



≡ CRANK ANGLE SHAFT ENCODER

ECA102

A precision measurement device used to measure the angular position, rotational speed and timing of an engine's crankshaft. It is commonly used in Petrol and Diesel engine testing to determine crankshaft position relative to Top Dead Centre (TDC).



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 the angular position and rotational speed in engines during compression, combustion and expansion strokes.
- Captures rapid changes in rotational speed and angular position during engine operation, making it suitable for combustion analysis and Crank-angle measurements.
- Suitable for Piston Position Tracking to identify when the piston reaches Top Dead Centre (TDC).

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DESCRIPTION

A crank angle shaft encoder is a precision measurement device used to measure the angular position, rotational speed and timing of a rotating shaft. In engine testing, it is particularly important because it identifies the exact angular position of the crankshaft during each engine cycle, allowing pressure, combustion, injection and other measurements to be related to crank angle.

For engine-testing applications, a crank angle encoder is especially useful when measuring cylinder pressure in petrol or diesel engines, calculating indicated power, analysing combustion, and synchronising pressure transducer data with crankshaft position.

The encoder's rotating element is mechanically coupled to the crankshaft, and as the shaft rotates, a code disc, magnetic pattern, or toothed target moves past a sensor. The sensor generates electrical pulses, which are counted by the electronics to determine direction and position. An absolute position Top Dead Centre (TDC) establishes a repeatable angular origin. The data acquisition system on ECA100 and ECA101 associates each pressure sample with the corresponding crank angle.

Crank angle input: Shaft encoder with 360 pulses per revolution with 1° resolution.

LEARNING OUTCOMES

When used with Engine Cycle Analyser (ECA100) and Cylinder Head Pressure Transducer (ECA101), 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)
- Cylinder Head Pressure Transducer (ECA101)
- 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.

PACKED DIMENSIONS AND WEIGHTS:

Approximately 370 mm x 260 mm x 50 mm and weighs 0.34 kg

ACCESSORIES (INCLUDED):

- Torque Disc
- Encoder Extension Cable
- Cap Head Screws and Locking Washers

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