

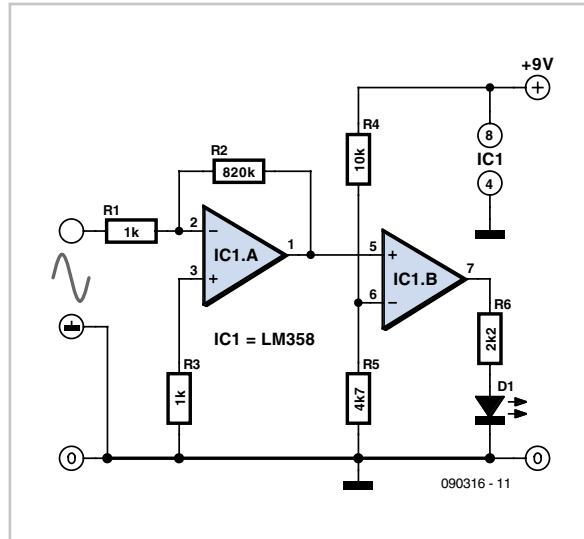
# Tester for Inductive Sensors



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This tester uses a LED to indicate whether an inductive sensor is generating a signal. It can be used to test the inductive sensors used in ABS and EBS systems in cars, with engine camshafts and flywheels, and so on. The circuit is built around an LM358 dual opamp IC. The weak signal coming from the sensor (when the wheel is turning slowly, for example) is an AC voltage. The first opamp, which is wired here as an inverting amplifier, amplifies the negative half-cycles of this signal by a factor of 820. The second opamp is wired as a comparator and causes the red LED to blink regularly.

In order to judge the quality of the signal from the sensor, you must turn the wheel very slowly. If the red LED blinks, this means that the sensor is generating a signal and the distance between the sensor and the pole wheel (gear wheel) is set correctly. If the distance (air gap) is too large, the sensor will not generate a signal when the wheel is turned



slowly, with the result that the LED will remain dark, but it will generate a signal if the wheel is turned faster and the LED will thus start blinking. Irregularities in the blinking rate can be caused by dirt on the sensor or damage to the pole wheel (gear wheel).

If you connect an oscilloscope to the LED with the engine running, you will see a square-

wave signal with a pattern matching the teeth of the gear wheel, with a frequency equal to the frequency of the AC signal generated by the sensor. You can also use this tester to check the polarity of the connecting leads. To do this, first dismount the sensor and then move it away from a metallic object. The LED will go on or off while the sensor is moving. If you now reverse the lead connections, the LED should do exactly the opposite as before when the sensor is moved the same way.

The circuit has been tested extensively in several workshops on various vehicles, and it works faultlessly.

The author has also connected the tester to sensors on running engines, such as the camshaft and flywheel sensors of a Volvo truck (D13 A engine). With the camshaft sensor, the LED blinks when the engine is being cranked for starting, but once the engine starts running you can't see the LED blinking any more due to the high blinking rate.