

CLUTCH

	Page		Page
Crankshaft Pilot Bushing	5-7	Release Lever Adjustment	5-9
Driven Plate	5-6	Removal	5-6
Flywheel	5-7	Service Diagnosis	5-1
General	5-1	Specifications	5-11
Housing Alignment	5-8	Throwout Bearing	5-6
Housing Alignment Specifications	5-11	Tools	5-11
Installation	5-10	Torque Specifications	5-11
Linkage Adjustment	5-5	Transmission Clutch Shaft	5-8

GENERAL

A single plate, dry disc-type clutch is used. A steel cover assembly bolted to the flywheel contains the clutch driven plate, release levers and springs.

Two types of clutch covers are used, a 10-1/2-inch diameter direct spring pressure type and an 11-inch diameter semicentrifugal type. The direct spring pressure type and semicentrifugal type are similar. Both apply direct spring pressure to the pressure plate to provide engagement. However, the semicentrifugal cover utilizes six rollers that are forced outward by centrifugal action to apply extra force to the pressure plate and maintain positive clutch action at high engine rpm (fig. 5-1).

Although no internal adjustment is provided for wear of the disc, release lever height should be checked and adjusted.

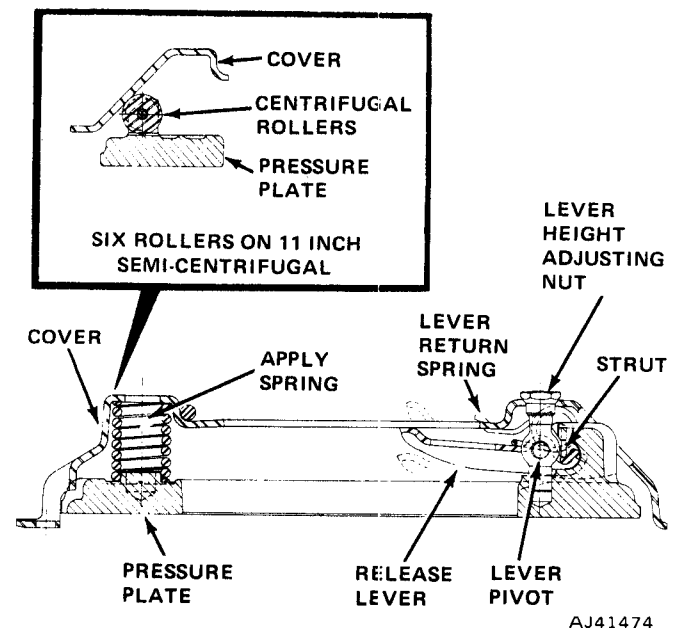


Fig. 5-1 Direct Spring Pressure and Semicentrifugal Type Clutches

SERVICE DIAGNOSIS

	Page		Page
Clutch Area Noise	5-5	Clutch-Related Vibration	5-5
Clutch Chatter	5-2	Clutch Slippage or Inadequate	
Clutch Drag or Inadequate Release	5-3	Linkage Free Play	5-3
Clutch Pedal Pulsation	5-4	General	5-1

GENERAL

Clutch problems can generally be assigned to one of the following categories defined as:

- Clutch chatter
- Clutch slippage or inadequate clutch linkage free play
- Clutch drag or inadequate clutch release

- Clutch pedal pulsation
- Clutch-related vibration
- Clutch area noises

Each category is described in common complaint language and followed by a common-sense approach to repairing the problem.

NOTE: *Before performing any of the diagnosis and repair procedures outlined below, check for complete return of the clutch pedal to its stop and adjust pedal free play.*

CLUTCH CHATTER

Clutch chatter can be described as a shaking or shuddering sensation that is felt throughout the vehicle. Chatter usually develops when the clutch cover pressure plate makes initial contact with the driven plate and ceases when the clutch is fully engaged (clutch pedal released). Check clutch operation as follows:

WARNING: *The following test requires clutch engagement to the point of car movement. Area to front and rear of vehicle must be clear.*

(1) Start engine, depress clutch pedal and shift transmission into first gear.

(2) Increase engine speed to 1200 to 1500 rpm and slowly release clutch pedal. When pressure plate makes initial contact with driven plate, observe clutch operation. Depress clutch pedal and reduce engine speed.

(3) Shift transmission into reverse and repeat the procedure outlined in step (2).

(4) If clutch chatter does not develop, increase engine speed to 1700 to 2200 rpm and repeat steps (2) and (3).

(5) If clutch chatter does not develop after performing tests outlined in steps (1) through (4), problem may be improper operation by owner. If clutch chatter does develop, proceed to step (6).

(6) Raise vehicle on hoist.

(7) Check for loose or broken front or rear engine support cushions. Tighten or replace as necessary. Check for loose clutch-housing-to-engine and clutch-housing or adapter-to-transmission attaching bolts. Tighten as necessary. Refer to torque specifications in this section. Check for binding, worn, bent, or broken clutch linkage components. Lubricate or replace as necessary.

(8) If components inspected were in good condition, proceed to step (9). If one or more problems were discovered and corrected, lower car and repeat step (1). If chatter is still evident, proceed to step (9).

(9) Remove transmission and clutch components as outlined in this section.

NOTE: *Whenever clutch components are removed, also remove pilot bushing lubricating wick and soak wick in engine oil. Install wick before assembly.*

(10) Check for oil or grease contamination of driven plate. If contaminated, correct cause of contamination and replace driven plate.

(11) Check clutch cover for broken or collapsed springs and inspect surface of pressure plate for deep scoring, cracks, heat checking, or warping (check surface with straightedge). Replace clutch cover if it exhibits any of these conditions. If clutch cover is in good condition, do not replace it.

(a) Clean oil and dirt from cover with mineral spirits and allow to air dry.

(b) Lightly sand pressure plate surface with fine emery cloth.

(c) Lubricate release lever pivots and check release lever height. Adjust height if necessary.

CAUTION: *Apply lubricant to pivots sparingly. Excessive lubrication could result in grease contamination of pressure plate and driven plate surfaces.*

(12) Inspect crankshaft pilot bushing. Replace bushing if worn, deeply scored, or discolored.

NOTE: *Soak replacement bushing in engine oil before installation.*

(13) Inspect condition of splines on transmission clutch shaft and in driven plate hub. If splines are worn, galled, chipped, or broken, replace clutch shaft or driven plate. Corrosion, rust, or burrs can be removed from splines with an oilstone or fine-tooth file. Install driven plate on clutch shaft. Driven plate must move freely on shaft.

(14) If all clutch components were in good condition, proceed to step (15). If one or more components were determined to be faulty, repair as outlined and proceed to step (16).

(15) Check clutch housing alignment as outlined in this section. Correct alignment if necessary and proceed to step (16).

(16) Apply thin film of chassis lubricant on splines of transmission clutch shaft. Do not apply lubricant to pilot hub.

(17) Install pilot bushing lubricating wick. Install clutch components and transmission.

NOTE: *Do not replace any release bearing and sleeve unless it is defective or damaged. Refer to Clutch Area Noises.*

CLUTCH SLIPPAGE OR INADEQUATE CLUTCH LINKAGE FREE PLAY

Clutch slippage can be described as a condition in which the engine overspeeds (overrevs) but does not generate any increase in torque supplied to the rear wheels. Clutch slippage occurs when the driven plate is not gripped firmly between the flywheel and clutch cover pressure plate and rotates or slips between them at high torque. Clutch slippage can occur during initial acceleration or during subsequent shifts. Check clutch operation as follows:

(1) Block wheels and set parking brake firmly.

(2) Start engine (engine should be at operating temperature), shift transmission into third gear, and increase engine speed to 2000 rpm.

WARNING: Do not permit anyone to stand in front of vehicle during test.

(3) Slowly release clutch pedal until clutch is fully engaged.

CAUTION: Do not allow clutch to be engaged for more than 5 seconds as clutch components may become damaged.

(4) If engine stalls within 5 seconds, the clutch is not defective. If engine continues to run, proceed to step (5).

(5) Raise vehicle on hoist. Check clutch linkage for binding, worn, broken, or bent components. Lubricate or replace as necessary. If all components tested are in good operating condition, proceed to step (6).

(6) If one or more problems were discovered during inspection in step (5), repeat steps (1) through (4). If clutch slippage is corrected, stop. If slippage persists, proceed to step (7).

(7) Remove transmission and clutch components as outlined in this section.

NOTE: Whenever transmission is removed, also remove pilot bushing lubricating wick and soak wick in engine oil. Install wick before assembly.

(8) Inspect driven plate. If excessively worn (1/16 inch or less friction material remains above rivets), highly glazed, or if plate is contaminated by oil or grease, replace driven plate.

NOTE: If driven plate is contaminated, determine cause and make correction.

(9) Inspect clutch cover assembly. If assembly is heat-checked, has broken or collapsed springs, or shows signs of overheating (e.g., has turned blue), replace clutch cover assembly. If assembly does not exhibit any of these conditions, do not replace it.

(a) Clean oil and dirt from assembly using mineral spirits and allow assembly to air dry.

(b) Lightly sand pressure plate surface with fine emery cloth.

(c) Lubricate clutch release lever pivots and check and adjust release lever height if necessary.

CAUTION: Apply lubricant to pivots sparingly. Excessive lubrication could result in grease contamination of driven plate and pressure plate surfaces.

(10) Check release bearing mounting surface of transmission front bearing cap for galling, deep scores, or roughness. Install release bearing and sleeve on front bearing cap and check for smooth fore-and-aft movement. Replace release bearing and sleeve or front bearing cap as necessary. Apply chassis lubricant to groove in release bearing sleeve and apply thin coat of lubricant to release bearing mounting surface of front bearing cap.

CAUTION: Release bearing used with T-150 transmission has retaining springs which position bearing on throwout lever. Check these springs for distortion, loss of tension, or for being bent or broken. Replace bearing if springs are damaged. Also, when installing bearing, be sure retaining projections on throwout lever are properly engaged in retaining holes in bearing.

NOTE: Do not replace release bearing and sleeve unless defective or damaged. Refer to Clutch Area Noises.

(11) Apply thin film of chassis lubricant to splines of transmission clutch shaft. Do not apply lubricant to pilot hub.

(12) Install pilot bushing and lubricating wick. Install clutch components and transmission as outlined in this section.

(13) Lower vehicle.

CLUTCH DRAG OR INADEQUATE RELEASE

Clutch drag can be described as a condition in which the clutch driven plate, and consequently the transmission clutch shaft, does not come to a complete stop after the clutch pedal is depressed (clutch disengaged). Clutch drag can cause gear clash when shifting into reverse or hard or difficult shifting. Check clutch operation as follows.

NOTE: Occasionally, the clutch driven plate and clutch shaft will require approximately 5 seconds to lose momentum and come to a complete stop after initial clutch disengagement. This is normal and should not be misconstrued as clutch drag.

(1) Start engine, depress clutch pedal fully, and shift transmission into first gear.

(2) Shift transmission into neutral but DO NOT release clutch pedal.

(3) Wait 5 to 10 seconds and shift transmission into reverse. If shift is smooth with no gear clash, clutch operation is normal. If shifting into reverse produces gear clash, proceed to step (4).

(4) Raise vehicle on hoist. Check clutch linkage for binding, worn, broken or bent components. Lubricate or replace as necessary. If components are in good operating condition, proceed to step (5). If one or more problems were discovered and repaired, lower vehicle and repeat steps(1) through (3). If clutch now operates correctly, stop. If clutch drag persists, proceed to step (5).

(5) Remove transmission and clutch components as outlined in this section.

NOTE: *Whenever transmission is removed, also remove pilot bushing lubricating wick and soak wick in engine oil. Install wick before assembly.*

(6) Observe wear pattern on driven plate. If wear pattern is uneven (e. g., two areas heavily worn on one side, two only partially worn on opposite side), or has opposing wear patterns on front and reverse side, the driven plate is warped and should be replaced.

(7) Inspect clutch cover assembly. If clutch cover assembly has worn, bent, or broken release levers or lever pivots, is heavily scored, or warped, replace clutch cover assembly. If cover assembly does not exhibit any of these conditions, do not replace assembly.

(a) Clean oil and dirt from clutch cover assembly using solvent and allow assembly to air dry.

(b) Lightly sand pressure plate with fine emery cloth.

(c) Lubricate clutch release lever pivots.

NOTE: *Apply lubricant to pivots sparingly. Excessive lubricant could result in grease contamination of pressure plate and driven plate surfaces.*

(8) Check and adjust release lever height as necessary.

NOTE: *If release lever height cannot be adjusted, release lever(s) are bent. Replace clutch cover assembly.*

(9) Inspect crankshaft pilot bushing for heavy scoring, angular wear pattern, or discoloration. Replace as necessary.

NOTE: *If pilot bushing indicates angular wear, proceed to step (12) after completing step (10). Soak replacement bushing in engine oil before installation.*

(10) Inspect condition of splines on transmission clutch shaft and in driven plate hub. If severely worn, galled, or corroded, replace clutch shaft or driven plate. Corrosion, rust, or burrs can be removed from splines with an oilstone or fine-tooth file. Install driven plate on clutch shaft. Driven plate must move freely on shaft.

(11) If components inspected in step (10) are in good condition, proceed to step (12). If one or more problems were discovered in steps (3) through (10), repair as outlined and proceed to step (12).

(12) Check clutch housing alignment as outlined in this section. Correct as necessary and proceed to step (13).

(13) Apply thin film of chassis lubricant to splines of transmission clutch shaft. Do not apply lubricant to pilot hub.

(14) Install pilot bushing lubricating wick. Install transmission and clutch components.

(15) Lower vehicle.

NOTE: *Do not replace clutch release bearing or sleeve unless defective. Refer to Clutch Area Noises.*

CLUTCH PEDAL PULSATION

Clutch pedal pulsation can be described as a rapid up-and-down (pumping-type) movement of the pedal that is not accompanied by any noise. This pedal movement, which is slight, can be felt by the driver. However, on occasion, pedal movement will be great enough to be visually observed and cause a noticeable vibration.

Clutch pedal pulsation occurs when the release bearing makes initial contact with the clutch cover release levers (clutch partially disengaged), or at any time the release bearing is in contact with the release levers. Pulsation is usually caused by incorrect clutch release lever height or clutch housing misalignment. Check clutch operation as follows.

(1) Start engine, slowly depress clutch pedal until release bearing makes initial contact with clutch release levers, and check for pulsation.

NOTE: *Some minor pulsation is normal.*

(2) Continue to depress clutch pedal while checking for pulsation until pedal is fully depressed.

(3) If pulsation is not evident or is minor, stop repair. If pulsation is very rapid and can be felt throughout car, refer to Clutch-Related Vibrations. If car displays pulsation symptoms, proceed to step (4) as outlined in this section.

NOTE: *Whenever transmission is removed, also remove pilot bushing lubricating wick and soak wick in engine oil. Install wick before assembly.*

(4) Inspect clutch cover for excessively worn or bent release levers. If release levers are bent or excessively worn, replace clutch cover and proceed to step (7). If release levers are in good condition, clean oil and dirt from clutch cover assembly using mineral spirits and allow assembly to air dry.

(a) Lightly sand pressure plate with fine emery cloth.

(b) Lubricate clutch release lever pivots.

(c) Check and adjust release lever height as necessary and proceed to step (6).

NOTE: Apply lubricant to pivots sparingly. Excessive lubrication could result in grease contamination of driven plate and pressure plate surface.

(5) Check clutch housing alignment as outlined in this section. Correct as necessary and proceed to step (4).

(6) Apply thin film of chassis lubricant on splines of transmission clutch shaft. Do not apply lubricant to pilot hub.

(7) Install pilot bushing lubricating wick. Install clutch components and transmission.

CLUTCH-RELATED VIBRATIONS

Clutch related vibrations differ from pedal pulsations in frequency and magnitude—they can be felt throughout the car. Clutch vibrations usually occur at a relatively high engine speed (over 1500 rpm) regardless of clutch pedal position. However, vibrations related to clutch component imbalance occur infrequently, as the clutch cover and driven plate are balanced as a unit at assembly—the clutch is installed on the crankshaft/flywheel assembly and given a final fine-tune balance. Replacement of clutch components to correct vibrations should be performed only after exhausting all other possibilities. Check clutch operation as follows.

(1) Raise vehicle on hoist and check engine front support cushion interlocks for grounding. Repair as necessary. Check for any other engine component (e.g., exhaust manifold, valve cover, etc.) for grounding on body or frame. If one of these components is grounded, repair and check for vibration. If vibration ceases, stop repair. If vibration continues, lower vehicle and proceed to step (2).

(2) Disconnect accessory drive belts one at a time and check for vibration. If vibration is corrected after removal of a drive belt, cause of vibration is related to the accessory driven by the belt or by the belt itself. Repair as necessary. If vibration continues, check following areas for other possible causes of clutch-related vibrations.

- Loose flywheel mounting bolts.
- Excessive flywheel face runout (over 0.005 inch).

- Damaged crankshaft vibration damper.
- Clutch cover imbalance.

NOTE: To check for imbalance, engine can be run with clutch components removed if engine is properly supported. If vibration is not evident, replace clutch cover.

CLUTCH AREA NOISES

Clutch Release Bearing Noise

Clutch release bearing noises can be described as whirring, grating, or grinding noises which occur when the clutch pedal is depressed (clutch disengaged).

These noises usually continue until the clutch pedal is fully released (clutch engaged) and the bearing is no longer in contact with the clutch cover release levers.

Release bearing noise is corrected by replacing the bearing and sleeve as outlined in this section.

NOTE: The release bearing and sleeve should not be replaced as a matter of course when the clutch cover or driven member are serviced. The bearing and sleeve should be replaced only when actually defective.

Clutch Shaft or Countershaft Bearing Noise

Clutch shaft or countershaft bearing noises can be described as whirring, grating, or grinding noises which cease when the clutch pedal is depressed (clutch disengaged) or when the transmission is shifted into gear. These noises are most noticeable when the clutch pedal is fully released and the transmission is in neutral. Correction of these noises will require transmission removal and replacement of the problem bearing(s).

Crankshaft Pilot Bushing Noise

Pilot bushing noises can be described as squealing, howling, or elephant-type trumpeting noises which are most noticeable when the engine is cold. These noises occur during the first few inches of clutch pedal travel as the pedal is being released (partial clutch engagement) with the transmission in gear. It can also occur in very cold weather when the pedal is fully depressed (clutch disengaged) and the engine is started with the transmission in neutral. To correct pilot bushing noise, adjust bushing as outlined in this section.

CLUTCH LINKAGE ADJUSTMENT

The operating linkage components are shown in figures 5-2 and 5-3.

- (1) Lift clutch pedal up against pedal stop.
- (2) On Cherokee and Truck models, adjust clutch push rod lower ball pivot assembly in or out on push

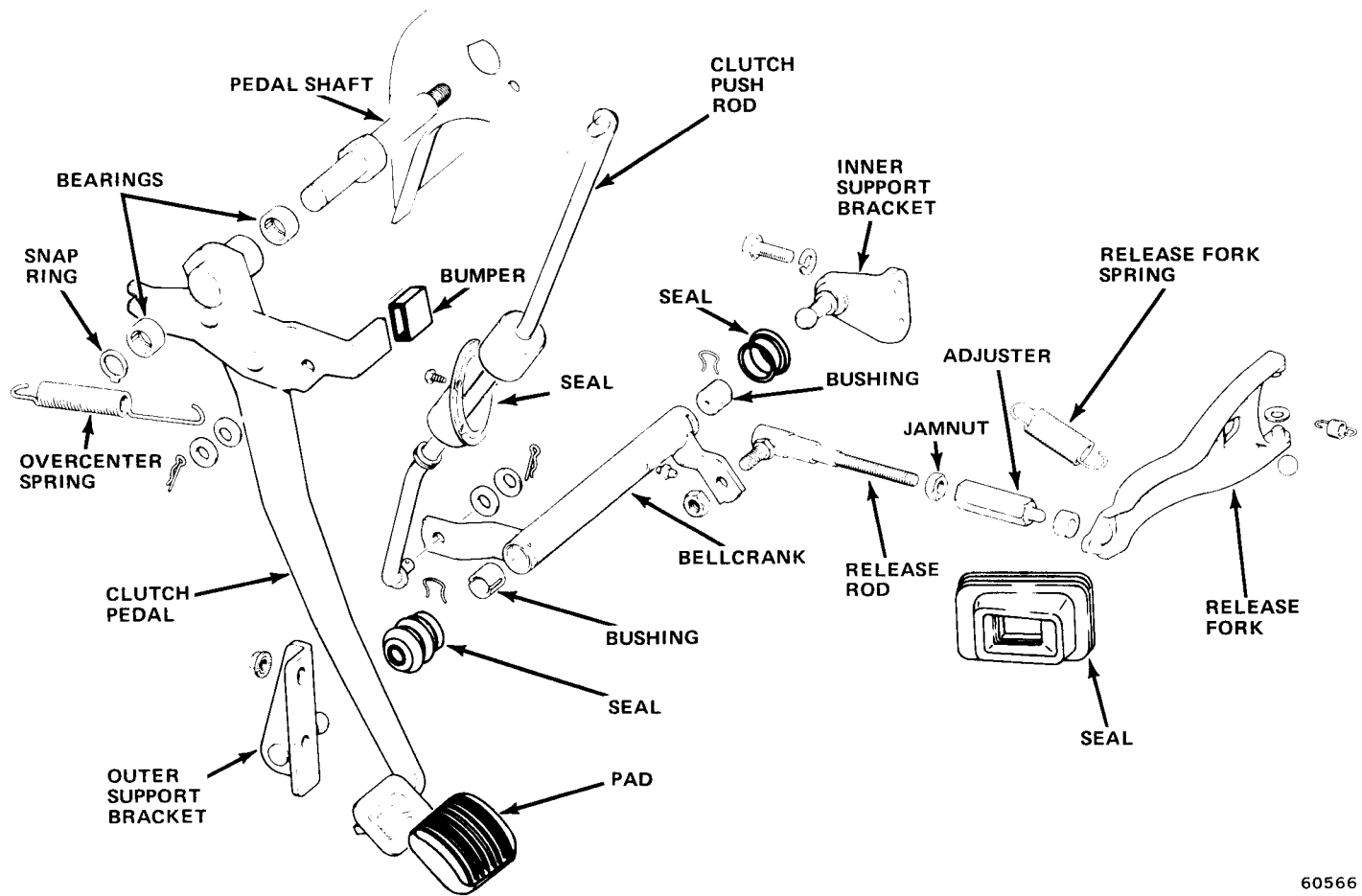


Fig. 5-2 Clutch Linkage—CJ Models

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rod as required to position bellcrank inner lever parallel to front face of clutch housing (slightly forward from vertical).

(3) Loosen jamnut and turn release fork adjuster in or out to obtain specified clutch pedal free play and tighten jamnut.

CLUTCH REMOVAL

(1) Remove transmission and transfer case. Refer to Section 6—Manual Transmission.

(2) Remove starter, throwout bearing, and sleeve assembly and clutch housing.

(3) Mark position of clutch cover, pressure plate and flywheel for assembly reference.

CAUTION: When removing clutch cover from flywheel, loosen attaching screws in rotation, one or two turns at a time, until spring tension on cover is released. The clutch cover is a steel stamping which could be warped by improper removal, causing clutch chatter when installed.

(4) Inspect crankshaft pilot bushing, flywheel, transmission clutch shaft, throwout bearing and sleeve

assembly, driven plate, clutch cover, and clutch housing alignment.

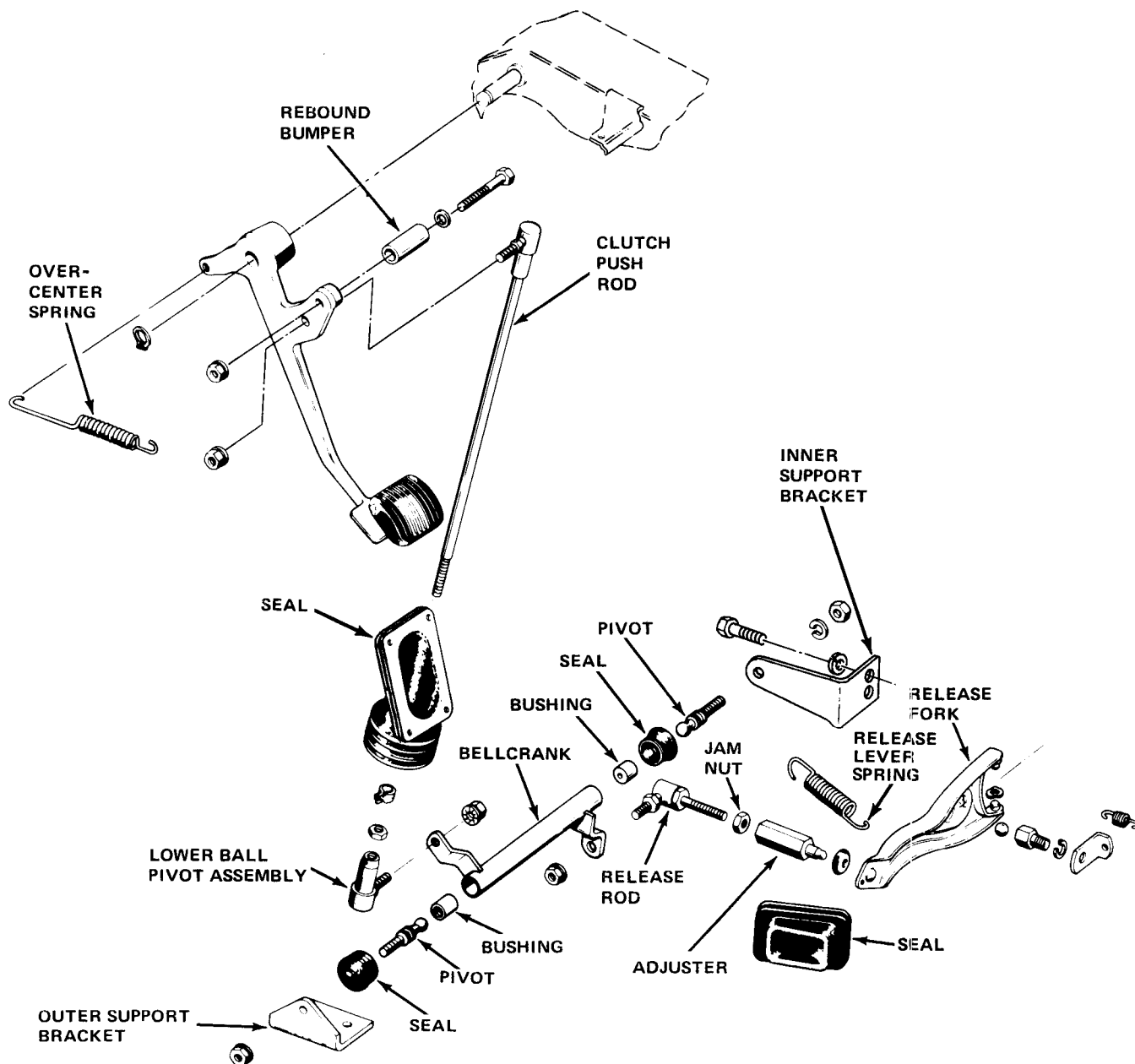
DRIVEN PLATE

Repair of the driven plate is not recommended. If the plate or cushion springs are bent, worn, or damaged, replace the driven plate. Do not replace the plate if the cushion springs only appear loose. This is normal.

THROWOUT BEARING

The clutch release mechanism consists of a forked lever which pivots on a ball and stud threaded into the clutch housing. A clutch fork return spring is anchored to a clip under the ball pivot and holds the lever in contact with the ball pivot. The clutch throwout bearing and sleeve is attached to the forked end of the throwout lever with a wave washer on the lower pin. On CJ models, the throwout bearing is attached to the fork by tension springs. The throwout bearing is permanently lubricated during manufacture.

Do not wash the throwout bearing in solvent as the lubricant may be dissolved.



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Fig. 5-3 Clutch Linkage—Cherokee and Truck

CRANKSHAFT PILOT BUSHING

When the clutch assembly is removed from the flywheel, inspect the pilot bushing for wear, scoring, cracks, and looseness. Replace bushing if worn or damaged.

Removal

(1) Remove lubrication wick and fill crankshaft bore and pilot bushing with multi-purpose grease.

(2) Insert clutch aligning tool in bushing and tap end of tool with lead hammer. Hydraulic pressure will force bushing out of crankshaft.

Installation

- (1) Clean grease from crankshaft bore.
- (2) Soak bushing and lubrication wick in engine oil.
- (3) Using clutch aligning tool as bushing driver, install bushing in crankshaft bore. Keep bushing straight during installation and be sure it is fully seated.
- (4) Install lubrication wick.

FLYWHEEL

Inspect flywheel and pressure plate surfaces for roughness. Check flywheel bolts for proper torque. Tighten bolts to 105 foot-pounds torque if necessary.

TRANSMISSION CLUTCH SHAFT

Install clutch driven plate on transmission clutch shaft. Be sure plate moves freely on splines. If splines on clutch shaft are burred, remove burrs with file or stone. If driven plate is not free to move on splines, incomplete release will result in hard shifting.

CLUTCH HOUSING ALIGNMENT

Clutch housing misalignment, caused by excessive face or bore runout of clutch housing or housing-to-transmission adapter, can cause: improper clutch release, driven plate failure, front transmission bearing failure, premature crankshaft pilot bushing wear, clutch cackle noise, vibration, and in some cases, jumping out of gear on deceleration. If these malfunctions occur, the rear face of the clutch housing or housing-to-transmission adapter should be checked for excessive runout.

Without Transmission Adapter

Use the following procedure to check housing alignment when the vehicle is not equipped with housing-to-transmission adapter.

- (1) Remove transmission as outlined in Section 6—Manual Transmission.
- (2) Remove clutch housing and clutch assembly.
- (3) Remove one flywheel attaching bolt.
- (4) Use nine-inch long 1/2-20 bolt and nut for dial indicator support.
- (5) Install nut on bolt so that 10 or 12 threads are exposed and thread bolt into crankshaft.
- (6) Tighten nut to secure bolt.
- (7) Install clutch housing on engine and tighten attaching bolts to specified torque. (Refer to Torque Specifications.)
- (8) Mount dial indicator on long bolt. Indicator stylus should contact rear face of clutch housing approximately 1/8 inch from edge of rear opening (fig. 5-4).
- (9) Check face runout of housing by turning crankshaft.
- (10) Face runout should not exceed 0.010 inch at any point through 360 degrees of rotation.

NOTE: Crankshaft end play must be held to zero when checking face runout. Move crankshaft forward or backward with pry bar to remove end play.

- (11) Use following procedure to correct face runout of clutch housing.

(a) Install shims between clutch housing and engine to clutch housing spacer (fig. 5-5).

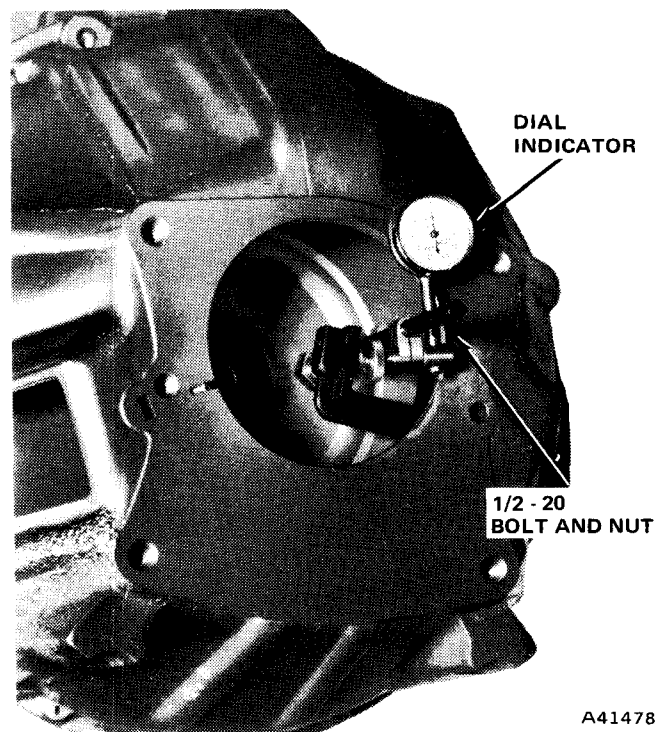
(b) Shims should be installed at points A to correctly align top with bottom of housing. Shims in-

stalled at points B and D or C and E will correct runout at either side of clutch housing. Shims installed at points D and E will align housing from bottom to top.

(c) To install shims, loosen clutch housing assembly.

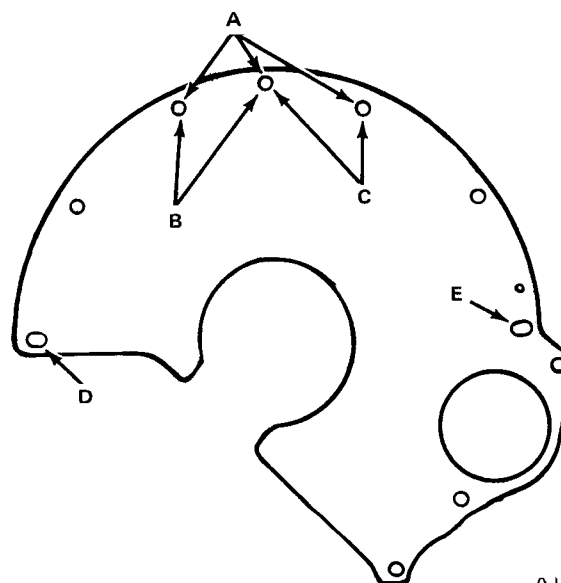
(d) Locate shims where necessary by loosening bolts and inserting shims.

(e) Tighten bolts and recheck face runout.



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Fig. 5-4 Mounting Dial Indicator



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Fig. 5-5 Shim Locations—232 CID Engine Shown

(f) Total face runout of clutch housing should not exceed 0.010 inch. Relocate shims as necessary to correct runout.

(12) Check bore alignment by positioning dial indicator stylus on inside diameter of rear opening of clutch housing.

(13) Rotate crankshaft and note indicator reading at four equally spaced points. Total bore runout must not exceed 0.010 inch.

(14) Any change in face alignment will change bore alignment and may make it possible to correct bore alignment by changing face alignment. Where it is impossible to correct bore alignment to within a maximum of 0.010 inch runout with change of face alignment (not to exceed 0.010 inch), replace housing.

With Transmission Adapter

Use the following procedure to check clutch housing-to-transmission adapter alignment.

(1) Remove transmission as outlined in Section 6—Manual Transmission.

(2) Remove clutch housing, with adapter attached, and remove clutch assembly.

(3) Remove one flywheel attaching bolt.

(4) Obtain a 1/2-20 by 15-inch long bolt and one 1/2-20 nut. Bolt and nut will serve as support for dial indicator.

(5) Thread nut onto bolt so that 10 to 12 threads are exposed. Threaded bolt in flywheel and tighten nut securely.

(6) Install clutch housing, with adapter attached, onto engine. Tighten upper bolts to 35 foot-pounds torque, and lower bolts to 45 foot-pounds torque.

(7) Mount dial indicator on 1/2-20 bolt. Position indicator so stylus contacts transmission mating face of adapter about 1/8 inch in from edge of adapter bore.

(8) Zero dial indicator and rotate crankshaft to check runout at adapter face. Runout should not exceed 0.010 inch at any point through 360 degrees of rotation.

NOTE: *Crankshaft end play must be held to zero while checking face runout.*

(9) Position dial indicator so stylus contacts bore surface of adapter at approximately center of bore.

(10) Zero dial indicator and rotate crankshaft to check runout of adapter bore. Runout should not exceed 0.010 inch at any point through 360 degrees of rotation.

NOTE: *Crankshaft end play must be held to zero while checking bore runout.*

(11) Correct adapter misalignment as follows:

(a) If runout at adapter bore is within acceptable limits but out of tolerance at face, shim

clutch housing as required to obtain runout of 0.010 inch or less. Shim housing as described under Clutch Housing Alignment—Without Transmission Adapter.

(b) If runout at adapter face is within acceptable limits but out of tolerance at bore, proceed as follows:

1. Loosen adapter-to-clutch housing bolts one turn.

2. Tap adapter lightly with hammer to reposition. Move adapter up, down, or side to side as required to obtain runout of 0.010 inch or less.

3. When runout is corrected, tighten adapter bolts to 35 foot-pounds torque. Check runout and adjust if necessary.

(c) If runout at adapter face or bore cannot be brought within tolerance, replace adapter and clutch housing.

(12) After correcting alignment, remove dial indicator and remove clutch housing with adapter attached.

NOTE: *If clutch housing was shimmed, mark location of shims for assembly reference.*

(13) Remove 1/2-20 bolt and nut from flywheel and install flywheel bolt removed previously. Tighten bolt to 100 to 110 foot-pounds torque. Install clutch assembly. Tighten clutch cover bolts to 40 foot-pounds torque.

(14) Install clutch housing with adapter attached. Tighten upper bolts to 35 foot-pounds torque, and lower bolts to 45 foot-pounds torque.

(15) Install transmission as outlined in Section 6—Manual Transmission.

CLUTCH RELEASE LEVER ADJUSTMENT

NOTE: *Always inspect release lever height adjustment before installing clutch cover assembly.*

(1) Install Clutch Gauge Plate, Tool J-1048, on flywheel in position normally occupied by driven plate (fig. 5-6).

(2) Position cover assembly over gauge plate. Release levers should be directly over machined lands of gauge plate and gauge plate hub should be centered between ends of release levers.

(3) Attach cover assembly to flywheel. Tighten cover attaching screws in rotation, one or two turns at a time, to avoid distortion of cover.

(4) Compress each release lever several times to seat levers in their operating positions (fig. 5-7).

(5) Measure height of each lever relative to gauge hub. Clutch Lever Height Gauge, Tool J-23330, has four different dimensional settings which can be used for measuring above and below hub (fig. 5-8).

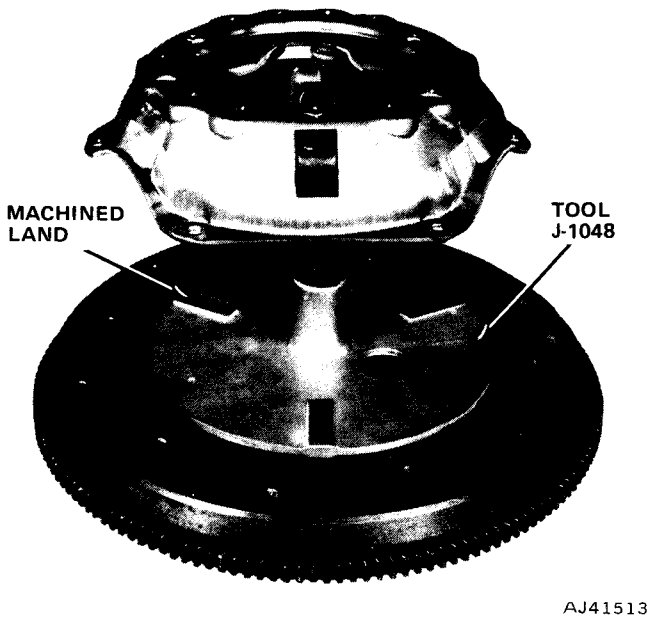


Fig. 5-6 Clutch Gauge Plate J-1048

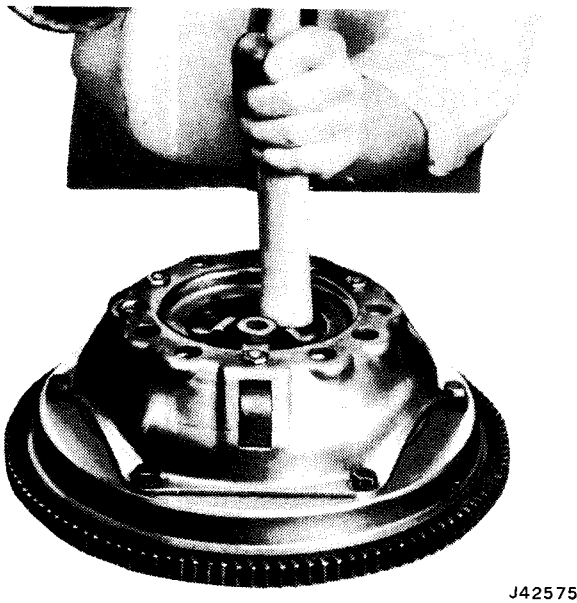


Fig. 5-7 Compressing Release Levers

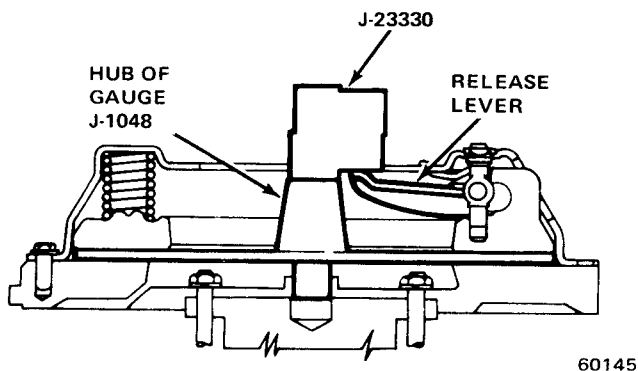


Fig. 5-8 Release Lever Height Measurement

(6) Adjust release levers by turning lever height adjusting nuts until lever is at specified height.

(7) After reach lever has been adjusted, work lever down and up several times and recheck adjustment. If correct, stake nut with dull punch to secure.

CLUTCH INSTALLATION

(1) Check clutch release lever height and correct if necessary.

(2) Install driven plate and loosely attach cover assembly to flywheel. Use Aligning Tool to install driven plate during installation. Use transmission clutch shaft if alignment tool is not available.

(3) Tighten cover attaching screws in rotation to prevent cover distortion.

(4) Install clutch housing, starter, and throwout bearing and sleeve assembly (fig. 5-9).

CAUTION: Do not operate clutch pedal until transmission has been installed.

(5) Install transmission and transfer case (refer to Section 6—Manual Transmission).

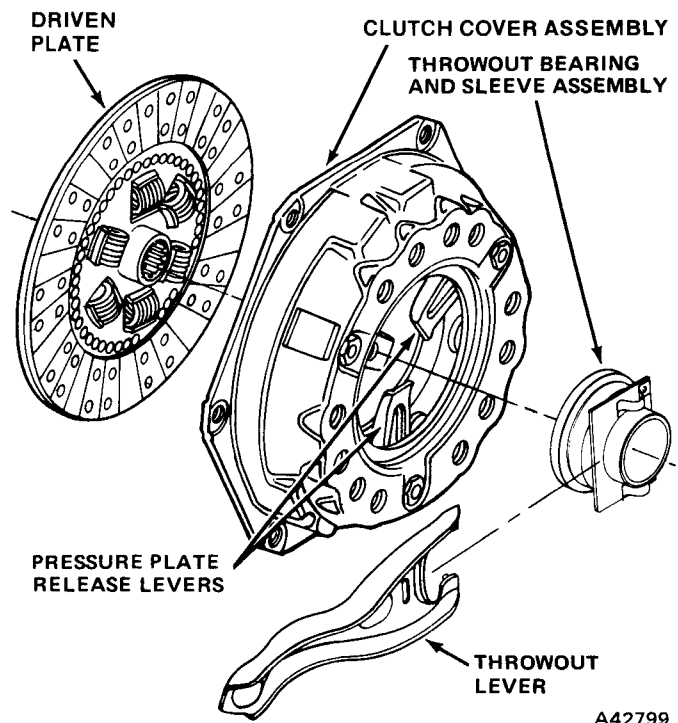


Fig. 5-9 Clutch Components—CJ Models

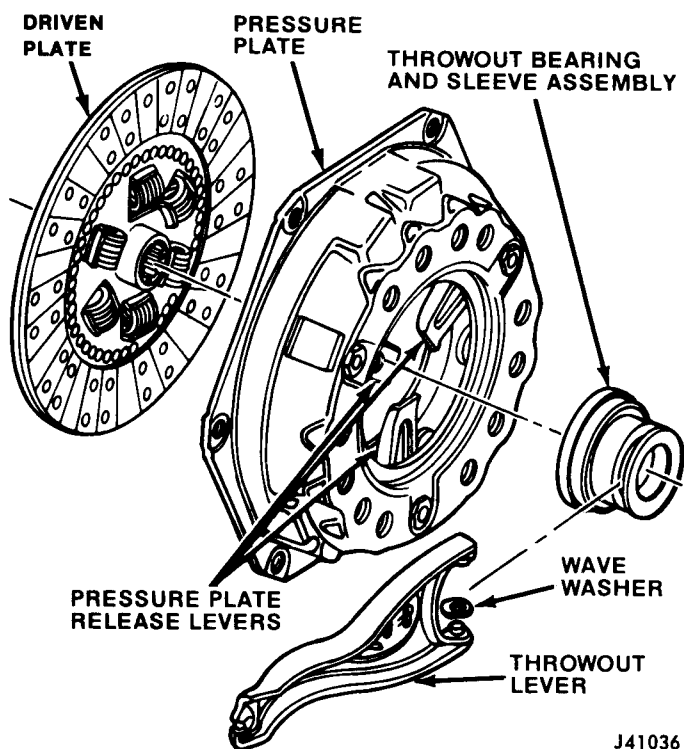


Fig. 5-10 Clutch Components—Cherokee and Truck

Specifications

Model	Engine (CID)	Clutch Diameter (Inches)	Release Lever Height (Inches Above Gauge Hub)	Pedal Free Play (Inches)
CJ-5/CJ-7	232, 258, 304	10.5	3/32 to 7/64	0.88 to 1.00
Cherokee, Wagoneer, Truck,	258	10.5	3/32 to 7/64	0.38 to 0.62
	360	11.0	3/16	0.38 to 0.62

60567

Torque Specifications

Service Set-To Torques should be used when assembling components.

Service In-Use Recheck Torques should be used for checking a pre-torqued item.

	Service Set-To Torques	Service In-Use Recheck Torques
Clutch Bellcrank Bracket to Frame Rail Bolt (Cke., Wag., Trk.)	14	12-16
Clutch Bellcrank Pivot	35	30-40
Clutch Cover Bolt	40	35-45
Clutch Housing to Engine Block Bolt		
232-258 CID Engines		
Top	35	30-40
Bottom	45	40-50
304-360 Engines		
Top	30	25-35
Bottom	30	25-35
Clutch Housing to Engine Dowel Bolt Nut	45	40-50
Clutch Housing Spacer to Block Bolt (304-360 CID Engines)	15	12-17
Clutch Housing to Starter Motor Bolt	45	40-50
Clutch Pedal Rebound Bumper, Bolt, Nut, and Lockwasher Assembly to Pedal	40	35-45
Clutch Pedal Shaft Locknut	33	30-36
Transmission Case to Clutch Housing Bolt	55	50-60

All torque values given in foot-pounds with dry fits unless otherwise specified.

Refer to the Standard Torque Specifications and Capscrew Markings Chart in Section A of this manual for any torque specifications not listed above.

60568

Clutch Housing Alignment Specifications (Inches)

Clutch Housing Bore to Crankshaft Centerline	0.010 max.
Clutch Housing Transmission Mounting Face to Crankshaft Centerline	0.010 max.
Clutch Housing to Transmission Adapter Bore to Crankshaft Centerline	0.010 max.
Clutch Housing to Transmission Adapter Face to Crankshaft Centerline	0.010 max.
Flywheel Runout at Face	0.005 max.

60569

