

2017 ENGINE PERFORMANCE**Engine Controls and Fuel - 1.4L (LE2) - Specifications - Encore****SPECIFICATIONS****TEMPERATURE VERSUS RESISTANCE (ENGINE COOLANT TEMPERATURE SENSOR)**

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

TEMPERATURE VERSUS RESISTANCE - INTAKE AIR TEMPERATURE SENSOR (DELCO SENSOR)

Temperature C°/F°	Resistance Minimum Ohms	Resistance Maximum Ohms
Delco Intake Air Temperature (IAT) Sensor		
-40/-40	42,661	54,224
-20/-4	14,039	17,333
-10/14	8,529	10,399
0/32	5,358	6,458
20/68	2,308	2,727
25/77	1,904	2,236
40/104	1,113	1,292
60/140	571	655
80/176	309	351

Temperature C°/F°	Resistance Minimum Ohms	Resistance Maximum Ohms
Delco Intake Air Temperature (IAT) Sensor		
100/212	175	197
120/248	103	116
140/284	67	73
150/302	54	59

TEMPERATURE VERSUS RESISTANCE - INTAKE AIR TEMPERATURE SENSOR (BOSCH SENSOR)

Temperature C°/F°	Resistance Minimum Ohms	Resistance Maximum Ohms
Bosch Intake Air Temperature (IAT) Sensor		
-40/-40	36,595	42,717
-20/-4	12,947	14,744
-10/14	8,082	9,105
0/32	5,191	5,789
20/68	2,309	2,530
25/77	1,913	2,088
40/104	1,122	1,210
60/140	587	625
80/176	328	345
100/212	193	201
120/248	119	125
140/284	76	81

ALTITUDE VERSUS BAROMETRIC PRESSURE

Altitude Measured in Meters (m)	Altitude Measured in Feet (ft)	Barometric Pressure Measured in Kilopascals (kPa)	Barometric Pressure Measured in Pounds Per Square Inch (PSI)
Determine your altitude by contacting a local weather station or by using another reference source.			
4,267	14,000	56-64	8.1-9.3
3,962	13,000	58-66	8.4-9.6
3,658	12,000	61-69	8.8-10.0
3,353	11,000	64-72	9.3-10.4
3,048	10,000	66-74	9.6-10.7
2,743	9,000	69-77	10.0-11.2
2,438	8,000	71-79	10.3-11.5
2,134	7,000	74-82	10.7-11.9
1,829	6,000	77-85	11.2-12.3
1,524	5,000	80-88	11.6-12.8
1,219	4,000	83-91	12.0-13.2
914	3,000	87-95	12.6-13.8
610	2,000	90-98	13.1-14.2
305	1,000	94-102	13.6-14.8
0	0 Sea Level	96-104	13.9-15.1
-305	-1,000	101-105	14.6-15.2

IGNITION SYSTEM SPECIFICATIONS

Application	Specification
Ignition Type	Individual Ignition Coils

Application	Specification
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

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 Actuator Solenoid Valve Seal
Camshaft Position Sensor Seal
Combustion Fuel Injector Seal
Engine Coolant Temperature Sensor Seal
Fuel Injector Wiring Harness Tie Strap
Fuel Pump Housing Seal
Fuel Sender Assembly Gasket
Fuel Tank Fuel Pump Module Gasket
Throttle Body Gasket
Turbocharger Air Pressure Sensor Seal
Vacuum Pump Gasket
Vacuum Pump Seal

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	30 N.m (22 lb ft)
Fuel Injection Fuel Rail Fuel Pressure Sensor (In Sequence)	32 N.m (24 lb ft)
Fuel Injector Bolt (In Sequence)	5 N.m (44 lb in)
Fuel Pump Bolt (In Sequence)	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	6 N.m (53 lb in)
Air Cleaner Outlet Duct Clamp	3 N.m (27 lb in)
Camshaft Position Actuator Solenoid Valve Fastener	10 N.m (89 lb in)
Camshaft Position Sensor Bolt	10 N.m (89 lb in)
Charge Air Cooler Fastener	10 N.m (89 lb in)
Charge Air Cooler Inlet Air Hose Bracket Bolt	22 N.m (16 lb ft)
Charge Air Cooler Outlet Air Hose Bracket Bolt	22 N.m (16 lb ft)

NOTE:

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

Application	Specification
	Metric (English)
Charge Air Cooler Outlet Air Hose Bracket Nut	22 N.m (16 lb ft)
Chassis Control Module Bolt	9 N.m (80 lb in)
Crankshaft Position Sensor Bolt	10 N.m (89 lb in)
Engine Oil Pressure Sensor	35 N.m (26 lb ft)
Engine Wiring Harness Bracket Bolt	9 N.m (80 lb in)
Engine Wiring Harness Ground Nut	10 N.m (89 lb in)
Fuel Injection Fuel Feed Pipe Clip Bolt	10 N.m (89 lb in)
Fuel Injection Fuel Rail Bolt (In Sequence)	10 N.m (89 lb in)
Fuel Tank Filler Pipe Fastener	9 N.m (80 lb in)
Fuel Tank Protector Fastener	22 N.m (16 lb ft)
Fuel Tank Strap Fastener	22 N.m (16 lb ft)
Heated Oxygen Sensor	42 N.m (31 lb ft)
Ignition Coil Bolt	10 N.m (89 lb in)
Intake Air Pressure and Temperature Sensor Fastener	5 N.m (44 lb in)
Knock Sensor Fastener	25 N.m (18 lb ft)
Mass Airflow Sensor Bolt	5 N.m (44 lb in)
Parking Brake Cable Nut	22 N.m (16 lb ft)
Spark Plug	17 N.m (13 lb ft)
Throttle Body Bolt	10 N.m (89 lb in)
Turbocharger Air Pressure Sensor Bolt	3.8 N.m (34 lb in)
Turbocharger Bypass Valve Solenoid Bolt	9 N.m (80 lb in)
Turbocharger Wastegate Actuator Nut	10 N.m (89 lb in)
Turbocharger Wastegate Regulator Solenoid Valve Bolt	8 N.m (71 lb in)
Underbody Cross Sill Shield Nut	3.5 N.m (31 lb in)

APPROXIMATE FLUID CAPACITIES

Application	Specification	
	Metric	English
Fuel Tank Capacity	53 liters	14 gallons