

Coil/Core Size

An important factor in the range of the sensor is the construction of the coil/core. An open coil with no core will produce a field that could be actuated by a target from any direction. That wouldn't be very practical for industrial applications.

For an inductive proximity sensor, the sensor **coil** that generates the field fits inside of a ferrite core. This cup-shaped piece of ferrite material is called a **cup core**. This core directs the field and shapes it.

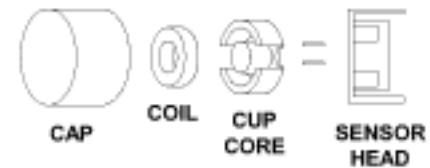


FIGURE 56: COIL/CORE CONSTRUCTION

A protective **cap** prevents dust or other environmental hazards from entering the sensor.

Shielding

To focus the intensity of the field, the coil can be shielded. In a standard range sensor, the ferrite cup core shapes the field to emanate straight from the sensing face of the sensor. In a sense, shielding it.

An extended range coil/core assembly does not use the standard cup core, just a core of ferrite. This unshielded device allows the extension of the sensing range. There is less ferrite to absorb the electromagnetic field, so its range is wider and a little longer.

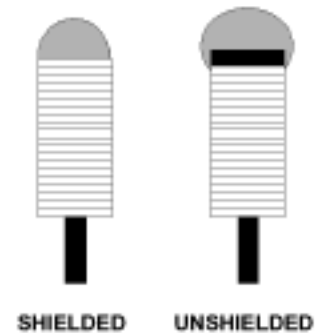


FIGURE 57

The decision to use a non-shielded sensor will impact the mounting of the sensor, as we will discuss next.

Mounting Considerations

The design of a sensor can affect how it is mounted.

A shielded sensor can be fully embedded in a metal mounting block without affecting the range. They are sometimes referred to as flush mount sensors.

A non-shielded sensor needs clearance around it (called the metal-free zone) which is determined by its sensing range. Otherwise, the sensor will sense the metal mounting and be continuously operating.

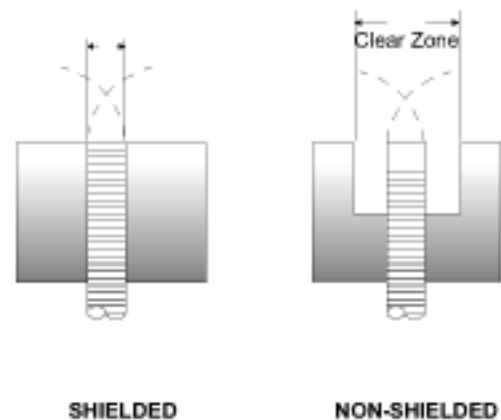


FIGURE 58