

HOT SHOT HIGH VELOCITY BURNERS

HS SERIES

FEATURES

- | | |
|---|--|
| • Mixer body: | cast iron G25 |
| • Plate: | cast iron G25 |
| • Gas tube: | AISI304 |
| • Pre-heated air: | up to 450 °C |
| • Suitable for different types of gas: | CH ₄ /L.P./propane/etc. |
| • Standard refractory block, max. temp.: | 1750 °C |
| • Capacity range: | 90 to 1500 kW |
| • Speed of combustion products: | 90-100 m/s |
| • Excess air for all models: | 300% |
| • Max. air pressure at burner: | 88 mbar |
| • Excellent flame stability: | excess air
excess fuel
on ratio firing |
| | |
| • Low NO _x level. | |
| • Wall mounting flanges to fasten the block holder to the furnace shell are threaded to allow for positioning of accessories: pilot burner, flame detectors (electrodes or UV scanners), peepsight. | |
| • Separated air and gas inlets, mixing at discharge point, no flashback. | |



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APPLICATIONS

- Generic heat-treat batch furnaces.
- Tunnel type furnaces.
- Movable hearth furnaces.
- Reverberatory furnaces.
- Ladle melting reheating burners.

DESCRIPTION

Hot shot high velocity burners are nozzle-mixing type burners. The air stream and the shape of the refractory cone combine to produce a flame allowing for a high heat penetration inside the combustion chamber and a consequent increase in turndown. In modulating or

excess air systems, quick rotation electric controls are recommended to obtain greater movement of the volumes inside the combustion chambers.



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INSTALLATION

Hot shot high velocity burners are usually mounted on the wall. Other mounting positions are not recommended; specify if other mounting positions are absolutely necessary when you order it. The inside flared face of the refractory block must be flush with the interior furnace wall. The furnace refractory should be set to leave 12.5 mm on all sides of the block. This space should be packed with flexible, refractory, ceramic fiber protected by 20 mm of refractory

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

IGNITION AND FLAME DETECTION

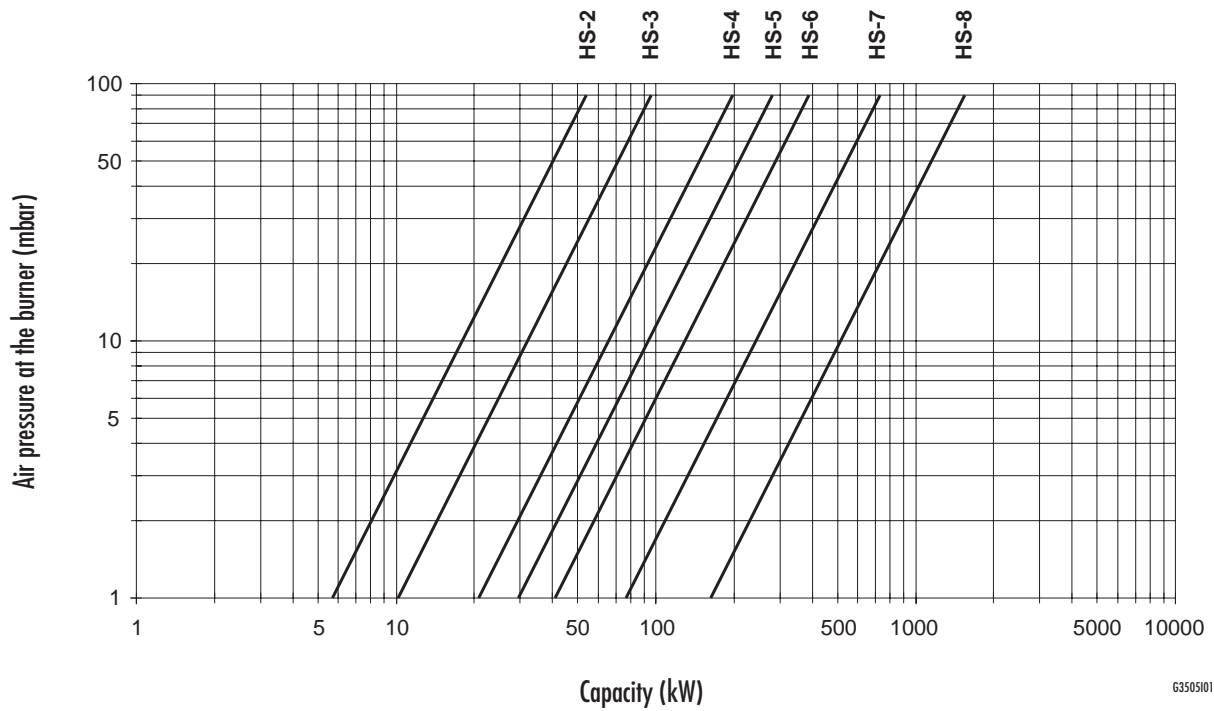
Hot shot high velocity burners must be ignited at low fire. They can be ignited with a blast pilot, PBST, or electrode WAND or DSE. The pilot burner should be cut off after ignition of the main burner therefore flame detection must be carried out by UV-scanners placed in an anticlockwise position as compared to the pilot burner.

An electrode WAND or DSE may be used for ignition of low capacity burners. In this case a UV-scanner must be used. Flame detection systems are required on all burners operating at furnace temperatures below 750°C.

Catalog No.	Pilot burner ignition		Electrode ignition	
	Ignition	Detection	Ignition	Detection
HS-3	P64PBST	UV-2 / 6EN-150 *	DSE-1	UV-2
HS-4	P64PBST	UV-2 / 6EN-300 *	DSE-3	UV-2
HS-5	P64PBST	UV-2 / 6EN-300 *	DSE-3	UV-2
HS-6	P64PBST	UV-2 / 6EN-300 *	DSE-3	UV-2
HS-7	P86PBST	UV-2 / 6EN-300 *	(not available)	(not available)
HS-8	P86PBST	UV-2 / 6EN-300 *	(not available)	(not available)

In most cases, we suggest you to make flame detection through UV- scanner. In some particular cases, it is possible to use continue pilot burner with detection electrode.

CAPACITY TABLE



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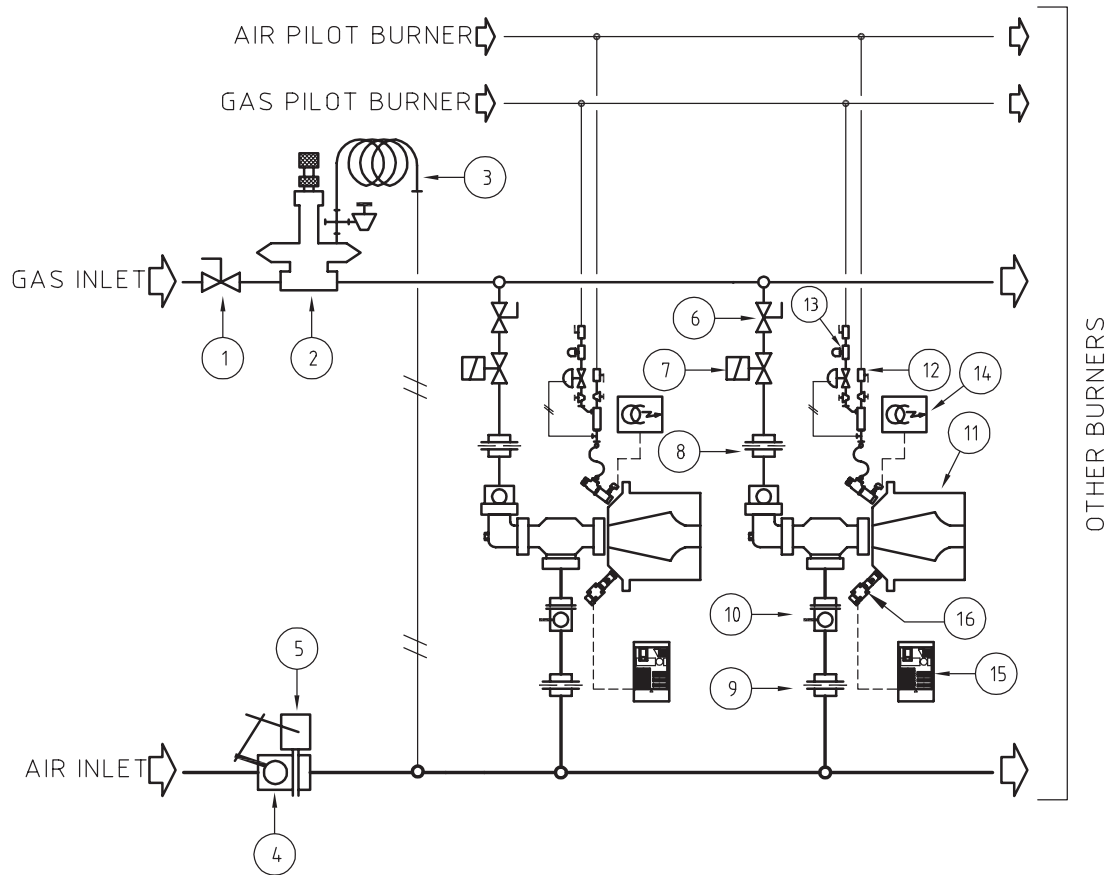
CAPACITY TABLE

Catalog no.	Capacity (kW) ΔP Air=88 mbar	Flame length mm	Peepsight	
			Low temp.	High temp.
HS 3	94	360 ÷ 600	6 PSLT	6 PSHT
HS 4	192	560 ÷ 750	6 PSLT	6 PSHT
HS 5	273	660 ÷ 1.000	6 PSLT	6 PSHT
HS 6	378	710 ÷ 1.250	6 PSLT	6 PSHT
HS 7	710	1.000 ÷ 1.500	6 PSLT	6 PSHT
HS 8	1510	1.140 ÷ 2.000	6 PSLT	6 PSHT

NOTE:

Flame lenght are approximate, referred to burner feeded with natural gas, free air, working at stoichiometric ratio and at nominal capacity.

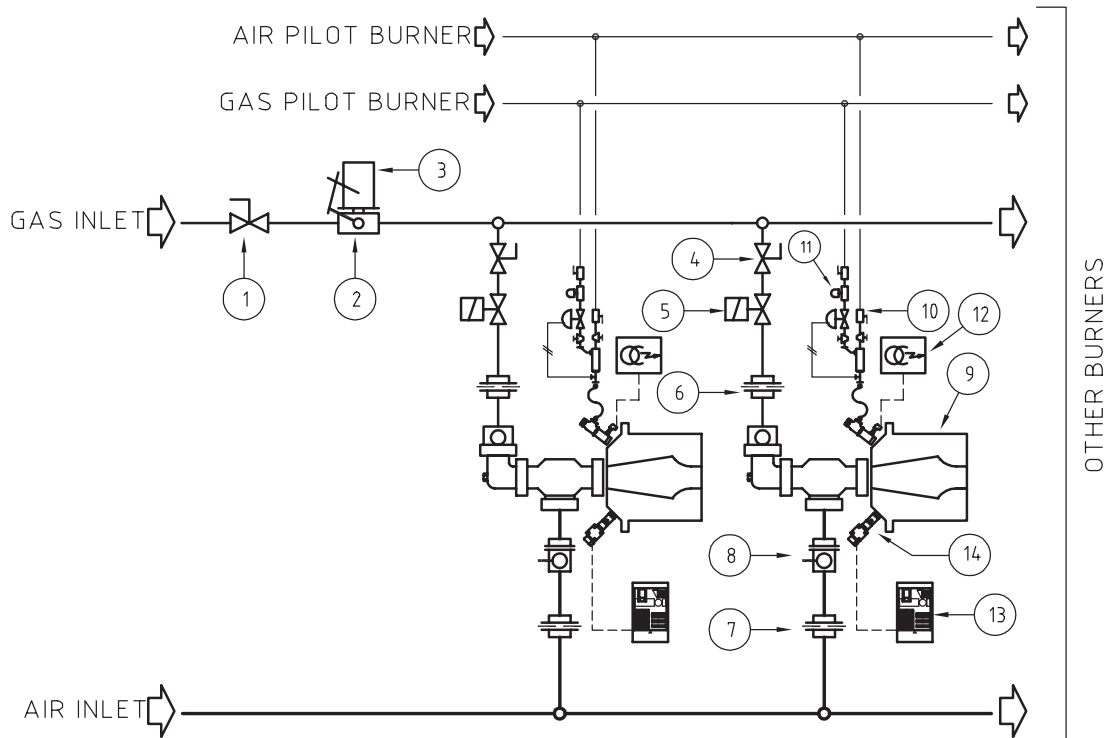
FLOW CHART (ON RATIO OPERATION)



Pos.	Model identification	Pos.	Model identification
1	Gas ball valve	9	Orifice flow meter for ΔP air
2	Balanced zero regulator	10	Manual air butterfly valve
3	Impulse line	11	Hot shot high velocity burners
4	Motorized air butterfly valve	12	Pilot burner
5	Electric control	13	Pilot burner safety solenoid gas valve
6	Gas ball valve at each burner	14	Ignition transformer
7	Main burner safety solenoid gas valve	15	Flame detection
8	Orifice flow meter for ΔP gas	16	UV-scanner

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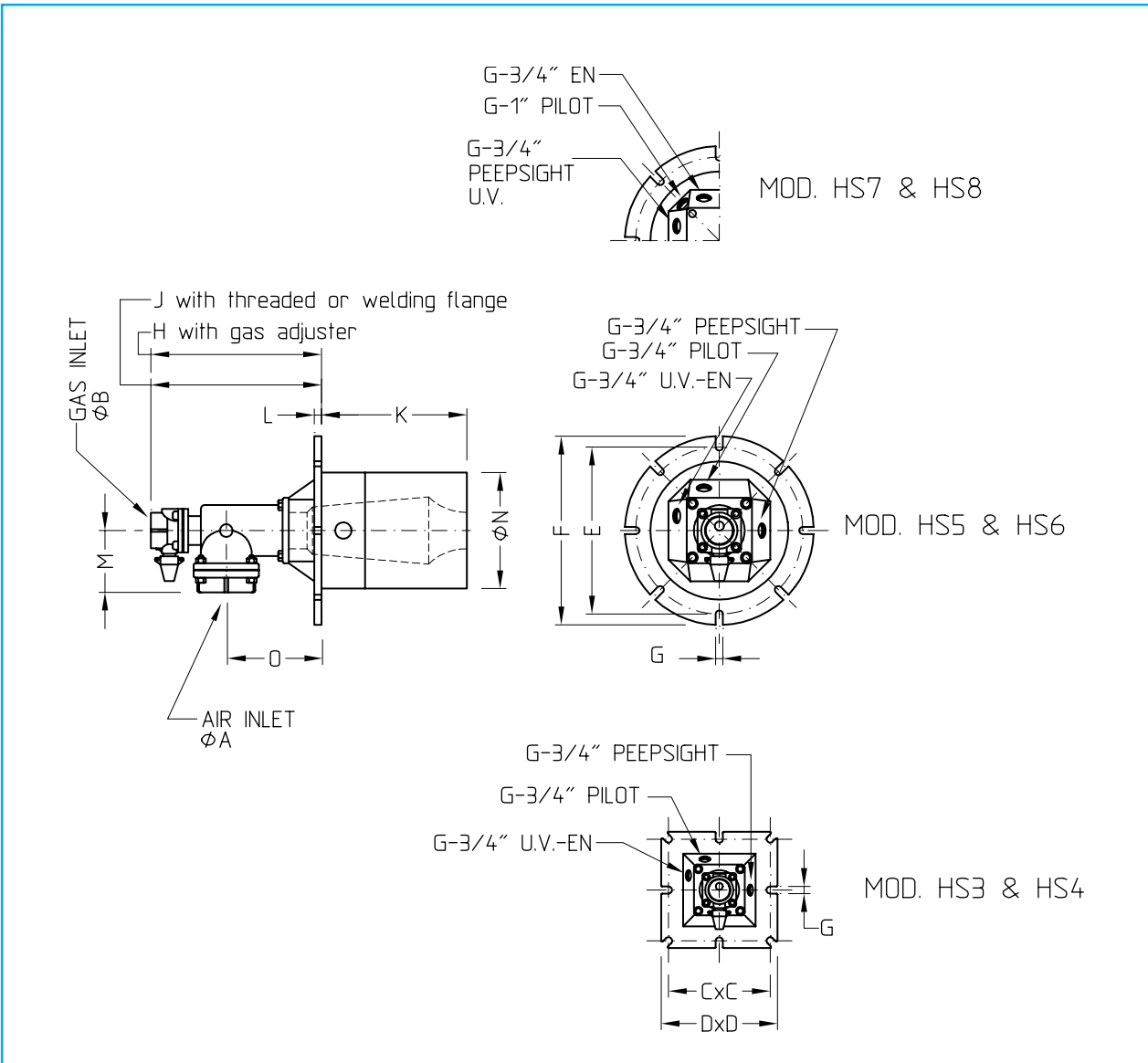
FLOW CHART (EXCESS AIR)



Pos.	Model identification	Pos.	Model identification
1	Gas ball valve	8	Manual air butterfly valve
2	Motorized butterfly air valve	9	Hot shot high velocity burners
3	Electric control	10	Pilot burner
4	Gas ball valve at each burner	11	Pilot burner safety solenoid gas valve
5	Main burner safety solenoid gas valve	12	Ignition transformer
6	Orifice flow meter for ΔP gas	13	Flame detection
7	Orifice flow meter for ΔP air	14	UV-scanner

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DIMENSIONS

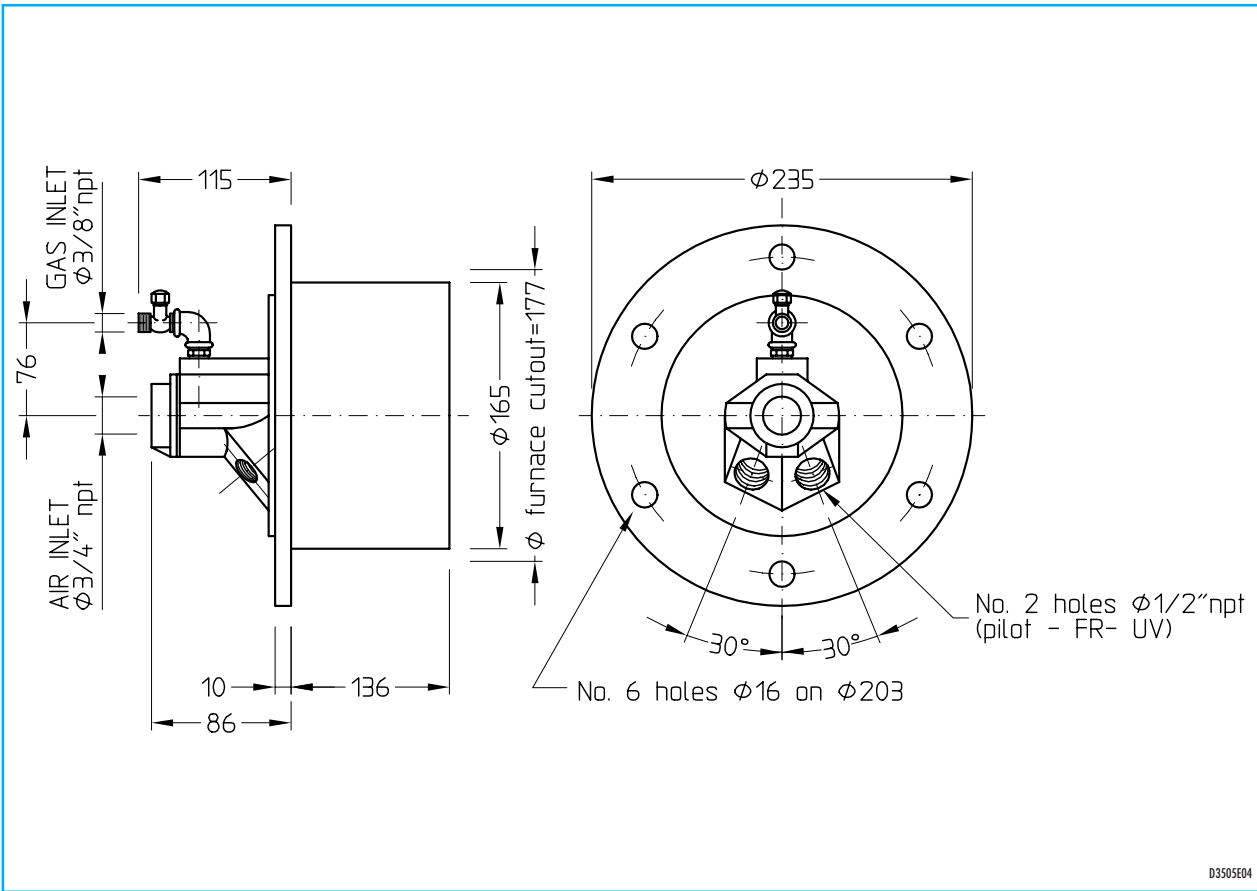


Catalog no.	A air	B gas	C mm	D mm	E mm	F mm	G mm	H mm	J mm	K mm	L mm	M mm	N mm	O mm	Mass kg
HS - 3	G-1.1/2"	G-1"	222	254	—	—	14	210	184	229	10	79	178	121	25
HS - 4	G-2"	G-1"	222	254	—	—	14	235	210	229	10	86	178	130	24
HS - 5	DN80	G-1.1/4"	—	—	289	330	16	286	260	254	13	108	203	152	32
HS - 6	DN80	G-1.1/2"	—	—	289	330	16	286	260	254	13	108	203	152	32
HS - 7	DN100	G-2.1/2"	—	—	349	406	16	419	356	305	13	137	298	216	82
HS - 8	DN150	G-3"	—	—	457	508	16	473	394	330	13	175	400	229	100

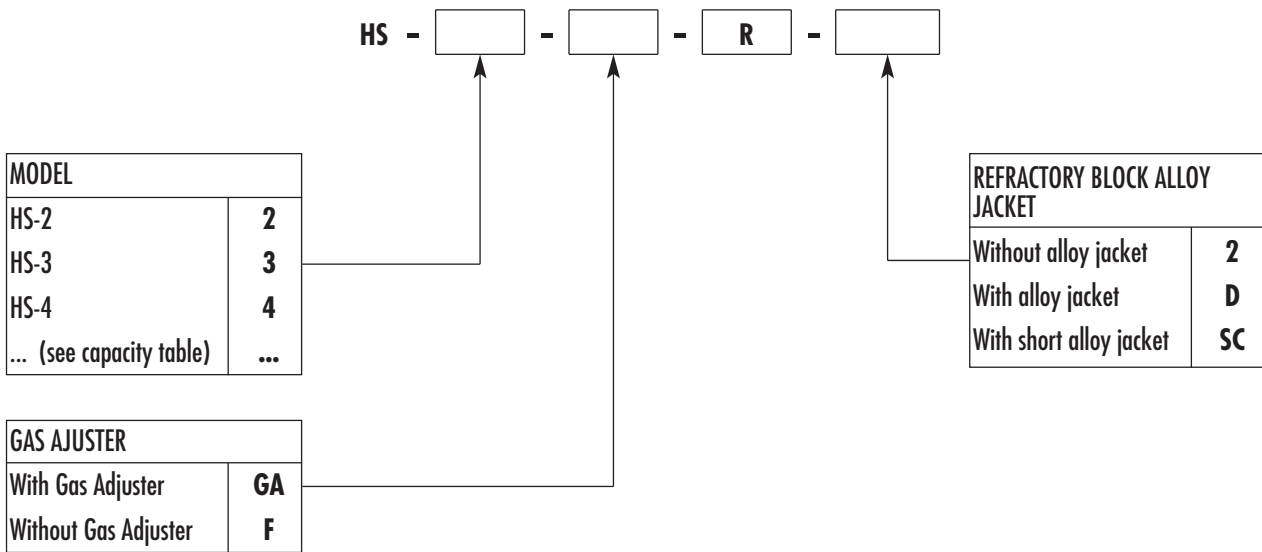
* H values correspond to HS-...-GA execution with gas adjuster.
 * J values correspond to HS-...-F with threaded or welding flange.

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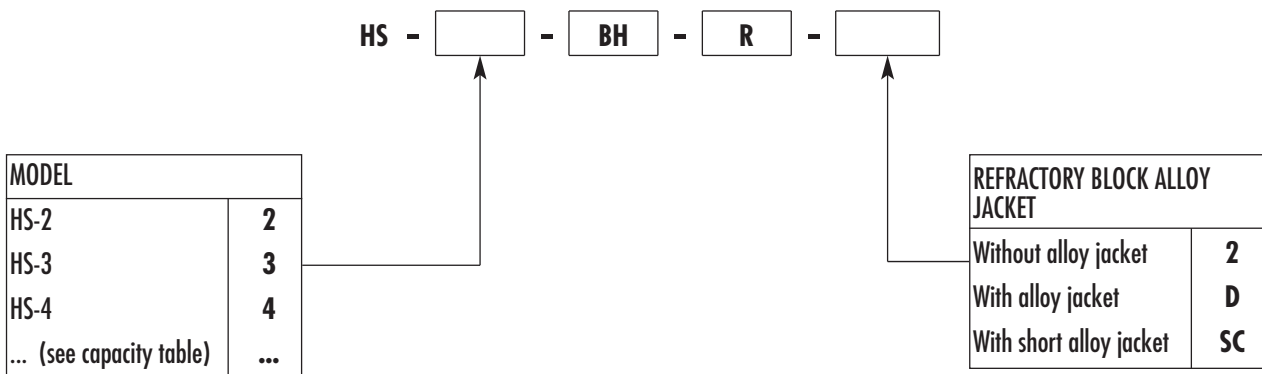
DIMENSIONS (HS-2)



ORDERING CODES - BURNER



ORDERING CODES - REFRACTORY BLOCK ONLY



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.