

Malfunction of the Road Speed Sensor

It seems to be indicated when the idle speed is erratic. The sensor is mounted on the inboard side of the pedal box on a bracket attached to it. Access is restricted, but it is possible to remove it after unscrewing the single screw mounting it to the bracket. After removing the retaining nut from the speedometer drive cable that comes from the gearbox move the cable end out of the way, then there is just enough room get your hand in to unscrew the retaining nut that holds the short cable to the speedometer head. The electrical connections are made by a two-pin connector that needs to be disconnected; after pressing the latch the two halves can be separated.

Investigation of the circuit diagram and the sensor test in the Lucas manual XXB 825 shows that the black wire on the sensor is fed with 12V from the ignition switch, through a white wire into

the female part of the connector which then feeds the sensor through a black wire. The colour change occurs at the connector, the output signal to the 14CUX box (pin 6) is yellow all the way.

The device is marked "Jaeger France" and has a part number **34019501** embossed on one side. Exhaustive searching does not throw up any information on this part. The device has an end cover attached by 4 staked pillars with a small washer on each and then pressed to retain the cover. To remove these, using a 4mm or larger bit drill into the staked part, until the washer is contacted. Then prise the washers off and remove the cover. Slide the cover with printed circuit board attached off and make sure you note which end of the magnet shaft is inserted into the cover. It appears to fit either way, but there is a slight difference in diameter in the sample I had that made it a tight fit if fitted the wrong way.

The device is simplicity itself. There is a circular magnet mounted on the shaft that rotates in close proximity to a small printed circuit board that holds just two components, a 120Ω resistor and a glass encapsulated "Reed Switch". As the magnet is rotated by the incoming speedometer cable the magnetic poles interact with the reed switch and close the contacts. The action is rather similar to a contact breaker in a distributor. The 12V supplied from the ignition switch is thus alternately connected and

disconnected and then fed to the ECU. The ECU can easily count the number of times it sees the voltage rising and falling and make a calculation against a time base to decide how fast the car is moving. The Lucas manual says the sensor should output 6 pulses for every turn of the LH rear wheel when it is jacked up, but with the other on the ground. Due to the action of the differential we can assume that it will provide 3 pulses per turn of the road wheels when both are on the ground.

Using a small low current test bulb, I supplied 12V to the device and watched the lamp go on and off as it was rotated using a card degree wheel to ensure that the pulses were counted in only one revolution of the shaft. I counted 12 pulses in 360 degrees. The mark space ratio is not accurate, but I assume that it is probably only detected on a rising or falling edge, so the ratio isn't important.



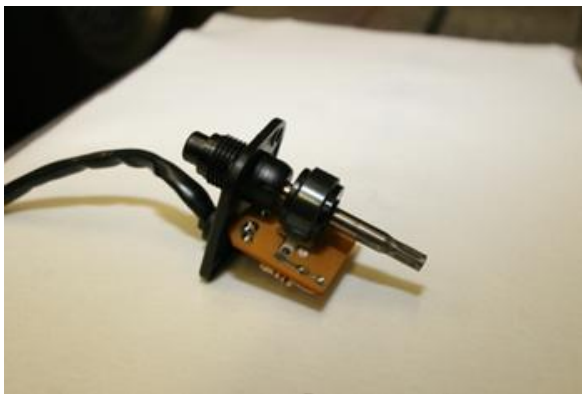
Reassembly is only a matter of carefully drilling down the die-cast corner pillars and inserting small self-tapping screws to hold the cover in place. Do so carefully, with a pillar drill not a handheld. Cleanliness is important in reassembly; I rinsed the casing with a degreasing cleaner, blew it dry with an airline and then lubricated the bearings with light oil. It is important to clean the magnet carefully, inevitably it will have picked up small particles of magnetic metal while in your workshop. These are easily removed by using a small lump of well kneaded Blu Tack.

I had experienced erratic idle for several weeks and nothing I tried would stop it, but after dismantling and re-assembling the sensor the problem seems to have gone away. Only time will tell.

Clive Wheatley has **YBE10007** Rover RV8 Speed Transducer in stock, current price is **£59.00** plus VAT and carriage.

What is a Reed Switch?

The Reed Switch was invented in 1936 and is widely used in automatic telephone exchanges until replaced by the fully electronic versions we have today. More information can be found at http://en.wikipedia.org/wiki/Reed_switch but it is important to realise that it is a low current switch only, so shorting the output to ground might damage the contacts.



Road speed sensor for the RV8

Responding to a member searching for a road speed sensor for his RV8, Nic Houslip agreed it is difficult adding "when I first had my RV8 it had some issues with idling at strange speeds, so I thought I had narrowed it down to the sensor. I then disassembled it and checked the operation.

It is a simple device with a number of magnets rotating on a shaft. As these magnets pass by a device called a "reed switch" that is basically a pair of electrical contacts sealed in a glass tube. As the magnet passed by it opens or closes the contacts and sends a train of pulses to the ECU, which interprets this to determine the speed the car is travelling at, and more importantly in this case, if the vehicle is stopped (no pulses). The ECU then makes a decision, based on a number of other inputs (coolant temperature, air temperature and fuel temperature) and tells the stepper motor to let the engine idle at 700 rpm. Now it soon should become clear that the other inputs might have a great impact on the decisions that the ECU makes. If for example it detects that coolant temp is not in the right range, it will allow a much higher idle speed. And, this is probably a most likely scenario, the sensor is giving false information (either due to a sensor fault or more likely a poor connection) then errant operation may occur".