1995-96 AUTOMATIC TRANSMISSIONS

Toyota A-340 & A-343 Series Overhaul

APPLICATION

APPLICATION

Vehicle Model	Transmission Model
Land Cruiser	A-343F
LX450	A-343F
Pickup	
2WD V6	A-340E
4WD 4-Cyl.	A-340F
4WD V6	A-340H
AWD	A-340F
Tacoma	
2WD V6	
Manual Steering	
With A/C	A-340E
Without A/C	A-340E
Power Steering	
With A/C	A-340E
Without A/C	A-340E
4WD 4-Cyl.	A-340F
4WD V6	A-340F
T-100	
2WD 4-Cyl.	
With A/C	A-340E
Without A/C	A-340E
2WD V6	
With A/C	A-340E
Without A/C	A-340E
4WD V6	A-340F
4Runner	
1995	
2WD V6	A-340E
4WD 4-Cyl.	A-340F
4WD V6	A-340H
1996	
2WD 4-Cyl.	A-340E
2WD V6	A-340E
4WD 4-Cyl.	A-340F

4WD V6	A-340F

CAUTION: Most models are equipped with a Supplemental Restraint System (SRS). When servicing vehicle, use care to avoid accidental air bag deployment. All SRS electrical connections and wiring harness are covered by Yellow insulation. SRS-related components are located in steering column, center console, instrument panel and lower panel on instrument panel. DO NOT use electrical test equipment on these circuits. If necessary, deactivate SRS before servicing components. See AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

IDENTIFICATION

Vehicle Identification Number (VIN) is located on front right side frame, top left of instrument panel, driver-side door post and front cowl of engine compartment. Fifth digit denotes transmission type.

DESCRIPTION

INTRODUCTION

All A-340 series automatic transmissions are 4-speed Electronic Controlled Transmissions (ECT).

Solenoids that control shifts are located in valve body. Transmission consists of lock-up type torque converter, overdrive planetary gear unit, planetary gear unit, hydraulic control system and electronic control system. See **Fig. 1**.

Solenoids are controlled by an Electronic Controlled Transmission (ECT) Electronic Control Unit (ECU). Control unit is referred to as the ECT ECU. For electronic diagnosis, see appropriate ELECTRONIC CONTROLS article. The ECT ECU receives information from various input devices and uses this information to control solenoids for transmission shifting and lock-up solenoid for torque converter lock-up.

An Overdrive (OD) switch is mounted on the shift lever. When OD switch is depressed to ON position, transmission will shift into 4th gear when shift lever is in "D" position, and OD OFF light on instrument panel will go off. When OD switch is released to OFF position, transmission will shift into 3rd gear, and OD OFF light on instrument panel will illuminate.

A pattern select switch is located near shift lever on center console. Pattern select switch contains a POWER (PWR) and a NORMAL operating position. When pattern select switch is depressed (PWR position), transmission upshifts and downshifts will occur at a higher vehicle speed than with switch released. An indicator light on instrument panel indicates pattern select switch is in PWR (on) position.

A-340F and A-343F transmission has a mechanically controlled 2-speed 4WD transfer case. A-340H transmission has a electronically controlled 4WD transfer case. The transfer case consists of planetary gears, hydraulic clutches and hydraulic brake. The transfer case is mounted to rear of transmission case.

Transmission is equipped with a shift lock and key lock system. Shift lock system prevents shift lever from

being moved from Park unless brake pedal is depressed. Key lock system prevents ignition key from being moved from ACC to LOCK position on ignition switch unless shift lever is in Park. For more information on shift lock and key lock system, see TOYOTA SHIFT LOCK SYSTEM article.

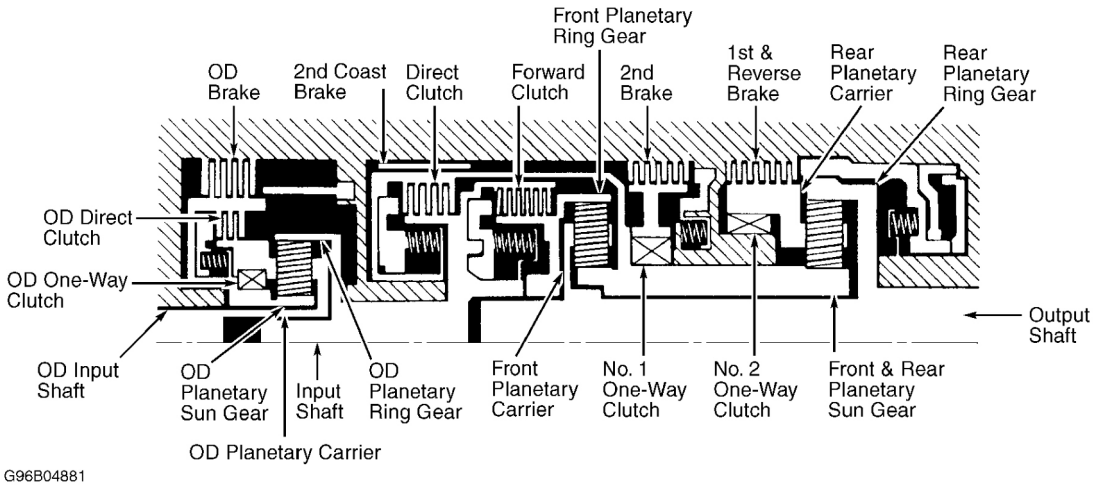

Fig. 1: Identifying Transmission Component Locations
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

LUBRICATION & ADJUSTMENTS

See appropriate TRANSMISSION SERVICING article in AUTOMATIC TRANSMISSION SERVICING.

ON-VEHICLE SERVICE

DRIVE AXLE SHAFTS

See appropriate article in AXLE SHAFTS & TRANSFER CASES section.

TRANSMISSION VALVE BODY

Removal

1. Drain fluid. Remove oil pan, filler tube, gasket, oil filter and magnets from oil pan. Disconnect connectors from each solenoid. Remove solenoid wiring and stopper plate.
2. Note location of oil tubes. Using screwdrivers, pry at both ends of oil tubes and remove oil tubes. Remove transmission fluid temperature sensor (if applicable). Remove valve body bolts. Note location and bolt length. See Fig. 2.
3. Lower valve body slightly and remove accumulator piston springs. Note location of springs. Disconnect throttle cable from valve body cam. Remove valve body. Use care not to lose check ball and spring located above valve body (if equipped).

NOTE: During valve body removal, note location of accumulator piston springs, oil tubes, bolt length and location, check ball and spring (if equipped). Component locations should be marked for reassembly reference.

Installation

1. To install, reverse removal procedure. Ensure check ball and spring are installed above valve body (if equipped). Ensure manual shift lever in transmission case aligns with manual valve of valve body.
2. Install accumulator piston springs and spacers in original location. See **TRANSMISSION REASSEMBLY**. Proper length bolts must be installed in designated areas. See Fig. 2. Use NEW "O" ring on solenoid, oil filter and gasket if necessary. Ensure oil tubes do not contact oil pan. Install magnets in oil pan. Install pan with NEW gasket. Fill fluid to proper level.

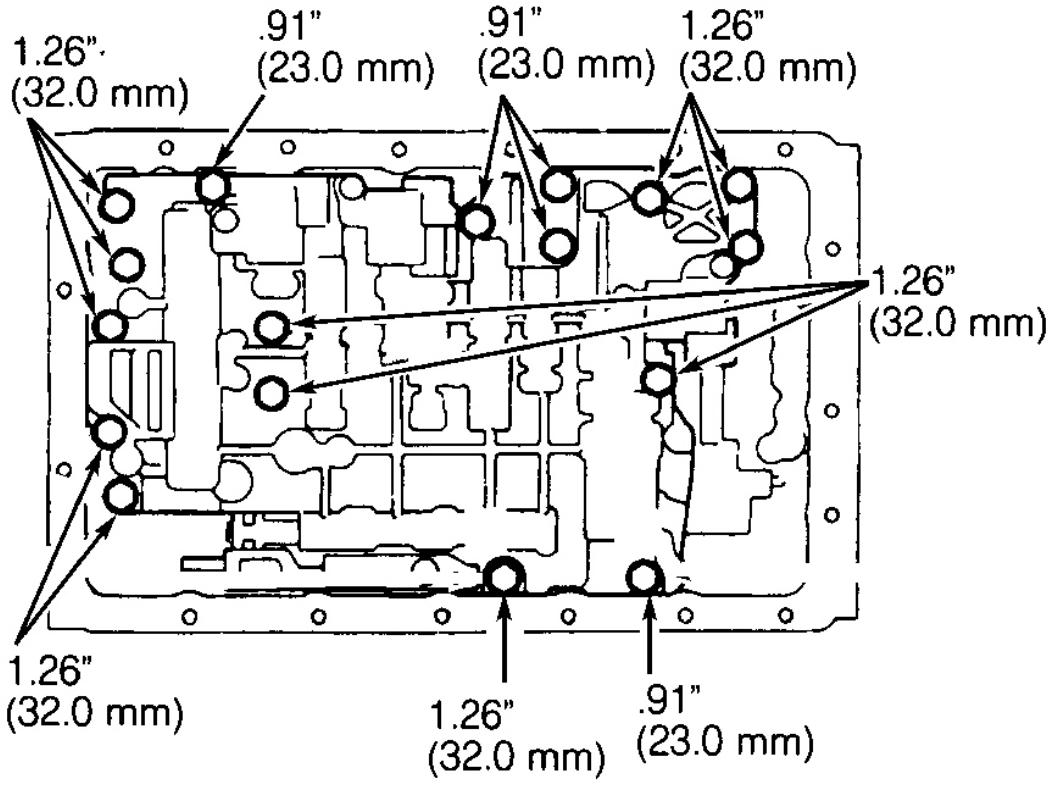

Fig. 2: Identifying Valve Body Mounting Bolts A-340 Series Models
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSFER CASE VALVE BODY (A-340H)

Removal & Installation

1. Drain fluid. Support transmission with jack. Remove rear support crossmember from body and transfer case bracket. Remove transfer case bracket from transfer case.
2. Remove oil pan. Remove magnets from oil pan. Disconnect No. 4 solenoid connector and transfer pressure switch. Remove valve body. Remove solenoid wiring stopper plate. Remove solenoid wiring from transfer case. Note bolt location and length.
3. To install, reverse removal procedures. Ensure manual shift lever in case aligns with manual valve of valve body. Proper length bolts must be installed. Install oil pan with NEW gasket. Fill to proper fluid level.

PARKING LOCK PAWL

Removal & Installation

1. Remove valve body on A-340E, A-340F and A-343F models or transfer case valve body on A-340H model. On all models, remove parking lock pawl bracket. Disconnect parking lock rod from manual valve lever on A-340E and A-340F. Remove transfer manual valve lever and shaft on A-340H model.
2. On all models, note location of shaft spring. Remove shaft spring from shaft. Remove shaft and parking lock pawl. Remove "E" ring from shaft. To install, reverse removal procedure.

EXTENSION HOUSING & SENSOR ROTOR (A-340E)

Removal

1. Raise and support vehicle. Place reference marks on drive shaft and companion flange. Remove drive shaft and center bearing assembly.
2. Remove front exhaust pipe and converter. Disconnect speedometer cable. Remove speedometer driven gear and speed sensor from extension housing.
3. Using jack, support transmission. Remove ground cable and rear support member from extension housing. Remove extension housing bolts. Note bolt length and location. Remove extension housing.
4. If sensor rotor is to be replaced, remove snap ring, speedometer drive gear and lock ball from output shaft. Use care not to lose lock ball when removing drive gear. Remove sensor rotor.

Cleaning & Inspection

Clean components with solvent. Dry with compressed air. Inspect components for damage. Measure inside diameter of extension housing bushing bore. Replace extension housing if inside diameter exceeds 1.578" (40.09 mm).

Installation

Install sensor rotor on output shaft, ensuring key is installed in groove. Install extension housing using a NEW housing gasket. Apply sealant to extension housing bolt threads prior to installation. Shorter mounting bolts go on bottom of extension housing. To complete installation, reverse removal procedure.

THROTTLE CABLE

Removal

Disconnect throttle cable from cam. Remove transmission valve body. See **TRANSMISSION VALVE BODY**. Pull out throttle cable.

Installation

1. Install throttle cable in transmission case. Ensure cable is fully seated. Install valve body. Connect throttle cable to cam. New cables do not have cable stopper installed. To make adjustment possible, stake stopper as described.
2. Pull inner cable lightly until a slight resistance is felt. Stake stopper .031-.059" (.80-1.50 mm) from end of outer cable. See **Fig. 3**. Connect throttle cable on throttle linkage. Adjust throttle cable. Test drive vehicle.

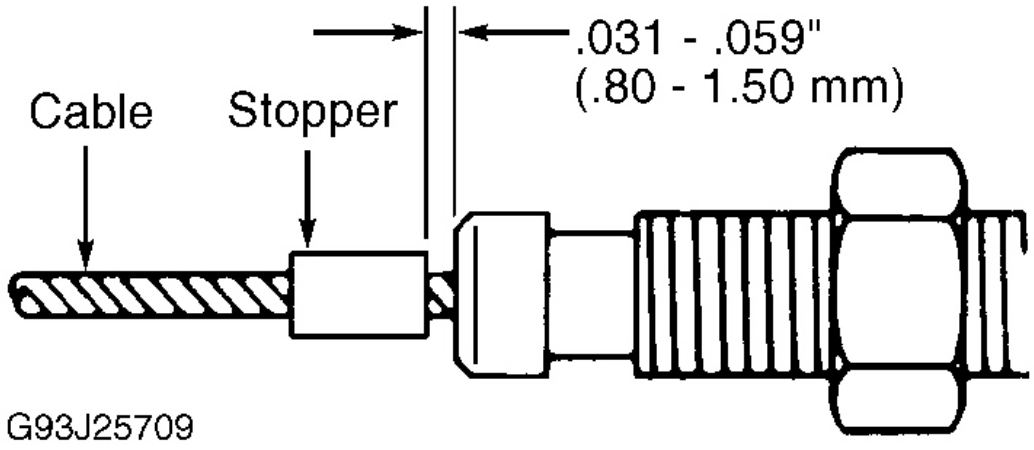

Fig. 3: Staking Throttle Cable Stopper
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TROUBLE SHOOTING

NOTE: See appropriate ELECTRONIC CONTROLS for trouble shooting solenoids, sensors and computer control unit. Ensure transmission fluid level is correct before diagnosing transmission.

PRELIMINARY CHECKS

Ensure fluid level is correct. Inspect and adjust throttle cable, shift linkage and park/neutral position switch (if necessary). Check idle speed RPM and adjust as necessary.

SYMPTOM DIAGNOSIS

Fluid Discolored Or Smells Burnt

Fluid contaminated. Torque converter or transmission faulty.

No Movement In Any Gear

Shift linkage out of adjustment. Faulty valve body or primary regulator. Park lock pawl faulty. Faulty torque converter. Converter drive plate damaged or broken. Oil pump intake screen blocked. ECT computer faulty. Control shaft lever out of adjustment. Faulty OD one-way clutch, OD brake, OD direct clutch or OD planetary gear.

Selector Lever Position Incorrect

Shift linkage out of adjustment. Faulty manual valve and lever.

Harsh Engagement Into Any Drive Range

Throttle cable out of adjustment. Faulty valve body, primary regulator or accumulator pistons. Faulty OD brake, OD direct clutch, OD planetary gear unit or torque converter. Faulty 1st and reverse brake, direct clutch or forward clutch.

Delayed 1-2, 2-3 Or 3-OD Upshifts, Or Downshifts From OD-3 Or 3-2, Then Changes Back To OD Or 3rd

Faulty valve body, ECT computer or solenoid valve.

Slips On Any Upshift Or Slips Or Shudders On Acceleration

Shift linkage or throttle cable out of adjustment. Faulty valve body or solenoid valve.

Drag Or Binding On Upshifts

Shift linkage out of adjustment or faulty valve body.

No Lock-Up In 2nd, 3rd Or OD

Faulty valve body, solenoid valve or electronic control unit.

Harsh Downshift

Throttle cable out of adjustment or faulty. Accumulator pistons or valve body faulty.

No Downshift When Coasting

Faulty valve body, electronic control or solenoid valve.

Downshifts Too Soon Or Too Late When Coasting

Throttle cable out of adjustment or faulty. Faulty valve body, electronic control or solenoid valve.

No OD-4, OD-3, 3-2 Or 2-1 Kickdown

Faulty valve body, electronic control or solenoid valve faulty.

No Engine Braking In "2" Or "L" Range

Faulty valve body, electronic control or solenoid valve.

Vehicle Does Not Move In "R" Range

Faulty 2nd coast brake, front and rear planetary gear unit or direct clutch. Faulty 1st and reverse brake. Faulty OD direct clutch.

Vehicle Does Not Move In "D", "2" Or "L" Range

Faulty forward clutch. Faulty No. 2 one-way clutch. Faulty 2nd brake. Faulty 1st and reverse brake. Faulty 2nd coast brake, direct clutch or 2nd brake.

No Upshift 1-2, 2-3, 3-OD, 3-4, 4-OD

Faulty 2nd brake or No. 1 one-way clutch. Faulty direct clutch. Faulty OD brake.

No Downshift 2-1

Faulty 2nd coast brake. Faulty 2nd brake.

No Lock-Up Or No Lock-Up Off

Faulty torque converter or solenoid.

Slip Or Shudder In "D", "R", 1st, 2nd, 3rd, 4th Or OD

Faulty torque converter, OD one-way clutch or OD direct clutch. Faulty 1st and reverse brake or direct clutch. Faulty forward clutch or No. 2 one-way clutch. Faulty 2nd brake, 2nd coast brake or No. 1 one-way clutch. Faulty OD brake.

No Engine Braking 1st-3rd

Faulty OD direct brake, faulty 1st and reverse clutch. Faulty 2nd coast brake.

Poor Acceleration

Faulty torque converter, OD direct clutch, OD planetary gear unit or OD brake. Faulty 2nd coast brake, direct clutch, 2nd brake or 1st and reverse brake. Faulty forward clutch.

Engine Stalls When Starting Off Or Stopping

Faulty torque converter.

Vehicle Does Not Hold In "P" Range

Shift linkage faulty or out of adjustment. Defective park lock pawl assembly.

No Transfer Case Gear Changes On 4WD Models

Transfer linkage out of adjustment. Faulty electronic control, valve body or transfer case.

CLUTCH & BAND APPLICATIONS

Selector Lever Position	Elements In Use
"D" (Drive)	
1st Gear	Forward Clutch, No. 2 One-Way Clutch, OD One-Way Clutch & OD Direct Clutch
2nd Gear	Forward Clutch, No. 1 One-Way Clutch, 2nd Brake, OD Direct Clutch & OD One-Way Clutch
3rd Gear	Forward Clutch, 2nd Brake, Direct Clutch, OD Direct Clutch & OD One-Way Clutch
OD (4th Gear)	Forward Clutch, 2nd Brake, OD Brake & Direct Clutch
"2" (Intermediate)	
1st Gear	Forward Clutch, No. 2 One-Way Clutch OD Direct Clutch & OD One-Way Clutch
2nd Gear	Forward Clutch, 2nd Coast Brake, 2nd Brake, No. 1 One-Way Clutch, OD Direct Clutch & OD One-Way Clutch
3rd Gear (1)	Forward Clutch, OD Direct Clutch, Direct Clutch 2nd Brake & OD One-Way Clutch
"L" (Low)	
1st Gear	Forward Clutch, OD One-Way Clutch, No. 2 One-Way Clutch, OD Direct Clutch & 1st & Reverse Brake
2nd Gear (2)	Forward Clutch, 2nd Coast Brake, 2nd Brake, No. 1 One-Way Clutch, OD Direct Clutch & OD One-Way Clutch
"R" (Reverse)	OD Direct Clutch, Direct Clutch, OD One-Way Clutch & 1st & Reverse Brake
"N" (Neutral)	OD Direct Clutch
"P" (Park)	OD Direct Clutch

(1) Downshift only in "2" range and 3rd gear. No upshift.

(2) Downshift only in "L" range and 2nd gear. No upshift.

TESTING

ELECTRICAL TESTING

Electrical tests should be performed prior to hydraulic testing to ensure problem is not in electrical circuit. See appropriate ELECTRONIC CONTROLS article.

PRELIMINARY CHECKS

Before testing transmission and transfer case, perform following procedures:

- Ensure fluid level is correct.
- Inspect and adjust throttle cable.
- Ensure battery is fully charged for accurate testing.
- Adjust shift linkage.
- Adjust park/neutral position switch.
- Inspect and adjust transfer shift linkage on A-340H.
- Inspect idle speed RPM.

TIME LAG TEST

Test Procedure

1. Engine and transmission must be at normal operating temperature. Start engine and ensure idle RPM is within specification. See **IDLE SPEED SPECIFICATIONS** table. On Pickup, 4Runner and T100 models, place transfer gear shift selector in "H2".
2. On all models, apply service and parking brakes. Using stop watch, measure time until engagement shock is felt when lever is shifted from "N" to "D". Allow one minute interval between tests. Perform time measurements 2 more times and calculate average value. Time should be less than 1.2 seconds.
3. Use same procedure to test time lag when gear selector is moved from "N" to "R". Time lag should be less than 1.5 seconds.

Test Results

1. If "N" to "D" time lag exceeds specification, check for low main line pressure, worn forward clutch or overdrive one-way clutch not operating correctly.
2. If "N" to "R" time lag exceeds specification, check for low main line pressure, worn direct clutch, worn 1st and reverse brake or overdrive one-way clutch not operating correctly.

IDLE SPEED SPECIFICATIONS (1) (2)

Vehicle	Transmission	RPM
Land Cruiser	A-343F	650
LX450	A-343F	650
Pickup		
2WD V6	A-340E	850
4WD 4-Cyl.	A-340F	800
4WD V6	A-340H	850
Tacoma & T100		

4-Cyl.	A-340E	700
V6	A-340E & A-340F	700
4Runner		
1995		
2WD V6	A-340E	800
4WD 4-Cyl.	A-340F	750
4WD V6	A-340H	800
1996		
4-Cyl	A-340E & A-340F	700
V6	A-340E & A-340F	700
(1) Plus or minus 50 RPM.		
(2) Check idle speed in Neutral range with A/C off.		

ROAD TEST

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

Test Procedure

Before road testing, note following information:

- No overdrive upshift or lock-up will occur when engine coolant is below 140°F (60°C) on Lexus models.
- No 3rd upshift or lock-up will occur when engine coolant temperature is below 95°F (35°C) and speed is below 25 MPH on Lexus models.
- No overdrive upshift or lock-up will occur when engine coolant temperature is below 133°F (55°C) on Land Cruiser or below 158°F (70°C) on Pickup, Tacoma, T100 and 4Runner models.
- No overdrive upshift or lock-up will occur if a 6 MPH difference between set cruise control speed and actual speed exists on Pickup and 4Runner models.
- All shift points vary due to transfer case gear position on Pickup, Tacoma, T100 and 4Runner models.
- Overdrive gear and lock-up are cancelled when transfer case is engaged in L4 on Pickup, Tacoma, T100 and 4Runner models.

"D" Range Test in NORM Or PWR Pattern Ranges

1. Shift into "D". Hold accelerator at constant full throttle position. Check 1-2, 2-3 and 3-OD upshift points. See appropriate SPECIFICATIONS table under **ROAD TEST SHIFT SPEED SPECIFICATIONS**.
   - If no 1st-2nd gear upshift occurs, 1-2 shift valve or No. 2 solenoid is stuck.
   - If no 2nd-3rd gear upshift occurs, 2-3 shift valve or No. 1 solenoid is stuck.
   - If no 3-OD gear upshift occurs, 3-4 shift valve is stuck.
   - If all shift points are incorrect, throttle, 1-2 shift, 2-3 shift and 3-OD shift valves are defective.

- If all lock-up points are incorrect, lock-up control valve, lock-up signal valve or lock-up solenoid is stuck.

2. Use procedure outlined in step 1 to check shock and slip between 1-2 gear, 2-3 gear and 3-OD gear upshifts. Excessive shock can be caused by excessive line pressure, defective accumulator or defective check ball.
3. Run in OD or lock-up in "D" range. Check for abnormal noise and vibration. Noise and vibration may be caused by unbalanced drive shaft, differential, torque converter or other drive train components.
4. While running in "D" range, 2nd, 3rd and OD gears, check correct kickdown speed for 2-1, 3-2 and OD-3 gears. Check for abnormal shock and slip at kickdown.
5. Check lock-up mechanism. Drive in OD gear of "D" range, at steady speed (lock-up ON) of 36-43 MPH for Lexus (except LX450), 47 MPH for Pickup, 4Runner, Tacoma, T100 models, and 59 MPH for Land Cruiser and LX450 models. Lightly depress accelerator pedal. Ensure engine RPM does not change abruptly. Large increase in engine RPM indicates there is no lock-up.

"2" Range Test

1. Shift to "2" range. Drive with accelerator pedal held constant at full throttle. Push in one pattern selection button. Ensure 1-2 upshift points at each accelerator opening take place and are operating properly.

NOTE: There is no OD upshift and lock-up in "2" range. To prevent overrun, transmission upshifts into 3rd gear at 62 MPH for Pickup and 4Runner.

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

"L" Range Test

1. While running in "L" range, ensure there is no upshift to 2nd gear.
2. While running in "L" range, release accelerator pedal. If there is no engine braking effect, 1st and reverse brake is defective. Note abnormal noise at acceleration and deceleration.

"R" Range Test

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

"P" Range Test

Stop vehicle on 5 degree or more gradient. Shift transmission into "P". Release parking brake. Ensure parking pawl holds vehicle.

Transfer Test

1. On A-340H model, ensure vehicle shifts from 2WD to 4WD when transfer gear lever is shifted from H2 to H4. Transfer case assembly is defective if unit does NOT shift from 2WD to 4WD.
2. Shift transfer gear lever from H4 to L4. Gear changes should occur within specification. If transfer did

not change from H4 to L4 gears within specification, No. 4 solenoid, ECT computer or transfer is defective.

ROAD TEST SHIFT SPEED SPECIFICATIONS

LANDCRUISER & LX450 A-343F (1995-96) SHIFT SPEEDS (1)

Application	MPH
"D" Range	
1st-2nd	35-39
2nd-3rd	64-71
3rd-OD	94-101
OD-3rd	90-97
3rd-2nd	59-63
2nd-1st	26-29
"2" Range (2)	
3rd-2nd	72-79
"L" Range	
2nd-1st	38-39
(1) Wide open throttle.	
(2) No 1-2 upshift or 2-1 downshift with 2nd start switch on.	

LANDCRUISER & LX450 A-343F (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (2) (NORM Or PWR)	
Lock-Up ON	48-52
Lock-Up OFF	42-46
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

PICKUP 2WD (1) A-340E (1995) SHIFT SPEEDS (3.417 GEAR RATIO)

Application	MPH
"D" Range (NORM)	
1st-2nd (2)	38-41
2nd-3rd (2)	67-73
3rd-OD (2)	89-94
3rd-OD (3)	27-30
OD-3rd (3)	16-19
OD-3rd (2)	85-90

3rd-2nd (2)	62-65
2nd-1st (2)	27-30
"D" Range (PWR)	
1st-2nd (2)	38-41
2nd-3rd (2)	74-79
3rd-OD (2)	91-97
3rd-OD (3)	29-32
OD-3rd (3)	16-19
OD-3rd (2)	87-93
3rd-2nd (2)	68-74
2nd-1st (2)	27-30
"2" Range (NORM or PWR)	
1st-2nd (2)	33-35
2nd-3rd (2)	78-84
3rd-2nd (2)	74-80
2nd-1st (2)	29-32
"L" Range (NORM or PWR)	
3rd-2nd (2)	63-68
2nd-1st (2)	35-39
(1) Tire size P205/75R14 and P215/65R15.	
(2) Wide open throttle.	
(3) Fully closed throttle.	

PICKUP 2WD (1) A-340E (1995) LOCK-UP SPEEDS (3.417 GEAR RATIO) (2)

Application	MPH
"D" Range (NORM) (3)	
Lock-Up ON In 3rd (4)	49-52
Lock-Up OFF In 3rd (4)	44-47
Lock-Up ON In OD	49-52
Lock-Up OFF In OD	42-45
"D" Range (PWR)	
Lock-Up ON In 3rd (4)	38-41
Lock-Up OFF In 3rd (4)	42-45
Lock-Up ON In OD	49-52
Lock-Up OFF In OD	42-47
(1) Tire size P205/75R14 or P215/65R15.	

(2) Throttle valve opened 5 percent.

(3) No lock-up in "L" or "2" range.

(4) With OD switch off.

PICKUP 2WD (1) A-340E (1995) SHIFT SPEEDS (3.90 GEAR RATIO)

Application	MPH
"D" Range (NORM)	
1st-2nd (2)	32-35
2nd-3rd (2)	45-62
3rd-OD (2)	84-88
3rd-OD (3)	23-25
OD-3rd (3)	14-16
OD-3rd (2)	81-85
3rd-2nd (2)	53-56
2nd-1st (2)	27-29
"D" Range (PWR)	
1st-2nd (2)	32-35
2nd-3rd (2)	63-68
3rd-OD (2)	92-96
3rd-OD (3)	25-27
OD-3rd (3)	14-16
OD-3rd (2)	88-92
3rd-2nd (2)	59-63
2nd-1st (2)	27-29
"2" Range (NORM or PWR)	
1st-2nd (2)	28-30
2nd-3rd (2)	67-71
3rd-2nd (2)	63-68
2nd-1st (2)	25-27
"L" Range (NORM or PWR)	
3rd-2nd (2)	54-48
2nd-1st (2)	30-33

(1) Tire size 185R14.

(2) Wide open throttle.

(3) Fully closed throttle.

PICKUP 2WD (1) A-340E (1995) LOCK-UP SPEEDS (3.90 GEAR RATIO) (2)

Application	MPH
"D" Range (NORM) (3)	
Lock-Up ON In 3rd (4)	42-44
Lock-Up OFF In 3rd (4)	38-40
Lock-Up ON In OD	42-44
Lock-Up OFF In OD	36-39
"D" Range (PWR)	
Lock-Up ON In 3rd (4)	36-39
Lock-Up OFF In 3rd (4)	32-35
Lock-Up ON In OD	42-44
Lock-Up OFF In OD	38-40

(1) Tire size 185R14.

(2) Throttle valve opened 5 percent.

(3) No lock-up in "L" or "2" range.

(4) With OD switch off.

PICKUP 2WD (CAB & CHASSIS) (1) A-340E (1995) SHIFT SPEEDS (4.10 GEAR RATIO)

Application	MPH
"D" Range (NORM)	
1st-2nd (2)	27-29
2nd-3rd (2)	52-57
3rd-OD (2)	80-84
3rd-OD (3)	45-48
OD-3rd (3)	13-16
OD-3rd (2)	76-81
3rd-2nd (2)	48-50
2nd-1st (2)	24-26
"D" Range (PWR)	
1st-2nd (2)	32-34
2nd-3rd (2)	60-64
3rd-OD (2)	82-86
3rd-OD (3)	45-48
OD-3rd (3)	13-16
OD-3rd (2)	78-82
3rd-2nd (2)	56-60

2nd-1st (2)	28-30
"2" Range (NORM or PWR)	
1st-2nd (2)	27-29
2nd-3rd (2)	64-68
3rd-2nd (2)	60-65
2nd-1st (2)	24-26
"L" Range (NORM or PWR)	
3rd-2nd (2)	52-55
2nd-1st (2)	29-32
(1) Tire size 185R14 (single or dual rear tires).	
(2) Wide open throttle.	
(3) Fully closed throttle.	

PICKUP 2WD (CAB & CHASSIS) (1) A-340E (1995) LOCK-UP SPEEDS (2) (4.10 GEAR RATIO)

Application	MPH
"D" Range (NORM) (3)	
Lock-Up ON In 3rd (4)	45-48
Lock-Up OFF In 3rd (4)	38-40
Lock-Up ON In OD	45-48
Lock-Up OFF In OD	42-44
"D" Range (PWR)	
Lock-Up ON In 3rd (4)	45-48
Lock-Up OFF In 3rd (4)	42-44
Lock-Up ON In OD	45-48
Lock-Up OFF In OD	42-44
(1) Tire size 185R14 (single or dual rear tires).	
(2) Throttle valve opened 5 percent.	
(3) No lock-up in "L" or "2" range.	
(4) With OD switch off.	

PICKUP 2WD (CAB & CHASSIS) (1) A-340E (1995) SHIFT SPEEDS (4.30 GEAR RATIO)

Application	MPH
"D" Range (NORM)	
1st-2nd (2)	25-28
2nd-3rd (2)	50-54
3rd-OD (2)	76-80

3rd-OD (3)	43-45
OD-3rd (3)	12-15
OD-3rd (2)	73-77
3rd-2nd (2)	45-48
2nd-1st (2)	23-25
"D" Range (PWR)	
1st-2nd (2)	30-33
2nd-3rd (2)	57-62
3rd-OD (2)	78-82
3rd-OD (3)	43-45
OD-3rd (3)	12-15
OD-3rd (2)	75-78
3rd-2nd (2)	53-57
2nd-1st (2)	26-29
"2" Range (NORM or PWR)	
1st-2nd (2)	25-28
2nd-3rd (2)	61-65
3rd-2nd (2)	58-62
2nd-1st (2)	23-25
"L" Range (NORM or PWR)	
3rd-2nd (2)	49-53
2nd-1st (2)	28-30

(1) Tire size 185R14 (dual rear tires).

(2) Wide open throttle.

(3) Fully closed throttle.

PICKUP 2WD (CAB & CHASSIS) (1) A-340E (1995) LOCK-UP SPEEDS (4.30 GEAR RATIO) (2)

Application	MPH
"D" Range (NORM) (3)	
Lock-Up ON In 3rd (4)	49-52
Lock-Up OFF In 3rd (4)	44-47
Lock-Up ON In OD	43-45
Lock-Up OFF In OD	40-42
"D" Range (PWR)	
Lock-Up ON In 3rd (4)	38-41
Lock-Up OFF In 3rd (4)	42-45

Lock-Up ON In OD	43-45
Lock-Up OFF In OD	40-42

(1) Tire size 185R14 (dual tires).

(2) Throttle valve opened 5 percent.

(3) No lock-up in "L" or "2" range.

(4) With OD switch off.

PICKUP & 4RUNNER 4WD A-340F (1995) SHIFT SPEEDS

Application	MPH
"D" Range (NORM)	
1st-2nd (1)	27-30
2nd-3rd (1)	58-61
3rd-OD (1)	83-87
3rd-OD (2)	22-24
OD-3rd (2)	13-16
OD-3rd (1)	79-84
3rd-2nd (1)	54-58
2nd-1st (1)	25-27
"D" Range (PWR)	
1st-2nd (1)	29-32
2nd-3rd (1)	58-61
3rd-OD (1)	92-96
3rd-OD (2)	31-33
OD-3rd (2)	13-16
OD-3rd (1)	89-92
3rd-2nd (1)	54-58
2nd-1st (1)	25-28
"2" Range (NORM or PWR)	
1st-2nd (1)	27-29
2nd-3rd (1)	64-68
3rd-2nd (1)	60-64
2nd-1st (1)	24-26
"L" Range (NORM or PWR)	
3rd-2nd (1)	51-55
2nd-1st (1)	29-32

(1) Wide open throttle.

(2) Fully closed throttle.

PICKUP & 4RUNNER 4WD A-340F (1995) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM) (2)	
Lock-Up ON In 3rd (3)	25-28
Lock-Up OFF In 3rd (3)	24-26
Lock-Up ON In OD	37-39
Lock-Up OFF In OD	34-37
"D" Range (PWR)	
Lock-Up ON In 3rd (3)	34-37
Lock-Up OFF In 3rd (3)	31-33
Lock-Up ON In OD	47-49
Lock-Up OFF In OD	43-45

(1) Throttle valve opened 5 percent.

(2) No lock-up in "L" or "2" range.

(3) With OD switch off.

PICKUP & 4RUNNER 4WD A-340H (1995) SHIFT SPEEDS

Application	MPH
"D" Range (NORM)	
1st-2nd (1)	31-33
2nd-3rd (1)	56-60
3rd-OD (1)	81-86
3rd-OD (2)	22-24
OD-3rd (2)	13-16
OD-3rd (1)	78-82
3rd-2nd (1)	52-57
2nd-1st (1)	25-27
"D" Range (PWR)	
1st-2nd (2)	31-33
2nd-3rd (2)	56-60
3rd-OD (2)	81-86
3rd-OD (3)	24-26
OD-3rd (3)	13-16

OD-3rd (2)	78-82
3rd-2nd (2)	52-57
2nd-1st (2)	25-27
"2" Range (NORM or PWR)	
1st-2nd (2)	27-29
2nd-3rd (2)	64-68
3rd-2nd (2)	60-64
2nd-1st (2)	24-26
"L" Range (NORM or PWR)	
3rd-2nd (2)	51-55
2nd-1st (2)	29-32
(1) Transfer shift position "H2" or "H4".	
(2) Wide open throttle.	
(3) Fully closed throttle.	

PICKUP & 4RUNNER 4WD A-340H (1995) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM) (2), (3)	
Lock-Up ON In 3rd (4)	32-35
Lock-Up OFF In 3rd (4)	31-33
Lock-Up ON In OD	40-42
Lock-Up OFF In OD	34-37
"D" Range (PWR)	
Lock-Up ON In 3rd (4)	32-35
Lock-Up OFF In 3rd (4)	31-33
Lock-Up ON In OD	40-42
Lock-Up OFF In OD	36-39
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	
(3) Transfer shift position "H2" or "H4".	
(4) With OD switch off.	

4RUNNER 2WD A-340E (1995) SHIFT SPEEDS

Application	MPH
"D" Range (NORM)	
1st-2nd (1)	36-39

2nd-3rd (1)	64-69
3rd-OD (1)	89-94
3rd-OD (2)	25-29
OD-3rd (2)	16-18
OD-3rd (1)	85-90
3rd-2nd (1)	59-62
2nd-1st (1)	28-30
"D" Range (PWR)	
1st-2nd (1)	36-39
2nd-3rd (1)	70-75
3rd-OD (1)	91-96
3rd-OD (2)	28-30
OD-3rd (2)	16-18
OD-3rd (1)	87-93
3rd-2nd (1)	65-70
2nd-1st (1)	28-30
"2" Range (NORM or PWR)	
1st-2nd (1)	31-34
2nd-3rd (1)	75-79
3rd-2nd (1)	70-75
2nd-1st (1)	28-30
"L" Range (NORM or PWR)	
3rd-2nd (1)	60-65
2nd-1st (1)	34-37
(1) Wide open throttle.	
(2) Fully closed throttle.	

4RUNNER 2WD A-340E (1995) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM) (2)	
Lock-Up ON In 3rd (3)	47-49
Lock-Up OFF In 3rd (3)	42-45
Lock-Up ON In OD	47-49
Lock-Up OFF In OD	40-43
"D" Range (PWR)	
Lock-Up ON In 3rd (3)	40-43

Lock-Up OFF In 3rd (3)	36-39
Lock-Up ON In OD	47-49
Lock-Up OFF In OD	42-45

(1) Throttle valve opened 5 percent.

(2) No lock-up in "L" or "2" range.

(3) With OD switch off.

4RUNNER 2.7L 2WD A-340E (1996) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	36-40
2nd-3rd (1)	66-72
3rd-OD (1)	88-94
3rd-OD (2)	21-24
OD-3rd (2)	16-19
OD-3rd (1)	84-90
3rd-2nd (1)	61-67
2nd-1st (1)	29-32
"2" Range (NORM or PWR)	
1st-2nd (1)	36-40
3rd-2nd (1)	70-75
2nd-1st (1)	29-32
"L" Range (NORM or PWR)	
2nd-1st (1)	34-37

(1) Wide open throttle.

(2) Fully closed throttle.

4RUNNER 2.7L 2WD A-340E (1996) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM) (2)	
Lock-Up ON In OD	48-52
Lock-Up OFF In OD	43-47
"D" Range (PWR)	
Lock-Up ON In OD	52-55
Lock-Up OFF In OD	43-47

(1) Throttle valve opened 5 percent.

(2) No lock-up in "L" or "2" range.

4RUNNER 3.4L 2WD A-340E (1996) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	37-40
2nd-3rd (1)	70-75
3rd-OD (1)	94-99
3rd-OD (2)	27-30
OD-3rd (2)	14-17
OD-3rd (1)	89-94
3rd-2nd (1)	64-69
2nd-1st (1)	29-32
"2" Range (NORM or PWR)	
1st-2nd (1)	37-40
3rd-2nd (1)	74-79
2nd-1st (1)	29-32
"L" Range (NORM or PWR)	
2nd-1st (1)	36-39
(1) Wide open throttle.	
(2) Fully closed throttle.	

4RUNNER 3.4L 2WD A-340E (1996) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON in OD	47-50
Lock-Up OFF in OD	42-45
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

4RUNNER 2.7L 4WD A-340F (1996) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	34-38
2nd-3rd (1)	63-69
3rd-OD (1)	83-90

3rd-OD (2)	20-23
OD-3rd (2)	15-18
OD-3rd (1)	79-86
3rd-2nd (1)	58-64
2nd-1st (1)	27-30
"2" Range (NORM or PWR)	
1st-2nd (1)	34-38
3rd-2nd (1)	65-72
2nd-1st (1)	27-30
"L" Range (NORM or PWR)	
2nd-1st (1)	32-35
(1) Wide open throttle. (2) Fully closed throttle.	

4RUNNER 2.7L 4WD A-340F (1996) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON in OD	48-52
Lock-Up OFF in OD	44-48
(1) Throttle valve opened 5 percent. (2) No lock-up in "L" or "2" range.	

4RUNNER 3.4L 4WD A-340F (1996) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	35-39
2nd-3rd (1)	66-73
3rd-OD (1)	89-97
3rd-OD (2)	25-29
OD-3rd (2)	14-17
OD-3rd (1)	85-93
3rd-2nd (1)	61-68
2nd-1st (1)	28-32
"2" Range (NORM or PWR)	
1st-2nd (1)	35-39
3rd-2nd (1)	71-78

2nd-1st (1)	28-32
"L" Range (NORM or PWR)	
2nd-1st (1)	34-38
(1) Wide open throttle.	
(2) Fully closed throttle.	

4RUNNER 3.4L 4WD A-340F (1996) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON in OD	45-48
Lock-Up OFF in OD	40-44
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

TACOMA 2.7L (P255/75R15 TIRES) A-340E (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	33-36
2nd-3rd (1)	60-65
3rd-OD (1)	84-89
3rd-OD (2)	21-23
OD-3rd (2)	15-18
OD-3rd (1)	80-86
3rd-2nd (1)	55-59
2nd-1st (1)	26-29
"2" Range (NORM or PWR)	
1st-2nd (1)	33-36
3rd-2nd (1)	66-72
2nd-1st (1)	26-29
"L" Range (NORM or PWR)	
3rd-2nd (1)	57-62
2nd-1st (1)	32-35
(1) Wide open throttle.	
(2) Fully closed throttle.	

TACOMA 2.7L (P255/75R15 TIRES) A-340E (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON In OD	48-52
Lock-Up OFF In OD	45-48
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

TACOMA 2.7L (31X10.5R15 TIRES) A-340E (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	32-35
2nd-3rd (1)	58-63
3rd-OD (1)	82-87
3rd-OD (2)	20-22
OD-3rd (2)	15-17
OD-3rd (1)	78-83
3rd-2nd (1)	54-57
2nd-1st (1)	25-28
"2" Range (NORM or PWR)	
1st-2nd (1)	32-35
3rd-2nd (1)	65-70
2nd-1st (1)	25-28
"L" Range (NORM or PWR)	
3rd-2nd (1)	55-60
2nd-1st (1)	31-34
(1) Wide open throttle.	
(2) Fully closed throttle.	

TACOMA 2.7L (31X10.5R15 TIRES) A-340E (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON In OD	47-50
Lock-Up OFF In OD	44-47
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

TACOMA 3.4L A-340E (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	40-43
2nd-3rd (1)	75-81
3rd-OD (1)	101-107
3rd-OD (2)	29-32
OD-3rd (2)	16-19
OD-3rd (1)	96-102
3rd-2nd (1)	69-75
2nd-1st (1)	32-35
"2" Range (NORM or PWR)	
1st-2nd (1)	40-43
3rd-2nd (1)	80-85
2nd-1st (1)	32-35
"L" Range (NORM or PWR)	
3rd-2nd (1)	68-73
2nd-1st (1)	38-42
(1) Wide open throttle.	
(2) Fully closed throttle.	

TACOMA 3.4L A-340E (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON In OD	50-53
Lock-Up OFF In OD	45-49
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

TACOMA 3.4L (P225/75R15 TIRES) A-340F (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	35-38
2nd-3rd (1)	65-71
3rd-OD (1)	88-94
3rd-OD (2)	25-29

OD-3rd (2)	14-16
OD-3rd (1)	84-90
3rd-2nd (1)	60-66
2nd-1st (1)	27-30
"2" Range (NORM or PWR)	
1st-2nd (1)	35-38
3rd-2nd (1)	70-75
2nd-1st (1)	27-30
"L" Range (NORM or PWR)	
3rd-2nd (1)	59-65
2nd-1st (1)	34-37
(1) Wide open throttle. (2) Fully closed throttle.	

TACOMA 3.4L (P225/75R15 TIRES) A-340F (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON In OD	44-47
Lock-Up OFF In OD	40-43
(1) Throttle valve opened 5 percent. (2) No lock-up in "L" or "2" range.	

TACOMA 3.4L (31X10.5R15 TIRES) A-340F (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range (NORM or PWR)	
1st-2nd (1)	36-39
2nd-3rd (1)	68-73
3rd-OD (1)	91-97
3rd-OD (2)	26-29
OD-3rd (2)	14-18
OD-3rd (1)	87-93
3rd-2nd (1)	62-68
2nd-1st (1)	29-31
"2" Range (NORM or PWR)	
1st-2nd (1)	36-39
3rd-2nd (1)	72-78

2nd-1st (1)	29-31
"L" Range (NORM or PWR)	
3rd-2nd (1)	62-68
2nd-1st (1)	35-38
(1) Wide open throttle.	
(2) Fully closed throttle.	

TACOMA 3.4L (31X10.5R15 TIRES) A-340F (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (NORM or PWR) (2)	
Lock-Up ON In OD	45-48
Lock-Up OFF In OD	41-44
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

T100 2.7L 2WD A-340E (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range	
1st-2nd (1)	34-37
2nd-3rd (1)	62-67
3rd-OD (1)	79-85
3rd-OD (2)	21-24
OD-3rd (2)	16-19
OD-3rd (1)	75-81
3rd-2nd (1)	57-61
2nd-1st (1)	27-30
"2" Range	
1st-2nd (1)	34-37
3rd-2nd (1)	68-75
2nd-1st (1)	27-30
"L" Range	
2nd-1st (1)	33-36
(1) Wide open throttle.	
(2) Fully closed throttle.	

T100 2.7L 2WD A-340E (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (2)	
Lock-Up ON In OD	52-55
Lock-Up OFF In OD	44-47
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

T100 3.4L 2WD A-340E (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range	
1st-2nd (1)	35-39
2nd-3rd (1)	67-73
3rd-OD (1)	91-96
3rd-OD (2)	27-30
OD-3rd (2)	14-17
OD-3rd (1)	86-92
3rd-2nd (1)	62-67
2nd-1st (1)	29-32
"2" Range	
1st-2nd (1)	35-39
3rd-2nd (1)	71-77
2nd-1st (1)	29-32
"L" Range	
2nd-1st (1)	32-36
(1) Wide open throttle.	
(2) Fully closed throttle.	

T100 3.4L 2WD A-340E (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (2)	
Lock-Up ON In OD	49-52
Lock-Up OFF In OD	45-48
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

T100 3.4L 4WD A-340F (1995-96) SHIFT SPEEDS

Application	MPH
"D" Range	
1st-2nd (1)	34-37
2nd-3rd (1)	64-69
3rd-OD (1)	86-91
3rd-OD (2)	26-29
OD-3rd (2)	13-16
OD-3rd (1)	83-88
3rd-2nd (1)	59-64
2nd-1st (1)	27-30
"2" Range	
1st-2nd (1)	34-37
3rd-2nd (1)	68-73
2nd-1st (1)	27-30
"L" Range	
2nd-1st (1)	33-36
(1) Wide open throttle.	
(2) Fully closed throttle.	

T100 3.4L 4WD A-340F (1995-96) LOCK-UP SPEEDS (1)

Application	MPH
"D" Range (2)	
Lock-Up ON In OD	47-50
Lock-Up OFF In OD	42-45
(1) Throttle valve opened 5 percent.	
(2) No lock-up in "L" or "2" range.	

STALL SPEED TEST

Test Procedure

1. Operate engine and transmission at normal operating temperature. Install tachometer. Apply parking brake and block front wheels.

CAUTION: DO NOT maintain stall RPM for more than 5 seconds. Allow engine to idle for one minute between tests to allow fluid to cool.

2. On Pickup, Tacoma, 4Runner and T100 4WD models, place transfer case in "H2" position. On all

models, start engine, apply brake pedal and place transmission in "D". Accelerate engine to full throttle and note maximum RPM obtained. Repeat test in "R". Compare reading obtained to specification. See **STALL SPEED SPECIFICATIONS** table.

Stall Test Results

1. If stall speed is the same for both ranges but lower than specification, engine output may be insufficient or stator one-way clutch may not be operating properly.

NOTE: If stall RPM is more than 600 RPM below specifications, torque converter may be faulty.

2. Stall speed exceeding specification in "D" range may be caused by a slipping forward clutch, defective No. 2 or overdrive one-way clutch, low main line pressure or transfer case direct clutch slipping.
3. Stall speeds exceeding specification in "R" range may be caused by a low main line pressure, direct clutch slipping, 1st and reverse brake slipping, overdrive one-way clutch defective or transfer case direct clutch slipping.
4. Stall speeds exceeding specification in both ranges may be caused by a low main line pressure, improper fluid level, overdrive one-way clutch defective or transfer case direct clutch slipping.

STALL SPEED SPECIFICATIONS

Vehicle	Transmission	Stall RPM
LX450	A-343F	1800-2100
Land Cruiser	A-343F	1800-2100
Pickup		
C & C(1)	A-340E	2050-2350
Except C & C	A-340E	2300-2600
4WD 4-Cyl	A-340F	2050-2350
4WD V6	A-340H	2700-3000
Tacoma & T100		
4-Cyl.	A-340E	1800-2100
V6	A-340E & A-340F	2000-2300
4Runner		
1995		
2WD V6	A-340E	2300-2600
4WD 4-Cyl.	A-340F	2050-2350
4WD V6	A-340H	2700-3000
1996		
4-Cyl	A-340E & A-340F	1850-2150
V6	A-340E & A-340F	2100-2400
(1) Cab & Chassis.		

HYDRAULIC PRESSURE TEST

NOTE: Hydraulic pressure test should be performed with transmission fluid temperature of 122-176°F (50-80°C).

1. Ensure transmission fluid is at normal operating temperature. Remove plug from right side of transmission case and install appropriate pressure gauge.
2. Apply parking and service brakes. Start engine. Ensure idle speed is within manufacturer's specifications. Place transmission in "D" range.
3. Check main line pressure at engine idle. See A-340 SERIES LINE PRESSURE SPECIFICATIONS table. Repeat procedure in "R" range. Compare all readings to specification. See A-340 SERIES LINE PRESSURE SPECIFICATIONS table.
4. Check main line pressure at full throttle (stall speed). Read highest pressure when engine reaches stall speed. See A-340 SERIES LINE PRESSURE SPECIFICATIONS table. Repeat procedure in "R" range. Compare all readings to specification. See A-340 SERIES LINE PRESSURE SPECIFICATIONS table.

Main Line Pressure Test Results

1. If line pressure in all ranges exceeds specification, check for defective regulator valve, defective throttle valve or throttle cable out of adjustment.
2. If line pressure is below specification in all ranges, check for defective oil pump, defective regulator valve, defective throttle valve, throttle cable out of adjustment, defective OD direct clutch or transfer case direct clutch, front drive clutch or low speed brake defective.
3. If line pressure is below specification in "D" range only, check for defective forward clutch, fluid leak in "D" range circuit, or defective OD clutch.
4. If line pressure is low in "R" range only, check for defective direct clutch, fluid leak in "R" range or defective 1st and reverse brake.

A-340 SERIES LINE PRESSURE SPECIFICATIONS (LAND CRUISER)

Application	"D" Range psi (kg/cm^2)	"R" Range psi (kg/cm^2)
1995		
Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
Stall Speed	135-171 (9.5-12.0)	188-238 (13.2-16.7)
1996		
Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
Stall Speed	186-222 (13.1-15.6)	229-280 (16.1-19.7)

A-340 SERIES LINE PRESSURE SPECIFICATIONS (LX450)

Application	"D" Range psi (kg/cm^2)	"R" Range psi (kg/cm^2)
Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
Stall Speed	186-222 (13.1-15.6)	229-280 (16.1-19.7)

A-340 SERIES LINE PRESSURE SPECIFICATIONS (PICKUP)

Application	"D" Range psi (kg/cm^2)	"R" Range psi (kg/cm^2)
A-340E		

Idle Speed	53-61 (3.7-4.3)	71-85 (5.0-6.0)
Stall Speed	135-171 (9.5-12.0)	188-238 (13.2-16.7)
A-340F		
Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
Stall Speed	162-198 (11.4-13.9)	199-249 (14.0-17.5)
A-340H		
Idle Speed	61-70 (4.3-4.9)	75-90 (5.2-6.3)
Stall Speed	162-198 (11.4-13.9)	199-249 (14.0-17.5)

A-340 SERIES LINE PRESSURE SPECIFICATIONS (TACOMA & T100)

Application	"D" Range psi (kg/cm^2)	"R" Range psi (kg/cm^2)
4-Cyl. (A-340E)		
Idle Speed	53-61 (3.7-4.3)	71-85 (5.0-6.0)
Stall Speed	135-171 (9.5-12.0)	188-238 (13.2-16.7)
V6 (A-340E & A-340F)		
Idle Speed	53-61 (3.7-4.3)	88-101 (6.2-7.1)
Stall Speed	131-166 (9.2-11.7)	208-282 (14.6-19.8)

A-340 SERIES LINE PRESSURE SPECIFICATIONS (4RUNNER)

Application	"D" Range psi (kg/cm^2)	"R" Range psi (kg/cm^2)
1995		
A-340E & A-340F		
Idle Speed	53-61 (3.7-4.3)	71-85 (5.0-6.0)
Stall Speed	135-171 (9.5-12.0)	188-238 (13.2-16.7)
A-340H		
Idle Speed	61-70 (4.3-4.9)	75-90 (5.2-6.3)
Stall Speed	162-198 (11.4-13.9)	199-249 (14.0-17.5)
1996		
4-Cyl.		
Idle Speed	53-61 (3.7-4.3)	88-102 (6.2-7.2)
Stall Speed	135-171 (9.5-12.0)	228-277 (16.0-19.5)
V6		
Idle Speed	53-61 (3.7-4.3)	88-101 (6.2-7.1)
Stall Speed	131-166 (9.2-11.7)	208-282 (14.6-19.8)

REMOVAL & INSTALLATION

TRANSMISSION

For transmission removal procedure, see appropriate TRANSMISSION REMOVAL article AUTOMATIC TRANSMISSION SERVICING.

TORQUE CONVERTER

NOTE: Torque converter is a sealed unit and is serviced as complete assembly. Perform following tests to check for defective converter. Torque converter and transmission cooler must be thoroughly cleaned and flushed if transmission is contaminated.

ONE-WAY CLUTCH CHECK

1. Install turner and stopper of One-Way Clutch Tester (09350-30020) in torque converter. See **Fig. 4**. 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 turned counterclockwise, but should turn freely when rotated clockwise. Torque required to turn clutch clockwise should be less than 22 INCH lbs. (2.5 N.m). If necessary, clean converter and retest clutch. Replace converter if clutch still fails test.

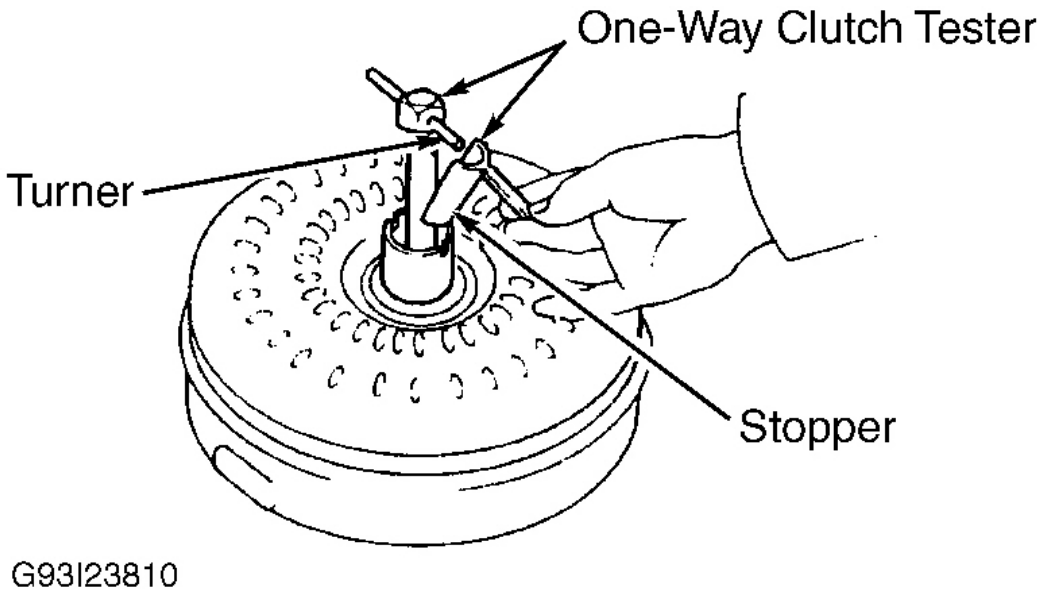

Fig. 4: Checking Condition Of One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DRIVE PLATE (FLYWHEEL) RUNOUT CHECK

Using dial indicator, measure drive plate runout. See **Fig. 5**. 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.

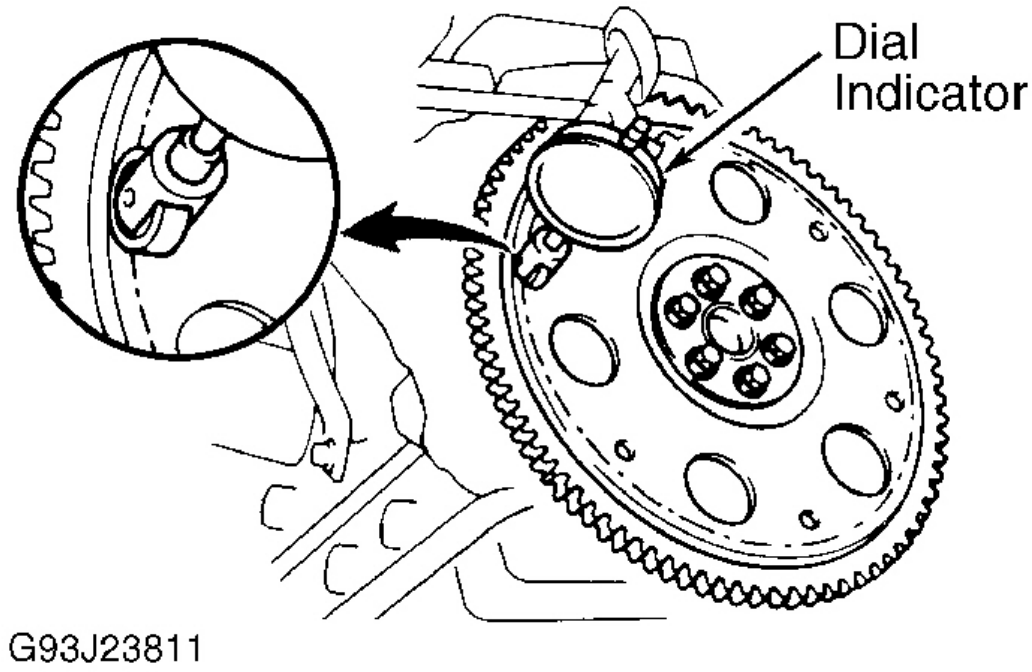

Fig. 5: Measuring Drive Plate Runout
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CONVERTER SLEEVE RUNOUT CHECK

Temporarily mount torque converter to drive plate. Mount a dial indicator with needle resting on converter sleeve. See **Fig. 6**. Rotate converter. If runout exceeds .012" (.30 mm), reposition converter on drive plate and recheck runout.

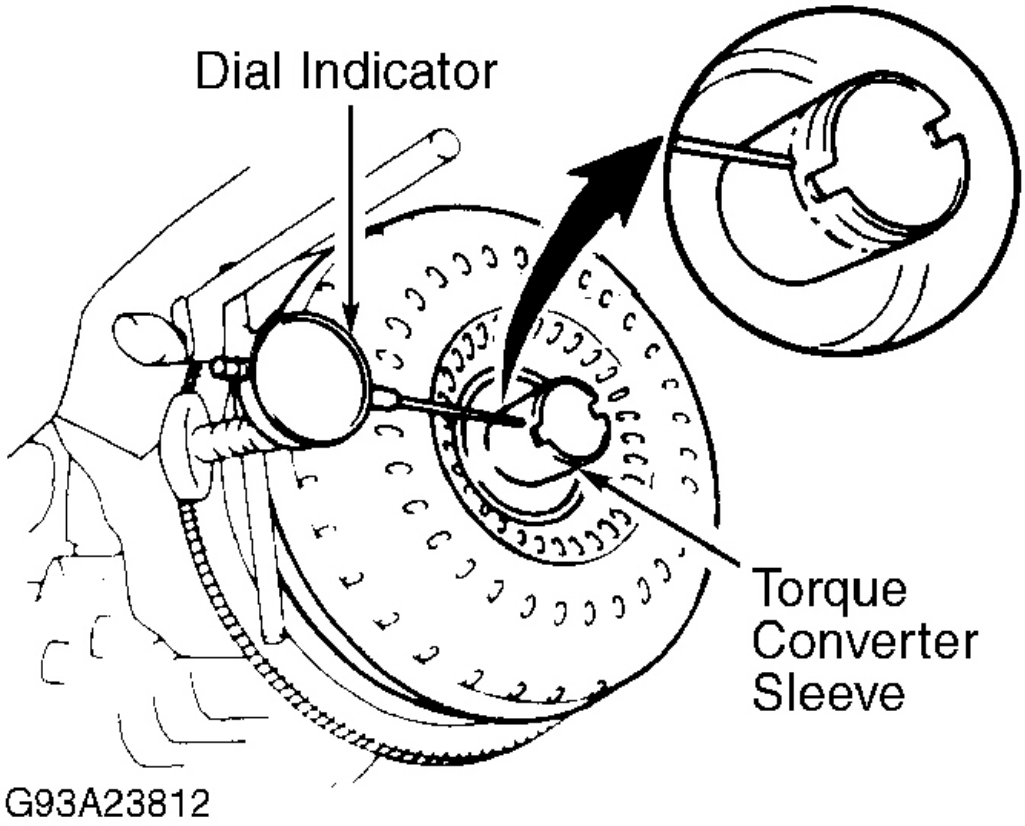

Fig. 6: Measuring Converter Sleeve Runout
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSMISSION DISASSEMBLY

1. Remove wire harness and throttle cable clamp. Remove transmission shaft lever and park/neutral position switch. Remove cooler line side unions. On A-340E, A-340F and A-340H models, remove speedometer driven gear or No. 1 and No. 2 speed sensors (if equipped) from extension housing.
2. On A-343F model, remove transmission fluid temperature sensor from right side of transmission case. On A-340F and A-340H models, remove transmission and transfer fluid temperature sensors. Remove transfer oil cooler tubes and transfer cooler line side unions. Remove transfer control shaft lever. Remove transfer position switch.
3. On A-340F and A-343F models, remove breather hose from transfer upper cover and transmission shifter control retainer. Remove engine rear mounting. Remove dynamic damper (vibration damper) from transfer case. Remove drive shaft upper dust cover. Unbolt and remove transfer case from transmission. DO NOT damage adapter rear oil seal with transfer input gear spline.
4. Remove speed sensor snap ring, sensor rotor and key. Remove transmission housing from transmission

case.

5. On A-340E models, remove extension housing. On A-340E model, remove speedometer drive gear snap ring, drive gear and lock ball from output shaft. Remove sensor rotor and key (if equipped).
6. On A-340F and A-343F models, remove transfer case from transmission. On all models, remove transmission oil pan. To prevent contamination of valve body, DO NOT turn transmission over.On A-340H models, remove transfer oil pan, transfer valve body, transfer solenoid wiring, parking lock pawl bracket. See **Fig. 7**. Remove transmission oil filter, oil tubes, transmission solenoid wiring.
7. On A-340E, A-340F and A-343F models, remove oil filter and solenoid wiring. On A-340E, A-340F and A-343F models, remove oil tubes. On all models, disconnect throttle cable from cam. Remove valve body. Remove check ball body and spring. See **Fig. 8**. Remove accumulator piston springs. Apply air pressure to proper passages of transmission case to remove accumulator pistons. See **Fig. 9**-**Fig. 11** . Remove throttle cable from transmission case.

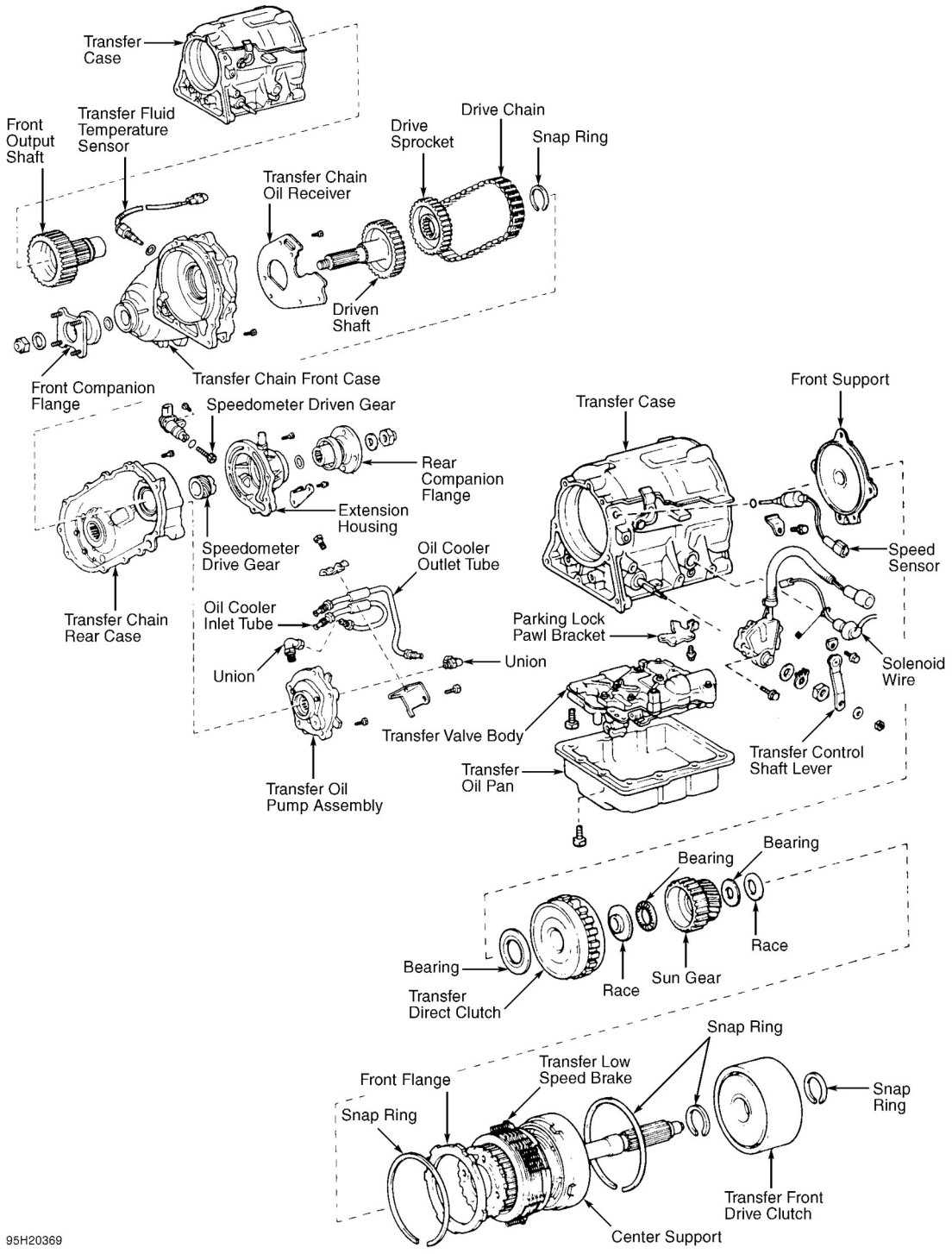

Fig. 7: Exploded View Of A-340H Transfer Case
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

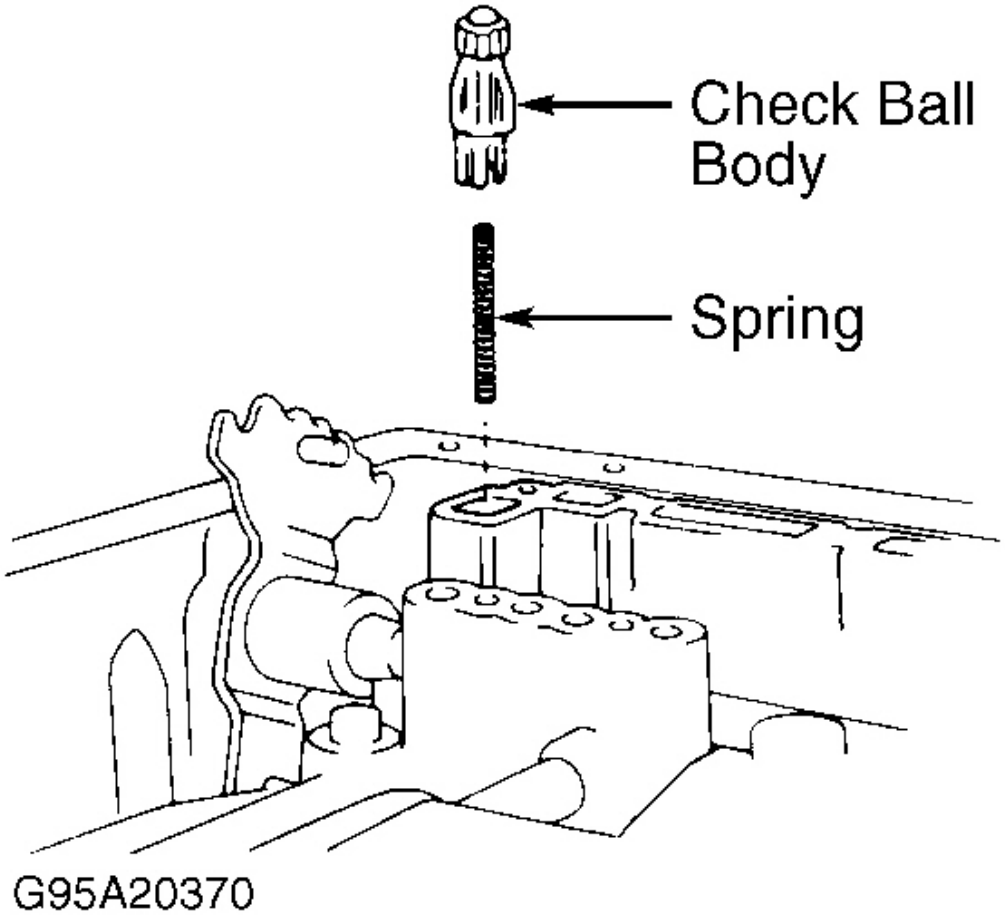

Fig. 8: Locating Check Ball & Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. On A-340H models, unstake and remove rear transfer case companion flange nut. Secure rear flange from turning with appropriate holding tool. Remove front companion flange using removal procedure for rear flange. Remove transfer extension housing. Remove speedometer drive gear. Remove oil pump assembly. Remove transfer chain rear case. See **Fig. 7**. Remove drive sprocket snap ring. Remove drive chain with drive sprocket and driven shaft. Remove transfer chain oil receiver. Remove transfer chain front case with front output shaft. Remove front output shaft from transfer chain front case.
9. Remove transfer front drive clutch snap ring and remove clutch. Remove output shaft snap ring. Check pack clearance of transfer low speed brake. Using feeler gauge, measure clearance between snap ring and flange. See **Fig. 12**. Clearance should be .036-.083" (.91-2.10 mm). If clearance is not within specifications, inspect discs. Remove transfer center support and transfer low speed brake. Remove front flange, thrust bearing race and thrust bearing. Remove sun gear. Remove bearing and race from transfer direct clutch. Remove transfer direct clutch snap ring and direct clutch. Remove front support. Remove

bearing and race from front support. Unbolt and remove transfer case. Remove speed sensor and key.

NOTE: For additional information on A-340H transfer case, see appropriate transfer case article in AXLE SHAFTS & TRANSFER CASES section.

10. On all models, remove parking lock pawl bracket. Disconnect parking rod from manual valve lever. Remove "E" ring from shaft. Carefully remove lock pawl, spring and shaft. Using chisel and hammer, cut and remove spacer from shaft. Drive out roll pin. Remove manual valve lever shaft through transmission case. Remove manual valve lever.
11. Remove oil pump from transmission case using appropriate puller. Remove overdrive planetary gear unit with overdrive direct clutch from case. Remove bearing and race. See **Fig. 13**. Remove overdrive planetary ring gear. Remove bearing and race.
12. On all models, check overdrive brake piston stroke. Install dial indicator on overdrive, (OD) brake piston. Measure stroke by applying 57-114 psi (4-8 kg/cm2) compressed air to opening in case. See **Fig. 14**. See OD BRAKE PISTON STROKE SPECIFICATIONS table. If piston stroke is not within specifications, inspect clutch discs.
13. Remove snap ring. Remove OD brake clutch pack flanges, plates and discs. Note number and location of all components. Place reference mark on 2nd coast brake piston rod. Apply 57-114 psi (4.8 kg/cm2) of air at opening of transmission case. Using wire gauge, measure clearance between reference mark and case. See**Fig. 15**-16. See **2ND COAST BRAKE PISTON STROKE SPECIFICATIONS** table. If stroke is not within specification, inspect brake band.
14. Remove 2nd coast brake cover snap ring. Carefully apply air pressure to oil hole as in step 13) to remove cover, piston and spring. Remove thrust bearing and race from overdrive support assembly. Remove overdrive support-to-case bolts. Remove snap ring. Using appropriate puller, remove overdrive support assembly. Remove race from rear of support assembly. Remove direct clutch with forward clutch from case. Remove bearings and race from clutch assembly.
15. Remove "E" ring from 2nd coast brake band pin and remove pin. Remove 2nd coast brake band. Remove race from front planetary ring gear. Remove front planetary ring gear. Remove thrust bearing and race from inside ring gear. Remove race from front planetary gear. Place transmission on end and support output shaft on wooden blocks. Remove snap ring located above front planetary gear. Remove front planetary gear. See **Fig. 13**.
16. Remove sun gear drum and one-way clutch. Check clutch pack clearance of second brake. See**Fig. 17**-18. Refer to the appropriate **2ND BRAKE CLUTCH PACK CLEARANCE SPECIFICATIONS** table. If clearance is not within specifications, inspect condition of clutch discs. Remove flange snap ring.
17. Remove the flange, plates and discs. Note the number and location of all components. Check clutch pack clearance of the 1st and reverse brakes. See**Fig. 17**-18. Also, refer to the specifications in the **1ST & REVERSE BRAKE PACK CLEARANCE SPECIFICATION** table. If clearance is not within specifications, inspect condition of clutch discs.
18. Remove 2nd brake piston sleeve. Remove rear planetary gear unit snap ring. Remove rear planetary gear, 2nd brake drum, 1st and reverse brake pack and output shaft as an assembly. Remove thrust bearing and race from case. Remove 2nd brake drum assembly. See **Fig. 13**.
19. Remove 1st and reverse brake cushion plate, flange, plates and discs. Note number and location of all components. Remove leaf spring from case. Remove brake drum gasket from case.
20. Ensure 1st and reverse brake pistons move smoothly when applying compressed air into case. See **Fig. 19**. Disassemble 1st and reverse brake piston. Install appropriate compressor on spring retainer and

compress return spring. See **Fig. 20**. Remove snap ring. Remove piston return spring. Using compressed air, remove 1st and reverse brake piston No. 2. See **Fig. 19**.

21. Insert Sleeve Remover (09350-07080) behind reaction sleeve. Remove reaction sleeve from case. See **Fig. 21**-22. Insert Piston Remover (09350-07090) behind No. 1 brake piston. Remove No. 1 brake piston from case. On A-340E and A-340H models, remove manual valve lever spacer from shaft. Remove pin. Pull shaft out through case and remove lever. Remove 2 oil seals.

OD BRAKE PISTON STROKE SPECIFICATIONS

Model & Transmission	Piston Stroke In. (mm)
Land Cruiser A-343F	.069-.081 (1.75-2.05)
LX450 A-343F	.069-.081 (1.75-2.05)
Pickup, Tacoma & 4Runner	
A-340E	.055-.067 (1.40-1.70)
A-340F	.052-.064 (1.32-1.62)
A-340H	.055-.067 (1.40-1.70)
T100	
2WD A-340E	.055-.067 (1.40-1.70)
4WD A-340F	.055-.067 (1.40-1.70)

2ND COAST BRAKE PISTON STROKE SPECIFICATIONS

Model & Transmission	Piston Stroke In. (mm)
Land Cruiser A-343F	.059-.118 (1.50-3.00)
LX450 A-343F	.059-.118 (1.50-3.00)
Pickup, Tacoma & 4Runner	
A-340E	.059-.118 (1.50-3.00)
A-340F	.059-.118 (1.50-3.00)
A-340H	.059-.118 (1.50-3.00)
T100	
2WD A-340E	.059-.118 (1.50-3.00)
4WD A-340F	.059-.118 (1.50-3.00)

2ND BRAKE CLUTCH PACK CLEARANCE SPECIFICATIONS

Model & Transmission	Piston Stroke In. (mm)
Land Cruiser A-343F	.024-.078 (.61-1.98)
LX450 A-343F	.024-.078 (.61-1.98)
Pickup, Tacoma & 4Runner	
A-340E	.024-.078 (.61-1.98)
A-340F	.020-.069 (.50-1.76)
A-340H	.024-.078 (.61-1.98)
T100	
2WD A-340E	.024-.078 (.61-1.98)
4WD A-340F	.024-.078 (.61-1.98)

1ST & REVERSE BRAKE PACK CLEARANCE SPECIFICATION

Application	Clearance - In. (mm)
Land Cruiser A-343F	.028-.048 (.70-1.22)
LX450 A-343F	.028-.048 (.70-1.22)
Pickup, Tacoma & 4Runner	
A-340E	.024-.044 (.61-1.12)
A-340F	.020-.040 (.50-1.02)
A-340H	.024-.052 (.61-1.32)
T100	
2WD A-340E	.024-.044 (.61-1.12)
4WD A-340F	.024-.044 (.61-1.12)

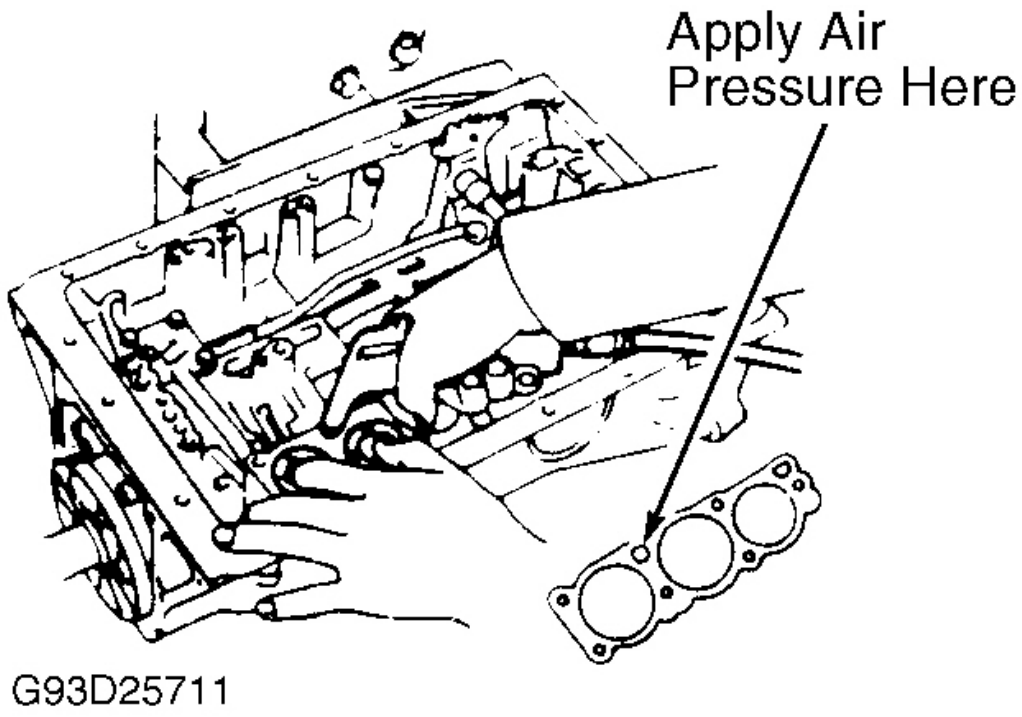

Fig. 9: Removing Accumulator Pistons & Springs 2nd Brake & Direct Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

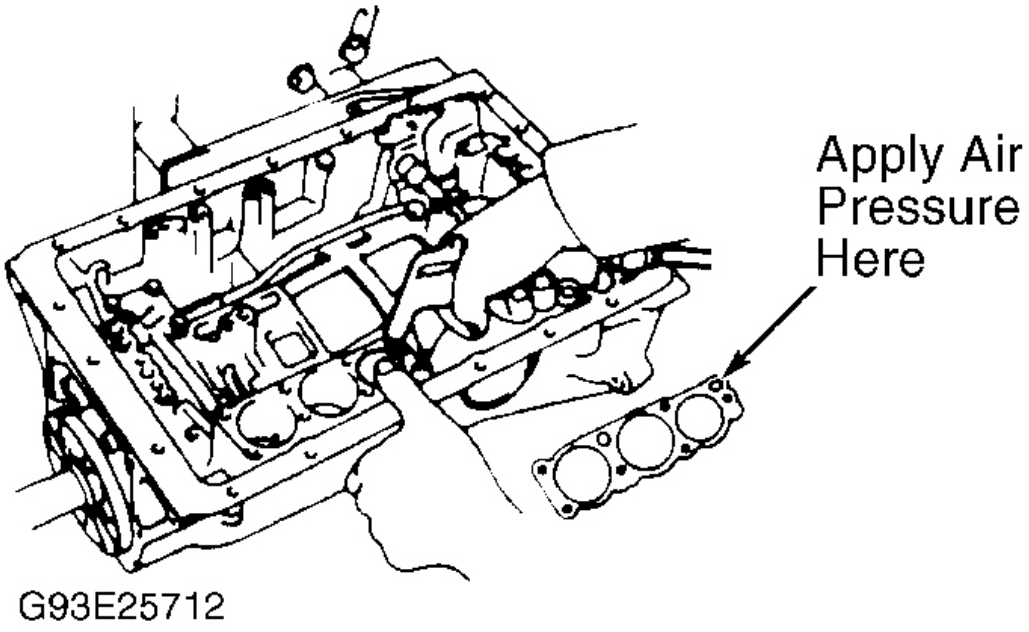

Fig. 10: Removing Accumulator Pistons & Springs Overdrive Brake
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

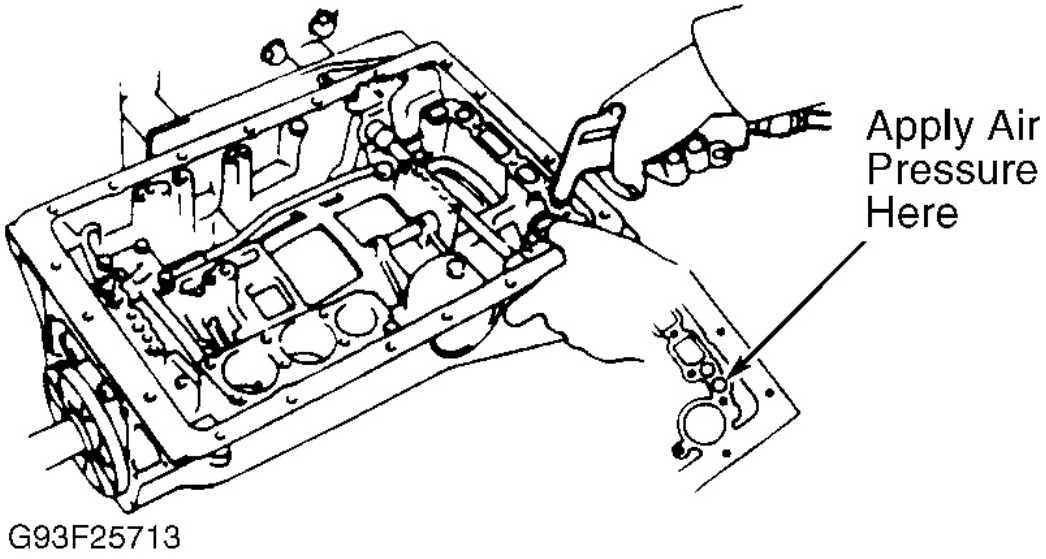

Fig. 11: Removing Accumulator Pistons & Springs Overdrive Direct Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

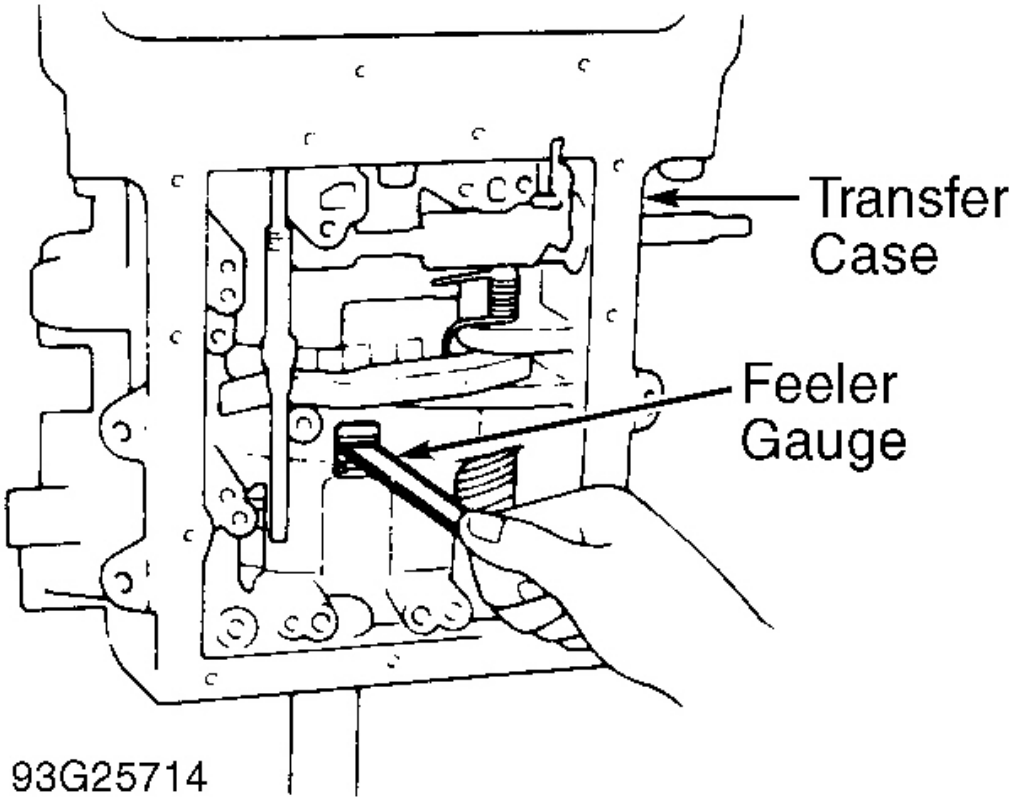

Fig. 12: Measuring Transfer Low Speed Brake Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

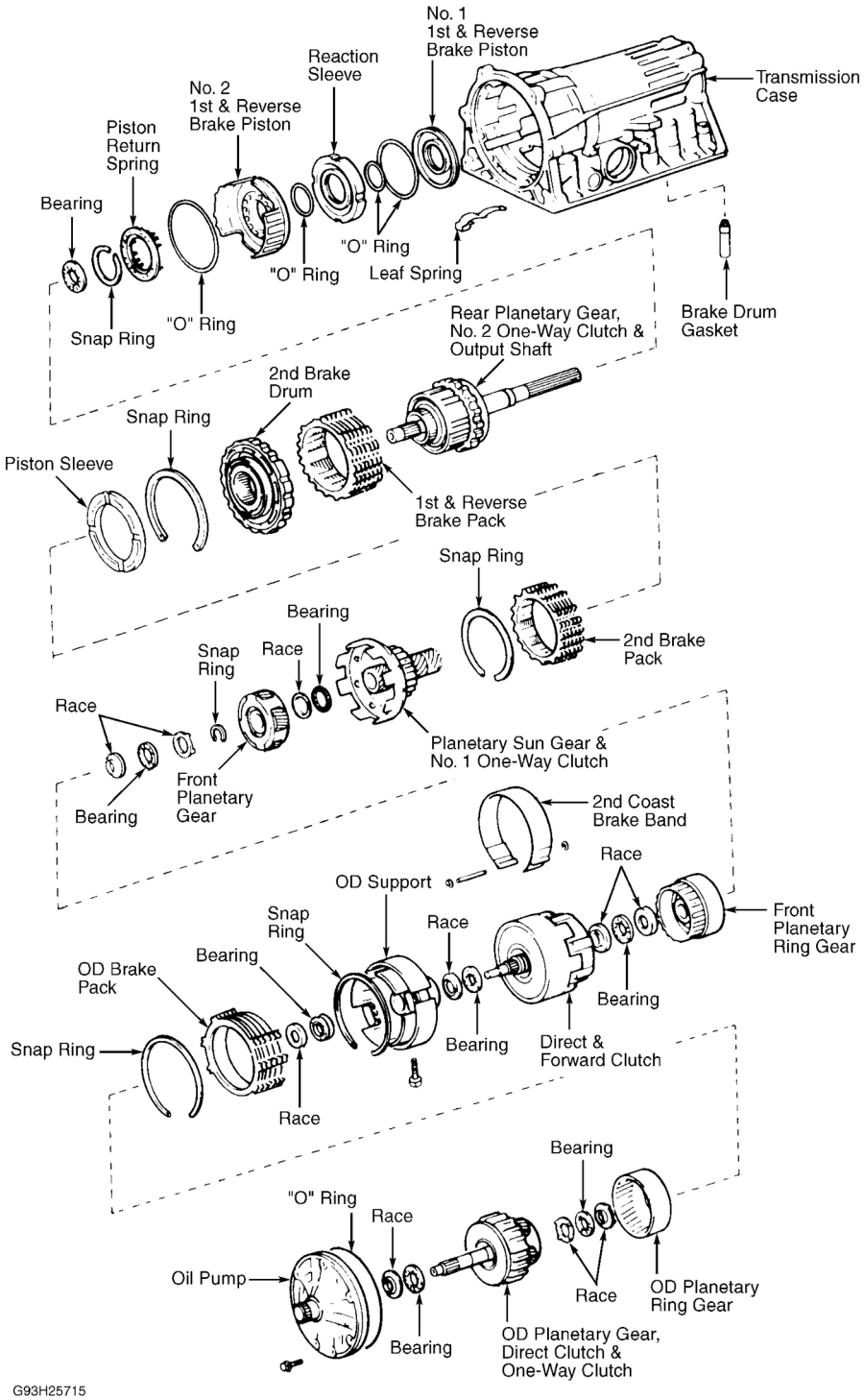

Fig. 13: Exploded View Of A-340E, A-340F, A-343F & A-340H Internal Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

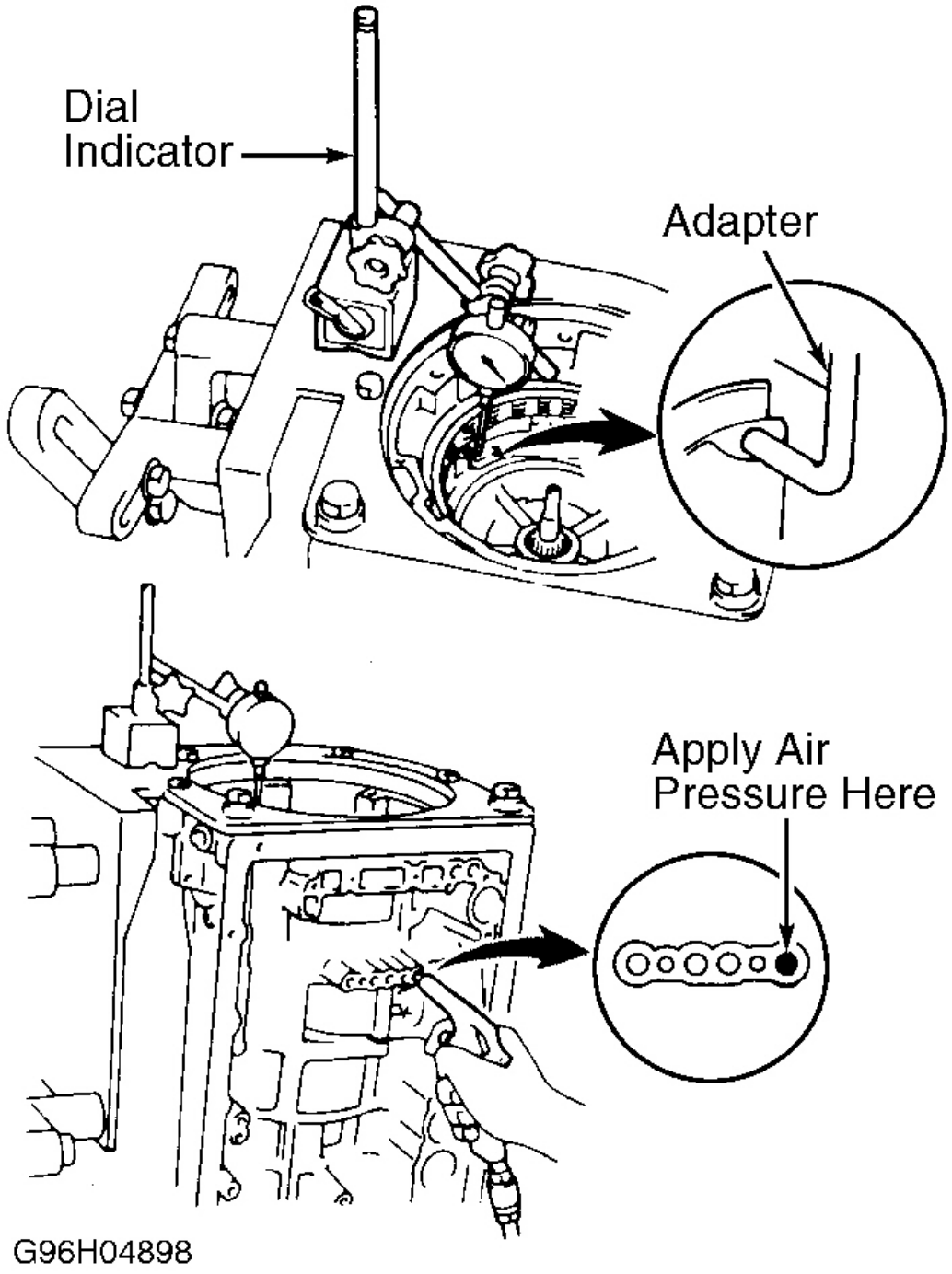

Fig. 14: Measuring Overdrive Brake Piston Stroke
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

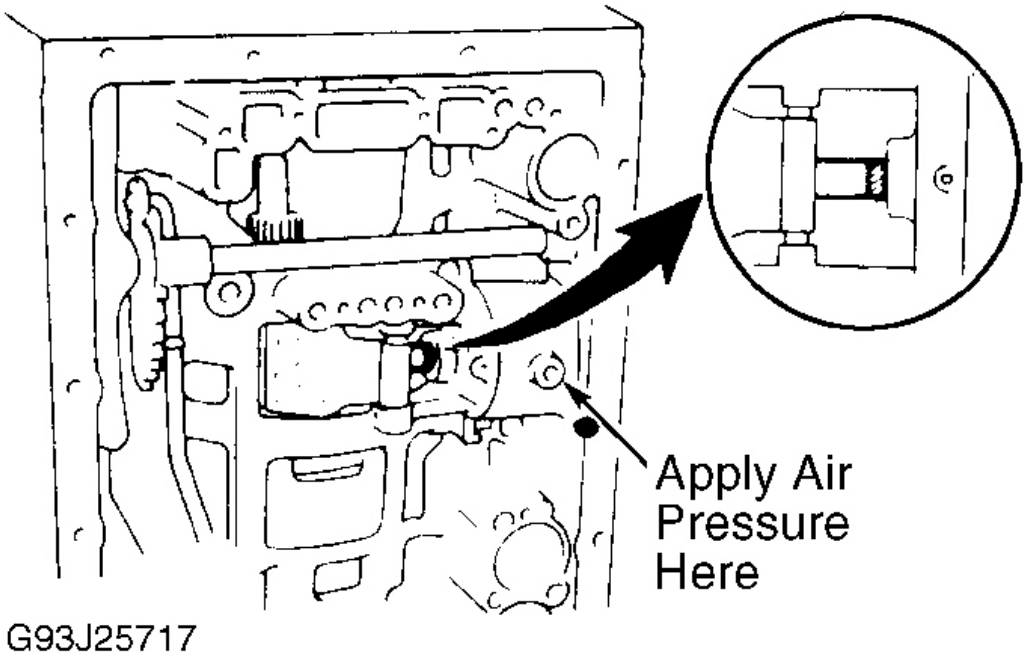

Fig. 15: Measuring 2nd Coast Brake Piston Stroke Reference Mark Location
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

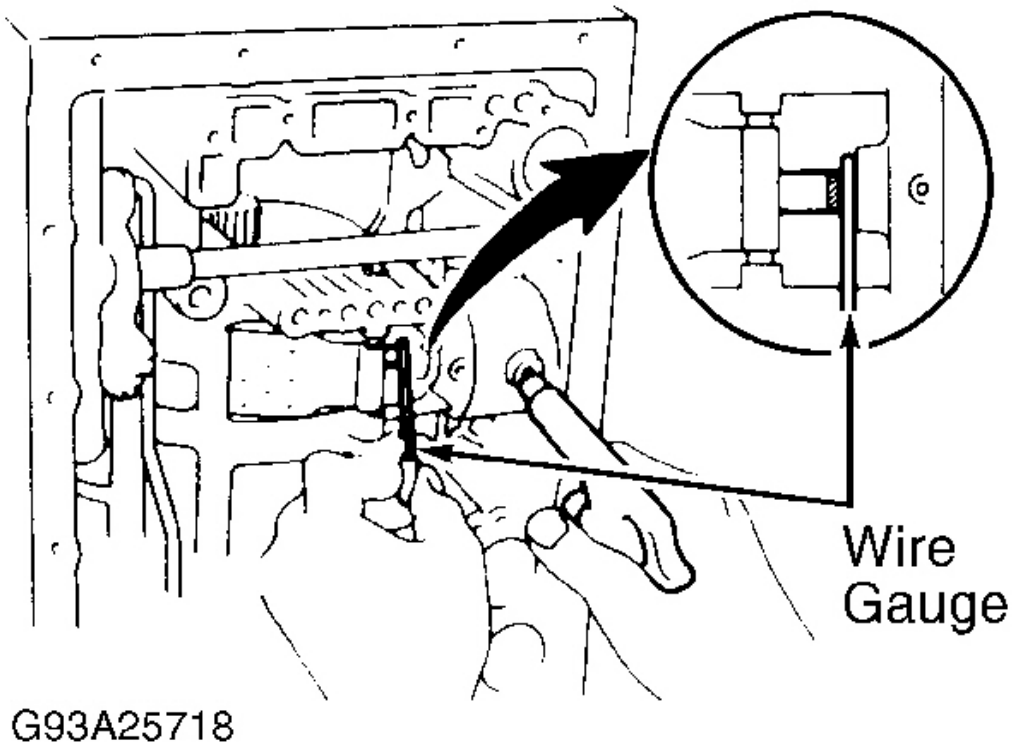

Fig. 16: Measuring 2nd Coast Brake Piston Stroke Measuring Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

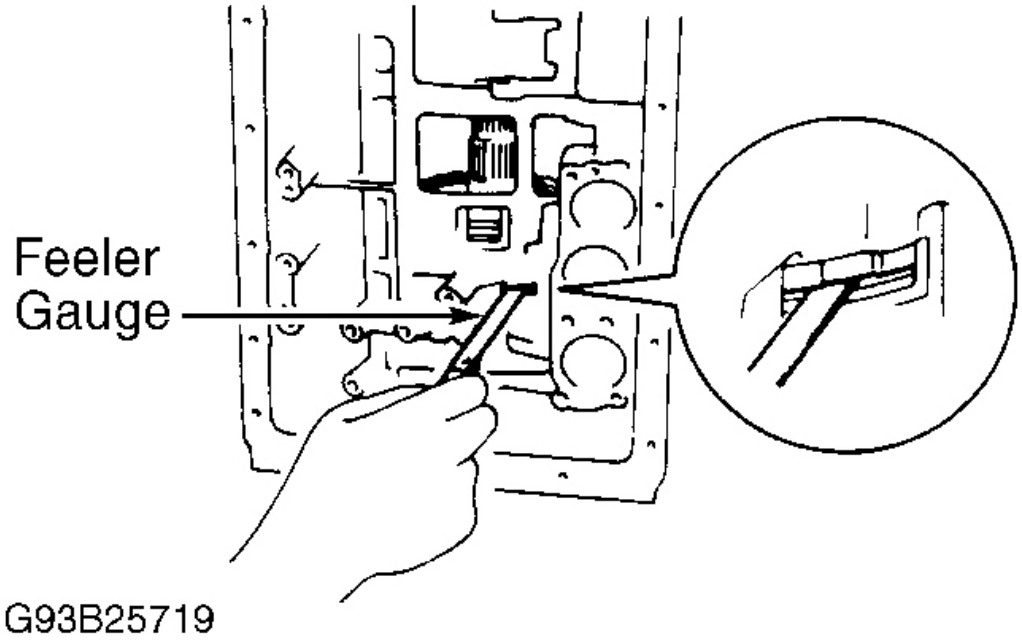

Fig. 17: Measuring Brake Clearance Checking 1st & Reverse Brake Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

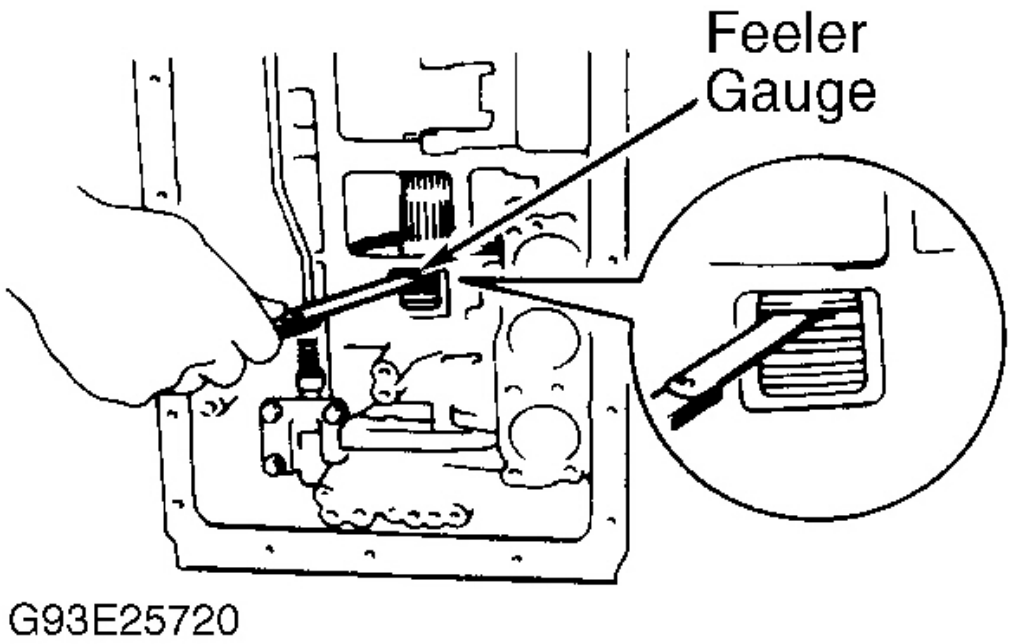

Fig. 18: Measuring Brake Clearance Checking 2nd Brake Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

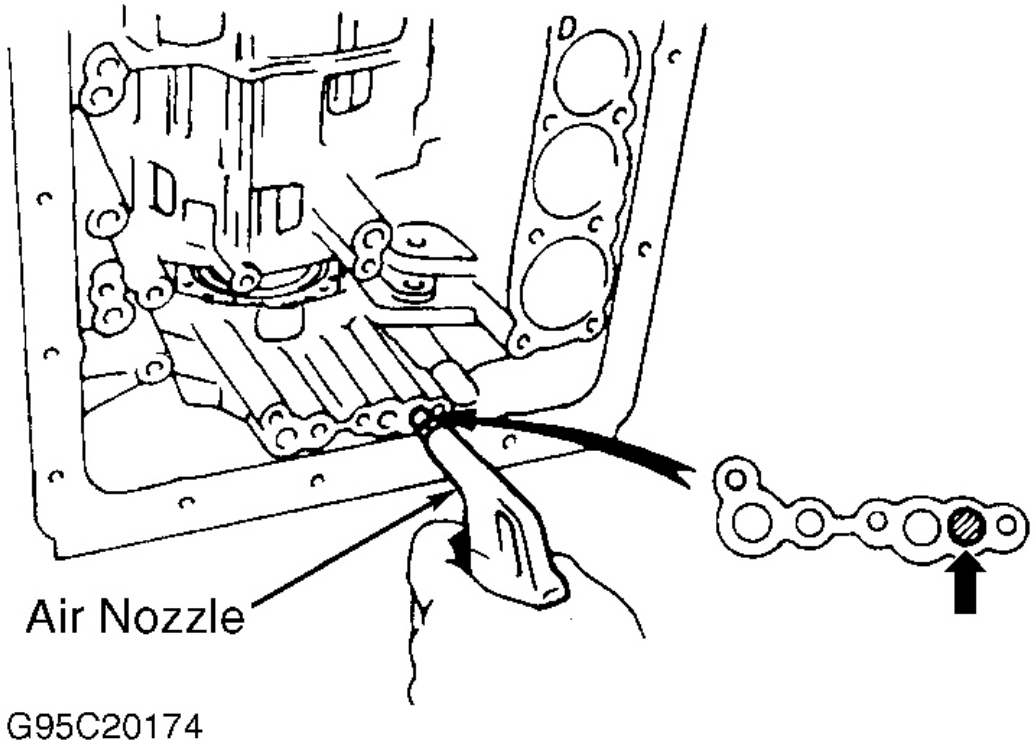

Fig. 19: Checking 1st & Reverse Brake Piston Travel
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

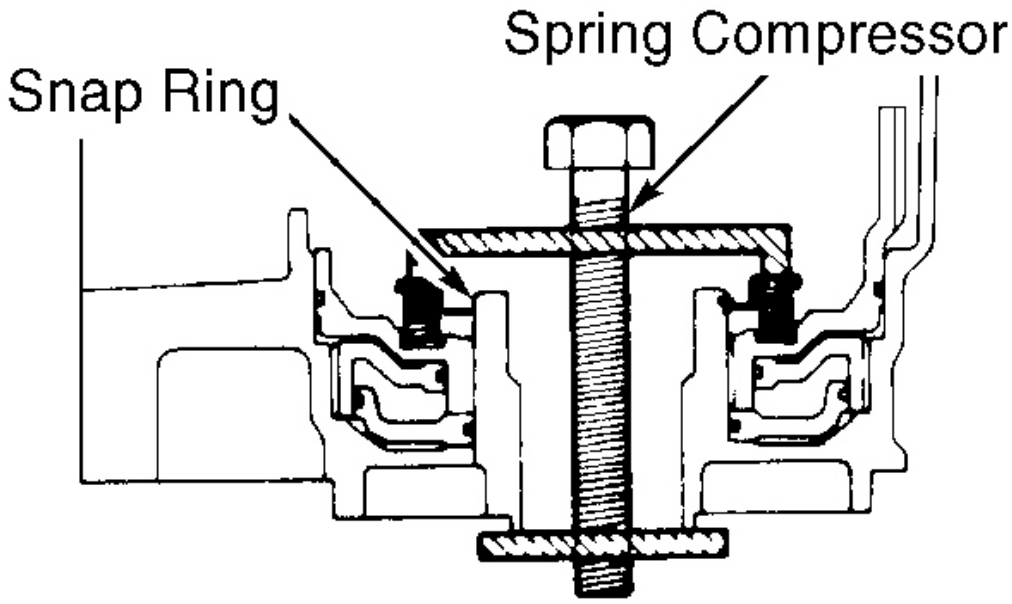

Fig. 20: Compressing 1st & Reverse Brake Return Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

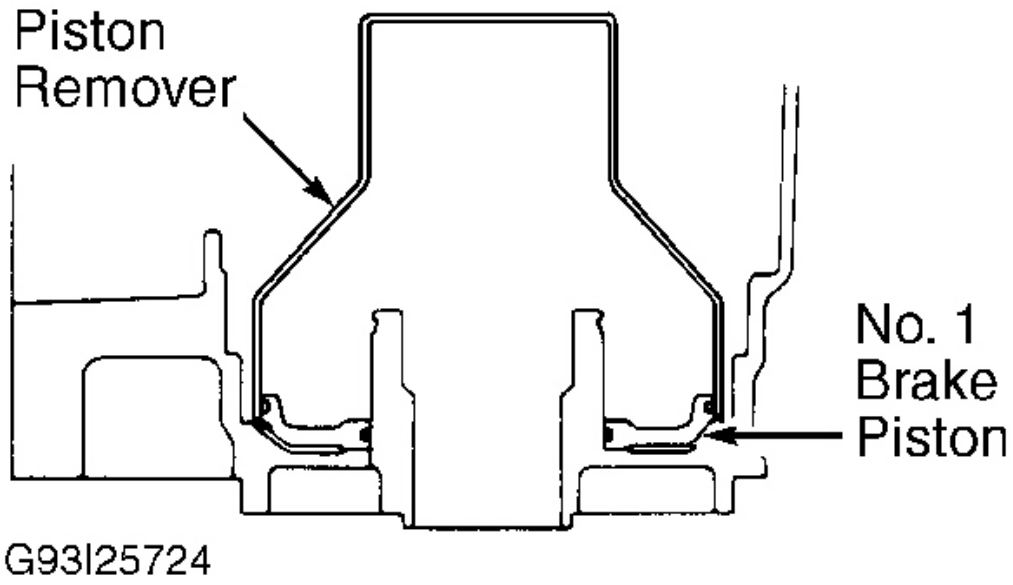

Fig. 21: Removing Reaction Sleeve & Brake Piston Removing Brake Piston
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

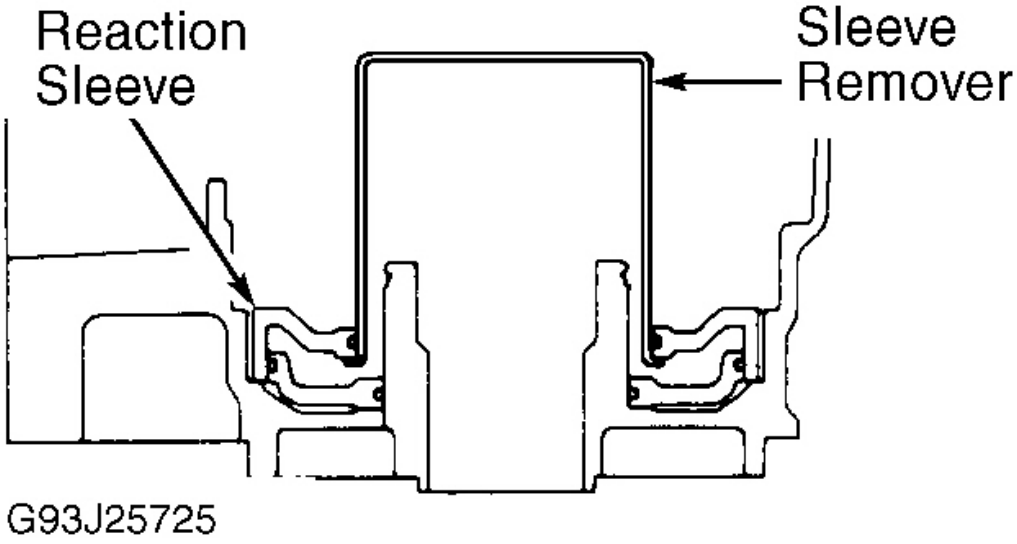

Fig. 22: Removing Reaction Sleeve & Brake Piston Removing Reaction Sleeve
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMPONENT DISASSEMBLY & REASSEMBLY

OIL PUMP

Disassembly

1. Place oil pump on torque converter while working on pump. Remove seal rings from rear of oil pump. Remove bolts from rear of pump assembly. Remove stator shaft from pump housing. See **Fig. 23**.
2. Place reference mark on drive and driven gears for reassembly reference and remove from pump housing. If oil seal requires replacement, pry seal from housing with a screwdriver.

Cleaning & Inspection

1. Clean all components in solvent. Dry with compressed air. Inspect contact surfaces between housing and driven gear for wear. Check gears for wear and body crescent for damage. Check pump gear contact surface on stator shaft for damage and wear.
2. Measure inside diameter of oil pump housing and stator shaft bushings. Measure driven gear-to-housing clearance and gear tip clearance. Using feeler gauge and straightedge, measure gear side clearance between pump housing face and top of gears. See **Fig. 24**. See **OIL PUMP CLEARANCE SPECIFICATIONS** table.
3. If clearance(s) are not within specifications, replace worn component(s). Pump gears must be replaced as a matched set. If bushing diameter exceeds specification, oil pump housing or stator shaft must be replaced.

OIL PUMP CLEARANCE SPECIFICATIONS

Application	Standard In. (mm)	Maximum In. (mm)
Gear-To-Housing	.003-.006 (.07-.15)	.012 (.30)
Gear Tip Clearance	.004-.006 (.11-.14)	.012 (.30)
Gear Side Clearance	.0008-.0020 (.020-.050)	.004 (.10)
Housing Bushing	N/A	1.504 (38.19)
Stator Shaft Bushing		
Front	N/A	.850 (21.58)
Rear	N/A	1.066 (27.08)

Reassembly

1. Install oil seal until seal is even with outer edge of pump housing. Place stator shaft in torque converter while working on pump. Coat all components with ATF. See **Fig. 23**.
2. Align reference marks on gears during installation. To complete reassembly, reverse disassembly procedure. Tighten bolts to specification. DO NOT over expand seal rings during installation. Ensure seal rings move smoothly after installation. Ensure drive gear rotates smoothly when installed in torque converter.

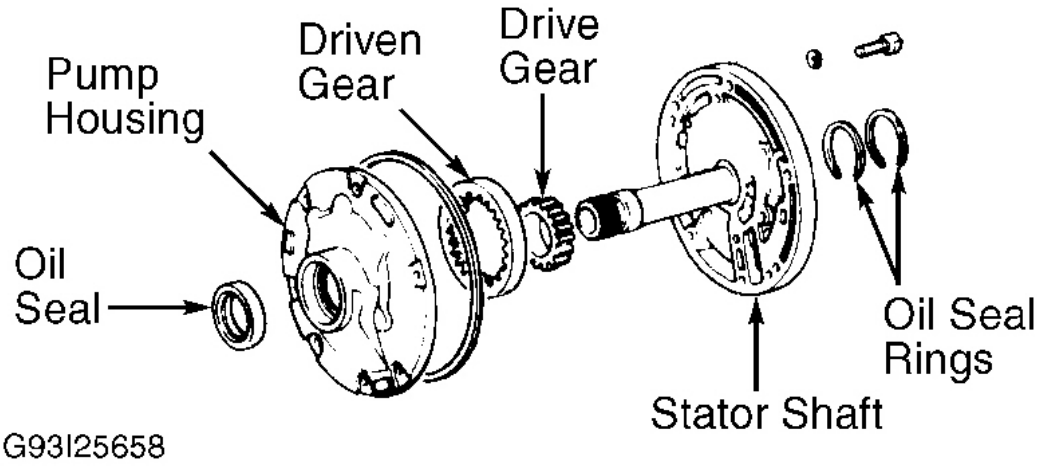

Fig. 23: Exploded View Of Oil Pump Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

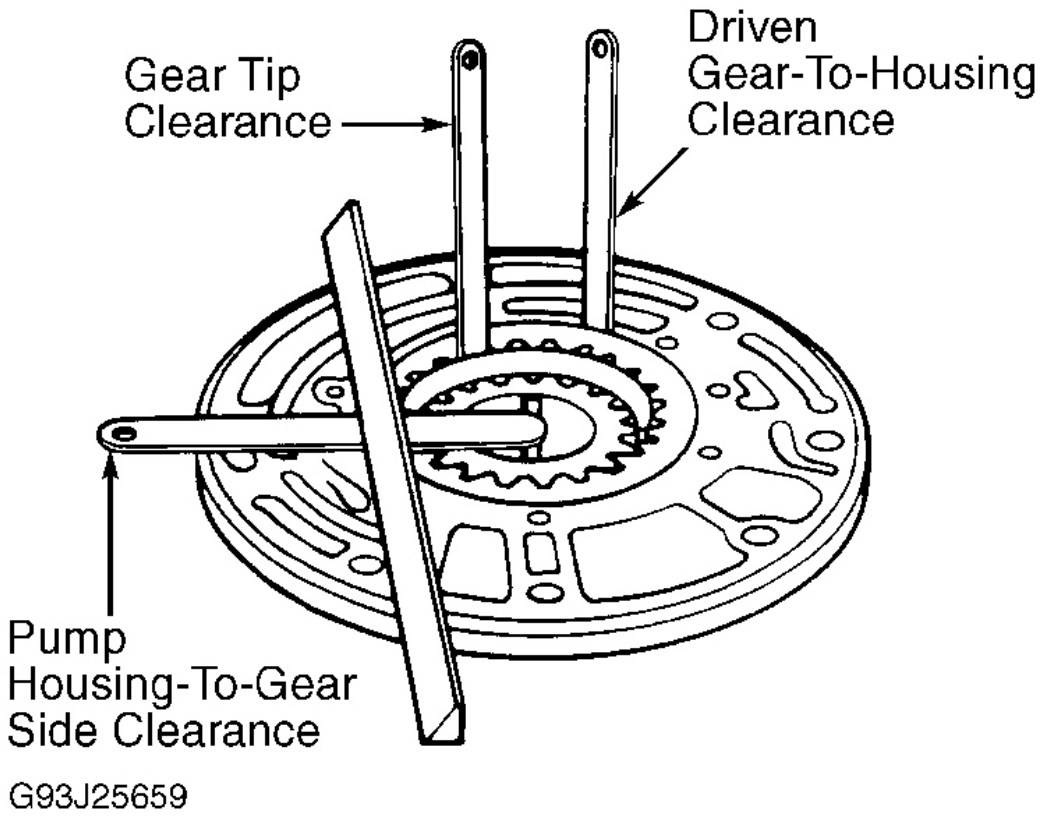

Fig. 24: Measuring Oil Pump Clearances
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OD PLANETARY GEAR, OD DIRECT CLUTCH & OD ONE-WAY CLUTCH

Disassembly

1. One-way clutch operation should be checked prior to disassembly. Hold clutch drum and rotate input shaft clockwise. See **Fig. 25**. Input shaft should rotate freely clockwise and lock counterclo ckwise.
2. Remove clutch drum from planetary gear. Remove thrust bearing from clutch drum. Remove snap ring, flange, discs and plates from clutch drum. Note number and location of components.
3. Using appropriate compressor, compress piston return spring and remove snap ring. Carefully release press and remove piston return spring. Place oil pump on torque converter. Place clutch drum on pump. Hold clutch piston and carefully apply air pressure to oil pump port. See **Fig. 26**. Remove direct clutch piston.
4. Remove snap ring and ring gear flange from planetary ring gear. Remove bearing race from rear of planetary gear. Remove snap ring, retaining plate, one-way clutch assembly and thrust washer from planetary gear. Remove one-way clutch from outer race. Remove thrust washer.

Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. Ensure check ball does not allow air to bleed through piston.
2. Measure inside diameter of clutch drum bushing and planetary gear bushing. Maximum diameter for overdrive direct clutch drum bushing is 1.067" (27.11 mm). Maximum diameter for overdrive planetary gear bushing is .444" (11.27 mm). Replace components if damaged or not within specifications.
3. Measure planetary pinion gear thrust clearance. Standard clearance should be .008-.024" (.20-.61 mm). Maximum clearance is .039" (1.00 mm). If clearance is not within specifications, replace planetary gear assembly. Check OD direct clutch return spring free length. Include spring seat in measurement. Standard free length is .622" (15.80 mm).

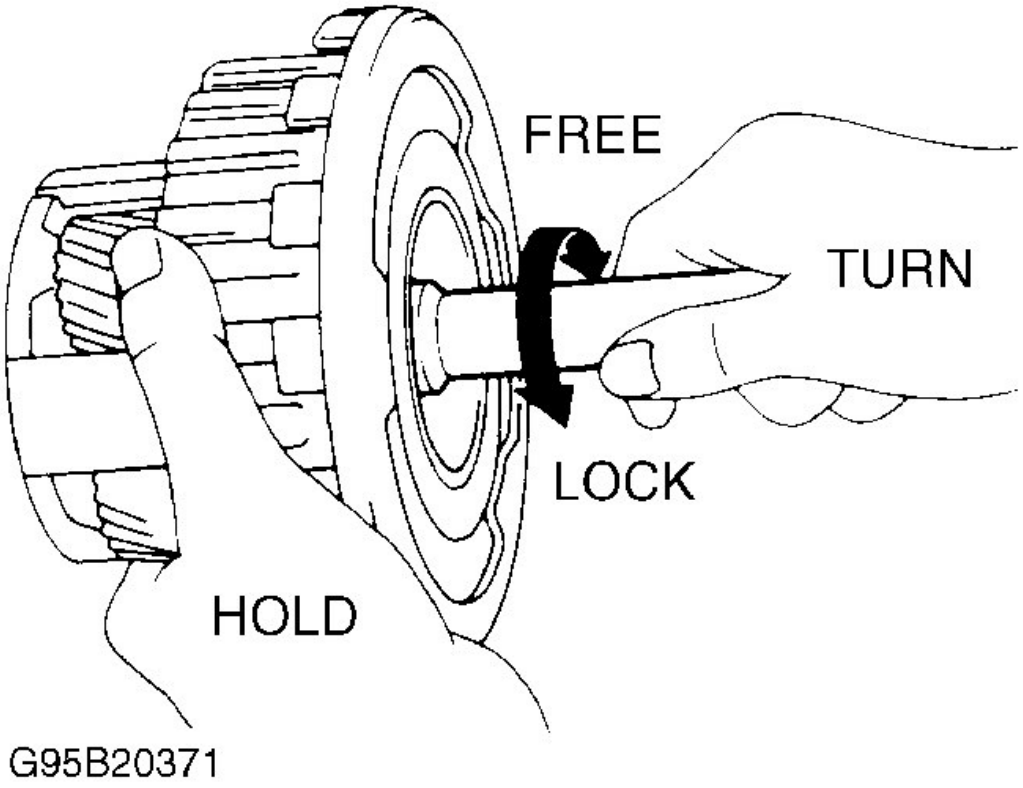

Fig. 25: Checking OD One-Way Clutch Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CAUTION: Clutch discs should be soaked in ATF for 15 minutes prior to installation. Coat all parts with ATF prior to installation. Coat thrust bearings and races with petroleum jelly prior to installation.

Reassembly

1. Position planetary gear with input shaft pointing upward. Install thrust washer in planetary gear with grooved side facing upward. Install one-way clutch into outer race with flanged side facing upward. See **Fig. 27**.
2. Install one-way clutch assembly on planetary gear. Install retaining plate and snap ring. Install race on back of planetary gear. Race tabs must be engaged in planetary gear. See **Fig. 28**.
3. Install ring gear flange and snap ring . Install thrust bearing and race in planetary ring gear. Race tabs must be engaged in ring gear. Coat "O" rings with ATF and install on clutch piston. Carefully install clutch piston in clutch drum. Install piston return spring. Using appropriate compressor, compress return spring and install snap ring. Ensure ring is fully seated.

CAUTION: Ensure ends of snap ring do not align with claw area on spring retainer of piston return spring.

4. With clutch drum open area facing upward, install plates and discs, starting with plate. Install flange with flat end facing toward disc. Install snap ring. Place oil pump on torque converter. Place clutch drum on the oil pump. Measure piston stroke while applying 57-114 psi (4-8 kg/cm^2) to oil pump port. See **Fig. 26**. See **OVERDRIVE DIRECT CLUTCH PISTON STROKE SPECIFICATIONS** table. If piston stroke is not within specifications, check for incorrectly assembled components. Recheck piston stroke.
5. If piston stroke exceeds specification, install different thickness flange. Flanges are available in thicknesses of .122" (3.09 mm) to .142" (3.60 mm) in .004" (.10 mm) increments.
6. Remove clutch assembly from oil pump. Install thrust bearing and race in clutch drum with race toward clutch drum. Align tabs of clutch discs. See **Fig. 28**. Install direct clutch drum on planetary gear. Hold clutch drum and rotate input shaft clockwise. Input shaft should rotate freely clockwise and lock counterclockwise.

OVERDRIVE DIRECT CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
Lexus LX450	.057-.067 (1.45-1.70)
Toyota	
A-340E	.073-.085 (1.85-2.15)
A-340F (T100)	.073-.085 (1.85-2.15)
A-340F (All But T100)	.070-.082 (1.77-2.07)
A-340H	.073-.085 (1.85-2.15)
A-343F	.073-.085 (1.85-2.15)

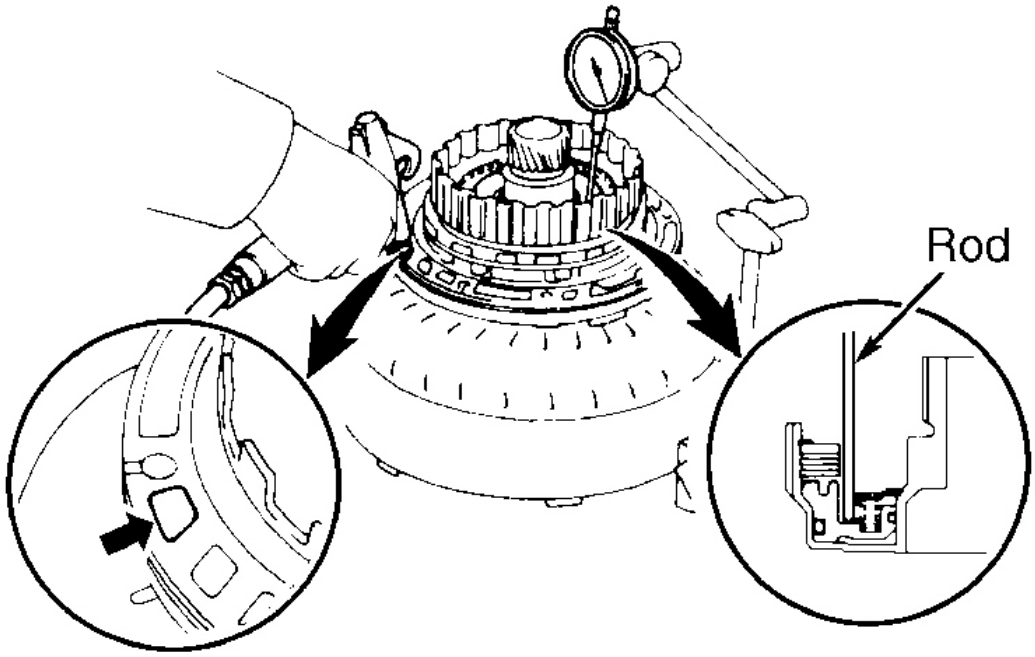

Fig. 26: Removing Clutch Piston & Measuring Stroke
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

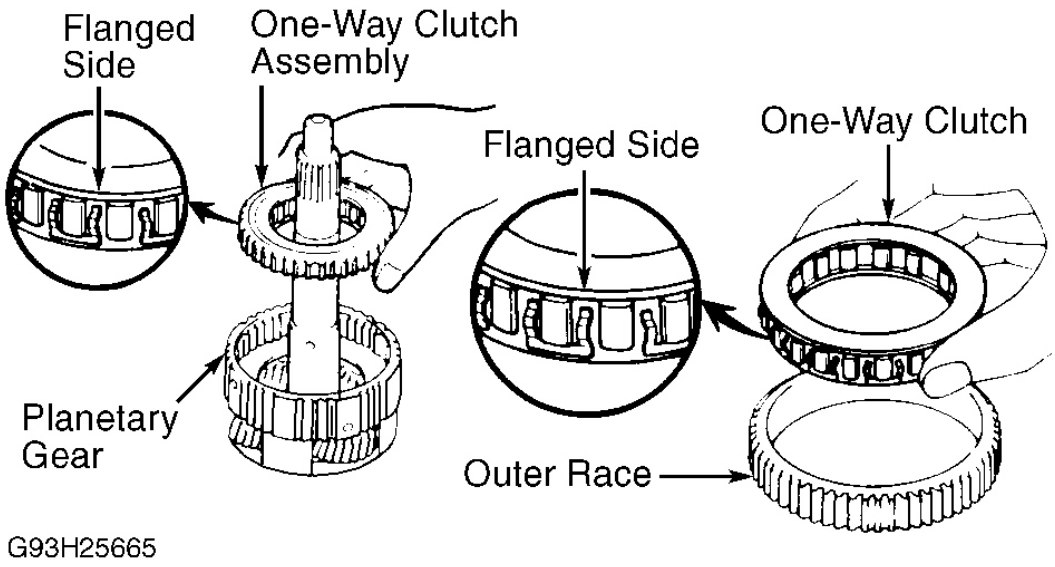

Fig. 27: Installing Overdrive One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

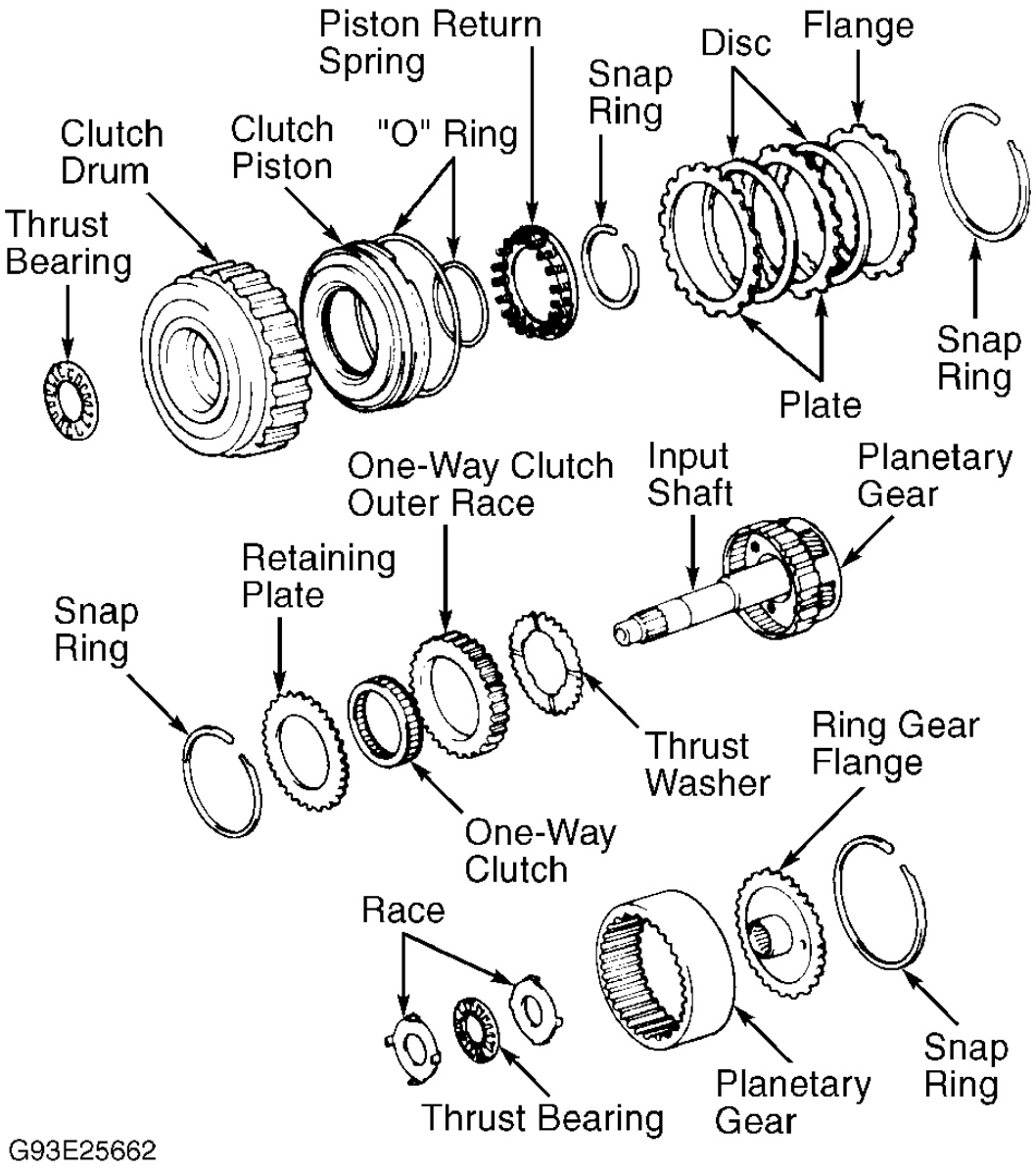

Fig. 28: Exploded View Of Overdrive Clutch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OVERDRIVE BRAKE

Disassembly

Remove all thrust washers from overdrive support. Using appropriate compressor, compress piston return spring and remove snap ring. Place support on direct clutch assembly. Hold brake piston in a level position. Carefully apply air pressure to piston supply port and remove piston. Remove oil seal rings from rear of

support. See **Fig. 29**.

Inspection

Clean all components with solvent. Dry with compressed air. Inspect components for damage. Replace as necessary.

Reassembly

1. To reassemble, reverse disassembly procedure. Coat seal rings with ATF prior to installation. DO NOT over expand seal rings during piston installation. Ensure seal rings move smoothly after installation.
2. Install NEW "O" rings on OD brake piston. Use care not to damage "O" rings during piston installation. Install snap ring in support and ensure end of snap ring is not aligned with cutout portion of support.
3. Ensure tabs on all races are aligned with areas on support. Coat races and thrust bearings with petroleum jelly prior to installation. Place support on direct clutch assembly and apply air pressure to piston supply port. Ensure piston operates smoothly in support. See **Fig. 29**.

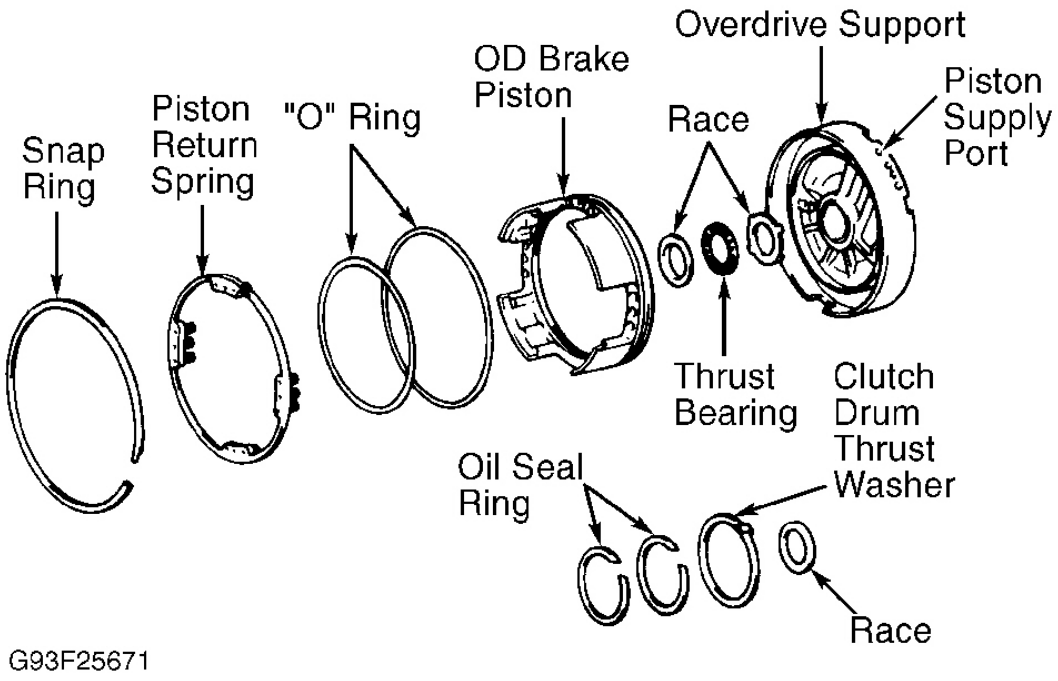

Fig. 29: Exploded View Of Overdrive Support & Brake
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DIRECT CLUTCH

Disassembly

1. Remove direct clutch drum from forward clutch assembly. Remove thrust bearing from inside of clutch drum. Remove snap ring from clutch drum. Remove flange, discs and plates. Note number and location of components. See **Fig. 30**.
2. Using appropriate compressor, compress piston return spring and remove snap ring or oil seal ring. Place clutch drum on overdrive support and carefully apply air pressure to piston supply port and remove clutch piston. See Fig. 31-32.

Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas.
2. Ensure check ball is free in clutch piston. Apply air pressure to check ball area. Ensure check ball does not allow air to bleed through piston. Measure free length of piston return spring. Length should be .839" (21.32 mm).
3. Measure inside diameter of clutch drum bushing. Replace the clutch drum if bushing diameter exceeds specification. See the **DIRECT CLUTCH DRUM BUSHING SPECIFICATION** table.

DIRECT CLUTCH DRUM BUSHING SPECIFICATION

Application	In. (mm)
Lexus LX450	2.126 (53.99)
Toyota (All Models)	2.126 (53.99)

CAUTION: Clutch discs should be soaked in ATF for 15 minutes prior to installation. Thrust washers and races should be coated with petroleum jelly prior to installation.

Reassembly

1. Coat "O" rings with ATF. To complete reassembly, reverse disassembly procedure. Ensure piston return spring snap ring or oil seal ring is fully seated and ring ends do not align with claw area on spring retainer of piston return spring.
2. With clutch drum open area facing upward, install plates and discs, starting with a plate and then alternating with a disc. Install appropriate amount of plates and discs.
3. Install flange with flat end facing toward disc. Install snap ring. Place clutch drum on overdrive support. Measure piston stroke with a dial indicator while applying 57-114 psi (4-8 kg/cm^2) to piston supply port. See **Fig. 31**-32.
4. See **DIRECT CLUTCH PISTON STROKE SPECIFICATIONS** table. If piston stroke is not within specifications, check for incorrectly assembled components. Recheck piston stroke measurement.
5. If piston stroke is not within specifications, install different thickness flange. Flanges for Toyota A-340E, A-340F, A-343F and A-340H are available in thicknesses of .106" (2.70 mm) to .146" (3.70 mm) in .004" (.10 mm) increments. Flanges for Lexus A-340E are available in thicknesses of .118" (2.99 mm) to .146" (3.70 mm) in .004" (.10 mm) increments.
6. Install thrust bearing in clutch drum. Align tabs of clutch discs. Install direct clutch assembly on forward clutch assembly. Measure distance from end of direct clutch to shaft end of forward clutch. Distance

should be 2.803" (71.2 mm). See**Fig. 31**-32. If distance is not within specifications, components may be incorrectly assembled.

DIRECT CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
Lexus LX450	.054-.063 (1.37-1.60)
Toyota	
A-340E	.054-.063 (1.37-1.60)
A-340F (T100)	.054-.063 (1.37-1.60)
A-340F (All But T100)	.041-.052 (1.03-1.33)
A-340H	.054-.063 (1.37-1.60)
A-343F	.054-.063 (1.37-1.60)

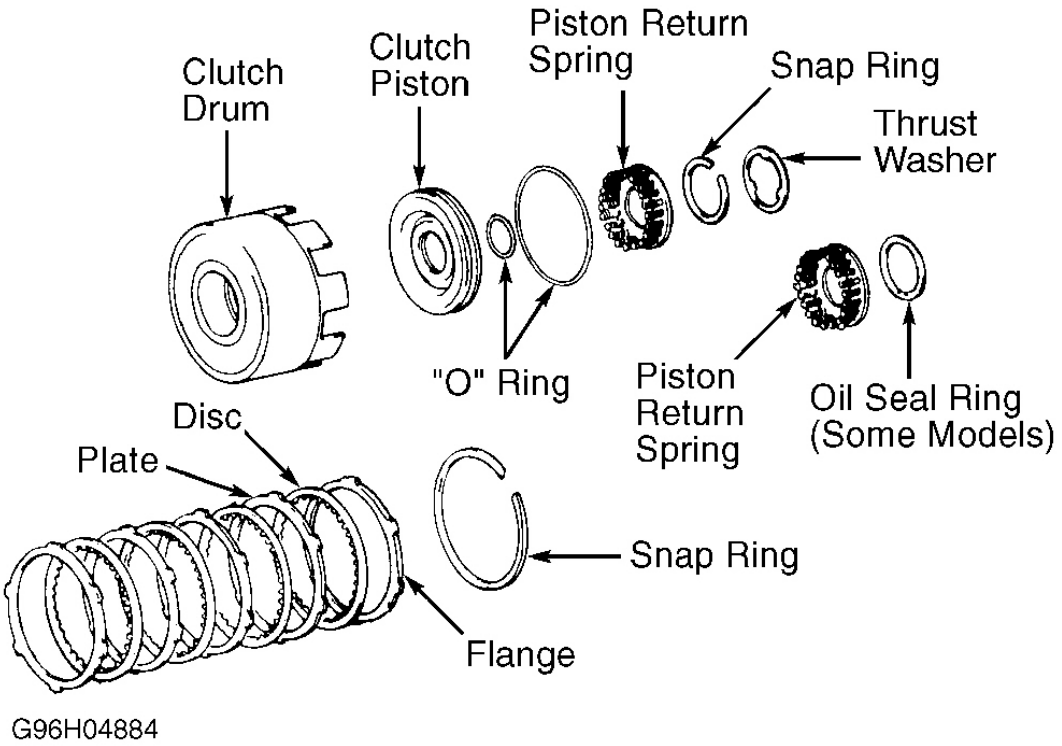

Fig. 30: Exploded View Of Direct Clutch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

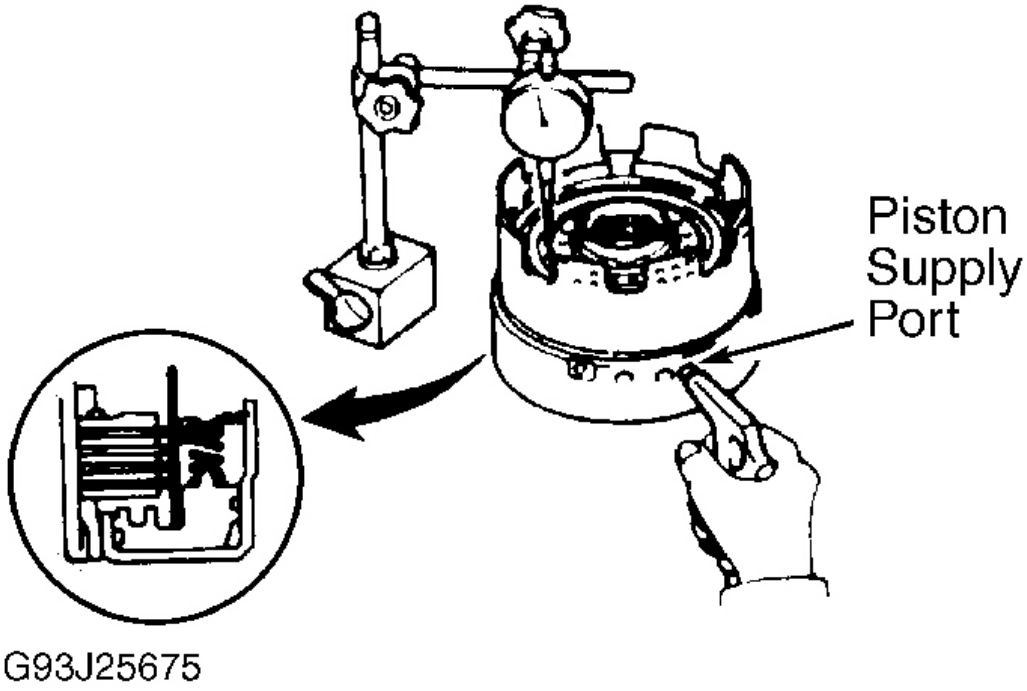

Fig. 31: Checking Direct Clutch Piston Stroke & Installation Measuring Piston Stroke
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

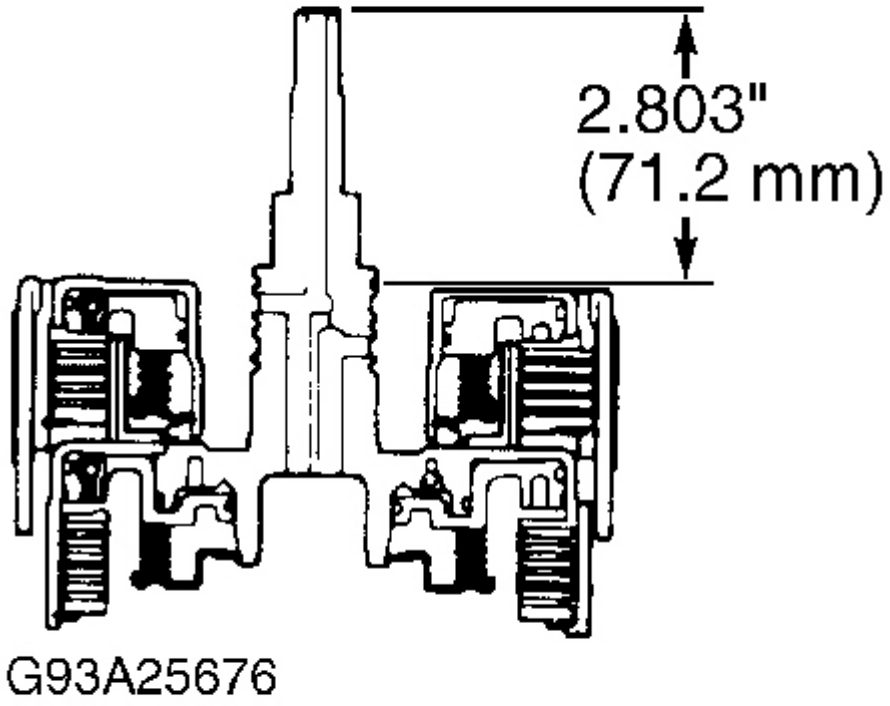

Fig. 32: Checking Direct Clutch Piston Stroke & Installation Checking Clutch Installation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FORWARD CLUTCH

Disassembly

1. Separate front clutch assembly from direct clutch. Place overdrive support on wooden blocks and install front clutch in overdrive support. Remove snap ring from clutch drum. Remove flange, discs, plates and cushion plate. See **Fig. 33**. Note number and location of components.
2. Using appropriate compressor, compress piston return spring and remove snap ring. Place clutch drum on overdrive support. Carefully apply air pressure to piston supply port and remove clutch piston. Remove "O" rings from clutch piston and clutch hub. Remove oil seal rings.

Inspection

Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. Ensure check ball is free in clutch piston. Apply air pressure to check ball area. Ensure check ball does not allow air to bleed through piston. Measure inside diameter of clutch drum bushing. Replace clutch drum if bushing diameter exceeds .948" (24.089 mm).

CAUTION: Clutch disc should be soaked in ATF for 15 minutes prior to installation.

Reassembly

1. Coat "O" rings with ATF. To complete reassembly, reverse disassembly procedure. Ensure piston return spring snap ring is fully seated and ends do not align with claw area on spring retainer of piston return spring.
2. Install cushion plate with rounded end toward inside of clutch drum. Install plates and discs, starting with a plate. Install appropriate amount of plates and discs. See **Fig. 33**.
3. Install flange with rounded edge toward disc. Install snap ring. Ensure end gap of snap ring is not aligned with forward clutch drum cut out portion. Place clutch drum on overdrive support. Measure piston stroke while applying 57-114 psi (4-8 kg/cm^2) to piston supply port. See **Fig. 34**. See **FORWARD CLUTCH PISTON STROKE SPECIFICATIONS** table.
4. If clearance is not within specifications, install different thickness flange. Flanges are available in thicknesses of .118" (3.0 mm) to .173" (4.4 mm) in .008" (.20 mm) increments. Install thrust bearing and race. Align tabs of the clutch discs.

FORWARD CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
Lexus LX450	.024-.039 (.61-.100)
Toyota	
A-340E	.020-.035 (.50-.90)
A-340F (T100)	.020-.035 (.50-.90)
A-340F (All But T100)	.016-.031 (.40-.80)
A-340H	.020-.035 (.50-.90)
A-343F	.024-.039 (.61-.100)

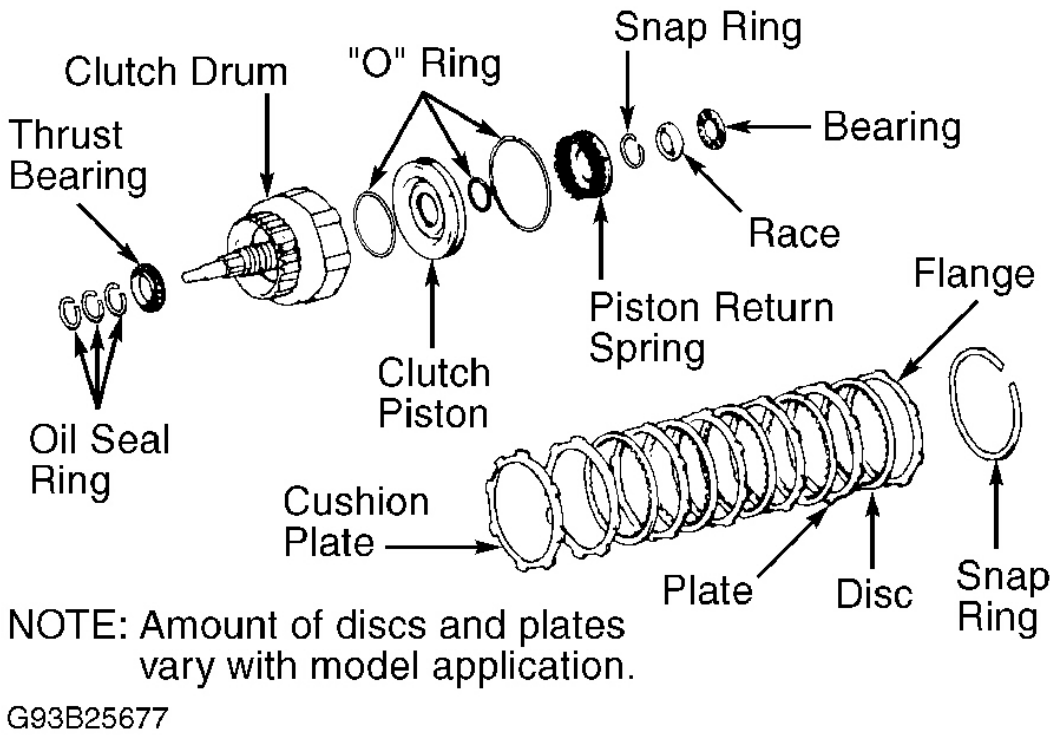

Fig. 33: Exploded View Of Forward Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

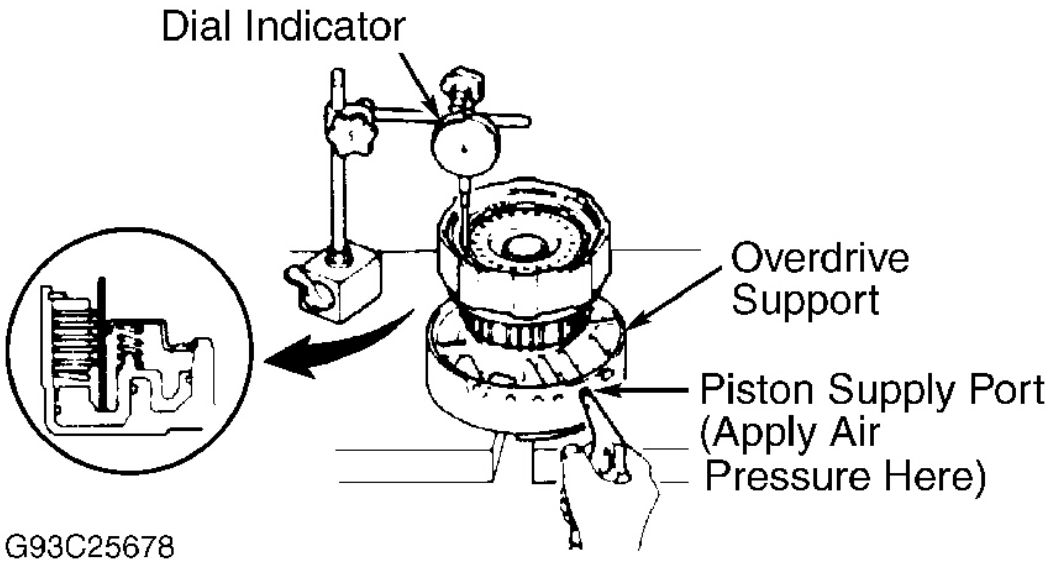

Fig. 34: Checking Front Clutch Piston Stroke
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FRONT PLANETARY GEAR

Disassembly & Inspection

Remove thrust bearings and races from planetary gear and front planetary ring gear. Note direction of race installation. Measure front planetary ring gear bushing inside diameter. Replace planetary ring gear if bushing diameter exceeds .948" (24.08 mm). Measure planetary pinion gear thrust clearance. Clearance should be .008-.024" (.20-.61 mm). Maximum clearance is .039" (1.00 mm). If clearance is not within specifications, replace planetary gear assembly.

Reassembly

Coat thrust bearings and races with petroleum jelly. Install thrust bearings and races, ensuring tabs on race align with planetary gear. Install races in planetary ring gear and planetary gear with the flat side against the gear surface. See **Fig. 35**.

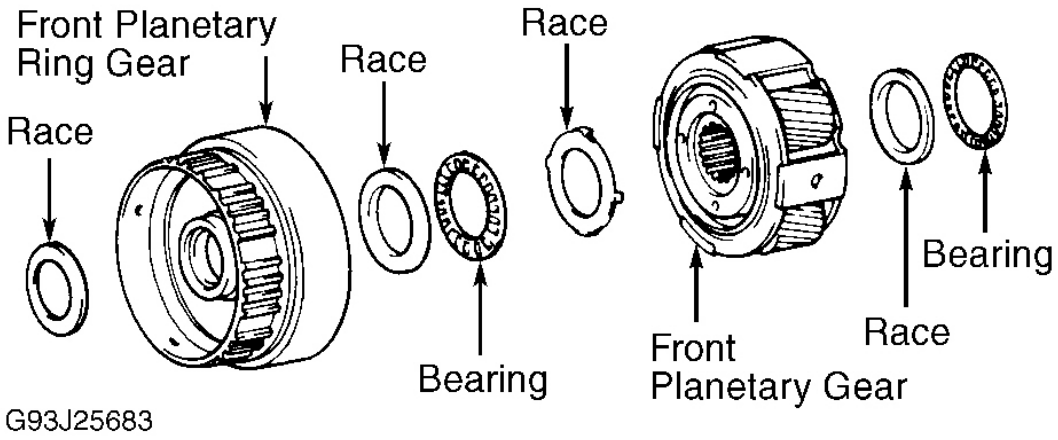

Fig. 35: Exploded View Of Front Planetary Gear
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PLANETARY SUN GEAR & NO. 1 ONE-WAY CLUTCH

Disassembly

Hold sun gear input drum and check rotation of one-way clutch. Clutch should turn freely clockwise and lock counterclockwise. See**Fig. 36**-37. Remove one-way clutch assembly. Note direction of clutch installation. Remove thrust washer and oil seal rings from sun gear input drum and sun gear. Support sun gear input drum on wooden block and remove snap ring from sun gear. Separate sun gear from sun gear input drum. See **Fig. 38**.

Inspection

Clean components in solvent. Dry with compressed air. Measure inside diameter of sun gear bushing. Replace sun gear if diameter exceeds 1.066" (27.08 mm).

Reassembly

To reassemble, reverse disassembly procedure. See **Fig. 38**. Ensure ends of oil seal rings are properly locked together and seal rings move smoothly. Install one-way clutch assembly in proper direction. Check one-way clutch operation. See**Fig. 36**-37.

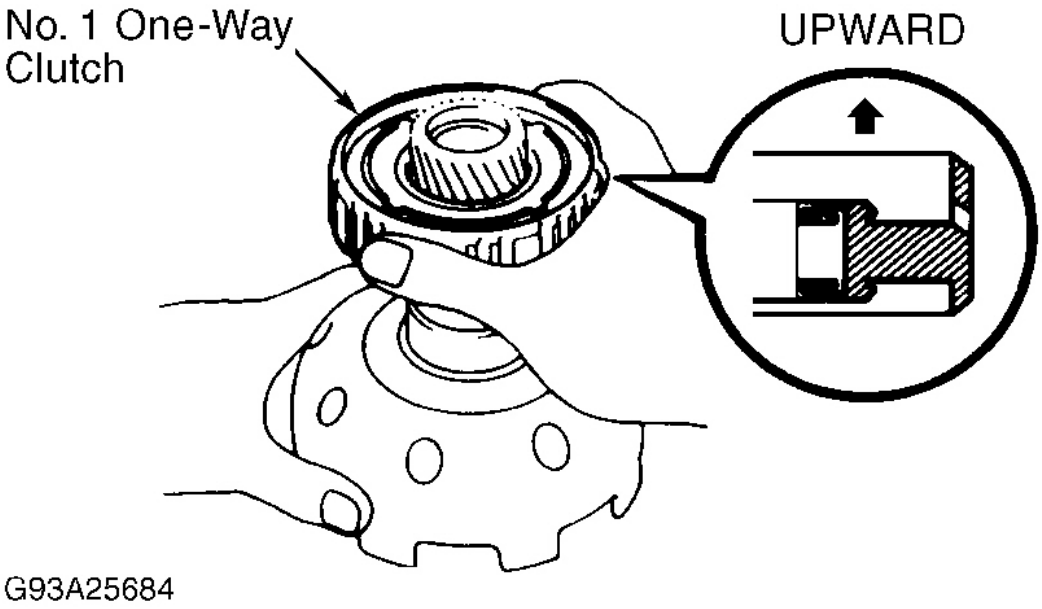

Fig. 36: Installing & Checking No. 1 One-Way Clutch Clutch Installation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

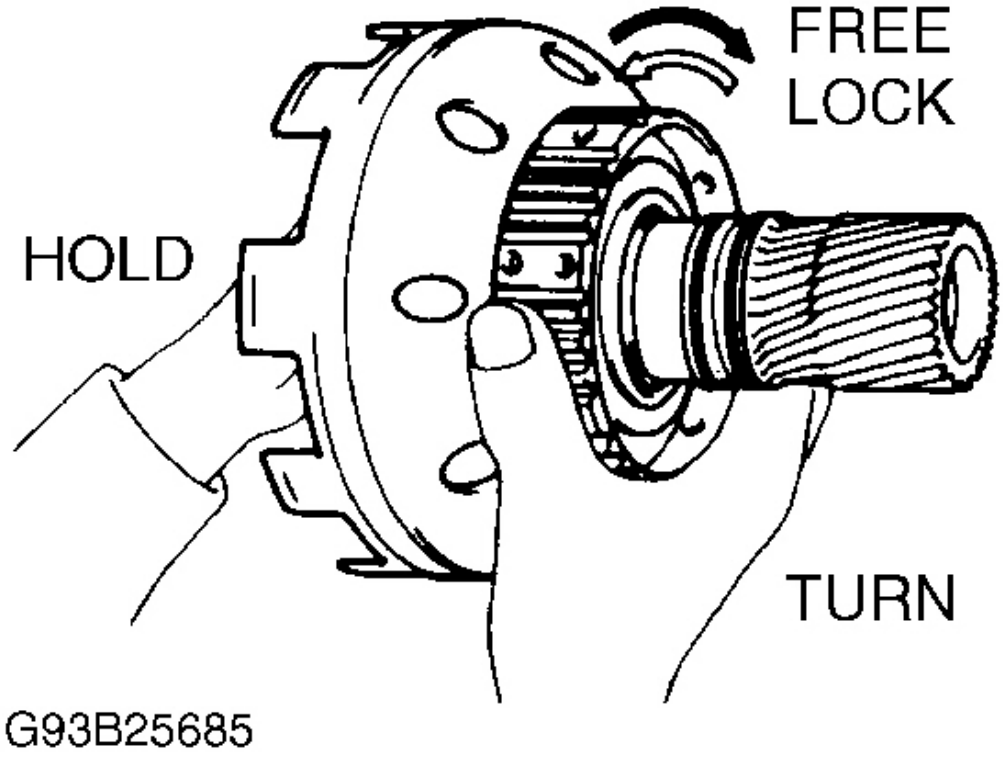

Fig. 37: Installing & Checking No. 1 One-Way Clutch Checking Clutch Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

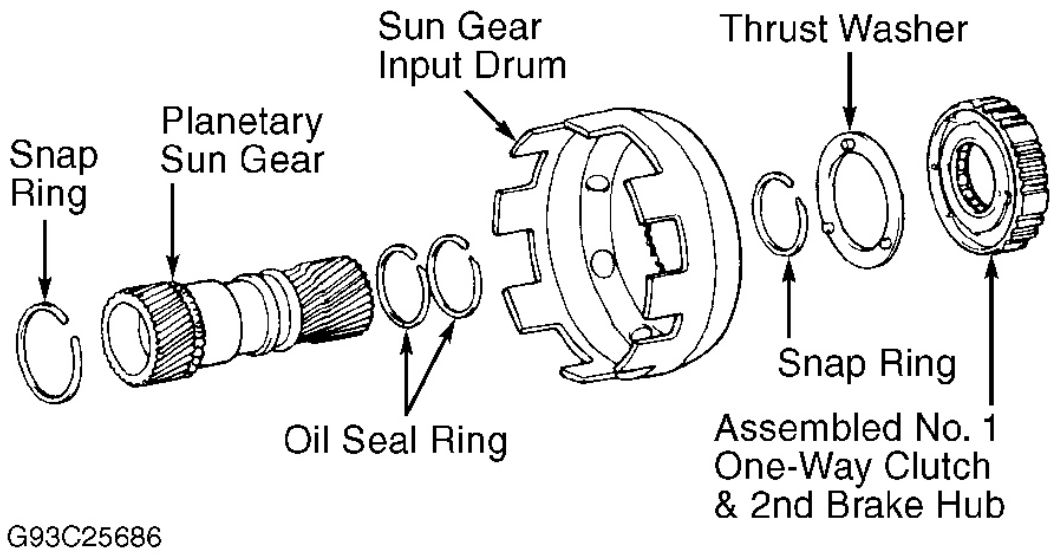

Fig. 38: Exploded View Of Planetary Sun Gear & No. 1 One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2ND COAST BRAKE (BAND)

Disassembly

Compress spring and remove "E" ring from piston rod. Remove 2nd coast brake piston, spring and retainer from piston rod. Remove oil seal ring.

Inspection

1. Replace brake band if lining is peeled off or discolored or printed numbers are defaced. Before assembling NEW band, soak band in ATF for at least 15 minutes.
2. If brake band is serviceable but piston rod stroke is not within specification, select replacement rod. Rods are available in lengths of 2.78" (70.7 mm), 2.81" (71.4 mm), 2.84" (72.2 mm), 2.87" (72.9 mm) and 2.09" (73.1 mm).

Reassembly

Install oil seal ring on piston. Install retainer, spring and piston to piston rod. Install "E" ring. See **Fig. 39**.

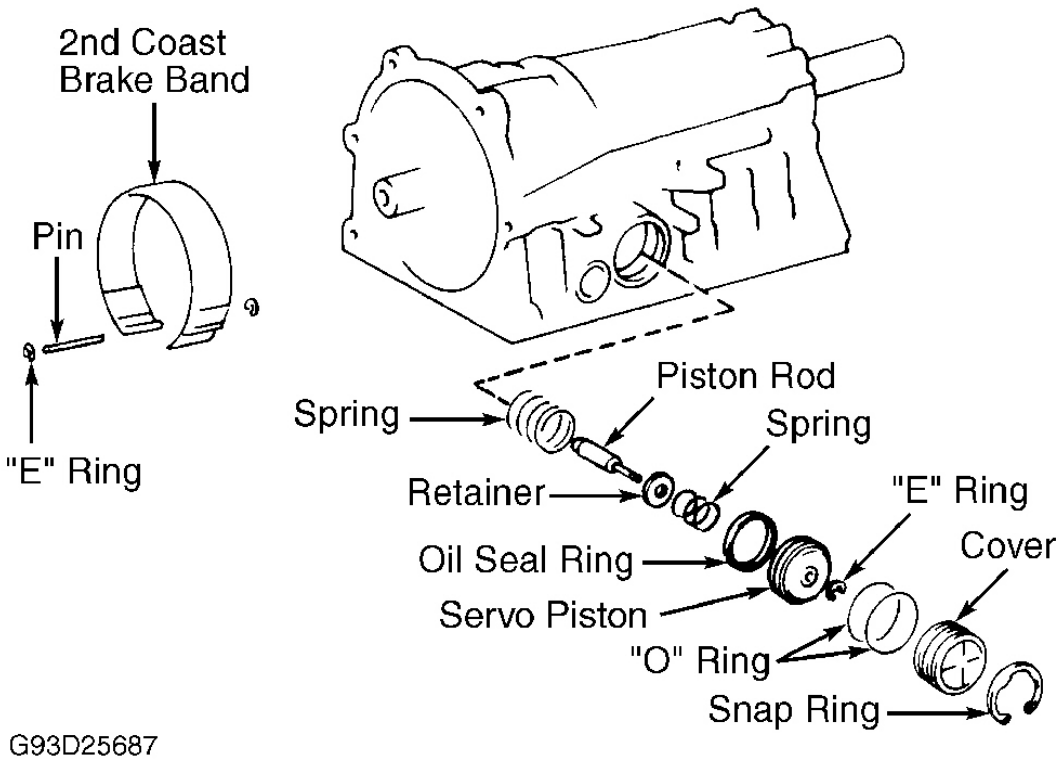

Fig. 39: Exploded View Of 2nd Coast Brake
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2ND BRAKE

Disassembly

Remove thrust washer. Using appropriate compressor, compress piston return spring with an arbor press. Remove snap ring. Remove spring retainer and piston return spring. Hold 2nd brake piston and apply compressed air to 2nd brake drum to remove piston.

Inspection

Check all parts for wear and damage. Soak NEW discs in ATF for 15 minutes before installation.

Reassembly

Coat NEW "O" rings with ATF and install. Carefully press 2nd brake piston into 2nd brake drum. Install piston return spring and spring retainer. See **Fig. 40**. Compress return spring and install snap ring. Apply compressed air to 2nd brake drum. Ensure 2nd brake piston moves smoothly. Install thrust washer. Ensure cutout portions of thrust washer match teeth of spring retainer.

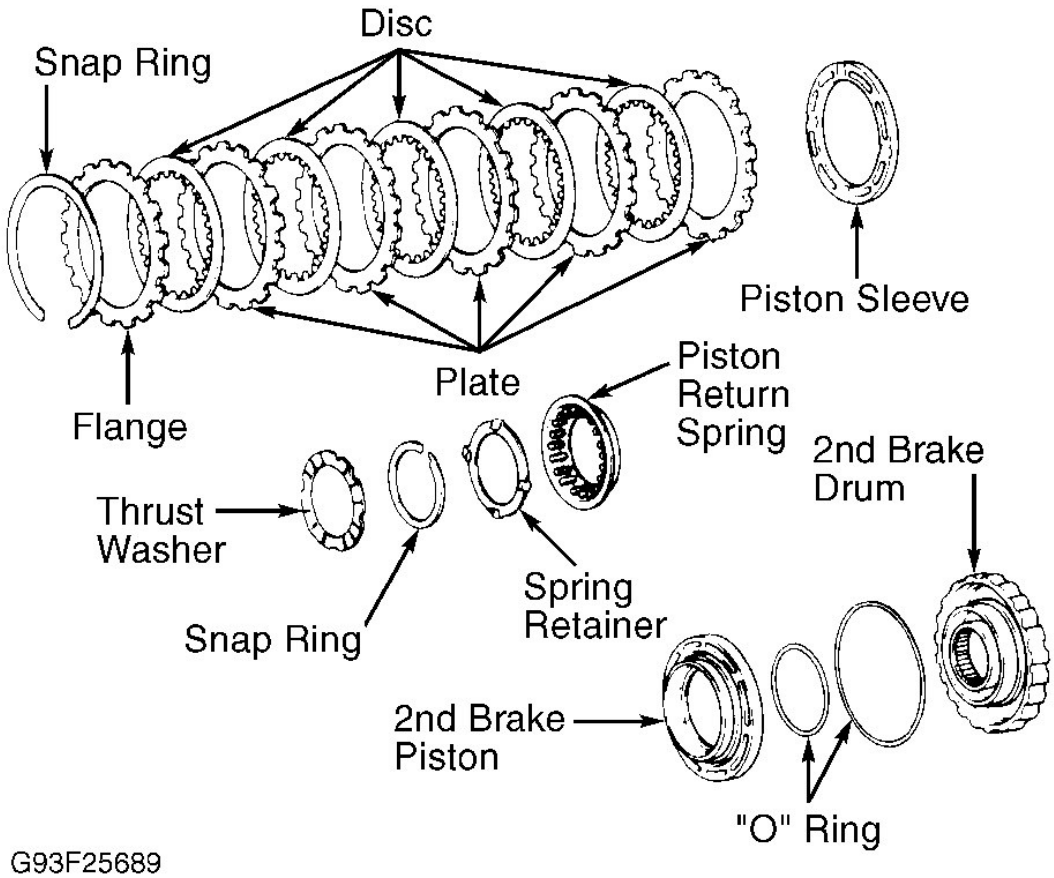

Fig. 40: Exploded View Of 2nd Brake Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR PLANETARY GEAR, NO. 2 ONE- WAY CLUTCH & OUTPUT SHAFT

Disassembly

1. Remove output shaft from rear planetary gear. Remove oil seal from output shaft. Remove rear planetary gear from rear ring gear. Hold planetary gear and check operation of No. 2 one-way clutch. Clutch should turn freely counterclockwise and lock clockwise. See**Fig. 41**-42. Remove No. 2 one-way clutch inner race from rear planetary gear.
2. Remove snap ring and No. 2 one-way clutch using retainers from planetary gear. Note direction of one-way clutch in planetary gear. Remove No. 1 and 2 thrust washers from planetary gear. Remove bearings and races from ring gear. Remove snap ring and ring gear flange from ring gear. See **Fig. 43**.

Inspection

Clean all components with solvent. Dry with compressed air. Inspect all components for damage. Replace if

necessary. Measure planetary pinion gear thrust clearance. Standard clearance should be .008-.024" (.20-.61 mm). Maximum clearance is .039" (1.00 mm). If clearance is not within specifications, replace planetary gear assembly.

Reassembly

1. To reassemble, reverse disassembly procedure. Coat all thrust bearings and races with petroleum jelly. When installing thrust bearings and races in ring gear, flat side of race must be placed against ring gear.
2. Ensure No. 1 and 2 thrust washer tangs align with cutout area of planetary gear. Install No. 2 one-way clutch with the open ends facing upward. See**Fig. 41**-**Fig. 42** .
3. Rotate one-way clutch inner race counterclockwise during installation into rear planetary gear. Ensure No. 2 one-way clutch turns freely counterclockwise and locks clockwise. See**Fig. 41**-**Fig. 42** .
4. Install rear planetary gear on rear planetary ring gear. Install oil seal ring. DO NOT spread oil seal ring too much. After installing oil seal ring, ensure seal ring rotates smoothly. Install output shaft into rear planetary gear assembly. See **Fig. 43**.

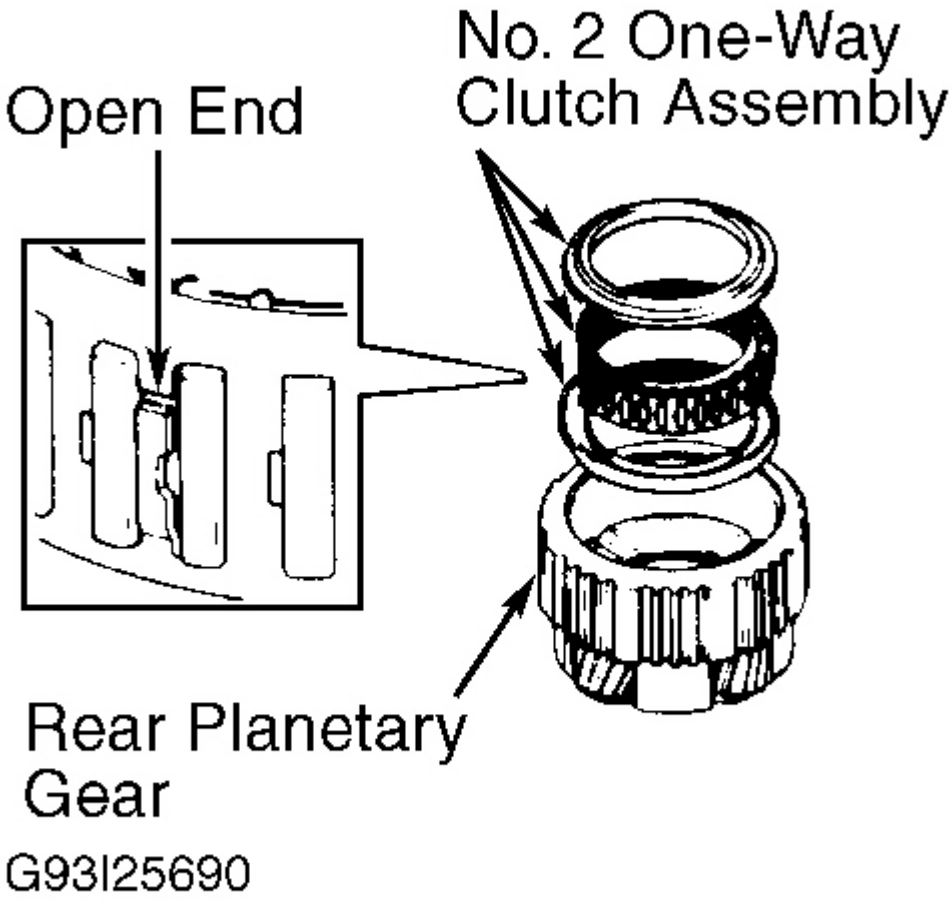

Fig. 41: Installing No. 2 One-Way Clutch & Checking Operation Installing Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

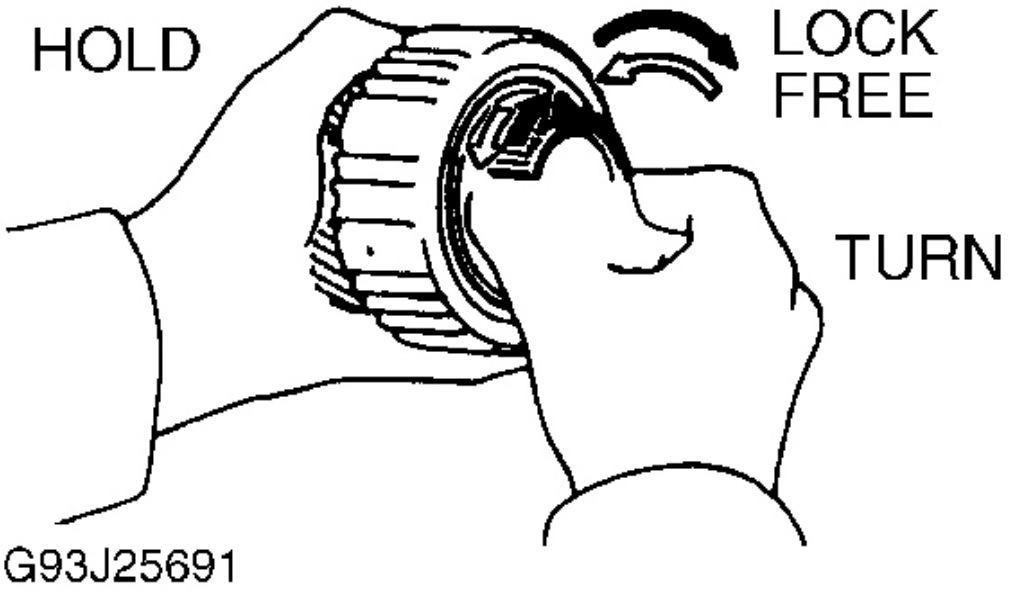

Fig. 42: Installing No. 2 One-Way Clutch & Checking Operation Checking Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

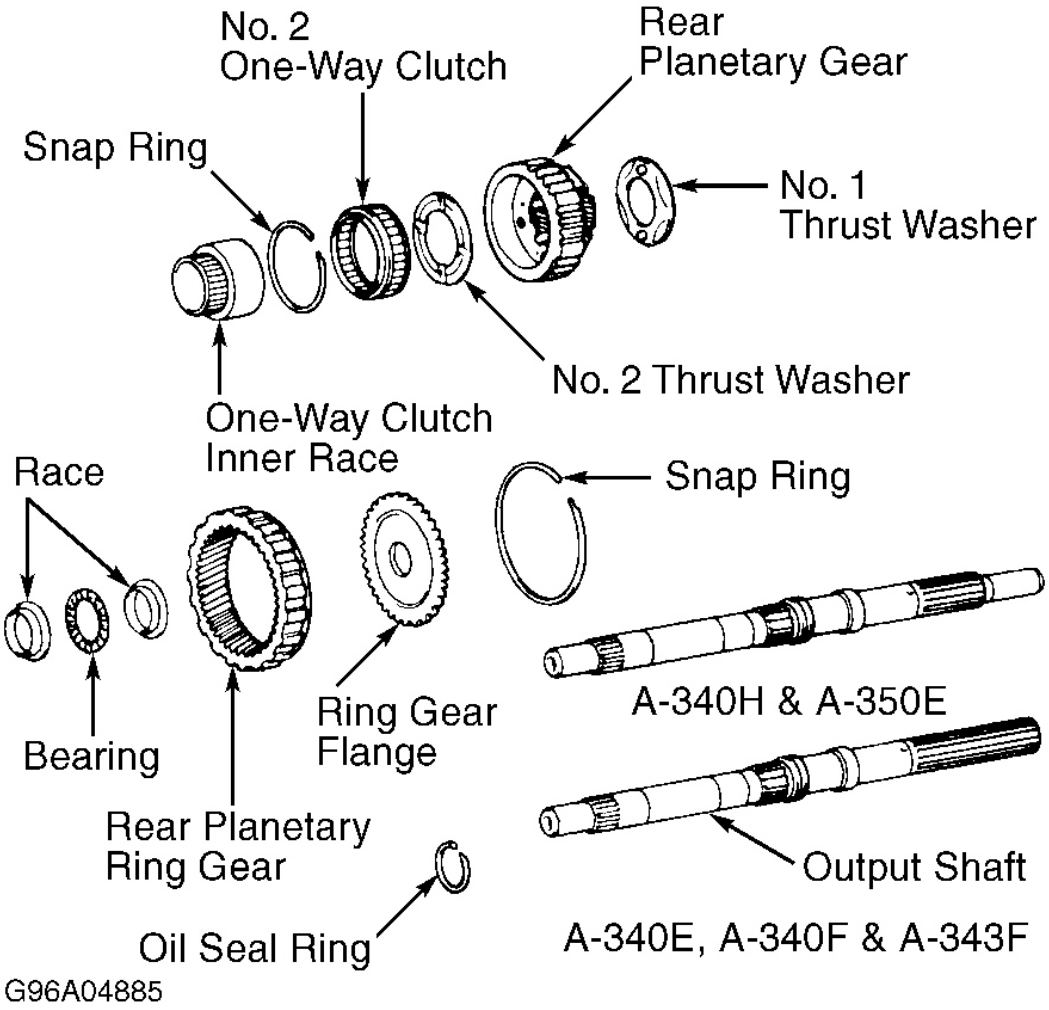

Fig. 43: Exploded View Of Output Shaft Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

VALVE BODY ASSEMBLY

CAUTION: All valve body components must be installed in original location. Lay all components in sequence during removal for reassembly reference. Note diameter and check ball location. Throttle pressure is changed according to number of adjusting rings. When assembling valve body, install same number of adjusting rings as removed. Some valve bodies do not have adjusting rings.

Disassembly

Remove detent spring and manual valve from valve body assembly. Remove solenoids and lock plate (if applicable), oil strainer and pressure relief valve. Remove lower valve body-to upper valve body bolts. Note bolt length and location. Separate upper valve body and valve body plate from lower valve body. See **Fig. 44**.

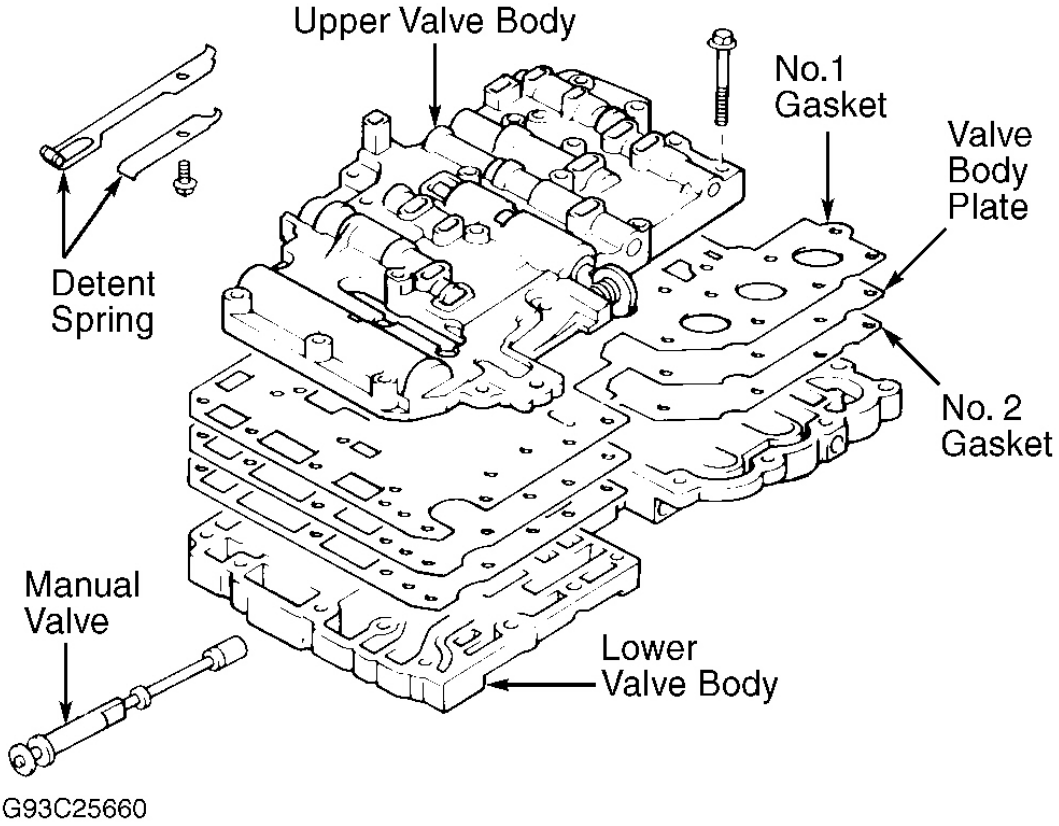

Fig. 44: Exploded View Of A-340 Series Control Valve Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A. INC.

CAUTION: DO NOT allow valve body plate to separate from upper valve body during removal or check balls and strainer may fall out.

Inspection

1. Clean all parts in solvent. Dry with compressed air. Ensure all valve body passages are clear. Ensure strainers are not damaged or clogged. Inspect valves for scoring or roughness.
2. Ensure valves slide freely in bores. Inspect valve springs for damage, squareness and collapsed coils. Measure spring free length. Replace spring if not within specification. See appropriate **VALVE BODY SPRING SPECIFICATIONS** table. Ensure valve body springs correspond with appropriate valve. Ensure retainers are installed in appropriate locations.

VALVE BODY SPRING SPECIFICATIONS

A-340E UPPER VALVE BODY SPRING SPECIFICATIONS

Spring (1)	Free Length In. (mm)	Diameter In. (mm)	Color
1	1.075 (27.30)	.343 (8.70)	Yellow
2	.811 (20.60)	.362 (9.20)	Blue
2 (Optional)	.917 (23.30)	.362 (9.20)	White
3	1.213 (30.80)	.382 (9.70)	Purple
4	.996 (25.30)	.339 (8.60)	Orange
5	.843 (21.40)	.217 (5.50)	Light Gray
6	1.217 (30.90)	.441 (11.20)	Blue
7	.858 (21.80)	.236 (6.00)	Red
8	1.213 (30.80)	.382 (9.70)	Blue
9	1.197 (30.40)	.327 (8.30)	Yellow

(1) For spring locations, see **Fig. 45**.

A-343F UPPER VALVE BODY SPRING SPECIFICATIONS (LAND CRUISER & LEXUS)

Spring (1)	Free Length In. (mm)	Diameter In. (mm)	Color
1	1.075 (27.30)	.343 (8.70)	Yellow
2	.811 (20.60)	.362 (9.20)	Blue
2 (Optional)	.917 (23.30)	.362 (9.20)	White
3	1.213 (30.80)	.382 (9.70)	Purple
4	1.217 (30.90)	.327 (8.30)	Purple
5	.843 (21.40)	.217 (5.50)	Light Gray
6	1.177 (29.90)	.433 (11.00)	Green
7	.858 (21.80)	.236 (6.00)	Red
8	1.213 (30.80)	.382 (9.70)	Blue
9	1.197 (30.40)	.327 (8.30)	Light Green

(1) For spring locations, see **Fig. 45**.

A-340 SERIES LOWER VALVE BODY SPRING SPECIFICATIONS

Spring (1)	Free Length In. (mm)	Diameter In. (mm)	Color
1	.796 (20.20)	.476 (12.10)	None
2	.441 (11.20)	.252 (6.40)	None
3	1.213 (30.80)	.382 (9.70)	Purple
4	2.453 (62.30)	.732 (18.60)	Purple
5	1.335 (33.90)	.346 (8.80)	Pink

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

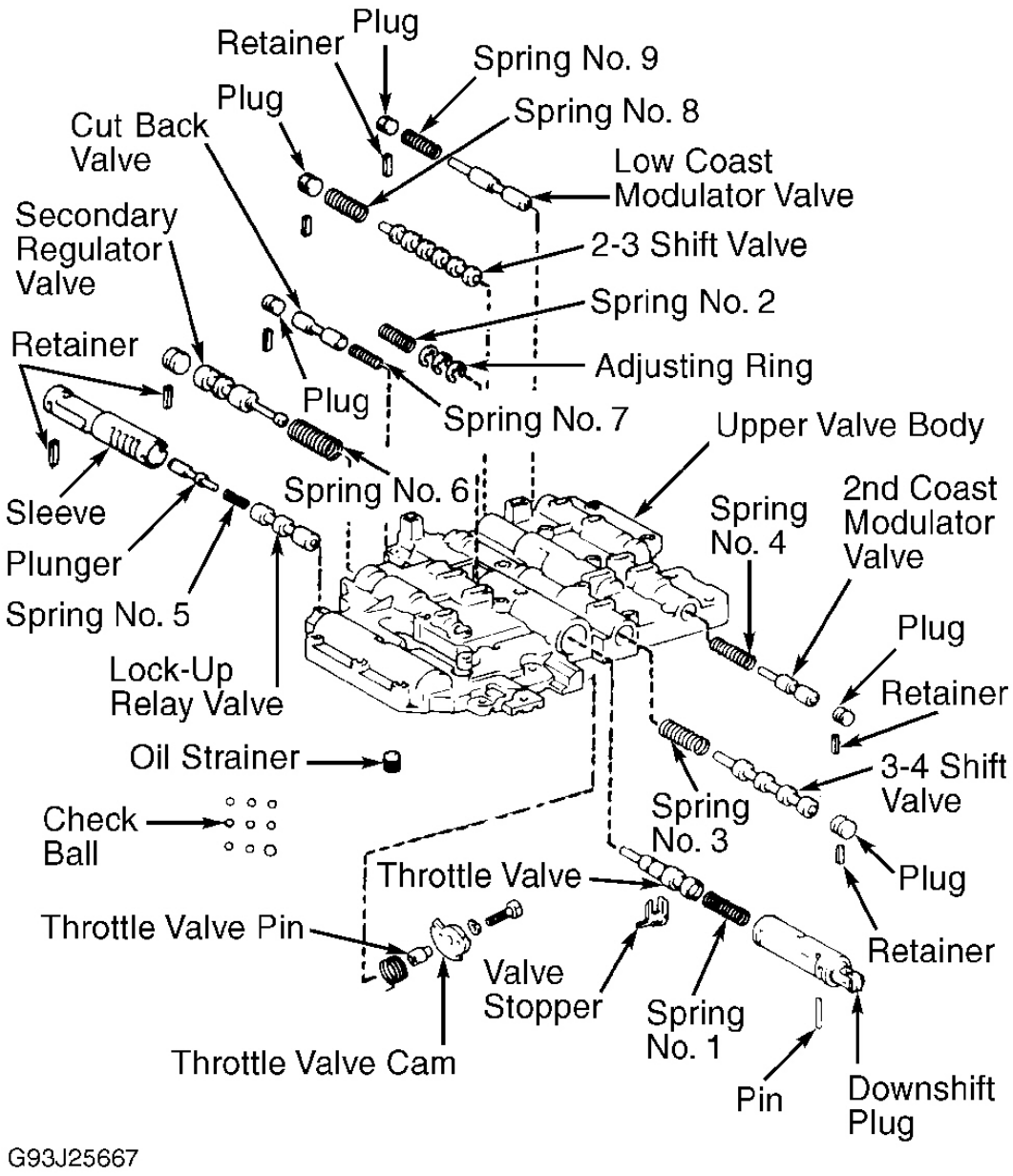

Fig. 45: Exploded View Of A-340 Series Upper Valve Body
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

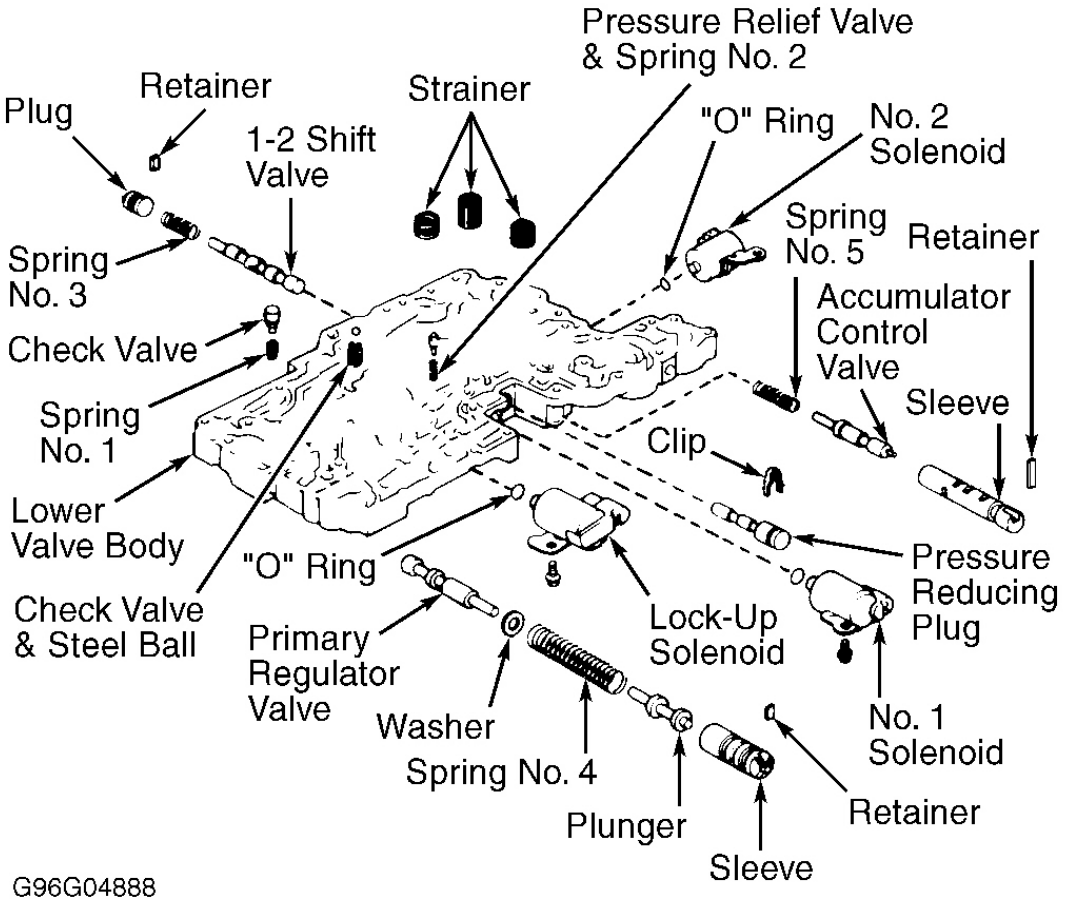

Fig. 46: Exploded View Of A-340 Series Lower Valve Body
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Valves may be held in with pins or retainers and plugs. Remove components and note locations. Arrange parts in order for reassembly reference.

Reassembly

1. Coat all components with ATF. To reassemble, reverse disassembly procedure. Ensure check balls in upper and lower valve body are installed correctly. See **Fig. 47**-50.
2. Position NEW No. 1 gasket, plate and NEW No. 2 gasket on upper valve body. Place lower valve body on upper valve body with plate and gaskets. DO NOT let components separate. Align each bolt hole in valve bodies with gaskets and plate.
3. Install and finger tighten bolts in upper valve body. Ensure proper bolt length is used. See **Fig. 51**. Tighten bolts to 56 INCH lbs. (6.4 N.m). Install oil strainer, pressure relief and solenoids (as applicable). Install manual valve and detent spring. Tighten bolts to 89 INCH lbs. (10 N.m). Ensure manual valve moves freely.

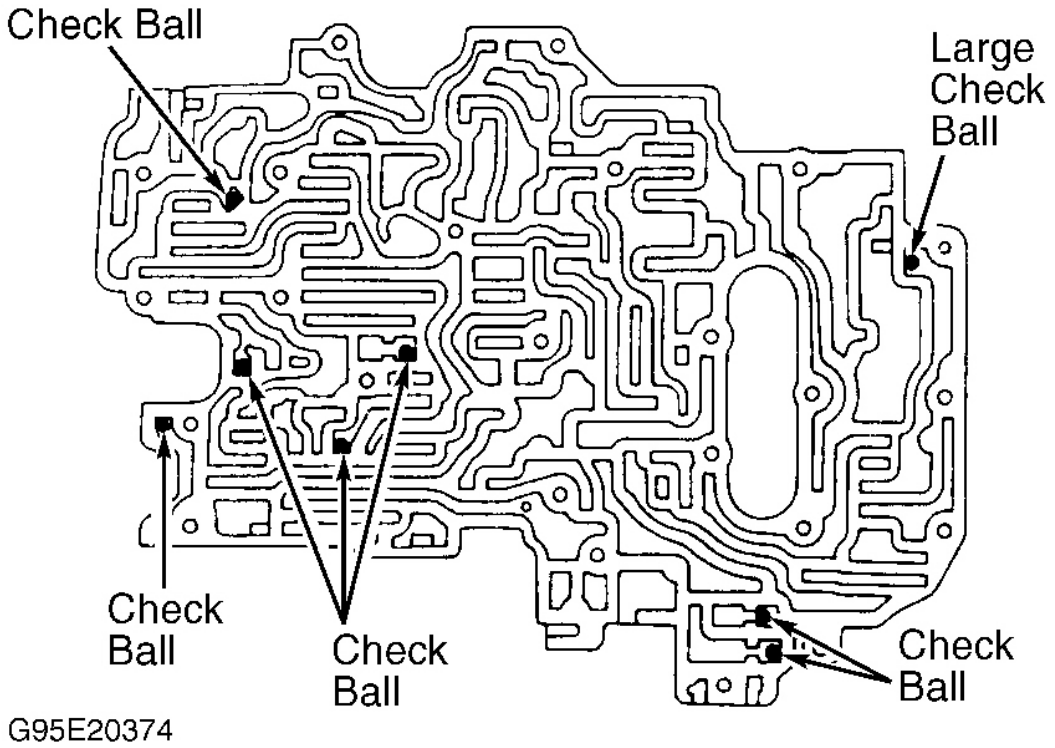

Fig. 47: Upper Valve Body Check Ball Locations (Pickup & 4Runner A-340H Models)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

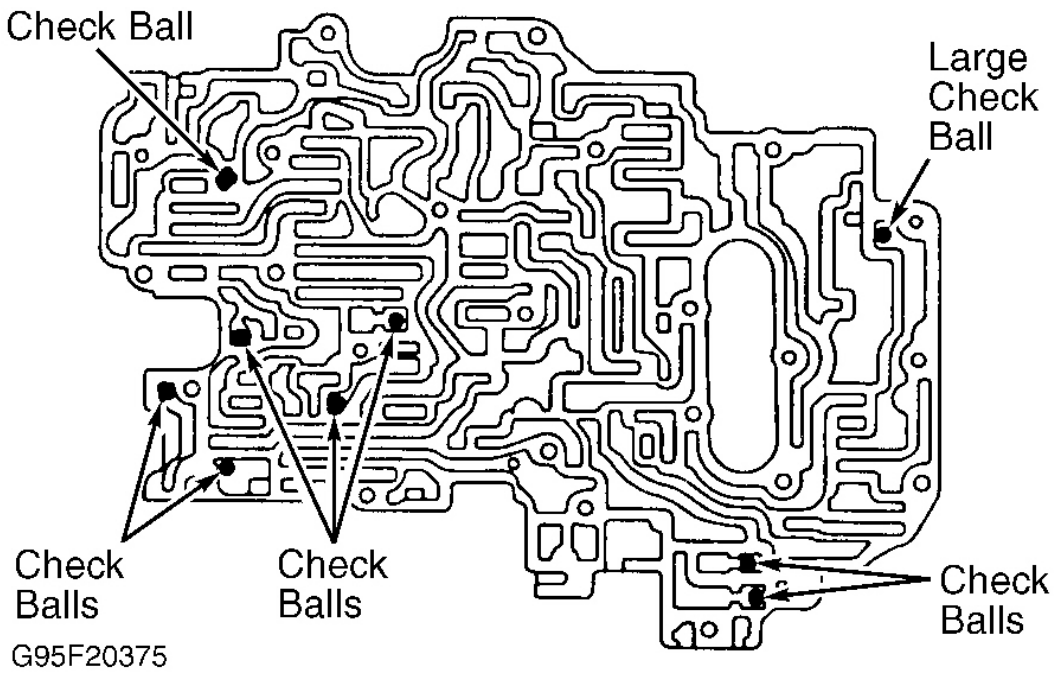

Fig. 48: Upper Valve Body Check Ball Locations Tacoma, T100 & 4Runner (A-340F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

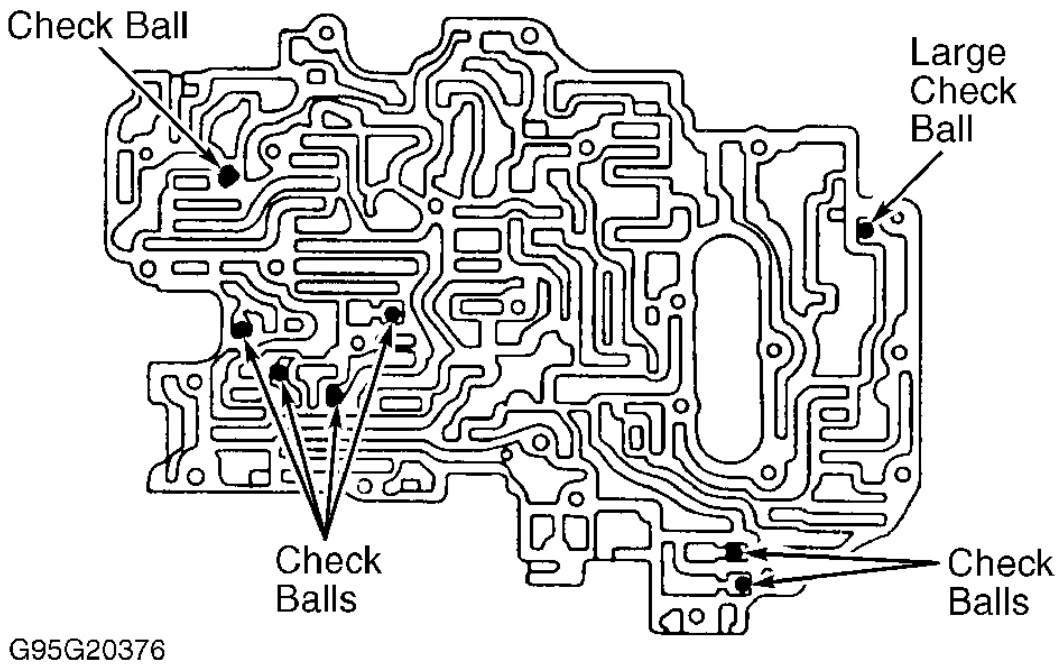

Fig. 49: Upper Valve Body Check Ball Locations Pickup, Tacoma, T100 & 4Runner (A-340E) Land Cruiser & LX450 (A-343F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

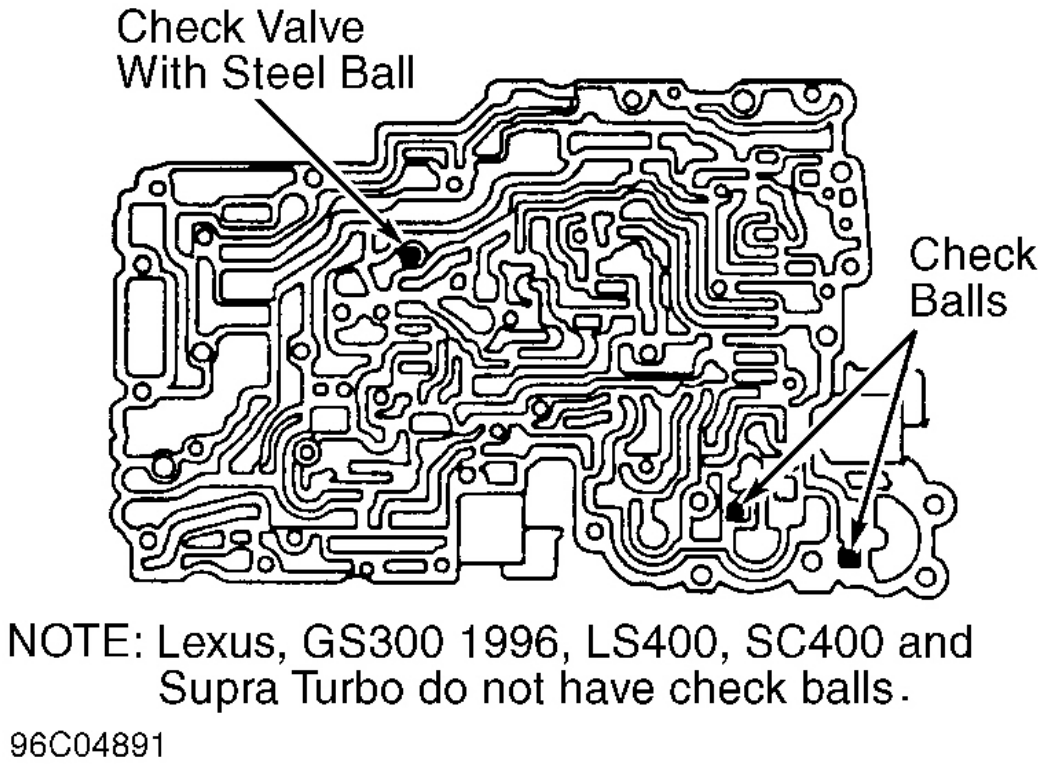

Fig. 50: Lower Valve Body Check Ball Locations (A-340 Series)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

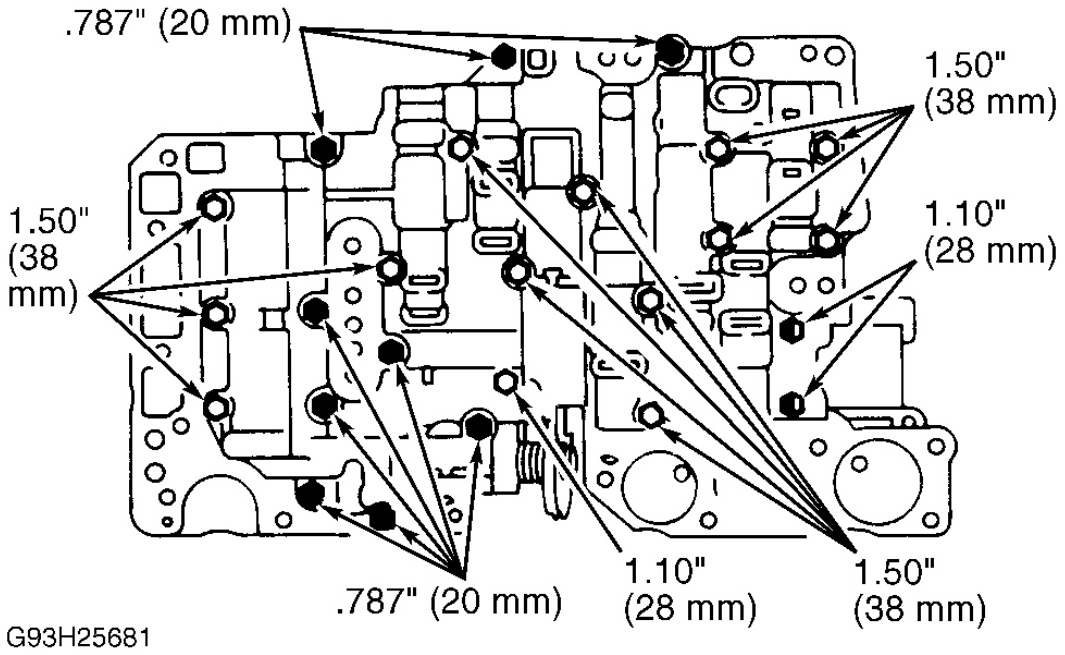

Fig. 51: Identifying A-340 Series Valve Body Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSMISSION REASSEMBLY

NOTE: Coat all oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces with ATF prior to reassembly. All gaskets and rubber "O" rings should be replaced. Ensure ends of snap rings are not aligned with cutouts and are installed correctly in groove. If a worn bushing is to be replaced, replacement must be made with subassembly containing that bushing. Check thrust bearings and races for wear or damage. Use petroleum jelly to hold parts in place. Replace parts as necessary. Clutch discs should be soaked in ATF for 15 minutes before installation.

1. Before transmission reassembly, inspect case bushing and extension housing bushing (if equipped). Maximum transmission case bushing inside diameter is 1.504" (38.19 mm). Maximum extension housing bushing inside diameter is 1.578" (40.09 mm). If bushings are not within specifications, manufacturer recommends replacing transmission case and/or extension housing.

NOTE: For thrust bearing and race identification and installation positions, SeeFig. 56 and Fig. 57

2. Install 1st and reverse brake No. 1 piston to reaction sleeve. Install No. 1 piston with reaction sleeve on No. 2 piston. Align No. 2 piston teeth into proper grooves. Carefully press No. 1 and No. 2 brake pistons

into case. Position piston return spring on No. 2 piston. Using Spring Compressor (09350-07050), compress return spring. See **Fig. 20**.

3. Install snap ring. Ensure snap ring end-gap is not aligned with spring retainer claw. Ensure 1st and reverse brake pistons move smoothly by applying compressed air to case. See **Fig. 19**.
4. Install leaf spring (if equipped). Install rear planetary gear unit with 1st and reverse brake pack and output shaft. Install flange with rounded edge toward planetary ring gear. On A340H, install plate and cushion plate. Cushion plate must be installed with rounded end toward brake drum end of output shaft. On all other models, install flange. Install plates and discs, starting with disc. Install correct number of plates and discs.
5. Install 2nd brake drum assembly. Install thrust bearing in case. Align teeth of 2nd brake drum, flange, discs and plates. Align splines of transmission case, assembled rear planetary gear, 2nd brake drum, 1st and reverse brake pack and output shaft into case.
6. Support output shaft on wooden blocks. Install snap ring in case with chamfered edge toward front of transmission. Ensure ends of snap ring are not aligned with cutout area of case. Measure 1st and reverse brake clearance between 2nd brake drum and plate. See**Fig. 17**-18. See **1ST & REVERSE BRAKE PACK CLEARANCE SPECIFICATION** table.
7. If clearance is not within specification, select a different thickness flange. Flanges are available in thicknesses of .157" (4.0 mm) to .213" (5.4 mm) in .008" (.20 mm) increments.
8. Install 2nd brake piston sleeve. Install NEW brake drum gasket in case. Install No. 1 one-way clutch assembly. Install No. 1 one-way clutch. On all models except A-340F, install .071" (1.8 mm) flange plate with rounded edge side of plate facing disc. Install plates and discs starting with disc. Install end flange with rounded edge facing disc. Install snap ring.
9. On A-340F, install .098" (2.5 mm) flange plate with rounded edge side of plate facing disc. Install plates and discs. Install end flange with rounded edge facing disc. Install snap ring.
10. Measure 2nd brake clearance between snap ring and flange. See **Fig. 17**-**Fig. 18** . See **2ND BRAKE CLUTCH PACK CLEARANCE SPECIFICATIONS**. If clearance is not within specifications, check for incorrect assembly.
11. Install planetary sun gear. Turn planetary sun gear clockwise into No. 1 one-way clutch. Ensure all thrust washers are correctly installed. Install front planetary gear bearing and race. Install front planetary gear into sun gear. Install snap ring. Remove wooden block from under output shaft. Install race on front of planetary gear so race tabs align with planetary gear holes.
12. Install 2nd coast brake band and pin. Pin must be installed so "E" ring is toward front of transmission. Install "E" ring. Coat thrust bearing and race with petroleum jelly and install on forward clutch. Raised portion of race must be toward front.

NOTE: For thrust bearing and race identification and installation positions, see Fig. 56 and Fig. 57.

13. Install race on front planetary ring gear. Smooth flat surface must be toward front. Align disc tabs of forward clutch. Install front planetary gear in forward clutch. Ensure gear is aligned with all clutch discs.
14. Install bearing race and thrust bearing on ring gear. Raised portion of race must be toward rear. Install forward and direct clutch assembly and front planetary ring gear in transmission case. Measure distance between sun gear input drum and direct clutch drum. Clearance should be .209-.287" (5.30-7.30 mm). If clearance is not within specifications, check for incorrect installation.

15. Install thrust bearing and race on forward clutch assembly with flat side toward the clutch assembly. Install NEW "O" ring on 2nd coast brake cover. Install spring, 2nd coast brake piston assembly and cover to case. Install snap ring.
16. Place reference mark on 2nd coast brake piston rod. Apply 57-114 psi (4.8 kg/cm2) of air at opening of transmission case. Using wire gauge, measure clearance between reference mark and case. See **Fig. 15** and **Fig. 16** . See **2ND COAST BRAKE PISTON STROKE SPECIFICATIONS**.
17. If stroke is not within specification, install replacement piston rod. Rods are available in lengths of 2.78" (70.7 mm), 2.81" (71.4 mm), 2.84" (72.2 mm) and 2.87" (72.9 mm). If stroke is not within specification, install NEW brake band. Install race on overdrive support. Install bolt and oil holes of overdrive support toward valve body side and align with bolt holes of case. Install support.
18. Ensure support is properly aligned. Install support snap ring with chamfered edge toward front of transmission. End of snap ring must be positioned to valve body side of case within .94" (23.9 mm) from center line of valve body as viewed from front of transmission.
19. Using dial indicator, check output shaft end play. End play should be .011-.034" (.27-.86 mm). If end play is not within specifications, check for incorrect assembly. Ensure output shaft rotates smoothly.
20. Install a .157" (4.00 mm) thick flange with rounded edge facing disc. Install correct amount of discs and plates, beginning with plate. Install end flange (stepped ring) with flat side toward disc. Install snap ring. Ensure ends of snap ring are not located at cutout areas of case.
21. Install dial indicator on case and measure piston stroke. Apply 57-114 psi (4-8 kg/cm^2) at opening of transmission case and note piston stroke. See **Fig. 14**. See **OD BRAKE PISTON STROKE SPECIFICATIONS** table.
22. If piston stroke is not within specifications, check for incorrect installation. Recheck piston stroke. If piston stroke is not within specifications, install different thickness flange. Flanges are available in thicknesses of .130" (3.3 mm) to .157" (4.0 mm) in .008" (.20 mm) increments.
23. Install thrust bearing and races on overdrive support. Ensure race tabs align with hole support. Install overdrive planetary ring gear. Install thrust bearing and race in ring gear. Install race on rear of overdrive planetary gear, aligning race tabs with holes of gear.
24. Install overdrive planetary gear with overdrive direct clutch and one-way clutch. Install thrust bearing and race onto OD direct clutch with race flat side toward direct clutch.
25. Install race on rear of oil pump with raised side toward oil pump. Install NEW "O" ring on outer diameter of oil pump. Ensure oil seal rings are installed on rear of oil pump. Align holes of oil pump and transmission case. Install oil pump while holding input shaft and lightly pressing on oil pump.

CAUTION: DO NOT apply excessive pressure on oil pump during installation or oil seal rings will stick to direct clutch drum.

26. Install oil pump bolts and tighten to specification. See **TORQUE SPECIFICATIONS**. Ensure input shaft rotates smoothly. Install throttle cable. Apply air pressure to specified oil passage to check operating components. See **Fig. 53**. When air checking OD direct clutch, overdrive accumulator piston hole must be plugged.

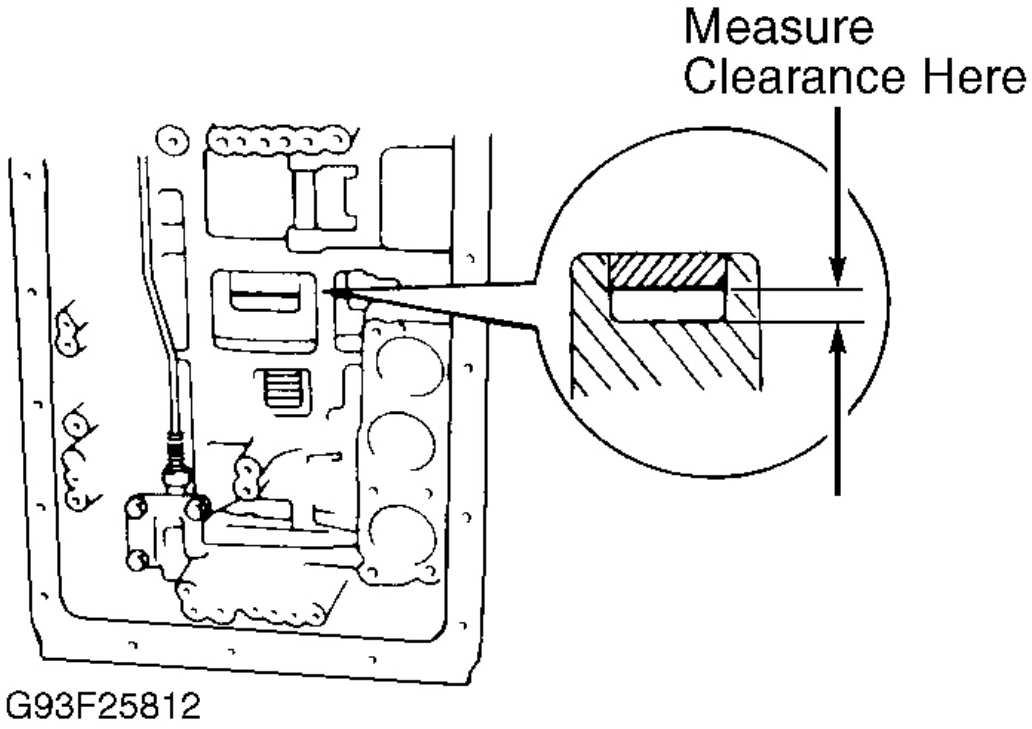

Fig. 52: Measuring Input Drum & Direct Clutch Drum Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

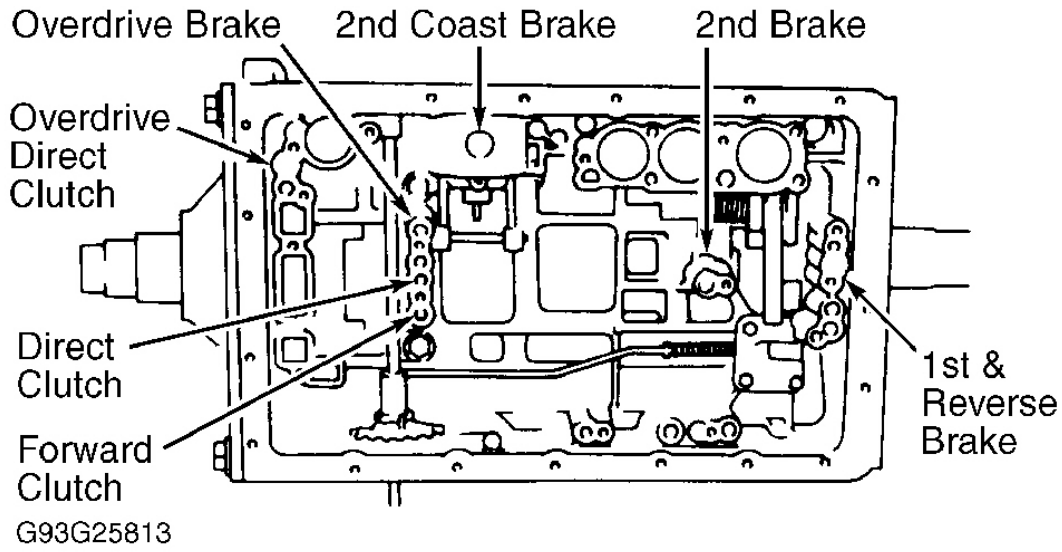

Fig. 53: Air Testing Transmission Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

27. Assemble NEW spacer-to-manual valve lever. Install manual lever shaft to case through manual valve lever. Install pin to shaft. Align spacer hole with lever hole and stake spacer to lever. Ensure manual valve lever shaft turns smoothly.
28. Install "E" ring, parking lock pawl, shaft and spring. Connect parking lock rod to manual valve lever. Position parking lock pawl, shaft and spring. Connect parking lock rod to manual valve lever. Position parking lock pawl bracket on case and install.
29. Install accumulator pistons with NEW "O" rings and springs. See **Fig. 54**. Accumulator pistons and springs must be correct diameter and height. Accumulator pistons are stamped with identification codes. Determine correct spring free length. See appropriate **ACCUMULATOR SPRING SPECIFICATIONS** table.

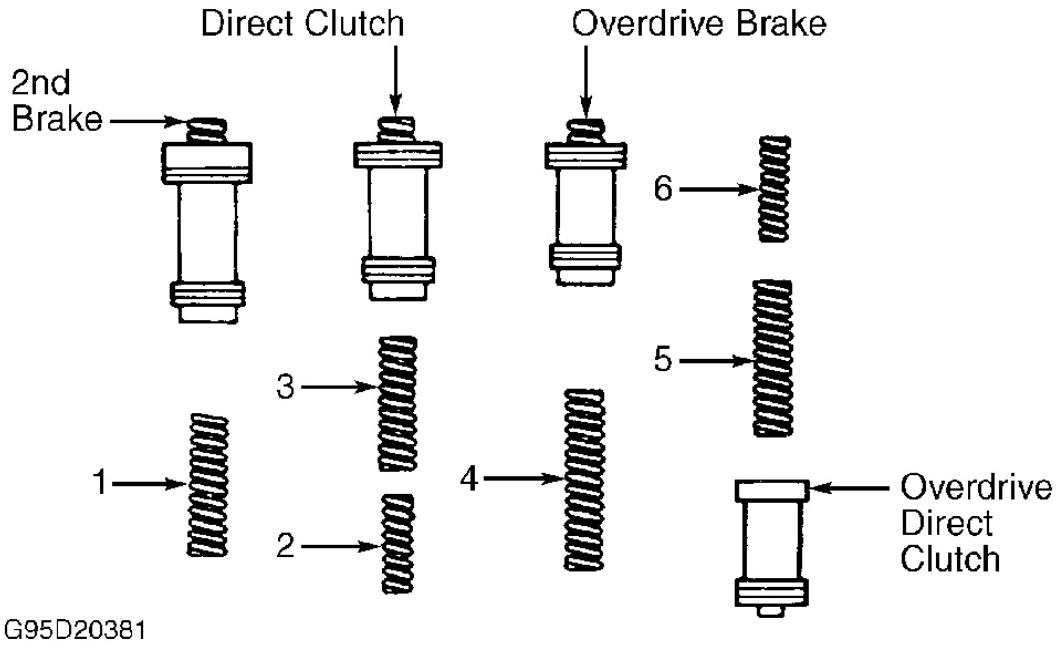

Fig. 54: Identifying Accumulator Piston Assemblies
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

30. Install check ball body and spring. See **Fig. 8**. Install valve body. See **VALVE BODY** under ON-VEHICLE SERVICE. Install sensor rotor and key on output shaft with snap ring. Install speedometer drive gear and lock ball and snap ring on output shaft. Install extension housing and NEW gasket. Shorter mounting bolts go to bottom of extension housing.
31. On A-340F and A-343F models, install transfer case assembly. Install transfer and drive shaft upper dust cover to transmission. Install engine rear mounting. Install dynamic damper. Install breather hose. Hose depth is .51" (13 mm).
32. On A-340H models, apply Three Bond (1281) sealant to transfer case and install. Ensure oil apply hole gaskets are installed. Interior mounting bolts are shorter than exterior bolts. Install front support to transfer case. Ensure oil apply hole gasket is installed.
33. Install thrust washer with inner and outer races on front of support with petroleum jelly. Install sun gear to transfer direct clutch with thrust bearing. Install transfer direct clutch with sun gear. See **Fig. 7**. Install thrust bearing and snap ring.
34. Install output shaft with planetary ring gear. Install front flange, clutch plates, discs and rear flange. Install cushion plate with rounded end facing rearward. Install piston return spring of transfer low speed brake. Install transfer center support with thrust bearing. Ensure center support oil and bolt holes are properly aligned.
35. Apply forward pressure on center support and install snap ring. Using a feeler gauge, measure clearance between snap ring and flange. See **Fig. 12**. Clearance should be .039-.083" (.91-2.10 mm). If clearance is not within specifications, select replacement flange. Flanges are available in thicknesses of .150" (3.8 mm) to .181" (4.6 mm) in .008" (.20 mm) increments. Ensure components are assembled correctly.

36. Install snap ring on output shaft. Install front drive clutch and snap ring. Install front output shaft and transfer front drive clutch. Mesh splines of front output shaft with discs. Apply sealant to transfer chain front cover and install. Install transfer chain front case to transfer case.
37. Install oil receiver. Install drive chain with drive and driven sprocket as single assembly. Install snap ring on output shaft. Apply sealant to transfer chain rear case and install. All bolts are equal length except 2 end bolts. Apply sealant to oil pump and install. Install speedometer drive gear. Apply sealant to extension housing and install. Install longer bolts with bracket.
38. Secure companion flange and install nut. Air-check piston operation. See **Fig. 55**. Install oil tubes. Install parking lock pawl bracket. Install transfer solenoid wiring. Install transfer valve body. Align manual valve groove to lever pin. Connect No. 4 solenoid and transfer pressure switch connectors. Install transfer oil pan. Install magnets in oil pan and install.
39. Install transmission housing. On A-340E models, install speed sensor and speedometer driven gear. Install front and rear cooler line unions. Install No. 1 and No. 2 speed sensors (if applicable).
40. Install speed sensor and fluid temperature sensor (if applicable). On A-340H models, install speed sensors. Install transfer position switch. Shift control lever into "H4" position. Align basic line and switch groove. Bend at least 2 lock washer tabs. Install transfer control shaft lever. Install speedometer driven gear.
41. Install transfer cooler line side unions. Install transfer oil cooler tubes. Install transmission and transfer fluid temperature sensors. On all models, install park/neutral position switch. Tighten nut to 61 INCH lbs. (6.9 N.m). Align neutral basic line and switch groove. Bend at least 2 lock washer tabs.
42. Install control shaft lever. If throttle cable is new, stake stopper on inner cable. Install wire harness and throttle cable clamp. Install torque converter. Using straightedge and depth gauge, measure distance from front of converter to front mounting surface of transmission housing. See **TORQUE CONVERTER DISTANCE SPECIFICATIONS** table to determine if converter is fully installed.

ACCUMULATOR SPRING SPECIFICATIONS (A-340E)

Color & Code	Free Length In. (mm)	Diameter In. (mm)
2nd Brake (B2) - Yellow	2.776 (70.50)	.776 (19.70)
Direct Clutch (C2)		
Inner - Pink	1.657 (42.10)	.579 (14.70)
Outer Purple	2.764 (70.20)	.795 (20.20)
OD Brake (B0) - Green	2.441 (62.00)	.630 (16.00)
OD Direct Clutch (C0)		
Inner - Yellow	1.811 (46.00)	.551 (14.00)
Outer - Orange	2.937 (74.60)	.823 (20.90)

ACCUMULATOR SPRING SPECIFICATIONS (A-340F)

Color & Code	Free Length In. (mm)	Diameter In. (mm)
2nd Brake (B2) - Yellow	2.776 (70.50)	.776 (19.70)
Direct Clutch (C2) - Blue	2.697 (68.50)	.795 (20.20)
OD Brake (B0) - Lt. Green	2.744 (69.70)	.657 (16.70)
OD Direct Clutch (C0) - White	2.638 (67.00)	.701 (17.80)

ACCUMULATOR SPRING SPECIFICATIONS (A-340H)

Color & Code	Free Length In. (mm)	Diameter In. (mm)
2nd Brake (B2) - Yellow	2.776 (70.50)	.776 (19.70)
Direct Clutch (C2)		
Inner - Purple	1.657 (42.10)	.579 (14.70)
Outer - Purple	2.764 (70.20)	.795 (20.20)
OD Brake (B0) - Green	2.441 (62.00)	.630 (16.00)
OD Direct Clutch (C0)		
Outer - Orange	2.937 (74.60)	.823 (20.90)
Inner - Yellow	1.811 (46.00)	.551 (14.00)

ACCUMULATOR SPRING SPECIFICATIONS (1) (A-343F)

Spring (Color)	Free Length In. (mm)
2nd Brake (Light Gray)	2.858 (72.60)
Direct Clutch	
Inner (Pink)	1.657 (42.10)
Outer (White/Red)	2.886 (73.30)
OD Brake (Green)	2.441 (62.00)
OD Direct Clutch	
Inner (Yellow)	1.811 (46.00)
Outer (Orange)	2.937 (74.60)
(1) Spring diameter is not available.	

TORQUE CONVERTER DISTANCE SPECIFICATIONS

Application	Distance In. (mm)
LX450 A-343F	.618 (15.70)
Land Cruiser A-343F	.618 (15.70)
Pickup & 4Runner (1995)	
A-340E	.787 (20.00)
A-340F	.787 (20.00)
A-340H	.709 (18.00)
Tacoma & 4Runner (1996)	
4-Cyl. A-340E & A-340F	1.250 (31.75)
V6 A-340E & A-340F	.707 (17.95)
T100	
A-340E	
4-Cyl.	1.250 (31.75)
V6	.707 (17.95)
A-340F	.707 (17.95)

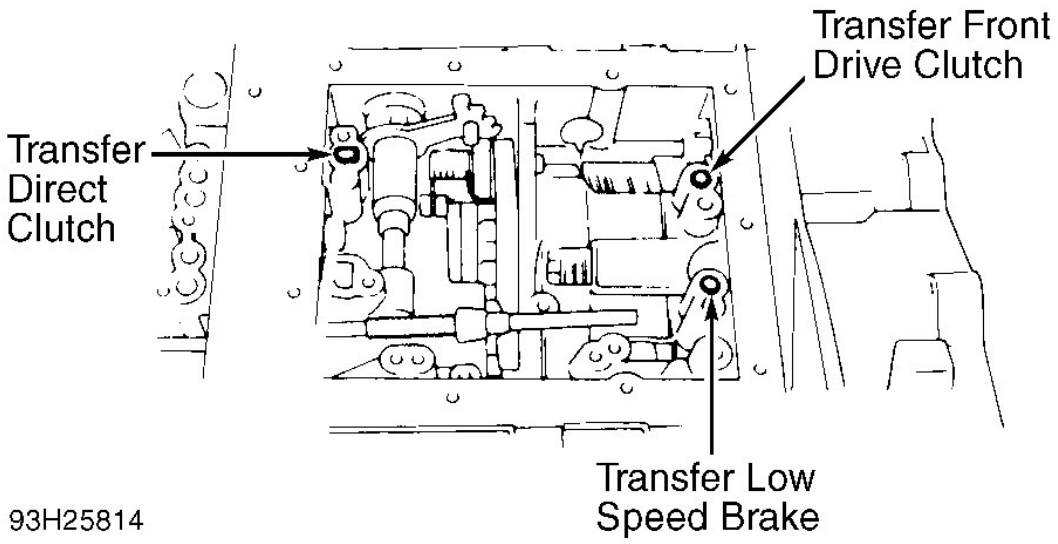

Fig. 55: Air Testing Transfer Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

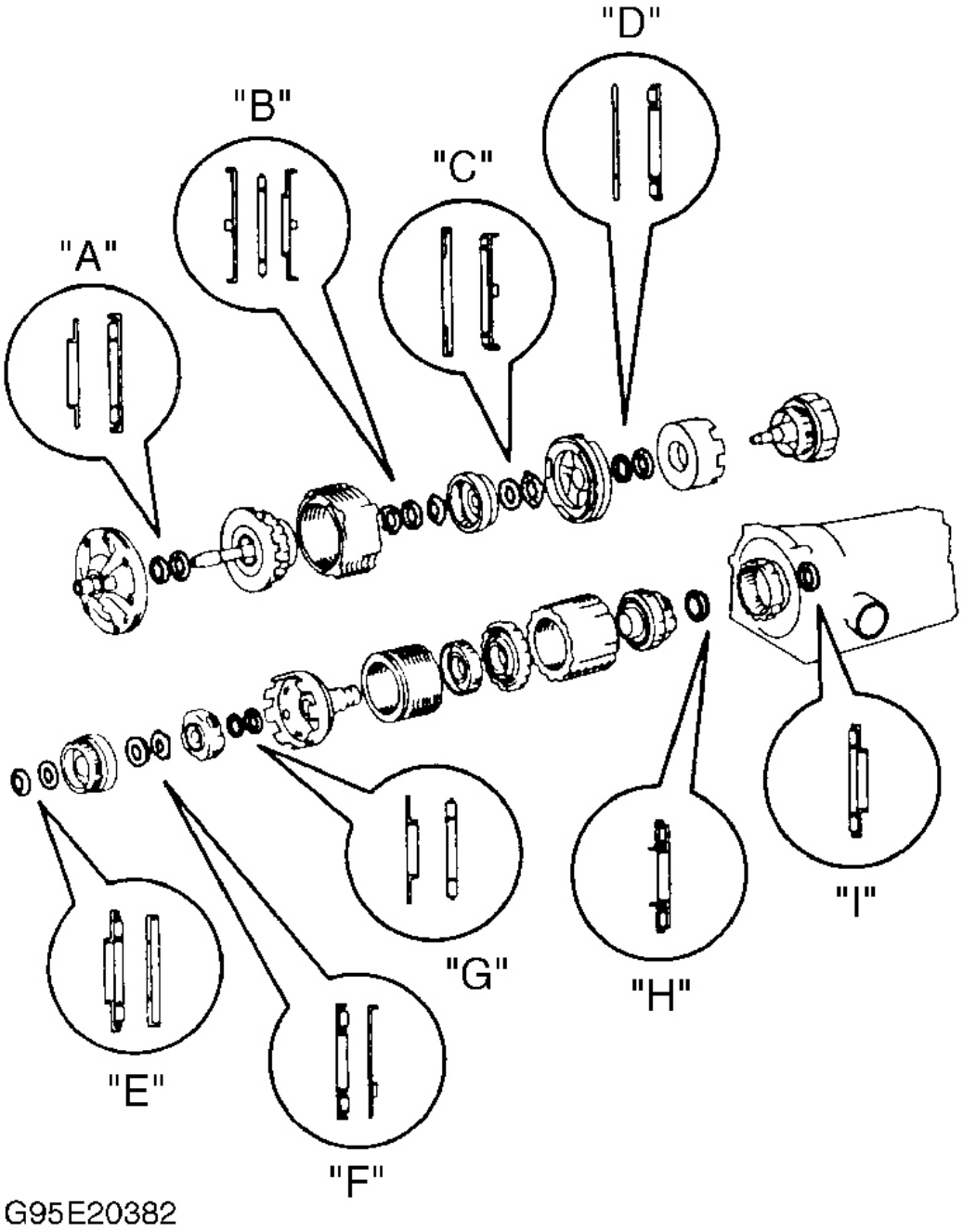

Fig. 56: Identifying Thrust Bearing & Race Installation Positions (A-340 Series Models) Land Cruiser & Lexus LX450 (A-343F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

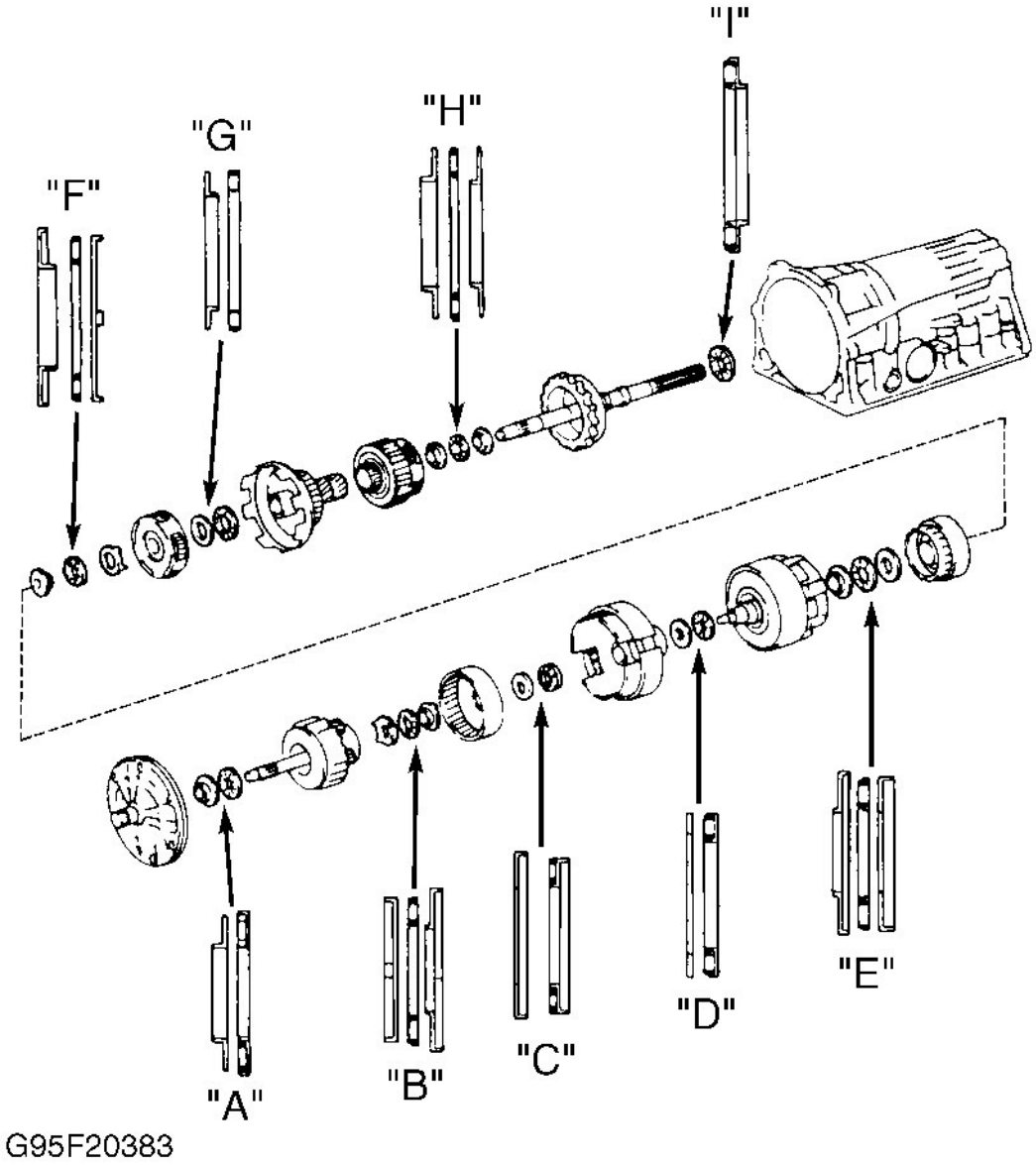

Fig. 57: Identifying Thrust Bearing & Race Installation Positions (A-340 Series Models) All Other A-340 Series Models
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

THRUST BEARING & RACE SPECIFICATIONS A-340 SERIES (ALL EXCEPT A-343F)

Application	Outer Diam. In. (mm)	Inner Diam. In. (mm)
"A"		
Front Race	1.86 (47.3)	1.11 (28.1)
Bearing	1.98 (50.2)	1.14 (28.9)

"B"		
Front Race	1.65 (41.8)	1.07 (27.3)
Rear Race	1.88 (47.8)	.953 (24.2)
Bearing	1.84 (46.8)	1.02 (26.0)
"C"		
Front Race	2.31 (58.8)	1.46 (37.2)
Bearing	2.01 (51.1)	1.33 (33.7)
"D"		
Front Race	2.00 (50.9)	1.45 (36.8)
Bearing	1.87 (47.6)	1.33 (33.7)
"E"		
Front Race	1.93 (48.9)	1.02 (26.0)
Rear Race	1.85 (47.0)	1.06 (26.8)
Bearing	1.84 (46.7)	1.02 (26.0)
"F"		
Front Race	2.11 (53.6)	1.20 (30.6)
Rear Race	1.88 (47.8)	1.35 (34.3)
Bearing	1.88 (47.8)	1.28 (32.6)
"G"		
Front Race	1.87 (47.6)	1.33 (33.7)
Bearing	1.88 (47.8)	1.40 (35.5)
"H"		
Front Race	1.76 (44.8)	1.13 (28.8)
Rear Race	1.76 (44.8)	1.13 (28.8)
Bearing	1.76 (44.8)	1.19 (30.1)
"I"		
Bearing	2.27 (57.7)	1.54 (39.2)

THRUST BEARING & RACE SPECIFICATIONS (LAND CRUISER & LX450 A-343F)

Application	Outer Diam. In. (mm)	Inner Diam. In. (mm)
"A"		
Front Race	1.87 (47.5)	1.11 (28.1)
Bearing	1.98 (50.4)	1.13 (28.8)
"B"		
Front Race	1.65 (42.0)	1.07 (27.2)
Rear Race	1.89 (48.0)	.94 (24.0)
Bearing	1.85 (47.0)	1.02 (26.0)
"C"		
Front Race	2.32 (59.0)	1.46 (37.0)
Bearing	1.98 (50.4)	1.32 (33.5)
"D"		

Front Race	2.01 (51.0)	1.46 (37.0)
Bearing	1.88 (47.8)	1.32 (33.5)
"E"		
Rear Race	2.11 (53.7)	1.04 (26.5)
Bearing	1.69 (43.0)	1.02 (26.0)
"F"		
Rear Race	2.50 (63.6)	2.10 (53.3)
Bearing	2.55 (64.7)	1.96 (49.7)
"G"		
Front Race	1.88 (47.8)	1.32 (33.5)
Bearing	1.89 (48.0)	1.39 (35.4)
"H" (2-piece)		
Front Race	1.74 (44.2)	1.12 (28.5)
Bearing	1.74 (44.2)	1.08 (27.5)
"I"		
Bearing	2.27 (57.7)	1.54 (39.2)

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Chain Case Bolt (A-340H)	25 (34)
Companion Flange Nut (A-340H)	91 (123)
Cooler Union	21 (29)
Dynamic Damper	27 (37)
Extension Housing Bolt	
A-340H	25 (34)
All Other Models	27 (37)
Fluid Temperature Sensor Bolt (A-340H)	11 (15)
Front Support Bolt (A340H)	25 (34)
No. 1 Speed Sensor Bolt	12 (16)
Oil Cooler Pipe Union Nut	25 (34)
Oil Pump-To-Case Bolt	16 (22)
Overdrive-To-Case Bolt	18 (25)
Rear Mounting-To-Extension Housing Bolt	18 (25)
Shift Lever Nut	12 (16)
Speedometer Driven Gear Bolt	12 (16)
Support Crossmember-To-Body Bolt	18 (25)
Torque Converter-To-Drive Plate Bolt	30 (41)
Transfer Case-To-Transmission Bolt (A-340H)	25 (34)
Transfer Oil Cooler Tube Union Nut (A-340H)	25 (34)

Transfer Oil Pump-To-Rear Chain Case Bolt (A-340H)	12 (16)
Transmission Housing Bolt	
10 mm	25 (34)
12 mm	42 (57)
14 mm	25 (34)
17 mm	42 (57)
	INCH Lbs. (N.m)
Detent Spring Bolt	89 (10)
Park/Neutral Position Switch	
Adjusting Bolt	115 (13)
Retaining Nut	61 (6.9)
No. 2 Speed Sensor Bolt	48 (5.4)
Oil Pan Bolt	65 (7.3)
Oil Pump-To-Stator Shaft Bolt	89 (10)
Oil Strainer Bolt	89 (10)
Parking Lock Pawl Bracket Bolt	65 (7.3)
Solenoid-To-Valve Body Bolt	89 (10)
Throttle Cable-To-Transmission Case Bolt	48 (5.4)
Transfer Detent Spring-To-Valve Body Bolt (A-340H)	61 (6.9)
Transfer Lock Pawl Bracket Bolt (A-340H)	61 (6.9)
Transfer Oil Pump Body Bolt (A-340H)	89 (10)
Transfer Oil Strainer Bolt (A-340H)	61 (6.9)
Transfer Position Switch	
Adjusting Bolt	115 (13)
Mounting Nut	35 (3.9)
Transfer Pressure Switch-To-Valve Body (A-340H)	61 (6.9)
Transfer Valve Body-To-Case Bolt (A-340H)	89 (10)
Upper Valve Body-To-Lower Valve Body Bolt	57 (6.4)
Valve Body-To-Case Bolt	89 (10)

TRANSMISSION SPECIFICATIONS

TRANSMISSION SPECIFICATIONS (LAND CRUISER & LX450)

Application	**In. (mm)**
Bushing Diameter (Maximum)	
Direct Clutch Drum	2.126 (53.99)
Extension Housing	1.578 (40.09)
Forward Clutch Drum	.948 (24.08)
OD Direct Clutch Drum	1.067 (27.11)
OD Planetary Gear	.444 (11.27)
Sun Gear	1.066 (27.08)

Transmission Case	1.504 (38.19)
Clutch Pack Clearance	
Transfer Low Speed Brake	.036-.083 (.91-2.10)
1st & Reverse Brake	.028-.048 (.70-1.22)
2nd Brake Clutch	.024-.078 (.61-1.98)
Output Shaft End Play	.011-.034 (.27-.86)
Piston Stroke	
Direct Clutch	.054-.063 (1.37-1.60)
Forward Clutch	.024-.039 (.61-1.00)
OD Brake	.069-.081 (1.75-2.05)
OD Direct Clutch	
Land Cruiser	.073-.085 (1.85-2.15)
LX450	.057-.067 (1.45-1.70)
2nd Coast Brake	.059-.118 (1.50-3.00)
Planetary Pinion Gear Clearance	.008-.024 (.20-.61)

TRANSMISSION SPECIFICATIONS (PICKUP, TACOMA & 4RUNNER)

Application	**In. (mm)**
Bushing Diameter (Maximum)	
Direct Clutch Drum	2.126 (53.99)
Extension Housing	1.578 (40.09)
Forward Clutch Drum	.948 (24.08)
OD Direct Clutch Drum	1.067 (27.11)
OD Planetary Gear	.444 (11.27)
Planetary Ring Gear (A-340 Series)	.948 (24.08)
Sun Gear	1.066 (27.08)
Transmission Case	1.504 (38.19)
Clutch Pack Clearance	
Transfer Low Speed Brake	.036-.083 (.91-2.10)
1st & Reverse Brake	
A-340E	.024-.044 (.61-1.12)
A-340F	.020-.040 (.50-1.02)
A-340H	.024-.052 (.61-1.32)
2nd Brake Clutch	
A-340E	.024-.078 (.61-1.98)
A-340F	.020-.069 (.50-1.76)
A-340H	.024-.078 (.61-1.98)
Output Shaft End Play	.011-.034 (.27-.86)
Piston Stroke	
Direct Clutch	
A-340E	.054-.063 (1.37-1.60)

A-340F	.041-.052 (1.03-1.33)
A-340H	.054-.063 (1.37-1.60)
Forward Clutch	
A-340E	.020-.035 (.50-.90)
A-340F	.016-.031 (.40-.80)
A-340H	.020-.035 (.50-.90)
OD Brake	
A-340E	.055-.067 (1.40-1.70)
A-340F	.052-.064 (1.32-1.62)
A-340H	.055-.067 (1.40-1.70)
OD Direct Clutch	
A-340E	.073-.085 (1.85-2.15)
A-340F	.070-.082 (1.77-2.07)
A-340H	.073-.085 (1.85-2.15)
2nd Coast Brake	
A-340E	.059-.118 (1.50-3.00)
A-340F	.059-.118 (1.50-3.00)
A-340H	.059-.118 (1.50-3.00)
Planetary Pinion Gear Clearance	.008-.024 (.20-.61)

TRANSMISSION SPECIFICATIONS (T100)

Application	**In. (mm)**
Bushing Diameter (Maximum)	
Direct Clutch Drum	2.126 (53.99)
Extension Housing	1.578 (40.09)
Forward Clutch Drum	.948 (24.08)
OD Direct Clutch Drum	1.067 (27.11)
OD Planetary Gear	.444 (11.27)
Planetary Ring Gear (A-340 Series)	.948 (24.08)
Sun Gear	1.066 (27.08)
Transmission Case	1.504 (38.19)
Clutch Pack Clearance	
Transfer Low Speed Brake	.036-.083 (.91-2.10)
1st & Reverse Brake	
2WD A-340E	.024-.044 (.61-1.12)
4WD A-340F	.024-.044 (.61-1.12)
2nd Brake Clutch	
2WD A-340E	.024-.078 (.61-1.98)
4WD A-340F	.024-.078 (.61-1.98)
Output Shaft End Play	.011-.034 (.27-.86)
Piston Stroke	

Direct Clutch	
2WD A-340E	.054-.063 (1.37-1.60)
4WD A-340F	.054-.063 (1.37-1.60)
Forward Clutch	
2WD A-340E	.020-.035 (.50-.90)
4WD A-340F	.020-.035 (.50-.90)
OD Brake	
2WD A-340E	.055-.067 (1.40-1.70)
4WD A-340F	.055-.067 (1.40-1.70)
OD Direct Clutch	
2WD A-340E	.073-.085 (1.85-2.15)
4WD A-340F	.073-.085 (1.85-2.15)
2nd Coast Brake	
2WD A-340E	.059-.118 (1.50-3.00)
4WD A-340F	.059-.118 (1.50-3.00)
Planetary Pinion Gear Clearance	.008-.024 (.20-.61)

