

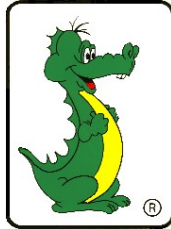
**OEM PRODUCTS**

**OPA-KING BENCH**

(Rev. 02 of 07-2022)

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# OPA-KING BENCH

## Partial flow OPA-KING bench

The bench OPA-KING represents the smallest and dynamic apparatus for smoke analysis of diesel vehicles planned till now. It's been possible to obviate to the problem of the length and width of the probe through the strong reduction of the dimensions of the apparatus and using communication systems of recent development (also Bluetooth).

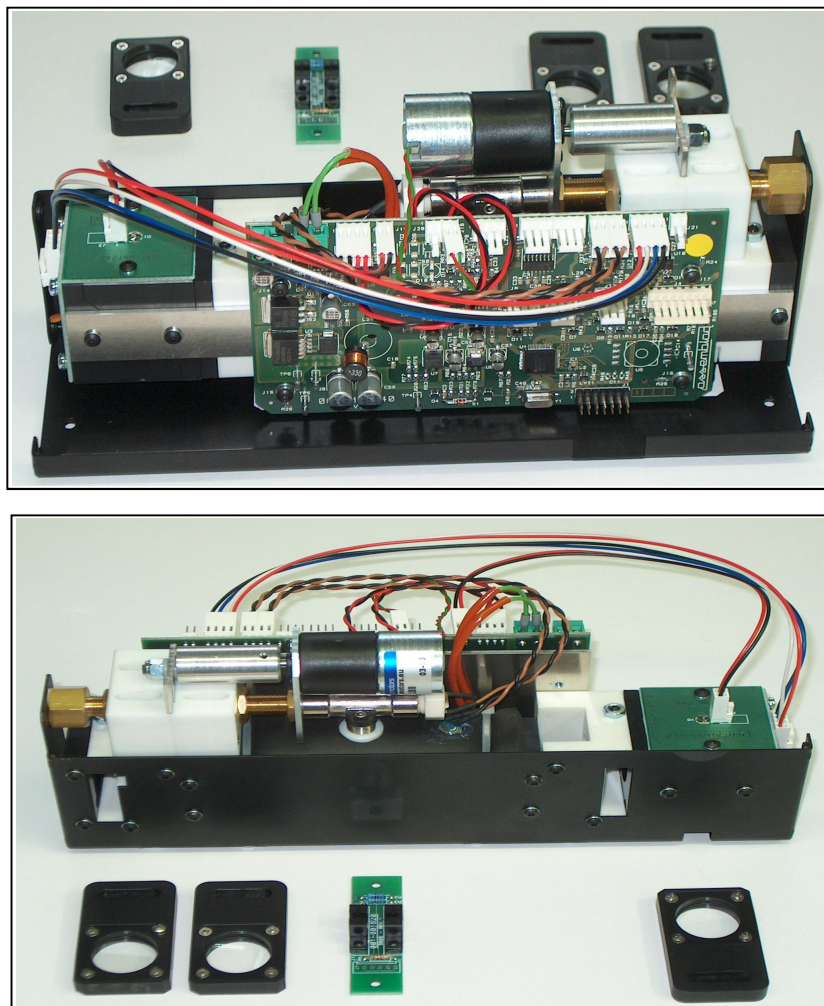


Fig. 01 - OPA-KING Bench - with smoke valve

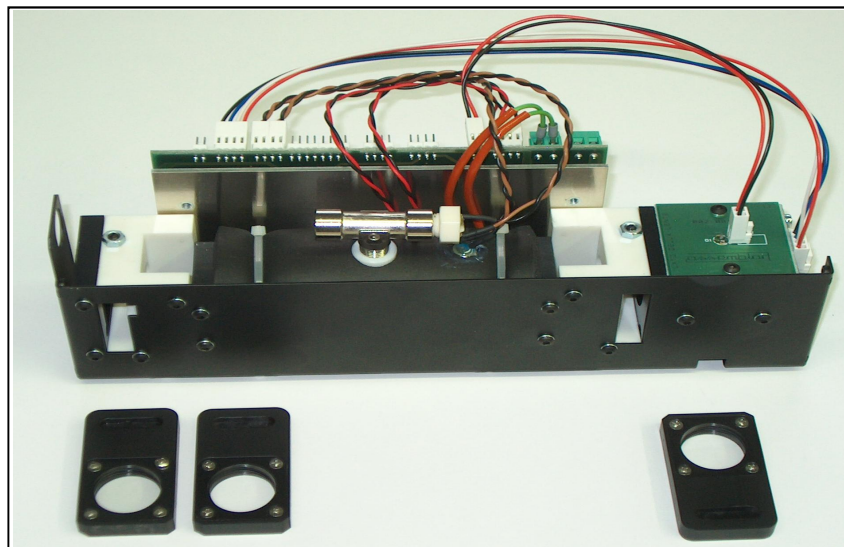
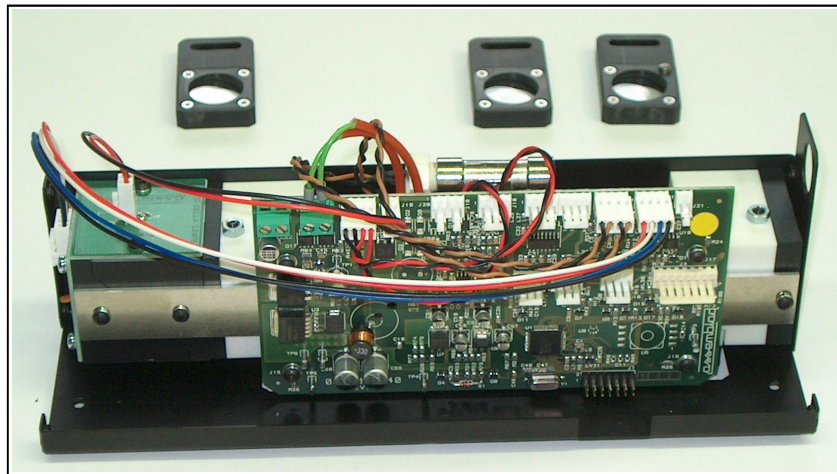


Fig. 02 - OPA-KING Bench - without smoke valve

These characteristics make the OPA-KING bench the only smoke-meter that it's possible to put near the exhaust in every situation.

The high precision of the measures is possible thanks to a particularly sensitive detector, equipped with optical filter and amplifier, that it finds every small variation of the luminous intensity of the bundle that crosses the measure bench.

### **Applications**

OPA-KING bench connected to a PC constitute a complete System of Analysis and Diagnosis for smoke of the diesel motors, with which it is possible to judge the efficiency of the combustion of the vehicle in examination and its consequent pollution degree.

OPA-KING bench if completed with the following parts:

- LCD
- Printer
- Keyboard

can be used like smoke-meter stand-alone.

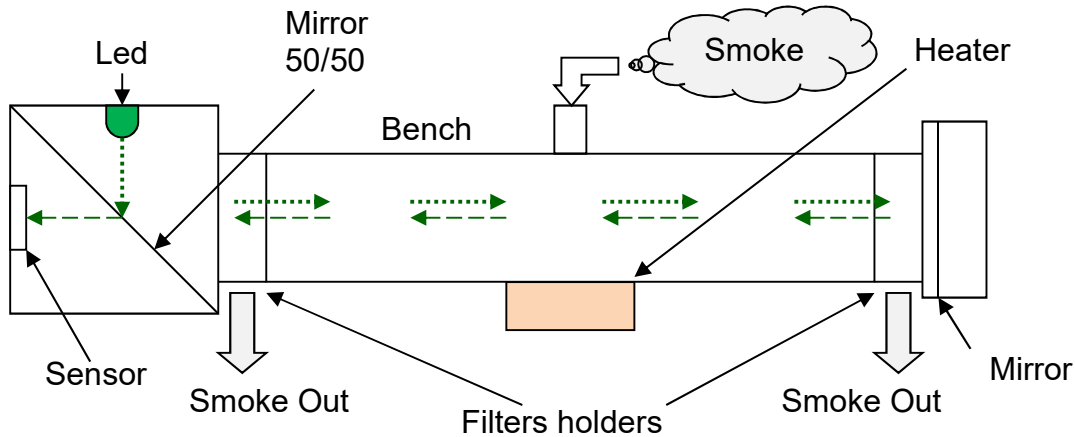
## Components and principle of operation

The heart of the equipment is represented from the two following parts:

- Optical Part
- Measure board

The optical part is composed from the light source (Green LED), from the optical sensor and the bench. The smoke that fills up the measure bench provokes an attenuation of the intensity of the luminous bundle that it's been produced from the Green LED in proportion of the gaseous concentration of the smoke.

The heating one of the bench is constituted from one resistance



The data elaboration is remitted to the measure board that constitutes "the thinking" element of the smoke-meter, because besides producing the measure of opacity on the base of the levels of brightness finds from the sensor, it controls and coordinates the entire operation of the equipment (modules of communication, interfaces, optional electro-valves and pressure and temperature sensors).

The CPU supplies to the compensations of the measures regarding the climatic variations and to an automatic zero of the drift.

On the measure board an inner local power source is present in order to generate the stabilized tensions of which it needs the system and through driver MOSFET open-drain it is possible to pilot the fan in order to clean up the bench and the electro-valves if it's present.

Two serial port are present (RS232) predisposed for the service programs and the firmware upgrade, for communication and the eventual connection with other devices.

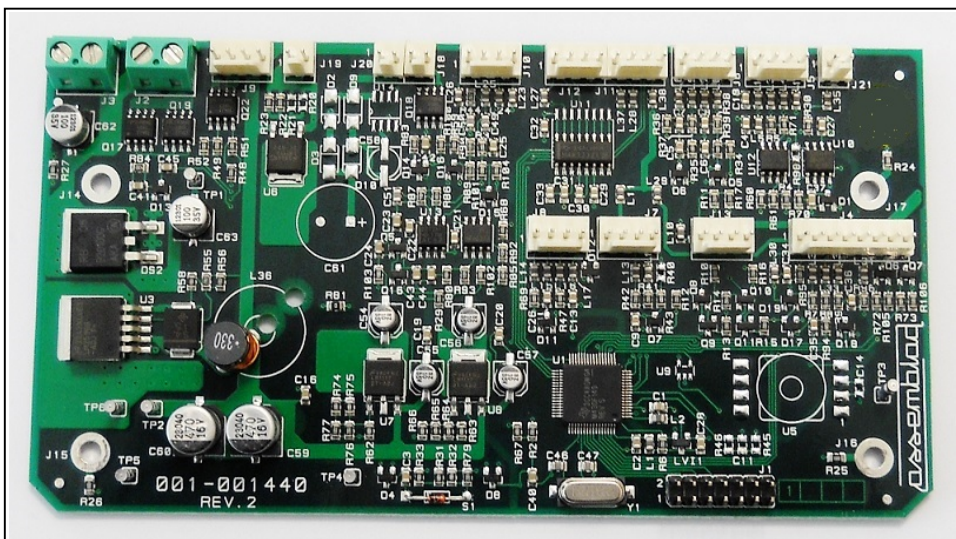


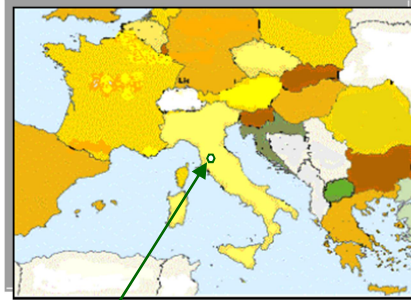
Fig. 03 - OPA-KING Bench - CPU PCB

## Specification

<b>OPA-KING Bench</b>	
<b>Measure</b>	<b>Opacity %:</b> 00.0 ÷ 99.9 % <b>Opacity K:</b> 0.00 ÷ 9.99 K <sup>m-1</sup> <b>Temperature:</b> - Smoke: 0 ÷ 150 °C - Oil: 0 ÷ 150 °C - Cell: 0 ÷ 100 °C <b>RPM:</b> 600 ÷ 9999 rpm
<b>Principle of Measure</b>	<b>Opacity:</b> Brightness attenuation
<b>Resolution of Measure</b>	<b>Opacity %:</b> 0.1 % <b>Opacity K:</b> 0.01 K <b>Temperature:</b> 0,1 °C <b>RPM:</b> 1 rpm
<b>Warm-Up Time</b>	about 5 min. (Tamb 25 °C)
<b>Operating Conditions</b>	<b>Temperature:</b> from 0°C to +45°C, R.H. ≤ 90% <b>Atmospheric pressure:</b> from 85 kPa to 105 kPa (with ± 2500 Pa) <b>Altitude:</b> from -300 m. to 2500 m.
<b>Weight and Dimensions</b>	<b>Height:</b> 9 cm. <b>Width:</b> 9 cm. <b>Length:</b> 25 cm. <b>Weight:</b> ≤ 1 Kg (without smoke valve)
<b>Power supply</b>	12Vdc 40 W (and/or 110-230 Vca from adapter)
<b>Serial out</b>	Two RS232 from 9600 to 57600 baud
<b>Optional</b>	- Oil Temperature probe - Vibration RPM - E-OBD Interface - Bluetooth

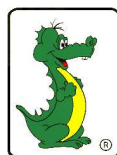
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