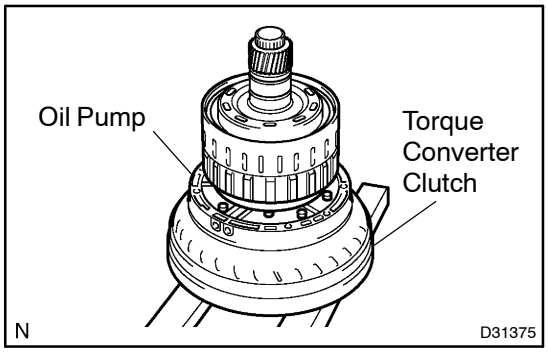
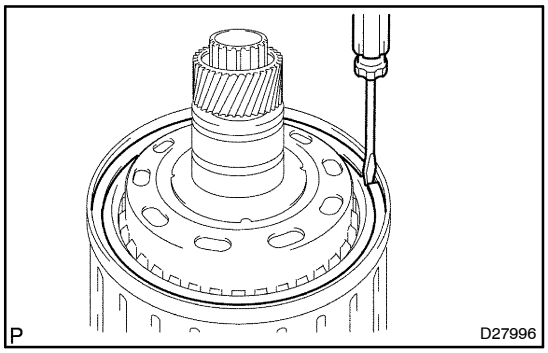
40168–01

OVERHAUL



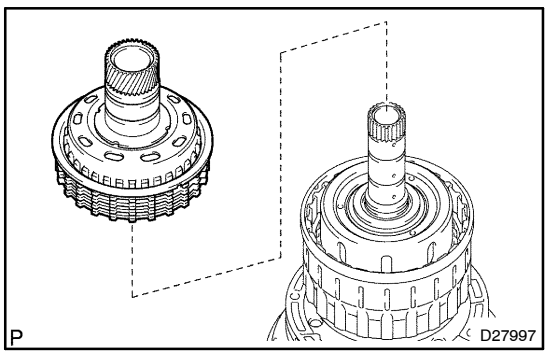
1. FIX CLUTCH DRUM & INPUT SHAFT ASSY

(a) Place the oil pump onto the torque converter clutch, and then place the clutch drum & input shaft assy onto the oil pump.

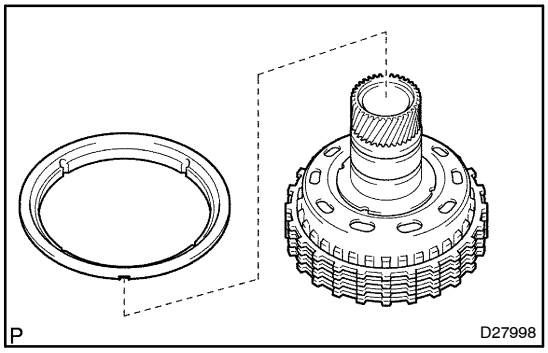


2. REMOVE REVERSE CLUTCH HUB SUB–ASSY

(a) Using a screwdriver, remove the snap ring from the clutch drum and the input shaft assy.

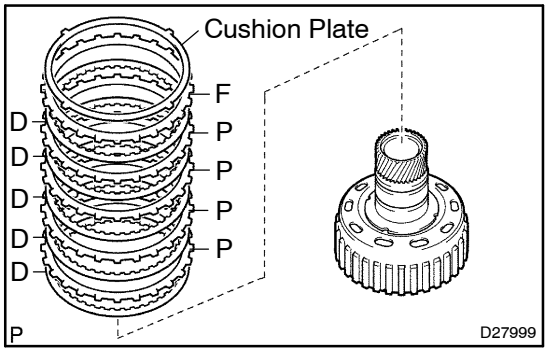


(b) Remove the reverse clutch hub sub assy with the reverse clutch reaction sleeve, the clutch cushion plate, the reverse clutch flange, the 5 reverse clutch discs, and the 4 clutch plates from the clutch drum assy.



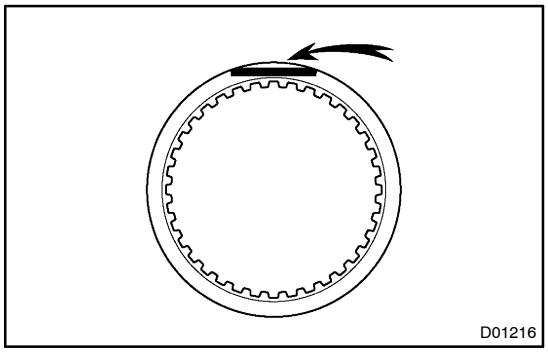
3. REMOVE REVERSE CLUTCH REACTION SLEEVE

(a) Remove the reverse clutch reaction sleeve from the reverse clutch hub sub assy.



4. REMOVE REAR CLUTCH DISC

(a) Remove the clutch cushion plate, the reverse clutch flange, the 4 plates and the 5 discs from the reverse clutch hub.

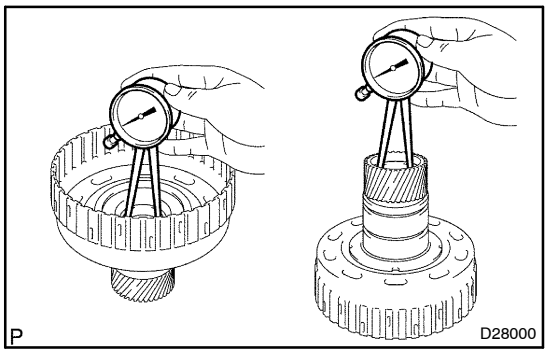


5. INSPECT REAR CLUTCH DISC

(a) Check whether the sliding surface of the disc, the plate and the flange are worn or burnt. If necessary, replace them.

NOTICE:

- **If the lining of the disc is peeled off or discolored, or even if only a part of the printed numbers is damaged, replace all discs.**
- **Before assembling new discs, soak them in ATF for at least 15 minutes.**

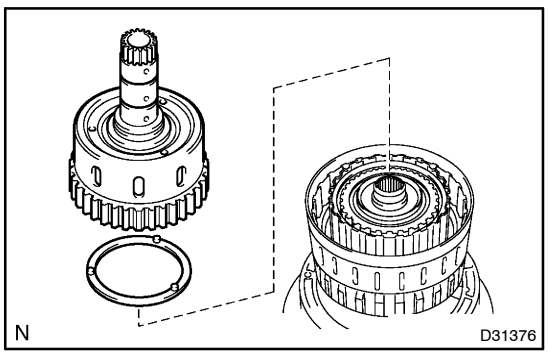


6. INSPECT REVERSE CLUTCH HUB SUB–ASSY

(a) Using a dial indicator, measure the inside diameter of the reverse clutch hub bushing.

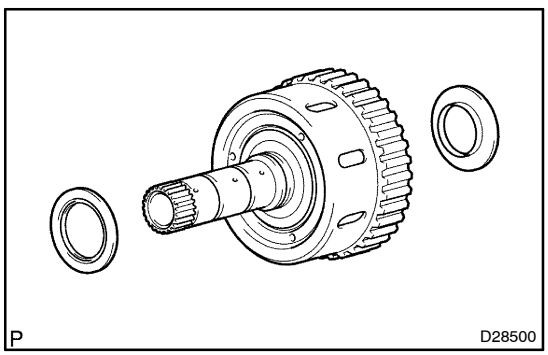
Standard inside diameter:
35.812 to 35.837 mm (1.4099 to 1.4109 in.)
Maximum inside diameter: 35.887 mm (1.4129 in.)

If the inside diameter is greater than the maximum inside diameter, replace the reverse clutch hub.

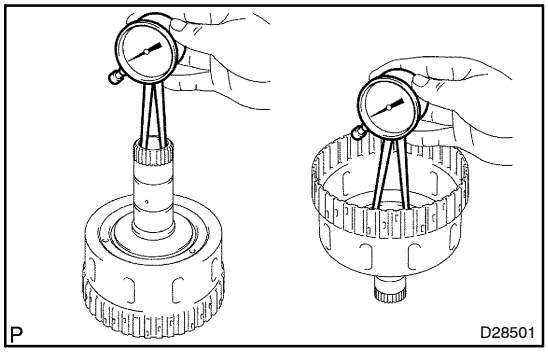


7. REMOVE FORWARD CLUTCH HUB SUB–ASSY

(a) Remove the forward clutch hub sub assy and thrust washer from the clutch drum assy.



(b) Remove the 2 thrust needle roller bearings from the forward clutch hub sub assy.

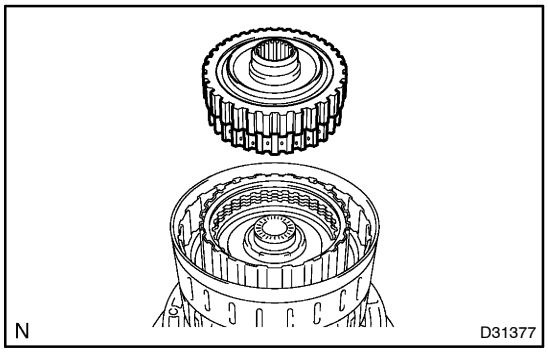


8. INSPECT FORWARD CLUTCH HUB SUB–ASSY

(a) Using a dial indicator, measure the inside diameter of the forward clutch hub bushing.

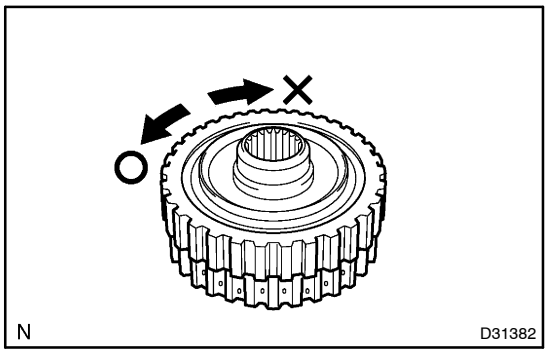
Standard inside diameter:
26.037 to 26.062 mm (1.0251 to 1.0261 in.)
Maximum inside diameter: 26.112 mm (1.028 in.)

If the inside diameter is greater than the maximum inside diameter, replace the forward clutch hub.



9. REMOVE COAST CLUTCH HUB SUB–ASSY

(a) Remove the coast clutch hub sub–assy from the clutch drum sub–assy.

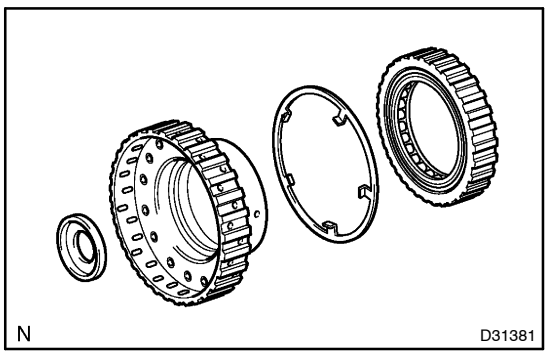


10. INSPECT CLUTCH ASSY, 1 WAY NO.4

(a) Hold the coast clutch hub and turn the 1 way clutch assy.

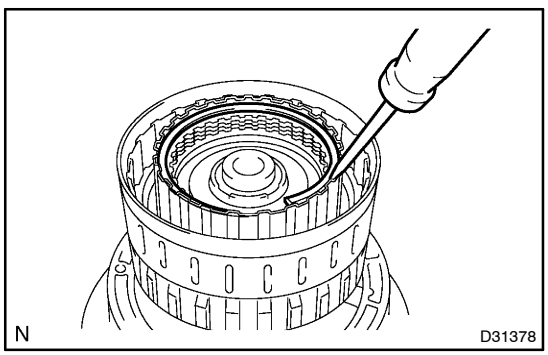
(b) Check that the 1 way clutch assy turns freely counterclockwise and locks clockwise.

If there is a problem with the 1 way clutch, replace the 1 way clutch.



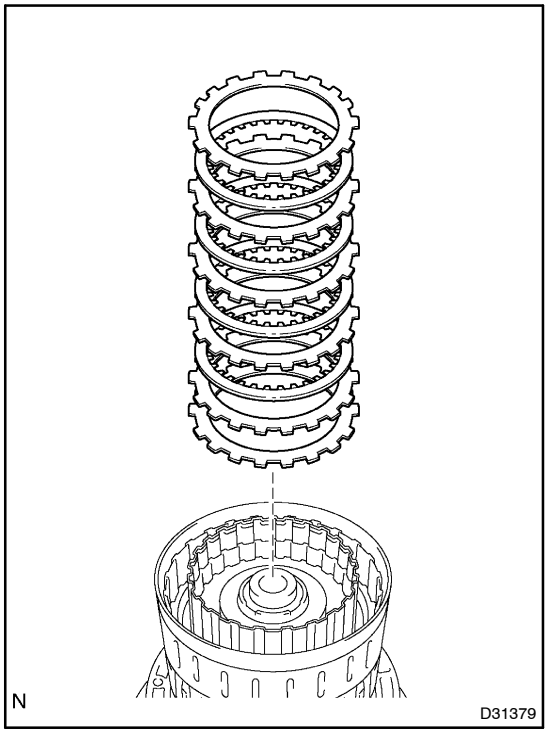
11. REMOVE CLUTCH ASSY, 1 WAY NO.4

(a) Remove the 1 way clutch No.4 and the 2 shaft thrust bearing races from the coast clutch hub.

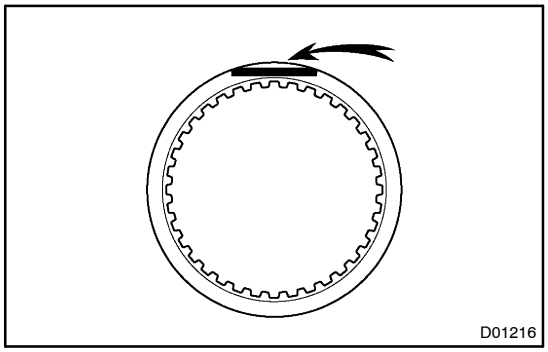


12. REMOVE FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

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



(b) Remove the flange, cushion plate, 4 discs and 4 plates from the input shaft assy.

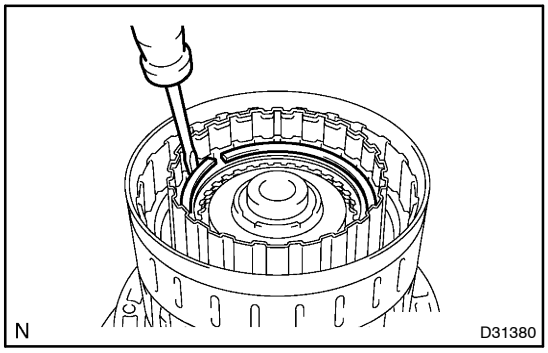


13. INSPECT FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

(a) Check whether the sliding surface of the disc, the plate and the flange are worn or burnt. If necessary, replace them.

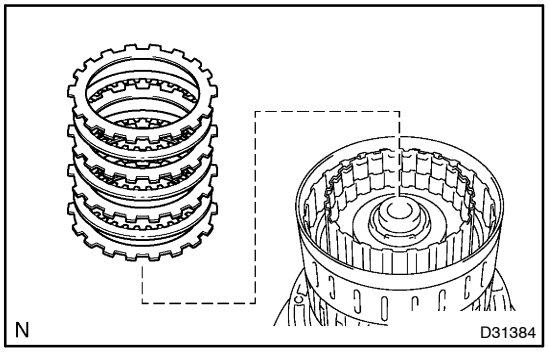
NOTICE:

- **If the lining of the disc is peeled off or discolored, or even if only a part of the printed numbers is damaged, replace all discs.**
- **Before assembling new discs, soak them in ATF for at least 15 minutes.**

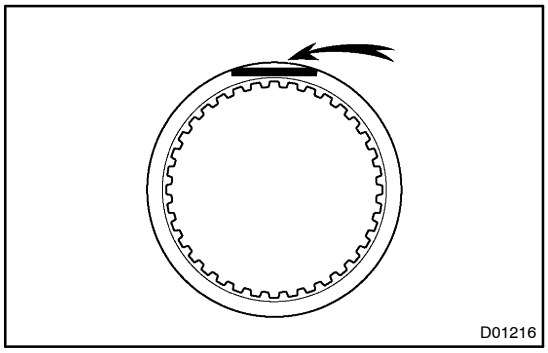


14. REMOVE COAST CLUTCH DISC

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



(b) Remove the flange, the 3 discs and the 3 plates from the input shaft assy.

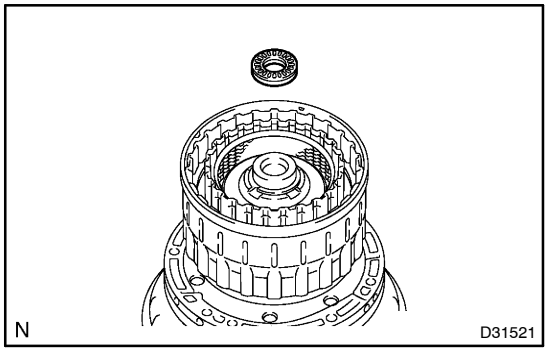


15. INSPECT COAST CLUTCH DISC

(a) Check whether the sliding surface of the disc, the plate and the flange are worn or burnt. If necessary, replace them.

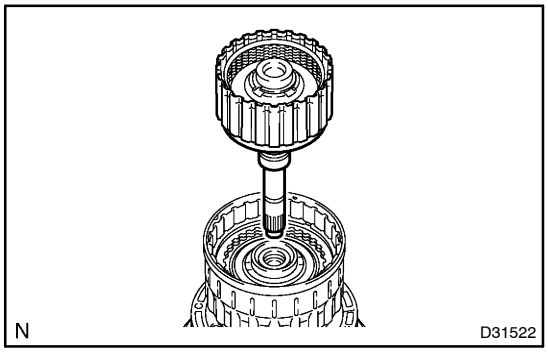
NOTICE:

- **If the lining of the disc is peeled off or discolored, or even if only a part of the printed numbers is damaged, replace all discs.**
- **Before assembling new discs, soak them in ATF for at least 15 minutes.**

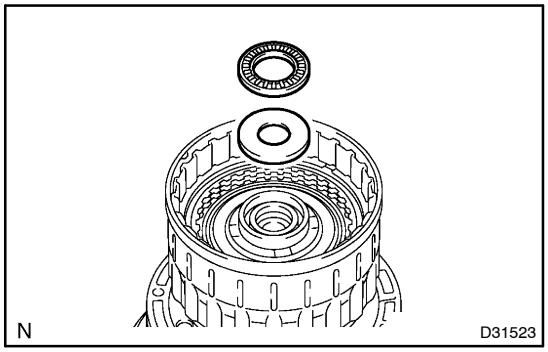


16. REMOVE INPUT SHAFT ASSY

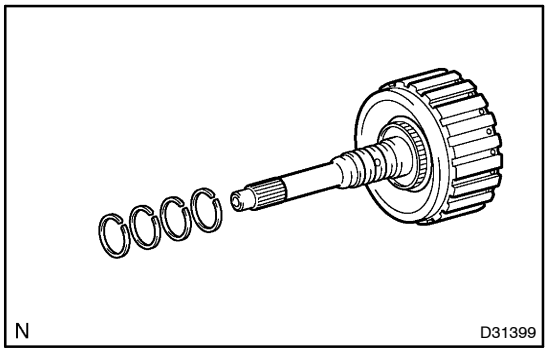
(a) Remove the thrust needle roller bearing from the input shaft assy.



(b) Remove the input shaft assy from the clutch drum assy.

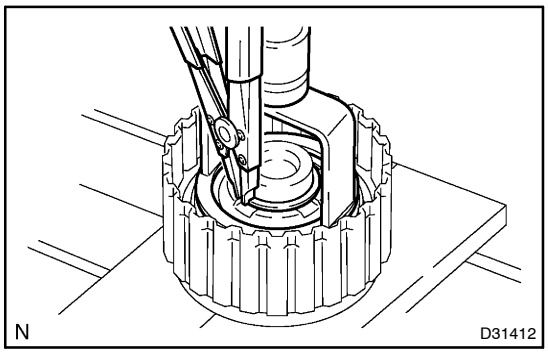


(c) Remove the thrust needle roller bearing and thrust bearing race from the clutch drum assy.



17. REMOVE INPUT SHAFT OIL SEAL RING

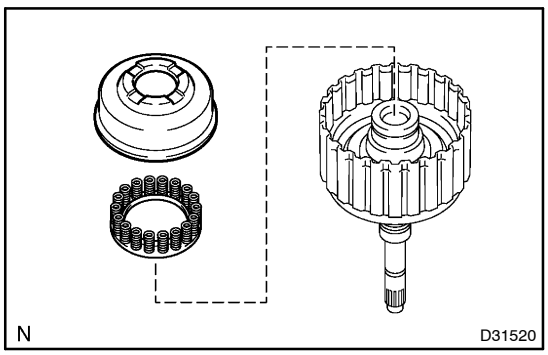
(a) Remove the 4 oil seal rings from the input shaft assy.



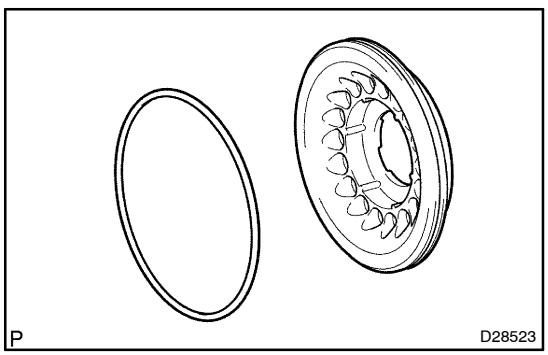
18. REMOVE CLUTCH BALANCER NO.1

(a) Place SST on the clutch balancer No.1, and compress the return spring with a press.
SST 09350–30020 (09350–07040)

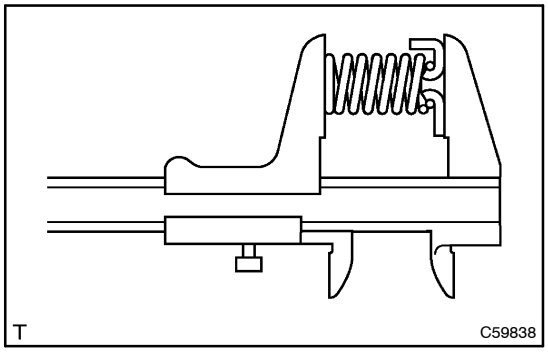
(b) Using SST, remove the snap ring.
SST 09350–30020 (09350–07070)



(c) Remove the clutch balancer No.1 and the forward clutch return spring from the input shaft assy.



(d) Remove the O–ring from the clutch balancer No.1.



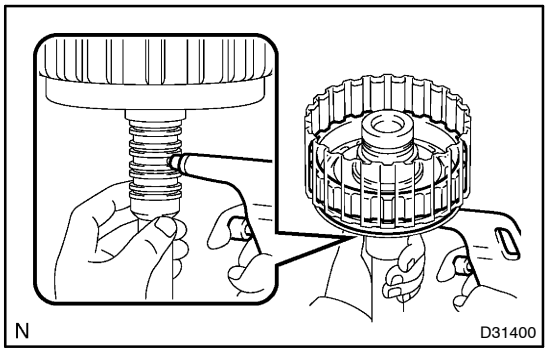
19. INSPECT FORWARD CLUTCH RETURN SPRING SUB–ASSY

(a) Using a vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length: 24.64 mm (0.9701 in.)

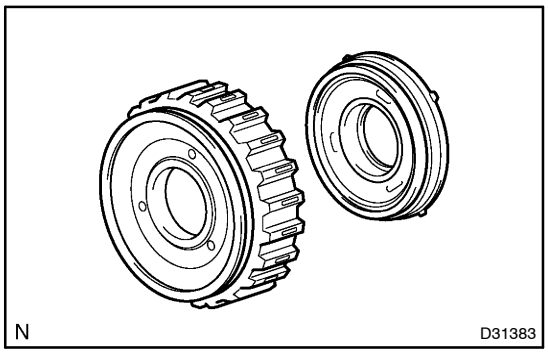
Minimum free length: 13.67 mm (0.538 in.)

If the inside diameter is shorter than the minimum free length, replace the clutch return spring sub–assy.

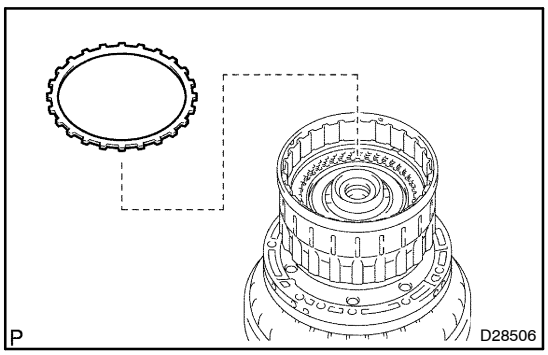


20. REMOVE FORWARD CLUTCH PISTON SUB–ASSY

(a) Holding the forward clutch piston by hand, apply compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the input shaft to remove the forward clutch piston.

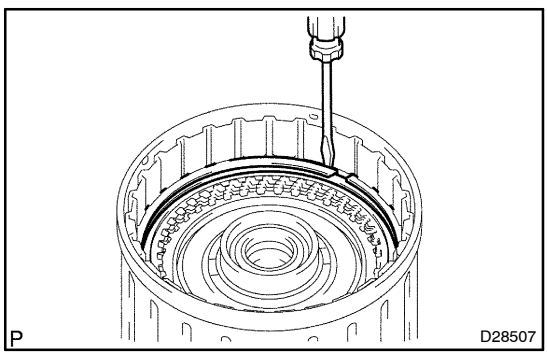


(b) Remove the coast clutch piston from the forward clutch piston.



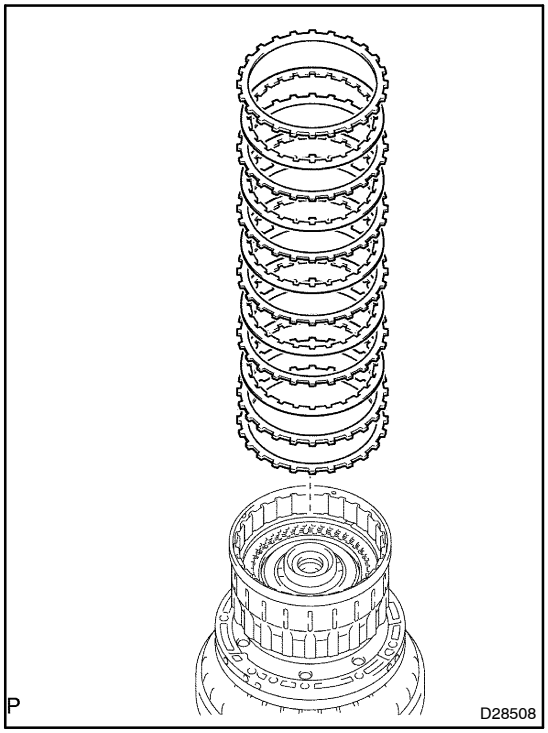
21. REMOVE REVERSE CLUTCH FLANGE

(a) Remove the reverse clutch flange from the clutch drum assy.

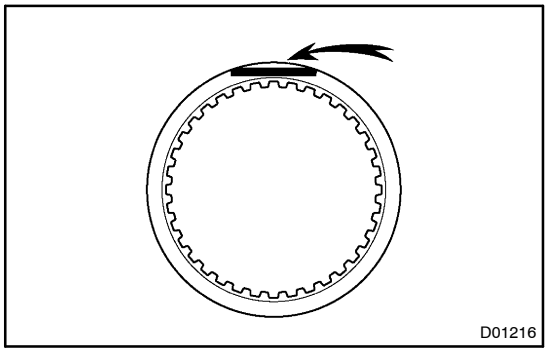


22. REMOVE DIRECT CLUTCH DISK

(a) Using a screwdriver, remove the 2 hole snap rings from the clutch drum assy.



(b) Remove the reverse clutch flange, the 6 plates and the 5 discs from the clutch drum assy.

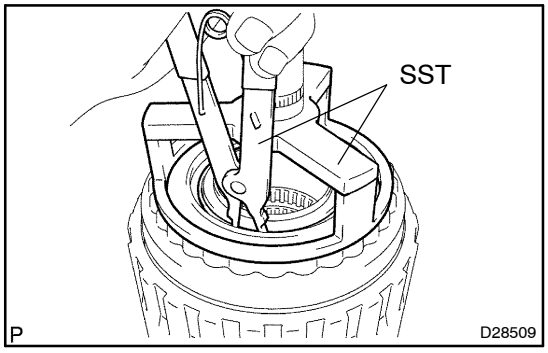


23. INSPECT DIRECT CLUTCH DISK

(a) Check whether the sliding surface of the disc, the plate and the flange are worn or burnt. If necessary, replace them.

NOTICE:

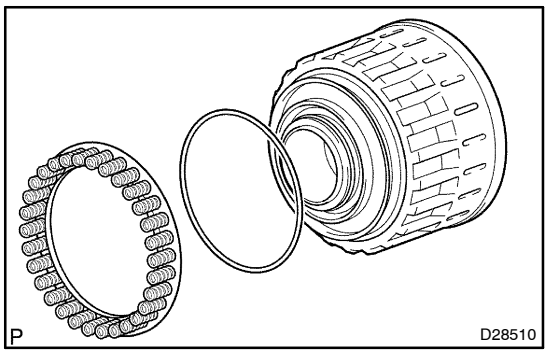
- **If the lining of the disc is peeled off or discolored, or even if only a part of the printed numbers is damaged, replace all discs.**
- **Before assembling new discs, soak them in ATF for at least 15 minutes.**



24. REMOVE CLUTCH BALANCER NO.3

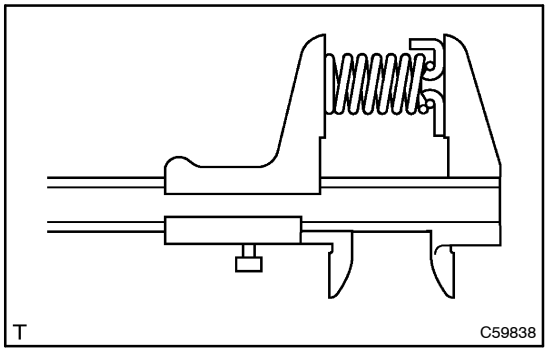
(a) Place SST on the clutch balancer No.3, and compress the return spring with a press.
SST 09387–00070

(b) Using SST, remove the snap ring.
SST 09350–30020 (09350–07070)



25. REMOVE REVERSE CLUTCH RETURN SPRING SUB–ASSY

(a) Remove the reverse clutch return spring and the O–ring from the reverse clutch piston.



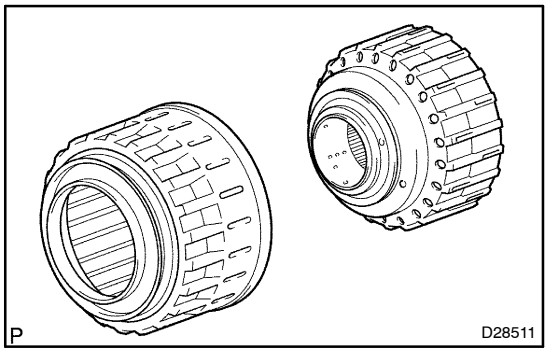
26. INSPECT REVERSE CLUTCH RETURN SPRING SUB–ASSY

(a) Using a vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length: 21.04 mm (0.828 in.)

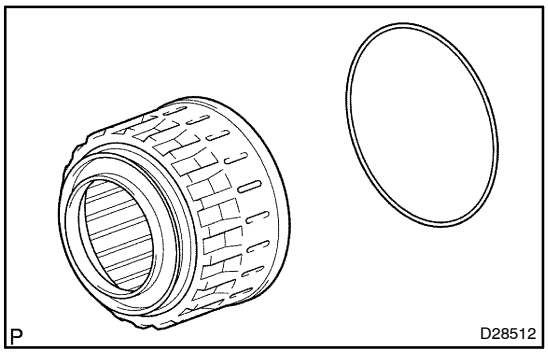
Minimum free length: 11.76 mm (0.463 in.)

If the inside diameter is shorter than the minimum free length, replace the clutch return spring sub–assy.

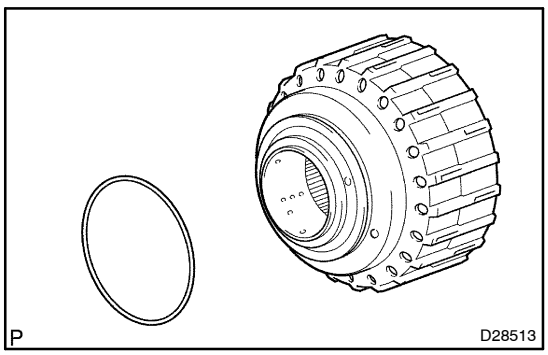


27. REMOVE REVERSE CLUTCH PISTON SUB–ASSY

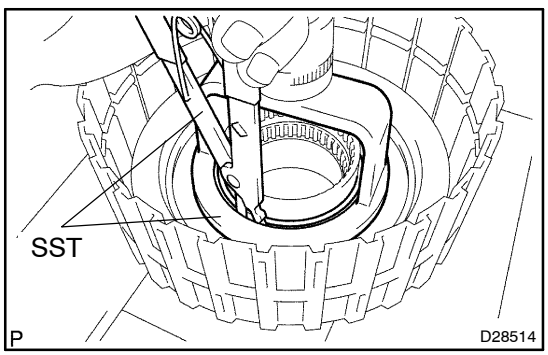
(a) Remove the reverse clutch piston sub–assy from the clutch drum sub assy.



(b) Remove the O–ring from the reverse clutch piston sub assy.



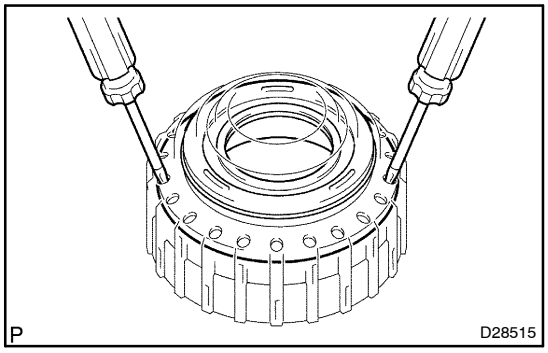
(c) Remove the O–ring from the clutch drum sub assy.



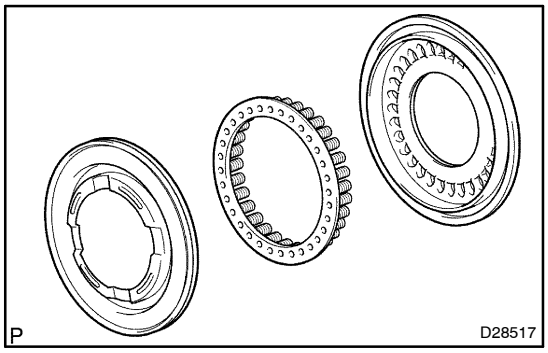
28. REMOVE DIRECT CLUTCH PISTON SUB–ASSY

(a) Place SST on the direct clutch piston, and compress the return spring with a press.

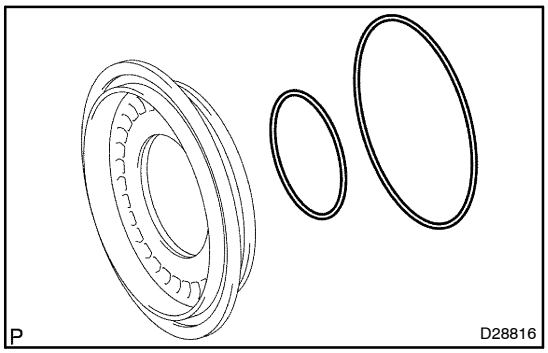
SST 09320–89010, 09350–30020 (09350–07070)



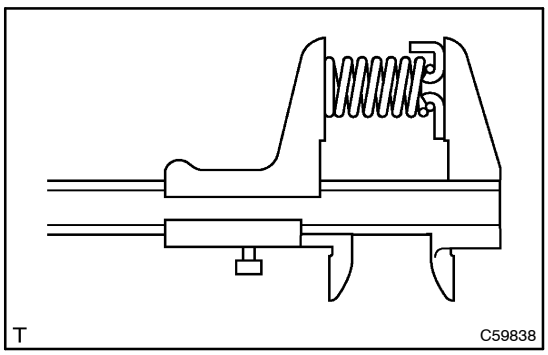
(b) Using 2 screw drivers, remove the direct clutch piston sub assy from the clutch drum.



(c) Remove the clutch balancer No.2 and the direct clutch return spring sub assy from the direct clutch piston sub assy.



(d) Remove the 2 O–rings from the direct clutch piston sub–assy.



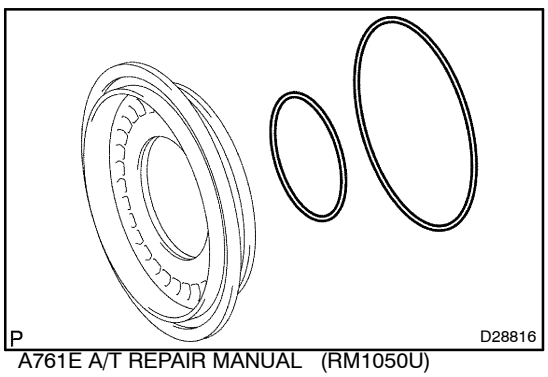
29. INSPECT DIRECT CLUTCH RETURN SPRING SUB–ASSY

(a) Using a vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length: 19.51 mm (0.768 in.)

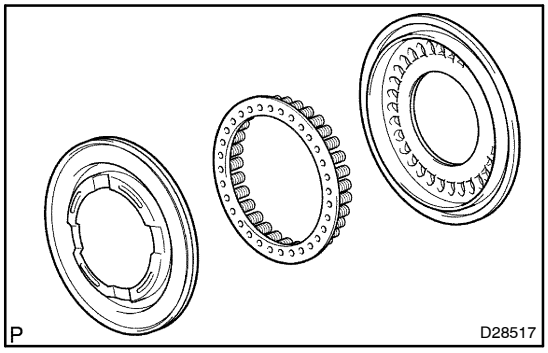
Minimum free length: 11.42 mm (0.450 in.)

If the inside diameter is shorter than the minimum free length, replace the clutch return spring sub–assy.

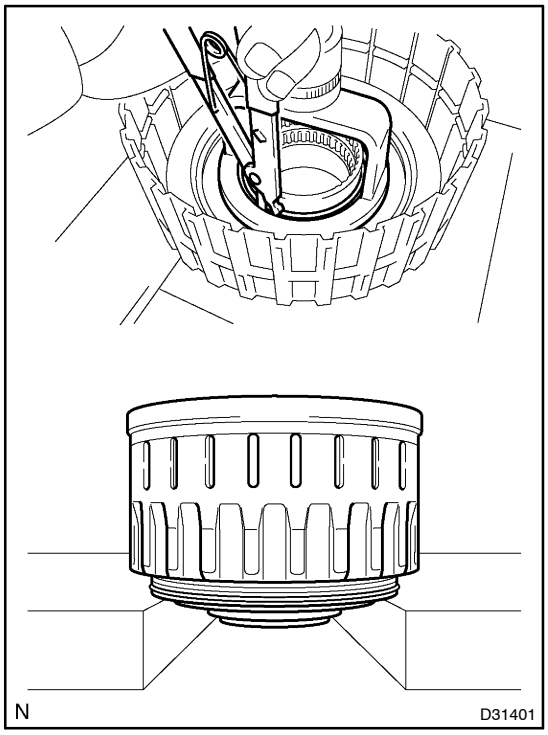


30. INSTALL DIRECT CLUTCH PISTON SUB–ASSY

(a) Coat 2 new O–rings with ATF, and install them in the direct clutch piston.



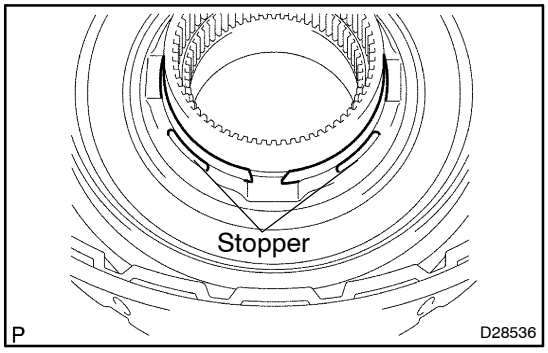
(b) Install the clutch balancer No.2 and the direct clutch return spring to the direct clutch piston sub assy.
(c) Be careful not to damage the O–rings. Press in the direct clutch piston into the clutch drum by hands.



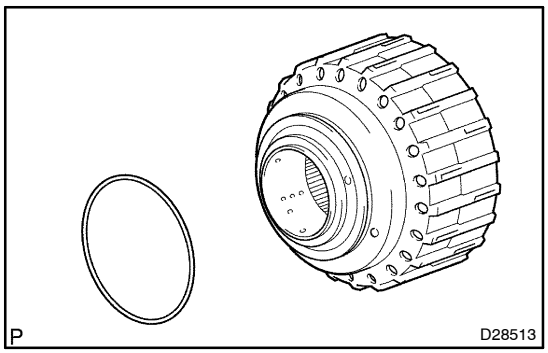
(d) Place SST on the direct clutch piston, and compress the return spring with a press.
SST 09320–89010, 09350–30020 (09350–07070)
(e) Install the snap ring with a snap ring expander.

NOTICE:

- **Be sure the end gap of the snap ring is not aligned with the spring retainer claw.**
- **Stop pressing when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove to prevent the spring sheet from being deformed.**
- **Do not expand the snap ring excessively.**

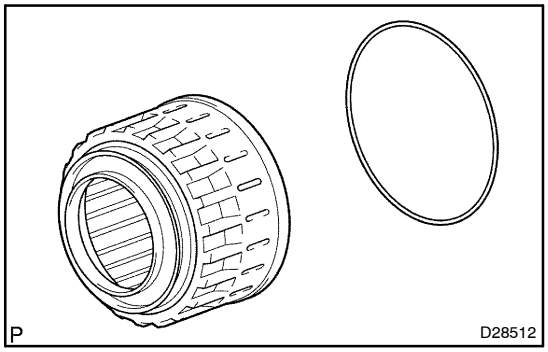


(f) Set the end gap of the snap ring in the piston as shown in the illustration.

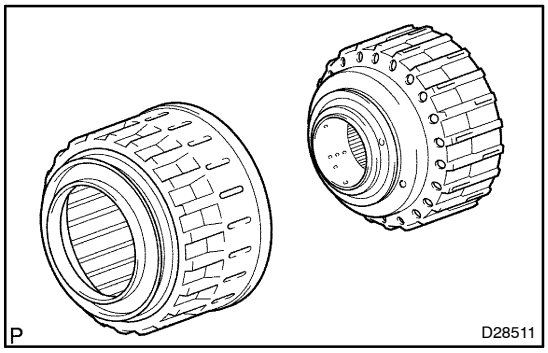


31. INSTALL REVERSE CLUTCH PISTON SUB–ASSY

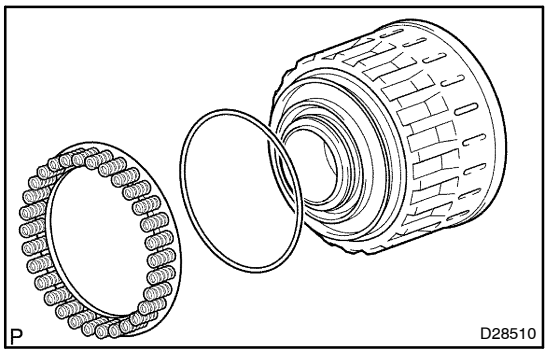
(a) Coat a new O–ring with ATF, and install it on the clutch drum sub assy.



(b) Coat a new O–ring with ATF, and install it on the reverse clutch piston sub assy.



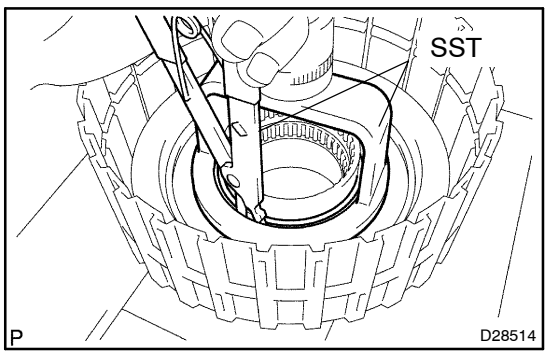
(c) Be careful not to damage the O–ring. Press in the clutch drum sub assy into the reverse clutch piston with both hands.



32. INSTALL REVERSE CLUTCH RETURN SPRING SUB–ASSY

(a) Coat a new O–ring with ATF, and install it on the reverse clutch piston sub assy.

(b) Install the reverse clutch return spring onto the reverse clutch piston sub assy.



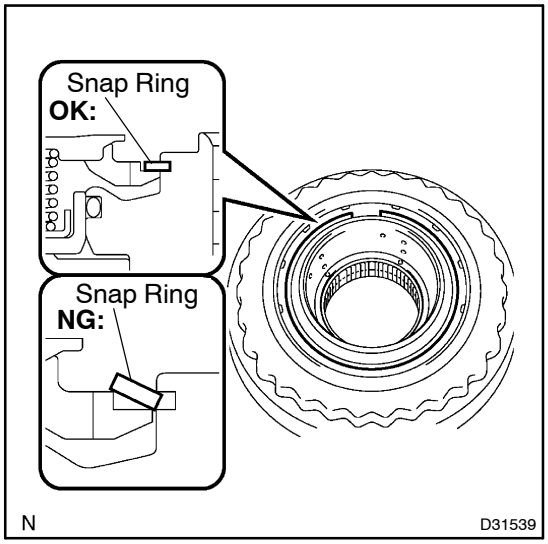
33. INSTALL CLUTCH BALANCER NO.3

(a) Place SST on the clutch balancer No.3, and compress the clutch balancer with a press.
SST 09387–00070

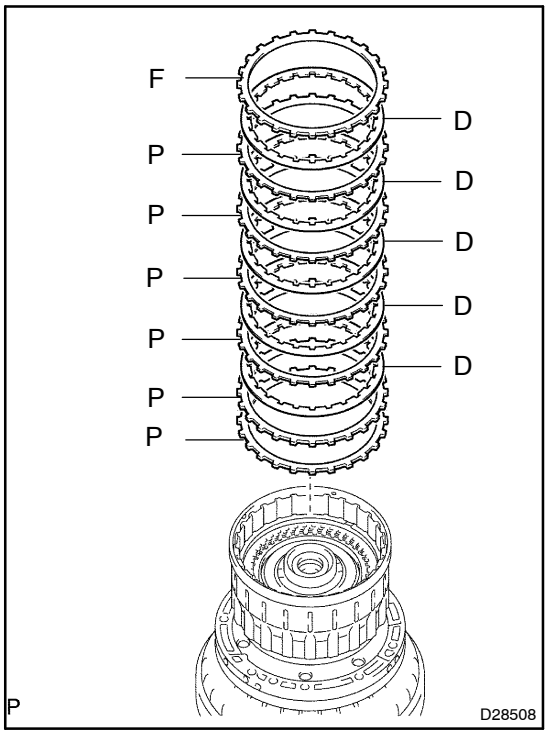
(b) Install the snap ring with a snap ring expander.
SST 09350–30020 (09350–07070)

NOTICE:

- **Be sure the end gap of the snap ring is not aligned with the spring retainer claw.**
- **Stop pressing when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove to prevent the spring sheet from being deformed.**
- **Do not expand the snap ring excessively.**

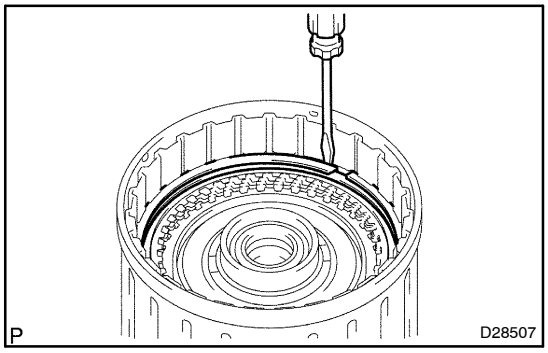


(c) Set the end gap of the snap ring in the piston as shown in the illustration.

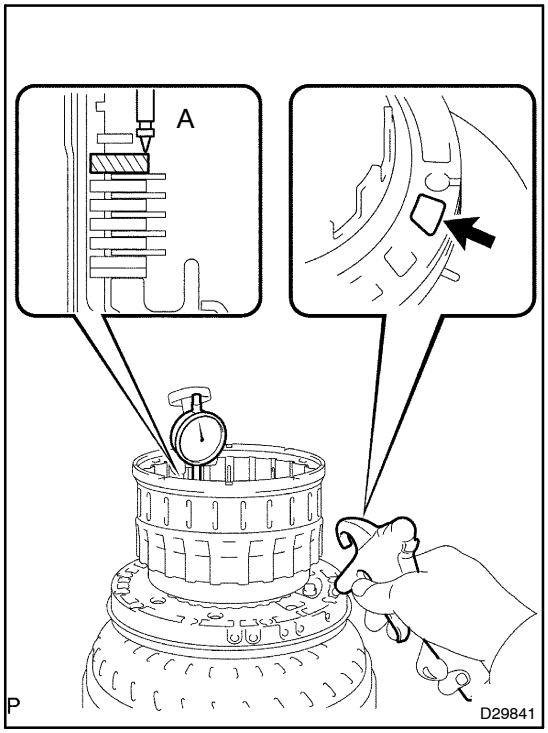


34. INSTALL DIRECT CLUTCH DISK

(a) Install the reverse clutch flange, the 6 plates and the 5 discs on the clutch drum sub assy.
Install in order: P = Plate, D = Disc, F = Flange,
F – D – P – D – P – D – P – D – P – D – P – P



(b) Using a screwdriver, install the 2 hole snap rings on the clutch drum sub assy.



35. INSPECT PACK CLEARANCE OF DIRECT CLUTCH

(a) Using a dial gauge, measure the moving distance (distance A) of the clutch flange at the both ends across a diameter while blowing air from the oil hole as shown in the illustration, and calculate the average.

HINT:

Flange moving distance A = 0.26 to 1.14 mm

Pack Clearance = Flange moving distance A – 0.05 mm

Pack Clearance: 0.5 to 0.8 mm (0.020 to 0.031 in.)

NOTICE:

Install a selective flange (t = 3.4 mm) when measuring the moving distance. (shaded area in the illustration.)

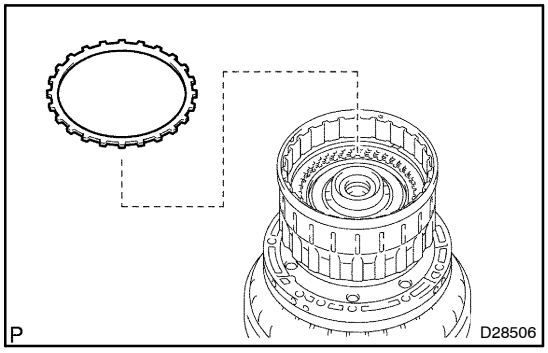
(b) If the pack clearance is outside the standard, select and install a clutch flange that brings the pack clearance within the standard.

HINT:

There is 9 type of flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

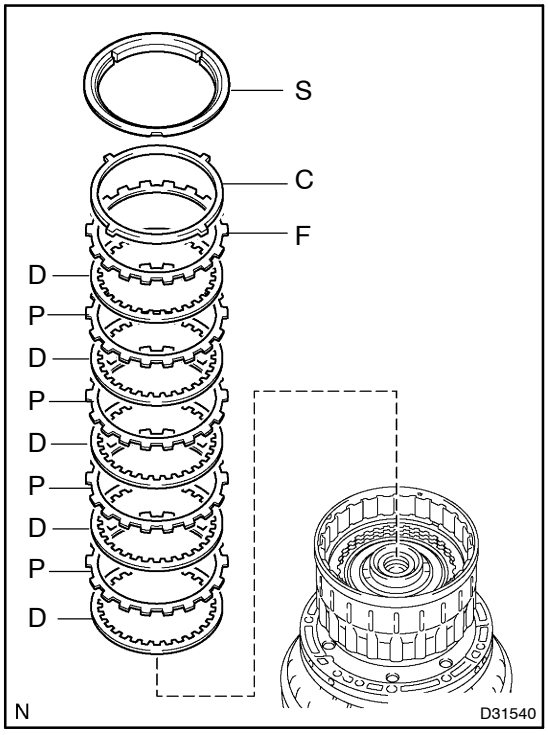
Flange thickness:

No.	Thickness	No.	Thickness
0	3.0 mm (0.118 in.)	5	3.5 mm (0.138 in.)
1	3.1 mm (0.122 in.)	6	3.6 mm (0.142 in.)
2	3.2 mm (0.126 in.)	7	3.7 mm (0.146 in.)
3	3.3 mm (0.130 in.)	8	3.8 mm (0.150 in.)
4	3.4 mm (0.134 in.)	–	–



36. INSTALL REVERSE CLUTCH FLANGE

(a) Install the reverse clutch flange to the clutch drum sub assy.



37. INSTALL REVERSE CLUTCH REACTION SLEEVE

(a) Install the reverse clutch reaction sleeve, the clutch cushion plate, the reverse clutch flange, the 5 reverse clutch discs, and the 4 clutch plates to the reverse clutch hub.
Install in order: P = Plate, D = Disc, F = Flange, S = Sleeve, C = Cushion Plate
S – C – F – D – P – D – P – D – P – D – P – D

(b) Using a screwdriver, install the hole snap ring.

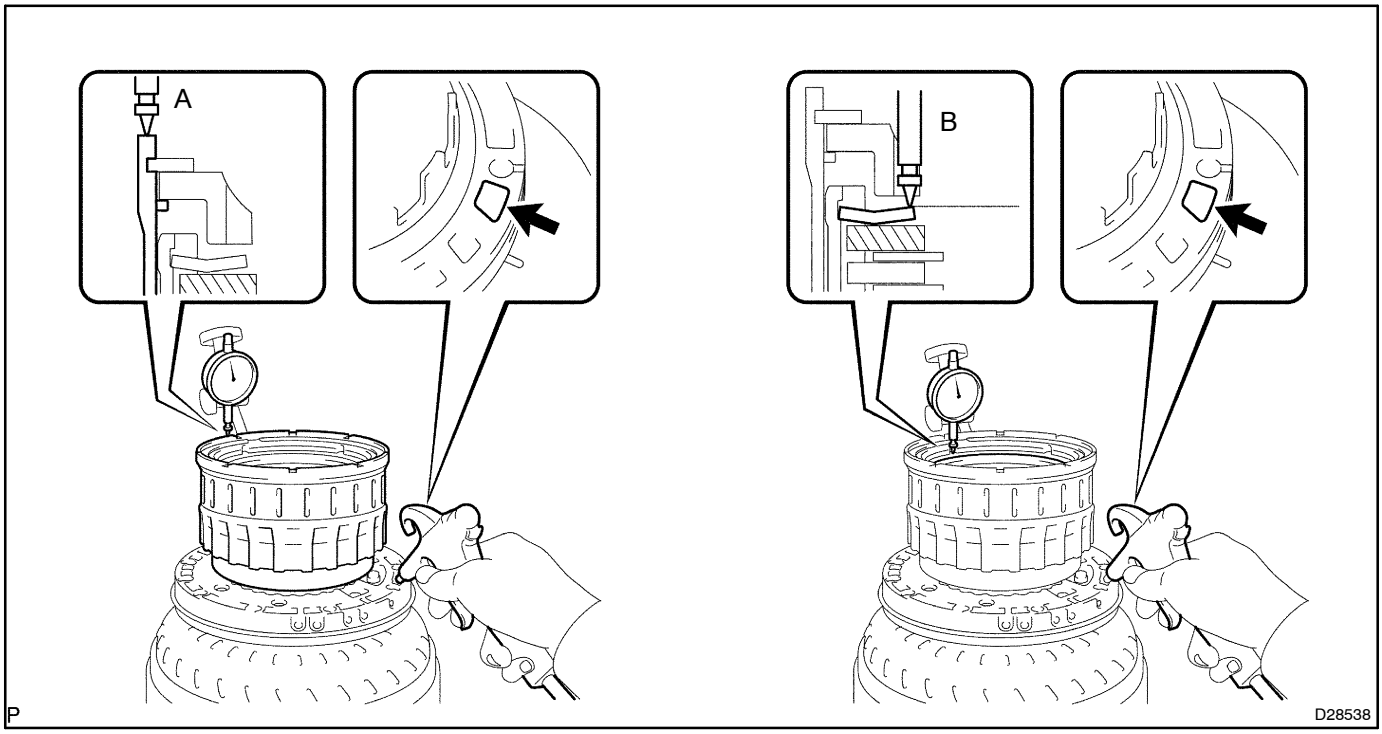
38. INSPECT PACK CLEARANCE OF REVERSE CLUTCH

(a) Using a dial gauge, measure the reverse clutch piston stroke (distance A) and the moving distance (distance B) of the reverse clutch flange at the both ends across a diameter while blowing air (392 kPa, 4 kgf/cm^2, 57 psi) from the oil hole as shown in the illustration, and calculate the average.

HINT:
Piston stroke A = 1.05 to 2.15 mm
Flange moving distance B = 0.72 to 1.08 mm
Pack Clearance = Piston stroke A – Flange moving distance B – 0.06

Pack Clearance: 0.5 to 0.8 mm (0.020 to 0.031 in.)

NOTICE:
Install a selective flange (t = 3.3 mm) when measuring the moving distance. (shaded area in the illustration.)



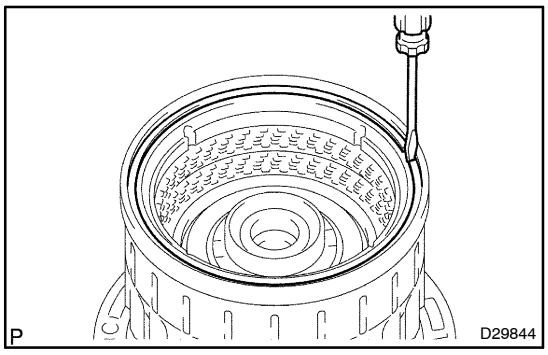
(b) If the pack clearance is outside the standard, select and install a clutch flange that brings the pack clearance within the standard.

HINT:

There are 11 types of flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

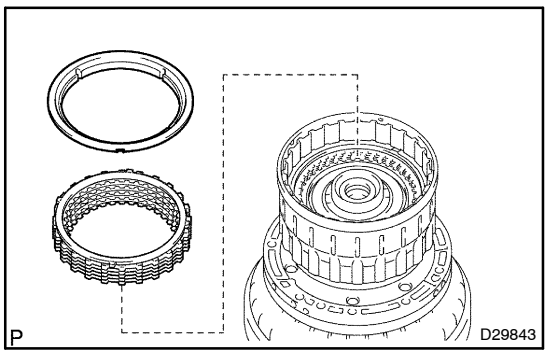
Flange Thickness:

No.	Thickness	No.	Thickness
0	2.8 mm (0.110 in.)	6	3.4 mm (0.134 in.)
1	2.9 mm (0.114 in.)	7	3.5 mm (0.138 in.)
2	3.0 mm (0.118 in.)	8	3.6 mm (0.142 in.)
3	3.1 mm (0.122in.)	9	3.7 mm (0.146 in.)
4	3.2 mm (0.126 in.)	A	3.8 mm (0.150 in.)
5	3.3 mm (0.130 in.)		–

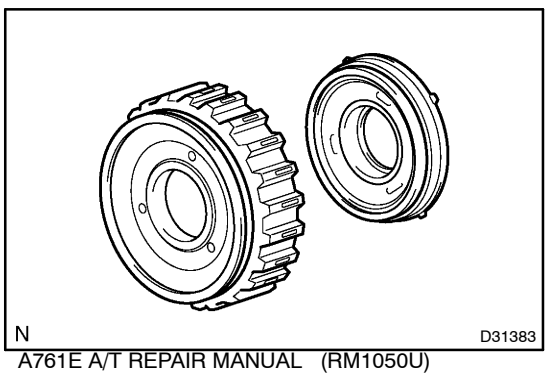


39. REMOVE REVERSE CLUTCH REACTION SLEEVE

(a) Using a screwdriver, remove the snap ring from the clutch drum assy.



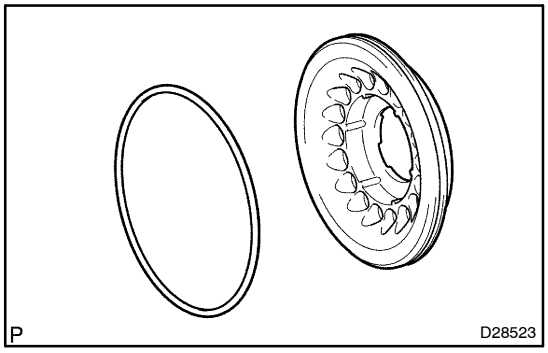
(b) Remove the reverse clutch reaction sleeve, the clutch cushion plate, the reverse clutch flange, the 5 reverse clutch discs, and the 4 clutch plates from the reverse clutch hub sub assy.



40. INSTALL FORWARD CLUTCH PISTON SUB–ASSY

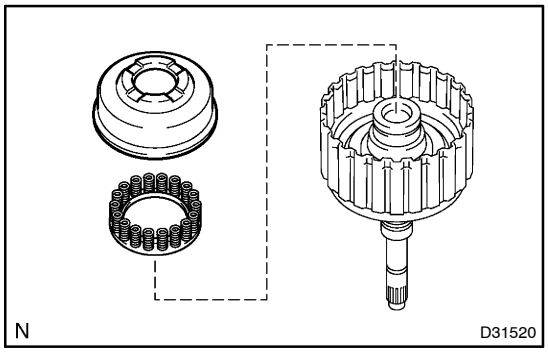
(a) Install the coast clutch piston to the forward clutch piston.

(b) Install the forward clutch piston sub–assy to the input shaft.



41. INSTALL CLUTCH BALANCER NO.1

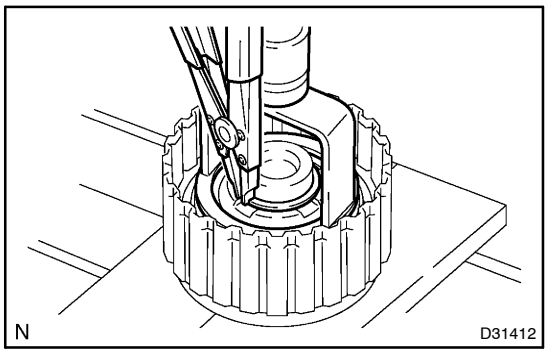
(a) Coat a new O–ring with ATF and install it on the clutch balancer No.1.



(b) Install the clutch balancer No.1 and the forward clutch return spring sub assy.

NOTICE:

Be careful not to damage the O–ring.



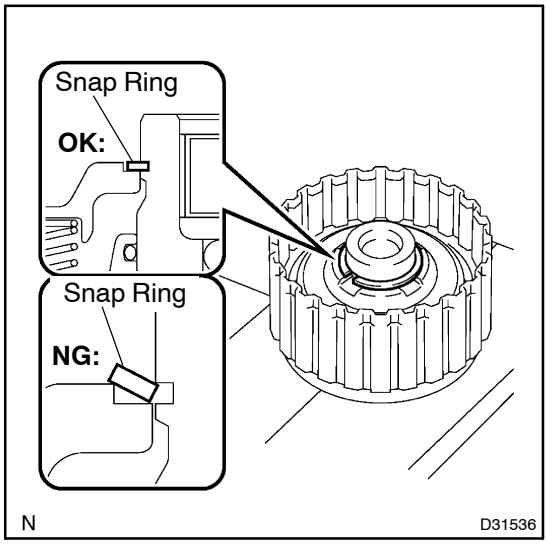
(c) Place SST on the clutch balancer No.1, and compress the return spring with a press.

SST 09350–30020 (09350–07040, 09350–07070)

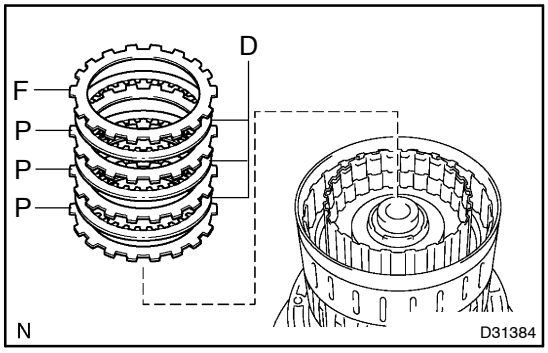
(d) Install the snap ring with a snap ring expander.

NOTICE:

- **Be sure that the end gap of the snap ring is not aligned with the spring retainer claw.**
- **Stop pressing when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove to prevents the spring sheet from being deformed.**
- **Do not expand the snap ring excessively.**



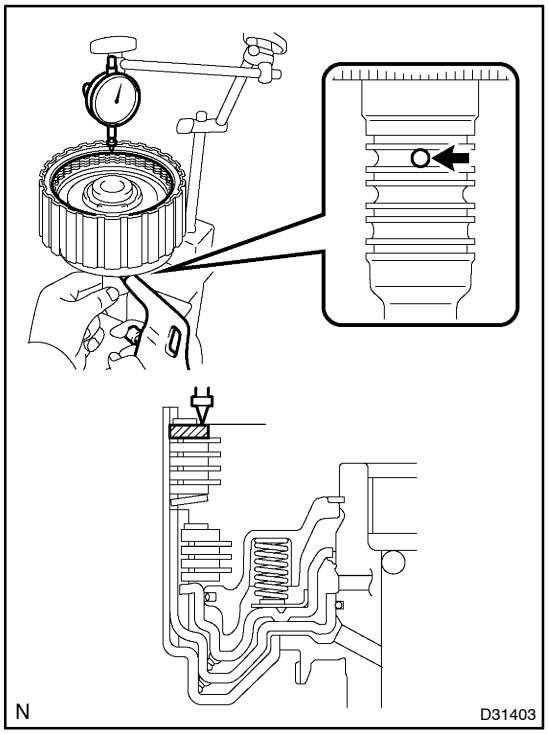
(e) Set the end gap of the snap ring in the piston as shown in the illustration.



42. INSTALL COAST CLUTCH DISC

(a) Install the flange, the 3 discs and the 3 plates to the forward clutch piston.

(b) Using a screwdriver, install the hole snap ring.



43. INSPECT PACK CLEARANCE OF COAST CLUTCH

(a) Using a dial gauge, measure the moving distance (distance A) of the clutch flange at the both ends across a diameter while blowing air from the oil hole as shown in the illustration, and calculate the average.

HINT:

Flange moving distance A =

0.38 to 1.48 mm (0.01496 to 0.0583 in.)

Pack Clearance =

Flange moving distance A – 0.02 mm (0.0008 in.)

Pack Clearance: 0.3 to 0.6 mm (0.012 to 0.024 in.)

NOTICE:

Install a selective flange (t = 3.0 mm) when measuring the moving distance. (shaded area in the illustration.)

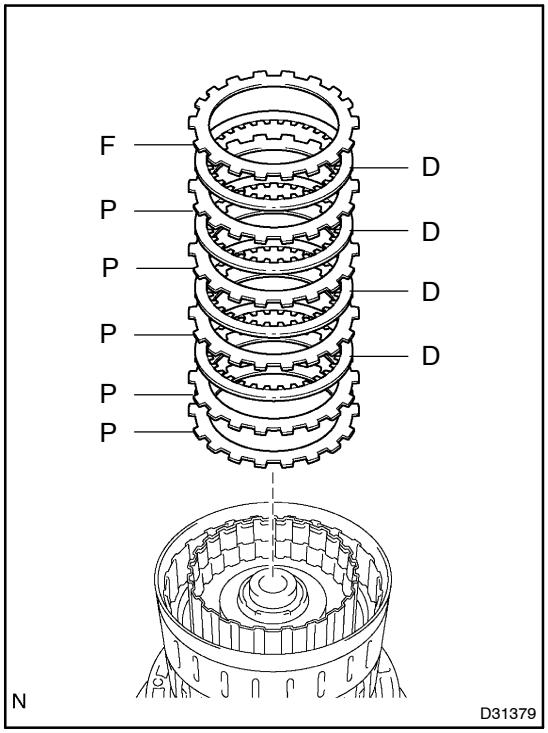
(b) If the pack clearance is outside the standard, select and install a clutch flange that brings the pack clearance within the standard.

HINT:

There are 11 types of flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

Flange thickness

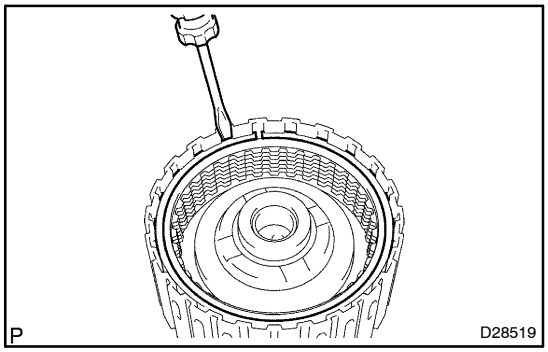
No.	Thickness	No.	Thickness
0	3.0 mm (0.118 in.)	5	3.5 mm (0.138 in.)
1	3.1 mm (0.122 in.)	6	3.6 mm (0.142 in.)
2	3.2 mm (0.126 in.)	7	3.7 mm (0.146 in.)
3	3.3 mm (0.130 in.)	8	3.8 mm (0.150 in.)
4	3.4 mm (0.134 in.)	9	3.9 mm (0.154 in.)



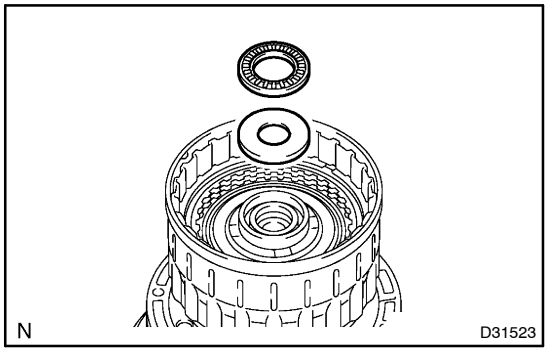
44. INSTALL FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

(a) Install the flange, the 4 discs and the 5 plates to the input shaft assy.

Install in order: P = Plate, D = Disc, F = Flange,
F – D – P – D – P – D – P – D – P – P

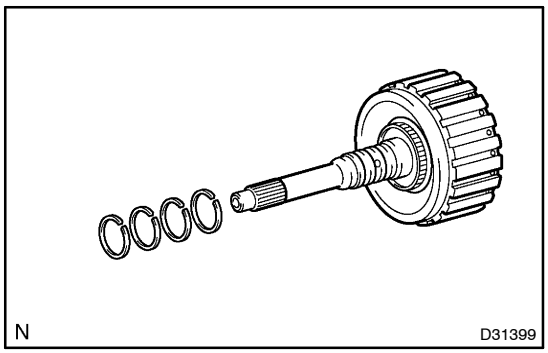


(b) Using a screwdriver, install the hole snap ring.



(c) Install the thrust needle roller bearing and thrust bearing race.

	Inside	Outside
Thrust needle roller bearing	21.3 mm (0.839 in.)	41.1 mm (1.618 in.)
Thrust bearing race No.2	22.6 mm (0.890 in.)	44.8 mm (1.764 in.)



45. INSTALL INPUT SHAFT OIL SEAL RING

(a) Coat the 4 oil seal rings with ATF.

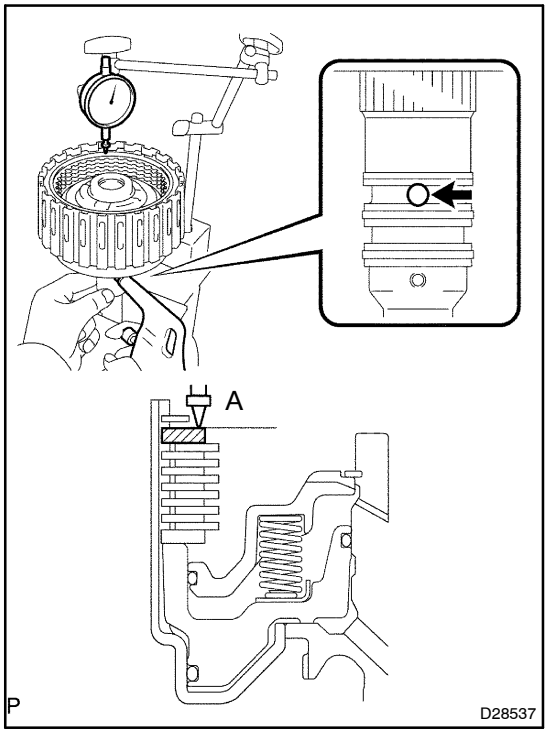
(b) Squeeze the ends of the 4 oil seal rings together, and then install them to the starter shaft groove.

NOTICE:

Do not expand the ring ends excessively.

HINT:

After installing the oil seal rings, check that they rotate smoothly.



46. INSPECT PACK CLEARANCE OF FORWARD CLUTCH

(a) Using a dial gauge, measure the moving distance (distance A) of the clutch flange at the both ends across a diameter while blowing air from the oil hole as shown in the illustration, and calculate the average.

HINT:

Flange moving distance A = 0.36 to 1.50 mm

Pack Clearance = Flange moving distance A – 0.11 mm

Pack Clearance: 0.56 – 0.86 mm (0.0220 to .0339 in.)

NOTICE:

Install a selective flange (t = 3.4 mm) when measuring the moving distance. (shaded area in the illustration.)

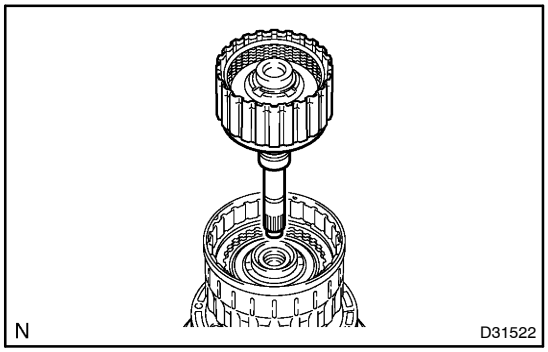
(b) If the pack clearance is outside the standard, select and install a clutch flange that brings the pack clearance within the standard.

HINT:

There are 11 types of flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

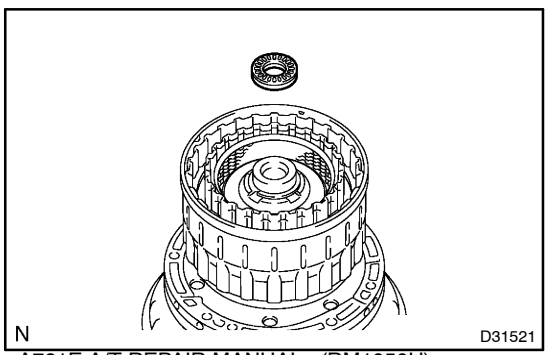
Flange thickness

No.	Thickness	No.	Thickness
0	3.0 mm (0.118 in.)	6	3.6 mm (0.142 in.)
1	3.1 mm (0.122 in.)	7	3.7 mm (0.146 in.)
2	3.2 mm (0.126 in.)	8	3.8 mm (0.150 in.)
3	3.3 mm (0.130 in.)	9	3.9 mm (0.154 in.)
4	3.4 mm (0.134 in.)	A	4.0 mm (0.158 in.)
5	3.5 mm (0.138 in.)		–



47. INSTALL INPUT SHAFT ASSY

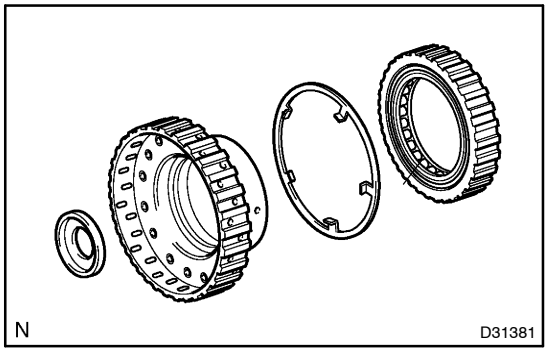
(a) Install the input shaft assy to the clutch drum.



(b) Install the thrust needle roller bearing to the clutch drum assy.

Thrust needle roller bearing diameter:

	Inside	Outside
Thrust needle roller bearing	21.3 (0.839)	41.1 (1.618)

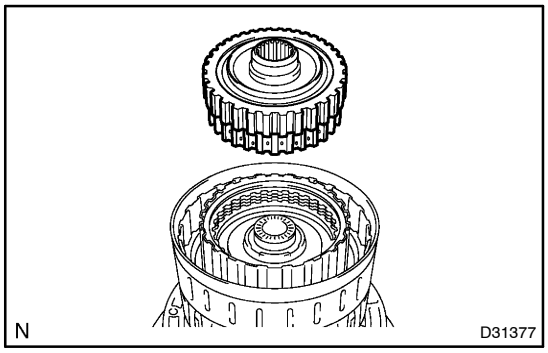


48. INSTALL COAST CLUTCH HUB SUB–ASSY

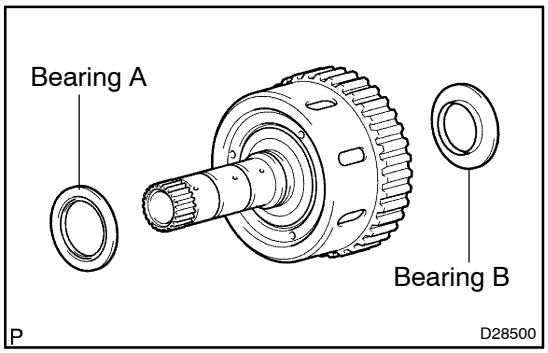
(a) Install the thrust bearing race No.2 and the input shaft thrust bearing race RR to the multiple disc clutch clutch hub.

Bearing and race diameter:

	Inside	Outside
Thrust bearing race No.3	35.6 mm (1.402 in.)	56.6 mm (2.228 in.)
Input shaft bearing race RR	22.6 mm (0.890 in.)	44.8 mm (1.764 in.)



(b) Install the multiple disc clutch clutch hub to the clutch drum assy.

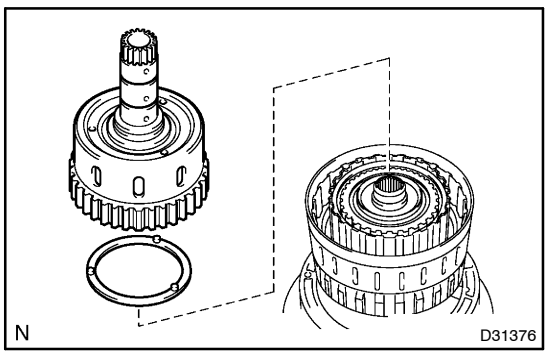


49. INSTALL FORWARD CLUTCH HUB SUB–ASSY

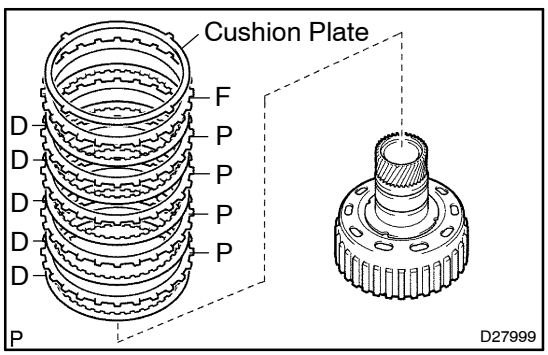
(a) Install the 2 thrust needle roller bearings to the forward clutch hub sub assy.

Bearing and race diameter:

	Inside	Outside
Bearing A	42.5 (1.673)	61.2 (2.409)
Bearing B	35.6 mm (1.402 in.)	56.6 mm (2.228 in.)

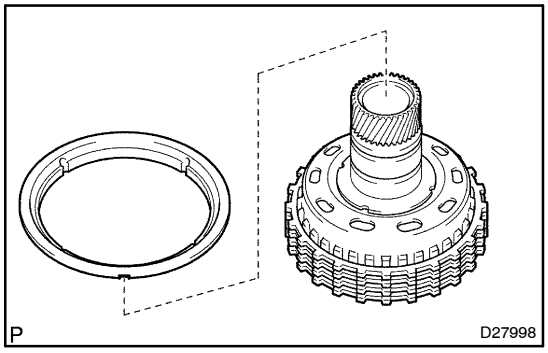


(b) Install the forward clutch hub sub assy to the clutch drum assy.



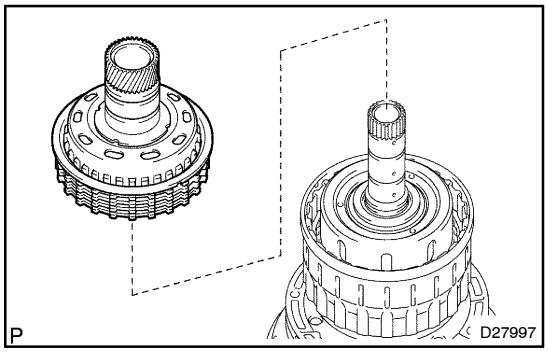
50. INSTALL REAR CLUTCH DISC

(a) Install the clutch cushion plate, the reverse clutch flange, the 4 plates and the 5 discs to the reverse clutch hub.



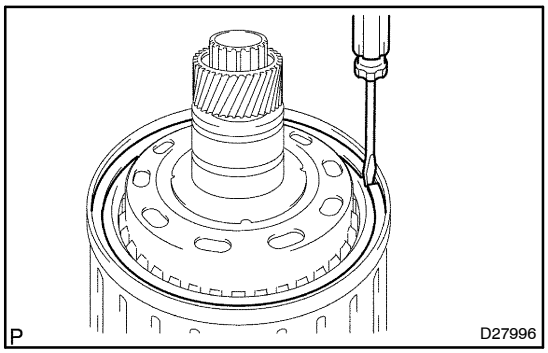
51. INSTALL REVERSE CLUTCH REACTION SLEEVE

(a) Install the reverse clutch reaction sleeve to the reverse clutch hub.



52. INSTALL REVERSE CLUTCH HUB SUB–ASSY

(a) Install the reverse clutch hub sub assy, the reverse clutch reaction sleeve, the clutch cushion plate, the reverse clutch flange, the 5 reverse clutch discs, and the 4 clutch plates to the clutch drum assy.



(b) Using a screwdriver, install the snap ring on the clutch drum and the input shaft assy.