

# CLUTCH

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## CLUTCH

### WARNING

**WARNING:** Exercise care when servicing clutch components. Factory installed clutch discs do not contain asbestos fibers. Dust and dirt on clutch parts may contain asbestos fibers from aftermarket components. Breathing excessive concentrations of these fibers can cause serious bodily harm. Wear a respirator during service and never clean clutch components with compressed air or with a dry brush. Either clean the components with water dampened rags or use a vacuum cleaner specifically designed to remove asbestos fibers and dust. Do not create dust by sanding a clutch discs. Replace the disc if the friction material is damaged. Dispose of all dust and dirt containing asbestos fibers in sealed bags or containers. This will minimize exposure to yourself and to others. Follow all recommended safety practices prescribed by the occupational safety and health administration (OSHA) and the environmental safety agency (EPA), for the handling and disposal of products containing asbestos. Failure to follow these instructions may result in personal injury or death

## DIAGNOSIS AND TESTING

### CLUTCH

Road test and inspect components to determine a clutch problem. Road test the vehicle at normal speeds. Shift the transmission through all gear ranges and observe clutch action. If clutch chatters, grabs, slips or does not release properly, remove and inspect clutch components. If problem is noise or hard shifting, further diagnosis may be needed to the transmission and driveline component.

### CLUTCH CONTAMINATION

Contamination is a frequent cause of clutch malfunctions. Oil, water or clutch fluid on the clutch disc and pressure plate surfaces will cause chatter, slip and grab. Oil contamination indicates a leak at either the rear main seal or transmission input shaft. Clutch fluid leaks are usually from damaged slave cylinder push rod seals. Heat buildup caused by slippage between the pressure plate, disc and flywheel can bake the oil residue onto the components. The glaze-like residue ranges in color from amber to black.

Road splash contamination is dirt/water entering the clutch housing due to loose bolts, housing cracks. Driving through deep water puddles can force water/road splash into the housing through such openings.

### IMPROPER RELEASE OR CLUTCH ENGAGEMENT

Clutch release or engagement problems can be caused by worn or damage clutch components.

Release problems can cause hard shifting and noise. Look for leaks at clutch cylinders, connecting line and loose slave cylinder bolts. Also worn/loose release fork, pivot stud, clutch disc, pressure plate or release bearing.

Engagement problems can cause slip, chatter/shudder and noisy operation. The causes may be clutch disc contamination, wear, distortion or flywheel damage.

### CLUTCH MISALIGNMENT

Clutch components must be in proper alignment with the crankshaft and transmission input shaft. Misalignment caused by excessive runout or warpage of any clutch component will cause grab, chatter and improper clutch release.

### CLUTCH COVER AND DISC RUNOUT

Check the clutch disc before installation. Axial (face) runout of a **new** disc should not exceed 0.50 mm (0.020 in.). Measure runout about 6 mm (1/4 in.) from the outer edge of the disc facing. Obtain another disc if runout is excessive.

Check condition of the clutch before installation. A warped cover or diaphragm spring will cause grab and incomplete release or engagement. Be careful when handling the cover and disc. Impact can distort the cover, diaphragm spring, release fingers and the hub of the clutch disc.

Use an alignment tool when positioning the disc on the flywheel. The tool prevents accidental misalignment which could result in cover distortion and disc damage.

A frequent cause of clutch cover distortion (and consequent misalignment) is improper bolt tightening.

**FLYWHEEL RUNOUT**

Check flywheel runout whenever misalignment is suspected. Flywheel runout should not exceed 0.08 mm (0.003 in.). Measure runout at the outer edge of the flywheel face with a dial indicator.

Common causes of runout are:

- heat warpage
- improper machining
- incorrect bolt tightening
- improper seating on crankshaft flange shoulder
- foreign material on crankshaft flange

Flywheel machining is not recommended. The flywheel clutch surface is machined to a unique contour and machining will negate this feature. Minor flywheel scoring can be cleaned up by hand with 180 grit emery or with turning equipment. Remove only enough material to reduce scoring (approximately 0.001 - 0.003 in.). Heavy stock removal is **not recommended**. Replace the flywheel if scoring is severe and deeper than 0.076 mm (0.003 in.). Excessive stock removal can result in flywheel cracking or warpage after installation; it can also weaken the flywheel and interfere with proper clutch release.

Clean the crankshaft flange before mounting the flywheel. Dirt and grease on the flange surface may cock the flywheel causing excessive runout. Use new bolts when remounting a flywheel and secure the bolts with Mopar™ Lock And Seal or equivalent. Tighten flywheel bolts to specified torque only. Overtightening can distort the flywheel hub causing runout.

**DIAGNOSIS CHART**

The diagnosis charts Diagnosis Chart describe common clutch problems, causes and correction.

**Diagnosis Chart**

CONDITION	POSSIBLE CAUSES	CORRECTION
Disc facing worn out	1. Normal wear. 2. Driver frequently rides (slips) the clutch. Results in rapid overheating and wear. 3. Insufficient clutch cover diaphragm spring tension.	1. Replace cover and disc. 2. Replace cover and disc. 3. Replace cover and disc.
Clutch disc facing contaminated with oil, grease, or clutch fluid.	1. Leak at rear main engine seal or transmission input shaft seal. 2. Excessive amount of grease applied to the input shaft splines. 3. Road splash, water entering housing. 4. Slave cylinder leaking.	1. Replace appropriate seal. 2. Remove grease and apply the correct amount of grease. 3. Replace clutch disc. Clean clutch cover and reuse if in good condition. 4. Replace hydraulic clutch linkage.
Clutch is running partially disengaged.	1. Release bearing sticking or binding and does not return to the normal running position.	1. Verify failure. Replace the release bearing and transmission front bearing retainer as necessary.
Flywheel below minimum thickness specification.	1. Improper flywheel machining. Flywheel has excessive taper or excessive material removal.	1. Replace flywheel.

CONDITION	POSSIBLE CAUSES	CORRECTION
Clutch disc, cover or diaphragm spring warped or distorted.	<ol style="list-style-type: none"> <li>1. Rough handling. Impact bent cover, spring, or disc.</li> <li>2. Improper bolt tightening procedure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace disc or cover as necessary.</li> <li>2. Tighten clutch cover using proper procedure.</li> </ol>
Facing on flywheel side of disc torn, gouged or worn.	<ol style="list-style-type: none"> <li>1. Flywheel surface scored or nicked.</li> <li>2. Clutch disc sticking or binding on transmission input shaft.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct surface condition if possible. Replace flywheel and disc as necessary.</li> <li>2. Inspect components and correct/replace as necessary.</li> </ol>
Clutch disc facing burnt. Flywheel and cover pressure plate surfaces heavily glazed.	<ol style="list-style-type: none"> <li>1. Frequent operation under high loads or hard acceleration conditions.</li> <li>2. Driver frequently rides (slips) clutch. Results in rapid wear and overheating of disc and cover.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct condition of flywheel and pressure plate surface. Replace clutch cover and disc. Alert driver to problem cause.</li> <li>2. Correct condition of flywheel and pressure plate surface. Replace clutch cover and disc. Alert driver to problem cause.</li> </ol>
Clutch disc binds on input shaft splines.	<ol style="list-style-type: none"> <li>1. Clutch disc hub splines damaged during installation.</li> <li>2. Input shaft splines rough, damaged, or corroded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean, smooth and lubricate hub splines if possible. Replace disc if necessary.</li> <li>2. Clean, smooth, and lubricate shaft splines if possible. Replace input shaft if necessary.</li> </ol>
Clutch disc rusted to flywheel or pressure plate.	<ol style="list-style-type: none"> <li>1. Clutch not used for an extended period of time (e.g. long term vehicle storage).</li> </ol>	<ol style="list-style-type: none"> <li>1. Sand rusted surfaces with 180 grit sanding paper. Replace clutch cover and flywheel if necessary.</li> </ol>
Pilot bearing seized, loose or rollers are worn.	<ol style="list-style-type: none"> <li>1. Bearing cocked during installation.</li> <li>2. Bearing defective.</li> <li>3. Bearing not lubricated.</li> <li>4. Clutch misalignment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install a new bearing.</li> <li>2. Install a new bearing.</li> <li>3. Install a new bearing.</li> <li>4. Inspect clutch and correct as necessary. Install and lubricate a new bearing.</li> </ol>
Clutch will not disengage properly.	<ol style="list-style-type: none"> <li>1. Low hydraulic linkage fluid level.</li> <li>2. Clutch cover loose.</li> <li>3. Clutch disc bent or distorted.</li> <li>4. Clutch cover diaphragm spring bent or warped.</li> <li>5. Clutch disc installed backwards.</li> <li>6. Release fork bent or fork pivot loose or damaged.</li> <li>7. Clutch master or slave cylinder failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add hydraulic linkage fluid.</li> <li>2. Follow proper bolt tightening procedure.</li> <li>3. Replace clutch disc.</li> <li>4. Replace clutch cover.</li> <li>5. Remove and install clutch disc correctly.</li> <li>6. Replace fork or pivot as necessary.</li> <li>7. Replace hydraulic linkage assembly.</li> </ol>

CONDITION	POSSIBLE CAUSES	CORRECTION
Clutch pedal squeak.	<ol style="list-style-type: none"> <li>1. Pivot pin loose.</li> <li>2. Master cylinder bushing not lubricated.</li> <li>3. Pedal bushings worn out or cracked.</li> <li>4. Rough surface on front bearing retainer.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten pivot pin if possible. Replace clutch pedal if necessary.</li> <li>2. Lubricate master cylinder bushing.</li> <li>3. Replace and lubricate bushings.</li> <li>4. Replace front bearing retainer.</li> </ol>
Clutch master or slave cylinder plunger dragging or binding	<ol style="list-style-type: none"> <li>1. Master or slave cylinder components worn or corroded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace clutch hydraulic linkage assembly.</li> </ol>
Release bearing is noisy.	<ol style="list-style-type: none"> <li>1. Release bearing defective or damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace release bearing.</li> </ol>
Contact surface of release bearing damaged.	<ol style="list-style-type: none"> <li>1. Clutch cover incorrect or release fingers bent or distorted.</li> <li>2. Release bearing defective or damaged.</li> <li>3. Release bearing misaligned.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace clutch cover and release bearing.</li> <li>2. Replace the release bearing.</li> <li>3. Check and correct runout of clutch components. Check front bearing sleeve for damage/alignment. Repair as necessary.</li> </ol>
Partial engagement of clutch disc. One side of disc is worn and the other side is glazed and lightly worn.	<ol style="list-style-type: none"> <li>1. Clutch pressure plate position incorrect.</li> <li>2. Clutch cover, spring, or release fingers bent or distorted.</li> <li>3. Clutch disc damaged or distorted.</li> <li>4. Clutch misalignment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace clutch disc and cover.</li> <li>2. Replace clutch disc and cover.</li> <li>2. Replace clutch disc.</li> <li>4. Check alignment and runout of flywheel, disc, pressure plate and clutch housing. Correct as necessary.</li> </ol>

## SPECIFICATIONS

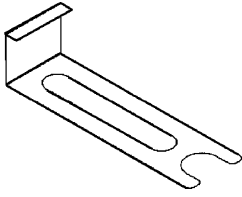
### CLUTCH

#### TORQUE SPECIFICATIONS

DESCRIPTION	N-m	Ft. Lbs.	In. Lbs.
Slave Cylinder Nuts	23	17	-
Clutch Master Cylinder Nuts	28	21	-
Pressure Plate Bolts - V6 & V8	50	37	-
Pressure Plate Bolts - V10	30	22	-
Pressure Plate Bolts - Diesel	30	22	-
Release Bearing Pivot	23	17	-
Flywheel Bolts	95	70	-

<b>DESCRIPTION</b>	<b>N-m</b>	<b>Ft. Lbs.</b>	<b>In. Lbs.</b>
Dual Mass Flywheel To Adapter Bolts	55	40	-
Dual Mass Flywheel Adapter To Crankshaft Bolts	137	100	-

**SPECIAL TOOLS**

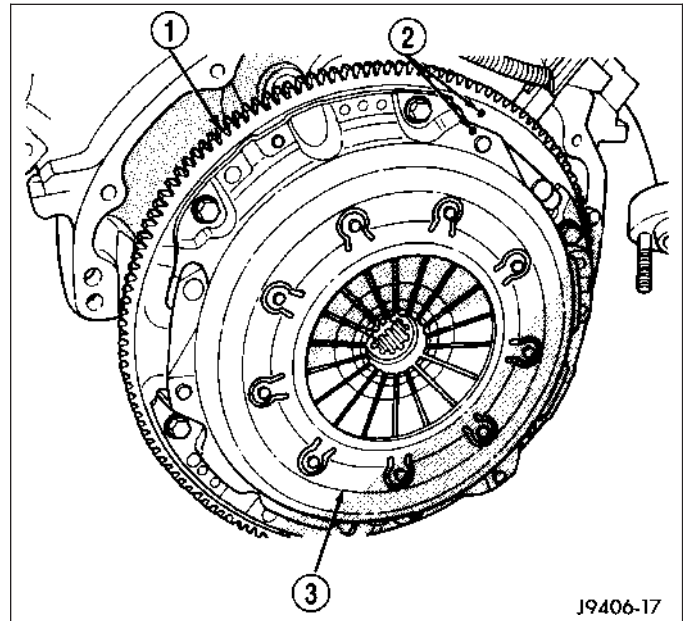


***LINE DISCONNECT TOOL 6638A***

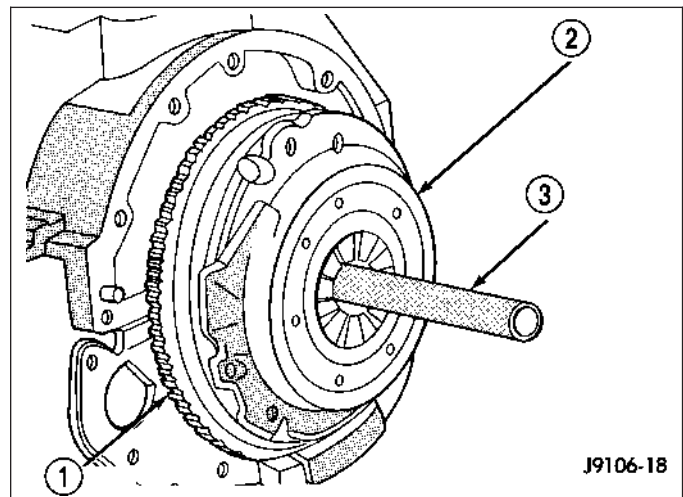
## DISC-CLUTCH

### REMOVAL

1. Support engine with wood block and adjustable jack stand, to prevent strain on engine mounts.
2. Remove transmission and transfer case, if equipped.
3. If pressure plate (3) will be reused, mark (2) the position on flywheel (1) with paint or scribe. Also note location marks on the pressure next to the bolt holes. The mark will be a L or a circle with an X in it.



4. Insert clutch alignment tool (3) through pressure plate (2) and into pilot bushing, to hold disc in place while removing bolts.
5. Loosen pressure plate bolts evenly, a few threads at a time and in a diagonal pattern to prevent warping the plate.
6. Remove bolts completely and remove pressure plate, disc and alignment tool.



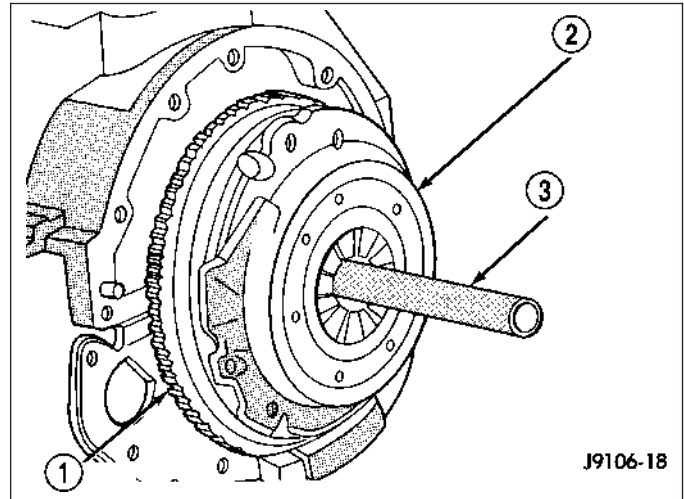


## INSTALLATION

**CAUTION:** Before installing a clutch disc on 5.9 L Diesel with Dual Mass Flywheel and self-adjusting pressure plate, the pressure plate must be reset. Failure to reset the pressure will result in damage to the clutch disc.

1. Check runout and free operation of new clutch disc.
2. Lubricate crankshaft pilot bearing with a NLGI - 2 rated grease.
3. Install clutch alignment tool in clutch disc hub with the raised side of hub is facing away from the flywheel.

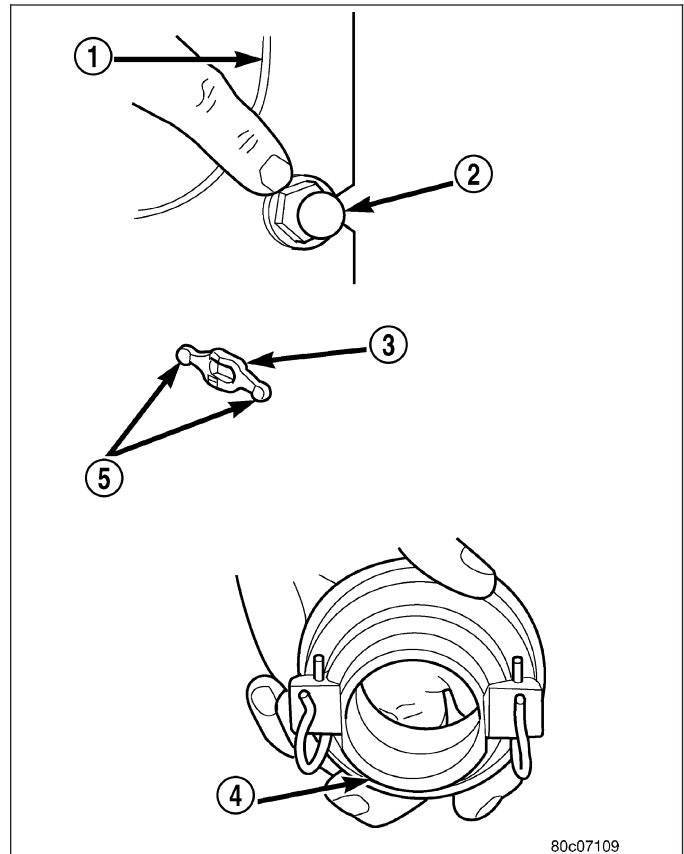
**NOTE:** Flywheel side is imprinted on the disc face.



4. Install alignment tool (3) in pilot bearing and position disc on the flywheel (1).
5. Position pressure plate over disc (2) and onto the flywheel.
6. Align and hold pressure plate in position and install bolts finger tight.
7. Tighten bolts evenly and a few threads at a time in a diagonal pattern.

**CAUTION:** Bolts must be tightened evenly and to specified torque to avoid warping pressure plate cover.

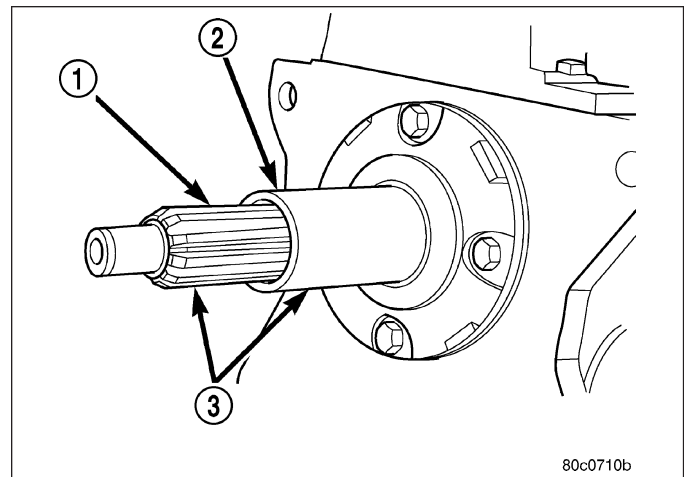
8. Tighten pressure plate bolts to:
  - V6 & V8 Engines - 50 N·m (37 ft. lbs.)
  - V10 & Diesel Engines - 30 N·m (22 ft. lbs.)
9. Remove release lever (3) and release bearing from clutch housing (1). Apply Mopar™ high temperature bearing grease to bore (4) of release bearing, release lever (5) contact surfaces and release lever pivot stud (2).



- Apply light coat of Mopar™ high temperature bearing grease to splines (3) of transmission input shaft (1) and to release bearing slide surface of the transmission front bearing retainer (2).

**CAUTION: Do not over lubricate shaft splines. This can result in grease contamination of the disc.**

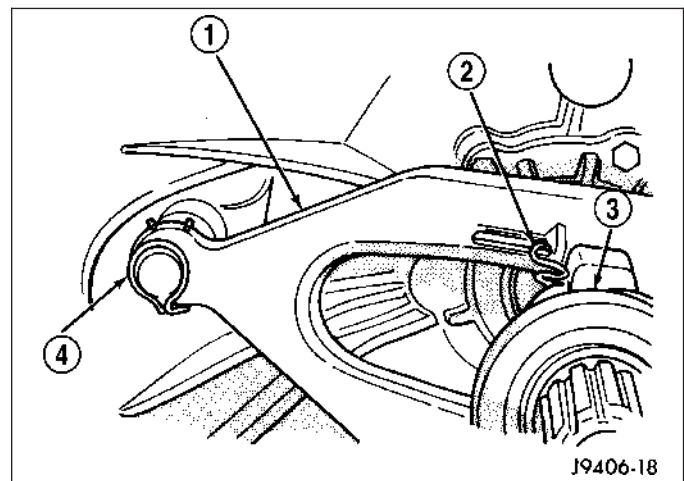
- Wipe pilot bearing surface clean.



- Install release lever and bearing in clutch housing. Verify spring clips (2) that retain lever on pivot ball (4) and release bearing (3) are installed properly.

**NOTE: If release lever is installed correctly, the lever part number will be toward the bottom of the transmission and right side up. There is also a stamped "I" in the lever which goes to the pivot ball side of the transmission.**

- Install transmission and transfer case if equipped.
- Check fluid level in clutch master cylinder.

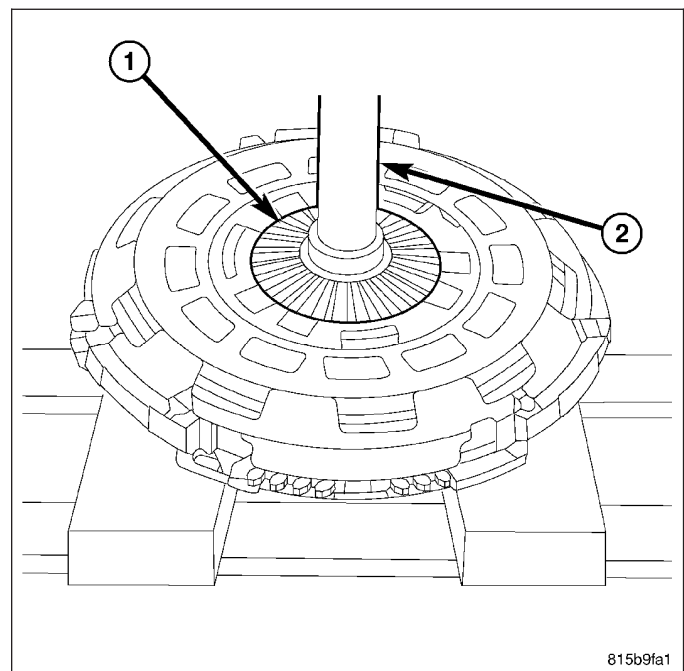


## ADJUSTMENTS

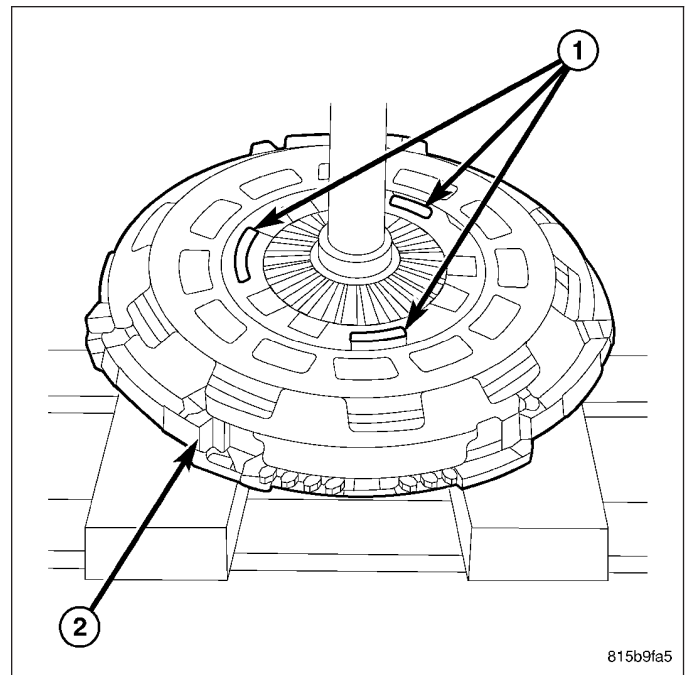
### PRESSURE PLATE DIAPHRAGM SPRINGS

**NOTE: Perform the following procedure, when replacing only the clutch disc on 5.9L Diesel with Dual Mass Flywheel and self-adjusting pressure plate. The pressure plate must be reset before installing a new disc.**

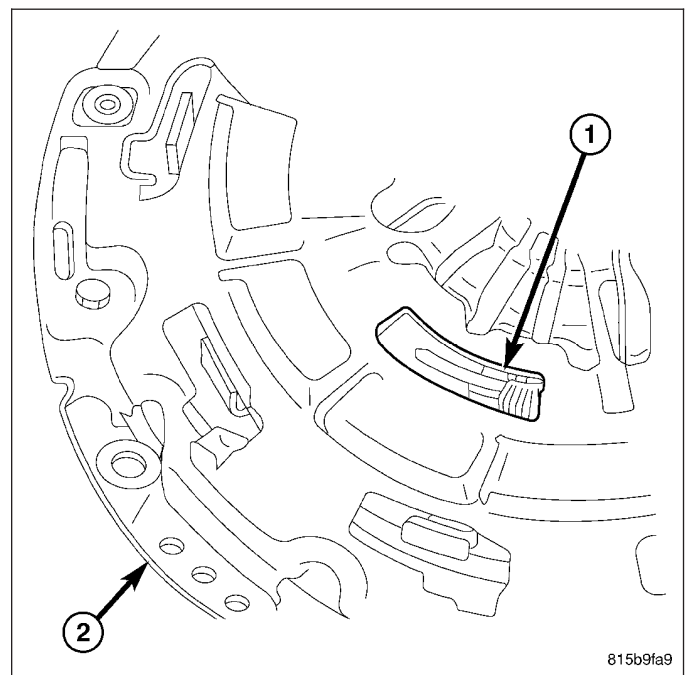
- Place pressure plate with disc on a press.
- Center press ram (2) on the pressure plate diaphragm spring fingers (1).
- Compress the diaphragm spring fingers (1), until tension is released from the stepped adjusting ring.



- Place two screwdrivers against two of the three stepped adjusting ring (1) tension spring stops, just ahead of the adjusting ring tension springs on the pressure plate (2).



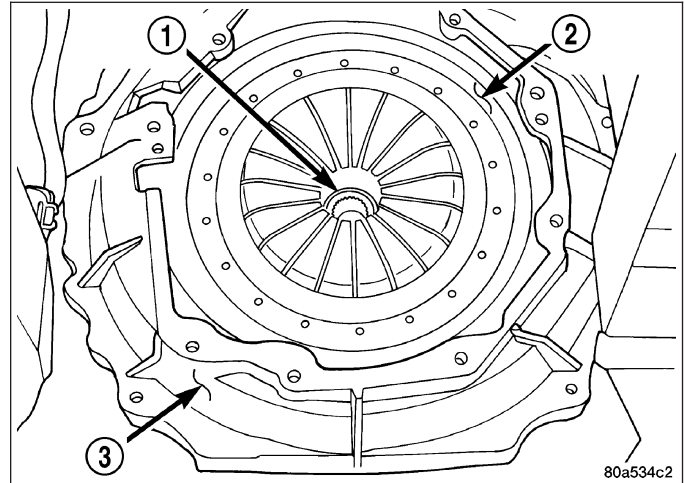
- Rotate stepped adjusting ring (1) on the pressure plate (2) counterclockwise until adjusting ring steps are adjusted out fully. Then hold adjusting ring while releasing the press pressure.
- Remove the screwdrivers. The pressure plate is now adjusted for a new clutch disc.



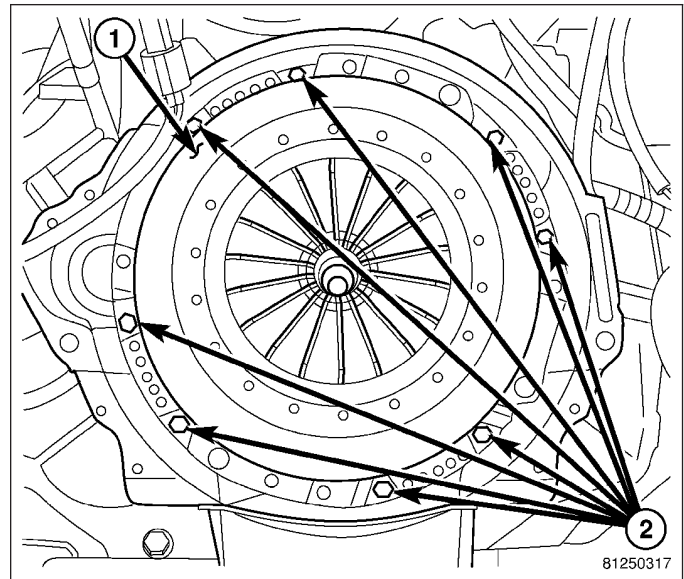
## DISC-CLUTCH SRT10

### REMOVAL

1. Remove transmission.
2. Remove clutch housing (3) bolts and remove clutch housing from engine.



3. Mark pressure plate (1) and flywheel to maintain their position when installing clutch assembly.
4. Insert Clutch Disc Aligning Tool through the clutch disc hub to prevent the clutch disc from falling and damaging the facings.
5. Loosen pressure plate bolts (2) one or two turns at a time, in a crisscross pattern. This will release spring pressure evenly and avoid clutch cover damage.
6. Remove pressure plate assembly and disc.



### CLEANING

Clean flywheel face with crocus cloth or 400-600 grade sandpaper, then wipe the surface with mineral spirits. If the surface is severely scored, heat checked or warped, replace the flywheel.

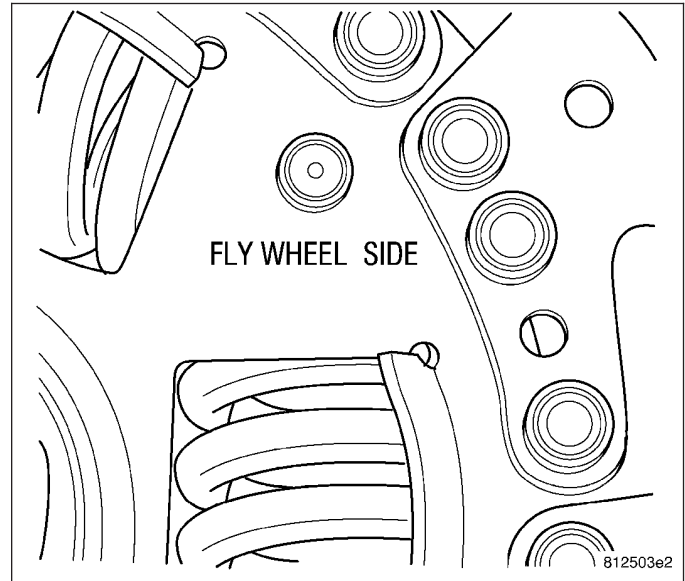
**CAUTION: Never machine the flywheel face. If flywheel surface is bad the flywheel must be replaced.**

Wipe the friction surface of the pressure plate with mineral spirits.

## INSTALLATION

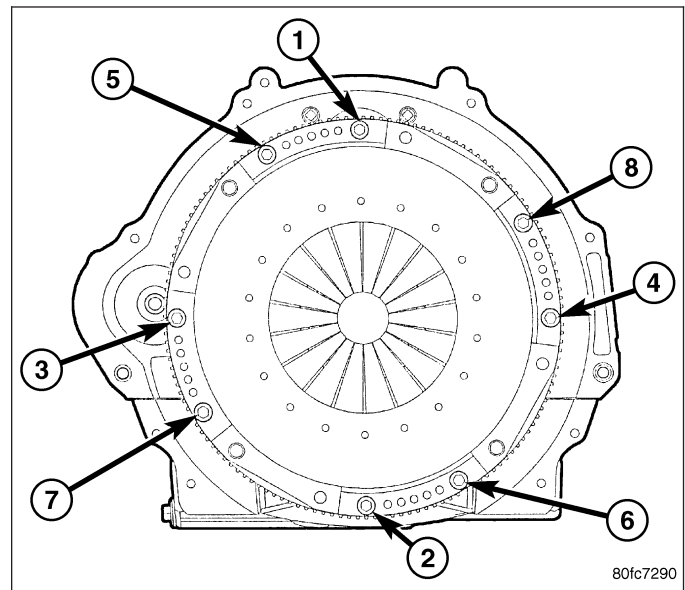
**NOTE: Clutch disc is marked flywheel side.**

1. Mount clutch assembly on flywheel, and properly align dowels and alignment marks made before removal. If new clutch or flywheel is installed, align cover balance spot as close as possible to flywheel balance orange spot. Apply pressure to the alignment tool. Install **new** plate bolts and tighten bolts enough to hold the disc in position.



**NOTE: Always use new pressure plate bolts.**

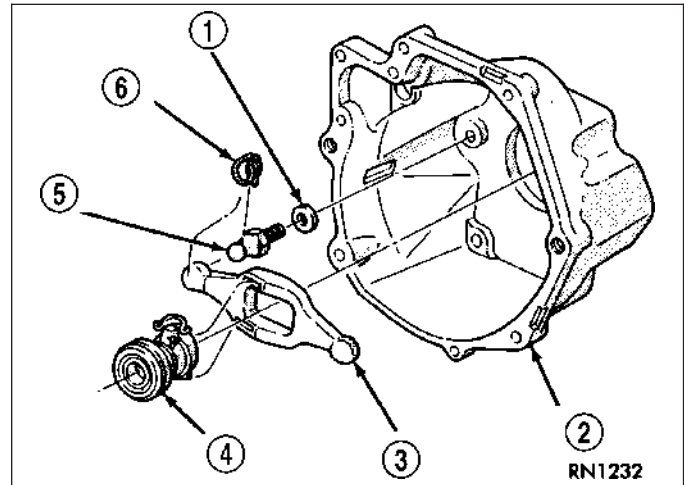
2. Tighten **new** pressure plate bolts a few turns at a time in a crisscross pattern until bolts are seated. Then tighten bolts sequence to 30 N·m (22 ft. lbs.). Remove clutch disc alignment tool.
3. Install bell housing on engine.
4. Install transmission.



## BEARING-CLUTCH RELEASE

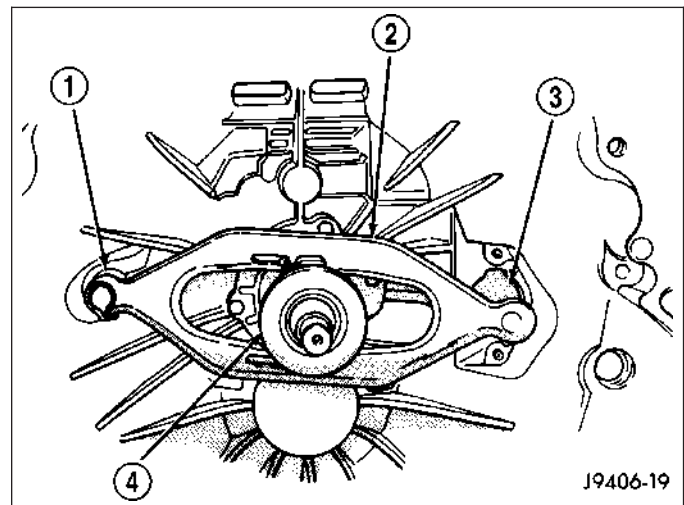
### REMOVAL

1. Remove transmission and transfer case, if equipped.
2. Remove spring clip (6).
3. Disconnect release bearing (4) from release lever (3) and remove bearing.



### INSTALLATION

1. Inspect bearing slide surface on transmission front bearing retainer. Replace retainer if slide surface is scored, worn, or cracked.
2. Inspect release lever (2) and pivot stud (1). Verify stud is secure and in good condition and lever is not distorted or worn. Replace fork spring clips if bent or damaged.
3. Lubricate input shaft splines, bearing retainer slide surface, pivot stud (1) and release lever pivot surface with Mopar™ high temperature bearing grease.
4. Install release fork and release bearing. Verify fork and bearing are properly secured by spring clips and release lever is installed properly. Rear side of release lever has one end with a raised area, which goes toward the slave cylinder side of the transmission.
5. Install transmission and transfer case.

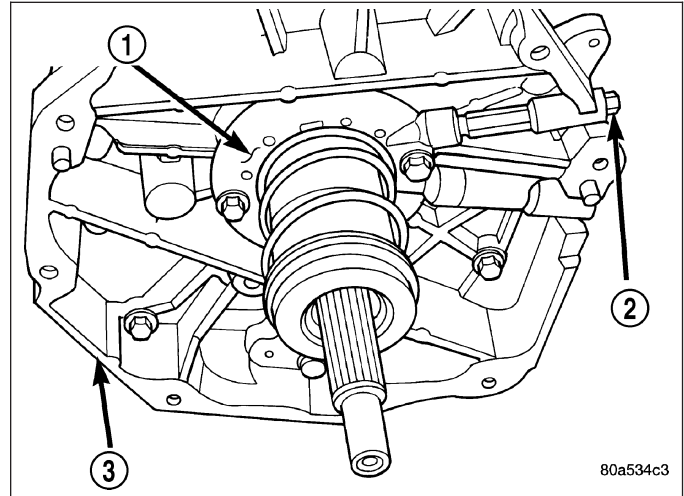


## BEARING-CLUTCH RELEASE SRT10

### REMOVAL

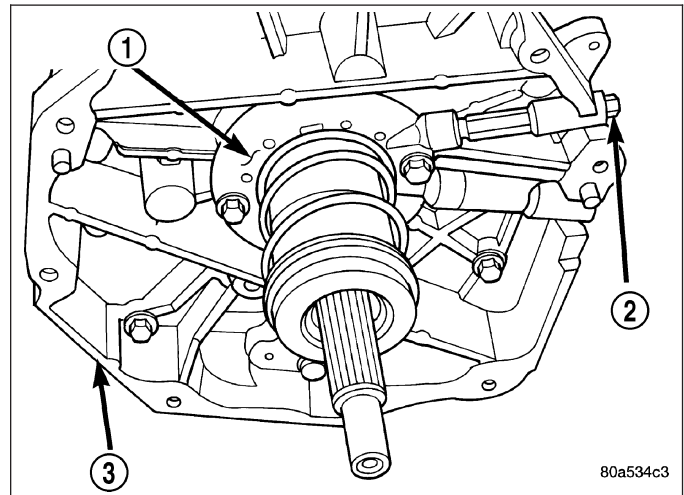
**NOTE:** The bearing and slave cylinder are serviced together as an assembly. Do not attempt to separate the bearing from the slave cylinder.

1. With vehicle in neutral, position vehicle on hoist.
2. Disconnect hydraulic line from hydraulic slave cylinder with Line Disconnect Tool 6638A.
3. Remove transmission.
4. Remove slave cylinder (1) bolts and remove cylinder.



### INSTALLATION

1. Install slave cylinder (1) onto transmission (3) and tighten bolts to 23 N·m (17 ft. lbs.).
2. Install transmission assembly.
3. Connect hydraulic line to slave cylinder.
4. Bleed the system.

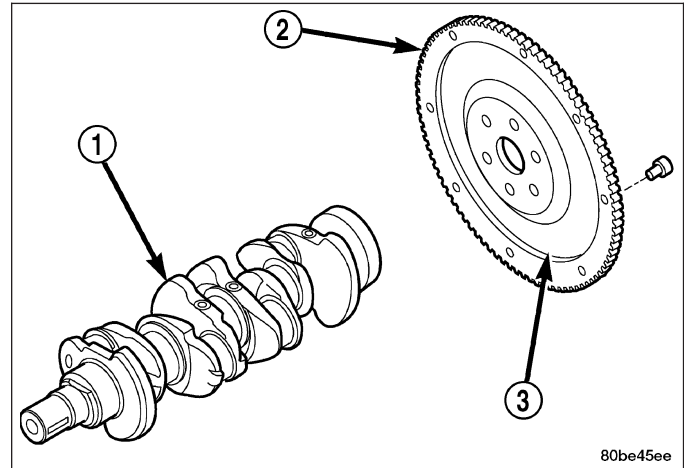


## FLYWHEEL

### DESCRIPTION

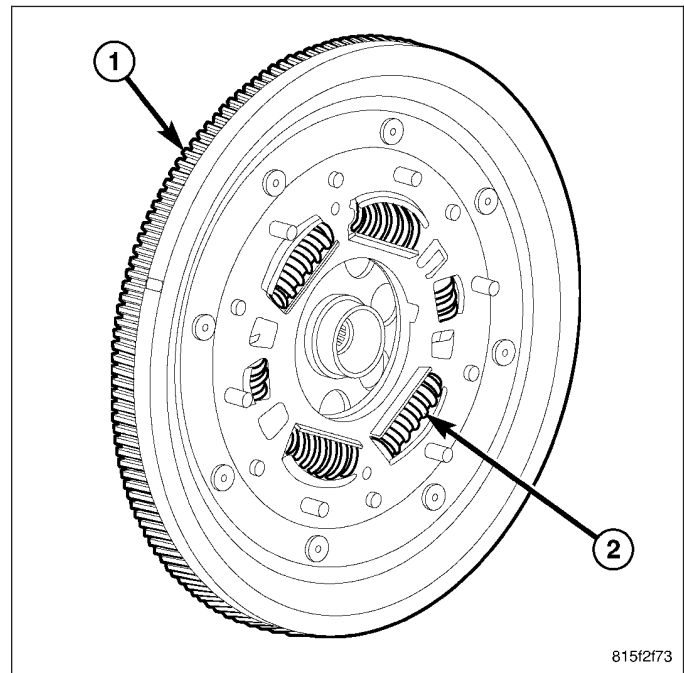
#### STANDARD FLYWHEEL

The standard (3) is a heavy plate bolted to the rear of the crankshaft (1). The flywheel incorporates the ring gear (2) around the outer circumference to mesh with the starter to permit engine cranking. The rear face of the flywheel serves as the driving member to the clutch disc.



#### DUAL MASS FLYWHEEL

The Dual Mass Flywheel is used on the 5.9L Diesel engine with G56 transmission. The flywheel incorporates the ring gear (1) around the outer circumference to mesh with the starter to permit engine cranking. The primary flywheel side is bolted to the crankshaft. The secondary flywheel side serves as the driving member to the clutch disc. Internal springs (2) are used to dampen energy. The Dual Mass Flywheel is serviced as an assembly only and should never be taken apart.





## DIAGNOSIS AND TESTING

### FLYWHEEL

Check flywheel (3) runout whenever misalignment is suspected. Flywheel runout should not exceed 0.08 mm (0.003 in.). Measure runout at the outer edge of the flywheel face with a dial indicator. Mount the indicator on a stud installed in place of one of the flywheel bolts.

Common causes of runout are:

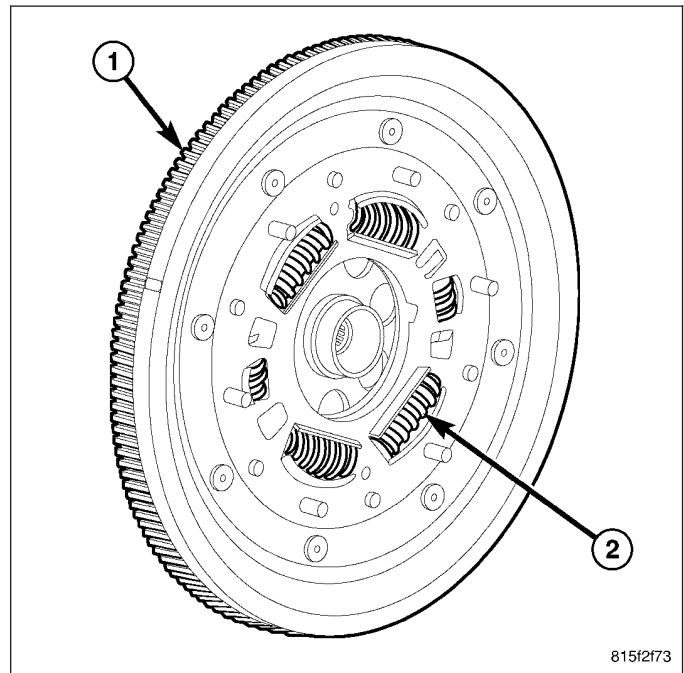
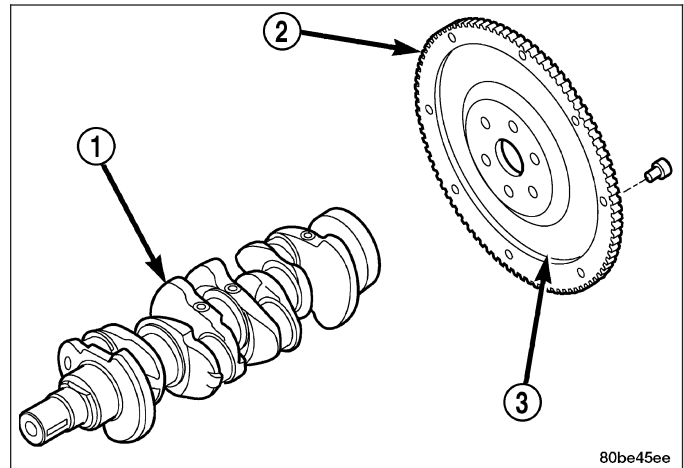
- heat warpage
- improper machining
- incorrect bolt tightening
- improper seating on crankshaft flange shoulder
- foreign material on crankshaft flange

Flywheel machining is not recommended. The flywheel clutch surface is machined to a unique contour and machining will negate this feature. Minor flywheel scoring can be cleaned up by hand with 180 grit emery or with surface grinding equipment. Remove only enough material to reduce scoring (approximately 0.001 - 0.003 in.). Heavy stock removal is **not recommended**. Replace the flywheel if scoring is severe and deeper than 0.076 mm (0.003 in.). Excessive stock removal can result in flywheel cracking or warpage after installation; it can also weaken the flywheel and interfere with proper clutch release.

Clean the crankshaft flange before mounting the flywheel. Dirt and grease on the flange surface may cock the flywheel causing excessive runout. Use new bolts when remounting a flywheel and secure the bolts with Mopar™ Lock And Seal or equivalent. Tighten flywheel bolts to specified torque only. Overtightening can distort the flywheel hub causing runout.

Clean the crankshaft flange before mounting the flywheel. Dirt and grease on the flange surface may cock the flywheel causing excessive runout. Use new bolts when remounting a flywheel and secure the bolts with Mopar™ Lock And Seal or equivalent. Tighten flywheel bolts to specified torque only. Overtightening can distort the flywheel hub causing runout.

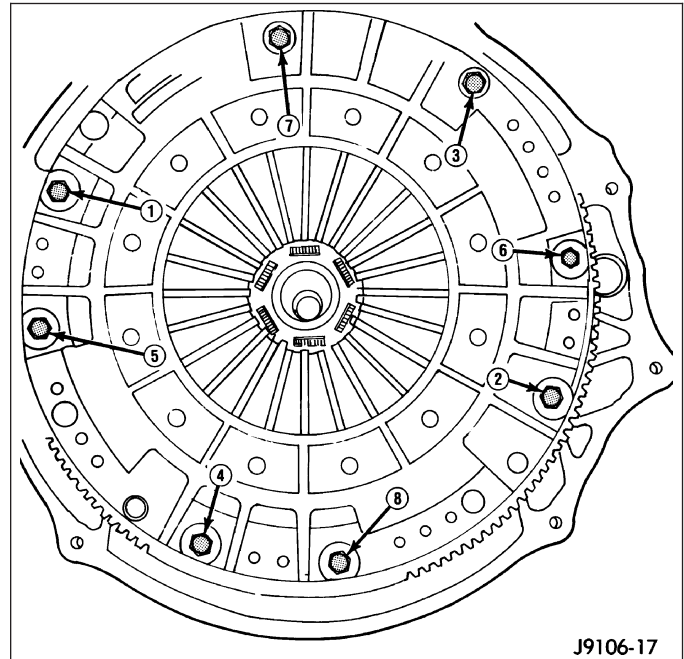
On a Dual Mass Flywheel (1) inspect all springs (2) for damage.



## REMOVAL

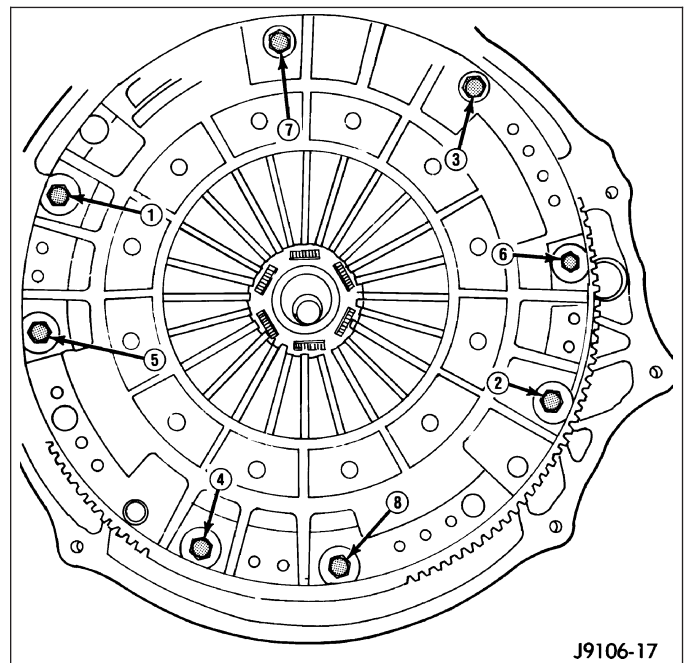
1. Remove transmission.
2. Loosen pressure plate bolts evenly, a few threads at a time and in a diagonal pattern to prevent warping the plate.
3. Remove bolts completely and remove pressure plate and disc.
4. Remove flywheel bolts and remove flywheel.

**NOTE:** Vehicles with Dual Mass Flywheel use an adapter plate between the flywheel and crank. This plate does not need to be removed.



## INSTALLATION

1. Install flywheel on the crankshaft.
2. Install flywheel bolts and tighten evenly in sequence to 95 N·m (70 ft. lbs.). Vehicles with Dual Mass Flywheel, tighten bolts to 55 N·m (40 ft. lbs.).
3. Install clutch.
4. Install transmission.



## FLYWHEEL-SRT10

### DIAGNOSIS AND TESTING

#### FLYWHEEL-SRT10

Common causes of flywheel problems:

- Incorrect bolt tightening
- Mounting the flywheel on a dirty crankshaft flange
- Improper seating on the crankshaft flange shoulder
- Heat warpage
- Loose flywheel to crankshaft bolts

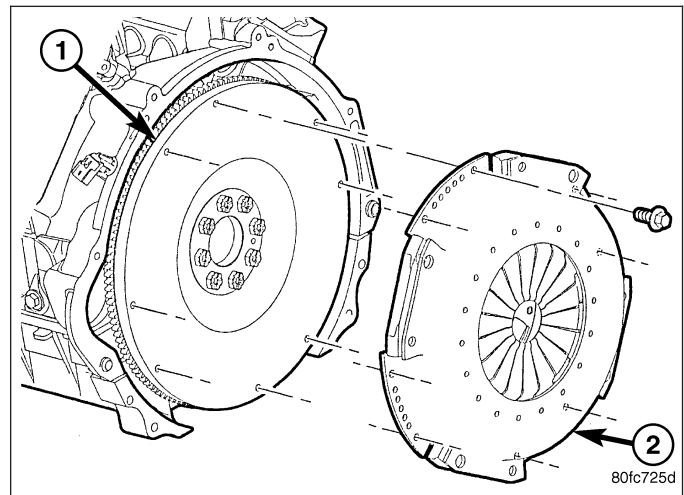
The flywheel should be replaced if warped or overheated. **Do not machine the face of the flywheel to correct a warped or overheated condition.**

Clean the crankshaft flange and its mating surface on the flywheel before assembling. Dirt/grease in this area could cause the flywheel to mis-aligned when installing.

Use **new** bolts when mounting flywheel and secure the bolts with Mopar™ Lock and Seal or equivalent. Tighten flywheel bolts to specified torque only. Over tightening can distort the flywheel causing run out.

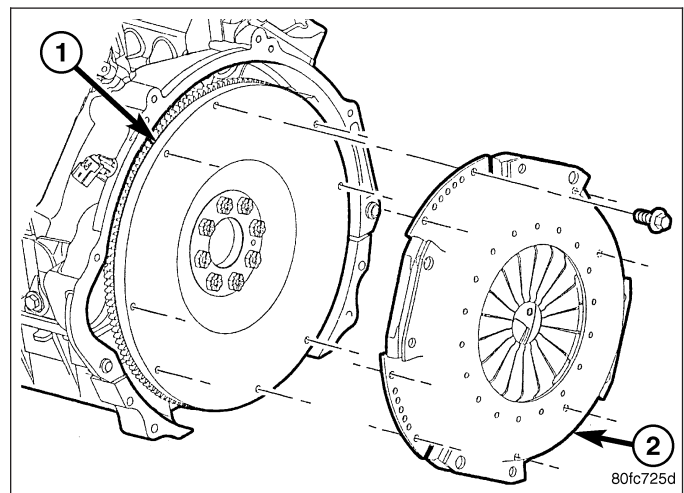
### REMOVAL

1. Remove transmission clutch housing and clutch assembly (2).
2. Remove flywheel (1) bolts and remove flywheel.



### INSTALLATION

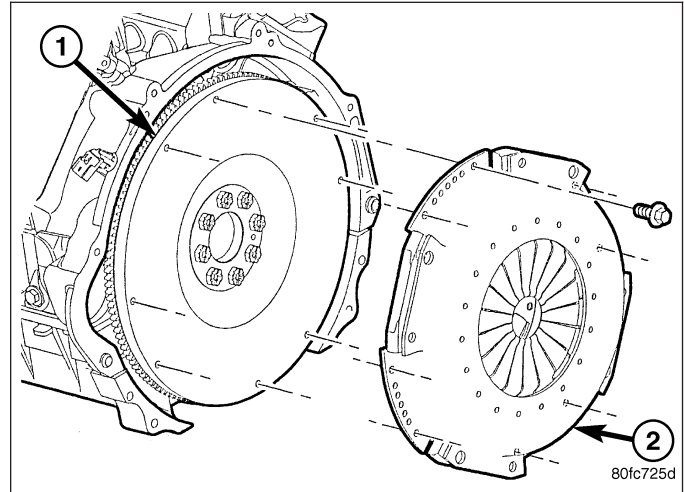
1. Clean flywheel bolts and apply thread sealer to bolts.
2. Install flywheel (1) on engine and install flywheel bolts.
3. Tighten flywheel bolts to 74 N·m (55 ft. lbs.).
4. Install clutch assembly (2), clutch housing and transmission.



## BEARING-PILOT

### REMOVAL

1. Remove transmission assembly from the vehicle.
2. Remove pressure plate (2) and clutch disc.
3. Remove pilot bearing with an internal puller and slide hammer to remove.

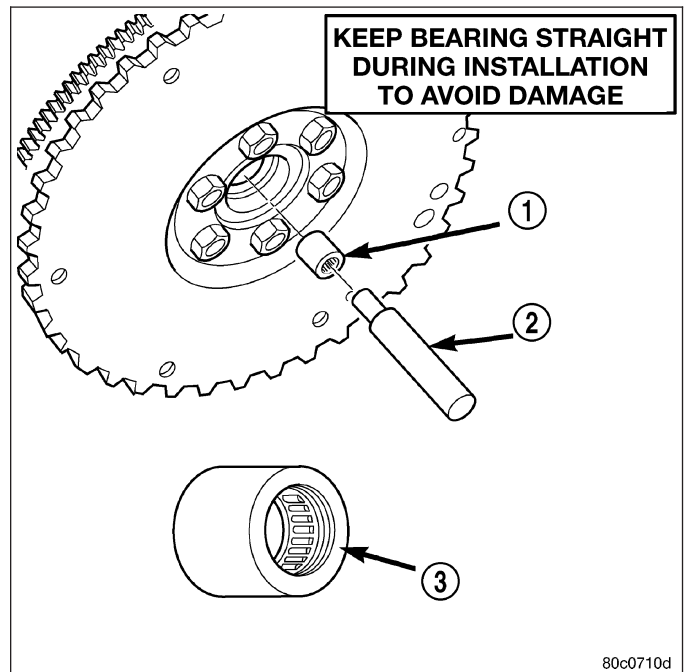


### INSTALLATION

1. Clean bearing bore with solvent and wipe dry with shop towel.
2. Install new bearing (1) with clutch alignment tool (2) and letter side of the bearing (3) facing the transmission. Bearing should be flush with edge of bearing bore.

**CAUTION: Do not allow bearing to become cocked and do not recess bearing.**

3. Install clutch disc, pressure plate and transmission.

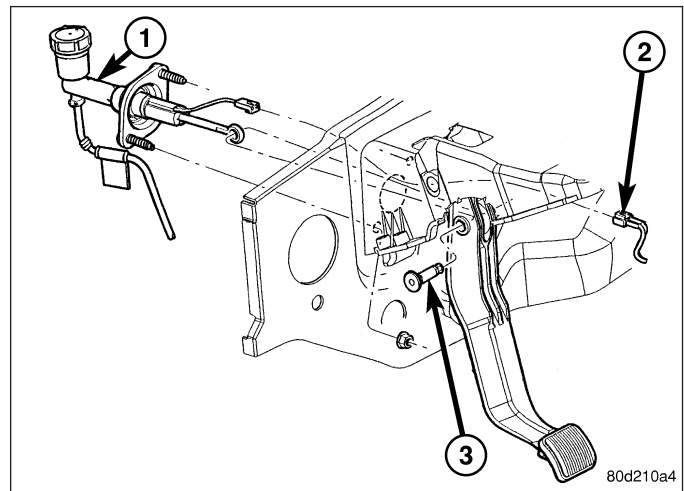
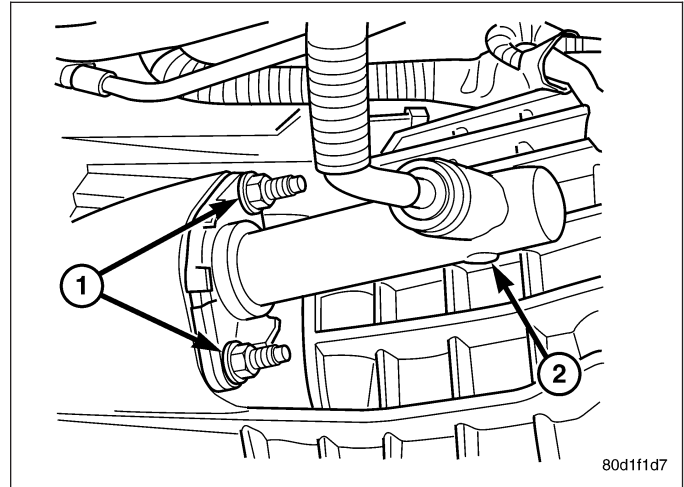


## LINKAGE

### REMOVAL

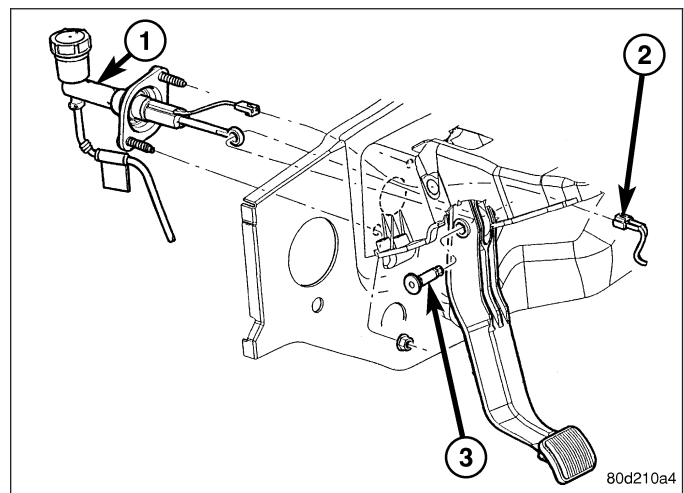
**CAUTION:** The hydraulic linkage has a quick disconnect at the slave cylinder. This fitting should never be disconnected or tampered with. Once the hydraulic line is connected to the slave cylinder, it should never be disconnected.

1. Raise and support vehicle.
2. Remove heat shield over hydraulic line.
3. Remove slave cylinder (2) nuts (1) on clutch housing.
4. Remove slave cylinder from clutch housing.
5. Remove plastic clip securing the hydraulic line to the dash panel from the lower dash panel flange.
6. Remove plastic clip securing hydraulic line to the dash panel from the upper dash panel stud.
7. Lower vehicle.
8. Disconnect clutch pedal interlock switch connector (2).
9. Remove clutch master cylinder (1) rod pin (3).
10. Verify that cap on clutch master cylinder reservoir is tight. This will avoid spillage during removal.
11. Remove clutch master cylinder nuts holding cylinder to the dash panel.
12. Remove clutch cylinders, reservoir and connecting lines from vehicle.



### INSTALLATION

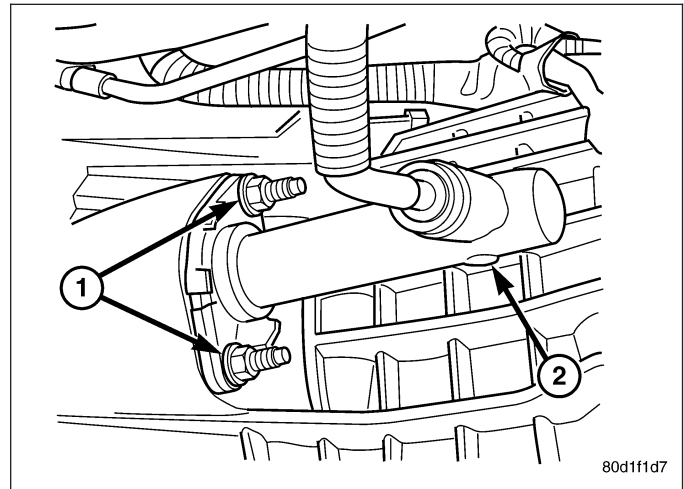
1. Position cylinders and connecting line in vehicle engine compartment. Position clutch hydraulic line against the dash panel and behind all engine hoses and wiring.
2. Apply a light coating of grease to the inside diameter of the master cylinder push rod eye.
3. Install clutch master cylinder (1) on dash panel and tighten clutch master cylinder nuts to 28 N·m (21 ft. lbs.).
4. Install clutch master cylinder push rod pin (3).
5. Connect clutch pedal position interlock switch connector (2).
6. Install plastic clip securing hydraulic line to the dash panel into the lower dash panel flange.
7. Install plastic clip securing hydraulic line to the dash panel onto the upper dash panel stud.



8. Raise vehicle.
9. Install slave cylinder (2) and verify cylinder rod is properly seated in release lever.
10. Install and tighten slave cylinder nuts (1) to 23 N·m (17 ft. lbs.).
11. If **new** clutch linkage is being installed, connect the clutch hydraulic line to the clutch slave cylinder.

**CAUTION:** Once the clutch hydraulic line is connected to the slave cylinder, it should never be disconnected.

12. Install heat shield over hydraulic line.
13. Operate linkage several times to verify proper operation.



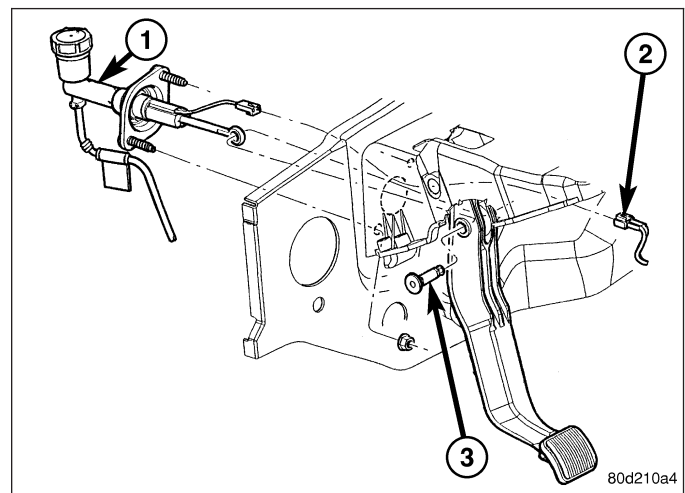
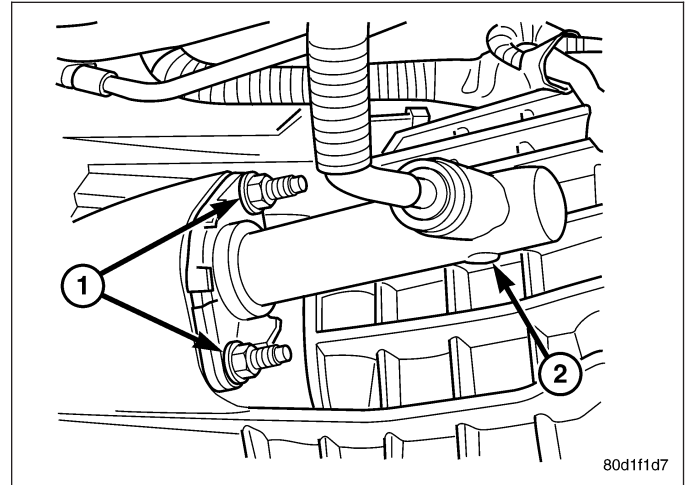
## LINKAGE-SRT10

### REMOVAL

1. Remove nuts (1) attaching slave cylinder (2) to studs on clutch housing.

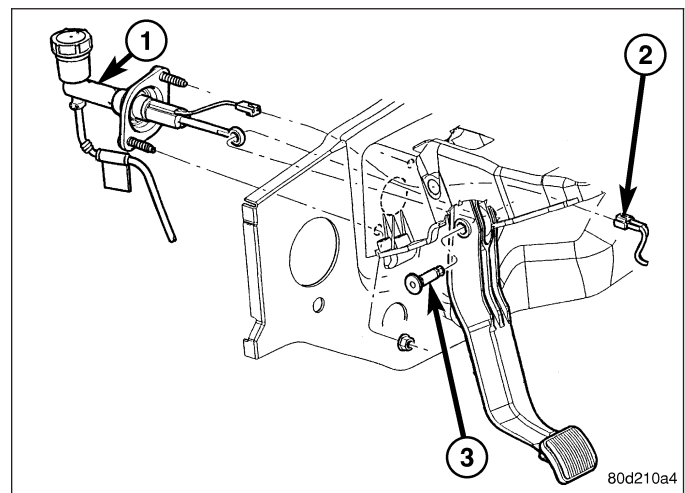
**CAUTION:** The hydraulic linkage has a quick disconnect at the slave cylinder. This fitting should never be disconnected or tampered with. Once the hydraulic line is connected to the slave cylinder, it should never be disconnected.

2. Raise and support vehicle.
3. Remove heat shield over hydraulic line.
4. Remove slave cylinder (2) from clutch housing.
5. Remove plastic clip securing the hydraulic line to the dash panel from the lower dash panel flange.
6. Remove plastic clip securing hydraulic line to the dash panel from the upper dash panel stud.
7. Lower vehicle.
8. Disconnect clutch pedal interlock switch connector (2).
9. Remove clutch master cylinder rod pin (3).
10. Verify that cap on clutch master cylinder reservoir is tight. This will avoid spillage during removal.
11. Remove clutch master cylinder nuts holding cylinder to the dash panel.
12. Remove clutch cylinders, reservoir and connecting lines from vehicle.



### INSTALLATION

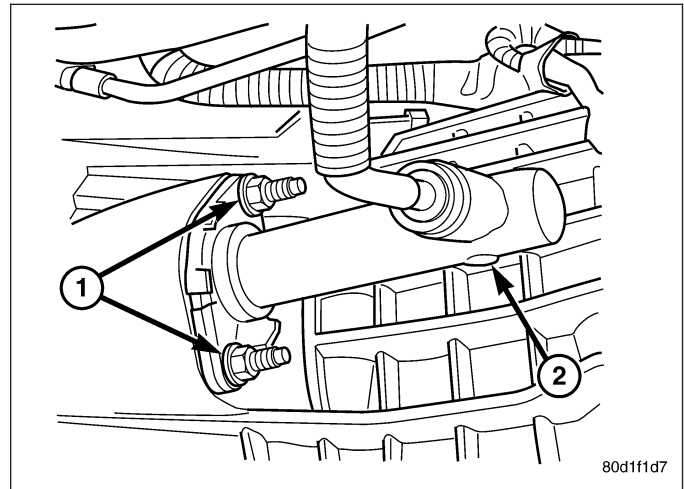
1. Position cylinders and connecting line in vehicle engine compartment. Position clutch hydraulic line against the dash panel and behind all engine hoses and wiring.
2. Apply a light coating of grease to the inside diameter of the master cylinder push rod (3) eye.
3. Install clutch master cylinder (1) on dash panel and tighten clutch master cylinder nuts to 28 N-m (21 ft. lbs.).
4. Install clutch master cylinder push rod pin.
5. Connect clutch pedal position interlock switch connector (2).
6. Install plastic clip securing hydraulic line to the dash panel into the lower dash panel flange.
7. Install plastic clip securing hydraulic line to the dash panel onto the upper dash panel stud.



8. Raise vehicle.
9. Install slave cylinder (2) and verify cylinder rod is properly seated in release lever.
10. Install and tighten slave cylinder nuts (1) to 23 N·m (17 ft. lbs.).
11. If **new** clutch linkage is being installed, connect the clutch hydraulic line to the clutch slave cylinder.

**CAUTION:** Once the clutch hydraulic line is connected to the slave cylinder, it should never be disconnected.

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13. Operate linkage several times to verify proper operation.



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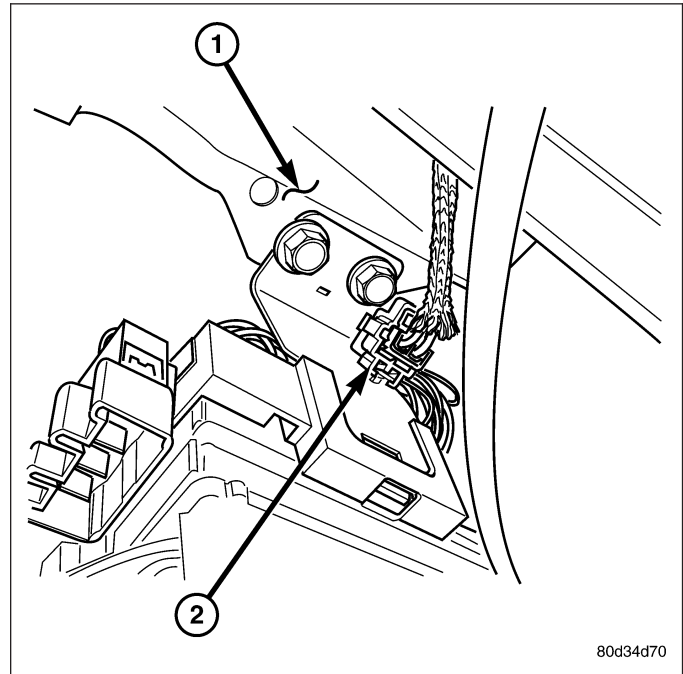


## SWITCH-CLUTCH PEDAL POSITION

### DIAGNOSIS AND TESTING

#### SWITCH-CLUTCH PEDAL POSITION

1. Disconnect switch 2-wire connector (2) attached to pedal support bracket (1), under instrument panel to left of clutch pedal.
2. Check switch continuity with an ohmmeter while operating clutch pedal.
  - Pedal Depressed - Continuity
  - Pedal Released - No Continuity
3. If continuity is not present or always present, replace clutch master cylinder. Switch is not serviced separately.

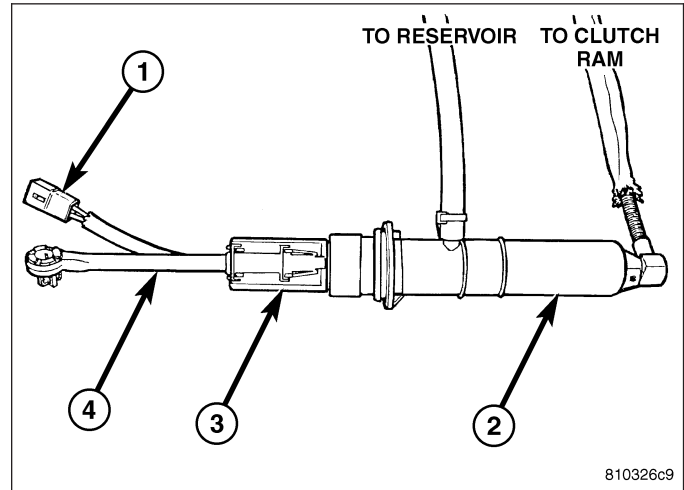


## SWITCH-CLUTCH PEDAL POSITION SRT10

### DIAGNOSIS AND TESTING

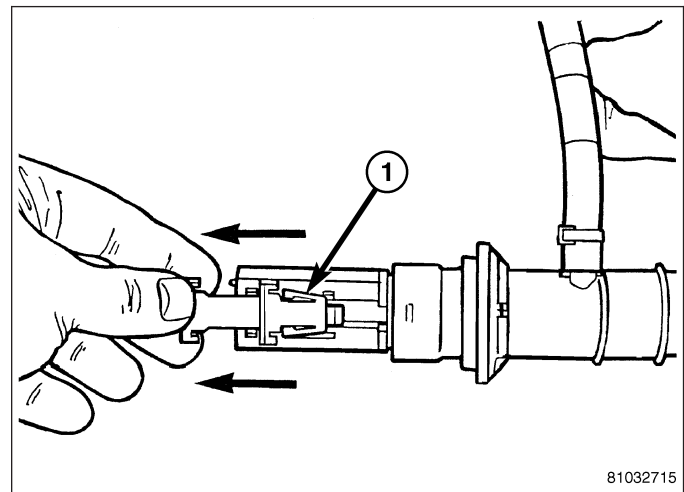
#### SWITCH-CLUTCH PEDAL POSITION SRT10

1. Disconnect the connector on the clutch position switch (1) from the vehicle wiring harness.
2. Place a ohmmeter across the terminals of the switch connector. The switch should show no continuity with the clutch pedal in the released (clutch engaged) position.
3. Slowly push the clutch pedal to the floor (clutch disengaged). The ohmmeter should show continuity just before the pedal reaches the end of its travel.
4. If the clutch switch shows continuity with clutch pedal up or no continuity with clutch pedal down, the switch is defective. The switch has no serviceable parts and should be replaced as an assembly.

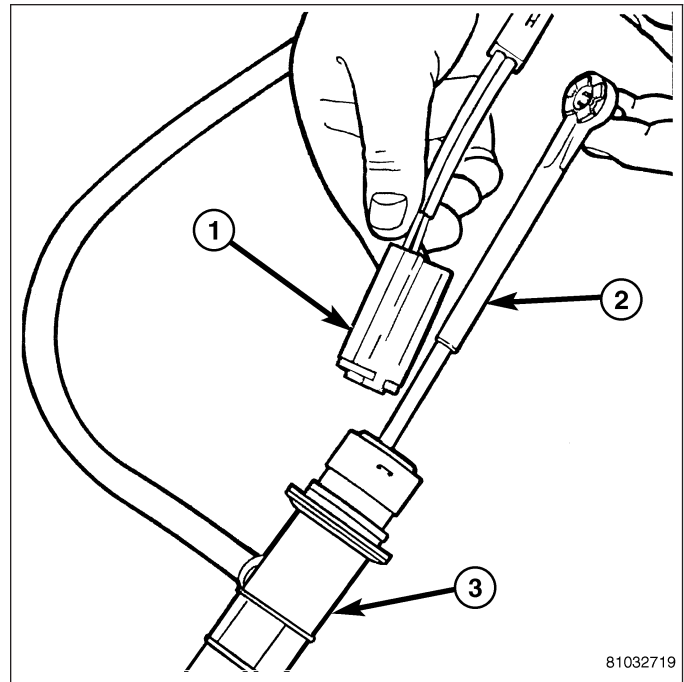


### REMOVAL

1. Disconnect the clutch pedal position switch connector.
2. Disconnect the clutch actuation rod from the clutch pedal.
3. Remove the clutch master cylinder from the toe box.
4. Remove the white clutch pedal position switch retaining clip (1).



5. Push the switch up (1) the rod (2) slightly. Then pull the bottom of the switch outward.



## INSTALLATION

1. Install new switch (1) as shown. Be sure that the spring loaded plunger inside the switch is slightly compressed. The plunger inside the switch must go on the narrow section of the clutch master cylinder actuation rod. Place the top of the switch against the rod. Then push the switch up slightly. This will compress the plunger. Then push the bottom of the switch against the rod. Failure to install the switch as described or forcing the switch onto the rod will crack the switch.
2. Install new white plastic retaining clip.
3. Install the clutch master cylinder back into the vehicle.
4. Reconnect the clutch switch connector.
5. Check clutch position switch operation.

