

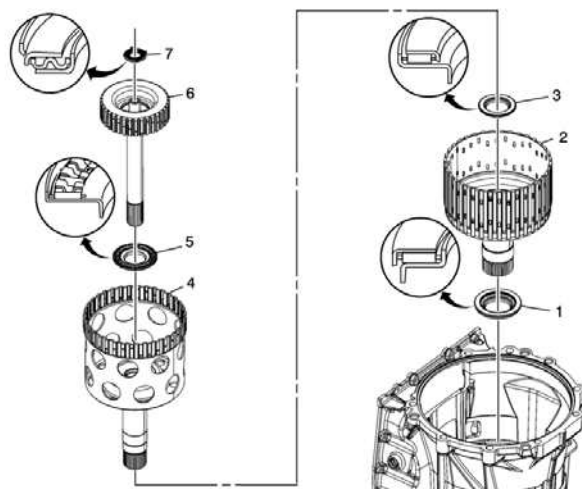
2013 Chevrolet Colorado

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

Table 1: [2-6 and 3-5 Reverse Clutch Hub, 1-2-3-4 Clutch Hub and 4-5-6 Clutch Hub Installation](#)

Table 2: [4-5-6 Clutch Assembly, Input Carrier and Input Sun Gear and 1-2-3-4 and 3-5 Reverse Clutch Installation](#)

[2-6 and 3-5 Reverse Clutch Hub, 1-2-3-4 Clutch Hub and 4-5-6 Clutch Hub Installation](#)

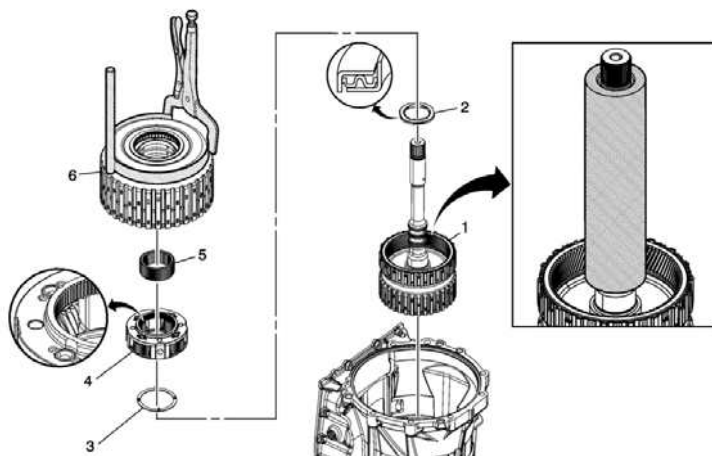


2-6 and 3-5 Reverse Clutch Hub, 1-2-3-4 Clutch Hub and 4-5-6 Clutch Hub Installation

Callout	Component Name
1	2-6 and 3-5 Reverse Clutch Hub Thrust Bearing Assembly
2	2-6 and 3-5 Reverse Clutch (with Output Carrier Outer Sun Gear Shaft) Hub Assembly
3	1-2-3-4 Clutch Hub Thrust Bearing Assembly
4	1-2-3-4 Clutch (with Output Carrier Inner Sun Gear Shaft) Hub Assembly
5	4-5-6 Clutch Hub Thrust Bearing Assembly
6	4-5-6 Clutch (with Output Carrier Shaft) Hub Assembly
7	Turbine Shaft Thrust Bearing Assembly

Note: Refer to 4-5-6 Clutch Dampener Overhaul for complete inspection – (6L50 Only).

[4-5-6 Clutch Assembly, Input Carrier and Input Sun Gear and 1-2-3-4 and 3-5 Reverse Clutch Installation](#)



4-5-6 Clutch Assembly, Input Carrier and Input Sun Gear and 1-2-3-4 and 3-5 Reverse Clutch Installation

Callout

Component Name

4-5-6 (with Turbine Shaft) Clutch Assembly

Caution: The new turbine shaft fluid seal rings must be sized prior to torque converter housing assembly, or damage to the seals will result.

Procedure

1

Apply *DT 36850* Transjel Lubricant to inner bore of *DT 48066-1A* Seal Sizer and install the sizer over the turbine shaft fluid seals. Size the seals for 5 minutes before installing the Torque Converter (with Fluid Pump) Housing Assembly.

Special Tools

- *DT 36850* Transjel Lubricant
- *DT 48066-1A* Seal Sizer

For equivalent regional tools, refer to Special Tools.

2

Input Sun Gear Thrust Bearing

Note: Thrust bearing snaps onto input carrier assembly.

3

Input Sun Gear Thrust Washer

4

Input Carrier Assembly

Note: The spline on the input carrier installs up into the 1-2-3-4 and 3-5 reverse clutch housing.

5

Input Sun Gear

1-2-3-4 and 3-5 Reverse Clutch Assembly

Note: Wiggle the *DT 47781* clutch assembly installer in order to align the 1-2-3-4 and 3-5 reverse clutch plates with the external splines of the 4-5-6 clutch assembly. To verify that the 1-2-3-4 and 3-5 reverse clutch assembly is fully installed, lift up on the turbine shaft. There should not be any noticeable slack.

6

Special Tool

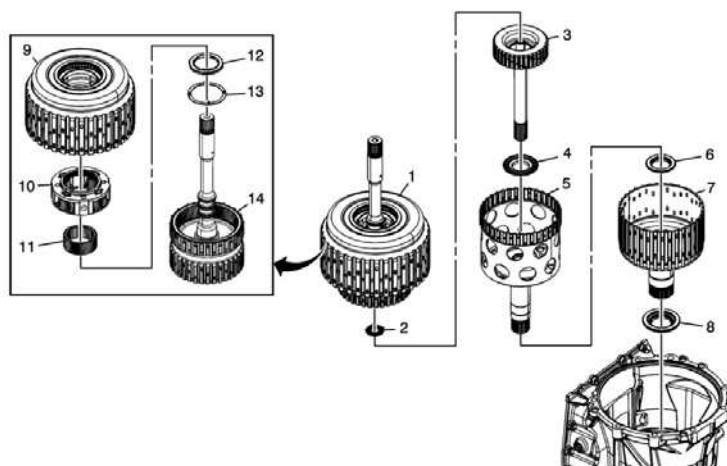
DT 47781 C1234 35R Clutch Assembly Installer

For equivalent regional tools, refer to Special Tools.

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Submodel: | Engine Type: | Liters:

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1-2-3-4 and 3-5 Reverse Clutch Assembly and 4-5-6 Clutch Assembly Removal

Callout

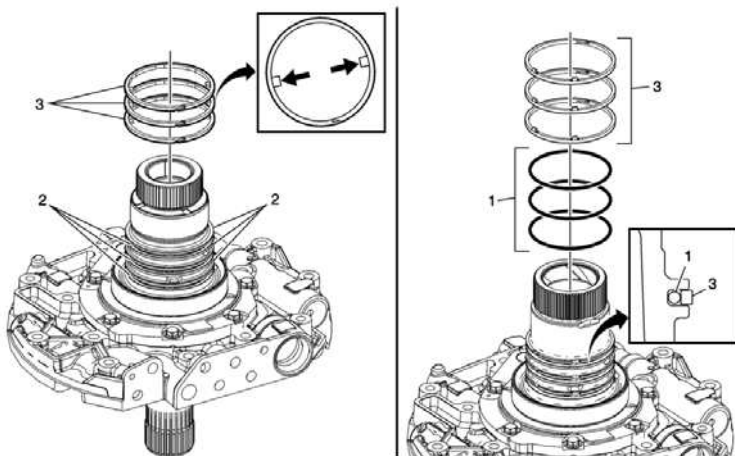
Component Name

- | | |
|----|--|
| 1 | 1-2-3-4 and 3-5 Reverse Clutch Assembly and 4-5-6 (With Turbine Shaft) Clutch Assembly |
| 2 | Turbine Shaft Thrust Bearing Assembly |
| 3 | 4-5-6 Clutch (With Output Carrier Shaft and Dampener) Hub Assembly |
| 4 | 4-5-6 Clutch Hub Thrust Bearing Assembly |
| 5 | 1-2-3-4 Clutch (With Output Carrier Inner Sun Gear Shaft) Hub Assembly |
| 6 | 1-2-3-4 Clutch Hub Thrust Bearing Assembly |
| 7 | 2-6 and 3-5 Reverse Clutch (With Output Carrier Outer Sun Gear Shaft) Hub Assembly |
| 8 | 2-6 and 3-5 Reverse Clutch Hub Thrust Bearing Assembly |
| 9 | 1-2-3-4 and 3-5 Reverse Clutch Assembly |
| 10 | Input Carrier Assembly |
| 11 | Input Sun Gear |
| 12 | Input Sun Gear Thrust Bearing |
| 13 | Input Sun Gear Thrust Washer |
| 14 | 4-5-6 (With Turbine Shaft) Clutch Assembly |

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:



1-2-3-4 and 3-5 Reverse Clutch Fluid Seal Ring Installation

Callout

Component Name

Caution: Do not use old seal rings. Install NEW seal rings. Reusing old seal rings may cause internal transmission leaks and transmission damage.

- | | |
|---|---|
| 1 | 1-2-3-4 and 3-5 Reverse Clutch Fluid Seal Rings – Inner O-ring (Qty: 3) – Model Dependent |
| 2 | 1-2-3-4 and 3-5 Reverse Clutch Fluid Seal Rings Anti-rotation Slots |
| 3 | 1-2-3-4 and 3-5 Reverse Clutch Fluid Seal Rings (Qty: 3) |

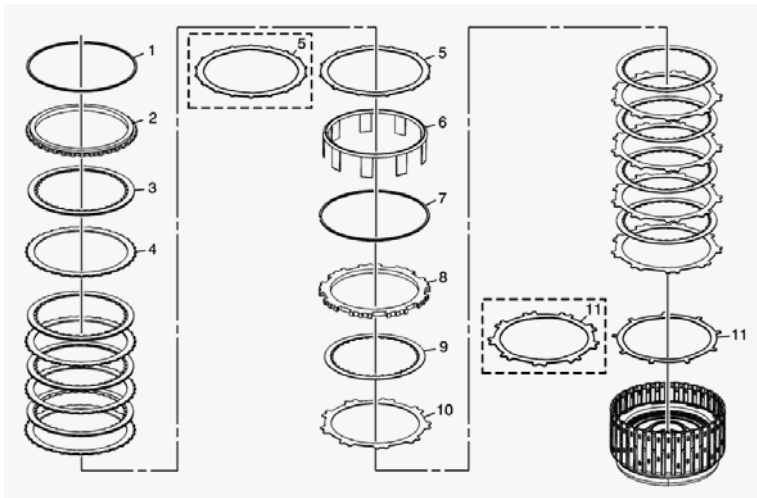
Note: Ensure anti-rotation tabs on seal rings align with anti-rotation slots.

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Table 1:	1-2-3-4 and 3-5 Reverse Clutch Plates Removal
Table 2:	1-2-3-4 Clutch Piston Removal
Table 3:	3-5 Reverse Clutch Piston Removal
Table 4:	3-5 Reverse Clutch Air Bleed Inspection (6L80/6L90)
Table 5:	3-5 Reverse Clutch Housing Inspection Disassembled
Table 6:	3-5 Reverse Clutch Housing Inspection Assembled
Table 7:	1-2-3-4 and 3-5 Reverse Clutch Piston Seals Replacement
Table 8:	3-5 Reverse Clutch Piston Installation
Table 9:	1-2-3-4 Clutch Piston Installation
Table 10:	1-2-3-4 Clutch Plate Installation
Table 11:	3-5 and Reverse Clutch Plate Installation
Table 12:	1-2-3-4 and 3-5 Reverse Clutch Bearing Assembly Replacement

[1-2-3-4 and 3-5 Reverse Clutch Plates Removal](#)

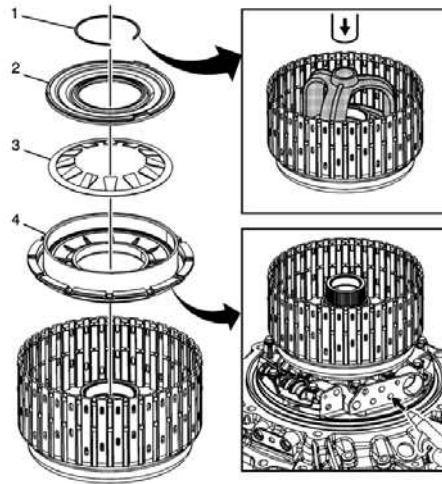


1-2-3-4 and 3-5 Reverse Clutch Plates Removal

Callout	Component Name
1	3-5 Reverse Clutch Backing Plate Retaining Ring
2	3-5 Reverse Clutch Backing Plate
	3-5 Reverse Clutch Plate Assembly
3	Procedure - Remove Qty: 4 plates – 6L45/6L50/6L80 - Remove Qty: 4 or 5 plates – Model Dependent – 6L90 3-5 Reverse Clutch Plate
4	Procedure - Remove Qty: 4 plates – 6L45/6L50/6L80 - Remove Qty: 4 or 5 plates – Model Dependent – 6L90
5	3-5 Reverse Clutch (Waved) Plate
6	3-5 Reverse Clutch Apply Ring
7	1-2-3-4 Clutch Backing Plate Retaining Ring
8	1-2-3-4 Clutch Backing Plate
	1-2-3-4 Clutch Plate Assembly
9	Procedure Remove Qty: 5 plates – 6L45/6L50/6L80

Callout	Component Name
	Remove Qty: 5 or 6 plates – Model Dependent – 6L90
	1–2–3–4 Clutch Plate
10	Procedure - Remove Qty: 5 plates – 6L45/6L50/6L80 - Remove Qty: 5 or 6 plates – Model Dependent – 6L90
11	1–2–3–4 Clutch (Waved) Plate

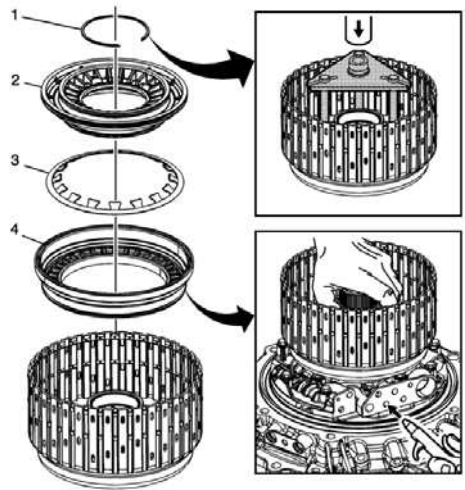
[1–2–3–4 Clutch Piston Removal](#)



1–2–3–4 Clutch Piston Removal

Callout	Component Name
	1–2–3–4 Clutch Piston Dam Retaining Ring
	Caution: Use care when compressing the 1–2–3–4 clutch spring and dam assembly. Compressing the dam assembly too much may damage it.
1	Caution: Refer to Retaining Ring Reuse Caution. Special Tool <i>DT 38734 Intermediate Spring Compressor Adapter</i> For equivalent regional tools, refer to Special Tools.
2	1–2–3–4 Clutch Piston Dam Assembly
3	1–2–3–4 Clutch Spring 1–2–3–4 Clutch Piston
4	Note: - It may be necessary to apply air to the apply passage in order to remove the piston. Install the 1–2–3–4 clutch housing onto the torque converter (with fluid pump) housing assembly in order to apply air. - After air is applied, it may be necessary to turn the housing assembly upside down and carefully tap the housing against a flat surface in order to release the piston.

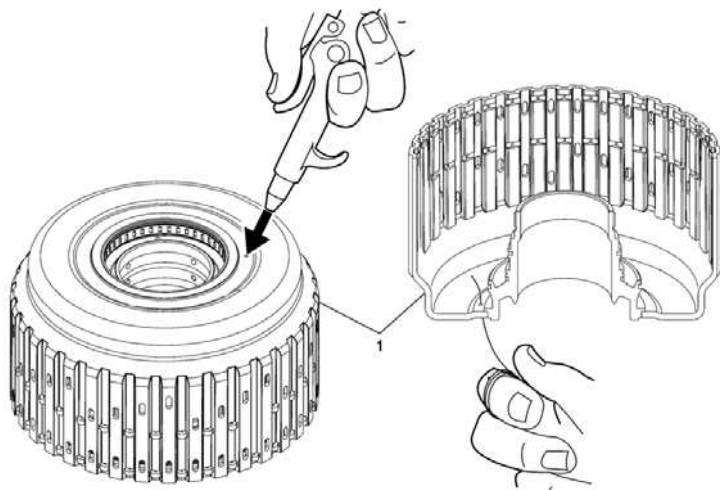
[3–5 Reverse Clutch Piston Removal](#)



3-5 Reverse Clutch Piston Removal

Callout	Component Name
Preliminary Procedures	
1.	Install the 1-2-3-4 and 3-5 reverse clutch housing assembly onto the torque converter (with fluid pump) housing assembly.
2.	Apply hand pressure on the 1-2-3-4 clutch piston housing while applying compressed air to the apply passage in order to unseat the 3-5 reverse clutch piston.
	1-2-3-4 Clutch Piston Housing Retaining Ring
	Caution: Refer to Retaining Ring Reuse Caution.
1	Special Tool DT 47867 Adjustable Clutch Spring Compressor For equivalent regional tools, refer to Special Tools.
2	1-2-3-4 Clutch Piston Housing
3	3-5 Reverse Clutch Spring
	3-5 Reverse Clutch Piston
4	Note: It may be necessary to turn the housing assembly upside down and carefully tap the housing against a flat surface in order to release the piston.

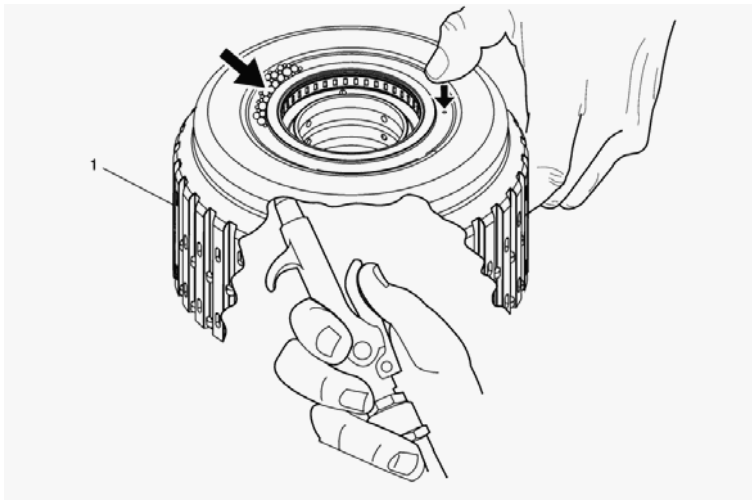
[3-5 Reverse Clutch Air Bleed Inspection \(6L80/6L90\)](#)



3-5 Reverse Clutch Air Bleed Inspection (6L80/6L90)

Callout	Component Name
	1-2-3-4 and 3-5 Reverse Clutch Housing Assembly
1	Procedure Ensure the air bleed passage is clear and free from obstructions by using a fine wire and also compressed air.

[3-5 Reverse Clutch Housing Inspection Disassembled](#)



3-5 Reverse Clutch Housing Inspection Disassembled

Callout

Component Name

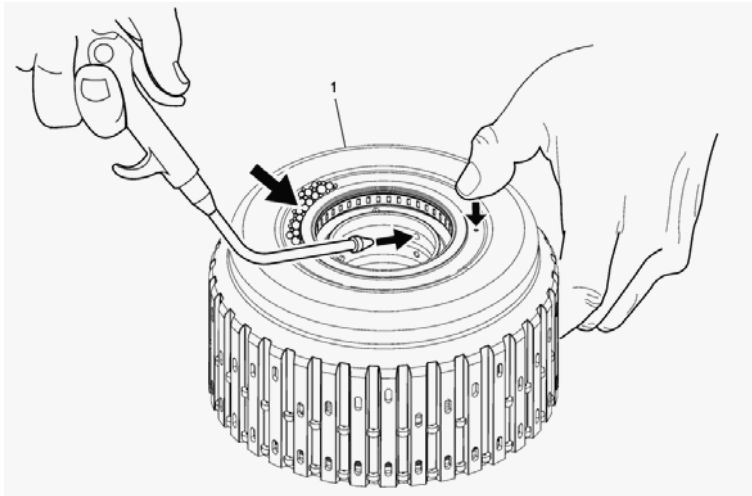
1-2-3-4 and 3-5 Reverse Clutch Housing Assembly

Procedure

1

1. Apply soap compound to weld area of housing.
2. Hold thumb over the air bleed passage.
3. For disassembled 1-2-3-4 and 3-5 reverse clutch housing spray compressed air onto the housing / hub joint and inspect weld area for bubbles.
4. If bubbles are detected a new housing is required.

[3-5 Reverse Clutch Housing Inspection Assembled](#)



3-5 Reverse Clutch Housing Inspection Assembled

Callout

Component Name

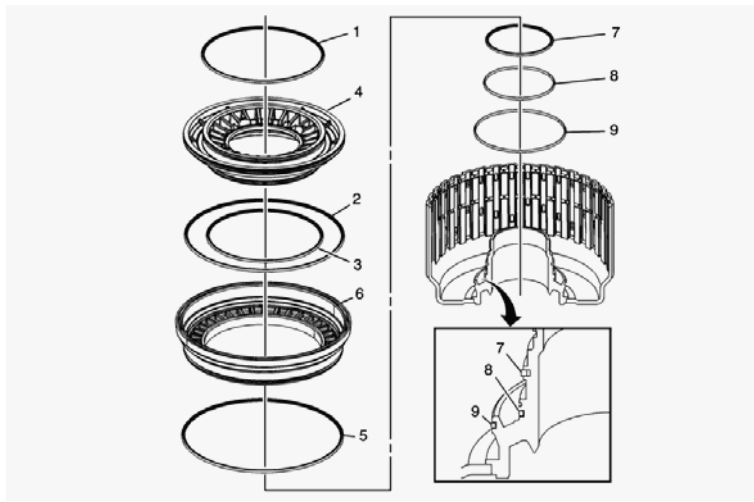
1-2-3-4 and 3-5 Reverse Clutch Housing Assembly

Procedure

1

1. Apply soap compound to weld area of housing.
2. Hold thumb over the air bleed passage.
3. For fully assembled 1-2-3-4 and 3-5 reverse clutch housing spray compressed air into the 3-5R clutch feed hole and inspect weld area for bubbles.
4. If bubbles are detected a new housing is required.

[1-2-3-4 and 3-5 Reverse Clutch Piston Seals Replacement](#)



1-2-3-4 and 3-5 Reverse Clutch Piston Seals Replacement

Callout

Component Name

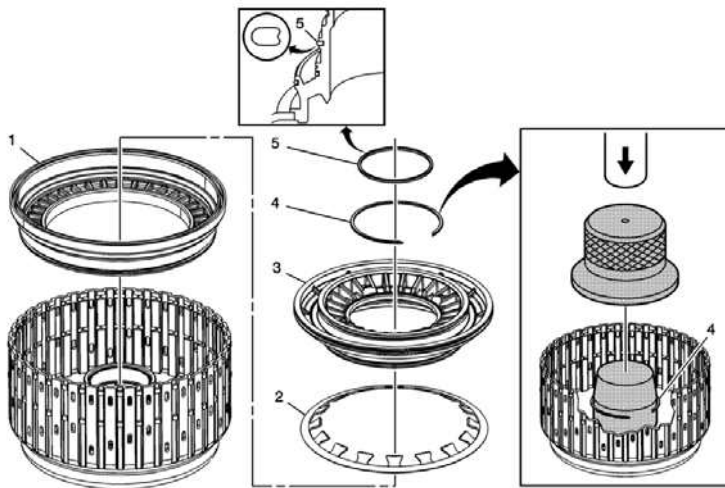
Caution: Refer to Seal Reuse Caution.

Preliminary Procedure

Lubricate all seals with automatic transmission fluid (ATF) prior to installation.

- | | |
|---|--|
| 1 | 1-2-3-4 Clutch Piston Seal |
| 2 | 3-5 Reverse Clutch Piston Dam (O-Ring) Seal |
| 3 | 3-5 Reverse Clutch Piston Inner Seal |
| 4 | 1-2-3-4 Clutch Piston Housing |
| 5 | 3-5 Reverse Clutch Piston Outer Seal |
| 6 | 3-5 Reverse Clutch Piston |
| | 1-2-3-4 Clutch Piston Inner Seal |
| 7 | Caution: Do not install a NEW 1-2-3-4 clutch piston inner seal yet. A special tool used to install the 1-2-3-4 clutch piston housing retaining ring may damage the seal if the seal is installed prior to installing the retaining ring. Refer to 3-5 Reverse Clutch Piston Installation. |
| 8 | 1-2-3-4 Clutch Piston Housing Seal |
| 9 | 1-2-3-4 Clutch Piston Housing Seal |

[3-5 Reverse Clutch Piston Installation](#)



3-5 Reverse Clutch Piston Installation

Callout

Component Name

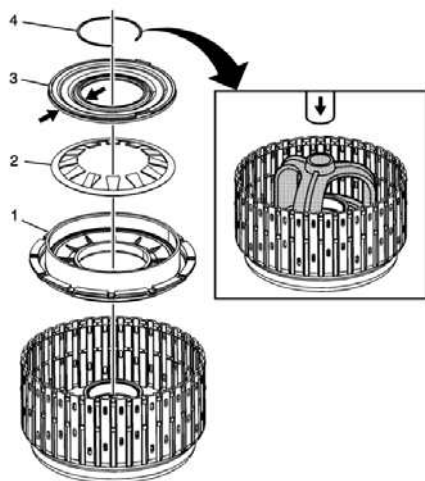
- | | |
|---|---------------------------|
| 1 | 3-5 Reverse Clutch Piston |
|---|---------------------------|

Callout

Component Name

- 2 3-5 Reverse Clutch Spring
- Caution:** Ensure the clutch spring is centered on the piston with the tabs facing up. Failure to do so may cause damage to the clutch assembly.
- 3 1-2-3-4 Clutch Piston Housing
- 1-2-3-4 Clutch Piston Housing Retaining Ring
- Caution:** Before using the DT 47782-2, push the retaining ring over the DT 47782-1 by hand so that the ring is positioned below the tapered area of the DT 47782-1. If the ring is positioned above the tapered area when it is being installed, the ring will become lodged between both tools and damage to the tools, retaining ring, and piston housing will result.
- Caution:** Refer to Retaining Ring Reuse Caution.
- Caution:** Push the retaining ring down over the cone until the ring seats firmly in the retaining ring groove. The retaining ring will make a distinctive click sound when it seats. Failure to properly seat the retaining ring may cause damage to the 3-5 reverse clutch assembly.
- 4
- Note:** Use a screwdriver in order to verify the retaining ring is fully seated into the groove. It may appear as though the retaining ring is not fully seated, since the groove is shallow by design. However, this shallow interface is normal.
- Special Tools**
- DT 47782-1 Retaining Ring Cone
 - DT 47782-2 Retaining Ring Installer
- For equivalent regional tools, refer to Special Tools.
- 1-2-3-4 Clutch Piston Inner Seal
- 5
- Caution:** Install a NEW seal and orientate as shown. Failure to do so may cause internal transmission leaks and damage to the transmission.

[1-2-3-4 Clutch Piston Installation](#)

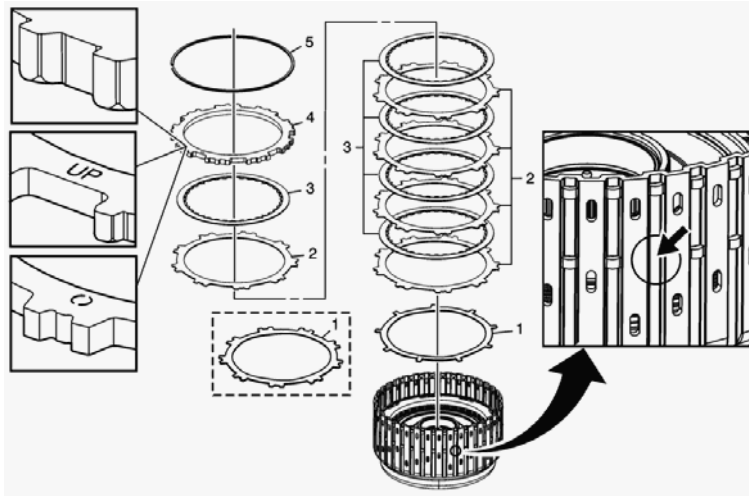


1-2-3-4 Clutch Piston Installation

Callout

Component Name

- 1 1-2-3-4 Clutch Piston
- 1-2-3-4 Clutch Spring
- 2
- Caution:** Ensure the clutch spring is centered on the piston with the tabs facing up. Failure to do so may cause damage to the clutch assembly.
- 3 1-2-3-4 Clutch Piston Dam Assembly
- Note:** Lubricate the inner and outer surfaces of the dam assembly with ATF in order to ease installation into the piston. Install the tabs facing up.
- 1-2-3-4 Clutch Piston Dam Retaining Ring
- Caution:** Use care when compressing the 1-2-3-4 clutch spring and dam assembly. Compressing the dam assembly too much may damage it.
- 4
- Caution:** Refer to Retaining Ring Reuse Caution.
- Special Tool**
- DT 38734 Intermediate Spring Compressor Adapter
- For equivalent regional tools, refer to Special Tools.



1-2-3-4 Clutch Plate Installation

Callout

Component Name

- 1

1-2-3-4 Clutch (Waved) Plate

Caution: Ensure an opening between the external splines of the waved plate is centered over the missing snap ring groove punch in the housing. Failure to do so may cause damage to the clutch assembly.
- 2

1-2-3-4 Clutch Plate

Caution: Ensure all clutch plates are centered in the housing. When installing the first steel clutch plate, ensure an opening between the external splines is centered over the missing snap ring groove punch in the housing. Align the external splines of each remaining steel clutch plate with the first steel clutch plate. Failure to do so may cause damage to the clutch assembly.

Procedure

 - Install Qty: 5 plates – 6L45/6L50/6L80
 - Install Qty: 5 or 6 plates – Model Dependent – 6L90
- 3

1-2-3-4 Clutch Plate Assembly

Procedure

 - Install Qty: 5 plates – 6L45/6L50/6L80
 - Install Qty: 5 or 6 plates – Model Dependent – 6L90
- 4

1-2-3-4 Clutch Backing Plate

Caution: Align the external splines of the backing plate with the external splines of the steel clutch plates. Failure to do so may cause damage to the clutch assembly.

Caution: Ensure the 1-2-3-4 Clutch Backing Plate is installed correctly to prevent mechanical damage.

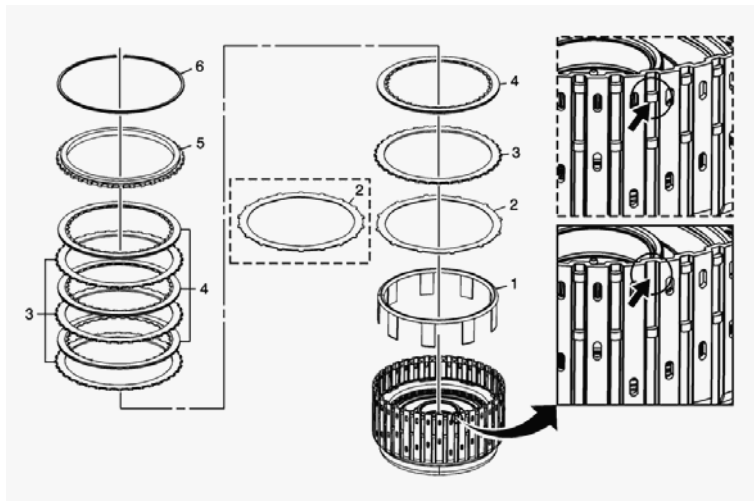
Procedure

If the plate has UP stamped on it, install that side up. If the plate has 3 circle marks spaced 120 degrees apart stamped on it, install that side up. If no identification marks are present, install sharp edge up, chamfer side down.
- 5

1-2-3-4 Clutch Backing Plate Retaining Ring

Caution: Depending on the housing configuration, align the retaining ring gap with the missing snap ring groove punch in the housing or the offset punch in the housing. Failure to do so may cause damage to the clutch assembly.

Note: After the retaining ring is installed, determine clutch piston travel in order to verify if the correct selective retaining ring is being used. Refer to 1-2-3-4 Clutch Backing Plate Retaining Ring Measurement.



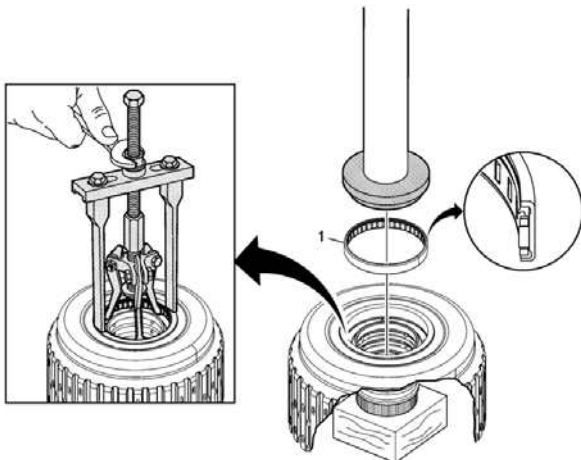
3-5 and Reverse Clutch Plate Installation

Callout

Component Name

- | | |
|---|--|
| 1 | <p>3-5 Reverse Clutch Apply Ring</p> <p>Caution: Ensure apply ring legs are positioned into the 3-5 reverse clutch piston. Failure to do so may cause damage to the 3-5 reverse clutch assembly.</p> |
| 2 | <p>3-5 Reverse Clutch (Waved) Plate</p> <p>3-5 Reverse Clutch Plate</p> <p>Procedure</p> |
| 3 | <ul style="list-style-type: none"> • Install Qty: 4 plates – 6L45/6L50/6L80 • Install Qty: 4 or 5 plates – Model Dependent – 6L90 <p>3-5 Reverse Clutch Plate Assembly</p> <p>Procedure</p> |
| 4 | <ul style="list-style-type: none"> • Install Qty: 4 plates – 6L45/6L50/6L80 • Install Qty: 4 or 5 plates – Model Dependent – 6L90 |
| 5 | <p>3-5 Reverse Clutch Backing Plate</p> <p>3-5 Reverse Clutch Backing Plate Retaining Ring</p> <p>Caution: Depending on the housing configuration, align the retaining ring gap with the missing snap ring groove punch in the housing or the offset punch in the housing. Failure to do so may cause damage to the clutch assembly.</p> |
| 6 | <p>Note:</p> <ul style="list-style-type: none"> • After retaining ring is installed check 1-2-3-4 and 3-5 reverse clutch housing for weld leak. Refer to 3-5 Reverse Clutch Housing Inspection Assembled earlier in this procedure. • After the retaining ring is installed, determine clutch piston travel in order to verify if the correct selective retaining ring is being used. Refer to 3-5 Reverse Clutch Backing Plate Retaining Ring Measurement. |

[1-2-3-4 and 3-5 Reverse Clutch Bearing Assembly Replacement](#)



1–2–3–4 and 3–5 Reverse Clutch Bearing Assembly Replacement

Callout

Component Name

3–5 Reverse Clutch Bearing

Caution: Install the NEW bearing assembly with the seal side up. Improper installation of the bearing may cause damage to the transmission.

Caution: Do not use a hammer or other striking tool that may cause damage to the bearing and housing. Use care to ensure the bearing is installed slowly and evenly using an arbor press supporting the inner hub. Do not support by the housing or fracture will result.

Caution: Do not reuse the bearing. Install a NEW bearing. Reusing an old bearing may cause damage to the transmission.

1

Procedure

Install the bearing flush to **0.3 mm (0.012 in)** below the thrust surface.

Special Tools

- *DT 47865* Bearing Remover
- *DT 47866* Bearing Installer
- *DT 45124* Removal Bridge

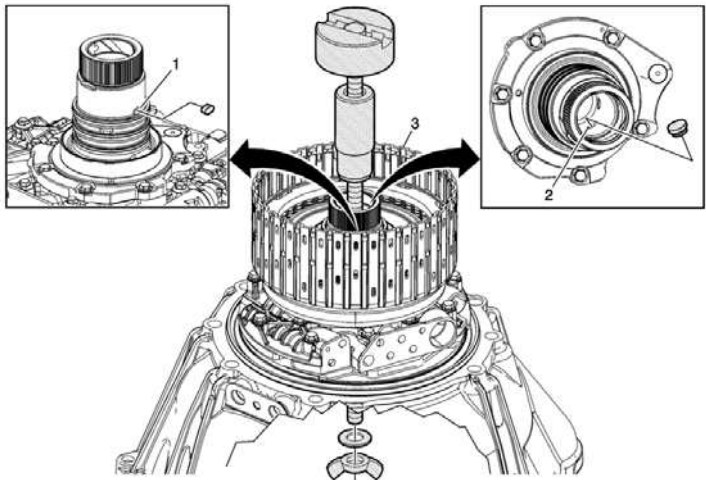
For equivalent regional tools, refer to Special Tools.

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- Table 1: [Fluid Passage Plug Kit Installation](#)
Table 2: [Apply Compressed Air and Measurement](#)

Fluid Passage Plug Kit Installation



Fluid Passage Plug Kit Installation

Callout Component Name

Special Tools

DT-49291 Clutch Travel Air Passage Plug Kit

Compensator Feed Fluid Passage – Outer

Procedure

- 1 Install the tapered oval fluid passage plug DT-49291-4 which is part of DT-49291 clutch travel air passage plug kit, into the compensator feed fluid passage hole on the 1-2-3-4 and 3-5 reverse clutch support assembly.
- Note:** The compensator feed fluid passage hole is the top outer hole on the 1-2-3-4 and 3-5 reverse clutch support assembly.

Compensator Feed Fluid Passage – Inner

Procedure

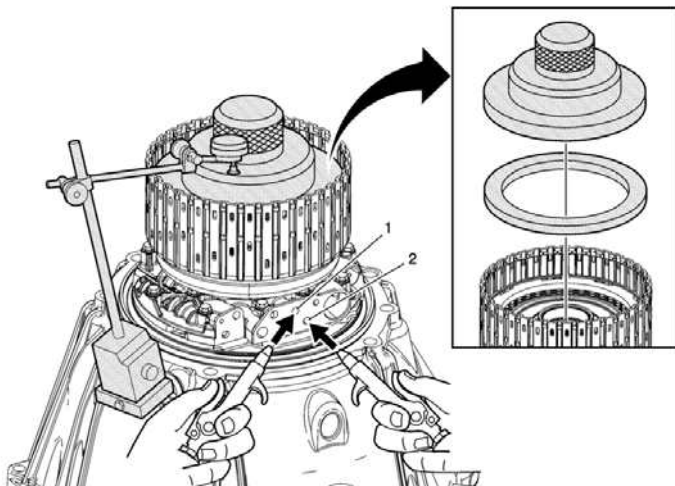
- 2 Install the round fluid passage plug DT-49291-5 which is part of DT-49291 clutch travel air passage plug kit, into the compensator feed fluid passage hole inside the 1-2-3-4 and 3-5 reverse clutch support assembly.
- Note:** The compensator feed fluid passage hole is the middle inner hole in the 1-2-3-4 and 3-5 reverse clutch support assembly.

1-2-3-4 and 3-5 Reverse Clutch Housing Assembly

Procedure

- 3
1. Ensure that the 1-2-3-4 clutch plates, backing plate and retaining ring are installed.
 2. Install the 1-2-3-4 and 3-5 reverse clutch housing onto the torque converter (with fluid pump) housing assembly.
 3. Install the applicable plug kit sleeve DT-49291-2 (6L80/6L90) or DT-49291-3 (6L45/6L50), cap DT-49291-1, bolt, washer and nut which are all part of DT-49291 clutch travel air passage plug kit.

[Apply Compressed Air and Measurement](#)



Apply Compressed Air and Measurement

Callout

Component Name

Preliminary Procedures

1. Install the *DT 47868-2* base adapter onto the torque converter housing.
2. Install *DT 47868-1* travel weight and *DT-47868-3* travel weight adapter onto the 1-2-3-4 clutch backing plate.
3. Install the *GE 26900-13* magnetic base onto *DT 47868-2* base adapter.
4. Attach the *GE 8001* dial indicator set to the *GE 26900-13* magnetic base.

Special Tools

- *DT 47868-1* Clutch Pack Travel Weight
- *DT 47868-2* Magnetic Base Adapter
- *DT-47868-3* Clutch Travel Weight Adapter
- *GE 8001* Dial Indicator Set
- *GE 26900-13* Magnetic Base

For equivalent regional tools, refer to Special Tools.

Compensator Feed Fluid Passage

Procedure

1

1. Apply compressed air to the compensator feed fluid passage.
2. Zero out the dial indicator *J 8001* dial indicator set.

1-2-3-4 Clutch Apply Passage

Procedure

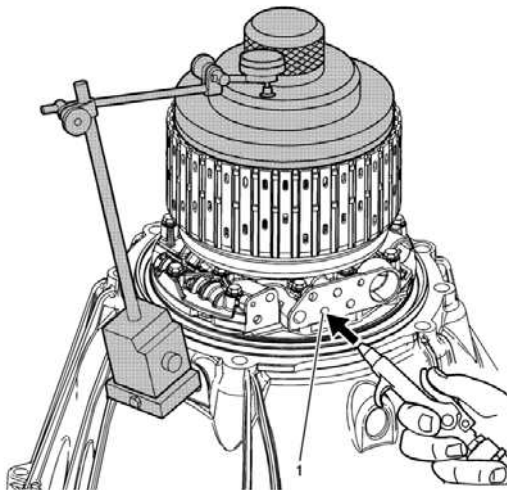
2

While Applying compressed air to the compensator feed fluid passage, simultaneously apply compressed air to the 1-2-3-4 clutch apply passage. Do this at least 3 times and observe the dial indicator measurement each time. Refer to Clutch Backing Plate Retaining Ring Specifications.

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3-5 Reverse Clutch Backing Plate Retaining Ring Measurement

Callout

Component Name

Preliminary Procedures

1. Install the 1-2-3-4 and 3-5 reverse clutch housing with the 1-2-3-4 and 3-5 reverse clutch plates installed, onto the torque converter housing.
2. Install the *DT 47868-2* magnetic base adapter onto the torque converter housing.
3. Install *DT 47868-1* clutch pack travel weight and *DT 47868-3* clutch travel weight adapter(6L50 applications only) onto the 3-5 reverse clutch backing plate.
4. Install the *GE 26900-13* magnetic base onto *DT 47868-2* magnetic base adapter.
5. Attach the *GE 8001* dial indicator set to the *GE 26900-13* magnetic base and zero out the dial indicator on the *DT 47868-1* clutch pack travel weight.

Special Tools

- *DT 47868-1* Clutch Pack Travel Weight
- *DT 47868-2* Magnetic Base Adapter
- *DT 47868-3* Clutch Travel Weight Adapter (6L50 applications only)
- *GE 8001* Dial Indicator Set
- *GE 26900-13* Magnetic Base

For equivalent regional tools, refer to Special Tools.

3-5 Reverse Clutch Apply Passage

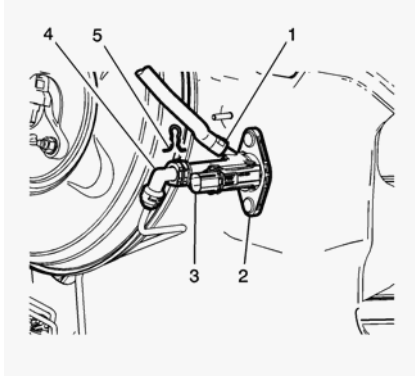
1

Note: Apply compressed air to the apply passage hole, and observe the dial indicator measurement. Refer to Clutch Backing Plate Retaining Ring Specifications.

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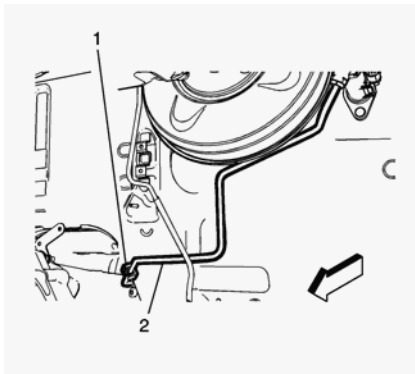
Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

[Removal Procedure](#)

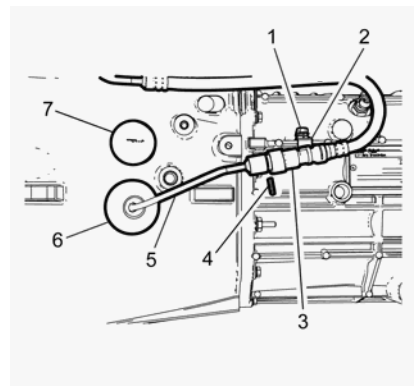


Note: Plug the fluid reservoir hose to prevent loss of fluid.

1. Disconnect the fluid reservoir hose (1) from the clutch master cylinder (2).
2. Remove the clutch actuator hose clip (5).
3. Disconnect the clutch actuator hose (4) from the clutch master cylinder.



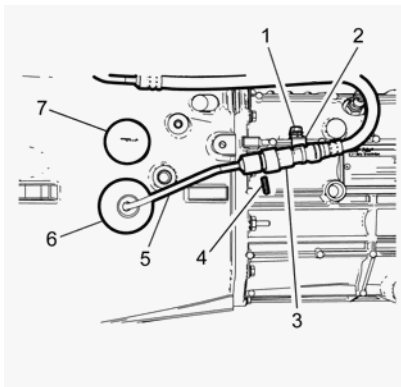
4. Unclip the clutch actuator pipe (2) from the retaining clip (1).
5. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.



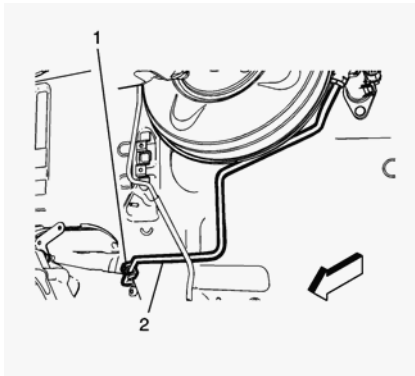
6. Remove the retaining clip (4) from the clutch actuator pipe (5).
7. Disconnect the rear actuator pipe (3) from the front clutch actuator pipe (5).
8. Carefully remove the clutch actuator pipe from the vehicle.

[Installation Procedure](#)

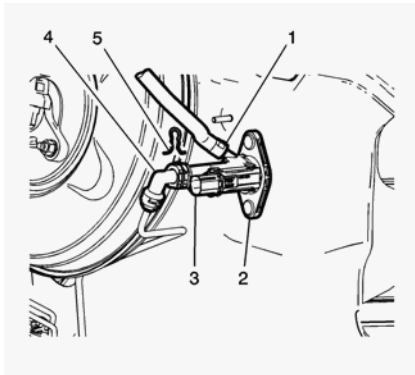
1. Carefully position the clutch actuator pipe into the vehicle.



2. Connect the rear actuator pipe (3) to the front clutch actuator pipe (5).
3. Install the retaining clip (4) to the clutch actuator pipe (5).
4. Lower the vehicle.



5. Clip the clutch actuator pipe (2) to the retaining clip (1).

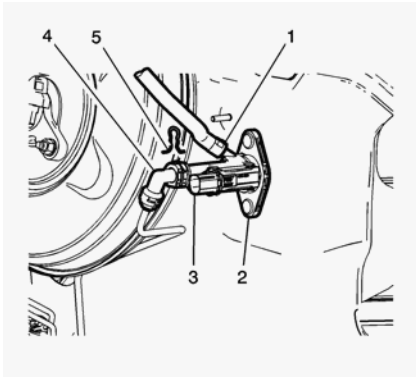


6. Install the clutch fluid reservoir hose (1) to the clutch master cylinder.
7. Connect the clutch actuator pipe (4) to the clutch master cylinder.
8. Install the clutch actuator pipe clip (5) to the clutch master cylinder.
9. Bleed the clutch hydraulic system. Refer to Hydraulic Clutch System Bleeding.

2013 Chevrolet Colorado

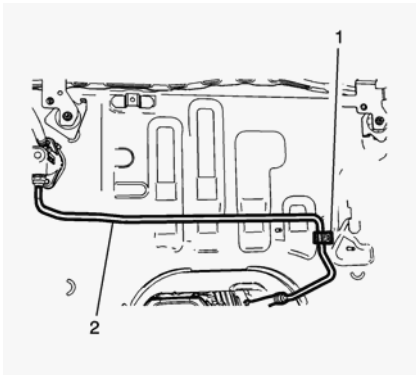
Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

[Removal Procedure](#)

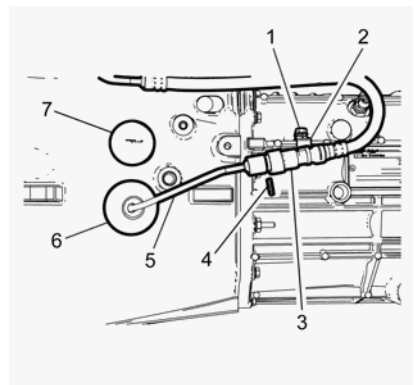


Note: Plug the fluid reservoir hose to prevent loss of fluid.

1. Disconnect the fluid reservoir hose (1) from the clutch master cylinder (2).
2. Remove the clutch actuator hose clip (5).
3. Disconnect the clutch actuator hose (4) from the clutch master cylinder.



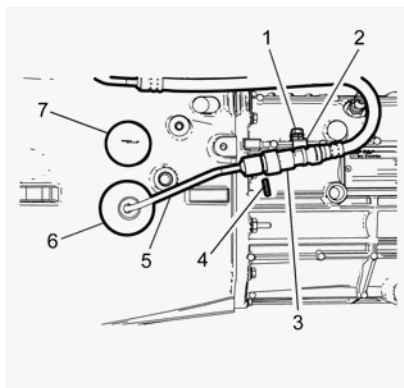
4. Unclip the clutch actuator pipe (2) from the retaining clip (1).
5. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.



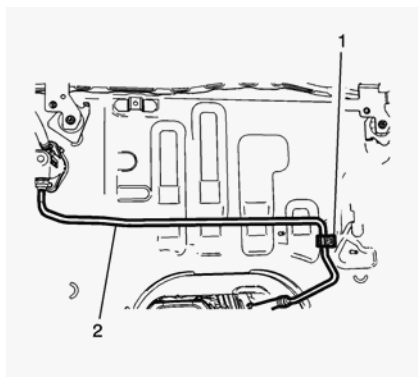
6. Remove the retaining clip (4) from the clutch actuator pipe (5).
7. Disconnect the rear actuator pipe (3) from the front clutch actuator pipe (5).
8. Carefully remove the clutch actuator pipe from the vehicle.

[Installation Procedure](#)

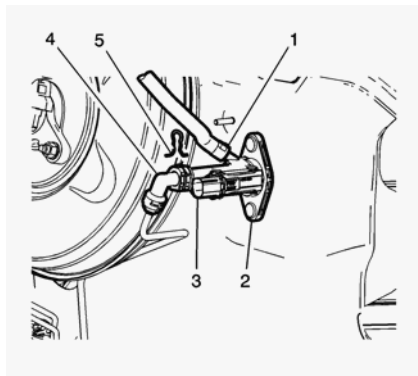
1. Carefully position the clutch actuator pipe into the vehicle.



2. Connect the rear actuator pipe (3) to the front clutch actuator pipe (5).
3. Install the retaining clip (4) to the clutch actuator pipe (3).
4. Lower the vehicle.



5. Clip the clutch actuator pipe (2) to the retaining clip (1).



6. Install the clutch fluid reservoir hose (1) to the clutch master cylinder.
7. Connect the clutch actuator pipe (4) to the clutch master cylinder.
8. Install the clutch actuator pipe clip (5) to the clutch master cylinder.
9. Bleed the clutch hydraulic system. Refer to Hydraulic Clutch System Bleeding.

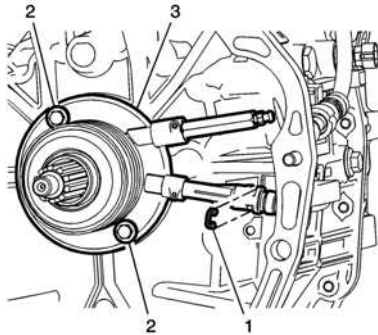
2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:

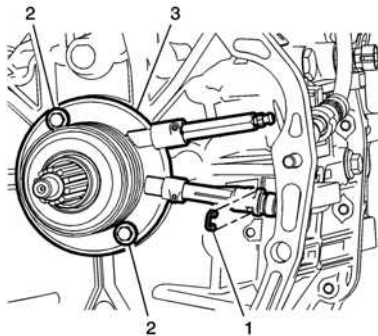
[Removal Procedure](#)

1. Remove the transmission. Refer to Transmission Replacement.



2. Remove the clutch actuator pipe retaining clip (1).
3. Remove the 2 clutch actuator cylinder bolts (2).
4. Remove the clutch actuator cylinder (3) from the transmission.

[Installation Procedure](#)



1. Position the clutch actuator cylinder (3) to the transmission.

Caution: Refer to Fastener Caution.

2. Install the 2 clutch actuator cylinder bolts (2) and tighten to **10 Y (89 lb in)**.
3. Install the clutch actuator pipe to the clutch actuator (3).
4. Install the clutch actuator pipe retaining clip (1).
5. Install the transmission. Refer to Transmission Replacement.

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

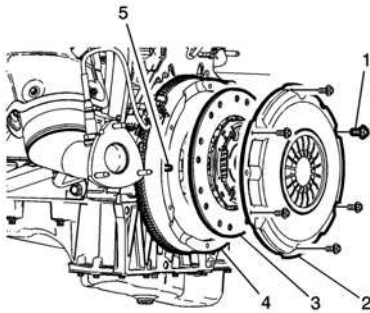
Special Tools

J-5824-A Clutch Alignment Tool

For equivalent regional tools, refer to Special Tools.

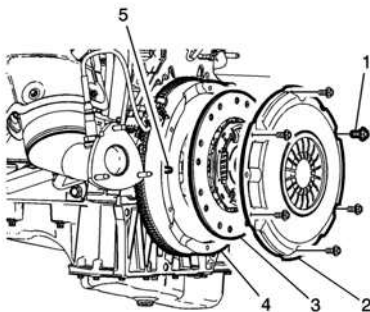
Removal Procedure

1. Remove the transmission. Refer to Transmission Replacement.

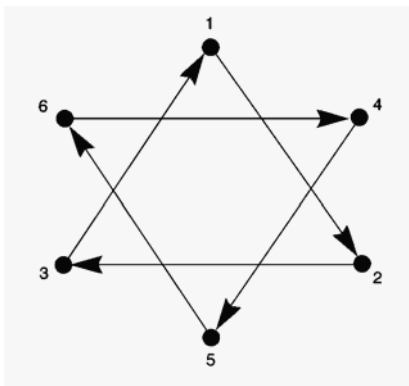


2. Remove the clutch pressure plate bolts (1).
Discard the bolts.
3. Remove the clutch pressure plate (2) and driven disc (3) from the dowel pins (4) on the flywheel (5).

Installation Procedure



1. Install the clutch pressure plate (2) and driven plate (3) to the dowel pins (4) on the flywheel (5).
2. Install the clutch pressure plate bolts (1) finger tight.
3. Using J-5824-A tool, align the clutch driven plate (3) to the clutch pilot bearing.



Caution: Refer to Fastener Caution.

4. Tighten the NEW clutch pressure plate bolts in the sequence shown to **40 Y (30 lb ft)**.
5. Install the transmission. Refer to Transmission Replacement.

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:

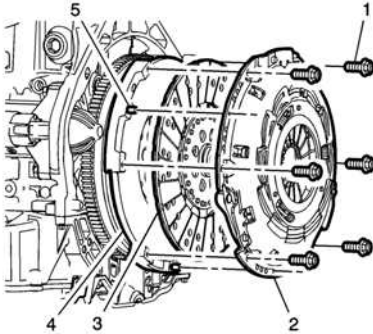
Special Tools

J-05824—A Clutch Alignment Arbor

For equivalent regional tools, refer to Special Tools.

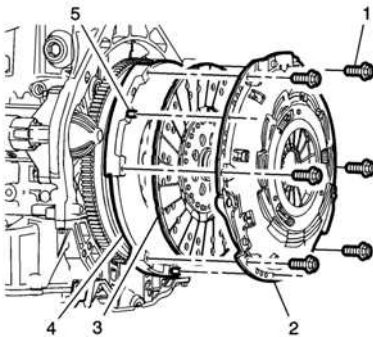
Removal Procedure

1. Remove the transmission. Refer to Transmission Replacement.

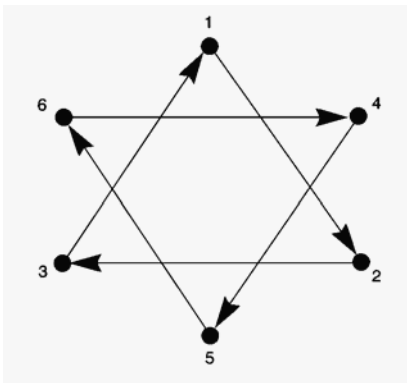


2. Remove the clutch pressure plate bolts (1).
Discard the bolts.
3. Remove the clutch pressure plate (2) and driven disc (3) from the dowel pins (4) on the flywheel (5).

Installation Procedure



1. Install the clutch pressure plate (2) and driven plate (3) to the dowel pins (4) on the flywheel (5).
2. Install the clutch pressure plate bolts (1) finger tight.
3. Using J-05824—A Clutch Alignment Arbor, align the clutch driven plate (3) to the clutch pilot bearing.



Caution: Refer to Fastener Caution.

4. Tighten the NEW clutch pressure plate bolts in the sequence shown to **40 Y (30 lb ft)**.
5. Install the transmission. Refer to Transmission Replacement.

2013 Chevrolet Colorado

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

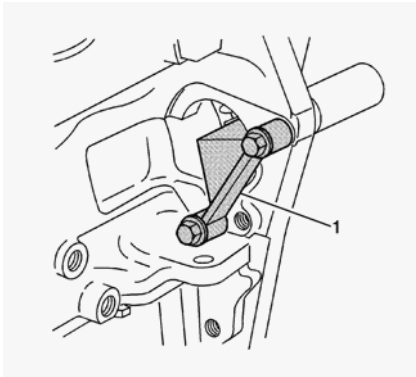
Special Tools

- EN 46106 Flywheel Holding Tool
- J 33169 Clutch Alignment Arbor

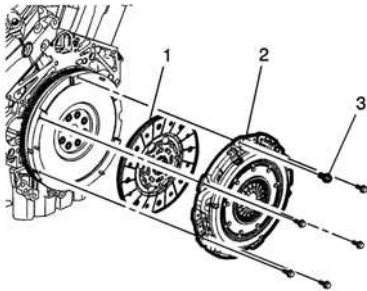
For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Remove the transmission assembly from the vehicle. Refer to Transmission Replacement.
2. Remove the starter assembly from the vehicle. Refer to Starter Replacement.

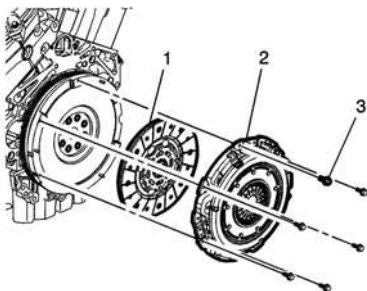


3. Install the EN 46106 tool (1) through the starter mounting hole.



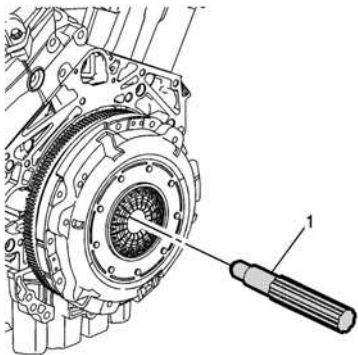
4. Remove the clutch pressure plate bolts (3).
5. Remove the clutch pressure plate and the clutch driven plate disc.

Installation Procedure



1. Install the clutch driven plate disc (1) and the clutch pressure plate (2) to the engine flywheel. Ensure to align the clutch pressure plate to the pins in the engine flywheel.

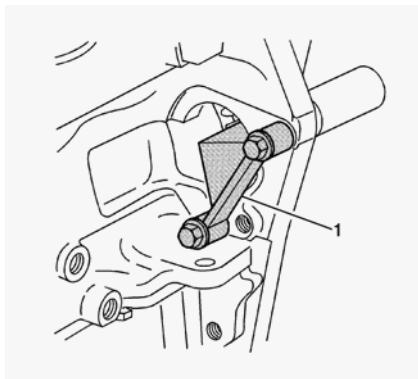
2. Loosely install the clutch pressure plate bolts.



3. Install the J 33169 arbor (1) through the clutch driven plate disc and into the end of the crankshaft in order to align the clutch driven plate disc.

Caution: Refer to Fastener Caution.

4. Tighten the clutch pressure plate bolts to **30 Y (22 lb ft)**.
5. Remove the J 33169 arbor (1).

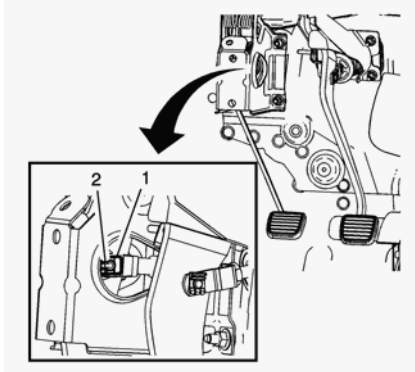


6. Remove the EN 46106 tool (1).
7. Install the starter assembly. Refer to Starter Replacement.
8. Install the transmission assembly. Refer to Transmission Replacement.

2013 Chevrolet Colorado

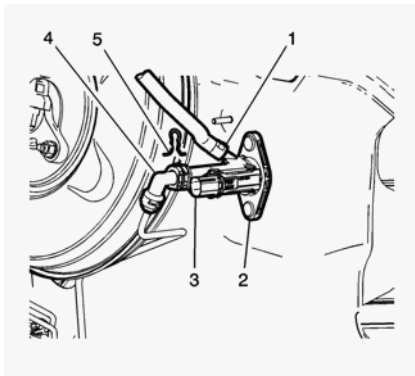
Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

[Removal Procedure](#)



Note: A new retainer (1) is required after removal.

1. Remove the retainer (1) from the clutch pedal pin.
2. Remove the push rod to clutch pedal pin (2).

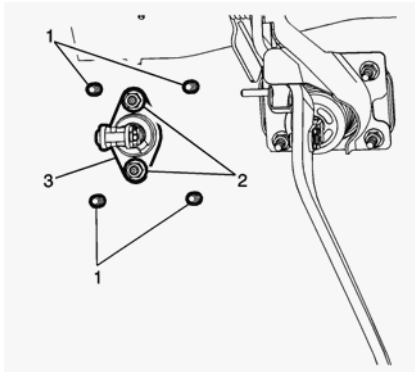


Note: Plug the fluid reservoir hose to prevent loss of fluid.

3. Disconnect the fluid reservoir hose (1) from the clutch master cylinder (2).
4. Disconnect the electrical connector (3) from the clutch master cylinder.
5. Remove the clutch actuator hose clip (5).

Note: Clutch pedal removal not required when removing clutch master cylinder. Clutch pedal not shown.

6. Disconnect the clutch actuator hose (4) from the clutch master cylinder.

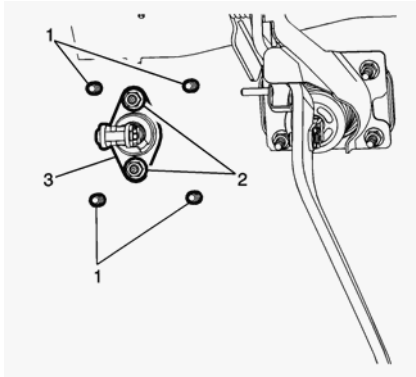


7. Remove the clutch master cylinder retaining nuts (2).
8. Remove the clutch master cylinder (3) from the vehicle.

[Installation Procedure](#)

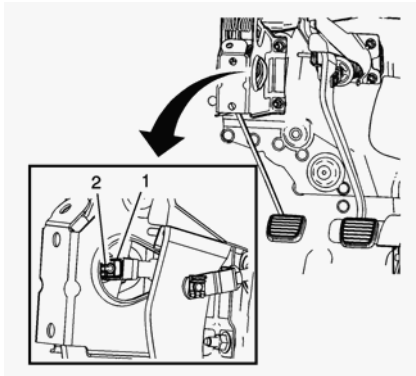
Note: Clutch pedal removal not required when removing clutch master cylinder.

1. Install the clutch master cylinder in the vehicle.

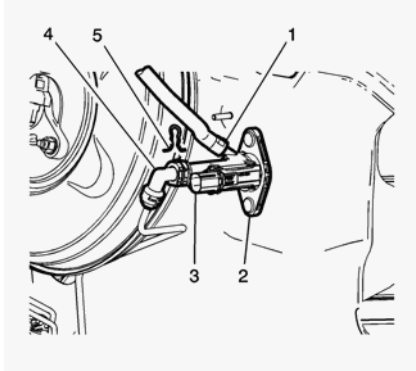


Caution: Refer to Fastener Caution.

2. Install the clutch master cylinder nuts (1) and tighten to **23 Y (17 lb ft)**.



3. Install the push rod to clutch pedal with pin (2).
4. Insert a new retainer (1) on the clutch pedal pin (2).

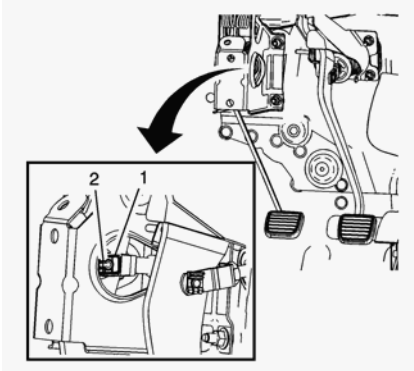


5. Install the clutch fluid reservoir hose (1) to the clutch master cylinder.
6. Connect the clutch actuator pipe (4) to the clutch master cylinder.
7. Install the clutch actuator pipe clip (5) to the clutch master cylinder.
8. Connect the electrical connector (3) to the clutch master cylinder.
9. Check for proper clutch pedal movement and operation.
10. Bleed the clutch hydraulic system. Refer to Hydraulic Clutch System Bleeding.

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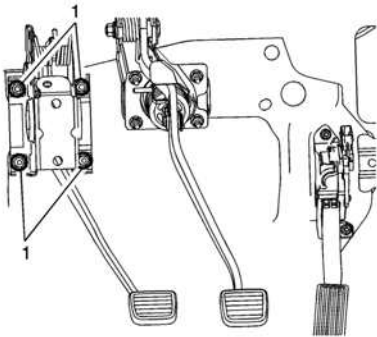
Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

[Removal Procedure](#)



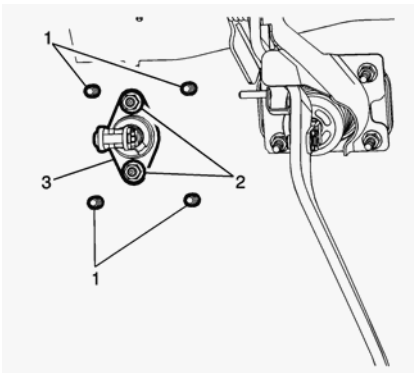
Note: A new retainer (3) is required after removal.

1. Remove the retainer (1) from the clutch pedal pin.
2. Remove the push rod to clutch pedal pin (2).

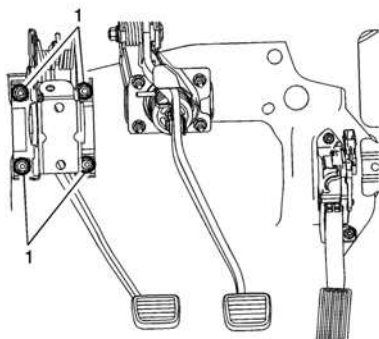


3. Remove the 4 nuts (1) securing the clutch pedal assembly to the cowl.
4. Remove the clutch pedal assembly from the vehicle.

[Installation Procedure](#)

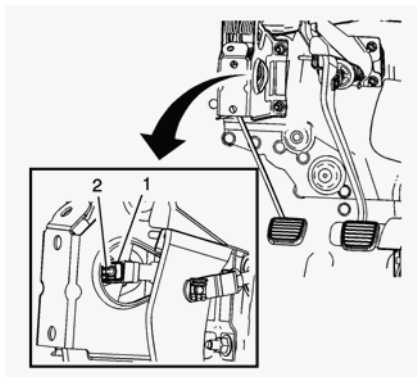


1. Position the clutch pedal assembly over the studs (1).



Caution: Refer to Fastener Caution.

2. Install the clutch pedal assembly nuts (1) and tighten to **23 Y (17 lb ft)**.



3. Install the push rod to clutch pedal pin (2).
4. Insert a new retainer (1) into the clutch master cylinder push rod.
5. Check for proper clutch pedal movement and operation.

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Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:

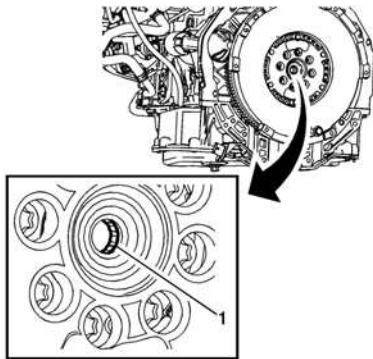
Special Tools

- CH-9404180 Bearing Puller
- DT-30706024 Handle
- EN-840911-A Bearing Installer
- J-23907-1 Slide Hammer

For equivalent regional tools, refer to Special Tools.

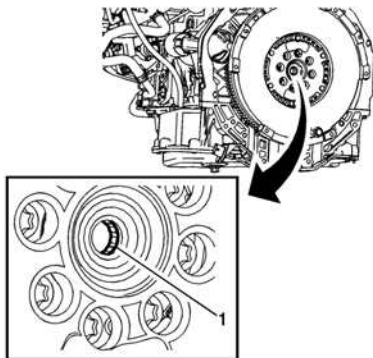
[Removal Procedure](#)

1. Remove the clutch assembly from the engine wheel. Refer to Clutch Assembly Replacement.



2. Using the CH-9404180 puller and J-23907-1 hammer, remove the clutch pilot bearing (1).
3. Discard the bearing.

[Installation Procedure](#)

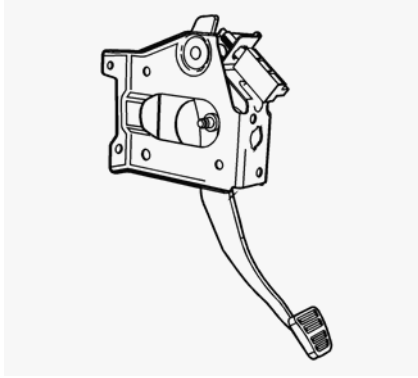


1. Using the DT-30706024 handle and EN-840911-A installer, install the clutch pilot bearing (1).
2. Inspect the clutch pilot bearing for proper installation.
3. Install the clutch assembly on the engine flywheel. Refer to Clutch Assembly Replacement.

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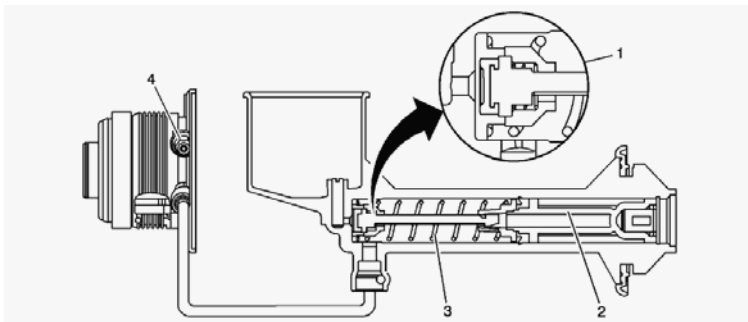
Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

[Clutch System Components](#) [Clutch Pedal](#)



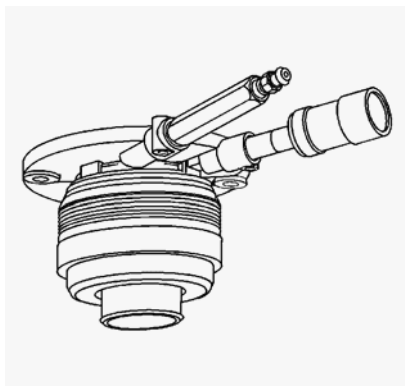
The clutch pedal, mounted on the engine cowl, is designed to compress the clutch hydraulic fluid with little driver effort. The pedal swivels on bushings. The clutch master cylinder pushrod connects to a pin on the pedal. A spring, located inside of the clutch master cylinder, returns the pedal to the correct position after depressing.

[Clutch Master Cylinder](#)



The reservoir, which is part of the master cylinder, supplies the fluid at the front of the master cylinder through the center feed port (1). The center feed port allows the flow of fluid from the reservoir to the cylinder when the pedal is in the complete returned position. The master cylinder uses a spring (3) to return the piston (2) to the clutch engagement position. When the clutch pedal is depressed, the piston moves forward in the cylinder, compressing the fluid. The compressed fluid travels through a hose to the clutch actuator cylinder. A bleeder screw (4) is located at the clutch actuator cylinder for bleeding the hydraulic system.

[Clutch Actuator Cylinder and Release Bearing](#)



The clutch control actuator cylinder disengages the clutch, using the pressurized fluid from the clutch master cylinder. The clutch control actuator cylinder is fastened to the front of the transmission. The clutch release bearing is attached to the control actuator cylinder. The control actuator cylinder has a piston, which has seals that slide on the housing assembly. There is a spring between the piston and the housing to keep the piston at the extended position, allowing the release bearing to be in constant contact with the pressure plate fingers. The movement of the piston, by the pressurized fluid, pushes the release bearing against the tips of the clutch pressure plate fingers, to disengage the clutch.

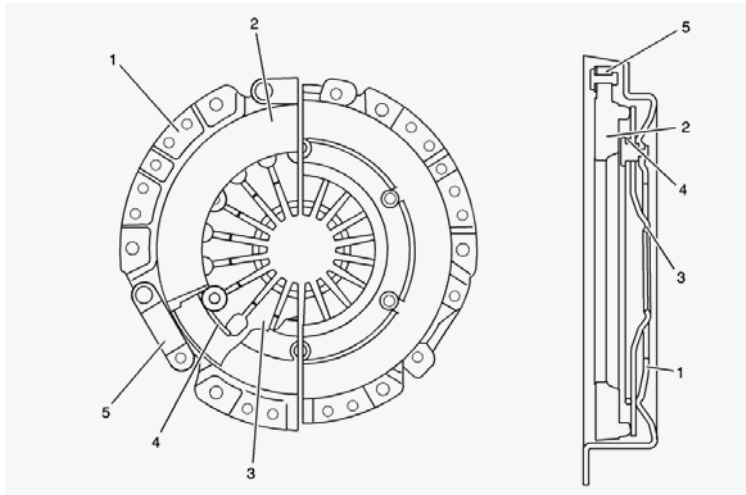
As the clutch wears, the piston, or release bearing, moves towards the transmission. The piston is at the furthest position from the transmission with a new clutch.

The clutch control actuator cylinder has a bleeder, for bleeding the air out of the hydraulic system.

Ball bearings enable the release bearing to turn, while applying pressure to the pressure plate fingers. Using an angular contact style bearing allows the release

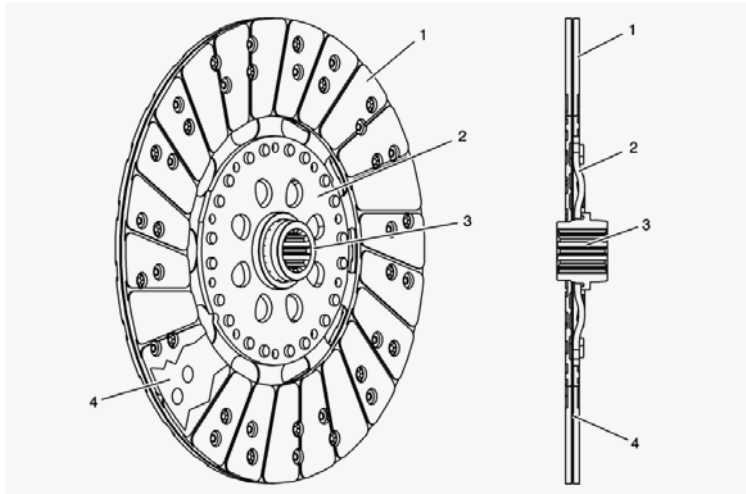
bearing to be in constant contact with the pressure plate fingers.

[Pressure Plate Assembly](#)



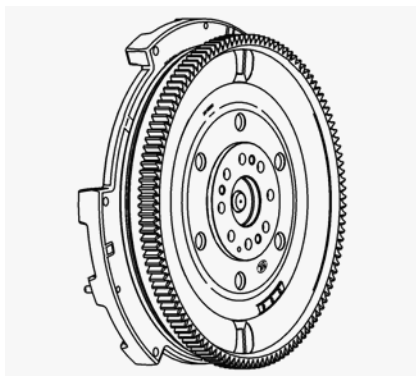
The diaphragm spring clutch consists of a pressure plate (2), a diaphragm spring (3), a pivot ring (4), drive straps (5), and a cover (1). When the release bearing contacts the tips of the diaphragm spring fingers, it moves them toward the dual mass flywheel. The outside diameter of the diaphragm spring pivots on a pivot ring inside the cover. This action lifts the pressure plate off the dual mass flywheel through the drive straps, which connect the cover to the pressure plate. As the clutch wears, there is an increase in pedal effort.

[Clutch Disc](#)



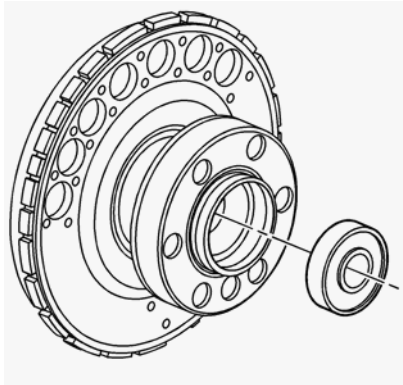
The clutch disc, or driven member, is a critical component in the service life of the clutch system. The disc provides smooth engagement and dampens engine vibrations. Mounted to the transmission input shaft, between the dual mass flywheel and the clutch pressure plate, the disc slides on the input shaft forward and backward. The disc is splined to the input shaft and cannot rotate without rotating the input shaft. The critical component of the clutch disc is the hub flange (3). The hub flange (3) is press fit into a retainer plate (2) and splined to fit the input shaft. Friction material (1) is riveted to numerous components, called marcel, or cushion segments (4). Waves in marcel soften engagement.

[Dual Mass Flywheel](#)



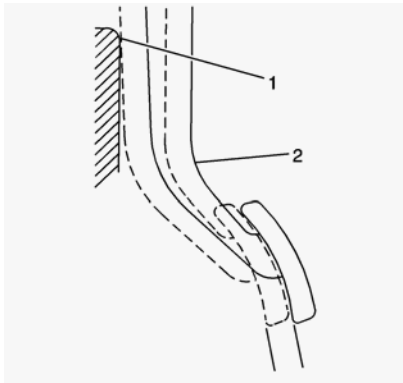
Bolted to the end of the crankshaft, the dual mass flywheel provides the mounting surface for the clutch. During engagement, the disc is clamped against the dual mass flywheel by the pressure plate. The dual mass flywheel acts as a heat sink, dissipating heat and moving it away from the clutch pressure plate and disc friction material. The dual mass flywheel must provide a smooth, flat surface in order for the clutch to operate properly.

[Pilot Bearing/Bushing](#)



A pilot bearing, or bushing, is located in the end of the crankshaft. The pilot bearing supports the end of the input shaft and centers the disc on the dual mass flywheel. The pilot bearing is a sintered bronze bushing. A small, and relatively inexpensive component, the pilot bearing or bushing should always be replaced during clutch installation. The variety of conditions caused by a worn or defective bearing or bushing is not worth the risk of having to remove the bell housing and transmission to replace this small part.

Clutch Pedal Reserve



In order for the clutch to be completely disengaged and allow proper shifting of the transmission, clutch pedal reserve is required. Clutch pedal reserve is the movement of the pedal from the down stop, or the floor (1), to where the clutch begins transmitting torque (2); it should be a minimum of 25 mm (1 in). Inspect for clutch pedal reserve by depressing the clutch pedal. Allow the clutch disc to quit spinning, and let up on the clutch pedal while listening for the clutch disc to start spinning. The distance the pedal moved from the floor, before the clutch disc started to spin, is the pedal reserve.

In order to determine if the clutch is properly releasing and the hydraulic system is functioning properly:

1. Depress the clutch pedal fully to disengage the clutch.
2. Shift into a low gear, either 1st or REVERSE.
3. Slowly shift out of the gear, only to disengage the synchronizer sleeve from the speed gear engagement teeth.
4. Let up on the pedal, to engage the clutch.
5. Depress the clutch pedal and shift back into gear.

If the clutch pedal is releasing properly, you should be able to engage the gear without grinding after 4–5 seconds, which is the time for the clutch disc to quit spinning.

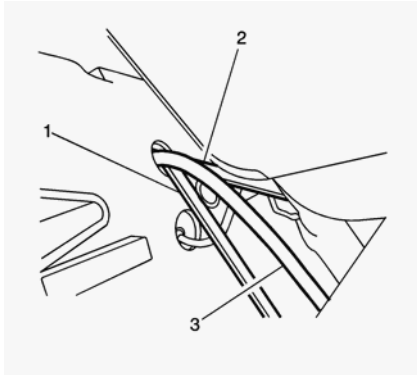
2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
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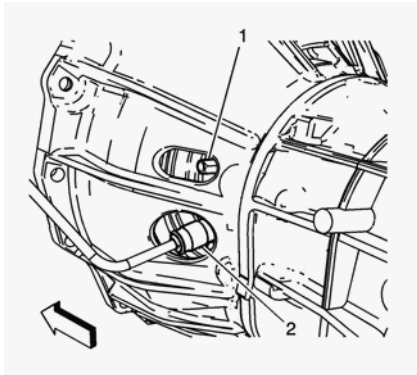
Caution: DO NOT use fluid which has been bled from a hydraulic clutch system, in order to fill the clutch master cylinder reservoir, due to the possibility that the fluid may be aerated, have too much moisture content, or be contaminated and may cause system or vehicle damage.

Perform the hydraulic clutch bleeding procedure with the aid of an assistant.

1. Ensure the reservoir is filled to the fill line with new hydraulic fluid. Add fluid if required from a clean sealed container. Refer to Sealers and Lubricants for the correct hydraulic fluid type.
2. Stroke the clutch pedal from the up stop to the down stop position at least 15 times.



3. Use a box wrench (1) to hold the housing of the bleed valve, and another wrench (2) to loosen the bleeder. Connect an appropriate hose (3) with a receiver for containing the fluid.



4. With the pedal in the down stop position. Open the bleeder valve (1) to release the trapped air.
5. Close the bleeder valve (1) and slowly return the clutch pedal to the up stop position.
6. Open the bleeder valve (1) and slowly depress the clutch pedal from the up stop to the down stop position until fluid escapes through the bleeder.
7. Close the bleeder valve (1).
8. Return the clutch pedal to the up stop position.
9. Depress the clutch pedal from the up stop to the down stop position.
10. Open the bleeder valve (1) in order to purge the air from the system.
11. Close the bleeder valve (1).

Note: Always make sure that the clutch fluid reservoir remains filled with new clean hydraulic fluid.

12. Repeat steps 7–10 until all the air is out of the clutch system.

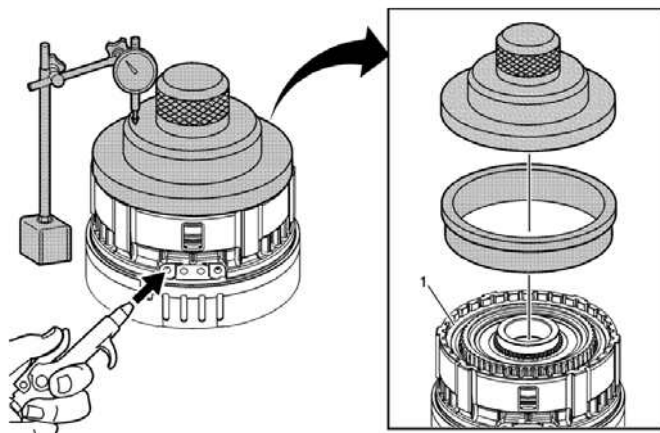
Caution: Refer to Component Fastener Tightening Caution.

13. Tighten the bleed valve to **8 Y (71 lb in)**.

2013 Chevrolet Colorado

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Low and Reverse Clutch Backing Plate Retaining Ring Measurement

Callout

Component Name

Preliminary Procedures

1. Install *DT-47868-1* pack travel weight and *DT-47868-4* travel weight adapter onto the low and reverse clutch backing plate.
2. Attach the *GE 8001* dial indicator set to the *GE 26900-13* magnetic base and zero out the dial indicator on the *DT-47868-1* pack travel weight.

Special Tools

- *DT-47868-1* Pack Travel Weight
- *DT-47868-4* Clutch Travel Weight Adapter
- *GE 8001* Dial Indicator Set
- *GE 26900-13* Magnetic Base

For equivalent regional tools, refer to Special Tools.

Low and Reverse Backing Plate Retaining Ring

1

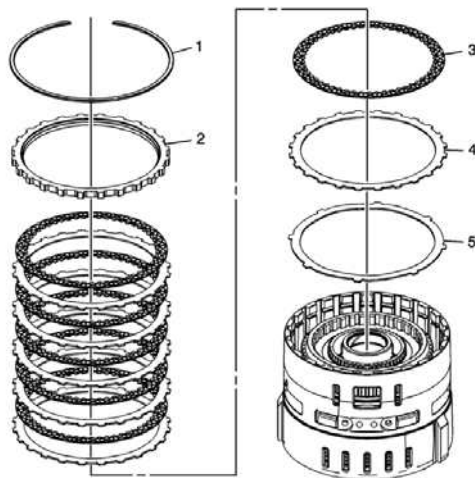
Note: Apply compressed air to the apply passage hole, at least 3 times and observe the dial indicator measurement each time. This action "fluffs" the clutch plates to ensure an accurate measurement. Refer to Clutch Backing Plate Retaining Ring Specifications.

2013 Chevrolet Colorado

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- Table 1: [Low and Reverse Clutch Plate Removal](#)
Table 2: [Low and Reverse Clutch Piston Removal](#)
Table 3: [Low and Reverse Clutch Piston Installation](#)
Table 4: [Low and Reverse Clutch Plate Installation](#)

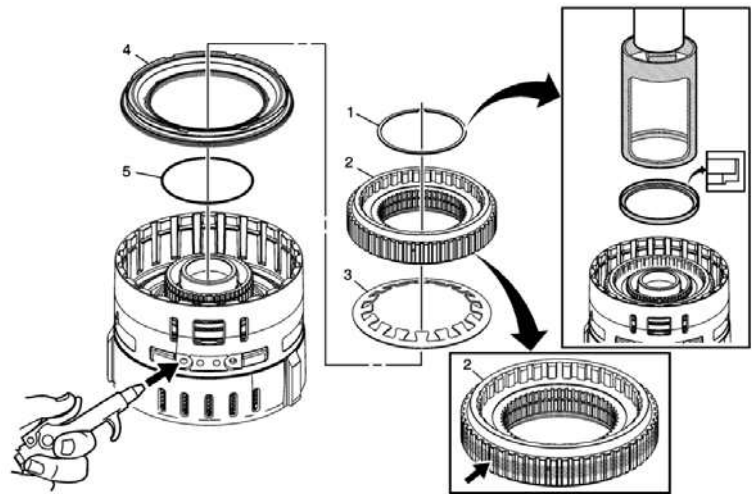
Low and Reverse Clutch Plate Removal



Low and Reverse Clutch Plate Removal

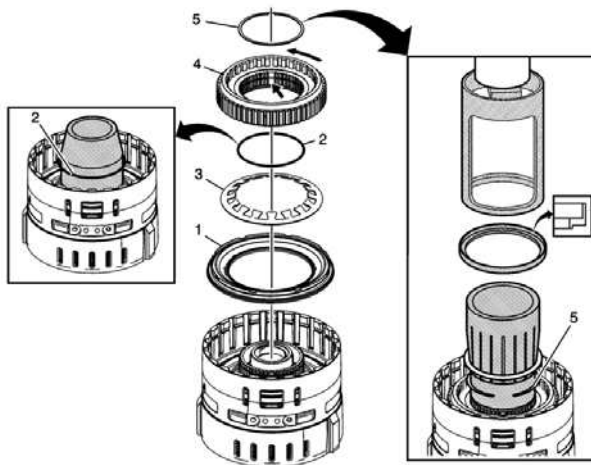
Callout	Component Name
1	Low and Reverse Clutch Backing Plate Retaining Ring
2	Low and Reverse Clutch Backing Plate
3	Low and Reverse Clutch Plate Assembly (Qty: 6)
4	Low and Reverse Clutch Plate (Qty: 6)
5	Low and Reverse Clutch (Waved) Plate

Low and Reverse Clutch Piston Removal



Callout	Component Name
	Low and Reverse Clutch Spring Retaining Ring
	Caution: DT-49122 must be used with the DT-48069 in order to prevent damage to the low clutch sprag retainer.
	Special Tool
1	- DT-48069 Low Clutch Spring Compressor - DT-49122 Low Clutch Spring Compressor Adapter For equivalent regional tools, refer to Special Tools.
	Low Clutch Sprag Assembly
2	Note: A blue colored ring may be present on the outer splines of the low clutch sprag assembly. This is a normal condition caused by heat treating during manufacturing and does not indicate need for replacement.
3	Low and Reverse Clutch Spring
4	Low and Reverse Clutch Piston Assembly
	Note: It may be necessary to apply air to the apply passage in order to unseat the piston.
5	Low Clutch Sprag Seal
	Caution: Refer to Seal Reuse Caution.

Low and Reverse Clutch Piston Installation



Low and Reverse Clutch Piston Installation

Callout	Component Name
	Low and Reverse Clutch Piston Assembly
1	Note: Lubricate the inner and outer sealing surfaces of the piston assembly with automatic transmission fluid (ATF) in order to ease installation into the center support assembly.
	Low Clutch Sprag Seal
	Caution: Refer to Seal Reuse Caution.
2	Note: Apply ATF to the DT-48070 low clutch sprag seal cone to ease seal installation.
	Special Tool
	DT-48070 Low Clutch Sprag Seal Cone
	For equivalent regional tools, refer to Special Tools.
3	Low and Reverse Clutch Spring
	Caution: Ensure the spring tabs are facing up during installation. Failure to do so may cause damage to the clutch assembly.
	Low Clutch Sprag Assembly
4	Note: - Verify that the low clutch sprag is operating correctly. Refer to the illustration for proper freewheel direction. - Ensure the missing splines on the sprag assembly are aligned with the missing splines on the center support hub.
	Low and Reverse Clutch Spring Retaining Ring
5	Caution: DT-49122 must be used with the DT-48069 in order to prevent damage to the low clutch sprag retainer.

Callout

Component Name

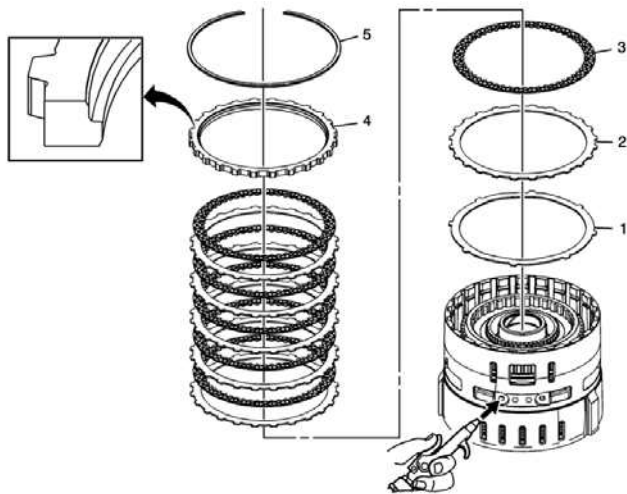
Caution: The retaining ring gap must be aligned with the 3 missing splines on the center support hub. Failure to do so may cause damage to the clutch assembly.

Special Tools

- DT-48068-1 Low Clutch Sprag Retaining Ring Cone
- DT-48068-2 Low Clutch Sprag Retaining Ring Pusher
- DT-48069 Low Clutch Spring Compressor
- DT-49122 Low Clutch Spring Compressor Adapter

For equivalent regional tools, refer to Special Tools.

[Low and Reverse Clutch Plate Installation](#)



Low and Reverse Clutch Plate Installation

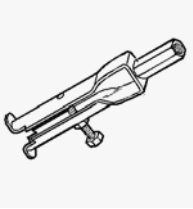
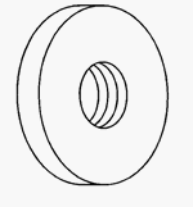
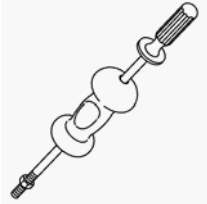
Callout

Component Name

- | | |
|---|--|
| 1 | Low and Reverse Clutch (Waved) Plate |
| 2 | Low and Reverse Clutch Plate (Qty: 6) |
| 3 | Low and Reverse Clutch Plate Assembly (Qty: 6) |
| 4 | Low and Reverse Clutch Backing Plate |
| | Note: Install the backing plate with the inner step side up. |
| 5 | Low and Reverse Clutch Backing Plate Retaining Ring |
| | Note: Apply air to verify proper installation of all low and reverse clutch components. |

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Illustration	Tool Number/ Description
	CH-9404180 Bearing Puller
	DT-30706024 Handle
	EN-840911-A Bearing Installer
	J-5824-A DT-50538-30 3-9506260 (Brazil) Clutch Alignment Tool
	J-23907-1 Slide Hammer

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Submodel: | Engine Type: | Liters:
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Caution: The bolts used to install the torque converter housing and the low and reverse clutch housing to the transmission case are similar in size and color. The low and reverse clutch housing bolts are, however, shorter than the torque converter housing bolts. Installing torque converter housing bolts into the low and reverse clutch housing may damage the transmission case. To help avoid torque converter housing bolts from being installed into the low and reverse clutch housing and vice versa, store the bolts separately. These bolts must be installed into their correct locations to help avoid transmission case damage.