

## 1995 Toyota Pickup

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE & A-46DF Overhaul

### 1995-96 AUTOMATIC TRANSMISSIONS

#### Toyota A-43D, A-46DE & A-46DF Overhaul

## APPLICATION

### TRANSMISSION APPLICATIONS

Vehicle	Transmission Model
1995 Pickup (2.4L)	A-43D
1995 Previa (2.4L)	A-46DE & A-46DF
1995-96 Tacoma (2.4L)	A-43D

**CAUTION:** Tacoma is 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

**CAUTION:** Previa and Tacoma 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 section.

Transmission is identified by Vehicle Identification Number (VIN). VIN locations are at front right side of frame, top left of instrument panel and driver's side door post. VIN is used to ensure correct application of component parts and assemblies.

## DESCRIPTION

Transmission consists of a lock-up torque converter, oil pump, valve body assembly, front clutch, O/D direct clutch, rear clutch, 3 planetary gear sets, 4 clutch style brakes and 3 one-way clutches.

The A-46DE and A-46DF transmissions are electronically controlled. Transmission shifting and torque converter lock-up are controlled by 2 shift solenoids and a lock-up solenoid. 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 TOYOTA A-46DE & A-46DF ELECTRONIC CONTROLS article.

The ECT ECU receives information from various input devices and uses this information to control No. 1 and No. 2 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.

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 **AUTOMATIC TRANSMISSION SHIFT INTERLOCK SYSTEMS** article.

## LUBRICATION & ADJUSTMENTS

See **AUTOMATIC TRANSMISSION SERVICING - A/T** article in TRANSMISSION SERVICING section.

## ON-VEHICLE SERVICE

### VALVE BODY ASSEMBLY

#### Removal

Remove drain plug and drain ATF. Remove oil pan and gasket. Remove magnets from oil pan. Note location of oil tubes. Using screwdrivers, carefully pry at both ends of oil tubes and remove oil tubes. Disconnect solenoid wiring. Remove oil strainer (filter) and gasket. Remove valve body assembly retaining bolts. Note bolt location and length. See **VALVE BODY ASSEMBLY BOLT SPECIFICATIONS** table. See **Fig. 1**. Slightly lower valve body assembly. Disconnect throttle cable from valve assembly cam. Remove valve body assembly.

#### Installation

1. To install, reverse removal procedure. Ensure manual shift lever in transmission case aligns with manual valve of valve body assembly. Connect throttle cable to cam.
2. Loosely install appropriate bolts in correct positions. See **Fig. 1**. Install valve body assembly and tighten bolts to 89 INCH lbs. (10 N.m). Install oil strainer and tighten bolts to 48 INCH lbs. (5.4 N.m). Ensure magnets are installed in oil pan. Install oil pan and tighten bolts to 48 INCH lbs. (5.4 N.m). Fill transmission with ATF to proper fluid level.

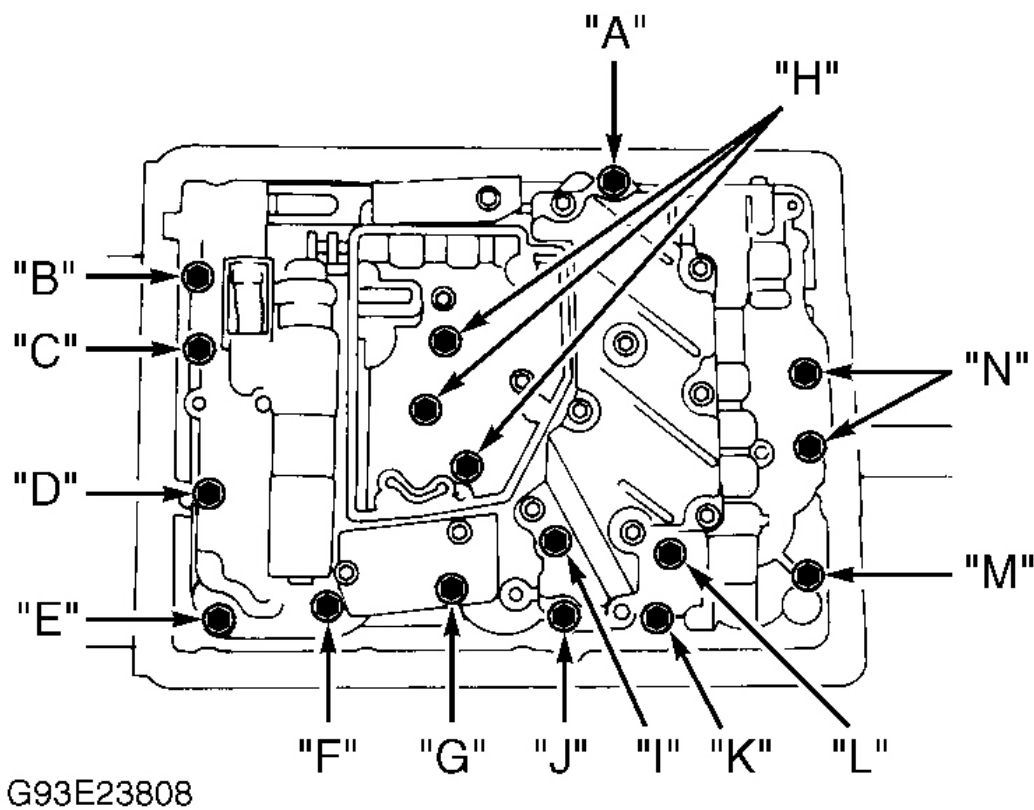
### VALVE BODY ASSEMBLY BOLT SPECIFICATIONS <sup>(1)</sup>

Bolt Identification	In. (mm)
A-43D	
A, I & J	2.17 (55)
B	1.57 (40)

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C, D & M	1.42 (36)
E & F	.98 (25)
G	1.85 (47)
H & N	1.18 (30)
K & L	.79 (20)
A-46DE & A-46DF	
A, B, C, E, H, J, K, & M	1.18 (30)
D	2.36 (60)
F	.98 (25)
G, I & L	1.85 (47)
N	N/A
(1) For bolt identification and locations, See <b>Fig. 1</b> .	



**Fig. 1: Identifying Control Valve Assembly Bolt Locations**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### EXTENSION HOUSING & GOVERNOR ASSEMBLY

**Removal**

1. Raise and support vehicle. Place reference marks on drive shaft and companion flange. Remove drive shaft, speedometer cable and speedometer driven gear. Remove speed sensors (if equipped). Support transmission with jack. Remove transmission-to-crossmember bolts and rear mount from extension housing.
2. Remove extension housing bolts and remove extension housing. Note bolt length and location. On 4WD vehicles, remove transfer case and adaptor. See appropriate article in AXLE SHAFTS & TRANSFER CASES section.
3. Remove snap ring, speedometer drive gear, lock ball and remaining snap ring from output shaft. Remove staked area on lock plate. Remove lock plate bolt. Using screwdriver, remove retaining clip from hole of output shaft. Remove governor assembly (if applicable).

**Cleaning & Inspection**

Clean components with solvent. Dry with compressed air. Inspect components for damage. Measure inside diameter of extension housing bushing. Replace extension housing if bushing inside diameter exceeds 1.4996" (38.090 mm).

**Installation**

1. To install, reverse removal procedure. Ensure output shaft bolt hole is aligned with governor assembly. Install lock plate and bolt and tighten bolt to 35 INCH lbs. (3.9 N.m). Stake lock plate. Install retaining clip so it engages with hole of output shaft. Install extension housing and NEW gasket. Clean all bolt threads.
2. Apply thread sealant to 4 upper extension housing bolts prior to installation. Install short bolts to bottom of extension housing. Tighten bolts to 25 ft. lbs. (34 N.m). Install engine rear mount to extension housing. Tighten bolts to 18 ft. lbs. (25 N.m). Tighten rear mount bracket bolts to 115 INCH lbs. (13 N.m). Fill transmission to proper level with ATF.

**PARKING LOCK PAWL****Removal & Installation**

1. Remove valve body assembly. Remove parking lock pawl bolts and bracket. Disconnect parking lock rod from manual valve lever. Remove "E" ring from shaft. Pull out shaft and remove spring and parking lock pawl. See **Fig. 7**.
2. To install, reverse removal procedures. Prior to installing parking lock pawl bracket bolts, push lock rod forward. Finger tighten bolts and ensure parking lock pawl operates smoothly. Tighten bracket bolts to 65 INCH lbs. (7.4 N.m).

**PARK/NEUTRAL POSITION (PNP) SWITCH**

For PNP switch adjustment, see **AUTOMATIC TRANSMISSION SERVICING - A/T** article in TRANSMISSION SERVICING section.

**SHIFT LINKAGE**

For shift linkage adjustment, see **AUTOMATIC TRANSMISSION SERVICING - A/T** article in TRANSMISSION SERVICING section.

## **THROTTLE CABLE**

For throttle cable adjustment, see **AUTOMATIC TRANSMISSION SERVICING - A/T** article in TRANSMISSION SERVICING section.

## **TROUBLE SHOOTING**

### **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, damaged torque converter or transmission assembly.

#### **No Movement In Any Gear Position**

Manual shift linkage or cable out of adjustment. Faulty valve body, primary regulator valve, parking lock pawl or torque converter. Damaged or broken converter drive plate or restricted oil filter.

#### **Selector Lever Position Incorrect**

Manual shift linkage or cable out of adjustment. Faulty manual valve and lever.

#### **Harsh Engagement Into Any Forward Gear Position**

Throttle cable out of adjustment. Faulty valve body, primary regulator valve, accumulator pistons or transmission assembly.

#### **Delayed Upshifts Or Downshifts From OD-3 Or 3-2, Then Back To OD**

Throttle cable or cam faulty or out of adjustment. Faulty governor, electronic controls, solenoid valve or valve body.

#### **Slips On Upshift, Or Slips Or Shudders On Acceleration**

Manual shift linkage, cable or throttle cable out of adjustment. Faulty valve body, solenoid valve or transmission assembly.

#### **Drag Or Binding On Upshifts**

Manual shift linkage or cable out of adjustment. Faulty valve body or transmission assembly. See **CLUTCH &**

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### **BRAKE APPLICATION** chart.

#### **Lock-Up Does Not Occur**

Faulty electronic controls, valve body, solenoid valve or transmission assembly.

#### **Harsh Downshift**

Throttle cable or cam faulty or out of adjustment. Faulty accumulator pistons, valve body or transmission assembly.

#### **No Downshift When Coasting**

Faulty governor, valve body, electronic controls or solenoid valve.

#### **Downshift Occurs Too Soon Or Too Late When Coasting**

Throttle cable or cam faulty or out of adjustment. Faulty governor, valve body, electronic controls, solenoid valve or transmission assembly.

#### **No OD-3, 3-2 Or 2-1 Kickdown**

Throttle cable out of adjustment. Faulty governor, valve body, electronic controls or solenoid valve.

#### **No Engine Braking In 2nd Or "L" Position**

Faulty valve body, electronic controls, solenoid valve or transmission assembly.

#### **Vehicle Does Not Hold In "P" Position**

Manual shift linkage or cable out of adjustment. Faulty parking lock pawl cam and spring.

### **CLUTCH & BRAKE APPLICATION CHART**

Selector Lever Position	Elements In Use
"D" (Drive)	
First Gear	Front Clutch, No. 2 One-Way Clutch, OD Direct Clutch & OD One-Way Clutch
Second Gear	Front Clutch, No. 1 One-Way Clutch, No. 2 Brake, OD Direct Clutch & OD One-Way Clutch
Third Gear	Front Clutch, No. 2 Brake, OD Direct Clutch, OD One-Way Clutch & Rear Clutch (Outer Piston)
OD (Fourth Gear)	Front Clutch, No. 2 Brake, OD Brake & Rear Clutch (Outer Piston)
"2" (Intermediate)	

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First Gear	Front Clutch, No. 2 One-Way Clutch, OD Direct Clutch & OD One-Way Clutch
Second Gear	Front Clutch, No. 1 Brake, No. 2 Brake, No. 1 One-Way Clutch, OD Direct Clutch & OD One-Way Clutch
"L" (1st Gear)	Front Clutch, No. 3 Brake, No. 2 One-Way Clutch, OD Direct Clutch & OD One-Way Clutch
"R" (Reverse)	No. 3 Brake, OD Direct Clutch, OD One-Way Clutch & Rear Clutch
"N" (Neutral)	OD Direct Clutch & OD One-Way Clutch
"P" (Park)	No. 3 Brake, OD Direct Clutch & OD One-Way Clutch

## TESTING

**NOTE:** For electronic diagnosis and component testing of A-46DE and A-46DF transmissions, see appropriate **ELECTRONIC CONTROLS** article.

### PRELIMINARY CHECKS

1. Before testing transmission, ensure fluid level is correct and selector lever, throttle cable and idle speed are adjusted correctly. Battery must be fully charged for accurate testing.
2. To aid in transmission fault diagnosis, determine if fault is hydraulic, electronic or a combination of both. Electronic control transmissions are capable of storing self-diagnostic codes. To determine if a fault is electrical, retrieve any stored diagnostic trouble codes. See **ELECTRONIC CONTROLS - A-46DE & A-46DF** article for electronic diagnosis.

### TIME LAG TEST

1. Engine and transmission must be at normal operating temperature. Start engine and ensure idle RPM is within specification with A/C off. Idle speed for Pickup and Previa is 750 RPM in Neutral. Idle speed for Tacoma is 700 RPM in Neutral. Apply service and parking brakes. Using stop watch, measure time until engagement shock is felt when selector lever is shifted from "N" to "D" position.
2. Allow one minute intervals between tests. Perform time measurements 2 more times and calculate average value. Time should be less than 1.2 seconds. Repeat test procedure to test time lag when selector lever is shifted from "N" to "R" position. Time lag should be less than 1.5 seconds.

#### Time Lag Test Results

- "N" To "D" Position Time Lag Is Greater Than Specified: Low line pressure, worn front clutch or OD one-way clutch not operating correctly.

- "N" To "R" Position Time Lag Is Greater Than Specified: Low line pressure, worn rear clutch, worn No. 3 brake or OD one-way clutch not operating correctly.

## ROAD TEST

### "D" Position Test

1. Engine and transmission must be at normal operating temperature. Shift transmission into "D" position with OD switch in ON position. Depress accelerator pedal to full throttle. Ensure all upshifts and downshifts occur at specified points. Refer to appropriate SHIFT SPEED SPECIFICATIONS table.
2. Ensure lock-up occurs at appropriate speeds. See LOCK-UP SPEED SPECIFICATIONS table. Lightly depress accelerator pedal. If excessive increase in engine RPM exists, lock-up did not occur.

**NOTE:** A 3-OD upshift will not occur with a throttle valve opening greater than 86 percent or if coolant temperature is below 122°F (50°C). A OD-3 kickdown is always possible with throttle valve opening of 86 percent or greater. Lock-up does not occur at coolant temperatures below 158°F (70°C).

3. Check for shock and slippage at all upshifts. Drive vehicle in 3rd and OD. Check for abnormal noise and vibration. While driving in OD, "D", 3rd and 2nd gear, ensure speeds at 2-1, 3-2 and OD-3 kickdown are within specification. Check for shock and slippage at kickdown.

### "D" Position Test Results

- No 1-2 Upshift: Defective governor or stuck 1-2 shift valve or No. 2 solenoid.
- No 2-3 Upshift: Stuck 2-3 shift valve or No. 1 solenoid.
- No 3-OD Upshift With Throttle Opening Less Than 86 Percent: Stuck 3-OD shift valve. If shift point is not within specification, check for misadjusted throttle cable or defective throttle valve, 1-2, 2-3 or 3-OD shift valve.
- Lock-Up Does Not Occur: Stuck shift solenoid or lock-up relay valve.
- Excessive Shock & Slippage: High line pressure, defective accumulator or check balls. Abnormal noise and vibration may be caused by unbalance in drive shaft, differential, tires or torque converter.

### "2" Position Test

Shift transmission to "2" position. With accelerator pedal held at full throttle, check for proper 1-2 upshift at specified throttle positions. See appropriate SHIFT SPEED SPECIFICATIONS table. While driving vehicle in 2nd gear, release accelerator and check engine braking effect. If engine braking does not exist, No. 1 brake is defective.

### "L" Position Test

While driving vehicle in "L" position, check for failure to upshift to 2nd gear. Check engine braking effect when accelerator is released. If engine braking does not exist, No. 3 brake is defective.

### "R" Position Test



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Shift vehicle to "R" position. Accelerate vehicle and check for transmission slippage.

**"P" Position Test**

Stop vehicle on incline of 5 degrees or steeper. Shift vehicle to "P" position and release parking brake. Ensure parking lock pawl prevents vehicle from moving.

**PICKUP A-43D SHIFT SPEED SPECIFICATIONS <sup>(1)</sup>**

<b>Application</b>	<b>MPH</b>
"D" Position	
1st-2nd	35-45
2nd-3rd	66-77
3rd-OD <sup>(2)</sup>	No Shift
OD-3rd	(3)
3rd-2nd	59-70
2nd-1st	22-30
"L" Position (2nd-1st)	29-39
(1) At wide open throttle.	
(2) 3-OD upshift point with closed throttle is at 24-32 MPH.	
(3) OD-3 downshift is possible up to maximum speed.	

**PREVIA A-46DE & A-46DF SHIFT SPEED SPECIFICATIONS <sup>(1)</sup>**

<b>Application</b>	<b>MPH</b>
"D" Position	
1st-2nd	35-38
2nd-3rd	62-68
3rd-OD	89-94
3rd-OD <sup>(2)</sup>	No Shift
OD-3rd	(3) *
OD-3rd	85-91
3rd-2nd	58-64
2nd-1st	31-34
"2" Position	
1st-2nd	35-38
3rd-2nd	62-66
2nd-1st	31-34
"L" Position (2nd-1st)	31-34
(1) At wide open throttle.	
(2) 3-OD upshift point with closed throttle is at 25-27 MPH.	

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(3) OD-3 downshift point with closed throttle is at 16-19 MPH.

### PREVIA A-46DE & A-46DF LOCK-UP SPEED SPECIFICATIONS <sup>(1)</sup>

Application	MPH
Lock-Up ON (3rd <sup>(2)</sup> & OD)	43-47
Lock-Up OFF (3rd <sup>(2)</sup> & OD)	40-43
(1) With vehicle in "D" position and throttle valve opened 5 percent.	
(2) With OD switch in OFF position.	

### TACOMA A-43D SHIFT SPEED SPECIFICATIONS <sup>(1)</sup>

Application	MPH
"D" Position	
1st-2nd	34-43
2nd-3rd	63-72
3rd-OD <sup>(2)</sup>	No Shift
OD-3rd	(3)
3rd-2nd	60-69
2nd-1st	27-35
"L" Position (2nd-1st)	29-40
(1) At wide open throttle.	
(2) 3-OD upshift point with closed throttle is at 27-34 MPH.	
(3) OD-3 downshift is possible up to maximum speed.	

### STALL SPEED TEST

1. Ensure engine and transmission are at normal operating temperature. Connect tachometer to vehicle and ensure it is visible to driver. Apply parking brake and block front wheels.

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

2. Start engine, apply brakes and place transmission in "D" position. Depress accelerator to full throttle and note maximum RPM obtained. Repeat test in "R" position. Stall speed for Pickup should be 1750-2050 RPM. Stall speed for Previa should be 2450-2750 RPM. Stall speed for Tacoma should be 1700-2000 RPM.

#### Stall Speed Test Results

- Stall Speed Is Same In Both Positions, But Less Than Specified: Engine output may be insufficient or defective stator one-way clutch.

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

- Stall Speed High In "D" Position: Low line pressure, slipping front clutch or defective No. 2 or OD one-way clutch.
- Stall Speed High In "R" Position: Low line pressure, rear clutch slipping, No. 3 brake slipping or defective OD one-way clutch.
- Stall Speed High In Both Positions: Low line pressure, improper fluid level or defective OD one-way clutch.

### HYDRAULIC PRESSURE TESTS

**NOTE:** Hydraulic pressure tests should be performed with transmission fluid temperature at normal operating temperature of 122-176°F (50-80°C).

#### Line Pressure Test

1. Ensure transmission fluid is at normal operating temperature. Connect appropriate pressure gauge to line pressure test port on transmission. See **Fig. 2**.
2. Connect tachometer to vehicle and ensure it is visible to driver. Block all 4 wheels and fully apply parking brake. Start engine and ensure idle speed is adjusted to specification.
3. Apply service brake and shift transmission to "D" position. Check line pressure at idle and record pressure reading. Accelerate vehicle to stall speed and record line pressure reading.
4. Repeat test procedure in "R" position. If line pressures are not as specified, check throttle cable adjustment. Adjust throttle cable (if necessary), and repeat test procedure and record pressure readings. Compare all readings to specification. See appropriate LINE PRESSURE SPECIFICATIONS table.

#### PICKUP & TACOMA LINE PRESSURE SPECIFICATIONS

Engine Speed	"D" Position psi (kg/cm <sup>2</sup> )	"R" Position psi (kg/cm <sup>2</sup> )
Idle Speed	64-73 (4.5-5.1)	97-108 (6.8-7.6)
Stall Speed	144-169 (10.1-11.9)	213-270 (15.0-19.0)

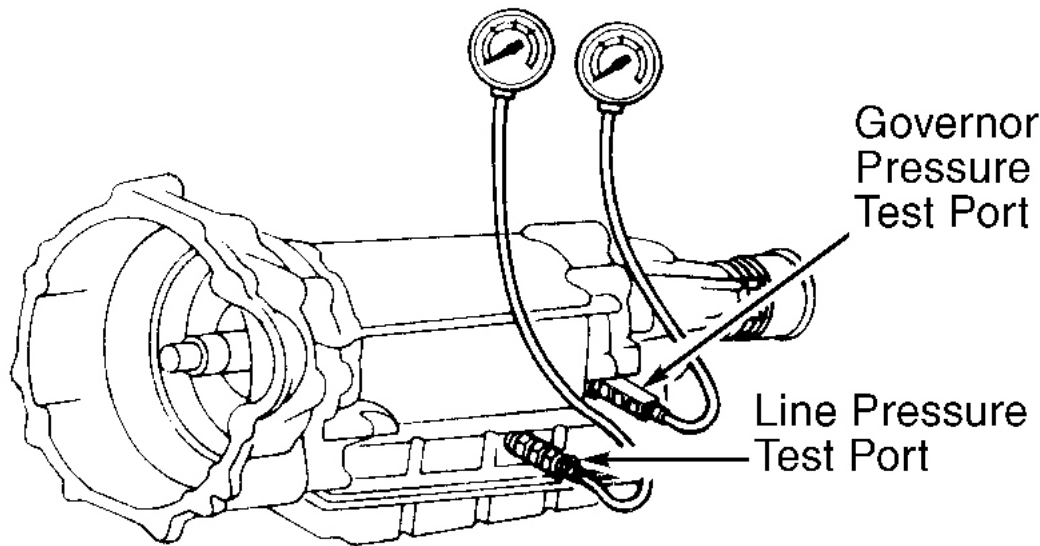
#### PREVIA LINE PRESSURE SPECIFICATIONS

Engine Speed	"D" Position psi (kg/cm <sup>2</sup> )	"R" Position psi (kg/cm <sup>2</sup> )
Idle Speed	53-58 (3.7-4.1)	73-81 (5.1-5.7)
Stall Speed	152-173 (10.6-12.2)	196-231 (13.8-16.3)

#### Line Pressure Test Results

- Line Pressure High In Both Positions: Defective regulator valve or throttle valve, or throttle cable out of adjustment.
- Line Pressure Low In Both Positions: Defective oil pump, regulator valve, throttle valve or OD direct clutch, or throttle cable out of adjustment.
- Line Pressure Low In "D" Position Only: Defective front clutch or fluid leak in "D" position circuit.

- Line Pressure Low In "R" Position Only: Defective rear clutch, No. 3 brake or internal fluid leak in reverse circuit.



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**Fig. 2: Identifying Transmission Hydraulic Pressure Test Ports**

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

**Governor Pressure Test (A-43D Only)**

1. Install pressure gauge to governor pressure port on transmission. See **Fig. 2**. Start engine and release parking brake. With transmission in "D" position, slowly depress accelerator and check governor pressure at specified speed. See **GOVERNOR PRESSURE SPECIFICATIONS (A-43D)** table.

**CAUTION: Road test vehicle or use dynamometer to check governor pressures exceeding minimum vehicle speed specification.**

2. If governor pressures are incorrect, possible causes are: incorrect line pressure, fluid leakage in governor pressure circuit or defective governor valve.

**GOVERNOR PRESSURE SPECIFICATIONS (A-43D)**

Vehicle & Speed (MPH)	Output Shaft RPM	Pressure psi (kg/cm <sup>2</sup> )
Pickup		
20	1000	13-21 (.9-1.5)
35	1800	23-31 (1.6-2.2)

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69	3500	58-75 (4.1-5.3)
Tacoma		
20	1000	14-23 (1.0-1.6)
35	1800	28-37 (2.0-2.6)
69	3500	73-90 (5.1-6.3)

## REMOVAL & INSTALLATION

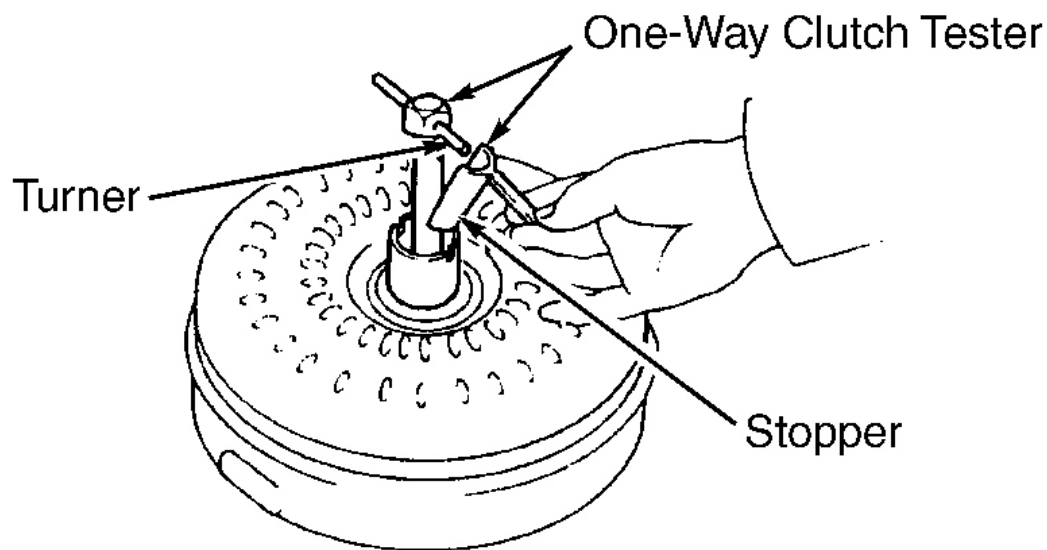
For transmission removal and installation procedure, see **AUTOMATIC TRANSMISSION REMOVAL & INSTALLATION - A/T** article in TRANSMISSION SERVICING section.

## TORQUE CONVERTER

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

### ONE-WAY CLUTCH TEST

1. Install turner and stopper of One-Way Clutch Tester (09350-30020) in torque converter. See **Fig. 3**. Turner fits in inner race of one-way clutch. Stopper fits in notch of converter hub and outer race of one-way clutch.
2. Clutch should lock when rotated counterclockwise, and turn freely when rotated clockwise. If necessary, clean converter and retest clutch. Replace converter if clutch fails test.

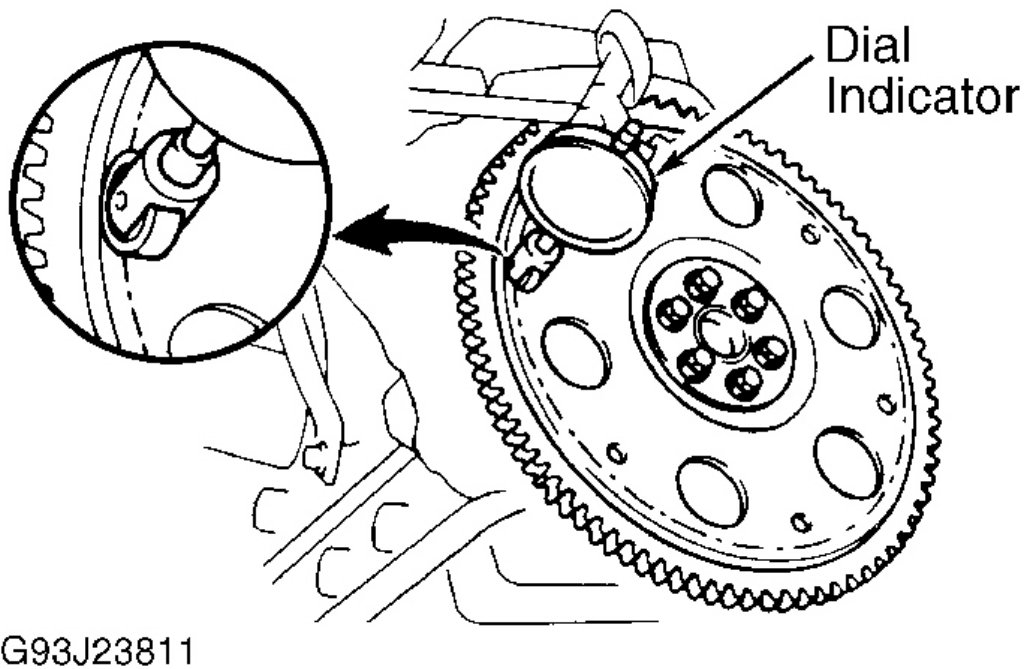


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**Fig. 3: Checking Torque Converter One-Way Clutch**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### DRIVE PLATE RUNOUT TEST

Measure drive plate runout. See **Fig. 4**. If runout exceeds .008" (.20 mm), or if ring gear is damaged, replace drive plate. If installing a new drive plate, note position of spacers. On Pickup, tighten bolts to 61 ft. lbs. (83 N.m). On Previa and Tacoma, tighten bolts to 55 ft. lbs. (74 N.m).

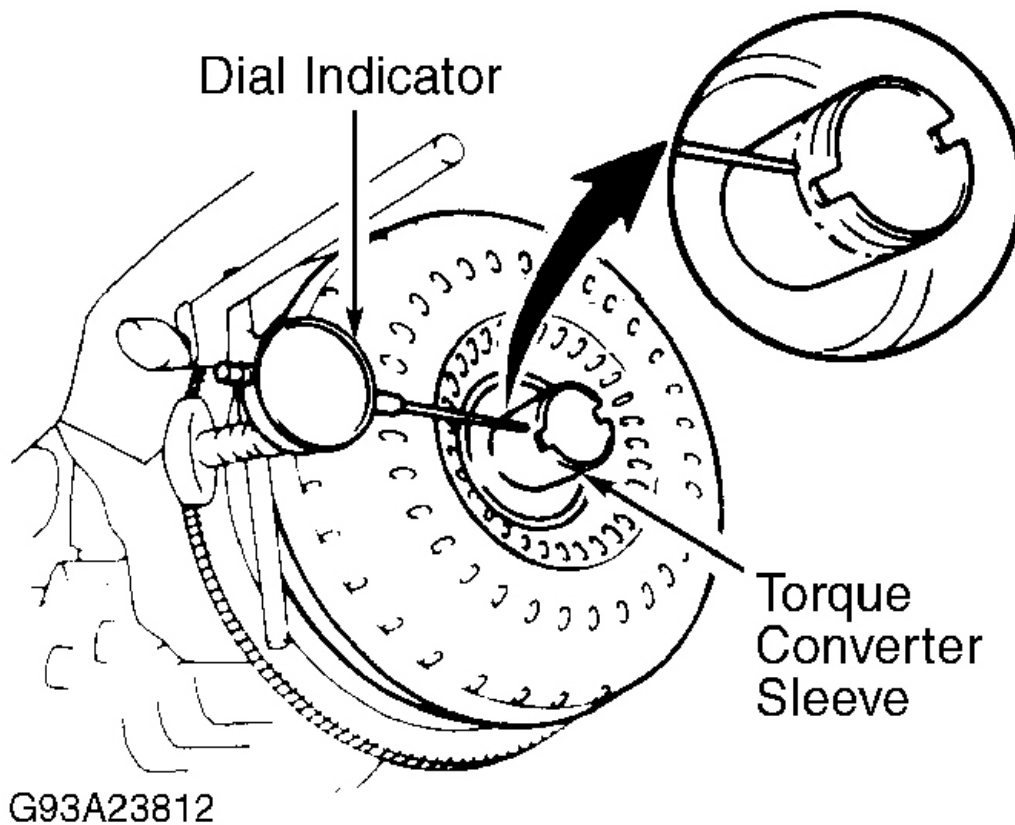


**Fig. 4: Checking Drive Plate Runout**

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

#### CONVERTER SLEEVE RUNOUT TEST

1. Temporarily mount torque converter to drive plate. Mount a dial indicator with needle resting on converter sleeve. See **Fig. 5**. Rotate converter. If runout exceeds .012" (.30 mm), ensure converter is properly mounted to drive plate and drive plate is not broken or bent.
2. If converter is properly mounted and runout exceeds specification, replace torque converter. Mark position of converter to ensure correct installation. Remove converter from drive plate.



**Fig. 5: Checking Converter Sleeve Runout**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

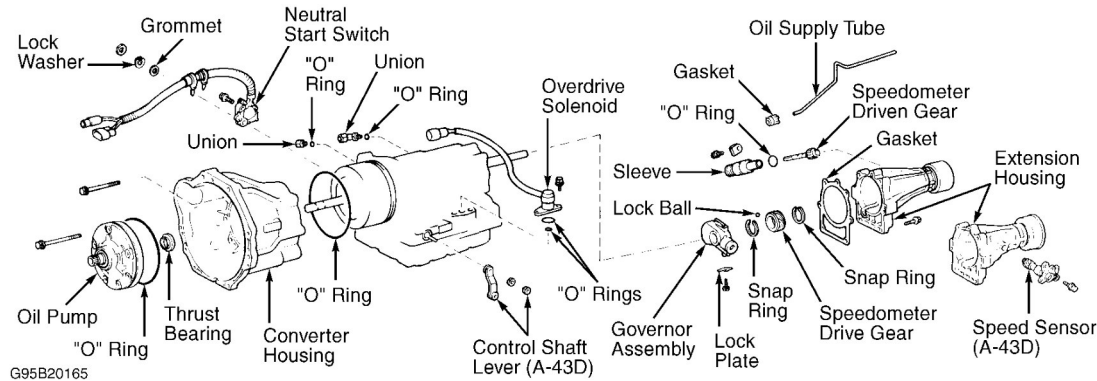
## TRANSMISSION DISASSEMBLY

1. Remove wire harness clamp and throttle cable from converter housing. Remove control shaft lever. Remove overdrive solenoid, PNP switch, speedometer driven gear and speed sensors (if equipped). See **Fig. 6**. On AWD vehicles, remove transfer case. See appropriate article in AXLE SHAFTS & TRANSFER CASES section.
2. Remove oil pump bolts. Using appropriate 2-jaw puller, remove oil pump from transmission case. Remove bearing and race from rear of oil pump. Remove converter housing bolts. Note length and bolt location. While holding input shaft, remove converter housing. Remove "O" ring from OD case.
3. Remove extension housing and gasket. Note bolt length and location. Remove oil supply tube. Remove transfer adaptor (if equipped). On A-43D models, remove snap ring, speedometer drive gear, lock ball and remaining snap ring from output shaft. See **Fig. 6**.
4. On all other models, remove snap ring from output shaft and remove speed sensor rotor and key. On A-43D models, remove staked area on lock plate. Remove governor assembly lock plate bolt. Using



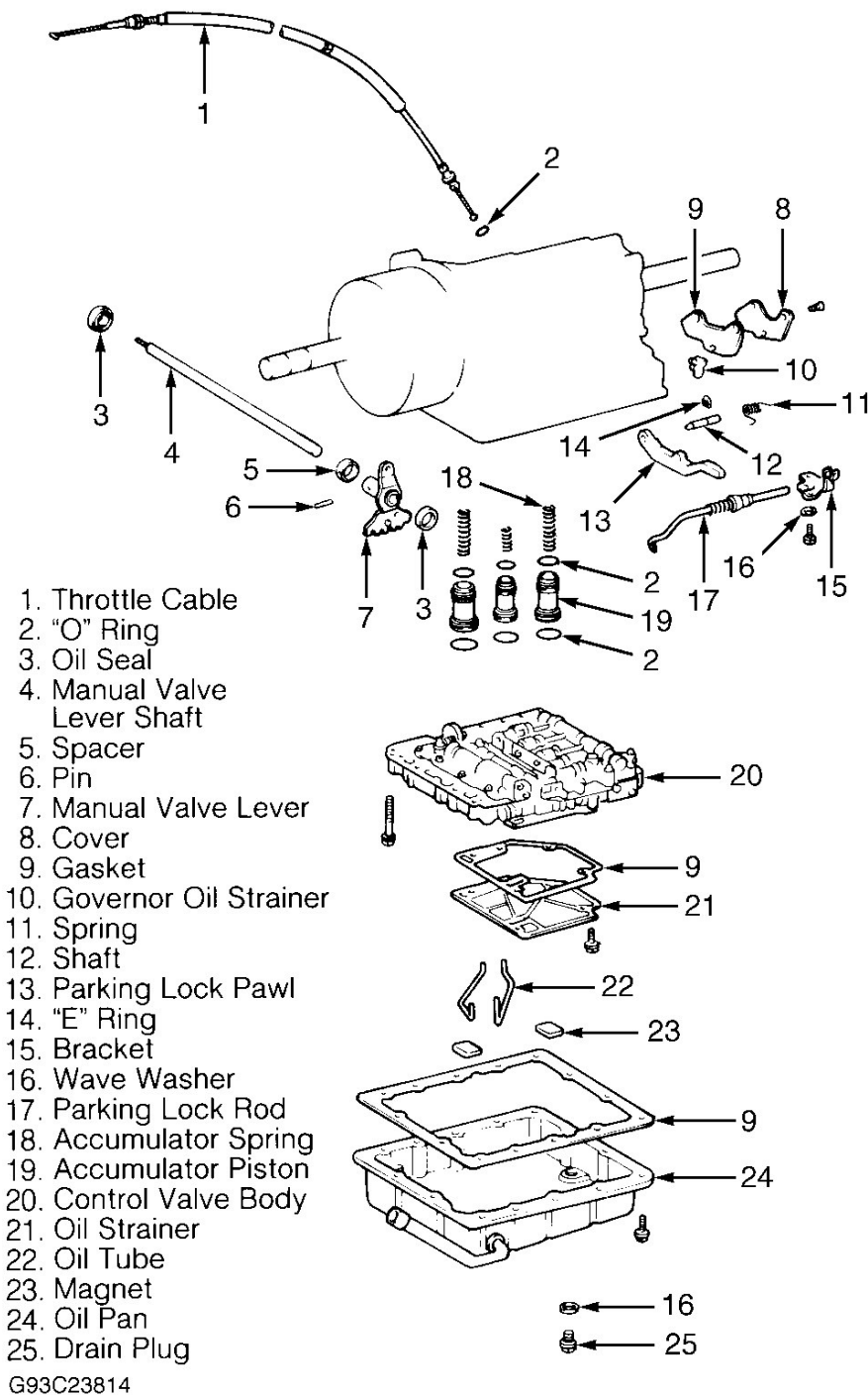
screwdriver, lift retaining clip from hole of output shaft. Remove governor assembly.

5. Remove cover, gasket and governor oil strainer from rear of transmission case. On all models, remove oil pan and gasket. Remove magnets from oil pan. Inspect magnets and pan for metal or brass particles.
6. Remove oil tubes by carefully prying both ends of tube with screwdriver. Remove solenoid wiring from transmission case. Remove oil strainer (filter) and gasket. See **Fig. 7**. Remove valve body assembly. See **VALVE BODY ASSEMBLY** under ON-VEHICLE SERVICE.



**Fig. 6: Identifying Transmission & Extension Housing Components (A-43D Shown; A-46DE & A-46DF Are Similar)**

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



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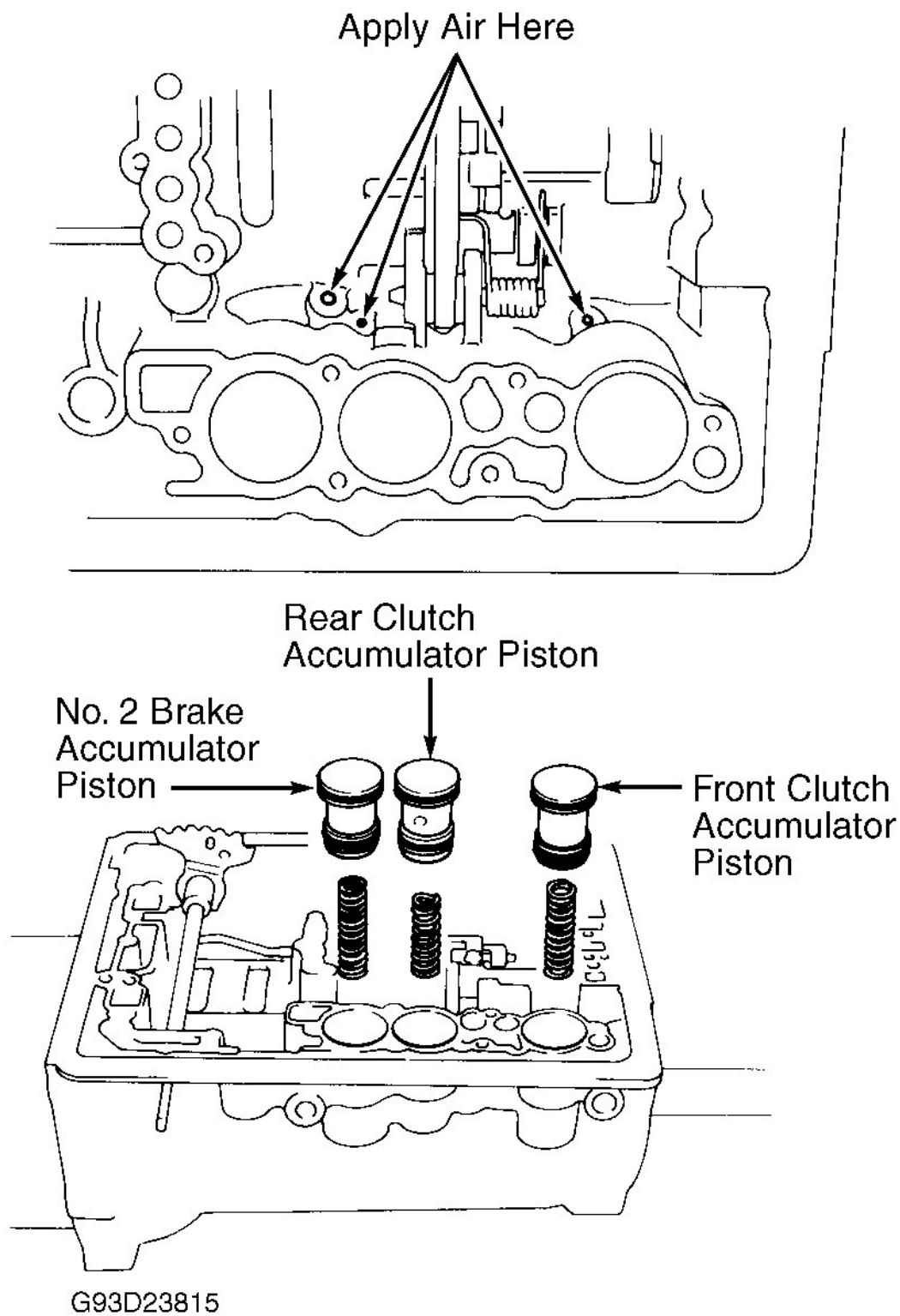
**Fig. 7: Identifying Transmission Case Components**

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

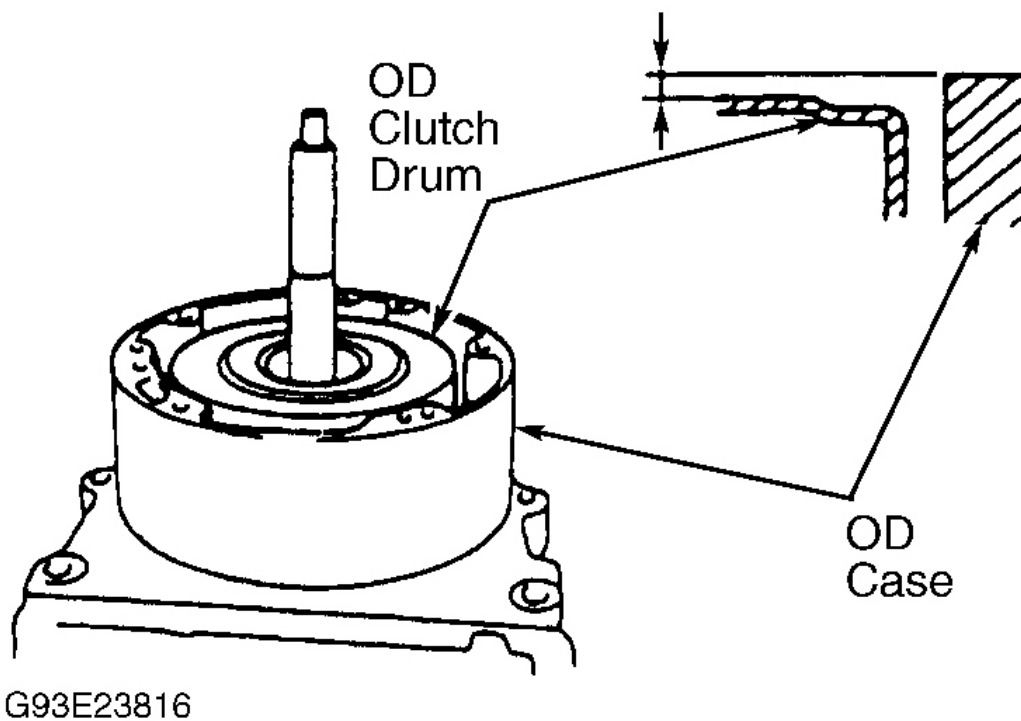
7. Remove throttle cable and "O" ring. Place shop cloth over accumulator pistons. Apply compressed air to oil passages of transmission case to remove accumulator pistons and springs. See **Fig. 8**. Note spring and

piston locations.

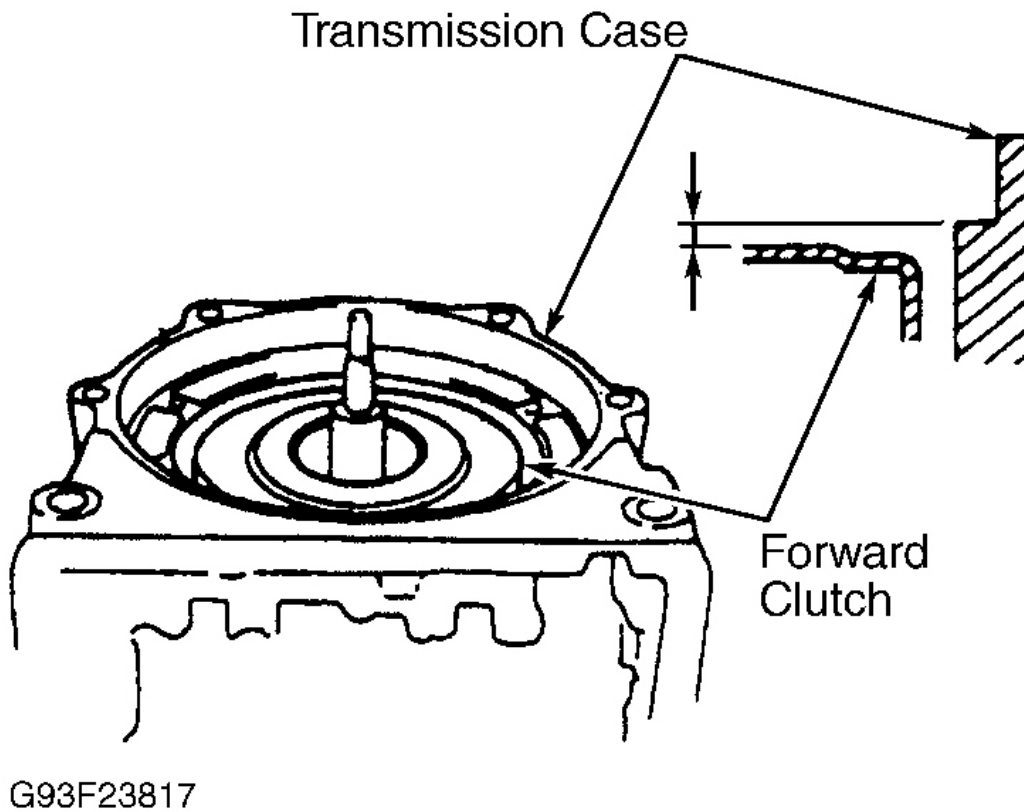
8. Remove parking lock rod bracket and rod. Remove parking lock pawl, pivot pin and spring. If manual valve lever shaft requires removal, use hammer and chisel to cut spacer and slide spacer toward lever to obtain clearance to shaft pin. Drive out pin. Remove shaft and spacer. Remove oil seals. See **Fig. 7**.
9. Position transmission case with front of case facing upward. Push input shaft and drum toward rear of transmission case to ensure OD direct clutch is installed correctly. Using vernier caliper and Clutch Drum Thrust Plate Gauge (09370-12010), measure distance between top of case and OD direct clutch drum. See **Fig. 9**.
10. Record measurement for reassembly reference. Remove OD planetary gear with OD direct clutch and one-way clutch from OD case. Note location of thrust washer and race on clutch assembly. Hold both sides of OD case and remove from transmission case. Note location of bearing and race. See **Fig. 11**.
11. Push input shaft and drum toward rear of transmission case. Ensure front clutch is installed correctly. Using vernier caliper and Clutch Drum Thrust Plate Gauge (09370-12010), measure distance between top of case and front clutch drum. See **Fig. 10**. Record measurement for reassembly reference.



**Fig. 8: Removing Accumulator Pistons & Springs**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



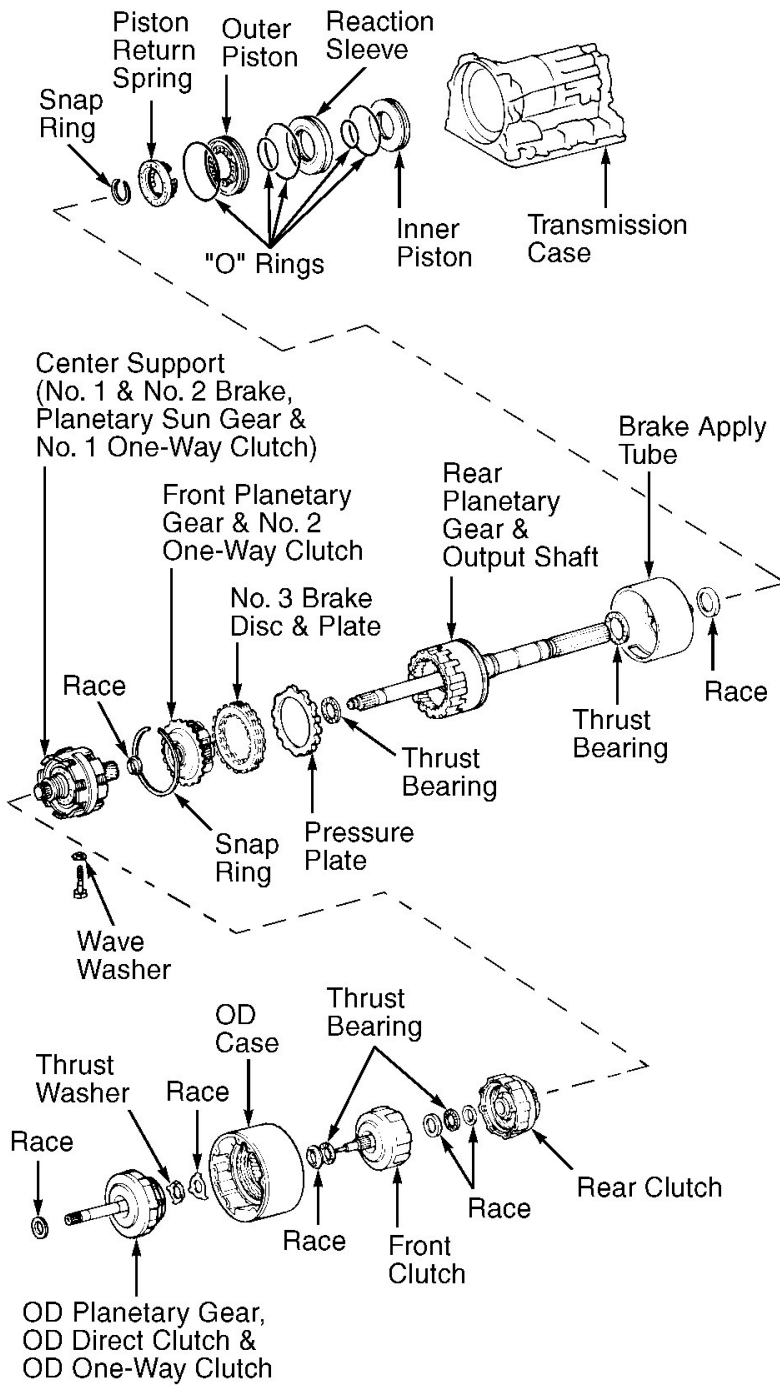
**Fig. 9: Measuring OD Direct Clutch Drum Clearance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 10: Measuring Front Clutch Drum Clearance**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. Remove front clutch assembly from transmission case. Note location of bearings and race. Remove rear clutch assembly. Remove center support-to-case retaining bolts. Bolts are located at valve body side of case. See **Fig. 11**.
13. Remove center support and sun gear shaft assembly from transmission case. Note direction of bearing race on end of sun gear. Using 2 screwdrivers, remove front planetary gear snap ring. Remove snap ring. Insert 2 wires into planetary gear and remove gear. Using calipers, measure pack clearance of No. 3 brake between disc and transmission case. See **Fig. 12**. Pack clearance should be .024-.104" (.61-2.64 mm). If clearance is not as specified, inspect brake discs.
14. Remove No. 3 brake pack and pressure plate. Remove rear planetary gear, output shaft and 2 bearings. Remove brake apply tube. See **Fig. 11**. Remove race from transmission case. Ensure No. 3 brake pistons move smoothly when applying compressed air into transmission case. See **Fig. 13**.
15. Using appropriate spring compressor, compress No. 3 brake piston return spring. Remove snap ring. Remove piston return spring. Hold outer piston with hand, apply compressed air to case and remove outer piston.
16. Insert Puller (09350-07080) behind reaction sleeve and gradually lift sleeve out of transmission case.

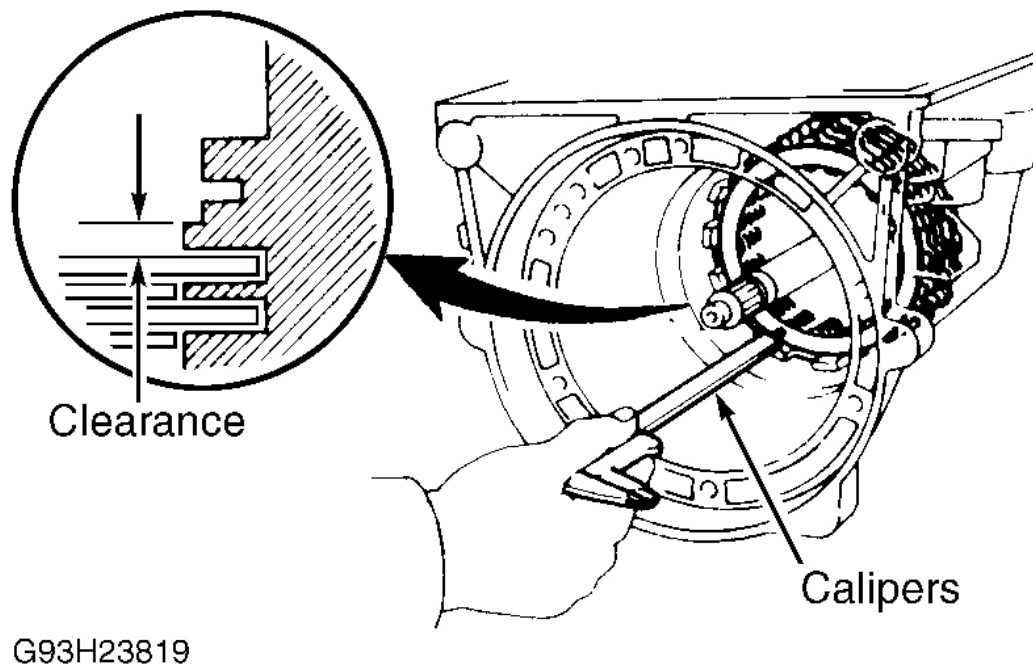
Insert Puller (09350-07090) behind inner piston and lift piston out of transmission case. See **Fig. 11** and **Fig. 14**. Measure inside diameter of transmission case rear bushing. Replace transmission case if diameter exceeds 1.5035" (38.188 mm).



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**Fig. 11: Identifying Transmission Case Internal Components**

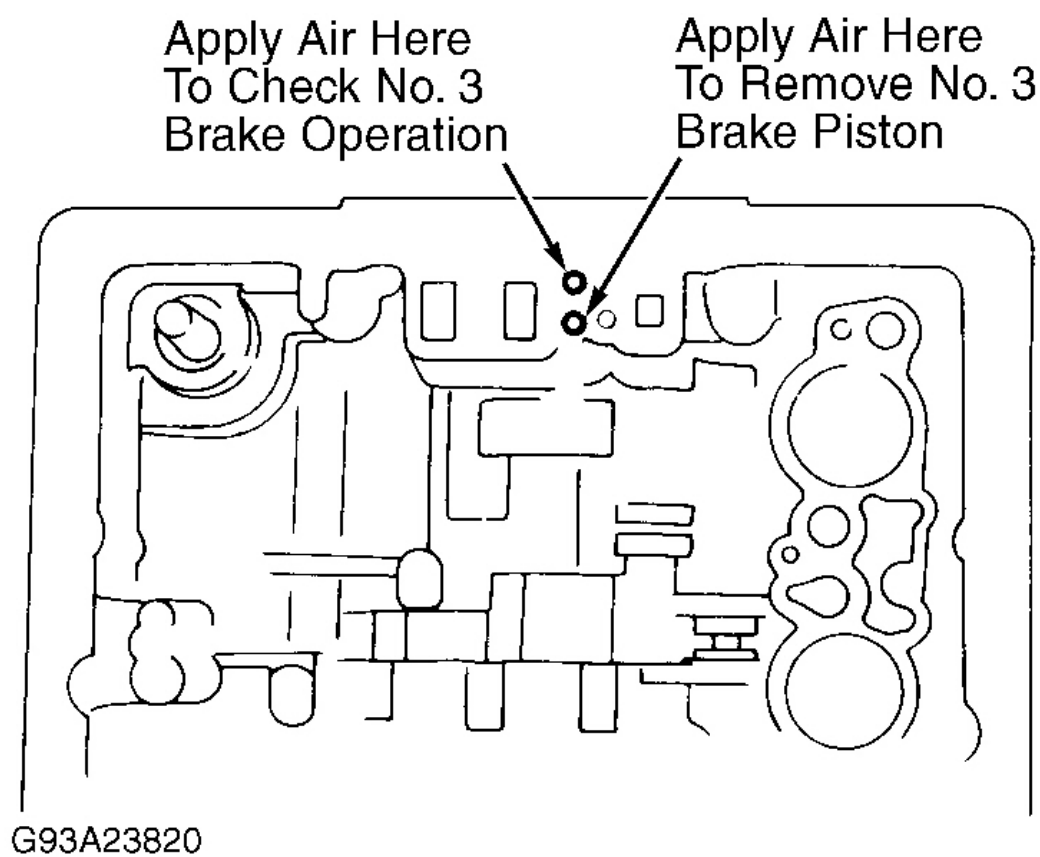
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



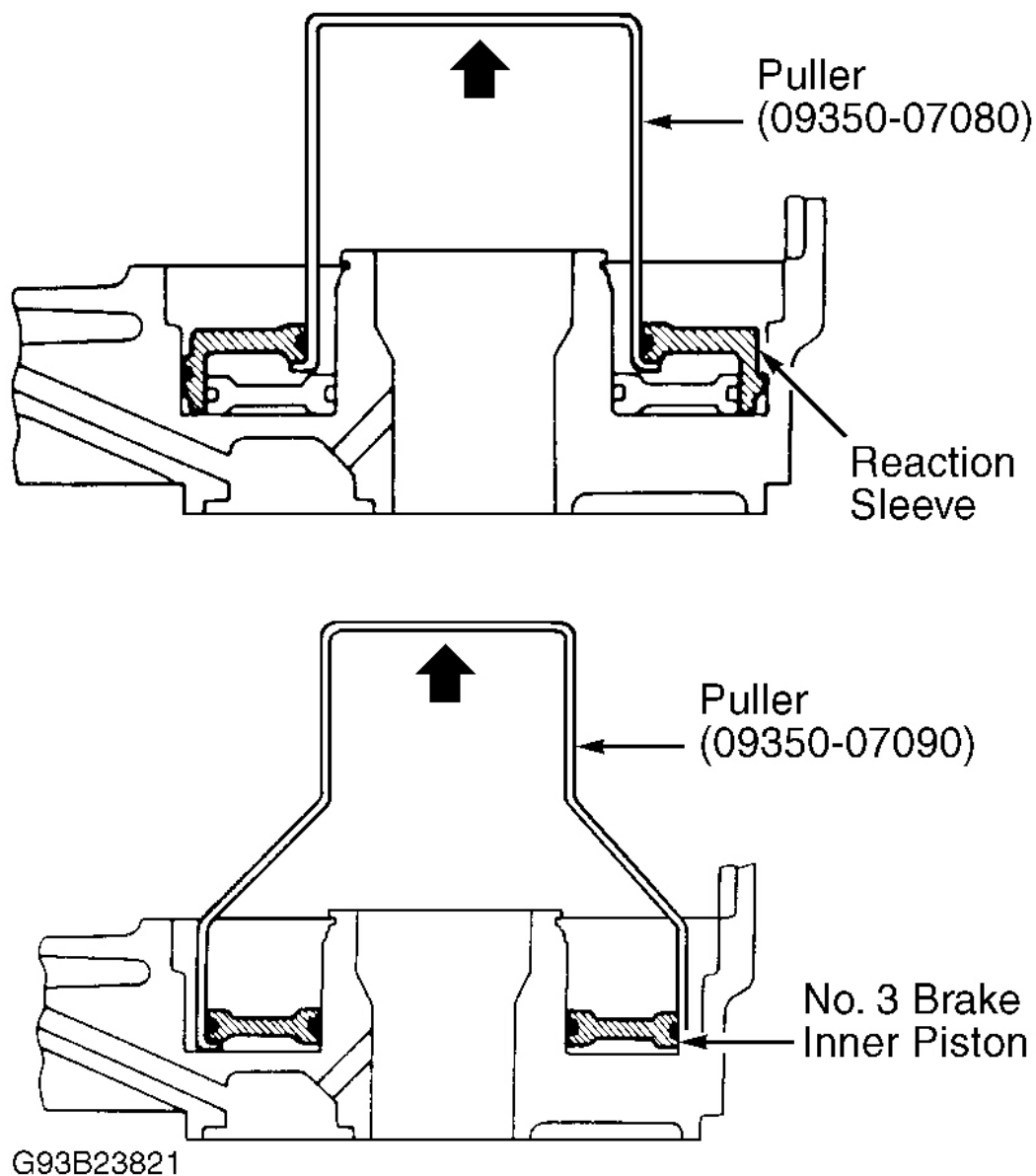
**Fig. 12: Measuring No. 3 Brake Pack Clearance**

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





**Fig. 13: Checking No. 3 Brake Operation & Removing Piston**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 14: Removing Reaction Sleeve & No. 3 Brake Piston**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## COMPONENT DISASSEMBLY & REASSEMBLY

### OIL PUMP ASSEMBLY

#### Disassembly

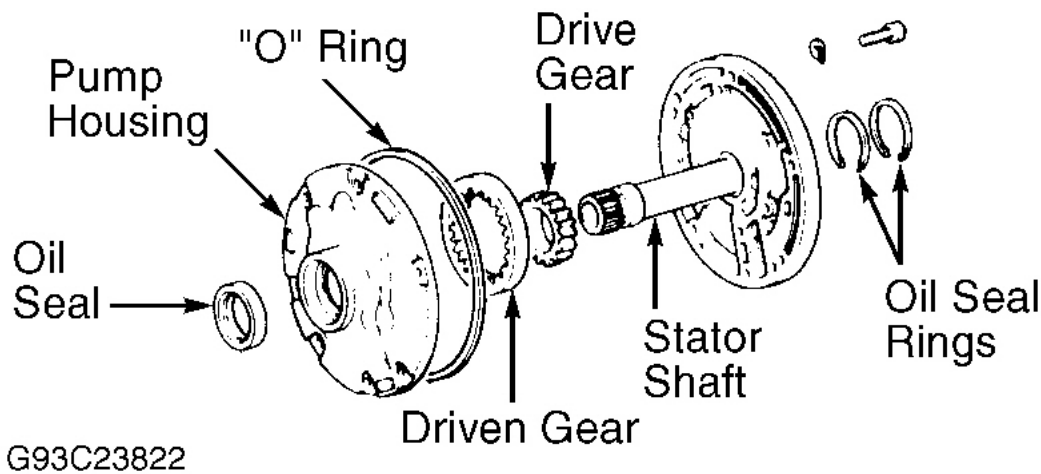
Place oil pump assembly on torque converter. Remove seal rings from stator shaft. Remove stator shaft from oil pump housing. Place reference mark on drive and driven gears and remove from pump housing. If oil seal requires replacement, pry seal from housing with a screwdriver. See **Fig. 15**.

### Inspection

1. Clean all components in solvent. Dry with compressed air. Inspect all components for damage or wear. 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. 16**.
2. Ensure all measurements are within specification. See **OIL PUMP SPECIFICATIONS** table. If bushing inside diameter exceeds specification, oil pump housing or stator shaft must be replaced. Replace necessary components to obtain correct clearances.

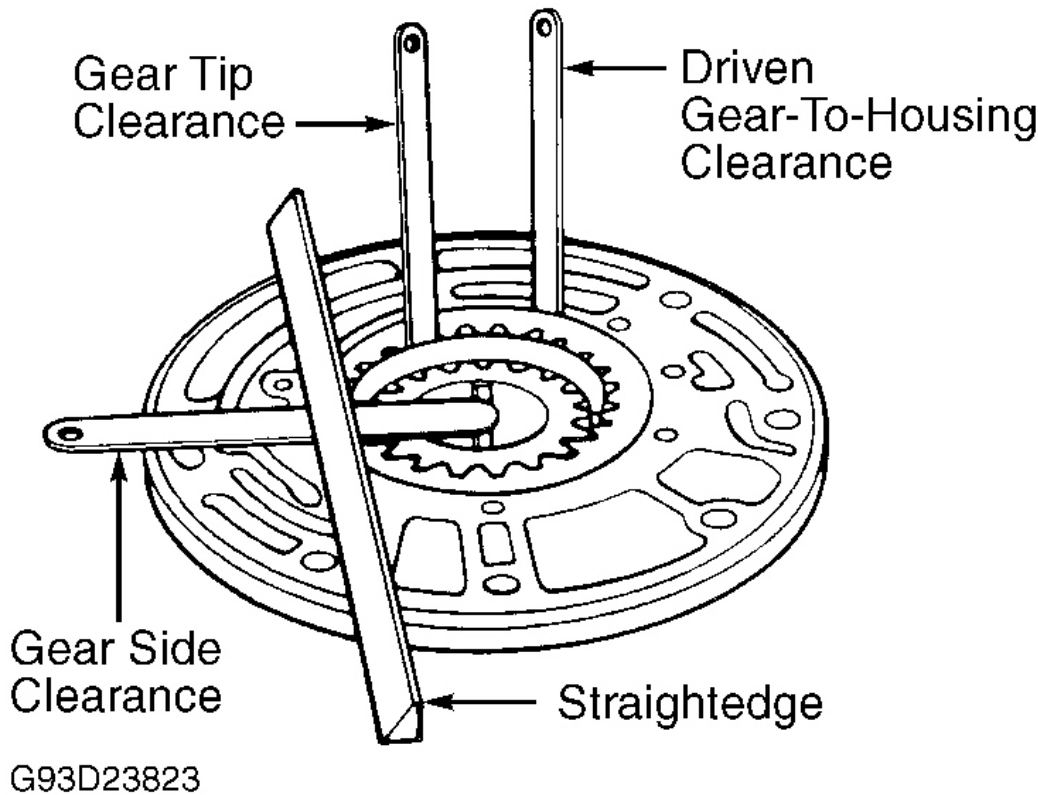
### OIL PUMP SPECIFICATIONS

Application	Standard: In. (mm)	Maximum: In. (mm)
Gear Side Clearance	.0008-.0020 (.020-.050)	.004 (.10)
Gear Tip Clearance	.0043-.0055 (.109-.140)	.012 (.30)
Gear-To-Housing	.0028-.0059 (.071-.150)	.012 (.30)
Housing Bushing	N/A	1.5035 (38.190)
Stator Shaft Bushing		
A-43D Front & Rear	N/A	.8496 (21.58)
A-46DE & A-46DF		
Front	N/A	.8496 (21.58)
Rear	N/A	.9094 (23.10)



**Fig. 15: Exploded View Of Oil Pump Assembly**

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

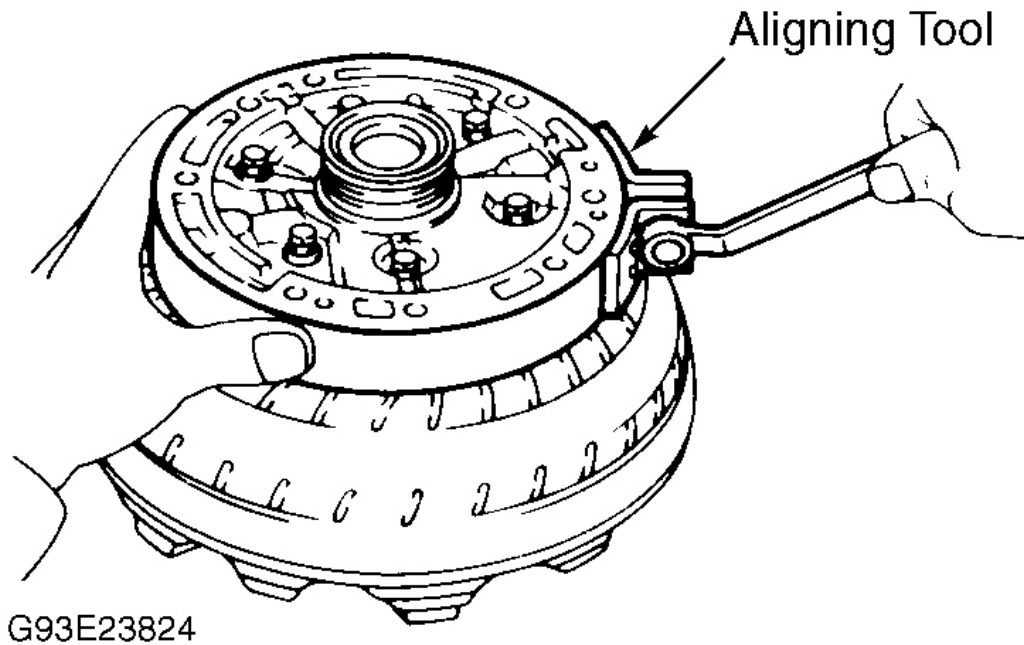


**Fig. 16: Measuring Oil Pump Gear Clearances**

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

#### Reassembly

1. Place oil pump housing on torque converter. Coat all components with ATF. Align reference marks on driven and drive gears during installation. Align bolt holes and place stator shaft onto pump housing. Install but do not tighten attaching bolts. Install Oil Pump Aligning Tool (09363-20010) around outside of pump assembly to align pump housing and stator shaft. See **Fig. 17**.
2. Tighten oil pump bolts to 65 INCH lbs. (7.4 N.m). Remove aligning tool. Install oil seal rings. DO NOT spread ring ends more than necessary for installation. Ensure seal rings move smoothly after installation. Ensure pump drive gear rotates smoothly. Lubricate and install "O" ring on oil pump assembly.

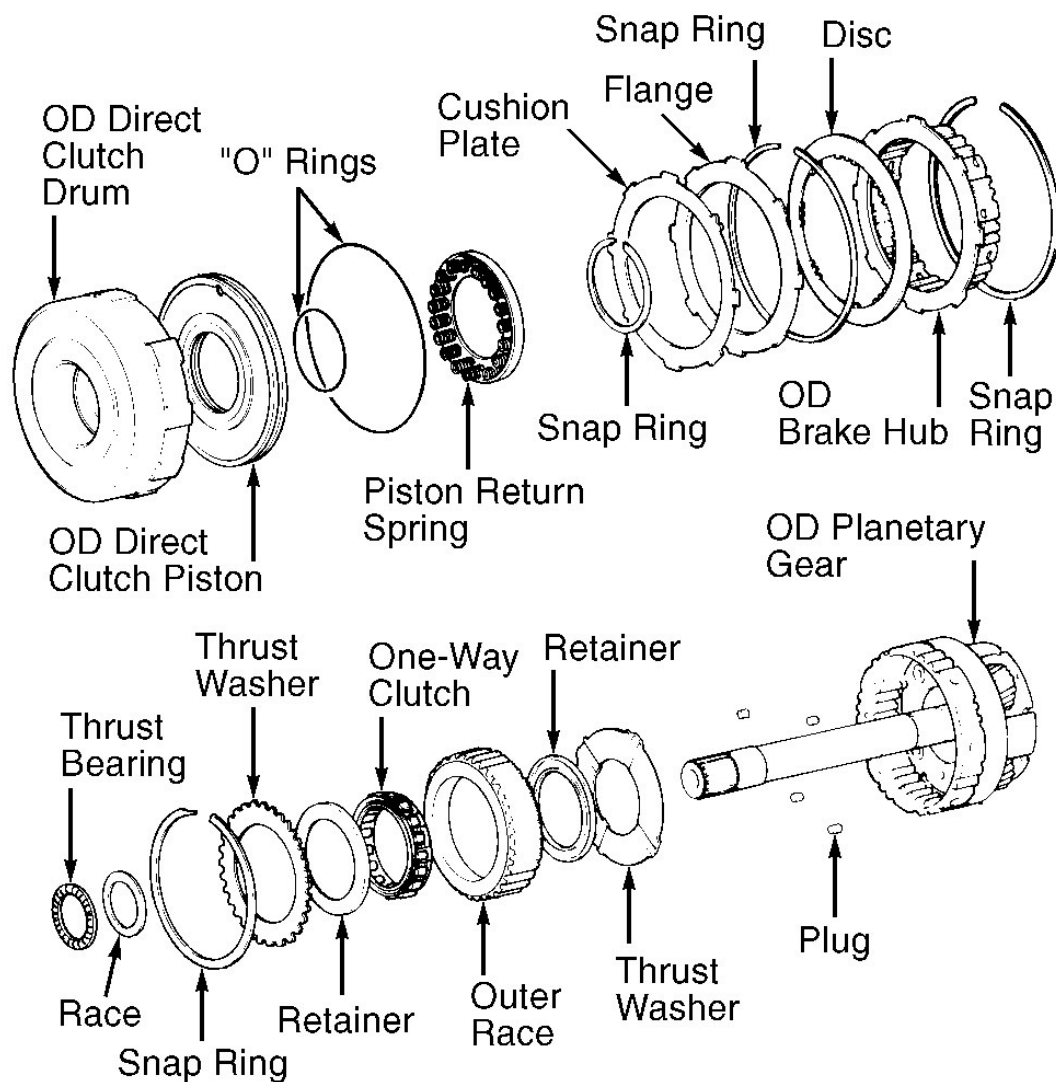


**Fig. 17: Aligning Oil Pump Housing & Stator Shaft**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

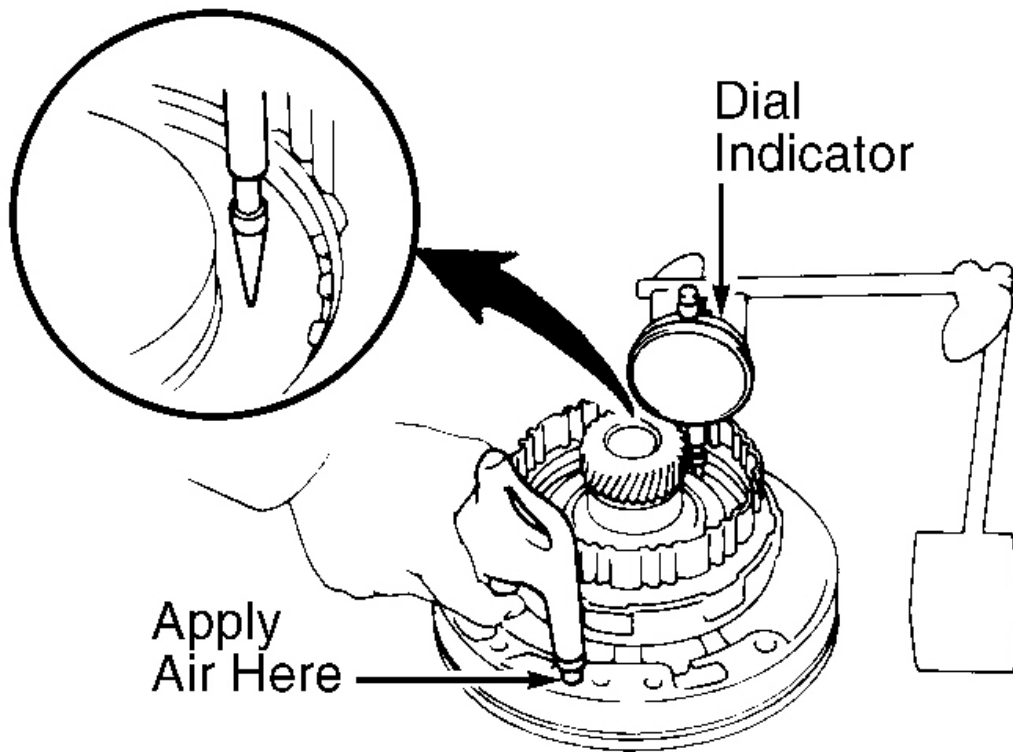
### Disassembly

1. Remove OD direct clutch drum from OD planetary gear. Remove thrust bearing and race (if equipped) from planetary gear. See **Fig. 18**. Place OD direct clutch assembly on oil pump assembly. Using a dial indicator, measure OD direct clutch piston stroke, while applying 57-114 psi (4-8 kg/cm<sup>2</sup>) to oil pump port. See **Fig. 19**.
2. Piston stroke should be .070-.102" (1.77-2.58 mm). If dial indicator reading is not within specified range, inspect discs for wear or damage. Remove OD direct clutch assembly from oil pump assembly. Remove OD brake hub snap ring and hub. Remove disc, snap ring, flange and cushion plate.
3. Using appropriate spring compressor, compress piston return spring and remove snap ring. Remove piston return spring. Install OD direct clutch drum on oil pump assembly. Hold OD direct clutch piston and apply compressed air to oil pump to remove OD direct clutch piston. See **Fig. 19**. Remove 2 "O" rings from piston.
4. Remove snap ring and thrust washer. Remove one-way clutch assembly. Disassemble one-way clutch. Remove 2 retainers from both sides of one-way clutch. Remove one-way clutch from outer race. See **Fig. 18**. Note direction of one-way clutch installation. Remove thrust washer. Using a magnet, remove 4 plugs (if applicable). DO NOT lose plugs.



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**Fig. 18: Exploded View Of OD Planetary Gear, OD Direct Clutch & One-Way Clutch**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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**Fig. 19: Measuring OD Direct Clutch Piston Stroke**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### Inspection

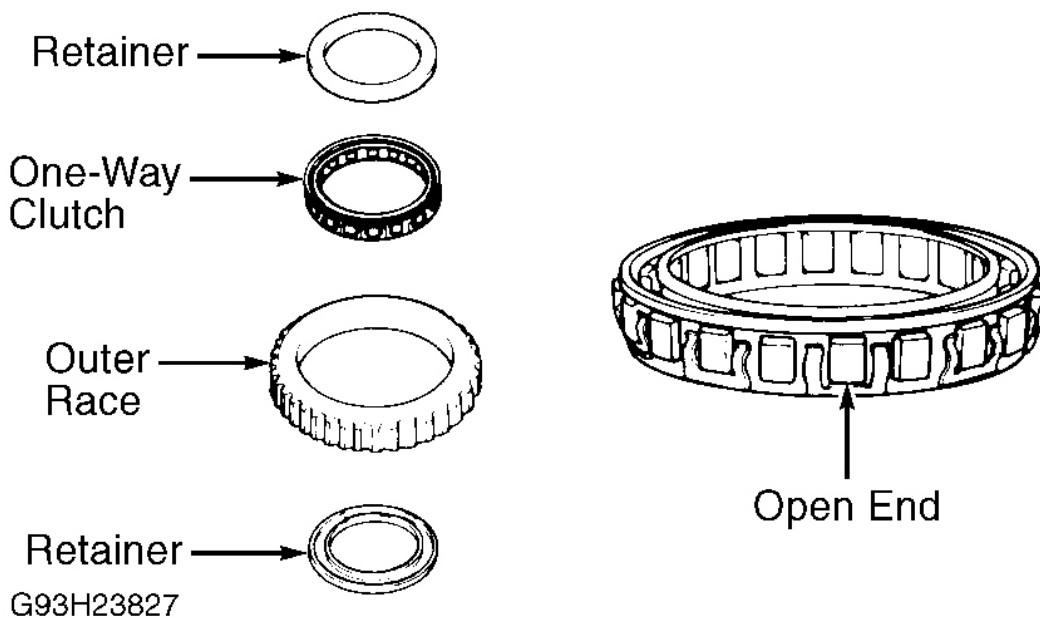
1. Inspect disc and flange for flaking or burnt areas. If disc lining is peeling or discolored, replace disc. Inspect piston return springs for wear, damage and collapsed coils. Clean all components (except disc) with solvent. Dry with compressed air. Ensure check ball is free in direct clutch piston. Apply compressed air to check ball area. Ensure check ball does not allow air to bleed through piston.
2. Using a dial indicator, measure inside diameter of OD direct clutch drum bushing. Bushing maximum inside diameter should be .911" (23.14 mm). If inside diameter is greater than specified, replace clutch drum. Measure inside diameter of OD planetary gear bushing. Bushing maximum inside diameter should be .444" (11.27 mm). If inside diameter is greater than specified, replace planetary gear.
3. Using a feeler gauge, measure clearance between planetary pinion gear and OD planetary gear housing. Standard clearance should be .008-.020" (.20-.50 mm). If clearance is not as specified, inspect planetary gear thrust washer. Replace planetary gear assembly (if necessary).

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

**Lubricate all parts with ATF. Coat thrust bearings and races with petroleum jelly.**

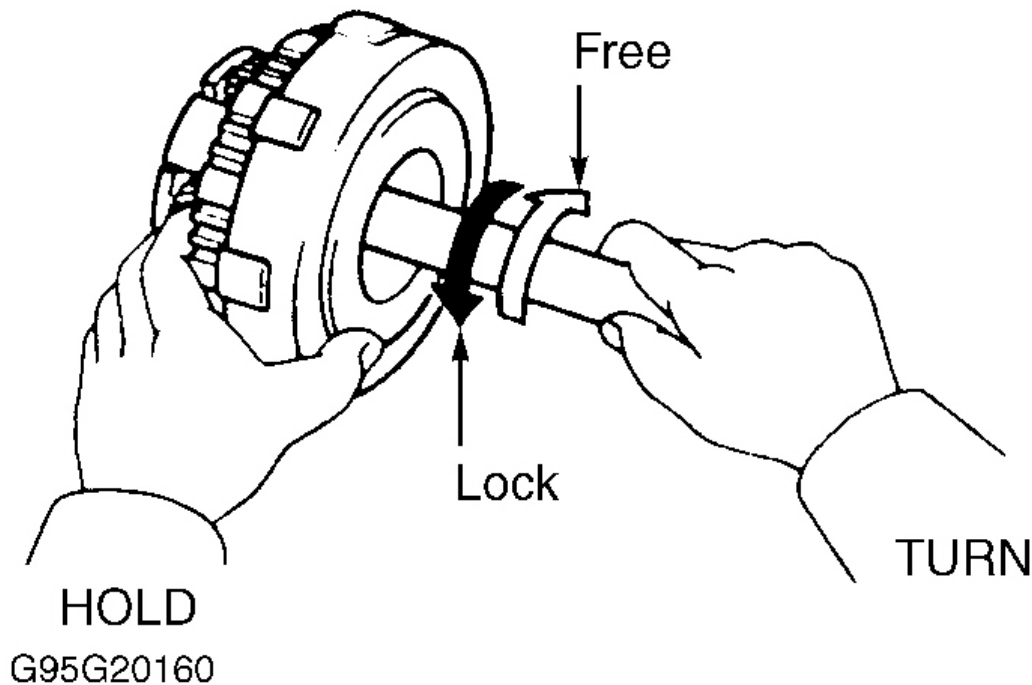
### Reassembly

1. Install 4 plugs in planetary gear holes (if applicable). Install thrust washer to OD planetary gear with grooved side facing upward. Install one-way clutch in outer race with open end of retainers facing upward. Install retainer on both sides of one-way clutch. See **Fig. 20**. Install one-way clutch assembly. Install thrust washer and snap ring.
2. Coat NEW "O" rings with ATF and install on OD direct clutch piston. Carefully press direct clutch piston into clutch drum. Using spring compressor, compress piston return spring and install snap ring. Ensure end gap of snap ring is not aligned with spring seat claw.
3. Install cushion plate. Install flange with rounded edge facing upward. Install snap ring. Ensure end gap of snap ring is not aligned with cutout portion of clutch drum. Install disc, OD brake hub and snap ring. Ensure end gap of snap ring is not aligned with cutout portion of drum.
4. Recheck piston stroke of OD direct clutch. If piston stroke is less than specified, check for incorrect reassembly of components. Install race and thrust bearing on OD planetary gear. Install direct clutch assembly on OD planetary gear.
5. Rotate and push OD planetary gear to mesh splines of planetary gear with flukes of disc. Check one-way clutch operation. Hold OD direct clutch drum and rotate input shaft. Input shaft should rotate freely in clockwise direction and lock in counterclockwise direction. See **Fig. 21**.



**Fig. 20: Exploded View Of One-Way Clutch (Typical)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



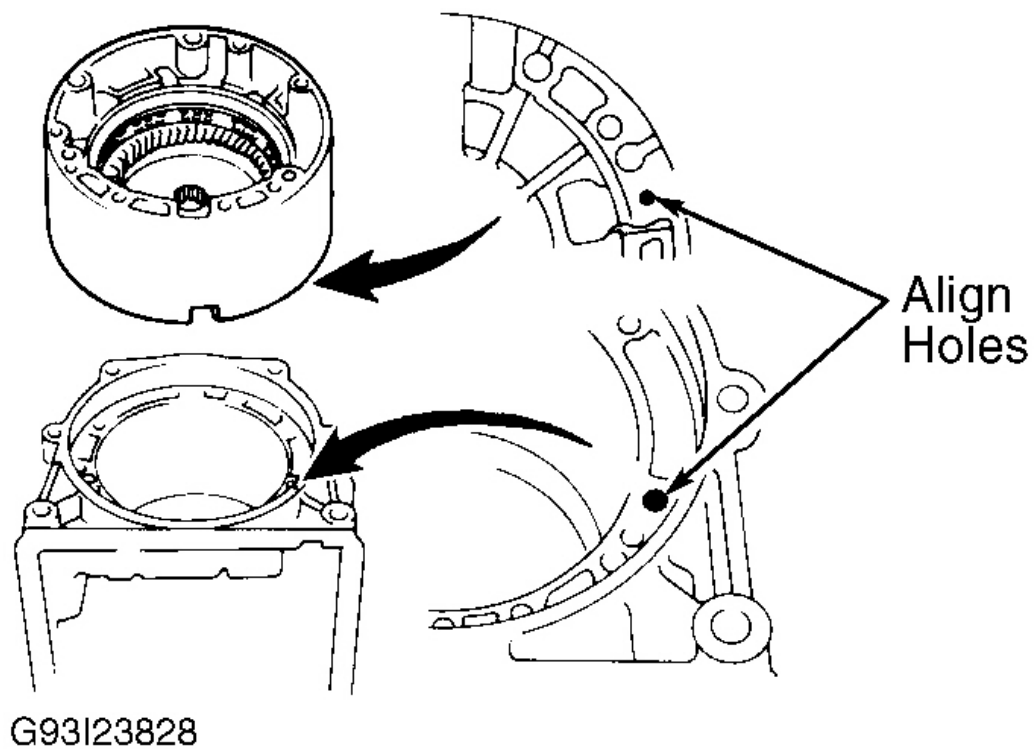


**Fig. 21: Checking Operation Of One-Way Clutch**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

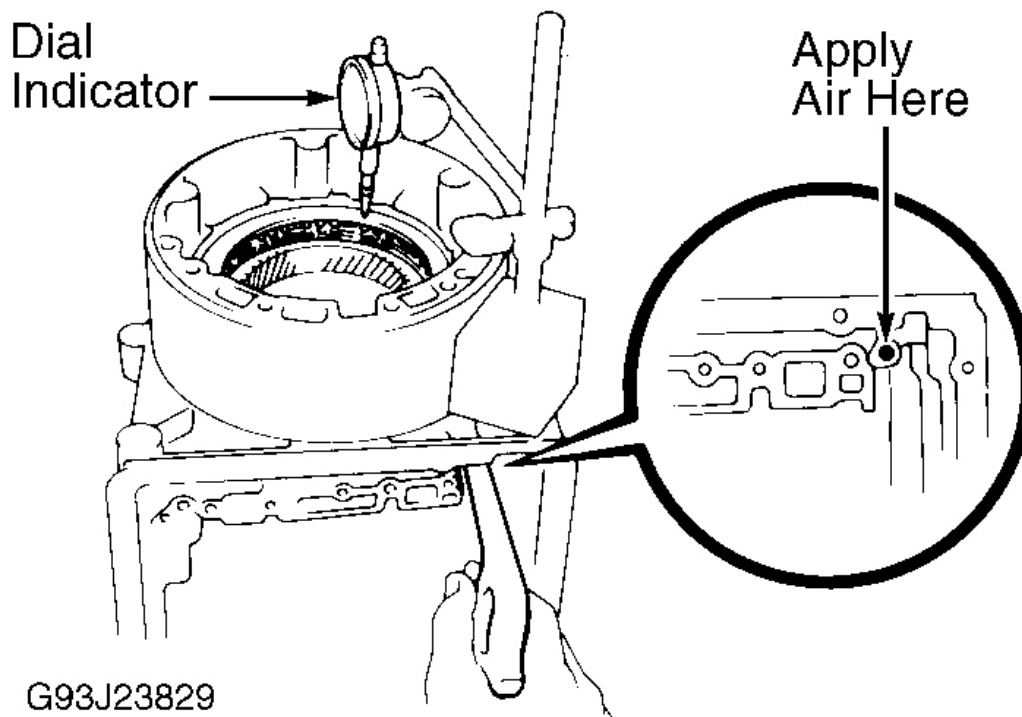
## OVERDRIVE BRAKE

### Disassembly

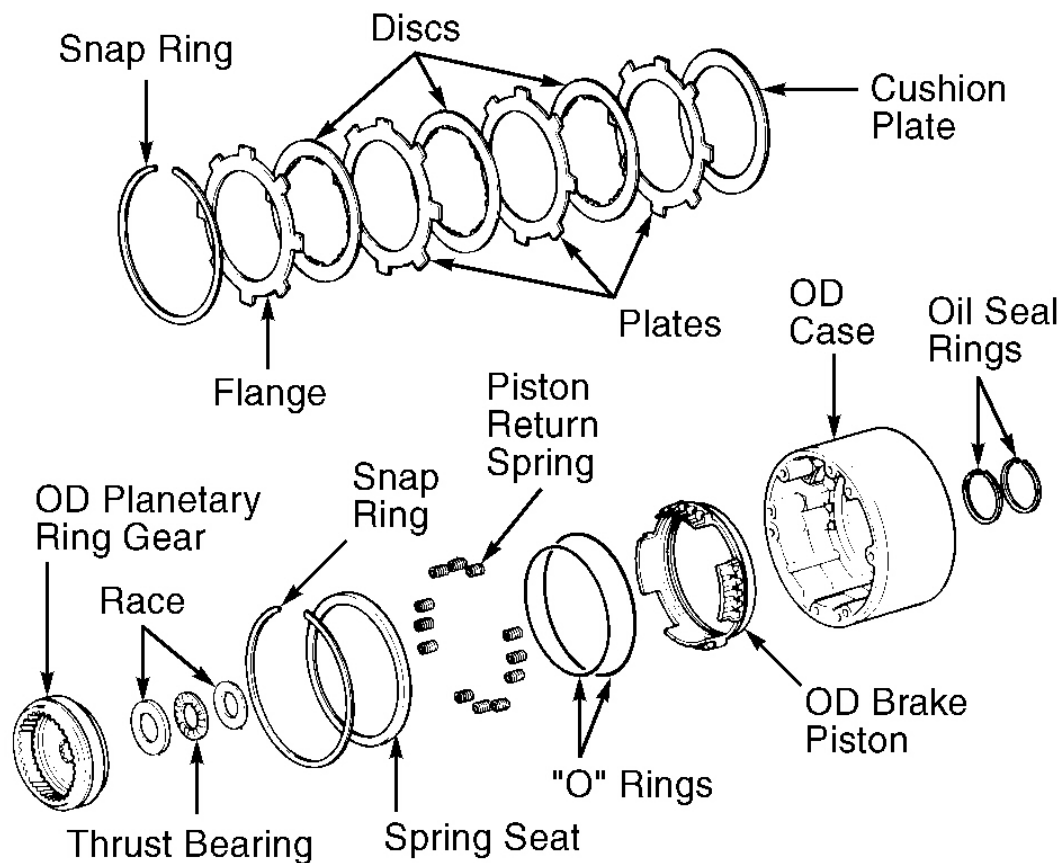
1. Prior to disassembly, check OD brake piston stroke on A-43D transmissions. Install OD case on transmission case with cutout portion of OD case at 6 o'clock position. Ensure OD case oil hole is aligned with transmission case oil hole. See **Fig. 22**.
2. Using a dial indicator, measure brake piston stroke by applying compressed air to oil hole. See **Fig. 23**. Piston stroke should be .026-.087" (.65-2.21 mm). If piston stroke is not as specified, inspect discs. Remove OD case from transmission case. On A-46DE and A-46DF transmissions, using a feeler gauge, measure clearance between snap ring and flange. Standard clearance should be .014-.075" (.35-1.91 mm). On all transmissions, remove snap ring from OD case. Remove flange, discs, plates and cushion plate. Note location and number of components.
3. Remove OD planetary ring gear, thrust bearing and races from OD case. Remove snap ring, spring seat and piston return spring. See **Fig. 28**. Remove brake piston by applying air pressure to OD case. See **Fig. 29**. Remove oil seal rings from case and "O" rings from piston.



**Fig. 22: Aligning OD Case & Transmission Case Oil Holes**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

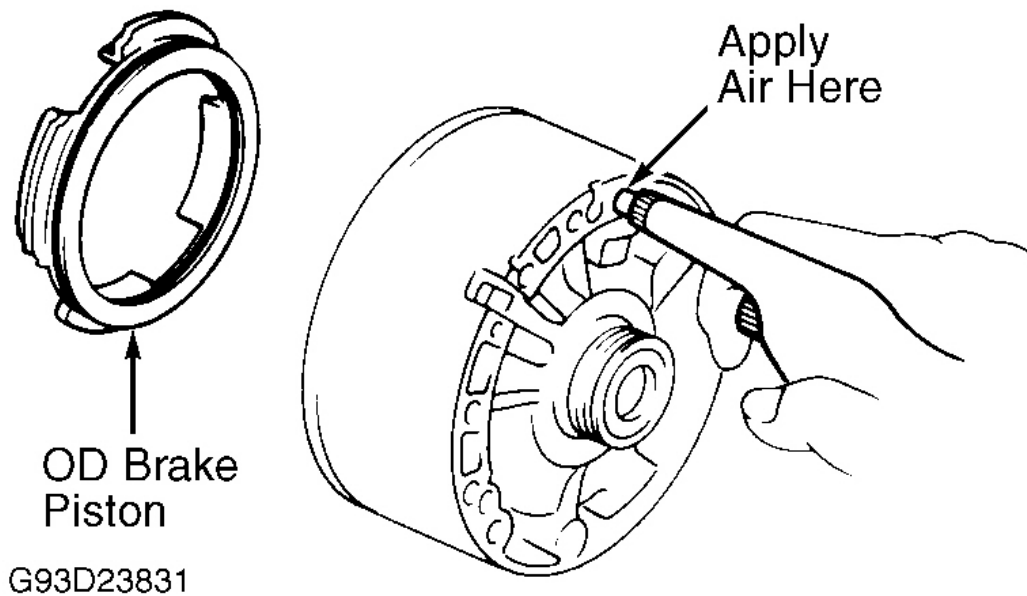


**Fig. 23: Measuring OD Brake Piston Stroke (A-43D)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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**Fig. 24: Exploded View Of OD Brake Components**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 25: Removing OD Brake Piston**

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

### Inspection

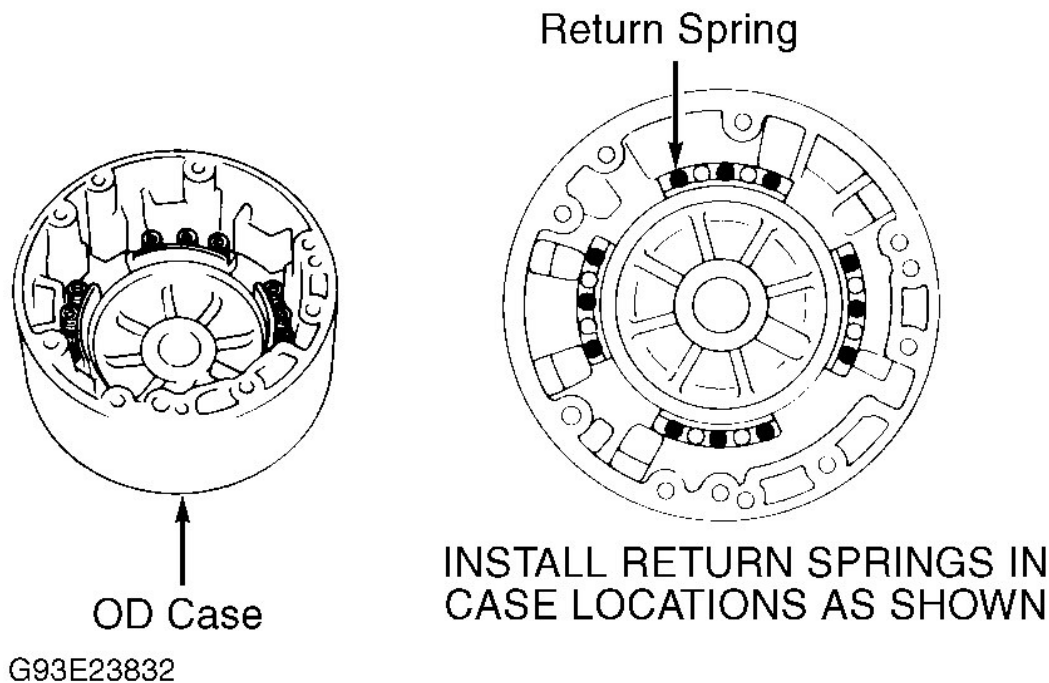
Clean all components (except discs) with solvent. Dry with compressed air. Inspect flanges, plates and discs for flaking or burnt areas. If disc lining is peeling or discolored, replace discs as necessary. Inspect piston return springs for wear, damage and collapsed coils.

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

### Reassembly

1. Lubricate and install oil seal rings on OD case. Ensure rings rotate smoothly after installation. Install NEW "O" rings on OD brake piston. Using hand pressure, carefully install brake piston into OD case with cup side upward.
2. Install piston return springs into OD case in appropriate locations. See **Fig. 26**. Install spring seat and snap ring. Ensure end gap of snap ring is not aligned with cutout portion of OD case. Ensure snap ring is inserted in its groove.
3. Install 1.752" (44.50 mm) outside diameter rear bearing race , thrust bearing and 1.909" (48.50 mm) outside diameter front bearing race on OD planetary ring gear. Install OD planetary ring gear assembly into OD case.
4. Install cushion plate into OD case with rounded side inward. Install plates and discs in appropriate order.

Install flange with rounded edge facing upward. Install snap ring. Ensure end gap of snap ring is not aligned with cutout portion of OD case. Recheck OD brake piston stroke or clearance. If measurement is not as specified, check for incorrect reassembly of components.

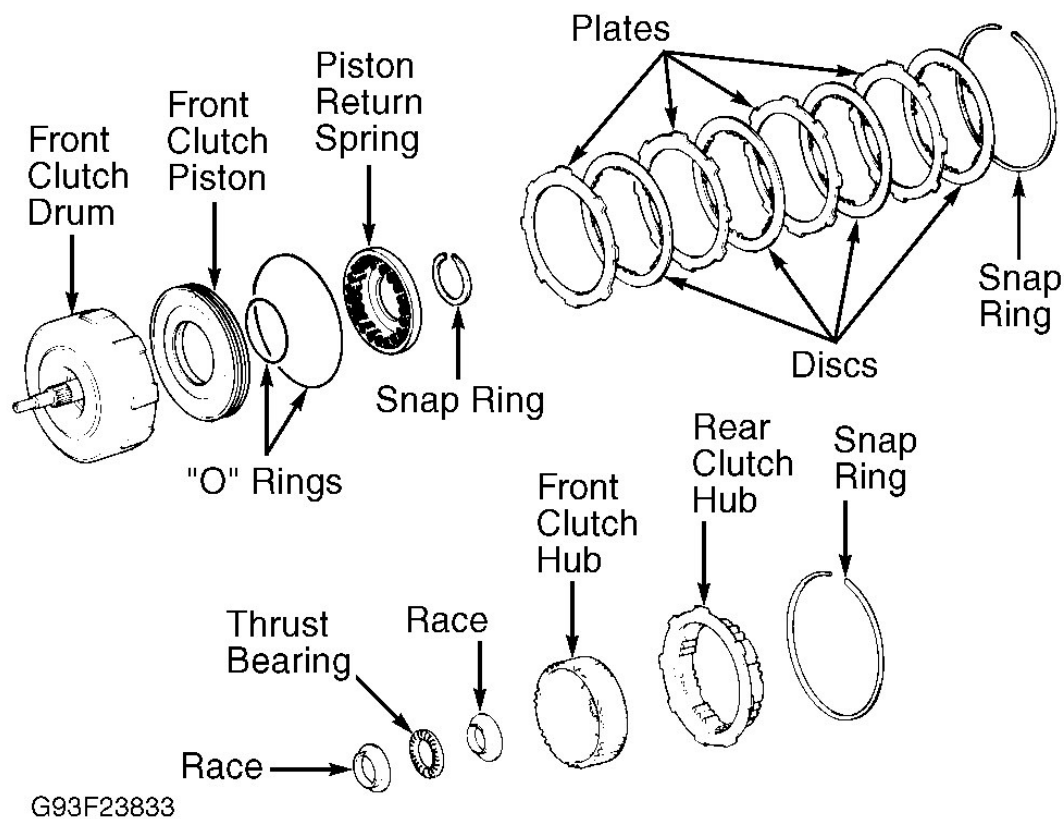


**Fig. 26: Installing OD Case Piston Return Springs**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

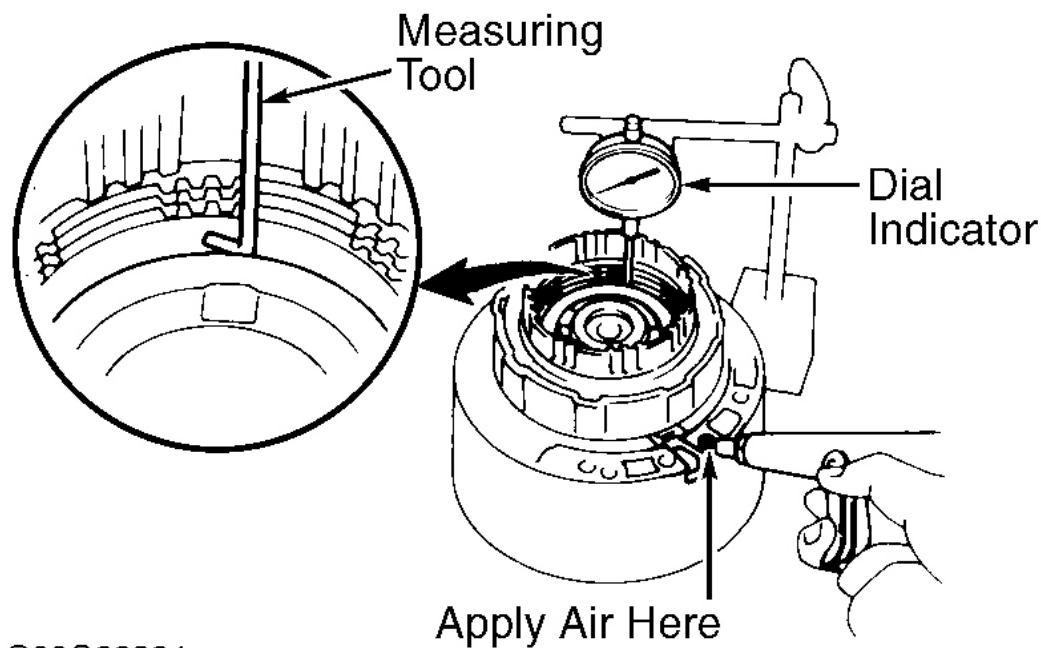
## FRONT CLUTCH

### Disassembly

1. Install front clutch assembly to OD case. Remove snap ring. Remove front and rear clutch hubs. Remove thrust bearing and races from clutch drum, noting component direction prior to removal. See **Fig. 27**.
2. Check front clutch piston stroke. Install rear clutch hub and snap ring. Using Measuring Tool (09350-06120) and a dial indicator, measure front clutch piston stroke while applying 57-114 psi (4-8 kg/cm<sup>2</sup>) to OD case oil hole. See **Fig. 28**. For A-43D transmission, piston stroke should be .052-.105" (1.32-2.66 mm). For A-46DE and A-46DF transmission, piston stroke should be .055-.098" (1.40-2.48 mm). If piston stroke is not as specified, inspect discs. Remove snap ring and rear clutch hub.
3. Remove snap ring, discs and plates. Note location and number of components. Using appropriate spring compressor, compress piston return spring. Remove snap ring and piston return spring. Place front clutch drum on OD case. Carefully apply air pressure to case oil hole to remove piston. See **Fig. 28**. Remove "O" rings from clutch piston.



**Fig. 27: Exploded View Of Front Clutch Components**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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**Fig. 28: Measuring Front Clutch Piston Stroke**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. If disc lining is peeling or discolored, replace discs as necessary.
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. Inspect piston return springs for wear, damage and collapsed coils. Replace worn or damaged components.

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

#### Reassembly

1. Lubricate and install NEW "O" rings onto clutch piston. Carefully install front clutch piston into clutch drum. Install piston return spring. Using spring compressor and appropriate press, compress return spring and install snap ring. Ensure end gap of snap ring is not aligned with claw area on spring seat.
2. Install plates, discs and snap ring in appropriate order. See **Fig. 27**. Ensure end gap of snap ring is not aligned with cutout portion of front clutch drum. Install rear clutch hub and snap ring. Recheck front clutch piston stroke.



3. If piston stroke is less than specified, check for incorrect reassembly of components. If piston stroke is greater than specified, select a new plate. Plates are available in thicknesses of .071" (1.80 mm) and .079" (2.00 mm). Remove snap ring and rear clutch hub. Install bearing races and thrust bearing into front clutch drum with flat surface of races facing away from clutch drum.
4. Rotate and push front clutch hub to mesh splines of front clutch hub with flukes of discs. Install front clutch hub into front clutch drum. Install rear clutch hub and snap ring. Ensure end gap of snap ring is not aligned with cutout portion of clutch drum.

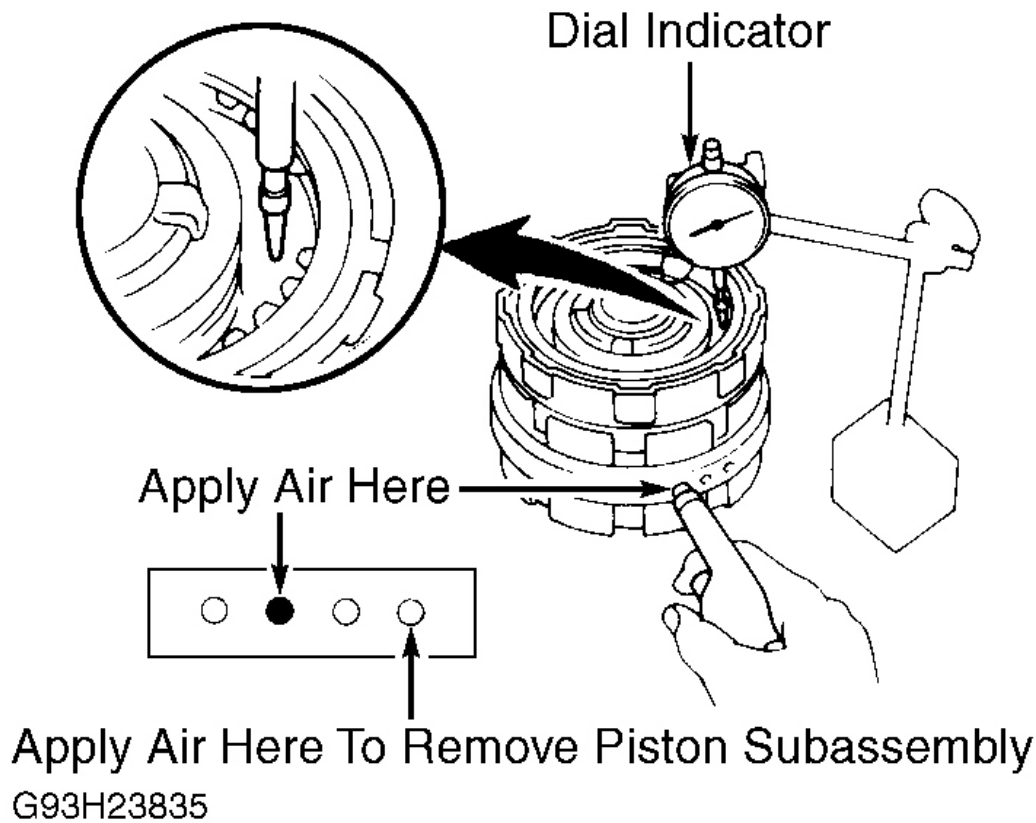
## REAR CLUTCH

### Disassembly

1. Prior to disassembly, place rear clutch drum on center support. Using a dial indicator and compressed air, measure rear clutch piston stroke while applying 57-114 psi (4-8 kg/cm<sup>2</sup>) to OD case oil hole. See **Fig. 29**. Piston stroke should be .036-.078" (.91-1.99 mm) for A-43D transmission and .035-.069" (.90-1.75 mm) for A-46DE and A-46DF transmissions. If piston stroke is not as specified, inspect discs. Remove rear clutch from center support.
2. Remove snap ring, flange, discs and plates. Note location and number of components. Using appropriate spring compressor, compress piston return spring and remove snap ring. Remove piston return spring.
3. Place rear clutch drum on center support. Hold rear clutch piston with hand, and apply compressed air to center support to remove rear clutch piston. On A-46DE and A-46DF transmissions, apply compressed air to appropriate hole in center support to remove piston subassembly from rear clutch piston. See **Fig. 29**. Remove "O" rings from piston(s).

### Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. If disc lining is peeling or discolored, replace discs as necessary.
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. Inspect piston return springs for wear, damage and collapsed coils. Replace worn or damaged components.

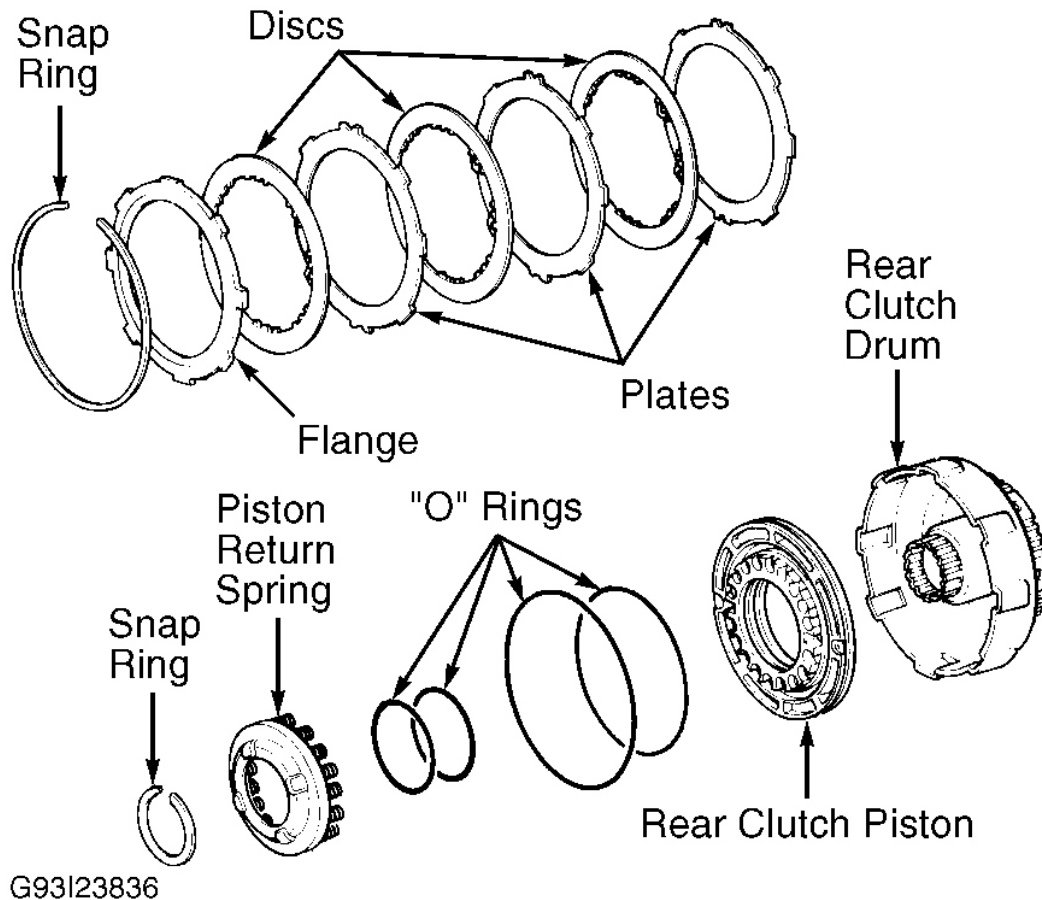


**Fig. 29: Measuring Rear Clutch Piston Stroke & Removing Piston Subassembly**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**CAUTION:** Clutch discs should be soaked in ATF for 15 minutes prior to installation.  
 Lubricate all parts with ATF.

#### Reassembly

1. Lubricate and install NEW "O" rings on clutch piston. On A-46DE and A-46DF transmissions, install piston subassembly into rear clutch piston. On A-43D transmission, carefully install rear clutch piston into clutch drum. On all models, using appropriate spring compressor and press, install piston return spring and snap ring. Ensure end gap of snap ring is not aligned with spring seat claw.
2. Install plates, discs and snap ring in appropriate order. See **Fig. 30**. Install flange with flat end facing down. Install snap ring. Ensure end gap of snap ring is not aligned with cutout portion of rear clutch drum. Recheck rear clutch piston stroke. If piston stroke is less than specified, check for incorrect reassembly of components.



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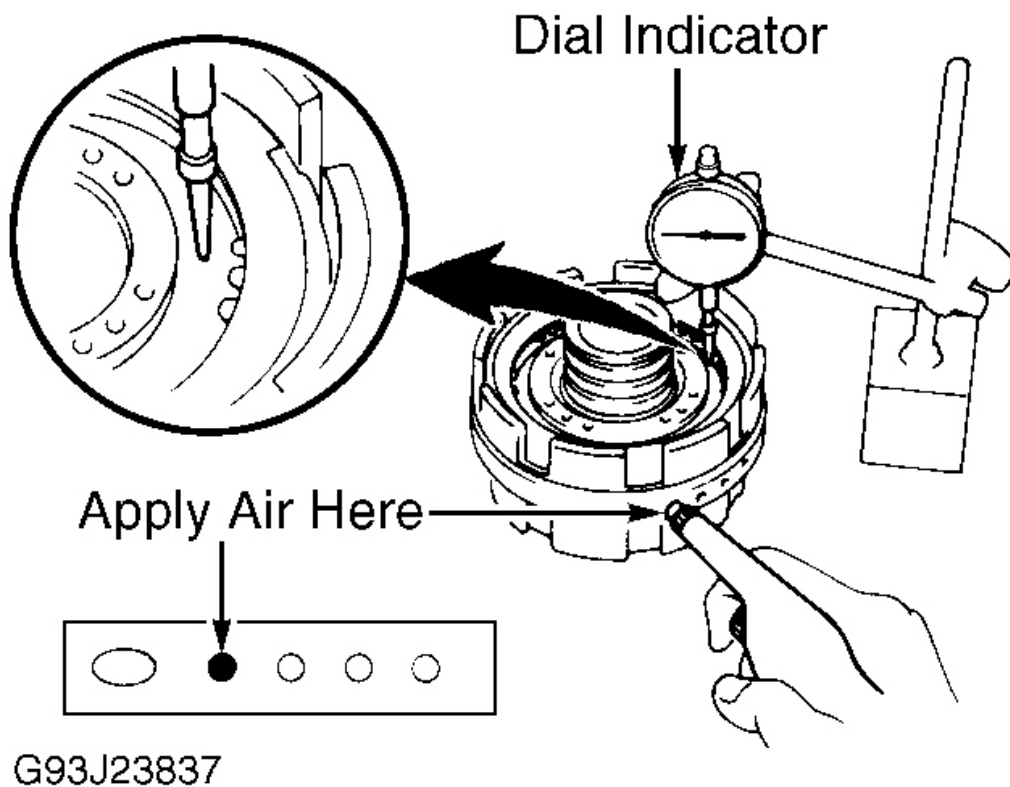
**Fig. 30: Exploded View Of Rear Clutch Components (A-43D Is Shown; A-46DE & A-46DF Are Similar)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## CENTER SUPPORT ASSEMBLY

### Disassembly

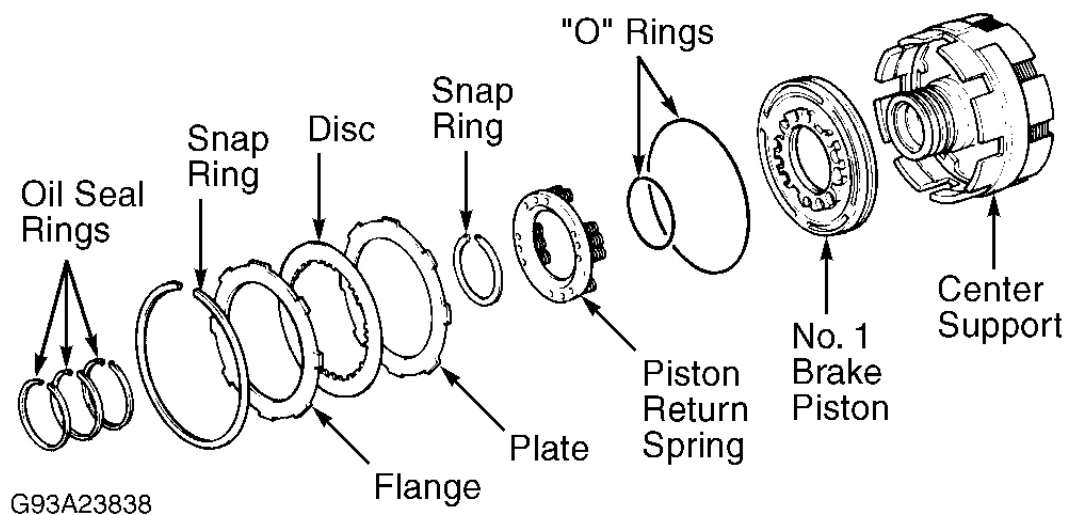
1. Remove snap ring from end of sun gear shaft. Remove planetary sun gear with No. 1 one-way clutch from center support. Repeat procedure used in rear clutch disassembly to check No. 1 brake piston stroke. Piston stroke should be .031-.059" (.78-1.50 mm) for A-43D transmissions, and .032-.068" (.80-1.73 mm) for A-46DE and A-46DF transmissions. If piston stroke is not as specified, inspect discs. See **Fig. 31**.
2. Remove snap ring from front of center support. Remove flange, disc(s) and plate(s). See **Fig. 32**. Using appropriate spring compressor, compress piston return spring. Remove snap ring. Remove piston return spring.
3. Hold No. 1 brake piston and apply air pressure to center support oil hole to remove No. 1 brake piston. See **Fig. 31**. Remove "O" rings and oil seal rings. Turn center support over.
4. Check No. 2 brake piston stroke. Repeat test procedure used previously for checking piston stroke on No.

- 1 brake piston. See **Fig. 33**. Piston stroke should be .0398-.0886" (1.01-2.25 mm) for all transmissions. If piston stroke is not as specified, inspect discs. Remove rear snap ring, flange, discs and plates. Note location and number of components. See **Fig. 34**.
5. Using appropriate spring compressor and press, compress piston return spring. Remove snap ring. Remove piston return spring. Hold No. 2 brake piston and apply air pressure to center support oil hole to remove No. 2 brake piston. See **Fig. 33**. Remove "O" rings.
  6. Hold No. 1 one-way clutch and rotate planetary sun gear. Sun gear should rotate freely in counterclockwise direction and lock in clockwise direction. See **Fig. 35**. If component does not test as described, one-way clutch requires replacement. Loosen staked part of rear side retainer. Remove No. 1 one-way clutch and 2 retainers from outer race. See **Fig. 36**. Using a pin punch and hammer, remove front side retainer. Remove oil seal rings from sun gear.
  7. Remove thrust washer from front planetary gear. Hold one-way clutch inner race and rotate planetary gear. Planetary gear should rotate freely in counterclockwise direction and lock in clockwise direction. See **Fig. 37**. Remove one-way clutch inner race. Remove snap ring, one-way clutch and 2 retainers. See **Fig. 38**.

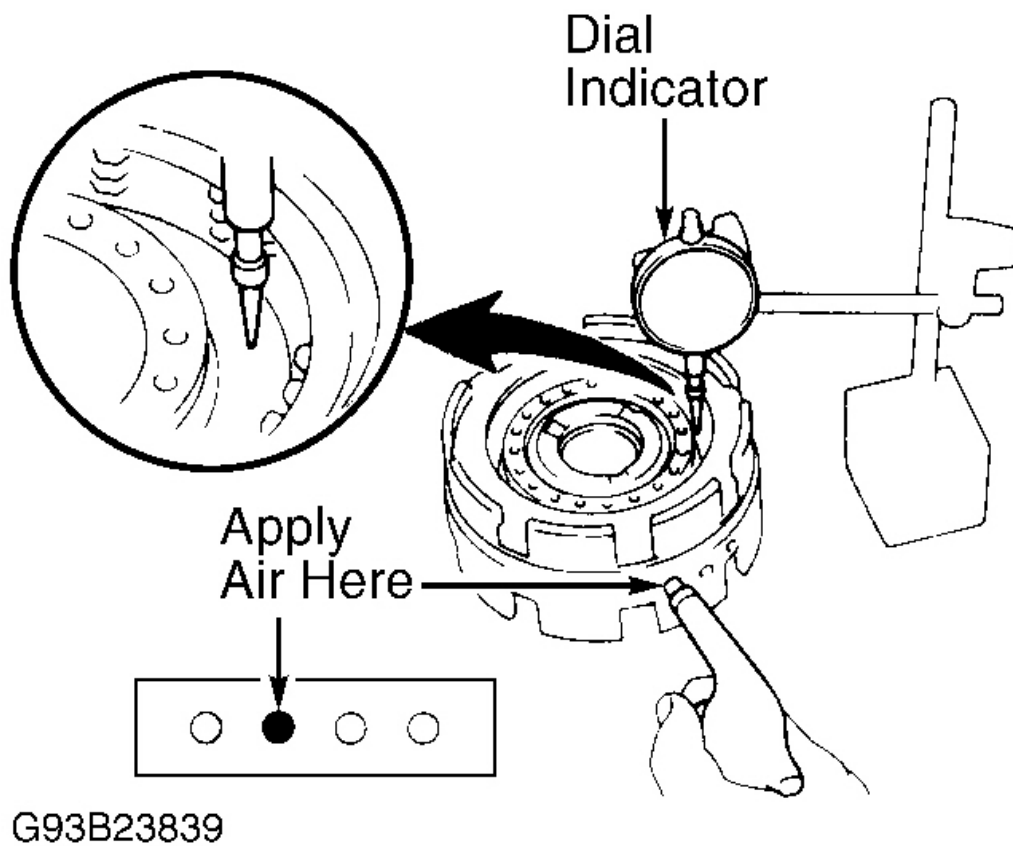


**Fig. 31: Measuring No. 1 Brake Piston Stroke**

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

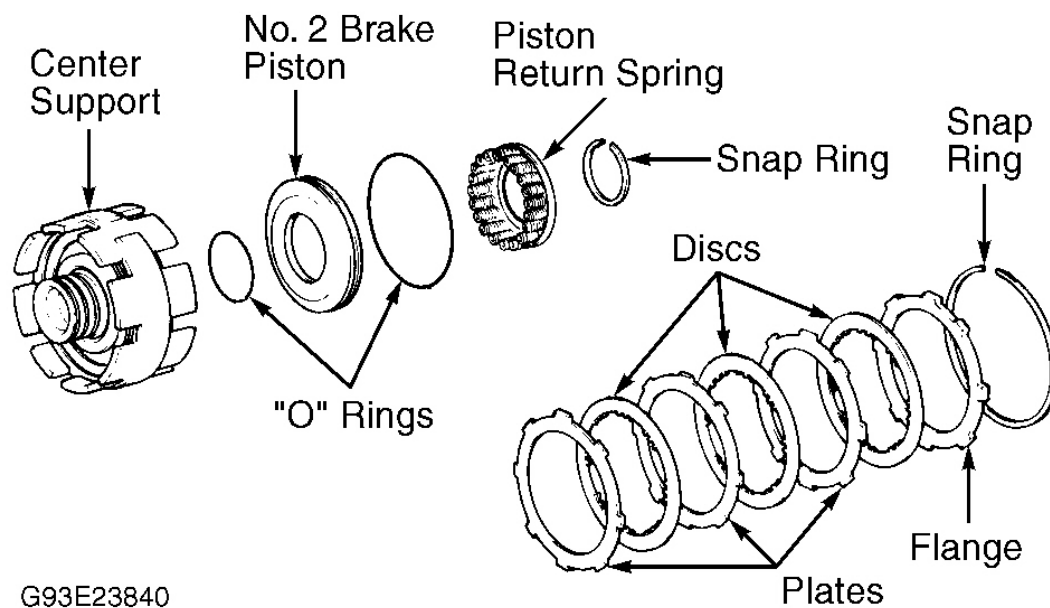


**Fig. 32: Exploded View Of No. 1 Brake Components**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

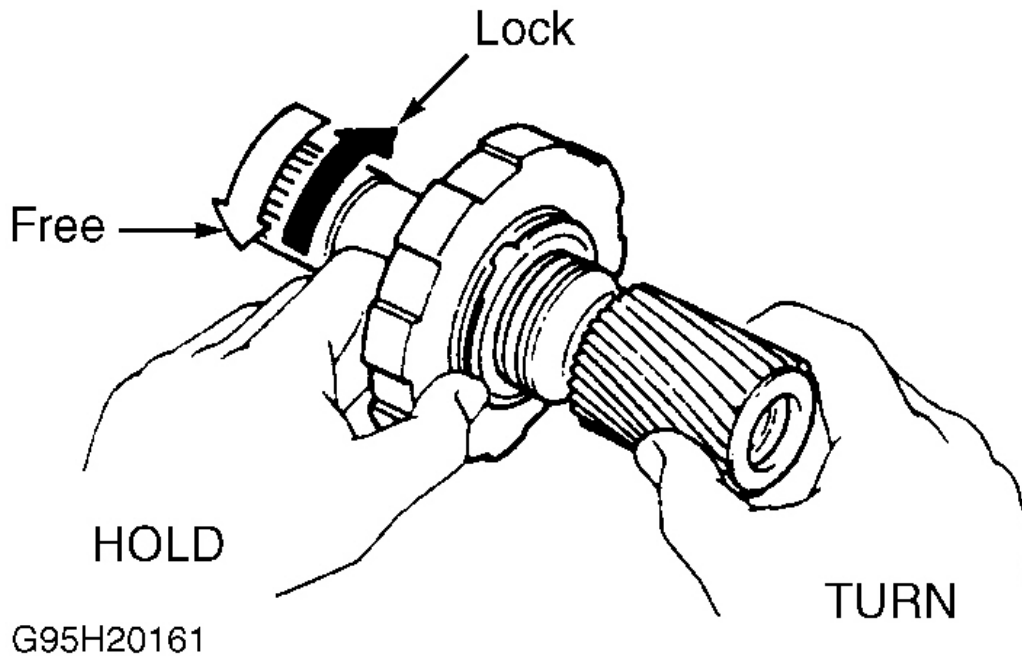


**Fig. 33: Measuring No. 2 Brake Piston Stroke**

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



**Fig. 34: Exploded View Of No. 2 Brake Components**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 35: Checking No. 1 One-Way Clutch Operation**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. If disc lining is peeling or discolored, replace disc as necessary. Inspect piston return springs for wear, damage or collapsed coils.
2. Using a dial indicator, measure inside diameter of center support bushing. Maximum inside diameter is 1.435" (36.46 mm). If inside diameter is greater than specified, replace center support. Measure inside diameter of planetary sun gear bushings. Maximum inside diameter is .8496" (21.58 mm). If inside diameter is greater than specified, replace planetary sun gear.
3. Using a feeler gauge, measure clearance between planetary pinion gear and planetary gear case. Standard clearance is .008-.020" (.20-.50 mm). If clearance is not as specified, replace planetary gear assembly.

**CAUTION: Clutch discs should be soaked in ATF for 15 minutes prior to installation. Lubricate all parts with ATF.**

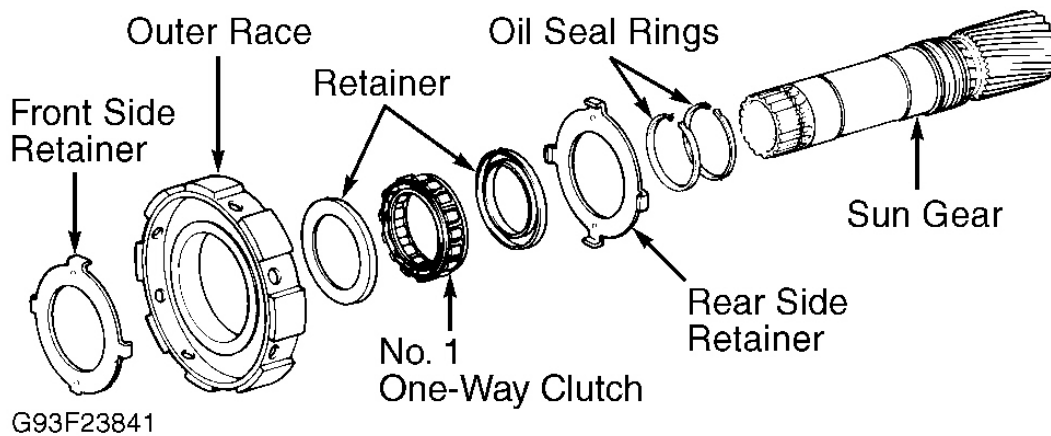
#### Reassembly

1. Lubricate "O" rings with ATF. To reassemble, reverse disassembly procedure. Ensure end gap of snap ring does not align with claw area on spring seat of piston return spring. Install plates and discs in

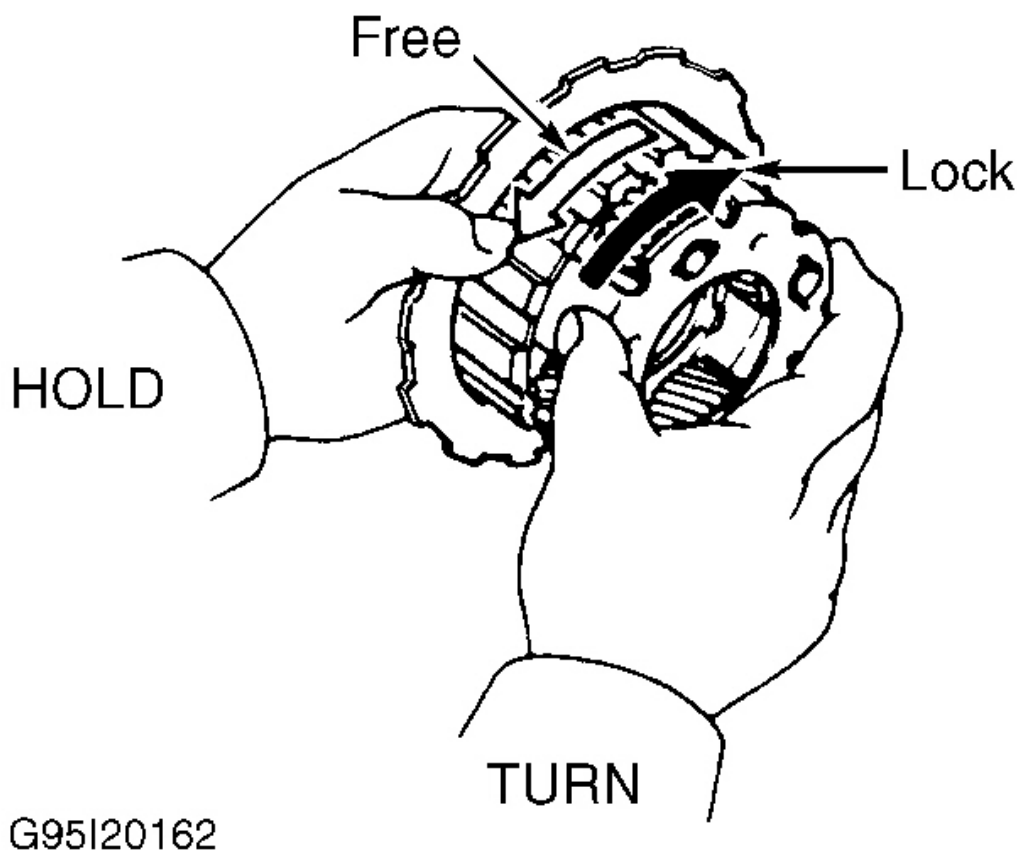


appropriate order. See **Fig. 32** and **Fig. 34**.

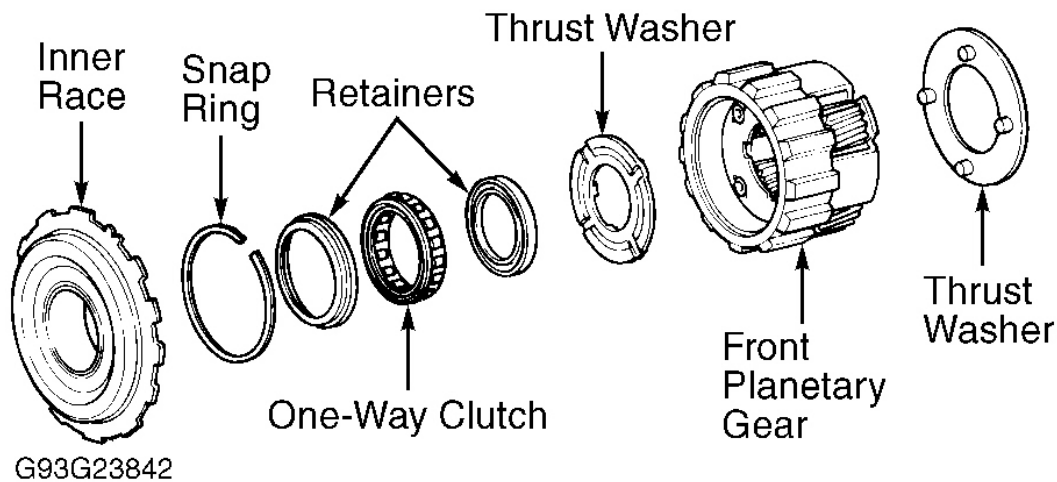
2. Install No. 1 brake flange with rounded side facing down. Install No. 2 brake flange with flat side facing down. Install all snap rings. Ensure ends of snap rings do not align with cutout areas of center support.
3. Recheck No. 1 and No. 2 brake piston stroke. See **Fig. 31** and **Fig. 33**. If piston stroke is not as specified, check for incorrect reassembly of components. Reassemble sun gear and No. 1 one-way clutch. See **Fig. 36**. While turning one-way clutch, install sun gear into center support. Install snap ring on end of sun gear. Ensure sun gear rotates in counterclockwise direction only.
4. Reassembly front planetary gear and No. 2 one-way clutch. See **Fig. 38**. Ensure lug shaped cutout on thrust washer for No. 2 one-way clutch is aligned with lug shaped cutout on front planetary gear. See **Fig. 39**. Ensure front planetary gear rotates in counterclockwise direction only.



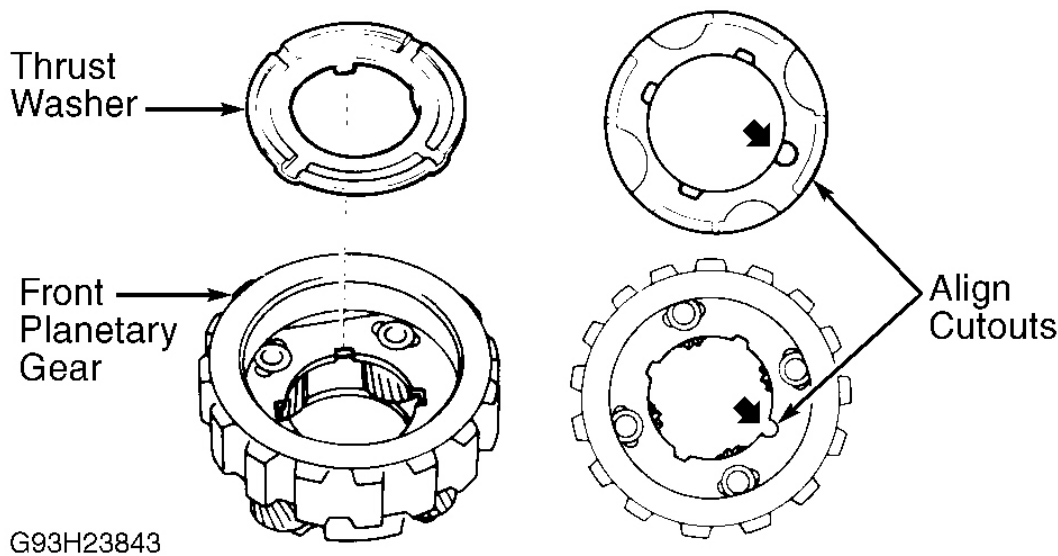
**Fig. 36: Exploded View Of Planetary Sun Gear & No. 1 One-Way Clutch**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 37: Checking No. 2 One-Way Clutch Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 38: Exploded View Of Front Planetary Gear & No. 2 One-Way Clutch**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

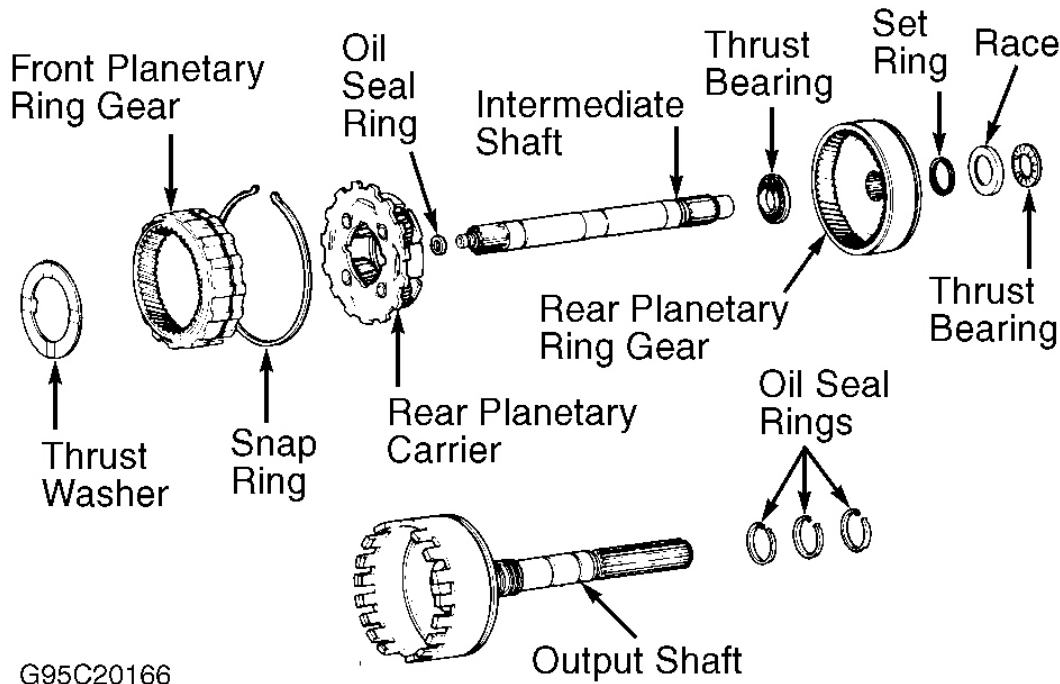


**Fig. 39: Aligning Thrust Washer To Planetary Gear**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REAR PLANETARY GEAR & OUTPUT SHAFT

### Disassembly

1. Remove thrust washer from front planetary ring gear. Compress snap ring and remove front planetary ring gear. Remove snap ring from ring gear. Remove rear planetary gear assembly from output shaft. Remove bearing and race.
2. Remove rear planetary carrier from rear planetary ring gear. Remove set ring. Remove rear planetary ring gear. Remove race from ring gear. Remove oil seal ring from intermediate shaft. Remove 3 oil seal rings from output shaft. See **Fig. 40**.



**Fig. 40: Exploded View Of Rear Planetary Gear & Output Shaft**

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

### Inspection

1. Clean all components with solvent. Dry with compressed air. Inspect all components for wear or damage. Using a dial indicator, measure inside diameter of output shaft bushing. Maximum inside diameter is .7117" (18.076 mm). If inside diameter is greater than specified, replace output shaft.
2. Using a feeler gauge, measure clearance between rear planetary carrier pinion gear and carrier case. Standard clearance should be .008-.020" (.20-.50 mm). If clearance is not as specified, inspect rear planetary carrier thrust washer. If necessary, replace rear planetary carrier assembly.

### Reassembly

1. Lubricate oil seal rings with ATF. Install oil seal rings on output shaft. Ensure rings rotate smoothly after installation. Lubricate and install NEW oil seal ring on output shaft. Ensure ring rotates smoothly. Apply

petroleum jelly to race and install race on intermediate shaft with flat surface away from shaft.

2. Install rear planetary ring gear on intermediate shaft. Install set ring. Install rear planetary carrier to planetary ring gear. Apply petroleum jelly to bearing and race and install on rear planetary ring gear. Install rear planetary gear assembly to output shaft. Install front planetary ring gear. See **Fig. 40**.
3. Ensure snap ring is installed in groove of output shaft. Align snap ring end with wide cutout portion of output shaft. Apply petroleum jelly to thrust washer and install on rear planetary carrier. Ensure lug shapes match cutout portions on rear planetary carrier.

### **NO. 3 BRAKE PISTON**

#### **Disassembly**

1. Using appropriate spring compressor, compress piston return springs and remove snap ring. Remove spring retainer and return springs. Position transmission with front opening facing upward.
2. Place shop towels under case to prevent piston damage. Apply air pressure to case passages to remove No. 3 brake outer piston, reaction sleeve and No. 3 brake inner piston. See **Fig. 11** and **Fig. 13**. It may be necessary to use long hooks to remove sleeve and inner piston. Using screwdriver, pry manual valve lever shaft seals from case if replacement is required.

#### **Inspection**

Clean all parts (except discs) in solvent. Dry with compressed air. Inspect pistons and sleeve for scoring, wear or damage. Check return springs for cracked or broken coils. If disc lining is peeled or discolored, replace discs as necessary. Replace damaged components as necessary.

#### **Reassembly**

Install manual valve lever shaft seals if removed. Lubricate and install all NEW "O" rings. Thin "O" ring goes on outside of reaction sleeve. Soak discs in ATF for 15 minutes prior to installation. To complete reassembly, reverse disassembly procedure. Check No. 3 brake operation. See **Fig. 13**.

### **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: On A-43D valve body, 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 (A-43D)**

1. Remove detent spring, detent spring cover and manual valve from valve body assembly. Remove lower valve body cover, gaskets, plate, check balls, retainers and pins. Remove lower valve body plate. See **Fig. 41** and **Fig. 42**.
2. Remove 3 lower valve body bolts. Turn over valve body assembly. Remove 5 front upper valve body

bolts. Remove 5 rear upper valve body bolts. Note bolt length and location. See **Fig. 43**. Separate lower valve body and plate from upper valve bodies.

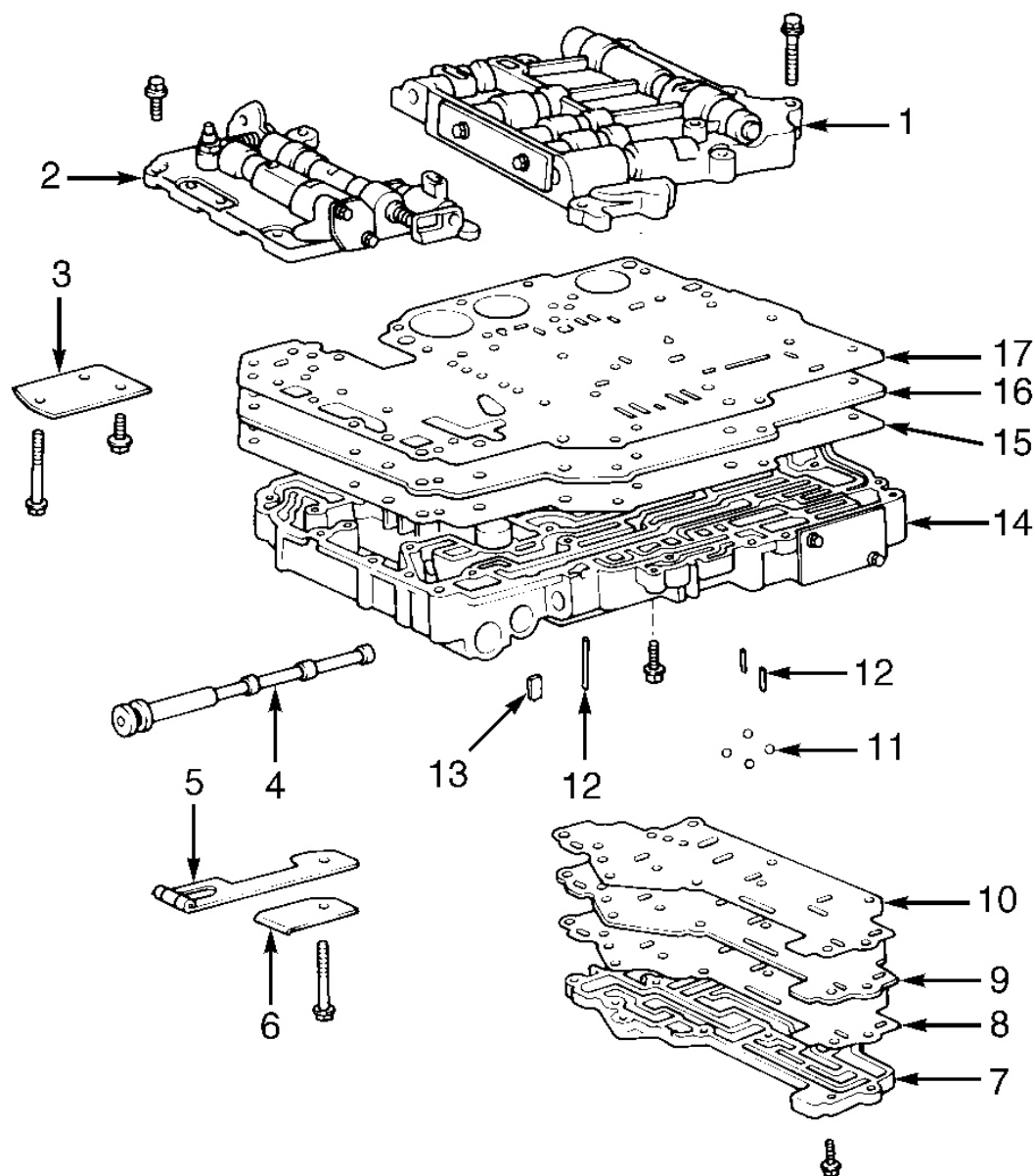
**CAUTION: DO NOT allow plate to separate from lower valve body during removal or check balls and retainers may fall out.**

### Inspection

Remove plate and gaskets from lower valve body. Note location and diameter of check balls, springs and valves. Push inward on sleeves or plugs to remove all pins and retainers. Retainers may be removed using a magnet. Remove all check balls, springs and valves. Note location of pins, retainers and diameter of check balls. Clean all parts in solvent. Dry with compressed air. Ensure all valve body passages are clear. Inspect valves for scoring or roughness. Ensure valves slide freely in bores. Inspect valve springs for damage, squareness and collapsed coils. Measure spring free length and outer diameter. Replace spring if not within specification. See appropriate VALVE BODY SPRING SPECIFICATIONS table.

## 1995 Toyota Pickup

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE & A-46DF Overhaul

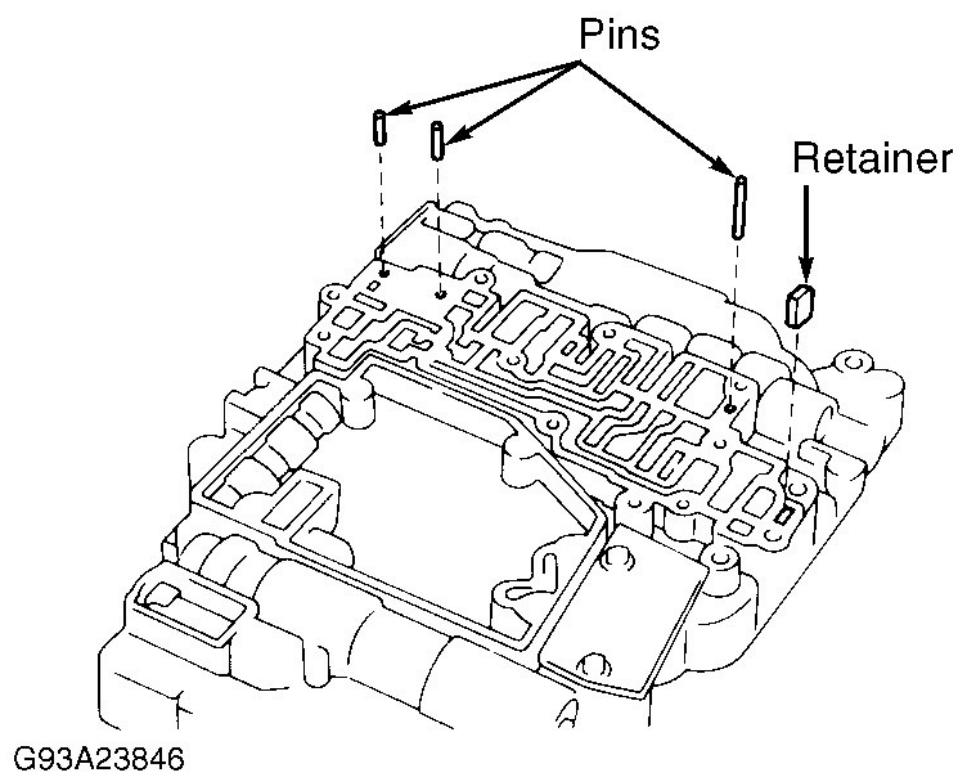
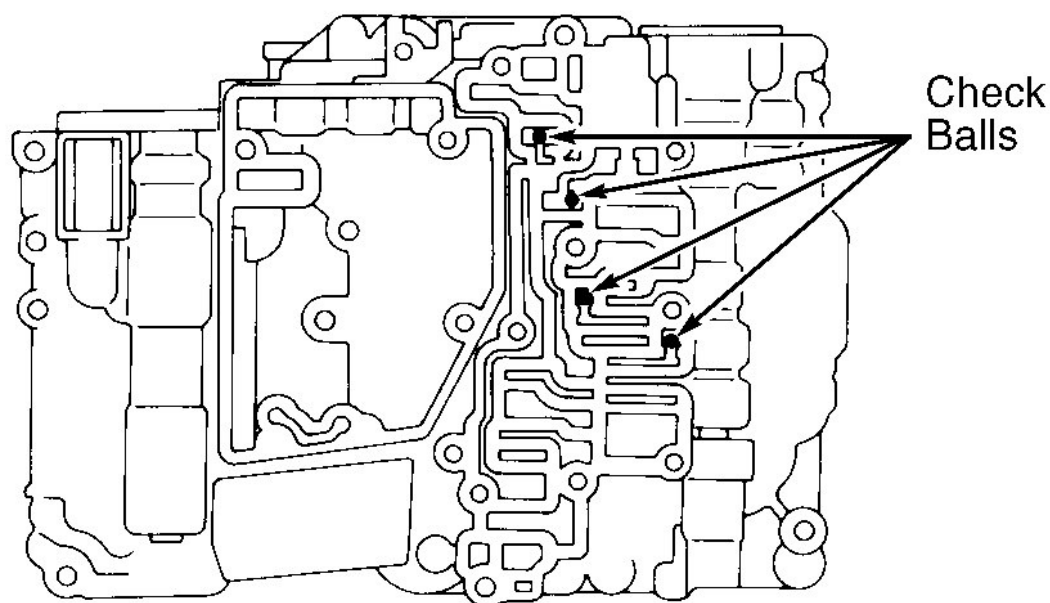


1. Rear Upper Valve Body
2. Front Upper Valve Body
3. Lower Valve Body Plate
4. Manual Valve
5. Detent Spring
6. Detent Spring Cover
7. Lower Valve Body Cover
8. No. 4 Gasket
9. Plate

10. No. 3 Gasket
11. Check Balls
12. Pin
13. Retainer
14. Lower Valve Body
15. No. 2 Gasket
16. Valve Body Plate
17. No. 1 Gasket

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**Fig. 41: Exploded View Of Valve Body Assembly (A-43D Shown; A-46DE & A-46DF Are Similar)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



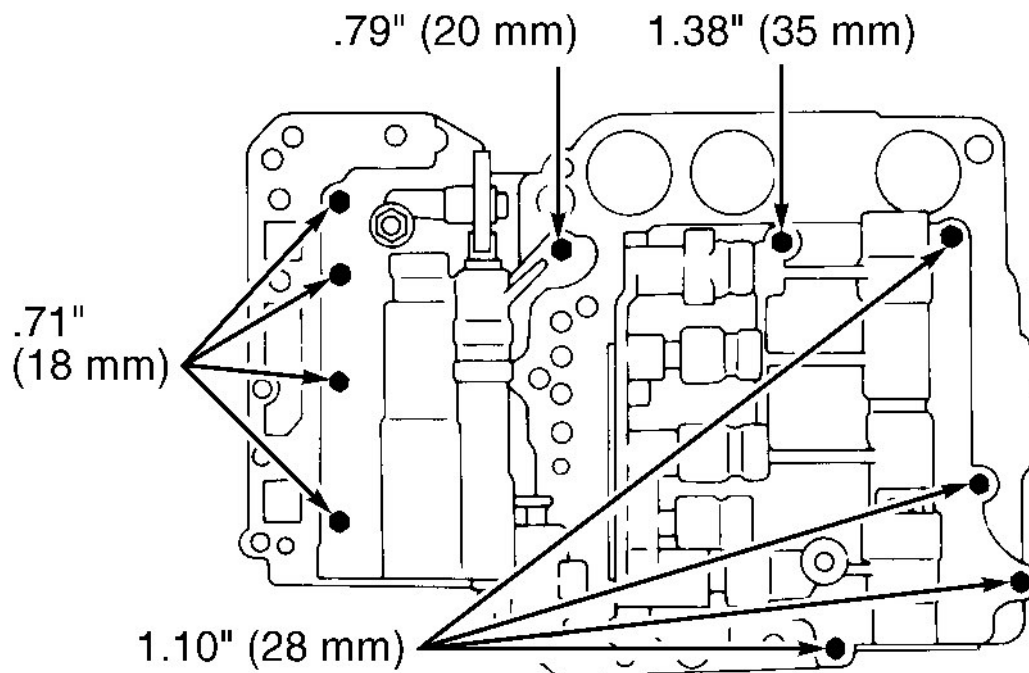
**Fig. 42: Identifying Lower Valve Body Check Ball, Pin & Retainer Locations (A-43D)**



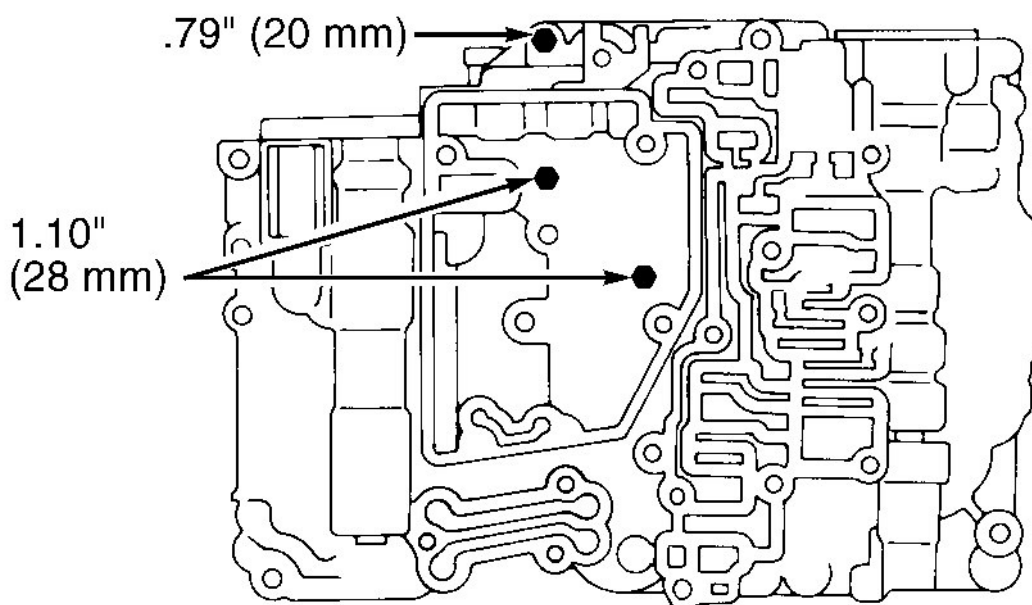
## 1995 Toyota Pickup

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE & A-46DF Overhaul

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



UPPER VALVE BODY



LOWER VALVE BODY

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**Fig. 43: Identifying Valve Body Bolts (A-43D)**

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

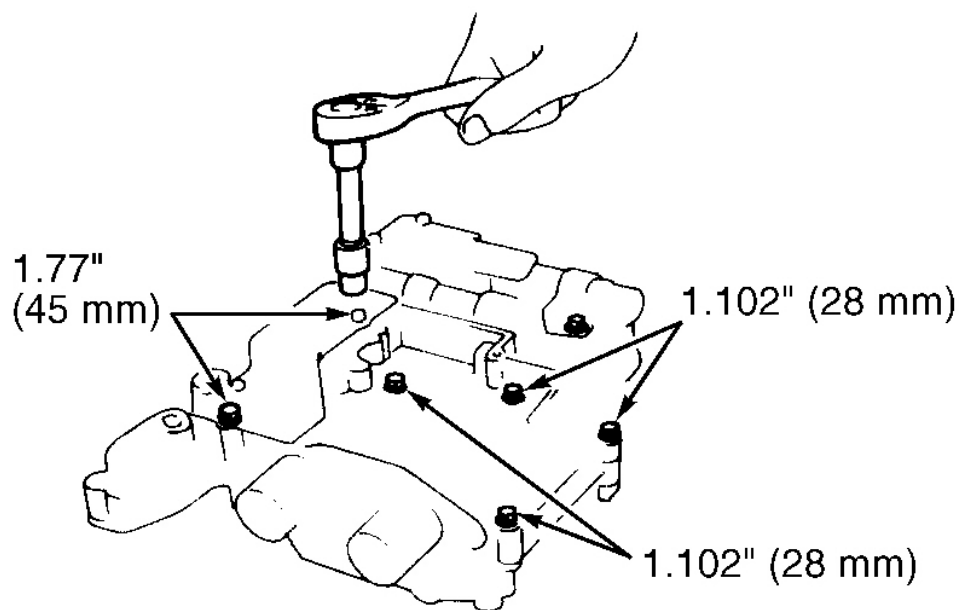
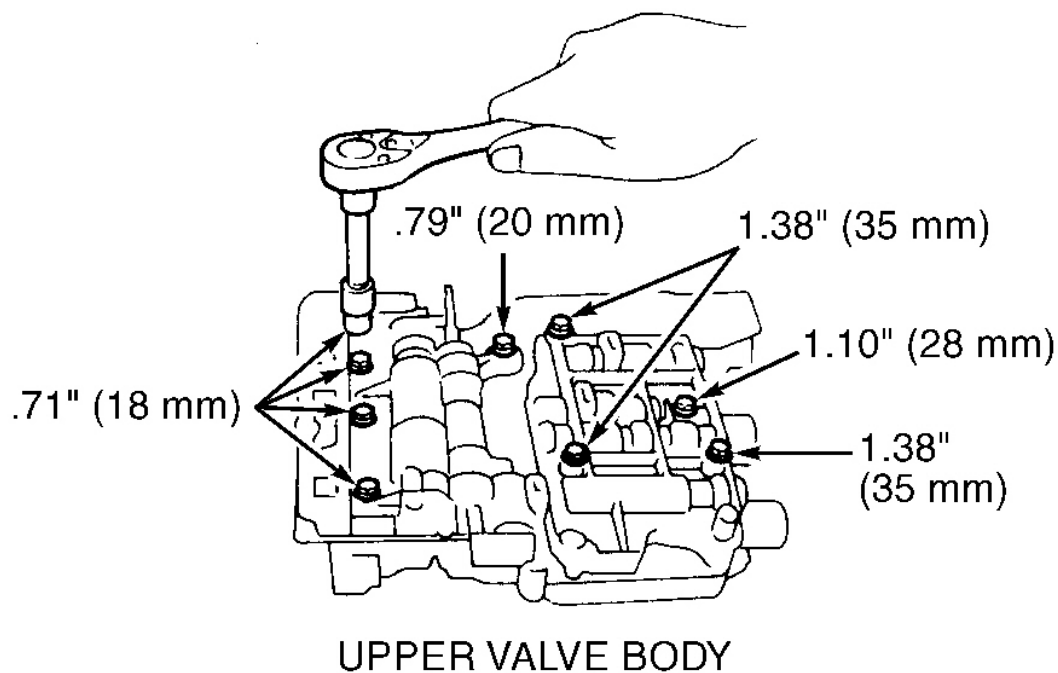
**Disassembly (A-46DE & A-46DF)**

Remove detent spring, detent spring cover and manual valve from valve body assembly. Remove 9 bolts from front and rear upper valve bodies. Note bolt length and location. Remove 7 bolts from lower valve body. See **Fig. 44**. Separate lower valve body and gasket from plate and upper valve bodies.

**CAUTION: DO NOT allow plate to separate from upper valve bodies during removal or check balls, pins and retainers may fall out.**

**Inspection**

Remove gasket from lower valve body. Note check ball, pin, spring and retainer location. Hold plate to upper valve bodies to ensure check balls do not fall out. Remove plate and gasket and note check ball, pin and retainer locations on upper valve bodies. Clean all parts in solvent. Dry with compressed air. Ensure all valve body passages are clear. Inspect valves for scoring or roughness. Ensure valves slide freely in bores. Inspect valve springs for damage, squareness and collapsed coils. Measure spring free length and outer diameter. Replace spring if not within specification. See appropriate VALVE BODY SPRING SPECIFICATIONS table.



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**Fig. 44: Identifying Valve Body Bolts (A-46DE & A-46DF)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### LOWER VALVE BODY SPRING SPECIFICATIONS

**1995 Toyota Pickup**

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE &amp; A-46DF Overhaul

Spring No.	Diameter In. (mm)	Free Length In. (mm)
A-43D <sup>(1)</sup>		
No. 1	.197 (5.00)	.787 (20.00)
No. 2	.543 (13.80)	.1138 (28.90)
No. 3	.413 (10.50)	.539 (13.70)
No. 4	.299 (7.60)	1.362 (34.60)
No. 5	.417 (10.60)	1.327 (33.70)
No. 6	.516 (13.10)	1.264 (32.10)
No. 7	.669 (17.00)	2.173 (55.20)
A-46DE & A-46DF <sup>(2)</sup>		
No. 1	.670 (17.02)	1.980 (50.28)
No. 2	.362 (9.20)	.1667 (42.35)
No. 3	.346 (8.80)	1.395 (35.43)
No. 4	.449 (11.40)	1.284 (32.60)
No. 5	.517 (13.14)	1.265 (32.14)
No. 6	.413 (10.50)	.539 (13.70)
No. 7	.196 (4.97)	.787 (20.00)
No. 8	.535 (13.60)	1.102 (28.00)
(1) For spring locations, see <b>Fig. 45</b> .		
(2) For spring locations, see <b>Fig. 46</b> and <b>Fig. 48</b> .		

**FRONT UPPER VALVE BODY SPRING SPECIFICATIONS**

Spring No.	Diameter In. (mm)	Free Length In. (mm)
A-43D <sup>(1)</sup>		
No. 1	.425 (10.80)	1.567 (39.80)
No. 2	.339 (8.60)	.862 (21.90)
No. 3	.685 (17.40)	2.807 (71.30)
A-46DE & A-46DF <sup>(2)</sup>		
No. 1	.686 (17.43)	2.806 (71.27)
No. 2	.338 (8.58)	.864 (21.94)
No. 3	.429 (10.90)	1.557 (39.55)
No. 4	.270 (6.85)	.906 (23.00)
(1) See <b>Fig. 50</b> for spring locations.		
(2) See <b>Fig. 51</b> for spring locations.		

**REAR UPPER VALVE BODY SPRING SPECIFICATIONS**

Spring No.	Diameter In. (mm)	Free Length In. (mm)
A-43D <sup>(1)</sup>		
No. 1	.350 (8.90)	1.146 (29.10)

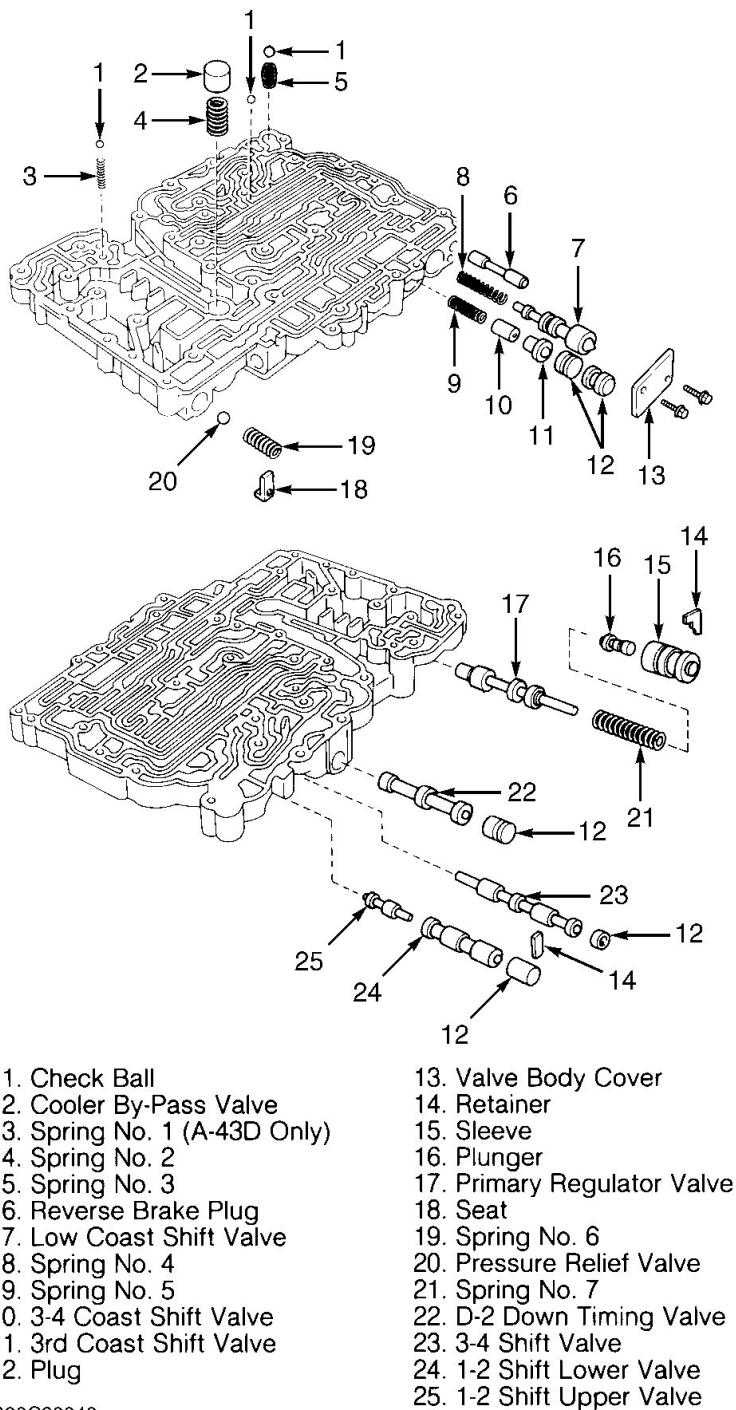
## 1995 Toyota Pickup

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE & A-46DF Overhaul

No. 2	.354 (9.00)	1.075 (27.30)
No. 3	.362 (9.20)	1.480 (37.60)
No. 4	.362 (9.20)	1.669 (42.40)
No. 5	.354 (9.00)	1.382 (35.10)
A-46DE & A-46DF (2)		
No. 1-3	.350 (8.90)	1.148 (29.15)
No. 4	.362 (9.20)	1.478 (37.55)

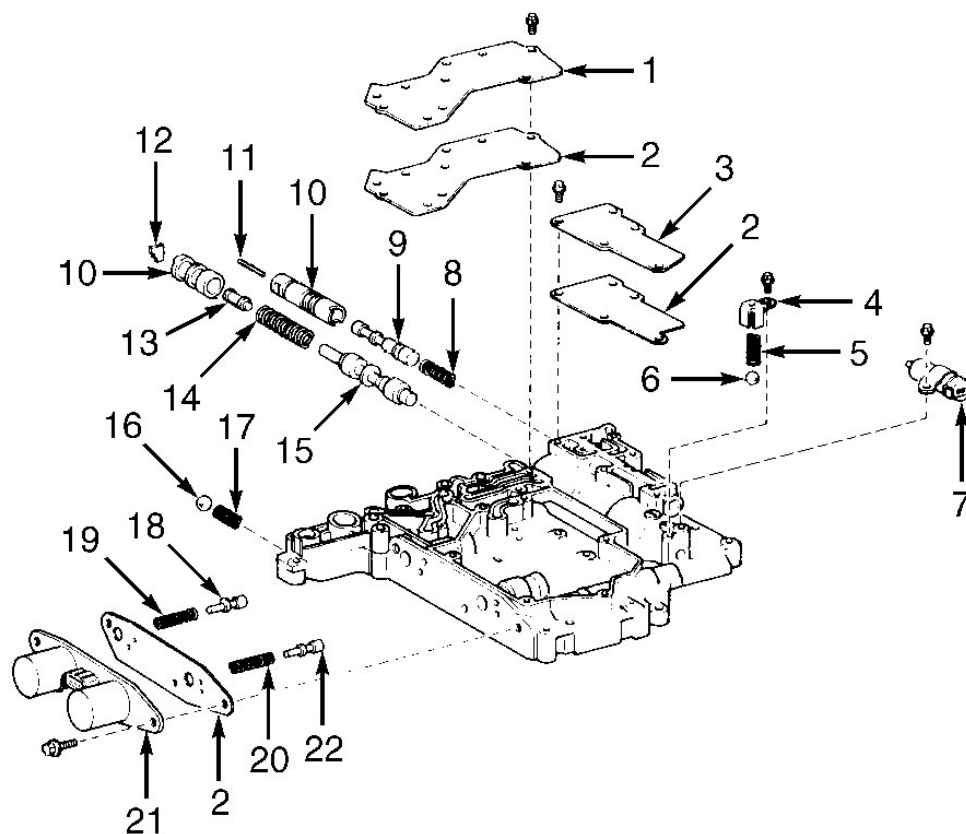
(1) See **Fig. 53** for spring locations.

(2) See **Fig. 54** for spring locations.



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**Fig. 45: Exploded View Of Lower Valve Body (A-43D)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



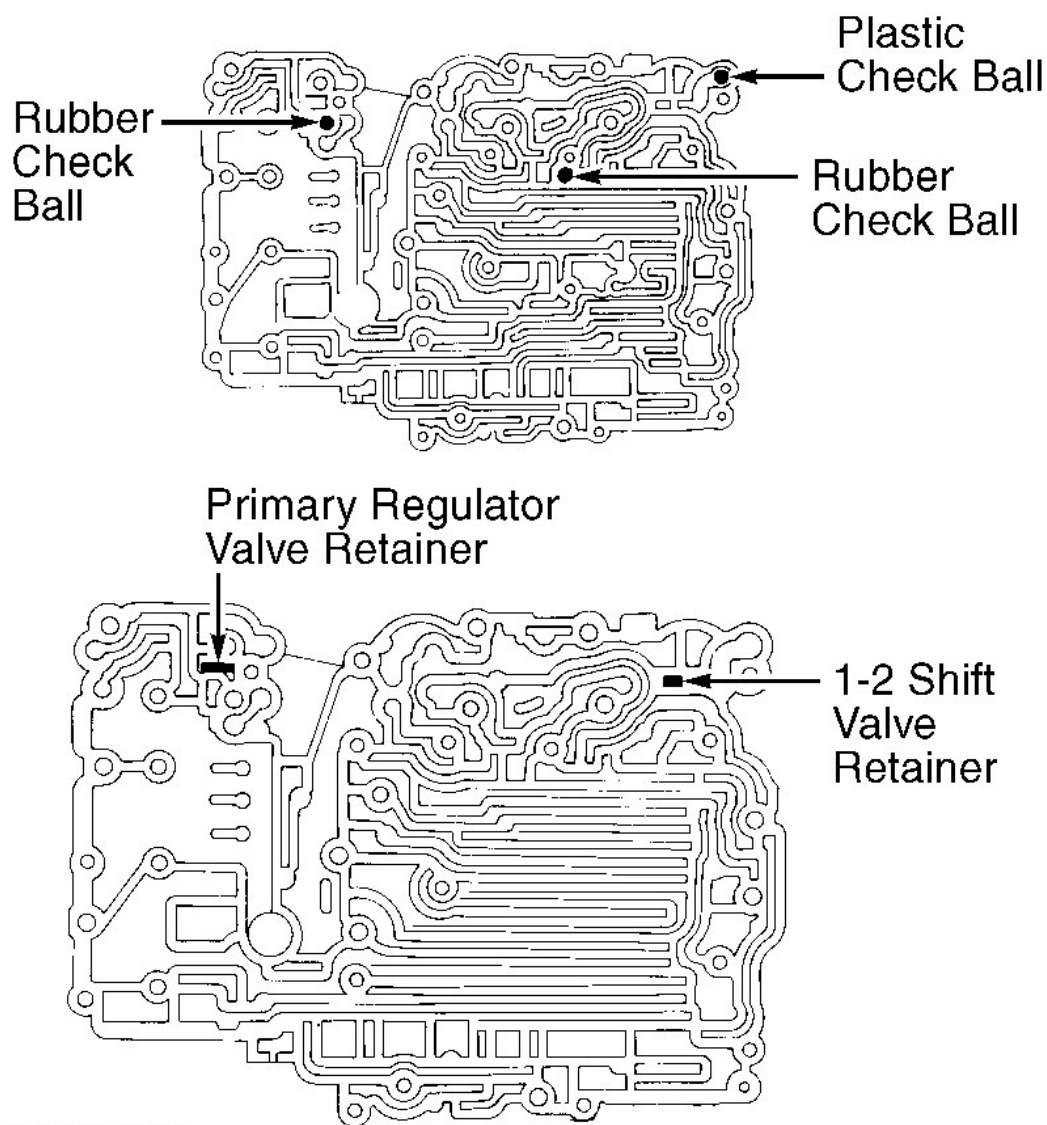
- |                             |                                  |
|-----------------------------|----------------------------------|
| 1. Valve Body Cover (Rear)  | 12. Retainer                     |
| 2. Gasket                   | 13. Plunger                      |
| 3. Valve Body Cover (Front) | 14. Spring No. 1                 |
| 4. Pressure Relief Valve    | 15. Primary Regulator Valve      |
| 5. Spring No. 5             | 16. Cooler Return Check Ball     |
| 6. Check Ball               | 17. Spring No. 6                 |
| 7. No. 3 Solenoid (TCC)     | 18. Intermediate Modulator Valve |
| 8. Spring No. 4             | 19. Spring No. 3                 |
| 9. Lock-Up Relay Valve      | 20. Spring No. 2                 |
| 10. Sleeve                  | 21. No. 1 & No. 2 Shift Solenoid |
| 11. Pin                     | 22. Low Coast Modulator Valve    |

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**Fig. 46: Exploded View Of Lower Valve Body (A-46DE & A-46DF)**

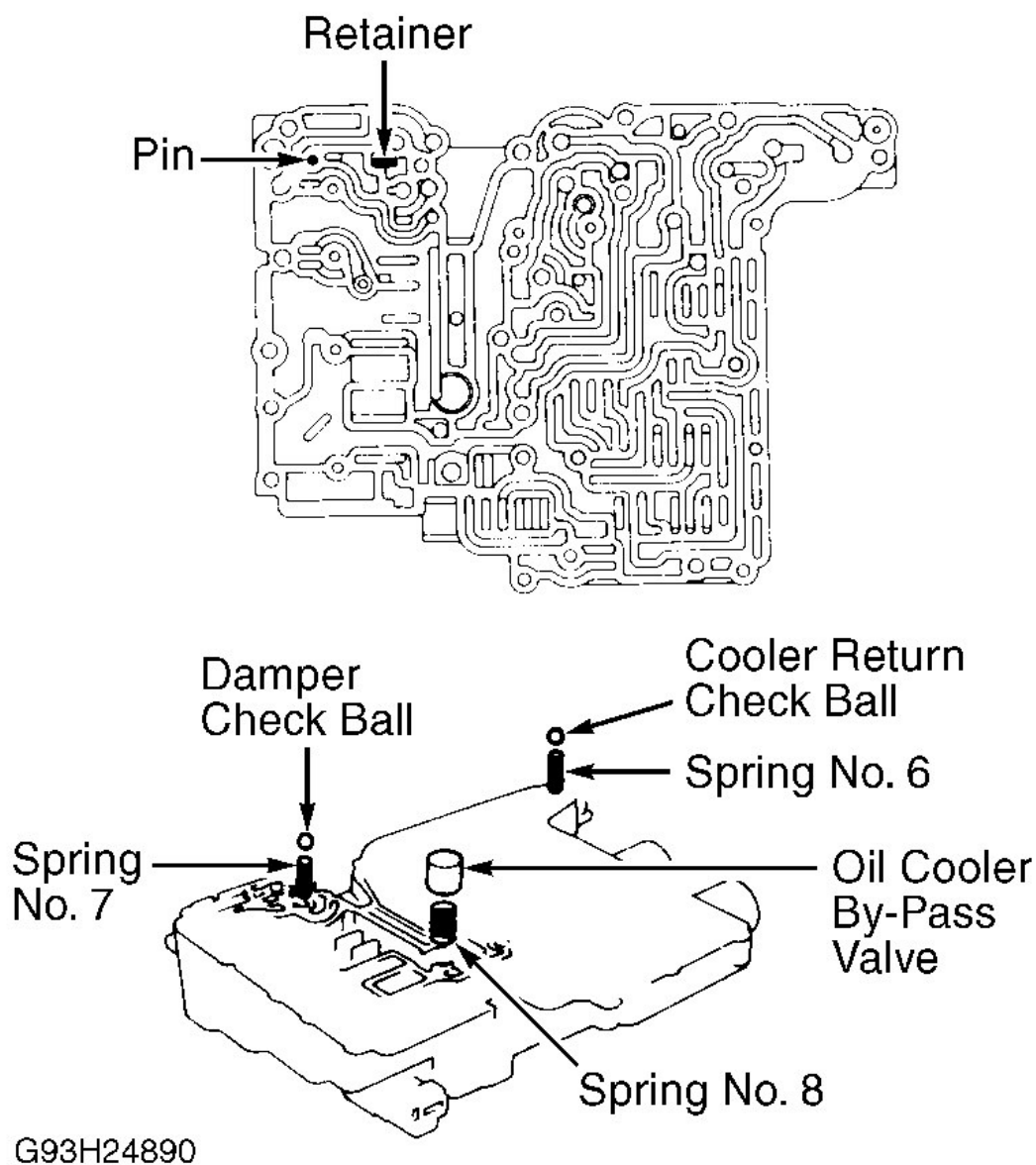
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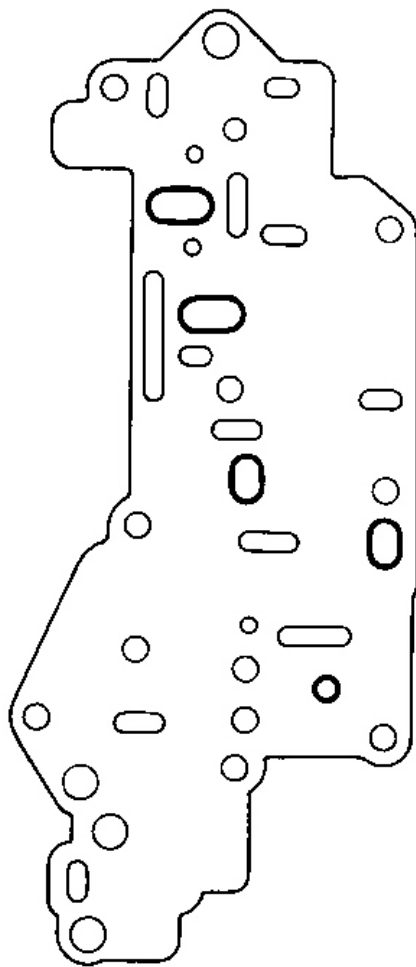
**Fig. 47: Identifying Lower Valve Body Check Ball & Retainer Locations (A-43D)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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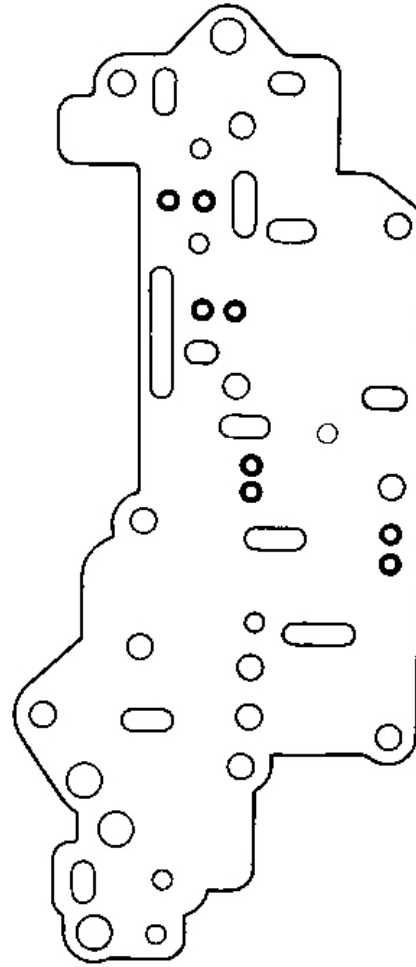
**Fig. 48: Identifying Lower Valve Body Check Ball, Pin, Spring & Retainer Locations (A-46DE & A-46DF)**

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



**NO. 3 GASKET**

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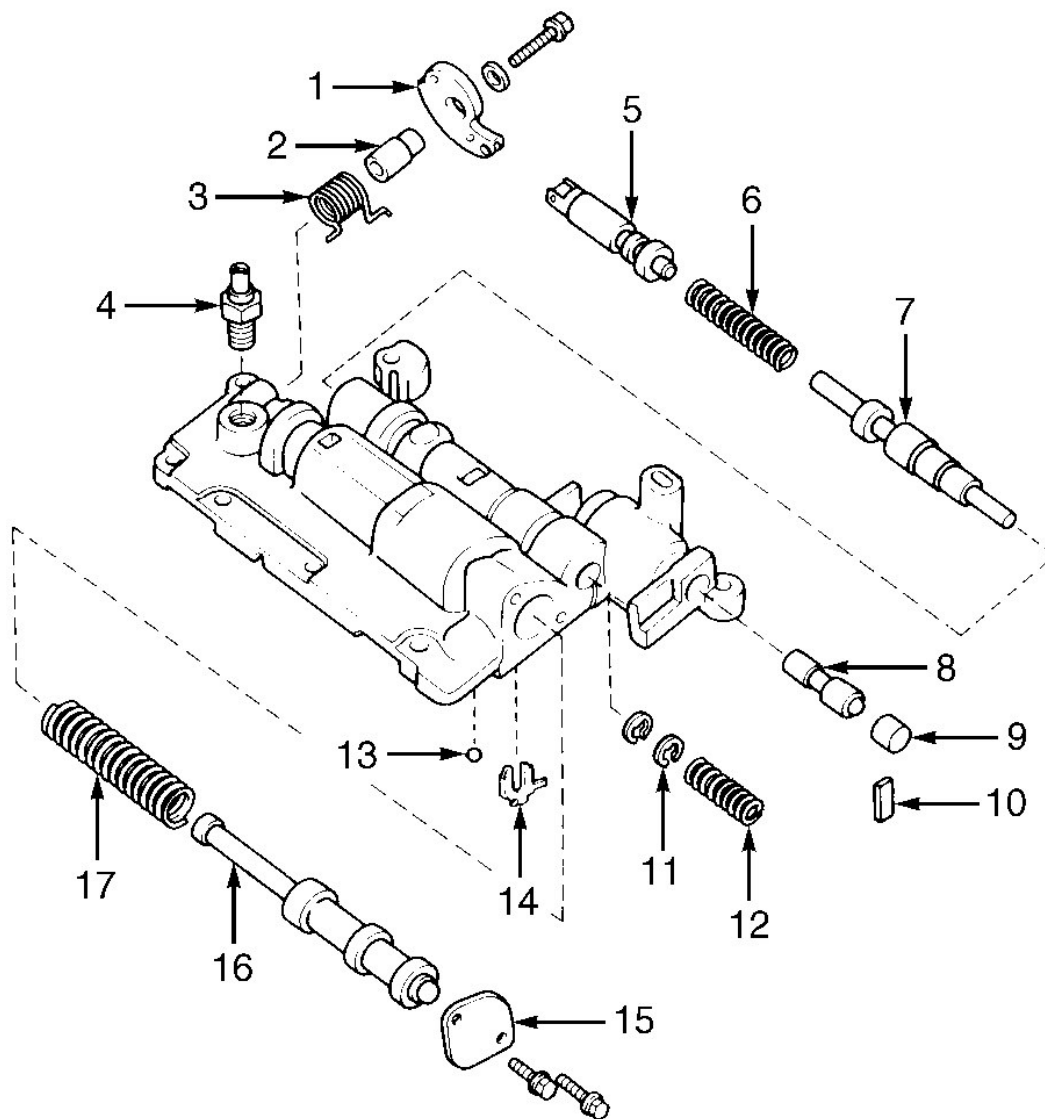


**NO. 4 GASKET**

**Fig. 49: Identifying Lower Valve Body No. 3 & No. 4 Gaskets (A-43D)**  
**Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.**

## 1995 Toyota Pickup

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE & A-46DF Overhaul

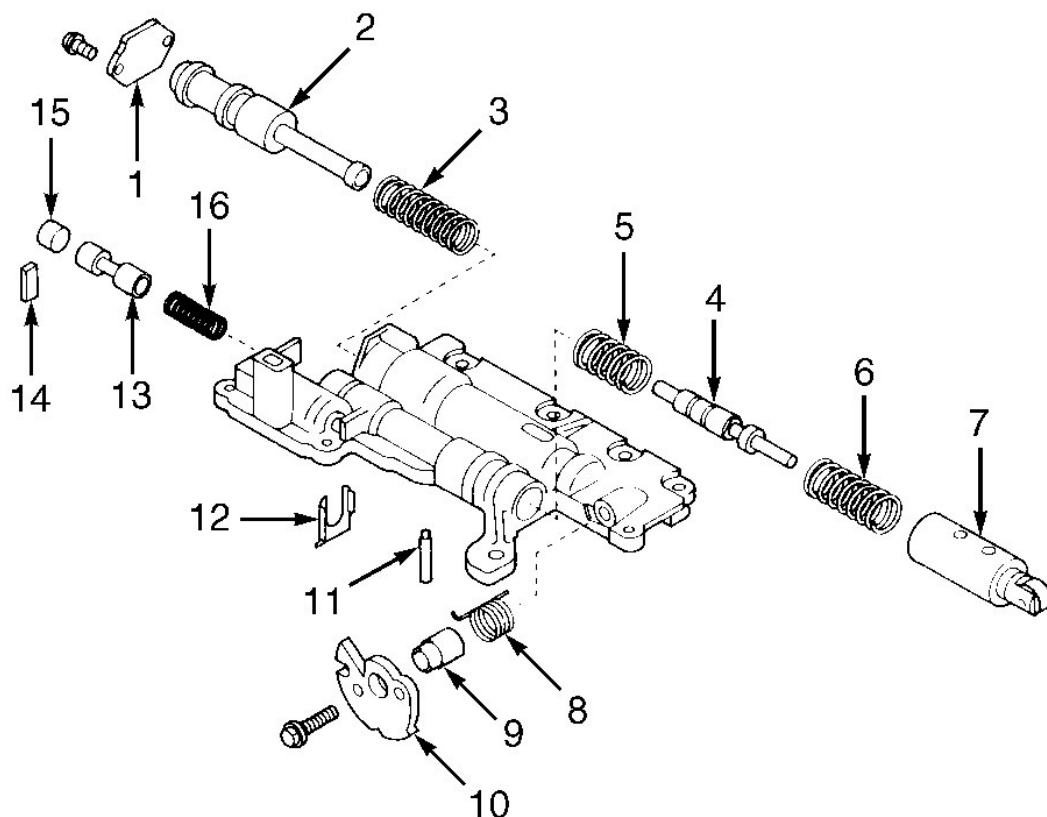


- |                    |                               |
|--------------------|-------------------------------|
| 1. Cam             | 10. Retainer                  |
| 2. Pin             | 11. Adjusting Ring            |
| 3. Spring          | 12. Spring No. 2              |
| 4. Check Ball Body | 13. Check Ball                |
| 5. Downshift Plug  | 14. Valve Vibrating Stopper   |
| 6. Spring No. 1    | 15. Valve Body Cover          |
| 7. Throttle Valve  | 16. Secondary Regulator Valve |
| 8. Cut-Back Valve  | 17. Spring No. 3              |
| 9. Plug            |                               |

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**Fig. 50: Exploded View Of Front Upper Valve Body (A-43D)**

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

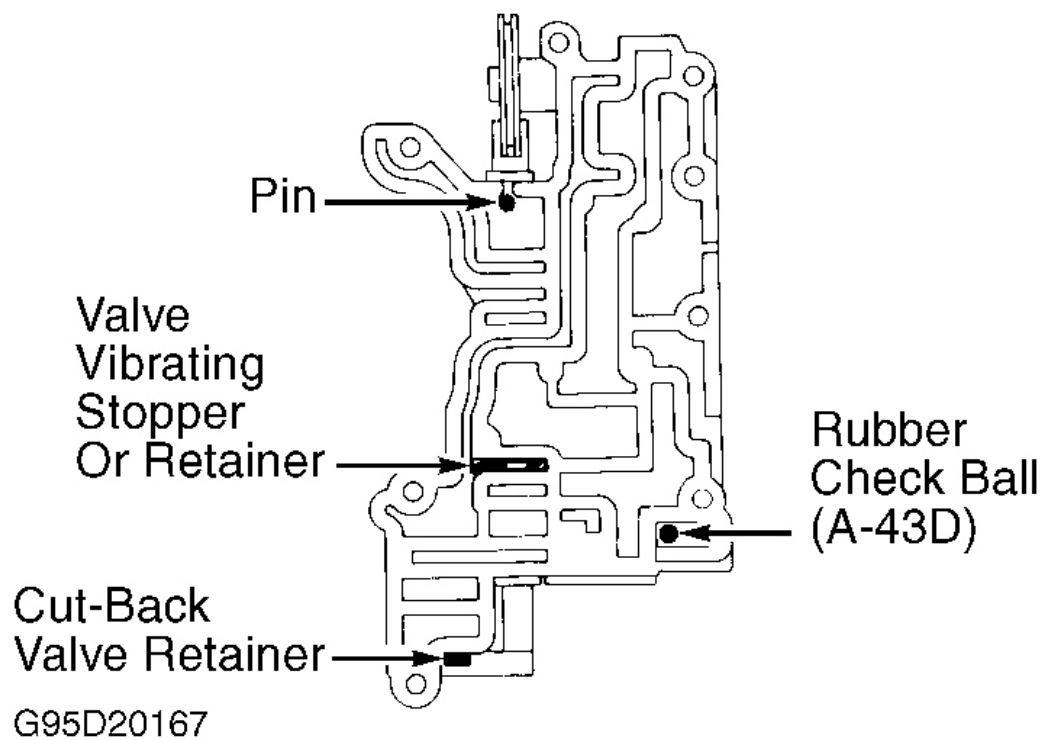


- |                              |                    |
|------------------------------|--------------------|
| 1. Cover                     | 9. Sleeve          |
| 2. Secondary Regulator Valve | 10. Cam            |
| 3. Spring No. 1              | 11. Pin            |
| 4. Throttle Valve            | 12. Retainer       |
| 5. Spring No. 2              | 13. Cut Back Valve |
| 6. Spring No. 3              | 14. Valve Retainer |
| 7. Downshift Plug            | 15. Plug           |
| 8. Spring                    | 16. Spring No. 4   |

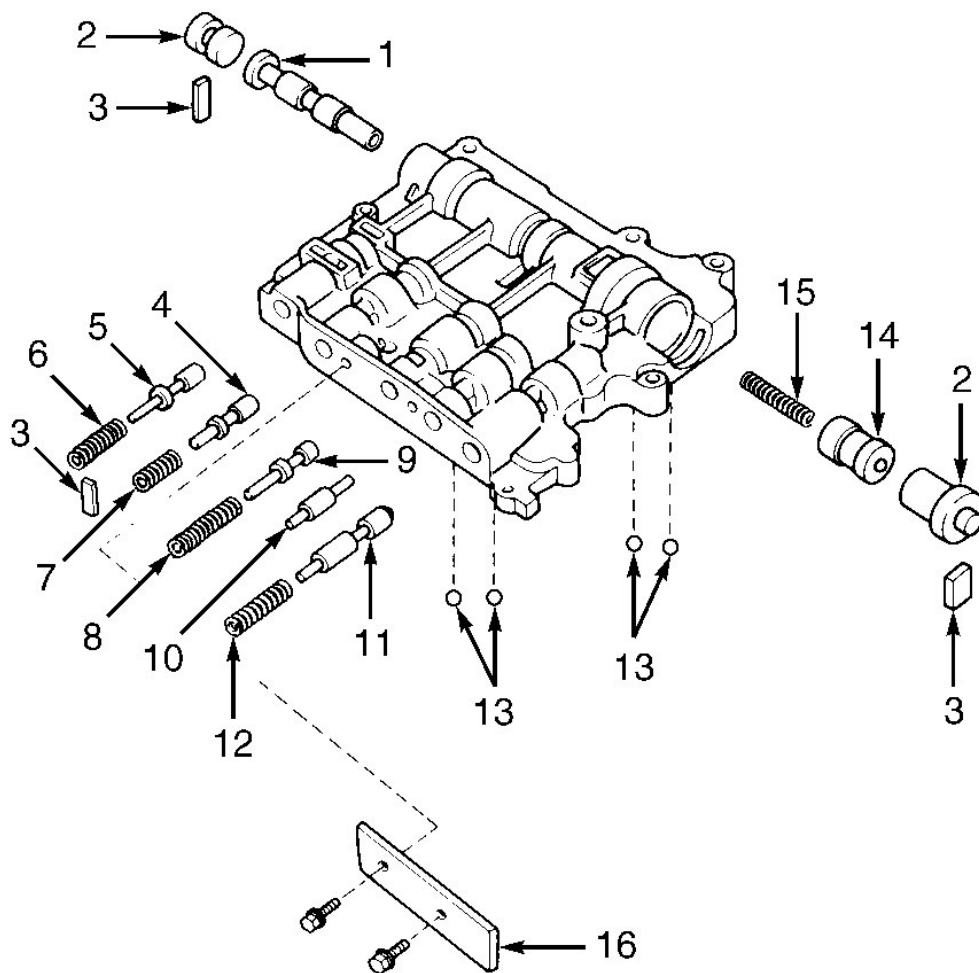
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**Fig. 51: Exploded View Of Front Upper Valve Body (A-46DE & A-46DF)**

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



**Fig. 52: Identifying Front Upper Valve Body Check Ball, Pin, Stopper & Retainer Locations**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

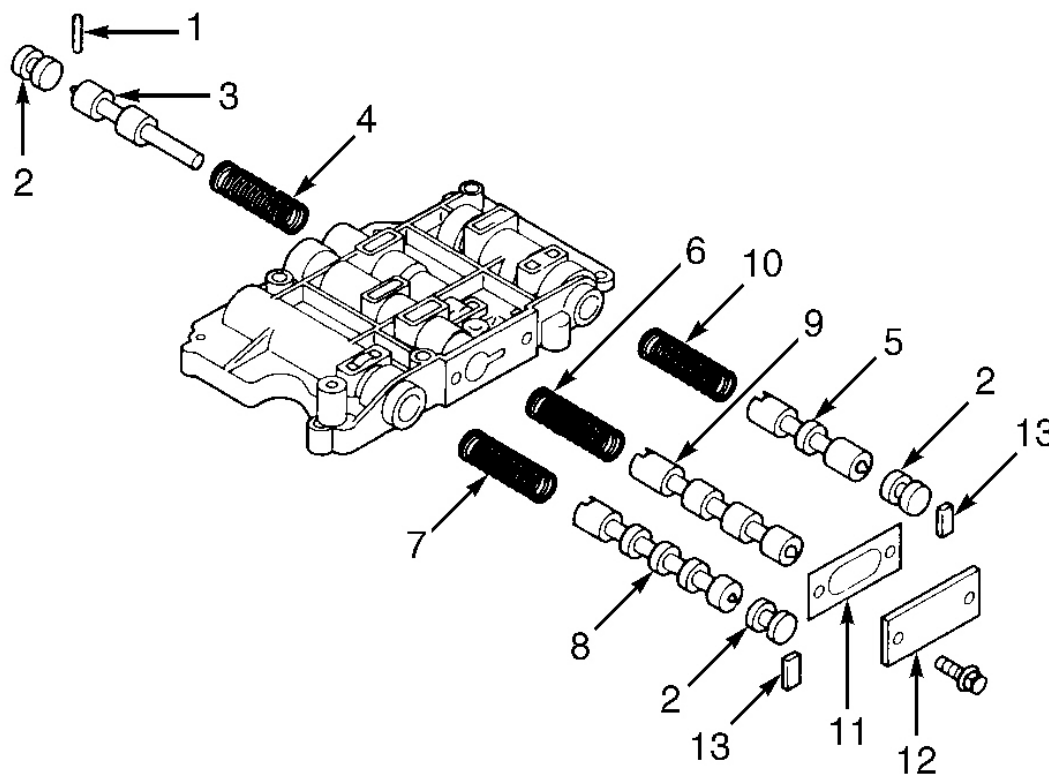


- |                                 |                                  |
|---------------------------------|----------------------------------|
| 1. 2-3 Shift Valve              | 9. Reverse Clutch Sequence Valve |
| 2. Plug                         | 10. Governor Modulator Plug      |
| 3. Retainer                     | 11. Low Coast Modulator Valve    |
| 4. Intermediate Modulator Valve | 12. Spring No. 4                 |
| 5. Detent Regulator Valve       | 13. Check Balls                  |
| 6. Spring No. 1                 | 14. Intermediate Shift Valve     |
| 7. Spring No. 2                 | 15. Spring No. 5                 |
| 8. Spring No. 3                 | 16. Valve Body Cover             |

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**Fig. 53: Exploded View Of Rear Upper Valve Body (A-43D)**

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



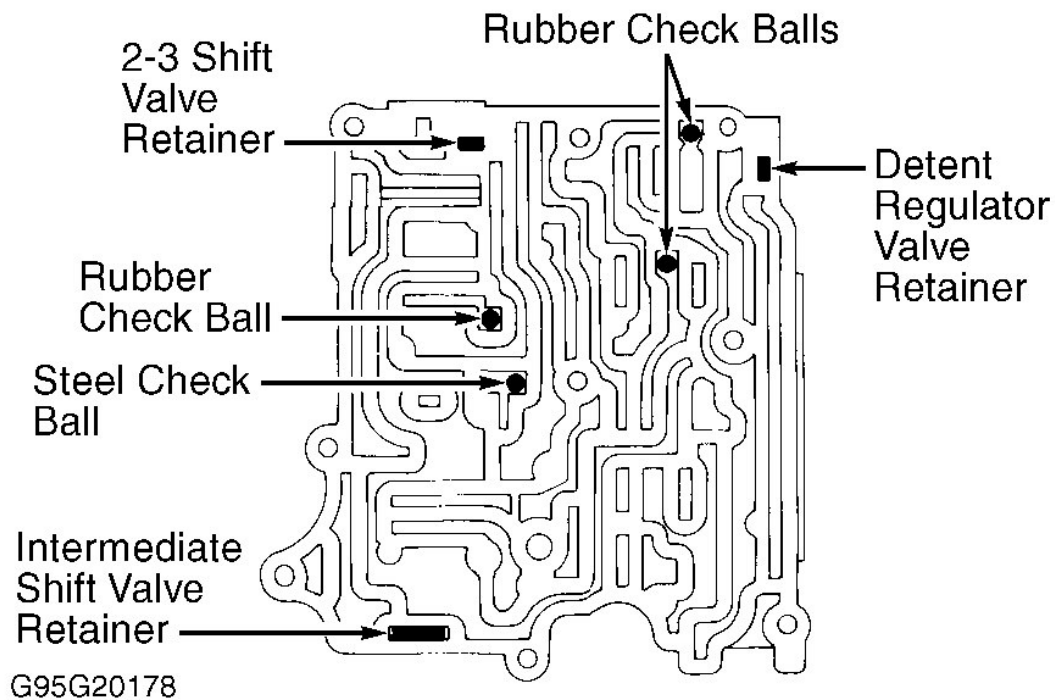
1. Pin
2. Plug
3. Rear Clutch  
Sequence Valve
4. Spring No. 4
5. 3-4 Shift Valve
6. Spring No. 3

7. Spring No. 2
8. 2-3 Shift Valve
9. 1-2 Shift Valve
10. Spring No. 1
11. Gasket
12. Cover
13. Retainer

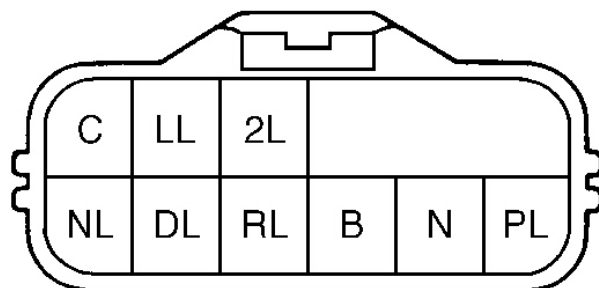
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**Fig. 54: Exploded View Of Rear Upper Valve Body (A-46DE & A-46DF)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.





**Fig. 55: Identifying Rear Upper Valve Body Check Ball, Pin & Retainer Locations A-43D**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



Terminal Shift Position	B	N	PL	RL	NL	DL	2L	LL	C
P	○	○	○						○
R				○					○
N	○	○			○				○
D						○			○
2							○		○
L								○	○

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**Fig. 56: Identifying Rear Upper Valve Body Check Ball, Pin & Retainer Locations A-46DE & A-46DF**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### Reassembly (A-43D)

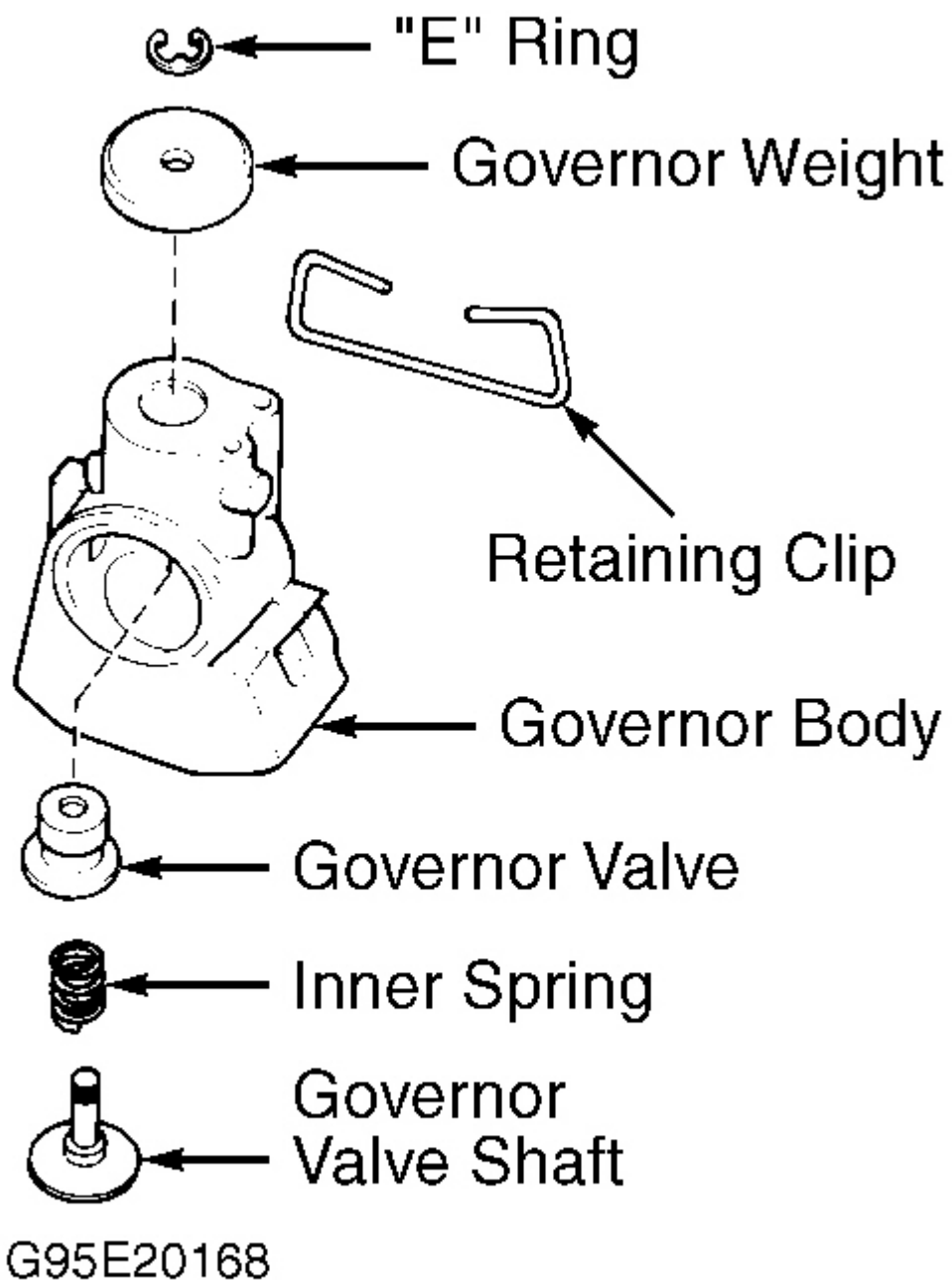
1. Coat all components with ATF. To reassemble, reverse disassembly procedure. Ensure valves slide freely in bores.
2. Place No. 2 gasket and separator plate on lower valve body. No. 2 gasket does not have 3 large holes. Temporarily install 2 bolts to secure plate. Place No. 1 gasket on plate. Place lower valve body with gaskets and separator plate on rear upper valve body.
3. Install and finger tighten bolt in lower valve body. Turn assembly over. Install 5 bolts in upper valve body. Ensure bolts are correct length. See **Fig. 43**. Remove bolts that were temporarily installed.
4. Install front upper valve body on lower valve body. Install correct bolts and finger tighten. Turn assembly over and install remaining bolts. Tighten all bolts to specification. See **TORQUE SPECIFICATIONS**.
5. Install lower valve body plate. See **Fig. 41**. Install check balls in lower valve body. See **Fig. 42**. Install No. 3 gasket, separator plate, No. 4 gasket and lower valve body cover. For gasket identification, see **Fig. 49**. Install bolts and tighten to specification. Install manual valve and detent spring.

**Reassembly (A-46DE & A-46DF)**

1. Position new gasket on upper rear valve body. Place lower valve body with separator plate and gaskets on top of upper rear valve body.
2. Install and finger tighten 3 bolts. Turn assembly over and install 4 bolts in upper rear valve body. See **Fig. 44**. Place assembly on top of upper front valve body. Install and finger tighten 3 bolts. Turn assembly over and install 5 bolts. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.

**GOVERNOR ASSEMBLY (A-43D ONLY)****Disassembly & Reassembly**

Remove retaining clip (if necessary). Push downward on governor shaft. Remove "E" clip and remove governor components. See **Fig. 57**. Inspect all parts for wear and damage. Insert valve shaft into body. Ensure valve slides smoothly. Check oil passage for restrictions. To reassemble, reverse disassembly procedure. Ensure "E" clip is fully seated.



**Fig. 57: Exploded View Of Governor Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## TRANSMISSION REASSEMBLY

**NOTE:** For bearing race and thrust bearing outer diameter specifications, see **BEARING RACE & THRUST BEARING SPECIFICATIONS** table. For bearing race and thrust bearing locations, see **Fig. 58**.

**CAUTION:** Lubricate all components with ATF. Clutch discs should be soaked in ATF for 15 minutes prior to installation. Coat thrust bearings and races with petroleum jelly. Ensure ends of snap rings are not aligned with cutout area of case.

1. Position transmission case with front facing upward. Assemble No. 3 brake inner piston, reaction sleeve and outer piston. Press assembled pistons into case with hand pressure. Using appropriate spring compressor, install piston return spring on outer piston. Install snap ring. Ensure No. 3 brake piston moves smoothly when compressed air is applied. See **Fig. 13**.
2. Install No. 1 bearing race. Install brake apply tube into transmission case, aligning locking tab with cutout in valve body side of transmission case. Ensure lips of tube end are completely inserted onto outer piston. Install output shaft No. 1 thrust bearing into case. Install rear planetary gear and output shaft into case. Install No. 2 thrust bearing. See **Fig. 58**.
3. Install pressure plate, with flat surface facing forward. Install 5 discs and 4 plates, starting with a disc and alternating each component. Measure No. 3 brake clutch pack clearance. See **Fig. 12**. Clearance should be .024-.104" (.61-2.64 mm).
4. Remove one-way clutch inner race from planetary gear assembly. Install front planetary gear. Mesh splines of planetary gear with flukes of discs by rotating and pushing planetary gear. Position inner race with notched tooth toward valve body side of case. Push plate into place. Install snap ring. Ensure snap ring is fully seated.
5. Align oil and bolt holes of center support toward valve body side. Align center support bolt holes with case holes and install. Install bolts with wave washers. Tighten bolt on accumulator piston side first to 18 ft. lbs. (25 N.m). Install rear clutch assembly while rotating to align with center support.
6. If fully installed, splined center of clutch will be even with end of sun gear shaft. Install No. 3 rear bearing race, thrust bearing and front bearing race over splined end of rear clutch. Install No. 4 thrust bearing and bearing race on front clutch. See **Fig. 58**. Install front clutch. Rotate and push front clutch to mesh splines of front clutch with flukes of discs.
7. Using calipers and Clutch Drum Thrust Plate Gauge (09370-12010), measure distance between top of case and front clutch drum. See **Fig. 10**. Distance should be equal to that recorded during disassembly. Install Guide Rods (09362-30011) finger tight in front case bolt holes.
8. Install OD case over guide rods with cutout area toward valve body side of case. Install thrust washer on OD case and OD planetary gear. Ensure washer lugs align with holes in OD case and planetary gear assembly. Install No. 5 bearing race on OD planetary gear assembly. See **Fig. 58**.
9. Install OD planetary gear assembly with OD direct clutch and one-way clutch. Rotate and push OD planetary gear to mesh splines with flukes of discs. Ensure thrust washer does not fall during installation. Using calipers and Clutch Drum Thrust Plate Gauge (09370-12010), measure distance between top of case and OD clutch drum. See **Fig. 9**. Distance should be equal to that recorded during disassembly.
10. Install "O" ring on OD case. Install converter housing to transmission case. Tighten 10-mm bolts to 25 ft. lbs. (34 N.m) and 12 mm bolts to 42 ft. lbs. (57 N.m). Install No. 5 thrust bearing on rear of oil pump.

Ensure oil seal rings and "O" ring are installed on oil pump.

11. Install oil pump over guide rods and into transmission case. Ensure thrust bearing does not fall off oil pump. Coat oil pump retaining bolts below bolt heads with thread sealer. Remove guide rods. Install bolts and tighten to 15 ft. lbs. (21 N.m). Ensure input shaft turns freely. Using a dial indicator, check output shaft end play. Position dial indicator against end of output shaft. End play should be .012-.035" (.30-.90 mm).
12. Apply air pressure to specific oil passage to check appropriate operating components. See **Fig. 59**. Component application should be heard while applying air. Install NEW oil seals in transmission case. Lubricate oil seal lips prior to installation. Install NEW spacer on manual valve lever. Install manual valve lever shaft into case and through manual valve lever. Install NEW pin with slot at right angle to shaft.
13. Align spacer hole to hollow area of lever. Stake spacer to lever. Ensure manual valve lever shaft turns smoothly. Install "E" ring on shaft. Install parking lock pawl, pivot pin and spring in case. Install lock rod on manual valve lever and install parking lock pawl. Install parking pawl bracket on case. Ensure collar on control rod is toward front of transmission. Tighten bracket bolts to 65 INCH lbs. (7.4 N.m).
14. Check operation of park lock pawl. Ensure output shaft is locked when manual valve lever is in "P" position. Determine proper accumulator piston locations. See **Fig. 8**. Ensure accumulator piston is proper diameter. See **ACCUMULATOR PISTON DIAMETER** table. Determine proper spring free length and outer diameter for accumulator piston application. See **ACCUMULATOR SPRING SPECIFICATIONS** table.
15. Install accumulator pistons and springs. Ensure accumulator pistons are pressed fully into bore. Install NEW "O" rings on throttle cable fitting. Install throttle cable. Align manual valve with pin on manual valve lever. Connect throttle cable to cam. Install valve body assembly and tighten bolts to 89 INCH lbs. (10 N.m). See **Fig. 1**.
16. Install gasket and oil strainer. Tighten bolts to 48 INCH lbs. (5.4 N.m). Using a plastic hammer, install oil tubes. Do not bend or damage oil tubes. Install magnets in oil pan. Ensure magnets do not interfere with oil tubes. Install NEW gasket to transmission case. Align cut part of gasket and transmission case. Install oil pan bolts and tighten to 39 INCH lbs. (4.4 N.m). On A-46DF, install transfer adapter and transfer case.
17. On A-43D models, install governor strainer and plate, if removed. Lift governor assembly retaining clip with screwdriver. Slide governor assembly onto output shaft. Install retaining clip into hole on output shaft. Install lock plate and bolt. Tighten bolt to 35 INCH lbs. (3.9 N.m). Stake lock plate in place.
18. Install snap ring, lock ball, speedometer drive gear and retaining snap rings. On all other models, install sensor rotor and snap ring. On all models, install oil supply tube and extension housing with NEW gasket. Clean all bolt threads. Apply thread sealer to top 4 extension housing bolts prior to installation. Install short bolts to bottom of extension housing. Tighten bolts to 25 ft. lbs. (34 N.m).
19. Install overdrive solenoid. Tighten bolts to 115 INCH lbs. (13 N.m). Lubricate and install NEW "O" rings on cooler unions. Install unions and tighten to 25 ft. lbs. (34 N.m). Lubricate and install "O" ring to sleeve. Insert speedometer driven gear into sleeve. Install sleeve to extension housing. Install lock plate and bolt. Using control shaft lever, turn manual valve lever shaft fully forward and return 2 notches.
20. Insert park/neutral position switch on manual valve lever shaft and temporarily tighten adjusting bolt. Install grommet and NEW lock washer. Install and tighten nut to 35 INCH lbs. (3.9 N.m). Align park/neutral position switch neutral basic line and switch groove. See **Fig. 60**. Tighten adjusting bolt to 40 INCH lbs. (4.5 N.m). Bend over at least 2 washer tabs.
21. Install control shaft lever with spring washer and nut. Tighten nut to 61 INCH lbs. (6.9 N.m). Install wire harness and throttle cable clamp. Install torque converter. Ensure torque converter is installed correctly.

**1995 Toyota Pickup**

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE &amp; A-46DF Overhaul

Using a straightedge and calipers, measure torque converter depth. For Pickup and Tacoma (1995), distance should be .787" (20.00 mm). For Previa and Tacoma (1996), distance should be 1.250" (31.75 mm). See **Fig. 61**.

**ACCUMULATOR PISTON DIAMETER <sup>(1)</sup>**

<b>Application</b>	<b>In. (mm)</b>
Front & Rear Clutch	1.252 (31.80)
No. 2 Brake	1.370 (34.80)

(1) For accumulator piston locations, See **Fig. 8**.

**ACCUMULATOR SPRING SPECIFICATIONS <sup>(1)</sup>**

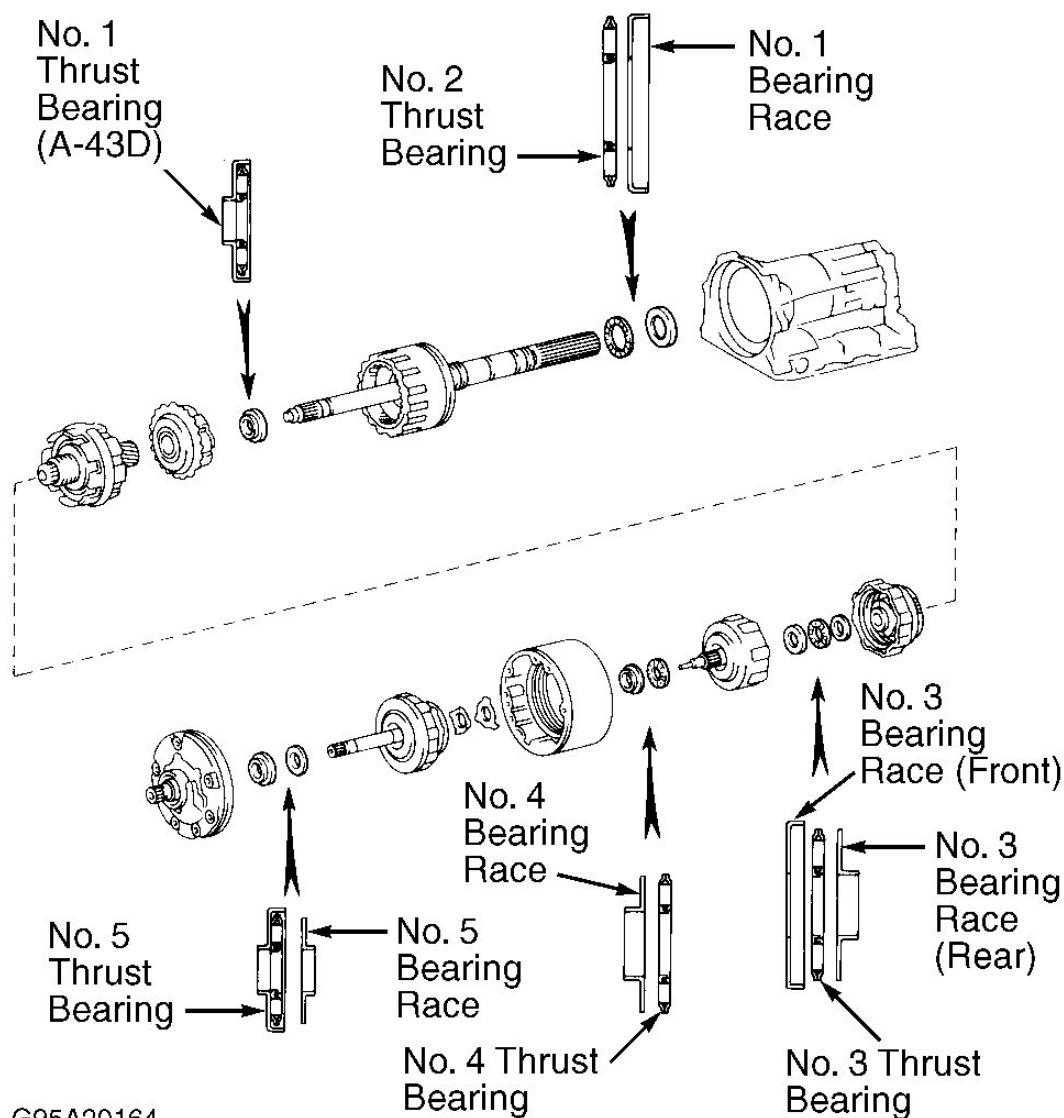
<b>Component Application</b>	<b>Diameter In. (mm)</b>	<b>Free Length In. (mm)</b>
<b>Front Clutch</b>		
A-43D	.689 (17.50)	2.547 (64.70)
A-46DE & A-46DF	.689 (17.50)	2.535 (64.40)
<b>No. 2 Brake</b>		
A-43D	.646 (16.40)	2.626 (66.70)
A-46DE & A-46DF	.606 (15.40)	1.260 (32.00)
<b>Rear Clutch</b>		
A-43D	.626 (15.90)	2.173 (55.20)
A-46DE & A-46DF	.626 (15.90)	2.260 (57.40)

(1) For accumulator spring locations, See **Fig. 8**.

**BEARING RACE & THRUST BEARING SPECIFICATIONS <sup>(1)</sup>**

<b>Application &amp; No.</b>	<b>Outer Diameter: In. (mm)</b>
<b>Bearing Race</b>	
No. 1	2.26 (57.5)
No. 3 (Rear)	1.75 (44.5)
No. 3 (Front)	1.91 (48.5)
No. 4	1.47 (37.3)
No. 5	1.54 (39.1)
<b>Thrust Bearing</b>	
No. 1 (A-43D)	1.74 (44.3)
No. 2	2.17 (55.2)
No. 3	1.83 (46.4)
No. 4	1.48 (37.5)
No. 5	1.70 (43.2)

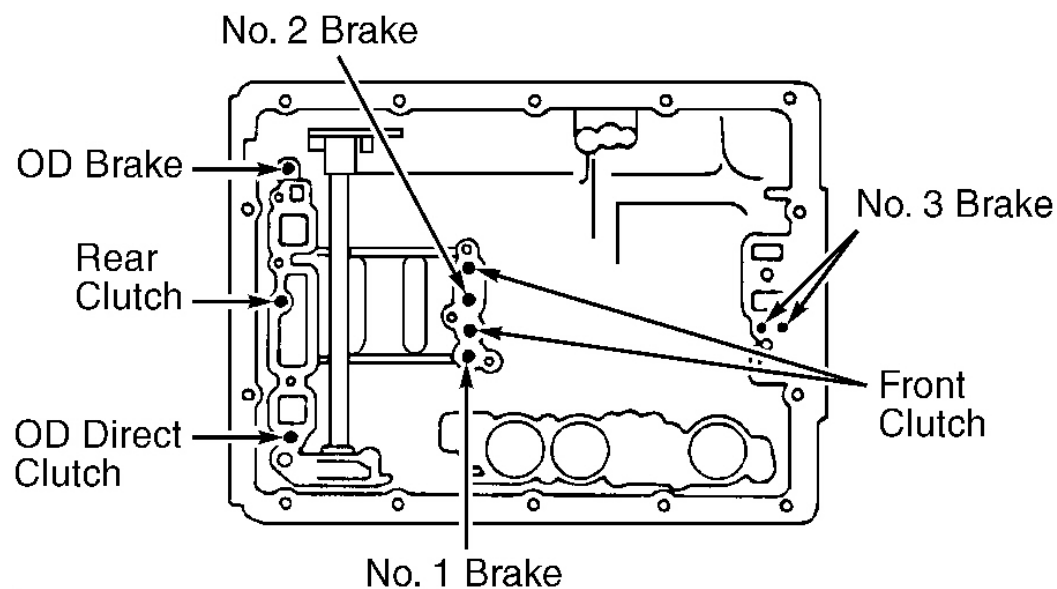
(1) See **Fig. 58** for component locations.



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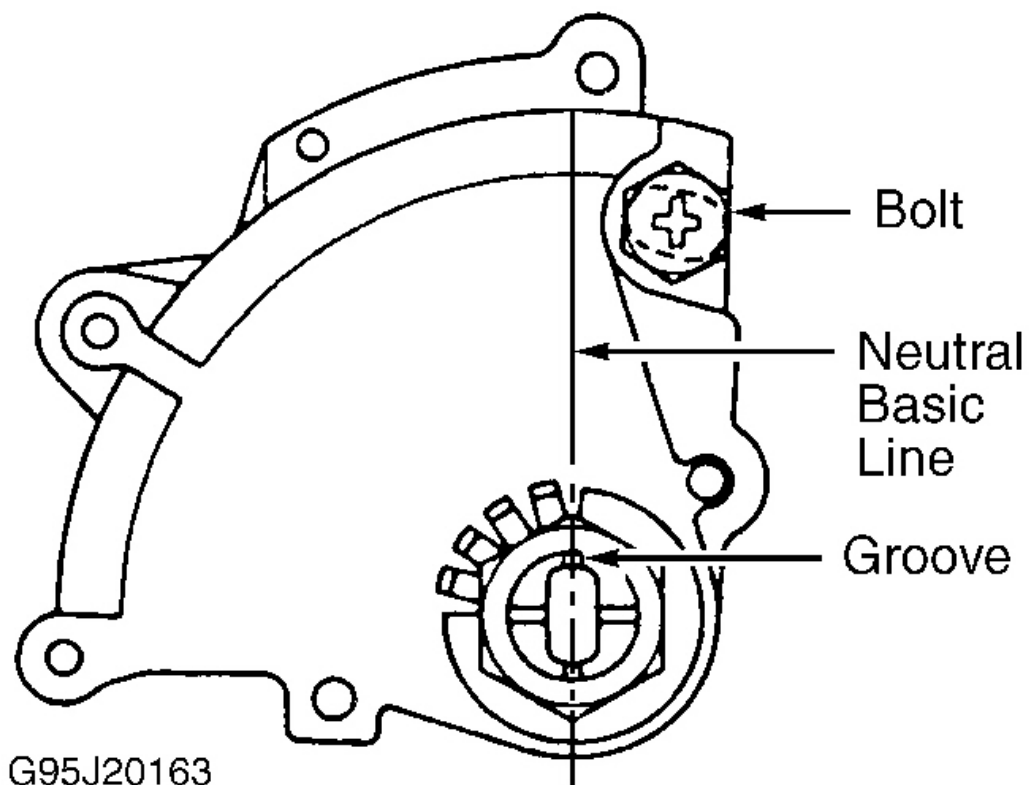
**Fig. 58: Identifying Bearing Race & Thrust Bearing Locations**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



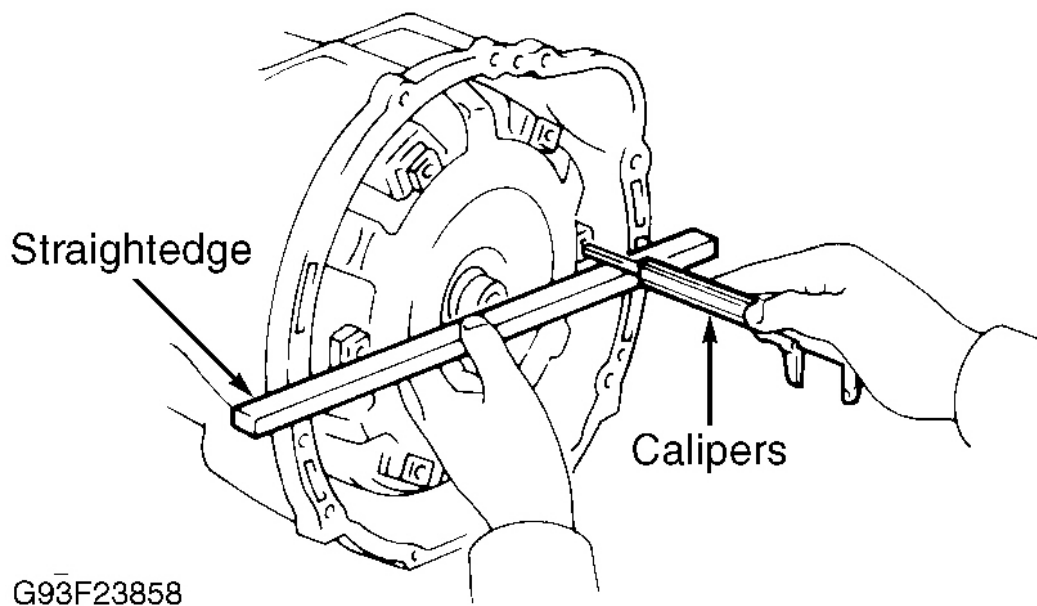


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**Fig. 59: Checking Component Piston Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 60: Aligning Park/Neutral Position Switch**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 61: Measuring Torque Converter Installed Depth**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## TRANSMISSION SPECIFICATIONS

### TRANSMISSION SPECIFICATIONS

Application	In. (mm)
Bushing Diameter (Maximum)	
Center Support	1.435 (36.46)
Extension Housing	1.4996 (38.090)
OD Direct Clutch Drum	.911 (23.14)
OD Planetary Gear	.444 (11.27)
Oil Pump Body	1.5035 (38.190)
Oil Pump Stator Shaft A-43D Front & Rear	.8496 (21.58)
A-46DE & A-46DF	
Front	.8496 (21.58)
Rear	.9094 (23.10)
Output Shaft	.712 (18.08)
Planetary Sun Gear	.850 (21.58)
Transmission Case	1.5035 (38.190)
Converter Sleeve Runout (Maximum)	.012 (.30)
Drive Plate Runout (Maximum)	.008 (.20)
Piston Stroke	

## 1995 Toyota Pickup

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Front Clutch	
A-43D	.052-.105 (1.32-2.66)
A-46DE & A-46DF	.055-.098 (1.40-2.48)
OD Direct Clutch	.070-.102 (1.77-2.58)
OD Brake	.026-.087 (.65-2.21)
No. 1 Brake	
A-43D	.031-.059 (.78-1.50)
A-46DE & A-46DF	.032-.068 (.80-1.73)
No. 2 Brake	.040-.089 (1.01-2.25)
Rear Clutch	
A-43D	.035-.078 (.91-1.99)
A-46DE & A-46DF	.035-.069 (.90-1.75)
No. 3 Brake Pack Clearance	.024-.104 (.61-2.64)
OD Brake Snap Ring-To-Flange Standard Clearance	.014-.075 (.35-1.91)
Output Shaft End Play	.012-.035 (.30-.90)
Planetary Pinion Gear Clearance	.008-.020 (.20-.50)
Torque Converter Depth	
Pickup & Tacoma (1995)	.787 (20.00)
Previa & Tacoma (1996)	1.250 (31.75)

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Center Support-To-Case Bolt	18 (25)
Converter-To-Drive Plate Bolt	20 (27)
Cooler Union Nut	25 (34)
Drive Plate Bolt	
Pickup	61 (83)
Previa & Tacoma	55 (74)
Extension Housing-To-Case Bolt	25 (34)
Oil Pump-To-Case Bolt	15 (21)
Transfer Case Adapter Bolt (A-46DF)	25 (34)
Transfer Case-To-Adapter Bolt (A-46DF)	33 (45)
Transmission Case-To-Converter Housing Bolt	
10-mm	25 (34)
12-mm	42 (57)
Transmission Mounting Bolt	36 (49)
INCH Lbs. (N.m)	
Control Shaft Lever Bolt	61 (6.9)
Governor Lock Plate Bolt	35 (3.9)

**1995 Toyota Pickup**

1995-96 AUTOMATIC TRANSMISSIONS Toyota A-43D, A-46DE &amp; A-46DF Overhaul

Lock Pawl Bracket Bolt	65 (7.4)
Oil Pan Bolt	39 (4.4)
Oil Pump Housing Bolt	65 (7.4)
Oil Strainer Bolt	48 (5.4)
Overdrive Solenoid Bolt	115 (13)
Park/Neutral Position Switch	
Adjusting Bolt	48 (5.4)
Mounting Nut	35 (3.9)
Throttle Cam Bolt	65 (7.4)
Upper Valve Body-To-Lower Valve Body Bolt	48 (5.4)
Valve Assembly-To-Case Bolt	89 (10)