



TD211

MODIFIED FOUR-STROKE PETROL ENGINE

A four-stroke, single-cylinder petrol engine with modified cylinder head and crank, for use with TecQuipment's Small Engine Test Set (TD200).



- For safe and effective studies and demonstrations of a four-stroke, single-cylinder petrol engine
- For use with TecQuipment's Small Engine Test Set (TD200)
- Modified for use with optional Pressure (ECA101) and Crank Angle (ECA102) Transducers and Engine Cycle Analyser (ECA100)
- Wide range of investigations possible
- Quickly and accurately mounts on the test bed
- Electric start option (TD211ES)
- Includes colour-coded fuel tank with quick-release couplings

LEARNING OUTCOMES

When used with TecQuipment's Small Engine Test Set (TD200), investigations into the performance and characteristics of a four-stroke petrol engine, including:

- Torque, speed and power relationship
- Brake mean effective pressure
- Engine performance curves
- Air and fuel consumption
- Volumetric and thermal efficiencies

When used with TecQuipment's Small Engine Test Set (TD200), Cylinder Head Pressure Transducer (ECA101), Crank Angle Encoder (ECA102) and Engine Cycle Analyser (ECA100), students can investigate further features including:

- Plotting $p-\theta$ and $p-V$ diagrams
- Engine cycle analysis
- Indicated mean effective pressure
- Indicated power
- Comparison of brake and indicated mean effective pressures
- Mechanical efficiency of the engine

MODIFIED FOUR-STROKE PETROL ENGINE

DESCRIPTION

High-quality and cost-effective four-stroke, single-cylinder petrol engine for use with TecQuipment's Small Engine Test Set (TD200). Adapted specially for education to enable effective laboratory testing and demonstrations, the engine includes an exhaust thermocouple, a half-coupling to link to the test set dynamometer and all essential hoses and fittings. In addition, each engine includes a colour-coded fuel tank with self-sealing couplings. The couplings ensure the engines can be connected and disconnected quickly and efficiently with minimum loss or spillage of fuel. For convenience and safety, the fuel tank can be removed for filling or for storage in a fuel locker when not in use. Removing the fuel tank also prevents unauthorised use of the equipment.

The engine has a modified cylinder head and crank. These allow use with the Cylinder Head Pressure Transducer (ECA101 available separately) and the Crank Angle Encoder (EA102 available separately). These can then connect to the Engine Cycle Analyser (ECA100 available separately) to extend the range of experiments possible.

The engine is mounted on a sturdy precision bedplate. The bedplate has dowels and slots which align and locate it accurately with the dynamometer test set. This minimises the time spent replacing one engine with another.

This engine starts using a simple pull cord, however TecQuipment can supply an electric start version (TD211ES). This is supplied with cables but TecQuipment do not supply the starter battery, this needs to be sourced locally. Contact our sales team for details.

The TD200 Test Bed is supplied with a 2.5 m exhaust. All TecQuipment engines are supplied with a 1" BSP threaded stub adaptor for connection to the TD200 exhaust. Alternatively the user can connect their own adaptor and connect to their laboratory exhaust.

ESSENTIAL BASE UNIT

- Small Engine Test Set (TD200)

RECOMMENDED ANCILLARIES

- Engine Cycle Analyser (ECA100)
- Cylinder Head Pressure Transducer (ECA101)
- Crank Angle Encoder (ECA102)

STANDARD FEATURES

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

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

NOISE LEVELS:

The noise level produced by this engine may exceed 70 dB, therefore TecQuipment strongly recommends the use of suitable ear defenders.

SPECIFICATIONS

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

DIMENSIONS:

Nett: height 430 mm x width 500mm x depth 400 mm

Packed: 0.13 m³

WEIGHT:

Nett: 22 kg

Packed: 27 kg

FUEL:

Gasoline up to 10% Ethyl Alcohol and 90% unleaded

ENGINE CAPACITY:

208 cc

NET POWER:

4.5 kW at 3600 rev.min⁻¹

NET TORQUE:

12.5 Nm at 2800 rev.min⁻¹

SPEED:

Governed to approximately 3600 rev.min⁻¹

COOLING:

Air cooled

NOTE: All values stated are approximate and subject to variation