

MANUAL TRANSAXLE CLUTCH

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GENERAL INFORMATION

Throughout this group, references may be made to a particular vehicle by letter or number designation. A chart showing the breakdown of these designations is included in the introduction section at the front of this service manual.

The clutch used in all models are a single, dry disc modular clutch assembly.

Clutch adjustment is provided by a automatic adjuster located in the clutch pedal. The clutch pedal is connected to the torque shaft through a cable and lever. The upper end of the clutch pedal pivots in the pedal bracket on two nylon bushings. These bushings do not require periodic lubrication.

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.

(3) Check for loose connections in drive train. Correct any problems and determine if clutch chatter complaint has 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 bushings. Replace all worn parts.

(7) Check flywheel/clutch assembly for contamination (dirt, oil). Replace as required.

(8) Check to see if the clutch disc hub splines are damaged. Replace clutch assembly if spline is damaged.

(9) Check input shaft on the transaxle for damaged splines. Replace if necessary.

(10) Check for uneven wear on clutch fingers. Replace clutch assembly if clutch fingers are damaged.

EXCESSIVE CLUTCH SPIN TIME/CLASH INTO REVERSE COMPLAINTS

For all excessive clutch spin time/clash into reverse complaints, do the following:

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

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

(3) Check the input shaft spline, clutch disc spline and release bearing for dry rust. If dry rust is present, clean rust off. Apply a light coat of bearing grease to the input shaft spline, where the clutch disc slides.

(4) Check to see if the clutch disc hub splines are damaged. If damaged replace clutch assembly.

(5) Check input shaft spline of the transaxle for damage. Replace input shaft if required.

(6) Install clutch assembly and transaxle.

CLUTCH CABLE MECHANISM

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 pedal. 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.

When the pedal is depressed, teeth on the adjuster and the positioner engage and pull the release cable. A spring located behind the adjuster ensures proper tooth engagement.

When the pedal is released, the adjuster contacts the bumper. This separates the adjuster and positioner teeth, allowing the preload spring to function.

SERVICE DIAGNOSIS—CLUTCH GRAB/CHATTER

CONDITION FOUND	CAUSE	CORRECTION
1. Clutch disc facing covered with oil or grease.	a) Oil leak at engine rear main or transaxle input shaft seal. b) Too much grease applied to splines or disc and input shaft.	a) Correct leak and replace modular clutch assembly. b) Apply lighter grease coating to splines and replace disc (do not clean and reuse the disc).
2. No fault found with clutch components.	a) Problem actually related to suspension or driveline component. b) Engine related problems.	a) Further diagnosis required. Check engine/transmission mounts, suspension attaching parts and other driveline components as needed. b) Check EFI and ignition systems.
3. Partial engagement of clutch disc.	a) Clutch cover, spring, or release fingers bent, distorted (rough handling, improper assembly). b) Clutch disc damaged or distorted. c) Clutch misalignment.	a) Replace modular clutch assembly. b) Check alignment and runout of clutch housing and its relationship to the engine dowel pins. Correct as necessary.

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SERVICE DIAGNOSIS—CLUTCH SLIPS

CONDITION FOUND	CAUSE	CORRECTION
1. Disc facing worn out.	a) Normal wear. b) Driver frequently "rides" (slips) clutch. Results in rapid wear overheating. c) Insufficient clutch cover diaphragm spring tension.	Replace modular clutch assembly.
2. Clutch disc facing contaminated with oil or grease.	a) Leak at rear main seal or at transmission input shaft seal. b) Excessive amount of grease applied to input shaft splines. c) Road splash, water entering housing.	a), b), c), d) Replace leaking seals. Apply less grease to input shaft splines. Replace modular clutch assembly.
3. Clutch is running partially disengaged.	a) Release bearing sticking-binding. Does not return to normal running position. b) Self-adjust mechanism sticking or binding.	a) Verify that bearing is actually binding, then replace bearing and transmission front bearing retainer if sleeve surface is damaged. b) Verify that self adjuster block in pedal is free to move up and down.
4. One or both clutch disc facings have fractured into small pieces.	a) Driver performs a 5-1 downshift at vehicle speed in excess of 60 mph. b) Leak of rear main seal or transaxle input shaft seal. c) Excessive heat from slippage.	Alert driver to problem cause. Replace modular clutch assembly.

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SERVICE DIAGNOSIS—CLUTCH NOISE

CONDITION FOUND	CAUSE	CORRECTION
1. Clutch components damaged or worn out prematurely.	Incorrect or sub-standard clutch parts.	Replace with parts of correct type and quality.
2. Release shaft bushings in transaxle binding or seized.	a) Dirt or contamination. b) Corrosion.	a, b) Wipe shaft, replace or lube bushings.
3. Loose components.	Attaching bolts loose at driveplate, modular clutch cover, or clutch housing.	Tighten bolts to specific torque. Do not reuse any bolts.
4. Contact surface of release bearing damaged.	a) Clutch cover incorrect, or release fingers are bent or distorted causing damage. b) Release bearing defective.	a) Replace clutch cover and bearing. b) Replace bearing.
5. Release bearing is noisy.	Release bearing defective.	Replace bearing.
6. Clutch pedal squeak.	a) Pedal bushings worn out or cracked. b) Inadequate lubrication.	a) Replace bushings if worn or damaged. b) Lubricate bushings, adjuster and positioner.
7. Clutch pedal clicks loudly when pedal is depressed (may be an intermittent problem).	Auto-adjust clutch cable spring bent or missing.	Bend spring to dimension shown in figure 1 or replace spring.

SERVICE DIAGNOSIS—IMPROPER CLUTCH RELEASE

CONDITION FOUND	CAUSE	CORRECTION
1. Clutch disc binds on input shaft splines.	a) Clutch disc hub splines damaged during installation. b) Input shaft splines rough, damaged. c) Corrosion; rust formations on splines of disc and input shaft.	Clean, smooth and lubricate disc and shaft splines. Replace modular clutch assembly and/or input shaft if splines are severely damaged.
2. Clutch disc rusted to flywheel and/or pressure plate.	Occurs in vehicles stored, or not driven for extended periods of time. Also occurs after steam cleaning if vehicle is not used for extended periods.	Replace modular clutch assembly.
3. Clutch will not disengage properly.	a) Disc bent, distorted during installation. b) Clutch cover diaphragm spring bent or warped during transaxle installation. c) Release fork bent loose or damaged. d) Clutch cable binding or routed incorrectly. e) Self adjuster in pedal not functioning properly.	a) Replace modular clutch assembly. b) Replace modular clutch assembly. c) Replace fork if worn or damaged. d) Check cable routing. e) Pull pedal upward to disengage cable adjuster.

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CLUTCH PEDAL NOISE/POP

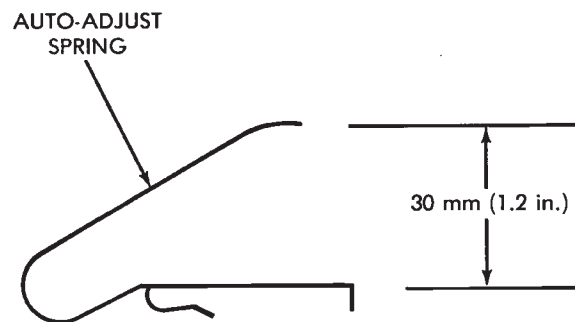
The mechanism which automatically adjusts the clutch may emit a loud clicking or pop noise. The cause of this noise in most cases is the clutch cable auto-adjust spring being below design load specifications. The condition can be corrected by either bending the auto-adjust spring to bring it back to specifications or replacing the spring (Fig. 1).

The auto-adjust spring is located on the back of the clutch pedal.

CLUTCH CABLE REPLACEMENT

REPLACEMENT

(1) Remove retainer from clutch release lever at transaxle by pulling on the tail of the ball stud (Fig. 2).



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Fig. 1 Clutch Cable Auto-Adjust Spring

(2) Pry out ball end of cable from positioner adjuster and remove cable, passing it through the hoop in the shock tower mounting bracket.

(3) Inspect cable for wear and contamination. The inner cable strand should move smoothly inside the cable housing. If cable is worn or damaged, replace the cable. **Do not lubricate.**

(4) Inspect the clutch pedal and adjuster mechanism for wear. Apply a multipurpose lubricant on parts indicated (Fig. 2).

(5) To install, reverse procedure of steps (3) through (1).

(6) After installation, push and lift the clutch pedal 2 or 3 times to allow adjuster mechanism to function.

(7) Check clutch pedal position switch operation.

CLUTCH PEDAL POSITION SWITCH

The clutch pedal position switch functions as a safety interlock device. It prevents possible engine cranking with the manual transmission in gear.

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 next to the clutch pedal. The switch is held in place by two plastic wing tabs.

The clutch pedal position switch has an adjustable striker plate. The striker plate is located on the left side of the clutch pedal.

DIAGNOSIS

Disconnect clutch pedal position switch harness from instrument panel wiring harness. Using a ohm meter, check for continuity between the two terminals in the connector on the switch harness. There should be no continuity between the terminals when the switch is in its neutral (fully extended) position. When the switch is depressed more than 1 mm (0.040) the ohm meter should show continuity at the switch harness.

If all ohm meter readings are correct and the switch does not operate correctly, adjustment is required. Refer to Switch Adjustment Procedure to adjust switch.

REMOVAL

(1) Disconnect electrical harness to switch connector.

(2) Push switch out of mounting bracket and 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) After installation, the switch must be adjusted and checked for proper operation. Refer to Switch Adjustment Procedure.

ADJUSTMENT PROCEDURE

When performing switch adjustment, the floor mat should be removed before beginning adjustment procedures.

(1) Set the park brake.

(2) Disconnect clutch cable at the transaxle end of the cable.

(3) Depress clutch pedal, loosen adjusting nut and slide the striker plate forward to fully compress the switch plunger.

(4) With the switch plunger depressed and the clutch pedal held to the floor, tighten adjusting nut to 12 N•m (105 in. lbs.).

(5) Reconnect clutch cable.

The clutch pedal position switch is now adjusted. A final check is required to insure that the switch is made below the clutch release point.

(1) 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 do not continue with this test.** Recheck the switch and switch adjustment to determine the cause. If the vehicle does not crank proceed to step 2.

(2) With the park brake set and the vehicle **IN GEAR** turn the key to the start position.

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

(3) Slowly depress the clutch pedal and feel for any vehicle motion when the starter is energized. If there is no motion the switch is properly adjusted. If motion is felt, repeat the adjustment procedure.

CLUTCH REPLACEMENT

The flywheel, clutch disc and clutch cover are serviced as an assembly (Fig. 4). Do not attempt to disassemble the clutch assembly.

REMOVAL

(1) Remove transaxle and clutch from vehicle as an assembly. See group 21, Manual Transaxle, for removal procedure.

(2) Slide clutch assembly out of transaxle bellhousing.

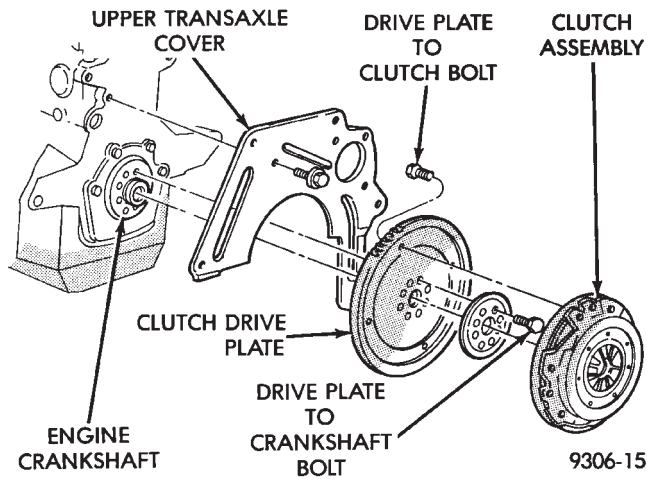


Fig. 4 Manual Transaxle Clutch

INSPECTION

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

Measure the thickness of the clutch material. The minimum thickness for each side of the friction material is 2.3 mm (0.090 in.). If clutch material on either side of the disc is less than 2.3 mm (0.090 in.) thick, the clutch assembly must be replaced.

The new clutch assembly disc facing will be about 3.4 mm (0.134 in.) thick.

Inspect engine drive plate and ring gear for cracks and broken teeth. Replace drive plate if these conditions are found.

INSTALLATION

- (1) Install clutch assembly into bell housing.
- (2) Install transaxle and clutch assembly into vehicle. See group 21, Manual Transaxle, for installation procedure.

RELEASE BEARING AND FORK

Remove the transaxle and clutch assembly from the vehicle. See group 21 for removal and installation procedures.

REMOVAL AND INSTALLATION

- (1) Remove clutch release shaft E-clip.
- (2) Remove the clutch release shaft and then slide the fork and bearing assembly off the bearing pilot.
- (3) Remove the fork from the bearing thrust plate.

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

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

(9) 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.**

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

(11) 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 often beneficial but not required.

(12) Install the retainer clip in the shaft groove near the large bushing.

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

CLEANING PRECAUTIONS

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

