

SS 1034797 M2,108SD, 114SD Coolant Level Sensor P/N 06-93316-002

This bulletin was updated 1/28/2021 to reflect the removal of the backshell P/N 23-13302-633, as the added length of the backshell makes it difficult to route the harness around the lower mounting bolt of the surge tank.

Applicable Vehicles:

Applies to all M2, 108 / 114 SD vehicles utilizing the Low Coolant Level (LCL) sensor 06-93316-002.

Issue:

The Call Center has received several calls pertaining to this LCL sensor introduced to in 2018. The purpose of this solution is to bring better awareness to the sensor functions, fault codes generated, along with providing testing procedures used to validate the sensors condition.

Background:

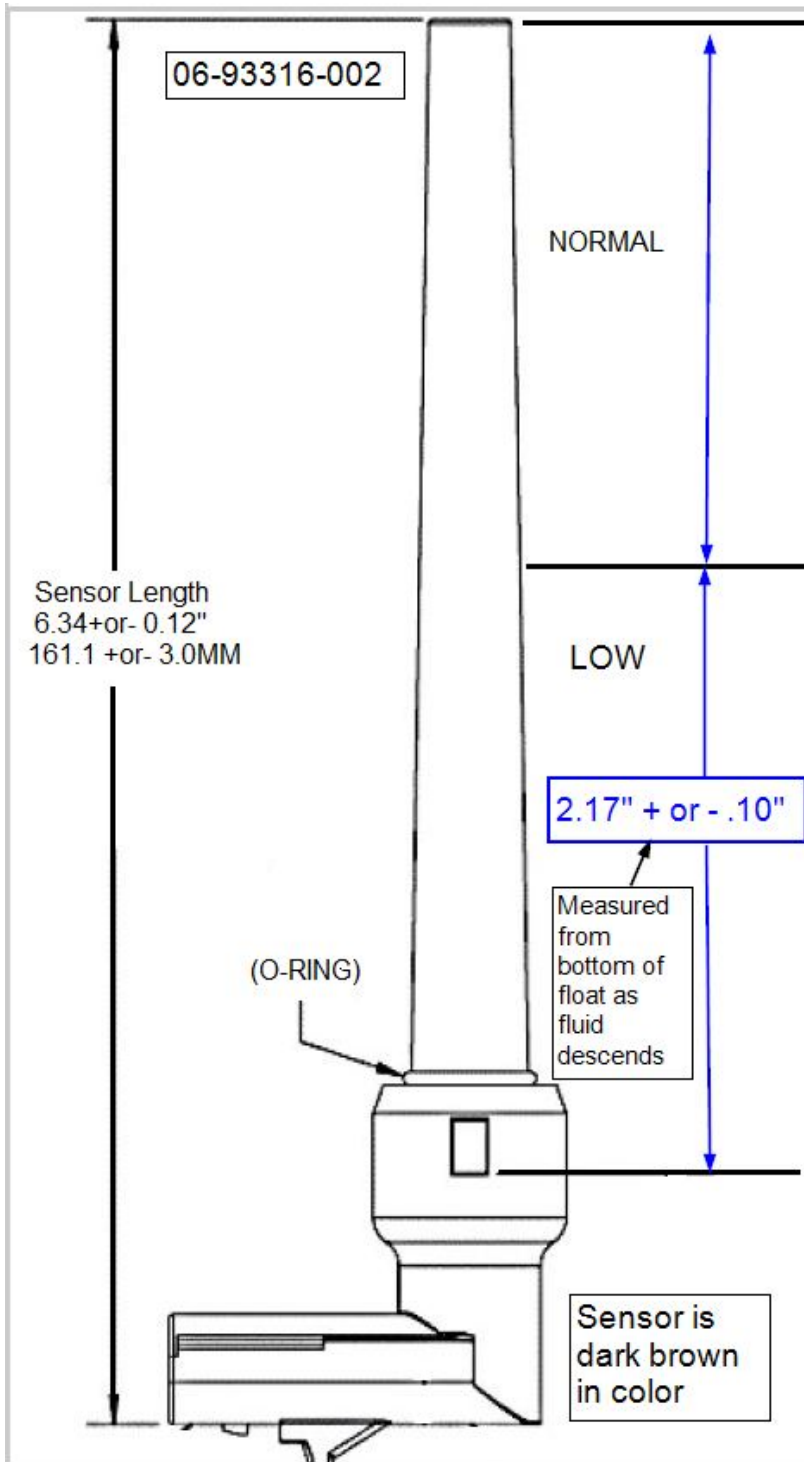
The sensor mounts in the bottom of the surge tank and utilizes a dry fit installation, meaning the sensor can be removed without draining the engine coolant. The sensor sits vertically in the tank and uses a float with two magnets (mounted in the tank) to open and close switches in sensor to determine coolant level. The sensor only has two values, normal and low used to monitor coolant level. The sensor has an external O-ring used to help hold engagement of the sensor when locked in place. It is important that the sensor have this O-ring when mounting the sensor into the tank. There are other versions of the LCL sensor 06-93316 base part number, however, only the -002 (Dark Brown in color) is currently used on the M2, 108SD and 114SD vehicles.

Sensor Information:

06-93316-002 - Resistance Values

Resistance (Ohms)	Level
133 + or - 3	Normal
1200 + or- 60	Low

Sensor measurements

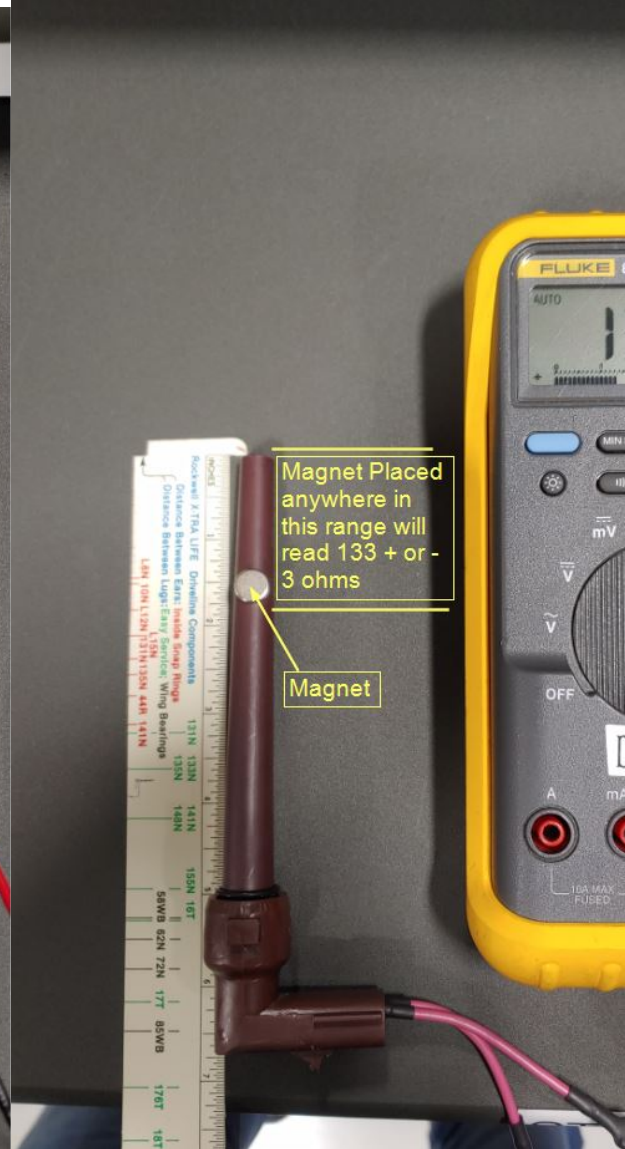
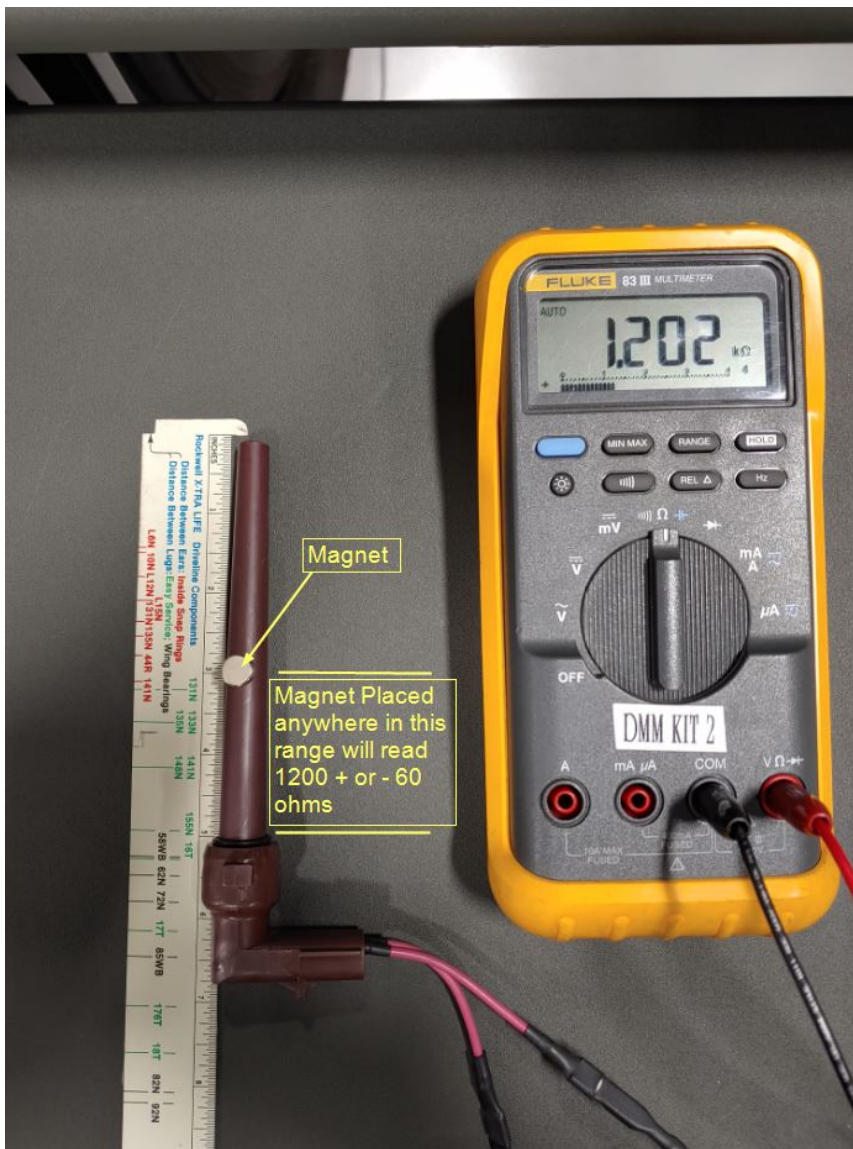


Sensor Testing:

A magnet can be used to move the switches with in the sensor. If no magnet is around the sensor it will read 1200 + or - 60 ohms. If a magnet is placed on the upper portion of the sensor as pictured in the sensor measurements for "Normal" then the ohms reading should be 133 + or - 3 ohms. If the magnet is moved to the bottom of the sensor "Low" then it will read 1200 +- 60 ohms. Reference the pictures below for examples of sensor testing.

Example coolant level (LOW)
(Normal)

Example coolant level
Example coolant sensor out of tank (no magnet)



Codes that are generated with each engine:

Even though the same sensor is used with both the Cummins and Detroit engines, the codes generated for coolant level will appear different.

Cummins LCL Codes:

SPN/FMI 111/3-Coolant level Voltage Above Normal Shorted High

SPN/FMI 111/18- Coolant level low

SPN/FMI 111/4-Coolant level Open Circuit or Shorted low

Detroit LCL Codes:

SPN/FMI 111/3-Coolant level Voltage Above Normal Shorted High

Extra harness support and protection can be obtained by adding, 8MM twist tube to the LCL sensor, if damage is found in that area. See below illustrations for routing and of the harness at the LCL sensor.

Extra harness support for ISB, L9, DDE5, DD8, ISLE5 and MBE900 engines.

The following content was updated removing the backshell as the added length that the backshell would add could cause interference with the lower radiator mounting bolt.

Extra harness support for X12 engines

23-09130-084--BRKT-STANDOFF,.433X.281 ANGLE
23-13482-003--TIE-FIR TREE MTD,7.8-8.0MM,FT8

23-11357-004--CLAMP-HOSE,SGL,CUSH,.250 DIA

DTNA Description	Vendor (Bentley Harris / Federal Mogul Twist tube 2420) P/N To Order	Reference Diameter	DTNA Recommended Bundle		Amount on each roll
			Min	MAX	
TUBE-TWIST TUBE,PES,BK,DIA8	BEN 2421000803SCM	8MM	6MM_1/4"	9MM_3/8"	382 feet
TUBE-TWIST TUBE,PES,BK,DIA13	BEN 2421001303SCM	13MM	8MM_5/16"	14MM_9/16"	164 feet

-001 SHOWN, CUM X12.