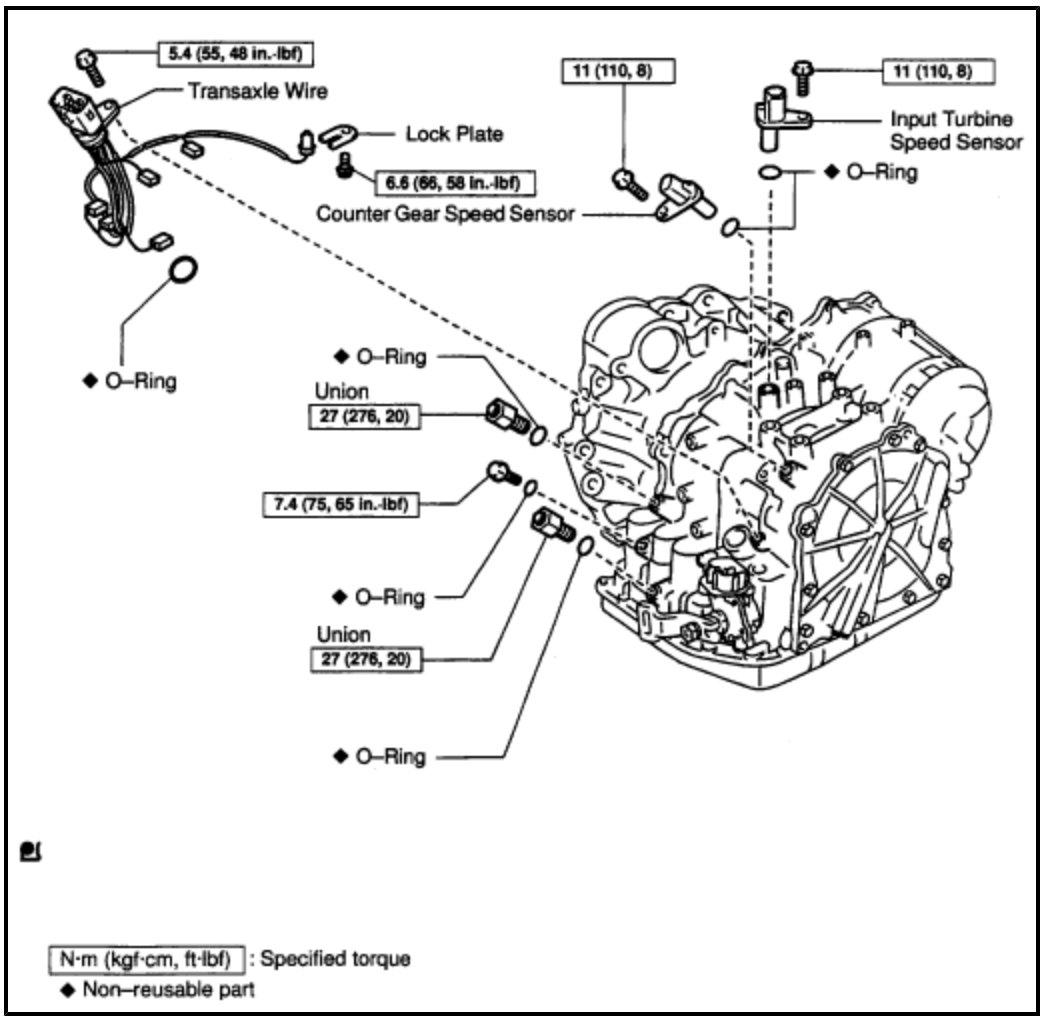
Part 1 of 3



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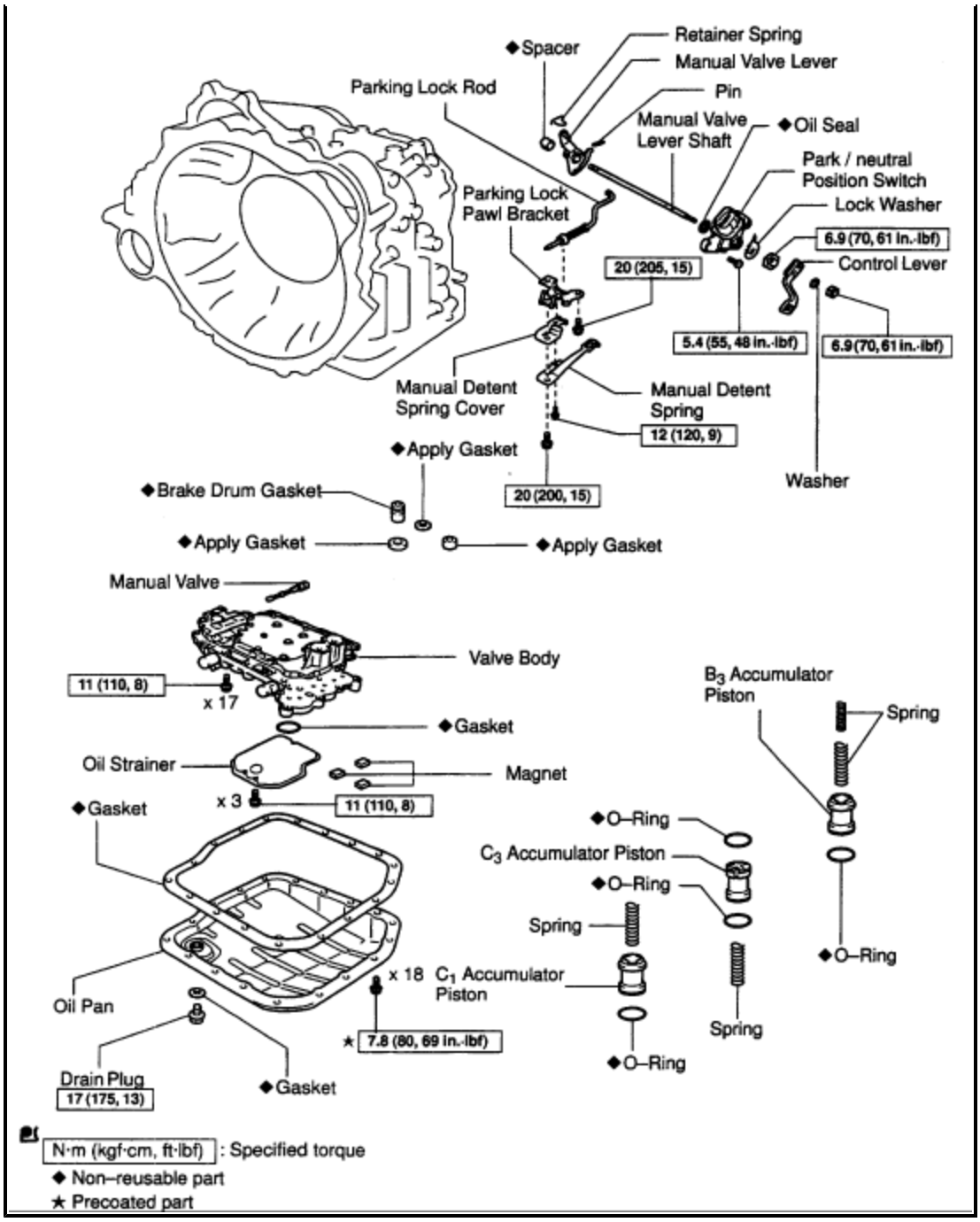

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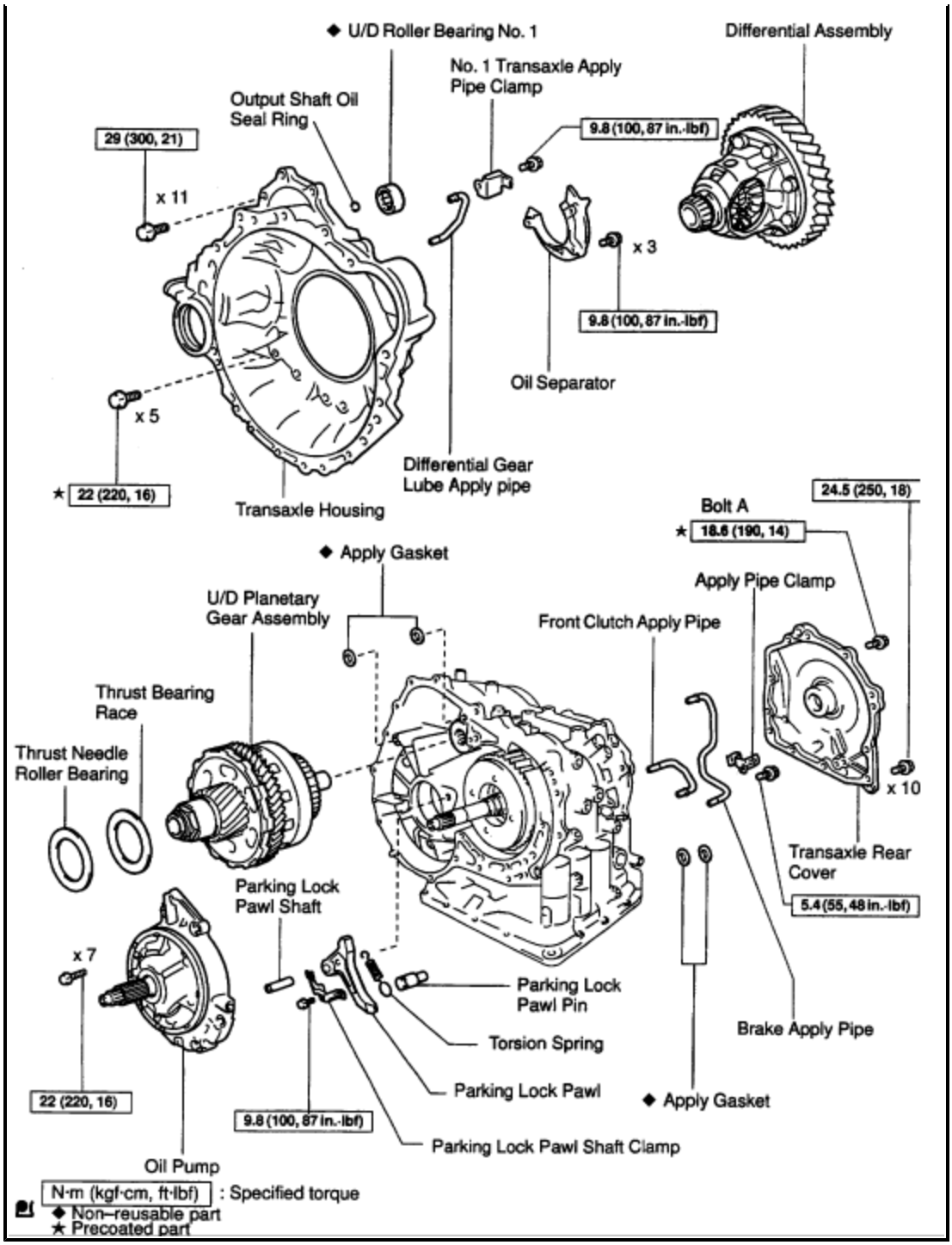

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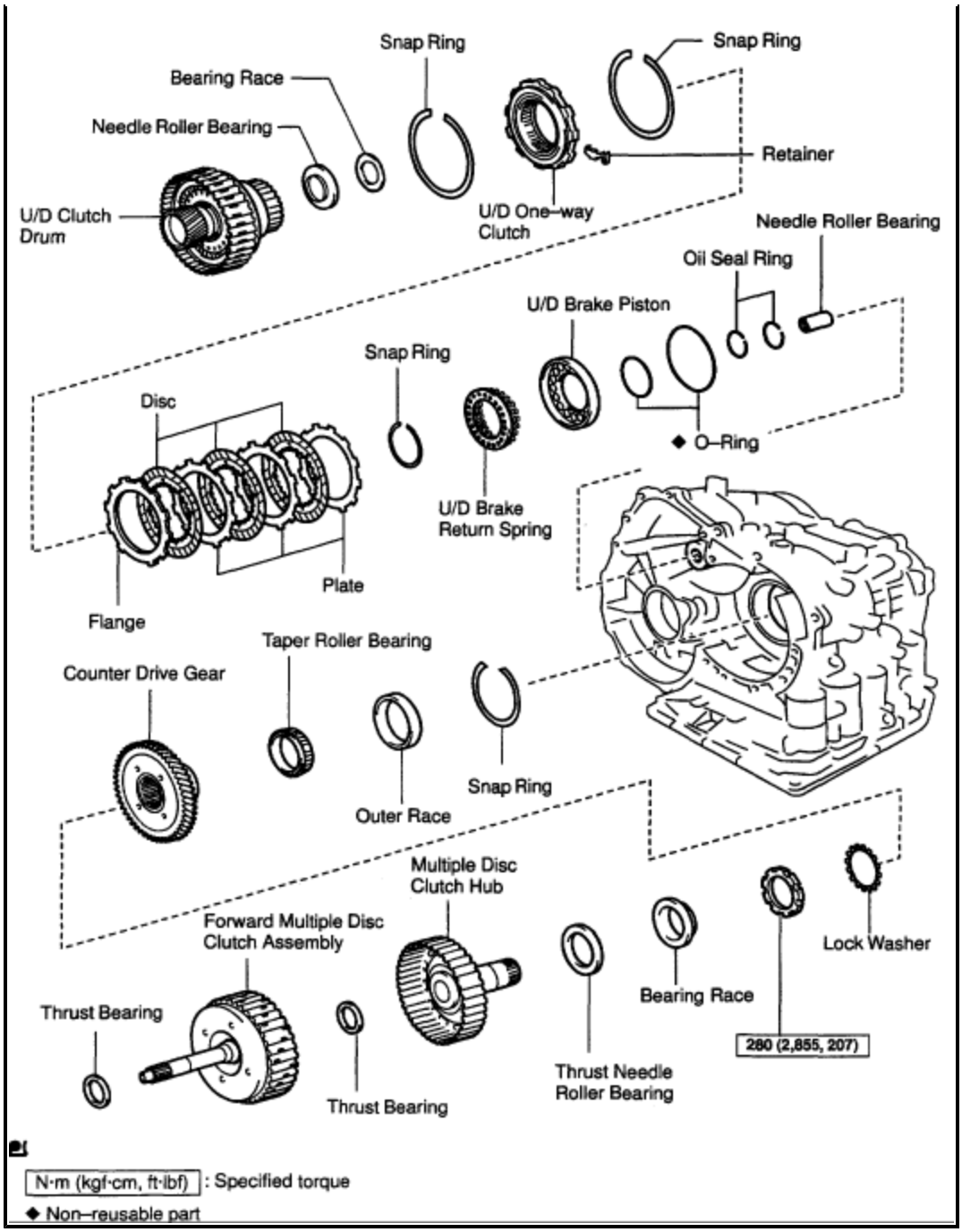

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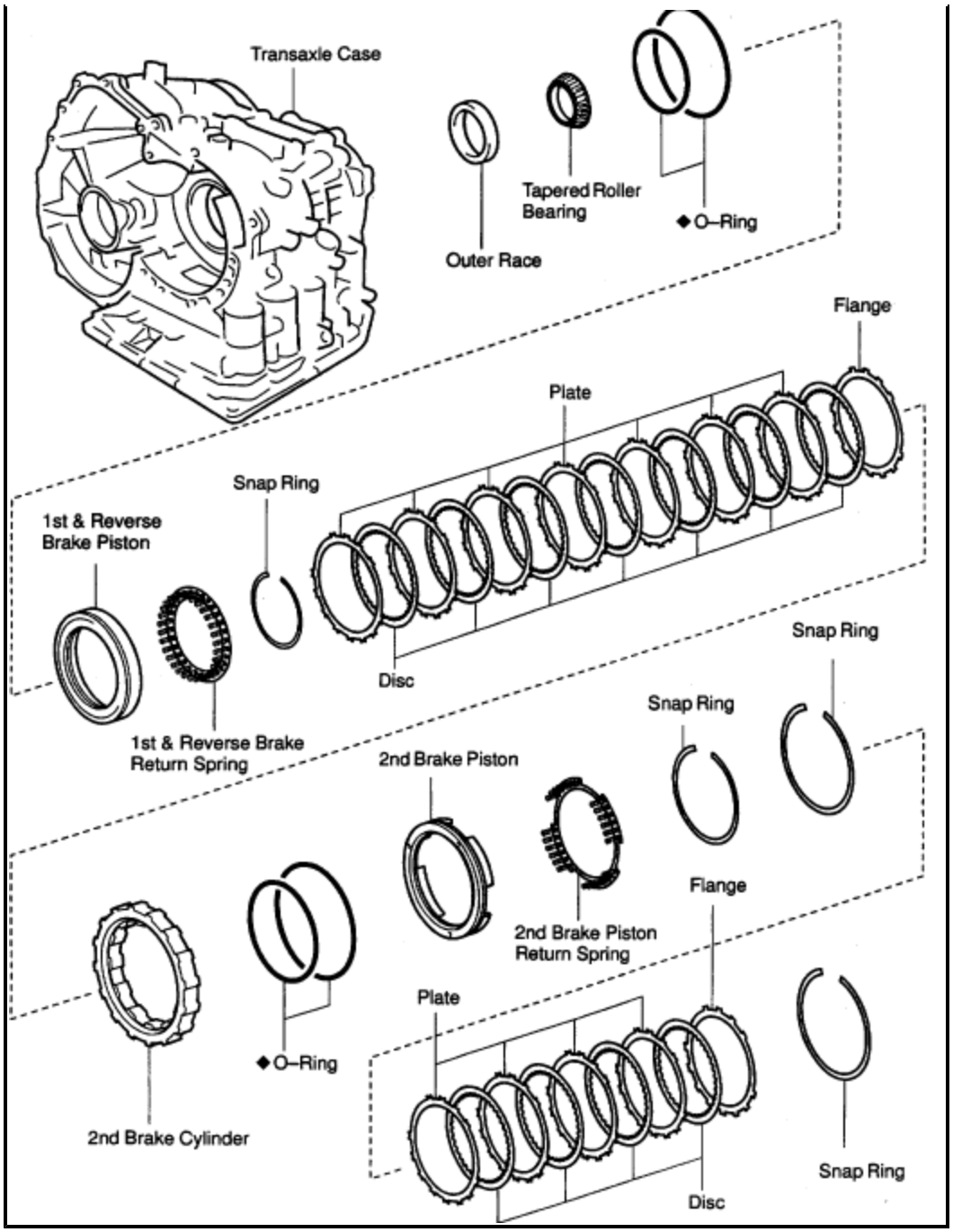

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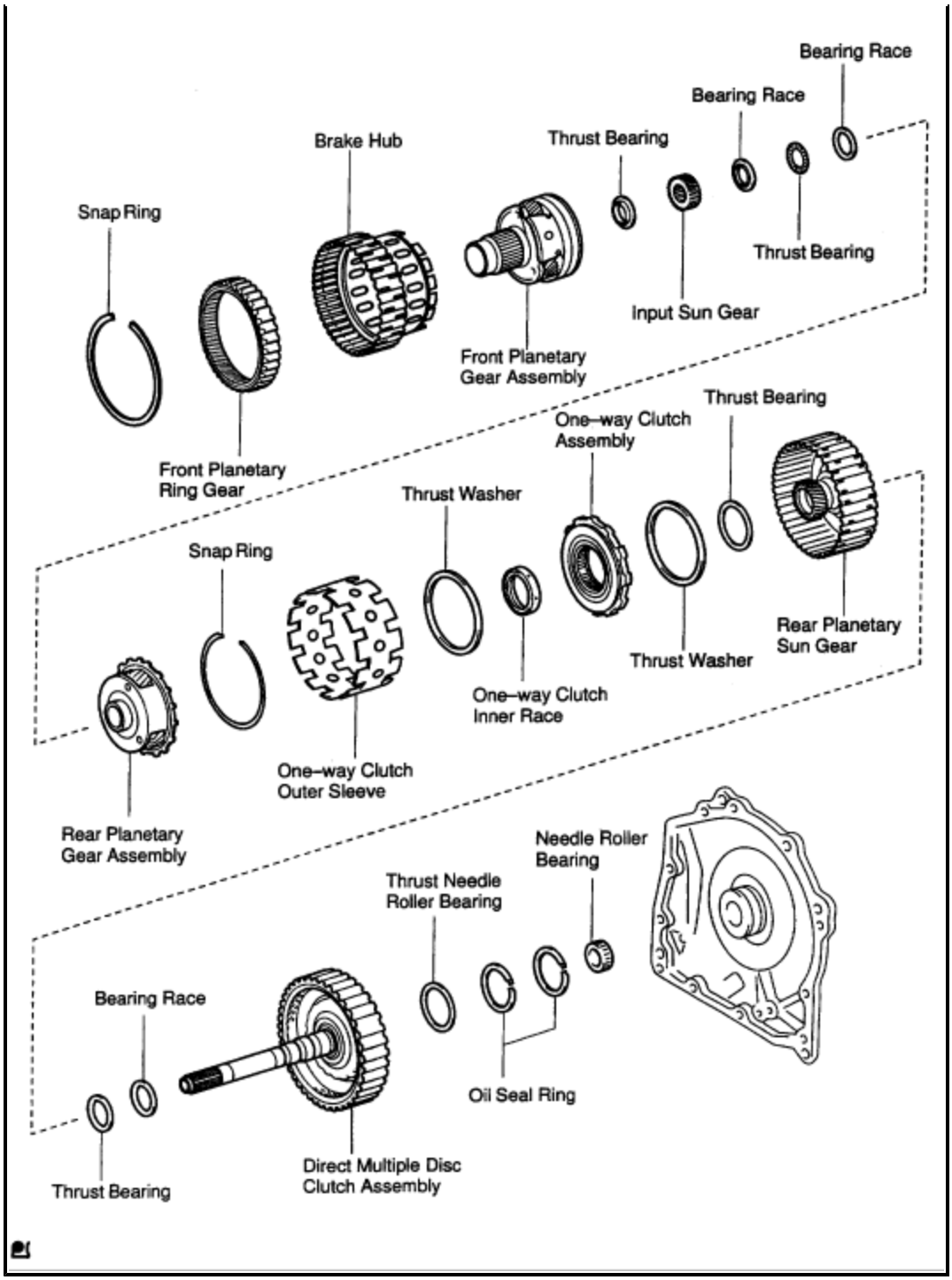

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REASSEMBLY

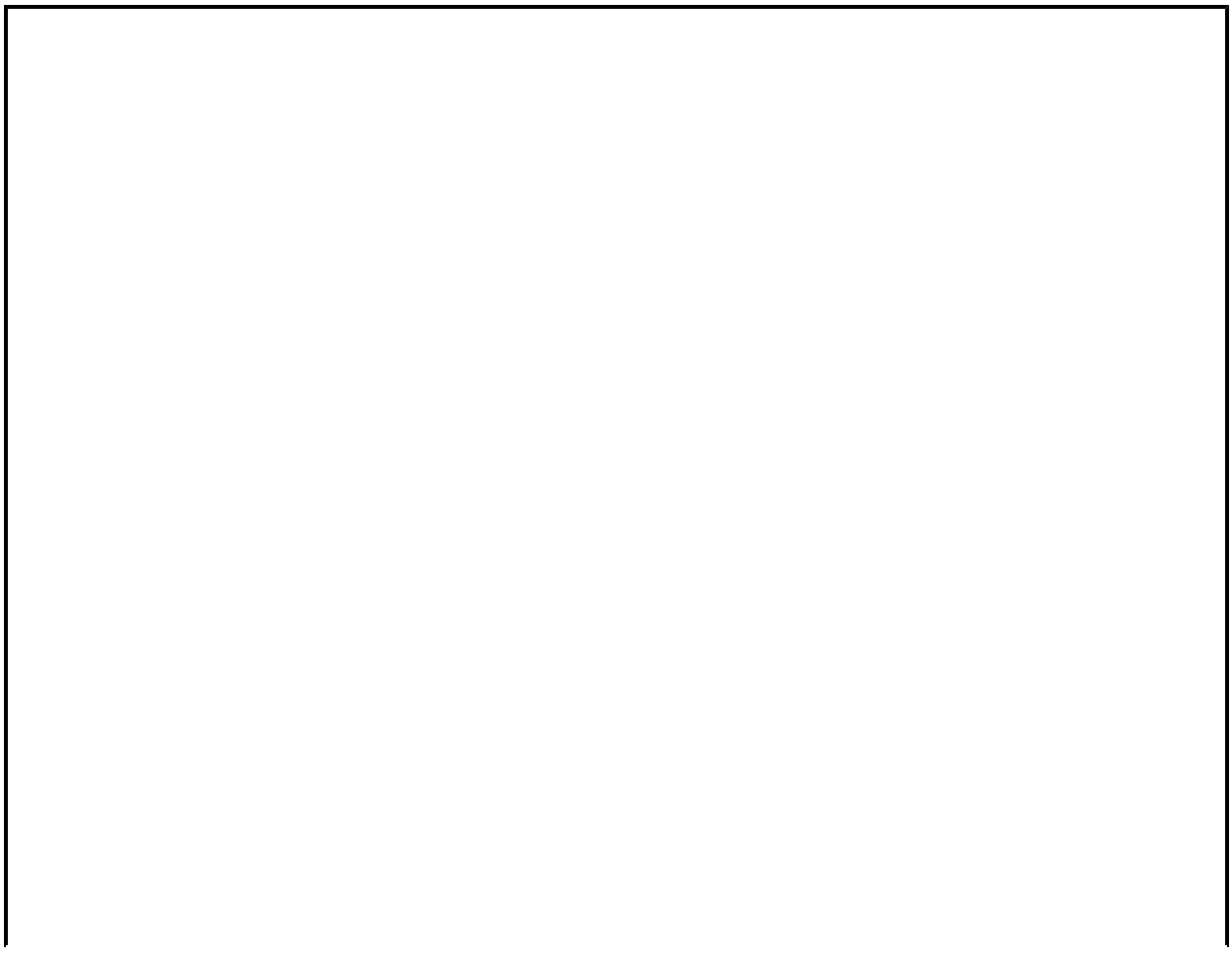
NOTICE:

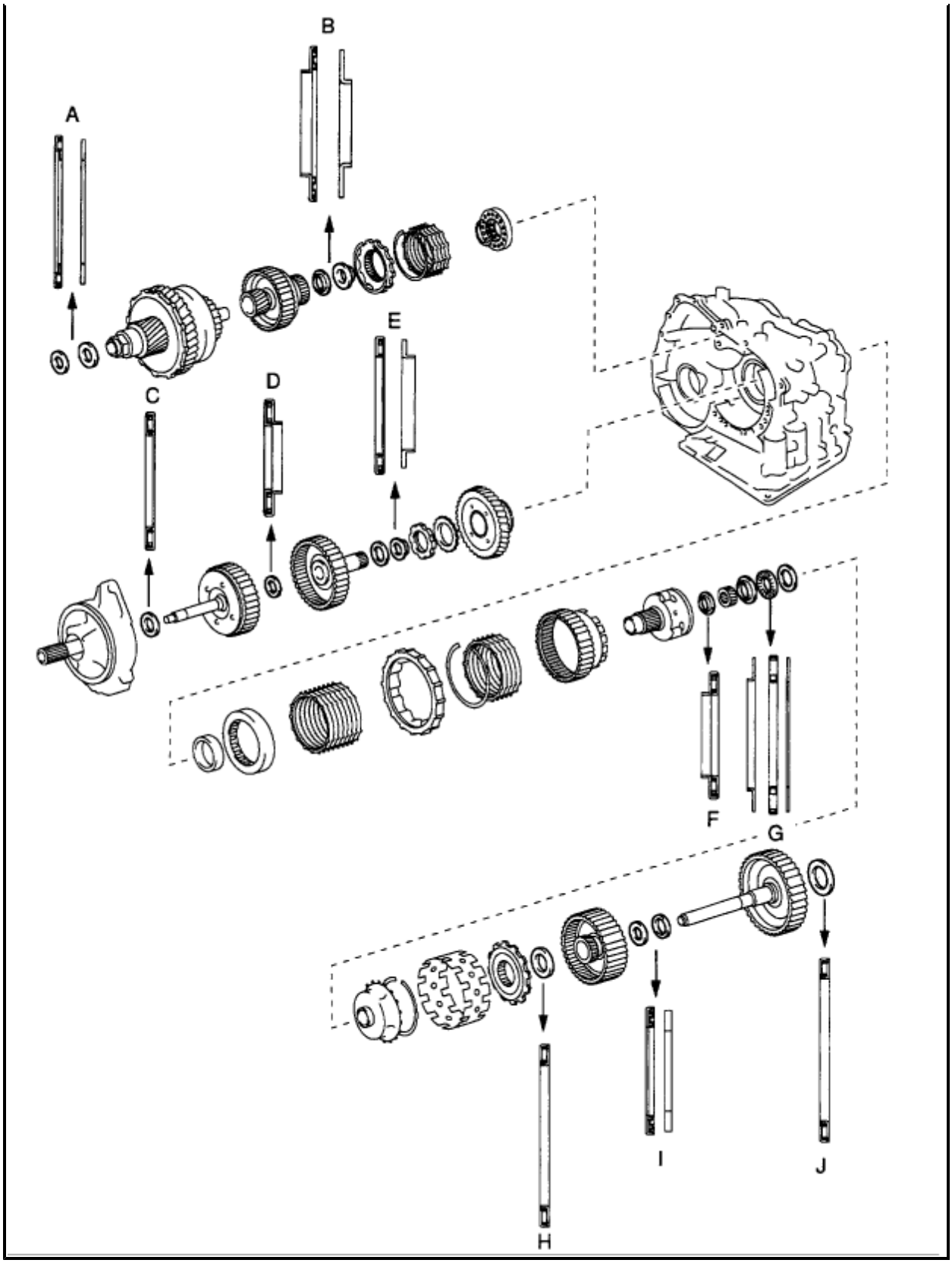
- The automatic transaxle is composed of highly precision-finished parts, necessitating careful inspection before reassembly because even a small nick could cause fluid leakage or affect the performance. The instructions here are organized so that you will work on only one component group at a time. This will help avoid confusion from similar-looking parts of different sub-assemblies being on your workbench at the same time. The component groups are

inspected and repaired from the converter housing side. As much as possible, complete the inspection, repair and reassembly before proceeding to the next component group. If a defect is found in a certain component group during reassembly, inspect and repair this group immediately. If a component group cannot be assembled because parts are being ordered, be sure to keep all parts of that group in a separate container while proceeding with disassembly, inspection, repair and reassembly of other component groups. Recommended ATF: TYPE T-IV or equivalent

- All disassembled parts should be washed clean and any fluid passages and holes should be blown through with compressed air.
- Dry all parts with compressed air. Never use shop rags.
- When using compressed air, always aim away from yourself to prevent accidentally spraying ATF or kerosene in your face.
- The recommended automatic transaxle fluid or kerosene should be used for cleaning.
- After cleaning, the parts should be arranged in the correct order for efficient inspection, repairs, and reassembly.
- When disassembling a valve body, be sure to match each valve together with the corresponding spring..
- New discs for the brakes and clutches that are to be used for replacement must be soaked in ATF for at least 15 minutes before reassembly.
- All oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces should be coated with ATF prior to reassembly.
- All gaskets and rubber O-rings should be replaced.
- Do not apply adhesive cements to gaskets and similar parts.
- Make sure that the ends of a snap ring are not aligned with one of the cutouts and are installed in the groove correctly.
- If a worn bushing is to be replaced, the sub-assembly containing the bushing must also be replaced.
- Check thrust bearings and races for wear or damage. Replace if necessary. Use petroleum jelly to keep parts in place.
- When working with Formed In Place Gasket **(FIPG)** material, you must observe the following: Using a razor blade and a gasket scraper, remove all of the old packing from the gasket surface.

Thoroughly clean all components to remove all the loose material. Clean both sealing surfaces with a non-residue solvent. Parts must be reassembled within 10 minutes of application. Otherwise, the packing Formed In Place Gasket (FIPG) material must be removed and reapplied.





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Mark	Front Race Diameter Inside / Outside mm (in.)	Thrust Bearing Diameter Inside / Outside mm (in.)	Rear Race Diameter Inside / Outside mm (in.)
A	–	57.2 (2.252) / 84.96 (3.3449)	56.4 (2.220) / 83.0 (3.268)
B	–	37.73 (1.4854) / 58.0 (2.283)	29.9 (1.177) / 55.5 (2.185)
C	–	33.85 (1.3327) / 52.2 (2.055)	–
D	–	23.5 (0.925) / 44.0 (1.732)	–
E	–	36.3 (1.429) / 52.2 (2.055)	34.5 (1.358) / 48.5 (1.909)
F	–	34.6 (1.362) / 48.5 (1.963)	–
G	40.3 (1.587) / 58.0 (2.283)	38.6 (1.520) / 60.0 (2.362)	38.6 (1.520) / 58.0 (2.283)
H	–	53.6 (2.110) / 69.6 (2.740)	–
I	–	33.7 (1.327) / 48.2 (1.898)	30.3 (1.193) / 46.0 (1.811)
J	–	53.6 (2.110) / 70.18 (2.763) or 69.6 (2.740)	–

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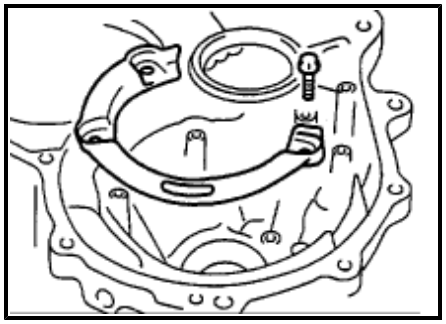
BEARING AND RACES INSTALLATION POSITION AND DIRECTION



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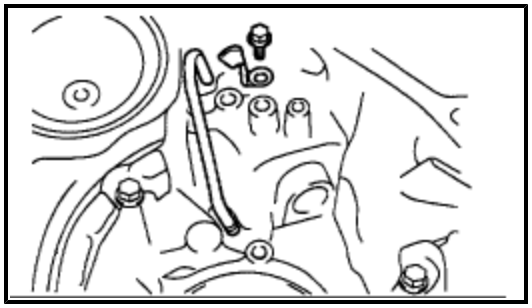
1. INSTALL OIL SEPARATOR Install the oil separator with the 3 bolts to the transaxle housing. Torque: **9.8 Nm (100 kgf-cm, 7 ft. lbs.)**



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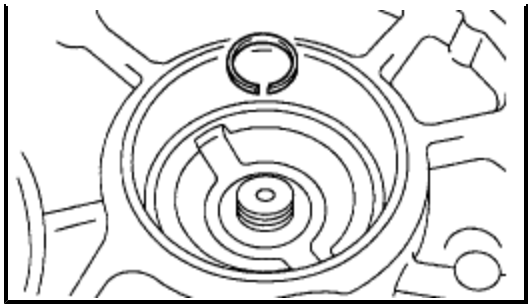
2. INSTALL APPLY PIPE

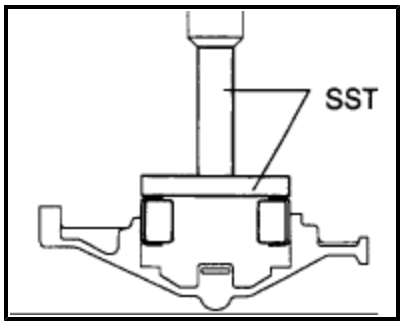
    a. Install the apply pipe, and clamp with the bolt to the transfer case. Torque: **9.8 Nm (100 kgf-cm, 7 ft. lbs.)**
    NOTICE: Make sure to insert the pipe to the stopper.

3. INSTALL U/D CYLINDRICAL ROLLER BEARING



ZOOM SIZED FOR PRINT

a. Install the oil seal ring to the transaxle housing.



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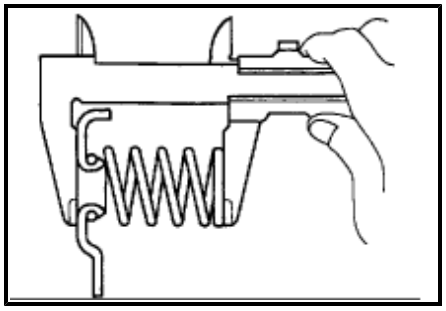
b. Using SST and a press, install the U/D cylindrical roller bearing. SST 09950-60020, (09951-00810), 09950-70010, (09951-07100) **NOTICE:** Do not apply excessive pressure to it.



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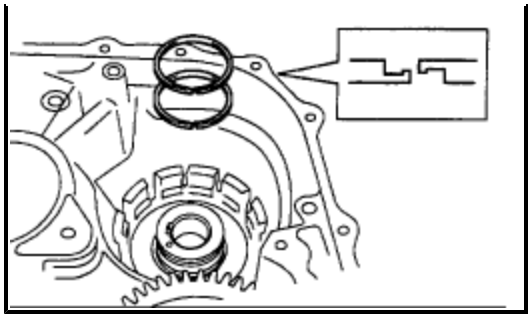
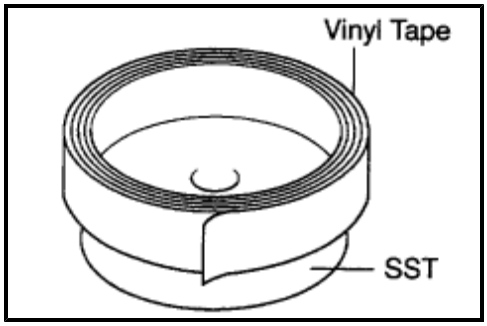
4. CHECK 2ND BRAKE PISTON RETURN SPRING Using vernier calipers, measure the free length of the spring together with the spring seat. Standard free length: **16.61 mm (0.6539 inch)**
5. INSTALL U/D BRAKE



ZOOM SIZED FOR PRINT

a. Install the 2 oil seal rings to the transaxle case.



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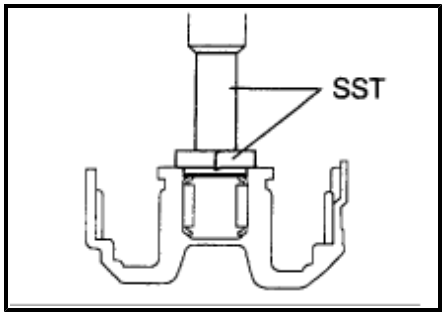
b. Wind a vinyl tape around SST at the place **4.0 mm (0.157 inch)** above from the bottom end until the thickness of the wound tape is about **5.0 mm (0.197 inch).** SST 09950-60010 (09951-00320) **NOTICE:** Clean SST to remove deposited oil, before winding a vinyl tape.



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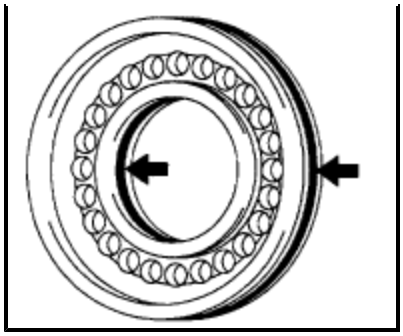
c. Using SST and a press, install the needle-roller bearing to the transaxle case. SST 09950-60010, (09951-00320), 09950-70010 (09951-07100) **NOTICE:** When the wound vinyl tape contacts the transaxle case, stop press-fitting.



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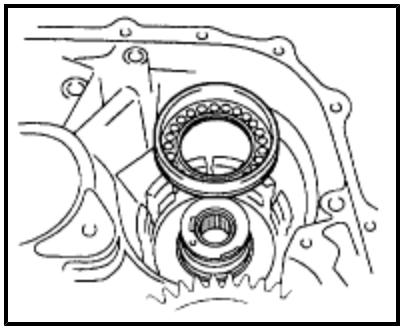
d. Coat 2 new O-rings with ATF, install them to the U/D brake piston.



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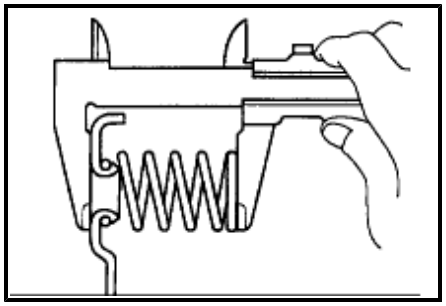
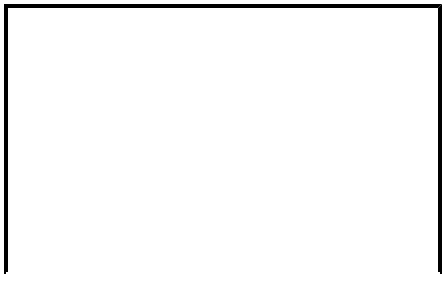
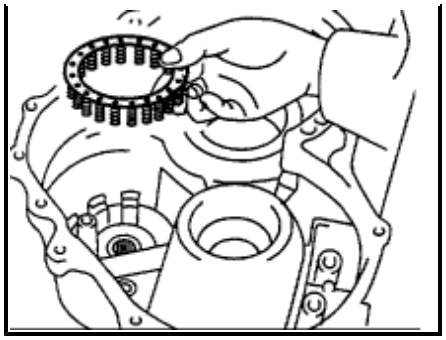
e. Install the U/D brake piston to the transaxle case.



ZOOM SIZED FOR PRINT

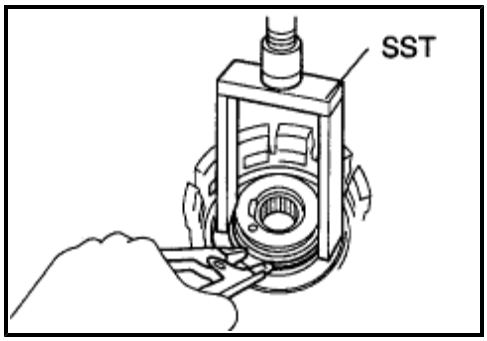
f. Using vernier calipers, measure the free length of the spring together with the spring seat. Standard free length: **13.24 mm (0.5212 inch)**





ZOOM SIZED FOR PRINT

g. Install the return spring.

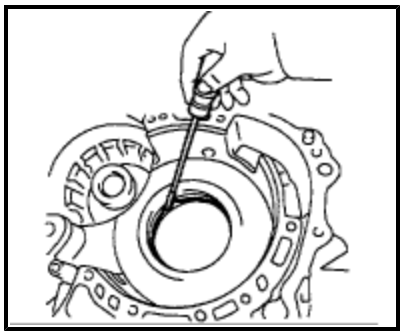


ZOOM SIZED FOR PRINT

h. Using SST, a snap ring expander and a press, install the piston return spring and snap ring to the transaxle case. SST 09387-00020 **NOTICE:**

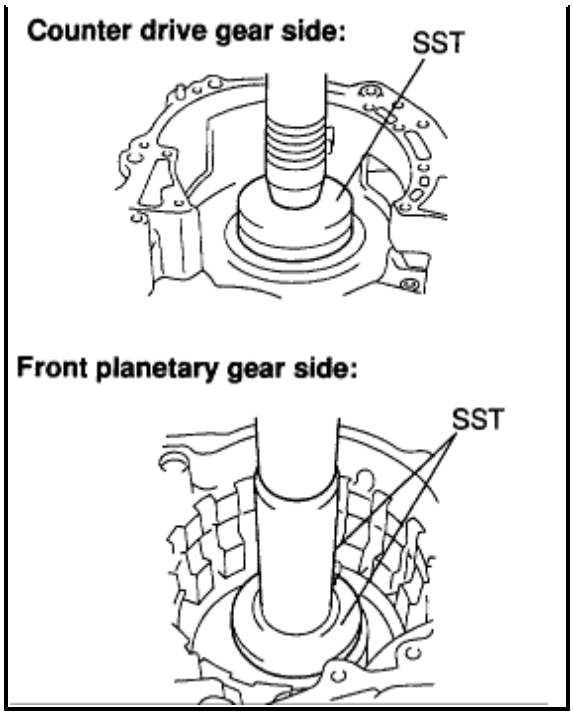
- Press-fit the bearing race RH until it contacts the snap ring.
- Do not apply excessive pressure to it.

6. INSTALL COUNTER DRIVE GEAR



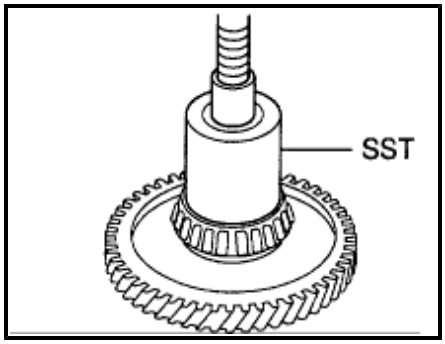
ZOOM SIZED FOR PRINT

a. Using a screwdriver, install the snap ring to the transaxle case.



ZOOM SIZED FOR PRINT

b. Using SST and a press, install the 2 bearing outer races to the transaxle case. SST 09950-60020 (09951-00890), 09950-70010 (09951-07150) **NOTICE:** Press-fit the bearing race until it contacts the snap ring. Do not apply excessive pressure to it.



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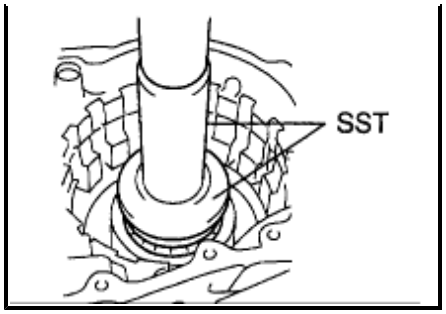
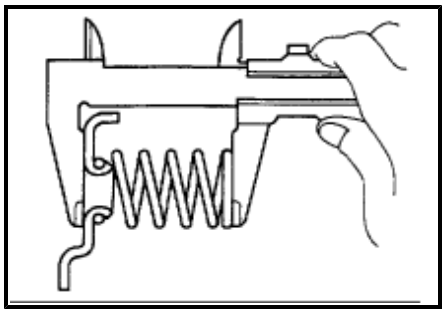
c. Using SST and a press, install the tapered roller bearing to the counter drive gear. SST 09649-17010 **NOTICE:**

- Press-fit the bearing inner race until it contacts the counter drive gear.
- Do not apply excessive pressure to it.



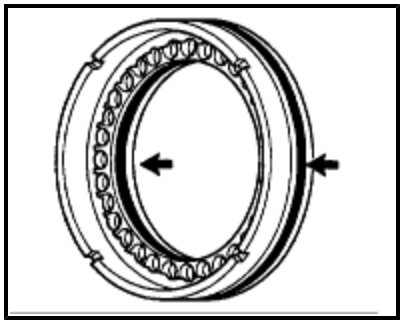
ZOOM SIZED FOR PRINT

d. Using SST and a press, install the counter drive gear and bearing to the transaxle case. SST 09950-60010 (09951-00890), 09950-70010 (09951-07150) **NOTICE:** Do not apply excessive pressure to it.



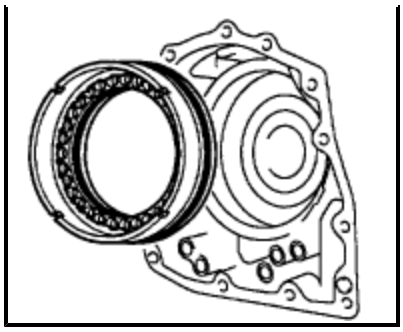
ZOOM SIZED FOR PRINT

7. CHECK 1ST & REVERSE BRAKE PISTON RETURN SPRING Using vernier calipers, measure the free length of the spring together with the spring seat. Standard free length: **17.61 mm (0.6933 inch)**
8. INSTALL 1ST& REVERSE BRAKE PISTON



ZOOM SIZED FOR PRINT

a. Coat 2 new O-rings with ATF
b. Install the 2 O-rings to the 1st & reverse brake piston.



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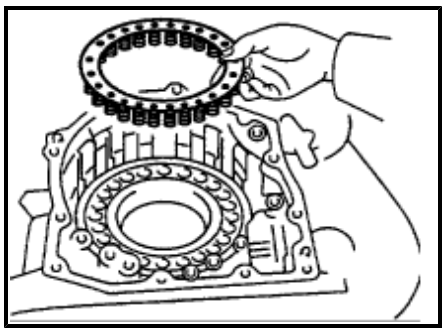
c. Coat a 1st & reverse brake piston with ATF, install the 1st & reverse brake piston to the transaxle case.



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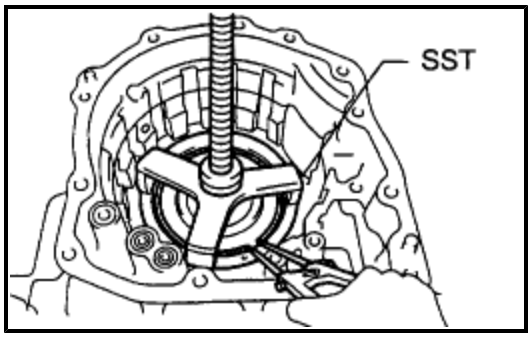
d. Install the return spring.



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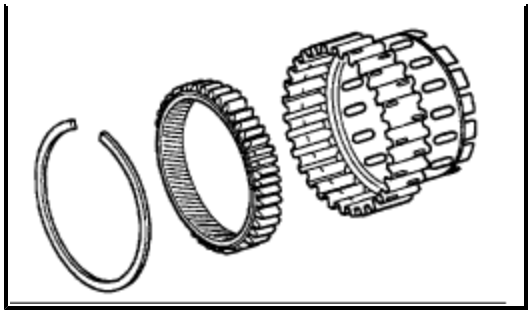
e. Using SST, a press, and snap ring pliers, install the piston return spring and snap ring to the transaxle case. SST 09387-00070 **NOTICE:**

- Stop the press when the spring sheet is lowered to the place **1 - 2 mm (0.039 - 0.078 inch)** from the snap ring groove, preventing the spring sheet from deforming.
- Do not expand the snap ring excessively.



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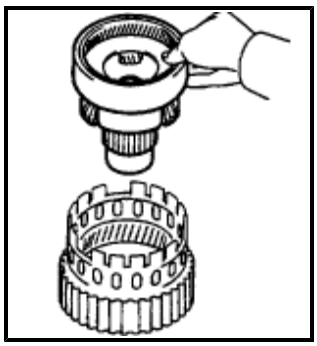
9. INSTALL FRONT PLANETARY GEAR ASSEMBLY

    a. Using a screwdriver, install the front planetary ring gear and the snap ring to the brake hub.

10. INSTALL FRONT PLANETARY GEAR



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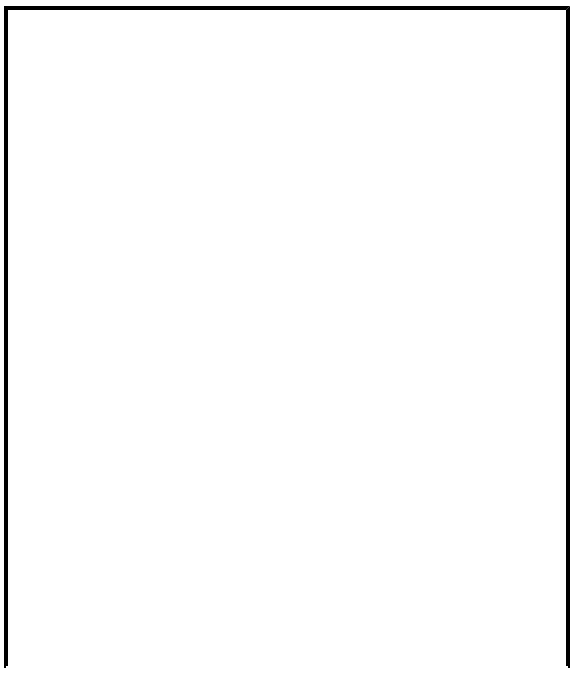
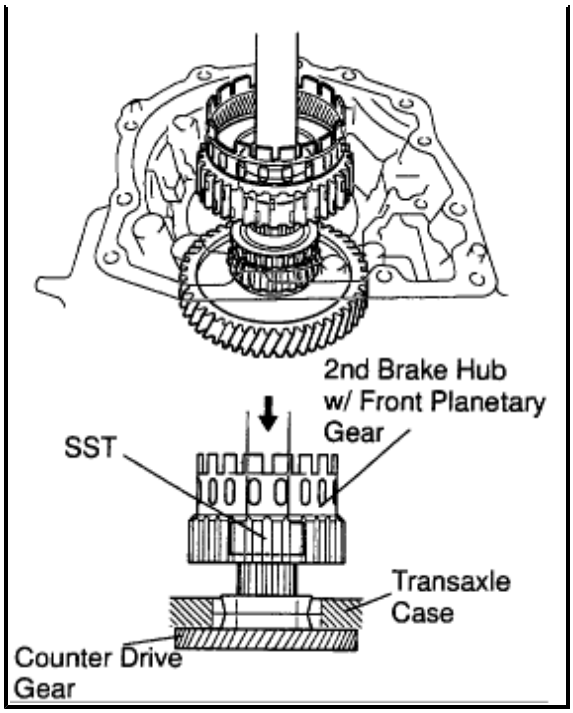
    a. Install the front planetary gear to the brake hub.





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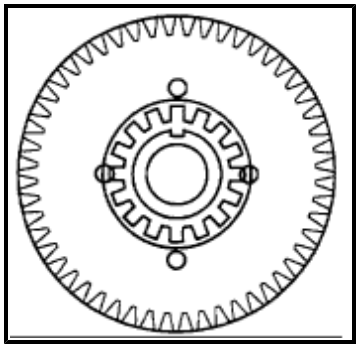
b. Install the front planetary gear to the brake hub.
c. Using SST, a press and press-fit the front planetary gear. SST 09950-60010 (09951-00400) **NOTICE:** Do not apply excessive pressure to it.



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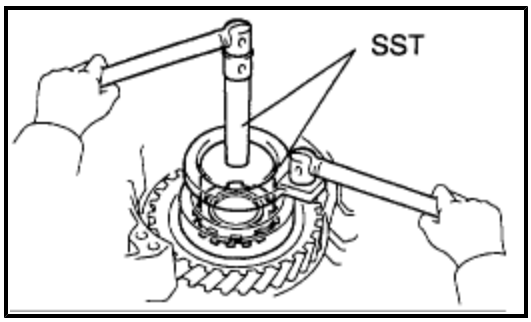
d. Install the washer, as shown in the illustration.



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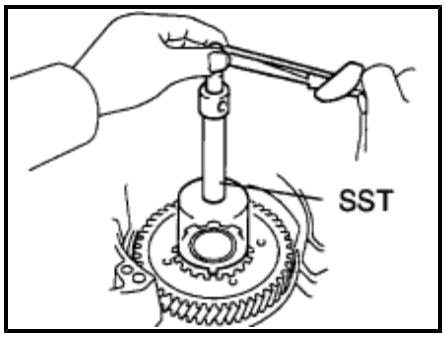
e. Using SST, install the nut. SST 09387-00030, 09387-00080 Torque: **280 Nm (2,855 kgf-cm, 207 ft. lbs.)**



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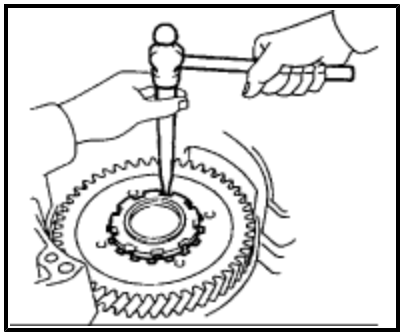
f. Using SST and a torque wrench, measure the starting torque of the bearing. When the measured value is not within the specified value, gradually tighten the nut until it reaches the specified value. SST 09387-00080 Starting torque: **0.5 - 1.0 Nm (5.0 - 10.0 kgf-cm, 4.3 - 8.7 inch lbs.)**



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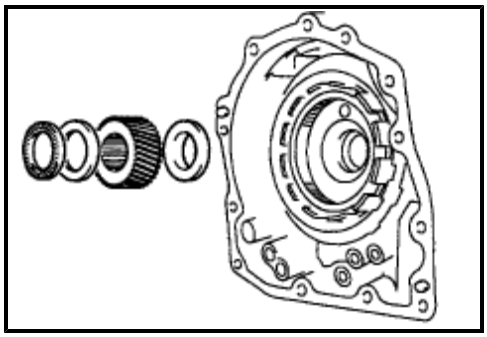
g. Using a chisel and hammer, stake the lock washer.



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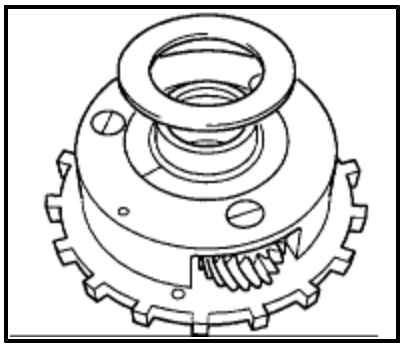
h. Install the 2 bearings, 2 races and front planetary sun gear to the front planetary gear.

	inside	out side
Bearing	34.6 (1.362)	48.5 (1.909)
Race	40.3 (1.587)	58.0 (2.283)
Bearing	38.6 (1.520)	60.0 (2.362)

ZOOM SIZED FOR PRINT

Bearing and race diameter: mm (inch)

11. INSTALL REAR PLANETARY GEAR



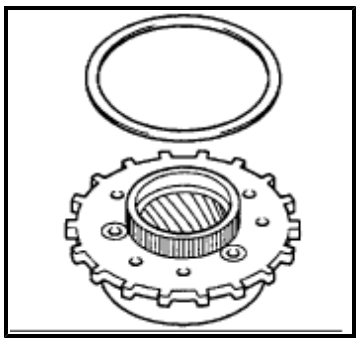
ZOOM SIZED FOR PRINT

a. Coat a bearing race with ATF, install it to the rear planetary gear assembly.

	inside	out side
Race	38.6 (1.520)	58.0 (2.283)

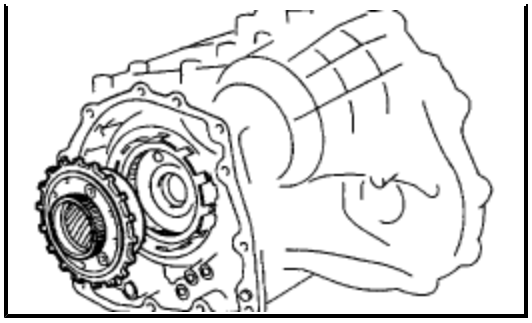
ZOOM SIZED FOR PRINT

Bearing race diameter:



ZOOM SIZED FOR PRINT

b. Install the thrust washer No.2.



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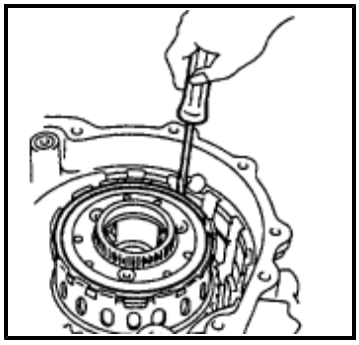
c. Install the rear planetary gear from the rear planetary ring gear.



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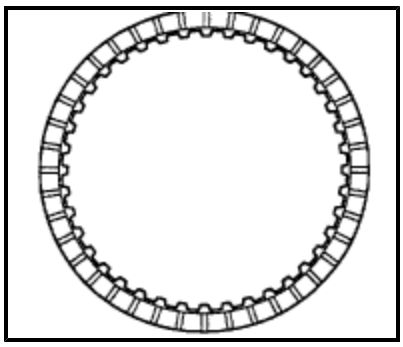
d. Using a screwdriver, install the snap ring.

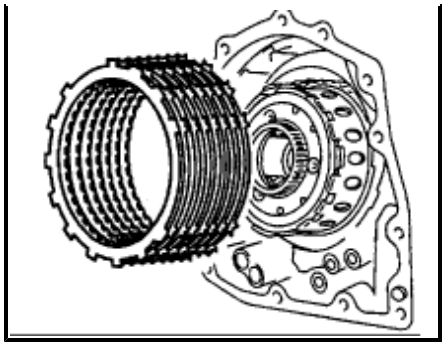


ZOOM SIZED FOR PRINT

12. INSPECT DISC AND FLANGE OF 1ST & REVERSE BRAKE Check to see if the sliding surface of the disc, plate and flange are worn or burnt. If necessary, replace them. **HINT:**

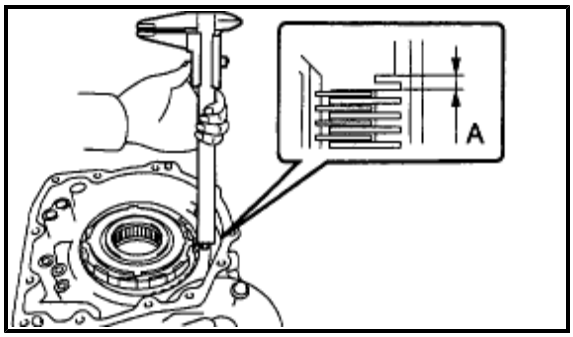
    - If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs.
    - Before assembling new discs, soak them in ATF for at least 15 minutes.

13. INSTALL 1ST & REVERSE BRAKE



ZOOM SIZED FOR PRINT

a. Install the 5 plates and 5 discs.



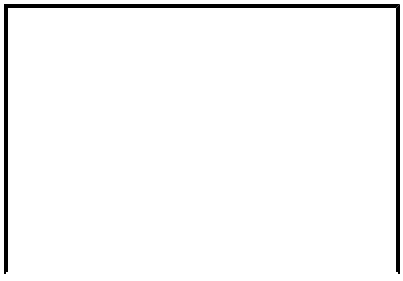
ZOOM SIZED FOR PRINT

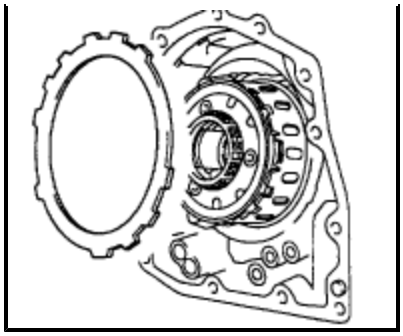
b. Using vernier calipers, measure the distance between the disc surface and the contact surface of the 2nd brake cylinder and transaxle case. (Dimension A)
c. Select an appropriate flange so that the piston stroke will meet the specified value. Piston stroke: **1.10 - 1.24 mm (0.0433 - 0.0488 inch) HINT:** Piston stroke = Dimension A - Flange thickness

Mark	Thickness	Mark	Thickness
1	1.8 (0.071)	5	2.2 (0.087)
2	1.9 (0.075)	6	2.3 (0.091)
3	2.0 (0.079)	7	2.4 (0.094)
4	2.1 (0.083)	8	2.5 (0.098)

ZOOM SIZED FOR PRINT

Flange thickness = mm (inch)





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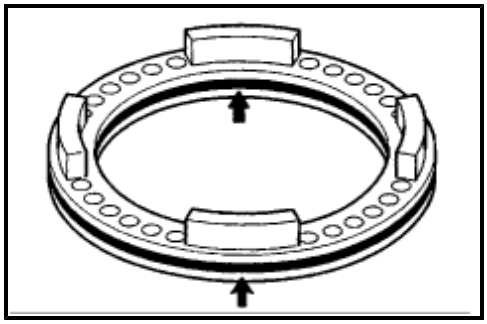
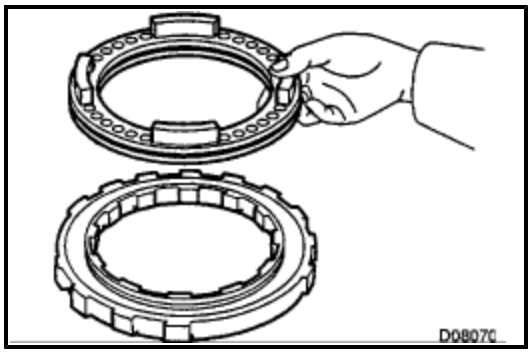
d. Install the flange.

14. INSTALL 2ND BRAKE PISTON



ZOOM SIZED FOR PRINT

a. Coat 2 new O-rings with ATF, install them to the 2nd brake piston.



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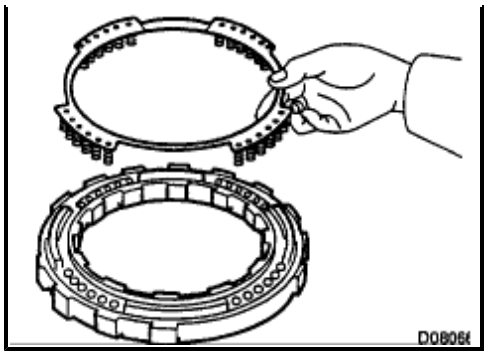
b. Install the 2nd brake piston to the 2nd brake cylinder.



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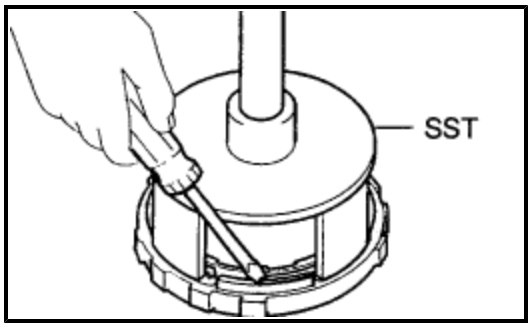
c. Install the return spring to the 2nd brake piston.



ZOOM SIZED FOR PRINT

d. Using SST, a press and a screwdriver, install the snap ring. SST 09387-00060