TRANSFER ASSEMBLY

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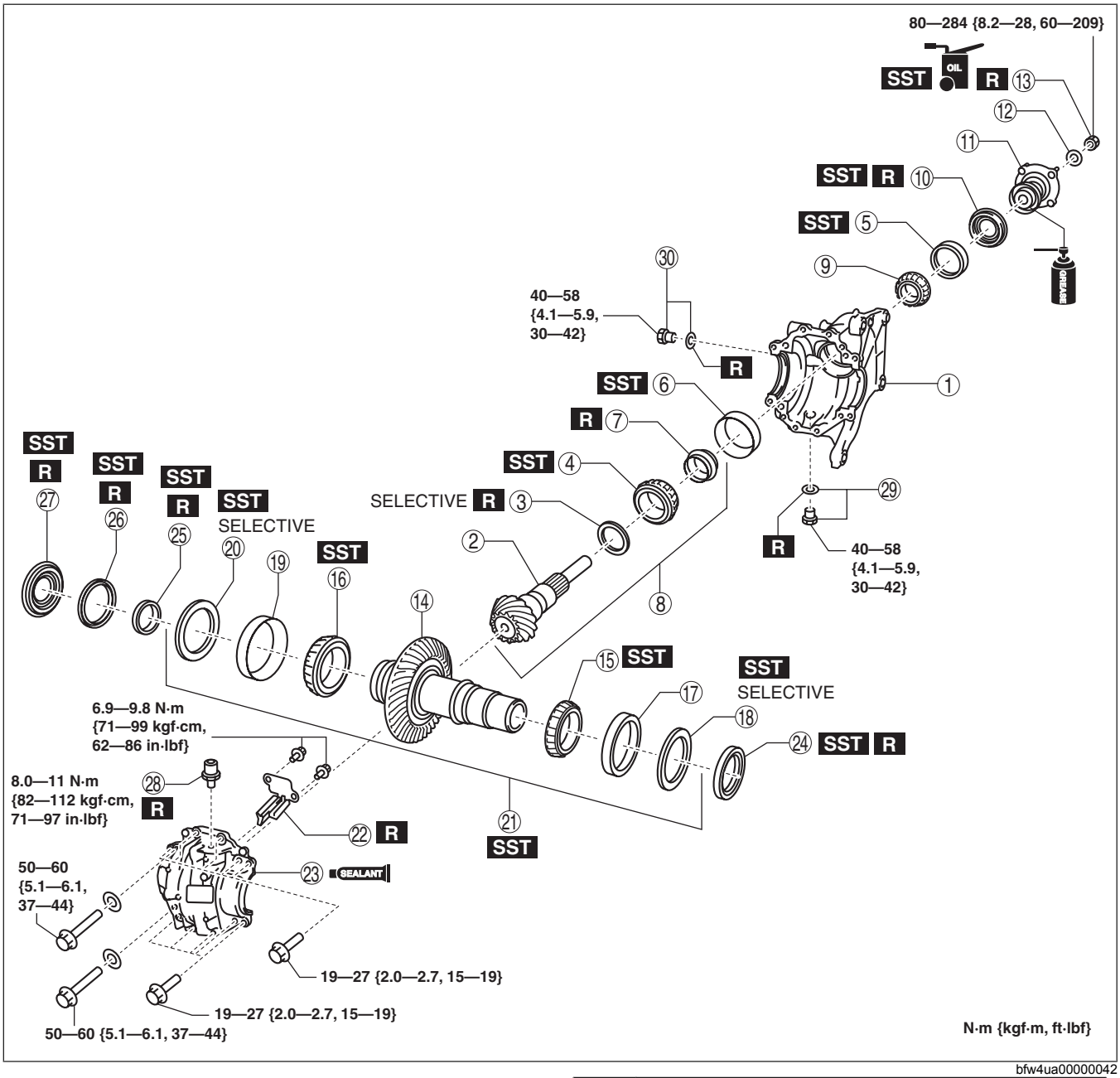

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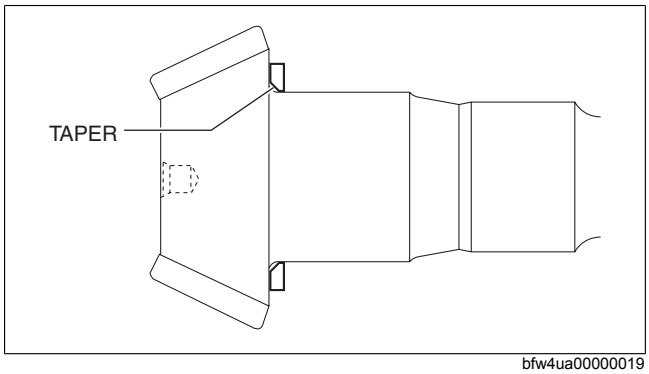
1	Front carrier
2	Drive pinion gear
3	Spacer
4	Bearing inner race (front)
5	Bearing outer race (rear)
6	Bearing outer race (front)
7	Collapsible spacer
8	Drive pinion gear component
9	Bearing inner race (rear)
10	Oil seal
11	Companion flange component
12	Washer
13	Locknut
14	Ring gear shaft
15	Bearing inner race (LH)
16	Bearing inner race (RH)

17	Bearing outer race (LH)
18	Adjustment shim (LH)
19	Bearing outer race (RH)
20	Adjustment shim (RH)
21	Ring gear shaft component
22	Baffle plate
23	Drive gear case
24	Transfer oil seal (LH)
25	Transfer oil seal (RH) No.3
26	Transfer oil seal (RH) No.2
27	Transfer oil seal (RH) No.1
28	Breather
29	Drain plug, washer
30	Oil level plug, washer

Transfer Component Assembly Procedure

1. When disassembling, measure the thickness of the removed spacer and assemble a new spacer with the same dimensions to the drive pinion gear.

   Note
   - Verify the assembly direction of the spacer and assemble it.



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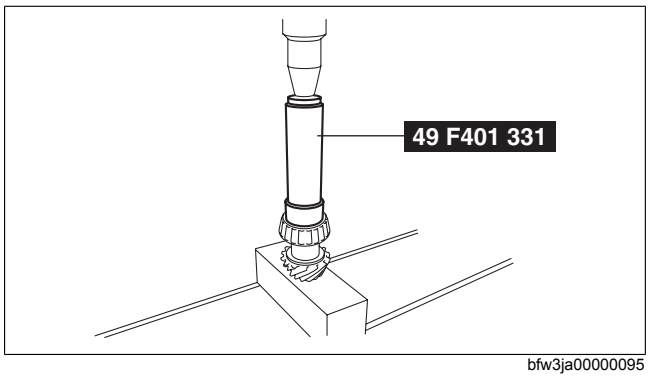
Spacer table

Identification mark	Thickness (mm {in})	Identification mark	Thickness (mm {in})
08	3.080 {0.1213}	29	3.290 {0.1295}
09	3.095 {0.1219}	30	3.305 {0.1301}
11	3.110 {0.1224}	32	3.320 {0.1307}
12	3.125 {0.1230}	33	3.335 {0.1313}
14	3.140 {0.1236}	35	3.350 {0.1319}
15	3.155 {0.1242}	36	3.365 {0.1325}
17	3.170 {0.1248}	38	3.380 {0.1331}
18	3.185 {0.1254}	39	3.395 {0.1337}
20	3.200 {0.1260}	41	3.410 {0.1343}
21	3.215 {0.1266}	42	3.425 {0.1348}
23	3.230 {0.1272}	44	3.440 {0.1354}
24	3.245 {0.1278}	45	3.455 {0.1360}
26	3.260 {0.1283}	47	3.470 {0.1366}
27	3.275 {0.1289}	–	–

2. Press fit the bearing inner race (front) to the drive pinion gear using the **SST** and a press.



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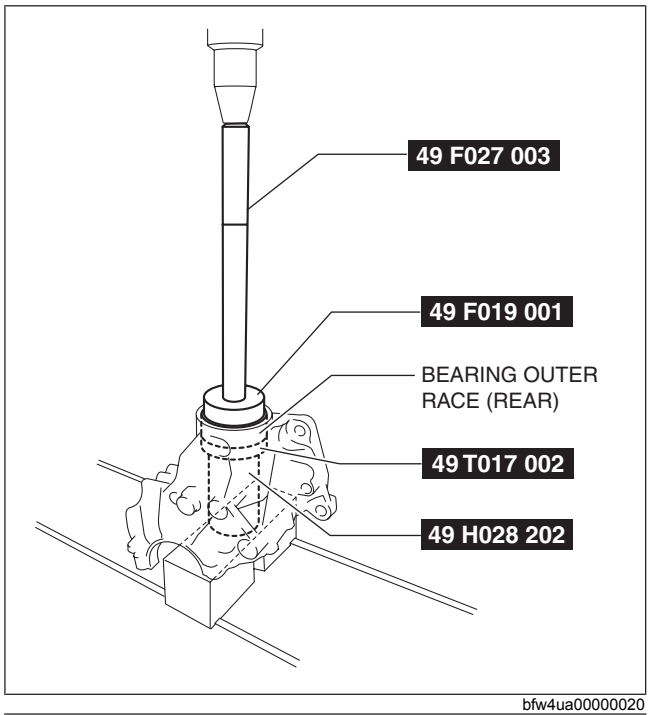
3. Press fit the bearing outer race (rear) to the front carrier using the **SST** and a press.



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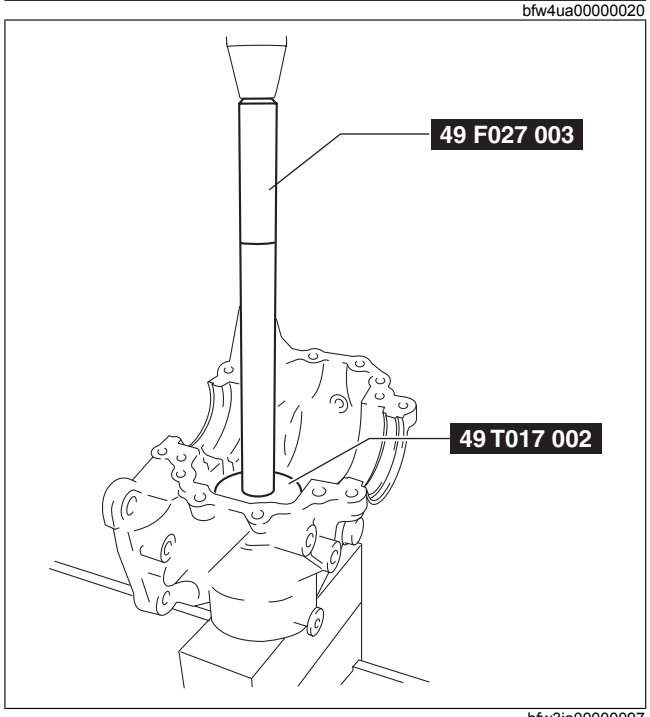
4. Press fit the bearing outer race (front) to the front carrier using the **SST** and a press.



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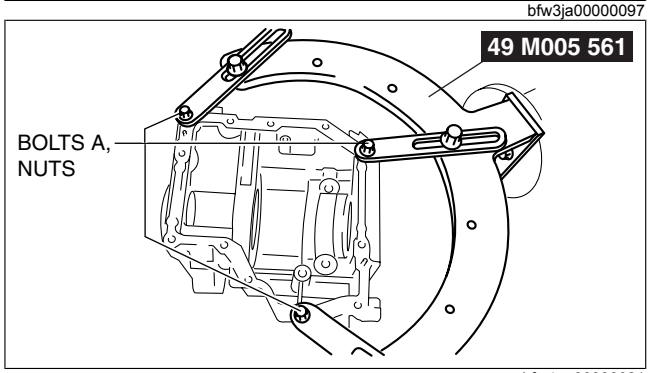
5. Assemble the front carrier to the **SST**.

   Bolts A, nuts
   Part number: 9YA02 A242A or M12 × 1.25 bolt (length 42 mm {1.7 in}), and nut (M12 × 1.25)
   Tightening torque: 64—89 N·m {6.6—9.0 kgf·m, 48—65 ft·lbf}

6. Assemble a new collapsible spacer to the drive pinion gear component.
7. Assemble the drive pinion gear component to the front carrier.
8. Assemble the bearing inner race (rear) to the drive pinion gear component.



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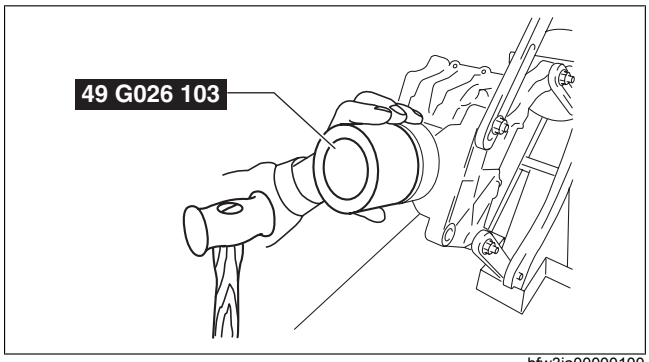
9. Assemble the oil seal using the **SST**.

Note
- Point the **SST** B-mark toward the oil seal side.

10. Apply grease to the area of the companion flange where it contacts the bearing inner race (rear).
11. Assemble the companion flange component to the drive pinion gear component.



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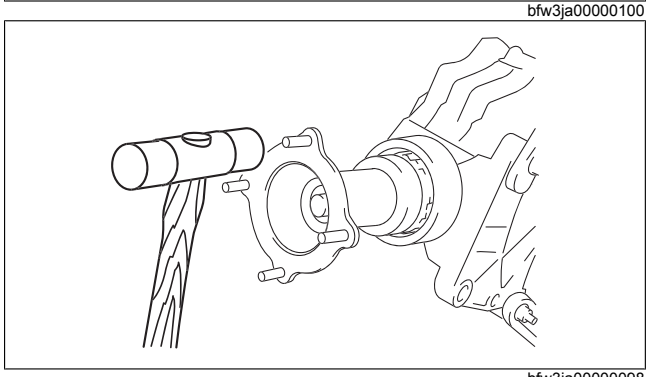
12. After applying transfer oil to the thread area of a new locknut, assemble the washer and locknut to the drive pinion gear component.

Note
- If the locknut cannot be installed, assemble the companion flange by lightly tapping it with a plastic hammer to acquire threading on the drive pinion gear.

13. Rotate the companion flange by hand to seat the bearing.
14. Using the **SST**, gradually tighten the locknut from the minimum specified tightening torque and adjust so that the specified preload is obtained. Record the locknut tightening torque value when the specified preload value is obtained.
    - If the specified preload is not obtained within the specified tightening torque, replace the collapsible spacer with a new one and return to Step 6 and perform the preload adjustment again.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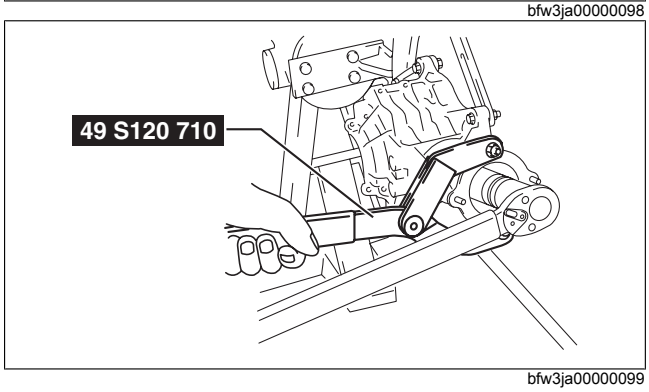
Tightening torque
80—284 N·m {8.2—28 kgf·m, 60—209 ft·lbf}

Drive pinion preload
1.19—1.44 N·m {13—14 kgf·cm, 11—12 in·lbf}



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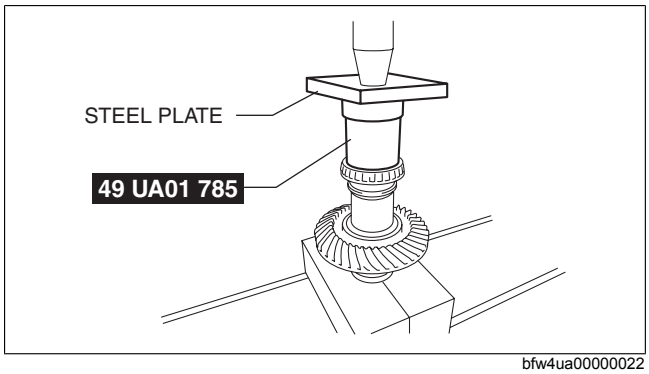
15. Press fit the bearing inner race (LH) to the ring gear shaft using the **SST** and a press.



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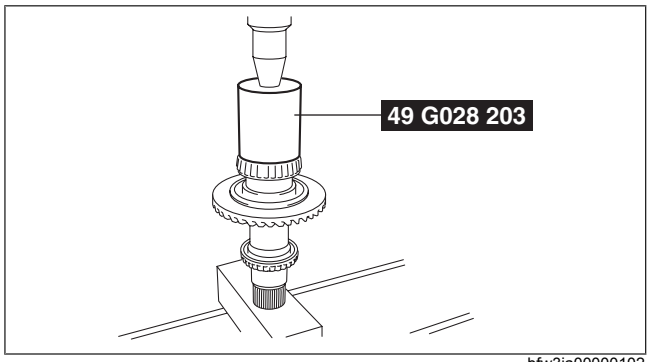
16. Press fit the bearing inner race (RH) to the ring gear shaft using the **SST** and a press.
17. Temporarily assemble the bearing outer race (LH) and bearing outer race (RH) to the ring gear shaft.



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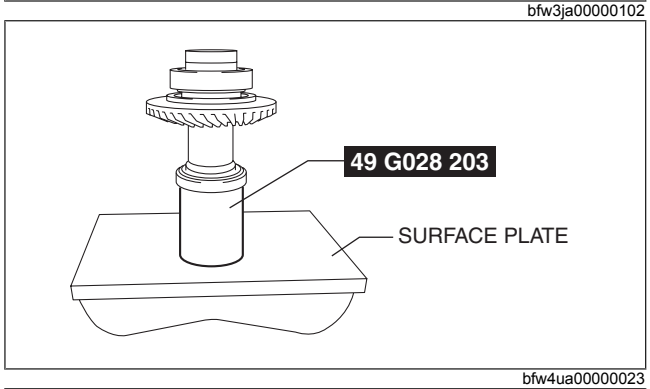
18. Place the **SST** on a surface plate as shown in the figure and set the ring gear shaft component on top of it with the bearing outer race (LH) side pointed downward.
19. Rotate the bearing by hand several times to seat it.



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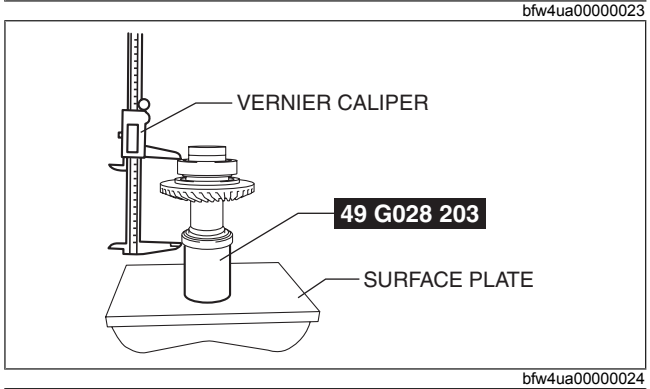
20. Using a vernier caliper, measure the distance between the bearing outer race (LH) and bearing outer race (RH).

    Note
    - Measure the distance in three locations as desired and designate the average value as distance A.



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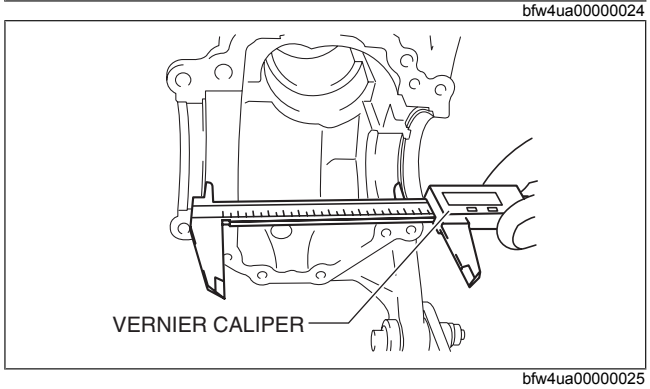
21. Using a vernier caliper, measure the distance shown in the figure for the front carrier.

    Note
    - Measure the distance in three locations as desired and designate the average value as distance B.

22. Calculate the total thickness C maximum and minimum values of the adjustment shim using the following formula.

    Adjustment shim total thickness C= Distance B - Distance A
    Minimum value= C + 0.07 mm {0.003 in}
    Maximum value= C + 0.16 mm {0.0063 in}



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(1) If the total thickness of the installed adjustment shim is within the range of the maximum and minimum values, use it as it is.
(2) If the total thickness of the installed adjustment shim is not within the range of the maximum and minimum values, select an appropriate adjustment shim from the following table.

Adjustment shim (LH) table

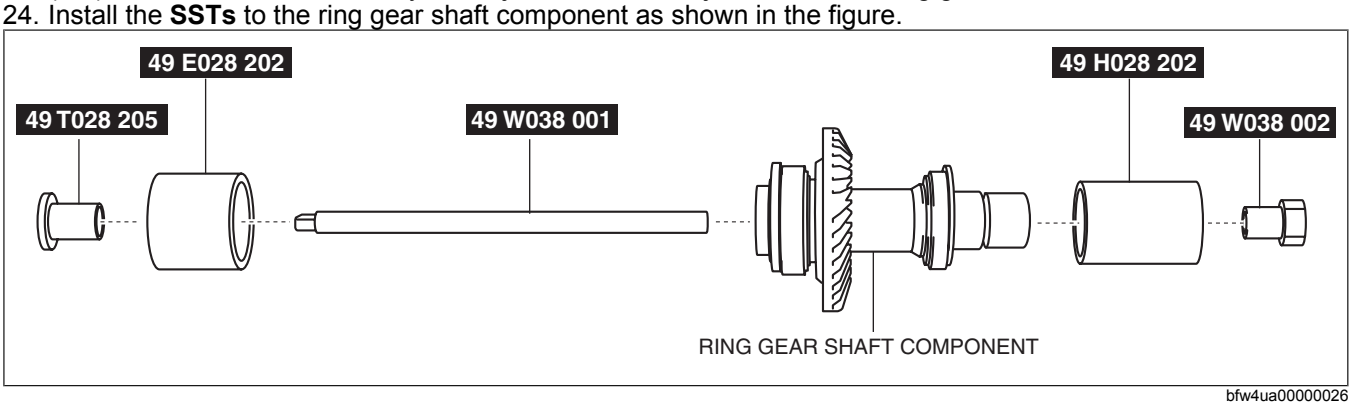
Part number	Thickness (mm {in})	Part number	Thickness (mm {in})
KN01 27 3D1	4.490 {0.1768}	KN01 27 3F1	5.030 {0.1980}
KN01 27 3D2	4.520 {0.1780}	KN01 27 3F2	5.060 {0.1992}
KN01 27 3D3	4.550 {0.1791}	KN01 27 3F3	5.090 {0.2004}
KN01 27 3D4	4.580 {0.1803}	KN01 27 3F4	5.120 {0.2016}

Part number	Thickness (mm {in})	Part number	Thickness (mm {in})
KN01 27 3D5	4.610 {0.1815}	KN01 27 3F5	5.150 {0.2028}
KN01 27 3D6	4.640 {0.1827}	KN01 27 3F6	5.180 {0.2039}
KN01 27 3D7	4.670 {0.1839}	KN01 27 3F7	5.210 {0.2051}
KN01 27 3D8	4.700 {0.1850}	KN01 27 3F8	5.240 {0.2063}
KN01 27 3D9	4.730 {0.1862}	KN01 27 3F9	5.270 {0.2075}
KN01 27 3E1	4.760 {0.1874}	KN01 27 3G1	5.300 {0.2087}
KN01 27 3E2	4.790 {0.1886}	KN01 27 3G2	5.330 {0.2098}
KN01 27 3E3	4.820 {0.1898}	KN01 27 3G3	5.360 {0.2110}
KN01 27 3E4	4.850 {0.1909}	KN01 27 3G4	5.390 {0.2122}
KN01 27 3E5	4.880 {0.1921}	KN01 27 3G5	5.420 {0.2134}
KN01 27 3E6	4.910 {0.1933}	KN01 27 3G6	5.450 {0.2146}
KN01 27 3E7	4.940 {0.1945}	KN01 27 3G7	5.480 {0.2157}
KN01 27 3E8	4.970 {0.1957}	KN01 27 3G8	5.510 {0.2169}
KN01 27 3E9	5.000 {0.1969}	–	–

Adjustment shim (RH) table

Part number	Thickness (mm {in})	Part number	Thickness (mm {in})
KN01 27 355	4.490 {0.1768}	KN01 27 375	5.030 {0.1980}
KN01 27 356	4.520 {0.1780}	KN01 27 376	5.060 {0.1992}
KN01 27 357	4.550 {0.1791}	KN01 27 377	5.090 {0.2004}
KN01 27 358	4.580 {0.1803}	KN01 27 378	5.120 {0.2016}
KN01 27 359	4.610 {0.1815}	KN01 27 379	5.150 {0.2028}
KN01 27 361	4.640 {0.1827}	KN01 27 3B1	5.180 {0.2039}
KN01 27 362	4.670 {0.1839}	KN01 27 3B2	5.210 {0.2051}
KN01 27 363	4.700 {0.1850}	KN01 27 3B3	5.240 {0.2063}
KN01 27 364	4.730 {0.1862}	KN01 27 3B4	5.270 {0.2075}
KN01 27 365	4.760 {0.1874}	KN01 27 3B5	5.300 {0.2087}
KN01 27 366	4.790 {0.1886}	KN01 27 3B6	5.330 {0.2098}
KN01 27 367	4.820 {0.1898}	KN01 27 3B7	5.360 {0.2110}
KN01 27 368	4.850 {0.1909}	KN01 27 3B8	5.390 {0.2122}
KN01 27 369	4.880 {0.1921}	KN01 27 3B9	5.420 {0.2134}
KN01 27 371	4.910 {0.1933}	KN01 27 3C1	5.450 {0.2146}
KN01 27 372	4.940 {0.1945}	KN01 27 3C2	5.480 {0.2157}
KN01 27 373	4.970 {0.1957}	KN01 27 3C3	5.510 {0.2169}
KN01 27 374	5.000 {0.1969}	–	–

23. Assemble the bearing outer race (LH), bearing outer race (RH), and adjustment shim (LH) and adjustment shim (RH) which were determined by the adjustment shim adjustment to the ring gear shaft.
24. Install the **SSTs** to the ring gear shaft component as shown in the figure.



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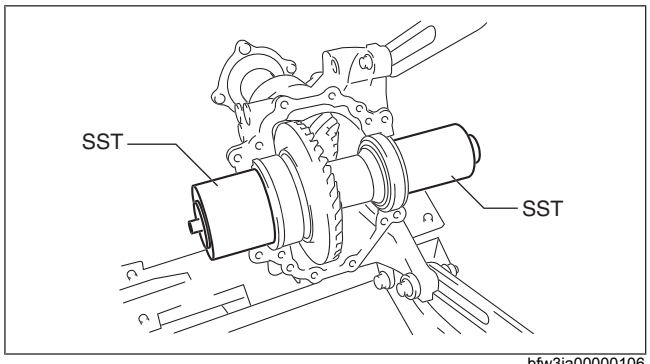
25. Tighten down the bolts on the left and right of the **SST** until the ring gear shaft component is assembled to the front carrier.

26. Assemble the ring gear shaft component with the **SSTs** to the front carrier.



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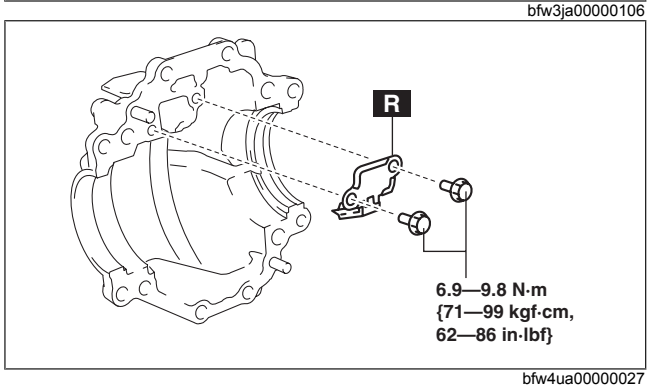
27. Assemble a new baffle plate to the drive gear case.

Note
- Verify that there is no gap between the baffle plate seal area lip and the drive gear case.

Tightening torque
6.9—9.8 N·m {71—99 kgf·cm, 62—86 in·lbf}

28. Assemble the drive gear case.

Tightening torque
Bolt, large (2): 50—60 N·m {5.1—6.1 kgf·m, 37—44 ft·lbf}
Bolt, small (10): 19—27 N·m {2.0—2.7 kgf·m, 15—19 ft·lbf}



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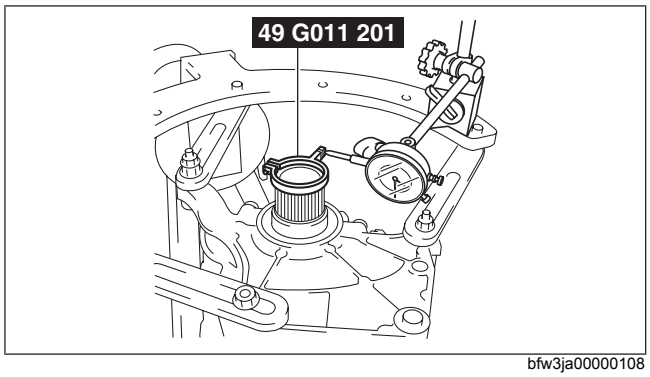
29. Remove the **SSTs** from the ring gear shaft component.
30. Install the **SST** to the differential engagement area of the ring gear shaft component, and install the dial gauge as shown in the figure.
31. Secure the companion flange (drive pinion gear) and measure the backlash when the ring gear shaft is moved.

Drive pinion gear and ring gear backlash
Standard: 0.07—0.1 mm {0.0028—0.0039 in}
Minimum: 0.04 mm {0.0016 in}
Variance: 0.05 mm {0.0019 in}



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- If the measured value of the backlash is not within the specification, adjust it by moving the ring gear shaft in the axial direction.

Note
- Replace the adjustment shim to move the ring gear shaft in the axial direction. At this time, if the adjustment shim on the right side is replaced with one 0.03 mm {0.001 in} thicker, replace the adjustment shim on the left side with one 0.03 mm {0.001 in} thinner.

32. Perform the drive pinion gear and ring gear shaft tooth contact inspection.
(1) Remove the drive gear case.

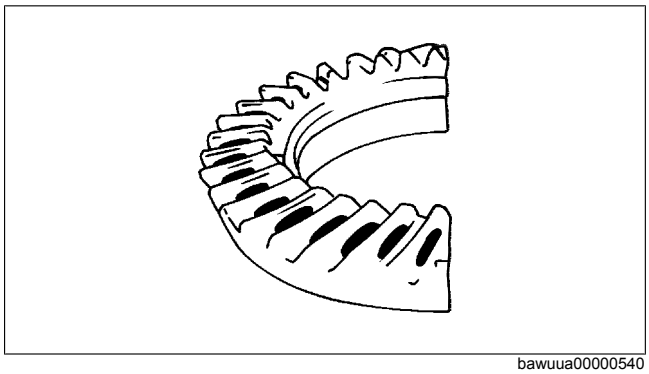
Caution
- **When removing the drive gear case, the ring gear shaft component comes off with the case and could drop and be damaged. Perform the drive gear case removal carefully.**

(2) Apply tooth marking compound (red lead coating) evenly to both tooth surfaces of the ring gear.
(3) Assemble the drive gear case.

Tightening torque
Bolt, large (2): 50—60 N·m {5.1—6.1 kgf·m, 37—44 ft·lbf}
Bolt, small (10): 19—27 N·m {2.0—2.7 kgf·m, 15—19 ft·lbf}

(4) Rotate the companion flange by hand several times.

(5) Remove the drive gear case and inspect the tooth contact in 4 locations around the circumference of the ring gear. Verify that the tooth contacts indicated by the tooth marking compound (red lead coating) exhibit the pattern shown in the figure.
   - If the tooth contact points are normal, wipe off the tooth marking compound (red lead coating).
   - If the tooth contact is not correct, adjust the drive pinion gear spacer. Then, adjust the drive pinion preload and the backlash.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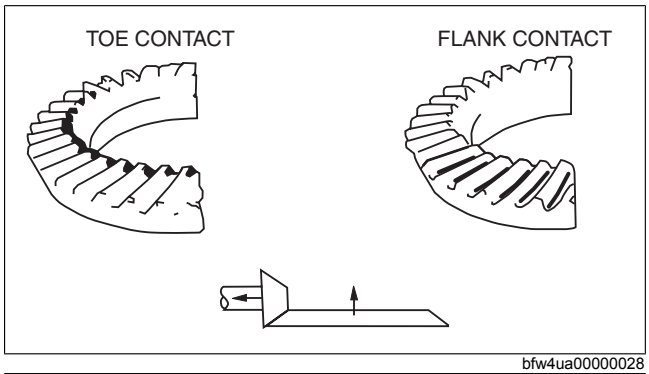
Caution
- **When removing the drive gear case, the ring gear shaft component comes off with the case and could drop and be damaged. Perform the drive gear case removal carefully.**

(6) If the tow and flank contact points appear as shown in the figure, replace the drive pinion gear spacer with a thinner one to move the drive pinion gear further away from the ring gear.



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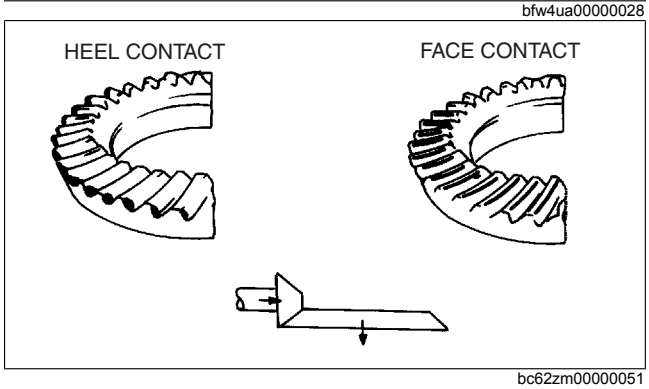
(7) If the heel and face contact points appear as shown in the figure, replace the drive pinion gear spacer with a thicker one to move the drive pinion gear closer to the ring gear.



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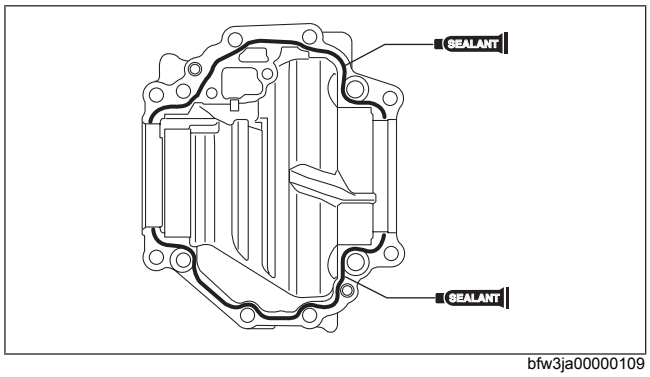
Spacer table

Identification mark	Thickness (mm {in})	Identification mark	Thickness (mm {in})
08	3.080 {0.1213}	29	3.290 {0.1295}
09	3.095 {0.1219}	30	3.305 {0.1301}
11	3.110 {0.1224}	32	3.320 {0.1307}
12	3.125 {0.1230}	33	3.335 {0.1313}
14	3.140 {0.1236}	35	3.350 {0.1319}
15	3.155 {0.1242}	36	3.365 {0.1325}
17	3.170 {0.1248}	38	3.380 {0.1331}
18	3.185 {0.1254}	39	3.395 {0.1337}
20	3.200 {0.1260}	41	3.410 {0.1343}
21	3.215 {0.1266}	42	3.425 {0.1348}
23	3.230 {0.1272}	44	3.440 {0.1354}
24	3.245 {0.1278}	45	3.455 {0.1360}
26	3.260 {0.1283}	47	3.470 {0.1366}
27	3.275 {0.1289}	–	–

33. Apply a thin layer of silicone sealant to the locations indicated in the figure for the drive gear case.



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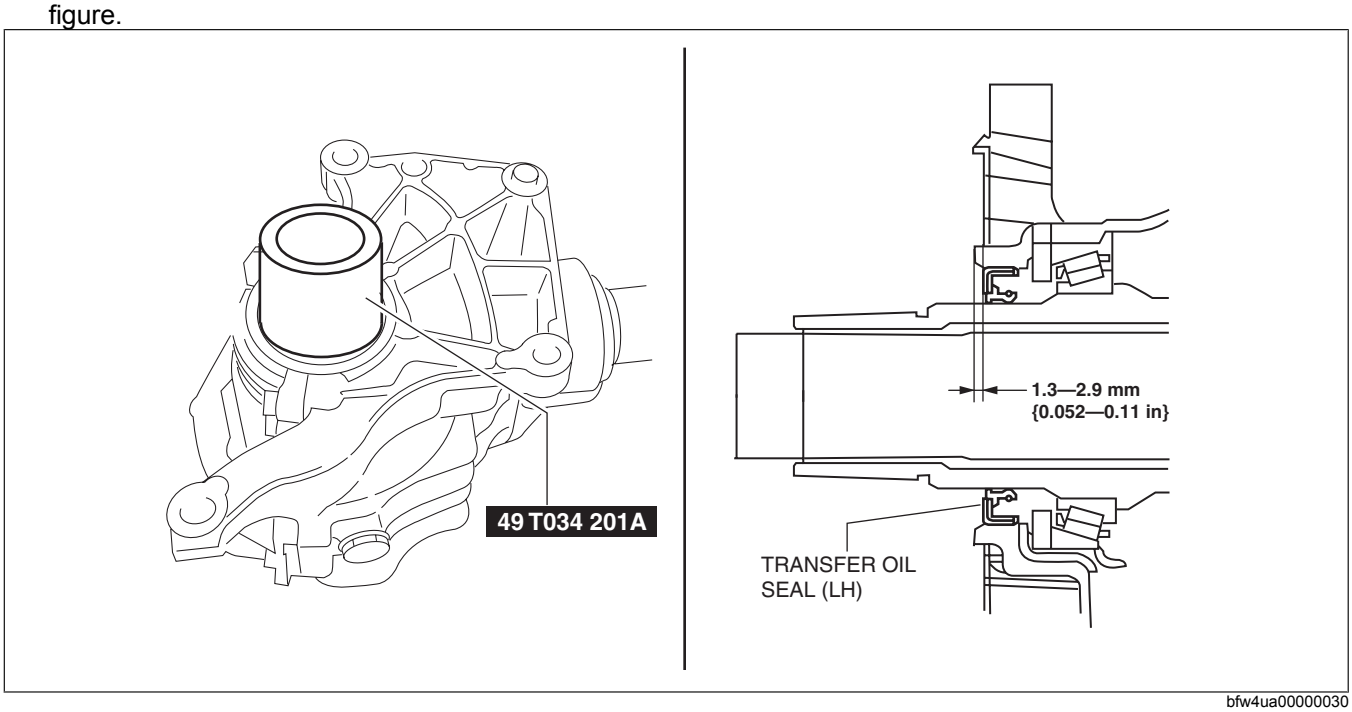
Note
- Clean away the remaining silicone sealant before applying new silicone sealant.
- Assemble the drive gear case before the applied silicone sealant starts to harden.
- Wait **30 min or more** after the silicone gasket application area has bonded and then fill with transfer oil.

34. Tighten the drive gear case installation bolts to the specified torque.

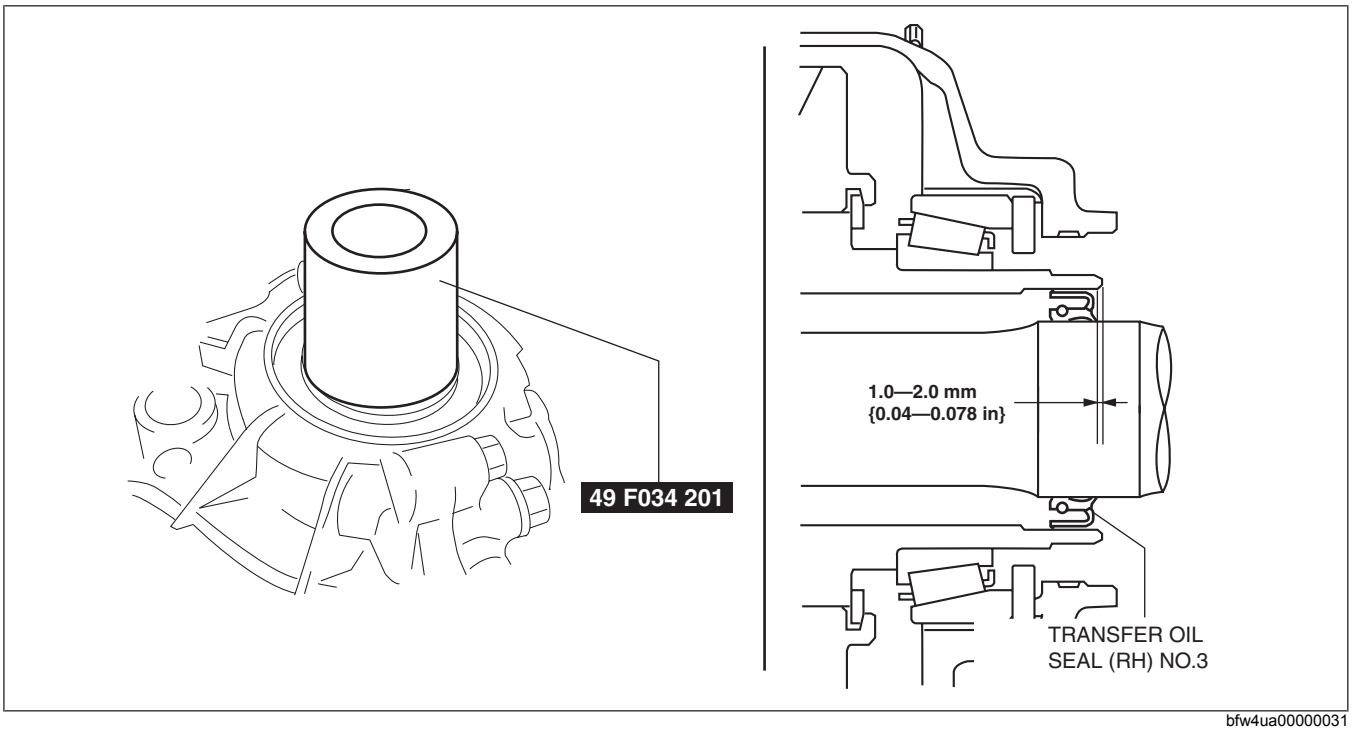
Tightening torque
Bolt, large (2): 50—60 N·m {5.1—6.1 kgf·m, 37—44 ft·lbf}
Bolt, small (10): 19—27 N·m {2.0—2.7 kgf·m, 15—19 ft·lbf}

35. Using the **SST** and a hammer, assemble a new transfer oil seal (LH) according to the dimensions shown in the figure.



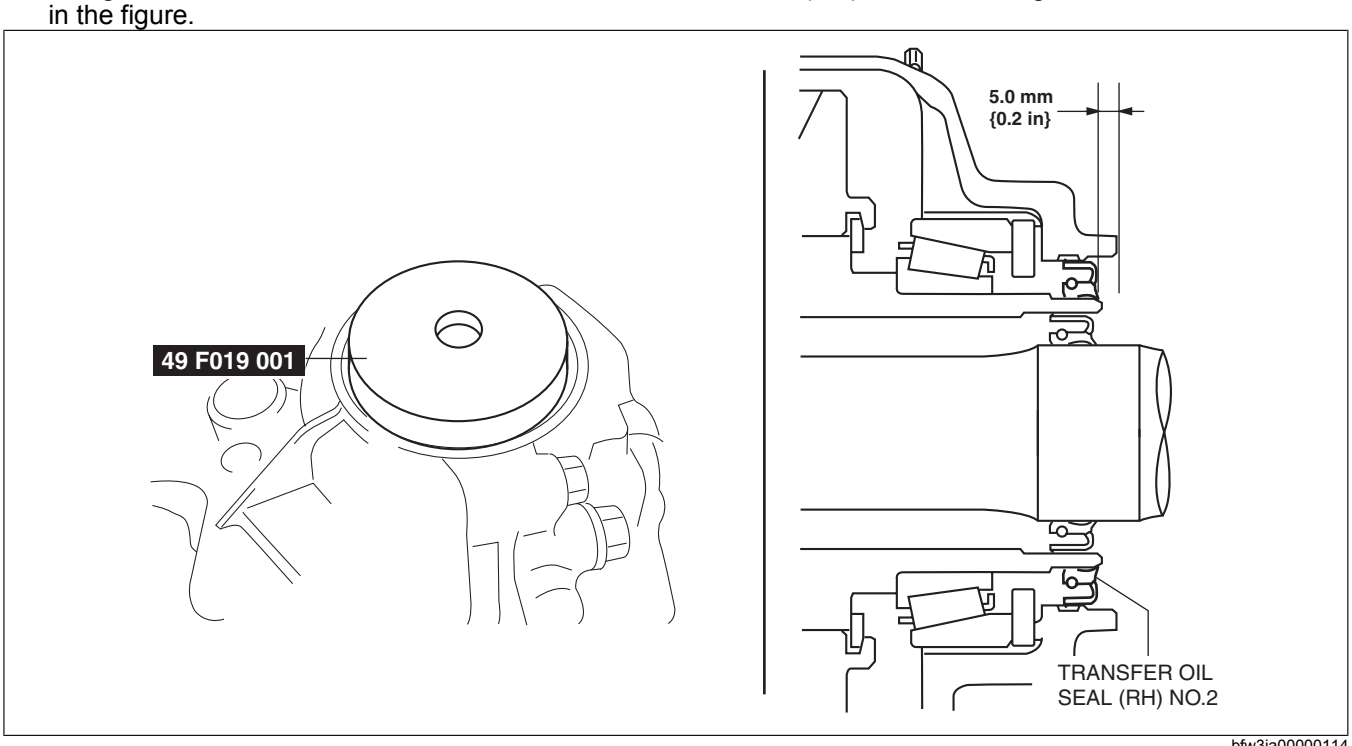
bfw4ua00000030

36. Using the **SST** and a hammer, assemble a new transfer oil seal (RH) No.3 according to the dimensions shown in the figure.



bfw4ua00000031

37. Using the **SST** and a hammer, assemble a new transfer oil seal (RH) No.2 according to the dimensions shown in the figure.



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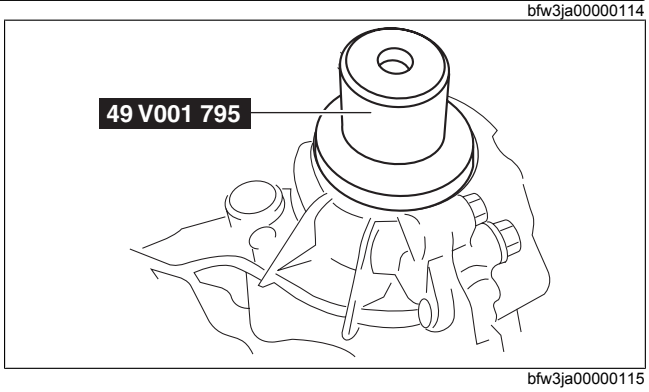
38. Using the **SST** and a hammer, assemble a new transfer oil seal (RH) No.1
39. Assemble a new breather.

    Tightening torque
    8.0—11 N·m {82—112 kgf·cm, 71—97 in·lbf}

40. Assemble a new washer and drain plug.

    Tightening torque
    40—58 N·m {4.1—5.9 kgf·m, 30—42 ft·lbf}

41. Assemble a new washer and oil level plug.



bfw3ja00000115

Tightening torque
40—58 N·m {4.1—5.9 kgf·m, 30—42 ft·lbf}