



≡ CYLINDER HEAD PRESSURE TRANSDUCER

ECA101

A ground-insulated high-temperature pressure sensor with an integral connecting cable for measuring cylinder pressures in combustion engines.



KEY FEATURES

- Significantly enhances practical investigations, demonstrations and studies of internal combustion engines.
- For use with TecQuipment's Engine Cycle Analyser (ECA100).
- Designed to measure in-cylinder pressure during compression, combustion and expansion strokes.
- Captures rapid pressure changes during engine operation, making it suitable for combustion analysis and pressure v/s Crank-angle measurements.
- Suitable for the thermal conditions associated with engine combustion, with temperature limits specified for the sensing element, mounting interface, and electrical connector.
- Provides consistent pressure readings over repeated engine cycles, supporting the evaluation of peak cylinder pressure, compression pressure and combustion behaviour.

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DESCRIPTION

A cylinder head pressure transducer measures the rapid, dynamic pressure changes inside an engine cylinder through an access port in the cylinder head. It converts the pressure into an electrical signal for monitoring, testing, and analysing engine performance.

The features include:

- Ground-isolated
- Additional cooling not required
- Low thermal shock error, very low load-change drift
- High sensitivity using a piezo-star crystal

The sensing element used is a quartz crystal that generates an electrical charge proportional to changing pressure. The sensor is characterised by minimal thermal shock and outstanding linearity. They capture high-frequency pressure spikes during the engine cycle. Its ground-isolated design makes it ideal for test stands with ground loop problems. The shoulder sealing of the sensor allows it to be mounted with its front flush with the cylinder head.

The high-temperature sensor is supplied with a shielded cable to withstand peak combustion temperatures and to eliminate false pressure changes. The precision charge amplifier has a digital thumb wheel for calibration purposes.

The sensor assembly can be easily fitted to a plug, which can then be fitted onto the cylinder head.

Pressure Range: 0–300 bar

Sensitivity: approximately 37 p.C/bar

LEARNING OUTCOMES

When used with Engine Cycle Analyser (ECA100) and Crank Angle Shaft Encoder (ECA102), it allows investigations into a variety of internal combustion engine characteristics, including:

- The thermodynamic cycle of an internal combustion engine
- Calculation of indicated mean effective pressure and indicated power
- Comparison of indicated mean effective pressure and brake mean effective pressure
- Mechanical efficiency of the test engine
- Further work using exported data such as combustion analysis

ESSENTIAL ANCILLARIES

- Engine Cycle Analyser (ECA100)
- Crank Angle Shaft Encoder (ECA102)
- Suitable Computer – see specifications

TecQuipment also offers a complete package (the ECA100S). This includes the ECA100, one ECA101 and one ECA102.

For engine test sets or engines other than TecQuipment's TD200 or TD300 series, please get in touch with TecQuipment or your local TecQuipment Agent.

ANCILLARY FOR

- Modified Four-Stroke Petrol Engines (TD211, TD211ES)
- Modified Four-Stroke Diesel Engine (TD212, TD212ES)
- Four-Stroke Petrol Engine (TD301)
- Four-Stroke Diesel Engine (TD302)

STANDARD FEATURES

- 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

SPECIFICATIONS

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

NETT DIMENSIONS AND WEIGHTS:

Supplied in a storage box 140 mm x 140 mm x 70 mm and weighs 0.5 kg

ACCESSORIES (INCLUDED):

- BNC adaptor with 1 m lead
- Tapping sealing washer
- Extension cable, 10 m long (BNC socket to BNC plug)

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