

2021 ENGINE PERFORMANCE

Engine Controls And Fuel - 3.6L (LGZ) - Specifications - Canyon, Colorado

SPECIFICATIONS

TEMPERATURE VERSUS RESISTANCE - ENGINE COOLANT TEMPERATURE SENSOR

Temperature	Resistance
150B°C (302B°F)	47 to 49 ohms
140B°C (284B°F)	58 to 62 ohms
130B°C (266B°F)	76 to 80 ohms
120B°C (248B°F)	98 to 104 ohms
110B°C (230B°F)	130 to 136 ohms
100B°C (212B°F)	174 to 182 ohms
90B°C (194B°F)	237 to 247 ohms
80B°C (176B°F)	327 to 341 ohms
70B°C (158B°F)	459 to 479 ohms
60B°C (140B°F)	656 to 686 ohms
50B°C (122B°F)	958 to 1002 ohms
45B°C (113B°F)	1167 to 1223 ohms
40B°C (104B°F)	1430 to 1500 ohms
35B°C (95B°F)	1763 to 1849 ohms
30B°C (86B°F)	2185 to 2295 ohms
25B°C (77B°F)	2725 to 2865 ohms
20B°C (68B°F)	3418 to 3604 ohms
15B°C (59B°F)	4318 to 4564 ohms
10B°C (50B°F)	5493 to 5823 ohms
5B°C (41B°F)	7041 to 7485 ohms
0B°C (32B°F)	9097 to 9701 ohms
-5B°C (23B°F)	11844 to 12678 ohms
-10B°C (14B°F)	15540 to 16700 ohms
-15B°C (5B°F)	20559 to 22183 ohms
-20B°C (-4B°F)	27439 to 29725 ohms
-30B°C (-22B°F)	50264 to 54924 ohms
-40B°C (-40B°F)	95953 to 105777 ohms

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

Temperature	Resistance
-20B°C (-4B°F)	13, 110 to 16, 329 ohms
-40B°C (-40B°F)	37, 527 to 49, 882 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 - 6
Firing Order	1 - 2 - 3 - 4 - 5 - 6
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
Crankshaft Position Sensor Seal
Fuel Pump Gasket
Fuel Pump O-Ring
Throttle Body Gasket

Single Use Threaded Fastener/Component Tightening Specifications

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

Application	Specification
	Metric (English)
Fuel Feed Intermediate Pipe Fitting	28 N.m (21 lb ft)
Fuel Pressure Sensor @ Fuel Injection Fuel Rail	33 N.m (24 lb ft)
Fuel Pump Bolt	25 N.m (18 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 Bracket Bolt @ Air Cleaner Outlet Duct	9 N.m (80 lb in)
Air Cleaner Outlet Duct Bracket Bolt @ Engine Front Cover	22 N.m (16 lb ft)
Air Cleaner Outlet Duct Clamp	3.5 N.m (31 lb in)
Camshaft Position Actuator Locating Pin Control Valve Bolt	10 N.m (89 lb in)
Camshaft Position Actuator Solenoid Valve Bolt	10 N.m (89 lb in)
Camshaft Position Sensor Bolt	10 N.m (89 lb in)
Chassis Control Module Bolt	9 N.m (80 lb in)
Crankshaft Position Sensor Bolt	10 N.m (89 lb in)
Engine Control Module Bracket Nut	9 N.m (80 lb in)
Engine Coolant Temperature Sensor	9 N.m (80 lb in)
Evaporative Emission Canister Purge Solenoid Valve Bolt	10 N.m (89 lb in)
Fuel Feed Front Pipe Bracket Bolt	10 N.m (89 lb in)
Fuel Pipe Shield Bolt	9 N.m (80 lb in)
Fuel Pressure Sensor @ Fuel Feed Pipe	15 N.m (11 lb ft)
Fuel Rail Fastener	
First Pass:	Start ALL bolts by hand, but do NOT tighten.
Second Pass:	Tighten the outer two bolts by hand.
Third Pass:	Tighten the inner bolt by hand.
Final Pass:	25 N.m (18 lb ft)
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 Bolt	10 N.m (89 lb in)
Intake Air Baffle Bolt	1.5 N.m (13 lb in)
Knock Sensor Bolt	25 N.m (18 lb ft)
Manifold Absolute Pressure Sensor Bolt	4 N.m (35 lb in)
Mass Airflow Sensor Bolt	1.5 N.m (13 lb in)
Oil Pump Flow Control Solenoid Valve Bolt	5 N.m (44 lb in)
Oil Pump Flow Control Solenoid Valve Harness Bolt	15 N.m (11 lb ft)
Positive Crankcase Ventilation Hose Clamp	4 N.m (35 lb in)

NOTE:

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

Application	Specification
	Metric (English)
Spark Plug	25 N.m (18 lb ft)
Throttle Body Assembly Fastener	10 N.m (89 lb in)
Valve Rocker Arm Oil Control Valve Bolt	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
All Purpose Parts Cleaner	Cleaner	Refer to the electronic parts catalog
Anti-Seize Compound	Lubricant	
Coolant Temperature Sensor Threads	Sealant	
Engine Oil	5W-30 Oil - Synthetic	
Fuel Injection Fuel Rail Bolts	Threadlock	
Intake Air Temperature Sensor Threads	Sealant	