

2021 ENGINE PERFORMANCE

Engine Controls And Fuel - 2.5L (LCV) - Specifications - Canyon, Colorado

SPECIFICATIONS

TEMPERATURE VERSUS RESISTANCE - INTAKE AIR TEMPERATURE SENSOR

Temperature	Resistance
150B°C (302B°F)	49 to 67 ohms
140B°C (284B°F)	62 to 83 ohms
120B°C (248B°F)	99 to 129 ohms
100B°C (212B°F)	165 to 210 ohms
80B°C (176B°F)	289 to 356 ohms
60B°C (140B°F)	537 to 639 ohms
40B°C (104B°F)	1, 073 to 1, 226 ohms
25B°C (77B°F)	1, 900 to 2, 100 ohms
20B°C (68B°F)	2, 298 to 2, 570 ohms
0B°C (32B°F)	5, 205 to 6, 122 ohms
-10B°C (14B°F)	8, 145 to 9, 851 ohms
-20B°C (-4B°F)	13, 110 to 16, 329 ohms
-40B°C (-40B°F)	37, 527 to 49, 882 ohms

TEMPERATURE VERSUS RESISTANCE - ENGINE COOLANT TEMPERATURE SENSOR

Temperature	Resistance
150B°C (302B°F)	42 to 44 ohms
140B°C (284B°F)	53 to 57 ohms
130B°C (266B°F)	68 to 72 ohms
120B°C (248B°F)	88 to 92 ohms
110B°C (230B°F)	114 to 120 ohms
100B°C (212B°F)	151 to 159 ohms
90B°C (194B°F)	203 to 215 ohms
80B°C (176B°F)	275 to 293 ohms
70B°C (158B°F)	379 to 405 ohms
60B°C (140B°F)	532 to 572 ohms
50B°C (122B°F)	762 to 824 ohms
45B°C (113B°F)	921 to 997 ohms
40B°C (104B°F)	1118 to 1212 ohms
35B°C (95B°F)	1366 to 1484 ohms
30B°C (86B°F)	1683 to 1829 ohms
25B°C (77B°F)	2088 to 2266 ohms
20B°C (68B°F)	2608 to 2828 ohms
15B°C (59B°F)	3289 to 3567 ohms
10B°C (50B°F)	4182 to 4532 ohms
5B°C (41B°F)	5356 to 5800 ohms
0B°C (32B°F)	6914 to 7484 ohms
-5B°C (23B°F)	8994 to 9732 ohms
-10B°C (14B°F)	11796 to 12762 ohms
-15B°C (5B°F)	15589 to 16871 ohms
-20B°C (-4B°F)	20791 to 22517 ohms

Temperature	Resistance
-30B°C (-22B°F)	37991 to 41273 ohms
-40B°C (-40B°F)	72230 to 78834 ohms

ALTITUDE VERSUS BAROMETRIC PRESSURE

Determine the current vehicle testing altitude.

The following table illustrates the relation between altitude and barometric pressure:

Altitude	Barometric Pressure
4, 267 m (14, 000 ft)	56 to 64 kPa (8.1 to 9.3 PSI)
3, 962 m (13, 000 ft)	58 to 66 kPa (8.4 to 9.6 PSI)
3, 658 m (12, 000 ft)	61 to 69 kPa (8.8 to 10.0 PSI)
3, 353 m (11, 000 ft)	64 to 72 kPa (9.3 to 10.4 PSI)
3, 048 m (10, 000 ft)	66 to 74 kPa (9.6 to 10.7 PSI)
2, 743 m (9, 000 ft)	69 to 77 kPa (10.0 to 11.2 PSI)
2, 438 m (8, 000 ft)	71 to 79 kPa (10.3 to 11.5 PSI)
2, 134 m (7, 000 ft)	74 to 82 kPa (10.7 to 11.9 PSI)
1, 829 m (6, 000 ft)	77 to 85 kPa (11.2 to 12.3 PSI)
1, 524 m (5, 000 ft)	80 to 88 kPa (11.6 to 12.8 PSI)
1, 219 m (4, 000 ft)	83 to 91 kPa (12.0 to 13.2 PSI)
914 m (3, 000 ft)	87 to 95 kPa (12.6 to 13.8 PSI)
610 m (2, 000 ft)	90 to 98 kPa (13.1 to 14.2 PSI)
305 m (1, 000 ft)	94 to 102 kPa (13.6 to 14.8 PSI)
0 m (0 ft)	96 to 104 kPa (13.9 to 15.1 PSI)
-305 m (-1, 000 ft)	101 to 105 kPa (14.6 to 15.2 PSI)

IGNITION SYSTEM SPECIFICATIONS

Application	Specification
Ignition System Type	T8 Ignition Coil - 1 - 4
Firing Order	1 - 3 - 4 - 2
Spark Plug Torque	Refer to Fastener Specifications
Spark Plug Gap	Refer to Engine Mechanical Specifications
Spark Plug Type	Refer to: Electronic Parts Catalog

TRANSMITTING AND RECEIVING COMPONENTS

DTC	Transmitting Component	Receiving Component
DTC P1000	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P1001	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P1003	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P1008	Q82 Passenger Compartment Heater Coolant Cut-Off Solenoid Valve	K20 Engine Control Module
DTC P1009	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P100A	M103 Turbocharger Vane Position Actuator	K20 Engine Control Module
DTC P103D	G59 Engine Coolant Pump	K20 Engine Control Module
DTC P103E	G17 Heater Coolant Pump	K20 Engine Control Module
DTC P10C6	K115 Reductant Control Module	K20 Engine Control Module
DTC P10C7	K115 Reductant Control Module	K20 Engine Control Module

DTC	Transmitting Component	Receiving Component
DTC P10C8	K115 Reductant Control Module	K20 Engine Control Module
DTC P10F5	G58 Evaporative Emission Canister Purge Pump	K20 Engine Control Module
DTC P1100	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P1103	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P117A	Q97 Engine Coolant Flow Control Valve	K20 Engine Control Module
DTC P11FF	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P1200	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P128C	B310 Fuel Pressure and Temperature Sensor	K20 Engine Control Module
DTC P128D	B310 Fuel Pressure and Temperature Sensor	K20 Engine Control Module
DTC P128F	B310 Fuel Pressure and Temperature Sensor	K20 Engine Control Module
DTC P129E	K111 Fuel Pump Driver Control Module or K209 Fuel Level Sensor Control Module	K20 Engine Control Module
DTC P12A8	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P130F	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P135C	G10 Cooling Fan Motor	K20 Engine Control Module
DTC P135D	G10 Cooling Fan Motor	K20 Engine Control Module
DTC P135E	G10 Cooling Fan Motor	K20 Engine Control Module
DTC P139A	K34 Glow Plug Control Module	K20 Engine Control Module
DTC P139B	K34 Glow Plug Control Module	K20 Engine Control Module
DTC P1436	B136 Exhaust Particulate Matter Sensor	K20 Engine Control Module
DTC P143A	K115 Reductant Control Module	K20 Engine Control Module
DTC P143B	K115 Reductant Control Module	K20 Engine Control Module
DTC P14A0	M10 Charge Air Cooler Coolant Pump	K20 Engine Control Module
DTC P14B6	B75 Mass Airflow Sensor or B75C Multifunction Intake Air Sensor	K20 Engine Control Module
DTC P14CD	K20 Engine Control Module	K111 Fuel Pump Driver Control Module
DTC P14CE	K20 Engine Control Module	K111 Fuel Pump Driver Control Module
DTC P14D4	K20 Engine Control Module	K111 Fuel Pump Driver Control Module
DTC P14D5	K20 Engine Control Module	K111 Fuel Pump Driver Control Module
DTC P14D6	K20 Engine Control Module	K111 Fuel Pump Driver Control Module
DTC P150C	K71 Transmission Control Module	K20 Engine Control Module
DTC P155D	K17 Electronic Brake Control Module	K20 Engine Control Module
DTC P15F2	K114 Hybrid/EV Powertrain Control Module	K20 Engine Control Module
DTC P15F9	K114 Hybrid/EV Powertrain Control Module	K20 Engine Control Module
DTC P15FB	K17 Electronic Brake Control Module	K20 Engine Control Module
DTC P165C	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P167F	K111 Fuel Pump Driver Control Module	K20 Engine Control Module
DTC P16FF	P16 Instrument Panel Cluster Control Module	K20 Engine Control Module
DTC P175F	K17 Electronic Brake Control Module	K20 Engine Control Module
DTC P1762	K9 Body Control Module	K20 Engine Control Module
DTC P1772	K71 Transmission Control Module	K20 Engine Control Module
DTC P1773	K71 Transmission Control Module	K20 Engine Control Module
DTC P1775	K20 Engine Control Module	K71 Transmission Control Module

DTC	Transmitting Component	Receiving Component
DTC P188B	K71 Transmission Control Module	K20 Engine Control Module
DTC P18EF	K71 Transmission Control Module	K20 Engine Control Module
DTC P1919	K71 Transmission Control Module	K20 Engine Control Module
DTC P2544	K71 Transmission Control Module	K20 Engine Control Module
DTC P30B4	B195A Nitrogen Oxides Sensor 1	K20 Engine Control Module
DTC P30B5	B195B Nitrogen Oxides Sensor 2	K20 Engine Control Module
DTC P30BC	B136 Exhaust Particulate Matter Sensor	K20 Engine Control Module
DTC P30D5	B195C Nitrogen Oxides Sensor 3	K20 Engine Control Module
DTC P30DE	B310 Fuel Pressure and Temperature Sensor	K20 Engine Control Module
DTC P314E	K287 Fuel Heater Control Module	K20 Engine Control Module
DTC P316B	K103 Fuel Injector Control Module	K20 Engine Control Module

FASTENER SPECIFICATIONS

Single Use Non-Threaded Fasteners/Components

NOTE: All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.
Application
Camshaft Position Sensor Seal (Intake)
Fuel Injector O-ring
Fuel Injector Plastic Spacer
Fuel Injector Seal
Fuel Pump Gasket @ Engine
Fuel Pump O-Ring @ Engine
Fuel Tank Fuel Pump Module O-ring Seal

Single Use Threaded Fastener/Component Tightening Specifications

NOTE: <i>All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.</i>	
Application	Specification
	Metric (English)
Fuel Pump Bolt @ Engine	
• First Pass:	8 N.m (71 lb in)
• Final Pass:	50 degrees
Fuel Pump Intermediate Pipe @ Fuel Pump	

NOTE:

All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.

Application	Specification
	Metric (English)
• First Pass:	15 N.m (11 lb ft)
• Final Pass:	30 N.m (22 lb ft)
Fuel Pump Intermediate Pipe @ Fuel Rail	
• First Pass:	15 N.m (11 lb ft)
• Final Pass:	30 N.m (22 lb ft)

Reusable Threaded Fastener Tightening Specifications

NOTE:

All fasteners listed in this table can be reused after removal.

Application	Specification
	Metric (English)
Accelerator Pedal Position Sensor Fastener	9 N.m (80 lb in)
Air Cleaner Assembly Fastener	12 N.m (106 lb in)
Air Cleaner Housing Cover Bolt	3.1 N.m (27 lb in)
Air Cleaner Outlet Duct Clamp	3.5 N.m (31 lb in)
Air Cleaner Outlet Duct Fastener	9 N.m (80 lb in)
Camshaft Position Actuator Exhaust Solenoid Valve Fastener	10 N.m (89 lb in)
Camshaft Position Actuator Intake Solenoid Valve Fastener	10 N.m (89 lb in)
Camshaft Position Sensor Fastener	10 N.m (89 lb in)
Crankshaft Position Sensor Fastener	10 N.m (89 lb in)
Engine Oil Pressure Sensor	35 N.m (26 lb ft)
Fuel Injection Fuel Rail Bolt	25 N.m (18 lb ft)
Fuel Injection Fuel Rail Fuel Pressure Sensor	33 N.m (24 lb ft)
Fuel Pressure Sensor @ Fuel Feed Pipe	15 N.m (11 lb ft)
Fuel Pump Cover Fastener	10 N.m (89 lb in)
Fuel Pump Power Control Module Fastener	9 N.m (80 lb in)
Fuel Tank Filler Hose Clamp	4 N.m (35 lb in)
Fuel Tank Filler Pipe Bolt	9 N.m (80 lb in)
Fuel Tank Strap Bolt	45 N.m (33 lb ft)
Heated Oxygen Sensor	42 N.m (31 lb ft)
Ignition Coil Fastener	10 N.m (89 lb in)

NOTE:

All fasteners listed in this table can be reused after removal.

Application	Specification
	Metric (English)
Intake Air Baffle Bolt	1.5 N.m (13 lb in)
Knock Sensor Fastener	25 N.m (18 lb ft)
Manifold Absolute Pressure Sensor Retaining Fastener	5 N.m (44 lb in)
Mass Airflow Sensor Bolt	1.5 N.m (13 lb in)
Oil Pump Flow Control Valve Electrical Wiring Harness Connector Bracket Fastener	10 N.m (89 lb in)
Oil Pump Flow Control Valve Fastener	10 N.m (89 lb in)
Spark Plug	20 N.m (15 lb ft)
Throttle Body Assembly Fastener	10 N.m (89 lb in)
Vacuum Pump Fastener	10 N.m (89 lb in)

APPROXIMATE FLUID CAPACITIES

Application	Specification	
	Metric	English
Emission Reduction Fluid Tank Capacity	21.3 liters	5.9 gallons
Fuel Tank Capacity	80.0 liters	21.0 gallons

ADHESIVES, FLUIDS, LUBRICANTS, AND SEALERS

Application	Type of Material	GM Part Number
Anti-Seize Compound	Lubricant	GM P/N 88862477 (Canadian P/N 88862478)
Camshaft Gear Access Hole Plug	Sealant	GM P/N 12346004 (Canadian P/N 10953480)
Coolant Temperature Sensor Threads	Sealant	GM P/N 12346004 (Canadian P/N 10953480)
Dielectric Grease for Spark Plug Wires	Lubricant	GM P/N 19260901 (Canadian P/N 19260902)
Fuel Injection Fuel Rail Bolts	Threadlocker	GM P/N 12345382 (Canadian P/N 10953489)
Intake Air Temperature Sensor Threads	Sealant	GM P/N 12346004 (Canadian P/N 10953480)
Silicon Free Engine Oil	5W-20	GM P/N 19259486 (Canadian P/N 88863951)
Silicon Free Engine Oil - Alternate	0W-20	GM P/N 19259487 (Canadian P/N 19259784)
Top Engine Cleaner	Cleaner	GM P/N 1052626 (Canadian P/N 993026)