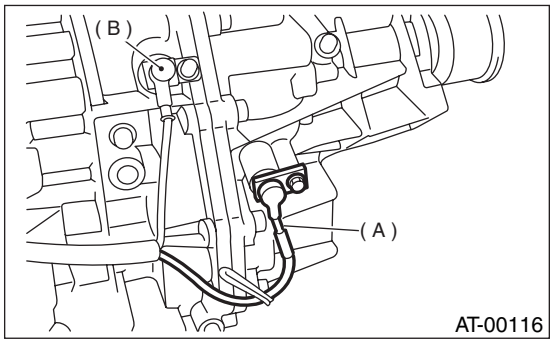
27.Transfer Clutch

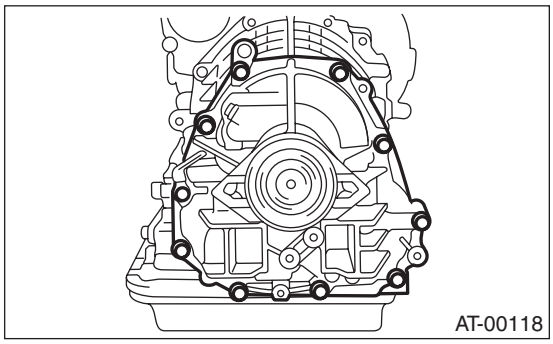
A: REMOVAL

1) Remove the transmission assembly from the vehicle. <Ref. to AT-39, REMOVAL, Automatic Transmission Assembly.>
2) Remove the rear vehicle speed sensor.

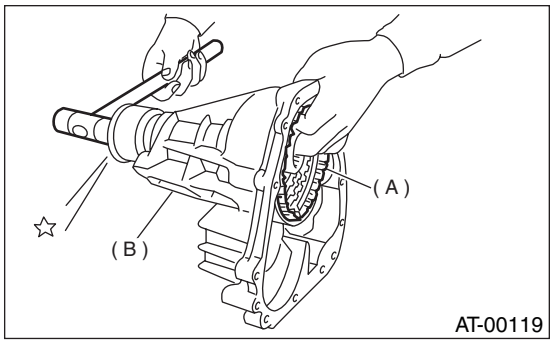


(A) Rear vehicle speed sensor
(B) Front vehicle speed sensor

3) Separate transmission case and extension case sections.



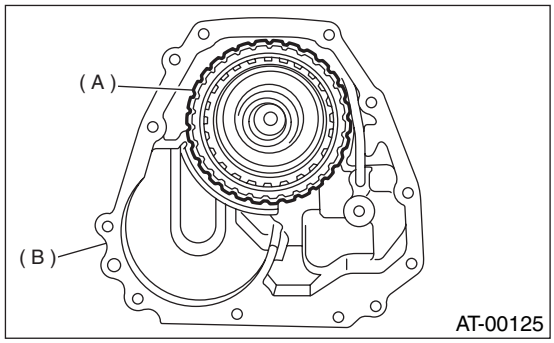
4) Take out the transfer clutch by lightly tapping the end of the rear drive shaft.



(A) Transfer clutch
(B) Extension case

B: INSTALLATION

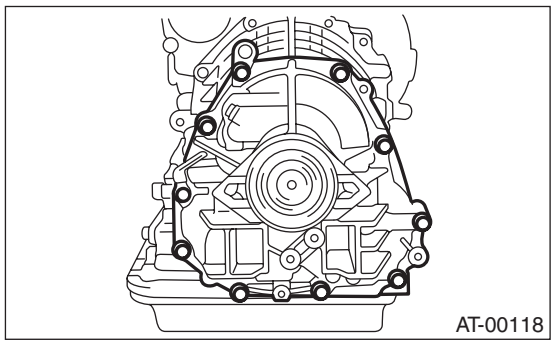
1) Select the thrust needle bearing.
2) Install the transfer clutch assembly to the case.



(A) Transfer clutch
(B) Extension case

3) Tighten bolts to secure the case.

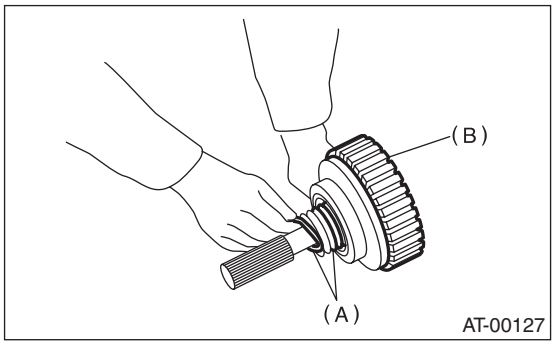
Tightening torque:
25 N·m (2.5 kgf-m, 18.1 ft-lb)



4) Install the transmission assembly to the vehicle. <Ref. to AT-41, INSTALLATION, Automatic Transmission Assembly.>

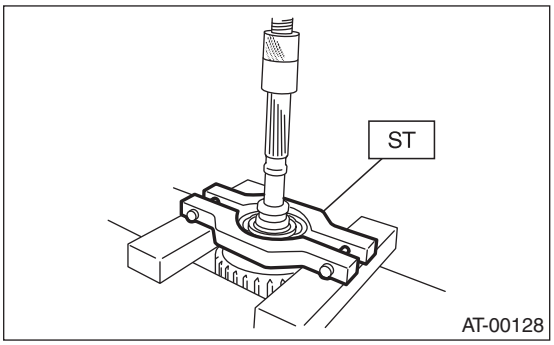
C: DISASSEMBLY

1) Remove the seal ring.

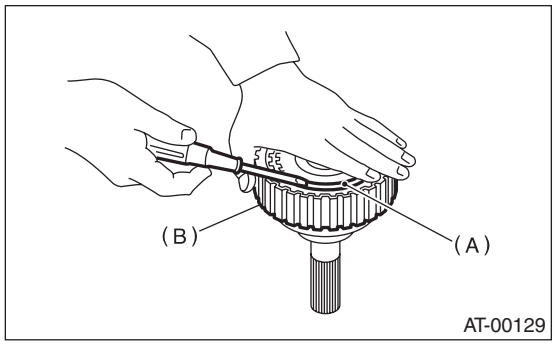


(A) Seal ring
(B) Transfer clutch

2) Using a press and ST, remove the ball bearing.
ST 498077600 REMOVER

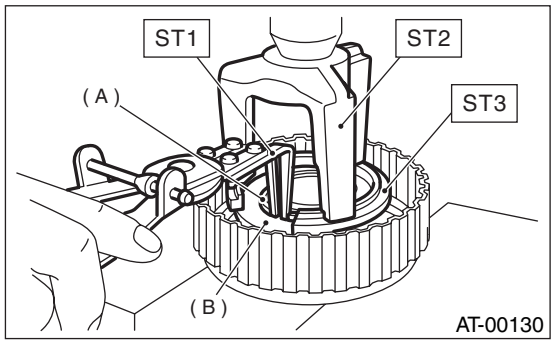


3) Remove the snap ring, and take out the pressure plate, drive plates, and driven plates.



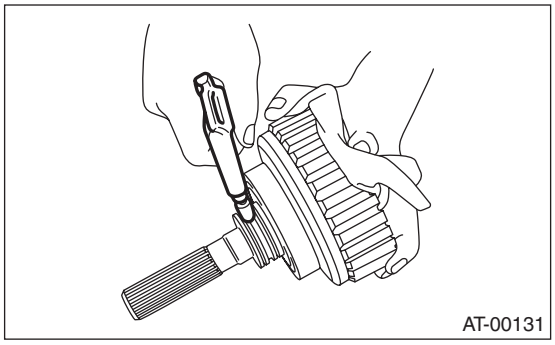
(A) Snap ring
(B) Transfer clutch

4) Remove the snap ring with ST1, ST2 and ST3, and take out the return spring and transfer clutch piston seal.
ST1 399893600 PLIERS
ST2 398673600 COMPRESSOR
ST3 398623600 SEAT



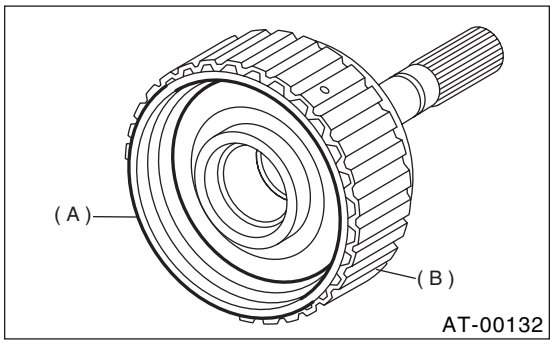
(A) Snap ring
(B) Transfer piston seal

5) Apply compressed air to the rear drive shaft to remove the piston.



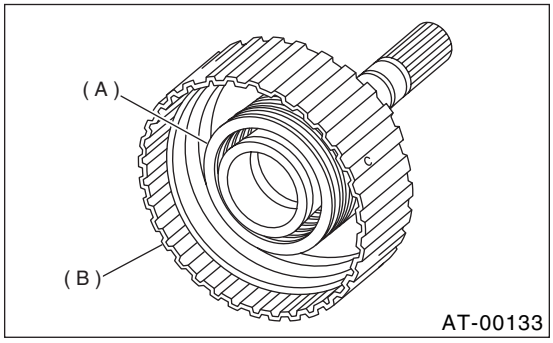
D: ASSEMBLY

1) Install the transfer clutch piston.



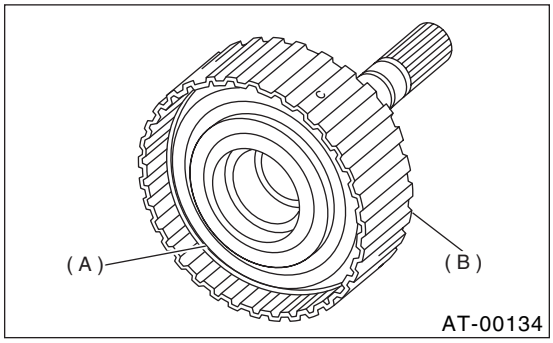
(A) Transfer clutch piston
(B) Rear drive shaft

2) Install return spring to transfer piston.



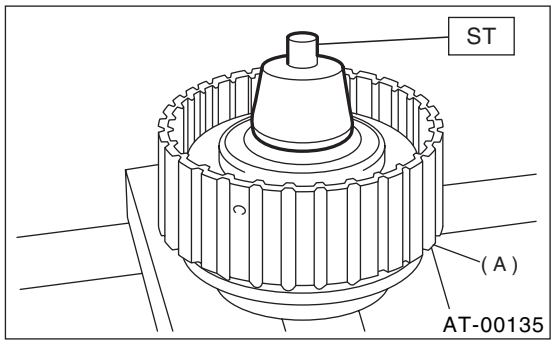
(A) Return spring
(B) Rear drive shaft

3) Install transfer clutch piston seal.



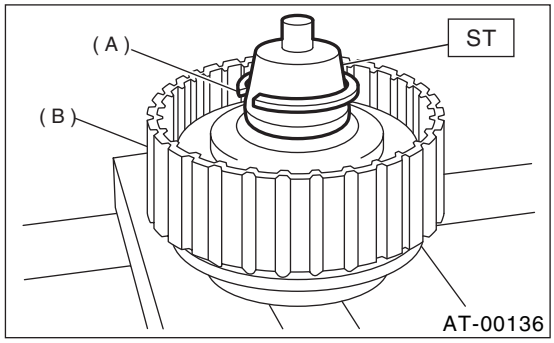
(A) Transfer clutch piston seal
(B) Rear drive shaft

4) Install ST to rear drive shaft.
ST 499257300 SNAP RING OUTER GUIDE



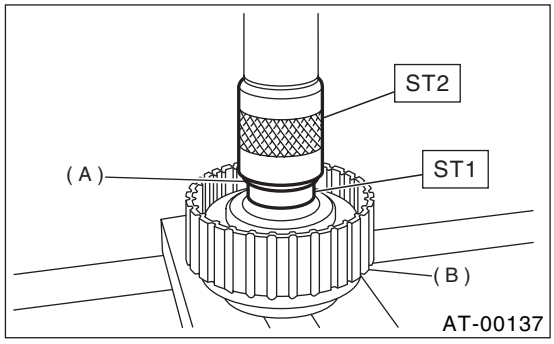
(A) Transfer clutch

5) Install snap ring to ST.
ST 499257300 SNAP RING OUTER GUIDE



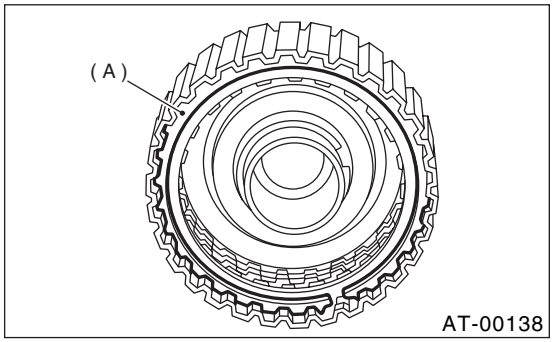
(A) Snap ring
(B) Transfer clutch

6) Using ST1 and ST2, install snap ring to rear drive shaft.
ST1 499257300 SNAP RING OUTER GUIDE
ST2 499247400 INSTALLER



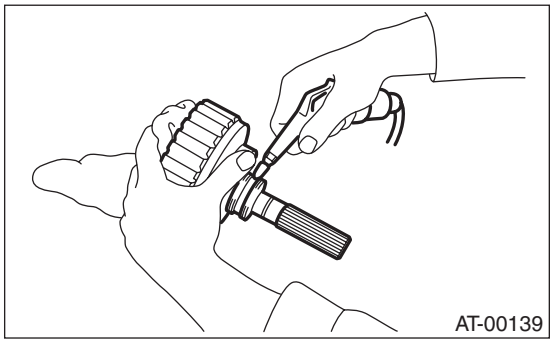
(A) Snap ring
(B) Transfer clutch

7) Install the driven plates, drive plates, pressure plate and snap ring.



(A) Snap ring

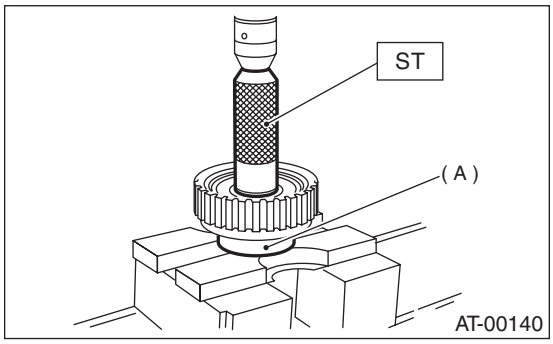
8) Apply compressed air to see if the assembled parts move smoothly.



9) Inspect clearance between snap ring and pressure plate. <Ref. to AT-87, INSPECTION, Transfer Clutch.>

10) Press-fit a new ball bearing with ST.

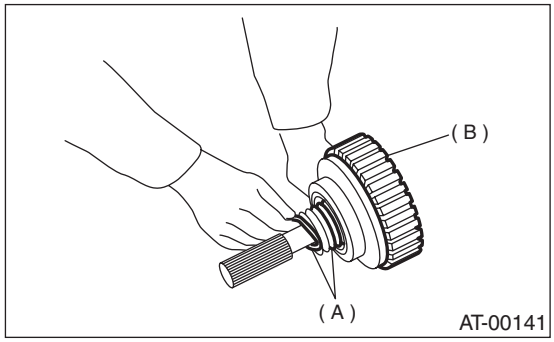
ST 899580100 INSTALLER



(A) Ball bearing

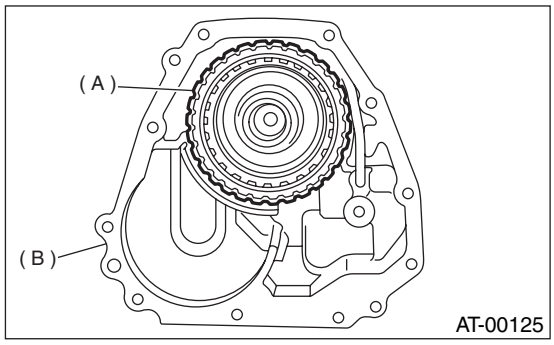
11) Coat a new seal ring with petrolatum, and install it in the seal ring groove of the shaft.

NOTE:
Do not expand the seal ring excessively when installing.



(A) Seal ring
(B) Transfer clutch

12) Install the transfer clutch assembly without damaging seal ring.



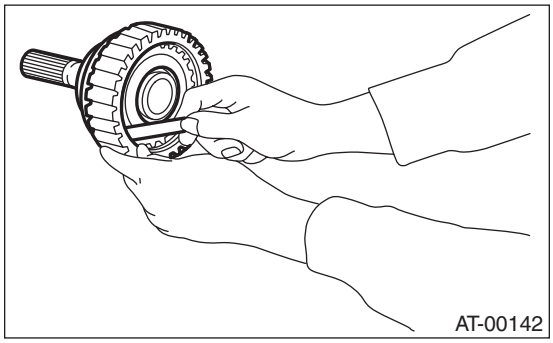
(A) Transfer clutch
(B) Extension case

E: INSPECTION

• Check the drive plate facing for wear and damage.
• Check the snap ring for wear, and the return spring for permanent set, breakage and deformation.
• Check the D ring for damage.
• Measure the extension end play and adjust it to within specifications. <Ref. to AT-87, ADJUSTMENT, Transfer Clutch.>
1) Inspect clearance between snap ring and pressure plate.
2) Before measuring clearance, place the same thickness of shim on both sides to prevent pressure plate from tilting.
3) If the clearance is not within specification, adjust it by selecting a suitable pressure plate on the transfer clutch piston side.

Standard:
0.7 — 1.1 mm (0.028 — 0.043 in)

Service limit:
1.6 mm (0.063 in)



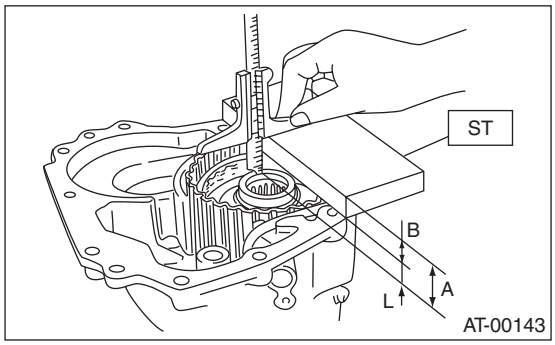
Available pressure plates	
Part No.	Thickness mm (in)
31593AA151	3.3 (0.130)
31593AA161	3.7 (0.146)
31593AA171	4.1 (0.161)
31593AA181	4.5 (0.177)

4) Check if tight corner braking does not occur when the vehicle is started with steering wheel held at fully turned position. If tight corner braking occurs, perform the following procedures.
(1) With the steering wheel held at fully turned position, drive the vehicle in “D” range and with vehicle speed at approx. 5 km/h (3 mph) in both clockwise and counterclockwise directions for approx. ten times each, while repeating acceleration and braking intermittently.
(2) If the tight corner braking still persists, drive the vehicle again in a circle for several laps.

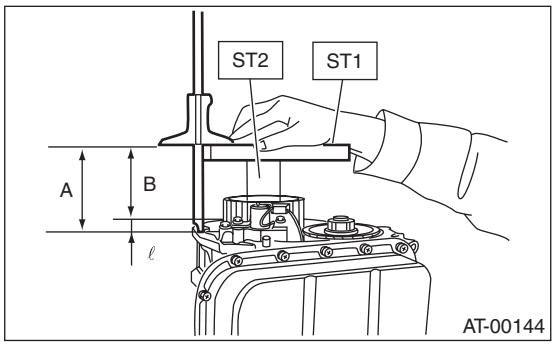
F: ADJUSTMENT

1. MPT MODEL

1) Measure distance “L” from end of extension case and rear drive shaft with ST.
ST 398643600 GAUGE
L = Measured value − 15 mm
(L = Measured value − 0.59 in)



A: Measured value
B: ST thickness [15 mm (0.59 in)]
L: Distance from end of extension case to end of rear drive shaft
2) Measure the distance “ ℓ ” from the transmission case mating surface to the reduction drive gear end surface with ST1 and ST2.
ℓ = Measured value − 50 mm
(ℓ = Measured value − 1.97 in)
ST1 398643600 GAUGE
ST2 499577000 GAUGE



A: Measured value
B: ST thickness [50 mm (1.97 in)]
ℓ: Distance from end of transmission case to end of reduction drive gear
3) Calculation equation:

NOTE:
Calculating H:
When clearance is at 0.05 mm (0.0020 in) and 0.25 mm (0.0098 in), then select a suitable thrust needle bearing from the table.

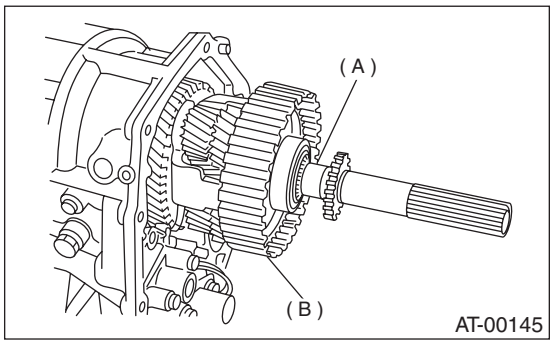
H = (L + 0.45 mm) − ℓ − T
[H = (L + 0.0177 in) − ℓ − T]
T: Thrust needle bearing thickness

L: Distance from end of extension case to end of rear drive shaft
0.45 mm (0.0177 in): Gasket thickness
ℓ: Distance from end of transmission case to end of reduction drive gear
H: Shim clearance
0.05 — 0.25 mm (0.0020 — 0.0098 in)
Example:
When, L = 18.60 mm (0.7323 in), ℓ = 15.05 mm (0.5925 in)
Calculation when clearance is 0.05 mm (0.0020 in)
H = (18.60 + 0.45) − 15.05 − 0.05 = 3.95
[H = (0.7323 + 0.0177) − 0.5925 − 0.0020 = 0.1555]
Calculation when clearance is 0.25 mm (0.0098 in)
H = (18.60 + 0.45) − 15.05 − 0.25 = 3.75
[H = (0.7323 + 0.0177) − 0.5925 − 0.0098 = 0.1476]
After calculation, the value of H becomes between 3.75 and 3.95, therefore select bearing thickness of 3.8.

Thrust needle bearing	
Part No.	Thickness mm (in)
806536020	3.8 (0.150)
806535030	4.0 (0.157)
806535040	4.2 (0.165)
806535050	4.4 (0.173)
806535060	4.6 (0.181)
806535070	4.8 (0.189)
806535090	5.0 (0.197)

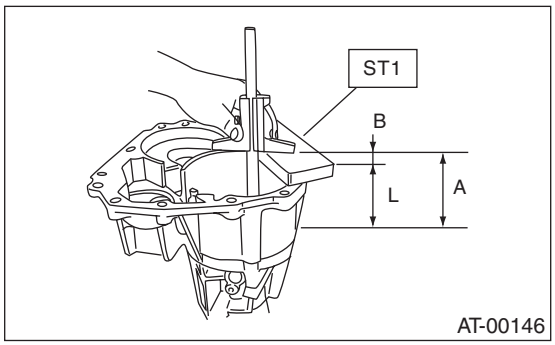
2. VTD MODEL

1) Insert the rear drive shaft into the reduction drive gear and center differential assembly.

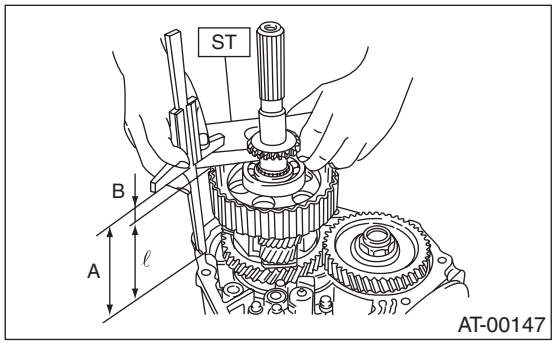


(A) Rear drive plate
(B) Center differential carrier

2) Measure distance L from extension case mating surface to multi-plate clutch (LSD) piston with ST.
ST 398643600 GAUGE
L = Measured value − 15 mm
(L = Measured value − 0.59 in)



A: Measured value
B: ST thickness [15 mm (0.59 in)]
L: Distance from end of extension case to end of rear drive shaft
3) Measure the distance "ℓ" from the transmission case mating surface to the reduction drive gear end surface with ST.
ℓ = Measured value − 15 mm
(ℓ = Measured value − 0.59 in)
ST 398643600 GAUGE



A: Measured value
B: ST thickness [15 mm (0.59 in)]
ℓ: Distance from end of extension case to end of reduction drive gear
4) Calculation equation:

NOTE:
Calculating H:
When clearance is at 0.05 mm (0.0020 in) and 0.25 mm (0.0098 in), then select up to 4 shims from the table so that their total thickness matches the clearance.

H = (L + 0.45 mm) − ℓ − T
[H = (L + 0.0177 in) − ℓ − T]
T: Shim clearance
L: Distance from end of extension case to end of rear drive shaft
0.45 mm (0.0177 in): Gasket thickness

ℓ: Distance from end of transmission case to end of reduction drive gear
T: Shim thickness
0.05 — 0.25 mm (0.0020 — 0.0098 in)
Example:
When, L = 90.50 mm (3.5360 in), ℓ = 90.35 mm (3.5571 in)
Calculation when clearance is 0.05 mm (0.0020 in)
H = (90.50 + 0.45) − 90.35 − 0.05 = 0.55
[H = (3.5630 + 0.0177) − 3.5571 − 0.0020 = 0.0217]
Calculation when clearance is 0.25 mm (0.0098 in)
H = (90.50 + 0.45) − 90.35 − 0.25 = 0.35
[H = (3.5630 + 0.0177) − 3.5571 − 0.0098 = 0.0138]
After calculation, the value of H becomes between 0.35 mm (0.0138 in) — 0.55 mm (0.0217 in), therefore select either 2 shims of a thickness 0.2 mm (0.010 in) each, or 1 shim 0.5 mm (0.020 in) thick.

Shims for adjustment	
Part No.	Thickness mm (in)
33281AA001	0.2 (0.008)
33281AA011	0.5 (0.020)