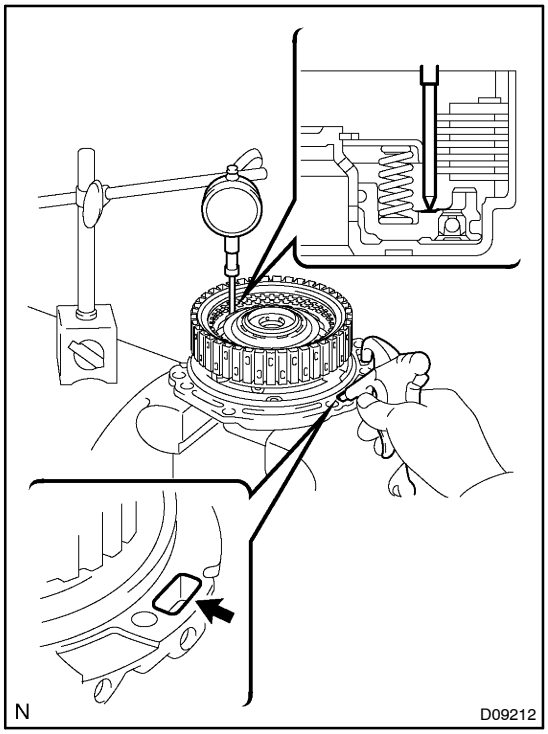
FORWARD CLUTCH ASSY (U140E/U140F)

OVERHAUL

4006G–01



1. INSPECT PACK CLEARANCE OF FORWARD CLUTCH

(a) Install the forward clutch on the oil pump.

NOTICE:

Be careful not to damage the oil seal ring of oil pump.

(b) Using a dial indicator, measure the forward clutch piston stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi).

Piston stroke:

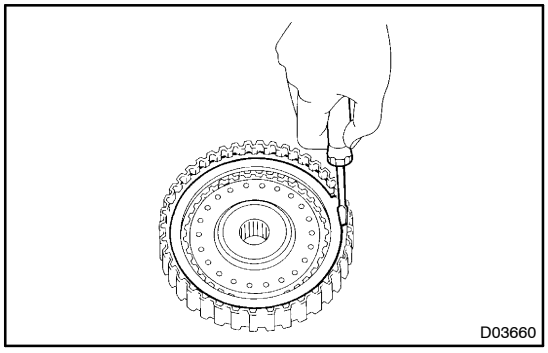
1MZ–FE: 2.08 – 2.42 mm (0.0819 – 0.0953 in.)

2AZ–FE: 1.74 – 2.08 mm (0.0685 – 0.0819 in.)

If the clearance is non–standard, inspect the discs, plates and flange.

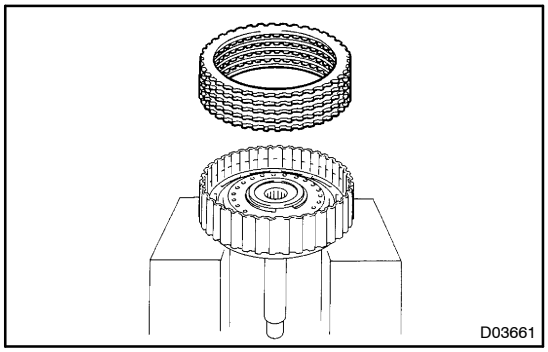
HINT:

As the opening is big, cover it with a shop rug to prevent the compressed air from being discharged.



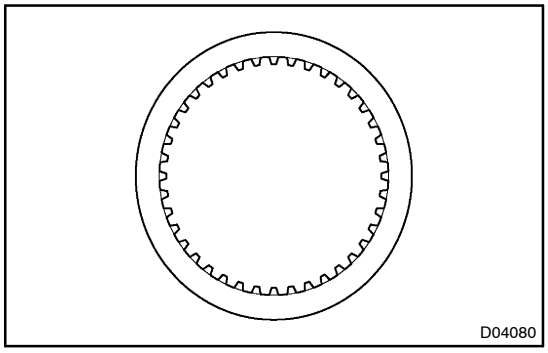
2. REMOVE FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

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



(b) 1MZ–FE:
Remove the flange, 6 discs and 6 plates from the input shaft assy.

(c) 2AZ–FE:
Remove the flange, 5 discs and 5 plates from the input shaft assy.



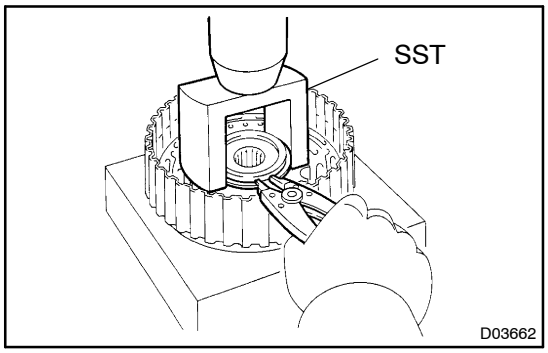
3. INSPECT FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

(a) Check to see if the sliding surface of the disc, plate and flange are worn or burnt.

If necessary, replace them.

HINT:

- If the lining of the disc is peeling off or discolored, or even if replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

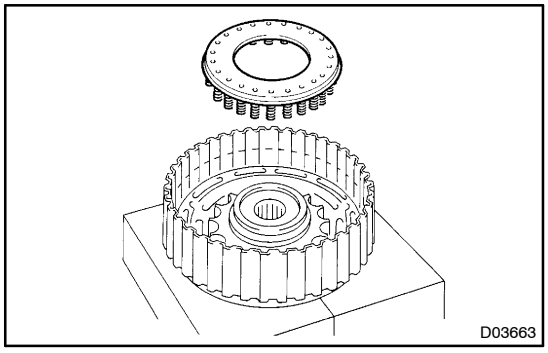


4. REMOVE FORWARD CLUTCH RETURN SPRING SUB–ASSY

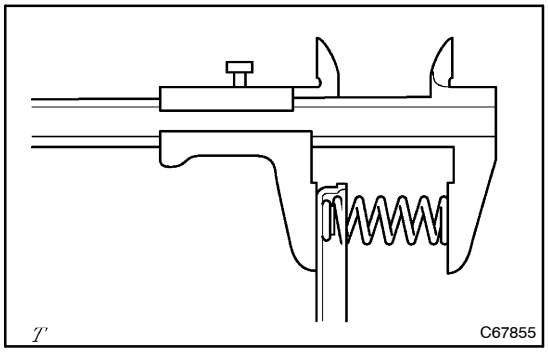
(a) Place SST on the spring retainer and compress the return spring with a press.

SST 09350–32014 (09351–32070)

(b) Using a snap ring expander, remove the snap ring.



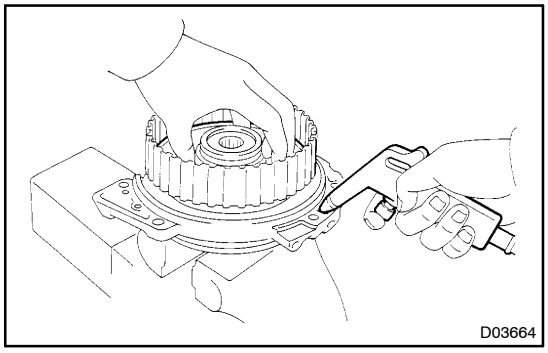
(c) Remove the piston return spring.



5. 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: 28.23 mm (1.1102 in.)

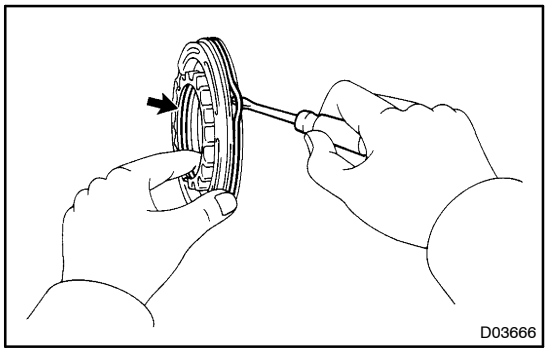


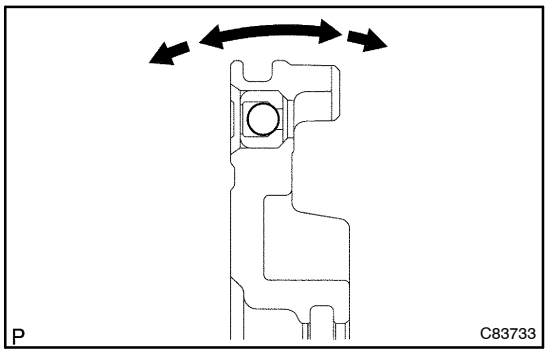
6. REMOVE FORWARD CLUTCH PISTON SUB–ASSY

(a) Place the forward clutch drum onto the oil pump.
(b) Holding the forward clutch piston with your hard, apply compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the oil pump to remove the forward clutch piston.

HINT:
When the piston can not be removed as it is slanted, either blow the air again with the protruding side pushed or remove the piston using the needle nose plier with vinyl tape on the tip.

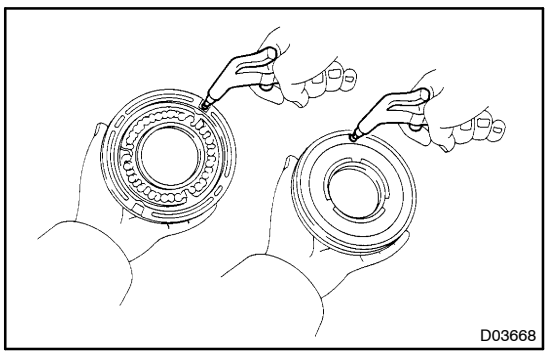
(c) Using a screwdriver, remove the 2 O–rings.



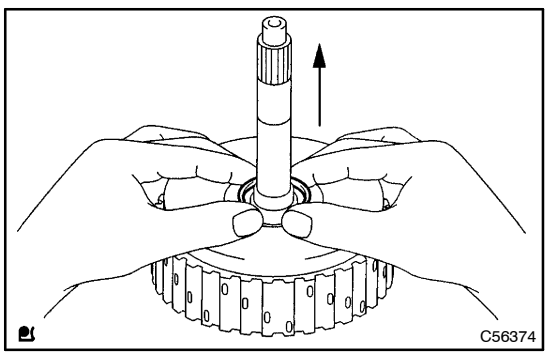


7. INSPECT FORWARD CLUTCH PISTON SUB–ASSY

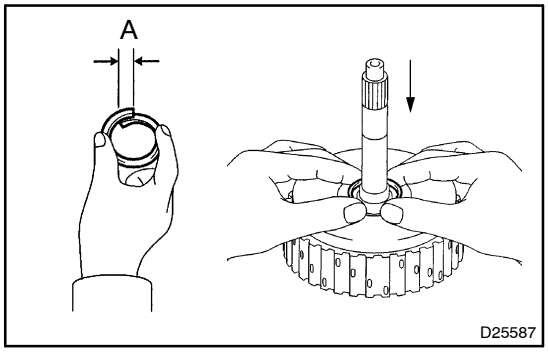
(a) Shake the piston to check that the check ball is not stuck.



(b) Check that air does not leak from the valve when applying low compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi).

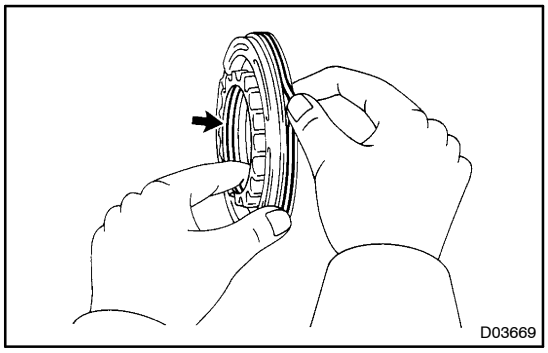


8. REMOVE INPUT SHAFT OIL SEAL RING



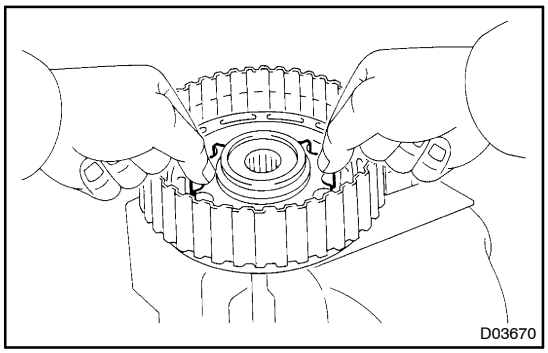
9. INSTALL INPUT SHAFT OIL SEAL RING

(a) Compress the oil seal ring from both sides to reduce dimension A.
Dimension A: 5 mm (0.197 in.)
(b) Coat the oil seal ring with ATF and install it to the input shaft.

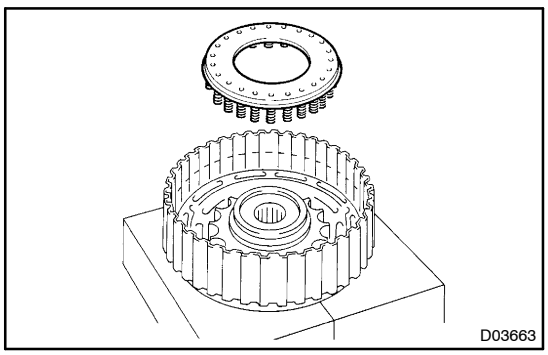


10. INSTALL FORWARD CLUTCH PISTON SUB–ASSY

(a) Coat 2 new O–rings with ATF, install them to the forward clutch piston.

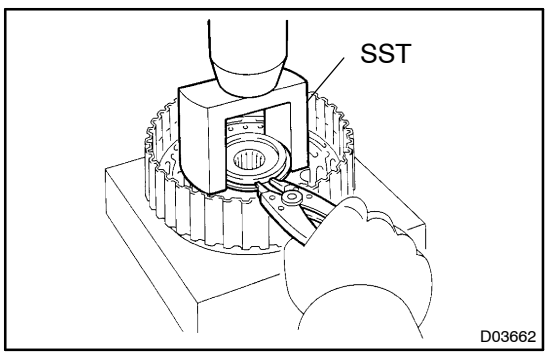


(b) Install the forward clutch piston to the forward clutch drum.



11. INSTALL FORWARD CLUTCH RETURN SPRING SUB–ASSY

(a) Place the return spring onto the piston.

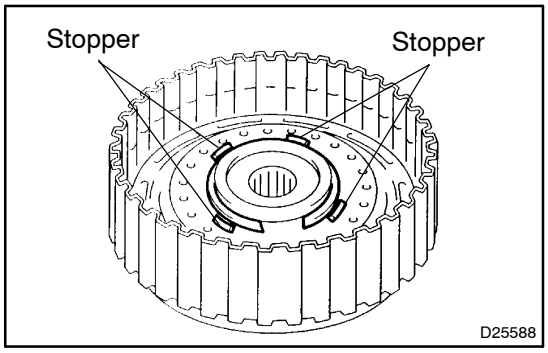


(b) Place SST on the return spring, and compress the return spring with a press.
SST 09350–32014 (09351–32070)
(c) Install the snap ring with a snap ring expander. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

NOTICE:

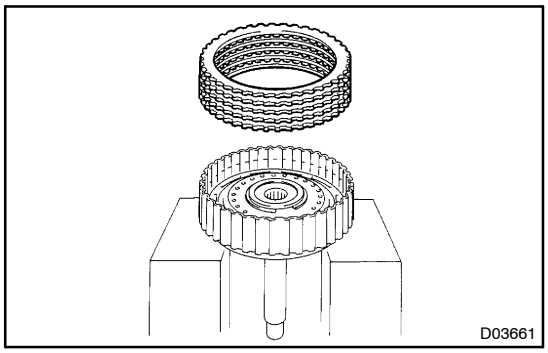
- **Stop the press when the spring sheet is lowered to the place 1 – 2 mm (0.039 – 0.078 in.) from the snap ring grove.**

- **This prevents the spring sheet from being deformed.**
- **Do not expand the snap ring excessively.**



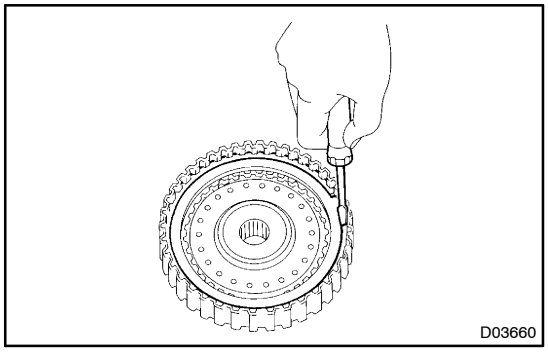
(d) Set the end gap of the snap ring in the piston shown in the illustration.

NOTICE:
The end gap of the snap ring should not coincide with any of the stoppers.

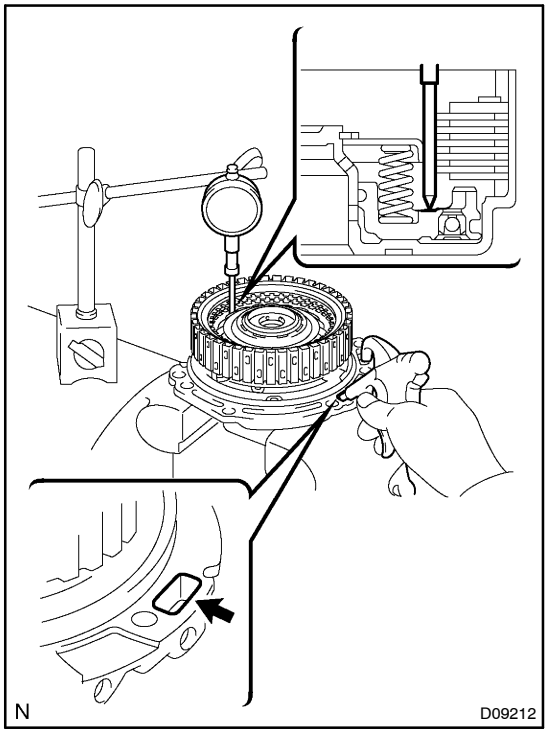


12. INSTALL FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

(a) 1MZ–FE:
Install the 6 plates, 6 discs and flange.
(b) 2AZ–FE:
Install the 5 plates, 5 discs and flange.



(c) Using a screwdriver, install the snap ring.
(d) Check that the end gap of the snap ring is not aligned with one of the cutouts.



13. INSPECT PACK CLEARANCE OF FORWARD CLUTCH

(a) Using a dial indicator, measure the forward clutch piston stroke while applying and releasing compressed air (392 kgf·cm^2, 4.0 kPa, 57 psi).

Piston stroke:

1MZ–FE: 2.08 – 2.42 mm (0.0819 – 0.0953 in.)

2AZ–FE: 1.74 – 2.08 mm (0.0685 – 0.0819 in.)

If the piston stroke is less than the minimum, parts may have been assembled incorrectly. Check and reassemble again.

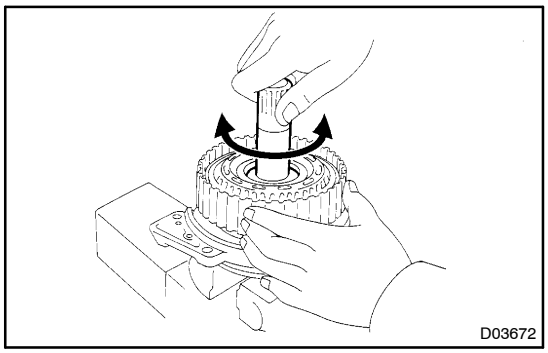
If the clearance is non–standard, select another flange.

HINT:

There are 5 different flanges in thickness.

Flange thickness: mm (in.)

No.	Thickness	No.	Thickness
1	3.00 (0.1181)	4	3.45 (0.1358)
2	3.15 (0.1240)	5	3.60 (0.1417)
3	3.30 (0.1299)	–	–



14. INSPECT FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

(a) Check that the disc lightly rotates when rotating the forward clutch assy after inserting the multiple disc clutch into it.

NOTICE:

Do not place the forward clutch assy in a vise.