

CLUTCH

1994 Toyota Celica

1994 Clutch

Celica

DESCRIPTION

The single, dry-type disc clutch uses a hydraulically-operated master cylinder with a clutch release cylinder mounted on clutch housing. Clutch release cylinder is nonadjustable. The clutch start system uses a clutch start switch which prevents the engine from starting unless clutch pedal is fully depressed.

ADJUSTMENTS

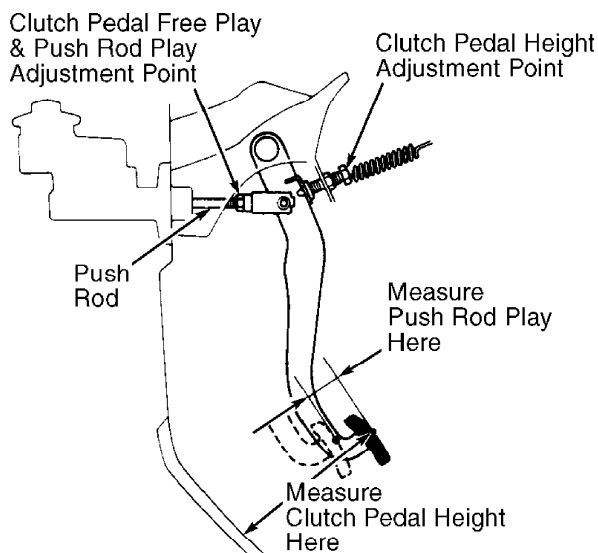
CLUTCH PEDAL HEIGHT

1) Measure clutch pedal height from highest point of clutch pedal pad to the floor panel. See Fig. 1. Ensure clutch pedal height is within specification. See CLUTCH PEDAL HEIGHT SPECIFICATIONS table.

2) If clutch pedal height adjustment is required, loosen lock nut and rotate bolt at clutch pedal height adjustment point until correct clutch pedal height is obtained. See Fig. 1. Check clutch pedal free play and push rod play. See CLUTCH PEDAL FREE PLAY & PUSH ROD PLAY under ADJUSTMENTS.

CLUTCH PEDAL HEIGHT SPECIFICATIONS TABLE

Application	In. (mm)
Celica	5.86-6.25 (148.8-158.8)



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Fig. 1: Clutch Pedal Height, Push Rod Play & Adjustment Points
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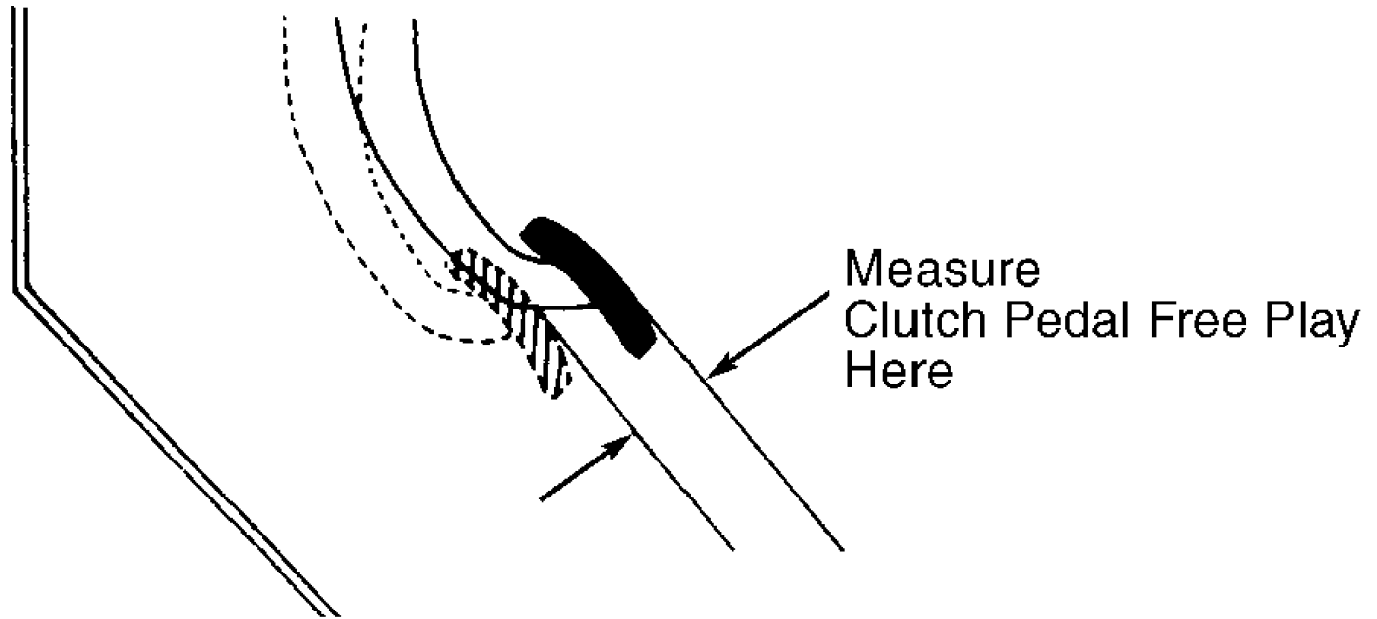
CLUTCH PEDAL FREE PLAY & PUSH ROD PLAY

1) To check clutch pedal free play, push clutch pedal downward until beginning of clutch resistance is felt. See Fig. 2. Note distance that clutch pedal moves. This is the clutch pedal free play.

2) Clutch pedal free play should be .20-.59" (5.0-15.0 mm). If clutch pedal free play adjustment is required, loosen lock nut on push rod at master cylinder. See Fig. 1. Rotate push rod to obtain correct pedal free play. Tighten lock nut.

3) To check push rod play, slightly push clutch pedal downward until slight resistance is felt. This is where the push rod starts to operate clutch master cylinder. Push rod play should be .039-.197" (1.00-5.00 mm) at top of clutch pedal. See Fig. 1. This ensures there is a slight amount of clearance at the push rod.

4) If push rod play adjustment is required, loosen lock nut on push rod at master cylinder. See Fig. 1. Rotate push rod to obtain correct push rod play. Tighten lock nut. Recheck clutch pedal free play and clutch pedal height.



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Fig. 2: Measuring Typical Clutch Pedal Free Play
Courtesy of Toyota Motor Sales, U.S.A., Inc.

TESTING

CLUTCH START SYSTEM

Ensure engine does not start when clutch pedal is released. Ensure engine starts when clutch pedal is fully depressed. If system is not operating correctly, check clutch start switch. See CLUTCH START SWITCH under TESTING. If clutch start switch is okay, adjust clutch start switch for correct system operation.

CLUTCH START SWITCH

1) Disconnect electrical connector from clutch start switch, located near rear of clutch pedal. See Fig. 3. Using ohmmeter, ensure continuity exists between clutch start switch terminals when clutch pedal is fully depressed. This is ON position.

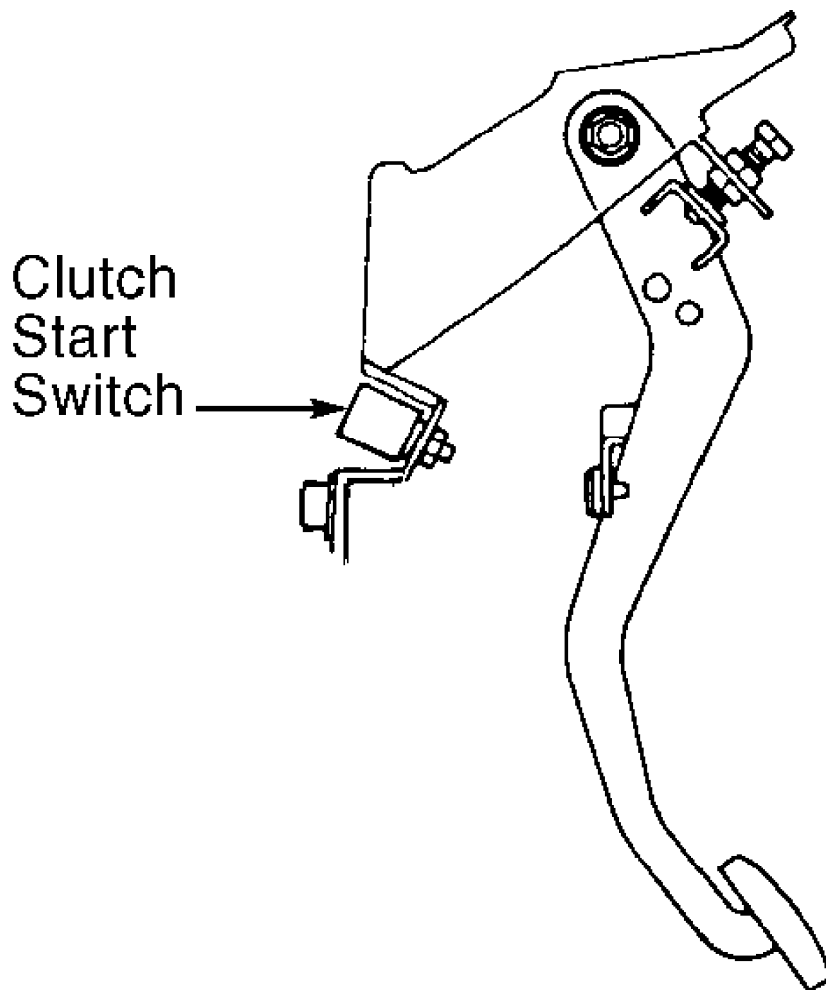
2) Ensure no continuity exists when clutch pedal is released. This is OFF position. The ON and OFF position is determined by distance that plunger extends from threaded end of clutch start switch. See Fig. 4.

4) For proper distance to determine switch continuity, see CLUTCH START SWITCH PLUNGER CONTINUITY SPECIFICATIONS table. Replace or adjust clutch start switch as necessary. Reinstall electrical connector.

CLUTCH START SWITCH PLUNGER CONTINUITY SPECIFICATIONS (1)

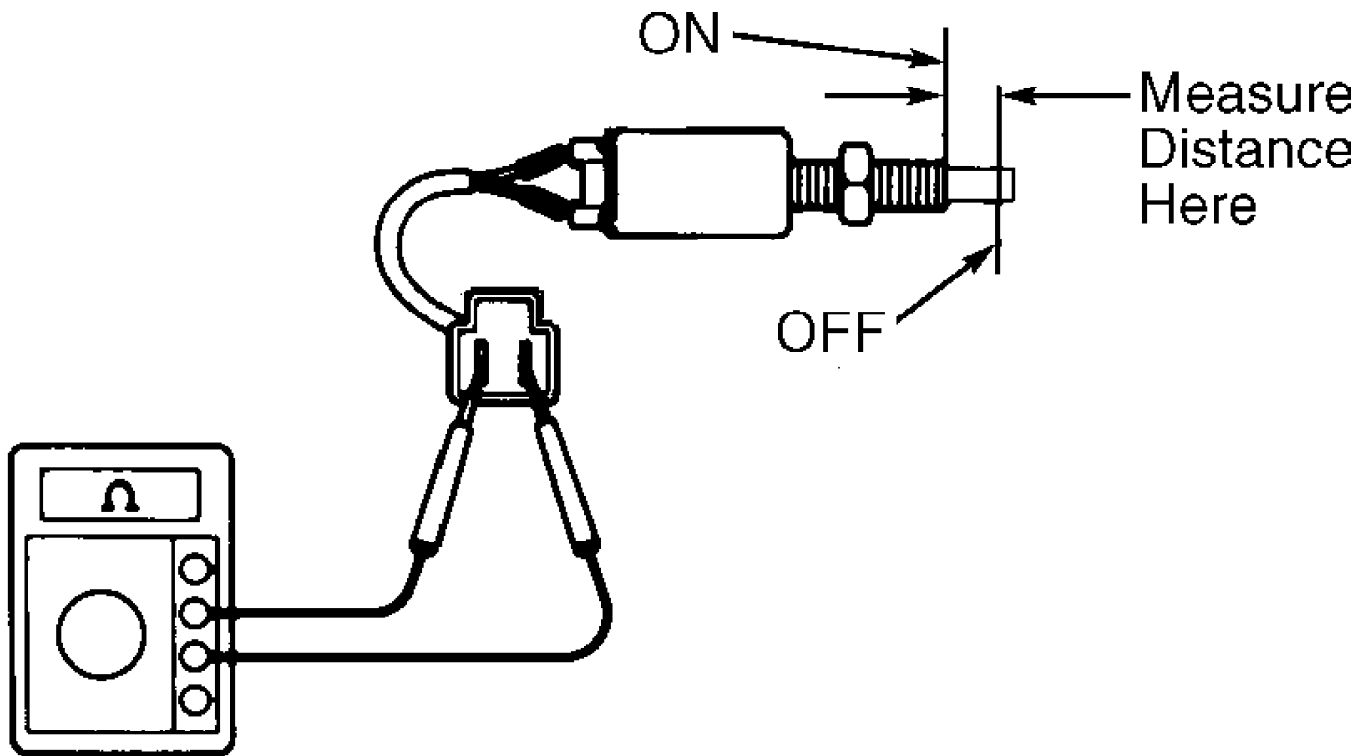
Application	In. (mm)
Celica295-.335 (7.50-8.50)

(1) - Distance from threaded end of clutch start switch where continuity changes. See Fig. 4.



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Fig. 3: Identifying Typical Clutch Start Switch Location
Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 4: Testing Clutch Start Switch
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

REMOVAL & INSTALLATION

CLUTCH ASSEMBLY

WARNING: To prevent air bag deployment, disconnect negative battery cable and wait at least 90 seconds before working on vehicle.

Removal

1) Disconnect negative battery cable. On 2.2L (5S-FE) models, remove battery and cruise control actuator. On all models, remove air cleaner case with air intake hose. Remove clutch release cylinder with hose attached and secure aside.

2) Remove starter. Disconnect necessary ground straps, electrical connections and control cables from transaxle. Remove upper transaxle mounting bolts from cylinder block.

3) Raise and support vehicle. Remove front wheels. Remove lower engine covers. Drain transaxle fluid. Remove axle shafts from transaxle. See the AXLE SHAFTS - 1.8L, or the AXLE SHAFTS - 2.2L article in DRIVE AXLES.

4) Remove front exhaust pipe, located below oil pan. Remove front exhaust pipe support bracket. On 2.2L (5S-FE), remove stiffener plate, located between cylinder block and transaxle, at rear of oil pan.

5) On all models, support engine with hoist. Using transmission jack, slightly raise transaxle to remove weight from engine mounts.

6) Remove front (exhaust manifold side) engine mount-to-crossmember bolts/nuts. Remove rear (intake manifold side) engine

mount-to-crossmember bolts/nuts.

7) Remove front (exhaust manifold side) engine mount and rear (intake manifold side) engine mount brackets from cylinder block. Remove bolts and crossmember, located below engine and transaxle. Remove transaxle mount bolts.

8) Remove remaining transaxle mounting bolts. Slightly lower engine and remove transaxle. Place a reference mark on clutch cover and flywheel for reassembly reference.

9) Alternately loosen clutch cover bolts until spring tension is released. Remove clutch cover and clutch disc. Remove clutch release fork, clutch release bearing and pivot stud from transaxle (if necessary). See Fig. 5.

Inspection

1) Check wear on facings of clutch disc by measuring depth of each rivet head. Minimum depth at any rivet is .012" (.30 mm). Check clutch disc runout. Maximum runout at facing on clutch disc is .031" (.80 mm). Replace clutch disc if not within specification.

2) Using dial indicator, check flywheel runout. Replace flywheel if flywheel runout is greater than .004" (.10 mm).

3) Using caliper, measure depth and wear on diaphragm spring on clutch cover. See Fig. 6. Maximum depth is .024" (.60 mm) and maximum width is .197" (5.00 mm). Replace clutch cover if necessary.

4) Ensure clutch release bearing rotates smoothly. Replace clutch release bearing if necessary.

Installation

1) If installing flywheel, apply thread sealant on threads of flywheel bolts before installing. Install and alternately tighten flywheel bolts in a crisscross pattern to specification. See TORQUE SPECIFICATIONS.

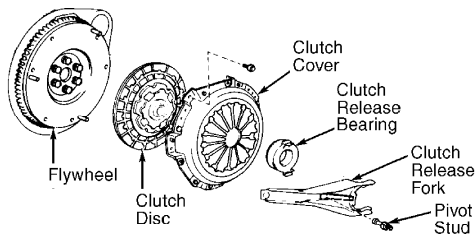
2) Install clutch disc in clutch cover. Align reference marks on clutch cover and flywheel. Install clutch disc and clutch cover on flywheel.

3) Using clutch aligner, center clutch disc on flywheel. Install and alternately tighten clutch cover bolts in a crisscross pattern to specification. See TORQUE SPECIFICATIONS table.

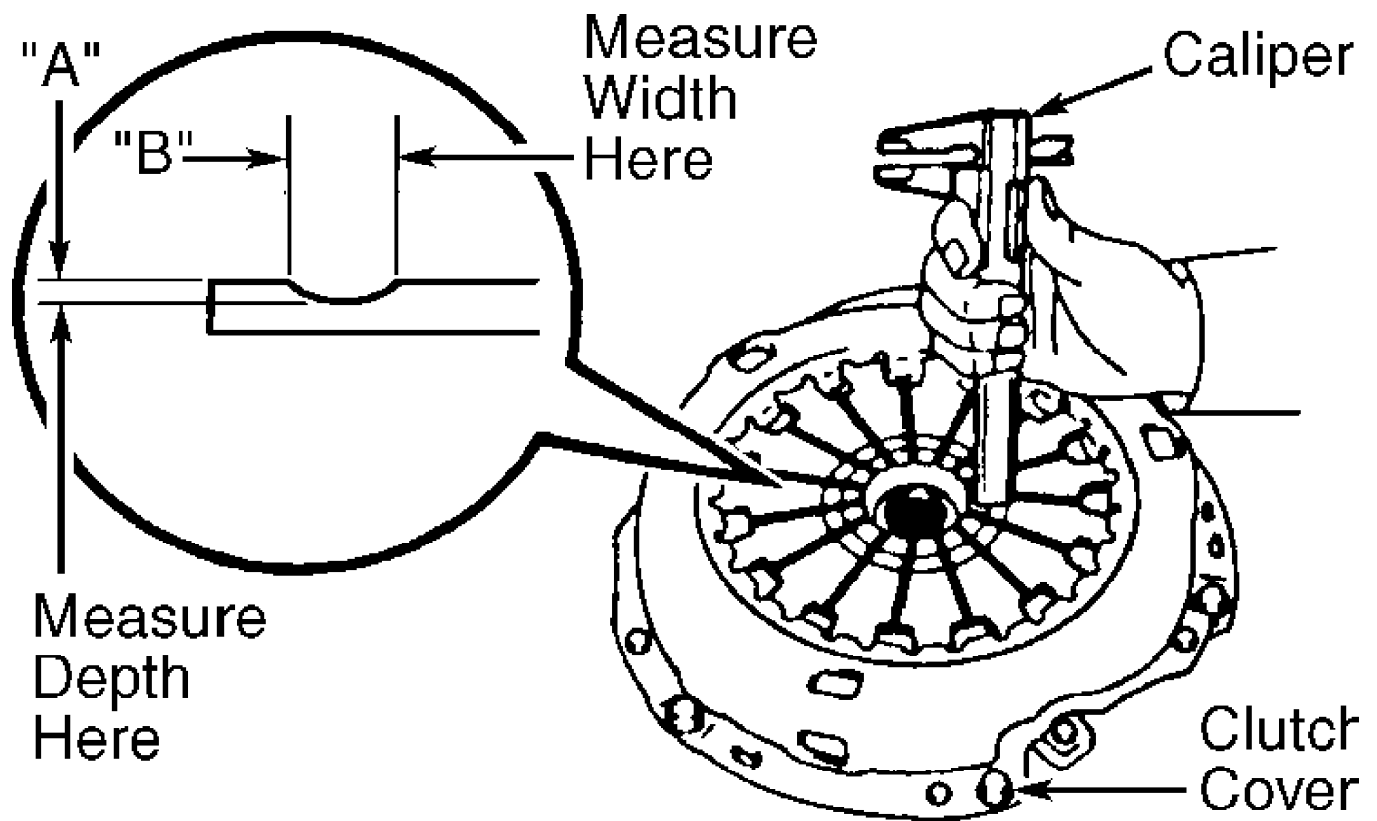
4) Apply molybdenum disulfide grease to clutch release fork-to-pivot stud contact surfaces, hub on clutch release bearing and clutch disc splines. Install clutch release fork and clutch release bearing on transaxle (if removed).

5) To install remaining components, reverse removal procedure. Tighten bolt/nuts to specification. See TORQUE SPECIFICATIONS. Fill transaxle with 75W-90 gear oil with API GL-4 or GL-5 rating.

WARNING: To prevent air bag deployment, disconnect negative battery cable and wait at least 90 seconds before working on vehicle.



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Fig. 5: Exploded View Of Typical Clutch Assembly
Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 6: Checking Diaphragm Spring Depth & Width
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

CLUTCH MASTER CYLINDER

Removal & Installation

- 1) Use syringe to remove brake fluid from clutch master cylinder.
- 2) Remove clip and clevis pin from push rod assembly at clutch pedal. Disconnect hydraulic line at clutch master cylinder. Remove nuts and clutch master cylinder.
- 3) To install, reverse removal procedure. Bleed hydraulic system. Adjust clutch pedal height, clutch free play and push rod play. See CLUTCH PEDAL HEIGHT and CLUTCH PEDAL FREE PLAY & PUSH ROD PLAY under ADJUSTMENTS.

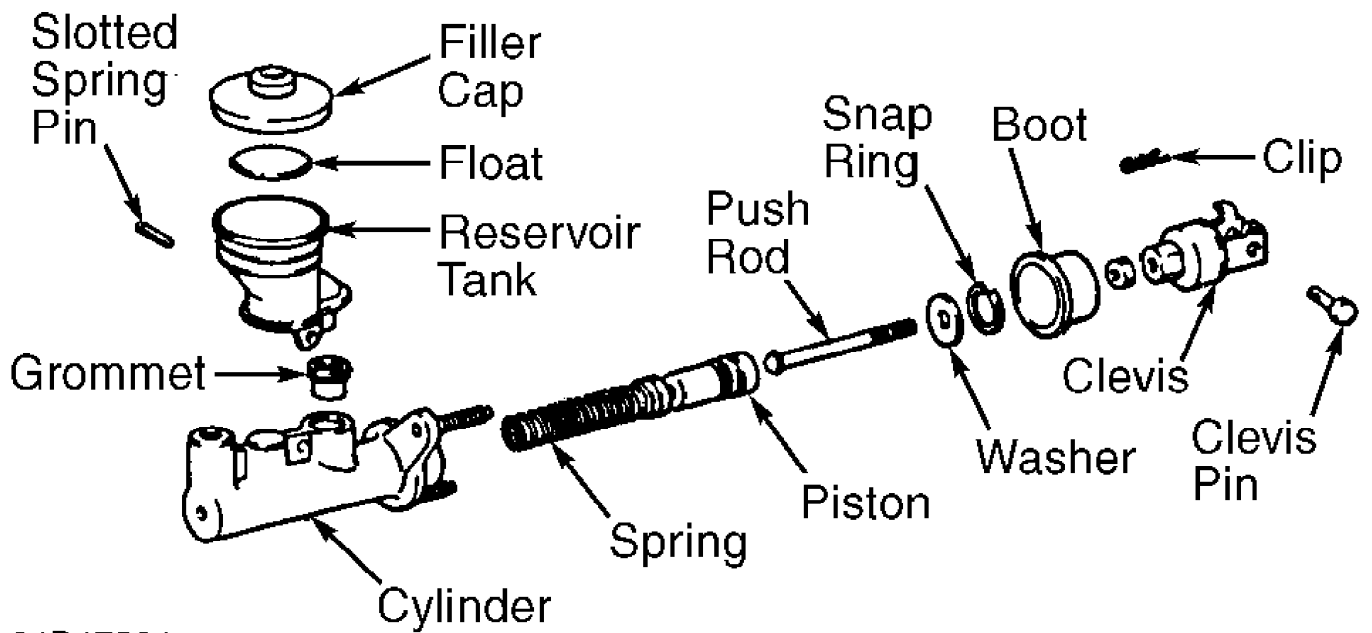
CLUTCH RELEASE CYLINDER

Removal & Installation

Disconnect hydraulic line at clutch release cylinder. Remove bolts and clutch release cylinder. To install, reverse removal procedure. Bleed hydraulic system.

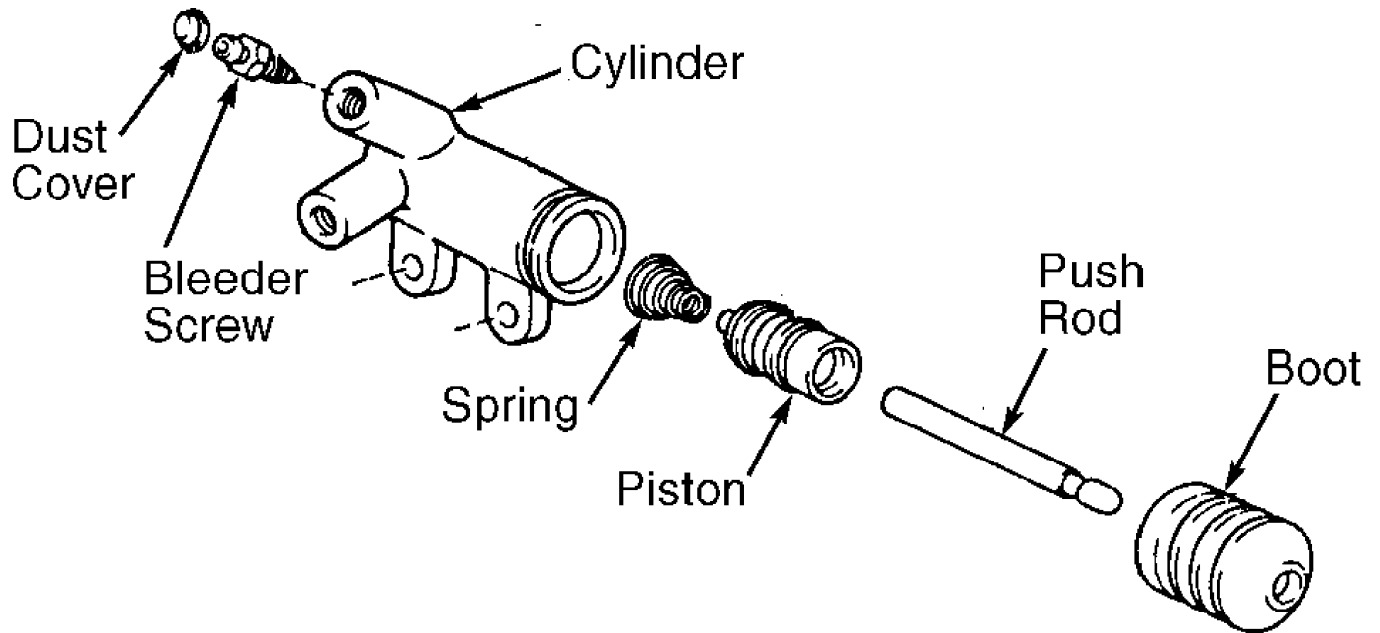
OVERHAUL

NOTE: For exploded view of typical clutch master cylinder, see Fig. 7. For exploded view of typical clutch release cylinder, see Fig. 8.



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Fig. 7: Exploded View Of Typical Clutch Master Cylinder
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 8: Exploded View Of Typical Clutch Release Cylinder
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Clutch Cover Bolt	14 (19)

Crossmember Bolt		
1.8L (7A-FE)	26	(35)
2.2L (5S-FE)	38	(52)
Exhaust Pipe Support Bracket Bolt/Nut	14	(19)
Flywheel Bolt		
1.8L (7A-FE)	58	(79)
2.2L (5S-FE)	65	(88)
Front (Exhaust Manifold Side) Engine		
Mount Bracket-To-Cylinder Block Bolt	57	(77)
Front (Exhaust Manifold Side) Engine		
Mount-To-Crossmember Bolt/Nut		
1.8L (7A-FE)	59	(80)
2.2L (5S-FE)	47	(64)
Front (Exhaust Manifold Side) Engine		
Mount Through-Bolt	64	(87)
Pivot Stud-To-Transaxle		
1.8L (7A-FE)	27	(37)
2.2L (5S-FE)	29	(39)
Rear (Intake Manifold Side) Engine		
Mount Bracket-To-Cylinder Block Bolt	57	(77)
Rear (Intake Manifold Side) Engine		
Mount Through-Bolt	64	(87)
Rear (Intake Manifold Side) Engine		
Mount-To-Crossmember Bolt/Nut		
1.8L (7A-FE)	59	(80)
2.2L (5S-FE)	47	(64)
Starter Bolt	29	(39)
Stiffener Plate Bolt - 2.2L (5S-FE)		
Cylinder Block Side	32	(43)
Transaxle Side	15	(20)
Transaxle Mounting Bolt		
10-mm Bolt	34	(46)
12-mm Bolt	47	(64)
Transaxle-To-Mount Bolt	47	(64)
Wheel Lug Nut	76	(103)
