

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

1988-90 AUTOMATIC TRANSMISSIONS

Toyota A-340E, A-340F, A-340H & A-341E Overhaul

APPLICATION

TRANSMISSION APPLICATION

Application	Transmission Model
Lexus	
1990 LS400	A-341E
Toyota	
1988-90 Cressida	A-340E
1988-90 Pickup (4WD)	A-340H
1989-90 Pickup (2WD)	A-340E
1990 Pickup (4WD)	A-340F
1988-90 Supra	A-340E
1988-90 4Runner (4WD)	A-340H
1990 4Runner (2WD)	A-340E
1990 4Runner (4WD)	A-340F

IDENTIFICATION

Vehicle Identification Number (VIN) is used for correct application of component parts and assemblies. VIN locations are front right side frame, top left of instrument panel, driver's door post or on front cowl of engine compartment.

DESCRIPTION & OPERATION

The A-340E automatic transmission is a 4-speed Electronic Controlled Transmission (ECT) which activates solenoids in valve body when gear changes are initiated. This transmission consists of lock-up type torque converter, overdrive planetary gear unit, 3-speed planetary gear unit, hydraulic control system and electronic control system.

The A-340F automatic transmission is a 4-speed Electronic Controlled Transmission (ECT) with mechanically controlled 4WD transfer. Transmission consists of same components as A-340E.

The A-340H automatic transmission is a 4-speed Electronic Controlled Transmission (ECT) with electronically controlled 4WD transfer. Transfer case consists of planetary gears, hydraulic clutches and hydraulic brake. Transfer case is mounted to rear of transmission case. A-340H transmission consists of 2-speed transfer and same components as A-340E.

The A-341E automatic transmission is a 4-speed Electronically Controlled Transmission with an intelligent Control (ECT-i). A-341E transmission consists of torque converter with lock-up clutch, 4-speed planetary gear unit, hydraulic control system and electronic control system.

LUBRICATION & ADJUSTMENTS

NOTE: See appropriate article in TRANSMISSION SERVICING.

TROUBLE SHOOTING

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

SYMPTOM DIAGNOSIS

Fluid Discolored Or Smells Burnt

Fluid contaminated. Torque converter faulty. Transmission faulty.

No Movement In Any Gear

Manual linkage out of adjustment. Faulty valve body or primary regulator. Park lock pawl faulty. Faulty torque converter. Converter drive plate damaged or broken. Oil pump intake screen blocked. ECT computer faulty. Control shaft lever out of adjustment. On A-341E transmissions, check following, faulty OD one-way clutch, OD brake, OD direct clutch or OD planetary gear. Faulty torque converter.

Selector Lever Position Incorrect

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

Harsh Engagement Into Any Drive Range

Throttle cable out of adjustment. Faulty valve body, primary regulator or accumulator pistons. On A-341E transmissions, check following, faulty OD brake, OD direct clutch, OD planetary gear unit or torque converter. Faulty 1st and reverse brake, direct clutch or forward clutch.

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

Faulty valve body, ECT computer or solenoid valve.

Slips On Any Upshift Or Slips Or Shudders On Acceleration

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

Drag Or Binding On Upshifts

Manual linkage out of adjustment or faulty valve body.

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

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Faulty valve body, solenoid valve or electronic control unit.

Harsh Downshift

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

No Downshift When Coasting

Faulty valve body, electronic control or solenoid valve.

Downshifts Too Soon Or Late When Coasting

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

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

Faulty valve body, electronic control or solenoid valve faulty.

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

Faulty valve body, electronic control or solenoid valve.

Vehicle Does Not Move In "R" Range (A-341E)

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

Vehicle Does Not Move In "D", "2" Or "L" Range (A-341E)

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

No Upshift 1-2, 2-3, 3-OD (A-341E)

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

No Downshift 2-1 (A-341E)

Faulty 2nd coast brake. Faulty 2nd brake.

No Lock-Up Or No Lock-Up Off (A-341E)

Faulty torque converter.

Slip Or Shudder In "D" Range, "R" Range, 1st, 2nd, 3rd Or OD (A-341E)

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

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Faulty OD brake.

No Engine Braking In 1st-3rd, 1st, 2nd (A-341E)

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

Poor Acceleration (A-341E)

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

Engine Stalls When Starting Off Or Stopping (A-341E)

Faulty torque converter.

Vehicle Does Not Hold In "P" Range

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

No Transfer Case Gear Changes On 4WD Models

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

TRANSMISSION/TRANSFER CASE ELEMENT APPLICATION

CLUTCH & BRAKE BAND APPLICATION

Selector Lever Position	OD Direct Clutch	Forward Clutch	Direct Clutch	OD Brake	2nd Coast Brake	2nd Brake	1st & Reverse Brake	OD One-Way Clutch	No. 1 One-Way Clutch	No. 2 One-Way Clutch
"D" – DRIVE										
First	X	X								X
Second	X	X				X		X	X	
Third	X	X	X			X		X		
Overdrive		X	X	X		X				
"2" – SECOND										
First	X	X						X		X
Second	X	X			X	X		X	X	
Third	X	X	X			X		X		
"L" – LOW										
First	X	X					X	X		X
Second ¹	X	X			X	X		X	X	
"R" – REVERSE	X		X				X	X		
"N" – NEUTRAL	X							X		
"P" – PARK	X									

¹ – Downshift only in "L" range and 2nd gear. No upshift.

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Fig. 1: Clutch & Brake Band Application

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

TRANSFER CLUTCH & BRAKE APPLICATION

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Shift Position	Direct Clutch	Front Drive Clutch	Low Speed Brake
"H4"	X		
"H4"	X	X	
"L4" (1)		X	X

(1) No. 4 solenoid applied.

TESTING

ELECTRICAL TESTING

Electrical tests should be performed prior to hydraulic testing to ensure problem is not within electrical circuit. See appropriate DIAGNOSIS article.

PRELIMINARY CHECKS

Before testing transmission and transfer case, perform following procedures:

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

ROAD TEST

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

Test Procedure

NOTE: Before road testing, note the following information:

- No overdrive upshift or lock-up will occur when engine coolant is below 158° F (70° C) on Cressida or 140° F (60° C) on Supra and Lexus models.
- Speed should be under 37 MPH or a 6 MPH difference between set cruise control speed and actual speed exists on Cressida, Supra or Lexus models.
- No 3rd upshift or lock-up will occur when engine coolant temperature is below 95° F (35° C) and speed is below 25 MPH on Cressida, Supra or Lexus models.
- No overdrive upshift or lock-up will occur when engine coolant temperature is below 158° F (70° C) on Pickup and 4Runner or 122° F (50° C) for engine 22RE on 4Runner models.

- No overdrive upshift or lock-up will occur if a 6 MPH difference between set cruise control speed and actual speed exists on Pickup and 4Runner models.
- All shift points vary due to transfer case gear position on Pickup and 4Runner models.
- Overdrive gear and lock-up are cancelled when transfer case is engaged in "L4" on Pickup and 4Runner models.

"D" Range Test in NORM Or PWR Pattern Ranges

1. Shift into "D" range. Hold accelerator pedal constant at full throttle position. Check 1-2, 2-3 and 3-OD upshift points. See **SHIFT SPEED SPECIFICATIONS** and **LOCK-UP SPEED SPECIFICATIONS**.
 - If no 1st-2nd gear upshift occurs, 1-2 shift valve or No. 2 solenoid is stuck.
 - If no 2nd-3rd gear upshift occurs, 2-3 shift valve or No. 1 solenoid is stuck.
 - If no 3-OD gear upshift occurs, 3-4 shaft valve is stuck.
 - If all shift points are incorrect, throttle, 1-2 shift, 2-3 shift and 3-OD shift valves are defective.
 - If all lock-up points are incorrect, lock-up relay valve or lock-up solenoid is stuck.
2. Use procedure outlined in step 1) to check shock and slip between 1-2 gear, 2-3 gear and 3-OD gear upshifts. Excessive shock can be caused by excessive line pressure, defective accumulator or defective check ball.
3. Run in OD or lock-up of "D" range. Check for abnormal noise and vibration. Noise and vibration may be unbalanced propeller shaft, differential, torque converter or other drive train components.
4. While running in "D" range, 2nd, 3rd and OD gears check correct kickdown speed for 2-1, 3-2 and OD-3 gears. Check for abnormal shock and slip at kickdown.
5. Check lock-up mechanism. Drive in OD gear of "D" range, at steady speed (lock-up ON) of 44 MPH for Cressida, 36 MPH for Lexus and 47 MPH for Pickup, 4Runner and Supra Models. Lightly depress accelerator pedal. Ensure engine RPM does not change abruptly. Large increase in engine RPM indicates there is no lock-up.

"2" Range Test

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

NOTE: **There is no OD upshift and lock-up in "2" range. To prevent overrun, transmission upshifts into 3rd gear at 68 MPH for Cressida, 68-71 MPH for Supra, 62 MPH for Pickup and 4Runner models.**

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

"L" Range Test

1. While running in "L" range, ensure there is no upshift to 2nd gear.
2. While running in "L" range, release accelerator pedal. If there is no engine braking effect, 1st and reverse

brake are defective. Note abnormal noise at acceleration and deceleration.

"R" Range Test

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

"P" Range Test

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

Transfer Test

1. On A-340H model, ensure vehicle shifts from 2WD to 4WD when transfer gear lever is shifted from "H2" to "H4". Transfer case assembly is defective if unit did NOT shift from 2WD to 4WD.
2. Shift transfer gear lever from "H4" to "L4" Gear changes should occur within specification. If transfer did not change from "H4" to "L4" gears within specification, No. 4 solenoid, ECT computer or transfer is defective.

SHIFT SPEED SPECIFICATIONS

CRESSIDA A-340E (1988) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range	
NORM	
1st-2nd	29-31
2nd-3rd	55-59
3rd-OD	88-92
3rd-OD ²	22-25
OD-3rd ²	17-19
OD-3rd	85-89
3rd-2nd	51-53
2nd-1st	25-27
PWR	
1st-2nd	32-34
2nd-3rd	62-66
3rd-OD	103-107
3rd-OD ²	26-29
OD-3rd ²	17-19
OD-3rd	99-103
3rd-2nd	53-62
2nd-1st	27-29
"2" Range	
NORM or PWR	
1st-2nd	29-31
2nd-3rd	69-73
3rd-2nd	63-67
2nd-1st	25-27
"L" Range	
2nd-1st	31-34

¹ – Wide open throttle.² – Fully closed throttle.

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Fig. 2: Shift Speed Specifications (1988 Cressida w/A-340E)

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

CRESSIDA A-340E (1989-90) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range	
NORM	
1st-2nd	33-36
2nd-3rd	63-68
3rd-OD	99-105
3rd-OD ²	23-26
OD-3rd ²	13-16
OD-3rd	95-101
3rd-2nd	57-63
2nd-1st	26-29
PWR	
1st-2nd	35-39
2nd-3rd	68-74
3rd-OD	108-114
3rd-OD ²	27-30
OD-3rd ²	13-16
OD-3rd	104-111
3rd-2nd	63-68
2nd-1st	29-32
"2" Range	
NORM or PWR	
1st-2nd	33-36
2nd-3rd	70-75
3rd-2nd	63-68
2nd-1st	26-27
"L" Range	
NORM OR PWR	
2nd-1st	31-34

¹ – Wide open throttle.² – Fully closed throttle.

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Fig. 3: Shift Speed Specifications (1989-90 Cressida w/A-340E)

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

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LEXUS (LS400) A-341E (1990) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range	
Kickdown Switch ON ²	
NORM or PWR	
1st-2nd	43-47
2nd-3rd	75-81
3rd-OD	117-124
3rd-OD ³	21-24
OD-3rd ³	15-17
OD-3rd	113-120
3rd-2nd	68-74
2nd-1st	37-40
Kickdown Switch OFF	
NORM	
1st-2nd	43-47
2nd-3rd	75-81
3rd-OD	101-108
3rd-OD ³	21-24
OD-3rd ³	15-17
OD-3rd	73-79
3rd-2nd	47-50
2nd-1st	6-9
PWR	
1st-2nd	43-47
2nd-3rd	75-81
3rd-OD	117-124
3rd-OD ³	21-24
OD-3rd ³	15-17
OD-3rd	97-103
3rd-2nd	65-69
2nd-1st	6-9
2" Range	
Kickdown Switch ON ²	
NORM or PWR	
1st-2nd	43-47
3rd-2nd	69-75
2nd-1st	37-40
Kickdown Switch OFF	
NORM or PWR	
1st-2nd	43-47
3rd-2nd	69-75
2nd-1st	6-9
"L" Range	
Kickdown Switch ON ² or OFF	
NORM or PWR	
2nd-1st	39-42

¹ – Wide open throttle.

² – Kickdown switch turns ON when accelerator is depressed further with throttle valve already fully open.

³ – Fully closed throttle.

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Fig. 4: Shift Speed Specifications (1990 Lexus LS400 w/A-341E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SUPRA (NON-TURBO) A-340E (1988-90) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range	
NORM	
1st-2nd	27-30
2nd-3rd	57-62
3rd-OD	91-96
3rd-OD ²	21-24
OD-3rd ²	16-18
OD-3rd	88-93
3rd-2nd	53-58
2nd-1st	24-27
PWR	
1st-2nd	29-32
2nd-3rd	63-66
3rd-OD	100-104
3rd-OD ²	25-28
OD-3rd ²	16-18
OD-3rd	96-101
3rd-2nd	58-62
2nd-1st	26-29
"2" Range	
NORM or PWR	
1st-2nd	27-30
2nd-3rd	66-71
3rd-2nd	58-63
2nd-1st	24-27
"L" Range	
2nd-1st	29-31

¹ – Wide open throttle.

² – Fully closed throttle.

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Fig. 5: Shift Speed Specifications (1988-90 Supra Non-Turbo w/A-340E)

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

SUPRA (TURBO) A-340E (1988-90) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range	
NORM	
1st-2nd	25-27
2nd-3rd	58-62
3rd-OD	93-99
3rd-OD ²	24-25
OD-3rd ²	17-20
OD-3rd	89-95
3rd-2nd	53-58
2nd-1st	21-24
PWR	
1st-2nd	30-32
2nd-3rd	63-69
3rd-OD	108-114
3rd-OD ²	28-31
OD-3rd ²	17-20
OD-3rd	103-110
3rd-2nd	59-64
2nd-1st	25-28
"2" Range	
NORM or PWR	
1st-2nd	25-27
2nd-3rd	68-73
3rd-2nd	63-69
2nd-1st	21-24
"L" Range	
2nd-1st	32-35

¹ – Wide open throttle.² – Fully closed throttle.

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Fig. 6: Shift Speed Specifications (1988-90 Supra Turbo w/A-340E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1989) SHIFT SPEED SPECIFICATIONS ²

Application	MPH
"D" Range	
NORM	
1st-2nd	33-35
2nd-3rd	64-70
3rd-OD	89-94
3rd-OD ³	27-30
"D" Range	
NORM	
OD-3rd ³	16-19
OD-3rd	85-90
3rd-2nd	58-62
2nd-1st	27-30
PWR	
1st-2nd	39-42
2nd-3rd	74-79
3rd-OD	91-97
3rd-OD ³	38-41
OD-3rd ³	16-19
OD-3rd	87-93
3rd-2nd	68-74
2nd-1st	27-30
"2" Range	
NORM or PWR	
1st-2nd	33-35
2nd-3rd	78-84
3rd-2nd	74-80
2nd-1st	27-30
"L" Range	
3rd-2nd	63-68
2nd-1st	35-39

¹ – CBU: tire size P205/75R14, P215/65R15 and differential gear ratio of 3.417.

² – Wide open throttle.

³ – Fully closed throttle.

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1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

Fig. 7: Shift Speed Specifications (1989 Pickup 2WD (CBU) w/A-340E - 1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1989) SHIFT SPEED SPECIFICATIONS ²

Application	MPH
"D" Range	
NORM	
1st-2nd	28-30
2nd-3rd	55-60
3rd-OD	84-88
3rd-OD ³	23-25
OD-3rd ³	14-16
OD-3rd	81-85
3rd-2nd	50-53
2nd-1st	25-27
PWR	
1st-2nd	34-36
2nd-3rd	63-68
3rd-OD	92-96
3rd-OD ³	32-35
OD-3rd ³	14-16
OD-3rd	88-92
3rd-2nd	59-63
2nd-1st	27-29
"2" Range	
NORM or PWR	
1st-2nd	28-30
2nd-3rd	67-71
3rd-2nd	63-68
2nd-1st	25-27
"L" Range	
3rd-2nd	54-48
2nd-1st	30-33

¹ – CBU: tire size 185R14-8 and differential gear ratio of 3.900.² – Wide open throttle.³ – Fully closed throttle.

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Fig. 8: Shift Speed Specifications (1989 Pickup 2WD (CBU) w/A-340E - 2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1990) SHIFT SPEED SPECIFICATIONS ²

Application	MPH
"D" Range	
NORM	
1st-2nd	38-41
2nd-3rd	67-73
3rd-OD	89-94
3rd-OD ³	27-30
OD-3rd ³	16-19
OD-3rd	85-90
3rd-2nd	62-65
2nd-1st	27-30
PWR	
1st-2nd	38-41
2nd-3rd	74-79
3rd-OD	91-97
3rd-OD ³	29-32
OD-3rd ³	16-19
OD-3rd	87-93
3rd-2nd	68-74
2nd-1st	27-30
"2" Range	
NORM or PWR	
1st-2nd	33-35
2nd-3rd	78-84
3rd-2nd	74-80
2nd-1st	29-32
"L" Range	
3rd-2nd	63-68
2nd-1st	35-39

¹ – CBU: tire size P205/75R14, P215/65R15 and differential gear ratio of 3.417.

² – Wide open throttle.

³ – Fully closed throttle.

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Fig. 9: Shift Speed Specifications (1990 Pickup 2WD (CBU) w/A-340E - 1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1990) SHIFT SPEED SPECIFICATIONS ²

Application	MPH
"D" Range	
NORM	
1st-2nd	32-35
2nd-3rd	45-62
3rd-OD	84-88
3rd-OD ³	23-25
OD-3rd ³	14-16
OD-3rd	81-85
3rd-2nd	53-56
2nd-1st	27-29
PWR	
1st-2nd	32-35
2nd-3rd	63-68
3rd-OD	92-96
3rd-OD ³	25-27
OD-3rd ³	14-16
OD-3rd	88-92
3rd-2nd	59-63
2nd-1st	27-29
"2" Range	
NORM or PWR	
1st-2nd	28-30
2nd-3rd	67-71
3rd-2nd	63-68
2nd-1st	25-27
"L" Range	
3rd-2nd	54-58
2nd-1st	30-33

¹ – CBU: tire size 185R14-8 and differential gear ratio of 3.900.

² – Wide open throttle.

³ – Fully closed throttle.

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Fig. 10: Shift Speed Specifications (1990 Pickup 2WD (CBU) w/A-340E - 2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (C & C) ¹ A-340E (1989-90) SHIFT SPEED SPECIFICATIONS ²

Application	MPH
"D" Range	
NORM	
1st-2nd	27-29
2nd-3rd	52-57
3rd-OD	80-84
3rd-OD ³	45-48
OD-3rd ³	13-16
OD-3rd	76-81
3rd-2nd	48-50
2nd-1st	24-26
PWR	
1st-2nd	32-34
2nd-3rd	60-64
3rd-OD	82-86
3rd-OD ³	45-48
OD-3rd ³	13-16
OD-3rd	78-82
3rd-2nd	56-60
2nd-1st	28-30
"2" Range	
NORM or PWR	
1st-2nd	27-29
2nd-3rd	64-68
3rd-2nd	60-65
2nd-1st	24-26
"L" Range	
3rd-2nd	52-55
2nd-1st	29-32

¹ – C & C: tire size 185R14-8, 185R14-6 (double tire) and differential gear ratio of 4.100.

² – Wide open throttle.

³ – Fully closed throttle.

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Fig. 11: Shift Speed Specifications (1989-90 Pickup 2WD (C & C) w/A-340E)

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

PICKUP & 4RUNNER 4WD A-340F (1990) SHIFT SPEED SPECIFICATIONS ¹

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

¹ – Wide open throttle.² – Fully closed throttle.

G00053588

Fig. 12: Shift Speed Specifications (1990 Pickup/4Runner 4WD w/A-340F)

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

4RUNNER 2WD A-340E (1990) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range	
NORM	
1st-2nd	31-34
2nd-3rd	61-66
3rd-OD	89-94
3rd-OD ²	25-29
OD-3rd ²	16-18
"D" Range	
NORM	
OD-3rd	85-89
3rd-2nd	55-58
2nd-1st	28-30
PWR	
1st-2nd	37-40
2nd-3rd	70-75
3rd-OD	91-96
3rd-OD ²	36-39
OD-3rd ²	16-18
OD-3rd	87-91
3rd-2nd	65-70
2nd-1st	27-31
"2" Range	
NORM or PWR	
1st-2nd	31-34
2nd-3rd	75-79
3rd-2nd	70-75
2nd-1st	28-30
"L" Range	
3rd-2nd	60-65
2nd-1st	34-37

¹ – Wide open throttle.² – Fully closed throttle.

G00053590

Fig. 13: Shift Speed Specifications (1990 4Runner 2WD w/A-340E)

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

PICKUP & 4RUNNER 4WD A-340H (1988) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	29-31
2nd-3rd	56-61
3rd-OD	85-89
3rd-OD ³	23-26
OD-3rd ³	17-21
OD-3rd	81-86
3rd-2nd	50-53
2nd-1st	25-28
"D" Range ²	
PWR	
1st-2nd	31-35
2nd-3rd	60-67
3rd-OD	96-104
3rd-OD ³	32-36
OD-3rd ³	17-21
OD-3rd	93-100
3rd-2nd	57-63
2nd-1st	26-30
"2" Range	
NORM or PWR	
1st-2nd	29-31
2nd-3rd	68-73
3rd-2nd	54-68
2nd-1st	23-26
"L" Range	
2nd-1st	31-34

¹ – Wide open throttle.² – Transfer shift position "H2" or "H4".³ – Fully closed throttle.

G00053592

Fig. 14: Shift Speed Specifications (1988 Pickup/4Runner 4WD w/A-340H)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 4WD (3VZ-E) A-340H (1989) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	29-32
2nd-3rd	56-63
3rd-OD	85-93
3rd-OD ³	24-27
OD-3rd ³	14-17
OD-3rd	81-89
3rd-2nd	51-55
2nd-1st	25-29
PWR	
1st-2nd	34-38
2nd-3rd	64-71
3rd-OD	87-95
3rd-OD ³	33-37
OD-3rd ³	14-17
"D" Range ²	
PWR	
OD-3rd	83-91
3rd-2nd	60-66
2nd-1st	27-30
"2" Range	
NORM or PWR	
1st-2nd	29-32
2nd-3rd	68-75
3rd-2nd	65-71
2nd-1st	25-29
"L" Range	
3rd-2nd	55-62
2nd-1st	31-35

¹ – Wide open throttle.

² – Transfer shift position "H2" or "H4".

³ – Fully closed throttle.

G00053594

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

Fig. 15: Shift Speed Specifications (1989 Pickup 4WD (3VZ-E) w/A-340H)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 4WD (22R-E) A-340H (1989) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	27-29
2nd-3rd	52-57
3rd-OD	80-84
3rd-OD ³	22-25
OD-3rd ³	13-16
OD-3rd	76-80
3rd-2nd	47-50
2nd-1st	24-26
PWR	
1st-2nd	30-32
2nd-3rd	58-62
3rd-OD	92-96
3rd-OD ³	31-33
OD-3rd ³	13-16
OD-3rd	89-93
"D" Range ²	
PWR	
3rd-2nd	54-58
2nd-1st	25-28
"2" Range	
NORM or PWR	
1st-2nd	27-29
2nd-3rd	64-68
3rd-2nd	60-64
2nd-1st	24-26
"L" Range	
3rd-2nd	51-55
2nd-1st	29-32

¹ – Wide open throttle.

² – Transfer shift position "H2" or "H4".

³ – Fully closed throttle.

G00053596

Fig. 16: Shift Speed Specifications (1989 Pickup 4WD (22R-E) w/A-340H)

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

PICKUP 4WD A-340H (1990) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	33-37
2nd-3rd	58-65
3rd-OD	85-93
3rd-OD ³	24-27
OD-3rd ³	14-17
OD-3rd	81-89
3rd-2nd	54-58
2nd-1st	27-30
PWR	
1st-2nd	33-37
2nd-3rd	64-71
3rd-OD	87-95
3rd-OD ³	25-29
OD-3rd ³	14-17
OD-3rd	83-91
3rd-2nd	60-66
2nd-1st	27-30
"2" Range	
NORM or PWR	
1st-2nd	29-32
2nd-3rd	68-75
3rd-2nd	65-71
2nd-1st	25-29
"L" Range	
3rd-2nd	55-62
2nd-1st	31-35

¹ – Wide open throttle.² – Transfer shift position "H2" or "H4".³ – Fully closed throttle.

G00053598

Fig. 17: Shift Speed Specifications (1990 Pickup 4WD w/A-340H)

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

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

4RUNNER 4WD (22R-E) A-340H (1989) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	29-31
2nd-3rd	56-61
3rd-OD	85-89
3rd-OD ³	23-26
OD-3rd ³	17-21
OD-3rd	81-86
3rd-2nd	50-53
2nd-1st	25-28
PWR	
1st-2nd	31-35
2nd-3rd	60-67
3rd-OD	96-104
3rd-OD ³	32-36
OD-3rd ³	17-21
OD-3rd	93-100
3rd-2nd	57-63
2nd-1st	26-30
"2" Range	
NORM or PWR	
1st-2nd	29-31
2nd-3rd	68-73
3rd-2nd	56-68
2nd-1st	23-26
"L" Range	
2nd-1st	31-34

¹ – Wide open throttle.² – Transfer shift position "H2" or "H4".³ – Fully closed throttle.

G00053600

Fig. 18: Shift Speed Specifications (1989 4Runner 4WD (22R-E) w/A-340H)

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

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

4RUNNER 4WD (3VZ-E) A-340H (1989) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	29-34
2nd-3rd	57-65
3rd-OD	88-94
3rd-OD ³	24-28
OD-3rd ³	18-22
OD-3rd	84-91
3rd-2nd	52-57
2nd-1st	25-30
PWR	
1st-2nd	35-39
2nd-3rd	66-73
3rd-OD	89-97
3rd-OD ³	34-38
OD-3rd ³	18-22
OD-3rd	86-93
3rd-2nd	61-68
2nd-1st	27-32
"2" Range	
NORM or PWR	
1st-2nd	29-34
2nd-3rd	70-77
3rd-2nd	66-73
2nd-1st	25-30
"L" Range	
3rd-2nd	56-63
2nd-1st	32-36

¹ – Wide open throttle.² – Transfer shift position "H2" or "H4".³ – Fully closed throttle.

G00053602

Fig. 19: Shift Speed Specifications (1989 4Runner 4WD (3VZ-E) w/A-340H)

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

4RUNNER 4WD (22R-E) A-340H (1990) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	27-29
2nd-3rd	52-57
3rd-OD	80-84
3rd-OD ³	22-24
OD-3rd ³	13-16
OD-3rd	76-80
3rd-2nd	47-50
2nd-1st	24-26
PWR	
1st-2nd	30-32
2nd-3rd	58-62
3rd-OD	92-96
3rd-OD ³	31-33
OD-3rd ³	13-16
OD-3rd	89-93
3rd-2nd	54-58
2nd-1st	25-28
"2" Range	
NORM or PWR	
1st-2nd	27-29
2nd-3rd	64-68
3rd-2nd	60-64
2nd-1st	24-26
"L" Range	
3rd-2nd	51-55
2nd-1st	29-32

¹ – Wide open throttle.² – Transfer shift position "H2" or "H4".³ – Fully closed throttle.

G00053604

Fig. 20: Shift Speed Specifications (1990 4Runner 4WD (22R-E) w/A-340H)

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

4RUNNER 4WD (3VZ-E) A-340H (1990) SHIFT SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
1st-2nd	29-32
2nd-3rd	56-63
3rd-OD	85-93
3rd-OD ³	24-27
OD-3rd ³	14-17
OD-3rd	81-89
3rd-2nd	51-55
2nd-1st	25-29
PWR	
1st-2nd	34-38
2nd-3rd	64-71
3rd-OD	87-95
3rd-OD ³	33-37
OD-3rd ³	14-17
OD-3rd	83-91
3rd-2nd	60-66
2nd-1st	27-30
"2" Range	
NORM or PWR	
1st-2nd	29-32
2nd-3rd	68-75
3rd-2nd	65-71
2nd-1st	25-29
"L" Range	
3rd-2nd	55-62
2nd-1st	31-35

¹ – Wide open throttle.² – Transfer shift position "H2" or "H4".³ – Fully closed throttle.

G00053606

Fig. 21: Shift Speed Specifications (1990 4Runner 4WD (3VZ-E) w/A-340H)

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

LOCK-UP SPEED SPECIFICATIONS***CRESSIDA A-340E (1988) LOCK-UP SPEED SPECIFICATIONS ¹***

Application	MPH
"D" Range ²	
NORM	
Lock-Up ON in 3rd ³	49-52
Lock-Up OFF in 3rd ³	45-48
Lock-Up ON in OD	32-34
Lock-Up OFF in OD	30-33
PWR	
Lock-Up ON in 3rd ³	49-52
Lock-Up OFF in 3rd ³	45-48
Lock-Up ON in OD	33-35
Lock-Up OFF in OD	31-34

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – With OD switch off.

G00053569

Fig. 22: Lock-Up Speed Specifications (1988 Cressida w/A-340E)

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

**CRESSIDA A-340E (1989-90) LOCK-UP SPEEDS
SPECIFICATIONS ¹**

Application	MPH
"D" Range ²	
NORM	
Lock-Up ON in 3rd ³	49-52
Lock-Up OFF in 3rd ³	45-49
Lock-Up ON in OD	39-41
Lock-Up OFF in OD	37-39
PWR	
Lock-Up ON in 3rd ³	49-52
Lock-Up OFF in 3rd ³	45-49
Lock-Up ON in OD	42-44
Lock-Up OFF in OD	39-41

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – With "OD" switch off.

G00053571

Fig. 23: Lock-Up Speed Specifications (1989-90 Cressida w/A-340E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

LEXUS (LS400) A-341E (1990) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM or PWR	
Lock-Up ON in 3rd ³	55-58
Lock-Up OFF in 3rd ³	50-54
Lock-Up ON in OD	35-38
Lock-Up OFF in OD	32-35

¹ – Throttle valve opening 5%.

² – There is no lock-up in "2" or "L" range.

³ – With OD switch off.

G00053573

Fig. 24: Lock-Up Speed Specifications (1990 Lexus LS400 w/A-341E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SUPRA (NON-TURBO) A-340E (1988-90) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
Lock-Up ON in 3rd ³	45-48
Lock-Up OFF in 3rd ³	42-45
Lock-Up ON in OD	36-39
Lock-Up OFF in OD	34-36
PWR	
Lock-Up ON in 3rd ³	45-48
Lock-Up OFF in 3rd ³	42-45
Lock-Up ON in OD	39-41
Lock-Up OFF in OD	35-38

¹ – Throttle valve opening 5%.

² – There is no lock-up in "L" or "2" range.

³ – With OD switch off.

G00053575

Fig. 25: Lock-Up Speed Specifications (1988-90 Supra Non-Turbo w/A-340E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SUPRA (TURBO) A-340E (1988-90) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
Lock-Up ON in 3rd ³	50-53
Lock-Up OFF in 3rd ³	46-49
Lock-Up ON in OD	37-40
Lock-Up OFF in OD	35-39
PWR	
Lock-Up ON in 3rd ³	50-53
Lock-Up OFF in 3rd ³	46-49
Lock-Up ON in OD	43-45
Lock-Up OFF in OD	39-42

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – With OD switch off.

G00053577

Fig. 26: Lock-Up Speed Specifications (1988-90 Supra Turbo w/A-340E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1989) LOCK-UP SPEED SPECIFICATIONS ²

Application	MPH
"D" Range ³	
NORM	
Lock-Up ON in 3rd ⁴	49-51
Lock-Up OFF in 3rd ⁴	38-40
Lock-Up ON in OD	42-45
Lock-Up OFF in OD	38-41
PWR	
Lock-Up ON in 3rd ⁴	55-58
Lock-Up OFF in 3rd ⁴	47-49
Lock-Up ON in OD	42-45
Lock-Up OFF in OD	39-42

¹ – CBU: tire size P205/75R14, P215/65R15 and differential gear ratio of 3.417.

² – Throttle valve opening 5%.

³ – There is no lock-up in "L" or "2" range.

⁴ – With OD switch off.

G00053581

Fig. 27: Lock-Up Speed Specifications (1989 Pickup 2WD (CBU) w/A-340E - 1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1989) LOCK-UP SPEED SPECIFICATIONS ²

Application	MPH
"D" Range ³	
NORM	
Lock-Up ON in 3rd ⁴	42-44
Lock-Up OFF in 3rd ⁴	33-35
Lock-Up ON in OD	36-39
Lock-Up OFF in OD	32-35
PWR	
Lock-Up ON in 3rd ⁴	48-50
Lock-Up OFF in 3rd ⁴	40-42
Lock-Up ON in OD	36-39
Lock-Up OFF in OD	34-36

¹ – CBU: tire size 185R14-8 and differential gear ratio of 3.900.

² – Throttle valve opening 5%.

³ – There is no lock-up in "L" or "2" range.

⁴ – With OD switch off.

G00053580

Fig. 28: Lock-Up Speed Specifications (1989 Pickup 2WD (CBU) w/A-340E - 2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1990) LOCK-UP SPEED SPECIFICATIONS ²

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

¹ – CBU: tire size P205/75R14, P215/65R15 and differential gear ratio of 3.417.

² – Throttle valve opening 5%.

³ – There is no lock-up in "L" or "2" range.

⁴ – With OD switch off.

G00053583

Fig. 29: Lock-Up Speed Specifications (1990 Pickup 2WD (CBU) w/A-340E - 1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (CBU) ¹ A-340E (1990) LOCK-UP SPEED SPECIFICATIONS ²

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

¹ – CBU: tire size 185R14-8 and differential gear ratio of 3.900.

² – Throttle valve opening 5%.

³ – There is no lock-up in "L" or "2" range.

⁴ – With OD switch off.

G00053585

Fig. 30: Lock-Up Speed Specifications (1990 Pickup 2WD (CBU) w/A-340E - 2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 2WD (C & C) ¹ A-340E (1989-90) LOCK-UP SPEED SPECIFICATIONS ²

Application	MPH
"D" Range ³	
NORM	
Lock-Up ON in 3rd ⁴	45-48
Lock-Up OFF in 3rd ⁴	38-40
Lock-Up ON in OD	45-48
Lock-Up OFF in OD	42-44
PWR	
Lock-Up ON in 3rd ⁴	45-48
Lock-Up OFF in 3rd ⁴	42-44
Lock-Up ON in OD	45-48
Lock-Up OFF in OD	42-44

¹ – C & C: tire size 185R14-8, 185R14-6 (double tire) and differential gear ratio of 4.100.

² – Throttle valve opening 5%.

³ – There is no lock-up in "L" or "2" range.

⁴ – With OD switch off.

G00053587

Fig. 31: Lock-Up Speed Specifications (1989-90 Pickup 2WD (C & C) w/A-340E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP & 4RUNNER 4WD A-340F (1990) LOCK-UP SPEED SPECIFICATIONS ¹

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

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – With OD switch off.

G00053589

Fig. 32: Lock-Up Speed Specifications (1990 Pickup/4Runner 4WD w/A-340F)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4RUNNER 2WD A-340E (1990) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ²	
NORM	
Lock-Up ON in 3rd ³	47-49
Lock-Up OFF in 3rd ³	43-45
Lock-Up ON in OD	46-48
Lock-Up OFF in OD	40-43
PWR	
Lock-Up ON in 3rd ³	62-63
Lock-Up OFF in 3rd ³	45-47
Lock-Up ON in OD	53-55
Lock-Up OFF in OD	49-51

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – With OD switch off.

G00053591

Fig. 33: Lock-Up Speed Specifications (1990 4Runner 2WD w/A-340E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP & 4RUNNER 4WD A-340H (1988) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2, 3, 4}	
NORM	
Lock-Up ON in OD	39-42
Lock-Up OFF in OD	37-39
PWR	
Lock-Up ON in OD	50-52
Lock-Up OFF in OD	46-48

¹ – Throttle valve opening 5%.

² – There is no lock-up in "L" or "2" range.

³ – Transfer shift position "H2" or "H4".

⁴ – Lock-up will be released regardless of lock-up pattern when throttle is completely closed or brake light switch is ON.

G00053593

Fig. 34: Lock-Up Speed Specifications (1988 Pickup/4Runner 4WD w/A-340H)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 4WD (3VZ-E) A-340H (1989) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2,3}	
NORM	
Lock-Up ON in 3rd ⁴	45-47
Lock-Up OFF in 3rd ⁴	40-42
Lock-Up ON in OD	42-46
Lock-Up OFF in OD	37-41
PWR	
Lock-Up ON in 3rd ⁴	57-62
Lock-Up OFF in 3rd ⁴	42-45
Lock-Up ON in OD	48-53
Lock-Up OFF in OD	44-48

¹ – Throttle valve opening 5%.

² – There is no lock-up in "L" or "2" range.

³ – Transfer shift position "H2" or "H4".

⁴ – With OD switch off.

G00053595

Fig. 35: Lock-Up Speed Specifications (1989 Pickup 4WD (3VZ-E) w/A-340H)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 4WD (22R-E) A-340H (1989) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2,3}	
NORM	
Lock-Up ON in 3rd ⁴	26-27
Lock-Up OFF in 3rd ⁴	24-26
Lock-Up ON in OD	37-39
Lock-Up OFF in OD	34-37
PWR	
Lock-Up ON in 3rd ⁴	35-37
Lock-Up OFF in 3rd ⁴	31-33
Lock-Up ON in OD	47-49
Lock-Up OFF in OD	44-51

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – Transfer shift position "H2" or "H4".⁴ – With OD switch off.

G00053597

Fig. 36: Lock-Up Speed Specifications (1989 Pickup 4WD (3VZ-E) w/A-340H)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PICKUP 4WD A-340H (1990) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2,3}	
NORM	
Lock-Up ON in 3rd ⁴	42-47
Lock-Up OFF in 3rd ⁴	39-43
Lock-Up ON in OD	42-46
Lock-Up OFF in OD	37-41
PWR	
Lock-Up ON in 3rd ⁴	37-41
Lock-Up OFF in 3rd ⁴	33-37
Lock-Up ON in OD	42-47
Lock-Up OFF in OD	39-43

¹ – Throttle valve opening 5%.

² – There is no lock-up in "L" or "2" range.

³ – Transfer shift position "H2" or "H4".

⁴ – With OD switch off.

G00053599

Fig. 37: Lock-Up Speed Specifications (1990 Pickup 4WD w/A-340H)

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

4RUNNER 4WD (22R-E) A-340H (1989) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2,3}	
NORM	
Lock-Up ON in OD	39-42
Lock-Up OFF in OD	37-39
PWR	
Lock-Up ON in OD	50-52
Lock-Up OFF in OD	46-48

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – Transfer shift position "H2" or "H4".

G00053601

Fig. 38: Lock-Up Speed Specifications (1989 4Runner 4WD (22R-E) w/A-340H)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4RUNNER 4WD (3VZ-E) A-340H (1989) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2,3}	
NORM	
Lock-Up ON in OD	42-47
Lock-Up OFF in OD	37-42
PWR	
Lock-Up ON in OD	49-54
Lock-Up OFF in OD	45-50

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – Transfer shift position "H2" or "H4".

G00053603

Fig. 39: Lock-Up Speed Specifications (1989 4Runner 4WD (3VZ-E) w/A-340H)

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

4RUNNER 4WD (22R-E) A-340H (1990) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2,3}	
NORM	
Lock-Up ON in 3rd ⁴	26-27
Lock-Up OFF in 3rd ⁴	24-26
Lock-Up ON in OD	37-39
Lock-Up OFF in OD	34-37
PWR	
Lock-Up ON in 3rd ⁴	35-37
Lock-Up OFF in 3rd ⁴	31-33
Lock-Up ON in OD	47-49
Lock-Up OFF in OD	43-45

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – Transfer shift position "H2" or "H4".⁴ – With OD switch off.

G00053605

Fig. 40: Lock-Up Speed Specifications (1990 4Runner 4WD (22R-E) w/A-340H)

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

4RUNNER 4WD (3VZ-E) A-340H (1990) LOCK-UP SPEED SPECIFICATIONS ¹

Application	MPH
"D" Range ^{2,3}	
NORM	
Lock-Up ON in 3rd ⁴	45-47
Lock-Up OFF in 3rd ⁴	40-42
Lock-Up ON in OD	42-46
Lock-Up OFF in OD	37-41
PWR	
Lock-Up ON in 3rd ⁴	57-62
Lock-Up OFF in 3rd ⁴	42-45
Lock-Up ON in OD	48-53
Lock-Up OFF in OD	44-48

¹ – Throttle valve opening 5%.² – There is no lock-up in "L" or "2" range.³ – Transfer shift position "H2" or "H4".⁴ – With OD switch off.

G00053607

Fig. 41: Lock-Up Speed Specifications (4Runner 4WD (3VZ-E) w/A-340H)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TIME LAG TEST**Test Procedure**

1. Engine and transmission must be at normal operating temperature. Start engine and ensure idle RPM is within specification. See **Fig. 42** . On Pickup and 4Runner models, place transfer gear shift in "H2".
2. On all models, apply service and parking brakes. Using stop watch, measure time until engagement shock is felt when lever is shifted from "N" to "D". Allow one minute interval between tests. Perform time measurements 2 more times and calculate average value. Time should be less than 1.2 seconds.
3. Use same procedure to test time lag when gear selector is moved from "N" to "R". Time lag should be less than 1.5 seconds.

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1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

IDLE SPEED SPECIFICATIONS ¹

Vehicle Application	Transmission Application	RPM
1988		
Cressida	A-340E	650
Supra		
7M-GE	A-340E	700
7M-GTE	A-340E	650
Pickup & 4Runner	A-340H	750
1989		
Cressida	A-340E	700
Supra		
7M-GE	A-340E	700
7M-GTE	A-340E	650
Pickup 2WD	A-340E	800
Pickup 4WD		
22R-E	A-340H	750
3VZ-E	A-340H	800
4Runner 4WD		
22R-E	A-340H	750
3VZ-E	A-340H	800
1990		
Cressida	A-340E	700
Lexus LS400	A-341E	650
Supra		
7M-GE	A-340E	700
7M-GTE	A-340E	650
Pickup 2WD	A-340E	800
Pickup 4WD	A-340H	800
Pickup 4WD	A-340F	800
4Runner 2WD	A-340E	800
4Runner 4WD		
22R-E	A-340H	750
3VZ-E	A-340H	800
4Runner 4WD	A-340F	750

¹ - Check idle speed in "N" range.

G00053608

Fig. 42: Idle Speed Specifications

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

Test Results

1. If "N" to "D" time lag exceeds specification, check for low main line pressure, worn front clutch or overdrive one-way clutch not operating correctly.
2. If "N" to "R" time lag exceeds specification, check for low main line pressure, worn rear clutch, or worn No. 3 brake or overdrive one-way clutch not operating correctly.

HYDRAULIC PRESSURE TEST

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

Main Line Pressure

1. Ensure transmission fluid is at normal operating temperature. Remove plug from transmission case and install Pressure Gauge (09992-00094). See **Fig. 43**.
2. Apply parking and service brakes. Start engine. Ensure idle speed is within manufacturer's specifications. Place transmission in "D" range.
3. Check main line pressure at specified engine RPM. Repeat procedure in "R" range. Compare all readings to specification. See **Fig. 44**.

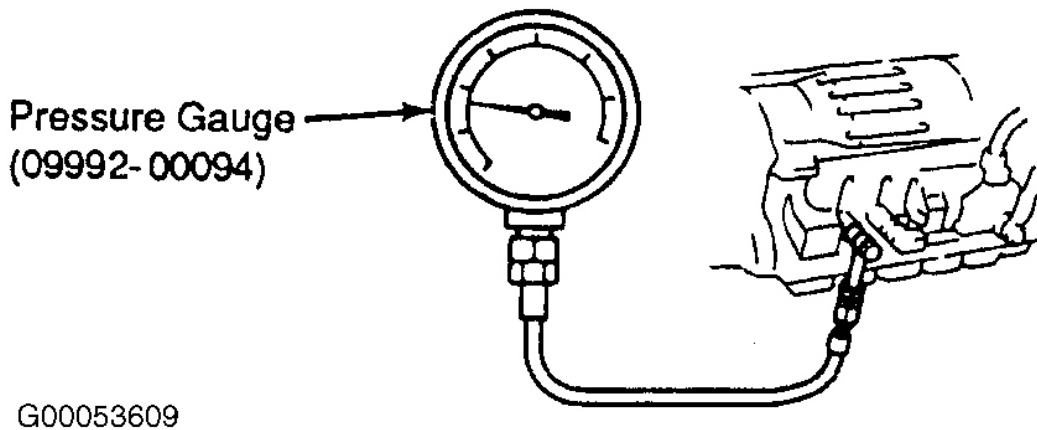


Fig. 43: Checking Hydraulic Pressure

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

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

LINE PRESSURE SPECIFICATIONS

Engine RPM	"D" Range psi (kg/cm ²)	"R" Range psi (kg/cm ²)
1988		
Cressida A-340E		
Idle Speed	53-61 (3.7-4.3)	73-87 (5.1-6.1)
Stall Speed	161-196	223-273
	(11.3-13.8)	(15.7-19.2)
Supra A-340E		
Idle Speed	50-61 (3.5-4.3)	70-87 (4.9-6.1)
Stall Speed	158-196	220-273
	(11.1-13.8)	(15.5-19.2)
Pickup & 4Runner A-340H		
Idle Speed	53-61 (3.7-4.3)	73-87 (5.1-6.1)
Stall Speed	135-171	188-238
	(9.5-12.0)	(13.2-16.7)
1989		
Cressida A-340E		
Idle Speed	53-61 (3.7-4.3)	73-87 (5.1-6.1)
Stall Speed	135-171	188-238
	(9.5-12.0)	(13.2-16.7)
Supra A-340E		
7M-GE Idle Speed	50-61 (3.5-4.3)	70-87 (4.9-6.1)
7M-GE Stall Speed	125-164	174-226
	(8.8-11.5)	(12.2-15.9)
7M-GTE Idle Speed	58-70 (4.1-4.9)	71-88 (5.0-6.2)
7M-GTE Stall Speed	175-213	215-267
	(12.3-15.0)	(15.1-18.8)
Pickup 2WD A-340E		
Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
Stall Speed	164-199	201-250
	(11.5-14.0)	(14.1-17.6)
Pickup 4WD A-340H		
22R-E Idle Speed	53-61 (3.7-4.3)	73-87 (5.1-6.1)
22R-E Stall Speed	132-168	185-235
	(9.3-11.8)	(13.0-16.5)
3VZ-E Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
3VZ-E Stall Speed	164-199	201-250
	(11.5-14.0)	(14.1-17.6)
4Runner 4WD A-340H		
22R-E Idle Speed	53-61 (3.7-4.3)	73-87 (5.1-6.1)
22R-E Stall Speed	135-171	188-238
	(9.5-12.0)	(13.2-16.7)
3VZ-E Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
3VZ-E Stall Speed	164-199	201-250
	(11.5-14.0)	(14.1-17.6)
1990		
Cressida A-340E		
Idle Speed	53-61 (3.7-4.3)	73-87 (5.1-6.1)
Stall Speed	135-171	188-238
	(9.5-12.0)	(13.2-16.7)
Lexus LS400 A-341E		
Idle Speed	55-64 (3.9-4.5)	84-95 (5.9-6.7)
Stall Speed	175-198	238-270
	(12.3-13.9)	(16.7-19.0)
Supra A-340E		
7M-GE Idle Speed	50-61 (3.5-4.3)	70-87 (4.9-6.1)
7M-GE Stall Speed	125-164	174-226
	(8.8-11.5)	(12.2-15.9)
7M-GTE Idle Speed	58-70 (4.1-4.9)	71-88 (5.0-6.2)
7M-GTE Stall Speed	175-213	215-267
	(12.3-15.0)	(15.1-18.8)
Pickup 2WD A-340E		
Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
Stall Speed	162-198	199-249
	(11.4-13.9)	(14.0-17.5)

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LINE PRESSURE SPECIFICATIONS (Cont.)

Engine RPM	"D" Range psi (kg/cm ²)	"R" Range psi (kg/cm ²)
1990 (Cont.)		
Pickup 4WD A-340H		
Idle Speed	61-70 (4.3-4.9)	75-90 (5.3-6.3)
Stall Speed	172-186	215-235
	(12.1-13.1)	(15.1-16.5)
Pickup 4WD A-340F		
Idle Speed	53-61 (3.7-4.3)	71-85 (5.0-6.0)
Stall Speed	135-171	188-238
	(9.5-12.0)	(13.2-16.7)
4Runner 2WD A-340E		
Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
Stall Speed	164-199	201-250
	(11.5-14.0)	(14.1-17.6)
4Runner 4WD A-340H		
22R-E Idle Speed	53-61 (3.7-4.3)	73-87 (5.1-6.1)
22R-E Stall Speed	132-168	185-235
	(9.3-11.8)	(13.0-16.5)
3VZ-E Idle Speed	61-70 (4.3-4.9)	74-88 (5.2-6.2)
3VZ-E Stall Speed	164-199	185-235
	(11.5-14.0)	(13.0-16.5)
4Runner 4WD A-340F		
Idle Speed	53-61 (3.7-4.3)	71-85 (5.0-6.0)
Stall Speed	135-171	188-238
	(9.5-12.0)	(13.2-16.7)

Fig. 44: Line Pressure Specifications

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

Main Line Pressure Test Results

1. If line pressure in all ranges exceeds specification, check for following: defective regulator valve, defective throttle valve or throttle cable out of adjustment.
2. If line pressure is below specification in all ranges, check for following: defective oil pump, defective

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regulator valve, defective throttle valve, throttle cable out of adjustment, defective OD direct clutch or transfer case direct clutch, front drive clutch or low speed brake defective.

3. If line pressure is below specification in "D" range only, check for following: defective forward clutch, fluid leak in "D" range circuit, or defective OD clutch.
4. If line pressure is low in "R" range only, check for following: defective direct clutch, fluid leak in "R" range or defective 1st and reverse brake.

ACCUMULATOR BACK PRESSURE TEST (A-341E)

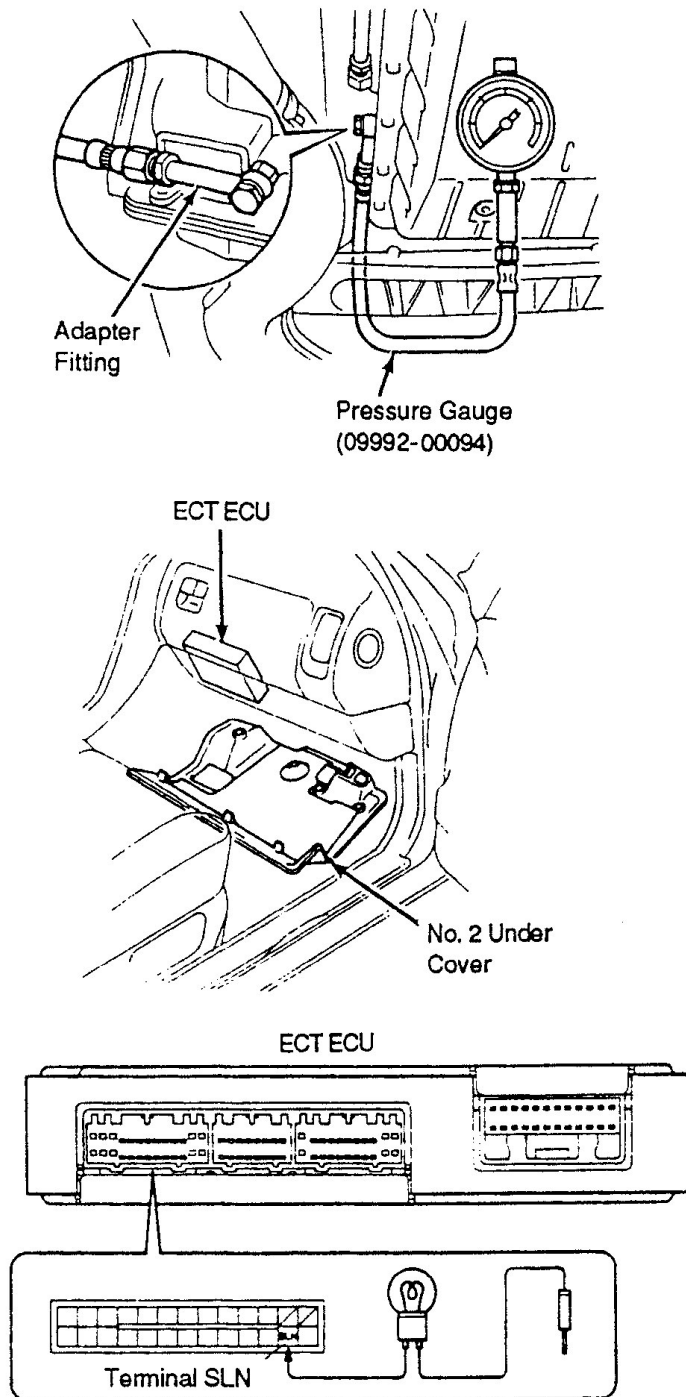
NOTE: Perform test at normal operating fluid temperature 122-176°F (50-80°C). Ensure oil pressure gauge hose does not come in contact with exhaust pipe.

Line Pressure Test

1. Move right side heat insulator aside. Remove plug from transmission case and install Pressure Gauge (09992-00094). See **Fig. 45**.
2. Remove passenger side No. 2 under cover. Connect a jumper lead to terminal SLN of ECU wire harness side connector, but DO NOT ground jumper at this time.
3. Apply parking brake. Block wheels. Start engine. Ensure idle speed is within manufacturer's specification. Place transmission in "D" range.
4. Measure accumulator back pressure. See **ACCUMULATOR BACK PRESSURE SPECIFICATIONS** table. Repeat procedure with jumper lead connected to ground. Compare all readings to specification.

ACCUMULATOR BACK PRESSURE SPECIFICATIONS

Application	Back Pressure - psi (kg/cm ²)
"D" Range (Idle) Not Grounded ⁽¹⁾	26-37 (1.8-2.6)
Grounded ⁽¹⁾	0 (0)
⁽¹⁾ Condition of engine and ECT ECU terminal SLN.	



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Fig. 45: Checking Accumulator Back Pressure (A-341E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Line Pressure Test Results

1. If accumulator back pressure is not as specified when terminal SLN is grounded, check for following: Throttle cable out of adjustment, throttle valve defective, solenoid modulator valve defective, SLN solenoid valve defective or accumulator control valve defective.
2. If accumulator back pressure does not become zero when terminal SLN is grounded, check for defective SLN solenoid valve.

ON-VEHICLE SERVICE

DRIVE AXLE SHAFTS

See AXLE SHAFTS article in DRIVE AXLES.

TRANSMISSION VALVE BODY

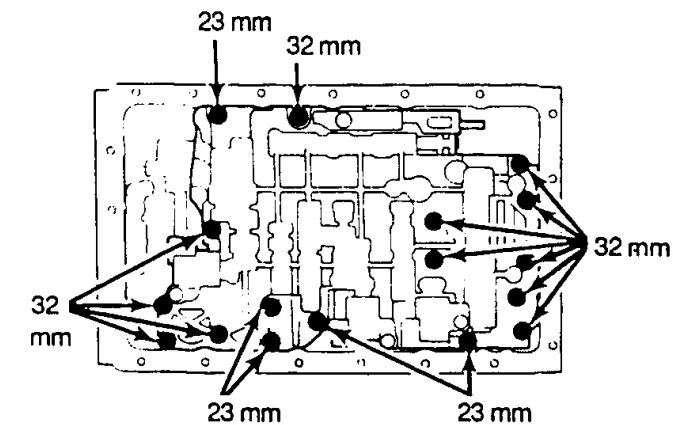
Removal

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

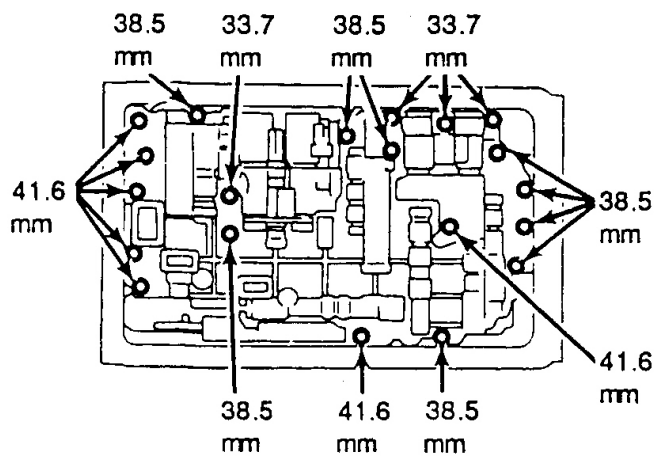
CAUTION: During valve body removal, note location of accumulator piston springs and pins, oil tubes, bolt length and location, check ball and spring (if equipped). Components should be marked for location for reassembly reference.

Installation

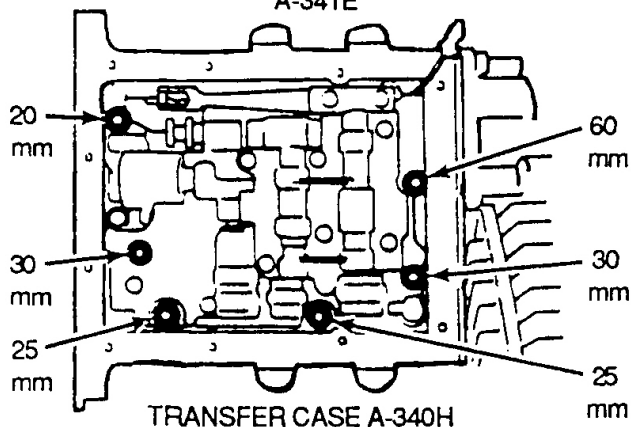
1. To install, reverse removal procedure. Ensure check ball and spring are installed above valve body (if equipped). Check that manual shift lever in transmission case aligns with manual valve of valve body.
2. Install accumulator piston springs and spacers in original location. Proper length bolts must be installed in designated areas. Torque bolts to 89 INCH lbs. (10 N.m). See **Fig. 46** . Use new "O" ring on solenoid, oil strainer and gasket if necessary. Torque oil strainer bolts to 89 INCH lbs. (10 N.m). On A-340E and A-341E, torque oil strainer case bolts to 89 INCH lbs. (10 N.m) and oil strainer to 61 INCH lbs. (6.9 N.m) on A-340F and A-340H. Ensure oil tubes do not contact oil pan. Install magnets in oil pan.
3. Apply Three Bond (1281) to oil pan sealing area prior to installation. Torque oil pan bolts to 65 INCH lbs. (7.4 N.m). Fill fluid to proper level.



A-340E, A-340F, A-340H



A-341E



TRANSFER CASE A-340H

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Fig. 46: Determining Valve Body Bolt Locations
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSFER CASE VALVE BODY (A-340H)

Removal & Installation

1. Drain fluid. Support transmission with a jack. Remove rear support crossmember from body and transfer case bracket. Remove transfer case bracket from transfer case.
2. Remove oil pan. Remove magnets from oil pan. Disconnect No. 4 solenoid connector and transfer pressure switch. Remove valve body. Remove solenoid wiring stopper plate. Remove solenoid wiring from transfer case. Note bolt location and length.
3. To install, reverse removal procedures. Ensure manual shift lever in case aligns with manual valve of valve body. Proper length bolts must be installed in designated areas. See **Fig. 46** . Torque transfer valve body to 89 INCH lbs. (10 N.m). Apply sealant Three Bond (1281) to oil pan sealing area prior to installation. Torque oil pan bolts to 65 INCH lbs. (7.4 N.m). Fill to proper fluid level.

PARKING LOCK PAWL**Removal**

1. Remove valve body on A-340E, A-340F and A-341E models or transfer case valve body on A-340H models. On all models, remove parking lock pawl bracket. Disconnect parking lock rod from manual valve lever on A-340E, A-340F and A-341E models. Remove transfer manual valve lever and shaft on A-340H models.
2. On all models, note location of shaft spring. Remove shaft spring from shaft. See **Fig. 47** .
3. Remove shaft and parking lock pawl. Remove "E" ring from shaft. To install, reverse removal procedures.
4. Remove pivot pin and parking lock pawl. To install, reverse removal procedures. Push lock rod forward prior to installing parking lock pawl bracket bolts. Finger tighten bolts and ensure parking lock pawl operates smoothly. Shift manual valve lever to "P" position to confirm planetary ring gear is correctly locked up by lock pawl. Torque bracket bolts to 65 INCH lbs. (7.3 N.m) once proper operation is checked.

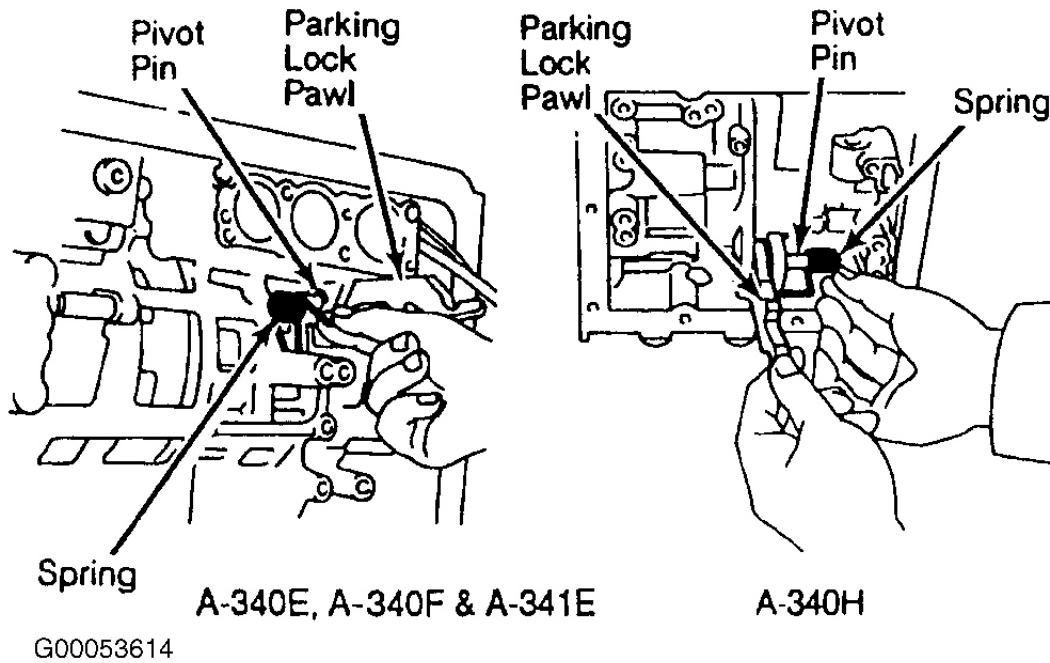


Fig. 47: Identifying Parking Lock Pawl Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

EXTENSION HOUSING & SENSOR ROTOR (A-340E & A-341E)

Removal

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

Cleaning & Inspection

Clean components with solvent. Dry with compressed air. Inspect components for damage. Measure inside diameter of extension housing bushing bore. Replace extension housing if inside diameter exceeds 1.5783" (40.088 mm).

Installation

Install sensor rotor on output shaft, ensuring key is installed in groove. Install extension housing using a new housing gasket. On A-341E model, apply sealant Three Bond (1281) to extension housing. Shorter mounting bolts go to bottom of extension housing. Install and torque bolts to 27 ft. lbs. (36 N.m) on A-340E and 25 ft. lbs. (34 N.m) on A-341E. To complete installation, reverse removal procedure.

EXTENSION HOUSING REAR OIL SEAL (A-340E & A-341E)

Removal & Installation

1. Raise and support vehicle. Drain ATF. On A-341E model, remove front exhaust pipe and heat insulator. On A-340E and A-341E models, place reference marks on drive shaft and companion flange. Remove drive shaft and center support bearing assembly.
2. Clean extension housing. Using Seal Remover (09308-10010), remove oil seal from housing. Note direction of seal installation. Using Seal Installer (09325-40010) for A-340E model and (09309-37010) for A-341E model, install seal in housing until seal bottoms. To complete installation, reverse removal procedure. Torque transmission output flange nut to specification. Torque all bolts to specification. See **TORQUE SPECIFICATIONS** .

THROTTLE CABLE (A-340F & A-340H)

Removal

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

Installation

1. Install throttle cable in transmission case. Ensure cable is fully seated. Install valve body. Connect throttle cable to cam. New cables do not have cable stopper installed. To make adjustment possible, stake stopper as described.
2. Pull inner cable lightly until a slight resistance is felt. Stake stopper .031-.059" (.80-1.50 mm) from end of outer cable. See **Fig. 48** . Connect throttle cable on throttle linkage.
3. Adjust throttle cable. See appropriate article in TRANSMISSION SERVICING. Test drive vehicle.

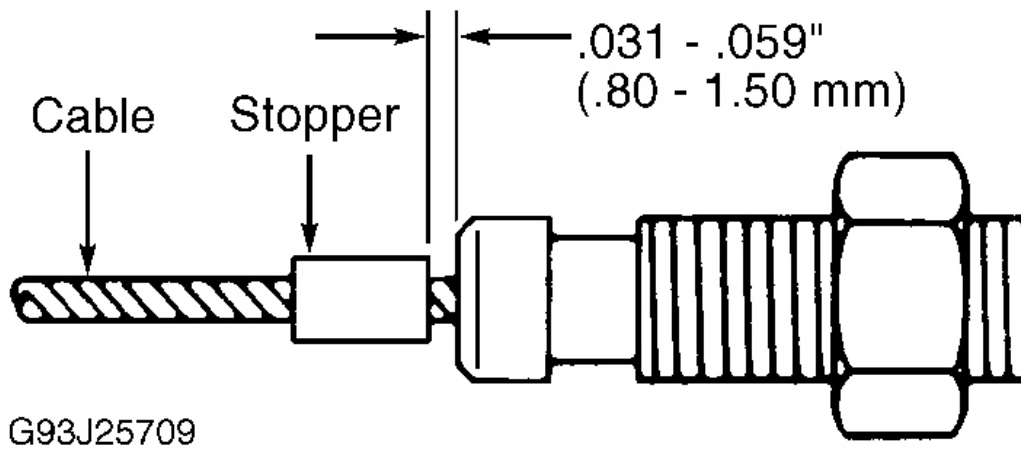


Fig. 48: Staking Throttle Cable Stopper

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

NO. 1 SPEED SENSOR (A-341E)

Removal

Remove transmission control rod rear side. Disconnect speed sensor connector. Remove No. 1 speed sensor assembly. Remove speedometer driven gear from No. 1 speed sensor.

Installation

Reverse removal procedure. Torque No. 1 speed sensor assembly to 12 ft. lbs. (16 N.m). Inspect and adjust shift lever position.

NO. 2 SPEED SENSOR (A-341E)

Removal & Installation

Disconnect speed sensor connector. Remove No. 2 speed sensor. To install, reverse removal procedure. Torque speed sensor bolt to 48 INCH lbs. (5.4 N.m).

OVERDRIVE DIRECT CLUTCH SPEED SENSOR (A-341E)

Removal & Installation

Remove front exhaust pipe and left side catalytic converter. Remove left side heat insulators. Disconnect speed sensor. To install, reverse removal procedure. Torque speed sensor bolt to 48 INCH lbs. (5.4 N.m).

REMOVAL & INSTALLATION

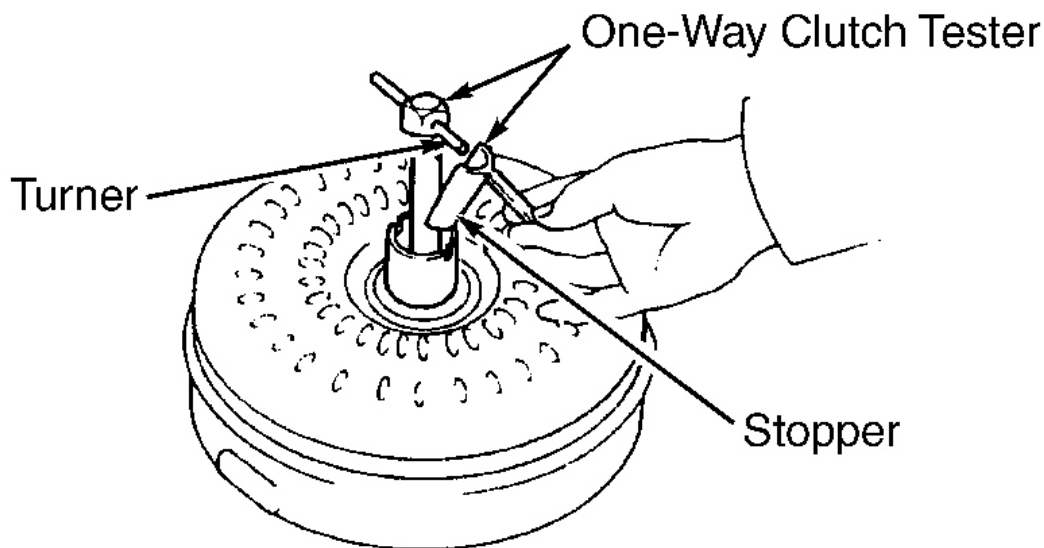
NOTE: For transmission removal procedure, see appropriate **AUTOMATIC TRANSMISSION REMOVAL** article in **TRANSMISSION SERVICING**.

TORQUE CONVERTER

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

One-Way Clutch Check

1. Install turner and stopper of One-Way Clutch Tester (09350-30020) in torque converter. See **Fig. 49** . Turner fits in inner race of one-way clutch. Stopper fits in notch of converter hub and outer race of one-way clutch.
2. Clutch should lock when turned counterclockwise, but should turn freely when rotated clockwise. Torque required to turn clutch clockwise should be less than 22 INCH lbs. (2.5 N.m). If necessary, clean converter and retest clutch. Replace converter if clutch still fails test.



G93I23810

Fig. 49: Checking Torque Converter One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Drive Plate Runout Check

Using dial indicator, measure drive plate runout. See **Fig. 50** . If runout exceeds .0079" (.200 mm), or if ring gear is damaged, replace drive plate. If installing a new drive plate, note position of spacers. Torque bolts to 47 ft. lbs. (64 N.m) on Cressida, 58 ft. lbs. (78 N.m) on Lexus, 55 ft. lbs. (74 N.m) on Supra and 61 ft. lbs. (83 N.m) on Pickup and 4Runner.

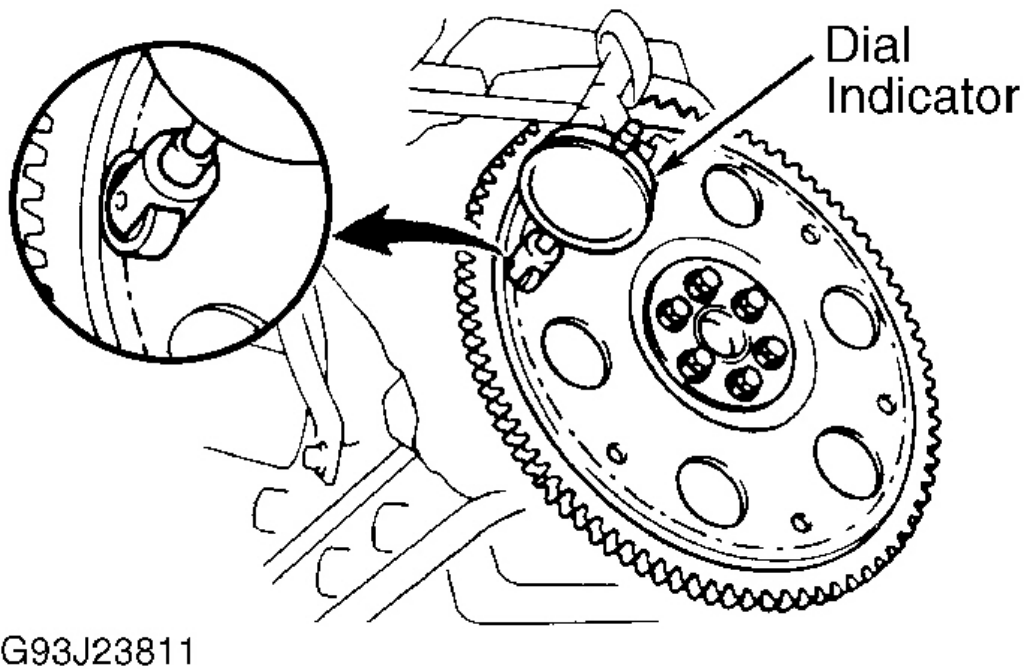


Fig. 50: Checking Drive Plate Runout

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

Converter Sleeve Runout Check

Temporarily mount torque converter to drive plate. Mount a dial indicator with needle resting on converter sleeve. See **Fig. 51** . Rotate converter. If runout exceeds .0118" (.300 mm), ensure converter is properly mounted to drive plate.

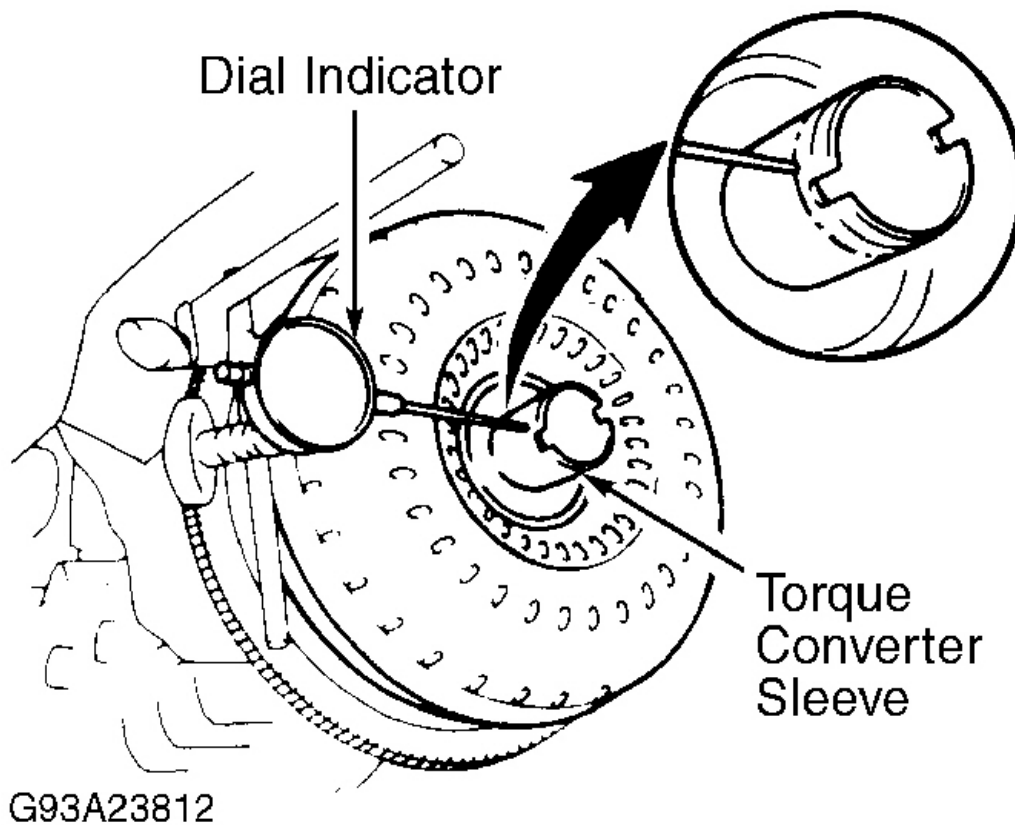


Fig. 51: Checking Converter Sleeve Runout
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSMISSION DISASSEMBLY

1. Remove wire harness and throttle cable clamp. Remove transmission shaft lever and neutral start switch. Remove side unions. On A-340E models, remove speedometer driven gear and speed sensor from extension housing. On A-341E models, remove No. 1 speed sensor and 2 speed sensors from transmission case.
2. On A-340F and A-340H models, remove transmission and transfer fluid temperature sensors.
3. On A-340H models, remove transfer oil cooler tubes and transfer side unions. Remove speedometer driven gear and speed sensor. Remove transfer control shaft lever. Remove transfer position switch.
4. On A-340F models, remove breather hose from transfer upper cover and transmission control retainer. Remove engine rear mounting. Remove dynamic damper. Remove propeller shaft upper dust cover. Carefully pull transfer straight up and remove from transmission. DO NOT damage adapter rear oil seal with transfer input gear spline. Remove transfer case. Remove snap ring. Remove sensor rotor and key.
5. On all models, remove transmission housing from transmission case. On A-341E only, shift manual valve

lever to "P" position and remove transmission output flange.

6. On A-340E and A-341E models, remove extension housing. On A-340E model, remove snap ring, speedometer drive gear and lock ball from output shaft. Use care not to lose lock ball when removing drive gear. Remove sensor rotor and key. On A-341E model, remove speedometer drive gear and sensor rotor.
7. On all models, remove transmission oil pan. To prevent contaminating valve body with foreign matter from bottom of oil pan, DO NOT turn transmission over. On A-340H models, remove transfer oil pan, transfer valve body, transfer solenoid wiring, parking lock pawl bracket, oil strainer, oil tubes, transmission solenoid wiring.
8. On A-340E, A-340F and A-341E models, remove oil strainer and solenoid wiring. On A-340E and A-340F models, remove oil tubes.
9. On all models, disconnect throttle cable from cam. Remove transmission valve body. Once valve body is removed, note location of accumulator piston springs and pins. Remove accumulator piston springs, pins and check ball body from transmission case. Apply air pressure to proper passages of transmission case to remove accumulator pistons. See **Fig. 52 -Fig. 54** . Note spring and piston locations. Remove throttle cable from transmission case.

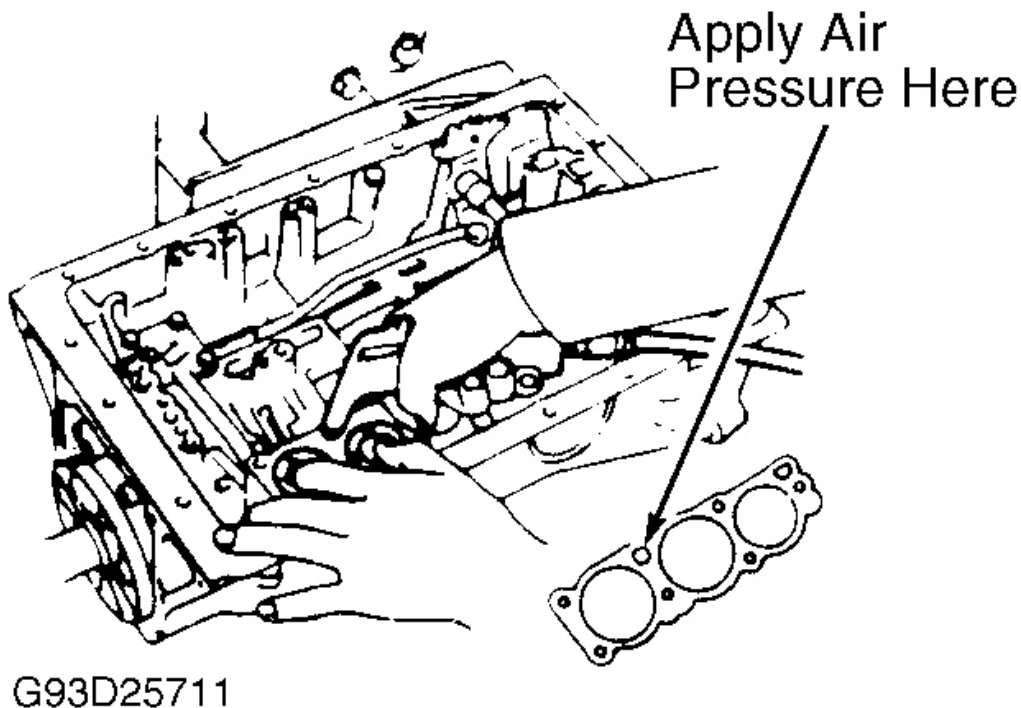


Fig. 52: Removing 2nd Brake & Direct Clutch Accumulator Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

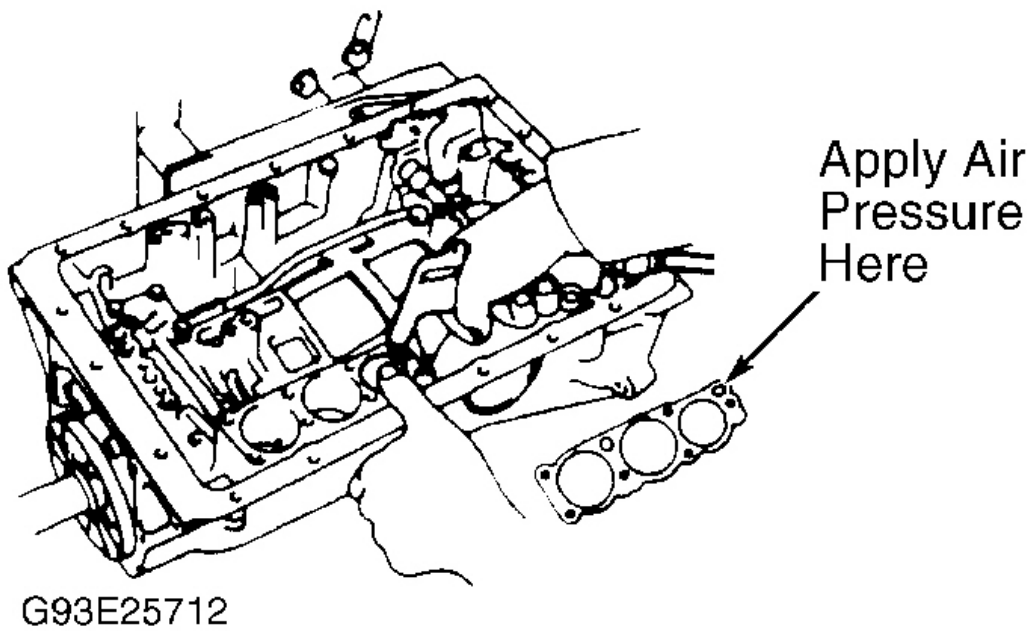


Fig. 53: Removing Overdrive Brake Accumulator Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

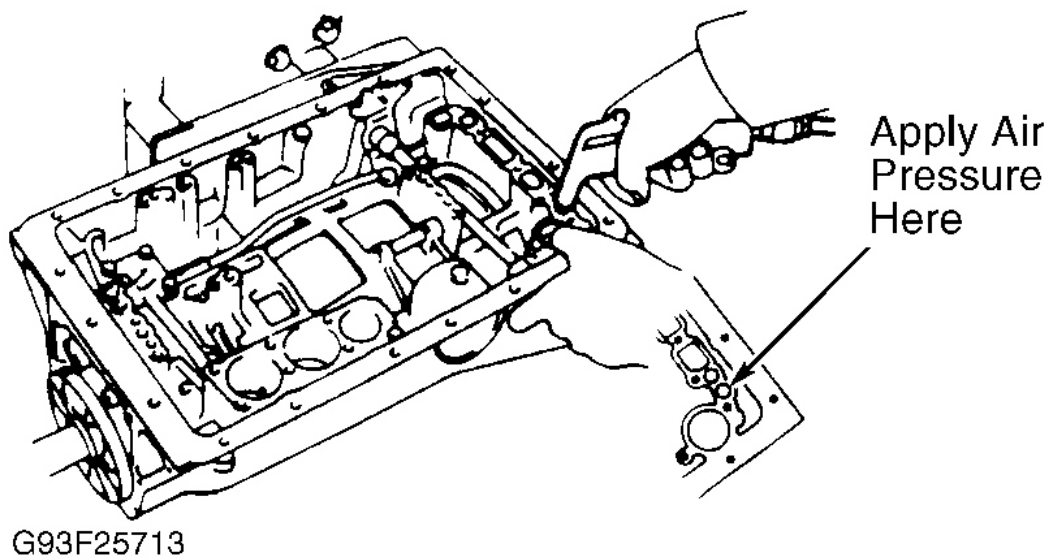


Fig. 54: Removing Overdrive Direct Clutch Accumulator Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. On A-340H models, remove following transfer components: Rear, companion flange using Flange Holder (09330-00021), transfer extension housing, speedometer drive gear, oil pump, transfer chain rear case, drive chain with drive sprocket and driven shaft, transfer chain oil receiver, transfer chain front case with front output shaft and front output shaft from transfer chain front case.
11. On A-340H model, remove transfer front drive clutch. Check pack clearance of transfer low speed brake. Using feeler gauge, measure clearance between snap ring and flange. Clearance should be .0358-.0827" (.910-2.100 mm). If not within specification, inspect discs.
12. On A-340H model, remove transfer center support and transfer low speed brake. Remove bearing and races from sun gear. Remove sun gear. Remove bearing and races from transfer direct clutch. Remove front support. Remove bearing and race from front support. Remove transfer case. Remove speed sensor and key.
13. On A-340F and A-341E models, disconnect parking rod from manual valve lever. Remove "E" ring from shaft. Carefully remove lock pawl, spring and shaft. Remove spacer and spring pin. Remove manual valve lever shaft through transmission case. Remove manual valve lever.
14. On all models, remove oil pump from transmission case using Puller (09350-30020). On A-341E model, remove overdrive planetary gear unit with overdrive direct clutch from case. Remove bearing and race.
15. On A-340E, A-340F and A-340H models, remove overdrive planetary gear unit with overdrive direct clutch and one-way clutch from case. On all models, remove overdrive planetary ring gear. Remove bearing and race.
16. On all models, check overdrive brake piston stroke. Place Measuring Terminal (09350-06120) and dial indicator on overdrive brake piston. Measure stroke by applying 57-114 psi (4-8 kg/cm²) compressed air to opening in case. See **Fig. 55** or **Fig. 56** and **Fig. 57**. If piston stroke is not within limit, inspect discs.

OD BRAKE PISTON STROKE SPECIFICATIONS

Application	Transmission Model	Piston Stroke In. (mm)
1988		
Pickup & 4Runner	A-340H	.0520-.0638 (1.320-1.620)
1988-90		
Cressida	A-340E	.0551-.0669 (1.400-1.700)
Supra		
7M-GE	A-340E	.0551-.0669 (1.400-1.700)
7M-GTE	A-340E	.0689-.0807 (1.750-2.050)
1989-90		
Pickup & 4Runner	A-340E	.0551-.0669 (1.400-1.700)
1989		
Pickup & 4Runner		
22R-E	A-340H	.0520-.0638 (1.320-1.620)
3VZ-E	A-340H	.0551-.0669 (1.400-1.700)
1990		
Lexus LS400	A-341E	.0669-.0807 (1.750-2.050)
Pickup	A-340H	.0358-.0827 (.910-2.100)
Pickup & 4Runner	A-340F	.0520-.0638 (1.320-1.620)
4Runner		
22R-E	A-340H	.0520-.0638 (1.320-1.620)
3VZ-E	A-340H	.0551-.0669 (1.400-1.700)

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Fig. 55: OD Brake Piston Stroke Specifications

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

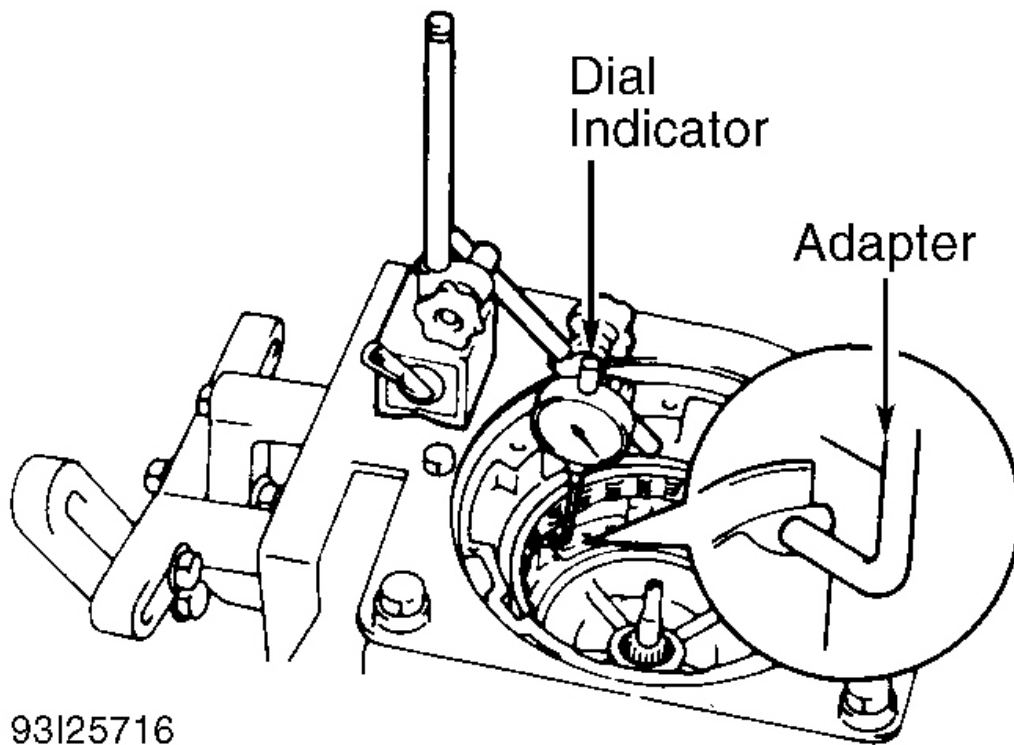


Fig. 56: Measuring Overdrive Brake Piston Stroke (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

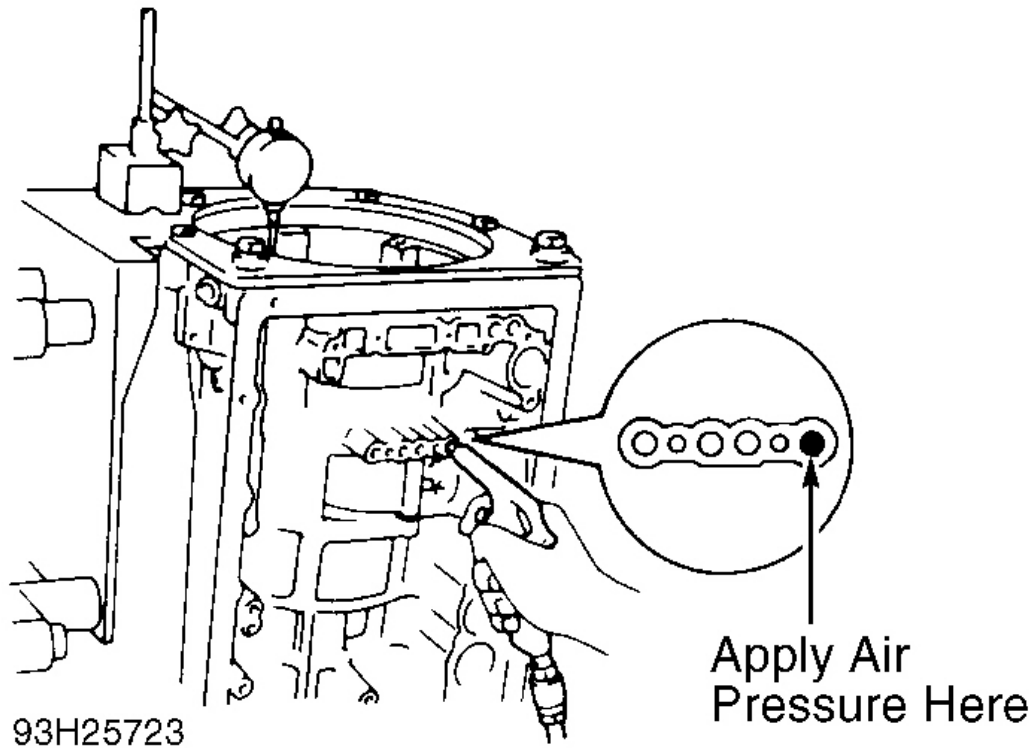


Fig. 57: Measuring Overdrive Brake Piston Stroke (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

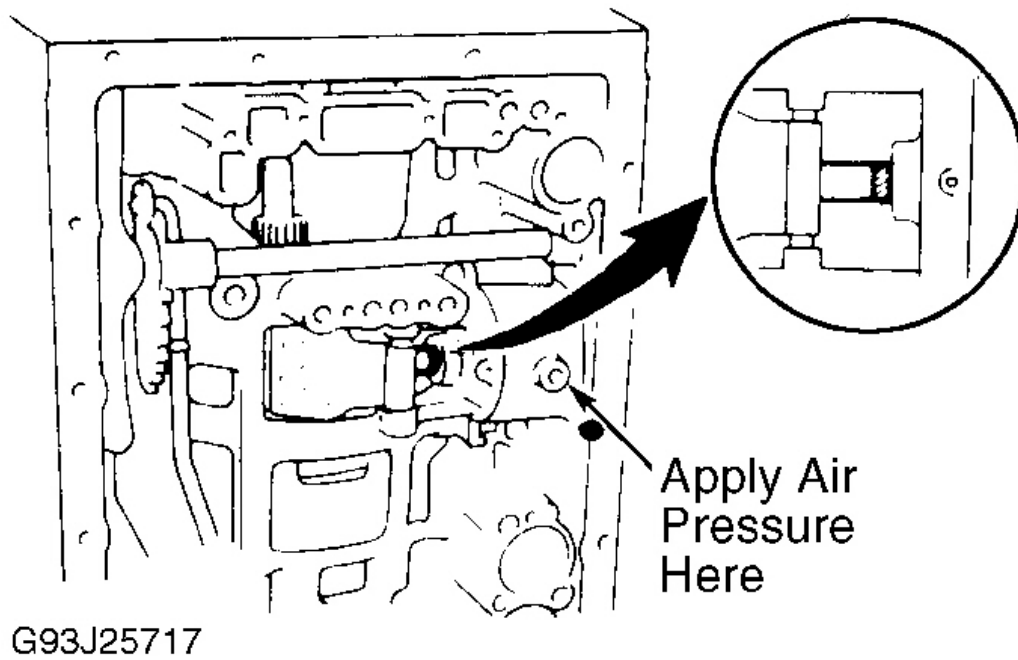


Fig. 58: Measuring 2nd Coast Brake Piston Stroke (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

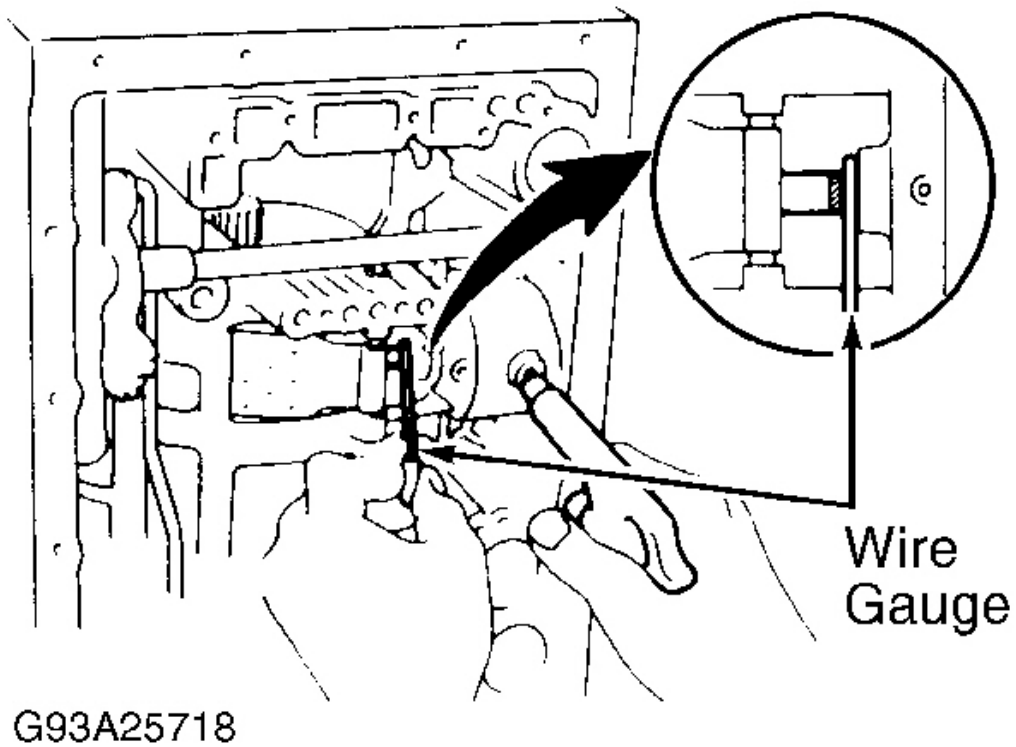
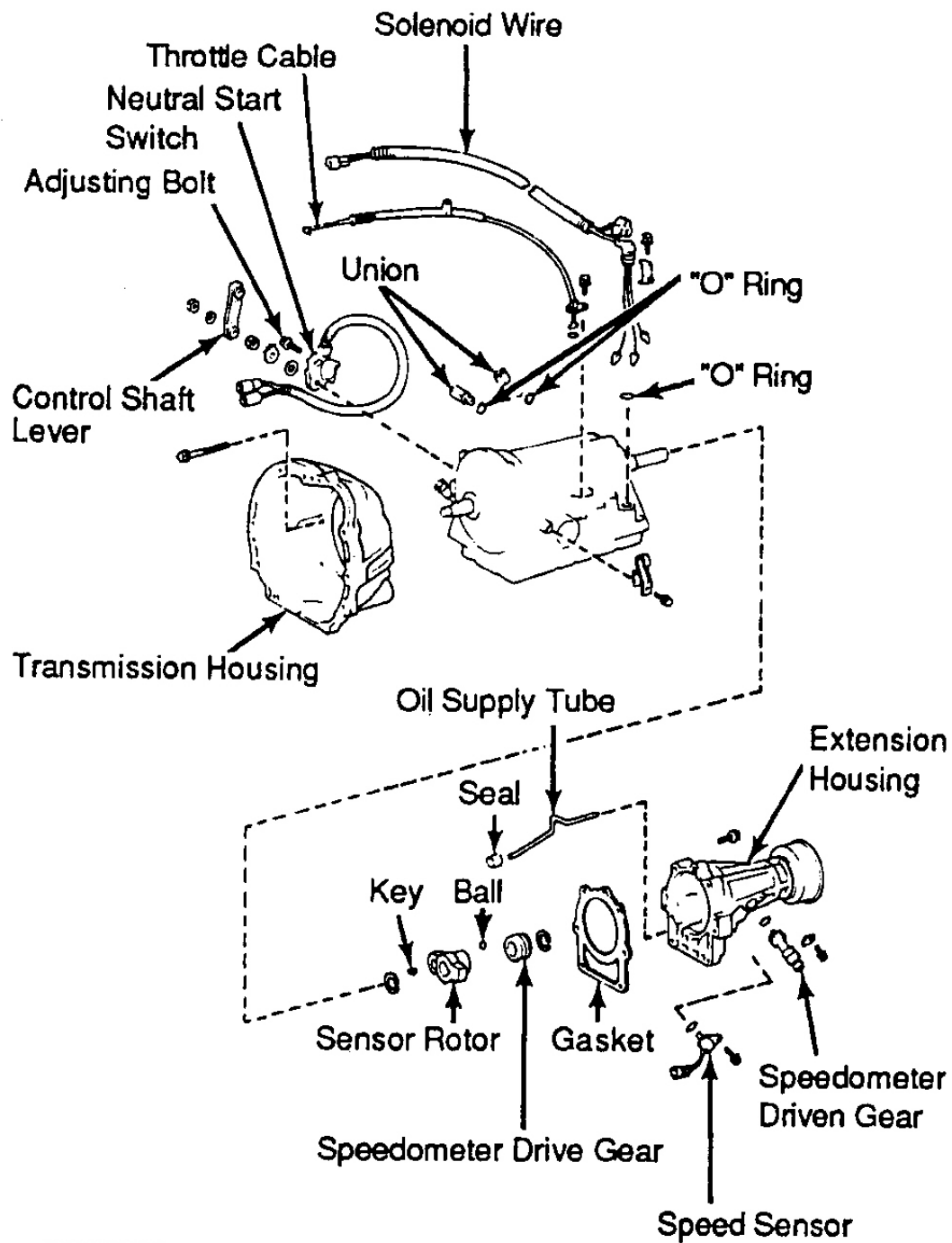


Fig. 59: Measuring 2nd Coast Brake Piston Stroke (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

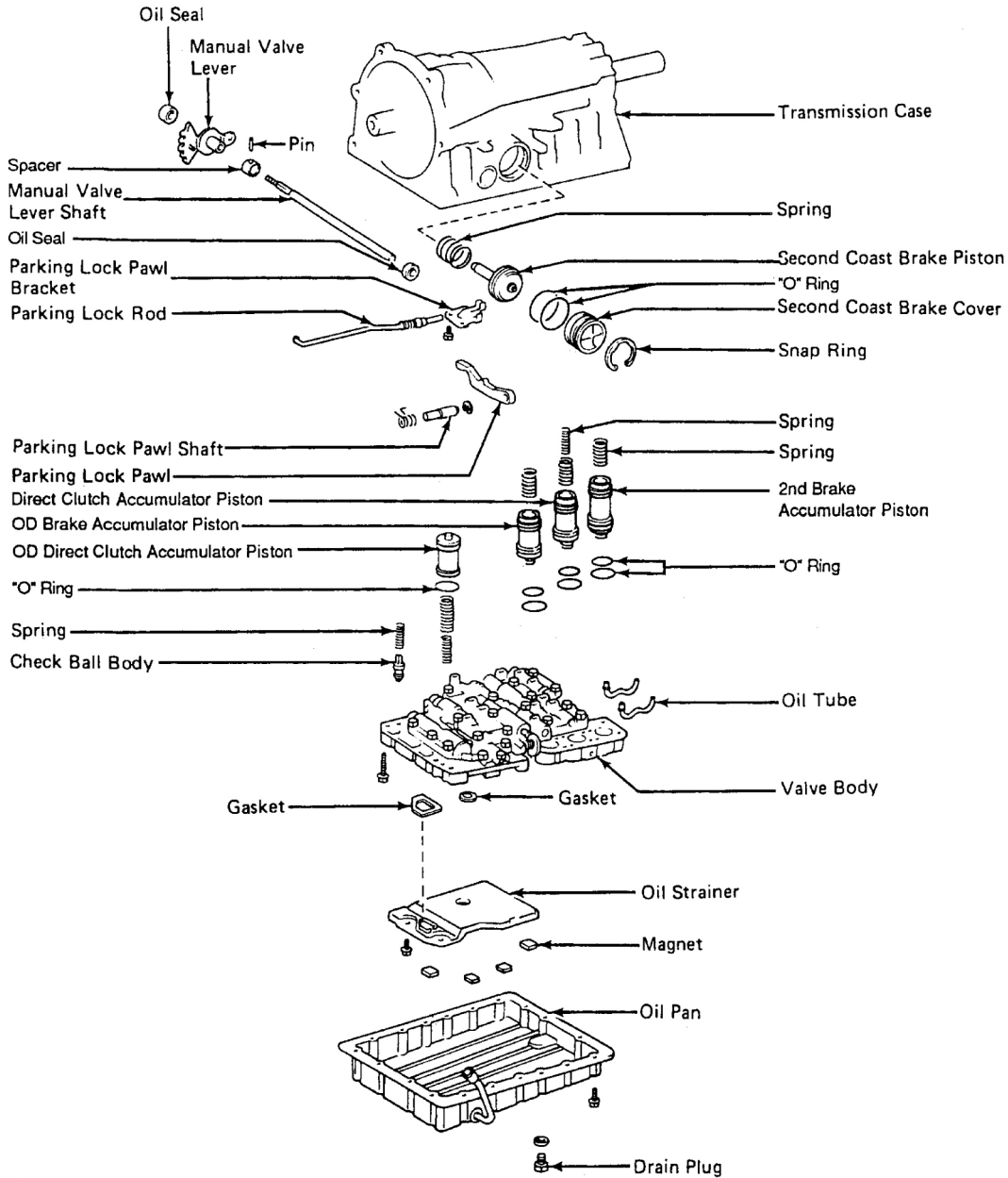


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Fig. 60: Exploded View Of A-340E External Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul



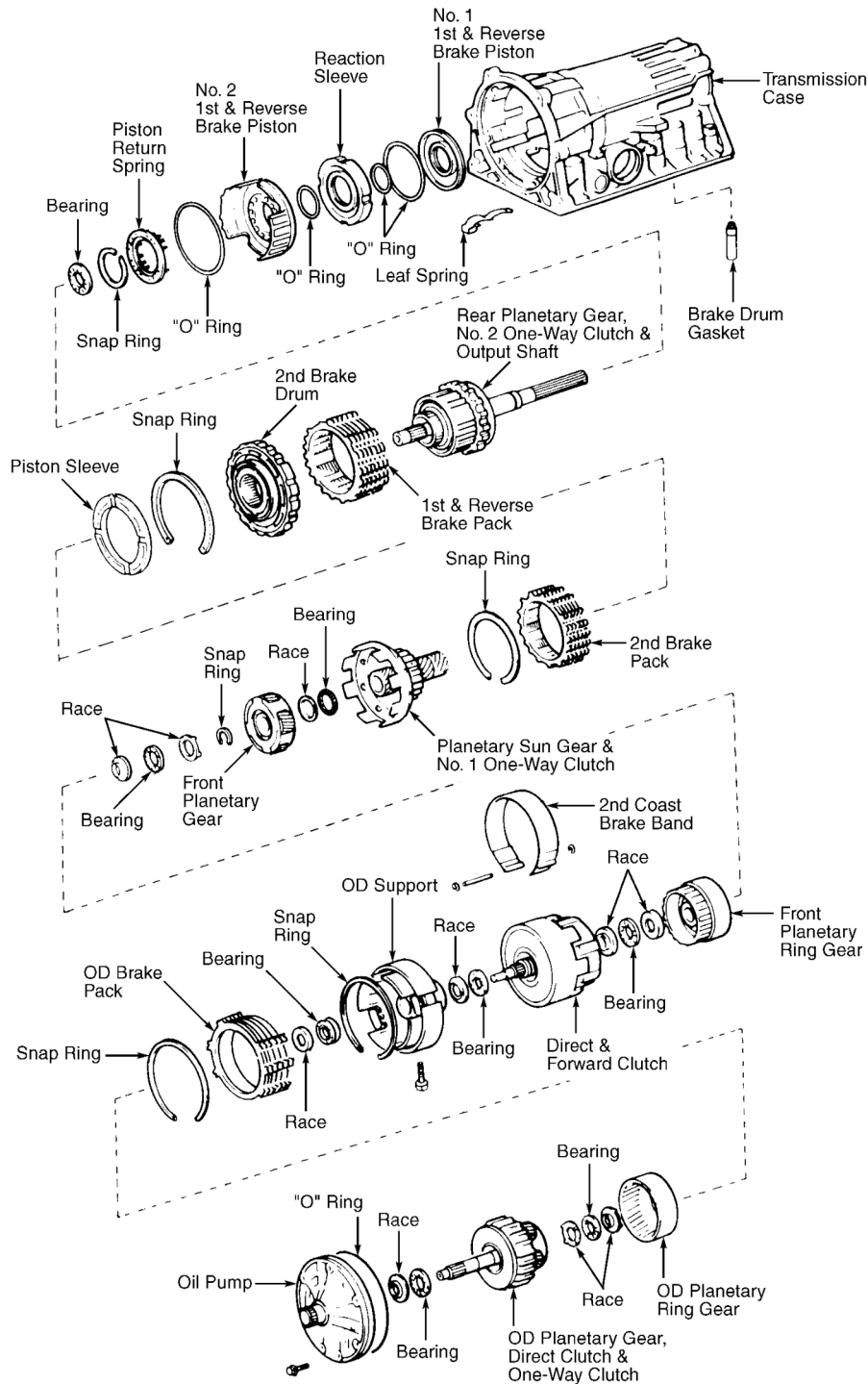
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Fig. 61: Exploded View Of A-340E Lower Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul



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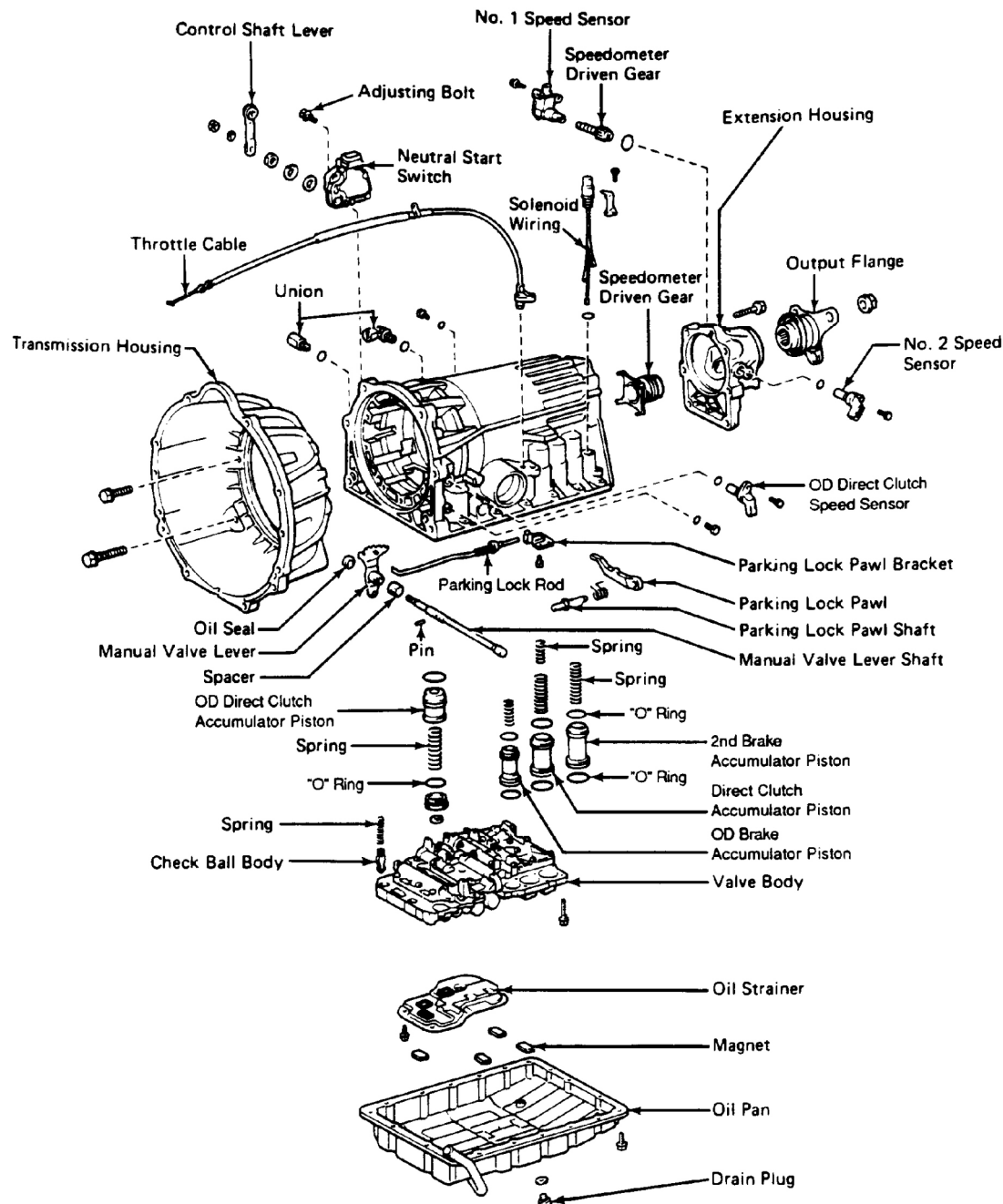


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Fig. 63: Exploded View Of A-340E, A-340F & A-340H Internal Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul



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Fig. 64: Exploded View Of A-341E External & Lower Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul



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

17. On all models, remove snap ring. Remove OD brake clutch pack flanges, plates and discs. Note number and location of all components.

CAUTION: Note number and location of flanges, plates and discs at time of removal.

18. On all models, place reference mark on 2nd coast brake piston rod. Apply 57-114 psi (4.8 kg/cm₂) of air at opening of transmission case. Using Wire Gauge Set (09240-00020), measure clearance between reference mark and case. This is piston stroke. See **Fig. 58** and **Fig. 59**.
19. Piston rod stroke should be .059-.118" (1.49-2.99 mm). If stroke is not within specification, inspect brake band.
20. Remove 2nd coast brake cover snap ring. Carefully apply air pressure to oil hole as in step 18 to remove cover, piston and spring.
21. Remove thrust bearing and race from overdrive support assembly. Remove overdrive support-to-case bolts. Using Puller (09350-07020), remove overdrive support assembly. Remove race from rear of support assembly. Remove direct clutch and forward clutch from case. Remove bearings and race from clutch assembly.
22. Remove "E" ring from 2nd coast brake band pin and remove pin. Remove 2nd coast brake band. Remove race from front planetary ring gear. Remove front planetary ring gear. Remove thrust bearing and race from inside ring gear. Remove race from front planetary gear. Support output shaft on wooden blocks. Remove snap ring located above front planetary gear. Remove front planetary gear.
23. Remove sun gear drum and one-way clutch. Remove flange snap ring. Remove flange, plates and discs. Note number and location of all components.

CAUTION: Note number and location of flanges, plates and discs at time of removal.

24. On A-340E models, remove parking lock pawl bracket. On A-340E and A-340H models, disconnect parking lock rod from manual valve lever. On A-340E models, remove spring, parking lock pawl and shaft.
25. On all models, remove 2nd brake piston sleeve. Remove rear planetary gear unit snap ring. Remove rear planetary gear, 2nd brake drum, 1st and reverse brake pack and output shaft as an assembly. Remove thrust bearing and race from case. Remove 2nd brake drum assembly.
26. Remove 1st and reverse brake cushion plate, flange, plates and discs. Note number and location of all components.

CAUTION: Note number and location of cushion plate, flanges, plates and discs at time of removal.

27. Remove leaf spring from case. Remove brake drum gasket from case.
28. Ensure 1st and reverse brake pistons move smoothly when applying compressed air into case. Disassemble 1st and reverse brake piston. Place Puller (09350-07050) on spring retainer, compress return spring. Remove snap ring. Remove piston return spring. Using compressed air, remove 1st and reverse brake piston No. 2. See **Fig. 91** and **Fig. 94**.
29. Insert Puller (09350-07080) behind reaction sleeve. Remove reaction sleeve from case. Insert Puller (09350-07090) behind No. 1 brake piston. Remove No. 1 brake piston from case.

30. On A-340E and A-340H models, remove manual valve lever spacer from shaft. Remove pin. Pull shaft out through case and remove lever. Remove 2 oil seals. See **Fig. 60 -Fig. 65** . See PICKUP & 4RUNNER TRANSFER CASES article in TRANSFER CASES for detailed information on transfer disassembly.

COMPONENT DISASSEMBLY & REASSEMBLY

OIL PUMP

Disassembly

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

Cleaning & Inspection

1. Clean all components in solvent. Dry with compressed air. Inspect contacting surfaces between body and driven gear for wear. Check gears for wear and body crescent for damage. Check pump gear contacting surface on stator shaft for damage and wear.
2. Measure inside diameter of oil pump housing and stator shaft bushings. Measure driven gear-to-housing clearance and gear tip clearance. Using feeler gauge and straightedge, measure gear side clearance between pump body face and top of gears. See **Fig. 66** .
3. All measurements must be within specifications. See **Fig. 67** . If bushing diameter exceeds specification, oil pump housing or stator shaft must be replaced. Replace necessary components to obtain correct clearances.

Reassembly

1. Using Seal Installer (09350-30020), install seal until seal is even with outer edge of pump housing. Place stator shaft in torque converter while working on pump. Coat all components with ATF. See **Fig. 68** .
2. Align reference marks on gears during installation. Reverse disassembly procedure. Tighten bolts to specification. DO NOT over expand seal rings during installation. Ensure seal rings move smoothly after installation. Ensure drive gear rotates smoothly when installed in torque converter.

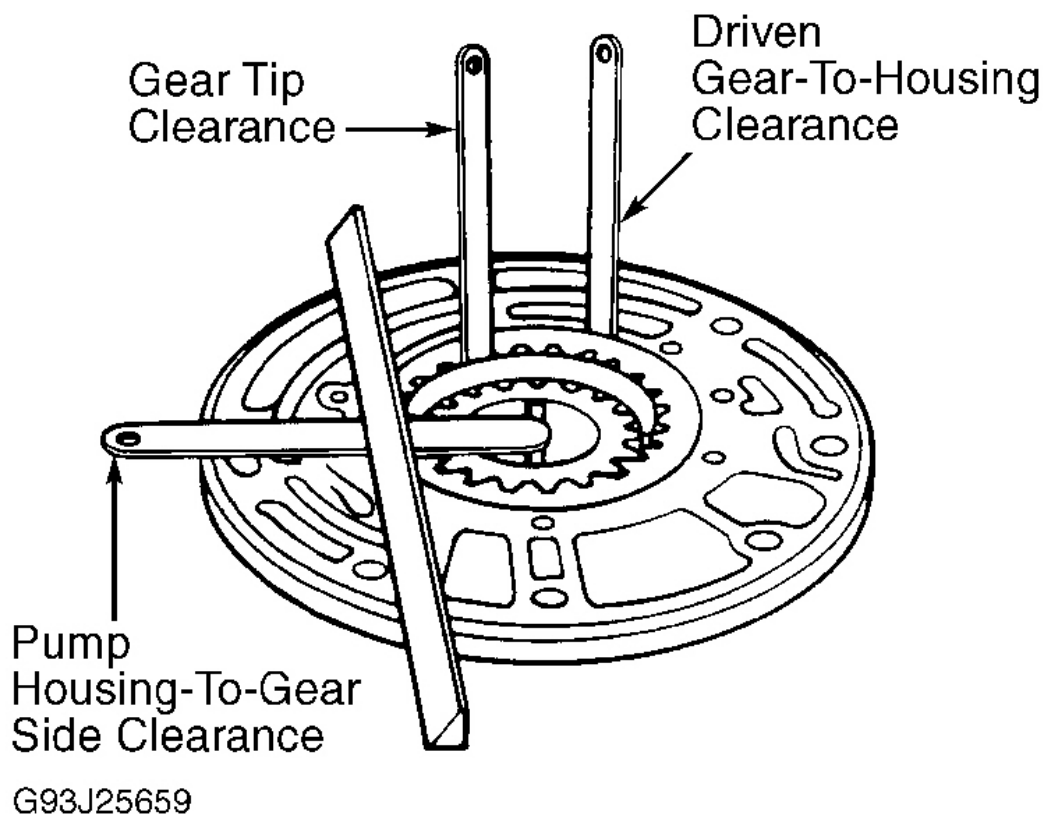


Fig. 66: Measuring Oil Pump Gear Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OIL PUMP CLEARANCE SPECIFICATIONS

Application	Standard In. (mm)	Maximum In. (mm)
Gear-To-Housing	.0028-.0059 (.071-.145)	.012 (.30)
Gear Tip Clearance	.0043-.0055 (.109-.140)	.012 (.30)
Gear Side Clearance	.0008-.0020 (.020-.050)	.004 (.10)
Housing Bushing		1.5035 (38.188)
Stator Shaft Bushing		
Front		.8496 (21.579)
Rear		1.0661 (27.078)

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Fig. 67: Oil Pump Clearance Specifications

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

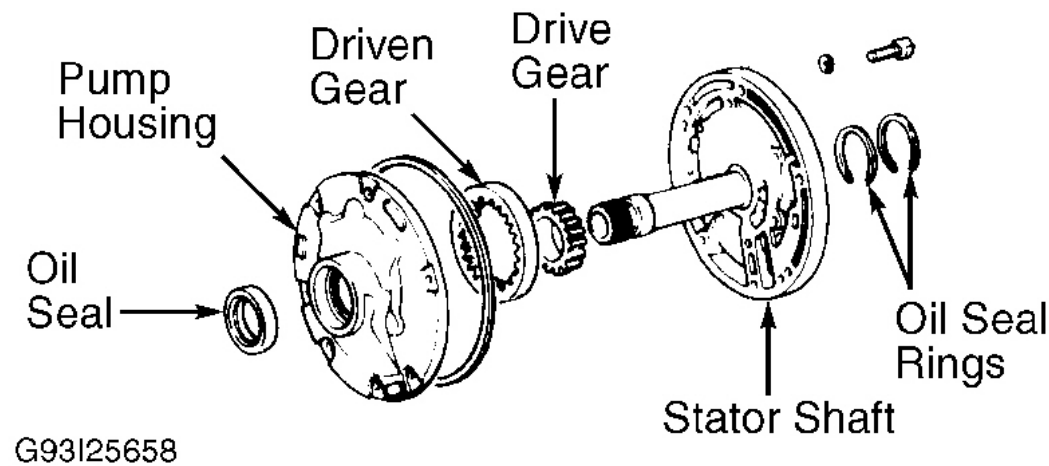


Fig. 68: Exploded View Of Oil Pump Assembly

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

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

Disassembly

1. One-way clutch operation should be checked prior to disassembly. Hold clutch drum and rotate input shaft clockwise. Input shaft should rotate freely clockwise and lock counterclockwise. See **Fig. 69**.
2. Remove clutch drum from planetary gear. Remove thrust bearing from clutch drum. Remove snap ring, flange, discs and plates from clutch drum. Note number and location of components.
3. Using Spring Compressor (09350-07040) and press, compress piston return spring and remove snap ring. Carefully release press and remove piston return spring.
4. To remove direct clutch piston, place oil pump on torque converter. Place clutch drum on pump. Hold clutch piston and carefully apply air pressure to oil pump port. See **Fig. 70**. Remove direct clutch piston.
5. Remove snap ring and ring gear flange from planetary ring gear. Remove bearing race from rear of planetary gear.
6. Remove snap ring, retaining plate, one-way clutch assembly and thrust washer from planetary gear. Remove one-way clutch from outer race. Remove thrust washer.

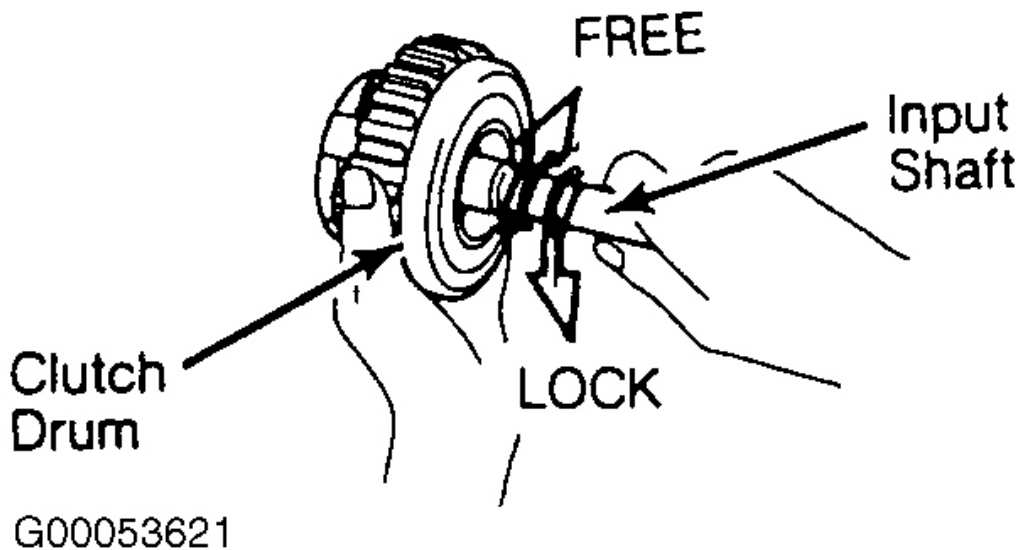
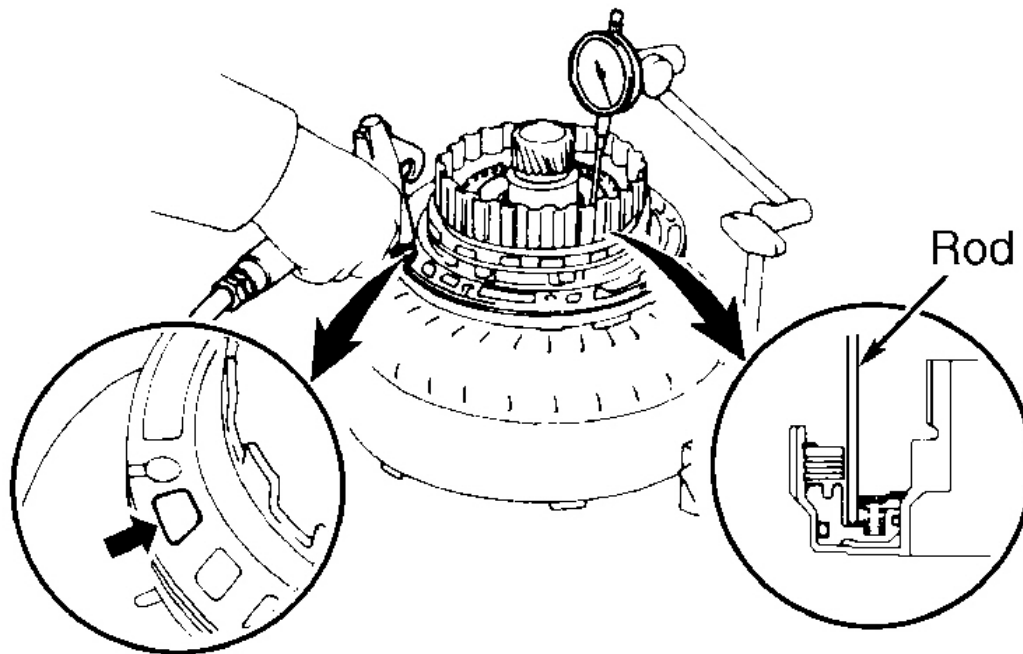


Fig. 69: Checking Overdrive One-Way Clutch Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 70: Removing Clutch Piston & Measuring 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. Ensure check ball does not allow air to bleed through piston.
2. Using dial indicator, measure inside diameter of clutch drum bushing and planetary gear bushing. Replace components if damaged or not within specification. See **OD DIRECT CLUTCH DRUM & PLANETARY GEAR SPECIFICATIONS** table.
3. Measure planetary pinion gear thrust clearance. Standard clearance should be .0079-.0236" (.200-.600 mm). Maximum clearance is .0394" (1.00 mm). If clearance is greater than maximum, replace planetary gear assembly.
4. On A-341E model, check OD direct clutch return spring free length. Include spring seat in measurement. Standard free length is .622" (15.80 mm).

OD DIRECT CLUTCH DRUM & PLANETARY GEAR SPECIFICATIONS

Application	In. (mm)
Clutch Drum Bushing	1.0673 (27.109)
Planetary Gear Bushing	.4437 (11.269)

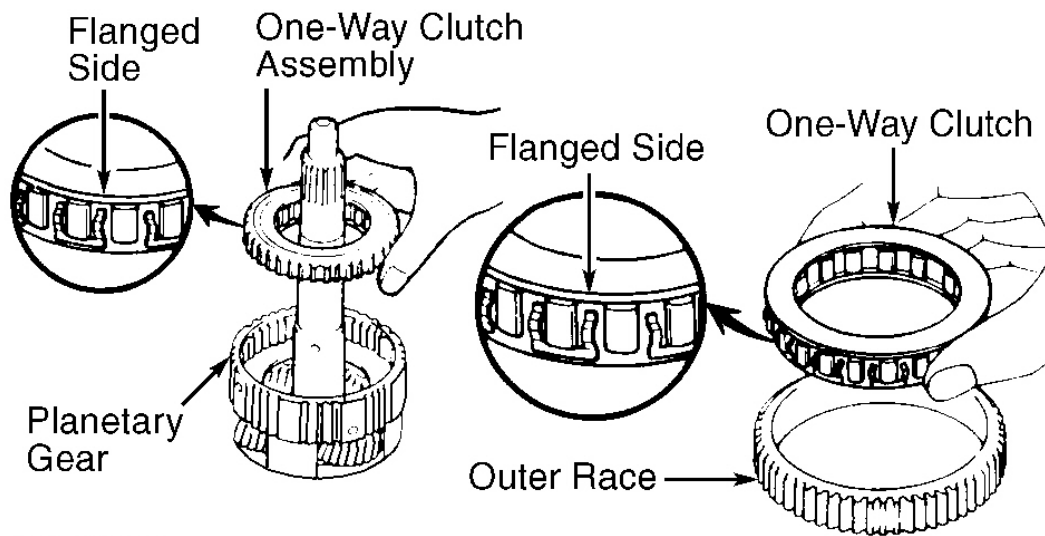
CAUTION: Clutch disc should be soaked in ATF for at least 30 minutes prior to installation. Coat all parts with ATF prior to installation. Coat thrust bearings and races with petroleum jelly prior to installation.

Reassembly

1. Position planetary gear with input shaft pointing upward. Install thrust washer in planetary gear with grooved side facing upward. Install one-way clutch into outer race with flanged side facing upward. See **Fig. 71** and **Fig. 72**.
2. Install one-way clutch assembly on planetary gear. Install retaining plate and snap ring. Install race on back of planetary gear. Race tabs must be engaged in planetary gear. See **Fig. 73**.
3. Install ring gear flange and snap ring. Install thrust bearing and race in planetary ring gear. Race tabs must be engaged in ring gear. Coat "O" rings with ATF and install on clutch piston. Carefully install clutch piston in clutch drum.
4. Install piston return spring. Using spring compressor and press, compress return spring and install snap ring. Ensure ring is fully seated.

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

5. With clutch drum open area facing upward, install plates and discs, starting with a plate and alternating with disc. Install flange with flat end facing toward disc. Install snap ring.
6. Place oil pump on torque converter. Place clutch drum on oil pump. Measure piston stroke while applying 57-114 psi (4-8 kg/cm₂) to oil pump port. See **Fig. 70**. Note piston stroke.
7. Piston stroke must be within specification. See **OVERDRIVE CLUTCH PISTON STROKE SPECIFICATIONS** table. If piston stroke is less than specification, check for mis-assembled components. Repeat procedure.
8. If piston stroke exceeds specification, install different thickness flange. Flanges are available with thickness of .122-.142" (3.09-3.60 mm) in .004" (.10 mm) increments.
9. Remove clutch assembly from oil pump. Install thrust bearing and race in clutch drum with race toward clutch drum. Align tabs of clutch discs. See **Fig. 73**.
10. Install direct clutch drum on planetary gear. Hold clutch drum and rotate input shaft clockwise. Input shaft should rotate freely clockwise and lock counterclockwise. See **Fig. 69**.



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Fig. 71: Installing Overdrive One-Way Clutch (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

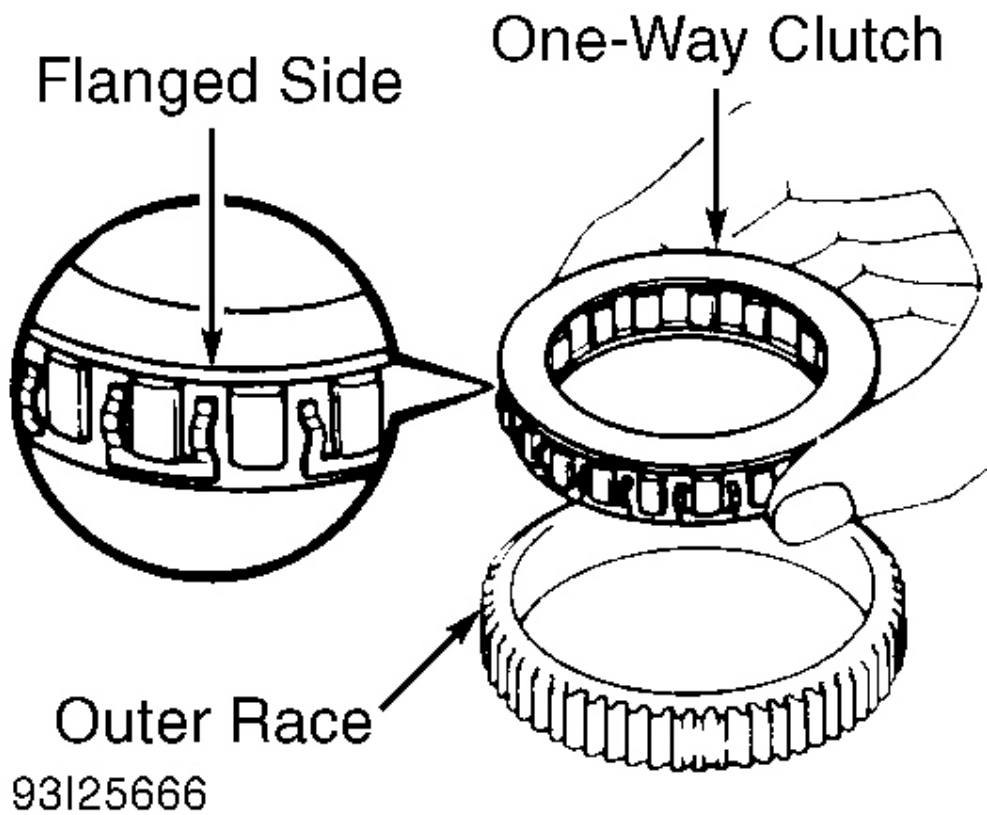
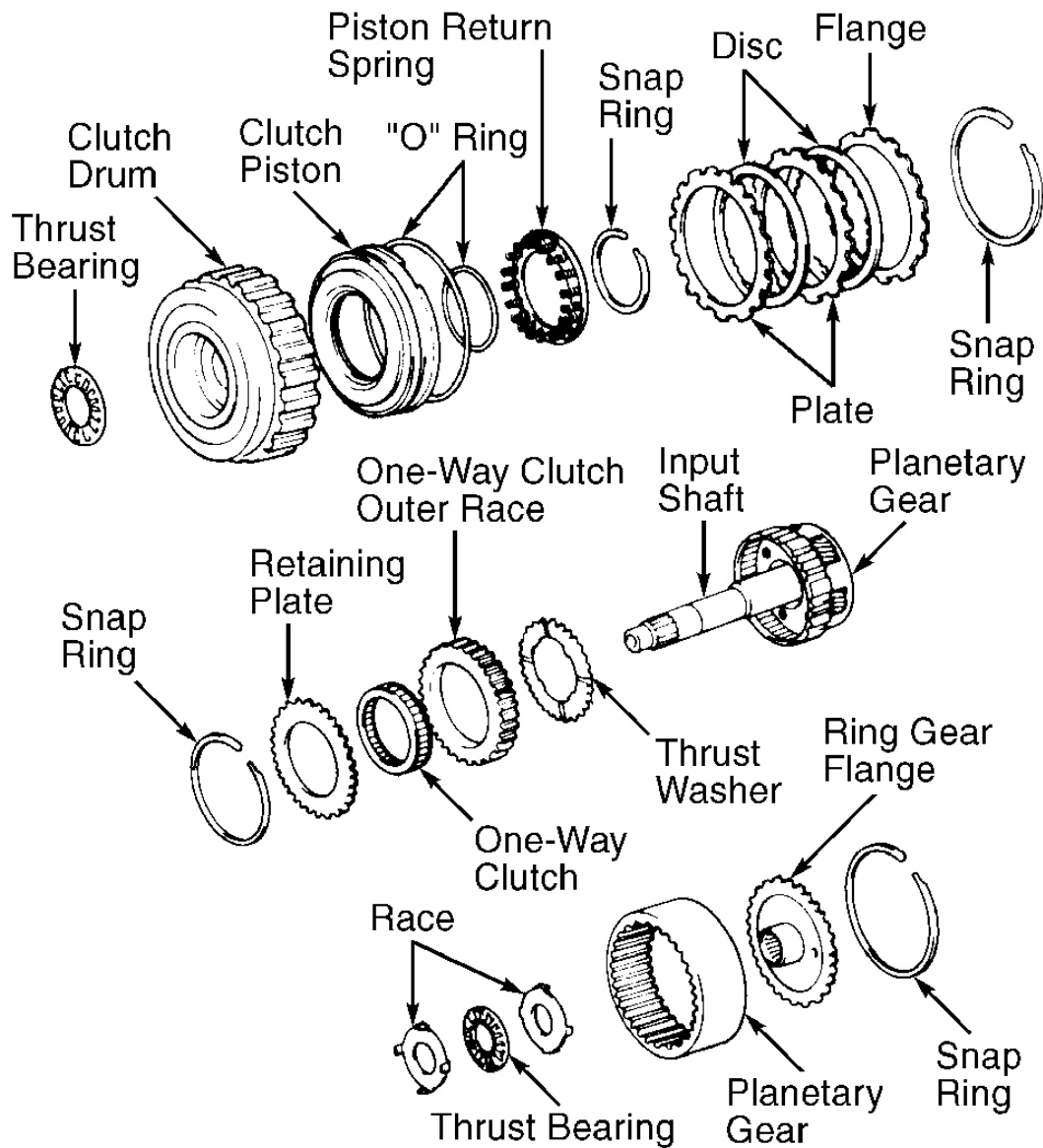


Fig. 72: Installing Overdrive One-Way Clutch (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 73: Exploded View Of Overdrive Clutch Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OVERDRIVE CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
A-340E	.0728-.0846 (1.849-2.148)
A-340F	.0697-.0815 (1.770-2.070)
A-340H	
22R-E Engine	.0697-.0815 (1.770-2.070)

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

3VZ-E Engine	.0728-.0846 (1.849-2.148)
A-341E	.0590-.0670 (1.500-1.700)

FORWARD CLUTCH

Disassembly

1. Separate front clutch assembly from direct clutch. Place overdrive support on wooden blocks and install front clutch in overdrive support.
2. Remove snap ring from clutch drum. Remove flange, discs, plates and cushion plate. Note number and location of components.
3. Using press and Spring Compressor (09350-07040), compress piston return spring and remove snap ring. Place clutch drum on overdrive support and carefully apply air pressure to piston supply port and remove clutch piston. Remove "O" rings from clutch piston and clutch hub. Remove oil seal rings.

Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas.
2. Ensure check ball is free in clutch piston. Apply air pressure to check ball area. Ensure check ball does not allow air to bleed through piston.
3. Measure inside diameter of clutch drum bushing. Replace clutch drum if bushing diameter exceeds .9480" (24.079 mm).

CAUTION: Clutch disc should be soaked in ATF for at least 30 minutes prior to installation.

Reassembly

1. Coat "O" rings with ATF. Reverse disassembly procedure. Ensure piston return spring retaining snap ring is fully seated and ends do not align with claw area on spring retainer of piston return spring.
2. Install cushion plate with rounded end toward inside of clutch drum. Install plates and discs, starting with a plate and alternating with disc. Install appropriate amount of plates and discs. See FORWARD CLUTCH DISC & PLATE APPLICATION table.
3. Install flange with rounded edge toward disc. Install snap ring. Ensure end gap of snap ring is not aligned with forward clutch drum cut out portion. Place clutch drum on overdrive support. Measure piston stroke while applying 57-114 psi (4-8 kg/cm²) to piston supply port. See **Fig. 74**. Note piston stroke.
4. Piston stroke must be within specification. See **FORWARD CLUTCH PISTON STROKE SPECIFICATIONS** table. If piston stroke is not within specification, replace discs and recheck piston stroke.
5. Check pack clearance of forward clutch. Measure forward clutch pack clearance while applying compressed air to piston supply port. See **Fig. 75**. Note pack clearance. If pack clearance is not within specification, install different thickness flange. Flanges for Lexus LS400 are available with thicknesses of .122-.142" (3.09-3.60 mm) in .004" (.10 mm) increments. Flanges for Pickup are available with

thicknesses of .118-.173" (3.00-4.40 mm) in .008" (.20 mm) increments.

6. Install thrust bearing and race. Align tabs of clutch discs. Install forward clutch assembly on direct clutch assembly. Check that distance from end of direct clutch to end of forward clutch is 2.803" (7.12 mm). See **Fig. 76**.

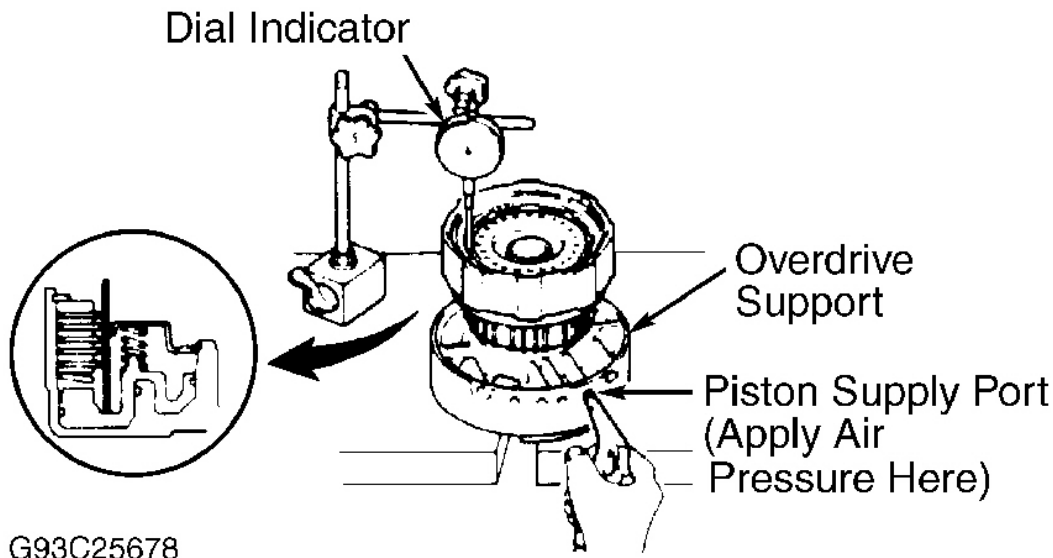
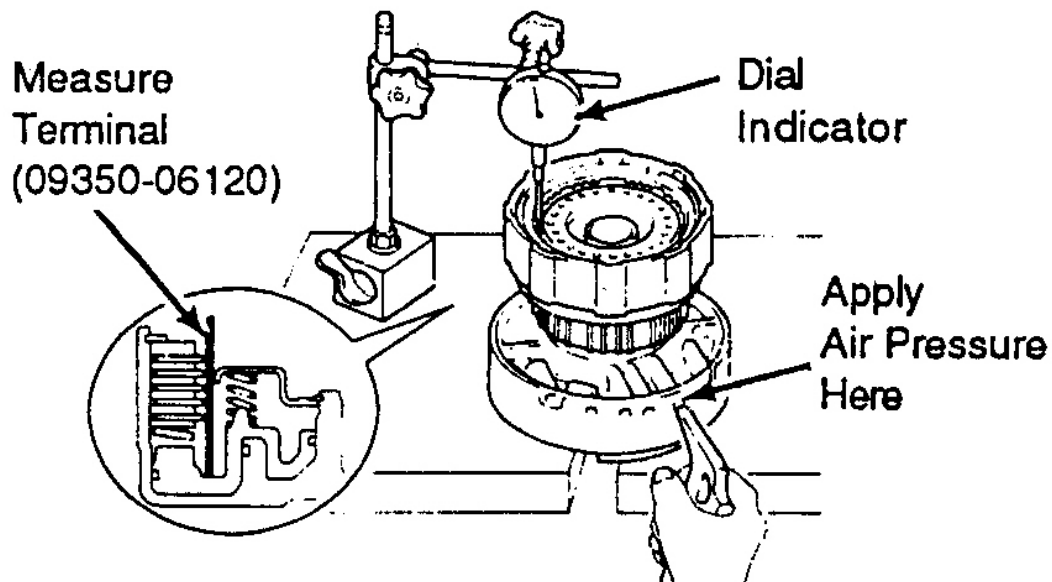
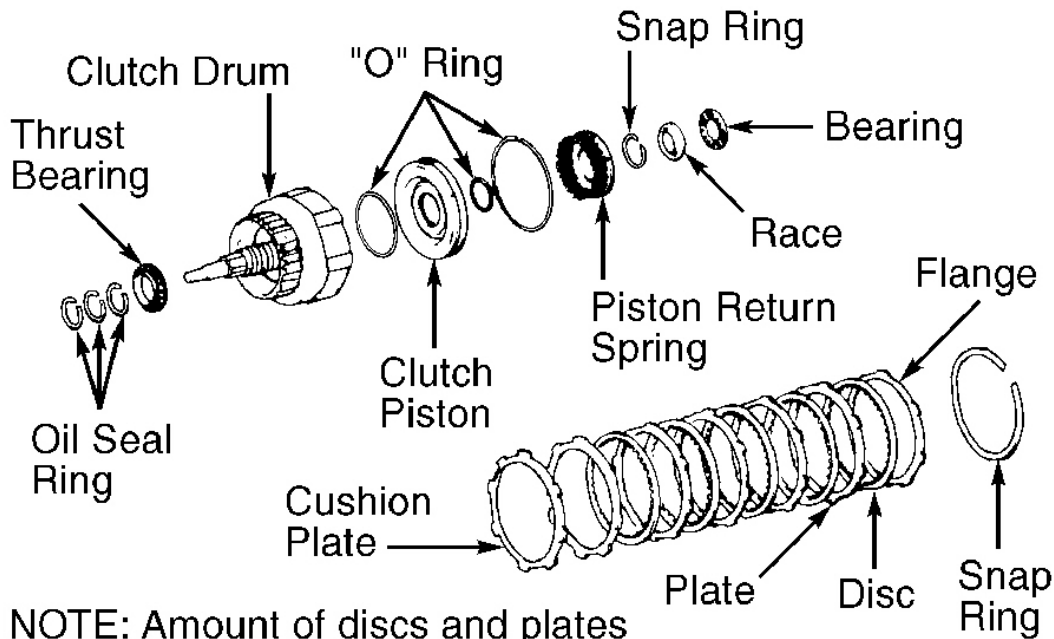


Fig. 74: Checking Front Clutch Piston Stroke
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 75: Checking Forward Clutch Pack Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



NOTE: Amount of discs and plates vary with model application.

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Fig. 76: Exploded View Of Forward Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FORWARD CLUTCH DISC & PLATE APPLICATION

Application	No. Of Discs	No. Of Plates
A-340E		
Cressida	5	5
Supra		
Non-Turbo (7M-GE)	5	5
Turbo (7M-GTE)	6	6
Pickup 2WD	5	5
4Runner		
22R-E	4	4
3VZ-E	5	5
A-340F		
Pickup 4WD	5	5
4Runner 4WD	4	4
A-340H		
Pickup 4WD	5	5
4Runner 4WD		

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

22R-E	4	4
3VZ-E	5	5
A-341E		
Lexus LS400	6	6

FORWARD CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
1988-89	
A-340E	
Cressida	.1346-.1665 (3.418-4.229)
Supra	
7M-GE	.1346-.1665 (3.418-4.229)
7M-GTE	.1469-.1807 (3.731-4.589)
1988	
A-340H	
Pickup and 4Runner 4WD	.1224-.1531 (3.110-3.890)
1989	
A-340E	
Pickup 2WD	
22R-E	.1224-.1531 (3.110-3.890)
3VZ-E	.1346-.1669 (3.420-4.240)
A-340H	
Pickup 4WD & 4Runner 4WD	
22R-E Engine	.1224-.1531 (3.110-3.890)
3VZ-E Engine	.1346-.1669 (3.420-4.240)
1990	
A-340E	
Cressida	.1047-.1567 (2.660-3.980)
Supra	
7M-GE Engine	.1346-.1547 (3.420-4.240)
7M-GTE Engine	.1469-.1807 (3.730-4.590)
Pickup 2WD	⁽¹⁾ .0197-.0354 (.500-.900)
4Runner 2WD	
22R-E Engine	.1224-.1531 (3.110-3.890)
3VZ-E Engine	.1346-.1669 (3.420-3.930)
A-340F	
Pickup 4WD	⁽¹⁾ .0197-.0354 (.500-.900)
4Runner 4WD	⁽¹⁾ .0169-.0327 (.430-.830)
A-340H	
Pickup 4WD	⁽¹⁾ .0197-.0354 (.500-.900)

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

4Runner 4WD	
22R-E	.1224-.1531 (3.110-3.890)
3VZ-E	.1346-.1669 (3.420-3.930)
A-341E	
Lexus LS400	.0492-.0839 (1.250-2.130)
Lexus LS400	⁽¹⁾ .0280-.0390 (.700-1.000)
(1) Measurement is for pack clearance. See step 5 .	

DIRECT CLUTCH**Disassembly**

1. Remove direct clutch drum from forward clutch assembly. Remove thrust bearing from inside of clutch drum. Remove snap ring from clutch drum. Remove flange, discs and plates. Note number and location of components.

CAUTION: Note location of all clutch pack components.

2. Using press and Spring Compressor (09350-07040), compress piston return spring and remove snap ring. Place clutch drum on overdrive support and carefully apply air pressure to piston supply port and remove clutch piston. See **Fig. 77 -Fig. 79** .

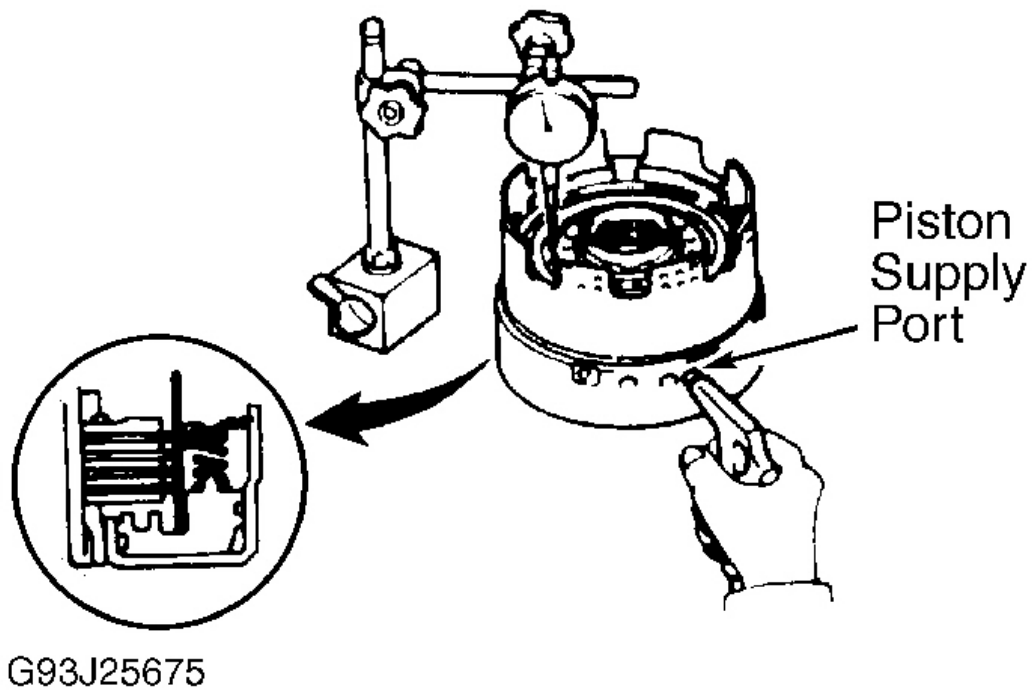


Fig. 77: Checking Direct Clutch Piston Stroke & Installation (1 Of 2)

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

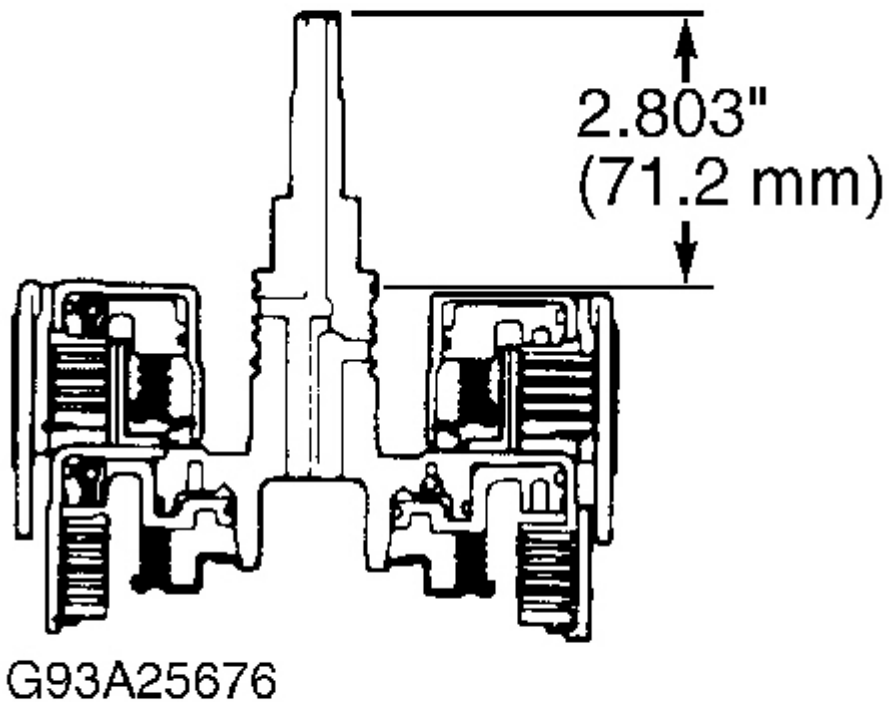
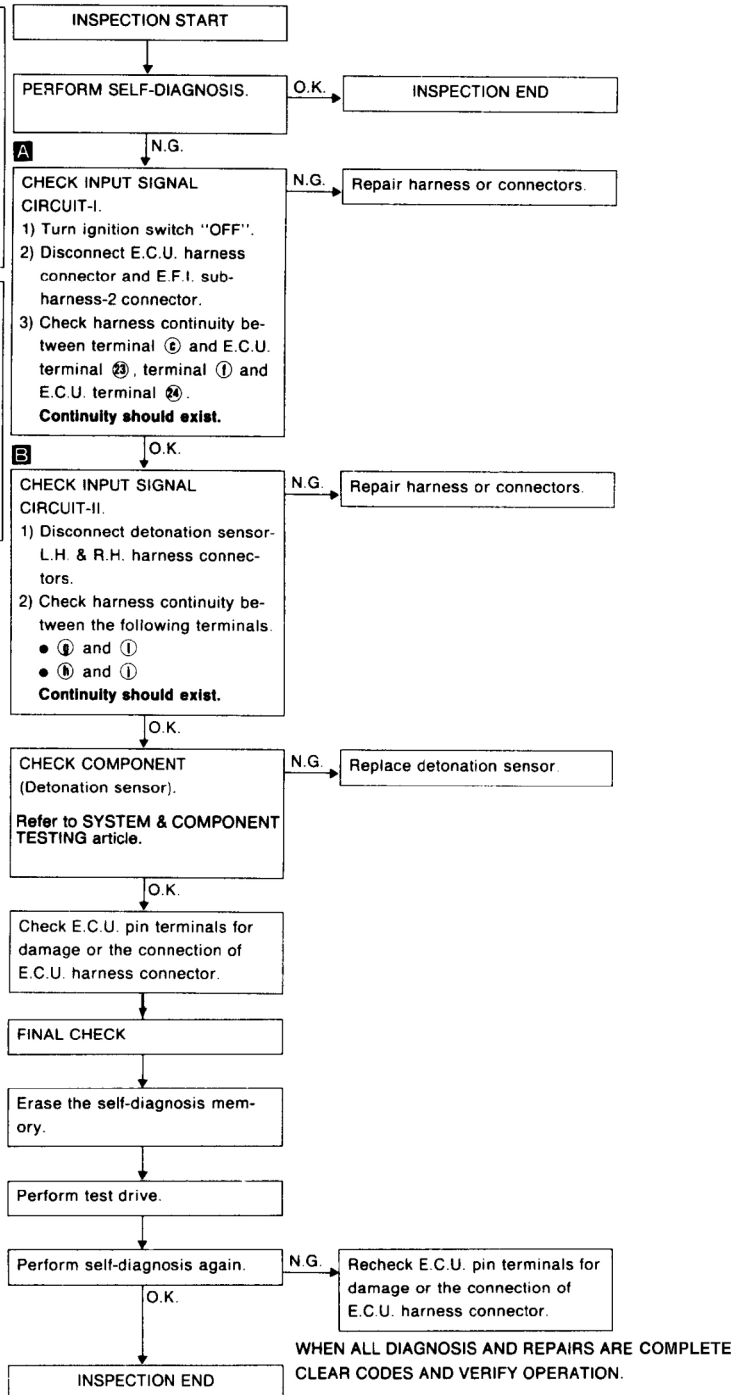
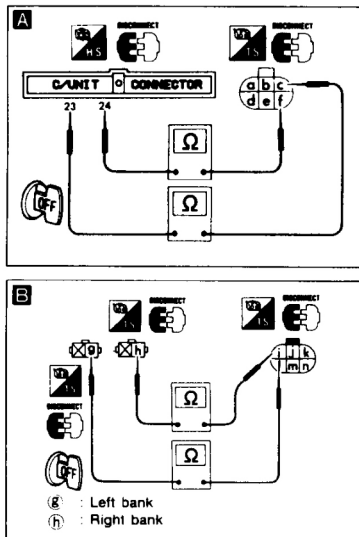


Fig. 78: Checking Direct Clutch Piston Stroke & Installation (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

KNOCK (DETONATION) SENSOR (Cont.) Q45



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Fig. 79: Exploded View Of Direct Clutch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas.
2. Ensure check ball is free in clutch piston. Apply air pressure to check ball area. Ensure that check ball does not allow air to bleed through piston.
3. Measure inside diameter of clutch drum bushing. Replace clutch drum if bushing diameter exceeds 2.1256" (53.990 mm). Bushing measurement on Lexus LS400 is 2.1248" (53.970 mm).

CAUTION: Clutch disc should be soaked in ATF for at least 30 minutes prior to installation. Thrust washers and races should be coated with petroleum jelly prior to installation.

Reassembly

1. Coat "O" rings with ATF. Reverse disassembly procedure. Ensure piston return spring retaining snap ring is fully seated and ring ends do not align with claw area on spring retainer of piston return spring.
2. With clutch drum open area facing upward, install plates and discs, starting with a plate and alternating with disc. Install appropriate amount of plates and discs. See **DIRECT CLUTCH DISC & PLATE APPLICATION** table.
3. Install flange with flat end facing toward disc. Place clutch drum on overdrive support. Measure piston stroke while applying 57-114 psi (4-8 kg/cm²) to piston supply port. See **Fig. 77 -Fig. 79** . Note piston stroke.
4. Piston stroke must be within specification. See **DIRECT CLUTCH PISTON STROKE SPECIFICATIONS** table. If piston stroke is less than specification, check for mis-assembled components. Repeat procedure.
5. If piston stroke exceeds specification, install different thickness flange. Flanges are available with thickness of .118-.146" (2.99-3.70 mm) in .004" (.10 mm) increments.
6. Install thrust bearing in clutch drum. Align tabs of clutch discs. Install direct clutch assembly on forward clutch assembly. Check that distance from end of direct clutch to end of forward clutch is 2.803" (7.12 mm). See **Fig. 77 -Fig. 79** .

DIRECT CLUTCH DISC & PLATE APPLICATION

Application	No. Of Discs	No. Of Plates
1988		
A-340E		
Cressida	3	3
Supra	4	4
A-340H		
Pickup & 4Runner 4WD	3	3
1989		
A-340E		
Cressida	4	4
Supra	4	4
Pickup 2WD	3	3

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

A-340H		
Pickup 4WD		
22R-E	3	3
3VZ-3	4	4
4Runner 4WD		
22R-E	3	3
3VZ-E	4	4
1990		
A-340E		
Cressida	4	4
Supra	4	4
Pickup 2WD	4	4
4Runner 2WD	3	3
A-340F		
Pickup 4WD	4	4
4Runner 4WD	3	3
A-340H		
Pickup 4WD	4	4
4Runner 4WD		
22R-E	3	3
3VZ-E	4	4
A341E		
Lexus LS400	4	4

DIRECT CLUTCH PISTON STROKE SPECIFICATIONS

Application	In. (mm)
1988	
A-340E	
Cressida	.0539-.0630 (1.370-1.600)
Supra	.0539-.0630 (1.370-1.600)
A-340H	
Pickup & 4Runner 4WD	.0406-.0524 (1.030-1.330)
1989	
A-340E	
Cressida	.0689-.0780 (1.750-1.980)
Supra	.0539-.0630 (1.370-1.600)
Pickup 2WD	
22R-E Engine	.0406-.0524 (1.030-1.330)
3VZ-E (2WD) Engine	.0539-.0630 (1.370-1.600)
3VZ-E (4WD) Engine	.0539-.0657 (1.370-1.670)
A-340H	

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

Pickup 4WD & 4Runner 4WD	
22R-E Engine	.0406-.0524 (1.030-1.330)
3VZ-E Engine	.0539-.0657 (1.370-1.670)
1990	
A-340E	
Cressida	.0539-.0630 (1.370-1.600)
Supra	.0539-.0630 (1.370-1.600)
Pickup 2WD	.0539-.0630 (1.370-1.600)
4Runner 2WD	.0539-.0630 (1.370-1.600)
A-340F	
Pickup 4WD	.0539-.0630 (1.370-1.600)
4Runner 4WD	.0539-.0630 (1.370-1.600)
A-340H	
Pickup 4WD	.0539-.0630 (1.370-1.600)
4Runner 4WD	
22R-E Engine	.0406-.0524 (1.030-1.330)
3 VZ-E (2WD) Engine	.0539-.0630 (1.370-1.600)
3VZ-E (4WD) Engine	.0539-.0657 (1.370-1.670)
A-341E	
Lexus LS400	.0539-.0630 (1.370-1.600)

FRONT PLANETARY GEAR**Disassembly & Inspection**

Remove thrust bearings and races from planetary gear and front planetary ring gear. Note direction of race installation. Measure bushing inside diameter. Replace planetary gear if bushing diameter exceeds .9480" (24.079 mm). Measure planetary pinion gear thrust clearance. Standard clearance should be .0079-.0236" (.200-.600 mm). Maximum clearance is .0394" (1.000 mm). If clearance is greater than maximum, replace planetary gear assembly.

Reassembly

Coat thrust bearings and races with petroleum jelly. Install thrust bearings and races, ensuring tabs on race align with planetary gear. Install races in planetary ring gear and planetary gear with flat side against gear surface. See **Fig. 80**.

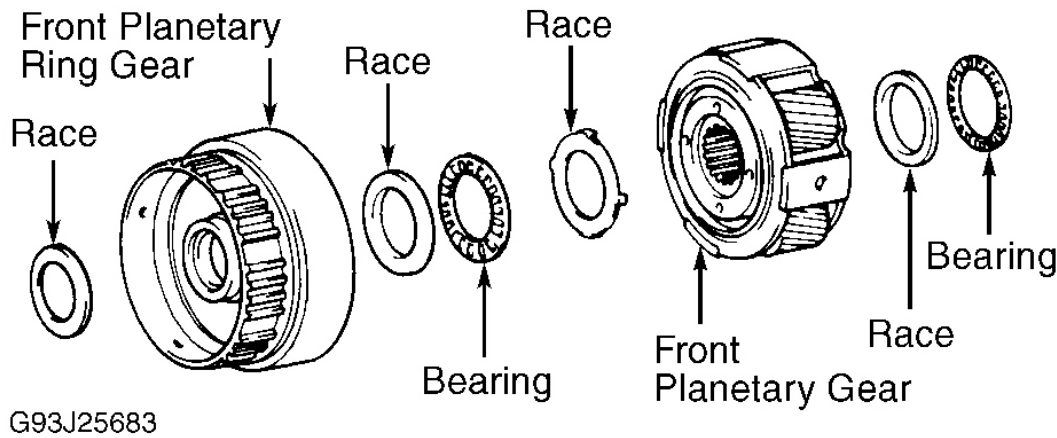


Fig. 80: Exploded View Of Front Planetary Gear
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PLANETARY SUN GEAR & NO. 1 ONE-WAY CLUTCH

Disassembly

1. Hold sun gear drum and check rotation of one-way clutch. See **Fig. 82** . Remove one-way clutch assembly. Note direction of clutch installation. Remove thrust washer and oil seal rings from sun gear drum and sun gear.
2. Support sun gear drum on wooden block and remove snap ring from sun gear. Separate sun gear from sun gear drum.

Inspection

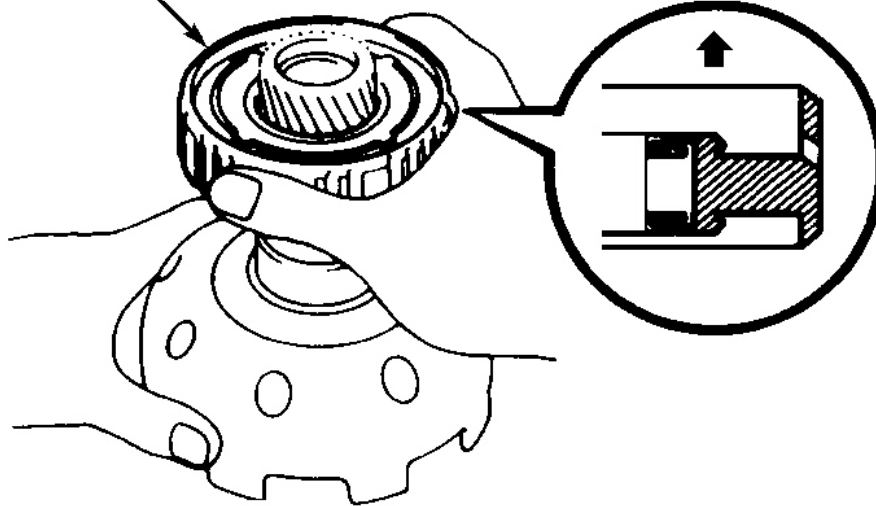
Clean components in solvent. Dry with compressed air. Measure inside diameter of sun gear bushing. Replace sun gear if diameter exceeds 1.0661" (27.079 mm).

Reassembly

Reverse disassembly procedure. Ensure ends of oil seal rings are properly locked together and seal rings move smoothly. Install one-way clutch assembly in proper direction. Check one-way clutch operation. See **Fig. 81** - **Fig. 83** .

No. 1 One-Way
Clutch

UPWARD



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Fig. 81: Installing No. 1 One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

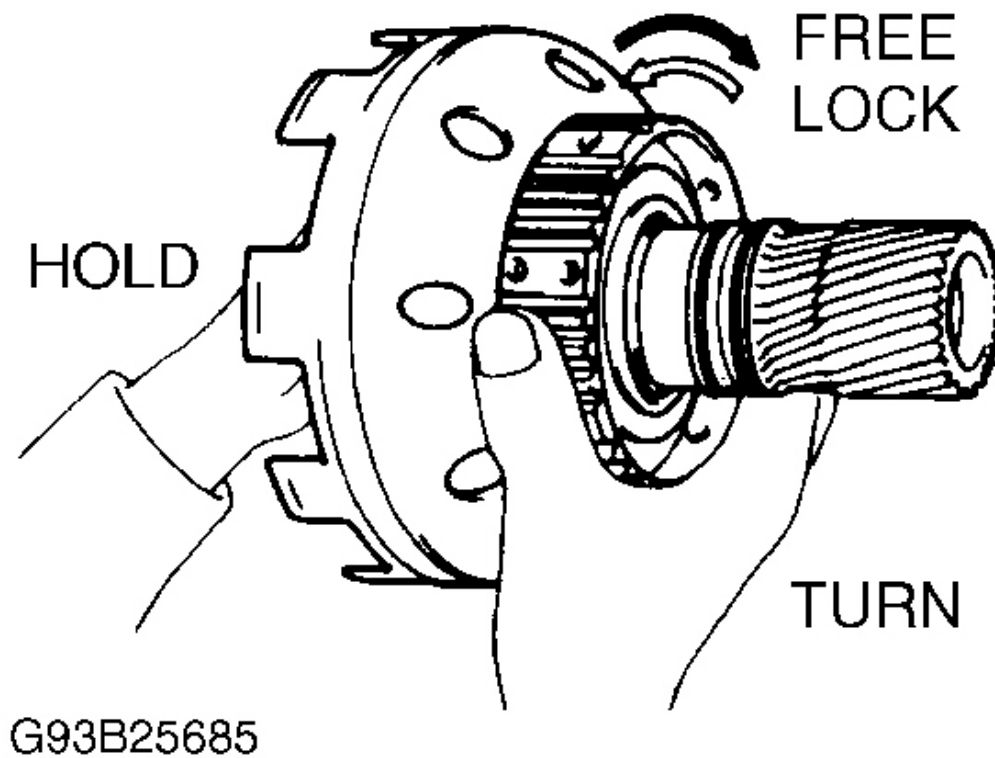
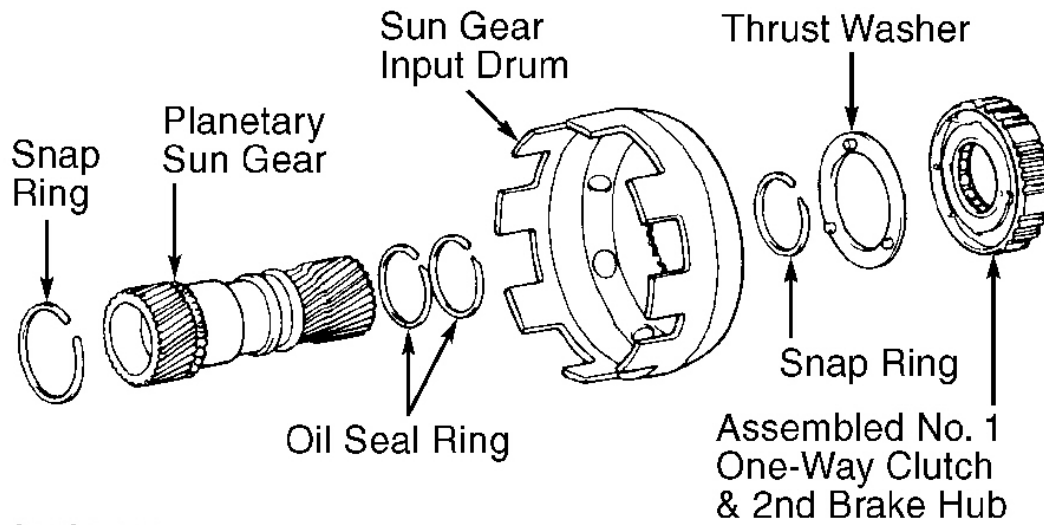


Fig. 82: Checking No. 1 One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 83: Exploded View Of Planetary Sun Gear & No. 1 One-Way Clutch

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

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

Disassembly

1. Remove output shaft from rear planetary gear. Remove oil seal from output shaft. Remove rear planetary gear from rear ring gear.
2. Hold planetary gear and check operation of No. 2 one-way clutch. See **Fig. 84** . Remove No. 2 one-way clutch inner race from rear planetary gear. Remove snap ring and No. 2 one-way clutch with retainer from planetary gear. Note direction of one-way clutch in planetary gear.
3. Remove No. 1 and 2 thrust washers from planetary gear. Remove bearings and races from ring gear. Remove snap ring and ring gear flange from ring gear.

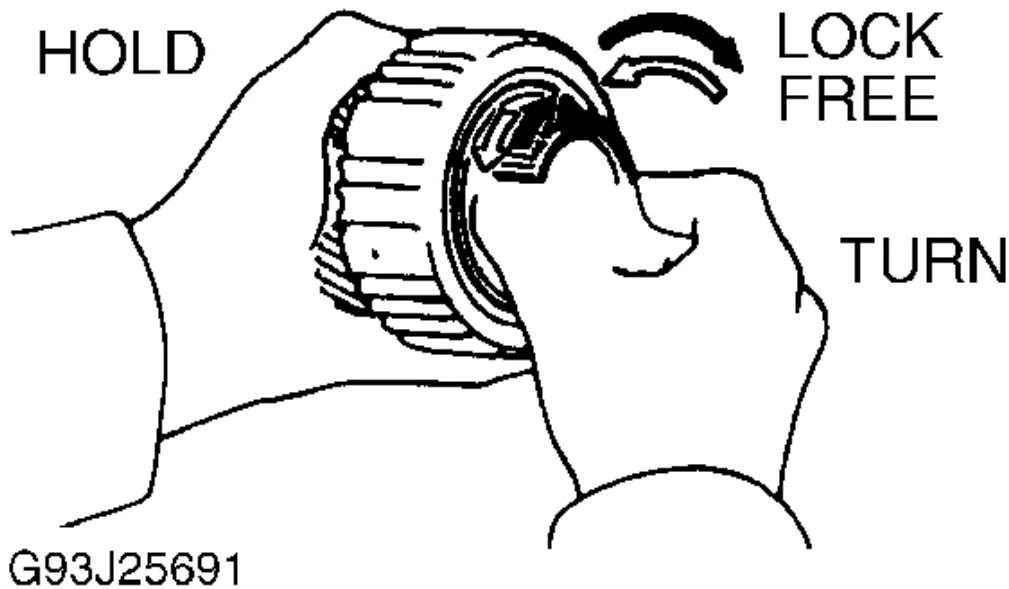


Fig. 84: Checking No. 2 One-Way Clutch Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection

Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. Inspect all components for damage. Replace if necessary. Measure planetary pinion gear thrust clearance. Standard clearance should be .0079-.0236" (.200-.600 mm). Maximum clearance is .0394 " (1.000 mm). Replace planetary gear assembly if maximum limit is exceeded.

Reassembly

1. To reassemble, reverse disassembly procedure. Coat all thrust bearings and races with petroleum jelly. When installing thrust bearings and races in ring gear, flat side of race must be placed against ring gear.
2. Ensure No. 1 and 2 thrust washer tangs align with cutout area of planetary gear. Install No. 2 one-way clutch with open ends facing upward. See **Fig. 85**.
3. Rotate one-way clutch inner race counterclockwise during installation into rear planetary gear. Ensure No. 2 one-way clutch turns freely counterclockwise and locks clockwise. See **Fig. 84**.
4. Install rear planetary gear on rear planetary ring gear. Install oil seal ring. DO NOT spread oil seal ring too much. After installing oil seal ring, ensure seal ring rotates smoothly. Install output shaft into rear planetary gear assembly. See **Fig. 86**.

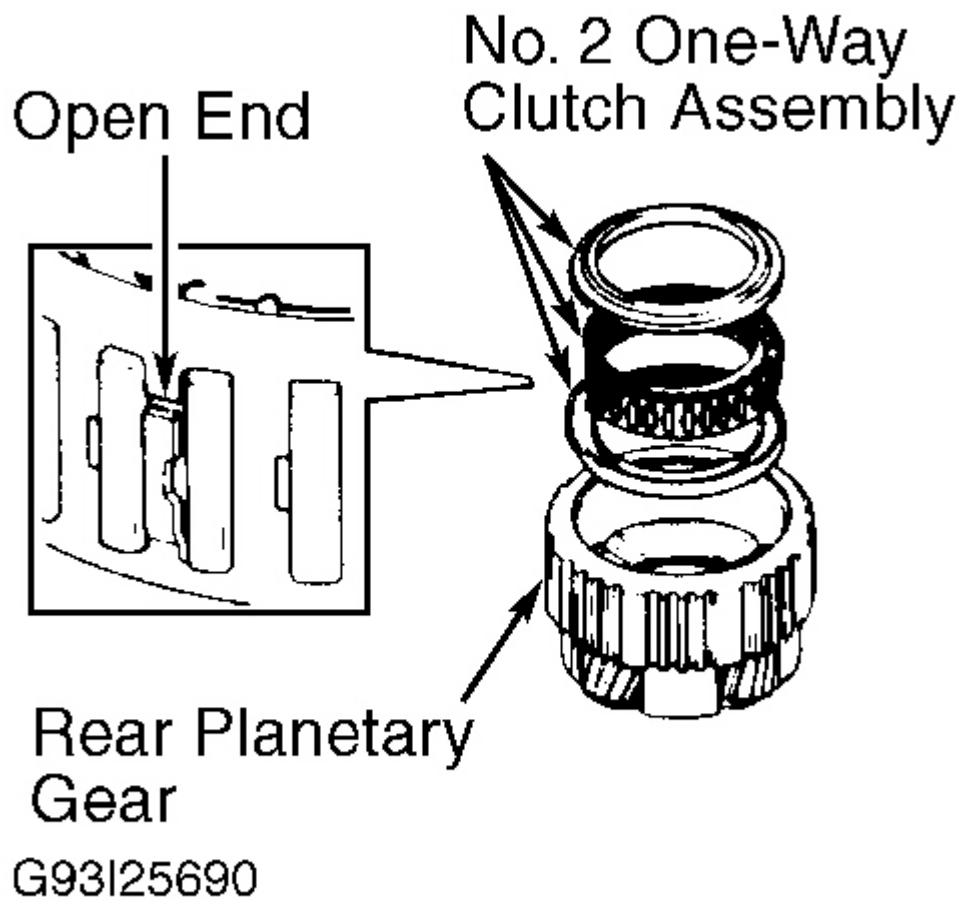


Fig. 85: Installing No. 2 One-Way Clutch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

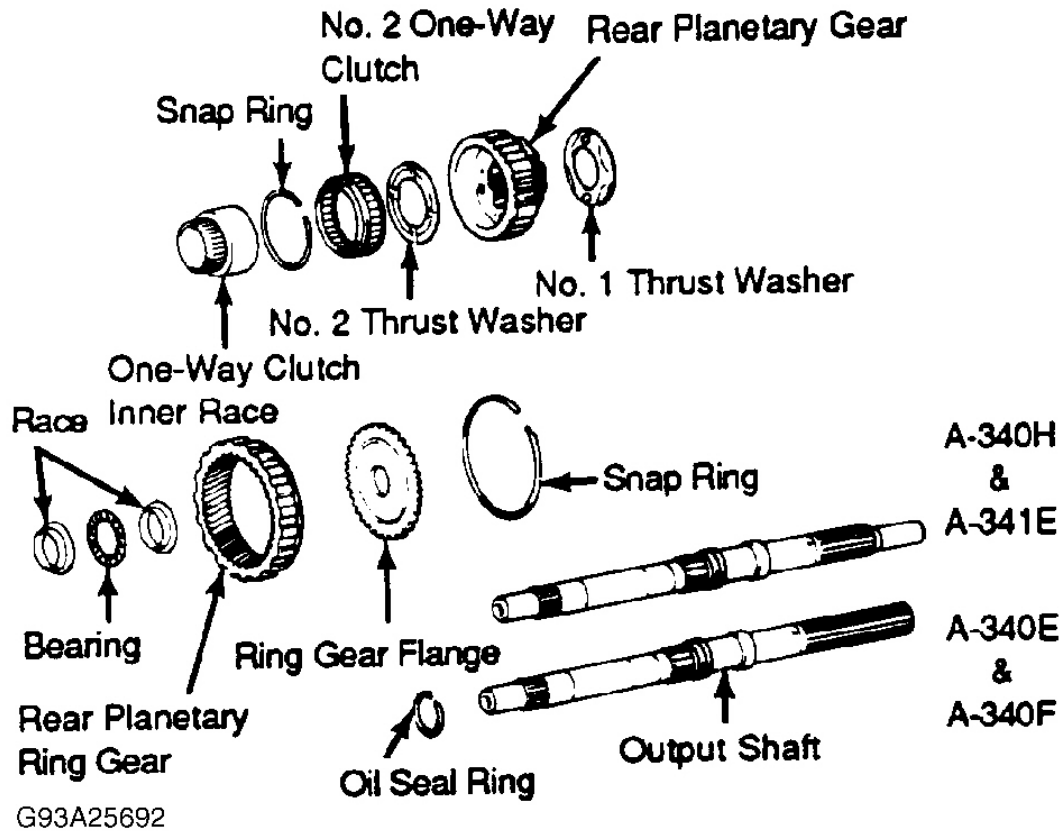
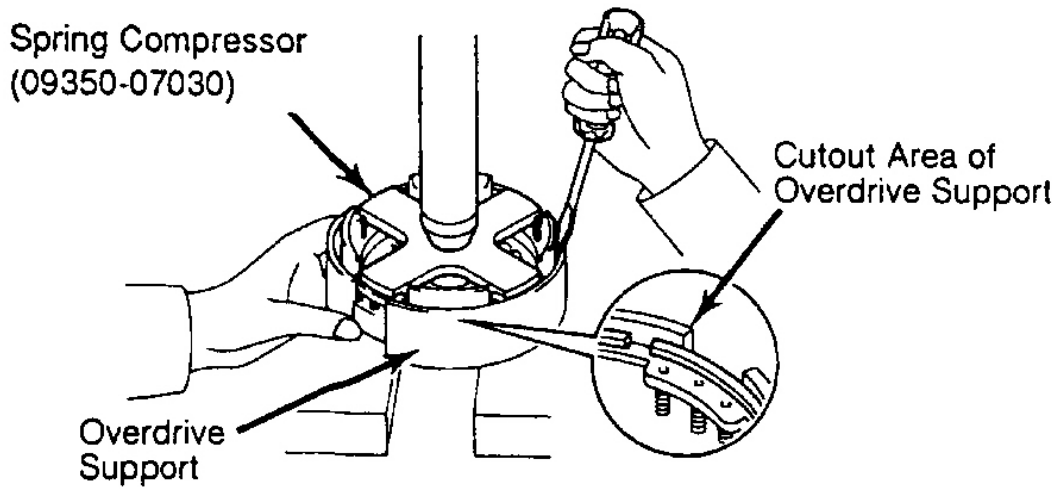


Fig. 86: Exploded View Of Output Shaft Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OVERDRIVE BRAKE

Disassembly

1. Remove all thrust washers from overdrive support. Using Spring Compressor (09350-07030) and press, compress piston return spring and remove snap ring. See **Fig. 87**.
2. Place support on direct clutch assembly. Hold brake piston in a level position. Carefully apply air pressure to piston supply port and remove piston. Remove oil seal rings from rear of support.



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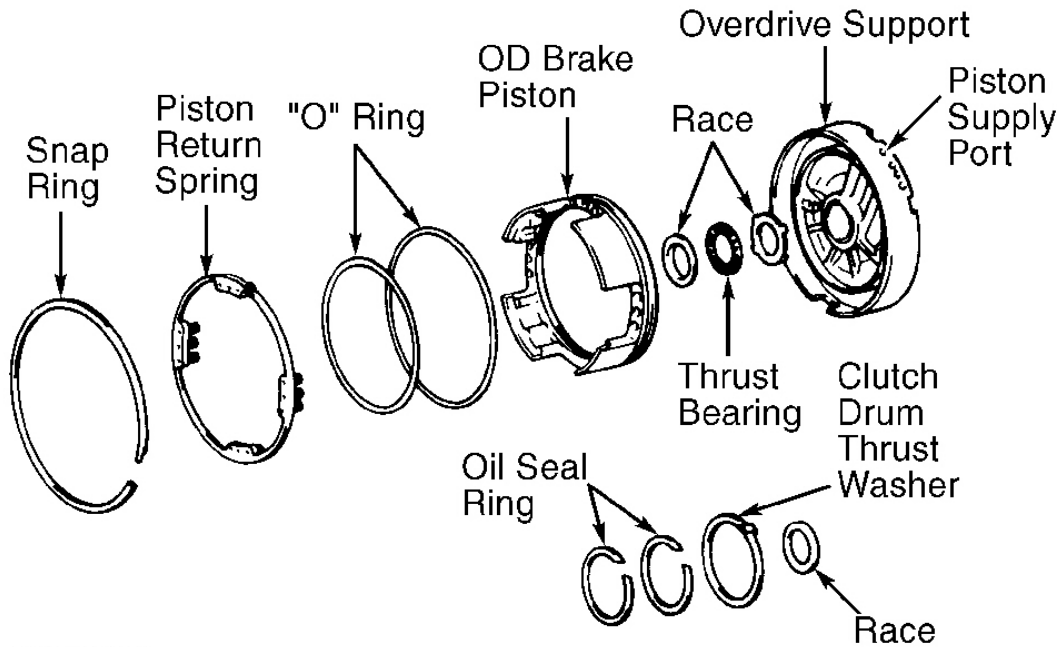
Fig. 87: Compressing Overdrive Support Piston Return Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection

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

Reassembly

1. To reassemble, reverse disassembly procedure. Coat seal rings with ATF prior to installation. DO NOT over expand seal rings during piston installation. Ensure seal rings move smoothly after installation.
2. Install new "O" rings on OD brake piston. Use care not to damage "O" rings during piston installation. Install snap ring in support and ensure end of snap ring is not aligned with cutout portion of support. See **Fig. 87**.
3. Ensure tabs on all races are aligned with areas on support. Coat races and thrust bearings with petroleum jelly prior to installation. Place support on direct clutch assembly and apply air pressure to piston supply port. Ensure piston operates smoothly in support. See **Fig. 88**.



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Fig. 88: Exploded View Of Overdrive Support & Brake
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2ND COAST BRAKE

Disassembly

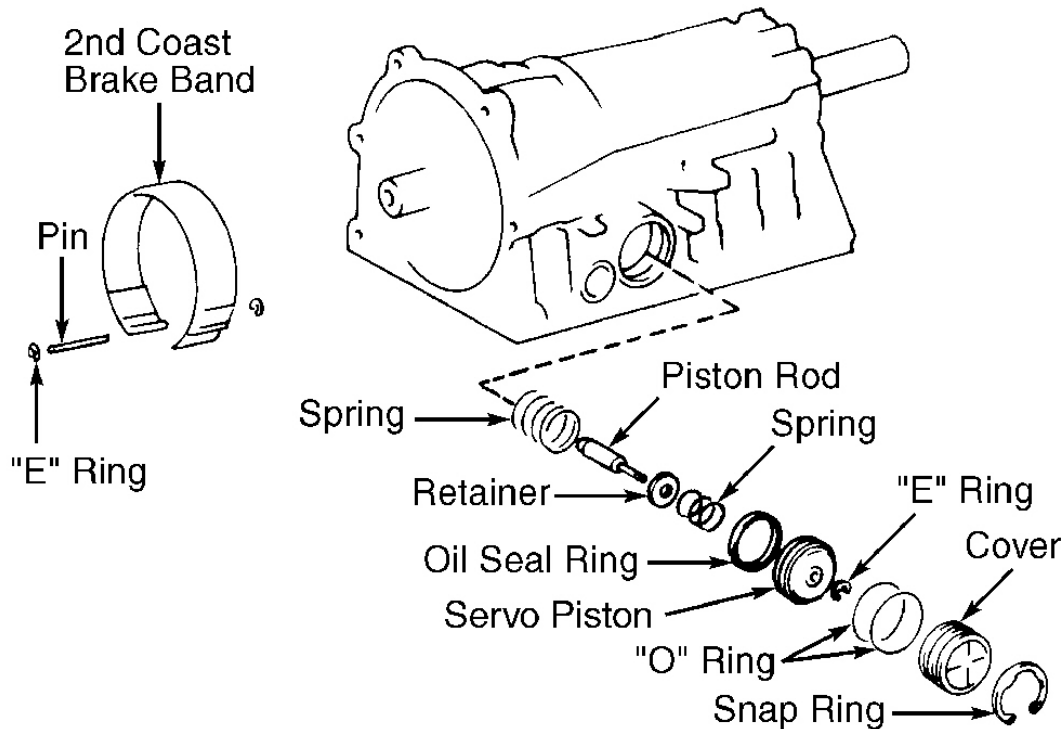
Remove "E" ring. Remove 2nd coast brake piston, spring and retainer from piston rod. Remove oil seal ring.

Inspection

1. Replace brake band if lining is peeled off or discolored or printed numbers are defaced. Before assembling new band, soak in ATF for at least 2 hours.
2. If brake band is serviceable but piston rod stroke is not within specification, select a new piston. There are 2 lengths for piston rod, 2.811" (71.4 mm) and 2.870" (72.9 mm).

Reassembly

Install oil seal ring on piston. Install retainer, spring and piston to piston rod. Install "E" ring. See **Fig. 89**.



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Fig. 89: Exploded View Of 2nd Coast Brake
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2ND BRAKE

Disassembly

1. Remove thrust washer. Position Spring Compressor (09350-07040) on spring retainer, compress return spring with an arbor press. Remove snap ring.
2. Remove spring retainer and piston return spring. Hold 2nd brake piston, apply compressed air to 2nd brake drum to remove piston.

Inspection

Check all parts for wear and damage. Soak new discs in ATF for at least 2 hours before installation.

Reassembly

1. Coat new "O" rings with ATF and install. Carefully press 2nd brake piston into 2nd brake drum. Install piston return spring and spring retainer. See **Fig. 90**.
2. Compress return spring and install snap ring. Apply compressed air to 2nd brake drum. Ensure 2nd brake piston moves smoothly. Install thrust washer. Ensure cutout portions of thrust washer match teeth of

This diagram illustrates the exploded view of a brake assembly. The components are labeled as follows:

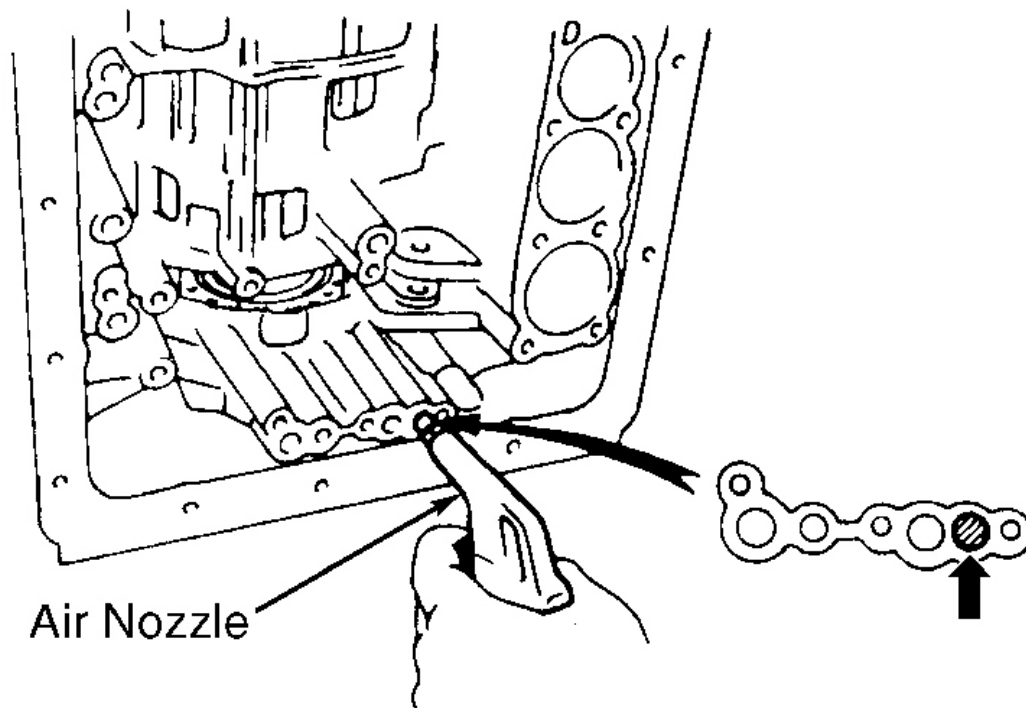
- Snap Ring**: Located at the top left, pointing to the ring that secures the disc to the axle.
- Disc**: The central rotating component, shown at the top center.
- Flange**: The component on the left that the disc is mounted onto.
- Thrust Washer**: A small ring component located below the disc.
- Snap Ring**: A second ring component located below the thrust washer.
- Plate**: A component located below the second snap ring.
- Spring Retainer**: A component located below the plate.
- Piston Return Spring**: A coiled spring component located to the right of the spring retainer.
- 2nd Brake Piston**: A component located below the spring retainer.
- "O" Ring**: Two O-ring components located below the 2nd brake piston.
- 2nd Brake Drum**: The large outer component on the right, which houses the piston and return spring.
- Piston Sleeve**: A component located at the top right, which fits into the drum.

Fig. 90: Exploded View Of 2nd Brake
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1ST & REVERSE BRAKE

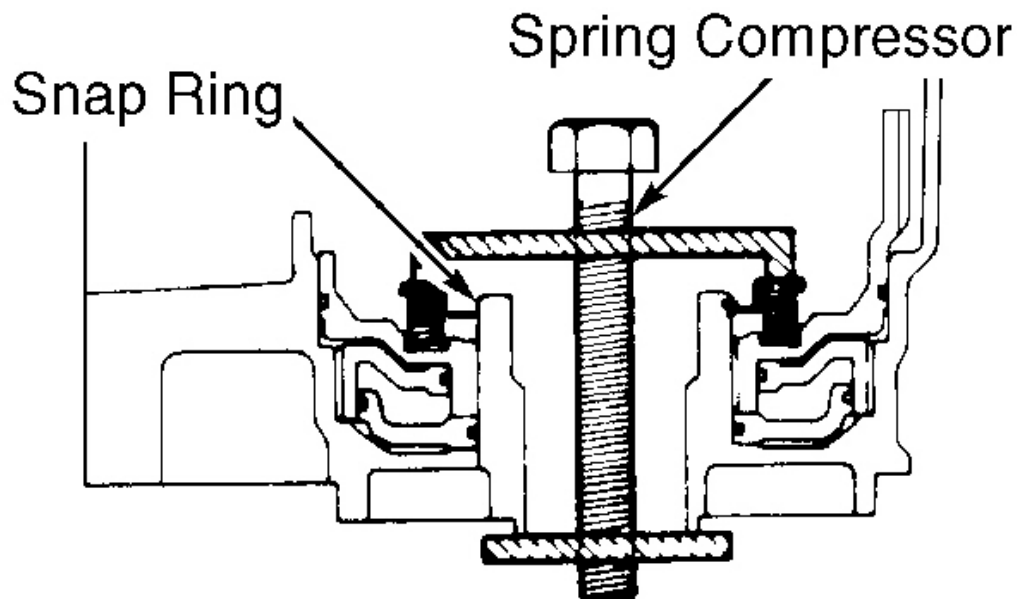
Disassembly

1. Apply compressed air to transmission case and ensure 1st and reverse brake piston operates smoothly. See **Fig. 91** . Using Spring Compressor (09350-07050), compress piston return spring, and remove snap ring. See **Fig. 92** . Remove piston return spring.
2. To remove No. 2 brake piston, apply air pressure to transmission case. See **Fig. 91** . If piston does not pop out with compressed air, lift piston out with needle nose pliers. Position Sleeve Remover (09350-07080) behind reaction sleeve and remove from case. See **Fig. 93** .
3. Using Piston Remover (09350-07090), remove No. 1 brake piston from case. See **Fig. 94** . Separate No. 1 brake piston from reaction sleeve. See **Fig. 95** . Remove all "O" rings from components.



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Fig. 91: Checking 1st & Reverse Brake Piston Travel
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



COMPRESSING RETURN SPRING

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Fig. 92: Compressing 1st & Reverse Brake Return Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

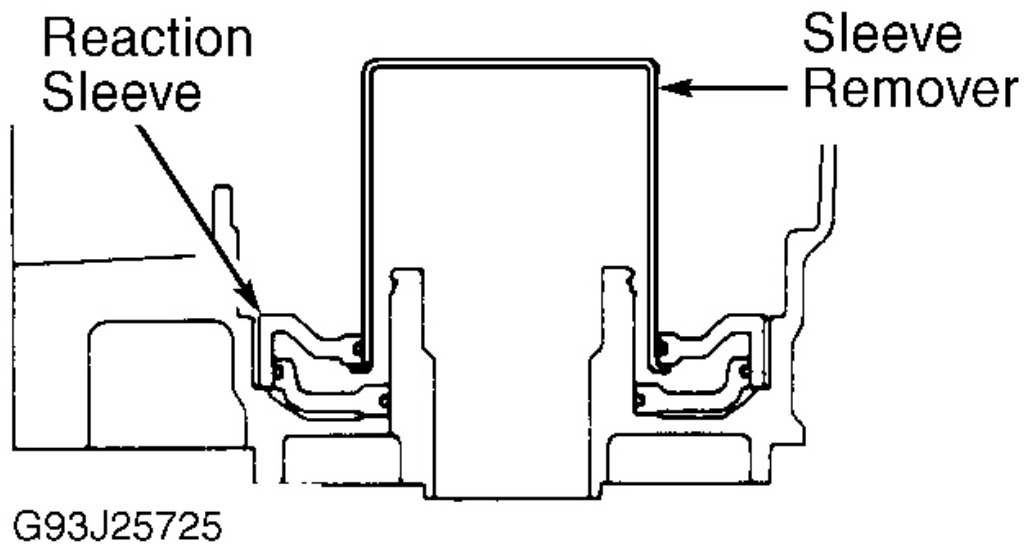


Fig. 93: Removing Reaction Sleeve

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

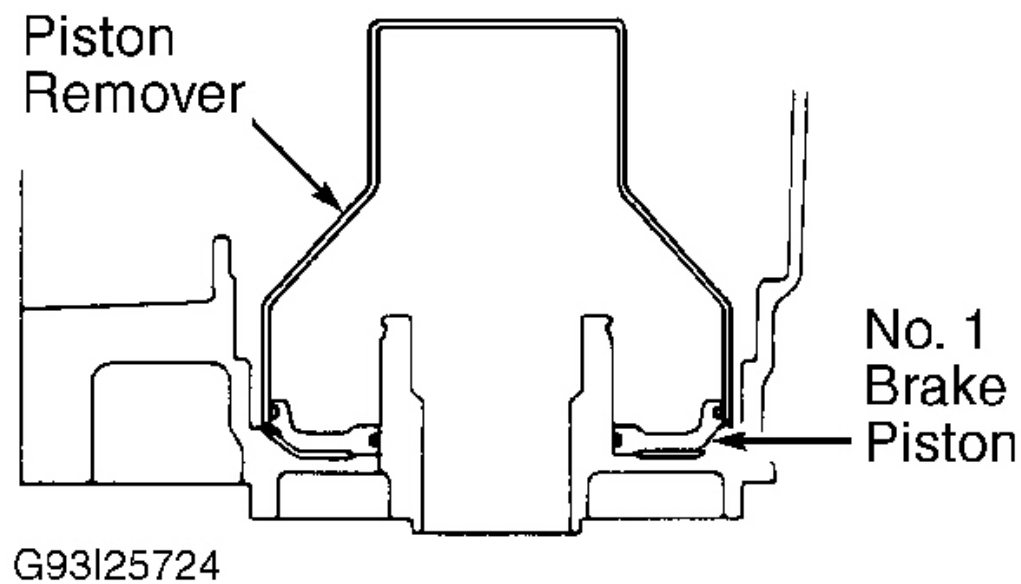
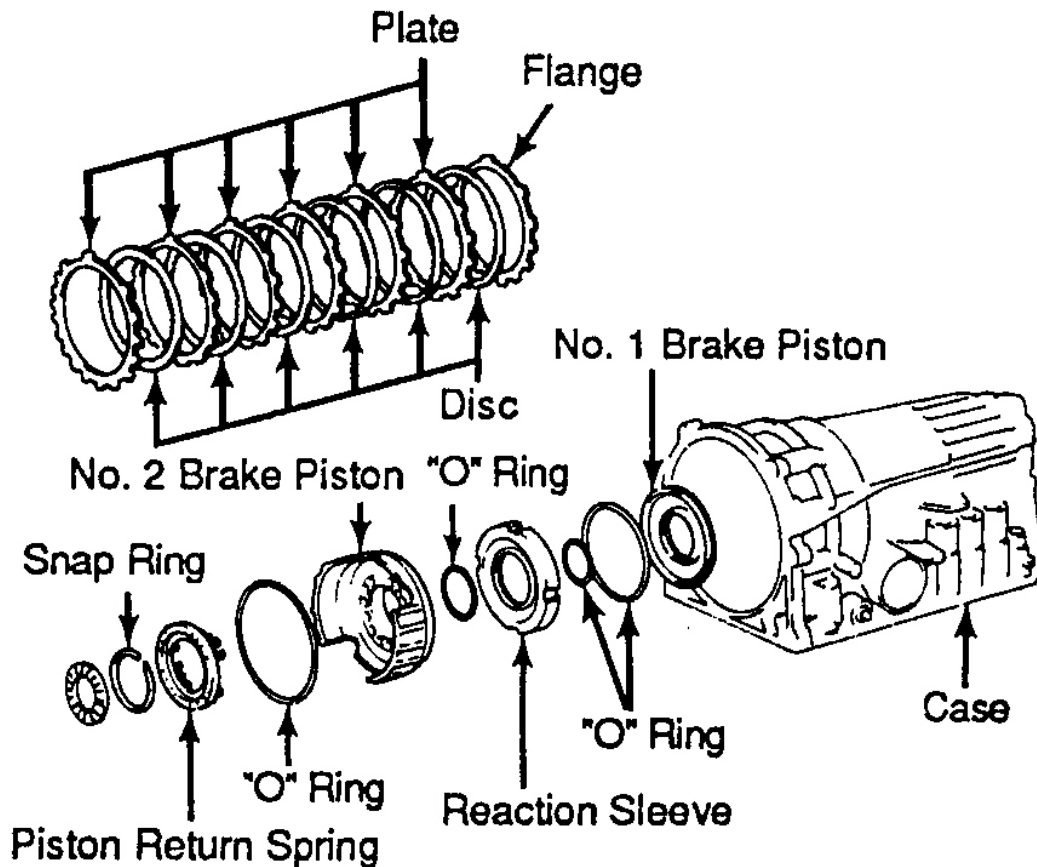


Fig. 94: Removing Brake Piston

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



G00053624

Fig. 95: Exploded View Of 1st & Reverse Brake

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

Inspection

1. Clean all parts in solvent and blow dry with compressed air. Inspect piston for scoring, wear or damage. Check discs, plates and flange for wear or burning. Soak new discs in ATF at least 2 hours before installation.
2. Check return spring and spring seat free length. Standard free length should be .508" (12.90 mm).

Reassembly

1. Coat new "O" rings with ATF and install. Install No. 1 brake piston to reaction sleeve. With No. 1 brake piston underneath (rear side), install reaction sleeve and No. 1 brake piston to case. With spring seat

upward (front side), position piston in transmission case.

2. Use care not to damage "O" rings during installation. Place piston return spring on No. 2 brake piston.
3. Reverse disassembly procedure for remaining components. Ensure piston return spring retaining snap ring is fully seated and ends do not align with claw area on spring retainer of piston return spring. See **Fig. 96** .
4. Apply air pressure to transmission case. Ensure piston operates smoothly. See **Fig. 91** .

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

1ST & REVERSE BRAKE DISC & PLATE APPLICATION

Application	No. of Discs	No. of Plates
1988		
A-340E		
Cressida	6	¹ 6
Supra		
7M-GE	6	¹ 6
7M-GTE	7	7
A-340H		
Pickup & 4Runner	5	5
1989		
A-340E		
Cressida	6	¹ 6
Supra		
7M-GE	6	¹ 6
7M-GTE	7	7
Pickup 2WD	6	6
A-340H		
Pickup 4WD		
22R-E	5	6
3VZ-E	6	6
4Runner 4WD		
22R-E	5	5
3VZ-E	6	6
1990		
A-340E		
Cressida	6	¹ 6
Supra		
7M-GE	6	¹ 6
7M-GTE	7	7
Pickup 2WD	6	6
4Runner 2WD	6	7
A-340F		
Pickup 4WD	5	5
4Runner 4WD	5	5
A-340H		
Pickup 4WD	6	6
4Runner 4WD		
22R-E	5	5
3VZ-E	6	6
A-341E		
Lexus LS400	7	7

¹ – See TSB 30 at the end of this article.

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Fig. 96: 1st & Reverse Brake Disc & Plate Application

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

LOWER VALVE BODY

CAUTION: All valve body components must be installed in original location. Lay all components in sequence during removal for reassembly reference.

Disassembly

1. Remove detent spring and manual valve from valve body assembly. On A-341E model, remove No. 1 and No. 2 solenoids, lock plate, No. 3 and No. 4 solenoids, oil strainer and pressure relief valve. Remove lower valve body-to-upper valve body bolts. Note bolt length and location. Separate upper valve body and valve body plate from lower valve body.

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

2. Push inward on sleeves or plugs to remove retainers or pins. It may be necessary to use magnet to remove retainers. Note location of retainers, check valve, rubber balls (if equipped) and strainers. Throttle oil strainer is longer than solenoid oil strainers. See **Fig. 97** and **Fig. 98**.

CAUTION: Primary regulator valve retaining sleeve-to-housing position must be marked prior to removal. Valve and sleeve must be installed in original location. Primary regulator valve sleeve is under spring pressure. Use care during removal to prevent personal injury.

3. Wrap screwdriver tip with tape to prevent scratching of valve body when removing pressure reducing plug retaining clip. Remove all valve body components. See **Fig. 97** and **Fig. 98**.

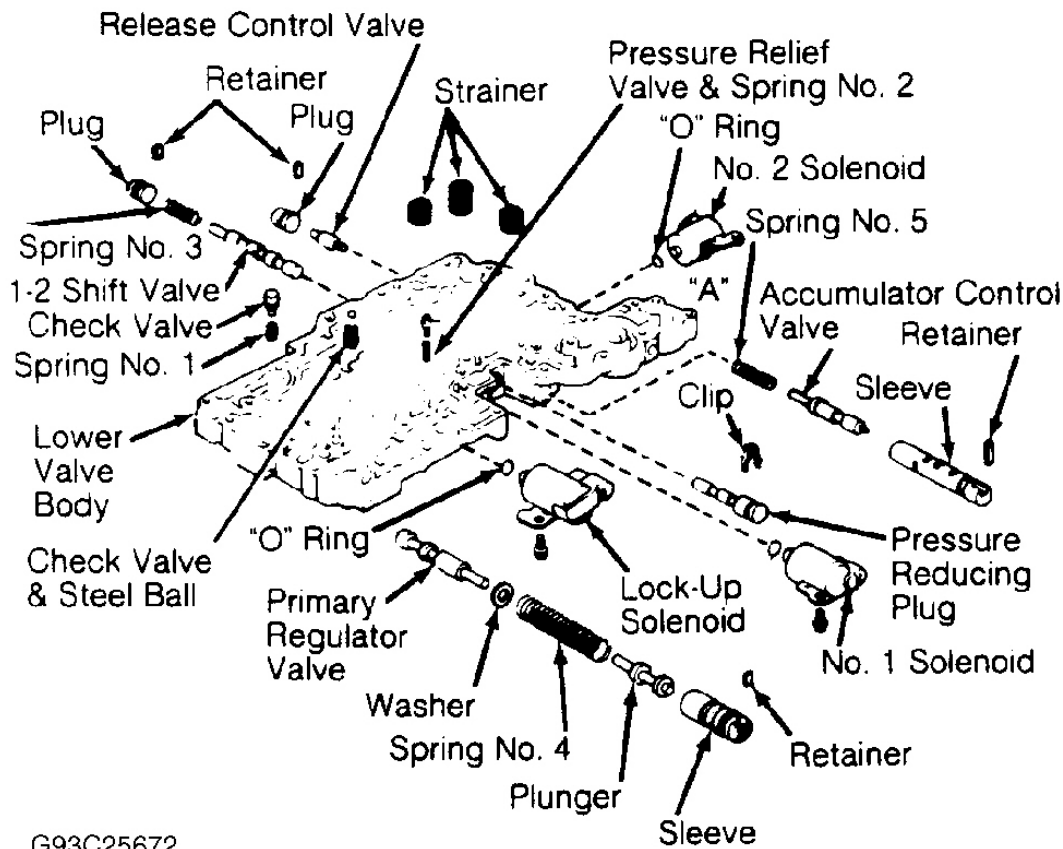
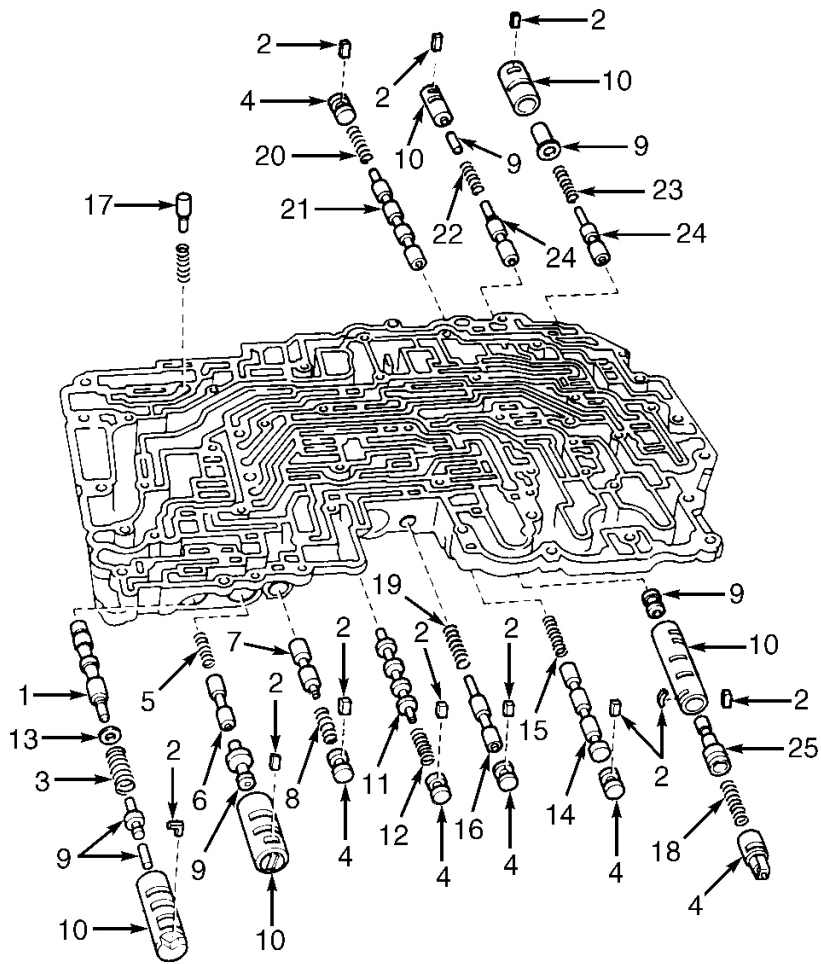


Fig. 97: Exploded View Of Lower Valve Body (A-340 Series)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



- | | |
|---|-------------------------------|
| 1. Primary Regulator Valve | 13. Washer |
| 2. Retainer | 14. Cut-Off Valve |
| 3. Spring No. 1 | 15. Spring No. 6 |
| 4. Plug | 16. Solenoid Modulator Valve |
| 5. Spring No. 2 | 17. Check Valve |
| 6. Lock-Up Control Valve | 18. Spring No. 7 |
| 7. Cut Back Valve | 19. Spring No. 5 |
| 8. Spring No. 3 | 20. Spring No. 8 |
| 9. Plunger | 21. 1-2 Shift Valve |
| 10. Sleeve | 22. Spring No. 9 |
| 11. Solenoid Relay Valve
(This part is not specified
the direction) | 23. Spring No. 10 |
| 12. Spring No. 4 | 24. Coast Modulator Valve |
| | 25. Accumulator Control Valve |

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Fig. 98: Exploded View Of Lower Valve Body (A-341E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection

1. Clean all parts in solvent. Dry with compressed air. Ensure all valve body passages are clear. Ensure strainers are not damaged or clogged. Inspect valves for scoring or roughness.
2. Ensure valves slide freely in bores. Inspect valve springs for damage, squareness and collapsed coils. Measure spring free length. Replace spring if not within specification. See **Fig. 99**.

LOWER VALVE BODY SPRING SPECIFICATIONS ¹

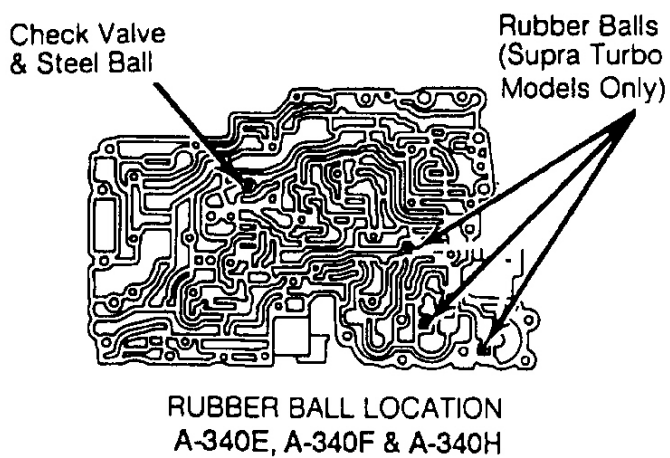
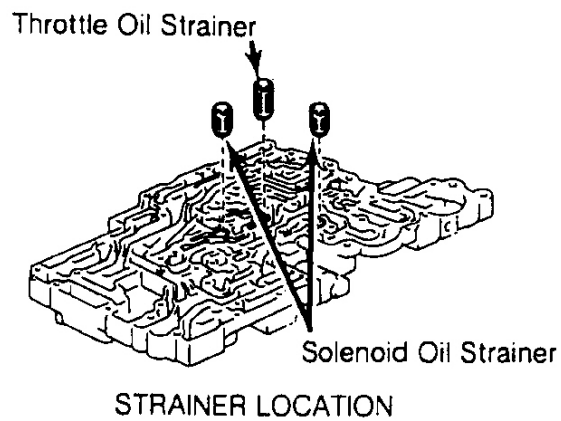
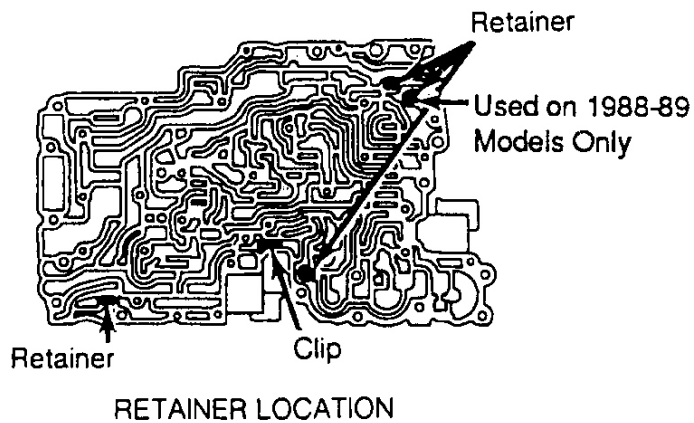
Spring Application	Color Code	Free Length In. (mm)
A-340E, A-340F & A340H		
Accumulator Control Valve	Pink	1.335 (33.90)
Supra 1988 (7M-GE)	White	1.421 (36.09)
Supra 1988 (7M-GTE)	Yellow	1.362 (34.59)
Check Valve	None	.795 (20.20)
Pressure Relief Valve	None	.441 (11.20)
Primary Regulator Valve		
22R-E	None	2.626 (66.70)
3VZ-E	None	2.453 (62.30)
1-2 Shift Valve	Purple	1.213 (30.80)
A-341E		
Primary Regulator Valve	Red	1.5992 (40.620)
Lock-Up Control Valve	White	.7291 (18.520)
Cut Back Valve	None	.740 (18.80)
Solenoid Relay Valve	None	.740 (18.80)
Solenoid Modulator Valve	None	1.2059 (30.630)
Coast Relay Valve	None	.799 (20.30)
Accumulator Control Valve	None	1.358 (34.50)
1-2 Shift Valve	Purple	1.2114 (30.770)
Coast Modulator Valve	None	.7768 (19.730)
Coast Modulator Valve	Red	1.063 (27.00)

¹ – Specifications are for 1988-90 valve bodies unless noted.

G00053626

Fig. 99: Lower Valve Body Spring Specifications

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



G00053627

Fig. 100: Locating Lower Valve Body Retainer, Ball & Strainer
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

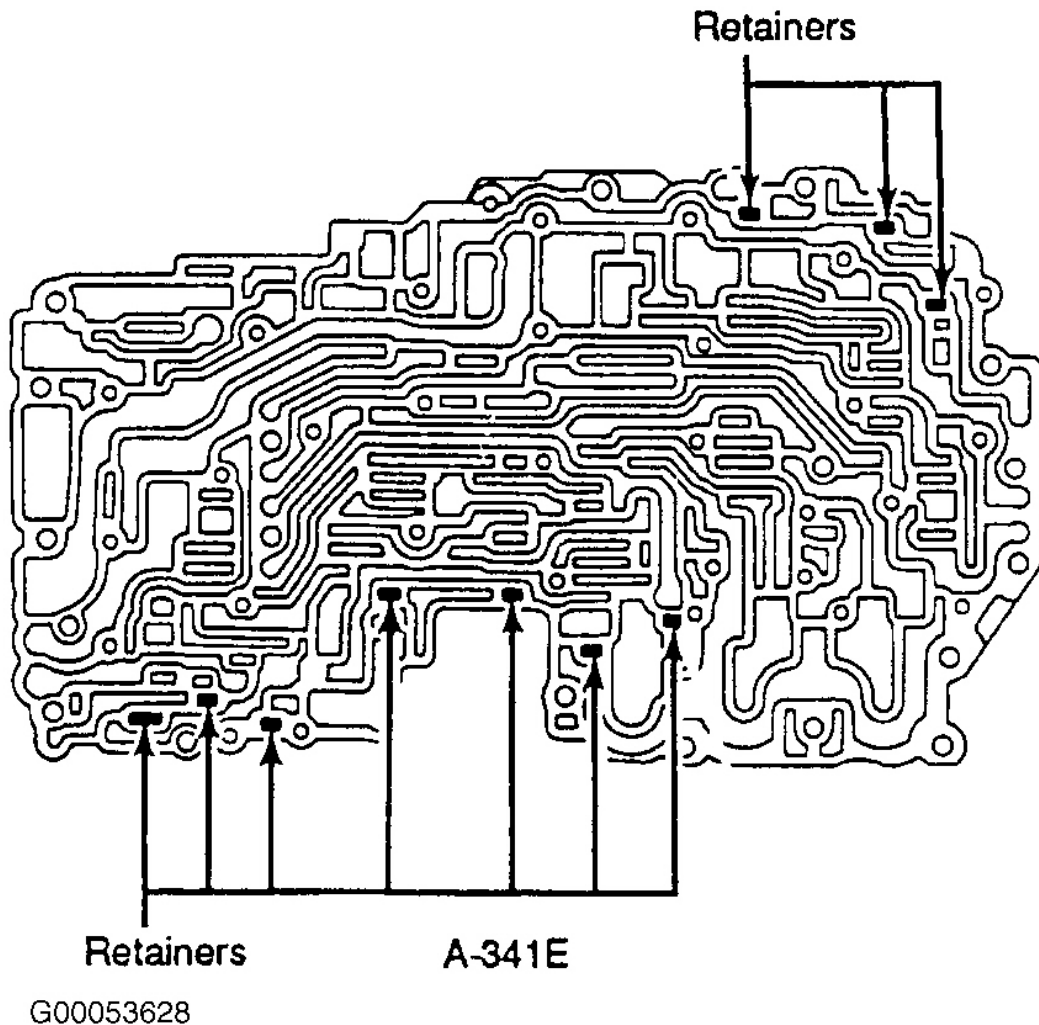


Fig. 101: Locating Lower Valve Body Retainers (A-341E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Reassembly

1. Coat all components with ATF. To reassemble reverse disassembly procedure. Ensure all valves slide freely in bores. Ensure retainers, check valve, rubber balls (if equipped) and strainers are installed in correct location. See **Fig. 100** and **Fig. 101**.
2. Ensure primary regulator valve retaining sleeve is aligned with reference mark made during disassembly. Torque solenoid bolt to specification. See **TORQUE SPECIFICATIONS**. Install valve body on upper valve body. See **UPPER VALVE BODY**.

UPPER VALVE BODY

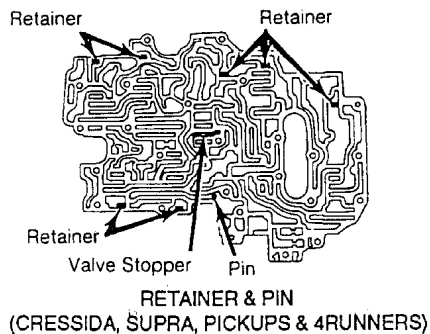
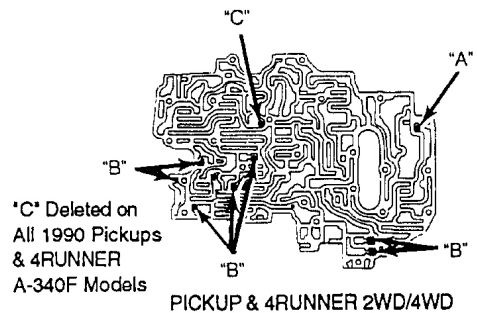
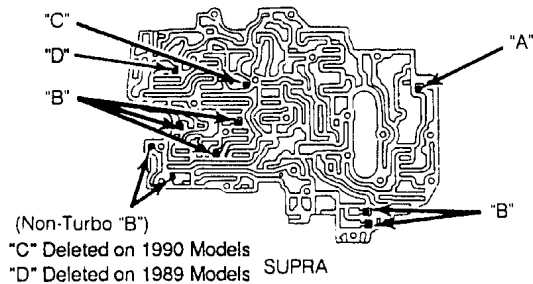
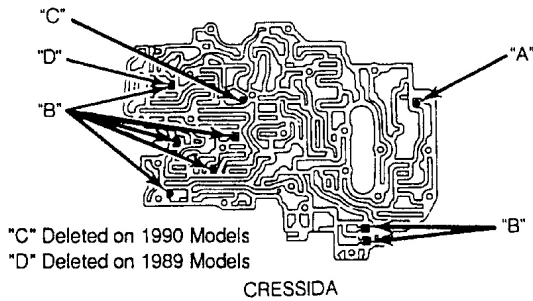
CAUTION: All valve body components must be installed in original location. Lay all components in sequence during removal for reassembly reference. Note diameter and ball location. Throttle pressure is changed according to number of adjusting rings. When assembling valve body, install same number of adjusting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

Disassembly

1. Separate valve body plate from upper valve body. Remove oil strainer. Note location and diameter of rubber and steel balls. See **Fig. 102** and **Fig. 103**.
2. Remove valve stopper and throttle valve cam. Note location of retainers. See **Fig. 102** and **Fig. 103**. Push inward on sleeves or plugs to remove retainers or pins. It may be necessary to use magnet to remove retainers.
3. Note amount of adjusting rings (if equipped). Sometimes adjusting rings may not be used. Remove all valves.

1990 Toyota 4Runner SR5

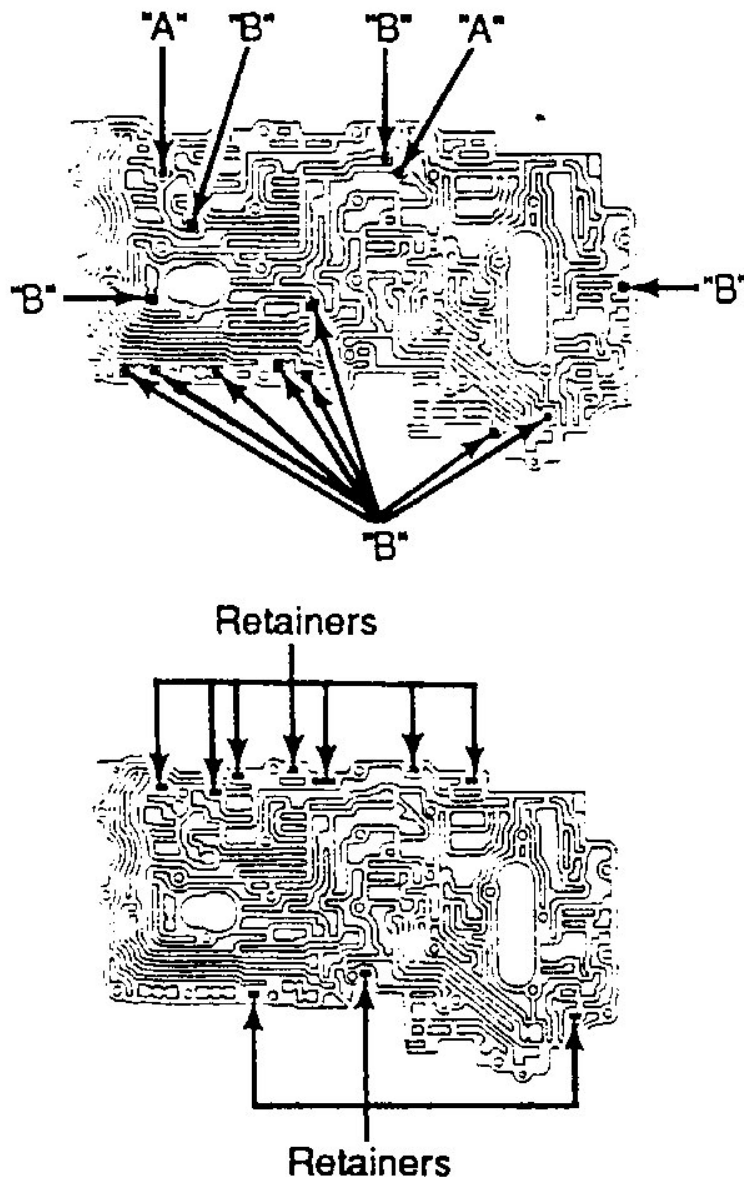
1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul



NOTE: Letter designates check ball size and material. See
UPPER VALVE BODY CHECK BALL SPECIFICA-
TIONS table.

G00053629

Fig. 102: Locating Upper Valve Body Check Ball & Retainer (A-340 Series)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



NOTE: Letter designates check ball size and material. See UPPER VALVE BODY CHECK BALL SPECIFICATIONS table.

G00053631

Fig. 103: Locating Upper Valve Body Check Ball & Retainer (A-341E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

1. Clean all parts in solvent. Dry with compressed air. Ensure all valve body passages are clear. Ensure strainers are not damaged or clogged. Inspect valves for scoring or roughness.
2. Ensure valves slide freely in bores. Inspect valve springs for damage, squareness and collapsed coils. Measure spring free length. Replace spring if not within specification. See **Fig. 104** .

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

UPPER VALVE BODY SPRING SPECIFICATIONS

Spring Application	Color Code	Free Length In. (mm)
A-340E		
Cut-Back Valve	None	.858 (21.79)
Downshift Plug	Yellow	1.075 (27.31)
Lock-Up Relay Valve	Light Gray	.843 (21.40)
Low Coast Modulator Valve		
Cressida (1988)	Pink	1.094 (27.80)
Cressida (1989-90)	Yellow	1.039 (26.40)
Supra (1988-90)	Pink	1.094 (27.80)
Pickup (1989-90)	Light Green	1.197 (30.40)
4Runner (1990)	Light Green	1.197 (30.40)
Second Coast Modulator Valve		
Cressida (1988)	Orange	.996 (25.30)
Cressida (1989-90)	Blue	.969 (24.60)
Supra 7M-GE (1988-90)	Orange	.996 (25.30)
Supra 7M-GTE (1988-90)	Red	1.165 (29.60)
Pickup (1989-90)	Orange	.996 (25.30)
4Runner (1990)	Orange	.996 (25.30)
Secondary Regulator Valve	Blue	1.217 (30.90)
Throttle Valve		
Non-Turbo	Blue	.811 (20.60)
Turbo	White	.917 (23.30)
2-3 Shift Valve	Purple	1.213 (30.80)
3-4 Shift Valve	Purple	1.213 (30.80)
A-340F & A-340H		
Cut-Back Valve	Red	.858 (21.80)
Downshift Plug	Yellow	1.075 (27.30)
Lock-Up Relay Valve	Light Gray	.843 (21.40)
Low Coast Modulator Valve	Light Green	1.197 (30.40)
Second Coast Modulator Valve	Orange	.996 (25.30)
Secondary Regulator Valve	Blue	1.217 (30.90)
Throttle Valve		
Non-Turbo	Blue	.811 (20.60)
Turbo	White	.917 (23.30)
2-3 Shift Valve	Purple	1.213 (30.80)
3-4 Shift Valve	Purple	1.213 (30.80)
A-341E		
Forward Clutch Accumulator	Pink	2.9630 (75.260)
Forward Clutch Orifice Control Valve	White	.8457 (21.480)
Forward Clutch Orifice Control Valve	White	1.4618 (37.130)
Lock-Up Relay Valve	Red	.922 (23.42)
Reverse Control Valve	None	1.007 (25.58)
Secondary Regulator Valve	None	1.448 (36.78)
Throttle Valve	Red	.689 (17.50)
Throttle Valve	Yellow	1.0728 (27.250)
2-3 Shift Valve	Purple	1.2114 (30.770)
3-4 Shift Valve	Purple	1.2114 (30.770)

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Fig. 104: Upper Valve Body Spring Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CAUTION: Correct type and diameter check ball must installed in proper location.

Reassembly

1. Coat all components with ATF. To reassemble, reverse disassembly procedure. Check that all valves slide freely in bores. Ensure retainers, valve stopper and pin are installed in correct location. See **Fig. 102** .
2. Install throttle valve cam and spring. Ensure spring is aligned with hole in valve cam and spring cutout area of valve body. Tighten retaining bolt to specification.
3. Proper type and size of check balls must be installed. Determine ball identification. See **Fig. 102** . Using ball identification, determine ball type and diameter. See **Fig. 105** .
4. Ensure all retainers, pins, valve stopper and check balls are installed in proper locations. See **Fig. 102** . Position new No. 1 gasket on upper valve body. Position valve body on No. 1 gasket. Position new No. 2 gasket on plate. Ensure all holes are aligned.
5. Install upper valve body and plate on lower valve body. Proper length bolts must be installed in designated locations. See **Fig. 106** and **Fig. 107** . Torque bolts to 57 INCH lbs. (6.4 N.m).
6. On A-341E models, install oil strainer, pressure relief valve and 4 solenoids. On all models, install manual valve. Install detent spring and torque bolt to 89 INCH lbs. (10 N.m). Ensure manual valve moves smoothly. See **Fig. 108** and **Fig. 109** .

1990 Toyota 4Runner SR5

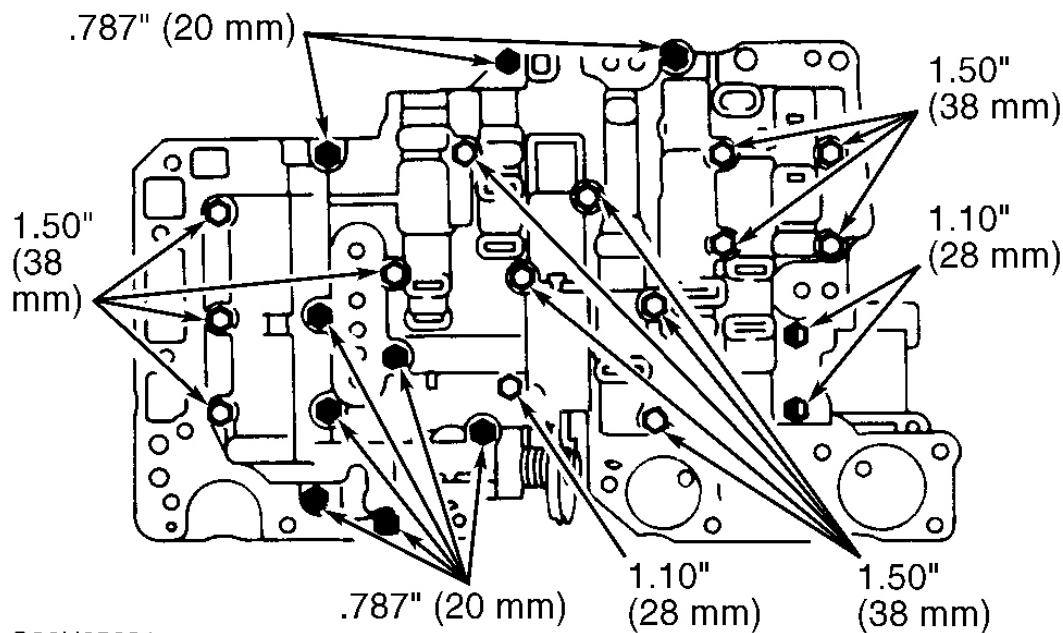
1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

UPPER VALVE BODY CHECK BALL SPECIFICATIONS

Ball Identification	Ball Type	No. of Check Balls	Check Ball Diameter In. (mm)
1988			
"A"	Rubber	1	.2500 (6.350)
"B" (Cressida)	Steel	6	.2189 (5.560)
"B" (Supra 7M-GE)	Steel	7	.2189 (5.560)
"B" (Supra M-GTE)	Steel	5	.2189 (5.560)
"B" (Pickup & 4Runner)	Steel	8	.2189 (5.560)
"C"	Steel	1	.2811 (7.140)
"D" (Cressida & Supra)	Rubber	1	.2181 (5.540)
1989			
"A"	Rubber	1	.2500 (6.350)
"B" (Cressida)	Rubber	7	.2181 (5.540)
"B" (Supra 7M-GE)	Rubber	8	.2181 (5.540)
"B" (Supra 7M-GTE)	Rubber	6	.2181 (5.540)
"B" (Pickup & 4Runner)	Rubber	8	.2181 (5.540)
"C"	Steel	1	.2811 (7.140)
1990			
"A"	Rubber	1	.2500 (6.350)
"A" (Lexus LS400)	Rubber	2	.2500 (6.350)
"B" (Cressida)	Rubber	7	.2181 (5.540)
"B" (Supra 7M-GE)	Rubber	8	.2181 (5.540)
"B" (Supra 7M-GTE)	Rubber	6	.2181 (5.540)
"B" (Pickup & 4Runner)	Rubber	8	.2181 (5.540)
"B" (Lexus LS400)	Rubber	11	.2181 (5.540)
"C" (4Runner A-340E/H)	Steel	1	.2811 (7.140)

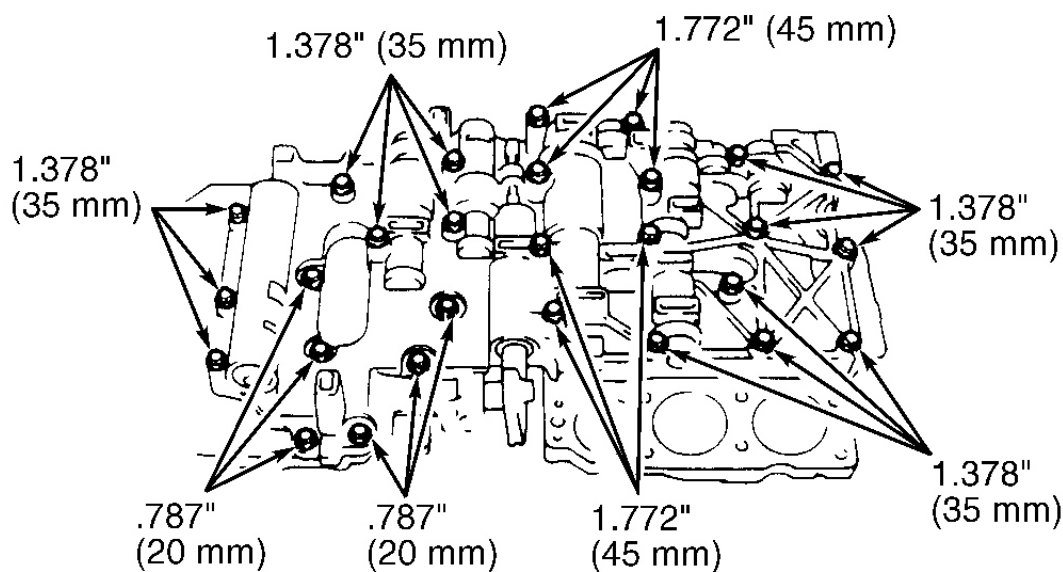
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Fig. 105: Upper Valve Body Check Ball Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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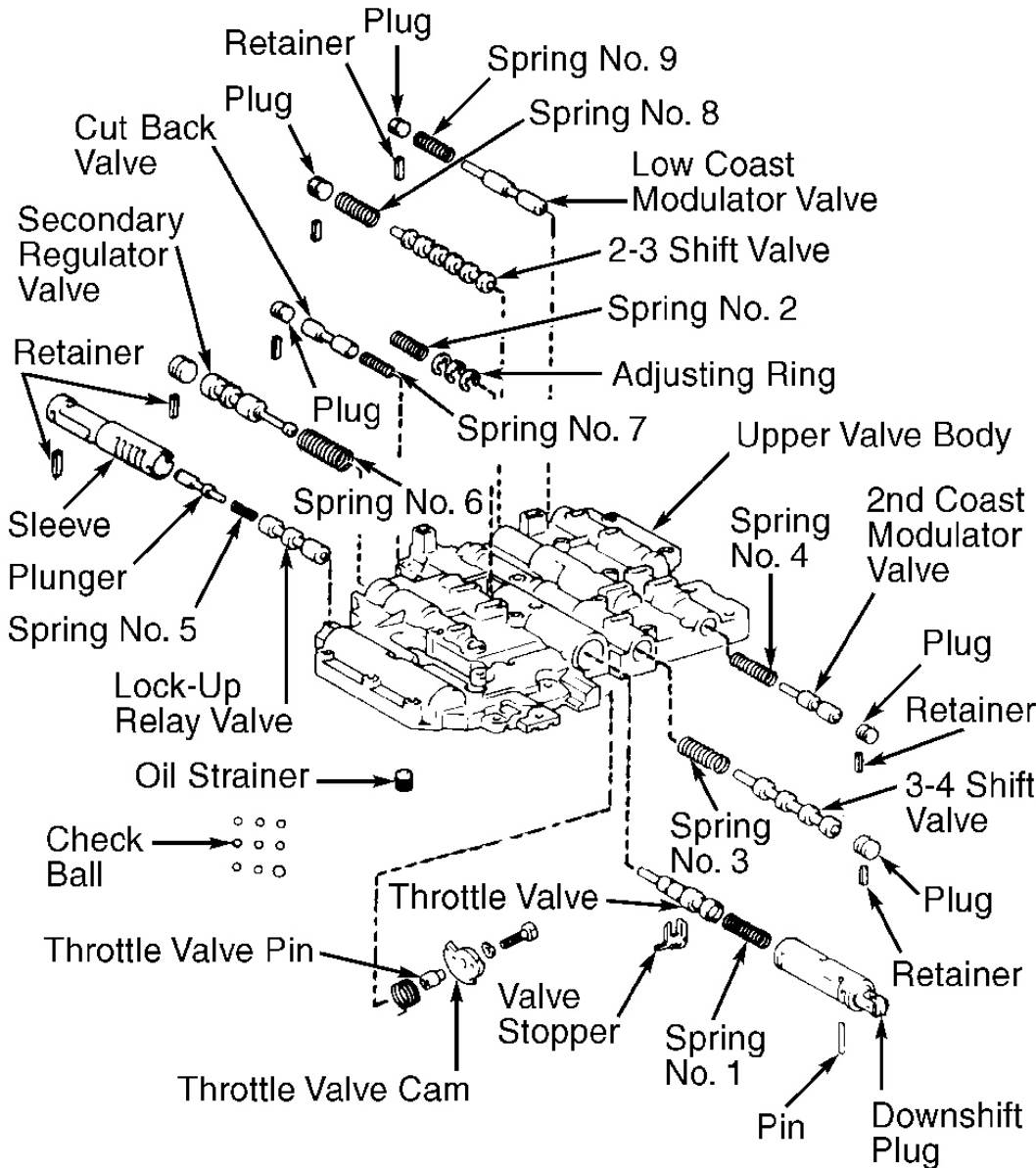
Fig. 106: Locating Upper Valve Body Bolts (A-340 Series)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 107: Locating Upper Valve Body Bolts (A-341E)

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



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Fig. 108: Exploded View Of Upper Valve Body (A-340 Series)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

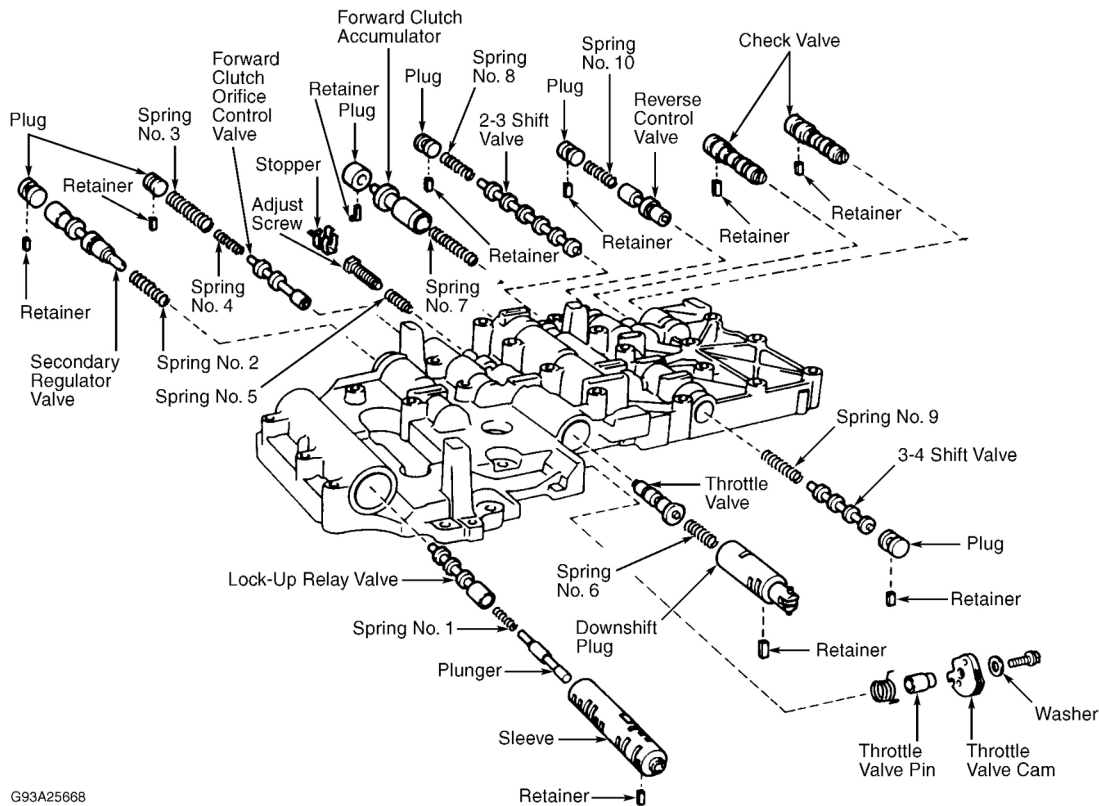


Fig. 109: Exploded View Of Upper Valve Body (A-341E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSMISSION REASSEMBLY

NOTE: Coat all oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces with ATF prior to reassembly. All gaskets and rubber "O" rings should be replaced. Ensure ends of snap rings are not aligned with cut-outs and are installed correctly in groove. If a worn bushing is to be replaced, replacement must be made with subassembly containing that bushing. Check thrust bearings and races for wear or damage. Use petroleum jelly to hold parts in place. Replace parts as necessary. Clutch discs should be soaked in ATF for at least 30 minutes before installation.

1. Before transmission reassembly, inspect case bushing and extension housing bushing (if equipped). Maximum transmission case bushing inside diameter is 1.5425" (39.180 mm) for A-341E and 1.5035" (38.190 mm) for all other models. Maximum extension housing bushing inside diameter is 1.5783" (40.090 mm). If measurement is greater than maximum, replace transmission case and/or extension housing.
2. On all models, install thrust bearing and race into transmission case. Bearing and race inside diameter is 1.543" (39.200 mm) and outside diameter is 2.272" (57.700 mm).
3. On A-340E and A-340H models, using Seal Replacer (09350-07110), tap in new oil seals. Assemble new

spacer to manual valve lever. Install manual lever shaft to case through manual valve lever. Install pin to shaft. Match spacer hole to lever calking hollow and calk spacer to lever. Ensure manual valve lever shaft turns smoothly.

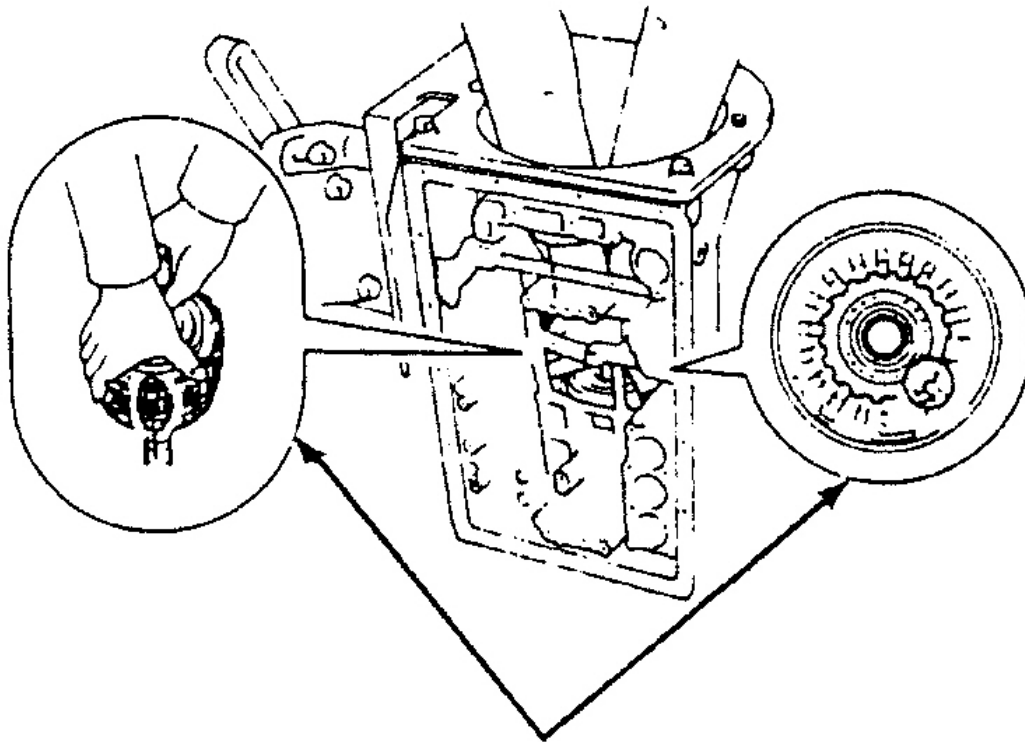
4. On A-340E, A-340F and A-340H models, install 1st and reverse brake No. 1 piston to reaction sleeve. Install No. 1 piston with reaction sleeve on No. 2 piston. Align No. 2 piston teeth into proper grooves. Carefully press No. 1 and No. 2 1st and reverse brake pistons into case. Position piston return spring on No. 2 piston. Using Spring Compressor (09350-07050), compress return spring. Install snap ring. Ensure snap ring end-gap is not aligned with spring retainer claw. Ensure 1st and reverse brake pistons move smoothly by applying compressed air to case. Refer to TSB 30.
5. Install 1st and reverse brake pack. On A-340H models, install plate and cushion plate. Cushion plate must be installed with rounded end toward brake drum end of output shaft. On A-340F models, install plate.
6. On all models, install flange with rounded edge toward planetary ring gear. Flanges are available in different thicknesses. See **Fig. 110** . Install plates and discs, starting with a disc and alternating with a plate. Install proper amount of plates and discs. See **Fig. 96** .
7. Install 2nd brake drum assembly. Install leaf spring. Align teeth of 2nd brake drum, flange, discs and plates. Align splines of transmission case, and assembled rear planetary gear, 2nd brake drum, 1st and reverse brake pack and output shaft. See **Fig. 111** .
8. Support output shaft on wooden blocks. Install snap ring in case with chamfered edge toward front of transmission. Ensure ends of snap ring are not aligned with cutout area of case. Measure 1st and reverse brake clearance between 2nd brake drum and plate. See **Fig. 112** . See **Fig. 113** .

1ST & REVERSE BRAKE FLANGE SPECIFICATIONS

Flange No.	Thickness In. (mm)
50	.197 (5.00)
51	.189 (4.80)
52	.181 (4.60)
53	.173 (4.40)
54	.165 (4.20)
55	.157 (4.00)

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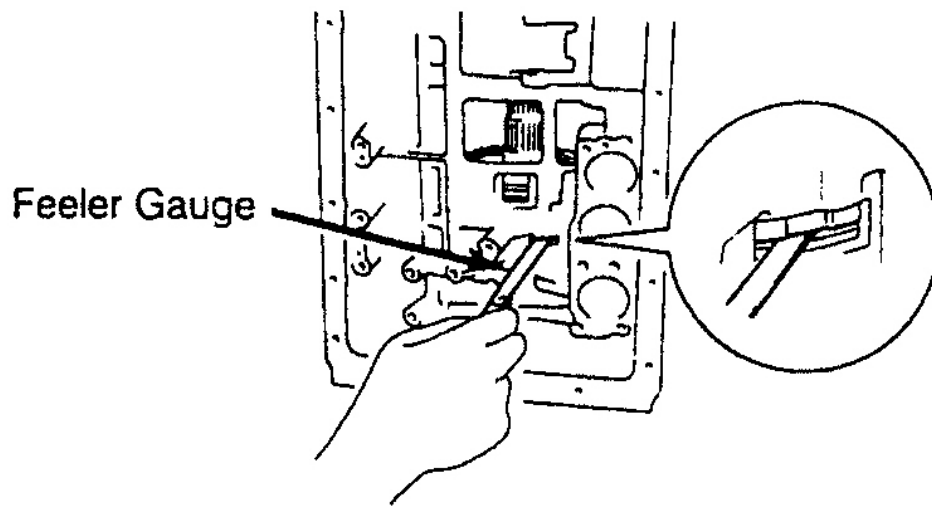
Fig. 110: 1st & Reverse Brake Flange Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



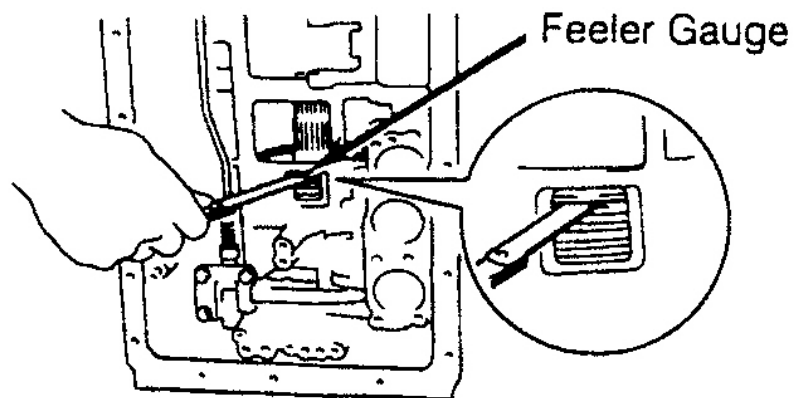
Aligning Splines of Transmission Case, Rear Planetary, 2nd Brake Drum, 1st & Reverse Brake Pack & Output Shaft

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Fig. 111: Aligning 1st & Reverse Brake Pack Splines
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



CHECKING 1ST & REVERSE BRAKE CLEARANCE



CHECKING 2ND BRAKE CLEARANCE

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Fig. 112: Measuring Brake Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

1ST & REVERSE BRAKE CLEARANCE SPECIFICATIONS

Application	Clearance In. (mm)
1988	
A-340E	
Cressida	.0232-.0441 (.590-1.120)
Supra	
7M-GE	.0291-.0882 (.740-2.240)
7M-GTE	.0370-.0988 (.940-2.510)
A-340H	
Pickup & 4Runner	.0228-.0811 (.580-2.060)
1989	
A-340E ¹	
Cressida	.0232-.0441 (.590-1.120)
Supra	
7M-GE	.0232-.0736 (.590-1.870)
7M-GTE	.0331-.0969 (.840-2.460)
Pickup 2WD	.0236-.0441 (.600-1.120)
4Runner 2WD	.0232-.0421 (.590-1.070)
A-340H	
Pickup 4WD	
22R-E	.0150-.0654 (.380-1.660)
3VZ-E	.0228-.0760 (.580-1.930)
4Runner 4WD	
22R-E	.0201-.0697 (.510-1.770)
3VZ-E	.0228-.0756 (.580-1.920)
1990	
A-340E ¹	
Cressida	.0232-.0441 (.590-1.120)
Supra	
7M-GE	.0236-.0441 (.600-1.120)
7M-GTE	.0276-.0480 (.700-1.220)
Pickup 2WD	.0236-.0441 (.600-1.120)
4Runner 2WD	.0232-.0421 (.590-1.070)
A-340F	
Pickup 4WD	.0197-.0402 (.500-1.020)
4Runner 4WD	.0197-.0402 (.500-1.020)
A-340H	
Pickup 4 WD	.0236-.0520 (.600-1.320)
4Runner 4 WD	
22R-E	.0201-.0697 (.510-1.770)
3VZ-E	.0228-.0756 (.580-1.920)
A-341E	
Lexus LS400	.0276-.0480 (.700-1.220)

¹— See TSB 30 at the end of this article.

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Fig. 113: 1st & Reverse Brake Clearance Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. If clearance is not within specification, select a different thickness flange. See **Fig. 114**.
10. Install 2nd brake piston sleeve with large area toward front of transmission. Using Gasket Installer

(09350-07100), install new brake drum gasket. Install parking lock pawl, shaft and spring. Connect lock rod to manual valve lever. Install parking lock pawl bracket. Torque bolts to 65 INCH lbs. (7.4 N.m). Place manual lever in "P" and ensure planetary ring gear is locked by parking pawl.

11. Install No. 1 one-way clutch assembly. Determine size of thick plate of 2nd brake components. Thick plate must be installed first. See **Fig. 114** . Install plate with rounded side of plate toward disc. See **Fig. 115** .

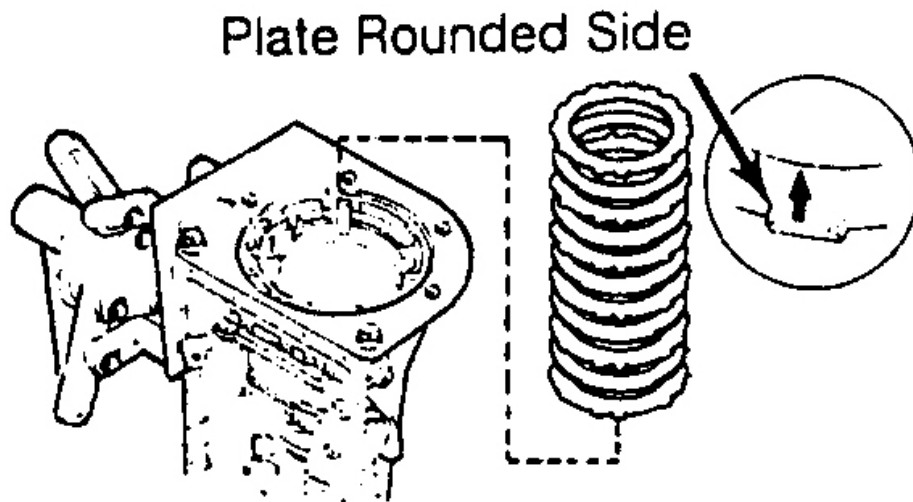
CAUTION: Clutch disc should be soaked in ATF for at least 30 minutes prior to installation.

2ND BRAKE PLATE THICKNESS SPECIFICATIONS

Application	Plate Thickness In. (mm)
A-340E	.071 (1.80)
A-340F	.098 (2.50)
A-340H	
22R-E	.098 (2.50)
3VZ-E	.071 (1.80)
A-341E	.071 (1.80)

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Fig. 114: 2nd Brake Plate Thickness Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



INSTALLING 2ND BRAKE THICK PLATE

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Fig. 115: Installing 2nd Brake Thick Plate

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

12. Starting with a disc and alternating with a plate, install correct amount of discs and plates. See **Fig. 116** . Install flange with rounded edged toward disc. Install snap ring. Ensure ends of snap ring are not located at cutout areas of case.

2ND BRAKE DISC & PLATE APPLICATION

Application	No. of Discs	No. of Plates
1988		
A-340E		
Cressida	4	3
Supra	5	4
A-340H		
Pickup & 4Runner	4	3
1989		
A-340E		
Cressida	5	4
Supra & Pickup 2WD	5	5
A-340H		
Pickup 4WD & 4Runner 4WD		
22R-E	4	3
3VZ-E	5	4
1990		
A-340E		
Cressida, Pickup 2WD & 4Runner 2WD	5	4
Supra	5	5
1990 (Cont.)		
A-340F		
Pickup 4WD & 4Runner 4WD	4	3
A-340H		
Pickup 4WD	5	4
4Runner 4WD		
22R-E	4	3
3VZ-E	5	4
A-341E		
Lexus LS400	5	5

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Fig. 116: 2nd Brake Disc & Plate Application

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

13. Measure 2nd brake clearance between snap ring and flange. See **Fig. 112** . Check for improper installation if clearance is not within specification. See **Fig. 117** .

14. While turning planetary sun gear clockwise, install sun gear into No. 1 one-way clutch. Ensure all thrust washers are correctly installed. Install front planetary gear bearing and race. Install front planetary gear into sun gear. Install snap ring . Remove wooden block from under output shaft. Install race on front of planetary gear so race tabs align with planetary gear holes.
15. Install 2nd coast brake band and pin. Pin must be installed so "E" ring is toward front of transmission. Install "E" ring. Install thrust bearing and race on forward clutch. Raised portion of race must be toward front.
16. Install race on front planetary ring gear. The smooth flat surface must be toward front. Align disc tabs of forward clutch. Install front planetary gear in forward clutch. Ensure gear is aligned with all clutch discs.
17. Install bearing race and thrust bearing on ring gear. Raised portion of race must be toward rear. Install forward and direct clutch assembly and front planetary ring gear in transmission case. Measure distance between sun gear input drum and direct clutch drum. See **Fig. 118** . Clearance should be .386-.440" (9.80-11.18 mm). Check for improper installation if clearance is not within specification.

2ND BRAKE CLEARANCE SPECIFICATIONS

Application	Clearance In. (mm)
1988	
A-340E	
Cressida	.0350-.0846 (.890-2.150)
Supra	.0244-.0780 (.620-1.980)
A-340H	
Pickup & 4Runner	.0197-.0693 (.500-1.760)
1989	
A340E	
Cressida, Supra, Pickup 2WD & 4Runner 2WD	.0244-.0780 (.620-1.980)
A-340H	
Pickup 4WD & 4Runner 4WD	
22R-E	.0197-.0693 (.500-1.760)
3VZ-E	.0244-.0780 (.620-1.980)
1990	
A-340E	
Cressida, Supra, Pickup 2WD & 4Runner 2WD	.0244-.0780 (.620-1.980)
A-340F	
Pickup 4WD & 4Runner 4WD	.0197-.0693 (.500-1.760)
A-340H	
Pickup 4WD	.0244-.0780 (.620-1.980)
4Runner 4WD	
22R-E	.0197-.0693 (.500-1.760)
3VZ-E	.0244-.0780 (.620-1.980)
A-341E	
Lexus LS400	.0244-.0780 (.620-1.980)

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Fig. 117: 2nd Brake Clearance Specifications

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

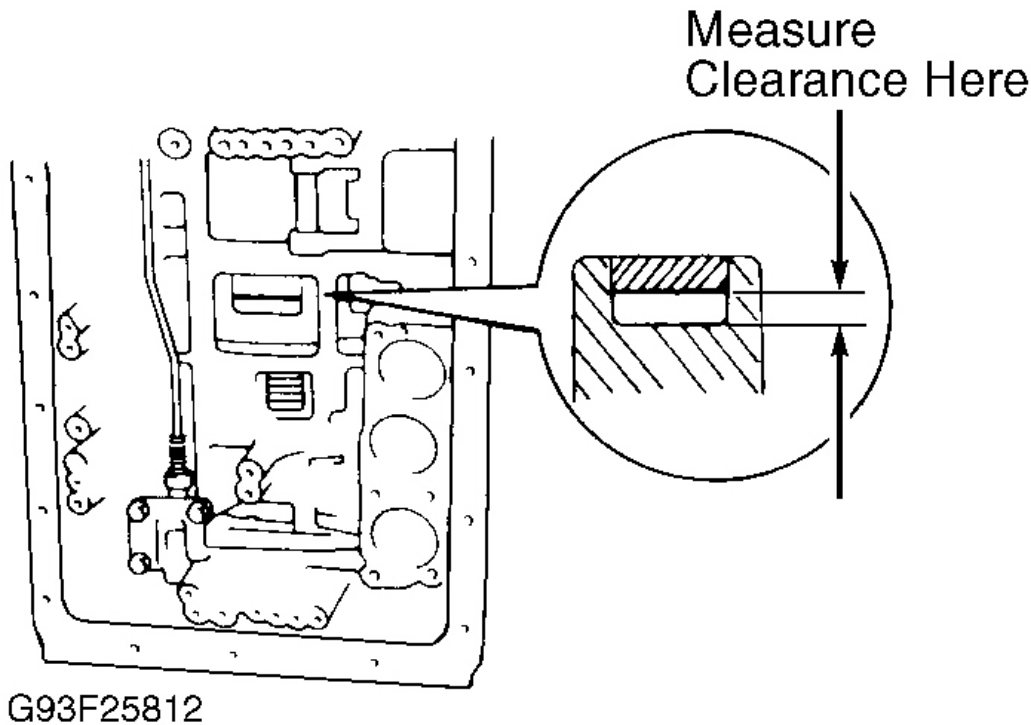


Fig. 118: Measuring Input Drum & Rear Clutch Drum Clearance
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

18. Install thrust bearing and race on forward clutch assembly with flat side toward clutch assembly. Install new "O" ring on 2nd coast brake cover. Install spring, 2nd coast brake piston assembly and cover to case. Install snap ring.
19. Place reference mark on 2nd coast brake piston rod. Apply 57-114 psi (4-8 kg/cm₂) at opening of transmission case. Using Wire Gauge Set (09240-00020), measure clearance between reference mark and case. This is piston rod stroke. See **Fig. 58** and **Fig. 59**.
20. Piston rod stroke should be within .059-.118" (1.49-2.99 mm). If not within specification, install new brake band. Install race on overdrive support. Align bolt and oil holes of overdrive support toward valve body side and bolt hole of case and install.
21. Ensure support is properly aligned. Install support snap ring with chamfered edge toward front of transmission. End of snap ring must be positioned to valve body side of case within .94" (23.9 mm) from center line of valve body as viewed from front of transmission.
22. Install support-to-case bolts. Torque bolts to 18 ft. lbs. (25 N.m). Using dial indicator, check output shaft end play. End play should be .0106-.0339" (.269-.861 mm). On A-341E models, end play should be within .0421-.0654" (1.070-1.660 mm). Check installation, if not within specification. Ensure output shaft rotates smoothly.

CAUTION: Clutch disc should be soaked in ATF for at least 30 minutes prior to installation.

23. Install overdrive brake assembly starting with a .157" (3.98 mm) thick flange. Flange must be installed with rounded edge facing disc. See **Fig. 122** .
24. Starting with disc and alternating with a plate, install correct amount of discs and plates. See **Fig. 119** . Install flange (stepped ring) with flat side toward disc. Install snap ring. Ensure ends of snap ring are not located at cutout areas of case.
25. Install Measure Terminal (09350-06120) and dial indicator on case and clutch pack. Apply 57-114 psi (4-8 kg/cm²) at opening of transmission case and note piston stroke. See **Fig. 122** .
26. Piston stroke must be within specification. See **Fig. 120** . If piston stroke is less than specification, check for improper installation. Repeat procedure. If piston stroke exceeds specification, install different thickness flange. Various thickness flanges are available. See **Fig. 121** .
27. On Supra models, once correct clearance is obtained, remove snap ring and brake components. On all models, install thrust bearing and races on overdrive support. Ensure race tabs align with hole support. Install overdrive planetary ring gear. Install thrust bearing and race in ring gear. Install race on rear of overdrive planetary gear, aligning race tabs with holes of gear.

OVERDRIVE BRAKE DISC & PLATE APPLICATION

Application	No. of Discs	No. of Plates
1988		
A-340E		
Cressida	4	3
Supra		
7M-GE	4	3
7M-GTE	5	4
A-340H		
Pickup & 4Runner	3	2
1989		
A-340E		
Cressida & Pickup 2WD	4	3
Supra		
7M-GE	4	3
7M-GTE	5	4
A-340H		
Pickup 4WD & 4Runner 4WD		
22R-E	3	2
3VZ-E	4	3
1990		
A-340E		
Cressida, Pickup 2WD & 4Runner 2WD	4	3
Supra		
7M-GE	4	3
7M-GTE	5	4
A-340F		
Pickup 4WD & 4Runner 4WD	3	2
A-340H		
Pickup 4WD	4	3
4Runner 4WD		
22R-E	3	2
3VZ-E	4	3
A-341E		
Lexus LS400	5	4

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Fig. 119: Overdrive Brake Disc & Plate Application

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

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

OVERDRIVE BRAKE PISTON STROKE SPECIFICATIONS

Application	Piston Stroke In. (mm)
1988	
A-340E	
Cressida	.0547-.0665 (1.390-1.690)
Supra	
7M-GE	.0547-.0665 (1.390-1.690)
7M-GTE	.0689-.0807 (1.750-2.050)
A-340H	
Pickup & 4Runner	.0520-.0638 (1.320-1.620)
1989	
A-340E	
Cressida & Pickup 2WD	.0547-.0665 (1.390-1.690)
Supra	
7M-GE	.0547-.0665 (1.390-1.690)
7M-GTE	.0689-.0807 (1.750-2.050)
A-340H	
Pickup 4WD & 4Runner 4WD	
22R-E	.0520-.0638 (1.320-1.620)
3VZ-E	.0547-.0665 (1.390-1.690)
1990	
A-340E	
Cressida, Pickup 2WD, 4Runner 2WD	.0547-.0665 (1.390-1.690)
Supra	
7M-GE	.0547-.0665 (1.390-1.690)
7M-GTE	.0689-.0807 (1.750-2.050)
A-340F	
Pickup 4WD & 4Runner 4WD	.0520-.0638 (1.320-1.620)
A-340H	
Pickup 4WD	.0547-.0665 (1.390-1.690)
4Runner 4WD	
22R-E	.0520-.0638 (1.320-1.620)
3VZ-E	.0547-.0665 (1.390-1.690)
A-341E	
Lexus LS400	.0689-.0807 (1.750-2.050)

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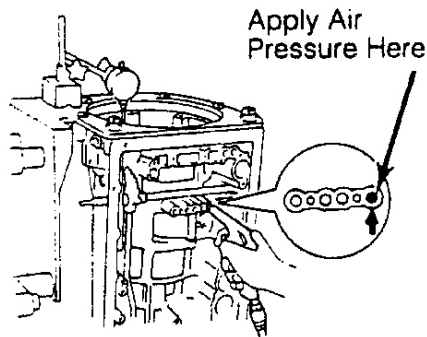
Fig. 120: Overdrive Brake Piston Stroke Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OVERDRIVE BRAKE FLANGE THICKNESS SPECIFICATIONS

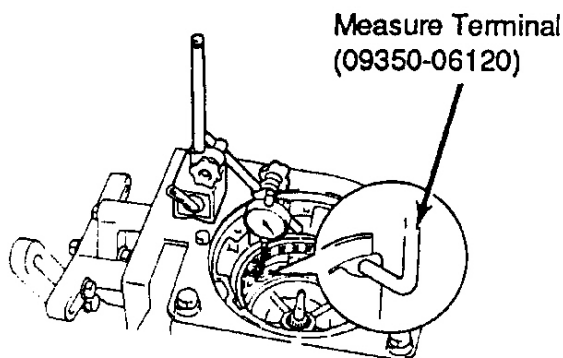
Application	Thickness In. (mm)
26	.130 (3.30)
25	.138 (3.50)
12	.142 (3.60)
24	.146 (3.70)
11	.150 (3.80)
23	.154 (3.90)
None	.157 (4.00)

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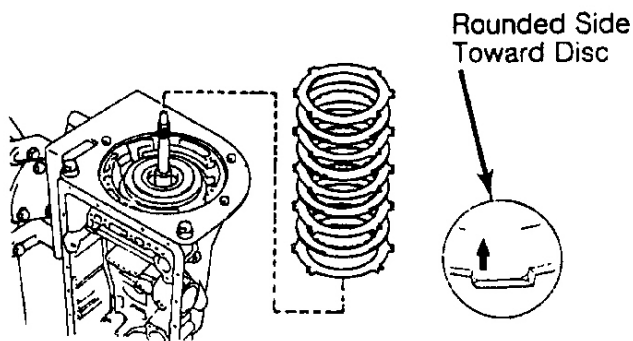
Fig. 121: Overdrive Brake Flange Thickness Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



APPLYING BRAKE



INSTALLING DIAL INDICATOR



INSTALLING FLANGE

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Fig. 122: Installing & Checking Overdrive Brake
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

28. Install overdrive planetary gear with overdrive direct clutch and one-way clutch. Position Plate (09350-06090) on transmission case (except Supra and Lexus). Using calipers, measure distance between top of

plate and clutch drum (except Supra and Lexus). Standard distance should be .610-.650" (15.50-16.50 mm). If not within specified limits, check for improper installation. Install thrust bearing and race onto OD direct clutch with race flat side toward direct clutch.

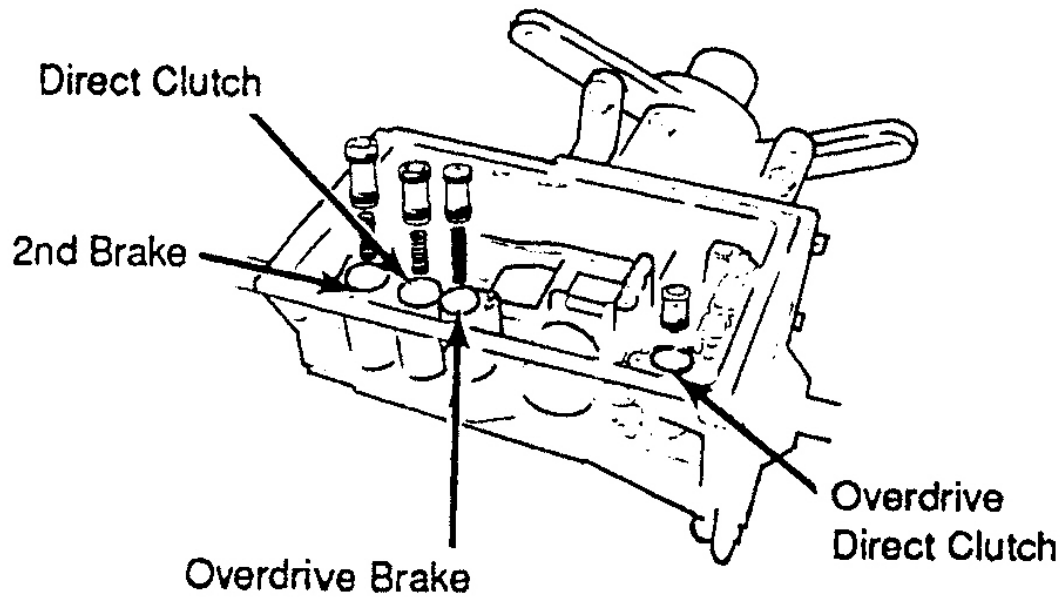
29. On Supra models, install overdrive brake components as previously removed. On all models, install snap ring. Ensure ends of snap ring are not aligned with cutout areas of case. Install race on rear of oil pump with raised side toward oil pump. Install new "O" ring on outer diameter of oil pump. Ensure seal rings are installed on rear of oil pump. Align holes of oil pump and case. Install oil pump while holding input shaft and lightly pressing on oil pump.

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

30. Install oil pump bolts. Torque bolts to 16 ft. lbs (22 N.m). Ensure input shaft rotates smoothly. Install throttle cable. Apply air pressure to specified oil passage to check operating components. See **Fig. 127** . Component application should be heard while applying air.

NOTE: When air checking rear clutch, overdrive accumulator piston hole must be plugged.

31. On A-340F and A-340H models, install speed sensor rotor and key on output. Install transfer case. See PICKUP & 4RUNNER TRANSFER CASES article in TRANSFER CASES for detailed information on transfer reassembly.
32. On A340F and A341E models, install new oil seals and spacer to manual valve lever. Install lever shaft to case. Install new spring pin. Match manual valve lever indentation with spacer hole and stake with a punch. Ensure shaft rotates smoothly.
33. On A-340F and A341E models, install "E" ring, parking lock pawl, shaft and spring. Connect parking lock rod to manual valve lever. Position parking lock pawl bracket on case and torque bolts to 65 INCH lbs. (7.4 N.m).
34. Determine accumulator piston, spring and pin reference location. See **Fig. 123** . Accumulator piston and pin must be proper diameter and height. See **Fig. 124** . Determine proper spring free length and outer diameter for accumulator piston application. See **Fig. 125** and **Fig. 126** .



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Fig. 123: Determining Accumulator Piston & Pin Location
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ACCUMULATOR PIN SPECIFICATIONS

Application	Diameter In. (mm)	Height In. (mm)
1988		
Cressida, Supra, Pickup & 4Runner		
2nd Brake	.472 (11.99)	1.386 (35.20)
Direct Clutch	.539 (13.69)	1.307 (33.20)
1989		
Pickup 4WD & 4Runner 4WD (22R-E)		
2nd Brake	.472 (11.99)	1.386 (35.20)
Direct Brake	.539 (13.69)	1.307 (33.20)
1990		
4Runner 4WD		
2nd Brake	.472 (11.99)	1.386 (35.20)
Direct Brake	.539 (13.69)	1.307 (33.20)

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Fig. 124: Accumulator Pin Specifications

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

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

ACCUMULATOR SPRING SPECIFICATIONS

Application	Free Length In. (mm)	Diameter In. (mm)	Direct Clutch	
1988				
A-340E				
2nd Brake			Upper (Outer)	
Lower			Pickup & 4Runner 22R-E 2.008 (51.00)787 (20.00)	
Cressida	1.535 (38.99)	.748 (19.00)	4Runner 3VZ-E 2.697 (68.50)795 (20.20)	
Supra	1.496 (38.00)	.764 (19.41)	Upper (Inner)	
Upper			Pickup & 4Runner 22R-E 1.264 (32.10)563 (14.30)	
Cressida & Supra 7M-GE	2.106 (53.49)	.776 (19.70)	Lower	
Supra 7M-GTE	2.252 (57.20)	.776 (19.70)	Pickup & 4Runner 22R-E 1.535 (39.00)819 (20.80)	
Overdrive Brake	2.598 (65.99)	.626 (15.90)	4Runner 3VZ-E787 (20.00)476 (12.10)	
Overdrive Direct Clutch			Pickup 3VZ-E 2.697 (68.50)795 (20.20)	
Inner	1.811 (46.00)	.551 (14.00)	Overdrive Brake	
Outer	2.937 (74.60)	.799 (20.29)	Pickup & 4Runner 22R-E 2.744 (69.70)657 (16.70)	
Direct Clutch			Pickup & 4Runner 3VZ-E 2.598 (66.00)634 (16.10)	
Lower	1.433 (36.40)	.831 (21.11)	Overdrive Direct Clutch	
Upper	1.894 (48.11)	.799 (20.29)	Inner	
A-340H				
2nd Brake			Pickup & 4Runner 3VZ-E 1.811 (46.00)551 (14.00)	
Lower	1.496 (38.00)	.764 (19.41)	Outer	
Upper	2.106 (53.49)	.776 (19.71)	4Runner 22R-E 2.638 (67.00)701 (17.80)	
A-340H				
Overdrive Brake	2.744 (69.70)	.657 (16.70)	Pickup & 4Runner 3VZ-E 2.937 (74.60)799 (20.30)	
Overdrive Direct Clutch	2.638 (67.00)	.701 (17.80)	Pickup 22R-E 2.638 (67.00)701 (17.80)	
Direct Clutch				
Lower	1.535 (39.00)	.819 (20.80)		
Upper (Outer)	2.008 (51.00)	.787 (20.00)		
Upper (Inner)	1.264 (32.10)	.563 (14.30)		
1989				
A-340E				
2nd Brake				
Cressida & Pickup 2WD	2.776 (70.50)	.776 (19.71)		
Supra				
7M-GE	2.890 (73.40)	.783 (19.90)		
7M-GTE	2.858 (72.60)	.783 (19.90)		
Direct Clutch				
Inner				
Cressida & Supra	1.657 (42.10)	.579 (14.70)		
Outer				
Cressida	2.768 (70.30)	.795 (20.20)		
Supra				
7M-GE	2.520 (64.00)	.795 (20.20)		
7M-GTE	2.768 (70.30)	.795 (20.20)		
Pickup 2WD	2.697 (68.50)	.795 (20.20)		
Overdrive Brake				
Cressida & Supra	2.441 (62.00)	.630 (16.00)		
Pickup 2WD & 4Runner				
2WD	2.937 (74.60)	.634 (16.10)		
Overdrive Direct Clutch				
Outer	2.937 (74.60)	.799 (20.30)		
Inner	1.811 (46.00)	.551 (14.00)		
A-340F				
2nd Brake				
Direct Clutch	2.698 (68.50)	.795 (20.20)		
Overdrive Brake	2.744 (69.70)	.657 (16.70)		
Overdrive Direct Clutch	2.638 (67.00)	.701 (17.80)		
A-340H				
2nd Brake				
Upper				
4Runner 22R-E	2.106 (53.50)	.776 (19.70)		
Lower				
4Runner 22R-E	1.496 (38.00)	.764 (19.40)		
Pickup 4WD & 4Runner				
3VZ-E	2.776 (70.50)	.776 (19.70)		
Direct Clutch				
Upper (Outer)				
4Runner 22R-E	2.008 (51.00)	.787 (20.00)		
Upper (Inner)				
4Runner 22R-E	1.264 (32.10)	.563 (14.30)		
Lower				
4Runner 22R-E	1.535 (39.00)	.819 (20.80)		
Pickup 4WD & 4Runner				
3VZ-E	2.697 (68.50)	.795 (20.20)		
Overdrive Brake				
4Runner 22R-E	2.744 (69.70)	.657 (16.70)		

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Fig. 125: Accumulator Spring Specifications (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ACCUMULATOR SPRING SPECIFICATIONS (Cont.)

Application	Free Length In. (mm)	Diameter In. (mm)
Pickup 4WD & 4Runner		
3VZ-E	2.598 (66.00)	.634 (16.10)
Overdrive Direct Clutch		
4Runner 22R-E	2.638 (67.00)	.701 (17.80)
Outer		
Pickup 4WD & 4Runner		
3VZ-E	2.937 (74.60)	.799 (20.30)
Inner		
Pickup 4WD & 4Runner		
3VZ-E	1.811 (46.00)	.551 (14.00)
1990 (Cont.)		
A-341E		
2nd Brake	2.963 (75.25)	.7862 (19.970)
Direct Clutch		
Inner	1.575 (40.00)	.556 (14.11)
Outer	2.787 (70.78)	.791 (20.10)
Overdrive Brake	2.637 (66.97)	.639 (16.24)
Overdrive Direct Clutch	2.573 (65.35)	.811 (20.59)

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Fig. 126: Accumulator Spring Specifications (2 Of 2)

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

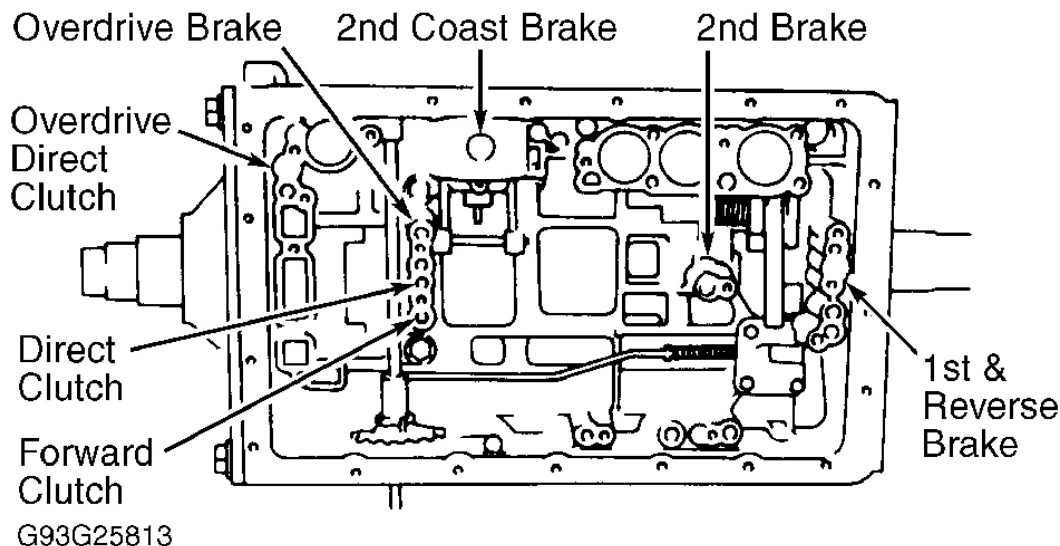


Fig. 127: Testing Component Locations With Air
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

35. Install new "O" rings on accumulator pistons. Install piston, springs and pins. Install check ball body and spring. Install valve body. See **TRANSMISSION VALVE BODY** under ON-VEHICLE SERVICE.
36. On A-340E and A-341E models, install sensor rotor and key on output shaft and snap ring. Install speedometer drive gear and lock ball and snap ring on output shaft. Install extension housing and new gasket. Shorter mounting bolts go to bottom of extension housing. Torque bolts to 27 ft. lbs. (36 N.m) on A-340E and 25 ft. lbs. (34 N.m) on A-341E.
37. On A-340F models, install transfer and propeller shaft upper dust cover to transmission. Torque propeller shaft upper dust cover bolts to 27 ft. lbs. (36 N.m). Torque dust cover bracket bolt to 17 ft. lbs. (23 N.m). Install engine rear mounting. Torque bolts to 18 ft. lbs. (25 N.m). Install dynamic damper. Torque bolts to 27 ft. lbs. (36 N.m). Install breather hose. Hose depth is .51" (13 mm).
38. On A-340H models, install parking lock pawl bracket. Torque bolts to 61 INCH lbs. (6.9 N.m). Install transfer solenoid wiring. Install transfer valve body. Align manual valve groove to lever pin. Torque bolts to 89 INCH lbs. (10 N.m). Connect No. 4 solenoid and transfer pressure switch connectors. Install transfer oil pan. Install magnets in oil pan. Apply seal packing, Three Bond (1281) to oil pan. Torque oil pan bolts to 65 INCH lbs. (7.4 N.m).
39. On A-341E models, install transmission output flange. Shift manual valve lever to "P" position. Torque nut to 91 ft. lbs. (123 N.m). Stake nut with chisel and hammer.
40. On all models, install transmission housing. On A-340E, A-340H and A-341E torque 10 mm bolt to 25 ft. lbs. (34 N.m) and 12 mm bolt to 42 ft. lbs. (57 N.m). On A-340F torque 14 mm bolt to 25 ft. lbs. (34 N.m) and 17 mm bolt to 42 ft. lbs. (57 N.m).
41. On A-340E models, install speed sensor and speedometer driven gear. Torque bolts 12 ft. lbs. (16 N.m) and torque front and rear unions to 21 ft. lbs. (29 N.m). On A-341E models, install speed sensor and torque bolts to 48 INCH lbs. (5.4 N.m). Install No. 1 speed sensor and torque bolts to 12 ft. lbs. (16 N.m).

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

42. On A-340F models, install speed sensor. Install and torque fluid temperature sensor to 11 ft. lbs. (15 N.m).
43. On A-340H models, install speed sensor. Install transfer position switch. Torque mounting nut to 35 INCH lbs. (3.9 N.m). Shift control lever into "H4" position. Align basic line and switch groove. Torque bolts to 115 INCH lbs. (13 N.m). Bend at least 2 lock washer tabs. Install transfer control shaft lever. Torque bolts to 12 ft. lbs. (16 N.m). Install speedometer driven gear. Torque bolts to 12 ft. lbs. (16 N.m). Install transfer side unions and torque to 21 ft. lbs. (29 N.m). Install transfer oil cooler tubes. Torque tube clamp bracket, outlet tube and inlet tube bolts to 25 ft. lbs. (34 N.m). Torque tube clamp to 89 INCH lbs. (10 N.m). Install transmission and transfer fluid temperature sensors. Torque bolts to 11 ft. lbs. (15 N.m).
44. On all models install neutral start switch. Torque nut to 61 INCH lbs. (6.9 N.m). Align neutral basic line and switch groove and torque adjusting bolt to 115 INCH lbs. (13 N.m). Bend at least 2 lock washer tabs. Install control shaft lever. Torque to 12 ft. lbs. (16 N.m). If throttle is new, stake stopper on inner cable. Install wire harness and throttle cable clamp. Install torque converter. Using calipers and straightedge, measure distance from front of converter to front surface of transmission housing. If torque converter is fully installed, distance should be as specified. See **Fig. 128**.

TORQUE CONVERTER DISTANCE SPECIFICATIONS

Application	Distance In. (mm)
A-340E	
Cressida and Supra	1.039 (26.40)
Pickup 2WD & 4Runner 2WD	.787 (20.00)
A340F	
Pickup 4WD & 4Runner 4WD	.709 (18.00)
A-340H	
Pickup 4WD	.709 (18.00)
4Runner 4WD	
22R-E	.787 (20.00)
3VZ-E	.709 (18.00)
Lexus LS400	.669 (17.00)

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Fig. 128: Torque Converter Distance Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	N.m (Ft. Lbs.)
Chain Case Bolt (A-340H)	34 (25)

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

Companion Flange Nut (A-340H)	123 (91)
Cooler Union	29 (21)
Extension Housing Bolt	36 (27)
Extension Housing Bolt (A-340H, A-341E)	34 (25)
Fluid Temperature Sensor Bolt (A-340H)	15 (11)
Front Support Bolt (A-340H)	34 (25)
Oil Cooler Pipe Union Nut	34 (25)
Oil Pump-To-Case Bolt	22 (16)
Overdrive-To-Case Bolt	25 (18)
Rear Mounting-To-Extension Housing Bolt	25 (18)
Shift Lever Nut	16 (12)
Speed Sensor Bolt	16 (12)
Speedometer Driven Gear Bolt	16 (12)
Support Crossmember-To-Body Bolt	25 (18)
Torque Converter-To-Drive Plate Bolt	41 (30)
Transfer Case-To-Transmission Bolt (A-340H)	34 (25)
Transfer Oil Cooler Tube Union Nut (A-340H)	34 (25)
Transfer Oil Pump-To-Rear Chain Case Bolt (A-340H)	16 (12)
Transmission Housing Bolt	
10 mm	34 (25)
12 mm	57 (42)
14 mm (A-341E)	34 (25)
17 mm (A-341E)	57 (42)
Transmission Output Flange Bolt (A-341E)	123 (91)
N.m (INCH Lbs.)	
Detent Spring Bolt	10 (89)
Neutral Start Switch	
Adjusting Bolt	13 (115)
Retaining Nut	6.9 (61)
No. 2 Speed Sensor Bolt (A-341E)	5.4 (48)
Oil Pan Bolt	7.3 (65)
Oil Pump-To-Stator Shaft Bolt	10 (89)
Oil Strainer Bolt	10 (89)
Overdrive Direct Clutch Speed Sensor Bolt (A-341E)	5.4 (48)
Parking Lock Pawl Bracket Bolt	7.3 (65)
Solenoid-To-Valve Body Bolt	10 (89)
Throttle Cable-To-Transmission Case Bolt (A-341E)	5.4 (48)
Transfer Detent Spring-To-Valve Body Bolt (A-340H)	6.9 (61)
Transfer Lock Pawl Bracket Bolt (A-340H)	6.9 (61)
Transfer Oil Pump Body Bolt (A-340H)	10 (89)
Transfer Oil Strainer Bolt (A-340H)	6.9 (61)
Transfer Position Switch	

1990 Toyota 4Runner SR5

1988-90 AUTOMATIC TRANSMISSIONS Toyota A-340E, A-340F, A-340H & A-341E Overhaul

Adjusting Bolt	13 (115)
Mounting Nut	3.9 (35)
Transfer Pressure Switch-To-Valve Body (A-340H)	6.9 (61)
Transfer Valve Body-To-Case Bolt (A-340H)	10 (89)
Upper Valve Body-To-Lower Valve Body Bolt	6.4 (57)
Valve Body-To-Case Bolt	10 (89)