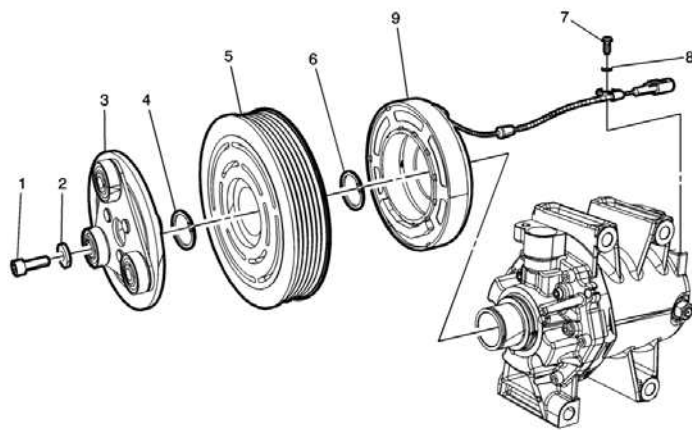


2013 Chevrolet Colorado

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



Air Conditioning Clutch Replacement

Callout Component Name

Preliminary Procedure

Remove the air conditioning compressor. Refer to Air Conditioning Compressor Replacement.

Air Conditioning Compressor Clutch Bolt

Caution: Refer to Fastener Caution.

Procedure

Use the GE-33027-A A/C Clutch Hub Holderto hold the compressor clutch plate from turning when removing the bolt.

1 Tighten

14 Y (124 lb in)

Special Tools

GE-33027-A A/C Clutch Hub Holder

For equivalent regional tools, refer to Special Tools.

2 Washer

3 Air Conditioning Compressor Clutch

4 Retaining Ring

Air Conditioning Compressor Pulley

5 **Procedure**

Use a pulley remover to remove the air conditioning compressor pulley.

6 Retaining Ring

Air Conditioning Compressor Coil Bolt

7 Tighten

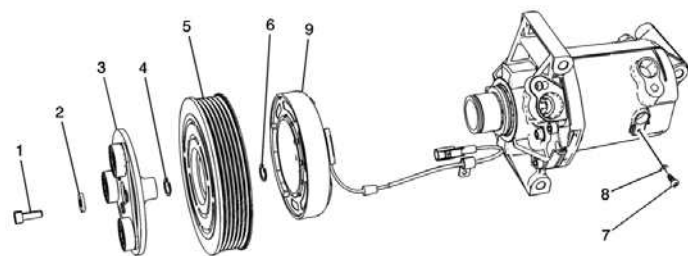
4 Y (35 lb in)

8 Washer

9 Air Conditioning Compressor Coil

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

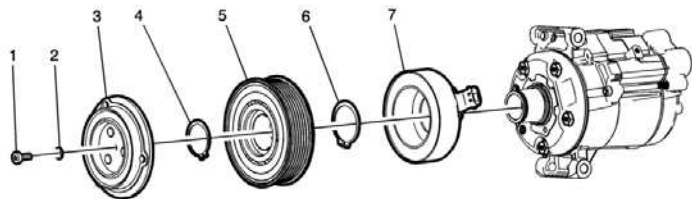


Air Conditioning Clutch Replacement

Callout	Component Name
Preliminary Procedure	
Remove the air conditioning compressor. Refer to Air Conditioning Compressor Replacement.	
Air Conditioning Compressor Clutch Bolt	
Caution: Refer to Fastener Caution.	
Procedure	
Use the GE-33027-A clutch plate holder to hold the compressor clutch plate from turning when removing the bolt.	
1	Tighten 14 Y (124 lb in) Special Tools GE-33027-A Clutch Plate Holder For equivalent regional tools, refer to Special Tools.
2	Washer
3	Air Conditioning Compressor Clutch
4	Retaining Ring
5	Air Conditioning Compressor Pulley
6	Retaining Ring
Air Conditioning Compressor Coil Bolt	
7	Tighten 4 Y (35 lb in)
8	Washer
9	Air Conditioning Compressor Coil

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

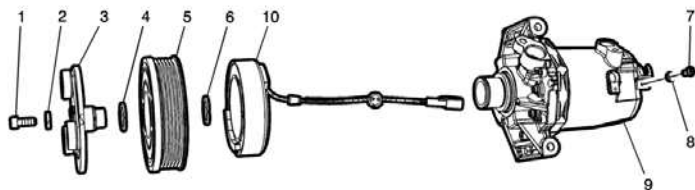


Air Conditioning Clutch Replacement

Callout	Component Name
Preliminary Procedure	
Remove the air conditioning compressor. Refer to Air Conditioning Compressor Replacement.	
Air Conditioning Compressor Clutch Bolt	
Caution: Refer to Fastener Caution.	
Procedure	
Use the CH-37872 A/C Clutch Hub Holder to hold the compressor clutch plate from turning when removing the bolt.	
1	Tighten 14 Y (124 lb in)
Special Tools	
CH-37872 A/C Clutch Hub Holder	
For equivalent regional tools, refer to Special Tools.	
2	Washer
3	Air Conditioning Compressor Clutch
4	Retaining Ring
Air Conditioning Compressor Pulley	
5	Procedure Use a pulley remover to remove the air conditioning compressor pulley.
6	Retaining Ring
7	Air Conditioning Compressor Coil

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Fuel Delivery: | Fuel:



Air Conditioning Clutch Replacement

Callout Component Name

Preliminary Procedure

Remove the air conditioning compressor. Refer to Air Conditioning Compressor Replacement.

Air Conditioning Compressor Clutch Bolt

Caution: Refer to Fastener Caution.

Procedure

Use the DT-48280 holder to hold the compressor clutch plate from turning when removing the bolt.

- | | |
|----|--|
| 1 | Tighten
14 Y (124 lb in)
Special Tools
DT-48280 Clutch Plate Holder
For equivalent regional tools, refer to Special Tools. |
| 2 | Air Conditioning Compressor Clutch Washer |
| 3 | Air Conditioning Compressor Clutch Plate |
| 4 | Retaining Ring |
| 5 | Air Conditioning Compressor Pulley |
| 6 | Retaining Ring |
| 7 | Air Conditioning Compressor Coil Bolt |
| 8 | Air Conditioning Compressor Coil Washer |
| 9 | Air Conditioning Compressor Coil Retainer |
| 10 | Air Conditioning Compressor Coil |

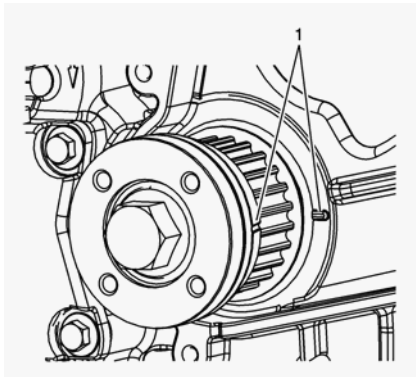
2013 Chevrolet Colorado

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

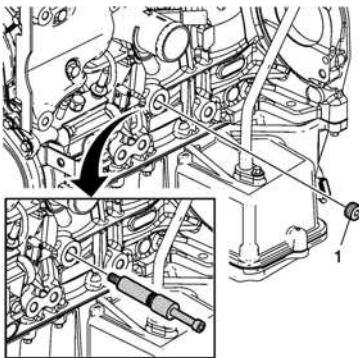
Special Tools

EN-50030 Crankshaft Locking Tool

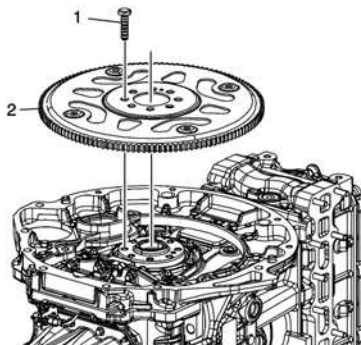
For equivalent regional tools, refer to Special Tools



1. Ensure that the timing mark on the crankshaft timing pulley (1) is aligned at 90 degrees ATDC with the mark on the front cover (1).



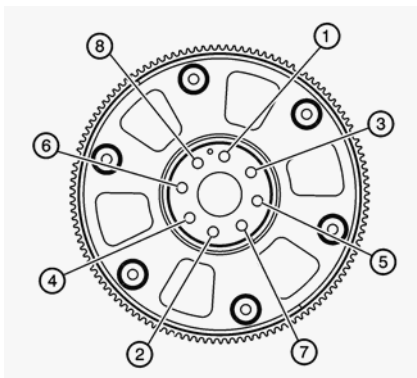
2. Remove the plug (1) and install the EN-50030 locking tool.



3. Install the flexplate (2).

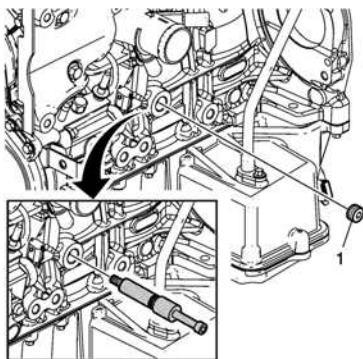
Caution: This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

4. Install the NEW flexplate bolts (1) and hand tighten.



Caution: Refer to Fastener Caution.

5. Tighten the NEW bolts in sequence to **50 Y (37 lb ft)**.
6. Loosen the flywheel bolts 90 degrees.
7. Tighten the NEW flywheel bolts in sequence to **25 Y (18 lb ft)**.
8. Tighten additional 60 degrees.
9. After each bolt is tightened, mark the head with a dot of brown paint as evidence of correct tightening.



10. Remove the *EN-50030* locking tool.
11. Install the block plug (1) and tighten to **79 Y (58 lb ft)**.

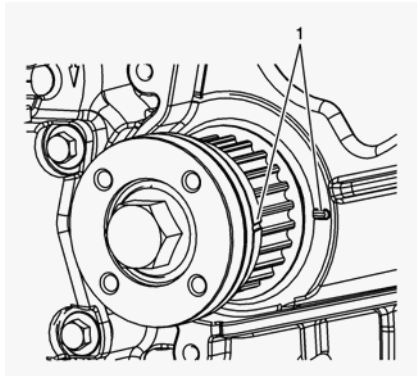
2013 Chevrolet Colorado

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

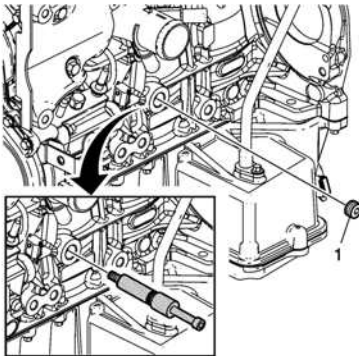
Special Tools

EN-50030 Crankshaft Locking Tool

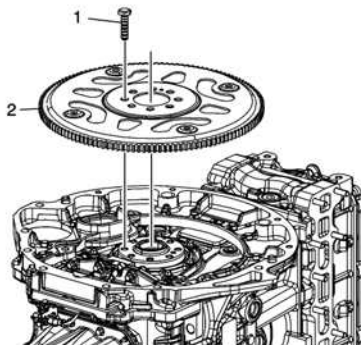
For equivalent regional tools, refer to Special Tools



1. Ensure that the timing mark on the crankshaft timing pulley (1) is aligned at 90 degrees ATDC with the mark on the front cover (1).



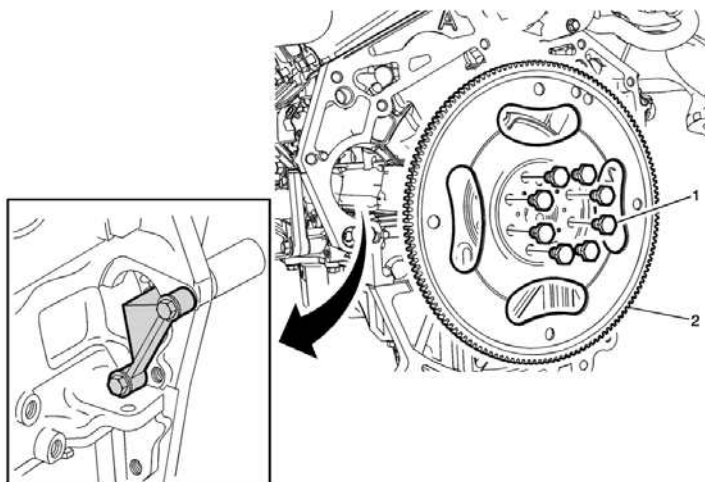
2. Remove the plug (1) and install the EN-50030 locking tool .



3. Remove the flexplate bolts (1) and flexplate (2).

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Fuel Delivery: | Fuel:



Automatic Transmission Flex Plate Replacement

Callout

Component Name

Procedure

Remove the transmission. Refer to Transmission Replacement.

Flexplate Fastener (Qty, 8)

Caution: Refer to Fastener Caution.

Procedure

1. Install the *EN 46106* tool through the starter mounting hole to secure crankshaft.
2. Remove the engine flexplate bolts and discard.
3. New bolts must be used whenever removing the flexplate.

Tighten

1

- 30 Y (22 lb ft)
- Tighten an additional *45 degrees* using the *EN 45059* meter

Special Tools

- *EN 46106* Flywheel Holding Tool
- *EN 45059* Torque Angle Sensor Kit

For equivalent regional tools. refer to Special Tools

2

Flexplate

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
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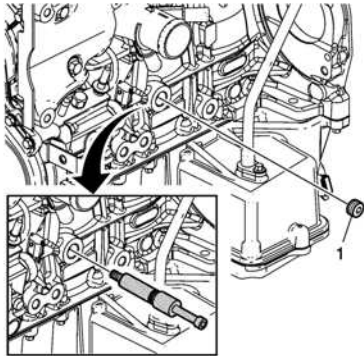
Special Tools

EN-50030 Crankshaft Locking Tool

For equivalent regional tools, refer to Special Tools.

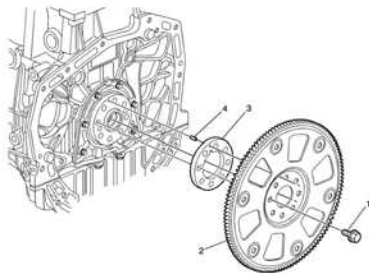
Removal Procedure

1. Remove the transmission. Refer to Transmission Replacement.



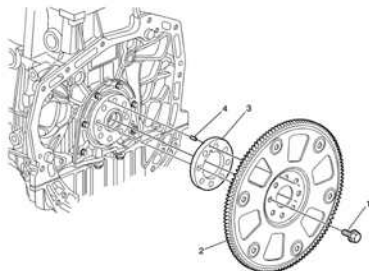
Note: Ensure the engine is at 90 degrees ATDC before installing the tool.

2. Remove the plug (1) and rotate the aligned tool EN-50030. Ensure the crankshaft is at 90 degrees ATDC before trying to install the crank locking tool.

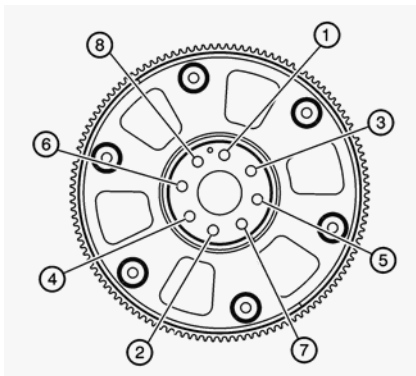


3. Remove the automatic transmission flex plate bolts (1).
4. Remove the flex plate (2), locating pin (4), and adapter plates (3).
5. For engine flywheel / automatic transmission flex plate cleaning and inspection. Refer to Engine Flywheel Cleaning and Inspection.

Installation Procedure

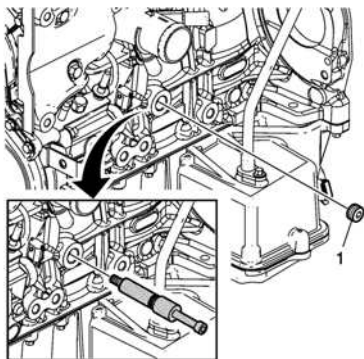


1. Install the automatic transmission flex plate (2) and bolts (1).



Caution: Refer to Fastener Caution.

2. Tighten the flex plate bolts in sequence to **50 Y (37 lb ft)**.
3. Loosen the flex plate bolts one at a time and then retighten in sequence to **25 Y (18 lb ft)** plus 60, 75, and 90 degrees respectively for bolts of 40, 50, 60 mm.
4. After each bolt is tightened, mark the head with a dot of brown paint as evidence of correct tightening.



5. Remove the *EN-50030* Crank locking tool .
6. Install the block plug (1) and tighten to **79 Y (58 lb ft)**.
7. Install the transmission. Refer to Transmission Replacement.

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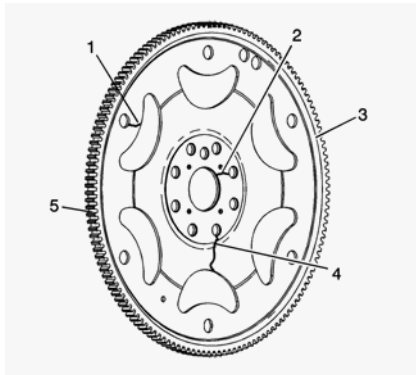
[Cleaning Procedure](#)

1. Clean the engine flywheel in solvent.

Warning: Refer to Safety Glasses Warning.

2. Dry the engine flywheel with compressed air.

[Inspection Procedure](#)



1. Inspect the engine flywheel for the following conditions:

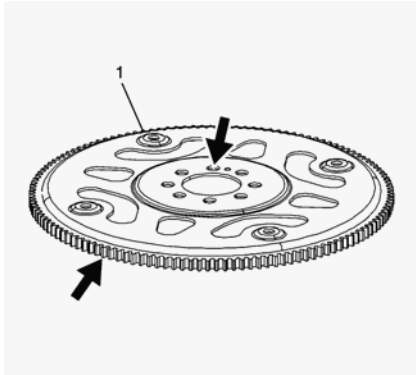
- Stress cracks around the engine flywheel-to-torque converter mounting bolt hole locations (1) and/or engine flywheel-to-crankshaft (2, 4)

Note: Do not attempt to repair the welded areas that retain the ring gear to the engine flywheel plate. Install a new engine flywheel.

- Cracks at welded areas that retain the ring gear onto the engine flywheel (3)
- Damaged or missing ring gear teeth (5)
- Replace the engine flywheel as necessary.

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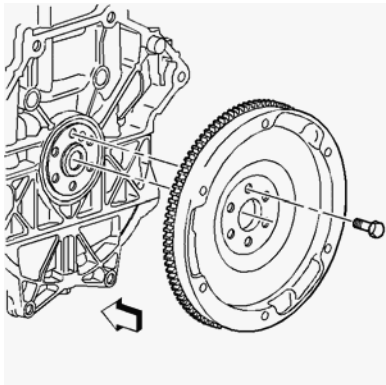


Note: In order to maintain the proper component balance, contact surface taper, and heat transfer, manual transmission flywheels are NOT to be machined.

1. Clean the flywheel (1) in solvent.

Warning: Refer to Safety Glasses Warning.

2. Dry the flywheel with compressed air.

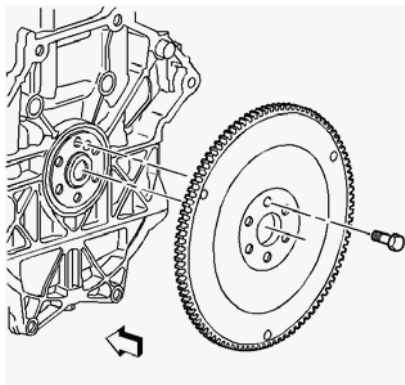


3. Inspect the manual transmission flywheel for the following:

- Damaged ring gear teeth
- Loose or improperly positioned ring gear

The ring gear has an interference fit onto the flywheel and should be positioned completely against the flange of the flywheel.

- A scored, grooved or damaged friction surface



- Inspect the automatic transmission flywheel for the following:

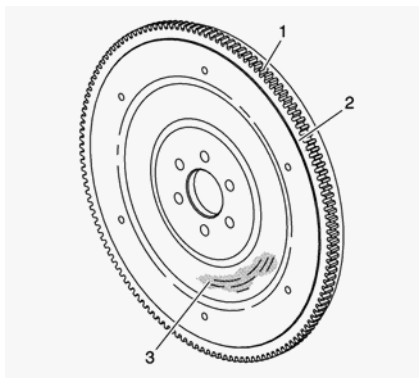
- Damaged ring gear teeth
- Stress cracks around the flywheel-to-crankshaft bolt hole locations

Engine Flywheel Cleaning and Inspection

- Weight saving holes

2013 Chevrolet Colorado

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



Note: In order to maintain the proper component balance, contact surface taper, and heat transfer, manual transmission flywheels are NOT to be machined.

1. Clean the flywheel in solvent.

Warning: Refer to Safety Glasses Warning.

2. Dry the flywheel with compressed air.
3. Inspect the manual transmission flywheel for the following:

- Damaged ring gear teeth (1)
- Loose or improperly positioned ring gear (2)

The ring gear has an interference fit onto the flywheel and should be positioned completely against the flange of the flywheel.

- A scored, grooved or damaged friction surface (3)

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Special Tools

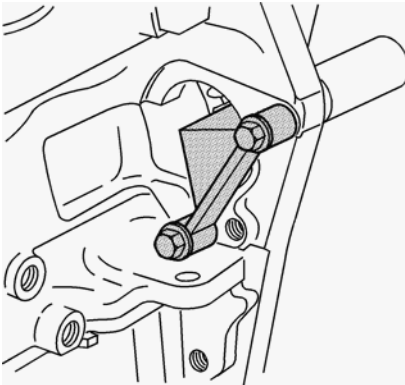
- EN 45059 Angle Meter
- EN 46106 Flywheel Holding Tool

For equivalent regional tools, refer to Special Tools.

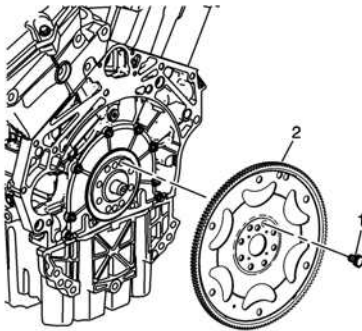
1. Place the engine flywheel in position on the crankshaft.

Caution: This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

2. Install 2 NEW bolts in location at the top and bottom of the engine flywheel bolt pattern allowing the engine flywheel to hang in position.



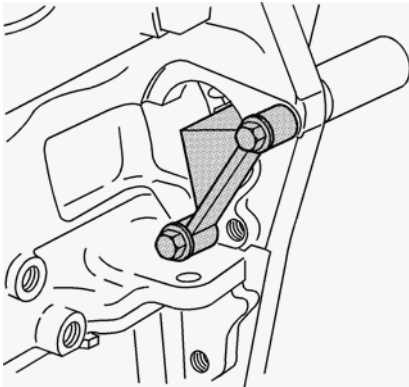
3. Install the EN 46106 tool.



Caution: Refer to Fastener Caution.

4. Install the remaining NEW engine flywheel bolts.
 1. Tighten the NEW engine flywheel bolts to **30 Y (22 lb ft)**.
 2. Tighten the NEW engine flywheel bolts an additional **45 degrees** using the EN 45059 meter.

Engine Flywheel Installation (Automatic Transmission)



5. Remove the *EN 46106* tool.

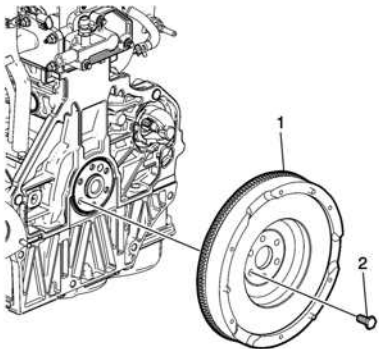
2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
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Special Tools

- EN-0206978 Flywheel Lock
- J-05824-A Alignment Tool
- EN-45059 Angle Meter

For equivalent regional tools, refer to Special Tools.

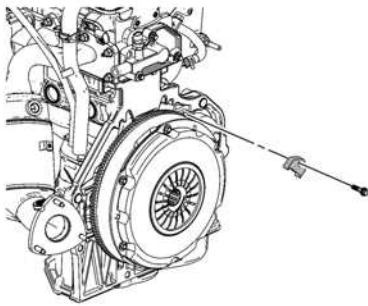


1. Install the flywheel (1).

Caution: This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

2. Apply sealant to the NEW flywheel bolts. Refer to Adhesives, Fluids, Lubricants, and Sealers.

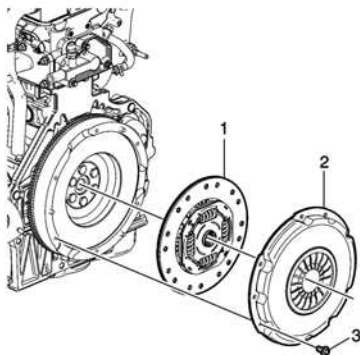
Install the flywheel bolts (2) finger tight.



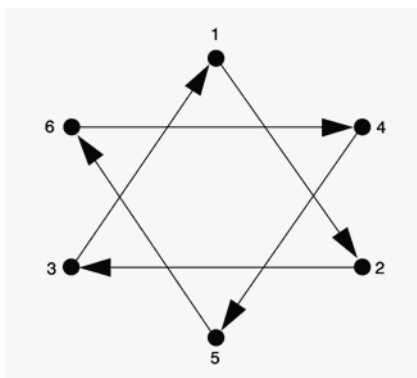
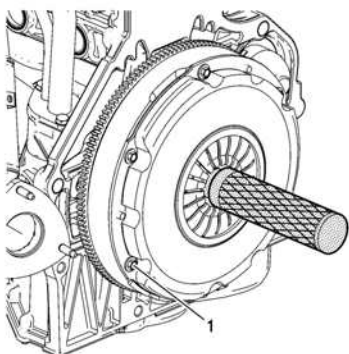
Caution: Refer to Fastener Caution.

3. Attach the EN-0206978 Flywheel Lock to flywheel and tighten the flywheel bolts to **35 Y (26 lb ft)**.

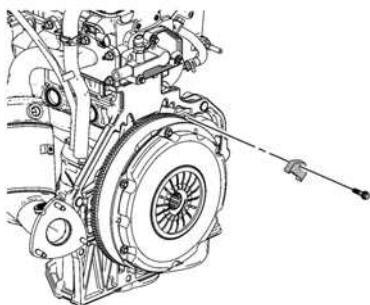
- Using the EN-45059 Angle Meter tighten the bolts **an additional 30 degrees**.
- Using the EN-45059 Angle Meter tighten one more pass **an additional 15 degrees**.



- Install the clutch driven plate (1), pressure plate assembly (2) and bolts (3) finger tight.



- Install the *J-05824-A* Alignment Tool and tighten the pressure plates bolts (1) in the sequence shown to **40 Y (30 lb ft)**.



- Remove the bolt and the *EN-0206978* Flywheel Lock from the flywheel assembly.
- Remove the *J-05824-A* Alignment Tool.

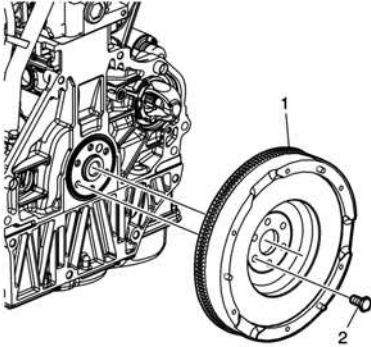
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Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

Special Tools

- S-0206978 Flywheel Holding Tool
- S9407183 Alignment Tool

For equivalent regional tools, refer to Special Tools.

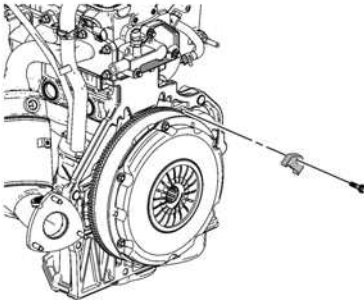


1. Install the flywheel (1).

Caution: This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

2. Apply sealant to the NEW flywheel bolts. Refer to Adhesives, Fluids, Lubricants, and Sealers.

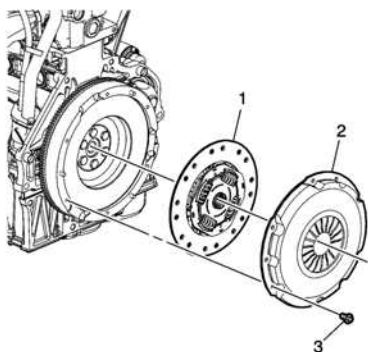
Install the flywheel bolts (2) finger tight.



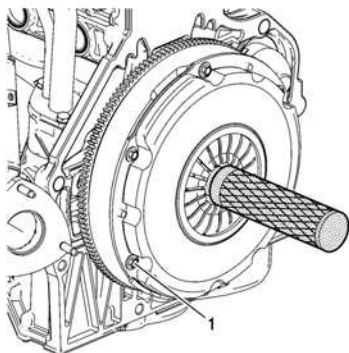
Caution: Refer to Fastener Caution.

3. Attach the S-0206978 holding tool to flywheel and tighten the flywheel bolts to **35 Y (26 lb ft)**.

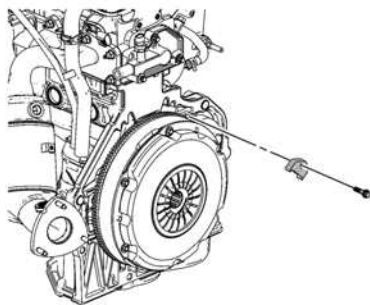
- Tighten the bolts **an additional 30 degrees**.
- Tighten one more pass **an additional 15 degrees**.



- Install the clutch driven plate (1), pressure plate assembly (2) and bolts (3) finger tight.



- Install the S9407183 alignment tool and tighten the pressure plates bolts (1) in a uniform cross pattern to **15 Y (11 lb ft)**.



- Remove the bolt and the S-0206978 flywheel holding tool from the flywheel assembly.
- Remove the S9407183 alignment tool.

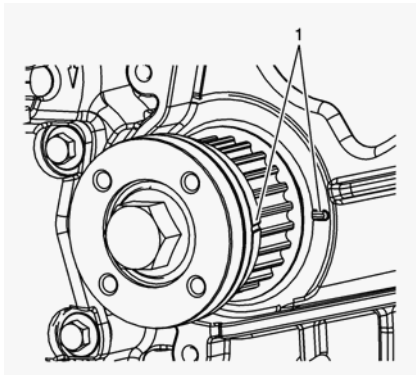
2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
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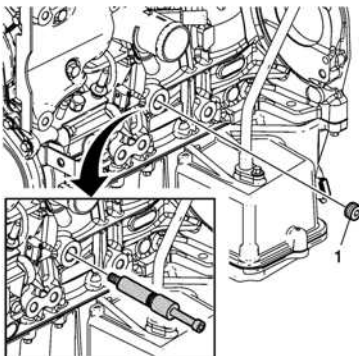
Special Tools

EN-50030 Crankshaft Locking Tool

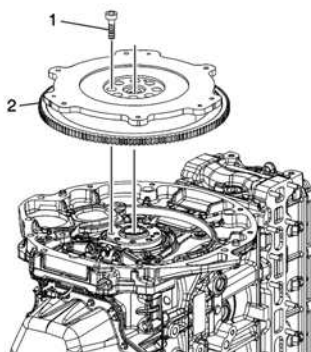
For equivalent regional tools, refer to Special Tools



1. Ensure that the timing mark on the crankshaft timing pulley (1) is aligned at 90 degrees ATDC with the mark on the front cover (1).



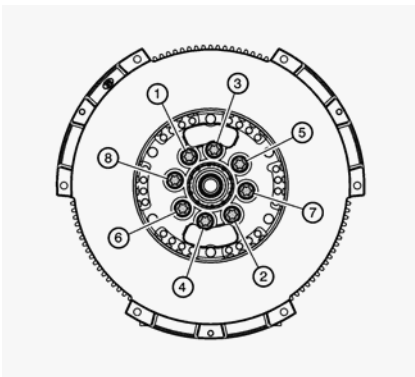
2. Remove the plug (1) and install the EN-50030 locking tool.



3. Install the flywheel (2).

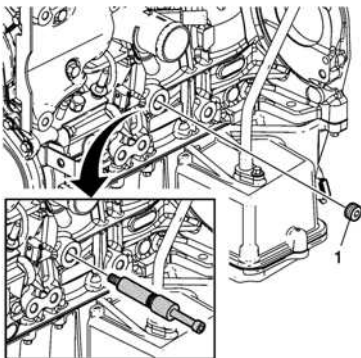
Caution: This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

4. Install the NEW flywheel bolts (1) and hand tighten.



Caution: Refer to Fastener Caution.

5. Tighten the NEW flywheel bolts in sequence to **50 Y (37 lb ft)**.
6. Loosen the flywheel bolts 90 degrees.
7. Tighten the NEW flywheel bolts in sequence to **25 Y (18 lb ft)**.
8. Tighten additional 60 degrees.
9. After each bolt is tightened, mark the head with a dot of brown paint as evidence of correct tightening.



10. Remove the EN-50030 locking tool.
11. Install the block plug (1) and tighten to **79 Y (58 lb ft)**.

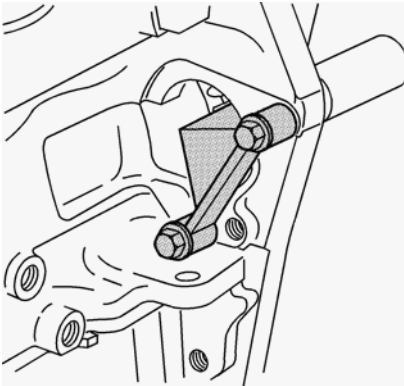
2013 Chevrolet Colorado

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

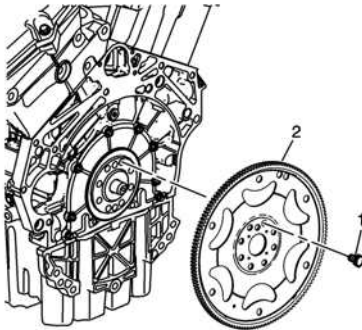
Special Tools

EN 46106 Flywheel Holding Tool

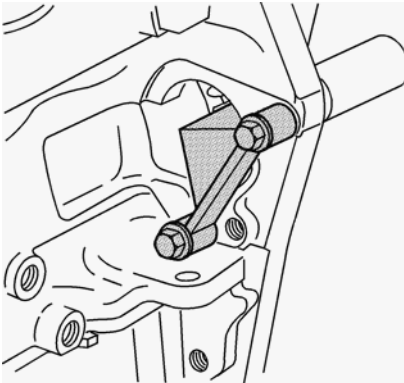
For equivalent regional tools, refer to Special Tools.



1. Install the EN 46106 tool through the starter mounting hole.



2. Remove the engine flywheel bolts and discard.
3. Remove the engine flywheel from the crankshaft.



4. Remove the EN 46106 tool .

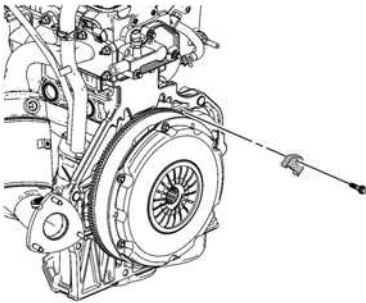
2013 Chevrolet Colorado

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

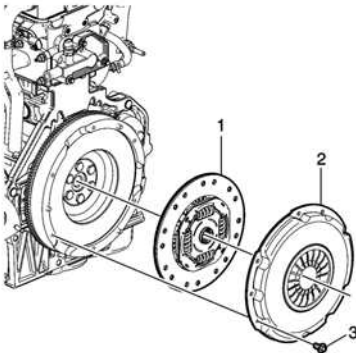
Special Tools

EN-0206978 Flywheel Lock

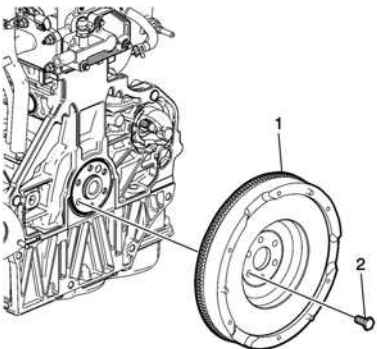
For equivalent regional tools, refer to Special Tools.



1. Install the EN-0206978 Flywheel Lock to prevent crankshaft rotation to the flywheel assembly.



2. Remove the clutch pressure plate bolts (3) and the pressure plate (2).
3. Remove the clutch driven plate (1).



4. Remove the flywheel bolts (2) and flywheel (1).
5. Clean the thread adhesive from the flywheel bolt holes. Use a nylon bristle brush to clean the holes in the crankshaft.

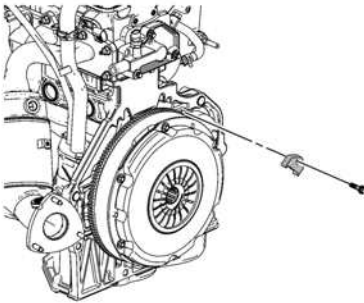
2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
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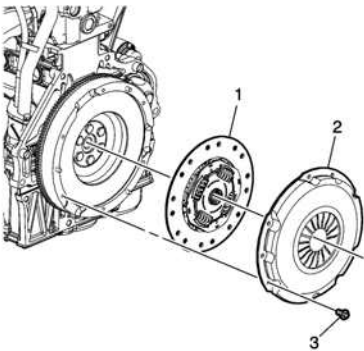
Special Tools

S-0206978 Flywheel Lock

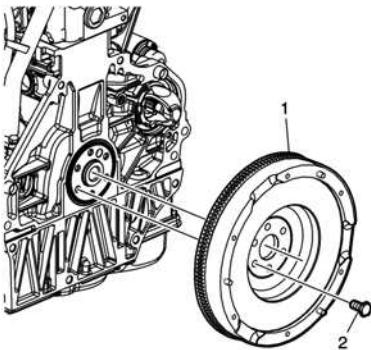
For equivalent regional tools, refer to Special Tools.



1. Install the S-0206978 flywheel lock to prevent crankshaft rotation to the flywheel assembly (1).



2. Remove the clutch pressure plate bolts (3) and the pressure plate (2).
3. Remove the clutch driven plate (1).



4. Remove the flywheel bolts (2) and flywheel (1).
5. Clean the thread adhesive from the flywheel bolt holes. Use a nylon bristle brush to clean the holes in the crankshaft.

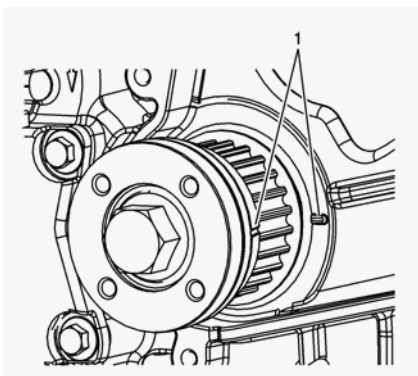
2013 Chevrolet Colorado

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Fuel Delivery: | Fuel:

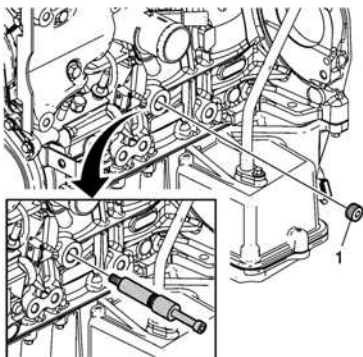
Special Tools

EN-50030 Crankshaft Locking Tool

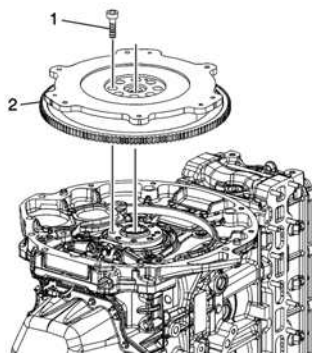
For equivalent regional tools, refer to Special Tools



1. Ensure that the timing mark on the crankshaft timing pulley (1) is aligned at 90 degrees ATDC with the mark on the front cover (1).



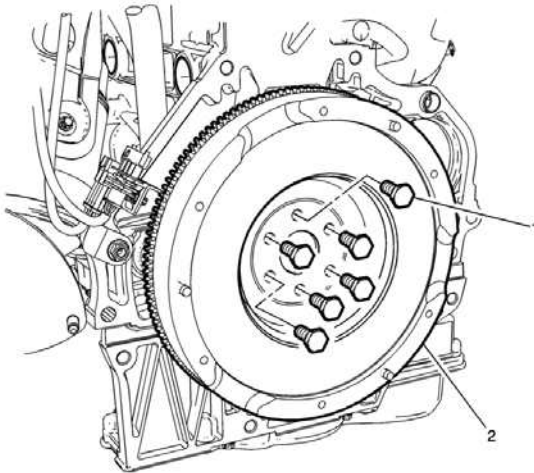
2. Remove the plug (1) and install the EN-50030 locking tool .



3. Remove the flywheel bolts (1) and flywheel (2).

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Engine Flywheel Replacement

Callout

Component Name

Preliminary Procedure

Remove the clutch pressure and driven Plate . Refer to Clutch Assembly Replacement.

Special Tools

- EN-0206978 Flywheel Holding Tool
- EN-45059 Torque Angle Sensor Kit

For equivalent regional tools. Refer to Special Tools.

Flywheel Fastener (Qty: 6)

Caution: Refer to Fastener Caution.

Procedure

Discard the flywheel fastener and use a NEW fastener for installation.

1

Tighten

- First pass to 35 Y (26 lb ft)
- Second pass to additional 30°.
- Final pass to an additional 15°.

Flywheel

Procedure

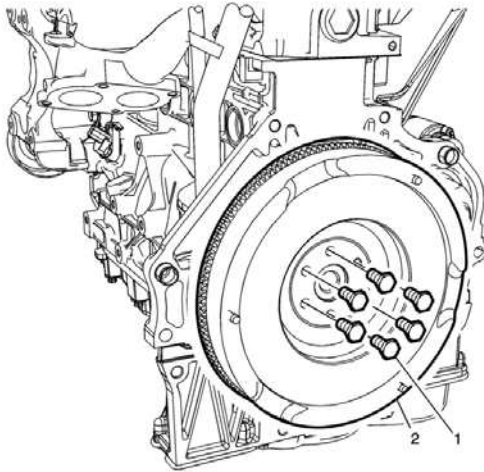
Inspect the engine flywheel for the following:

2

1. Stress cracks around the engine flywheel.
2. Cracks at welded areas that retain the ring gear onto the engine flywheel.
3. Damaged or missing ring gear teeth.
4. Do not attempt to repair the welded areas that retain the ring gear to the engine flywheel plate. Install a new engine flywheel.

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Engine Flywheel Replacement

Callout

Component Name

Preliminary Procedure

Remove the clutch pressure and driven Plate . Refer to Clutch Assembly Replacement.

Special Tools

- S-0206978 Flywheel Holding Tool
- S9407183 Alignment Tool .
- EN-45059 Torque Angle Sensor Kit

For equivalent regional tools. Refer to Special Tools.

Flywheel Fastener (Qty: 6)

Caution: Refer to Fastener Caution.

Procedure

Discard the flywheel fastener and use a NEW fastener for installation.

1

Tighten

- First pass to 35 Y (26 lb ft)
- Second pass to additional 30°.
- Final pass to an additional 15°.

Flywheel

Procedure

Inspect the engine flywheel for the following:

2

1. Stress cracks around the engine flywheel.
2. Cracks at welded areas that retain the ring gear onto the engine flywheel.
3. Damaged or missing ring gear teeth.
4. Do not attempt to repair the welded areas that retain the ring gear to the engine flywheel plate. Install a new engine flywheel.

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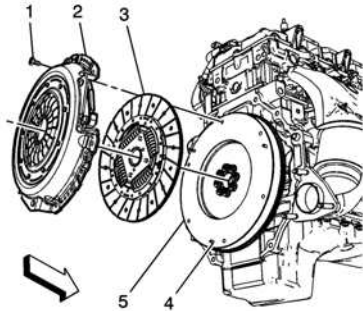
Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

Special Tools

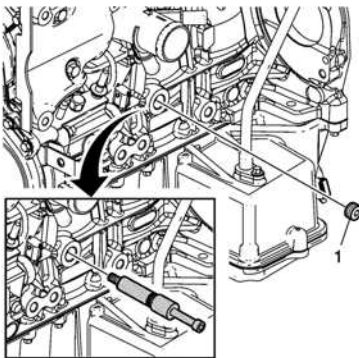
EN-50030 Crankshaft Locking Tool

For equivalent regional tools, refer to Special Tools.

[Removal Procedure](#)

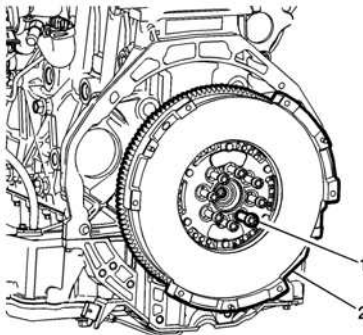


1. Remove the clutch assembly. Refer to Clutch Assembly Replacement.
2. Remove the front left tire and wheel assembly. Refer to Tire and Wheel Removal and Installation.
3. Remove the engine lower front splash shield. Refer to Engine Lower Front Splash Shield Replacement.



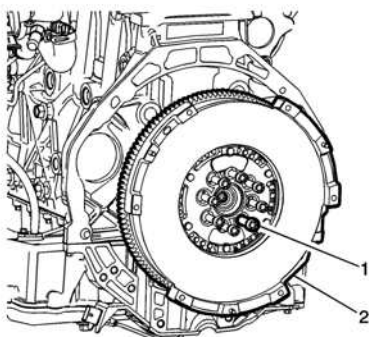
Note: Ensure the engine is at 90 degrees ATDC before installing the tool.

4. Remove the plug (1) and rotate the aligned tool EN-50030. Ensure the crankshaft is at 90 degrees ATDC before trying to install the crank locking tool.

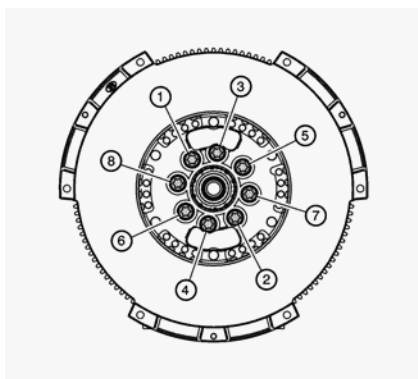


5. Remove the flywheel attaching bolts (1).
6. Remove the flywheel (2).
7. For engine flywheel cleaning and inspection. Refer to Engine Flywheel Cleaning and Inspection.

[Installation Procedure](#)

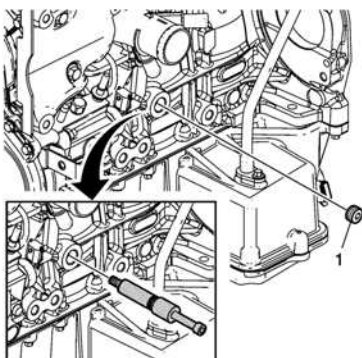


1. Install the flywheel (2) and bolts (1).



Caution: Refer to Fastener Caution.

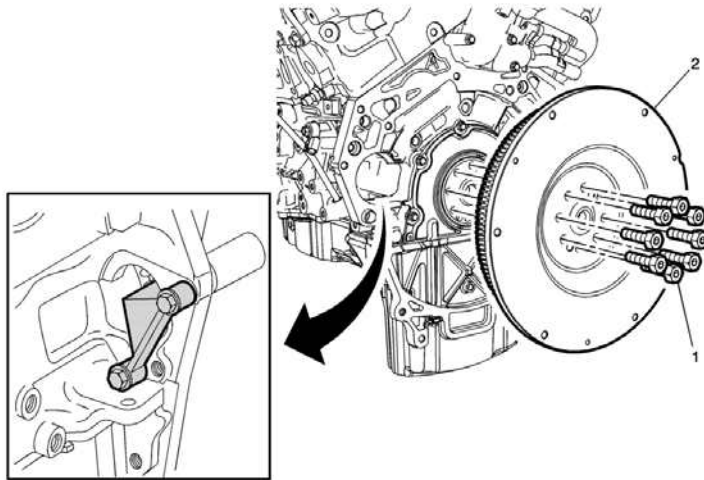
2. Tighten the flywheel bolts in sequence to **50 Y (37 lb ft)**.
3. Loosen the flywheel bolts one at a time and then retighten in sequence to **25 Y (18 lb ft)** plus 60, 75, and 90 degrees respectively for bolts of 40, 50, 60 mm.
4. After each bolt is tightened, mark the head with a dot of brown paint as evidence of correct tightening.



5. Remove the *EN-50030* Crank locking tool.
6. Install the block plug (1) and tighten to **79 Y (58 lb ft)**.
7. Install the engine lower front splash shield. Refer to Engine Lower Front Splash Shield Replacement
8. Install the front left tire and wheel assembly. Refer to Tire and Wheel Removal and Installation.
9. Install the clutch assembly. Refer to Clutch Assembly Replacement.

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Engine Flywheel Replacement

Callout

Component Name

Preliminary Procedure

Remove the clutch assembly. Refer to Clutch Assembly Replacement.

Flywheel Fastener (Qty: 8)

Caution: Refer to Fastener Caution.

Procedure

1. Install the *EN-46106* tool through the starter mounting hole to secure crankshaft.
2. Remove the engine flywheel bolts and discard.
3. New bolts must be used whenever removing the flywheel.

1

Tighten

- 30 Y (22 lb ft)
- Tighten an additional 90 degrees using the *EN-45059* meter.

Special Tools

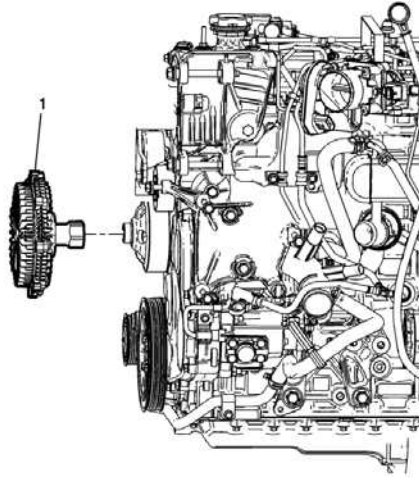
- *EN-46106* Flywheel Holding Tool
- *EN-45059* Torque Angle Sensor Kit

2

Flywheel

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Fan Blade Clutch Replacement

Callout

Component Name

Preliminary Procedures

1. Remove the engine coolant fan lower shroud. Refer to Engine Coolant Fan Lower Shroud Replacement.
2. Remove the engine coolant fan upper shroud. Refer to Engine Coolant Fan Upper Shroud Replacement.
3. Remove the engine coolant fan shroud. Refer to Engine Coolant Fan Shroud Replacement.
4. Remove the engine lift front bracket. Refer to Engine Lift Front Bracket Replacement.
5. Remove the cooling fan blade. Refer to Fan Blade Replacement.

Cooling Fan Clutch

Procedure

Use fan clutch holding wrench to remove the fan clutch from the water pump.

Caution: Refer to Fastener Caution.

1

Tighten

59 Y (44 lb ft)

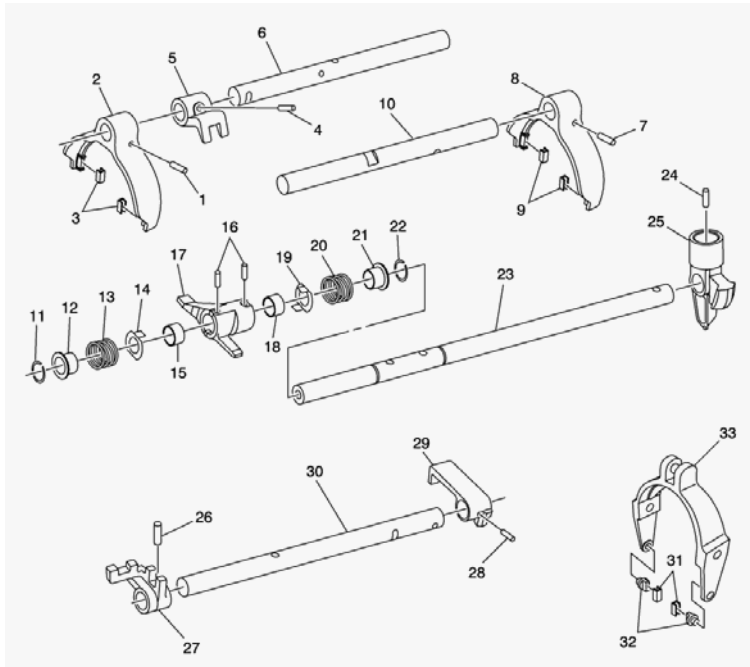
Special Tools

EN-46406-A Fan Clutch Holding Wrench

For regional tools . Refer to. Special Tools.

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Shift Shaft and Shift Fork Cleaning and Inspection

Callout

Component Name

1	Shift Fork Retaining Pin
2	3rd and 4th Shift Fork
3	3rd and 4th Shift Fork Insert
4	3rd and 4th Shift Block Pin
5	3rd and 4th Shift Block
6	3rd and 4th Shift Shaft
7	Shift Fork Retaining Pin
8	1st and 2nd Shift Fork
9	1st and 2nd Shift Fork Insert
10	1st and 2nd Shift Shaft
11	Shift Shaft Retainer Ring
12	Center Support
13	Shift Control Shaft Lower Spring
14	Transmission Washer
15	Shift Shaft Bushing
16	Shift Shaft Block Pin
17	Shift Shaft Block
18	Shift Shaft Bushing
19	Transmission Washer

Shift Shaft and Shift Fork Cleaning and Inspection

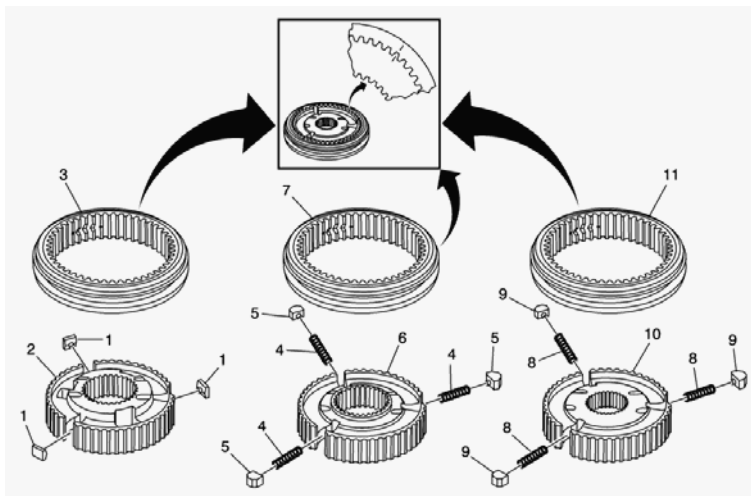
Callout

Component Name

20	Shift Control Shaft Lower Spring
21	Center Support
22	Shift Shaft Retaining Ring
23	Shift Shaft
24	Shift Shaft Detent Pin Assembly
25	Shift Shaft Detent Lever
26	5th and Reverse Shift Block Pin
27	5th and Reverse Shift Block
28	5th and Reverse Shift Fork Pin
29	5th and Reverse Shift Link Lever
30	5th and Reverse Shift Rail
31	5th and Reverse Shift Fork Insert – Outer
32	5th and Reverse Shift Fork Insert – Inner
33	5th and Reverse Shift Fork

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Synchronizers Assemble

Callout	Component Name
Preliminary Procedure	
1.	Synchronizer components are not interchangeable. Keep all the synchronizer components separate. The synchronizer hubs and the sliding sleeves are a selected assembly. Keep the hubs and the sliding sleeves together as originally assembled.
2.	Match up the marks on the synchronizer hub and on the sleeve. This will help you to reinstall the parts in the same position.
3.	When repairing synchronizer assemblies, do not replace a single part only. Always replace the assembly. If it would be necessary to replace one synchronizer ring, always replace the synchronizer ring set.
4.	Grooves on the inside splines of sleeves should match the grooves for the inserts on the hubs.
1	1st and 2nd Gear Synchronizer Insert
2	1st and 2nd Gear Synchronizer Hub Tip: Hub should be facing up as shown above.
3	1st and 2nd Gear Synchronizer Sleeve Tip: Assemble with chamfer side up.
4	3rd and 4th Gear Synchronizer Spring
5	3rd and 4th Gear Synchronizer Insert
6	3rd and 4th Gear Synchronizer Hub Tip: Hub should be facing up as shown above.
7	3rd and 4th Gear Synchronizer Sleeve Tip: Assemble with chamfer side up.
8	5th and Reverse Gear Synchronizer Spring
9	5th and Reverse Gear Synchronizer Insert
10	5th and Reverse Gear Synchronizer Hub Tip: Hub should be facing up as shown above.
11	5th and Reverse Gear Synchronizer Sleeve Tip: Assemble with chamfer side up.

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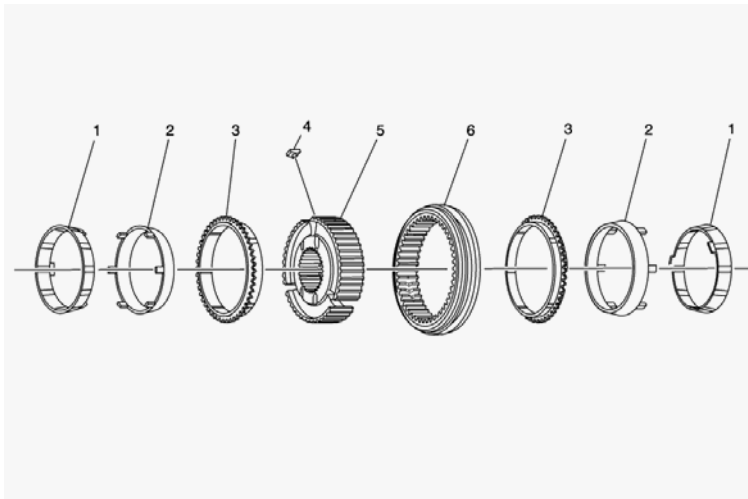
Submodel: | Engine Type: | Liters:
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Table 1: [1st and 2nd Gear Synchronizer Components](#)

Table 2: [3rd and 4th Gear Synchronizer Components](#)

Table 3: [5th and Reverse Gear Synchronizer Components](#)

[1st and 2nd Gear Synchronizer Components](#)



1st and 2nd Gear Synchronizer Components

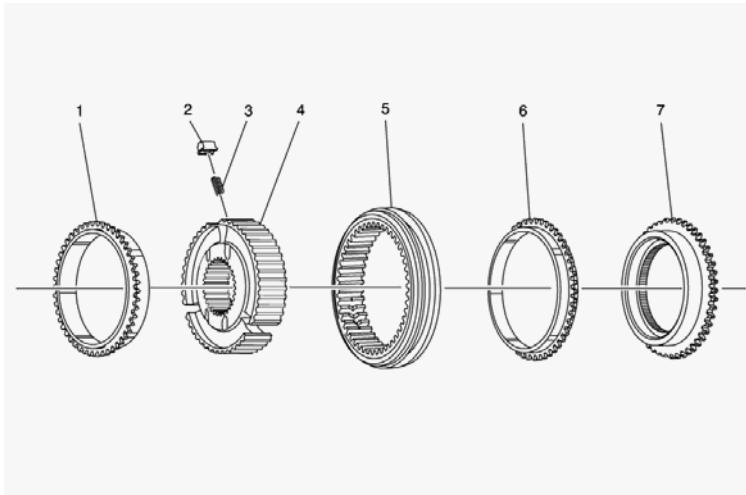
Callout	Component Name
Preliminary Procedures	
1.	When you service the synchronizers, retain them in the order that they are removed. Mark the parts to ensure the correct position for inspection and assembly.
2.	Clean all the synchronizer parts in a suitable solvent. Air dry all the synchronizer parts.
3.	Inspect the synchronizer parts for the following conditions:
•	Burrs
•	Cracks
•	Hicks
•	Chamfer for excessive wear
•	Free movement for the clutching sleeves on their hubs
•	Worn or damaged clutch teeth
•	Distorted teeth
•	Warping
•	Worn grooves
•	Wear on external splines
•	When repairing synchronizer assemblies, do not replace a single part only. Always replace the assembly. If it would be necessary to replace one synchronizer ring, always replace the synchronizer ring set.
•	Correct the cause, such as, but not limited to the following conditions:
•	Engine related vibrations
•	Driving at a low speed in a high gear
•	Defective vibration damper or crankshaft
1	1st Gear Synchronizer Inner Cone
2	1st Gear Synchronizer Outer Cone
3	1st and 2nd Gear Blocking Ring Assembly
4	1st and 2nd Gear Synchronizer Insert
5	1st and 2nd Gear Synchronizer Hub

Callout

Component Name

6

1st and 2nd Gear Synchronizer Sleeve

[3rd and 4th Gear Synchronizer Components](#)

3rd and 4th Gear Synchronizer Components

Callout

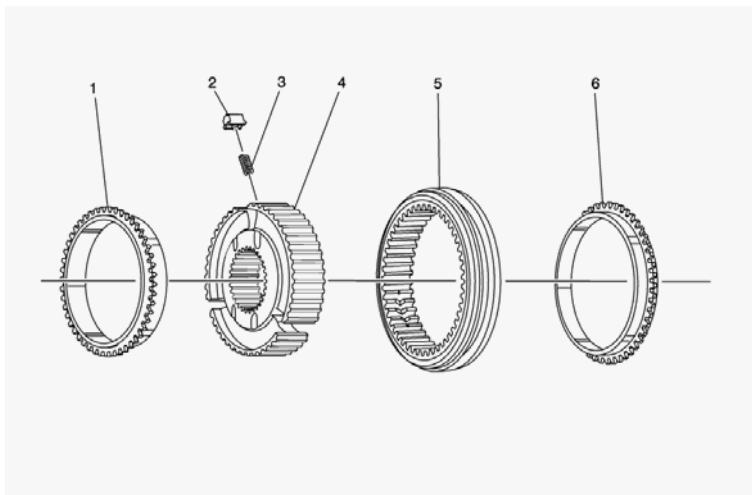
Component Name

Preliminary Procedures

1. When you service the synchronizers, retain them in the order that they are removed. Mark the parts to ensure the correct position for inspection and assembly.
2. Clean all the synchronizer parts in a suitable solvent. Air dry all the synchronizer parts.
3. Inspect the synchronizer parts for the following conditions:
 - Burrs
 - Cracks
 - Hicks
 - Chamfer for excessive wear
 - Free movement for the clutching sleeves on their hubs
 - Worn or damaged clutch teeth
 - Distorted teeth
 - Warping
 - Worn grooves
 - Wear on external splines
- When repairing synchronizer assemblies, do not replace a single part only. Always replace the assembly. If it would be necessary to replace one synchronizer ring, always replace the synchronizer ring set.
- Correct the cause, such as, but not limited to the following conditions:
 - Engine related vibrations
 - Driving at a low speed in a high gear
 - Defective vibration damper or crankshaft

- | | |
|---|--------------------------------------|
| 1 | 4th Gear Synchronizer Ring |
| 2 | 3rd and 4th Gear Synchronizer Insert |
| 3 | 3rd and 4th Gear Synchronizer Spring |
| 4 | 3rd and 4th Gear Synchronizer Hub |
| 5 | 3rd and 4th Gear Synchronizer Sleeve |
| 6 | 3rd Gear Synchronizer Ring |
| 7 | 3rd Gear Synchronizer Cone |

[5th and Reverse Gear Synchronizer Components](#)



5th and Reverse Gear Synchronizer Components

Callout
Preliminary Procedures

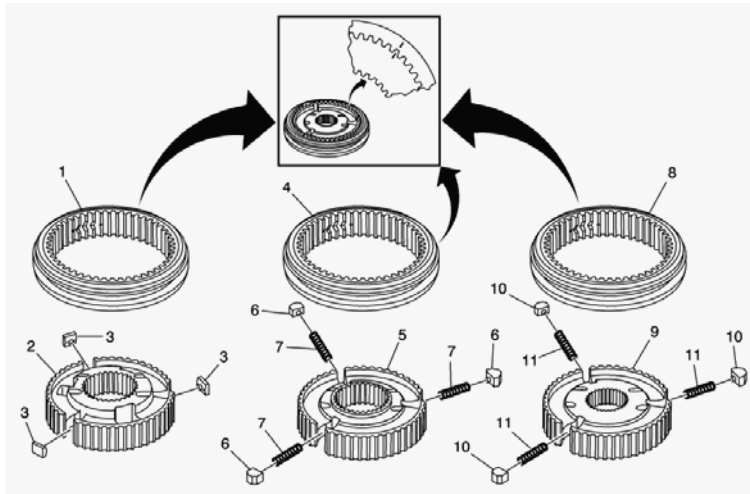
Component Name

1. When you service the synchronizers, retain them in the order that they are removed. Mark the parts to ensure the correct position for inspection and assembly.
2. Clean all the synchronizer parts in a suitable solvent. Air dry all the synchronizer parts.
3. Inspect the synchronizer parts for the following conditions:
 - Burrs
 - Cracks
 - Hicks
 - Chamfer for excessive wear
 - Free movement for the clutching sleeves on their hubs
 - Worn or damaged clutch teeth
 - Distorted teeth
 - Warping
 - Worn grooves
 - Wear on external splines
- When repairing synchronizer assemblies, do not replace a single part only. Always replace the assembly. If it would be necessary to replace one synchronizer ring, always replace the synchronizer ring set.
- Correct the cause, such as, but not limited to the following conditions:
 - Engine related vibrations
 - Driving at a low speed in a high gear
 - Defective vibration damper or crankshaft

- | | |
|---|--|
| 1 | 5th Gear Blocking Ring |
| 2 | 5th and Reverse Gear Synchronizer Insert |
| 3 | 5th and Reverse Gear Synchronizer Spring |
| 4 | 5th and Reverse Gear Synchronizer Hub |
| 5 | 5th and Reverse Gear Synchronizer Sleeve |
| 6 | Reverse Gear Blocking Ring |

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Synchronizers Disassemble

Callout

Component Name

Preliminary Procedures

1. Synchronizer components are not interchangeable. Keep all the synchronizer components separate. The synchronizer hubs and the sliding sleeves are a selected assembly. Keep the hubs and the sliding sleeves together as originally assembled.
2. Mark on the synchronizer hub and on the sleeve. This will help you to reinstall the parts in the same position.
3. If you are servicing this transmission for a shifting concern such as clash, hop out of gear, or block-out in a particular gear, the following hardware must be replaced as a set for the gear in question. Adjoining gears do not need to be serviced unless necessary:

- Main gear in question – for example 1st, 2nd
- Synchronizer Assembly
- Blocker Ring Assembly
- Shift Fork Inserts

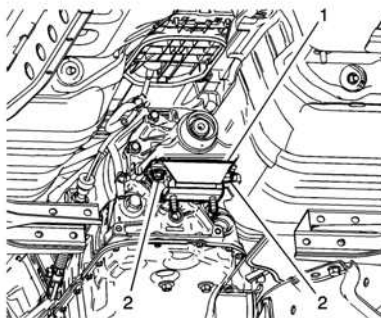
1	1st and 2nd Gear Synchronizer Sleeve
2	1st and 2nd Gear Synchronizer Hub
3	1st and 2nd Gear Synchronizer Insert
4	3rd and 4th Gear Synchronizer Sleeve
5	3rd and 4th Gear Synchronizer Hub
6	3rd and 4th Gear Synchronizer Insert
7	3rd and 4th Gear Synchronizer Spring
8	5th and Reverse Gear Synchronizer Sleeve
9	5th and Reverse Gear Synchronizer Hub
10	5th and Reverse Gear Synchronizer Insert
11	5th and Reverse Gear Synchronizer Spring

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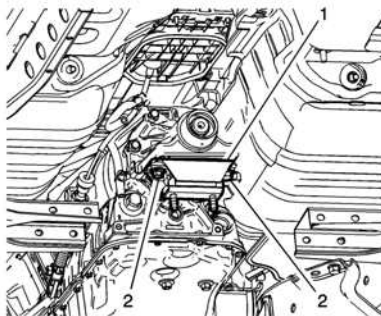
[Removal Procedure](#)

1. Remove the crossmember. Refer to Transmission Support Crossmember Replacement.



2. Remove the transmission mount bolts (2).
3. Remove the transmission mount (1) from the vehicle.

[Installation Procedure](#)



1. Install the transmission mount (1) to the vehicle.

Caution: Refer to Fastener Caution.

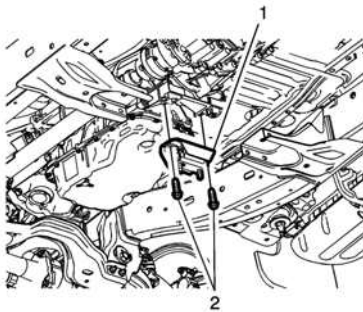
2. Install the bolts (2) and tighten to **58 Y (42 lb ft)**.
3. Install the crossmember. Refer to Transmission Support Crossmember Replacement.

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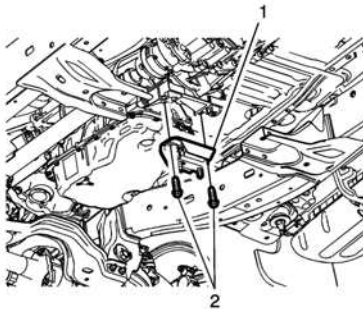
[Removal Procedure](#)

1. Remove the transmission support crossmember. Refer to Transmission Support Crossmember Replacement.



2. Remove the transmission mount bolts (2).
3. Remove the transmission mount (1) from the vehicle.

[Installation Procedure](#)



1. Install the transmission mount (1) to the vehicle.

Caution: Refer to Fastener Caution.

2. Install the bolts (2) and tighten to **55 Y (41 lb ft)**.
3. Install the transmission support crossmember. Refer to Transmission Support Crossmember Replacement.