

ABBREVIATIONS USED IN THIS MANUAL

A/T ATM	Automatic Transmission
ATF	Automatic Transmission Fluid
B ₁	Second Coast Brake
B ₂	Second Brake
B ₃	First and Reverse Brake
B ₄	Underdrive Brake
C ₁	Forward Clutch
C ₂	Direct Clutch
C ₃	Underdrive Clutch
D	Disc
Ex.	Except
F	Flange
F ₁	No. 1 One-way Clutch
F ₂	No. 2 One-way Clutch
F ₃	Underdrive One-way Clutch
MP	Multipurpose
O/D	Overdrive
P	Plate
SSM	Special Service Materials
SST	Special Service Tools
STD	Standard
T/C	Torque Converter
T/F	Transfer
U/D	Underdrive
w/	with
4WD	Four Wheel Drive

DESCRIPTION

General

A240L, A241E, A243L

The A240L, A241E and A243L automatic transaxles are 4-speed transaxles with a lock-up mechanism developed exclusively for use with a transversely-mounted engine.

The A241E automatic transaxle is an Electronically Controlled Transaxle (hereafter called ECT).

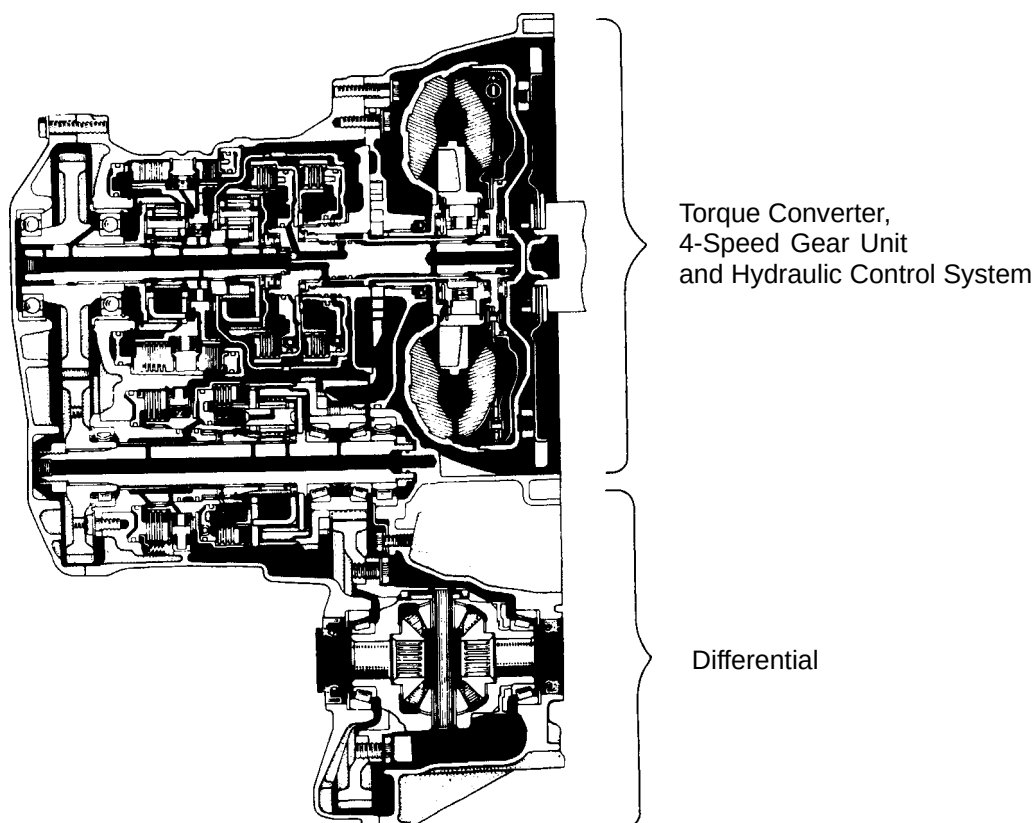
These automatic transaxles have the following features.

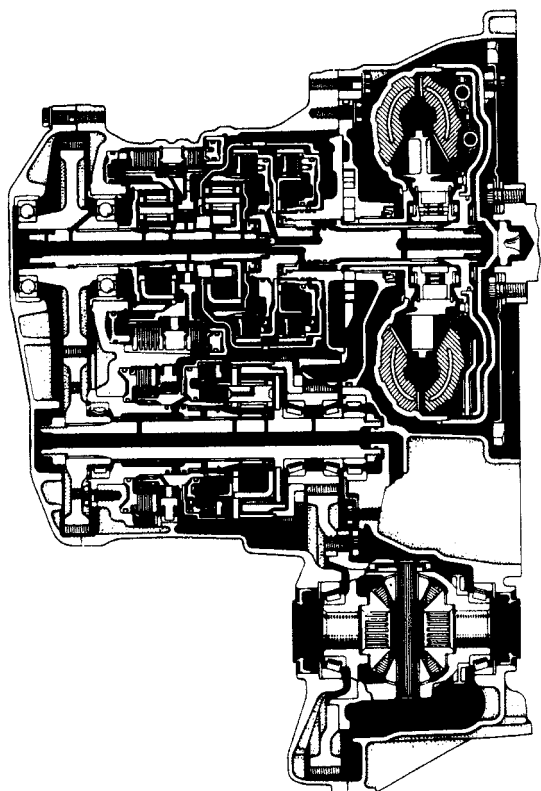
- **The “Super-Flow” torque converter is used to improve the transmission efficiency.**
- **When shifting the transmission, the engine torque is controlled and the clutch hydraulic pressure in the transmission is electronically controlled to reduce transmission shift shock. (A241E)**
- **Transaxle control ECU has been integrated with the Engine ECU. (A241E)**

These automatic transaxle are mainly composed of the torque converter with lock-up clutch, 4-speed planetary gear unit, the hydraulic control system and the electronic control system.

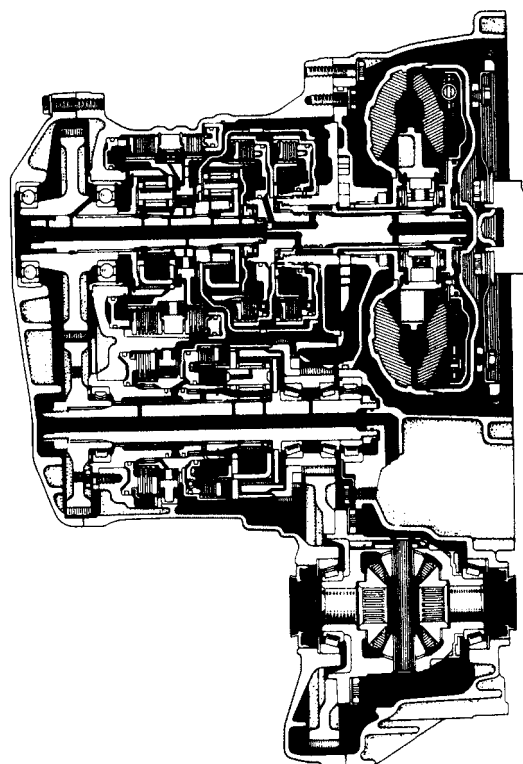
To minimize the possibility of incorrect operation of the automatic transaxle, a shift lock mechanism has also been added.

A240L





A241E



A243L

A241H

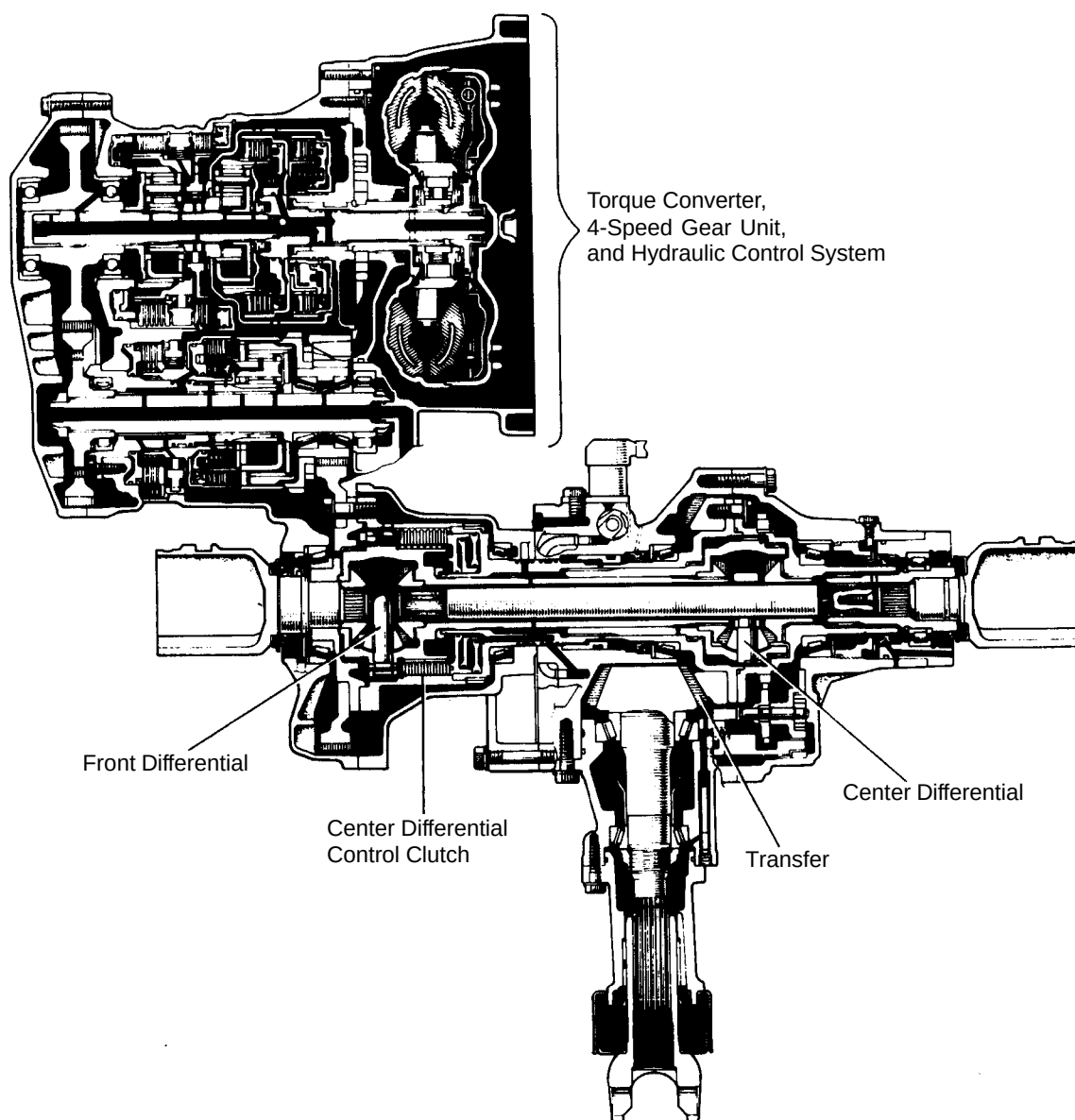
The A241H automatic transaxle is a 4-speed automatic transaxle developed for full-time 4WD use. Its construction is that of the favorably received A240L automatic transaxle.

In addition, a center differential control clutch, which operates in response to driving conditions, has been incorporated.

The center differential control clutch controls excessive differences in the rotation rates of the front and rear wheels to provide the most suitable driving conditions.

NOTICE: Special handling methods are necessary for full-time 4WD vehicles during inspection and maintenance. Instructions concerning these handling methods are given on Corolla Repair Manual (Pub. No. RM252U) on page IN-8.

A241H



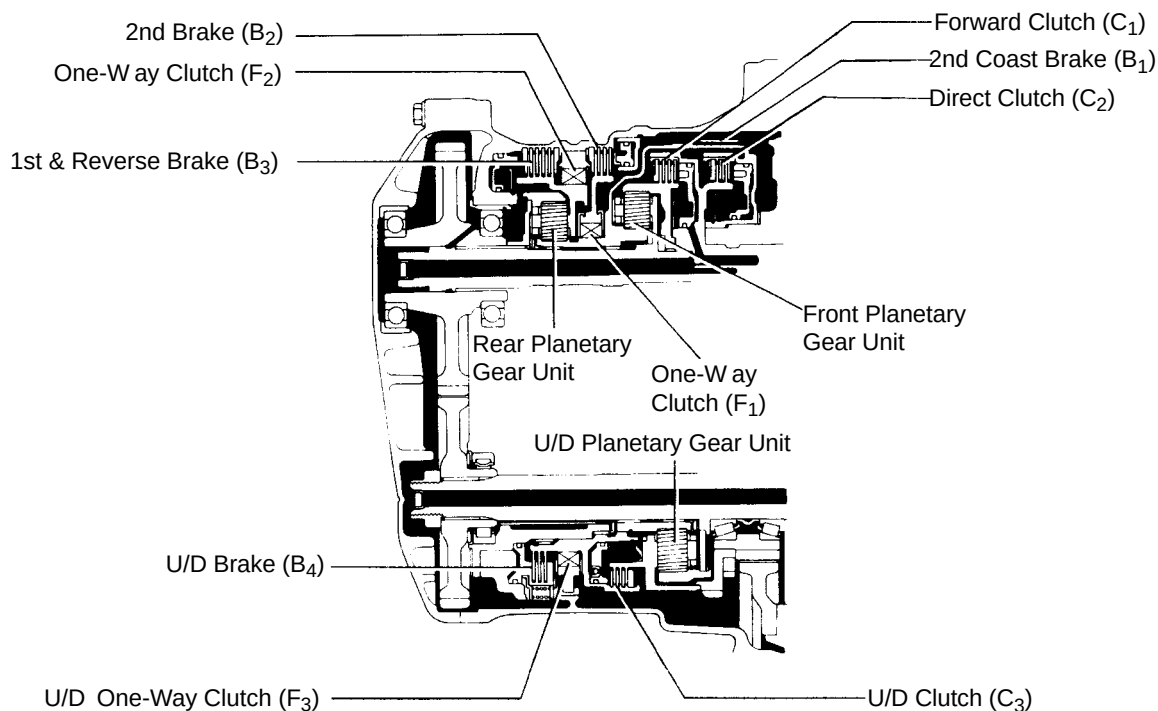
General Specifications

Type of Transaxle		A240L	A243L	A241E	A241H
Type of Engine		4A-FE	4A-FE	5S-FE	4A-FE
Torque Converter	Stall Torque Ratio	2.3 : 1	2.5 : 1	2.0 : 1	2.3 : 1
	Lock-Up Mechanism	Equipped	←	←	←
Gear Ratio	1st Gear	3.643	4.005	3.643	←
	2nd Gear	2.008	2.208	2.008	←
	3rd Gear	1.296	1.425	1.296	←
	O/D Gear	0.892	0.981	0.892	←
	Reverse Gear	2.977	3.272	2.977	←
Number of Disc and Plates (Disc/Plate)	C ₁ Forward Clutch	4/4	←	←	←
	C ₂ Direct Clutch	2/3	2/3	3/3	2/3
	C ₃ Underdrive clutch	3/3	3/3	3/5	3/3
	B ₂ 2nd Brake	3/3	←	←	←
	B ₃ 1st and Reverse Brake	6/5	←	←	←
	B ₄ Underdrive Brake	3/3	←	←	←
B ₁ Band Width mm (in.)		25 (0.98)	←	←	←
ATF	Type	ATF DEXRON★II	←	←	ATF Type T or equivalent
	Capacity liter (US. qts, Imp. qts)	7.2 (7.6, 6.3)	7.7 (8.1, 6.8)	8.0 (8.5, 7.0)	8.2 (8.7, 7.2)
Transfer Oil	Type	—	—	—	Transaxle Oil E50, API GL5, SAE 75W-90 or equivalent
	Capacity liter (US. qts, Imp. qts)	—	—	—	0.8 (0.8, 0.7)

OPERATION

Mechanical Operation

OPERATING CONDITIONS



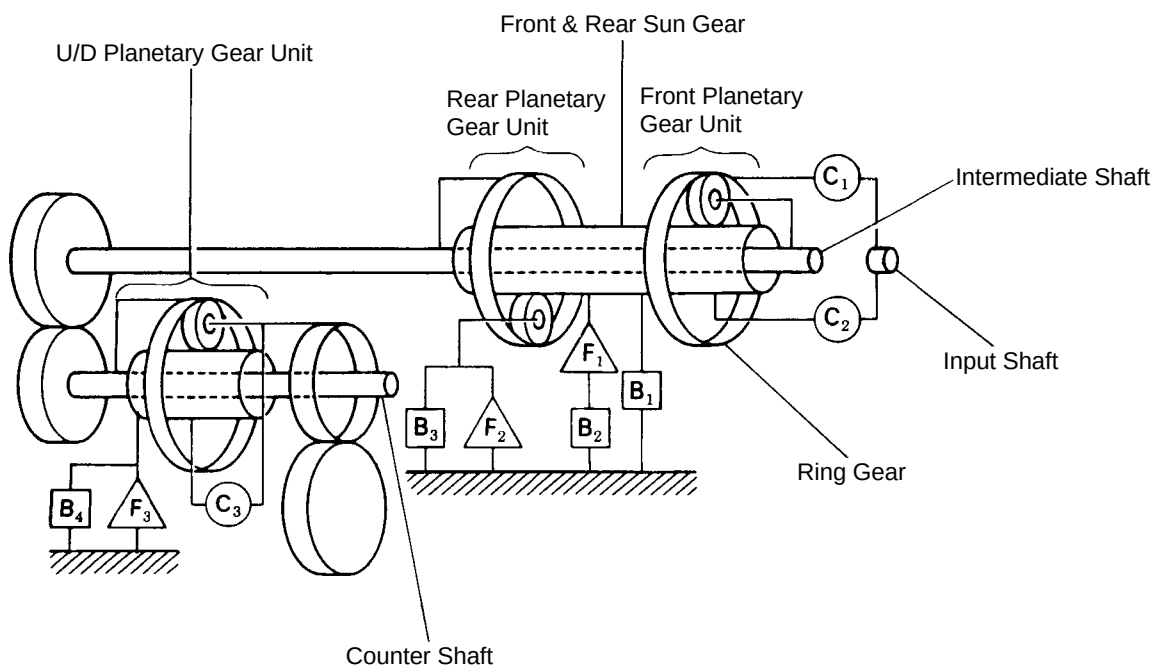
AT8498

Range (i.e.,) Shift Lever Position	Gear	No. 1 Solenoid Valve* ¹	No. 2 Solenoid Valve* ¹	C ₁	C ₂	C ₃	B ₁	B ₂	B ₃	B ₄	F ₁	F ₂	F ₂
P	Park	ON	OFF							★			
R	Reverse	ON	OFF		★				★	★			
N	Neutral	ON	OFF							★			
D	1st	ON	OFF	★						★		★	★
	2nd	ON	ON	★				★		★	★		★
	3rd	OFF	ON	★	★			★		★			★
	O/D	OFF	OFF	★	★	★		★					
2	1st	ON	OFF	★						★		★	★
	2nd	ON	ON	★			★	★		★	★		★
	3rd* ²	OFF	ON	★	★			★		★			★
L	1st	ON	OFF	★					★	★		★	★
	2nd* ²	ON	ON	★			★	★		★	★		★

*¹: A241E only ★: Operating*²: Down-Shift only in the the 3rd gear for the 2 range and 2nd gear for the L-range - no up-shift

FUNCTION OF COMPONENTS

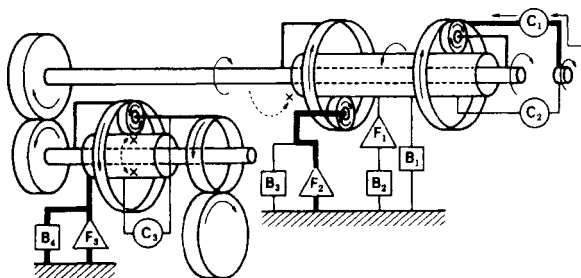
Component		Function
C ₁	Forward Clutch	Connects input shaft and front planetary ring gear.
C ₂	Direct Clutch	Connects input shaft and front & rear planetary sun gear.
C ₃	U/D Clutch	Connects underdrive sun gear and underdrive planetary carrier.
B ₁	2nd Coast Brake	Prevents front & rear planetary sun gear from turning either clockwise or counterclockwise.
B ₂	2nd Brake	Prevents outer race of F ₁ from turning either clockwise or counterclockwise thus preventing the front & rear planetary sun gear from turning counterclockwise.
B ₃	1st & Reverse Brake	Prevents rear planetary carrier from turning either clockwise or counterclockwise.
B ₄	U/D Brake	Prevents underdrive sun gear from turning either clockwise or counterclockwise.
F ₁	No. 1 One-Way Clutch	When B ₂ is operating, this clutch prevents the front & rear planetary sun gear from turning counterclockwise.
F ₂	No. 2 One-Way Clutch	Prevents rear planetary carrier from turning counterclockwise.
F ₃	U/D One-Way Clutch	Prevents underdrive planetary sun gear from turning clockwise.
Planetary Gears		These gears change the route through which driving force is transmitted in accordance with the operation of each clutch and brake in order to increase or reduce the input and output speed.



FUNCTION OF COMPONENTS (Cont'd)

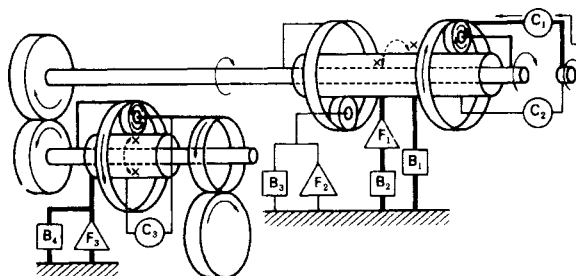
The conditions of operation for each gear position are shown on the following illustration:

D or 2 Range 1st Gear



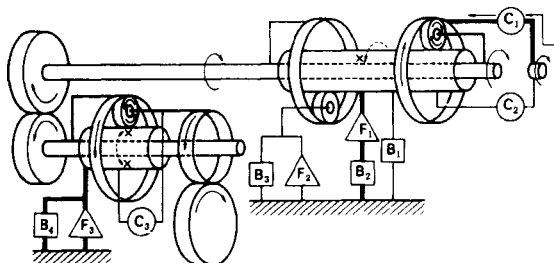
AT3216

2 Range 2nd Gear



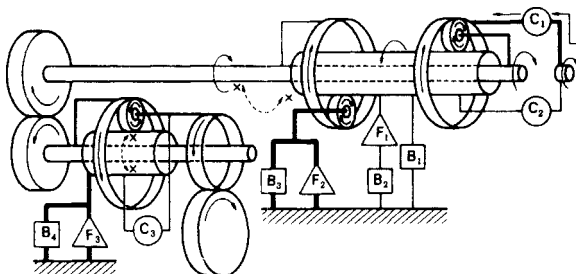
AT3220

D Range 2nd Gear



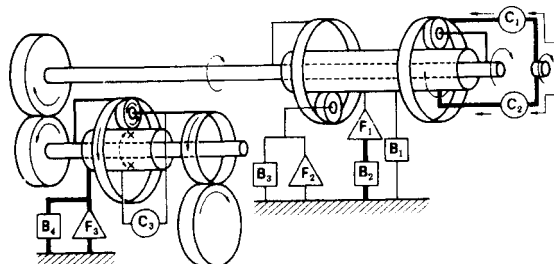
AT3217

L Range 1st Gear



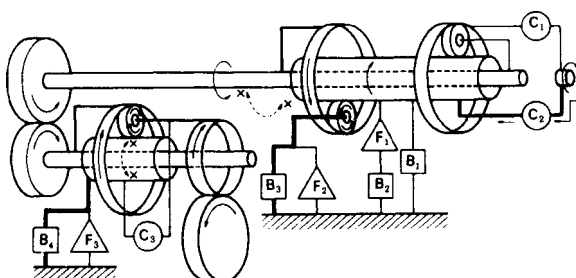
AT3221

D Range 3rd Gear



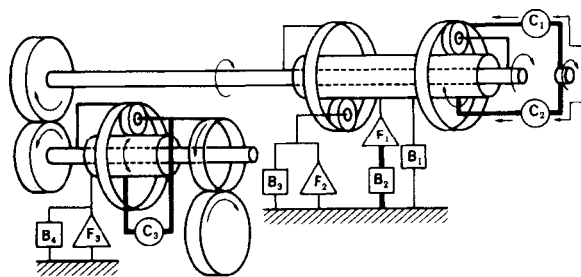
AT3218

R Range Reverse Gear



AT3222

D Range O/D



AT3219

Hydraulic Control System

The hydraulic control system is composed of the oil pump, the valve body, the solenoid valves, the accumulators, the clutches and brakes, and the governor valve as well as the fluid passages which connect all of these components.

Based on the hydraulic pressure created by the oil pump, the hydraulic control system governs the hydraulic pressure acting on the torque converter, clutches and brakes in accordance with the vehicle driving conditions.

The governor valve produces hydraulic pressure in response to vehicle speed. Governor pressure increases as vehicle speed increases. (A240L and A243L)

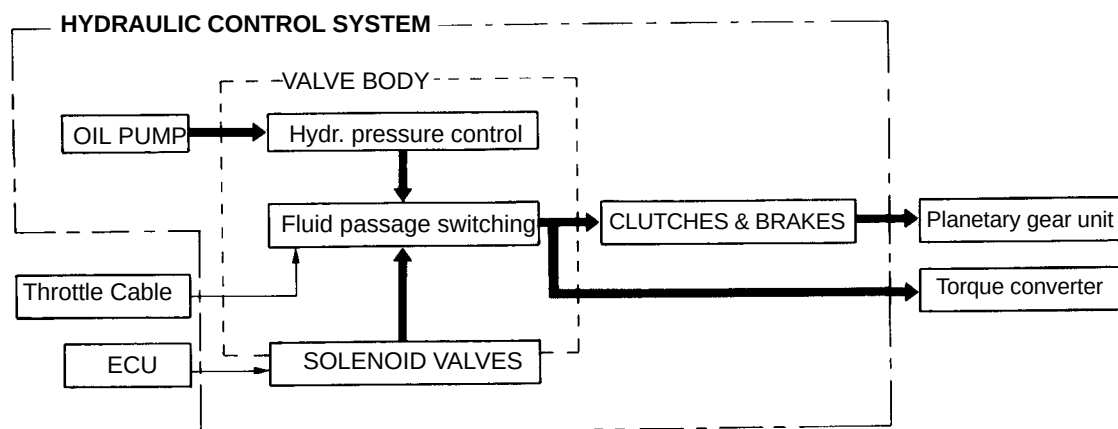
There are three solenoid valves on the valve body of the A241E automatic transaxle.

The No. 1 and No. 2 solenoid valves are turned on and off by signals from the ECU to operate the shift valves and change the gear shift position.

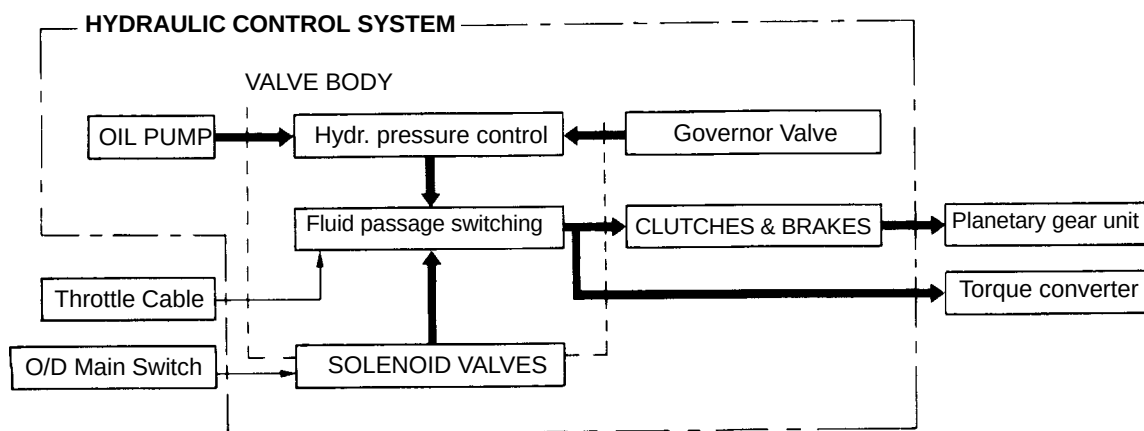
The No. 3 solenoid valve is operated by signals from the ECU to engage or disengage the lock-up clutch of the torque converter.

The valve body of the A240L and A243L automatic transaxle has one solenoid valve, which is for over-drive control.

A241E



A240L, A243L and A241H



A241E Electronic Control System

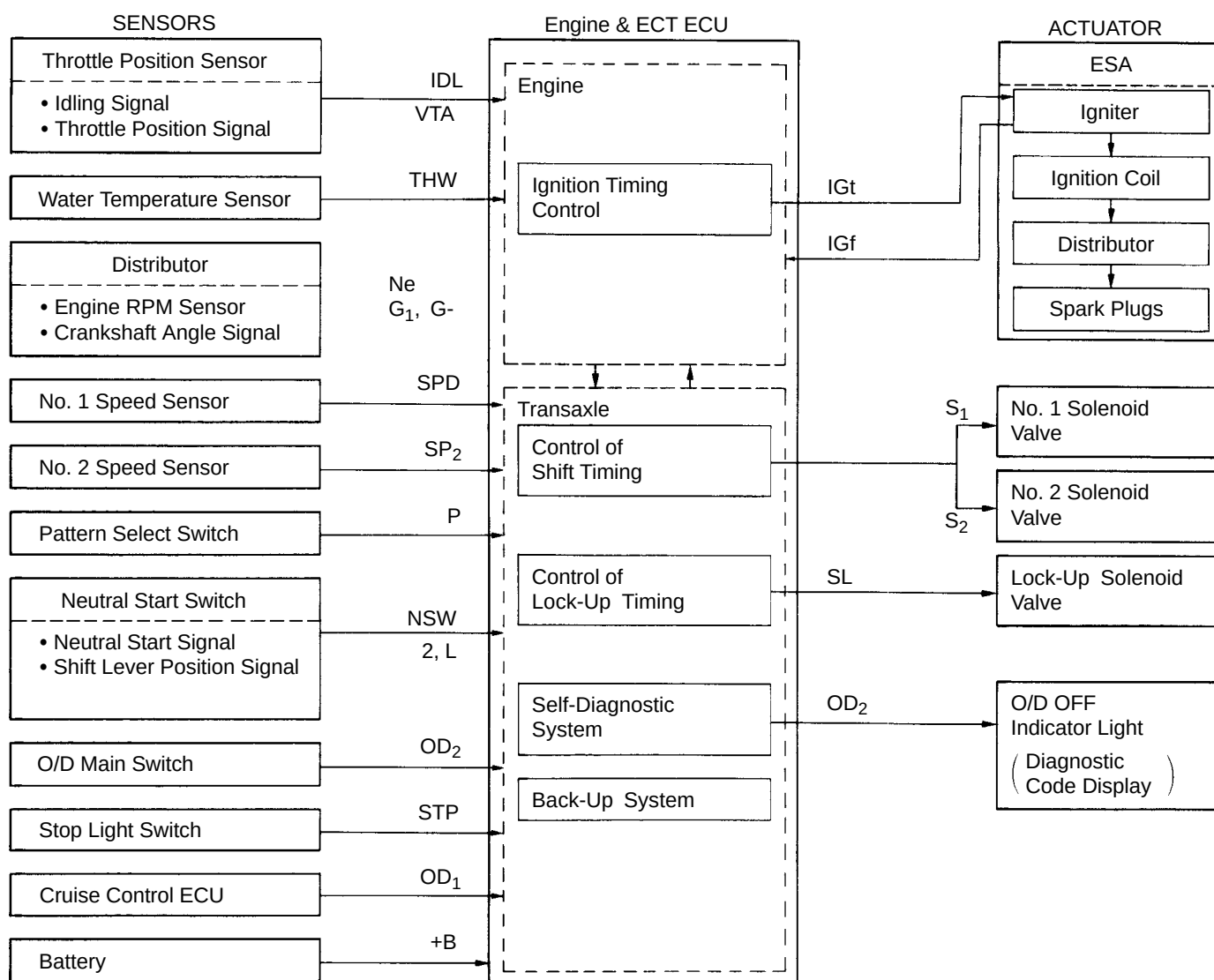
GENERAL

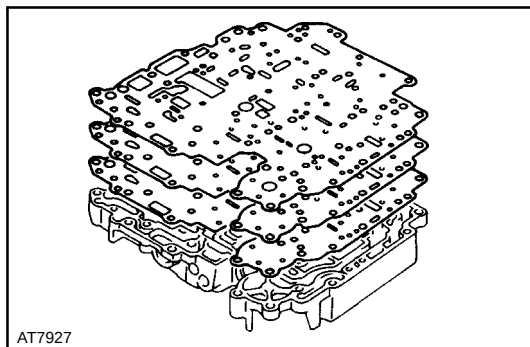
The electronic control system for the A241E automatic transmission provides extremely precise control of the gear shift timing and lock-up timing in response to driving conditions as sensed by various sensors located throughout the vehicle and in response to the engine's running condition.

At the same time, the ECU control reduces vehicle squat when the vehicle starts out and gear shift shock. The electronic control system is also equipped with a self diagnosis system which diagnoses malfunctions of electronically controlled components and warns the driver, and a fail-safe system which makes it possible for the vehicle to continue functioning when a malfunction occurs.

CONSTRUCTION

The electronic control system can be broadly divided into three groups; the sensors, ECU and actuators.





(Assembly of Valve Body)

(See page [AX-89](#))

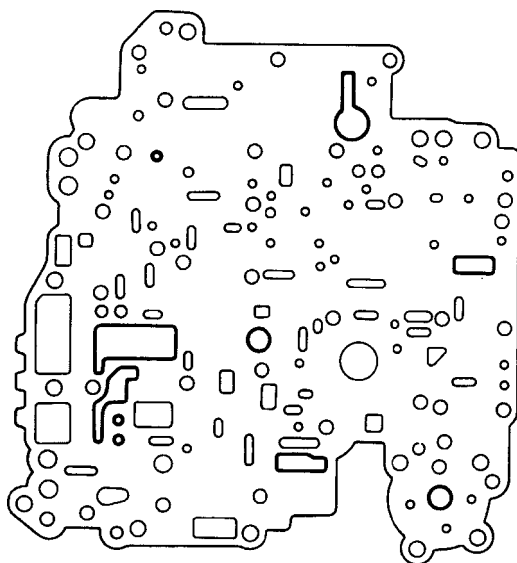
1. POSITION PLATE AND NEW GASKETS ON LOWER VALVE BODY

Position the new No. 2 gasket, the plate and then the new No. 1 gasket on the lower valve body.

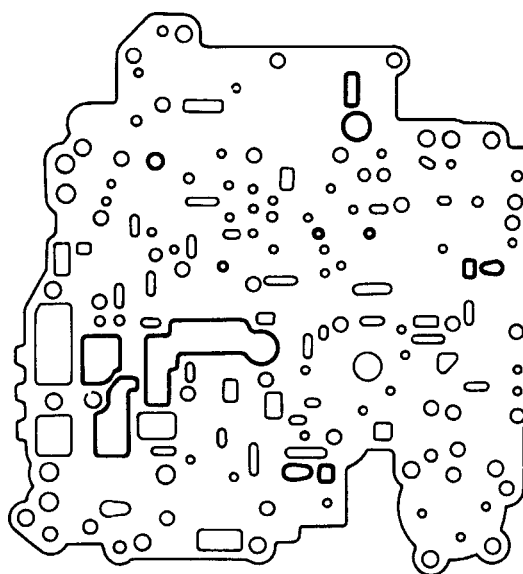
HINT: Since the No. 1 gasket and No. 2 gasket are similar use the illustration below to discriminate between them.

A241E

No. 1 Gasket

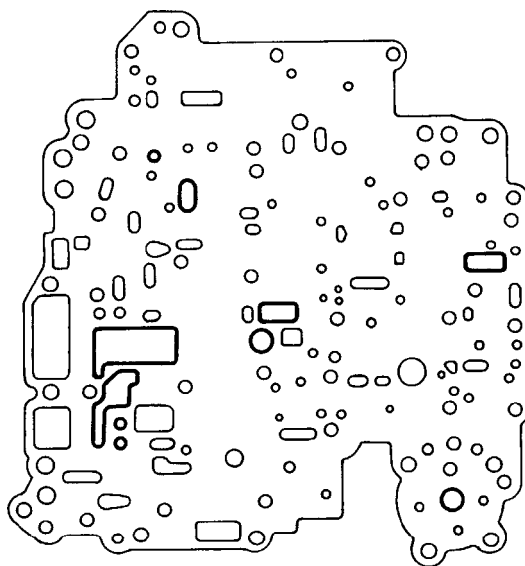


No. 2 Gasket

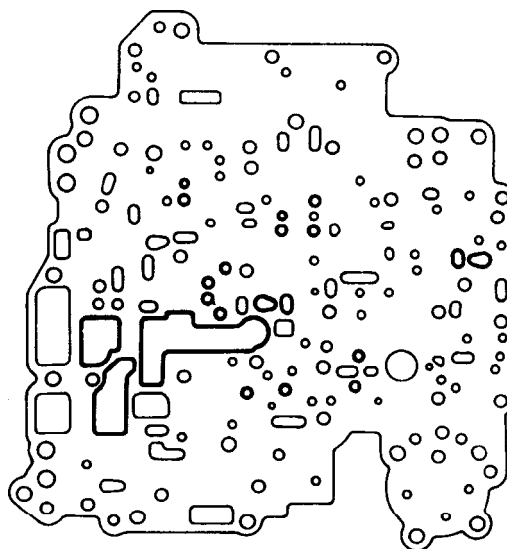


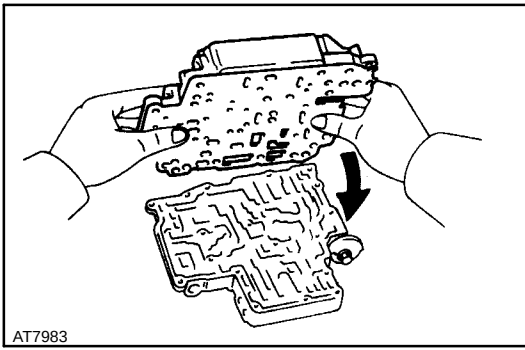
A240L, A243L

No. 1 Gasket



No. 2 Gasket

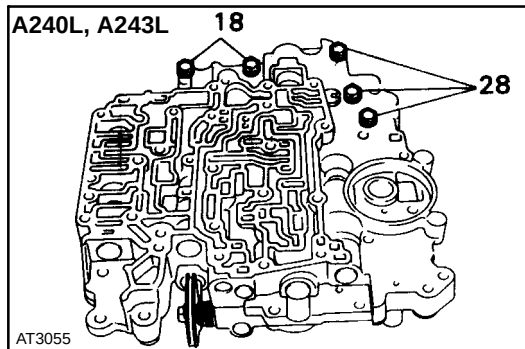




2. PLACE LOWER VALVE BODY WITH PLATE AND GASKETS ON UPPER VALVE BODY

HINT: Hold the lower valve body, gaskets and plate securely so they do not separate.

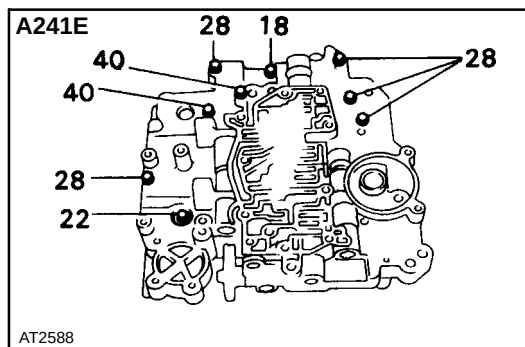
Align each bolt hole in the valve bodies with the gaskets and plate.



3. INSTALL AND FINGER TIGHTEN BOLTS IN LOWER VALVE BODY TO SECURE UPPER VALVE BODY

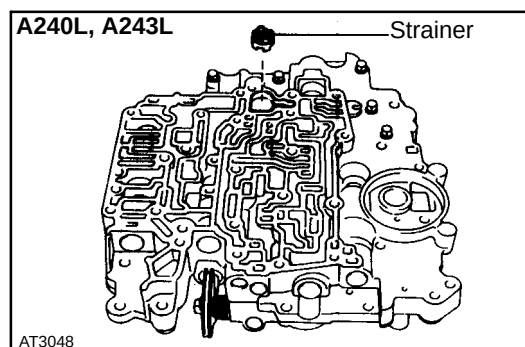
Install and finger tighten the five bolts. (A240L, A243L).

HINT: Each bolt length (mm) is indicated in the figure.



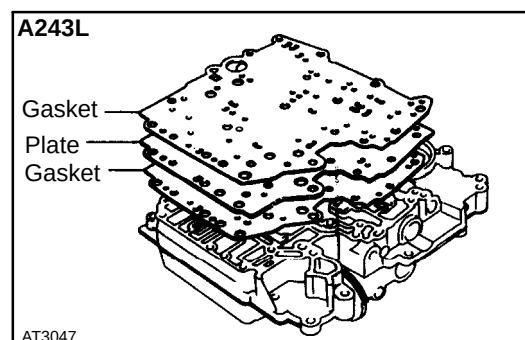
Install: and finger tighten the nine bolts. (A241E)

HINT: Each bolt length (mm) is indicated in the figure.

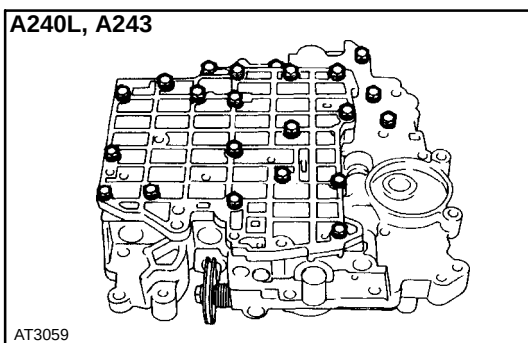
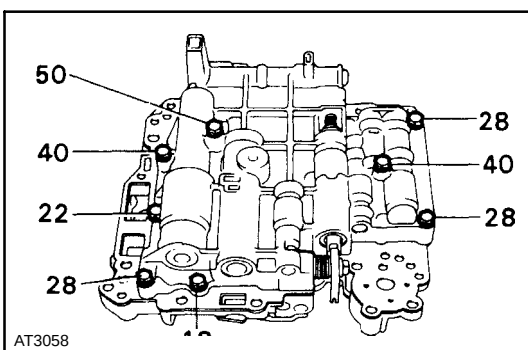
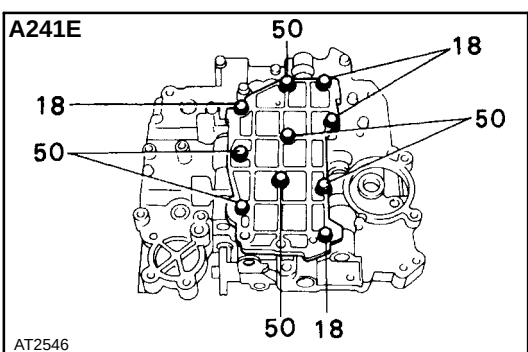
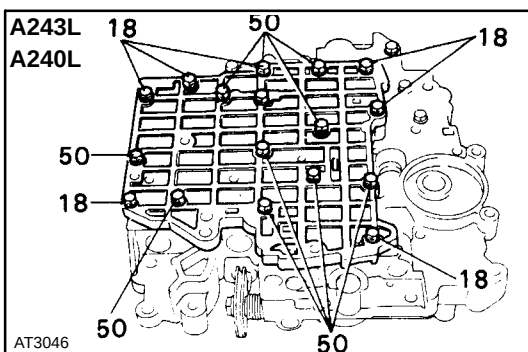
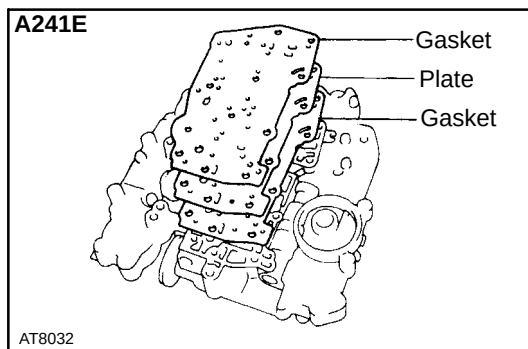


4. INSTALL LOWER VALVE BODY COVER

(a) Install the strainer. (A240L, A243L Only)



(b) Position a new gasket and plate and then another new gasket.



(c) Position the lower valve body cover.

(d) Install and finger tighten the seventeen bolts.
(A240L, A243L)

HINT: Each bolt length (mm) is indicated in the figure.

(e) Install and finger tighten the ten bolts.
(A241E)

HINT: Each bolt length (mm) is indicated in the figure.

5. INSTALL AND FINGER TIGHTEN BOLTS IN UPPER VALVE BODY

Install and finger tighten the eight bolts.

HINT: Each bolt length (mm) is indicated in the figure.

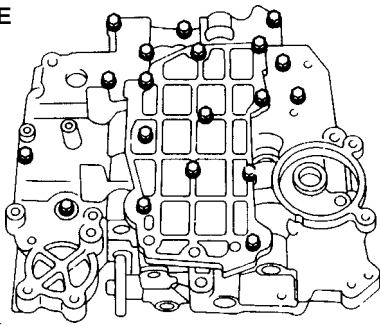
6. TIGHTEN BOLTS OF UPPER AND LOWER VALVE BODIES

(a) Tighten the twenty-two bolts in the lower valve body.

(A240L, A243L)

Torque: 6.4 N-m (65 kgf-cm, 56 in.-lbf)

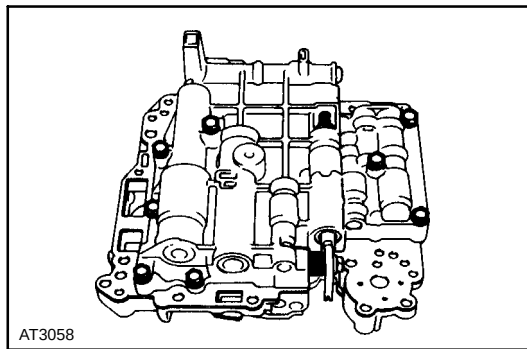
A241E



AT5725

- (b) Tighten the nineteen bolts in the lower valve body. (A241E)

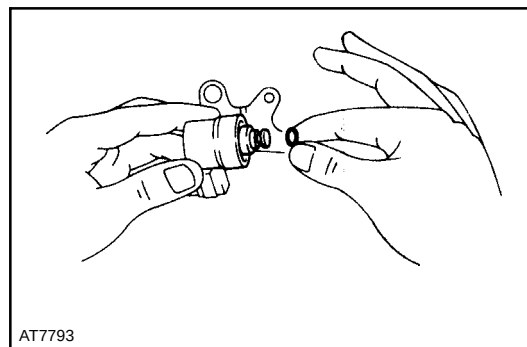
Torque: 6.4 N-m (65 kgf-cm, 56 in.-lbf)



AT3058

- (c) Tighten the eight bolts in the upper valve body.

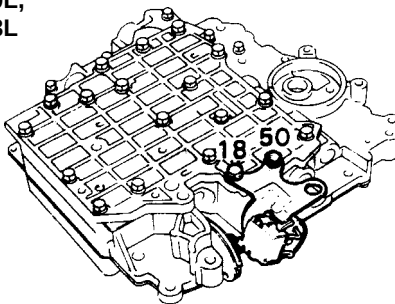
Torque: 6.4 N-m (65 kgf-cm, 56 in.-lbf)



AT7793

7. INSTALL SOLENOID

- (a) Install the new O-rings on the each solenoids.

A240L,
A243L

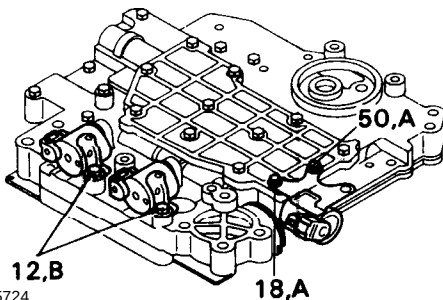
AT3138

- (b) Install the solenoids.

HINT: Each bolt length (mm) is indicated in the figure.

Torque: 6.4 N-m (kgf-cm, 56 in.-lbf)

A241E

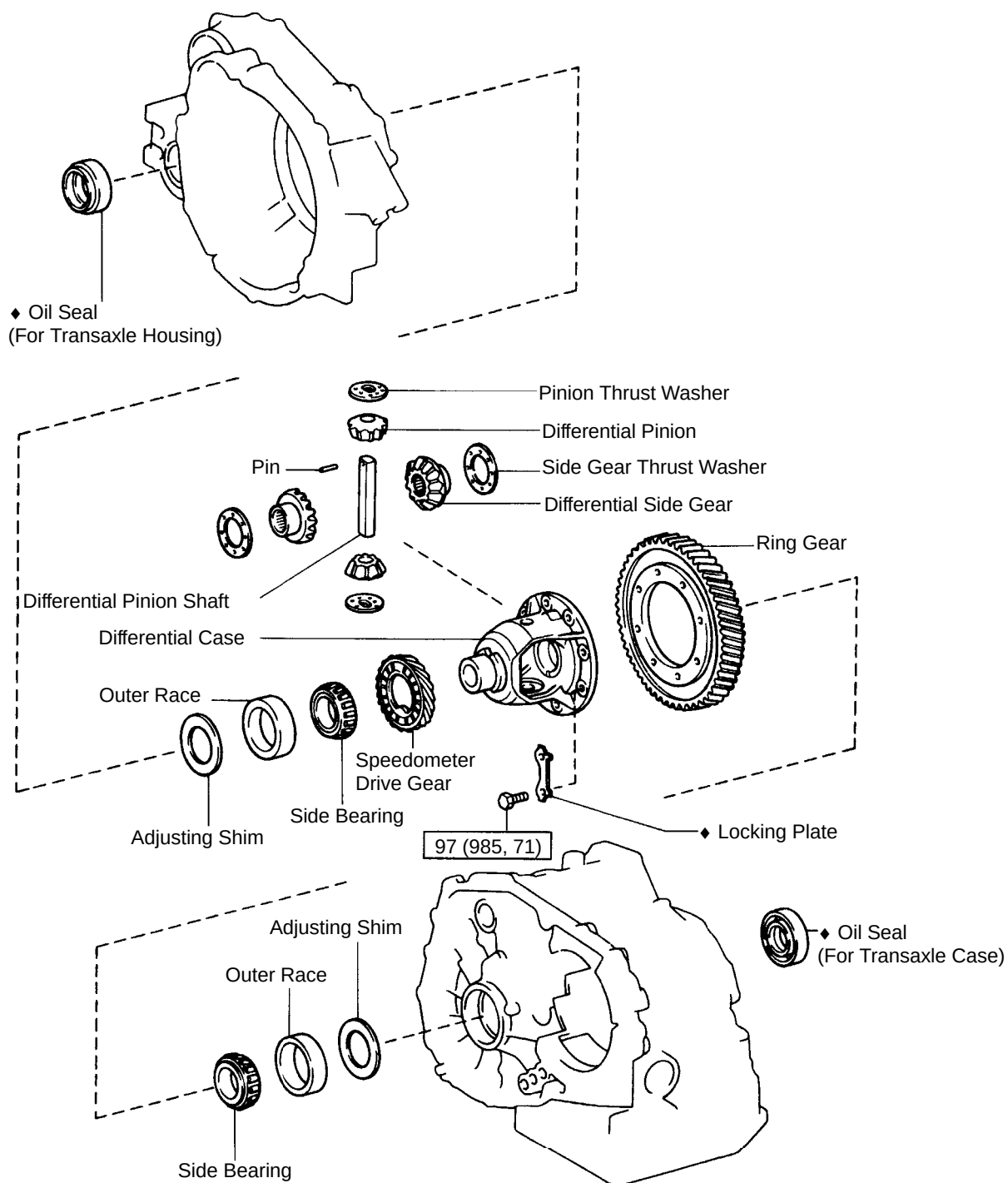


AT5724

Torque: A 6.4 N-m (65 kgf-cm, 56 in.-lbf)

B 10 N-m (100 kgf-cm, 7 ft.-lbf)

Differential COMPONENTS



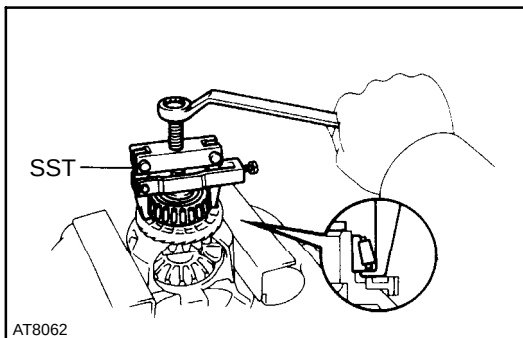
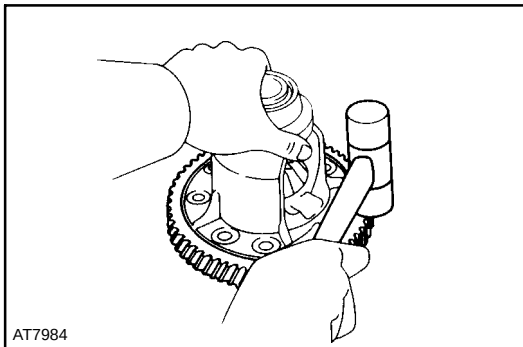
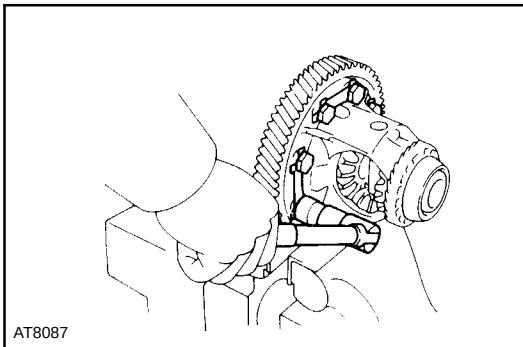
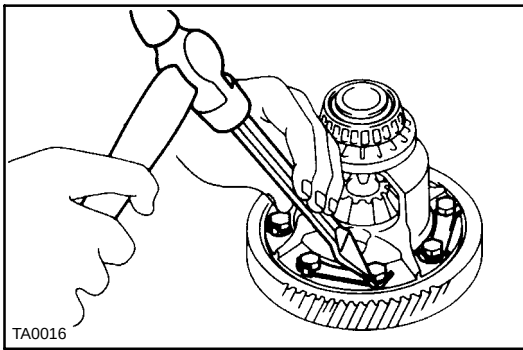
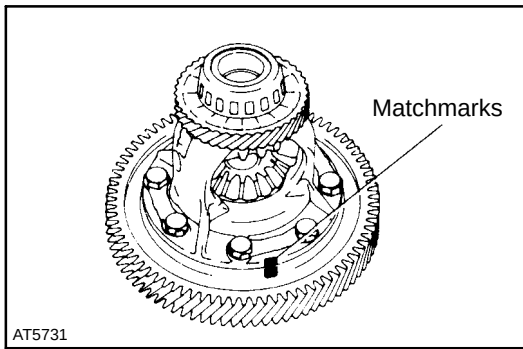
N-m (kgf-cm, ft-lbf) : Specified torque

◆ Non-reusable part

DISASSEMBLY OF DIFFERENTIAL

1. REMOVE RING GEAR

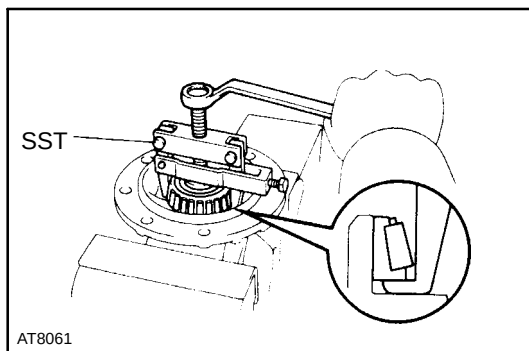
- (a) Place the matchmarks on the ring gear and differential case.
- (b) Loosen the staked part of the locking plate.
- (c) Remove the eight bolts and four locking plates.
- (d) Using a plastic hammer, tap on the ring gear to remove it from the case.



2. REMOVE SIDE BEARINGS FROM DIFFERENTIAL CASE

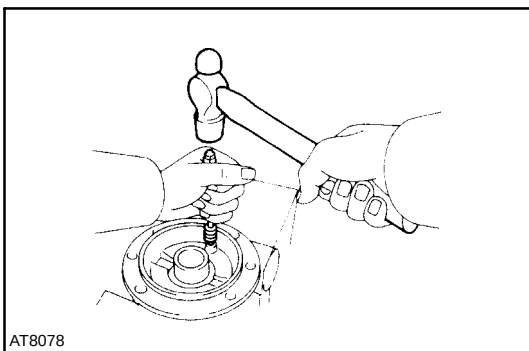
- (a) Setting SST to the cut-out portion on the speedometer drive gear, remove the bearing from the differential case.
- (b) Remove the speedometer drive gear.

SST 09502-10012



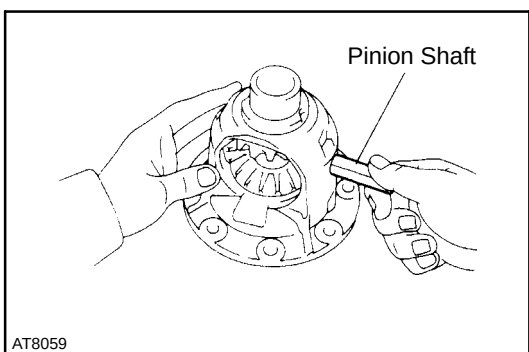
- (c) Setting SST to the cut-out portion on the differential case, remove the bearing.

SST 09502-10012

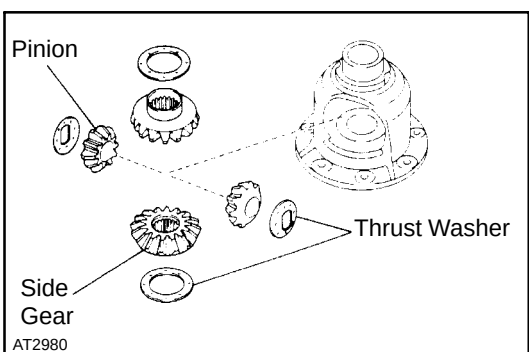


3. DISASSEMBLY DIFFERENTIAL CASE

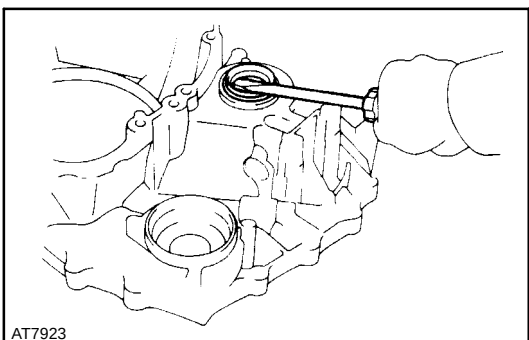
- (a) Drive out the pinion shaft lock pin from the ring gear side.



- (b) Remove the pinion shaft from the case.

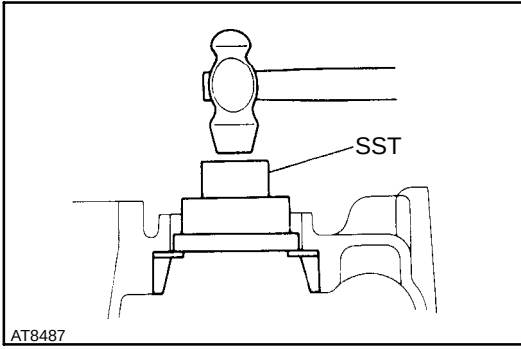


- (c) Remove the two pinions, two side gears and four thrust washers.



4. REMOVE OIL SEAL OF TRANSAXLE HOUSING

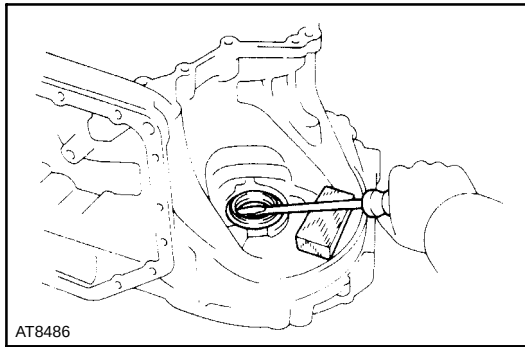
Using a screwdriver, remove the oil seal.



5. REMOVE SIDE BEARING OUTER RACE OF TRANS-AXLE HOUSING

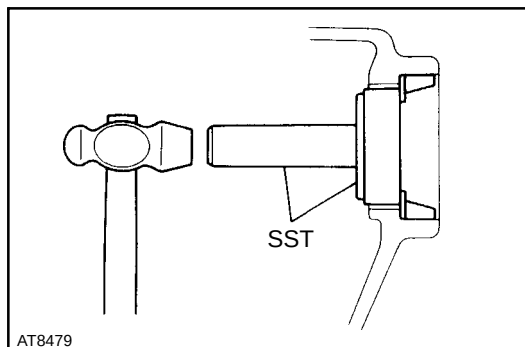
Using SST and a hammer, drive out the outer race and shim.

SST 09350-32014 (09351-32090)



6. REMOVE OIL SEAL OF TRANSAXLE CASE

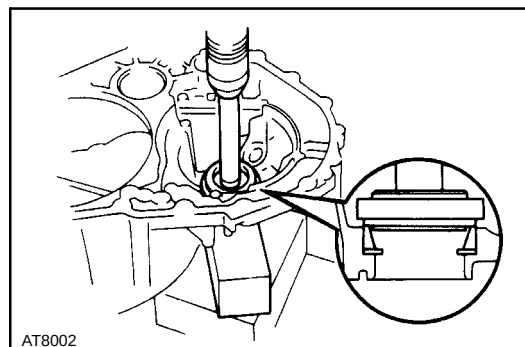
Using a screwdriver, remove the oil seal.



7. REMOVE SIDE BEARING OUTER RACE OF TRANS-AXLE CASE

Using SST and a hammer, drive out the outer race and adjusting shim.

SST 09350-32014 (09351-32130, 09351-32150)

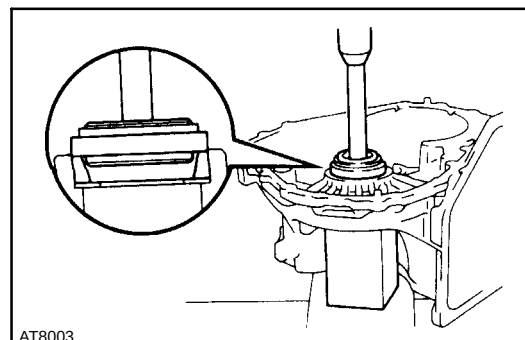


ASSEMBLY OF DIFFERENTIAL

1. INSTALL SIDE BEARING OUTER RACE OF TRANS-AXLE HOUSING

- (a) Place the shim onto the transaxle housing.
- (b) Using SST and press, press a new outer race into the transaxle housing.

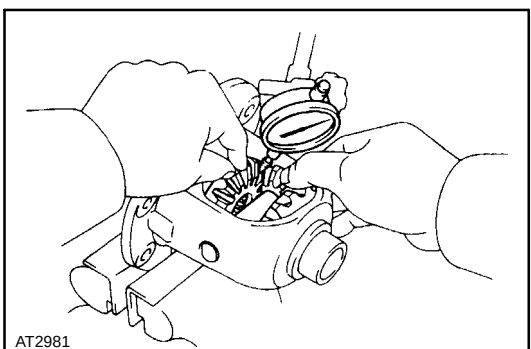
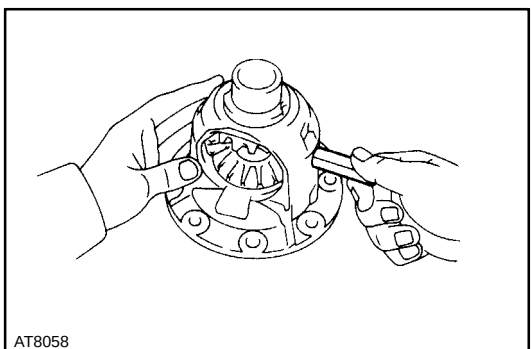
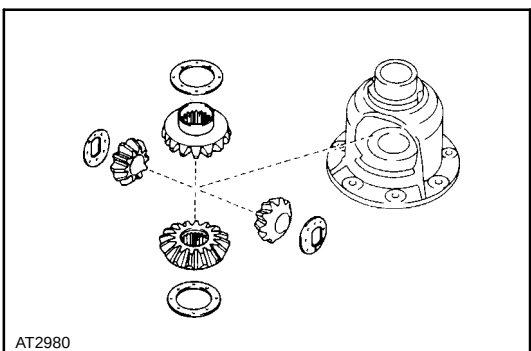
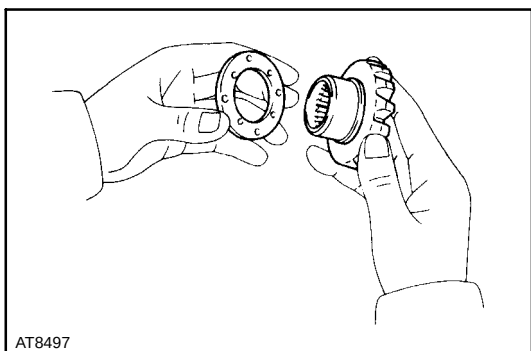
SST 09350-32014 (09351-32111, 09351-32130)



2. INSTALL SIDE BEARING OUTER RACE OF TRANS-AXLE CASE

- (a) Place the adjusting shim onto the transaxle case.
- (b) Using SST and press, press a new outer race into the transaxle case.

SST 09350-32014 (09351-32111, 09351-32130)



3. ASSEMBLY DIFFERENTIAL CASE

- (a) Install the thrust washers to the side gears.
- (b) Install the side gears with thrust washers, pinion gears pinion thrust washers into the differential case.
- (c) Install the pinion shaft so as to align the lock pin holes on the pinion shaft and differential case.

4. CHECK SIDE GEAR BACKLASH

- (a) Measure the side gear backlash while holding one pinion gear toward the case.

Standard backlash: **0.05 - 0.20 mm**
 (0.0020 - 0.0079 in.)

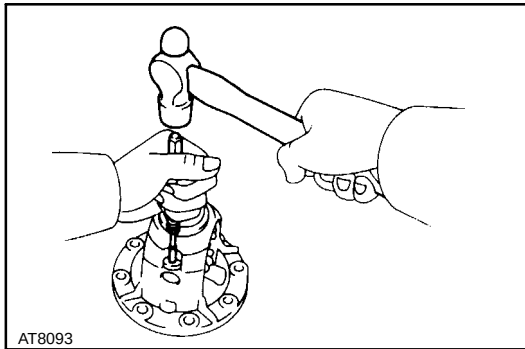
If the backlash is out of specification, install the correct thrust washer to the side gear.

- (b) Referring to the table below, select thrust washers which will ensure that the backlash is within specification. Try to select washers of the same size of both sides.

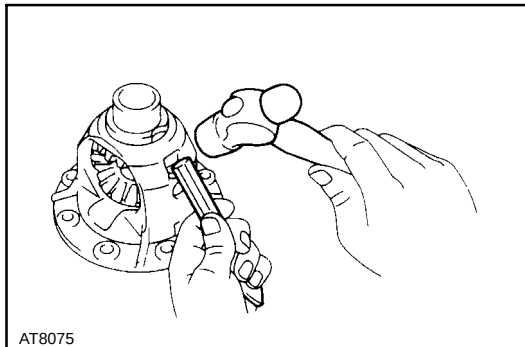
Thrust washer thicknesses

Thickness	mm (in.)	Thickness	mm (in.)
0.95	(0.0374)	1.10	(0.0433)
1.00	(0.0394)	1.15	(0.0453)
1.05	(0.0413)	1.20	(0.0472)

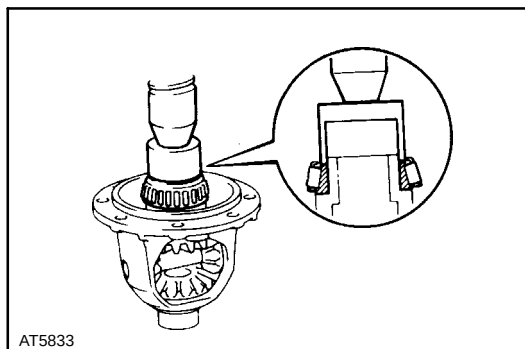
If the backlash is not within specification, install a thrust washer of a different thickness.

**5. INSTALL LOCK PIN**

- (a) Using a hammer and punch, drive the lock pin through the case and hole in the pinion shaft.

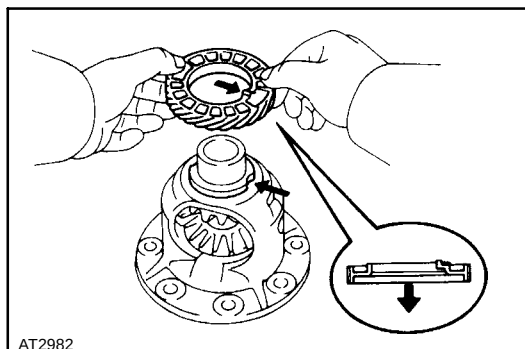


- (b) Stake the differential case.

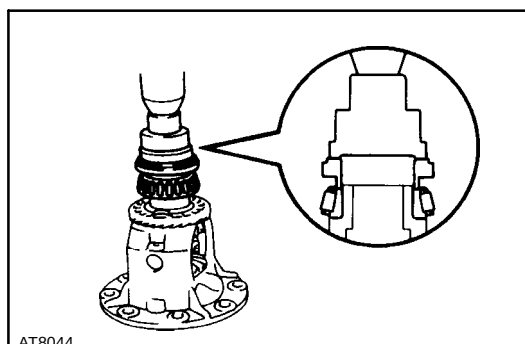
**6. INSTALL SIDE BEARINGS TO DIFFERENTIAL CASE**

- (a) Using SST and press, press the side bearing into the differential case.

SST 09710-30030 (09710-03160)

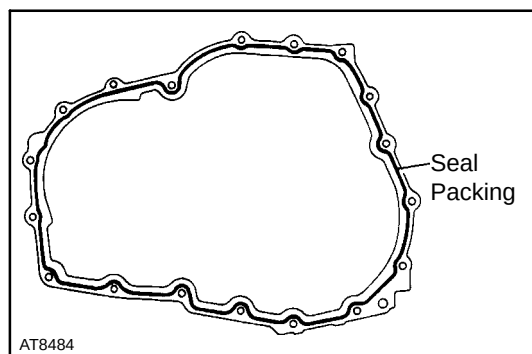


- (b) Install the speedometer drive gear to the differential case.



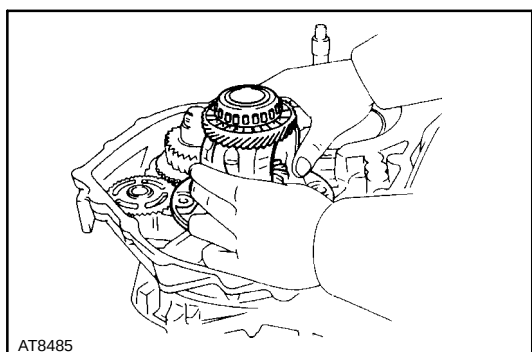
- (c) Using SST and press, press the side bearing into the differential case.

SST 09350-32014 (09351-32090, 09351-32120)

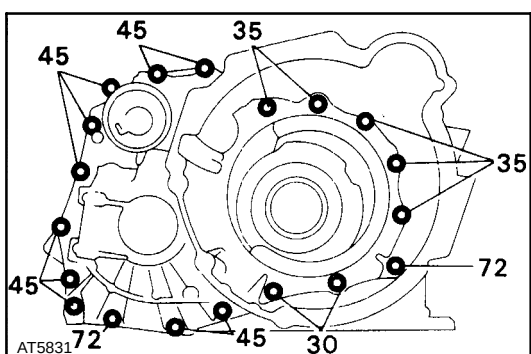


7. ADJUST SIDE BEARING PRELOAD

- (a) Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle housing or transmission case.



- (b) Install the differential to the transaxle case.



- (c) Install the transaxle housing to the transaxle case.

- (d) Install and tighten the bolts.

Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)

HINT: Each bolt length (mm) is indicated in the illustration.

- (e) Using SST, rotate the differential in both directions to snug the bearing down.

SST 09563-3201 1

- (f) Using SST and a torque meter, measure the preload of the side bearing.

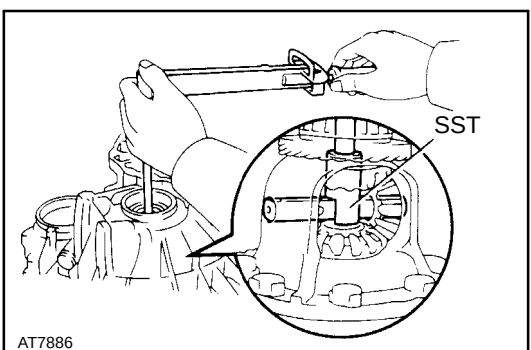
SST 09564-3201 1

Preload (at starting):

New bearing 0.8-1.4 N-m
(8-14 kgf-cm, 6.9-12.2 in.-lbf)

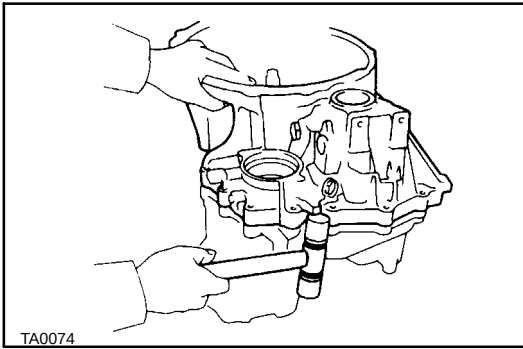
Used bearing 0.4-0.7 N-m
(4-7 kgf-cm, 3.5-6.1 in.-lbf)

If the preload is not within specification, remove the differential from the transaxle case. Re-select the transaxle case side adjusting shim.

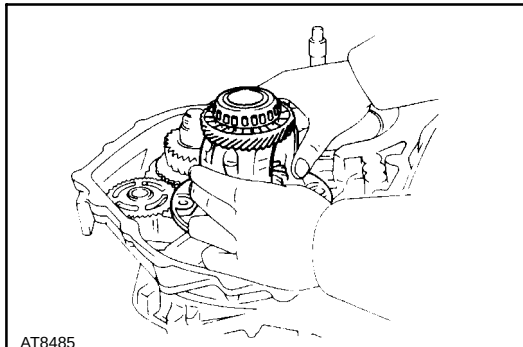


Thickness				mm (in.)
2.00 (0.0787)	2.20 (0.0866)	2.40 (0.0945)	2.60 (0.1024)	2.80 (0.1102)
2.05 (0.0807)	2.25 (0.0886)	2.45 (0.0965)	2.65 (0.1043)	2.85 (0.1122)
2.10 (0.0827)	2.30 (0.0906)	2.50 (0.0984)	2.70 (0.1063)	2.90 (0.1142)
2.15 (0.0846)	2.35 (0.0925)	2.55 (0.1004)	2.75 (0.1083)	

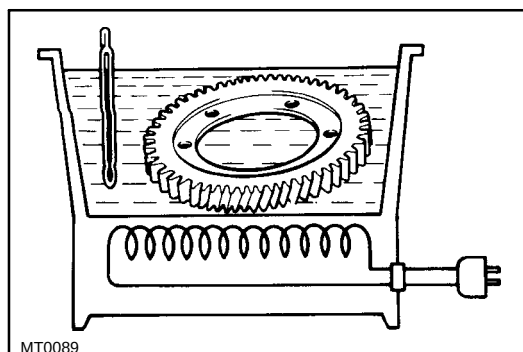
HINT: The preload will change about 0.3 - 0.4 N-m (3 - 4 kgf-cm, 2.6 - 3.5 in.-lbf) with each shim thickness.



(g) Remove the bolts and transaxle housing.



(h) Remove the differential from the transaxle case.

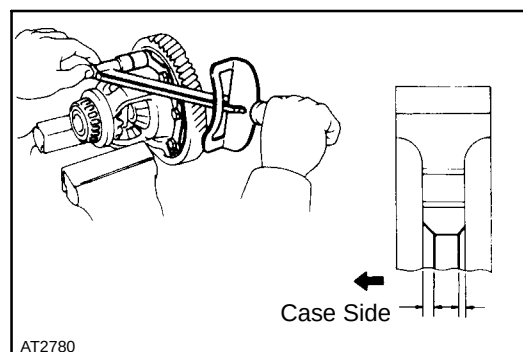


8. INSTALL RING GEAR To DIFFERENTIAL

- (a) Clean the contact surface of the differential case.
- (b) Heat the ring gear to about 100°C (212°F) in an oil bath.

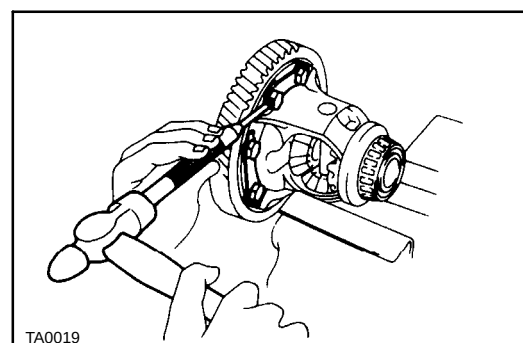
NOTICE: Do not heat the ring gear above 110°C (230°F).

- (c) Clean the contact surface of the ring gear with cleaning solvent.



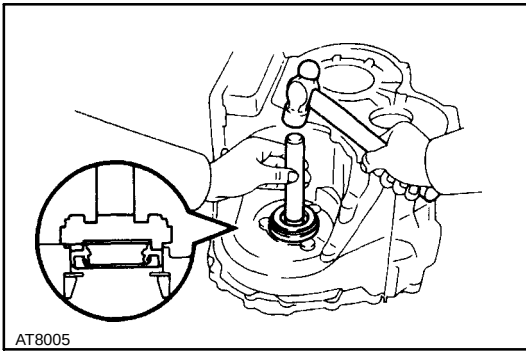
- (d) Quickly install the ring gear on the differential case.
- (e) Install new locking bolts uniformly and a little at a time. Torque the bolts.

Torque: 97 N-m (985 kgf-cm, 71 ft-lbf)

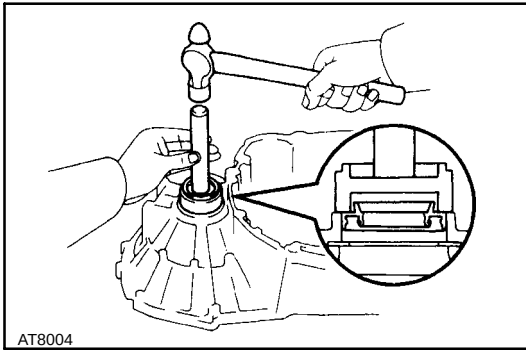


- (f) Using a hammer and drift punch, stake the locking plates.

HINT: Stake one claw with the flat surface of the nut. For the claw contacting the protruding portion of the nut, stake only the half on the tightened side.

**9. INSTALL OIL SEAL OF TRANSAXLE CASE**

- (a) Using SST and a hammer, drive in a new oil seal.
SST 09350-32014 (09351-32130, 09351-32111)
- (b) Coat the lip of the seal with MP grease.

**10. INSTALL OIL SEAL OF TRANSAXLE HOUSING**

- (a) Using SST and a hammer, drive in a new oil seal.
SST 09350-32014 (09351-32130, 09351-32150)
- (b) Coat the lip of oil seal with MP grease.

INSTALLATION OF COMPONENT PARTS

(See pages [AX-16](#) to [AX-21](#))

Disassembly, inspection and assembly of each component group have been indicated in the preceding chapter. Before assembly, make sure again that all component groups are assembled correctly.

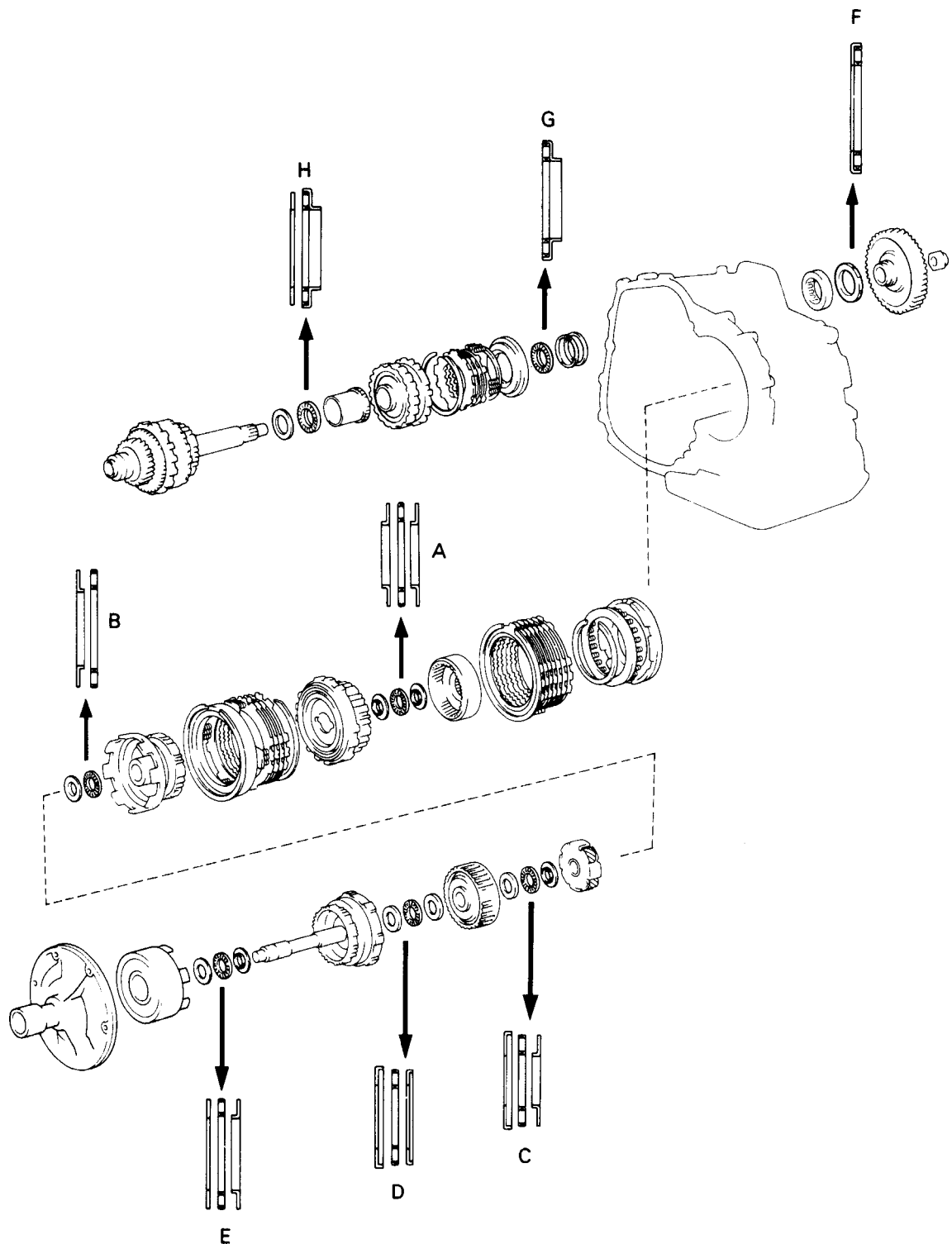
If something wrong is found in a certain component group during assembly, inspect and repair this group immediately.

Recommended ATF: DEXRON★ II

GENERAL NOTES:

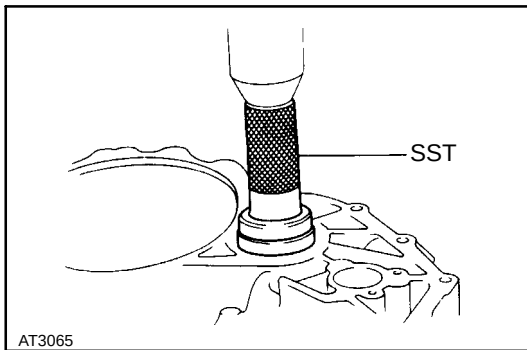
1. The automatic transmission is composed of highly precision-finished parts, necessitating careful inspection before assembly because even a small nick could cause fluid leakage or affect performance.
2. Before assembling new clutch discs, soak them in automatic transmission fluid for at least fifteen minutes.
3. Apply automatic transmission fluid on sliding or rotating surfaces of parts before assembly.
4. Use petroleum jelly to keep small parts in their place.
5. Do not use adhesive cements on gaskets and similar parts.
6. When assembling the transmission, sure to use new gaskets and O-rings.
7. Dry all parts with compressed air-never use shop rags.

8. Be sure to install the thrust bearings and races in the correct direction and position.



mm (in.)

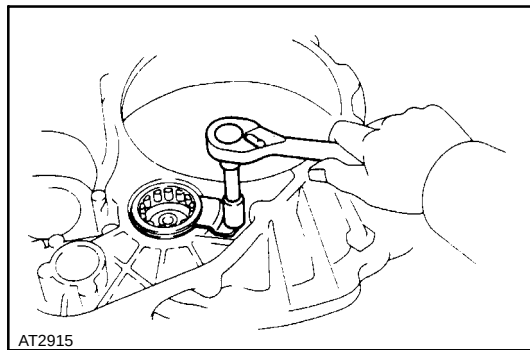
			A	B	C	D	E	F	G	H
Front Bearing Race	Outer Diameter		37.3 (1.469)	45.0 (1.772)	37.9 (1.492)	←	43.0 (1.693)			41.8 (1.646)
	Inner Diameter		24.1 (0.949)	28.0 (1.102)	22.0 (0.866)	←	30.5 (1.201)			30.0 (1.181)
Thrust Bearing	Outer Diameter	A241E A243L	37.6 (1.480)	45.0 (1.772)	36.1 (1.421)	←	42.0 (1.654)	57.7 (2.272)	45.2 (1.780)	43.7 (1.720)
		A240L	37.6 1.4801	45.0 11.7721	36.1 (1.421)	←	42.0 (1.654)	57.7 (2.272)	45.2 (1.780)	←
	Inner Diameter	A241E A243L	24.0 (0.945)	30.0 (1.181)	22.2 (0.874)	←	28.9 (1.138)	41.0 (1.614)	31.0 (1.220)	←
		A240L	24.0 (0.945)	30.0 (1.181)	22.2 (0.874)	←	28.9 (1.138)	41.0 (1.614)	31.0 (1.220)	←
Rear Bearing Race	Outer Diameter		37.6 (1.480)	-	35.0 11.3781	35.7 (1.406)	42.0 (1.654)	-	-	-
	Inner Diameter		22.2 (0.874)	-	19.0 (0.748)	23.0 (0.906)	27.1 (1.067)	-	-	-



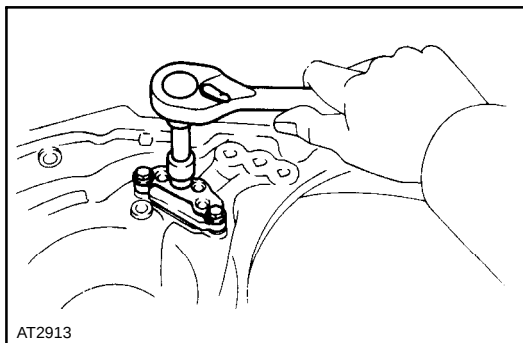
1. INSTALL BEARING To TRANSAXLE HOUSING

- (a) Using SST and a press, press the bearing into the transaxle housing.

SST 09350-32014 (09351-32140)

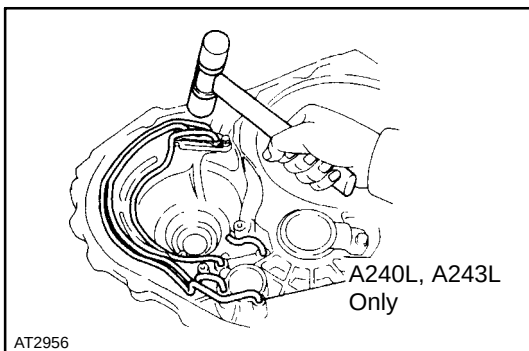


- (b) Install the bearing stopper with a bolt.



2. INSTALL NEW GASKET AND OIL TUBE APPLY COVER

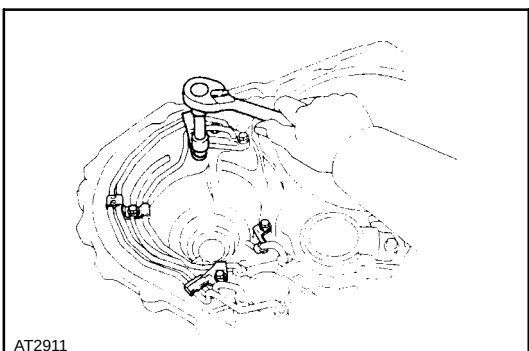
Install the new gasket and oil tube apply cover, and tighten the three bolts.



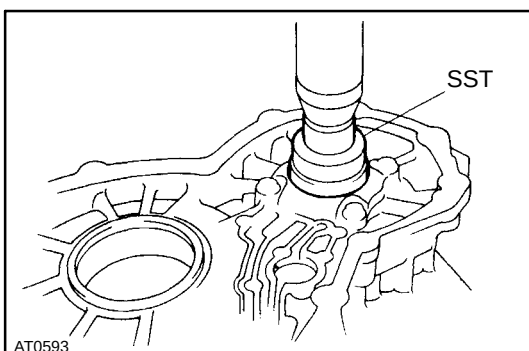
3. INSTALL OIL TUBES

- (a) Using a plastic hammer, install the three (A241E) or four (A240L, A243L) oil tubes.

NOTICE: Be careful not to bend or damage the tubes.



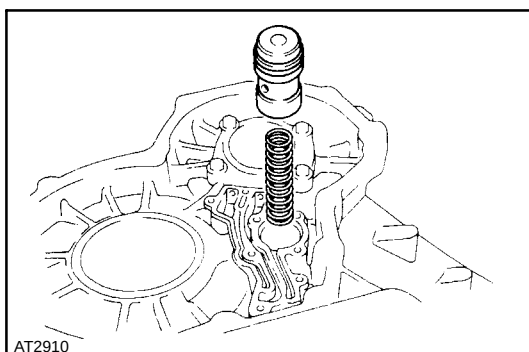
- (b) Install the flour tube clamps.



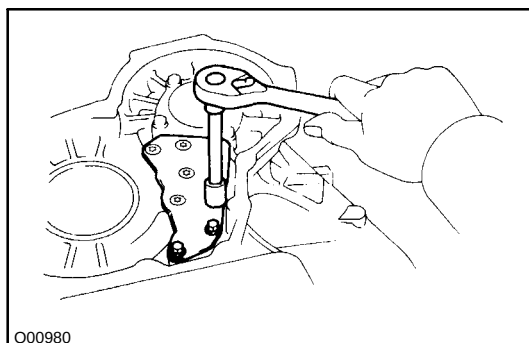
4. INSTALL BEARING TO TRANSMISSION CASE

Using SST and a press, press the bearing into the transmission case.

SST 09350-32014 (09351-32090)

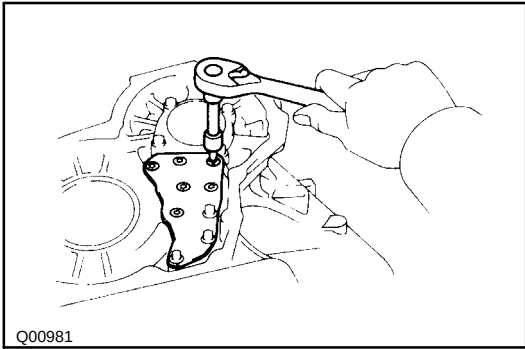


5. INSTALL B₄ ACCUMULATOR PISTON AND SPRING

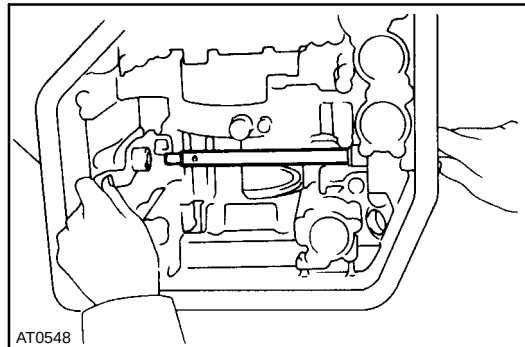


6. INSTALL OIL GALLERY COVER AND GASKET

- (a) Clean the threads of the screws and case with white gasoline.
- (b) Install the new gasket and oil gallery cover in place.
- (c) Install and tighten the three bolts.

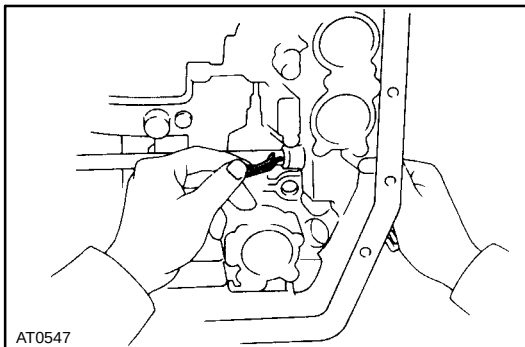


- (d) Apply seal packing or equivalent to the six screws.
Seal packing: Part No. 08833 - 00070, THREE BOND 1324 or equivalent
- (e) Using a torx wrench, install and tighten the three screws.

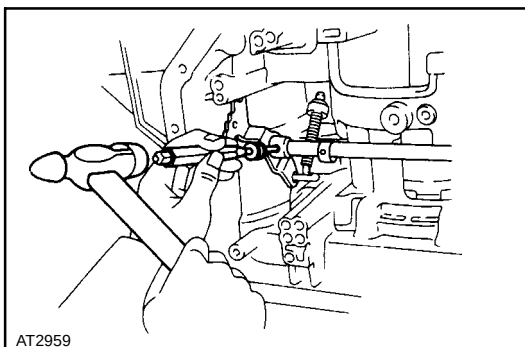


7. INSTALL MANUAL VALVE SHAFT AND LEVER

- (a) Install the parking lock rod to the manual valve lever.
- (b) Slide in the shaft and install the washer, new spacer and manual lever.

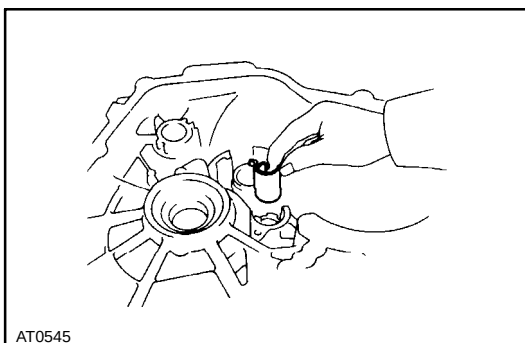


- (c) Install the retaining spring.
HINT: Make sure there is a washer between the retaining spring and case.



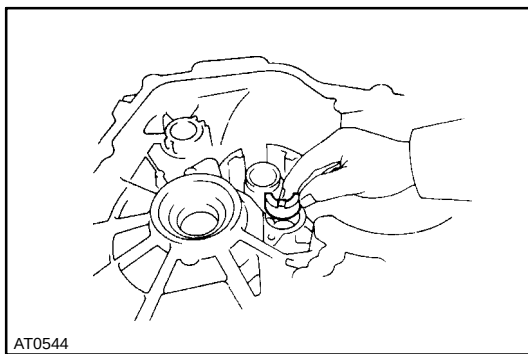
8. INSTALL PIN

- (a) Using a pin punch and hammer, drive in the pin.
- (b) Position the spacer and stake it.

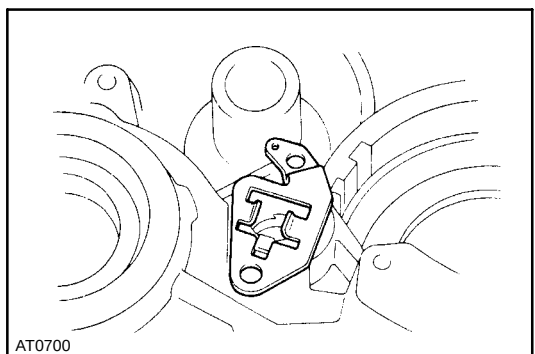


9. INSTALL CAM GUIDE BRACKET

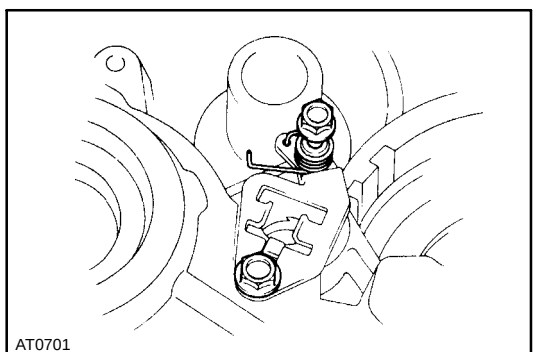
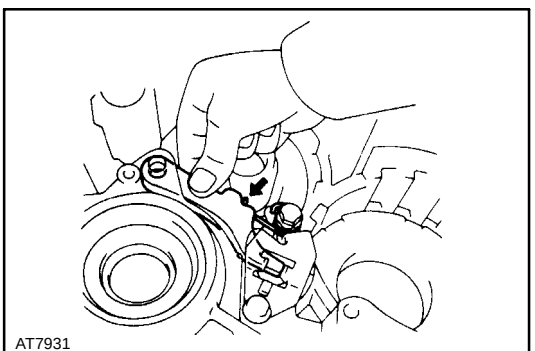
Install the cam guide bracket and then install the parking lock rod into the guide bracket.

**10. INSTALL PARKING LOCK SLEEVE**

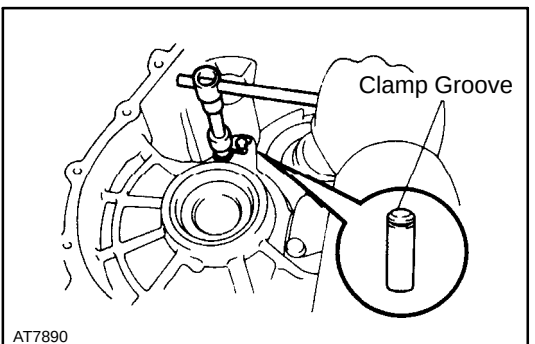
Install the parking lock sleeve protruding portion upward.

**11. PLACE STOPPER PLATE**

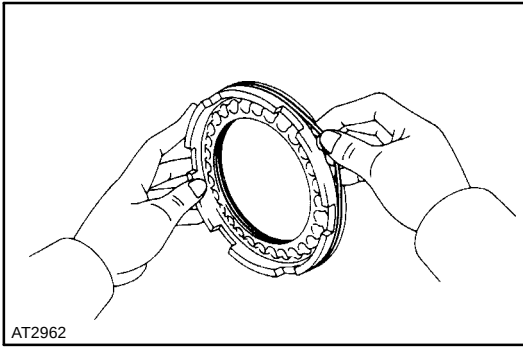
Place the stopper plate on the protruding portion of lock sleeve.

**12. INSTALL GUIDE SLEEVE AND SPRING****13. INSTALL PARKING LOCK PAWL, PAWL SHAFT AND SHAFT CLAMP**

(a) Install the parking lock pawl.

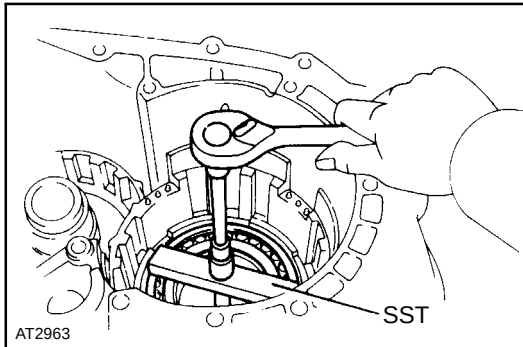


(b) Insert the parking lock pawl shaft and install the shaft clamp.

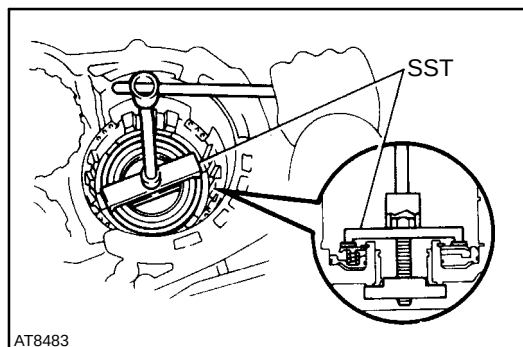


14. INSTALL FIRST AND REVERSE BRAKE PISTON

- (a) Install the two new O-rings to the piston.
- (b) Coat the O-rings with ATF.



- (c) Place the piston into the bore of the case, facing the spring seats upward.
- (d) Using SST, press in the piston.
SST 09350-32014 (09351-32040)
HINT: Be careful not to damage the O-rings.
- (e) Remove SST.

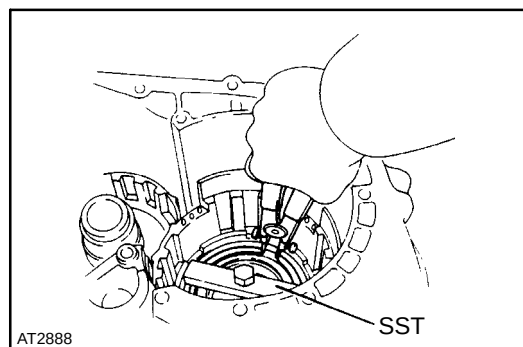


15. INSTALL PISTON RETURN SPRING AND SNAP RING

- (a) Install the piston return spring assembly and snap ring in place.
- (b) Set SST, and tighten the bolt gradually to compress the springs.

SST 09350-32014 (09351-32040)

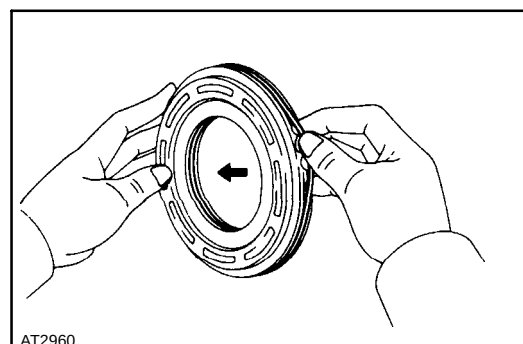
NOTICE: Avoid bending the spring retainer by over-tightening the bolt.



- (c) Using snap ring pliers, install the snap ring.
HINT: Visually check to make sure it is fully seated and centered by the three lugs on the spring retainer. Be sure the end gap of snap ring is not aligned with the spring retainer claw.

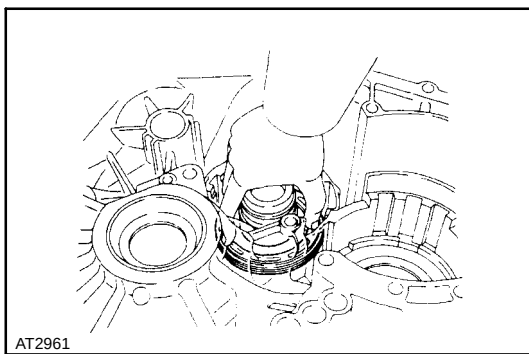
- (d) Remove SST.

SST 09350-32014 (09351-32040)

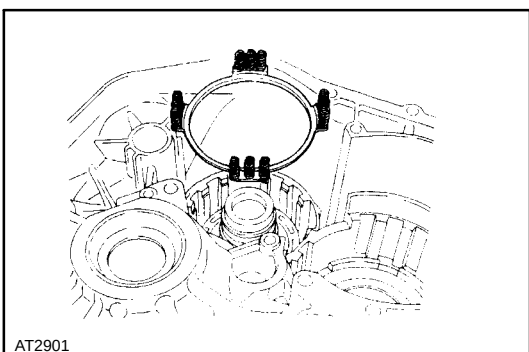


16. INSTALL UNDERDRIVE BRAKE PISTON

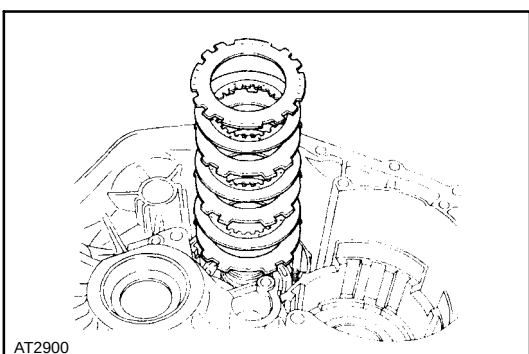
- (a) Coat the O-rings with ATF.
- (b) Install the two new O-rings to the piston.



- (c) Place the piston into the case with the cup side up, being careful not to damage the O-rings.



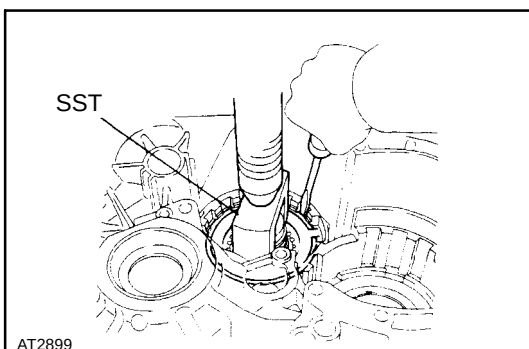
17. INSTALL RETURN SPRING



18. INSTALL PLATES, DISCS AND FLANGE

- (a) Install in order: D = Disc P = Plate F = Flange
P-D-P-D-P-D-F

HINT: Install the Flange with the flat end facing downward.

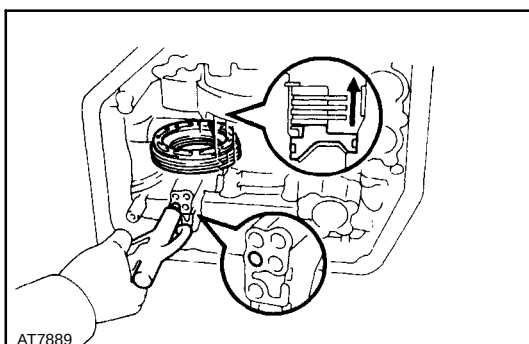


- (b) Place SST on the flange, and compress the flange with a press.

SST 09350-3201 (09351-32070)

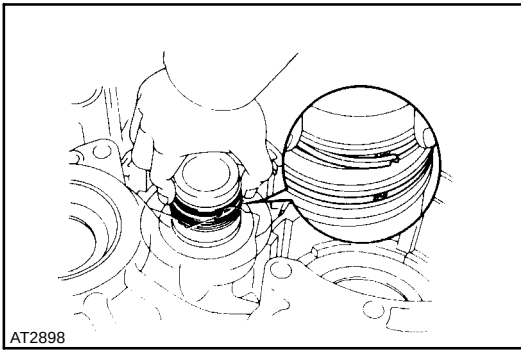
- (c) Install the snap ring.

HINT: Be sure the end gap of the snap ring is not aligned with one of the cutouts.



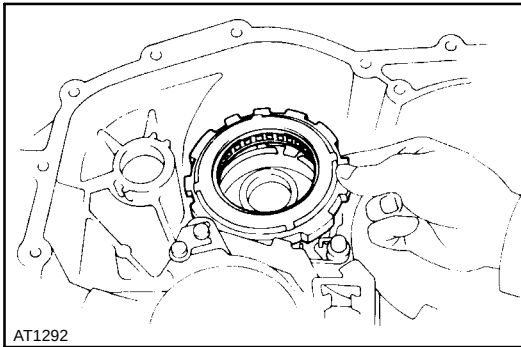
19. CONFIRM THAT UNDERDRIVE BRAKE PISTON MOVES

Using compressed air, confirm that the underdrive brake piston moves smoothly.

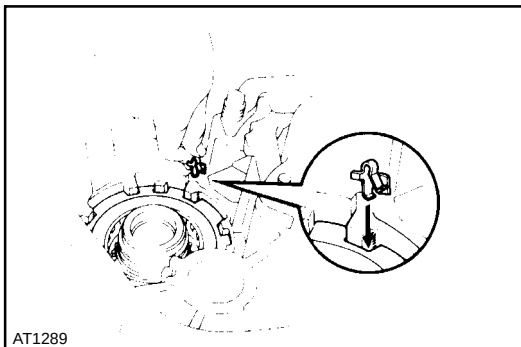


20. INSTALL OIL SEAL RINGS TO TRANSMISSION CASE

Install the two oil seals to the transmission case.

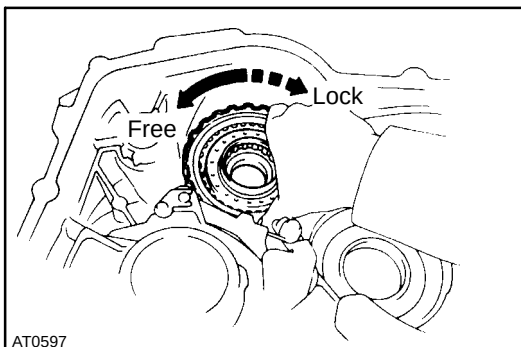


21. INSTALL UNDERDRIVE ONE-WAY CLUTCH



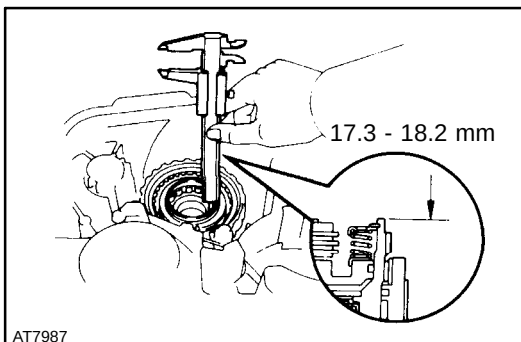
22. INSTALL ANTI-RATTLE CLIP

In the place shown in the figure (the space between the one-way clutch outer race and case), push the anti-rattle clip in until you hear the "click".



23. INSTALL UNDERDRIVE CLUTCH ASSEMBLY

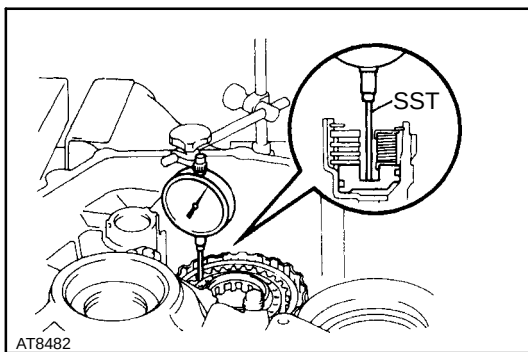
- (a) Align the flukes of discs in the underdrive brake.
- (b) Install the clutch assembly.
- (c) Turn the clutch assembly. The clutch assembly should turn freely counterclockwise and should lock clockwise.



24. CHECK HEIGHT OF CLUTCH ASSEMBLY

Using vernier calipers, check the height from the sleeve to the inner race.

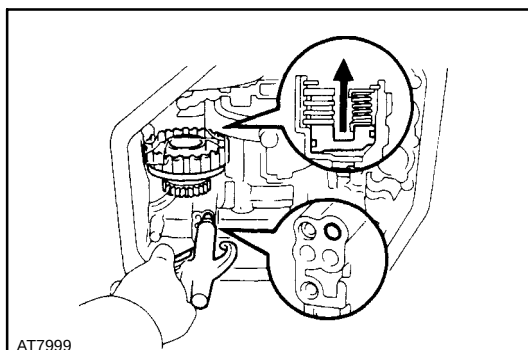
Height: 17.3 - 18.2 mm (0.681 - 0.717 in.)



25. CHECK PISTON STROKE OF UNDERDRIVE CLUTCH

- (a) Set a dial indicator (long type pick or SST) as shown.

SST 09350-32014 (09351-32190)



- (b) Applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi), measure the underdrive clutch piston stroke.

Piston stroke:

A240L 1.50 - 1.86 mm (0.0591 - 0.0732 in.)

A241E, A243L 1.21 - 1.55 mm (0.0476 - 0.0610 in.)

If the piston stroke is less than limit, parts may have been misassembled. Check them.

If the piston stroke is nonstandard, select another flange.
HINT: There are two different flange thickness.

Flange thicknesses:

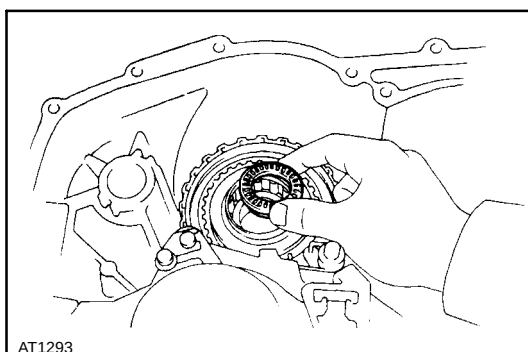
A240L 2.04 mm (0.0803 in.)

2.40 mm (0.0945 in.)

A241E, A243L 2.30 mm (0.0906 in.)

2.50 mm (0.0984 in.)

2.70 mm (0.1063 in.)

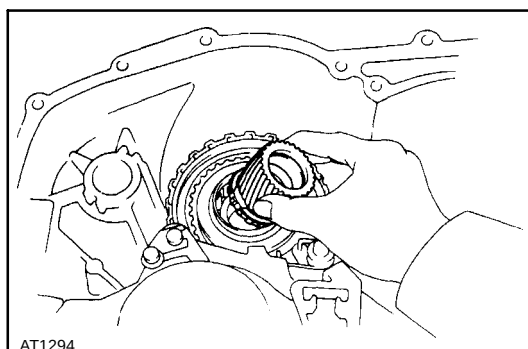


26. INSTALL BEARING WITH RAGE

Install the thrust bearing with race, with the bearing facing upward.

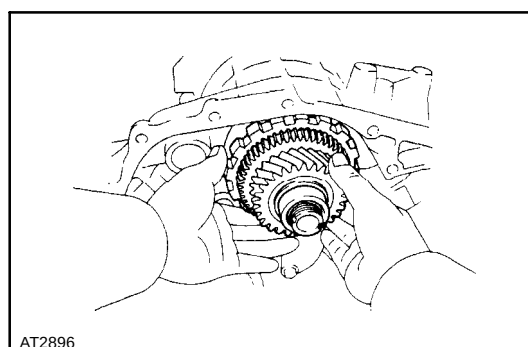
mm (in.)

Bearing	A240L	A241E, A243L
Outer diameter	43.7 (1.720)	45.2 (1.780)
Inner diameter	31.0 (1.220)	31.0 (1.220)



27. INSTALL SUN GEAR To CASE

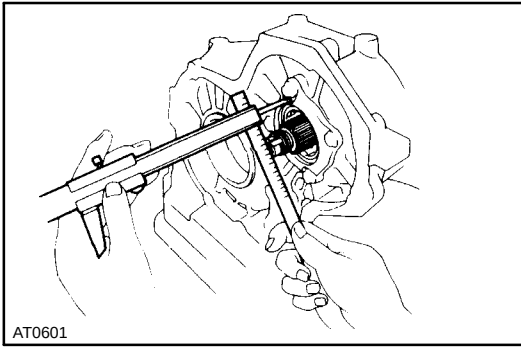
Install the sun gear of the counter shaft to the case.



28. INSTALL COUNTER SHAFT ASSEMBLY

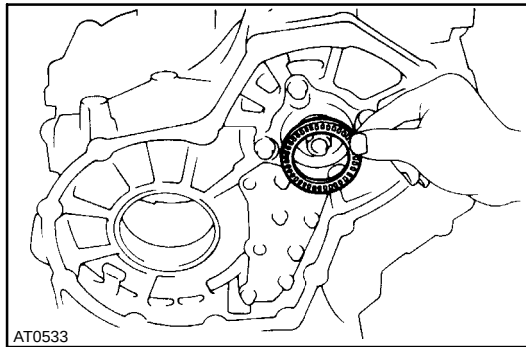
- (a) Align the flukes of the discs in the underdrive clutch.

- (b) Install the counter shaft assembly.

**29. CHECK HEIGHT OF COUNTER SHAFT**

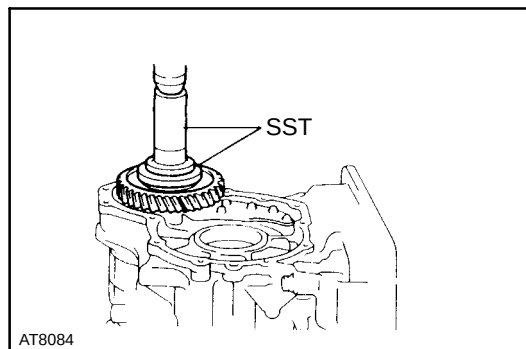
Using vernier calipers, measure the distance between the tip of the counter shaft and bolt seat of the clutch support.

Height: 33.3 - 35.5 mm (1.311 - 1.398 in.)

**30. INSTALL THRUST NEEDLE BEARING**

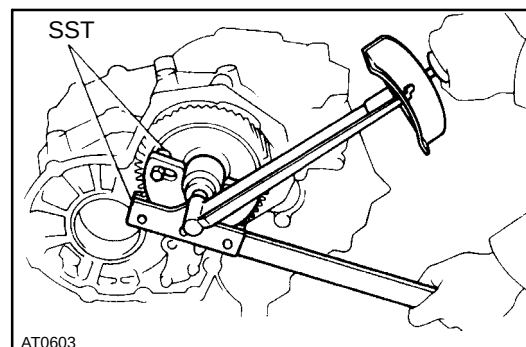
Bearing: Outer diameter 57.7 mm (2.272 in.)

Inner diameter 41.0 mm (1.614 in.)

**31. INSTALL COUNTER DRIVEN GEAR**

Using SST and press, press in the driven gear.

SST 09350-32014 (09351-32100, 09351-32140)

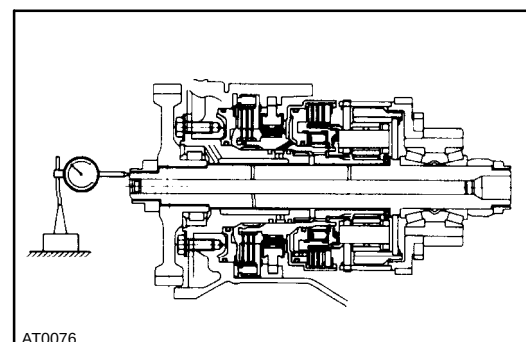
**32. TIGHTEN NEW LOCK NUT**

(a) Using SST to hold the driven gear, tighten a new lock nut.

SST 09330-00021 and 09350-32014 (09351-32032)

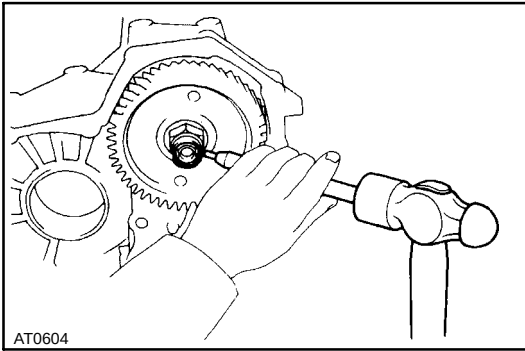
Torque: 157 N-m (1,600 kgf-cm, 116 ft-lbf)

(b) Remove SST.

**33. CHECK END PLAY OF COUNTER SHAFT**

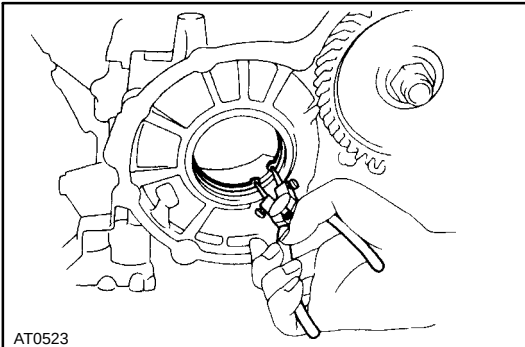
Using a dial indicator, measure the end play of the counter shaft.

End play: 0.23 - 0.89 mm (0.0091 - 0.0360 in.)



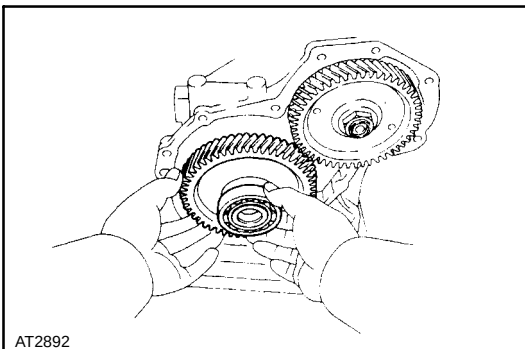
34. STAKE LOCK NUT

Using a punch and hammer, stake the lock nut.

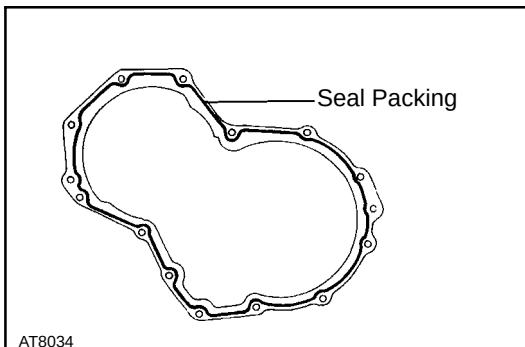


35. INSTALL SNAP RING To TRANSMISSION CASE

Using snap ring pliers, install the snap ring to the transmission case.



36. INSTALL INTERMEDIATE SHAFT

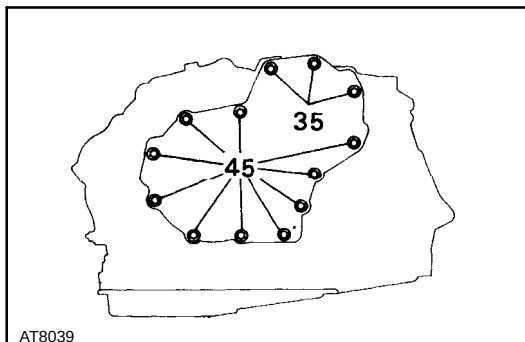


37. INSTALL TRANSAXLE REAR COVER

(a) Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle rear cover or transmission case.

(b) Apply seal packing to the rear cover as shown.

Seal packing: Part No. 08833 - 00090, THREE BOND 1131, LOCTITE 518 or equivalent.

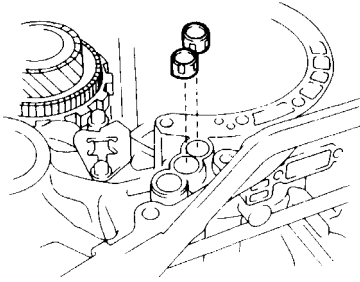


(c) Install and tighten the thirteen bolts.

Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)

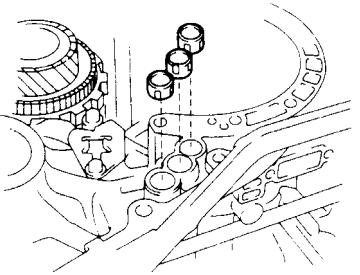
HINT: Each bolt length (mm) is indicated in the figure.

A241E



AT5602

A240L, A243L



AT2893

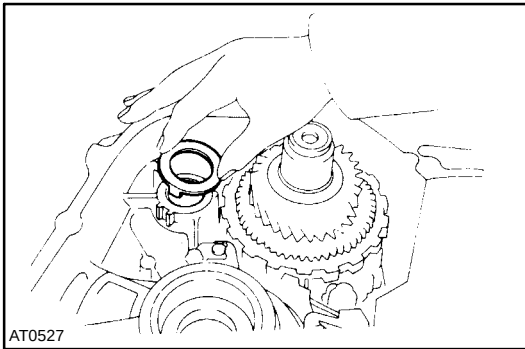
38. INSTALL NEW APPLY GASKETS

Install the two (A241E) or three (A240L, A243L) new apply gaskets.

HINT: The oil seal may be inserted with either end up or down.

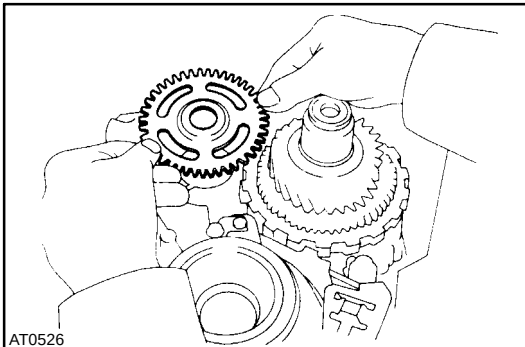
39. INSTALL GOVERNOR DRIVEN GEAR

(a) Install the thrust washer.



AT0527

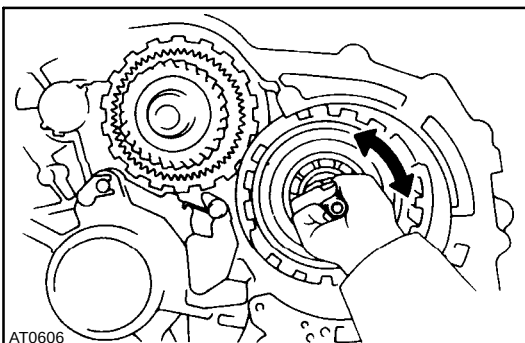
(b) Install the governor driven gear.



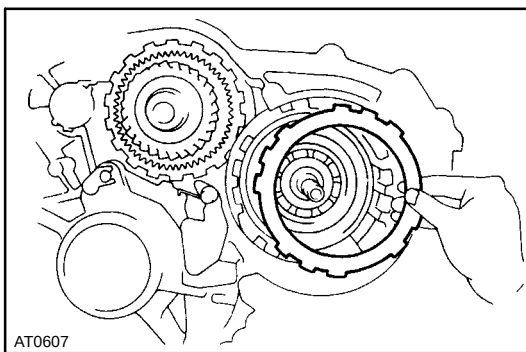
AT0526

40. CHECK INTERMEDIATE SHAFT

Make sure that the intermediate shaft turns smoothly.

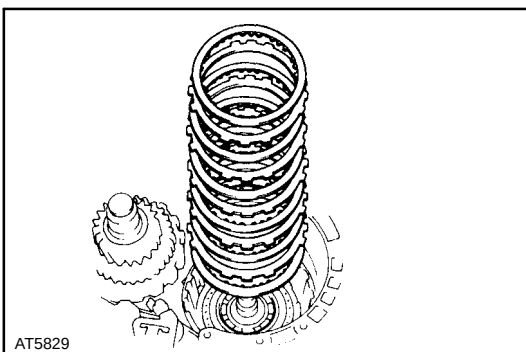


AT0606

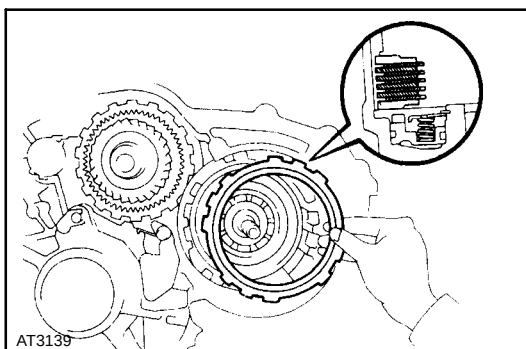


41. INSTALL DISCS, PLATES AND FLANGE

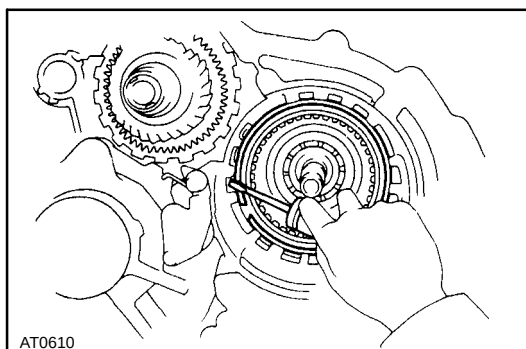
(a) Install the inner flange, facing the flat end upward.



(b) Install in order: D = Disc P = Plate
D-P-D-P-D-P-D-P-D-P-D

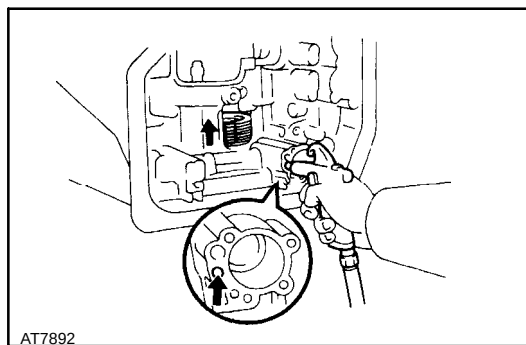


(c) Install the outer flange, the flat end facing downward.



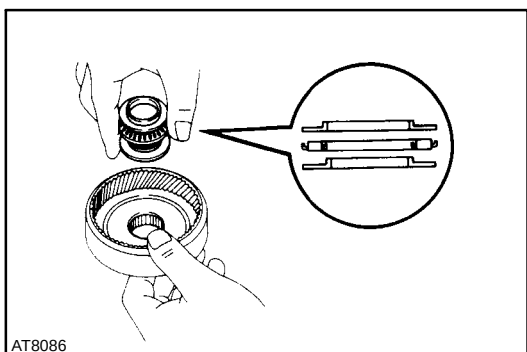
42. INSTALL SNAP RING

HINT: Be sure the snap ring end gap is not aligned with one of the cutouts.



43. CONFIRM THAT FIRST AND REVERSE BRAKE PISTON MOVES

Using compressed air, confirm that the first and reverse brake piston moves smoothly.



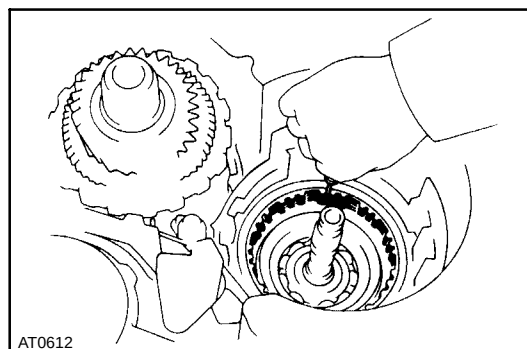
44. INSTALL REAR PLANETARY RING GEAR TO CASE

- (a) Coat the races and bearing with petroleum jelly, and install them onto the ring gear as shown.

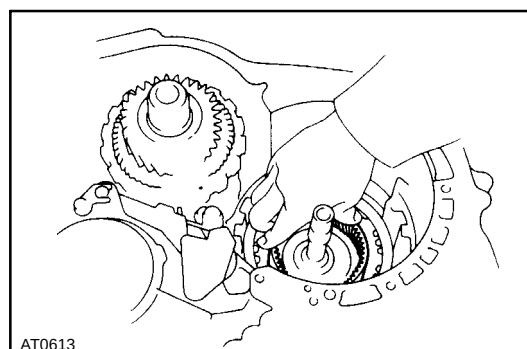
Bearing and races:

mm (in.)

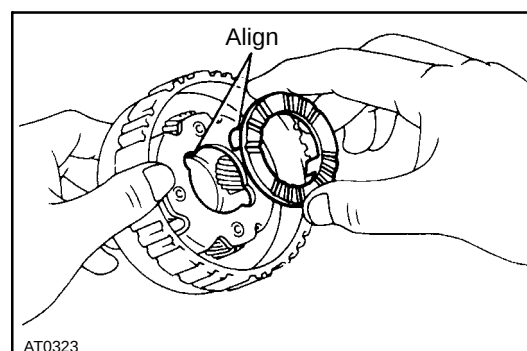
	Outer diameter	Inner diameter
Front Race	37.3 (1.4699)	24.1 (0.949)
Bearing	37.6 (1.480)	24.0 (0.945)
Rear Race	37.6 (1.480)	22.0 (0.874)



- (b) Using a screwdriver, align the flukes of the discs.



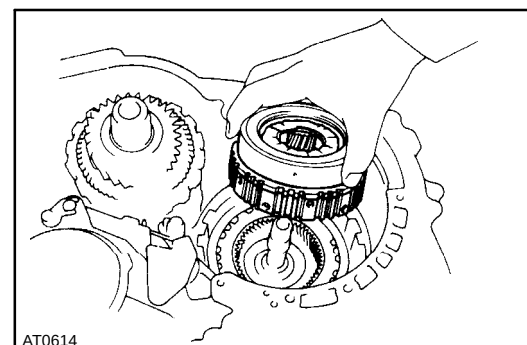
- (c) Install the rear planetary ring gear into the case.



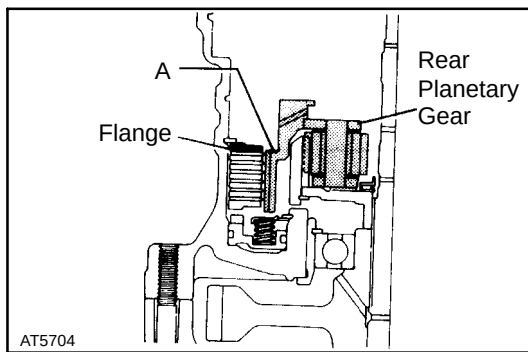
45. INSTALL REAR PLANETARY GEAR

- (a) Coat the thrust washer with petroleum jelly and install it onto the planetary gear.

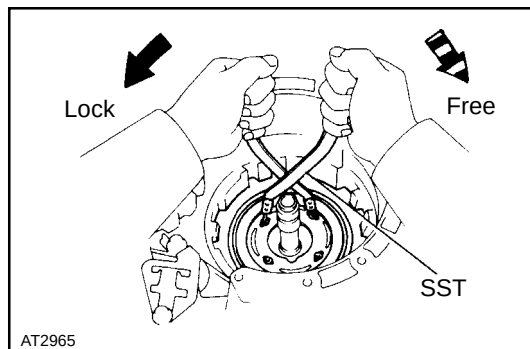
HINT: Make sure that the different lug shapes match the openings on the gear.



- (b) Align the spline of the planetary gear with the flukes of the discs and install the planetary gear into the first and reverse brake discs.



- (c) Check that part A of the rear planetary gear is below the upper surface of the flange.

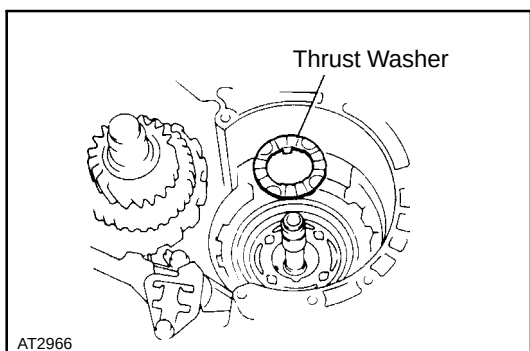


46. INSTALL NO. 2 ONE-WAY CLUTCH

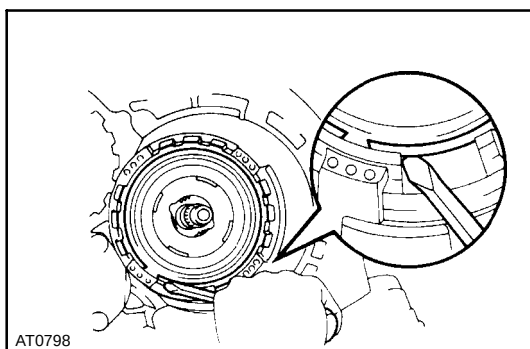
- (a) Place the one-way clutch into the case, the shiny side facing upward.
 (b) Install the one-way clutch onto the inner race while turning the planetary gear clockwise with SST.

SST 09350-32014 (09351-32050)

- (c) Check that the planetary gear turns freely clockwise and locks counterclockwise.

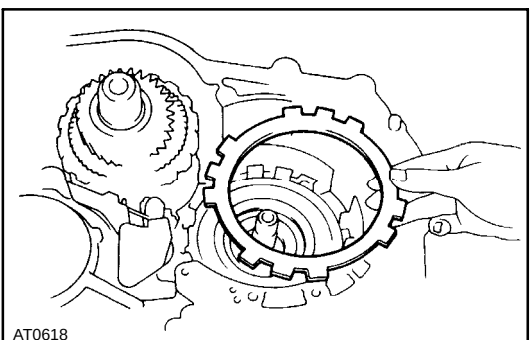


- (d) Coat the thrust washer with petroleum jelly and install it onto the planetary gear.



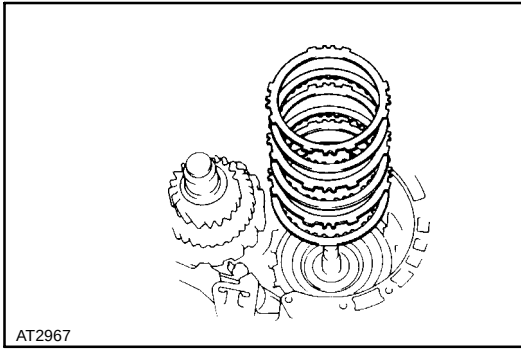
47. INSTALL SNAP RING

Be sure the end gap of the snap ring is not aligned with one of the cutouts.

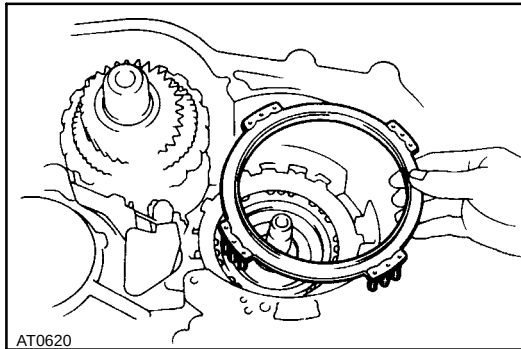


48. INSTALL SECOND BRAKE INTO CASE

- (a) Install the flange, the flat side facing upward.

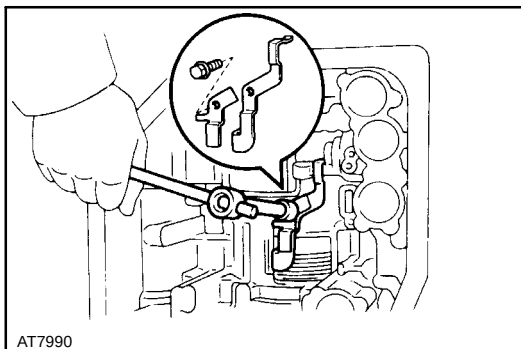


- (b) Install the discs and plates in order.
D = Disc P = Plate
D-P-D-P-D-P



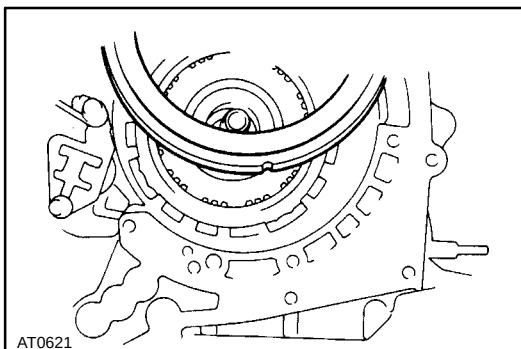
49. INSTALL SECOND BRAKE PISTON RETURN SPRING

Install each of the springs over the protrusions in the case.



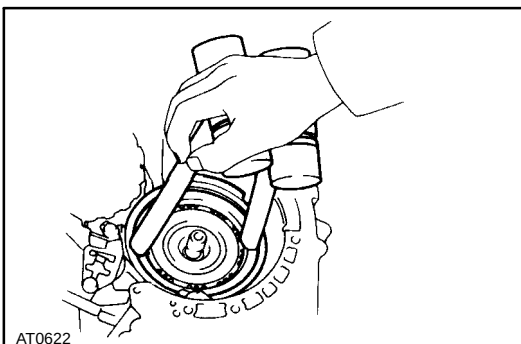
50. INSTALL SECOND COAST BRAKE BAND GUIDE

Install the band guide so that its tip touches the case.



51. INSTALL SECOND BRAKE DRUM INTO CASE

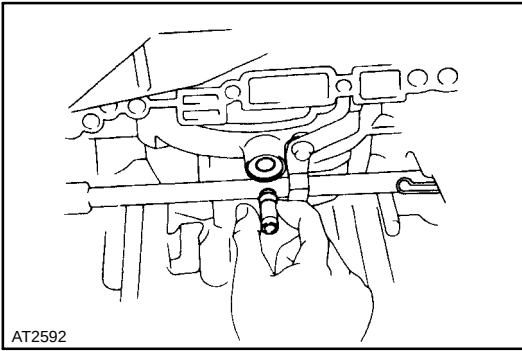
Align the groove of the drum with the bolt and place it into the case.



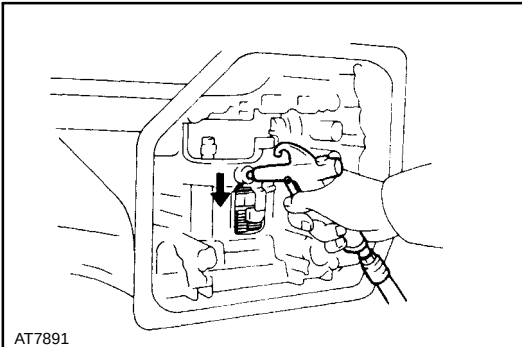
52. INSTALL SNAP RING

- (a) Place the snap ring into the case so that the end gap is installed into the groove.
(b) While compressing the piston return springs over the drum with hammer handles, install the snap ring.

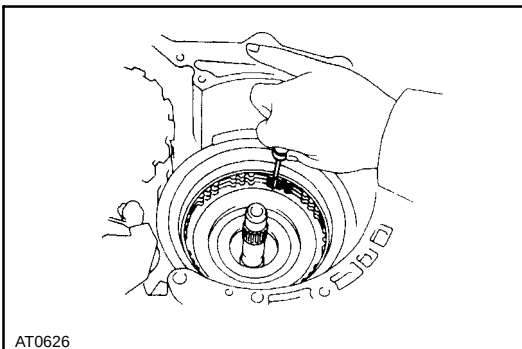
HINT: Be sure the end gap of the snap ring is not aligned with one of the cutouts.

**53. INSTALL SECOND BRAKE DRUM GASKET**

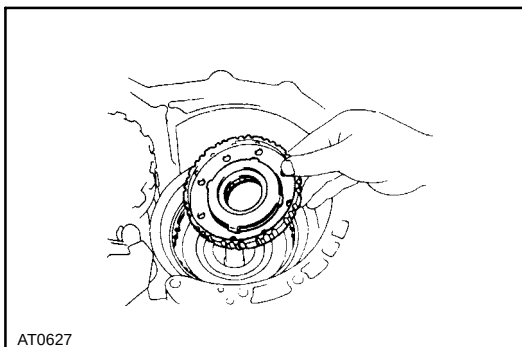
Driven in a new drum gasket until it makes contact with the second brake drum.

**54. CONFIRM THAT SECOND BRAKE PISTON MOVES**

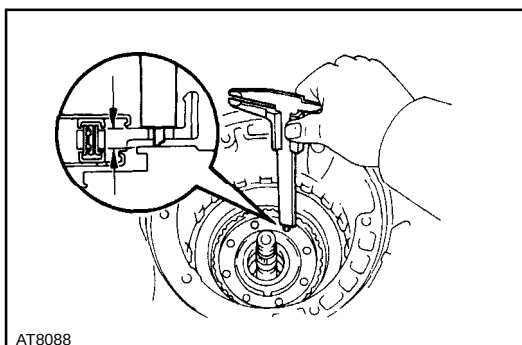
Using compressed air, confirm that the second brake piston moves smoothly.

**55. INSTALL SECOND BRAKE HUB NO. 1 ONE-WAY CLUTCH**

(a) Using a screwdriver, align the flukes of the discs in the second brake.

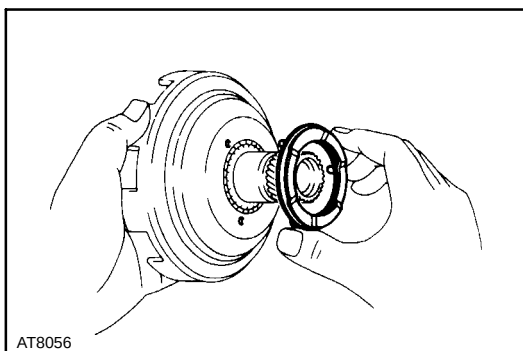


(b) Align the spline of the hub with the flukes of the discs and install the hub to the second brake discs.

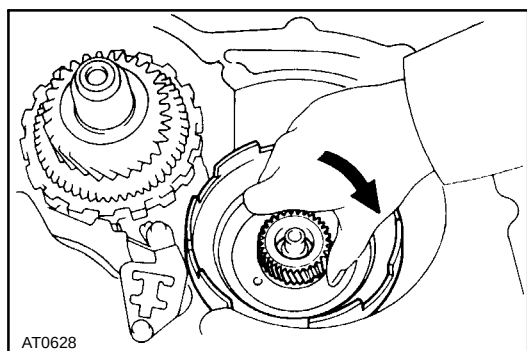
**56. CHECK SECOND BRAKE HUB INSTALLATION DISTANCE**

Check the distance between the surface of the second brake hub and rear planetary gear.

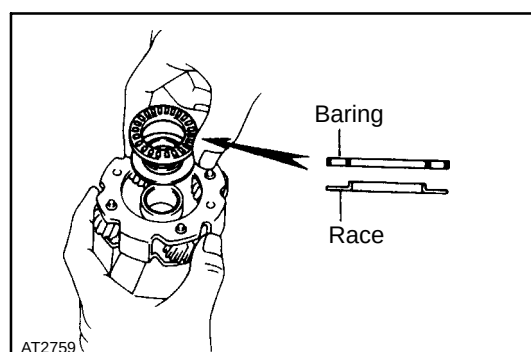
Distance: Approx. 5 mm (0.20 in.)

**57. INSTALL SUN GAR AND SUN GEAR INPUT DRUM**

- (a) Coat the thrust washer with petroleum jelly and install it on the sun gear input drum.



- (b) While turning the sun gear clockwise, install it into the No. 1 one-way clutch.

**58. INSTALL FRONT PLANETARY GEAR**

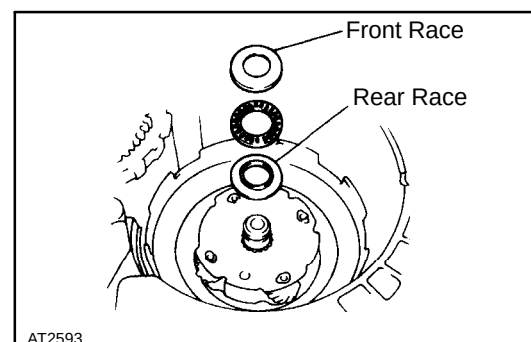
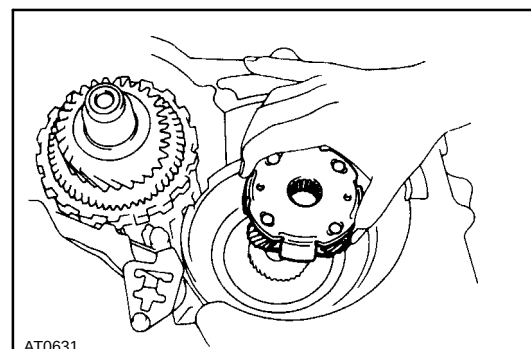
- (a) Coat the race and bearing with petroleum jelly and install them onto the planetary gear.

Bearing and races:

mm (in.)

	Outer diameter	Inner diameter
Bearing	45.0 (1.772)	30.0 (1.181)
Race	45.0 (1.772)	28.0 (1.102)

- (b) Install the planetary gear.

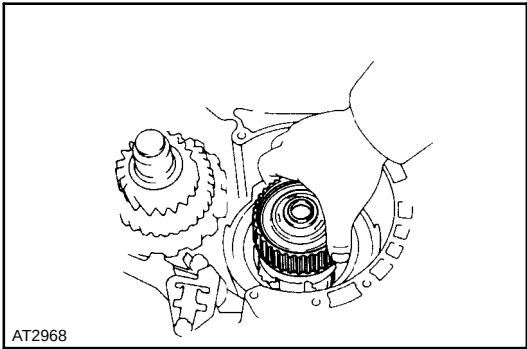
**59. INSTALL FRONT PLANETARY RING GEAR**

- (a) Coat the races and bearing with petroleum jelly and install them onto the planetary ring gear.

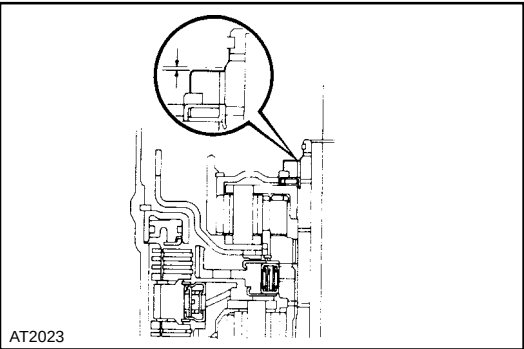
Bearing and races:

mm (in.)

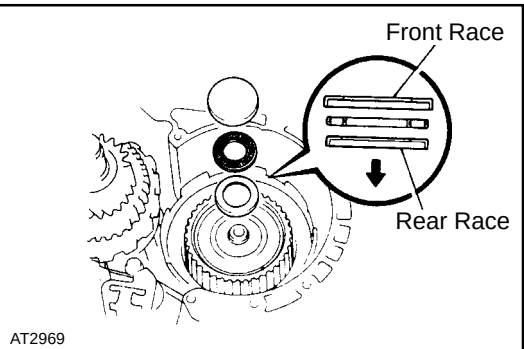
	Outer diameter	Inner diameter
Front Race	37.9 (1.492)	22.0 (0.866)
Bearing	36.1 (1.421)	22.2 (0.874)
Rear Race	35.0 (1.378)	19.0 (0.748)



(b) Install the ring gear.

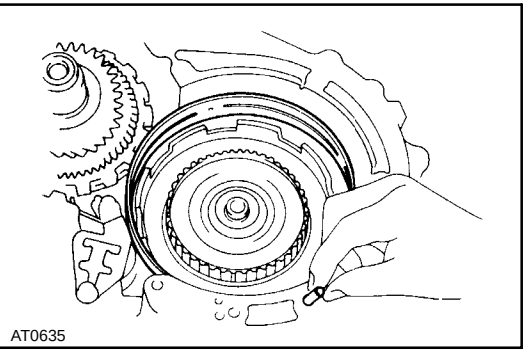


HINT: If the planetary ring gear and the other parts are installed correctly into the case, the end of the bushing with the ring gear flange will be flush with a shoulder of the intermediate shaft or under.



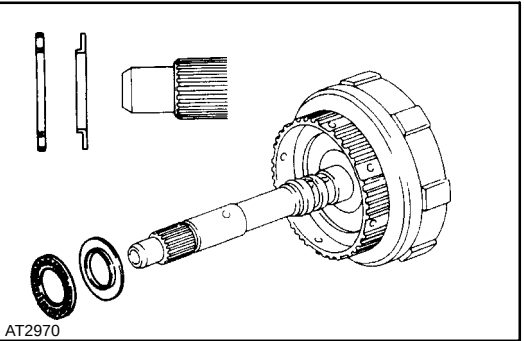
(c) Coat the races and bearing with petroleum jelly and install them onto the tip of ring gear flange as shown.
Bearing and races: mm (in.)

	Outer diameter	Inner diameter
Front Race	37.9 (1.492)	22.0 (0.866)
Bearing	36.1 (1.421)	22.2 (0.874)
Rear Race	35.7 (1.406)	23.0 (0.906)



60. INSTALL SECOND COAST BRAKE BAND

- (a) Place the band into the case.
- (b) Install the pin through the oil pump mounting bolt hole.

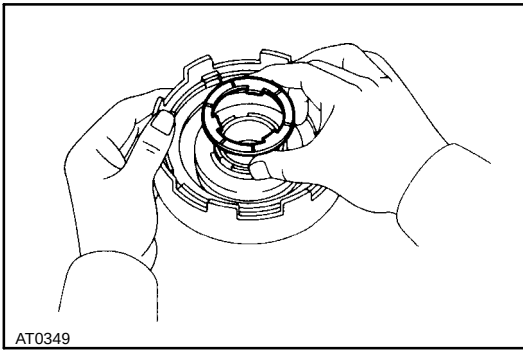


61. INSTALL FORWARD CLUTCH AND DIRECT CLUTCH

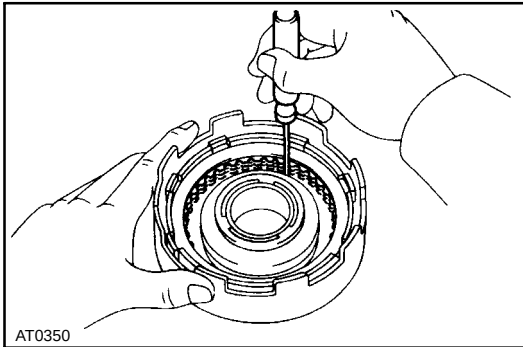
- (a) Coat the race and bearing with petroleum jelly, and install them onto the forward clutch drum.

Bearing and race: mm (in.)

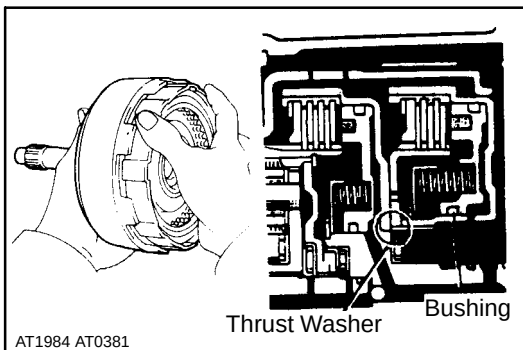
	Outer diameter	Inner diameter
Bearing	42.0 (1.654)	28.9 (1.138)
Race	42.0 (1.654)	27.1 (1.067)



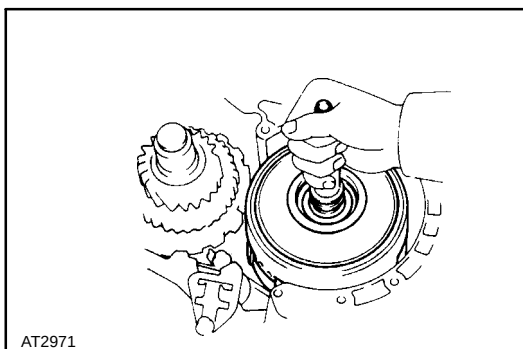
- (b) Coat the clutch drum thrust washer with petroleum jelly, and install it onto the direct clutch drum with the oil groove facing upward.



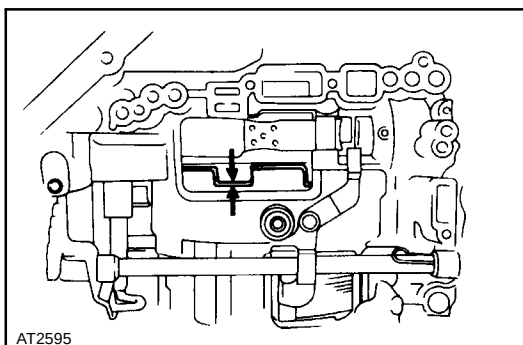
- (c) Using a screwdriver, align the flukes of discs in the direct clutch.



- (d) Mesh the hub with the flukes of the direct clutch while turning the clutch drum or forward clutch.
HINT: If the flukes of the discs are meshed with the hub correctly, the end of the bushing with the direct clutch drum will be flush with the surfaces of the forward clutch.

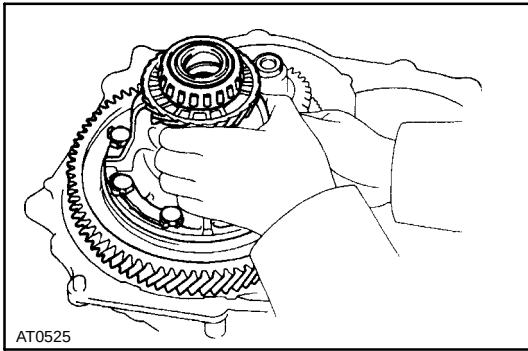


- (e) Place the direct clutch and forward clutch into the case.
(f) While rotating the forward clutch to mesh the front planetary ring gear and discs, install them.

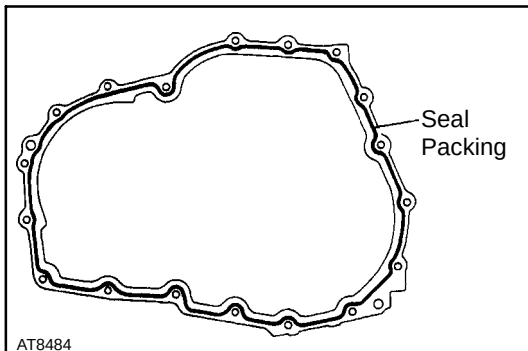


- (g) Check the distance between A and B shown in the illustration.

Distance: Approx. 3 mm (0.118 in.)



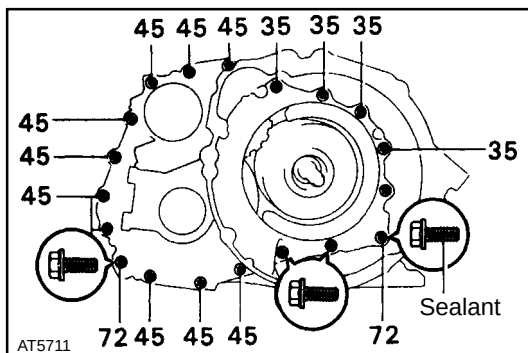
62. INSTALL DIFFERENTIAL



63. INSTALL TRANSAXLE HOUSING

- Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle housing or transmission case.
- Apply seal packing to the transaxle housing as shown.

Seal packing: Part No. 08833 - 00090, THREE BOND 1131, LOCTITE 518 or equivalent.



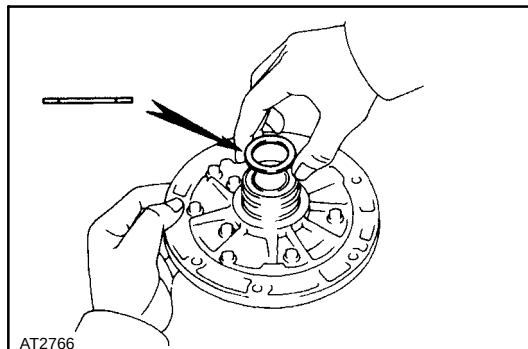
- Apply sealant to the bolt threads.

Sealant: Part No. 08833 - 00080, Adhesive 1344, THREE BOND 1344, LOCTITE 242 or equivalent

- Install and tighten the bolts.

Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)

HINT: Each bolt length (mm) is indicated in the illustration.

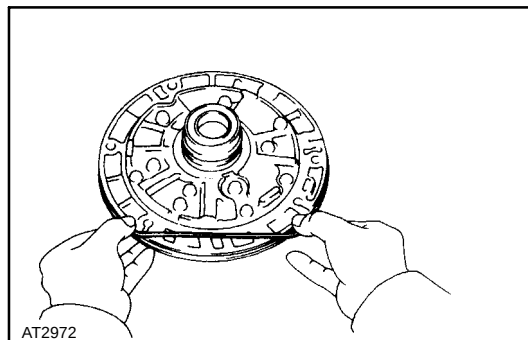


64. CHECK PRELOAD OF DIFFERENTIAL SIDE BEARING (See page [AX-112](#))

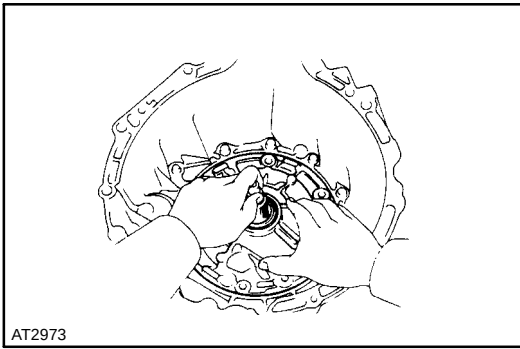
65. INSTALL OIL PUMP INTO CASE

- Coat the race with petroleum jelly and install it onto the stator shaft.

Race:	Outer diameter	43.0 mm (1.693 in.)
	Inner diameter	30.5 mm (1.201 in.)

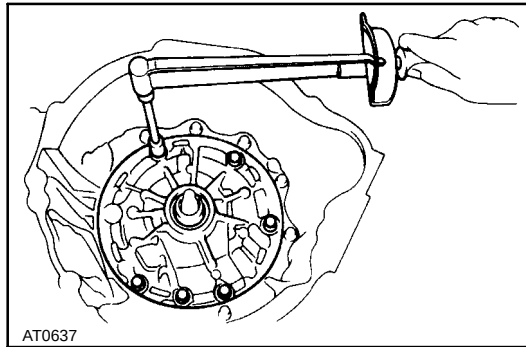


- Coat the new O-ring with ATF, and install it to pump body.

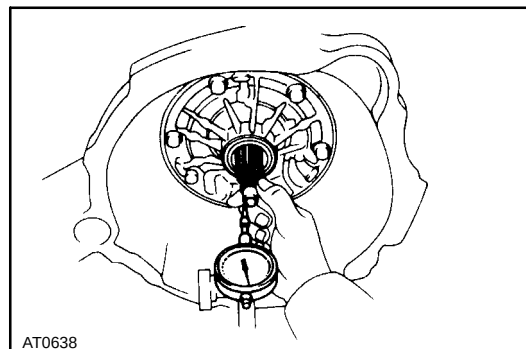


- (c) Place the oil pump through the input shaft, and align the bolt holes of the pump body with the transmission case.
- (d) Hold the input shaft, and lightly press the oil pump body to slide the oil seal rings on the stator shaft through the direct clutch drum.

NOTICE: Do not push on the oil pump strongly, or the oil seal ring will stick to the direct clutch drum.



- (e) Install and tighten the six bolts.
Torque: 25 N-m (250 kgf-cm, 18 ft-lbf)



66. MEASURE THRUST PLAY OF INPUT SHAFT

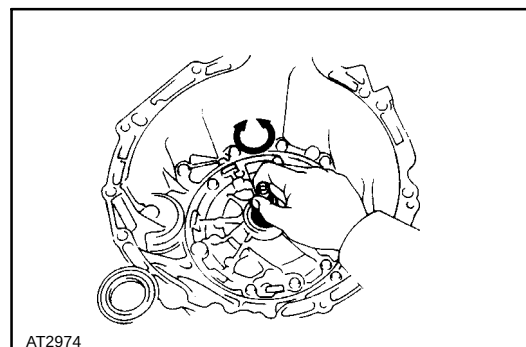
Measure the thrust play in axial direction.

Thrust play: 0.3 - 0.9 mm (0.012 - 0.035 in.)

If the play is not as specified, select and replace the race for the end of stator shaft.

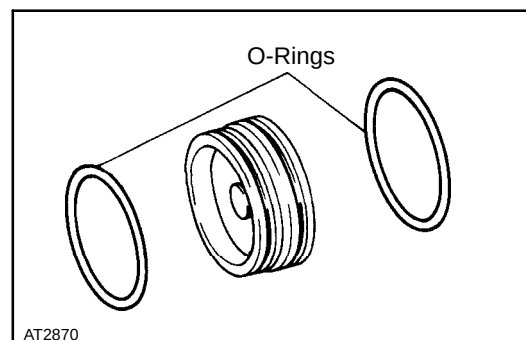
HINT: There are two different thickness of races. If necessary, select one of them.

Race thickness: 0.8 mm (0.031 in.)
1.4 mm (0.055 in.)



67. CHECK INPUT SHAFT ROTATION

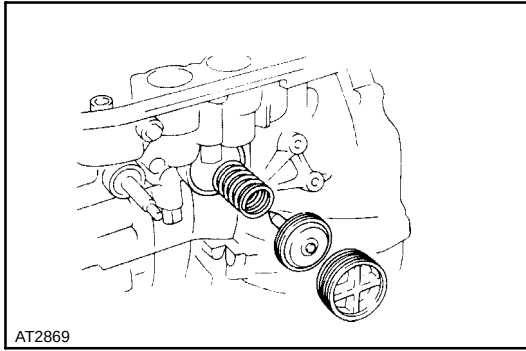
Make sure that the input shaft rotates smoothly.



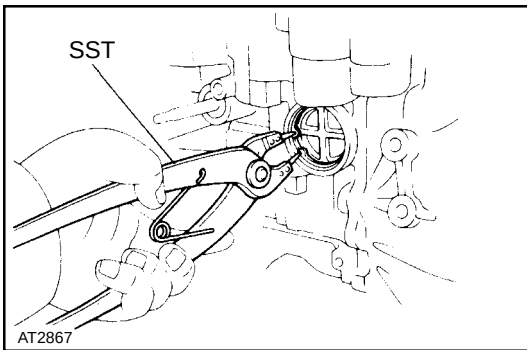
68. INSTALL SECOND COAST BRAKE PISTON

- (a) Install the two new O-rings to the cover.

HINT: Coat the O-rings with ATF before installing.



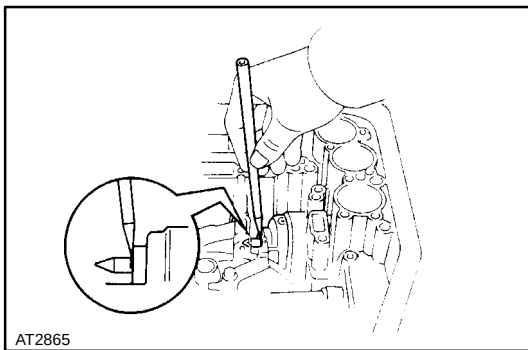
- (b) Install the spring, piston and cover into the bore.



- (c) Using SST, install the snap ring while pressing the cover.

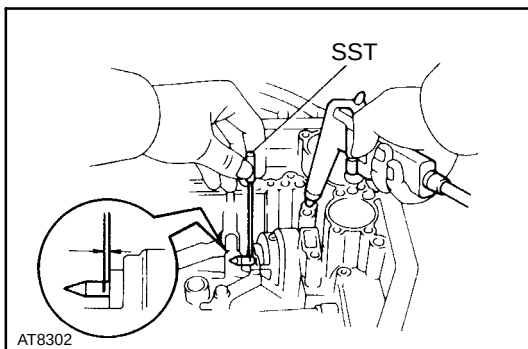
SST 09350-31014 (09351-32050)

- (d) Check that the front end of the piston rod contacts the center of the second brake band depression.



69. MEASURE PISTON STROKE OF SECOND COAST BRAKE

- (a) Apply a small amount of paint to the piston rod at the point it meets the case as shown in the illustration.



- (b) Using SST, measure the piston stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi) as shown.

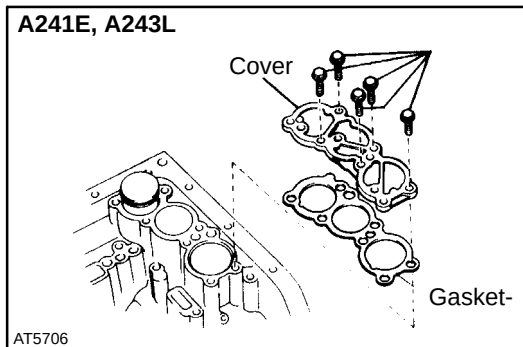
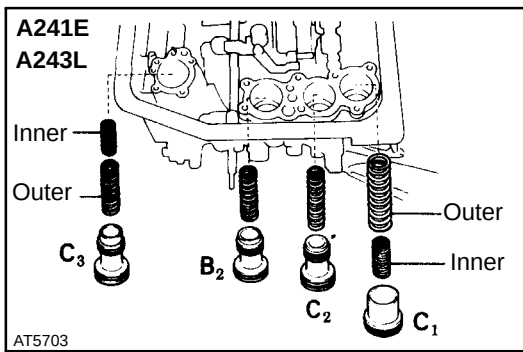
SST 09240-00020

Piston stroke: 1.5 - 3.0 mm (0.059 - 0.118 in.)

If it is still more than standard value, replace the brake band with a new one.

70. INSTAL ACCUMULATOR PISTONS AND SPRINGS

- (a) Coat the new O-rings with ATF, and install them to the pistons.



(b) Install the pistons and springs to the case.

(A241E)

Spring		Free length mm (in.)	Color
C ₁	Outer	74.1 (2.917)	Pink
	Inner	41.0 (1.614)	Pink
C ₂	No. 1	15.5 (0.610)	Pink
	No. 2	62.54 (2.462)	Pink
B ₂	No. 1	15.5 (0.610)	Green
	No. 2	64.5 (2.539)	Green
C ₃	Outer	65.2 (2.570)	Blue
	Inner	48.0 (1.890)	Orange

(A243L)

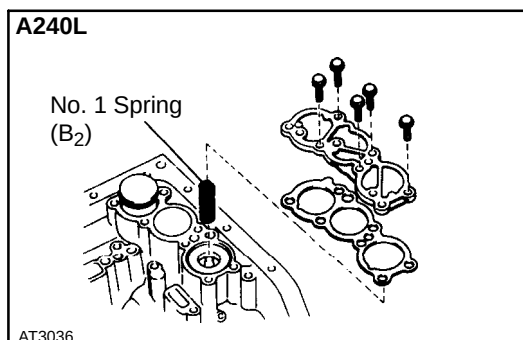
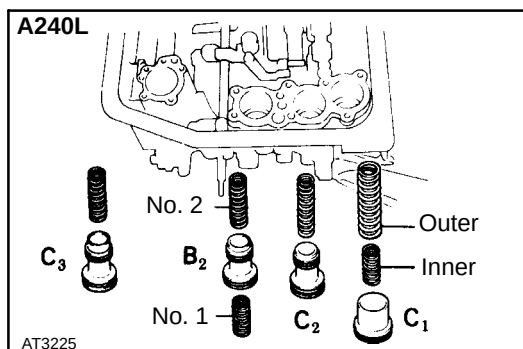
Spring		Free length mm (in.)	Color
C ₁	Outer	77.8 (3.063)	None
	Inner	42.5 (1.673)	None
C ₂		71.54 (2.817)	Blue and Light Blue
B ₂		56.68 (2.231)	Yellow
C ₃		61.47 (2.420)	White

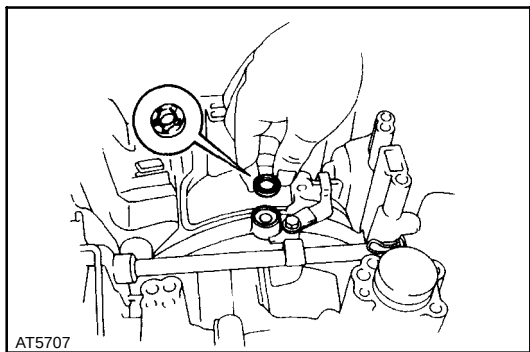
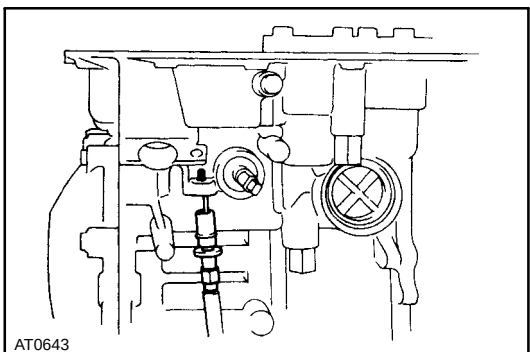
(A240L)

Spring		Free length mm (in.)	Color
C ₁	Outer	77.8 (3.063)	None
	Inner	42.50 (1.6732)	None
C ₂		64.8 (2.551)	Yellow
B ₂	No. 1	35.18 (1.3850)	Yellow
	No. 2	56.68 (2.2315)	Yellow
C ₃		64.72 (2.5480)	Red and Yellow

(c) Place the cover with a new gasket and gradually tighten the bolts little a time in sequence.

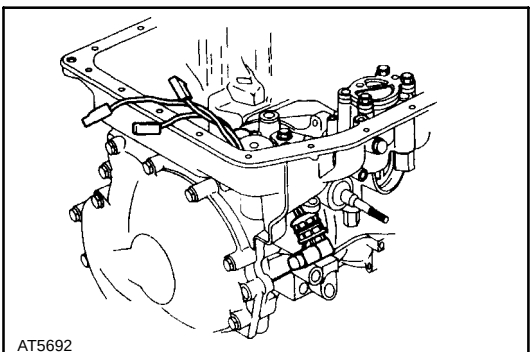
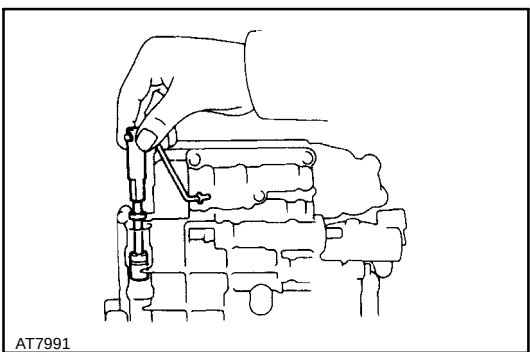
Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)



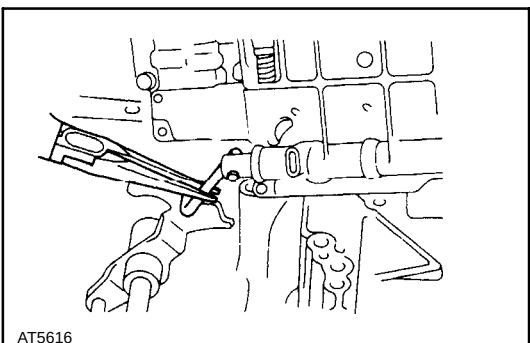
**71. INSTALL SECOND BRAKE APPLY GASKET****72. INSTALL THROTTLE CABLE IN CASE**

Push the cable through the hole on the case, being careful not to damage the O-ring. Check for full seating.

NOTICE: In subsequent work, to avoid breaking the cable fitting do not roll the case over the cable.

**73. INSTALL SOLENOID WIRE****74. INSTALL VALVE BODY**

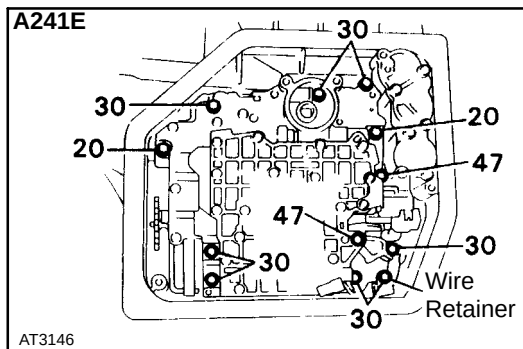
- (a) Coat the manual valve with ATF and install it to the valve body.



- (b) Connect the connecting rod to the manual valve lever.



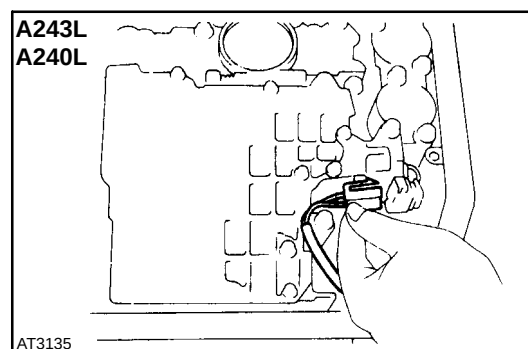
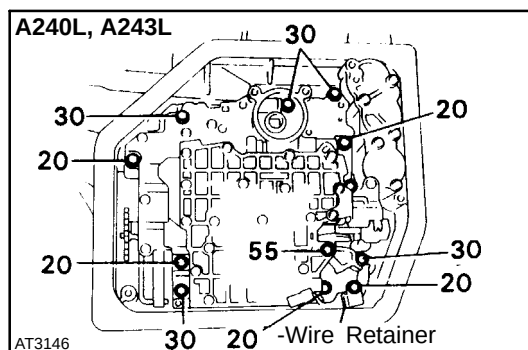
- (c) Place the valve body on the transmission.
- (d) While holding the cam down with your hand, slip the cable end into the slot.



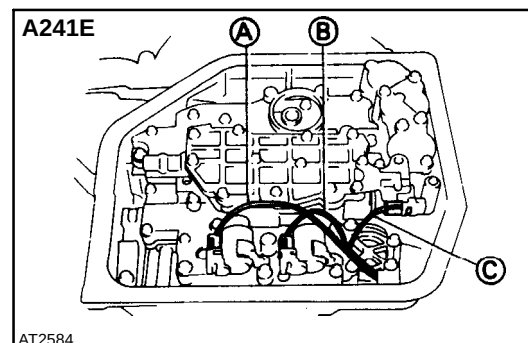
- (e) Install the twelve bolts and wire retainer shown in the illustration, and hand tighten all the bolts first. Then tighten them with a torque wrench.

HINT: Each bolt length (mm) is indicated in the illustration.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)

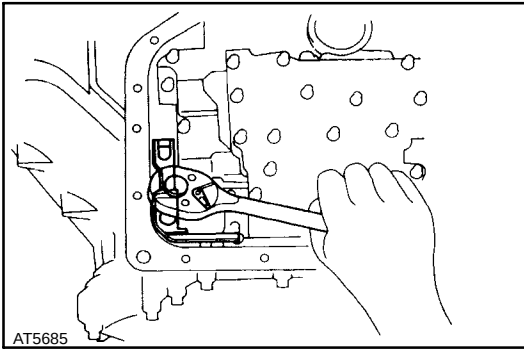


75. CONNECT SOLENOID CONNECTOR



HINT: Wire color

- Ⓐ White
- Ⓑ Black
- Ⓒ Yellow

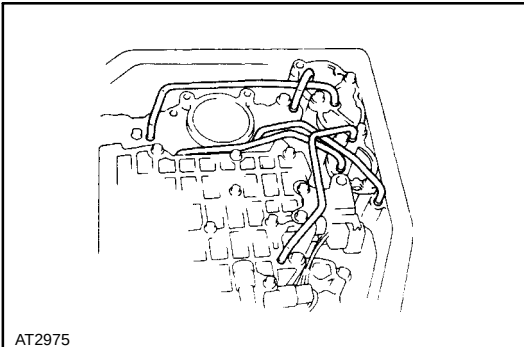


76. INSTALL MANUAL DETENT SPRING

- (a) Install the detent spring and cover in place, and install the bolt (length: 16 mm).
- (b) Hand tighten the bolt first, then tighten the bolt with a torque wrench.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)

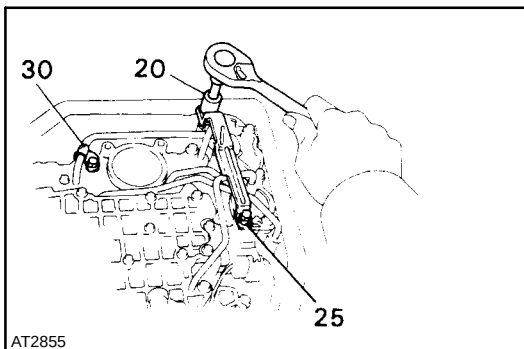
- (c) Check that the manual valve lever is in contact with the center of the roller at the tip of the detent spring.



77. INSTALL OIL TUBES

- (a) Tap the tubes with a plastic hammer to install them into the positions indicated in the illustration.

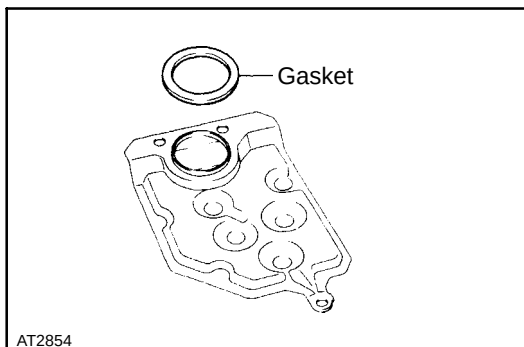
NOTICE: Be careful not to bend or damaged the tubes.



- (b) Install the oil tube clamp and bracket.

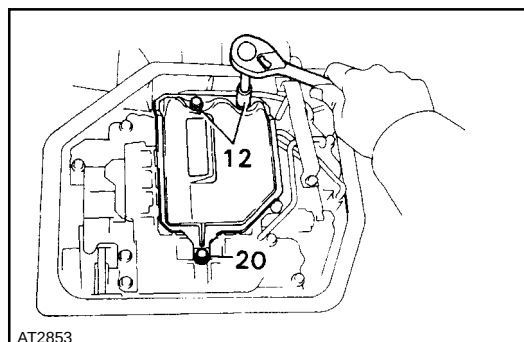
HINT: Each bolt length (mm) is indicated in the illustration. Hand tighten all bolts first, then tighten them with a torque wrench.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)



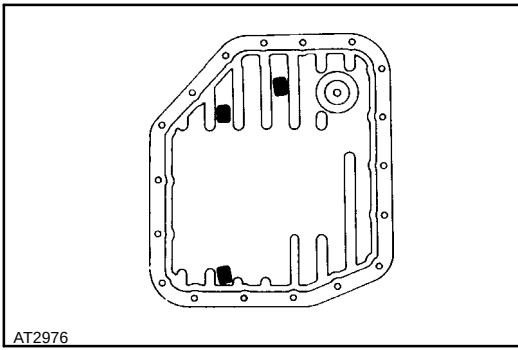
78. INSTALL OIL STRAINER

- (a) Install the new gasket to the oil strainer.

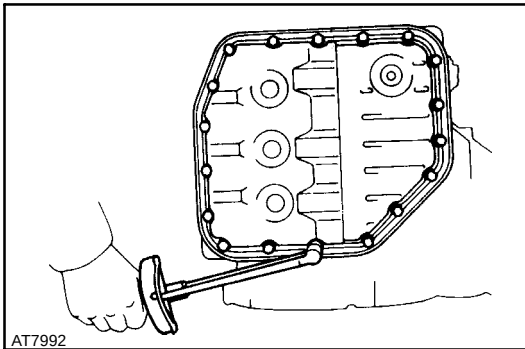


- (b) Install the oil strainer with the three bolts.

HINT: each bolt length (mm) is indicated in the illustration.

**79. INSTALL THREE MAGNETS IN OIL PAN**

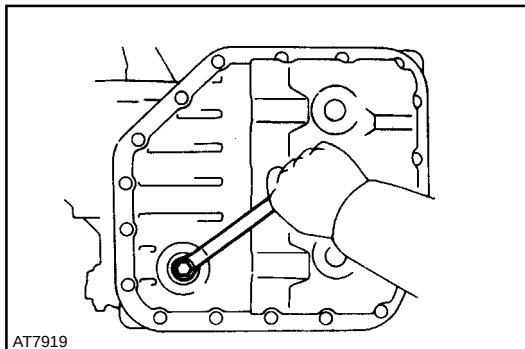
NOTICE: Make sure that the magnets do not interfere with the oil tubes.

**80. INSTALL OIL PAN**

(a) Install a new gasket to the oil pan and install them to the transmission.

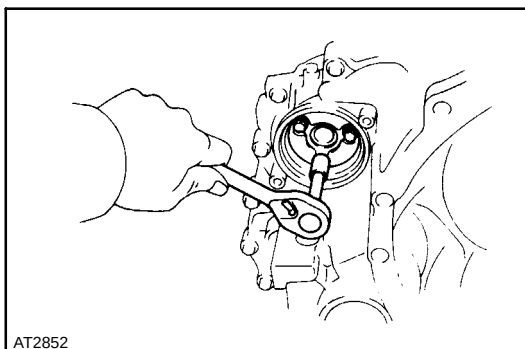
(b) Tighten the eighteen bolts.

Torque: 4.9 N-m (50 kgf-cm, 43 in.-lbf)

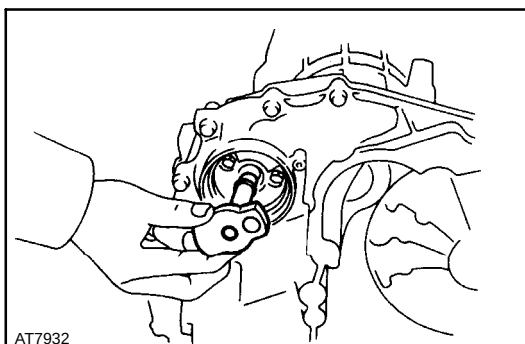


(c) Install a new gasket to the drain plug and install it to the oil pan.

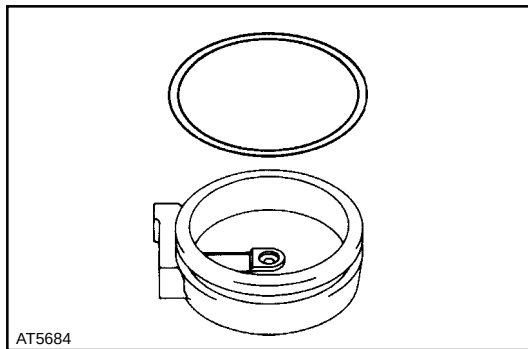
Torque: 17 N-m (175 kgf-cm, 13 ft-lbf)

**81. (A241E)****INSTALL SPEED SENSOR AND SENSOR ROTOR**

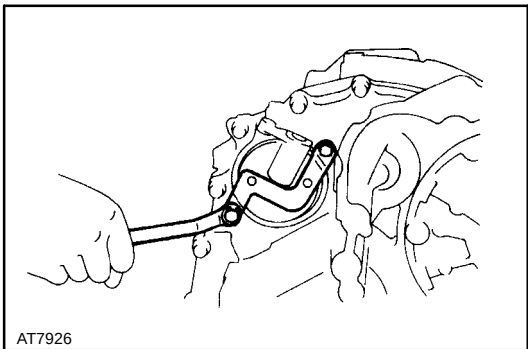
(a) Install the sensor adaptor with three bolts.



(b) Install the sensor rotor.

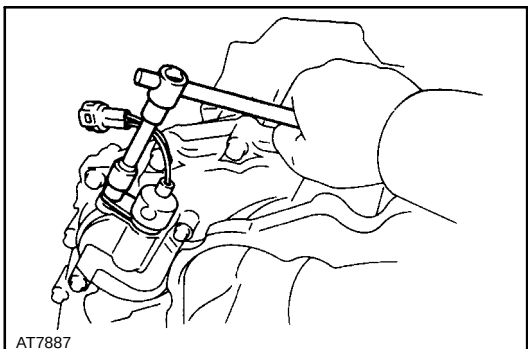


- (c) Install a new O-ring to the sensor cover.



- (d) Install the sensor cover to the transmission and then install the sensor cover bracket with the two bolts.

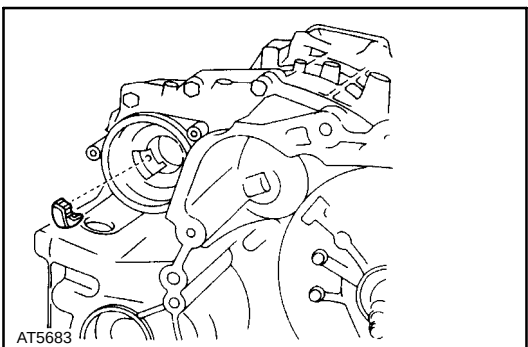
Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)



- (e) Coat a new O-ring with ATF and install it to the speed sensor.

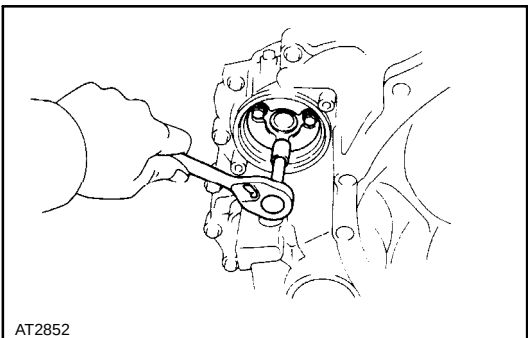
- (f) Install the speed sensor and retaining plate.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)

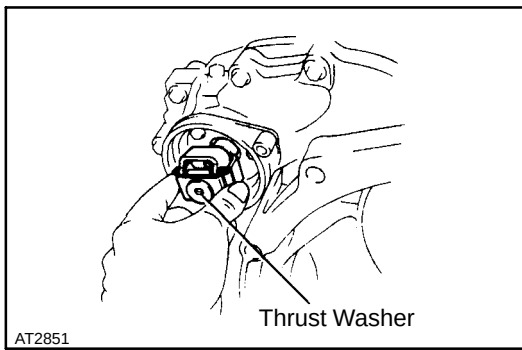


82. (A240L, A241E, A243L) INSTALL GOVERNOR BODY

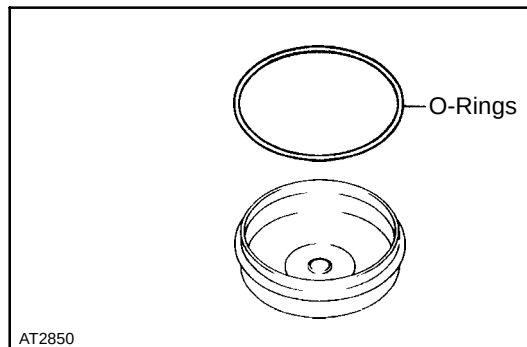
- (a) Install the governor oil strainer to the case.



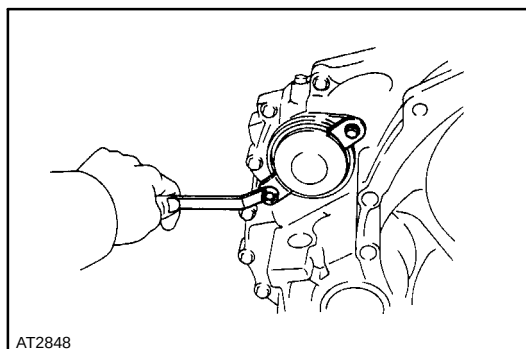
- (b) Install a new gasket to governor body adaptor.
(c) Install the governor body adaptor with three bolts.



(d) Install the governor body and thrust washer.

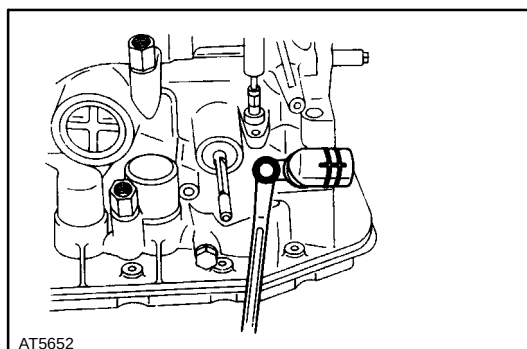


(e) Install a new O-ring to the cover.



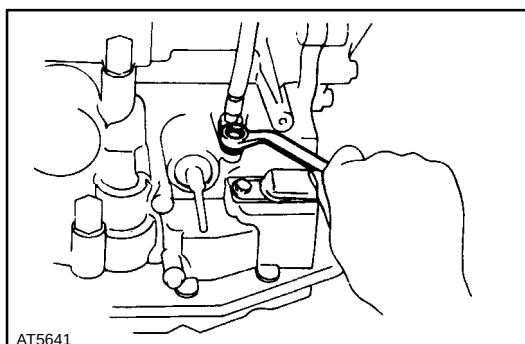
(f) Install the cover to the transmission and then install the two cover brackets with the two bolts.

Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)



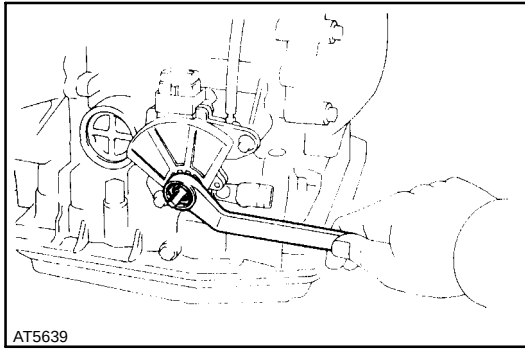
83. INSTALL SOLENOID WIRE RETAINING PLATE

Install the retaining plate with the bolt.



84. INSTALL THROTTLE CABLE RETAINING PLATE

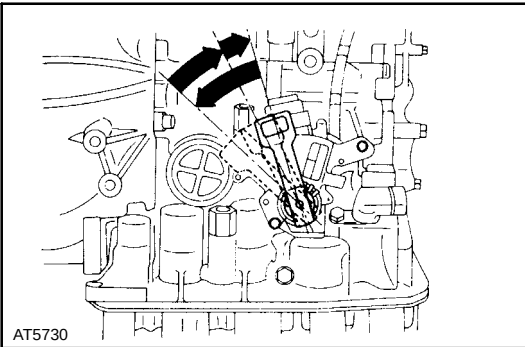
Install the retaining plate with the bolt.



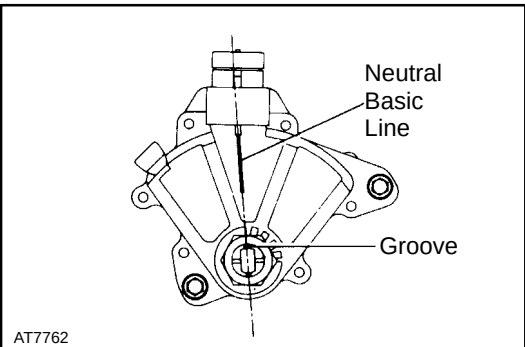
85. INSTALL NEUTRAL START SWITCH

- (a) Install the neutral start switch to the manual valve shaft.
- (b) Install the packing. (A240L, A241E)
- (c) Install the nut and lock stopper.
- (d) Tighten the nut.

Torque: 6.9 N-m (70 kgf-cm, 61 in.-lbf)

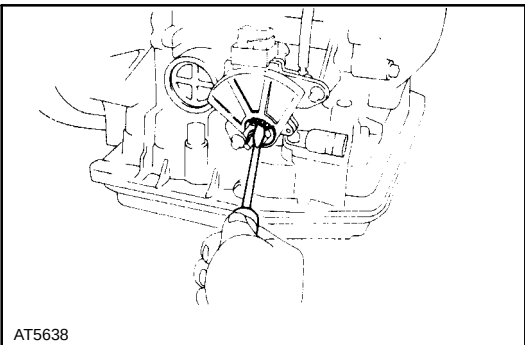


- (e) Temporarily install the manual shift lever.
- (f) Turn the lever counterclockwise until it stops, then turn it clockwise two notches.
- (g) Remove the manual shift lever.

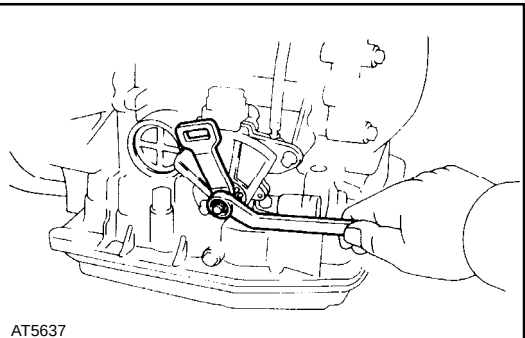


- (h) Align the groove and neutral basic line as shown.
- (i) Install and tighten the two bolts.

Torque: 5.4 N-m (55 kgf-cm, 48 in.-lbf)



- (j) Using a screwdriver, stake the nut with the nut stopper.

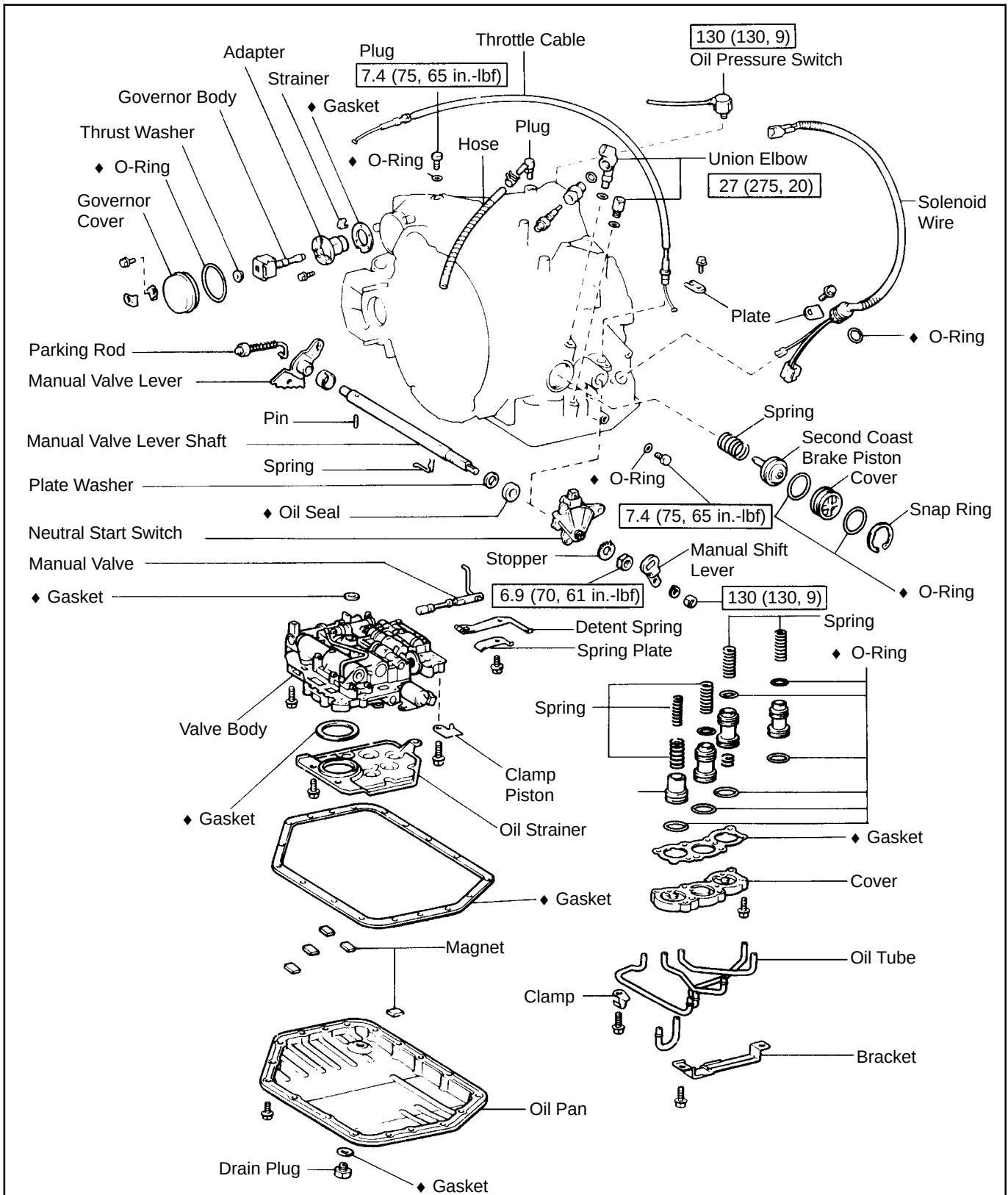


- (k) Install the manual shift lever with the washer, and tighten the nut.

86. INSTALL FILLER TUBE AND TRANSMISSION DIP-STICK

87. INSTALL TWO OIL COOLER PIPES

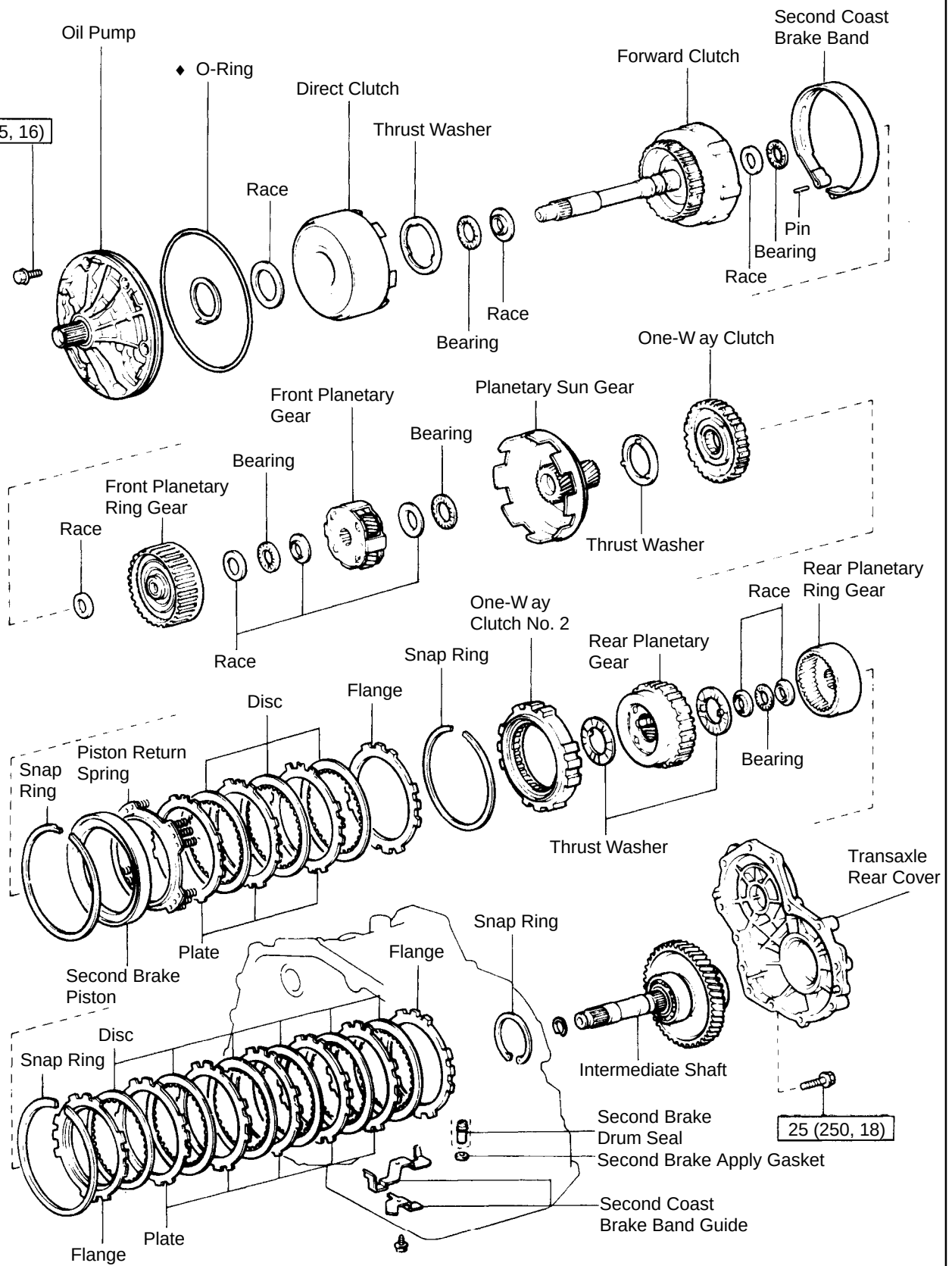
REMOVAL OF COMPONENT PARTS (A241H) COMPONENTS



N-m (kgf-cm, ft-lbf) : Specified torque

◆ Non-reusable part

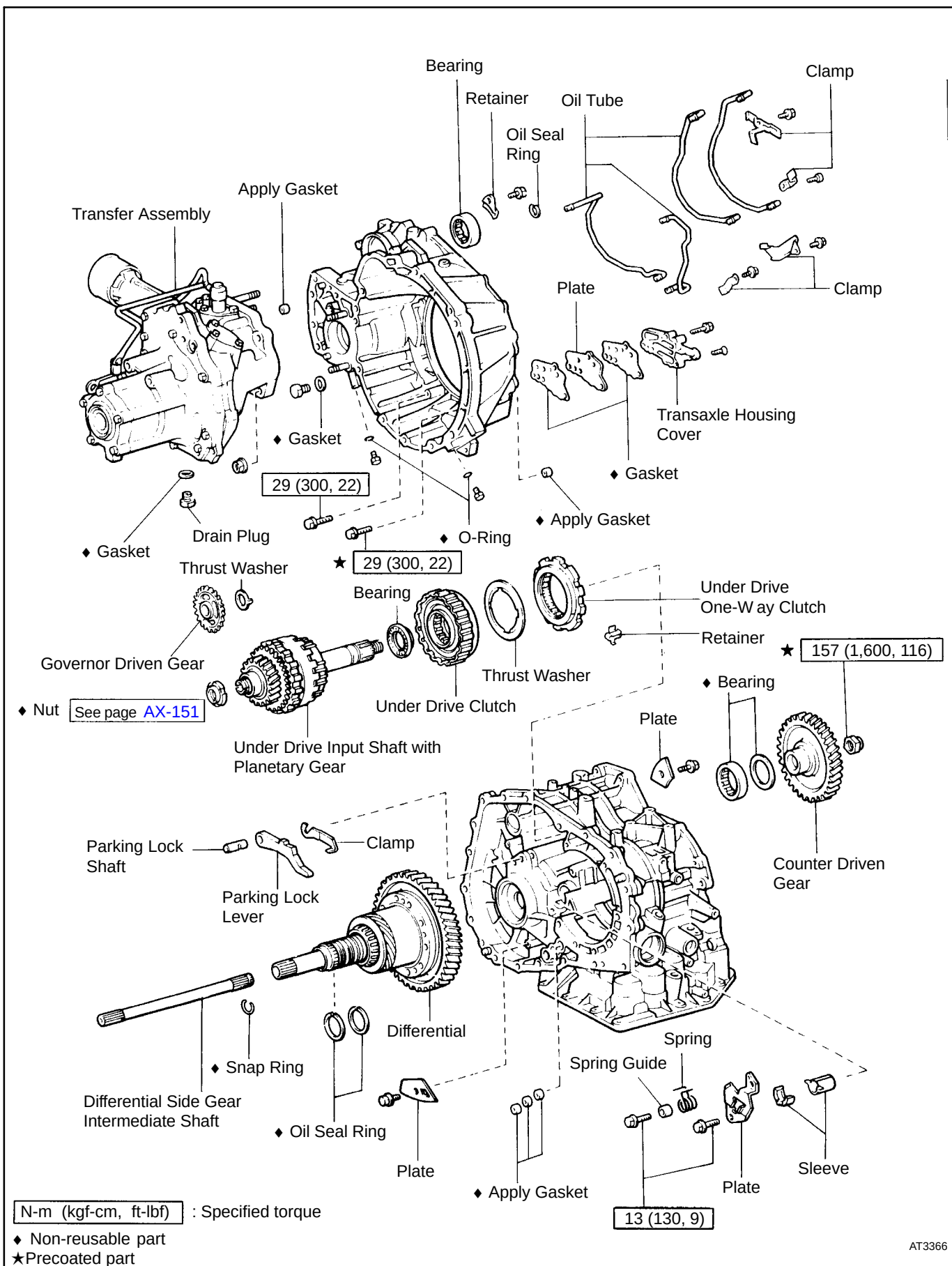
COMPONENTS (Cont'd)

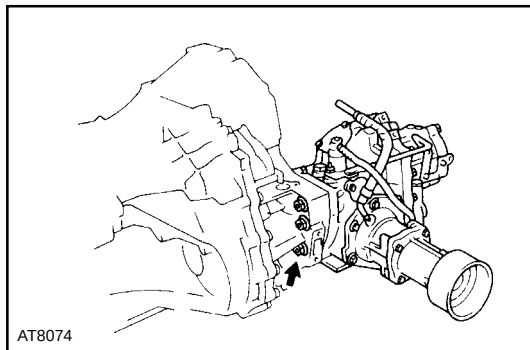


N-m (kgf-cm, ft-lbf) : Specified torque

◆ Non-reusable part

COMPONENTS (Cont'd)

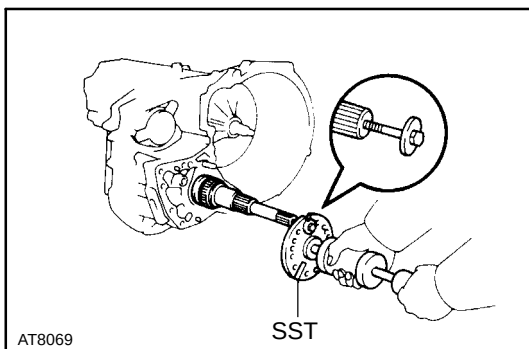




SEPARATE BASIC SUBASSEMBLY

1. REMOVE TRANSFER ASSEMBLY

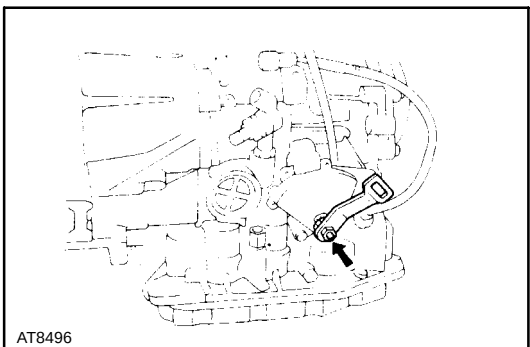
- (a) Remove six nuts.
- (b) Using a plastic hammer, remove the transfer assembly from the transaxle.



2. REMOVE DIFFERENTIAL SIDE GEAR INTERMEDIATE SHAFT

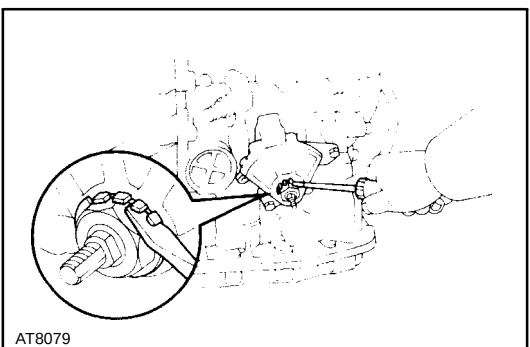
- (a) Screw in suitable bolt with washer into the side gear intermediate shaft.
- (b) Using SST, remove the side gear intermediate shaft.

SST 09520-32012



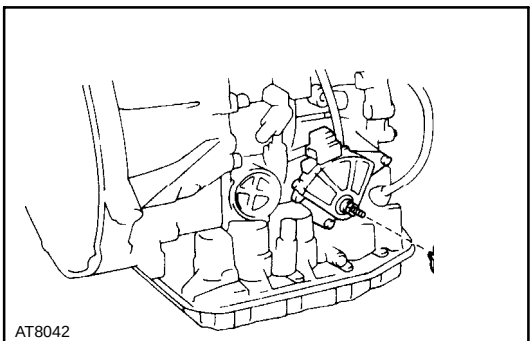
3. REMOVE MANUAL SHIFT LEVER

Remove the nut, washer and manual shift lever.

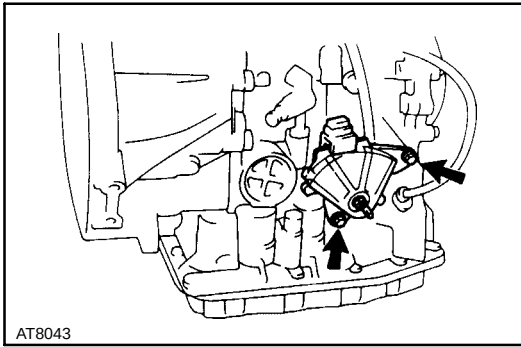


4. REMOVE NEUTRAL START SWITCH

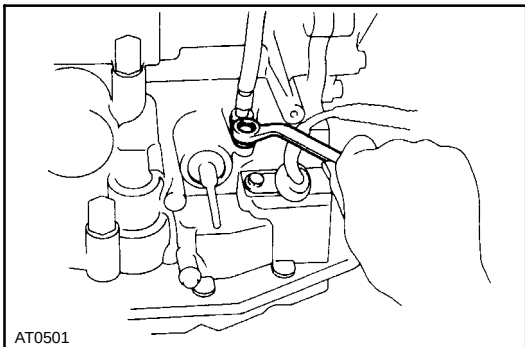
- (a) Using a screwdriver, unstake the nut stopper.



- (b) Remove the nut, nut stopper and packing.

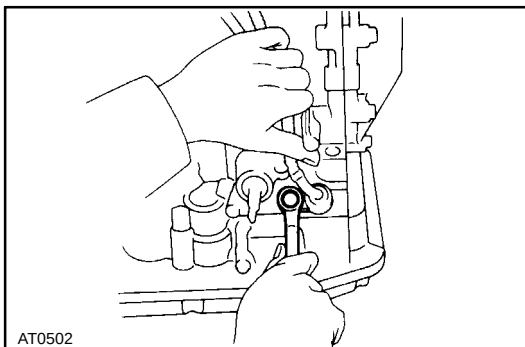


(c) Remove the two bolts and neutral start switch.



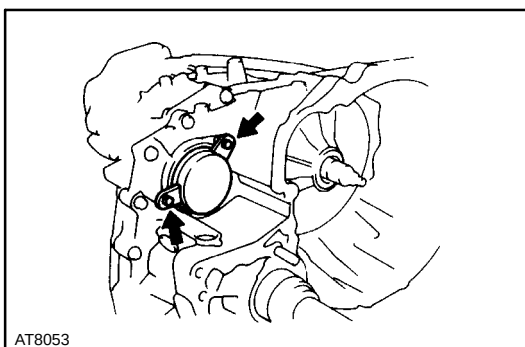
5. REMOVE THROTTLE CABLE RETAINING PLATE

Remove the bolt and plate.



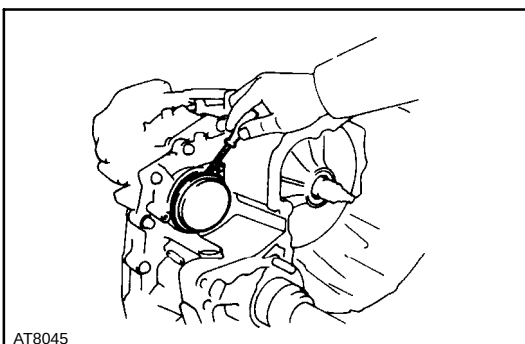
6. REMOVE SOLENOID WIRE RETAINING PLATE

Remove the bolt and plate.

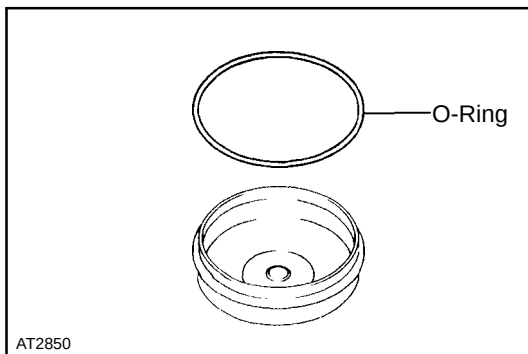


7. REMOVE GOVERNOR BODY

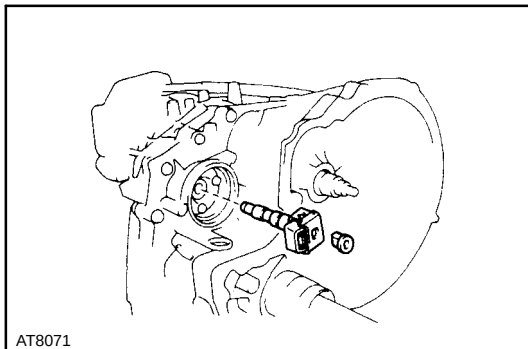
(a) Remove the two bolts and cover brackets.



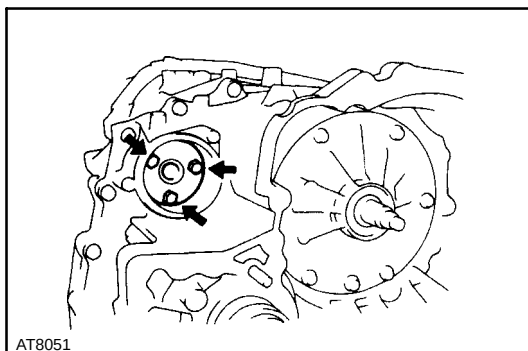
(b) Using a screwdriver, remove the governor cover.
HINT: Tape the screwdriver tip before use so as not to damage the cover of transaxle.



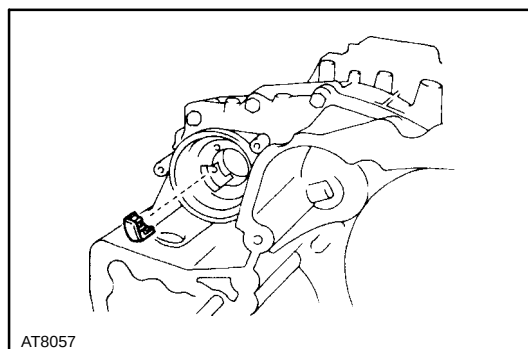
(c) Remove the O-ring from the cover.



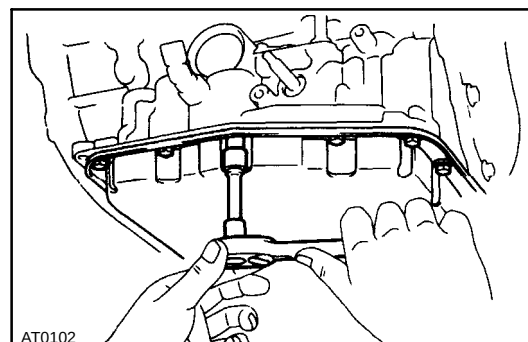
(d) Remove the governor body with thrust washer.



(e) Remove the three bolts and governor body adaptor with gasket.

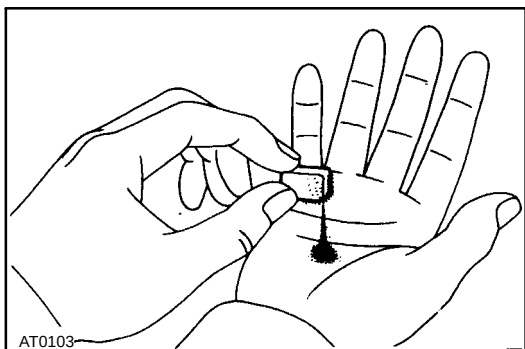


(f) Remove the governor oil strainer.



8. REMOVE PAN AND GASKET

- (a) Remove the eighteen bolts.
- (b) Remove the pan by lifting the transmission case.
NOTICE: Do not turn the transmission over as it will contaminate the valve body with the foreign materials in the bottom of the pan.
- (c) Remove the gasket.
- (d) Place the transmission on wooden blocks to prevent damage to the pipe.



9. EXAMINE PARTICLES IN PAN

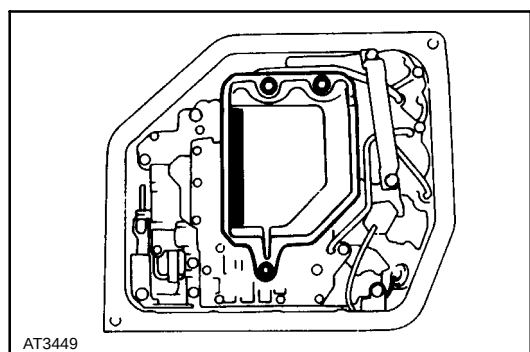
Remove the magnets and use them to collect any steel chips. Look carefully at the chips and particles in the pan and on the magnet to anticipate what type of wear you will find in the transmission:

Steel (magnetic) bearing, gear and plate wear
Brass (non-magnetic) . . bushing wear

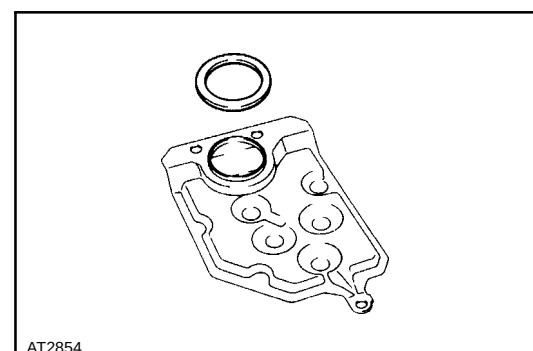
10. TURN TRANSMISSION OVER

11. REMOVE OIL STRAINER

(a) Remove the three bolts and oil strainer.

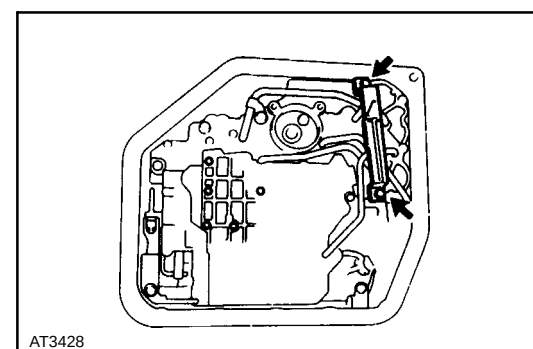


(b) Remove the gasket.



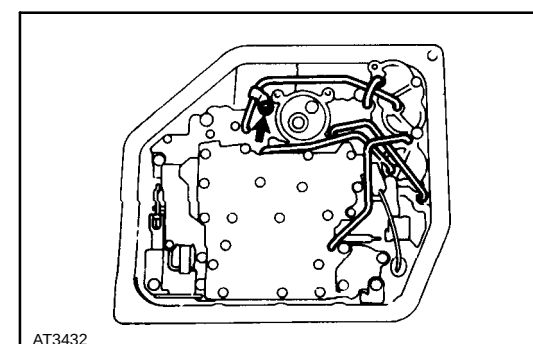
12. REMOVE OIL TUBES

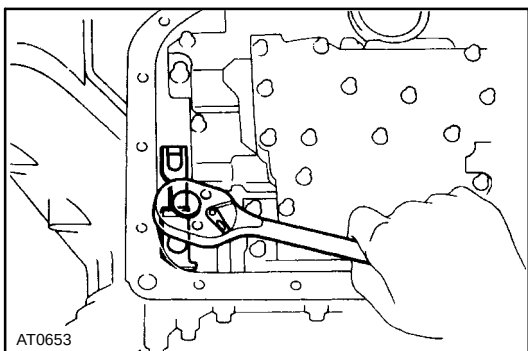
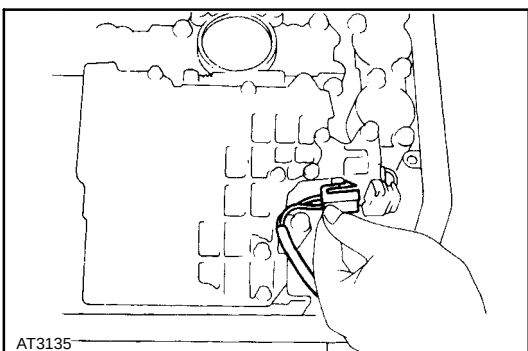
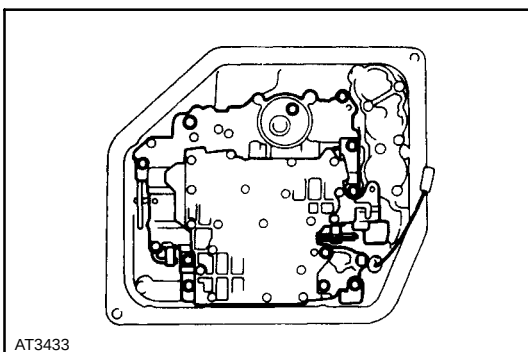
(a) Remove the two bolts and tube bracket.



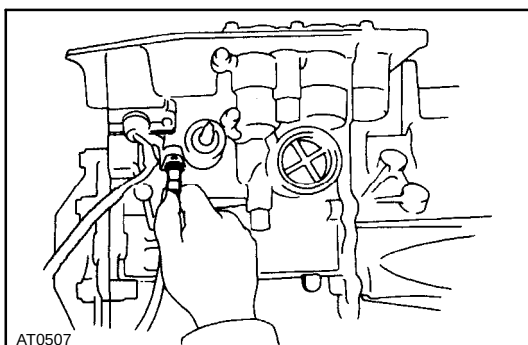
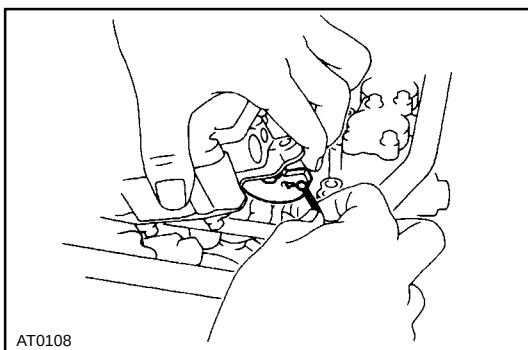
(b) Remove the tube clamp bolt and clamp.

(c) Pry up both tube ends with a large screwdriver and remove the five tubes.

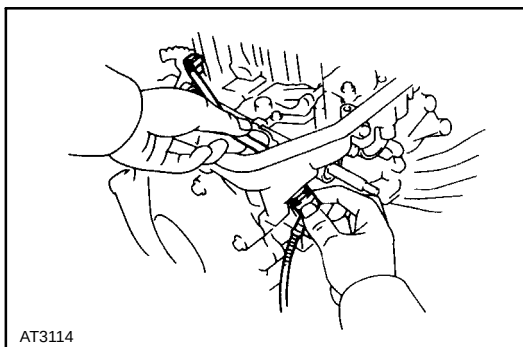
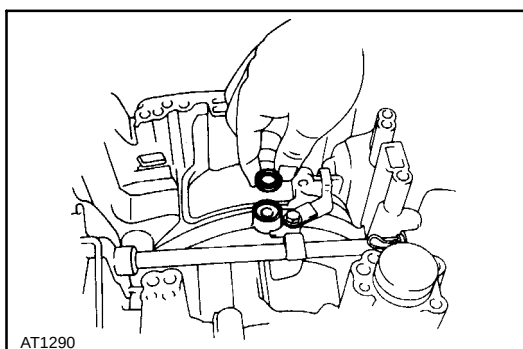
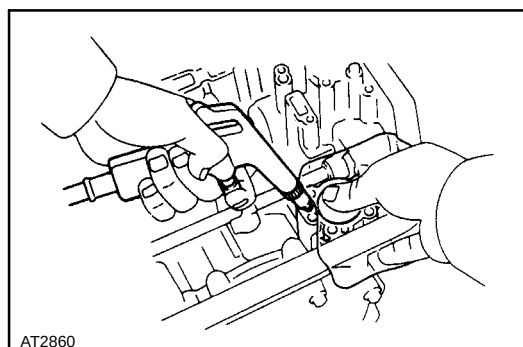


**13. REMOVE MANUAL DETENT SPRING****14. DISCONNECT SOLENOID CONNECTOR****15. REMOVE VALVE BODY**

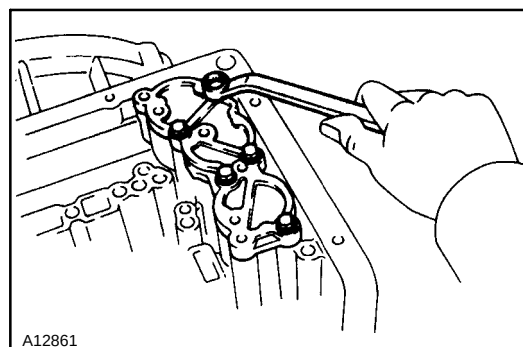
- (a) Remove the twelve bolts and wire retainer as shown.
- (b) Disconnect the throttle cable from the cam.
- (c) While disconnecting the manual valve connecting rod from the manual valve lever, remove the valve body.

**16. REMOVE THROTTLE CABLE FROM CASE**

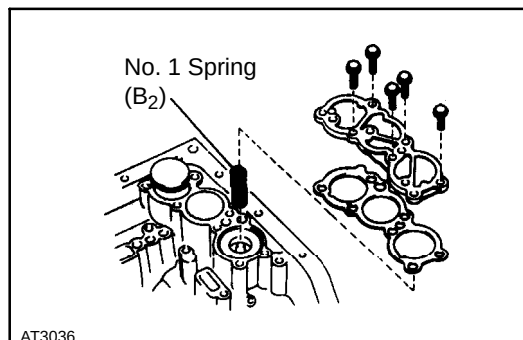
Pull out the throttle cable.

**17. REMOVE SOLENOID WIRE****18. REMOVE SECOND BRAKE APPLY GASKET****19. REMOVE C₃ ACCUMULATOR PISTON AND SPRING**

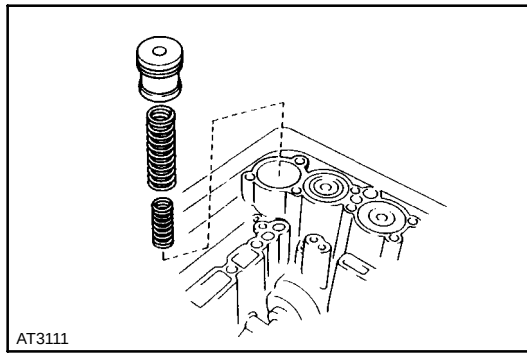
Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the piston into a rag. Force air into the hole shown and remove the piston and spring.

**20. REMOVE ACCUMULATOR PISTONS AND SPRINGS**

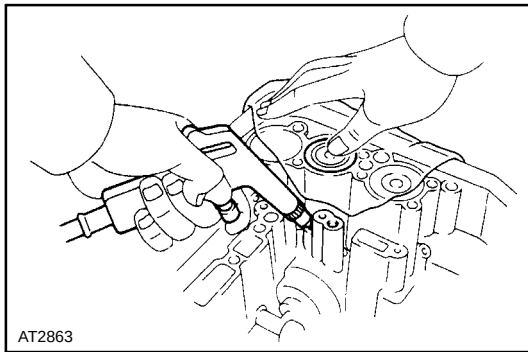
(a) Loosen the five bolts one turn at a time until the spring tension is released.



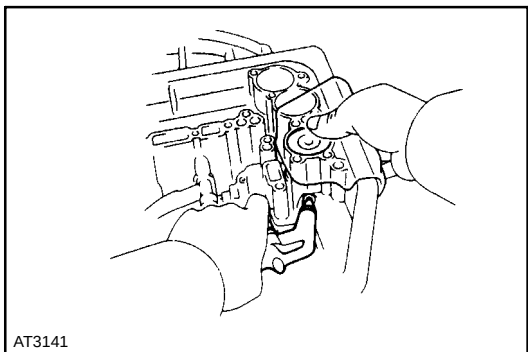
(b) Remove the cover, gasket and spring on the B₂ piston.



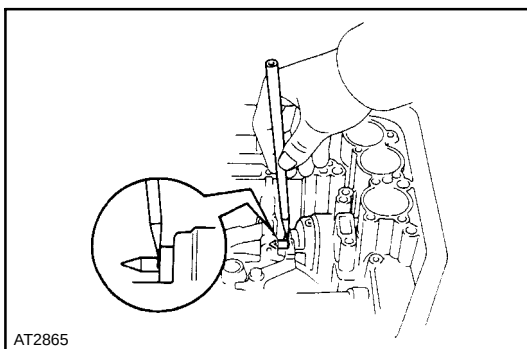
(c) Remove the C₁ piston and two springs.



(d) Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the C₂ piston into a rag. Force air into the hole shown and remove the piston and spring.

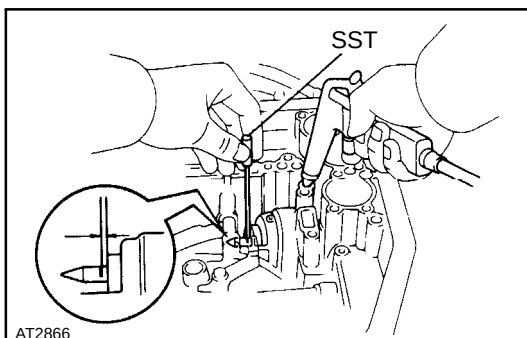


(e) Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the B₂ piston into a rag. Force air into the hole shown and remove the piston and spring.



21. MEASURE PISTON STROKE OF SECOND COAST BRAKE

(a) Apply a small amount of paint to the piston rod at the point it meets the case as shown in the illustration.

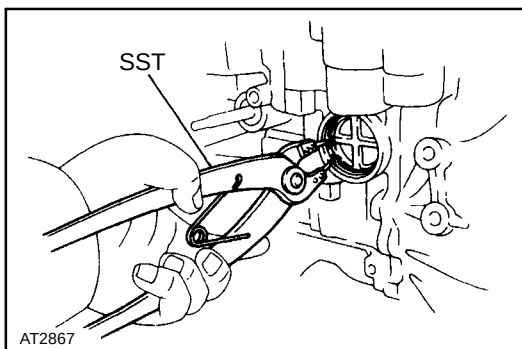


(b) Using SST, measure the piston stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi) as shown.

SST 09240-00020

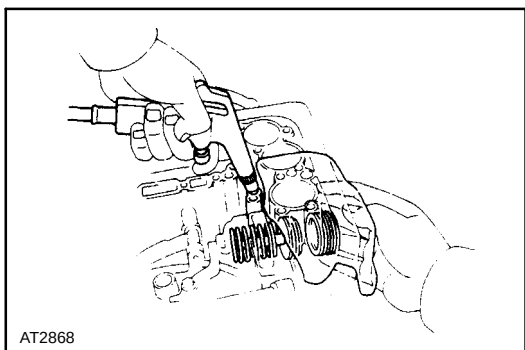
Piston stroke: 1.5 - 3.0 mm (0.059 - 0.118 in.)

If the piston stroke exceed the limit, inspect the brake band.

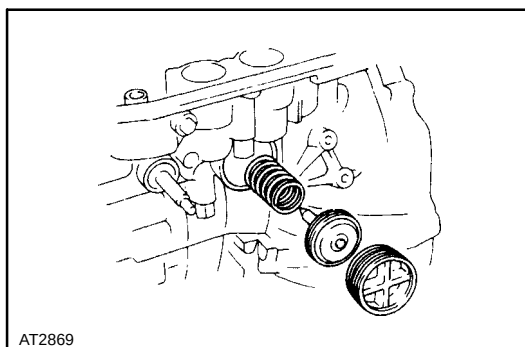


22. REMOVE SECOND COAST BRAKE PISTON

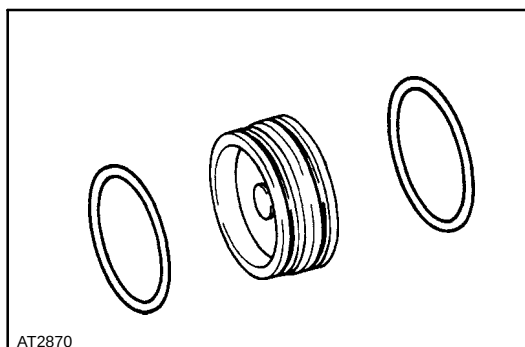
- (a) Using SST, remove the snap ring.
SST 09350-32014 (09351-32050)



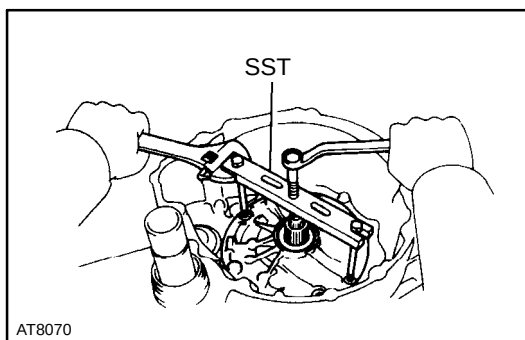
- (b) Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the cover into a rag. Force air into the hole shown.



- (c) Remove the cover, piston and spring.

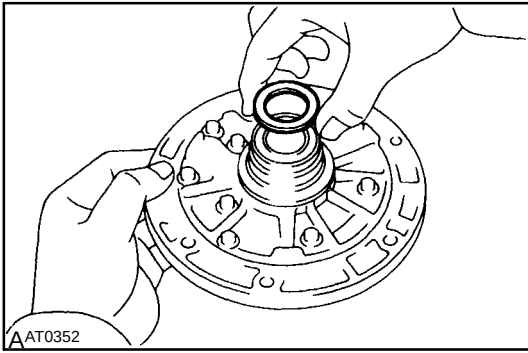


- (d) Remove the two O-rings from the cover.

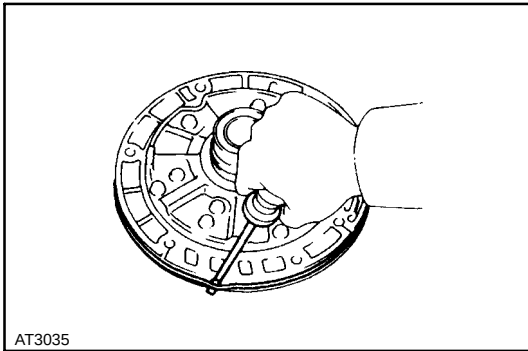


23. REMOVE OIL PUMP

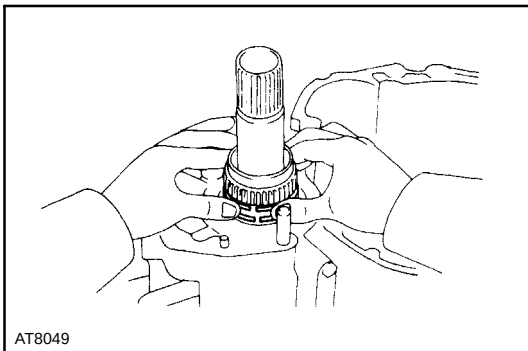
- (a) Remove the six bolts holding the oil pump to the transmission case.
- (b) Using SST, remove the oil pump.
SST 09350-32014 (09351-32061)
NOTICE: Be careful not to drop or damage the races and bearing behind oil pump.
- (c) Remove SST from the oil pump:



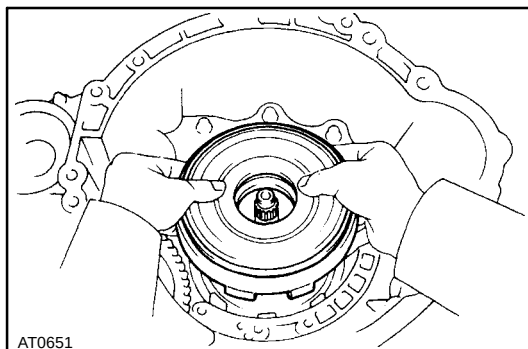
(d) Remove the race from the oil pump.



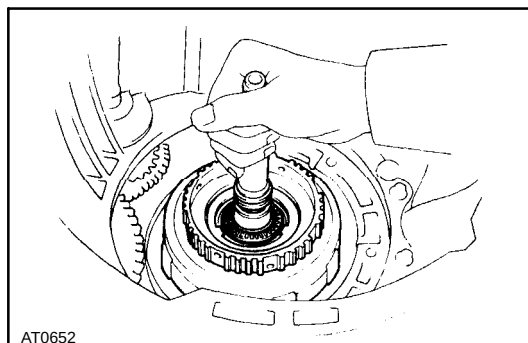
(e) Remove the O-ring from the oil pump.



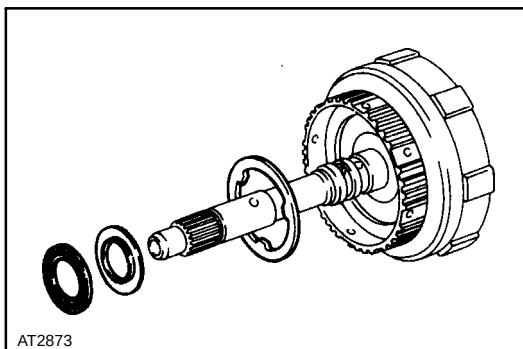
24. REMOVE OIL SEAL RINGS
Remove the two oil seal rings.



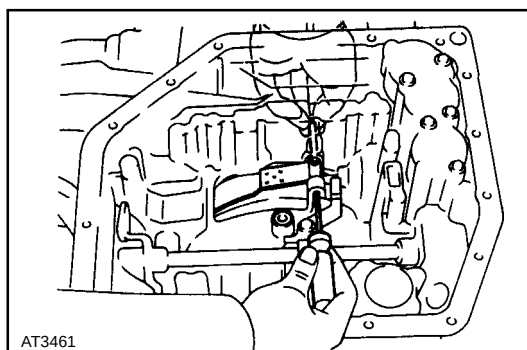
25. REMOVE DIRECT CLUTCH



26. REMOVE FORWARD CLUTCH
(a) Remove the forward clutch with bearing and race.

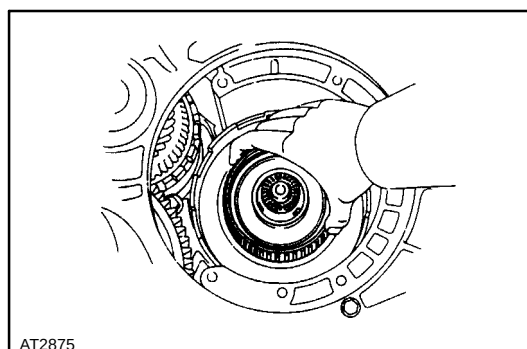


- (b) Remove the thrust washer, bearing and races from the forward clutch.



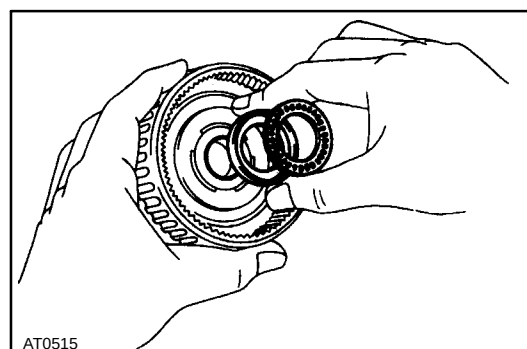
27. REMOVE SECOND COAST BRAKE BAND

- (a) Push the pin with a small screwdriver and remove it from the bolt hole of the oil pump mounting.
- (b) Remove the brake band.

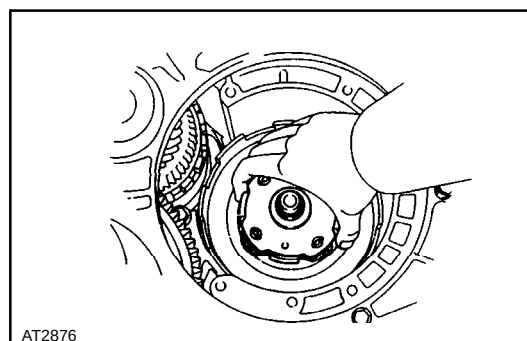


28. REMOVE FRONT PLANETARY RING GEAR

- (a) Remove the front planetary ring gear with bearing and race.

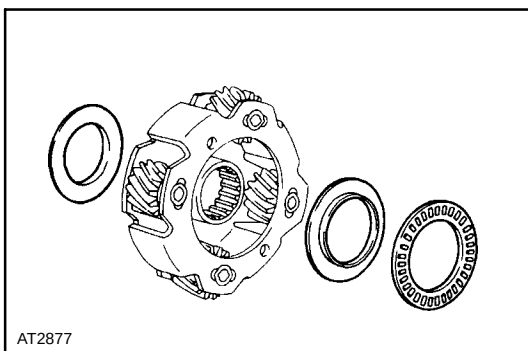


- (b) Remove the bearing and race from the ring gear.

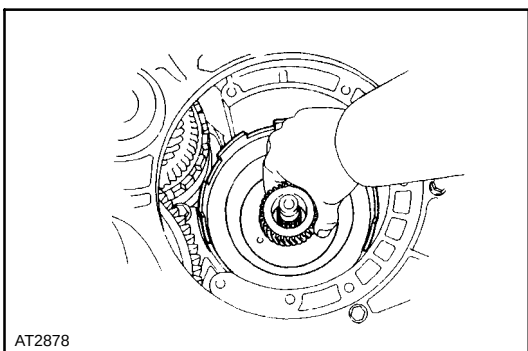


29. REMOVE FRONT PLANETARY GEAR

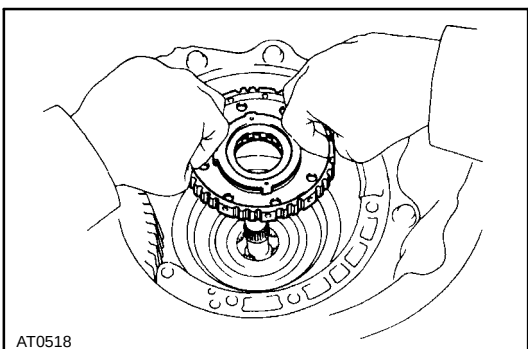
- (a) Remove the front planetary gear with race.



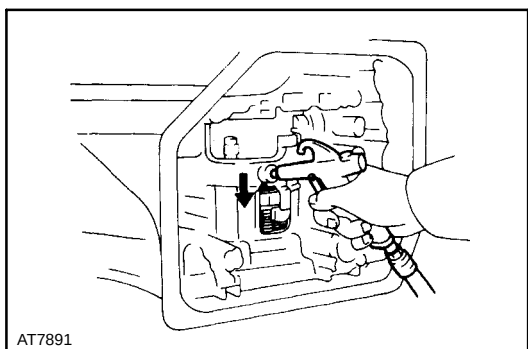
- (b) Remove the races and bearing from the planetary gear or sun gear.



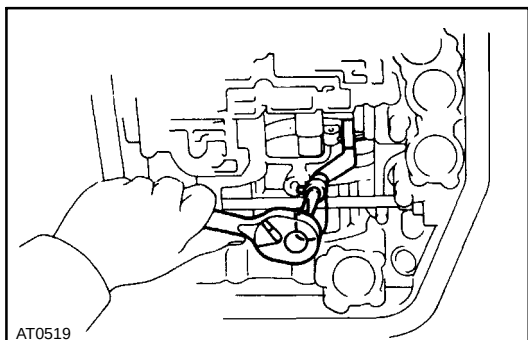
30. REMOVE SUN GEAR, SUN GEAR INPUT DRUM AND THRUST WASHER



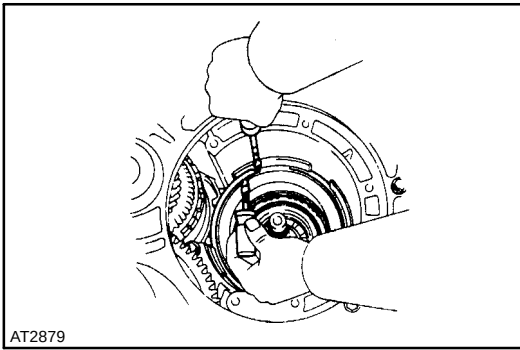
31. REMOVE SECOND BRAKE HUB AND NO. 1 ONE-WAY CLUTCH



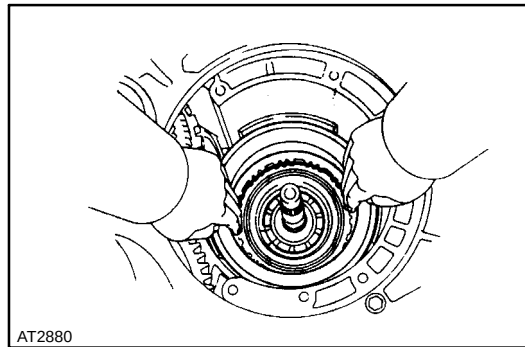
- 32. CONFIRM THAT SECOND BRAKE PISTON MOVES**
Using compressed air, confirm that the second brake piston moves smoothly.



33. REMOVE SECOND COAST BRAKE BAND GUIDE

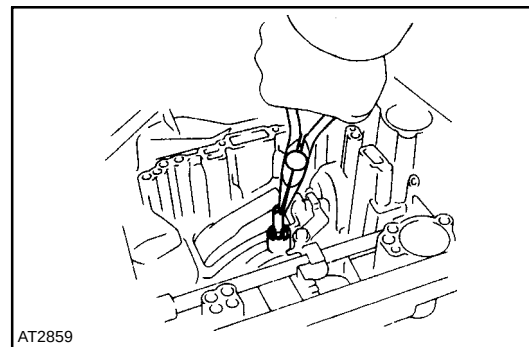


34. REMOVE SNAP RING HOLDING SECOND BRAKE DRUM TO CASE



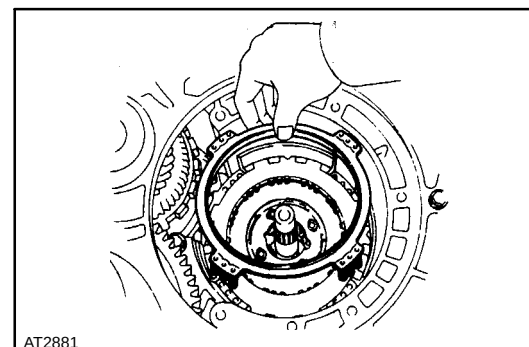
35. REMOVE SECOND BRAKE DRUM

HINT: If the brake drum is difficult to remove, lightly tap it with a wooden block.



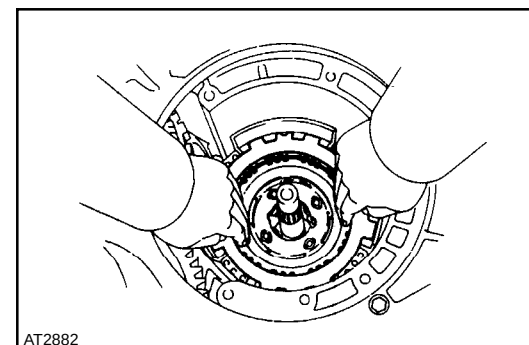
36. REMOVE SECOND BRAKE DRUM SEAL

Using a needle nose pliers, pull out the second brake drum seal.

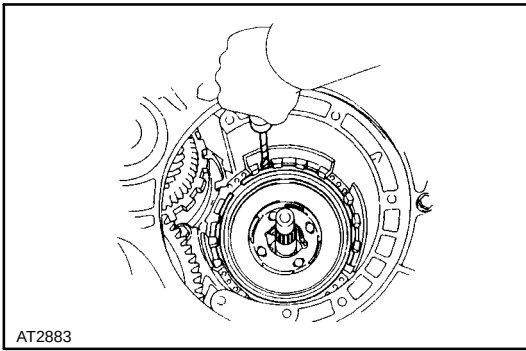


37. REMOVE SECOND BRAKE PISTON RETURN SPRING

- (a) Remove the thrust washer.
- (b) Remove the return spring.

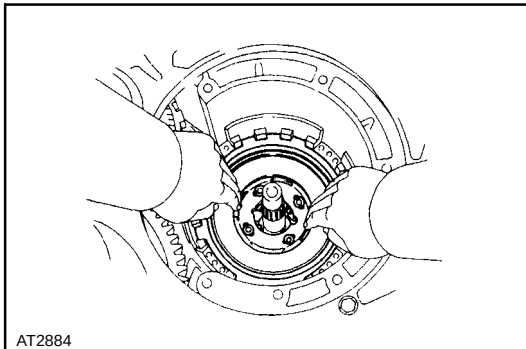


38. REMOVE PLATES, DISCS AND FLANGE



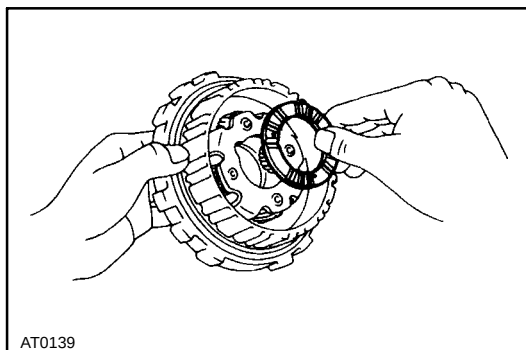
39. REMOVE SNAP RING HOLDING NO. 2 ONE-WAY CLUTCH OUTER RACE TO CASE

Using a screwdriver, remove the snap ring.

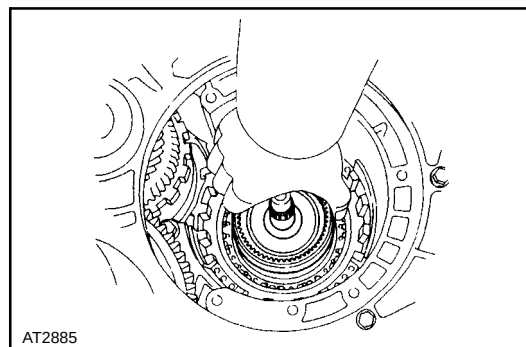


40. REMOVE NO. 2 ONE-WAY CLUTCH AND REAR PLANETARY GEAR

(a) Remove the No. 2 one-way clutch and rear planetary gear with thrust washer.

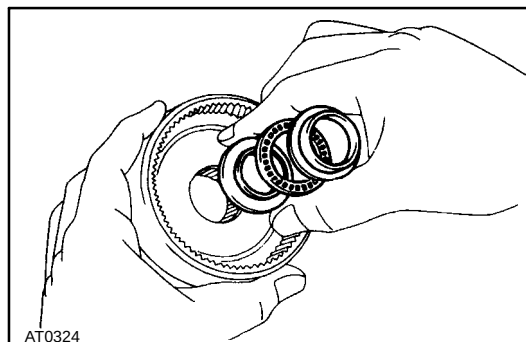


(b) Remove the thrust washer from the gear.

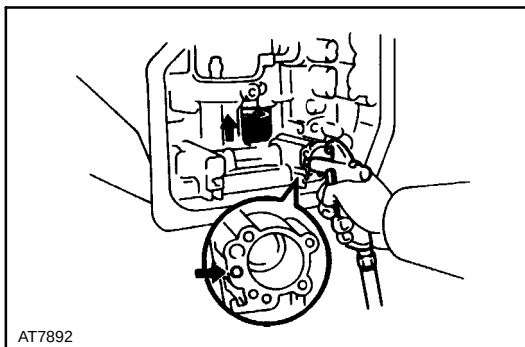


41. REMOVE REAR PLANETARY RING GEAR

(a) Remove the rear planetary ring gear with bearing and races.

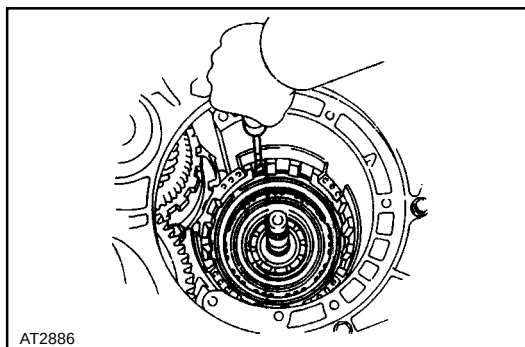


(b) Remove the bearing and races from the ring gear.



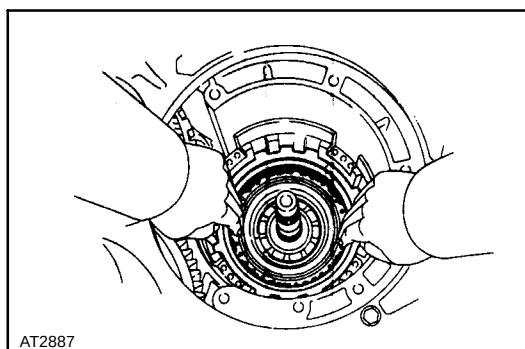
42. CONFIRM THAT FIRST AND REVERSE BRAKE PISTON MOVES

Using compressed air, confirm that the first and reverse brake piston moves smoothly.

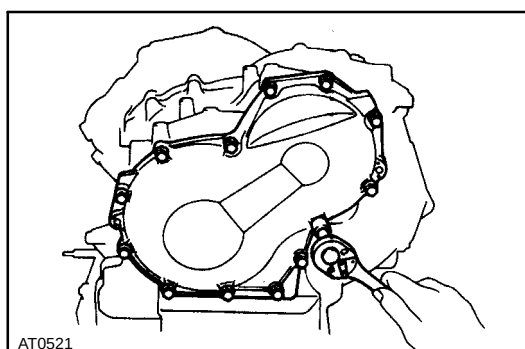


43. REMOVE SNAP RING HOLDING FLANGE TO CASE

Using a screwdriver, remove the snap ring.

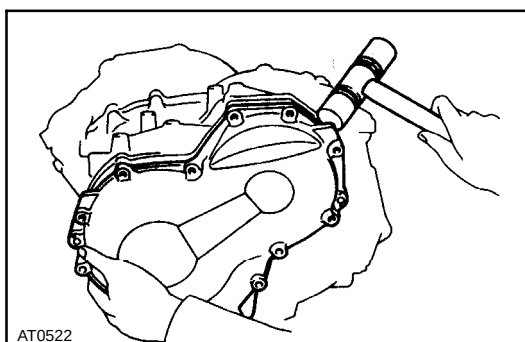


44. REMOVE FLANGES, PLATES AND DISCS.

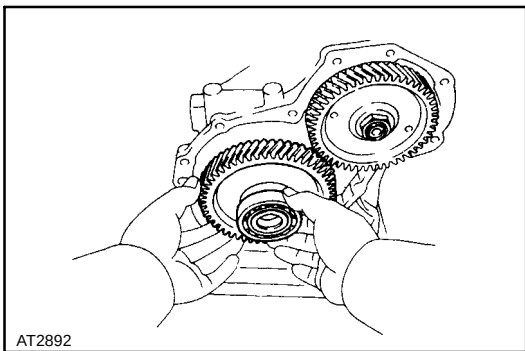


45. REMOVE TRANSAXLE REAR COVER

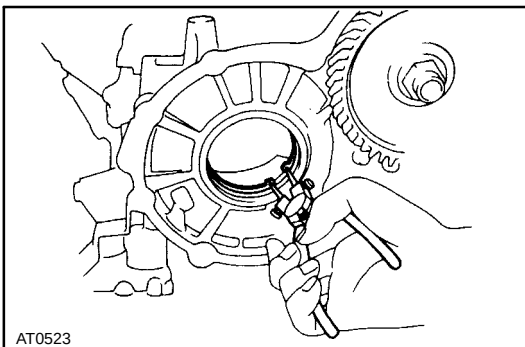
(a) Remove the thirteen bolts.



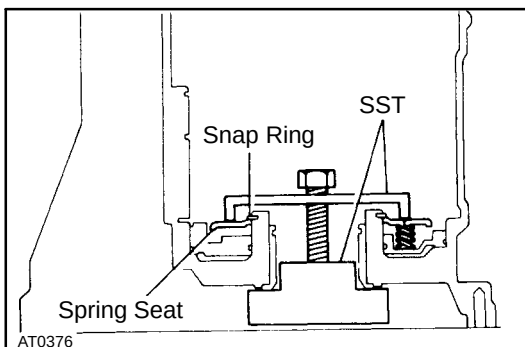
(b) Tap off the circumference of the cover with a plastic hammer to remove the cover from the transmission case, and remove the cover.

**46. REMOVE INTERMEDIATE SHAFT**

Remove the intermediate shaft from the transmission case.

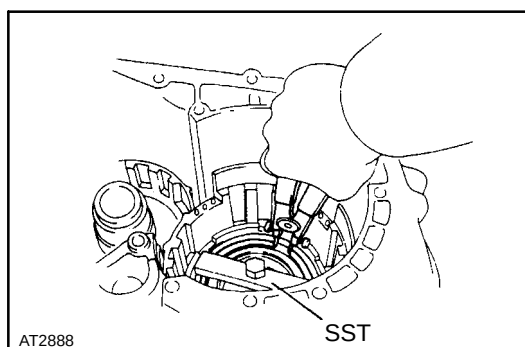
**47. REMOVE SNAP RING**

Using snap ring pliers, remove the snap ring.

**48. REMOVE SNAP RING**

- (a) Set SST, and tighten the bolt gradually to compress the springs until the snap ring is free from the spring seat.

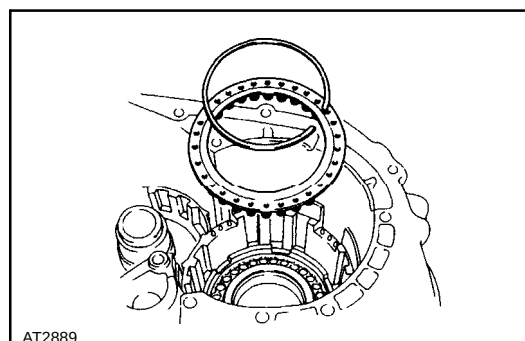
SST 09350-32014 (09351-32040)



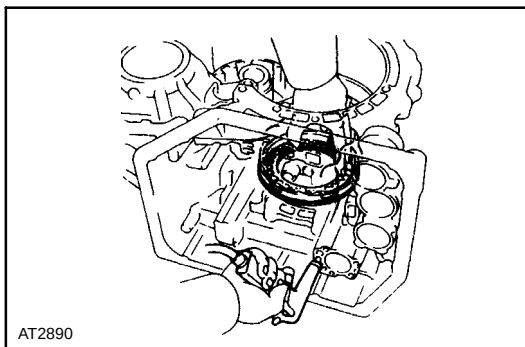
- (b) Using snap ring pliers, remove the snap ring.

- (c) Remove SST.

SST 09350-32014 (09351-32040)

**49. REMOVE RETURN SPRING**

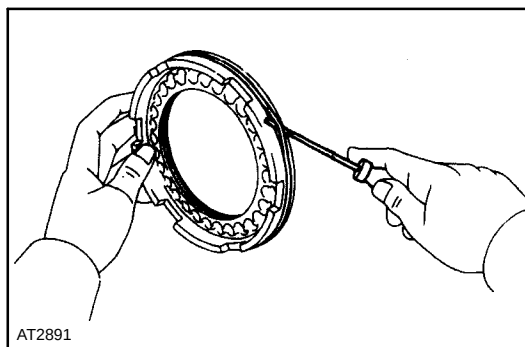
Remove the return spring and snap ring.

**50. REMOVE PISTON FROM TRANSMISSION CASE WITH COMPRESSED AIR**

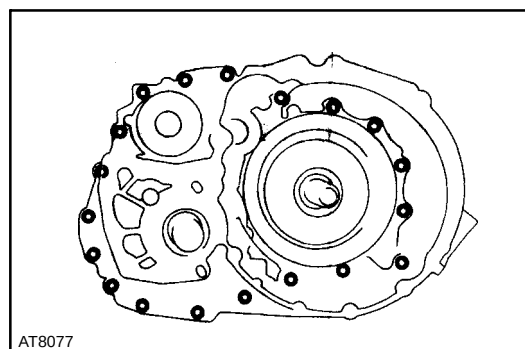
- (a) Apply compressed air into the oil passage of the case to remove the piston.

HINT: Hold the piston so it is not horizontal and blow with the gun slightly away from the oil hole.

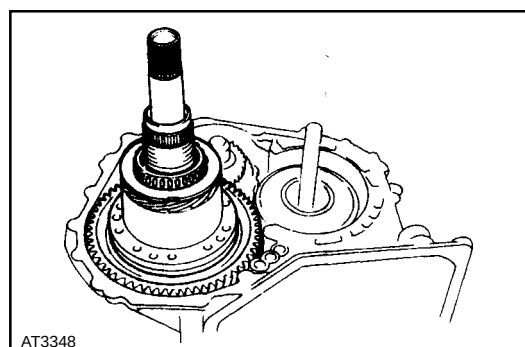
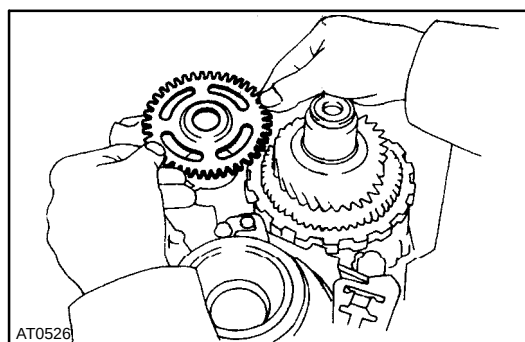
- (b) If the piston does not pop out with compressed air, use needle-nose pliers to remove it.

**51. REMOVE O-RINGS FROM PISTON**

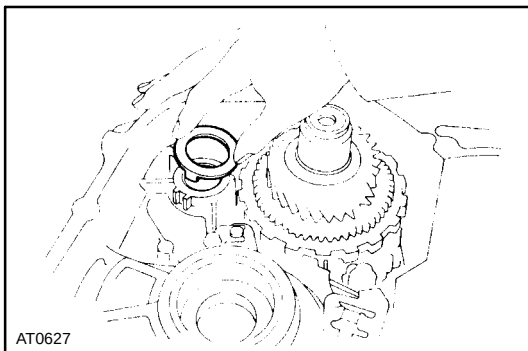
Remove the two O-rings from the piston.

**52. REMOVE TRANSAXLE HOUSING**

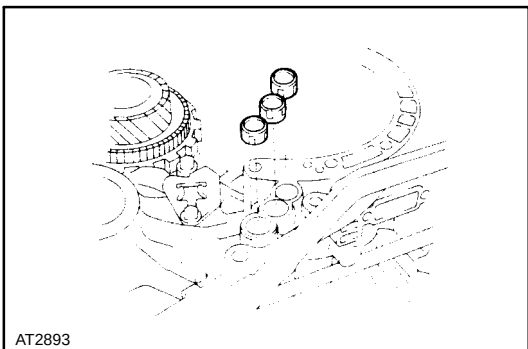
Remove the nineteen bolts and transaxle housing.

**53. REMOVE DIFFERENTIAL ASSEMBLY****54. REMOVE GOVERNOR' DRIVEN GEAR**

- (a) Remove the governor driven gear.

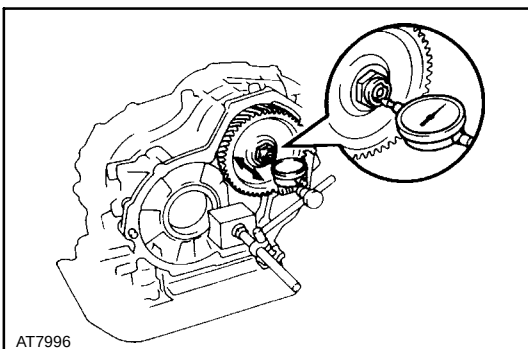


- (b) Remove the thrust washer.



55. REMOVE APPLY GASKETS

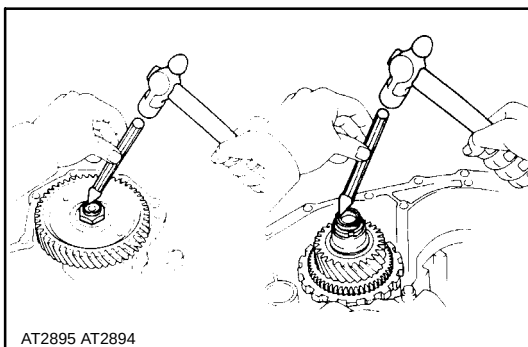
Remove the three gaskets.



56. INSPECT COUNTER SHAFT END PLAY

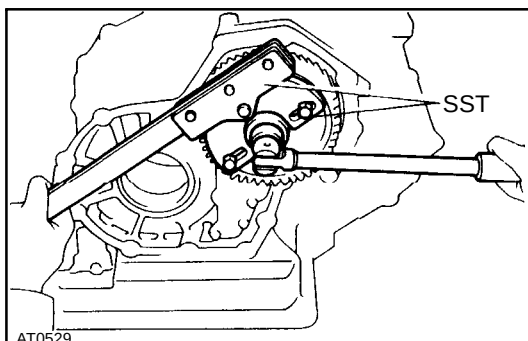
Using a dial indicator, measure the end play of the counter shaft.

End play: 0.23 - 0.89 mm (0.0091 - 0.0350 in.)



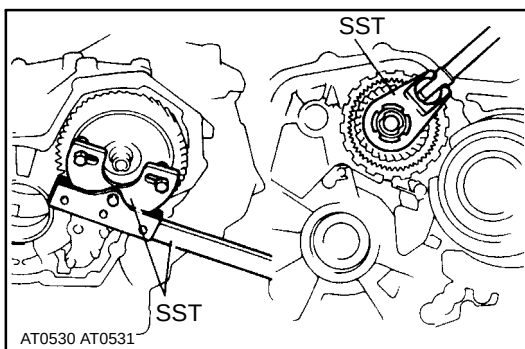
57. REMOVE COUNTER SHAFT LOCK NUTS

- (a) Using a chisel and hammer, unstake the counter shaft lock nut on both sides.



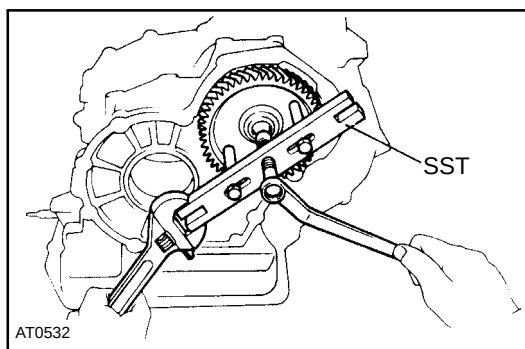
- (b) Using SST, remove the lock nut of the driven gear side.

SST 09330-00021, 09350-32014 (09351-32032)



- (c) Using SST to hold the driven gear, remove the lock nut of the another side.

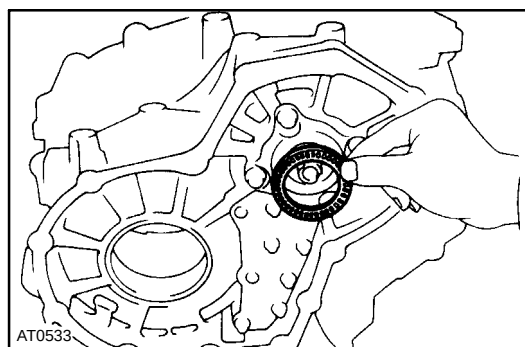
SST 09330-00021
09350-32014 (09351-32032, 09351-32170)



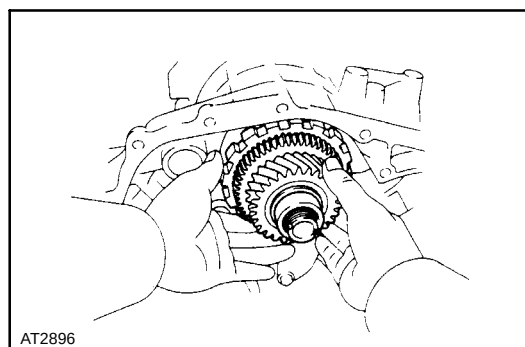
58. REMOVE COUNTER DRIVEN GEAR

Using SST, remove the driven gear.

SST 09350-32014 (09351-32061)

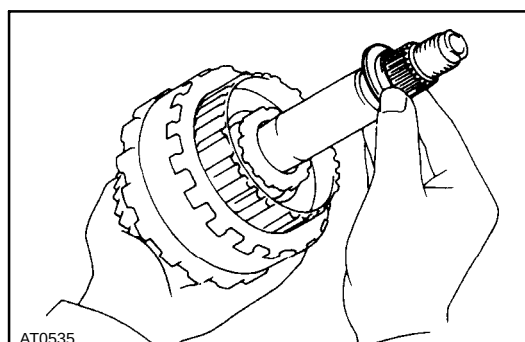


59. REMOVE THRUST NEEDLE BEARING



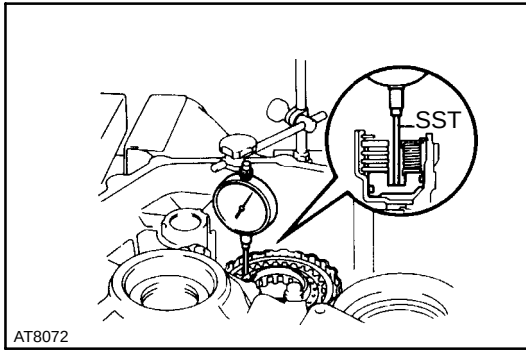
60. REMOVE COUNTER SHAFT ASSEMBLY

Pull out the counter shaft assembly.



61. REMOVE THRUST BEARING WITH RACE

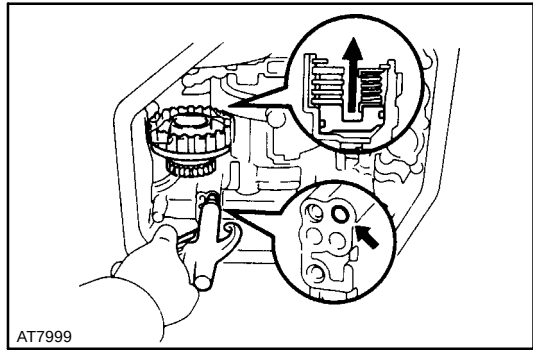
Remove the thrust bearing with race from the counter shaft assembly.



62. CHECK PISTON STROKE OF UNDERDRIVE CLUTCH

- (a) Set a dial indicator (long type pick or SST) as shown.

SST 09350-32014 (09351-32190)



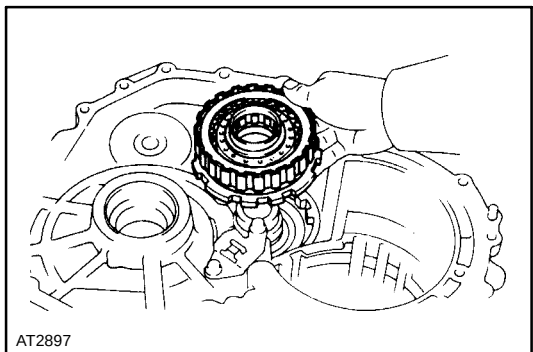
- (b) Applying and releasing the compressed air (392 785 kPa, 4 - 8 kg/cm², 57 - 114 psi), measure the underdrive clutch piston stroke.

Piston stroke: 1.50 - 1.86 mm (0.0591 - 0.0732 in.)

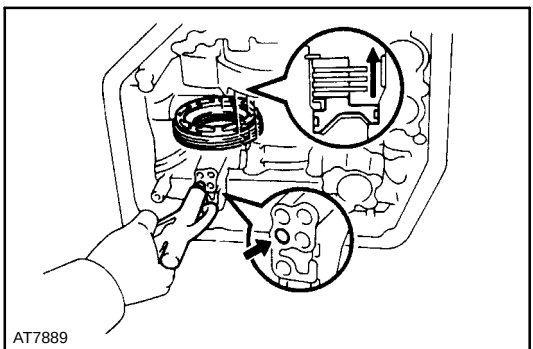
If the piston stroke is nonstandard, select another flange.

HINT: There are two different flange thickness.

Flange thickness: 2.04 mm (0.0803 in.)
2.40 mm (0.0945 in.)

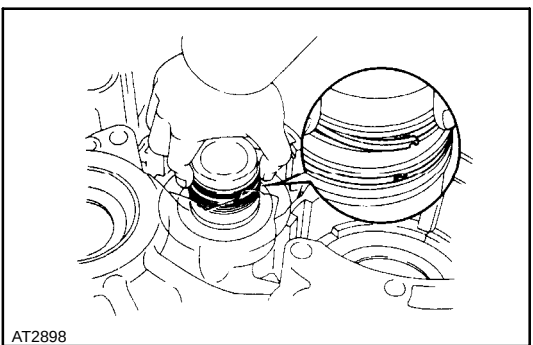


63. REMOVE UNDERDRIVE CLUTCH DRUM AND ANTI-RATTLE CLIP



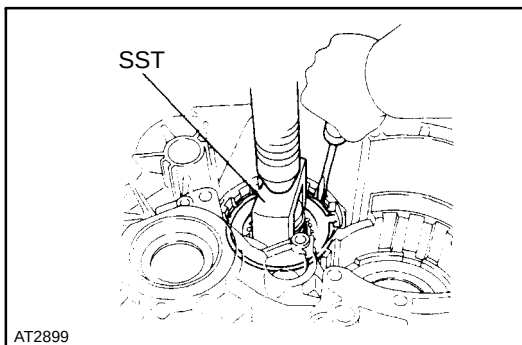
64. CONFIRM THAT UNDERDRIVE BRAKE PISTON MOVES

Using compressed air, confirm that the underdrive brake piston moves smoothly.



65. REMOVE OIL SEAL RINGS

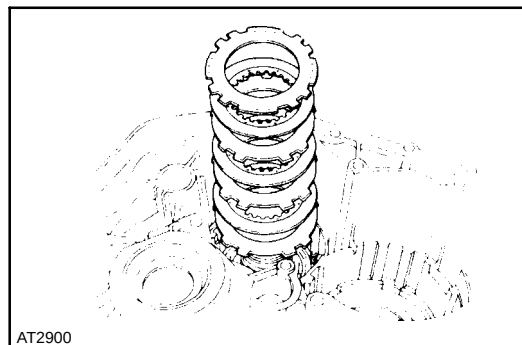
Remove the two oil seal rings.

**66. REMOVE FLANGE, PLATES AND DISCS**

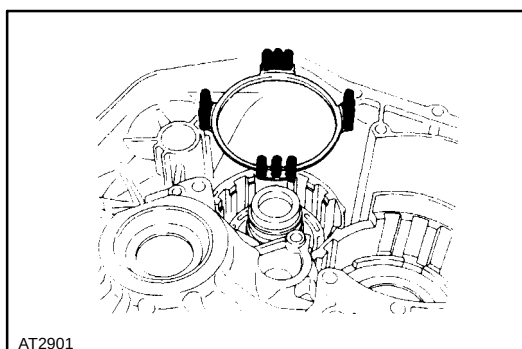
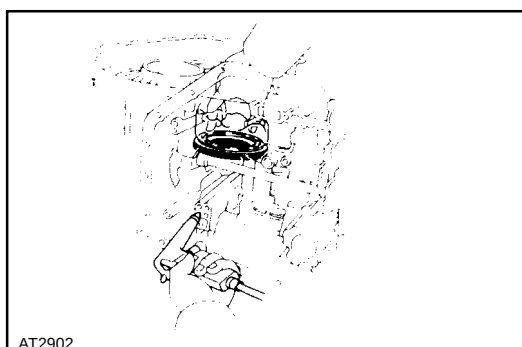
- (a) Using SST and press, press in the flange until the snap ring is free from the flange.

SST 09350-32014 (09351-32070)

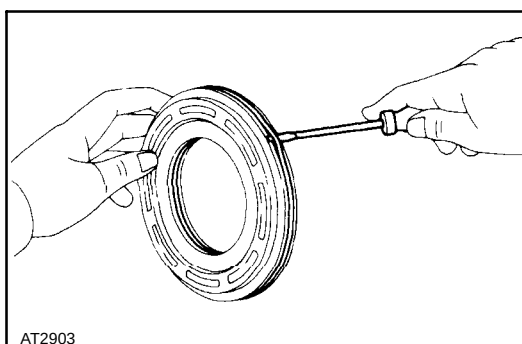
- (b) Using a screwdriver, remove the snap ring.



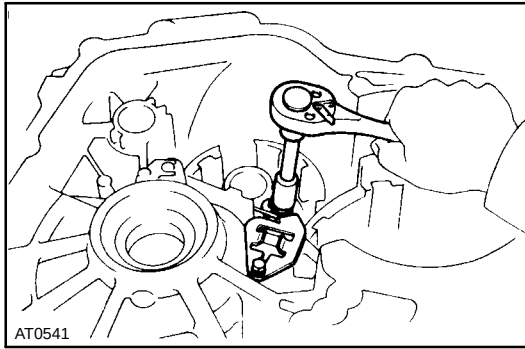
- (c) Remove the flange, three plates and discs.

**67. REMOVE RETURN SPRING****68. REMOVE UNDERDRIVE BRAKE PISTON**

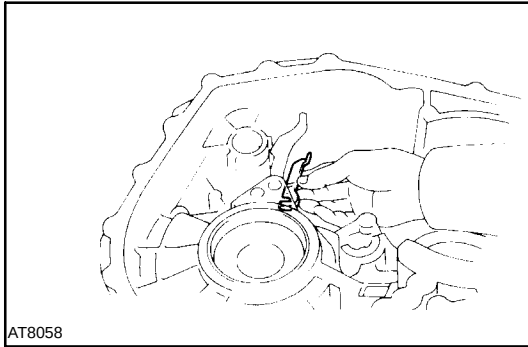
Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the brake piston into a rag. Force air into the hole shown and remove the brake piston.

**69. REMOVE O-RINGS FROM PISTON**

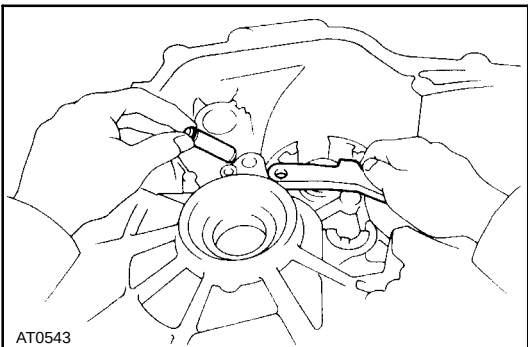
Remove the two O-rings from the piston.



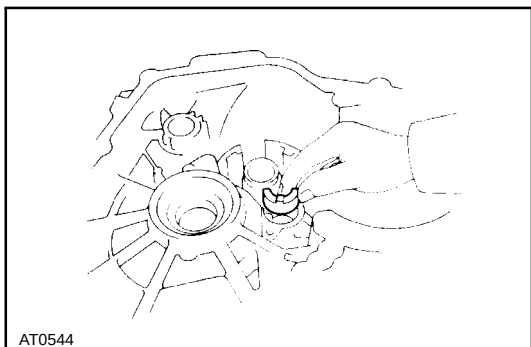
- 70. REMOVE PARKING LOCK PAWL STOPPER PLATE, TORSION SPRING AND SPRING GUIDE**



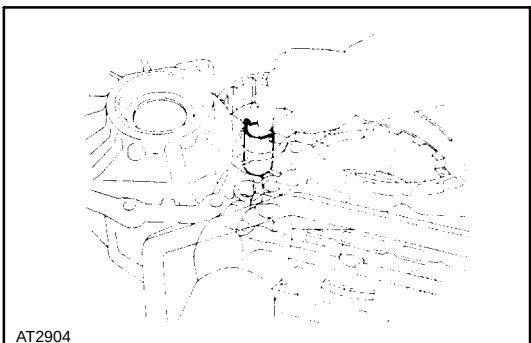
- 71. REMOVE PAWL SHAFT CLAMP**



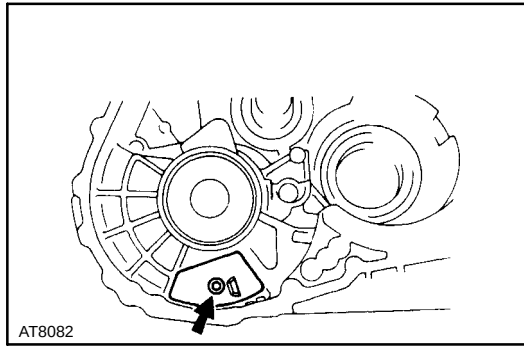
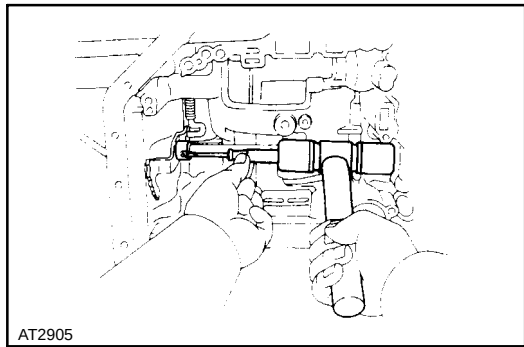
- 72. REMOVE PARKING LOCK PAWL SHAFT AND LOCK PAWL**



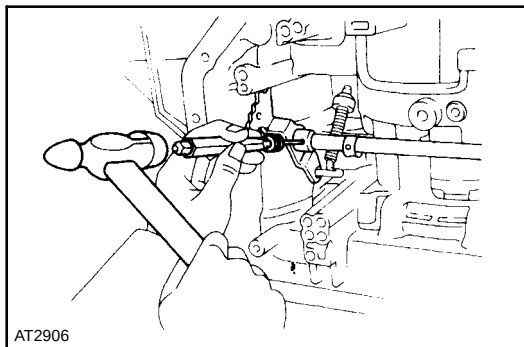
- 73. REMOVE PARKING LOCK SLEEVE**



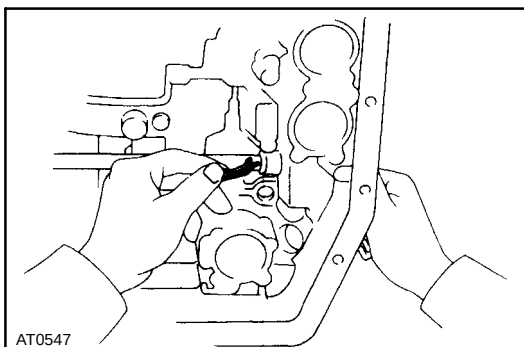
- 74. REMOVE CAM GUIDE BRACKET**
Remove the cam guide bracket as shown.

**75. REMOVE TRANSMISSION CASE PLATE****76. REMOVE MANUAL VALVE SHAFT SPACER**

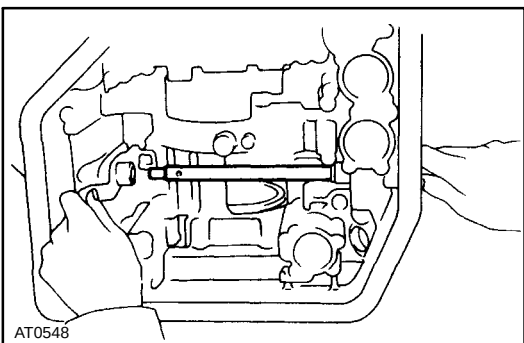
Using a screwdriver and hammer, unseat the spacer and remove it.

**77. REMOVE PIN**

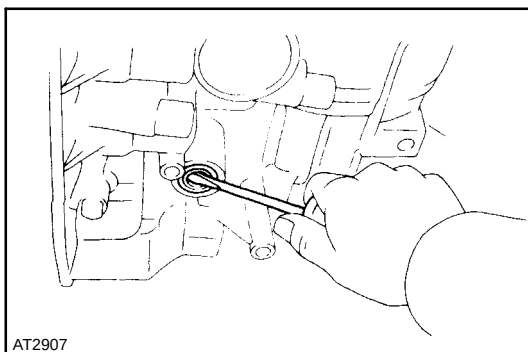
Using a pin punch and hammer, drive out the pin.

**78. REMOVE MANUAL VALVE SHAFT AND LEVER**

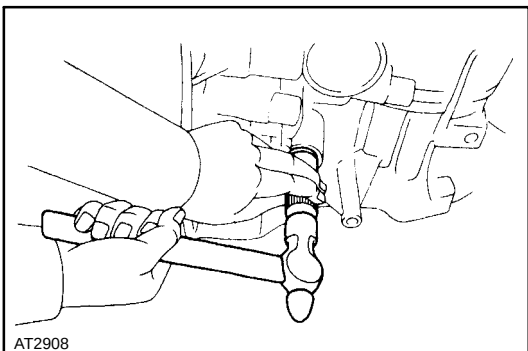
(a) Remove the retaining spring.



(b) Slide out the manual valve shaft and remove the manual valve lever and washer.

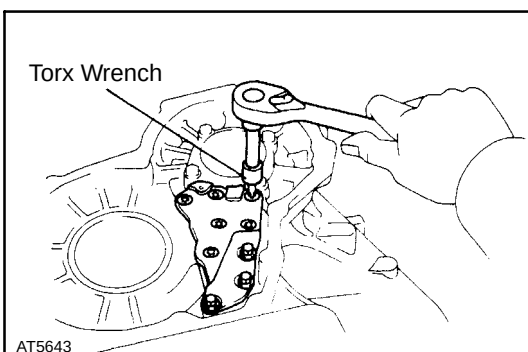
**79. IF NECESSARY, REPLACE OIL SEAL OF MANUAL SHAFT**

(a) Using a screwdriver, remove the oil seal.



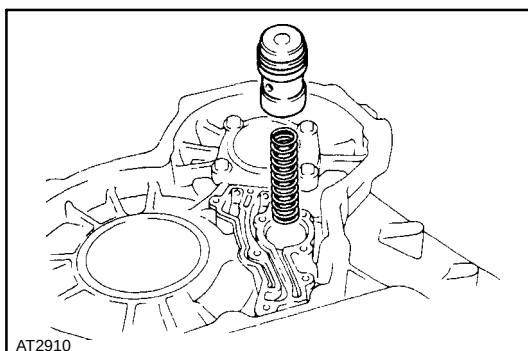
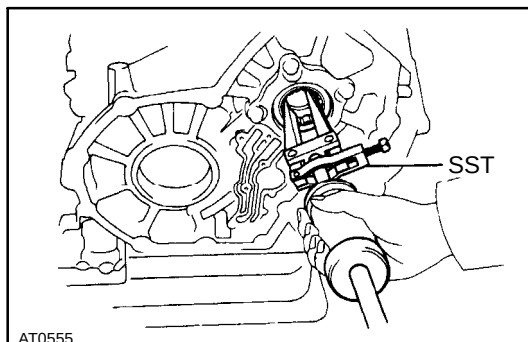
(b) Using a 14 mm socket wrench and hammer, drive in a new oil seal.

(c) Apply MP grease to the oil seal lip.

**80. REMOVE OIL GALLERY COVER AND GASKET**

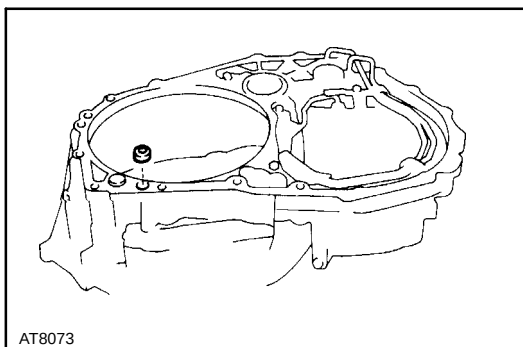
(a) Remove the six screws and three bolts.

(d) Remove the gallery cover and gasket.

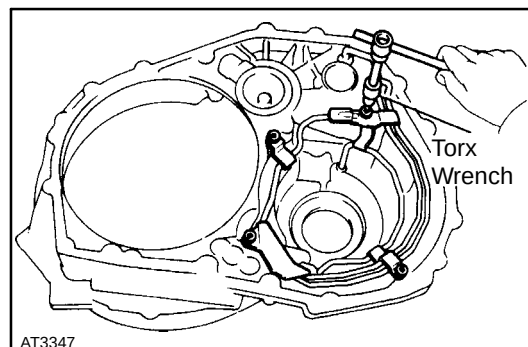
**81. REMOVE B₄ ACCUMULATOR PISTON AND SPRING****82. REMOVE BEARING**

Using SST, remove the bearing.

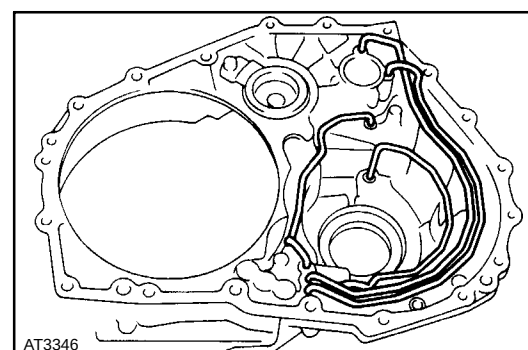
SST 09308-00010

**83. REMOVE APPLY GASKET**

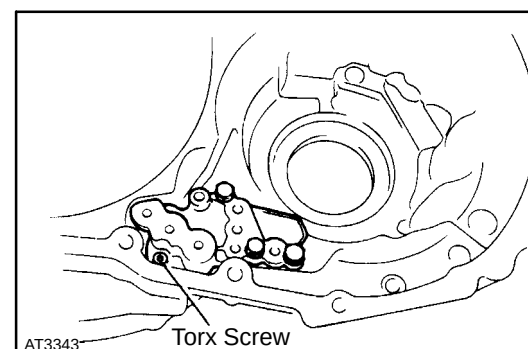
Remove the apply gasket from the transaxle housing.

**84. REMOVE OIL TUBES**

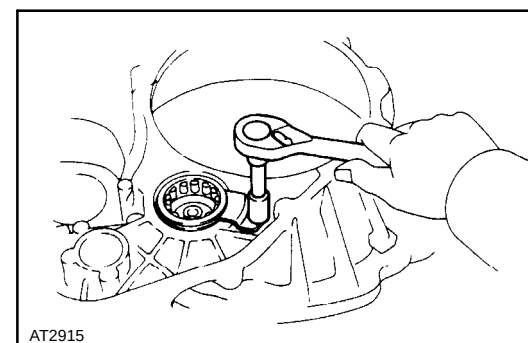
- (a) Using a torx wrench, remove the four tube clamps.



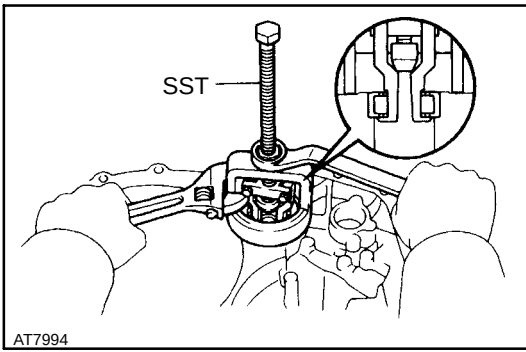
- (b) Using a screwdriver, remove the four oil tubes.

**85. REMOVE OIL TUBE APPLY COVER, GASKET AND STRAINER**

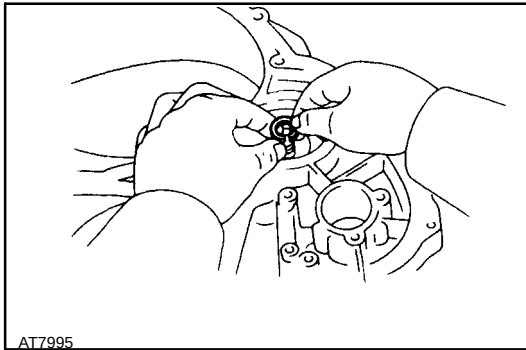
Remove the three bolts and a torx screw, and remove the cover and gasket.

**86. REMOVE BEARING**

- (a) Remove the bolt and stopper.

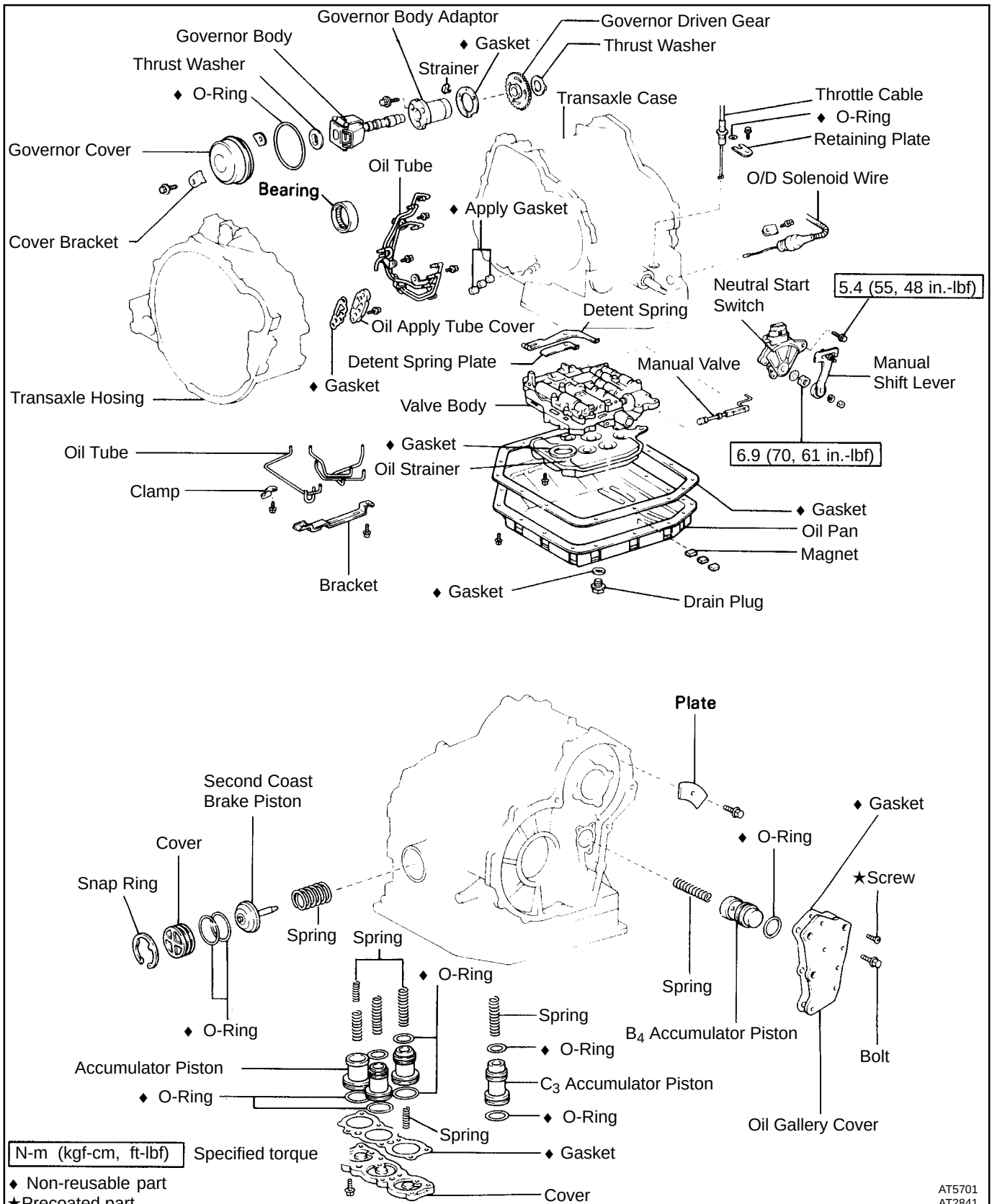


- (b) Using SST, remove the bearing.
SST 09612-65014

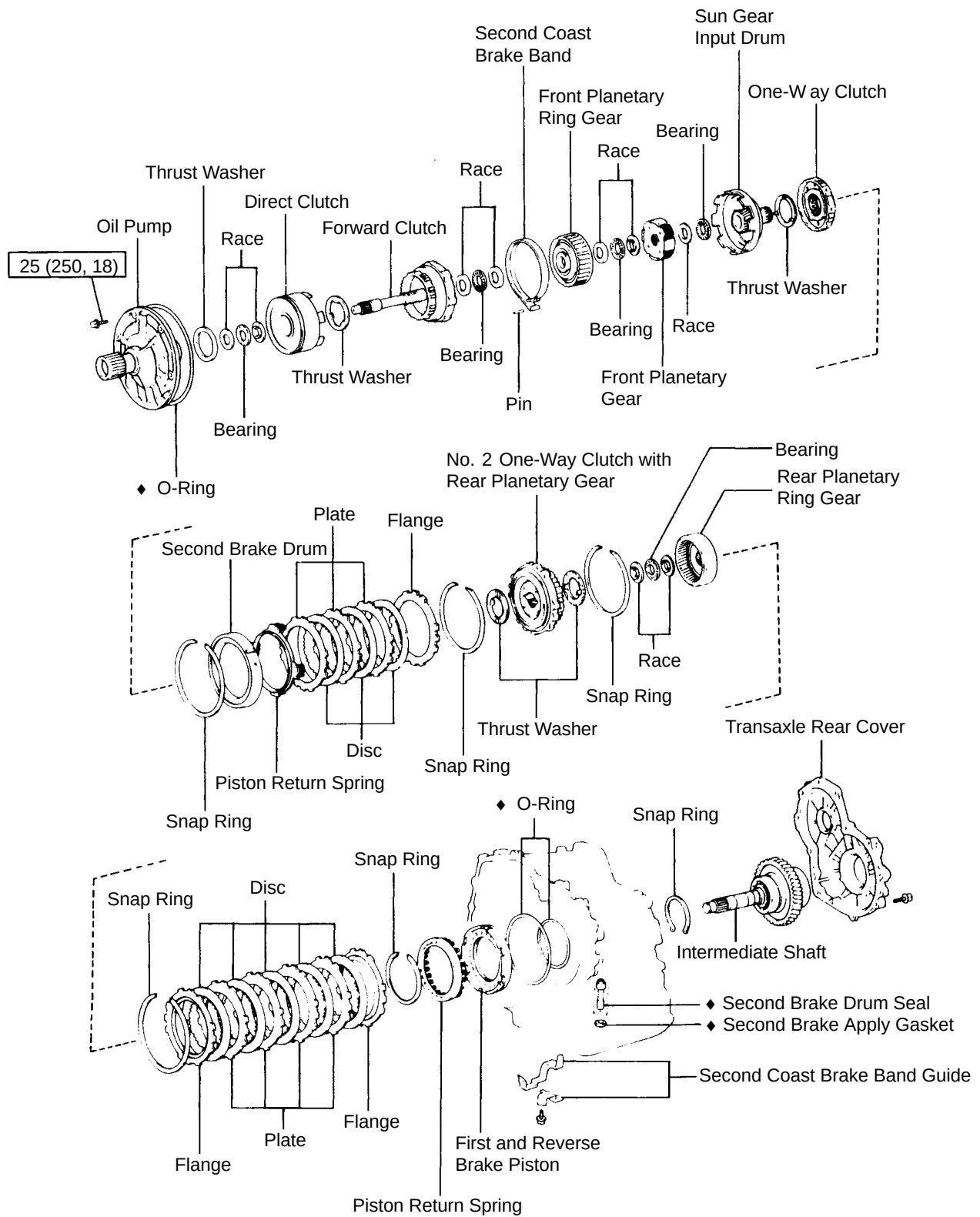


- (c) Remove the oil seal ring.

REMOVAL OF COMPONENT PARTS (A240L) COMPONENTS



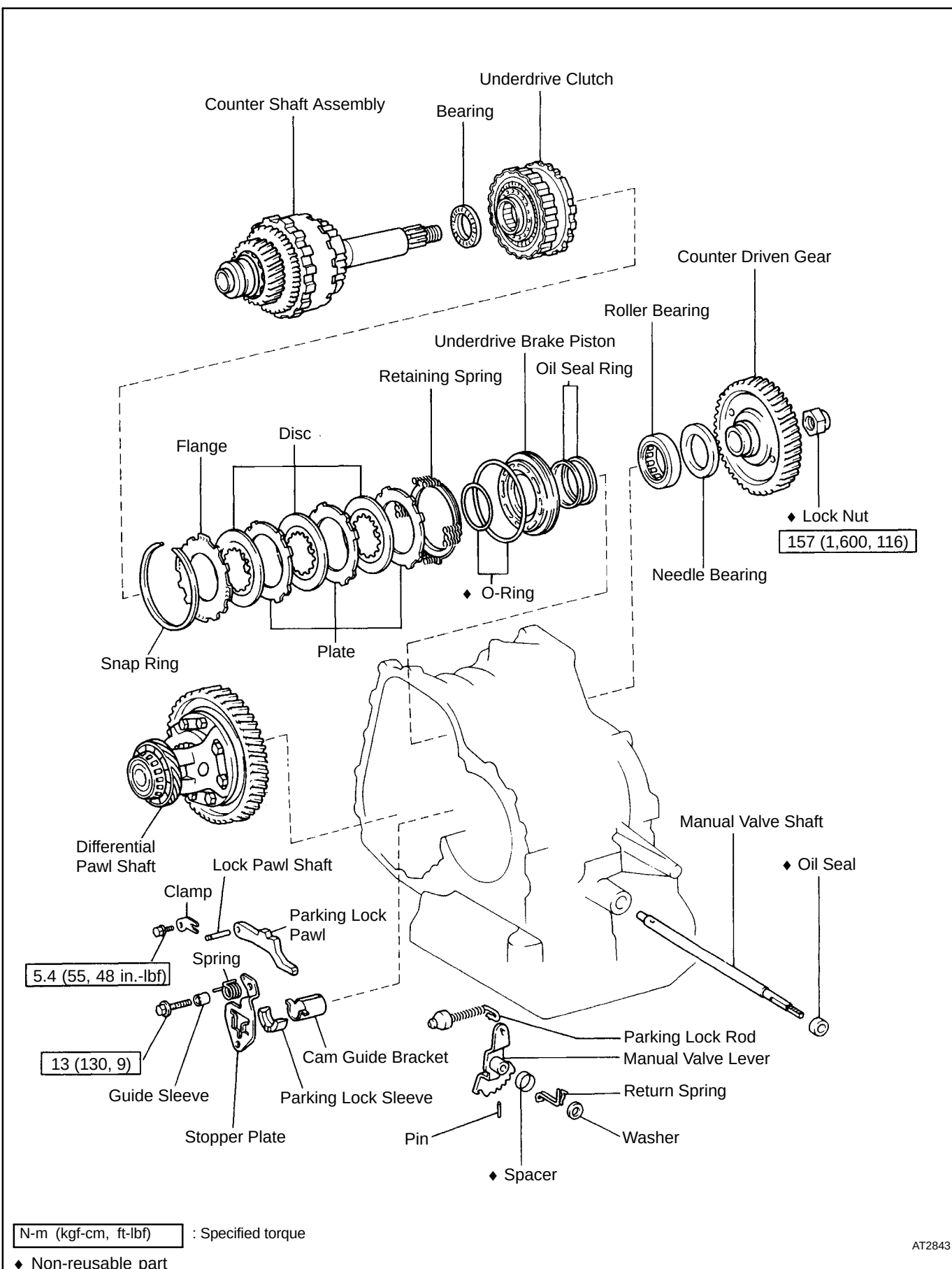
COMPONENTS (Cont'd)



N-m (kgf-cm, ft-lbf) Specified torque

◆ Non-reusable part

COMPONENTS (Cont'd)



COMPONENT PARTS

(See page [AX-48](#) to [AX-88](#))

General Notes

The instructions here are organized so that you work on only one component group at a time.

This will help avoid confusion from similar-looking parts of different subassemblies being on your workbench at the same time.

The component groups are inspected and repaired from the converter housing side.

As much as possible, complete the inspection, repair and assembly before proceeding to the next component group. If a component group can not be assembled because parts are being ordered, be sure to keep all parts of that group in a separate container while proceeding with disassembly, inspection, repair and assembly for other component groups.

GENERAL CLEANING NOTES:

1. All disassembled parts should be washed clean with any fluid passages and holes blown through with compressed air.
2. When using compressed air to dry parts, always aim away from yourself to prevent accidentally spraying automatic transmission fluid or kerosene in your face.
3. The recommended automatic transmission fluid kerosene should be used for cleaning.

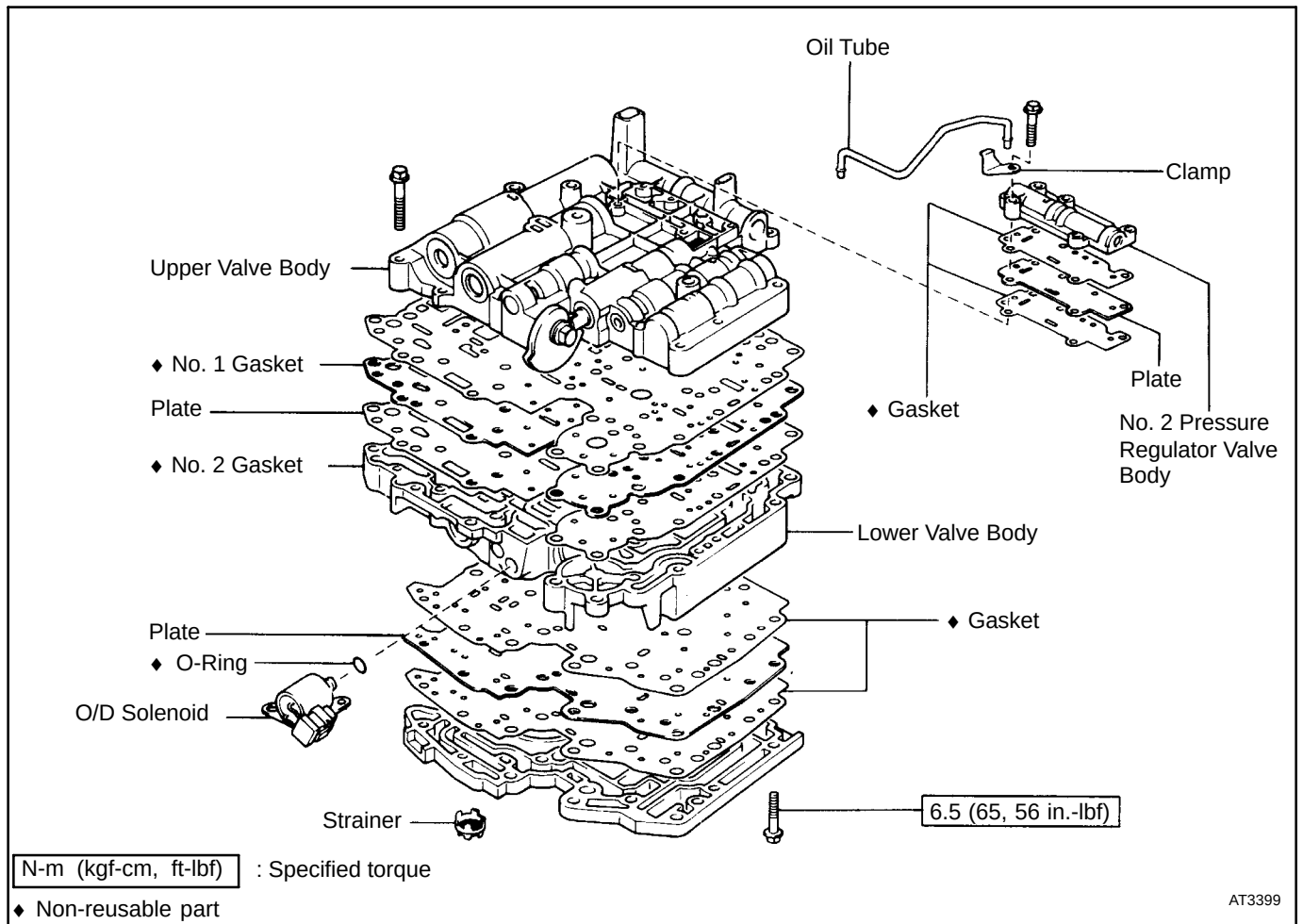
PARTS ARRANGEMENT:

1. After cleaning, the parts should be arranged in proper order to allow efficient inspection, repairs, and reassembly.
2. When disassembling a valve body, be sure to keep each valve together with the corresponding spring.
3. New brakes and clutches that are to be used for replacement must be soaked in transmission fluid for at least fifteen minutes before assembly.

GENERAL ASSEMBLY:

1. All oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces should be coated with transmission fluid prior to reassembly.
2. All gaskets and rubber O-rings should be replaced.
3. Make sure that the ends of a snap ring are not aligned with one of the cutouts and are installed in the groove correctly.
4. If a worn bushing is to be replaced, the subassembly containing that bushing must be replaced.
5. Check thrust bearings and races for wear or damage. Replace if necessary.
6. Use petroleum jelly to keep parts in place.

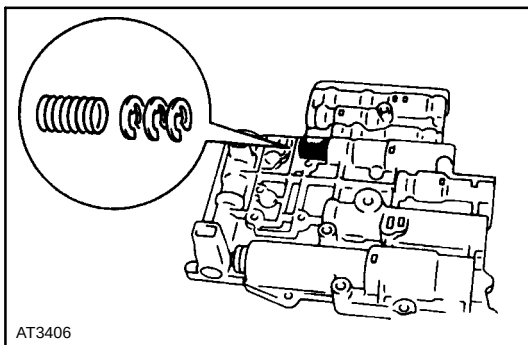
Valve Body COMPONENTS



(Disassembly of Valve Body)

1. NOTE NUMBER OF ADJUSTING RINGS

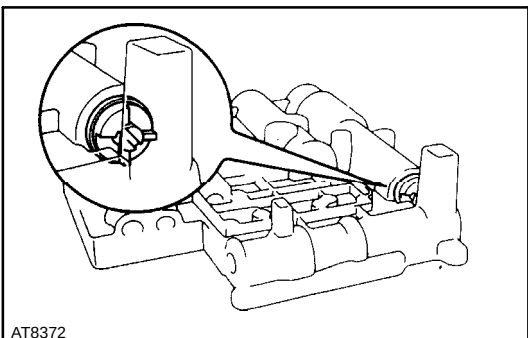
HINT: Count the number of adjusting rings before disassembly of the valve body because the throttle pressure is changed according to the number. (Some of the valve bodies do not have any adjusting rings.)

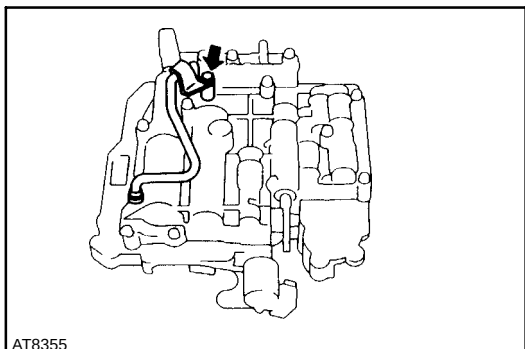


2. NOTE POSITION OF PLUNGER SLEEVE

Note which step at the end of the plunger sleeve is in contact with the valve body.

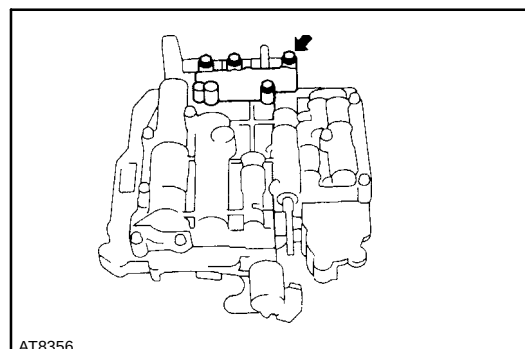
HINT: Be certain to check this before disassembly because the line pressure changes according to the part of the plunger sleeve which comes into contact with the valve body.



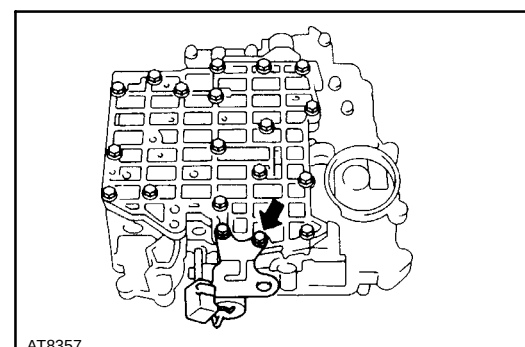


3. SEPARATE NO. 2 PRESSURE REGULATOR VALVE BODY

(a) Remove the tube clamp and oil tube.



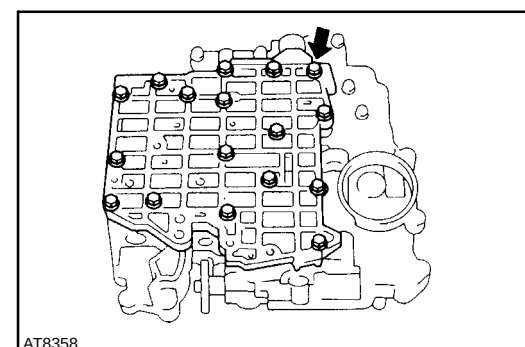
(b) Remove the four bolts, No. 2 pressure regulator valve body, gasket and plate from the upper valve body.



4. REMOVE O/D SOLENOID

(a) Remove the solenoid.

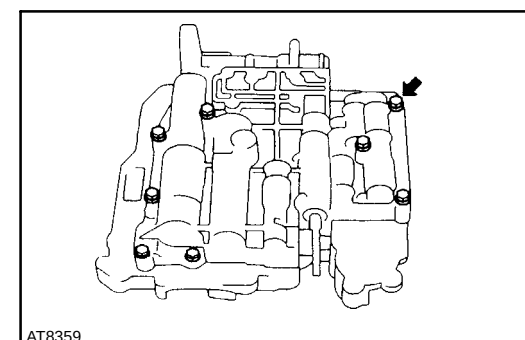
(b) Remove the O-ring from the solenoid.



5. REMOVE LOWER VALVE BODY COVER AND OIL STRAINER

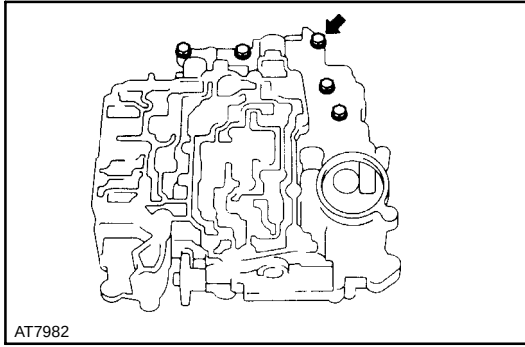
(a) Remove the seventeen bolts, cover, plate and two gaskets.

(b) Remove the oil strainer.

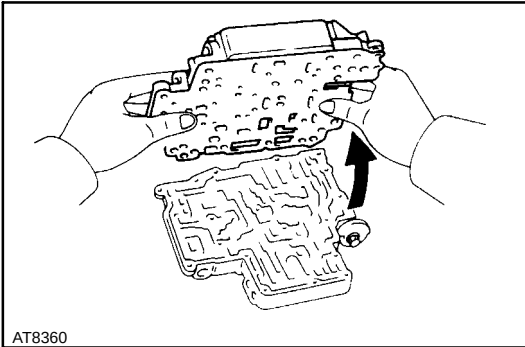


6. SEPARATE UPPER VALVE BODY AND LOWER VALVE BODY

(a) Remove the eight bolts from the upper valve body.



(b) Remove the five bolts from the lower valve body.

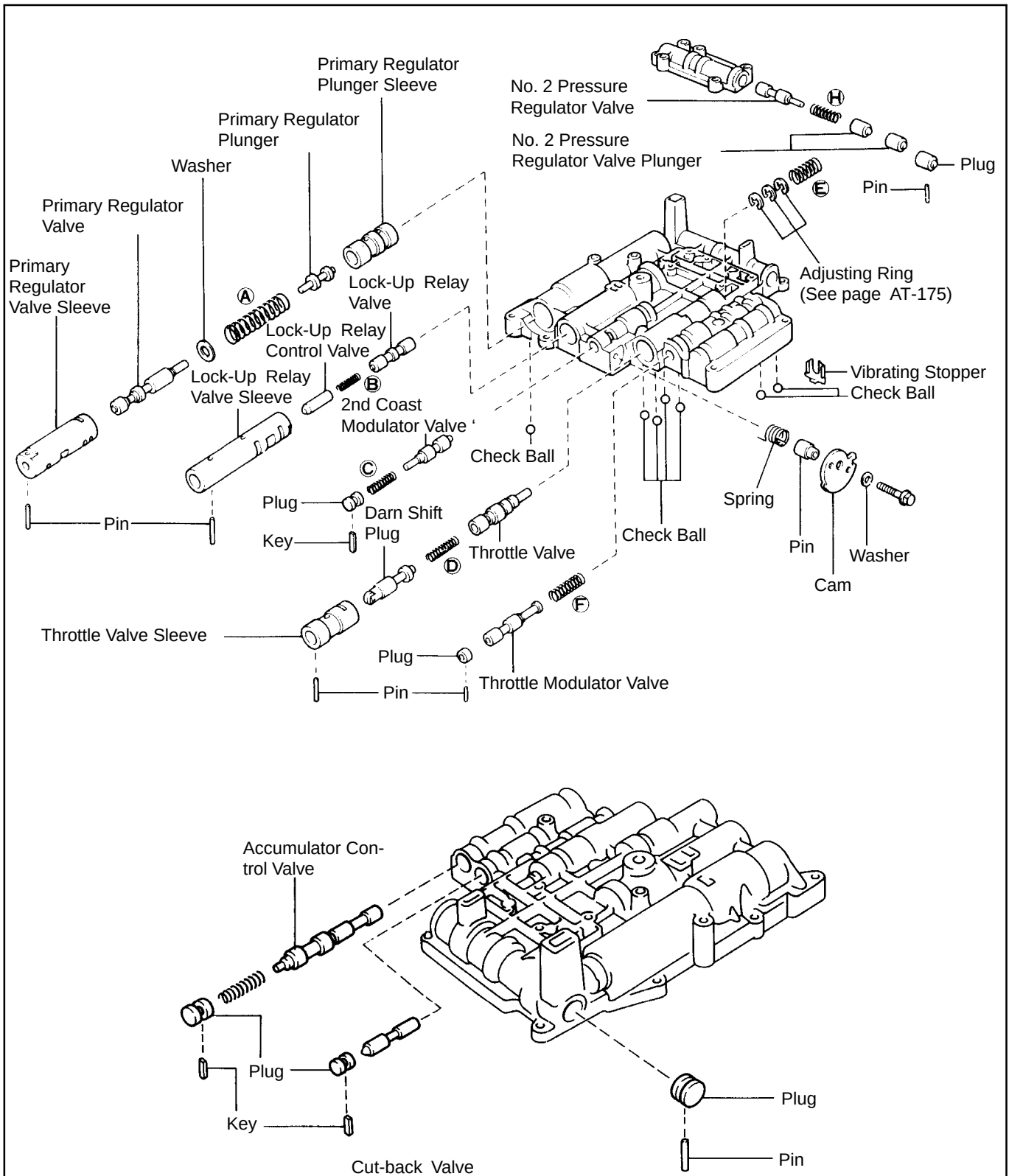


(c) Hold the plate to the lower valve body and lift off the lower valve body.

HINT: Be careful that the valves, springs and strainer do not fall out.

(Upper Valve Body)

COMPONENTS

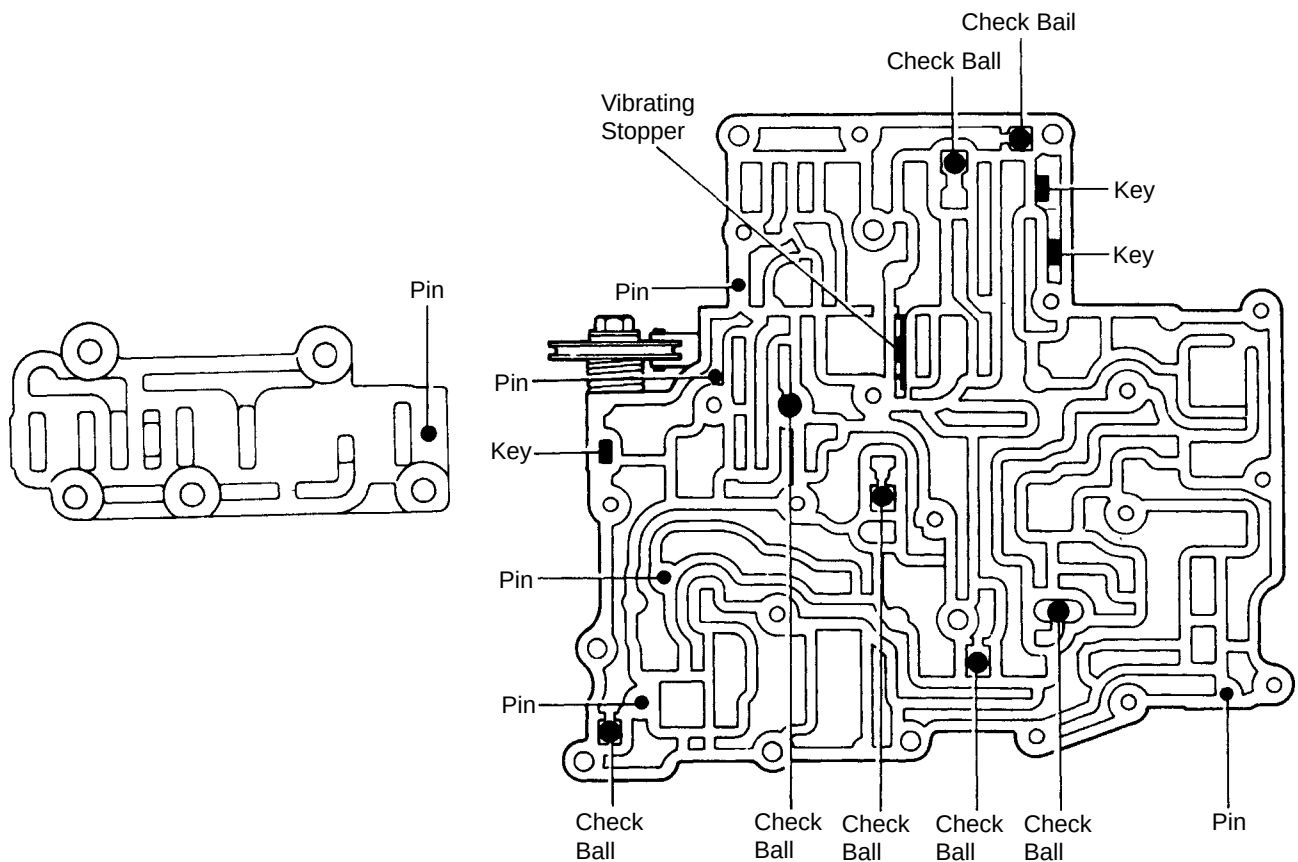


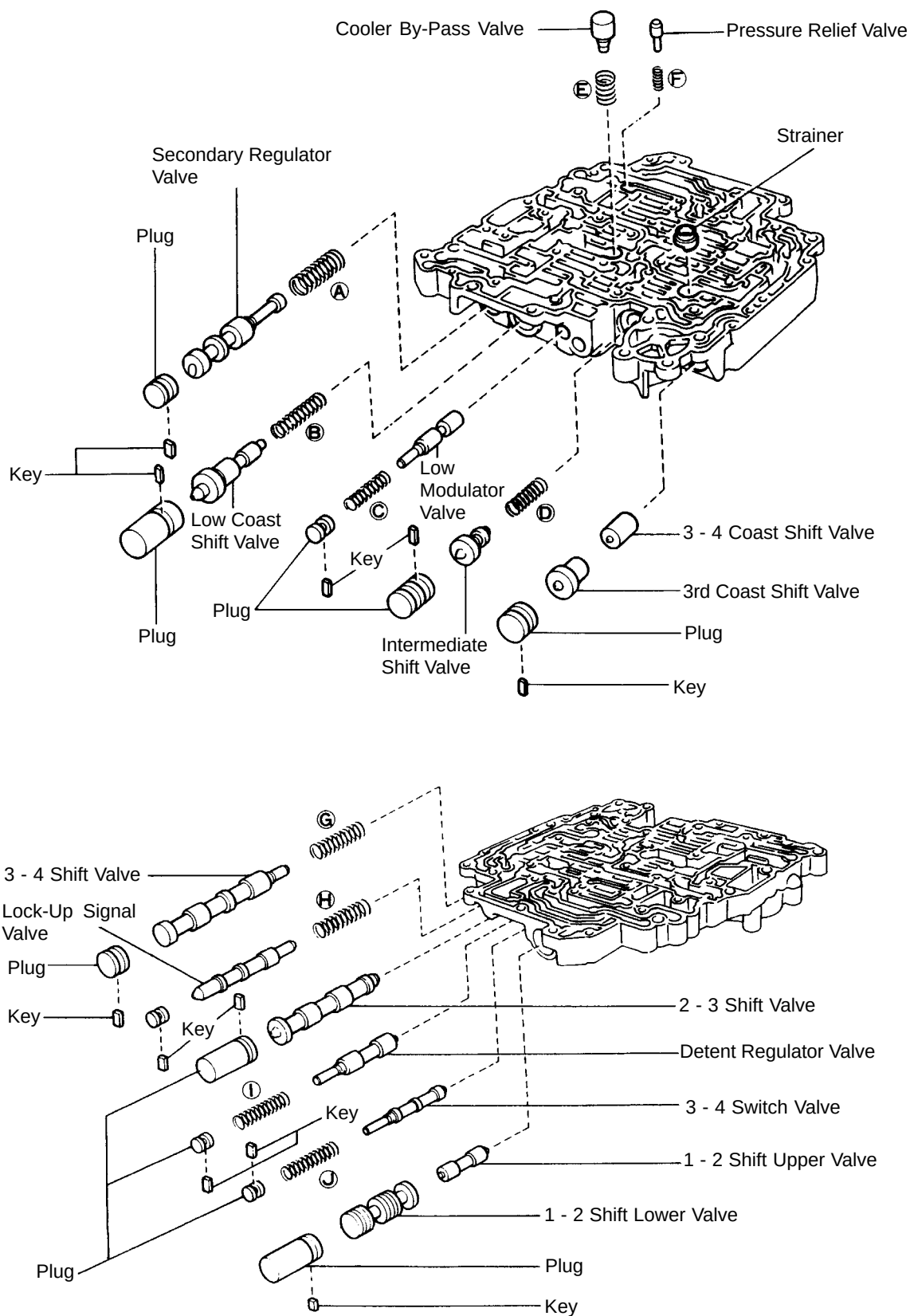
SPECIFICATIONS OF VALVE BODY SPRING

Spring		Free length mm (in.)	Coil Outer Diameter mm (in.)	Number of Coils	Color
Ⓐ	Primary Regulator Valve Spring	66.7 (2.626)	18.6 (0.732)	12.5	Purple
Ⓑ	Lock-Up Relay Valve Spring	18.8 (0.740)	5.1 (0.201)	14.5	None
Ⓒ	2nd Coast Modulator Valve Spring	32.6 (1.283)	8.3 (0.327)	12.5	Blue
Ⓓ	Down Shift Plug Spring	30.0 (1.181)	8.7 (0.343)	12.5	Blue
Ⓔ	Throttle Valve Spring	29.2 (1.150)	9.2 (0.3622)	9.5	Light Green
Ⓕ	Throttle Modulator Valve Spring	29.9 (1.177)	9.0 (0.354)	15.5	Green
Ⓖ	Accumulator Control Valve Spring	38.2 (1.504)	10.0 (0.394)	11.5	Yellow
Ⓗ	No. 2 Pressure Regulator Valve Spring	29.4 (1.157)	7.5 (0.295)	14.0	Red

HINT: During re-assembly please refer to the spring specifications above to help discriminate between the different springs.

LOCATION OF KEYS, PINS, VIBRATING STOPPER AND CHECK BALLS



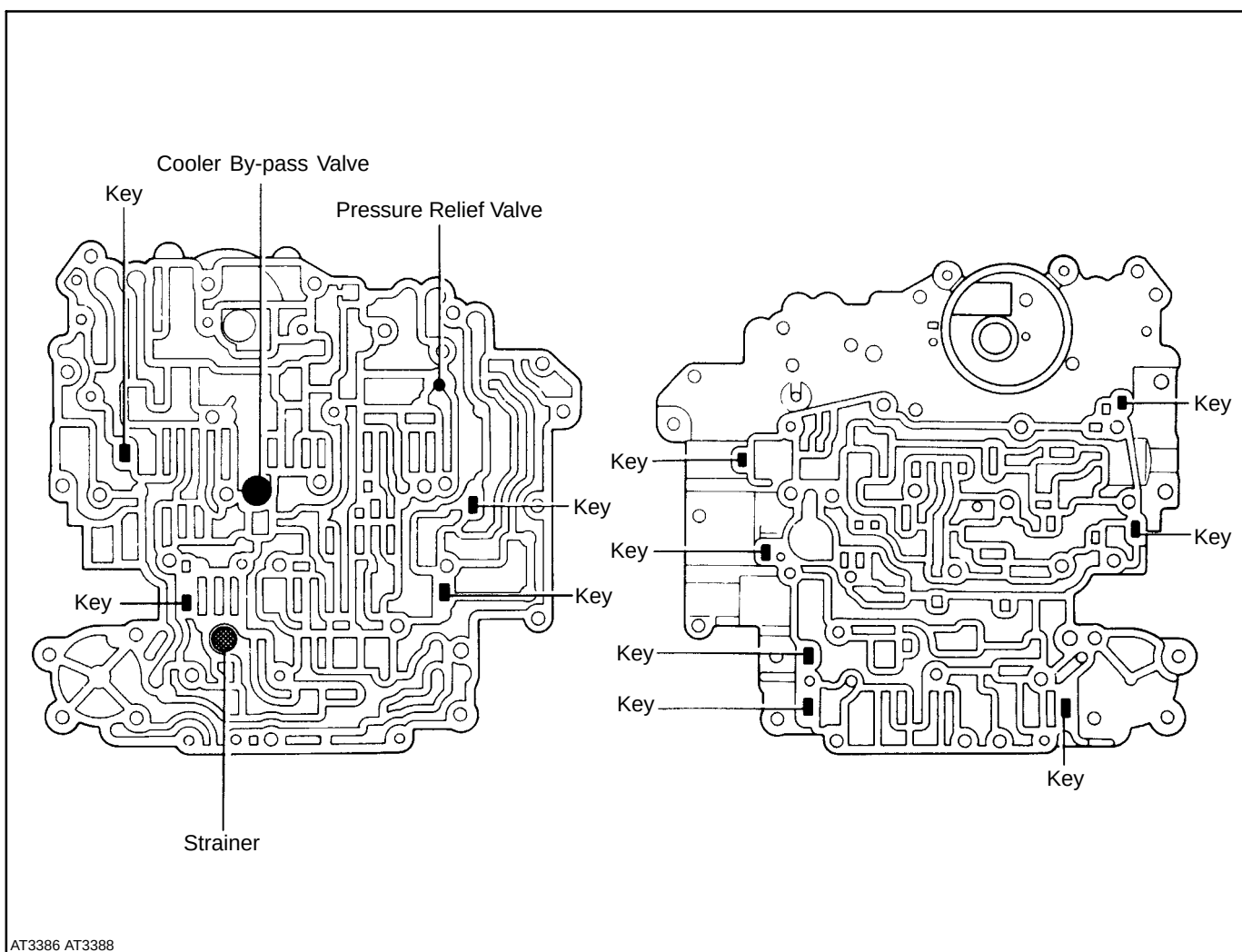
(Lower Valve Body)**COMPONENTS**

SPECIFICATIONS OF VALVE BODY SPRING

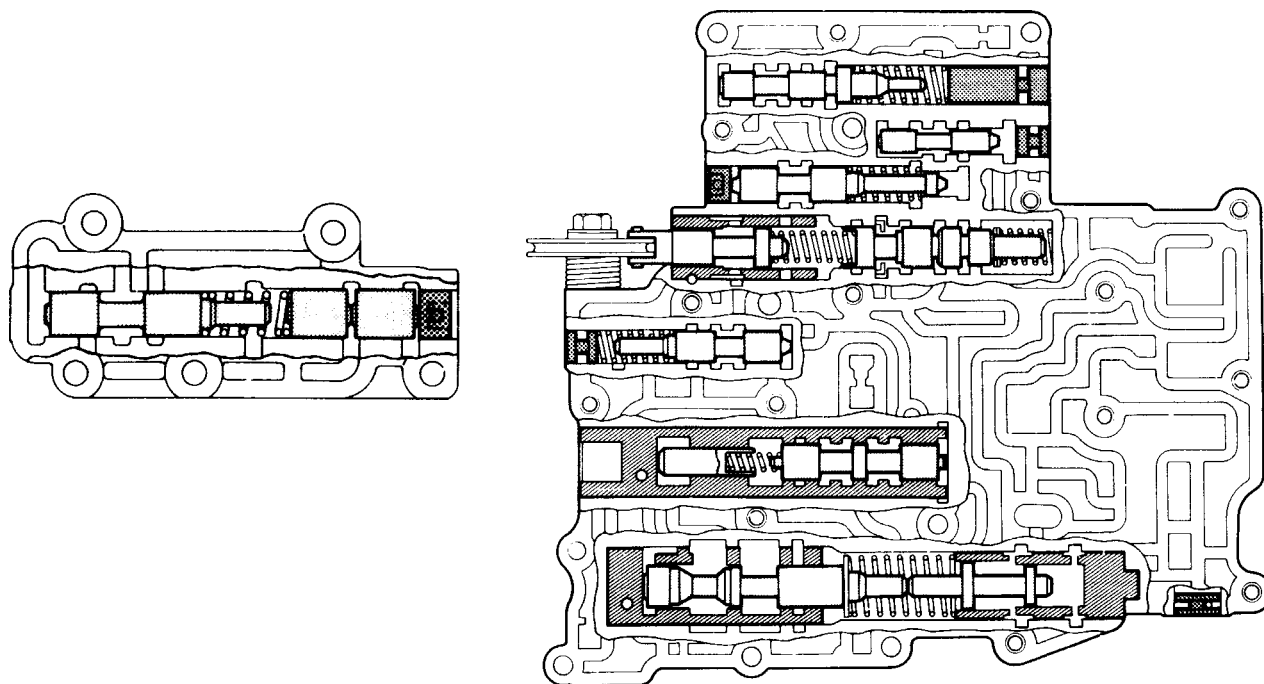
Spring		Free Length mm (in.)	Coil Outer Diameter mm (in.)	Number of Coils	Color
A	Secondary Regulator Valve Spring	27.4 (1.079)	11.0 (0.433)	11.5	Blue
B	1 - 2 Shift Valve Spring	27.2 (1.071)	6.4 (0.252)	15.5	Yellow
C	Low Modulator Valve Spring	29.2 (1.150)	8.3 (0.327)	12.5	None
D	2 - 3 Shift Valve Spring	27.7 (1.091)	8.3 (0.327)	11.0	None
E	Cooler By-pass Valve Spring	18.3 (0.720)	12.0 (0.472)	6.5	Yellow
F	Pressure Relief Valve Spring	11.2 (0.441)	6.4 (0.252)	7.5	None
G	3 - 4 Shift Valve Spring	34.9 (1.374)	8.2 (0.323)	13.5	None
H	Lock-up Signal Valve Spring	41.4 (1.630)	8.2 (0.323)	14.5	White
I	Detent Regulator Valve Spring	32.0 (1.260)	8.3 (0.327)	15.5	Brown
J	3 - 4 Switch Valve Spring	30.9 (1.217)	7.0 (0.276)	18.5	None

HINT: During re-assembly please refer to the spring specifications above to help discriminate between the different springs.

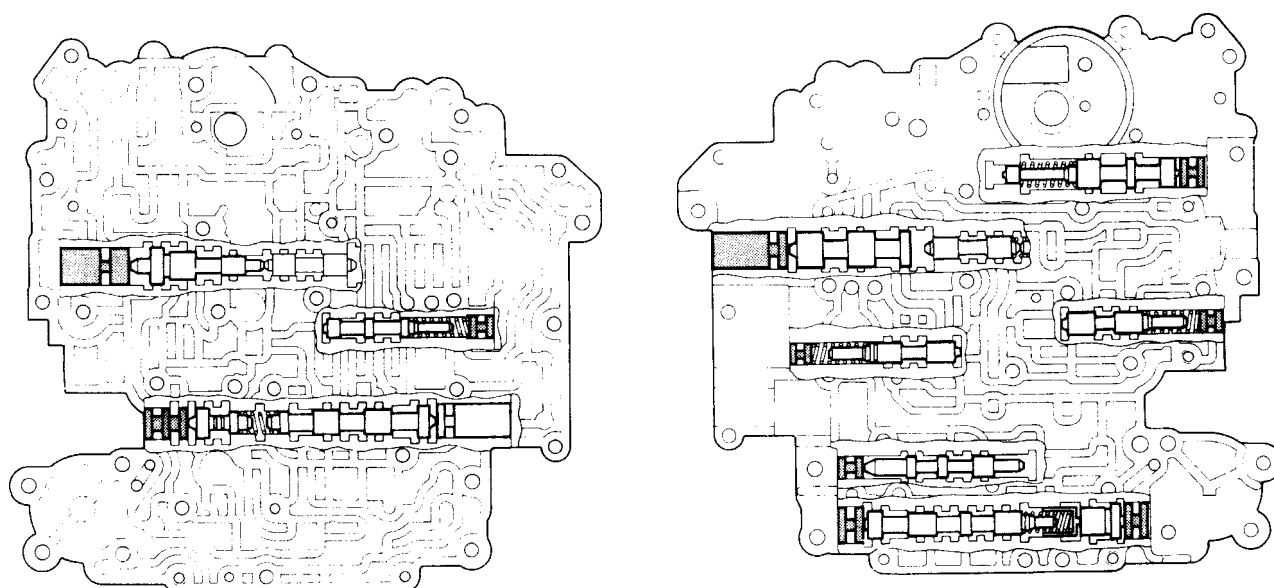
LOCATION OF KEYS, STRAINER AND VALVES



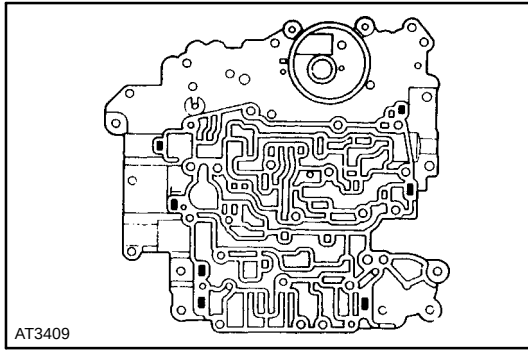
(Sectional View of Valve Body)



AT3383 AT3385



AT3389 AT3387



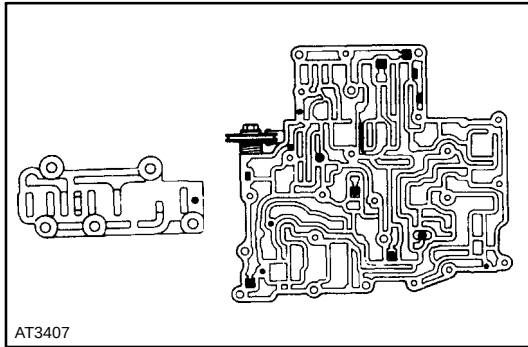
(Assembly of Valve Body)

1. CHECK INSTALLATION OF KEYS, PINS, CHECK BALLS, STOPPER AND STRAINER

- (a) Make sure that the keys and strainer on the upper side of the lower valve body are installed correctly.

(See page [AX-182](#))

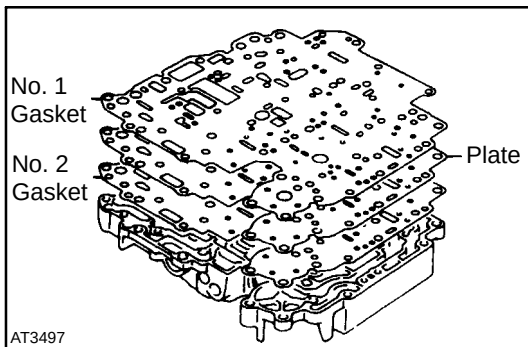
- (b) Make sure that the keys, pins, check balls and vibrating stopper on the lower side of the upper valve body and No. 2 pressure regulator valve are installed correctly. (See page [AX-180](#))



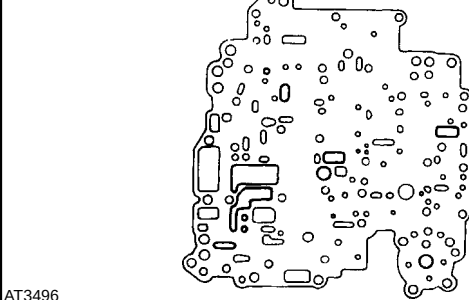
2. POSITION PLATE AND NEW GASKETS ON LOWER VALVE BODY

Position the new No. 2 gasket, plate and then the new No. 1 gasket on the lower valve body.

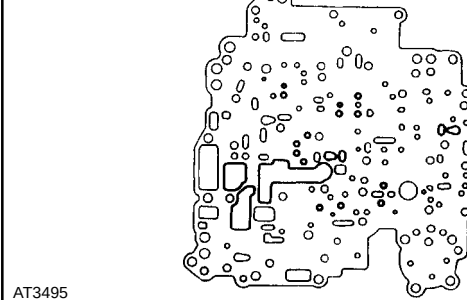
HINT: Since the No. 1 gasket and No. 2 gasket are similar use the illustration below to discriminate between them.



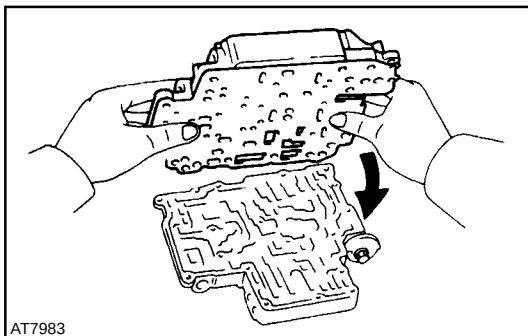
No. 1 Gasket

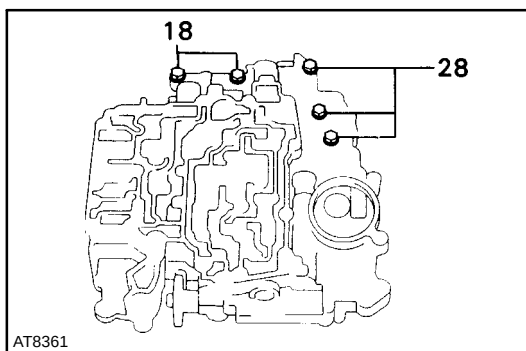


No. 2 Gasket



3. PLACE LOWER VALVE BODY WITH PLATE AND GASKETS ON UPPER VALVE BODY

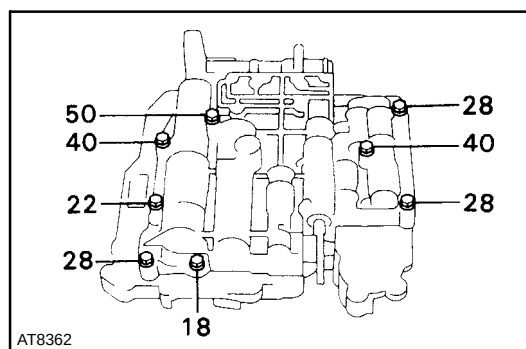




4. INSTALL AND FINGER TIGHTEN BOLTS IN LOWER VALVE BODY TO SECURE UPPER VALVE BODY

Install and finger tighten the five bolts.

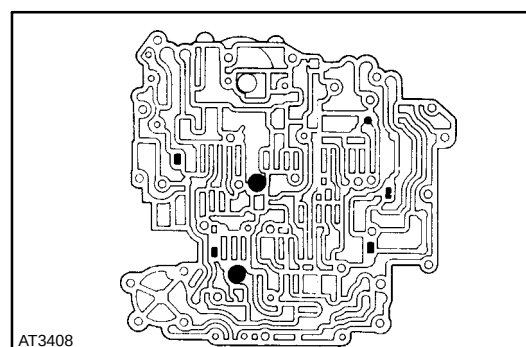
HINT: Each bolt length (mm) is indicated in the figure.



5. INSTALL AND FINGER TIGHTEN BOLTS IN UPPER VALVE BODY

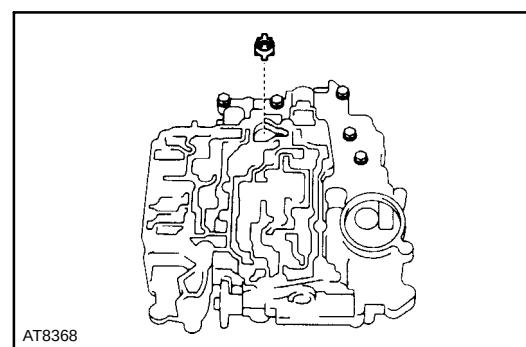
Install and finger tighten the eight bolts.

HINT: Each bolt length (mm) is indicated in the figure.

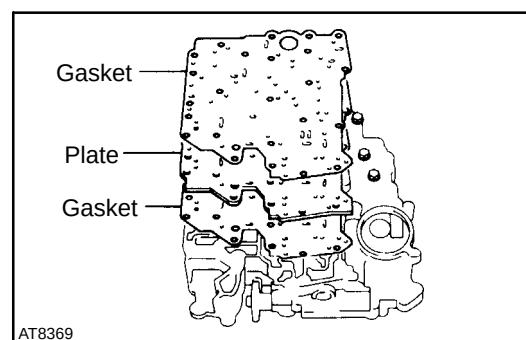


6. INSTALL LOWER VALVE BODY COVER

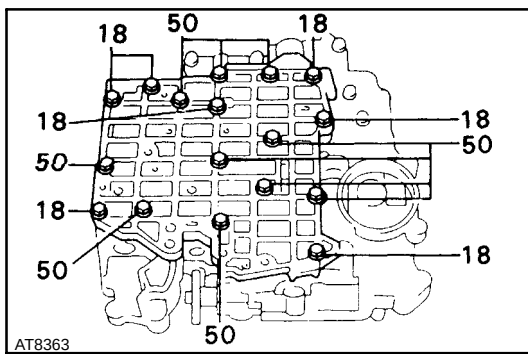
- (a) Make sure that the keys are installed correctly. (See page [AX-184](#))



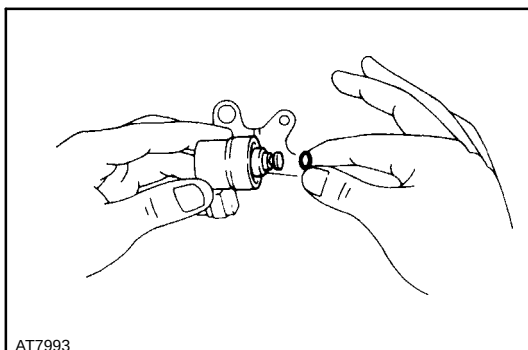
- (b) Install the strainer.



- (c) Position a new gasket and plate, and then another new gasket.

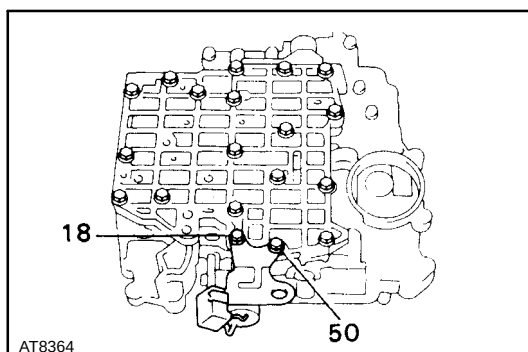


- (d) Position the lower valve body cover.
 - (e) Install and finger tighten the seventeen bolts.
- HINT: Each bolt length (mm) is indicated in the figure.

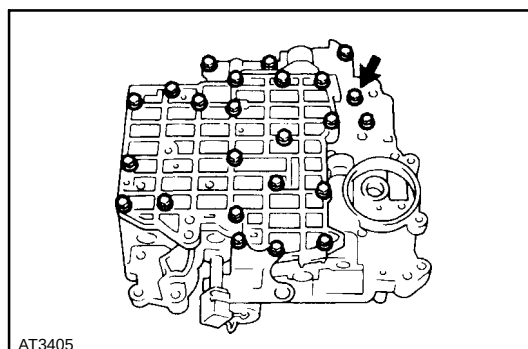


7. INSTALL O/D SOLENOID

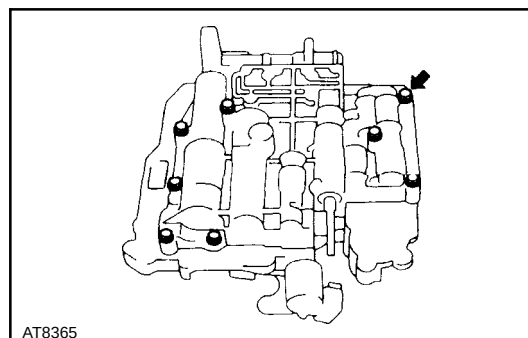
- (a) Apply ATF to a new O-ring.
- (b) Install the O-ring to the solenoid.



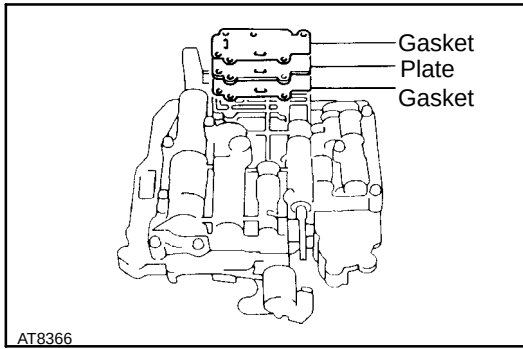
- (c) Install the solenoid.
- HINT: Each bolt length (mm), is indicated in the figure.
Torque: 6.4 N-m (65 kgf-cm, 56 in.-lbf)



- ## 8. TIGHTEN EACH BOLTS
- Torque: 6.4 N-m (65 kgf-cm, 56 in.-lbf)**
 (Lower valve body side)

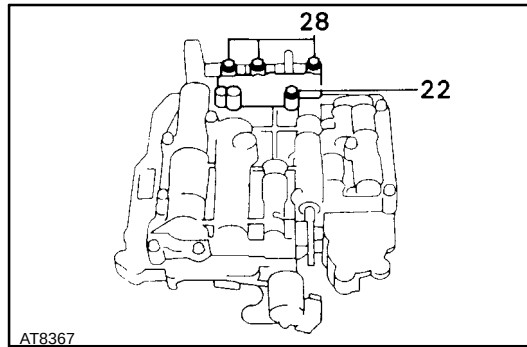


(Upper valve body side)



9. INSTALL NO. 2 PRESSURE REGULATOR VALVE BODY

- (a) Install the gasket, plate and gasket on the upper valve body.

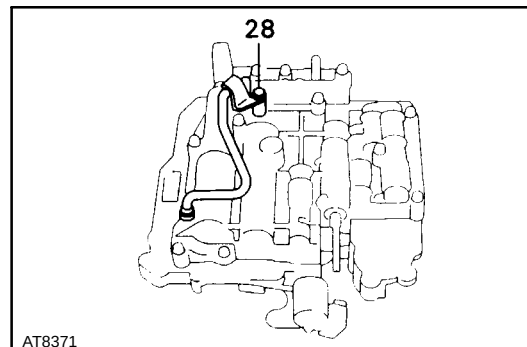


- (b) Install the No. 2 pressure regulator valve body on the upper valve body.

- (c) Install and tighten the four bolts.

HINT: Each bolt length (mm) is indicated in the figure.

Torque: 6.4 N-m (65 kgf-cm, 56 in.-lbf)



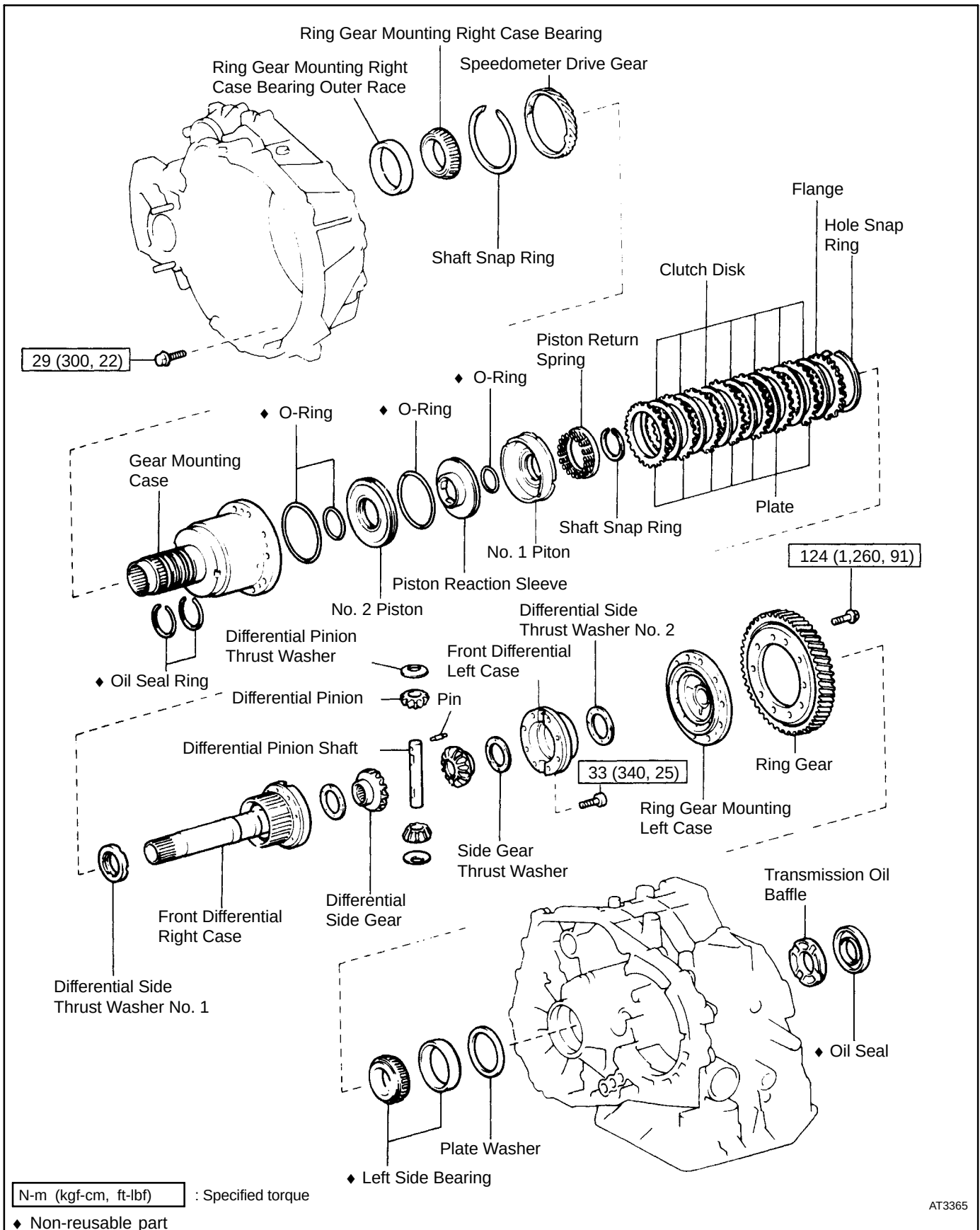
10. INSTALL OIL TUBE

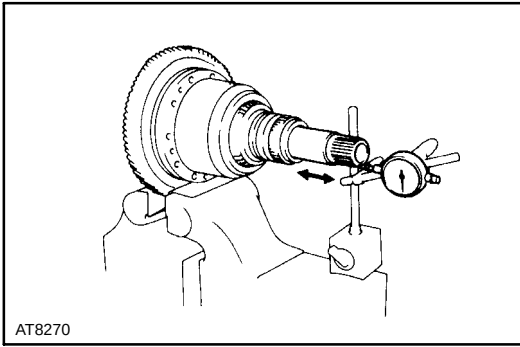
- (a) Install the oil tube.

- (b) Install the clamp and torque the bolt.

Torque: 6.4 N-m (65 kgf-cm, 56 in.-lbf)

Differential COMPONENTS

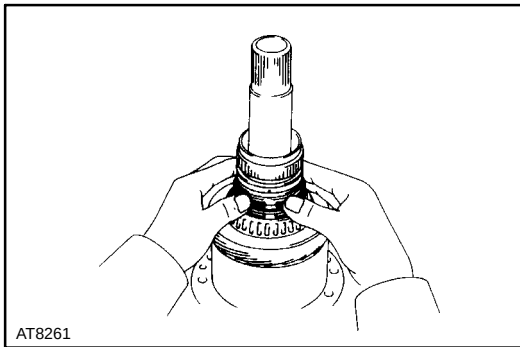




DISASSEMBLY OF DIFFERENTIAL ASSEMBLY

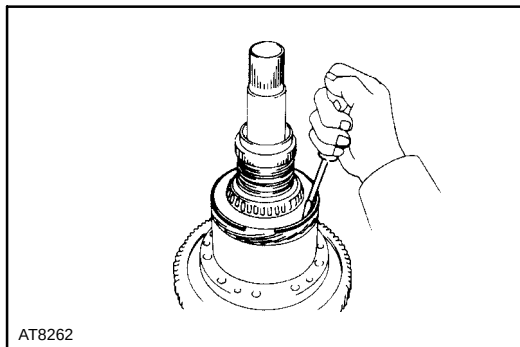
1. CHECK DIFFERENTIAL END PLAY

Using a dial indicator, measure the differential end play.
End play: 0.18 - 0.82 mm (0.0071 - 0.0323 in.)



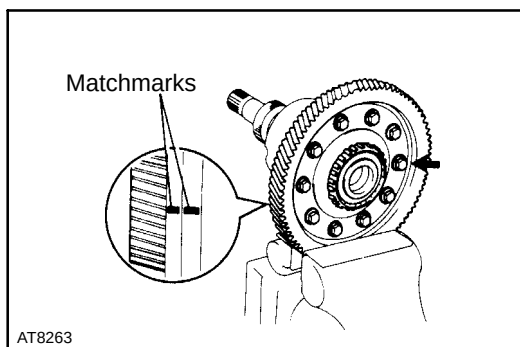
2. REMOVE OIL SEAL RINGS

Remove two oil seal rings from the ring gear mounting right case.



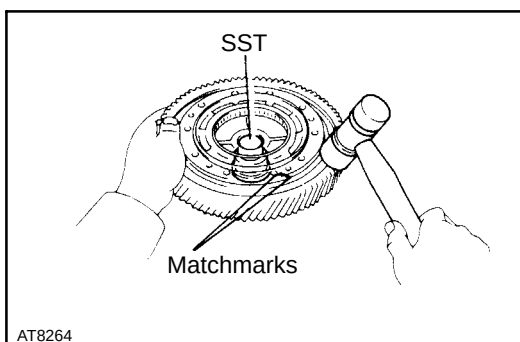
3. REMOVE SPEEDOMETER DRIVE GEAR

Using a screwdriver, remove the shaft snap ring and the speedometer drive gear.



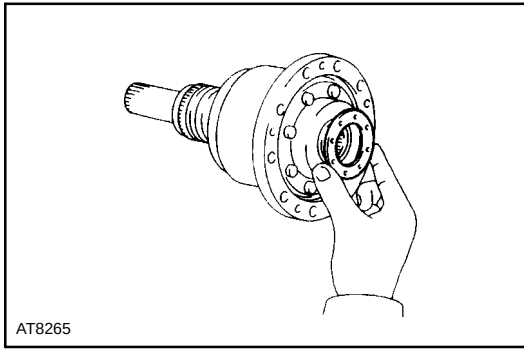
4. REMOVE RING GEAR MOUNTING LEFT CASE

- (a) Place matchmarks to the ring gear mounting left case and right case.
- (b) Remove the ten bolts and left case.



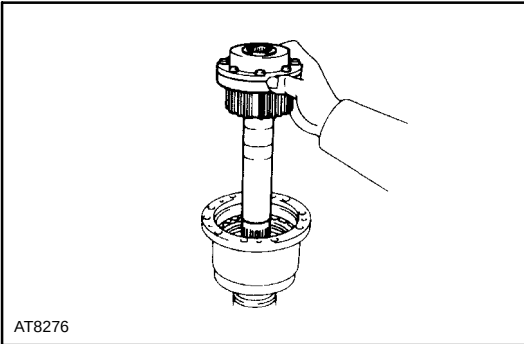
5. REMOVE RING GEAR

- (a) Place matchmarks on the ring gear and left case.
 - (b) Place the left case on SST.
- SST 09350-32014 (09351-32090)
- (c) Using a plastic hammer, remove the ring gear from the left case.

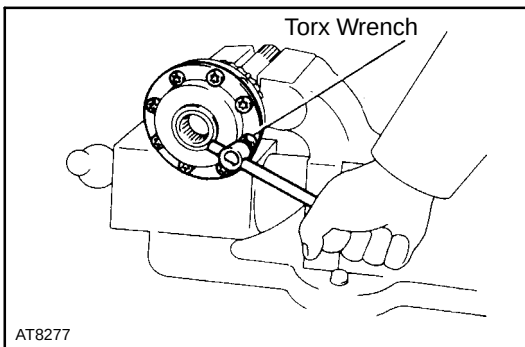


6. REMOVE FRONT DIFFERENTIAL CASE

- (a) Remove the No. 2 thrust washer.



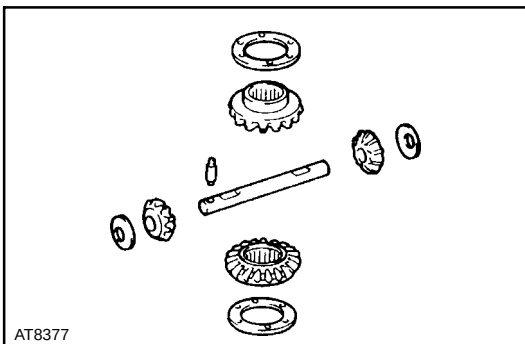
- (b) Remove the front differential case from the ring gear mounting right case.



7. REMOVE FRONT DIFFERENTIAL LEFT CASE

- (a) Using a torx wrench, remove the eight screws from the left case.
- (b) Separate the left case and right case.

NOTICE: Do not scratch the contact surface of the needle bearing.

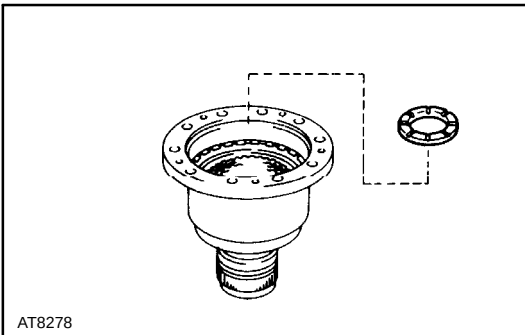


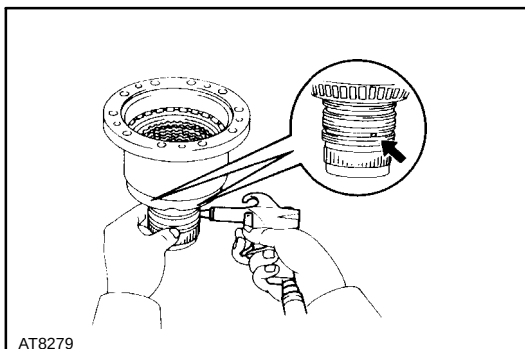
8. REMOVE DRIVE PINIONS AND SIDE GEARS

Remove the following parts:

- Differential pinion shaft
- Shaft pin
- Two pinion gears
- Two pinion thrust washers
- Two side gears
- Two side gear thrust washers

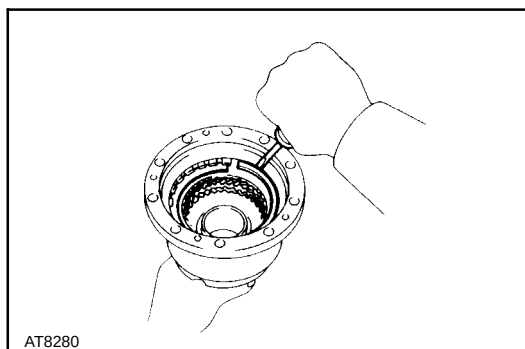
9. REMOVE NO. 1 THRUST WASHER





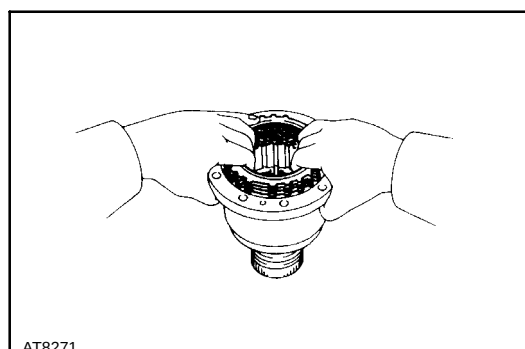
10. CHECK OPERATION OF DIFFERENTIAL LOCK CLUTCH PISTON

- (a) Plug one hole of the right case with your hand.
- (b) Apply compressed air into the other hole and confirm that the piston move.

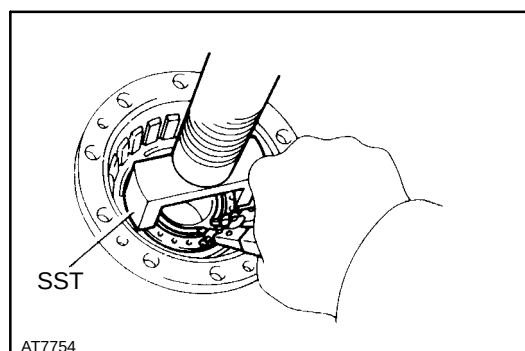


11. REMOVE DIFFERENTIAL LOCK CLUTCH

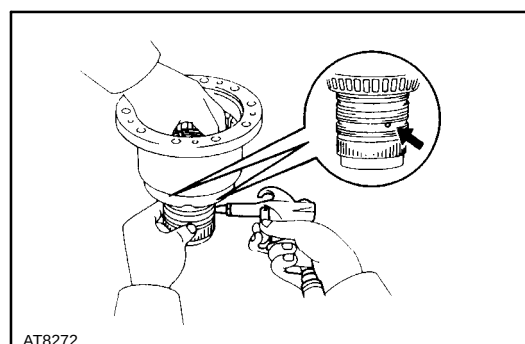
- (a) Using a screwdriver, remove the snap ring.



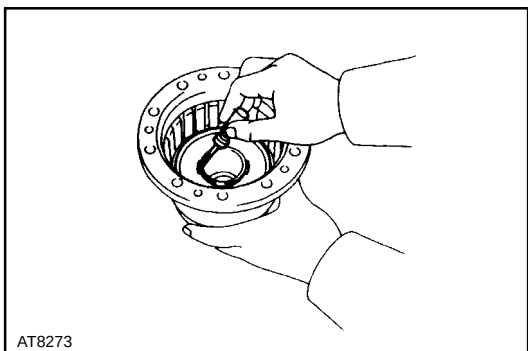
- (b) Remove the flange, seven discs and seven plates.



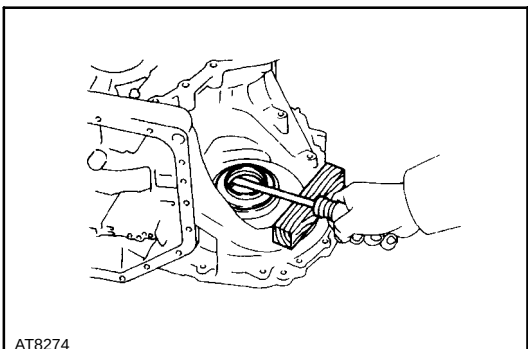
- (c) Place SST, and compress the return spring.
SST 09350-32014 (09351-32070)
- (d) Using snap ring pliers, remove the snap ring.



- (e) Apply compressed air to the right case hole to remove the No. 1 piston.
- (f) Remove the O-ring from the No. 1 piston.

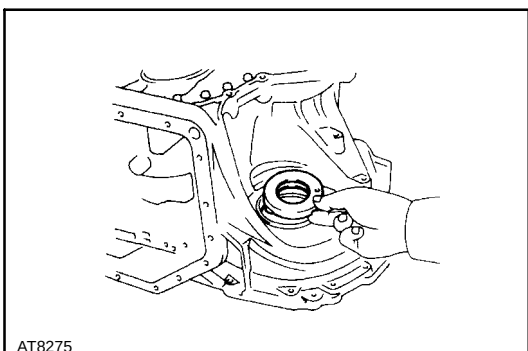


- (g) Using a small screwdriver, remove the reaction sleeve and No. 2 piston.
- (h) Remove the three O-rings from the reaction sleeve and No. 2 piston.

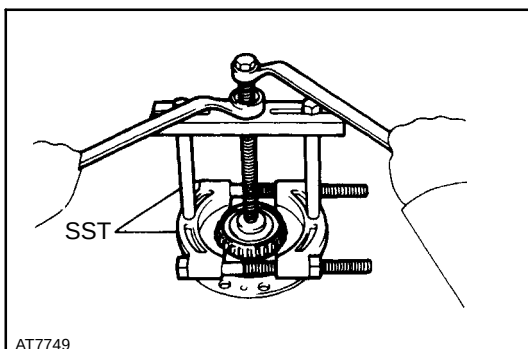


12. REMOVE TRANSAXLE CASE OIL SEAL

Using a screwdriver, remove the oil seal from the transaxle case.



13. REMOVE TRANSMISSION OIL BAFFLE

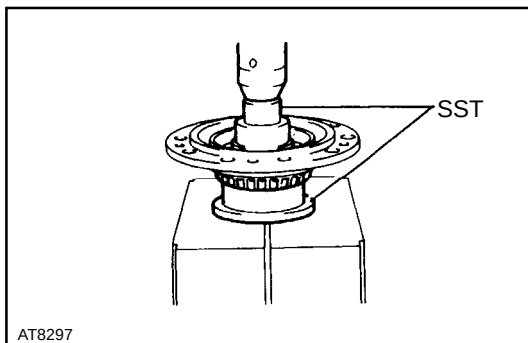


REPLACEMENT OF RING GEAR MOUNTING CASE BEARINGS

1. REMOVE RING GEAR MOUNTING LEFT CASE BEARING

Using SST, remove the bearing.

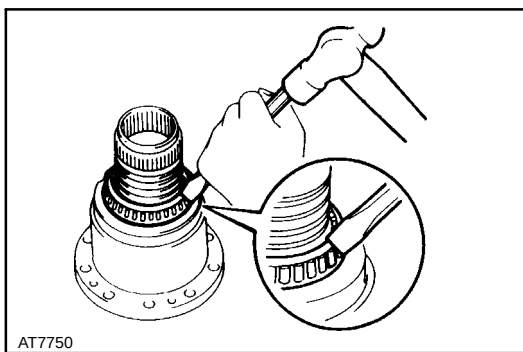
SST 09950-00020, 09950-00030



2. INSTALL RING GEAR MOUNTING LEFT CASE BEARING

Using a press and SST, press in the bearing.

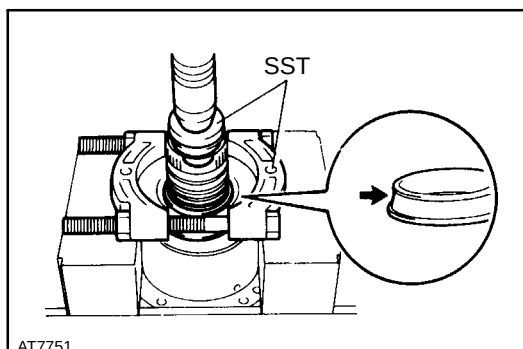
SST 09316-2001 1, 09350-32014 (09351-32090)



3. REMOVE RING GEAR MOUNTING RIGHT CASE BEARING

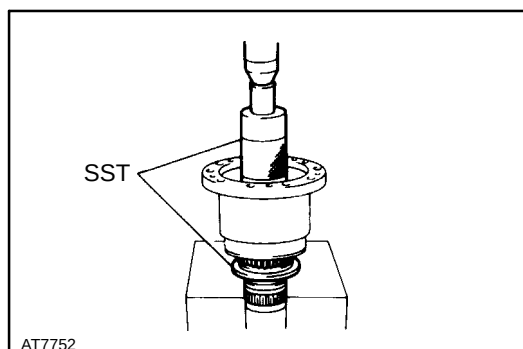
- (a) Using a chisel and hammer, cut out the bearing cage.

NOTICE: Do not damage to the case.



- (b) Using a press and SST, press out the bearing inner race.

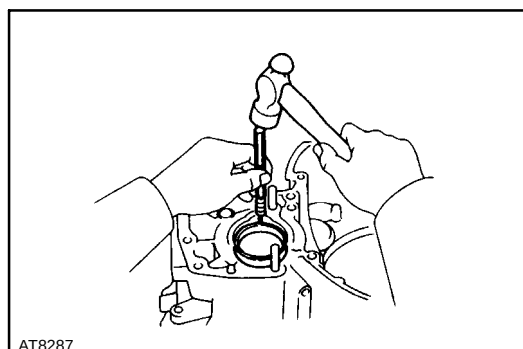
SST 09350-32014 (09351-32090), 09950-00020



4. INSTALL RING GEAR MOUNTING RIGHT CASE BEARING

Using a press and SST, press in the new bearing.

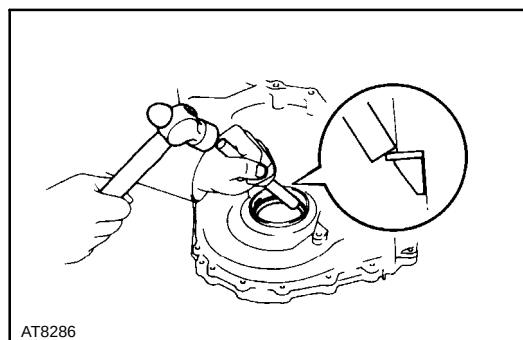
SST 09316-60010 (09316-00010), 09502-12010



5. REMOVE RING GEAR MOUNTING CASE BEARING OUTER RACES

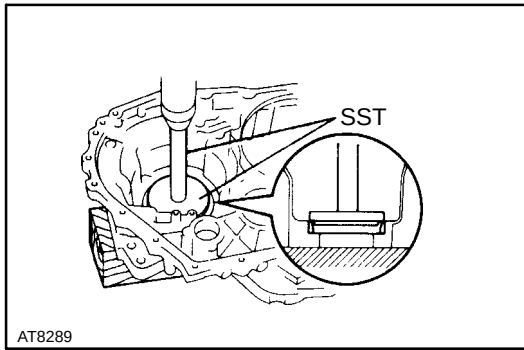
(Transaxle Housing Side)

Using a pin punch and hammer, drive out the outer race from the transaxle housing.



(Transaxle Case Side)

Using a brass bar and hammer, drive out the outer race and plate washer.

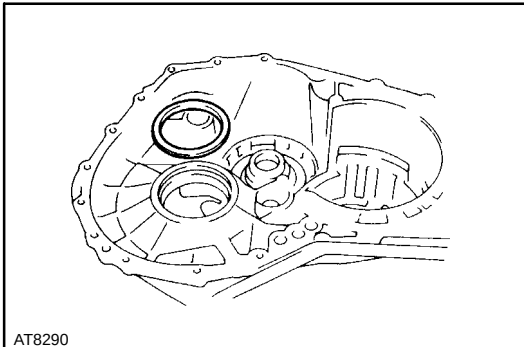


6. INSTALL RING GEAR MOUNTING CASE BEARING OUTER RACE

(Transaxle Housing Side)

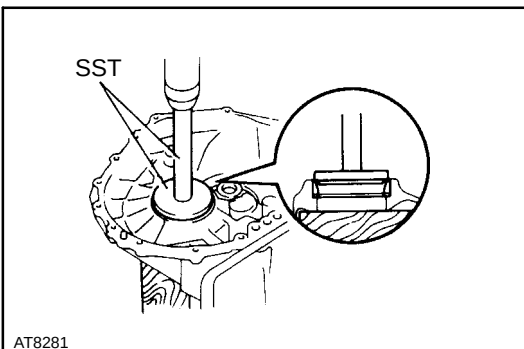
Using a press and SST, press in the outer race.

SST 09608-35014 (09608-06020, 09608-06150)



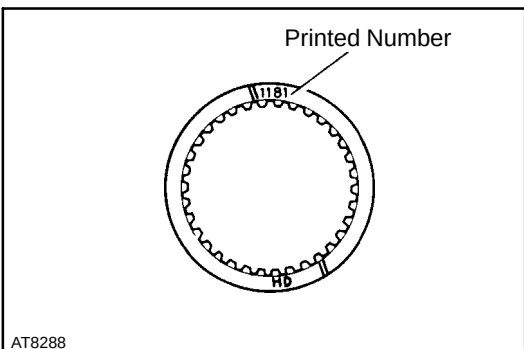
(Transaxle Case Side)

(a) Install the plate washer.



(b) Using a press and SST, press in the outer race.

SST 09608-35014 (09608-06020, 09608-06180)



INSPECTION OF DIFFERENTIAL LOCK CLUTCH

INSPECT DISCS, PLATES AND FLANGE

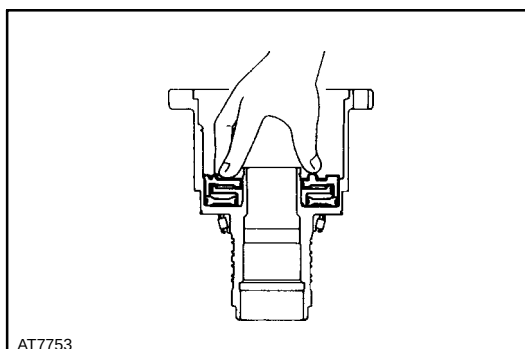
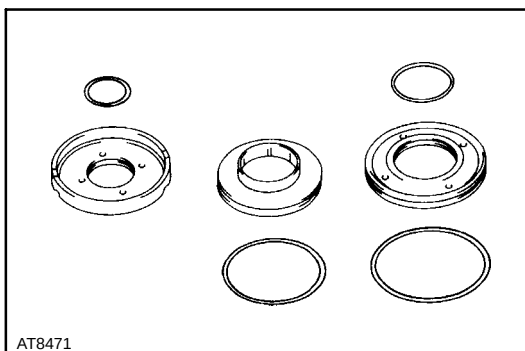
Check that the sliding surface of disc, plate and flange worn or burnt. If necessary, replace them.

HINT:

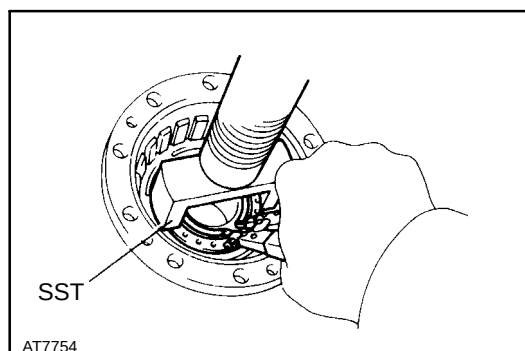
- If the lining of the disc is exfoliated or discolored, or even a part of the printed number are defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least fifteen minutes.

ASSEMBLY OF DIFFERENTIAL ASSEMBLY**1. INSTALL DIFFERENTIAL LOCK CLUTCH PISTON**

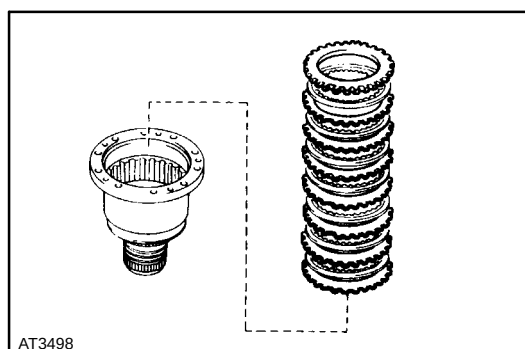
- (a) Coat the four O-rings with ATF.
- (b) Install the four O-rings to the reaction sleeve and pistons.
- (c) Install the No. 1, No. 2 pistons and reaction sleeve to the ring gear mounting right case.

**2. INSTALL RETURN SPRING**

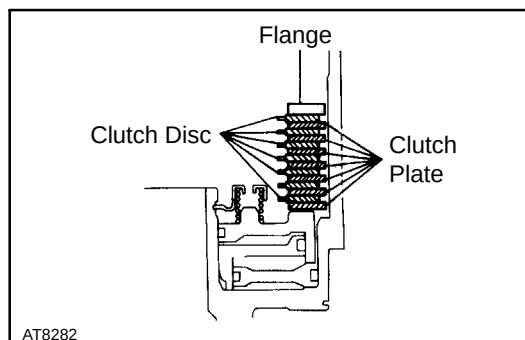
- (a) Place the spring on the piston.
- (b) Place SST on the spring retainer, and compress the spring with a press.
- SST 09350-32014 (09351-32070)
- (c) Using snap ring pliers, install the snap ring.

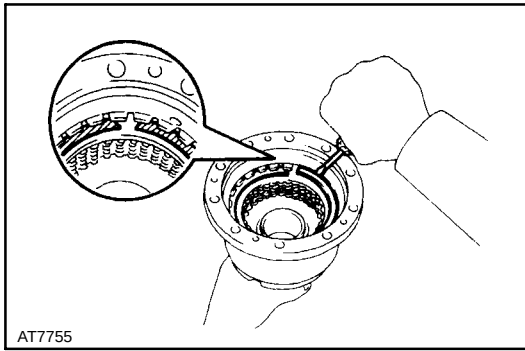
**3. INSTALL PLATE, DISCS AND FLANGE**

- (a) Install the plate and discs.
Install in order: P = Plate D = Disc
P-D-P-D-P-D-P-D-P-D-P-D-P-D

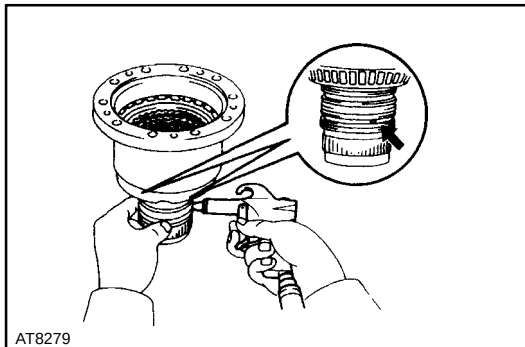


- (b) Install the flange with a facing the flat end downward.



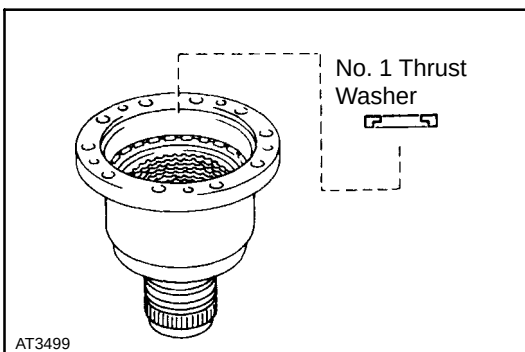


(c) Using a screwdriver, install the snap ring.

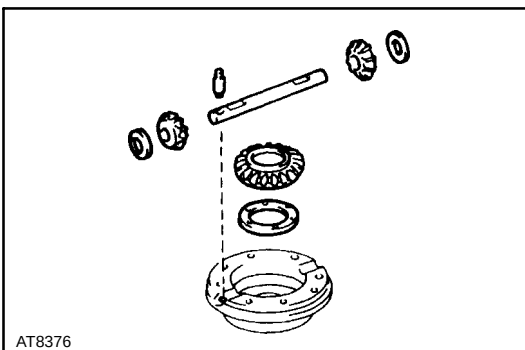


4. CHECK OPERATION OF DIFFERENTIAL LOCK CLUTCH PISTON

- Plug the one hole with your hand.
- Apply compressed air into the other hole and be sure that the piston move.



5. INSTALL NO. 1 THRUST WASHER



6. CHECK AND ADJUST FRONT DIFFERENTIAL SIDE GEAR BACKLASH

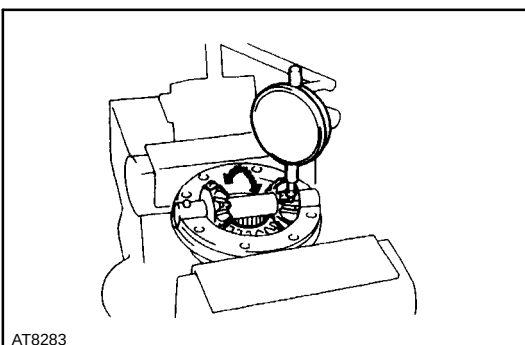
(Front Differential Left Case)

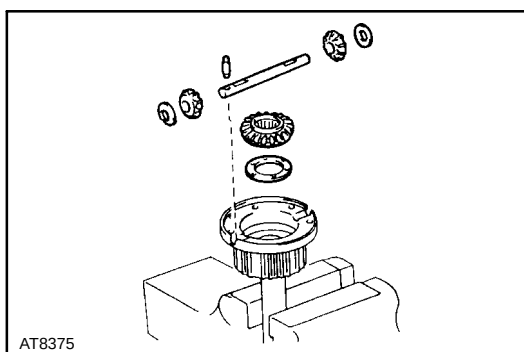
- Install the following parts:
 - Side gear thrust washer
 - Side gear
 - Two differential pinion gear
 - Two pinion gear thrust washer
 - Pinion shaft
 - Pinion shaft pin
- Using a dial indicator, measure the backlash one pinion gear while holding the side gear toward the case.

Backlash: 0.05 - 0.20 mm (0.0020 - 0.0079 in.)

If not within specification select the side gear thrust washer.

NOTICE: Do not tighten the vise too tight.

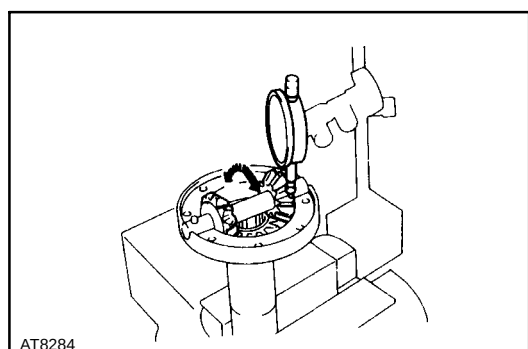




(Front Differential Right Case)

(a) Install the following parts:

- Side gear thrust washer
- Side gear
- Two differential pinion gear
- Two pinion gear thrust washer
- Pinion shaft
- Pinion shaft pin

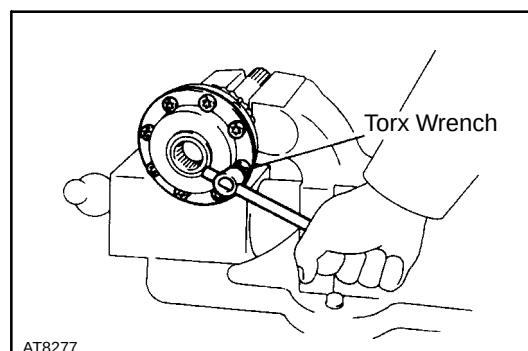


(b) Using a dial indicator, measure the backlash one pinion gear while holding the side gear toward the case.

Backlash: 0.05 - 0.20 mm (0.0020 - 0.0079 in.)

If not within specification select the side gear thrust washer.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	1.00 (0.0394)	E	1.20 (0.0472)
B	1.05 (0.0413)	F	1.25 (0.0492)
C	1.10 (0.0433)	G	1.30 (0.0512)
D	1.15 (0.0453)		



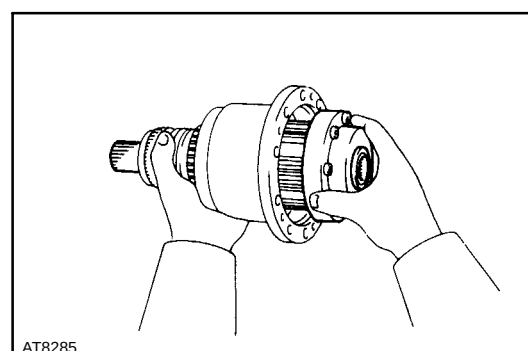
7. INSTALL FRONT DIFFERENTIAL LEFT CASE

(a) Install the left case to the right case.

(b) Using a torx wrench, torque the eight torx screws.

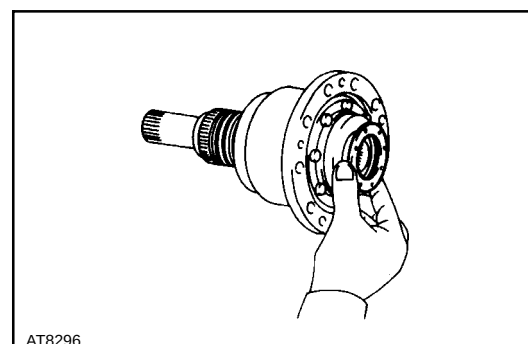
Torque: 33 N-m (340 kgf-cm, 25 ft-lbf)

NOTICE: Do not scratch the contact surface of the needle bearing.

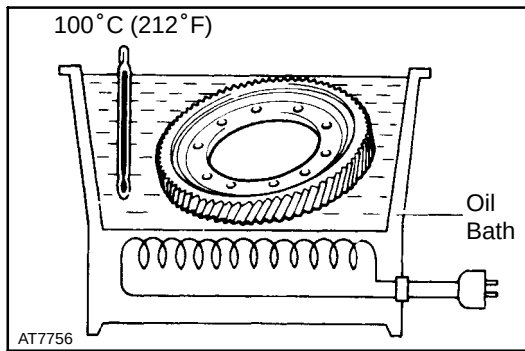


8. INSTALL FRONT DIFFERENTIAL CASE

(a) Install the front differential case to the ring gear mounting right case.



(b) Install the No. 2 thrust washer.



9. INSTALL RING GEAR

- (a) Clean the contact surface of the ring gear mounting left case.
- (b) Heat the ring gear to about 100°C (212°F) in an oil bath.

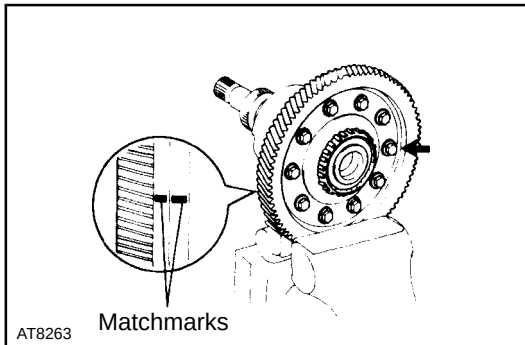
NOTICE: Do not heat the ring gear above 110°C (230°F)

- (c) Clean the contact surface of the ring gear with cleaning solvent.

- (d) Then quickly install the ring gear on the left case.
HINT: Align the matchmarks on the left case and ring gear.

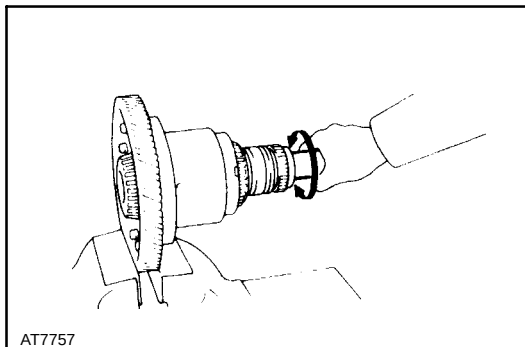
- (e) Torque the ten bolts.

Torque: 124 N-m (1,260 kgf-cm, 91 ft-lbf)



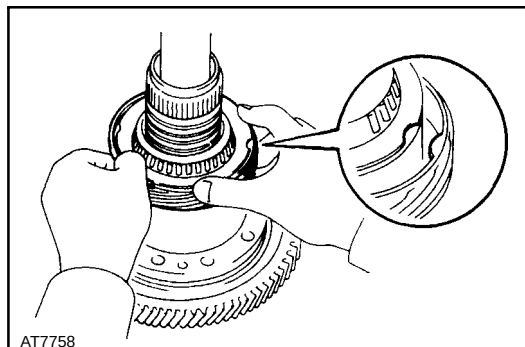
10. CHECK OPERATION OF FRONT DIFFERENTIAL

Check that the front differential turns smoothly.



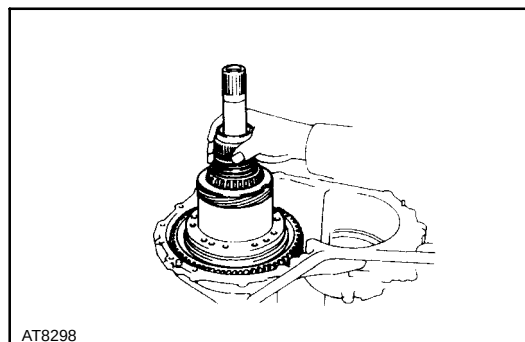
11. INSTALL SPEEDOMETER DRIVE GEAR

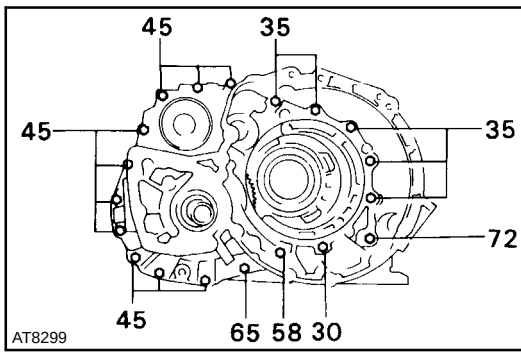
- (a) Place the speedometer drive gear on the ring gear mounting case.
- (b) Install the snap ring.



12. CHECK AND ADJUST DIFFERENTIAL SIDE BEARING PRELOAD

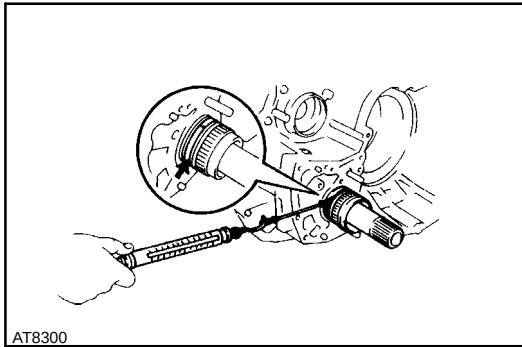
- (a) Install the differential assembly to the transaxle case.





(b) Install the transaxle housing to the transaxle case.

Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)



(c) Turn the differential assembly counterclockwise and clockwise several times.

(d) Using a spring tension gauge, measure the differential side bearing preload.

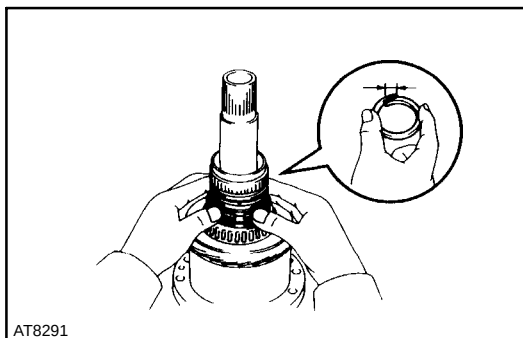
Preload (at starting):

New bearing 245 - 43.1 N
(2.5 - 4.4 kg, 5.5 - 9.7 lb)

Reused bearing 12.7 - 21.6 N
(1.3 - 2.2 kg, 2.9 - 4.9 lb)

If the preload is not within specification, select the thrust washer.

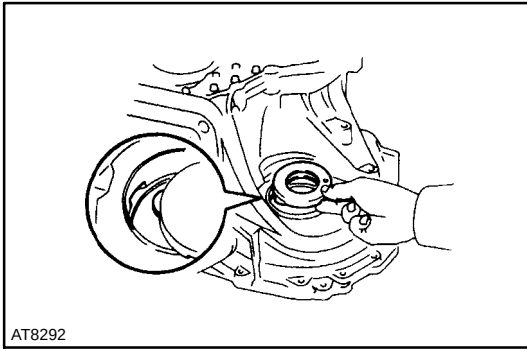
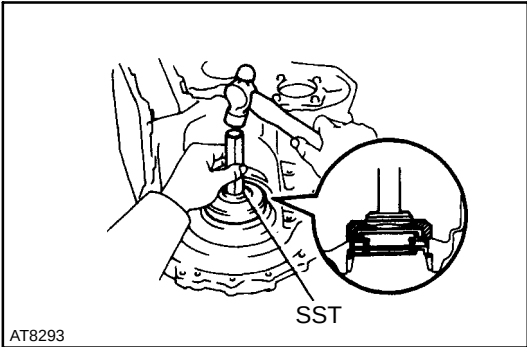
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
51	2.00 (0.0787)	J	2.24 (0.0882)	61	2.50 (0.0984)
B	2.03 (0.0799)	K	2.27 (0.0894)	62	2.55 (0.1004)
C	2.06 (0.0811)	57	2.30 (0.0906)	63	2.60 (0.1024)
D	2.09 (0.0823)	M	2.33 (0.0917)	64	2.65 (0.1043)
E	2.12 (0.0835)	N	2.36 (0.0929)	65	2.70 (0.1063)
54	2.15 (0.0846)	P	2.39 (0.0941)	66	2.75 (0.1083)
G	2.18 (0.0858)	Q	2.42 (0.0953)	67	2.80 (0.1102)
H	2.21 (0.0870)	60	2.45 (0.0965)	68	2.85 (0.1122)



(e) Remove the differential assembly from the trans-axle case.

13. INSTALL DIFFERENTIAL OIL SEAL RINGS

Install the two oil seal rings to the ring gear mounting case lower side grooves.

**14. INSTALL TRANSMISSION OIL BAFFLE****15. INSTALL OIL SEAL**

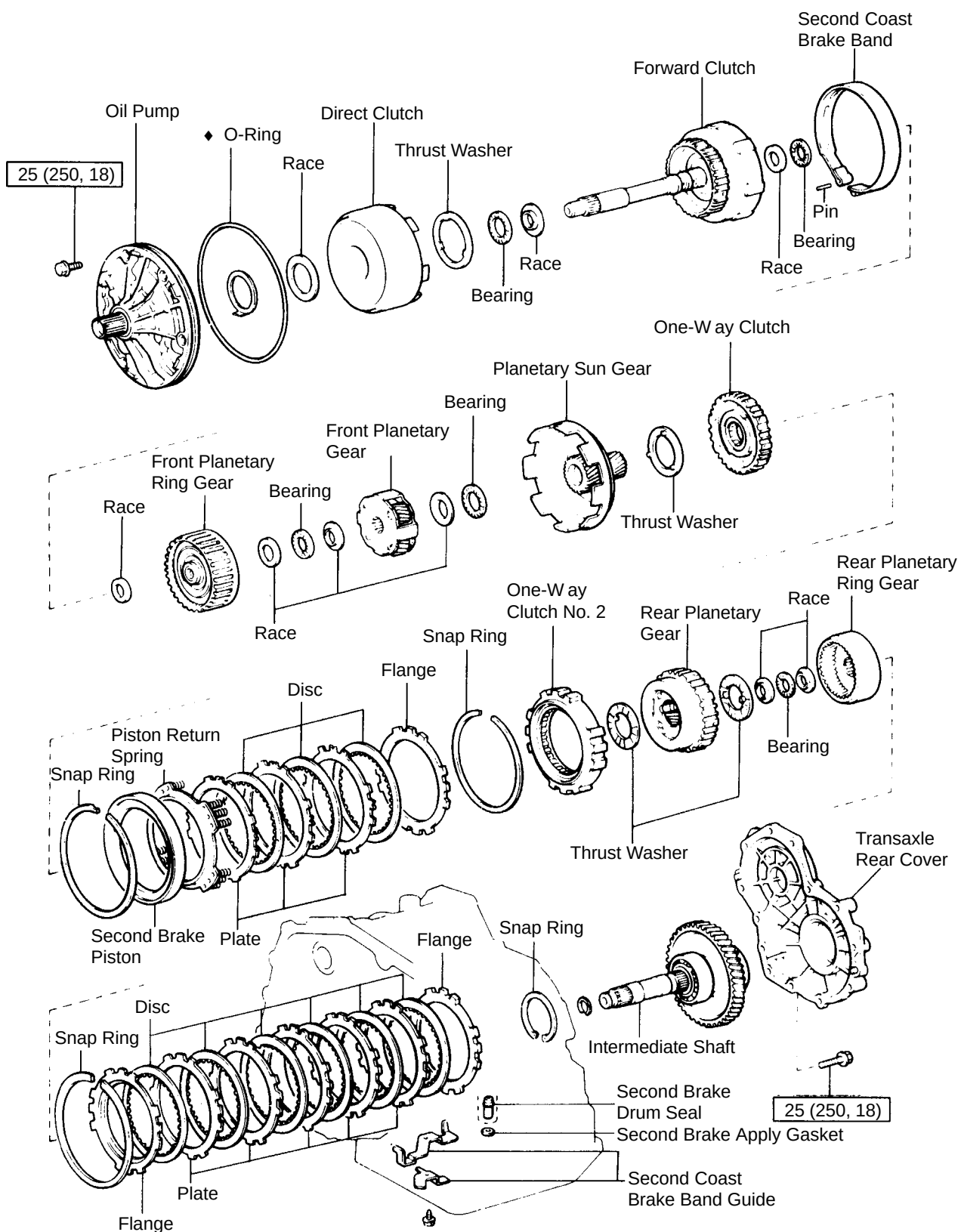
- (a) Using SST, drive in a new oil seal to the transaxle case.

SST 09223-15010

- (b) Coat the oil seal lip with MP grease.

[illegible]

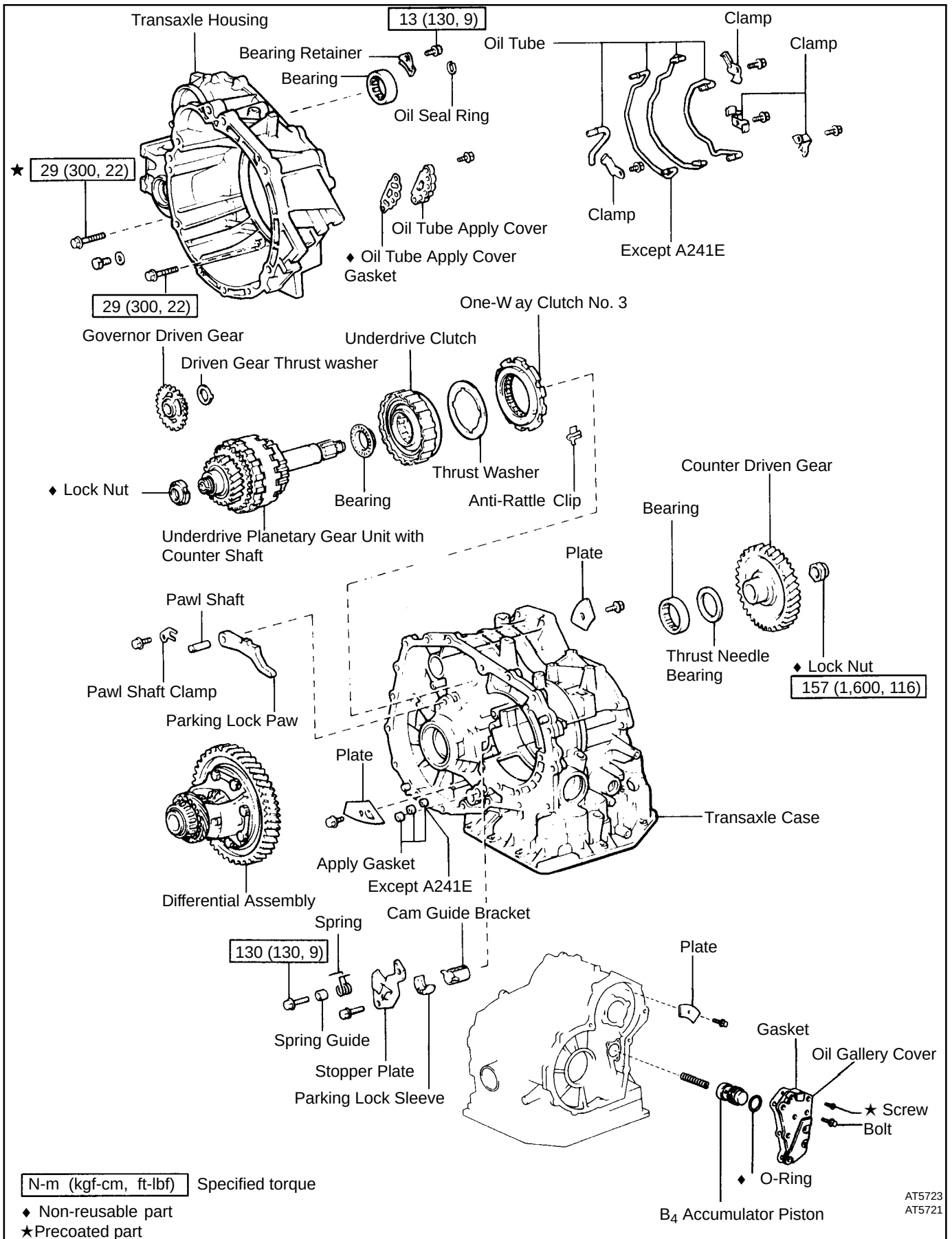
COMPONENTS (Cont'd)

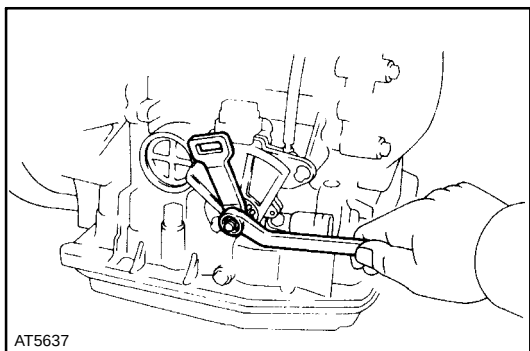


N-m (kgf-cm, ft-lbf) : Specified torque

◆ Non-reusable part

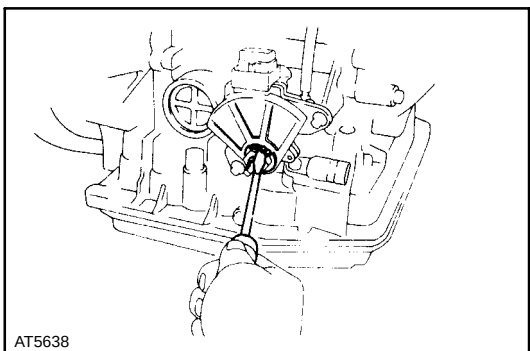
COMPONENTS (Cont'd)



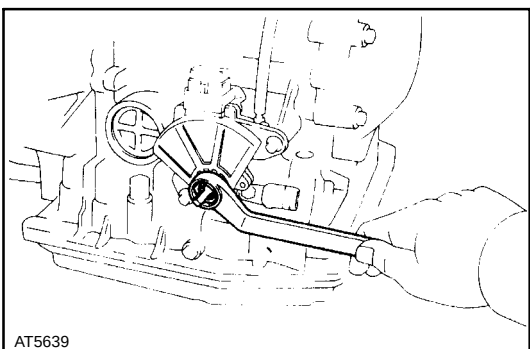


SEPARATE BASIC SUBASSEMBLY

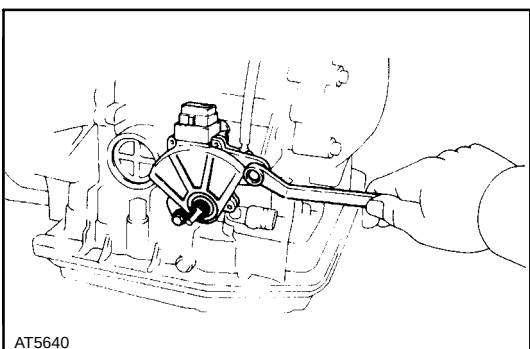
1. **REMOVE TWO OIL COOLER PIPES**
2. **REMOVE TRANSMISSION DIPSTICK AND FILLER TUBE**
3. **REMOVE MANUAL SHIFT LEVER**
Remove the nut, washer and manual shift lever.



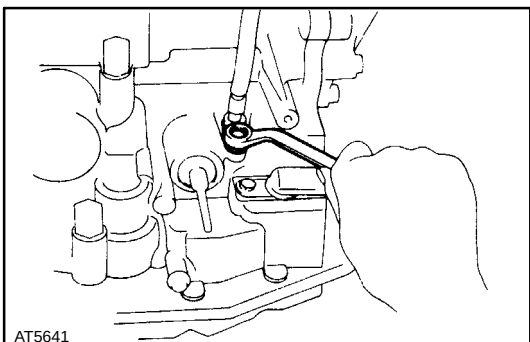
4. **REMOVE NEUTRAL START SWITCH**
(a) Using a screwdriver, pry off the lock washer.



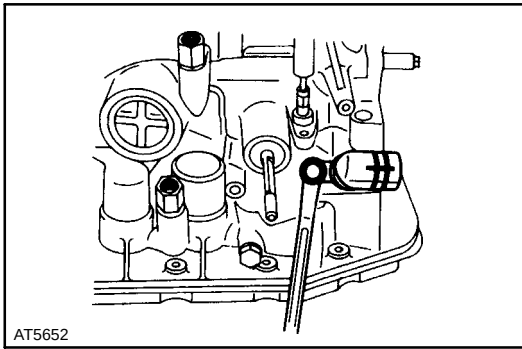
- (b) Remove the nut and lock washer.
- (c) (A240L, A241E)
Remove the packing.



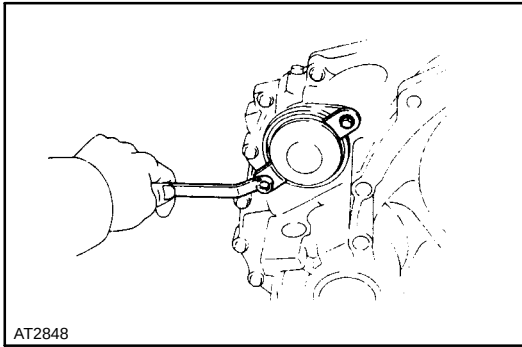
- (d) Remove the two bolts and pull out the neutral start switch.



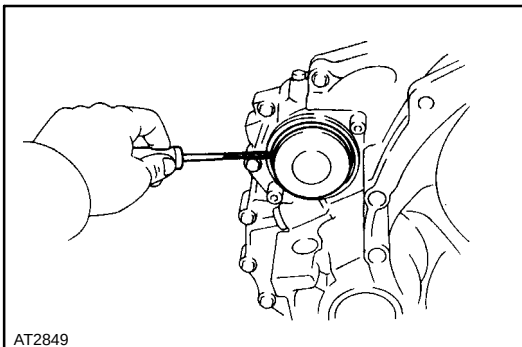
5. **REMOVE THROTTLE CABLE RETAINING PLATE**
Remove the bolt and plate.

**6. REMOVE SOLENOID WIRE RETAINING PLATE**

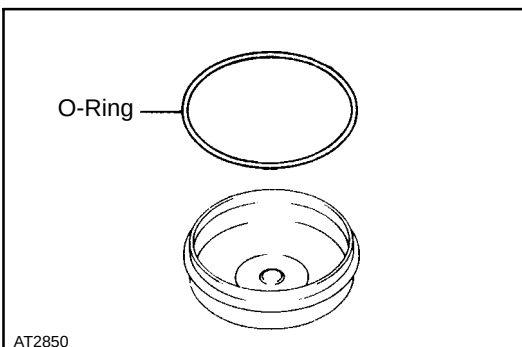
Remove the bolt and plate.

**7. (A240L, A2431L)****REMOVE GOVERNOR BODY**

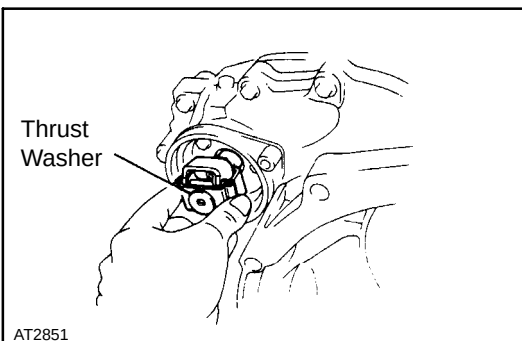
(a) Remove the two bolts and cover brackets.



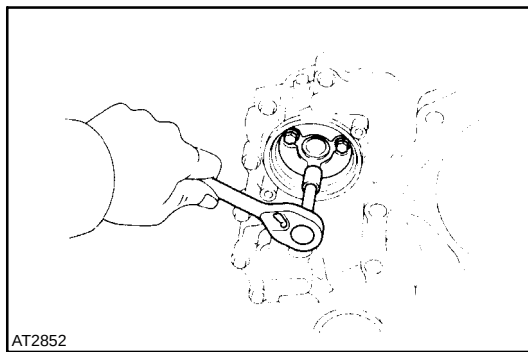
(b) Using a screwdriver, remove the governor cover.
HINT: Tape the screwdriver tip before use so as not to damage the cover or transaxle.



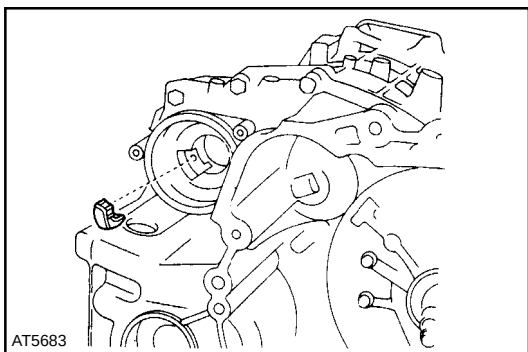
(c) Remove the O-Ring from cover.



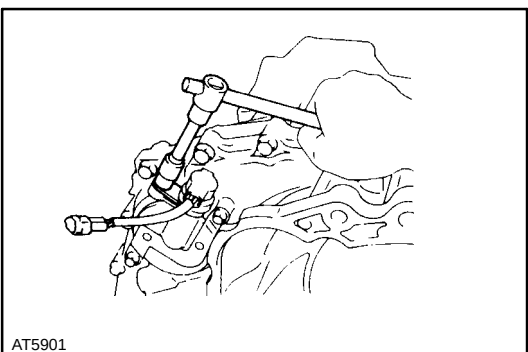
(d) Remove the governor body with thrust washer.



- (e) Remove the three bolts and governor body adaptor with gasket.

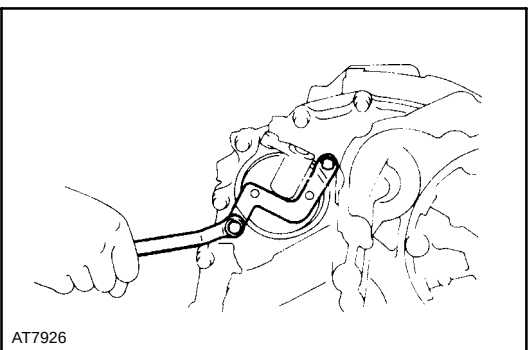


- (f) Remove the governor oil strainer.

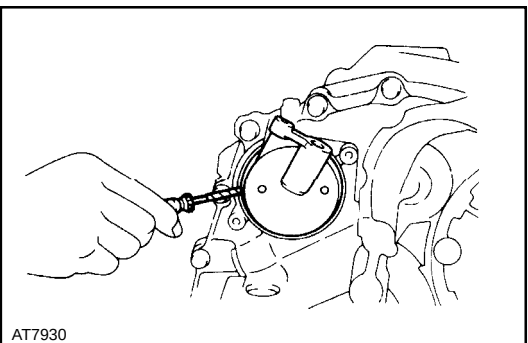


**8. (A241E)
REMOVE SPEED SENSOR AND SENSOR ROTOR**

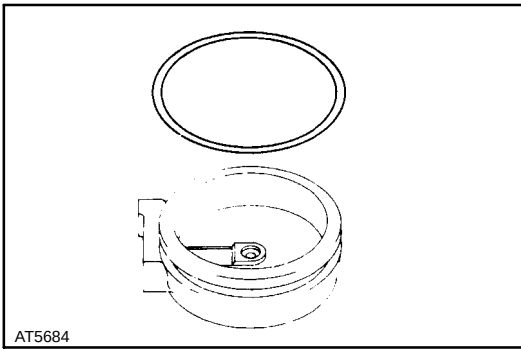
- (a) Remove the retaining plate and pull out the speed sensor.
(b) Remove the O-ring from speed sensor.



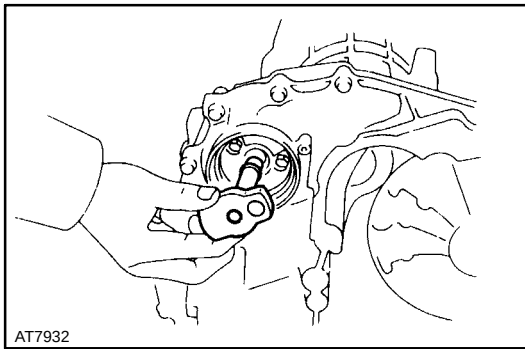
- (c) Remove the two bolts and sensor cover bracket.



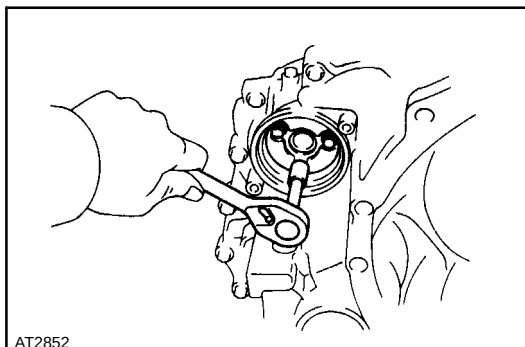
- (d) Using a screwdriver, remove the sensor cover.
HINT: Tape the screwdriver tip before use so as not to damage the cover or transaxle.



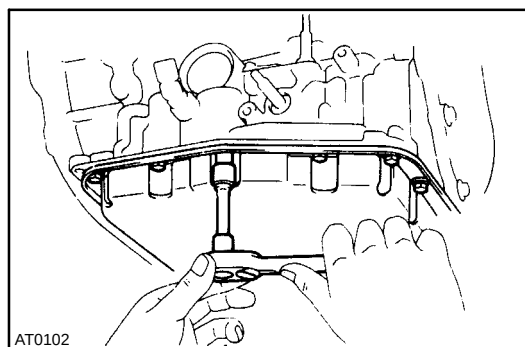
(e) Remove the O-Ring from the sensor cover.



(f) Remove the sensor rotor.



(g) Remove the three bolts and sensor adaptor.



9. REMOVE PAN AND GASKET

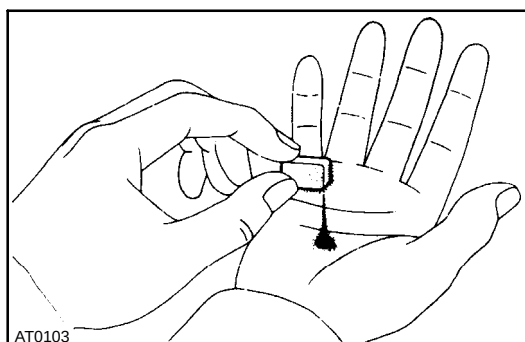
(a) Remove the eighteen bolts.

(b) Remove the pan by lifting the transmission case.

NOTICE: Do not turn the transmission over as it will contaminate the valve body with the foreign materials in the bottom of the pan.

(c) Remove the gasket.

(d) Place the transmission on wooden blocks to prevent damage to the pipes.

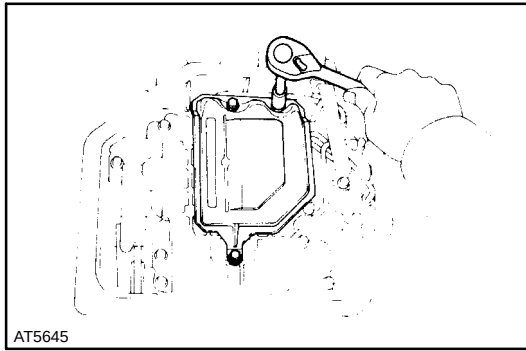


10. EXAMINE PARTICLES IN PAN

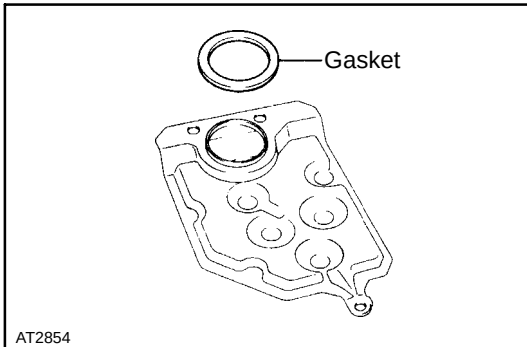
Remove the magnets and use them to collect any steel clips. Look carefully at the chips and particles in the pan and on the magnet to anticipate what type of wear you will find in the transmission:

Steel (magnetic) bearing, gear and plate wear
Brass (non-magnetic) bushing wear

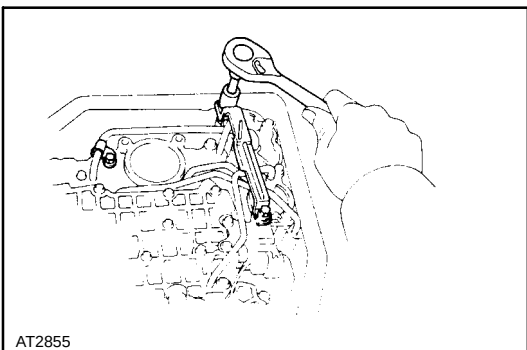
11. TURN TRANSMISSION OVER

**12. REMOVE OIL STRAINER**

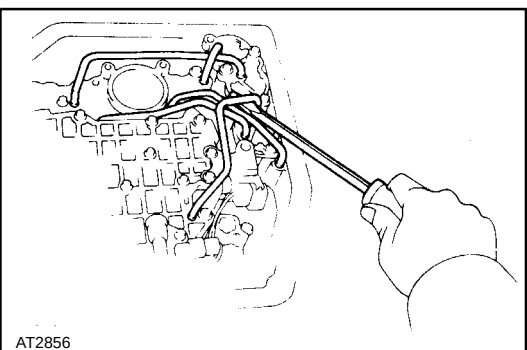
- (a) Remove the three bolts and oil strainer.



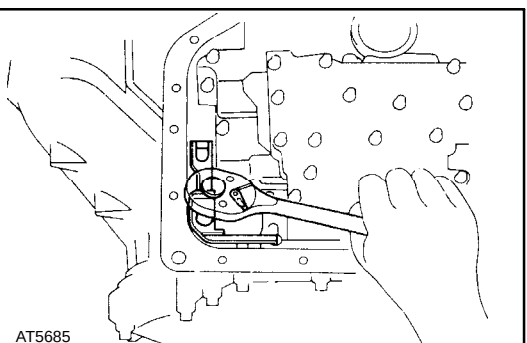
- (b) Remove the gasket.

**13. REMOVE OIL TUBES**

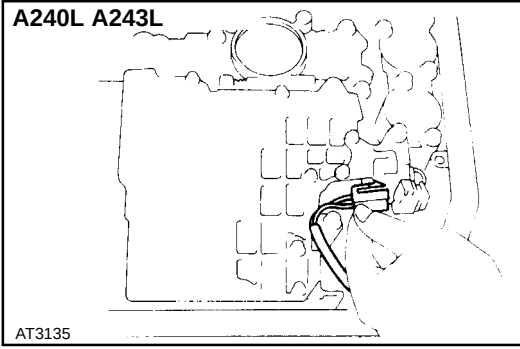
- (a) Remove the two bolts and tube gasket.
(b) Remove the tube clamp bolt and clamp.



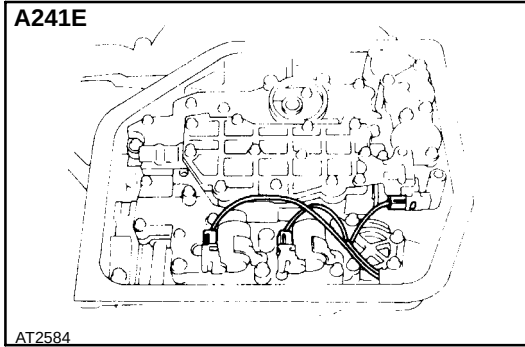
- (c) Pry up both ends with a large screwdriver and remove the five tubes.

**14. REMOVE MANUAL DETENT SPRING**

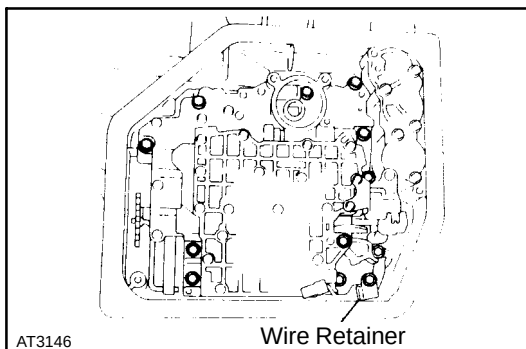
A240L A243L



A241E

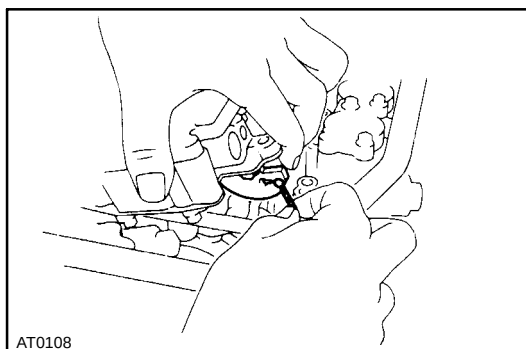


15. DISCONNECT SOLENOID CONNECTORS

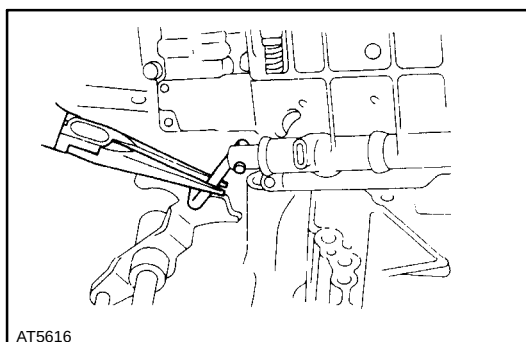


16. REMOVE VALVE BODY

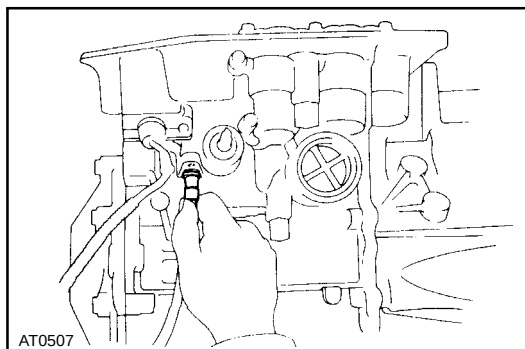
- (a) Remove the twelve bolts and wire retainer as shown.



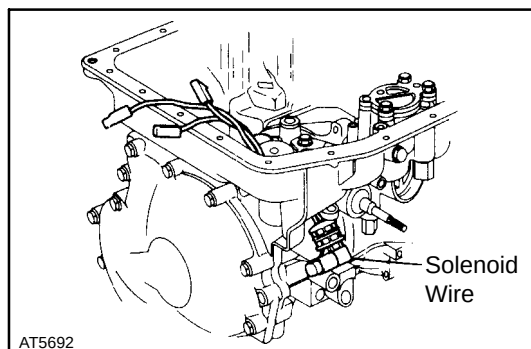
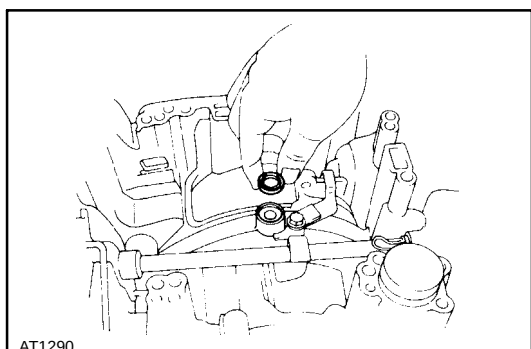
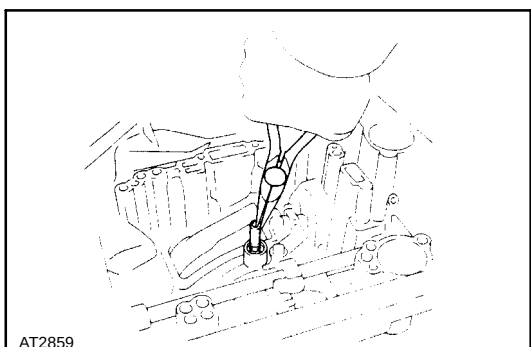
- (b) Disconnect the throttle cable from the cam.



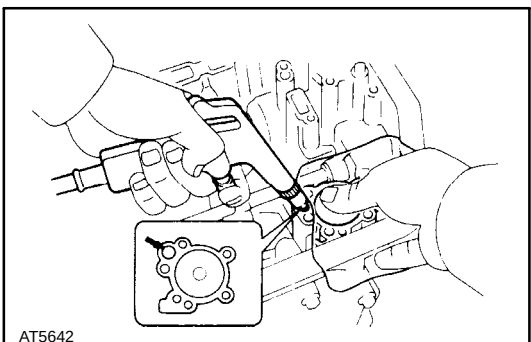
- (c) While disconnecting the manual valve connecting rod from the manual valve lever, remove the valve body.
- (d) Remove the manual valve from the valve body.

**17. REMOVE THROTTLE CABLE FROM CASE**

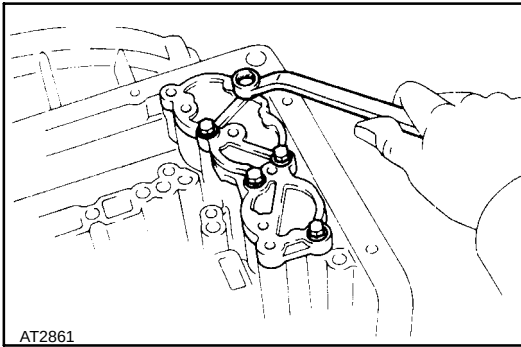
Pull out the throttle cable.

**18. REMOVE SOLENOID WIRE****19. REMOVE SECOND BRAKE APPLY GASKET****20. REMOVE SECOND BRAKE DRUM SEAL**

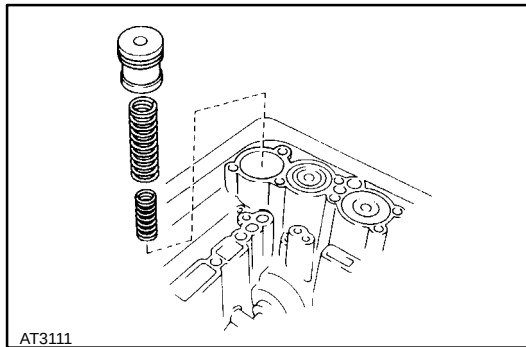
Using a needle nose pliers, pull out the second brake drum seal.

**21. REMOVE C₃ ACCUMULATOR PISTON AND SPRING**

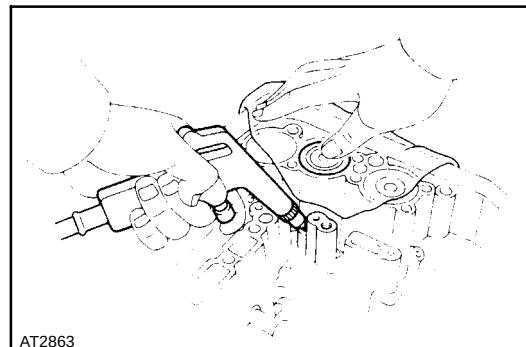
Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the piston into a rag. Force air into the hole shown and remove the piston and spring.

**22. REMOVE ACCUMULATOR PISTONS AND SPRINGS**

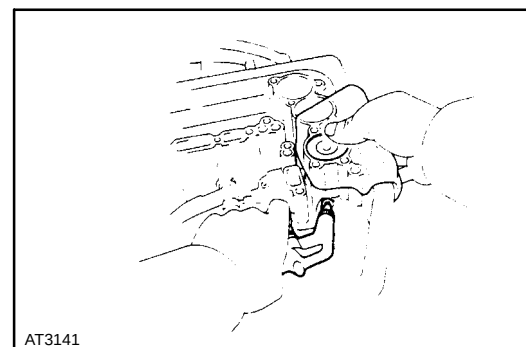
- (a) Loosen the five bolts one turn at a time until the spring tension is released.
- (b) Remove the cover and gasket.
- (c) (A240L)
Remove the cover, gasket and spring on the B₂ piston.



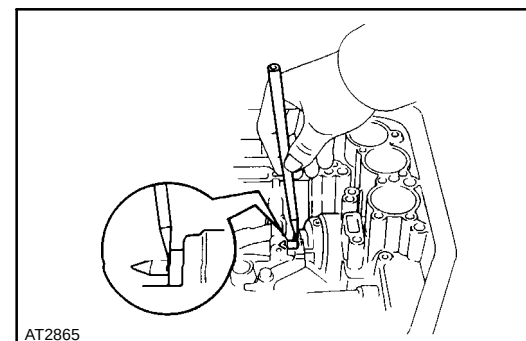
- (d) Remove the C₁ piston and two springs.



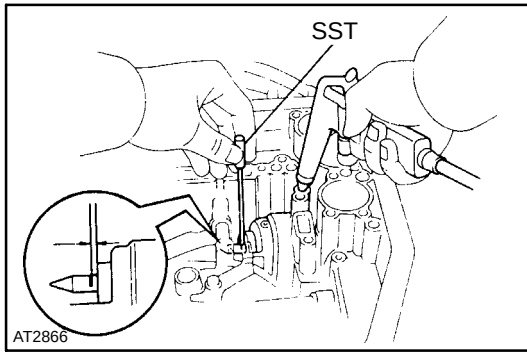
- (e) Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the C₂ piston into a rag. Force air into the hole shown and remove the piston and spring.



- (f) Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the B₂ into the a rag. Force air into the hole shown and remove the piston and spring.

**23. MEASURE PISTON STROKE OF SECOND COAST BRAKE**

- (a) Apply a small amount of paint to the piston rod at the point it meets the case as shown in the illustration.

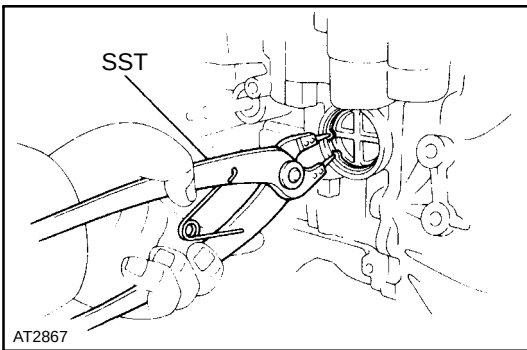


- (b) Using SST, measure the piston stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi) as shown.

SST 09240-00020

Piston stroke: 1.5 - 3.0 mm (0.059 - 0.118 in.)

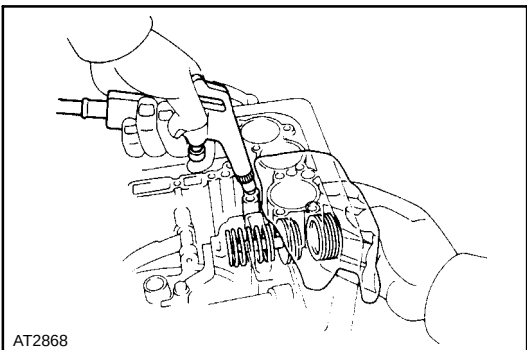
If the piston stroke exceeds the limit, inspect the brake band.



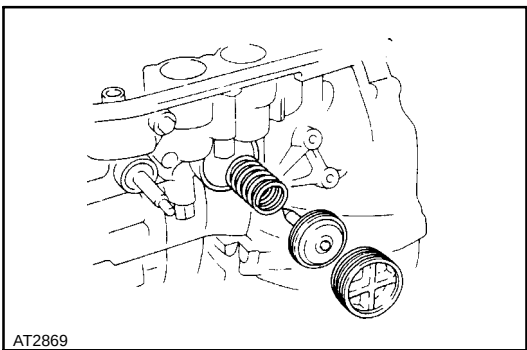
24. REMOVE SECOND COAST BRAKE PISTON

- (a) Using SST, remove the snap ring.

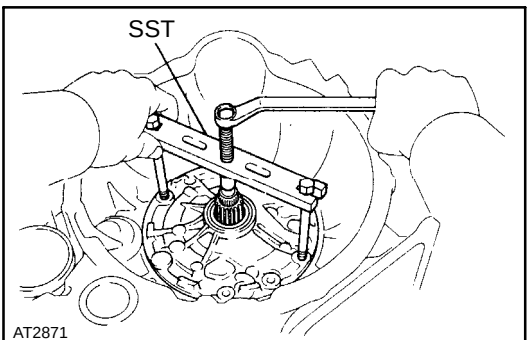
SST 09350-32014 (09351-32050)



- (b) Using low-pressure compressed air (98 kPa, 1 kg/cm², 14 psi), pop out the cover into a rag. Force air into the hole shown.



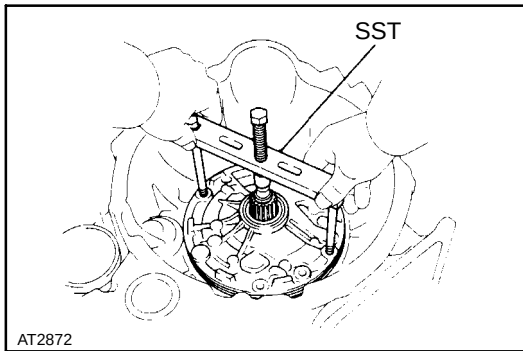
- (c) Remove the cover, piston and spring.
(d) Remove the two O-rings from the cover.



25. REMOVE OIL PUMP

- (a) Remove the six bolts holding the oil pump to the transmission case.
(b) Using SST, pull the oil pump free from the transmission case.

SST 09350-32014 (09351-32061)

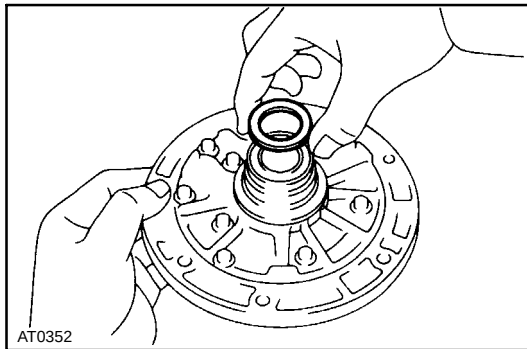


(c) Remove the oil pump with SST.

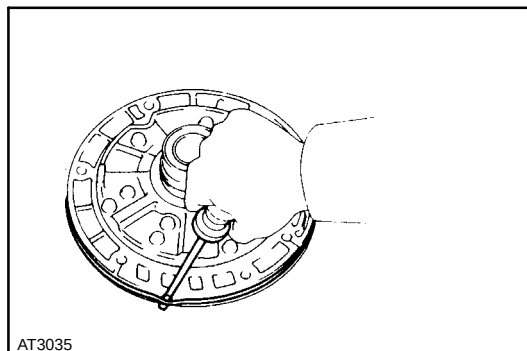
SST 09350-32014 (09351-32061)

NOTICE: Be careful not to drop or damage the races and bearing behind oil pump.

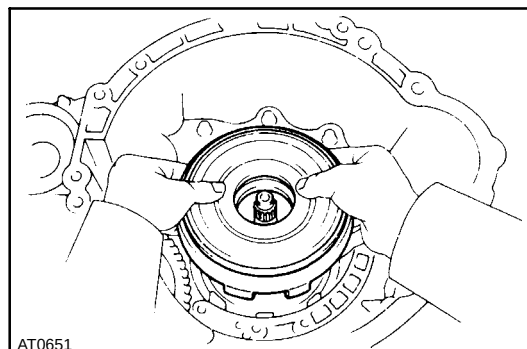
(d) Remove SST from the oil pump.



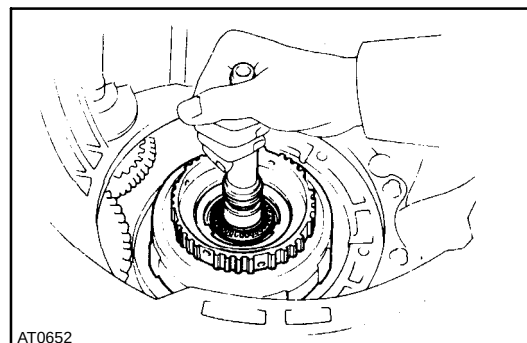
(e) Remove the race from the oil pump.



(f) Remove the O-ring from the oil pump.

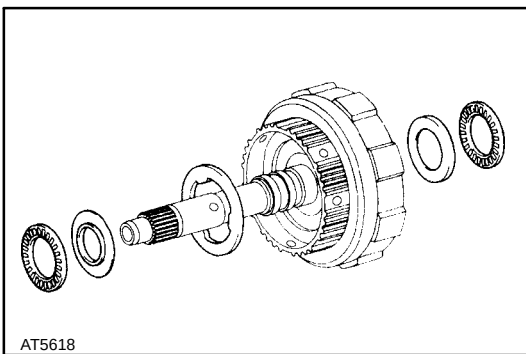


26. REMOVE DIRECT CLUTCH

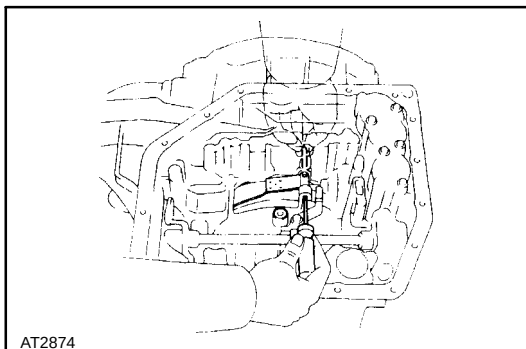


27. REMOVE FORWARD CLUTCH

(a) Remove the forward clutch with bearing and race.

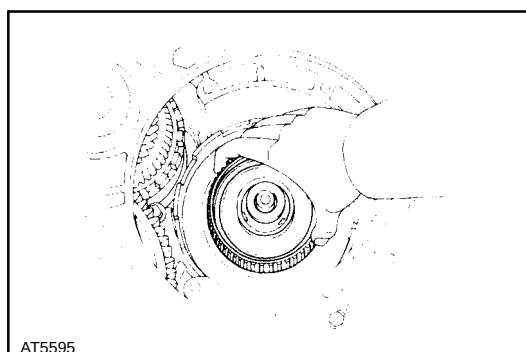


- (b) Remove the thrust washer, bearings and races from the forward clutch.



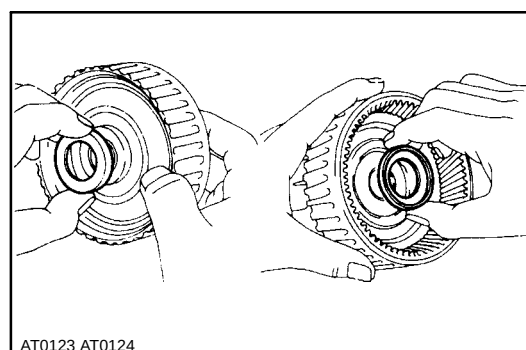
28. REMOVE SECOND COAST BRAKE BAND

- (a) Push the pin with a small screwdriver and remove it from the bolt hole of the oil pump mounting.
- (b) Remove the brake band.

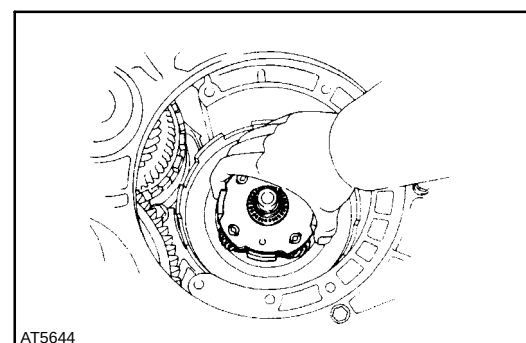


29. REMOVE FRONT PLANETARY RING GEAR

- (a) Remove the front planetary ring gear with race.

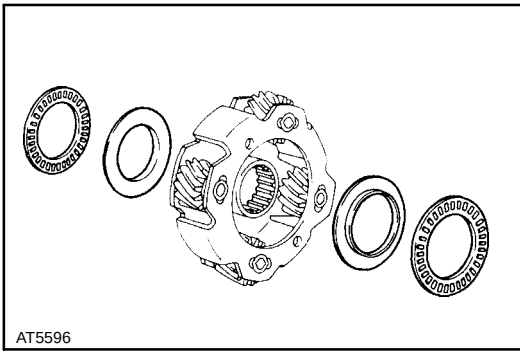


- (b) Remove the races from the ring gear.

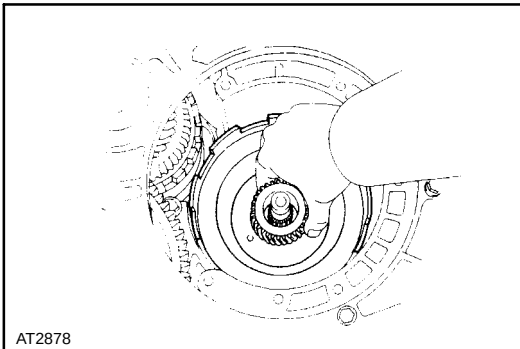


30. REMOVE FRONT PLANETARY GEAR

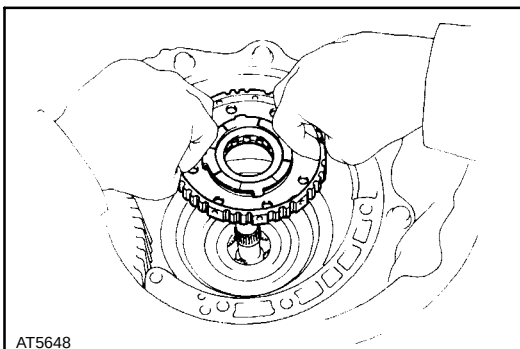
- (a) Remove the front planetary gear with bearing and race.



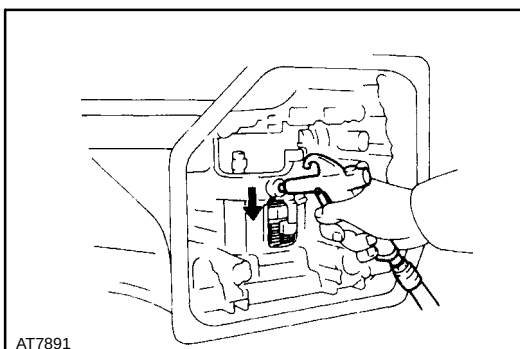
- (b) Remove the races and bearings from the planetary gear.



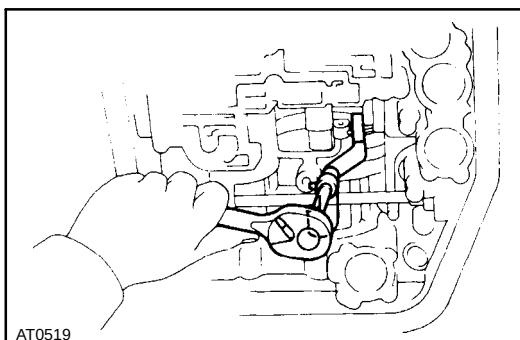
- 31. REMOVE SUN GEAR, SUN GEAR INPUT DRUM AND THRUST WASHER**



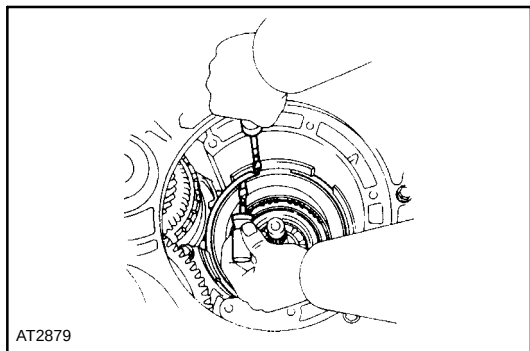
- 32. REMOVE SECOND BRAKE HUB AND NO. 1 ONE-WAY CLUTCH**



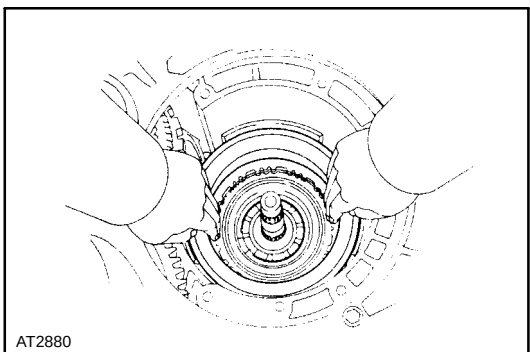
- 33. CONFIRM THAT SECOND BRAKE PISTON MOVES**
Using compressed air, confirm that the second brake piston moves smoothly.



- 34. REMOVE SECOND COAST BRAKE BAND GUIDE**

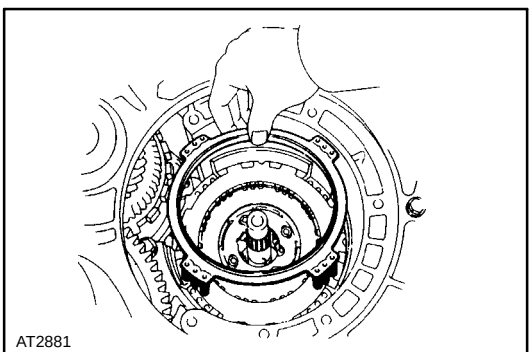


35. REMOVE SNAP RING HOLDING SECOND BRAKE DRUM TO CASE



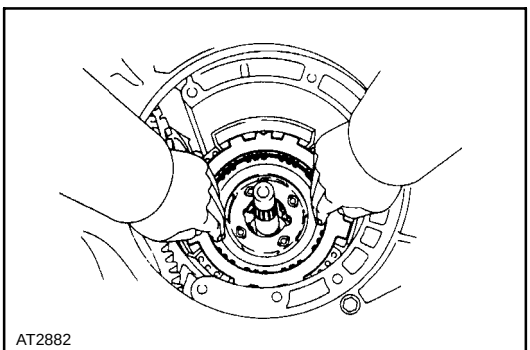
36. REMOVE SECOND BRAKE DRUM

HINT: If the brake drum is difficult to remove, lightly cap it with a wooden block.

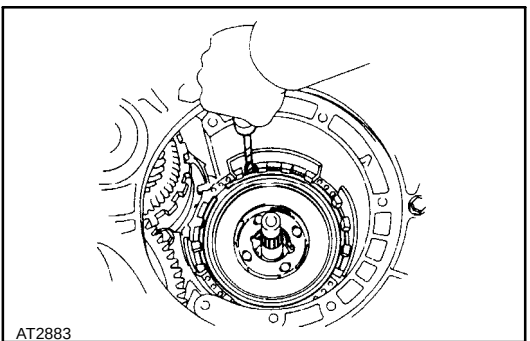


37. REMOVE SECOND BRAKE PISTON RETURN SPRING

- (a) Remove the thrust washer.
- (b) Remove the return spring.

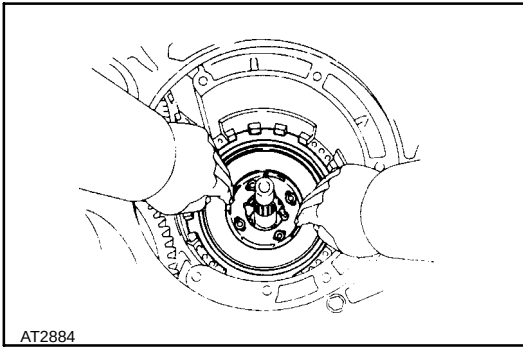


38. REMOVE PLATES, DISCS AND FLANGE

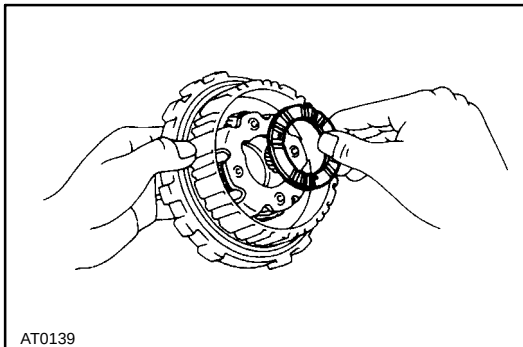


39. REMOVE SNAP RING HOLDING NO. 2 ONE-WAY CLUTCH OUTER RACE TO CASE

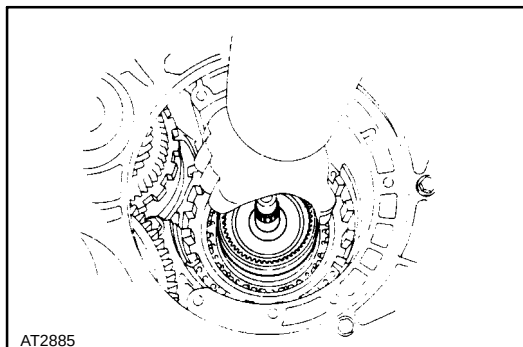
Using a screwdriver, remove the snap ring.

**40. REMOVE NO. 2 ONE-WAY CLUTCH AND REAR PLANETARY GEAR**

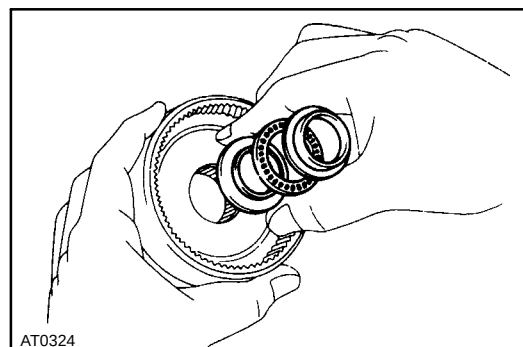
- (a) Remove the No. 2 one-way clutch and rear planetary gear with thrust washer.



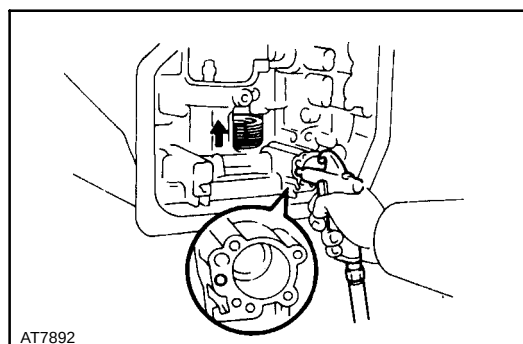
- (b) Remove the thrust washer from the gear.

**41. REMOVE REAR PLANETARY RING GEAR**

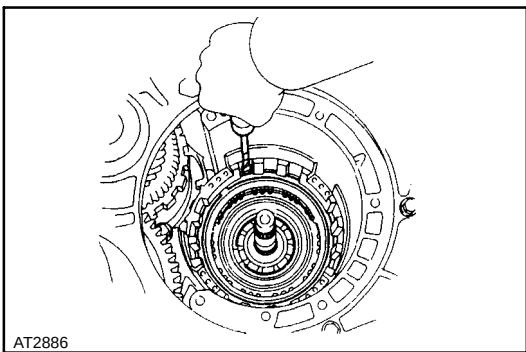
- (a) Remove the rear planetary ring gear with bearing and races.



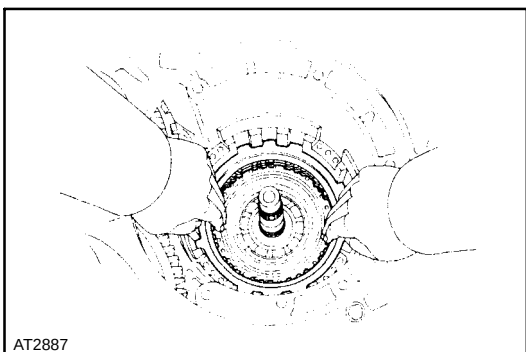
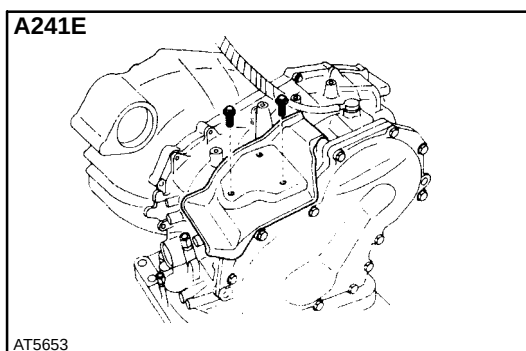
- (b) Remove the bearing and races from the ring gear.

**42. CONFIRM THAT FIRST AND REVERSE BRAKE PISTON MOVES**

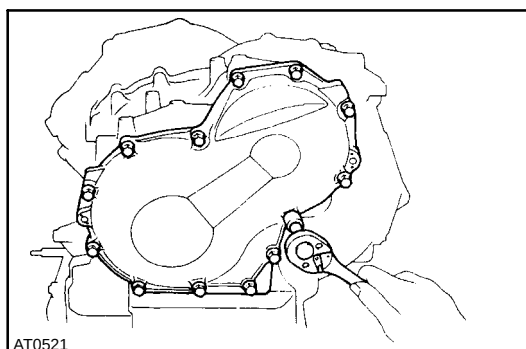
Using compressed air, confirm that the first and reverse brake piston moves smoothly.

**43. REMOVE SNAP RING HOLDING FLANGE TO CASE**

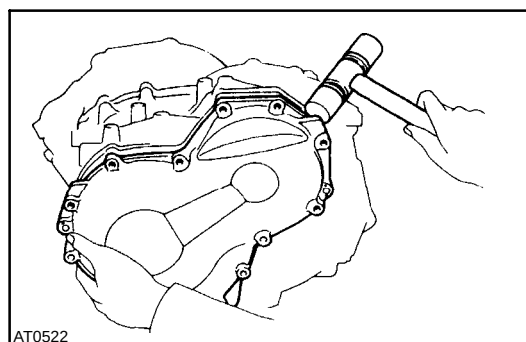
Using a screwdriver, remove the snap ring.

**44. REMOVE FLANGES, PLATES AND DISCS****45. (A241E)**

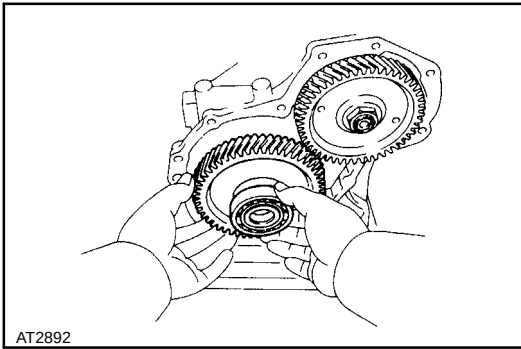
REMOVE ENGINE MOUNTING LEFT BRACKET

**46. REMOVE TRANSAXLE REAR COVER**

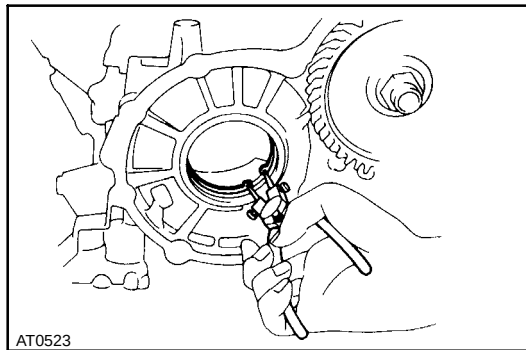
(a) Remove the thirteen bolts:



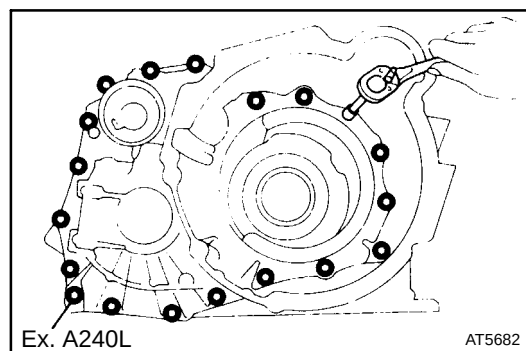
(b) Tap off the circumference of the cover with a plastic hammer to remove the cover from the transmission case, and remove the cover.

**47. REMOVE INTERMEDIATE SHAFT**

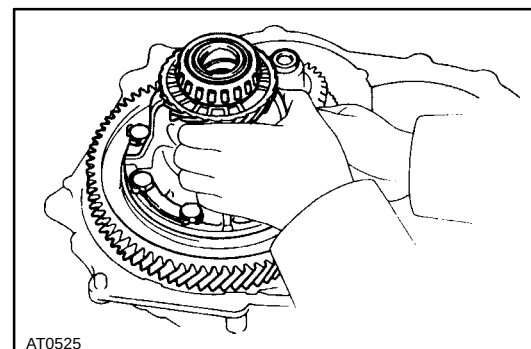
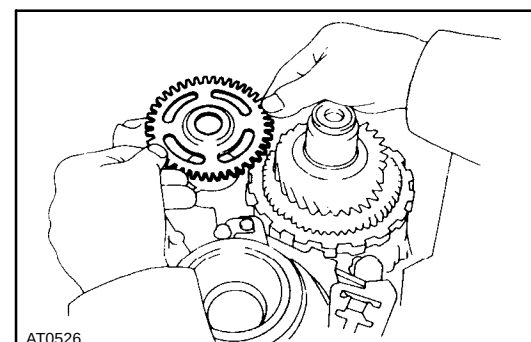
Remove the intermediate shaft from the transmission case.

**48. REMOVE SNAP RING**

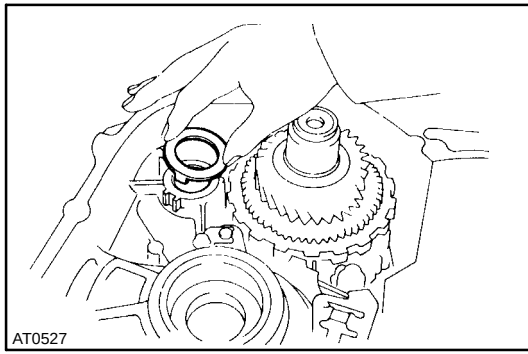
Using snap ring pliers, remove the snap ring.

**49. REMOVE TRANSAXLE HOUSING**

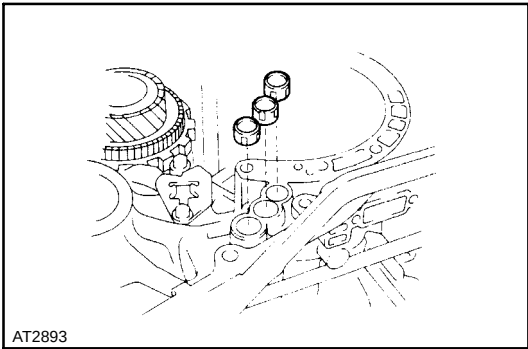
Remove the bolts and transaxle housing.
(A241E, A243L) nineteen bolts
(A240L) eighteen bolts

**50. REMOVE DIFFERENTIAL****51. REMOVE GOVERNOR DRIVEN GEAR**

(a) Remove the governor driven gear.



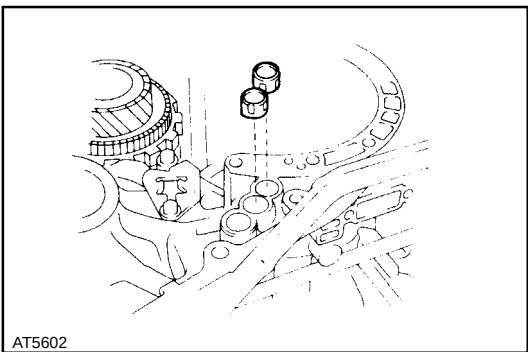
- (b) Remove the thrust washer.



52. REMOVE APPLY GASKETS

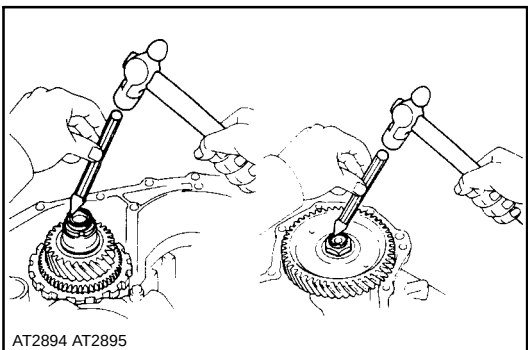
(A240L, A243L)

Remove the three gaskets.



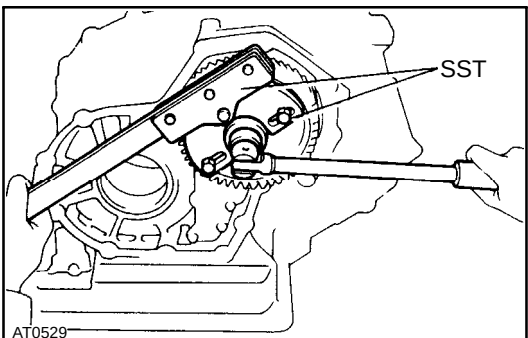
(A241E)

Remove the two gaskets.



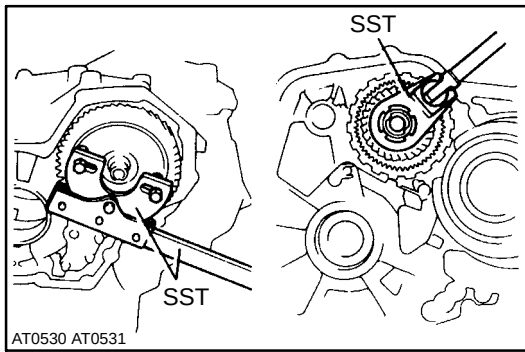
53. REMOVE COUNTER SHAFT LOCK NUTS

- (a) Using a chisel and hammer, unstake the counter shaft lock nut on both sides.



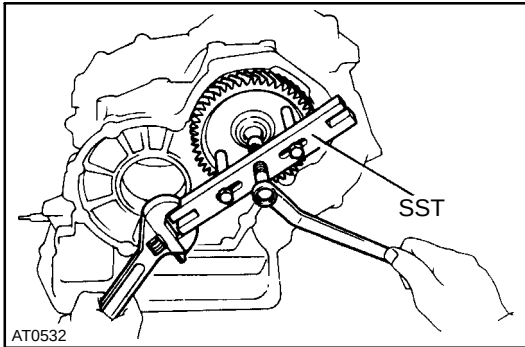
- (b) Using SST, remove the lock nut of the driven gear side.

SST 09330-00021, 09350-32014 (09351-32032)



- (c) Using SST to hold the driven gear, remove the lock nut of the another side.

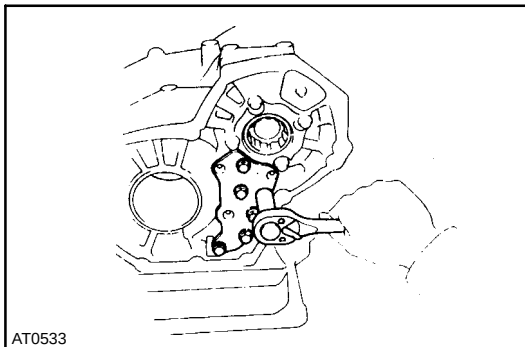
SST 09330-00021 and
09350-32014 (09351-32032, 09351-32170)



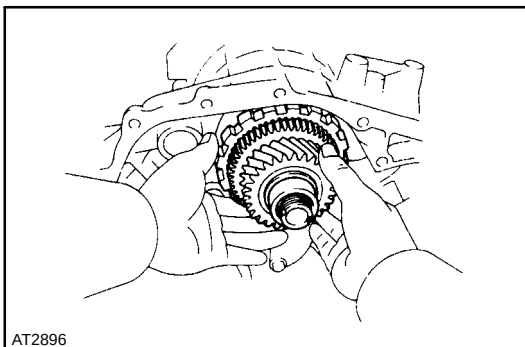
54. REMOVE COUNTER DRIVEN GEAR

Using SST, remove the driven gear.

SST 09350-32014 (09351-32061)

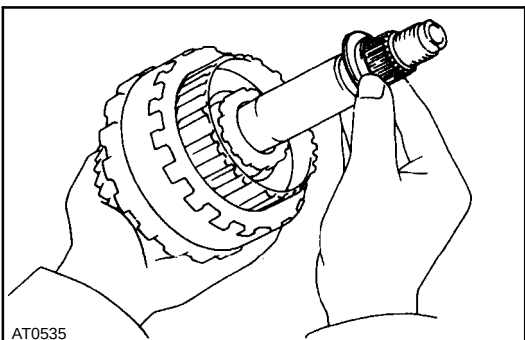


55. REMOVE THRUST NEEDLE BEARING



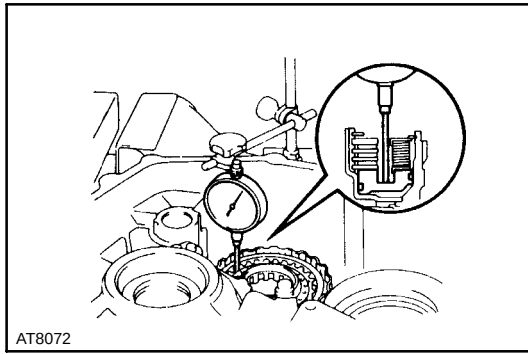
56. REMOVE COUNTER SHAFT ASSEMBLY

Pull out the counter shaft assembly.



57. REMOVE THRUST BEARING WITH RACE

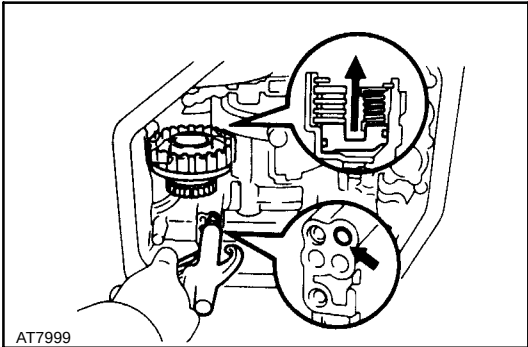
Remove the thrust bearing with race from the counter shaft assembly.



58. CHECK PISTON STROKE OF UNDERDRIVE CLUTCH

- (a) Set a dial indicator (long type pick or SST) as shown.

SST 09350-32014 (09351-32190)



- (b) Applying and releasing the compressed air (392 785 kPa, 4 - 8 kg/cm², 57 - 114 psi), measure the underdrive clutch piston stroke.

Piston stroke:

A241E 1.21 - 1.55 mm (0.0476 - 0.0610 in.)

A2401L, A243L

1.50 - 1.86 mm (0.0591 - 0.0732 in.)

If the piston stroke is nonstandard, select another flange.

HINT: There are two or three different flange thickness.

Flange thickness:

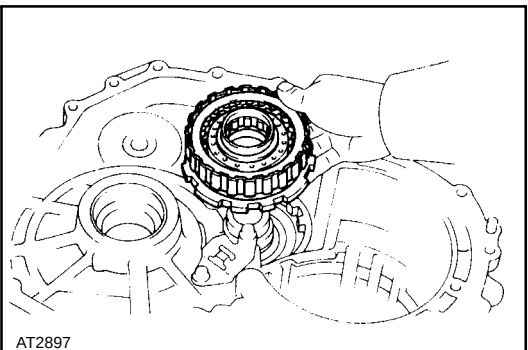
A240L 2.04 mm (0.0803 in.)

2.40 mm (0.0945 in.)

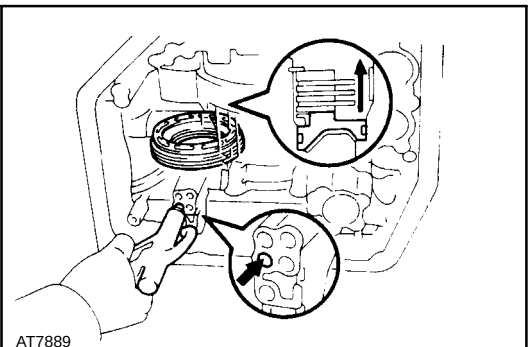
A241E, A243L 2.30 mm (0.0906 in.)

2.50 mm (0.0984 in.)

2.70 mm (0.1063 in.)

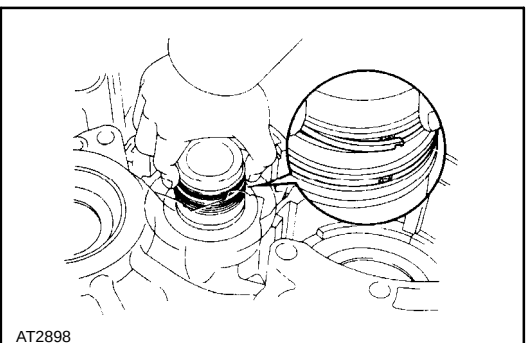


59. REMOVE UNDERDRIVE CLUTCH DRUM AND ANTI-RATTLE CLIP



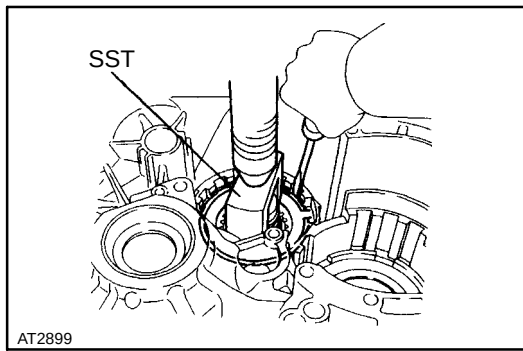
60. CONFIRM THAT UNDERDRIVE BRAKE PISTON MOVES

Using compressed air, confirm that the underdrive brake piston moves smoothly.



61. REMOVE OIL SEAL RINGS

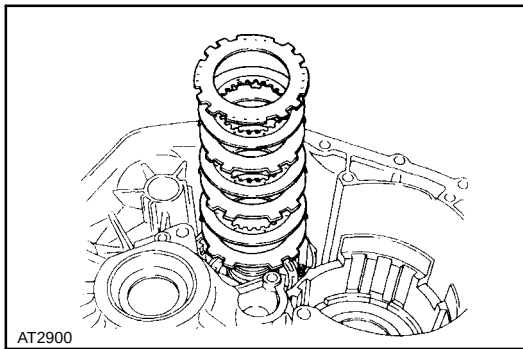
Remove the two oil seal rings.

**62. REMOVE FLANGE, PLATES AND DISCS**

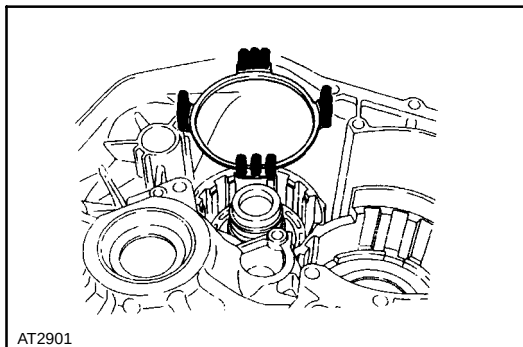
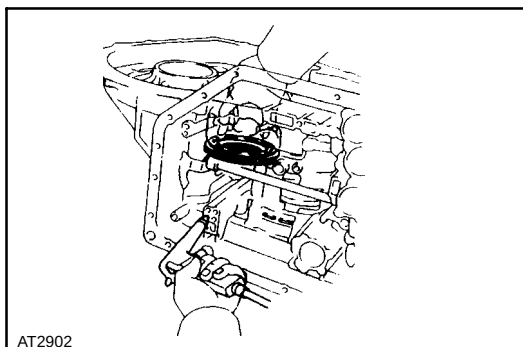
- (a) Using SST and press, press in the flange until the snap ring is free from the flange.

SST 09350-32014 (09351-32070)

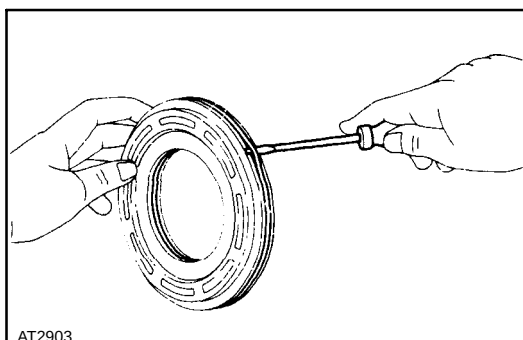
- (b) Using a screwdriver, remove the snap ring.



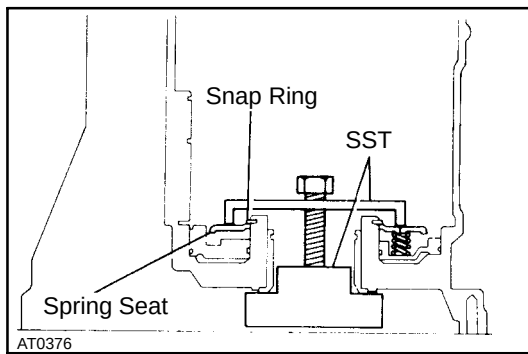
- (c) Remove the flange, three plates and discs.

**63. REMOVE RETURN SPRING****64. REMOVE UNDERDRIVE BRAKE PISTON**

Using low-pressure compressed air (88 kPa, 1 kg/cm², 14 psi), pop out the brake piston into a rag. Force air into the hole shown and remove the brake piston.

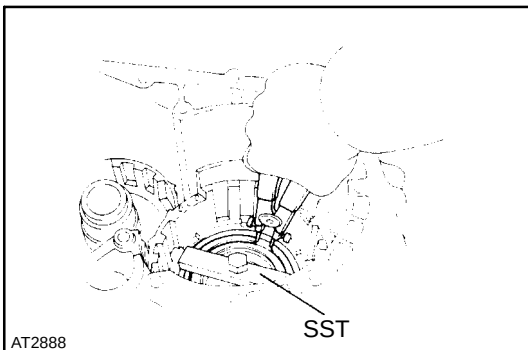
**65. REMOVE O-RINGS FROM PISTON**

Remove the two O-rings from the piston.

**68. REMOVE SNAP RING**

- (a) Set SST, and tighten the bolt gradually to compress the springs until the snap ring is free from the spring seat.

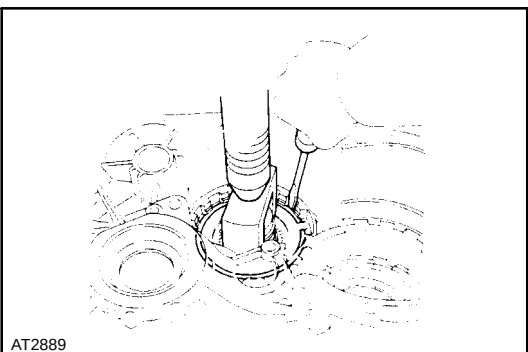
SST 09350-32014 (09351-32040)



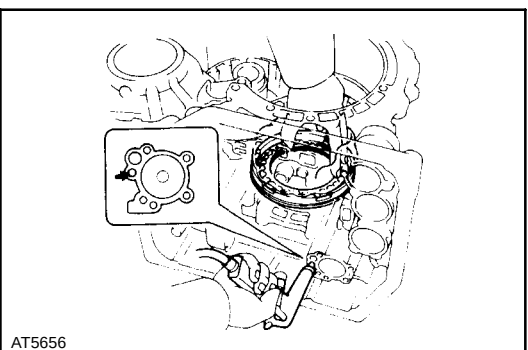
- (b) Using snap ring pliers, remove the snap ring.

- (c) Remove SST.

SST 09350-32013 (09351-32040)

**67. REMOVE RETURN SPRING**

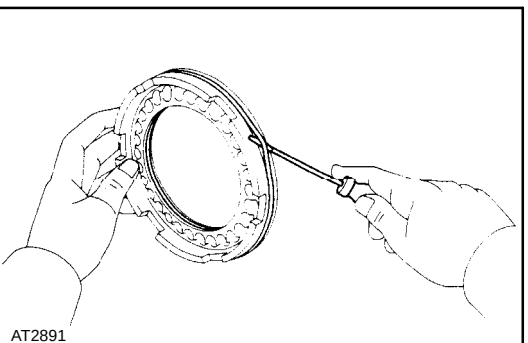
Remove the return spring and snap ring.

**68. REMOVE PISTON FROM TRANSMISSION CASE WITH COMPRESSED AIR**

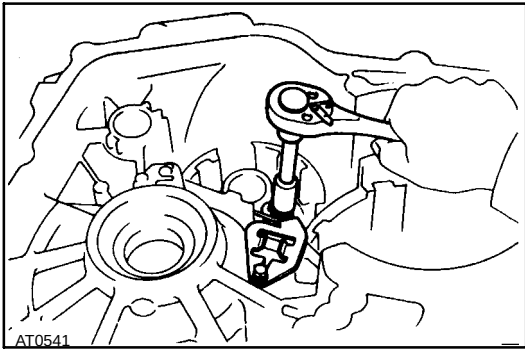
- (a) Apply compressed air into the oil passage of the case to remove the piston.

HINT: Hold the piston so it is not slanted and blow with the gun slightly away from the oil hole.

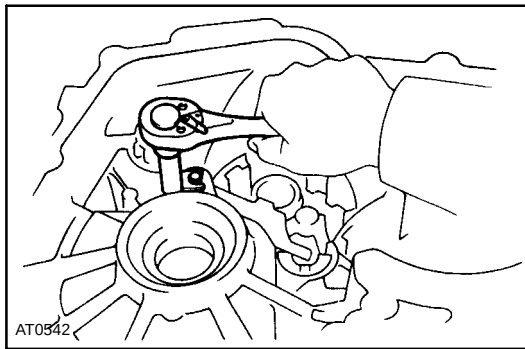
- (b) If the piston does not pop out with compressed air, use needle-nose pliers to remove it.

**69. REMOVE O-RINGS FROM PISTON**

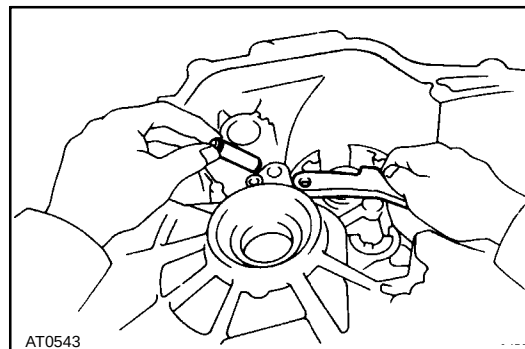
Remove the two O-rings from the piston.



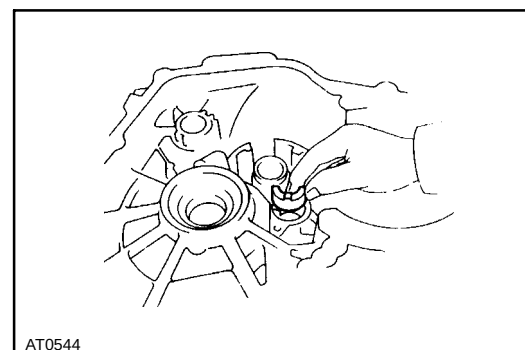
- 70. REMOVE PARKING LOCK PAWL STOPPER PLATE, TORSION SPRING AND SPRING GUIDE**



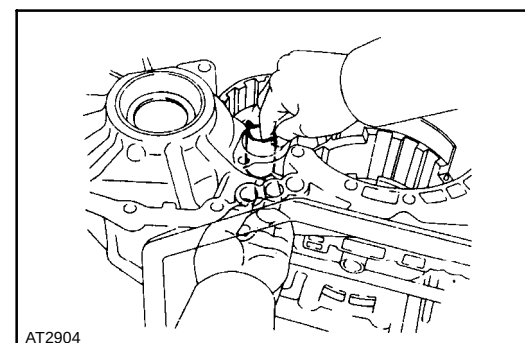
- 71. REMOVE PAWL SHAFT CLAMP**
Remove the bolt and pawl shaft clamp.



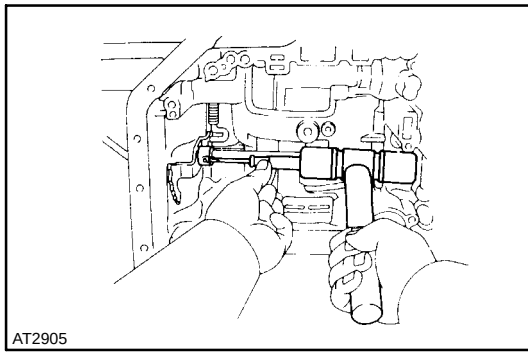
- 72. REMOVE PARKING LOCK PAWL SHAFT AND LOCK PAWL**



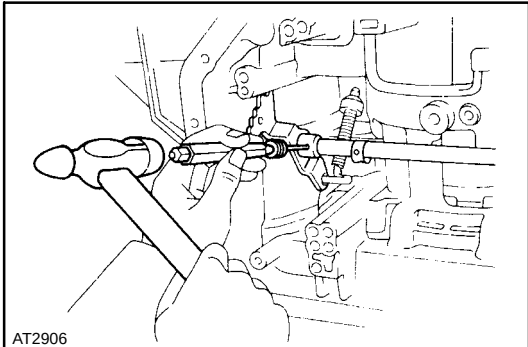
- 73. REMOVE PARKING LOCK SLEEVE**



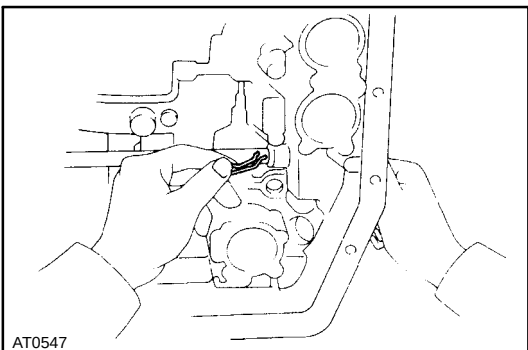
- 74. REMOVE CAM GUIDE BRACKET**
Remove the cam guide bracket as shown.

**75. REMOVE MANUAL VALVE SHAFT SPACER**

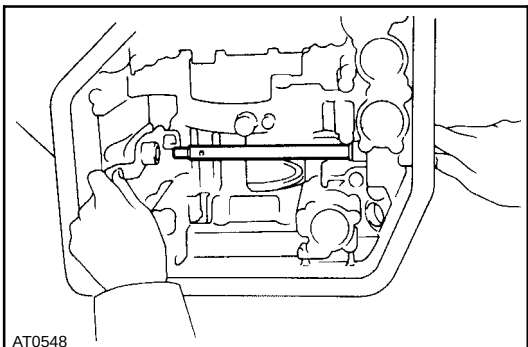
Using a screwdriver and hammer, unstake the spacer and remove it.

**76. REMOVE PIN**

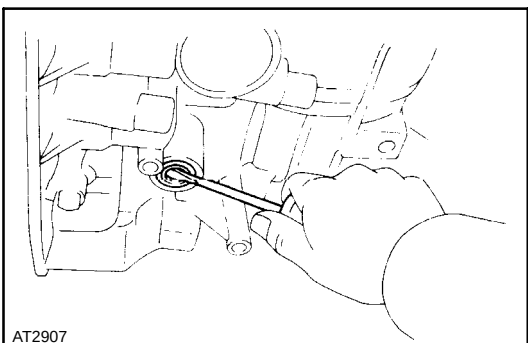
Using a punch and hammer, drive out the pin.

**77. REMOVE MANUAL VALVE SHAFT AND LEVER**

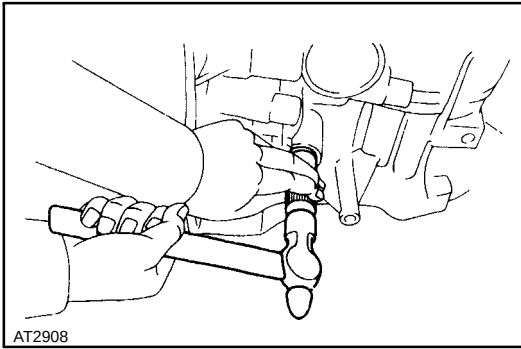
(a) Remove the retaining spring.



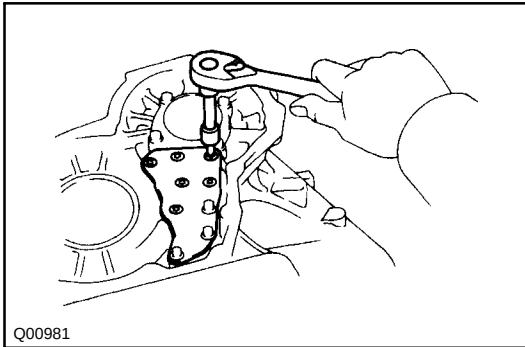
(b) Slide out the manual valve shaft and remove the manual valve lever and washer.

**78. IF NECESSARY, REPLACE OIL SEAL OF MANUAL SHAFT**

(a) Using a screwdriver, remove the oil seal.

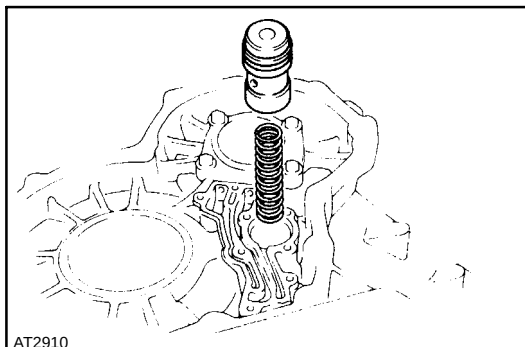


- (b) Using a 14 mm socket wrench and hammer, drive in a new oil seal.
- (c) Apply MP grease to the oil seal lip.

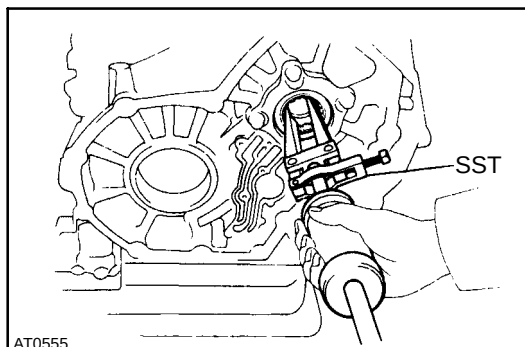


79. REMOVE OIL GALLERY COVER AND GASKET

- (e) Remove the three bolts.
- (b) Using a Torx wrench, remove the six screws. Remove the gallery cover and gasket.

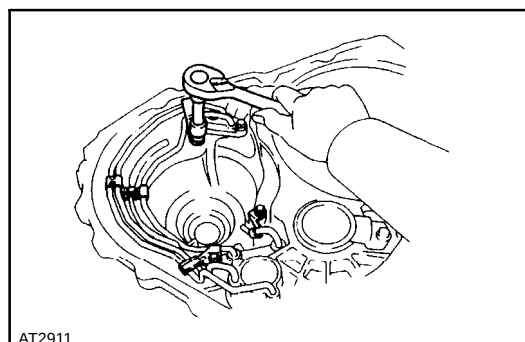


80. REMOVE B₄ ACCUMULATOR PISTON AND SPRING



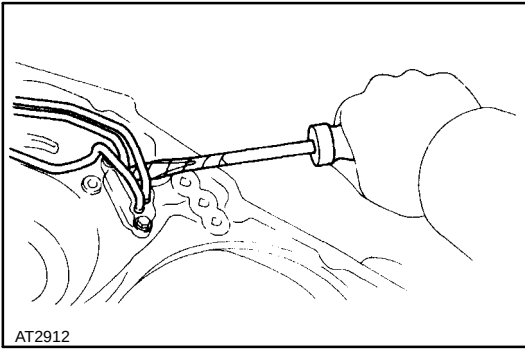
81. REMOVE BEARING

Using SST, remove the bearing.
SST 09308-00010

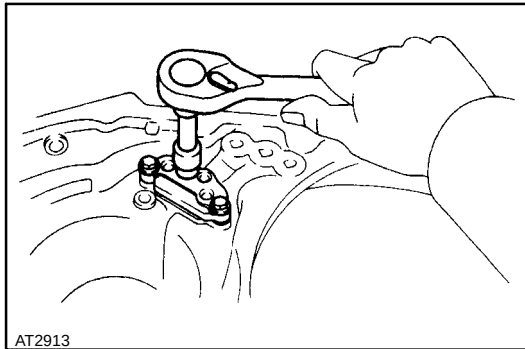


82. REMOVE OIL TUBES

- (a) Remove the four tube clamps from transaxle housing.

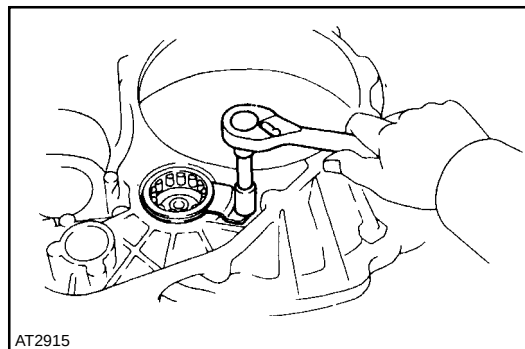


- (b) Using a screwdriver, remove the three (A241E) or four (A240L, A243L) oil tubes.



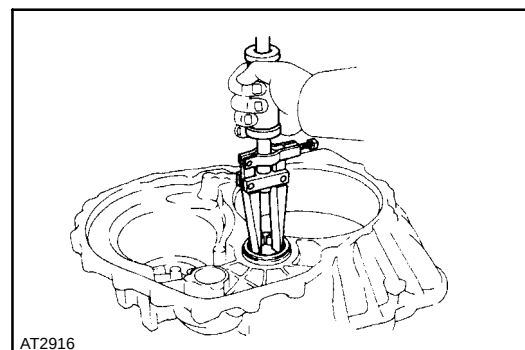
83. REMOVE OIL TUBE APPLY COVER AND GASKET

Remove the three bolts, and remove the cover and gasket.



84. REMOVE BEARING

- (a) Remove the bolt and retainer.



- (b) Using SST, remove the bearing.
SST 09308-00010

INSTALLATION OF COMPONENT PARTS (A241H)

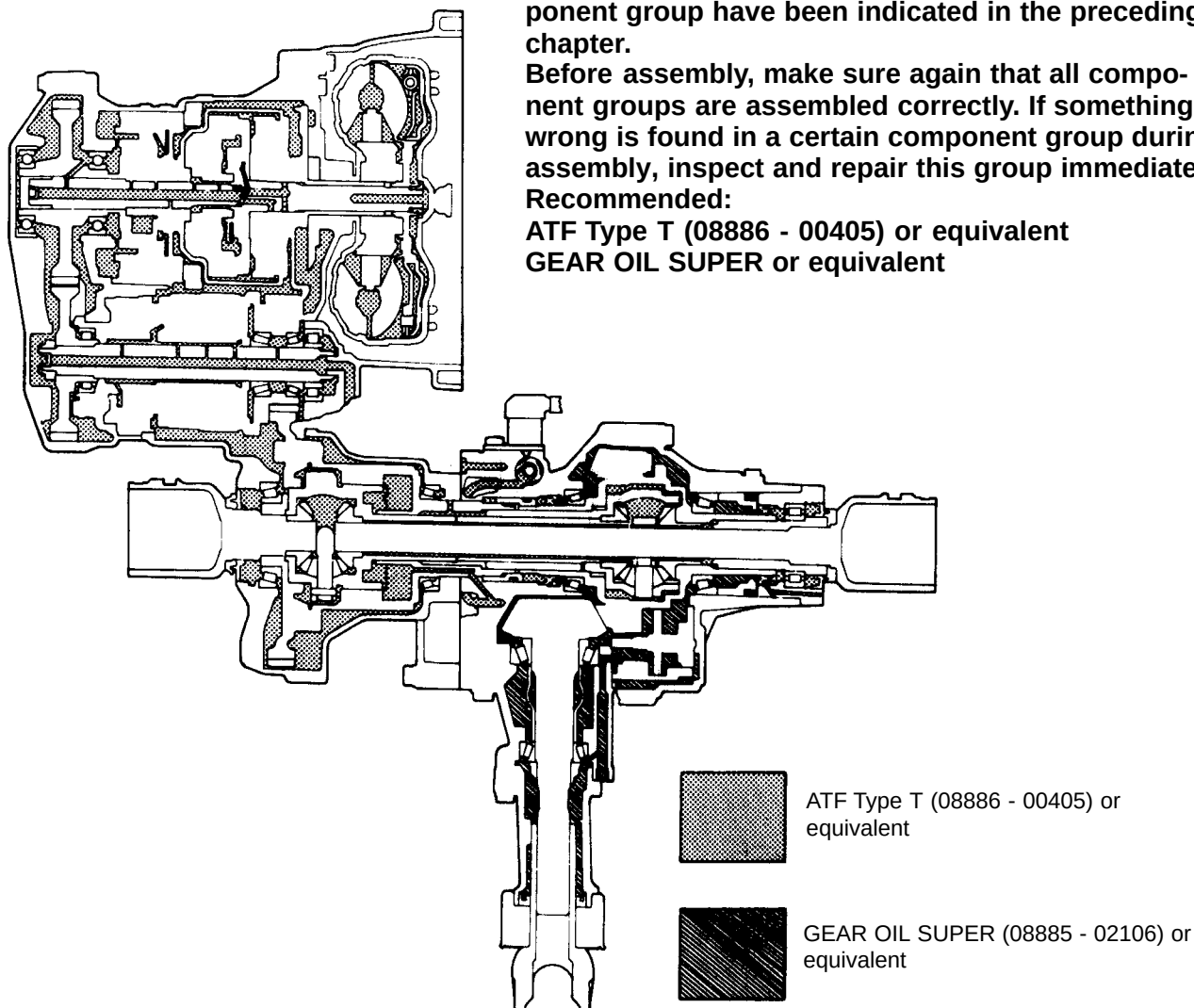
Disassembly, inspection and assembly of each component group have been indicated in the preceding chapter.

Before assembly, make sure again that all component groups are assembled correctly. If something wrong is found in a certain component group during assembly, inspect and repair this group immediately.

Recommended:

ATF Type T (08886 - 00405) or equivalent

GEAR OIL SUPER or equivalent

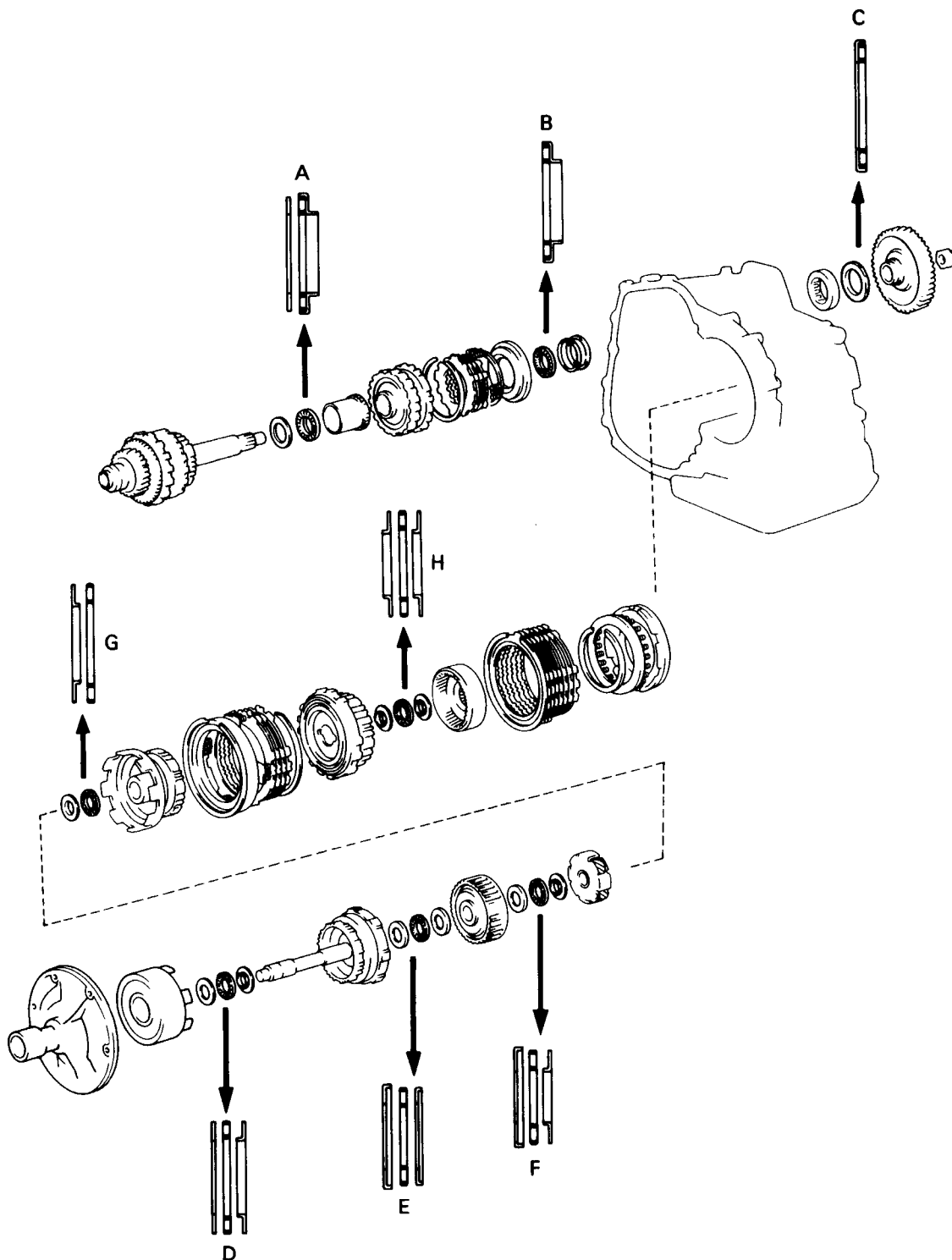


AT4331

GENERAL ASSEMBLY NOTES:

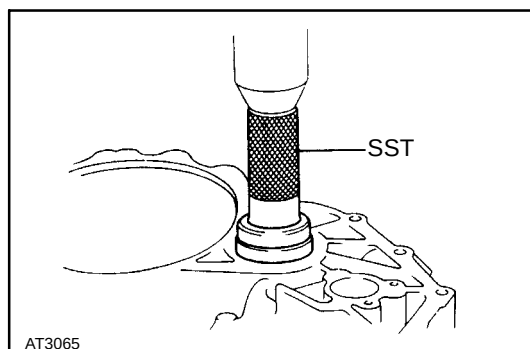
1. The automatic transmission is composed of highly precision finished parts, necessitating careful inspection before assembly, because even a small nick could cause fluid leakage or affect performance.
2. Before assembling new clutch discs, soak them in automatic transmission fluid for at least fifteen minutes.
3. Apply automatic transmission fluid on the sliding or rotating surfaces of parts before assembly.
4. Use petroleum jelly to keep small parts in their place.
5. Do not use adhesive cements on gaskets and similar parts.
6. When assembling the transmission, be sure to use new gaskets and O-rings.
7. Dry all parts by blowing with compressed air. Never use shop rags.

8. Be sure to install the thrust bearings and races in the correct direction and position.



mm (in.)

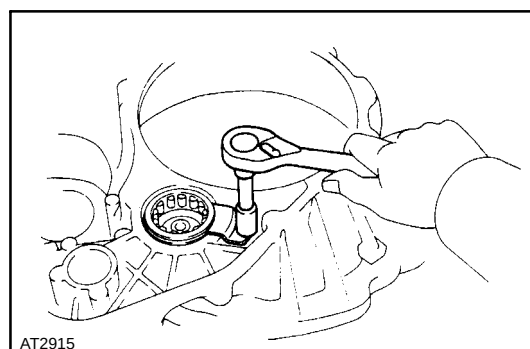
		A	B	C	D	E	F	G	H
Front Bearing Race	Outer Diameter	41.8 (1.646)	—	—	43.0 (1.693)	37.9 (1.492)	←	45.0 (1.772)	37.3 (1.469)
	Inner Diameter	30.0 (1.181)	—	—	30.5 (1.201)	22.0 (0.866)	←	28.0 (1.102)	24.1 (0.949)
Thrust Bering	Outer Diameter	43.7 (1.720)	←	57.7 (2.272)	42.0 (1.654)	36.1 (1.421)	←	45.0 (1.772)	37.6 (1.480)
	Inner Diameter	31.0 (1.220)	←	41.0 (1.614)	28.9 (1.138)	22.2 (0.874)	←	30.0 (1.181)	24.0 (0.945)
Rear Bearing Race	Outer Diameter	—	—	—	42.0 (1.654)	35.7 (1.406)	35.0 (1.378)	—	37.6 (1.480)
	Inner Diameter	—	—	—	27.1 (1.067)	23.0 (0.906)	19.0 (0.748)	—	22.2 (0.874)



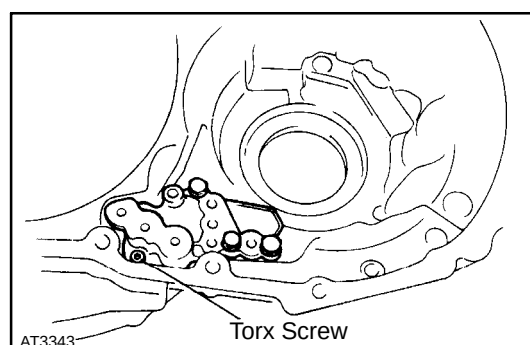
1. INSTALL BEARING TO TRANSAXLE HOUSING

- (a) Using SST and a press, press the bearing into the transaxle housing.

SST 09350-32014 (09351-32140)

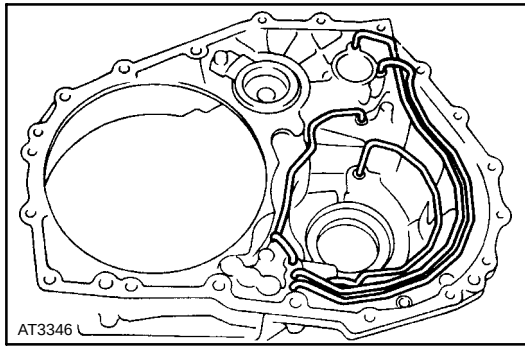


- (b) Install the bearing stopper with a bolt.



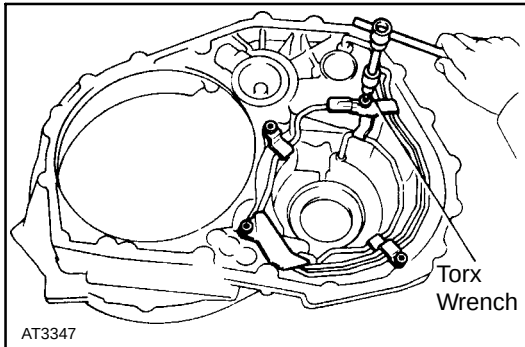
2. INSTALL GASKET AND OIL TUBE APPLY COVER

Install a new gasket and oil tube apply cover, and tighten the three bolts and a torx screw.

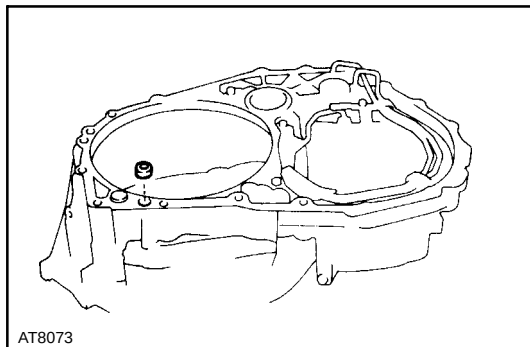


3. INSTALL OIL TUBES

- (a) Using a plastic hammer, install the four oil tubes.
NOTICE: Be careful not to bend or damage the tubes.

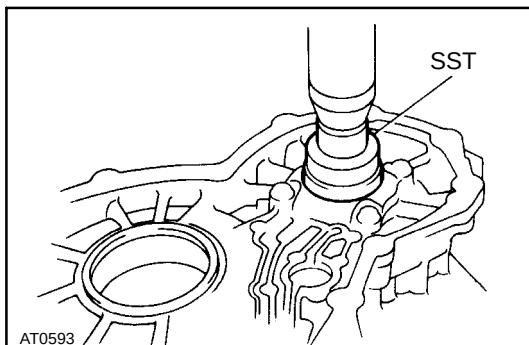


- (b) Using a torx wrench, install the four tube clamps.



4. INSTALL APPLY GASKET

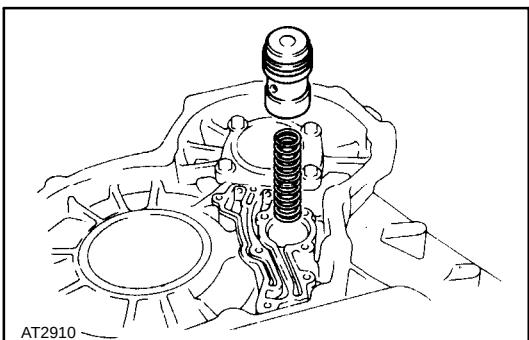
Install a new apply gasket to the transaxle housing.



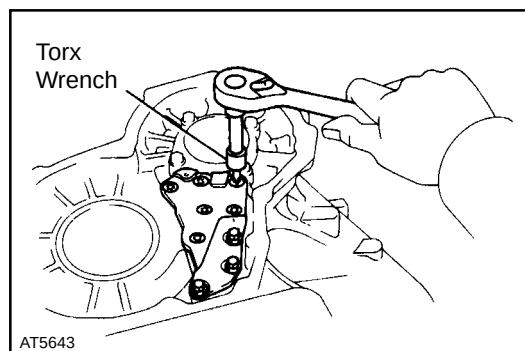
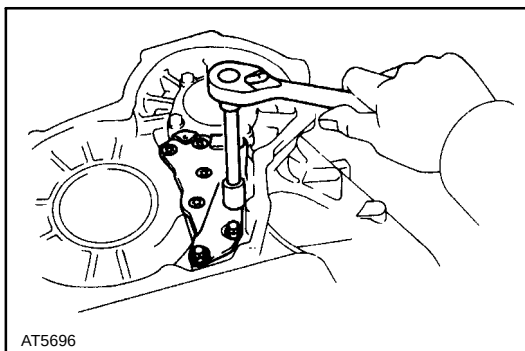
5. INSTALL BEARING TO TRANSMISSION CASE

Using SST and a press, press the bearing into the transmission case.

SST 09350-32014 (09351-32090)



6. INSTALL B₄ ACCUMULATOR PISTON AND SPRING



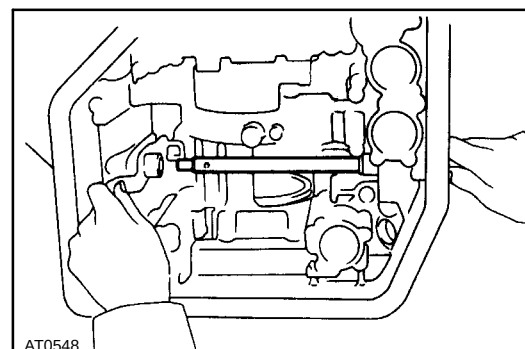
7. INSTALL OIL GALLERY COVER AND GASKET

- (a) Clean the threads of the screws and case with white gasoline.
- (b) Install a new gasket and oil gallery cover in place.
- (c) Install and tighten the three bolts.

- (d) Apply seal packing or equivalent to the six torx screws.

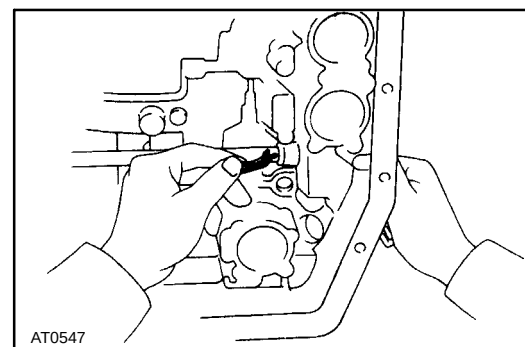
Seal packing: Part No. 08833 - 00070, THREE BOND 1324 or equivalent

- (e) Install and tighten the six torx screws.



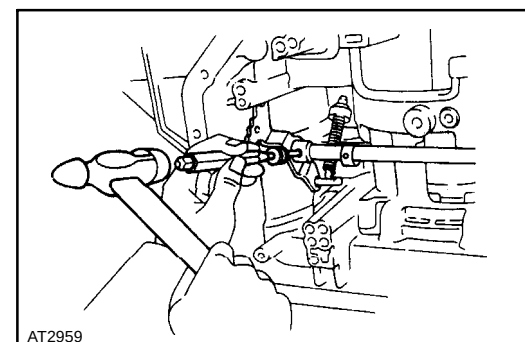
8. INSTALL MANUAL VALVE SHAFT AND LEVER

- (a) Install the parking lock rod to the manual valve lever.
- (b) Slide in the shaft and install the washer, new spacer and manual lever.



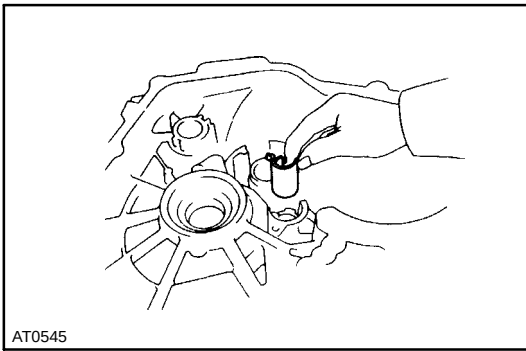
- (c) Install the retaining spring.

HINT: Make sure there is a washer between the retaining spring and case.

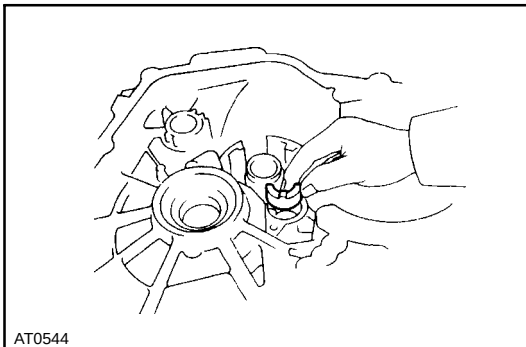


9. INSTALL PIN

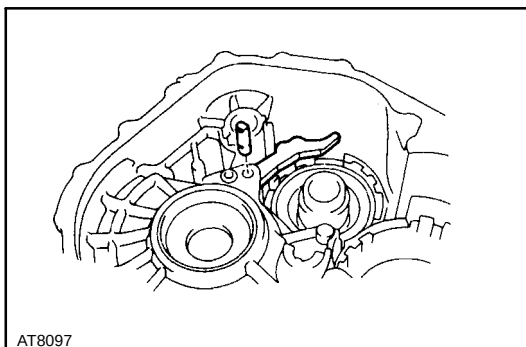
- (a) Using a punch and hammer, drive in the pin.
- (b) Position the spacer and stake it.

**10. INSTALL CAM GUIDE BRACKET**

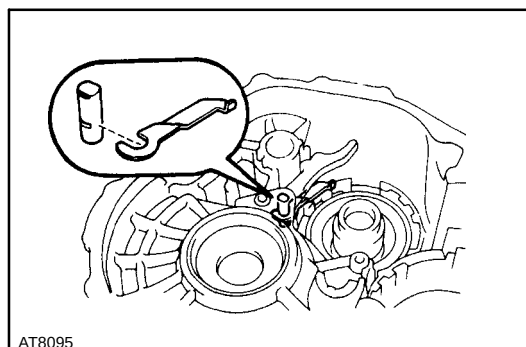
Install the cam guide bracket and then insert the parking lock rod into the guide bracket.

**11. INSTALL PARKING LOCK SLEEVE**

Install the parking lock sleeve protruding portion upward.

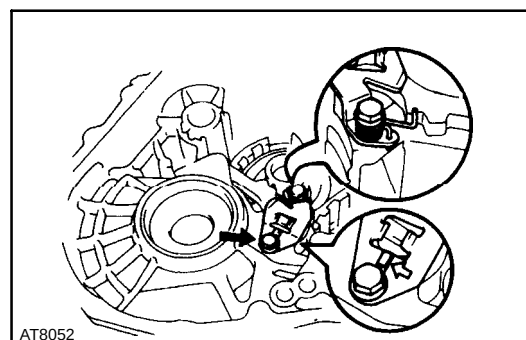
**12. INSTALL PARKING LOCK PAWL, PAWL SHAFT AND SHAFT CLAMP**

(a) Install the parking lock pawl and pawl shaft.



(b) Align the pawl shaft groove and shaft clamp cut position.

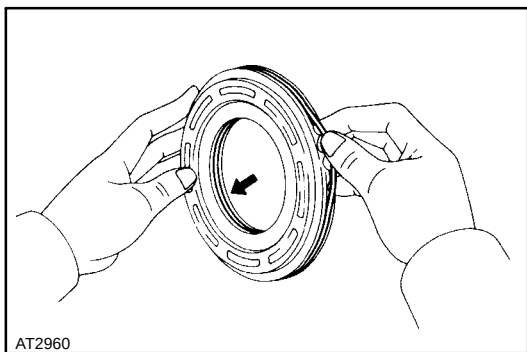
(c) Install the shaft clamp.

**13. INSTALL STOPPER PLATE AND GUIDE SLEEVE**

(a) Place the stopper plate on the protruding portion of lock sleeve.

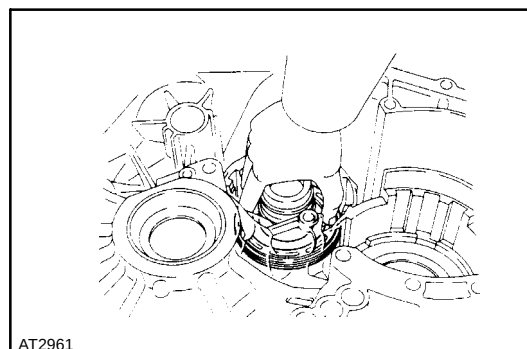
(b) Install the guide sleeve and spring.

Torque: 7.4 N-m (75 kgf-cm, 65 in.-lbf)

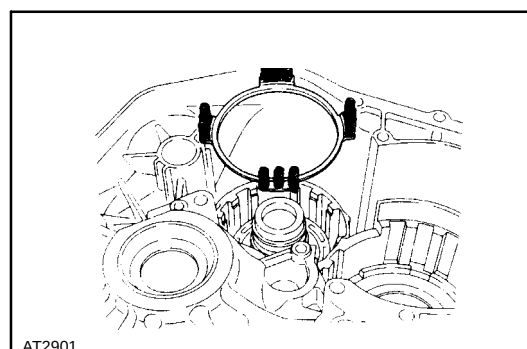


14. INSTALL UNDERDRIVE BRAKE PISTON

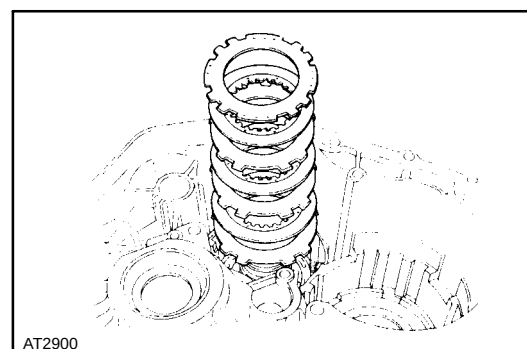
- (a) Coat two new O-rings with ATF.
- (b) Install O-rings to the piston.



- (c) Place the piston into the case with the cup side up, being careful not to damage O-rings.



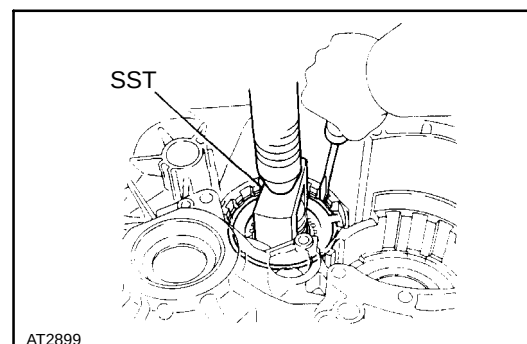
15. INSTALL RETURN SPRING



16. INSTALL PLATES, DISCS AND FLANGE

- (a) Install in order: D = Disc P = Plate F = Flange
P-D-P-D-P-D-F

HINT: Install the flange with the flat end facing upward.

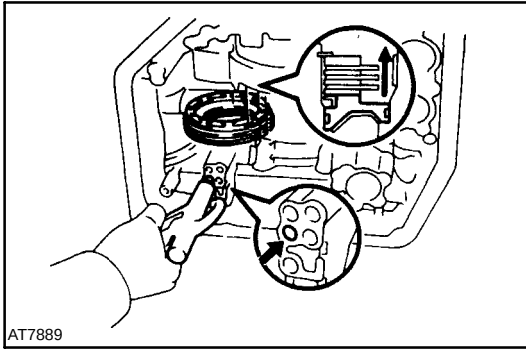


- (b) Place SST on the flange, and compress the flange with a press.

SST 09350-32014 (09351-32070)

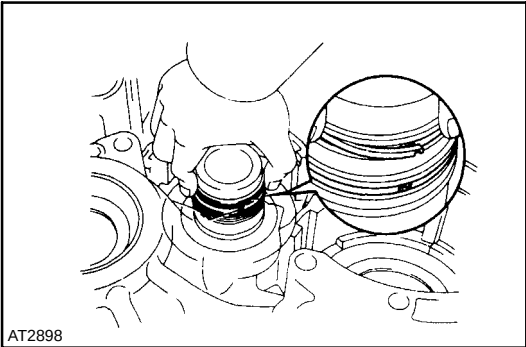
- (c) Install the snap ring.

HINT: Be sure the end gap of the snap ring is not aligned with one of the cutouts.



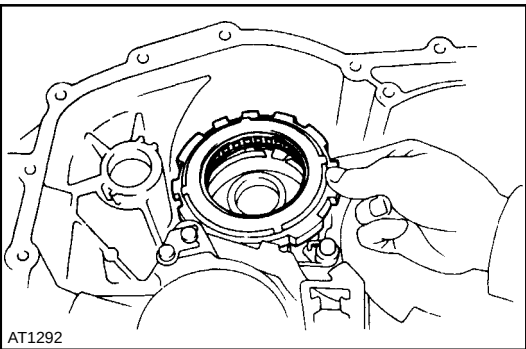
17. CONFIRM THAT UNDERDRIVE BRAKE PISTON MOVES

Using compressed air, confirm that the underdrive brake piston moves smoothly.

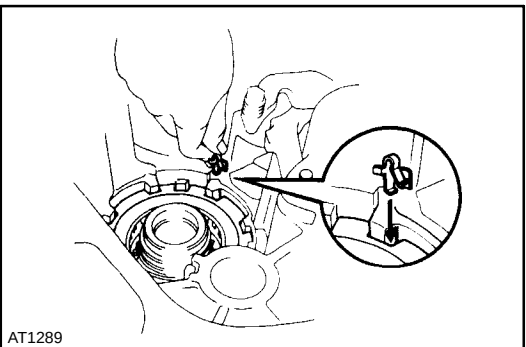


18. INSTALL OIL SEAL RINGS To TRANSMISSION CASE

Install the two oil seals to the transmission case.

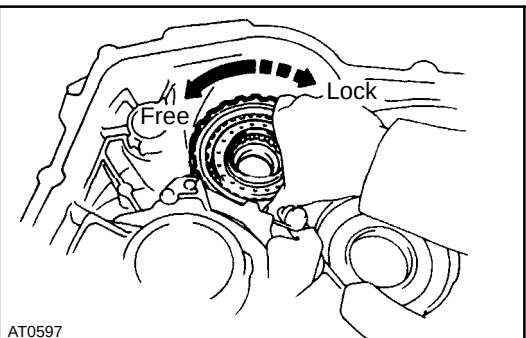


19. INSTALL UNDERDRIVE ONE-WAY CLUTCH



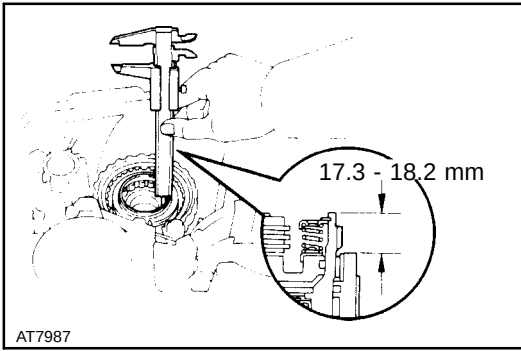
20. INSTALL ANTI-RATTLE CLIP

In the place shown in the figure (the space between the one-way clutch outer race and case), push the anti-rattle clip in until you hear the "click".



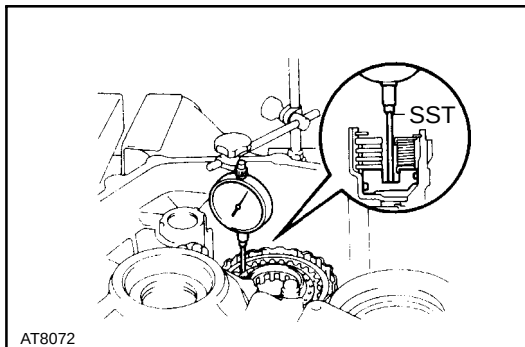
21. INSTALL UNDERDRIVE CLUTCH ASSEMBLY

- (a) Align the flukes of discs in the underdrive brake.
- (b) Install the clutch assembly.
- (c) Turn the clutch assembly. The clutch assembly should turn freely counterclockwise and should lock clockwise.

**22. CHECK HEIGHT OF CLUTCH ASSEMBLY**

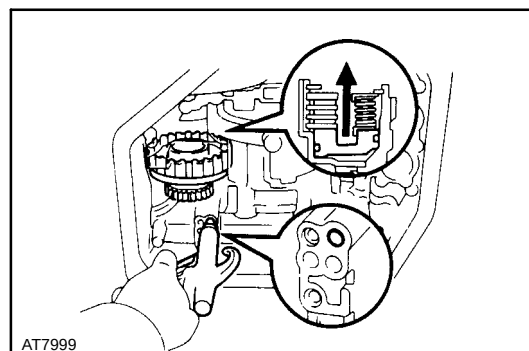
Using vernier calipers, check the height from the sleeve to the inner race.

Height: 17.3 - 18.2 mm (0.6811 - 0.7165 in.)

**23. CHECK PISTON STROKE OF UNDERDRIVE CLUTCH**

(a) Set a dial indicator (long type pick or SST) as shown.

SST 09350-32014 (09351-32190)



(b) Applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi), measure the underdrive clutch piston stroke.

Piston stroke: 1.50 - 1.86 mm (0.0591 - 0.0732 in.)

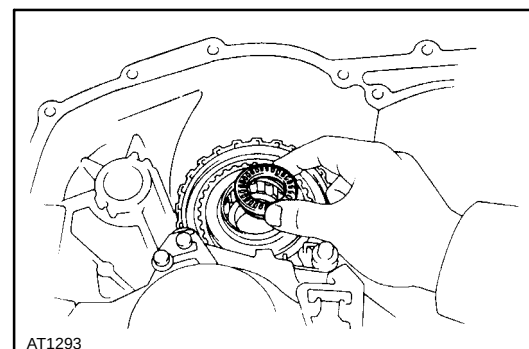
If the piston stroke is less than limit, parts may have been misassembled. Check them.

If the piston stroke is nonstandard, select another flange.

HINT: There are two different flange thickness.

Flange thickness: 2.04 mm (0.0803 in.)

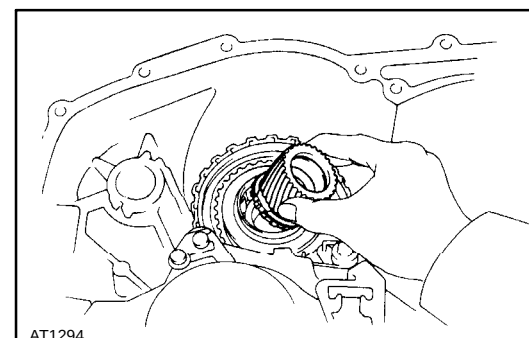
2.40 mm (0.0945 in.)

**24. INSTALL BEARING WITH RACE**

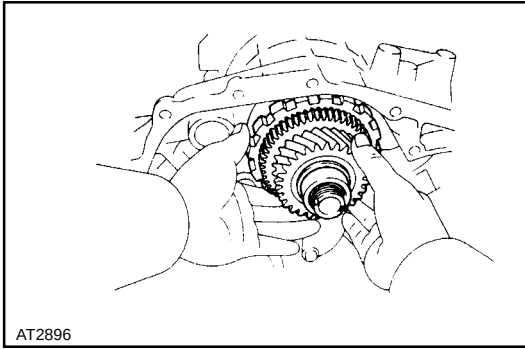
Install the thrust bearing with race, with the bearing facing upward.

Bearing: Outer diameter 43.7 mm (1.720 in.)

Inner diameter 31.0 mm (1.220 in.)

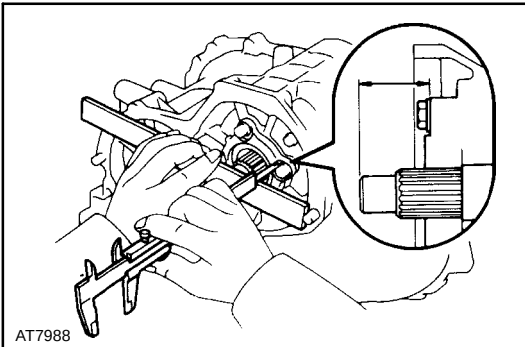
**25. INSTALL SUN GEAR To CASE**

Install the sun gear of the counter shaft to the case.



26. INSTALL COUNTER SHAFT ASSEMBLY

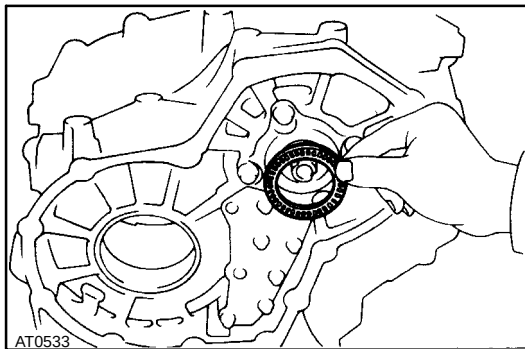
- (a) Align the flukes of the discs in the underdrive clutch.
- (b) Install the counter shaft assembly.



27. CHECK HEIGHT OF COUNTER SHAFT

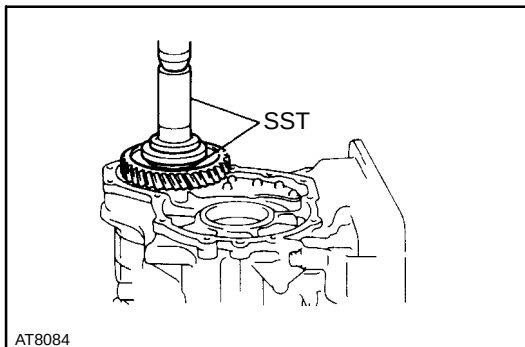
Using vernier calipers, measure the distance between the tip of the counter shaft and bolt seat of the clutch support.

Height: 33.3 - 35.5 mm (1.311 - 1.398 in.)



28. INSTALL THRUST NEEDLE BEARING

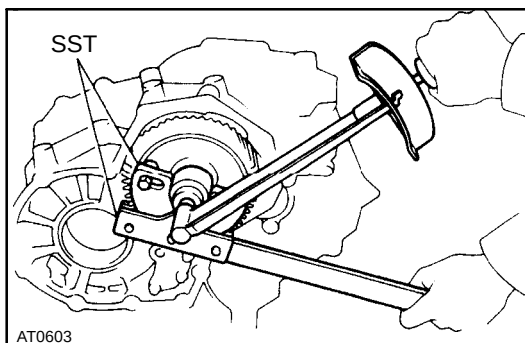
Bearing: Outer diameter 57.7 mm (2.272 in.)
Inner diameter 41.0 mm (1.614 in.)



29. INSTALL COUNTER DRIVEN GEAR

Using SST and press, press in the driven gear.

SST 09350-32014 (09351-32100, 09351-32140)



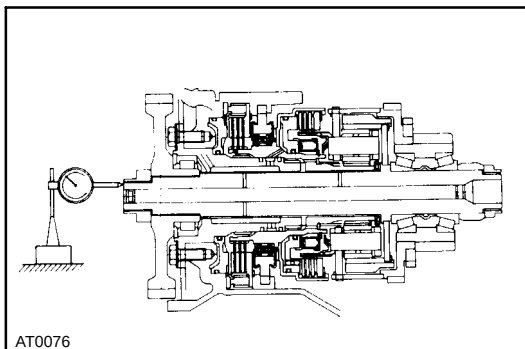
30. TIGHTEN NEW LOCK NUT

- (a) Using SST to hold the driven gear, tighten a new lock nut.

SST 09330-00021, 09350-32014 (09351-32032)

Torque: 157 N-m (1,600 kgf-cm, 116 ft-lbf)

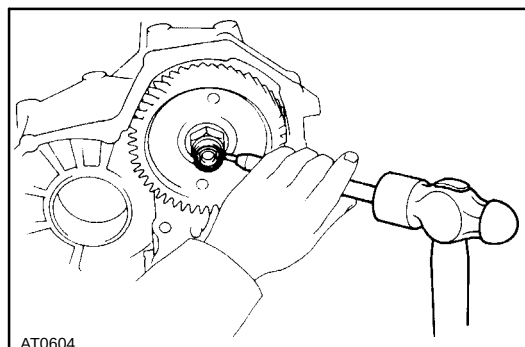
- (b) Remove SST.



31. CHECK END PLAY OF COUNTER SHAFT

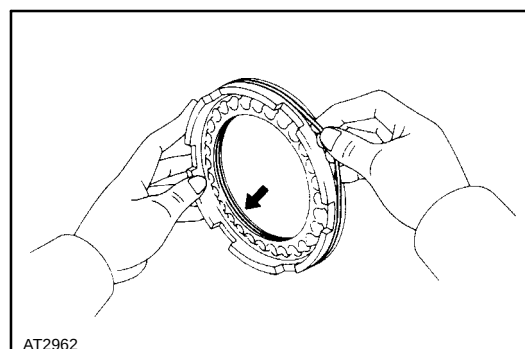
Using a dial indicator, measure the end play of the counter shaft.

End play: 0.23 - 0.89 mm (0.0091 - 0.0350 in.)



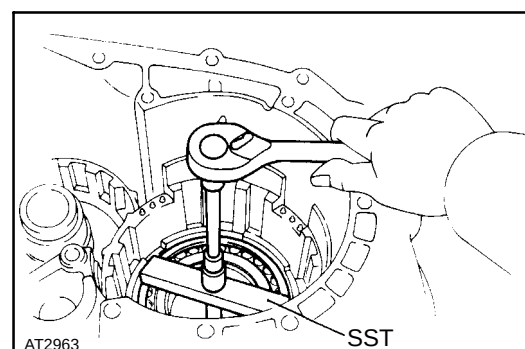
32. STAKE LOCK NUT

Using a punch and hammer, stake the lock nut.



33. INSTALL FIRST AND REVERSE BRAKE PISTON

- (a) Coat the two new O-rings with ATF.
- (b) Install two O-rings to piston.



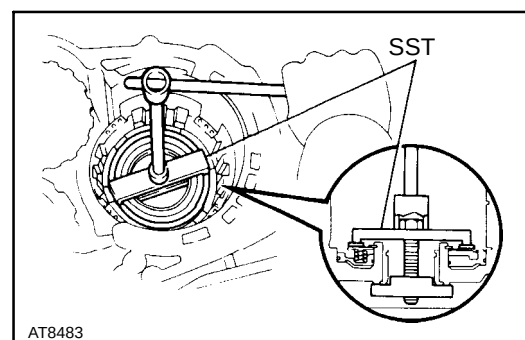
- (c) Place the piston into the bore of the case, facing the spring seats upward.

- (d) Using SST, press into the piston.

SST 09350-32014 (09351-32040)

HINT: Be careful not to damage the O-rings.

- (e) Remove SST.

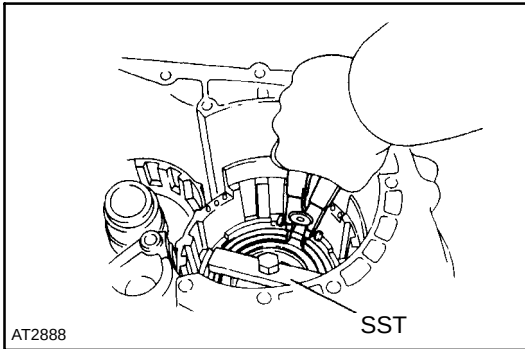


34. INSTALL PISTON RETURN SPRING AND SNAP RING

- (a) Install the piston return spring assembly and snap ring in place.
- (b) Set SST, and tighten the bolt gradually to compress the springs.

SST 09350-32014 (09351-32040)

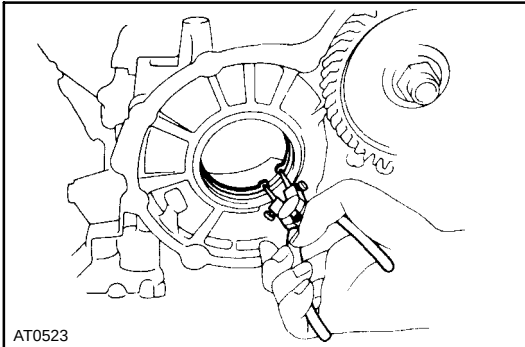
NOTICE: Avoid bending the spring retainer by over-tightening the bolt.



(c) Using snap ring pliers, install the snap ring.
 HINT: Visually check to make sure it is fully seated and centered by the three lugs on the spring retainer. Be sure the end gap of snap ring is not aligned with the spring retainer claw.

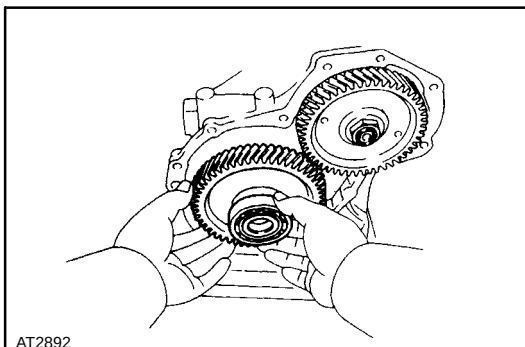
(d) Remove SST.

SST 09350-32014 (09351-32040)

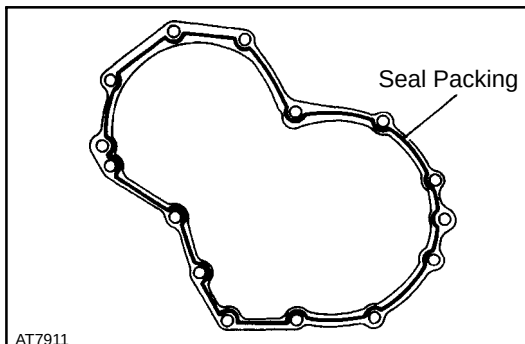


35. INSTALL SNAP RING TO TRANSMISSION CASE

Using snap ring pliers, install the snap ring to the transmission case.



36. INSTALL INTERMEDIATE SHAFT

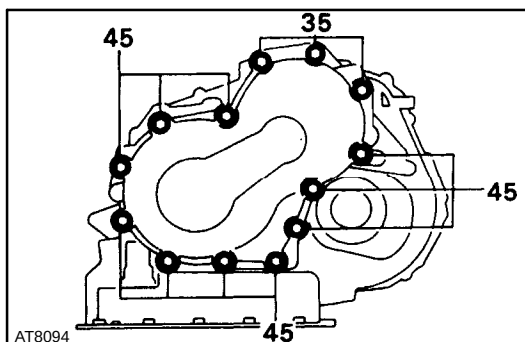


37. INSTALL TRANSAXLE REAR COVER

(a) Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle rear cover or transmission case.

(b) Apply seal packing to the rear cover as shown.

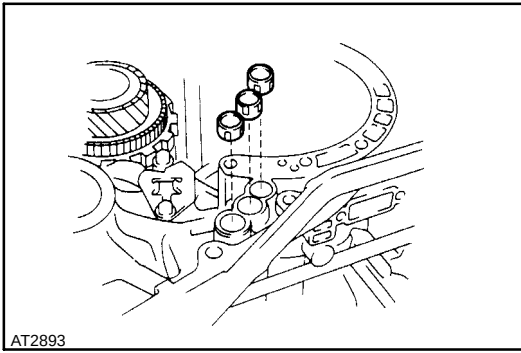
Seal packing: Part No. 08833 - 00090, THREE BOND 1131, LOCTITE 518 or equivalent



(c) Install and tighten the thirteen bolts.

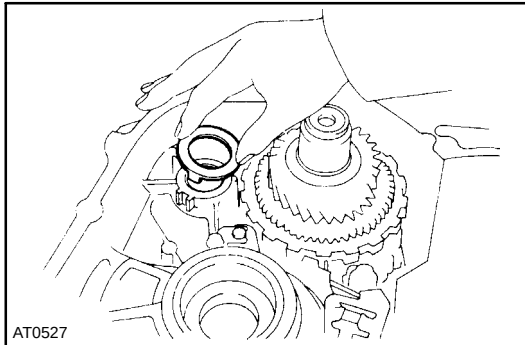
Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)

HINT: Each bolt length (mm) is indicated in the figure.

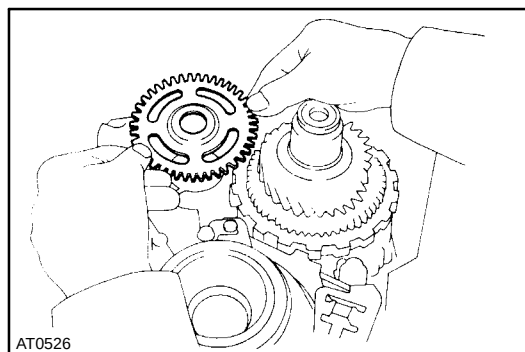
**38. INSTALL NEW APPLY GASKETS**

Install the three new apply gaskets.

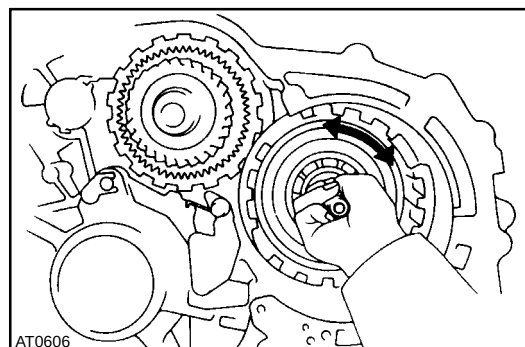
HINT: The apply gasket may be inserted with either end up or down.

**39. INSTALL GOVERNOR DRIVEN GEAR**

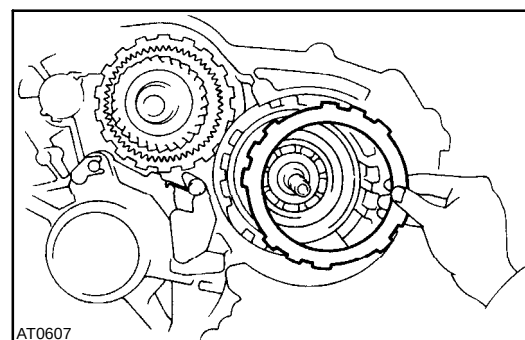
(a) Install the thrust washer.



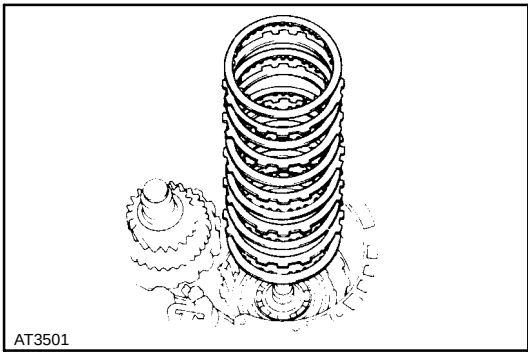
(b) Install the governor driven gear.

**40. CHECK INTERMEDIATE SHAFT**

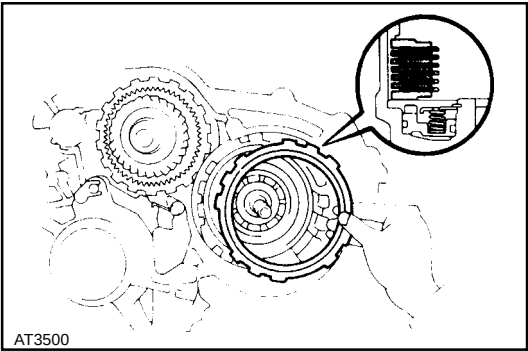
Make sure that the intermediate shaft turns smoothly.

**41. INSTALL FIRST AND REVERSE BRAKE DISCS, PLATES AND FLANGE**

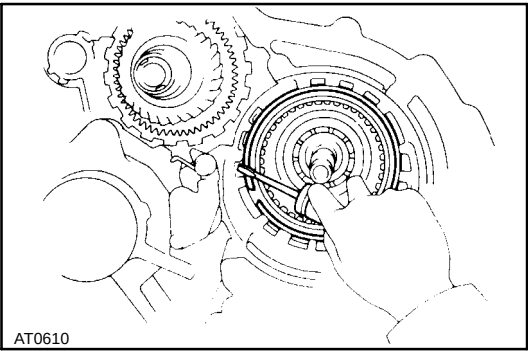
(a) Install the inner flange, facing the flat end upward.



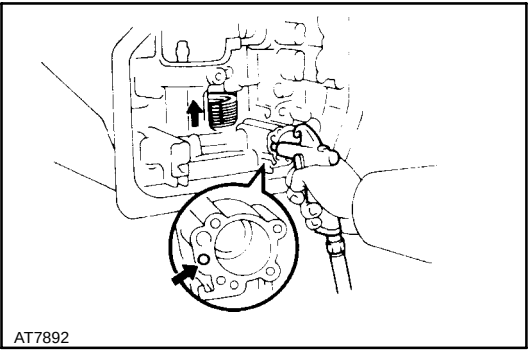
- (b) Install in order: D = Disc P = Plate
D-P-D-P-D-P-D-P-D-P-D



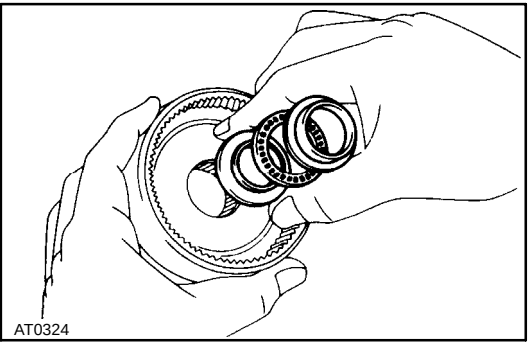
- (c) Install the outer flange, the flat end facing downward.



42. **INSTALL SNAP RING**
HINT: Be sure the snap ring end gap is not aligned with one of the cutouts.



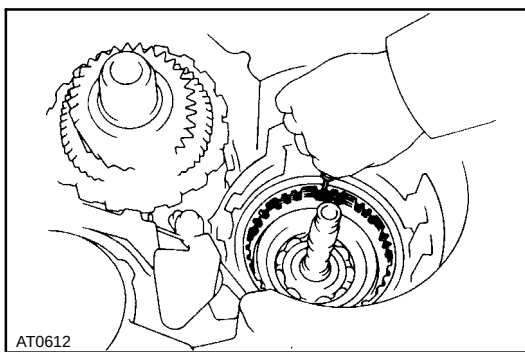
43. **CONFIRM THAT FIRST AND REVERSE BRAKE PISTON MOVES**
Using compressed air, confirm that the first and reverse brake piston moves smoothly.



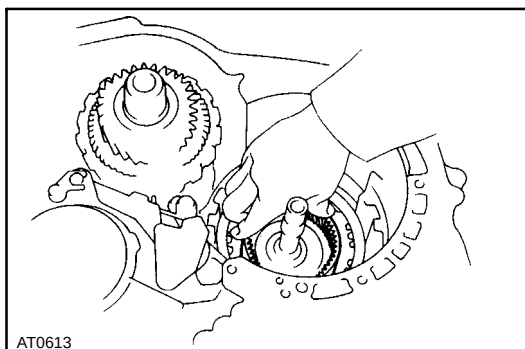
44. **INSTALL REAR PLANETARY RING GEAR TO CASE**
(a) Coat the races and bearing with petroleum jelly, , and install them onto the ring gear as shown.

Bearing and races mm (in.)

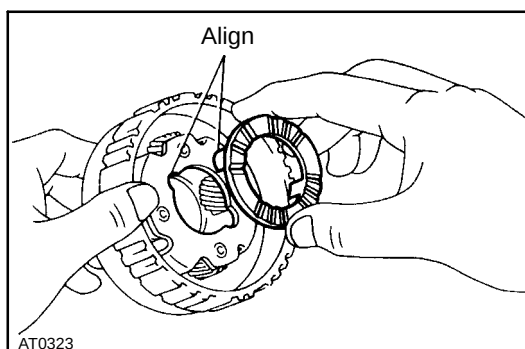
	Outer diameter	Inner diameter
Front Race	27.3 (1.469)	24.1 (0.949)
Bearing	37.6 (1.480)	24.0 (0.945)
Rear Race	37.6 (1.480)	22.0 (0.874)



- (b) Using a screwdriver, align the flukes of the discs.



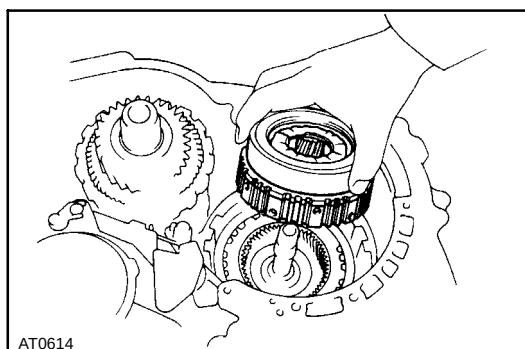
- (c) Install the rear planetary ring gear into the case.



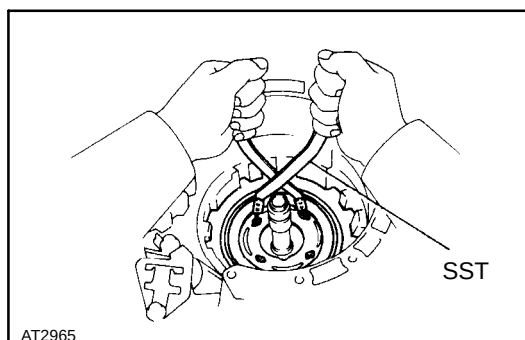
45. INSTALL REAR PLANETARY GEAR

- (a) Coat thrust washer with petroleum jelly and install it onto the planetary gear.

HINT: Make sure that the different lug shapes match the openings on the gear.



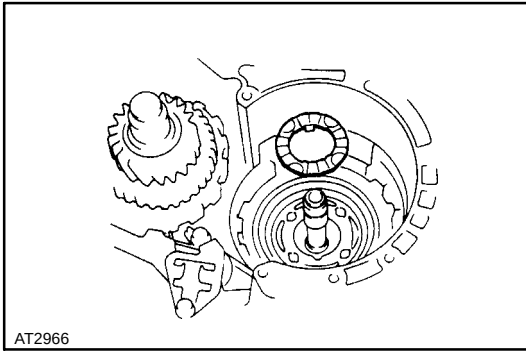
- (b) Align the spline of the planetary gear with the flukes of the discs and install the planetary gear into the first and reverse brake discs.



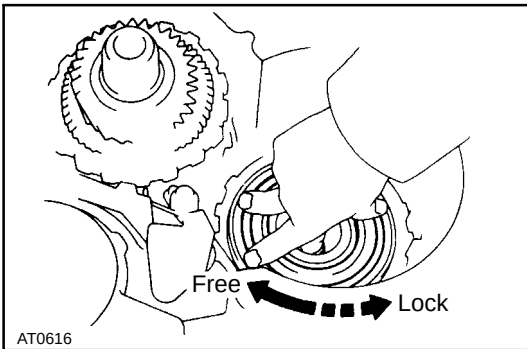
46. INSTALL NO. 2 ONE-WAY CLUTCH

- (a) Place the one-way clutch into the case, the shiny side facing upward.
- (b) Install the one-way clutch onto the inner race while turning the planetary gear clockwise with SST.

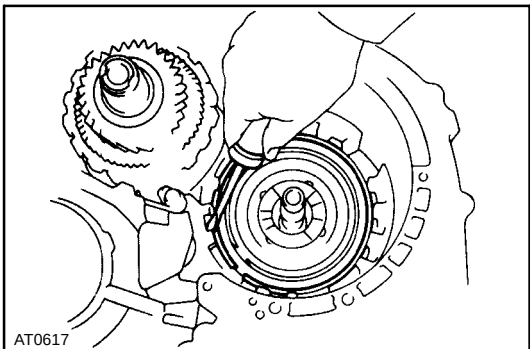
SST 09350-32014 (09351-32050)



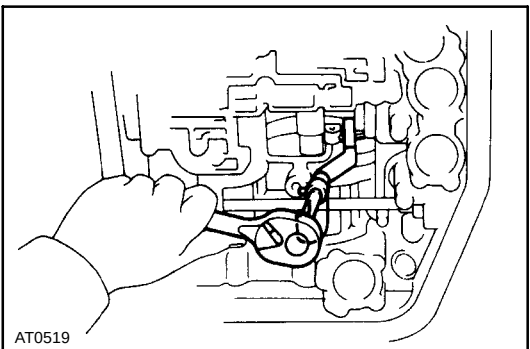
- (c) Coat the thrust washer with petroleum jelly and install it onto the planetary gear.



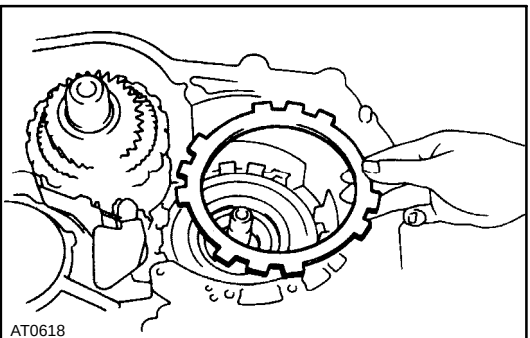
- 47. CHECK OPERATION OF NO. 2 ONE-WAY CLUTCH**
Check that the planetary carrier turns freely clockwise and locks counterclockwise.



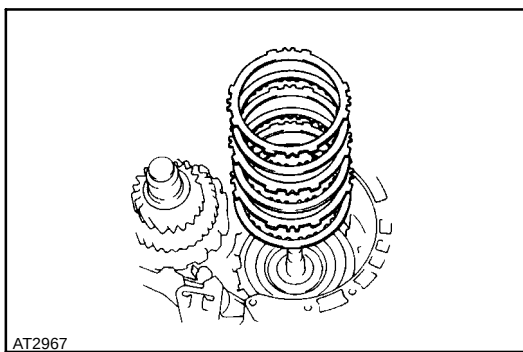
- 48. INSTALL SNAP RING**
Be sure the end gap of the snap ring is not aligned with one of the cutouts.



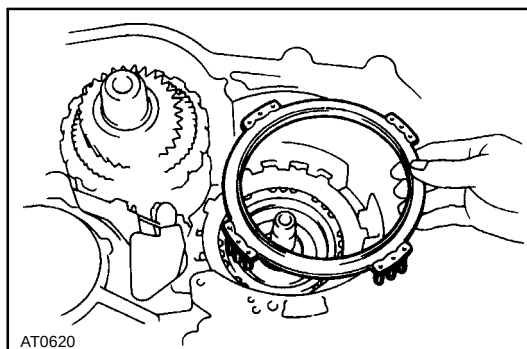
- 49. INSTALL SECOND COAST BRAKE BAND GUIDE**
Install the band guide so that its tip touches the case.



- 50. INSTALL SECOND BRAKE INTO CASE**
(a) Install the flange, the flat side facing upward.

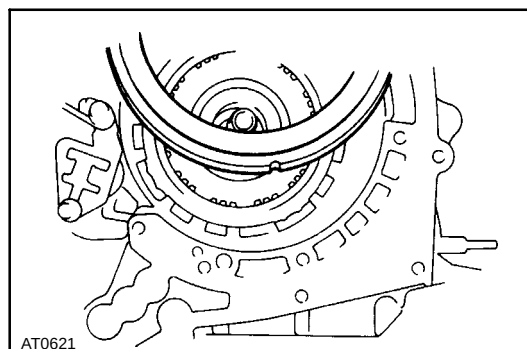


- (b) Install the discs and plates in order.
D = Disc P = Plate
D-P-D-P-D-P



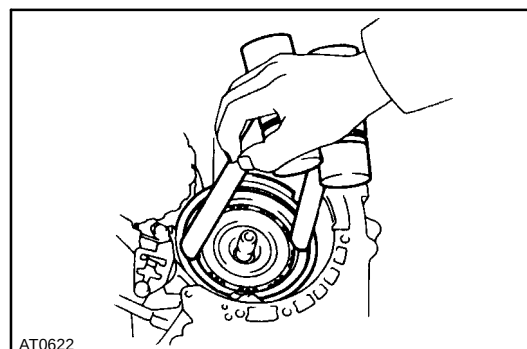
51. INSTALL SECOND BRAKE PISTON RETURN SPRING

Install each of the springs over the protrusions in the case.



52. INSTALL SECOND BRAKE DRUM INTO CASE

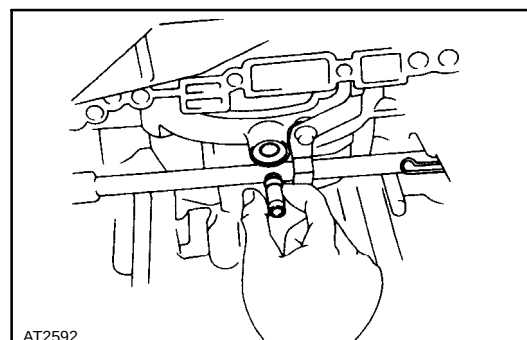
Align the groove of the drum with the bolt and place it into the case.



53. INSTALL SNAP RING

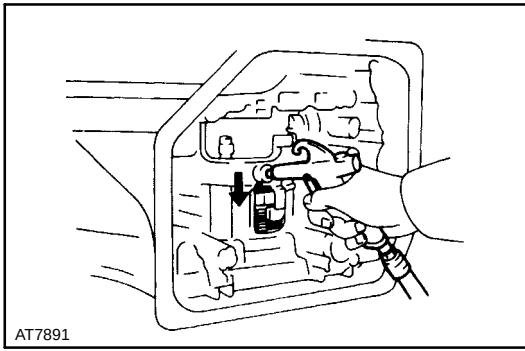
- Place the snap ring into the case so that the end gap is installed into the groove.
- While compressing the piston return springs over the drum with hammer handles, install the snap ring.

HINT: Be sure the end gap of the snap ring is not aligned with one of the cutouts.

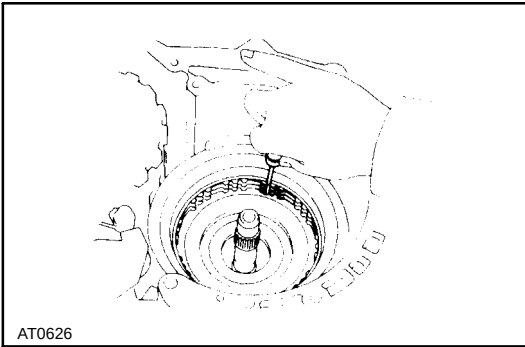


54. INSTALL SECOND BRAKE DRUM GASKET

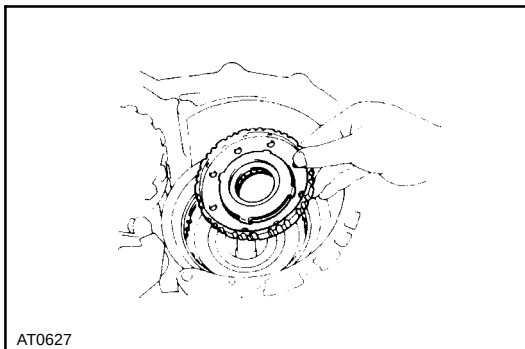
Drive in a new drum gasket until it makes contact with the second brake drum.

**55. CONFIRM THAT SECOND BRAKE PISTON MOVES**

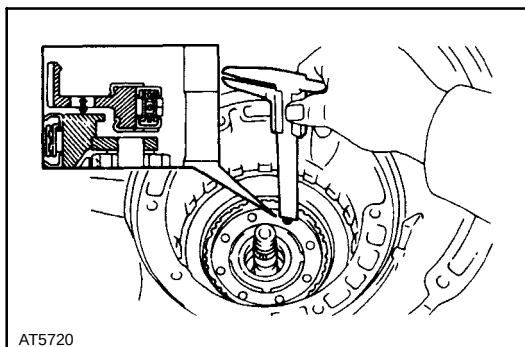
Using compressed air, confirm that the second brake piston moves smoothly.

**56. INSTALL SECOND BRAKE HUB AND No. 1 ONE-WAY CLUTCH**

(a) Using a screwdriver, align the flukes of the discs in the second brake.

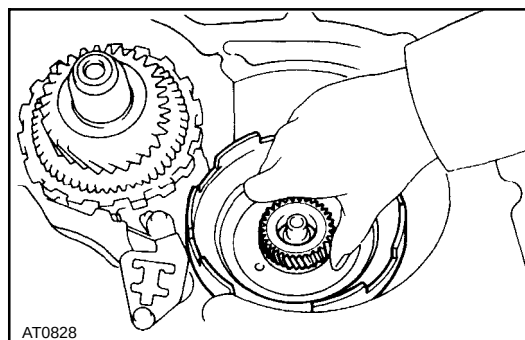


(b) Align the spline of the hub with the flukes of the discs and install the hub to the second brake discs.

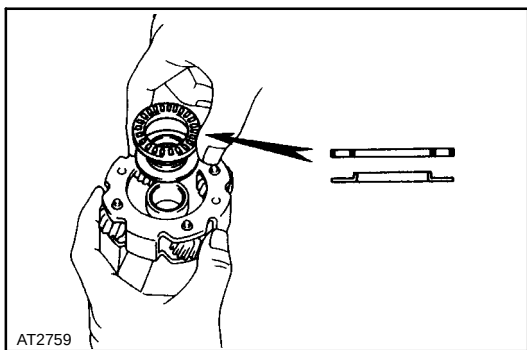
**57. CHECK SECOND BRAKE HUB INSTALLATION DISTANCE**

Check the distance between the surface of the second brake hub and rear planetary gear.

Distance: Approx. 5 mm (0.20 in.)

**58. INSTALL SUN GEAR, SUN GEAR INPUT DRUM AND THRUST WASHER**

While turning the sun gear clockwise, install it into the one-way clutch.

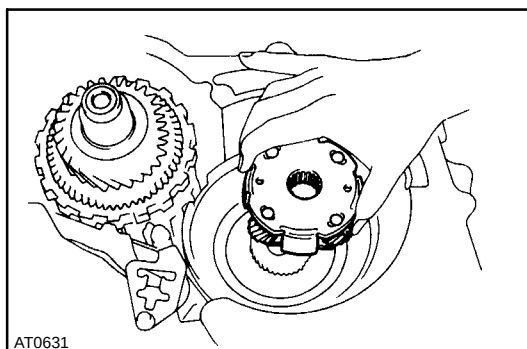


59. INSTALL FRONT PLANETARY GEAR

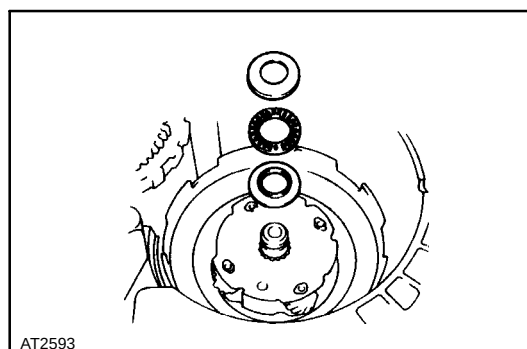
- (a) Coat the race and bearing with petroleum jelly and install them onto the planetary gear.

Bearing and races mm (in.)

	Outer diameter	Inner diameter
Race	45.0 (1.772)	28.0 (1.102)
Bearing	45.0 (1.772)	30.0 (1.181)



- (b) Install the planetary gear.

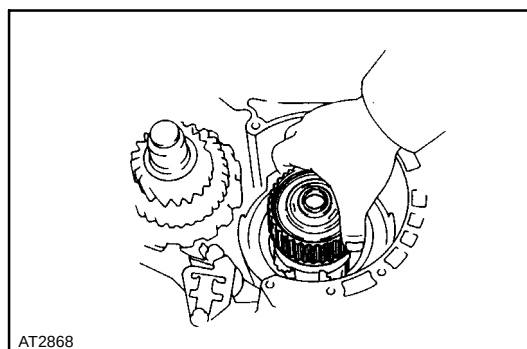


60. INSTALL FRONT PLANETARY RING GEAR

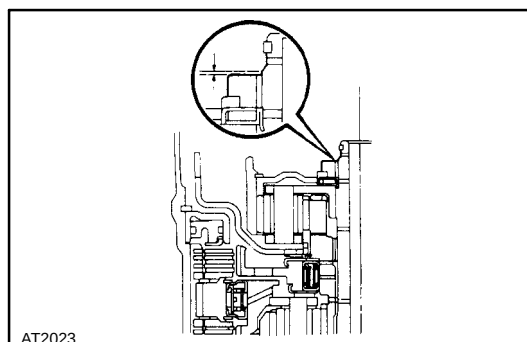
- (a) Coat the races and bearing with petroleum jelly and install them onto the planetary ring gear.

Bearing and races mm (in.)

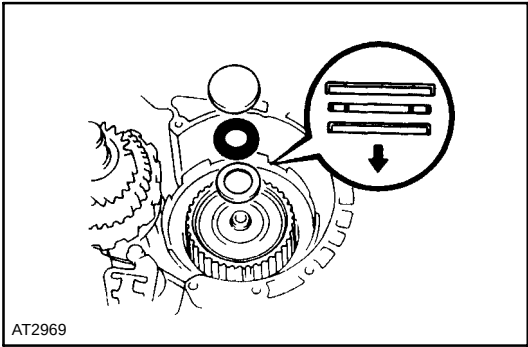
	Outer diameter	Inner diameter
Front Race	37.9 (1.492)	22.0 (0.866)
Bearing	36.1 (1.421)	22.2 (0.874)
Rear Race	35.0 (1.378)	19.0 (0.748)



- (b) Install the ring gear.



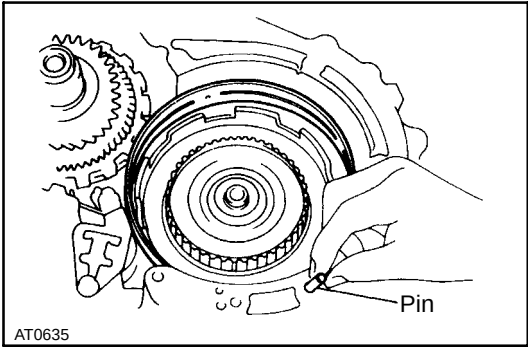
HINT: If the planetary ring gear and the other parts are installed correctly into the case, the end of the bushing with the ring gear flange will be flush with a shoulder of the intermediate shaft or under.



- (c) Coat the races and bearing with petroleum jelly and install them onto the tip of ring gear flange as shown.

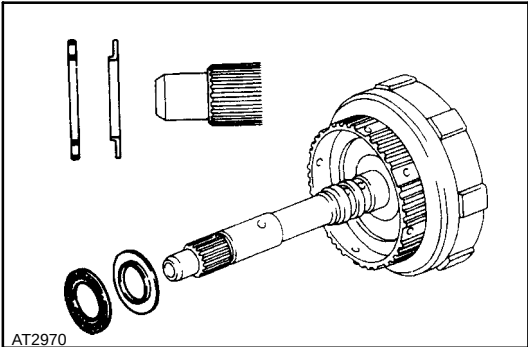
Bearing and races mm (in.)

	Outer diameter	Inner diameter
Front Race	37.9 (1.492)	22.0 (0.866)
Bearing	36.1 (1.421)	22.2 (0.874)
Rear Race	35.7 (1.406)	23.0 (0.906)



61. INSTALL SECOND COAST BRAKE BAND

- (a) Place the band into the case.
(b) Install the pin through the oil pump mounting bolt hole.

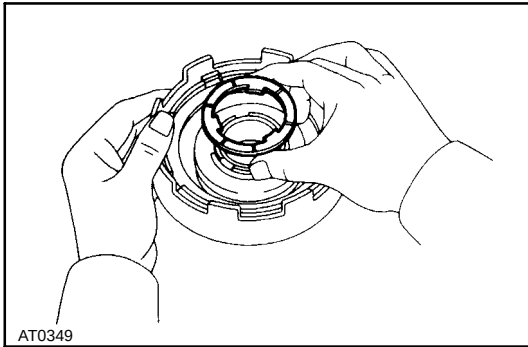


62. INSTALL FORWARD CLUTCH AND DIRECT CLUTCH

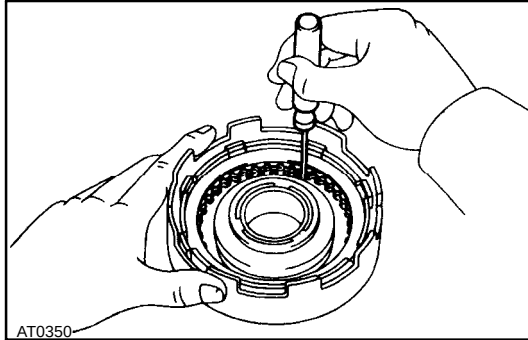
- (a) Coat the race and bearing with petroleum jelly, and install them onto the forward clutch drum.

Bearing and race mm (in.)

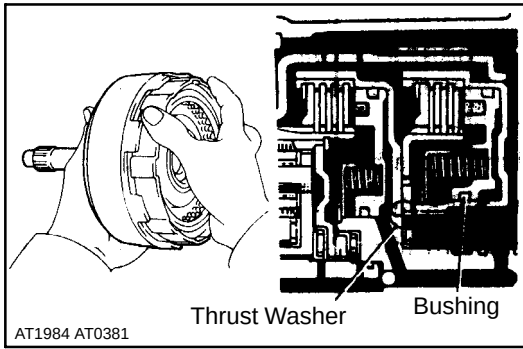
	Outer diameter	Inner diameter
Bearing	42.0 (1.654)	28.9 (1.138)
Race	42.0 (1.654)	27.1 (1.067)



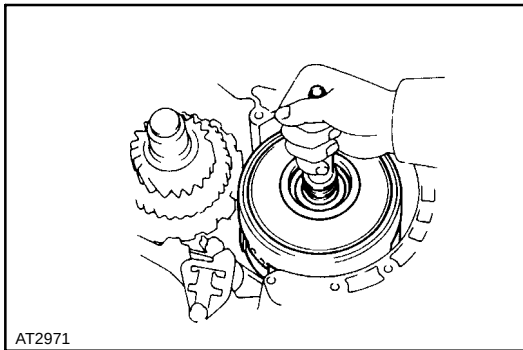
- (b) Coat the clutch drum thrust washer with petroleum jelly, and install it onto the direct clutch drum with the oil groove facing upward.



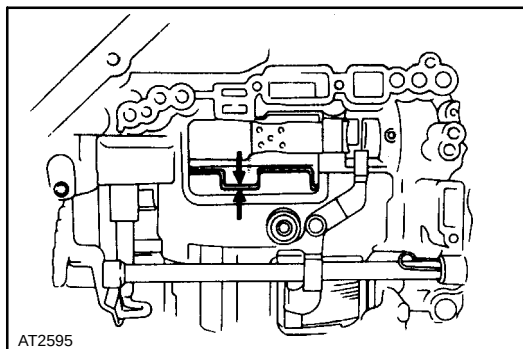
- (c) Using a screwdriver, align the flukes of discs in the direct clutch.



- (d) Mesh the hub with the flukes of the direct clutch while turning the clutch drum or forward clutch.
- HINT: If the flukes of the discs are meshed with the hub correctly, the end of the bushing with the direct clutch drum will be flush with the surface of the forward clutch.

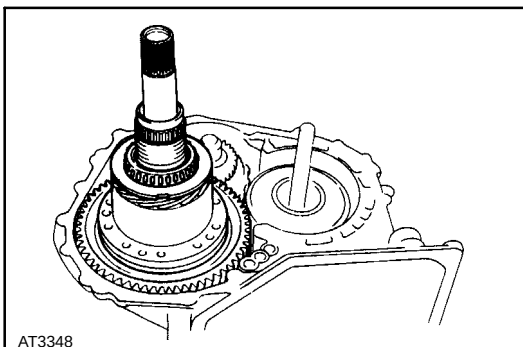


- (e) Place the direct clutch and forward clutch into the case.
- (f) While rotating the forward clutch to mesh the front planetary ring gear and discs, install them.

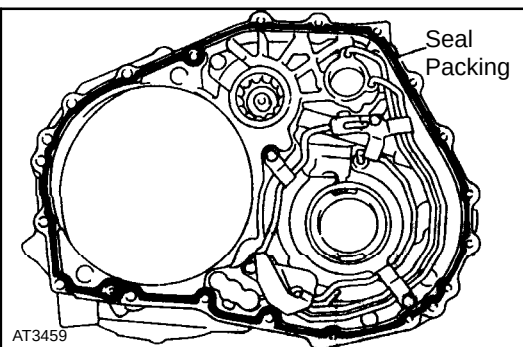


- (g) Check the distance between A and B as shown in the illustration.

Distance: Approx. 3 mm (0.118 in.)



63. INSTALL DIFFERENTIAL ASSEMBLY

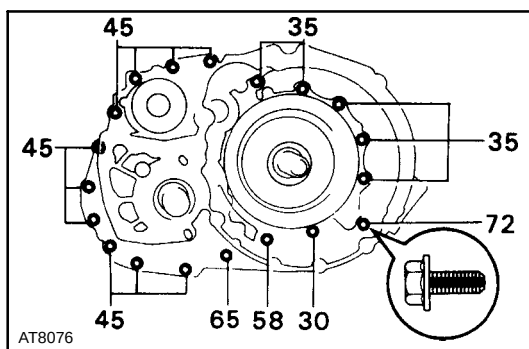


64. INSTALL TRANSAXLE HOUSING

- (a) Remove any packing material and be careful not to get oil on the contacting surfaces, of the transaxle housing or transmission case.
- (b) Apply seal packing to the transaxle housing as shown.

Seal packing: Part No. 08833 - 00090, THREE BOND 1131, LOCTITE 518 or equivalent

HINT: Install the transaxle housing as soon as the seal packing is applied:



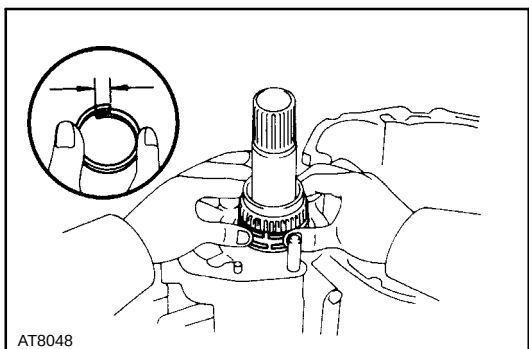
(c) Apply sealant to the bolt threads.

Sealant: Part No. 08833 - 00080, Adhesive 1344, THREE BOND 1344. LOCTITE 242 or equivalent

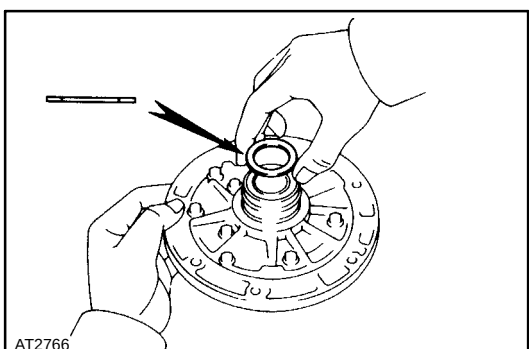
(d) Install and tighten the bolts.

Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)

HINT: Each bolt length (mm) is indicated in the illustration.



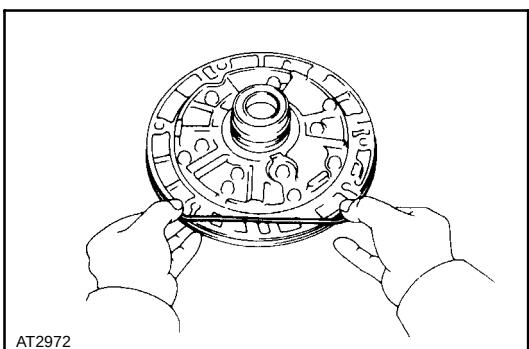
65. INSTALL OIL SEAL RINGS



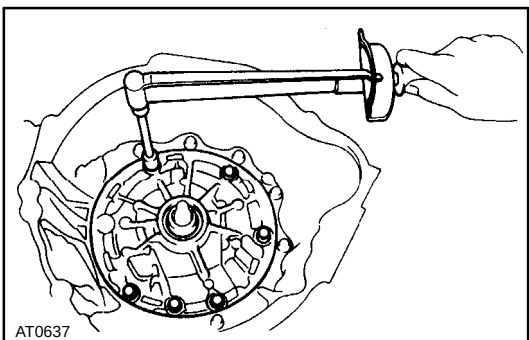
66. INSTALL OIL PUMP INTO CASE

(a) Coat the race with petroleum jelly and install it onto the stator shaft.

Race: Outer diameter 43.0 mm (1.693 in.)
Inner diameter 30.5 mm (1.201 in.)



(b) Coat the O-ring with ATF, and install it to pump body.



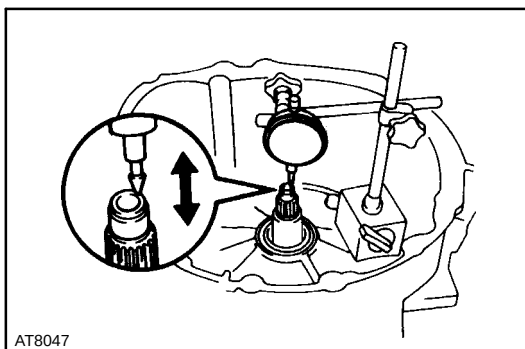
(c) Place the oil pump through the input shaft, and align the bolt holes of the pump body with the transmission case.

(d) Hold the input shaft, and lightly press the oil pump body to slide the oil seal rings on the stator shaft through the direct clutch drum.

NOTICE: Do not push on the oil pump strongly, or the oil seal ring will stick to the direct clutch drum.

(e) Install and tighten the six bolts.

Torque: 25 N-m (250 kgf-cm, 18 ft-lbf)

**67. MEASURE THRUST PLAY OF INPUT SHAFT**

Measure the thrust play in axial direction.

Thrust play: 0.3 - 0.9 mm (0.012 - 0.035 in.)

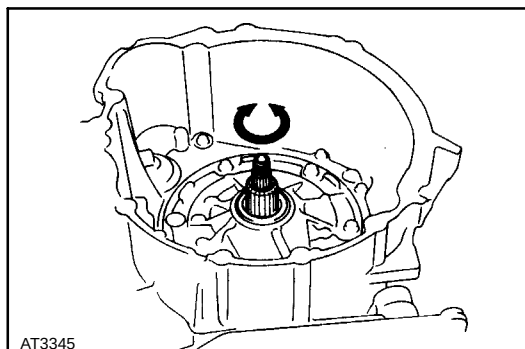
If the play is not as specified, select and replace the race for the end of the stator shaft.

HINT: There are two different thickness of races.

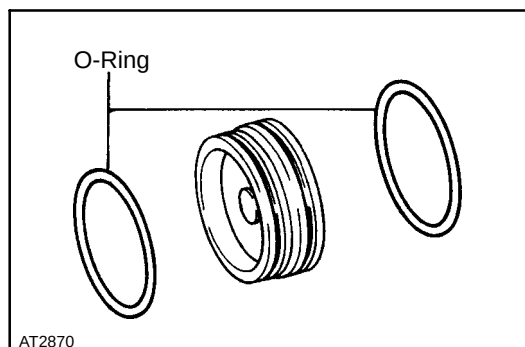
If necessary, select one of them.

Race thickness: 0.8 mm (0.031 in.)

1.4 mm (0.055 in.)

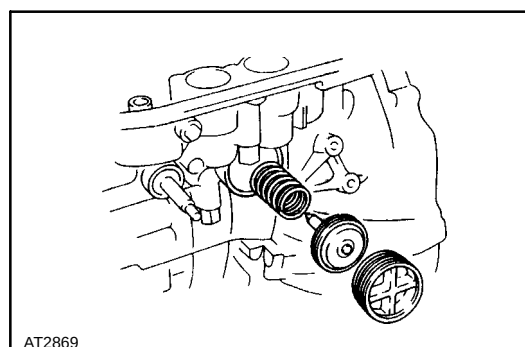
**68. CHECK INPUT SHAFT ROTATION**

Make sure that the input shaft rotates smoothly.

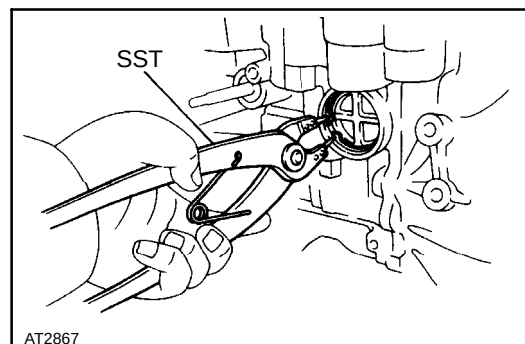
**69. INSTALL SECOND COAST BRAKE PISTON**

(a) Install the two new O-rings to the cover.

HINT: Coat the O-rings with ATF before installing.



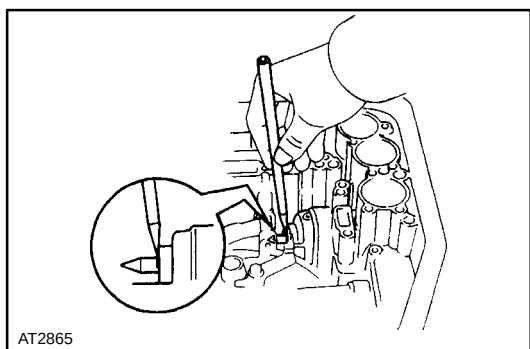
(b) Install the spring, piston and cover into the bore.



(c) Using SST, install the snap ring while pressing the cover.

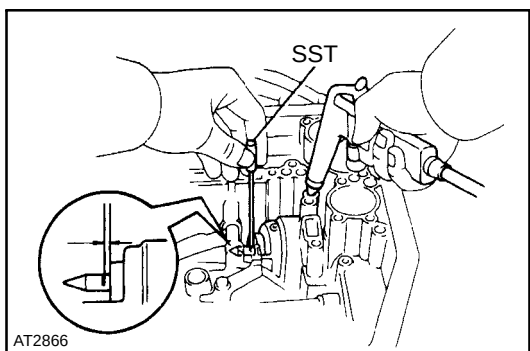
SST 09350-32014 (09351-32050)

(d) Check that the front end of the piston rod contacts the center of the second brake band depression.



70. MEASURE PISTON STROKE OF SECOND COAST BRAKE

- (a) Apply a small amount of paint to the piston rod at the point it meets the case as shown in the illustration.

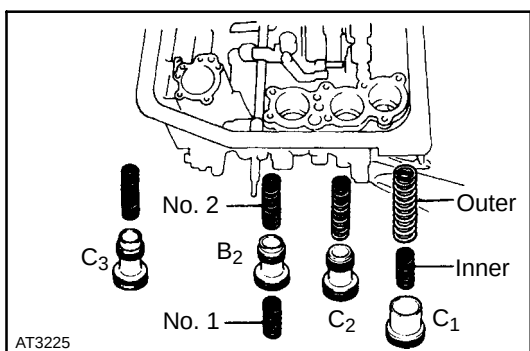


- (b) Using SST, measure the piston stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi) as shown.

SST 09240-00020

Piston stroke: 1.5 - 3.0 mm (0.059 - 0.118 in.)

If it is still more than standard value, replace the brake band with a new one.

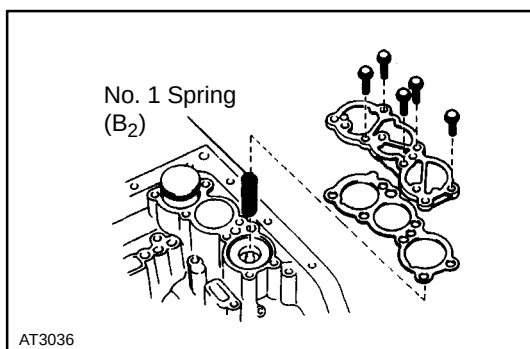


71. INSTALL ACCUMULATOR PISTONS AND SPRINGS

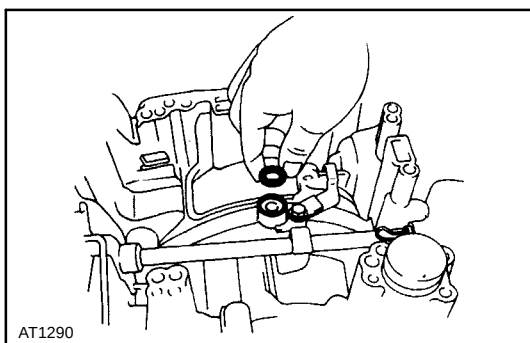
- (a) Coat the new O-rings with ATF, and install them to the pistons.
- (b) Install the pistons and springs.

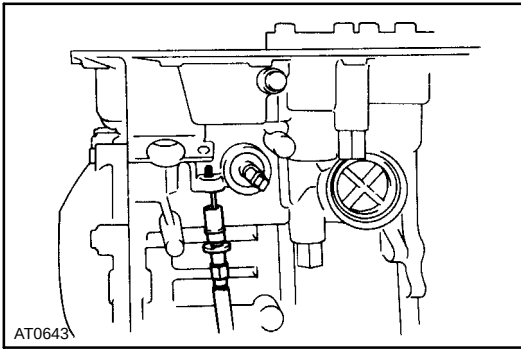
Spring		Free length mm (in.)	Color
C ₁	Outer	78.2 (3.079)	Yellow
	Inner	41.0 (1.614)	Pink
C ₂		66.2 (2.606)	Blue
B ₂	No. 1	36.5 (1.437)	White
	No. 2	56.7 (2.232)	Yellow
C ₃		62.1 (2.445)	Light Green

- (c) install a new gasket and accumulator cover.
- (d) Tighten the five bolts shown in the illustration evenly and gradually.

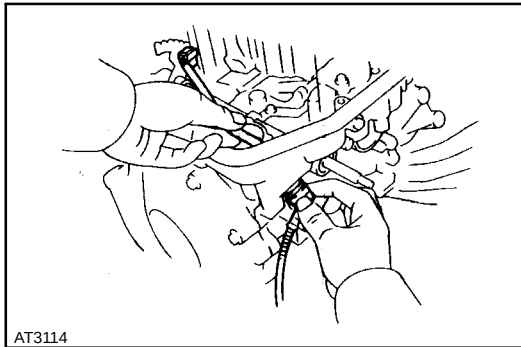
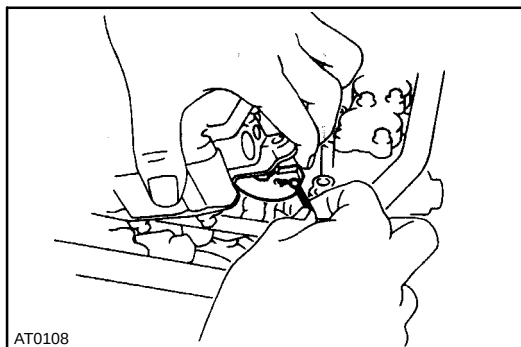


72. INSTALL SECOND BRAKE APPLY GASKET

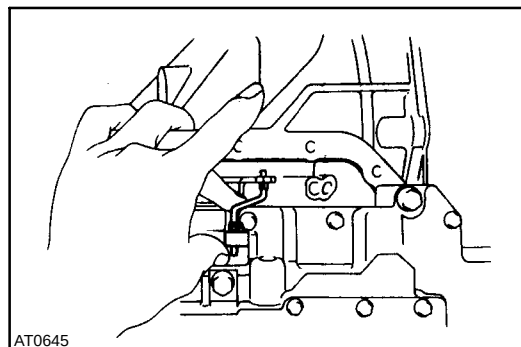


**73. INSTALL THROTTLE CABLE IN CASE**

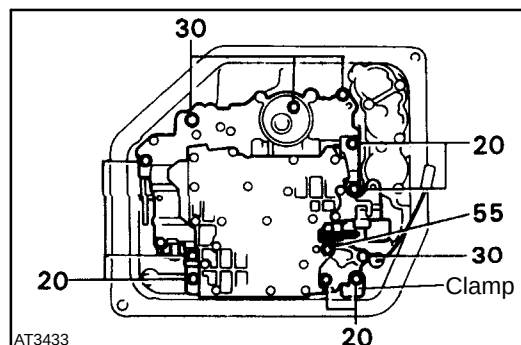
Push the cable through the hole on the case, being careful not to damage the O-ring. Check for full seating.
NOTICE: In subsequent work, to avoid breaking the cable fitting do not roll the case over the cable.

**74. INSTALL O/D SOLENOID WIRE****75. INSTALL VALVE BODY**

- (a) Place the valve body on the transmission.
- (b) While holding the cam down with your hand, slip the cable end into the slot.



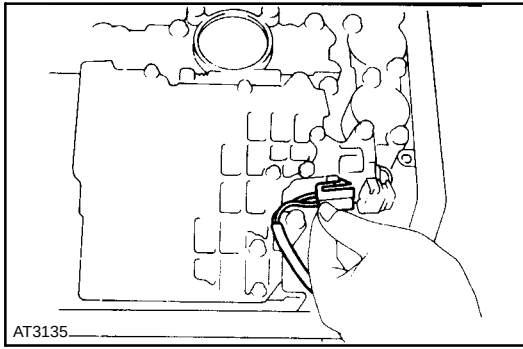
- (c) Connect the connecting rod to the manual valve lever.
- (d) lower the valve body in place.



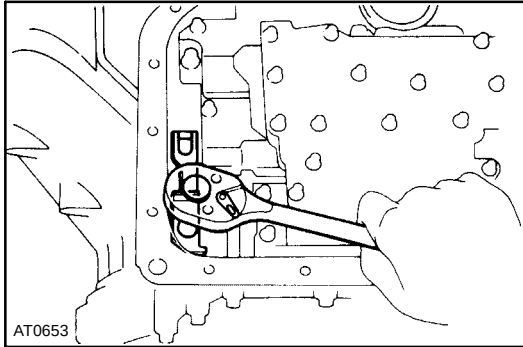
- (e) Install the twelve bolts and wire retainer shown in the illustration, and hand tighten all the bolts first. Then tighten them with a torque wrench.

HINT: Each bolt length (mm) is indicated in the illustration.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)



76. CONNECT O/D SOLENOID CONNECTOR

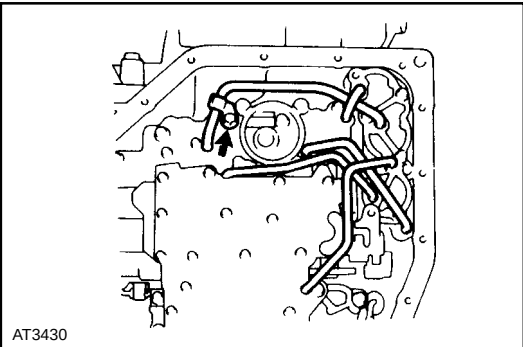


77. INSTALL MANUAL DETENT SPRING

- Install the detent spring and cover in place, and install the bolt (length: 16 mm).
- Hand tighten the bolt first, then tighten the bolt with a torque wrench.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)

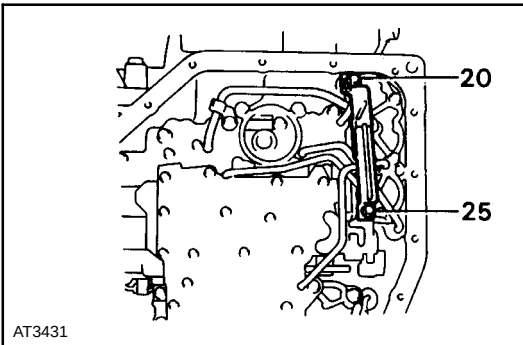
- Check that the manual valve lever is in contact with the center of the roller at the tip of the detent spring.



78. INSTALL OIL TUBES

- Tap the tubes with a plastic hammer to install them into the positions indicated in the illustration.

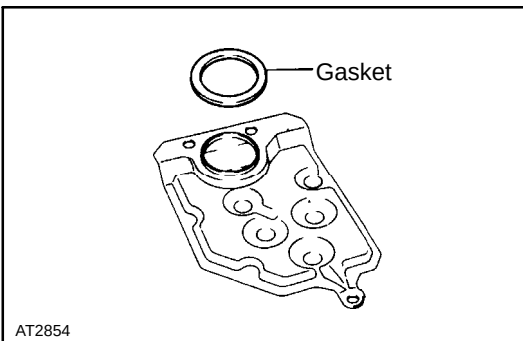
NOTICE: Be careful not to bend or damage the tubes.



- Install the oil tube clamp and bracket.

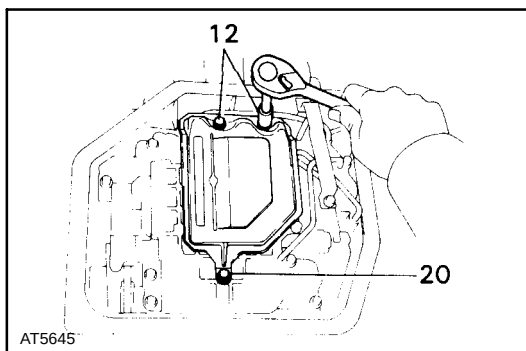
HINT: Each bolt length (mm) is indicated in the illustration. Hand tighten all bolts first, then tighten them with a torque wrench.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)

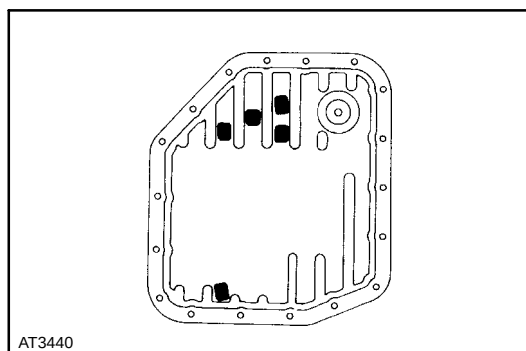


79. INSTALL OIL STRAINER

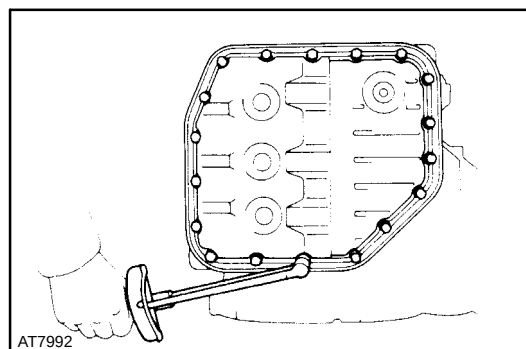
- Install a new gasket to the oil strainer.



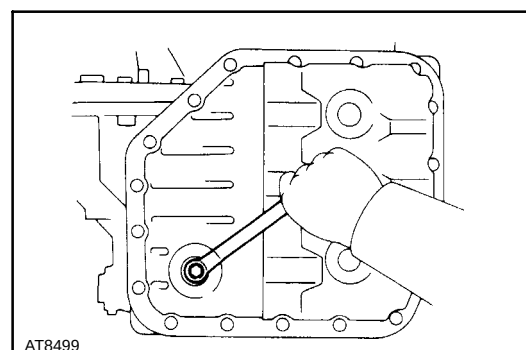
- (b) Install the oil strainer with the three bolts.
HINT: Each bolt length (mm) is indicated in the illustration.



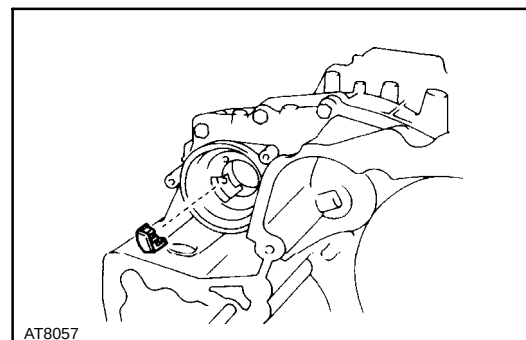
- 80. INSTALL FIVE MAGNETS IN OIL PAN**
NOTICE: Make sure that the magnets do not interfere with the oil tubes.



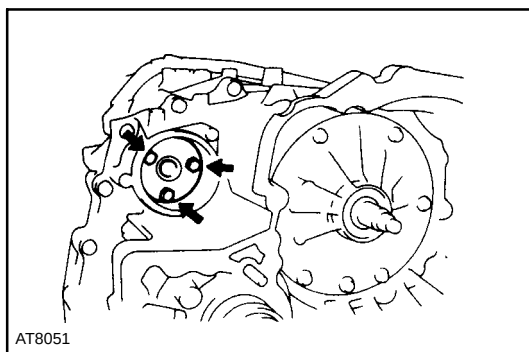
- 81. INSTALL OIL PAN**
(a) Install a new gasket to the oil pan and install them to the transmission.
(b) Tighten the eighteen bolts.
Torque: 4.9 N-m (50 kgf-cm, 43 in.-lbf)



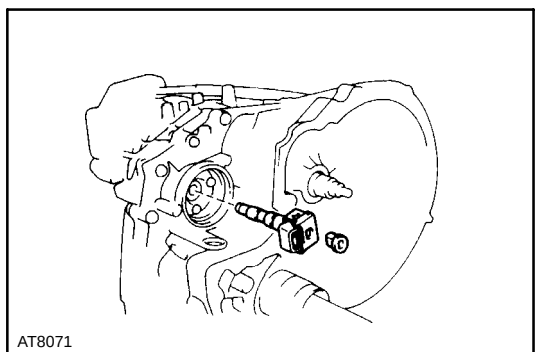
- (c) Install a new gasket to the drain plug and install it to the oil pan.
Torque: 17 N-m (175 kgf-cm, 13 ft-lbf)



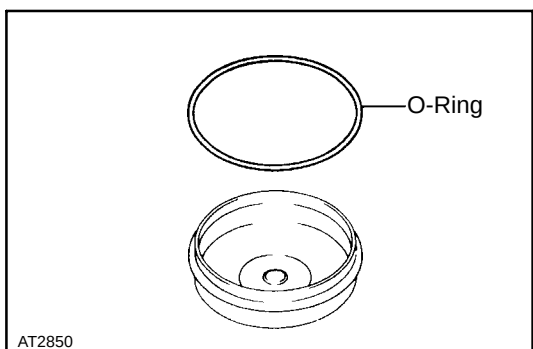
- 82. INSTALL GOVERNOR BODY**
(a) Install the oil strainer.



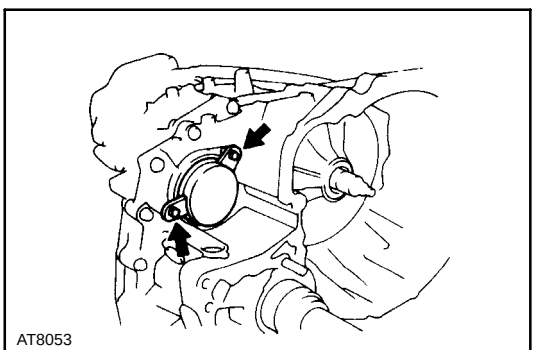
- (b) Install a new gasket to governor body adaptor.
- (c) Install the governor body adaptor with three bolts.



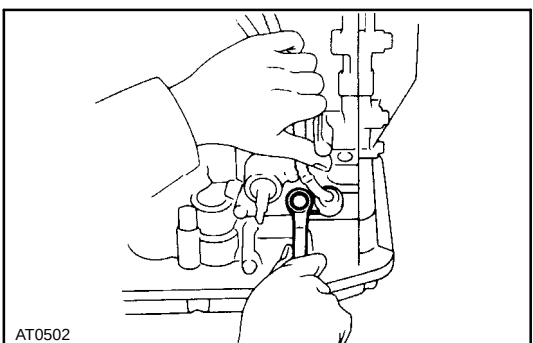
- (d) Install the governor body and thrust washer.



- (e) Install a new O-ring to the cover.

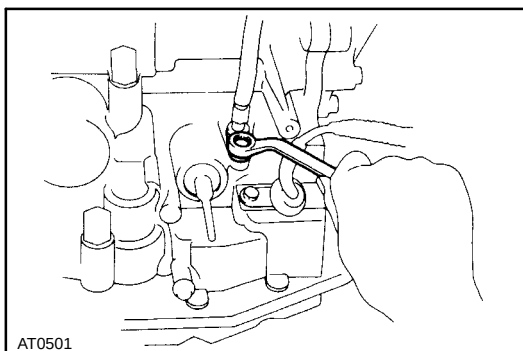


- (f) Install the cover to the transmission and then install the two cover brackets with the two bolts.

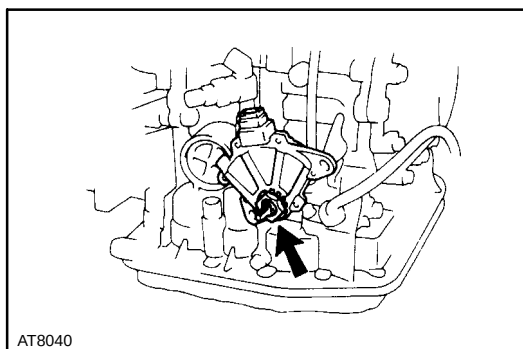


83. INSTALL SOLENOID WIRE RETAINING PLATE

Install the retaining plate with the bolt.

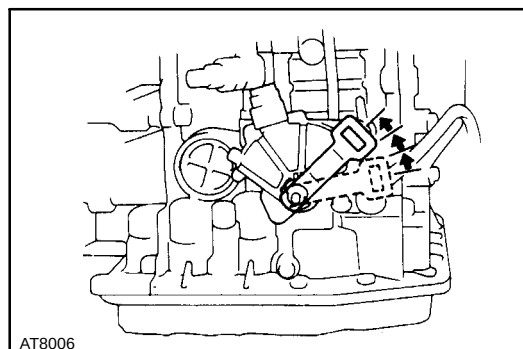
**84. INSTALL THROTTLE CABLE RETAINING PLATE**

Install the retaining plate with bolt.

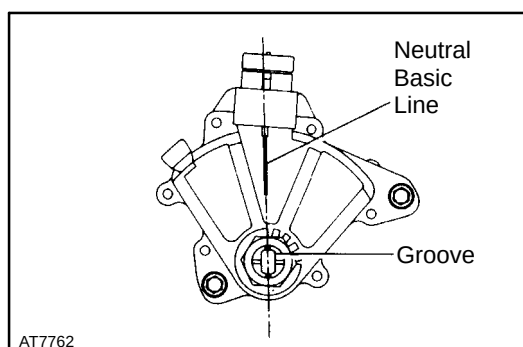
**85. INSTALL NEUTRAL START SWITCH**

- (a) Install the neutral start switch to the manual valve shaft.
- (b) Install the packing, nut stopper and nut.
- (c) Tighten the nut.

Torque: 6.9 N-m (70 kgf-cm, 61 in.-lbf)

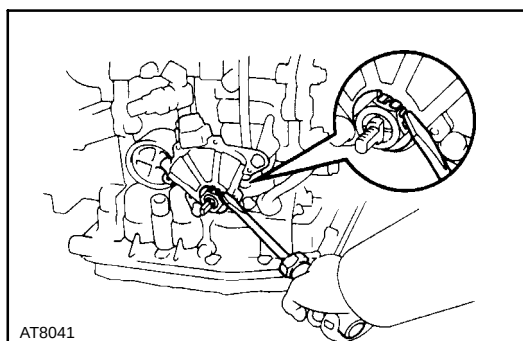


- (d) Temporarily install the manual shift lever.
- (e) Turn the lever clockwise until it stops, then turn it counterclockwise three notches.
- (f) Remove the manual shift lever.

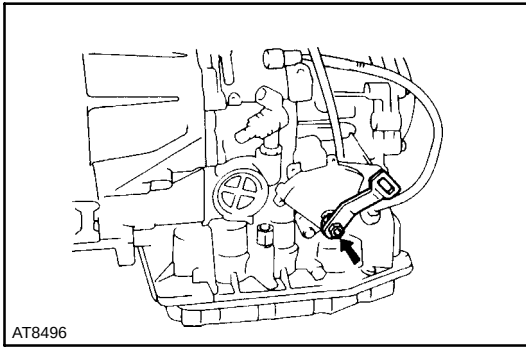


- (g) Align the groove and neutral basic line as shown.
- (h) Install and tighten the two bolts.

Torque: 5.4 N-m (55 kgf-cm, 48 in.-lbf)

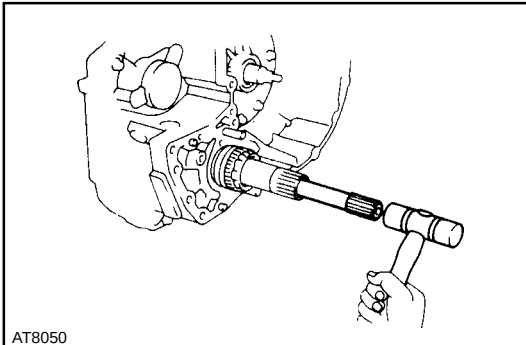


- (i) Using a screwdriver, stake the nut with the nut stopper.



- (j) Install the manual shift lever with the washer, and tighten the nut.

Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)

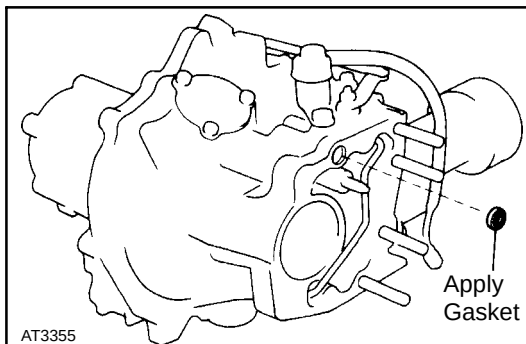
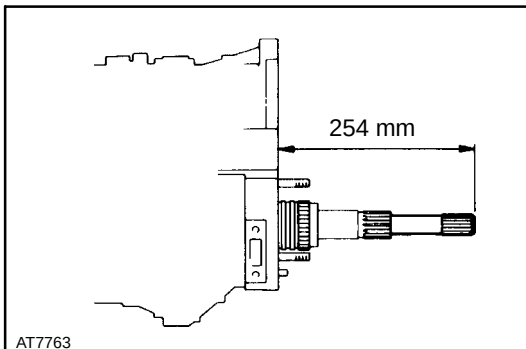


86. INSTALL DIFFERENTIAL SIDE GEAR INTERMEDIATE SHAFT

- (a) Install a new snap ring to the shaft groove.
(b) Using a plastic hammer, install the shaft.

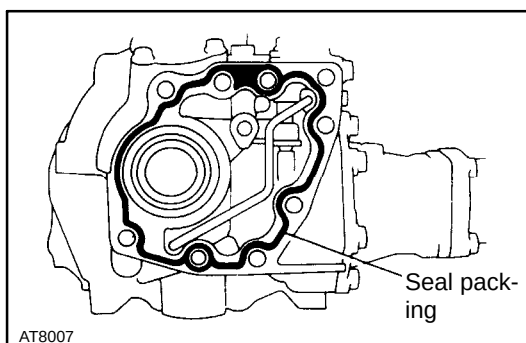
HINT: Keeping the intermediate shaft on the pinion shaft of differential, measure the point in the illustration.

Protrusion Length (Reference): 254 mm (10.0 in.)



87. INSTALL APPLY GASKET

Install a new apply gasket to the transfer left case.

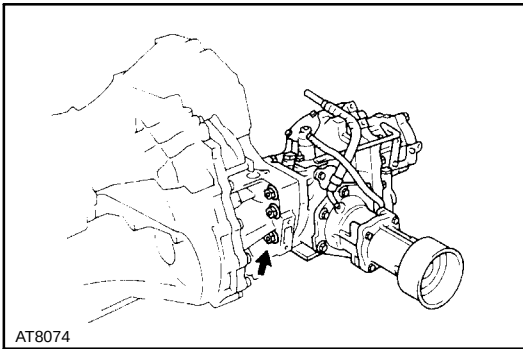


88. INSTALL TRANSFER ASSEMBLY

- (a) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transfer and transaxle.
(b) Apply seal packing to the transfer as shown in the illustration.

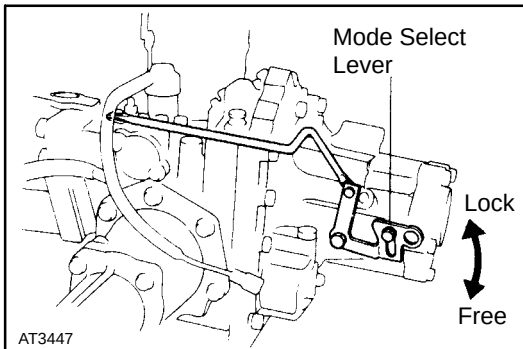
Seal packing: Part No. 08826 - 00090, THREE BOND 1281 or equivalent

HINT: Install the transfer assembly as soon as the seal packing is applied.



(c) Install and torque the six nuts.

Torque: 69 N-m (700 kgf-cm, 51 ft-lbf)



89. INSPECT MODE SELECT LEVER POSITION

After finishing inspection or repair the transaxle, be sure the mode select lever position to FREE mode and attach the lock bolt.

COMPONENT PARTS

General Notes

The instructions here are organized so that you work on only one component group at a time.

This will help avoid confusion from similar-looking parts of different subassemblies being on your workbench at the same time.

The component groups are inspected and repaired from the converter housing side.

As much as possible, complete the inspection, repair and assembly before proceeding to the next component group. If a component group can not be assembled because parts are being ordered, be sure to keep all parts of that group in a separate container while proceeding with disassembly, inspection, repair and assembly for other component groups.

GENERAL CLEANING NOTES:

1. All disassembled parts should be washed clean with any fluid passages and holes blown through with compressed air.
2. When using compressed air to dry parts, always aim away from yourself to prevent accidentally spraying automatic transmission fluid or kerosene in your face.
3. The recommended automatic transmission fluid kerosene should be used for cleaning.

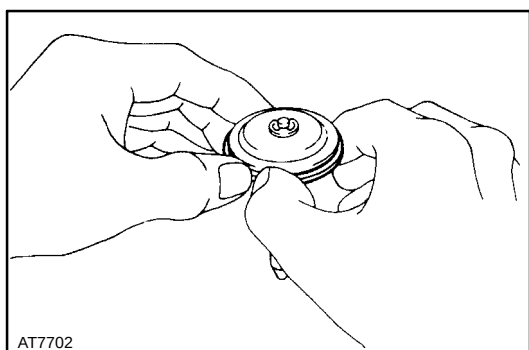
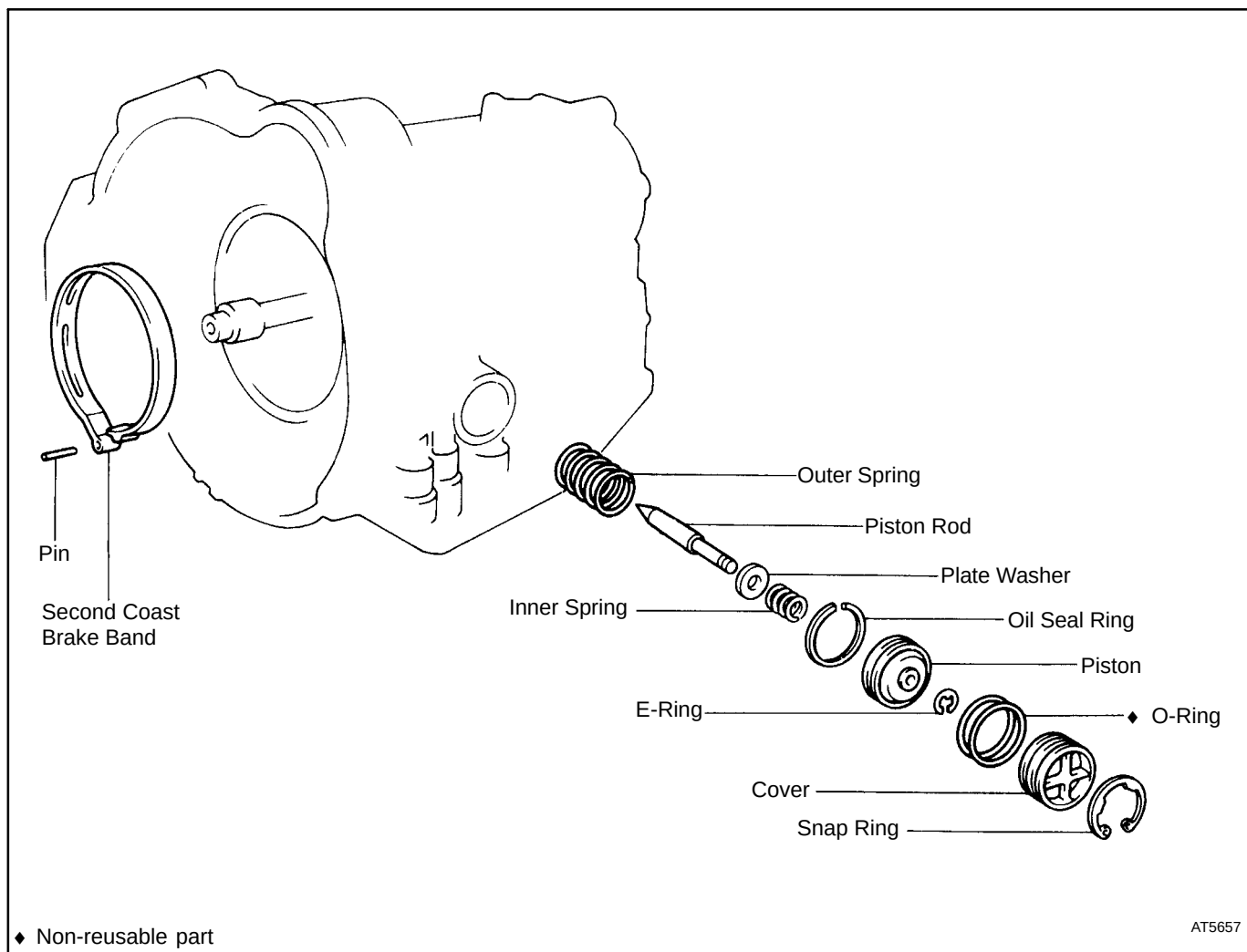
PARTS ARRANGEMENT:

1. After cleaning, the parts should be arranged in proper order to allow efficient inspection, repairs, and reassembly.
2. When disassembling a valve body, be sure to keep each valve together with the corresponding spring.
3. New brakes and clutches that are to be used for replacement must be soaked in transmission fluid for at least fifteen minutes before assembly.

GENERAL ASSEMBLY:

1. All oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces should be coated with transmission fluid prior to reassembly.
2. All gaskets and rubber O-rings should be replaced.
3. Make sure that the ends of a snap ring are not aligned with one of the cutouts and are installed in the groove correctly.
4. If a worn bushing is to be replaced, the subassembly containing that bushing must be replaced.
5. Check thrust bearings and races for wear or damage. Replace if necessary.
6. Use petroleum jelly to keep parts in place.

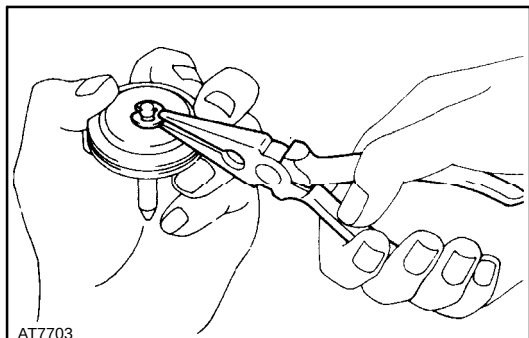
Second Coast Brake



DISASSEMBLY OF SECOND COAST BRAKE PISTON

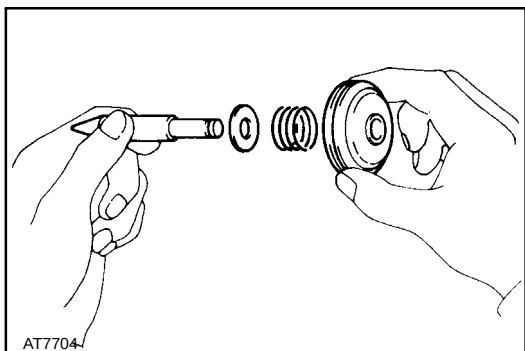
1. REMOVE OIL SEAL RING

Remove the oil seal ring from the piston.

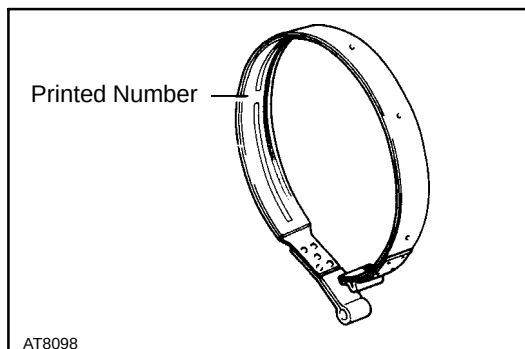


2. REMOVE PISTON ROD

- (a) Remove the E-ring while pushing the piston with needle-nose pliers.



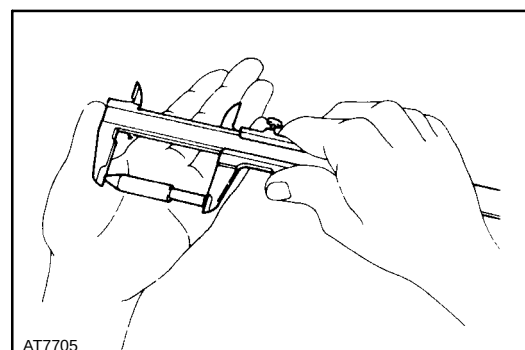
- (b) Remove the spring, washer and piston rod.



INSPECTION OF SECOND COAST BRAKE COMPONENT

INSPECT BRAKE BAND

If the lining of the brake band is exfoliated or discolored, or even part of the printed numbers are defaced, replace the brake band.



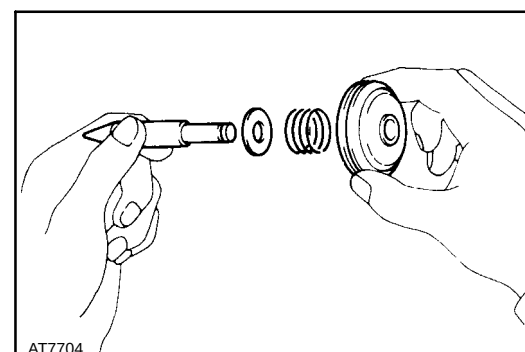
ASSEMBLY OF SECOND COAST BRAKE PISTON

1. SELECT PISTON ROD

If the band is OK with piston stroke not within the standard value, select the piston rod.

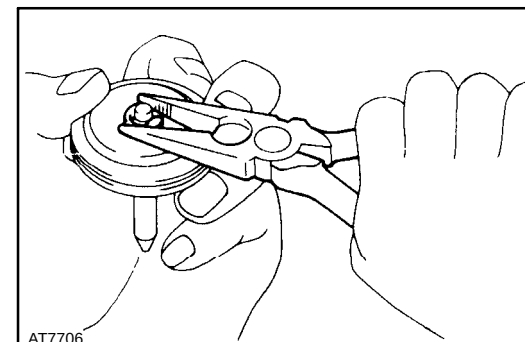
There are two lengths of piston rod.

Piston rod length: **72.9 mm (2.870 in.)**
 71.4 mm (2.811 in.)

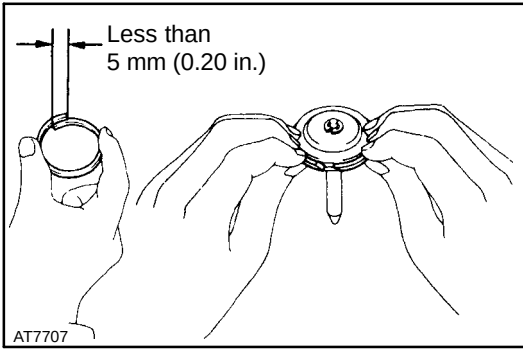


2. INSTALL PISTON ROD

- (a) Install the washer and spring to the piston rod.



- (b) Install a E-ring while pushing the piston.

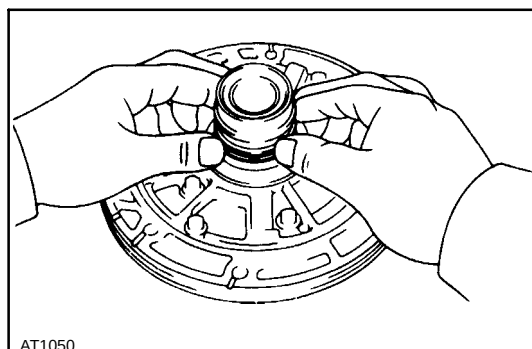
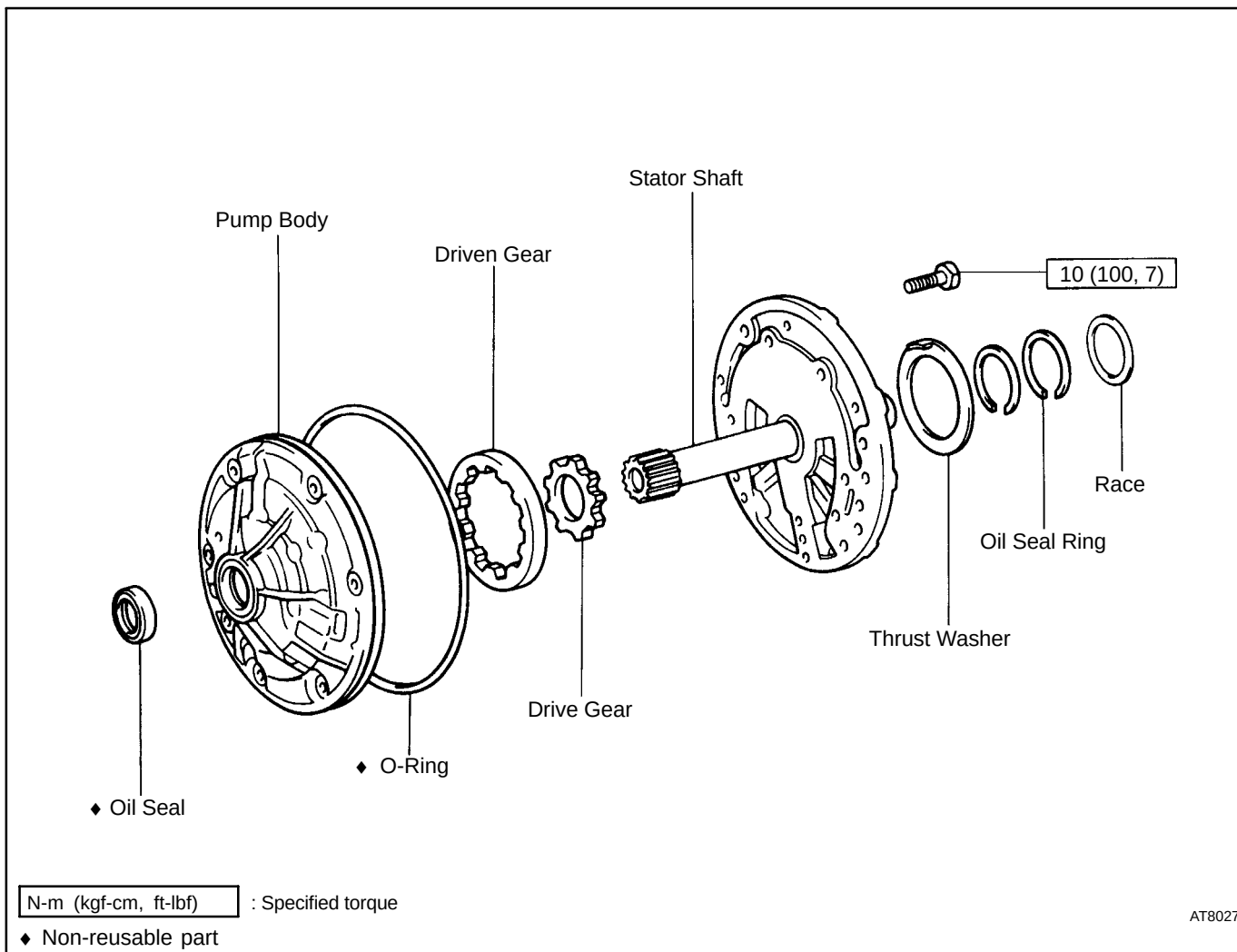


3. INSTALL OIL SEAL RING

- (a) Apply ATF to the oil seal ring.
- (b) Install the oil seal ring to the piston.

NOTICE: Do not spread the ring ends more than necessary.

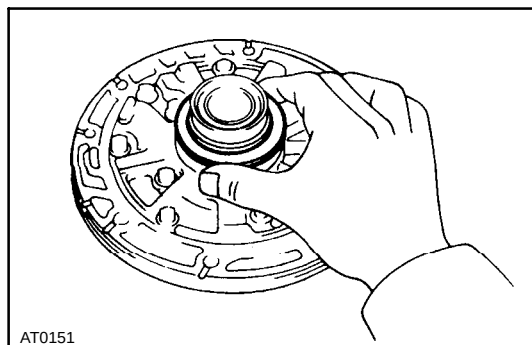
Oil Pump



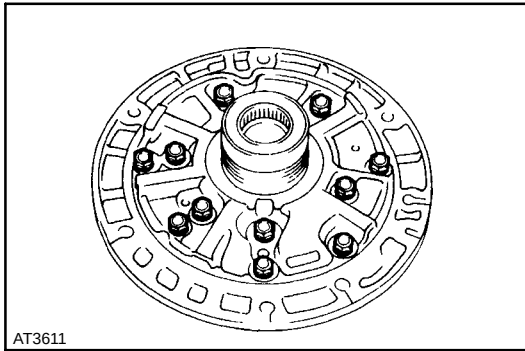
DISASSEMBLY OF OIL PUMP

1. REMOVE OIL SEAL RINGS

Remove the two oil seal rings from the stator shaft back side.



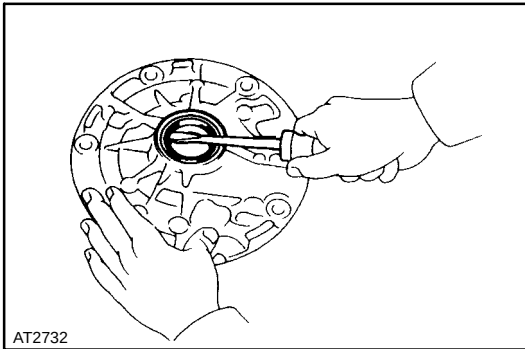
2. REMOVE THRUST WASHER FROM STATOR SHAFT BACK SIDE



AT3611

3. REMOVE STATOR SHAFT

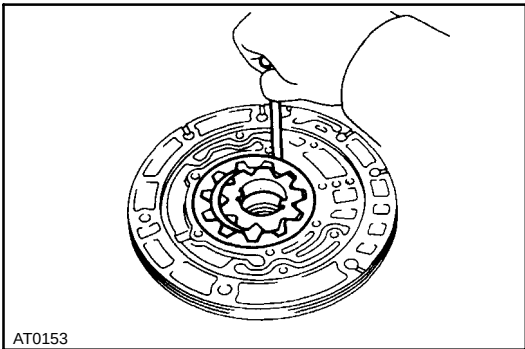
Remove the eleven bolts and stator shaft. Keep the gears in assembly order.



AT2732

4. REMOVE FRONT OIL SEAL

Pry off the oil seal with a screwdriver.



AT0153

INSPECTION OF OIL PUMP

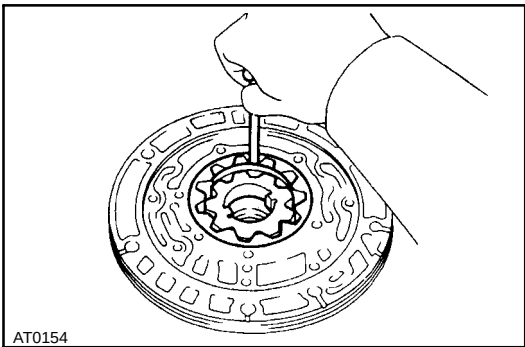
1. CHECK BODY CLEARANCE OF DRIVEN GEAR

Push the driven gear to one side of the body. Using a feeler gauge, measure the clearance.

Standard body clearance: 0.07 - 0.15 mm
(0.0028 - 0.0059 in.)

Maximum body clearance: 0.3 mm (0.012 in.)

If the body clearance is greater than the maximum, replace the oil pump body subassembly.



AT0154

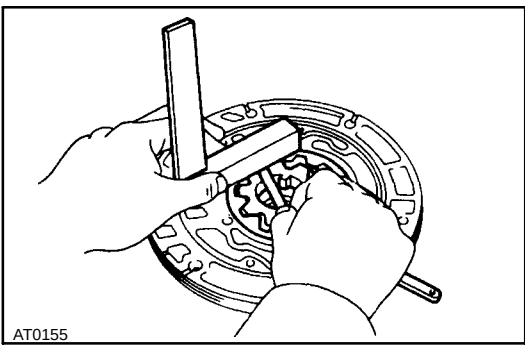
2. CHECK TIP CLEARANCE OF DRIVEN GEAR

Measure between the driven gear teeth and the crescent-shaped part of the pump body.

Standard tip clearance: 0.11 - 0.14 mm
(0.0043 - 0.0055 in.)

Maximum tip clearance: 0.3 mm (0.012 in.)

If the tip clearance is greater than the maximum, replace the oil pump body subassembly.



AT0155

3. CHECK SIDE CLEARANCE OF BOTH GEARS

Using a steel straightedge and a feeler gauge, measure the side clearance of both gears.

Standard side clearance: 0.02 - 0.05 mm
(0.0008 - 0.0020 in.)

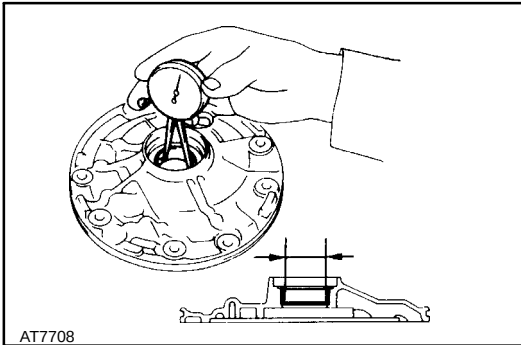
Maximum side clearance: 0.1 mm (0.004 in.)

There are different thicknesses for drive and driven gears.

Drive and driven gear thickness:

	Mark	Thickness mm (in.)
A240L, A243L	A	9.440 - 9.456 (0.3717 - 0.3723)
	B	9.456 - 9.474 (0.3723 - 0.3730)
	C	9.474 - 9.490 (0.3730 - 0.3736)
A241E	—	10.715 (0.4219)

If the thickest gear can not make the side clearance within standard specification, replace the oil pump body sub-assembly.

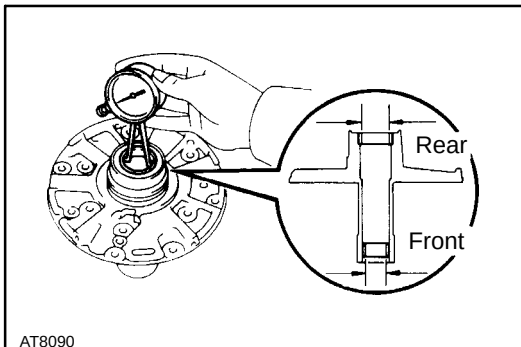


4. CHECK OIL PUMP BODY BUSHING

Using a dial indicator, measure the inside diameter of the oil pump body bushing.

Maximum inside diameter: 38.18 mm (1.5051 in.)

If the inside diameter is greater than the maximum, replace the oil pump body subassembly.



5. CHECK STATOR SHAFT BUSHINGS

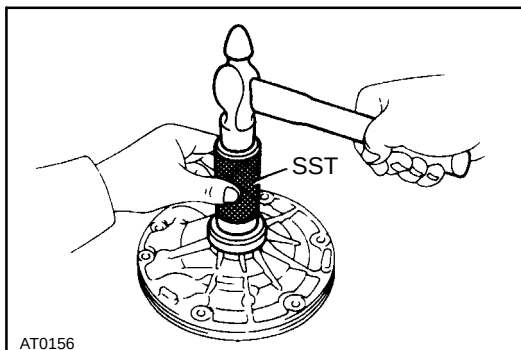
Using a dial indicator, measure the inside diameter of the stator shaft bushings.

Maximum inside diameter:

Front side 21.57 mm (0.8492 in.)

Rear side 27.07 mm (1.0657 in.)

If the inside diameter is greater than the maximum, replace the stator shaft.



ASSEMBLY OF OIL PUMP

1. INSTALL FRONT OIL SEAL

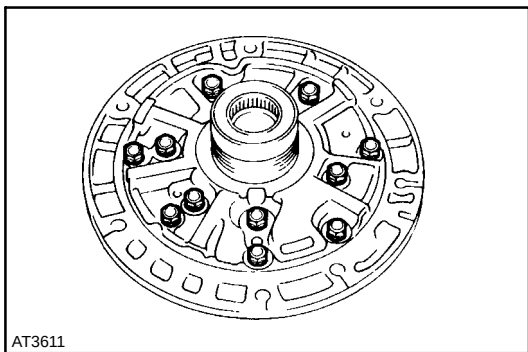
Using SST and a hammer, install a new oil seal. The seal end should be flush with the outer edge of the pump body.

SST 09350-32014 (09351-32140)

2. INSTALL DRIVEN GEAR AND DRIVE GEAR

Make sure the top of the gears are facing upward.

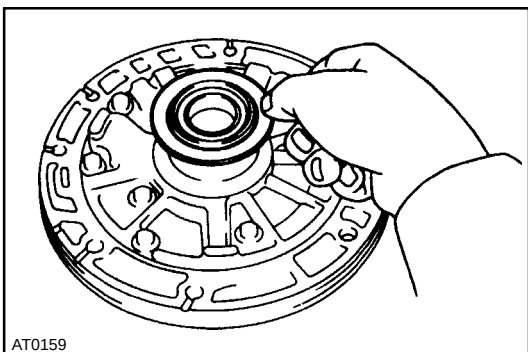




3. INSTALL STATOR SHAFT TO PUMP BODY

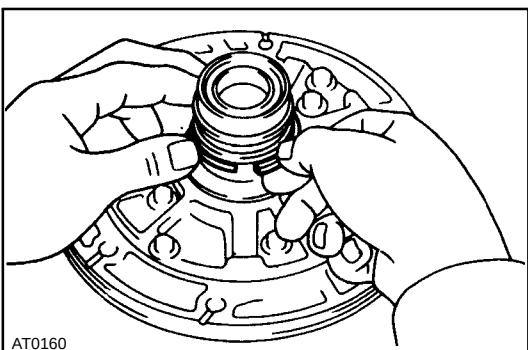
- (a) Align the stator shaft with each bolt hole.
- (b) Torque the eleven bolts.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)



4. INSTALL THRUST WASHER

- (a) Coat the thrust washer with petroleum jelly.
- (b) Align the tab of the washer with the hollow of the pump body.

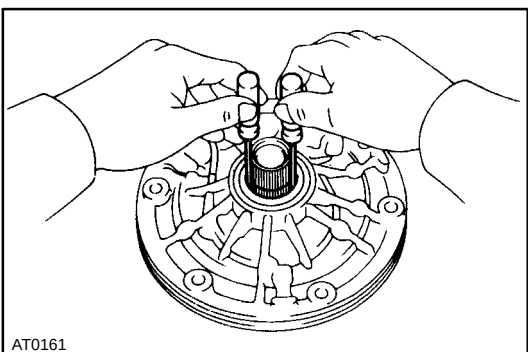


5. INSTALL OIL SEAL RINGS

Install the two oil seal rings to the stator shaft back side.

NOTICE: Do not spread the ring ends more than necessary.

HINT: After installing the oil seal rings, check that they move smoothly.

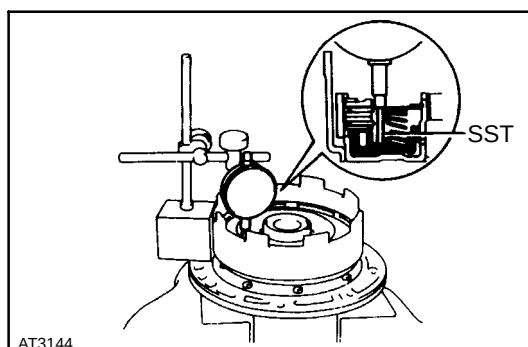
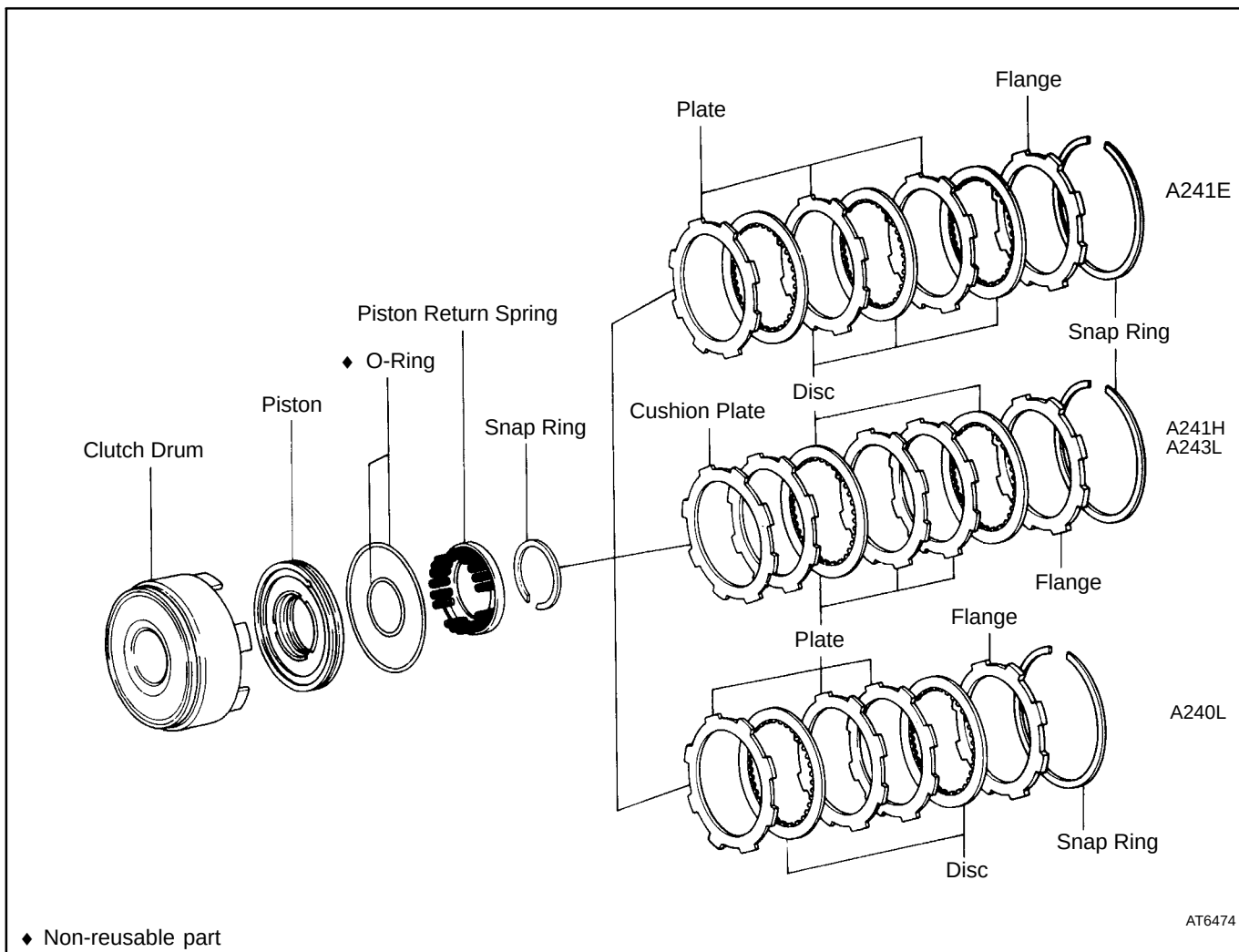


6. CHECK PUMP DRIVE GEAR ROTATION

Turn the drive gear with two screwdrivers and make sure it rotates smoothly.

NOTICE: Be careful not to damage the oil seal lip.

Direct Clutch



DISASSEMBLY OF DIRECT CLUTCH

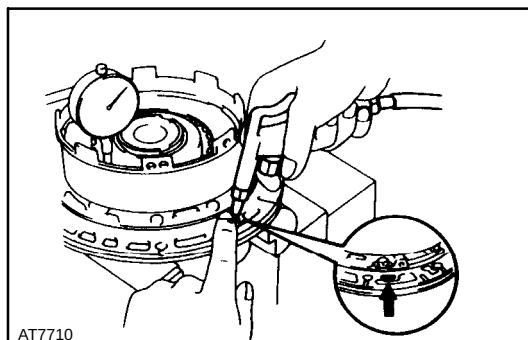
1. CHECK PISTON STROKE OF DIRECT CLUTCH

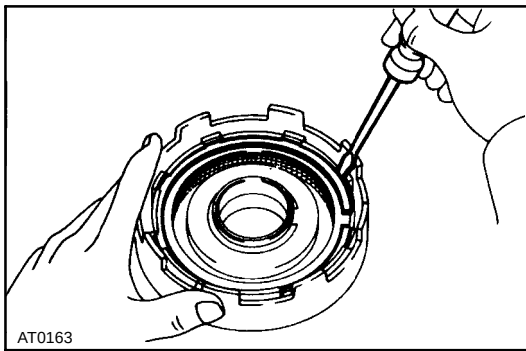
- Install the direct clutch on the oil pump.
- Using a dial indicator (long type pick or SST), measure the direct clutch piston stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi) as shown.

SST 09350-32014 (09351-32190)

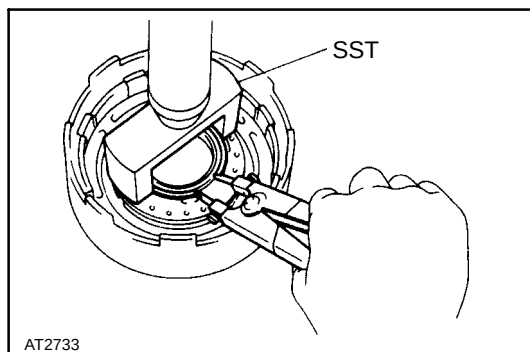
Piston stroke:	A241E	1.11 - 1.47 mm (0.0437 - 0.0579 in.)
	A243L	1.63 - 1.97 mm (0.0642 - 0.0776 in.)
	A240L, A241H	1.36 - 1.71 mm (0.0535 - 0.0669 in.)

If the piston stroke is greater than the maximum inspect the each component.

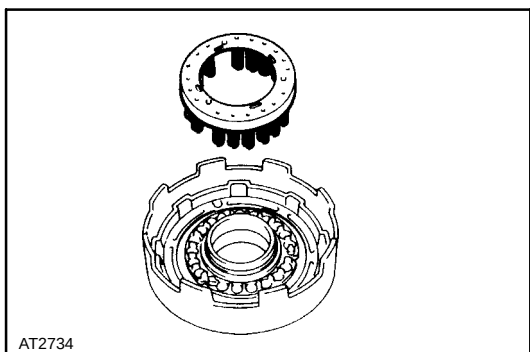




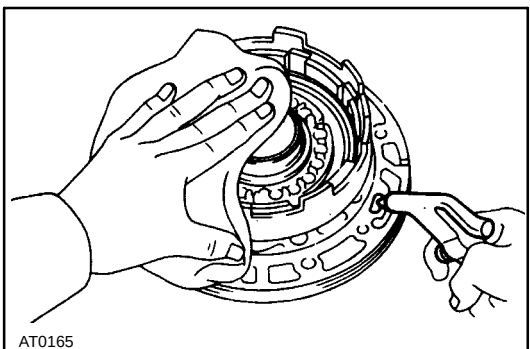
2. **REMOVE SNAP RING FROM CLUTCH DRUM**
3. **REMOVE FLANGE, DISCS AND PLATES**
4. **(A243L, A241H)
REMOVE CUSHION PLATE**



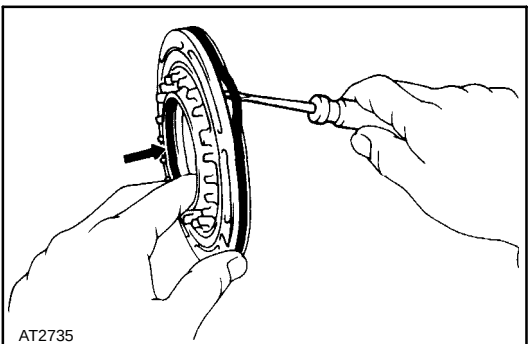
5. **REMOVE PISTON RETURN SPRING**
 - (a) Place SST on the spring retainer and compress the springs with a shop press.
SST 09350-32014 (09351-32070)
 - (b) Remove the snap ring with the snap ring pliers.



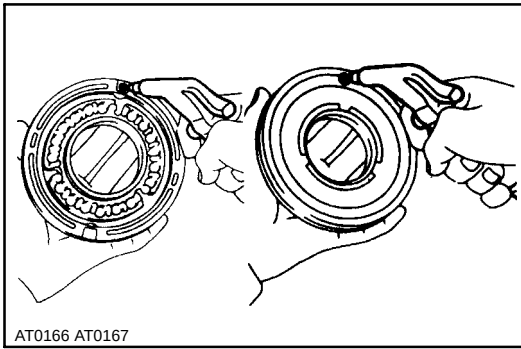
- (c) Remove the piston return spring.



6. **REMOVE CLUTCH PISTON**
 - (a) Install the direct clutch onto the oil pump.
 - (b) Apply compressed air to the oil pump to remove the piston. (If the piston does not come out completely, use needle-nose pliers to remove it.)
 - (c) Remove the direct clutch from the oil pump.



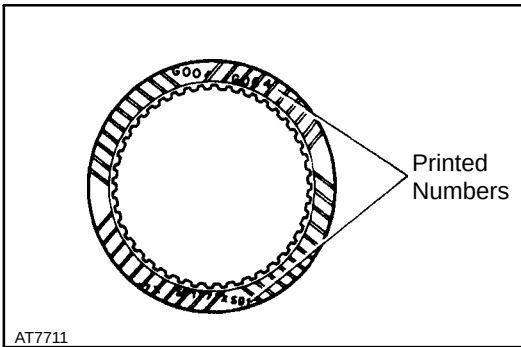
- (d) Remove the two O-rings from the piston.



INSPECTION OF DIRECT CLUTCH

1. INSPECT CLUTCH PISTON

- (a) Check that the check ball is free by shaking the piston.
- (b) Check that the valve does not leak by applying low-pressure compressed air.

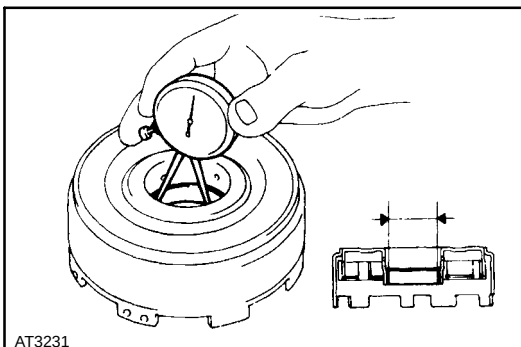


2. INSPECT DISC, PLATE AND FLANGE

Check that the sliding surface of disc, plate and flange worn or burnt. If necessary, replace them.

HINT:

- ★ If the lining of the disc is exfoliated or discolored, or even a part of the printed number is defaced, replace all discs.
- ★ Before assembling new discs, soak them in ATF for at least fifteen minutes.

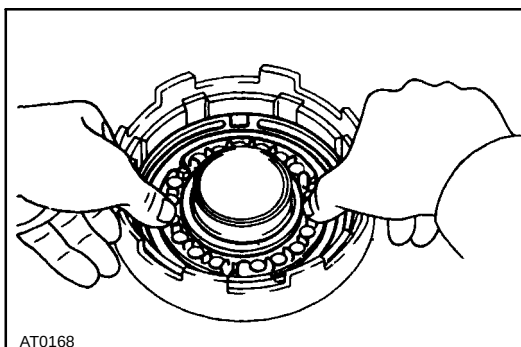


3. CHECK DIRECT CLUTCH BUSHING

Using a dial indicator, measure the inside diameter of the direct clutch bushing.

Maximum inside diameter: 47.07 mm (1.8531 in.)

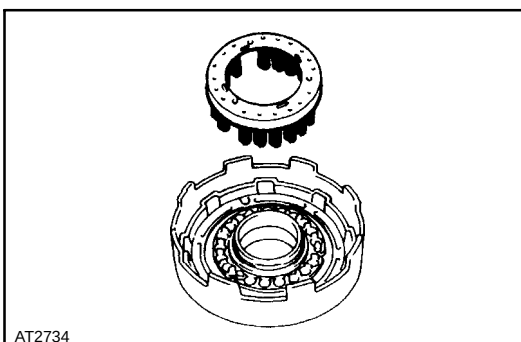
If the inside diameter is greater than the maximum, replace the direct clutch.



ASSEMBLY OF DIRECT CLUTCH

1. INSTALL CLUTCH PISTON IN DIRECT CLUTCH DRUM

- (a) Install new O-rings to the piston. Coat the O-rings with ATF.
- (b) Being careful not to damage the O-rings, press the piston into the drum with the cup side up.

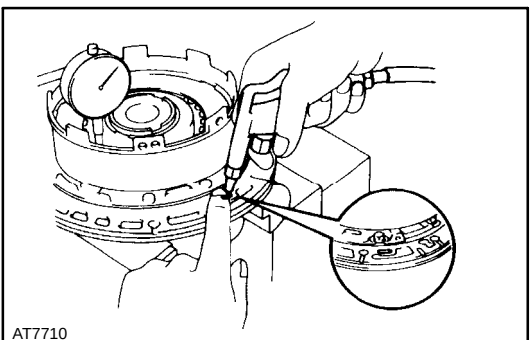
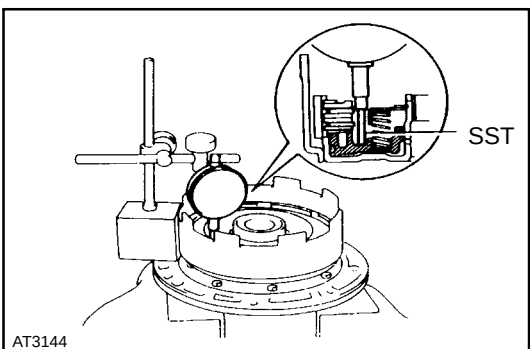
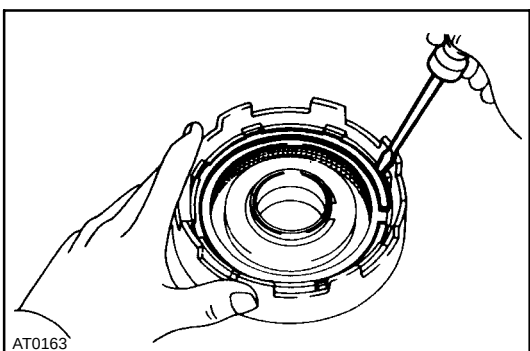
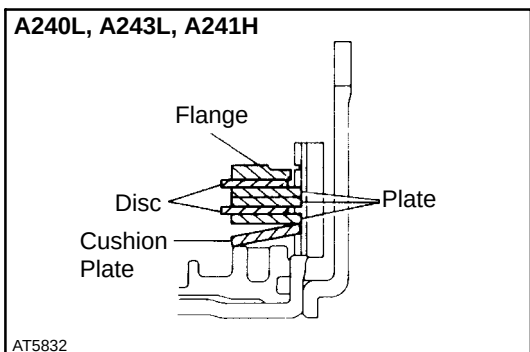
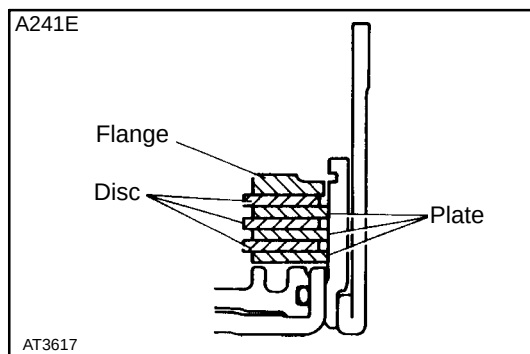


2. INSTALL PISTON RETURN SPRING

- (a) Place the return spring and snap ring onto the piston.
- (b) Place SST on the return spring, and compress the return spring with a shop press.

SST 09350-32014 (09351-32070)

- (c) Install the snap ring with the snap ring pliers. Be sure the end gap of snap ring is not aligned with the spring retainer claw.



3. (A243L) INSTALL CUSHION PLATE ROUNDED END DOWN

4. INSTALL PLATES, DISCS AND FLANGE

- (a) Install plates and discs.
Install in order: P = Plate D = Disc
A241E P-D-P-D-P-D
A240L, A243L, A241H P-D-P-P-D
- (b) Install the flange with the flat end facing downward.

5. INSTALL SNAP RING

Check that the end gap of the snap ring is not aligned with one of the cutouts.

6. RECHECK PISTON STROKE OF DIRECT CLUTCH

- (a) Install the direct clutch on the oil pump.
- (b) Using a dial indicator (long type pick or SST), measure the direct clutch piston stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kg/cm², 57 - 114 psi) as shown.

SST 09350-32014 (09351-32190)

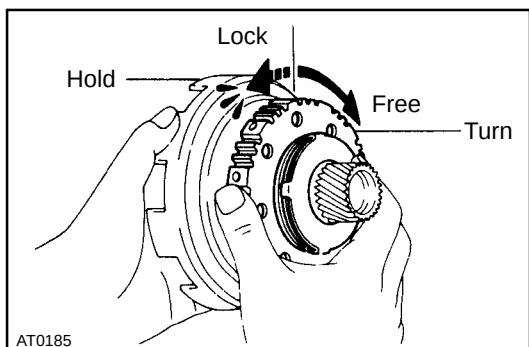
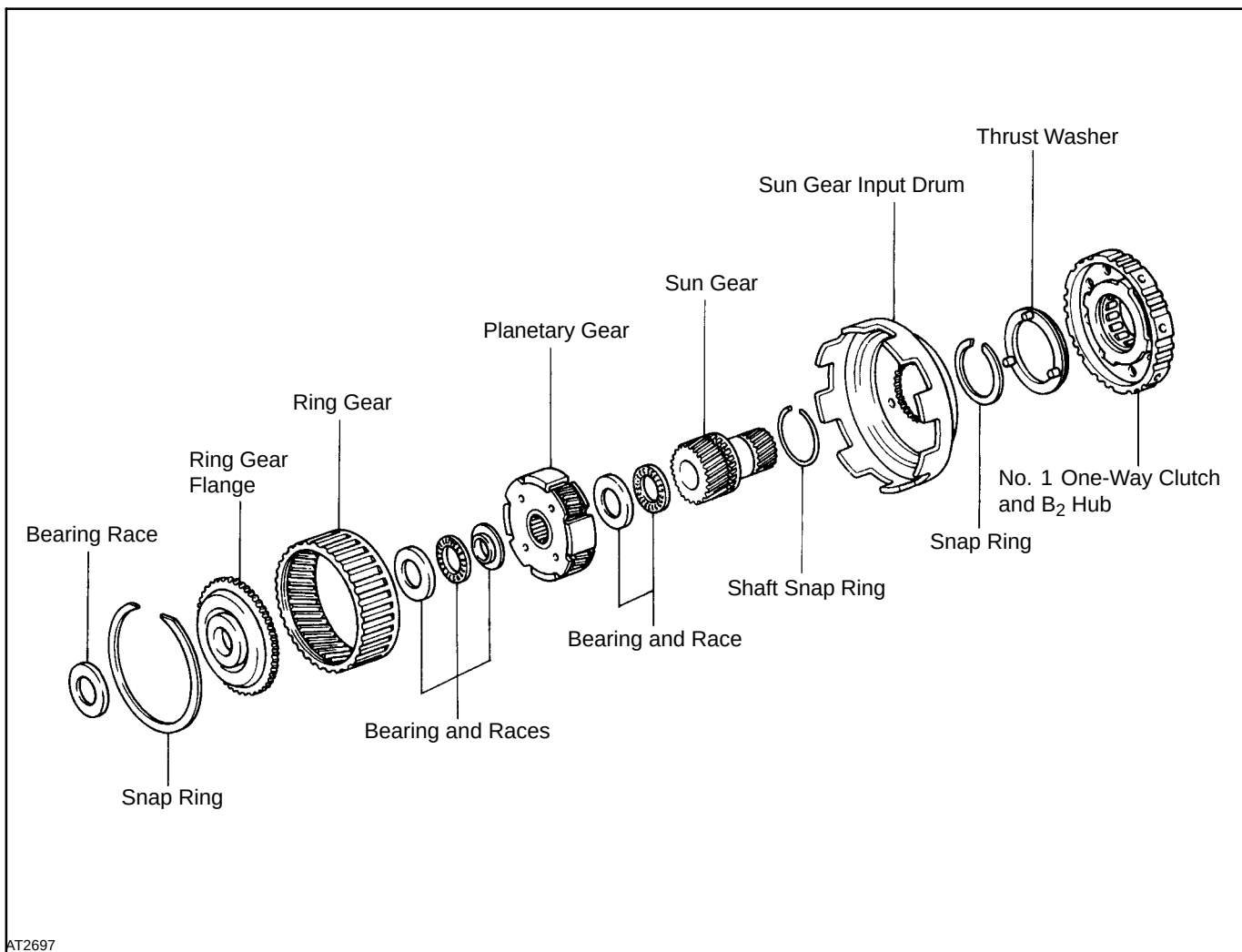
Piston stroke:	A241E	1.11 - 1.47 mm
		(0.0437 - 0.0579 in.)
	A243L	1.63 - 1.97 mm
		(0.0642 - 0.0776 in.)
	A240L, A241H	1.36 - 1.71 mm
		(0.0535 - 0.0669 in.)

If the piston stroke is nonstandard, select another flange.
HINT: There are two (A240L, A241H, A241E) or three (A243L) different thickness for the flange.

Flange thicknesses:

A241E	2.6 mm (0.102 in.)
	3.0 mm (0.118 in.)
A243L	2.6 mm (0.102 in.)
	2.8 mm (0.110 in.)
	3.0 mm (0.118 in.)
A240L, A241H	3.00 mm (0.1181 in.)
	3.37 mm (0.1327 in.)

Front Planetary Gear



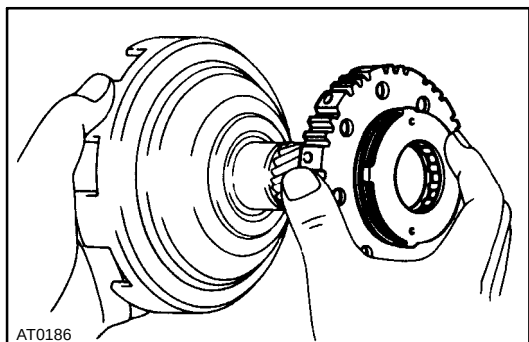
DISASSEMBLY OF ONE-WAY CLUTCH AND SUN GEAR

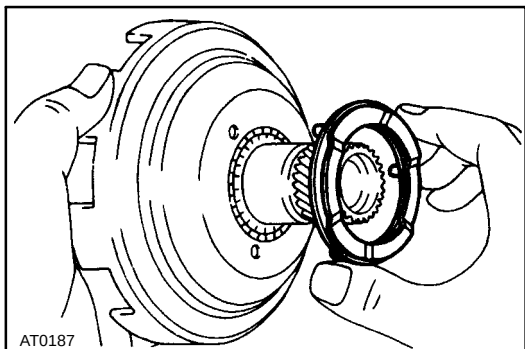
1. CHECK OPERATION OF ONE-WAY CLUTCH

Hold the sun gear and turn the hub. The hub should turn freely clockwise and should lock counterclockwise.

2. REMOVE SECOND BRAKE HUB AND ONE-WAY CLUTCH FROM SUN GEAR

While turning the hub clockwise, remove the one-way clutch from the sun gear.

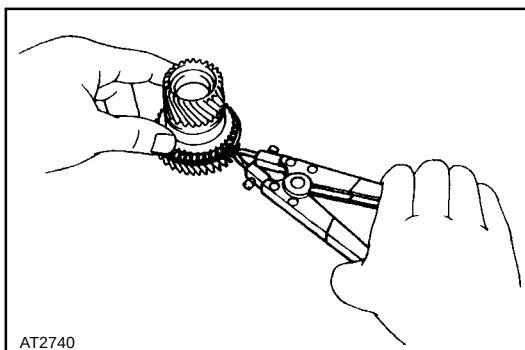




3. REMOVE THRUST WASHER FROM SUN GEAR INPUT DRUM

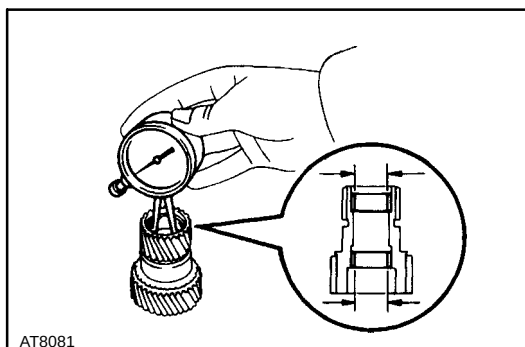
4. REMOVE SUN GEAR FROM DRUM

- (a) Using snap ring pliers, remove the snap ring from the drum.
- (b) Remove the sun gear from the drum.



5. REMOVE SHAFT SNAP RING

Using snap ring pliers, remove the shaft snap ring from the sun gear.



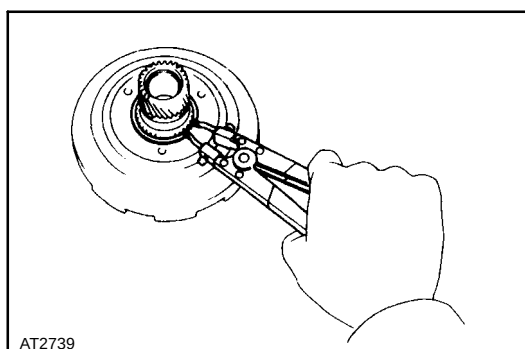
INSPECTION OF SUN GEAR

INSPECT SUN GEAR FLANGE BUSHING

Using a dial indicator, measure the inside diameter of the sun gear.

Standard inside diameter: 22.025 - 22.046 mm
(0.8671 - 0.8680 in.)

Maximum diameter: 22.096 mm (0.8699 in.)

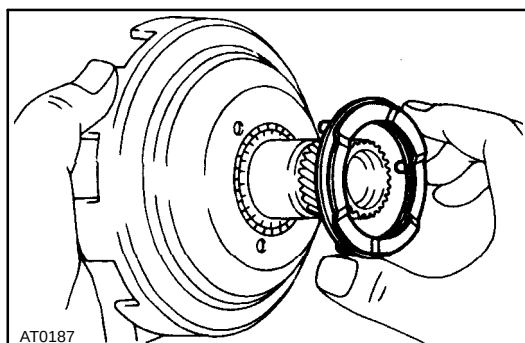


ASSEMBLY OF ONE-WAY CLUTCH AND SUN GEAR

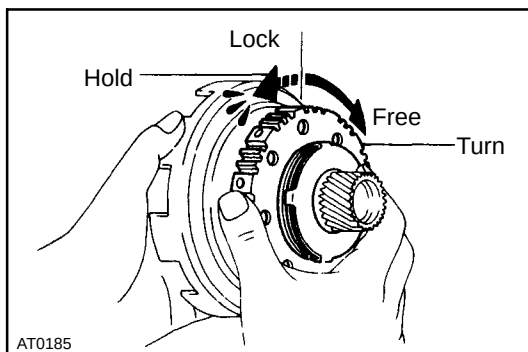
1. INSTALL SHAFT SNAP RING TO SUN GEAR

2. INSTALL SUN GEAR TO DRUM

- (a) Install the sun gear to the drum.
- (b) Using snap ring pliers, install the snap ring to the drum.



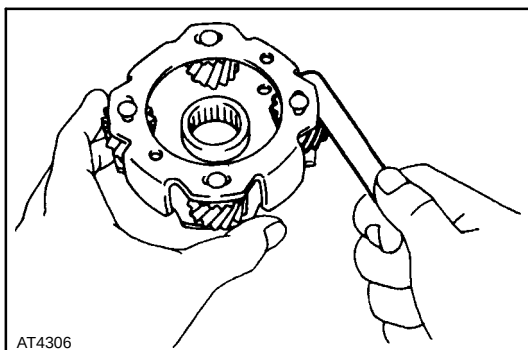
3. INSTALL THRUST WASHER TO SUN GEAR INPUT-DRUM



4. INSTALL ONE-WAY CLUTCH AND SECOND BRAKE HUB ON SUN GEAR

While turning the hub clockwise, slide the one-way clutch onto the sun gear.

5. RECHECK OPERATION OF ONE-WAY CLUTCH



INSPECTION OF FRONT PLANETARY GEAR

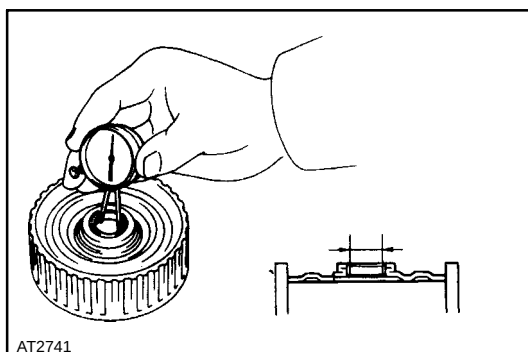
MEASURE PLANETARY PINION GEAR THRUST CLEARANCE

Using a feeler gauge, measure the planetary pinion gear thrust clearance.

Standard clearance: 0.2 - 0.5 mm
(0.008 - 0.020 in.)

Maximum clearance: 0.5 mm (0.020 in.)

If the clearance is greater than the maximum, replace the planetary gear assembly.



INSPECTION OF PLANETARY RING GEAR

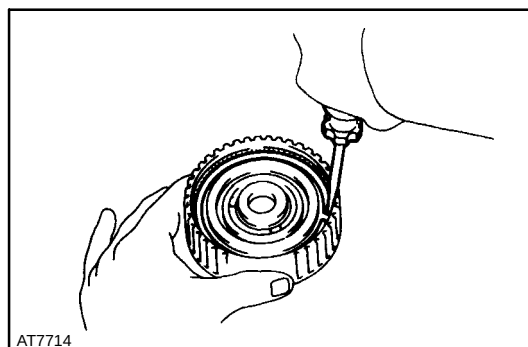
1. INSPECT RING GEAR FLANGE BUSHING

Using a dial indicator, measure the inside diameter of the flange bushing.

Standard inside diameter: 19.025 - 19.050 mm
(0.7490 - 0.7500 in.)

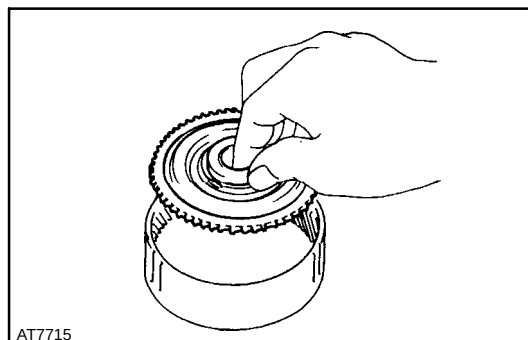
Maximum inside diameter: 19.100 mm (0.7520 in.)

If the inside diameter is greater than the maximum, replace the flange.



2. REMOVE RING GEAR FLANGE

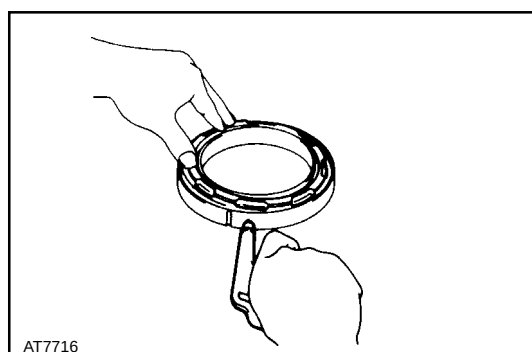
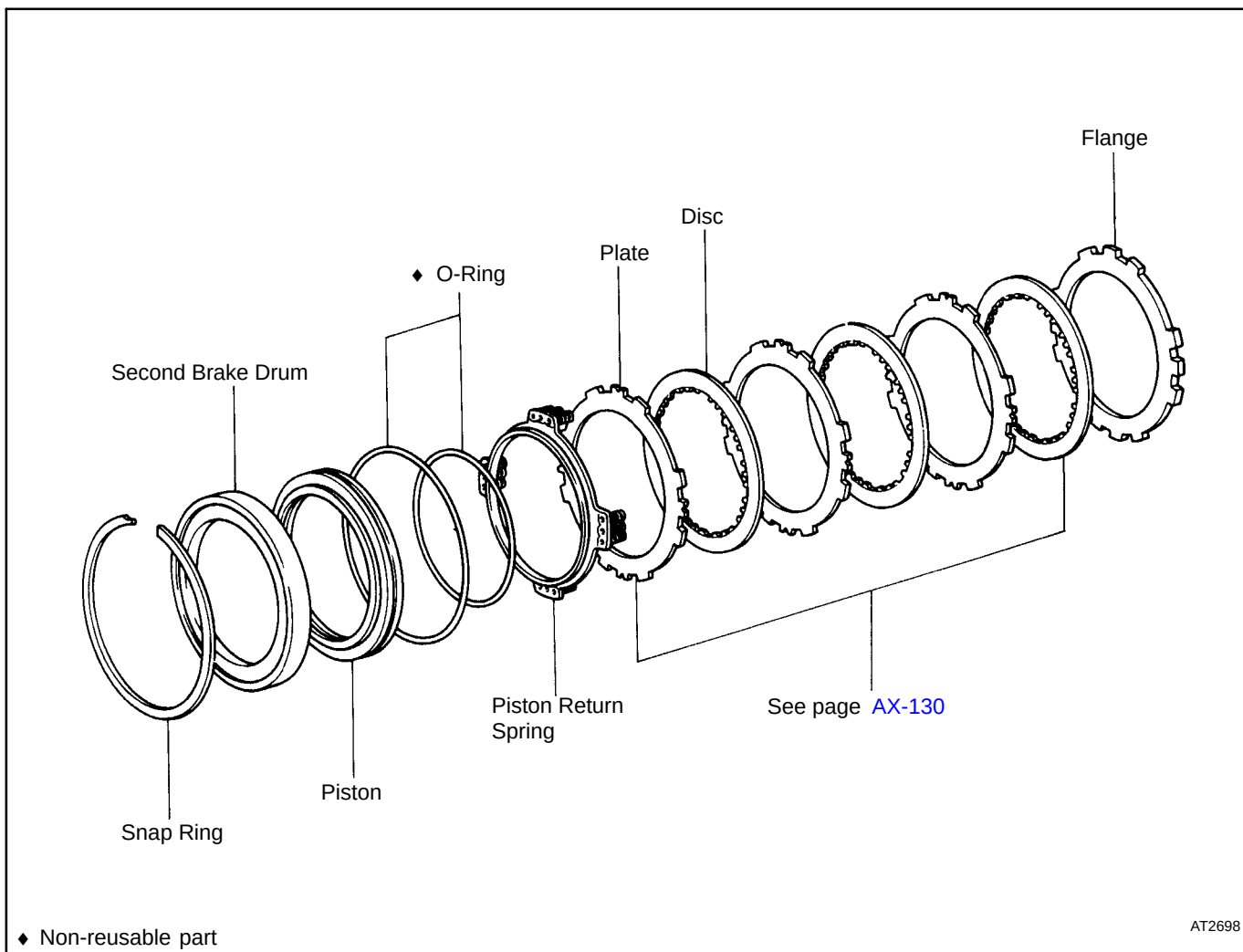
- (a) Using a screwdriver, remove the snap ring.
- (b) Remove the flange from the ring gear.



3. INSTALL RING GEAR FLANGE

- (a) Position the flange onto the ring gear.
- (b) Using a screwdriver, install the snap ring.

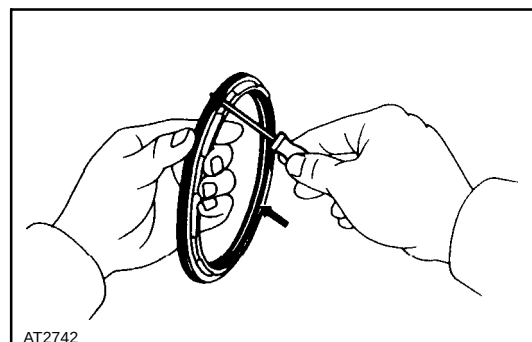
Second Brake



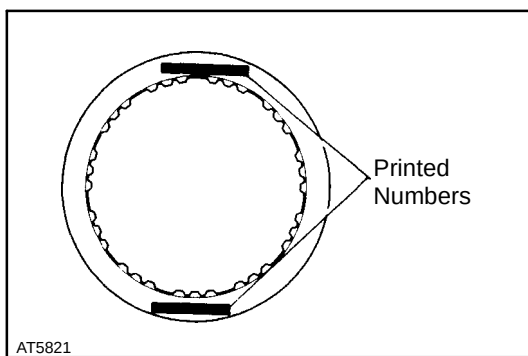
DISASSEMBLY OF SECOND BRAKE PISTON

REMOVE SECOND BRAKE PISTON

- (a) Apply compressed air to the oil hole to remove the piston.



- (b) Remove the two O-rings from the piston.



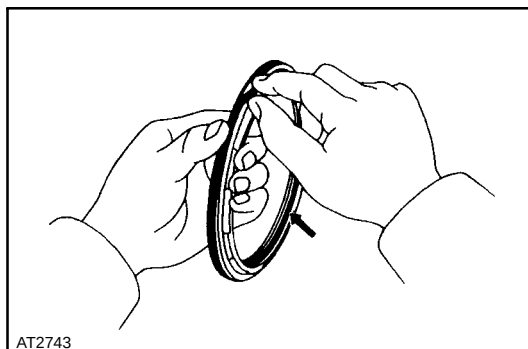
INSPECTION OF SECOND BRAKE COMPONENT

INSPECT DISCS, PLATES AND FLANGE

Check if the sliding surface of the discs, plates and flange are worn or burnt. If necessary, replace them.

HINT:

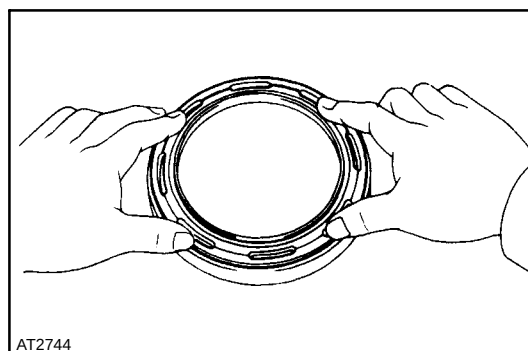
- ★ If the lining of the disc is exfoliated or discolored, or even a part of the printed numbers are defaced, replace all discs.
- ★ Before assembling new discs, soak them in ATF for at least fifteen minutes.



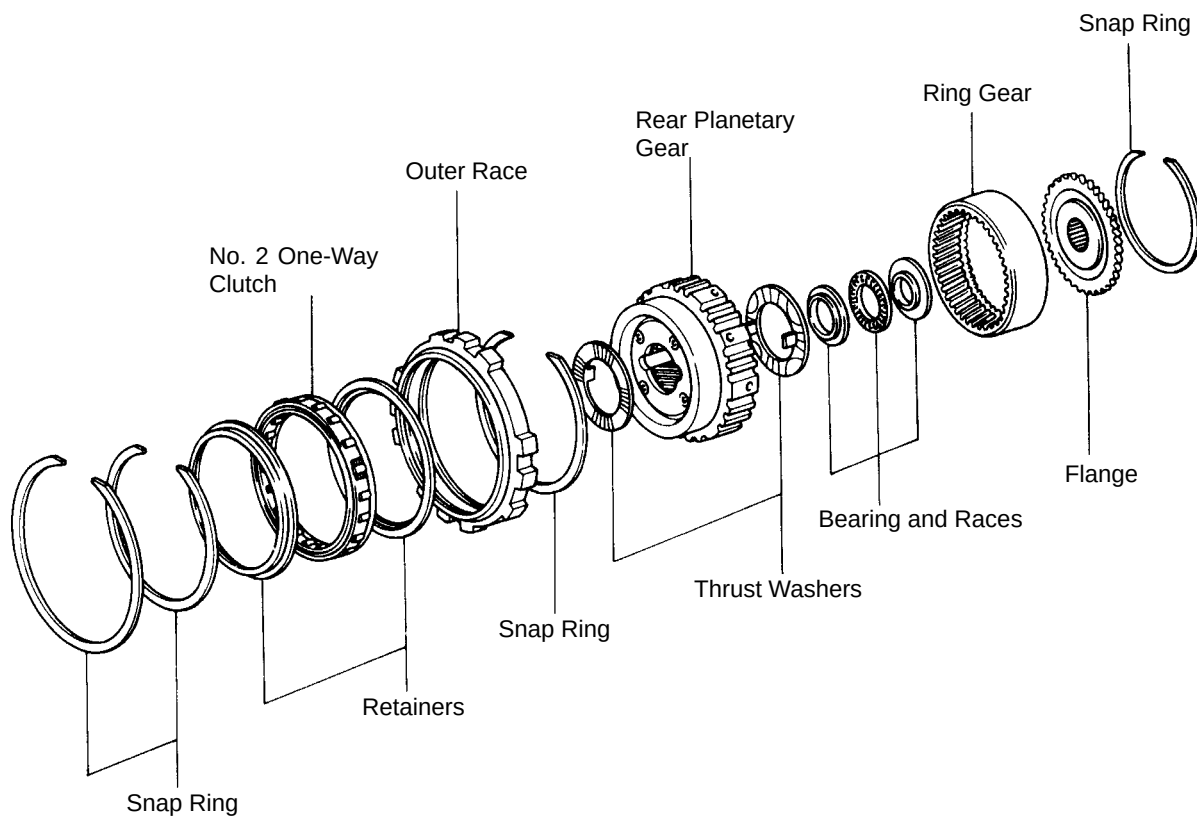
ASSEMBLY OF SECOND BRAKE PISTON

INSTALL PISTON

- (a) Coat a new O-ring with ATF.
- (b) Install the two O-rings on the piston.
- (c) Press the piston into the drum, being careful not to damage the O-rings.



Rear Planetary Gear

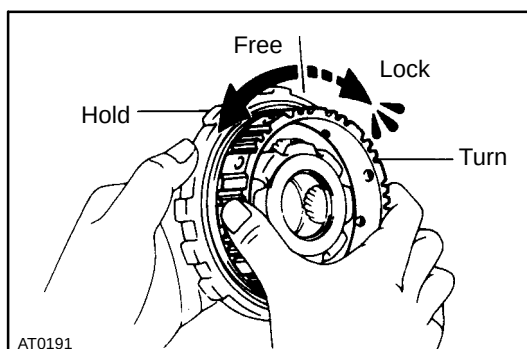


AT2699

DISASSEMBLY OF ONE-WAY CLUTCH

1. CHECK OPERATION OF ONE-WAY CLUTCH

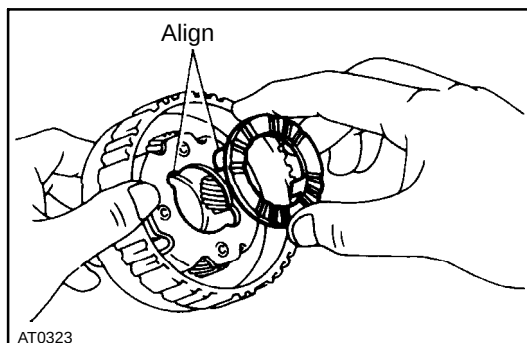
Hold the outer race and turn the hub. The hub should turn freely counterclockwise and should lock clockwise.



AT0191

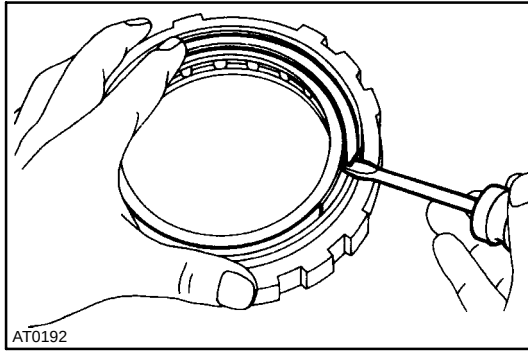
2. REMOVE THRUST WASHERS

Remove the two thrust washers from the both sides of planetary gear.



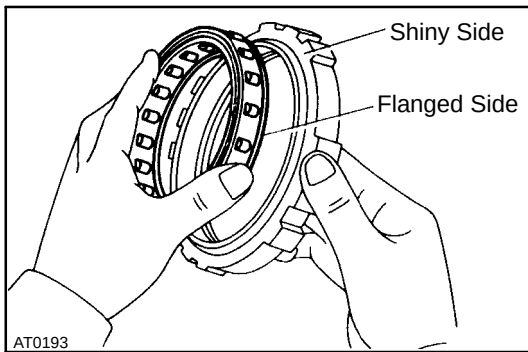
AT0323

3. SEPARATE ONE-WAY CLUTCH AND PLANETARY GEAR



4. REMOVE ONE-WAY CLUTCH FROM OUTER RACE

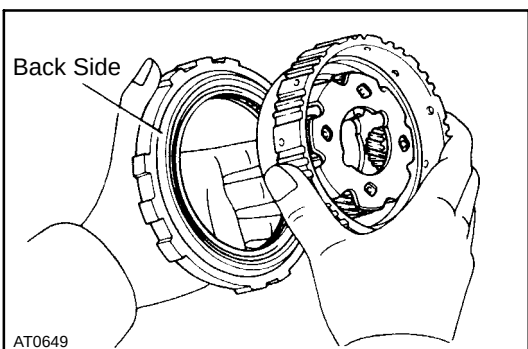
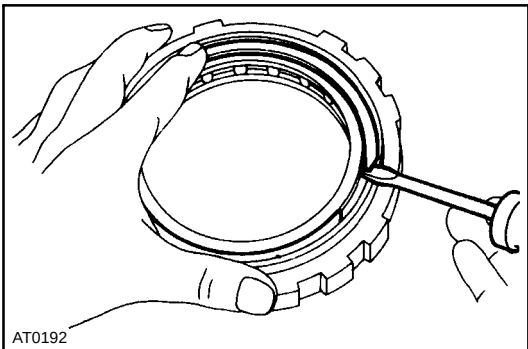
- (a) Remove the two snap rings and retainers from the both sides.
- (b) Remove the one-way clutch from the outer race.



ASSEMBLY OF ONE-WAY CLUTCH

1. INSTALL ONE-WAY CLUTCH

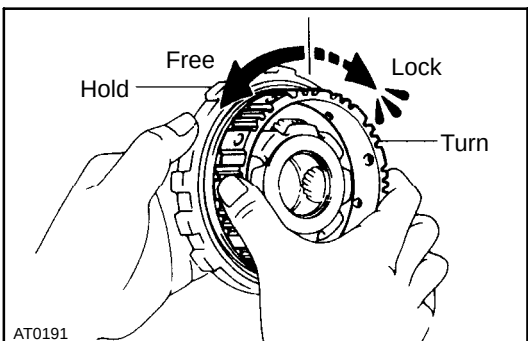
- (a) Install the one-way clutch into the outer race, facing the flanged side of the one-way clutch toward the shiny side of the outer race.
- (b) Install the two retainers and snap rings to the both sides.

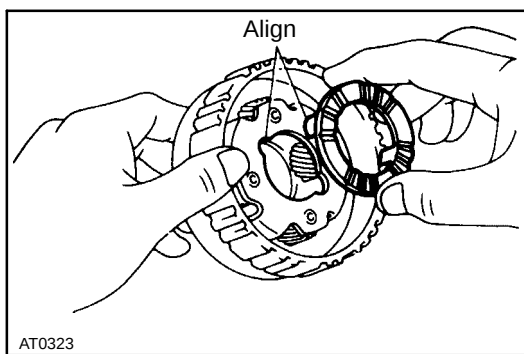


2. INSTALL PLANETARY GEAR INTO ONE-WAY CLUTCH

Install the planetary gear into the one-way clutch facing the inner race of the planetary gear toward the back side of the one-way clutch outer race.

3. CHECK OPERATION OF ONE-WAY CLUTCH





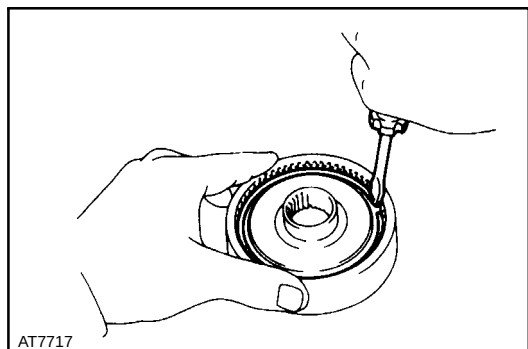
4. INSTALL THRUST WASHERS

- (a) Coat the two thrust washers with petroleum jelly.
- (b) Align the tab of the washers with the hollow of the carrier.

REPLACEMENT OF RING GEAR FLANGE

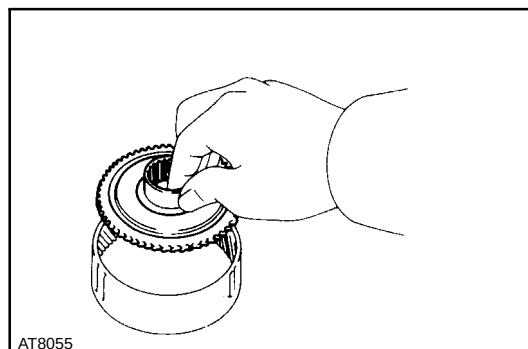
1. REMOVE RING GEAR FLANGE

- (a) Using a screwdriver, remove the snap ring.
- (b) Remove the flange from the ring gear.

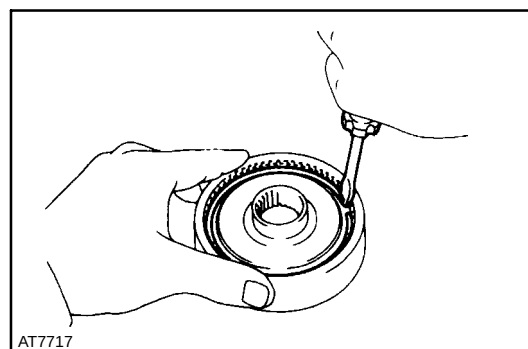


2. INSTALL RING GEAR FLANGE

- (a) Position the flange into the ring gear.



- (b) Using a screwdriver, install the snap ring.



INSPECTION OF REAR PLANETARY GEAR

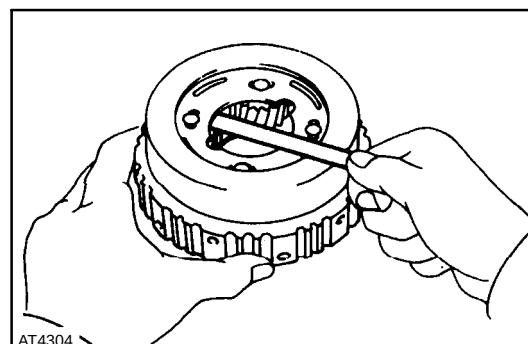
MEASURE PLANETARY PINION GEAR THRUST CLEARANCE

Using a feeler gauge, measure the planetary pinion gear thrust clearance.

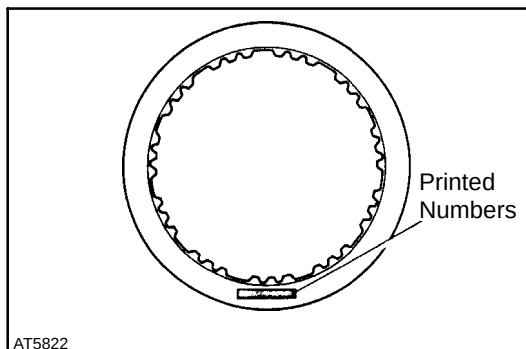
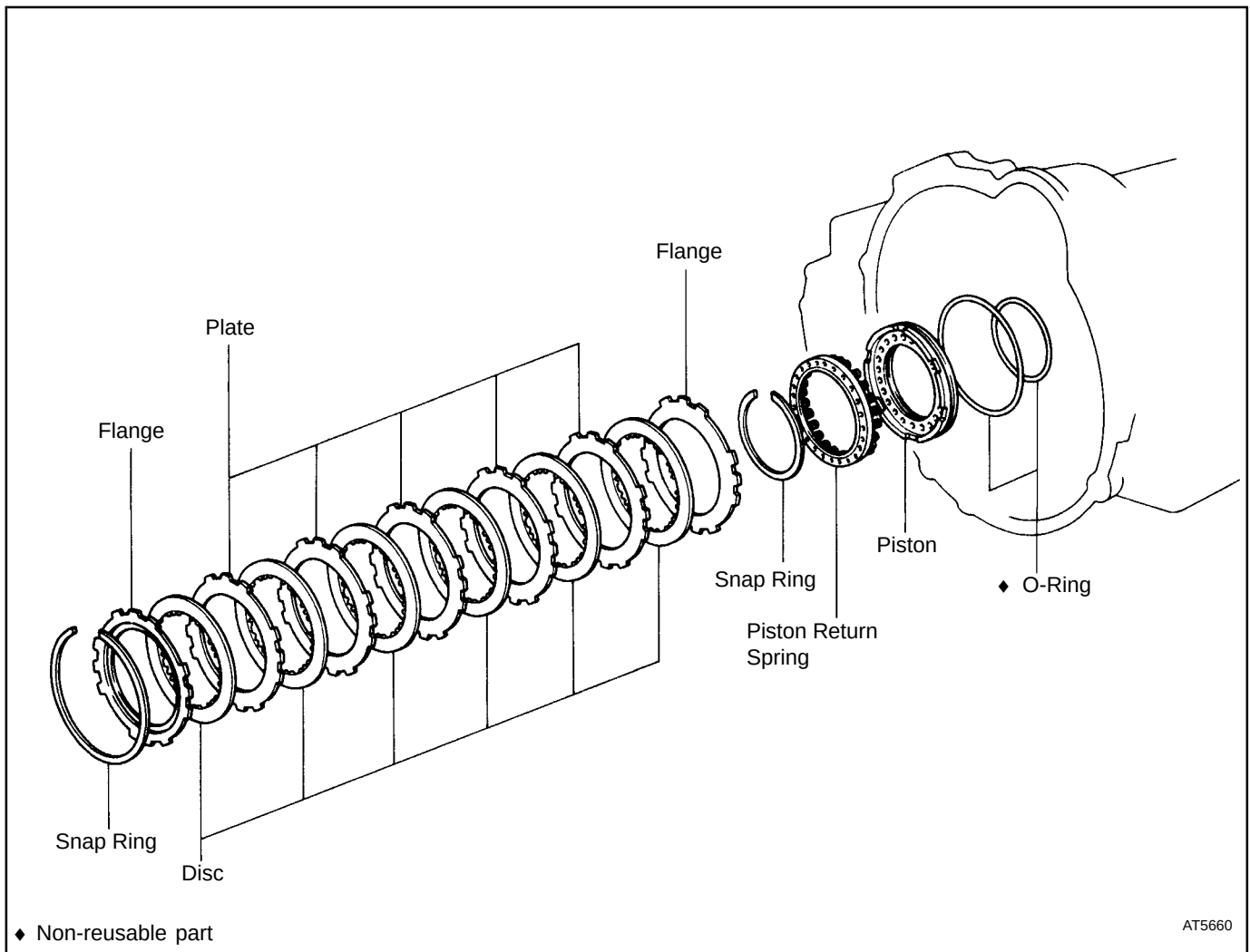
Standard clearance: 0.2 - 0.5 mm
(0.008 - 0.020 in.)

Maximum clearance: 0.5 mm (0.020 in.)

If the clearance is greater than maximum, replace the planetary gear assembly.



First and Reverse Brake



INSPECTION OF FIRST AND REVERSE BRAKE COMPONENT

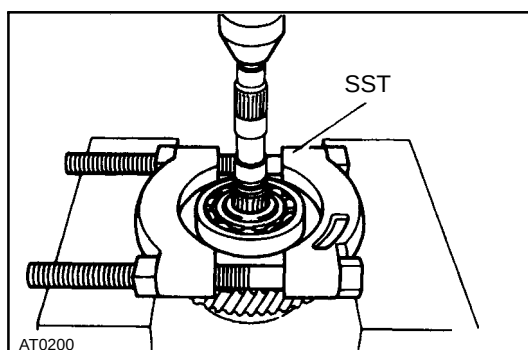
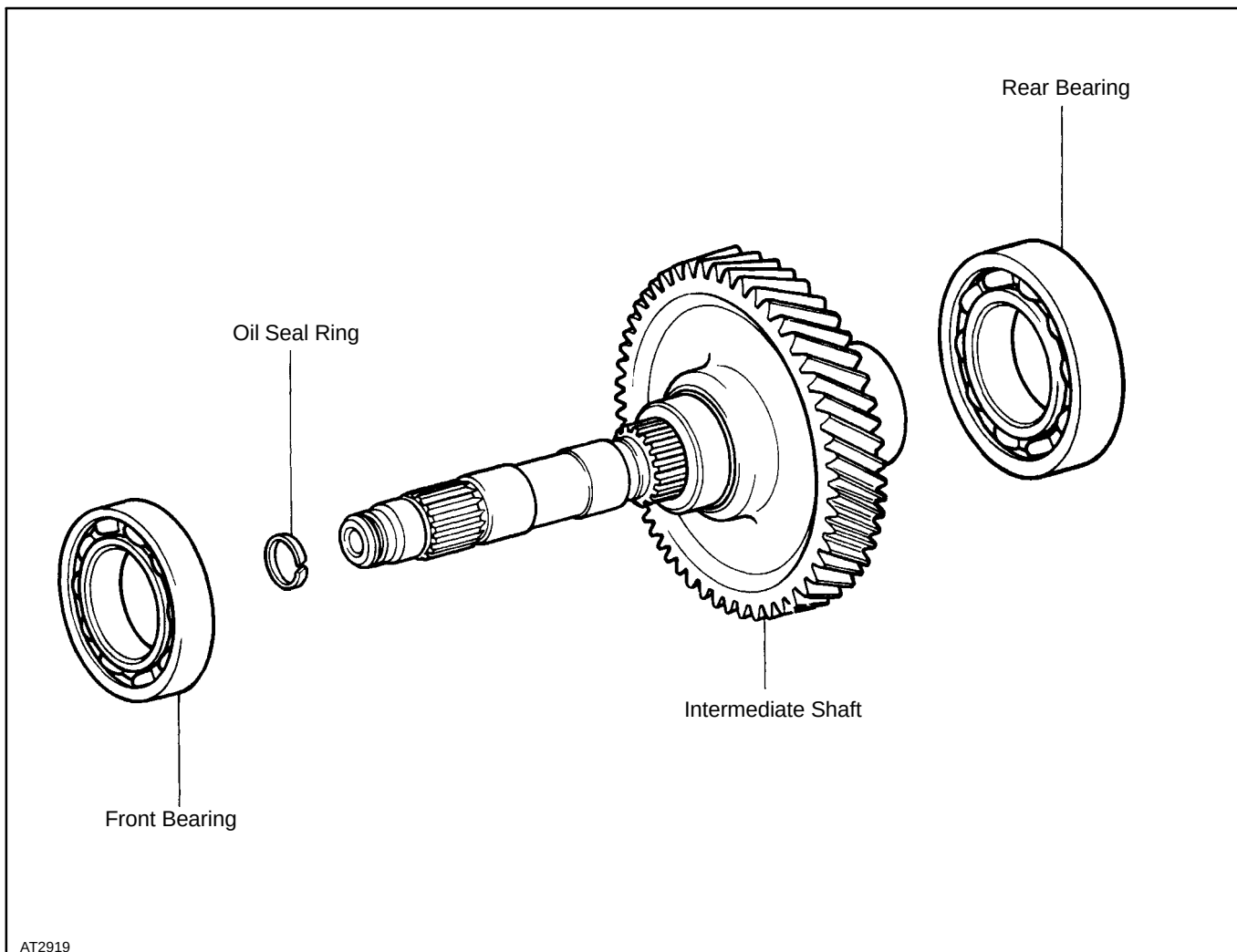
INSPECT DISCS, PLATE AND FLANGE

Check if the sliding surface of the discs, plates and flanges are worn or burnt. If necessary, replace them.

HINT:

- ★ If the lining of the disc is exfoliated or discolored, or even a part of the printed number is defaced, replace all discs.
- ★ Before assembling new discs, soak them in ATF for at least fifteen minutes.

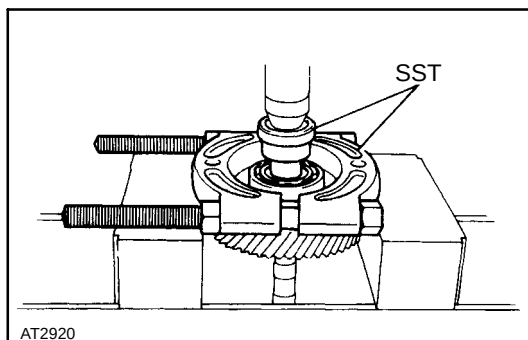
Intermediate Shaft



DISASSEMBLY OF INTERMEDIATE SHAFT

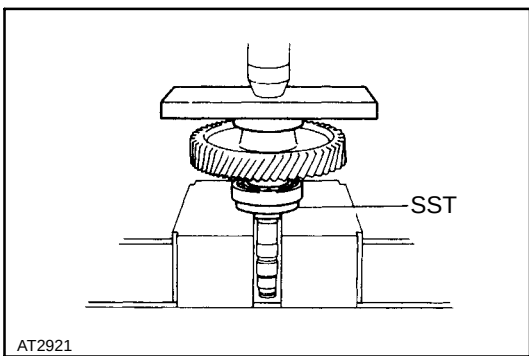
1. REMOVE INTERMEDIATE SHAFT FRONT BEARING

Using SST and press, press out the bearing.
SST 09555-55010



2. REMOVE INTERMEDIATE REAR BEARING

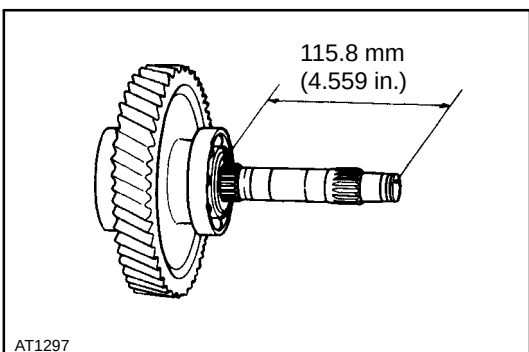
Using SST and press, press out the bearing.
SST 09350-32014 (09351-32090) and
09555-55010



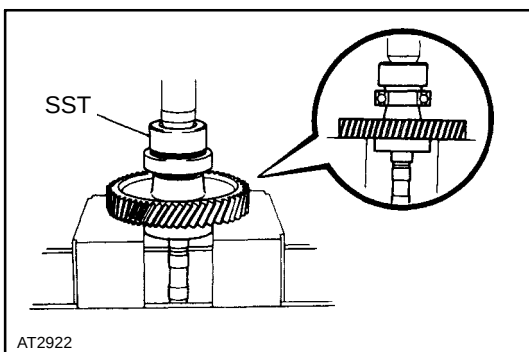
ASSEMBLY OF INTERMEDIATE SHAFT

1. INSTALL INTERMEDIATE SHAFT FRONT BEARING

- (a) Using SST and press, press in a new bearing.
SST 09350-32014 (09351-32120)



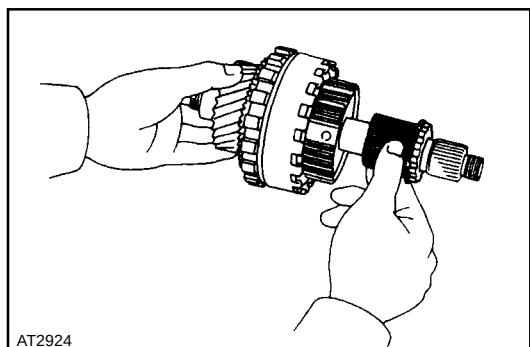
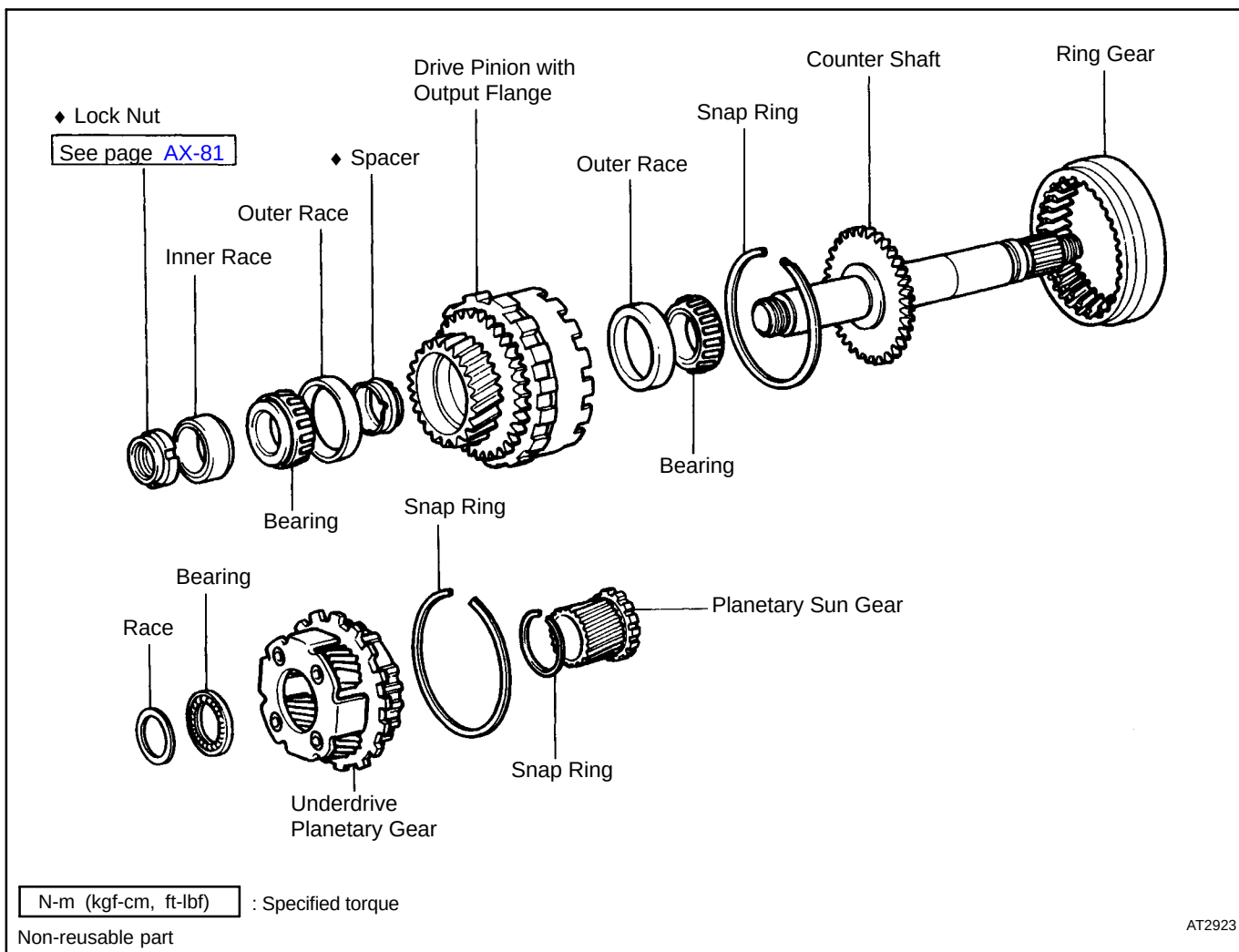
- (b) Check that the distance from the gear flange end to the intermediate shaft end should be 115.8 mm (4.559 in.).



2. INSTALL INTERMEDIATE SHAFT REAR BEARING

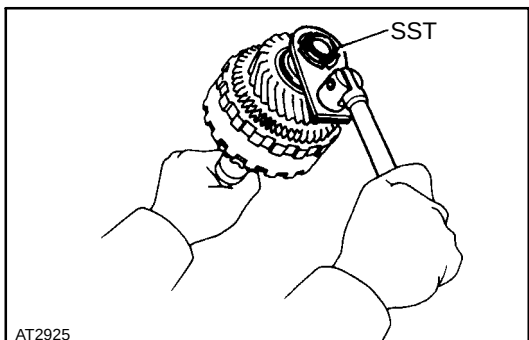
- Using SST and press, press in a new bearing.
SST 09350-32014 (09351-32150)

Counter Shaft



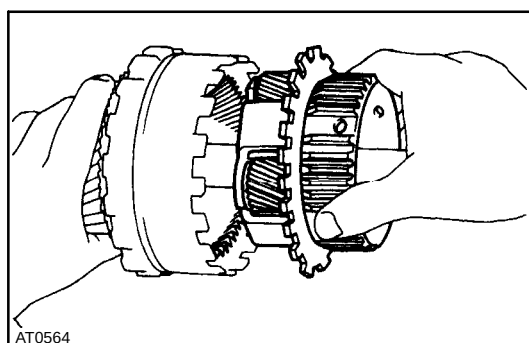
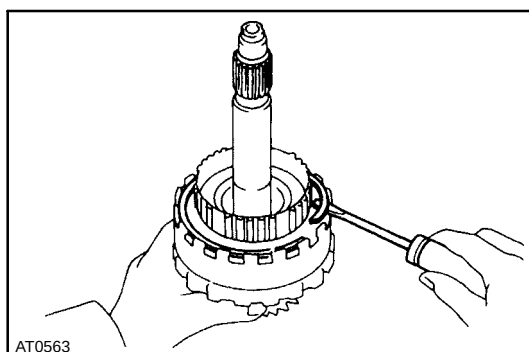
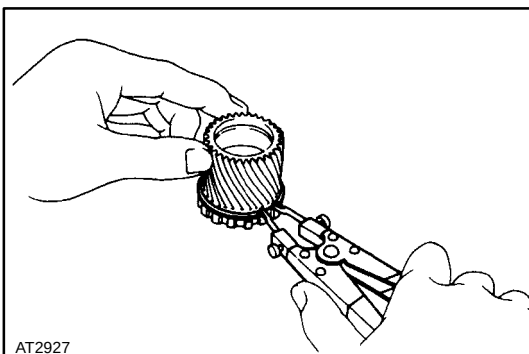
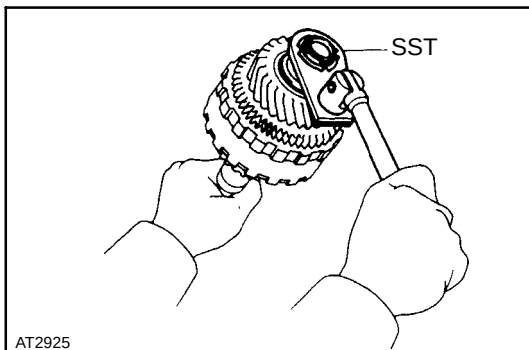
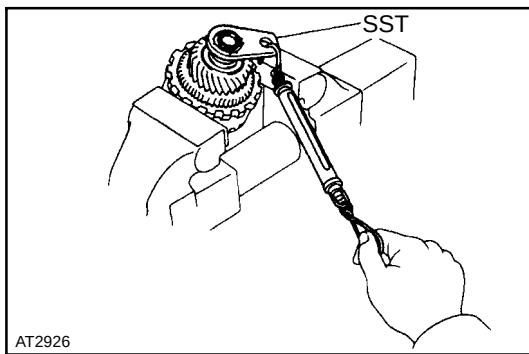
DISASSEMBLY OF COUNTER SHAFT

1. REMOVE UNDERDRIVE PLANETARY SUN GEAR FROM COUNTER SHAFT



2. MEASURE STARTING TORQUE OF COUNTER SHAFT

(a) Using SST, temporarily tighten the lock nut.
SST 09350-32014 (09351-32170)



- (b) Using soft jaws, hold the drive pinion in a vise.
- (c) Using SST and spring tension gauge, measure the starting torque of the counter shaft.

SST 09350-32014 (09351-32170)

Starting torque: with spring tension gauge
12 - 20 N

(1.2 - 2.0 kg, 2.6 - 4.4 lb)

with torque gauge
(hexagon nut side)

New bearing

0.6 - 1.0 N-m

(6 - 10 kgf-cm, 5.2 - 8.7 in.-lbf)

Reused bearing

0.3 - 0.5 N-m

(3 - 5 kgf-cm, 2.6 - 4.3 in.-lbf)

If the torque is exceeded, replace the spacer.

- (a) Using SST, remove the lock nut.

SST 09350-32014 (09351-32170)

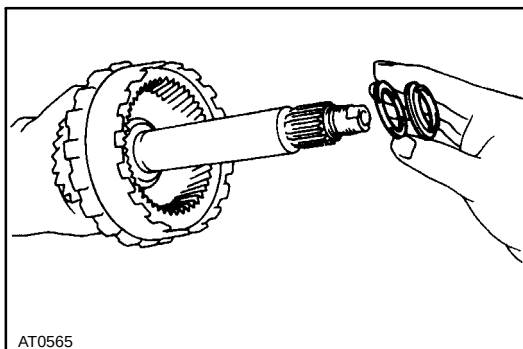
3. REMOVE SNAP RING FROM SUN GEAR

Using snap ring pliers, remove the snap ring from the sun gear.

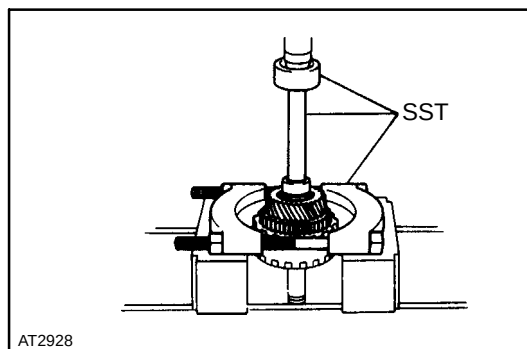
4. REMOVE SNAP RING FROM COUNTER SHAFT ASSEMBLY

Using a screwdriver, remove the snap ring from the counter shaft assembly.

5. REMOVE UNDERDRIVE PLANETARY GEAR



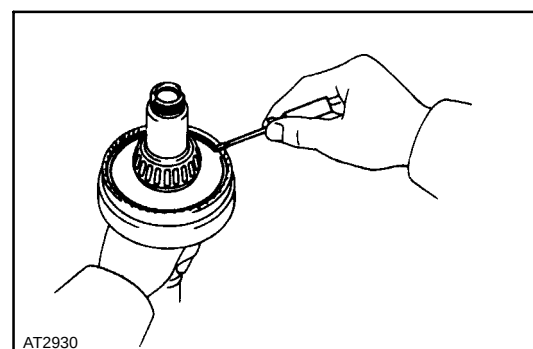
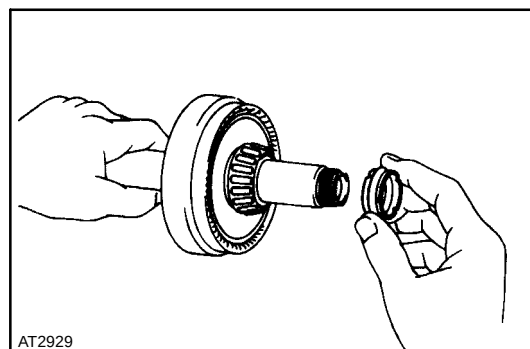
6. REMOVE THRUST NEEDLE ROLLER BEARING AND RACE



7. REMOVE DRIVE PINION WITH OUTPUT FLANGE, BEARING, INNER RACE AND SPACER

- (a) Using SST and press, remove the drive pinion with output flange, bearing and inner race.
SST 09350-32014 (09351-32150, 09351-32130), 09555-55010

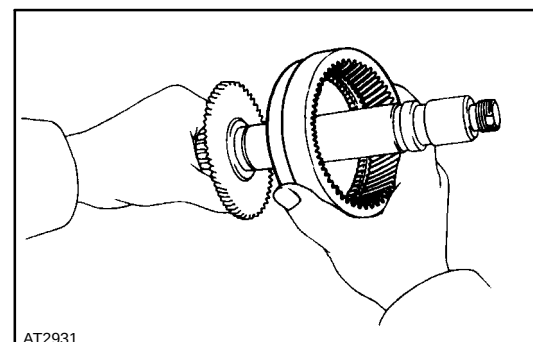
- (b) Remove the spacer from the counter shaft.

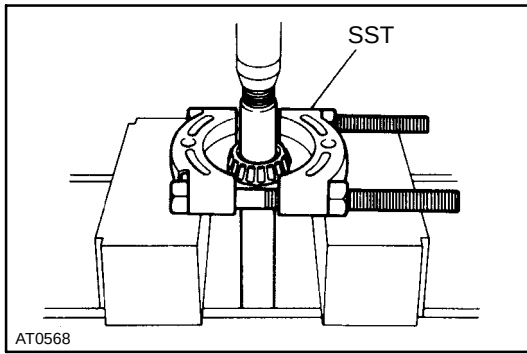


8. REMOVE RING GEAR

- (a) Using a screwdriver, remove the snap ring from the counter shaft.

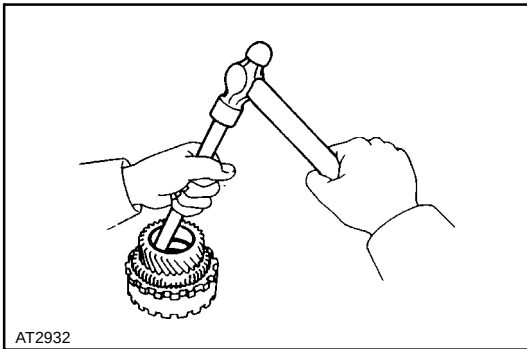
- (b) Remove the ring gear from the counter shaft.





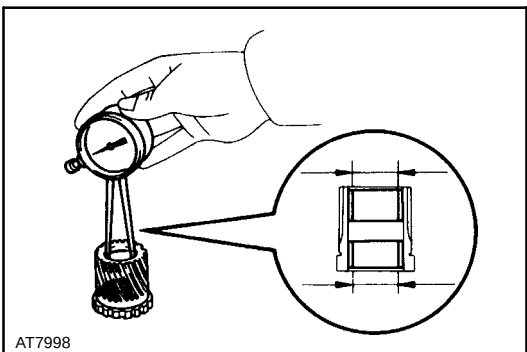
9. REMOVE BEARING

Using SST and press, remove the bearing.
SST 09950-00020



10. REMOVE BEARING OUTER RACES

Using a brass bar and hammer, tap out both bearing outer races.



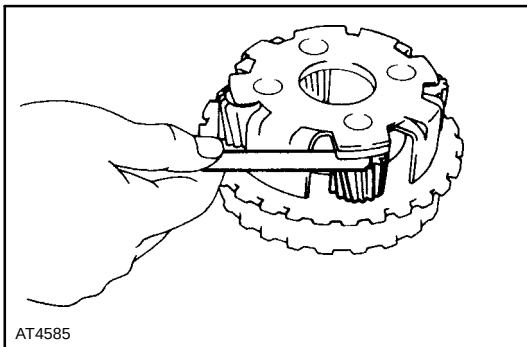
INSPECTION OF COUNTER SHAFT COMPONENTS

1. MEASURE PLANETARY SUN GEAR BUSHING INSIDE DIAMETER

Using a caliper gauge, measure the bushing inside diameter of the planetary sun gear as shown.

Standard inside diameter: 29.800 - 29.825 mm
(1.17322 - 1.17421 in.)

Maximum inside diameter: 29.870 mm (1.17598 in.)



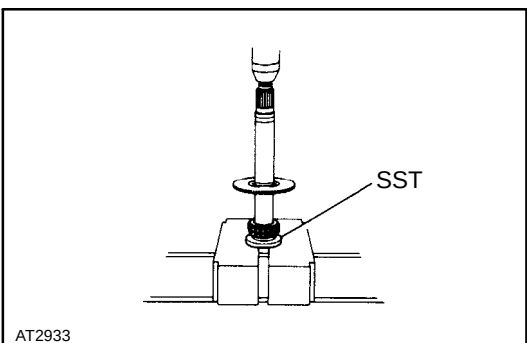
2. MEASURE PLANETARY PINION GEAR THRUST CLEARANCE

Using a feeler gauge, measure the planetary pinion gear thrust clearance.

Standard clearance: 0.2 - 0.5 mm
(0.008 - 0.020 in.)

Maximum clearance: 0.5 mm (0.020 in.)

If the clearance is greater than the maximum, replace the planetary gear assembly.



ASSEMBLY OF COUNTER SHAFT

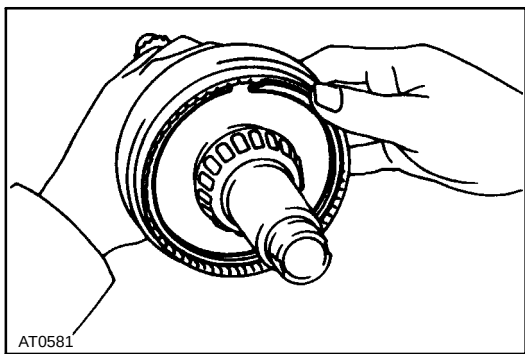
1. INSTALL BEARING TO COUNTER SHAFT

Using SST and press, press in the bearing of the thick inner race side.

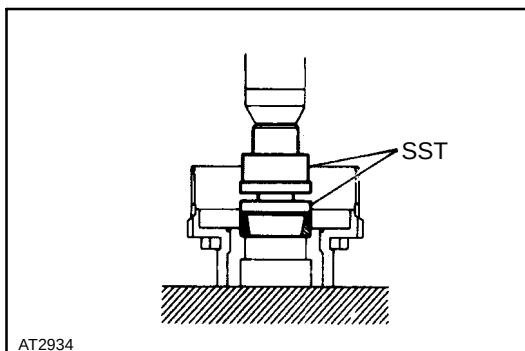
SST 09350-32014 (09351-32180)

2. INSTALL RING GEAR

(a) Install the ring gear to the counter shaft.



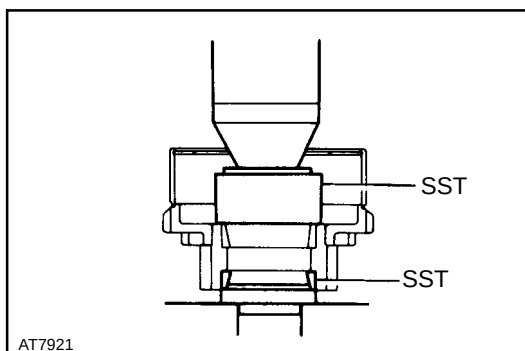
- (b) Install the snap ring.



3. INSTALL BEARING OUTER RACES TO DRIVE PINION

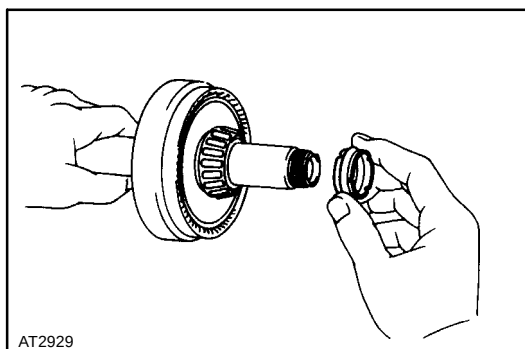
- (a) Using SST and press, press in the thick race to the flange side of the drive pinion.

SST 09350-32014 (09351-32090, 09351-32180)



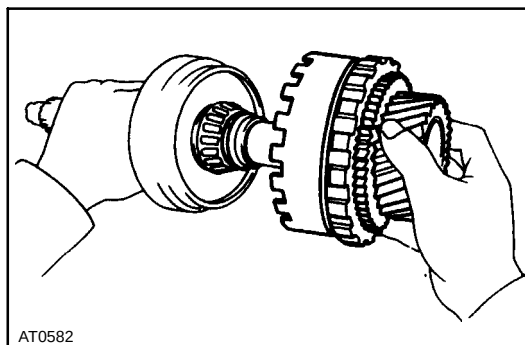
- (b) Using SST and press, press in the thin race to the other side.

SST 09350-32014 (09351-32154, 09351-32180)

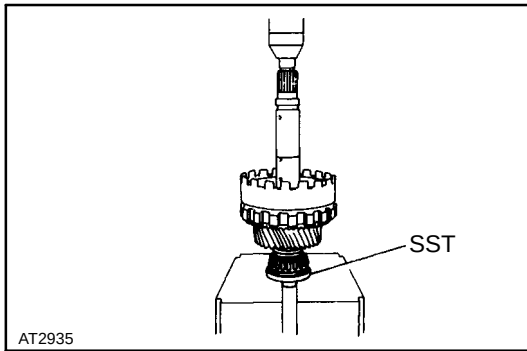


4. INSTALL DRIVE PINION TO COUNTER SHAFT

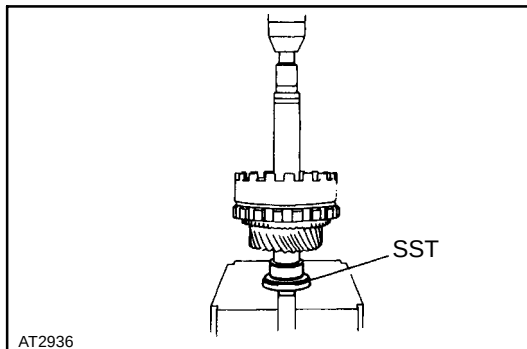
- (a) Install the new spacer to the counter shaft.



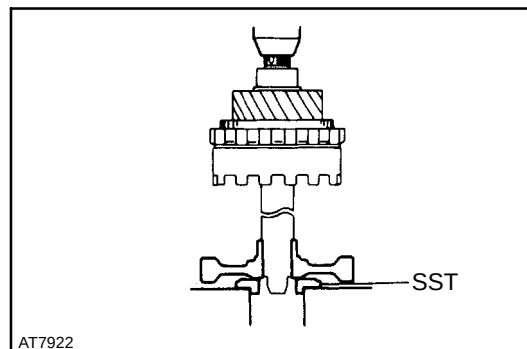
- (b) Install the drive pinion to the counter shaft.



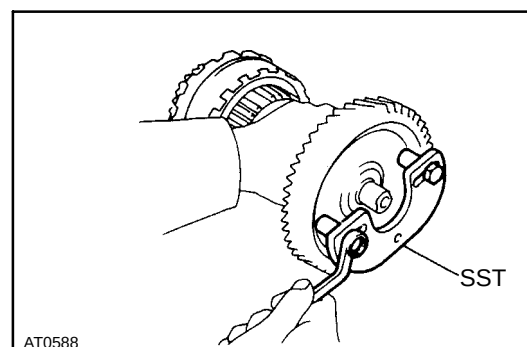
- 5. INSTALL ANOTHER BEARING TO COUNTER SHAFT**
Using SST and press, press in the another bearing.
SST 09350-32014 (09351-32180)
NOTICE: Be sure there is some clearance between the output flange and bearing.



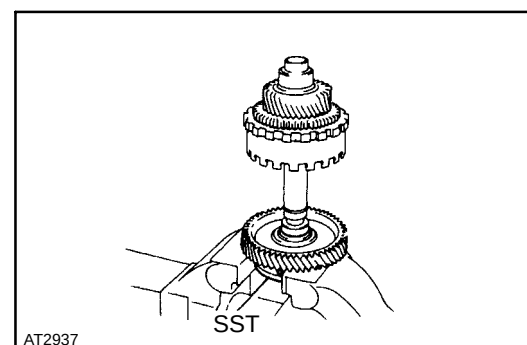
- 6. INSTALL BEARING INNER RACE**
Using SST and press, press in the inner race.
SST 09350-32014 (09351-32180)
NOTICE: Be sure there is some clearance.



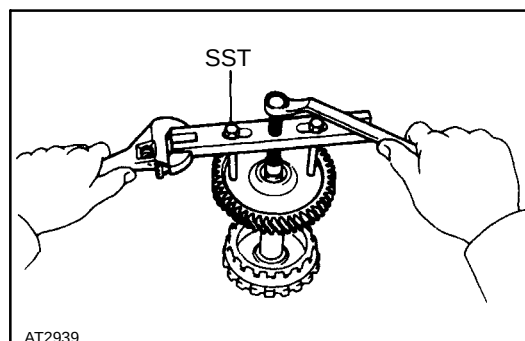
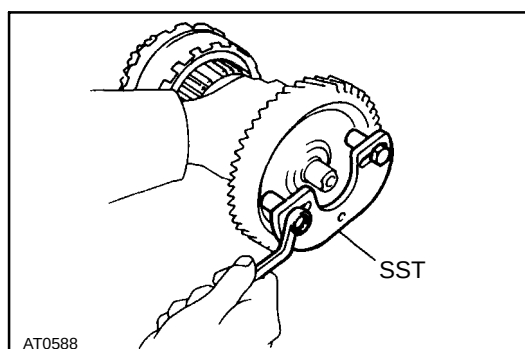
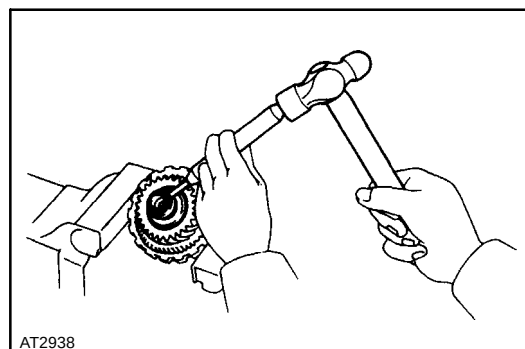
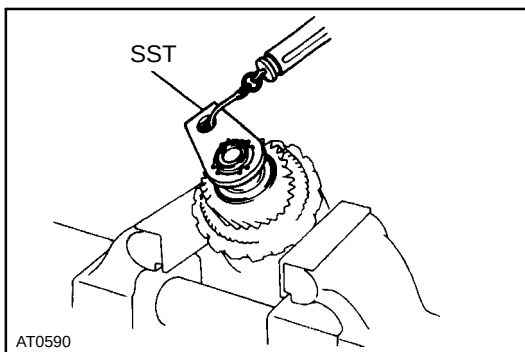
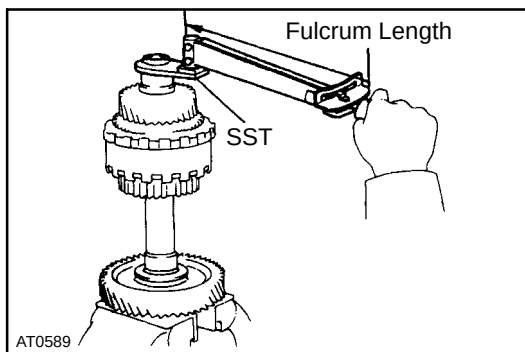
- 7. ADJUST COUNTER SHAFT STARTING TORQUE**
(a) Using SST and press, press in the counter driven gear to the counter shaft.
SST 09354-32014 (09351-32100)



- (b) Install SST to the driven gear.
SST 09350-32014 (09351-32032)



- (c) Secure the counter shaft by holding the SST in a vise.
SST 09350-32014 (09351-32032)



- (d) Temporarily install the new lock nut, and using SST, tighten the lock nut until the counter shaft starting torque is in specification.

SST 09350-32014 (09361-32170)

Torque (Reference): 117 - 216 N-m
(A241E, A243L) (1,800 - 2,200 kgf-cm, 130 - 159 ft-lbf)

Torque (Reference): 157 - 193 N-m
(A240L, A241H) (1,610 - 1,970 kgf-cm, 116 - 142 ft-lbf)

HINT: Use a torque wrench with a fulcrum length of 42 cm (16.54 in.).

- (e) Using soft jaws, , hold the drive pinion in a vise.
(f) Using SST and spring tension gauge, measure the starting torque of the counter shaft.

SST 09350-32014 (09351-32170)

Starting torque: with tension gauge
12 - 20 N
(1.2 - 2.0 kg, 2.6 - 4.4 lb)

with torque gauge
(hexagon nut side)

New bearing
0.6 - 1.0 N-m
(6 - 10 kgf-cm, 5.2 - 8.7 in.-lbf)

Reused bearing
0.3 - 0.5 N-m
(3 - 5 kgf-cm, 2.6 - 4.3 in.-lbf)

If the starting torque is exceeded, replace the spacer and retorque.

HINT: Before measuring the starting torque, sung down the bearing by turning the counter shaft.

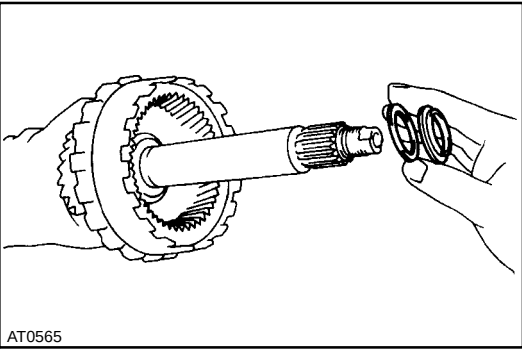
- (g) Using a punch and hammer, stake the lock nut.

- (h) Remove the SST from the counter driven gear.

SST 09350-32014 (09351-32032)

- (i) Using SST, remove the counter driven gear.

SST 09350-32014 (09351-32061)



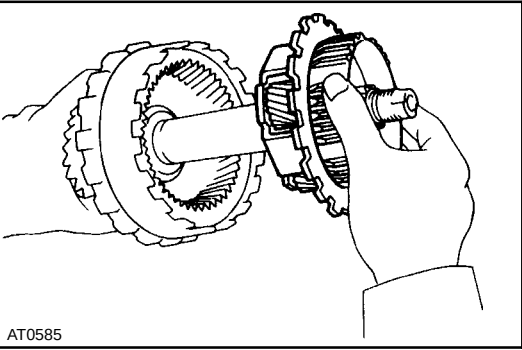
8. **INSTALL RACE AND BEARING**

Coat the race and bearing with petroleum jelly and install them to the counter shaft.

Bearing and race:

mm (in.)

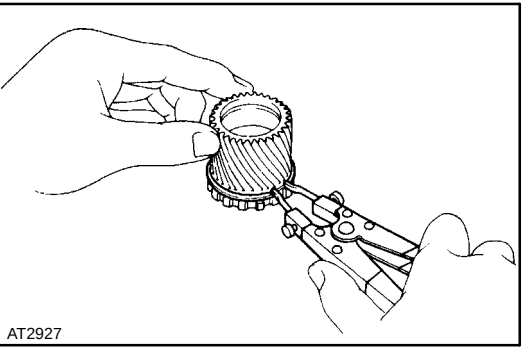
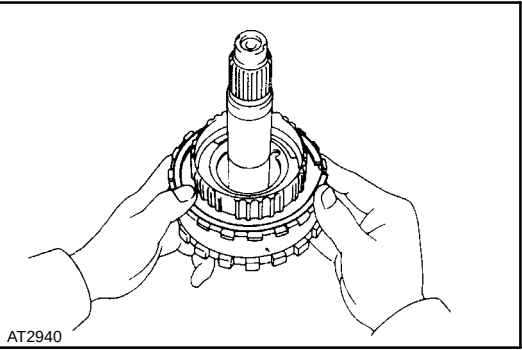
		Outer Diameter	Inner Diameter
A241E A243L	Race Bearing	41.8 (1.646) 43.85 (1.726)	30.0 (1.181) 31.0 (1.220)
A240L A241H	Race Bearing	41.8 (1.646) 43.7 (1.720)	30.0 (1.181) 31.0 (1.220)



9. **INSTALL UNDERDRIVE PLANETARY GEAR**

(a) Install the underdrive planetary gear to the counter shaft.

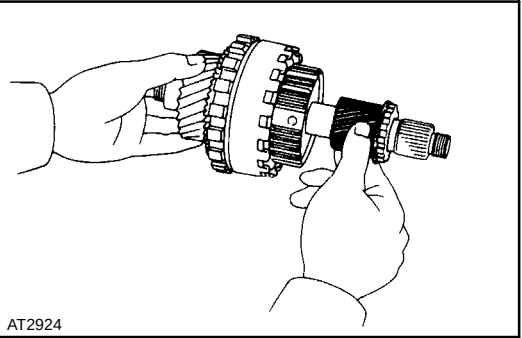
(b) Install the snap ring.



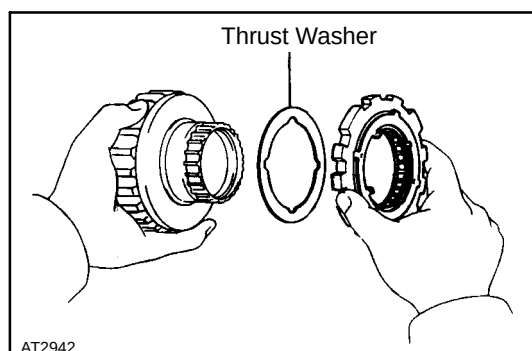
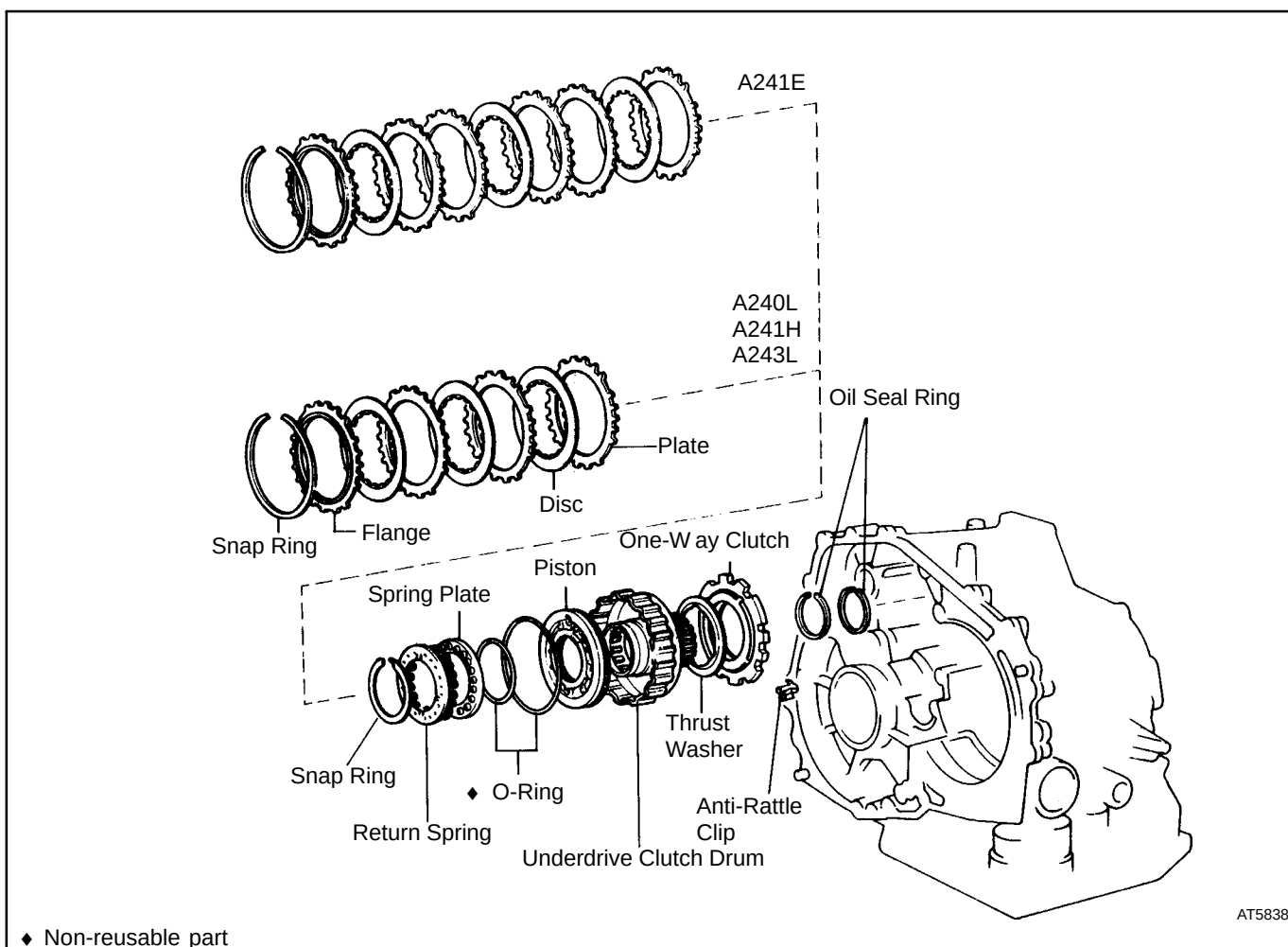
10. **INSTALL UNDERDRIVE PLANETARY SUN GEAR**

(a) Using snap ring pliers, install the snap ring to the sun gear.

(b) Install the underdrive planetary sun gear to the counter shaft as shown.



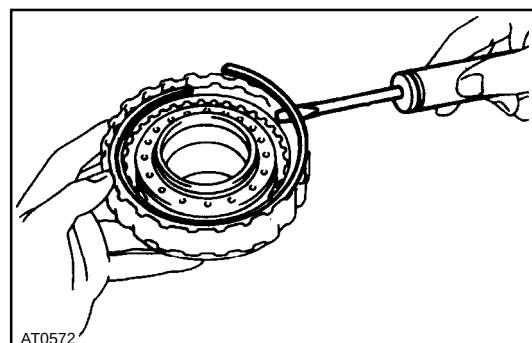
Underdrive Clutch and One-Way Clutch No. 3



DISASSEMBLY OF UNDERDRIVE CLUTCH

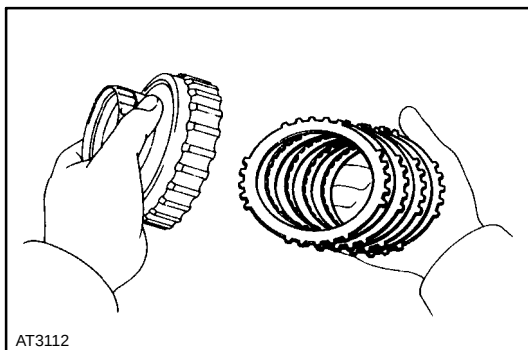
1. REMOVE ONE-WAY CLUTCH FROM CLUTCH DRUM

Remove the one-way clutch and thrust washer from the underdrive clutch drum.



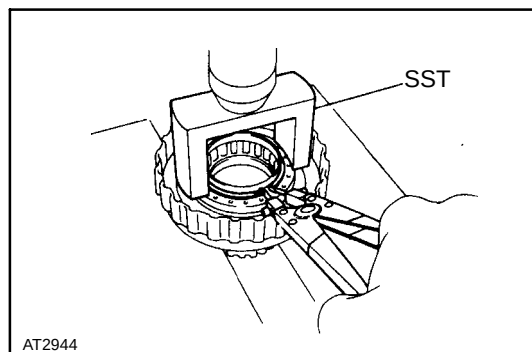
2. REMOVE SNAP RING

Using a screwdriver, remove the snap ring.



3. REMOVE FLANGE, DISCS AND PLATES

Remove the flange, discs and plates from the clutch drum.



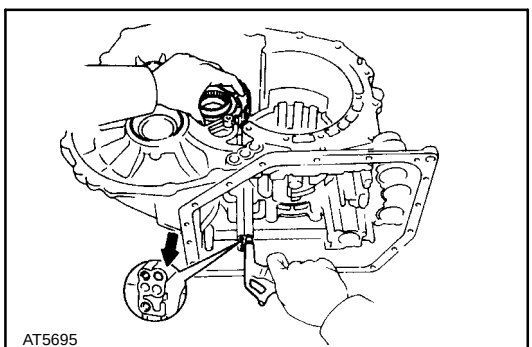
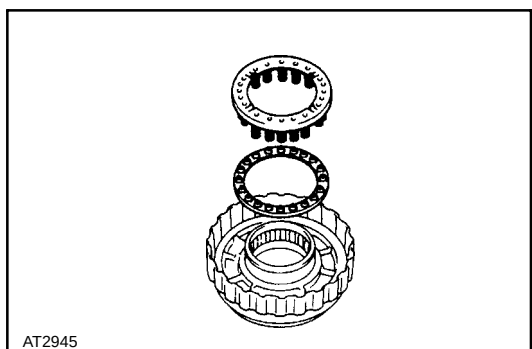
4. REMOVE RETURN SPRING AND SPRING PLATE

- (a) Using SST and press, compress the return spring retainer.

SST 09350-32014 (09351-32070)

- (b) Using snap ring pliers, remove the snap ring.
(c) Remove SST.

- (d) Remove the return spring and spring plate.



5. REMOVE UNDERDRIVE CLUTCH PISTON

- (a) Install the underdrive clutch to the transaxle case.

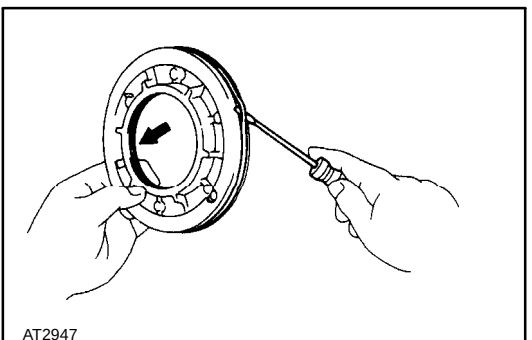
HINT: Before installing the clutch, install the oil seal rings to the transaxle case.

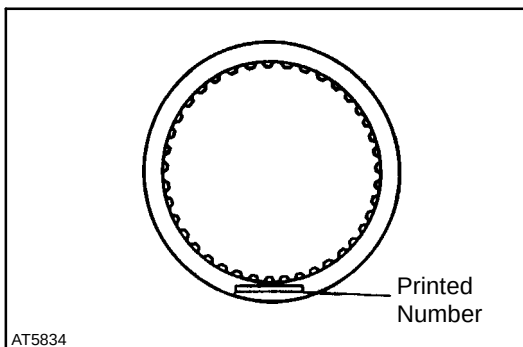
- (b) Apply compressed air into the oil passage of the case, and remove the piston from the clutch drum.

- (c) If the piston does not pop out with compressed air, use needle-nose pliers to remove it.

6. REMOVE O-RINGS FROM PISTON

Using a screwdriver, remove the two O-rings from the underdrive clutch piston.





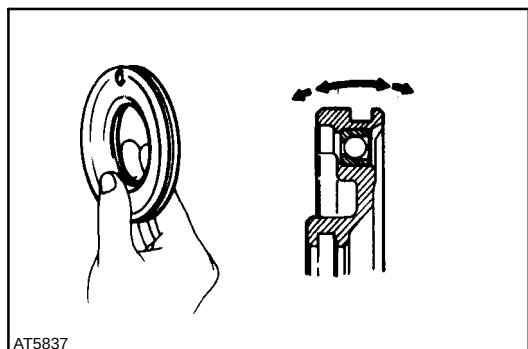
INSPECTION OF UNDERDRIVE CLUTCH COMPONENTS

1. INSPECT DISCS, PLATES AND FLANGES

Check if the sliding surface of the discs, plates and flanges are worn or burnt. If necessary, replace them.

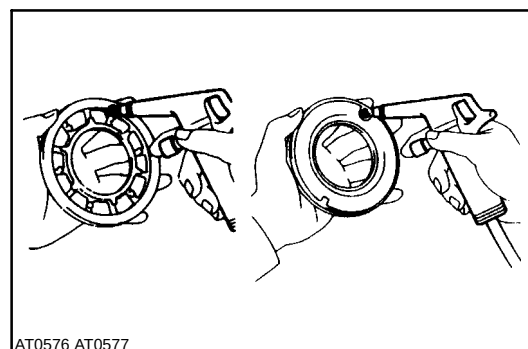
HINT:

- ★ If the lining of the disc is exfoliated or discolored, or even a part of the printed numbers are defaced, replace the disc.
- ★ Before assembling new discs, soak them in ATF for at least fifteen minutes.

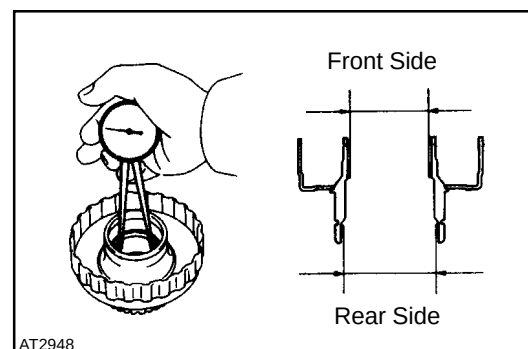


2. INSPECT UNDERDRIVE CLUTCH PISTON

- (a) Check that the check ball is free by shaking the piston.



- (b) Check that the valve does not leak by applying low-pressure compressed air.



3. INSPECT UNDERDRIVE CLUTCH DRUM

Using a caliper gauge, measure the bushing inside diameter of the underdrive clutch drum as shown.

Standard inside diameter:

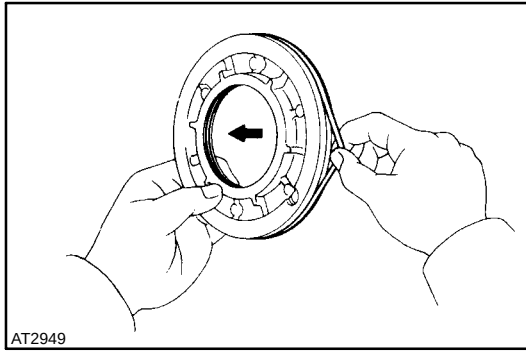
Front side 46.500 - 46.525 mm
(1.53071 - 1.83169 in.)

Rear side 55.000 - 55.030 mm
(2.16535 - 2.16653 in.)

Maximum inside diameter:

Front side 46.570 mm (1.83346 in.)

Rear side 55.080 mm (2.16850 in.)

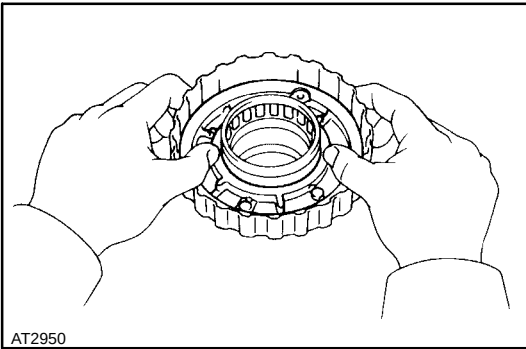


ASSEMBLY OF UNDERDRIVE CLUTCH

1. INSTALL UNDERDRIVE CLUTCH PISTON INTO CLUTCH DRUM

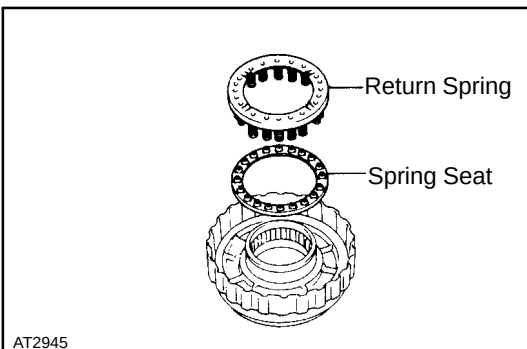
(a) Install the two new O-rings to the piston.

HINT: Before installing, coat the O-rings with ATF.



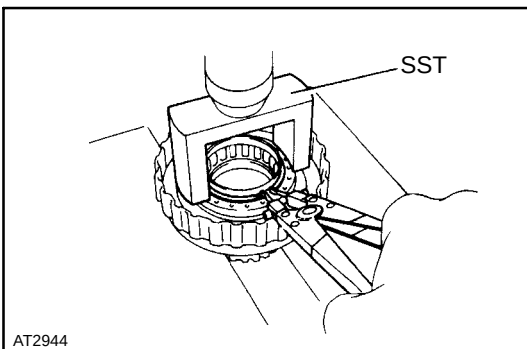
(b) Install the underdrive clutch piston into the clutch drum.

HINT: Be careful not to damage the O-rings.



2. INSTALL SPRING SEAT AND RETURN SPRING

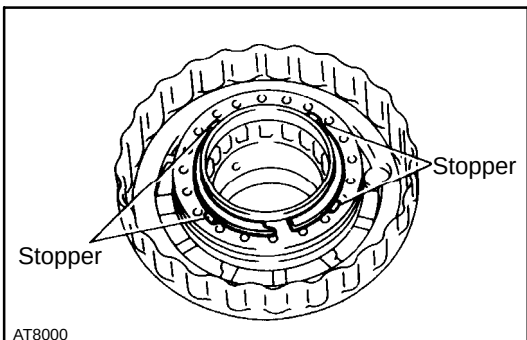
(a) Install the spring seat and return spring to the underdrive clutch as shown.



(b) Using SST and press, compress the return spring retainer.

SST 09350-32014 (09351-32070)

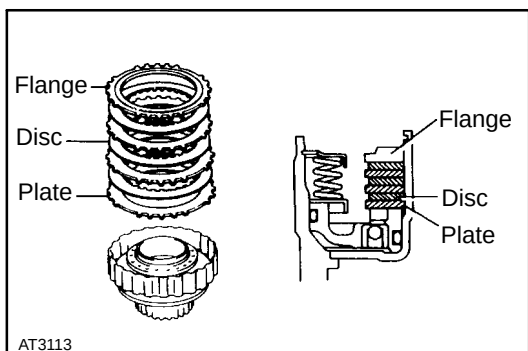
(c) Using snap ring pliers, install the snap ring.



HINT: Install the snap ring as shown.

(d) Remove SST.

SST 09350-32014 (09351-32070)



3. INSTALL PLATES, DISCS AND FLANGE

Install in order: D = Disc P = Plate F = Flange

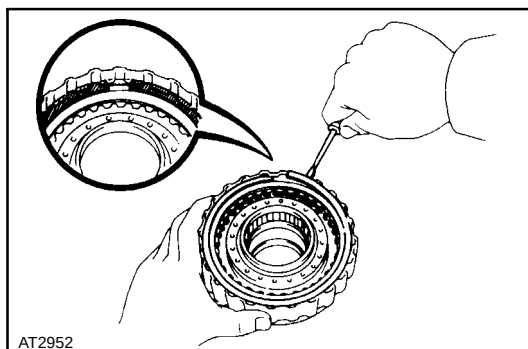
A241E F-D-P-P-D-P-P-D-P

A243L F-D-P-D-P-D-P

A240L

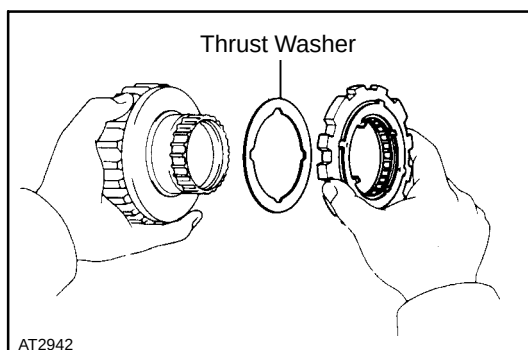
A241H

HINT: Install the flange the flat end facing downward.



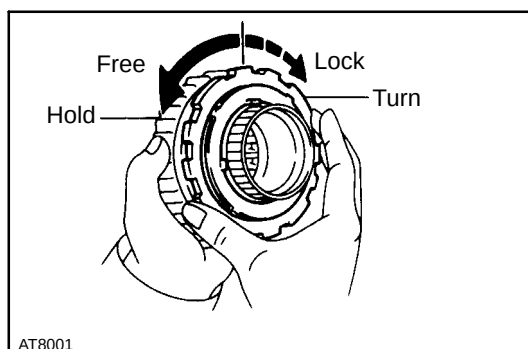
4. INSTALL SNAP RING

Install the snap ring to the underdrive clutch.



5. INSTALL ONE-WAY CLUTCH TO CLUTCH DRUM

- Install the thrust washer to clutch drum.
- Install the one-way clutch with the claw of retain-er up.

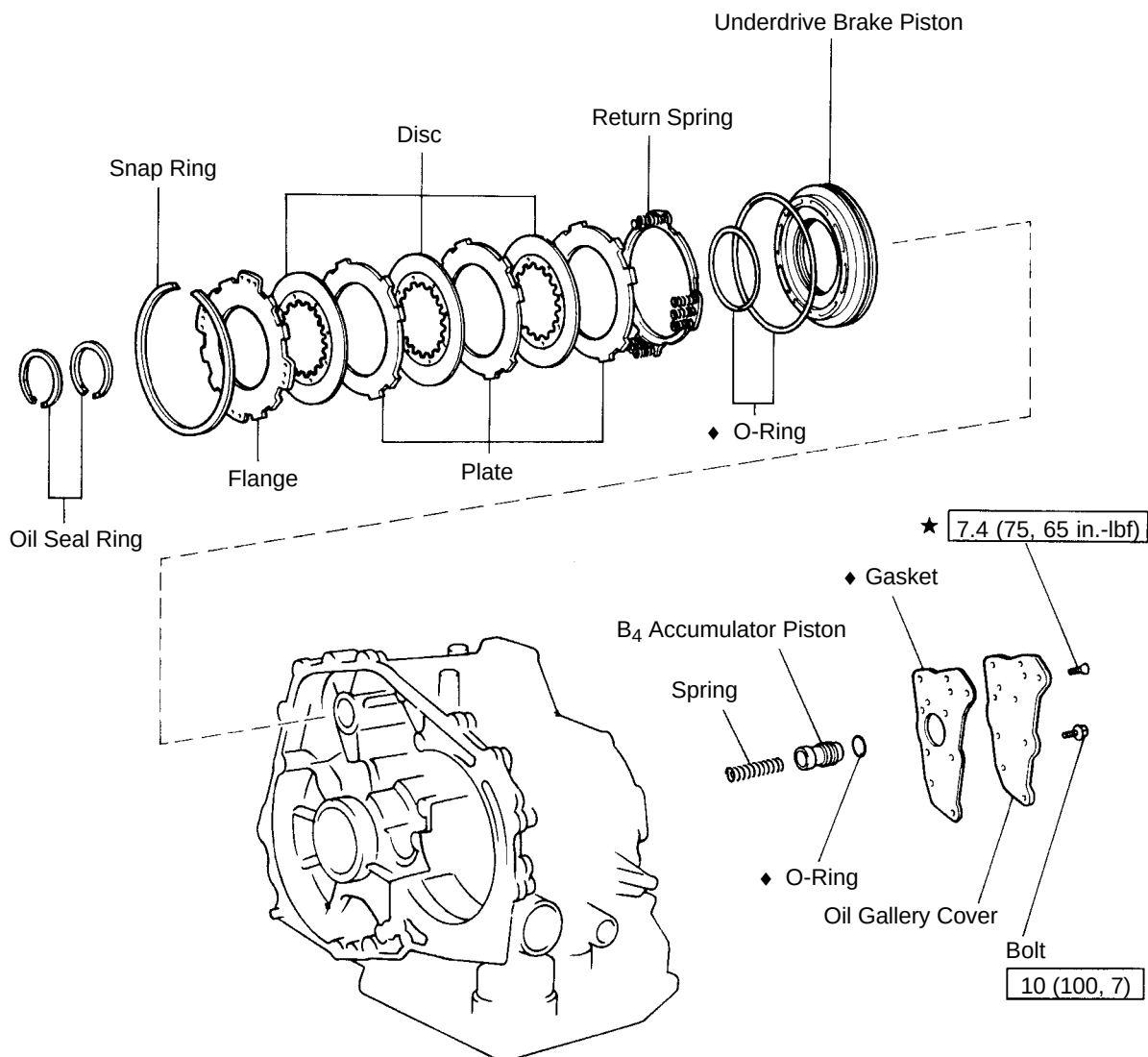


6. CHECK OPERATION OF ONE-WAY CLUTCH

Hold the one-way clutch drum and turn the one-way clutch.

Check that the one-way clutch turns freely counter-clockwise and lock clockwise.

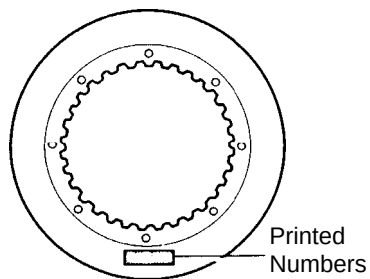
Underdrive Brake and B₄ Accumulator Piston



N-m (kgf-cm, ft-lbf) : Specified torque

◆ Non-reusable part
★ Precoated part

AT2953



AT5823

INSPECTION OF UNDERDRIVE BRAKE COMPONENTS

INSPECT DISCS, PLATES AND FLANGES

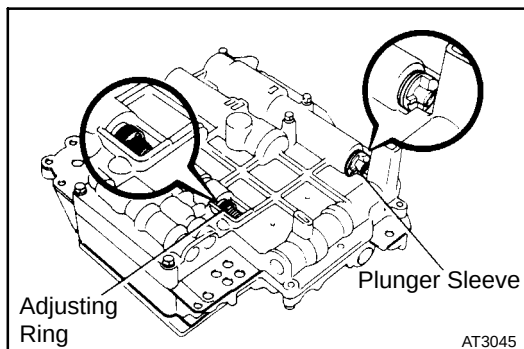
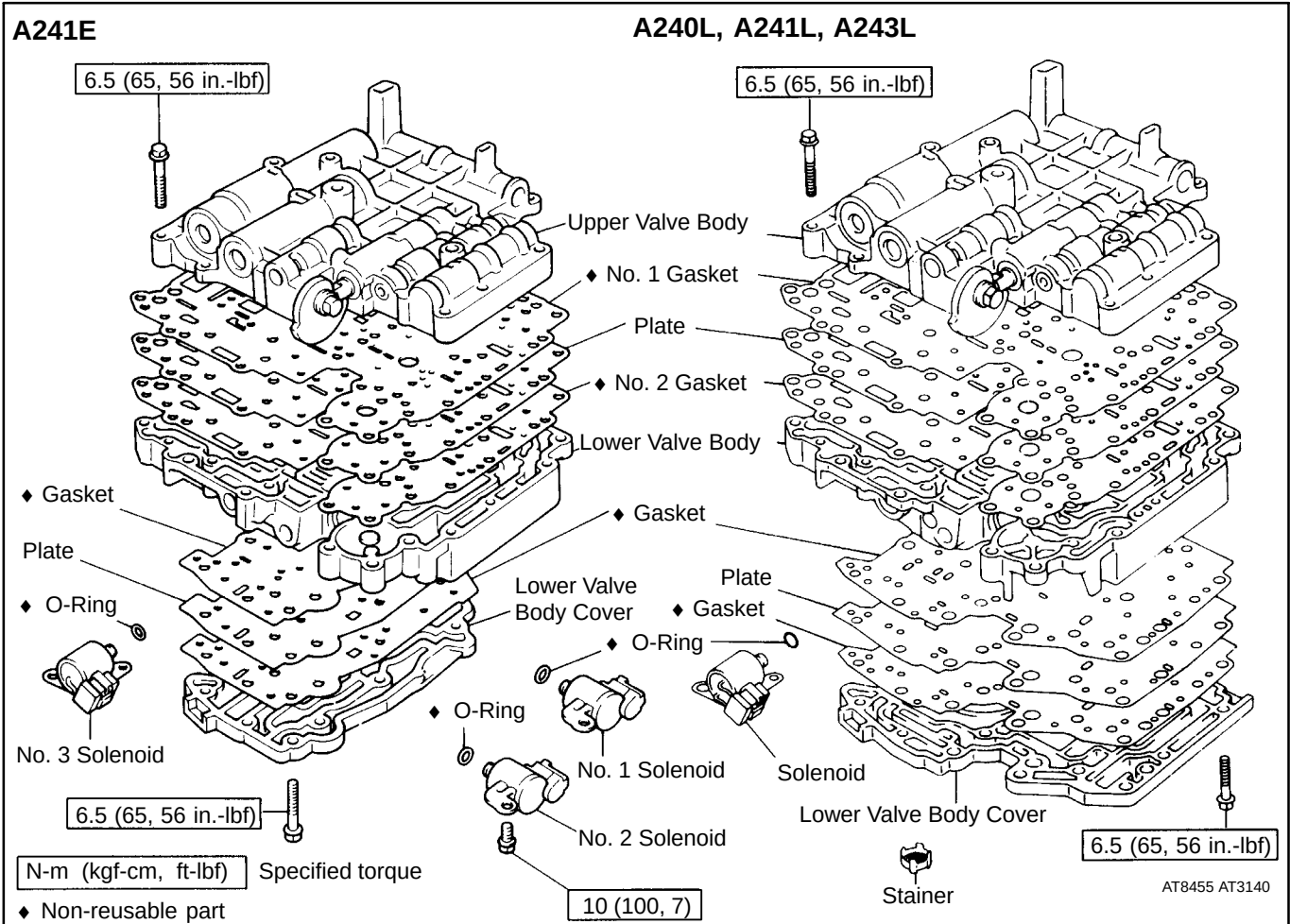
Check that the sliding surface of disc, plate and flange worn or burnt. If necessary, replace them.

HINT:

If the lining of the disc is exfoliated or discolored, or even a part of the printed numbers are defaced, replace the disc.

Before assembling new discs, soak them in ATF for at least fifteen minutes.

Valve Body COMPONENTS



(Disassembly of Valve Body)

1. NOTE THE NUMBERS OF ADJUSTING RINGS

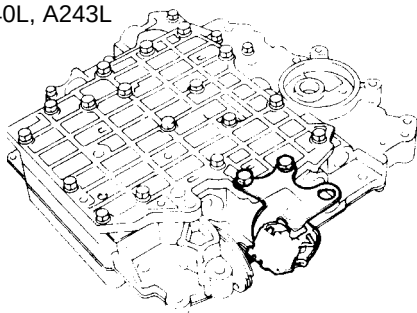
HINT: Count the number of adjusting rings before disassembly of the valve body because the throttle pressure is changed according to the number. (Some of the valve bodies do not have any adjusting rings.)

2. NOTE THE POSITION OF PLUNGER SLEEVE

Note which step at the end of the plunger sleeve is in contact with the valve body.

HINT: Be certain to check this before disassembly because the line pressure changes according to the part of the plunger sleeve which comes into contact with the valve body.

A240L, A243L

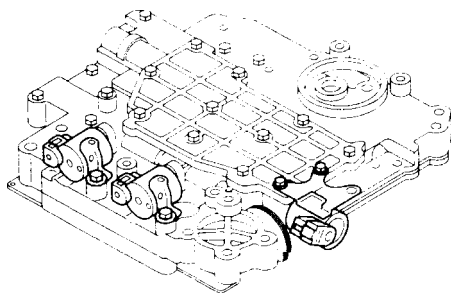


AT3138

3. REMOVE SOLENOID

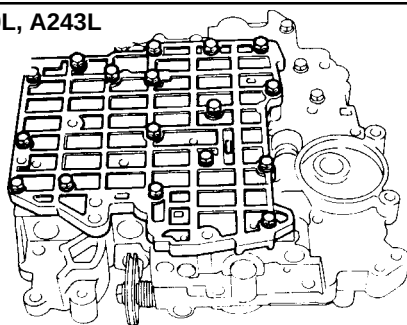
- (a) Remove the solenoids.
- (b) Remove the O-rings from the each solenoids.

A241E



AT5724

A240L, A243L

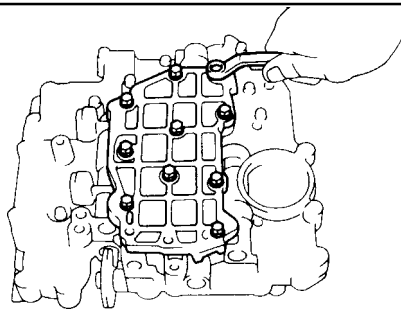


AT3046

4. REMOVE LOWER VALVE BODY COVER (A240L, A243L)

Remove the seventeen bolts and the lower valve body cover.

A241E



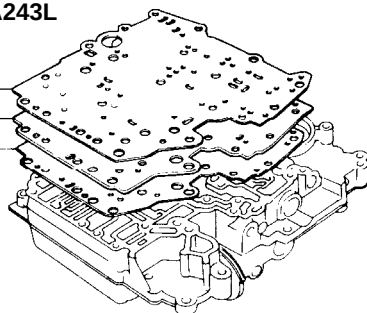
AT8033

(A241E)

Remove the ten bolts and the lower valve body cover.

A240L, A243L

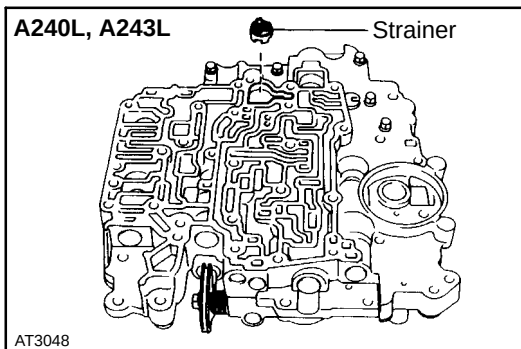
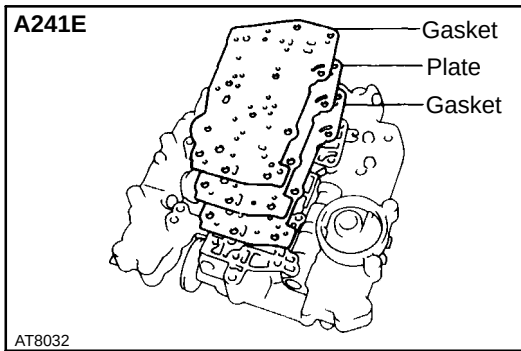
Gasket
Plate
Gasket



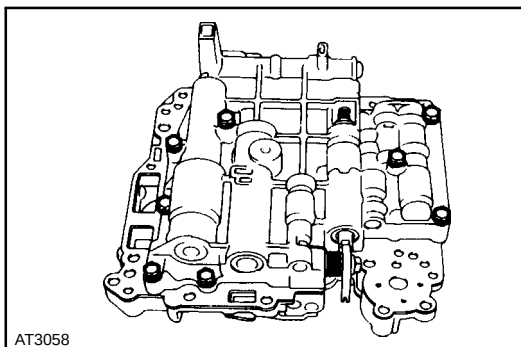
AT3047

5. REMOVE GASKETS, PLATE AND STRAINER

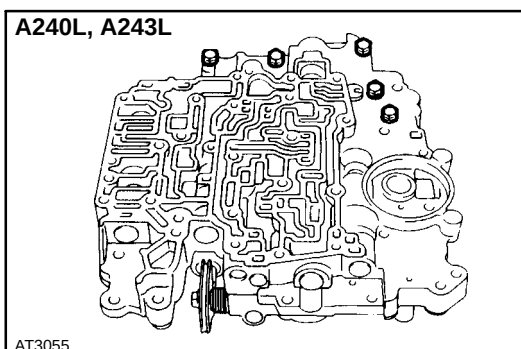
- (a) Remove the two gaskets and plate.



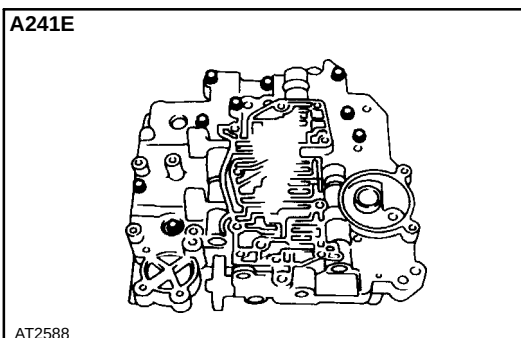
(b) Remove the strainer. (A240L, A243L only)



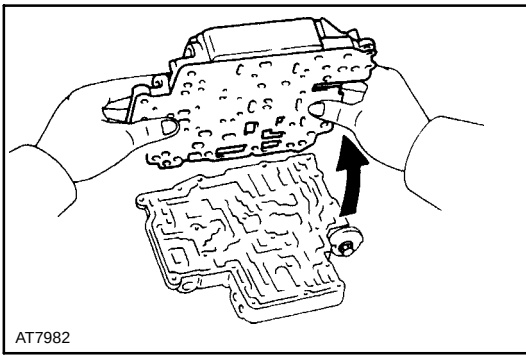
- 6. REMOVE BOLTS FROM UPPER VALVE BODY**
Remove the eight bolts from the upper valve body.



- 7. REMOVE BOLTS FROM LOWER VALVE BODY**
Remove the five bolts from the lower valve body.
(A240L, A243L)



Remove the nine bolts from the lower valve body.
(A241E)



8. LIFT OFF LOWER VALVE BODY AND PLATE AS SINGLE UNIT

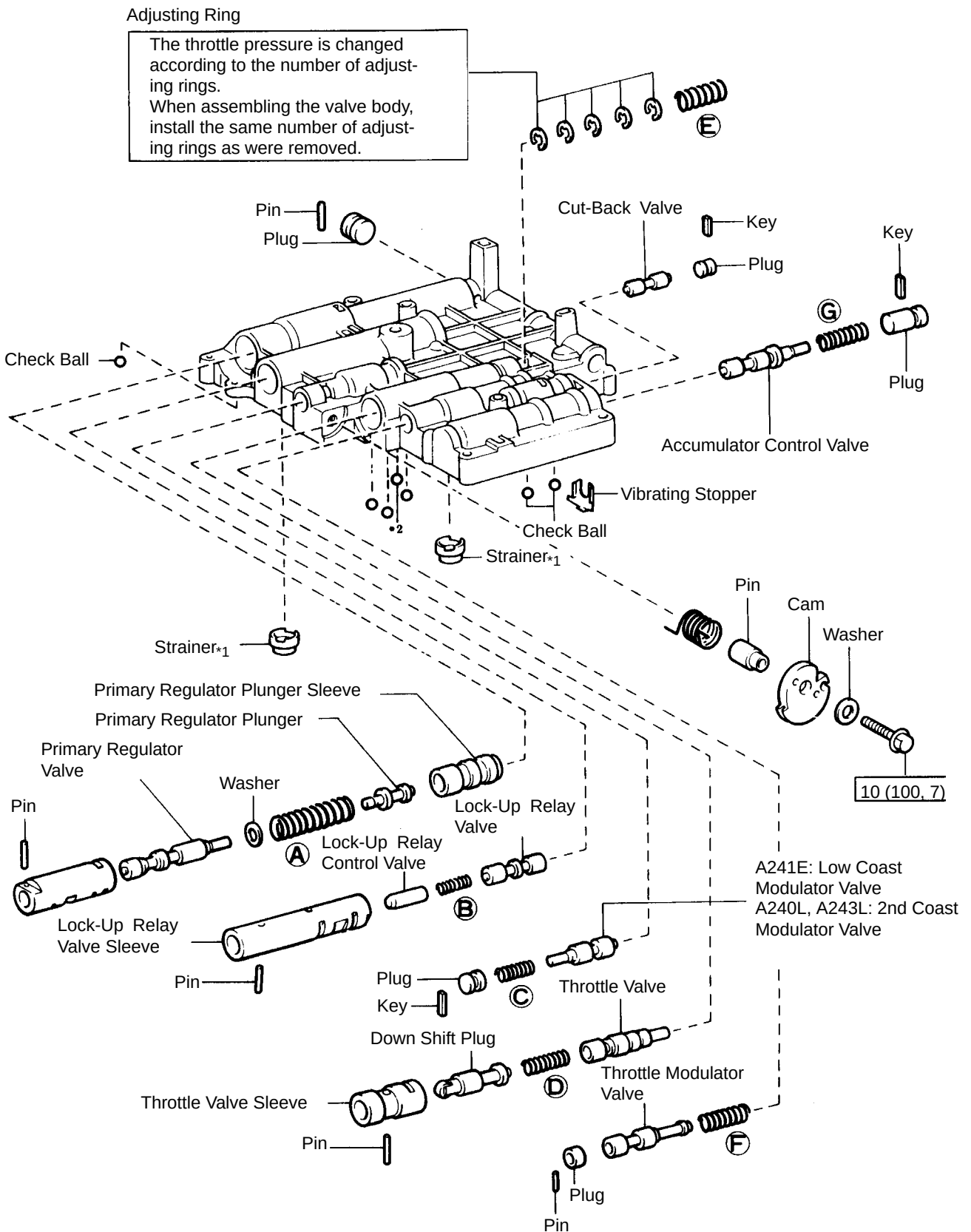
Hold the plate to the lower valve body and lift off the lower valve body.

HINT: Be careful that the valves, springs and strainer do not fall out.

9. REMOVE PLATE AND GASKETS FROM LOWER VALVE BODY

(Upper Valve Body)

COMPONENTS



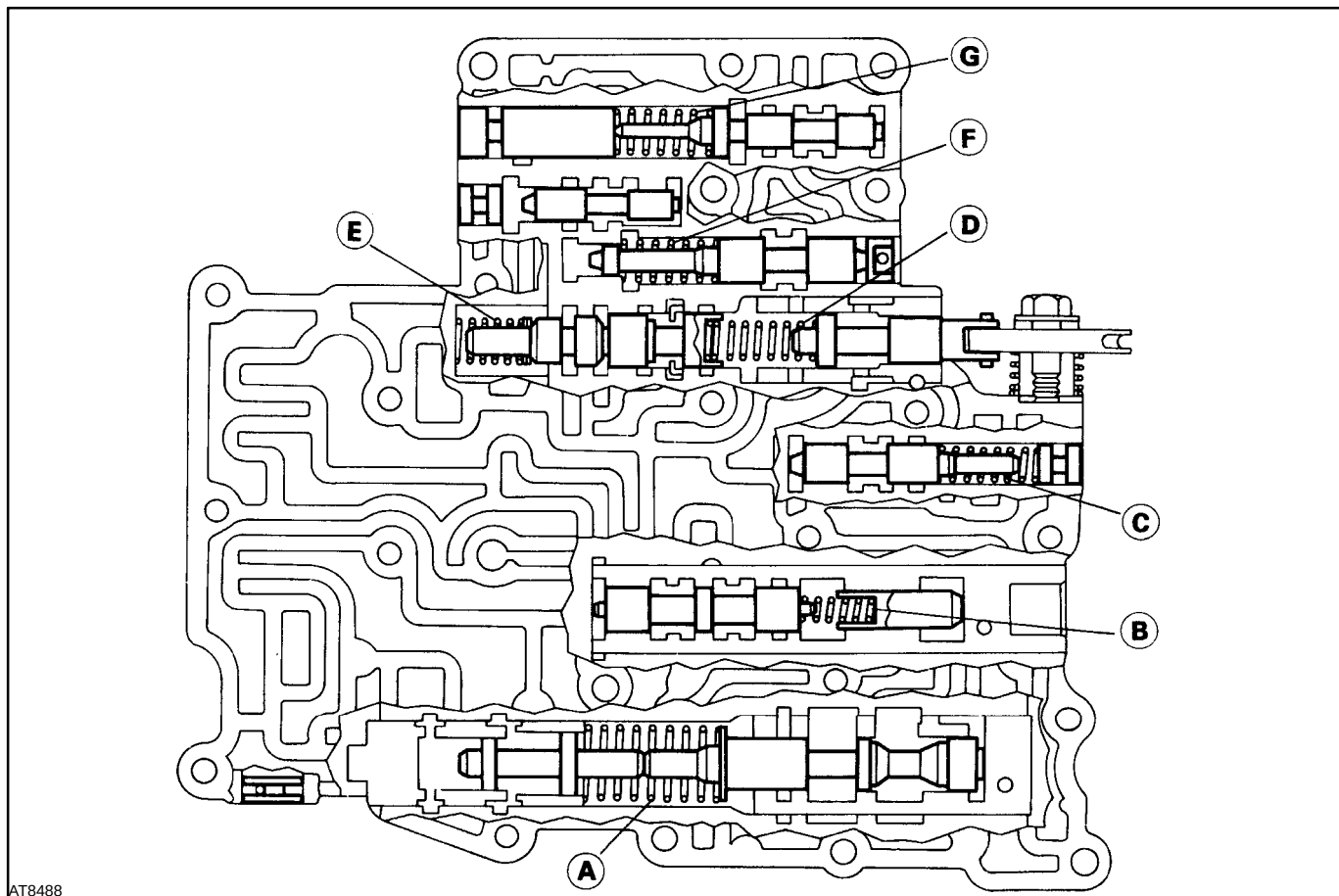
N-m (kgf-cm, ft-lbf) : Specified torque*¹A241E Only*² A241E and A240L Only

SPECIFICATIONS OF VALVE BODY SPRING

Spring			Free Length mm (in.)	Coil Outer Diameter mm (in.)	Number of Coils	Color
Ⓐ	Primary Regulator Valve Spring		66.7 (2.626)	18.6 (0.732)	12.5	Purple
Ⓑ	Lock-up Relay Valve Spring		18.8 (0.740)	5.1 (0.201)	14.5	None
Ⓒ	Low Coast Modulator Valve Spring	A241E	27.5 (1.083)	8.3 (0.327)	12.5	Yellow
	2nd Coast Modulator Valve Spring	A243L	29.7 (1.169)	8.3 (0.327)	12.5	Red
		A240L	29.6 (1.165)	8.3 (0.327)	12.5	Red
Ⓓ	Down Shift Plug Spring		29.8 (1.173)	8.7 (0.343)	13.5	White (A240L) Red (A241E A243L)
Ⓔ	Throttle Valve Spring		29.2 (1.150)	9.2 (0.362)	9.5	Light Green
Ⓕ	Throttle Modulator Valve Spring		29.9 (1.177)	9.0 (0.354)	15.5	Green
Ⓖ	Accumulator Control Valve Spring	A243L	38.2 (1.504)	10.0 (0.394)	11.5	Yellow
		A241E	33.2 (1.307)	10.0 (0.394)	11.5	Orange

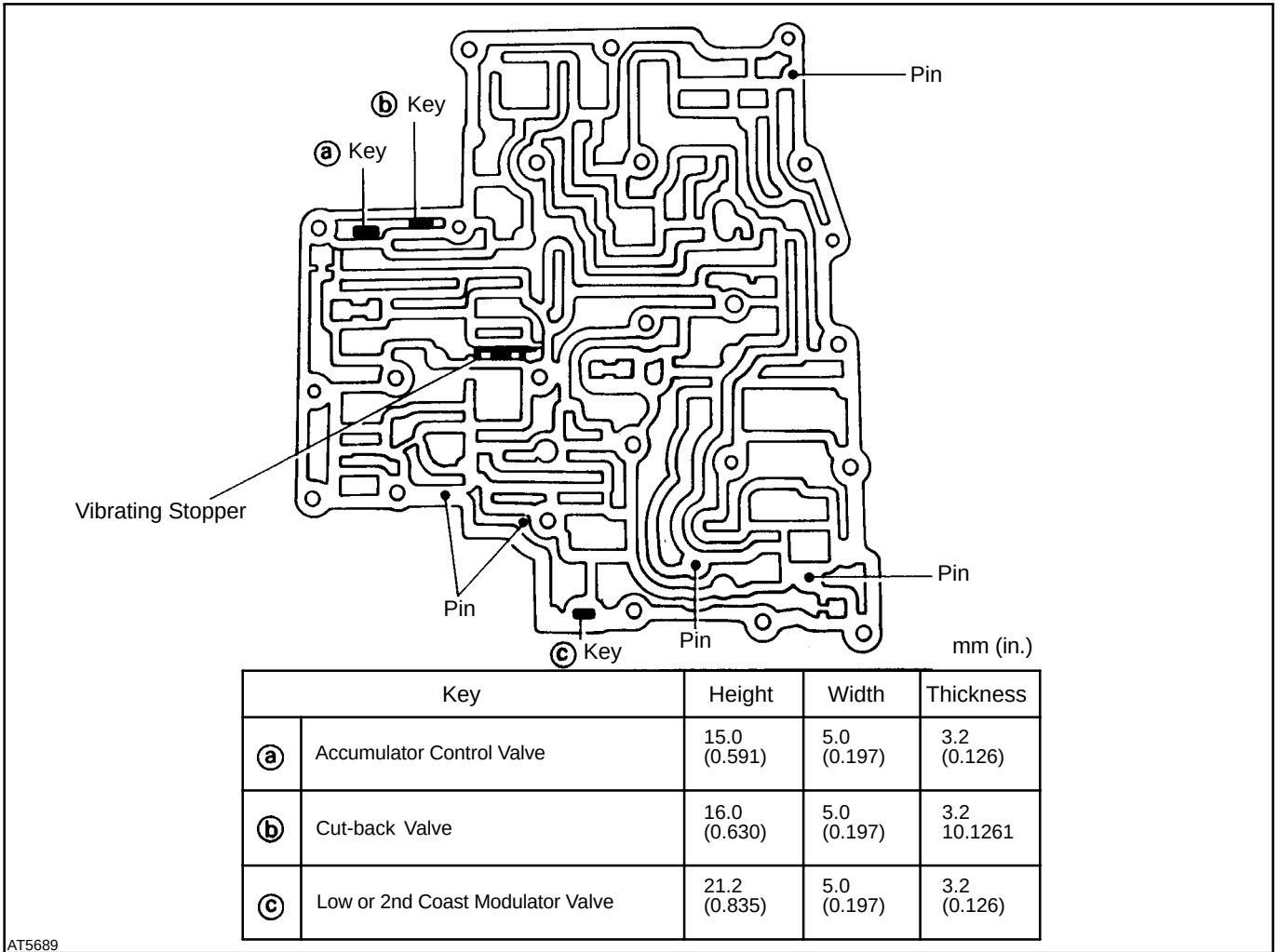
HINT: During reassembly please refer to the spring specifications above to help discriminate between the different springs.

SECTIONAL VIEW OF VALVE BODY



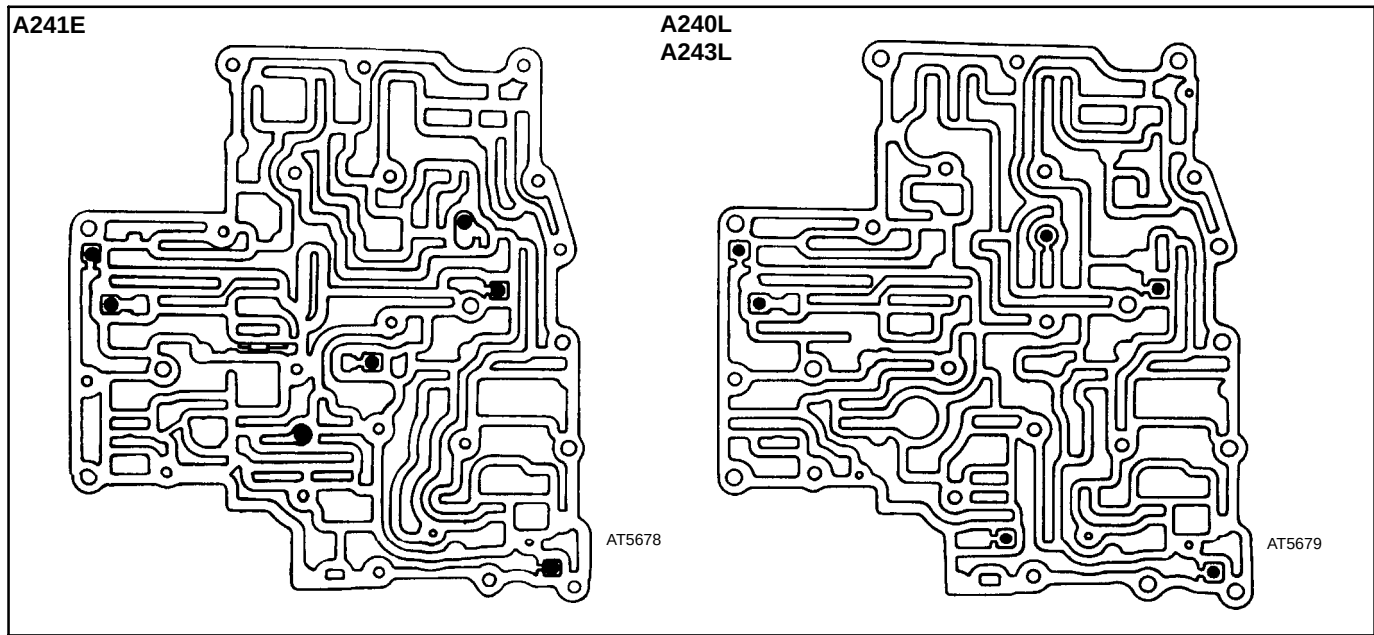
LOCATION OF KEYS, PINS, VIBRATING STOPPER AND CHECK BALLS

1. KEY STOPPER AND PIN



AT5689

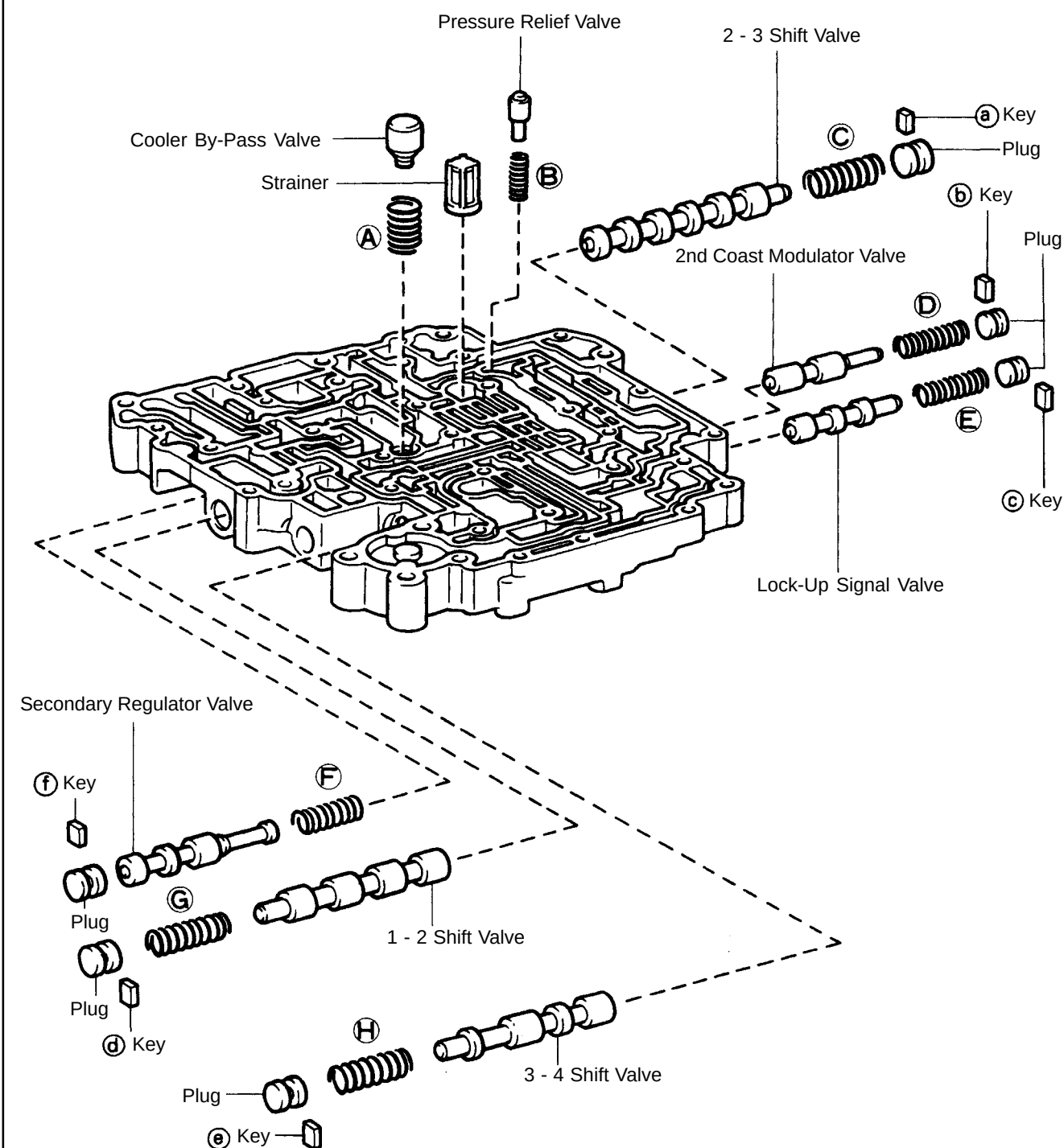
2. CHECK BALL



(Lower Valve Body, A241E)

COMPONENTS

A241E

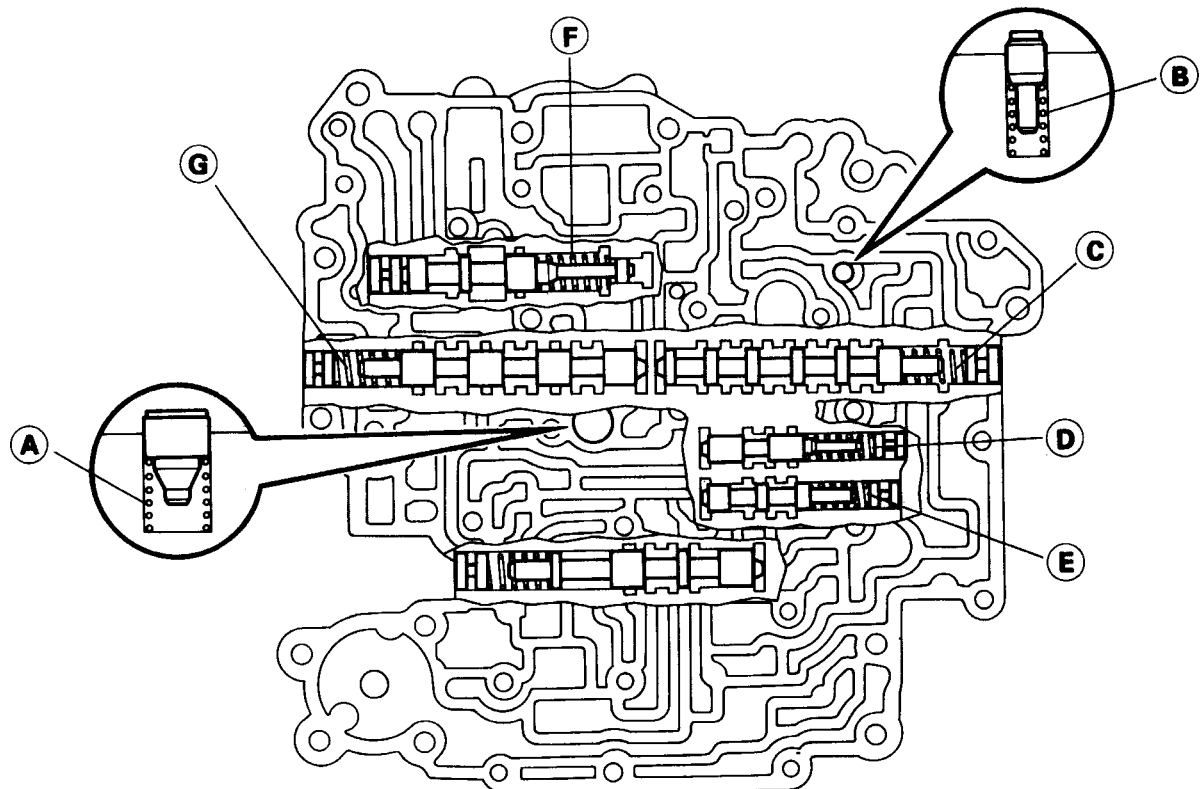


SPECIFICATIONS OF VALVE BODY SPRING

Spring	Free Length mm (in.)	Coil Outer Diameter mm (in.)	Number of Coils	Color
A Cooler By-pass Valve Spring	18.3 (0.720)	12.0 (0.472)	6.5	Yellow
B Pressure Relief Valve Spring	11.2 (0.441)	6.4 (0.252)	7.5	None
C 2 - 3 Shift Valve Spring	30.8 (1.213)	9.7 (0.382)	10.5	Purple
D 2nd Coast Modulator Valve Spring	29.6 (1.165)	8.3 (0.327)	12.5	Red
E Lock-up Signal Valve Spring	30.0 (1.181)	8.2 (0.323)	11.5	Orange
F Secondary Regulator Valve Spring	27.4 (1.079)	11.0 (0.433)	11.5	Blue
G 1 - 2 Shift Valve Spring	30.8 (1.213)	9.7 (0.382)	10.5	Purple
H 3 - 4 Shift Valve Spring	30.8 (1.213)	9.7 (0.382)	10.5	Purple

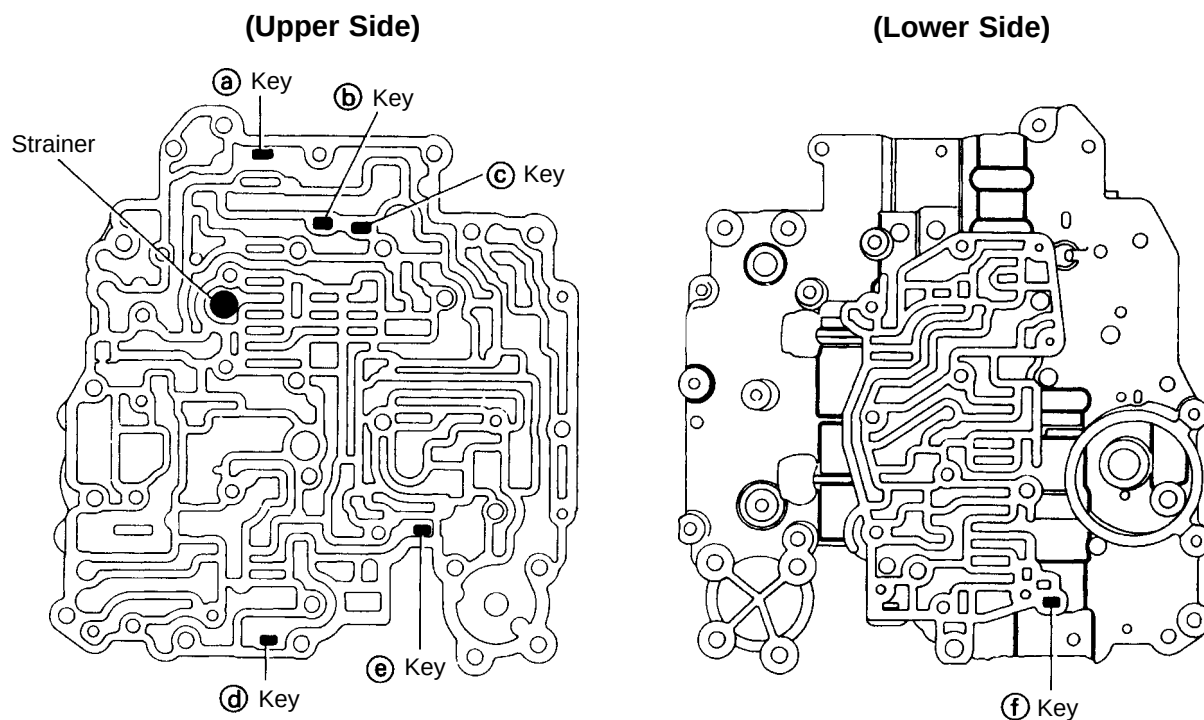
HINT: During reassembly please refer to the spring specifications above to help discriminate between the different springs:

SECTIONAL VIEW OF VALVE BODY



LOCATION OF KEYS AND STRAINER

A241E

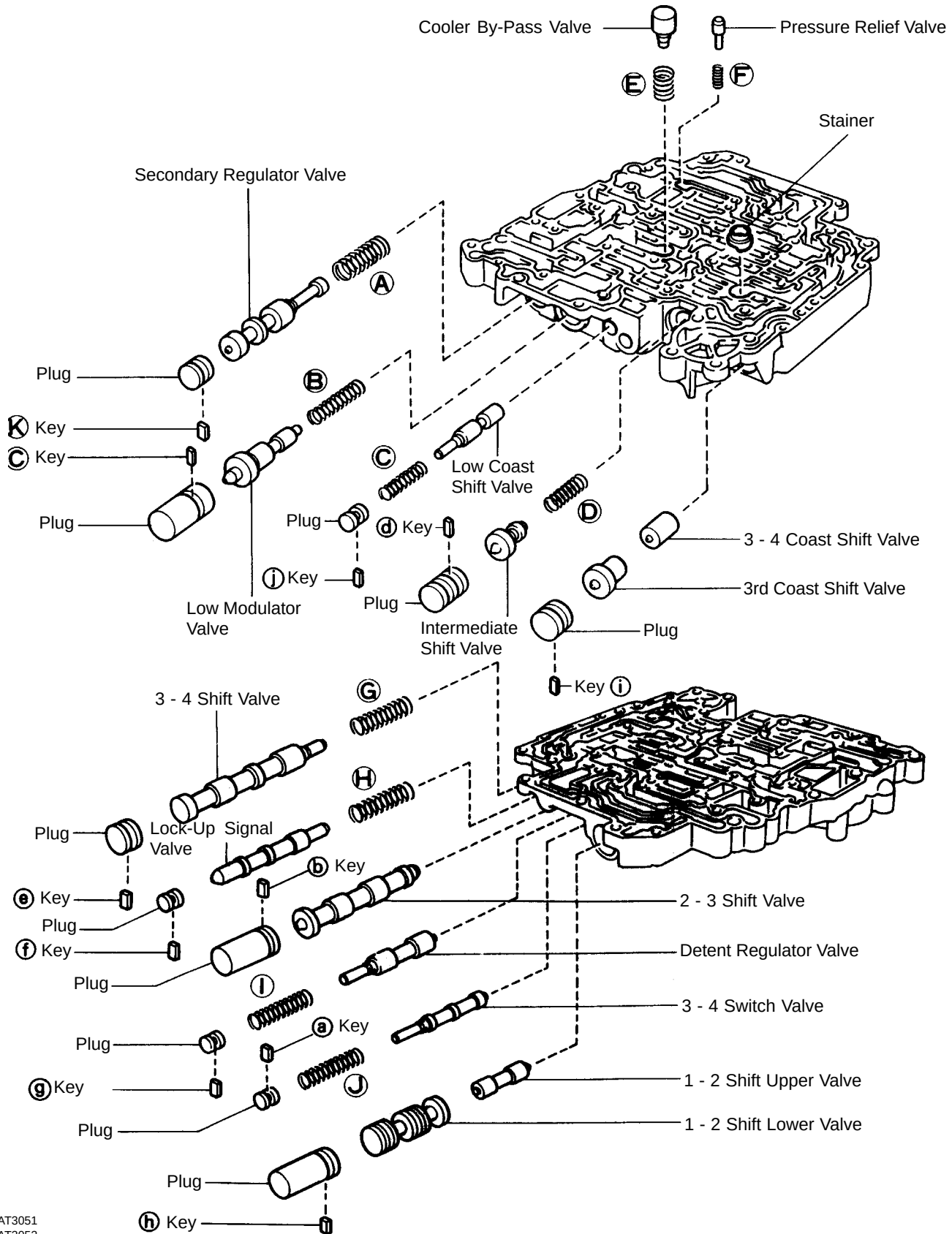


mm (in.)

Key		Height	Width	Thickness
(a)	2 - 3 Switch Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(b)	2nd Coast Modulator Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(c)	Lock-up Signal Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(d)	1 - 2 Shift Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(e)	3 - 4 Shift Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(f)	Secondary Regulator Valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)

(Lower Valve Body, A240L, A243L)
COMPONENTS

A240L, A243L

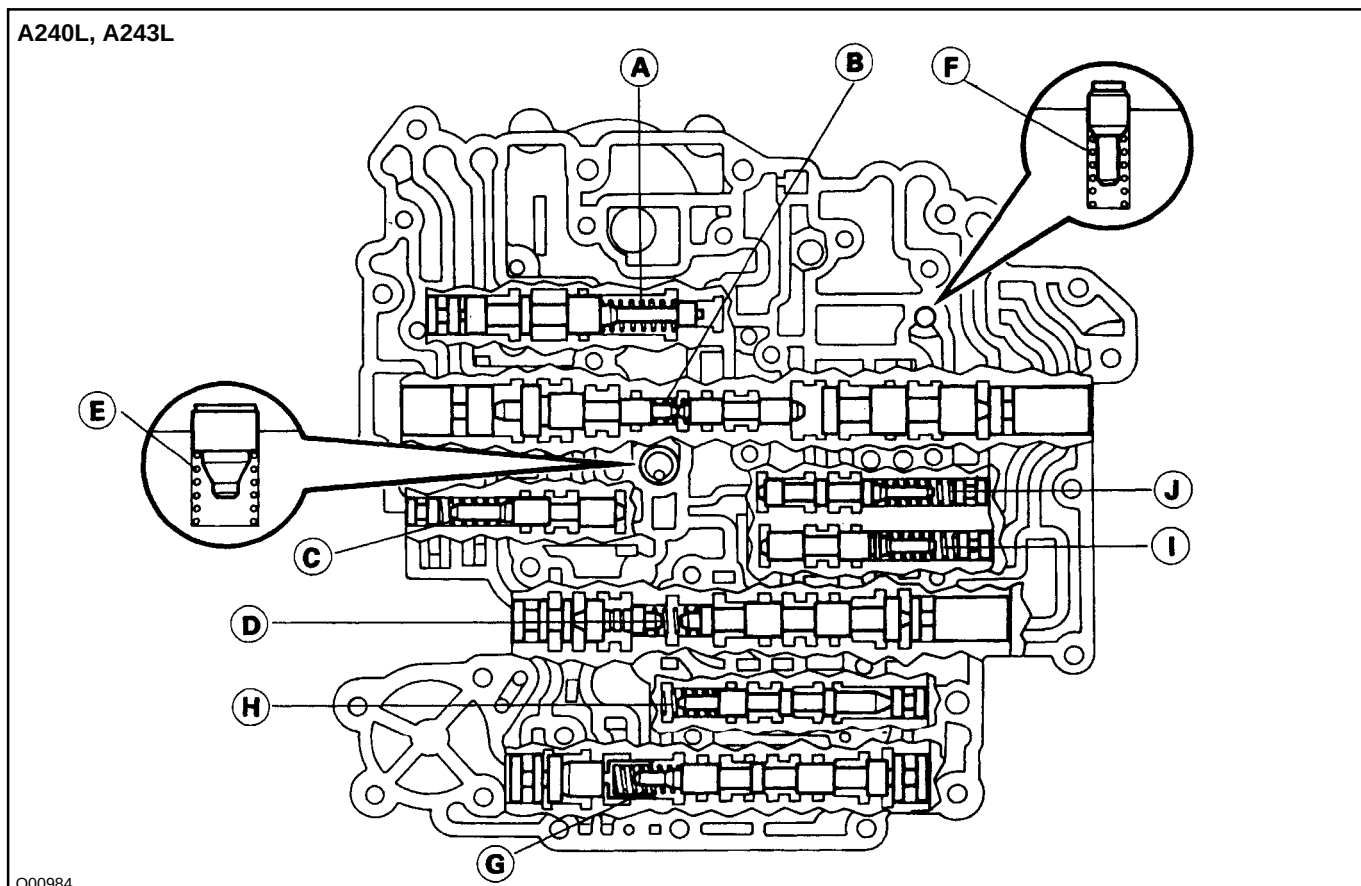


SPECIFICATIONS OF VALVE BODY SPRINGS

Spring		Free Length mm (in.)	Coil Outer Diameter mm (in.)	Number of Coils	Color	
Ⓐ	Secondary Regulator Valve Spring		27.4 (1.079)	11.0 (0.433)	11.5	Blue
Ⓑ	1 - 2 Shift Valve Spring		27.2 (1.071)	6.4 (0.252)	15.5	Yellow
Ⓒ	Low Modulator Valve Spring		29.2 (1.150)	8.3 (0.327)	12.5	None
Ⓓ	2 - 3 Shift Valve Spring		27.7 (1.091)	8.3 (0.327)	11.0	None
Ⓔ	Cooler By-pass Valve Spring		18.3 (0.720)	12.0 (0.472)	6.5	Yellow
Ⓕ	Pressure Relief Valve Spring		11.2 (0.441)	6.4 (0.252)	7.5	None
Ⓖ	3 - 4 Shift Valve Spring	A240L, A243L	27.7 (1.091)	8.3 (0.327)	11.0	None
Ⓗ	Lock-up Signal Valve Spring	A240L	35.7 (1.406)	8.1 (0.319)	14.5	Yellow
		A243L	18.2 (0.717)	8.1 (0.319)	8.0	Blue
Ⓘ	Detent Regulator Valve Spring		32.0 (1.260)	8.3 (0.327)	15.5	Brown
Ⓙ	3 - 4 Switch Valve Spring		30.9 (1.217)	7.0 (0.276)	18.5	None

HINT: During reassembly please refer to the spring specifications above to help discriminate between the different springs.

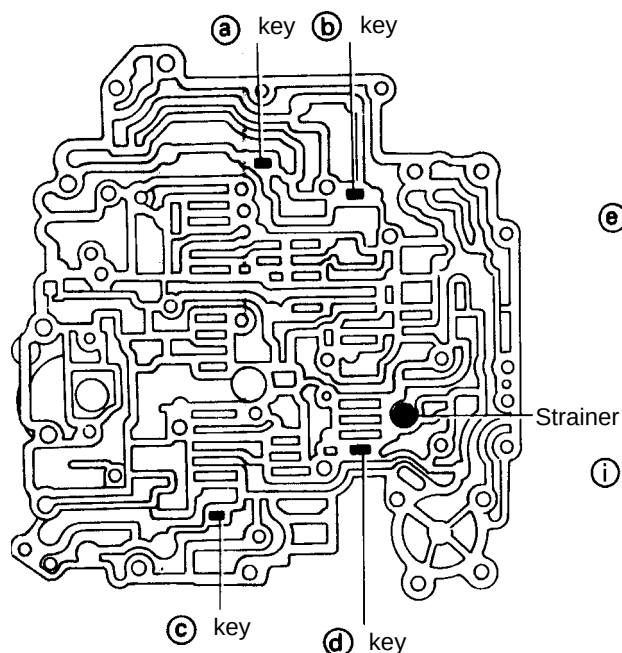
SECTION VIEW OF VALVE BODY



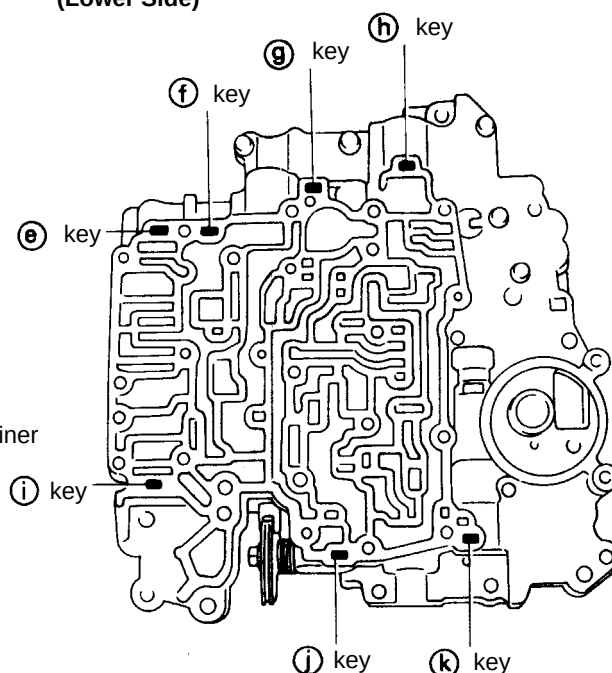
LOCATION OF KEYS AND STRAINER

A240L, A243L

(Upper Side)



(Lower Side)



AT3057 AT3053

mm (in.)

	Key	Height	Width	Thickness
(a)	3 - 4 Switch Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(b)	2 - 3 Shift Valve	9.2 (0.3622)	5.0 (0.197)	3.2 (0.126)
(c)	Low Modulator Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(d)	Intermediate Shift Valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)
(e)	3 - 4 Shift Valve	8.0 (0.315)	6.0 (0.236)	3.2 (0.126)
(f)	Lock-up Signal Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(g)	Detent Regulator Valve	11.5 (4.453)	5.0 (0.197)	3.2 (0.126)
(h)	1 - 2 Shift Lower valve	9.2 (0.3622)	5.0 (0.197)	3.2 (0.126)
(i)	3rd Coast Shift Valve	8.0 (0.315)	6.0 (0.236)	3.2 (0.126)
(j)	Low Coast Shift Valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)
(k)	Secondary Regulator Valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)

FOREWORD

This repair manual covers Disassembly, Inspection and Assembly procedures for the following Automatic Transaxles:

Automatic Transaxle	Applicable Model
A240L	'92 Corolla
A241E	'92 MR2, '92 Celica
A241H	'92 Corolla
A243L	'92 Celica

For On-vehicle Servicing (Inspection, Adjustment, Troubleshooting, Removal and Installation) of Automatic Transaxle, refer to the repair manual for the applicable vehicle models.

Pub. Name	Pub. No
'92 Corolla Repair Manual	RM250U
'92 Celica Repair Manual	RM251U1
'92 MR2 Repair Manual	RM252U1

All information contained in this manual is the most up-to-date at the time of publication. However, specifications and procedures are subject to change without notice.

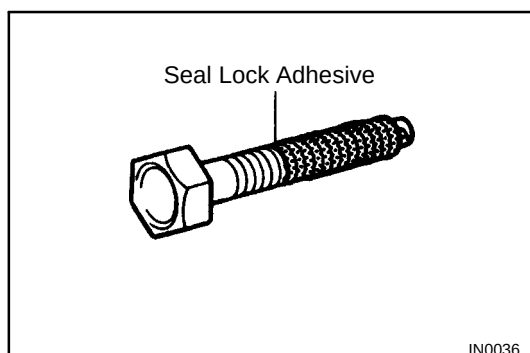
TOYOTA MOTOR CORPORATION

GENERAL REPAIR INSTRUCTIONS

1. **Use fender, seat and floor covers to keep the vehicle clean and prevent damage.**
2. **During disassembly, keep parts in order to facilitate reassembly.**
3. **Observe the following:**
 - (a) Before performing electrical work, disconnect the negative cable from the battery terminal.
 - (b) If it is necessary to disconnect the battery for inspection or repair, always disconnect the cable from the negative (-) terminal which is grounded to the vehicle body.
 - (c) To prevent damage to the battery terminal post, loosen the terminal nut and raise the cable straight up without twisting it or prying it.
 - (d) Clean the battery terminal posts and cable terminals with a shop rag. Do not scrape them with a file or other abrasive object.
 - (e) Install the cable terminal to the battery post with the nut loose, and tighten the nut after installation. Do not use a hammer or such to tap the terminal onto the post.
 - (f) Be sure the cover for the positive (+) terminals are properly in place.
4. **Check hoses and wiring connectors to make sure that they are secure and correct.**
5. **Non-reusable parts**
 - (a) Always replace cotter pins, gaskets, O-rings and oil seals etc. with new ones.
 - (b) Non-reusable parts are indicated in the component illustrations by the "♦" symbol.
6. **Precoated parts**

Precoated parts are the bolts and nuts, which have been coated with a seal lock adhesive at the factory.

 - (a) If a precoated part is retightened, loosened or caused to move in any way, it must be recoated with the specified adhesive.
 - (b) Recoating of precoated parts
 - (1) Clean off the old adhesive from the bolt, nut or installation part threads.
 - (2) Dry with compressed air.
 - (3) Apply the specified seal lock adhesive to the bolt or nut threads.
 - (c) Precoated parts are indicated in the component illustrations by the "★" symbol.



7. **When necessary, use a sealer on gaskets to prevent leaks.**
8. **Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.**
9. **Use of special service tools (SST) and special service materials (SSM) may be required, depending on the nature of the repair. Be sure to use SST and SSM where specified and follow the proper work procedure. A list of SST and SSM can be found at the preparation of AX section.**
10. **When replacing fuses, be sure the new fuse has the correct amperage rating. DO NOT exceed the fuse amp rating or use one of a lower rating.**
11. **Care must be taken when jacking up and supporting the vehicle. Be sure to lift and support the vehicle at the proper locations.**
 - (a) If the vehicle is to be jacked up only at the front or rear end, be sure to block the wheels in order to ensure safety.
 - (b) After the vehicle is jacked up, be sure to support it on stands. It is extremely dangerous to do any work on the vehicle raised on jack alone, even for a small job that can be finished quickly.

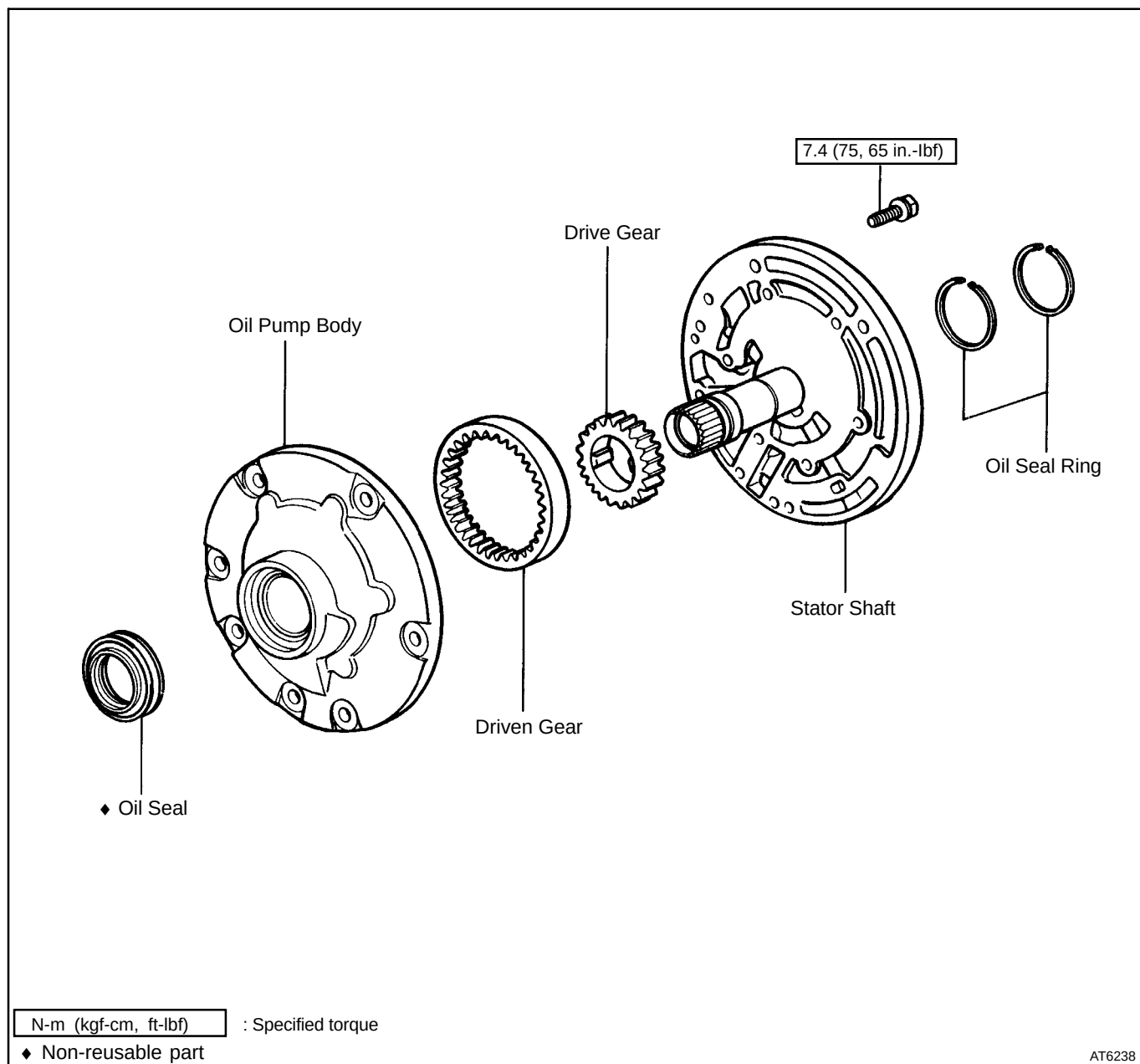
HOW TO USE THIS MANUAL

To assist you in finding your way through the manual, the Section Title and major heading are given at the top of every page.

REPAIR PROCEDURES

Most repair operations begin with an overview illustration. It identifies the components and shows how the parts fit together.

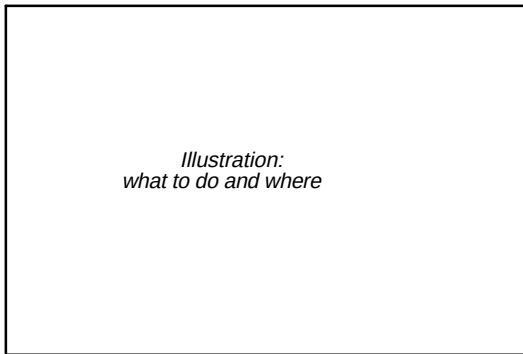
Example:



The procedures are presented in a step-by-step format:

- **Illustration shows *what* to do and *where* to do it.**
- **The task heading tells *what* to do.**
- **The detailed text tells *how* to perform the task and gives other information such as specifications and warnings.**

Example:



7. CHECK PISTON STROKE OF FORWARD CLUTCH
If replacing the disc, plate or flange, check the piston stroke:

Task heading: what to do

Detail text: how to do it

Using a dial indicator (long type pick or SST), measure the forward clutch piston stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kgf/cm² or 57 - 114 psi) as shown.

SST 09350-32014 (09351-32190)

Set part No.

Component part No.

Piston stroke: 1.41 - 1.82 mm (0.0555 - 0.0717 in.)

Specification

This format provides the experienced technician with a FAST TRACK to the information needed. The upper case task heading can be read at a glance and only when necessary, the text below it provides detailed information. Important specifications and warnings always stand out in bold type.

REFERENCES

References have been kept to a minimum. However, when they are required you are given the *page* to go to.

SPECIFICATIONS

Specifications are presented in bold type throughout the text in the applicable step. You never have to leave the procedure to look up your specs. All specifications are also found at the back of AX section, specifications for quick reference.

CAUTIONS, NOTICES, HINTS:

- **CAUTIONS** are presented in bold type, and indicate there is a possibility of injury to you or other people.
- **NOTICES** are also presented in bold type, and indicate the possibility of damage to the components being repaired.
- **HINTS** are separated from the text but do not appear in bold. They provide additional information to help you efficiently perform the repair.

SERVICE SPECIFICATIONS

SERVICE DATA

Transfer driven pinion preload (at starting) w/ Transfer (Add driven pinion preload)		8.8 - 13.7 N	0.9 - 1.4 kg	2.0 - 3.1 lb
	New bearing	12.7 - 13.7 N	1.3 - 1.4 kg	2.7 - 3.1 lb
	Reused bearing	4.9 - 8.8 N	0.5 - 0.9 kg	1.1 - 2.0 lb
Drive pinion bearing cage preload (at starting)				
	New bearing	17.7 - 28.4 N	1.8 - 2.9 kg	4.0 - 6.4 lb
	Reused bearing	8.8 - 13.7 N	0.9 - 1.4 kg	2.0 - 3.1 lb
Backlash				
Transfer ring gear		0.13 - 0.18 mm	0.0051 - 0.0071 in.	
Oil seal depth				
Transfer left case		3 mm	0.12 in.	
Transfer right case	Left side	0 mm	0 in.	
	Right side	0 mm	0 in.	
Extension housing		0.1 - 0.9 mm	0.004 - 0.035 in.	
Conical spring washer	Mark			
	A	1.00 mm	0.0394 in.	
	B	1.05 mm	0.0413 in.	
	C	1.10 mm	0.0433 in.	
	D	1.15 mm	0.0453 in.	
	E	1.20 mm	0.0472 in.	
	F	1.25 mm	0.0492 in.	
	G	1.30 mm	0.0512 in.	
	H	1.35 mm	0.0531 in.	
	J	1.40 mm	0.0551 in.	
	K	1.45 mm	0.0571 in.	
	L	1.50 mm	0.0591 in.	
Transfer left case side plate washer	Mark			
	71	2.13 mm	0.0839 in.	
	72	2.16 mm	0.0850 in.	
	73	2.19 mm	0.0862 in.	
	74	2.22 mm	0.0874 in.	
	75	2.25 mm	0.0886 in.	
	76	2.28 mm	0.0898 in.	
	77	2.31 mm	0.0909 in.	
	78	2.34 mm	0.0921 in.	
	79	2.37 mm	0.0933 in.	
	80	2.40 mm	0.0945 in.	
	81	2.43 mm	0.0957 in.	
	82	2.46 mm	0.0969 in.	

SERVICE DATA (Cont'd)

Transfer left case side plate washer (Cont'd)	83	2.49 mm	0.0980 in.
	84	2.52 mm	0.0992 in.
	85	2.55 mm	0.1004 in.
	86	2.58 mm	0.1016 in.
	87	2.61 mm	0.1028 in.
	88	2.64 mm	0.1039 in.
	89	2.67 mm	0.1051 in.
	90	2.70 mm	0.1063 in.
	91	2.73 mm	0.1075 in.
	92	2.76 mm	0.1087 in.
	93	2.79 mm	0.1098 in.
	94	2.82 mm	0.1110 in.
	Transfer ring gear adjusting shim	Mark	
	A	0.30 mm	0.0118 in.

	B	0.33 mm	0.0130 in.
	C	0.36 mm	0.0142 in.
	D	0.39 mm	0.0154 in.
	E	0.42 mm	0.0165 in.
	F	0.45 mm	0.0177 in.
	G	0.48 mm	0.0189 in.
	H	0.51 mm	0.0201 in.
	J	0.54 mm	0.0213 in.
	K	0.57 mm	0.0224 in.

TORQUE SPECIFICATIONS

Part tightened	N-m	kgf-cm	ft-lbf
Transfer × Transaxle (nut)	69	700	51
Ring gear mounting left case × Right case	97	984	71
Left case × Driven pinion bearing cage	39	400	29
Left case × Control valve sleeve cover	17	170	12
Left case × Case retainer	25	260	19
Left case × Inspection hole cover	17	170	12
Right case × Level gauge guide plate	10	100	7
Extension housing × Driven pinion bearing cage	25	260	19
Mode select lever and rod	13	130	9
Driven pinion lock nut	98	1,000	72
Left case × Ring gear	124	1,260	91
Left case × Right case	33	340	25

SERVICE SPECIFICATIONS

SERVICE DATA

Second coast brake	Piston stroke		1.5 - 3.0 mm	0.059 - 0.118 in.
	Piston rod length		72.9 mm	2.870 in.
			71.4 mm	2.811 in.
Oil pump	Body clearance	STD	0.07 - 0.15 mm	0.0028 - 0.0059 in.
	Maximum		0.3 mm	0.012 in.
	Tip clearance	STD	0.11 - 0.14 mm	0.0043 - 0.0055 in.
		Maximum	0.3 mm	0.012 in.
	Side clearance	STD	0.02 - 0.05 mm	0.0008 - 0.0020 in.
		Maximum	0.1 mm	0.004 in.
	Pump body bushing inside diameter	Maximum	38.18 mm	1.5031 in.
	Stator shaft bushing inside diameter			
	Front side	Maximum	21.57 mm	0.8492 in.
	Rear side	Maximum	27.07 mm	1.0657 in.
Direct clutch	Piston stroke	A241E	1.11 - 1.47 mm	0.0437 - 0.0579 in.
		A243L	1.63 - 1.97 mm	0.0642 - 0.0776 in.
		A240L, A241H	1.36 - 1.71 mm	0.0535 - 0.0673 in.
	Drum bushing inside diameter		47.07 mm	1.8531 in.
	Flange thickness	A241E	2.6 mm	0.102 in.
		A243L	3.0 mm	0.118 in.
		A240L, A241H	2.6 mm	0.102 in.
			2.8 mm	0.110 in.
			3.0 mm	0.118 in.
			3.0 mm	0.118 in.
			3.37 mm	0.1327 in.
Forward clutch	Piston stroke		1.42 - 1.81 mm	0.0559 - 0.0713 in.
	Flange thickness		3.00 mm	0.1181 in.
			3.37 mm	0.1327 in.
Front planetary gear	Sun gear bushing inside diameter	Standard	22.025 - 22.046 mm	0.8671 - 0.8680 in.
		Maximum	22.096 mm	0.8699 in.
	Ring gear flange bushing inside diameter			
		Standard	19.025 - 19.050 mm	0.7490 - 0.7500 in.
	Planetary pinion gear thrust clearance	Maximum	0.5 mm	0.020 in.
Rear planetary gear	Planetary pinion gear thrust clearance	Maximum	0.5 mm	0.020 in.
Counter shaft	Starting torque	with spring tension gauge	1.2 - 2.0 kg	2.6 - 4.4 lb
		with torque gauge		
		(hexagon nut side)		
		New bearing	0.6 - 1.0 N-m	6 - 10 kgf-cm 5.2 - 8.7 in.-lbf
		Reused bearing	0.3 - 0.5 N-m	3 - 5 kgf-cm 2.6 - 4.3 in.-lbf
	Planetary sun gear bushing inside diameter			
		Standard	29.800 - 29.825 mm	1.1732 - 1.1742 in.
		Maximum	29.870 mm	1.1760 in.
	Underdrive planetary pinion gear thrust clearance			
		Maximum	0.5 mm	0.020 in.
	Height (measure the distance between the tip of the counter shaft and bolt seat of the clutch support.)		33.3 - 35.5 mm	1.311 - 1.398 in.
	End play		0.23 - 0.89 mm	0.0091 - 0.0350 in.

SERVICE DATA (Cont'd)

Underdrive clutch and one-way clutch No. 3	Clutch drum bushing inside diameter					
		Standard	Front side	46.500 - 46.525 mm	1.8307 - 1.8317 in.	
			Rear side	55.000 - 55.030 mm	2.1654 - 2.1665 in.	
		Maximum	Front side	46.570 mm	1.8335 in.	
			Rear side	55.080 mm	2.1685 in.	
	Underdrive clutch piston stroke		A241E	1.21 - 1.55 mm	0.0476 - 0.0606 in.	
			A240L, A243L, A241H	1.50 - 1.86 mm	0.0591 - 0.0732 in.	
	Flange thickness		A240L	2.04 mm	0.0803 in.	
			A241H	2.40 mm	0.0945 in.	
			A241E, A243L	2.30 mm	0.0906 in.	
				2.50 mm	0.0984 in.	
			2.70 mm	0.1063 in.		
Intermediate shaft	Intermediate shaft protrusion length (Reference) A241H		115.8 mm	4.559 in.		
			254 mm	10.0 in.		
Input shaft	Thrust play		0.3 - 0.9 mm	0.012 - 0.035 in.		
Valve body spring	Spring		Free length mm (in.)	Coil outer diameter mm (in.)	Total No. of coils	Color
	(Upper valve body)					
	Primary regulator valve		66.7 (2.626)	18.6 (0.732)	12.5	Purple
	Lock-up relay valve		18.8 (0.740)	5.1 (0.201)	14.5	None
	Low coast modulator valve (A241E)		27.5 (1.083)	8.3 (0.327)	12.5	Yellow
	2nd coast modulator valve (A240L, A243L)		29.6 (1.165)	8.3 (0.327)	12.5	Red
	(A241H)		32.6 (1.283)	8.3 (0.327)	12.5	Pink
	Down shift plug spring (A240L)		29.8 (1.173)	8.7 (0.343)	13.5	White
	(Others)		30.0 (1.181)	8.7 (0.343)	12.5	Blue
	No. 2 pressure regulator valve (A241H)		29.4 (1.157)	7.5 (0.295)	14.0	Red
	Throttle valve		29.2 (1.150)	9.2 (0.362)	9.5	Light Green
	Throttle modulator valve		29.9 (1.177)	9.0 (0.354)	15.5	Green
	Accumulator control valve (A241L)		35.9 (1.413)	10.0 (0.394)	11.5	Blue
	(A241H, A243L)		38.2 (1.504)	10.0 (0.394)	11.5	Yellow
	(A241E)		33.2 (1.307)	10.0 (0.394)	11.5	Orange
	(Low valve body, A241E)					
	Cooler by-pass valve		18.3 (0.720)	12.0 (0.472)	6.5	Yellow
	Pressure relief valve		11.2 (0.441)	6.4 (0.252)	7.5	None
	2 - 3 shift valve		30.8 (1.213)	9.7 (0.382)	10.5	Purple
	2nd coast modulator valve		29.6 (1.165)	8.3 (0.327)	12.5	Red
	Lock-up signal valve		30.0 (1.181)	8.2 (0.323)	11.5	Orange
	Secondary regulator valve		27.4 (1.079)	11.0 (0.433)	11.5	Blue
	1 - 2 Shift valve		30.8 (1.213)	9.7 (0.382)	10.5	Purple
	3 - 4 Shift valve		30.8 (1.213)	9.7 (0.382)	10.5	Purple
	(Lower valve body, A243L, A240L, A241H)					
	Secondary regulator valve		27.4 (1.079)	11.0 (0.433)	11.5	Blue
	1 - 2 Shift valve		27.2 (1.071)	6.4 (0.252)	15.5	Yellow
	Low modulator valve		29.2 (1.150)	8.3 (0.327)	12.5	None
	2 - 3 shift valve		27.7 (1.091)	8.3 (0.327)	11.0	None
	Cooler by-pass valve		18.3 (0.720)	12.0 (0.472)	6.5	Yellow
	Pressure relief valve		11.2 (0.441)	6.4 (0.252)	7.5	None
	3 - 4 shift valve					
	(A241H)		34.9 (1.374)	8.2 (0.323)	13.5	None
	(A240L, A243L)		27.7 (1.091)	8.3 (0.327)	11.0	None
	Lock-up signal valve					
	(A241H)		41.4 (1.630)	8.2 (0.323)	14.5	White
	(A243L)		18.2 (0.717)	8.1 (0.319)	8.0	Blue
	(A240L)		35.7 (1.406)	8.1 (0.319)	14.5	Yellow
	Detent regulator valve		32.0 (1.260)	8.3 (0.327)	15.5	Brown
	3 - 4 switch valve		30.9 (1.217)	7.0 (0.276)	18.5	None

SERVICE DATA (Cont'd)

Accumulator spring (A241E)	Spring		Free length mm (in.)		Color
	C ₁	Outer Inner	74.1 41.0	(2.917) (1.614)	Pink Pink
(A243L)	C ₂	No. 1	15.5	(0.610)	Pink
		No. 2	62.54	(2.462)	Pink
	C ₃	Outer	65.2	(2.570)	Blue
		Inner	48.0	(1.890)	Orange
(A240L)	B ₂	No. 1	15.5	(0.610)	Green
		No. 2	64.5	(2.539)	Green
	C ₁	Outer	77.8	(3.063)	None
		Inner	42.5	(1.673)	None
(A241H)	C ₂		71.5	(2.815)	Blue and Light blue
	C ₃		61.47	(2.420)	White
	B ₂		56.68	(2.231)	Yellow
	B ₂	No. 1	35.18	(1.3850)	Yellow
		No. 2	56.68	(2.2315)	Yellow
	C ₁	Inner	42.50	(1.6732)	None
		Outer	77.8	(3.063)	None
	C ₂		64.8	(2.551)	Yellow
	C ₃		64.72	(2.5480)	Red and Yellow
	B ₂	No. 1	36.5	(1.473)	White
		No. 2	56.7	(2.232)	Yellow
(A241H)	C ₁	Inner	41.0	(1.614)	Pink
		Outer	78.2	(3.079)	Yellow
	C ₂		66.2	(2.606)	Blue
	C ₃		62.1	(2.445)	Light Green
Differential	Side bearing preload (at Starting)				
	New bearing		8 - 14 kg-cm	6.9 - 12.2 in.-lb	0.8 - 1.4 N-m
	Reused bearing		4 - 7 kg-cm	3.5 - 6.1 in.-lb	0.4 - 0.7 N-m
	(A241H)				
	New bearing		2.5 - 4.4 kg	5.5 - 9.7 lb	24.5 - 43.1 N
	Reused bearing		1.3 - 2.2 kg	2.9 - 4.9 lb	12.7 - 21.6 N
	Pinion to side gear backlash		0.05 - 0.20 mm	0.0020 - 0.0079 in.	

SERVICE DATA (Cont'd)

Differential (Cont'd)	(A241H) Center differential backlash	0.13 - 0.18 mm	0.0051 - 0.0071 in.
	Center differential case thrust clearance		
	STD	0.18 - 0.63 mm	0.0071 - 0.0248 in.
	Differential end play	0.18 - 0.82 mm	0.0071 - 0.0323 in.
	Side gear thrust washer thickness	0.95 mm 1.00 mm 1.05 mm 1.10 mm 1.15 mm 1.20 mm	0.0374 in. 0.0394 in. 0.0413 in. 0.0433 in. 0.0453 in. 0.0472 in.
	(A241H)	Mark	
	Center differential side gear thrust washer	A	1.00 mm 0.0394 in.
		B	1.05 mm 0.0413 in.
		C	1.10 mm 0.0433 in.
		D	1.15 mm 0.0453 in.
		E	1.20 mm 0.0472 in.
		F	1.25 mm 0.0492 in.
		G	1.30 mm 0.0512 in.
		H	1.35 mm 0.0531 in.
		J	1.40 mm 0.0551 in.
	Side bearing adjusting shim thickness	2.00 mm 2.05 mm 2.10 mm 2.15 mm 2.20 mm 2.25 mm 2.30 mm 2.35 mm 2.40 mm 2.45 mm 2.50 mm 2.55 mm 2.60 mm 2.65 mm 2.70 mm 2.75 mm 2.80 mm 2.85 mm 2.90 mm	0.0787 in. 0.0807 in. 0.0827 in. 0.0846 in. 0.0866 in. 0.0886 in. 0.0906 in. 0.0925 in. 0.0945 in. 0.0965 in. 0.0984 in. 0.1004 in. 0.1024 in. 0.1043 in. 0.1063 in. 0.1083 in. 0.1102 in. 0.1122 in. 0.1142 in.

SERVICE DATA (Cont'd)

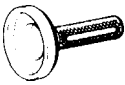
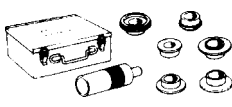
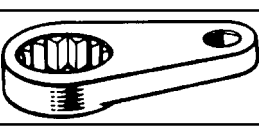
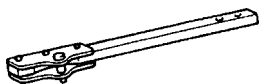
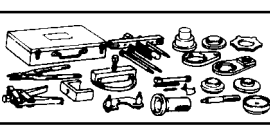
Differential (Cont'd)	Differential side thrust washer	Mark		
		51	2.00 mm	0.0787 in.
		B	2.05 mm	0.0807 in.
		C	2.10 mm	0.0827 in.
		D	2.15 mm	0.0846 in.
		E	2.20 mm	0.0866 in.
		54	2.25 mm	0.0886 in.
		G	2.30 mm	0.0906 in.
		H	2.35 mm	0.0925 in.
		J	2.40 mm	0.0945 in.
		K	2.27 mm	0.0894 in.
		57	2.30 mm	0.0906 in.
		M	2.33 mm	0.0917 in.
		N	2.36 mm	0.0929 in.
		P	2.39 mm	0.0941 in.
		Q	2.42 mm	0.0953 in.
		60	2.45 mm	0.0965 in.
		61	2.50 mm	0.0984 in.
		62	2.55 mm	0.1004 in.
		63	2.60 mm	0.1024 in.
		64	2.65 mm	0.1043 in.
		65	2.70 mm	0.1063 in.
		66	2.75 mm	0.1083 in.
		67	2.80 mm	0.1102 in.
		68	2.85 mm	0.1122 in.

TORQUE SPECIFICATIONS

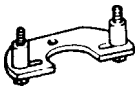
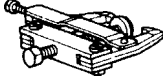
Part tightened	kg-cm	ft-lb	N-m
Neutral start switch × Transaxle case	55	48 in.-lb	5.4
Oil pump body × Stator shaft	100	7	10
Upper valve body × Lower valve body	65	56 in.-lb	6.4
Solenoid × Lower valve body (A241E)	100	7	10
Ring gear × Differential case (Ex. A241H)	985	71	97
Transaxle housing × Transmission case	300	22	29
Counter shaft × Driven gear	1,600	116	157
Oil pump × Transaxle case	250	18	25
Accumulator cover × Transaxle case	100	7	10
Valve body × Transaxle case	100	7	10
Manual detent spring × Transaxle case	100	7	10
Oil tube bracket	100	7	10
Oil pan	50	43 in.-lb	4.9
Speed sensor × Transaxle case (Ex. A241H)	100	7	10
Governor body adopter (A243L)	100	7	10
Sensor adopter (A241E)	100	7	10
Governor cover bracket (A243L)	130	9	13
Sensor cover bracket (A241E)	130	9	13
Neutral start switch × Manual valve shaft	70	61 in.-lb	6.9
Transaxle rear cover × Transaxle case	300	22	29

PREPARATION

SST (SPECIAL SERVICE TOOLS)

Illustration	Part No.	Part Name	Note
	09223-15010	Crankshaft Rear Oil Seal Replacer	A241H
	09226-10010	Crankshaft Front & Rear Bearing Replacer	A241H
	09240-00020	Wire Gauge Set	
	09308-00010	Oil Seal Puller	
	09316-12010	Transfer Bearing Replacer	A241H
	09316-20011	Transfer Bearing Replacer	A241H
	09316-60010	Transmission & Transfer Bearing Replacer	A241H
	(09316-00010)	(Replacer Pipe)	A241H
	(09316-00030)	(Replacer "B")	A241H
	(09316-00040)	(Replacer "C")	A241H
	(09316-00060)	(Replacer "E")	A241H
	09318-12010	Transfer Bearing Adjusting Nut Wrench	A241H
	09326-20011	Output Shaft Bearing Lock Nut Wrench	A241H
	09330-00021	Companion Flange Holding Tool	
	09350-32014	TOYOTA Automatic Transmission Tool Set	

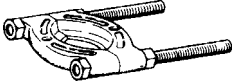
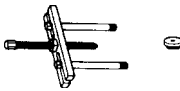
SST (SPECIAL SERVICE TOOLS) (Cont'd)

Illustration	Part No.	Part Name	Note
	(09351-32032)	Counter Driven Gear Holding Tool	
	(09351-32040)	No. 1 Piston Spring Compressor	
	(09351-32050)	(Snap Ring Expander)	
	(09351-32061)	(Oil Pump Puller)	
	(09351-32070)	No. 2 Piston Spring Compressor	
	(09351-32090)	Oil Seal Remover & Replacer	
	(09351-32100)	Drive Pinion Bearing Replacer	
	(09351-32111)	Side Bearing Race Replacer	Except A241H
	(09351-32130)	(Handle)	
	(09351-32140)	(Oil Seal Replacer)	
	(09351-32150)	(Oil Seal Replacer)	
	(09351-32170)	(Lock Nut Wrench)	
	(09351-32180)	(Bearing Replacer)	
	(09351-32190)	(Measure Terminal)	
	09502-10012	Differential Side Bearing Puller	

SST (SPECIAL SERVICE TOOLS) (Cont'd)

Illustration	Part No.	Part Name	Note
	09502-12010	Differential Bearing Replacer	A241H
	09506-35010	Differential Drive Pinion Rear Bearing Replacer	A241H
	09555-55010	Differential Drive Pinion Bearing Replacer	
	09564-32011	Differential Preload Adaptor	Except A241H
	09608-30022	Front Hub Searing Replacer Set	A241H
	(09608-00050)	Drive Pinion Front Bearing Cup Replacer	A241H
	(09608-05010)	(Handle)	A241H
	09608-32010	Steering Knuckle Oil Seal Replacer	A241H (Side gear shaft oil seal)
	09608-35014	Axle Hub & Drive Pinion Bearing Tool Set	A241H
	(09608-06020)	(Handle)	A241H
	(09608-06120)	Front Hub Outer Bearing Cup Replacer	A241H
	(09608-06150)	Rear Hub Outer Bearing Cup Replacer	A241H
	(09608-06180)	Drive Pinion Rear Bearing Cup Replacer	A241H
	09612-65014	Steering Worm Bearing Puller	A241H
	09710-30030	Rear Suspension Bushing Tool Set	A241H, A241E, A243L

SST (SPECIAL SERVICE TOOLS) (Cont'd)

Illustration	Part No.	Part Name	Note
	(09710-03160)	(Remover)	A241E, A243L
	09950-00020	Bearing Remover	
	09950-00030	Bearing Remover Attachment	A241H

RECOMMENDED TOOL

Illustration	Part No.	Part Name	Note
	09031-00030	Pin Punch	

EQUIPMENT

Part Name	Note
Feeler gauge	Check major clearance.
Vernier caliper with depth gauge	Check length of second coast brake piston rod.
Dial indicator with magnetic base	Check piston stroke and end play of the output shaft.
Dial indicator	Check inside diameter of major bushing.
Straight edge	Check side clearance of oil pump.
Torque wrench	

LUBRICANT

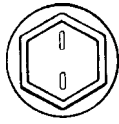
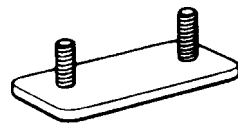
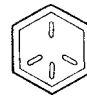
Item	Capacity			Classification
	Liters	US qts	Imp. qts	
Automatic transmission fluid				ATF DEXRON★ II
A241E Dry fill Drain and refill	8.0 3.3	8.5 3.5	7.0 2.9	
A243L Dry fill Drain and refill	7.7 3.3	8.1 3.5	6.8 2.9	
A240L Dry fill Drain and refill	7.2 3.1	7.6 3.3	6.3 2.7	
A241H Dry fill Drain and refill	8.2 3.1	8.7 3.3	7.2 2.8	
Transfer oil (A241H) Dry fill Drain and refill	0.8 0.7	0.8 4.7	0.7 0.6	Transaxle oil E50 (08885 - 80206) or equivalent Recommended oil Oil grade: API GL-5 Viscosity: Above -18°C (0°F) SEA 75W-90, 80W-90 or 90 Below -18°C (0°F) SEA 75W-90, 80W-90 or 80W

SSM (SPECIAL SERVICE MATERIALS)

Part Name	Part No.	Use etc.
Seal packing 1281, Three bond 1281 or equivalent	08826-00090	(A241H) Transfer left case × Differential lock control cover Transfer left case × Right case Transfer left case × Inspection hole cover Transaxle housing × Transfer assembly
Adhesive 1324, Three bond 1324 or equivalent	08833-00070	Oil gallery cover tighten bolts (A241E: MR2, A241H) Torque converter mounting bolts
Adhesive 1344, Three bond 1344, Loctite 242 or equivalent	08833-00080	Transaxle housing tighten bolts
Adhesive 1131, Three bond 1131, Loctite 518 or equivalent	08833-00090	Transaxle rear cover × Transaxle case Transaxle housing × Transaxle case (A241H) Transaxle housing × Transaxle case Transaxle case × Rear cover

STANDARD BOLT TORQUE SPECIFICATIONS

HOW TO DETERMINE BOLT STRENGTH

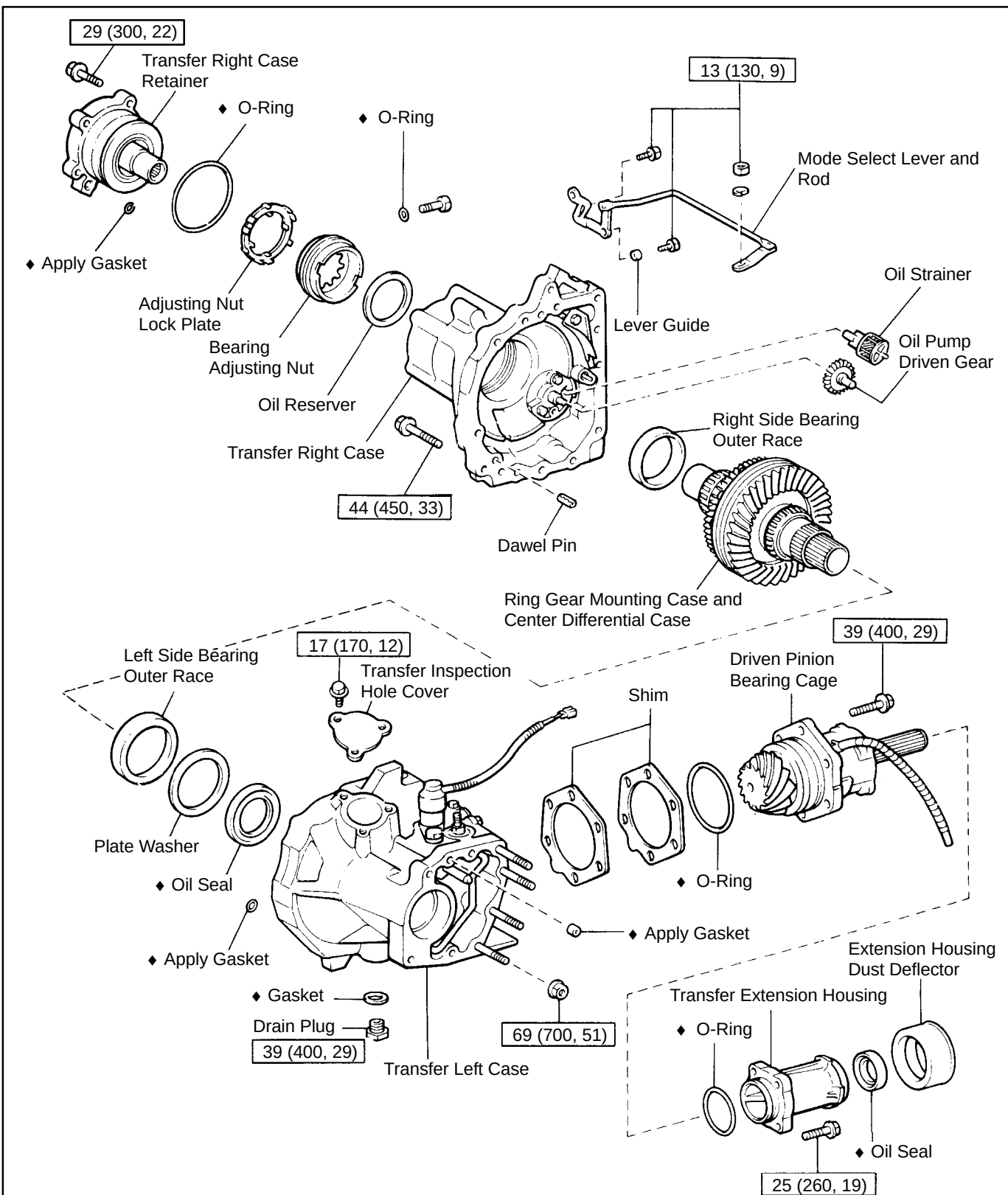
	Mark	Class		Mark	Class
Hexagon head bolt	4- 4T 5- 5T 6- 6T 7- 7T 8- 8T 9- 9T 10- 10T 11- 11T 		Stud bolt		4T
	 No mark	4T			
Hexagon flange bolt w/ washer hexagon bolt	 No mark	4T			6T
Hexagon head bolt	 Two protruding lines	5T			
Hexagon flange bolt w/ washer hexagon bolt	 Two protruding lines	6T	Welded bolt		4T
Hexagon head bolt	 Three protruding lines	7T			
Hexagon head bolt	 Four protruding lines	8T			

SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N-m	kgf-cm	ft-lbf	N-m	kgf-cm	ft-lbf
4T	6	1	5	55	48 in.-lbf	6	60	52 in.-lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	-	-	-
5T	6	1	6.5	65	56 in.-lbf	7.5	75	65 in.-lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	-	-	-
6T	6	1	8	80	69 in.-lbf	9	90	78 in.-lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	-	-	-
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	-	-	-
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

TRANSFER (A241H)

COMPONENTS

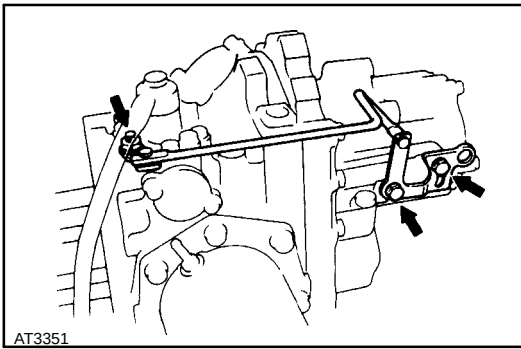


N-m (kgf-cm, ft-lbf) : Specified torque

◆ Non-reusable part

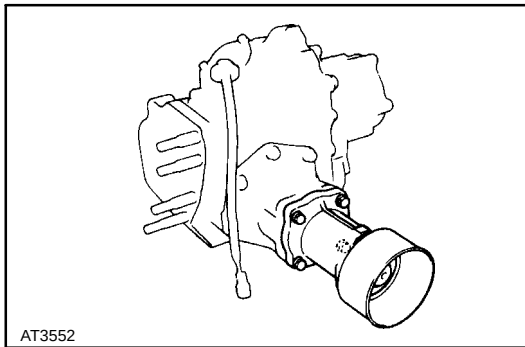
REMOVAL OF COMPONENT PARTS

1. REMOVE TRANSFER MODE SELECT LEVER AND ROD

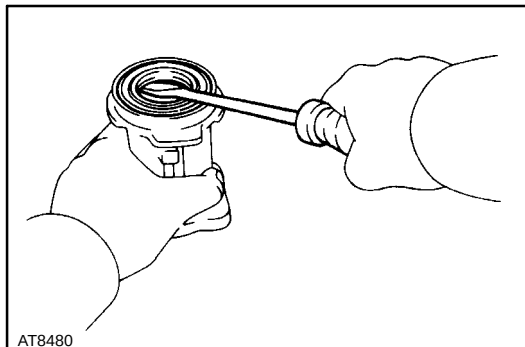


2. REMOVE EXTENSION HOUSING

- (a) Remove four bolts and extension housing.
- (b) Remove the O-ring from the extension housing.

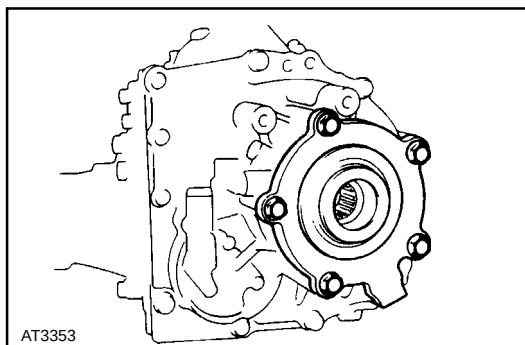


- (c) Using a screwdriver, remove the oil seal.

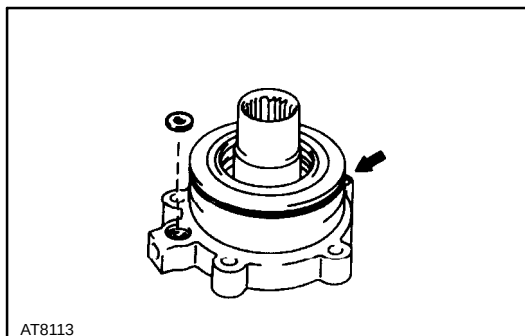


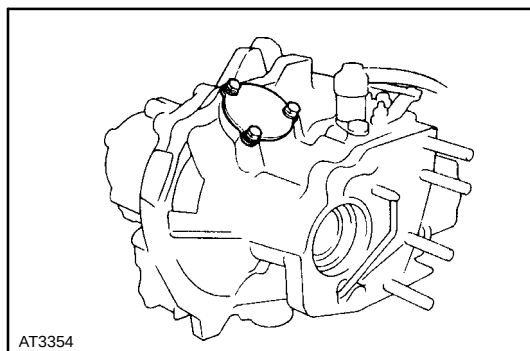
3. REMOVE TRANSFER RIGHT CASE RETAINER

- (a) Remove the five bolts.
- (b) Using a plastic hammer, remove the right case retainer.



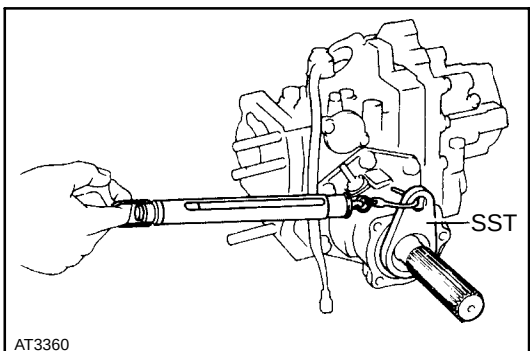
- (c) Remove the O-ring and apply gasket from the right case retainer.





4. REMOVE TRANSFER INSPECTION HOLE COVER

Remove the three bolts and inspection hole cover.



5. CHECK PRELOAD

- (a) Using SST and a spring tension gauge, measure the driven pinion preload of the backlash between the driven pinion and ring gear.

SST 09326-2001 1

Driven pinion preload (at starting):

8.8 - 13.7 N (0.9 - 1.4 kg, 2.0 - 3.1 lb)

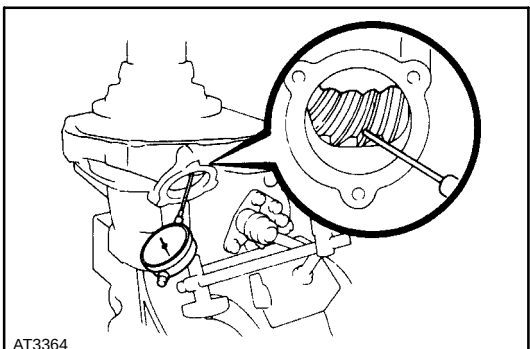
- (b) Using SST and a spring tension gauge, measure the total preload.

SST 09326-201 1

Total preload (at starting):

Add driven pinion preload

4.9 - 8.8 N (0.5 - 0.9 kg, 1.1 - 2.0 lb)



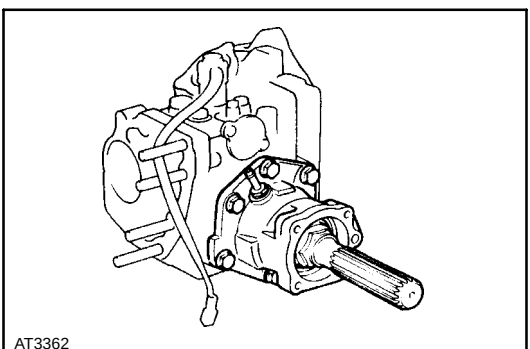
6. CHECK RING GEAR BACKLASH

Using a dial indicator, measure the ring gear backlash.

Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

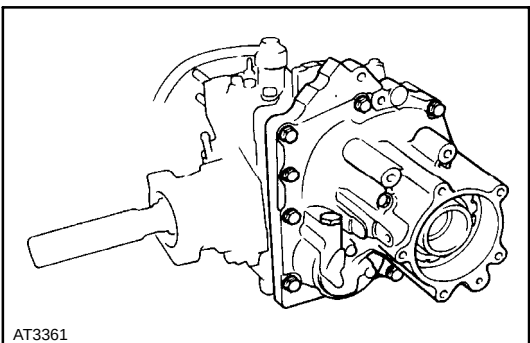
7. CHECK TOOTH CONTACT

(See pages [TR-34](#) , [TR-35](#))



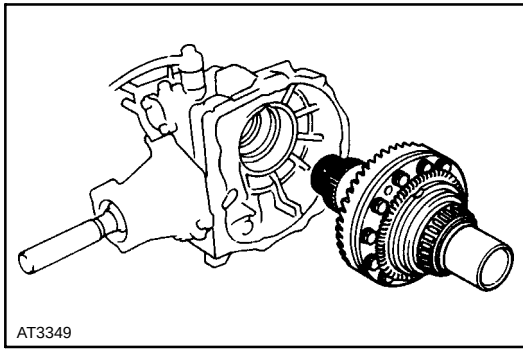
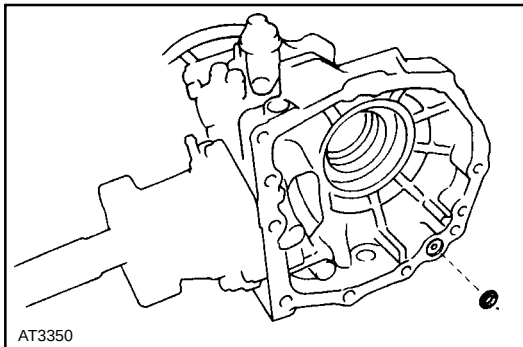
8. REMOVE DRIVEN PINION BEARING CAGE

- Remove the six bolts.
- Using a plastic hammer, remove the bearing cage.
- Remove the O-ring and the shims from the bearing cage.

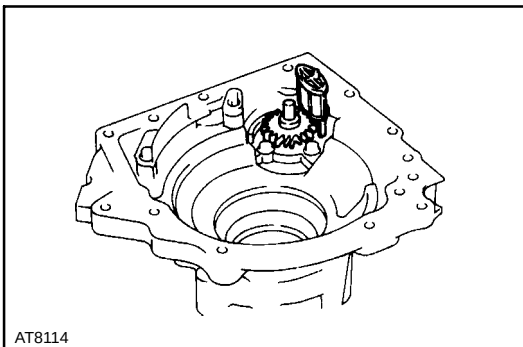
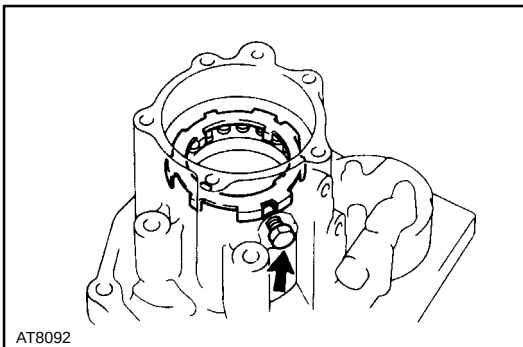


9. REMOVE TRANSFER RIGHT CASE

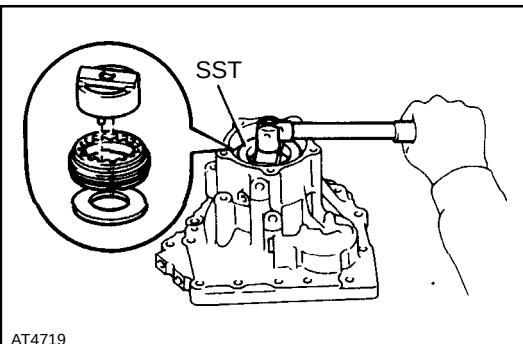
Remove the ten bolts and right case.

**10. REMOVE CENTER DIFFERENTIAL ASSEMBLY****11. REMOVE APPLY GASKET**

Remove the apply gasket from the left case.

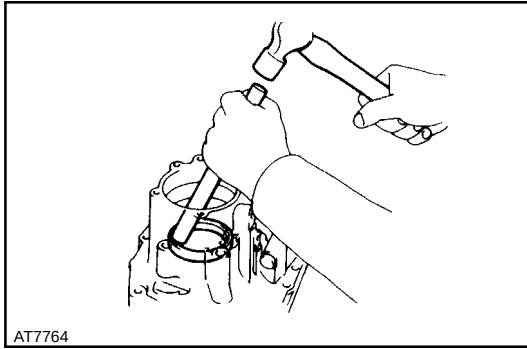
**12. REMOVE OIL PUMP STRAINER AND OIL PUMP DRIVEN GEAR****13. REMOVE ADJUSTING NUT LOCK PLATE**

- (a) Remove the bolt and nut lock plate from the right case.
- (b) Remove the O-ring from the bolt.

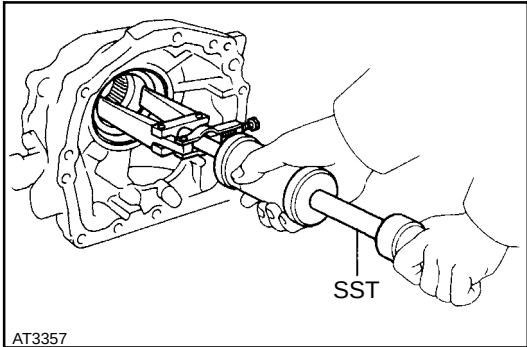
**14. REMOVE DIFFERENTIAL RIGHT SIDE BEARING OUTER PACE**

- (a) Using SST, remove the adjusting nut and an oil reserver from the right case.

SST 09318-12010

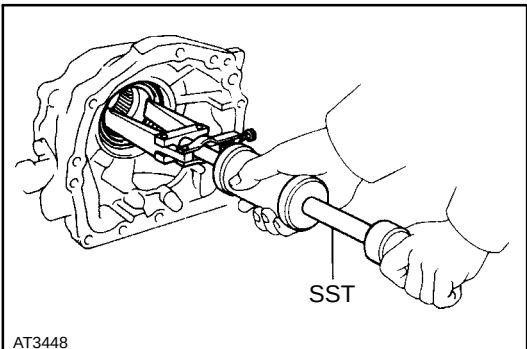


(b) Using a brass bar, remove the outer race.



15. REMOVE DIFFERENTIAL LEFT SIDE BEARING OUTER RACE

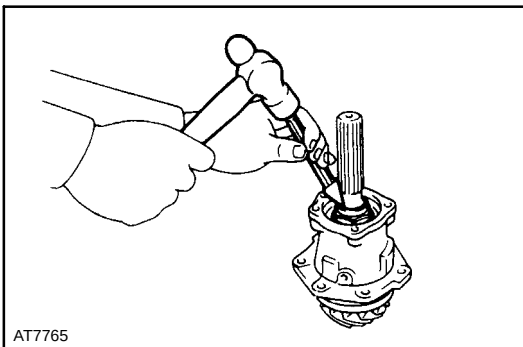
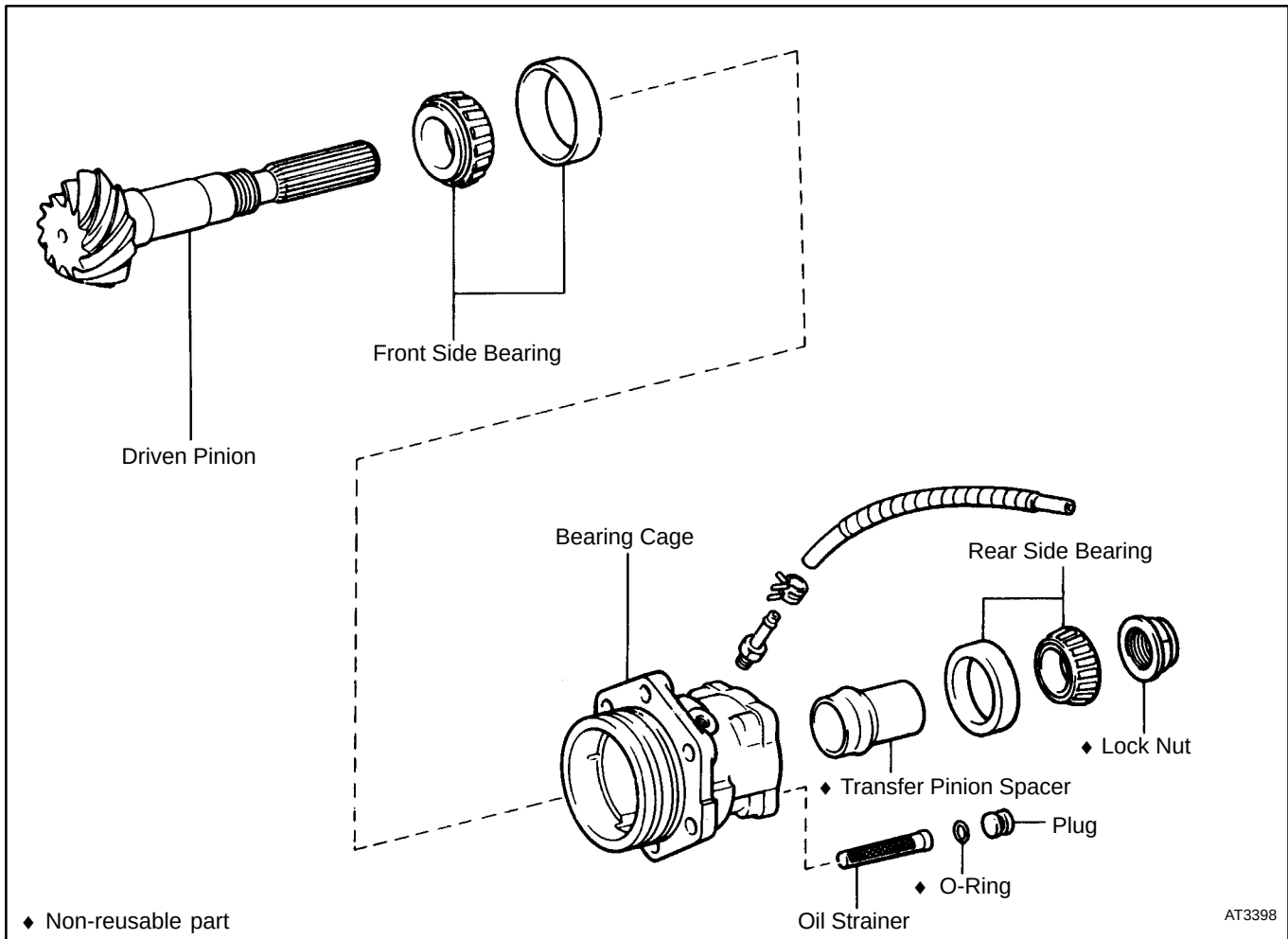
Using SST, remove the outer race and washer.
SST 09308-00010



16. REMOVE LEFT CASE OIL SEAL

Using SST, remove the oil seal.
SST 09308-00010

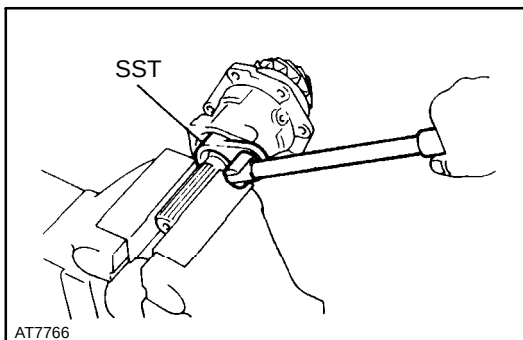
Drive Pinion Bearing Cage COMPONENTS



DISASSEMBLY OF DRIVEN PINION BEARING CAGE

1. REMOVE LOCK NUT

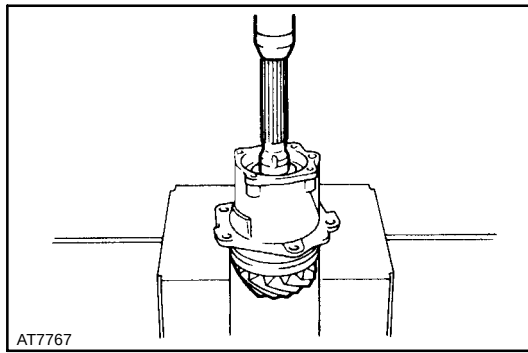
(a) Using a chisel and hammer, unstake the lock nut.



(b) Using SST, remove the lock nut.

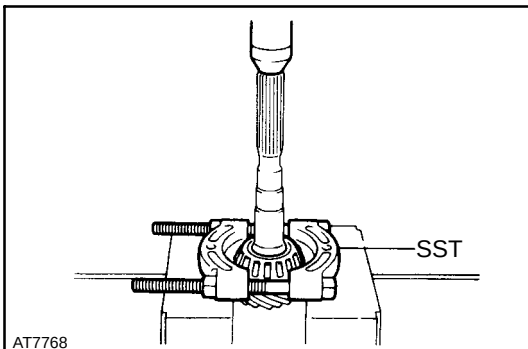
SST 09326-2001 1

NOTICE: Using the soft jaws, , hold the drive pinion in a vise.



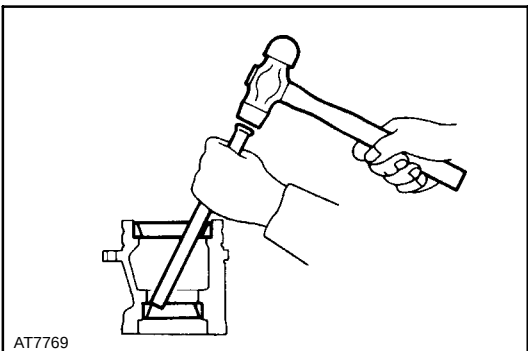
2. REMOVE DRIVEN PINION

Using a press, remove the driven pinion, rear side bearing and spacer.



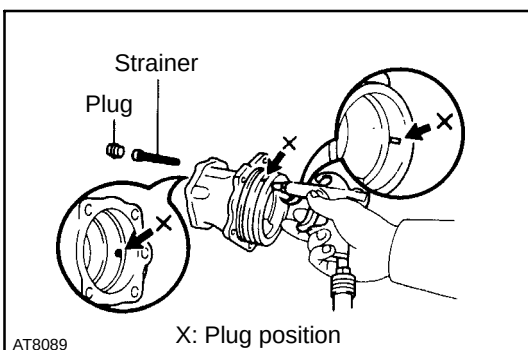
3. REMOVE FRONT SIDE BEARING

Using a press and SST, remove the front side bearing.
SST 09950-00020



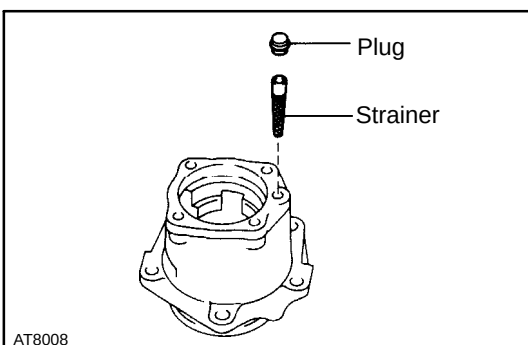
4. REMOVE BEARING OUTER RACES

Using a brass bar and hammer, remove the two bearing outer races.



5. REMOVE OIL STRAINER

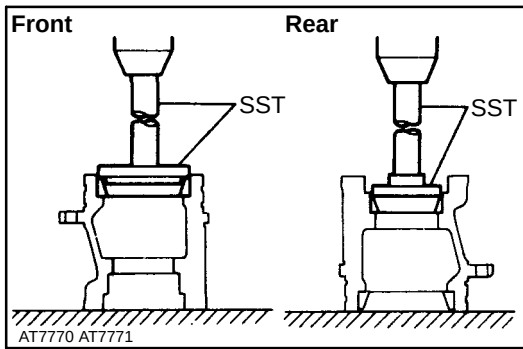
- Using low pressure air, remove the plug and oil strainer.
- Remove the O-ring from the plug.



ASSEMBLY OF DRIVEN PINION BEARING CAGE

1. INSTALL OIL STRAINER

- Apply ATF to a new O-ring.
- Install a new O-ring to the plug.
- Install the oil strainer and plug.



2. INSTALL BEARING OUTER RACES

Using a press and SST, install the two bearing outer races to the bearing cage.

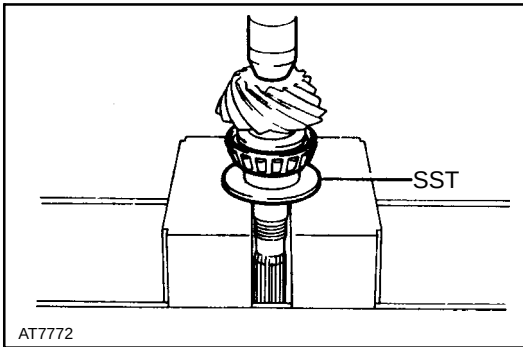
SST

Front side:

09608-35014 (09608-06020, 09608-06120)

Rear side:

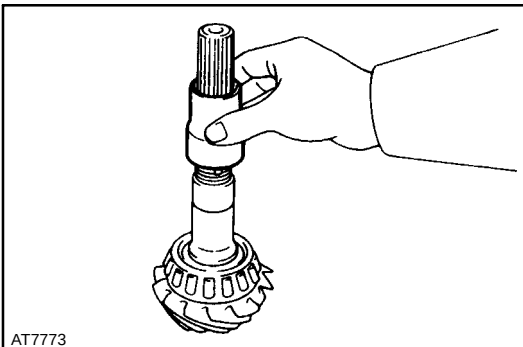
09608-30022 (09608-05010, 09608-00050)



3. INSTALL DRIVEN PINION FRONT SIDE BEARING

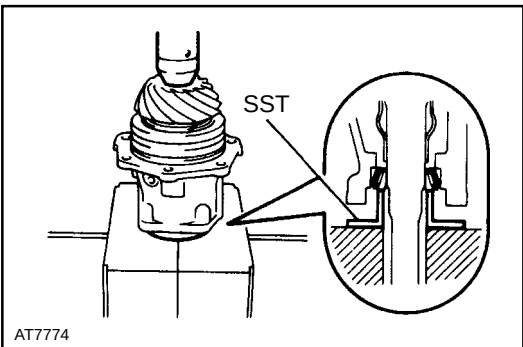
Using a press and SST, install the front side bearing.

SST 09506-35010



4. INSTALL SPACER

Install a new spacer to the driven pinion.

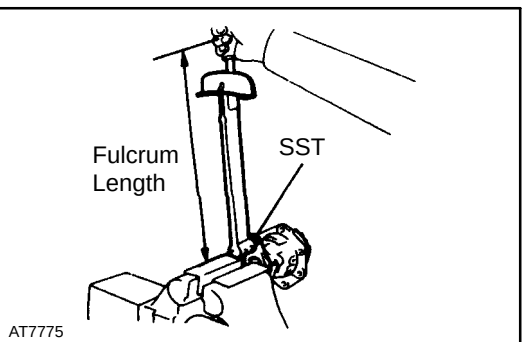


5. INSTALL DRIVEN PINION REAR SIDE BEARING

(a) Install the bearing cage to the driven pinion.

(b) Using a press and SST, install the rear side bearing to the driven pinion.

SST 09506-35010



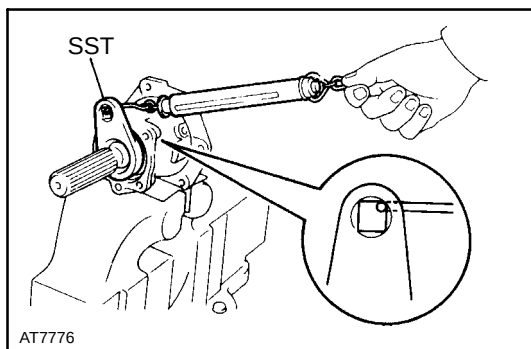
6. ADJUST DRIVEN PINION PRELOAD

(a) Using SST, torque a new nut.

SST 09326-2001 1

Torque: 98 N-m (1,000 kgf-cm, 72 ft-lbf)

HINT: Use a torque wrench with a fulcrum length of 50 cm (19.69 in.).



- (b) Using a spring tension gauge and SST, measure the preload.

SST 09326-2001 1

HINT: Turn the driven pinion right and left two or three times to allow the bearings to settle.

Preload (at starting):

New bearing

17.7 - 28.4 N (1.8 - 2.9 kg, 4.0 - 6.4 lb)

Reused bearing.

8.8 - 13.7 N (0.9 - 1.4 kg, 2.0 - 3.1 lb)

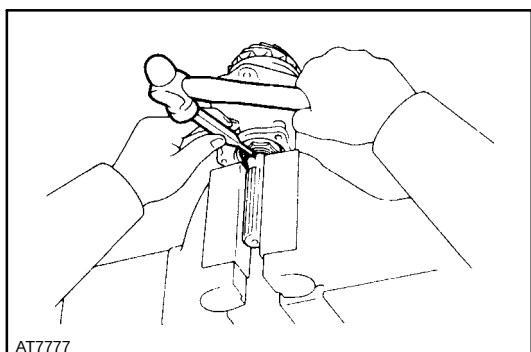
- If preload is greater than specification, replace the bearing spacer.
- If preload is less than specification, retighten the nut 5-10° at a time until the specified preload is rechecked.

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload procedure.

Do not back off the pinion nut to reduce the preload.

Maximum torque: 216 N-m (2,200 kgf-cm, 159 ft-lbf)

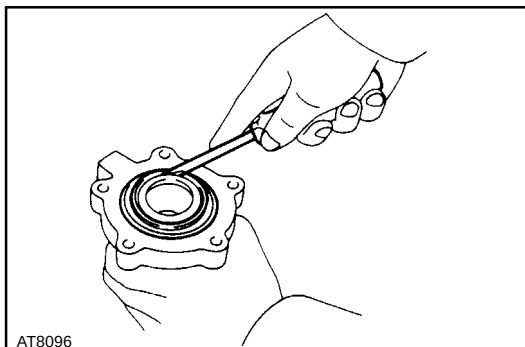
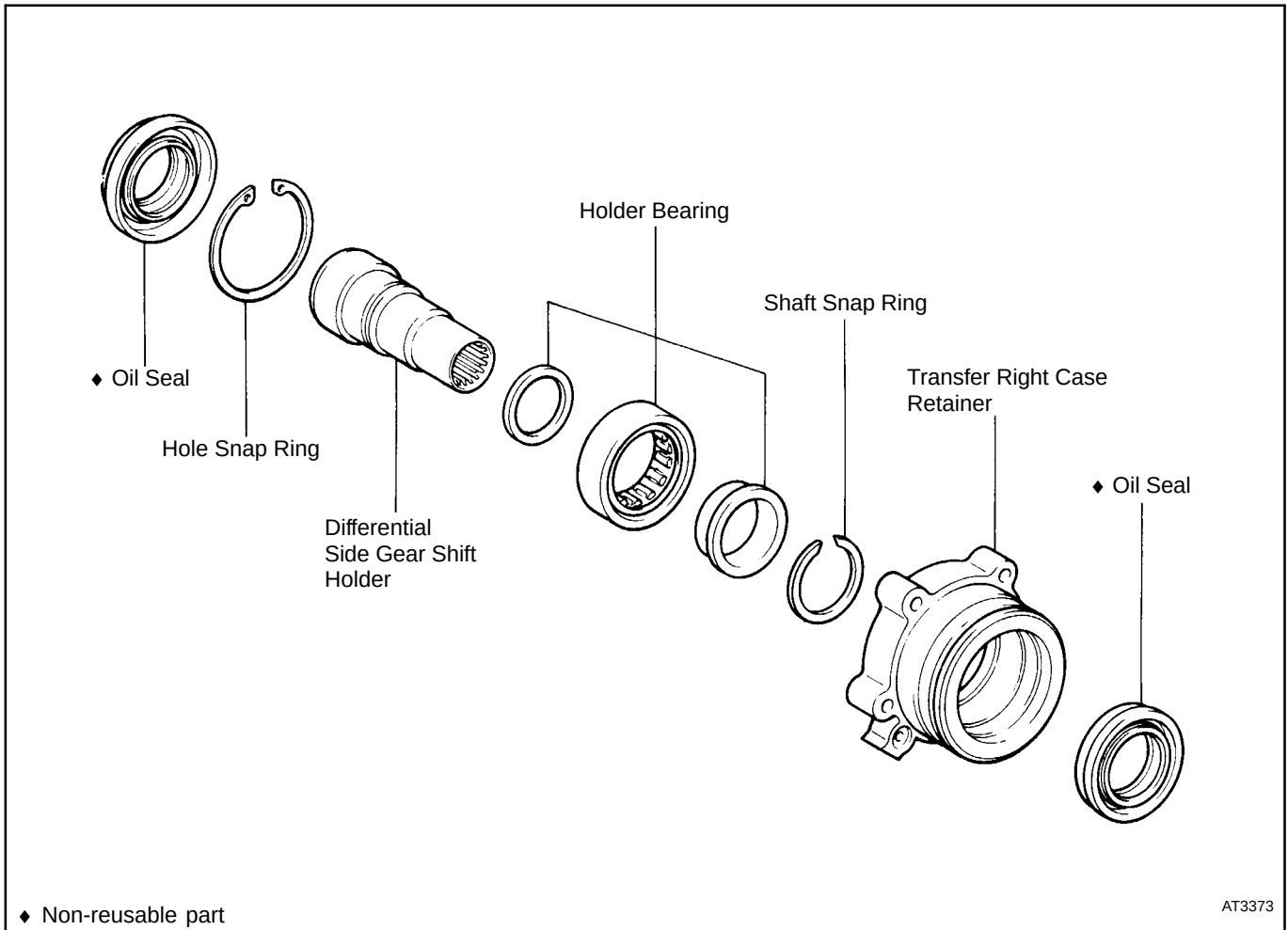
NOTICE: Using the soft jaws, hold the bearing cage in a vise.



7. STAKE LOCK NUT

Using a pin punch and hammer, stake the nut.

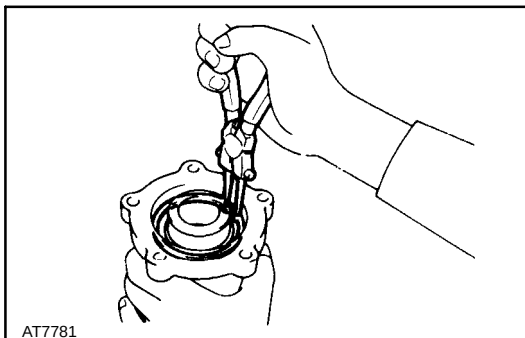
Transfer Right Case Retainer COMPONENTS



DISASSEMBLY OF TRANSFER RIGHT CASE RETAINER

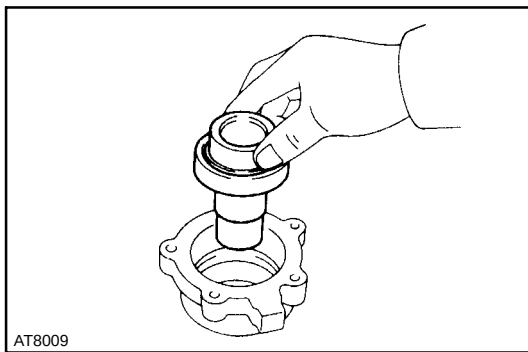
1. REMOVE OIL SEAL

Using a screwdriver, remove the oil seal.

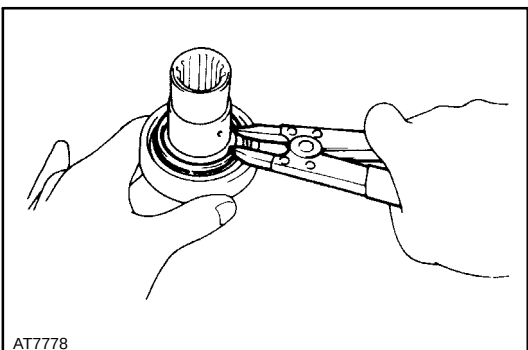


2. REMOVE SIDE GEAR SHAFT HOLDER

(a) Using snap ring pliers, remove the snap ring.

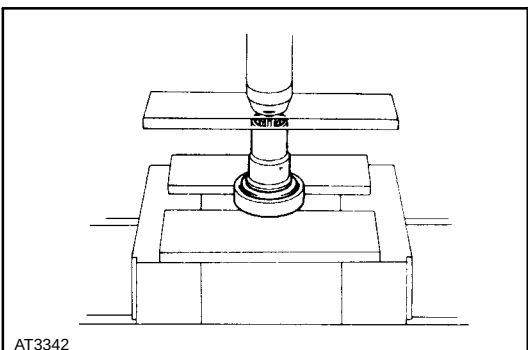


(b) Remove the side gear shaft holder.

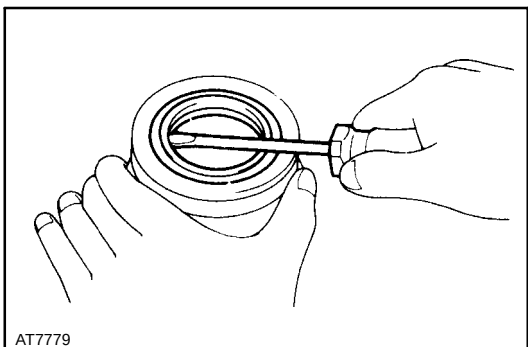


3. REMOVE HOLDER BEARING

(a) Using snap ring pliers, remove the snap ring.

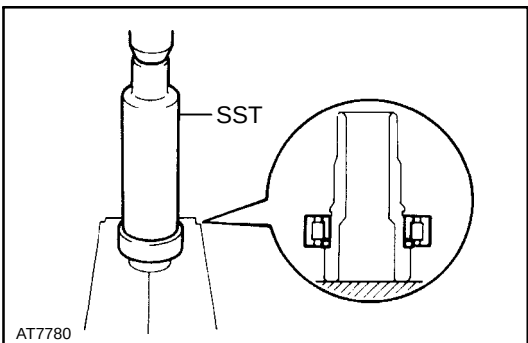


(b) Using a press, press out the bearing.



4. REMOVE OIL SEAL

Using a screwdriver, remove the oil seal.

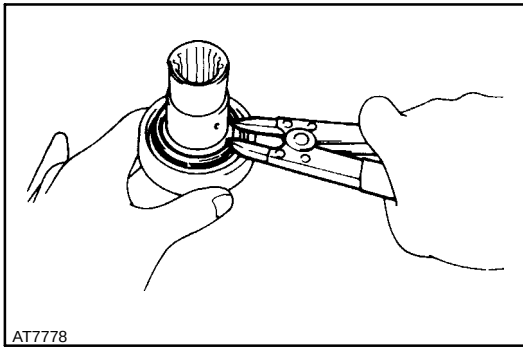


ASSEMBLY OF TRANSFER RIGHT CASE RETAINER

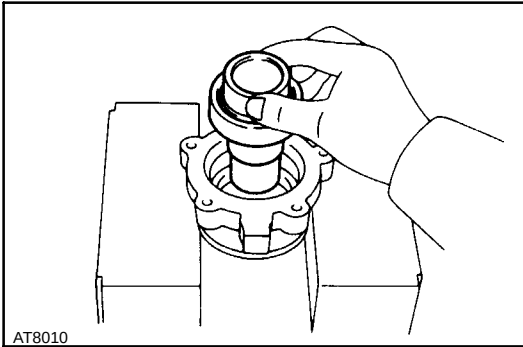
1. INSTALL HOLDER BEARING

(a) Using SST and a press, press in the holder bearing.

SST 09226-10010

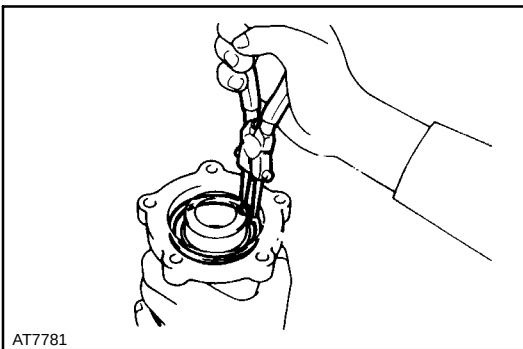


- (b) Using snap ring pliers, install the snap ring.

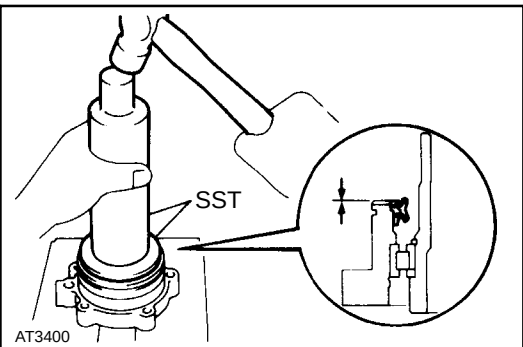


2. INSTALL SIDE GEAR SHAFT HOLDER

- (a) Install the side gear shaft holder.



- (b) Using snap ring pliers, install the snap ring.



3. INSTALL OIL SEAL

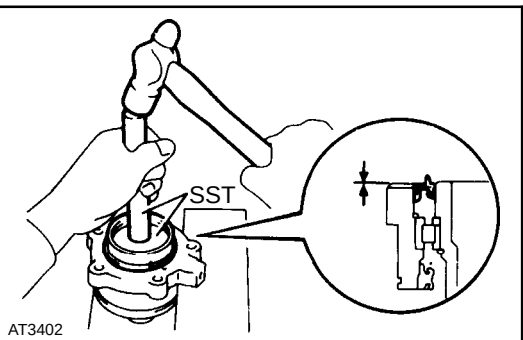
(Left side oil seal)

- (a) Coat a new oil seal lip with MP grease.

- (b) Using a hammer and SST, drive in a oil seal.

SST 09316-60010 (09316-00010, 09316-00040)

Oil seal depth: 0 mm (0 in.)



(Right side oil seal)

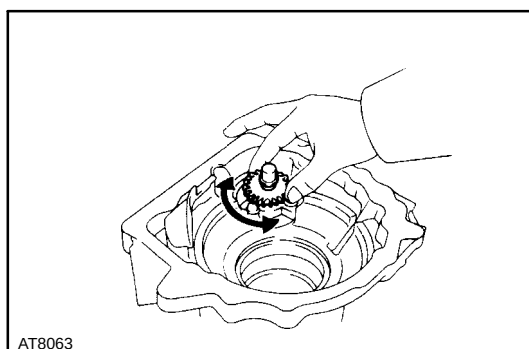
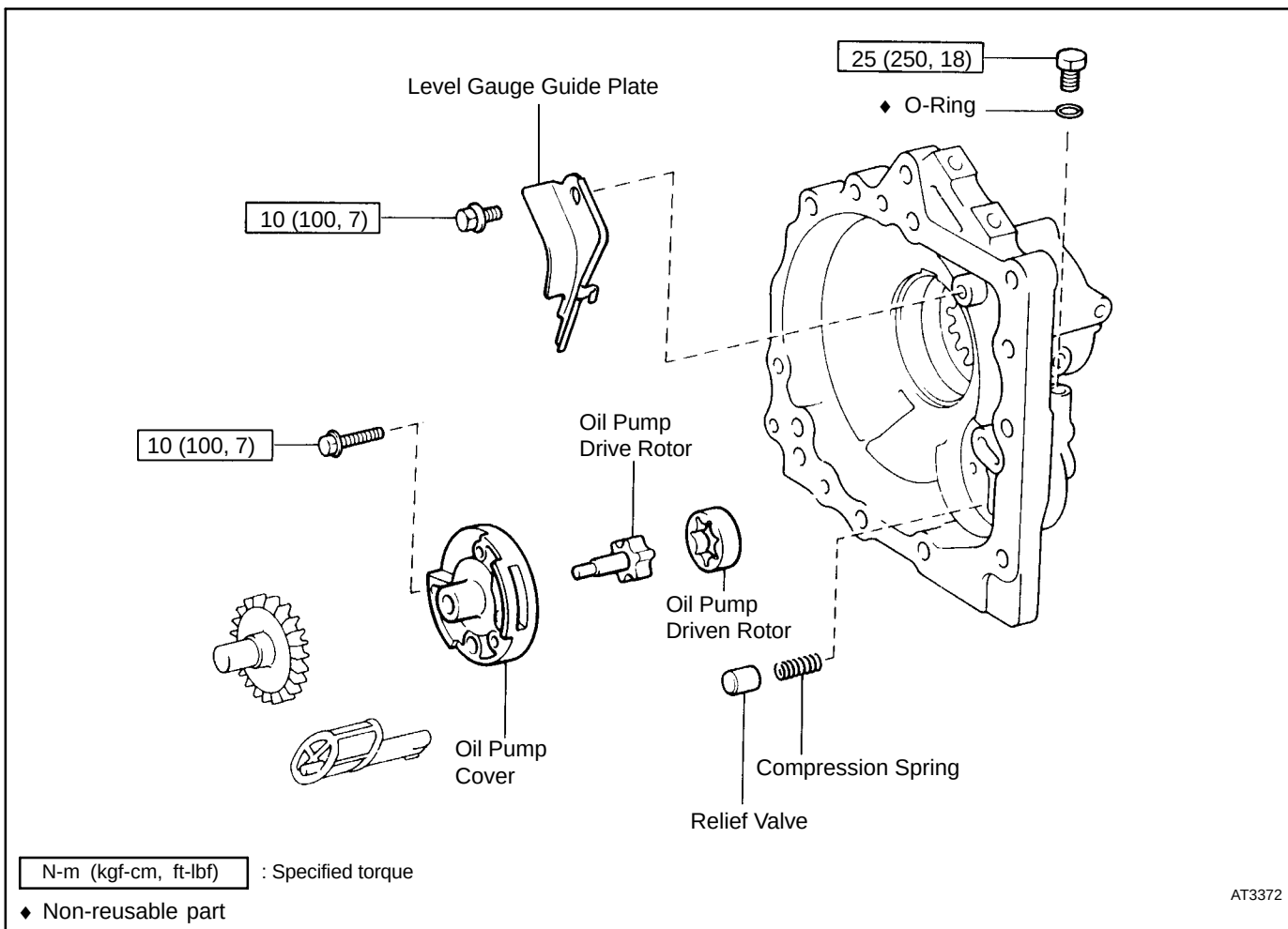
- (a) Coat a new oil seal lip with MP grease.

- (b) Using a hammer and SST, drive in a oil seal.

SST 09608-32010, 09608-35014 (09608-06020)

Oil seal depth: 0 mm (0 in.)

Transfer Right Case COMPONENTS



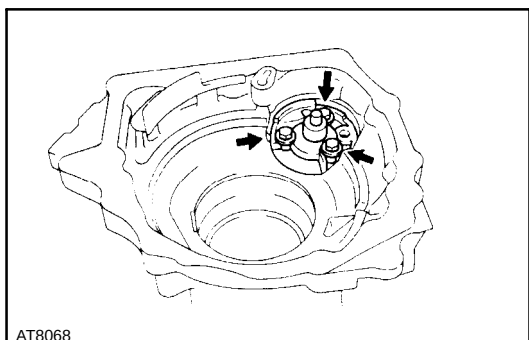
DISASSEMBLY OF TRANSFER RIGHT CASE

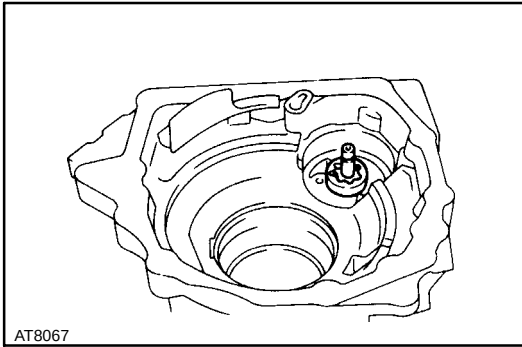
1. INSPECT OIL PUMP OPERATION

Check that the oil pump turns smoothly with oil pump driven gear.

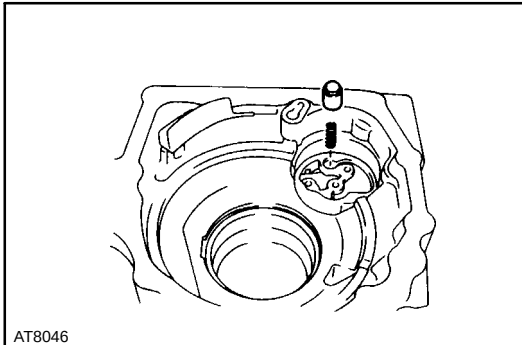
2. REMOVE OIL PUMP COVER

Remove the three bolts and the cover.

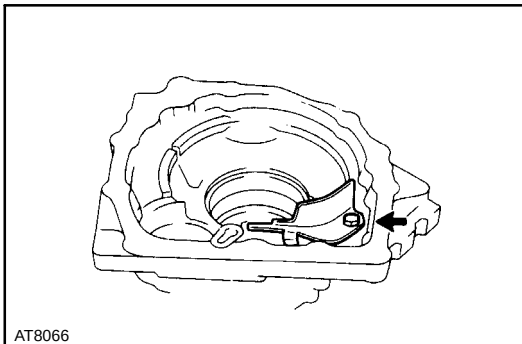




3. **REMOVE OIL PUMP DRIVE ROTOR AND DRIVEN ROTOR**



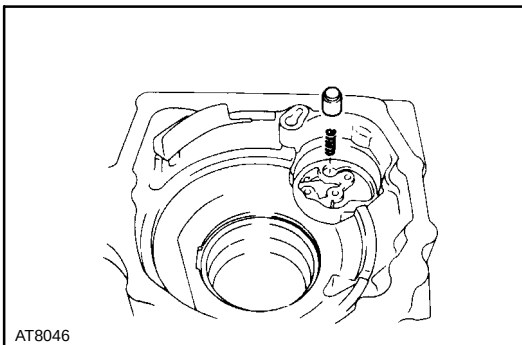
4. **REMOVE RELIEF VALVE**
Remove the relief valve and a spring.



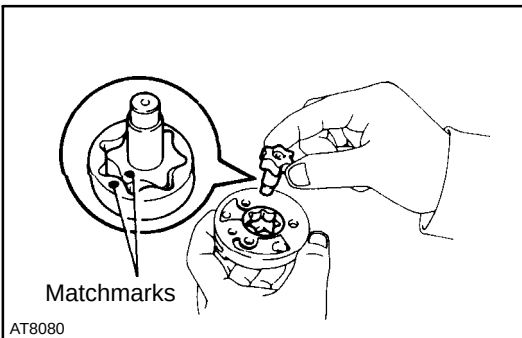
5. **REMOVE LEVEL GAUGE GUIDE PLATE**

ASSEMBLY OF TRANSFER RIGHT CASE

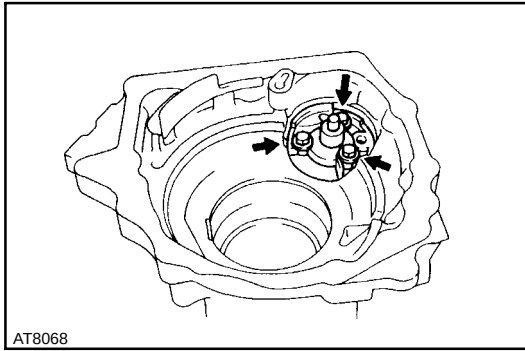
1. **INSTALL LEVEL GAUGE GUIDE PLATE**
Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)



2. **INSTALL RELIEF VALVE**
Install the relief valve and a spring.

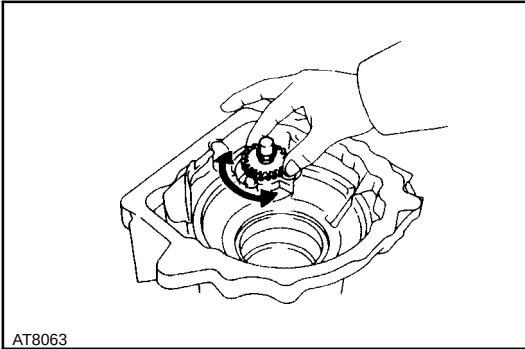


3. **INSTALL OIL PUMP DRIVE ROTOR AND DRIVEN ROTOR**
Align the matchmarks on the drive rotor and the driven rotor.

**4. INSTALL OIL PUMP COVER**

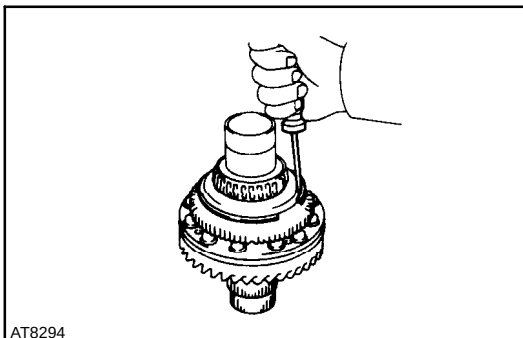
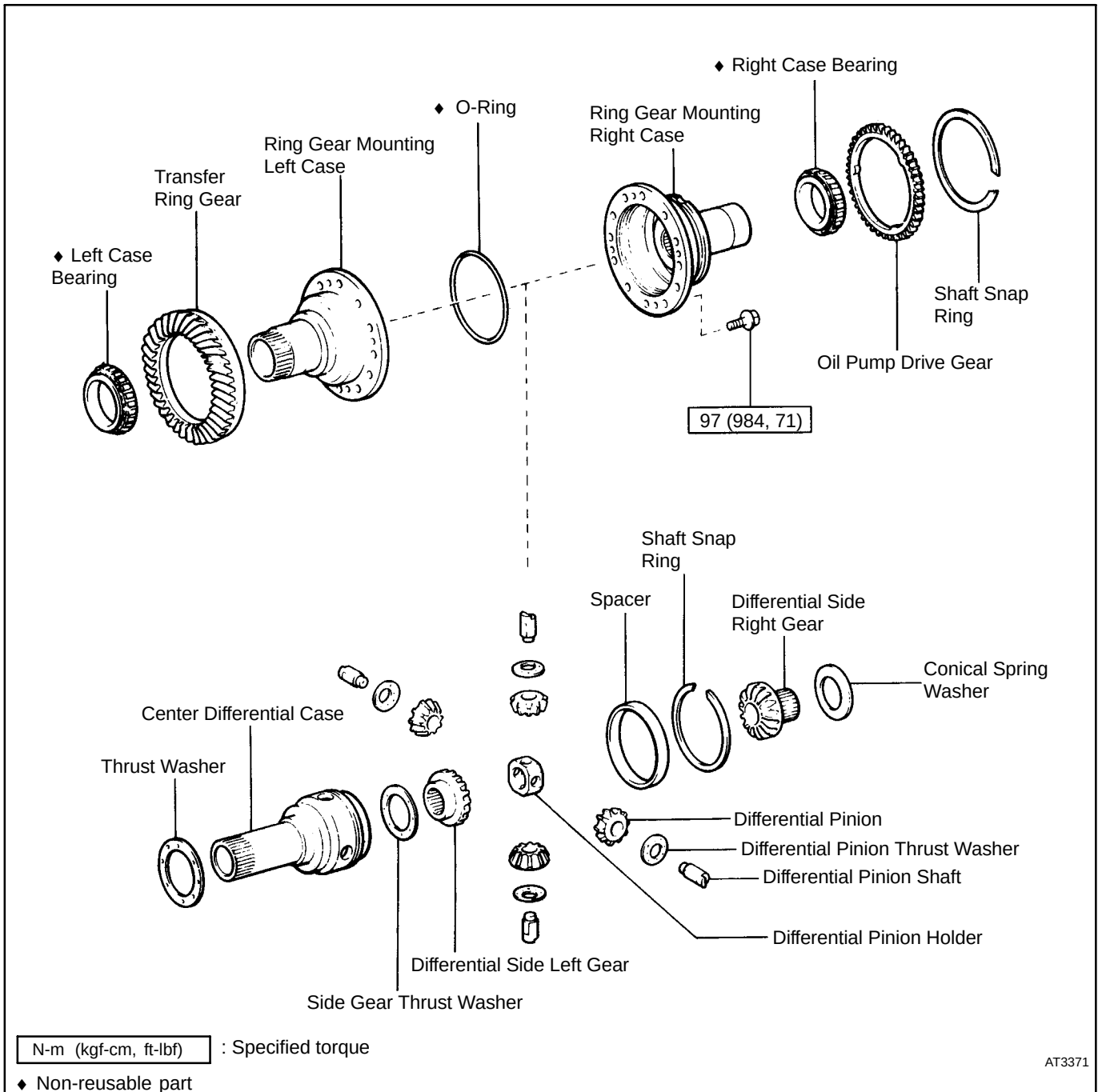
Torque the three bolts evenly.

Torque: 10 N-m (100 kgf-cm, 7 ft-lbf)

**5. CHECK OPERATION OF OIL PUMP**

Install the oil pump driven gear to the drive rotor, check that the drive rotor turns smoothly.

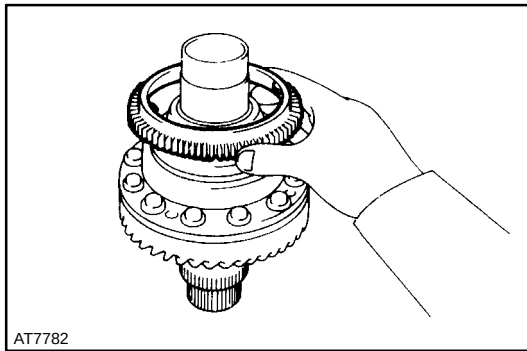
Ring Gear Mounting Case and Center Differential Case COMPONENTS



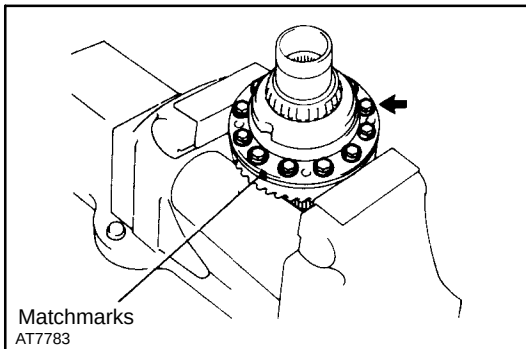
AT8294

DISASSEMBLY OF RING GEAR MOUNTING CASE AND CENTER DIFFERENTIAL CASE

1. REMOVE OIL PUMP DRIVE GEAR
 - (a) Using a screwdriver, remove the shaft snap ring.



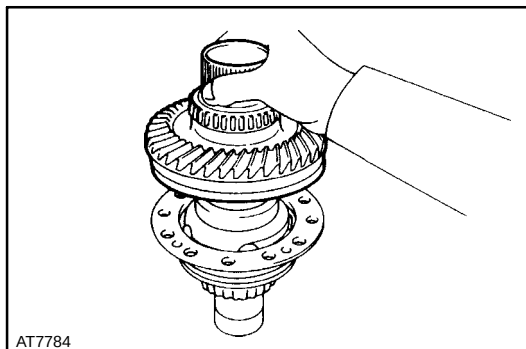
- (b) Remove oil pump drive gear.



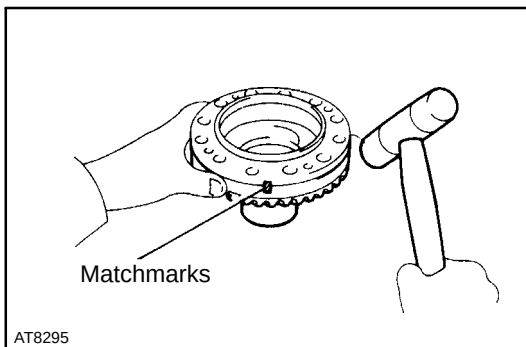
2. REMOVE RING GEAR MOUNTING LEFT CASE

- (a) Place the matchmarks on the differential left case and the differential right case.

NOTICE: Using the soft jaws, hold the left case in a vise.

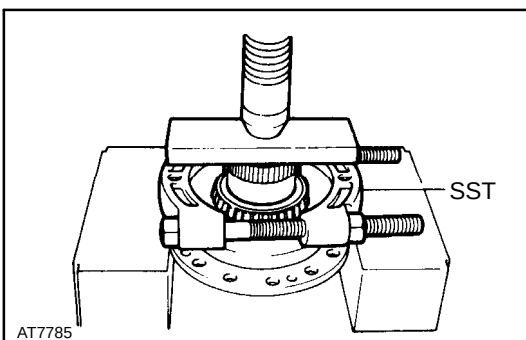


- (b) Remove the twelve bolts.
(c) Remove the differential left case upward.
(d) Remove the O-ring from the left case.



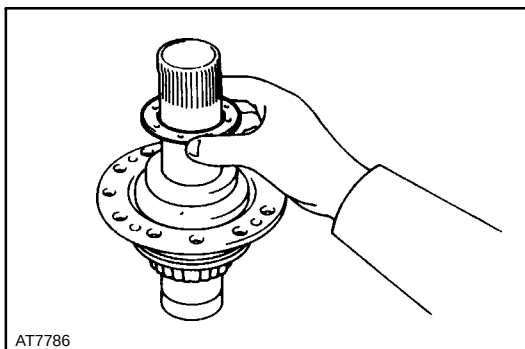
3. REMOVE RING GEAR

- (a) Place the matchmarks on the differential left case and ring gear.
(b) Using a plastic hammer, tap out the ring gear.

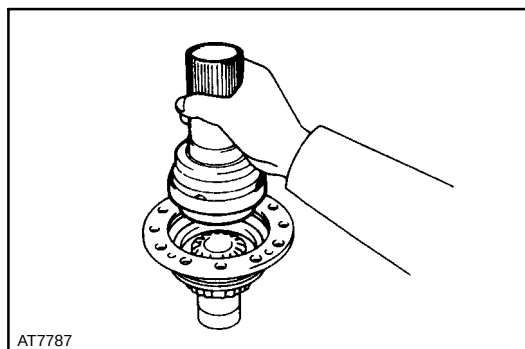


4. REMOVE LEFT CASE BEARING

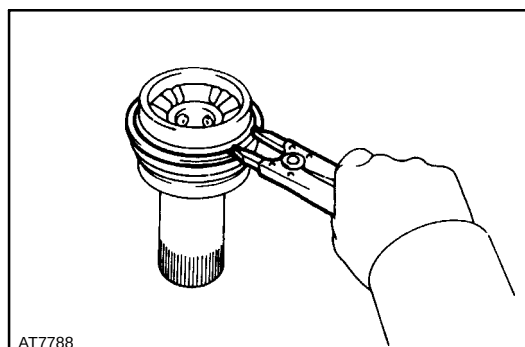
Using SST and a press, press out the bearing.
SST 09950-00020



5. REMOVE THRUST WASHER

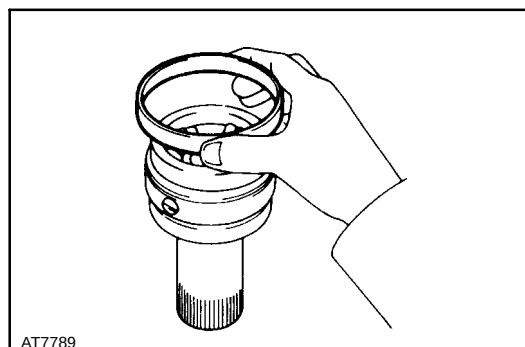


6. REMOVE CENTER DIFFERENTIAL CASE ASSEMBLY

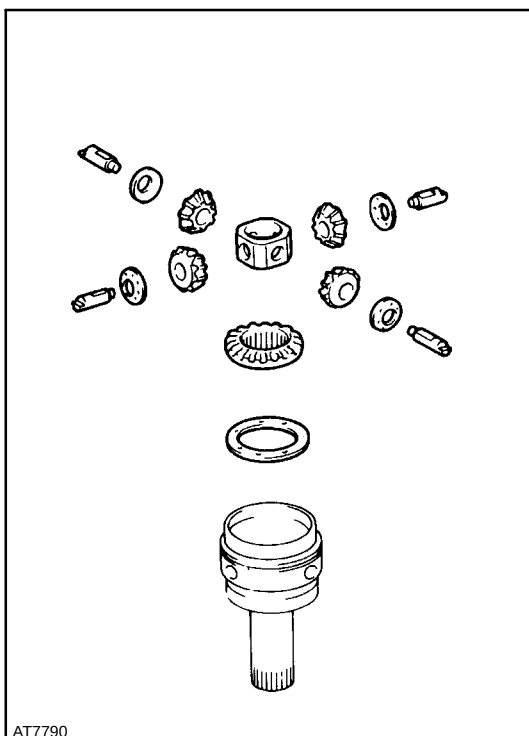


7. DISASSEMBLE CENTER DIFFERENTIAL CASE

- (a) Using snap ring pliers, remove the shaft snap ring.

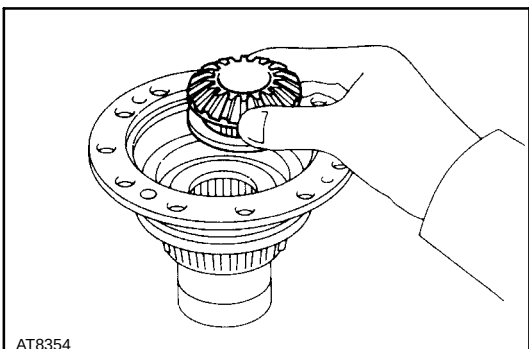


- (b) Remove the spacer.

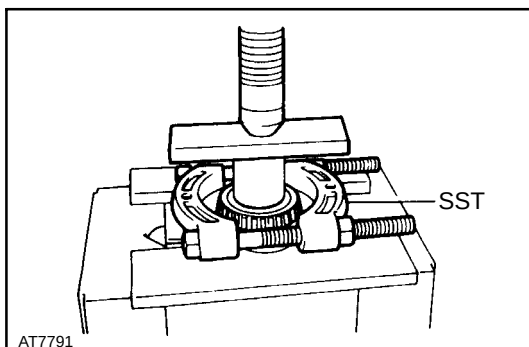


(c) Remove following parts from the center differential case.

- Four pinion shafts
- Pinion shaft holder
- Four differential pinions
- Four pinion thrust washers
- Differential side left gear
- Side gear thrust washer

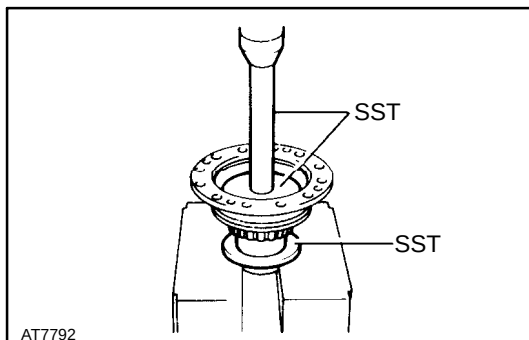


8. REMOVE DIFFERENTIAL SIDE RIGHT GEAR AND CONICAL SPRING WASHER



9. REMOVE RIGHT CASE BEARING

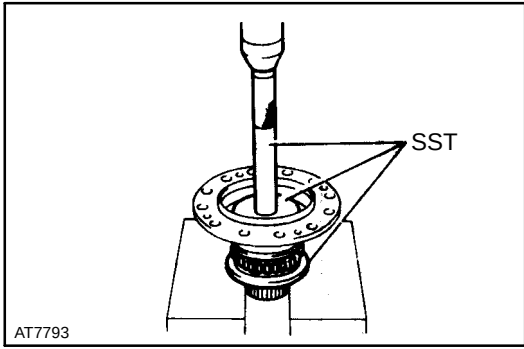
Using SST and a press, press out the bearing.
SST 09950-00020



ASSEMBLY OF RING GEAR MOUNTING CASE AND CENTER DIFFERENTIAL CASE

1. INSTALL RIGHT CASE BEARING

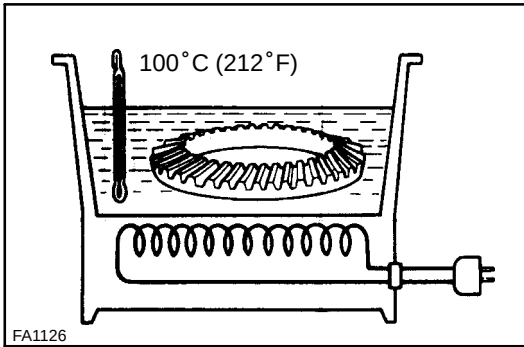
Using SST and a press, press in the bearing.
SST 09316-2001 1, 09608-35014
(09608-06020, 09608-06120)



2. INSTALL LEFT CASE BEARING

Using SST and a press in the left case.

SST 09316-12010, 09608-35014
(09608-06020, 09608-06120)



3. INSTALL RING GEAR

(a) Clean the contact surface of the ring gear mounting left case.

(b) Heat the ring gear to about 100°C (212°F) in an oil bath.

NOTICE: Do not heat the ring gear about gear above 110°C (230°F)

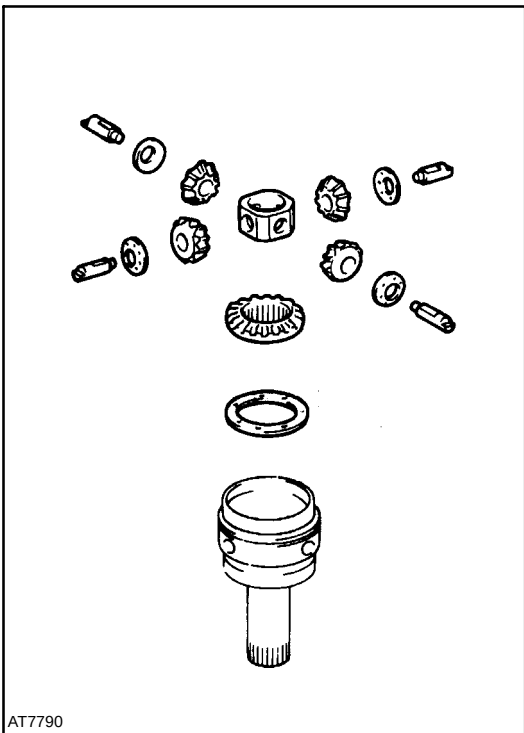
(c) Clean the contact surface of the ring gear with cleaning solvent.

(d) Align the matchmarks and quickly install the ring gear on the ring gear mounting left case.

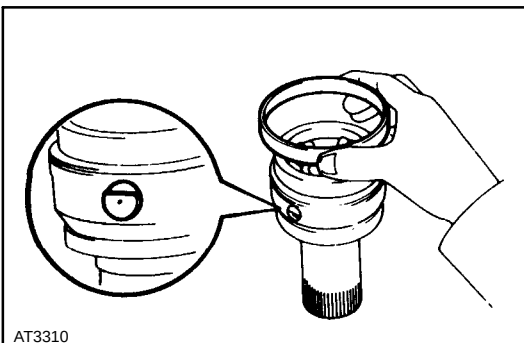
4. CHECK AND ADJUST CENTER DIFFERENTIAL SIDE GEAR BACKLASH

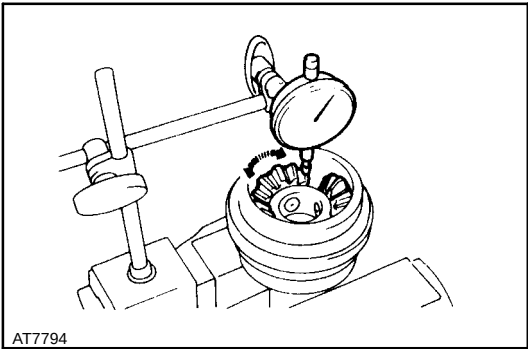
(a) Install following parts to the center differential case:

- Side gear thrust washer
- Differential side left gear
- Four pinion thrust washers
- Four differential pinions
- Pinion shaft holder
- Four pinion shafts



(b) Install spacer toward to as shown.



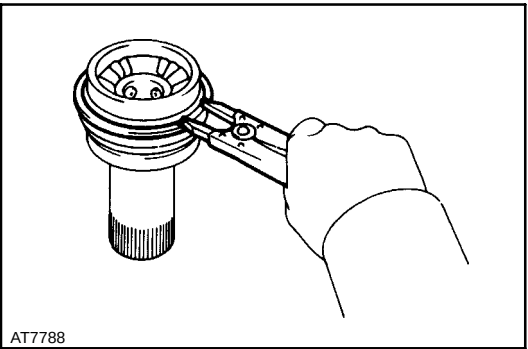


- (c) Using a dial indicator, measure the backlash of one pinion gear while holding the side gear toward the case.

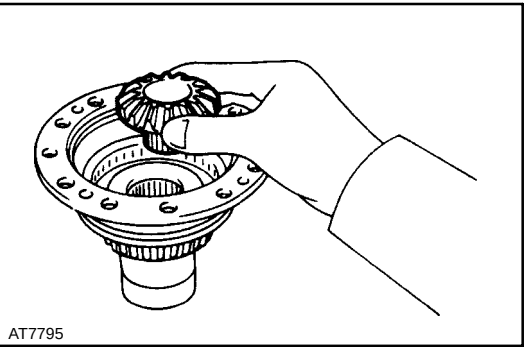
**Standard backlash: 0.06 - 0.22 mm
(0.0024 - 0.0087 in.)**

HINT: Do not mount the surface of center differential case which contacts with bushing in a vise.
Referring to the table below, select the thrust washer which will ensure that the backlash is within specification.
Try to select a washer of the same size.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	1.00 (0.0394)	F	1.25 (0.0492)
B	1.05 (0.0413)	G	1.30 (0.0512)
C	1.10 (0.0433)	H	1.35 (0.0531)
D	1.15 (0.0453)	J	1.40 (0.0551)
E	1.20 (0.0472)		

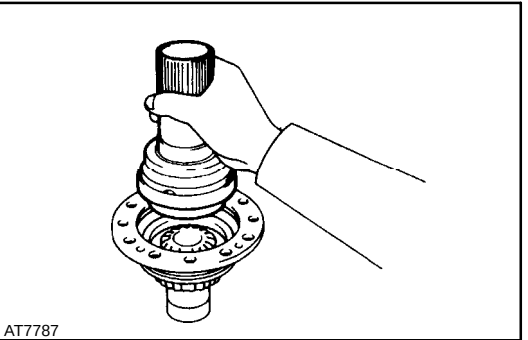


- (d) Using snap ring pliers, install the shaft snap ring.

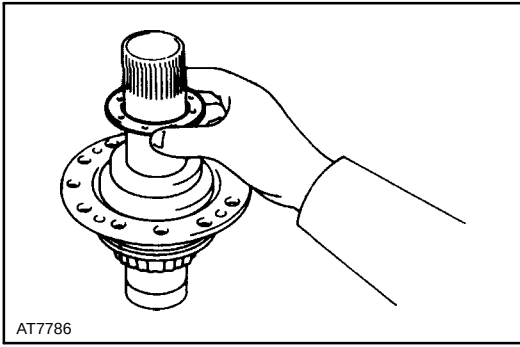


5. CHECK AND ADJUST CENTER DIFFERENTIAL SIDE GEAR THRUST CLEARANCE.

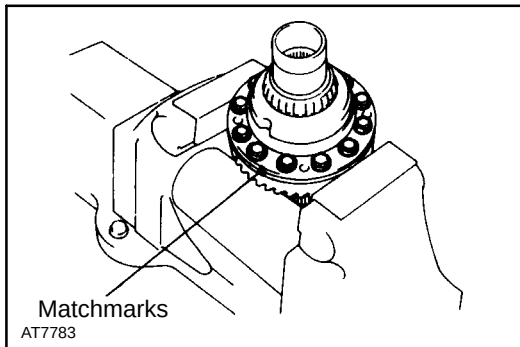
- (a) Install differential side right gear.
HINT: Do not install the conical spring washer.



- (b) Install center differential case.



(c) Install the thrust washer.



(d) Align the matchmarks on ring gear mounting left and right case.

(e) Install and torque the twelve bolts.

Torque: 97 N-m (984 kgf-cm, 77 ft-lbf)

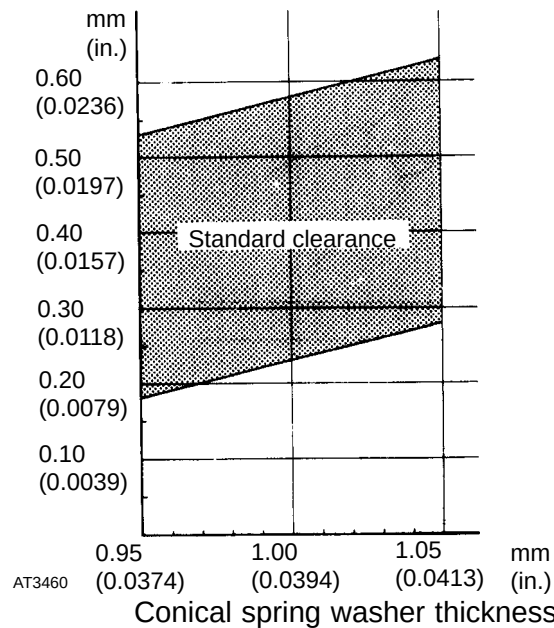
HINT: Do not install the O-ring.

(f) Using a caliper, measure the conical spring washer thickness.

(g) Using a dial indicator, measure the thrust clearance of center differential case while holding the ring gear mounting case.

Standard clearance:

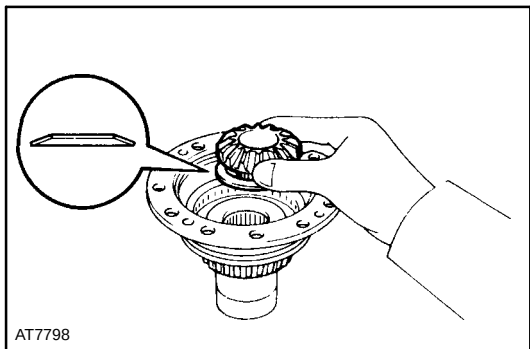
Thrust clearance



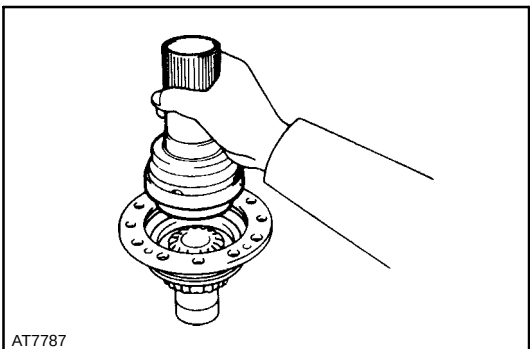
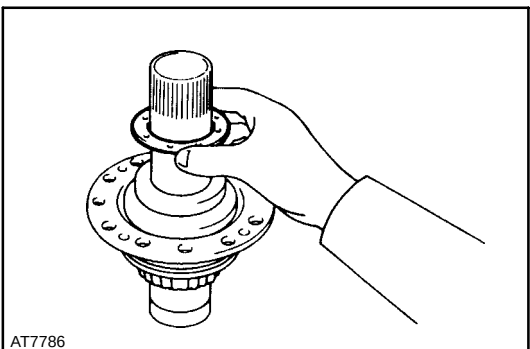
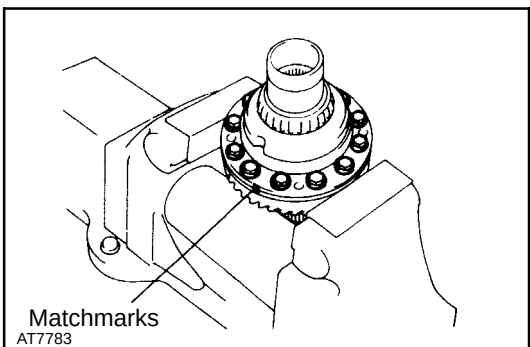
(h) Referring to the table below, select the thrust washer which will ensure that the backlash is within specification. Try to select a washer of the same size.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	1.00 (0.0394)	G	1.30 (0.0512)
B	1.05 (0.0413)	H	1.35 (0.0531)
C	1.10 (0.0433)	J	1.40 (0.0551)
D	1.15 (0.0453)	K	1.45 (0.0571)
E	1.20 (0.0472)	L	1.50 (0.0591)
F	1.25 (0.0492)		

(i) Remove ring gear mounting right case.

**6. INSTALL DIFFERENTIAL SIDE GEAR AND CONICAL SPRING WASHER**

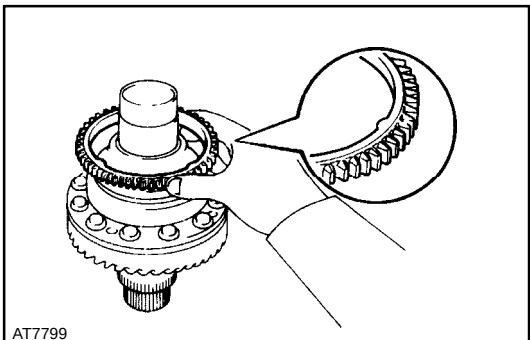
HINT: Be careful not to mistake the direction of conical spring washer.

**7. INSTALL CENTER DIFFERENTIAL CASE****8. INSTALL THRUST WASHER (Previously selected)****9. INSTALL RING GEAR MOUNTING LEFT CASE**

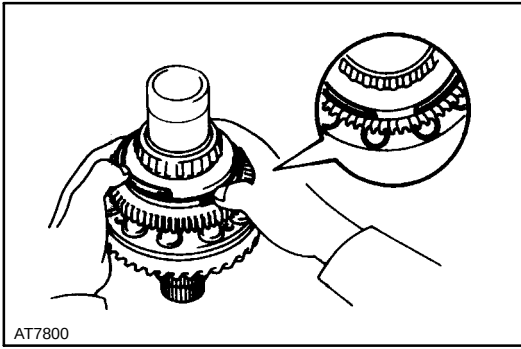
- (a) Coat the new O-ring with ATF, and install it onto the left case.
- (b) Align the matchmarks on the right and left case.
- (c) Install and torque the twelve bolts.

Torque: 984 kg-cm (71 ft-lb, 97 N-m)

NOTICE: Using the soft jaws, hold the left case in a vise.

**10. INSTALL OIL PUMP DRIVE GEAR**

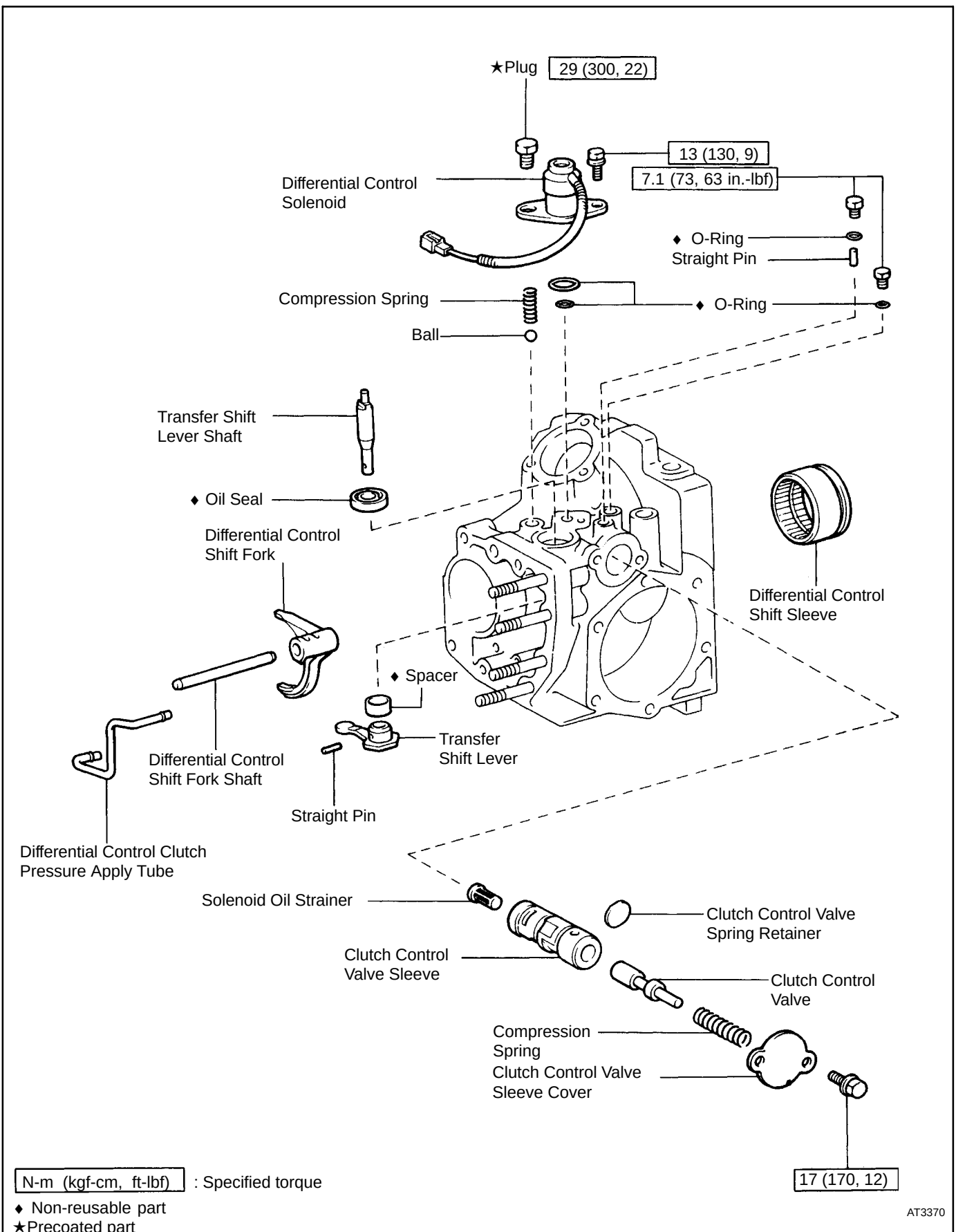
- (a) Install the oil pump drive gear.

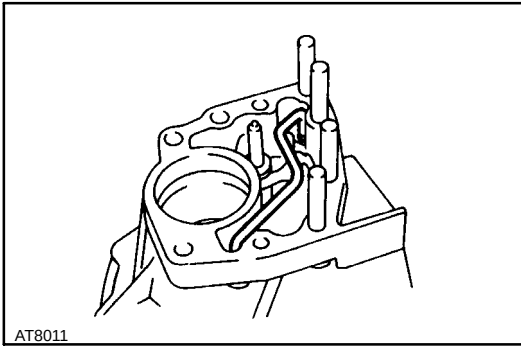


(b) Install the shaft snap ring.

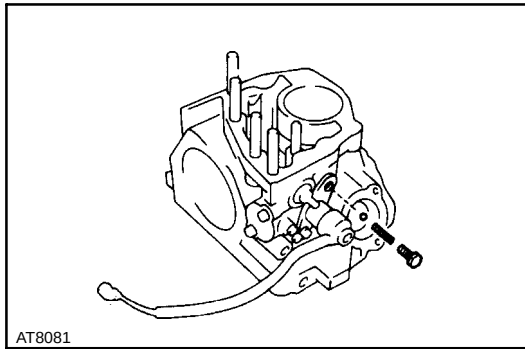
Transfer Left Case

COMPONENTS



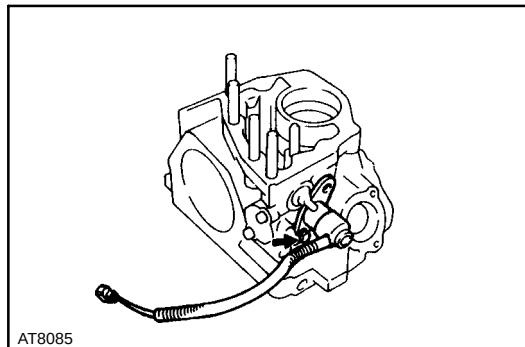
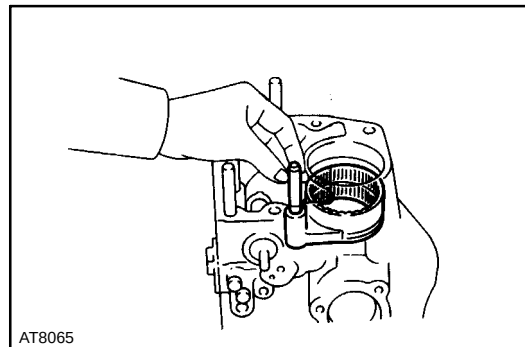
DISASSEMBLY OF TRANSFER LEFT CASE**1. REMOVE APPLY TUBE****2. REMOVE CENTER DIFFERENTIAL CONTROL SOLENOID**

(a) Remove the plug, compression spring and ball.

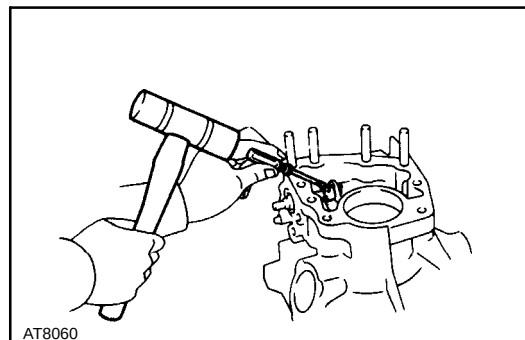


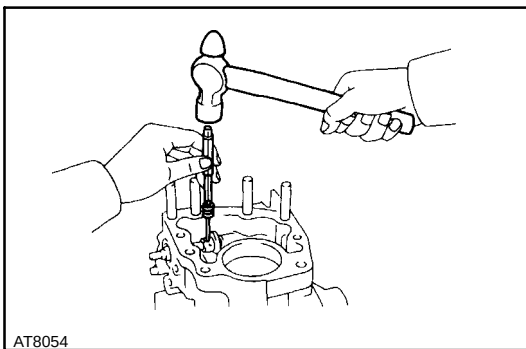
(b) Remove a bolt and solenoid.

(c) Remove two O-rings from the solenoid.

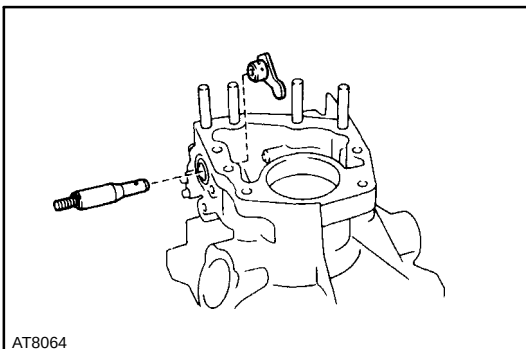
**3. REMOVE DIFFERENTIAL CONTROL SHIFT FORK SHAFT, SHIFT FORK SLEEVE****4. REMOVE TRANSFER SHIFT LEVER**

(a) Using a screwdriver and hammer, cut the spacer.

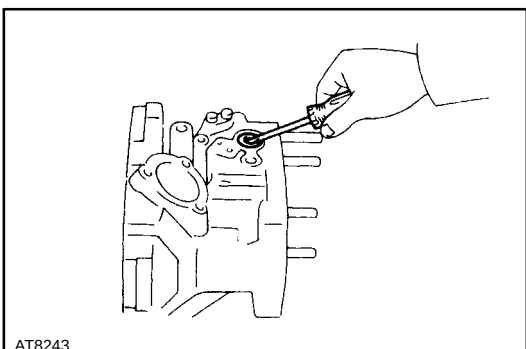




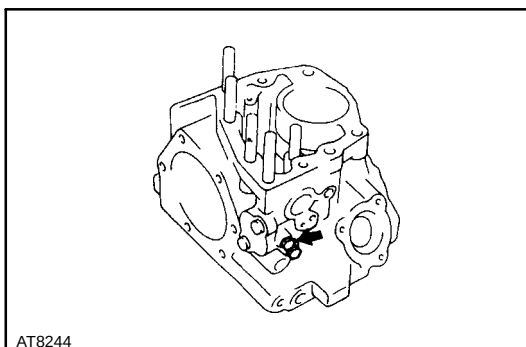
- (b) Using a pin punch and hammer, drive out the straight pin.



- (c) Remove the shift lever shaft and shift lever.

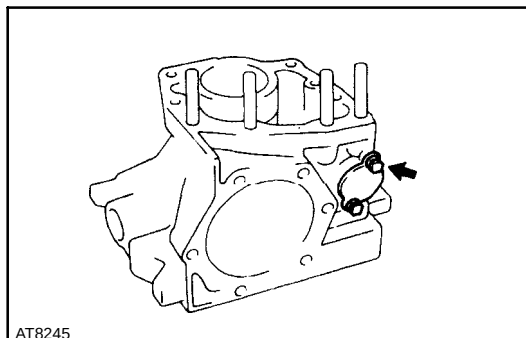


- (d) Using a screwdriver, remove the oil seal.



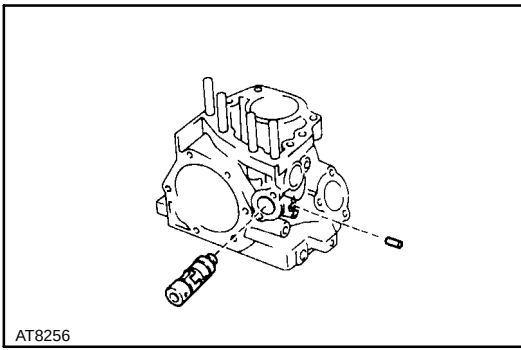
5. REMOVE PLUGS

- (a) Remove two plugs.
(b) Remove the O-rings from each plugs.

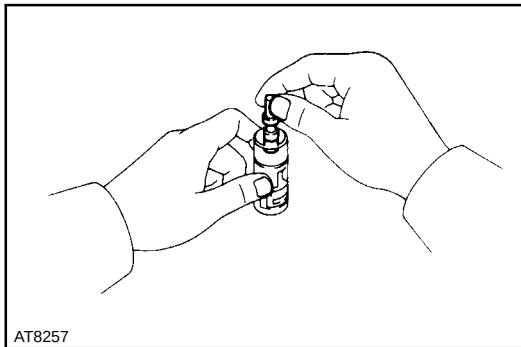


6. REMOVE DIFFERENTIAL CONTROL VALVE

- (a) Remove the control valve sleeve cover.

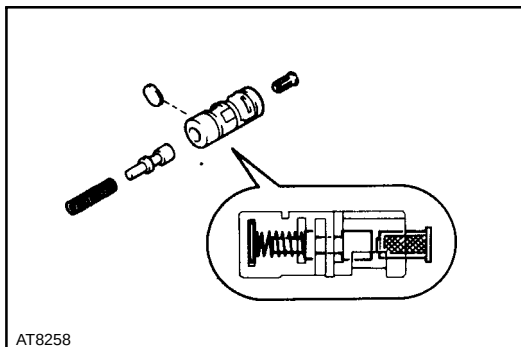


(b) Remove straight pin and control valve sleeve.



(c) Remove following parts from the control valve sleeve:

- **Valve spring retainer**
- **Compression spring**
- **Control valve**
- **Solenoid oil strainer**

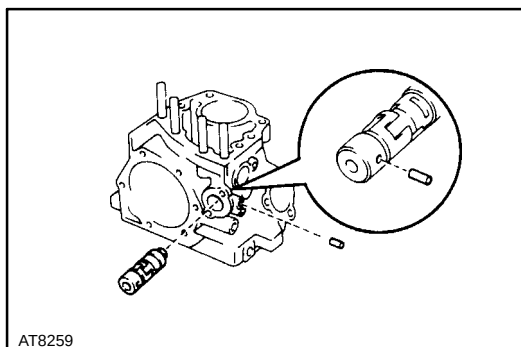


ASSEMBLY OF TRANSFER LEFT CASE

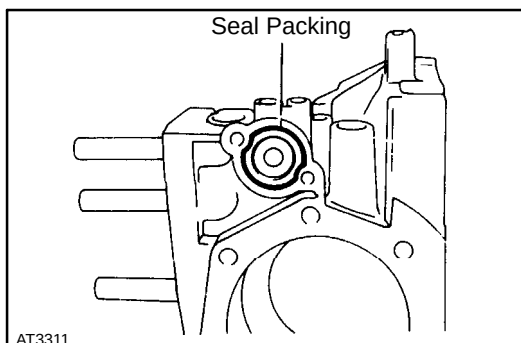
1. INSTALL DIFFERENTIAL LOCK CLUTCH CONTROL VALVE

(a) Install following parts to the control valve sleeve:

- **Solenoid oil strainer**
- **Control valve**
- **Compression spring**
- **Valve spring retainer**



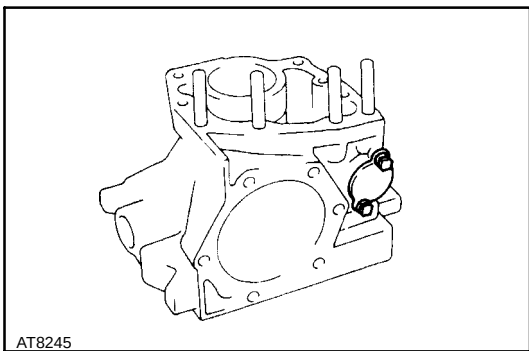
(b) Install the control valve sleeve and straight pin.



(c) Apply seal packing to the rear cover as shown.

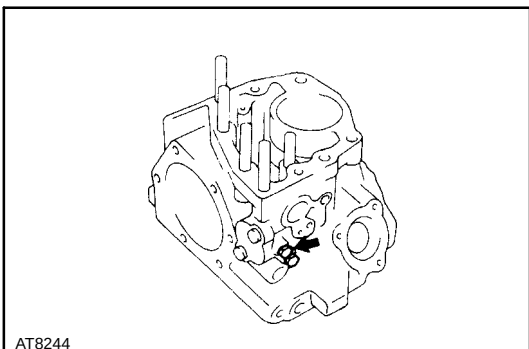
Seal packing: Part No. 08826 - 00090 THREE BOND 1281, or equivalent

HINT: Install the cover as soon as the seal packing is applied.



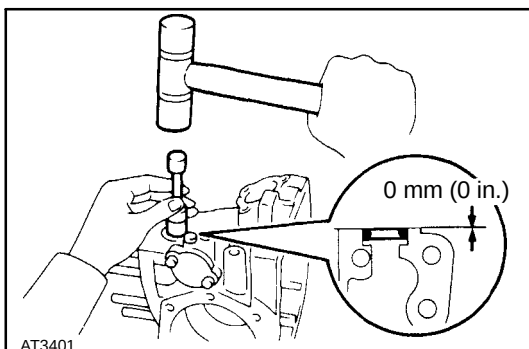
(d) Install control valve cover.

Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)



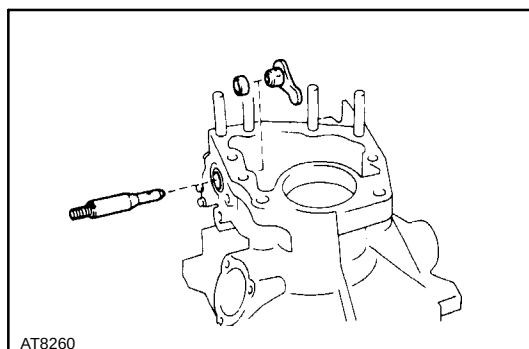
2. INSTALL PLUGS

- (a) Coat the O-rings with ATF, and install it on to the plugs.
- (b) Install the two plugs.

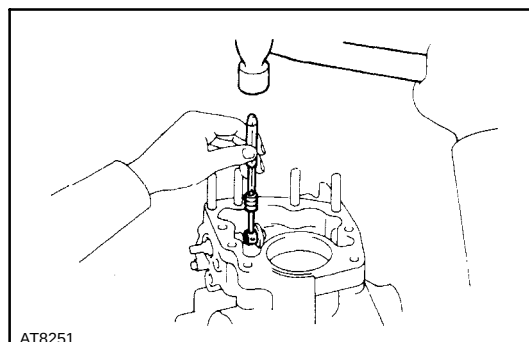


3. INSTALL TRANSFER SHIFT LEVER

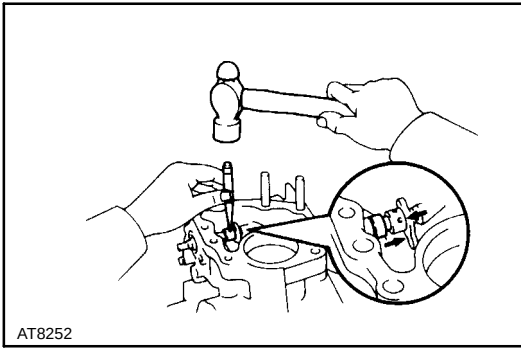
- (a) Coat the rip of new oil seal with MP grease.
- (b) Using a 17 mm (0.67 in.) socket wrench and hammer, drive in the oil seal as shown.



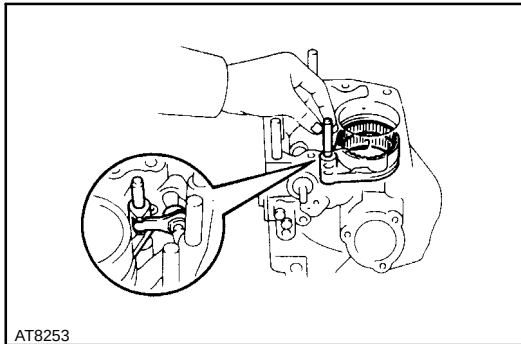
- (c) Install the transfer shift lever shaft, new spacer and shift lever.



- (d) Using a pin punch and hammer, drive in the pin.

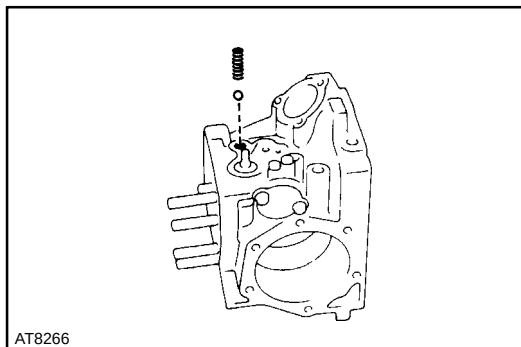


- (e) Slide the spacer as shown.
- (f) Using a pin punch and hammer, stake the spacer.



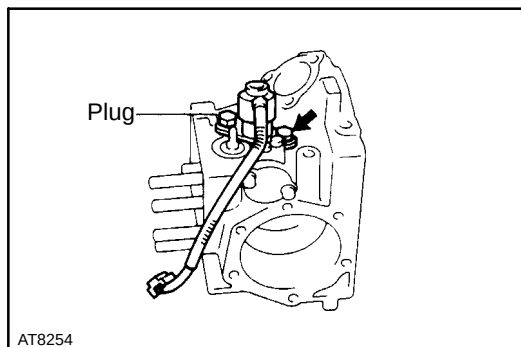
4. INSTALL DIFFERENTIAL CONTROL SHIFT FORK, SLEEVE AND SHIFT FORK SHAFT

HINT: Engaged shift fork and transfer shift lever.



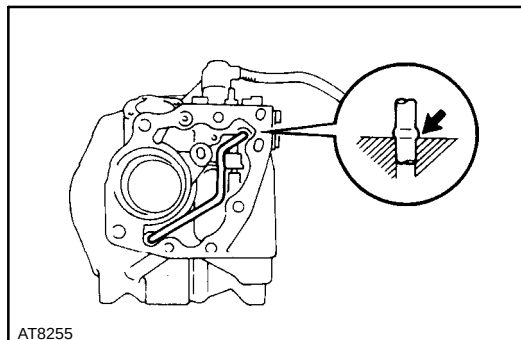
5. INSTALL CENTER DIFFERENTIAL CONTROL SOLENOID

- (a) Install the ball and compression spring.
- (b) Coat the two new O-rings with ATF, install it on to the solenoid.



- (c) Install the solenoid.
- (d) Install and tighten the plug and the bolt.

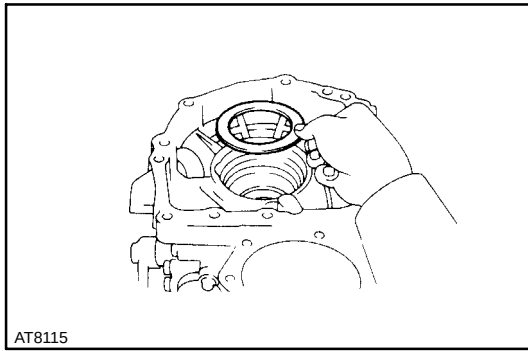
Torque: Bolt 13 N-m (130 kgf-cm, 9 ft-lbf)
Plug 29 N-m (300 kgf-cm, 22 ft-lbf)



6. INSTALL APPLY TUBE

Tap the tubes with a plastic hammer to install then into the positions indicated in the illustration.

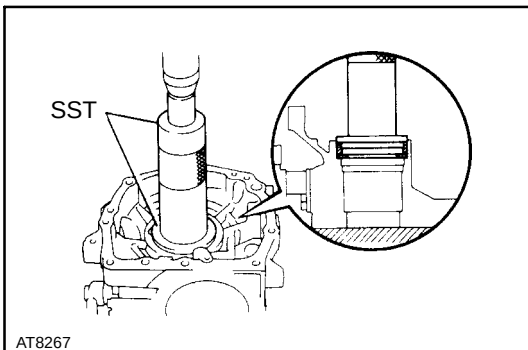
NOTICE: Be careful not to bend or damage the tubes.



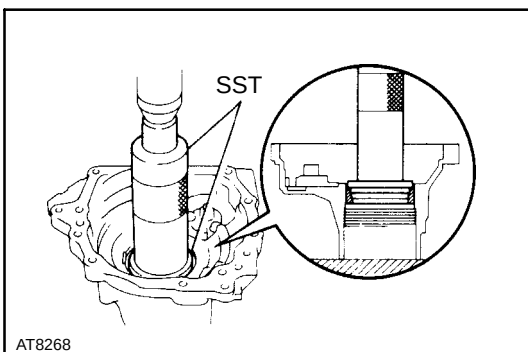
ASSEMBLY OF COMPONENT PARTS

1. INSTALL LEFT CASE SIDE

- (a) Install the plate washer.



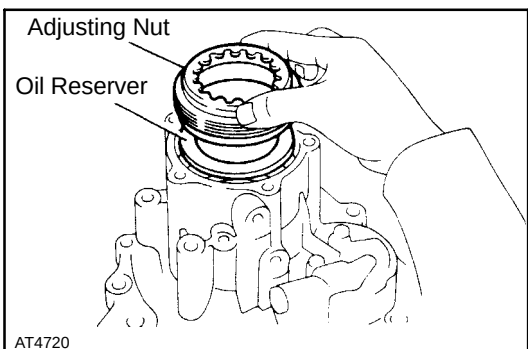
- (b) Using SST and a press, press in the outer race.
SST 09316-60010 (09316-00010, 09316-00060)



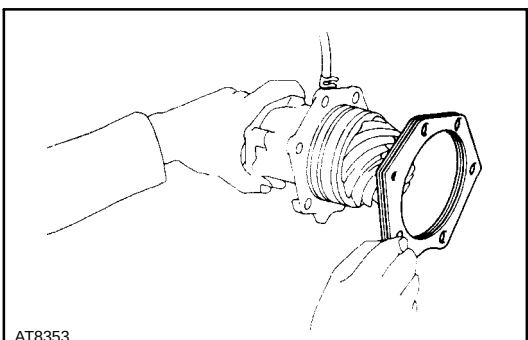
2. INSTALL RIGHT CASE SIDE

- (a) Using SST and a press, press in outer race as shown.

SST 09316-60010 (09316-00010, 09316-00060)



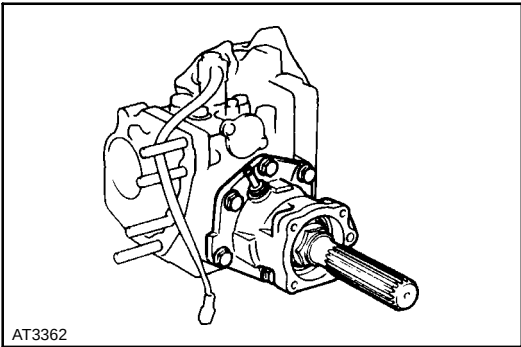
- (b) Install the bearing adjusting nut and oil reserver, until it touch the outer race.



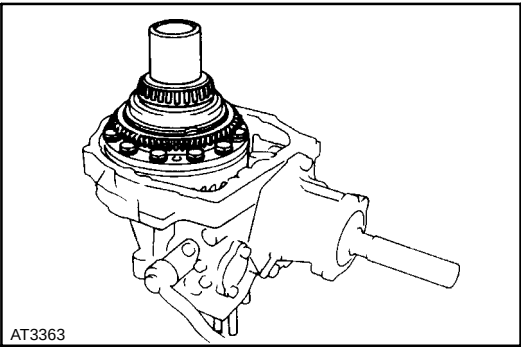
3. ADJUSTING GEAR BACKLASH

- (a) Install the shim to the driven pinion bearing cage assembly.

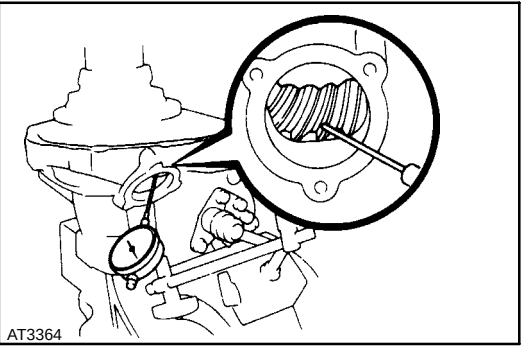
HINT: First install a shim of the same thickness as before.



- (b) Install driven pinion cage.
Torque: 39 N-m (400 kgf-cm, 29 ft-lbf)
HINT: Do not install the O-ring.



- (c) Install ring gear mounting case and center differential case.
(d) Using a dial indicator, measure the ring gear backlash.
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

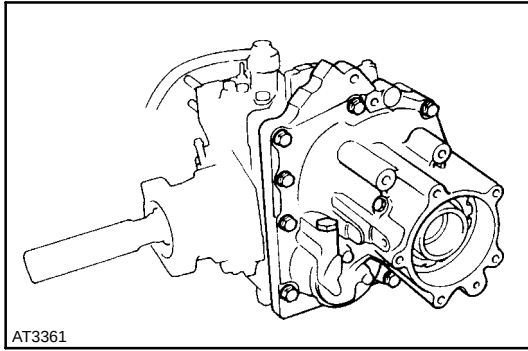


- (e) Referring to the table below, select the plate washer which will ensure that the backlash is within specification.

Plate washer thickness mm (in.)

Mark	Thickness	Mark	Thickness
71	2.13 (0.0839)	83	2.49 (0.0980)
72	2.16 (0.0850)	84	2.52 (0.0992)
73	2.19 (0.0862)	85	2.55 (0.1004)
74	2.22 (0.0874)	86	2.58 (0.1016)
75	2.25 (0.0886)	87	2.61 (0.1028)
76	2.28 (0.0898)	88	2.64 (0.1039)
77	2.31 (0.0909)	89	2.67 (0.1051)
78	2.34 (0.0921)	90	2.70 (0.1063)
79	2.37 (0.0933)	91	2.73 (0.1075)
80	2.40 (0.0945)	92	2.76 (0.1087)
81	2.43 (0.0957)	93	2.79 (0.1098)
82	2.46 (0.0969)	94	2.82 (0.1110)

Try select a washer of the same size.

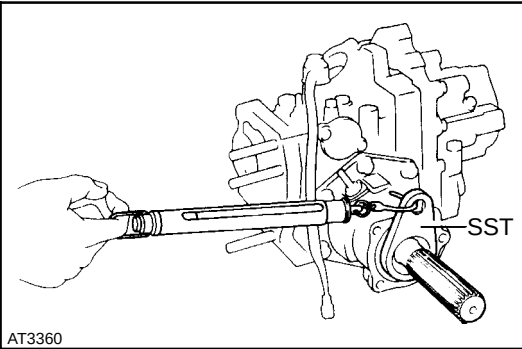


4. ADJUST TOTAL PRELOAD

- (a) Install the transfer right case.

HINT: Do not apply seal packing and do not install gasket.

Torque: 44 N-m (450 kgf-cm, 33 ft-lbf)



- (b) Using SST and a spring tension gage, measure the total preload.

SST 09326-2001 1

Preload (at starting):

New bearing

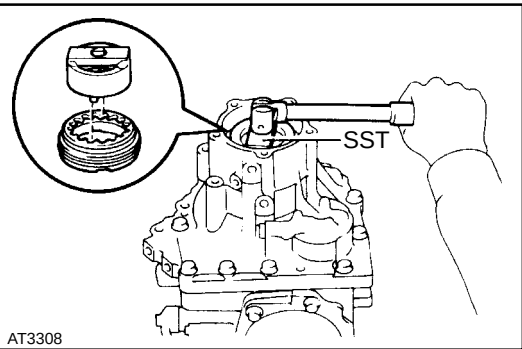
Add driven pinion preload

12.7 - 13.7 N (1.3 - 1.4 kg, 2.9 - 3.1 lb)

Reused bearing

Add driven pinion preload

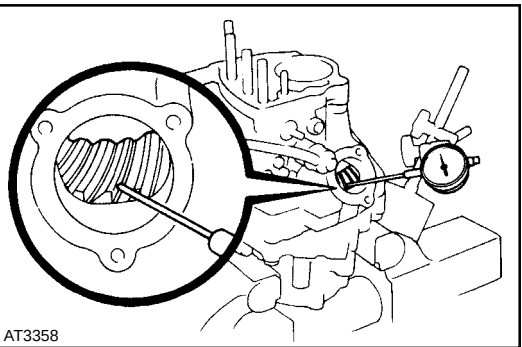
4.9 - 8.8 N (0.5 - 0.9 kg, 1.1 - 2.0 lb)



- (c) Adjusting total preload by tightening the adjusting nut with SST.

SST 09318-12010

HINT: Measure the preload while tightening the bearing adjusting nut a little at a time.

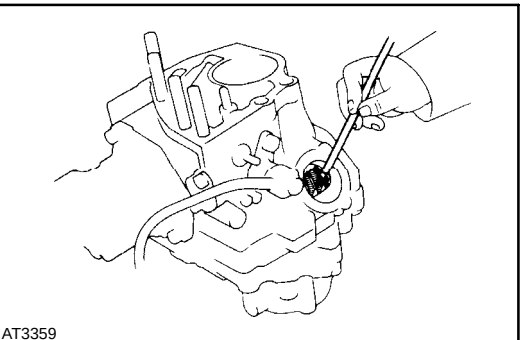


5. CHECK RING GEAR BACKLASH

- (a) Using a dial indicator, measure the ring gear backlash.

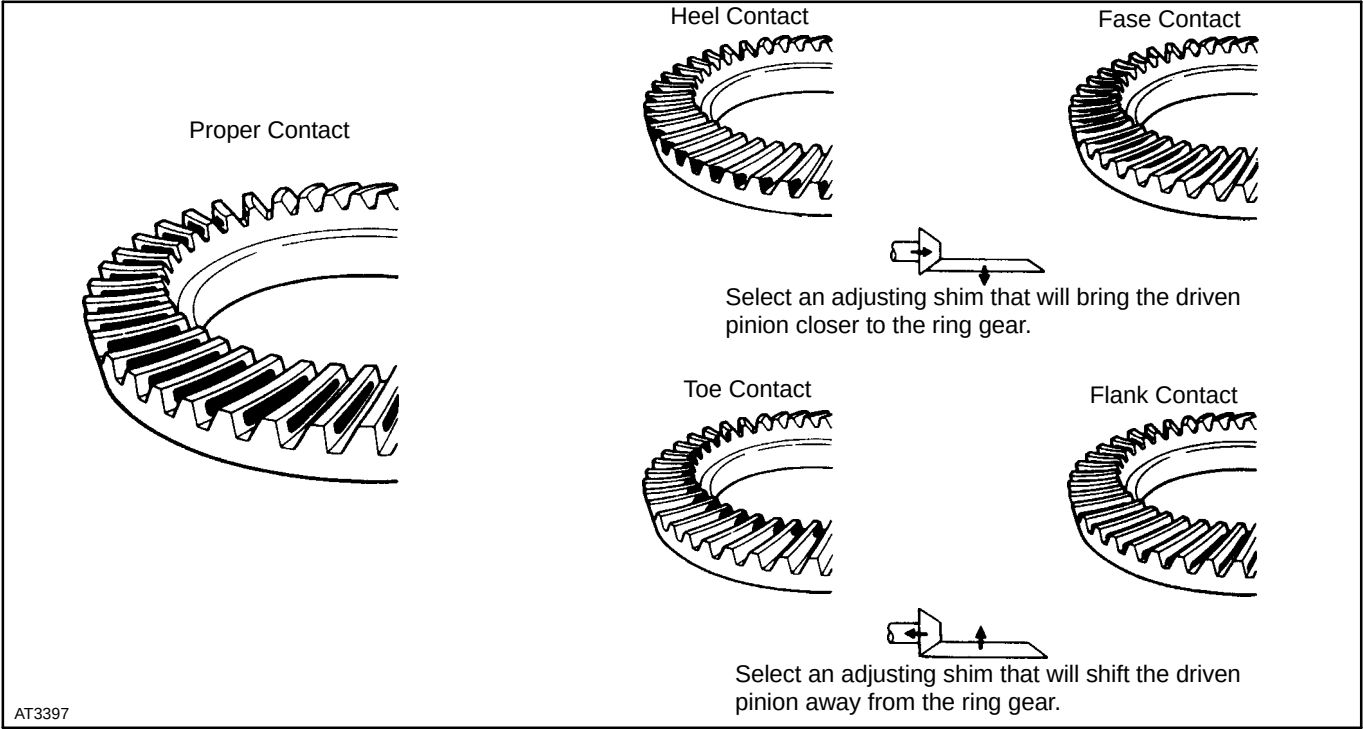
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

- (b) When the backlash is outside the standard value, select a different plate washer to the one selected step 3. Again adjust the backlash and total preload.



6. CHECK TOOTH CONTACT

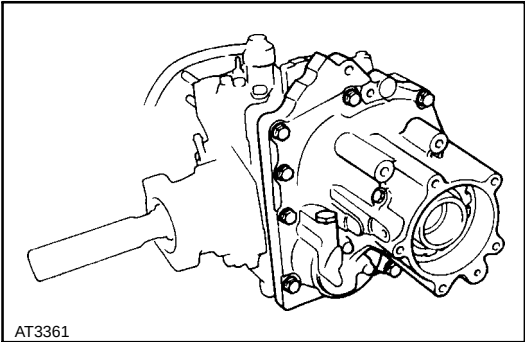
- (a) Coat 3 or 4 teeth at different position on the ring gear with red lead.
- (b) Rotate the ring gear, inspect the teeth pattern.



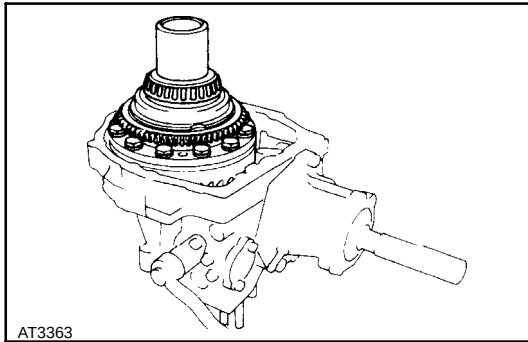
(c) If the teeth are not connecting properly, again the proper shim and plate.

mm (in.)

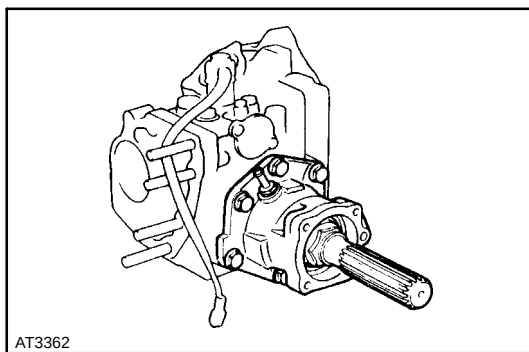
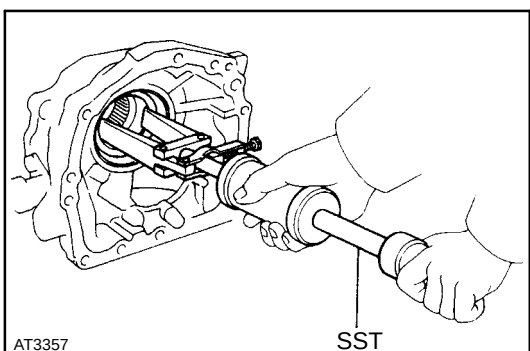
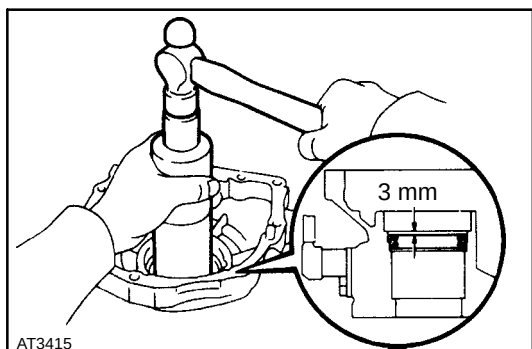
Mark	Thickness	Mark	Thickness
A	0.30 (0.0118)	F	0.45 (0.0177)
B	0.33 (0.0130)	G	0.48 (0.0189)
C	0.36 (0.0142)	H	0.51 (0.0201)
D	0.39 (0.0154)	J	0.54 (0.0213)
E	0.42 (0.0165)	K	0.57 (0.0224)



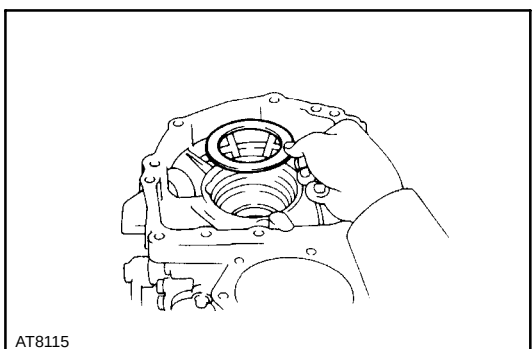
7. **REMOVE TRANSFER RIGHT CASE**
Remove the ten bolts and transfer right case.



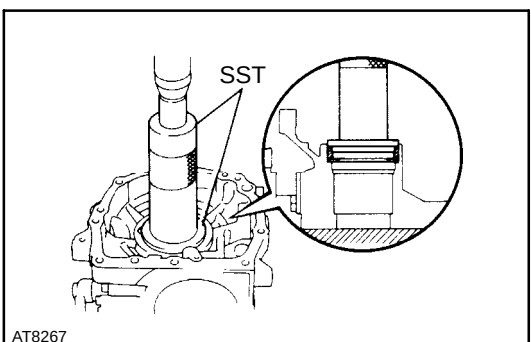
8. **REMOVE RING GEAR MOUNTING CASE AND CENTER DIFFERENTIAL CASE**

**9. REMOVE DRIVEN PINION BEARING CAGE****10. REMOVE LEFT CASE BEARING OUTER RACE AND PLATE WASHER****11. INSTALL OIL SEAL**

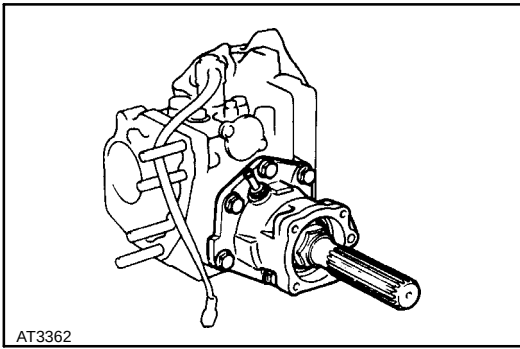
- (a) Using SST, install a new oil seal as shown.
SST 09316-60010 (09316-00010, 09316-00030)
Oil seal depth: 3 mm (0.12 in.)
- (b) Coat the lip of oil seal with MP grease.

**12. INSTALL LEFT CASE BEARING OUTER RACE**

- (a) Install the plate washer. (previously selected)



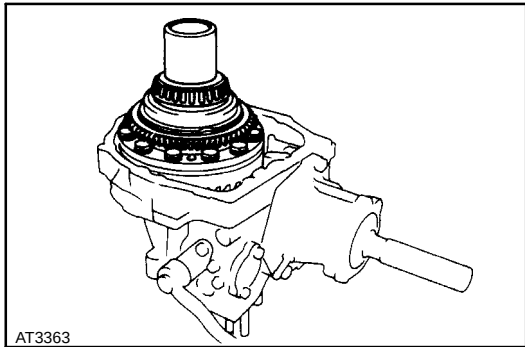
- (b) Using SST and a press, press in the outer race.
SST 09316-60010 (09316-00010, 09316-00060)



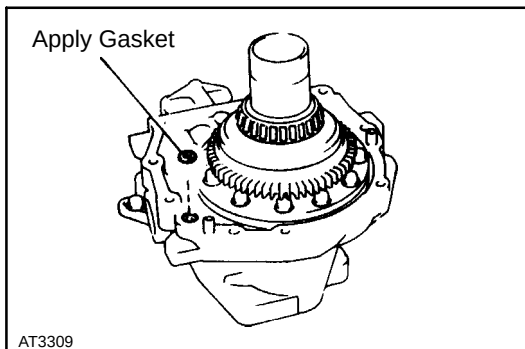
13. INSTALL DRIVEN PINION BEARING CAGE

- (a) Coat the O-ring with gear oil, and install it to the bearing cage.
- (b) Install shim (previously selected) and bearing cage assembly.

Torque: 39 N-m (400 kgf-cm, 29 ft-lbf)

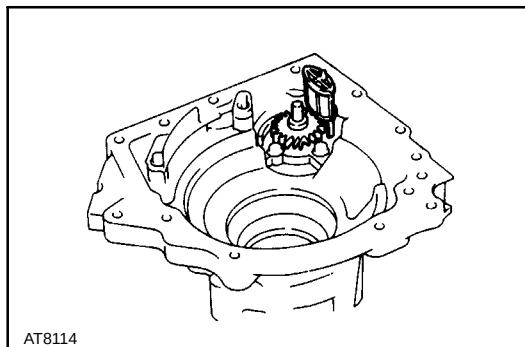


14. INSTALL RING GEAR MOUNTING CASE AND CENTER DIFFERENTIAL CASE

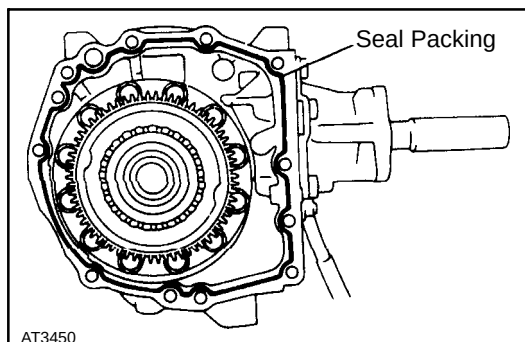


15. INSTALL TRANSFER RIGHT CASE

- (a) Install a new apply gasket to the left case.



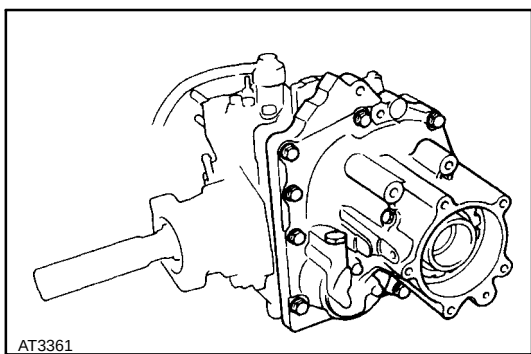
- (b) Install oil pump strainer and driven gear to the right case.



- (c) Apply seal packing to the left case as shown in the figure.

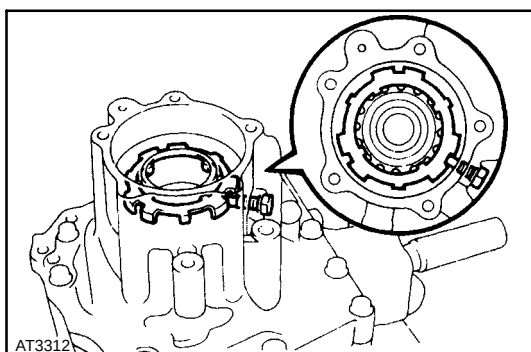
Seal packing: Part No. 08826 - 00090 THREE BOND 1281 or equivalent

HINT: Install the right case as soon as the packing is applied.

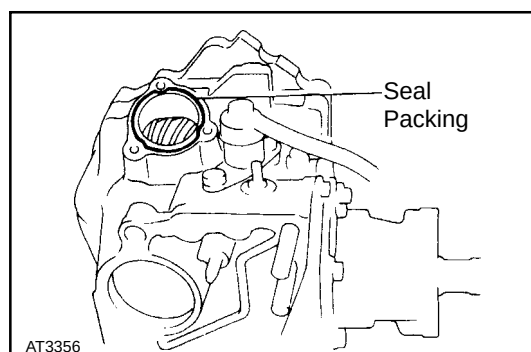


- (d) Install right case and ten bolts.
Torque: 44 N-m (459 kgf-cm, 33 ft-lbf)

16. CHECK TOTAL PRELOAD
(See page [TR-34](#))



- 17. INSTALL ADJUSTING NUT LOCK PLATE**
Install the lock plate so that projection from the lock plate fits properly into the groove of the adjusting nut.

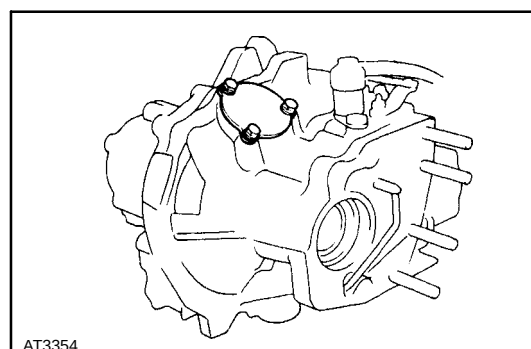


18. INSTALL TRANSFER INSPECTION HOLE COVER

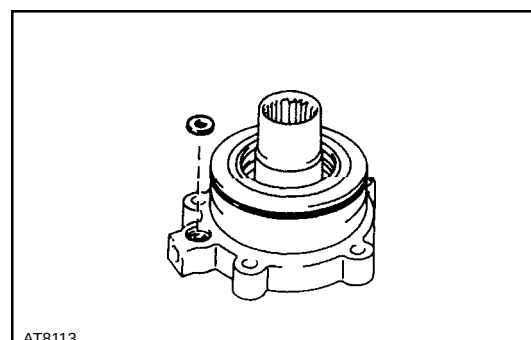
- (a) Apply seal packing to the left case as shown in the figure.

Seal packing: Parts No. 08826 - 00090 THREE BOND 1281 or equivalent

HINT: Install the cover as soon as the seal packing is applied.

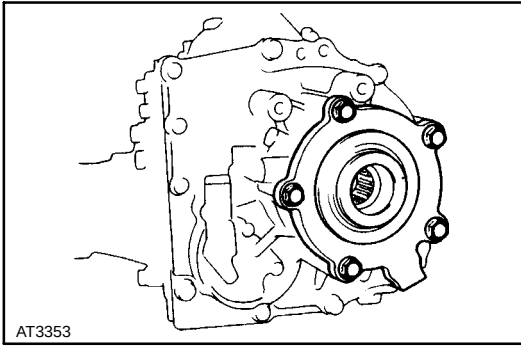


- (b) Install hole cover.
Torque: 17 N-m (170 kgf-cm, 12 ft-lbf)



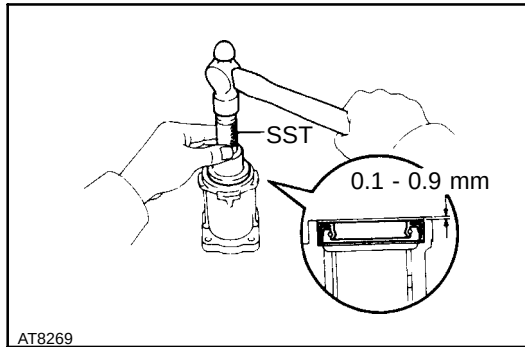
19. INSTALL TRANSFER RIGHT CASE RETAINER

- (a) Coat a O-ring with gear oil, and install it and new apply gasket.



(b) Install case Retainer.

Torque: 25 N-m (260 kgf-cm, 19 ft-lbf)



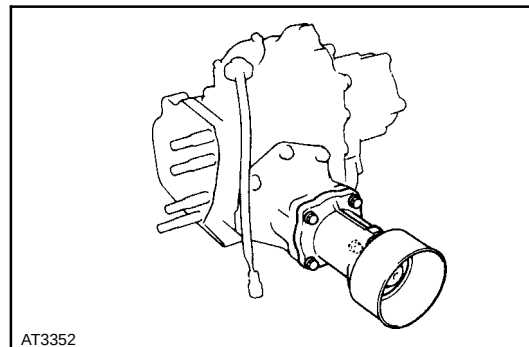
20. INSTALL EXTENSION HOUSING

(a) Using SST and a hammer, drive in a new oil seal as shown.

SST 09325-20010

Oil seal depth: 0.1 - 0.9 mm (0.004 - 0.035 in.)

(b) Coat the lip of the oil seal with MP grease.

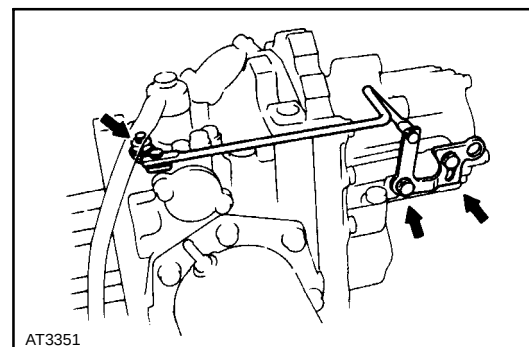


(c) Coat a new O-ring with gear oil.

(d) Install dust deflector and O-ring to the extension housing.

(e) Install extension housing to the drive pinion bearing cage.

Torque: 25 N-m (260 kgf-cm, 19 ft-lbf)



21. INSTALL TRANSFER MODE SELECT LEVER AND ROD

(a) Install the lever, rod and lever guide.

Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)

(b) Install the bolt while setting the lever as shown.

Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)