

HIGH VELOCITY BURNERS

EMB - SIK SERIES

FEATURES

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|--|--|
| • Mixer body (*): | cast iron G25 |
| • Gas inlet block: | cast iron G25 |
| • Flame tube: | silicon carbide |
| • Nozzle: | AISI303 |
| • Mounting flange: | iron |
| • Pre-heated air: | up to 500°C |
| • Suitable for different types of gas: | CH ₄ /L.P./propane/etc. |
| • Capacity range: | 30 to 600 kW |
| • Excess air: | over 400% |
| • Air and gas pressure at burner: | 45 mbar |
| • Excellent flame stability: | excess air
excess fuel
on ratio firing |
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- Wide turndown range.
 - Easily replaced electrodes.
 - Separated air and gas inlets, mixing at discharge point, no flashback.
 - Light-weighted, small-sized compact burners supplied with micrometer type gas flow adjuster, spark electrode and flame rod, peepsight, calibrated orifice plate flow meters to measure air and gas flows.



F3506101



F3506102

APPLICATIONS

- Fibre insulated furnaces.
- Ceramic furnaces.
- Heat treat furnaces.
- Tunnel type furnaces.
- Truck-hearth furnaces.

DESCRIPTION

EMB-SIK burners models, 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. The air stream as well as the particular shape of the silicon carbide flame tube create a flame allowing for high heat penetration in the combustion chamber.

Maximum ratings are obtained with 45 mbar air pressure; operation with 400% excess air is possible when necessary. EMB-SIK burner models, are recommended in chambers with fibre isolation. Calibration is simplified by pressure plugs which allow for knowing the exact gas and air flow (see charts below).



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INSTALLATION

EMB-SIK 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 fiber, to allow for expansion of the walls (see technical note).

(*) see the dimensional chart

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 direct spark ignition electrode (model EN or WAND). A pilot burner, model P42PBST-W/X, can be supplied on request (only for the versions shown on table). Flame detection is

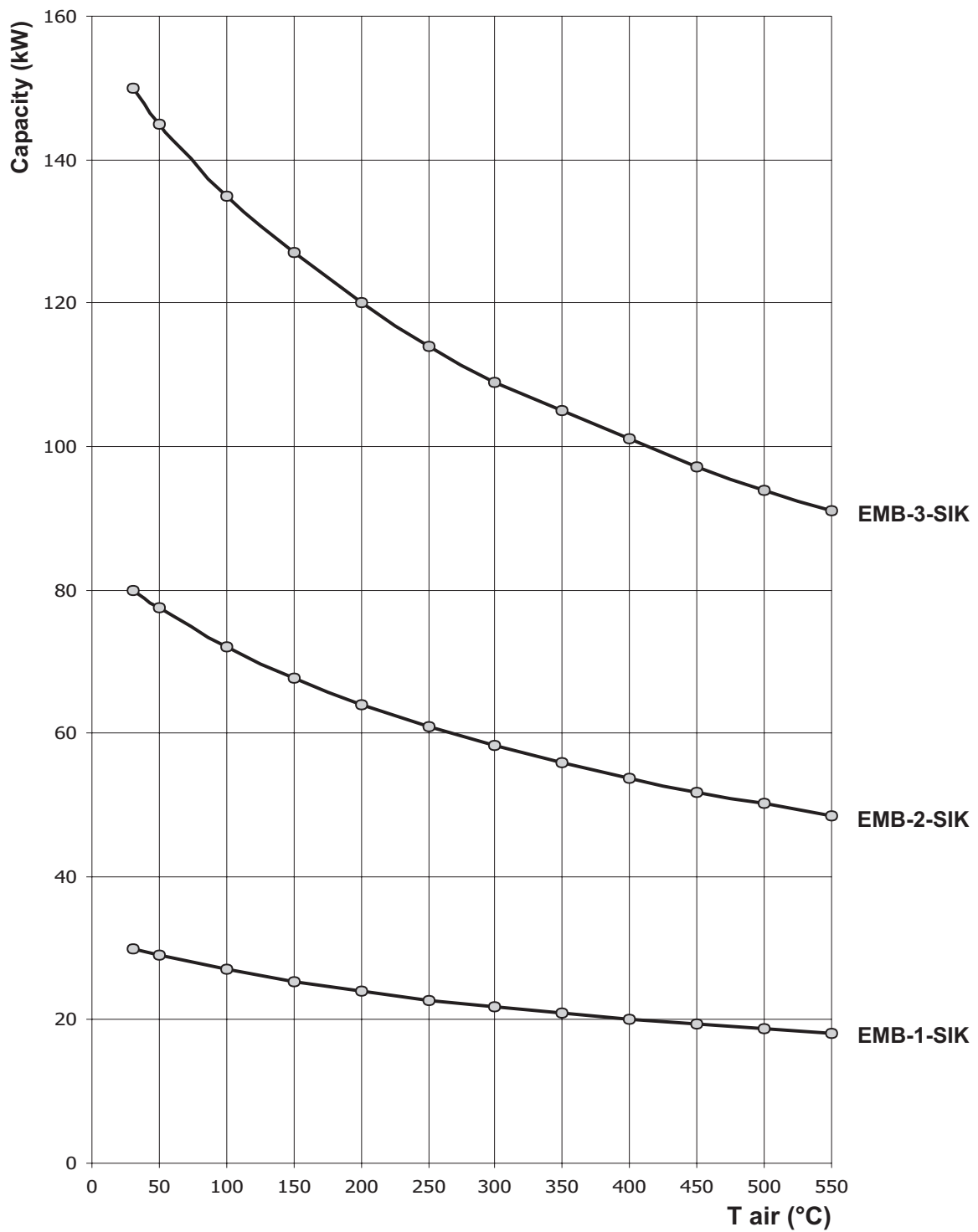
done either through EN or WAND electrode or, on request, UV-2 Ultraviolet Scanner. Flame detection systems are required on all burners with furnace temperatures below 750°C.

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

CAPACITY TABLE

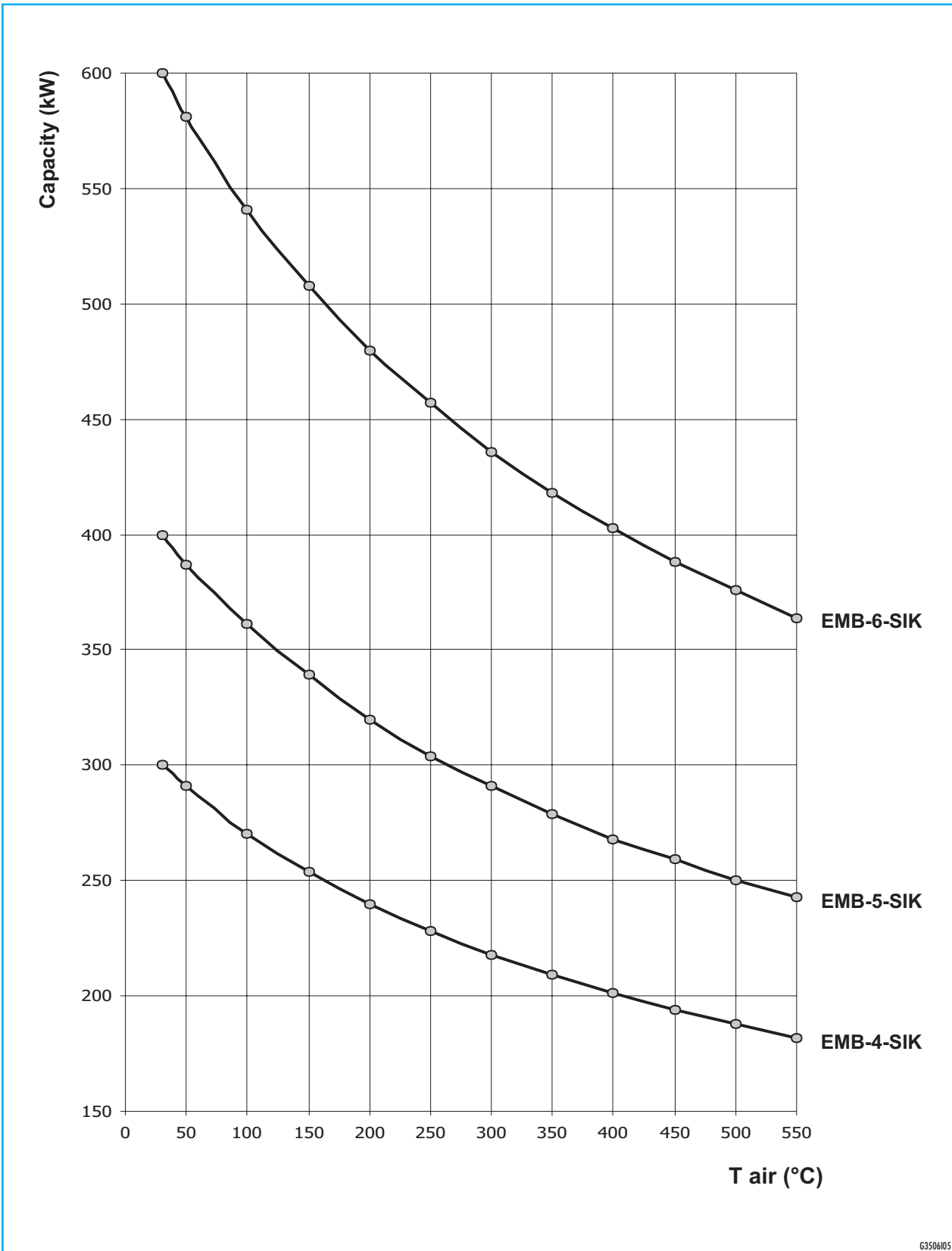
Catalog No.	Air/Gas pressure mbar	Capacity kW @ 30 °C (') on ratio firing	Capacity kW @ 400 °C on ratio firing	Capacity kW @ 30 °C 30% air excess
EMB-1-SIK	45	30	20	20
EMB-2-SIK	45	80	55	55
EMB-3-SIK	45	150	100	100
EMB-4-SIK	45	300	200	200
EMB-5-SIK	45	400	270	270
EMB-6-SIK	45	600	400	400

BURNER CAPACITY VS PREHEATED AIR TEMPERATURE



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BURNER CAPACITY VS PREHEATED AIR TEMPERATURE



G350605

FLAME TUBE CHOICE

Modello	Flame tube type (*)	Flame lenght 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-SIK	M1	150÷300	30	80	30	13	9	7	6	5
EMB-2-SIK	L2	400÷600	60	55	35	18	13	9	7.5	6
	M2	400÷600	50	80	45	22	15	11	9	7.5
	H2	400÷600	40	120	55	28	18	14	11	10
EMB-3-SIK	L3	600÷900	85	50	45	23	16	12	10	8
	M3	600÷900	70	80	55	30	20	15	12	10
	H3	600÷900	57	120	66	35	24	18	15	12
EMB-4-SIK	M4	900÷1200	85	95	70	45	30	23	18	16
	H4	900÷1200	70	150	105	55	38	29	23	20
EMB-5-SIK	H5	1000÷1500	85	140	115	62	42	32	26	22
EMB-6-SIK	H6	1500÷2000	120	105	85	62	45	35	26	22

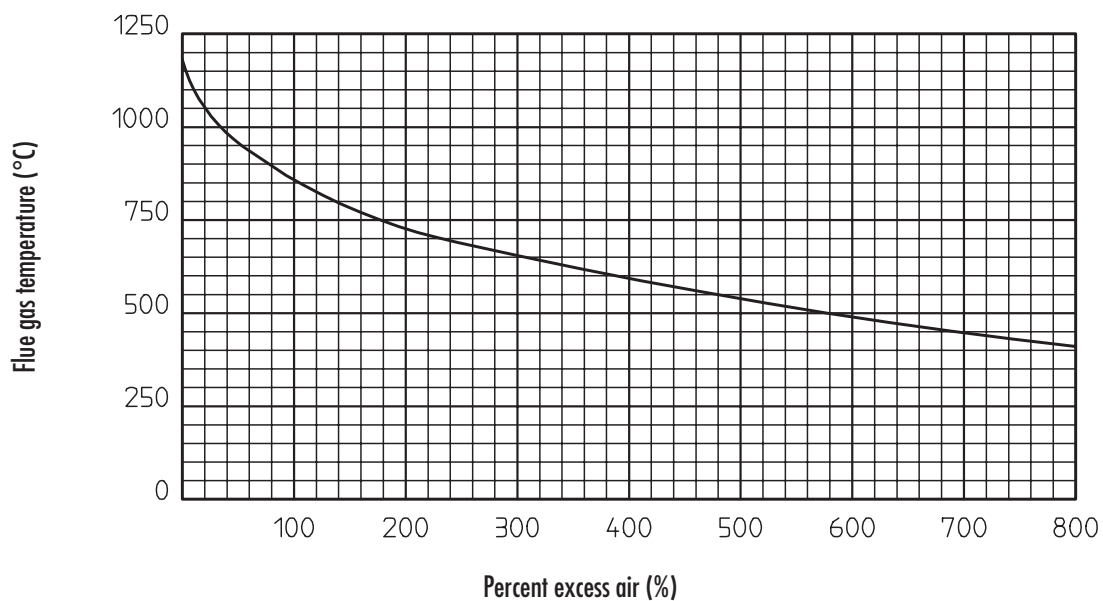
Flame lenght are approximate, referred to burner feeded with natural gas cold air, tested in atmosphere pressure ambient, working at stoichiometric ratio and at nominal capacity.

Values calculated for short flame burners.

(*) L: low velocity flame tube; M: medium velocity; H: high velocity

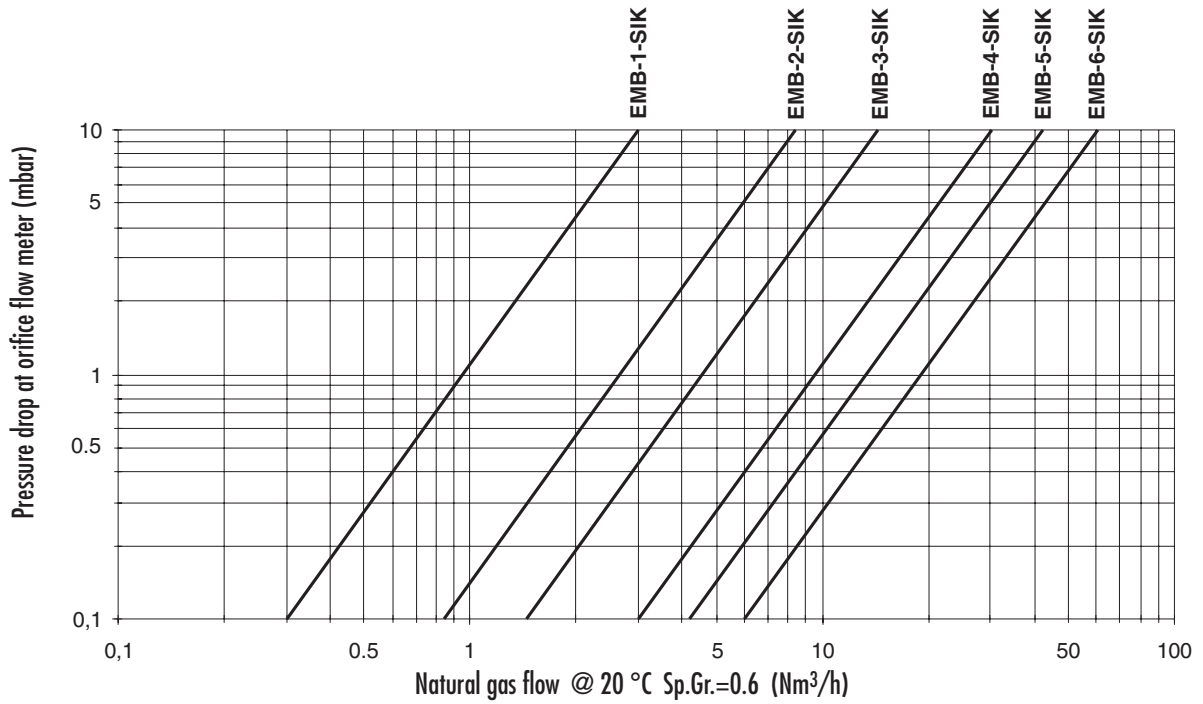
This table is referred to combustion chambers in where pressure is zero.

EXCESS AIR AND TEMPERATURE CHART



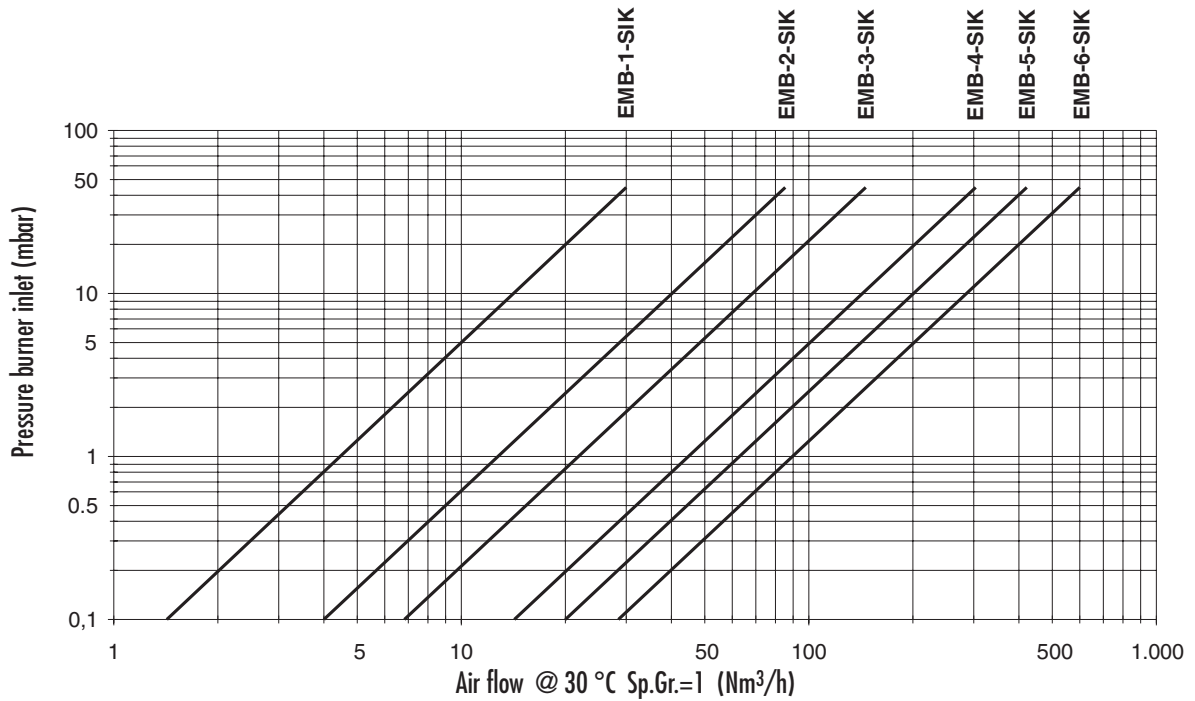
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NATURAL GAS CAPACITY TABLE



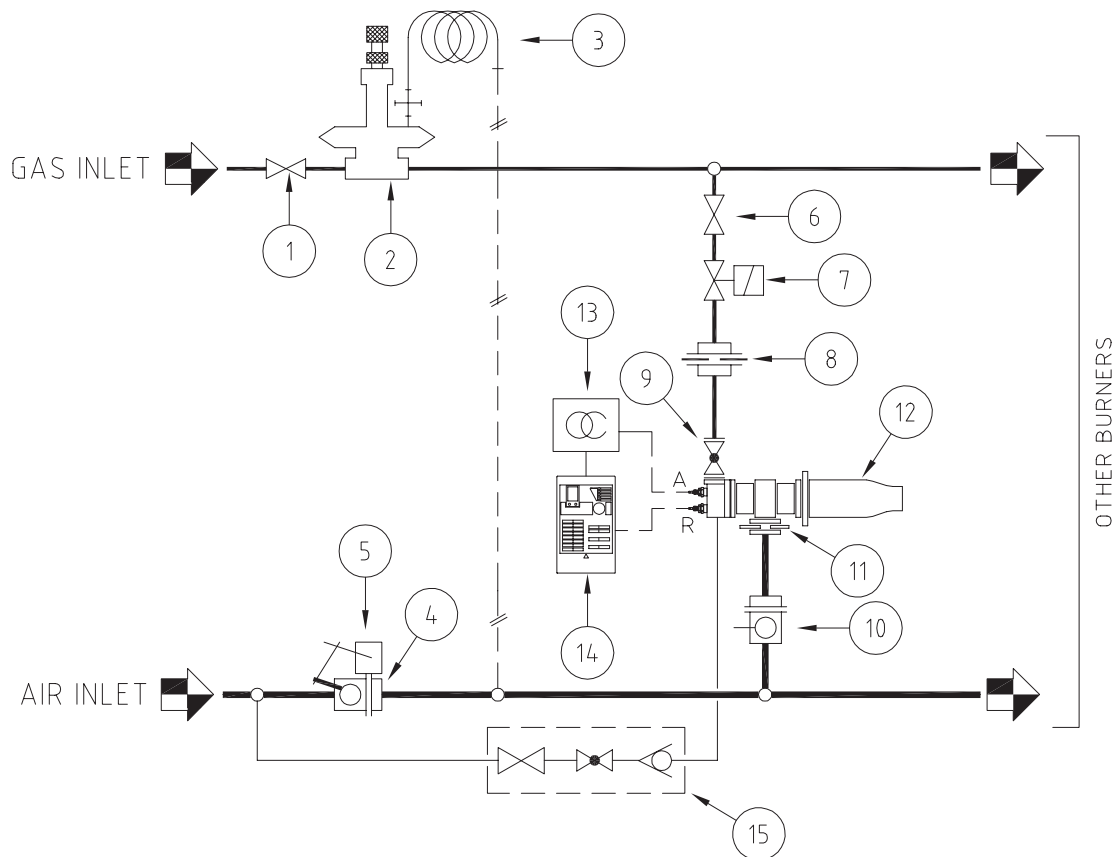
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AIR CAPACITY TABLE



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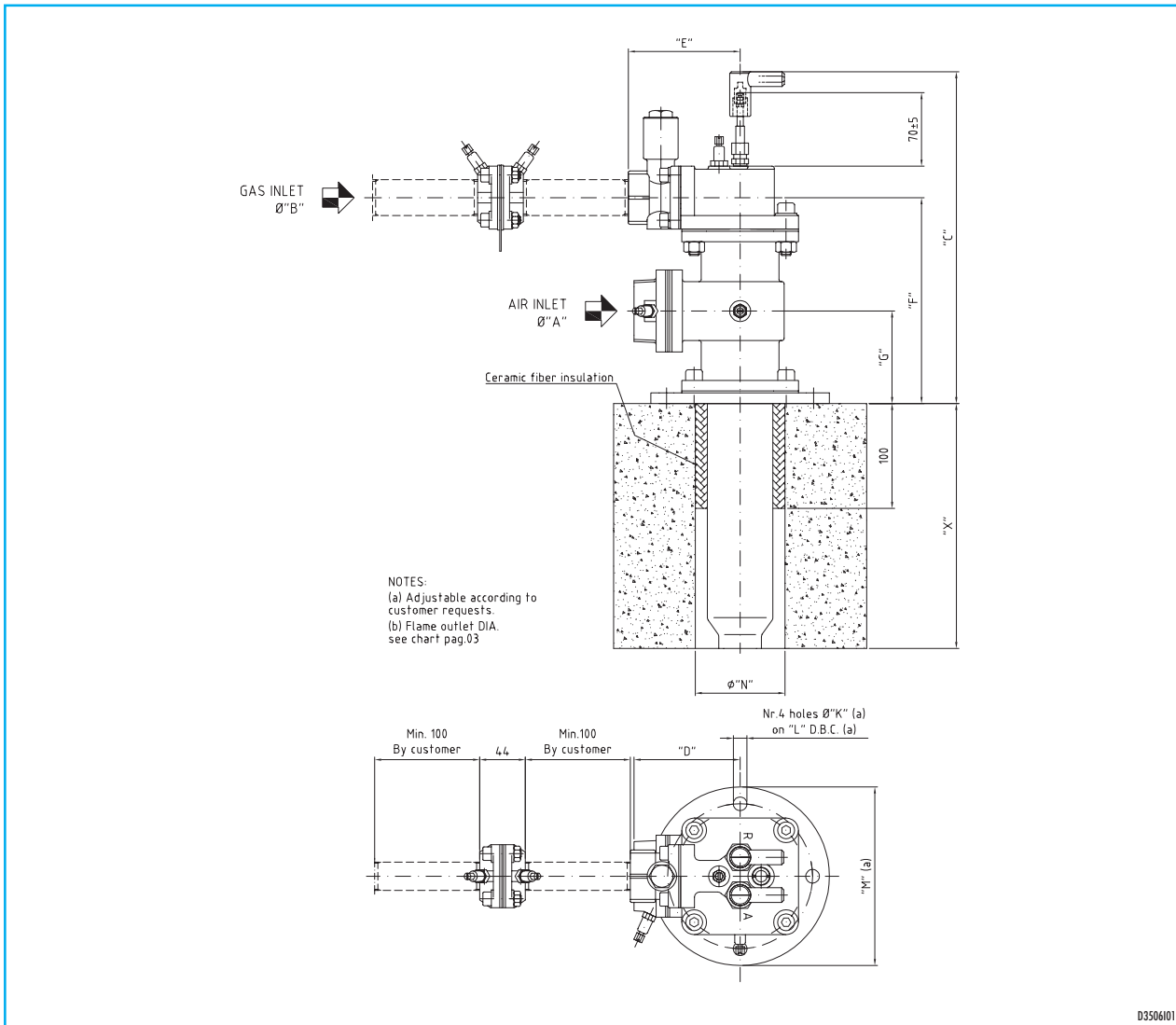
FLOW CHART



Pos.	Model Identification
1	Main gas ball valve
2	Zero regulator
3	Impulse line
4	Motorized air valve
5	Electric control
6	Gas butterfly valve
7	Main burner solenoid safety gas valve
8	Orifice flow meter for ΔP gas
9	Gas adjuster
10	Manual air butterfly valve
11	Orifice flow meter for inlet pressure and ΔP air
12	Burner
13	Ignition transformer
14	Flame detection
15	Premix air regulating group (only L.P. versions)

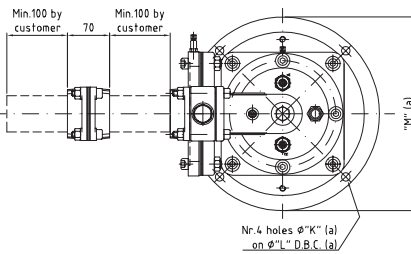
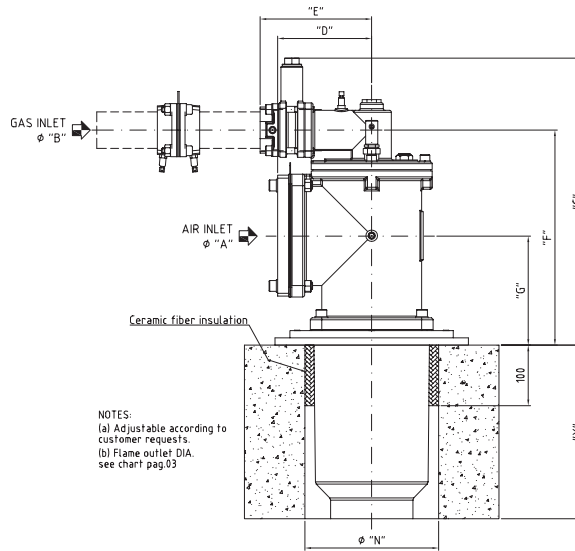
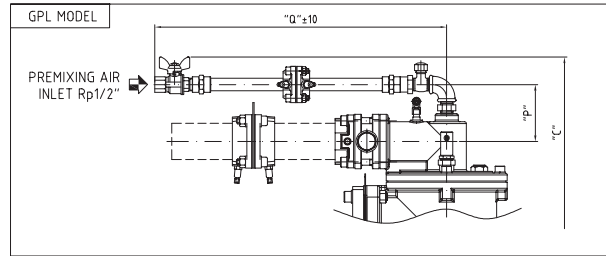
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DIMENSIONS EMB-1-SIK ÷ EMB-4-SIK - CH4 VERSION



Model	Flame tube type	ø A	ø B	C mm	D mm	E mm	F mm	G mm	K mm	L mm	M mm	N mm	X mm
EMB-1-SIK	M1	Rp 1.1/2"	Rp 1/2"	281	87	107	169	88	ø 11	ø 120	ø 150	ø 75	300
EMB-2-SIK	L2	Rp 1.1/2"	Rp 3/4"	317	101	107	197	88	ø 13	ø 140	ø 170	ø 100	300
	M2	Rp 1.1/2"	Rp 3/4"	317	101	107	197	88	ø 13	ø 140	ø 170	ø 100	300
	H2	Rp 1.1/2"	Rp 3/4"	317	101	107	197	88	ø 13	ø 140	ø 170	ø 100	300 - 380 - 500
EMB-3-SIK	L3	Rp 2.1/2"	Rp 1"	272	122	107	208	110	ø 14	ø 200	ø 240	ø 140	280
	M3	Rp 2.1/2"	Rp 1"	272	122	107	208	110	ø 14	ø 200	ø 240	ø 140	280
	H3	Rp 2.1/2"	Rp 1"	272	122	107	208	110	ø 14	ø 200	ø 240	ø 140	280
EMB-4-SIK	M4	Rp 2.1/2"	Rp 1.1/2"	282	122	117	216	110	ø 14	ø 200	ø 240	ø 140	280
	H4	Rp 2.1/2"	Rp 1.1/2"	282	122	117	216	110	ø 14	ø 200	ø 240	ø 140	280

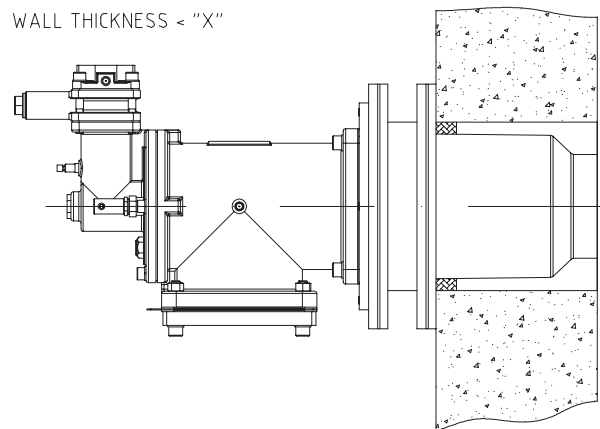
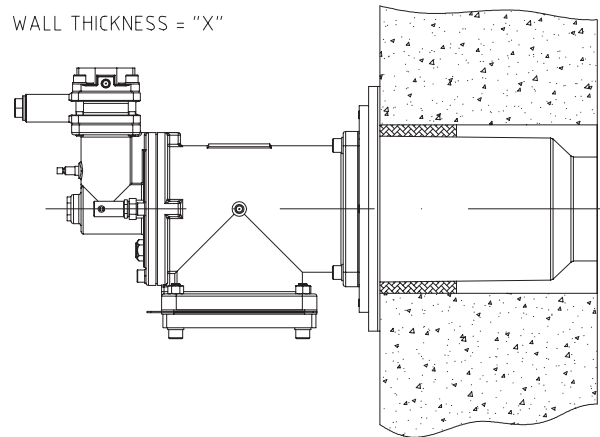
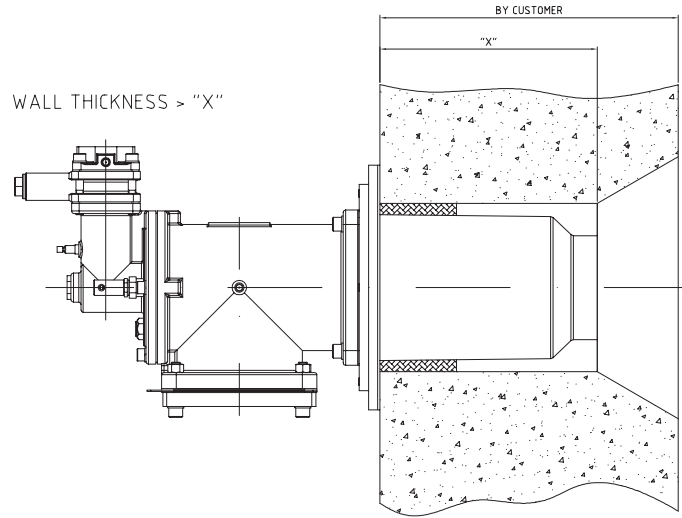
DIMENSIONS (EMB-5-SIK / EMB-6-SIK)



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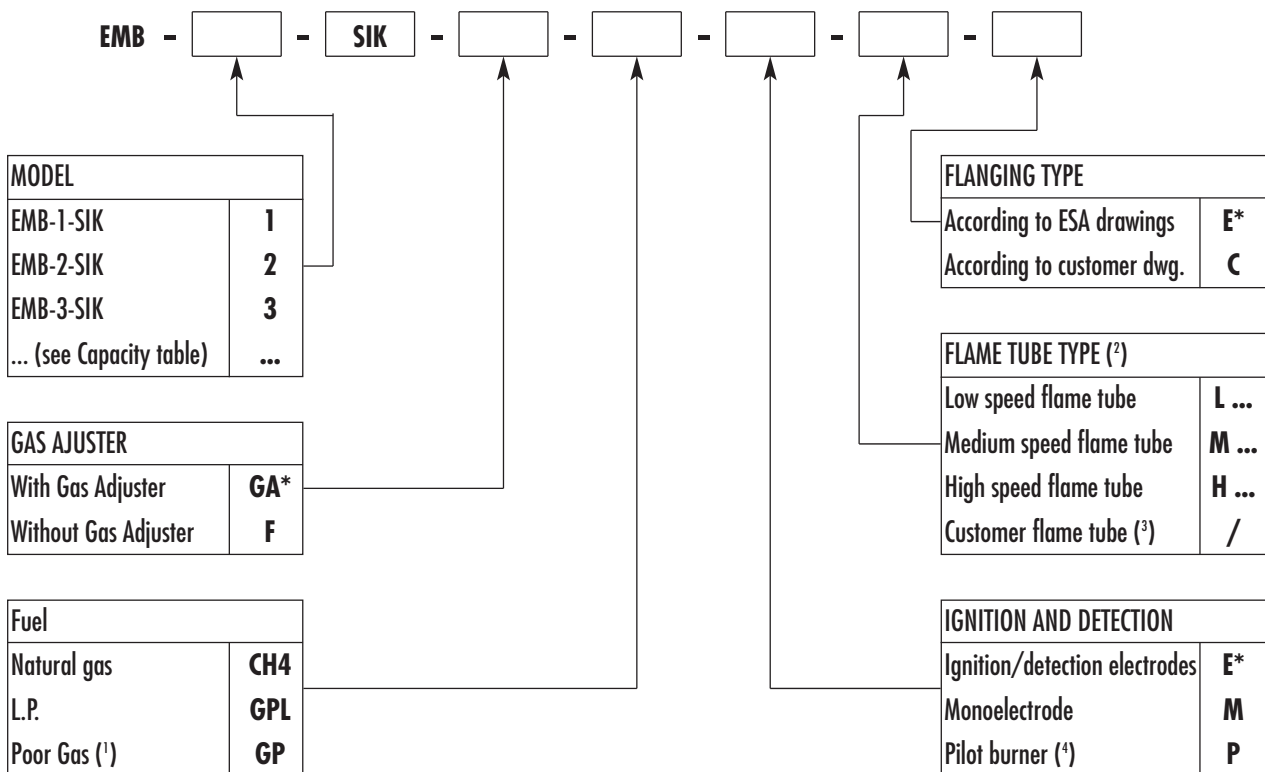
Model	Flame tube type	ϕ A	ϕ B	C mm	D mm	E mm	F mm	G mm	K mm	L mm	M mm	N mm	P mm	Q mm	X mm
EMB-5-SIK-CH4	H5	DN100	Rp 1.1/2"	340	126	135	278	137	ϕ 14	ϕ 295	ϕ 320	ϕ 170	-	-	301
EMB-5-SIK-GPL	H5	DN100	Rp 1"	406	126	135	278	137	ϕ 14	ϕ 295	ϕ 320	ϕ 170	83	406	301
EMB-6-SIK-CH4	H6	DN150	Rp 2"	477	156	186	356	180	ϕ 14	ϕ 295	ϕ 320	ϕ 220	-	-	285
EMB-6-SIK-GPL	H6	DN150	Rp 1.1/2"	495	156	186	356	180	ϕ 14	ϕ 295	ϕ 320	ϕ 220	94	482	285

FURNACE WALL FIXING SCHEME



D3507/03

ORDERING CODE - BURNER



* Standard embodiment of basic equipment.

Note:

- ¹ Special manufacture made according to gas characteristics
- ² See "Flame tube choice"
- ³ Please specify manufacturing characteristics of flame tube
- ⁴ Available only for versions 3, 4, 5 and 6 (see "Ignition and flame detection")