SECTION 7C

CLUTCH

CAUTION: When servicing clutch parts, do not create dust by grinding or sanding clutch disc of by cleaning parts with a dry brush or with compressed air. (A water dampened cloth "NOT SOAKED" should be used.) The clutch disc contains asbestos fibers which can become airborne if dust is created during servicing. Breathing dust containing asbestos fibers may cause serious bodily harm.

NOTICE: Always use the correct fastener in the proper location. When you replace a fastener, use ONLY the exact part number for that application. General Motors will call out those fasteners that require a replacement after removal. General Motors will also call out the fasteners that require thread lockers or thread sealant. UNLESS OTHERWISE SPECIFIED, do not use supplemental coatings (paints, greases, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and joint clamping force, and may damage the fastener. When you install fasteners, use the correct sequence and tightening specifications. Following these instructions can help you avoid damage to parts and systems.

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GENERAL DESCRIPTION

PRINCIPAL COMPONENTS

The clutch assembly contains three major components: The clutch disc, the pressure plate and the clutch release bearing (Figure 1). The clutch disc is a single, dry disc fitted with four torsional coil springs which help to reduce shock upon engine engagement with the transmission. The hub of the clutch disc is splined to the transmission input shaft causing the transmission input shaft to turn when the clutch disc is engaged. The pressure plate cover, which contains the pressure plate and its diaphragm spring, is bolted to the engine flywheel. Pressure on the the diaphragm spring is controlled by a set of tapering levers which surround the diaphragm spring. The clutch release bearing rests against the diaphragm

spring levers. When the clutch is engaged (clutch pedal released), the pressure plate presses the clutch disc against the flywheel causing the clutch disc to turn and rotate the transmission input shaft.

When the clutch disc is disengaged (clutch pedal depressed), the clutch release bearing pushes in on the diaphragm spring levers, releasing pressure against the clutch disc and disengaging engine torque to the transmission input shaft.

The clutch assembly is engaged and disengaged by a release shaft. This release shaft is connected to the clutch cable by the clutch release lever. The clutch cable is connected to the clutch pedal. When the clutch pedal is depressed, the clutch cable pulls the release lever and turns the release shaft. The release shaft pushes the release bearing into the diaphragm spring levers—releasing pressure against the clutch disc and disengaging it.

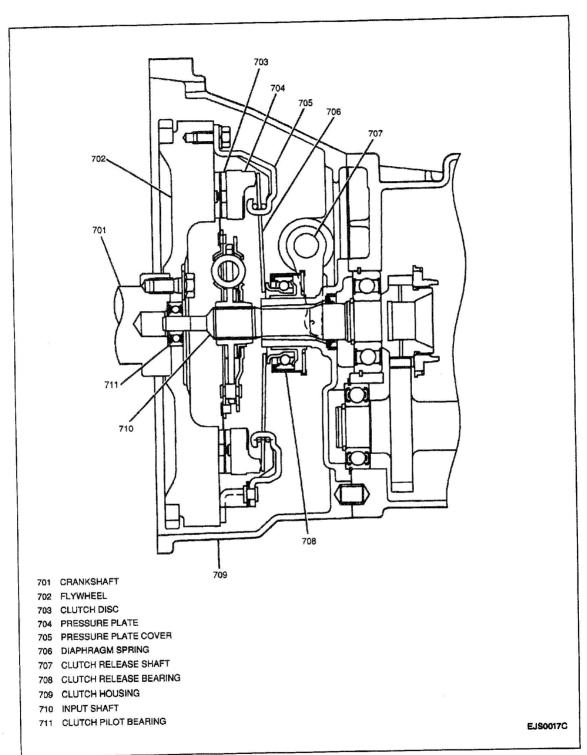


Figure 1—Clutch Components

Driving Members

The driving members consist of the flywheel and pressure plate. Both of these surfaces are machined to a smooth finish to produce little or no vibration or noise upon clutch engagement. The pressure plate is fitted inside the pressure plate cover and is not serviceable. If the pressure plate appears excessively worn or damaged upon inspection, the pressure plate and cover must be replaced as an assembly. The flywheel can be removed and machined if necessary. When removing the engine flywheel during clutch service, an index mark (reference mark) should be made in relation to its position on the engine crankshaft. If this precaution is not observed, an engine imbalance may result.

Driven Member

The driven member is a single clutch disc fitted with four torsional coil springs that are placed between the driven surface and the splined hub. These springs help reduce the shock of engine torque upon clutch engagement. The driven surface of the clutch disc consists of an asbestos material that is riveted onto the driven plate of the clutch disc and is resistant to frictional heat that can occur during clutch engagement and disengagement.

OPERATING MEMBERS

The operating members control clutch engagement/disengagement and are known as the clutch release system. The clutch release system consists of:

- · The clutch release bearing.
- · The clutch release shaft.
- The clutch release lever.
- The clutch cable.
- The clutch pedal shaft arm.
- The clutch pedal.

When the clutch pedal is depressed, the clutch pedal shaft causes the clutch pedal shaft arm to turn. As the clutch pedal shaft arm turns, it pulls on the clutch cable which is connected by a clevis to the clutch pedal shaft arm. The cable pulls on the clutch release lever which turns the clutch release shaft. As the clutch release shaft turns, it pushes the clutch release bearing into the pressure plate diaphragm spring levers. This releases the pressure plate from the clutch disc and disengages the engine from the transmission.

CLUTCH PEDAL POSITION (CPP) SWITCH

The CPP switch is mounted above the clutch pedal and contacts the clutch pedal lever. This switch is incorporated into the starter motor circuit to prevent the engine from being started with the clutch engaged or the transmission in gear. When the clutch pedal is not depressed, an open in the starter motor circuit exists preventing starter motor operation. When the clutch pedal is depressed, the circuit is closed, making the starter motor circuit complete and operational. For diagnosis of the CPP switch, refer to SECTION 8A.

DIAGNOSIS

PRELIMINARY CHECKS

Before attempting to repair the clutch, transmission or related components for any reason other than an obvious fault, the problem and probable cause should be identified. Most clutch and manual transmission problems are revealed by shifting difficulties such as high shift effort, gear clash or gear grinding. When any of these problems occur, a careful analysis of these conditions should be made before removing the clutch or transmission for repairs.



Inspect

- 1. Engine idle speed. Refer to SECTION 6E.
- 2. Clutch pedal height. Refer to "Clutch Pedal Height Adjustment" later in this section.
- 3. Clutch pedal free travel. Refer to "Clutch Pedal Free Travel Adjustment" later in this section.
- 4. Clutch cable for wear or damage. Refer to "Clutch Cable" later in this section.

CLUTCH "SPIN DOWN" TIME

- 1. Run the engine at normal idle with the transmission in neutral and the clutch engaged.
- Disengage the clutch (clutch pedal depressed), wait approximately nine seconds and shift the transmission into reverse.
- 3. If a grinding noise is heard, check the clutch for engagement.

After performing the preliminary checks and checking clutch spin down time, use the "Clutch Diagnosis Chart" to assist in proper diagnosis of clutch problems.

7C-4 CLUTCH

CONDITION	INSPECT COMPONENT	FOR PROBABLE CAUSE
FAILS TO RELEASE (PEDAL DEPRESSED TO	CLUTCH CABLE	IMPROPER PEDAL FREE TRAVEL ADJUSTMENT
FLOOR-GEARSHIFT CONTROL	CLUTCH PEDAL	FOREIGN OBJECT BETWEEN CLUTCH PEDAL AND FLOOR
IN AND OUT OF REVERSE GEAR WITHOUT GEAR CLASH)		IMPROPER PEDAL STOP ADJUSTMENT
	CLUTCH RELEASE BEARING	IMPROPERLY INSTALLED IN RELEASE SHAFT FORK
a	PRESSURE PLATE	LOOSE PRESSURE PLATE COVER BOLTS
	CLUTCH DISC	IMPROPER SPIN DOWN TIME- REFER TO "CLUTCH SPIN DOWN TIME"
SLIPPING	CLUTCH CABLE	IMPROPERLY ADJUSTED CAUSING PARTIAL CLUTCH ENGAGEMENT
	PRESSURE PLATE	WEAK DIAPHRAGM SPRING
	CLUTCH DISC	OIL CONTAMINATION (OIL SOAKED)
		EXCESSIVELY WORN, EXPLODED OR DAMAGED
GABBING (CHATTERING)	ENGINE MOUNTS	LOOSE OR WORN
GABBING (CHAITERING)	PRESSURE PLATE	WARPED PRESSURE PLATE SURFACE
		BURNED OR SMEARED RESIN ON PRESSURE PLATE SURFACE
	CLUTCH DISC	OIL CONTAMINATION (OIL SOAKED)
		EXCESSIVELY WORN, EXPLODED OR DAMAGED
		WORN OR BROKEN TORSION SPRINGS
		WORN SPLINES IN DISC HUB
	FLYWHEEL	FLYWHEEL SURFACE RUNOUT
	LAGE TTABLES	BURNED OR SMEARED RESIN ON FLYWHEEL SURFACE
	TRANSMISSION INPUT SHAFT	WORN OR DAMAGED SPLINES

Figure 2—Clutch Diagnosis Chart 1 of 2

CONDITION	INSPECT COMPONENT	FOR PROBABLE CAUSE
CLUTCH RELEASE BEARING NOISE WITH CLUTCH FULLY ENGAGED	CLUTCH RELEASE BEARING CLUTCH RELEASE SHAFT	IMPROPERLY INSTALLED WORN OR DAMAGED LOOSE OR WORN BUSHINGS
PEDAL STAYS ON FLOOR	CLUTCH CABLE CLUTCH PEDAL RETURN SPRING CLUTCH RELEASE SHAFT	BROKEN OR DISCONNECTED LOOSE OR MISPOSITIONED BINDING IN CLUTCH HOUSING
HARD PEDAL EFFORT	CLUTCH CABLE CLUTCH RELEASE SHAFT PRESSURE PLATE	BINDING OR MISADJUSTED BINDING IN CLUTCH HOUSING BINDING OR DAMAGED DIAPHRAGM SPRING

Figure 3—Clutch Diagnosis Chart 2 of 2

ON-VEHICLE SERVICE

CLUTCH PEDAL ASSEMBLY

Figures 4 through 7

++

Remove or Disconnect

? Important

• Before removing the clutch pedal shaft arm from the clutch pedal shaft, place a reference mark on the clutch pedal shaft and clutch pedal shaft arm to ensure correct assembly. If the clutch pedal shaft arm is installed in a position other than the one from which it was removed, the clutch release lever travel will increase or decrease resulting in a misadjusted clutch pedal.

- One nut, one bolt and clutch pedal shaft arm from clutch pedal shaft (Figure 5).
- 2. Clutch pedal return spring from brake pedal bracket (Figure 6).
- 3. Push clutch pedal in to clear the electronic brake control module (EBCM) and slide the clutch pedal to the left (Figure 7).
- Clutch pedal, clutch pedal return spring lever and clutch pedal return spring from brake pedal bracket.
- 5. Clutch pedal shaft bushings from brake pedal bracket (Figure 4).

10

Inspect

- Clutch pedal shaft and clutch pedal shaft bushings for excessive wear. Replace as necessary.
- Clutch pedal lever for distortion or bending. Replace as necessary.
- Clutch pedal return spring for distortion or weakness. Replace as necessary.

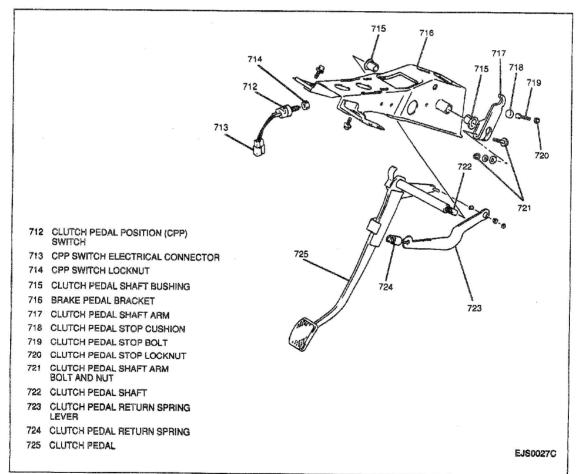


Figure 4—Clutch Pedal Components

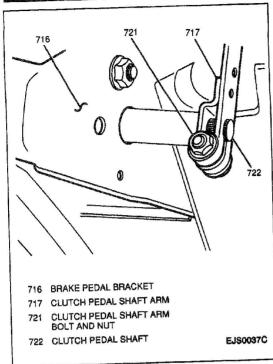


Figure 5-Clutch Pedal Shaft Arm

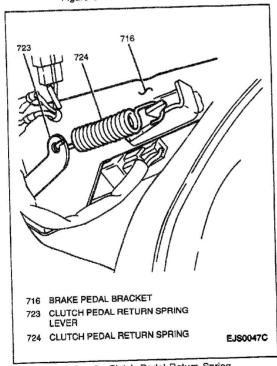


Figure 6-Clutch Pedal Return Spring

Install or Connect

- 1. Clutch pedal shaft bushings into brake pedal bracket (Figure 4).
- 2. Apply a thin coat of lithium grease to the inside of the clutch pedal shaft bushings.
- 3. Clutch pedal, clutch pedal return spring lever and clutch pedal return spring into brake pedal
- 4. Clutch pedal return spring to brake pedal bracket (Figure 6).
- 5. Clutch pedal shaft arm onto clutch pedal shaft aligning index marks made during removal; secure with one bolt and one nut (Figure 5).

Tighten

• Clutch pedal shaft arm bolt and nut to 24 N·m (17 lb. ft.).

| Important

• For clutch adjustment procedures, refer to "Clutch Pedal Height Adjustment" and "Clutch Pedal Free Travel Adjustment" later in this section.

CLUTCH PEDAL HEIGHT ADJUSTMENT

Figures 4 and 8

- 1. Loosen the clutch pedal stop locknut (Figure 4).
- 2. Turn the clutch pedal stop bolt counterclockwise to lower the clutch pedal toward the floor, or clockwise to raise the clutch pedal height away from floor. Clutch pedal height should be 5.0 mm (0.2-inch) above brake pedal height (Figure 8).

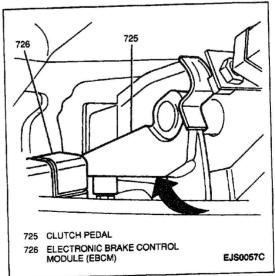


Figure 7-Removing Clutch Pedal

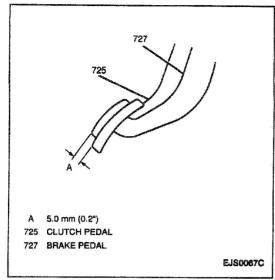


Figure 8-Adjusting Clutch Pedal Height



• Clutch pedal stop locknut to 13 N·m (115 lb. in.).

CLUTCH PEDAL FREE TRAVEL ADJUSTMENT

Figure 9

[**⁵** Inspect

- Clutch pedal height adjustment. Refer to "Clutch Pedal Height Adjustment" earlier in this section.
- Depress the clutch pedal lightly until tension on the clutch cable can be felt.
- 3. Measure clutch pedal free travel. Clutch pedal free travel should 15 to 25 mm (0.6 to 1.1-inch).
- 4. Measure clutch release lever free travel adjustment. Clutch release lever free travel should be 0.5 to 1.5 mm (0.02 to 0.06-inch) (Figure 9).

If clutch pedal free travel is below specification, raise vehicle, loosen clutch cable adjustment nut "B" at the clutch cable bracket until clutch pedal free travel is within specification. Then, tighten clutch cable adjustment nut "A." If clutch pedal free travel is above specification, raise vehicle, loosen both clutch cable adjustment nuts "A" and "B" at the clutch cable bracket and tighten clutch cable adjustment nut "A" until clutch pedal free travel is within specification. Then, tighten adjustment nut "B" (Figure 9).

(D) Tighten

- \bullet Clutch cable adjustment nuts "A" and "B" to 18 N·m (13 lb. ft.).
- Raise and suitably support vehicle. Refer to SECTION 0A.

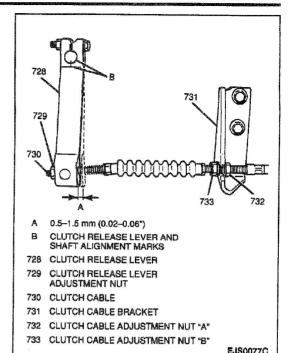


Figure 9—Adjusting Clutch Pedal and Clutch Release Lever Free Travel

If clutch release lever free travel is below specification, loosen the clutch release lever adjustment nut until clutch release lever free travel is within specification. If clutch release lever free travel is above specification, tighten the clutch release lever adjustment nut until clutch release lever free travel is within specification (Figure 9).

? Important

- Make sure marks on the clutch release lever and the clutch release shaft are aligned with each other (Figure 9). If marks are not aligned, remove the clutch release lever from the clutch release shaft, align marks and repeat free travel adjustment procedures.
- 6. Lower vehicle.

CLUTCH PEDAL POSITION (CPP) SWITCH Figures 10, 11 and 12

Remove or Disconnect

- 1. Negative (-) battery cable.
- 2. CPP switch electrical connector from CPP switch.
- 3. Loosen CPP switch locknut (Figure 10).
- CPP switch from brake pedal bracket by turning counterclockwise.

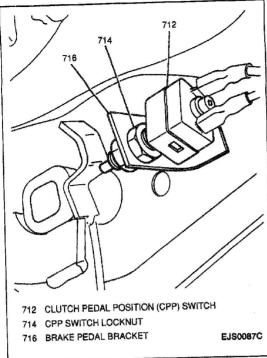


Figure 10-Clutch Pedal Position (CPP) Switch at Brake Pedal Bracket

Inspect

For CPP switch diagnosis, refer to SECTION 8A.

Install or Connect

1. CPP switch into brake pedal bracket by turning clockwise.

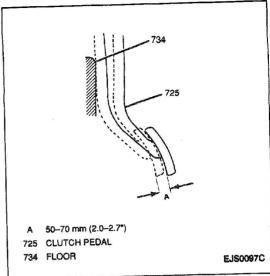


Figure 11—Clutch Pedal Distance From Floor For Clutch Pedal Position (CPP) Switch Adjustment



Tool Required:

J 39200 Digital Multimeter

- A. CPP switch by inserting the probes of a J 39200 into either side of the CPP switch electrical connector.
- B. Depress the clutch pedal to within 20 to 30 mm (0.8 to 1.2-inches) from the floor (Figure 11).
- C. Screw the CPP switch clockwise into the brake pedal bracket until continuity is obtained.

2 Tighten

- CPP switch locknut to 13 N·m (115 lb. in.).
- 2. CPP switch electrical connector to CPP switch.
- 3. Negative (-) battery cable.

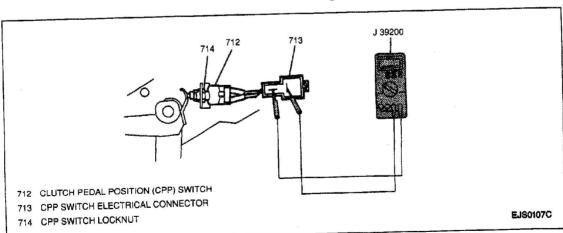


Figure 12-Adjusting Clutch Pedal Position (CPP) Switch

Tighten

 Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N·m (11 lb. ft.).

CLUTCH CABLE

Figures 9, 13, 14 and 15

←→ Remove or Disconnect

- 1. Raise and suitably support vehicle. Refer to SECTION 0A.
- Loosen clutch cable adjustment nuts "A" and "B" (Figure 9).
- One nut and clutch cable from clutch release lever and clutch cable bracket (Figure 9).
- Clutch cable from two clutch cable clamps below radiator.

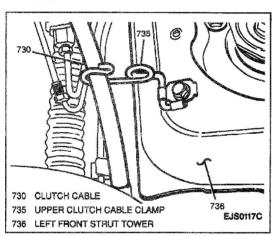


Figure 13-Clutch Cable at Upper Clutch Cable Clamp

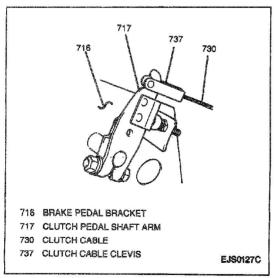


Figure 14-Clutch Cable Clevis at Clutch Pedal Shaft Arm

- 5. Lower vehicle.
- Clutch cable from upper clutch cable clamp at left front strut tower (Figure 13).
- Clutch cable clevis from clutch pedal shaft arm (Figure 14).
- Two clutch cable grommet bolts and clutch cable from vehicle from engine compartment side of bulkhead (Figure 15).

Inspect

Clutch cable for fraying or kinks. Replace as necessary.

→← Install or Connect

1. Clutch cable into bulkhead from engine compartment side; secure with two clutch cable grommet bolts (Figure 15).

Tighten

- Clutch cable grommet bolts to 8 N.m (70 lb. in.).
- Clutch cable clevis to clutch pedal shaft arm (Figure 14).
- 3. Clutch cable into upper clutch cable clamp at left front strut tower (Figure 13).
- 4. Raise and suitably support vehicle. Refer to SECTION 0A.
- Clutch cable into two clutch cable clamps below radiator.
- 6. Clutch cable into clutch release lever and clutch cable bracket; secure with clutch release lever adjustment nut (Figure 9).
- 7. Lower vehicle.

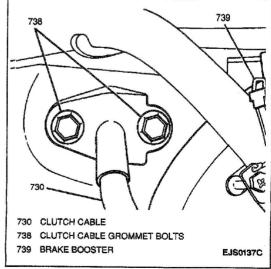


Figure 15-Clutch Cable Grommet Bolts

P

Adjust

 For clutch cable adjustment procedures, refer to "Clutch Pedal Height Adjustment" and "Clutch Pedal Free Travel Adjustment" earlier in this section.

PRESSURE PLATE, CLUTCH DISC AND FLYWHEEL

Figures 16 through 21



Remove or Disconnect

Tools Required:

J 37761 Clutch Alignment Arbor J 35271 Flywheel Holder

- Manual transmission assembly from vehicle. Refer to SECTION 7B.
- 2. Install a J 35271 to the engine block in order to hold the flywheel stationary (Figure 17).
- 3. Install a J 37761 to support the clutch disc during pressure plate removal (Figure 18).
- Slowly loosen the six pressure plate cover bolts evenly until pressure plate diaphragm spring tension is completely released.
- Six pressure plate cover bolts and pressure plate assembly from flywheel.
- 6. Clutch disc and the J 37761 from flywheel.
- 7. The J 35271 from the engine block.

Measure

Tool Required:

J 7872 Magnetic Base Indicator Set • Flywheel for runout using a J 7872 and slowly turning the flywheel using a flywheel wrench. If flywheel runout exceeds 0.1 mm (0.004-inch), the flywheel must be resurfaced

or replaced (Figure 19).

? Important

- The flywheel should be indexed (reference marked) before removal to ensure correct installation. If the flywheel is installed in a position other than the one from which it was removed, poor engine balance may result.
- 8. Six flywheel bolts and flywheel from crankshaft noting flywheel position on crankshaft.

? Important

 DO NOT use alcohol based solvents or other cleaning agents on the clutch disc. Using solvents on the clutch disc may cause slipping and premature clutch wear.

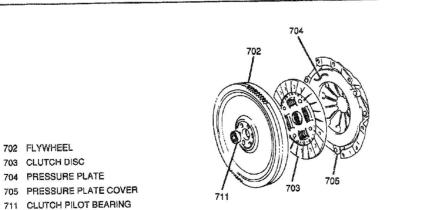
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Clean

- 1. Flywheel and pressure plate-to-clutch disc mating surfaces of all oil, grease and metallic particles.
- 2. Clutch disc using a clean, dry cloth.

Inspect

- 1. Flywheel and pressure plate for:
 - Cracks.
 - · Heat checking.
 - · Grooves or excessive wear.
 - · Bent or broken pressure plate fingers.
 - Weak or damaged diaphragm spring. If any of the above conditions exist, do not attempt to disassemble or repair the pressure plate assembly. If the flywheel or pressure plate appears excessively worn, replace the flywheel and/or pressure plate as necessary.
- Pilot bearing for smooth rotation. If the bearing does not spin freely, replace it. Refer to "Clutch Pilot Bearing" later in this section.
- 3. Clutch disc for:
 - Cracks.
 - · Excessive wear.
 - · Darnaged or weak torsional springs.



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Figure 16-Pressure Plate, Clutch Disc and Flywheel

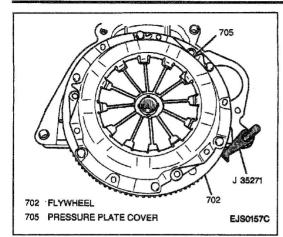


Figure 17-Holding Flywheel Stationary

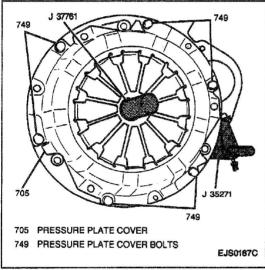


Figure 18-Supporting Clutch Disc

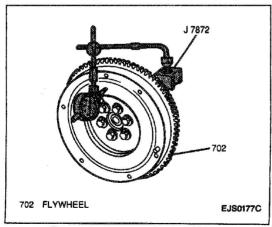


Figure 19-Measuring Flywheel Runout

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Measure

Tools Required:
J 26900-5 Vernier Caliper
J 7872 Magnetic Base Indicator Set

- 1. Clutch disc wear by using a J 26900-5 and measuring the depth of each rivet head depression (Figure 20). Standard rivet head depth should measure 1.2 mm (0.05-inch). If the clutch rivet depth is less than 0.5 mm (0.02-inch), replace the clutch disc.
- 2. Clutch disc for runout using a J 7872. Place the disc between two horizontal arbors and turn slowly while measuring runout (Figure 21). If clutch disc runout exceeds 0.8 mm (0.031-inch), replace the clutch disc.

++

Install or Connect

Tools Required:
J 37761 Clutch Alignment Arbor
J 35271 Flywheel Holder

 Flywheel to crankshaft aligning index marks made during removal; secure with six flywheel bolts.

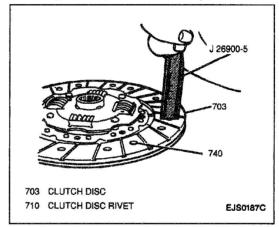


Figure 20—Measuring Clutch Disc Rivet Depth

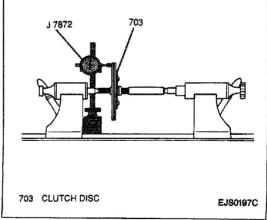


Figure 21-Measuring Clutch Disc Runout

7C-12 CLUTCH

2

Tighten

- Flywheel bolts to 78 N.m (56 lb. ft.).
- 2. The J 35271 to the engine block in order to hold the flywheel stationary (Figure 17).

? Important

- When installing the clutch disc, make sure the torsional springs are offset to the rear facing the transmission.
- 3. Clutch disc to the flywheel using the J 37761 clutch alignment arbor to center the disc on the flywheel and support the disc in place (Figure 18).
- 4. Pressure plate to flywheel; secure with six pressure plate cover bolts.

হ্মি Tighten

- All six pressure plate cover bolts evenly in a diagonal pattern to prevent clutch disc distortion. Then, tighten all six bolts in the same diagonal pattern to 23 N·m (17 lb. ft.).
- 5. Remove the J 35271 from the engine block and the J 37761 from the clutch disc.
- Lubricate the transmission input shaft splines and clutch release bearing with a thin coat of wheel bearing lubricant GM P/N 1051344, or equivalent.
- 7. Lubricate the pilot bearing with a thin coat of wheel bearing lubricant GM P/N 1051344, or equivalent.
- 8. Manual transmission assembly into vehicle. Refer to SECTION 7B.

CLUTCH PILOT BEARING

Figures 22 and 23

4-4

Remove or Disconnect

Tools Required:

- J 34839 Pinion Bearing Remover
- J 37764 Pilot Bearing Remover Adapter J 23907 Clutch Pilot Bearing Remover
- 1. Manual transmission assembly from vehicle. Refer
- to SECTION 7B.

 2. Pressure plate and clutch disc from flywheel.
 Refer to "Pressure Plate, Clutch Disc and
 Flywheel" earlier in this section.
- 3. Clutch pilot bearing from crankshaft using a J 34839 with a J 37764 and a J 23907 (Figure 22).

10

Inspect

 Clutch pilot bearing for scoring, binding or rough operation. Replace as necessary.

Install or Connect

Tools Required:

- J 7079-2 Driver Handle
- J 34848 Clutch Pilot Bearing Installer
- Clutch pilot bearing into crankshaft using a J 34848 with a J 7079-2 (Figure 23).
 Clutch disc and pressure plate to flywheel. Refer
- Clutch disc and pressure plate to flywheel. Refer to "Pressure Plate, Clutch Disc and Flywheel" earlier in this section.
- Manual transmission assembly into vehicle. Refer to SECTION 7B.

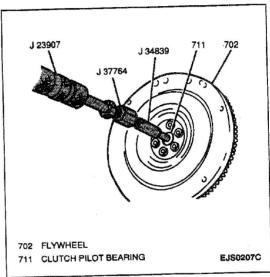


Figure 22—Removing Clutch Pilot Bearing

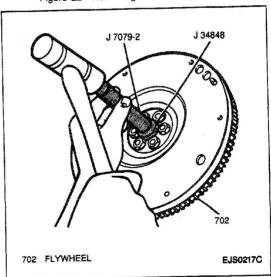


Figure 23-Installing Clutch Pilot Bearing

CLUTCH RELEASE BEARING

Figure 24

←→ Remove or Disconnect

- Manual transmission assembly from vehicle. Refer to SECTION 7B.
- 2. Clutch release shaft return spring from clutch release shaft fork (Figure 24),
- 3. Clutch release bearing pin from clutch release shaft fork and clutch release bearing from transmission input shaft (Figure 24).

§ Important

 DO NOT clean the clutch release bearing with degreaser or solvents. Cleaning the clutch release bearing with degreaser or solvents will damage the bearing seals. Use a clean, dry solvent free cloth.

Clean

• Clutch release bearing with a clean, dry solvent free cloth.

Inspect

 Clutch release bearing for external damage and smooth rotation. If external damage exists or bearing does not operate smoothly, replace the clutch release bearing.

→← Install or Connect

1. Apply a thin coat of wheel bearing lubricant GM P/N 1051344, or equivalent, to the transmission input shaft.

- Clutch release bearing onto the transmission input shaft; secure to clutch release shaft fork with clutch release bearing pin (Figure 24).
- 3. Clutch release shaft return spring to the clutch release shaft fork (Figure 24).
- Manual transmission assembly into vehicle. Refer to SECTION 7B.

CLUTCH RELEASE SHAFT AND BUSHINGS

Figures 24 and 25 through 28

←→ Remove or Disconnect

Tool Required: J 37973 Clutch Release Outer Bushing Remover

 Manual transmission assembly from vehicle. Refer to SECTION 7B.

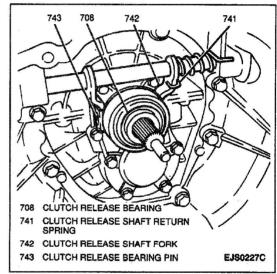


Figure 24—Removing Clutch Release Shaft Spring

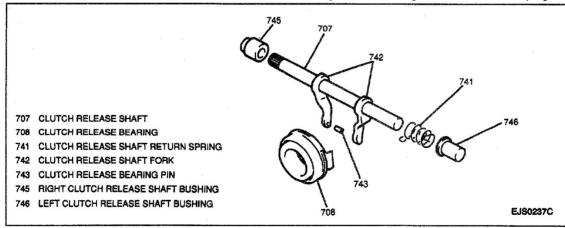


Figure 25—Clutch Release Shaft Components

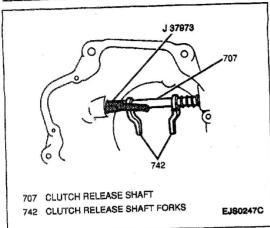


Figure 26—Removing Right Clutch Release Shaft Bushing

- 2. Clutch release shaft return spring from clutch release shaft fork (Figure 24).
- Clutch release bearing pin from clutch release shaft fork and clutch release bearing from transmission input shaft (Figure 24).
- 4. Turn transmission on its left side so that the clutch release shaft is vertical.
- 5. Right clutch release shaft bushing from clutch release shaft bore in clutch housing using a J 37973 (Figure 26).
- 6. Clutch release shaft from clutch housing.
- 7. Left clutch release shaft bushing from clutch release shaft bore in clutch housing using a suitable press arbor extension and gently tapping with a hammer from the outside in (Figure 27).

[Inspect

- 1. Transmission input shaft bearing retainer for scoring or other damage. If the sleeve on the input shaft bearing retainer is excessively worn or damaged, replace input shaft bearing retainer. Refer to SECTION 7B-4B (2WD vehicles) or SECTION 7B-11 (4WD vehicles) in the 1996 Transmission/Transaxle/Transfer Case Unit Repair Manual.
- Clutch release shaft return spring for distortion or weakness. Replace as necessary.
- 3. Clutch release shaft for distortion or damage. Replace as necessary.

→+ Install or Connect

Tool Required: J 36037 Clutch Shaft Outer Bushing Installer

 Left clutch release shaft bushing into clutch housing release shaft bore using a suitable press arbor extension and gently tapping with a hammer.

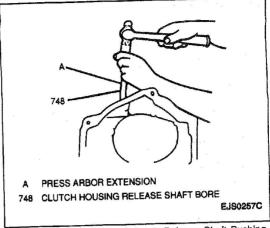


Figure 27—Removing Left Clutch Release Shaft Bushing

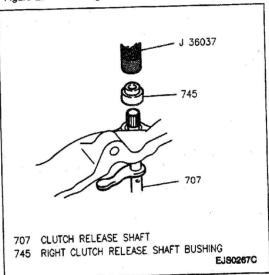
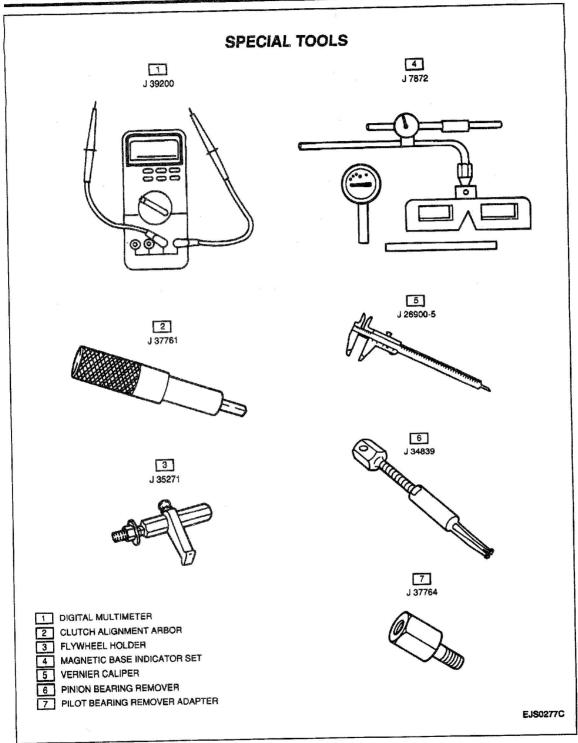


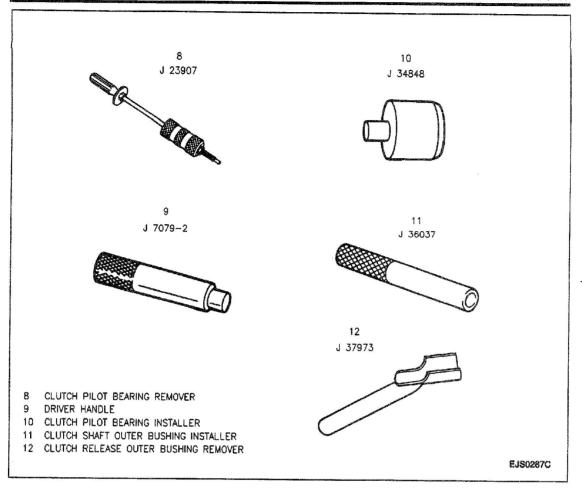
Figure 28-Installing Right Clutch Release Shaft Bushing

- Clutch release shaft return spring onto clutch release shaft.
- 3. Clutch release shaft into clutch housing.
- Right clutch release shaft bushing down on the clutch release shaft and into the right clutch housing release shaft bore using a J 36037 (Figure 28).
- Turn transmission over so that the clutch release shaft is above the input shaft and horizontal.
- 6. Clutch release bearing onto transmission input shaft; secure with clutch release bearing pin.
- 7. Clutch release shaft return spring onto the clutch release shaft fork.
- 8. Manual transmission assembly into vehicle. Refer to SECTION 7B.

SPECIFICATIONS

FASTENER TORQUES	
Clutch Pedal Shaft Arm Bolt and Nut	24 N·m (17 lb. ft.
Clutch Pedal Shaft Arm Bolt and Nut	
Clutch Pedal Position (CPP) Switch Locknut	
Clutch Cable Grommet Bolts	
Flywheel Bolts	
Pressure Plate Cover Bolts	
Negative (-) Battery Cable-to-Negative (-) Battery Terminal Retainer	
CLUTCH SPECIFICATIONS	
Clutch Pedal Height Difference Clutch Pedal Free Travel	5 mm (0.2 in.
Clutch Pedal Free Travel	15-25 mm (0.6-1.1 in.
Clutch Release Lever Travel	.0.5-1.5 mm (0.02-0.06 in.
Clutch Pedal Position (CPP) Switch Adjustment Clutch Pedal Distance	
from floorFlywheel Runout (Maximum)	20-30 mm (0.8-1.2 in.
Flywheel Runout (Maximum)	0.1 mm (0.004 in.
Clutch Disc Rivet Head Depth:	*
Standard	
Service Limit	0.5 mm (0.02 in.
Clutch Disc Runout (Maximum)	0.8 mm (0.031 in.





BLANK