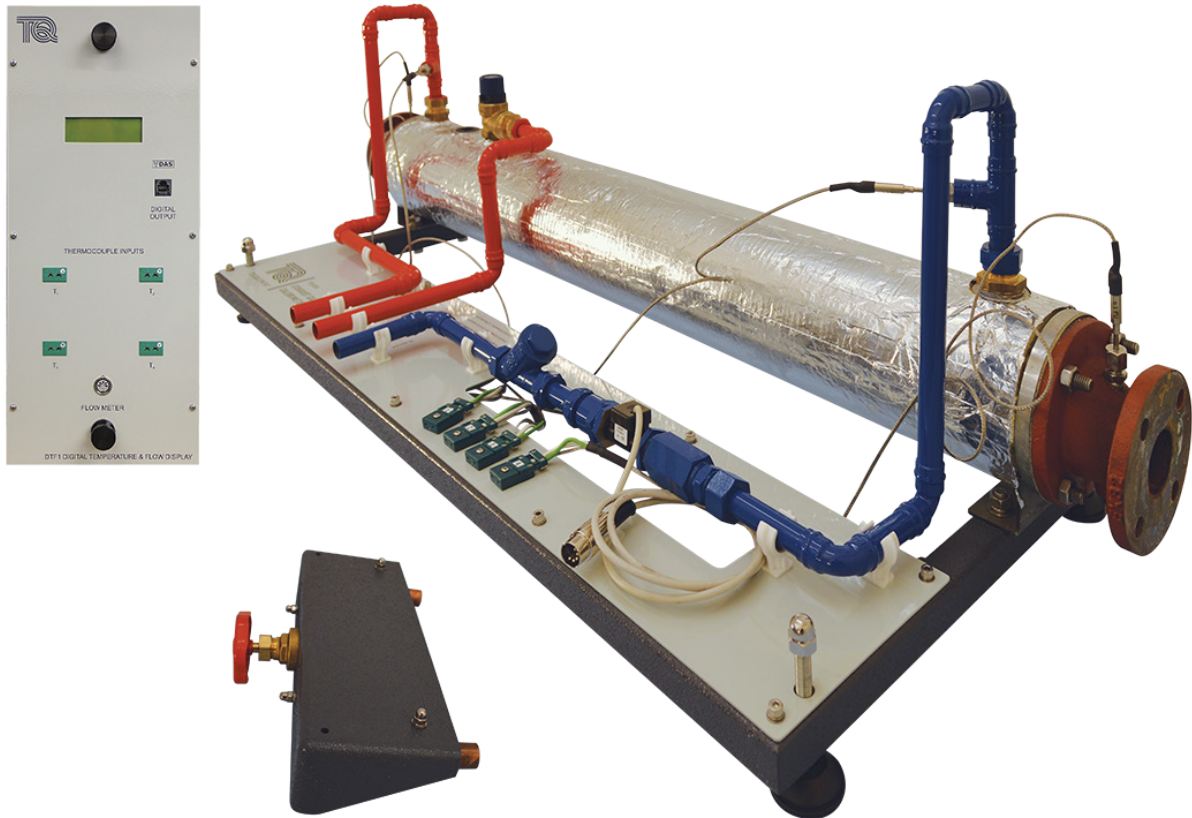




VDAS® TDX00A

EXHAUST GAS CALORIMETER

Experiment for use with TecQuipment's Regenerative Engine Test Sets (TD200 and TD300) to measure the heat content of engine exhaust gases.



KEY FEATURES

- Safely and effectively measures the heat content of TecQuipment test engine exhaust gases
- For use with TecQuipment's Regenerative Engine Test Sets (TD200 and TD300) and petrol and diesel Test Engines (TD200 series and TD300 series engines)
- Specially designed for educational use
- Wide range of investigations possible
- Uses electronic transducers and a digital display for ease of use and accuracy
- Separate instrumentation unit conveniently mounts on test set console frame
- Fully compatible with TecQuipment's Versatile Data Acquisition System (VDAS®) and software

EXHAUST GAS CALORIMETER

DESCRIPTION

An exhaust gas calorimeter for use with TecEquipment's Regenerative Engine Test Sets (TD200 or TD300). The equipment measures the heat content of exhaust gases and enables students to determine the energy lost to exhaust in the energy balance for single-cylinder, four-stroke petrol and diesel engines. The engines are separately available.

The main components of the Exhaust Gas Calorimeter are:

- Gas-to-water shell and multi-tube heat exchanger
- Control valve
- Instrumentation unit

The heat exchanger is mounted on a sturdy base plate. Exhaust gases from the test engine mounted on the test set flow through the tubes. A jacket of constantly flowing, cooling water surrounds the tubes, and the heat content of the gases is assessed by measuring the cooling water flow rate and the inlet and outlet temperatures.

A hand-operated valve, which mounts on the control console of the test set, controls the flow of cooling water through the heat-exchanger jacket. Thermocouples measure the temperature of gas and water at the inlet and outlet. A turbine flow meter measures the flow rate. For safety, the heat exchanger also includes a pressure-relief valve in case insufficient cooling water is flowing.

The instrumentation consists of a digital, four-channel temperature and flow display unit. This unit mounts on the instrumentation rail of the test set console frame and allows easy and accurate display and monitoring of data. In addition, the Exhaust Gas Calorimeter is fully compatible with TecEquipment's Versatile Data Acquisition System (VDAS® available separately).

VDAS® enables accurate real-time data capture, monitoring and display, calculation and charting of all relevant parameters on a computer, (computer not included) making tests quick and reliable.

STANDARD FEATURES

- Supplied with comprehensive user guide
- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer

LEARNING OUTCOMES

When used with TecEquipment's Engine Test Sets (TD200 or TD300), the Exhaust Gas Calorimeter enables students to assess the heat lost to exhaust in the energy balance for single-cylinder four-stroke petrol and diesel engines.

ANCILLARY FOR

- Regenerative Engine Test Set (TD300)
- Small Engine Test Set (TD200)

ESSENTIAL SERVICES

WATER SUPPLY AND DRAIN:

Approximately 10 litres per minute at 3 bar minimum

ELECTRICAL SUPPLY:

Single-phase a.c. 90 to 240 V, 50/60 Hz

EXHAUST OUTLET:

The exhaust from TDX00a must be connected to a suitable outlet. The local laboratory exhaust can be used (both need an outlet to atmosphere and to comply with local emission regulations)

NOTE: TecEquipment supplies 1.5 m plus a flange adaptor with TDX00a these are compatible with the supplied exhaust on the TD200 or TD300 base units.

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Well ventilated laboratory

STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

SPECIFICATIONS

TecEquipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

NETT DIMENSIONS AND WEIGHTS:

- Calorimeter: length 1200 mm x depth 500 mm x height 800 mm and 30 kg
- Temperature and flow display unit: 190 mm x depth 130 mm x height 450 mm and 4 kg

APPROXIMATE PACKED DIMENSIONS:

0.8 m³ and 50 kg

HEAT EXCHANGER:

Stainless steel shell and multi-tube with pressure-relief valve

TEMPERATURE MEASUREMENT:

4 x Thermocouples with digital display

FLOW MEASUREMENT:

Turbine flow meter with digital display

FLOW CONTROL:

Hand-operated valve