

WARRANTY INFORMATION SERVICE INFORMATION

Reference Voltage Circuit Optimax

Models Affected

MERCURY RACING OUTBOARDS
BEGINNING WITH 2001 MODEL YEAR
200 XS Optimax and Pro Max 300X
200 XS: S/N 0T235288 and Up
Pro Max 300X: S/N 0T235084 & Up

Future Models Affected

New model engines released in the calendar year 2001 and beyond could use the same type of Motorola ECM as the 200 XS Optimax and Pro Max 300X. The base part numbers for this type ECM from Motorola are 859610 or 859611. Any ECM with these part numbers are susceptible to the same failure described in the following text. Motorola ECM's with a base part number of 858891 are not affected by this bulletin.

Situation

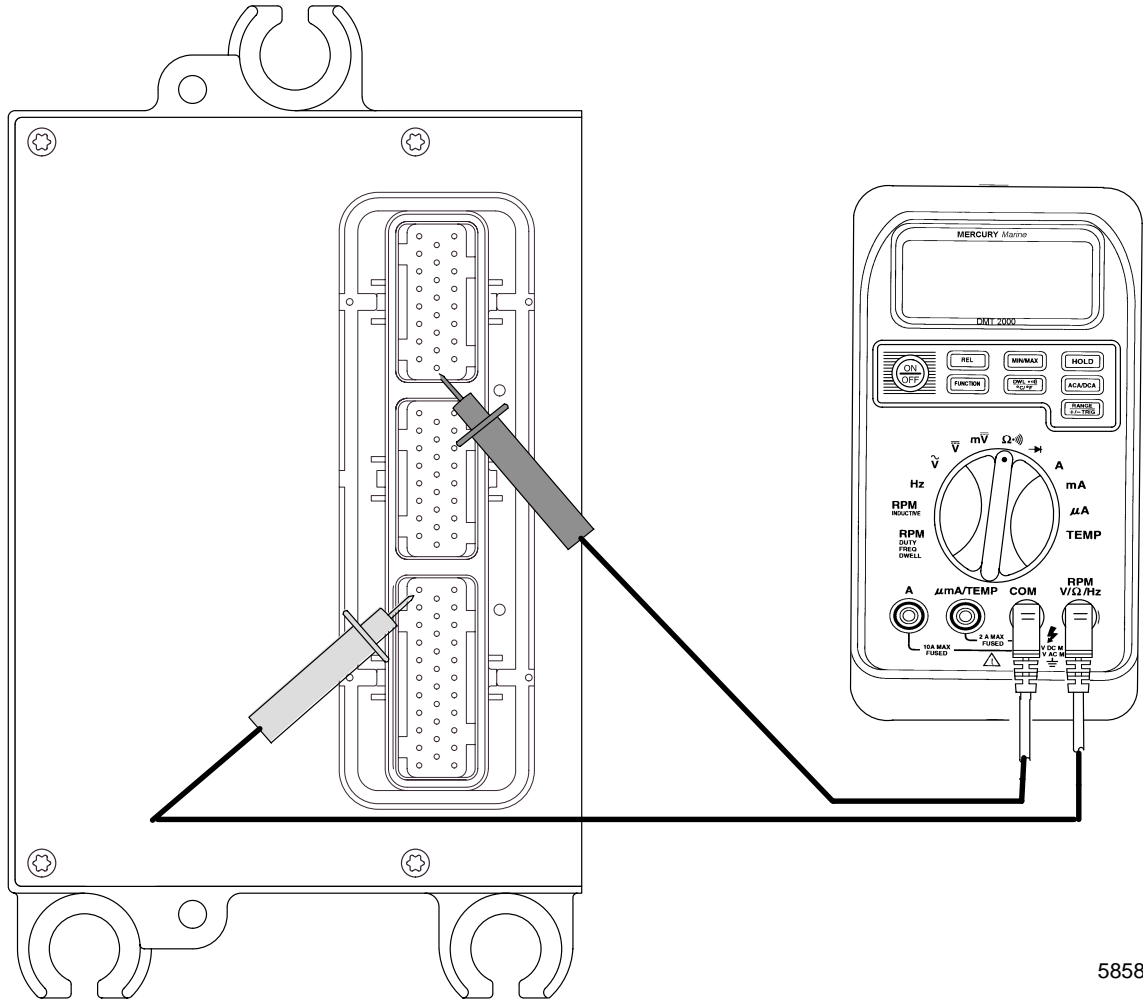
Some sensors used on Optimax engines and sensors used for SmartCraft gauges use a 5 volt reference voltage. The 5 volt source wire is PURPLE/YELLOW and the BLACK/ORANGE wire is used for sensor ground.

If a boat is incorrectly wired to allow a 12 volt battery source to be connected to the PURPLE/YELLOW or BLACK/ORANGE wire/s, excessive current flow through the reference voltage circuit in the Electronic Control Module (ECM) could occur. This excessive current flow could damage the ECM reference voltage circuit. **Examples:** If an analog fuel gauge is wired to a fuel tank level sender that also has the SmartCraft sensor harness connected, there would be a 12 volt source connected to the 5 volt reference ground circuit.

Failure of this circuit typically results in a very high idle speed of 2000 to 4500 RPM. Another indication of circuit damage is abnormal readings on the Digital Diagnostic Terminal (DDT). **Example:** 32° F [0° C] on temp sensors, high voltage reading on the Throttle Position Sensor (TPS), and a warning horn sounding on engine start up.

Correction

To confirm failure on a 859610 or 859611 ECM, make an ohms check between the two ECM pins shown below. The reading should normally be less than 1 ohm. High resistance or an open circuit indicates a damaged ECM (Note: Normal reading for ECM P/N 858891 is an open circuit). Before replacing the ECM, the wiring error must be corrected, or the replacement ECM may also be damaged.



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