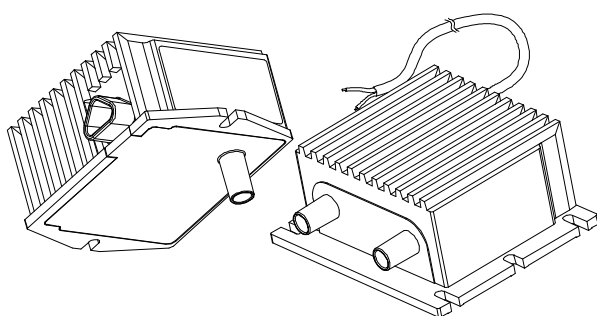


ELECTRONIC IGNITION TRANSFORMERS

Type TA/TB....S.



DESCRIPTION

These ignition transformers are suitable to equip gas forced draught burners and light or heavy oil burners in domestic and industrial applications. Thanks to their electrical characteristics, they can replace our induction ignition transformers type T18, with the advantage of much more reduced overall dimensions.

The working principle is based on a high frequency oscillator; the voltage generated by the oscillator is then increased by means of a transformer with ferrite nucleus, reaching output voltage values up to 17 kV.

All types can be fitted with an E.M.C. filter to minimize the emission of electromagnetic interference. In this way, these transformers can be in compliance with the EMC directive 2004/108/EC without using any external filtering systems.

FEATURES

Followings are the main features of this range of transformers:

- **available with inbuilt E.M.C. filter;**
- reduced weight and overall dimensions;
- high efficiency and ignition power;
- low consumption;
- single-pole or double-pole high voltage output;
- different fixing and connecting systems.

TECHNICAL DATA

- **Supply voltage:** 220-240V/50-60Hz
- on request: 110-120V/50-60Hz
- **Operating cycle:** 100%
- **Operating temperature range:** -10°C +60°C
- **Protection degree:** IP00
- **Recommended distance between the electrodes:** 3÷5 mm
- **Max. ignition cable length:** 1,5 m
- **Standard supply cable length:** 560 mm
- **Weight:** 530 g approx.
- **For further details see table on page 2.**

	TA/TB1...S	TA1/TB1...SF	TA2/TB2...S	TA2/TB2...SF
Number of poles	1	1	2	2
Output peak voltage kV (1)	17	17	2x12	2x12
Output peak current mA (2)	49	49	60	60
Output effective current mA (2)	17	17	22	22
Output voltage frequency kHz (1)	6	6	6	6
Output voltage frequency kHz (2)	10	10	10	10
Inbuilt filter		•		•
Consumption VA (3)	30	30	35	35

(1) Open-circuit secondary with 30 pF load.

(2) Short-circuit secondary.

(3) 10 mm spark gap.

CONSTRUCTION

The working principle based on the use of a high frequency electronic oscillator has enabled to design a device with reduced dimensions and weight, but with high ignition power.

The electronic circuit and the transformer with ferrite nucleus are bathed in a special kind of resin with a very good thermal conductivity and a specific coefficient of expansion, which grants a high resistance to temperature variations and to the overload due to protracted working.

An inbuilt varistor protects the device from possible voltage transients in the electric network.

The transformers of this series are available in different versions as regards the number of poles, the position of the isolators, the type of connection, the power supply connection and the availability of an E.M.C. filter; to this purpose, see the following diagram:

TA/TB X X X X S X

- : without filter;
F: with filter;
- C: output with cable (Fig. 1 and 2);
P: output with outlet (Fig. 3);
- V: screw fixing system (Fig. 4);
T: fixing system with terminal $\varnothing 4$ (Fig. 4);
- L: lateral isolators (Fig. 1 and 2);
S: bottom isolators (Fig. 1 and 2);
- 1: single pole;
2: double pole;

For instance, the designation **TB2STPSF** indicates that the transformer is provided with the following:

- two lateral fixing loops (B);
- double-pole high voltage output (2);
- isolators on the bottom side (S);
- connection with terminal $\varnothing 4$ mm (T);
- power supply outlet connection (P);
- E.M.C. filter (F);

OVERALL DIMENSIONS

The figures on the right side of this page show the main overall dimensions of the transformers. In particular, Fig. 1 illustrates types TA, whereas Fig. 2 refers to types TB. The transformers can be fixed by means of screws type M4x10.

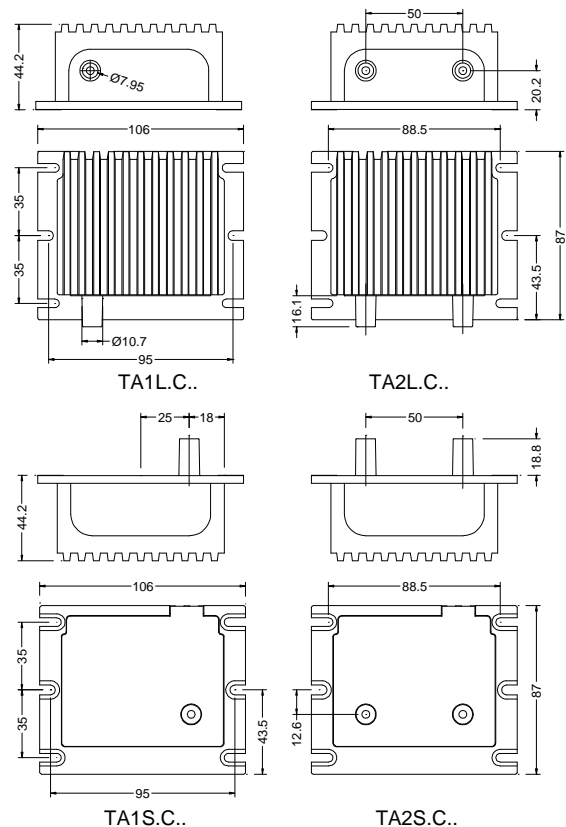


Fig. 1

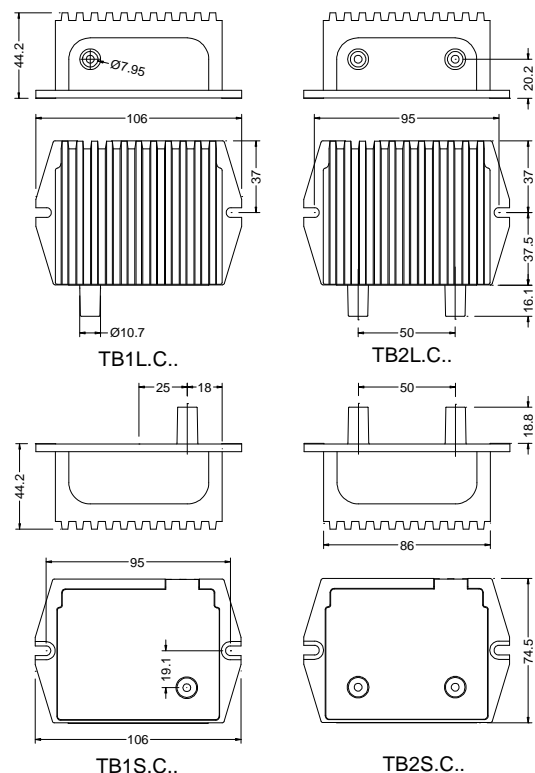


Fig. 2

CONNECTION

All transformers can be supplied with cable or power supply outlet; see, for instance, Fig. 3 which shows the power supply outlet of a type of transformer fitted with isolators on the bottom side.

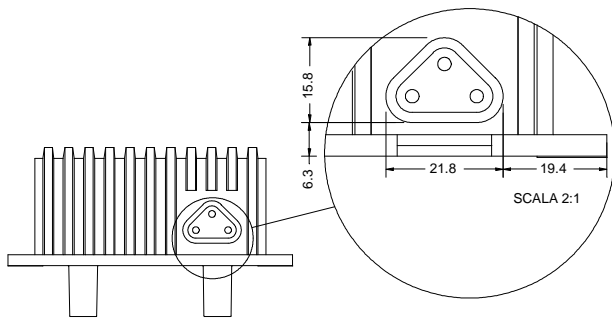


Fig. 3

The connection of high voltage cables can be of two types, according to the terminals used inside the isolators: connections can be executed by means of a screw or of a cylindrical terminal with 4 mm diameter, as shown in Fig. 4. Cables with different lengths and terminations can be supplied upon request.

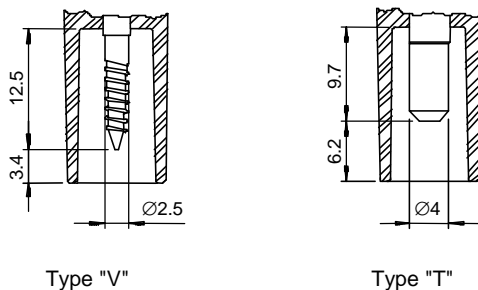


Fig. 4

INSTALLATION



- Caution! There might be dangerous voltages.
- Connect and disconnect the ignition transformer only after cutting off the mains supply.
- Respect the applicable national and European standards (e.g. EN 60355-1 / prEN 50165) concerning electrical safety.
- Make sure that the earth of the ignition transformer and the earth of the electrical system are well connected.
- The device can be mounted in any position.
- Avoid putting high voltage cables close to other cables.
- Grant a protection degree suitable to the application.

E.M.C. FILTER

With particular reference to the use of ignition transformers in oil or gas burners, you will find here below some remarks about the application of these devices, resulting from the research carried out by the Brahma Testing Laboratory. This Laboratory, in compliance with CISPR-16, is adequately equipped for the measuring of electromagnetic interference in boilers, burners, hot air generators and heating systems in general, according to EN55014-1.

On the basis of the EMC directive 2004/108/EC, the above mentioned products have to be subjected to the measuring of conducted electromagnetic interference on the connection terminals, irradiated by the supply cable; the measuring is carried out considering a frequency range from 150KHz to 30MHz in case of conducted interference, and from 30 to 300MHz in case of irradiated interference.

Electromagnetic interference is mainly due to power variations in the electric circuits (i.e. current peaks); the greater and faster these variations, the higher the interference. In the above-mentioned applications, the main source of interference is the discharge of the ignition transformer: the irregular discharge current causes the emission of interference on a wide frequency range.

To keep the products within the limits allowed by the standard in force, a special capacitive-inductive filter is usually mounted in series to the mains supply, in order to reduce electromagnetic interference with frequency values up to 20MHz. For a frequency range beyond this limit, it is useful to mount a resistor of a few kΩs in series to the ignition electrodes, in order to reduce the peak current generated whenever an electric arc is produced. The stronger the stray capacitance between the group of ignition electrodes and cables and the burner metal casing, the higher the current peak.

The resistor is more effective if it is placed near the point of spark generation.

Besides the obvious advantage of reduced assembly costs, the fitting of an E.M.C. filter inside the ignition transformer ensures the elimination of electromagnetic interference in close proximity to its source, without involving the remaining electric circuit.

Finally, the following solutions are always effective to reduce the emission of electromagnetic interference:

- ignition cables should be as short as possible (this will reduce stray capacitance and the possibility that ignition cables act as antennas, transferring electromagnetic interference to the nearby cables);
- use distributed resistance cables or mount a resistor near the electrodes (few kΩs can reduce the current peak);
- let ignition cables follow a separate path, close to ground planes (this will reduce the influence of electromagnetic interference on the remaining electric cables);
- realize a single earth centre, preventing the earth conductors from creating circular paths.