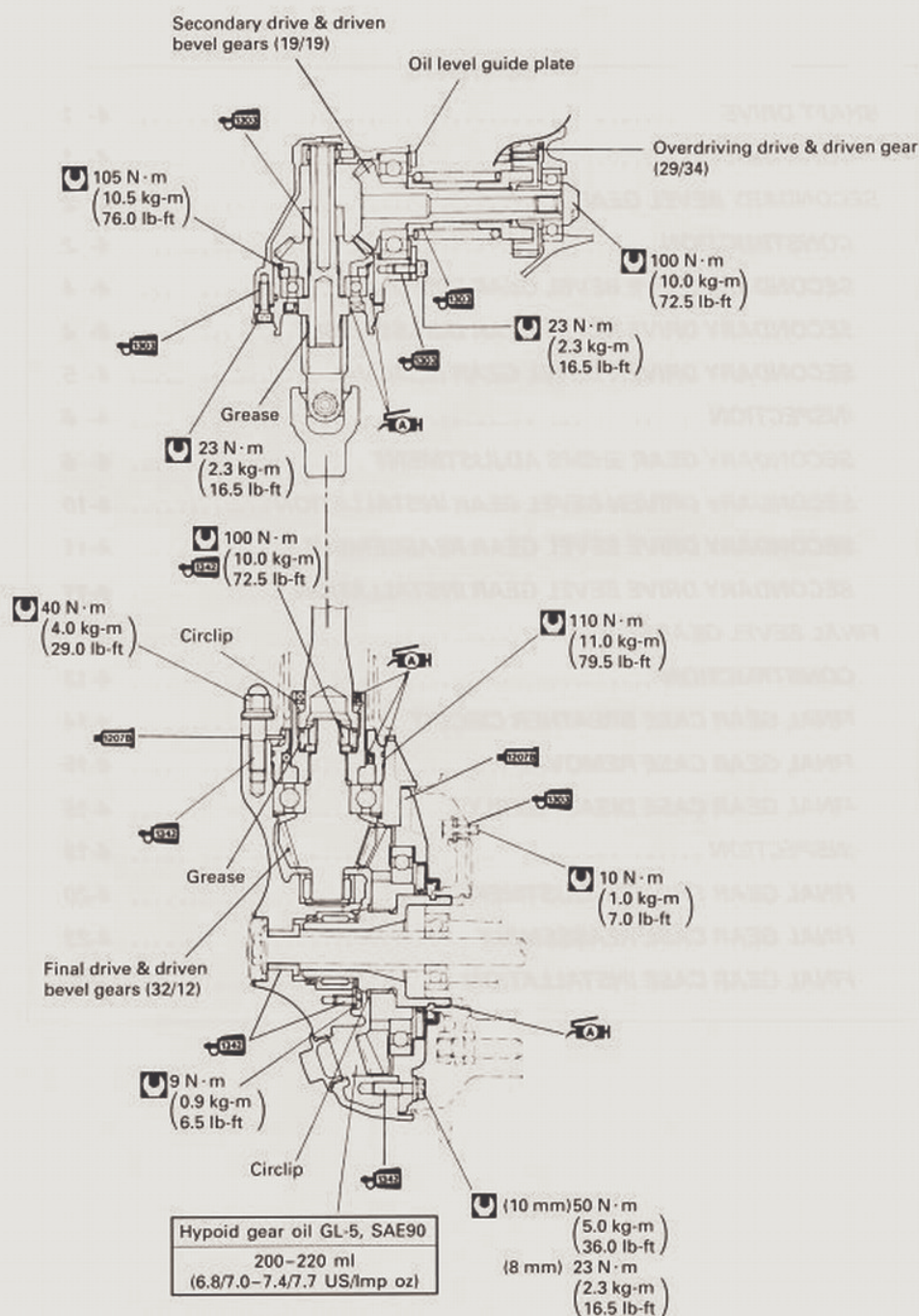


SHAFT DRIVE

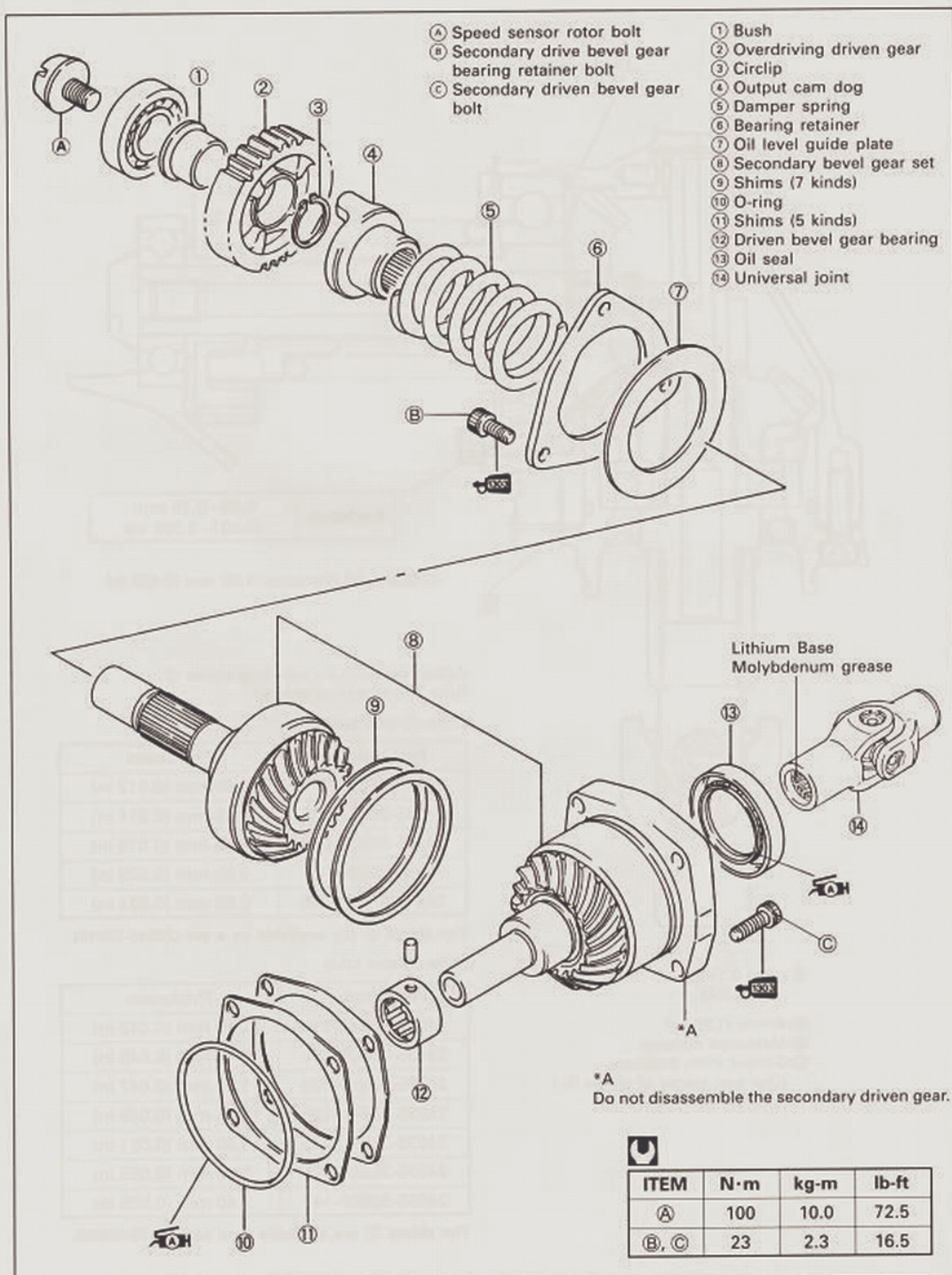
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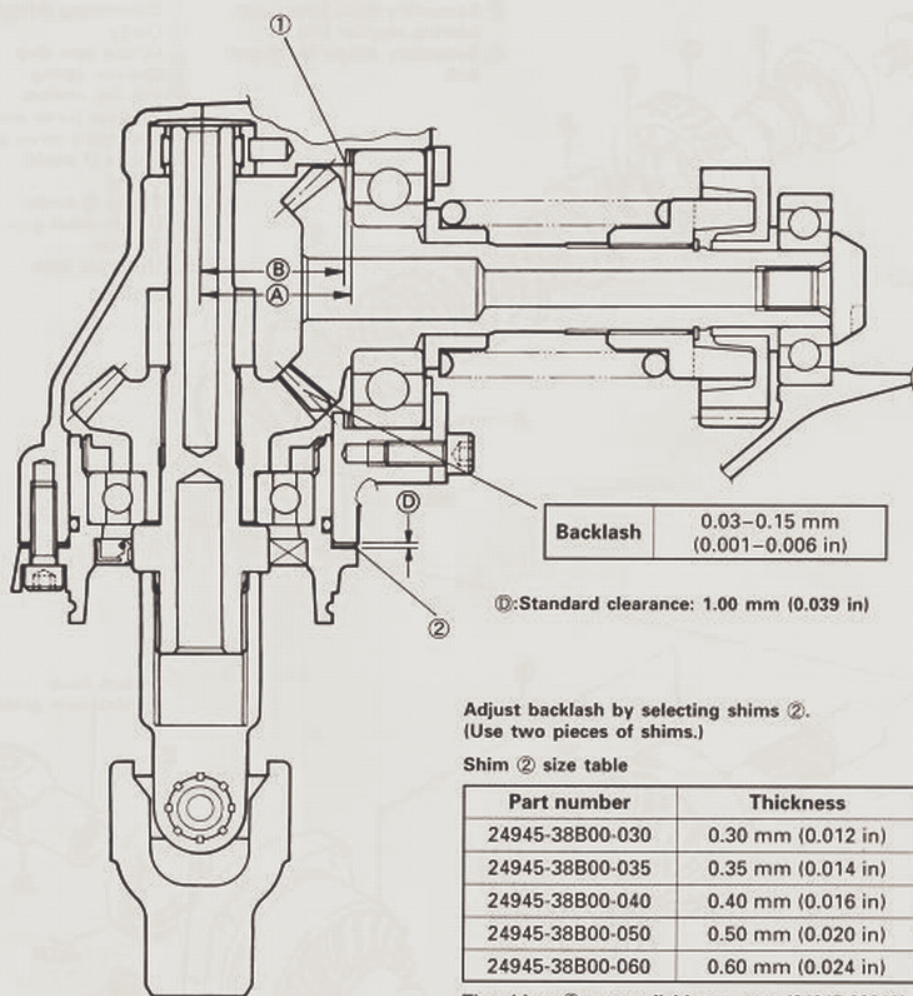
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SHAFT DRIVE CONSTRUCTION



SECONDARY BEVEL GEARS CONSTRUCTION





Backlash 0.03–0.15 mm
(0.001–0.006 in)

③: Standard clearance: 1.00 mm (0.039 in)

Adjust backlash by selecting shims ②.
(Use two pieces of shims.)

Shim ② size table

Part number	Thickness
24945-38B00-030	0.30 mm (0.012 in)
24945-38B00-035	0.35 mm (0.014 in)
24945-38B00-040	0.40 mm (0.016 in)
24945-38B00-050	0.50 mm (0.020 in)
24945-38B00-060	0.60 mm (0.024 in)

The shims ② are available as a set (24945-38810).

Shim ① size table

Part number	Thickness
24935-38B00-110	1.10 mm (0.043 in)
24935-38B00-115	1.15 mm (0.045 in)
24935-38B00-120	1.20 mm (0.047 in)
24935-38B00-125	1.25 mm (0.049 in)
24935-38B00-130	1.30 mm (0.051 in)
24935-38B00-135	1.35 mm (0.053 in)
24935-38B00-140	1.40 mm (0.055 in)

The shims ① are available as a set (24935-38820).

$$A - B - 0.1 = C$$

(0.004)

A: 48mm (1.89 in)

B: Measured distance

C: Correct shim thickness
(Use two pieces of shims ①.)


SECONDARY DRIVE BEVEL GEAR REMOVAL

The crankcase must be separated to service the secondary drive bevel gear. The secondary drive bevel gear service requires engine removal and disassembly. Refer to the engine removal and the engine disassembly sections for secondary drive bevel gear assembly removal.

- *ENGINE REMOVAL See pp. 3-2 to -10.
- *ENGINE DISASSEMBLY See pp. 3-16 to -30.

SECONDARY DRIVE BEVEL GEAR DISASSEMBLY

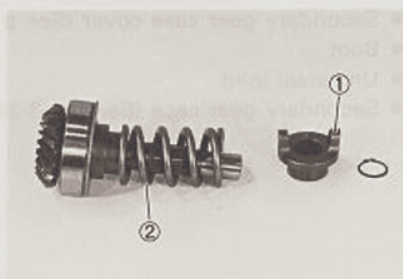
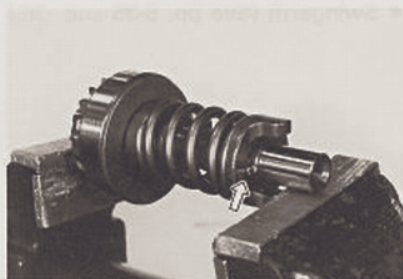
- Compress the damper spring with a vice, and remove the circlip using the special tool.

 09900-06107: Snap ring pliers

- Remove the cam dog ① and damper spring ②.

⚠ CAUTION

Do not attempt to remove the secondary drive bevel gear bearing.
The secondary drive bevel gear and its bearing are available only as an assembly.



SECONDARY DRIVEN BEVEL GEAR REMOVAL

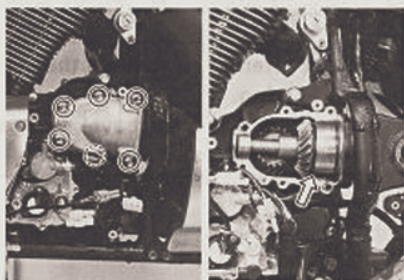
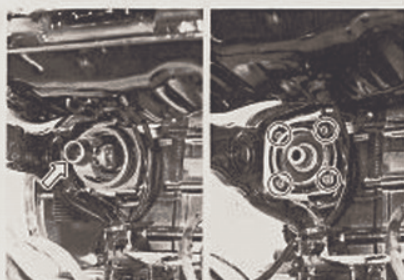
The following components must be removed in the described order before removing the secondary driven bevel gear.

NOTE:

Refer to the following pages for the details of each step.

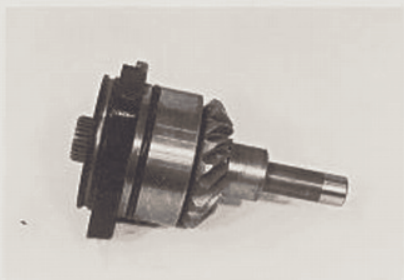
Remove

- Rear wheel (See p. 6-29.)
- Swingarm (See pp. 6-35 and -36.)
- Secondary gear case cover (See p. 3-7.)
- Boot
- Universal joint
- Secondary gear case (See pp. 3-24 and -25.)
- Secondary driven bevel gear (See p. 3-25.)



⚠ CAUTION

Do not attempt to disassemble the secondary driven bevel gear assembly.
It is available only as an assembly.



INSPECTION

Inspect the removed parts for the following abnormalities.

- * Drive and driven bevel gears damage or wear
- * Improper tooth contact
- * Abnormal noise of bearings
- * Bearing damage or wear
- * Oil seal damage or wear
- * Output cam dog wear or damage
- * Universal joint spline damage or wear

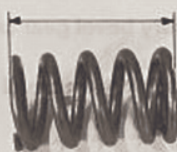


DAMPER SPRING

Measure the free length of the damper spring. If the length is shorter than the service limit, replace the spring with a new one.

Service limit

Damper spring free length: 88.4 mm (3.48 in)



SECONDARY GEAR SHIMS ADJUSTMENT

BACKLASH

- When replacing the crankcases with new ones, measure the height (B) with a surface plate and a vernier calipers. As the height (A) is designed with 48.00 mm (1.890 in), calculate the difference (C) between (A)-(B).

$$(A) - (B) - 0.1 (0.004) = (C) \quad (A): 48.00 \text{ mm (1.890 in)}$$

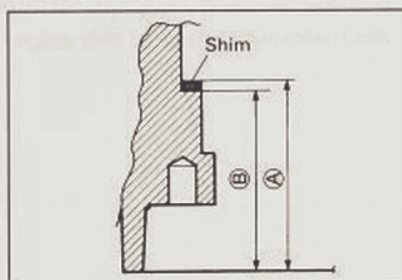
- Select the two pieces of shims that the total thickness equals (C).

Shim (Drive bevel gear side) specifications

Part No.	Thickness
24935-38B00-110	1.10 mm (0.043 in)
24935-38B00-115	1.15 mm (0.045 in)
24935-38B00-120	1.20 mm (0.047 in)
24935-38B00-125	1.25 mm (0.049 in)
24935-38B00-130	1.30 mm (0.051 in)
24935-38B00-135	1.35 mm (0.053 in)
24935-38B00-140	1.40 mm (0.055 in)

NOTE:

The shims (drive bevel gear side) are available as a set (24935-38820).



- Install the selected shims to the secondary drive bevel gear assembly and tighten the bolts ① to the specified torque.

Secondary drive bevel gear bearing retainer bolt:
23 N·m (2.3 kg-m, 16.5 lb-ft)

NOTE:

When replacing the secondary drive and driven bevel gears, install the removed shims to the secondary drive bevel gear assembly and tighten the bolts ① to the specified torque.

- Install the secondary driven bevel gear assembly with removed shims, the driven bevel gear bearing and secondary gear case.

NOTE:

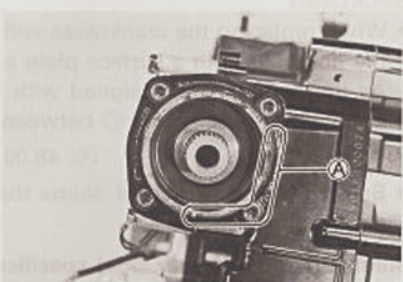
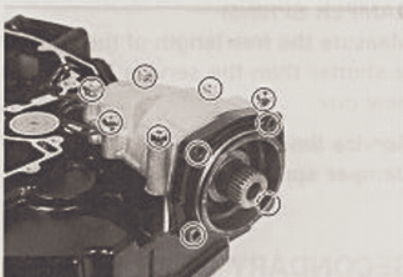
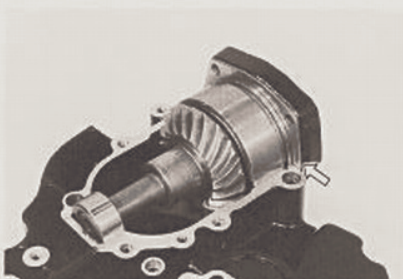
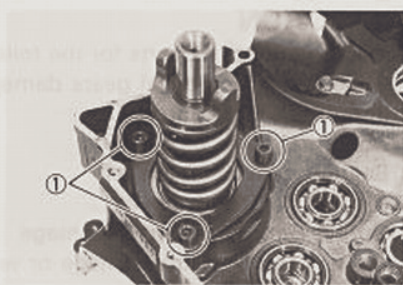
Do not install the O-ring on the driven gear housing at this stage. O-ring is installed after backlash and tooth contact are correct.

- Tighten the secondary bevel gear case bolts and secondary driven bevel gear bolts to the specified torque.

Secondary bevel gear case bolts: 22 N·m
(2.2 kg-m, 16.0 lb-ft)
Secondary driven bevel gear bolt: 23 N·m
(2.3 kg-m, 16.5 lb-ft)

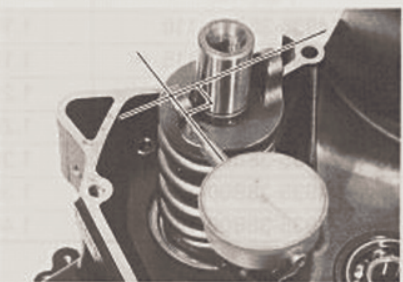
NOTE:

- * Hollow portion ① of the secondary driven bevel gear assembly faces inside.
- * It is not necessary to apply SUZUKI BOND "1207B" to the matching surface at this stage.



- Measure the backlash as follows.
- Set-up a dial gauge as shown in photo.

TOOL 09900-20606: Dial gauge (1/100 mm, 10 mm)
09900-20701: Magnetic stand



- Adjust the dial gauge so that it touches the secondary drive bevel gear cam dog; hold the driven bevel gear securely, and turn the drive bevel gear in each direction, reading the total backlash on the dial gauge.

Standard

**Secondary bevel gear backlash: 0.03–0.15 mm
(0.001–0.006 in)**

NOTE:

When measuring backlash, hold the left crankcase horizontally pull the secondary drive gear to take the bearing play out.

- If the backlash is not within specification, the shims (Driven bevel gear side) must be changed and the backlash should be re-checked until correct.

Refer to the chart for appropriate changes.

NOTE:

When changing the shims (Driven bevel gear side), measure the thickness of old shims. Using the thickness of the old shims as a guide, adjust the backlash by referring to the chart.

Backlash	Shim adjustment
Under 0.03 mm (0.001 in)	Increase shim thickness
0.03–0.15 mm (0.001–0.006 in)	Correct
Over 0.15 mm (0.006 in)	Decrease shim thickness

Shim (Driven bevel gear side) specifications

Part No.	Shim thickness
24945-38B00-030	0.30 mm (0.012 in)
24945-38B00-035	0.35 mm (0.014 in)
24945-38B00-040	0.40 mm (0.016 in)
24945-38B00-050	0.50 mm (0.020 in)
24945-38B00-060	0.60 mm (0.024 in)

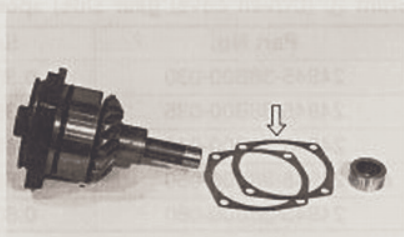
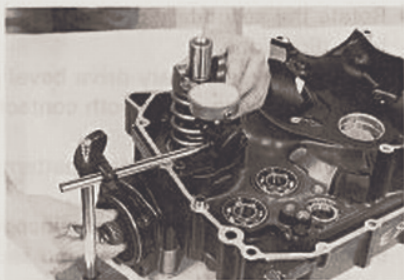
NOTE:

The shims (driven bevel gear side) are available as a set (24945-38810).

TOOTH CONTACT

After bringing the backlash within specification by changing the secondary driven bevel gear shims, it will be necessary to check tooth contact.

- Remove the drive bevel gear assembly from the crankcase.
- Clean and degrease the secondary drive bevel gear teeth, and apply a coating of machinist's layout dye or paste to several teeth.
- Reinstall the secondary drive bevel gear assembly, with correct shim, onto the secondary gear housing.



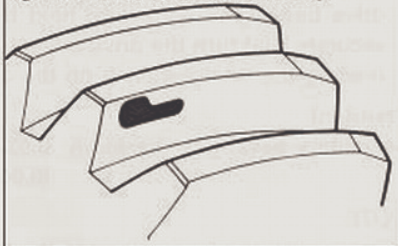
- Rotate the secondary driven bevel gear several turns in both directions.
- Remove the secondary drive bevel gear from the crankcase, and observe the tooth contact pattern made in the dye or paste.
- Compare the tooth contact pattern to the examples as shown in ①, ② and ③.
- If tooth contact is found to be incorrect, the shims of the secondary drive bevel gear and secondary driven bevel gear must be changed, tooth contact should be re-checked until correct.

CAUTION

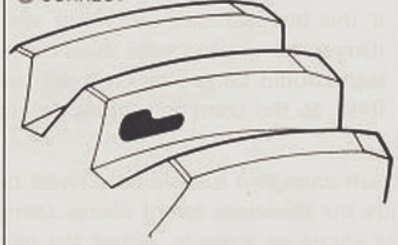
After the tooth contact adjustment is made, the backlash must be re-checked, as it may change. Refer to the backlash checking sub-section, and readjust until both backlash and tooth contact are correct.

Tooth contact	Shim adjustment
Contact at tooth top ①	Decrease thickness of shims ④ or ⑤
Contact at tooth root ③	Increase thickness of shims ④ or ⑤

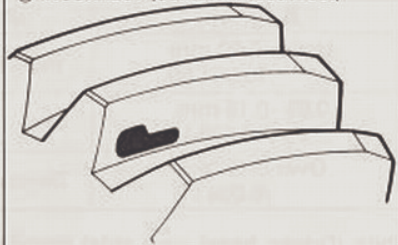
① INCORRECT (Contact at tooth top)



② CORRECT



③ INCORRECT (Contact at tooth root)

**Shim ④ (Driven bevel gear side) specifications**

Part No.	Shim thickness
24945-38B00-030	0.30 mm (0.012 in)
24945-38B00-035	0.35 mm (0.014 in)
24945-38B00-040	0.40 mm (0.016 in)
24945-38B00-050	0.50 mm (0.020 in)
24945-38B00-060	0.60 mm (0.024 in)

NOTE:

The shims ④ are available as a set (24945-38810).

Shim ⑤ (Drive bevel gear side) specifications

Part No.	Shim thickness
24935-38B00-110	1.10 mm (0.043 in)
24935-38B00-115	1.15 mm (0.045 in)
24935-38B00-120	1.20 mm (0.047 in)
24935-38B00-125	1.25 mm (0.049 in)
24935-38B00-130	1.30 mm (0.051 in)
24935-38B00-135	1.35 mm (0.053 in)
24935-38B00-140	1.40 mm (0.055 in)

NOTE:

The shims ⑤ are available as a set (24935-38820).



SECONDARY DRIVEN BEVEL GEAR INSTALLATION

Installation is in the reverse order of removal.

NOTE:

Refer to the following pages for the details of each step.

CAUTION

When replacing the secondary driven bevel gear, replace the secondary drive bevel gear also, as a set and adjust the backlash and tooth contact.

Install:

- Secondary driven bevel gear assembly (See p. 3-40.)
- Secondary bevel gear case (See pp. 3-41 and -42.)

NOTE:

After installing the driven bevel gear, make sure that both gears turn smoothly without any hitch or bearing noise.

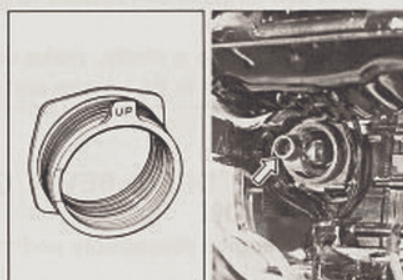
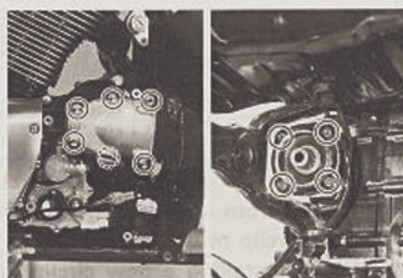
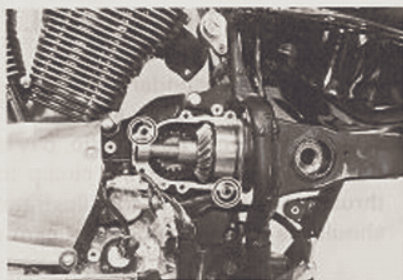
- Secondary gear case cover
- Universal joint
- Boot (See p. 6-40.)

- Swingarm (See pp. 6-40 to -42.)

- Rear wheel (See p. 6-32.)

Adjust the following item to specification

* Engine oil 2-6

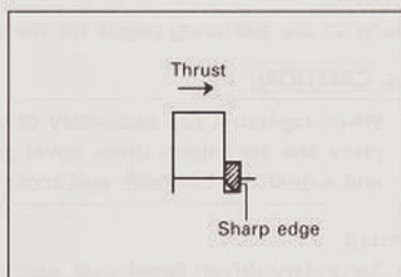


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SECONDARY DRIVE BEVEL GEAR REASSEMBLY

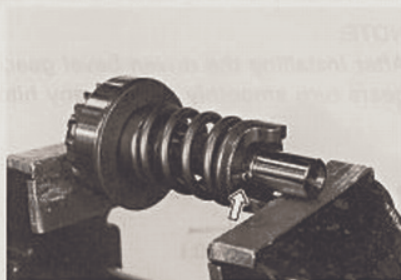
Reassemble the secondary drive bevel gear in the reverse order of disassembly. Pay attention to the following points.

- When installing a new circlip, pay attention to the direction of the circlip. Fit the circlip to the side where the thrust is, as shown in the illustration. The rounded side should be against the output cam dog surface.



CAUTION

- * Never reuse a circlip. After a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.
- * When installing a new circlip, do not expand the end gap larger than required to slip the circlip over the shaft.
- * After installing a circlip, make sure that it is completely seated in its groove and securely fitted.

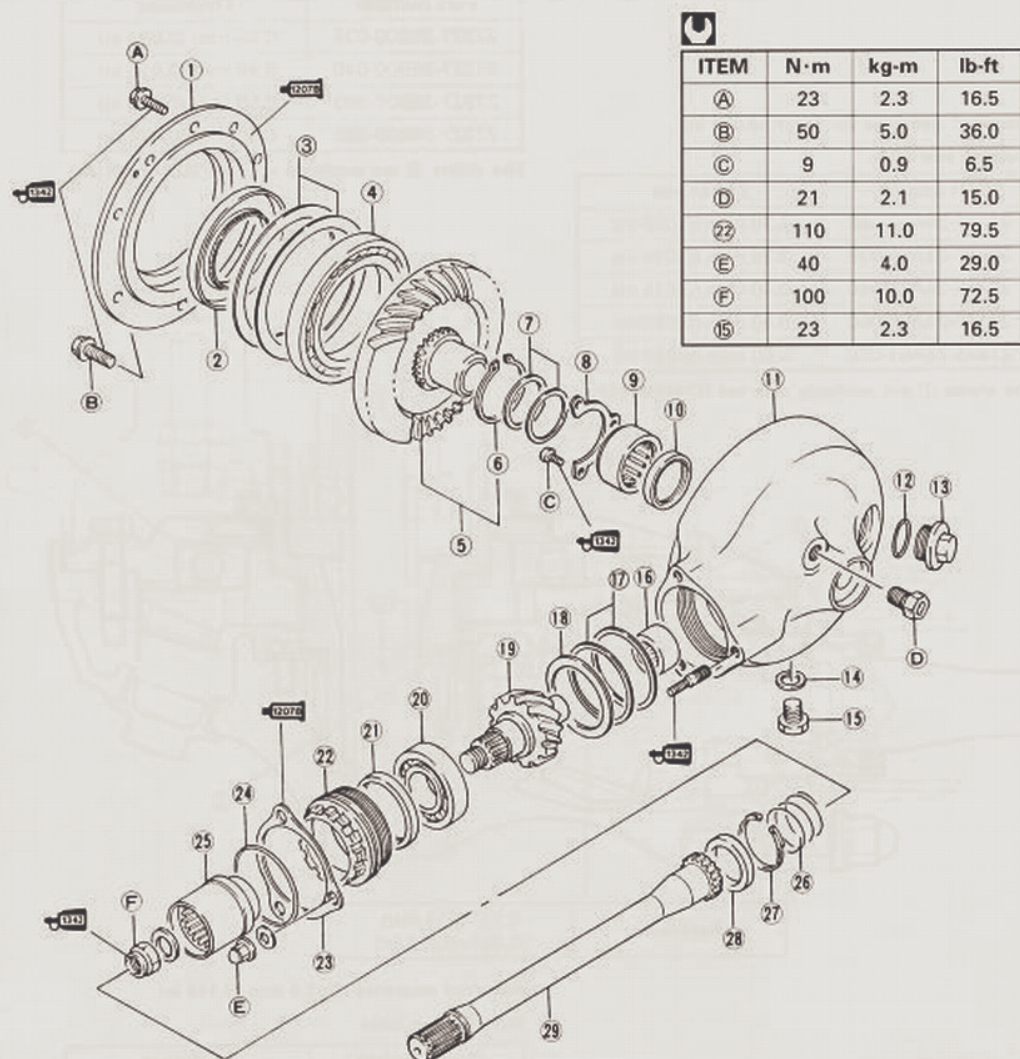


SECONDARY DRIVE BEVEL GEAR INSTALLATION

Refer to the engine reassembly and the engine installation sections.

- *ENGINE REASSEMBLY See pp. 3-31 to -60.
- *ENGINE INSTALLATION See pp. 3-11 to -15.

FINAL BEVEL GEARS CONSTRUCTION



ITEM	N·m	kg-m	lb-ft
(A)	23	2.3	16.5
(B)	50	5.0	36.0
(C)	9	0.9	6.5
(D)	21	2.1	15.0
(22)	110	11.0	79.5
(E)	40	4.0	29.0
(F)	100	10.0	72.5
(15)	23	2.3	16.5

- (A) Final gear case bolt (8 mm)
- (B) Final gear case bolt (10 mm)
- (C) Final driven bevel gear bearing retainer screw
- (D) Plug
- (E) Final gear case mounting nut
- (F) Final driven bevel gear coupling nut

- (1) Final gear bearing case
- (2) Oil seal
- (3) Shims (4 kinds)
- (4) Final driven gear bearing
- (5) Final driven bevel gear
- (6) Circlip
- (7) Shims (9 kinds)
- (8) Bearing retainer
- (9) Final driven gear bearing
- (10) Oil seal
- (11) Final gear case
- (12) O-ring
- (13) Oil filler plug
- (14) Gasket
- (15) Oil drain plug

- (16) Final drive gear bearing
- (17) Shims (5 kinds)
- (18) Washer
- (19) Final drive bevel gear
- (20) Final drive bevel gear bearing
- (21) Oil seal
- (22) Bearing stopper
- (23) Stopper plate (2 kinds)
- (24) O-ring
- (25) Final drive coupling
- (26) Spring
- (27) Circlip
- (28) Oil seal
- (29) Propeller shaft

Shim ③—Gear case cover clearance: 0.10 mm (0.004 in)

Shim ③ size table

Part number	Thickness
27327-38B00-035	0.35 mm (0.014 in)
27327-38B00-040	0.40 mm (0.016 in)
27327-38B00-050	0.50 mm (0.020 in)
27327-38B00-060	0.60 mm (0.024 in)

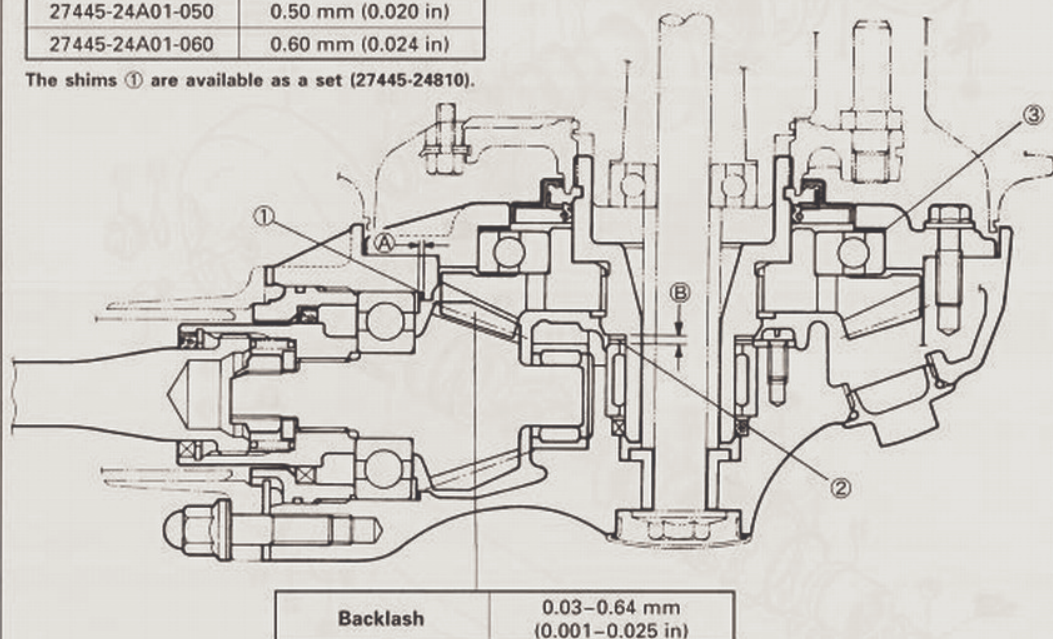
The shims ③ are available as a set (27327-38810).

Standard clearance ②: 1 mm (0.039 in)

Shim ① size table

Part number	Thickness
27445-24A01-030	0.30 mm (0.012 in)
27445-24A01-035	0.35 mm (0.014 in)
27445-24A01-040	0.40 mm (0.016 in)
27445-24A01-050	0.50 mm (0.020 in)
27445-24A01-060	0.60 mm (0.024 in)

The shims ① are available as a set (27445-24810).



Standard clearance ②: 2.8 mm (0.110 in)

Shim ② size table

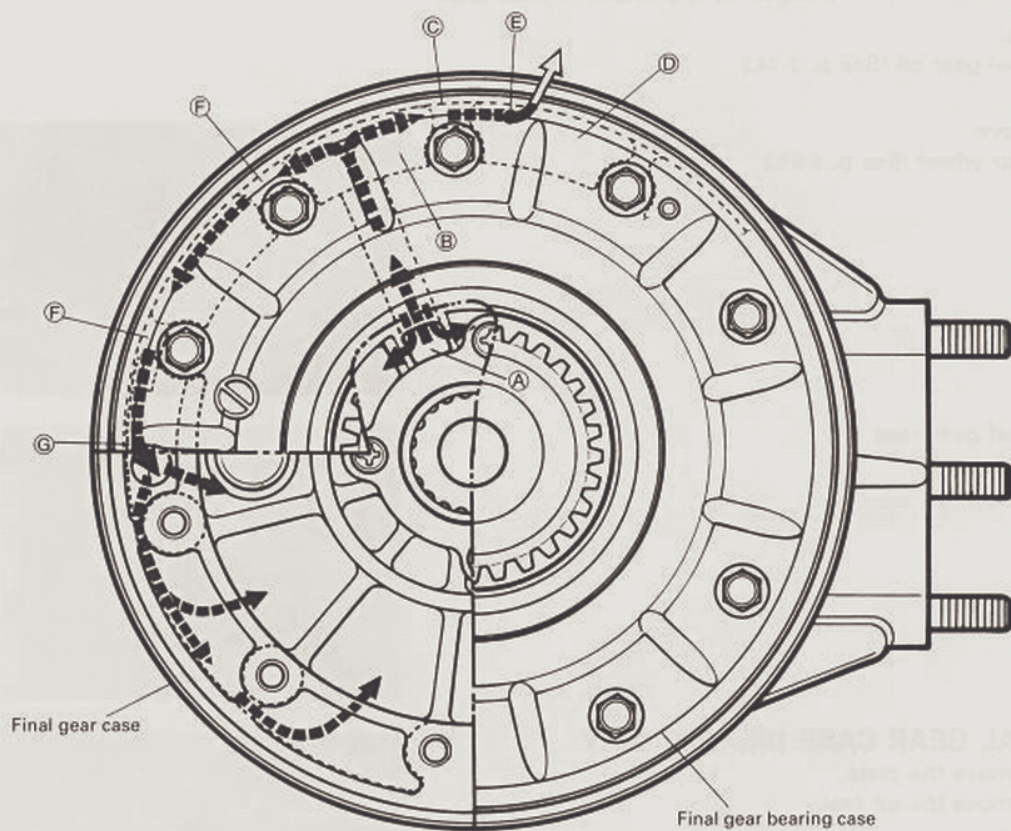
Part number	Thickness
09160-35008	0.95 mm (0.026 in)
09181-35141	1.05 mm (0.041 in)
09181-35144	1.10 mm (0.043 in)
09181-35148	1.20 mm (0.047 in)
09181-35151	1.25 mm (0.049 in)
27326-45104	1.35 mm (0.053 in)
09181-35154	1.40 mm (0.055 in)
27326-45100-145	1.45 mm (0.057 in)
09181-35156	1.50 mm (0.059 in)

The shims ② (1.05–1.50) are available as a set (27326-45811).

FINAL GEAR CASE BREATHER CIRCUIT

BREATHER CIRCUIT

The final gear case breather circuit (passage) consists of the final gear case and final gear bearing case. Air/oil mixed gas, flows through the following routes.



AIR PASSAGE

When the air pressure in the final gear case becomes higher than atmospheric pressure, both air and oil flow in the following passages.

Air flows from hole (A) to chamber (B) and passes through the hole (C) and chamber (D) to the atmosphere through the breather hole (E).

OIL PASSAGE

When the final gear case pressure rises abruptly or when the gear case oil level changes during cornering, the gear oil may sometime flow out into the air passage.

- In this case, the gear oil which has traveled into hole (A) goes into chamber (B), where the oil is separated from the air.
- The air flows through hole (C) and chamber (D), and goes out through the breather hole (E).
- The gear oil, however, flows through the passage (F) and returns to the gear case from gear oil return port (G).

FINAL GEAR CASE REMOVAL

After draining final gear oil, the following components must be removed in the described order before removing the final gear case.

NOTE:

Refer to the following pages for the details of each step.

Drain:

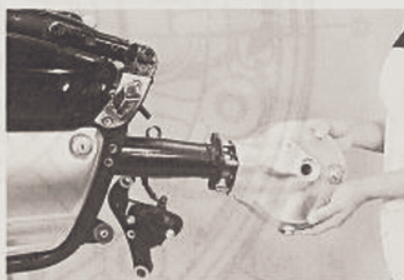
- Final gear oil (See p. 2-14.)

Remove:

- Rear wheel (See p. 6-29.)



- Final gear case

**FINAL GEAR CASE DISASSEMBLY**


- Remove the plate.
- Remove the oil seal.

⚠ CAUTION

The removed oil seal must be replaced with a new one.

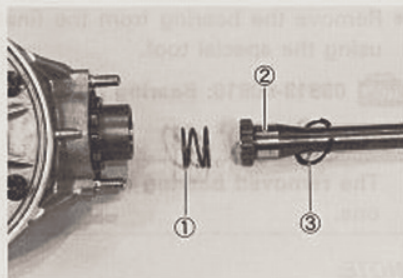


- Remove the circlip by using the special tool and take off the propeller shaft and spring.

 09900-06108: Snap ring pliers

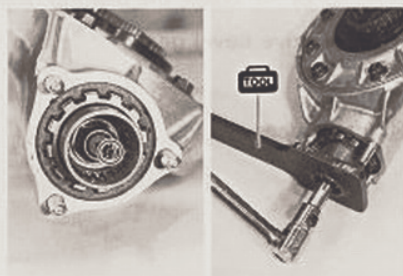


- ① Spring
- ② Propeller shaft
- ③ Circlip

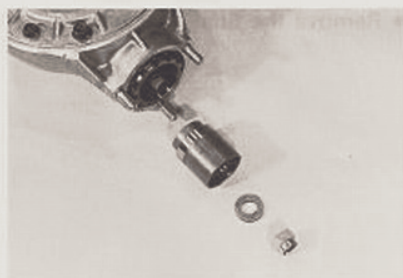


- Using a chisel, unlock the nut.
- Remove the final drive bevel gear coupling nut by using the special tool.

TOOL 09924-64510: Final drive gear coupling holder

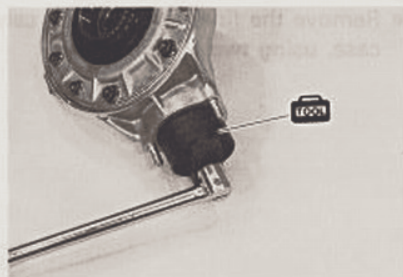


- Remove the washer and the final drive coupling.

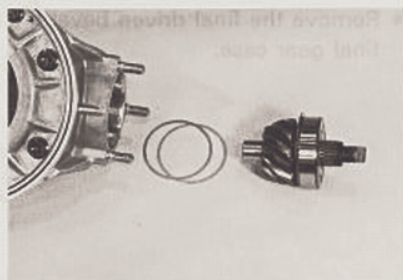


- Remove the bearing stopper by using the special tool.

TOOL 09924-62410: Final drive gear bearing holder wrench



- Remove the final drive bevel gear and shims.



- Remove the bearing from the final drive bevel gear by using the special tool.

TOOL 09913-60910: Bearing puller

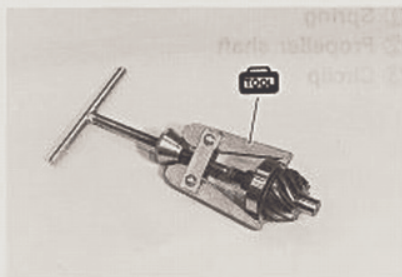
CAUTION

The removed bearing must be replaced with a new one.

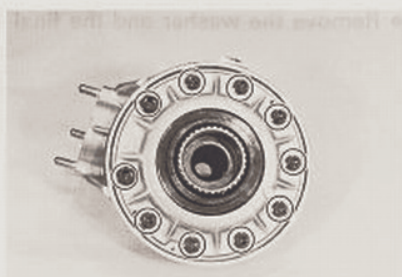
NOTE:

If no abnormal noise, the bearing removal is not necessary.

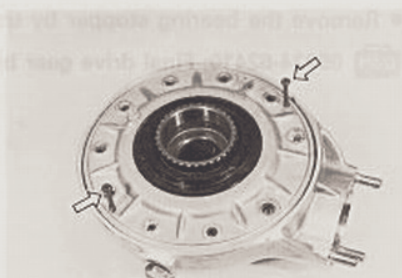
- ① Final drive bevel gear
- ② Washer
- ③ Bearing
- ④ Inner races



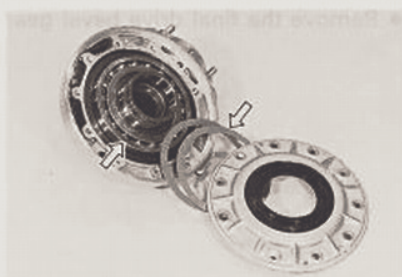
- Remove the final gear bearing case bolts.



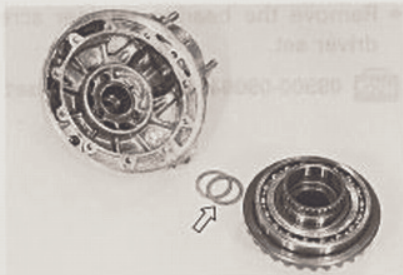
- Remove the final gear bearing case from the final gear case, using two 5 mm screws.



- Remove the final driven bevel gear and shims from the final gear case.



- Remove the final driven bevel gear shims.



- Using the snap ring pliers, remove the circlip from the final driven bevel gear shaft.

TOOL 09900-06107: Snap ring pliers



- Using two bolts or suitable drift, remove the final driven bevel gear bearing from the bevel gear.

NOTE:

If no abnormal noise the bearing removal is not necessary.

CAUTION

The removed bearing must be replaced with a new one.



- Remove the gear from the shaft by using the special tool.

TOOL 09924-74570: Final driven gear remover/installer

NOTE:

The final driven bevel gear and the shaft are available as a set.



- Remove the oil seal from the final gear bearing case.

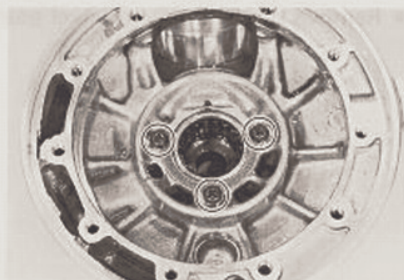
NOTE:

If no oil leakage, the oil seal removal is not necessary.




- Remove the bearing retainer screws, using an impact driver set.

 **09900-09004: Impact driver set**



- Remove the final driven gear bearing and oil seal by using the special tools.

 **09941-64511: Bearing remover**
09930-30102: Sliding shaft


CAUTION

The removed bearing and oil seal must be replaced with new ones.

NOTE:

If no abnormal noise, the bearing removal is not necessary.

- Remove the final drive gear bearing by using the special tools.

 **09923-74510: Bearing remover**
09930-30102: Sliding shaft

CAUTION

The removed bearing must be replaced with a new one.

NOTE:

If no abnormal noise, the bearing removal is not necessary.

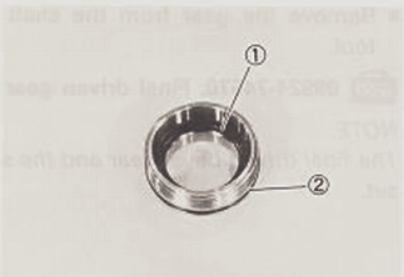
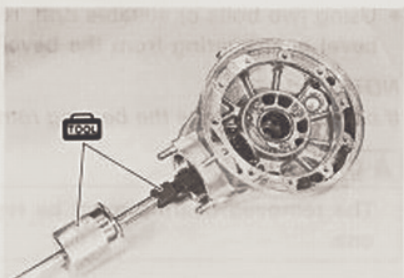
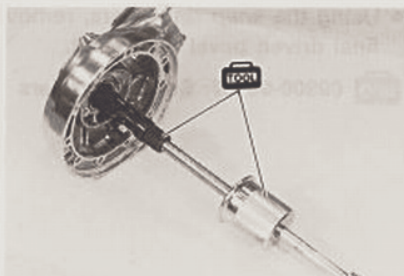
- Remove the oil seal ① and O-ring ② from the bearing stopper.

CAUTION

The removed oil seal and O-ring must be replaced with new ones.

NOTE:

If no oil leakage, the oil seal removal is not necessary.



INSPECTION

Inspect the removed parts for the following abnormalities.

- * Drive and driven bevel gear damage or wear
- * Improper tooth contact
- * Abnormal noise of bearings
- * Bearing damage or wear
- * Oil seal damage or wear
- * Propeller shaft spline damage or wear


FINAL GEAR SHIMS ADJUSTMENT

FINAL GEAR BEARING CASE SHIM CLEARANCE

- Install the final driven gear, shims (① and ②) and final gear bearing case to the final gear case.

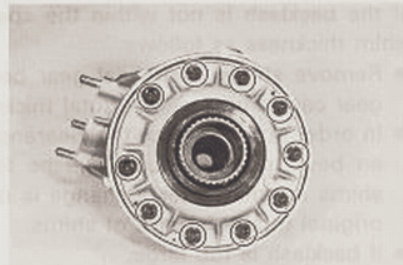


- Tighten the final gear case bolts to the specified torque.

-  **Final gear case bolt (8 mm) : 23 N·m**
(2.3 kg-m, 16.5 lb-ft)
(10 mm): 50 N·m
(5.0 kg-m, 36.0 lb-ft)

NOTE:

It is not necessary to apply SUZUKI BOND "1207B" to the matching surface at this stage.



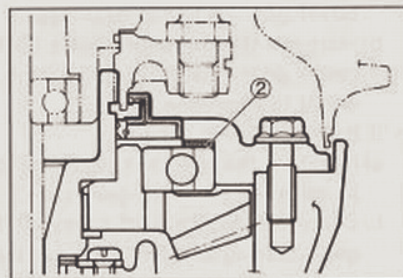
- Measure the clearance between the shims and bearing. If it is not within the specification, the shims must be changed.

Standard

Final gear case shim clearance: 0.10 mm (0.004 in)

Shims ② specifications

Part No.	Shim thickness
27327-38B00-035	0.35 mm (0.014 in)
27327-38B00-040	0.40 mm (0.016 in)
27327-38B00-050	0.50 mm (0.020 in)
27327-38B00-060	0.60 mm (0.024 in)




NOTE:

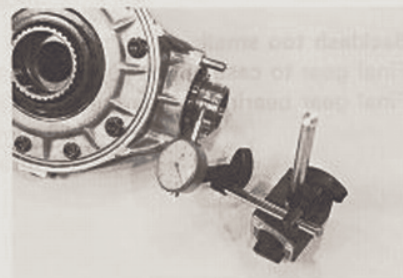
The shims ② are available as a set (27327-38810).

BACKLASH

After assembling the final gear case (See pp. 4-23 to -27.), measure the final bevel gear backlash as follows.

- Install the backlash measuring tool on the drive bevel gear coupling, and set-up a dial gauge as shown in Fig.

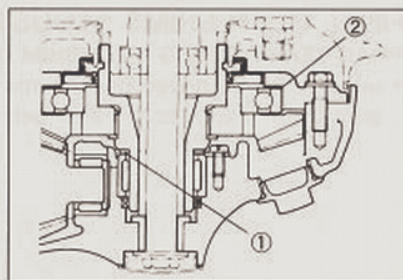
-  09924-34510: Backlash measuring tool (27-50 mm)
09900-20606 : Dial gauge (1/100 mm, 10 mm)
09900-20701 : Magnetic stand



- Adjust the dial gauge so that it touches the backlash measuring tool arm at the mark; hold the final driven bevel gear securely, and turn the final drive bevel gear coupling slightly in each direction, reading the total backlash on the dial gauge.

Standard

Final bevel gear backlash: 0.03–0.64 mm (0.001–0.025 in)



If the backlash is not within the specification, adjust the shim thickness as follows:

- Remove shims from final gear bearing case and final gear case, and measure total thickness.
- In order not to change the clearance between final driven bevel gear and bearing, the total thickness of the shims installed after a change is made must equal the original total thickness of shims.
- If backlash is too large:
 - Install a thinner shim pack ① between final driven bevel gear and final gear case.
 - Increase thickness of shims ② between final driven bevel gear bearing and bearing case by an amount equal to decrease above.
- If backlash is too small:
 - Install a thicker shim pack ① between final driven bevel gear and final gear case.
 - Decrease thickness of shims ② between final driven gear bearing and bearing case by an amount equal to increase above.

EXAMPLE:

Final gear to case shims ①; 1.45 mm + 1.40 mm = 2.85 mm

Final gear bearing to bearing case shims ②,

$$0.35 \text{ mm} + 0.60 \text{ mm} = 0.95 \text{ mm}$$

$$\text{Original total measurement} = 3.80 \text{ mm}$$

Backlash too large:

Final gear to case shims ①; 1.35 mm + 1.45 mm = 2.80 mm

Final gear bearing to bearing case shims ②,

$$0.60 \text{ mm} + 0.40 \text{ mm} = 1.00 \text{ mm}$$

$$\text{Total thickness} = 3.80 \text{ mm}$$

Backlash too small:

Final gear to case shims ①; 1.50 mm + 1.40 mm = 2.90 mm

Final gear bearing to bearing case shims ②;

$$0.50 \text{ mm} + 0.40 \text{ mm} = 0.90 \text{ mm}$$

$$\text{Total thickness} = 3.80 \text{ mm}$$

Shims ① specifications

Part No.	Shim thickness
09160-35008	0.95 mm (0.026 in)
09181-35141	1.05 mm (0.041 in)
09181-35144	1.10 mm (0.043 in)
09181-35148	1.20 mm (0.047 in)
09181-35151	1.25 mm (0.049 in)
27326-45104	1.35 mm (0.053 in)
09181-35154	1.40 mm (0.055 in)
27326-45100-145	1.45 mm (0.057 in)
09181-35156	1.50 mm (0.059 in)

The shims ① (1.05–1.50) are available as a set (27326-45811).

Shims ② specifications

Part No.	Shim thickness
27327-38B00-035	0.35 mm (0.014 in)
27327-38B00-040	0.40 mm (0.016 in)
27327-38B00-050	0.50 mm (0.020 in)
27327-38B00-060	0.60 mm (0.024 in)

The shims ② are available as a set (27327-38810).

TOOTH CONTACT

After backlash adjustment is carried out, the tooth contact must be checked.

- Remove the 10 bolts from the final gear bearing case, and remove the case, using the two 5 mm screws. (See p. 4-17.) Do not misplace the shims. Remove the final driven bevel gear.
- Clean and de-grease several teeth on the final driven bevel gear. Coat these teeth with machinist's dye or paste, preferably of a light color.
- Re-install the final driven bevel gear with shims in place, positioning the coated teeth so that they are centered on the final drive bevel gear.
- Re-install the final gear bearing case and bolts, and tighten to specification.

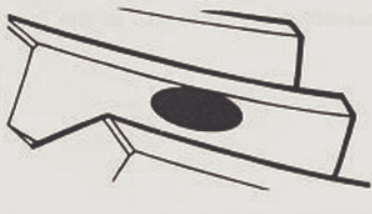
**Final gear case bolt (8 mm) : 23 N·m
(2.3 kg-m, 16.5 lb-ft)
(10 mm): 50 N·m
(5.0 kg-m, 36.0 lb-ft)**

- Using a socket and handle on the final drive bevel gear coupling nut, rotate the final drive bevel gear several turns in each direction, while loading the final driven bevel gear. This will provide a contact pattern on the coated teeth of the driven bevel gear.
- Remove the final gear bearing case and final driven bevel gear, and inspect the coated teeth of the driven bevel gear. The contact patch should be as shown at right:
- If the tooth contact pattern is incorrect, as shown in ①, a thinner shim ④ is needed between the final drive bevel gear bearing and final gear case.
- If the tooth contact pattern is incorrect, as shown in ③, a thicker shim ④ is needed between the final drive bevel gear bearing and final gear case.
- If the tooth contact pattern is incorrect for either reason, the appropriate shim must be installed, and the tooth contact pattern rechecked by repeating the tooth coating procedure above.

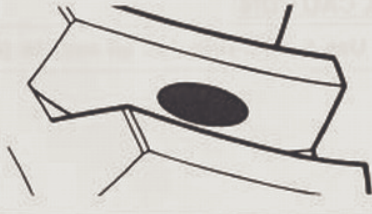
NOTE:

If it is necessary to adjust the shim thickness between final drive bevel gear bearing and final gear case, the final gear backlash may change, and should be re-checked according to the procedure outlined under the Backlash Measurement sub-section. Both adjustments may be needed until both backlash and tooth contact are correct.

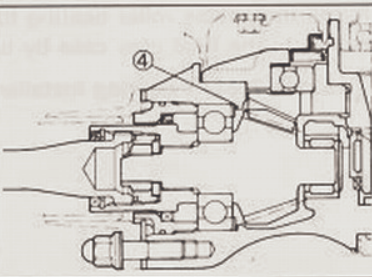
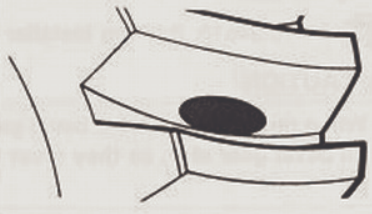
① INCORRECT (Contact at tooth top)



② CORRECT



③ INCORRECT (Contact at tooth root)

**Shims ④ specification**

Part No.	Shim thickness
27445-24A01-030	0.30 mm (0.012 in)
27445-24A01-035	0.35 mm (0.014 in)
27445-24A01-040	0.40 mm (0.016 in)
27445-24A01-050	0.50 mm (0.020 in)
27445-24A01-060	0.60 mm (0.024 in)

The shims ④ are available as a set (27445-24810).

FINAL GEAR CASE REASSEMBLY

Reassemble the final gear case in the reverse order of disassembly. Pay attention to the following points.

- Install a new O-ring and oil seal to the bearing stopper.

CAUTION

Use new O-ring and oil seal to prevent oil leakage.

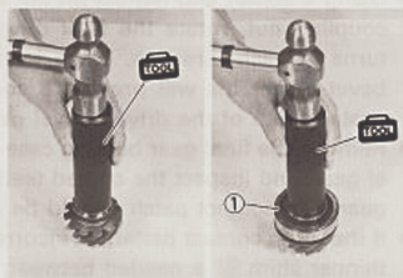


- Install the bearing ① to the final drive bevel gear by using the special tool.

TOOL 09913-84510: Bearing installer

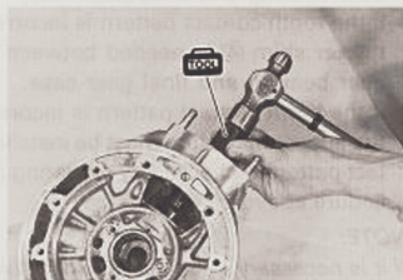
CAUTION

When replacing the drive bevel gear, replace the driven bevel gear also, as they must be replaced together.



- Install the needle roller bearing for the final drive bevel gear into the final gear case by using the special tool.

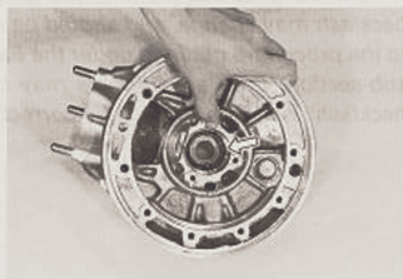
TOOL 09913-75821 : Bearing installer



- Install the oil seal into the final gear case.

CAUTION

- * Use a new oil seal to prevent oil leakage.
- * The lip and spring of the oil seal should face to the driven bevel gear side.



- Install the needle roller bearing for the final driven bevel gear into the final gear case by using the special tool.

TOOL 09913-76010: Bearing installer

NOTE:

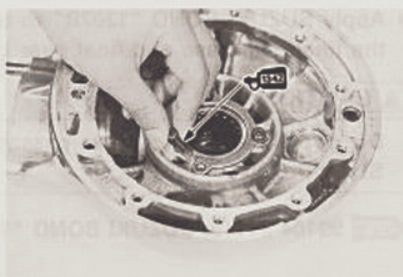
The stamped ward on the bearing end should face to the driven bevel gear side.



- Install the bearing retainer. Apply a small quantity of the THREAD LOCK "1342" on the screws, and tighten them to the specified torque.

1342 99000-32050: THREAD LOCK "1342"

U Bearing retainer bolt: 9 N·m (0.9 kg-m, 6.5 lb-ft)



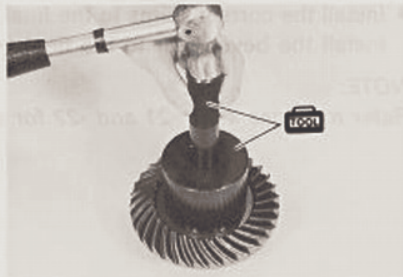
- Install a new oil seal to the final gear bearing case.
- Apply final gear oil to the lip of the oil seal.



- Install the final driven gear to the shaft by using the special tool.
- Install a new circlip properly.

TOOL 09900-06107: Snap ring pliers

09924-74570: Final driven gear bearing installer/remover



- Install the final driven bevel gear bearing to the bevel gear.

NOTE:

The stamped mark (A) on the bearing faces out.

CAUTION

Do not tap the bearing outer race.



- Install correct shims to the both sides of the final driven bevel gear and install the gear to the final gear case.

NOTE:

Refer to pages 4-20, -21 and -22 for shim adjustment.

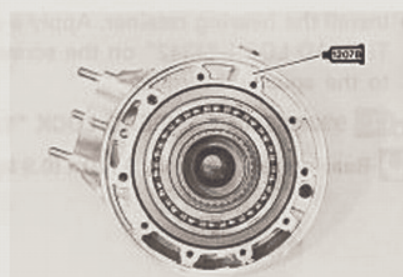


- Apply SUZUKI BOND "1207B" to the mating surface of the final gear case and final gear bearing case.

CAUTION

Do not block the breather passage when applying SUZUKI BOND "1207B".

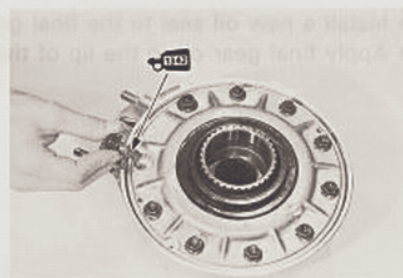
1207B 99104-31140: SUZUKI BOND "1207B"



- Apply THREAD LOCK "1342" to the final gear case bolts and tighten them to the specified torque.

1342 99000-32050: THREAD LOCK "1342"

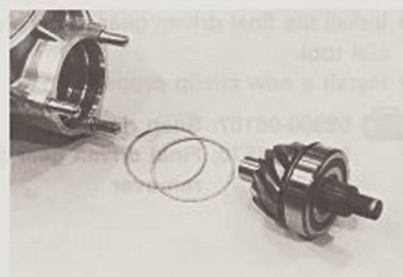
U Final gear case bolt (8 mm) : 23 N·m
(2.3 kg-m, 16.5 lb-ft)
(10 mm): 50 N·m
(5.0 kg-m, 36.0 lb-ft)



- Install the correct shims to the final drive bevel gear and install the bevel gear to the final gear case.

NOTE:

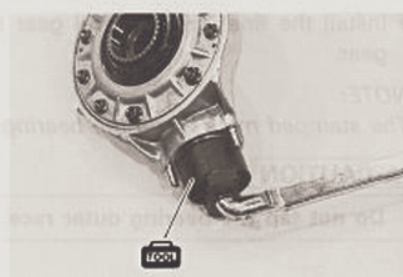
Refer to pages 4-20, -21 and -22 for shim adjustment.



- Apply oil to the O-ring and the oil seal.
- Tighten the bearing stopper to the specified torque by using the special tool.

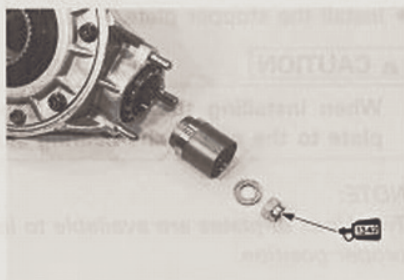
TOOL 09924-62410: Final drive gear bearing holder wrench

U Final drive bevel gear bearing stopper: 110 N·m
(11.0 kg-m, 79.5 lb-ft)





- Apply a small quantity of the THREAD LOCK "1342" to the final drive bevel gear coupling nut.

 99000-32050: THREAD LOCK "1342"

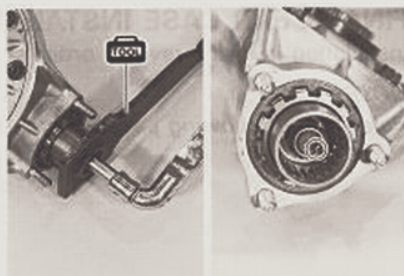


- Tighten the nut to the specified torque.

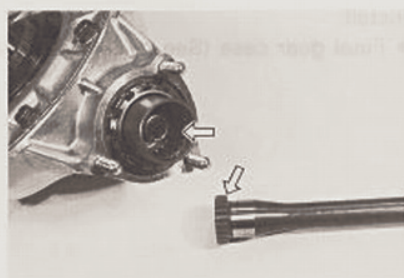
 09924-64510: Final drive gear coupling holder

 Final drive bevel gear coupling nut: 100 N·m
(10.0 kg-m, 72.5 lb-ft)


- Lock the final drive bevel gear coupling nut with a center punch.



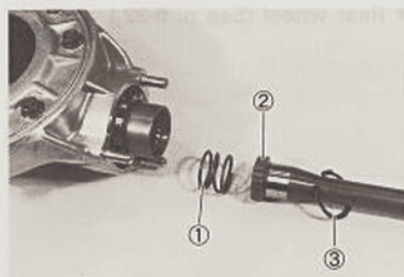
- Apply Lithium Base Molybdenum grease (NLGI #2) to the propeller shaft splines and final drive bevel gear coupling.



- Install the spring ①, propeller shaft ② and circlip ③ in that order.

 09900-06108: Snap ring pliers

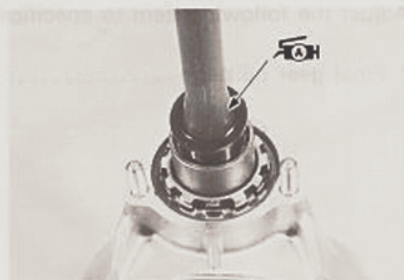
- After installing the propeller shaft with a new circlip, make sure that the propeller shaft turns smoothly without any hitch or bearing noise.



- Apply grease to the lip of the oil seal and install it to the final drive bevel gear coupling.

CAUTION

Use a new oil seal to prevent oil leakage.



- Install the stopper plate.

CAUTION

When installing the plate, fit the protrusion **A** of plate to the one of the bearing stopper grooves.

NOTE:

Two kinds of plates are available to lock the stopper at the proper position.

**FINAL GEAR CASE INSTALLATION**

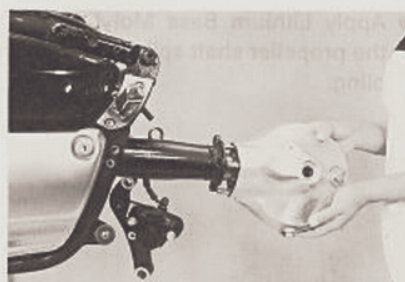
Installation is in the reverse order of removal.

NOTE:

Refer to the following pages for the details of each step.

Install:

- Final gear case (See p. 6-41 and -42)



- Rear wheel (See p. 6-32.)



Adjust the following item to specification.

	Page
* Final gear oil page	2-14