

2013 Chevrolet Colorado

Submodel: | **Engine Type:** | **Liters:**
Fuel Delivery: | **Fuel:**

The electronic ignition system produces and controls a high-energy secondary spark. This spark is used to ignite the compressed air/fuel mixture at precisely the correct time. This provides optimal performance, fuel economy, and control of exhaust emissions. This ignition system uses an individual coil for each cylinder. The ignition coils are mounted in the center of each camshaft cover with short integrated boots connecting the coils to the spark plugs. The driver modules within each ignition coil are commanded ON/OFF by the engine control module (ECM). The ECM primarily uses engine speed, the mass air flow (MAF) sensor signal, and position information from the crankshaft position and the camshaft position sensors. This controls the sequence, dwell, and timing of the spark. The electronic ignition system consists of the following components:

Crankshaft Position Sensor

The crankshaft position sensor works in conjunction with a reluctor wheel on the crankshaft (front mounted crankshaft position sensor) or a reluctor wheel that is part of the flywheel (rear mounted crankshaft position sensor). The engine control module (ECM) monitors the voltage frequency on the crankshaft position sensor signal circuit. As each reluctor wheel tooth rotates past the sensor, the sensor creates a digital ON/OFF pulse. This digital signal is processed by the ECM. This creates a signature pattern that enables the ECM to determine the crankshaft position. The ECM uses the signal to determine which pair of cylinders is approaching top dead center based on the crankshaft position signal alone. The camshaft position sensor signals are used in order to determine which of these 2 cylinders is on a firing stroke, and which is on the exhaust stroke. The ECM uses this to properly synchronize the ignition system, the fuel injectors, and the knock control. This sensor is also used in order to detect misfire.

The ECM also has a dedicated replicated crankshaft position sensor signal output circuit that may be used as an input signal to other modules for monitoring engine RPM.

Camshaft Position Sensor

This engine uses a camshaft position sensor for each camshaft. The camshaft position sensor signals are a digital ON/OFF pulse and output 4 times per revolution of the camshaft. The camshaft position sensor does not directly affect the operation of the ignition system. The camshaft position sensor information is used by the engine control module (ECM) to determine the position of the camshaft relative to the crankshaft position. By monitoring the camshaft position and crankshaft position signals the ECM can accurately time the operation of the fuel injectors. The ECM supplies the camshaft position sensor with a 5 V reference circuit and a low reference circuit. The camshaft position sensor signals are an input to the ECM. These signals are also used to detect camshaft alignment with the crankshaft.

The ECM also has a dedicated replicated camshaft position sensor signal output circuit that may be used as an input signal to other modules for monitoring engine RPM.

Knock Sensor

The knock sensor system enables the control module to control the ignition timing for the best possible performance while protecting the engine from potentially damaging levels of detonation, also known as spark knock. The knock sensor system uses 1 or 2 flat response 2-wire sensors. The sensor uses piezo-electric crystal technology that produces an AC voltage signal of varying amplitude and frequency based on the engine vibration or noise level. The amplitude and frequency depend upon the level of knock that the knock sensor detects. The control module receives the knock sensor signal through the signal circuit. The knock sensor ground is supplied by the control module through the low reference circuit.

The control module learns a minimum noise level, or background noise, at idle from the knock sensor and uses calibrated values for the rest of the RPM range. The control module uses the minimum noise level to calculate a noise channel. A normal knock sensor signal will ride within the noise channel. As engine speed and load change, the noise channel upper and lower parameters will change to accommodate the normal knock sensor signal, keeping the signal within the channel. In order to determine which cylinders are knocking, the control module only uses knock sensor signal information when each cylinder is near top dead center (TDC) of the firing stroke. If knock is present, the signal will range outside of the noise channel.

If the control module has determined that knock is present, it will retard the ignition timing to attempt to eliminate the knock. The control module will always try to work back to a zero compensation level, or no spark retard. An abnormal knock sensor signal will stay outside of the noise channel or will not be present. Knock sensor diagnostics are calibrated to detect faults with the knock sensor circuitry inside the control module, the knock sensor wiring, or the knock sensor voltage output. Some diagnostics are also calibrated to detect constant noise from an outside influence such as a loose/damaged component or excessive engine mechanical noise.

Ignition Coils

Each ignition coil contains a solid state driver module as its primary element. The engine control module (ECM) signals the coil driver to initiate a firing event by applying ignition control (IC) circuit voltage for the appropriate amount of time otherwise known as dwell. When the voltage is removed the coil fires the spark plug.

Engine Control Module (ECM)

The engine control module (ECM) controls all ignition system functions and constantly corrects the spark timing. The ECM monitors information from various sensor inputs that may include the following components, if applicable:

- Throttle position sensor
- Engine coolant temperature (ECT) sensor
- Mass air flow (MAF) sensor
- Intake air temperature (IAT) sensor
- Vehicle speed sensor (VSS)
- Transmission gear position or range information sensors
- Engine knock sensors
- Ambient pressure sensor (BARO)

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The ignition system is responsible for producing and controlling a high energy secondary spark. This spark is used to ignite the compressed air/fuel mixture at precisely the correct time. This provides optimal performance, fuel economy, and control of exhaust emissions. This ignition system uses one coil for each pair of cylinders. Each pair of cylinders that are at top dead center (TDC) at the same time are known as companion cylinders. The cylinder that is at TDC of the compression stroke is called the event cylinder. The cylinder that is at TDC of the exhaust stroke is called the waste cylinder. When the coil is triggered both companion cylinder spark plugs fire at the same time, completing a series circuit. Because the lower pressure inside the waste cylinder offers very little resistance, the event cylinder uses most of the available voltage to produce a very high energy spark. This is known as waste spark ignition. The ignition system consists of the following components:

Crankshaft Position Sensor

The crankshaft position sensor works in conjunction with a reluctor wheel on the crankshaft (front mounted crankshaft position sensor) or a reluctor wheel that is part of the flywheel (rear mounted crankshaft position sensor). The engine control module (ECM) monitors the voltage frequency on the crankshaft position sensor signal circuit. As each reluctor wheel tooth rotates past the sensor, the sensor creates a digital ON/OFF pulse. This digital signal is processed by the ECM. This creates a signature pattern that enables the ECM to determine the crankshaft position. The ECM uses the signal to determine which pair of cylinders is approaching top dead center based on the crankshaft position signal alone. The camshaft position sensor signals are used in order to determine which of these 2 cylinders is on a firing stroke, and which is on the exhaust stroke. The ECM uses this to properly synchronize the ignition system, the fuel injectors, and the knock control. This sensor is also used in order to detect misfire.

Crankshaft Reluctor Wheel

The crankshaft reluctor wheel is part of the crankshaft. The reluctor wheel consists of 58 teeth and a reference gap. Each tooth on the reluctor wheel is spaced 6 degrees apart with a 12-degree space for the reference gap. The pulse from the reference gap is known as the sync pulse. The sync pulse is used to synchronize the coil firing sequence with the crankshaft position, while the other teeth provide cylinder location during a revolution.

Camshaft Position Sensor

The camshaft position sensor is a Hall-Effect type sensor. The camshaft position signal is a digital ON/OFF pulse, which outputs once per revolution of the camshaft. The camshaft position sensor does not directly affect the operation of the ignition system. The camshaft position sensor information is used by the engine control module (ECM) to determine the position of the valve train relative to the crankshaft position. By monitoring the camshaft position and crankshaft position signals, the ECM can accurately trigger the fuel injectors. This allows the ECM to calculate true sequential fuel injection mode of operation. If the camshaft position signal is lost while the engine is running, the fuel injection system will shift to a calculated sequential fuel injection mode based on the last fuel injection pulse, and the engine will continue to run. The camshaft position sensor consists of an ignition 1 voltage circuit, a ground circuit, and a signal circuit.

Camshaft Reluctor Wheel

The camshaft reluctor wheel is bolted to the front of the camshaft. The wheel is a smooth track, half of which is of a lower profile than the other half. This track is read in a radial or axial fashion respectively. This allows the camshaft position sensor to supply a signal as soon as the key is turned ON, since the camshaft position sensor reads the track profile, instead of a notch.

Ignition Coils (IC)

The ignition coil (IC) provides the voltage for 2 spark plugs simultaneously. The IC is a dual coil pack, and directly supplies voltage to each spark plug. The engine control module (ECM) will command the IC circuit ON, this allows the current to flow through the primary coil windings for the appropriate time or dwell. When the ECM commands the IC circuit OFF, this will interrupt current flow through the primary coil windings. The magnetic field created by the primary coil windings will collapse across the secondary coil windings, which induces a high voltage. The secondary coil voltage travels from the coil output terminal, through the spark plug wire, and across the spark plug gap to the engine block. The IC is not serviceable and must be replaced as an assembly. The IC consists of an ignition 1 voltage circuit, an IC 1 and 4 control circuit, and an IC 2 and 3 control circuit.

Engine Control Module (ECM)

The engine control module (ECM) is responsible for maintaining proper spark and fuel injection timing for all driving conditions. The electronic spark timing (EST) is the method the ECM uses to control spark advance. The ignition module is integrated inside the ECM, and the primary coil ON/OFF is directly controlled by the ECM. To provide optimum driveability and emissions, the ECM monitors input signals from the following components in calculating ignition spark timing:

- The crankshaft position sensor
- The throttle position (TP) sensor
- The engine coolant temperature (ECT) sensor
- The manifold absolute pressure (MAP) sensor
- The intake air temperature (IAT) sensor
- The vehicle speed sensor (VSS)
- The knock sensor (KS)

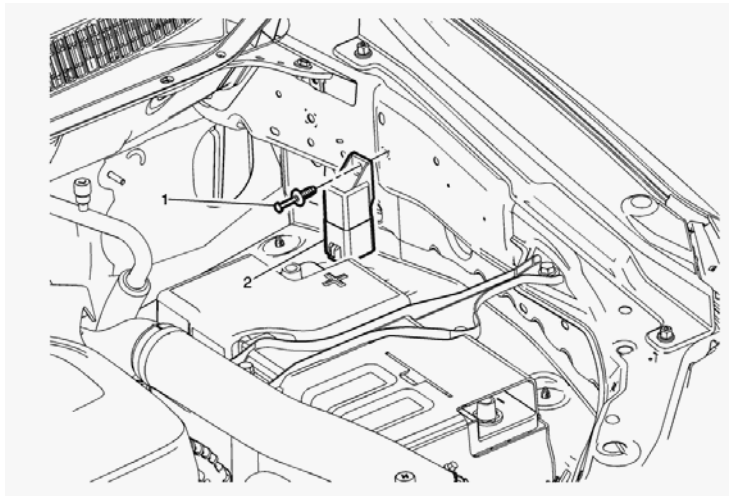
Noteworthy Ignition Information

The ignition coils secondary output voltage is more than 40,000 volts. Avoid body contact with the ignition high voltage secondary components when the engine is running or personal injury may result.

Be careful not to damage the secondary ignition coil boots when servicing the ignition system. Rotate each spark plug wire in order to loosen the boot from the spark plug before removing. Never pierce a secondary ignition boot for any testing purposes. Future ignition system problems are guaranteed if pinpoints or test lights are pushed through the secondary ignition component insulation during testing.

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Glow Plug Controller Replacement

Callout

1 Glow Plug Controller Push Pin

Glow Plug Controller

2 **Procedure**

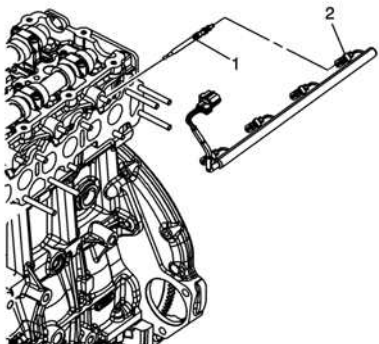
Disconnect the electrical connector.

Component Name

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Caution: Refer to Fastener Caution.

1. Install the glow plug assemblies (1) and tighten to **14Y (124 lb in)**.
2. Install the glow plug wiring harness assembly (2).

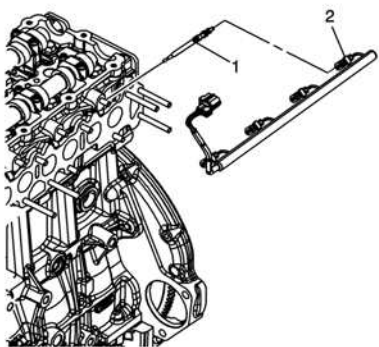
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Special Tools

EN 50038 Glow Plug Socket

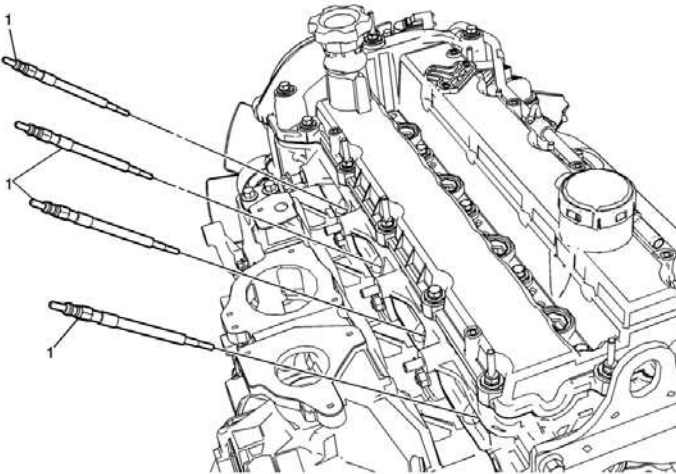
For equivalent regional tools, refer to Special Tools.



1. Remove the glow plug wiring harness assembly (2).
2. Remove the glow plugs (1) using the EN 50038 socket .

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Glow Plug Replacement

Callout

Component Name

Preliminary Procedure

Remove the fuel rail. Refer to Fuel Injection Fuel Rail Assembly Replacement.

Glow Plug (Qty: 4)

Caution: Refer to Fastener Caution.

Procedure

Disconnect the electrical connector.

Tighten

14 Y (10 lb ft)

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In the diesel engine, air alone is compressed in the cylinder. Then, after the air has been compressed, a charge of fuel is sprayed into the cylinder and ignition occurs, due to the heat of compression. Glow plugs are used as an aid to starting.

Control of the glow plugs is accomplished by a glow plug controller. The temperature and the power consumption is controlled between the engine control module (ECM) and the controller within a wide range to suit the engine's pre-heating requirements. Each glow plug is energized individually. This capability yields more optimum heat times for the glow plugs, thus pre-glow times can be kept to a minimum for short wait to crank times and maximum glow plug durability. A DTC will set if there is a glow plug system fault.

A normal functioning system operates as follows:

- Turn the ignition ON with the engine OFF, and at room temperature.
- The glow plugs turn ON and heat up in 2 seconds and then are pulse-width modulated (PWM) for another 2 seconds.
- The glow plug wait lamp is ON for 1 second during cold start.
- The glow plug wait lamp may not illuminate during a warm engine start.
- If the engine is cranked during or after the above sequence, the glow plugs may cycle ON and OFF after the ignition switch is returned from the start position, whether the engine starts or not. The engine does not have to be running to terminate the glow plug cycling.

The glow plug initial ON time will vary based on the system voltage and temperature. Lower temperatures cause longer ON times.

The ECM provides glow plug operation after starting a cold engine. This post-start operation is initiated when the ignition switch is returned to Run, from the Start position. This function helps clean up excessive white smoke and/or poor idle quality after starting.

[Glow Plugs](#)

The glow plugs are 4.4 volt heaters in each of the cylinders that turn ON, then are pulse-width modulated when the ignition switch is turned to the RUN position prior to starting the engine. The glow plug controller remains pulsing the glow plugs a short time after starting, then are turned OFF.

A Wait to Start lamp on the instrument panel provides information on engine starting conditions. The Wait to Start lamp will not illuminate during post-start glow plug operation.

[Glow Plug Controller](#)

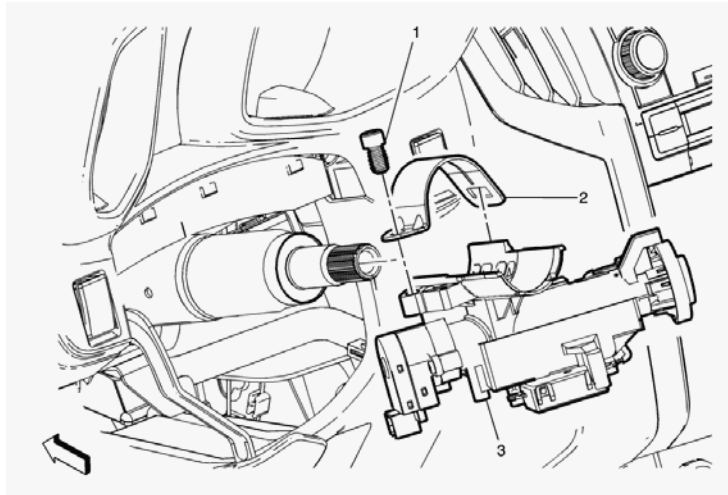
The glow plug controller is a solid state device which operates the glow plugs. The glow plug controller is connected to the following circuits:

- The battery voltage circuits
- The CAN communication circuit located between the engine control module (ECM) and the glow plug controller - If equipped
- The engine ground circuit
- The glow plug supply voltage circuits located between the glow plug controller and the glow plugs.

The glow plug diagnostic circuits are directly monitored individually by using a separate transistor to control current to each glow plug. Individual diagnosis is thus possible for every glow plug.

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Ignition and Start Switch Housing Replacement

Callout

Component Name

Preliminary Procedure

Remove the turn signal switch bracket. Refer to Turn Signal Switch Bracket Replacement.

Ignition and Start Switch Housing Bolt

Caution: Refer to Fastener Caution.

1

Tighten

11 Y (97 lb in)

2

Ignition and Start Switch Housing Strap

Ignition and Start Switch Housing

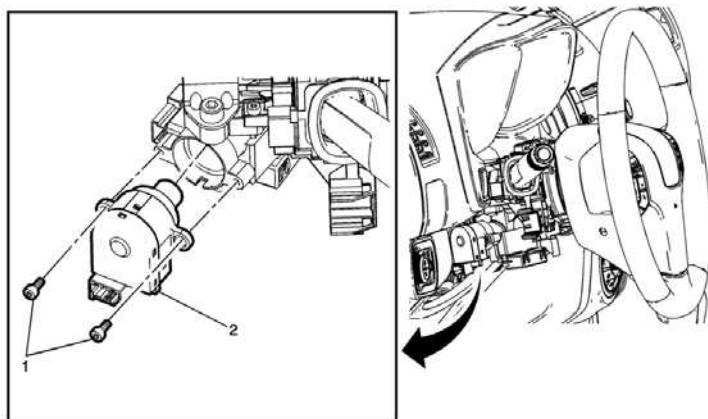
Procedure

3

1. Disconnect any electrical connectors as necessary.
2. Transfer any components as necessary.

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Ignition and Start Switch Replacement

Callout

Component Name

Preliminary Procedure

1. Disconnect the battery negative cable. Refer to Battery Negative Cable Disconnection and Connection.
2. Disable the supplemental inflatable restraint (SIR) system. Refer to SIR Disabling and Enabling.
3. Remove the steering column trim covers. Refer to Steering Column Trim Cover Replacement.

1

Ignition and Start Switch Bolt (Qty: 2)

Caution: Refer to Fastener Caution.

Ignition and Start Switch

2

Procedure

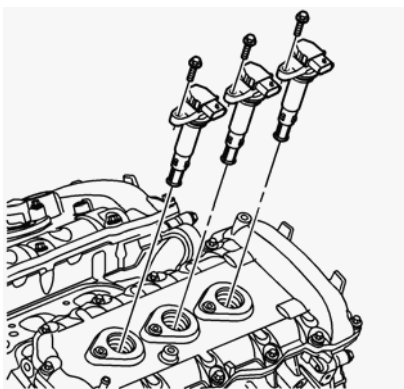
Disconnect the ignition and start switch electrical connector.

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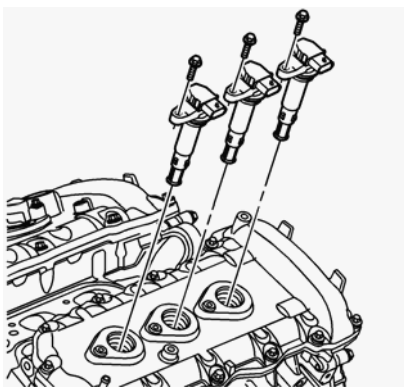
[Removal Procedure](#)

1. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
2. Remove the intake cover. Refer to Intake Manifold Cover Replacement.
3. Disconnect the electrical wiring harness connectors from the ignition coils.



4. Remove the ignition coil bolt(s).
5. Remove the ignition coil(s).

[Installation Procedure](#)



1. Install the ignition coil(s).

Caution: Refer to Fastener Caution.

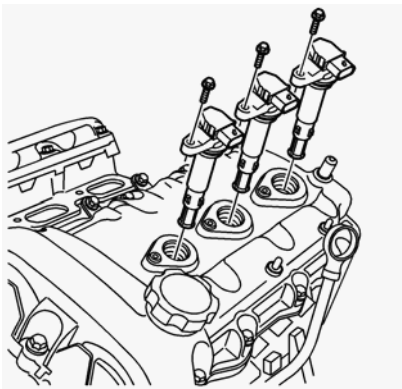
2. Install the ignition coil bolt(s) and tighten to **10 Y (89 lb in)**.
3. Connect the ignition coil electrical wiring harness connector(s).
4. Install the intake cover. Refer to Intake Manifold Cover Replacement.
5. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

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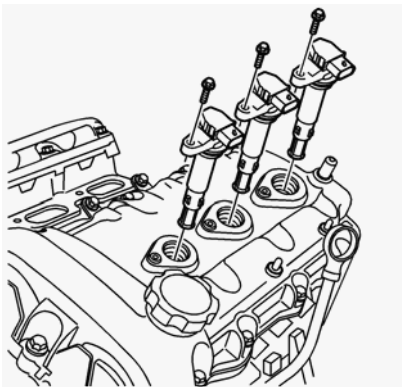
Removal Procedure

1. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
2. Remove the intake cover. Refer to Intake Manifold Cover Replacement.
3. Disconnect the electrical wiring harness connectors from the ignition coils.
4. Remove the upper intake manifold. Refer to Upper Intake Manifold Replacement.



5. Remove the ignition coil bolt(s).
6. Remove the ignition coil(s).

Installation Procedure

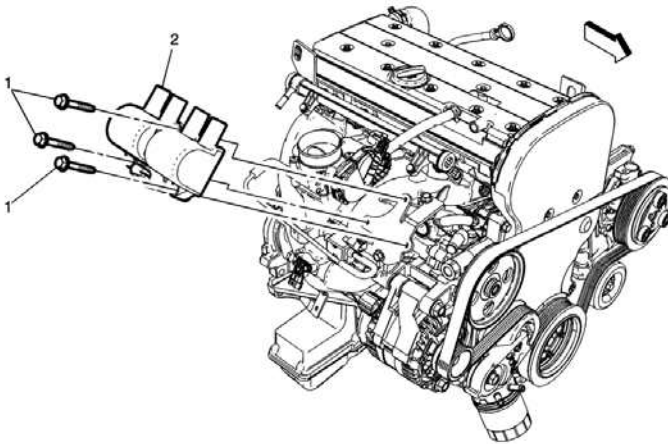


1. Install the ignition coil(s).
- Caution:** Refer to Fastener Caution.
2. Install the ignition coil bolts and tighten to **10 Y (89 lb in)**.
 3. Install the upper intake manifold. Refer to Upper Intake Manifold Replacement.
 4. Connect the ignition coil electrical wiring harness connector(s).
 5. Install the intake cover. Refer to Intake Manifold Cover Replacement.
 6. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

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Ignition Coil Replacement

Callout

Component Name

Preliminary Procedure

1. Remove the air cleaner outlet duct. Refer to Air Cleaner Outlet Duct Replacement.
2. Remove the spark plug wires. Refer to Spark Plug Wire Replacement.

Ignition Coil Fasteners (Qty: 3)

Caution: Refer to Fastener Caution.

1

Tighten

9 Y(80 lb in)

Ignition Coil

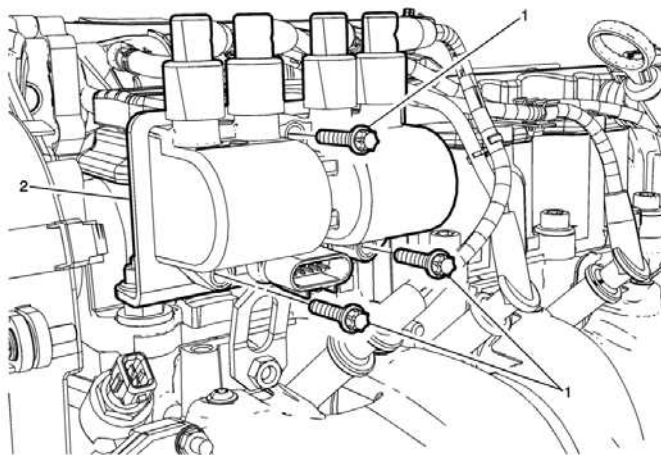
2

Procedure

Disconnect the ignition coil electrical connector.

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Ignition Coil Replacement

Callout

Component Name

Preliminary Procedure

Remove the spark plug wires. Refer to Spark Plug Wire Replacement.

Ignition Coil Fasteners (Qty: 3)

Caution: Refer to Fastener Caution.

1

Tighten

9 Y(80 lb in)

Ignition Coil

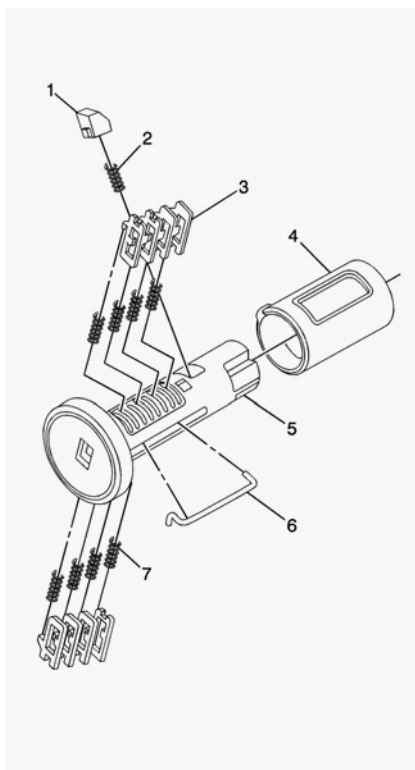
2

Procedure

Disconnect the ignition coil electrical connector.

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The ignition lock cylinder uses 8 key cut positions, 1–8. The ignition cylinder tumblers (3) are located on alternate sides of the cylinder (5). They are not snap-in and are not self-retaining. It follows the key code with the first tumbler being the first depth of the key code, closest to the head of the key.

Note: All lock cylinders for side milled keys have right and left tumblers. The location of the tooth of the tumbler determines whether it is right or left. Illustrations in this procedure show the right tumblers on the top and the left tumblers on the bottom. All tumblers are marked 1R, 1L, 2R, or 2L. The number being cut depth and the letter meaning right or left.

1. Hold the ignition cylinder assembly (5) so the side with the tumbler spring pocket located closest to the head of the cylinder is facing up.
2. Insert the tumbler spring (7) into each of the 4 spring pockets of the cylinder assembly. This side of the cylinder used left tumblers.
3. The first tumbler (3) to be loaded will be the first key cut position, which is the first number in the key code. Install the tumbler in the slot over the spring. Install the remaining right tumblers following the key code and same process, pressing the tumblers in place until they are secure.
4. Rotate the cylinder assembly. Insert the tumbler spring into each of the spring pockets of the cylinder assembly. This side of the cylinder used right tumblers.
5. The first tumbler (3) to be loaded will be the second key cut position, the second number in the key code. Install the first tumbler in the slot over the spring. Install the remaining left tumblers following the key code and same process, pressing the tumblers in place until they are secure.
6. Inspect for correct loading of the tumblers by inserting the key into the cylinder. All tumblers should drop flush with the lock cylinder body diameter.
7. With the key in the cylinder assembly insert the round connector (6), insert the retainer spring (2) in the retainer slot located in the cylinder assembly. Insert the retainer (1) lining it up in the slot over the spring. Depress the retainer and hold.
8. Insert the cylinder into the sleeve (4) as shown in the print. Make sure the actuator stays located properly in the cylinder.
9. When the key is removed, the lock should stay together.
10. Lightly lubricate the outside surface in the tumbler area of in the lock body and down the key slot using the provided grease. Insert and extract the key 5 times to lubricate the keyway.
11. Insert the key and function the lock 3 times to distribute the grease inside the sleeve.
12. Verify the key position for inserting the lock into the column.

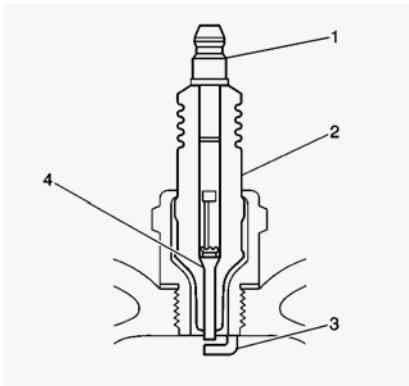
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[Spark Plug Usage](#)

Ensure that the correct spark plug is installed. An incorrect spark plug causes driveability conditions. Refer to the Electronic Parts Catalog.

[Spark Plug Inspection](#)



- Inspect the terminal post (1) for damage.
 - Inspect for a bent or broken terminal post (1).
 - Test for a loose terminal post (1) by twisting and pulling the post. The terminal post (1) should NOT move.
- Inspect the insulator (2) for flashover or carbon tracking, soot. This condition is often mistakenly identified as a cracked insulator. This is caused by the electrical charge traveling across the insulator (2) between the terminal post (1) and ground. Inspect for the following conditions:
 - Inspect the spark plug boot for damage.
 - Inspect the spark plug recess area of the cylinder head for moisture, such as oil, coolant, or water. A spark plug boot that is saturated causes arcing to ground.
- Inspect the insulator (2) for cracks. All or part of the electrical charge may arc through the crack instead of the electrodes (3, 4).
- Inspect for evidence of improper arcing.
 - Measure the gap between the center electrode (4) and the side electrode (3) terminals. This must be done carefully in order to avoid damaging the small diameter Iridium center electrode. Refer to Ignition System Specifications. An excessively wide electrode gap can prevent correct spark plug operation.
 - Inspect for the correct spark plug torque. Refer to Ignition System Specifications. Insufficient torque can prevent correct spark plug operation. An over torqued spark plug, causes the insulator (2) to crack.
 - Inspect for signs of tracking that occurred near the insulator tip instead of the center electrode (4).
 - Inspect for a broken or worn side electrode (3).
 - Inspect for a broken, worn, or loose center electrode (4) by shaking the spark plug.
 - A rattling sound indicates internal damage.
 - A loose center electrode (4) reduces the spark intensity.
 - Inspect for bridged electrodes (3, 4). Deposits on the electrodes (3, 4) reduce or eliminates the gap.
 - Inspect for worn or missing platinum pads on the electrodes (3, 4) If equipped.
 - Inspect for excessive fouling.
- Inspect the spark plug recess area of the cylinder head for debris. Dirty or damaged threads can cause the spark plug not to seat correctly during installation.

[Spark Plug Visual Inspection](#)

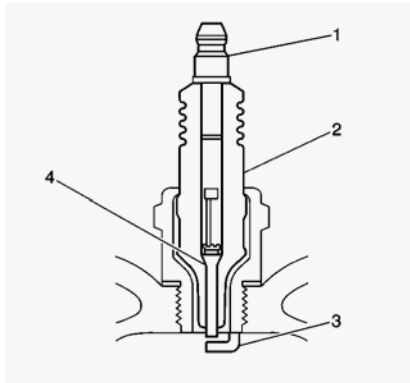
- Normal operation—Brown to grayish-tan with small amounts of white powdery deposits are normal combustion by-products from fuels with additives. Reddish orange deposits can indicate MMT fuel additive which is still used in some markets around the world (will cause misfire and cannot be burned off). MMT fuel additive use should be avoided.
- Carbon Fouled—Dry, fluffy black carbon, or soot caused by the following conditions:
 - Rich fuel mixtures
 - Leaking fuel injectors
 - Excessive fuel pressure
 - Restricted air filter element
 - Incorrect combustion
 - Reduced ignition system voltage output
 - Weak coils

Spark Plug Inspection

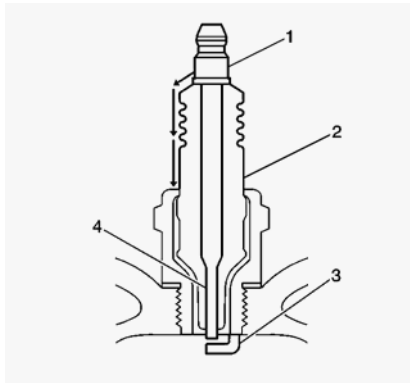
- Worn ignition wires
- Incorrect spark plug gap
 - Excessive idling or slow speeds under light loads can keep spark plug temperatures so low that normal combustion deposits may not burn off.
- Deposit Fouling—Oil, coolant, or additives that include substances such as silicone, very white coating, reduces the spark intensity. Most powdery deposits will not effect spark intensity unless they form into a glazing over the electrode.

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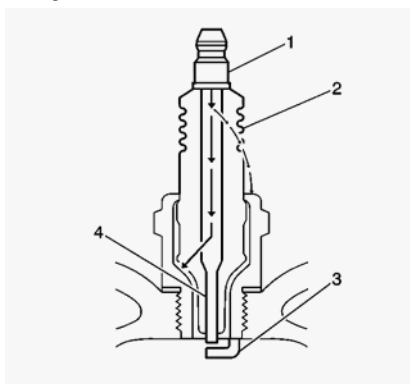
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- Verify that the correct spark plug is installed. An incorrect spark plug causes driveability conditions. Refer to Ignition System Specifications.
- Ensure that the spark plug has the correct heat range. An incorrect heat range causes the following conditions:
 - Spark plug fouling – Colder plug
 - Pre-ignition causing spark plug and/or engine damage – Hotter plug
- Inspect the terminal post (1) for damage.
 - Inspect for a bent or broken terminal post (1)
 - Test for a loose terminal post (1) by twisting and pulling the post. The terminal post should not move.

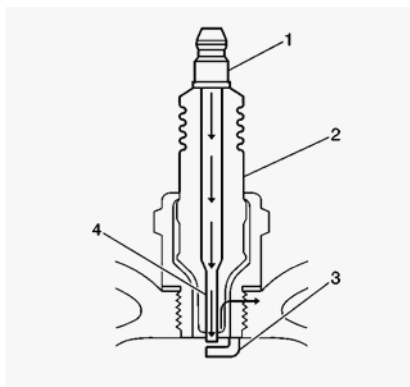


- Inspect the insulator (2) for flashover or carbon tracking, or soot. This is caused by the electrical charge traveling across the insulator between the terminal post (1) and ground. Inspect for the following conditions:
 - Inspect the spark plug boot for damage.
 - Inspect the spark plug recess area of the cylinder head for moisture, such as oil, coolant, or water. A spark plug boot that is saturated will cause arcing to ground.



- Inspect the insulator (2) for cracks. All or part of the electrical charge may arc through the crack instead of the electrodes (3,4).

Spark Plug Inspection



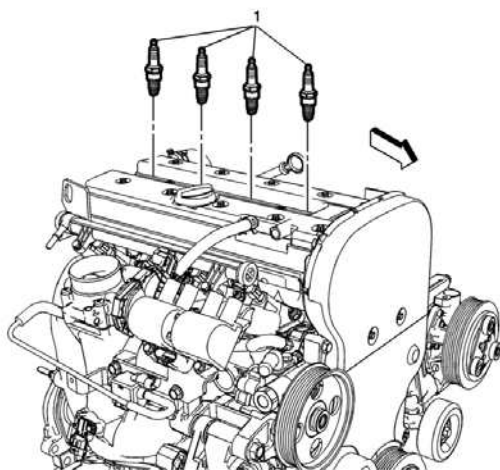
- Inspect for evidence of improper arcing.
 - Measure the gap between the center electrode (4) and the side electrode (3). Refer to Ignition System Specifications. An excessively wide electrode gap can prevent correct spark plug operation.
 - Inspect for the correct spark plug torque. Refer to Ignition System Specifications. Insufficient torque can prevent correct spark plug operation. An over torqued spark plug, causes the insulator (2) to crack.
 - Inspect for signs of tracking that occurred near the insulator tip instead of the center electrode (4).
 - Inspect for a broken or worn side electrode (3).
 - Inspect for a broken, worn, or loose center electrode (4) by shaking the spark plug.
 - A rattling sound indicates internal damage.
 - A loose center electrode (4) reduces the spark intensity.
 - Inspect for bridged electrodes (3,4). Deposits on the electrodes (3,4) reduce or eliminate the gap.
 - Inspect for worn or missing platinum pads on the electrodes (3,4), if equipped.
 - Inspect for excessive fouling.
- Inspect the spark plug recess area of the cylinder head for debris. Dirty or damaged threads can cause the spark plug not to seat correctly during installation.

Visual Inspection

- Normal operation – Brown to grayish-tan with small amounts of white powdery deposits are normal combustion by-products from fuels with additives.
- Carbon fouled – Dry, fluffy black carbon, or soot caused by the following conditions:
 - Rich fuel mixtures
 - Leaking fuel injectors
 - Excessive fuel pressure
 - Restricted air filter element
 - Incorrect combustion
 - Reduced ignition system voltage output
 - Weak ignition coils
 - Worn ignition wires
 - Incorrect spark plug gap
 - Excessive idling or slow speeds under light loads can keep spark plug temperatures so low that normal combustion deposits may not burn off.
- Deposit fouling – Oil, coolant, or additives that include substances such as silicone, very white coating, reduces the spark plug intensity. Most powdery deposits will not affect spark plug intensity unless they form into a glazing over the electrode.

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:



Spark Plug Replacement

Callout

Component Name

Preliminary Procedure

Remove the spark plug wires. Refer to Spark Plug Wire Replacement

Spark Plugs (Qty: 4)

Procedure

1

Caution: Refer to Component Fastener Tightening Caution.

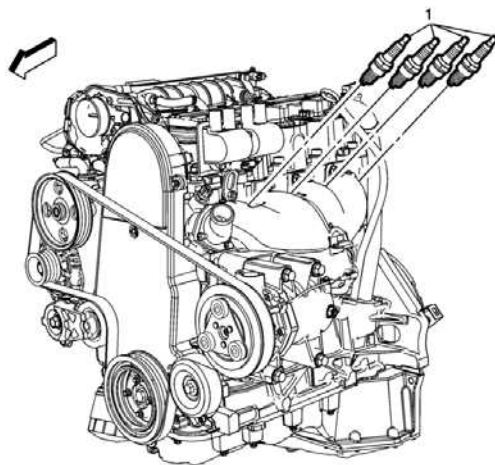
1. Loosen the spark plug 1-2 turns..
2. Brush or using compressed air, blow away any dirt from around the spark plug.

Tighten

18 Y (13 lb ft)

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
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Spark Plug Replacement

Callout

Component Name

Preliminary Procedure

Remove the spark plug wires. Refer to Spark Plug Wire Replacement

Spark Plugs (Qty: 4)

Procedure

1

Caution: Refer to Component Fastener Tightening Caution.

1. Loosen the spark plug 1-2 turns..
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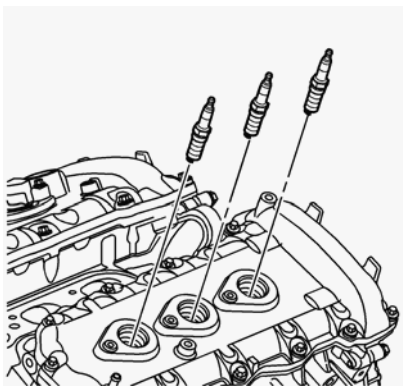
Tighten

18 Y (13 lb ft)

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

[Removal Procedure](#)

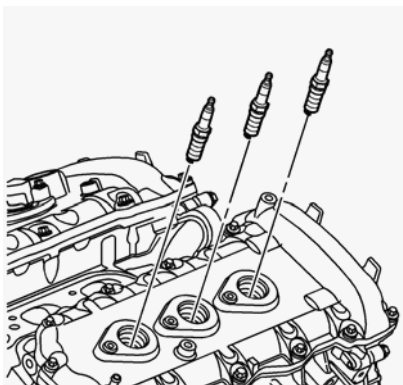


1. Turn the ignition OFF.
2. Remove the ignition coil. Refer to Ignition Coil Replacement - Bank 1 and/or Ignition Coil Replacement - Bank 2.

Warning: Refer to Safety Glasses and Compressed Air Warning.

3. Use compressed air in order to remove debris from the spark plug cavity.
4. Remove the spark plug.

[Installation Procedure](#)



1. Ensure that the spark plug gap is equivalent to the spark plug gap specification. Refer to Ignition System Specifications.

Caution: Be sure that the spark plug threads smoothly into the cylinder head and the spark plug is fully seated. Use a thread chaser, if necessary, to clean threads in the cylinder head. Cross-threading or failing to fully seat the spark plug can cause overheating of the plug, exhaust blow-by, or thread damage.

2. Install the spark plug and tighten to **20 Y (15 lb ft)**.
3. Install the ignition coil. Refer to Ignition Coil Replacement - Bank 1 and/or Ignition Coil Replacement - Bank 2.

2013 Chevrolet Colorado

Submodel: | **Engine Type:** | **Liters:**
Fuel Delivery: | **Fuel:**

Spark plug wire integrity is vital for proper engine operation. A thorough inspection is necessary to accurately identify conditions that may affect engine operation. Inspect for the following conditions:

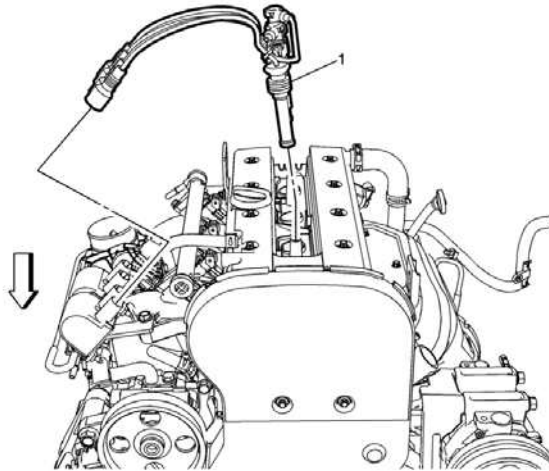
1. Correct routing of the spark plug wires – Incorrect routing may cause cross-firing.
2. Any signs of cracks or splits in the wires.
3. Inspect each boot for the following conditions:

- Tearing
- Piercing
- Arcing
- Carbon tracking
- Corroded terminal

If corrosion, carbon tracking or arcing are indicated on a spark plug wire boot or terminal, replace the wire and the component connected to the wire.

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Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:



Spark Plug Wire Replacement

Callout

Component Name

Preliminary Procedure

1. Remove the air cleaner outlet duct. Refer to Air Cleaner Outlet Duct Replacement.
2. Remove the engine emblem. Refer to Engine Emblem Replacement.

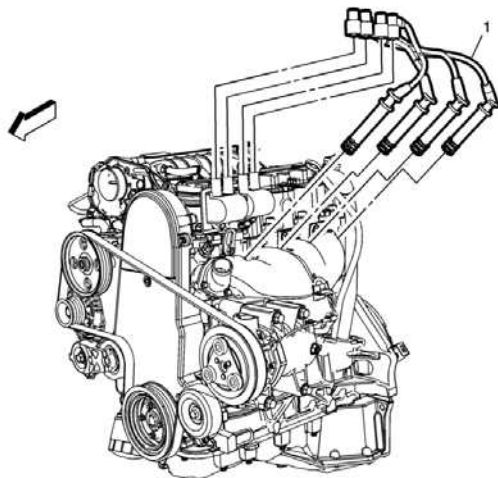
Spark Plug Wires (Qty: 4)

Procedure

1. Remove the spark plug wire from the spark plug.
-
1.
 - Twist each spark plug boot 1/2 turn.
 - Pull only on the boot in order to remove the wire from each plug.
 - Remove the spark plug wire from the ignition coil.
 - Twist each spark plug boot 1/2 turn.
 - Pull only on the boot in order to remove the wire from each plug.

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:



Spark Plug Wire Replacement

Callout

Spark Plug Wires (Qty: 4)

Component Name

Procedure

1

1. Remove the spark plug wire from the spark plug.
 - Twist each spark plug boot 1/2 turn.
 - Pull only on the boot in order to remove the wire from each plug.
- Remove the spark plug wire from the ignition coil.
 - Twist each spark plug boot 1/2 turn.
 - Pull only on the boot in order to remove the wire from each plug.