INSTALLATION OF COMPONENT PARTS

(See pages AT–25 and 26)

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.

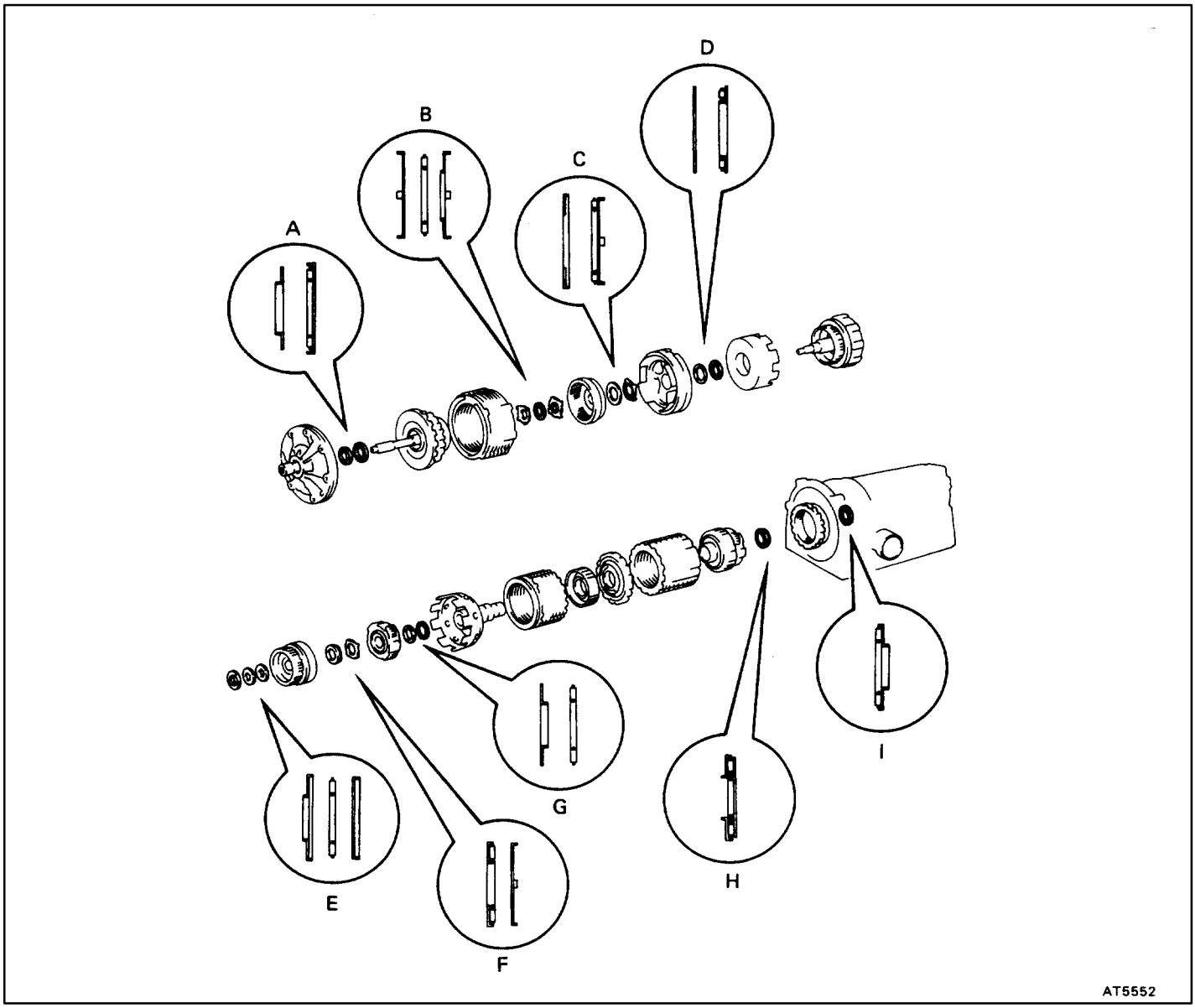
If something wrong is found in a certain component group during assembly, inspect and repair this group immediately.

Recommended ATF: Type T–II or equivalent

GENERAL NOTES:

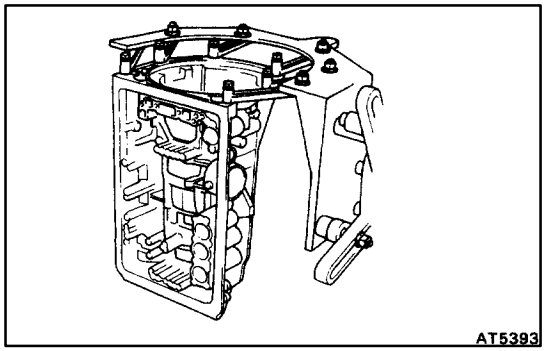
1. The automatic transmission is composed of highly precision–finished parts, necessitating careful inspection before assembly because even a small nick could cause fluid leakage or affect performance.
2. Before assembling new clutch discs, soak them in automatic transmission fluid for at least fifteen 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, be sure to use new gaskets and O–rings.
7. Dry all parts with compressed air–never use shop rags.
8. When working with FIPG material, you must observe the following.
   - Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces.
   - Thoroughly clean all components to remove all the loose material.
   - Clean both sealing surface with a non–residue solvent.
   - Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

INSTALLATION POSITION AND DIRECTION OF BEARINGS AND RACES



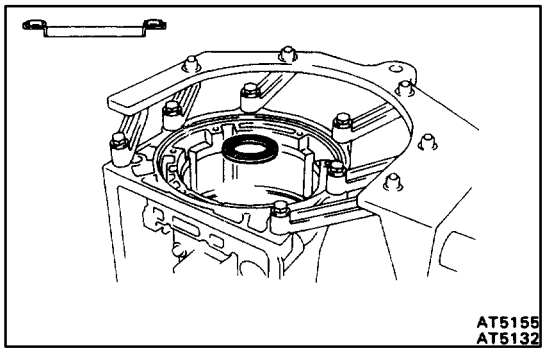
mm (in.)

	Front Bearing Race		Thrust Bearing		Rear Bearing Race	
	Inner Diameter	Outer Diameter	Inner Diameter	Outer Diameter	Inner Diameter	Outer Diameter
A	28.1 (1.106)	47.5 (1.870)	28.8 (1.134)	50.4 (1.984)	–	–
B	24.0 (0.945)	48.0 (1.890)	25.9 (1.020)	47.0 (1.850)	27.2 (1.070)	42.0 (1.654)
C	37.1 (1.461)	59.0 (2.323)	33.6 (1.323)	50.3 (1.980)	–	–
D	37.0 (1.457)	51.0 (2.008)	33.5 (1.319)	47.8 (1.882)	–	–
E	26.0 (1.024)	44.9 (1.768)	25.9 (1.020)	47.0 (1.850)	26.5 (1.043)	47.0 (1.850)
F	–	–	35.0 (1.378)	53.8 (2.118)	34.0 (1.339)	48.0 (1.890)
G	–	–	35.4 (1.394)	48.0 (1.890)	33.5 (1.319)	47.8 (1.882)
H	–	–	27.0 (1.063)	54.5 (2.146)	–	–
I	–	–	39.2 (1.543)	57.72 (2.2724)	–	–



1. INSTALL TRANSMISSION CASE

Install the transmission case in the overhaul attachment.



2. INSTALL BEARING AND RACE

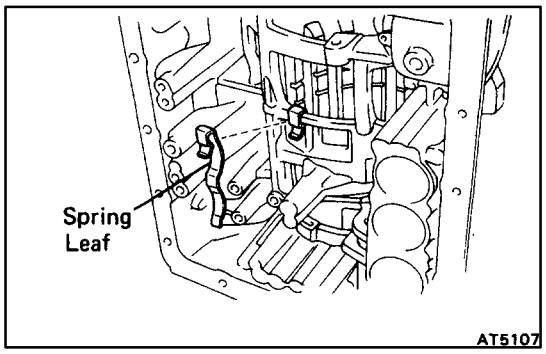
(a) Coat the assembled bearing and race with petroleum jelly.

(b) Install it onto the case.

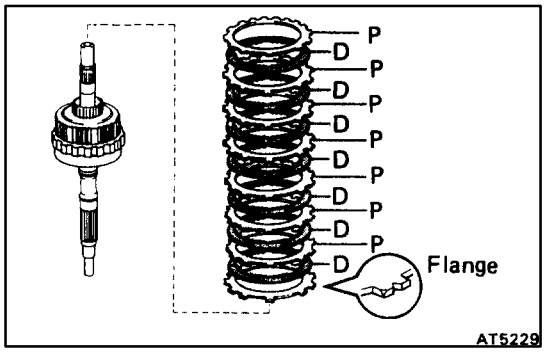
HINT: Assembled bearing and race diameter

mm (in.)

	Inside	Outside
Bearing and race	39.2 (1.543)	57.7 (2.272)



3. INSTALL SPRING LEAF



4. INSTALL REAR PLANETARY GEAR UNIT WITH FIRST AND REVERSE BRAKE PACK AND OUTPUT SHAFT

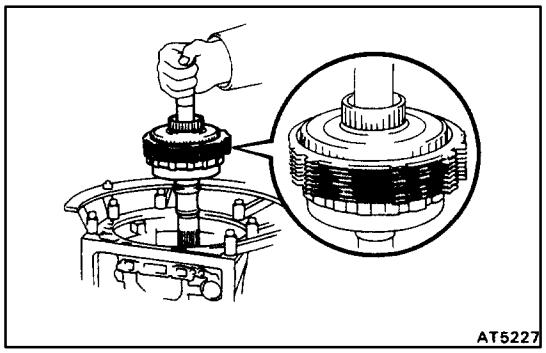
(a) Reinstall the original flange, the rounded edge facing upward.

(b) Install the seven plates and seven discs.

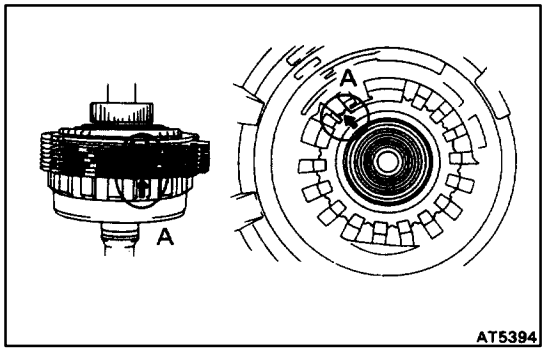
Install in order:

D–P–D–P–D–P–D–P–D–P–D–P–D–P

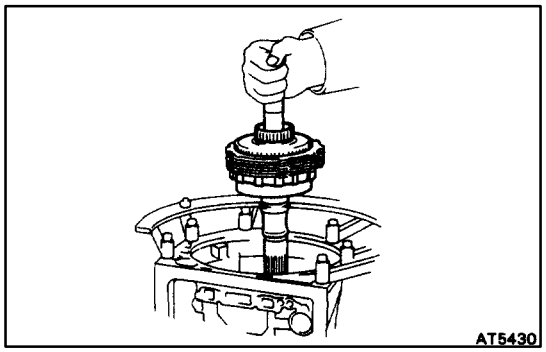
P=Plate, D=Disc



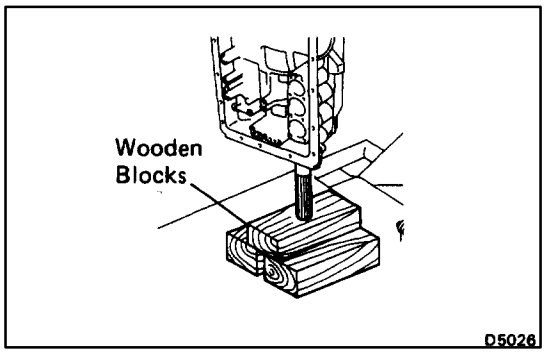
(c) Align the teeth of the flange, discs and plates as shown in the figure.



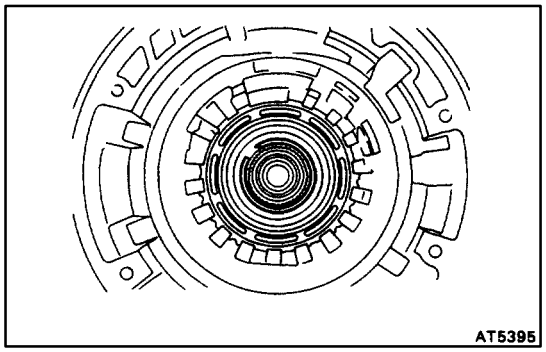
(d) Align the splines of the transmission case and the assembled rear planetary gear, first and reverse brake pack and output shaft, indicated by A.



(e) Install the assembled rear planetary gear, first and reverse brake pack and output shaft.



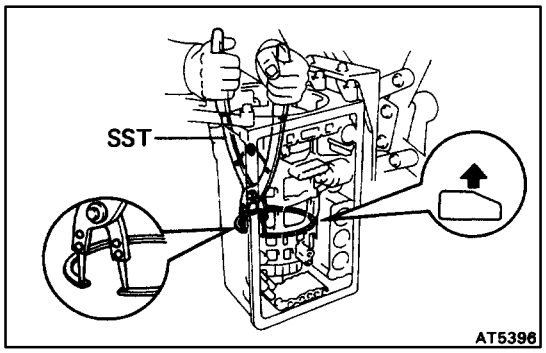
(f) Rest the output shaft on wooden blocks.



5. INSTALL SECOND BRAKE DRUM

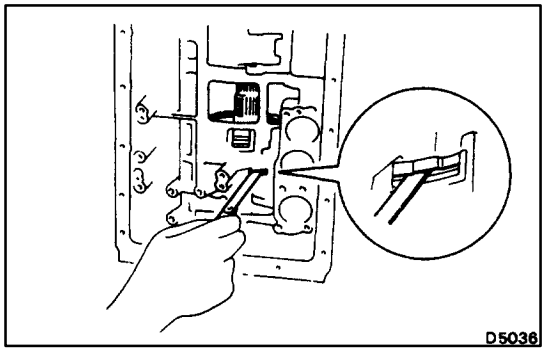
(a) Face the snap ring upward (front side) and install the second brake drum to the planetary gear.

NOTICE: Face the oil hole in the drum towards the lower side of the transmission case (the side the valve body is installed).



(b) Using SST, install the snap ring.

SST 09350–30020 (09350–07060)



6. CHECK PACE CLEARANCE OF FIRST AND REVERSE BRAKE

Using a feeler gauge, measure the clearance between the plate and second brake drum as shown in the figure.

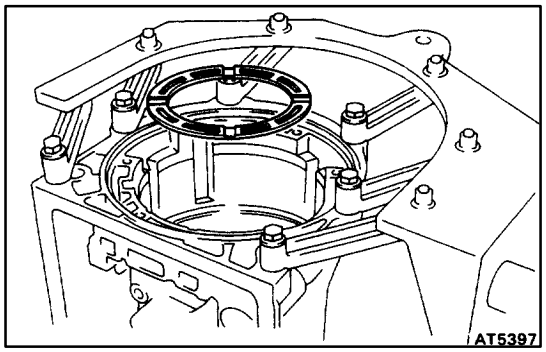
Clearance: 0.70–1.22 mm (0.028–0.048 in.)

If the values are nonstandard, select another flange.

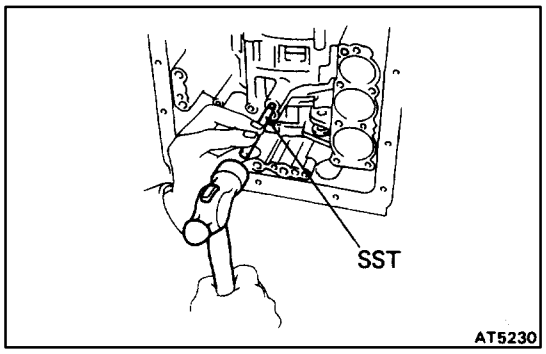
HINT: There are six different thicknesses for the flange.

Flange Thickness mm (in.)

No.	Thickness	No.	Thickness
50	5.0 (0.197)	53	4.4 (0.173)
51	4.8 (0.189)	54	4.2 (0.165)
52	4.6 (0.181)	55	4.0 (0.157)



7. INSTALL SECOND BRAKE PISTON SLEEVE

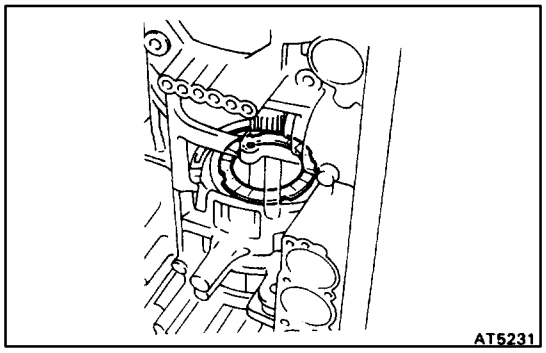


8. INSTALL NEW BRAKE DRUM GASKET

(a) Coat the gasket with ATF.

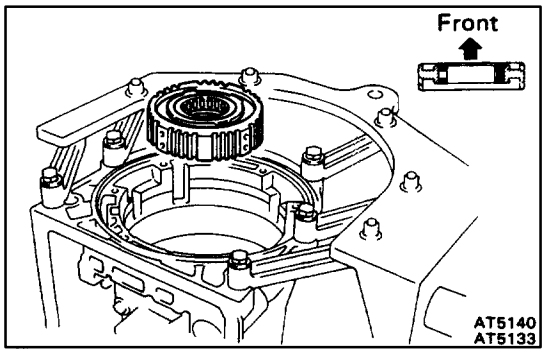
(b) Using SST, install the new brake drum gasket.

SST 09350–30020 (09350–07100)

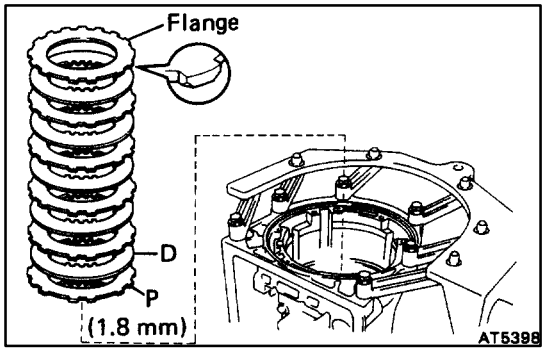


9. INSTALL NO.1 ONE–WAY CLUTCH

(a) Install the No.1 thrust washer onto the second brake.



(b) Install the No.1 one–way clutch.



10. INSTALL FLANGE, PLATES AND DISCS OF SECOND BRAKE

(a) Install the 1.8 mm (0.071 in.) thick plate with the rounded–edge side of the plate facing the disc.

(b) Install the five plates and five discs.

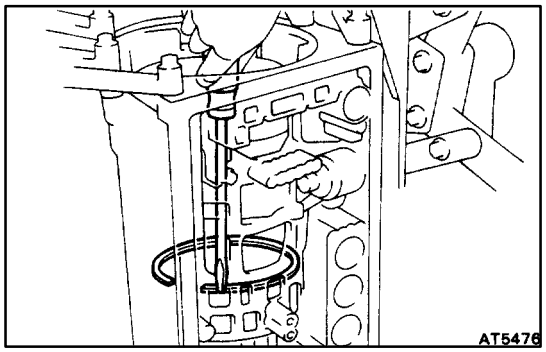
Install in order:

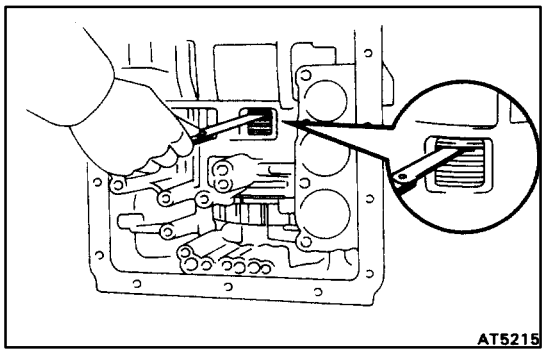
D–P–D–P–D–P–D–P–D–P

P = Plate, D = Disc

(c) Install the flange with the rounded edge of the flange facing the disc.

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



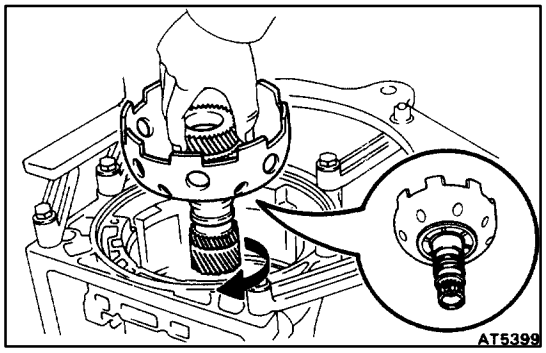


11. CHECK PACK CLEARANCE OF SECOND BRAKE

Using a feeler gauge, measure the clearance between the snap ring and flange as shown in the figure.

Clearance: 0.62–1.98 mm (0.0244–0.0780 in.)

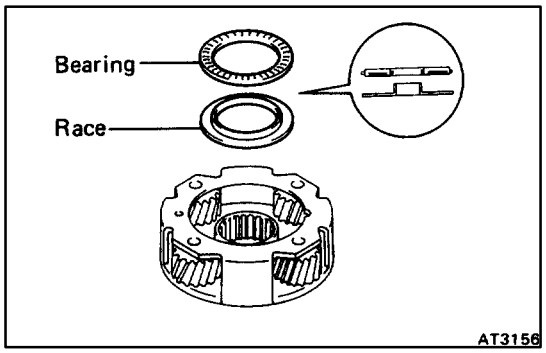
If the values are nonstandard, check for improper installation.



12. INSTALL PLANETARY SUN GEAR

While turning the planetary sun gear clockwise, install it into No.1 one–way clutch.

HINT: Confirm the thrust washer is installed correctly.



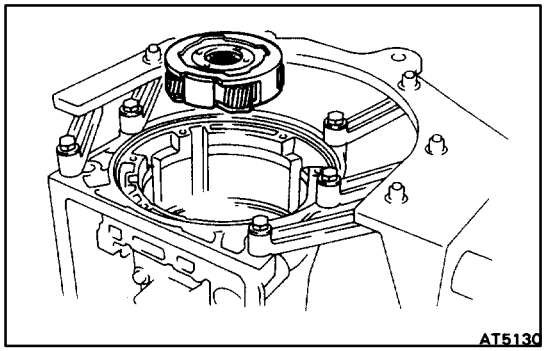
13. INSTALL FRONT PLANETARY GEAR

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

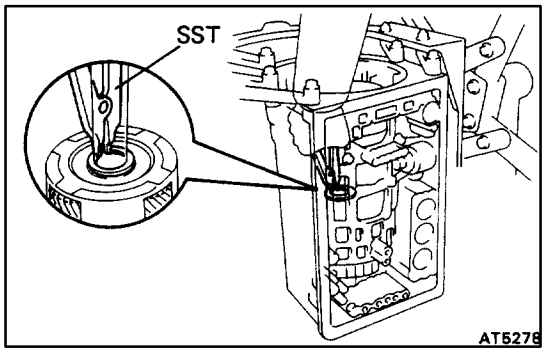
HINT: Bearing and race diameter

mm (in.)

	Inside	Outside
Bearing	35.4 (1.394)	48.0 (1.890)
Race	33.5 (1.319)	47.8 (1.882)



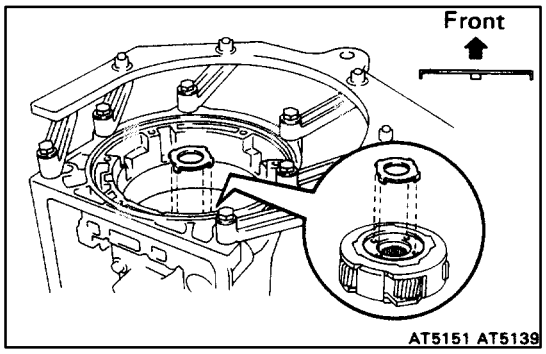
(b) Install the front planetary gear to the sun gear input drum.



(c) Using SST, install the snap ring.

SST 09350–30020 (09350–07070)

(d) Remove the wooden blocks under the output shaft.

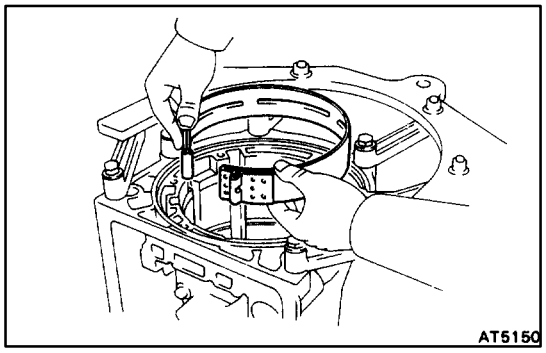


(e) Coat the race with petroleum jelly and install it onto the front planetary gear.

HINT: Diameter of race

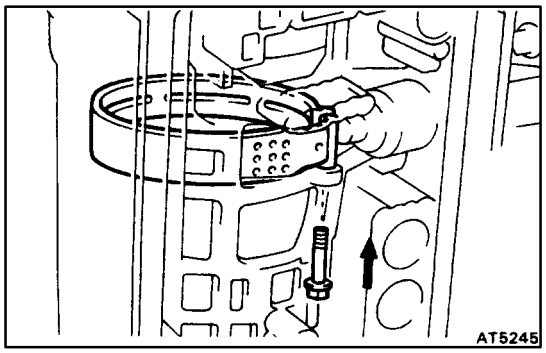
mm (in.)

	Inside	Outside
Race	34.0 (1.339)	48.0 (1.890)

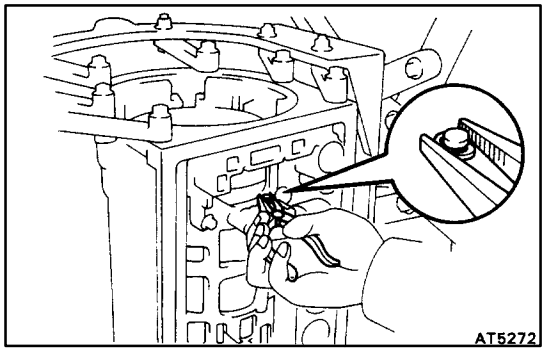


14. INSTALL SECOND COAST BRAKE BAND

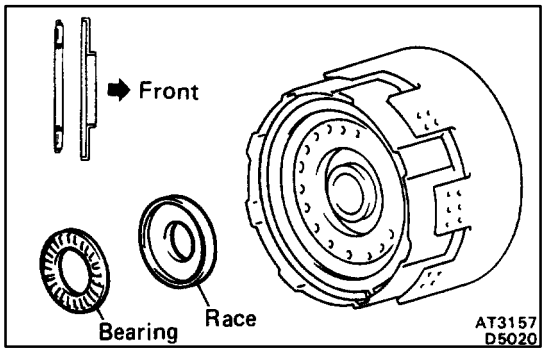
(a) Insert the second coast brake band to the transmission case.



(b) Install the pin through the brake band.



(c) Install the E–ring to the pin.



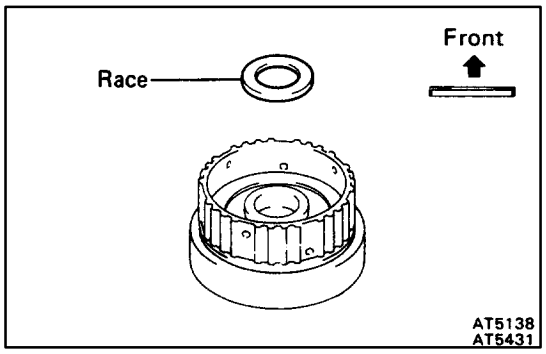
15. INSTALL FRONT PLANETARY RING GEAR TO FORWARD AND DIRECT CLUTCH

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

HINT: Bearing and race diameter

mm (in.)

	Inside	Outside
Bearing	25.9 (1.020)	47.0 (1.850)
Race	26.0 (1.024)	48.9 (1.925)

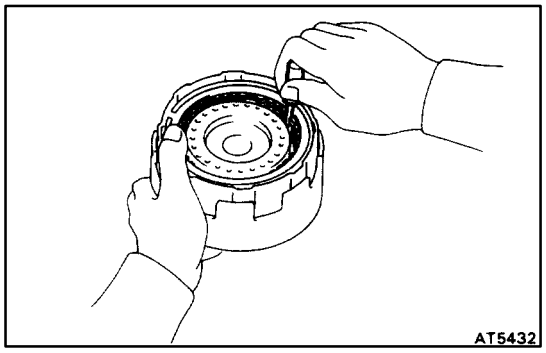


(b) Coat the race with petroleum jelly and install it onto the front planetary ring gear.

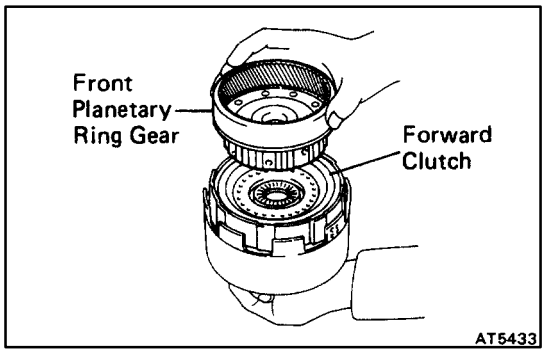
HINT: Diameter of race

mm (in.)

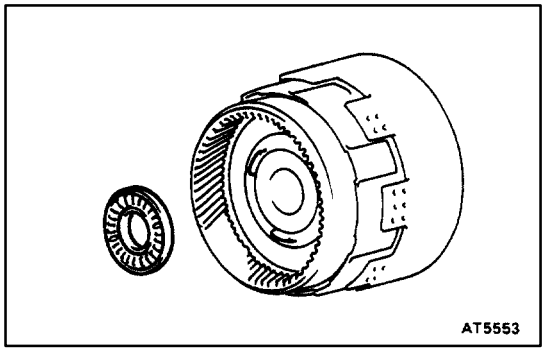
	Inside	Outside
Race	26.5 (1.043)	47.0 (1.850)



(c) Align the flukes of the discs in the forward clutch.



(d) Align the splines of the front planetary ring gear with the flukes of the discs and install the front planetary ring gear to the forward clutch.



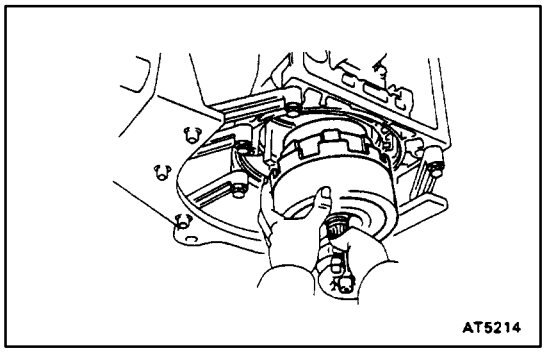
16. INSTALL ASSEMBLED DIRECT CLUTCH, FORWARD CLUTCH AND FRONT PLANETARY RING GEAR INTO CASE

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

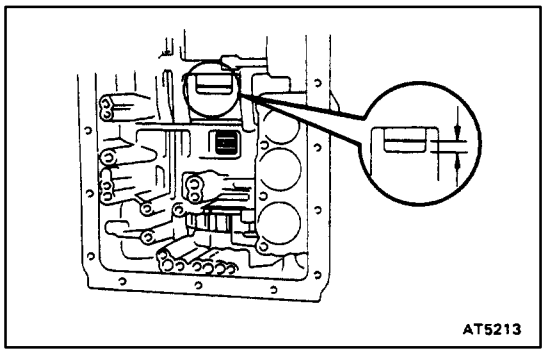
HINT: Bearing and race diameter

mm (in.)

	Inside	Outside
Bearing and Race	35.0 (1.378)	53.8 (2.118)



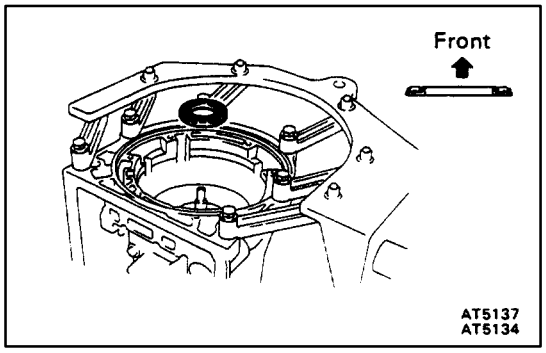
(b) Install the assembled direct clutch, forward clutch and front planetary ring gear into the transmission case.



(c) Using vernier calipers, measure the distance between the sun gear input drum and direct clutch drum as shown in the figure.

Height: 6.3–8.3 mm (0.248–0.328 in.)

If the values are nonstandard, check for improper installation.

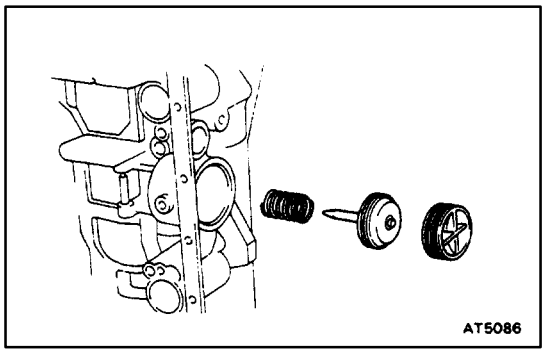


(d) Coat the assembled bearing and race with petroleum jelly and install it onto the forward clutch.

HINT: Assembled bearing and race diameter

mm (in.)

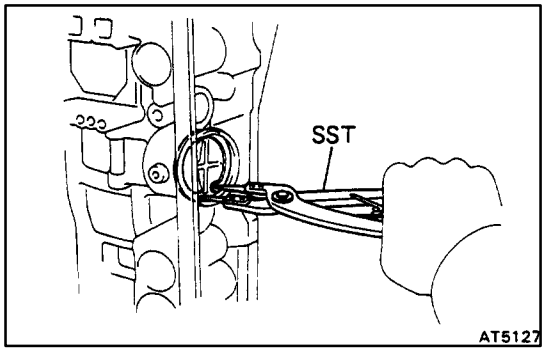
	Inside	Outside
Race	33.5 (1.319)	47.8 (1.882)



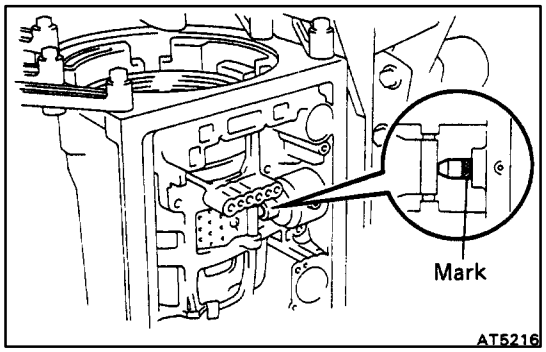
17. INSTALL SECOND COAST BRAKE COVER, PISTON ASSEMBLY AND SPRING

(a) Coat two new O–rings with ATF and install them to the cover.

(b) Install the spring, piston assembly and cover to the case.

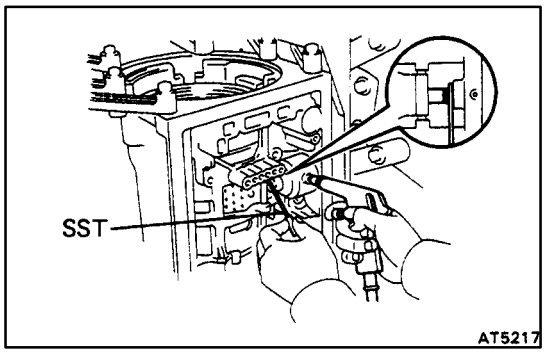


(c) Using SST, install the snap ring.
SST 09350–30020 (09350–07060)

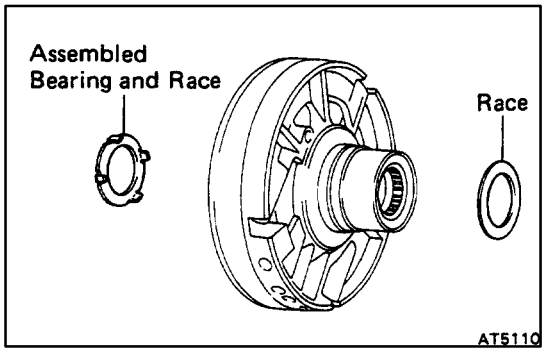


18. CHECK PISTON ROD STROKE OF SECOND COAST BRAKE

(a) Place a mark on the second coast brake piston rod.



(b) Using SST, measure the stroke applying the compressed air (4–8 kg/cm2, 57–114 psi or 392–785 kPa) as shown in the figure.
SST 09240–00020
Piston rod 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.

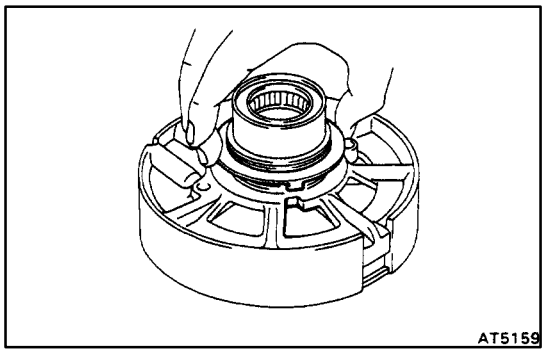


19. INSTALL OVERDRIVE SUPPORT ASSEMBLY

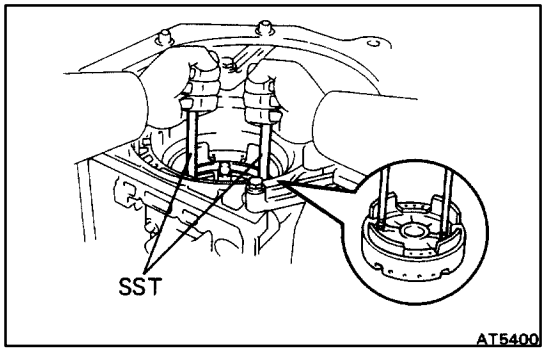
(a) Coat the assembled bearing and races with petroleum jelly and install them onto the overdrive support assembly.
HINT: Assembled bearing and race diameter

mm (in.)

	Inside	Outside
Bearing	33.6 (1.323)	50.3 (1.980)
Race	37.0 (1.457)	51.0 (2.008)

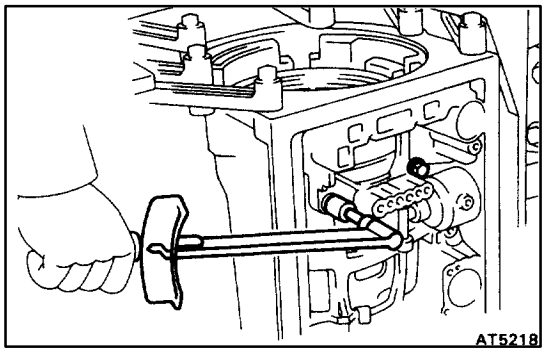


(b) Confirm the thrust washer is installed correctly.
HINT: Make sure that the lug shape matches the hole on the O/D support.



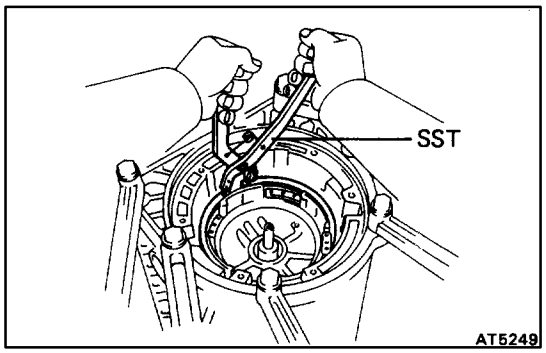
(c) Using two bolts of SST, aim the bolt and oil holes of the overdrive support toward the valve body side, align them with the bolt holes of the transmission case and insert the bolts.

SST 09350–30020 (09350–07020)



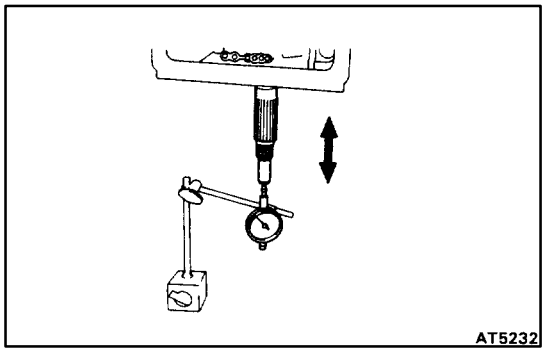
(d) Install and torque the two bolts.

Torque: 260 kg–cm (19 ft–lb, 25 N·m)



(e) Using SST, install the snap ring.

SST 09350–30020 (09350–07060)



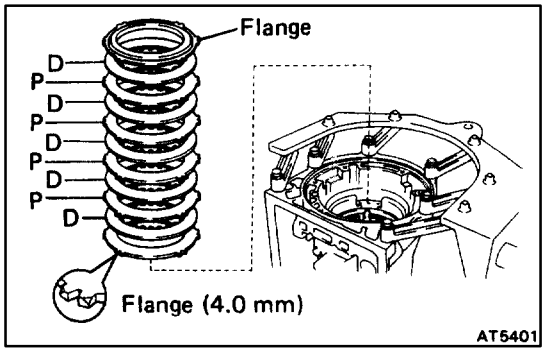
20. CHECK OUTPUT SHAFT

(a) Using a dial indicator, measure the end play of the output shaft with hand.

End play: 1.07–1.66 mm (0.0421–0.0654 in.)

If the values are nonstandard, check for improper installation.

(b) Check to see that output shaft rotates smoothly.



21. INSTALL FLANGES, PLATES AND DISCS OF OVERDRIVE BRAKE

(a) Install the 4.0mm (0.157 in.) thick flange (flat ring) with the rounded–edge side of the flange facing the disc.

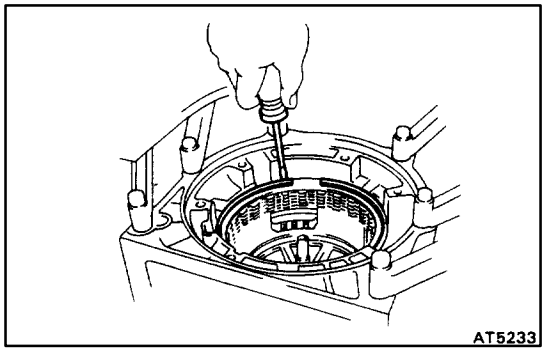
(b) Install the four plates and five discs.

Install in order:

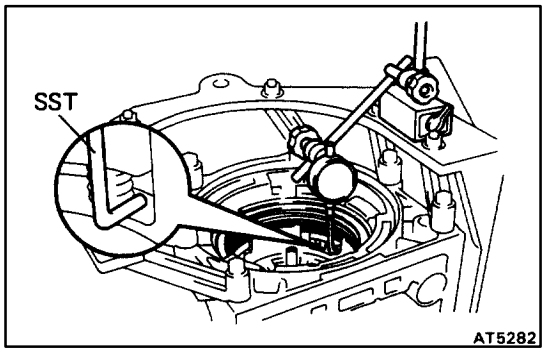
D–P–D–P–D–P–D–P–D

P = Plate, D = Disc

(c) Install the flange (stepped ring) with the flat side of the flange facing the disc.



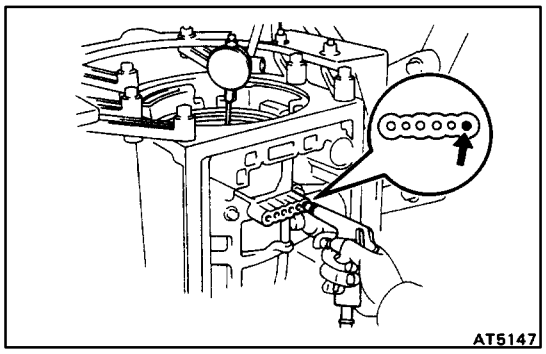
(d) Using a screwdriver, install the snap ring.



22. CHECK PISTON STROKE OF OVERDRIVE BRAKE

(a) Place SST and a dial indicator onto the overdrive brake piston as shown in the figure.

SST 09350–30020 (09350–06120)



(b) Measure the stroke applying and releasing the compressed air (4–8 kg/cm2, 57–114 psi or 392–785 kPa) as shown in the figure.

Piston stroke: 1.75–2.05 mm (0.0690–0.0807 in.)

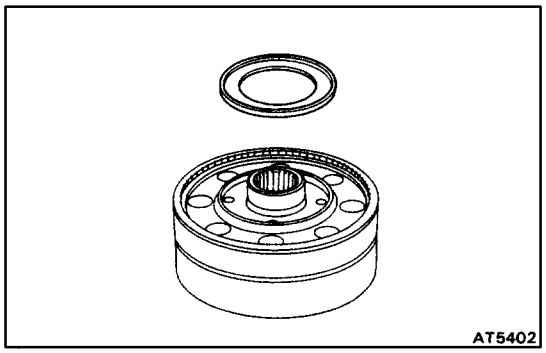
If the piston stroke is less than the limit, parts may have been assembled incorrectly, so check and reassemble again.

If the piston stroke is nonstandard, select another flange.

HINT: There are seven different thicknesses for the flange.

Flange thickness mm (in.)

No.	Thickness	No.	Thickness
26	3.3 (0.130)	11	3.8 (0.150)
25	3.5 (0.138)	23	3.9 (0.154)
12	3.6 (0.142)	None	4.0 (0.157)
24	3.7 (0.146)		



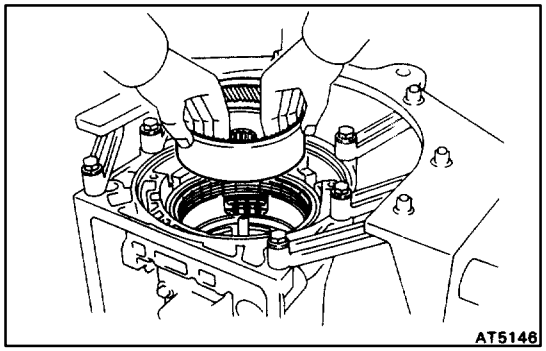
23. INSTALL OVERDRIVE PLANETARY GEAR UNIT WITH OVERDRIVE DIRECT CLUTCH AND ONE–WAY CLUTCH

(a) Coat the race with petroleum jelly and install it onto the overdrive planetary ring gear.

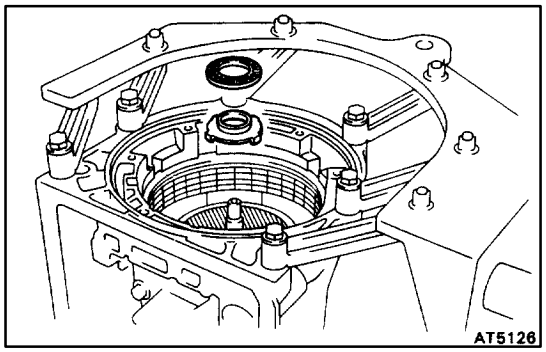
HINT: Diameter of race

mm (in.)

	Inside	Outside
Race	37.1 (1.461)	59.0 (2.323)



(b) Install the overdrive planetary ring gear.

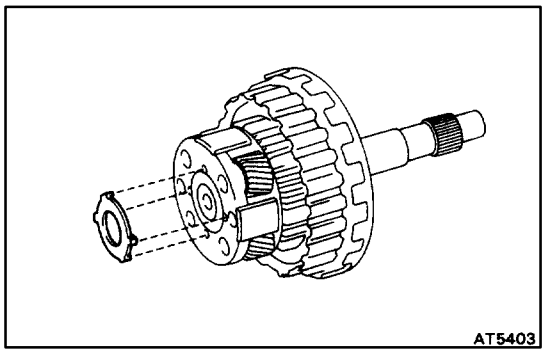


(c) Coat the bearing and race with petroleum jelly and install them onto the planetary ring gear.

HINT: Bearing and race diameter

mm (in.)

	Inside	Outside
Bearing	25.9 (1.020)	47.0 (1.850)
Race	24.0 (0.945)	48.0 (1.890)

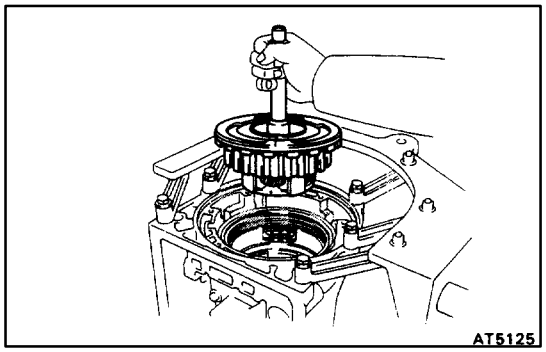


(d) Coat the race with petroleum jelly and install it onto the planetary gear.

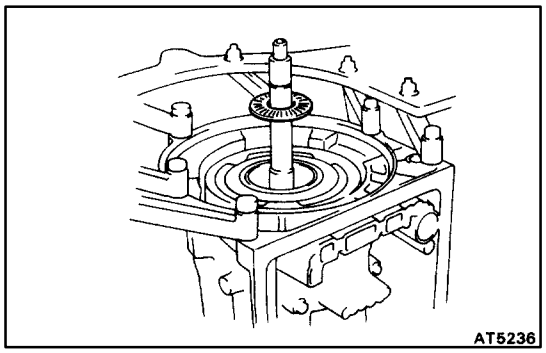
HINT: Diameter of race

mm (in.)

	Inside	Outside
Race	27.2 (1.071)	42.0 (1.654)



(e) Install the overdrive planetary gear with the overdrive direct clutch and one–way clutch.

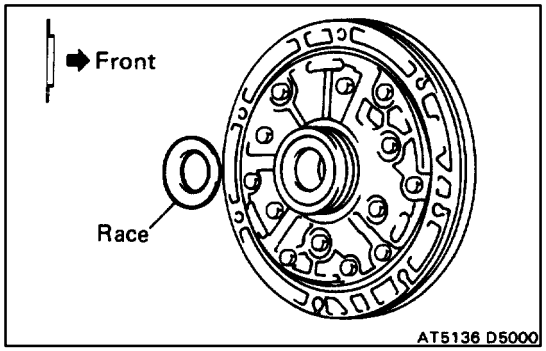


(f) Coat the assembled bearing and race with petroleum jelly and install them onto the overdrive direct clutch.

HINT: Diameter of race

mm (in.)

	Inside	Outside
Bearing and race	28.8 (1.134)	50.4 (1.984)



24. INSTALL OIL PUMP INTO CASE

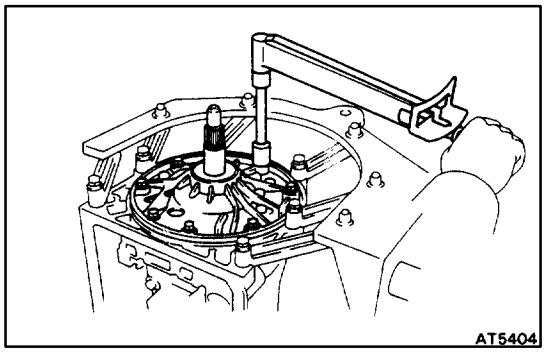
(a) Coat the race with petroleum jelly and install it onto the oil pump.

HINT: Diameter of race

mm (in.)

	Inside	Outside
Race	28.1 (1.106)	47.5 (1.870)

(b) Coat a new O–ring with ATF and install it around the pump body.



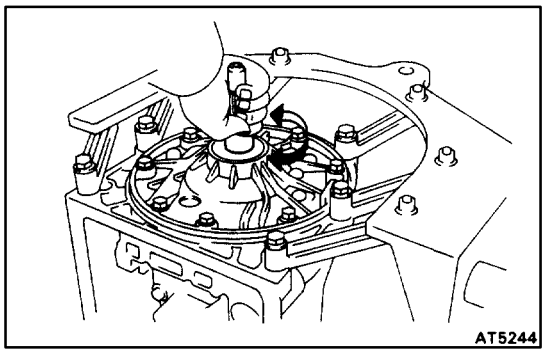
(c) Place the oil pump through the input shaft, and align the bolt holes of the pump body with the transmission case.

(d) Hold the input shaft, and lightly press the oil pump body to slide the oil seal rings into the overdrive 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 the seven bolts.

Torque: 215 kg–cm (16 ft–lb, 21 N·m)



25. CHECK INPUT SHAFT ROTATION

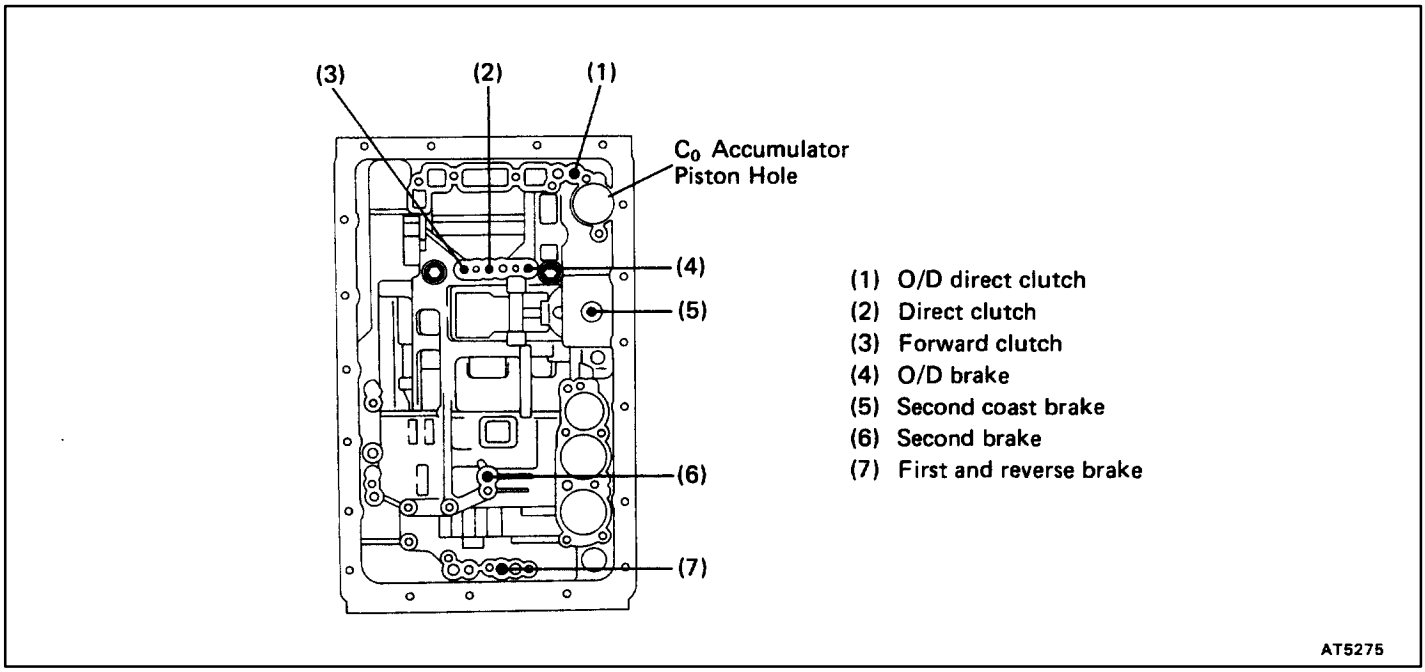
Make sure the input shaft rotates smoothly.

26. INDIVIDUAL PISTON OPERATION INSPECTION

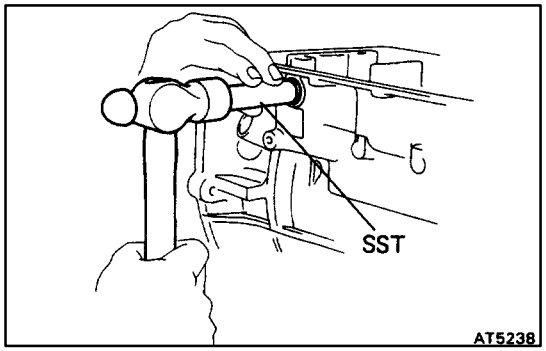
Check for the sound of operation while applying compressed air into the oil hole indicated in the figure.

HINT: When inspecting the O/D direct clutch, check with the C_0 accumulator piston hole closed.

If there is no noise, disassemble and check the installation condition of the parts.



If there is no noise, disassemble and check the installation condition of the parts.

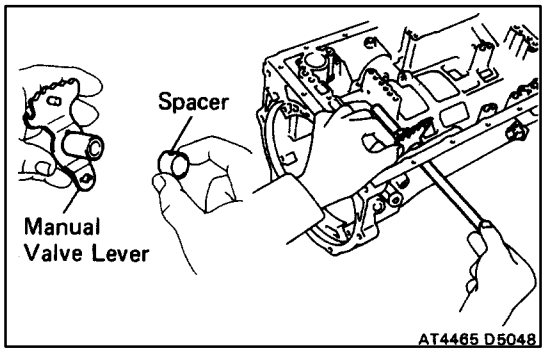


27. INSTALL MANUAL VALVE LEVER, SHAFT AND OIL SEAL

(a) Using SST, drive in new oil seal.

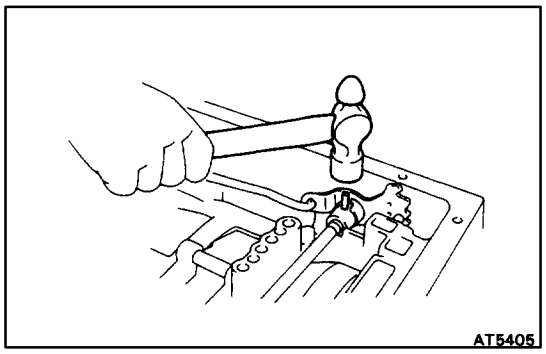
SST 09350–30020 (09350–07110)

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

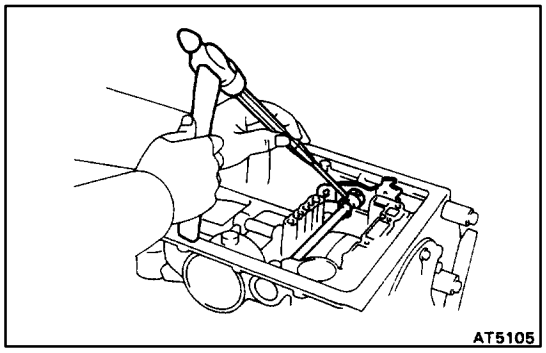


(c) Install a new spacer to the manual valve lever.

(d) Install the manual valve lever shaft to the transmission case through the manual valve lever.

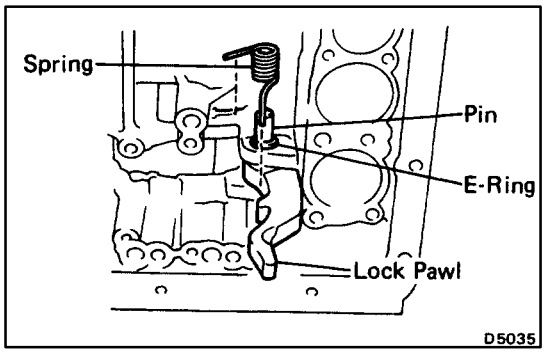


(e) Using a hammer, drive in a new spring pin.



(f) Match the manual valve lever indentation with the spacer hole and calk them with the punch.

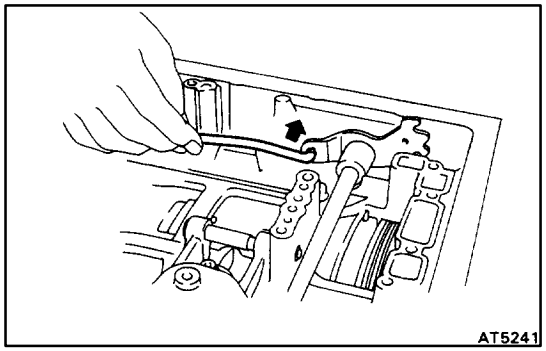
(g) Make sure the shaft rotates smoothly.



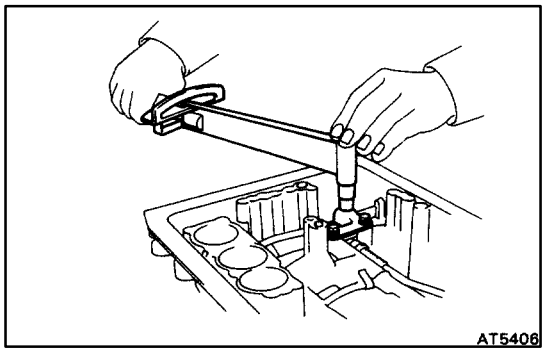
28. INSTALL PARKING LOCK PAWL AND ROD

(a) Install the E–ring to the shaft.

(b) Install the parking lock pawl, shaft and spring.

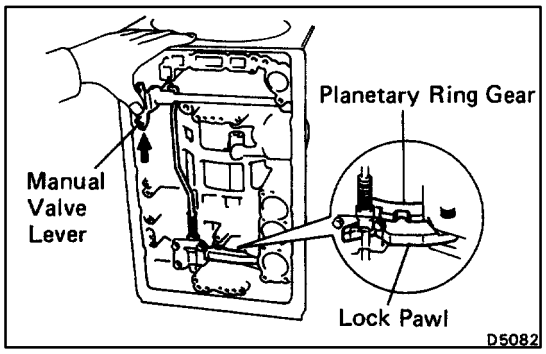


(c) Connect the parking lock rod to the manual valve lever.

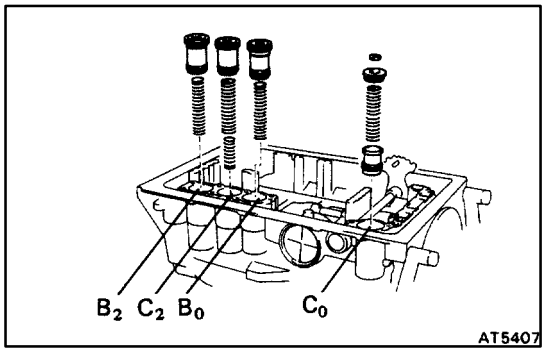


(d) Place the parking lock pawl bracket onto the transmission case and torque the three bolts.

Torque: 75 kg–cm (65 in.–lb, 7 N·m)



(e) Shift the manual valve lever to the P position, and confirm the planetary ring gear is correctly locked up by the lock pawl.

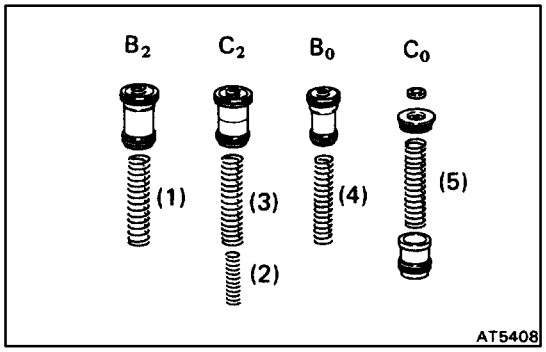


29. INSTALL ACCUMULATOR SPRING AND PISTONS

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

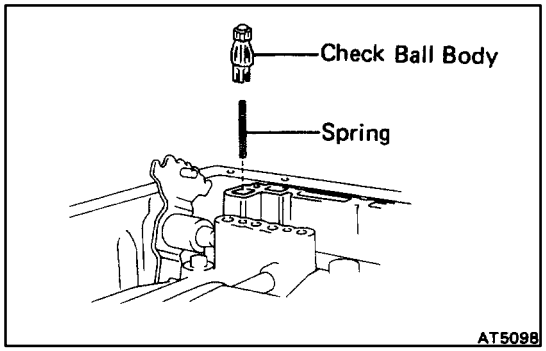
(b) Install the five springs and four accumulator pistons to the bore as shown in the figure.

HINT: The pistons are marked in relief with either C_0, B_0, C_2 or B_2 to discriminate between them.

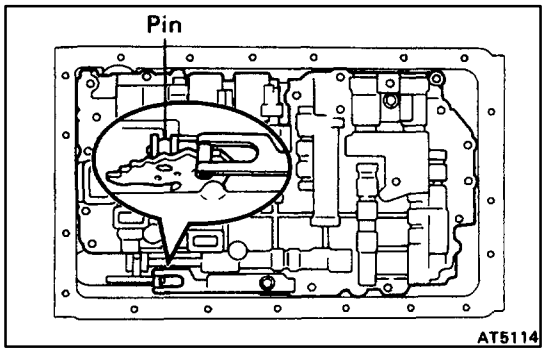


mm (in.)

Spring			Free length	Outer diameter	Color
(1)	B_2		75.25 (2.9626)	19.97 (0.7862)	White & Red
(2)	C_2	Inner	40.0 (1.575)	14.11 (0.5556)	White & Blue
(3)		Outer	70.78 (2.7866)	20.1 (0.791)	White & Yellow
(4)	B_0		66.97 (2.6366)	16.24 (0.6394)	White & Blue
(5)	C_0		65.35 (2.5728)	20.59 (0.8106)	White & Orange

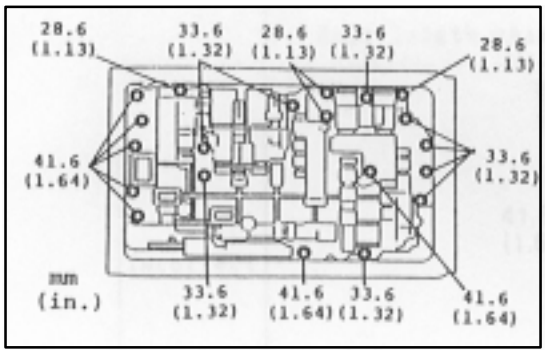


30. INSTALL CHECK BALL BODY AND SPRING



31. INSTALL VALVE BODY

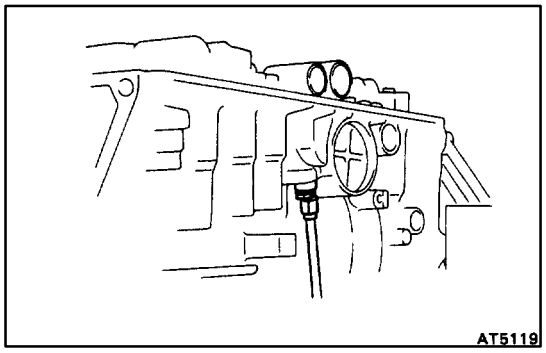
(a) Align the groove of the manual valve to the pin of the lever.



(b) Install the twenty bolts.

Torque: 100 kg–cm (7 ft–lb, 10 N·m)

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

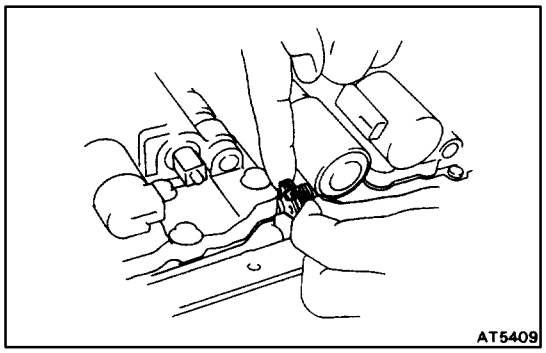


32. INSTALL THROTTLE CABLE

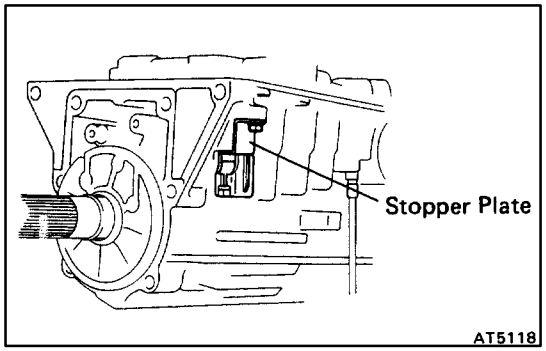
(a) Coat a new O–ring with ATF and install it to the case.

(b) Install the throttle cable to the case.

Torque: 55 kg–cm (48 in.–lb, 5 N·m)



(c) Connect the throttle cable to the cam.

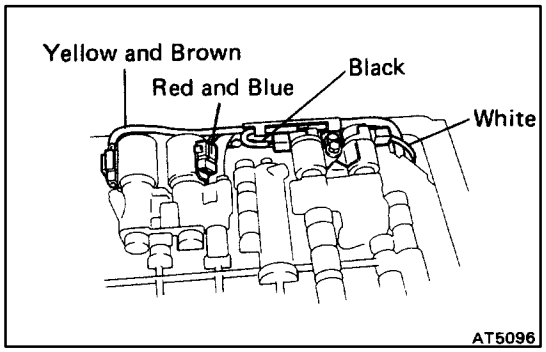


33. INSTALL SOLENOID WIRING

(a) Coat a new O–ring with ATF and install it to the solenoid wire.

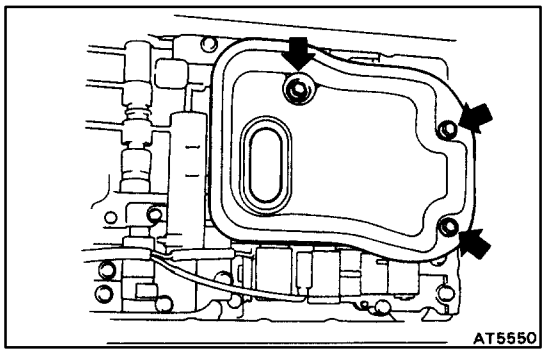
(b) Insert the solenoid wiring to the case and install the stopper plate.

Torque: 55 kg–cm (48 in.–lb, 5 N·m)



(c) Connect the four solenoid connectors.

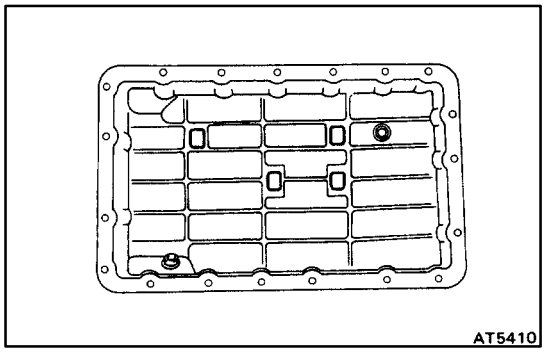
(d) Install the clamp with two bolts.



34. INSTALL OIL STRAINER AND GASKETS

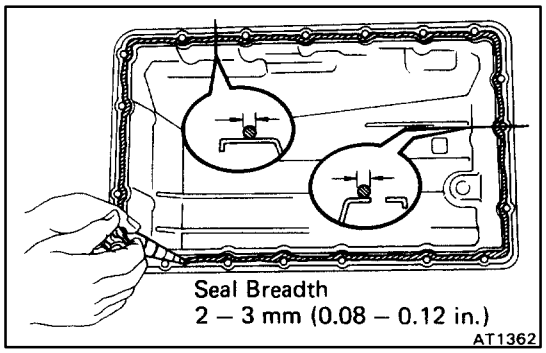
Install the oil strainer and torque the three bolts.

Torque: 100 kg–cm (7 ft–lb, 10 N·m)



35. INSTALL OIL PAN

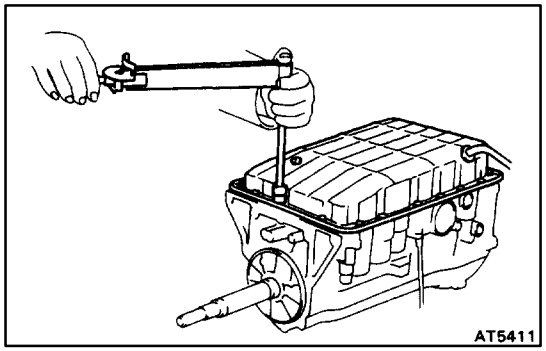
(a) Install the four magnets in the indentations of the oil pan as shown in the figure.



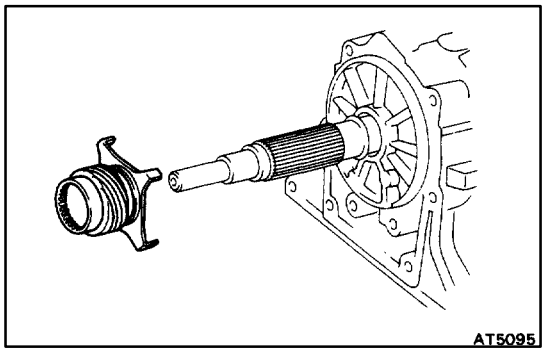
(b) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transmission case and oil pan.

(c) Apply seal packing to the oil pan as shown in the figure.

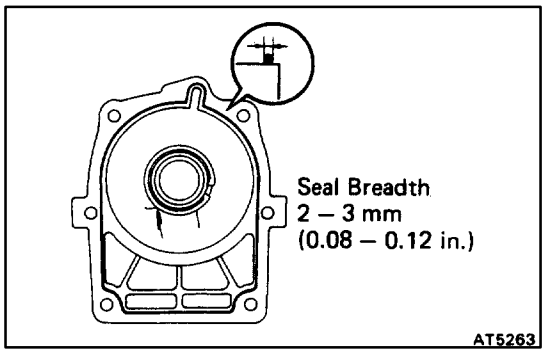
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent



(d) Install and torque the nineteen bolts.
Torque: 75 kg–cm (65 in.–lb, 17 N·m)

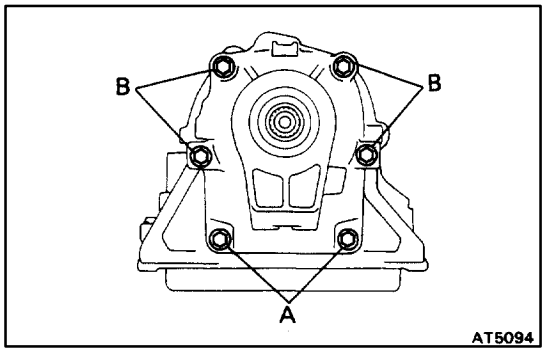


36. INSTALL SPEEDOMETER DRIVE GEAR

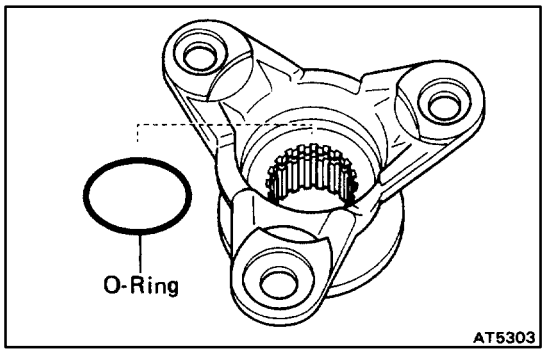


37. INSTALL EXTENSION HOUSING

(a) Apply seal packing to the extension housing as shown in the figure.
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent

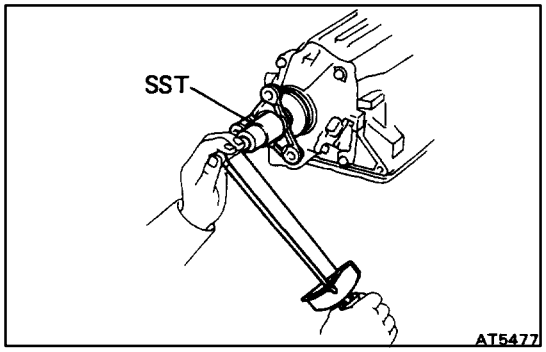


(b) Install and torque the six bolts.
Torque: 345 kg–cm (25 ft–lb, 34 N·m)
HINT: Each bolt length (mm, in.) is indicated in the figure.
A: 35 mm (1.378 in.)
B: 45 mm (1.772 in.)



38. INSTALL TRANSMISSION OUTPUT FLANGE

(a) Install the new O–ring to the output flange.

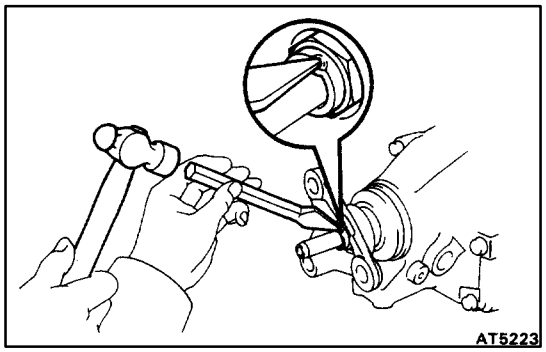


(b) Using SST, install the nut.

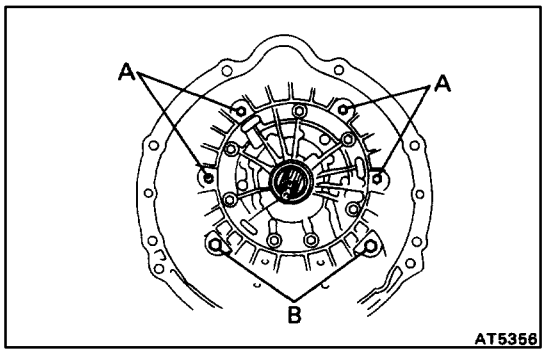
SST 09060–20100

Torque: 1,250 kg–cm (90 ft–lb, 123 N·m)

HINT: Shift the manual valve lever to the P position.



(b) Using a hammer and chisel, stake the nut.

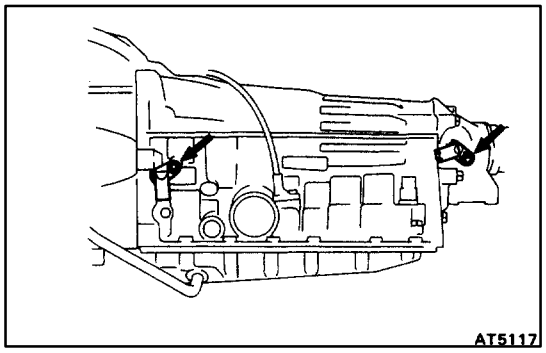


39. REMOVE TRANSMISSION CASE FROM OVERHAUL ATTACHMENT

40. INSTALL TRANSMISSION HOUSING

Install and torque the six bolts.

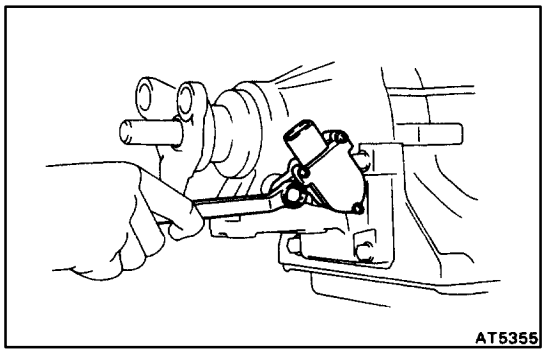
Torque: A bolt: 345 kg–cm (25 ft–lb, 34 N·m)
B bolt: 580 kg–cm (42 ft–lb, 57 N·m)



41. INSTALL SPEED SENSORS

(a) Coat a new O–ring with ATF and install it to the speed sensor.
(b) Install the speed sensors.
(c) Install and torque the bolt.

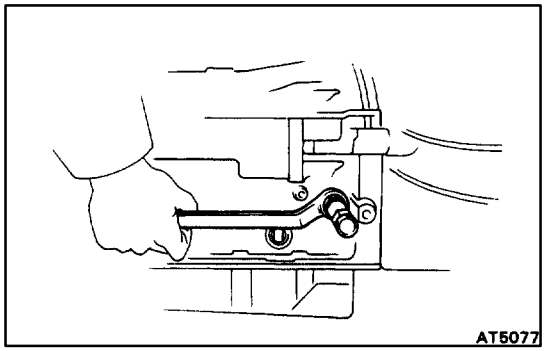
Torque: 55 kg–cm (48 in.–lb, 5 N·m)



42. INSTALL No.1 SPEED SENSOR

(a) Coat a new O–ring with ATF and install it to the No.1 speed sensor.
(b) Install the No.1 speed sensor.
(c) Install and torque the bolt.

Torque: 160 kg–cm (12 ft–lb, 16 N·m)

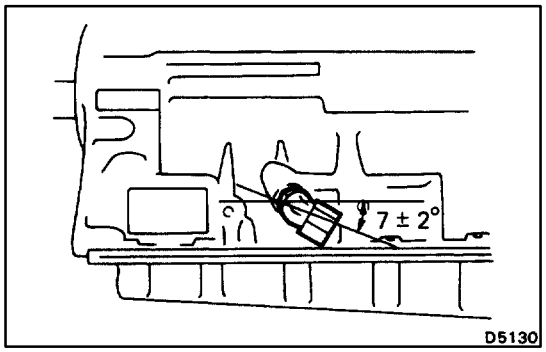


43. INSTALL UNIONS

(a) Coat two new O–rings with ATF and install them to each union.

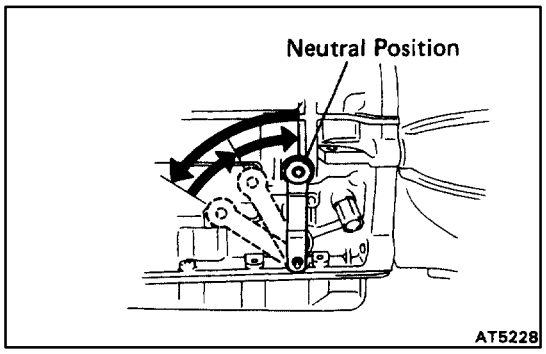
(b) Install each union.

Torque: 300 kg–cm (22 ft–lb, 29 N·m)



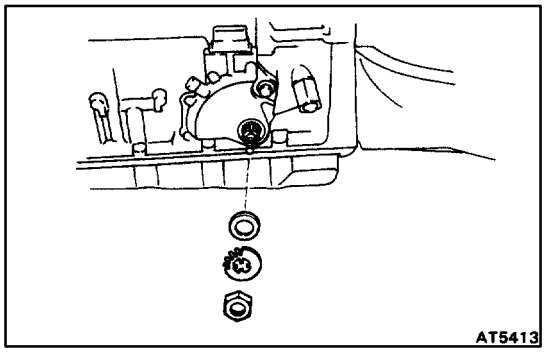
(c) Install the rear union as shown in the figure.

Torque: 300 kg–cm (22 ft–lb, 29 N·m)



44. INSTALL NEUTRAL START SWITCH

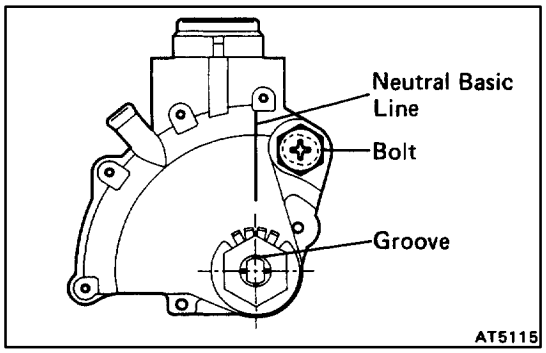
(a) Using the control shaft lever, fully turn the manual lever shaft back and return two notches. It is now in neutral.



(b) Insert the neutral start switch onto the manual valve lever shaft and temporarily tighten the adjusting bolt.

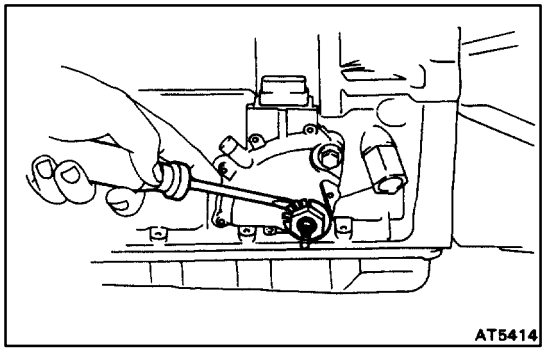
(c) Install the grommet and a new lock washer. Install and torque the nut.

Torque: 70 kg–cm (61 in.–lb, 7 N·m)

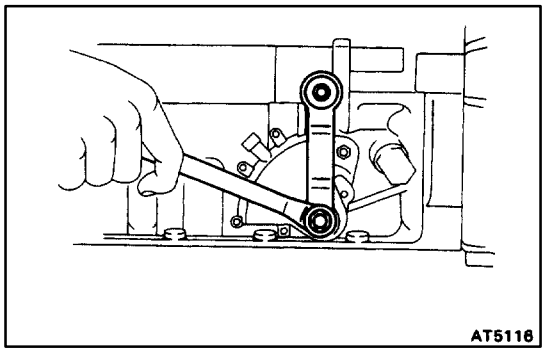


(d) Align the neutral basic line and the switch groove, and tighten the adjusting bolt.

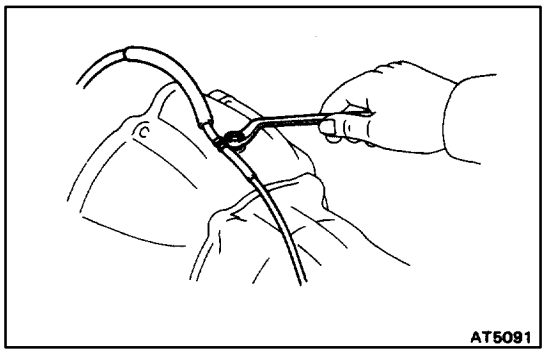
Torque: 130 kg–cm (9 ft–lb, 13 N·m)



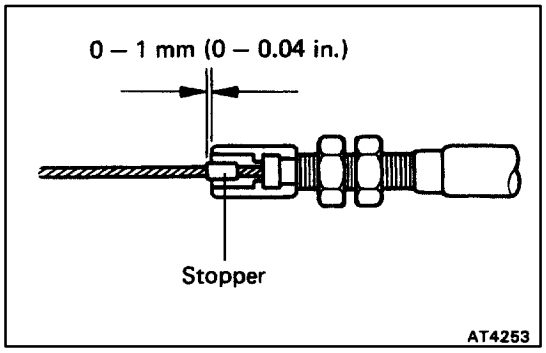
(e) Using a screwdriver, bend the tabs of the lock washer.
HINT: Bend at least two of the lock washer tabs.



45. INSTALL CONTROL SHAFT LEVER
Torque: 160 kg–cm (12 ft–lb, 16 N·m)



46. INSTALL THE THROTTLE CABLE CLAMP
Torque: 75 kg–cm (65 in.–lb, 7 N·m)



47. IF THROTTLE CABLE IS NEW, STAKE STOPPER ON INNER CABLE

(a) Pull the inner cable lightly until a slight resistance is felt and hold it.
(b) Stake a stopper on the inner cable as shown in the illustration.