

SECTION : 5C

CLUTCH

CAUTION : *Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.*

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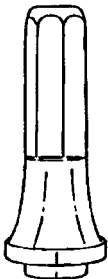

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

| Application | N•m | Lb-Ft | Lb-In |
|---|-----|-------|-------|
| Clutch Fork-to-Release Lever Shaft Bolt | 35 | 26 | – |
| Clutch Master Cylinder Locknuts | 22 | 16 | – |
| Clutch Pedal Nut | 18 | 13 | – |
| Pressure Plate-to-Flywheel Bolts | 15 | 11 | – |
| Release Bearing Guide Sleeve Bolts | 5 | – | 44 |
| Release Cylinder Bolts | 60 | 44 | – |

SPECIAL TOOLS

SPECIAL TOOLS TABLE

| | | | |
|--|---|--|---------------------------------|
|  <p>A103C009</p> | <p>J-36547 Input Shaft Seal Installer</p> |  <p>A103C045</p> | <p>J-42474 Clutch Arbor</p> |
|--|---|--|---------------------------------|

DIAGNOSIS

CLUTCH OPERATION

Engine Fails to Start

| Checks | Action |
|---|---|
| DEFINITION: When the clutch pedal is pressed to the floor, the engine fails to turn over during starting. | |
| Check the position of the clutch pedal position switch adjusting screw. | Adjust the clutch pedal position switch adjusting screw to the proper position. |
| Check for continuity in the clutch pedal position switch. | Replace the clutch pedal position switch. |

Fails to Release

| Checks | Action |
|--|---|
| DEFINITION: When the pedal is pressed to the floor, the shift lever does not move freely in and out of reverse gear. | |
| Check for a loose linkage. | Repair or replace the loose linkage, if necessary. |
| Check for a damaged clutch disc. | Replace the damaged clutch disc. |
| Check for an improperly installed fork shaft. | Remove and properly reinstall the fork shaft. Very lightly lubricate the fork fingers at the release bearing with wheel bearing grease. |
| Check for the clutch disc hub binding on the input shaft splines. | Repair or replace the clutch disc hub. |
| Check for a warped or bent clutch disc. | Replace the warped or bent clutch disc. |

Slipping

| Checks | Action |
|---|---|
| Check for the driver improperly operating the vehicle. | Correct the driver's operation of the vehicle, as necessary. |
| Check for an oil-soaked clutch disc. | Correct the leak at its source and install a new clutch disc. |
| Check for a worn facing or a facing torn from the disc. | Replace the worn disc with a new disc. |
| Check for a warped pressure plate or a warped flywheel. | Replace the warped pressure plate or the warped flywheel. |
| Check for a weak diaphragm spring. | Replace the pressure plate. |
| Check for a driven plate that is not seated. | Start the engine 30 to 40 times. Do not overheat the engine. |
| Check for a driven plate that is overheated. | Allow the driven plate to cool. |

Grabbing (Chattering)

| Checks | Action |
|--|--|
| Check for a burned or a glazed facing caused by oil on the facing. | Correct the leak at its source and install a new clutch disc. |
| Check for worn splines on the input shaft. | Replace the worn input shaft. |
| Check for a warped pressure plate or a warped flywheel. | Replace the warped pressure plate or the warped flywheel. |
| Check for burned or smeared resin on the flywheel or the pressure plate. | Sand off the burned or smeared resin if it is superficial. Replace any burned or heat-checked parts. |

Rattling (Transaxle Click)

| Checks | Action |
|---|--|
| Check for weak retracting springs. | Replace the pressure plate. |
| Check for a loose release fork. | Remove and reinstall the release fork properly. |
| Check for oil in the driven plate damper. | Correct the cause of the oil leak and replace the driven disc. |
| Check for a damaged driven plate damper spring. | Replace the driven disc. |

Release Bearing Noise with Clutch Fully Engaged

| Checks | Action |
|--|--|
| Check for the driver improperly operating the vehicle. | Correct the driver's operation of the vehicle, as necessary. |
| Check for a binding release bearing. | Clean and re-lubricate the release bearing. Inspect the release bearing for burrs and nicks. |
| Check for an improperly installed release lever. | Remove and reinstall the release lever properly. |
| Check for a weak linkage return spring. | Replace the weak linkage return spring. |

Noisy

| Checks | Action |
|--|---|
| Check for a worn release bearing. | Replace the worn release bearing. |
| Check for an improperly installed release lever. | Remove and properly reinstall the fork shaft. Very lightly lubricate the fork fingers at the release bearing with wheel bearing grease. |

Pedal Stays on Floor When Disengaged

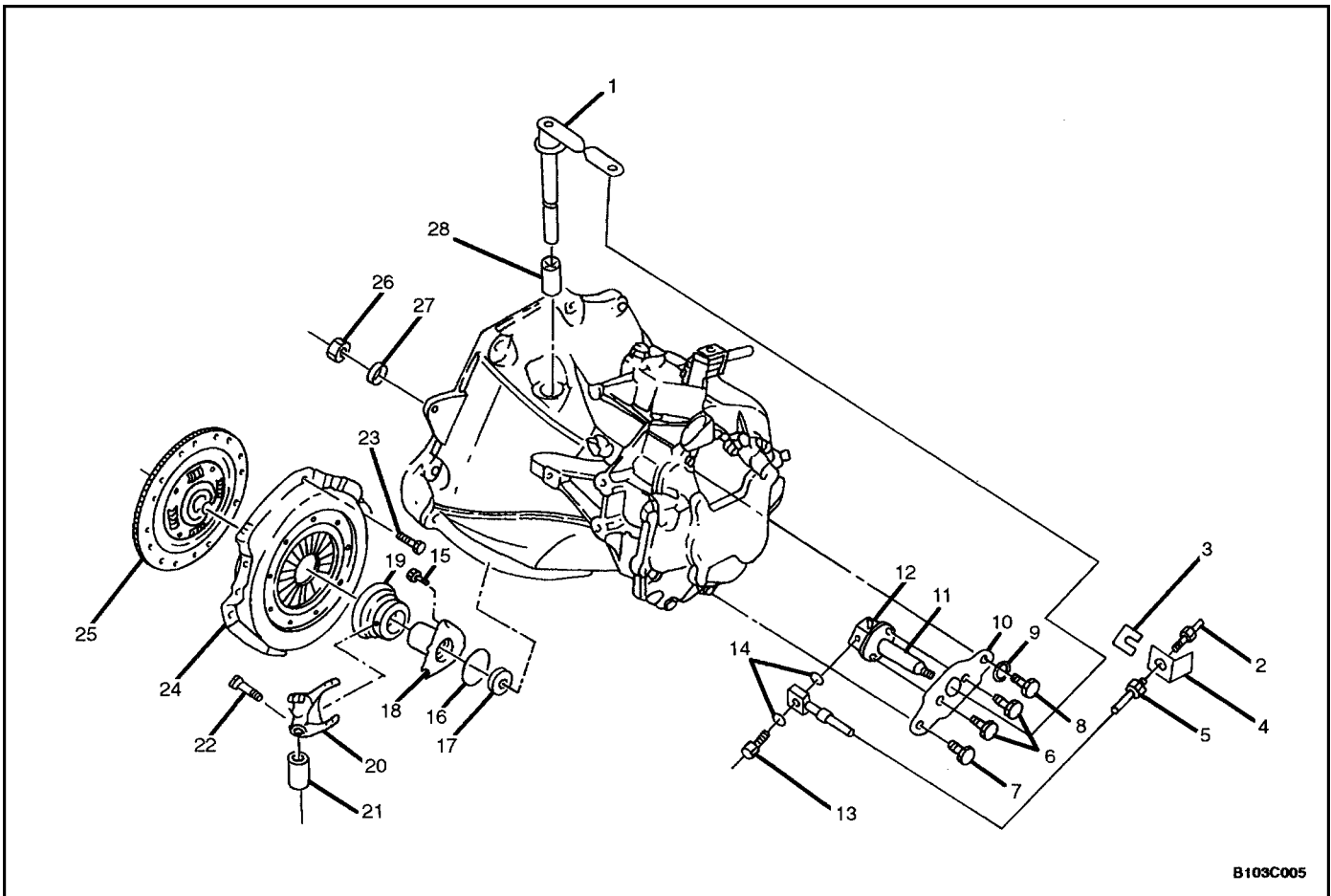
| Checks | Action |
|--|---|
| Check for binding in the linkage or the release bearing. | Lubricate and free-up the binding linkage or the release bearing. |
| Check for weak pressure plate springs. | Replace the pressure plate. |

Hard Pedal Effort

| Checks | Action |
|-----------------------------------|--|
| Check for binding in the linkage. | Lubricate and free-up the binding linkage. |
| Check for a worn driven plate. | Replace the worn driven plate. |

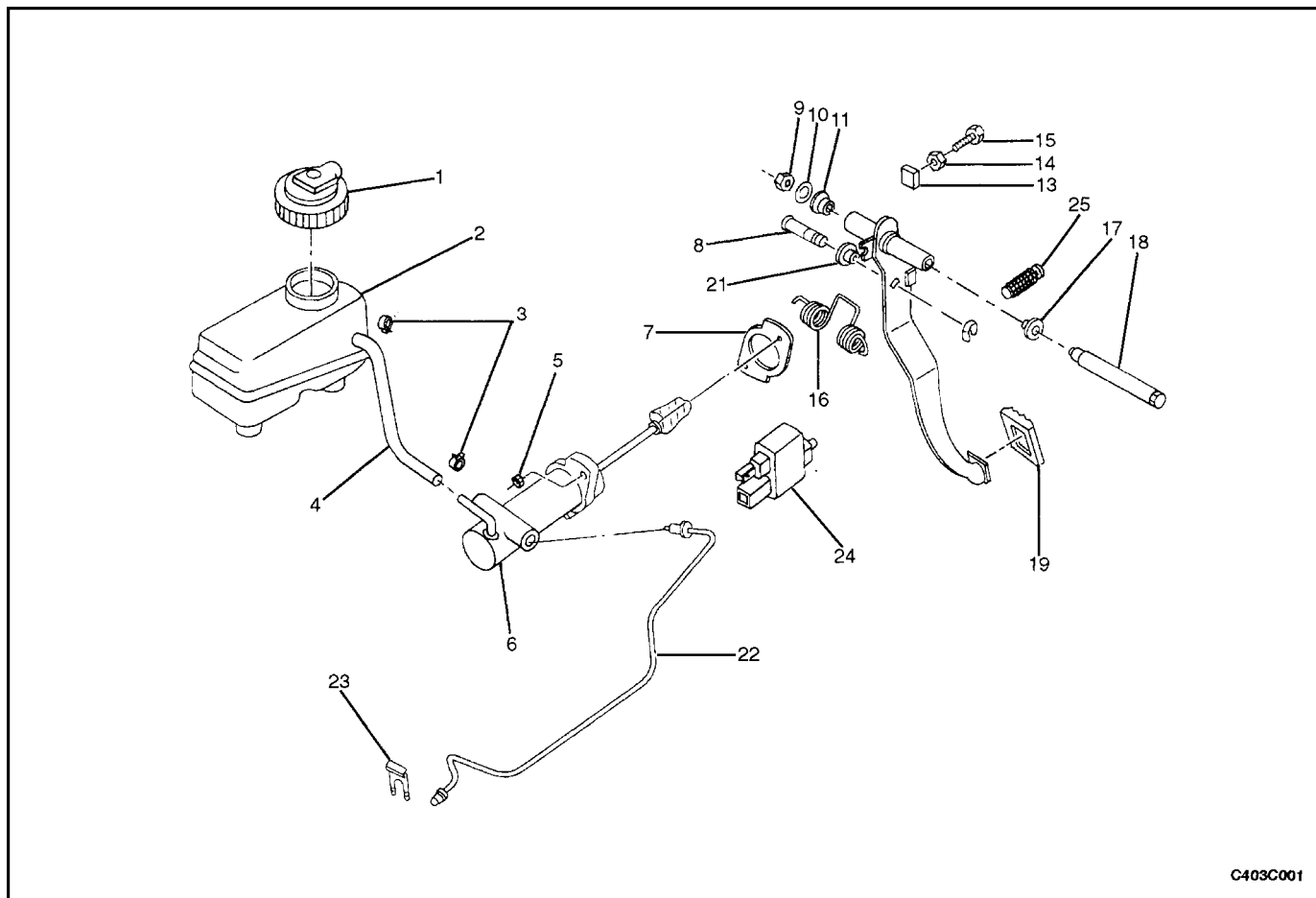
COMPONENT LOCATOR

HYDRAULIC CLUTCH COMPONENTS



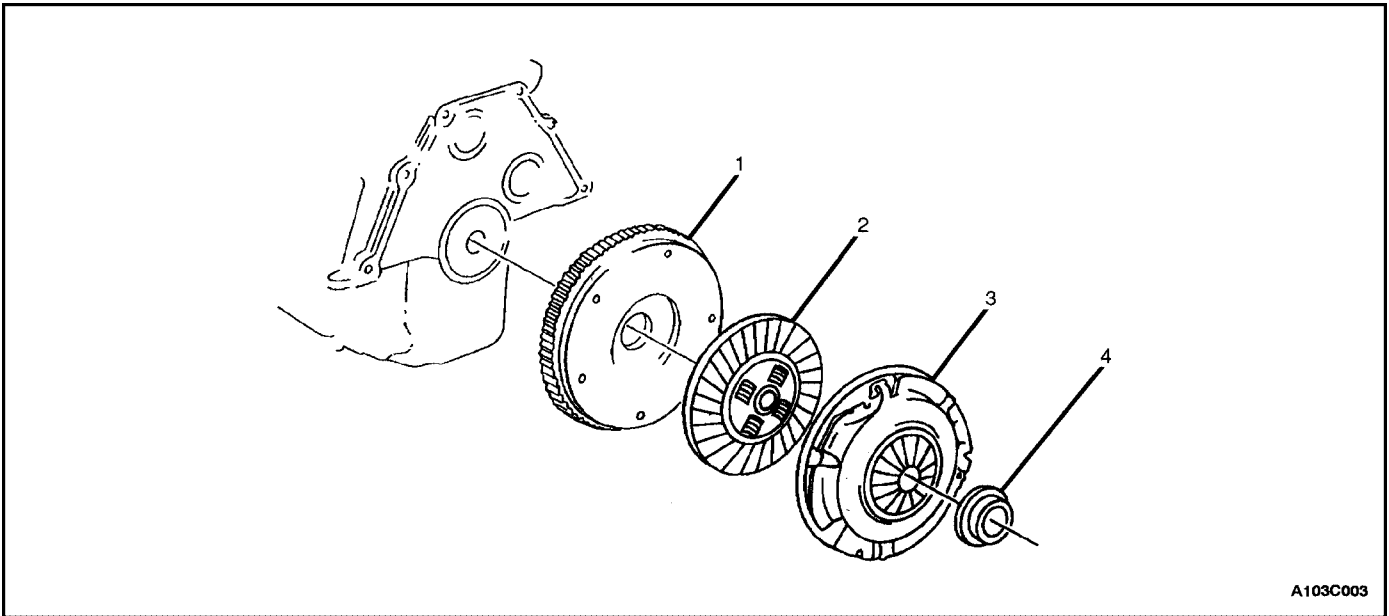
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- | | |
|------------------------------|--------------------------|
| 1. Release Lever | 16. O-ring |
| 2. Pipe | 17. Input Shaft Seal |
| 3. Clip | 18. Bearing Guide Sleeve |
| 4. Clamp | 19. Release Bearing |
| 5. Hose | 20. Fork |
| 6. Bolt | 21. Bushing |
| 7. Bolt | 22. Bolt |
| 8. Bolt | 23. Bolt |
| 9. Spring Washer | 24. Pressure Plate |
| 10. Release Cylinder Bracket | 25. Clutch Disc |
| 11. Release Cylinder | 26. Nut |
| 12. Air Bleeder | 27. Spring Washer |
| 13. Bolt | 28. Bushing |
| 14. Copper Washer | |
| 15. Bolt | |



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- | | |
|---------------------------|--|
| 1. Reservoir Cap | 14. Nut |
| 2. Clutch/Brake Reservoir | 15. Bolt |
| 3. Spring Clamps | 16. Return Spring |
| 4. Reservoir Hose | 17. Clutch Pedal Bushing |
| 5. Nut | 18. Pedal Mounting Shaft |
| 6. Master Cylinder | 19. Clutch Pedal Pad |
| 7. Gasket | 20. Locking Washer |
| 8. Piston Rod Bolt | 21. Clutch Pedal Bushing |
| 9. Nut | 22. Hydraulic Clutch Pipe |
| 10. Washer | 23. Clip |
| 11. Clutch Pedal Bushing | 24. Clutch Pedal Position Switch |
| 12. Clutch Pedal | 25. Clutch Pedal Position Switch Adjusting Screw |
| 13. Clutch Pedal Buffer | |



1. Flywheel
2. Clutch Disc

3. Pressure Plate
4. Release Bearing

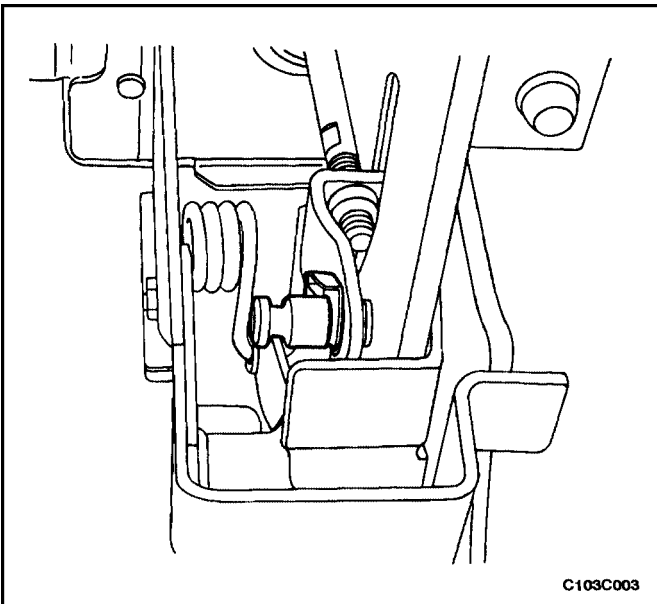
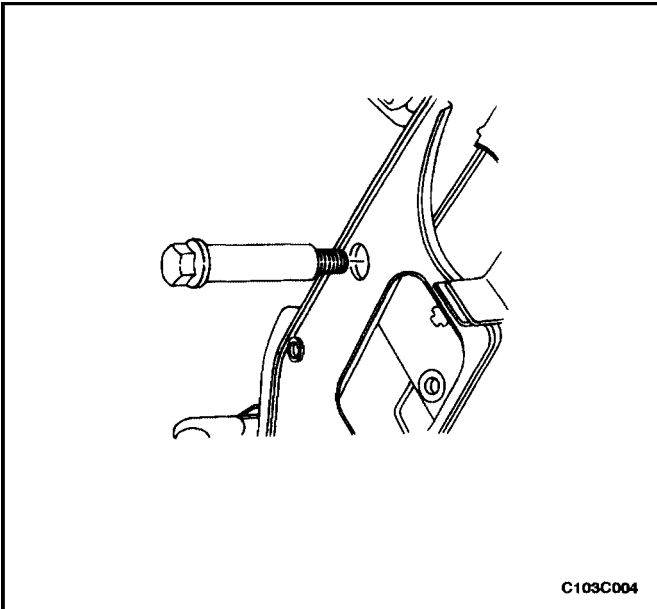
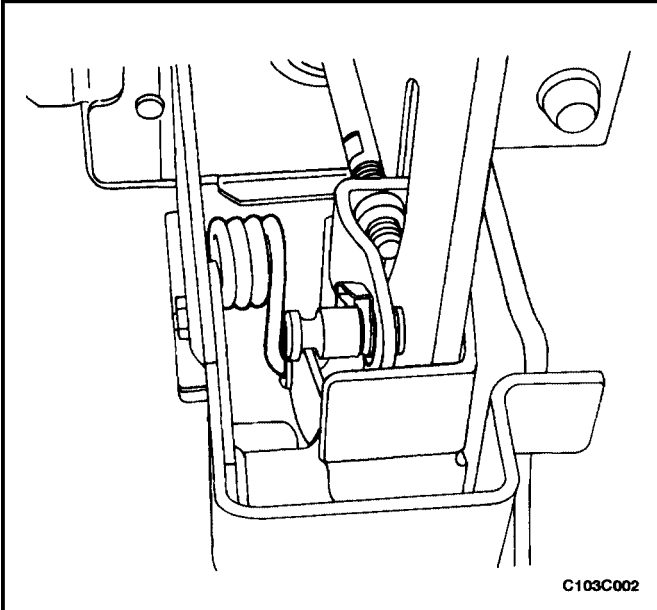
MAINTENANCE AND REPAIR

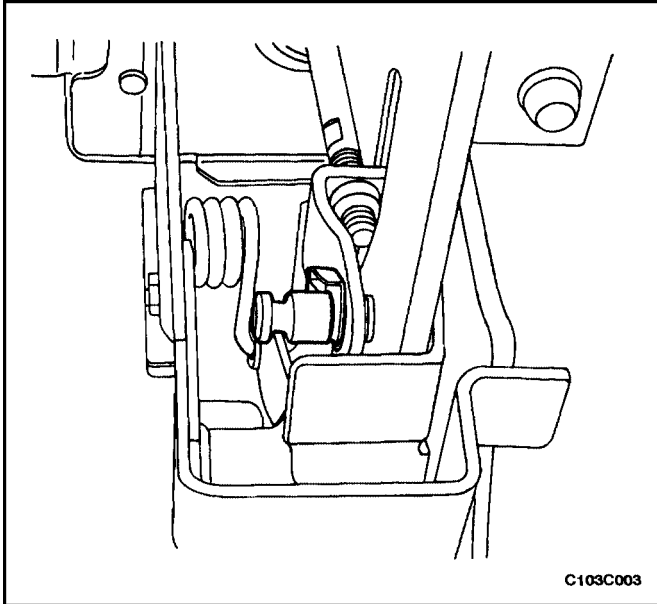
ON-VEHICLE SERVICE

CLUTCH PEDAL

Removal Procedure

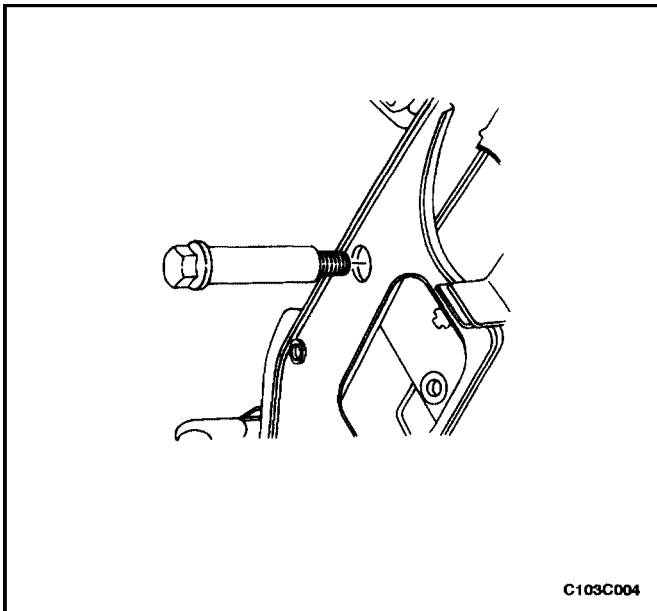
1. Disconnect the negative battery cable.
2. Disconnect the return spring from the mount brace.
3. Remove the nut, the washer, and the pedal mounting shaft.
4. Remove the locking washer and the piston rod bolt.
5. Remove the clutch pedal from the vehicle.





Installation Procedure

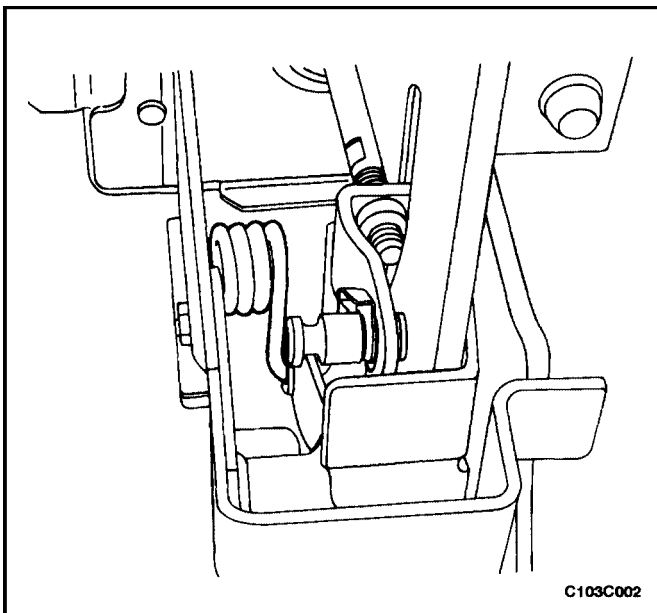
1. Install the clutch pedal to the mount brace. Make sure the return spring engages the notch on the rear of the clutch pedal.
2. Coat the piston rod bolt with multi-purpose grease.
3. Install the piston rod bolt and the locking washer.



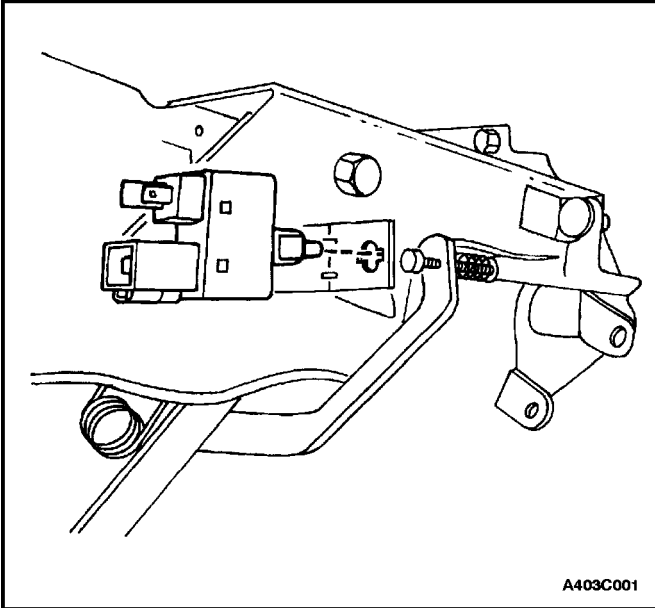
4. Coat the pedal mounting shaft with multi-purpose grease.
5. Install the pedal mounting shaft, the washer, and the nut.

Tighten

Tighten the clutch pedal nut to 18 N•m (13 lb–ft).



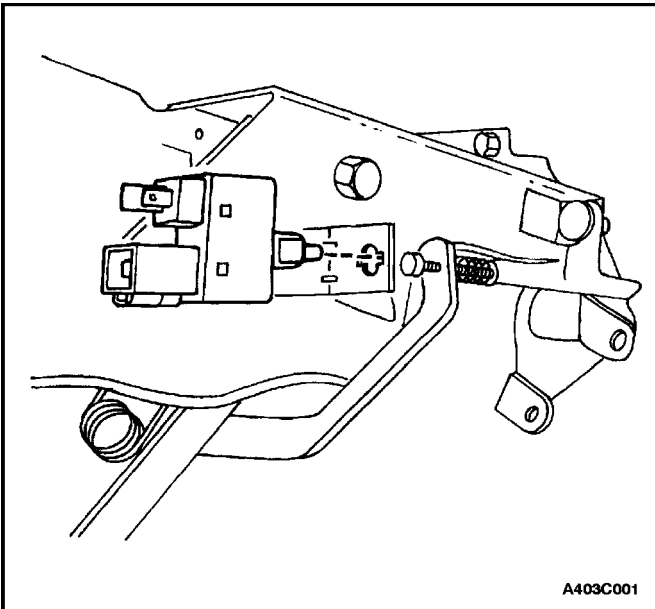
6. Connect the return spring to the mount brace.
7. Connect the negative battery cable.



CLUTCH PEDAL POSITION SWITCH

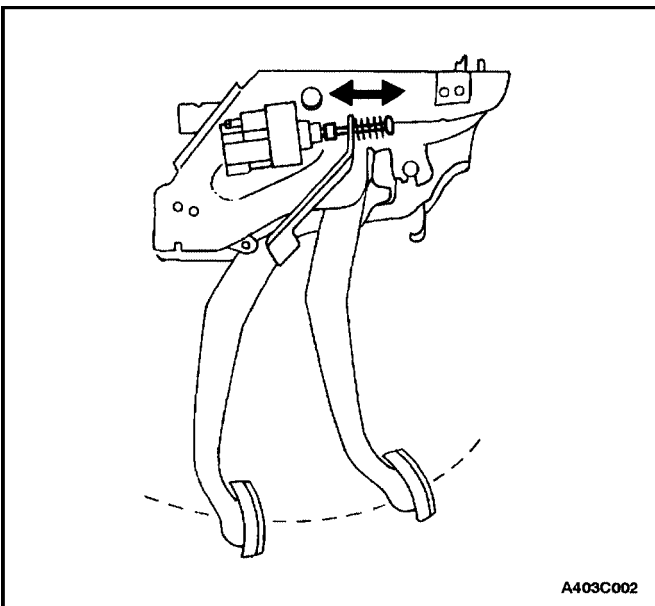
Removal Procedure

1. Remove the clutch pedal position switch by rotating the switch and pulling it out from the rear of the clutch pedal bracket.
2. Disconnect the electrical connector.



Installation Procedure

1. Connect the electrical connector.
2. Install the clutch pedal position switch by inserting it in from the rear of the clutch pedal bracket and rotating the switch until it locks into position.

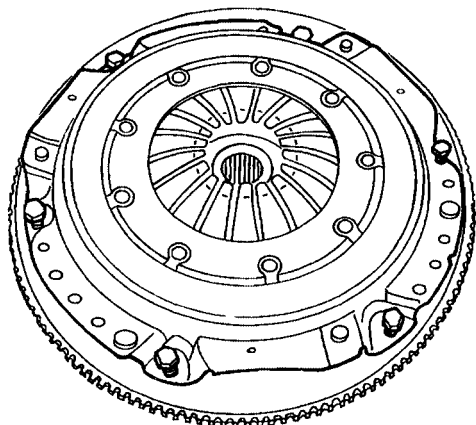


Adjustment Procedure

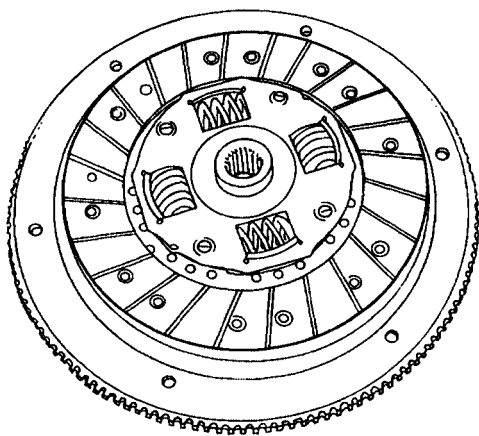
After installation, adjust the clutch pedal position switch in the following manner:

1. Check that the engine does not start when the clutch pedal is released.
2. Check that the engine does start when the clutch pedal is fully pressed. If engine does not start when the clutch pedal is fully pressed, turn the clutch pedal position switch adjusting screw in until the clutch pedal position switch is engaged and the engine will start. Do not adjust the screw so far down that it damages the clutch pedal position switch.

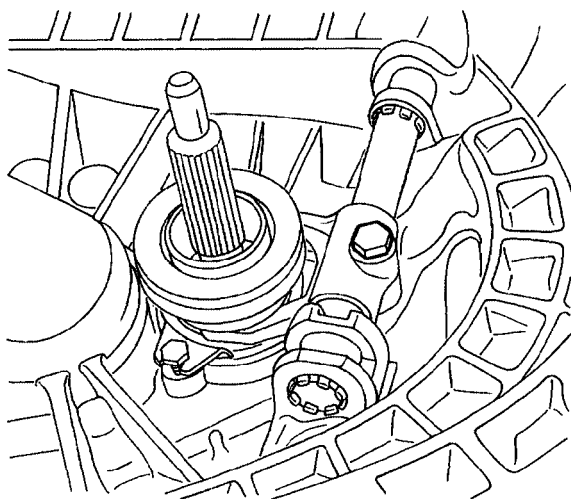
After the adjustment procedure, if the engine does start when the clutch pedal is released completely, replace the clutch pedal position switch.



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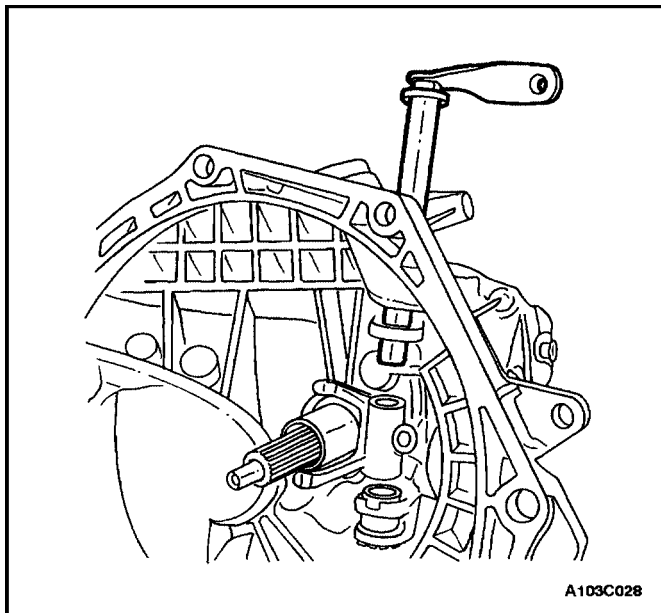


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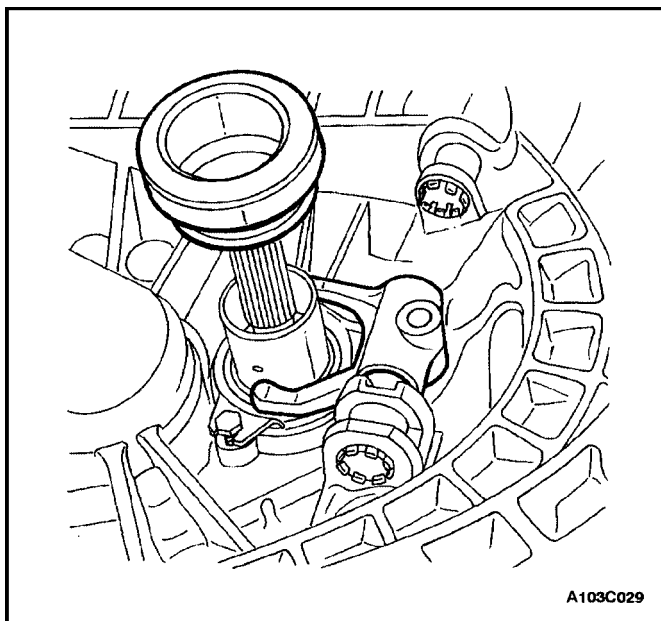
CLUTCH DISC AND RELATED COMPONENTS

Removal Procedure

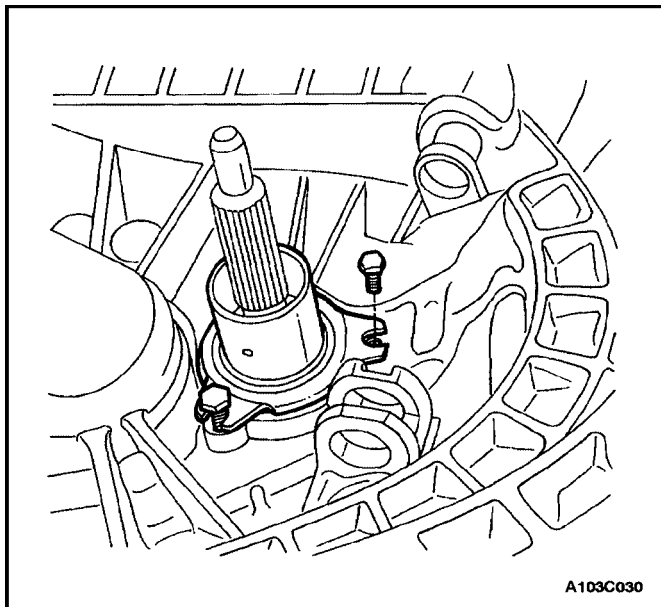
1. Disconnect the negative battery cable.
2. Raise and suitably support the vehicle.
3. Remove the left front wheel. Refer to *Section 2E, Tires and Wheels*.
4. Remove the engine under covers. Refer to *Section 9N, Frame and Underbody*.
5. Remove the transaxle from the vehicle. Refer to *Section 5B, Five-Speed Manual Transaxle*.
6. Remove the pressure plate bolts and the pressure plate. Support the pressure plate when removing the last bolt.
7. Remove the clutch disc.
8. Remove the release fork bolt.



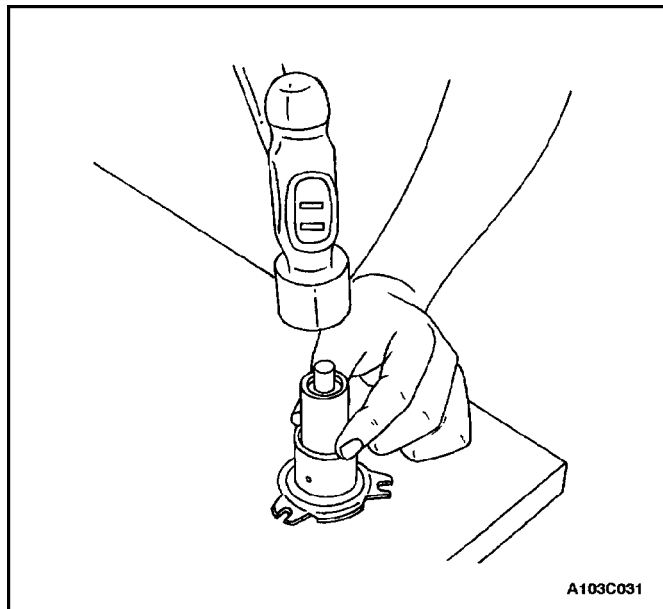
9. Pull the clutch release shaft upward, out of the transaxle.



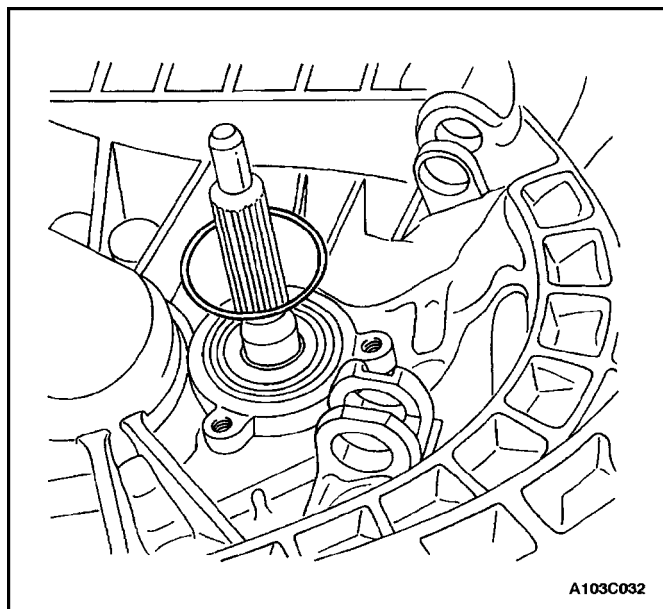
10. Remove the fork and the release bearing from the release bearing guide sleeve.



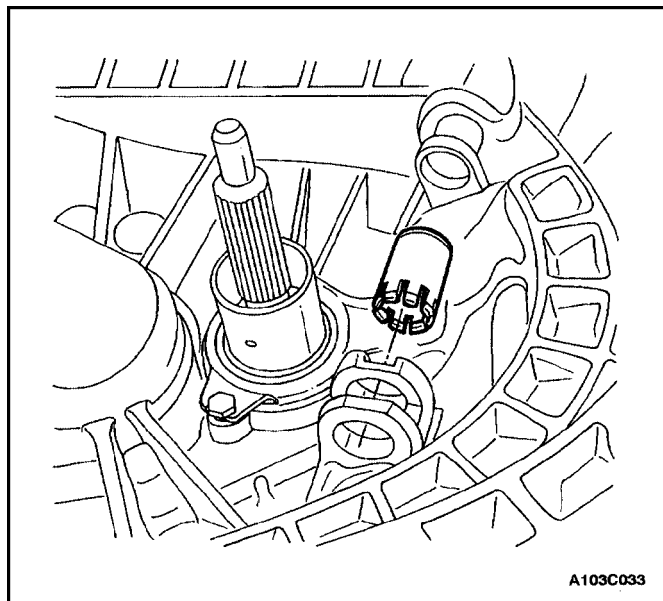
11. Remove the bolts and the release bearing guide sleeve.



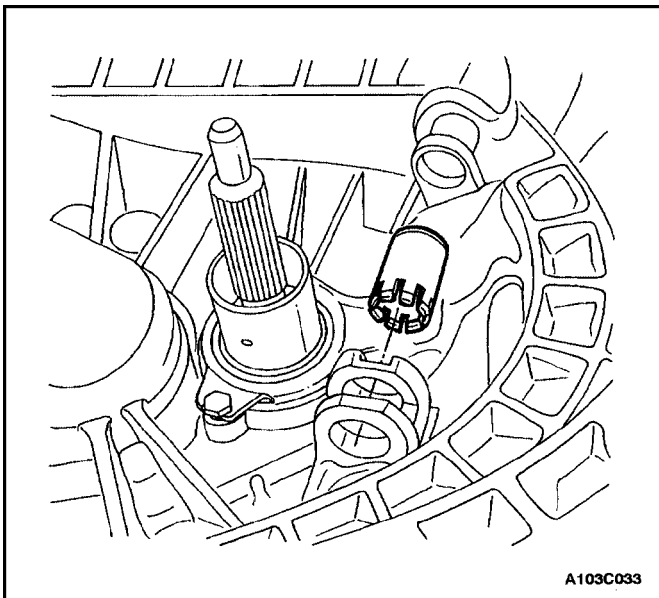
12. Remove the input shaft seal from the release bearing guide sleeve.



13. Remove the O-ring from the groove in the trans-axle case.



14. Remove the release lever shaft bushings.



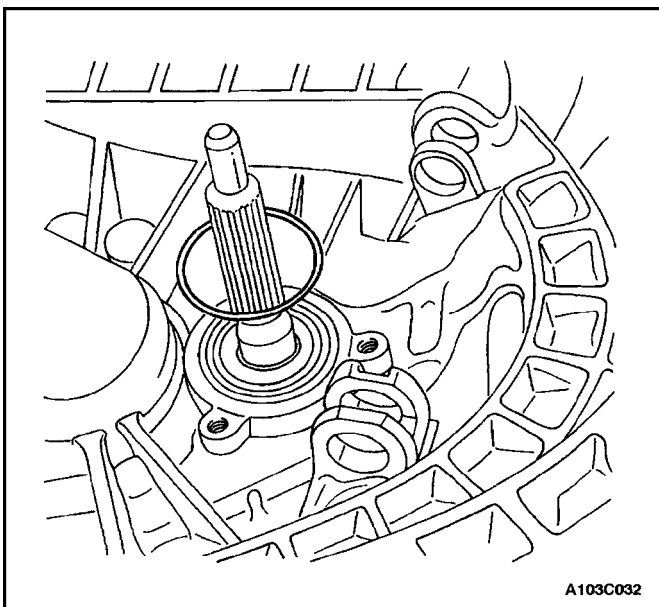
Installation Procedure

Tools Required

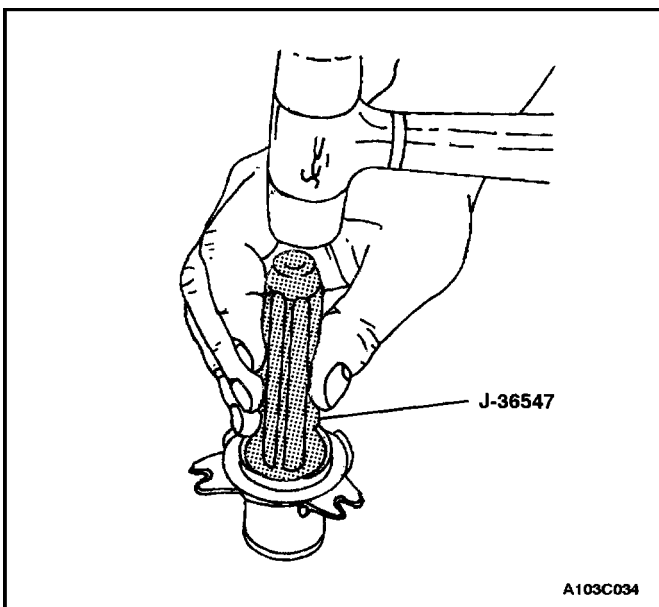
J-36547 Input Shaft Seal Installer

J-42474 Clutch Arbor

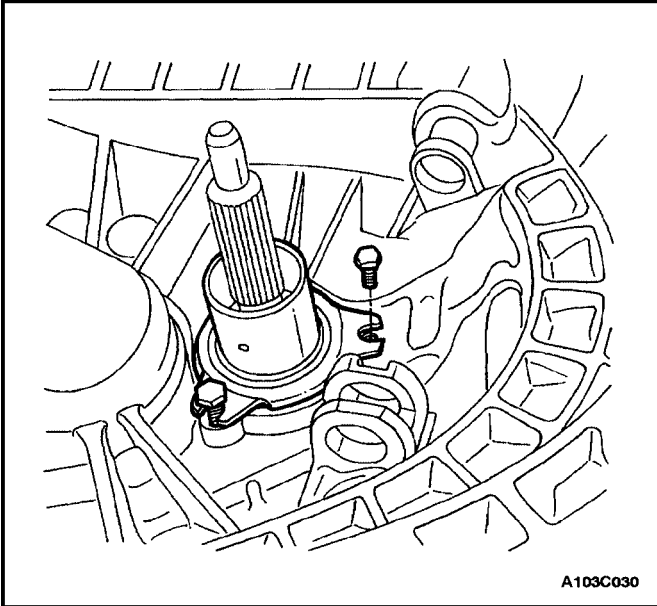
1. Install the release lever shaft bushings. Coat the bushing bores with multi-purpose grease.



2. Install the O-ring into the groove in the case.



3. Install the input shaft seal into the release bearing guide sleeve. Use input shaft seal installer J-36547 with a hammer.

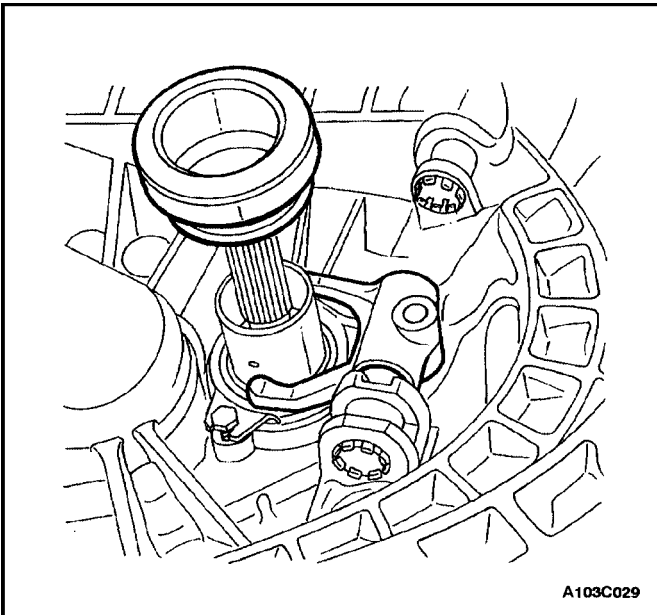


4. Install the release bearing guide sleeve and the bolts.

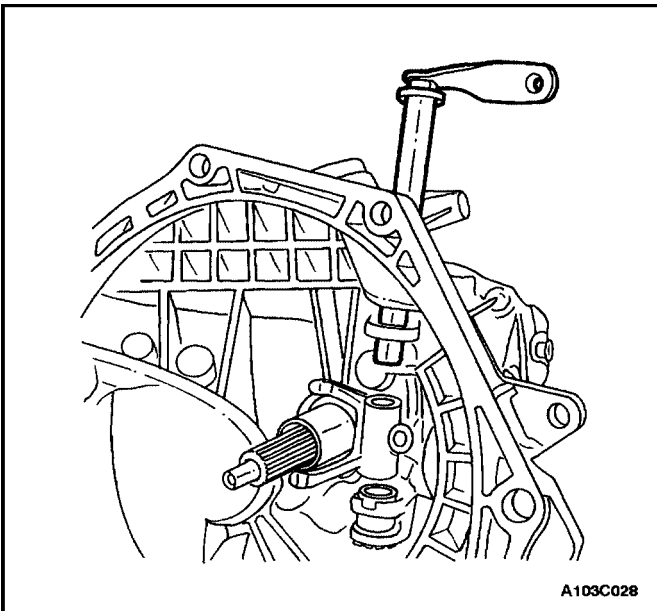
Tighten

Tighten the release bearing guide sleeve bolts to 5 N•m (44 lb-in).

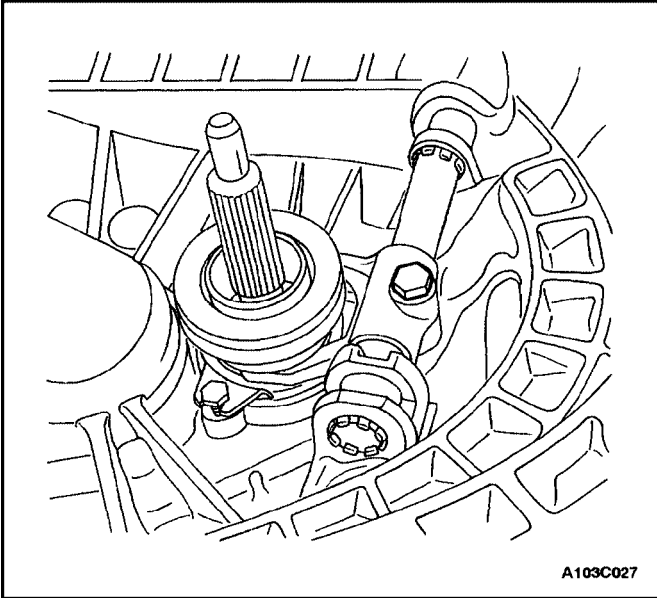
5. Coat the sleeve surface with multi-purpose grease.



6. Coat the release bearing bore with multi-purpose grease.
7. Install the release bearing, with the clutch fork, onto the release bearing guide sleeve.



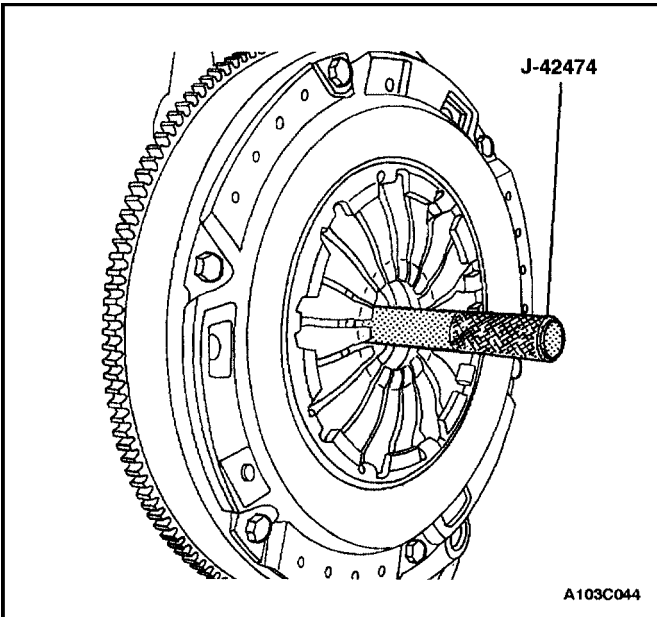
8. Install the release lever shaft from the top of the transaxle. Guide the shaft through the clutch fork.



9. Align the shaft to the fork and install the bolt.

Tighten

Tighten the clutch fork-to-release lever shaft bolt to 35 N•m (26 lb-ft).



10. Coat the spline on the clutch disc with multi-purpose grease.
11. Align the pressure plate and the clutch disc onto the flywheel using the clutch arbor J-42474.
12. Install the pressure plate bolts.

Tighten

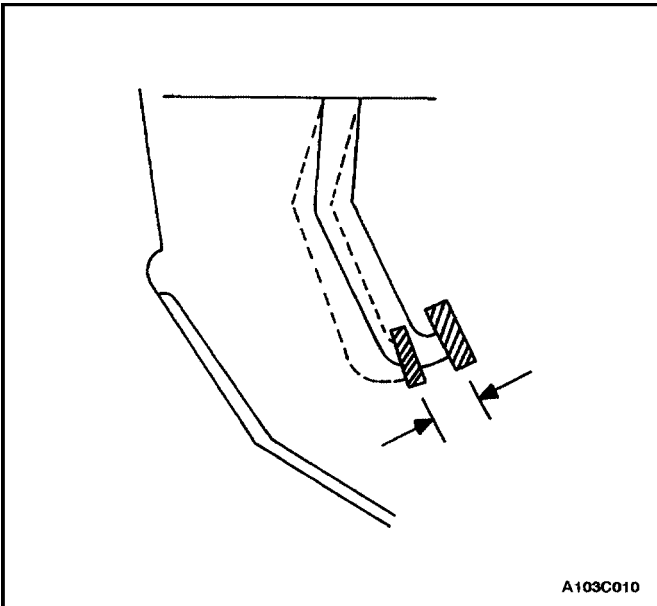
Tighten the pressure plate-to-flywheel bolts to 15 N•m (11 lb-ft).

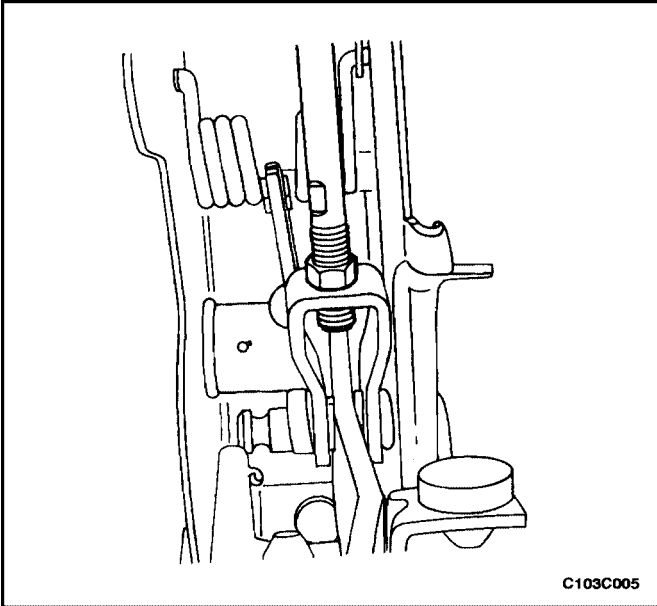
13. Remove the clutch arbor J-42474.
14. Install the transaxle into the vehicle. Refer to *Section 5B, Five-Speed Manual Transaxle*.
15. Install the engine under covers. Refer to *Section 9N, Frame and Underbody*.
16. Install the left front wheel. Refer to *Section 2E, Tires and Wheels*.
17. Lower the vehicle.
18. Connect the negative battery cable.

CLUTCH PEDAL ADJUSTMENT (HYDRAULIC)

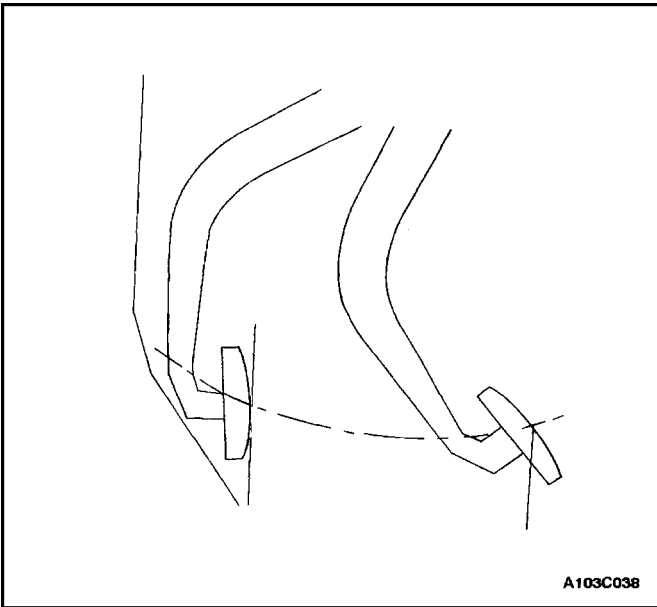
Adjustment Procedure

1. Determine the clutch pedal play. Press the clutch pedal lightly with your hand and measure the distance when resistance is felt.

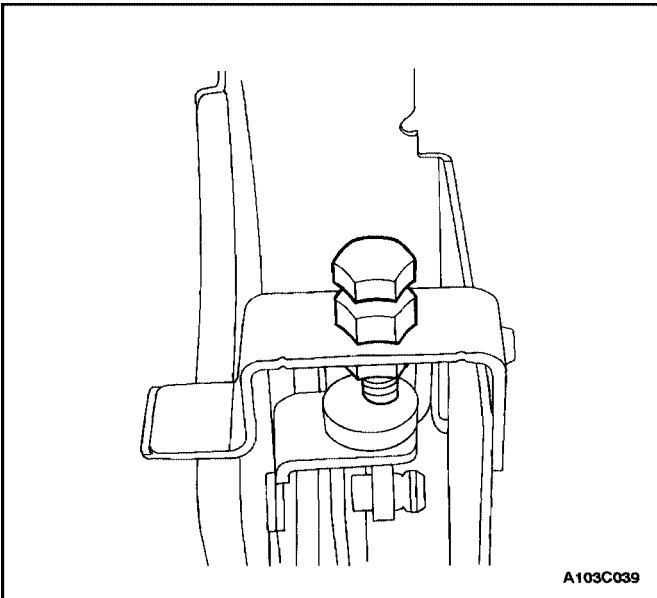




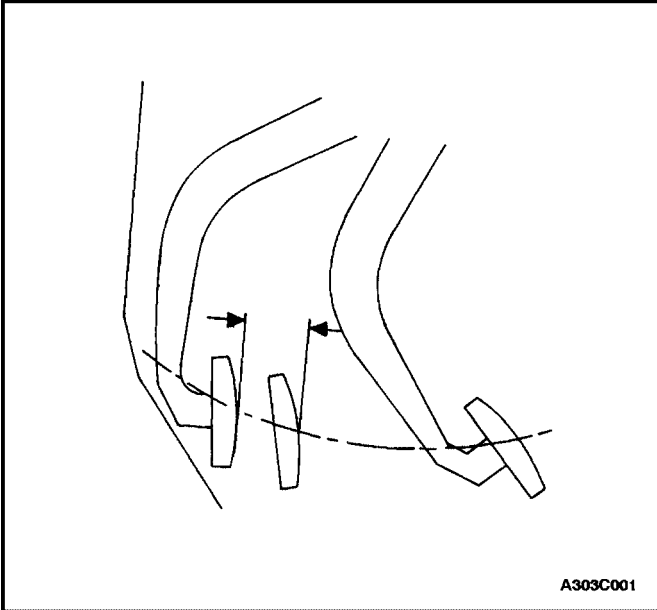
2. Adjust the clutch pedal play. Loosen the locknut and turn the pushrod. Clutch pedal play should measure 6 to 12 mm (0.2 to 0.5 inch). Tighten the locknut after adjustment.



3. Measure the clutch pedal travel. Press the clutch pedal all the way to the floor. Measure from the starting position to the ending position.



4. Adjust the clutch pedal travel. Loosen the locknut and turn the bolt. Clutch pedal travel should measure more than 140 mm (5.5 inches). Tighten the locknut after adjustment.



CLUTCH RELEASE POINT ADJUSTMENT (HYDRAULIC)

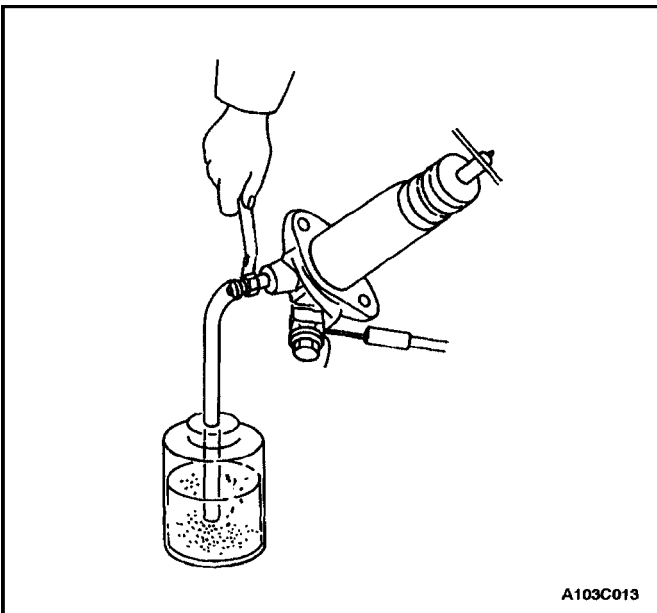
Adjustment Procedure

1. Apply the parking brake.
2. Run the engine at idle speed.
3. While moving the shift lever into the reverse position, press the clutch pedal slowly and measure the distance between the point when gear noise is not heard and the point when the clutch pedal is completely pressed. The distance should be more than 30 mm (1.2 inches).
4. If the distance is not more than 30 mm (1.2 inches), check the following:
 - Clutch pedal height.
 - Clutch pedal play.
 - Air in the system.
 - Clutch cover and disk.

AIR BLEEDING

Bleed the hydraulic system to remove the air which entered when the pipes were disconnected for repairs. The clutch/brake fluid in the clutch/brake reservoir must be maintained at the MIN level or higher during air bleeding.

1. Attach a vinyl hose to the bleeder plug. Place the other end of the vinyl tube in a glass container half-filled with brake fluid.
2. Slowly pump the clutch pedal several times.
3. While pressing the clutch pedal, loosen the bleeder screw until the fluid starts to run out. Close the bleeder screw.
4. Repeat Step 3 until there are no air bubbles in the fluid.
5. Fill the reservoir with brake fluid up to the MAX level.

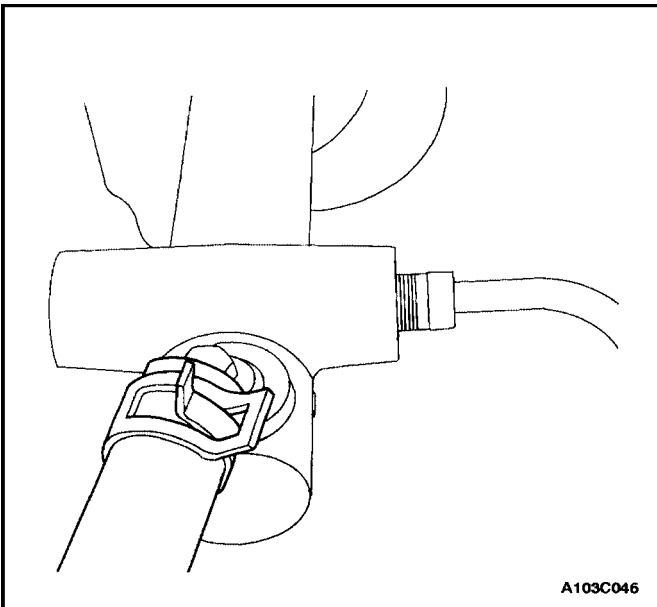


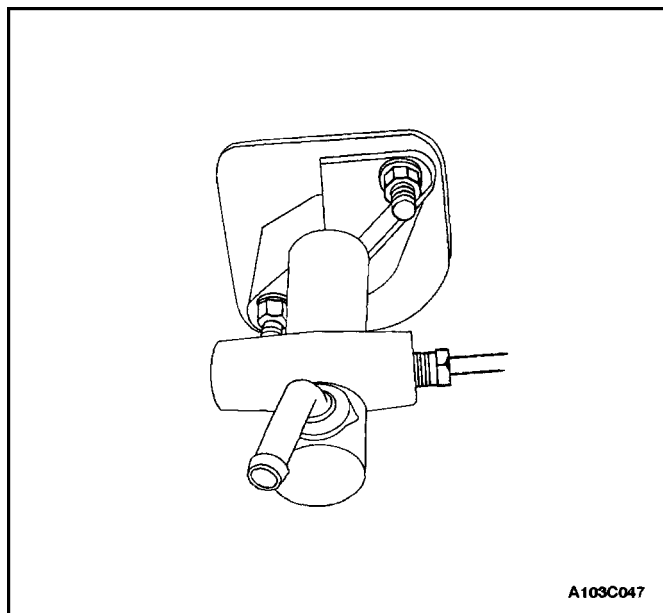
CLUTCH MASTER CYLINDER ASSEMBLY

Removal Procedure

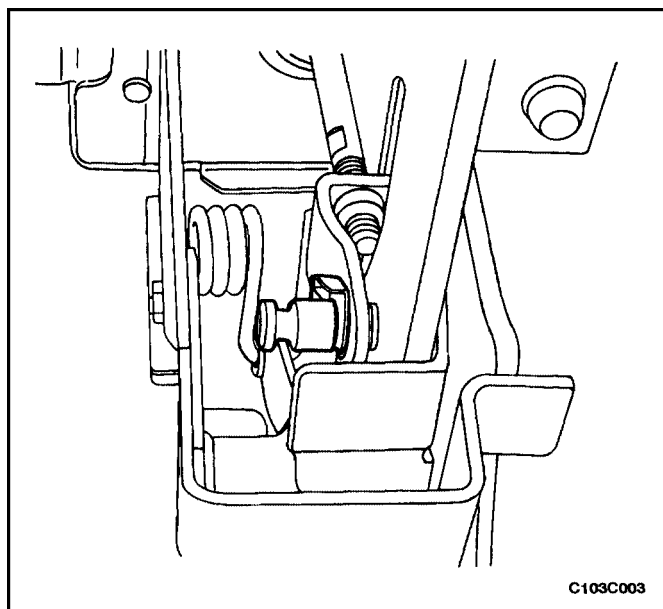
Before disconnecting the reservoir tank hose, remove the clutch/brake fluid from the reservoir tank.

1. Disconnect the negative battery cable.
2. Disconnect the spring clamp on the master cylinder. Remove the reservoir hose.

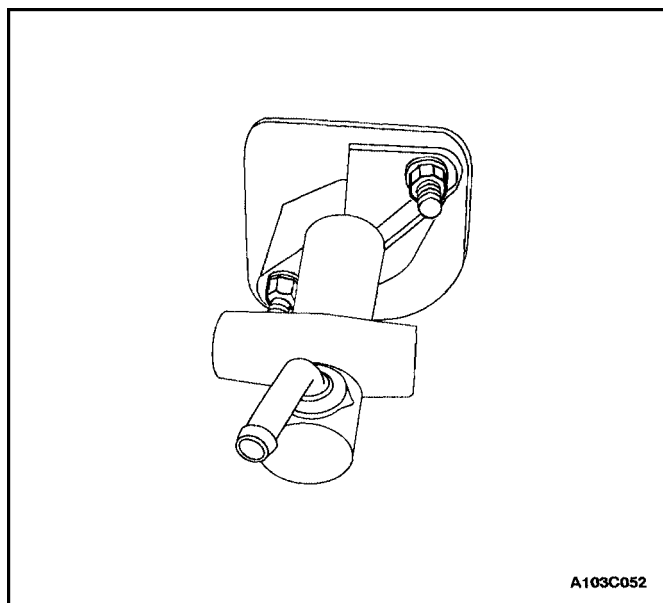




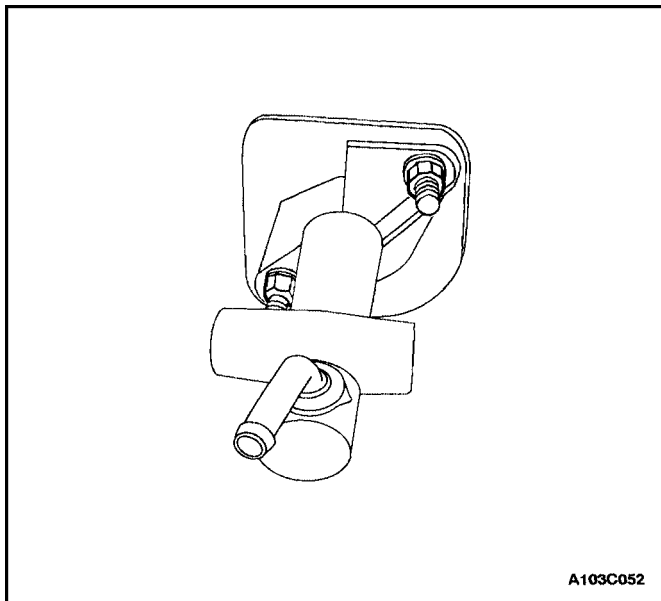
3. Disconnect the pipe connected to the master cylinder.



4. Remove the locking washer and the piston rod bolt from the clutch pedal and the piston rod clevis.



5. Remove the locknuts on the master cylinder bracket. Remove the master cylinder in the direction of the engine compartment.

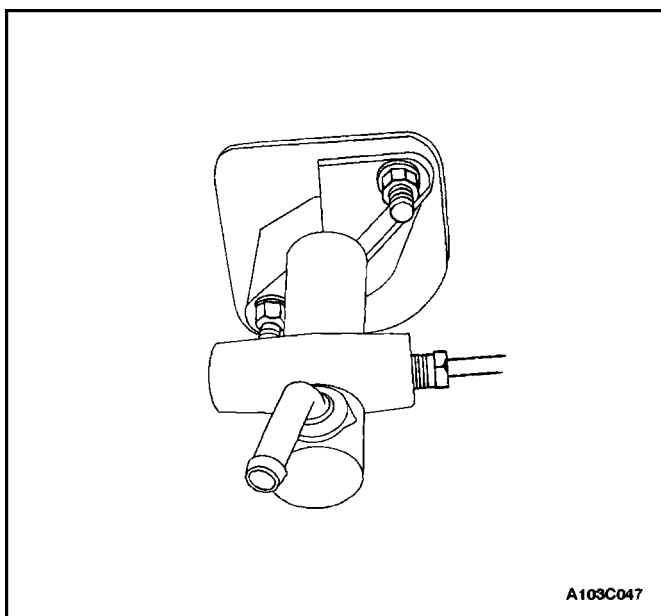


Installation Procedure

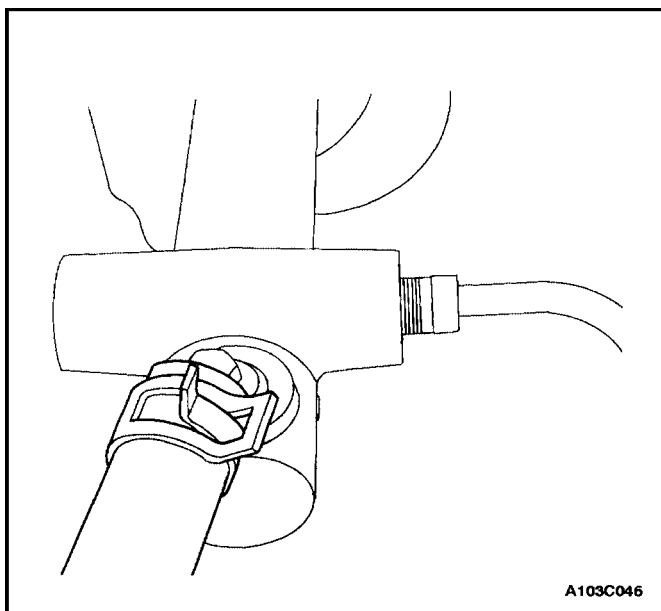
1. Install the master cylinder to the mounting bolts and install the locknuts.

Tighten

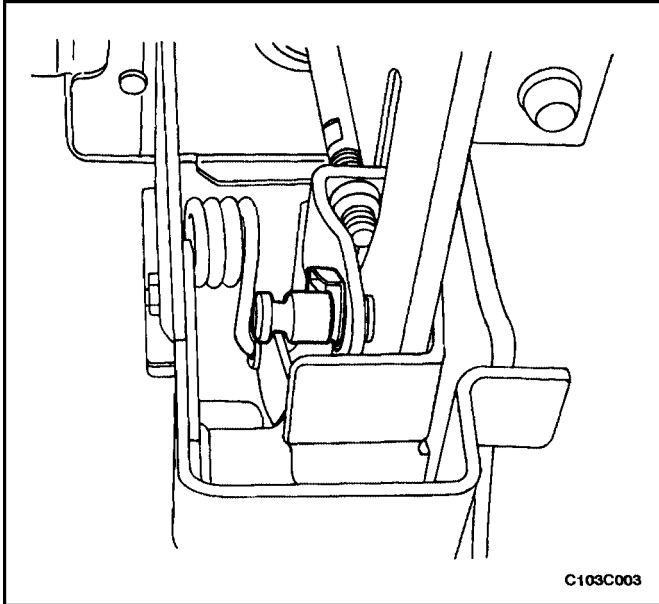
Tighten the clutch master cylinder locknuts to 22 N•m (16 lb–ft).



2. Connect the pipe to the master cylinder.



3. Connect the reservoir hose to the master cylinder and tighten the spring clamp.

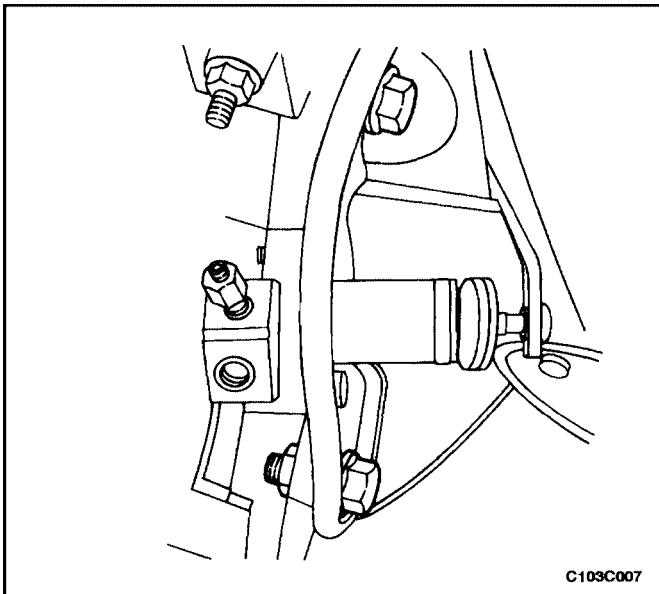
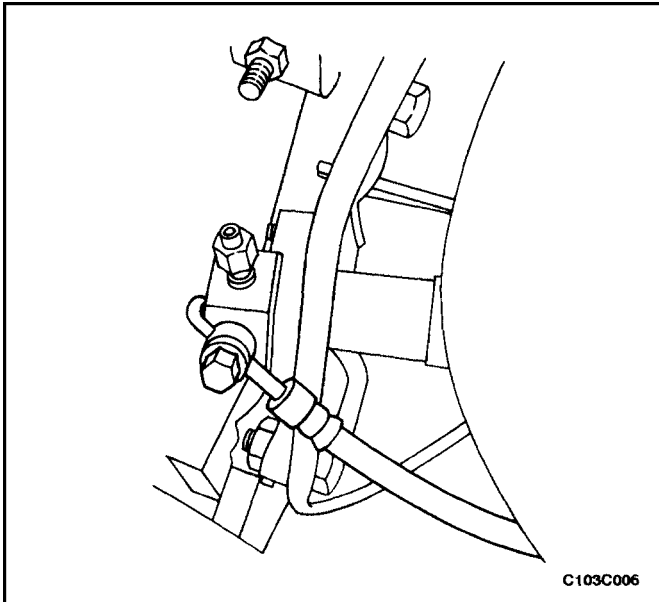


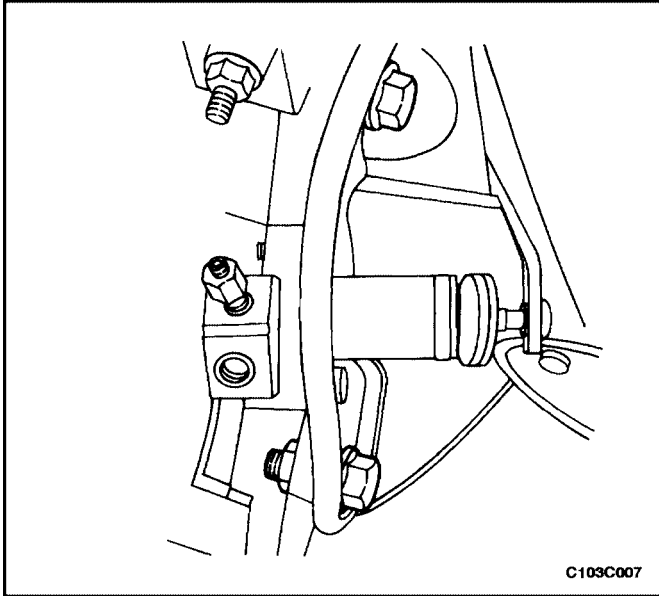
4. Coat the piston rod bolt with multi-purpose grease.
5. Install the piston rod clevis, the piston rod bolt, and the locking washer onto the clutch pedal.
6. Bleed the air. Refer to "Air Bleeding" in this section.
7. Adjust the clutch pedal. Refer to "Clutch Pedal Adjustment (Hydraulic)" in this section.
8. Fill the reservoir with clutch/brake fluid up to the MAX level.
9. Connect the negative battery cable.

CLUTCH RELEASE CYLINDER ASSEMBLY

Removal Procedure

1. Disconnect the negative battery cable.
2. Remove the bolt and disconnect the hose from the clutch release cylinder.
3. Remove the clutch release cylinder bolts and remove the release cylinder from the transaxle.



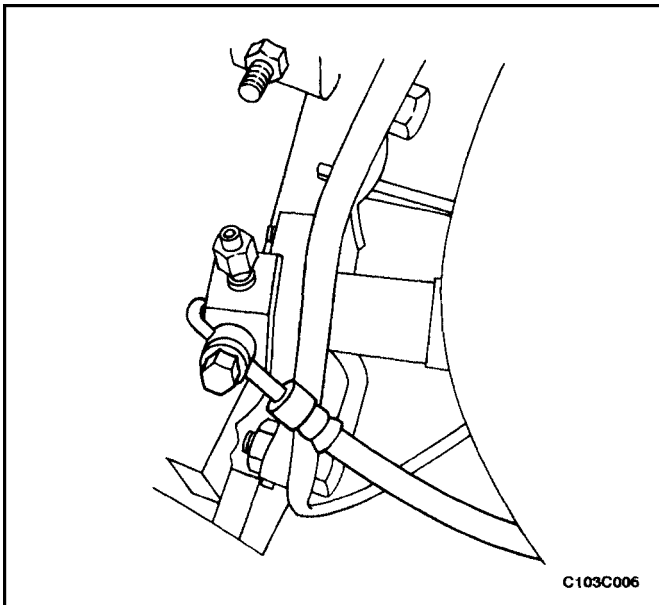


Installation Procedure

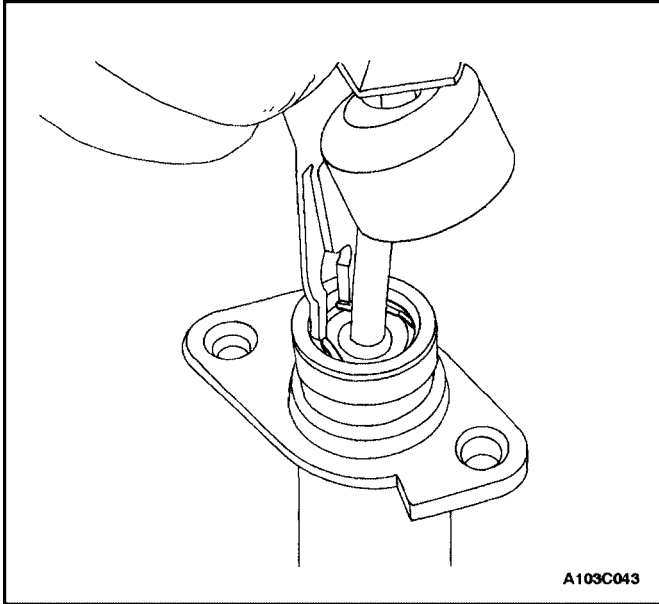
1. Connect the release cylinder to the transaxle and install the bolts.

Tighten

Tighten the release cylinder bolts to 60 N•m (44 lb–ft).



2. Connect the hose assembly to the cylinder body.
3. Apply grease where the pushrod connects to the release lever. Be careful not to stain the boot.
4. Bleed the air. Refer to "Air Bleeding" in this section.
5. Adjust the clutch pedal. Refer to "Clutch Pedal Adjustment (Hydraulic)" in this section.
6. Fill the reservoir with clutch/brake fluid up to the MAX level.
7. Connect the negative battery cable.

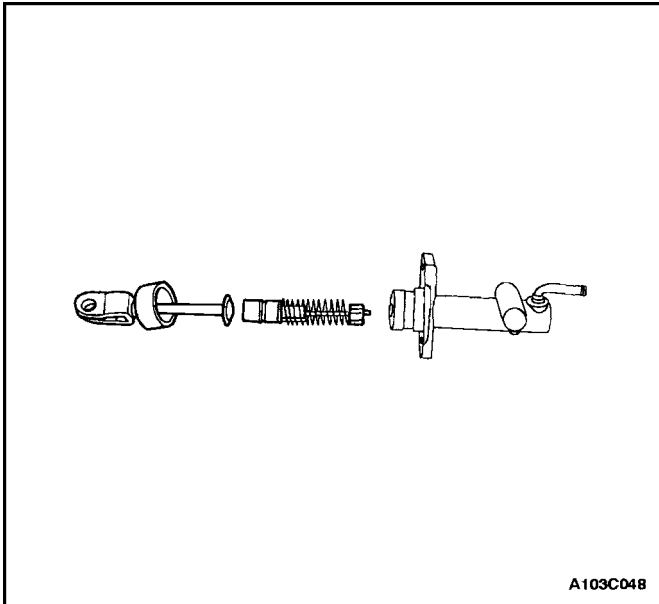


UNIT REPAIR

CLUTCH MASTER CYLINDER

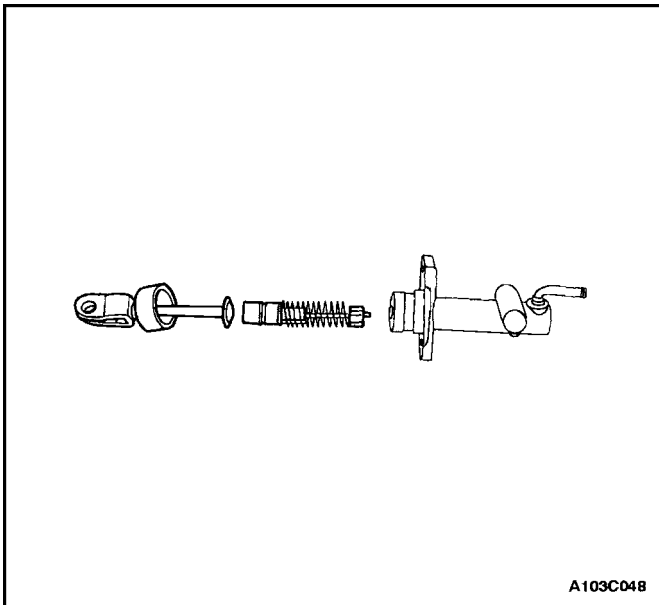
Disassembly Procedure

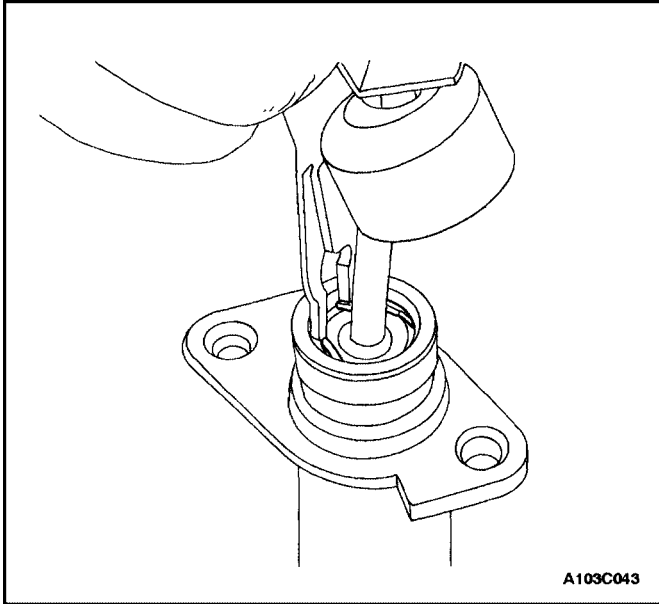
1. Remove the clutch master cylinder assembly from the vehicle. Refer to "Clutch Master Cylinder Assembly" in this section.
2. Remove the boot and disconnect the piston stop ring using ring pliers.
3. Remove the pushrod assembly and the piston assembly.
4. Inspect the clutch master cylinder wall and the piston for wear. Replace the piston, if necessary.
5. Inspect the cup and the piston for wear. Fluid leaks will show wear on the cup and the piston. Replace the cup and the piston, if necessary.
6. Inspect the pushrod for wear. Repair the pushrod, if necessary.



Assembly Procedure

1. Apply clean fluid to the piston assembly cup and insert the piston assembly and the pushrod assembly into the master cylinder body.



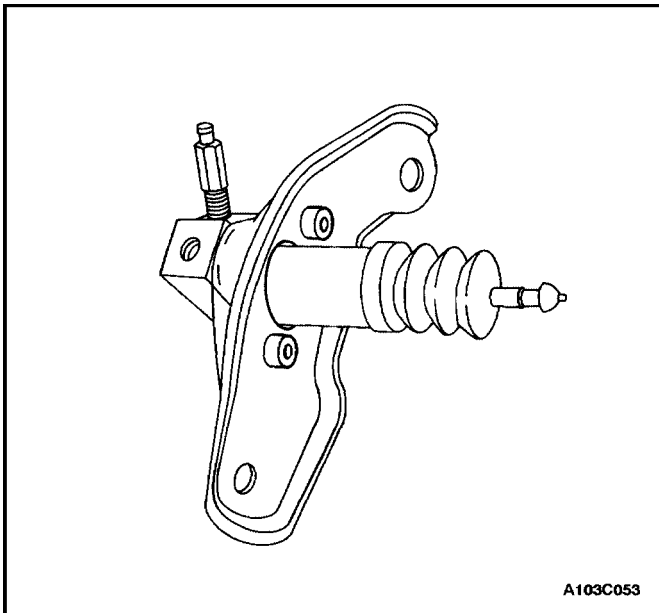


2. Install the piston stop ring using ring pliers. Install the boot.
3. Install the clutch master cylinder assembly into the vehicle. Refer to "Clutch Master Cylinder Assembly" in this section.

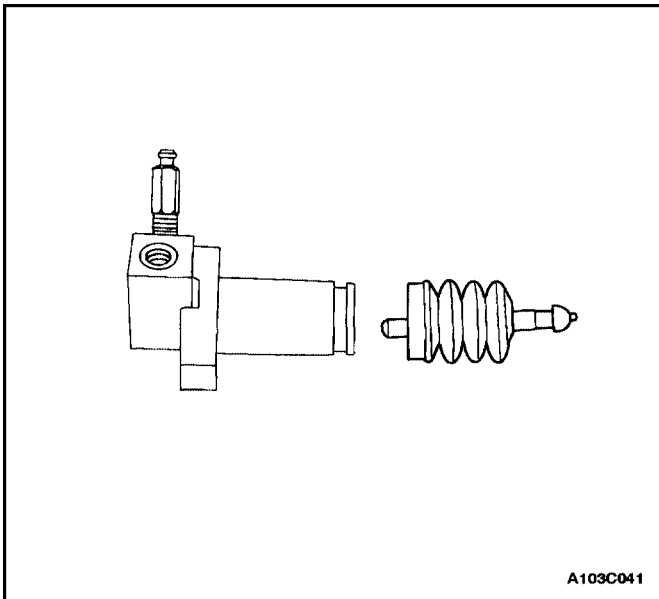
CLUTCH RELEASE CYLINDER

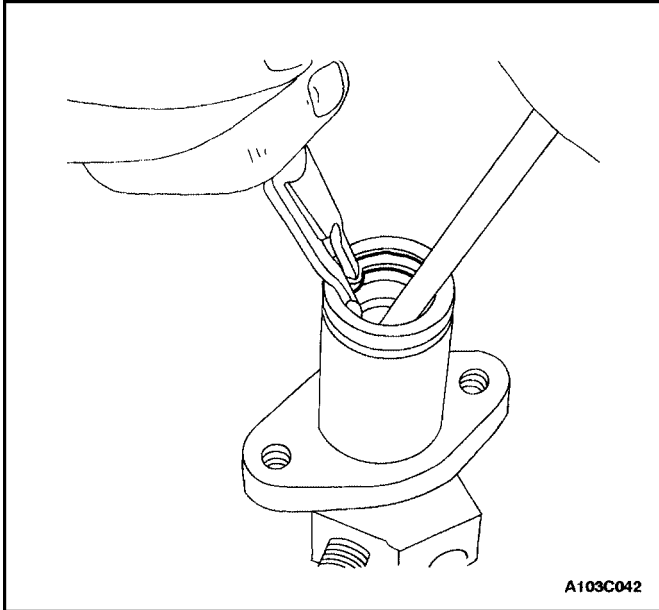
Disassembly Procedure

1. Remove the clutch release cylinder assembly from the vehicle. Refer to "Clutch Release Cylinder Assembly" in this section.
2. Remove the bolts and the bracket.

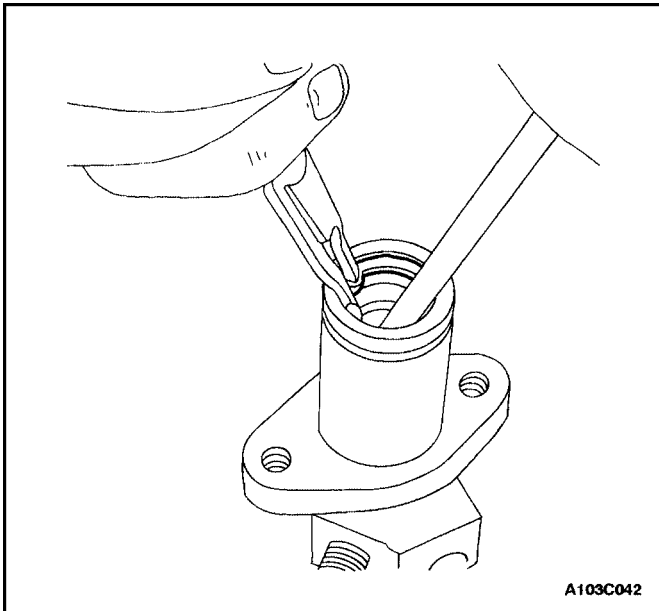


3. Remove the boot and the pushrod.



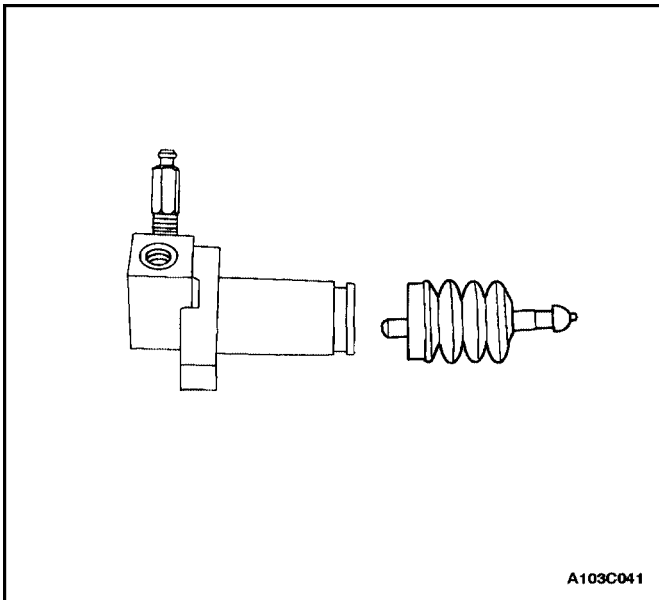


4. Compress the piston with a driver, and remove the snap ring with snap ring pliers.
5. Remove the piston assembly.

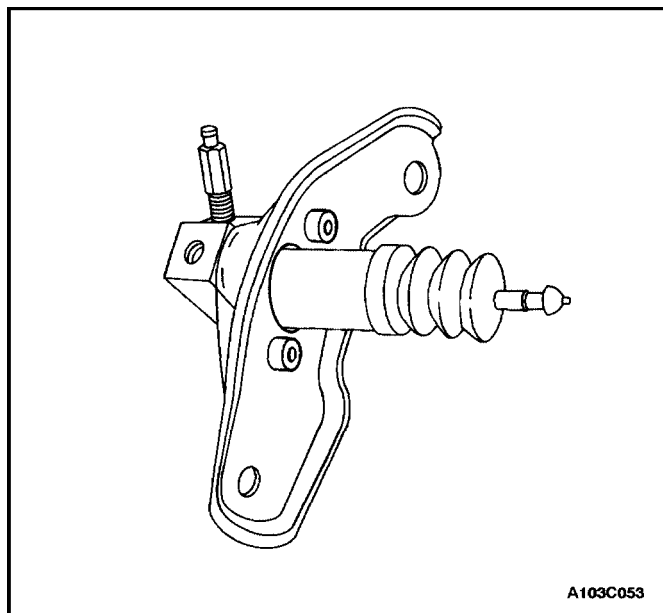


Assembly Procedure

1. Apply clean clutch fluid to the piston and the cup.
2. Install the spring to the piston, and insert the assembly into the cylinder body.
3. Compress the piston with a driver, and install the snap ring with snap ring pliers.



4. Install the push rod and the boot.



5. Install the bracket and the bolts.
6. Install the clutch release cylinder assembly. Refer to "Clutch Release Cylinder Assembly" in this section.

GENERAL DESCRIPTION AND SYSTEM OPERATION

DRIVING MEMBERS

The driving members consist of two 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.

The splined hub is free to slide lengthwise along the splines of the input shaft and 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 shaft, the fork, and the release bearing. When pressure is applied to the clutch pedal, the fork pivots on its shaft and the inner end pushes against the release bearing. The bearing then pushes against the release levers in the pressure plate assembly, thereby releasing the clutch.