

Injectronics

Remanufactured Automotive Electronics Components

TECHNICAL BULLETIN

Document number: T0018

For further technical information regarding testing, repairs or to search for New or Remanufactured Automotive electronic products, please visit www.injectronics.com.au, call our office on (+613) 8792 6999, or email sales@injectronics.com.au

Make: Various

Model: Delco Engine Management System

Subject: Coolant temperature sensor operation

The Delco engine management system utilises different coolant temperature sensor circuitry within the engine management module compared to previous type L-Jetronic systems. The reason for this is to increase the precision of the coolant temperature sensor over a broader range of temperatures. Injectronics has found that a number of coolant temperature sensors and ECM's have been incorrectly diagnosed and replaced, mainly due to a lack of understanding of the Delco system.

The coolant temperature sensors initial stage of operation (cold start up) acts the same as any other, whereas the coolant temperature sensor resistance lowers (temperature rises), the signal voltage back to the ECM also decreases. As the engine temperature rises and the sensor resistance continues to decrease, the signal voltage will also decrease to approximately 0.85v where suddenly it will sharply rise back up again to approximately 3.7v. The engine temperature at which this rise occurs is approximately 50°C. See figure 1.

From here on, the voltage again begins to decrease in relation to the decrease of sensor resistance and increase in engine temperature until the voltage falls to approximately 1.69v, where the engine cooling fans begin to operate. The cooling fans will then switch off when the C.T.S. voltage rises to approximately 1.95v, the voltage should then stabilise between these two values whilst the engine is at normal operating temperature (approximately 90 - 100°C).

Temperature	Resistance	Voltage-KOEO	Voltage-Engine on
0°C	6000 ohms	2.9 v	2.9 v
20°C	2500 ohms	1.9 v	1.9 v
30°C	1800 ohms	1.6 v	1.6 v
40°C	1200 ohms	1.2 v	1.2 v
70°C	450 ohms	0.55 v	2.6 v
90°C	250 ohms	0.33 v	1.9 v
100°C	190 ohms	0.26 v	1.6 v

KOEO = Key on, Engine Off.

T0018.doc

This publication is distributed with the understanding that the authors, editors and publishers are not responsible for the results of any actions or works of whatsoever kind undertaken on the basis of information contained in this publication, nor for any errors or omissions contained herein. The publishers, authors and editors expressly disclaim all and any liability to any person whomsoever whether a purchaser of this publication or not in respect of anything and of the consequences of anything done or omitted to be done by any such persons in reliance, whether whole or partial upon the whole or any part of the contents of this publication. Injectronics Australia Pty Ltd. © Copyright 2001.