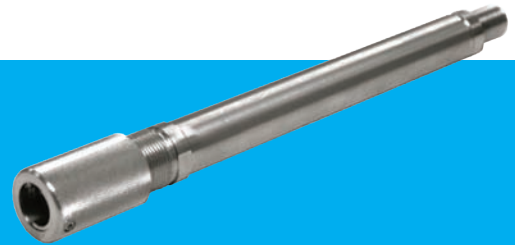


IC ENGINE PROBE ADAPTOR MODELS EP-12 AND EP-14



Development of internal combustion (IC) engines is becoming extremely competitive and knowledge-based. No longer can an engine design effort be considered as a one-dimensional project, because each sub-system requires advanced preparation, modeling, testing, and validation. The combustion system is one piece of the jigsaw puzzle. Emissions regulations demand the cleanest, most complete burning of the fuel. Fuel economy standards require the most efficient burning of the fuel. Pricing pressure limits the overall cost to the consumer.

Instant Optical Access

No engine modification is needed, and the in-cylinder flow geometry stays just the way you design it.

Importance of Measurements

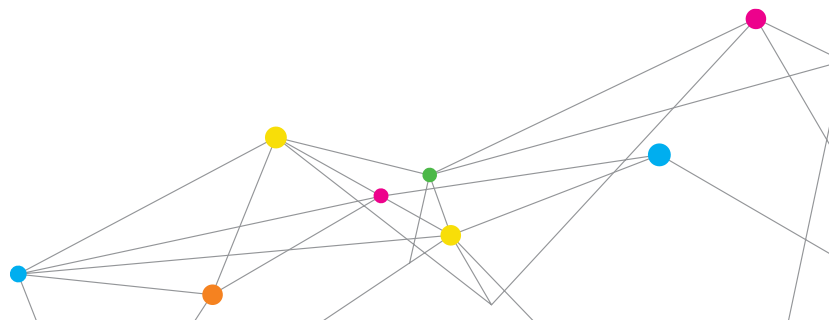
Experimental measurements of in-cylinder flows are often combined with numerical simulations to help the IC engine design team meet all these objectives. The EP-12 and EP-14 IC Engine Probe Adaptors allow time-resolved, spatially-resolved, even cycle-resolved velocity and turbulence measurements from unmodified IC engines.

Features and Benefits

- + Allows acquisition of time-resolved, spatially-resolved, cycle-resolved velocity data without optical access
- + Model EP-12 designed for 12mm thread size, EP-14 designed for 14mm thread size
- + User-selectable reference angle
- + 30-degree increments in probe rotational position
- + Allows continuously variable measurement depth (reach)
- + Unique design – No slip-rings, spacers or washers used
- + Does not restrict aperture or f# of the fiber-optic probe
- + Anti-reflection coated window
- + Any TR 10 series fiberoptic probe from TSI can be used with the EP-12 and EP-14 IC Engine Probe Adaptors
- + Protects the fiberoptic probe from mechanical damage



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SPECIFICATIONS

IC ENGINE PROBE ADAPTOR MODELS EP-12 AND EP-14

Thread Size

Model EP-12	12 × 1.25mm
Model EP-14	14 × 1.25mm

Measurement Distance

Standard TLN01-60EP Lens	0 to 15mm
Optional TLN01-50EP "High-SNR" Lens	0 to 5mm
Optional TLN01-80EP "Long Stand-off" Lens	19 to 35mm
Length*	160mm
Window	AR-Coated Fused Silica
Clear Aperture	6.4mm

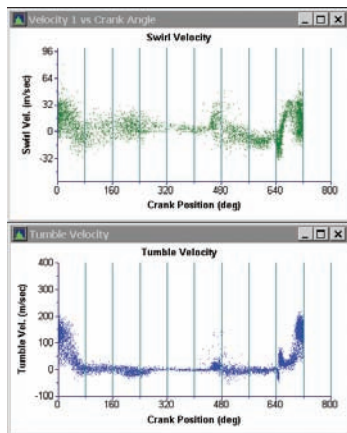
Outer Diameter

Sleeve	19.05mm
End Cap	24.61mm
Inner Diameter	15.49mm
Depth Adjustment Range (max)	17mm
Depth Adjustment Rate	0.794mm/turn
Maximum Operating Temperature	204°C (continuous)
Maximum Operating Pressure	17MPa

Special Features

The IC Engine Probe Adaptors EP-12 and EP-14 are backed by hours of engine testing and laboratory use. This experience has produced a unique, user friendly IC Engine Adaptor that allows the user to extract meaningful data from completely unmodified engines. Velocity data are acquired using the coaxial transmitter/receiver approach, which is the key to obtaining time-resolved, spatially-resolved, cycle-resolved velocity data without costly and unrealistic optical access or single-cylinder engine testing. Both 12mm and 14mm thread sizes are available, and the special design permits continuous variation of the measurement location, from the window surface outwards. Any TSI TR 10 series 15mm probe can be used in the EP-12 and EP-14 IC Engine Probe Adaptor. Efficiency and SNR are maximized by using an anti-reflection coated window. The reference angle can be set and locked, which means the probe can be removed and replaced to the same angular and axial position. The probe can be positioned in 30-degree rotational increments from the reference position thus allowing the user to measure any dominant in-cylinder flow direction.

Sample Data



* Add 75mm for the armored monocoil loop

Specifications are subject to change without notice.

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Related Components

The Engine Probe Adaptors Model EP-12 and EP-14 IC are used with one or two component Model TR 10 series transceiver probes. Since the TR 10 series fiberoptic probes are compatible with TSI's other transmitter/transceiver probes, the existing customer needs only to purchase the probe and IC Engine Probe Adaptor EP-12 and EP-14. The fiberlight, PDM, and FSA can be used as-is.



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TSI Incorporated - Visit our website www.tsi.com for more information.

USA	Tel: +1 800 874 2811	India	Tel: +91 80 67877200
UK	Tel: +44 149 4 459200	China	Tel: +86 10 8251 6588
France	Tel: +33 4 91 11 87 64	Singapore	Tel: +65 6595 6388
Germany	Tel: +49 241 523030		