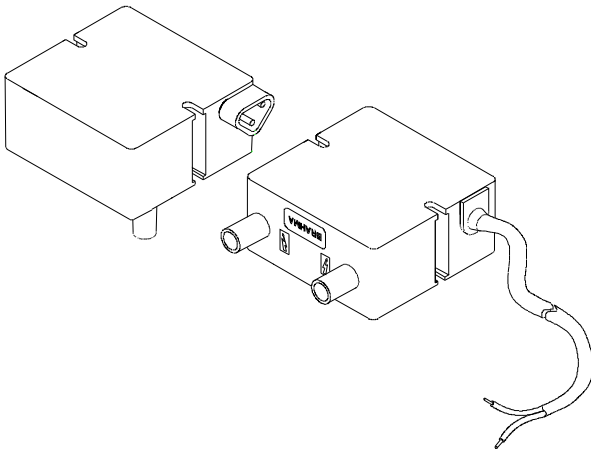


ELECTRONIC IGNITION TRANSFORMERS

Types TD....A.



DESCRIPTION

Keeping the technical features of the TC...A series unchanged, this new series of electronic ignition transformers has more reduced overall dimensions and is particularly suitable to equip forced draught burners for gas and light or heavy oil, for civil and industrial applications.

The working principle is due to the generation of high frequency voltage by means of an electronic oscillator; the resulting voltage is then increased by using a winding with ferrite nucleus. In this way it is possible to reach output voltage values up to 15 kV.

All types can be supplied with E.M.C. filter to minimise the emission of electromagnetic interference. In this way this series of electronic transformers is in compliance with the directive 89/336/EEC without the use of external filters.

The transformers of this series can also be supplied for permanent operation (100% duty cycle). For further information see our technical leaflet on TD....S transformers.

FEATURES

Followings are the main features of this range of transformers:

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

	TD1...A	TD1...AF	TD2...A	TD2...AF
Number of poles	1	1	2	2
Output peak voltage kV (1)	15	15	2x12	2x12
Output effective voltage kV (1)	9	9	2x5	2x5
Output peak current mA (2)	45	45	55	55
Output effective current mA (2)	25	25	30	30
Output voltage frequency kHz (1)	6	6	6	6
Output voltage frequency kHz (2)	10	10	10	10
Inbuilt filter		•		•
Consumption VA (3)	45	45	55	55

- (1) At 30pF loading
(2) Short-circuit output
(3) 10mm spark gap

TECHNICAL DATA

- **Supply voltage:** 220/240V-50/60Hz
on request: 110/120V-50/60Hz
- **Operating cycle:** 50% in 2 minutes
- **Operating temperature range:** -10°C +60°C
- **Protection degree:** IP00
- **Recommended spark gap:** 3-5 mm
- **Max. ignition cable length:** 1.5 m
- **Standard length of supply cable:** 560mm
- **Weight:** about 360g

CONSTRUCTION

The working principle based on the use of a high frequency electronic oscillator has allowed to design a device with limited 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 good thermal conductivity and a specific coefficient of expansion, which grants high resistance to temperature variations and to the overload due to protracted working. An inbuilt varistor protects the appliance from possible voltage transients in the electric network.

The transformers of this series are available in different executions as regards the number of poles, the position of the isolators, the connection of high voltage output, the connection of supply voltage and the presence of E.M.C. filter. On this subject, see the following descriptions:

Standard versions

TD X X X X A

- C: supplied with cable (Fig. 1-Fig. 2);
P: supplied with outlet (Fig. 4);
- V: screw fixing system (Fig. 5);
T: fixing system with terminal Ø 4 (Fig. 5);
- L: lateral isolators (Fig. 1);
S: bottom isolators (Fig. 2);
- 1: single pole;
2: double pole;

Versions with inbuilt E.M.C. filter

TD X X X X AF

- C: supplied with cable (Fig. 1-Fig. 2);
P: supplied with outlet (Fig. 4);
- V: screw fixing system (Fig. 5);
T: fixing system with terminal Ø 4 (Fig. 5);
- L: lateral isolators (Fig. 1);
S: bottom isolators (Fig. 2);
- 1: single pole;
2: double pole;

For instance, the part reference TD2STPAF indicates that this type of transformer is provided with two bottom isolators, terminal fixing system and E.M.C. filter and is supplied by outlet.

OVERALL DIMENSIONS

Fig.1 and Fig.2 show the main overall dimensions of these transformers.

To fix the transformers screws type M4x40 or M5x40 can be used.

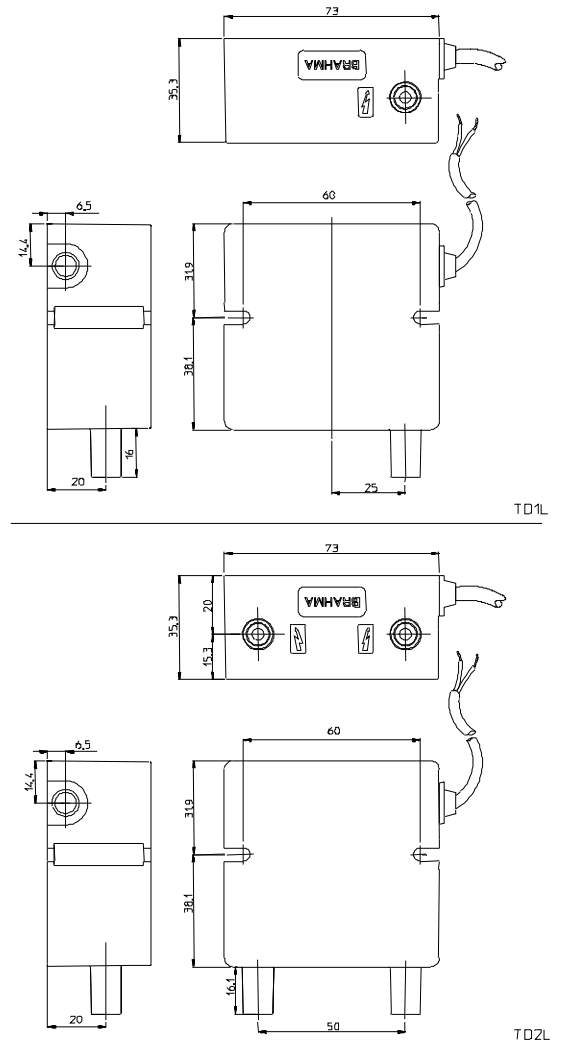


Fig.1

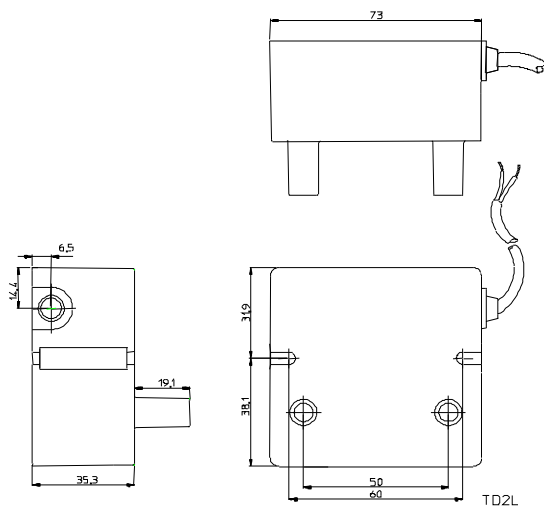
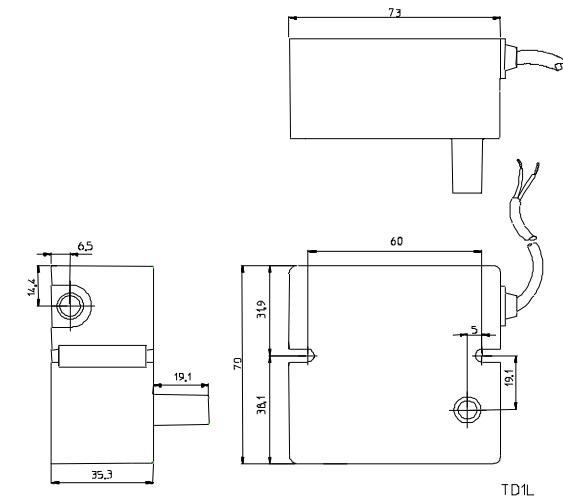


Fig. 2

CONNECTION

This range of ignition transformers has been designed to be used with control boxes of our own production, which can be mounted on the ignition devices by means of fixing screws type M4x45, as shown in Fig.3.

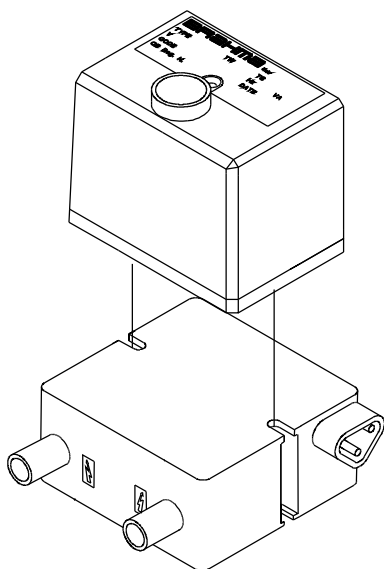


Fig.3

All ignition transformers can be supplied by cable or outlet; for instance, fig. 4 shows overall dimensions of ignition transformer equipped with outlet (with lateral isolators).

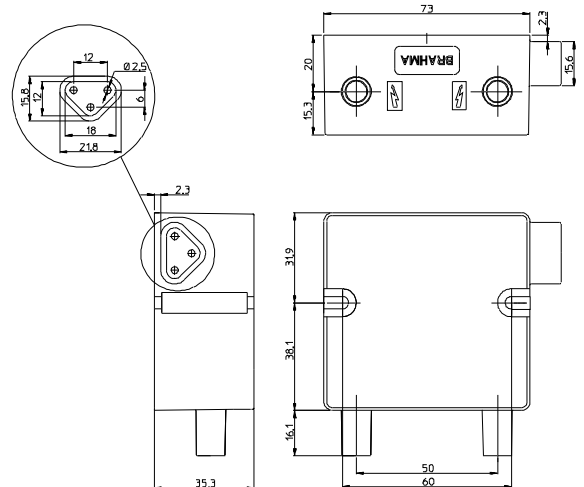


Fig. 4

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.5. All connectors, including the ones complete with cable, can be supplied on request.

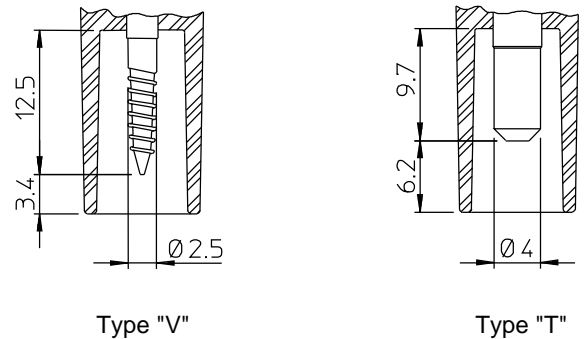


Fig.5

INSTALLATION

- Connect and disconnect the ignition transformer only after interrupting the main 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 next to other cables.
- Grant a protection degree suitable to the application.

ANTI-EMISSION FILTER

With particular reference to the use of ignition transformers on 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 EN55014 and with CISPR 16-1, is adequately equipped for the measuring of electromagnetic interference on boilers, burners, warm air generators and heating systems in general. According to the directive 89/336/EEC, the above mentioned products are subjected to the measuring of conducted electromagnetic interference in the power network and irradiated by the supply cable; the measuring is carried out on the basis of 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) and it is greater and faster the higher the interference. In this case, 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 present standards, a special capacitive-inductive filter is generally installed in series to the main supply, in order to reduce electromagnetic interference with frequency up to 20MHz approx; for frequencies over 20MHz, a resistor of a few kohms mounted in series to the ignition electrodes is useful; the purpose of this resistor is to reduce the high current peak generated whenever an electric arc is produced. This current peak is higher the stronger the stray capacitance between ignition electrodes and cables and burner metal casing.

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 E.M.C. filter inside the ignition transformer ensures the elimination of electromagnetic interference in close proximity to their 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 their stray capacitance and their possibility to 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);
- make a single earth centre, preventing the earth conductors from creating circular paths .

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