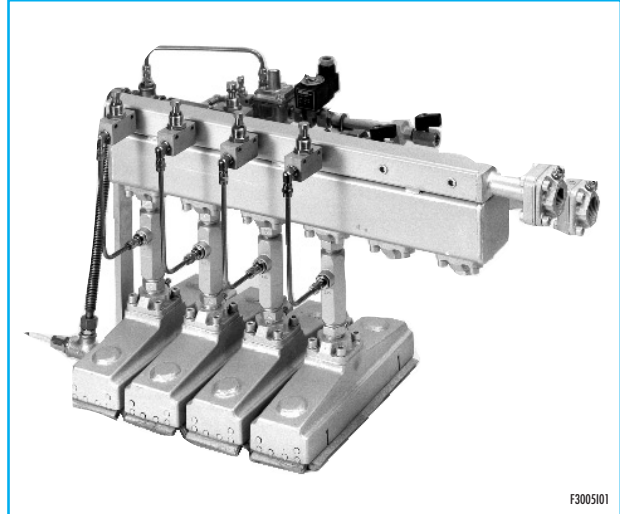


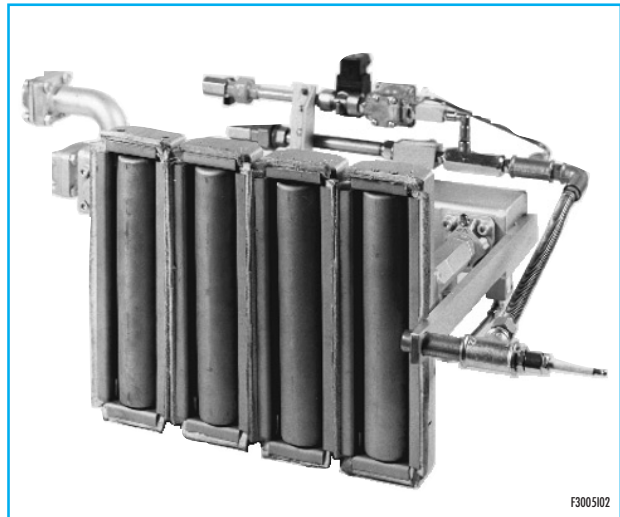
# INFRA-RED BURNERS BR-70 SERIES

## FEATURES

- Mixer body: AISI304
- Radiant surface: inconel
- Mixer: brass
- Low air and gas pressure required: 40 mbar
- Capacity of one radiant panel: 5 kW
- Adequate to different types of gas: CH<sub>4</sub>/L.P./propane/etc.
- High excess air.
- Wide turndown range.
- Modular design allows for burner groupings.
- High efficiency.
- Compact, light-weighted, small-sized burners supplied with adjustable metering orifice, flame and sight electrodes and single electrode pilot.



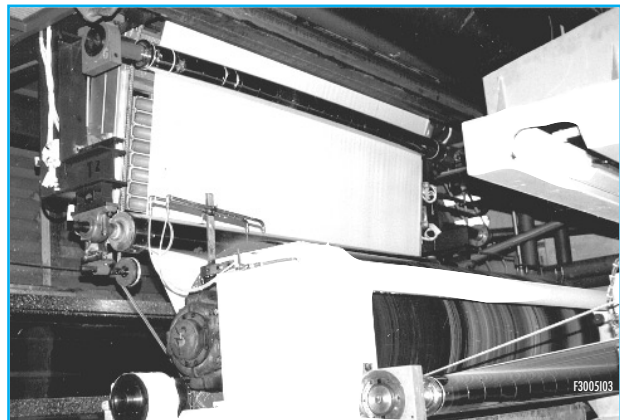
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## APPLICATIONS

- Paper drying.
- Strip processing (copper, steel).
- Glass, rubber, resin processing.



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## DESCRIPTION

It is well known that for most industrial heat processing operations (treatment and drying of paper, glass, steel and copper strips), the wave lengths between 2 and 6 microns are most favorable. Many materials used in industrial processes will absorb heat from infra-red radiation sources faster than from convection or conduction sources. Standard flame combustion chambers are poor in this radiation, therefore in industrial processing metal shield or special refractory material are used which emit radiation of the wave lengths required if adequately heated (760°C÷870°C for the metallic reflector). At adequate temperature, infra-red burners have about 92% of the total radiant energy above 2.0 microns. Improvements in the creation of metallic and refractory material has allowed for the construction of better radiant panels lately. In particular the use of infra-red energy has increased as a result of a more widespread use of gas fuels and natural gas in industrial processes. Gas burners results are not as positive as infra-red burners and are not as

efficient as I-R burners. Moreover metallic burners at the moment are made of metallic nets which with the passing of time, become curbed or of porous material which deteriorates. Another serious problem of gas burner is flashback when the mixture temperature is as high as that of self-ignition. Differences in temperatures of the heated surfaces may cause non homogeneous emissions of the radiant energy. A gas burner was then built equipped with some accessories, capable of emitting thermic energy in the form of infra-red radiation yet avoiding the recurrent problems experienced with traditional burners.

BR-70 burners are characterized by great efficiency and may reach a specific capacity of as much as 5 kW, because the mixer is immediately upstream of the burner and flashback is thus prevented. The particular internal shape then generates a vortex which ensures homogeneous radiation.

## INSTALLATION

BR-70 burners may be mounted to operate in any position. Sections are easily coupled together to form continuous lines of radiating surface thanks to flanges.

Continuous lines of burners already mounted may be supplied on request with air and gas inlet flanges and mounting plates according to the customer's need.

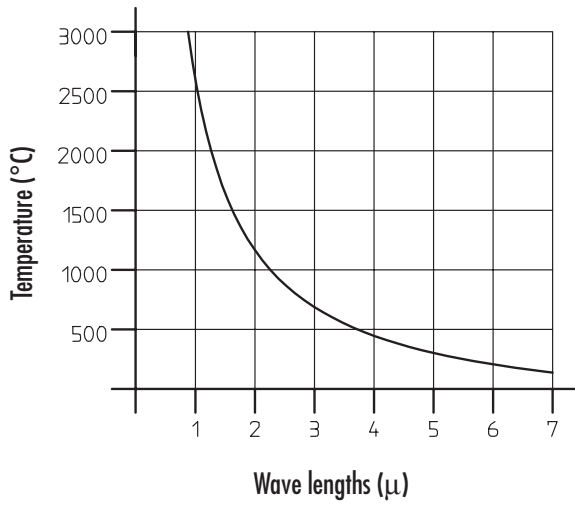
## IGNITION AND FLAME DETECTION

Firing of BR-70 burners is done by a blast pilot, model PBST/X operated on a continuous basis and flame detection is done on the pilot flame itself. Flame travel from section to section and between

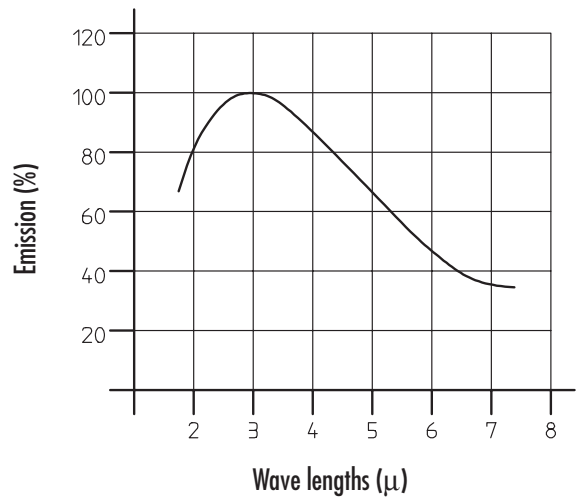
lines is instantaneous so that single point ignition and flame failure protection may be applied. A direct spark electrode, UV-scanner or optical pyrometer may be supplied on request.

Catalog No.	Pilot burner ignition		Electrode ignition	
	Ignition	Detection	Ignition	Detection
BR-70	P42PBST-W/X	Wand	Wand	Wand

## TEMPERATURE AND EMISSION CHART



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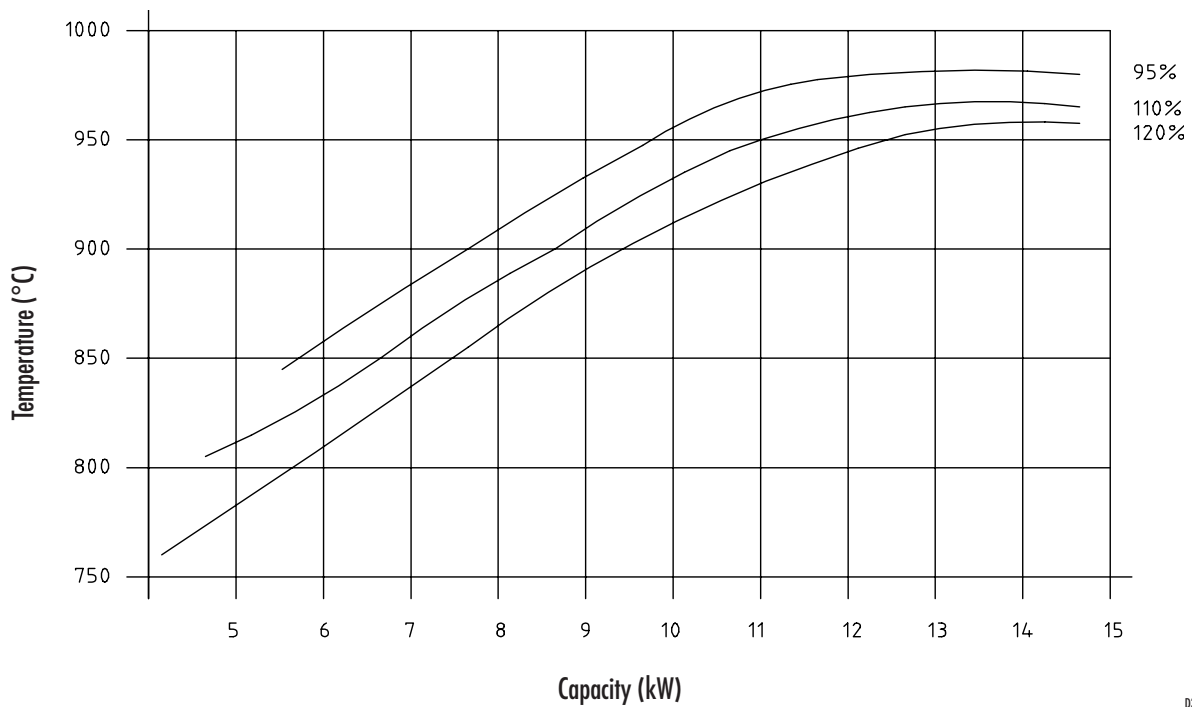
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Ratio between the radiant screen temperature in °C and the wave lengths of the emission in μ (K: temperature in kelvin):

$$^{\circ}\text{C} = \text{K} - 273 = \frac{2880}{\mu} - 273$$

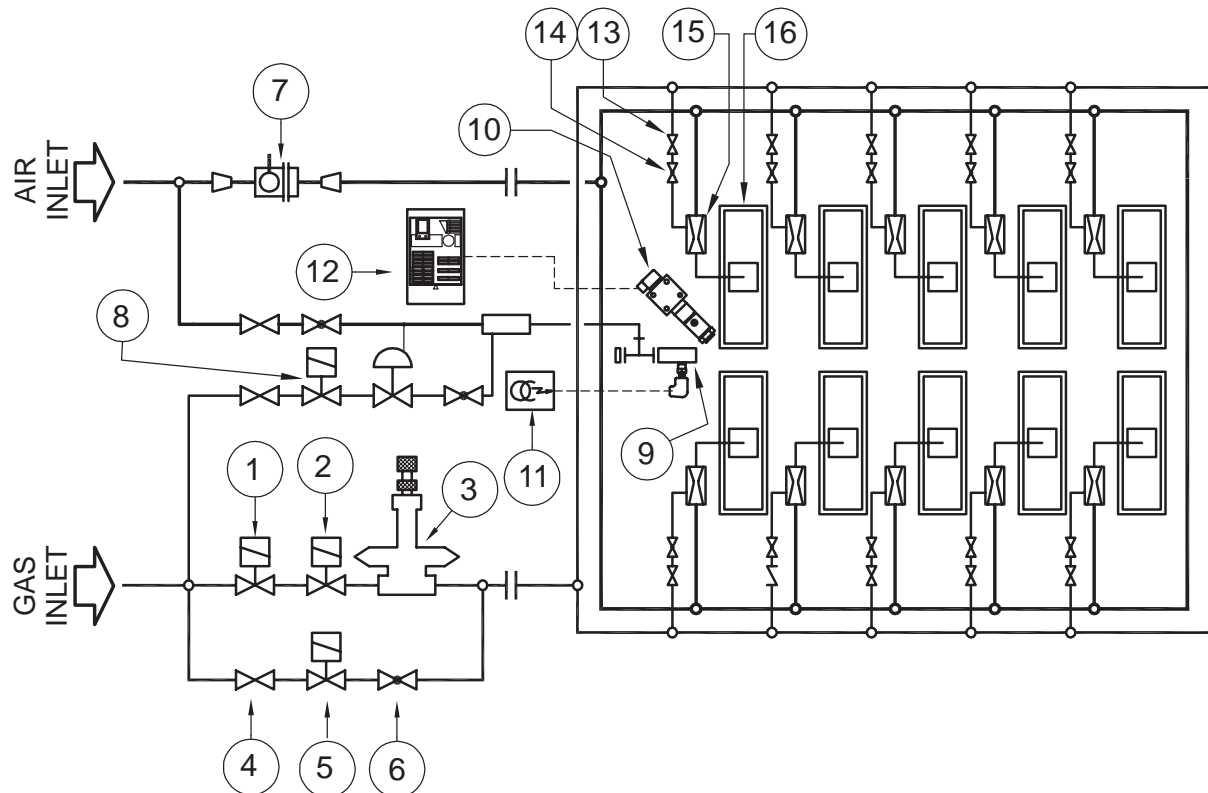
Curve of the emission of a black body having peak wave lengths of about 3μ and the percentual relative emission

Chart of the heat flow according to the temperature of the reflector and of the excess air in the mixture



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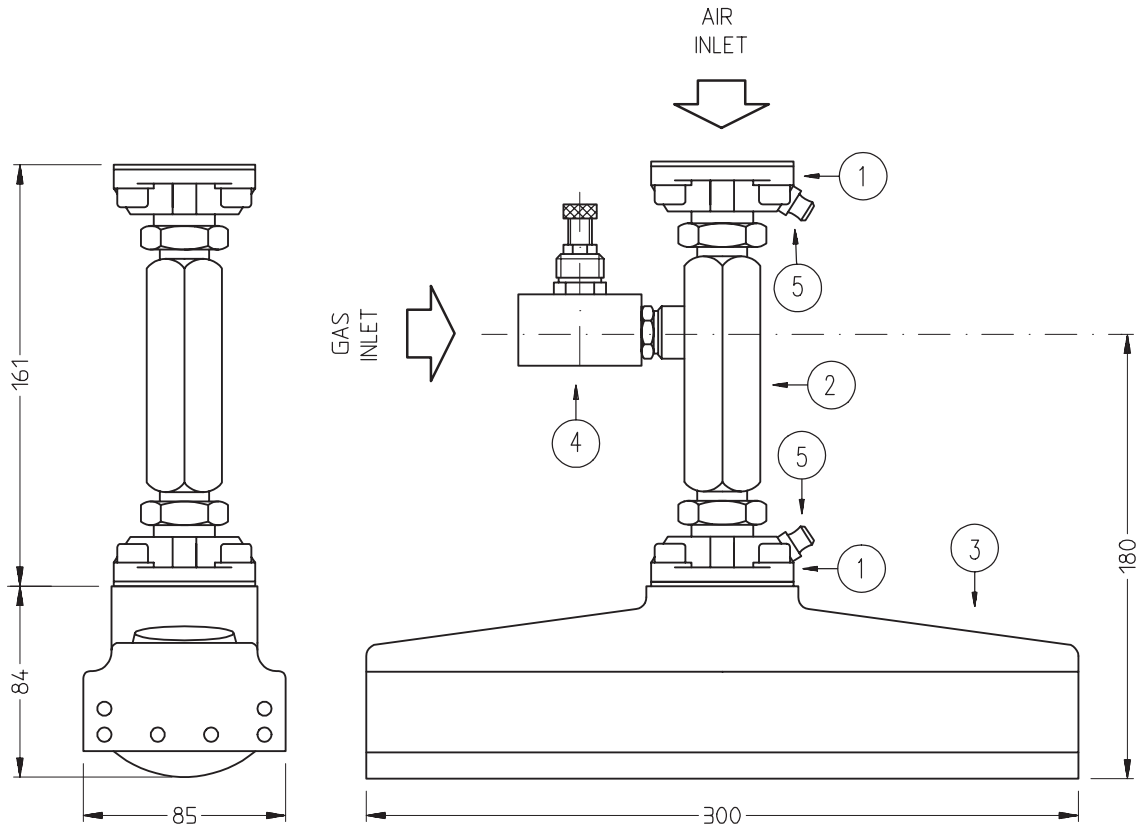
## FLOW CHART



Pos.	Model identification
1	Main solenoid gas valve
2	Safety solenoid gas valve
3	Zero regulator
4	By-pass gas ball valve
5	By-pass solenoid gas valve
6	By-pass adjuster
7	Manual butterfly air valve
8	Pilot burner solenoid gas valve
9	Pilot burner
10	UV-scanner
11	Ignition transformer
12	Flame detection
13	Gas ball valve at single burners
14	Gas adjuster at single burners
15	Venturi mixer
16	Infra-red burner

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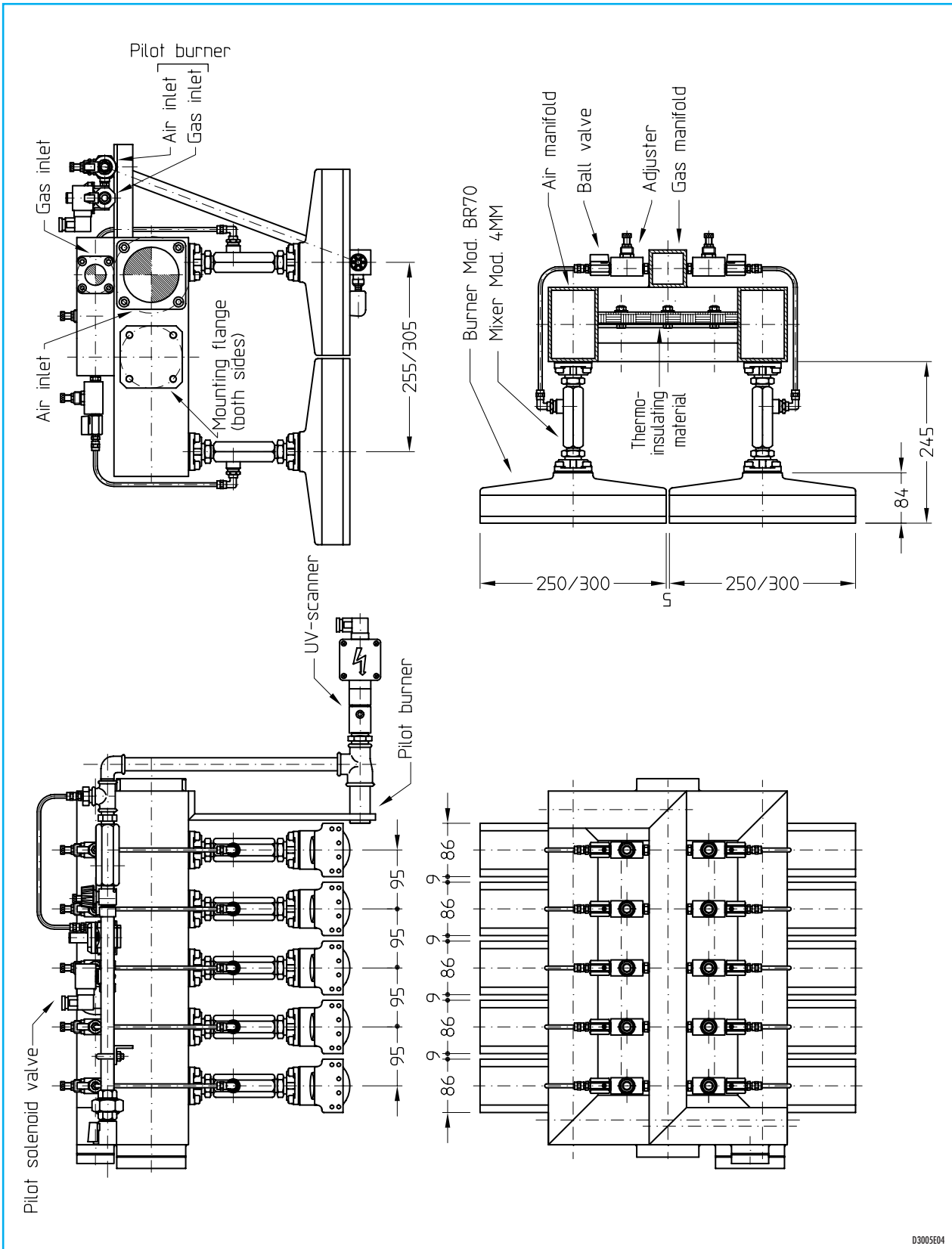
## DIMENSIONS



Pos.	Model identification
1	Threaded flange Mod. 106 PF dia. 3/4"
2	Mixer Mod. 4MM
3	Infra-red burner Mod. BR70/300
4	Gas adjuster Mod. RFO/344
5	Pressure taps dia. 1/8"

D3005106

## DIMENSIONS



D3005E04



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](http://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.