Operation with preheated air up to: 450°C
- Optional refractory block max temp.: 1750°C
- Capacity range: 30 to 600 kW
- Low air and gas pressures required: 45 mbar
- Operation with any types of gas: CH₄/L.P./propane/etc.
- Air excess : over 400%
- Excellent flame stability with: air excess
fuel excess
on ratio firing

- Low NO_x level.
- Wide turndown.
- Easily replaced electrodes.
- Separated air and gas inlets, mixing at discharge point, no flashback.
- Light , small compact burners supplied with micrometer type gas flow adjuster, flame and sight electrodes, peepsight, calibrated orifice plate flow meters to measure air and gas flows.

* Aluminium mixer body can be supplied on request



F3004101

APPLICATIONS

- Air heaters.
- Steam generators.
- Incinerators.
- Driers.
- Heat treat furnaces for rubber, fabric, resin, carpets, paints, solvents.
- Textile, dying drying (Rameause).
- Stress Relieving Furnaces.
- Low temperature processes.



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DESCRIPTION

Metallic burners, model EMB, are nozzle mix burners. Gas and air are mixed only at the point of discharge, thus flashback is prevented. This allows for adjustments on stoichiometric ratio and

excess air. Maximum ratings are obtained with 40 mbar air pressure. Low pressure air blowers are required. Pressure referenced control system is supplied for controlling heat inputs.

INSTALLATION

EMB metallic burners are supplied with iron, mounting flanges. Avoid mounting with flame up which may cause condensation resulting in ignition problems. The furnace refractory should be set to leave some room on all sides of the block. This space should be packed with refractory material, for example ceramic fibre, to allow for expansion of the walls (see technical note). Flexible connectors are

recommended for air and gas connections at the burner to allow slight movement or misalignment of piping and are absolutely required when pre-heated air is involved. Air and gas connections are Pyronics' standard, welding or threaded flanged type. They may rotate by 90°.

IGNITION AND FLAME DETECTION

Burner ignition is achieved by a direct spark ignition electrode. A pilot burner, model P42PBST/X, can be supplied on request (only for the versions shown on table). Flame detection is done either through

electrode or - on request - UV-2 Ultraviolet Scanner. Flame detection systems are required on all burners with furnace temperatures below 750°C.

Catalog No.	Pilot burner ignition		Electrode ignition	
	Ignition	Detection	Ignition	Detection
EMB - 1	(not available)	(not available)	Wand	Wand
EMB - 2	(not available)	(not available)	Wand	Wand
EMB - 3	P42PBST-W/X	Wand	3EN / IS-4	3EN / IS-4
EMB - 4	P42PBST-W/X	Wand	3EN / IS-4	3EN / IS-4
EMB - 5	P42PBST-W/X	Wand	3EN / IS-4	3EN / IS-4
EMB - 6	P42PBST-W/X	Wand	3EN / IS-4	3EN / IS-4

CAPACITY TABLE

Catalog No.	Air/Gas pressure mbar	Capacity kW @ 30 °C (') on ratio firing	Capacity kW @ 400 °C on ratio firing	Capacity kW @ 30 °C 30% air excess
EMB - 1	45	30	20	20
EMB - 2	45	80	55	55
EMB - 3	45	150	100	100
EMB - 4	45	300	200	200
EMB - 5	45	400	270	270
EMB - 6	45	600	400	400

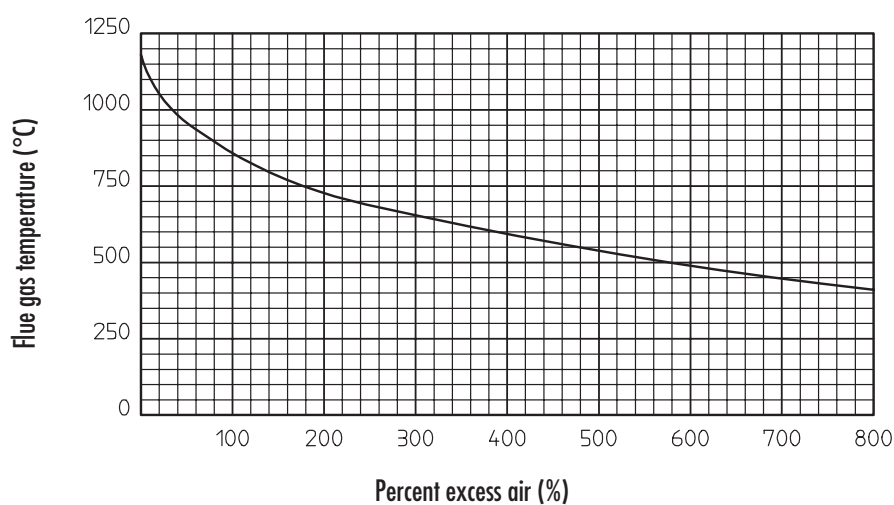
FLAME CHARACTERISTICS

Catalog No.	Flame length mm	Flame manifold ø mm	Flame propagation speed (m/s) @ 1500 °C						
			at 0 m	at 0,5 m	at 1 m	at 1,5 m	at 2 m	at 2,5 m	at 3 m
EMB - 1	300 ÷ 400	43	40	17	9	6	4,5	4	3
EMB - 2	500 ÷ 700	64	50	35	17	12	9	7	6
EMB - 3	700 ÷ 1000	94	42	38	21	15	11	9	7
EMB - 4	1000 ÷ 1250	122	47	42	30	21	16	13	11
EMB - 5	1500 ÷ 2000	122	65	52	42	29	22	18	15
EMB - 6	2000 ÷ 3000	160	54	49	44	31	24	30	17

Flame length are approximate, referred to burner feeded with natural gas, free air, working at stoichiometric ratio and at nominal capacity (see (') on Capacity Table). Speed values are calculated for short flame burners at maximum capacity.

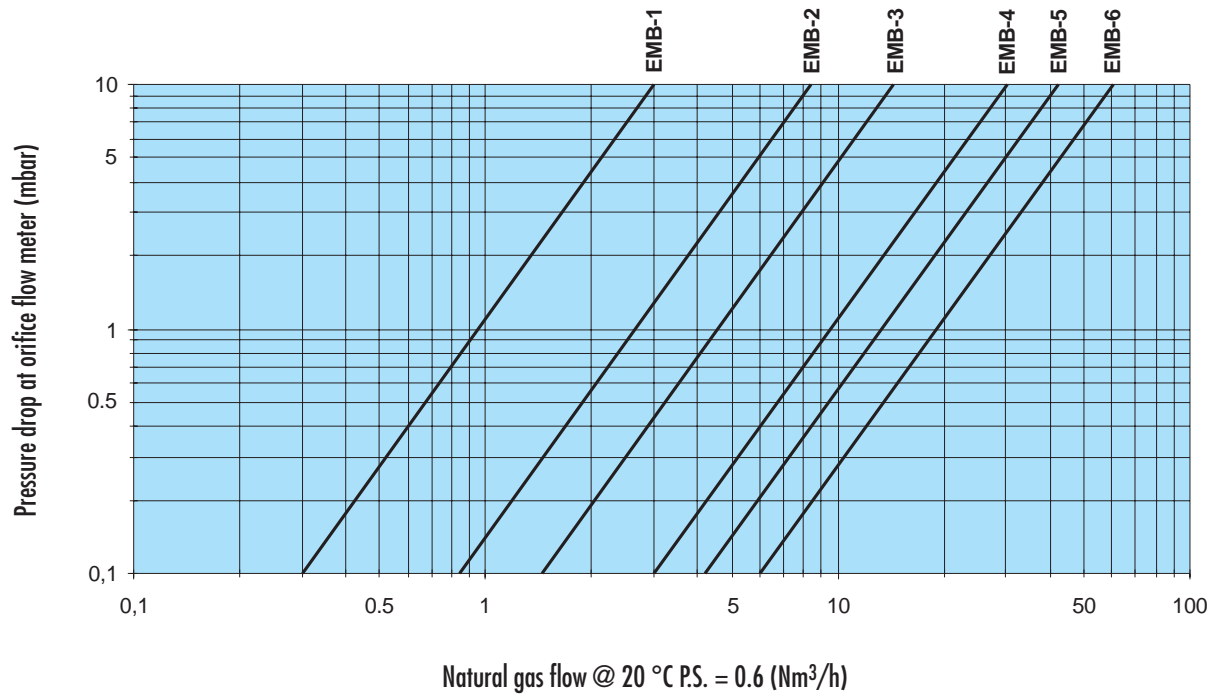
This table is referred to combustion chambers in which pressure is zero.

EXCESS AIR AND TEMPERATURE CHART



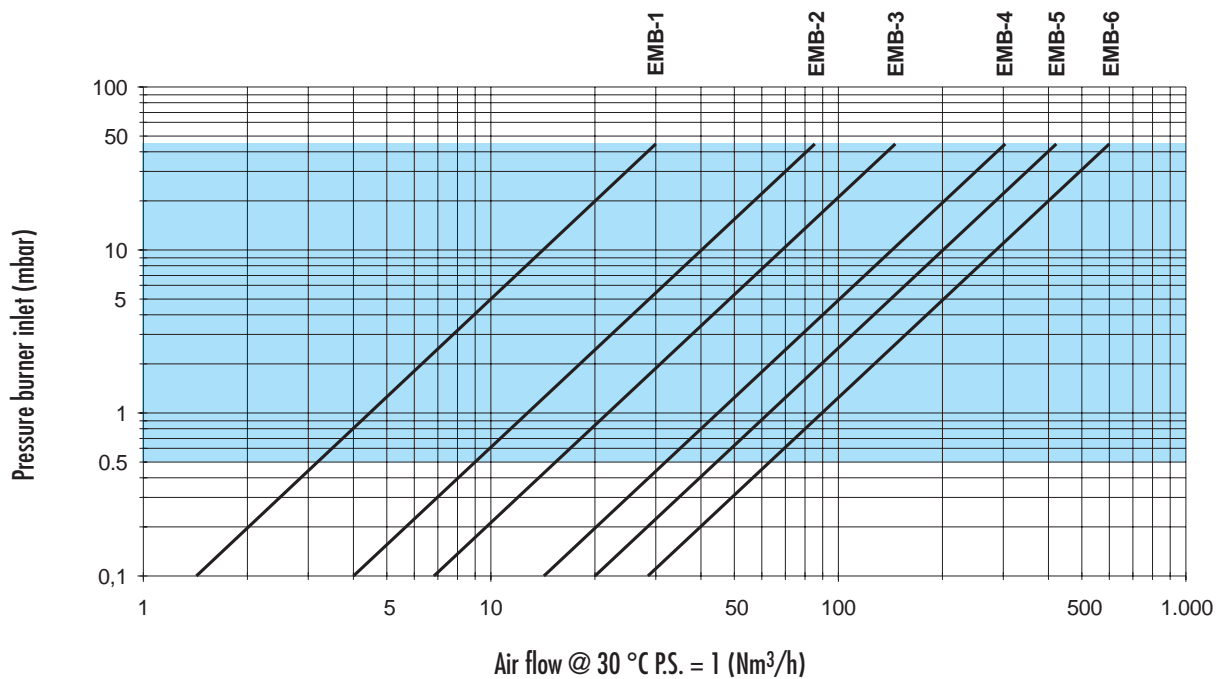
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NATURAL GAS CAPACITY TABLE



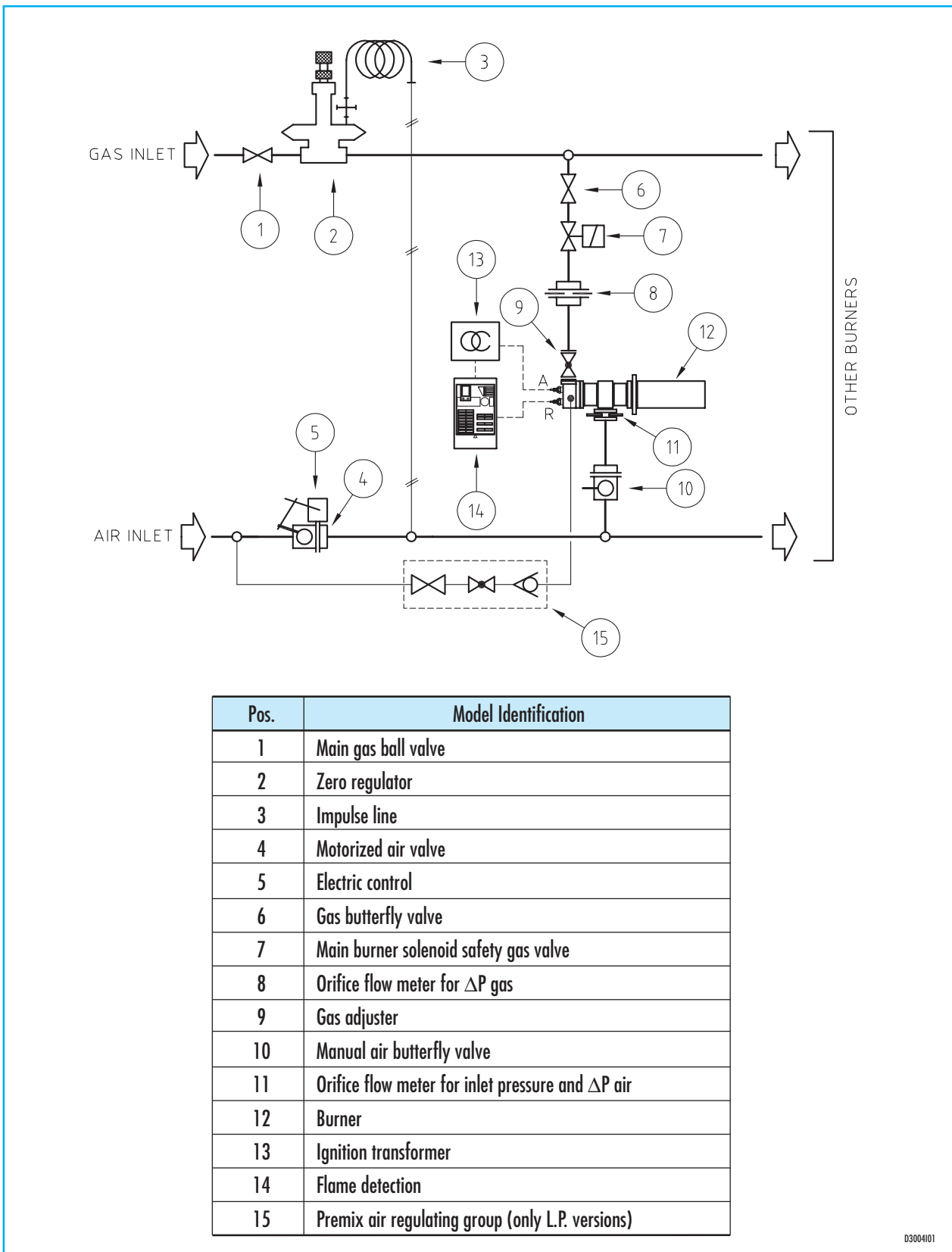
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AIR CAPACITY TABLE



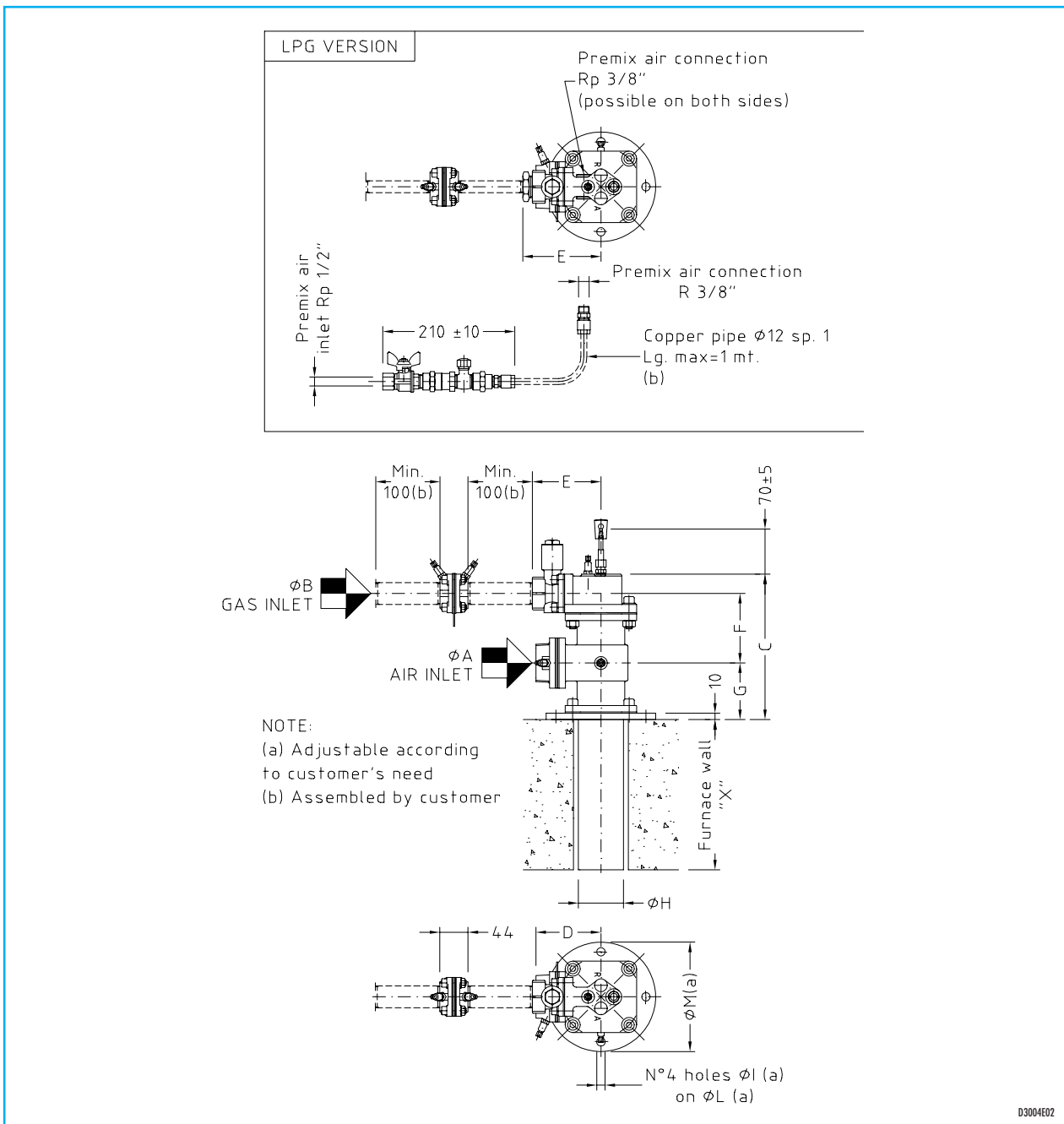
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FLOW CHART



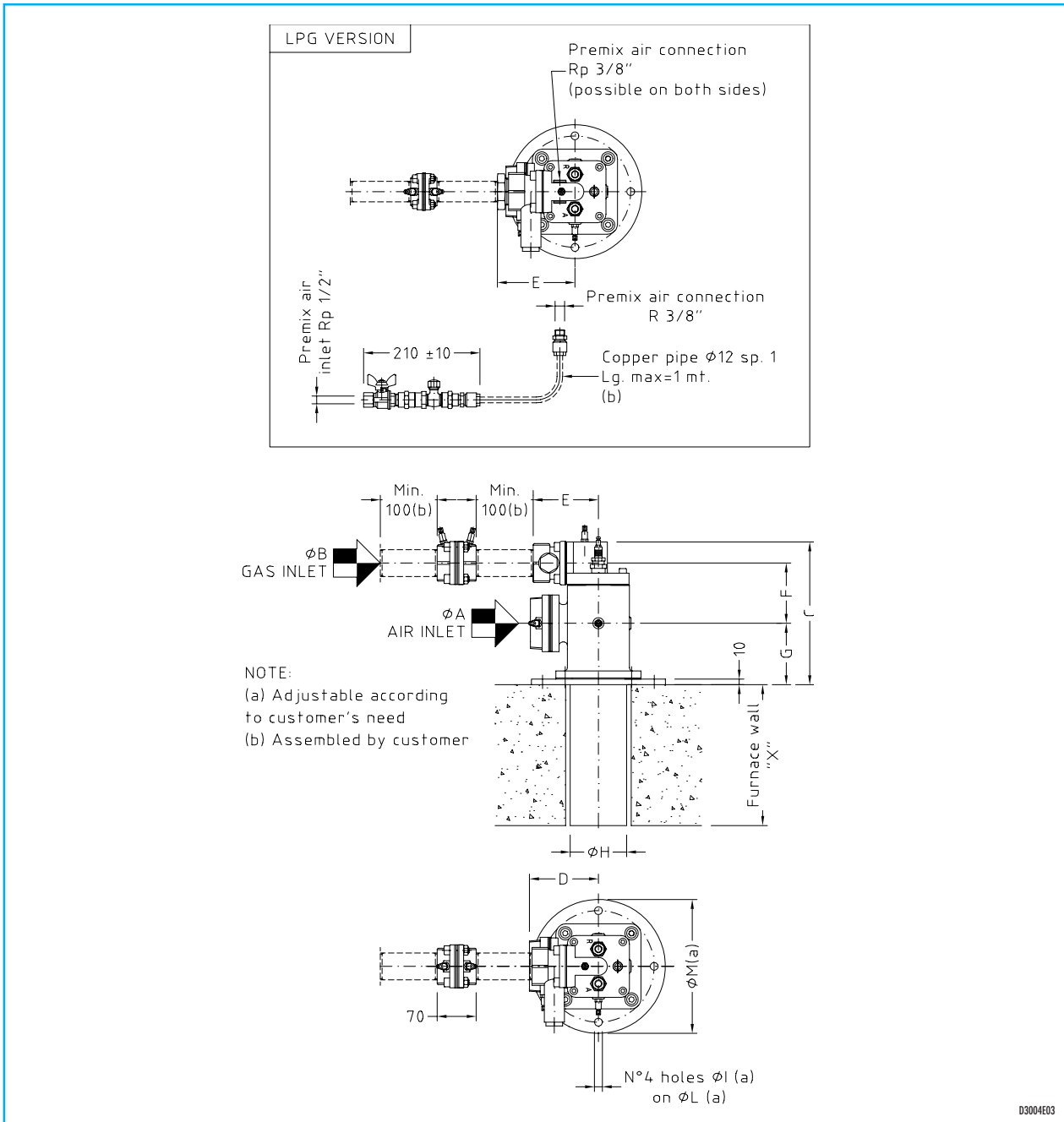
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DIMENSIONS (EMB-1 / EMB-2)



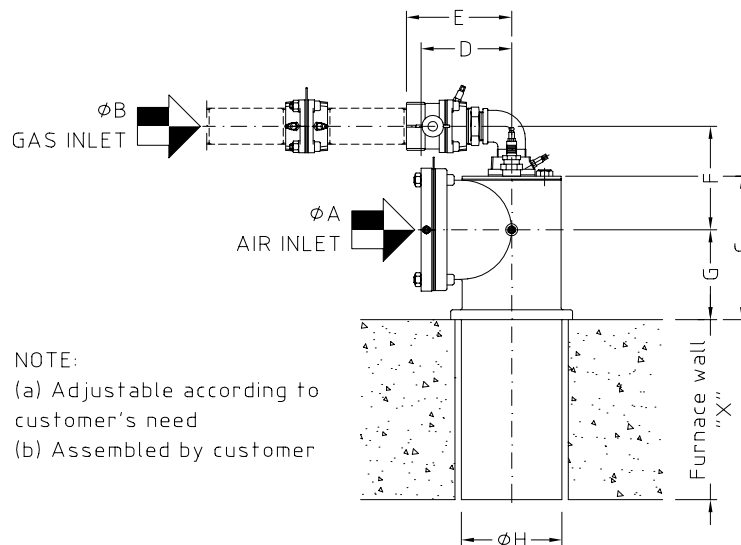
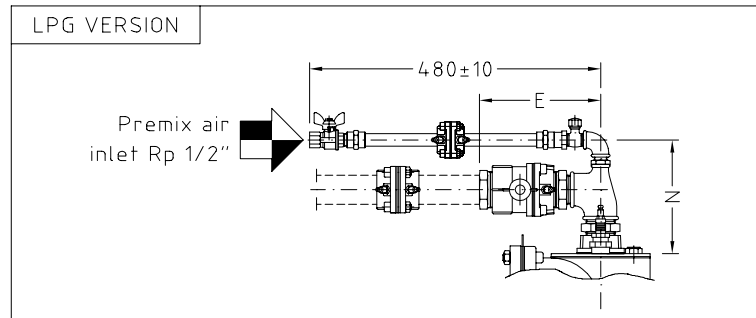
Catalog no.	ϕA	ϕB	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm
EMB-1-CH4	Rp 1.1/2"	Rp 1/2"	201	87	107	83	88	$\phi 48$	$\phi 13$	$\phi 120$	$\phi 150$
EMB-1-GPL	Rp 1.1/2"	Rp 1/2"	201	87	107	83	88	$\phi 48$	$\phi 13$	$\phi 120$	$\phi 150$
EMB-2-CH4	Rp 1.1/2"	Rp 3/4"	226	101	107	110	88	$\phi 70$	$\phi 13$	$\phi 140$	$\phi 170$
EMB-2-GPL	Rp 1.1/2"	Rp 1/2"	226	101	122	110	88	$\phi 70$	$\phi 13$	$\phi 140$	$\phi 170$

DIMENSIONS (EMB-3 / EMB-4)

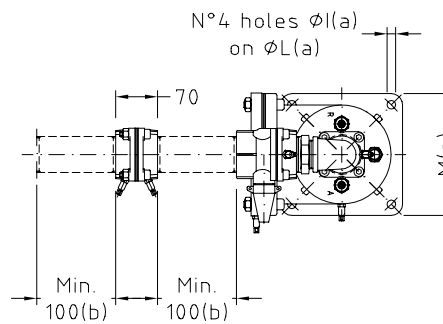


Catalog no.	ϕA	ϕB	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm
EMB-3-CH4	Rp 2.1/2"	Rp 1"	240	122	107	100	110	$\phi 101$	$\phi 14$	$\phi 200$	$\phi 240$
EMB-3-GPL	Rp 2.1/2"	Rp 3/4"	240	122	122	100	110	$\phi 101$	$\phi 14$	$\phi 200$	$\phi 240$
EMB-4-CH4	Rp 2.1/2"	Rp 1.1/2"	256	122	117	108	110	$\phi 129$	$\phi 14$	$\phi 200$	$\phi 240$
EMB-4-GPL	Rp 2.1/2"	Rp 1"	256	122	132	108	110	$\phi 129$	$\phi 14$	$\phi 200$	$\phi 240$

DIMENSIONS (EMB-5 / EMB-6)



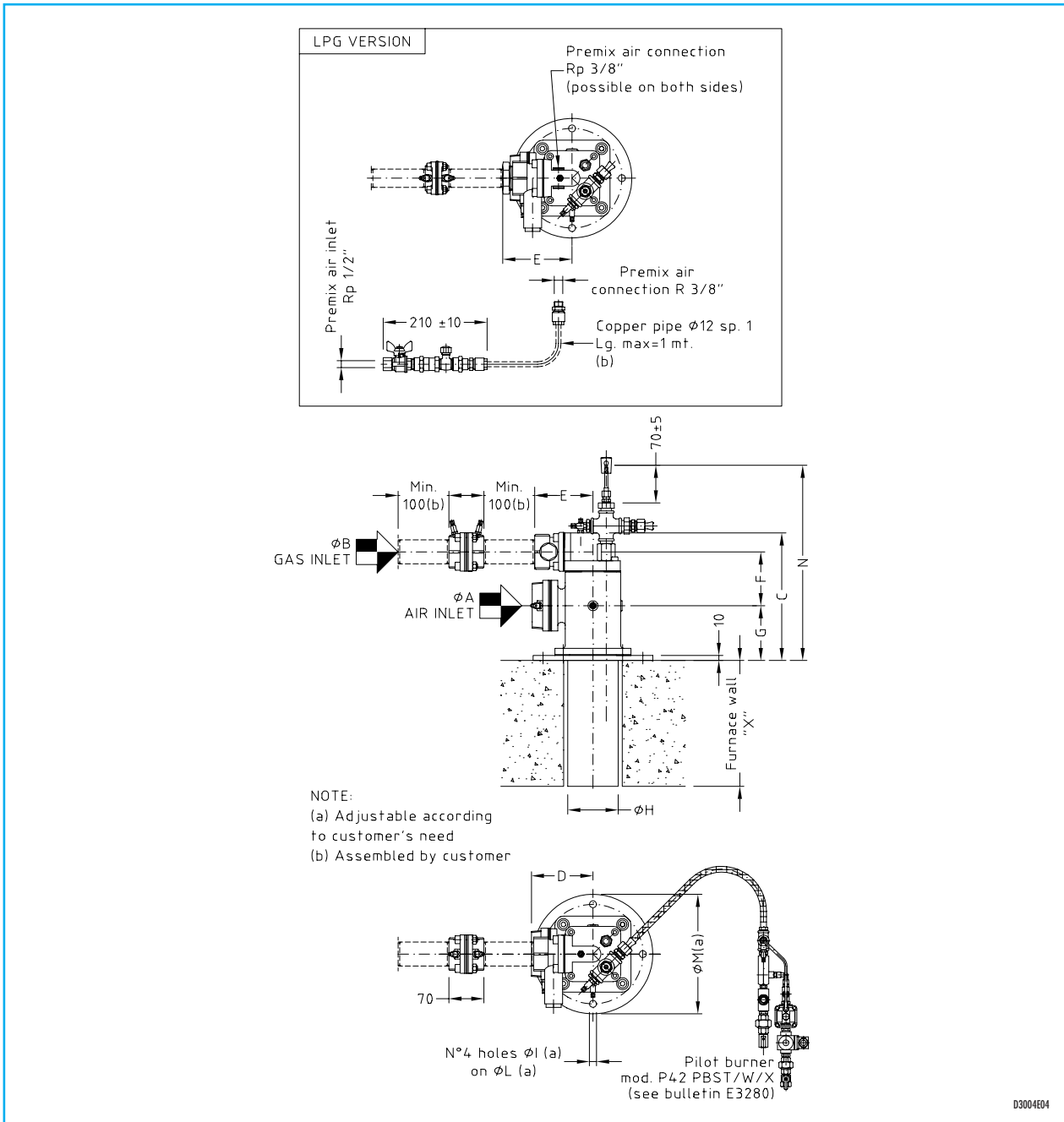
NOTE:
 (a) Adjustable according to customer's need
 (b) Assembled by customer



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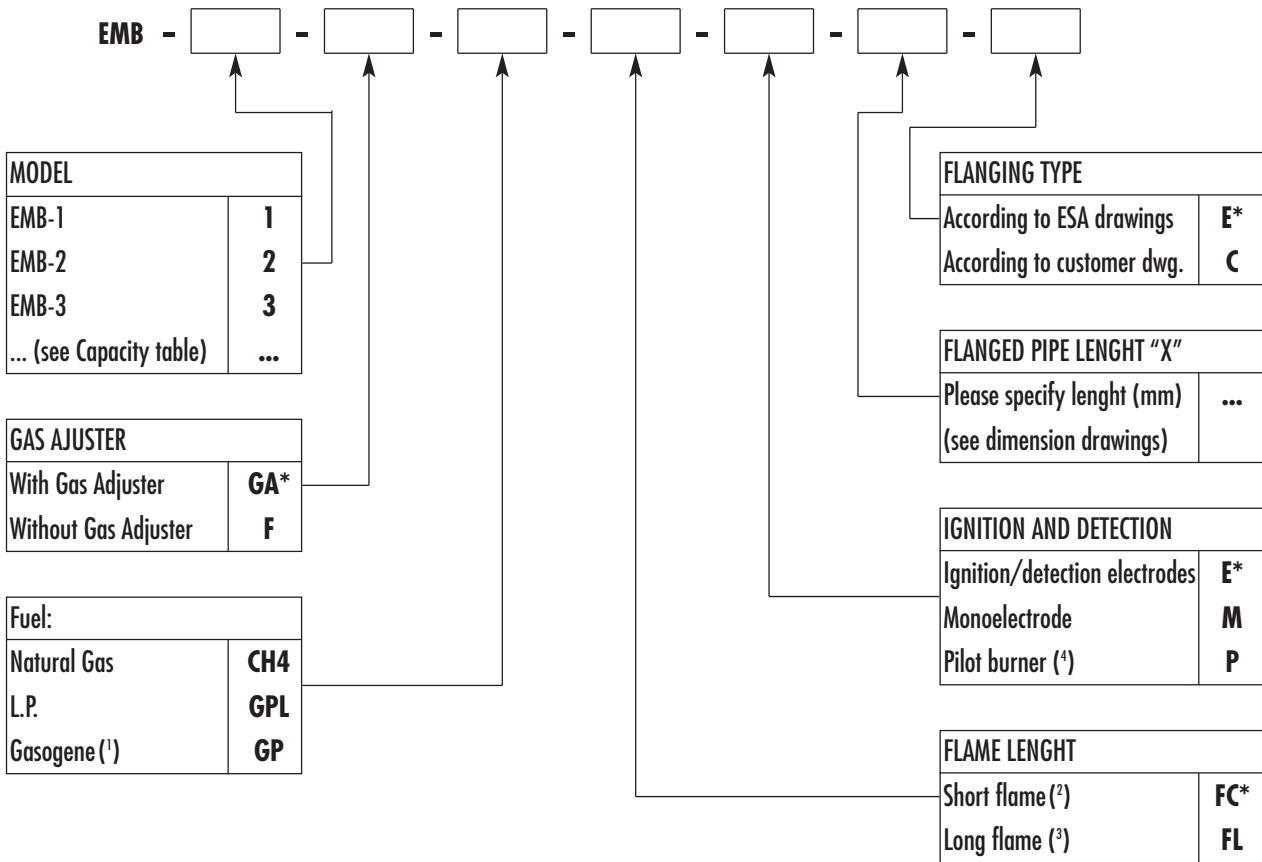
Catalog no.	ϕA	ϕB	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm
EMB-5-CH4	Rp 4"	Rp 1.1/2"	203	119	154	131	139	$\phi 129$	$\phi 14$	$\phi 235$	$\nabla 203$	-
EMB-5-GPL	Rp 4"	Rp 1"	203	119	174	154	139	$\phi 129$	$\phi 14$	$\phi 235$	$\nabla 203$	172
EMB-6-CH4	Rp 6"	Rp 2"	240	151	175	172	150	$\phi 168$	$\phi 14$	$\phi 235$	$\nabla 203$	-
EMB-6-GPL	Rp 6"	Rp 1.1/2"	240	151	200	198	150	$\phi 168$	$\phi 14$	$\phi 235$	$\nabla 203$	190

DIMENSIONS (EMB-3-P / EMB-4-P)



Catalog no.	ø A	ø B	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm
EMB-3-CH4-P	Rp 2.1/2"	Rp 1"	240	122	107	100	110	ø 101	ø 14	ø 200	ø 240	370
EMB-3-GPL-P	Rp 2.1/2"	Rp 3/4"	240	122	122	100	110	ø 101	ø 14	ø 200	ø 240	370
EMB-4-CH4-P	Rp 2.1/2"	Rp 1.1/2"	256	122	117	108	110	ø 129	ø 14	ø 200	ø 240	370
EMB-4-GPL-P	Rp 2.1/2"	Rp 1"	256	122	132	108	110	ø 129	ø 14	ø 200	ø 240	370

ORDERING CODE - BURNER



* Standard embodiment of basic equipment

Note:

- ¹ Special manufacture made according to gas characteristics
- ² Standard version used in application with naked flame
- ³ Version used for application with burners in open tubes. Available up to version 4.
- ⁴ Available only for version 3, 4, 5 and 6 (see "Ignition and Flame detection")



NOTE: Based on the company's policy aimed at a continuous improvement on product quality, ESA-PYRONICS reserves the right to bring changes to the technical characteristics of this device without previous notice. Our catalog updated to the latest version is available on our web site www.esapyronics.com and it is possible to download modified documents

WARNING: When operating, this combustion system can be dangerous and cause harm to persons or damage to equipment. Every burner must be provided with a protection device that monitors the combustion. The installation, adjustment and maintenance operations should only be performed by trained and qualified personnel.