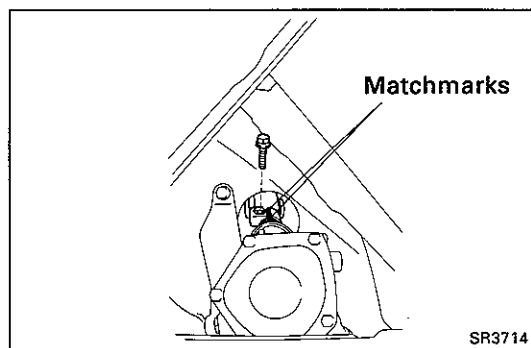
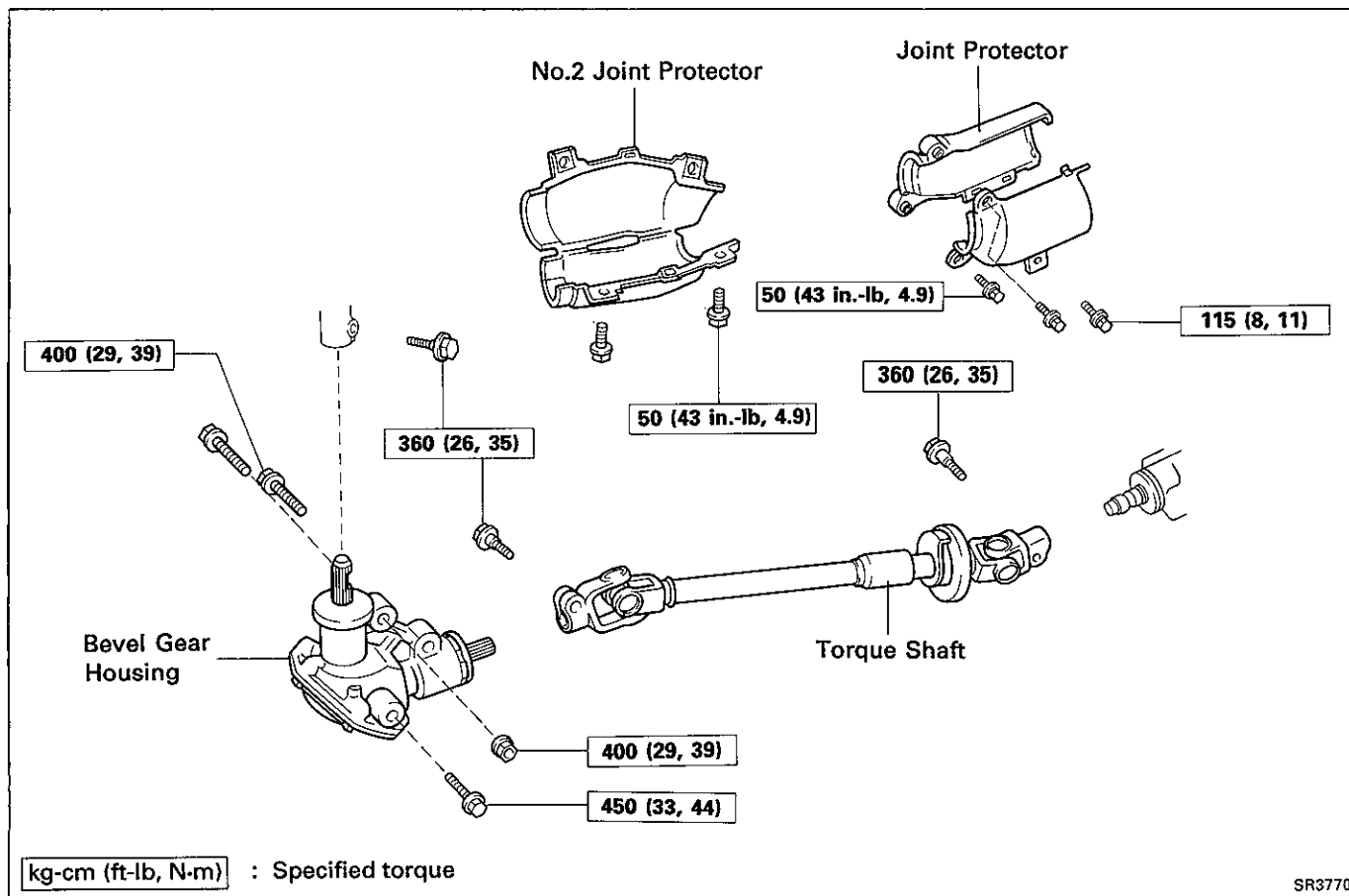


STEERING BEVEL GEAR HOUSING

REMOVAL AND INSTALLATION OF STEERING BEVEL GEAR HOUSING

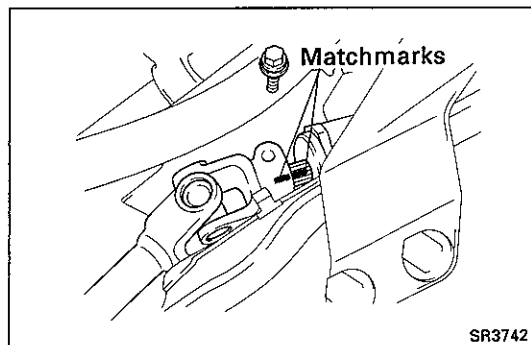
Remove the parts as shown.



(MAIN POINTS OF REMOVAL)

1. DISCONNECT MAIN SHAFT

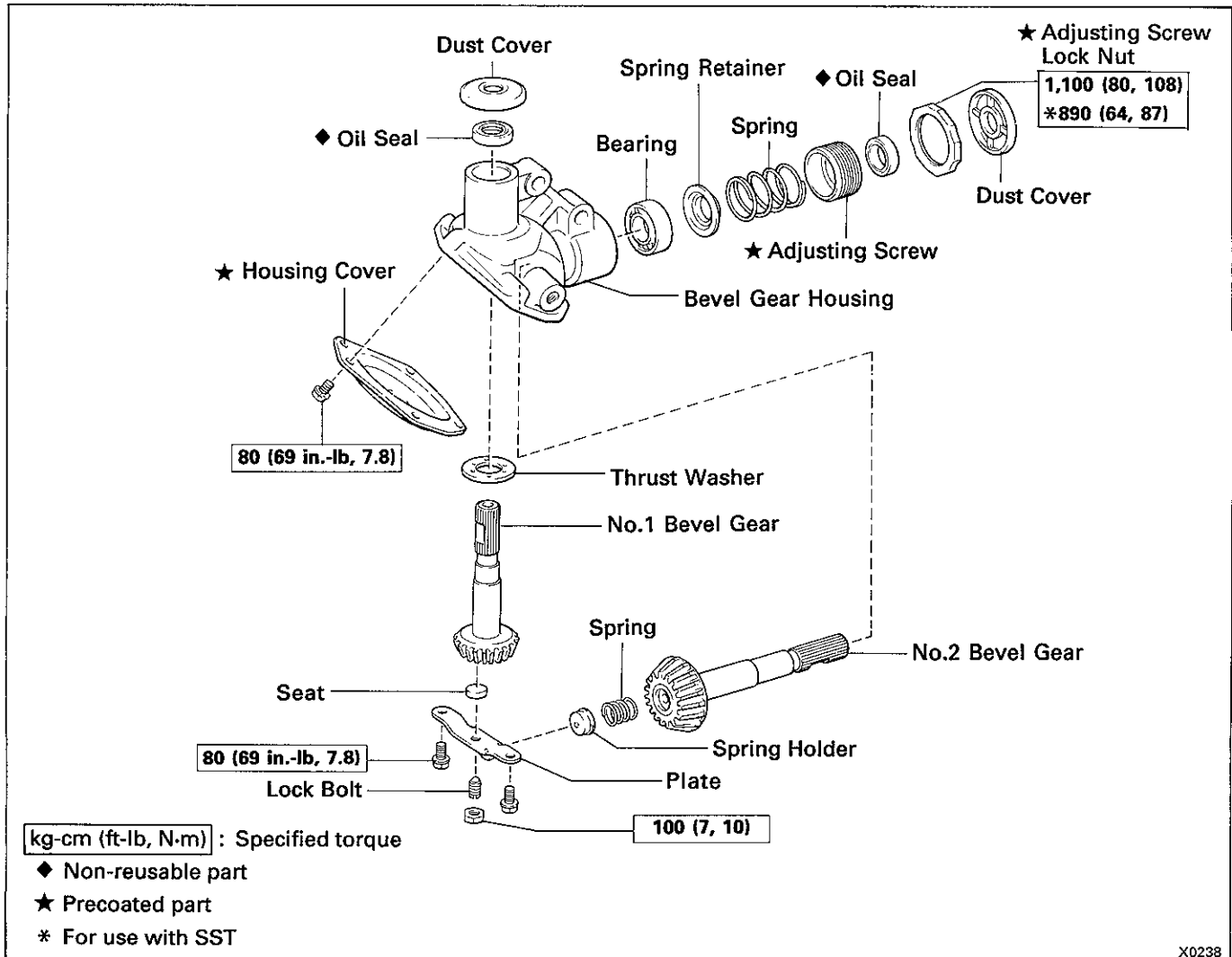
- Place matchmarks on the bevel gear shaft and main shaft.
- Disconnect the main shaft from the bevel gear housing.



2. DISCONNECT TORQUE SHAFT

- Place matchmarks on the torque shaft and the bevel gear shaft.
- Loosen the bolt on the gear housing side.
- Pull out the torque shaft from the bevel gear housing.

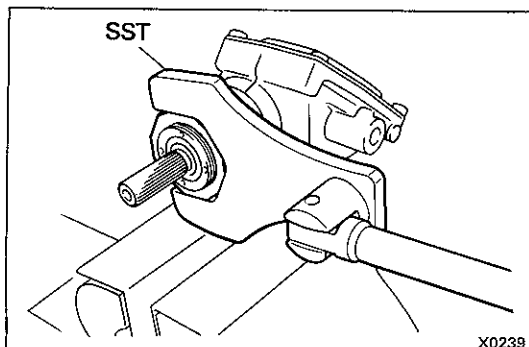
COMPONENTS



X0238

DISASSEMBLY OF BEVEL GEAR HOUSING

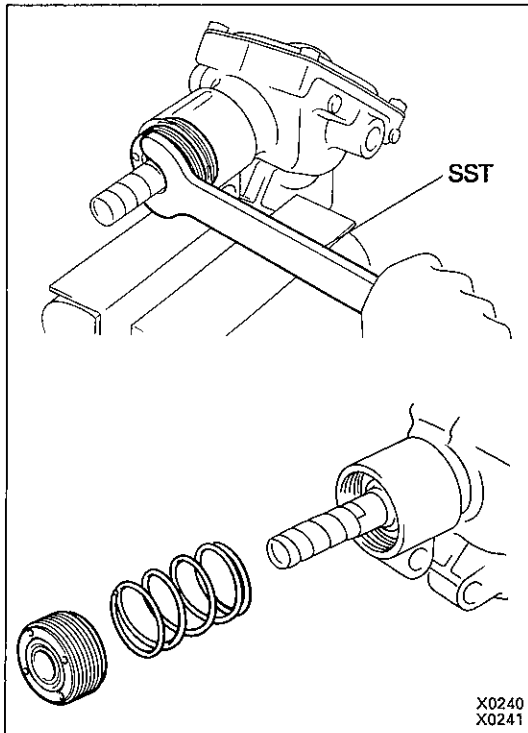
1. CLAMP BEVEL GEAR HOUSING IN VISE
NOTICE: Do not tighten the vise too tight.
2. REMOVE TWO DUST COVERS



X0239

3. REMOVE PINION BEARING ADJUSTING SCREW LOCK NUT

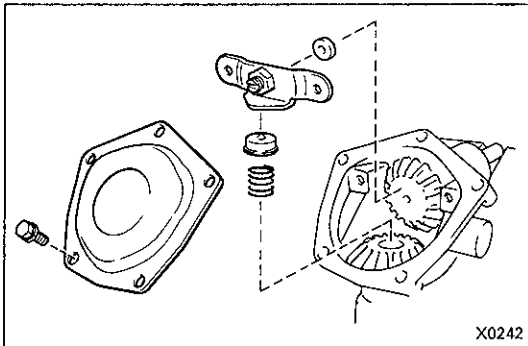
Using SST, remove the lock nut.
SST 09612-10093 (09617-10010)



4. REMOVE PINION BEARING ADJUSTING SCREW

- (a) Wind vinyl tape to the shaft.
 - (b) Using SST, remove the screw.
- SST 09612-10093 (09616-10020)

- (c) Pull out the spring from the adjusting screw.

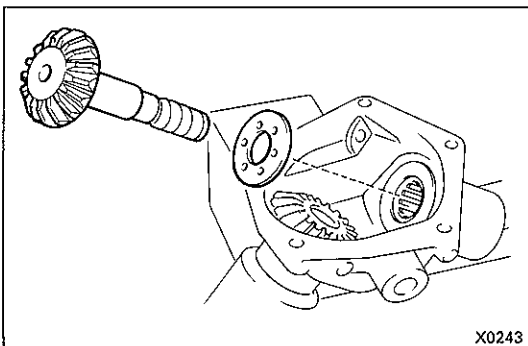


5. REMOVE HOUSING COVER

Remove the five bolts and the housing cover.

6. REMOVE PLATE, SEAT, SPRING AND SPRING HOLDER

- (a) Loosen the lock nut and unscrew the adjusting bolt.
- (b) Remove two plate set bolts and the plate.
- (c) Take out the adjusting bolt seat, spring and spring holder.



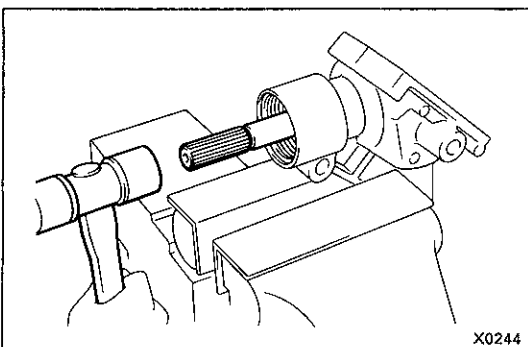
7. REMOVE NO.1 BEVEL GEAR

- (a) Push in the No.2 bevel gear.

HINT: If necessary, lightly tap the No.2 bevel gear with a plastic hammer.

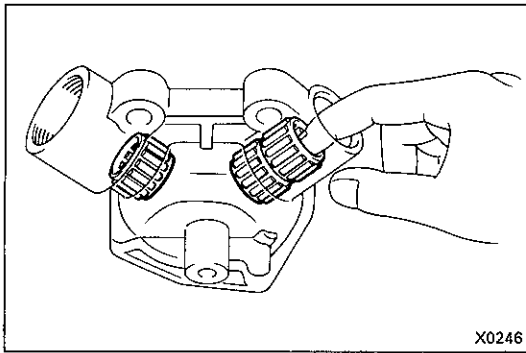
- (b) Remove No.1 bevel gear and thrust washer.

HINT: Wind vinyl tape to the serration of the gear.



8. REMOVE NO.2 BEVEL GEAR

- (a) Using a plastic hammer, tap out the No.2 bevel gear.
- (b) Remove the bearing and spring holder.



INSPECTION AND REPLACEMENT OF BEVEL GEAR HOUSING

1. INSPECT NO.1 AND NO.2 BEVEL GEAR

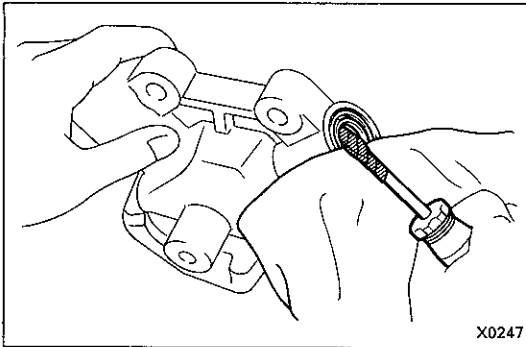
- (a) Check the needle roller bearing contacting surface for wear or damage.
- (b) Check the gear teeth for wear or damage.

2. INSPECT NEEDLE ROLLER BEARINGS

Check that the bearing rotates smoothly without abnormal noise. Check for wear or damage.

3. IF NECESSARY, REPLACE NO.1 BEVEL GEAR OIL SEAL

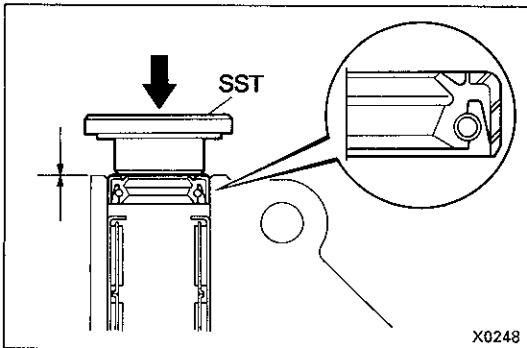
- (a) Using a screwdriver, pry out the oil seal.



- (b) Apply molybdenum disulphide lithium base grease to a new oil seal lip.

- (c) Using SST, drive in the oil seal.

SST 09612-10093 (09612-10050)



4. IF NECESSARY, REPLACE NO.2 BEVEL GEAR OIL SEAL

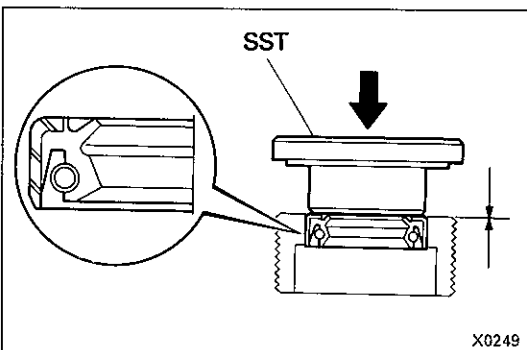
- (a) Using SST, remove the oil seal.

SST 09612-10093 (09612-10050)

- (b) Apply molybdenum disulphide lithium base grease to a new oil seal lip.

- (c) Using SST, drive in the oil seal.

SST 09612-10093 (09612-10050)

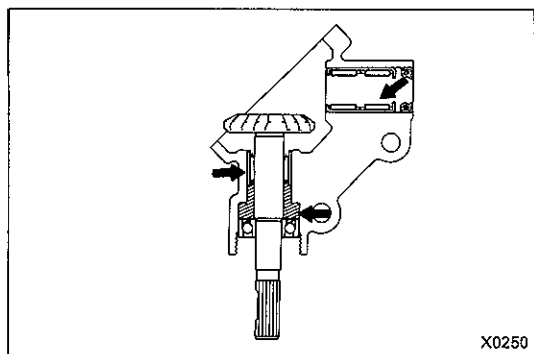


ASSEMBLY OF BEVEL GEAR HOUSING

(See page SR-67)

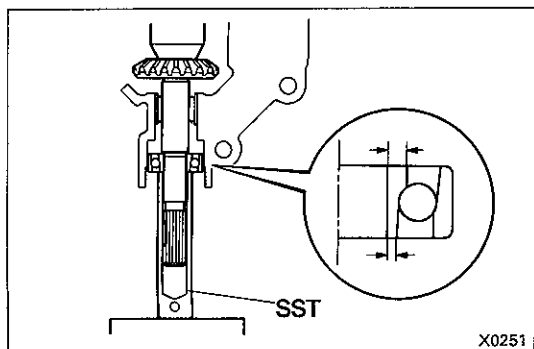
1. COAT PARTS WITH MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE

(See page SR-67)

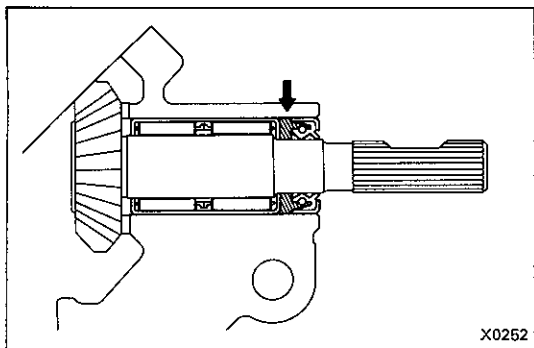


2. INSTALL NO.2 BEVEL GEAR AND BEARING

- (a) Fill the gear housing with molybdenum disulphide lithium base grease as shown.
- (b) Insert No.2 bevel gear into the housing.

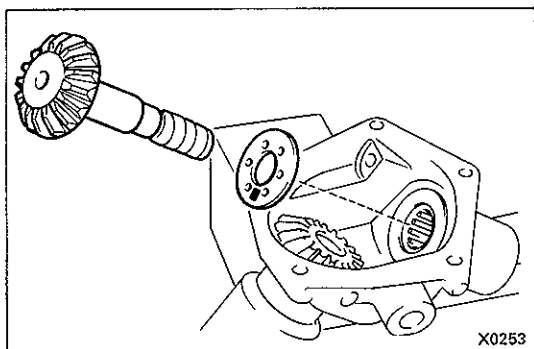


- (c) Using SST, press in the bearing.
SST 09612-10093 (09612-10061)

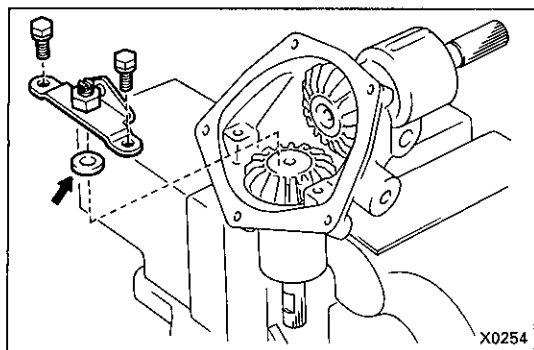


3. INSTALL NO.1 BEVEL GEAR AND THRUST WASHER

- (a) Fill the gear housing with molybdenum disulphide lithium base grease as shown.



- (b) Install the thrust washer.
HINT: If necessary, replace the washer with one having the same letter as on the old washer.
- (c) Wind vinyl tape to the serration of the No.1 bevel gear.
- (d) Install the gear.

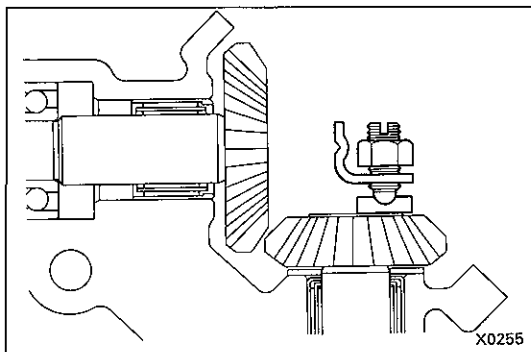


4. INSTALL LOCK BOLT SEAT

5. INSTALL PLATE

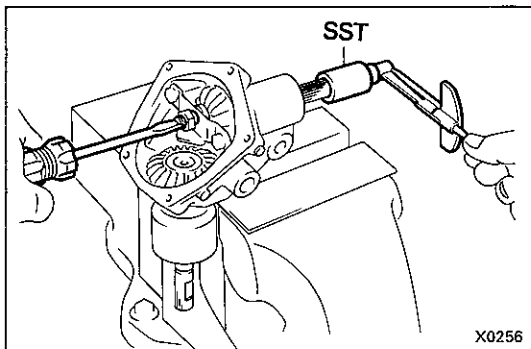
- (a) Loosen the lock bolt.
- (b) Install two bolts and the plate.

Torque: 80 kg-cm (69 in.-lb, 7.8 N-m)



6. ADJUST NO.1 BEVEL GEAR PRELOAD

- (a) Screw the adjusting bolt, until touch to the seat.

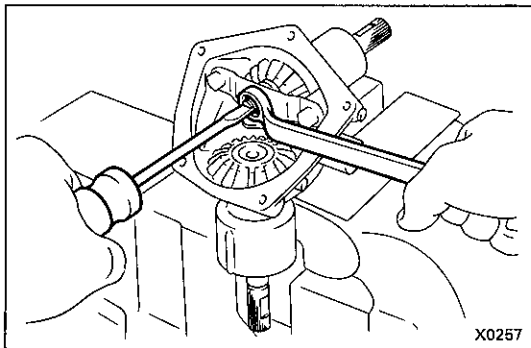


- (b) Using a screwdriver and SST, adjust the No.1 bevel gear preload, and then No.1 bevel gear is no axial play.

SST 09616-00010

**Preload (turning): 0.8 – 1.5 kg-cm
(0.7 – 1.3 in.-lb, 0.08 – 0.15 N-m)**

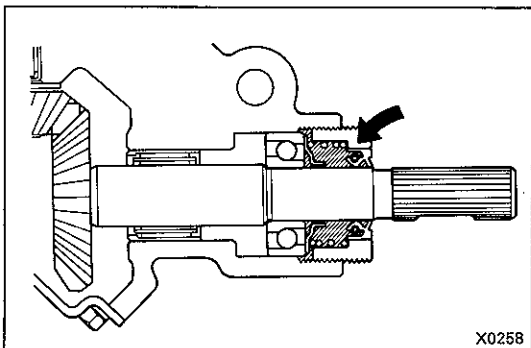
HINT: Line up the cutout portion of the No.1 and No.2 bevel gear.



- (c) Using a screwdriver, while holding the adjusting bolt, torque the lock nut.

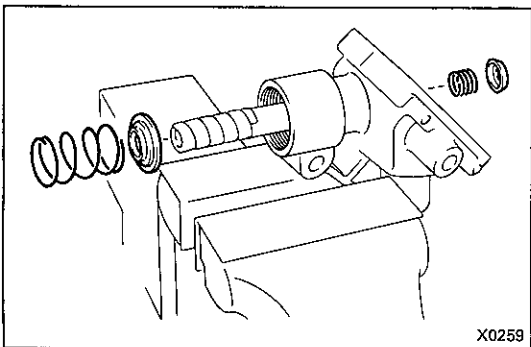
Torque: 100 kg-cm (7 ft-lb, 10 N-m)

- (d) Recheck the No.1 bevel gear preload.

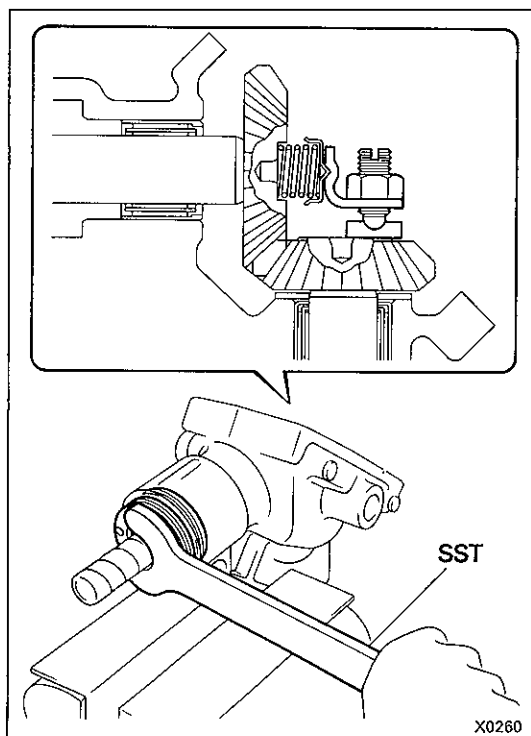


7. INSTALL SPRING HOLDERS AND SPRINGS

- (a) Fill the gear housing with molybdenum disulphide lithium base grease as shown.



- (b) Install the spring holders and springs.



8. INSTALL PINION BEARING ADJUSTING SCREW

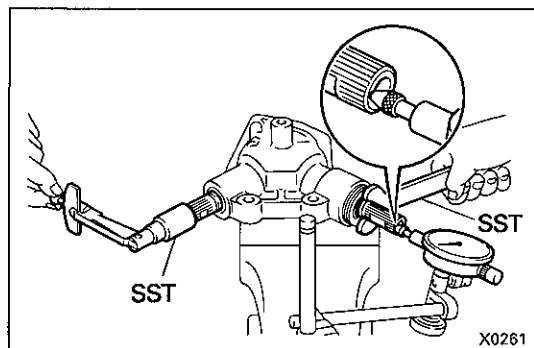
- (a) Wind vinyl tape to the serration of the shaft.
- (b) Apply sealant to the threads of adjusting screw.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- (c) Using SST and dial indicator, tighten the adjusting screw until the No.1 and No.2 bevel gear backlash is 0.

SST 09612-10093 (09616-10020)

HINT: Do not damage the oil seal lip in the screw.



9. ADJUST TOTAL PRELOAD

- (a) Turn the No.1 bevel gear left and right 5 times and snug it.
- (b) Using SST, unscrew the adjusting screw little by little and measure the total preload within specification.

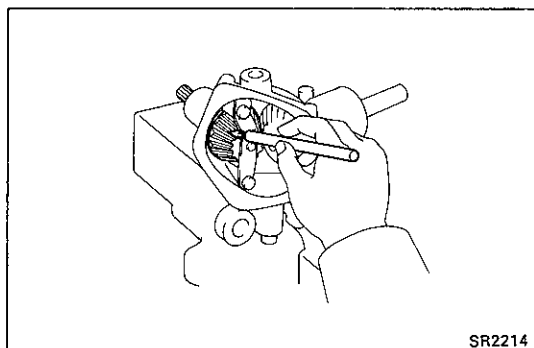
SST 09612-10093 (09616-10020), 09616-00010

**Preload (turning): 1.5 – 4.0 kg-cm
(1.3 – 3.5 in.-lb, 0.15 – 0.39 N·m)**

NOTICE: When loosening the adjusting screw, take care that the backlash is not more than 0.36 mm (0.0142 in.).

10. INSPECT TOOTH CONTACT BETWEEN NO.1 AND NO.2 BEVEL GEAR

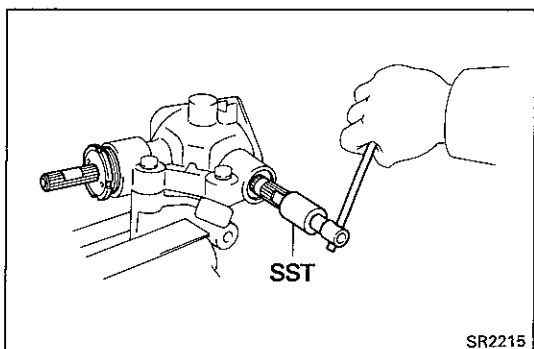
- (a) Coat two teeth at symmetrical position on the No.1 bevel gear with red lead.



- (b) Using SST, turn the No.2 bevel gear in both directions.

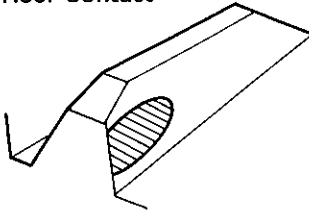
SST 09616-00010

- (c) Inspect the tooth pattern of the No.2 bevel gear. If incorrect, reassemble the bevel gear housing.



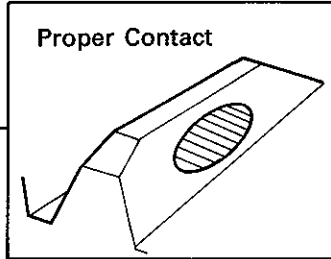
[Tooth Pattern of No.2 Bevel Gear]

Heel Contact

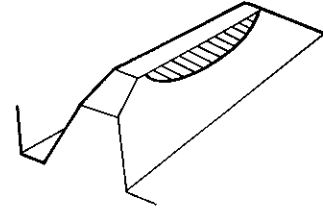


Select a more thick washer

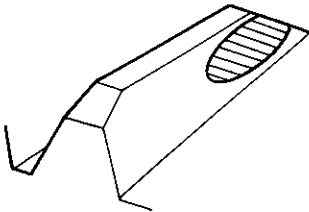
Proper Contact



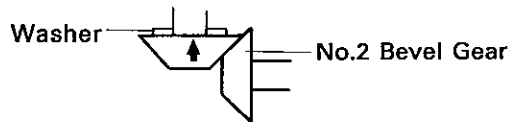
Face Contact



Toe Contact



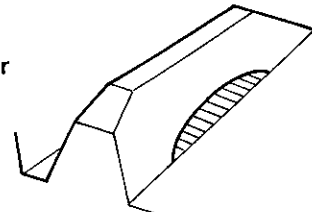
Washer



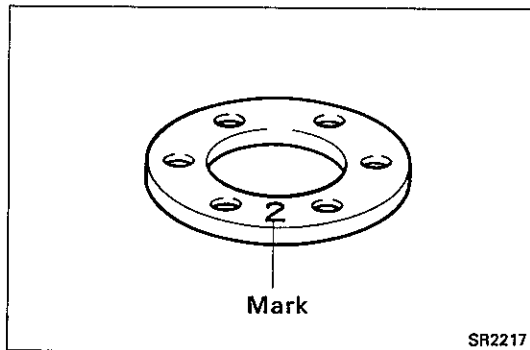
No.2 Bevel Gear

Select a thinner washer

Flank Contact



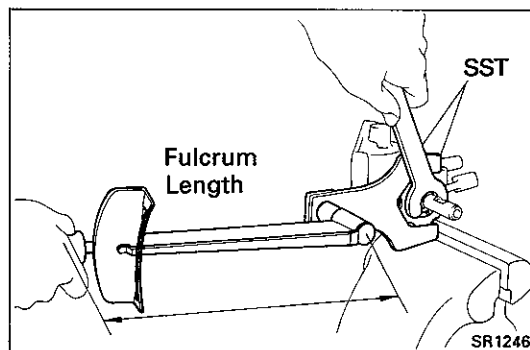
SR2216



SR2217

If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

Mark	Thrust washer thickness mm (in.)	
2	1.875 – 1.925	(0.07382 – 0.07579)
3	1.925 – 1.975	(0.07579 – 0.07776)
4	1.975 – 2.025	(0.07776 – 0.07972)
5	2.025 – 2.075	(0.07972 – 0.08169)
6	2.075 – 2.125	(0.08169 – 0.08366)
7	2.125 – 2.175	(0.08366 – 0.08562)
8	2.175 – 2.225	(0.08562 – 0.08760)



SR1246

11. INSTALL PINION BEARING ADJUSTING SCREW LOCK NUT

- (a) Apply sealant to the lock nut thread and housing surface.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- (b) While holding the screw with SST, install the lock nut with SST.

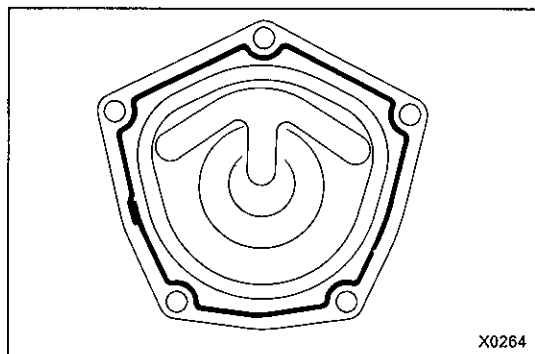
SST 09612-10093 (09616-10020, 09617-10010)

Torque: 890 kg-cm (64 ft-lb, 87 N-m)

HINT: Use a torque wrench with a fulcrum length of 425 mm (16.73 in.).

- (c) Recheck the total preload.

12. PACK MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE INTO GEAR HOUSING

**13. INSTALL HOUSING COVER**

(a) Apply sealant to the cover as shown.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

(b) Install the cover with five bolts.

Torque: 80 kg-cm (69 in.-lb, 7.8 N-m)

14. INSTALL TWO DUST COVERS