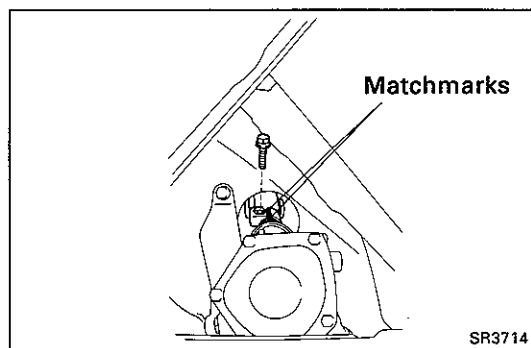
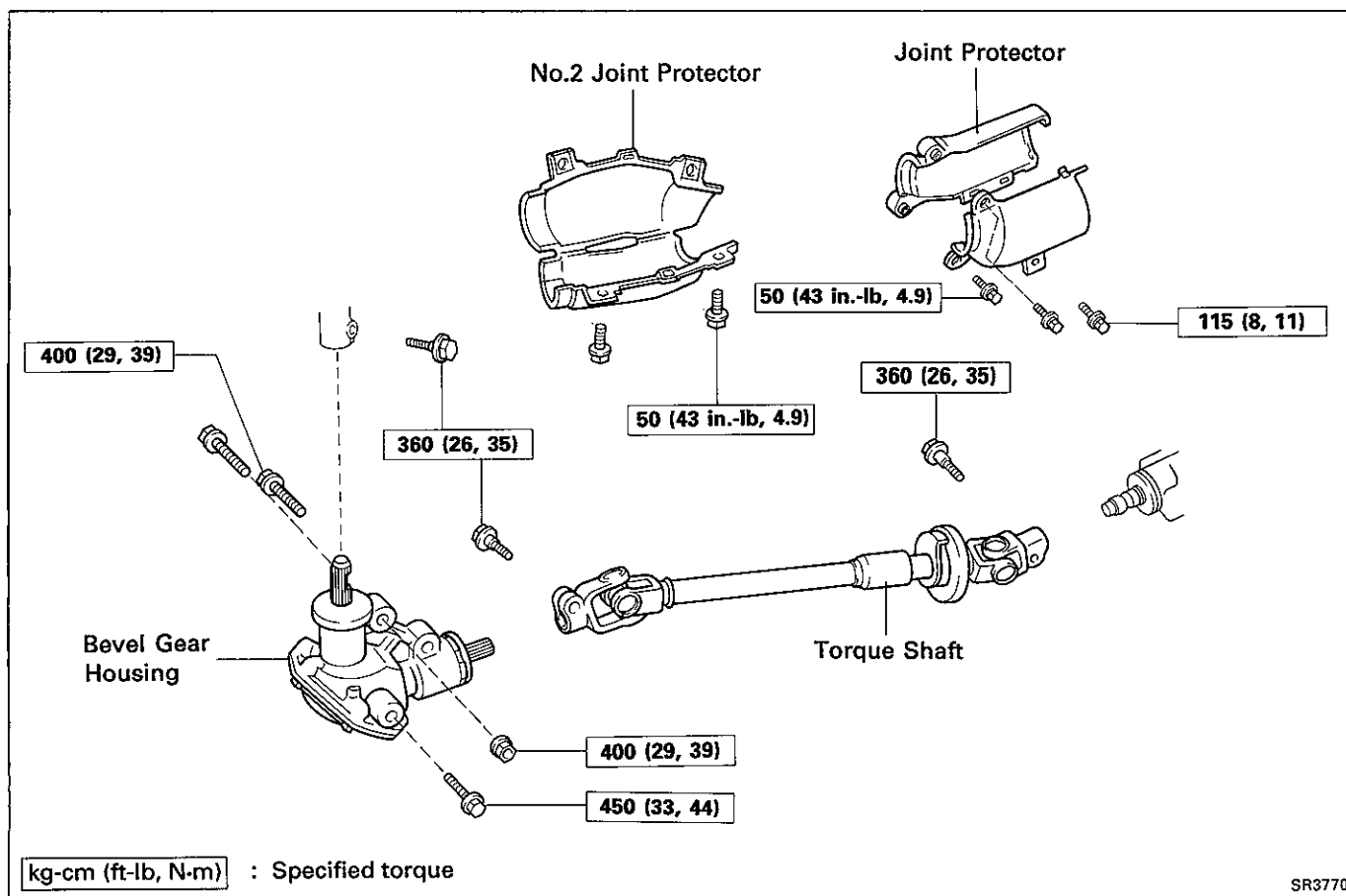


# STEERING BEVEL GEAR HOUSING

## REMOVAL AND INSTALLATION OF STEERING BEVEL GEAR HOUSING

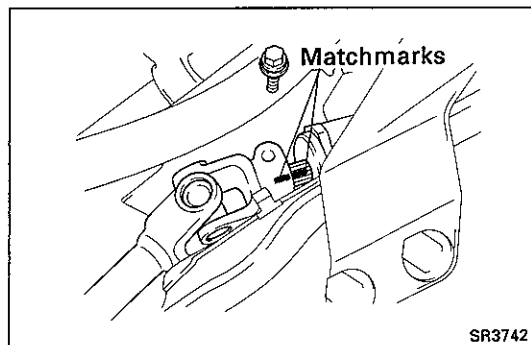
Remove the parts as shown.



### (MAIN POINTS OF REMOVAL)

#### 1. DISCONNECT MAIN SHAFT

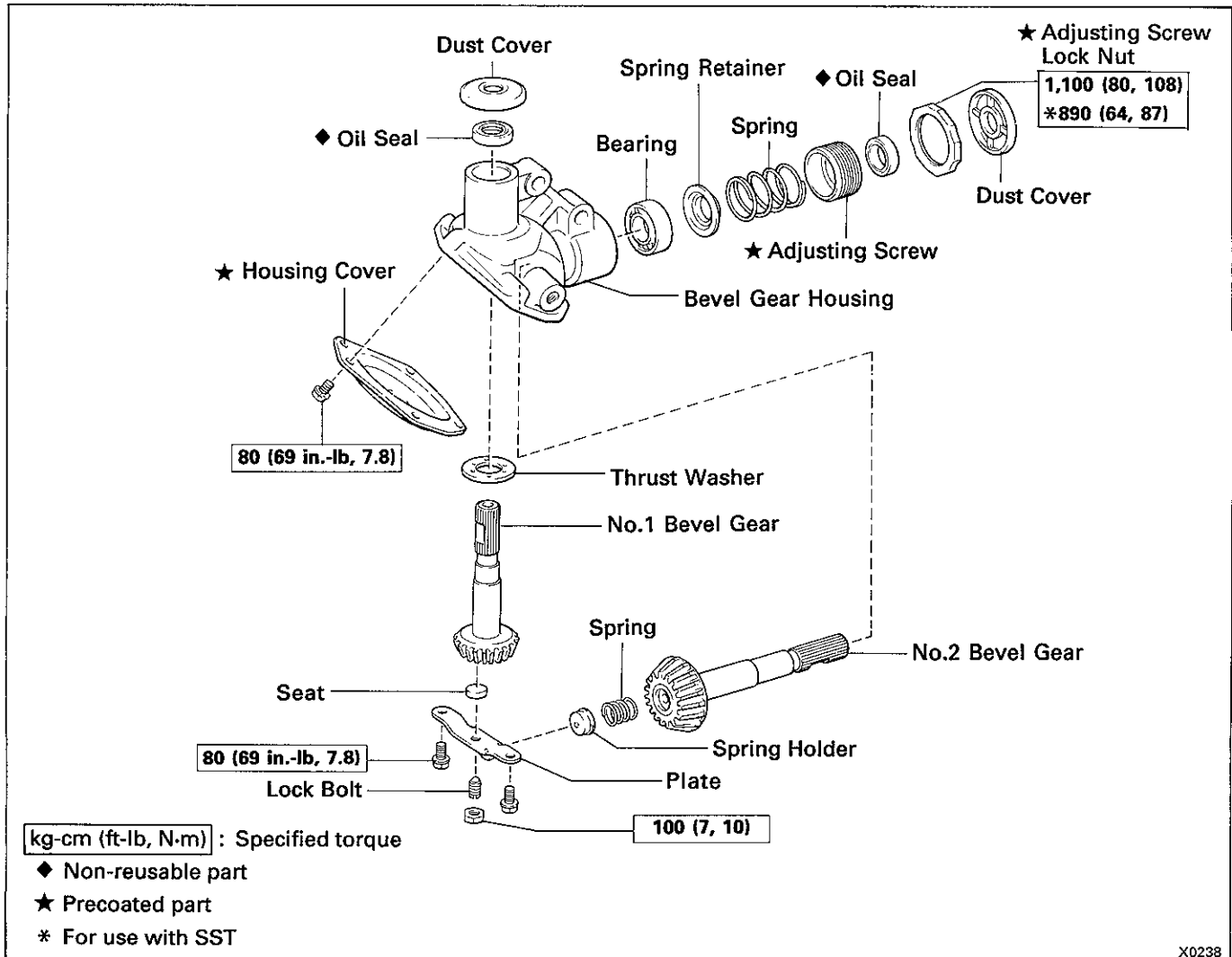
- Place matchmarks on the bevel gear shaft and main shaft.
- Disconnect the main shaft from the bevel gear housing.



#### 2. DISCONNECT TORQUE SHAFT

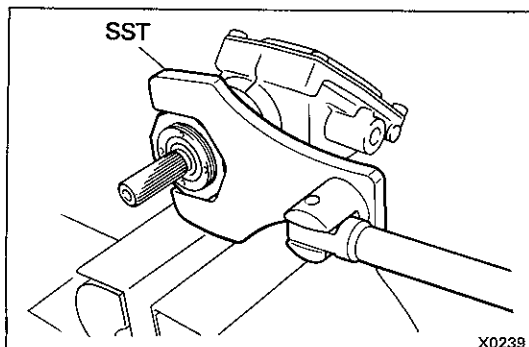
- Place matchmarks on the torque shaft and the bevel gear shaft.
- Loosen the bolt on the gear housing side.
- Pull out the torque shaft from the bevel gear housing.

## COMPONENTS



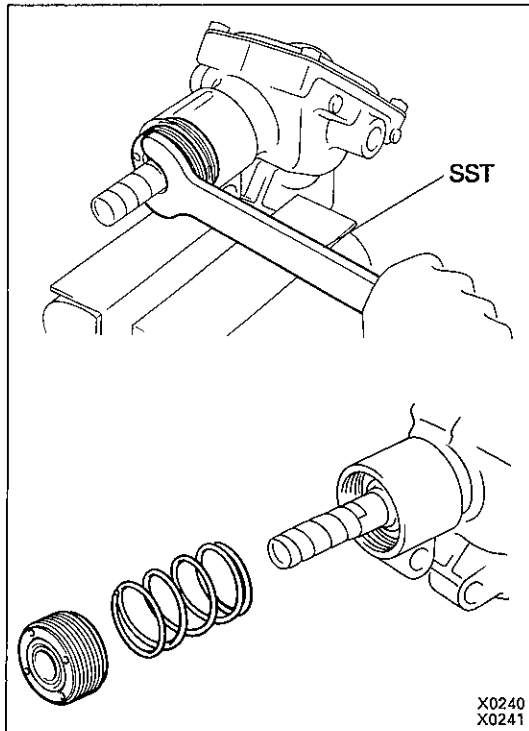
## DISASSEMBLY OF BEVEL GEAR HOUSING

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



3. REMOVE PINION BEARING ADJUSTING SCREW LOCK NUT

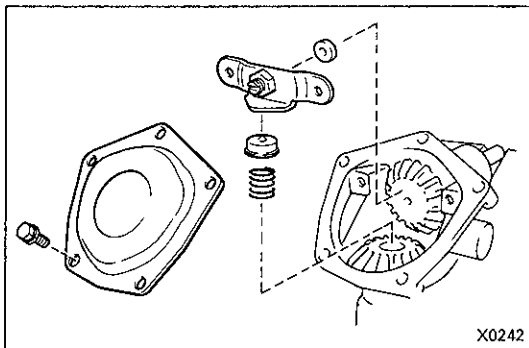
Using SST, remove the lock nut.  
SST 09612-10093 (09617-10010)



#### 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.

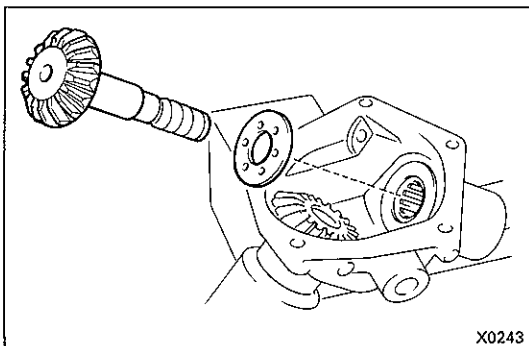


#### 5. REMOVE HOUSING COVER

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.



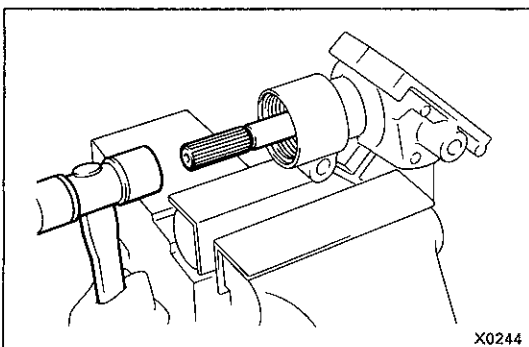
#### 7. REMOVE NO.1 BEVEL GEAR

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

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

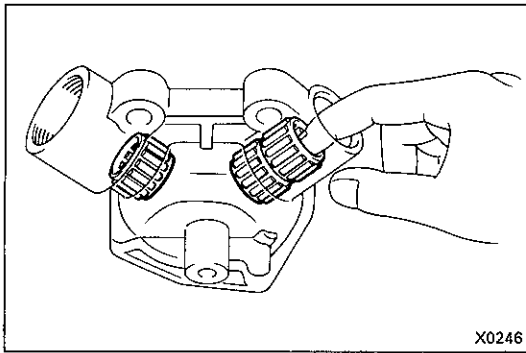
- (b) Remove No.1 bevel gear and thrust washer.

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.



X0246

## INSPECTION AND REPLACEMENT OF BEVEL GEAR HOUSING

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

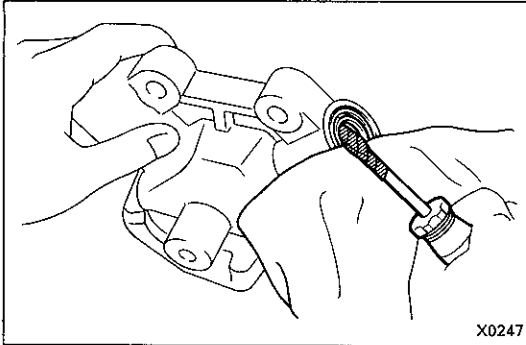
- (a) Check the needle roller bearing contacting surface for wear or damage.
- (b) Check the gear teeth for wear or damage.

### 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.

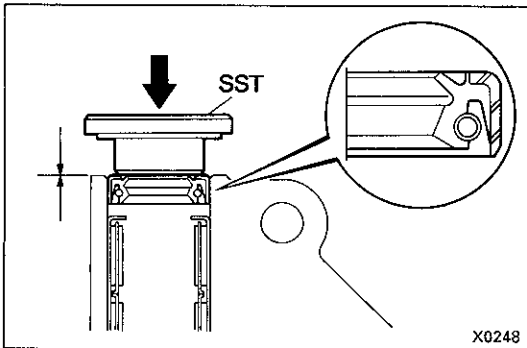


X0247

- (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)



X0248

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

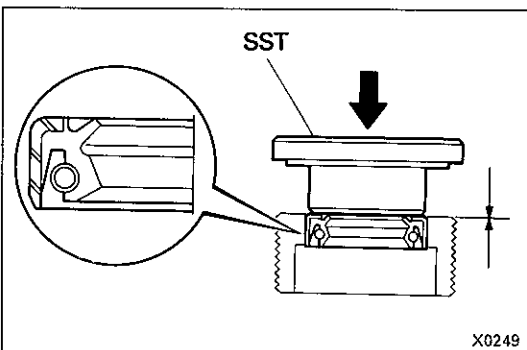
- (a) Using SST, remove the oil seal.

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)



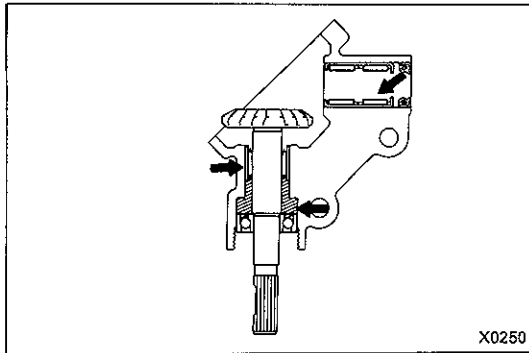
X0249

## ASSEMBLY OF BEVEL GEAR HOUSING

(See page SR-67)

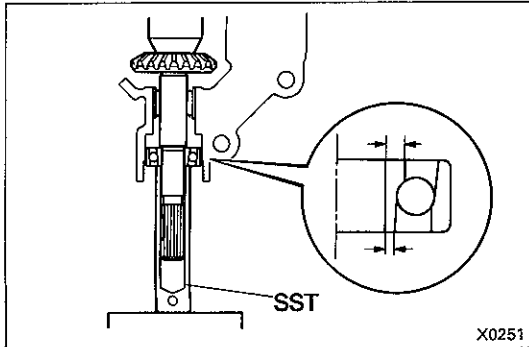
### 1. COAT PARTS WITH MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE

(See page SR-67)

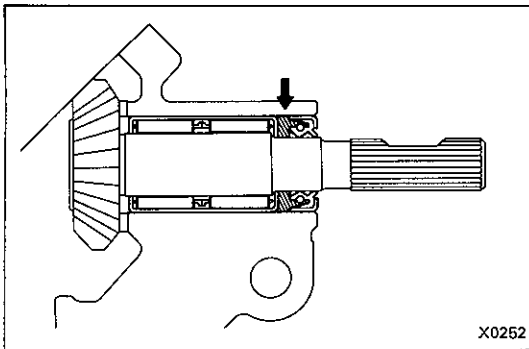


## 2. INSTALL NO.2 BEVEL GEAR AND BEARING

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

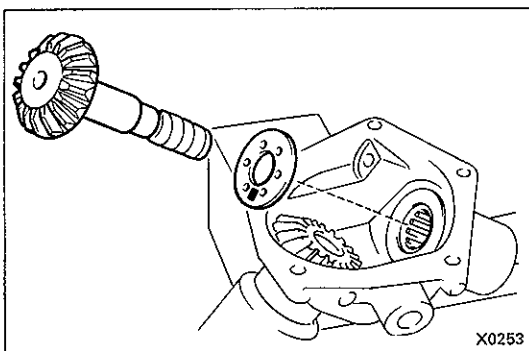


- (c) Using SST, press in the bearing.  
SST 09612-10093 (09612-10061)



## 3. INSTALL NO.1 BEVEL GEAR AND THRUST WASHER

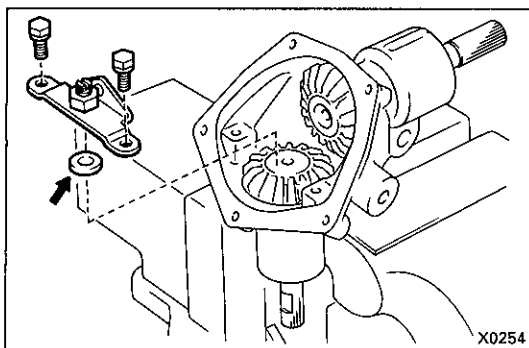
- (a) Fill the gear housing with molybdenum disulphide lithium base grease as shown.



- (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.

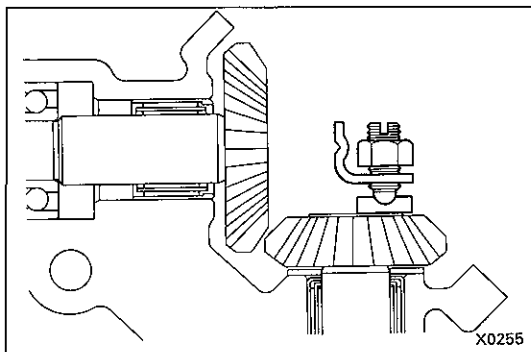


## 4. INSTALL LOCK BOLT SEAT

## 5. INSTALL PLATE

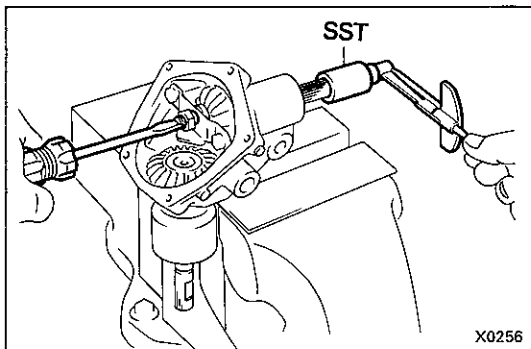
- (a) Loosen the lock bolt.
- (b) Install two bolts and the plate.

**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.

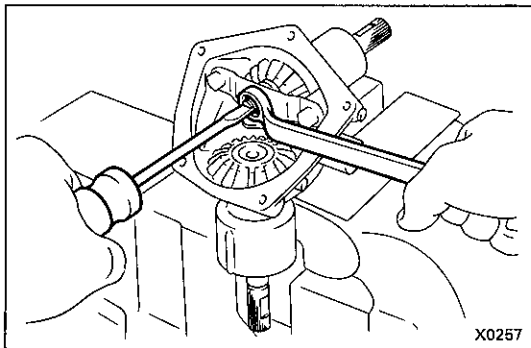


- (b) Using a screwdriver and SST, adjust the No.1 bevel gear preload, and then No.1 bevel gear is no axial play.

SST 09616-00010

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

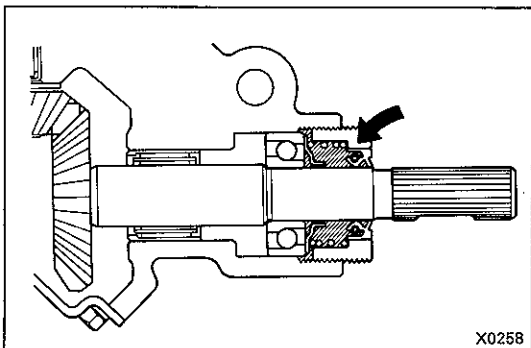
**HINT:** Line up the cutout portion of the No.1 and No.2 bevel gear.



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

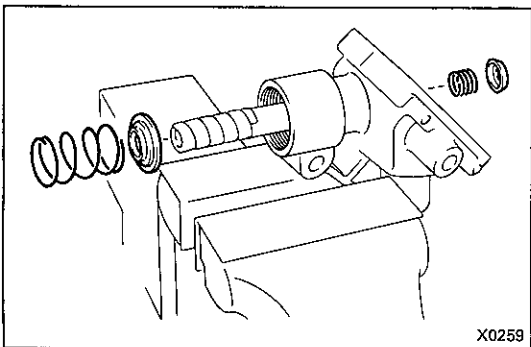
**Torque: 100 kg-cm (7 ft-lb, 10 N-m)**

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

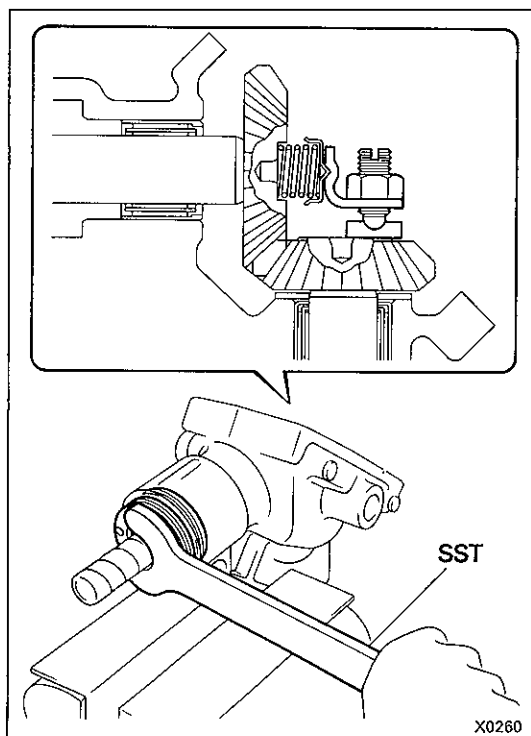


## 7. INSTALL SPRING HOLDERS AND SPRINGS

- (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

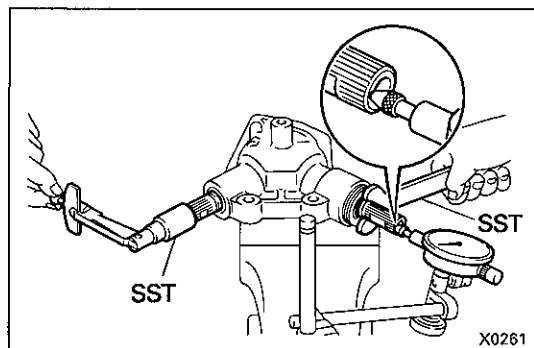
- (a) Wind vinyl tape to the serration of the shaft.
- (b) Apply sealant to the threads of adjusting screw.

**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.

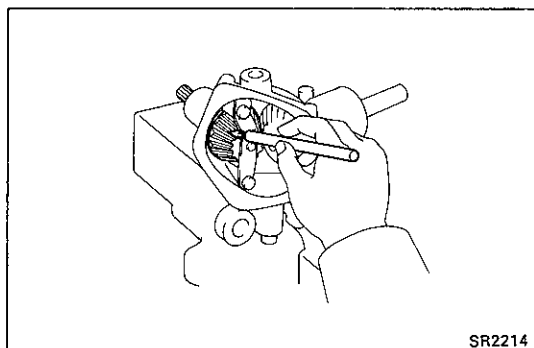
SST 09612-10093 (09616-10020), 09616-00010

**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

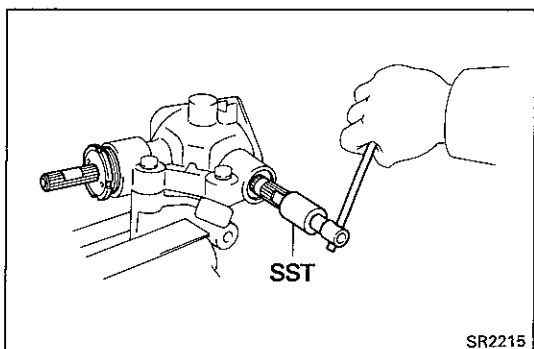
- (a) Coat two teeth at symmetrical position on the No.1 bevel gear with red lead.



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

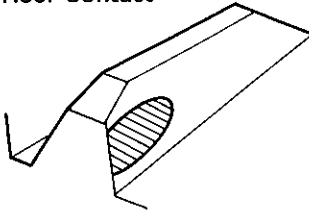
SST 09616-00010

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



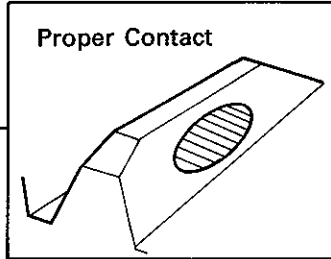
**[Tooth Pattern of No.2 Bevel Gear]**

Heel Contact

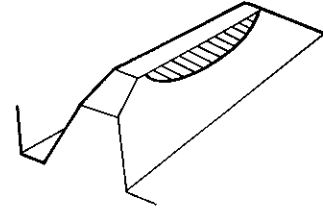


Select a more thick washer

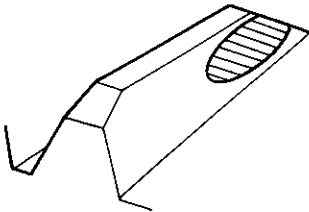
Proper Contact



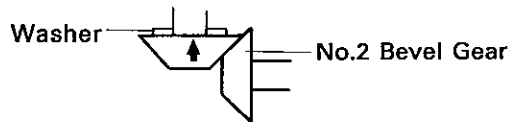
Face Contact



Toe Contact



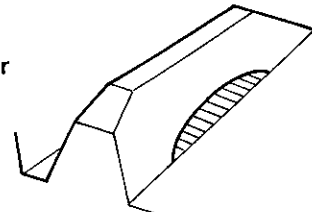
Washer



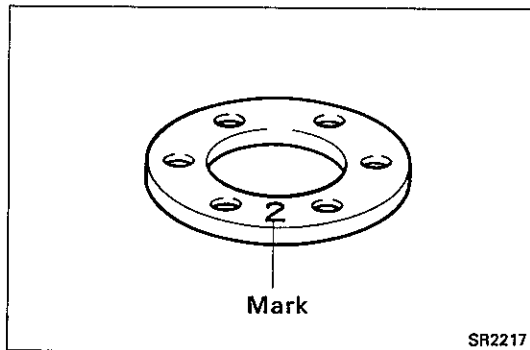
No.2 Bevel Gear

Select a thinner washer

Flank Contact



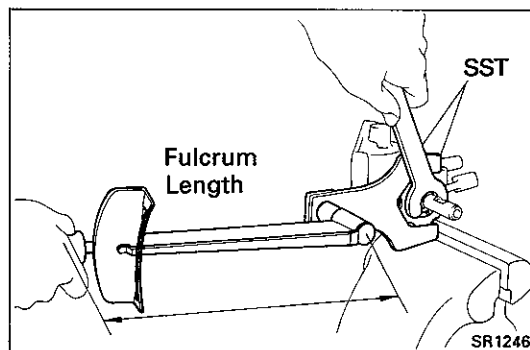
SR2216



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)

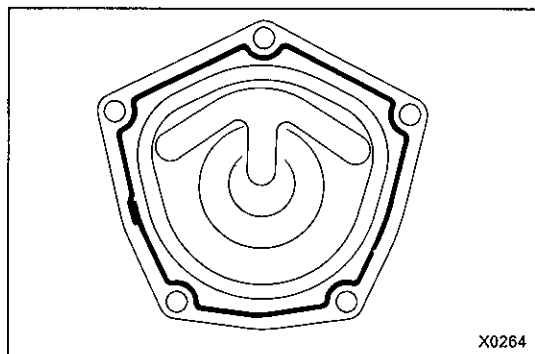
**Torque:** 890 kg-cm (64 ft-lb, 87 N-m)

**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**