

Inductive sensors

Inductive sensors are axi-symmetric, so the rotational orientation with respect to the target wheel is not important.

Enclosed body sensors may be immersed in hot oil as well as other fluids typically used in motorsport. Sensors with an eddy current reduction slot or an exposed core should not be immersed in hot oil but they resist other fluids.

If an inductive sensor with an eddy current reduction slot is installed in such a way that it is surrounded by metal, the effect of the eddy current reduction slot is much reduced and a smaller air gap may be necessary.

Differential Hall Effect (DHE) Sensors

It is important to install DHE sensors correctly in relation to the target wheel. The teeth of the wheel should pass the two Hall effect elements in a straight line. Deviation from this ideal orientation will not generally stop the sensor from working, but it will reduce sensitivity, making the device more susceptible to noise and possibly requiring a decrease in the air gap. The correct orientation is indicated on the outline drawings in the Product Summaries and, in most cases, is also marked on the sensor body. If the sensor is rotated through 180° the polarity of the output is reversed.

Zero Speed Hall Effect Sensors

The Zero Speed Sensors have a single Hall probe, so the rotational orientation with respect to the target wheel is Good target wheel concentricity is not important. required, to ensure that the maximum operational air gap is not exceeded.

Clamped Sensors

Sensors without mounting holes should be clamped or held by a circlip or similar. DHE sensors should be prevented from rotating. Clamps and clips are not available from McLaren Electronic Systems.

Target Wheel Design

The following specification has been found to give good results with our sensors. However, other designs can give acceptable results. For specific assistance, please contact our technical consultancy department.

For Inductive Sensors:

- Use steel of a carbon content less than 0.15%
- Wheel thickness ≥3mm
- Tooth height ≥3mm

For high speed applications a minimum length of tooth may be required, depending on the details of the application.

For Hall Effect Sensors (DHE, Zero Speed and TPZS):

- Use steel of a carbon content between 0.10% and 0.15%
- Optimum wheel pitch = 5mm The target wheel pitch may be > 5 mm, contact our technical consultancy department for specific assistance.
- Tooth width to space ratio = 1:1
- Tooth height > 5mm

Air Gap

For Inductive Sensors, an air gap of 0.8mm is recommended. The air gap should not exceed 1mm.

For DHE Sensors, the air gap should not exceed 1.5mm.

For Zero Speed Sensors, an air gap of 0.8mm is recommended. The air gap should not exceed 1mm.

For True Position Zero Speed Sensors, an air gap of 0.4mm is recommended.

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The following images illustrate a selection of housing styles and sealing methods. These can be designed to suit specific applications.



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TRUE POSITION ZERO SPEED SENSOR -90° CABLE EXIT - SINGLE FLANGE VARIANT

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