

# DRIVE SHAFT & FRONT AXLE

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## GENERAL

### SPECIFICATIONS

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<b>Drive shaft</b>		
<b>Joint type</b>		
Outer		B.J.
Inner		D.O.J.
<b>Length (Joint to joint)</b>	<b>mm (in.)</b>	
L.H.		374.5 (14.74).
R.H.		374.5 (14.74)
<b>Shaft diameter</b>	<b>mm (in.)</b>	
L.H.		26 (1.02)
R.H.		26/32 (1.02/1.26)
<b>Center bearing</b>		
Type		Radial ball bearing
Dimension (O.D. x I.D.)	mm (in.)	62 x 30 (2.44 x 1.18)
<b>Inner shaft</b>		
Length	mm (in.)	395.5 (15.57)
Shaft diameter	mm (in.)	29 (1.14)
<b>Wheel bearing</b>		
Type		Double row angular contact ball bearing
Dimension (O.D. x I.D.)	mm (in.)	80 x 40 (3.15 x 1.57)

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### SERVICE STANDARD

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<b>Standard value</b>		
<b>Setting of D.O.J. boot length</b>	<b>mm (in.)</b>	
L.H.		86 ± 2 (3.38 ± 0.08)
R.H.		86 ± 2 (3.38 ± 0.08)
<b>Limit</b>		
Hub end play	mm (in.)	0.1 (0.004)
Wheel bearing starting torque	Nm (kg.cm, lb.in.)	1.76 (18, 16)

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**GENERAL**

**TIGHTENING TORQUE**

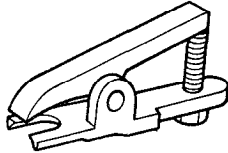
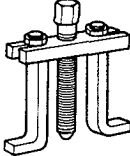
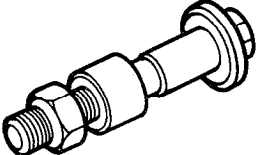
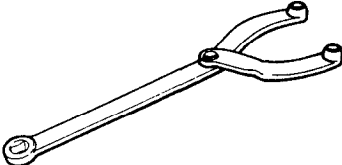
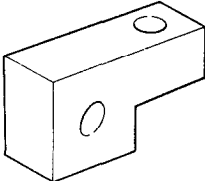
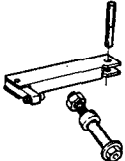
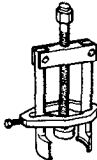
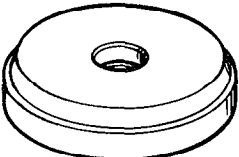
	Nm	Kg.cm	lb.ft
Drive shaft nut	196-255	2000-2600	145-188
Knuckle to strut assembly	88-103	900-1050	65-76
Lower arm ball joint to knuckle	59-71	600-720	42-50
Tie rod end to knuckle	24-33	240-340	17-25
Center bearing bracket mounting bolt	35-45	360-460	26-33

**LUBRICANTS**

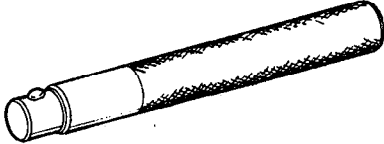
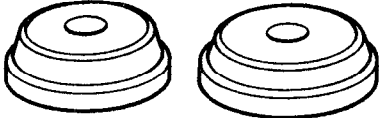
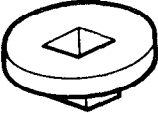
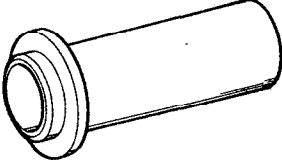
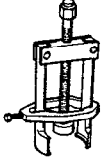
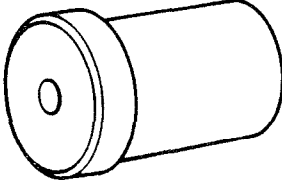
	Recommended lubricants	Quantity
Birfield joint boot grease (L.H. and R.H.)	SUNLIGHT SW-2	In the joint 70 ± 3g (2.5 ± 0.1 oz) In the boot 65 ± 3g (2.3 ± 0.1 oz)
Double offset joint boot grease (L.H. and R.H.)	VALIANT SD-R2	In the joint 65 ± 3g (2.3 ± 0.1 oz) In the boot 40 ± 3g (1.4 ± 0.1 oz)
Wheel bearing and knuckle inside surface Oil seal lip Inside surface and lip of ball joint dust cover	} Multipurpose grease SAE J310a, NLGI grade #2	As required As required As required

GENERAL

SPECIAL TOOLS

Tool (Number and Name)	Illustration	Use
09568—31000 Tie rod end puller		Separation of the tie rod end and the lower arm ball joint.
09526—11001 Axle shaft puller		Removal of the drive shaft from the front hub.
09517—21500 Front hub remover and installer		Removal and installation of the front hub.
09517—21700 End yoke puller		Holding of the front wheel nut when removing the front axle shaft.
09517—33000 Knuckle arm bridge adaptor		Removal of the front hub. (use with 09517—21600)
09517—21600 Knuckle arm bridge		Removal of the front hub. (use with 09517—21500)
09455—21000 Bearing and gear puller		Removal of the inner race from the front hub.
09517—21000 Oil seal installer		Press-fitting of the front wheel bearing outer race. (use with 09500—21000)

**GENERAL**

Tool (Number and Name)	Illustration	Use
09500—21000 Bar		Removal and installation of the oil seal and bearings.
09532—32000 Bearing installer (A/B)		Installation of the oil seal and bearing. (use with 09500—21000)
09532—11600 Preload socket		Measurement of the wheel bearing pre-load (use with torque wrench)
09452—21200 Oil pump oil seal installer		Installation of the outer dust seal
09495—33000 Center bearing bracket remover		Removal of the center bearing bracket
09495—33100 Center bearing remover, installer and inner dust seal installer		Removal and installation of the center bearing Installation of the inner dust seal

**GENERAL**

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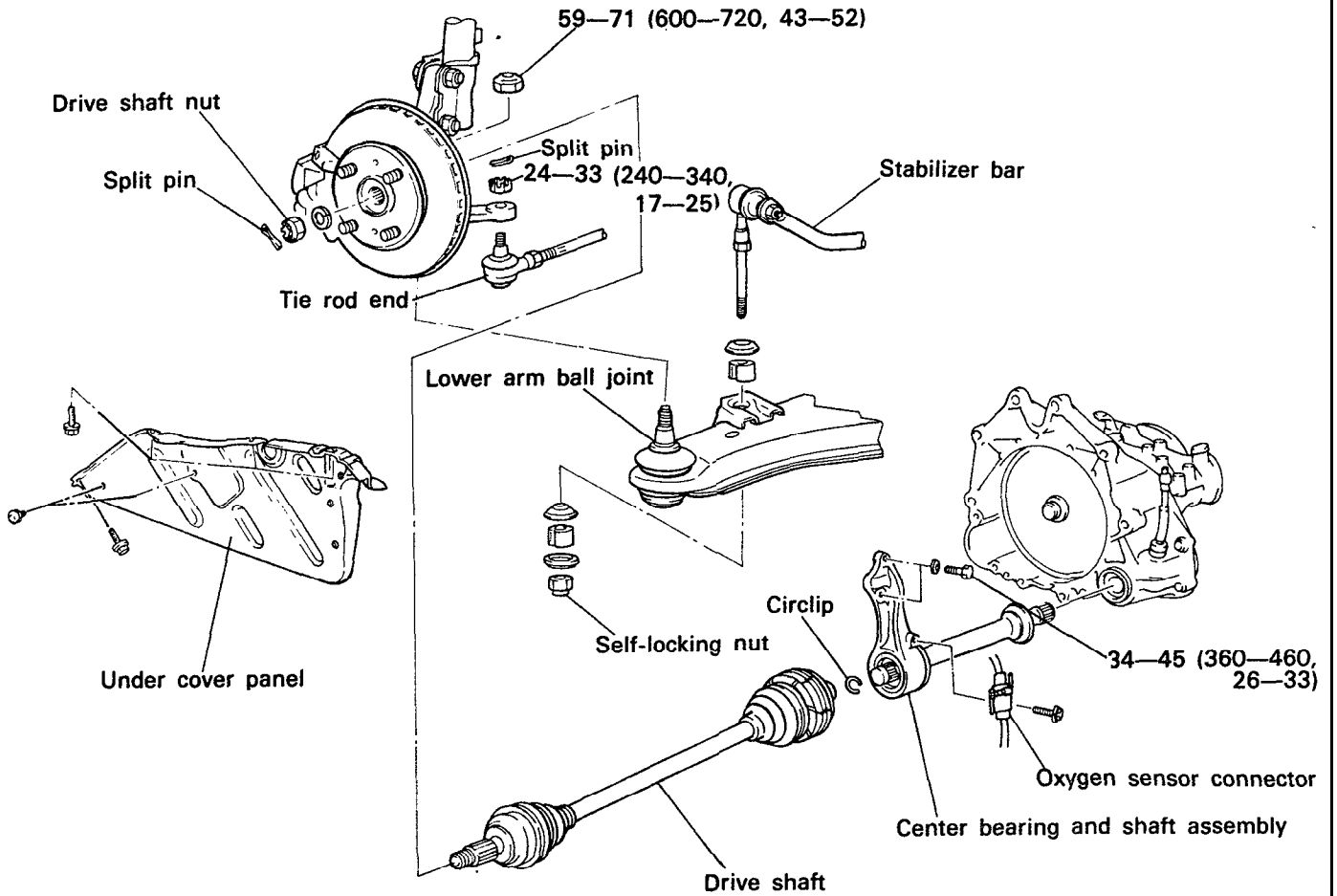
**TROUBLESHOOTING**

<b>Symptom</b>	<b>Probable cause</b>	<b>Remedy</b>
<b>Vehicle pulls to one side</b>	<b>Scoring of drive shaft ball joint</b>	<b>Replace</b>
	<b>Wear, rattle or scoring of wheel bearing</b>	<b>Replace</b>
	<b>Defective front suspension and steering</b>	<b>Adjust or replace</b>
<b>Vibration</b>	<b>Worn, damaged or bent of drive shaft</b>	<b>Replace</b>
	<b>Rattle of drive shaft and hub serration</b>	<b>Replace</b>
	<b>Worn, rattle or sintering of wheel bearing</b>	<b>Replace</b>
<b>Shimmy</b>	<b>Defective wheel balance</b>	<b>Adjust or replace</b>
	<b>Defective front suspension and steering</b>	<b>Adjust or replace</b>
<b>Excessive noise</b>	<b>Worn, damaged or bent of drive shaft</b>	<b>Replace</b>
	<b>Rattle of drive shaft and hub serration</b>	<b>Replace</b>
	<b>Rattle of drive shaft and side gear serration</b>	<b>Replace</b>
	<b>Wear, rattle or scoring of wheel bearing</b>	<b>Replace</b>
	<b>Loose hub nut</b>	<b>Adjust or replace</b>
	<b>Defective front suspension and steering</b>	<b>Adjust or replace</b>

# DRIVE SHAFT

## DRIVE SHAFT (L.H.)

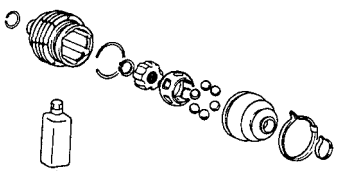
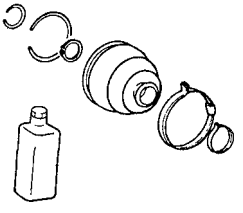
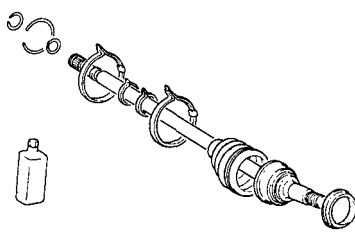
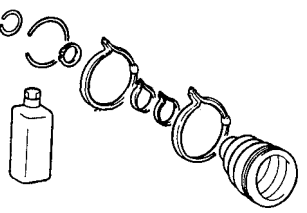
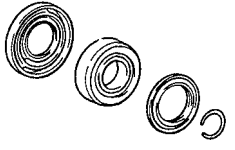
### COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

## DRIVE SHAFT

### REPAIR KITS

KIT NAME	ILLUSTRATION	CONTENTS
Double offset joint kit		<ul style="list-style-type: none"> <li>o D.O.J. outer race</li> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. inner race, cage and balls</li> <li>o D.O.J. boot</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o Grease</li> </ul>
Double offset joint boot kit		<ul style="list-style-type: none"> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. boot</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o Grease</li> </ul>
Birfield joint kit		<ul style="list-style-type: none"> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o B.J. boot band</li> <li>o B.J. boot</li> <li>o B.J. assembly</li> <li>o Dust cover</li> <li>o Grease</li> </ul>
Birfield joint boot kit		<ul style="list-style-type: none"> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o B.J. boot band</li> <li>o B.J. boot</li> <li>o Grease</li> </ul>
Center bearing dust seal kit		<ul style="list-style-type: none"> <li>o Inner dust seal</li> <li>o Center bearing</li> <li>o Outer dust seal</li> </ul>



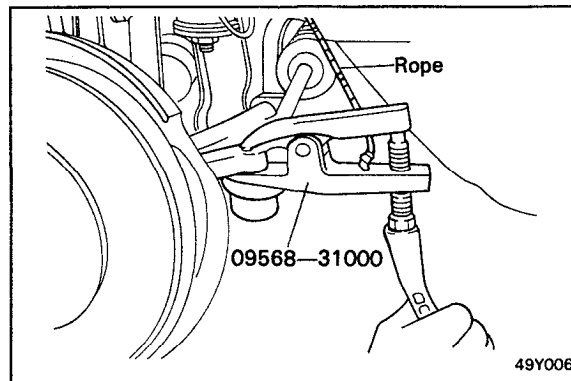
## DRIVE SHAFT

### REMOVAL

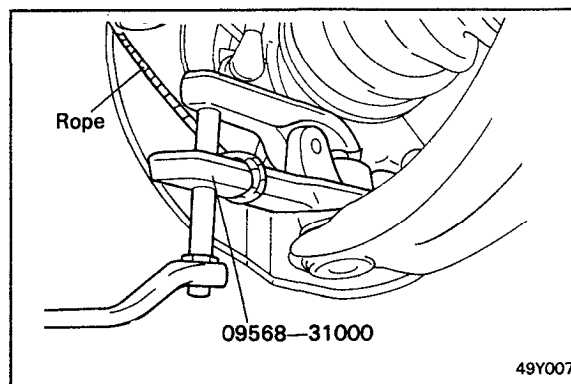
1. Using the special tool, disconnect the tie rod end from the knuckle.

#### NOTE

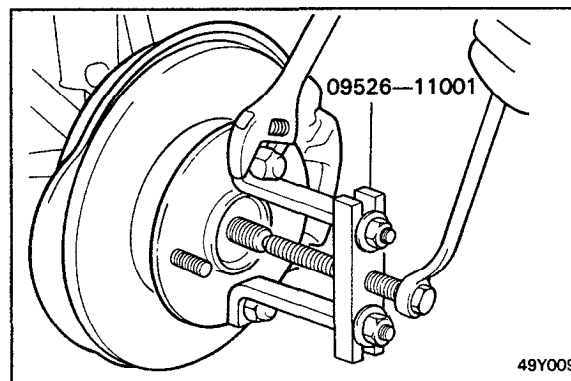
- 1) Be sure to tie a cord to the special tool and to a nearby part.
- 2) Loosen the nut, but do not remove it.



2. Using the special tool, disconnect the lower arm ball joint from the knuckle.



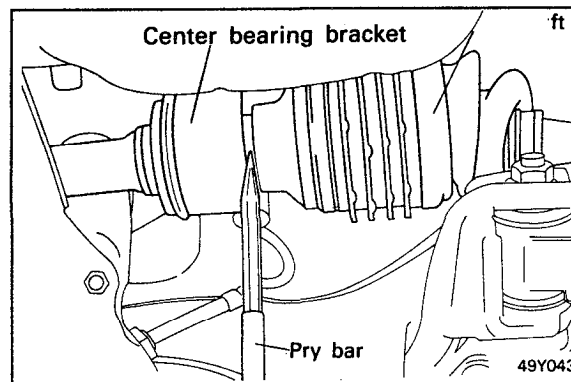
3. Disconnect the drive shaft from the hub by using the special tool.



4. Insert a pry bar between the center bearing bracket and the drive shaft, and then pry the drive shaft from the transaxle.

#### NOTE

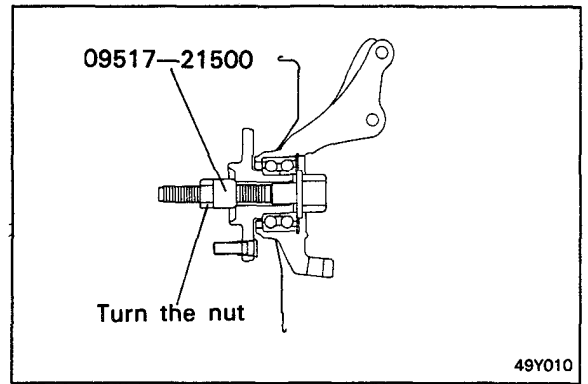
Do not pull on the drive shaft; doing so will damage the D.O.J.; be sure to use the pry bar.



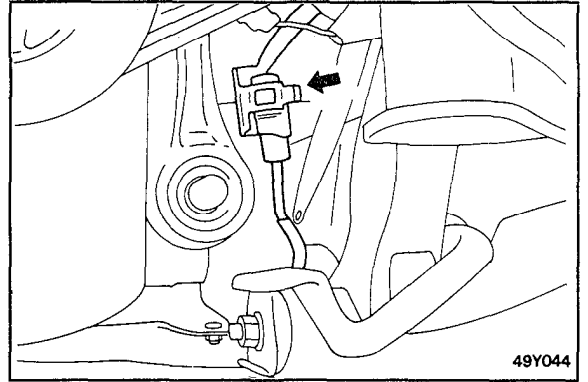
## DRIVE SHAFT

### CAUTION

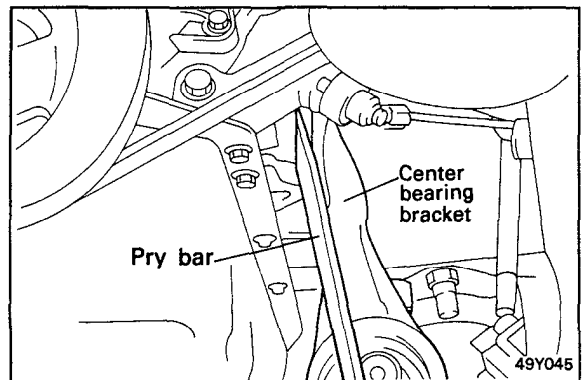
Do not apply the vehicle weight to the wheel bearing while the driveshaft is disconnected. If the vehicles weight must be applied (because of vehicle movement or some other reason), use the special tool to hold the wheel bearing, as shown in the figure.



5. Remove the oxygen sensor connector from the center bearing bracket.

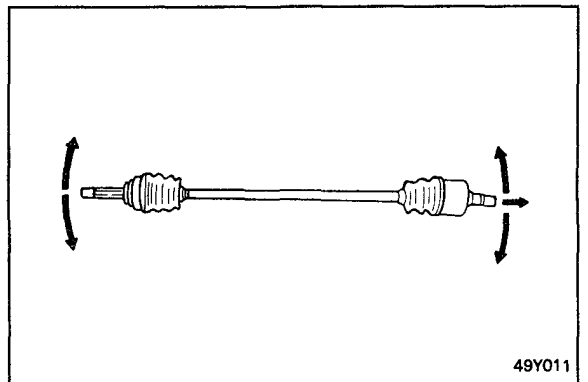


6. Remove the center bearing bracket and the shaft assembly mounting bolts. Insert the pry bar between the center bearing bracket, shaft assembly and the cylinder block, then remove the assembly.



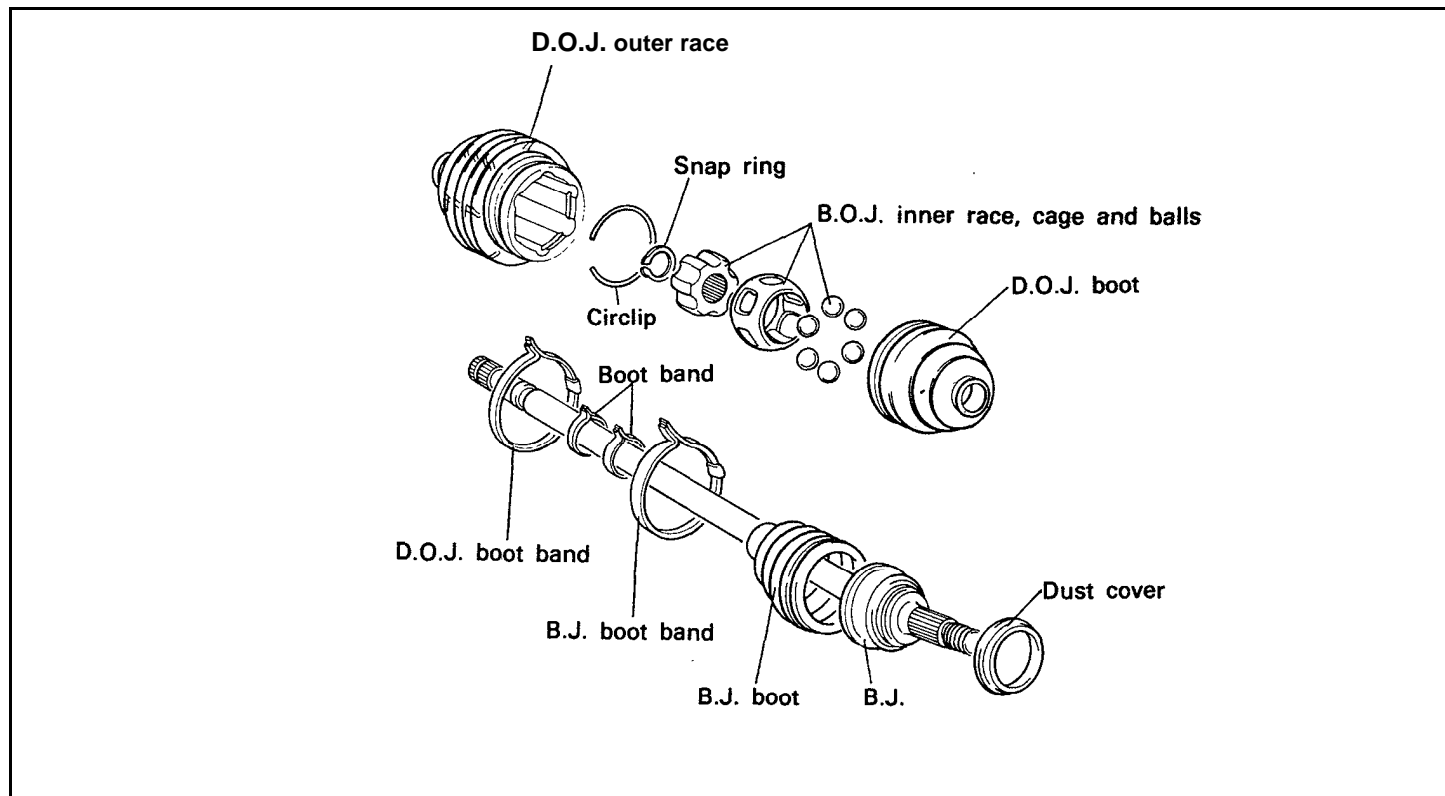
### INSPECTION

1. Check the drive shaft boots for damage or deterioration.
2. Check the ball joints for wear or operating condition.
3. Check the splines for wear or damage.



## DRIVE SHAFT

### DISASSEMBLY AND ASSEMBLY (Drive Shaft L.H.)

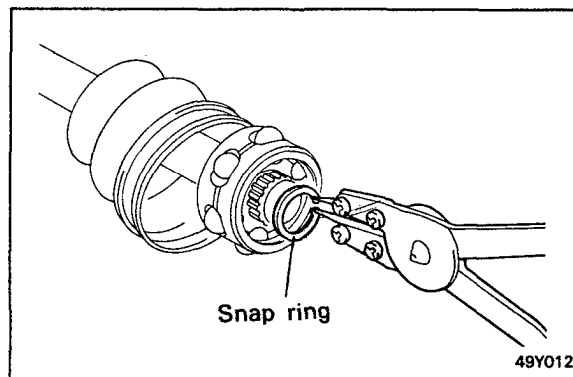


### DISASSEMBLY

1. Remove the snap ring, and then remove the D.O.J. inner race, the D.O.J. cage, and the balls as a unit.
2. Clean the D.O.J. inner race, the D.O.J. cage, and the balls, without disassembling them.

#### NOTE

- 1) Be careful that the balls do not drop out of the cage.
- 2) If the balls drop out, press them back into the D.O.J. cage with the D.O.J. inner race.



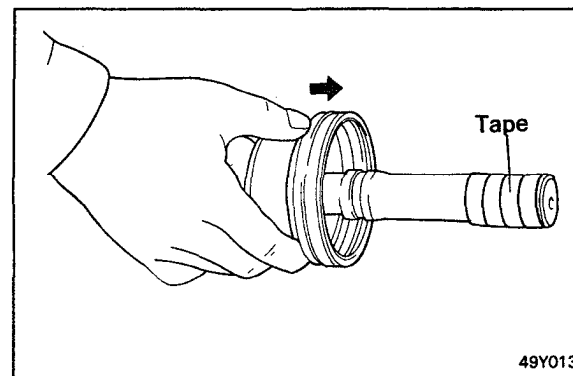
3. Wipe the grease off the spline portion.
4. Remove the D.O.J. boot and B.J. boot.

#### NOTE

If the boots can be reused, wrap vinyl tape around the drive shaft splines so that the boots are not damaged when they are removed.

#### NOTE

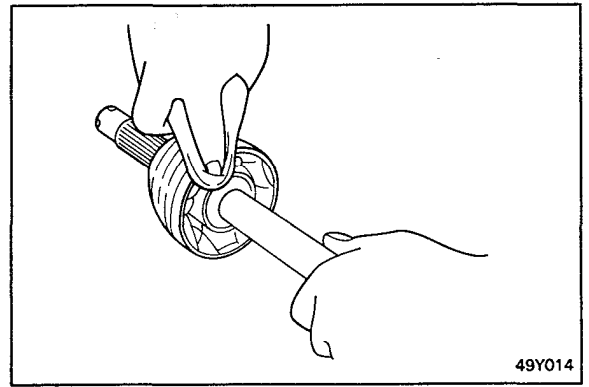
Do not disassemble the B.J..



## DRIVE SHAFT

### Inspection after Disassembly

1. Inspect the drive shaft and drive shaft splines for wear, damage, bending or corrosion.
2. Inspect the birfield joint for entry of water and/or foreign material.
3. Check the double offset joint outer race, cage, balls and inner race for damage, corrosion or wear.

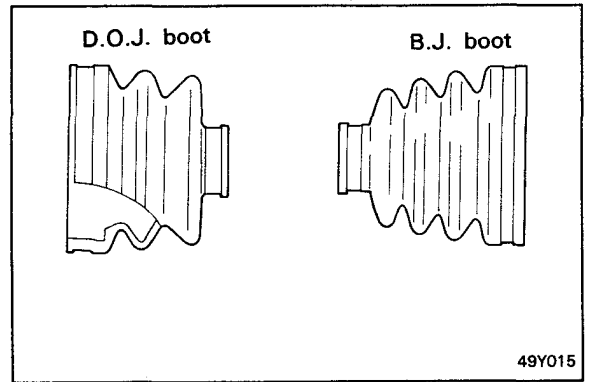


### ASSEMBLY

1. Wrap the drive shaft splines (D.O.J. side) with tape to prevent damage to the boots.
2. Apply grease to the drive shaft and install the boots.
3. Remove the tape.

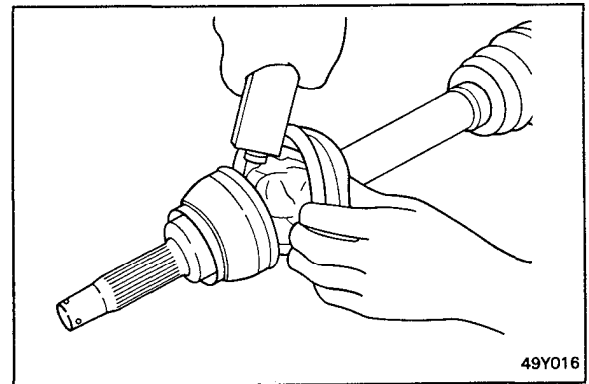
#### NOTE

Distinguish between the B.J. boot and the D.O.J. boot parts according to the section "Parts Distinction", and be sure to assemble them correctly.

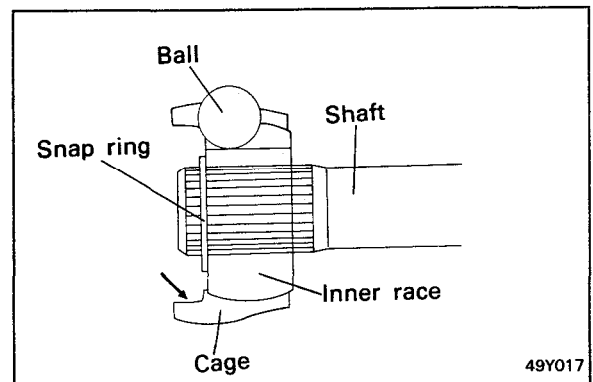


4. Fill the inside of the B.J. and B.J. boot with the specified grease.

Recommended grease ..... SUNLIGHT SW-2

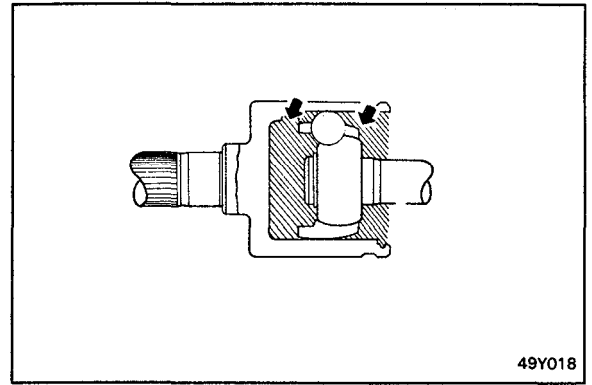


5. Apply the recommended grease to the D.O.J. cage, the balls and the D.O.J. inner race.



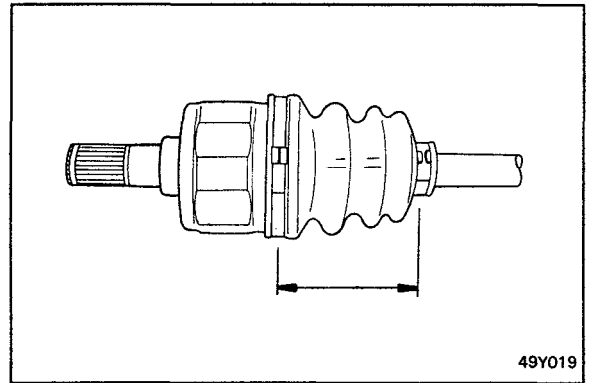
## DRIVE SHAFT

6. Fill the D.O.J. outer race with the recommended grease. Fit the drive shaft into the D.O.J. outer race and apply additional grease to the D.O.J.'s outer race.

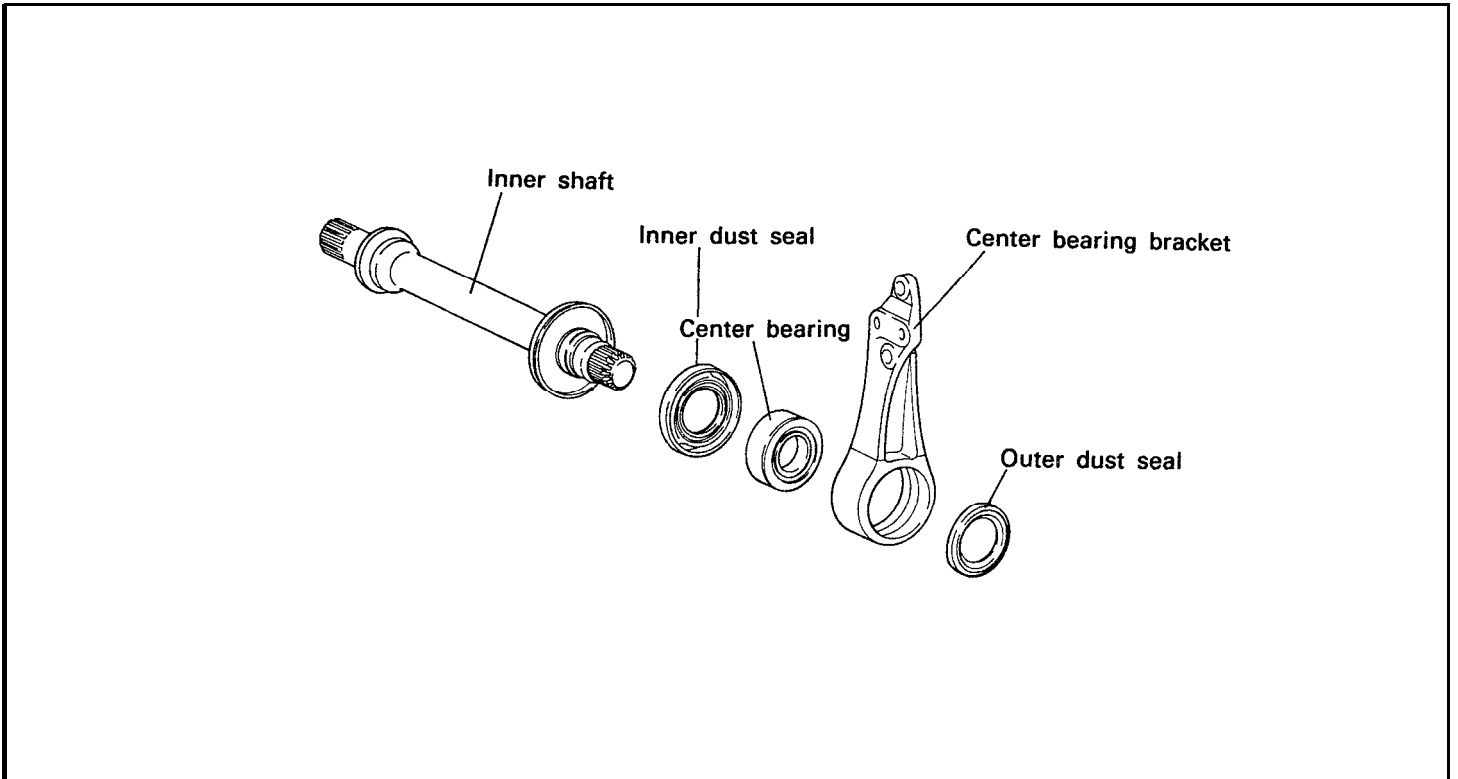


7. Set the D.O.J. boot bands at the specified distance in order to adjust the amount of air inside the D.O.J. boot, and then tighten the D.O.J. boot band securely.

Standard value .....  
77.5±3 mm (3.05±0.12 in.)

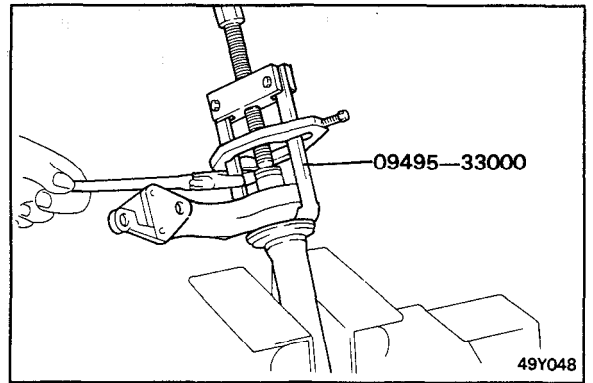


## DISASSEMBLY AND ASSEMBLY (Bearing Bracket and Shaft Assembly)

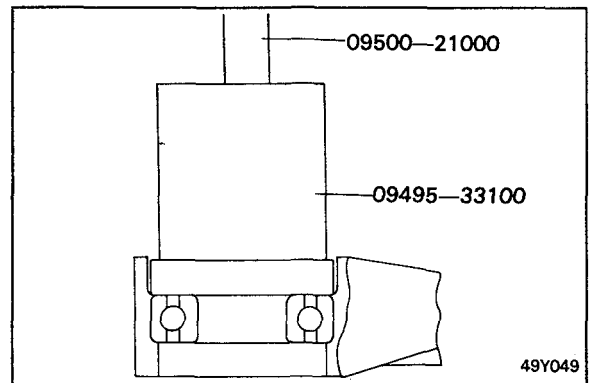


## DISASSEMBLY

1. Using the special tool, remove the center bearing bracket from the inner shaft.



2. Using the special tool, remove the center bearing from the center bearing bracket.

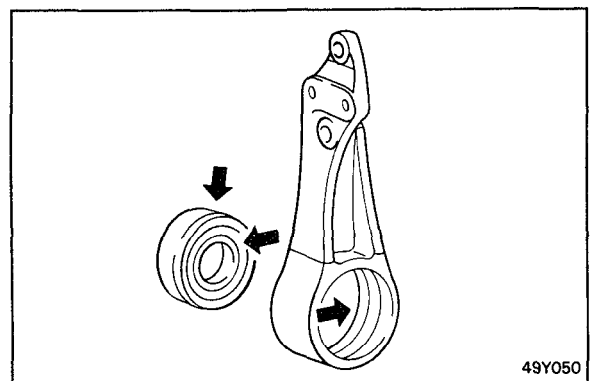


## Inspection after Disassembly

1. Check the inner shaft for damage, bending, or rust.
2. Check the inner shaft splines for wear or damage.
3. Check the center bearing for scoring, discoloration, and roughness of the moving surfaces of the roller journal.

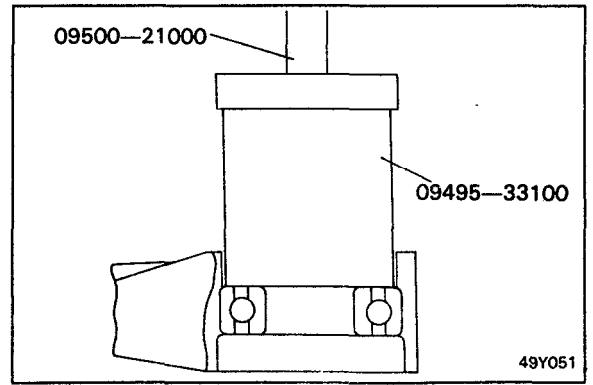
## ASSEMBLY

1. Apply multipurpose grease to the center bearing and inside the center bearing bracket.



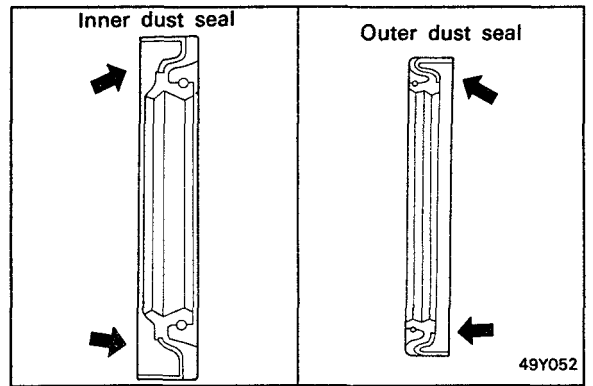
## DRIVE SHAFT

- Press the center bearing into the center bearing bracket by using the special tools.



- Apply multipurpose grease to the rear surface of all dust seals.

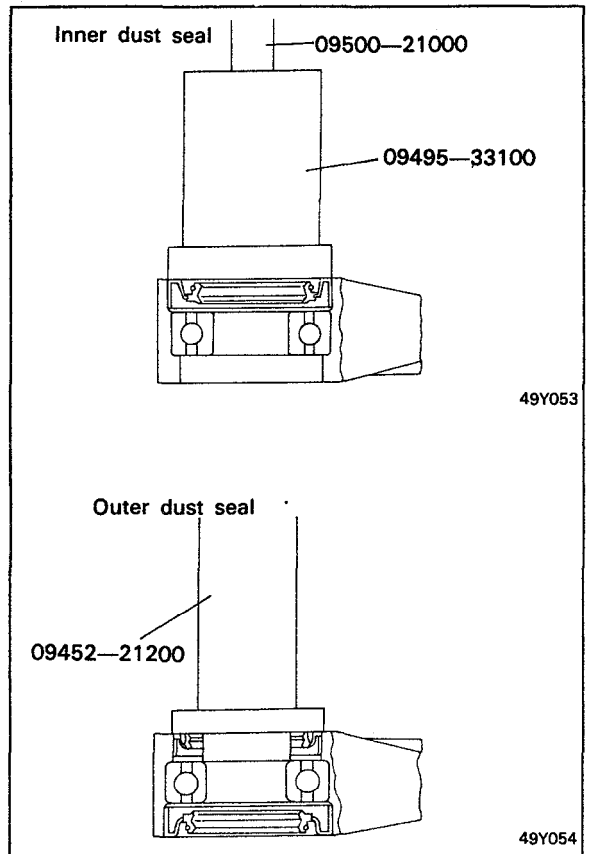
Recommended grease . . . .	Multipurpose grease NLGI #2
Inner dust seal	7-10g (0.25-0.35 oz)
Outer dust seal	4-6g (0.14-0.21 oz)



- Using the special tool, tap in the dust seals until they are flush with the edge of the center bearing bracket.

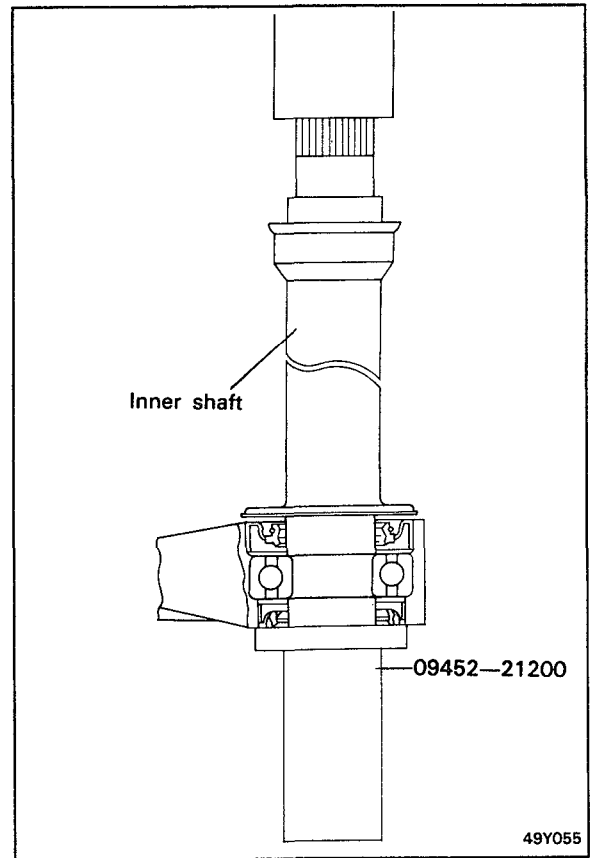
**NOTE**

When applying grease, make sure that it does not adhere to anything outside the lip.



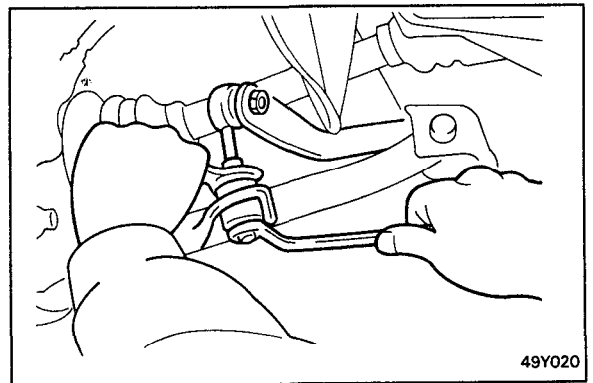
## DRIVE SHAFT

- Using the special tool, support the center bearing as shown in the figure, and then press in the inner shaft.

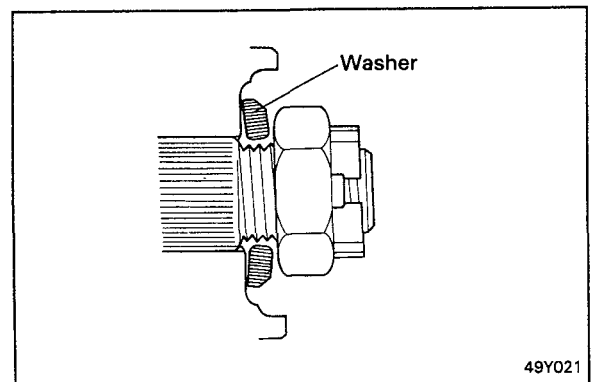


## INSTALLATION

- Secure the stabilizer link in position with a spanner [2 side width 12 mm (1/2 in.)] and attach a self-locking nut.



- Be sure to install the washer and wheel bearing nut in the specified direction.
- After installing the wheel, lower the vehicle to the ground and tighten the wheel bearing nut.
- If the position of the split pin holes do not match, tighten the nut up to 255 Nm (2600 Kg.cm, 188 lb.ft) maximum.
- Install the split pin in the first matching holes and bend it over.

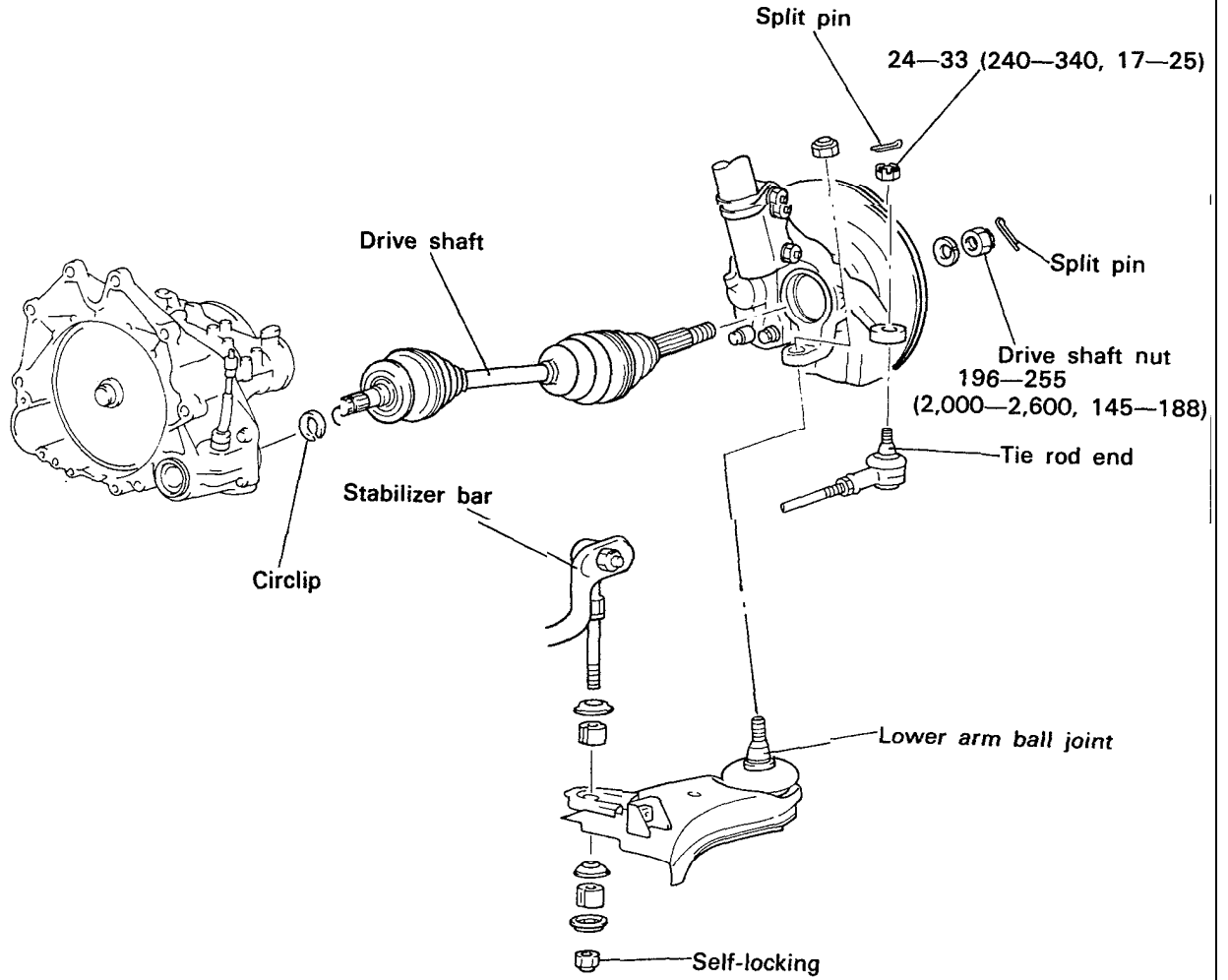




# DRIVE SHAFT

## DRIVE SHAFT (R.H.)

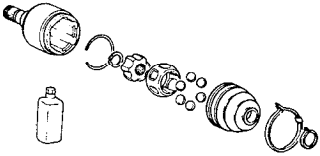
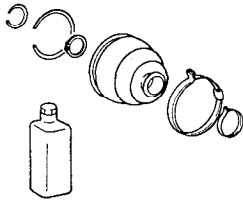
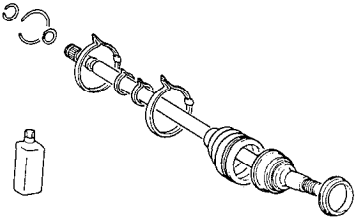
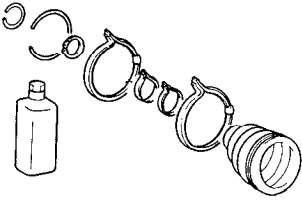
### COMPONENTS



TORQUE ; Nm (Kg.cm, lb.ft)

## DRIVE SHAFT

### REPAIR KITS

KIT NAME	ILLUSTRATION	CONTENTS
Double offset joint kit	 <p style="text-align: right; margin-right: 20px;">49Y057</p>	<ul style="list-style-type: none"> <li>o D.O.J. outer race</li> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. inner race, cage and balls</li> <li>o D.O.J. boot</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o Grease</li> </ul>
Double offset joint boot kit	 <p style="text-align: right; margin-right: 20px;">49Y039</p>	<ul style="list-style-type: none"> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. boot</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o Grease</li> </ul>
Birfield joint kit	 <p style="text-align: right; margin-right: 20px;">49Y040</p>	<ul style="list-style-type: none"> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o B.J. boot band</li> <li>o B.J. boot</li> <li>o B.J. assy</li> <li>o Dust cover</li> <li>o Grease</li> </ul>
Birfield joint boot kit	 <p style="text-align: right; margin-right: 20px;">49Y041</p>	<ul style="list-style-type: none"> <li>o Circlip</li> <li>o Snap ring</li> <li>o D.O.J. boot band</li> <li>o Boot band</li> <li>o B.J. boot band</li> <li>o B.J. boot</li> <li>o Grease</li> </ul>

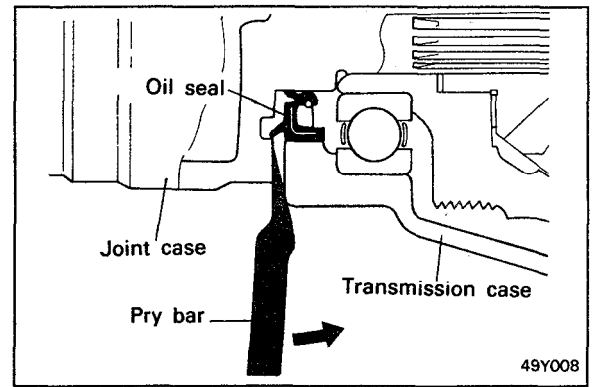
## DRIVE SHAFT

### REMOVAL

1. The removal procedure is the same as that of the drive shaft (L.H.).
2. Insert a pry bar between the transaxle case and the drive shaft, and then pry the drive shaft from the transaxle.

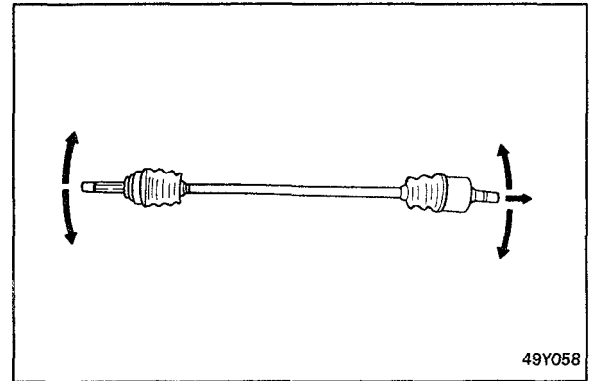
#### NOTE

Do not pull on the drive shaft; doing so will damage the D.O.J.; be sure to use the pry bar.

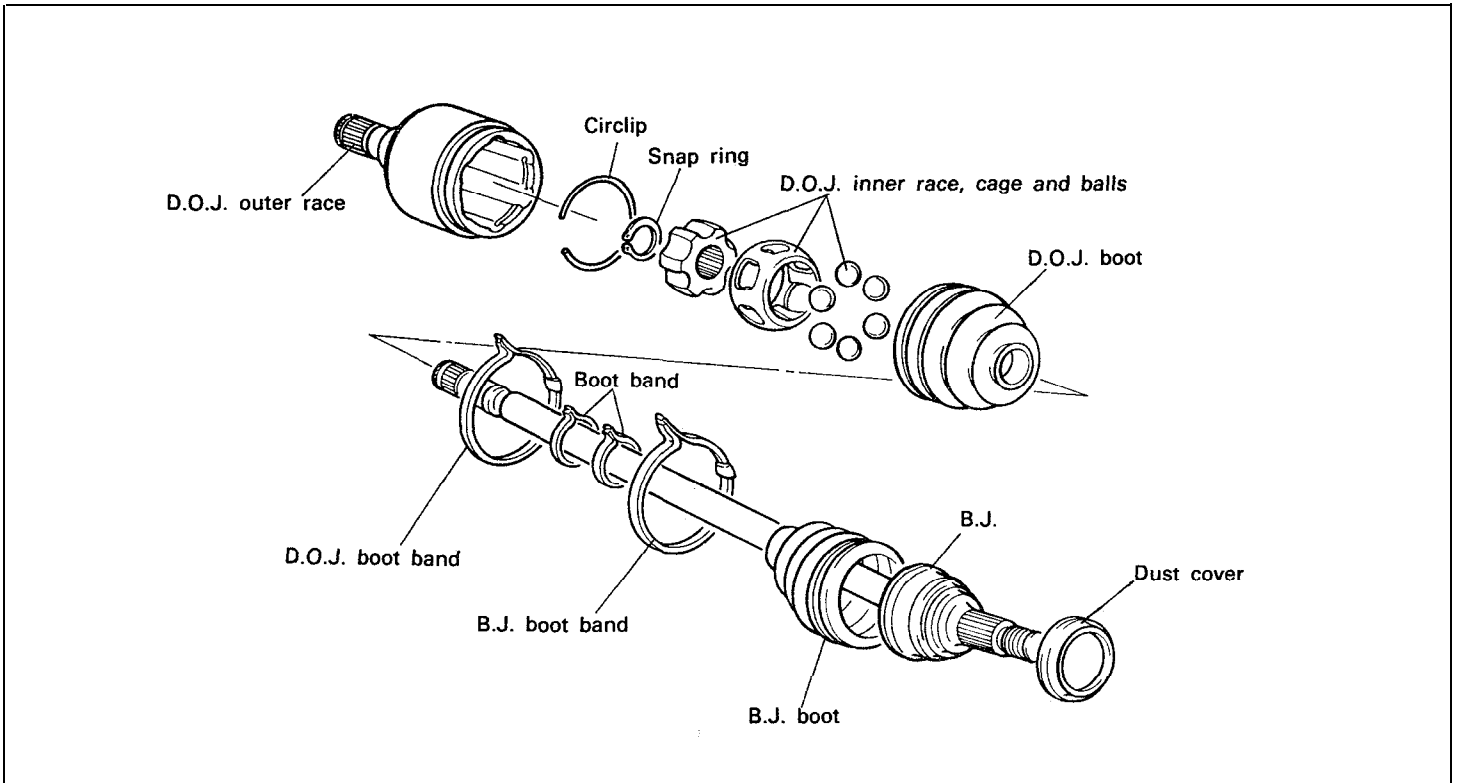


### INSPECTION

1. Check the drive shaft boots for damage or deterioration.
2. Check the ball joints for wear or operating condition.
3. Check the splines for wear or damage.



### DISASSEMBLY AND ASSEMBLY

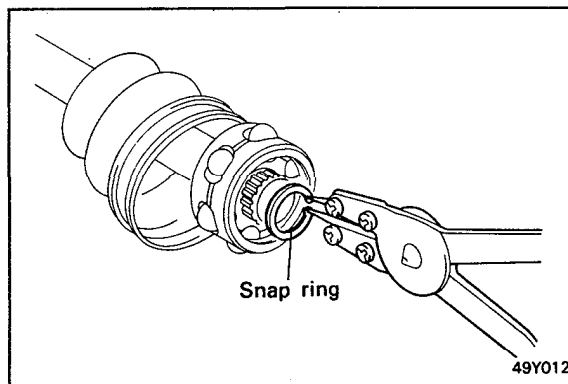


**DISASSEMBLY**

1. Remove the snap ring, and then remove the D.O.J. inner race, the D.O.J. cage, and the balls as a unit.
2. Clean the D.O.J. inner race, the D.O.J. cage, and the balls, without disassembling them.

**NOTE**

- 1) Be careful that the balls do not drop out of the cage.
- 2) If the balls drop out, press them back into the D.O.J. cage with the D.O.J. inner race.



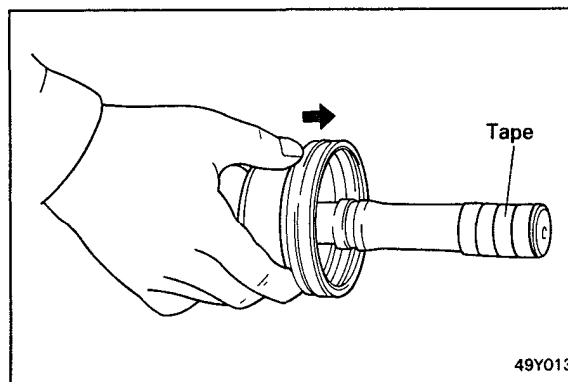
3. Wipe the grease off the spline portion.
4. Remove the D.O.J. boot and B.J. boot.

**NOTE**

If the boots can be reused, wrap tape around the drive shaft splines so that the boots are not damaged when they are removed.

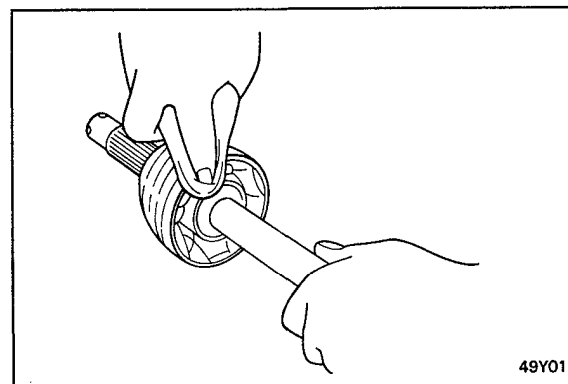
**NOTE**

Do not disassemble the B.J..



**Inspection after Disassembly**

1. Inspect the drive shaft and drive shaft splines for wear, damage, bending or corrosion.
2. Inspect the birfield joint for entry of water and/or foreign material.
3. Check the double offset joint outer race, cage, balls and inner race for damage, corrosion or wear.

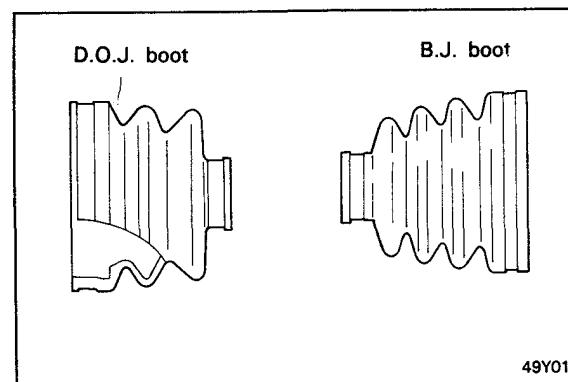


**ASSEMBLY**

1. Wrap tape around the drive shaft splines (D.O.J. side) to prevent damage to the boots.
2. Apply grease to the drive shaft and install the boots.
3. Remove the tape.

**NOTE**

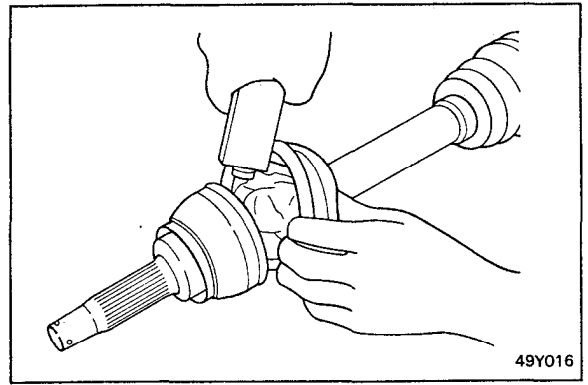
Distinguish between the B.J. boot and the D.O.J. boot parts according to the section "Parts Distinction", and be sure to assemble them correctly.



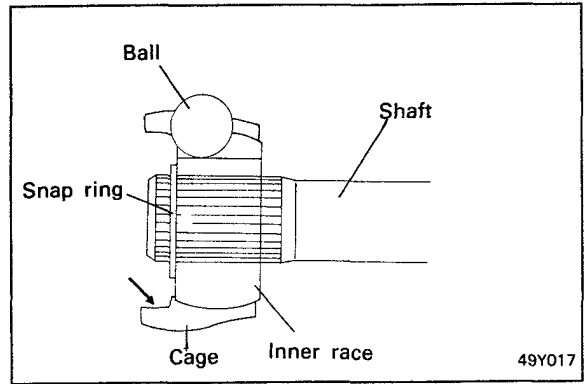
# DRIVE SHAFT

4. Fill the inside of the B.J. and B.J. boot with the specified grease.

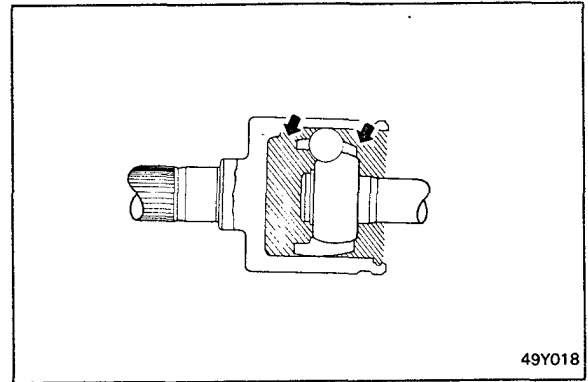
Recommended grease ..... SUNLIGHT SW-2



5. Apply the recommended grease to the D.O.J. cage, the balls and the D.O.J. inner race.

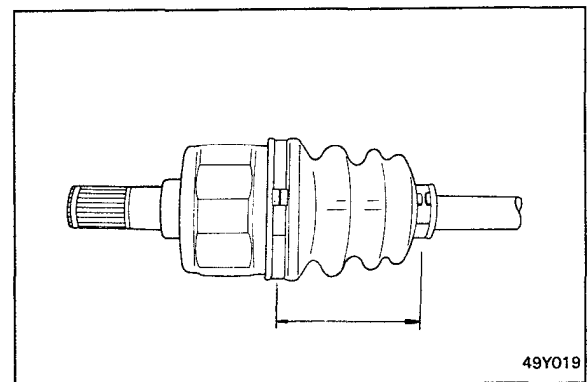


6. Fill the D.O.J. outer race with the recommended grease. Fit the drive shaft into the D.O.J. outer race and apply additional grease to the D.O.J.'s outer race.



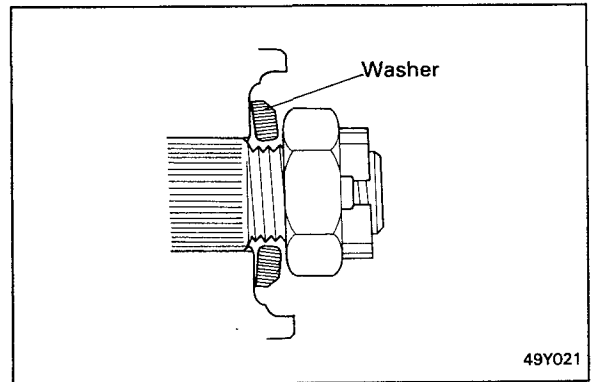
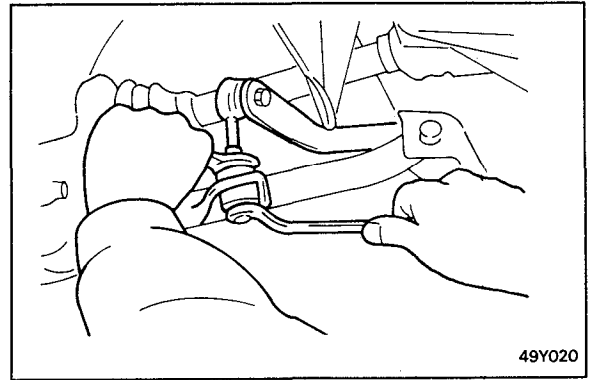
7. Set the D.O.J. boot bands at the specified distance in order to adjust the amount of air inside the D.O.J. boot, and then tighten the D.O.J. boot band securely.

Standard value.....  
77.5±3 mm (3.05-10.12 in.)



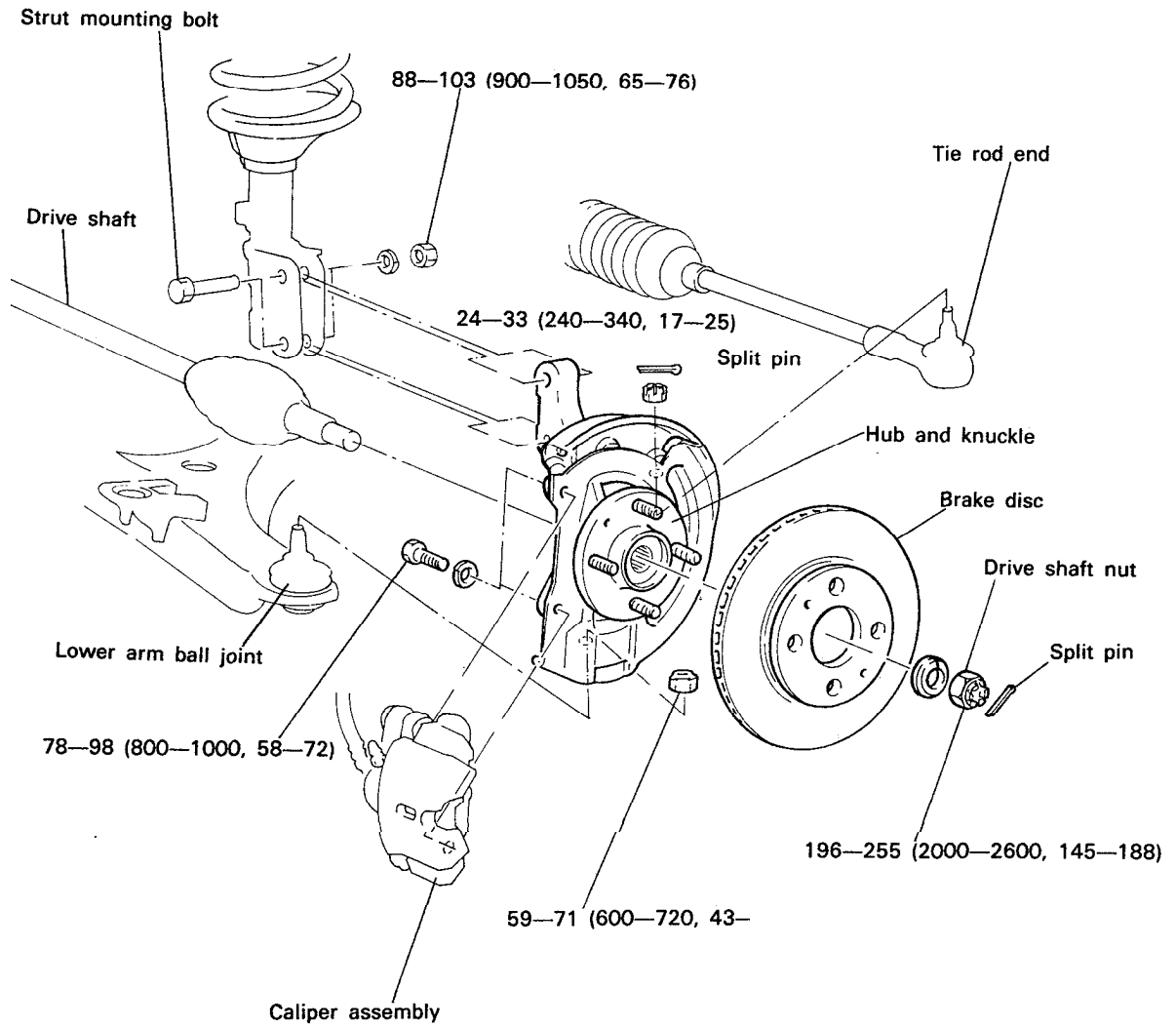
### INSTALLATION

1. Secure the stabilizer link in position with a spanner [2 side width 12 mm (1/2 in.)] and attach a self-locking nut.
2. Be sure to install the washer and wheel bearing nut in the specified direction.
3. After installing the wheel, lower the vehicle to the ground and tighten the wheel bearing nut.
4. If the position of the split pin holes do not match, tighten the nut up to 255 Nm (2600 Kg.cm, 188 lb.ft) maximum.
5. Install the split pin in the first matching holes and bend it over.



# HUB AND KNUCKLE

## COMPONENTS

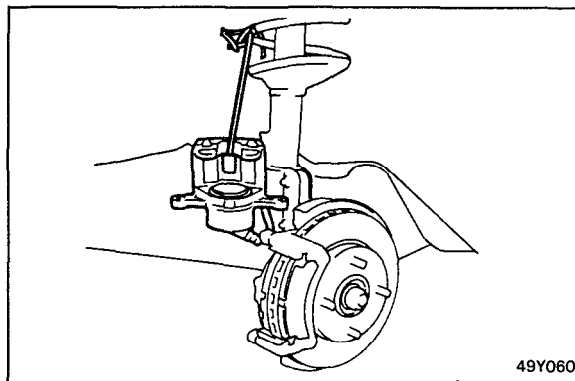


TORQUE : Nm (kg.cm, lb.ft)

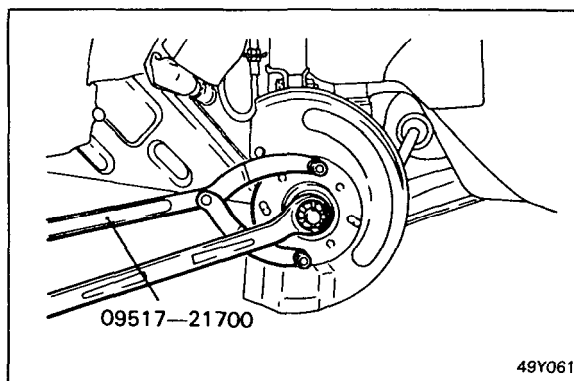
## HUB AND KNUCKLE

### REMOVAL

1. Remove the caliper assembly and suspend it with wires.



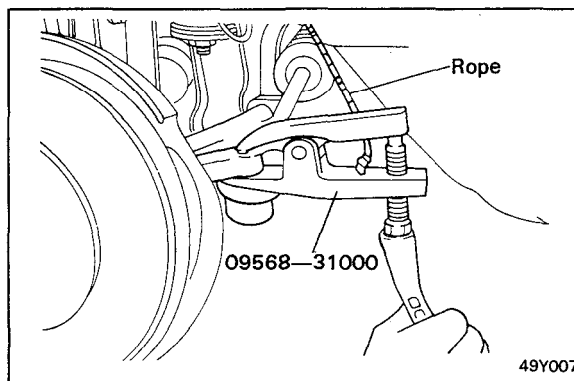
2. Using the special tool, remove the drive shaft nut.



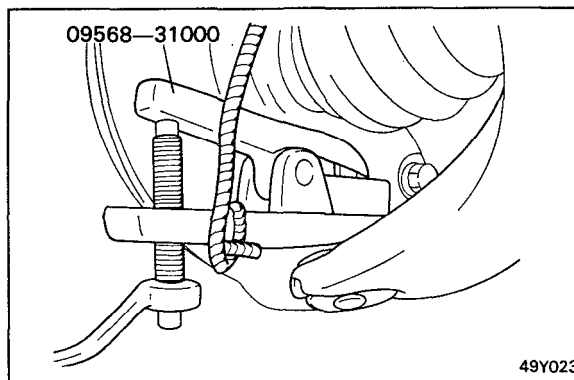
3. Using the special tool, disconnect the tie rod end from the knuckle.

#### NOTE

- 1) Be sure to tie a cord to the special tool and to a nearby part.
- 2) Loosen the nut but do not remove it.



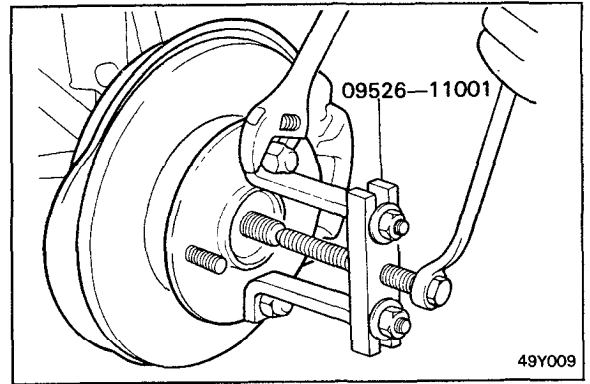
4. Using the special tool, disconnect the lower arm ball joint from the knuckle.





## HUB AND KNUCKLE

5. Disconnect the drive shaft from the hub by using the special tool.



## INSPECTION

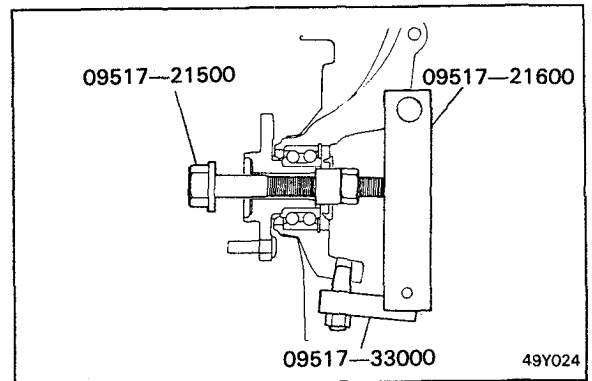
1. Check the hub for cracks and the splines for wear.
2. Check the oil seal for damage.
3. Check the steering knuckle for cracks.

## DISASSEMBLY

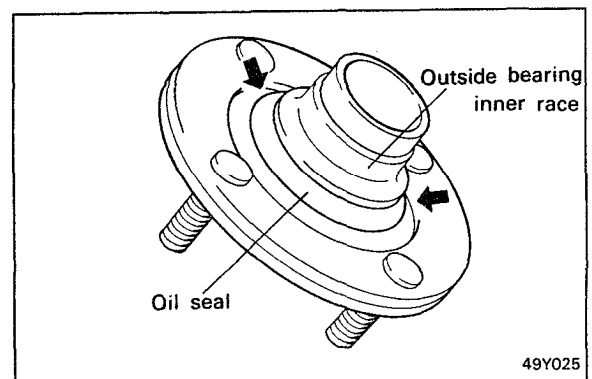
1. Attach the special tools to the knuckle and hub.
2. Secure the knuckle in a vise.
3. Tighten the nut of the special tool and remove the hub from the knuckle.

### NOTE

If the hub and knuckle are disassembled by striking them with a hammer, the bearing will be damaged.

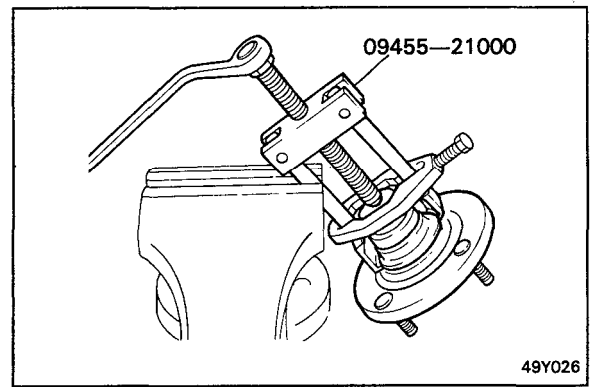


4. Crush the oil seal in two places so that the tabs of the special tool engage on the outside bearing inner race.

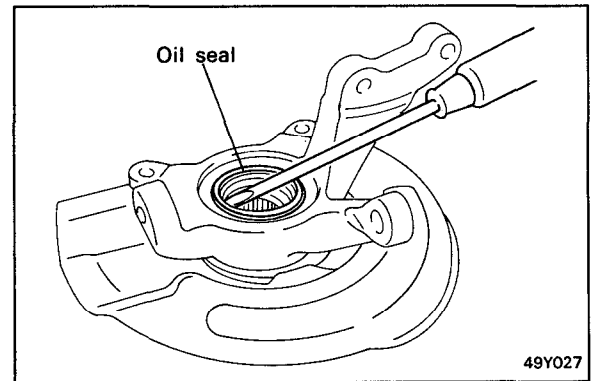


## HUB AND KNUCKLE

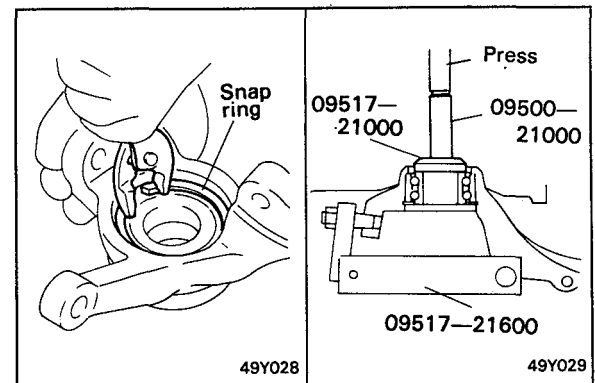
5. Remove the outside bearing inner race from the hub by using the special tool.



6. Remove the oil seal (inner) from the knuckle.



7. Remove the snap ring from the knuckle.  
Remove the bearing by using the special tool.



### Inspection after Disassembly

1. Check the hub and brake disc mounting surfaces for scoring and contamination.
2. Check the knuckle inner surface for scoring and cracks.
3. Check for a defective bearing.

# HUB AND KNUCKLE

## ASSEMBLY

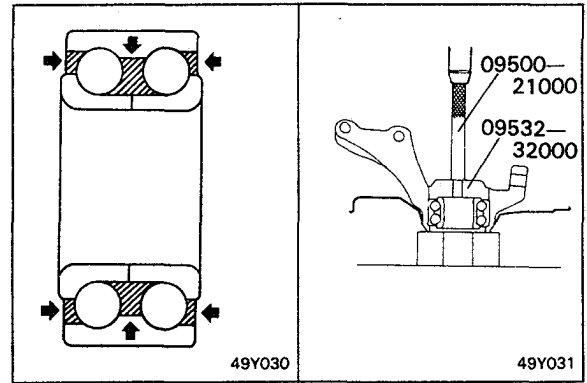
1. Fill the bearing with the recommended grease.

---

Recommended grease . . . . . Multipurpose grease  
SAE J310a, NLGI  
grade #2

---

2. With the inside wheel bearing inner race removed, press-in the bearing by using the special tool.
3. Install the wheel bearing inner race to the wheel bearing.

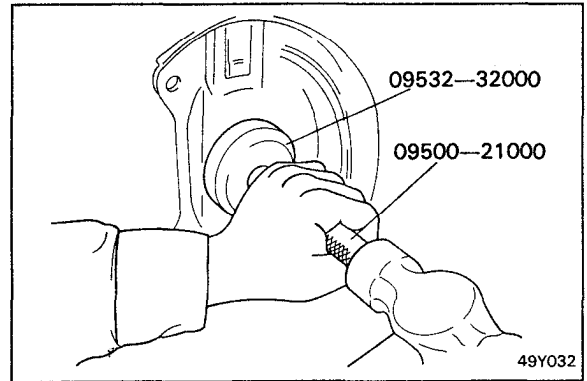


4. Drive the out oil seal into the knuckle using the special tools until it is flush with the knuckle end surface.
5. Apply the recommended grease to the lip of the oil seal and to the surfaces of the oil seal which contact the hub.

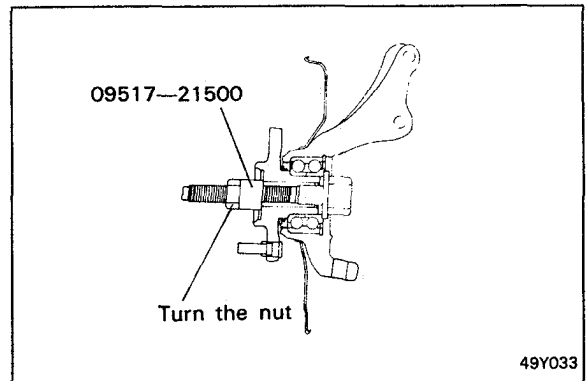
---

Recommended grease . . . . . Multipurpose grease  
SAE J310a, NLGI  
grade #2

---



6. Use the special tool to mount the hub onto the knuckle.
7. Tighten the nut of the special tool to 196-255 Nm (145-188 lb.ft).
8. Rotate the hub in order to seat the bearing.

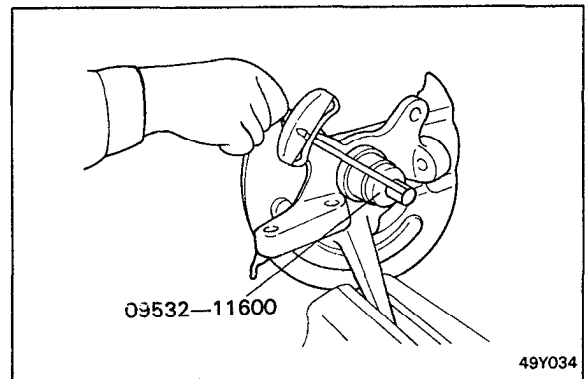


9. Measure the bearing pre-load.

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Standard value. . . . . 1.76 Nm  
(18 kg.cm, 16 lb.in.)

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## HUB AND KNUCKLE

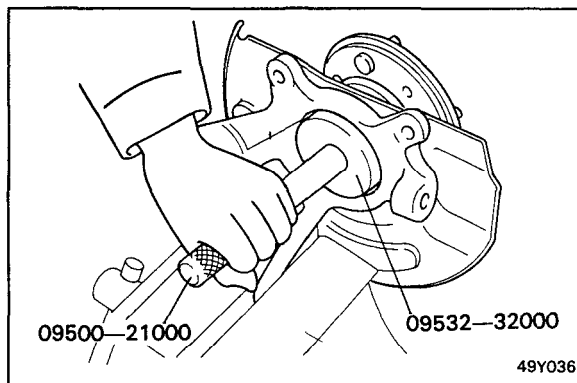
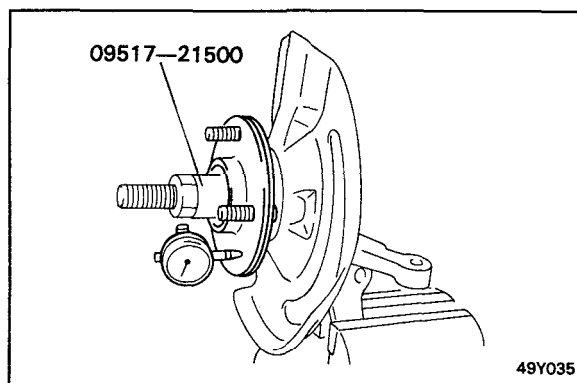
10. Measure to determine whether the end play of the hub is within the specified limit or not.

Standard value ..... 0.1 mm (0.004 in.)

11. Remove the special tool.  
12. Apply the recommended grease to the bearing and to the inside of the knuckle.

Recommended grease ..... Multipurpose grease  
SAE J310a, NLGI  
grade #2

13. Drive the inner oil seal into the knuckle until it contacts the snap ring.  
14. Apply the recommended grease to the lip of the oil seal.



## INSTALLATION

1. Be sure to install the washer and wheel bearing nut in the specified direction.
2. After installing the wheel, lower the vehicle to the ground and tighten the wheel bearing nut.
3. If the position of the split pin holes do not match, tighten the nut up to 255 Nm (2600 kg.cm, 188 lb.ft) maximum.
4. Install the split pin in the first matching holes and bend it over.