CLUTCH

CONTENTS

page

GENERAL INFORMATION
CLUTCH COMPONENTS 1
CLUTCH DISC AND COVER APPLICATION ... 3
CLUTCH REPLACEMENT 3
DESCRIPTION AND OPERATION
CLUTCH PEDAL POSITION SWITCH 4
CLUTCH RELEASE SYSTEM 4
DIAGNOSIS AND TESTING
CLASH–INTO–REVERSE COMPLAINTS 8
CLUTCH CHATTER COMPLAINTS 8
CLUTCH COVER AND DISC RUNOUT 8
CLUTCH DIAGNOSIS 6
CLUTCH PEDAL POSITION SWITCH 4
DRIVE PLATE MISALIGNMENT 7
REMOVAL AND INSTALLATION
CLUTCH ASSEMBLY (2.5L DIESEL) 13
CLUTCH CABLE SYSTEM — LHD 8
CLUTCH PEDAL POSITION SWITCH 10

page

CLUTCH RELEASE BEARING AND FORK ... 14
HYDRAULIC CLUTCH LINKAGE SYSTEM — RHD 11
MASTER CYLINDER SYSTEM — RHD 12
MODULAR CLUTCH ASSEMBLY (2.0L AND 2.4L GASOLINE) 13
QUICK CONNECT COUPLING — RHD 12
SLAVE CYLINDER ASSEMBLY — RHD 12
CLEANING AND INSPECTION
CLEANING PRECAUTIONS 15
CLUTCH CONTAMINATION 15
ADJUSTMENTS
CLUTCH CABLE — LHD 16
CLUTCH PEDAL POSITION SWITCH 16
SPECIFICATIONS
CLUTCH TIGHTENING REFERENCE 16

GENERAL INFORMATION

CLUTCH COMPONENTS

The clutch used in the 2.0 liter and 2.4 liter gasoline engine is a single, dry-disc modular clutch assembly. The modular clutch assembly combines the pressure plate cover, pressure plate, disc, and flywheel into one unit. The unit rides on the input shaft of the transmission and is bolted to the drive plate mounted on the rear of the crankshaft. The clutch used in the 2.5 liter diesel engine is a conventional clutch and pressure plate arrangement.

CLUTCH CABLE AND PEDAL — LHD

The clutch cable has a unique self-adjuster mechanism built into the cable which compensates for clutch disc wear. The cable requires no maintenance or lubrication. There are no serviceable components on the cable assembly.

The clutch pedal is connected to the cable through a plastic spacer (Fig. 1). The upper end of the clutch pedal pivots in the pedal bracket on two nylon bushings and a shaft (Fig. 2). These bushings are greased during assembly and do not require periodic lubrication.

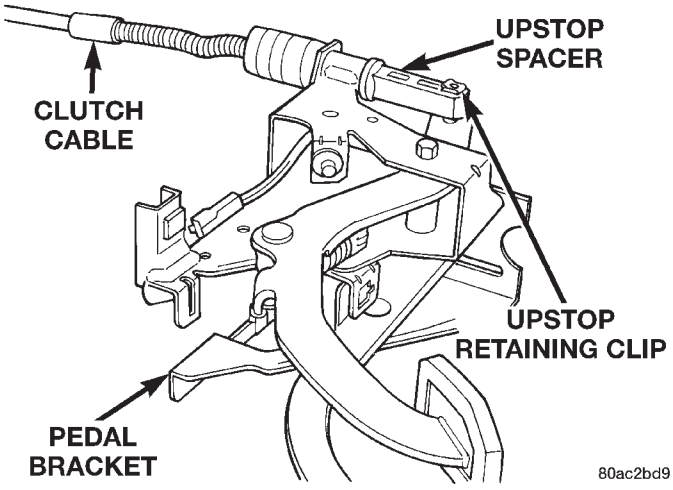

Fig. 1 Upstop/Spacer and Cable — LHD

GENERAL INFORMATION (Continued)

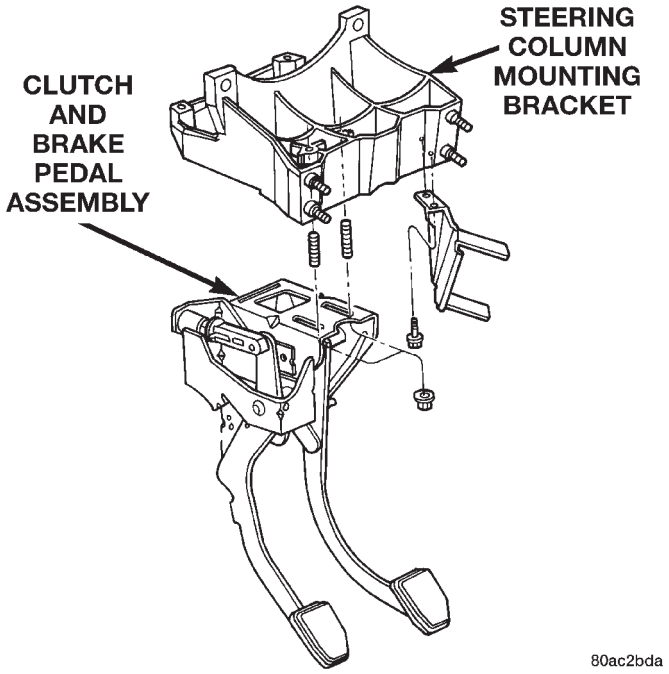

Fig. 2 Clutch Pedal Components — LHD

The clutch pedal on the 2.0L is fitted with a return spring (Fig. 3). The spring hook that attaches to the pedal is coated with nylon. Push the hook all the way through the hole in the pedal to prevent it from walking out. No service lubrication is required.

The clutch pedal on the 2.4L and 2.5L VM diesel is fitted with an assist spring (Fig. 4) to reduce clutch pedal effort. The assist spring has two plastic end fittings which locate to pins on the clutch pedal and bracket. The plastic which the fittings are made of includes PTFE lubricant. No service lubrication is required.

HYDRAULIC LINKAGE AND COMPONENTS — RHD

The hydraulic clutch linkage is a prefilled system free of air, contamination, and leaks. There is no routine maintenance required. The hydraulic clutch linkage is serviced as an assembly and the individual components cannot be overhauled or serviced separately. The hydraulic linkage consists of a clutch master cylinder with integral reservoir, a clutch slave cylinder and an interconnecting fluid line with quick disconnect coupling (Fig. 5).

The clutch master cylinder push rod is connected to the clutch pedal (Fig. 6). The clutch pedal is fitted with a return spring. The spring hook that attaches to the pedal is coated with nylon. No service lubrication is necessary. The slave cylinder push rod is connected to the clutch release fork (Fig. 5).

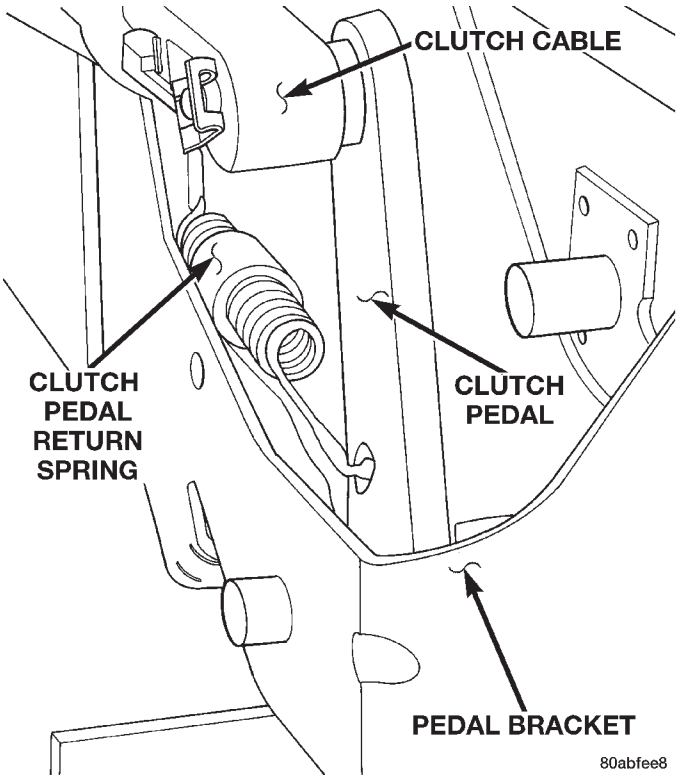

Fig. 3 Clutch Pedal Return Spring — 2.0L LHD

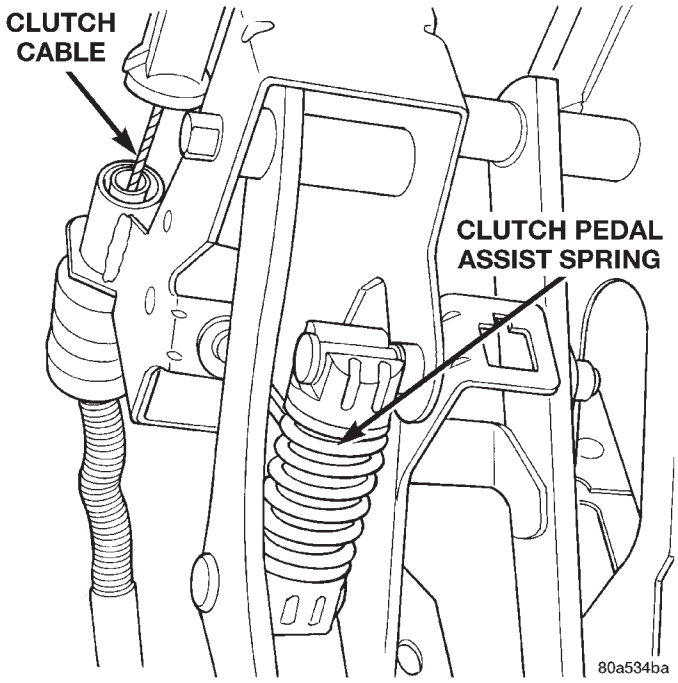

Fig. 4 Assist Spring — 2.4L and 2.5L VM Diesel LHD

GENERAL INFORMATION (Continued)

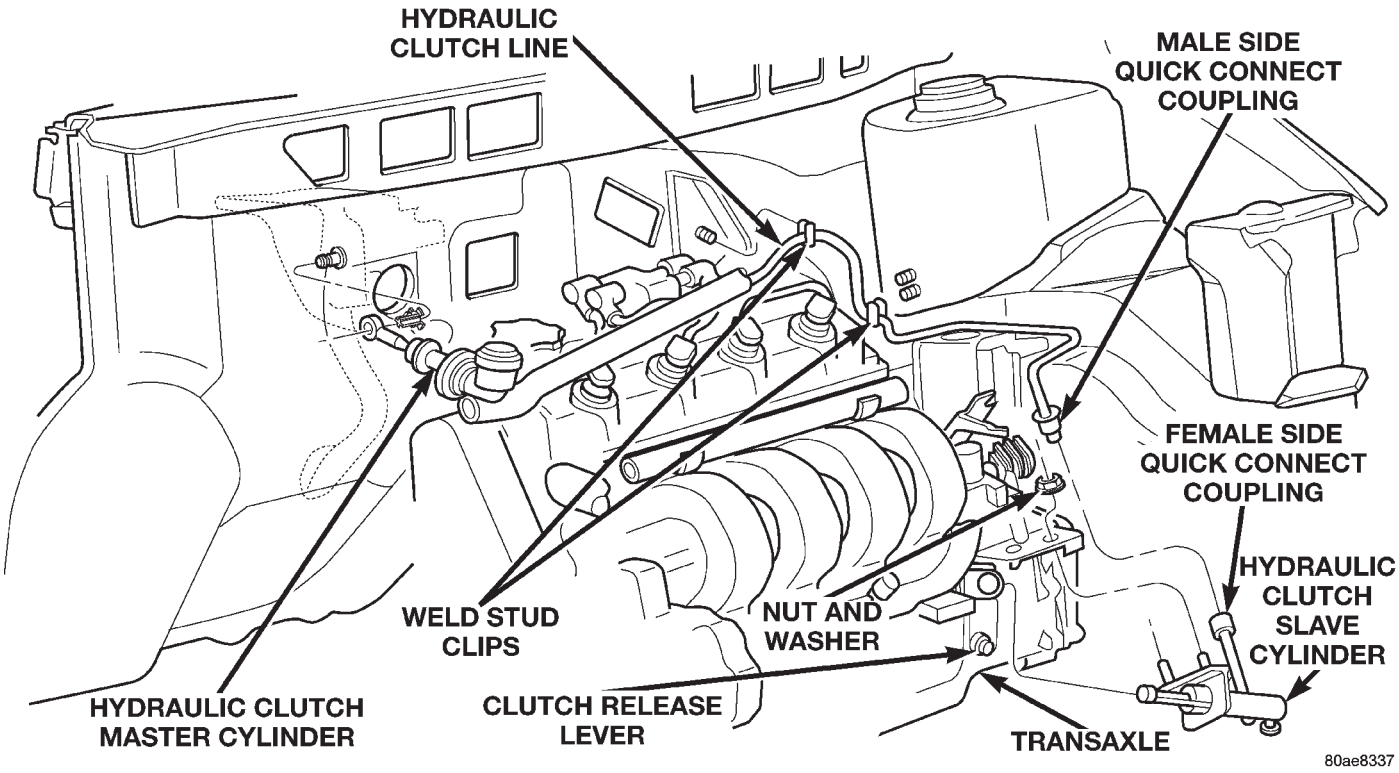

Fig. 5 Hydraulic Clutch Linkage System — RHD

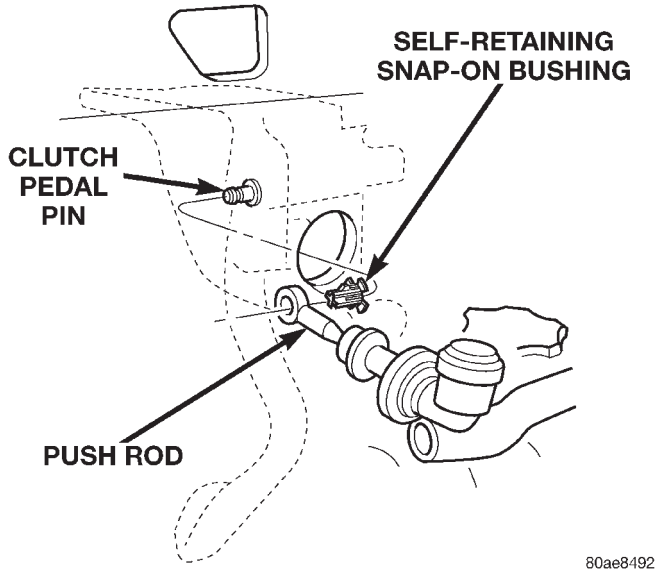

Fig. 6 Clutch Master Cylinder Mounting — RHD

CLUTCH DISC AND COVER APPLICATION

The 2.0 liter and 2.4 liter gasoline engines use a 240 mm (9.5 in.) modular clutch assembly. The 2.5 liter diesel engine uses a 240 mm (9.5 in.) standard clutch and pressure plate arrangement. Although the clutches are the same size they do not interchange.

CLUTCH REPLACEMENT

The transaxle must be removed to service the clutch assembly, fork, or bearing.

DESCRIPTION AND OPERATION

CLUTCH RELEASE SYSTEM

CLUTCH CABLE — LHD

The manual transaxle clutch release system has a unique self-adjusting mechanism to compensate for clutch disc wear (Fig. 7). This adjuster mechanism is located within the clutch cable assembly. The preload spring maintains tension on the cable. This tension keeps the clutch release bearing continuously loaded against the fingers of the clutch cover assembly.

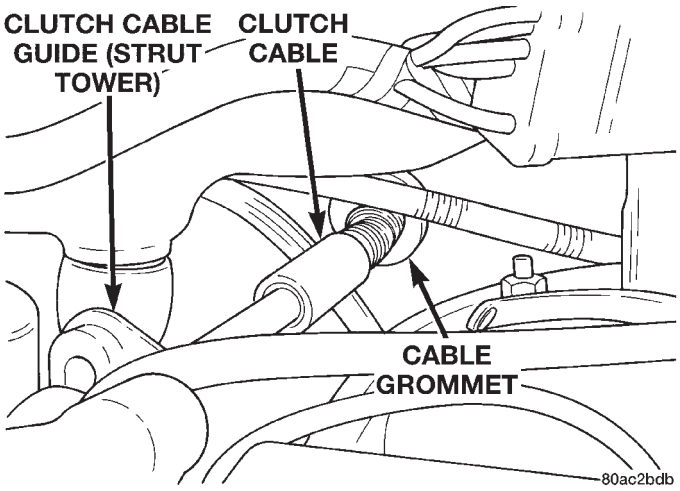

Fig. 7 Clutch Cable — LHD

HYDRAULIC CLUTCH — RHD

Leverage, clamping force, and friction are what make the clutch work. The disc serves as the friction element and a diaphragm spring and pressure plate provide the clamping force. The clutch pedal, hydraulic linkage, release lever and bearing provide the leverage to disengage and engage the modular clutch assembly.

The modular clutch assembly contains the cover, diaphragm spring, pressure plate, disc and flywheel in one unit. The modular clutch also uses a drive plate and is bolted to and driven by the drive plate.

The clutch linkage uses hydraulic pressure to operate the clutch. The clutch master cylinder push rod is connected to the clutch pedal and the slave cylinder push rod is connected to the release lever in the clutch housing.

Depressing the clutch pedal develops fluid pressure in the clutch master cylinder. This pressure is transmitted to the slave cylinder through a connecting line. In turn, the slave cylinder operates the clutch release lever.

The clutch release bearing is mounted on the transmission front bearing retainer. The bearing is attached to the release lever, which moves the bearing into contact with the clutch cover diaphragm spring.

Slave cylinder force causes the release lever to move the release bearing into contact with the diaphragm spring. As additional force is applied, the bearing presses the diaphragm spring fingers inward on the fulcrums. This action moves the pressure plate rearward relieving clamp force on the disc. The clutch disc is disengaged and not driven at this point.

The process of clutch engagement is simply the reverse of what occurs during disengagement. Releasing pedal pressure removes clutch linkage pressure. The release bearing moves away from the diaphragm spring which allows the pressure plate to exert clamping force on the clutch disc.

CLUTCH PEDAL POSITION SWITCH

The clutch pedal position switch functions as a safety interlock device. It prevents possible engine cranking with the clutch engaged.

The clutch pedal position switch is wired in series between the starter relay coil and the ignition switch.

The clutch pedal position switch is mounted to a bracket located behind the clutch pedal. The switch is held in place by four plastic wing tabs.

The clutch pedal position switch IS NOT adjustable. The pedal blade contacts the switch in the down position (Fig. 8).

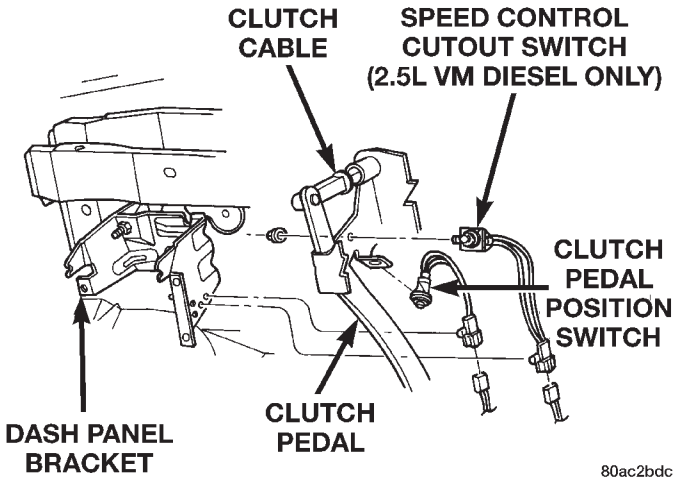

Fig. 8 Clutch Pedal Position Switch and Components — LHD Shown

DIAGNOSIS AND TESTING

CLUTCH PEDAL POSITION SWITCH

CLUTCH PEDAL POSITION SWITCH–ELECTRICAL TEST

Disconnect clutch pedal position switch harness from instrument panel wiring harness. Using an ohmmeter, check for continuity between the two terminals in the connector on the switch harness. There should be no continuity between the terminals when

DIAGNOSIS AND TESTING (Continued)

the switch is in its normal (fully extended) position. When the switch is depressed more than 1.25 mm (0.050), the ohmmeter should show continuity (zero ohms).

If ohmmeter readings do not fall within these ranges, the switch is defective, and must be replaced.

CLUTCH PEDAL POSITION SWITCH–MECHANICAL TEST

With the park brake set and the vehicle **IN NEUTRAL,** turn the key to the start position. The vehicle should not crank. If the vehicle cranks, the switch is defective (shorted out) and must be replaced. If the vehicle does not crank proceed to the next step.

WARNING: BEFORE PERFORMING THIS STEP, BE SURE THAT THE AREA IN FRONT OF THE VEHICLE IS CLEAR OF OBSTRUCTIONS AND PEOPLE. VEHICLE MAY MOVE WHEN PERFORMING THIS TEST.

With the park brake set and the vehicle **IN GEAR,** turn the key to the start position and hold it there.

Slowly depress the clutch pedal and feel for any vehicle motion when the starter is energized. If there is no motion the switch is working properly.

If motion is felt, check to see if the switch is making contact when the pedal is between 25 mm (1.0 in.) and 6 mm (0.25 in.) from the floor. If this condition is met, then the problem is either the clutch or the clutch actuation system (See "Clutch Will Not Disengage Properly"). If this condition is not met, then the switch mounting tab on the brake bracket is bent, and the brake bracket must be replaced.

If vehicle will not crank, even with clutch pedal pressed to the floor, refer to "Service Diagnosis-Clutch Pedal Position Switch" chart in this section.

SERVICE DIAGNOSIS–CLUTCH PEDAL POSITION SWITCH

CONDITION	POSSIBLE CAUSES	CORRECTION
ENGINE WON'T CRANK WHEN CLUTCH PEDAL IS PRESSED TO THE FLOOR	Switch does not have continuity when plunger is depressed 1.25 mm	Defective switch. Replace switch.
	Switch plunger is not depressed when clutch pedal is pushed to the floor	Floor mat interferes with clutch pedal movement. Move floor mat out of the way. Switch mounting bracket is bent. Replace brake bracket assembly
	Problem is related to other components in the starting circuit	Check other components in the starting circuit. Refer to Section 8A, Battery/Starting/Charging System.

DIAGNOSIS AND TESTING (Continued)

CLUTCH DIAGNOSIS

Problem diagnosis will generally require a road test to determine the type of fault. Component inspection will then determine the problem after road testing.

Drive the vehicle at normal speeds during road test. Shift the transaxle through all gear ranges and observe clutch action. If chatter, grab, slip, or improper release is experienced, remove and inspect the clutch components. If the problem is noise or hard shifting, further diagnosis may be needed. The transaxle or other driveline components may actually be at fault.

SERVICE DIAGNOSIS–CLUTCH GRAB/CHATTER

CONDITION	POSSIBLE CAUSES	CORRECTION
CLUTCH DISC FACING COVERED WITH OIL OR GREASE	Oil leak at engine rear main or transaxle input shaft seal	Correct leak and replace clutch assembly
NO FAULT FOUND WITH CLUTCH COMPONENTS	Problem actually related to suspension or driveline component	Further diagnosis required. Check engine/transmission mounts, suspension attaching parts and other driveline components as needed.
	Engine related problems	Check EFI and ignition systems
PARTIAL ENGAGEMENT OF CLUTCH DISC	Clutch cover, spring, or release fingers bent, distorted (rough handling, improper assembly)	Replace clutch assembly
	Clutch disc damaged or distorted	Replace clutch assembly
	Clutch misalignment	Check alignment and runout of flywheel, disc, or cover. Check clutch housing to engine dowels and dowel holes for damage. Correct as necessary.

SERVICE DIAGNOSIS–CLUTCH SLIPS

CONDITION	POSSIBLE CAUSES	CORRECTION
DISC FACING WORN OUT	Normal wear.	Replace clutch assembly.
	Driver frequently rides (slips) clutch, results in rapid wear overheating.	Replace clutch assembly
	Insufficient clutch cover diaphragm spring tension	Replace clutch assembly
CLUTCH DISC FACING CONTAMINATED WITH OIL OR GREASE	Leak at rear main oil seal or transaxle input shaft seal	Replace leaking seals. Replace clutch assembly.
	Road splash, water entering housing	Seal housing. Inspect clutch assembly.
CLUTCH IS RUNNING PARTIALLY DISENGAGED	Release bearing sticking or binding, does not return to normal running position.	Verify that bearing is actually binding. Then, replace bearing and transmission front bearing retainer if sleeve surface is damaged.
	Cable self-adjuster mechanism sticking or binding causing high preload (LHD Applications only)	Verify that self-adjuster is free to move (LHD Applications only)
CLUTCH DISC FACINGS HAVE FRACTURED INTO SMALL PIECES	Driver performs a 5-1 downshift at vehicle speed in excess of 60 miles per hour	Alert driver to problem cause. Replace clutch assembly.
	Excessive heat from slippage	Replace clutch assembly

DIAGNOSIS AND TESTING (Continued)

SERVICE DIAGNOSIS–IMPROPER CLUTCH RELEASE

CONDITION	POSSIBLE CAUSES	CORRECTION
CLUTCH DISC BINDS ON INPUT SHAFT SPLINES	Clutch disc hub splines damaged during installation	Clean, smooth, and lubricate disc and shaft splines. Replace clutch assembly and/or input shaft if splines are severely damaged.
	Input shaft splines rough, damaged.	Clean input shaft splines. Then lube.
	Corrosion or rust formations on splines of input shaft and disc	Clean input shaft splines and disc splines, then lube
CLUTCH DISC RUSTED TO FLYWHEEL AND/OR PRESSURE PLATE	Occurs in vehicles stored or not driven for extended period of time. Also occurs after steam cleaning if vehicle is not used for extended period.	Replace clutch assembly
CLUTCH WILL NOT DISENGAGE PROPERLY	Disc bent, distorted during transaxle installation	Replace clutch assembly
	Clutch cover diaphragm spring damaged during transaxle installation	Replace clutch assembly
	Release fork and (or) bushings damaged	Replace fork and (or) bushings if worn or damaged
	Clutch cable binding or routed incorrectly	Check and correct cable routing
	Self-adjuster in cable not functioning properly, resulting in excess cable slack	Pull on cable conduit at transaxle (as if disconnecting cable) to check adjuster operation
	Clutch pedal travel restricted	Verify clutch pedal can travel all the way to the downstop on the bracket

SERVICE DIAGNOSIS–CLUTCH PEDAL NOISE

CONDITION	POSSIBLE CAUSES	CORRECTION
CLUTCH PEDAL MAKES REPEATED ″POP″ NOISE IN THE FIRST INCH OF TRAVEL	Self-adjusting mechanism in cable defective (LHD Applications)	Replace clutch cable (LHD Applications)
CLUTCH PEDAL SQUEAKS WHEN DEPRESSED TO FLOOR	Pedal bushings worn out or inadequate lubrication	Replace or lubricate bushings
	Clutch pedal assist spring fittings worn out	Replace assist spring fittings
	Clutch release shaft bushings in the bellhousing are worn out	Replace release shaft and bushings

DRIVE PLATE MISALIGNMENT

Common causes of misalignment are:

- Heat warping
- Mounting drive plate on a dirty crankshaft flange
- Incorrect bolt tightening
- Improper seating on the crankshaft shoulder
- Loose crankshaft bolts

Clean the crankshaft flange before mounting the drive plate. Dirt and grease on the flange surface may misalign the flywheel, causing excessive runout. Use new bolts when mounting drive plate to crankshaft. Tighten drive plate bolts to specified torque only. Over-tightening can distort the drive plate hub causing excessive runout.

DIAGNOSIS AND TESTING (Continued)

CLUTCH COVER AND DISC RUNOUT

Check condition of the clutch cover before installation. A warped cover or diaphragm spring will cause grab and/or incomplete release or engagement. Use care when handling the clutch assembly. Impact can distort the cover, diaphragm spring, and release fingers.

CLUTCH CHATTER COMPLAINTS

For all clutch chatter complaints, do the following:

(1) Check for loose, misaligned, or broken engine and transmission mounts. If present, they should be corrected at this time. Test vehicle for chatter. If chatter is gone, there is no need to go any further. If chatter persists:

(2) Check to see if clutch cable routing is correct and operates smoothly (LHD applications).

(3) Check for loose connections in drivetrain. Correct any problems and determine if clutch chatter complaints have been satisfied. If not:

(4) Remove transaxle. See Group 21, Manual Transaxle for procedure.

(5) Check to see if the release bearing is sticky or binding. Replace bearing, if needed.

(6) Check linkage for excessive wear on the pivot shaft, fork, and bushings. Replace all worn parts.

(7) Check clutch assembly for contamination (dirt, oil). Replace clutch assembly, if required.

(8) Check to see if the clutch disc hub splines are damaged. Replace with new clutch assembly, if necessary.

(9) Check input shaft splines for damage. Replace, if necessary.

(10) Check for uneven wear on clutch fingers.

(11) Check for broken clutch cover diaphragm spring fingers. Replace with new clutch assembly, if necessary.

CLASH–INTO–REVERSE COMPLAINTS

(1) Depress clutch pedal to floor and hold. After three seconds, shift to reverse. If clash is present, clutch has excessive spin time.

NOTE: Verify that nothing is obstructing pedal travel. Floormats or other articles located underneath the clutch pedal could prevent the clutch from disengaging fully.

(2) Remove transaxle. See Group 21, Manual Transaxle for procedure.

(3) Check the input shaft spline, clutch disc splines, and release bearing for dry rust. If present, clean rust off and apply a light coat of bearing grease to the input shaft splines. Apply grease on the input shaft splines only where the clutch disc slides. Verify that the clutch disc slides freely along the input shaft spline.

(4) Check to see if the clutch disc hub splines are damaged, and replace with new clutch assembly if required.

(5) Check the input shaft for damaged splines. Replace as necessary.

(6) Check for broken clutch cover diaphragm spring fingers.

(7) Install clutch assembly and transaxle.

REMOVAL AND INSTALLATION

CLUTCH CABLE SYSTEM — LHD

REMOVAL

(1) Hoist vehicle

(2) Using a pair of pliers, grasp end of clutch cable and pull downward.

(3) Remove clutch cable retaining clip from clutch release lever (Fig. 9).

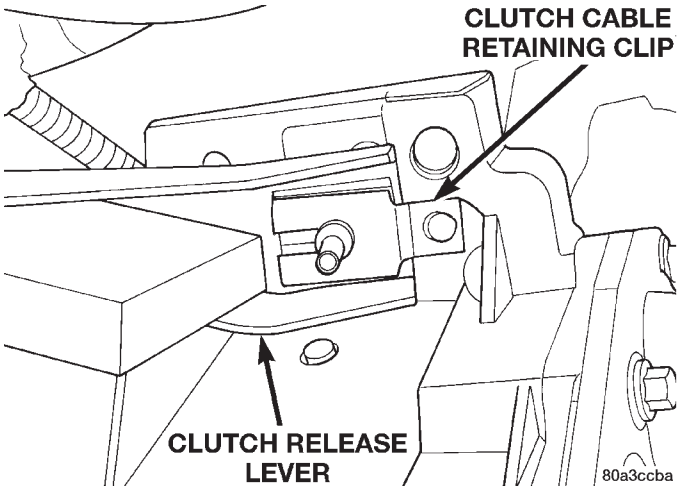

Fig. 9 Clutch Cable Retaining Clip — LHD

(4) Guide cable through slot in transaxle and disconnect (Fig. 10).

(5) Unsnap cable from the cable guide located at the left shock tower (Fig. 10).

(6) Inside the vehicle, remove the driver side lower dash cover and steel support plate. This provides access to the top of the clutch pedal.

(7) Disconnect clutch cable upstop/spacer with cable strand from clutch pedal (Fig. 11) (Fig. 12).

REMOVAL AND INSTALLATION (Continued)

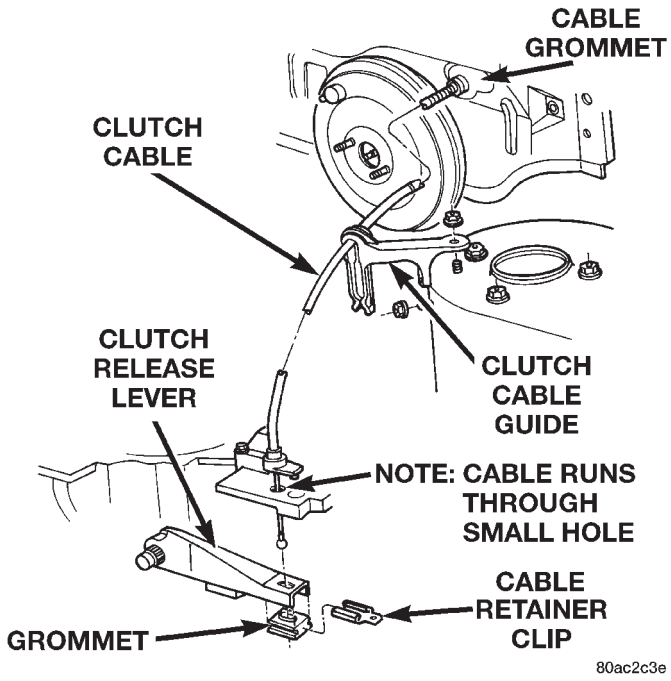

Fig. 10 Clutch Cable Routing — LHD

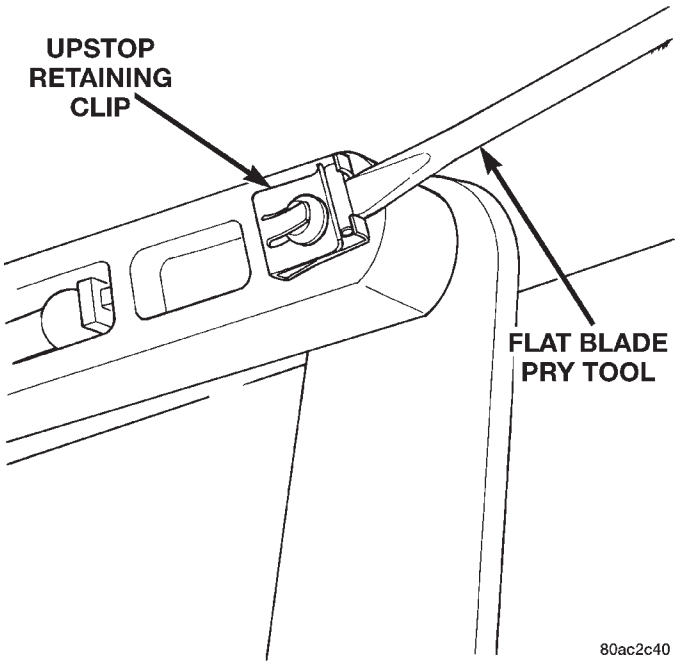

Fig. 11 Clutch Cable Retaining (Upstop) Clip — LHD

NOTE: Depressing the clutch pedal to the floor provides access to the clutch cable strand. Disconnect the cable upstop/spacer from the pedal pivot pin by removing the retaining clip at the top of the clutch pedal. Wedge a flat blade pry tool in the clip slot to remove the clip. Remove the clutch pedal upstop/spacer from the pedal by wedging a flat blade pry tool between the spacer and pedal. It may be necessary to push the steel support bracket supporting the electrical junction block slightly to the left for clearance to remove the upstop/spacer from the pedal. Push the cable end fitting out of upstop/spacer.

CAUTION: Use caution if lifting the clutch pedal once the clutch pedal/upstop spacer has been removed. The clutch pedal assist spring provides enough pedal force to cause an injury. Also, on 2.5L Turbo Diesel vehicles, lifting the clutch pedal with the upstop/spacer removed may bend the cruise control cutout switch bracket located near the top of the clutch pedal. This will result in non-operational cruise control.

CAUTION: Do not pull on the clutch cable to remove it from the dash panel. Damage to the cable self-adjuster may occur.

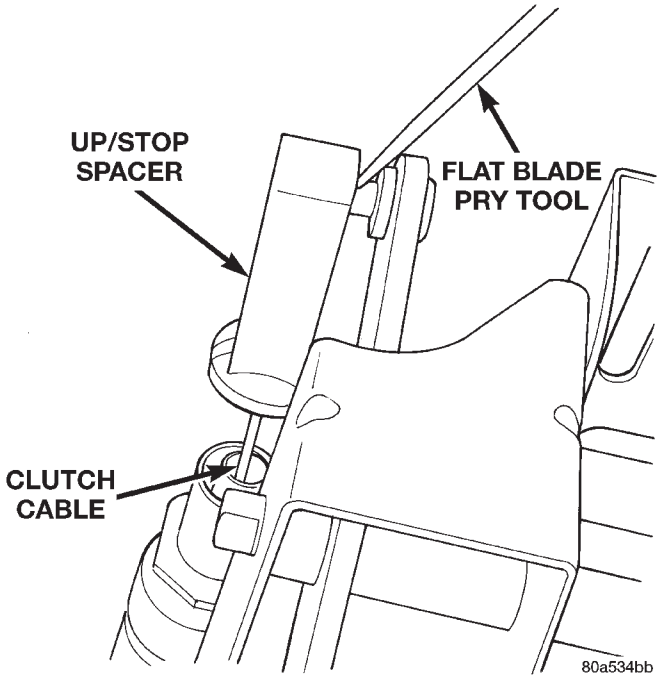

Fig. 12 Upstop/Spacer — LHD

NOTE: It may be helpful to remove the battery and clutch cable guide from the left shock tower to improve access to the clutch cable dash panel grommet.

REMOVAL AND INSTALLATION (Continued)

(8) Use a slight twisting motion while grasping the grommet and body to remove the cable from the dash panel and clutch bracket.

INSTALLATION

(1) Using a slight twisting motion, insert the self–adjuster mechanism end of the clutch cable through the dash panel hole and into the bracket.

NOTE: It may be helpful to lubricate the dash panel grommet using Mopar® Door-Ease or equivalent to aid installation.

(2) Seat the cylindrical part of the cable grommet in the dash panel. Be sure the self–adjuster is firmly seated against the clutch bracket to ensure proper adjuster mechanism function.

(3) Connect the clutch cable to the upstop/spacer.

(4) Connect the upstop/spacer to the clutch pedal.

(5) Replace the upstop/spacer retainer clip.

(6) Lift the clutch pedal and perform the Adjuster Mechanism Function Check before finishing installation.

NOTE: If the adjuster mechanism does not function properly, the most likely cause is that the cable is not properly seated in the bracket.

ADJUSTER MECHANISM FUNCTION CHECK — LHD

(1) With slight pressure, pull the clutch release lever end of the cable to draw the cable taut. Push the clutch cable housing toward the dash panel (With less than 20 lbs. of effort, the cable housing should move 30-50mm.). This indicates proper adjuster mechanism function. If the cable does not adjust, determine if the mechanism is properly seated on the bracket.

(2) If the adjust mechanism functions properly, route cable to the transaxle. Install battery and cable guide.

(3) Snap cable into cable guide located at the left shock tower.

(4) Insert cable into transaxle and through clutch release lever. Ensure the cable is routed through the smaller hole in the transaxle deck (Fig. 10).

(5) Pull down on cable and insert cable retaining clip onto clutch cable end.

(6) Check clutch pedal position switch operation.

CLUTCH PEDAL POSITION SWITCH

The clutch pedal position switch is mounted to a bracket located behind the clutch pedal. The switch is held in place by four plastic wing tabs.

The clutch pedal position switch IS NOT adjustable. The pedal blade contacts the switch in the down position (Fig. 13).

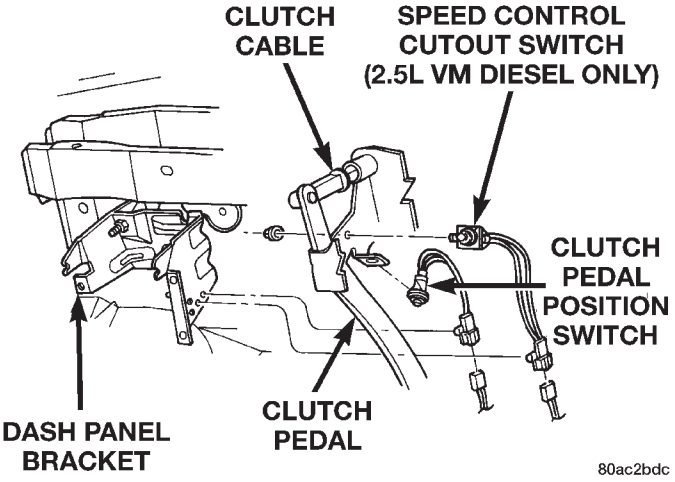

Fig. 13 Clutch Pedal Position Switch and Components (LHD Shown)

REMOVAL

(1) Disconnect electrical harness to switch connector.

(2) Depress wing tabs on switch and push switch out of mounting bracket. Then slide wires through slot in bracket.

INSTALLATION

(1) Slide switch wires through slot in switch bracket.

(2) Line up switch tab with slot in switch bracket and push switch into position. Do not pull on the switch wires to seat switch into bracket, switch damage may occur.

(3) Attach switch wiring harness to vehicle wiring harness. Attach switch panel to the dash panel bracket (Fig. 13).

(4) After installation, the switch must be checked for proper operation. Refer to Diagnosis and Testing section for proper testing procedures.

REMOVAL AND INSTALLATION (Continued)

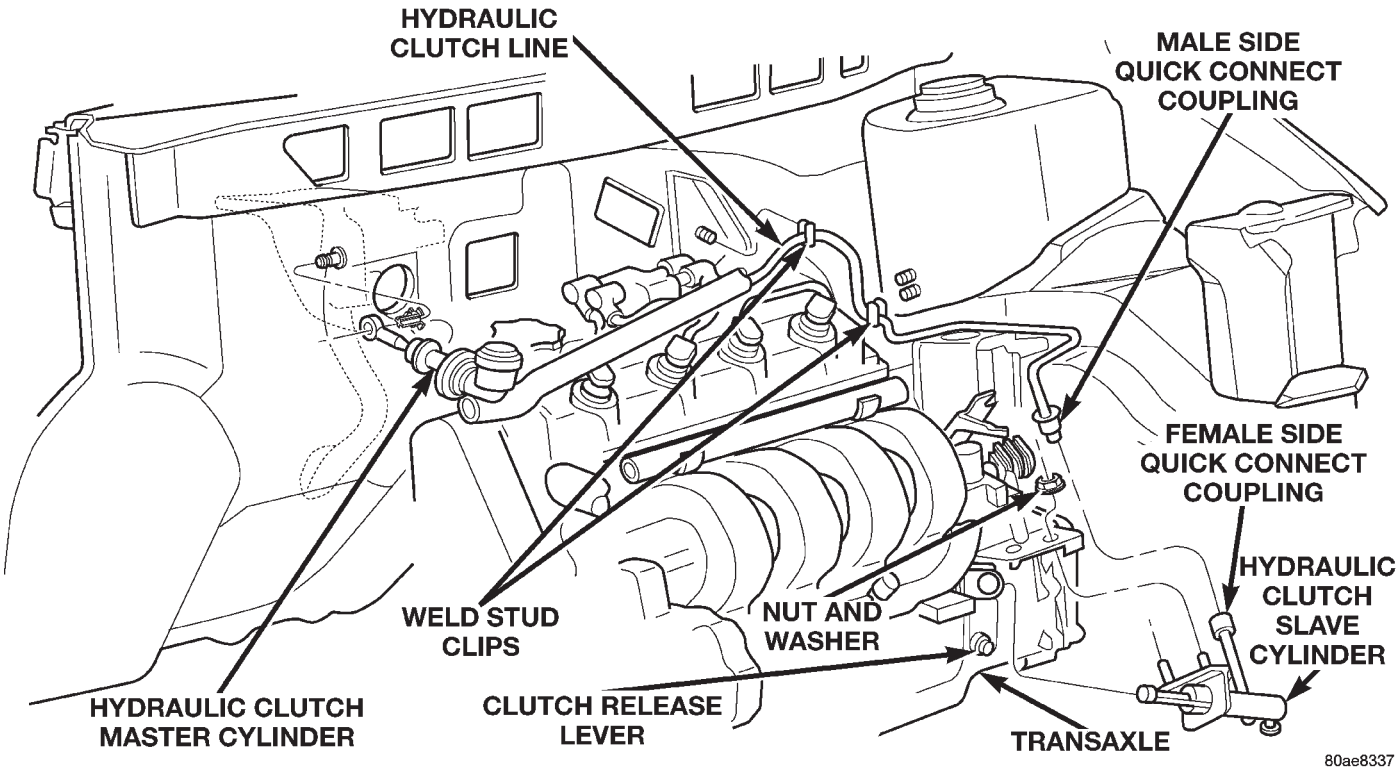

Fig. 14 Hydraulic Clutch Linkage System — RHD

HYDRAULIC CLUTCH LINKAGE SYSTEM — RHD

CAUTION: Do not actuate the master cylinder or step on the clutch pedal before the quick connect coupling is joined or an over pressure condition could result in damage to the master cylinder, the quick connect coupling, or the dash panel.

NOTE: The hydraulic clutch linkage system is pre-filled by the supplier who warrants the system to be free of air, contamination, and leaks. No routine maintenance is required. Except for the self-retaining snap-on master cylinder pushrod bushing, the hydraulic system is serviced only as a complete assembly and individual components cannot be overhauled or replaced.

REMOVAL

1. Disconnect the quick connect coupling to facilitate the removal of the master cylinder assembly and slave cylinder assembly separately (Fig. 14). Refer to the removal and installation procedure in this section for detailed instructions on disconnecting and connecting the quick connect coupling.
2. Remove the master cylinder assembly (Fig. 15). Refer to the master cylinder removal and installation procedure in this section for detailed instructions on removal of the master cylinder assembly.
3. Remove the slave cylinder assembly. Refer to the slave cylinder removal and installation procedure in this section for detailed instructions on removal and installation of the slave cylinder.

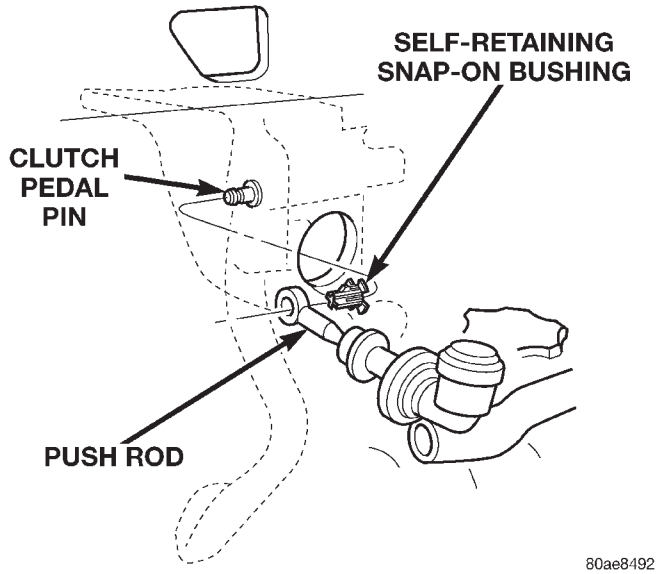

Fig. 15 Self-Retaining Snap-on Bushing — RHD

INSTALLATION

1. For installation of the hydraulic clutch linkage system, reverse the above procedure.

REMOVAL AND INSTALLATION (Continued)

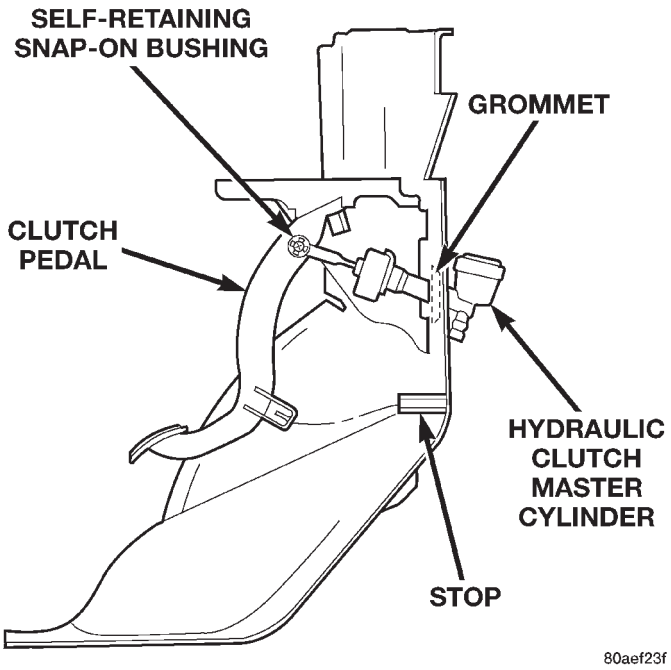

Fig. 16 Clutch Master Cylinder — RHD

QUICK CONNECT COUPLING — RHD

CAUTION: Do not actuate the master cylinder or step on the clutch pedal before the quick connect coupling is joined, or an over pressure condition could result in damage to the master cylinder, the quick connect coupling, or the dash panel.

REMOVAL

1. Disconnect the quick connect coupling by lightly pushing down on the black release collar on the male side of the quick connect coupling while separating it from the female side of the quick connect coupling (Fig. 14).

INSTALLATION

1. Connect the male side of the quick connect coupling (part of the master cylinder assembly) by holding the clutch tube at the rear and inserting it into the female side of the quick connect coupling (part of the slave cylinder assembly) until an audible click is heard (Fig. 14). **Do not push on the black release collar on the male side of the quick connect coupling while inserting it into the female side of the quick connect coupling.**
2. Confirm the connection by pulling firmly on the clutch tube.

MASTER CYLINDER SYSTEM — RHD

REMOVAL

(1) Disconnect the quick connect coupling. Refer to the “Quick Connect Coupling” removal and installation procedure in this section.

(2) Remove the master cylinder pushrod from the clutch pedal pin by prying between the self-retaining snap-on bushing, located in the master cylinder pushrod, and the clutch pedal pin (Fig. 15).

(3) Disconnect the hydraulic line from the weld stud clips (Fig. 14).

(4) Remove the rubber grommet at the master cylinder pass through in the dash panel (Fig. 16).

(5) Remove the master cylinder assembly from the engine compartment by rotating it clockwise from the 12 o’clock lock position to the 2 o’clock unlock position and pulling the master cylinder out tilted 20 degrees down. **NOTE: A “Twist and Lock” type mechanism is used to secure the master cylinder to the clutch pedal bracket which is attached to the dash panel.**

INSTALLATION

(1) Position the master cylinder assembly to the clutch pedal bracket by tilting it 20 degrees upward and at the 2 o’clock unlocked position.

(2) Rotate the master cylinder counterclockwise to the 12 o’clock locked position.

(3) Install the rubber grommet into the dash panel at the master cylinder pass through (Fig. 16).

(4) Connect the hydraulic line to the weld stud clips in the engine compartment (Fig. 14).

(5) Connect the quick connect coupling. Refer to the “Quick Connect Coupling” removal and installation procedure in this section.

(6) Install the self-retaining snap-on bushing into the master cylinder pushrod, if necessary.

(7) Install the master cylinder pushrod with self-retaining snap-on bushing onto the clutch pedal pin by pressing it onto the clutch pedal pin until seats in the groove of the clutch pedal pin.

SLAVE CYLINDER ASSEMBLY — RHD

REMOVAL

1. Disconnect the quick connect coupling. Refer to the “Quick Connect Coupling” removal and installation procedure in this section.
2. Remove the nut and washer assemblies (2) retaining the slave cylinder and mounting bracket assembly to the transaxle (Fig. 14).
3. Remove the slave cylinder assembly from the transaxle.

REMOVAL AND INSTALLATION (Continued)

INSTALLATION

1. Position the slave cylinder assembly to the transaxle deck and secure with the nut and washer assemblies (2) and tighten to specifications (Fig. 14).
2. Make sure the slave cylinder pushrod is properly seated in the cup end of the clutch release lever.
3. Connect the quick connect coupling. Refer to the "Quick Connect Coupling" removal and installation procedure in this section.

MODULAR CLUTCH ASSEMBLY (2.0L AND 2.4L GASOLINE)

The transaxle must be removed to service the modular clutch assembly and components (Fig. 17). Refer to Group 21 for the "A-558 Manual Transaxle" removal procedure.

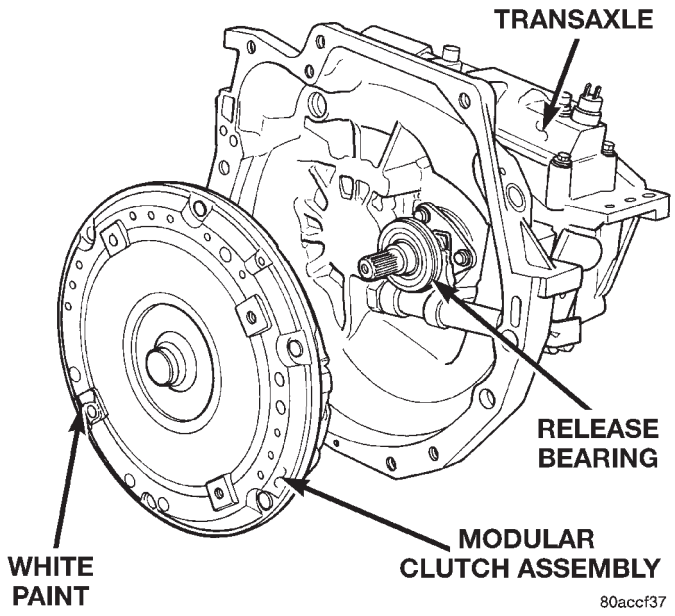

Fig. 17 Modular Clutch Assembly — 2.0L and 2.4L

CLUTCH ASSEMBLY (2.5L DIESEL)

The transaxle must be removed to service the clutch disc assembly and components.

REMOVAL

(1) Remove the transaxle, refer to Group 21, Transaxle.

(2) Install universal clutch alignment tool into the clutch assembly (this will prevent the clutch from inadvertently being dropped).

(3) To avoid distortion of the pressure plate, remove the clutch pressure plate bolts a few turns at a time. Use a crisscross pattern until all bolts are loosened.

(4) Carefully remove the clutch pressure plate and disc (Fig. 18).

To service the flywheel, refer to Group 9, Engine.

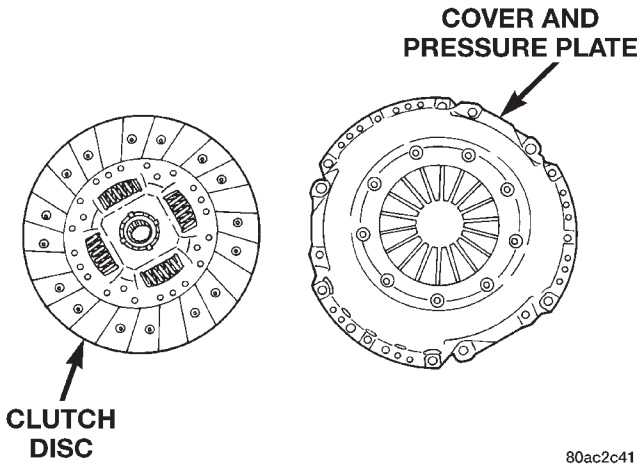

Fig. 18 Clutch Disc, Cover and Pressure Plate

INSPECTION

Inspect for oil leakage through engine rear main bearing oil seal and transaxle input shaft seal. If leakage is noted, it should be corrected at this time.

The friction faces of the flywheel and pressure plate should not have:

- Excessive discoloration
- Burned areas
- Small cracks
- Deep grooves
- Ridges

Replace parts as required.

CAUTION: Do not polish flywheel to a mirror like surface. Clean the flywheel face with medium sandpaper (80-160 grade), then wipe the surface with mineral spirits. If the surface is severely scored, heat checked, or warped, replace the flywheel.

CAUTION: Do not flat-machine the flywheel face. The surface profile is slightly tapered and has a 0.30 mm step.

The disc assembly should be handled without touching the facings. Replace disc if the facings show evidence of grease or oil soakage, or wear to within less than .38 mm (.015 inch) of the rivet heads. The splines on the disc hub and transaxle input shaft should be a snug fit without signs of excessive wear. Metallic portions of disc assembly should be dry and clean, and not been discolored from excessive heat. Each of the arched springs between the facings should not be broken and all rivets should be tight.

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

Using a straight edge, check clutch cover (pressure plate) for flatness. The clutch cover (pressure plate)

REMOVAL AND INSTALLATION (Continued)

friction area should be slightly concave, with the inner diameter 0.02 mm to 0.1 mm (.0008 in. to .0039 in.) below the outer diameter. It should also be free from discoloration, burned areas, cracks, grooves, or ridges.

Using a surface plate, test cover for flatness. All sections around attaching bolt holes should be in contact with surface plate within .015 inch.

The cover should be a snug fit on flywheel dowels. If the clutch assembly does not meet these requirements, it should be replaced.

INSTALLATION

(1) Position the clutch and pressure plate onto the flywheel.

(2) Insert the universal clutch alignment tool into the clutch disc.

(3) To avoid distortion of the pressure plate, bolts should be tightened a few turns at a time (Fig. 19). Use a crisscross pattern until all bolts are seated. Tighten pressure plate bolts to 27 N·m (20 ft. lbs.).

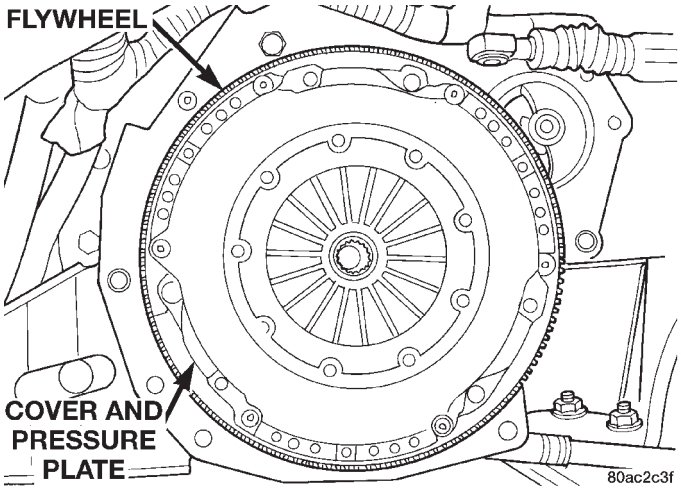

Fig. 19 2.5 Diesel Clutch Assembly

(4) Remove the universal clutch alignment tool.

(5) Install the transaxle, refer to Group 21, Transaxle.

(6) Fill transaxle to the proper level with the specified lubricant.

(7) While the vehicle is elevated slightly, run the transaxle through all the forward gears. Apply brakes and shift into reverse. Run the transaxle through reverse gear.

(8) Check the transaxle for leaks and recheck the level of the transaxle lubricant.

CLUTCH RELEASE BEARING AND FORK

Remove the transaxle from the vehicle. See Group 21, for removal and installation procedures.

REMOVAL

(1) Remove clutch release shaft E-clip (Fig. 20).

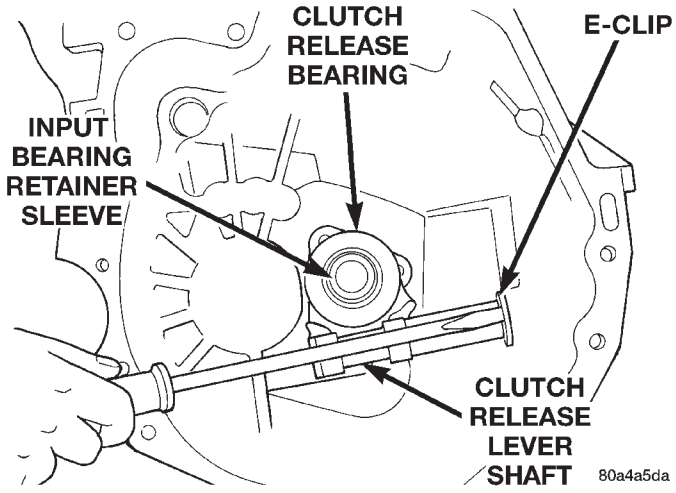

Fig. 20 E-clip at Clutch Release Lever Shaft

(2) Remove the clutch release shaft and then slide the fork and bearing assembly off the bearing pilot (Fig. 21).

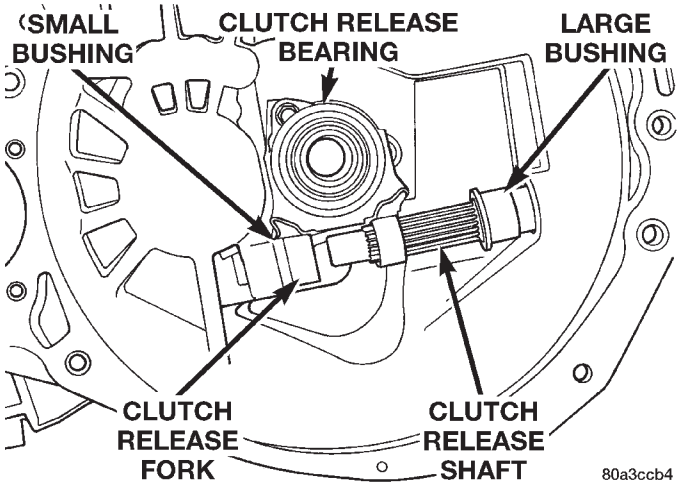

Fig. 21 Clutch Release Shaft

REMOVAL AND INSTALLATION (Continued)

(3) Remove the fork from the bearing thrust plate (Fig. 22).

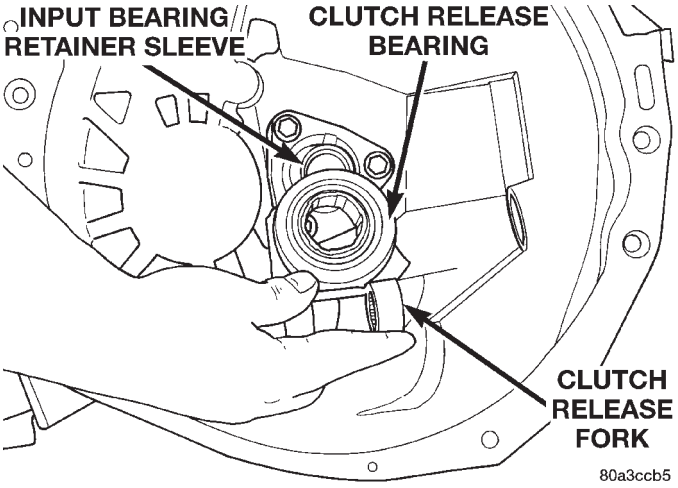

Fig. 22 Clutch Release Fork

(4) Examine the condition of the bearing. It is pre-lubricated and sealed and should not be immersed in oil or solvent.

(5) The bearing should turn smoothly when held in the hand under a light thrust load. A light drag caused by the lubricant fill is normal. If the bearing is noisy, rough, or dry, replace the complete bearing assembly with a new bearing.

(6) The bearing has a plastic sleeve pre-lubricated at assembly. Wipe out the old grease. Refill the sleeve cavities and coat the inner surface with multipurpose grease. If the liner is cracked or worn, replace the bearing assembly.

(7) Check the condition of the spring clips. If the clips are broken or distorted, replace the bearing assembly.

INSTALLATION

(1) Before assembling the fork, lubricate the rounded thrust pads and the spring clip cavities with multipurpose grease.

(2) Assemble the fork to the bearing by sliding the thrust pads under the spring clips. Be careful to avoid distorting the spring clips. These clips prevent the bearing thrust plate from rotating with the bearing.

(3) Slide the bearing and fork assembly onto the input shaft bearing retainer.

(4) Position the release shaft bushings in the housing and install the release shaft. A small amount of bearing grease between the release shaft bushing and the shaft is beneficial but not required. Install the retainer clip in the shaft groove near the large bushing.

(5) Install the release lever and retaining clip on the outer end of the release shaft.

CLEANING AND INSPECTION

CLUTCH CONTAMINATION

Fluid contamination is a frequent cause of clutch malfunctions. Oil, grease, water, or other fluids on the clutch contact surfaces will cause faulty operation.

During inspection, note if any components are contaminated. Look for evidence of oil, grease, or water/road splash on clutch components.

OIL CONTAMINATION

Oil contamination indicates a leak at the rear main seal and/or transaxle input shaft. Oil leaks produce a residue of oil on the transaxle housing interior, clutch cover and flywheel. Heat buildup caused by slippage can bake the oil residue onto the components. This glaze-like residue ranges in color from amber to black.

GREASE CONTAMINATION

Grease contamination is usually a product of over-lubrication. During clutch service, apply only a small amount of grease to the input shaft splines. Excess grease may be thrown off during operation, contaminating the disc.

ROAD SPLASH/WATER CONTAMINATION

Road splash contamination is usually caused by driving the vehicle through deep water puddles. Water can be forced into the clutch housing, causing clutch components to become contaminated. Facing of disc will absorb moisture and bond to the flywheel and/or, pressure plate, if vehicle is allowed to stand for some time before use. If this condition occurs, replacement of clutch assembly may be required. Drive the vehicle until normal clutch operating temperature has been obtained. This will dry off disc assembly, pressure plate, and flywheel.

CLEANING PRECAUTIONS

Condensation from steam vapors tend to accumulate on the internal clutch mechanism when the vehicle is steam cleaned. Facing of disc will absorb moisture and will bond to flywheel and/or pressure plate, if vehicle is allowed to stand for some time before use. If this condition occurs, it may require replacement of clutch assembly. After cleaning, drive the vehicle to its normal clutch operating temperature. This will dry off disc assembly, pressure plate, and flywheel.

ADJUSTMENTS

CLUTCH CABLE — LHD

The manual transaxle clutch release system has a unique self-adjusting mechanism to compensate for clutch disc wear. This adjuster mechanism is located within the clutch cable assembly. The preload spring maintains tension on the cable. This tension keeps the clutch release bearing continuously loaded against the fingers of the clutch cover assembly.

ADJUSTER MECHANISM FUNCTION CHECK — LHD

(1) With slight pressure, pull the clutch release lever end of the cable to draw the cable taut. Push the clutch cable housing toward the dash panel (With less than 20 lbs. of effort, the cable housing should move 30-50mm.). This indicates proper adjuster mechanism function. If the cable does not adjust, determine if the mechanism is properly seated on the bracket.

(2) If the adjust mechanism functions properly, route cable to the transaxle.

(3) Insert cable into transaxle and through clutch release lever. Ensure the cable is routed through the smaller hole in the transaxle deck (Fig. 10).

(4) Pull down on cable and insert cable retaining clip onto clutch cable end.

(5) Check clutch pedal position switch operation.

CLUTCH PEDAL POSITION SWITCH

The clutch pedal position switch is mounted to a bracket located behind the clutch pedal. The switch is held in place by four plastic wing tabs.

The clutch pedal position switch IS NOT adjustable. The pedal blade contacts the switch in the down position.

SPECIFICATIONS

CLUTCH TIGHTENING REFERENCE

2.0/2.4 LITER GASOLINE ENGINE

DESCRIPTION	TORQUE
Drive Plate Bolts	95 N·m (70 ft. lbs.)
Lower Trans. Cover	12 N·m (105 in. lbs.)
Modular Clutch Bolts	74 N·m (55 ft. lbs.)
Upper Trans. Cover	12 N·m (105 in. lbs.)

2.5 LITER DIESEL ENGINE

DESCRIPTION	TORQUE
Flywheel Bolts	95 N·m (70 ft. lbs.)
Lower Trans. Cover	12 N·m (105 in. lbs.)
Clutch Pressure Plate Bolts	27 N·m (20 ft. lbs.)
Upper Trans. Cover	12 N·m (105 in. lbs.)