

BETD0021

ELECTRONIC SPEEDOMETER AND SENSOR INSTALLATION



BARRATT ENGINEERING

Read thoroughly prior to assembly.

This document provides a guide to install a new electronic programmable speedometer and differential mounted sensor.

The speedometer uses a PNP proximity sensor to read vehicle speed. The sensor produces a signal when a ferrous or magnetic body is passed by in close proximity, in this instance the bolts in the trigger ring mounted to the propshaft. This signal allows speed and distance to be calculated by the speedometer

Speedometer Installation

Unless otherwise state refer to the manufacturer's installation instructions supplied

Wiring (plug)

Red: Chassis ground
Black: Chassis ground
Green: +12v ignition 3a fused
White/Black: Signal from sensor (black wire)

Wiring (aux) MG/Triumph

Blue: High beam warning lamp
Back: Chassis ground

Wiring (aux) Austin Healey only

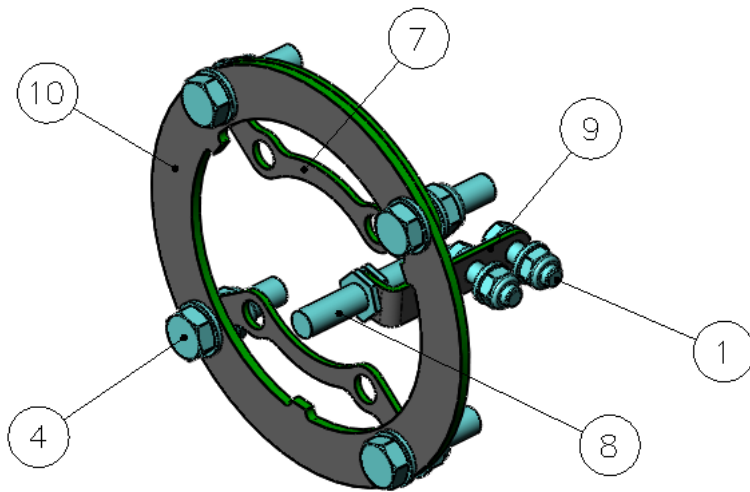
Blue: No Charge Warning. Install with resistor supplied bridging between blue and black (ground). **Charge system will not function correctly and may be damaged if resistor is missing.**
Back: Chassis ground

Sensor Wiring

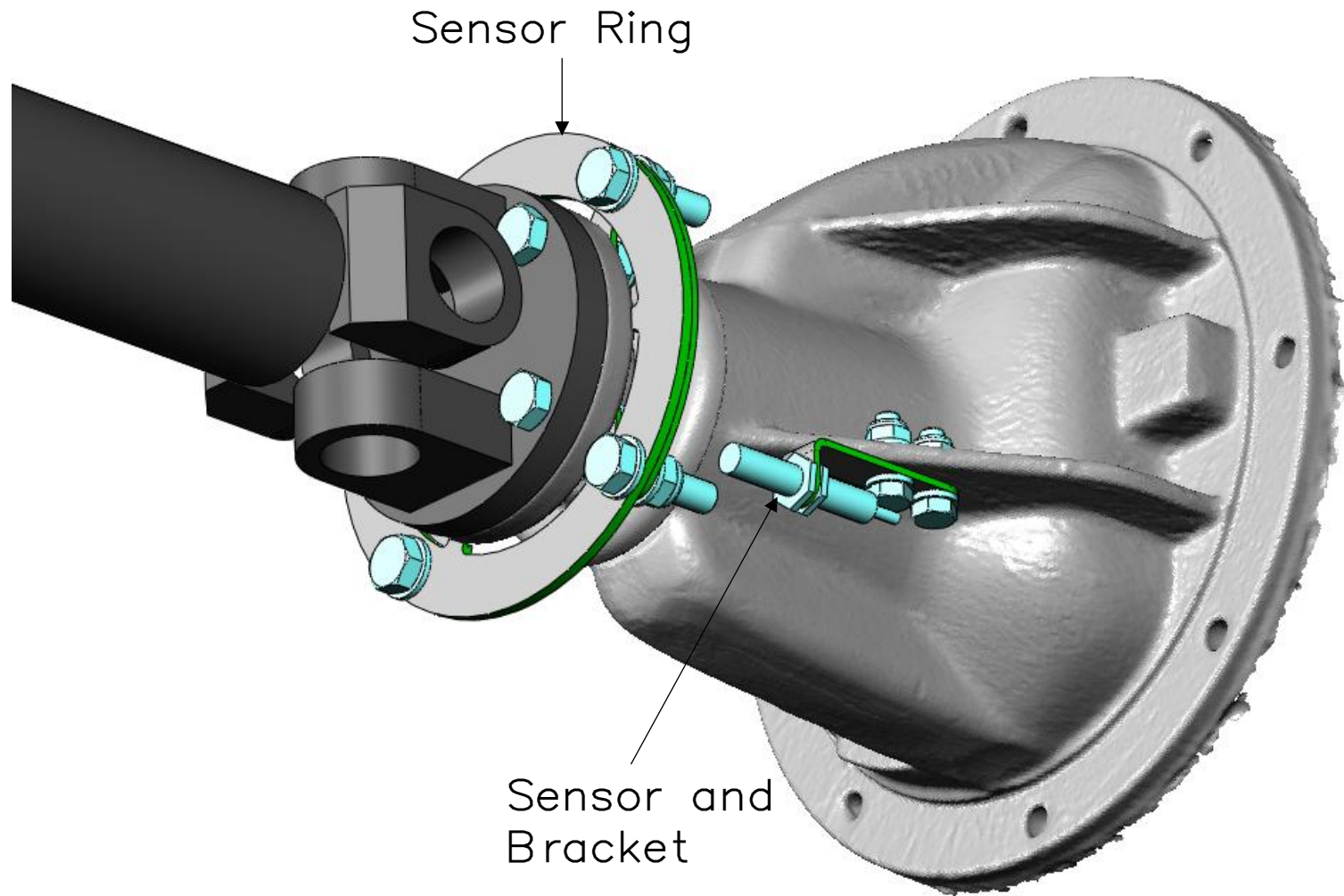
A harness will need to be made to connect to the speedometer. It is recommended that a high-quality waterproof connector is used to join the sensor wires to the new harness.

Brown: +12v ignition 3a fused, can be shared with speedometer
Black: Signal, connect to White/Black on speedometer harness
Blue: GND

Trigger Ring Assembly



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	2	00045	BOLT, HEX HEAD, M6X20, DIN933
2	4	00046	WASHER, PLAIN, M6, DIN125A
3	8	00053	WASHER, PLAIN, M8, DIN125A
4	4	00253	BOLT, HEX HEAD, M8X30, DIN933
5	4	00262	NUT, NYLOC, M8, DIN985
6	2	00263	NUT, NYLOC, M6, DIN985
7	2	00438	SENSOR RING CARRIER
8	1	00369	SENSOR, SPEEDOMETER, XS112BLPAL2
9	1	00440	BRACKET, SPEED SENSOR
10	1	00460	SENSOR RING, SPEEDOMETER



Trigger Ring Installation

1. Remove the mounting bolts attaching the propshaft to the differential.
2. Fit the Sensor Ring (00460) over the differential flange
3. Reattach the propshaft and fit 2x Carriers (00438), bolting to the differential side of the flange using the propshaft mounting bolts.
4. Bolt the Sensor Ring to the Carriers using the M8 bolts and nyloc nuts supplied.
5. Assemble the Sensor (00369) and Bracket (00440). Only tighten the adjustment nuts finger tight.
6. Mount the bracket to the cast web on differential case as shown in the image above. The web will need to be drilled to accept the 2x M6 mounting screws. Mount the bracket to align the sensor with the trigger bolts as they pass.
7. Set the distance between the sensor and trigger bolts to 0.5 – 1mm. With power to the sensor the built in LED will illuminate when the trigger bolts pass. Ensure all bolts trigger the sensor.

Calibration

The simplest way to calibrate the speedometer is to input the pulses per unit distance (PPU).

The PPU is input into the speedometer following the manufactures instructions.

Common tyre size PPU settings are shown below:

Digital Speedometer Pulses Per Unit (PPU)

		Tyre Size										
Diff Ratio		145R13	520-13	155/70R13	165/70R13	175/70R13	175/65R13	145/80R13	185/60R13	165/65R14	175/70R14	
	9 / 41	4.56	16291	15984	17059	16633	16206	16738	16610	16936	16407	15506
	9 / 38	4.22	15099	14815	15811	15416	15020	15513	15394	15697	15206	14372
	10 / 39	3.90	13947	13684	14604	14240	13874	14329	14220	14499	14046	13275
	11 / 41	3.73	13329	13078	13957	13609	13260	13695	13590	13857	13424	12687
	11 / 39	3.55	12679	12440	13277	12945	12613	13027	12927	13181	12769	12068

Revision Control

Revision	Date	Change(s)
1	27/03/2025	First issue, supersedes: • BETD0013
2	07/06/2025	Sensor part number updated PPU chart added