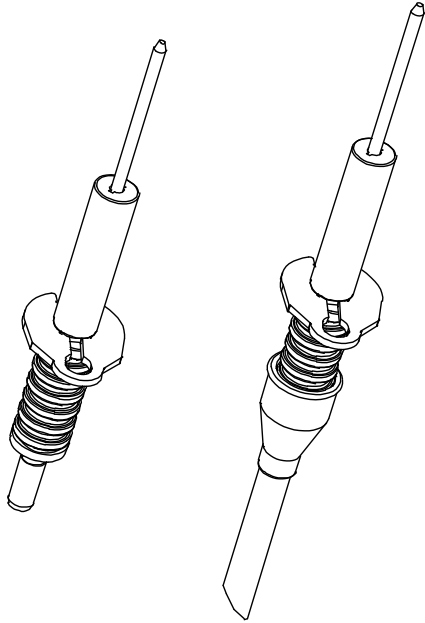


# IGNITION AND FLAME DETECTION ELECTRODES

## Series SA....



### DESCRIPTION

The characteristics and typology of the materials used to produce these electrodes make them suitable to be used as ignition electrodes in general, but also as flame sensors in gas burners and in appliances where temperature can reach almost 300°.

When used as flame detection electrodes, they exploit the electrical conductivity of the flame and profit by the fact that a substantial difference between the mass of the electrode (in contact with the flame) and the burner mass allows current to flow prevalently from the electrode to the burner metal housing. In order to obtain a good flame signal the burner housing should be connected correctly to earth.

The generated current, usually amounting to some  $\mu\text{A}$ , depends on the electrode mass-to-burner mass ratio, on electrode position in respect of flame and on combustion quality.

**Caution:** Make sure that the detection electrode is far enough from the ignition electrode in order to prevent the electrical discharges, generated for the burner ignition, from striking the ground through the detection electrode, thus damaging the connected flame detection device .

### FEATURES

The electrodes are made of a kanthal metal rod, a glazed alumina ceramic insulating part and of a galvanized iron fixing bracket (utility model registration number of bracket/ceramic fastening system: VR2007U000021).

The electrical wiring is carried out by means of  $\varnothing$  4 mm and  $\varnothing$  6,35 mm terminals, 2,8 and 4,8 and 6,3 mm Fast-on or by a high-insulation 5 mm diameter silicone cable,

The ceramic shape (which has a section with variable diameter) is designed to increase the superficial distance between bracket and connection terminals (compared to electrodes which have traditional ceramics with constant diameter). This shape, together with the new blocking system bracket/ceramic ( deposited technology), allows getting the following advantages:

- High temperature operation ambient  
electrodes with cable < 270°C  
electrodes with terminal < 350°C
- excellent insulation between ceramic and iron fixing bracket
- excellent insulation between fixing bracket and connection terminals (Terminals, Fast-on or Cable)
- high torsion and tensile resistance;
- resistance in high temperature ambient .

The electrode is formed of:

#### Ceramic

Glazed alumina  
Diameter 7 mm

#### Bracket

Galvanized iron

#### Rod

Kanthal A1  
Diameter 2 mm

#### Connection terminals

Cylindrical diameter (T4 – T6) 4 or 6,35 mm

Male Fast-on (F2,8 – F4,8 – F6,3)  
2,8x0,8 o 4,8x0,8 o 6,3x0,8 mm

Silicone cable diameter (C) 5 mm

*Electric insulation* 24 kV

Dimensions and/or Standard Brahma's electrode features are shown in table 1 and 2 .

## OVERALL DIMENSIONS

The main variable and constant overall dimensions of the electrode are shown, as an example, in Figure 1 and 2, while the fixing bracket is illustrated in Fig. 3.

Fig. 1 Electrode with terminal: type SA..T..., SA..M... or with Fast-on: type SA..F... (See table.1)

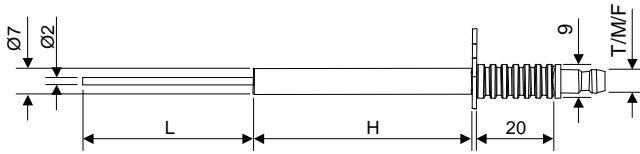
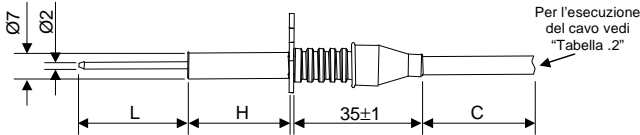


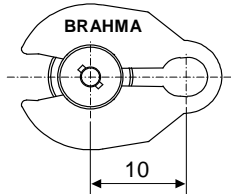
Fig. 2 Electrode with silicone cable: type SA..C... (See table. 2)



Legend:

- H** = Ceramic length starting from bracket;
- L** = Rod length out of ceramic;
- T/ M/ F** = Terminal type;
- C** = Silicone cable;

Fig. 3 10 mm Fixing bracket.



## CONSTRUCTION FEATURES

Tables .1 and .2 show the possible solutions regarding connections to the transformer or to the board and contain the designation legend of the electrodes.

### ELETTRODES WITH TERMINALS/FAST-ON X<sub>1</sub>X<sub>2</sub>X<sub>3</sub> X<sub>4</sub>

- X<sub>1</sub>**= **SA**: Standard Wheelbase fixing bracket 10 mm (Fig. 3)
- X<sub>2</sub>**= **27**: Length of ceramic bracket 27 mm (H Fig.1-2)
- 58**: Length of ceramic bracket 58 mm (H Fig.1-2)
- 67**: Length of ceramic bracket 67 mm (H Fig.1-2)
- X<sub>3</sub>**= Finishing of the opposite side of the rod
- T4**: Ø 4 terminal (T Fig.1)
- T6**: Ø 6,35 terminal (T Fig.1)
- M4**: M4 threaded terminal (T Fig.1)
- F2,8**: 2,8x0,8 mm Fast-on (F Fig.1)
- F4,8**: 4,8x0,8 mm Fast-on (F Fig.1)
- F6,3**: 6,35x0,8 mm Fast-on (F Fig.1)
- X<sub>4</sub>**=Length of straight rod out of ceramic expressed in mm (L Fig.1-2)
- P**: Bend rod out of ceramic

Table .1

For instance, The designation "**SA58T6 P**" means that the electrode has the following features:

- 10 mm wheelbase fixing bracket (SA);
- Ceramic length (58 mm) starting from the bracket (58);
- Finishing of rod's opposite side, Ø 6,35 mm terminal(T6);
- Bend rod out of ceramic (P);

### ELETTRODES WITH CABLE X<sub>1</sub>X<sub>2</sub>X<sub>3</sub> X<sub>4</sub> X<sub>5</sub>/X<sub>6</sub>

- X<sub>1</sub>**= **SA**: Standard wheelbase fixing bracket 10 mm (Fig. 3)
- X<sub>2</sub>**= **27**: length of ceramic starting from rod 27 mm (H Fig.1-2)
- 58**: length of ceramic starting from rod 58 mm (H Fig.1-2)
- 67**: length of ceramic starting from rod 67 mm (H Fig.1-2)
- X<sub>3</sub>**= Finishing of the opposite side of the rod
- C**: silicone cable (C Fig.2)
- X<sub>4</sub>**=Length of straight rod out of ceramic expressed in mm(L Fig.1-2)
- P**: bend rod out of ceramic
- X<sub>5</sub>**= Length of silicone cable expressed in mm (C Fig.2)
- X<sub>6</sub>**= Possible finishing/ protection for silicone cable on the connections side
- TGL**: Sheared cable (no unsheathing – no peeling)
- Z**: Peeled cable
- 2**: 2,8x0,5 mm female fast-on
- 4**: Ø 4 terminal
- 6**: 6,35x0,8 mm female fast-on
- 8**: 4,8x0,8 mm female fast-on
- PG5**: Rubber protection (see fig. 4)
- PS4**: Heat-shrinkable silicone protection Ø 4 (see fig. 5)
- TRM**: Protection with heat-shrinkable tube (see fig. 6)

Table .2

For instance, the designation "**SA27C 50 300/2 TRM**" means that the electrode has the following :

- 10 mm wheelbase fixing bracket (SA);
- Ceramic length (27 mm) starting from bracket (27);
- Finishing of rod's opposite side, silicone cable (C);
- 50 mm straight rod out of ceramic (50);
- Length of cable out of electrode 300 mm (300);
- Cable provided with 2,8x0,5 female Fast-on (2);
- Fast-on protection with heat-shrinkable tube (TRM);

Fig. 4 Rubber protection (PG5)

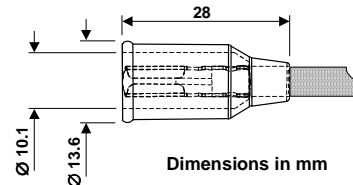


Fig. 5 Silicone protection for Ø 4 terminals (PS4)

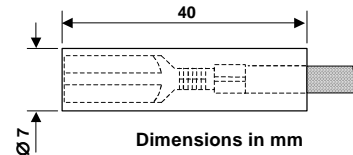
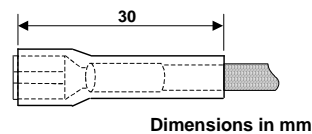


Fig. 6 Protection with heat-shrinkable tube (TRM)



## ACCESSORIES

In case the electrodes have an ignition function it may be necessary to use a resistor in order to reduce the EMC; the use of electrodes equipped with terminal "T" (Fig. 1) together with high voltage cables available with straight plug (PD series) or 90°bent plug (PC series) is advisable for this application. These types of cables can be also provided by 1 kΩ, 2,7 kΩ e 4,7 kΩ resistors. Detailed information is available in the cables series PC../PD.. data sheet.

**ATTENTION -> Company Brahma S.p.A. declines any responsibility for any damage resulting from the Customer's interfering with the device**

### BRAHMA S.p.A.

Via del Pontiere, 31  
37045 Legnago (VR)  
Tel. +39 0442 635211 - Telefax +39 0442 25683  
http://www.brahma.it  
E-mail : brahma@brahma.it

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