

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

1988-94 AUTOMATIC TRANSMISSIONS

General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

APPLICATION

TRANSMISSION APPLICATIONS

Application	Transmission
Chevrolet 1988 Nova	A-240E
Geo 1990-92 Prizm	A-240E
Toyota	
Corolla - 1988-92 LE	A-240L
Corolla - 1993-94 1.8L	A-245E
MR2 (1988-92)	A-240E & A-241E
Paseo (1992-93)	A-244E

IDENTIFICATION

Transaxles may be identified by using the Vehicle Identification Number (VIN). VIN locations are on cowl panel at center of firewall, top left corner of instrument panel or driver's door post. On Geo Prizm, transaxle identification number is located on transaxle, near transaxle rear cover.

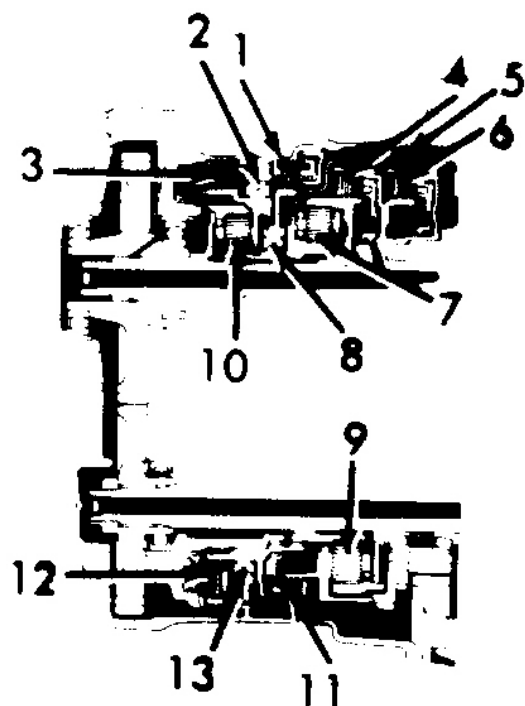
DESCRIPTION

Transaxles have 4 forward speeds and Reverse. Transaxle assemblies consists of a lock-up torque converter, oil pump, control valve assembly, forward clutch, direct clutch, differential, three (3) planetary gear sets and 3 one-way clutches. See **Fig. 1**.

The A-240E and A-244E transaxles are Electronically Controlled Transaxles (ECT). Transaxle control ECU has been integrated with engine ECU. When shifting transaxle, engine torque is controlled and clutch hydraulic pressure in transaxle is electronically controlled to reduce transmission shift shock.

On A-240E transaxle, one of 2 different driving modes (NORMAL or POWER) can be selected by driver. Transaxle shift points are changed by ECT computer, depending on mode selected. The MR2 A-241E transaxle is installed in rear of vehicle.

To minimize possibility of incorrect operation of vehicle transaxle, a shift lock mechanism has also been added. For more information on shift lock and key lock system, see Toyota SHIFT LOCK SYSTEM article.



1. 2nd Brake
2. No. 2 One-Way Clutch
3. 1st & Reverse Brake
4. Forward Clutch
5. 2nd Coast Brake
6. Direct Clutch
7. Front Planetary Gear
8. No. 1 One-Way Clutch
9. Underdrive Planetary Gear
10. Rear Planetary Gear
11. Underdrive Clutch
12. Underdrive Brake
13. Underdrive One-Way Clutch

93E25589

Fig. 1: Identifying Transaxle Component Locations
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

LUBRICATION

See the appropriate TRANSMISSION SERVICING - A/T article in this section. Refer to the following menu:

- 1991 Geo Prizm: TRANSMISSION SERVICING - A/T
- 1992 Geo Prizm: TRANSMISSION SERVICING - A/T
- 1991 Toyota Models: **TRANSMISSION SERVICING - A/T**
- 1992 Toyota Models: **TRANSMISSION SERVICING - A/T**

ADJUSTMENTS

See the appropriate TRANSMISSION SERVICING - A/T article in this section. Refer to the following menu:

- 1991 Geo Prizm: TRANSMISSION SERVICING - A/T
- 1992 Geo Prizm: TRANSMISSION SERVICING - A/T
- 1991 Toyota Models: **TRANSMISSION SERVICING - A/T**
- 1992 Toyota Models: **TRANSMISSION SERVICING - A/T**

ON-VEHICLE SERVICE

DRIVE AXLE SHAFTS

See appropriate AXLE SHAFTS article in the AXLE SHAFTS & TRANSFER CASES section.

GOVERNOR ASSEMBLY (A-240L, A-241L & A-243L)

Removal & Installation

Disconnect speedometer cable. Remove governor cover bolts. Using a screwdriver, remove governor cover. Remove "O" ring from cover. Remove governor body with thrust washer. Remove governor body adapter. Remove governor oil strainer. To install, reverse removal procedure. Install NEW gasket and tighten bolts to 115 INCH lbs. (13 N.m).

SPEED SENSOR & ROTOR (A-240E, A-241E & A-244E)

Removal & Installation

Remove retaining plate and pull out speed sensor. Remove "O" ring from speed sensor. Remove 2 bolts and sensor cover bracket. Using a screwdriver, remove sensor cover. **DO NOT** damage cover. Remove sensor rotor. To install, reverse removal procedure. Tighten bolts to 48 INCH lbs. (5.4 N.m).

THROTTLE CABLE

Removal

Disconnect throttle cable from throttle linkage. Disconnect transaxle control cable from manual shift lever. Remove manual shift lever. Remove neutral safety switch. Remove control valve assembly. See **CONTROL VALVE ASSEMBLY** under ON-VEHICLE SERVICE. Remove throttle cable bolt and retaining plate. Pull

throttle cable from transaxle.

Installation

1. Install throttle cable in transaxle case. Ensure cable is fully seated. Install retaining bolt and plate. Install control valve assembly. On new throttle cables, stopper must be staked on inner cable. Bend cable in approximately 7.87" (200 mm) radius.
2. Pull inner cable lightly, until a slight resistance is felt, and hold in place. Stake stopper on inner cable, leaving a .031-.059" (.78-1.49 mm) gap between cable housing and stopper. See **Fig. 2**.
3. Adjust throttle cable and neutral safety switch (if necessary). See appropriate AUTOMATIC TRANSMISSION SERVICING article in the TRANSMISSION SERVICING section. Install manual shift lever. Install transaxle control cable. Test drive vehicle.

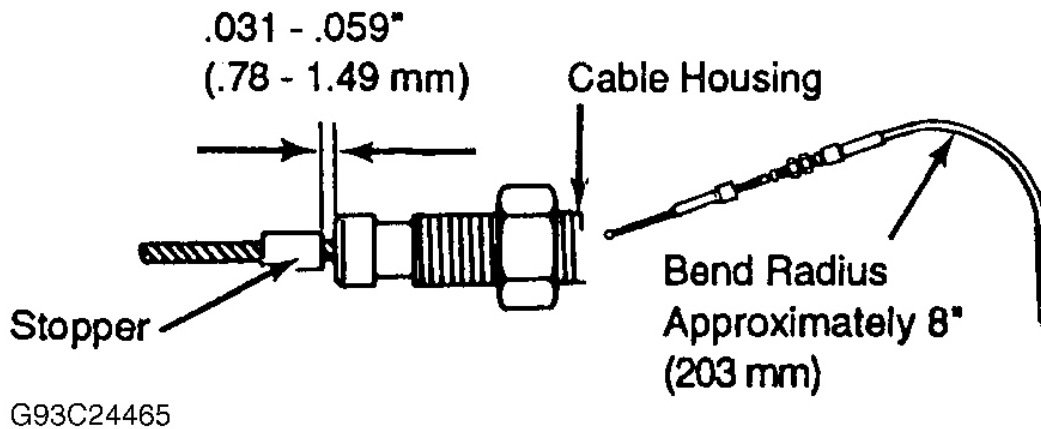


Fig. 2: Locating Throttle Cable Stopper

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CONTROL VALVE ASSEMBLY

CAUTION: Note control valve assembly bolts length and location. Proper length bolts must be installed in correct location to prevent case damage.

Removal

1. Clean exterior of transaxle oil pan. Remove drain plug and drain transaxle. Remove oil pan and gasket. Remove oil strainer and apply tube bracket. Note location of oil tubes. Using large screwdriver, remove oil tubes.
2. Remove manual detent spring. Disconnect solenoid connector(s). Remove control valve assembly bolts. Note bolt length and location. See **Fig. 3**. Remove throttle cable. Disconnect manual valve connecting rod. Remove control valve assembly. Remove governor apply gasket (if equipped).

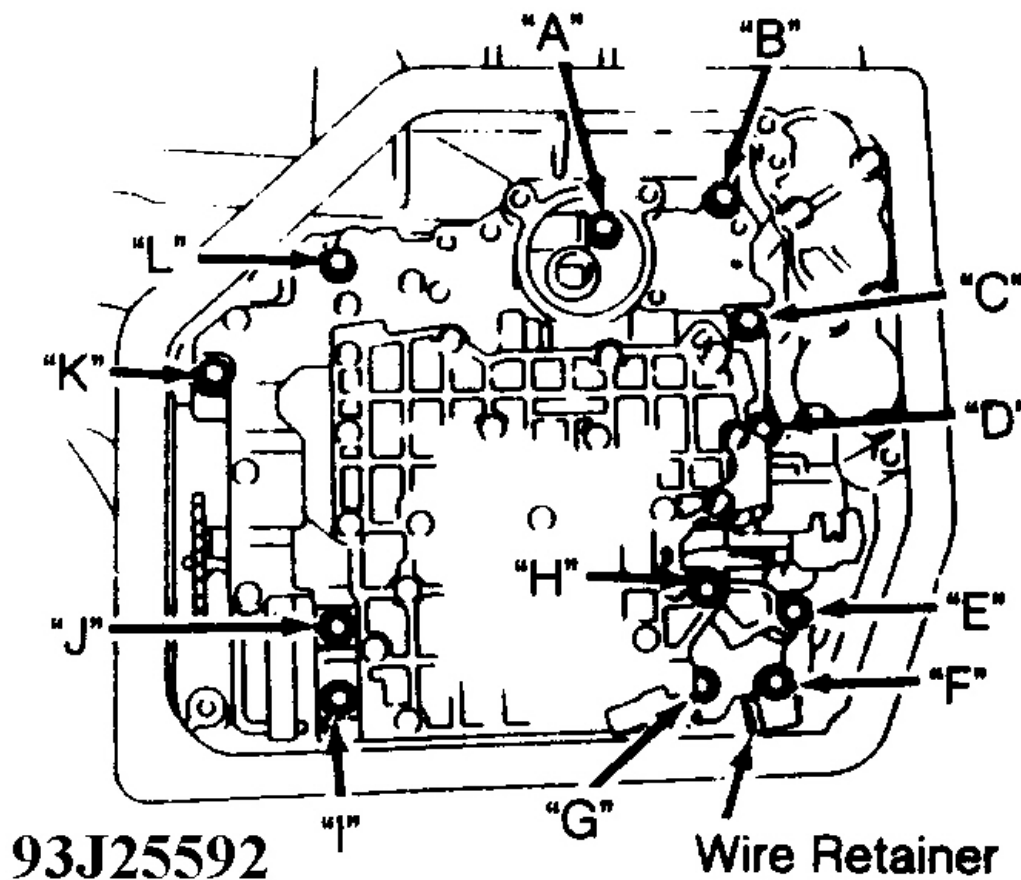


Fig. 3: Identifying Control Valve Assembly Bolts
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Installation

1. Install governor apply gasket. Hold valve body cam downward and install throttle cable in slot. Install manual valve connecting rod. Install control valve assembly. Ensure kickdown switch wire is not pinched under control valve assembly.
2. Install control valve assembly bolts finger tight. Ensure proper length bolts are installed in proper location. See **Fig. 3**. See **CONTROL VALVE ASSEMBLY BOLT SPECIFICATIONS**. Tighten bolts to 89 INCH lbs. (10 N.m). Connect solenoid connector(s). Install detent spring and tighten bolt to 89 INCH lbs. (10 N.m). Ensure manual valve lever contacts center of roller on detent spring. Using a plastic hammer, tap oil tubes into place.
3. Install oil tube clamp and bolt and tighten bolt to 89 INCH lbs. (10 N.m). Install oil strainer. Install magnet in oil pan. Ensure magnet does not interfere with oil tubes. Install oil pan and gasket. Tighten oil pan bolts to 43 INCH lbs. (4.9 N.m). Install drain plug and tighten to 13 ft. lbs. (17 N.m). Fill transaxle with fluid and check for leaks.

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

CONTROL VALVE ASSEMBLY BOLT SPECIFICATIONS ⁽¹⁾

Letter ID	In. (mm)
A-240E, A-240L, A-241L & A-243	
"A", "B", "E", "I" & "L"	1.180 (30.00)
"C", "F", "G", "J" & "K"	.787 (20.00)
"D"	N/A
"H"	2.165 (55.00)
A-241E	
"C" & "K"	.787 (20.00)
"D" & "H"	1.850 (47.00)
All Others	1.180 (30.00)
A-244E	
"A", "B", "E" & "L"	1.180 (30.00)
"H"	2.165 (55.00)
All Others	.787 (20.00)
(1) For bolt locations, see Fig. 3 .	

TROUBLE SHOOTING

NOTE: For electronic diagnosis and component testing of A-240E and A-244E transaxles, go to appropriate **DIAGNOSIS** article.

SYMPTOM DIAGNOSIS

Preliminary Checks

Automatic transaxle malfunctions can be caused by either engine or transaxle. Isolate malfunction to engine or transaxle before proceeding with trouble shooting. Prior to trouble shooting, check and adjust throttle cable, shift linkage, neutral safety switch and idle speed RPM as necessary. Ensure fluid level is correct. Check tires for correct inflation.

Fluid Discolored Or Smells Burnt

Contaminated fluid, faulty torque converter or transaxle assembly.

No Movement In Any Gear

Shift cable out of adjustment, faulty control valve assembly, primary regulator, parking lock pawl, torque converter or transaxle assembly, broken converter drive plate or blocked oil pump intake screen.

Selector Lever Position Incorrect

Shift cable out of adjustment, faulty manual valve and lever or transaxle assembly.

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

Harsh Engagement Into Any Forward Gear

Throttle cable out of adjustment, faulty control valve assembly, primary regulator, accumulator pistons or transaxle assembly. See **CLUTCH & BAND APPLICATION**.

Delayed Upshifts, Or Downshifts From 3-2, Then Shifts

Back To 3rd

Throttle cable out of adjustment, faulty electronic controls, control valve assembly or governor assembly.

Slips On Upshift, Or Slips Or Shudders On Acceleration

Shift cable or throttle cable is out of adjustment, there is a faulty control valve assembly or transaxle assembly. Refer to **CLUTCH & BAND APPLICATION**.

Drag, Binding Or Tie-Up On Upshifts

Shift cable out of adjustment, faulty control valve assembly or transaxle assembly.

No Lock-Up

Faulty electronic controls, solenoid valve, control valve assembly, torque converter or transaxle assembly.

Harsh Downshift

Throttle cable out of adjustment, faulty accumulator pistons, control valve assembly or transaxle assembly.

No Downshift When Coasting

Faulty control valve assembly, electronic controls, solenoid valve or governor assembly.

Downshift Occurs Too Soon Or Too Late While Coasting

Throttle cable out of adjustment, faulty control valve assembly, electronic controls, solenoid valve, transaxle assembly or governor assembly.

No 3-2 Or 2-1 Kickdown

Throttle cable out of adjustment, faulty control valve assembly or governor assembly.

No Engine Braking In 2nd Or "L" Position

Faulty control valve assembly, electronic controls, solenoid valve or transaxle assembly.

Vehicle Does Not Hold In "P" Position

Shift cable out of adjustment, faulty parking lock pawl cam and spring.

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

CLUTCH & BAND APPLICATION

Selector Lever Position	Elements In Use
"D" (Drive)	
First Gear	Forward Clutch, No. 2 One-Way Clutch, Underdrive Brake & Underdrive One-Way Clutch
Second Gear	Forward Clutch, No. 1 One-Way Clutch No. 2 One-Way Clutch, No. 2 Brake, Underdrive Brake & Underdrive One-Way Clutch
Third Gear	Direct Clutch, Forward Clutch, No. 2 Brake, Underdrive Brake & Under-Drive One-Way Clutch
OD (Fourth Gear)	Direct Clutch, Forward Clutch, No. 2 Brake & Underdrive Clutch
"2" (Intermediate)	
First Gear	Forward Clutch, No. 2 One-Way Clutch Underdrive Brake & Underdrive One-Way Clutch
Second Gear	Forward Clutch, No. 2 Brake, No. 1 One-Way Clutch, Underdrive Brake Underdrive One-Way Clutch & 2nd Coast Brake
Third Gear ⁽¹⁾	Direct Clutch, Forward Clutch No. 2 Brake, Underdrive Brake & Underdrive One-Way Clutch
"L" (Low)	
First Gear	Forward Clutch, No. 3 Brake, No. 2 One-Way Clutch, Underdrive One-Way Clutch & 1st & Reverse Brake
Second Gear ⁽²⁾	Forward Clutch, 2nd Coast Brake No. 2 Brake, No. 1 One-Way Clutch, Underdrive Brake & Underdrive One-Way Clutch
"R" (Reverse)	Direct Clutch, Underdrive Brake & 1st & Reverse Brake
"N" (Neutral)	Underdrive Brake
"P" (Park)	Underdrive Brake
(1) Downshift only in 3rd gear for "2" position.	
(2) Downshift only in 2nd gear for "L" position. Upshift does not occur.	

PERFORMANCE TESTS

NOTE: For electronic diagnosis and component testing of A-240E and A-244E transaxles, refer to procedures in appropriate DIAGNOSIS article.

PRELIMINARY CHECKS

1. Before testing transaxle, ensure fluid level is correct and selector lever, throttle cable and idle speed are adjusted correctly. Battery must be fully charged for accurate testing.
2. To aid in transaxle fault diagnosis, determine if fault is hydraulic, electronic or a combination of both. Electronic control transaxles are capable of storing self-diagnostic codes. To determine if a fault is electrical, retrieve any stored diagnostic codes. See appropriate DIAGNOSIS article for electronic diagnosis.

ROAD TEST

CAUTION: Perform test at normal operating fluid temperature of 122-176°F (50-80°C).

"D" Position Test

1. Shift vehicle into "D" position. On all transaxles except A-240E, while driving vehicle, hold accelerator pedal constantly at full throttle. On A-240E transaxles, shift vehicle into "D" position. While driving vehicle, hold accelerator pedal constantly at half throttle with OD switch ON. Repeat procedure at full throttle position. On all transaxles, check 1-2, 2-3 and 3-OD lock-up and upshift points. Refer to appropriate table under **SHIFT SPEED SPECIFICATIONS**.

NOTE: On A-240E transaxle, there is no overdrive upshift when coolant temperature is below 122°F (50°C). There is no lock-up when vehicle speed is 6 MPH less than set cruise control speed.

- If no 1-2 upshift occurs, 1-2 shift valve or No. 2 solenoid is faulty or governor valve is defective.
 - If no 2-3 upshift occurs, 2-3 shift valve or No. 1 solenoid is faulty.
 - If no 3-OD upshift occurs (throttle valve opening must be less than 86 percent), 3-OD shift valve is stuck, solenoid valve or circuit is defective.
 - If all shift points are incorrect, throttle cable is out of adjustment or throttle valve or 1-2, 2-3 or 3-OD shift valves are defective.
 - If lock-up points are incorrect, No. 3 solenoid or lock-up relay valve is faulty.
2. Repeat procedure outlined in step 1) to check for shock and slip between 1-2, 2-3 and 3-OD upshifts. If shock is harsh, line pressure is too high or accumulator or check ball is defective. While driving vehicle in "D" position, check for abnormal noise and vibration.

NOTE: Cause of abnormal noise and vibration may be due to an unbalanced drive shaft, differential, tire, torque converter, etc.

3. While driving vehicle in 3rd gear or in OD of "D" position, confirm correct kickdown speed for 2-1, 3-2

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

and OD-3 shift points. If kickdown speed limit is incorrect, throttle cable is out of adjustment or throttle valve, 1-2, 2-3 or 3-OD shift valves are defective. Check for abnormal shock and slip at kickdown.

4. Check lock-up function. Drive vehicle in "D" position with lock-up ON. Hold vehicle speed steady at appropriate lock-up speed. See appropriate table under **LOCK-UP SPEED SPECIFICATIONS**. Lightly depress accelerator pedal. Ensure engine RPM does not change abruptly.
5. Large increase in engine RPM indicates lock-up function is faulty. Drive vehicle in "D" position. Release accelerator pedal and shift to "L" position. Confirm correct downshift speed limits for 2-1 shift point.

"2" Position Test

1. Shift vehicle into "2" position. Hold accelerator pedal constantly at full throttle. On A-240E, push in one of the pattern selectors. On all transaxles, ensure 1-2 upshift speeds are within specification. Refer to appropriate table under **SHIFT SPEED SPECIFICATIONS**.

NOTE: To prevent overrun, transaxle will upshift into 3rd gear. See appropriate table under **SHIFT SPEED SPECIFICATIONS** for when approximate speed upshift occurs. In "2" position there will be no lock-up to 2nd gear.

2. While driving vehicle in "2" position, 2nd gear, release accelerator pedal and check engine braking effect. If there is no engine braking effect, 2nd coast brake is defective. Check for abnormal noise and shock at acceleration and deceleration.

"L" Position Test

1. While driving vehicle in "L" position, ensure there is no upshift to 2nd gear. Release accelerator pedal. If there is no engine braking effect, 1st and reverse brake is defective. Check for abnormal noise at acceleration and deceleration.
2. On A-240E models, operate vehicle above 50 MPH in "D" or "2" position. Release accelerator pedal and shift into "L" position. Ensure that 2nd-1st gear down-shift occurs at 31-32 MPH. To prevent overrun, transaxle upshifts into 2nd gear at 33-37 MPH.

"R" Position Test

Shift vehicle into "R" position. Accelerate vehicle from a stop at full throttle. Ensure slipping does not occur.

"P" Position Test

Stop vehicle on slight grade. Shift vehicle into "P" position. Release parking brake. Ensure parking pawl holds vehicle.

SHIFT SPEED SPECIFICATIONS TABLES

A-240E (PRIZM GSi) SHIFT SPEED SPECIFICATIONS ⁽¹⁾ [\(2\)](#)

Application	MPH
"D" Position - NORMAL	
1-2	30-34

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

2-3	60-66
3-OD	85-91
OD-3	80-86
3-2	56-62
2-1	27-30
"D" Position - POWER	
1-2	38-42
2-3	69-76
3-OD	116-123
OD-3	110-117
3-2	65-71
2-1	27-30
"2" Position	
1-2	38-42
2-1	27-30
"L" Position	
2-1	32-35
(1) Wide open throttle.	
(2) Lock-up speed specification information not available.	

A-240L (COROLLA LE) SHIFT SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
"D" Position	
1-2	28-38
2-3	56-65
3-OD ⁽²⁾	19-29
OD-3 ⁽²⁾	9-17
3-2	53-64
2-1	21-27
"L" Position	
2-1	25-33
(1) Wide open throttle.	
(2) Fully closed throttle.	

A-241E (CELICA GTS) SHIFT SPEED SPECIFICATIONS ⁽¹⁾ (1991)

Application	MPH
"D" Position	
1st-2nd	32-35
2nd-3rd	62-66

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

3rd-OD	83-88
3rd-OD (NORMAL) ⁽²⁾	24-27
3rd-OD (POWER) ⁽²⁾	39-42
OD-3rd ⁽²⁾	11-14
OD-3rd	79-85
3rd-2nd	57-62
2nd-1st	27-30
"2" Position	
1st-2nd	32-35
2nd-1st	27-30
"L" Position	
2nd-1st	21-24
(1) Wide open throttle.	
(2) Fully closed throttle.	

A-241E (CELICA GTS) SHIFT SPEED SPECIFICATIONS ⁽¹⁾ (1992)

Application	MPH
"D" Position	
1st-2nd	33-37
2nd-3rd	61-68
3rd-OD	81-90
3rd-OD (NORMAL) ⁽²⁾	24-28
3rd-OD (POWER) ⁽²⁾	37-41
OD-3rd ⁽²⁾	11-14
OD-3rd	78-86
3rd-2nd	58-66
2nd-1st	26-30
"2" Position	
1st-2nd	33-37
2nd-1st	26-30
"L" Position	
2nd-1st	29-34
(1) Wide open throttle.	
(2) Fully closed throttle.	

A-241E (MR2) SHIFT SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
"D" Position	

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

1st-2nd	33-37
2nd-3rd	63-70
3rd-OD	85-93
3rd-OD ⁽²⁾	29-32
OD-3rd ⁽²⁾	12-15
OD-3rd	81-89
3rd-2nd	61-67
2nd-1st	27-31
"2" Position	
1st-2nd	33-37
2nd-1st	27-31
"L" Position	
2nd-1st	21-25
(1) Wide open throttle.	
(2) Fully closed throttle.	

A-241L (CELICA ST) SHIFT SPEED SPECIFICATIONS ⁽¹⁾ (1991)

Application	MPH
"D" Position	
1st-2nd	27-37
2nd-3rd	54-63
3rd-OD ⁽²⁾	15-23
OD-3rd	(3)
3rd-2nd	51-62
2nd-1st	20-26
"L" Position	
2nd-1st	25-32
(1) With throttle wide open.	
(2) With throttle fully closed.	
(3) Possible up to maximum speed.	

A-243L (CELICA GT) SHIFT SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
"D" Position	
1st-2nd	27-37
2nd-3rd	54-63
3rd-OD ⁽²⁾	16-24
OD-3rd	(3)

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

3rd-2nd	52-62
2nd-1st	20-26
"L" Position	
2nd-1st	25-32
(1) With throttle wide open.	
(2) With throttle fully closed.	
(3) Possible up to maximum speed.	

A-244E (PASEO) SHIFT SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
"D" Position	
1st-2nd	34-37
2nd-3rd	62-68
3rd-OD	123-127
3rd-OD ⁽²⁾	25-27
OD-3rd ⁽²⁾	11-12
OD-3rd	119-123
3rd-2nd	60-63
2nd-1st	28-30
"2" Position	
1st-2nd	34-37
2nd-1st	27-30
"L" Position	
2nd-1st	32-34
(1) With throttle wide open.	
(2) With throttle fully closed.	

LOCK-UP SPEED SPECIFICATIONS TABLES**A-240L (COROLLA LE) LOCK-UP SPEED SPECIFICATIONS ⁽¹⁾**

Application	MPH
"D" Position ⁽²⁾	
Lock-Up ON	43-48
Lock-Up OFF	40-45
(1) Throttle valve fully closed.	
(2) There is no lock-up in "2" or "L" position.	

A-241E (CELICA GTS) LOCK-UP SPEED SPECIFICATIONS ⁽¹⁾

--	--

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

Application	MPH
"D" Position ⁽²⁾ - NORM	
Lock-Up ON in OD	41-43
Lock-Up OFF in OD	37-40
"D" Position ⁽²⁾ - PWR	
Lock-Up ON in OD	48-51
Lock-Up OFF in OD	44-47
(1) With throttle valve opened 5 percent.	
(2) There is no lock-up in "2" or "L" position.	

A-241E (MR2) LOCK-UP SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
"D" Position ⁽²⁾	
Lock-Up ON in OD	50-54
Lock-Up OFF in OD	46-50
(1) With throttle valve opened 5 percent.	
(2) There is no lock-up in "2" or "L" position.	

A-241L (CELICA ST) LOCK-UP SPEED SPECIFICATIONS ⁽¹⁾ (1991)

Application	MPH
"D" Position ⁽²⁾ ⁽³⁾	
Lock-Up ON	39-45
Lock-Up OFF	37-43
(1) With throttle fully closed.	
(2) There is no lock-up in "2" or "L" position.	
(3) Differential gear ratio: 3.034.	

A-243L (CELICA ST) LOCK-UP SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
"D" Position ⁽²⁾ ⁽³⁾	
Lock-Up ON	44-50
Lock-Up OFF	37-43
(1) With throttle fully closed.	
(2) There is no lock-up in "2" or "L" position.	
(3) Differential gear ratio: 3.034.	

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

A-244E (PASEO) LOCK-UP SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
"D" Position ⁽²⁾	
Lock-Up ON in OD	42-45
Lock-Up OFF in OD	39-42
(1) With throttle valve opened 5 percent.	
(2) There is no lock-up in "2" or "L" position.	

STALL SPEED TEST

1. Operate engine and transaxle at normal operating temperature. Connect tachometer to vehicle and ensure it is visible to driver. Apply parking brake and block front and rear wheels.

CAUTION: DO NOT maintain stall speed RPM for more than 5 seconds.

2. Start engine, apply service brakes and shift vehicle into "D" position. Depress accelerator to full throttle and note maximum RPM obtained. Repeat test in "R" position. For stall speeds, refer to the **STALL SPEED SPECIFICATIONS**. Also, see **STALL SPEED TEST RESULTS**.

STALL SPEED SPECIFICATIONS

Vehicle	Transaxle	RPM
Geo		
Prizm	A-240E	2250-2550
Toyota		
Celica GTS (1991)	A-241E	2400-2700
Celica GTS (1992)	A-241E	2500-2800
Celica ST	A-241L	2200-2500
Celica GT (1991)	A-243L	2500-2800
Celica GT (1992)	A-243L	2300-2800
Corolla LE	A-240L	2550-2850
MR2	A-241E	2400-2700
Paseo	A-244E	2300-2700

Stall Speed Test Results:

- **Stall Speed Is Same In Both Positions, But Less Than Specified**

Insufficient engine output or defective stator one-way clutch.

NOTE: If stall speed RPM is greater than 600 RPM lower than specification, torque converter may be faulty.

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

- **Stall Speed High In "D" Position**

Low line pressure, forward clutch slipping or defective No. 2 one-way clutch or underdrive one-way clutch.

- **Stall Speed High In "R" Position**

Low line pressure, direct clutch, 1st and reverse brake or underdrive brake slipping.

- **Stall Speed High In Both Positions**

Low line pressure, improper fluid level or underdrive brake slipping.

TIME LAG TEST

CAUTION: Perform test with fluid at normal operating temperature of 122-176°F (50-80°C). Allow a one minute interval between tests. Record 3 measurements and use average value.

1. If selector lever is actuated with engine idling, a time lag will be noted before shock can be felt. This test is used for checking condition of underdrive clutch, forward clutch, direct clutch and 1st and reverse brake. Apply the parking brake and start engine. Make sure that the idle speed is set to specification. Refer to the **IDLE SPEED SPECIFICATIONS**.

IDLE SPEED SPECIFICATIONS

Vehicle	Transaxle	RPM
Geo		
Prizm	A-240E	800
Toyota		
Celica GTS (4A- GZE)	A-241E	750-850
Celica GTS (5S- FE)	A-241E	650-750
Celica ST	A-241L	650-750
Celica GT	A-243L	750-850
Corolla LE	A-240L	650-750
MR2	A-241E	550-850
Paseo	A-244E	550-850

2. Move selector lever from "N" to "D" position. Measure time required for shock to be felt. Time lag must be less than 1.2 seconds. Repeat procedure shifting from "N" to "R" position. Time lag must be less than 1.5 seconds. See results:

Time Lag Test Results:

- **Excessive Time Lag From "N" To "D" Position**

Low line pressure, defective forward clutch or No. 2 and underdrive one-way clutch.

- **Excessive Time Lag From "N" To "R" Position**

Low line pressure, defective direct clutch, 1st and reverse brake or underdrive brake worn.

HYDRAULIC PRESSURE TESTS

CAUTION: Perform test at normal operating fluid temperature of 122-176°F (50-80°C)

Line Pressure Test

1. Remove appropriate transaxle plug and connect pressure gauge. See **Fig. 4**. Block all wheels. Apply parking brake. Start engine and shift into "D" position.
2. Apply service brakes and depress accelerator. Note pressure readings at idle and stall speed. Repeat test in "R" position. Compare pressure readings to those listed in appropriate table under **LINE PRESSURE SPECIFICATIONS** See **LINE PRESSURE TEST RESULTS**.
3. If pressure is lower than specified, check throttle cable adjustment. Adjust as necessary. See appropriate AUTOMATIC TRANSMISSION SERVICING article in the TRANSMISSION SERVICING section. Repeat pressure test procedure if throttle cable adjustment was necessary.

Line Pressure Test Results:

- **Line Pressure High In Both Positions**

Throttle cable out of adjustment, defective throttle valve or regulator valve.

- **Line Pressure Low In Both Positions**

Throttle cable out of adjustment, defective oil pump, throttle valve, regulator valve, underdrive brake or underdrive one-way clutch.

- **Line Pressure Low In "D" Position Only**

"D" position circuit leaking pressure, defective forward clutch or underdrive one-way clutch.

- **Line Pressure Low In "R" Position Only**

"R" position circuit leaking pressure, defective direct clutch, 1st and reverse brake or underdrive one-way clutch.

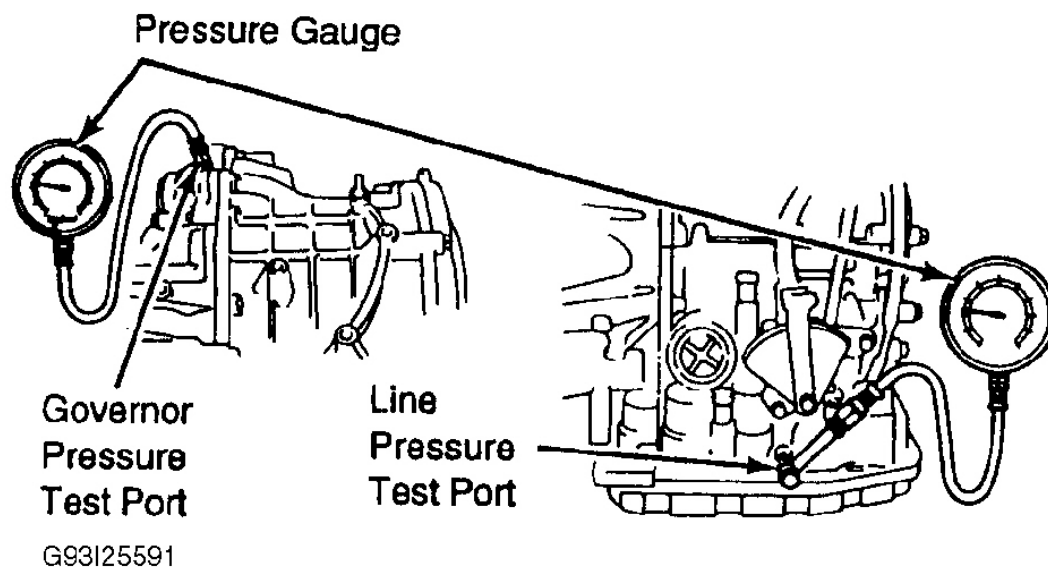


Fig. 4: Checking Governor & Line Pressure
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

LINE PRESSURE SPECIFICATIONS TABLES

A-240E (PRIZM) LINE PRESSURE SPECIFICATIONS

Application	psi (kg/cm ²)
"D" Position	
Idle Speed	53-61 (3.7-4.3)
Stall Speed	131-152 (9.2-10.7)
"R" Position	
Idle Speed	77-102 (5.4-7.2)
Stall Speed	205-239 (14.4-16.8)

A-240L (COROLLA) LINE PRESSURE SPECIFICATIONS

Application	psi (kg/cm ²)
"D" Position	
Idle Speed	53-61 (3.7-4.3)
Stall Speed	131-152 (9.2-10.7)
"R" Position	
Idle Speed	80-102 (5.6-7.2)

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

Stall Speed

205-239 (14.4-16.8)

A-241E (CELICA) LINE PRESSURE SPECIFICATIONS

Application	psi (kg/cm ²)
"D" Position	
Idle Speed	54-61 (3.8-4.3)
Stall Speed	104-125 (7.3-8.8)
"R" Position	
Idle Speed	92-115 (6.5-8.1)
Stall Speed	193-229 (13.6-16.1)

A-241E (MR2) & A-244E (PASEO) LINE PRESSURE SPECIFICATIONS

Application	psi (kg/cm ²)
"D" Position	
Idle Speed	54-61 (3.8-4.3)
Stall Speed	104-125 (7.3-8.8)
"R" Position	
Idle Speed	92-115 (6.5-8.1)
Stall Speed	193-229 (13.6-16.1)

A-241L (CELICA) LINE PRESSURE SPECIFICATIONS

Application	psi (kg/cm ²)
"D" Position	
Idle Speed	54-61 (3.8-4.3)
Stall Speed	131-152 (9.2-10.7)
"R" Position	
Idle Speed	97-115 (6.5-8.1)
Stall Speed	226-275 (15.9-19.3)

A-243L (CELICA) LINE PRESSURE SPECIFICATIONS

Application	psi (kg/cm ²)
"D" Position	
Idle Speed	54-61 (3.8-4.3)
Stall Speed	131-152 (9.2-10.7)
"R" Position	
Idle Speed	80-102 (5.6-7.2)
Stall Speed	205-242 (14.4-17.0)

Governor Pressure Test

1. Transaxle must be at normal operating temperature of 122-176°F (50-80°C). Block rear wheels. **DO NOT**

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

apply parking brake. Raise and support front of vehicle with safety stands.

2. Remove appropriate transaxle plug and connect pressure gauge. See **Fig. 4**. Start engine and shift vehicle into "D" position. Note governor pressure at specified speeds and engine RPM. See **GOVERNOR PRESSURE SPECIFICATIONS**. Readings at 490 and 800 RPM can be taken with vehicle on safety stands.

CAUTION: Road test vehicle or use chassis dynamometer to check governor pressures at vehicle speeds above 800 RPM.

3. Incorrect governor pressure may be caused by incorrect line pressure, leakage at governor pressure circuit or defective governor valve.

GOVERNOR PRESSURE SPECIFICATIONS ⁽¹⁾

Engine RPM	Speed (MPH)	psi (kg/cm ²)
A-240L		
800	17	7.1-18 (.5-1.3)
1600	35	26-37 (1.8-2.6)
2400	53	47-58 (3.3-4.1)
A-241L		
1300	29	26-30 (1.8-2.1)
2600	58	60-71 (4.2-5.0)
A-243L		
490	11	3-7 (.2-.5)
1300	29	26-30 (1.8-2.1)
2600	58	60-71 (4.2-5.0)

(1) On A-240E, A-241E and A-244E transaxles, governor is replaced by speed sensor.

ELECTRONIC COMPONENT TESTING

COOLANT TEMPERATURE SWITCH

1. Disconnect engine coolant temperature switch connector. Connect ohmmeter between switch terminal and ground. Note resistance reading.
2. Resistance should be zero ohms when coolant temperature is less than 109°F (43°C). Resistance should be infinite when coolant temperature exceeds 131°F (55°C). Replace as necessary.

OVERDRIVE SOLENOID

1. Disconnect overdrive solenoid connector at transaxle. Connect solenoid to battery voltage and ground. Solenoid should operate and clicking should be heard. Connect ohmmeter between solenoid terminals and note reading. Resistance should be 11-15 ohms. Replace as necessary.
2. Reconnect solenoid connector. Disconnect coolant temperature switch. Turn ignition switch to ON position. Operate overdrive switch. Solenoid should click when switch is turned to ON position. Turn

ignition to OFF position. Reconnect coolant temperature switch. Replace solenoid as necessary.

OVERDRIVE MAIN SWITCH

Using an ohmmeter, check for continuity between switch terminals No. 1 and No. 3, while switching to ON and OFF position. See **Fig. 5**. Continuity should exist with switch turned to OFF position. Continuity should not exist with switch turned to ON position. Replace switch as necessary.

SPEED SENSOR

Raise and support front wheels. Connect an ohmmeter to speed sensor terminals. While turning front wheels, ohmmeter needle should deflect when sensor is brought close to magnet then moved away from magnet.

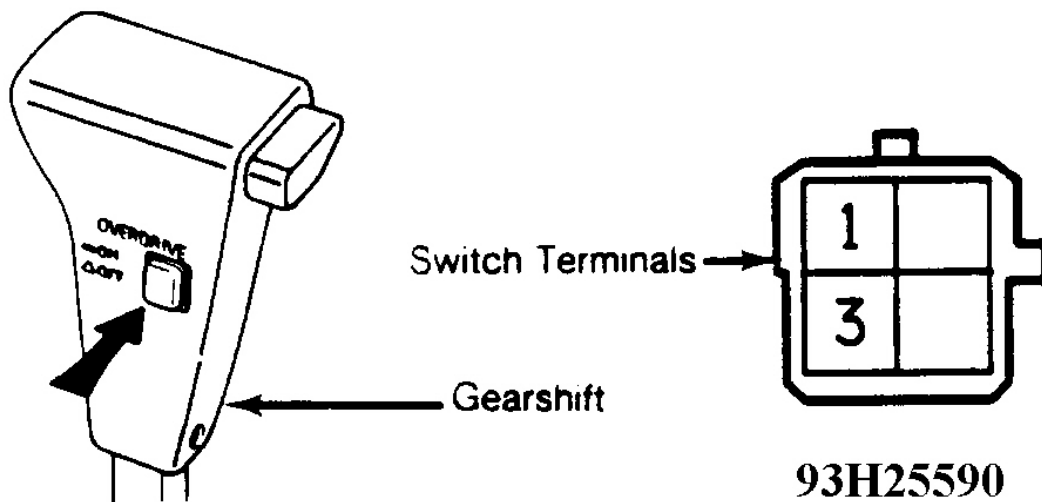


Fig. 5: Identifying Overdrive Switch Terminals

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL & INSTALLATION

For transaxle removal and installation procedure, see appropriate TRANSMISSION REMOVAL & INSTALLATION - A/T article:

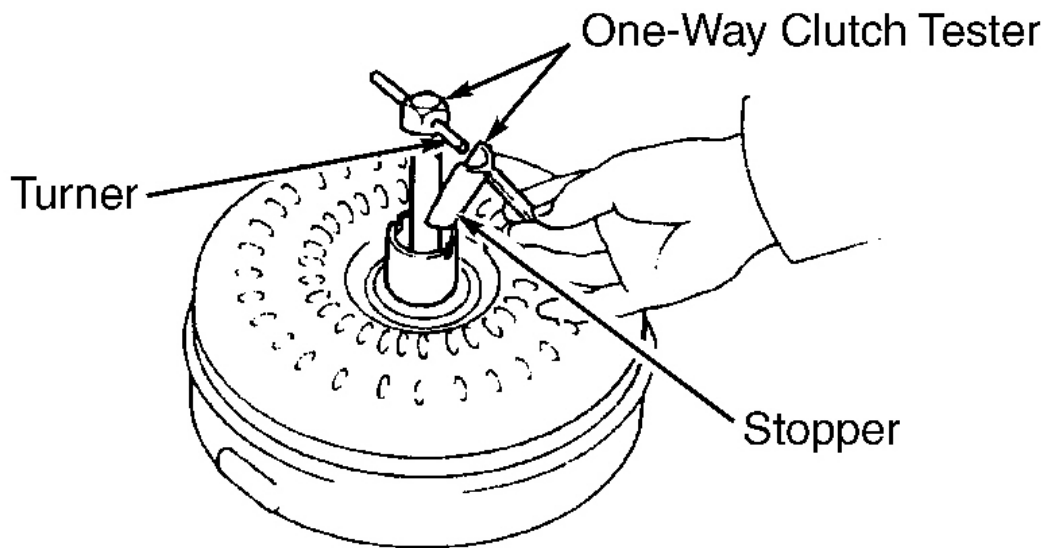
- 1991 Geo Prizm: TRANSMISSION REMOVAL & INSTALLATION - A/T
- 1992 Geo Prizm: TRANSMISSION REMOVAL & INSTALLATION - A/T
- 1991-92 Toyota: **TRANSMISSION REMOVAL & INSTALLATION - A/T**

TORQUE CONVERTER

NOTE: Torque converter is a sealed unit and must be serviced as complete assembly. Perform following tests to check converter condition. Torque converter and oil cooler lines must be thoroughly cleaned and flushed if transaxle fluid is contaminated.

ONE-WAY CLUTCH TEST

1. Install turner and stopper of One-Way Clutch Tester (09350-30020) in torque converter. See **Fig. 6**. Turner fits in inner race of one-way clutch. Stopper fits in notch of converter hub and outer race of one-way clutch.
2. Clutch should lock when rotated counterclockwise, and turn freely when rotated clockwise. If necessary, clean converter and retest clutch. Replace converter if clutch does not test as described.



G93I23810

Fig. 6: Checking Torque Converter One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DRIVE PLATE RUNOUT TEST

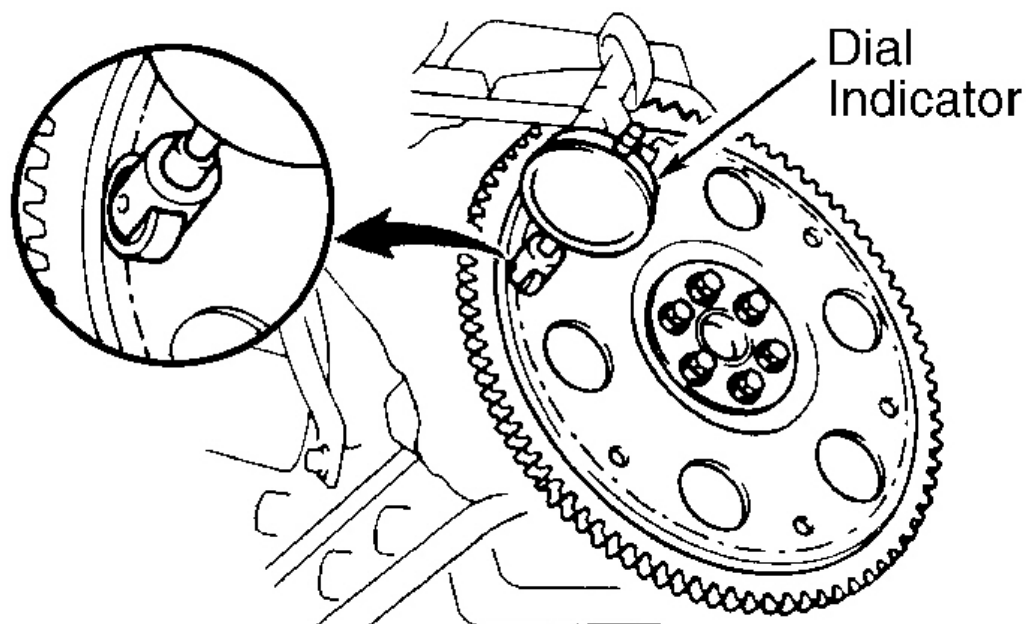
Measure drive plate runout. See **Fig. 7**. If runout exceeds .008" (.20 mm), or if ring gear is damaged, replace drive plate. If installing a new drive plate, note position of spacers. On Corolla and Prizm, tighten bolts to 47 ft. lbs. (64 N.m). On all other models, tighten bolts to 61 ft. lbs. (83 N.m).

CONVERTER SLEEVE RUNOUT TEST

1. Temporarily mount torque converter to drive plate. Mount a dial indicator with needle resting on

converter sleeve. See **Fig. 8**. Rotate converter. If runout exceeds .012" (.30 mm), ensure converter is properly mounted to drive plate.

2. If converter is properly mounted and runout exceeds specification, replace torque converter. Mark position of converter on drive plate to ensure correct installation. Remove converter from drive plate.



G93J23811

Fig. 7: Checking Drive Plate Runout

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

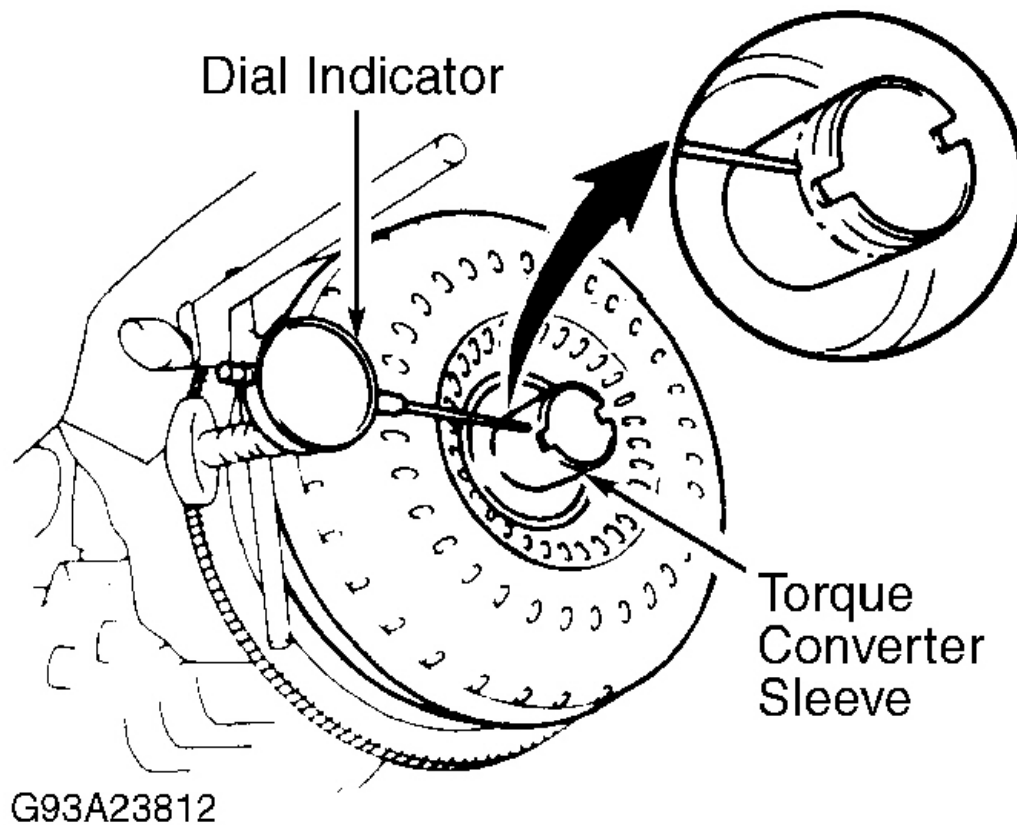


Fig. 8: Checking Converter Sleeve Runout
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSAXLE DISASSEMBLY

1. Remove oil cooler pipes, manual shift lever and neutral safety switch. Remove filler tube and dipstick. Remove throttle cable lock plate. Remove solenoid wire lock plate. On A-240L, A-241L and A-243L transaxles, remove governor cover bracket. See **Fig. 9** and **Fig. 10**.
2. Remove governor cover and "O" ring. Remove governor body, thrust washer, governor body adapter, gasket and governor oil strainer. On A-240E, A-241E and A-244E transaxles, remove lock plate and pull out speed sensor. Remove "O" ring from speed sensor. Remove 2 bolts and sensor cover bracket. Using a screwdriver, remove sensor cover. **DO NOT** damage cover. Remove sensor rotor. Remove sensor adapter. See **Fig. 10**.
3. On all transaxles, remove oil pan and gasket. Remove magnet(s) from oil pan. Remove tube bracket and oil strainer. Remove manual detent spring. Disconnect solenoid connectors. Remove control valve assembly. See **CONTROL VALVE ASSEMBLY** under ON-VEHICLE SERVICE. Remove throttle cable from transaxle case. Remove 2nd brake apply gasket. Remove 2nd brake drum seal.

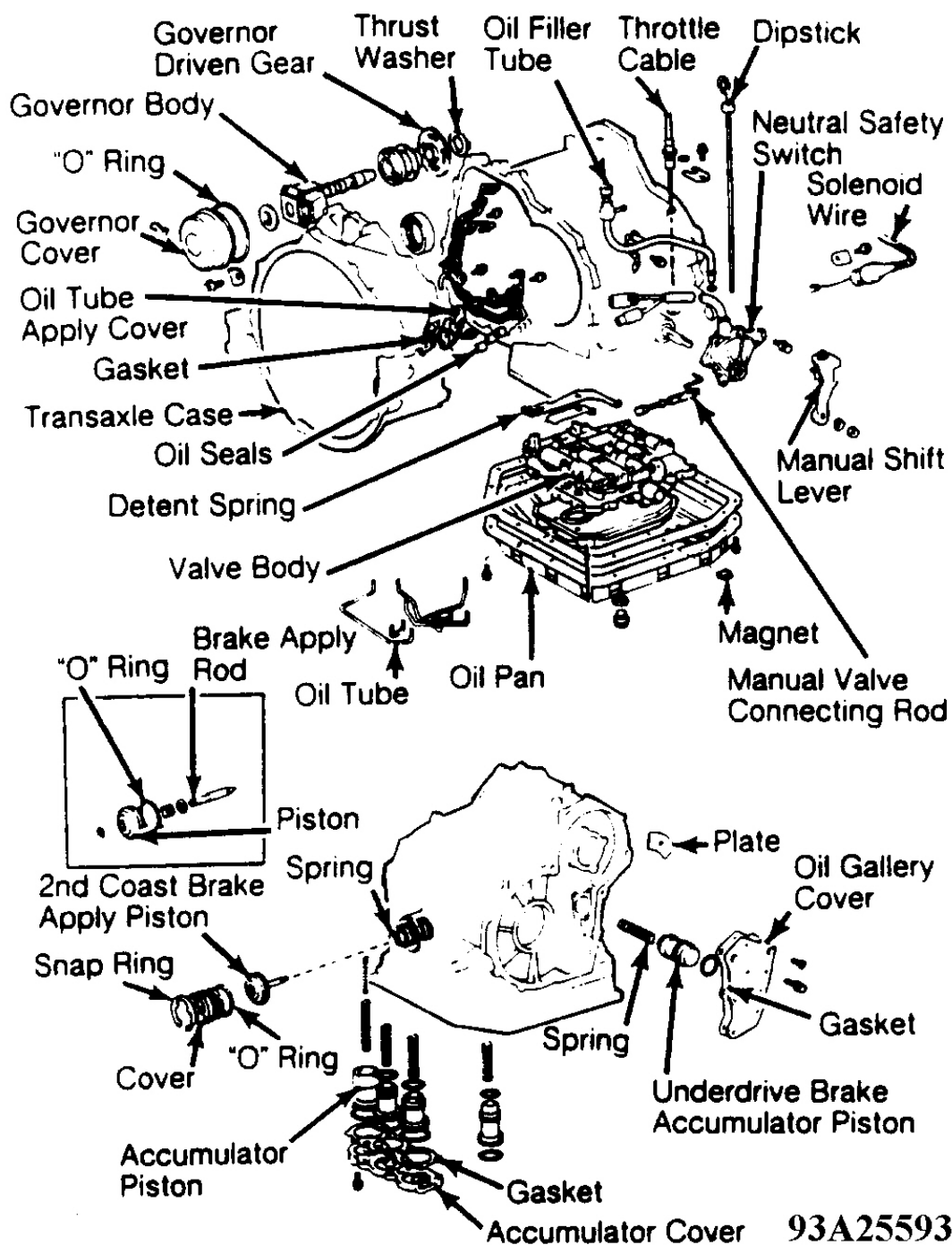


Fig. 9: Exploded View Of External Components (A-240E & A-240L)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

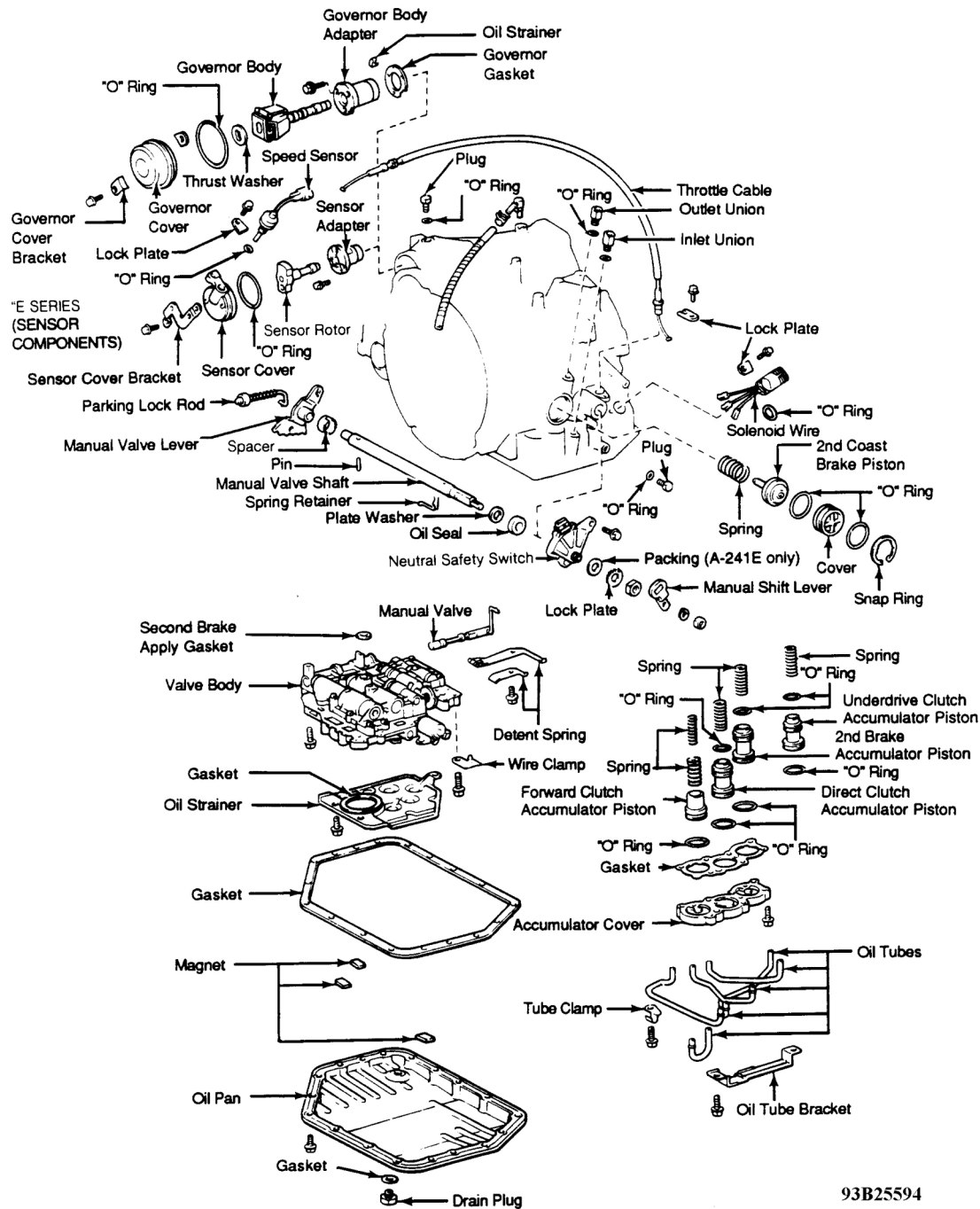


Fig. 10: External Components (A-241E, A-241L, A-243L & A-244E)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. Apply 14 psi (1 kg/cm²) of compressed air to oil passage to remove underdrive clutch accumulator piston and spring. See **Fig. 11**. Loosen accumulator cover bolts evenly until spring tension is released. Remove cover and gasket. Remove forward clutch accumulator piston and springs. Apply 14 psi (1 kg/cm²) of compressed air to oil passage to remove direct clutch accumulator piston and spring. See **Fig. 12**.

5. Apply 14 psi (1 kg/cm²) of compressed air to oil passage to remove 2nd brake accumulator piston and spring. See **Fig. 13**. Using Expander (09351-32050), remove 2nd coast brake piston snap ring. Apply 14 psi (1 kg/cm²) of compressed air to oil passage to remove 2nd coast brake cover. Remove 2nd coast brake piston and spring. See **Fig. 14**.
6. Remove oil pump retaining bolts. Using Puller (09351-32061), pull oil pump free from transaxle case. Remove oil pump. Remove race from oil pump. Remove direct clutch and forward clutch from transaxle case. Remove direct clutch from forward clutch. Remove thrust washer, bearings and races from forward clutch. See **Fig. 15**.

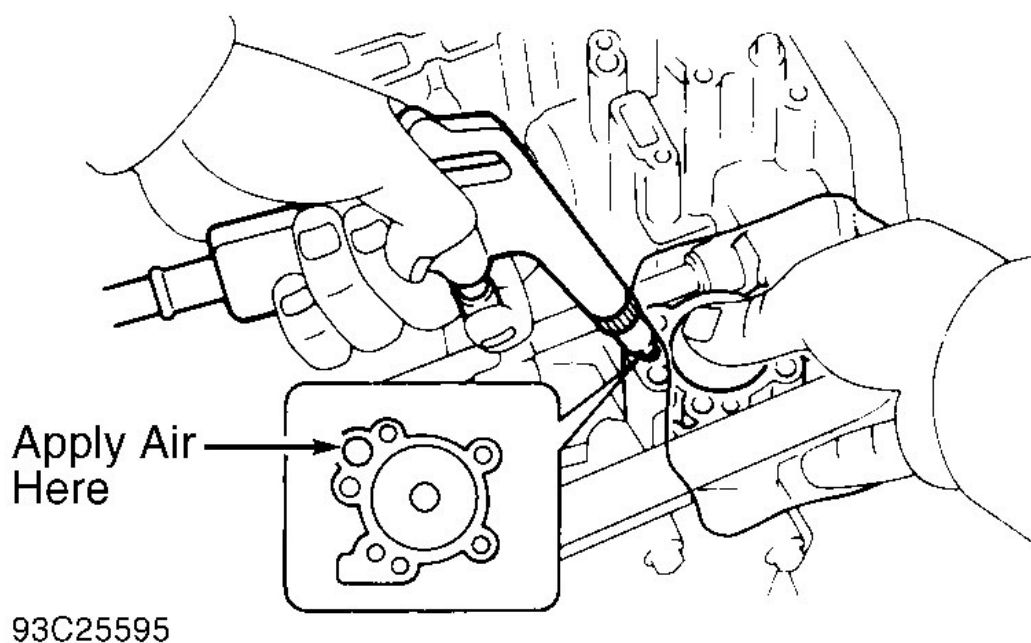


Fig. 11: Removing Underdrive Clutch Accumulator Piston & Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

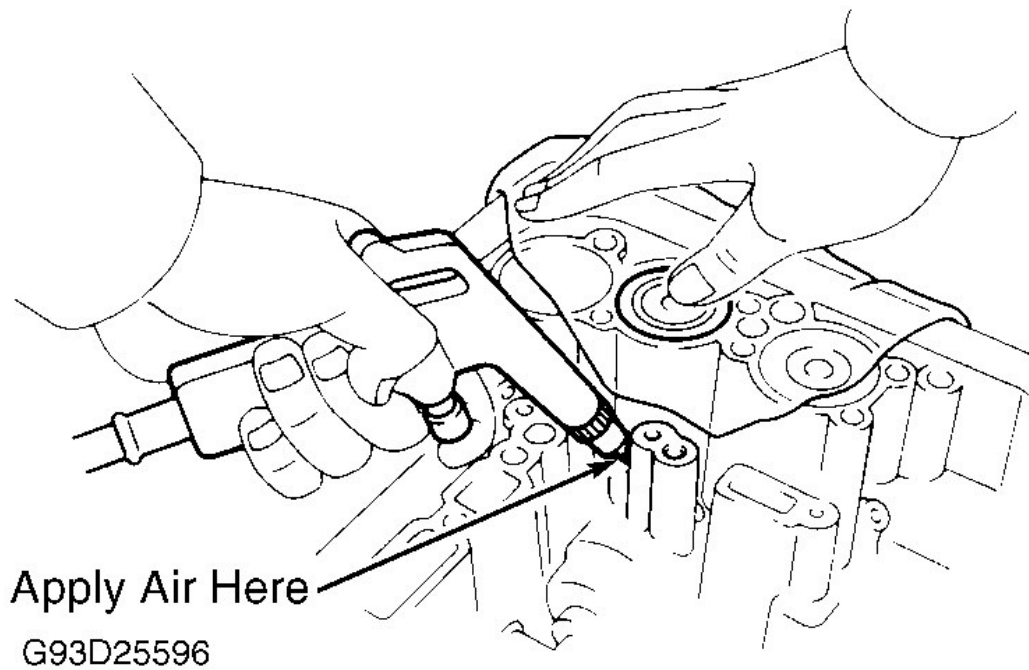


Fig. 12: Removing Direct Clutch Accumulator Piston & Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

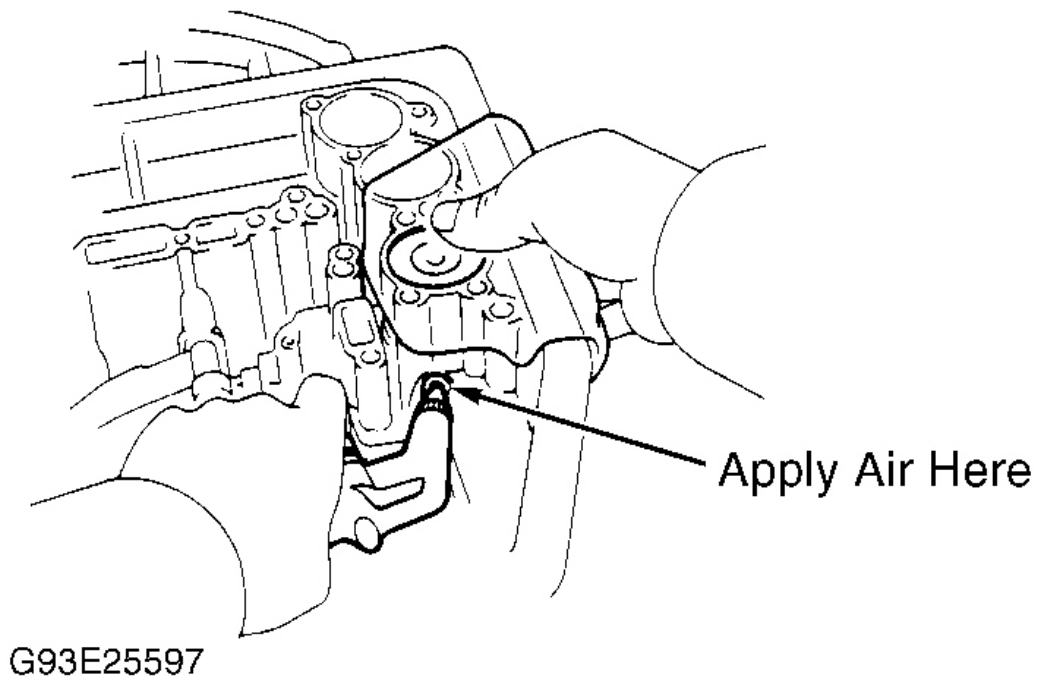


Fig. 13: Removing 2nd Brake Accumulator Piston & Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

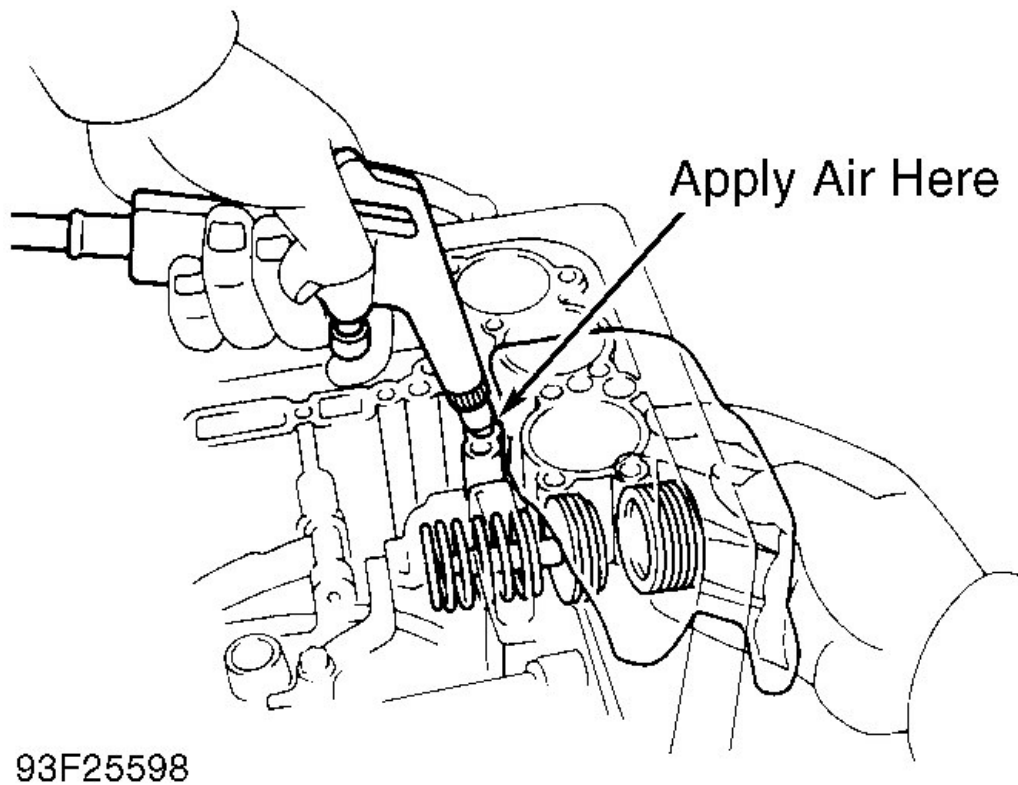


Fig. 14: Removing 2nd Coast Brake Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

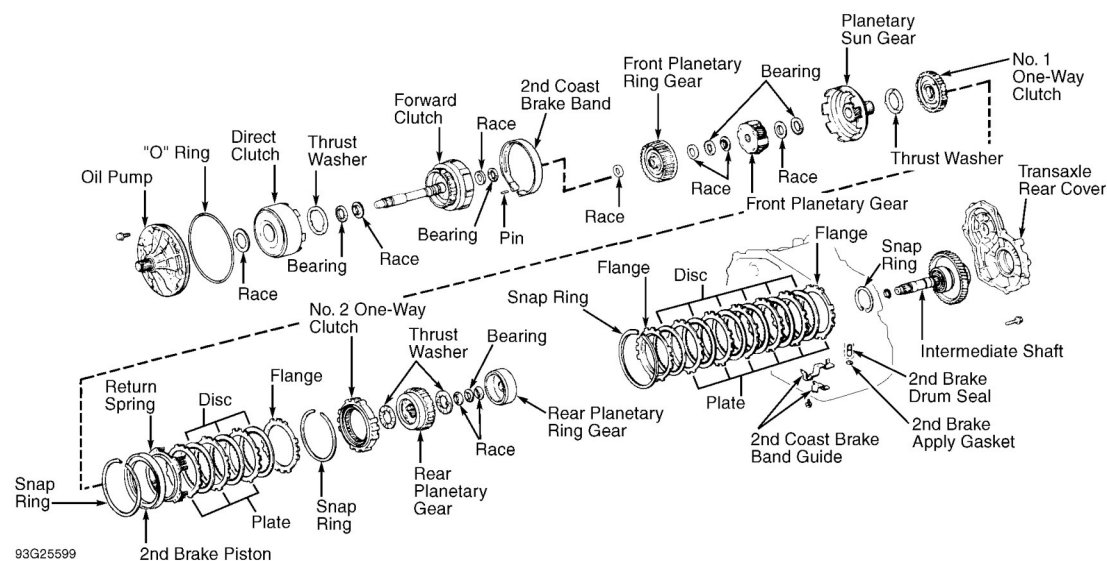


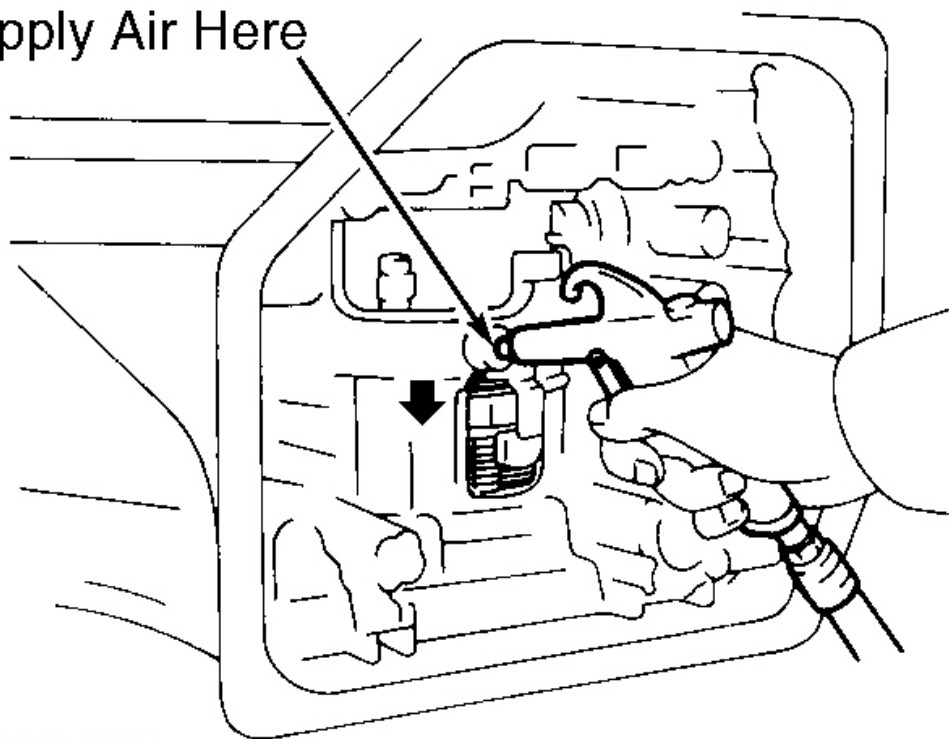
Fig. 15: Exploded View Of Transaxle Case Internal Components (Typical)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. Using small screwdriver, push 2nd coast brake band pin inward and remove pin from oil pump mounting bolt hole. Remove 2nd coast brake band. Remove front planetary ring gear. Remove race and bearing from ring gear. See **Fig. 15**.
8. Remove front planetary gear. Remove bearings and races from planetary gear. Remove sun gear, sun gear input drum, thrust washer, 2nd brake hub and No. 1 one-way clutch. Using compressed air, confirm 2nd brake piston operates smoothly. See **Fig. 16**. Remove 2nd coast brake band guide.
9. Remove 2nd brake drum retaining snap ring. Remove 2nd brake drum. Remove thrust washer and 2nd brake piston return spring. Remove plates, discs and flange. Note number and location of components. Remove No. 2 one-way clutch retaining snap ring. Remove No. 2 one-way clutch and rear planetary gear. See **Fig. 15**.
10. Remove thrust washers from both sides of planetary gear. Remove rear planetary ring gear with bearing and races. Using compressed air, confirm 1st and reverse brake piston operates smoothly. See **Fig. 17**. Remove flange retaining snap ring. Remove flange, plates and discs. Note number and location of components. Remove rear transaxle cover bolts. Tap rear cover using a plastic hammer. Remove cover. Remove intermediate shaft.
11. Remove snap ring. Remove transaxle housing-to-case bolts. Remove transaxle housing. Remove differential assembly, governor driven gear and thrust washer. Remove apply gaskets from transaxle case. See **Fig. 18**. Using chisel, release staked area of countershaft lock nuts. Using Holder (09330-00021) and Adapter (09351-32031), remove front and rear countershaft lock nuts.
12. Using Puller (09351-32061), remove counterdriven gear. Remove thrust needle bearing. Remove countershaft assembly. Remove thrust bearing and race from countershaft. Remove underdrive clutch drum and anti-rattle clip. Using compressed air, confirm underdrive brake piston operates smoothly. See **Fig. 19**. Remove oil seal rings. Using appropriate press and Adapter (09351-32070), carefully remove underdrive brake snap ring.
13. Remove flange, plates and discs. Note number and location of components. Remove brake return spring. Using compressed air, remove underdrive brake piston. See **Fig. 19**. Using Compressor (09351-32040),

gradually compress spring assembly and remove snap ring.

14. Remove return spring assembly. Apply compressed air to oil passage in transaxle case and remove 1st and reverse brake piston. See **Fig. 17**. If piston does not pop out, remove using needle-nose pliers. Remove parking lock pawl stopper plate, torsion spring and spring guide. Remove pawl shaft clamp, shaft and lock pawl. See **Fig. 18**.
15. Remove parking lock sleeve and cam guide bracket. Using a screwdriver and hammer, unstake and remove spacer. Using a punch and hammer, drive out lock pin. Remove spring from manual valve shaft. Remove manual valve shaft, lever and washer. Using screwdriver, remove manual shaft oil seal. See **Fig. 10**. Remove oil gallery cover and gasket. Remove underdrive brake accumulator piston and spring. See **Fig. 18**.
16. Using Puller (09308-00010) remove bearing from transaxle case. Remove oil tube clamps. Using screwdriver, carefully remove oil tubes. Remove oil tube apply cover, gasket and strainer. Remove bearing retainer. See **Fig. 18**. Using puller remove bearing from transaxle housing.

Apply Air Here



G93J25600

Fig. 16: Checking & Removing 2nd Brake Piston
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

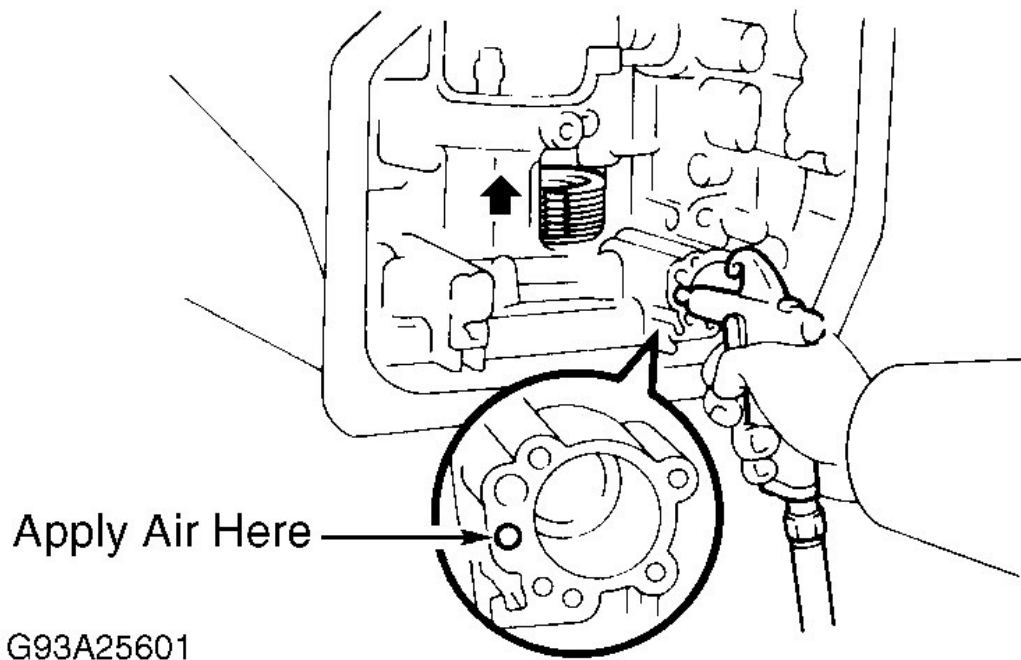
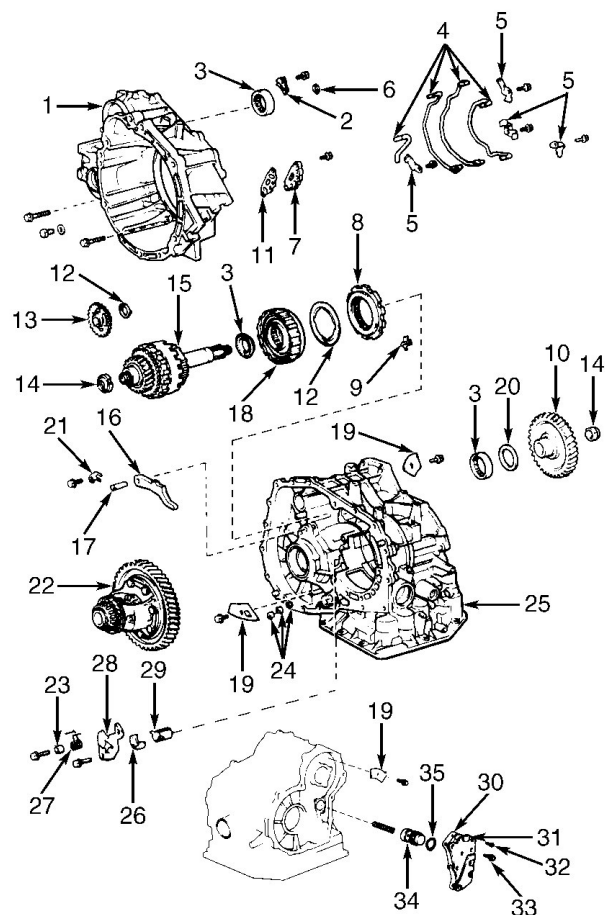


Fig. 17: Checking & Removing 1st & Reverse Piston
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



- | | |
|---|---|
| 1. Transaxle Housing | 18. Underdrive Clutch |
| 2. Bearing Retainer | 19. Plate |
| 3. Bearing | 20. Thrust Needle Bearing |
| 4. Oil Tubes | 21. Pawl Shaft Clamp |
| 5. Clamp | 22. Differential Assembly |
| 6. Oil Seal Ring | 23. Spring Guide |
| 7. Oil Tube Apply Cover | 24. Apply Gaskets |
| 8. No. 3 One-Way Clutch | 25. Transaxle Case |
| 9. Anti-Rattle Clip | 26. Parking Lock Sleeve |
| 10. Counter-Driven Gear | 27. Spring |
| 11. Oil Tube Apply Cover Gasket | 28. Stopper Plate |
| 12. Thrust Washer | 29. Cam Guide Bracket |
| 13. Governor Driven Gear | 30. Gasket |
| 14. Lock Nut | 31. Oil Gallery Cover |
| 15. Underdrive Planetary Gear With Countershaft | 32. Screw |
| 16. Parking Lock Pawl | 33. Bolt |
| 17. Pawl Shaft | 34. Underdrive Brake Accumulator Piston |
| | 35. "O" Ring |

G93B25602

Fig. 18: Exploded View Of Transaxle Housing & Case Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

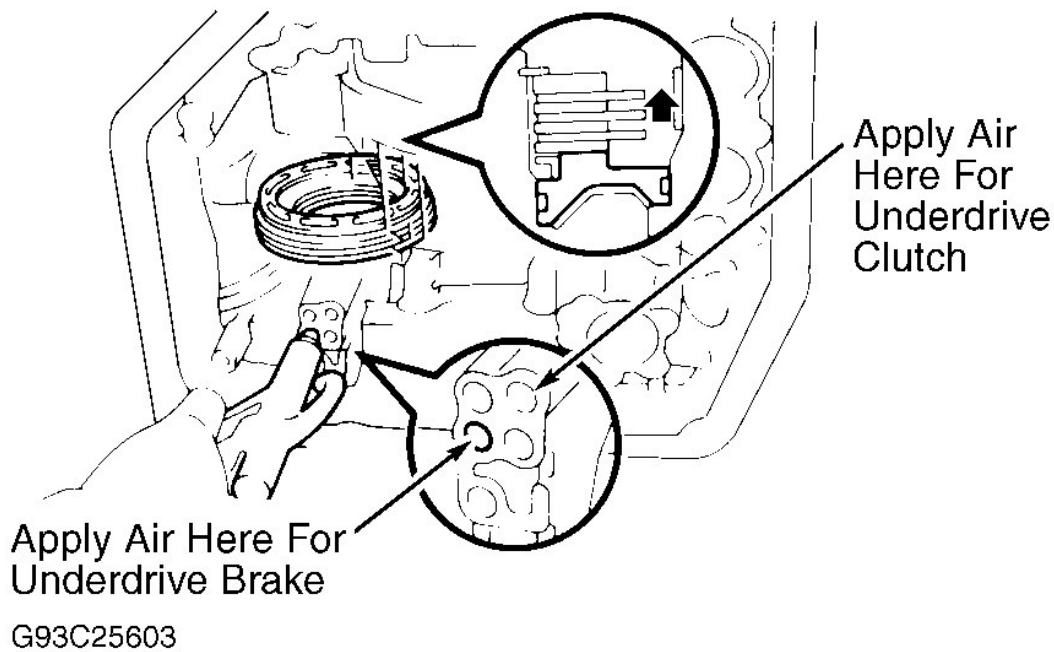


Fig. 19: Checking Underdrive Brake & Clutch Piston Operation

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMPONENT DISASSEMBLY & REASSEMBLY

OIL PUMP

Disassembly

1. Remove race from stator shaft. Remove "O" ring and oil seal rings from oil pump body and stator shaft. Remove clutch drum thrust washer from stator shaft.
2. Mark stator shaft and oil pump body for reassembly reference. Remove stator shaft bolts. Separate stator shaft and oil pump body. Mark gear location for reassembly reference. Remove pump gears. Using screwdriver, remove front seal. See **Fig. 20**.

Inspection

1. Note position of oil pump gears. Clean all parts with solvent. Dry parts using compressed air. Ensure oil passages are clear. Check driven gear-to-body clearance. Push driven gear against one side of oil pump. Measure clearance between driven gear and oil pump body. See **Fig. 21**. Replace oil pump body if clearance is not within specification. See **OIL PUMP CLEARANCE SPECIFICATIONS**.
2. Measure tip clearance between driven gear and crescent-shaped part of oil pump body. See **Fig. 22**. Replace oil pump body if clearance is not within specification. See **OIL PUMP CLEARANCE SPECIFICATIONS**.

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

- Using feeler gauge and straightedge, measure side clearance of both gears. See **Fig. 23**. Replace oil pump body if clearance is not within specification. See **OIL PUMP CLEARANCE SPECIFICATIONS**. Gears are available in 3 different thicknesses. See **DRIVE & DRIVEN GEAR THICKNESS SPECIFICATIONS**.

DRIVE & DRIVEN GEAR THICKNESS SPECIFICATIONS

Identifying Mark	Thickness - In. (mm)
A-240E, A-240L & A-243L	
"A"	.371-.372 (9.44-9.46)
"B"	.372-.373 (9.46-9.47)
"C"	.373-.374 (9.47-9.49)
A-241L & A-241E	
N/A	.422 (10.72)
A-244E	
N/A	.373 (9.47)

- Using a dial indicator, measure inside diameter of oil pump body bushing. Maximum inside diameter should be 1.503" (38.18 mm). If inside diameter exceeds specification, replace oil pump body.
- Measure inside diameter of stator shaft bushings. Maximum front side bushing inside diameter should be .849" (21.57 mm). Maximum rear side bushing inside diameter should be 1.066" (27.07 mm). If inside diameter exceeds specification, replace stator shaft.

OIL PUMP CLEARANCE SPECIFICATIONS

Application	In. (mm)
Driven Gear-To-Pump Body	
Standard	.0028-.0059 (.071-.149)
Maximum	.012 (.30)
Gear-To-Crescent	
Standard	.0043-.0055 (.109-.139)
Maximum	.012 (.30)
Gear Side Clearance	
Standard	.0008-.0020 (.020-.050)
Maximum	.004 (.10)

Reassembly

- Using Seal Installer (09350-32140), install NEW oil seal. Seal must be even with edge of oil pump body. Coat all components with ATF. Install pump gears aligning reference marks. Install stator shaft on pump body. Align bolt holes and tighten bolts to 89 INCH lbs. (10 N.m).
- Coat thrust washer with petroleum jelly. Install thrust washer on oil pump body. Align washer tab with oil pump body. Install oil seal rings. Use care not to over expand rings. Using screwdrivers, check drive gear for smooth rotation. Install "O" ring. Install race on stator shaft. See **Fig. 20**.

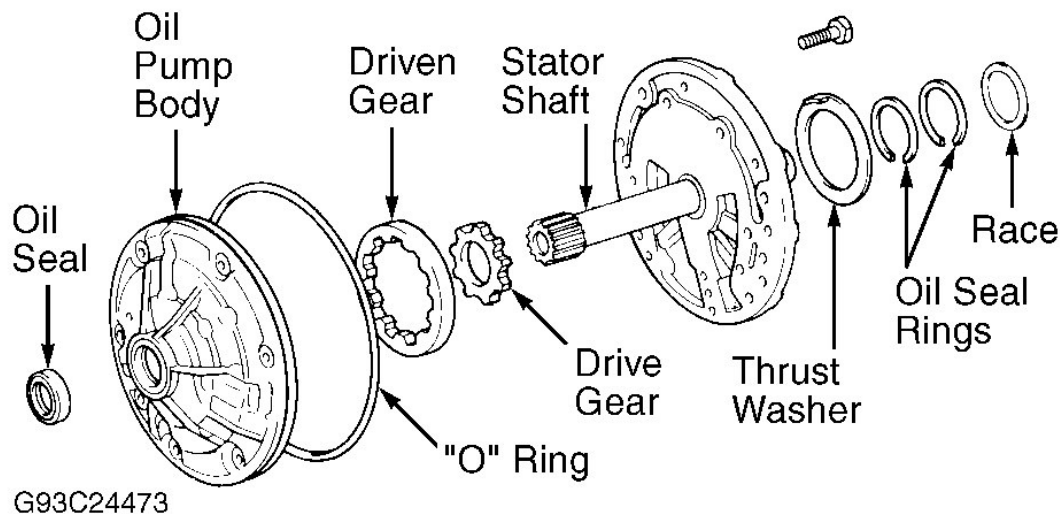


Fig. 20: Exploded View Of Oil Pump Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

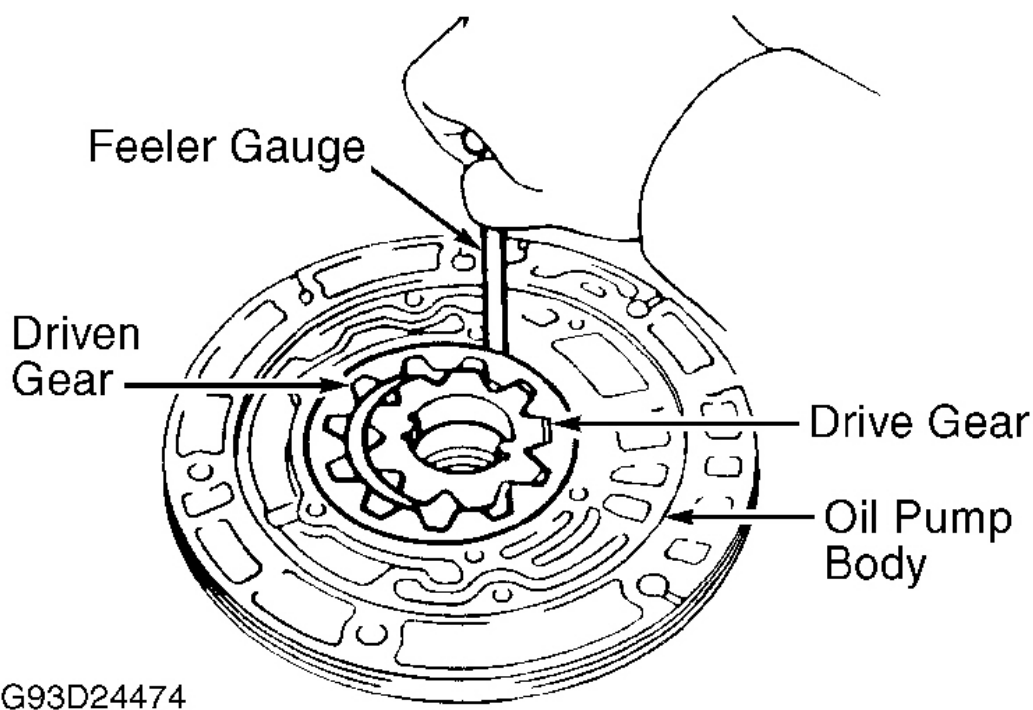


Fig. 21: Checking Oil Pump Driven Gear Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

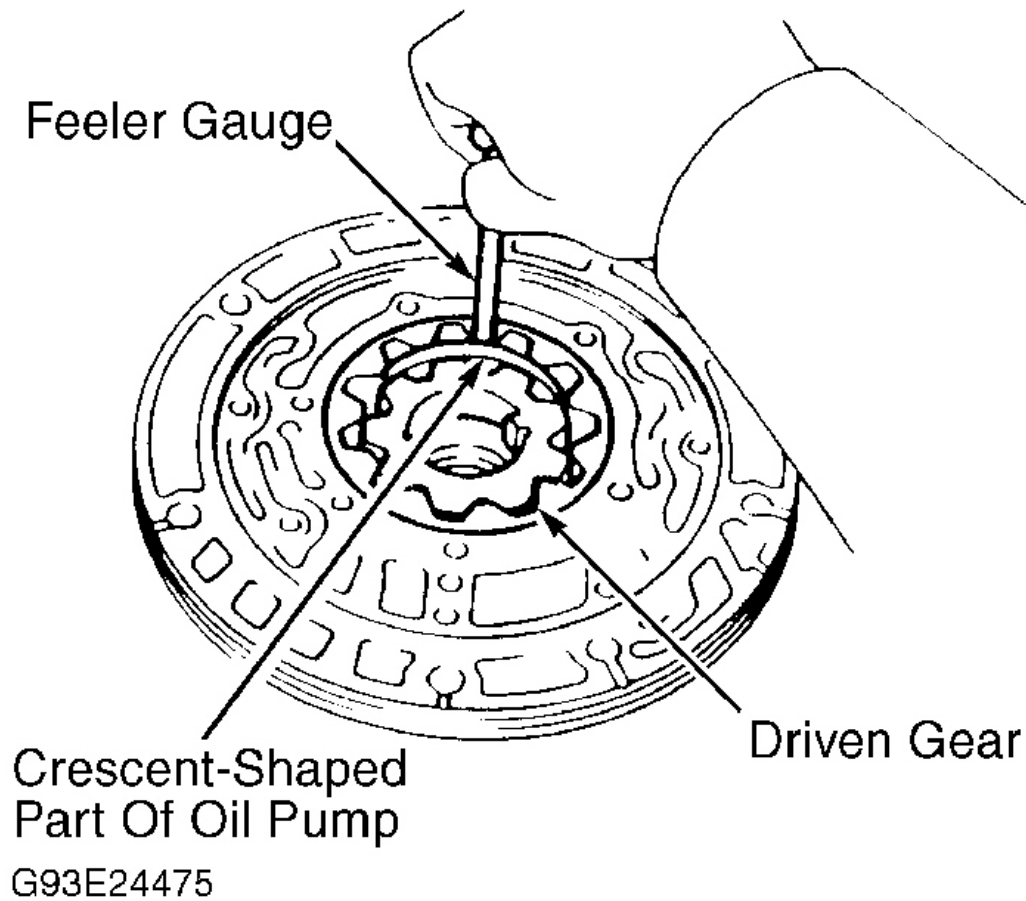


Fig. 22: Checking Oil Pump Gear Tip Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

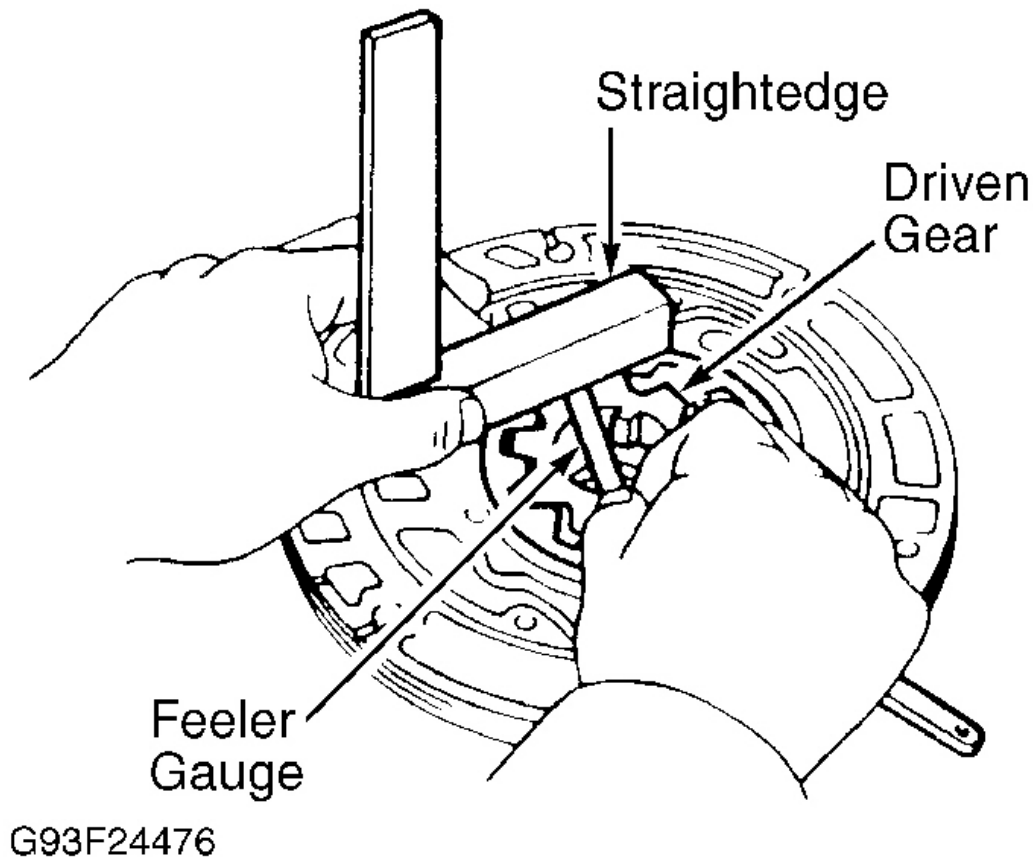


Fig. 23: Checking Oil Pump Gear Side Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DIRECT CLUTCH

Disassembly

1. Remove snap ring from direct clutch drum. Remove flange, discs and plates. Note number and location of components. See **Fig. 24**. Using Clutch Spring Compressor (09351-32070) and press, compress spring retainer and springs. Remove snap ring, clutch spring compressor, spring retainer and piston return springs.
2. Install direct clutch on oil pump. Apply compressed air to oil pump oval shaped oil passage to remove piston. See **Fig. 25**. Remove direct clutch from oil pump. Remove clutch piston "O" rings.

Inspection

1. Clean all parts (except discs) with solvent. Dry parts using compressed air. Ensure check ball is free in

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

piston. Apply low air pressure to small hole in piston to check for air leakage around piston valve. Inspect discs and plates for wear or burnt areas. If disc lining is peeled or discolored, replace discs as necessary. Replace all damaged components as necessary.

NOTE: **New discs must be soaked in ATF for at least 15 minutes prior to reassembly.**

2. Measure inside diameter of direct clutch bushing. Maximum inside diameter is 1.853" (47.07 mm). If inside diameter exceeds specification, replace direct clutch.

Reassembly

1. Install NEW "O" rings on piston and coat with ATF. Using hand pressure, press direct clutch piston into clutch drum with cup side upward. Use care not to damage "O" rings. Install piston return springs, retainer and snap ring. Compress return springs and retainer using clutch spring compressor.
2. Ensure snap ring gap does not align with spring retainer claw. Install plates and discs in reverse order of removal. Install flange with flat side facing downward. Install snap ring. Ensure snap ring gap does not align with drum cutout.
3. Install direct clutch on oil pump. Using a dial indicator, measure direct clutch piston stroke. Apply compressed air to oil pump passage and note dial indicator reading. See **Fig. 25**. Refer to **DIRECT CLUTCH PISTON STROKE SPECIFICATIONS** for stroke specification. If piston stroke is not as specified, select the appropriate flange to obtain the correct piston stroke. Refer to **DIRECT CLUTCH FLANGE APPLICATION** for flange thicknesses.

DIRECT CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
A-240E	.045-.059 (1.13-1.50)
A-240L	.054-.067 (1.37-1.70)
A-241L & A-241E	.044-.058 (1.11-1.47)
A-243L & A-244E	.064-.078 (1.63-1.97)

DIRECT CLUTCH FLANGE APPLICATION

Application	In. (mm)
A-240E	.102 (2.60), .118 (3.00) & .133 (3.37)
A-240L	.118 (3.00) & .133 (3.37)
A-241E & A-241L	.102 (2.60) & .118 (3.00)
A-243L & A-244E	.102 (2.60), .110 (2.80) & .118 (3.00)

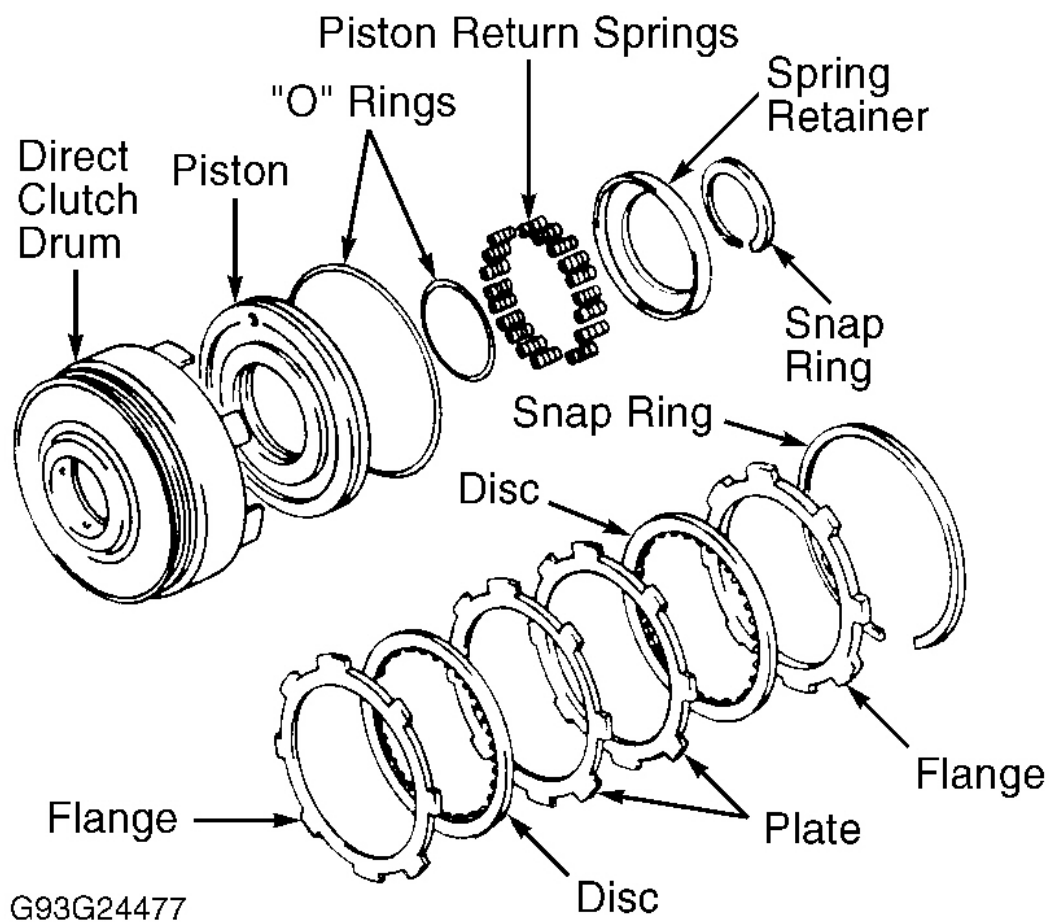
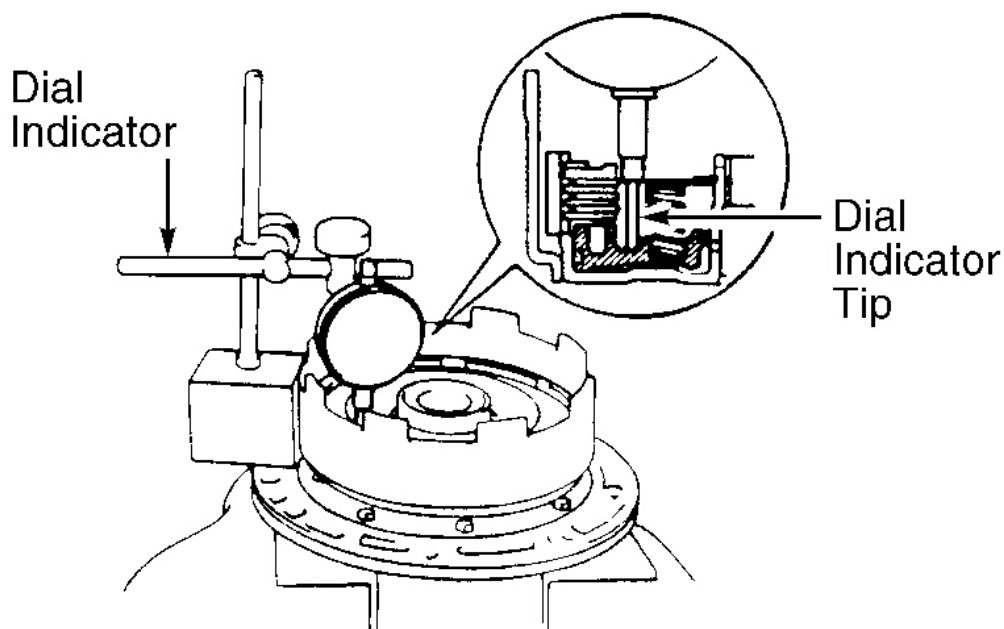
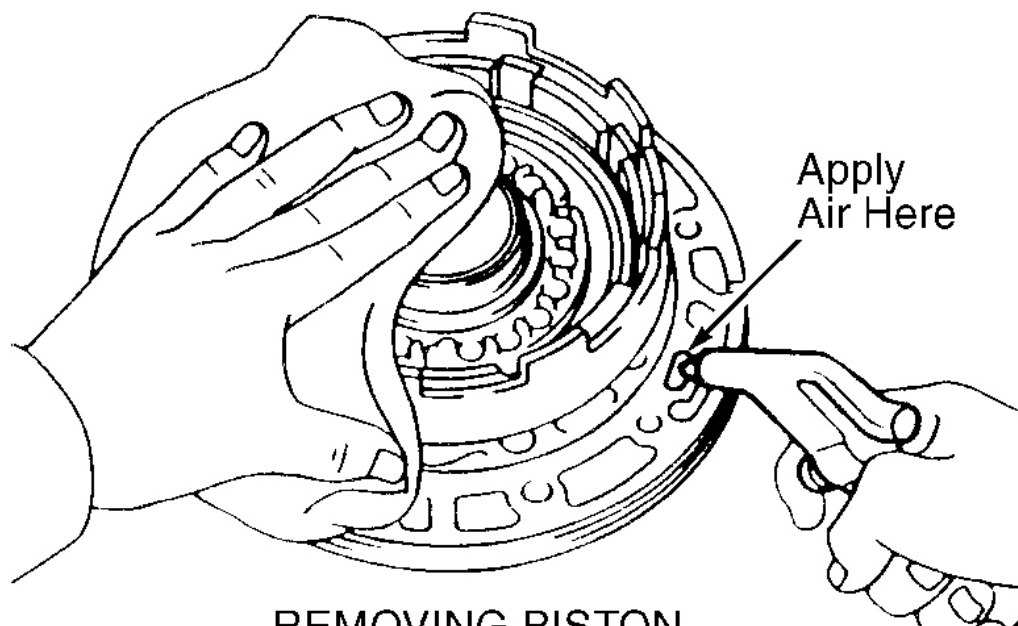


Fig. 24: Exploded View Of Direct Clutch Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



CHECKING PISTON TRAVEL



REMOVING PISTON

G93H24478

Fig. 25: Checking & Removing Direct Clutch Piston
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FORWARD CLUTCH

Disassembly

1. Remove thrust washer. Remove thrust bearings and races from both sides of clutch. Remove clutch drum snap ring. Remove flange, discs and plates. Note number and location of components. See **Fig. 26**. Using Clutch Spring Compressor (09351-32070) and press, compress spring retainer and return springs.
2. Remove snap ring. Remove spring compressor, spring retainer and return springs. To remove piston from clutch drum, apply compressed air to oil passage (hole nearest piston) on rear of forward clutch shaft. Remove "O" rings from piston. If necessary, remove oil seal rings.

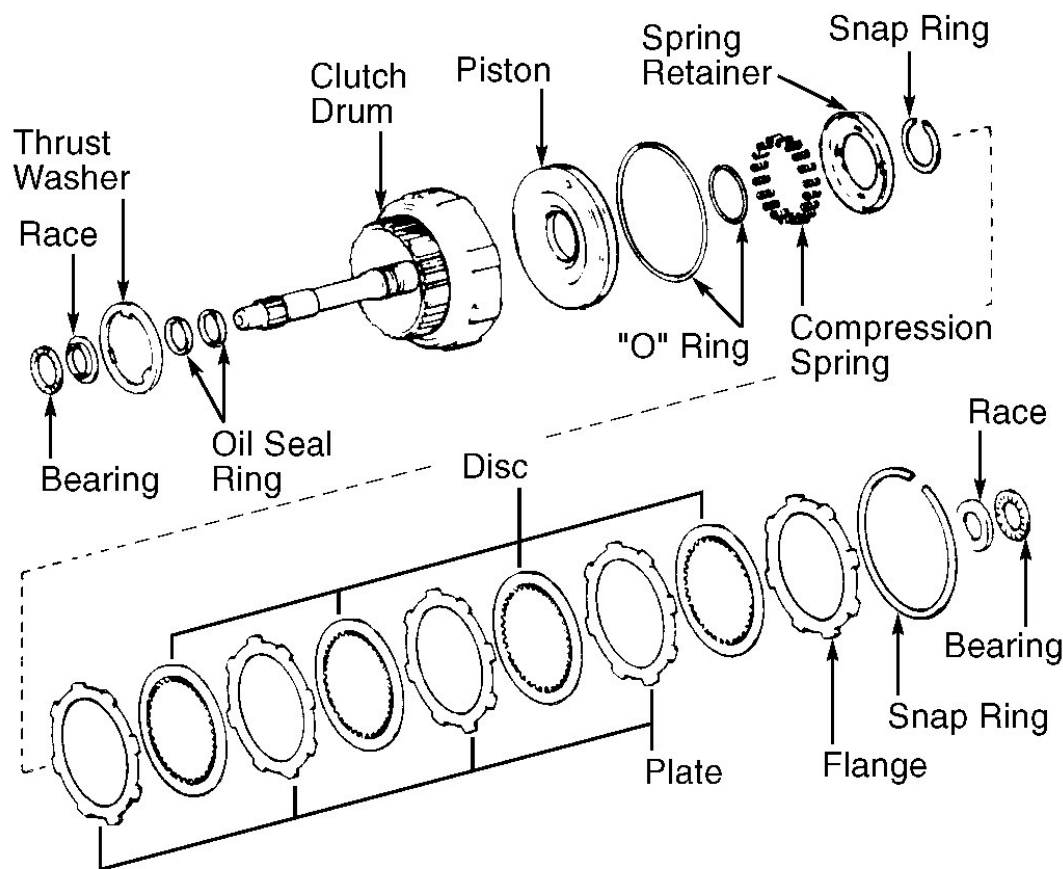
Inspection

Clean all parts (except discs) with solvent. Dry parts using compressed air. Ensure check ball is free in piston. Apply low air pressure to small hole in piston to check for air leakage around piston valve. Inspect discs and plates for wear or burnt areas. If disc lining is peeled or discolored, replace discs as necessary. Replace all damaged components as necessary.

NOTE: **New discs must be soaked in ATF at least 15 minutes prior to reassembly.**

Reassembly

1. Install NEW oil seal rings (if necessary). **DO NOT** over expand seal rings. Install NEW "O" rings on piston and coat with ATF. Using hand pressure, install piston in clutch drum with cup side upward. Use care not to damage "O" rings. Install piston return springs, retainer and snap ring. Compress return springs and retainer using clutch spring compressor. Install snap ring so ring gap does not align with spring retainer claw.
2. Install plate and disc in reverse order of removal. Install flange with flat side facing inward. Install snap ring. Ensure end gap of snap ring is not aligned with drum cutout. Position dial indicator on piston flange. Measure piston stroke by applying compressed air to oil passage (hole nearest piston) on rear of forward clutch shaft and note dial indicator reading.
3. Piston stroke for A-244E transaxle should be .044-.058" (1.11-1.47 mm). Piston stroke for all other transaxles should be .056-.071" (1.42-1.81 mm). If piston stroke is not as specified, select appropriate flange to obtain correct piston stroke. Flange is available in thicknesses of .118" (3.00 mm) and .133" (3.37 mm). Coat thrust washer, races and bearings with petroleum jelly and install components. See **Fig. 26**.



G93D25604

Fig. 26: Exploded View Of Forward Clutch

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FRONT PLANETARY GEAR

Disassembly

1. Check No. 1 one-way clutch operation. Hold sun gear and turn hub. Hub should rotate freely clockwise and lock when turned counterclockwise. See **Fig. 27**. Remove 2nd brake hub and No. 1 one-way clutch from sun gear.
2. Remove thrust washer from sun gear input drum. Remove snap ring. Remove sun gear input drum. Remove shaft snap ring from sun gear. Remove one-way clutch retainer if clutch requires replacement. Remove one-way clutch from hub. See **Fig. 28**.

Inspection

1. Clean all parts with solvent. Dry parts using compressed air. Check thrust bearings, races and one-way clutch for wear or damage. Replace if necessary.

2. Measure inside diameter of sun gear flange bushing. Standard inside diameter should be .867-.868" (22.03-22.05 mm). Maximum inside diameter is .870" (22.10 mm). If inside diameter exceeds specification, replace flange.
3. Measure planetary pinion gear thrust clearance. Standard clearance should be .008-.020" (.20-.50 mm). Maximum clearance is .020" (.50 mm). If clearance exceeds specification, replace planetary gear. See **Fig. 29**.
4. Measure inside diameter of ring gear flange bushing. Standard inside diameter should be .749-.750" (19.03-19.05 mm). If inside diameter exceeds specification, replace flange.

Reassembly

Install shaft snap ring to sun gear. Install sun gear to drum. Install snap ring to drum. Install thrust washer to sun gear input drum. See **Fig. 28**. Rotate hub clockwise. Install one-way clutch and 2nd brake hub. Check one-way clutch operation. Hold sun gear and rotate hub. Hub should rotate freely clockwise and lock counterclockwise.

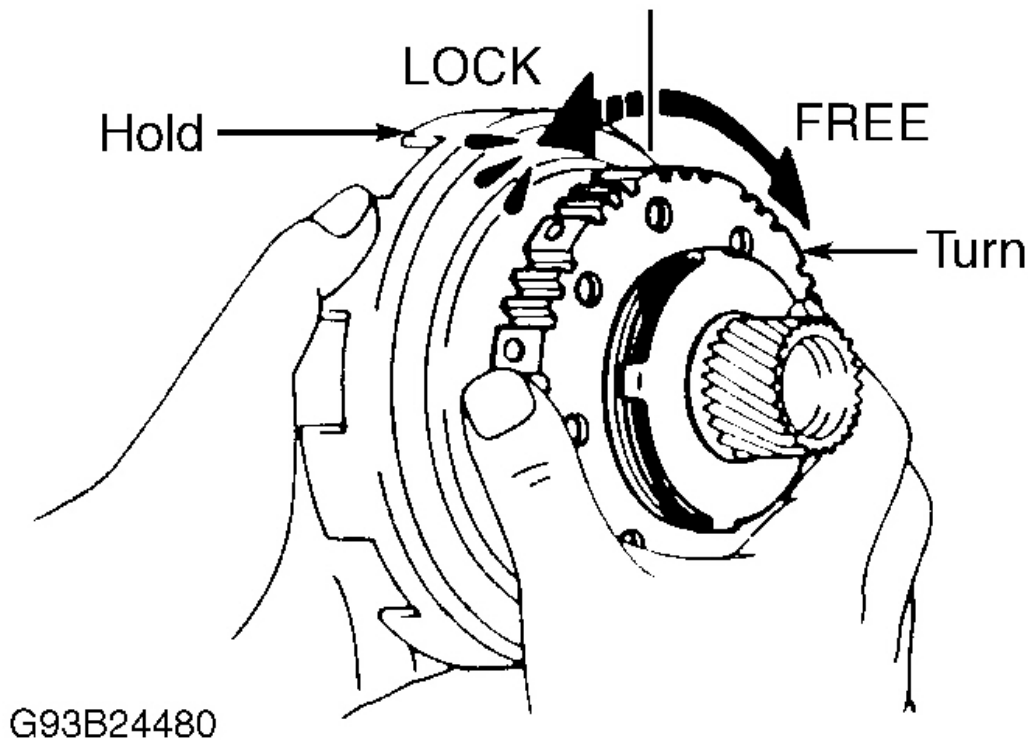


Fig. 27: Checking No. 1 One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

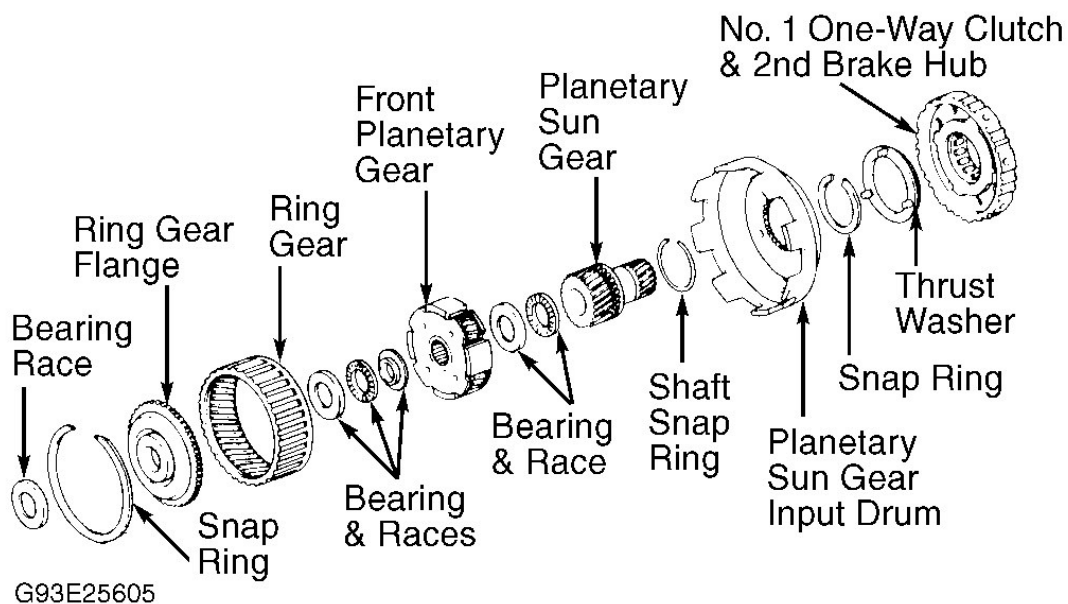


Fig. 28: Exploded View Of Front Planetary Gear
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

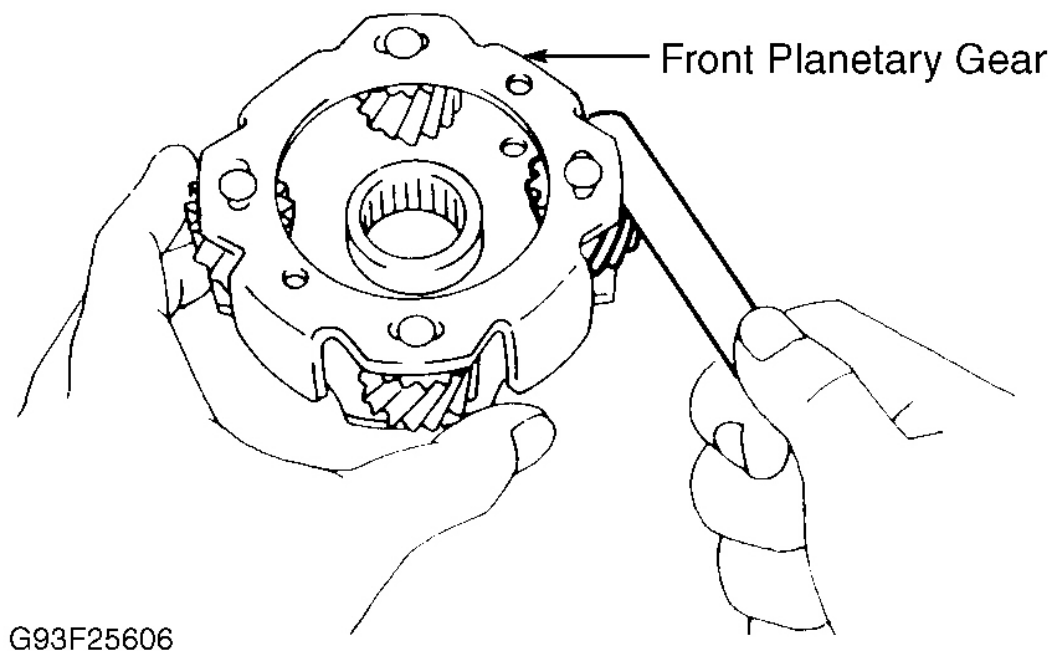


Fig. 29: Measuring Planetary Gear Thrust Clearance

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR PLANETARY GEAR

Disassembly

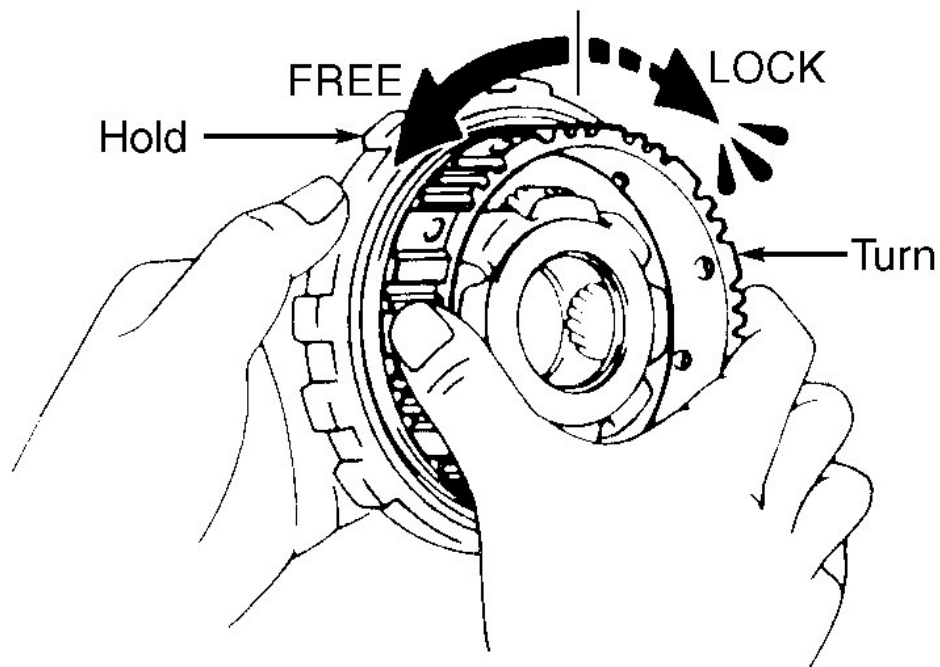
1. Check No. 2 one-way clutch operation. Hold outer race and rotate hub. Hub should rotate freely counterclockwise and lock clockwise. See **Fig. 30**.
2. Remove thrust washers from both sides of planetary gear. Separate No. 2 one-way clutch and planetary gear. Remove snap rings and side retainers from No. 2 one-way clutch. Note position of No. 2 one-way clutch and remove from outer race. See **Fig. 31**.

Inspection

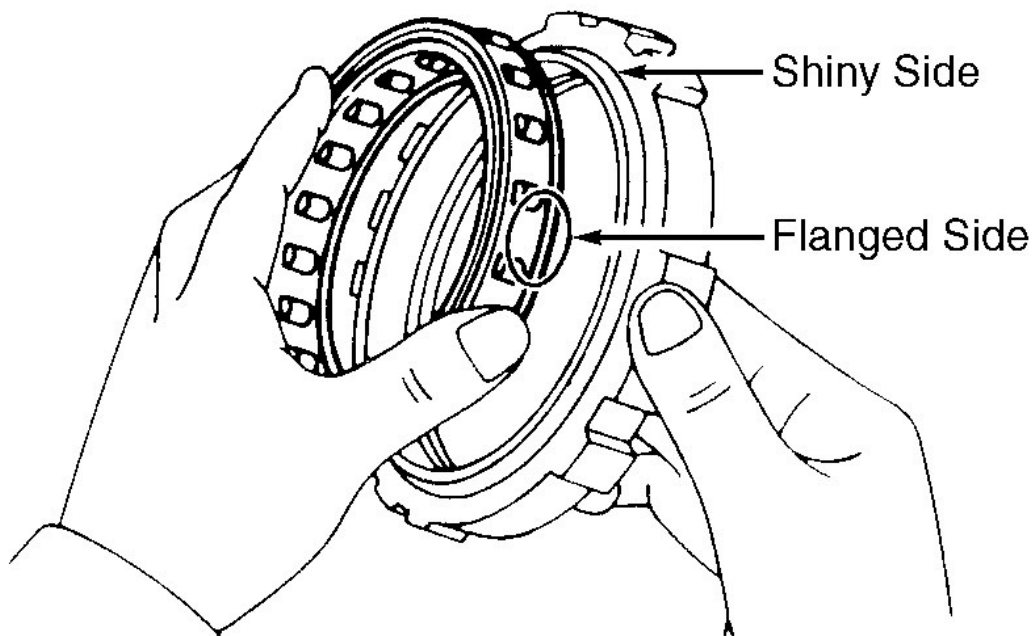
Clean all parts with solvent. Dry parts using compressed air. Check thrust washers and one-way clutch for wear or damage. Replace damaged parts as necessary.

Reassembly

1. Coat all parts with ATF. Install one-way clutch into outer race. Flanged side should face inward away from shiny side of outer race. See **Fig. 30**. Install side retainers and snap rings.
2. Install planetary gear into one-way clutch. Planetary gear inner race should face inward from back side of outer race. Check operation of one-way clutch. See **Fig. 30**. Coat thrust washers with petroleum jelly. Install thrust washers on both sides of gear, aligning thrust washer tab with hollow area in gear.



CHECKING OPERATION



INSTALLING CLUTCH

G93D24482

Fig. 30: Installing & Checking No. 2 One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

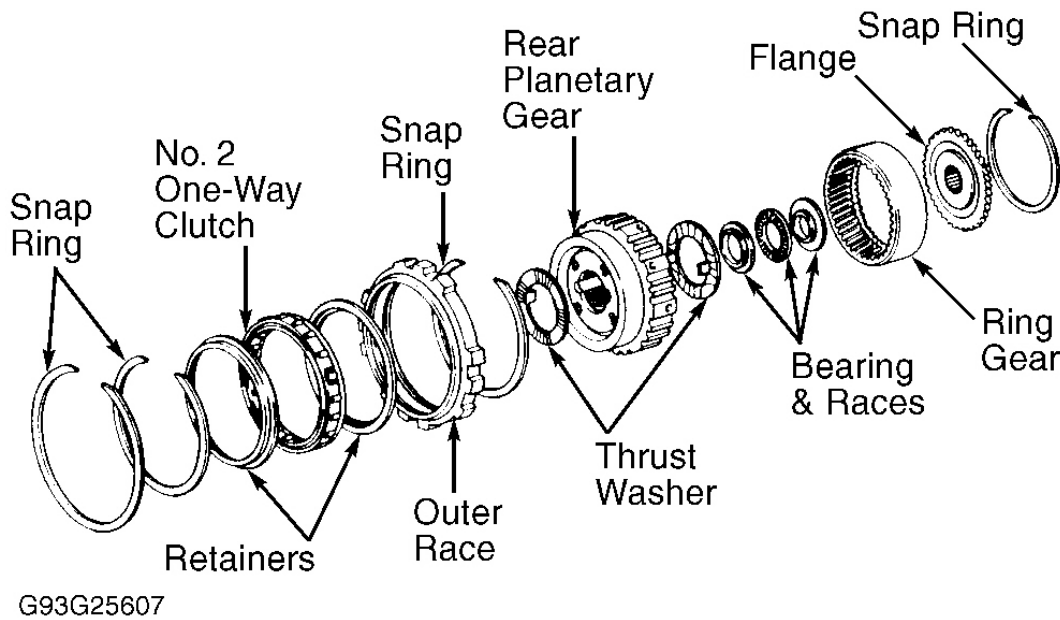


Fig. 31: Exploded View Of Rear Planetary Gear
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1ST & REVERSE BRAKE PISTON

Disassembly

1. Using Spring Compressor (09350-32013), compress springs by tightening bolt gradually. Remove spring retainer snap ring and compressor.
2. Remove piston return spring assembly. Apply compressed air to oil passage in transaxle case to remove piston. See **Fig. 17**. Remove piston "O" rings.

Inspection

Clean all parts with solvent. Dry parts using compressed air. Inspect piston for roughness or damage. Replace as necessary.

Reassembly

1. Install NEW "O" rings on piston and coat with ATF. Install piston in transaxle case with spring seats facing upward. Install piston return spring assembly and snap ring in place. See **Fig. 32**.
2. Using clutch spring compressor, compress piston return springs. Avoid bending spring retainer or damaging transaxle case by overtightening compressor. Push snap ring into place with fingers.

3. Ensure snap ring is fully seated and centered by spring retainer lugs. Ensure snap ring end gap is not aligned with cutouts. Remove spring compressor.

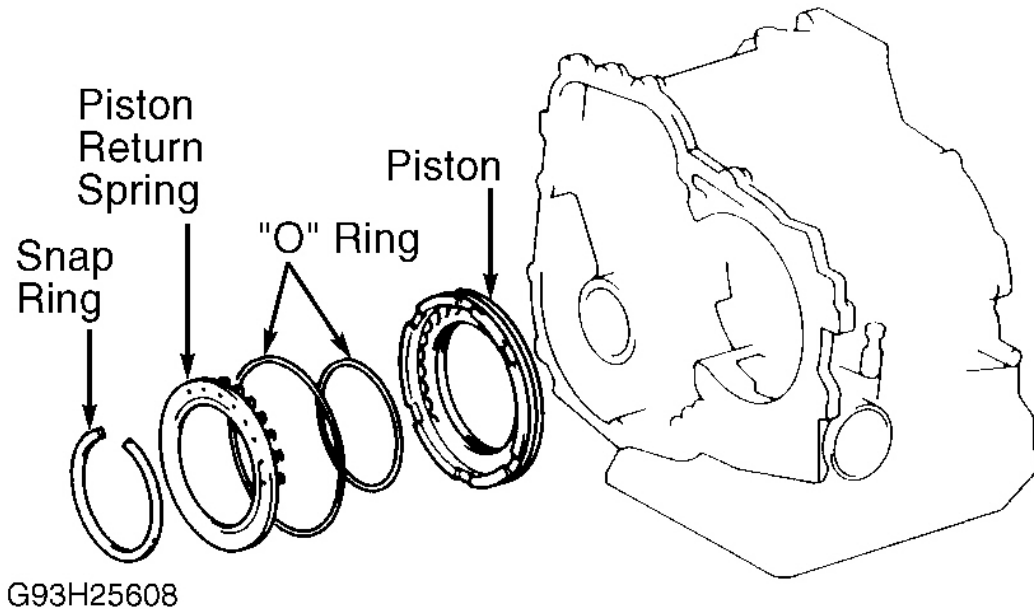


Fig. 32: Exploded View Of 1st & Reverse Brake Piston
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2ND COAST BRAKE

Disassembly

1. Prior to disassembly, check brake piston stroke. Apply paint to piston rod at point rod meets transaxle case. Apply compressed air to oil passage and measure piston stroke using Wire Gauge Set (09240-00020). Piston stroke should be .059-.118" (1.50-3.00 mm). See **Fig. 33**.
2. If piston stroke exceeds specification, check brake band. If brake band is serviceable but piston rod stroke is not within specification, select NEW piston rod. Piston rod is available in lengths of 2.811" (71.40 mm) and 2.870" (72.90 mm).
3. Remove oil seal ring from piston. Remove "E" ring while pushing piston with needle-nose pliers. Remove spring, washer and piston rod. See **Fig. 34**.

Inspection

Replace brake band if lining is peeled or discolored or printed numbers are defaced. Before assembling new band, soak in ATF for at least 15 minutes.

Reassembly

Install washer and spring to piston rod. Install "E" ring. Install oil seal ring. **DO NOT** expand oil seal ring ends more than necessary for installation. See **Fig. 34**.

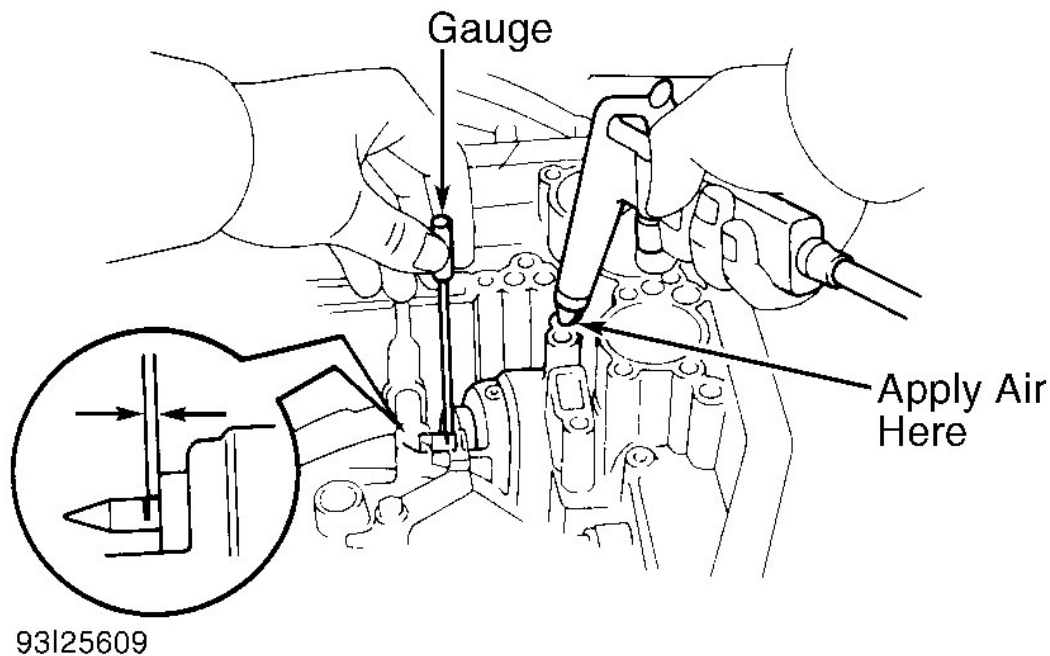


Fig. 33: Checking 2nd Coast Brake Piston Stroke
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

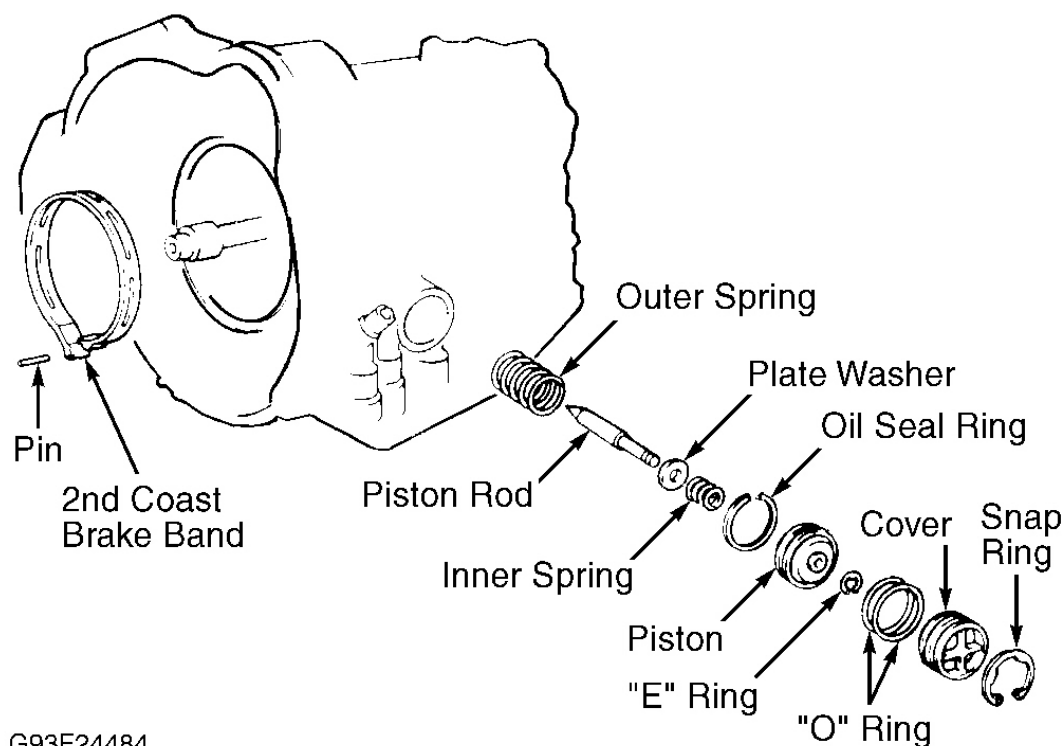


Fig. 34: Exploded View Of 2nd Coast Brake
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2ND BRAKE PISTON

Disassembly & Reassembly

Apply compressed air to oil passage and remove 2nd brake piston. See **Fig. 16**. Remove "O" rings from piston. Coat NEW "O" rings with ATF and install. Carefully press 2nd brake piston into 2nd brake drum. See **Fig. 35**.

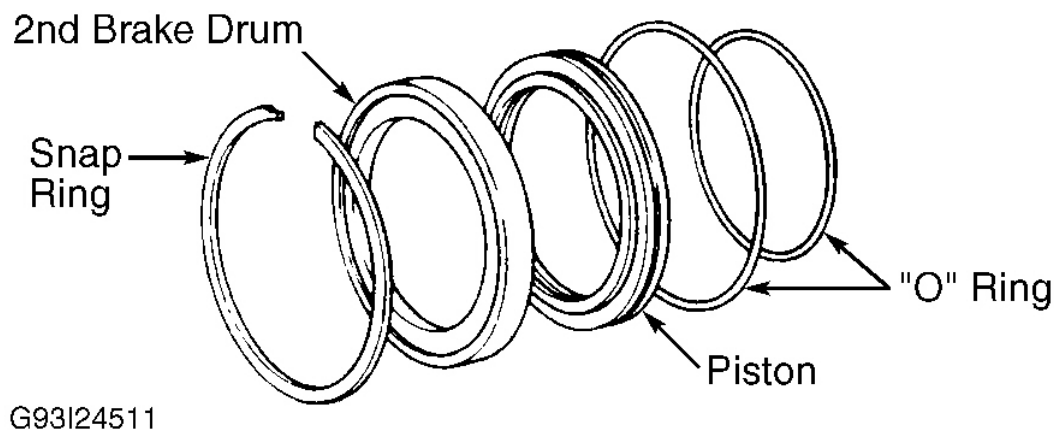


Fig. 35: Exploded View Of 2nd Brake Piston
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INTERMEDIATE SHAFT

Disassembly & Reassembly

Using Puller (09555-55010), press intermediate shaft bearings from shaft. Install intermediate shaft bearings using proper puller and Adapter (09351-32013) and press. Ensure gear flange end to intermediate shaft end measurement is 4.560" (115.82 mm). See **Fig. 36**.

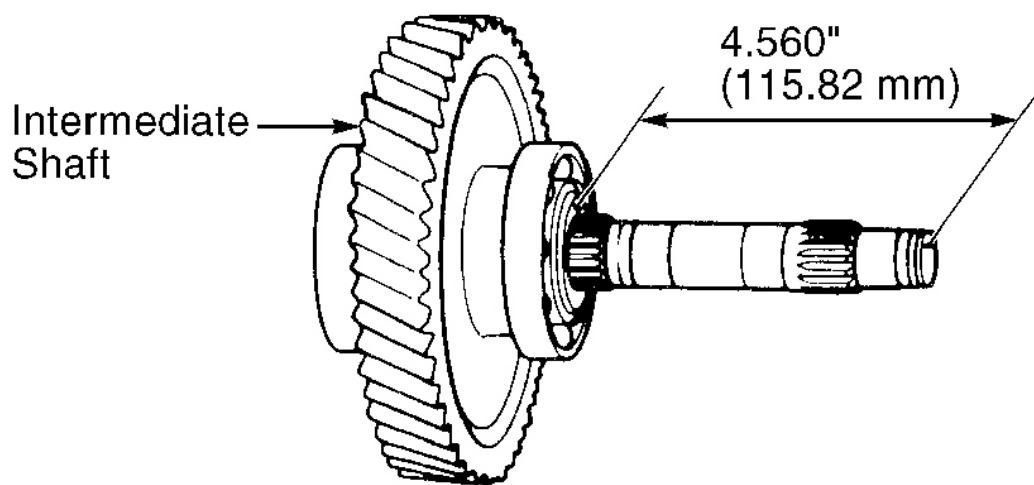


Fig. 36: Checking Intermediate Shaft Gear Flange

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COUNTERSHAFT ASSEMBLY**Disassembly**

1. Remove planetary sun gear from countershaft. Remove snap ring from sun gear and countershaft assembly. Remove underdrive planetary gear, thrust bearing and race. See **Fig. 37**.
2. Using Adapter (09350-32014) and press, remove drive pinion with output flange, outer bearing, race and spacer. Note thickness and size of bearing race. Remove ring gear retaining snap ring. Remove ring gear from countershaft.
3. Using Bearing Remover (09550-00020) and press, remove remaining bearing from countershaft. Remove outer bearing race from drive pinion using a brass punch and hammer. Note size of bearing and bearing race.

Inspection

1. Clean all parts with solvent. Dry parts using compressed air. Inspect bearings, races, thrust bearing and race, drive pinion and gears for wear or damage. Replace components as necessary.
2. Measure inside diameter of planetary sun gear bushing. Standard diameter should be 1.173-1.174" (29.80-29.83 mm). Maximum inside diameter is 1.176" (29.87 mm). If clearance exceeds specification, replace planetary sun gear.
3. Measure planetary pinion gear thrust clearance. Standard clearance should be .008-.020" (.20-.50 mm). See **Fig. 29**. If clearance exceeds specification, replace planetary gear assembly.

Reassembly

1. Using Bearing Installer (09351-32180) and Adapter (09351-32150), press bearing of thick inner race on countershaft. Install ring gear and snap ring to countershaft. Install bearing outer races to drive pinion. Using Adapters (09351-32090 and 09351-32180) and press, press thick bearing race into flange side of drive pinion. Using adapters, press thin bearing race on remaining side of drive pinion. See **Fig. 37**.
2. Install NEW spacer on countershaft. Install drive pinion on countershaft. Using bearing installer, install remaining countershaft bearing. Ensure clearance exists between output flange and bearing. Using Adapter (09351-32180) and press, install inner race.
3. Using Adapter (09351-32100) and press, temporarily install counterdriven gear on countershaft. Install Holder (09351-32032) on counterdriven gear. Install NEW lock nut. **DO NOT** use old lock nut. Countershaft bearing preload must be checked.
4. Install holder in vise. Tighten NEW lock nut using torque wrench and Adapter (09351-3270). Tighten lock nut to 116-142 ft. lbs. (157-193 N.m) on A-240L transaxle, and 130-159 ft. lbs. (177-216 N.m) for all other transaxles.
5. Using Countershaft Adapter (09351-32170) and a spring scale, measure starting torque of countershaft. Before measuring starting torque, turn countershaft firmly to seat bearing. Starting torque should be 2.6-4.4 lbs. (1.2-2.0 kg). Replace spacer if starting torque exceeds specification. Recheck starting torque. See **Fig. 38**.
6. Using a punch and hammer, stake lock nut. Remove counterdriven gear. Install thrust bearing and race

"H". See **Fig. 55**. Install underdrive planetary gear and snap ring. Install snap ring to sun gear. Install planetary sun gear to countershaft. See **Fig. 37**.

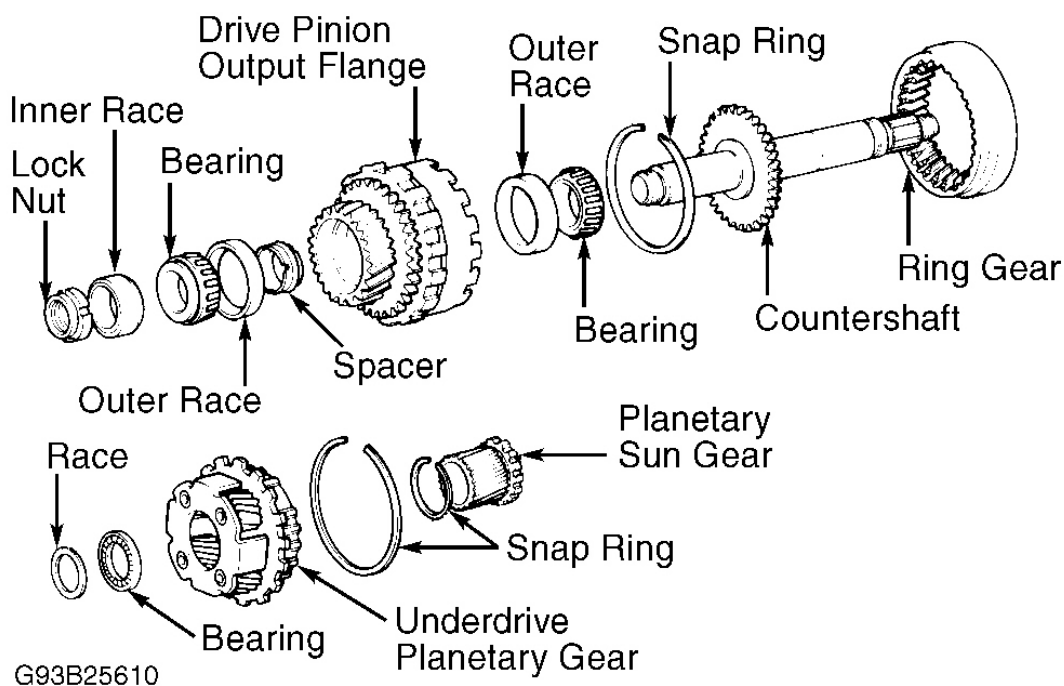


Fig. 37: Exploded View Of Countershaft Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

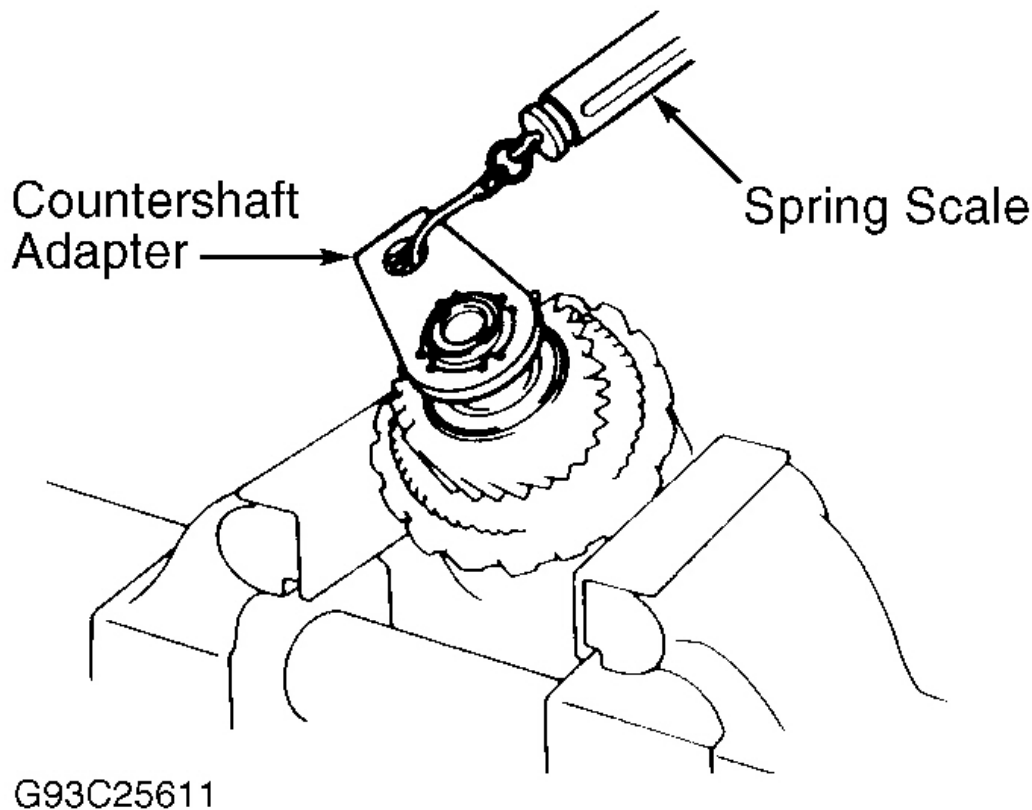


Fig. 38: Measuring Countershaft Torque
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

UNDERDRIVE CLUTCH & NO. 3 ONE-WAY CLUTCH

Disassembly

1. Remove one-way clutch and thrust washer from under-drive clutch drum. Remove snap ring from underdrive clutch drum. See **Fig. 39**. Remove flange, discs and plates from clutch drum. Note number and location of components. Using Spring Compressor (09351-32070) and press, compress return spring plate.
2. Remove snap ring. Remove return spring and spring plate. Install oil seal rings to transaxle case (if necessary). Install underdrive clutch to transaxle case. Apply compressed air to oil passage in transaxle case to remove piston. See **Fig. 19**. Remove "O" rings from piston.

Inspection

1. Clean all parts (except discs) with solvent. Dry parts using compressed air. Inspect discs and plates for wear or burnt areas. If discs are peeled or discolored, replace discs as necessary.

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

2. Ensure check ball is free in piston. Apply low air pressure to small hole in piston to check for air leakage around piston valve. Inspect discs and plates for wear or burnt areas. Replace all damaged components.

NOTE: **New discs must be soaked in ATF for at least 15 minutes prior to installation.**

3. Measure inside diameter of underdrive clutch drum bushing. Standard diameter for front side of bushing should be 1.831-1.832" (46.50-46.53 mm). Standard diameter for rear side of bushing should be 2.165-2.167" (55.00-55.03 mm). Maximum inside diameter should be 1.833" (46.57 mm) for front side and 2.169" (55.08 mm) for rear side. Replace underdrive clutch drum if not within specification.

Reassembly

1. Coat "O" rings with ATF. Install "O" rings on piston. Carefully install underdrive clutch into clutch drum. Install spring plate and return spring to underdrive clutch. Using Spring Compressor (09351-32070) and press, compress return spring. Install snap ring.
2. Ensure snap ring end does not align with spring retainer claw. Install plates and discs in reverse order of disassembly ending with disc. Install flange with round end facing inward. Install snap ring.
3. Measure underdrive clutch piston stroke. Mount dial indicator so tip rests on underdrive clutch assembly. Apply air pressure to activate piston. See **Fig. 19**. See **UNDERDRIVE CLUTCH PISTON STROKE SPECIFICATIONS** table for stroke specifications. If piston stroke is not within specification, replace flange.

UNDERDRIVE CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
A-240E & A-241L	.058-.074 (1.47-1.89)
A-240L, A-243L & A-244E	.059-.073 (1.50-1.86)
A-244E	.048-.061 (1.21-1.55)

4. For A-241E and A-243L transaxle, flange is available in thicknesses of .091" (2.30 mm), .098" (2.50 mm) and .106" (2.70 mm). For all other transaxles, flange is available in thicknesses of .080" (2.04 mm) and .094" (2.40 mm). Install appropriate flange to obtain correct clearance.
5. Install thrust washer on underdrive clutch drum. Install underdrive one-way clutch on underdrive clutch drum. Retainer claw must be facing upward. Check operation of one-way clutch. Hold clutch drum and rotate one-way clutch. One-way clutch should turn freely counterclockwise and lock clockwise.

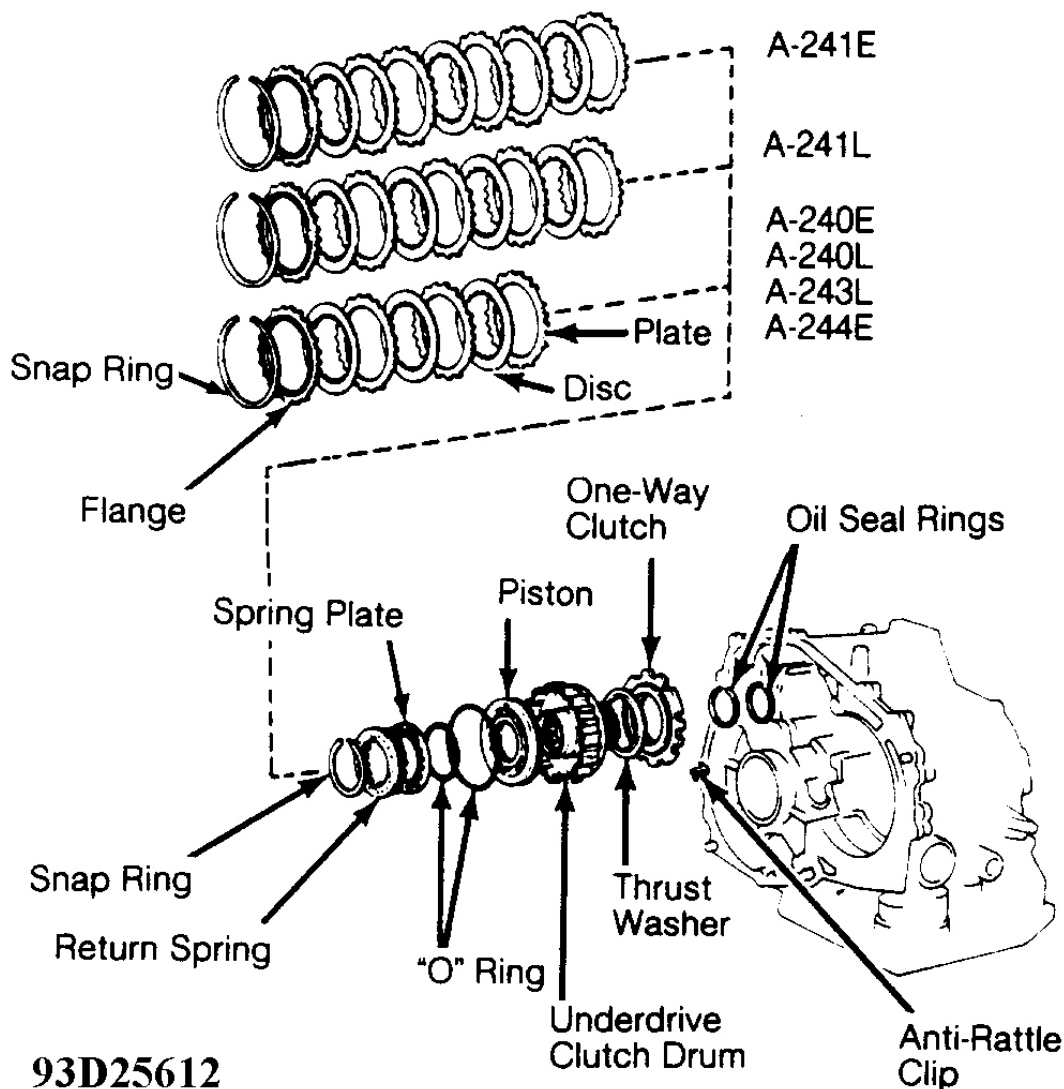


Fig. 39: Exploded View Of Underdrive Clutch & No. 3 One-Way Clutch
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

UNDERDRIVE BRAKE & ACCUMULATOR

Disassembly

1. Using Spring Compressor (09351-32070), compress return spring and remove snap ring. Remove plates, discs and flange. Note number and location of components. Remove return spring. Remove oil seal rings (if necessary).
2. Apply compressed air to oil passage in transaxle case to remove underdrive piston from transaxle case. See **Fig. 19**. Remove "O" rings from piston. Remove oil gallery cover and gasket. Remove accumulator piston and spring from transaxle case. Remove "O" ring from piston. See **Fig. 40**.

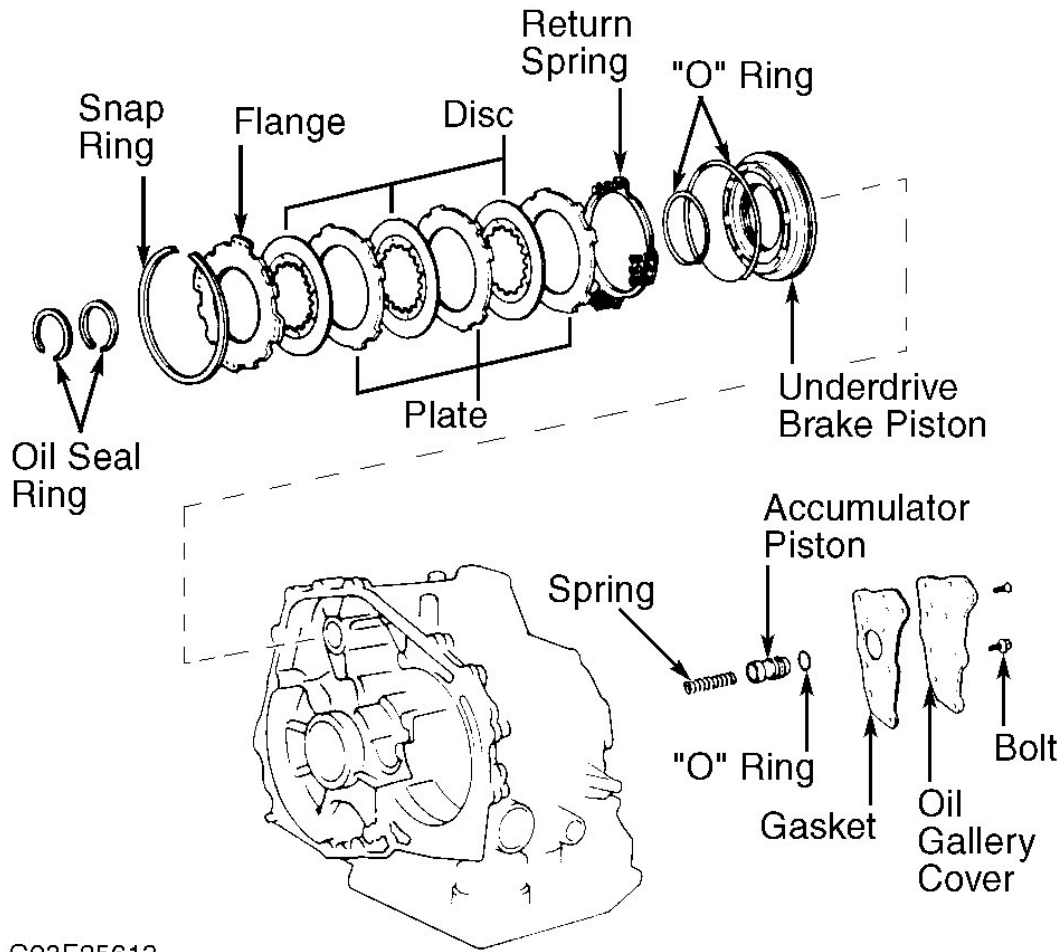
Inspection

1. Clean all parts (except discs) with solvent. Dry parts using compressed air. Inspect discs and plates for wear or burnt areas. If discs are peeled or discolored, replace discs as necessary.
2. Inspect underdrive brake piston. Ensure check ball is free by shaking piston. Ensure valve does not leak by applying low pressure compressed air to small hole in piston.

NOTE: **New discs must be soaked in ATF at least 15 minutes prior to reassembly.**

Reassembly

1. Coat NEW "O" ring with ATF and install on accumulator piston. Install accumulator piston and spring. Install oil gallery gasket and cover. Tighten bolts to 89 INCH lbs. (10 N.m). Apply seal packing Three Bond (1324) to screws for oil gallery cover. Install screws and tighten to 65 INCH lbs. (7.4 N.m).
2. Install underdrive brake piston "O" rings. Coat "O" rings with ATF. Install piston in transaxle case with cupped side upward. Use care not to damage "O" rings. Install brake piston return spring. Install plates and discs. Install flange with flat end facing inward.
3. Using spring compressor, compress return spring. Install snap ring. Ensure snap ring end gap is not aligned with cutout. Using compressed air, ensure underdrive brake piston operates smoothly. See **Fig. 40**.



G93E25613

Fig. 40: Exploded View Of Underdrive Brake & Accumulator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CONTROL VALVE ASSEMBLY

NOTE: All control valve assembly components must be installed in original location. Arrange components in sequence during removal for reassembly reference. Throttle pressure is changed according to number of adjusting rings. When assembling valve body, install same number of adjusting rings as were removed. Some valve bodies do not have adjusting rings.

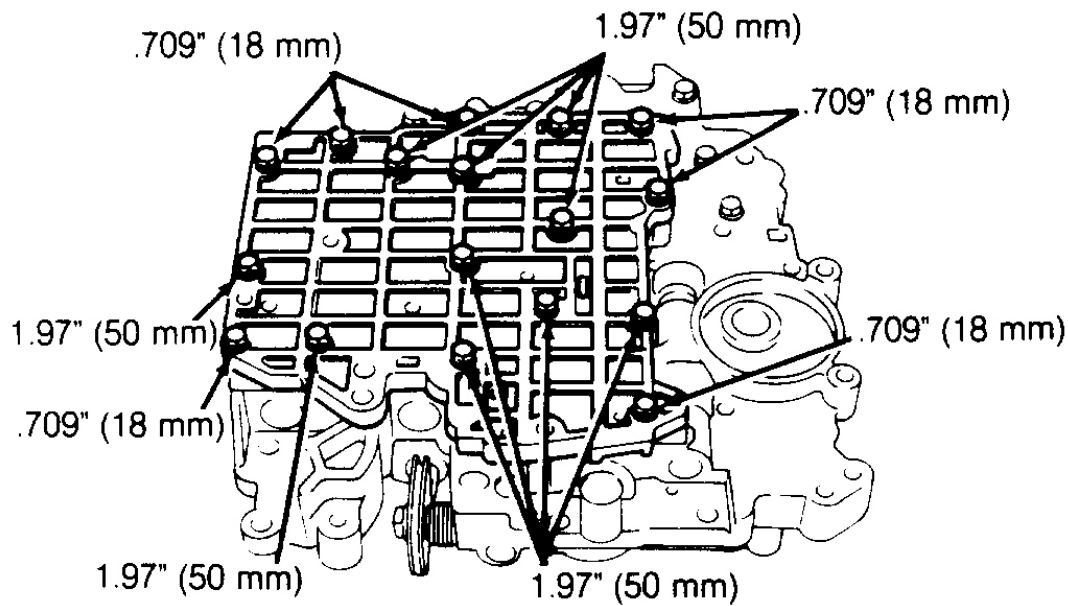
CAUTION: Note which step end of primary regulator valve sleeve contacts valve body prior to removal. Line pressure is affected by plunger location.

Disassembly

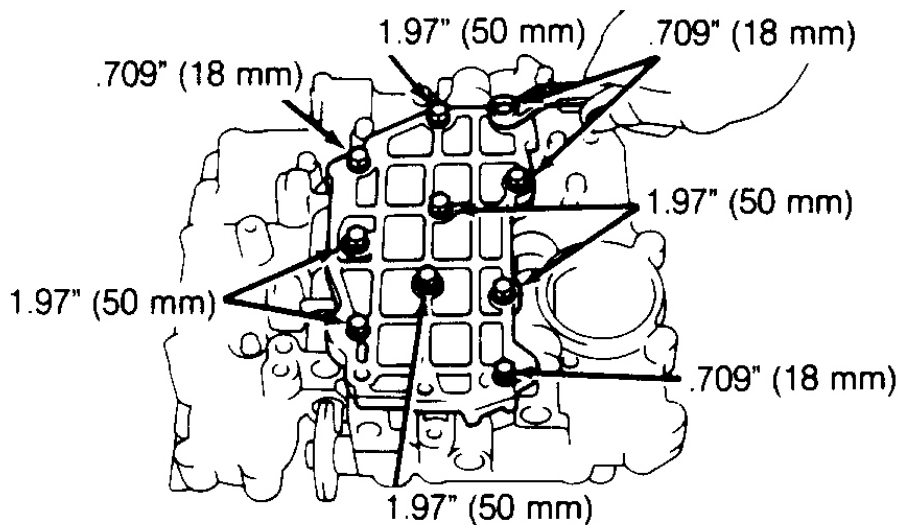
1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

1. Remove solenoids. On A-240L, A-241L and A-243L transaxles, remove 17 bolts and lower valve body cover. On A-240E, A-241E and A-244E transaxles, remove 10 bolts and lower valve body cover. See **Fig. 41**. On all transaxles, remove strainer, gaskets and plate.
2. Remove 8 bolts from upper valve body. On A-240L, A-241L and A-243L transaxles, remove 5 bolts from lower valve body. On A-240E, A-241E and A-244E transaxles, remove 9 bolts from lower valve body. See **Fig. 42**. Hold plate against lower valve body and carefully remove lower valve body. **DO NOT** lose check balls. Note location of check balls, retainers, pins and plugs in valve body. Remove plate and gasket. See **Fig. 43**.



A-240L, A-241L & A-243L

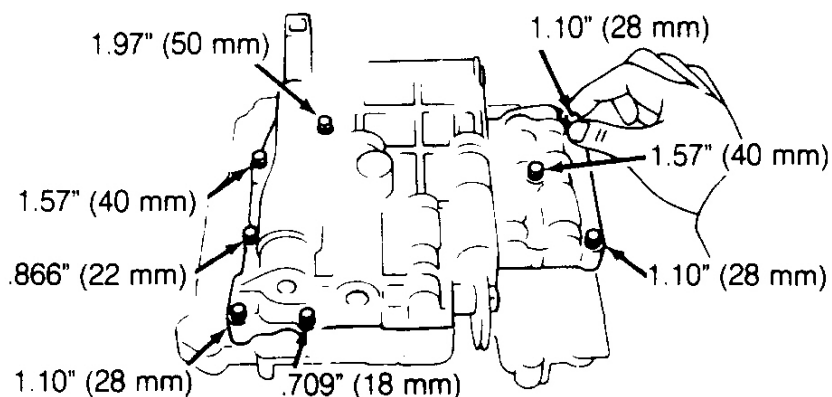


A-240E, A-241E & A-244E

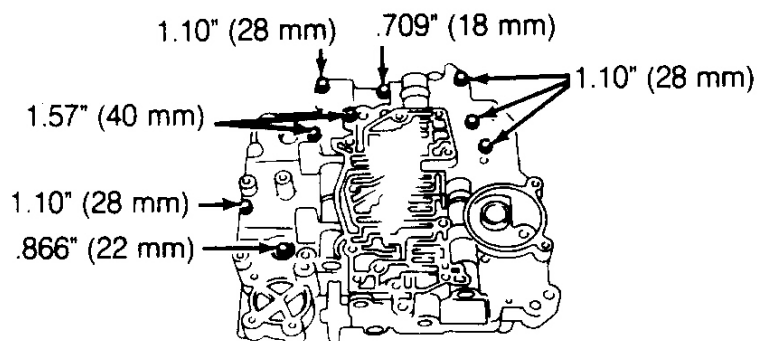
93F25614

Fig. 41: Identifying Upper & Lower Valve Body Cover Bolt Locations

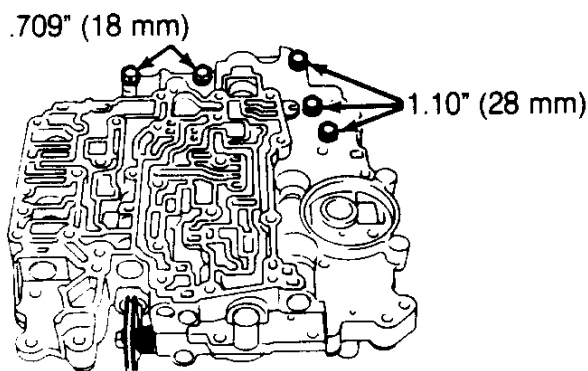
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



UPPER VALVE BODY



LOWER VALVE BODY
(A-240E, A-241E & A-244E)



LOWER VALVE BODY
(A-240L, A-241L & A-243L) 93G25615

Fig. 42: Identifying Valve Body Bolts

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

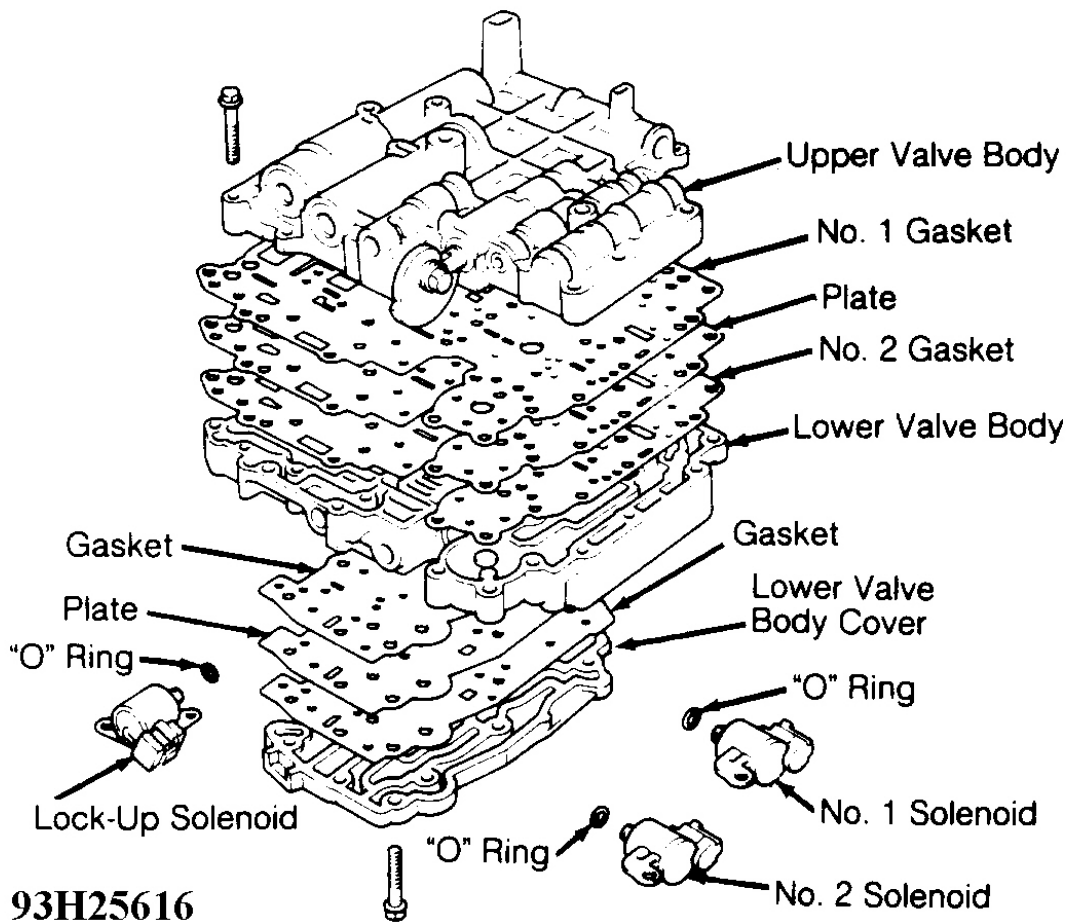


Fig. 43: Exploded View Of Control Valve Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A. INC.

Inspection

1. Clean all parts with solvent. Dry parts with compressed air. Ensure all valve body oil passages are clear. Inspect valves for scoring or roughness. Inspect valve springs for damage, squareness, rust and collapsed coils. Measure spring free length and outer diameter.
2. Replace spring if not within specification. See appropriate table under **VALVE BODY SPRING SPECIFICATIONS**. Ensure valve body springs correspond with appropriate valve. Ensure check balls, pins, retainers, strainers and vibrating stopper is installed in appropriate locations. See appropriate table under **VALVE BODY RETAINER SPECIFICATIONS** for retainer specifications. See **Fig. 45-48**.

VALVE BODY SPRING SPECIFICATIONS TABLES

UPPER VALVE BODY SPRING SPECIFICATIONS ⁽¹⁾

Spring No. ⁽²⁾	Diameter: In. (mm)	Free Length: In. (mm)
---------------------------	--------------------	-----------------------

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

1	.732 (18.60)	2.626 (66.70)
2	.201 (5.10)	.740 (18.80)
3		
A-240L	.327 (8.30)	1.165 (29.60)
A-241E & A-244E	.327 (8.30)	1.083 (27.50)
A-241L & A-243L	.327 (8.30)	1.169 (29.70)
4		
A-244E	.343 (8.70)	.957 (24.30)
Except A-244E	.343 (8.70)	1.173 (29.80)
5	.354 (9.00)	1.177 (29.90)
6	.362 (9.20)	1.150 (29.20)
7		
A-241L ⁽³⁾	.394 (10.00)	1.413 (35.90)
A-241E	.394 (10.00)	1.307 (33.20)
A-243L	.394 (10.00)	1.504 (38.20)
A-244E	.386 (9.80)	1.370 (34.80)

(1) A-240E specifications not available.

(2) For spring locations, see **Fig. 44**.

(3) A-240L specifications not available.

LOWER VALVE BODY SPRING SPECIFICATIONS ("E" SERIES)

Spring No. ⁽¹⁾	Diameter: In. (mm)	Free Length: In. (mm)
1	.472 (12.00)	.720 (18.30)
2	.252 (6.40)	.441 (11.20)
3	.382 (9.70)	1.213 (30.80)
4	.327 (8.30)	1.165 (29.60)
5	.323 (8.20)	1.181 (30.00)
6	.433 (11.00)	1.079 (27.40)
7 & 8	.382 (9.70)	1.213 (30.80)

(1) For spring locations, see **Fig. 46**.

LOWER VALVE BODY SPRING SPECIFICATIONS ("L" SERIES)

Spring No. ⁽¹⁾	Diameter: In. (mm)	Free Length: In. (mm)
1	.433 (11.00)	1.079 (27.40)
2	.252 (6.40)	1.071 (27.20)
3	.327 (8.30)	1.150 (29.20)
4	.327 (8.30)	1.091 (27.70)
5	.472 (12.00)	.720 (18.30)

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

6	.252 (6.40)	.441 (11.20)
7		
A-240L & A-243L	.327 (8.30)	1.091 (27.70)
A-241L	.323 (8.20)	1.374 (34.90)
8		
A-240L	.319 (8.10)	1.406 (35.70)
A-241L	.323 (8.20)	1.630 (41.40)
A-243L	.319 (8.10)	.717 (18.20)
9	.327 (8.30)	1.260 (32.00)
10	.276 (7.00)	1.217 (30.90)
(1) For spring locations, see Fig. 47 .		

VALVE BODY RETAINER SPECIFICATIONS TABLES**UPPER VALVE BODY RETAINER SPECIFICATIONS ⁽¹⁾**

Application (Letter ID) ⁽²⁾	Height: In. (mm)
Accumulator Control Valve ("A")	.591 (15.00)
Cut-Back Valve ("B")	.630 (16.00)
Low Or 2nd Coast Modulator Valve ("C")	.835 (21.20)
(1) Width is .197" (5.00 mm) for all retainers.	
(2) For retainer locations, see Fig. 45 .	

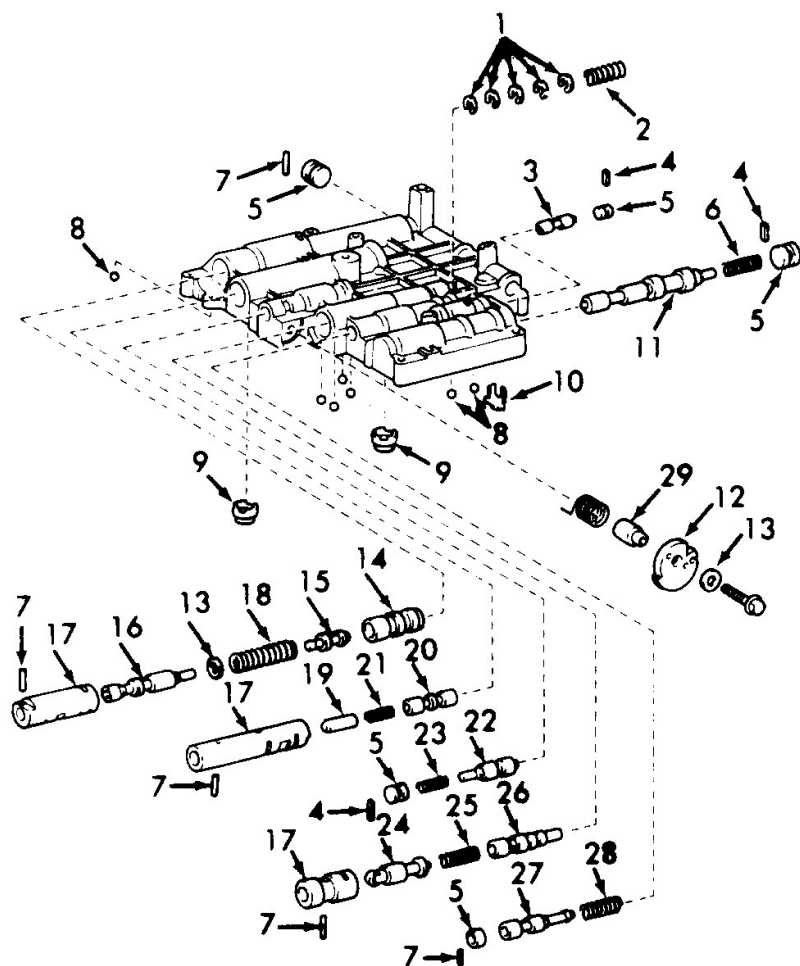
LOWER VALVE BODY RETAINER SPECIFICATIONS ⁽¹⁾ ("E" SERIES)

Application (Letter ID) ⁽²⁾	Height: In. (mm)
Secondary Regulator Valve ("A")	.362 (9.20)
All Other Valves	.453 (11.50)
(1) Width is .197" (5.00 mm) for all retainers.	
(2) For retainer locations, see Fig. 48 .	

LOWER VALVE BODY RETAINER SPECIFICATIONS ⁽¹⁾ ("L" SERIES)

Application (Letter ID) ⁽²⁾	Height: In. (mm)
3-4 Shift ("A"), Low Modulator ("C"), Lock-Up Signal ("F"), Detent Regulator ("G") & Low Coast Shift Valve ("J")	.453 (11.50)
2-3 Shift ("B"), Intermediate Shift ("D"), 1-2 Shift ("H"), & Secondary Regulator ("K") Valve	.362 (9.20)
3-4 Shift ("E") & 3rd Coast Shift Valve ("I")	.315 (8.00)
(1) Width is .197" (5.00 mm) for all retainers except ("E") and ("I"). Retainers ("E") and ("I") width is .236" (6.00 mm).	

(2) For retainer locations, see **Fig. 48**.



- | | |
|-------------------------------|---------------------------------|
| 1. Adjusting Rings | 16. Primary Regulator Valve |
| 2. Spring No. 6 | 17. Sleeve |
| 3. Cut-Back Valve | 18. Spring No. 1 |
| 4. Retainer | 19. Lock-Up Relay Control Valve |
| 5. Plug | 20. Lock-Up Relay Valve |
| 6. Spring No. 7 | 21. Spring No. 2 |
| 7. Pin | 22. Low Coast Modulator Valve |
| 8. Check Ball | 23. Spring No. 3 |
| 9. Strainer | 24. Down Shift Plug |
| 10. Vibrating Stopper | 25. Spring No. 4 |
| 11. Accumulator Control Valve | 26. Throttle Valve |
| 12. Cam | 27. Throttle Modulator Valve |
| 13. Washer | 28. Spring No. 5 |
| 14. Plunger Sleeve | 29. Cam Pin |
| 15. Plunger | |

93I25617

Fig. 44: Exploded View Of Upper Valve Body

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

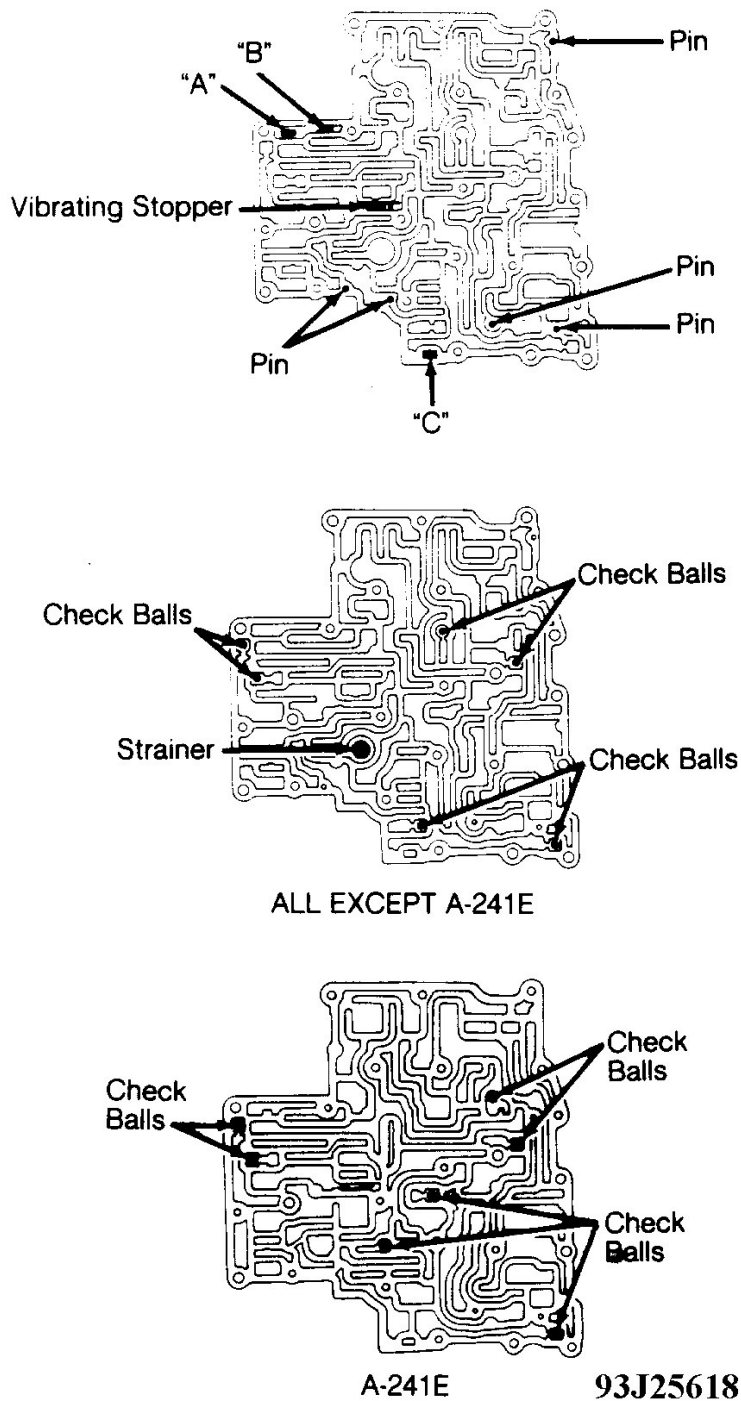
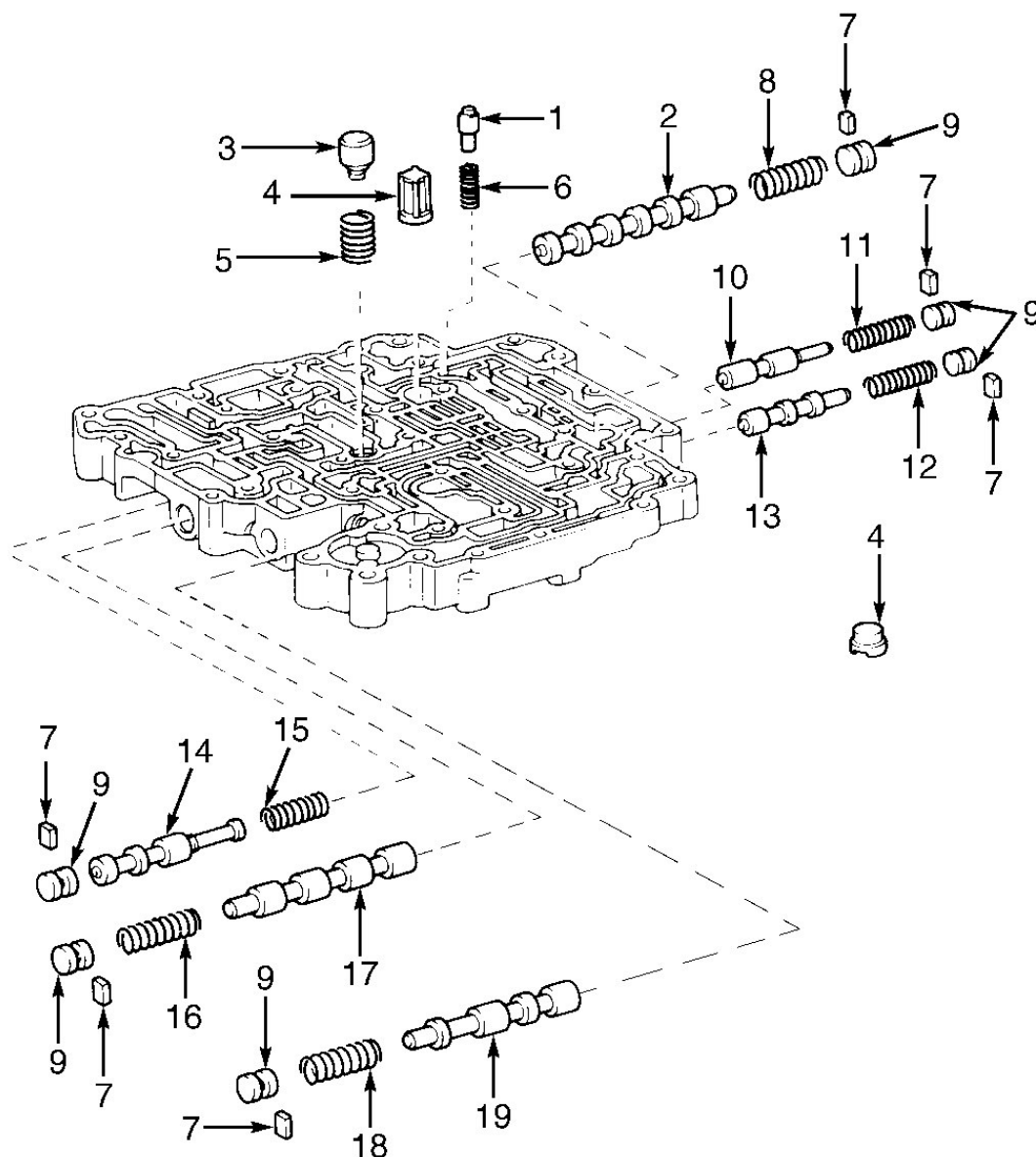


Fig. 45: Upper Valve Body Check Ball, Pin & Retainer Locations
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

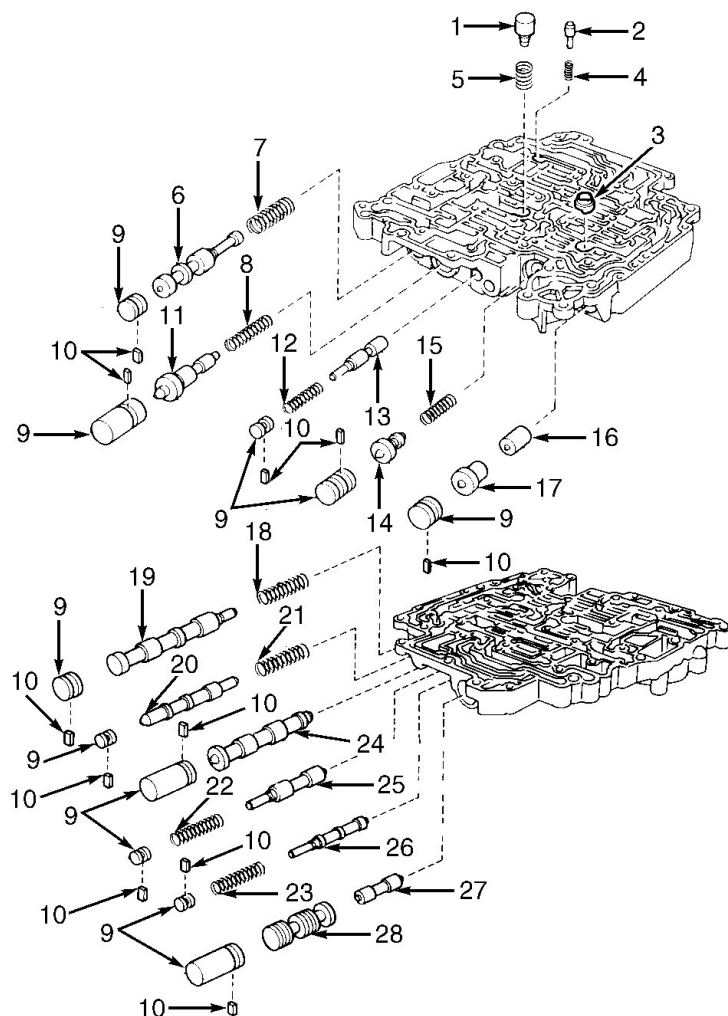


1. Pressure Relief Valve
2. 2-3 Shift Valve
3. Cooler By-Pass Valve
4. Strainer
5. Spring No. 1
6. Spring No. 2
7. Retainer
8. Spring No. 3
9. Plug
10. 2nd Coast Modulator Valve

11. Spring No. 4
12. Spring No. 5
13. Lock-Up Signal Valve
14. Secondary Regulator Valve
15. Spring No. 6
16. Spring No. 7
17. 1-2 Shift Valve
18. Spring No. 8
19. 3-4 Shift Valve

93A25619

Fig. 46: Exploded View Of Lower Valve Body (A-240E, A-241E & A-244E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



- | | |
|------------------------------|----------------------------|
| 1. Cooler By-Pass Valve | 15. Spring No. 4 |
| 2. Pressure Relief Valve | 16. 3-4 Coast Shift Valve |
| 3. Strainer | 17. 3rd Coast Shift Valve |
| 4. Spring No. 6 | 18. Spring No. 7 |
| 5. Spring No. 5 | 19. 3-4 Shift Valve |
| 6. Secondary Regulator Valve | 20. Lock-Up Signal Valve |
| 7. Spring No. 1 | 21. Spring No. 8 |
| 8. Spring No. 2 | 22. Spring No. 9 |
| 9. Plug | 23. Spring No. 10 |
| 10. Retainer | 24. 2-3 Shift Valve |
| 11. Low Modulator Valve | 25. Detent Regulator Valve |
| 12. Spring No. 3 | 26. 3-4 Switch Valve |
| 13. Low Coast Shift Valve | 27. 1-2 Shift Upper Valve |
| 14. Intermediate Shift Valve | 28. 1-2 Shift Lower Valve |

93D25620

Fig. 47: Exploded View Of Lower Valve Body (A-240L, A-241L & A-243L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

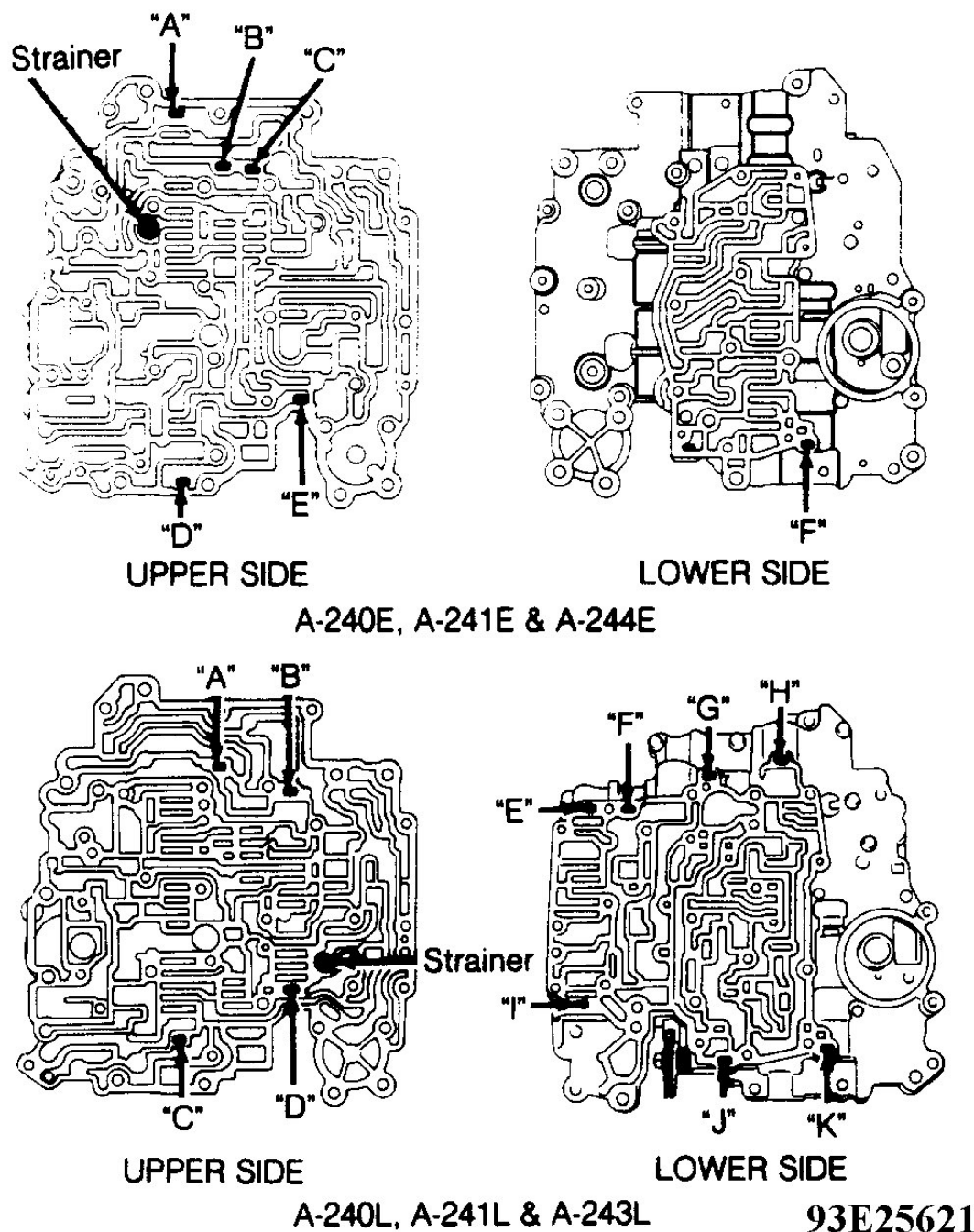


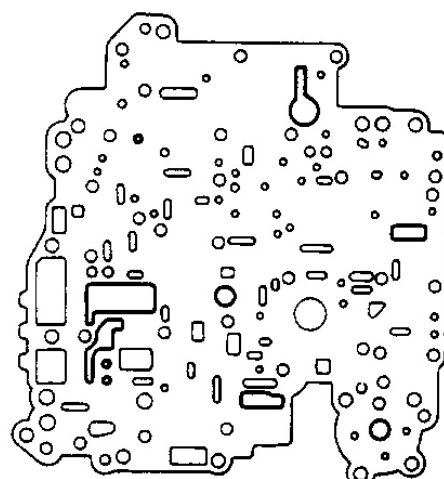
Fig. 48: Identifying Lower Valve Body Retainer Locations
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Reassembly

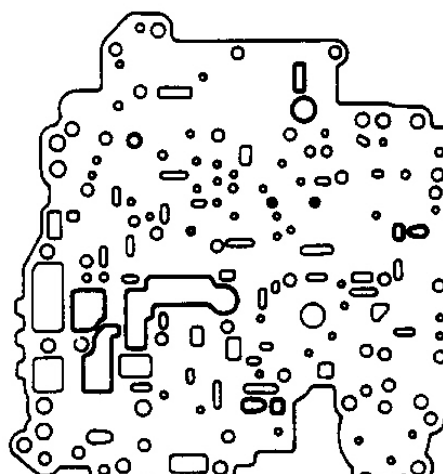
1. Coat all components with ATF. To reassemble, reverse disassembly procedure. Ensure check balls, pins,

strainer and vibrating stopper on lower side of upper valve body are installed correctly. See **Fig. 45**. Ensure retainers and strainer on lower valve body are installed correctly. See **Fig. 48**.

2. Position NEW No. 2 gasket, plate and NEW No. 1 gasket on lower valve body. Ensure gaskets are installed in correct locations. See **Fig. 49**. Place lower valve body with plate and gaskets on upper valve body. **DO NOT** let components separate. Align each bolt hole in valve bodies with gaskets and plate.
3. Install and finger tighten bolts in lower valve body to secure upper valve body. See **Fig. 42**. Install lower valve body cover over NEW gasket. Install and finger tighten cover bolts. See **Fig. 41**. Install and finger tighten bolts in upper valve body.
4. Ensure retainers are installed correctly. Position NEW gasket, plate and gasket. Tighten upper and lower valve body bolts to 56 INCH lbs. (6.4 N.m). Install NEW "O" rings on solenoids. Lubricate "O" rings with ATF and install solenoids. Tighten bolts for single solenoid to 56 INCH lbs. (6.5 N.m). Tighten bolts for 2 solenoids mounted together to 89 INCH lbs. (10 N.m).

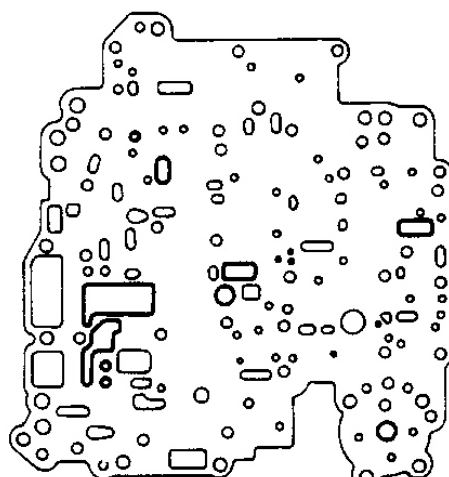


NO. 1 GASKET

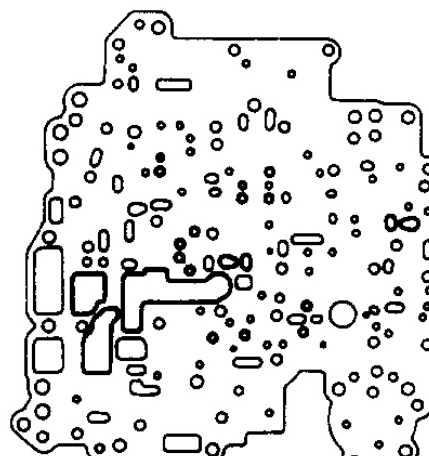


NO. 2 GASKET

A-240E, A-241E & A-244E



NO. 1 GASKET



NO. 2 GASKET

A-240L, A-241L & A-243L

93F25622

Fig. 49: Identifying Valve Body Gaskets

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DIFFERENTIAL

Disassembly

1. Mark ring gear and differential case for reassembly reference. Spread ring gear bolt locking tabs. Remove ring gear bolts and locking tabs. Using brass hammer, tap ring gear from differential case. Remove bearings from differential case using Puller (09502-10012). Remove speedometer drive gear.

2. Use a dial indicator to check side gear backlash. Hold one pinion against differential case. Measure side gear backlash. Backlash should be .002-.008" (.05-.20 mm). If backlash is not within specification, side gear thrust washers must be replaced.
3. Drive out pinion shaft lock pin from ring gear side. Remove pinion shaft, pinion gears, side gears, and thrust washers. See **Fig. 50**. Using a long screwdriver, remove oil seals from transaxle housing and transaxle case.
4. Using Race Remover/Installer (09351-32130) and Handle (09351-32150), remove bearing outer race and shim from transaxle case. Using Race and Seal Remover/Installer (09351-32090), remove bearing outer race and shim from transaxle housing.

Inspection

Clean all parts with solvent. Dry parts using compressed air. Check bearings and gears for wear or damage. Replace parts as necessary.

Reassembly

1. Using Race Remover/Installer (09351-32111) and Handle (09351-32130), install bearing outer race and shim in transaxle housing. Install bearing outer race and shim in transaxle case using race remover/installer and handle.
2. Select thrust washers that will ensure correct side gear backlash. Thrust washers are available in thicknesses of .037-.047" (.95-1.20 mm) in .002" (.05 mm) increments. Install thrust washers and side gears in differential case.
3. If possible, install same size thrust washers on both sides. Install pinion gears and pinion shaft. Check gear backlash to ensure proper thrust washers are used. When backlash is correct, using hammer and punch, drive lock pin through differential case and into pinion shaft. Stake differential case to retain lock pin.
4. Using Adapter (09710-03160) and press, install side bearing on differential case. Install speedometer drive gear on differential case. Using Adapters (09351-32090 and 09315-31120) and press, install side bearing on differential case on speedometer drive gear side.
5. Install differential in transaxle case. Install transaxle housing. Install bolts in correct locations and tighten bolts to 21 ft. lbs. (29 N.m). See **Fig. 51**. Measure differential bearing preload, using Differential Preload Adapter (09564-32011) and an INCH-lb. torque wrench. See **Fig. 52**.
6. Preload must be within specification. Refer to **DIFFERENTIAL PRELOAD SPECIFICATIONS**. If preload is incorrect, remove differential from transaxle case and replace adjusting shim under bearing. Adjusting shims are available in thicknesses of .079-.114" (2.00-2.90 mm) in .002" (.05 mm) increments. Preload will change approximately 2.6-3.5 INCH lbs. (.3-.4 N.m) with each shim thickness.
7. When correct preload is obtained, remove differential from transaxle case. Install ring gear on differential case. Clean ring gear and mounting surface. Heat ring gear to 212°F (100°C) in an oil bath. **DO NOT** heat ring gear at temperatures greater than 230°F (110°C). Align ring gear on differential case and install NEW bolts. Tighten bolts evenly to 72 ft. lbs. (97 N.m). See **Fig. 51**.
8. Stake locking tabs. Stake one tab flush with flat surface of nut. Stake 2nd tab against corner of nut on tightening side. Coat lip of oil seals with multipurpose grease. Use Seal Installer (09351-32150) and handle to install oil seals.

DIFFERENTIAL PRELOAD SPECIFICATIONS

Application	INCH Lbs. (N.m)
New Bearings	7.1-12.4 (.8-1.4)
Used Bearings	3.5-6.2 (.4-.7)

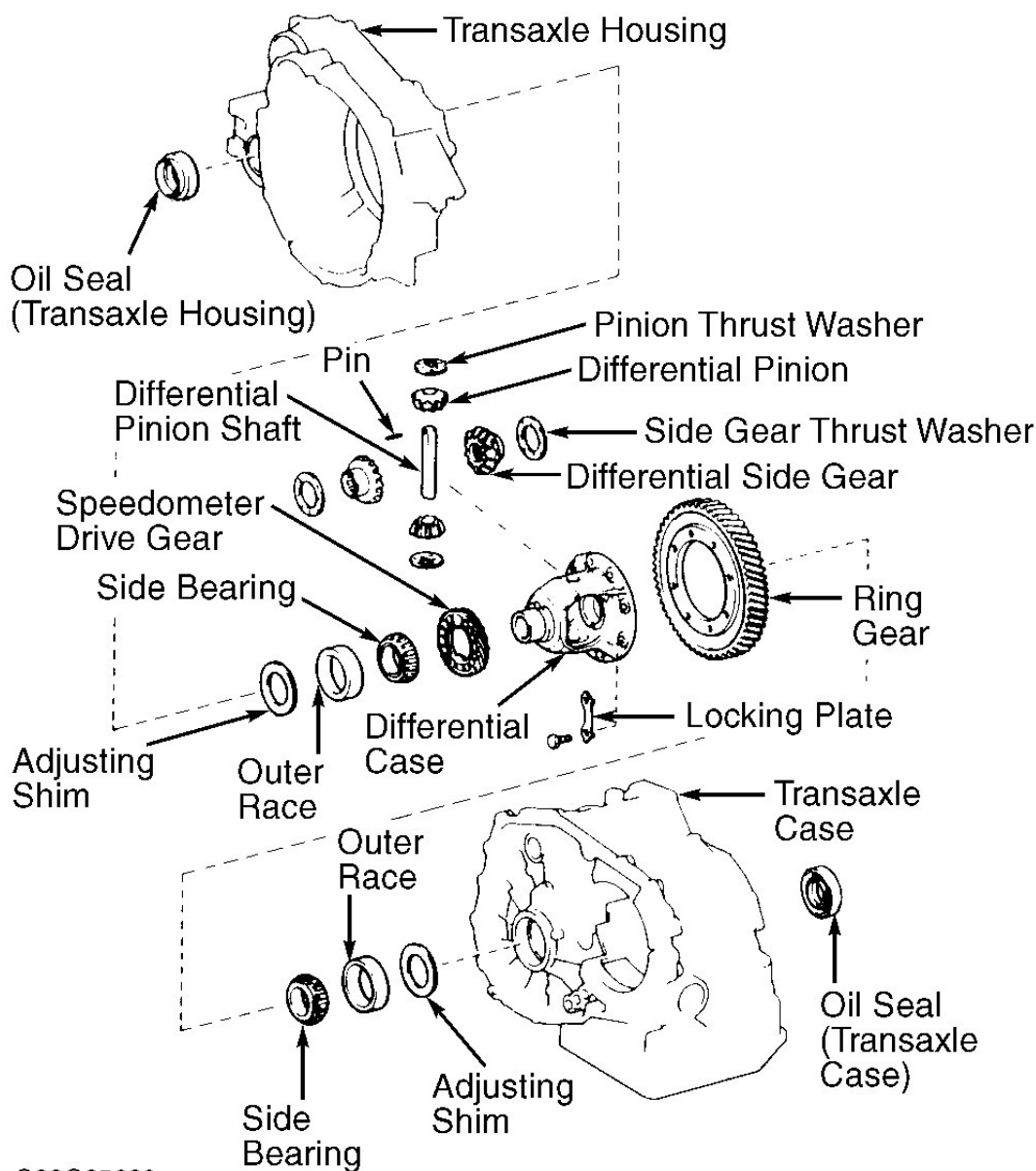


Fig. 50: Exploded View Of Differential Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

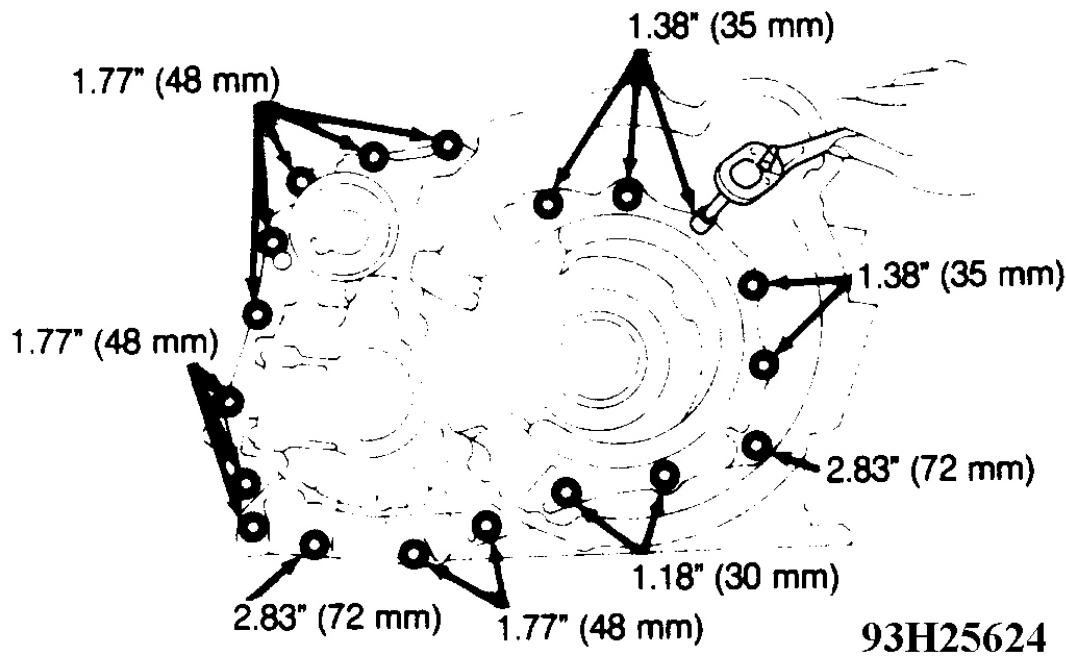


Fig. 51: Installing Transaxle Housing Bolts
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

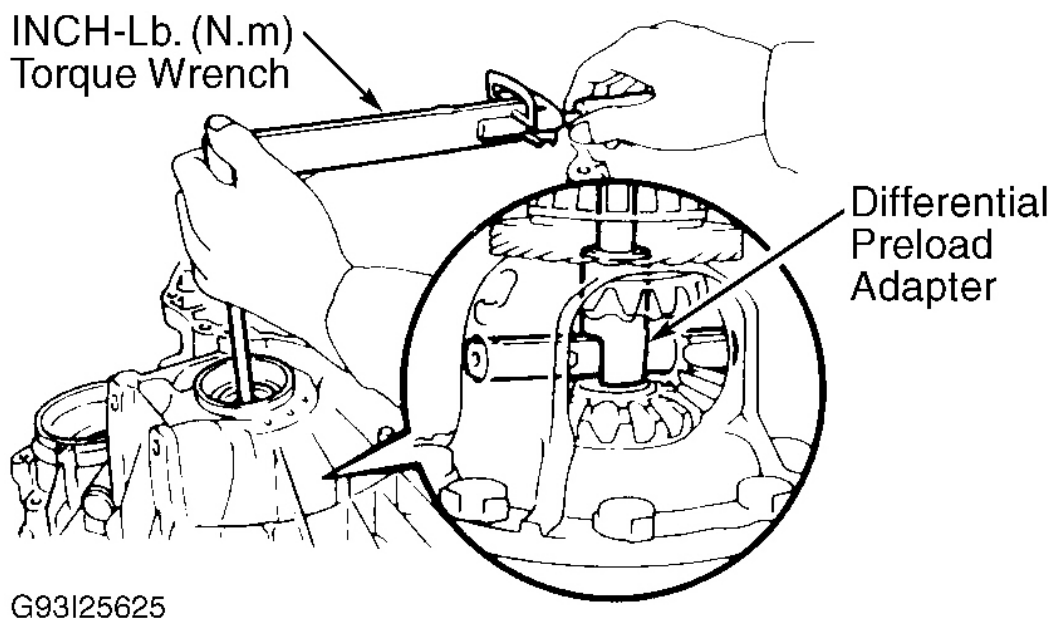


Fig. 52: Measuring Differential Bearing Preload

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSAXLE REASSEMBLY

NOTE: Coat all oil seal rings, discs, plates, rotating parts and sliding surfaces with ATF prior to reassembly. Use petroleum jelly to hold parts in place. Discs should be soaked in ATF for at least 15 minutes prior to installation. For bearing race and thrust bearing specifications, see refer to the **BEARING RACE & THRUST BEARING SPECIFICATIONS**. For bearing race and thrust bearing locations, see **Fig. 55**.

1. Using Bearing Installer (09351-32140) and press, install bearing in transaxle housing. Install bearing stopper. Install oil tube apply cover and gasket. Install oil tubes. Install oil tube clamps. Using Bearing Installer (09351-32090), install bearing in transaxle case. Install underdrive brake accumulator piston and spring. See **Fig. 18**.
2. Install oil gallery cover and gasket. Tighten bolts to 89 INCH lbs. (10 N.m). Apply Seal Packing 3 Bond (1324) to screws for oil gallery cover. Install screws and tighten.
3. Install manual shaft, washer, spacer and lever. Install retaining spring. Ensure washer is located between retaining spring and transaxle case. Install pin. Stake spacer in proper position. See **Fig. 10**. Install cam guide bracket.
4. Install parking lock rod in guide bracket. Install parking lock sleeve with raised portion up. Install stopper plate on raised portion of lock sleeve. Install guide sleeve and spring. Install parking lock pawl, pawl shaft and shaft clamp. See **Fig. 18**.
5. Install NEW "O" rings on 1st and reverse brake piston. Lubricate "O" rings with ATF. Using Piston Spring Compressor (09351-32040), press 1st and reverse brake piston into transaxle case. Install piston return spring and snap ring. Avoid bending spring retainer by overtightening bolt. Ensure snap ring is fully seated and centered by 3 lugs on spring retainer. Ensure end gap of snap ring is not aligned with spring retainer claw.
6. Install underdrive brake piston "O" rings. Coat "O" rings with ATF. Install piston in transaxle case with cup side upward. Use care not to damage "O" rings. Install brake piston return spring. Install 3 plates and 3 discs. Start with plate and alternate with disc ending with disc. Install flange with flat end down.
7. Using Spring Compressor (09351-32070), compress return spring. Install snap ring. Ensure snap ring end gap is not aligned with cutout. Using compressed air, confirm underdrive brake piston moves smoothly. See **Fig. 19**. Install oil seal rings to transaxle case.
8. Install underdrive one-way clutch assembly. Install anti-rattle clip. Align clutch disc tabs and install underdrive clutch assembly. Check operation of underdrive one-way clutch. Clutch should turn freely counterclockwise and lock clockwise.
9. Measure clutch assembly height from sleeve to inner race. Height should be .681-.717" (17.29-18.21 mm). Check underdrive clutch piston stroke. Position dial indicator stem on underdrive clutch assembly. Apply compressed air to oil passage in transaxle case. See **Fig. 19**.
10. For A-240E and A-241L transaxles, piston stroke should be .058-.074" (1.47-1.89 mm). For A-240L and A-244E transaxles, piston stroke should be .059-.073" (1.50-1.86 mm). For A-241E and A-243L transaxles, piston stroke should be .048-.061" (1.21-1.55 mm). If piston stroke is less than specification, parts may be installed incorrectly. If parts are installed correctly, flange may be incorrect size.

11. Flange is available in thicknesses of .080" (2.04 mm) and .094" (2.40 mm) for A-240E, A-240L, A-241L and A-244E. Flange is available in thicknesses of .091" (2.30 mm), .098" (2.50 mm) and .106" (2.70 mm) for A-241E and A-243L transaxle. Install thrust bearing "G". See **Fig. 55**. Install sun gear in transaxle case.
12. Align clutch disc tabs in underdrive clutch. Install countershaft assembly. Check countershaft height. Using calipers, measure distance from tip of countershaft to bolt seat of clutch support. Countershaft height should be 1.311-1.398" (33.30-35.50 mm).
13. Install thrust bearing "F". See **Fig. 55**. Using Installer (09223-32040), install counterdriven gear. Install NEW lock nut. Using holder and adapter, tighten lock nut to 116 ft. lbs. (157 N.m) on A-240L transaxle, and 130-159 ft. lbs. (177-216 N.m) for all other transaxles. Using a dial indicator, measure countershaft end play. End play should be .009-.035" (.23-.89 mm). Stake lock nut. Install snap ring in transaxle case.
14. Install intermediate shaft. Apply Loctite (518) to rear cover sealing areas. Install transaxle rear cover and bolts. Ensure bolts are installed in correct locations. See **Fig. 53**. Tighten bolts to 21 ft. lbs. (29 N.m). Install apply gaskets in transaxle case. Install thrust washer and governor driven gear. See **Fig. 18**. Ensure intermediate shaft rotates smoothly.

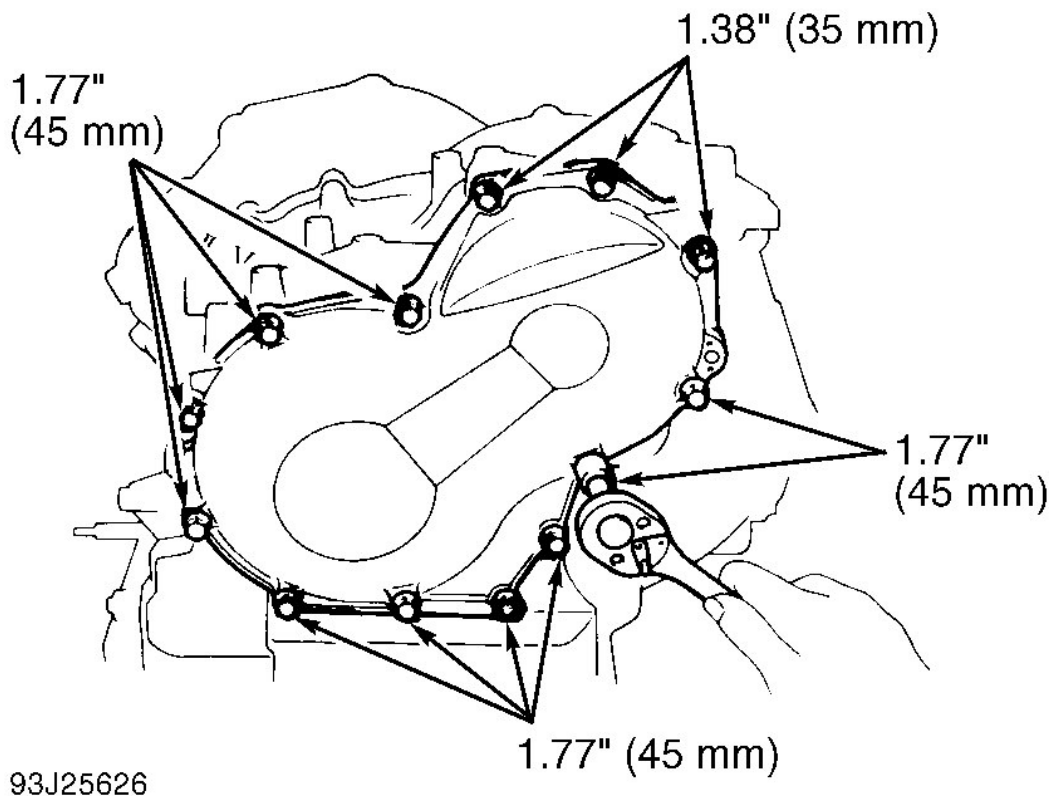


Fig. 53: Identifying Transaxle Rear Cover Bolts
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

15. Install 1st and reverse brake components in transaxle case. Install inner flange with flat end facing upward. Install discs and plates. Start with disc, alternate with plate, ending with disc. Install outer flange with flat area facing inward. Install snap ring in groove. Ensure end gap does not align with transaxle case cutout.
16. Check 1st and reverse brake operation. Apply light air pressure to oil passage. See **Fig. 17**. Ensure piston moves smoothly. Install thrust bearing and races "A" in rear planetary ring gear. See **Fig. 55**. Align disc tabs. Install rear planetary ring gear in transaxle case. Install thrust washer on rear planetary gear. Ensure tabs align with grooves of gear.
17. Align spline of planetary gear with tabs of 1st and reverse brake discs. Install rear planetary gear into 1st and reverse brake. Ensure inner surface of rear planetary gear is below upper surface of flange. Install No. 2 one-way clutch with shiny side upward. Rotate planetary gear clockwise while installing No. 2 one-way clutch.
18. Check No. 2 one-way clutch operation. Planetary gear should rotate clockwise and lock counterclockwise. Install thrust washer on planetary gear. Install snap ring. Ensure end gap of snap ring is not aligned with case cutouts.
19. Install 2nd coast brake band guide with tip contacting transaxle case. Install 2nd brake flange with flat end facing upward. Install 3 discs and 3 plates, starting with disc, alternating with plate and ending with plate. Install piston return spring assembly with springs over case protrusions. Align 2nd brake drum groove with bolt in transaxle case.
20. Install 2nd brake drum. Install snap ring in groove while compressing piston return springs with hammer handles. Ensure end gap of snap ring is not aligned with transaxle case cutouts. Install 2nd brake drum gasket in center oil passage until it contacts 2nd brake drum. Apply compressed air into 2nd brake oil passage in transaxle case. Ensure 2nd brake piston operates smoothly. See **Fig. 16**.
21. Align 2nd brake disc tabs. Install No. 1 one-way clutch and 2nd brake hub. Check distance between surface of 2nd brake hub and rear planetary gear. Distance should be approximately .20" (5.0 mm). Install thrust washer on sun gear input drum. Install sun gear and sun gear input drum. Rotate sun gear clockwise while installing gear into one-way clutch.
22. Install thrust bearing and race "B" on front planetary gear. See **Fig. 55**. Install planetary gear. Install thrust bearing and race "C" on front planetary ring gear. See **Fig. 55**. Install front planetary ring gear. Install intermediate shaft oil seal ring.
23. If components installed in transaxle case are correctly installed, end of ring gear flange bushing will be even or slightly lower than intermediate shaft shoulder. Install thrust bearing and races "D" on tip of ring gear flange. Install 2nd coast brake band into transaxle case. Install pin through oil pump mounting bolt hole.
24. Install thrust bearing and race "E" on forward clutch drum. See **Fig. 55**. Install clutch drum thrust washer on direct clutch drum with oil groove facing upward. Align clutch disc tabs. Install direct clutch into forward clutch. If tabs are aligned with hub correctly, end of direct clutch drum bushing will be flush with surfaces of forward clutch.
25. Rotate forward clutch to mesh with front planetary gear and discs. Install direct clutch and forward clutch into transaxle case. Install differential. Apply Loctite (518) to transaxle housing. Install transaxle housing. Install mounting bolts in original locations. See **Fig. 52**. Tighten bolts to 21 ft. lbs. (29 N.m). Check differential side bearing preload. See **DIFFERENTIAL** under COMPONENT DISASSEMBLY & REASSEMBLY.
26. Install race on stator shaft. Install "O" ring on oil pump. Install oil pump. Hold input shaft and tightly press oil pump body to slide oil seal rings on stator shaft through direct clutch drum. Install and tighten

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

bolts to 18 ft. lbs. (25 N.m).

NOTE: **DO NOT apply excessive pressure on oil pump. Seal rings will stick to direct clutch drum if excessive pressure is used.**

27. Ensure input shaft rotates smoothly. Using a dial indicator, measure input shaft end play. End play should be .012-.035" (.30-.90 mm). Replace oil pump race if end play is incorrect. Oil pump races are available in thicknesses of .031" (.80 mm) and .055" (1.40 mm).
28. Install spring, 2nd coast brake piston and cover into bore. Install snap ring. Ensure front end of piston rod contacts center of 2nd brake band depression. Measure 2nd coast brake piston stroke by applying compressed air to oil passage in transaxle case. See **Fig. 33**.
29. Piston stroke should be .059-.118" (1.50-3.00 mm). Replace piston rod with different length rod if not within specification. Piston rods are available in lengths of 2.811" (71.39 mm) and 2.870" (72.89 mm).
30. Recheck piston stroke after changing piston rod. If stroke still exceeds specification, replace 2nd coast brake band. Coat accumulator piston "O" rings with ATF. Install "O" rings on accumulator pistons. Measure spring free length and replace as necessary.
31. See **ACCUMULATOR SPRING SPECIFICATIONS**. Install pistons and springs in transaxle case. See **Fig. 54**. Install accumulator cover and NEW gasket. Tighten bolts to 89 INCH lbs. (10 N.m).

ACCUMULATOR SPRING SPECIFICATIONS (1)

Application	Free Length: In. (mm)
A-240E	
Direct Clutch	2.500 (63.50)
Forward Clutch - Inner Spring	1.673 (42.50)
Forward Clutch - Outer Spring	3.063 (77.80)
Underdrive Clutch	2.420 (61.47)
2nd Brake - No. 1	1.385 (35.18)
2nd Brake - No. 2	2.232 (56.68)
A-240L	
Direct Clutch	2.551 (64.80)
Forward Clutch -	1.673 (42.50)

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

Inner Spring	
Forward Clutch - Outer Spring	3.063 (77.80)
Underdrive Clutch	2.548 (64.72)
2nd Brake - No. 1	1.385 (35.18)
2nd Brake - No. 2	2.232 (56.68)
A-241E	
Direct Clutch	2.462 (62.54)
Forward Clutch - Inner Spring	1.614 (41.00)
Forward Clutch - Outer Spring	2.917 (74.10)
Underdrive Clutch - Inner Spring	1.890 (48.00)
Underdrive Clutch - Outer Spring	2.570 (65.20)
2nd Brake	2.539 (64.50)
A-241L	
Direct Clutch	2.656 (67.45)
Forward Clutch - Inner Spring	1.457 (37.00)
Forward Clutch - Outer Spring	3.063 (77.80)
Underdrive Clutch -	2.231 (56.68)

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

Inner Spring	
Underdrive Clutch - Outer Spring	.551 (14.00)
2nd Brake	2.626 (66.70)
A-243L	
Direct Clutch	2.817 (71.54)
Forward Clutch - Inner Spring	1.673 (42.50)
Forward Clutch - Outer Spring	3.063 (77.80)
Underdrive Clutch	2.420 (61.47)
2nd Brake	2.231 (56.68)
A-244E	
Direct Clutch	2.446 (62.12)
Forward Clutch - Inner Spring	1.457 (37.00)
Forward Clutch - Outer Spring	3.063 (77.80)
Underdrive Clutch - No. 1	.551 (14.00)
Underdrive Clutch - No. 2	2.231 (56.68)
2nd Brake	2.314 (58.77)
(1) For accumulator spring locations, see Fig. 54 .	

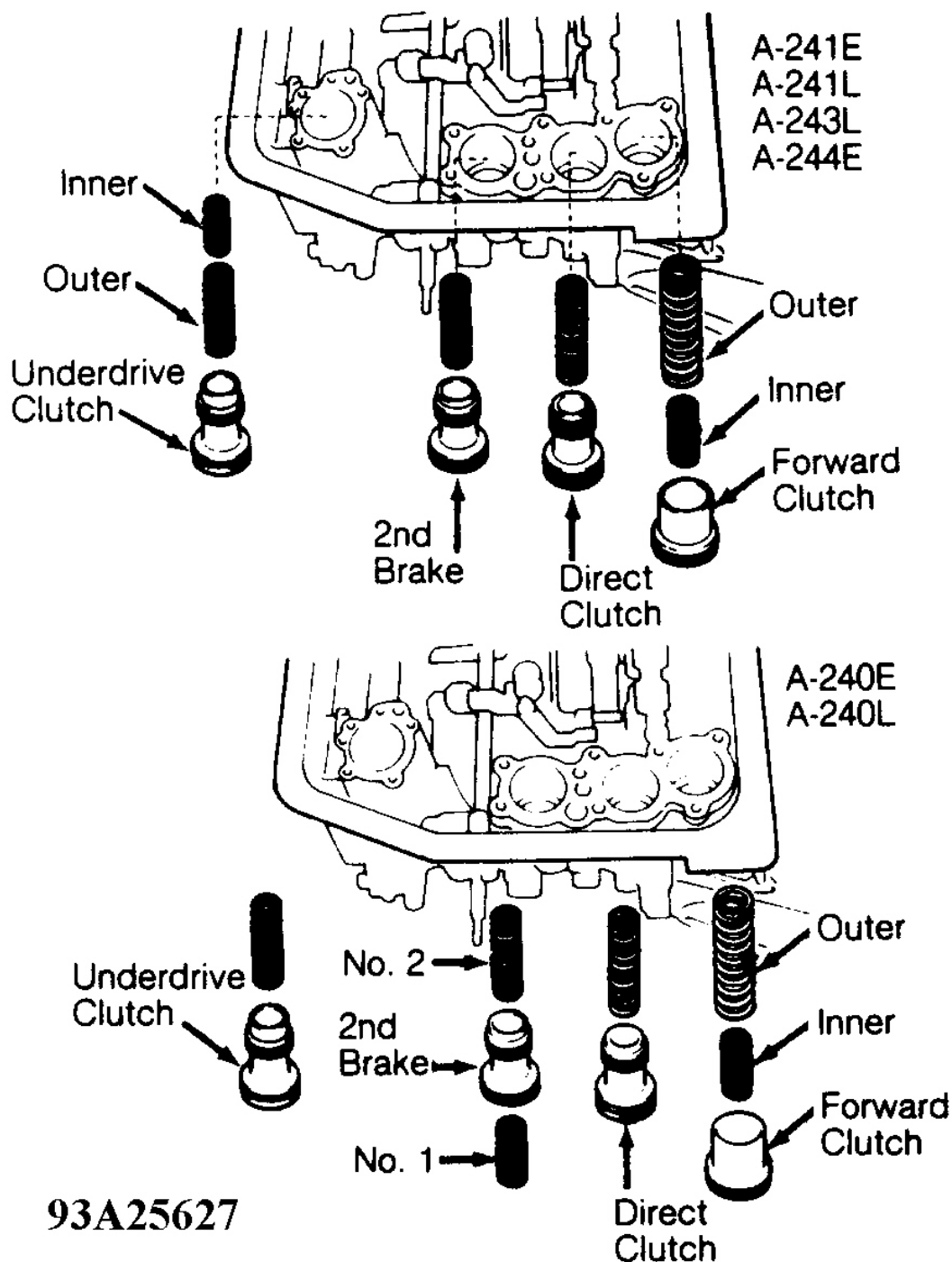


Fig. 54: Identifying Accumulator Pistons & Springs
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

32. Install 2nd brake apply gasket. Install throttle cable. Use care not to damage "O" ring. Ensure cable is

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

fully seated in transaxle case. Install solenoid wire(s) in transaxle case. Install control valve assembly. See **CONTROL VALVE ASSEMBLY** under ON-VEHICLE SERVICE. Ensure proper length bolt is installed in proper location. Connect solenoid wiring.

33. Install manual detent spring and cover. Install bolt and tighten bolt to 89 INCH lbs. (10 N.m). Ensure manual valve lever is in contact with center of roller at tip of detent spring. Install oil tubes. Install oil tube clamp and bracket. Tighten bolts to 89 INCH lbs. (10 N.m). Install NEW oil strainer gasket and oil strainer.
34. Install magnet(s) in oil pan. Install NEW oil pan gasket and install oil pan. Tighten oil pan bolts to 43 INCH lbs. (4.9 N.m). Install speed sensor and sensor rotor (if equipped). Install NEW "O" ring on sensor cover and install cover. Install sensor bracket and tighten bolts to 115 INCH lbs. (13 N.m).
35. On A-240L, A-241L and A-243L transaxles, install governor oil strainer. Install NEW gasket to governor body adapter. Install governor body adapter, governor body and thrust washer. Install NEW "O" ring on cover. Install cover and cover brackets. Tighten bracket bolts to 115 INCH lbs. (13 N.m). Install throttle cable and solenoid lock plates.
36. On all transaxles, install oil cooler pipe unions (if necessary). Install neutral safety switch to manual valve shaft. Install packing, nut, stopper and nut. Tighten nut to 61 INCH lbs. (6.9 N.m). Adjust neutral safety switch (if necessary) and tighten adjusting bolts to 48 INCH lbs. (5.4 N.m). Stake nut to stopper. Install manual shift lever and tighten nut. Install filler tube and dipstick. Install oil cooler pipes.
37. Install the torque converter on the transaxle. Using a straightedge and calipers, measure the torque converter installed depth. For torque converter installed depth specifications, refer to the **TORQUE CONVERTER DEPTH SPECIFICATIONS**. Also, refer to **Fig. 56**.

TORQUE CONVERTER DEPTH SPECIFICATIONS

Application	In. (mm)
Celica	
A4-GZE	.898 (22.80)
5S-FE	.657 (16.70)
Corolla	.906 (23.00)
MR2	.510 (13.00)
Paseo	.528 (13.40)
Prizm	.787 (20.00)

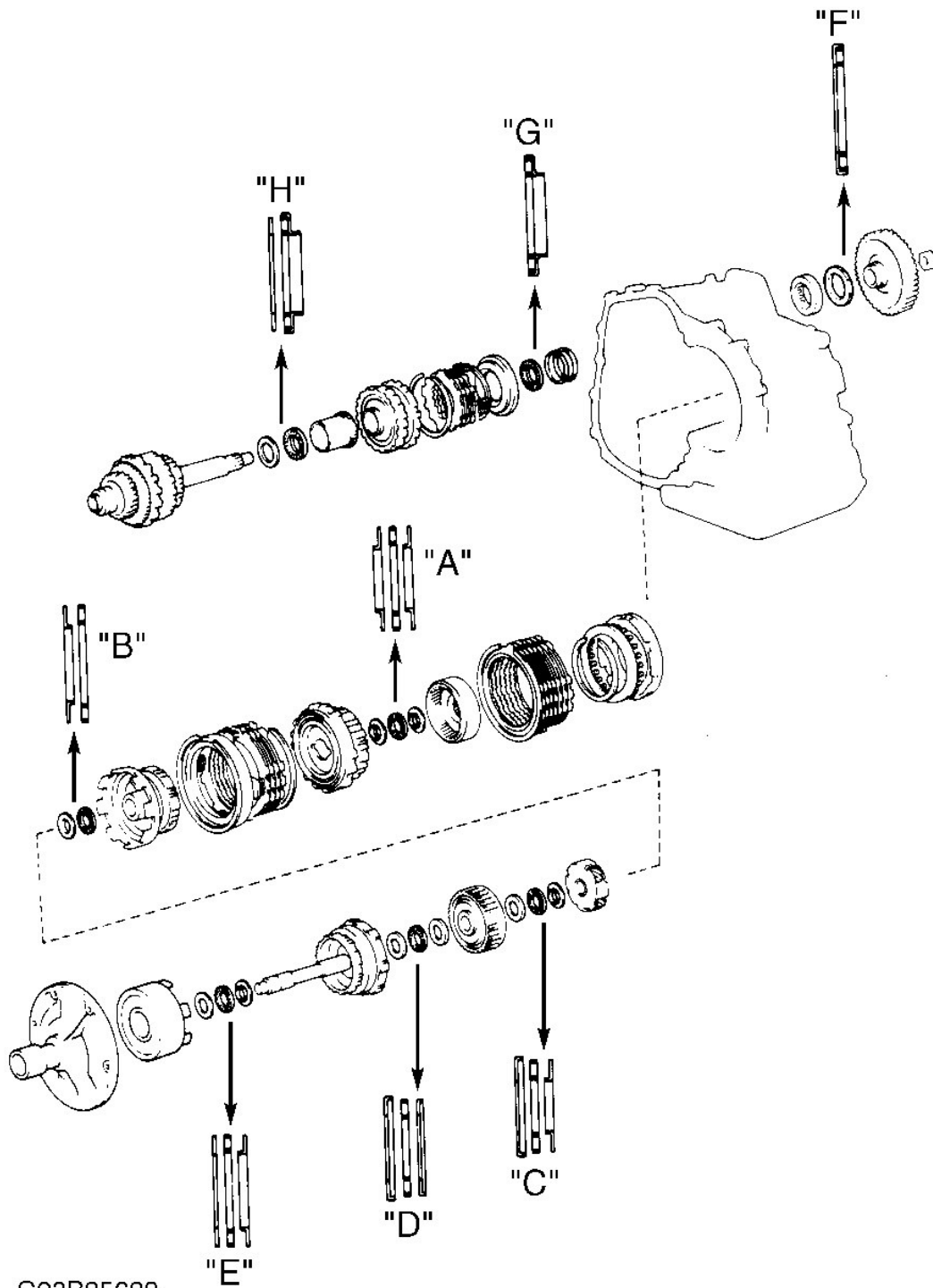
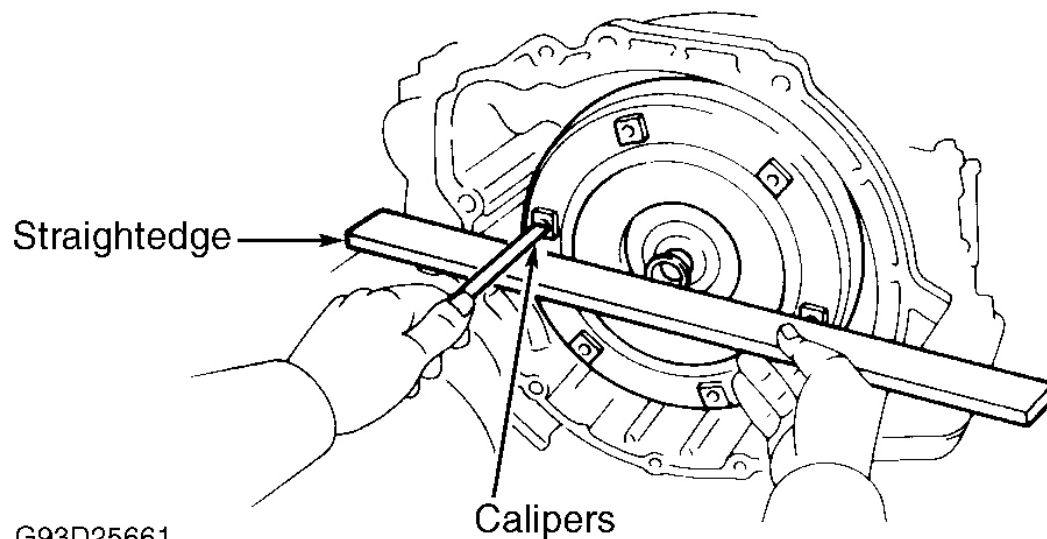


Fig. 55: Identifying Bearing Race & Thrust Bearing Locations
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G93D25661

Fig. 56: Measuring Torque Converter Depth
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

BEARING RACE & THRUST BEARING SPECIFICATIONS

Application (Letter ID) ^{(1) (2)}	Outer Diameter In. (mm)
Front Bearing Race	
"A"	1.469 (37.30)
"B"	1.772 (45.00)
"C" & "D"	1.492 (37.90)
"E"	1.693 (43.00)
"F" & "G"	N/A
"H" ⁽³⁾	1.646 (41.80)
Thrust Bearing - A-241E, A-241L & A-243L	
"A"	1.480 (37.60)
"B"	1.772 (45.00)
"C" & "D"	1.421 (36.10)
"E"	1.654 (42.00)
"F"	2.272 (57.70)
"G" (A-244E)	1.720 (43.70)
"G" (Except A-244E)	1.780 (45.20)
"H" ⁽³⁾ - A-240L	1.780 (45.20)
"H" ⁽³⁾ - A-241E, A-241L & A-243L	1.720 (43.70)
Rear Bearing Race	

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

"A"	1.480 (37.60)
"B"	N/A
"C"	1.378 (35.00)
"D"	1.406 (35.70)
"E"	1.654 (42.00)
"F", "G" & "H"	N/A

(1) For bearing race and thrust bearing locations, see **Fig. 55**.

(2) Specifications for A-240E transaxle are not available.

(3) Bearing race and thrust bearing "H" is located on countershaft.

TORQUE SPECIFICATIONS**TORQUE SPECIFICATIONS**

Application	Ft. Lbs. (N.m)
Converter-To-Drive Plate Bolt	
Paseo	18 (25)
All Other Models	20 (27)
Countershaft Lock Nut	
A-240L	116-142 (157-193)
All Other Transaxles	130-159 (177-216)
Drive Plate Mounting Bolt	
Paseo	8 (25)
All Other Models	20 (27)
Oil Cooler Union Nut	25 (34)
Oil Pan Drain Plug	13 (18)
Oil Pump Mounting Bolt	18 (25)
Ring Gear Bolt	72 (97)
Transaxle Housing Mounting Bolt	21 (29)
Transaxle Rear Cover Bolt	21 (29)
	INCH lb. (N.m)
Accumulator Cover Bolt	89 (10)
Brake Band Guide Bolt	48 (5.4)
Neutral Safety Switch	
Adjusting Bolt	48 (5.4)
Retaining Nut	61 (6.9)
Oil Pan Bolt	43 (4.9)
Oil Pump Stator Shaft Bolt	89 (10)
Oil Strainer Bolt	89 (10)
Oil Tube Clamp Bolt	89 (10)
Parking Lock Pawl Bracket Bolt	65 (7.4)

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

Sensor Bracket Bolt	115 (13)
Sensor Cover Bolt	48 (5.4)
Solenoid Bolt	
Single Solenoid Bolt	56 (6.5)
Other Solenoids (2) Bolt	89 (10)
Upper Valve Body-To-Lower Valve Body Bolt	56 (6.4)
Underdrive Brake Accumulator	
Bolt	89 (10)
Screw	65 (7.4)

TRANSMISSION SPECIFICATIONS**TRANSMISSION SPECIFICATIONS**

Application	In. (mm)
Countershaft End Play	.009-.035 (.23-.89)
Countershaft Height	1.311-1.398 (33.30-35.50)
Bushing Inside Diameter	
Direct Clutch	1.853 (47.07)
Oil Pump Body	1.503 (38.18)
Ring Gear Flange	.749-.750 (19.03-19.05)
Stator Shaft	
Front	.849 (21.57)
Rear	1.066 (27.07)
Sun Gear Flange	.867-.868 (22.03-22.05)
Underdrive Clutch (Front) - Standard	1.831-1.832 (46.50-46.55)
Underdrive Clutch (Front) - Maximum	1.833 (45.57)
Underdrive Clutch (Rear) - Standard	2.165-2.167 (55.00-55.03)
Underdrive Clutch (Rear) - Maximum	2.169 (55.08)
Input Shaft End Play	.012-.035 (.30-.90)
Piston Stroke	
Direct Clutch - A-240E	.045-.059 (1.13-1.50)
Direct Clutch - A-240L	.054-.067 (1.37-1.70)
Direct Clutch - A-241L & A-241E	.044-.058 (1.11-1.47)
Direct Clutch - A-243L & A-244E	.064-.078 (1.63-1.97)
Forward Clutch - A-244E	.044-.058 (1.11-1.47)
Forward Clutch - All Other Transaxles	.056-.071 (1.42-1.81)
Underdrive Clutch - A-240E & A-241L	.058-.074 (1.47-1.89)
Underdrive Clutch - A-240L, A-243L & A-244E	.059-.073 (1.50-1.86)
Underdrive Clutch - A-241E	.048-.061 (1.21-1.55)

1991 Toyota Corolla

1988-94 AUTOMATIC TRANSMISSIONS General Motors Corp. - Toyota A-240E/L, 244L & 245E Overhaul

2nd Coast Brake	.059-.118 (1.50-3.00)
Planetary Pinion Gear Thrust Clearance	.008-.020 (.20-.50)
Side Gear Backlash	.002-.008 (.05-.20)