CLUTCH

1993 Toyota Celica

1993 Clutch

Celica

DESCRIPTION

The single, dry disc type clutch uses a hydraulically operated master cylinder and a release cylinder mounted on clutch housing. Clutch release cylinder is not adjustable. Clearance is automatically compensated for by internal design of cylinder. Camry models also use an accumulator.

ADJUSTMENTS

CLUTCH PEDAL HEIGHT

Pedal height is measured from highest point of pedal pad to area of floor contacted when pedal is fully depressed. Loosen pedal stop bolt at top of pedal assembly to adjust pedal height from floor. See Fig. 1. See CLUTCH PEDAL HEIGHT SPECIFICATIONS table.

CLUTCH PEDAL HEIGHT SPECIFICATIONS TABLE

Application	In. (mm)
Camry	
4-Cylinder	6.33-6.72 (160.8-170.7)
V6	6.48-6.88 (164.6-174.8)
Celica	6.41-6.80 (162.8-172.7)
Corolla	5.61-6.00 (142.5-152.5)
Paseo	5.51-5.91 (140.0-150.1)
Tercel	
4-Speed	5.69-6.08 (144.5-154.4)
5-Speed	5.51-5.91 (140.0-150.1)

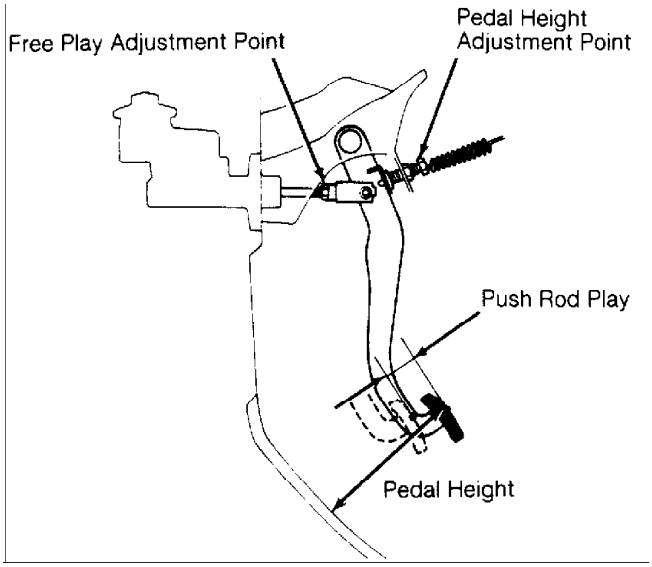

Fig. 1: Adjusting Clutch Pedal Height & Free Play
Courtesy of Toyota Motor Sales, U.S.A., Inc.

CLUTCH PEDAL FREE PLAY

Push in on clutch pedal until beginning of clutch resistance is felt. Clutch pedal free play should be .20-.59" (5.0-15.0 mm). See Fig. 2. To adjust free play, loosen lock nut on master cylinder push rod and turn push rod to obtain correct pedal free play. See Fig. 1. Tighten lock nut, and recheck pedal height.

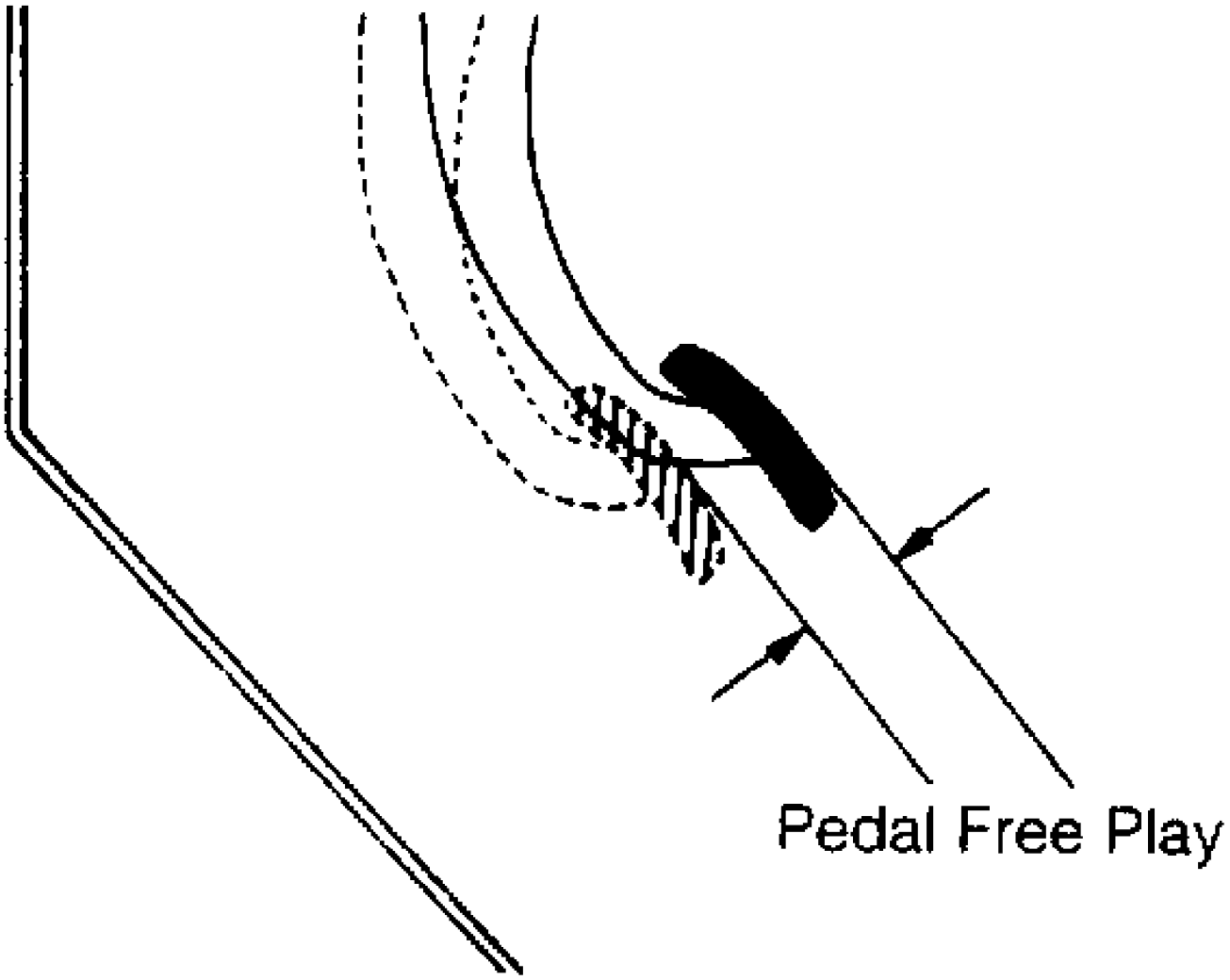

Fig. 2: Measuring Clutch Pedal Free Play
Courtesy of Toyota Motor Sales, U.S.A., Inc.

CLUTCH START SYSTEM

Switch Adjustment

1) Ensure engine does not start when clutch pedal is released. Ensure engine starts when clutch pedal is fully depressed.

2) On all models, if system is not operating correctly, check clutch start switch. With switch in ON (pushed) position, continuity should exist. With switch in OFF (free) position, continuity should not exist. See CLUTCH SWITCH PLUNGER CONTINUITY SPECIFICATIONS table. See Fig. 3. Replace or adjust switch as necessary.

CLUTCH SWITCH PLUNGER CONTINUITY SPECIFICATIONS TABLE (1)

Application	In. (mm)
Celica	.176-.216 (4.5-5.5)

(1) - Distance from threaded end of switch where continuity changes. See Fig. 3.

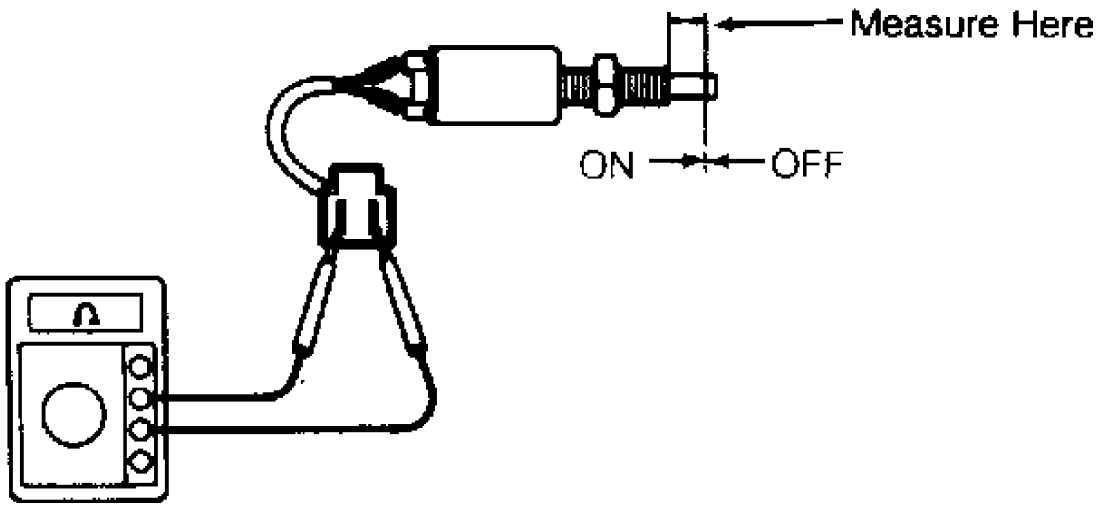

Fig. 3: Testing Clutch Start System Switch
Courtesy of Toyota Motor Sales, U.S.A., Inc.

REMOVAL & INSTALLATION

CLUTCH ASSEMBLY

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

Removal (Celica FWD)

1) Disconnect negative battery cable. Remove air cleaner assembly. Remove cruise control assembly. Remove starter, clutch release cylinder and bracket. Remove left engine stay, ground cable and back-up switch connector. Disconnect control cables and speedometer cable.

2) Remove left side engine and transaxle mounting bolts. Remove front wheels. Raise and support vehicle. Remove splash shields. Drain transaxle fluid. Remove drive shaft. See AXLE SHAFTS - FRONT article in DRIVE AXLES. Remove lower crossmember. Remove front exhaust pipe. Remove engine mounting bolts and engine-to-center crossmember bolts.

3) Raise engine and transaxle slightly with a jack, and remove center crossmember. Remove stiffener plate. Remove transaxle mounting bolts, lower engine and remove transaxle.

4) Mark pressure plate and flywheel for reassembly reference.

Loosen pressure plate attaching bolts alternately until pressure plate is released. Remove clutch disc and pressure plate. DO NOT drop clutch disc.

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

Removal (Celica All-Trac)

1) Engine and transaxle must be removed as an assembly to replace clutch assembly. With ignition off, disconnect negative battery cable. Place suitable container under fuel line. Cover fuel line connection with shop towel. Slowly loosen fuel line connection to release fuel pressure.

2) Drain cooling system, engine oil and transaxle oil. Remove hood and engine undercover. Remove air intake duct, airflow meter and air cleaner cap as an assembly. Remove air cleaner case. Disconnect cables from throttle body.

3) Disconnect relay box from battery. Remove lower cover from relay box. Disconnect fusible link assembly and engine wire connectors from relay box. Remove A/C relay box from bracket, located near right corner of radiator.

4) Remove battery. Remove injector solenoid resistor and fuel pump resistor located in front of battery, left of radiator. Remove radiator cooling fans, radiator and radiator reservoir tank. Remove cruise control actuator and ignition coil. Remove strut tower-to-firewall braces.

5) Label charcoal canister vacuum hoses, and remove canister. Label all necessary vacuum hose locations for reassembly reference. Disconnect necessary control cables, coolant hoses, fuel lines, vacuum hoses and electrical connections.

6) Raise and support vehicle. Disconnect speedometer cable, oil cooler hoses and control cables at transaxle. Remove clutch release cylinder with hose attached, and secure aside. Disconnect wiring, and remove turbo pressure sensor and A/C vacuum switching valve from firewall. Remove starter.

7) Disconnect electrical connectors from engine Electronic Control Unit (ECU) located left of glove box, behind center console. Disconnect remaining electrical connections so engine wiring can be pulled out through access hole in passenger's side of firewall. See Fig. 4. Remove retaining nuts, and pull engine wiring through firewall.

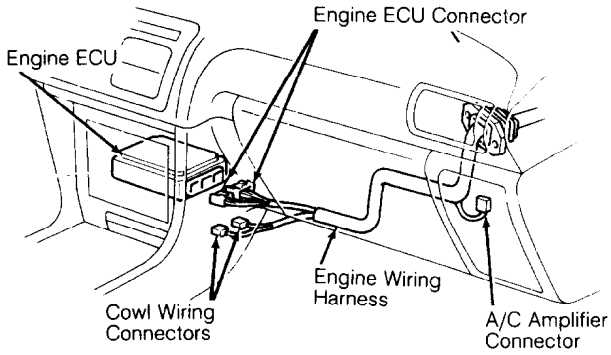

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Fig. 4: Identifying Engine Wiring Connectors (Celica All-Trac) Courtesy of Toyota Motor Sales, U.S.A., Inc.

8) Remove suspension crossmember bolted to both lower suspension arm shafts. Disconnect exhaust pipe at catalytic converter

(located at bottom of turbo) and center pipe. Remove exhaust pipe. Remove front tires and wheels. Remove axle shafts. See the AXLE SHAFTS - FRONT article in DRIVE AXLES. Remove front drive shaft.

9) Place reference marks on front and rear drive shaft flanges at center bearing. Remove flange bolts. Remove drive shaft from transfer case. Remove seal deflector from rear of transfer case. Remove dynamic damper from transfer case.

10) Remove alternator and idler pulley bracket. Remove A/C compressor and power steering pump with hoses attached, and secure aside. Remove engine mount crossmember located below engine. Remove catalytic converter from turbo.

11) Disconnect engine and transaxle mounts. Note direction of mount installation for reassembly reference. Mounts must be installed in original direction. Lift engine and transaxle from vehicle.

12) Remove bolts attaching engine to transaxle and remove transaxle. Mark pressure plate and flywheel for reassembly reference. Loosen pressure plate attaching bolts alternately until pressure plate is released. Remove clutch disc and pressure plate. DO NOT drop clutch disc.

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

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). Maximum runout of clutch disc facing is .031" (.79 mm). Replace clutch disc if it is not within specifications.

2) Check diaphragm spring and pressure plate for wear and damage. If assembly is excessively worn or damaged, replace pressure plate. Check pilot bearing rotation. If bearing rotates roughly, replace bearing. Check release bearing for rough rotation. Replace bearing and hub as necessary.

3) Inspect flywheel runout. Maximum runout is .004" (.10 mm). If runout is excessive, replace flywheel. Clean flywheel and pressure plate of all oil, grease and metal deposits. Inspect for damage, cracks and warpage. Slight surface scoring can be removed using sandpaper. Replace or repair as necessary.

4) Using calipers, inspect diaphragm spring for depth and width of wear. See Fig. 5. Maximum depth is .024" (.060 mm). Maximum width is .197" (5.0 mm).

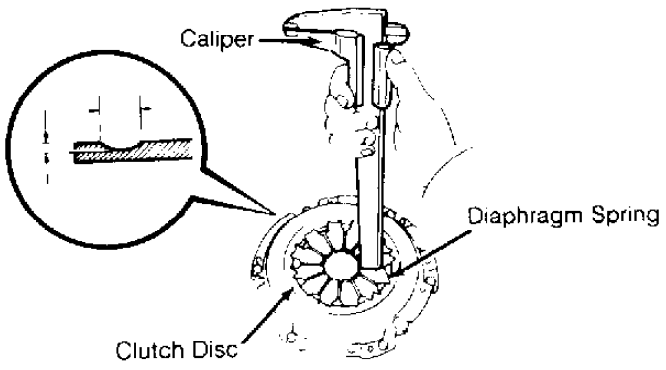

Fig. 5: Checking Diaphragm Spring Depth & Width Wear
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Installation

1) Align reference marks, and install clutch disc and

pressure plate. Use clutch aligner to center clutch disc on flywheel. Tighten pressure plate bolts alternately and evenly in a crisscross pattern to specification. See TORQUE SPECIFICATIONS table.

2) Apply molybdenum disulfide grease to release fork contact surfaces, release bearing and hub, and clutch disc splines. Reverse removal procedure to complete installation.

CLUTCH MASTER CYLINDER

Removal & Installation

1) On Celica Turbo, remove front suspension brace. On Corolla, remove brake booster. On all models, disconnect master cylinder push rod at clutch pedal. Disconnect hydraulic line at cylinder.

2) Remove clutch master cylinder. To install, reverse removal procedure. Adjust pedal height and free play. See CLUTCH PEDAL HEIGHT and CLUTCH PEDAL FREE PLAY under ADJUSTMENTS. Bleed hydraulic system.

OVERHAUL

NOTE: For exploded view of release cylinder, see Fig. 6. For exploded view of clutch master cylinder, see Fig. 7.

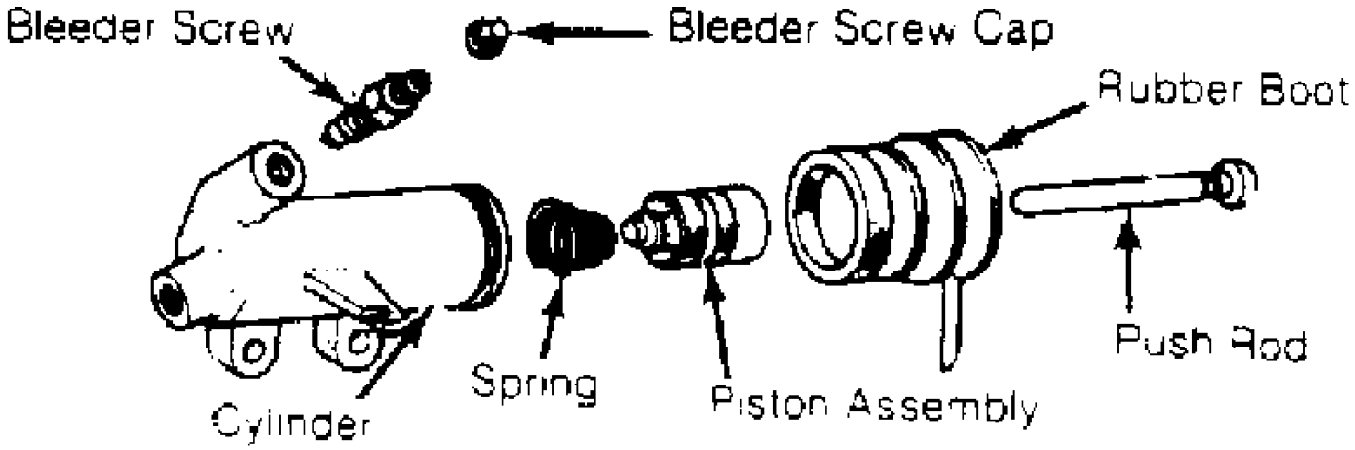

Fig. 6: Exploded View Of Release Cylinder (Typical)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

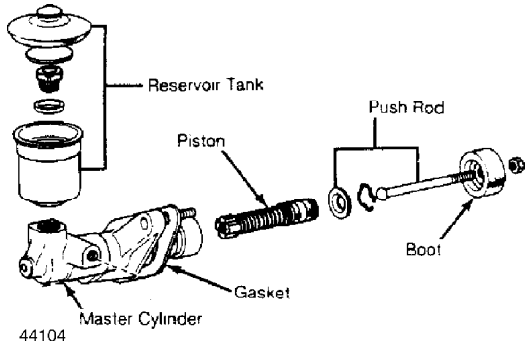

Fig. 7: Exploded View Of Clutch Master Cylinder (Typical)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Celica (FWD)	
Flywheel Bolts	
4A-FE	58 (79)
5S-FE	65 (88)
3S-GTE	80 (108)
Pressure Plate Bolts	14 (19)
Transaxle-To-Engine Bolts	
10-mm Bolts	34 (46)
12-mm Bolts	47 (64)
Wheel Lug Nuts	76 (103)
Celica (All-Trac)	
Dynamic Damper Bolt	19 (26)
Engine Mount Crossmember-To-Underbody Bolt	38 (52)
Engine Mounting Bracket-To-Engine Bolts (Right Front)	38 (52)
Engine Mounting Insulator Through Bolt	64 (87)
Engine Mounting Insulator-To-Bracket Nuts (Right Front)	38 (52)
Engine Mount-To-Crossmember Bolt	54 (73)
Flywheel Bolt	65 (88)
Power Steering Pump Bolt	32 (43)
Pressure Plate Bolts	14 (19)
Stiffener Support Brace Bolt (Engine Block-To-Flywheel Housing)	27 (37)
Strut Tower-To-Firewall Brace	
Bolt	15 (20)
Nut	47 (64)
Suspension Crossmember Bolt	112 (152)
Transaxle-To-Engine Bolts	
10-mm Bolts	34 (46)
12-mm Bolts	47 (64)
Wheel Lug Nuts	76 (103)