

Design specification – spark plug sensor

TO CUSTOMIZE THE SPARK PLUG SENSOR TO YOUR SPECIFIC APPLICATION A DETAILED DESCRIPTION OF THE ORIGINAL SPARK PLUG AND BORE IS REQUIRED.

A proper analysis of the original spark plug is needed in order to ensure the best performance and durability of the sensor solution and a comparable spark initiation in the cylinder. Based on these data AVL can design the sensor according to the customer needs. The data is stored for further orders. The input as well as forwarding the form can be carried out electronically. The order form is also available as download at www.avl.com/sensors.

BASE INFORMATION:

Customer name / contact	Affiliate name / contact	Date

ENGINE INFORMATION:

Engine manufacturer / code	Spark plug manufacturer / part number

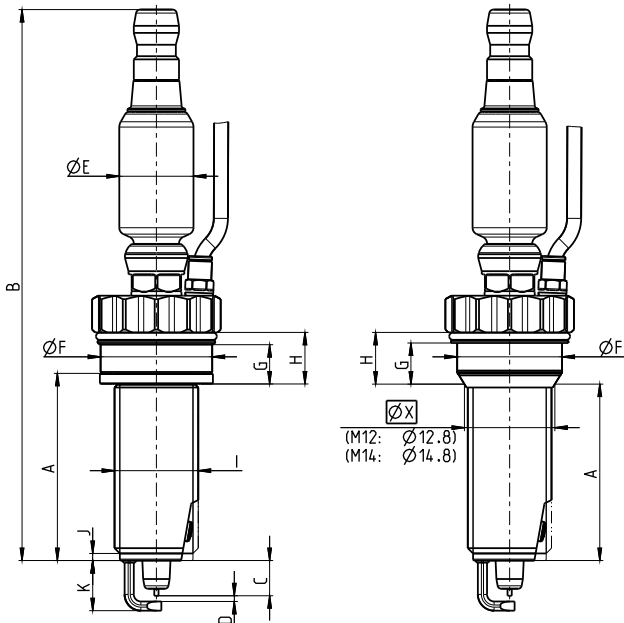
SPARK PLUG SENSOR SOLUTIONS:

(Type selection via checkbox)

Sensor	Thread diameter [I]	Selection
ZI22	M10×1	
ZI33	M12×1.25	
ZI45	M14×1.25	

SPECIFICATION OF SHAPE AND DIMENSION OF THE ORIGINAL SPARK PLUG:

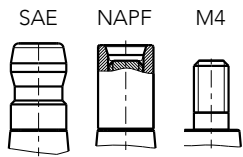
Dimension



Dimension

- Reach [A] = _____ mm
- Total length [B] = _____ mm
- Spark protrusion [C] = _____ mm
- Electrode gap [D] = _____ mm
- Insulator diameter [E] = _____ mm
- Shaft diameter [F] = _____ mm
- Length [G] = _____ mm
- Length [H] = _____ mm
- Thread return [J] = _____ mm
- Maximum depth [K] = _____ mm
- Length of insulator [L] = _____ mm

Connector



Connector (type selection via checkbox)

- SAE
- NAPF
- M4 thread

Sealing (type selection via checkbox)

- Flat
- Conical

Mounting hexagon

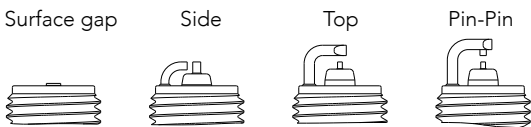
Mounting hexagon = HEX _____

Heat range

Scale type _____

Heat range _____

Ground electrodes specification



Ground electrode specification

Indexed mounting

Number of electrodes _____

Electrode type (type selection via checkbox)

- Surface gap
- Side
- Top
- Pin-Pin

INSTALLATION SOCKET INFORMATION (necessary for conical sealing and HEX <16):

Dimension

Outer diameter mounting tool = _____ mm

Diameter spark plug bore = _____ mm

FAQ for spark plug sensors

The spark plug sensors from AVL have two functions in parallel. The spark plug sensor measures the combustion pressure and in addition ignites the gas mixture in the combustion chamber. The expansion of the combustion in the chamber is depending on many influences like the spark energy, position of the spark etc. AVL offers a state of the art generation of spark plugs in line with the original spark plugs. This FAQ list should help to find answers to frequently asked questions.

Why isn't it always possible to determine a suitable measurement spark plug with information like engine type, OEM part number or manufacturer code?

AVL doesn't have information about the recommended original spark plug for every engine type and the OEM part number. The engine type itself doesn't define spark plug. The manufacturer helps together with conversion tables to get most information but information like spark protrusion, customized adaptations or heat range conversion aren't totally clear due to missing information or a high uncertainty. In worst case AVL would need an original spark plug to define the correct type.

The measurement spark plugs from AVL are only available in dedicated heat ranges and spark protrusions. Which values should be taken if there is no matching AVL solution compared to the original spark plug?

Additionally heat ranges like 4 and 6 (Bosch) and adjusted spark protrusions are possible based on customization of standard types. Recommendation of AVL is to choose a colder heat range if the conversion of the heat range means a high uncertainty.

Could the electrode gap be adjusted without limits?

The electrode gap could be adjusted to the value of the original spark plug for measurement spark plugs of generation ZI22, ZI33 and ZI45 due to the electrical strength. The measurement spark plugs of the new generation are delivered standard wise with a gap of 0.8 mm.

Does it make sense to check the electrode gap before every usage as well as during operation and how could this be done?

AVL recommends to check the electrode gap before every usage and also during operation (every 50 to 100 h depending on fuel). The check should be done with the tool TA32 from AVL.

Is it possible to use AVL spark plug sensor as well without sealing ring?

The sealing surface of the AVL spark plug sensor is manufactured with a high accuracy and less roughness in comparison to the original spark plug. Based on this AVL measurement spark plug sensors could be used without sealing ring if needed due to the specification.

How could you mount an already existing spark plug in an oriented position?

AVL offers sealing rings (used as indexing washers) with different thicknesses to reach the oriented position with a minimum impact to the spark protrusion.