

Clutch

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Description and Operation

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Clutch System Description and Operation

Driving Members

The driving members consist of 2 flat surfaces machined to a smooth finish. One of these is the rear face of the engine flywheel, and the other is the pressure plate. The pressure plate is fitted into a steel cover, which is bolted to the flywheel.

Driven Members

The driven member is the clutch disc with a splined hub which is free to slide lengthwise along the splines of the input shaft, but which drives the input shaft through these same splines.

The driving and driven members are held in contact by spring pressure. This pressure is exerted by a diaphragm spring in the pressure plate assembly.

Operating Members

The clutch release system consists of the clutch pedal, the clutch fork shaft, the clutch pedal arm and the release bearing. When pressure is applied to the clutch pedal, the clutch fork shaft pushes against the release bearing by rotating. The bearing then pushes against the diaphragm spring in the pressure plate assembly, thereby releasing the clutch.

Diagnostic Information and Procedures

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Symptoms - Clutch

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom.

- [Clutch Does Not Disengage](#)
- [Clutch Slipping](#)
- [Clutch Grabbing](#)
- [Clutch Rattle](#)
- [Release Bearing Noisy with Clutch Engaged](#)
- [Clutch Noisy](#)
- [Clutch Pedal Hard to Push](#)

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Clutch Does Not Disengage

Causes	Actions
DEFINITION: When the pedal is pressed to the floor, the shift lever does not move freely in and out of reverse gear.	
Damaged clutch disc	Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .
Clutch disc hub binding on the input shaft splines	Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .
Warped or bent clutch disc	Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .
Pedal blocked from full travel	1. Inspect for obstacles that will prevent the pedal from going to the floor. 2. Clear any obstacles from under the pedal area, such as floor mats or interior panels.
Too much travel between pedal and hydraulic clutch master cylinder	1. Inspect the pedal for worn bushings. 2. Replace the pedal bushings if worn.
Hydraulic clutch master cylinder seized or binding	1. Inspect the master cylinder for the piston being able to move freely and full range of travel. 2. Replace the clutch master cylinder as required. Refer to Clutch Master Cylinder Replacement.
Air in the hydraulic clutch system	Bleed the hydraulic clutch system. Refer to Hydraulic Clutch System Bleeding .
Hydraulic clutch actuator cylinder seized or binding	1. Inspect the clutch actuator piston for moving freely. 2. Replace the clutch actuator cylinder if the piston is binding. Refer to Clutch Actuator Cylinder Replacement.
Hydraulic clutch master cylinder leaking internally	1. Inspect for proper pedal reserve. 2. 1. Let up halfway on pedal. 2. Apply the pedal a few times. 3. Inspect to ensure there is still the proper pedal reserve. 3. Replace the clutch master cylinder if it will not hold pedal reserve. Refer to Clutch Master Cylinder Replacement.

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Clutch Slipping

Condition	Action
DEFINITION: The clutch does not engage completely after the pedal is released, after shifting gears, or the clutch slips during maximum engine loads, such as climbing hills or high vehicle speeds. Clutch slipping is identified by increase in engine RPM without increase in vehicle speed. Review the Symptoms - Clutch and perform the necessary inspections.	
Incorrect clutch pedal height, not allowing the clutch master cylinder to return.	Adjust the clutch pedal position switch. Refer to Clutch Pedal Position Sensor Replacement .
The clutch pedal return spring is broken or missing.	Replace the clutch pedal return spring, if equipped. Refer to Clutch Pedal Replacement .
The clutch pedal is binding or sticking.	1. Clear away any items that may be contacting the pedal. 2. Inspect the pedal bushings for ease of movement. 3. Replace the clutch pedal if it is faulty. Refer to Clutch Pedal Replacement.
Clutch master cylinder binding or seized.	Replace the clutch master cylinder. Refer to Clutch Master Cylinder Replacement .
Clutch actuator cylinder binding or seized.	Replace the clutch actuator cylinder. Refer to Clutch Actuator Cylinder Replacement .
Kinked or damaged clutch actuator cylinder front pipe.	1. Inspect for the correct routing of the clutch actuator cylinder front pipe. 2. Route the clutch actuator cylinder front pipe properly. 3. Inspect for loose or faulty engine mounts that may allow the clutch actuator cylinder front pipe to be kinked or pinched. 4. Repair or replace faulty engine mounts. 5. Replace the clutch actuator cylinder front pipe if it is damaged. Refer to Clutch Actuator Cylinder Front Pipe Replacement
Grease or oil contamination of the clutch disc.	1. Repair the source of the oil leak. 2. Repair the source of the grease leak. 3. Clean the contamination from the clutch components. 4. If contaminants cannot be removed, replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement.
Oil-soaked clutch disc.	Correct the leak at its source and install a new clutch disc.
Weak diaphragm spring.	Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .
Driven plate that is not seated.	Start the engine 30â€³40â€³times. Do not overheat the engine.
Driven plate is overheated.	Allow the driven plate to cool.
Worn or damaged flywheel.	Replace the engine flywheel.
Worn clutch disc facing.	Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .
Burnt or glazed clutch discs.	Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .
Improper resurfacing of the flywheel.	Replace the flywheel if it has been improperly resurfaced, allowing contact of the clutch disc hub or insufficient clamping load of the pressure plate.

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Clutch Grabbing

Causes	Actions
DEFINITION: The clutch grabs, or chatters, or the clutch is unable to release without the vehicle jerking. An abrupt engagement of the clutch. Review the Symptoms - Clutch and perform the necessary inspections.	
Grease or oil contamination on the clutch facings	1. Repair the cause of the oil leak or grease contamination. 2. Clean the clutch facings. 3. Replace the clutch components if they will not clean. Refer to Clutch Pressure and Driven Plate Replacement.
Loose or faulty engine mounts	1. Inspect the engine mounts for being loose or faulty. 2. Repair or replace the engine/transmission mounts as required.
Clutch pedal sticking	1. Inspect the clutch pedal for correct operation. 2. Replace the clutch pedal if it is faulty. Refer to Clutch Pedal Replacement.
Clutch actuator binding	1. Inspect the clutch actuator for the piston seals binding or sticking. 2. Replace the clutch actuator if it is binding. Refer to Clutch Actuator Cylinder Replacement.
Clutch master cylinder binding	1. Inspect the clutch master cylinder for the piston binding or sticking in the cylinder. 2. Replace the master cylinder if it is faulty. Refer to Clutch Master Cylinder Replacement.
Warped clutch cover	1. Inspect the clutch cover for distortion caused by improperly tightening the clutch cover bolts. 2. Replace the clutch cover if it is distorted. Refer to Clutch Pressure and Driven Plate Replacement.
Improper clutch installation	1. Inspect the pressure plate for distortion caused by improperly tightening the pressure plate bolts. 2. Inspect the clutch disc for a bent hub caused by forcing the installation of the transmission. 3. Inspect for the correct clutch disc. 4. Inspect the clutch disc for being installed backwards. 5. Replace the clutch assembly if it is damaged or the wrong components were installed. Refer to Clutch Pressure and Driven Plate Replacement.
Clutch disc binding on the input shaft	1. Inspect the input shaft for rust dirt or debris. 2. Clean and lubricate the input shaft. 3. Inspect the clutch disc for a bent hub. 4. Replace the clutch assembly if the clutch disc is faulty. Refer to Clutch Pressure and Driven Plate Replacement. 5. Inspect the input shaft for excessive wear on the splines, causing the clutch disc to bind. 6. Replace the transmission input shaft if it is worn. Refer to Input Shaft Disassemble.
Clutch pressure plate damaged	1. Inspect the pressure plate for bent drive straps caused by improper vehicle use. 2. Replace the clutch assembly if the clutch pressure plate is damaged. Inform the customer. Refer to Clutch Pressure and Driven Plate Replacement.

Causes	Actions
Flywheel improperly machined	1. Inspect the flywheel for being improperly machined, and causing interference with the clutch disc. 2. Replace the flywheel if it has been improperly machined.
Flywheel uneven	1. Inspect the flywheel surface for being warped or uneven. 2. Replace the flywheel if it is faulty.

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Clutch Rattle

Condition	Action
DEFINITION: A rattle noise coming from the clutch components with the clutch disengaged or engaged. Review the Symptoms - Clutch and perform the necessary inspections.	
Idle rattle clutch engaged	Replace the clutch disc, due to faulty damper springs. Refer to Clutch Pressure and Driven Plate Replacement .
Clutch is improperly installed	Remove the clutch and install it correctly. Refer to Clutch Pressure and Driven Plate Replacement .
Clutch disc damper worn or damaged	1. Inspect the clutch disc for a broken or worn damper. 2. Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement.
Oil in the driven plate damper	Correct the cause of the oil leak and replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .
Clutch disc splines and input shaft splines worn	1. Inspect the clutch disc hub to input shaft splines for excessive clearance. 2. Replace the clutch assembly if the clutch splines are worn. Refer to Clutch Pressure and Driven Plate Replacement. 3. Replace the transmission input shaft if it is worn. Refer to Input Shaft Disassemble.

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Release Bearing Noisy with Clutch Engaged

Condition	Action
Check for a binding release bearing.	Clean and re-lubricate the release bearing. Inspect the release bearing for burrs and nicks.
Inspect for an improperly installed release lever.	Remove and reinstall the release lever properly.

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Clutch Noisy

Condition	Action
Clutch release bearing damaged or worn.	Replace the clutch release bearing. Refer to Clutch Release Bearing Replacement .

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Clutch Pedal Hard to Push

Condition	Action
DEFINITION: The clutch pedal requires high effort to operate. Review the Symptoms - Clutch and perform the necessary inspections.	
Incorrect hydraulic fluid.	1. Inspect for the correct fluid in the master cylinder. Refer to Hydraulic Clutch System Bleeding. 2. If mineral oil is found, replace the clutch master cylinder, the clutch actuator cylinder, and flush the hydraulic system and fill with the correct fluid. Refer to Clutch Master Cylinder Replacement and Hydraulic Clutch System Bleeding.
Contaminated hydraulic fluid.	1. Inspect the hydraulic fluid for water. 2. Inspect the hydraulic fluid for dirt or debris. 3. Inspect the clutch hydraulic fluid for contamination of mineral oil. If contaminated, replace the clutch master cylinder and the clutch actuator cylinder. Refer to Clutch Master Cylinder Replacement. 4. Flush the hydraulic system and fill with the correct fluid. Refer to Hydraulic Clutch System Bleeding.
Clutch pedal binding.	1. Inspect the pedal for binding. 2. Replace the pedal. Refer to Clutch Pedal Replacement.
Clutch pedal spring worn.	1. Inspect the clutch pedal spring for wear. 2. Replace the clutch pedal. Refer to Clutch Pedal Replacement.
Kinked or damaged clutch actuator cylinder front pipe.	1. Inspect for a kinked or damaged clutch actuator cylinder front pipe. 2. Replace the clutch actuator cylinder front pipe. Refer to Clutch Actuator Cylinder Front Pipe Replacement.
Clutch disc worn too thin.	Replace the clutch assembly. Refer to Clutch Pressure and Driven Plate Replacement .

Related Part Information

Part Name	Catalog Name	Part Code
Clutch Pedal	PEDAL KIT,CLU(W/BRKT)	0044Y
Clutch Pedal	PEDAL,CLU (W/BRKT)	0045A
Clutch Pedal	PEDAL,CLU	0050A
Clutch Pedal	PEDAL,CLU	0050B

Repair Instructions

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Clutch Pedal Replacement

Note:

The clutch pedal is part of the brake, accelerator, and clutch pedal assembly and cannot be serviced separately.

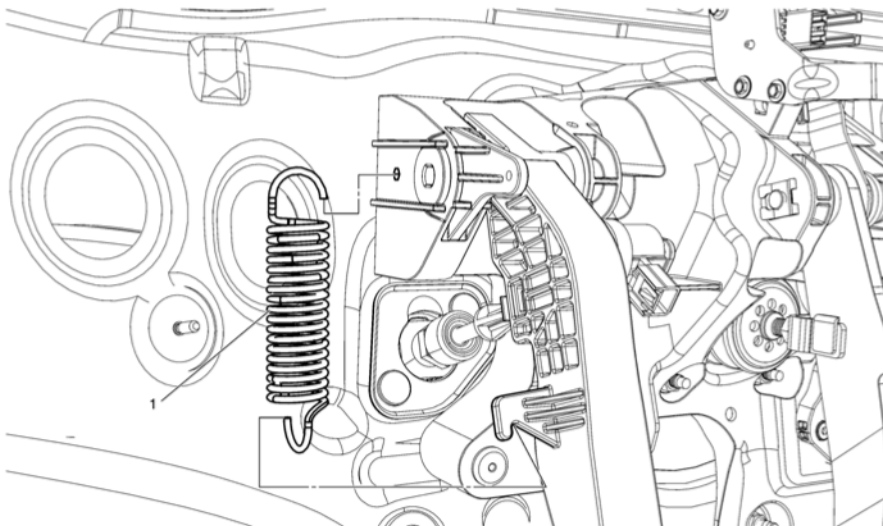
To replace the brake, accelerator and clutch pedal assembly. Refer to [Brake Pedal Assembly Replacement](#).

Related Part Information

Part Name	Catalog Name	Part Code
Clutch Pedal	PEDAL KIT,CLU(W/BRKT)	0044Y
Clutch Pedal	PEDAL,CLU (W/BRKT)	0045A
Clutch Pedal	PEDAL,CLU	0050A
Clutch Pedal	PEDAL,CLU	0050B

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Clutch Pedal Return Spring Replacement



Callout	Component Name
Preliminary Procedure	
Remove the steering column opening filler. Refer to Steering Column Opening Filler Replacement .	
1	Clutch Pedal Return Spring
	Procedure
	Disengage the clutch pedal return spring, using suitable pliers.

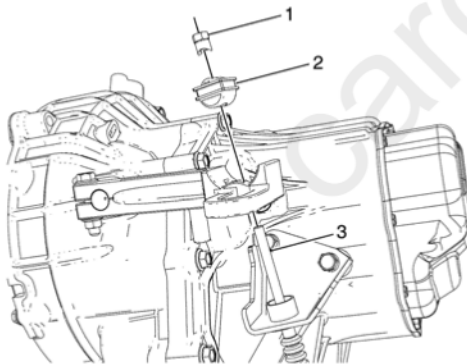
Callout	Component Name
Preliminary Procedure	
Remove the steering column opening filler. Refer to Steering Column Opening Filler Replacement	
1	Clutch Pedal Return Spring Procedure Disengage the clutch pedal return spring, using suitable pliers.

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Clutch Cable Replacement

Removal Procedure

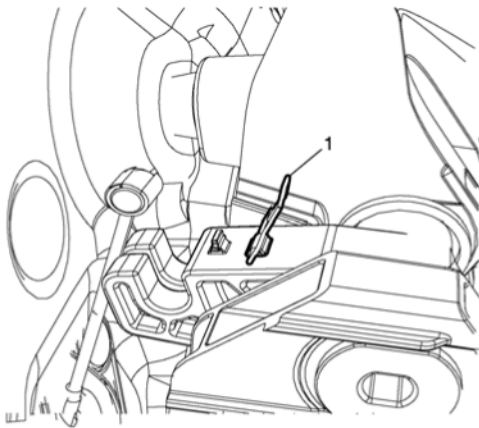
1. Remove the ECM from the battery tray. Refer to [Engine Control Module Replacement](#).



2.

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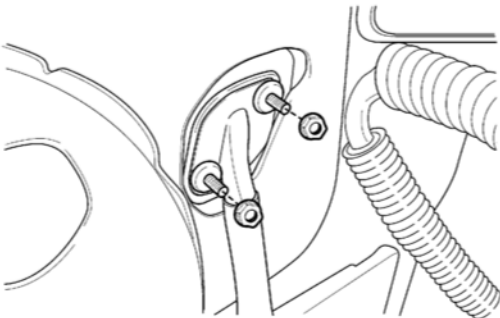
3. Remove the clutch cable adjusting nut(1).
4. Remove the clutch release bumper assembly(2) from the clutch cable(3).
5. Pull and remove the clutch cable(3) from the clutch cable bracket hole.



6.

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7. Open the clutch cable clip (1) and disconnect the cable from the pedal hook.



8.

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9. Remove the clutch cable grommet nut.

10. Remove the clutch cable from the vehicle.

Installation Procedure

1. Install the clutch cable to the vehicle.





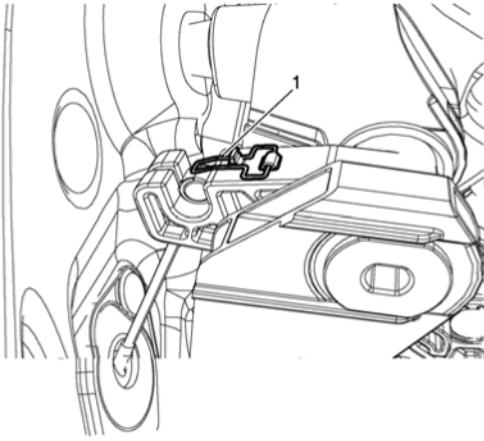
2.

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3. Caution:

Refer to [Fastener Caution](#).

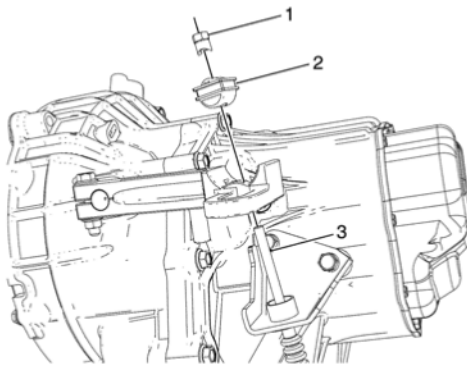
4. Install the clutch cable grommet nuts and tighten to 22â€%N-m (16â€%lbâ€%ft).



5.

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6. Connect the cable to the pedal hook and close the clutch cable clip (1).



7.

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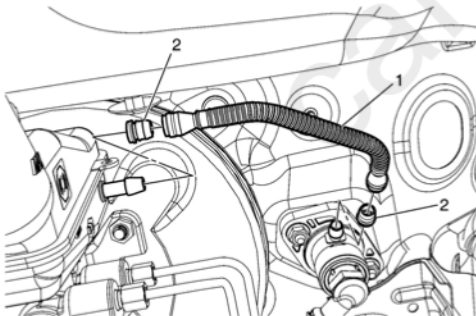
8. Insert the clutch cable(3) to the clutch cable bracket hole.
9. Install the clutch release bumper assembly(2) to the clutch cable(3).
10. Install the clutch cable adjusting nut(1).
11. Install the ECM to the battery tray. Refer to [Engine Control Module Replacement](#).
12. Adjust the clutch cable. Refer to [Clutch Assembly Adjustment](#).

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Clutch Master Cylinder Reservoir Hose Replacement

Removal Procedure

1. Remove the engine control module (ECM). Refer to [Engine Control Module Replacement](#).



2.

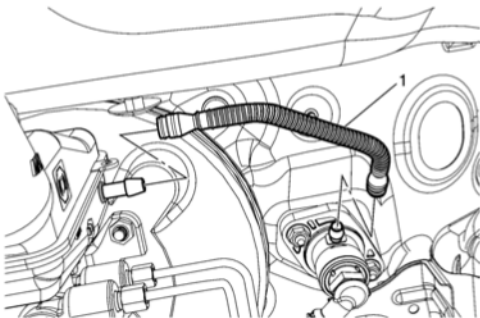
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3. Note:

Before disconnecting the reservoir hose, remove the clutch/brake fluid from the reservoir tank.

4. Remove the clutch master cylinder reservoir hose(1) and hose seal(2) from the reservoir tank and the master cylinder.

Installation Procedure



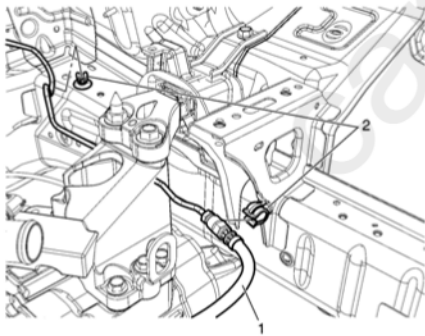
1. [Click here for full size](#)
2. Install the NEW clutch master cylinder reservoir hose assembly (1) to the reservoir tank and the master cylinder.
3. Bleed hydraulic clutch system. Refer to [Hydraulic Clutch System Bleeding](#).
4. Fill the reservoir with clutch/brake fluid up to the MAX level.
5. Install the engine control module (ECM). Refer to [Engine Control Module Replacement](#).

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Clutch Master Cylinder Replacement

Removal Procedure

1. Remove the battery tray. Refer to [Battery Tray Replacement](#).



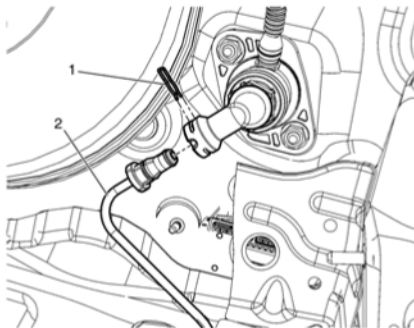
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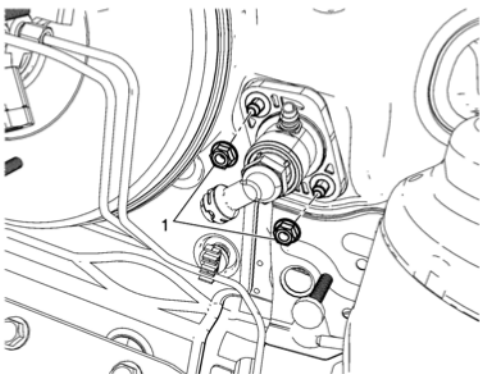
3. Note:

Before disconnecting the clutch actuator cylinder front pipe, remove the clutch/brake fluid from the reservoir tank.

4. Unclip the clutch actuator cylinder front pipe(1) from the retainers(2).



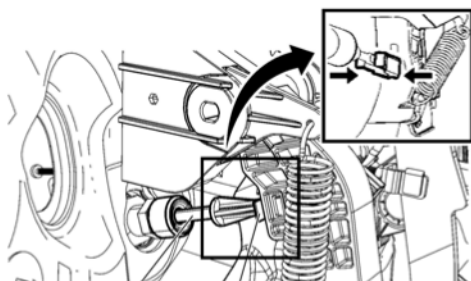
5.
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6. Remove the retaining clip(1).
7. Disconnect the clutch actuator cylinder front pipe(2) from the clutch master cylinder.
8. Remove the clutch master cylinder reservoir hose from the master cylinder. Refer to [Clutch Master Cylinder Reservoir Hose Replacement](#).



9.

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10. Remove the 2 clutch master cylinder mount nuts(1).





11.

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12. Note:

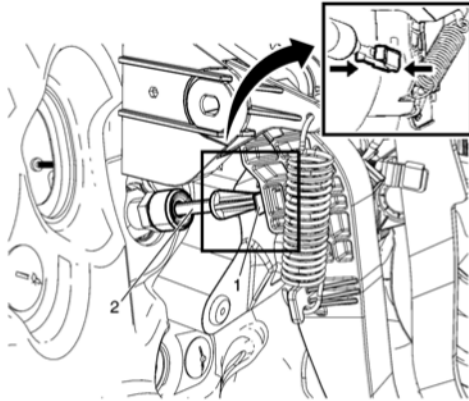
Press the 2 latches (arrows) together.

13. Remove the steering column opening filler. Refer to [Steering Column Opening Filler Replacement](#).

14. Disconnect the push rod retainer (1) from the clutch pedal.

15. Remove the clutch master cylinder (2).

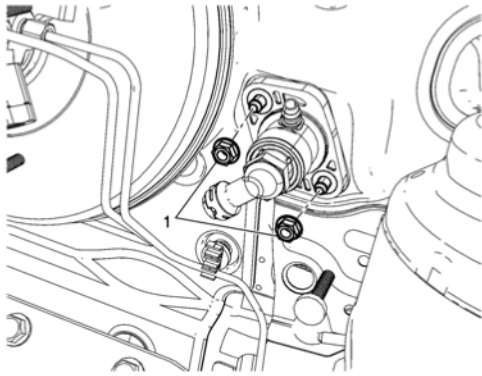
Installation Procedure



1. [Click here for full size](#)
2. Note:

The retaining clip (arrows) has to engage audibly.

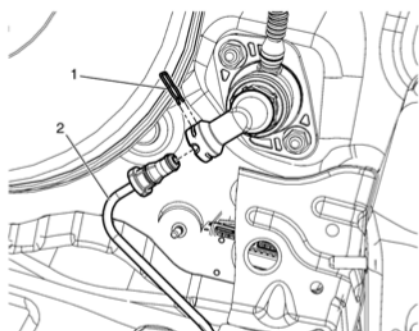
3. Install the clutch master cylinder (2).
4. Connect the push rod retainer (1) to the clutch pedal.
5. Install the steering column opening filler. Refer to [Steering Column Opening Filler Replacement](#).



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6. [Click here for full size](#)
7. Caution:

Refer to [Fastener Caution](#).
8. Install the 2 clutch master cylinder mount nuts (1) and tighten to 22 N-m (16 lb-ft).
9. Install the clutch master cylinder reservoir hose to the master cylinder. Refer to [Clutch Master Cylinder Reservoir Hose Replacement](#).

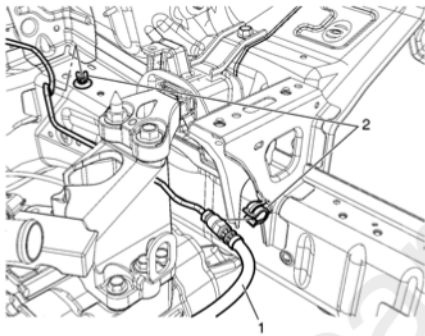


10.

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11. Install the monitoring of the CO₂ (1)

11. Install the retaining clip (1).
12. Connect the clutch actuator cylinder front pipe (2) to the clutch master cylinder.



13. [Click here for full size](#)
14. Clip the clutch actuator cylinder front pipe(1) to the retainers(2).
15. Bleed the hydraulic clutch system. Refer to [Hydraulic Clutch System Bleeding](#).
16. Fill the reservoir with clutch/brake fluid up to the MAX level.
17. Install the battery tray. Refer to [Battery Tray Replacement](#).

Related Part Information

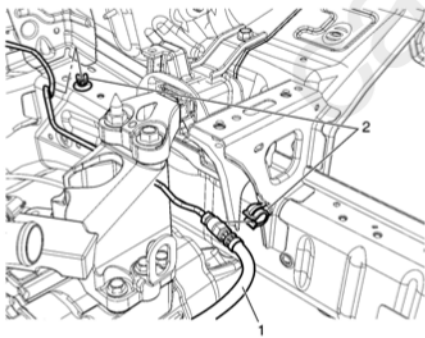
Part Name	Catalog Name	Part Code
Clutch Master Cylinder	CYLINDER,CLU MAS (W/ACTR)	7524Y
Clutch Master Cylinder	CYLINDER,CLU MAS	7525A
Clutch Master Cylinder	CYLINDER KIT,CLU MAS	7525B
Clutch Master Cylinder	CYLINDER,CLU MAS	7525C
Clutch Master Cylinder	CYLINDER,CLU MAS	7525D

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Clutch Actuator Cylinder Front Pipe Replacement

Removal Procedure

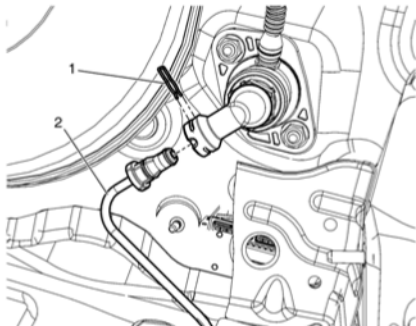
1. Remove the battery tray. Refer to [Battery Tray Replacement](#).
2. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).



3.

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4. Unclip the clutch actuator cylinder front pipe(1) from the retainers(2).



5.

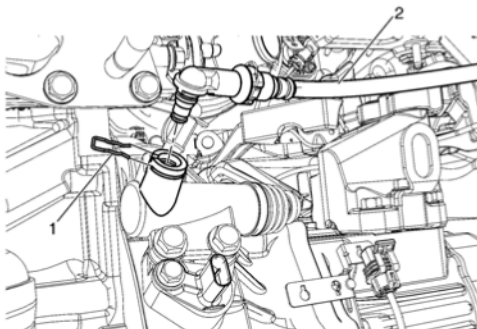
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6. Note:

Before disconnecting the clutch actuator cylinder front pipe, remove the clutch/brake fluid from the reservoir tank.

7. Remove the retaining clip(1).

8. Disconnect the clutch actuator cylinder front pipe(2) from the clutch master cylinder.



9.

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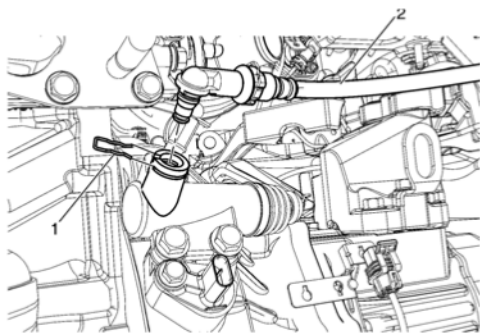
10. Remove the retaining clip(1).

11. Disconnect the clutch actuator cylinder front pipe(2) from the clutch actuator cylinder.

12. Remove the clutch actuator cylinder front pipe.

Installation Procedure

1. Install the clutch actuator cylinder front pipe.

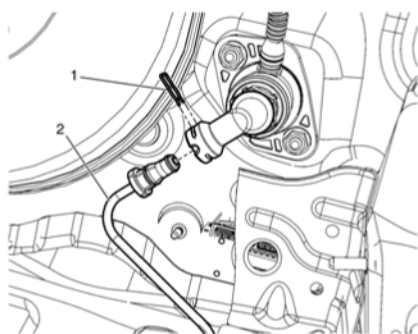


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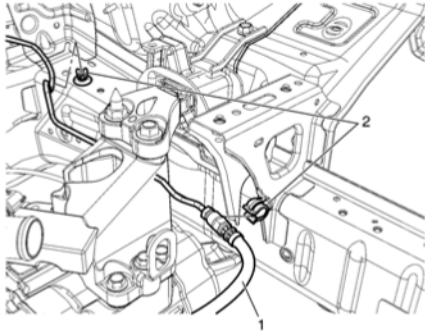
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3. Install the retaining clip(1).

4. Connect the clutch actuator cylinder front pipe(2) to the clutch actuator cylinder.



5. [Click here for full size](#)
6. Install the retaining clip(1).
7. Connect the clutch actuator cylinder front pipe(2) to the clutch master cylinder.



8. [Click here for full size](#)
9. Clip the clutch actuator cylinder front pipe(1) to the retainers(2).
10. Bleed the hydraulic clutch system. Refer to [Hydraulic Clutch System Bleeding](#).
11. Fill the reservoir with clutch/brake fluid up to the MAX level.
12. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).
13. Install battery tray. Refer to [Battery Tray Replacement](#).

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Hydraulic Clutch System Bleeding

Warning:

Refer to [Brake Fluid Irritant Warning](#).

Caution:

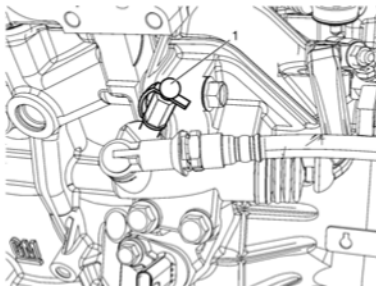
Refer to [Brake Fluid Effects on Paint and Electrical Components Caution](#).

Note:

Brake fluid must not come in contact with mineral oils and greases. The smallest amount of such could lead to malfunction or breakdown of the clutch.

Note:

The hydraulic clutch actuation must only be bled from "below", i.e. from the bleeder valve.



1. [Click here for full size](#)

2. Note:

The following operational stages must be undertaken to fill the pressure line between the master cylinder and the clutch actuator cylinder. When bleeding, ensure that the brake fluid reservoir is always full and does not run dry.

3. Bleed pressure line between the clutch master cylinder and the clutch actuator cylinder using the following procedure:

- 4.

1. Remove the valve cap (1) from the bleeder valve.
2. Fill brake fluid reservoir up to "MAX" marking.
3. Press and hold clutch pedal.
4. Open bleeder valve until air or air/brake fluid mixture emerges.

5. Note:

Do not close the bleeder valve too fast.

6. Close the bleeder valve.
7. Release the clutch pedal slowly.
8. Wait approximately 5 seconds.
9. Repeat this bleeding process 4 times.
10. Tighten bleeder valve.
11. Push valve cap on to bleeder valve to protect the bleeder valve.

5. Check shifting for ease of movement with vehicle stationary, with engine running and with clutch disengaged.
6. Road test the vehicle to ensure proper operation.
7. Undertake road test using varying RPM ranges and frequent gear changes, bring vehicle to operating temperature during this process. Ensure the brake and clutch system is operating correctly.

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Clutch Fork Assembly Replacement (Cable)

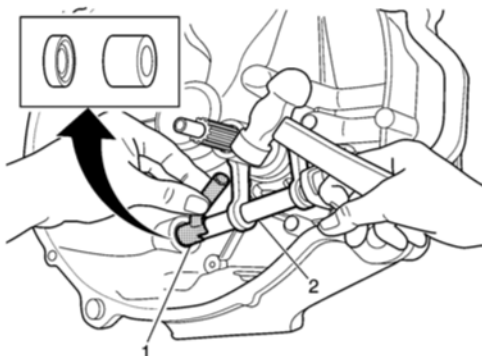
Special Tools

- DT-49085 Bushing Remover
- DT-49086 Bushing Remover/Installer
- DT-49087 Bushing Remover
- DT-50059 Sliding Shaft
- DT-50060 Bushing/Bearing Installation Tool
- DT-50199 Bushing, Seal Installer

Equivalent regional tools: [Special Tools](#)

Removal Procedure

1. Clutch Release Bearing >> Remove - [Clutch Release Bearing Replacement](#)



2.

[Click here for full size](#)

3. Remove the (No. 2) bushing and seal using *DT-49085* bushing remover(1) and hammer.

4. Clutch Fork Shaft (2>) >> Remove



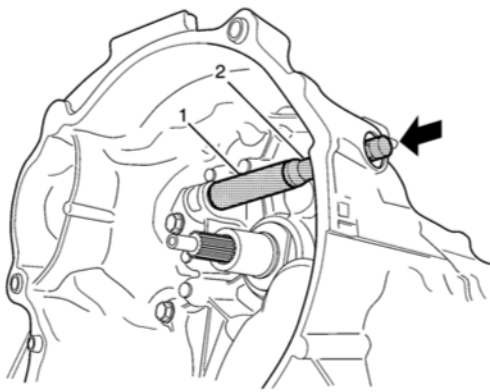


5.

[Click here for full size](#)

6. Install the *DT-49086* bushing remover/installer(1) and the *DT-49087* bushing remover(2) to the No.1 bushing.
7. Connect the *DT-50059* sliding shaft(3) to the end of the *DT-49086* bushing remover/installer(1).
8. Remove the No.1 bushing by pulling.

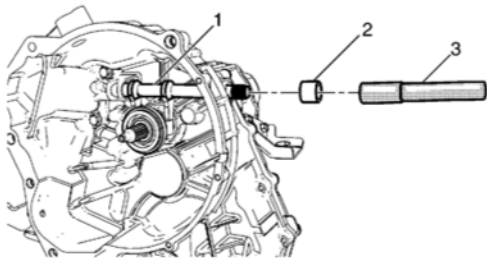
Installation Procedure



1.

[Click here for full size](#)

2. Install the new No.1 release shaft bushing using the *DT-49086* bushing remover/installer(1), *DT-50060* bushing, bearing installer(2) and a hammer.



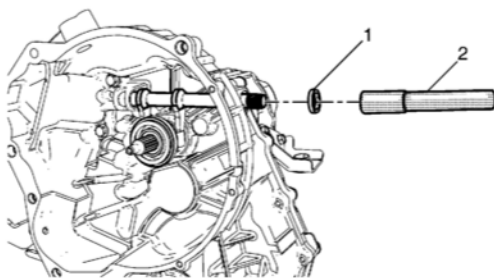
3.

[Click here for full size](#)

4. Coat the release shaft and bushing with grease.

5. Clutch Fork Shaft (1>) >> Install

6. Install the new No.2 release shaft bushing(2) using the *DT-50199* bushing, seal installer(3) and a hammer.



7.

[Click here for full size](#)

8. Install the release shaft seal (1) using the *DT-50199* bushing, seal installer (2) and a hammer.

9. Clutch Release Bearing >> Install - [Clutch Release Bearing Replacement](#)

Related Part Information

Part Name	Catalog Name	Part Code
Clutch Fork Shaft	SHAFT,CLU FORK	X0028

Part Name	Catalog Name	Part Code
Clutch Fork	FORK KIT,CLU	4149Z
Clutch Fork	FORK,CLU	4150A
Clutch Fork	FORK,CLU	4151A
Clutch Fork Shaft	SHAFT,CLU FORK	4380A
Clutch Fork Shaft	SHAFT,CLU FORK	4380B

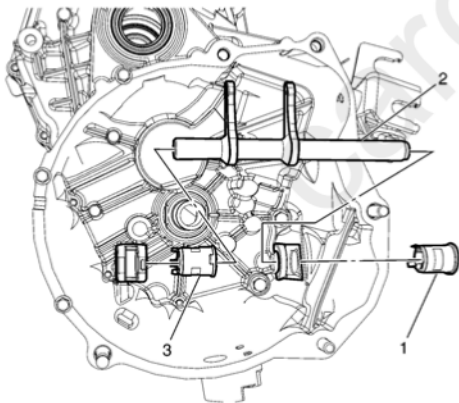
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1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Fork Assembly Replacement (Hydraulic)

Removal Procedure

1. Clutch Release Bearing >> Remove - [Clutch Release Bearing Replacement](#)



2.

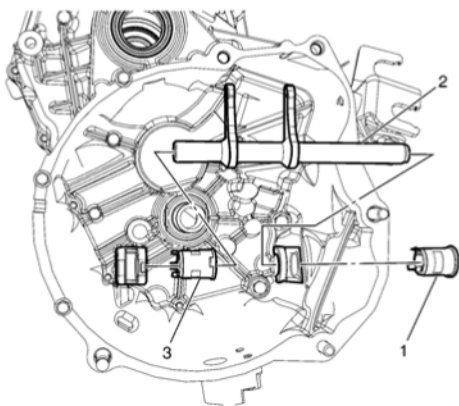
[Click here for full size](#)

3. Clutch Fork Shaft Bushing (1>) >> Remove

4. Clutch Fork Shaft (2>) >> Remove

5. Clutch Fork Shaft Bushing (3>) >> Remove

Installation Procedure



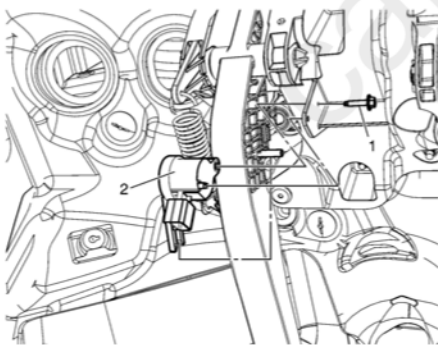
1. [Click here for full size](#)
2. Clutch Fork Shaft Bushing (3>) >> Install
3. Coat the clutch fork shaft and bushing with grease.
4. Clutch Fork Shaft (2>) >> Install
5. Clutch Fork Shaft Bushing (1>) >> Install
6. Clutch Release Bearing >> Install - [Clutch Release Bearing Replacement](#)

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Pedal Position Sensor Replacement

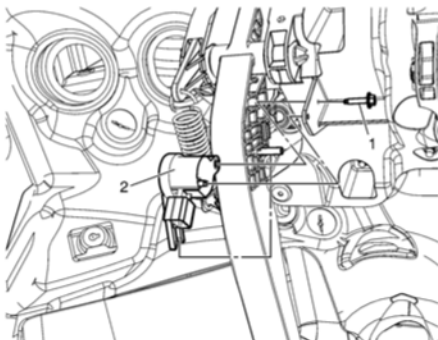
Removal Procedure

1. Remove the steering column opening filler. Refer to [Steering Column Opening Filler Replacement](#).
2. Remove the intermediate steering shaft. Refer to [Intermediate Steering Shaft Replacement](#).



3. [Click here for full size](#)
4. Disconnect the clutch pedal position sensor wiring harness connector.
5. Remove the clutch pedal position sensor bolt(1).
6. Remove the clutch pedal position sensor(2).

Installation Procedure



1. [Click here for full size](#)
2. Install the clutch pedal position sensor (2).
3. Caution:
Refer to [Fastener Caution](#).
4. Install the clutch pedal position sensor bolt (1) and tighten to 3 N-m (27 lb-in).
5. Connect the clutch pedal position sensor wiring harness connector.
6. Install the intermediate steering shaft. Refer to [Intermediate Steering Shaft Replacement](#).
7. Install the steering column opening filler. Refer to [Steering Column Opening Filler Replacement](#).

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Pressure and Driven Plate Replacement

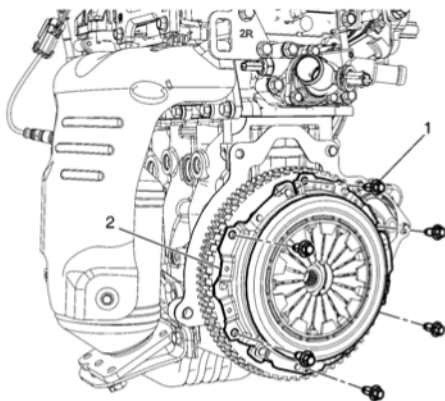
Special Tools

- DT-6263-30 Drift
- DT-6263-23 Clutch Center Guide

For equivalent regional tools, refer to [Special Tools](#).

Removal Procedure

1. Remove the transmission from the vehicle. Refer to [Transmission Replacement](#).



2.

[Click here for full size](#)

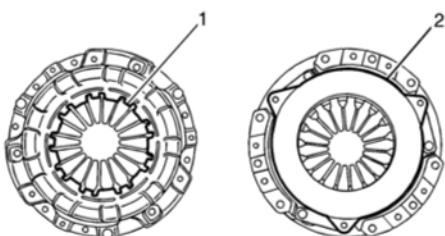
3. Note:

Remove the clutch pressure plate bolts symmetrically to avoid clutch pressure plate distortion.

4. Remove and DISCARD the clutch pressure plate bolts(1).

5. Remove the clutch pressure plate and clutch disc(2).

Pressure Plate Inspection Procedure

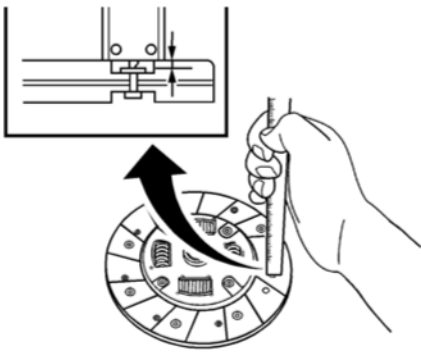


[Click here for full size](#)

1. Inspect the weak and damaged diaphragm spring(1).
2. Inspect the face that may be polluted by the oil or grease(2).

Clutch Disc Inspection Procedure

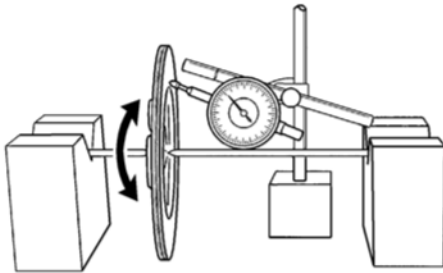




[Click here for full size](#)

1. Measure the rivet head depth from the clutch disc surface and replace if the depth is below the limit.
2. Specifications
 - Rivet head depth for standard equals 1.1mm (0.043in).
 - Rivet head depth for limit equals 0.4mm (0.016in).
3. Replace the clutch disc if the clutch disc surface is contaminated or if the clutch disc rivets are loose.

Clutch Disc Runout In A Rotational Direction Inspection Procedure



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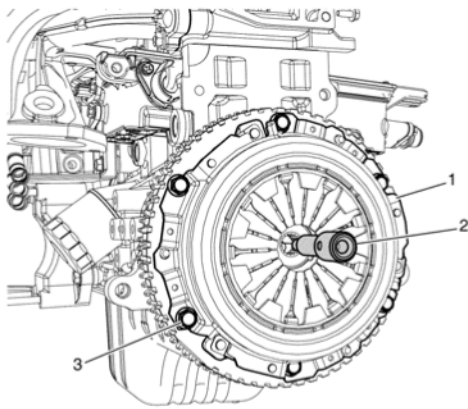
[Click here for full size](#)

Measure the runout in a rotational direction and replace if the runout exceeds the limit.

Specifications

The disc runout limit in a rotational direction equals $0.7\text{ }\mu\text{m}$ (0.028 in).

Installation Procedure



1. [Click here for full size](#)
2. Install the clutch pressure plate and clutch disc(1) to the flywheel.
3. Attach the *DT-6263-23* clutch center guide to the *DT-6263-30* drift.

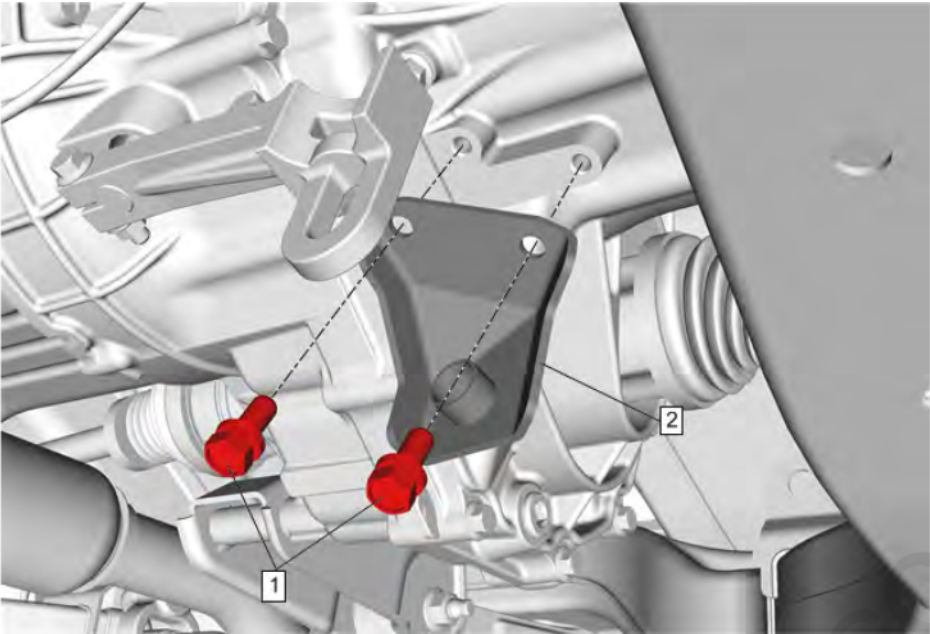
4. Align the clutch pressure plate and clutch disc onto the flywheel using the *DT-6263-23* clutch center guide (2) and the *DT-6263-30* drift.
5. Caution:
Refer to [Fastener Caution](#).
6. Install the 6 NEW clutch pressure plate bolts (3) and tighten the bolts crosswise to 28 N·m (21 lb·ft).
7. Remove the *DT-6263-23* clutch center guide (2) and the *DT-6263-30* drift.
8. Install the transmission to the vehicle. Refer to [Transmission Replacement](#).

Related Part Information

Part Name	Catalog Name	Part Code
Clutch Driven Plate	PLATE KIT, CLU DRVN	6999A
Clutch Driven Plate	PLATE, CLU DRVN	7000A
Clutch Driven Plate	PLATE, CLU DRVN	7000B
Clutch Pressure and Driven Plate	PLATE KIT, CLU PRESS & DRVN (W/ CVR)	7044Z
Clutch Pressure and Driven Plate	PLATE, CLU PRESS & DRVN (W/ CVR)	7045A
Clutch Pressure and Driven Plate	PLATE KIT, CLU PRESS & DRVN	7045X
Clutch Pressure Plate	PLATE, CLU PRESS (W/ CVR & CLU REL BRG)	7046A
Clutch Pressure and Driven Plate	PLATE KIT, CLU PRESS & DRVN (SERV OVERHAUL W/ CVR)	7046Z
Clutch Pressure Plate	PLATE, CLU PRESS (W/ CVR)	7050A
Clutch Pressure and Driven Plate	PLATE, CLU PRESS & DRVN	7052Z
Clutch Pressure Plate	PLATE KIT, CLU PRESS	7054Z
Clutch Pressure Plate	PLATE, CLU PRESS	7055A
Clutch Pressure Plate	PLATE, CLU PRESS	7055B
Clutch Pressure and Driven Plate	PLATE, CLU PRESS & DRVN (W/ CVR)	SS010
Clutch Pressure Plate	PLATE, CLU PRESS	SJ332
Clutch Driven Plate	PLATE, CLU DRVN	SJ333

- 1. TRANSMISSION
- 2. CLUTCH
- 3. REPAIR INSTRUCTIONS
- 4.

Clutch Cable Bracket Replacement



[Click here for full size](#)

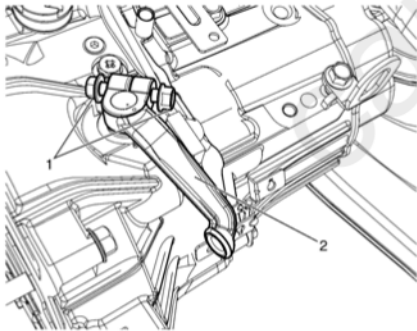
Callout	Component Name
Preliminary Procedures	
1. Raise and support the vehicle. Lifting and Jacking the Vehicle	
2. Clutch Cable @ Clutch Cable Bracket >> Remove - Clutch Cable Replacement	
1	Clutch Cable Bracket Bolt [2>x] Caution: Refer to Fastener Caution Tighten 23N-m (17 lb ft)
2	Clutch Cable Bracket Procedure Clutch Assembly Adjustment

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Pedal Arm Replacement (Hydraulic)

Removal Procedure

1. Remove the clutch actuator cylinder. Refer to [Clutch Actuator Cylinder Replacement](#).



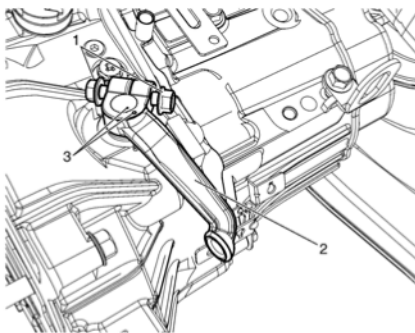
2.

[Click here for full size](#)

3. Loosen the clutch pedal arm bolt and nut (1).

4. Remove the clutch release arm (2).

Installation Procedure



1.

[Click here for full size](#)

2. Install the clutch pedal arm(2) to the clutch fork shaft and align to the marked position(3).

3. Caution:

Refer to [Fastener Caution](#).

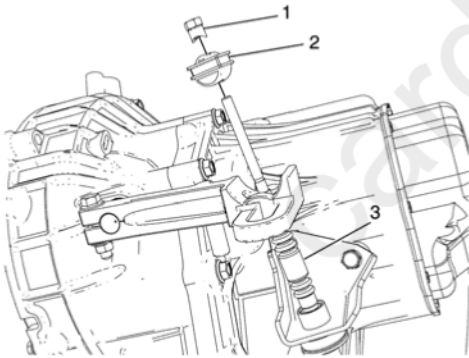
4. Install the clutch pedal arm bolt and nut(1) and tighten to 17N-m (13lb-ft).

5. Install the clutch actuator cylinder. Refer to [Clutch Actuator Cylinder Replacement](#).

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Pedal Arm Replacement (Cable)

Removal Procedure

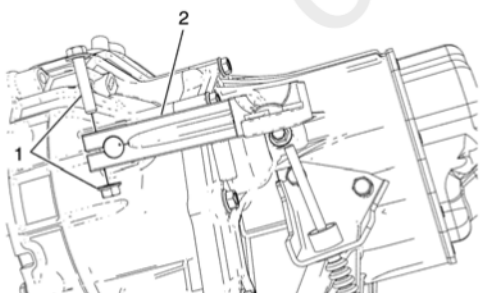


1.

[Click here for full size](#)

2. Remove the clutch cable adjusting nut(1).

3. Remove the clutch release bumper assembly(2) from the clutch cable(3).



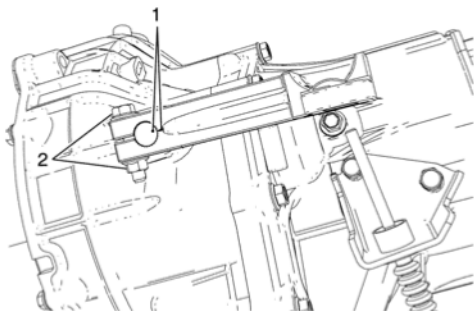
4.

[Click here for full size](#)

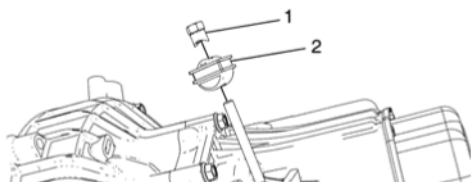
5. Remove the clutch release arm bolt and nut (1).

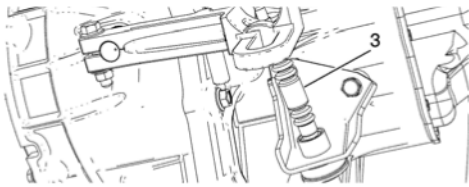
6. Remove the clutch release arm (2).

Installation Procedure



1. [Click here for full size](#)
2. Install the release arm to the release shaft and align to the marked position(1).
3. Caution:
Refer to [Fastener Caution](#).
4. Install the release arm bolt and nut(2) and tighten to 13N-m (10lb-ft).





5.

[Click here for full size](#)

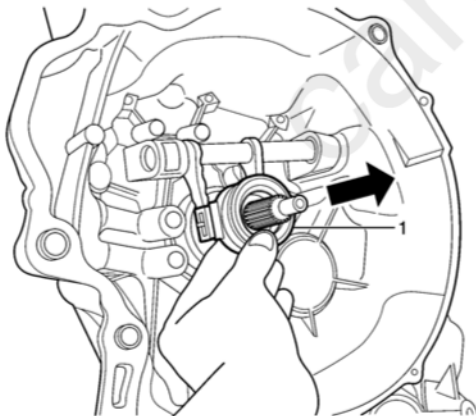
6. Install the clutch release bumper assembly(2) to the clutch cable(3).
7. Install the clutch cable adjusting nut(1).
8. Adjust the clutch cable. Refer to [Clutch Assembly Adjustment](#).

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Release Bearing Replacement

Removal Procedure

1. Remove the transmission from the vehicle. [Transmission Replacement](#).
2. Remove the clutch pedal arm. [Clutch Pedal Arm Replacement](#).

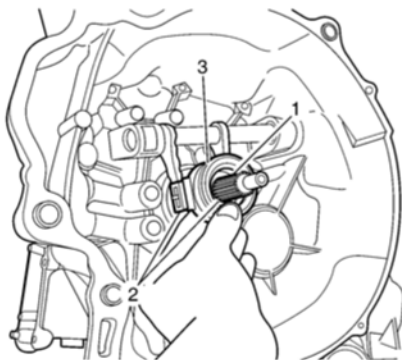


3.

[Click here for full size](#)

4. Clutch Release Bearing (1>) >> Remove

Installation Procedure



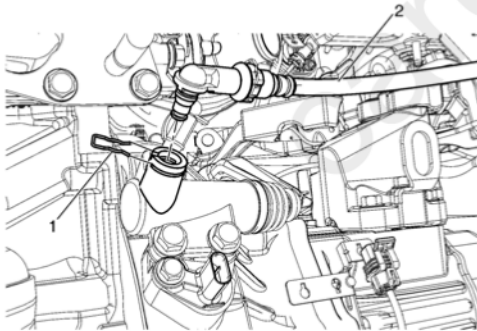
1. [Click here for full size](#)
2. Coat the spline of the transmission input shaft with multi-purpose grease(1).
3. Coat the release bearing bore and the connecting of the clutch fork shaft with multi-purpose grease(2).
4. Clutch Release Bearing (3>) >> Install
5. Install the clutch pedal arm. [Clutch Pedal Arm Replacement](#).
6. Install the transmission to the vehicle. [Transmission Replacement](#).

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Actuator Cylinder Replacement

Removal Procedure

1. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).



2.

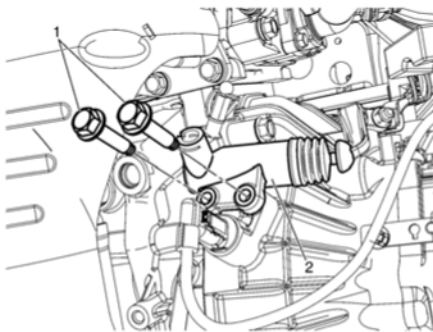
[Click here for full size](#)

3. Note:

Before disconnecting the clutch actuator cylinder front pipe, remove the clutch/brake fluid from the reservoir tank.

4. Remove the retaining clip(1).

5. Disconnect the clutch actuator cylinder front pipe(2) from the clutch actuator cylinder.



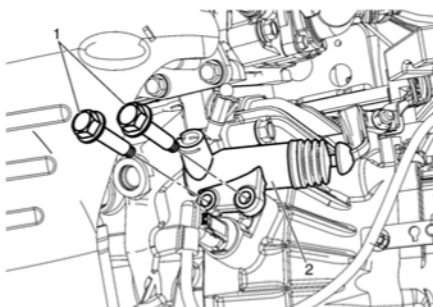
6.

[Click here for full size](#)

7. Remove the clutch actuator cylinder mount bolts (1).

8. Remove the clutch actuator cylinder (2).

Installation Procedure





1.

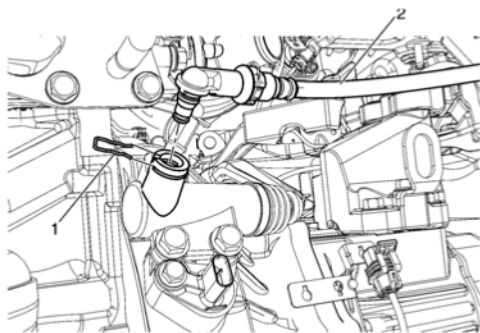
[Click here for full size](#)

2. Install the clutch actuator cylinder(2).

3. Caution:

Refer to [Fastener Caution](#).

4. Install the clutch actuator cylinder mount bolts(1) and tighten to 22N-m (16lb-ft).

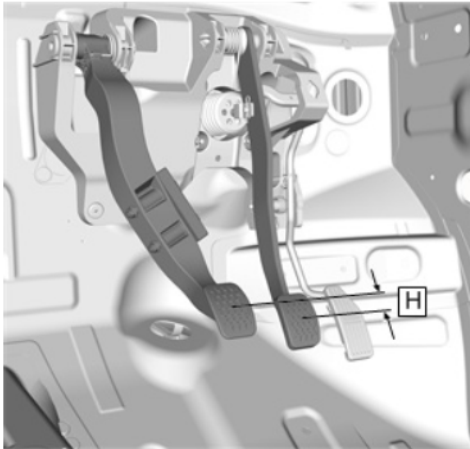


5. [Click here for full size](#)
6. Install the retaining clip (1).
7. Connect the clutch actuator cylinder front pipe (2) to the clutch actuator cylinder.
8. Bleed the hydraulic clutch system. Refer to [Hydraulic Clutch System Bleeding](#).
9. Fill the reservoir with clutch/brake fluid up to the MAX level.
10. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

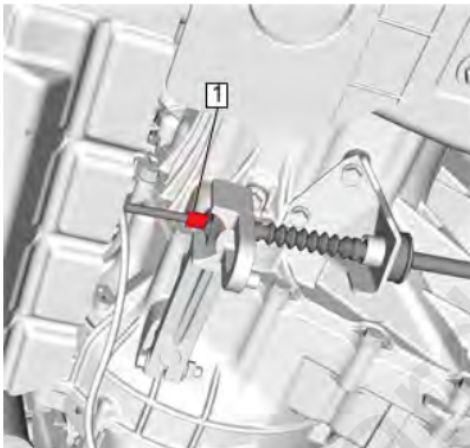
Clutch Pedal Height Adjustment

1. Depress and release the clutch pedal through its entire travel 20 times to ensure the clutch mechanism is fully seated.



2. [Click here for full size](#)

3. Measure the clutch pedal pad height (H) relative to the brake pedal pad.

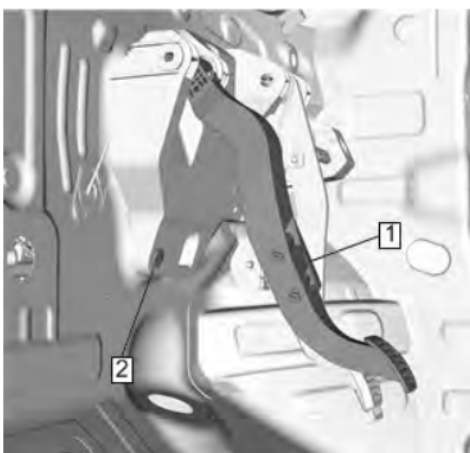


4. [Click here for full size](#)

5. If the clutch pedal pad height is not within the specification above the brake pedal, adjust the clutch cable nut (1) at the release fork end so that the clutch pedal pad is positioned within the specification above the brake pedal pad.

6. Specification

Left Hand Drive: 5.0 - 15.0 mm, Right Hand Drive: 0.0 $\pm$ 5.0 mm



7. [Click here for full size](#)

8. Note:

After the clutch pedal height is adjusted, the clutch pedal should be contacted to the end stop bumper in full travel when operating the clutch pedal at normal condition. If not, it may affect the durability of clutch pedal.

9. Ensure that the clutch pedal (1) is contacted to the end stop bumper (2) in full travel when operating the clutch pedal at normal condition.

Related Part Information

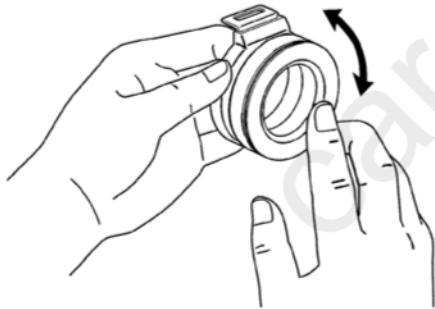
Part Name	Catalog Name	Part Code
Clutch Pedal	PEDAL KIT,CLU(W/BRKT)	0044Y
Clutch Pedal	PEDAL,CLU (W/BRKT)	0045A
Clutch Pedal	PEDAL,CLU	0050A
Clutch Pedal	PEDAL,CLU	0050B

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1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

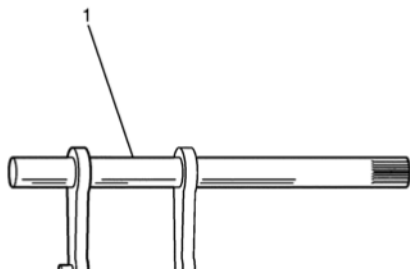
Clutch Release Bearing and Door Shaft Inspection

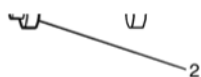
Release Bearing Inspection



1. [Click here for full size](#)
2. Inspect for a noisy, worn, and damaged release bearing.
3. Inspect for a grabbing rotation of release bearing.
4. Replace the release bearing if necessary.

Release Shaft Inspection

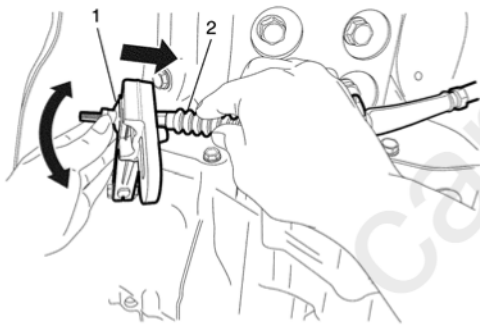




1. [Click here for full size](#)
2. Inspect for a warped shaft(1).
3. Inspect for a worn fork(2).
4. Replace the shaft if necessary.

1. TRANSMISSION
2. CLUTCH
3. REPAIR INSTRUCTIONS
- 4.

Clutch Assembly Adjustment



[Click here for full size](#)

If the clutch connection/disconnection is operated unsmoothly, adjust the clutch (2) by adjusting the clutch cable adjust nut (1) until the desired pedal travel is obtained. Refer to [Clutch Pedal Height Adjustment](#).

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Specifications

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1. TRANSMISSION
2. CLUTCH
3. SPECIFICATIONS
- 4.

Fastener Specifications

Single Use Non-Threaded Fasteners/Components

Application
Note:
All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.
Clutch Actuator Cylinder Seal
Clutch Master Cylinder Reservoir Hose Assembly
Clutch Pedal Bushing
Clutch Pedal Pivot Pin

Single Use Threaded Fastener/Component Tightening Specifications

Application	Specification
	Metric (English)
Note:	
All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.	
Clutch Pressure Plate Bolt	28â€%N-m (21â€%lbâ€%ft)

Reusable Threaded Fastener Tightening Specifications

Application	Specification
	Metric (English)
Note:	
All fasteners listed in this table can be reused after removal.	
Clutch Actuator Cylinder Mount Bolt	22â€%N-m (16â€%lbâ€%ft)
Clutch Cable Grommet Nut	22â€%N-m (16â€%lbâ€%ft)
Clutch Master Cylinder Nut	22â€%N-m (16â€%lbâ€%ft)
Clutch Pedal Arm Bolt and Nut	17â€%N-m (13â€%lbâ€%ft)
Clutch Release Arm Bolt and Nut	13â€%N-m (10â€%lbâ€%ft)
Clutch Pedal Position Sensor Bolt	3â€%N-m (27â€%lbâ€%in)

1. TRANSMISSION
2. CLUTCH
3. SPECIFICATIONS
- 4.

General Specifications

Application	Specification	
	Metric	English
Clutch Disc		
Type	Single Dry Plate	
• Outside Diameter** Standard	190â€‰mm	7.480â€‰in
• Inside Diameter** Standard	127.5â€‰mm	5.020â€‰in
• Thickness** Standard	8.4â€‰mm	0.331â€‰in
• Rivet Head Depth** Standard	1.1â€‰mm	0.043â€‰in
• Rivet Head Depth** Limit	0.4â€‰mm	0.016â€‰in
• Disc Runout Limit in Rotational Direction** Limit	0.7â€‰mm	0.028â€‰in

Special Tools and Equipment

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- 1. TRANSMISSION
- 2. CLUTCH
- 3. SPECIAL TOOLS AND EQUIPMENT
- 4.

Special Tools

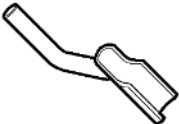
Illustration	Tool Number/ Description
	DT-49085 Remover Bushings
Click here for full size	

Illustration	Tool Number/ Description
	DT-49086 Remover/Installer Bushings
Click here for full size	

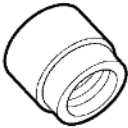
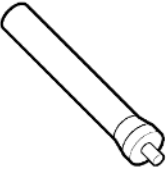
Illustration	Tool Number/ Description
 Click here for full size	DT-49087 Bushing Remover

Illustration	Tool Number/ Description
	DT-50059 09930-30102 Sliding Shaft
Click here for full size	

Illustration	Tool Number/ Description
	DT-50060 09943-88211 Installer Bushing, Bearing
Click here for full size	

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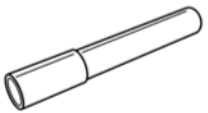
Illustration	Tool Number/ Description
	DT-50199 Bushings Seal Installer
Click here for full size	

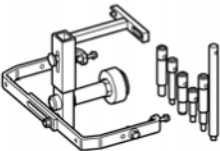
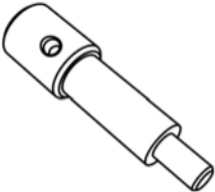
Illustration	Tool Number/ Description
	DT-6263 KM-6263 Remover/Installer
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Illustration	Tool Number/ Description
	DT-6263-23 KM-6263-23 Clutch Center Guide
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