

# Driveshaft and Axle

## GENERAL

## DRIVESHAFT

FRONT DRIVESHAFT ASSEMBLY  
FRONT DRIVESHAFT (TJ-BJ TYPE)

## FRONT AXLE

FRONT HUB / KNUCKLE

## REAR AXLE

REAR HUB / AXLE

## GENERAL

### SPECIFICATIONS E1BBF0AA

Item		2.4 M/T	2.4 A/T	
Wheel bearing	Type	Double row angular contact ball bearing		
	Starting torque	28N (0.18 kgf·m, 16 lbf·in) or less		
	Dimension (O.D x I.D.) mm (in)	Ø 84 X Ø45		
Drive shaft	Joint type	Outer	BJ	BJ
		Inner	TJ	TJ
	Maximum permissible angle	Outer	45°	45°
		Inner	21°	21°
Hub end play		0.008 mm (0.0003 in) or less		

- B.J. : Birfield Joint

- T.J. : Tripod Joint

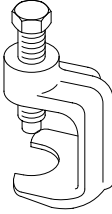
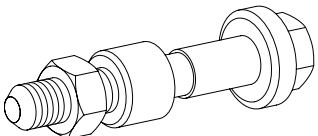
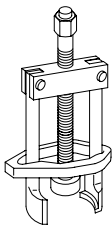
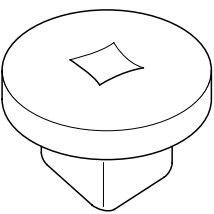
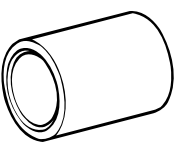
### TIGHTNING TORQUE EECC2819

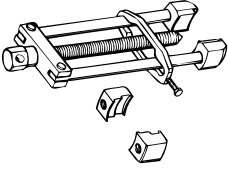
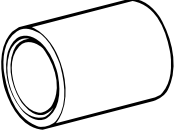
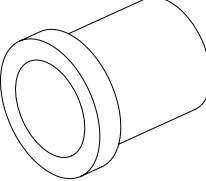
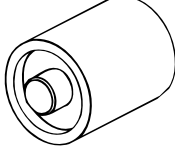
Item	N·m	kgf·m	lbf·ft
Drive shaft castle nut	200~280	20~28	148~207
Brake caliper to knuckle	50~60	5~6	36~44
Lower arm ball joint to knuckle nut	100~120	10~12	74~88
Wheel nut	90~110	9~11	66~81
Shock absorber lower mounting bolt	140~160	14~16	101~118
Stabilizer link mounting nut	100~120	10~12	74~88
Tie rod end self locking nut	24~34	2.4~3.4	18~25
Rear upper arm to carrier self locking nut	80~90	8~9	59~66
Lower arm ball joint self locking nut	75~90	7.5~9	54.2~66
Rear axle mounting bolt	60~70	6~7	44~52
Front Upper arm to knuckle self locking nut	35~45	3.5~4.5	26~33

 **CAUTION**

**Replace self-locking nuts with new ones after removal.**

SPECIAL TOOLS EDECB799

Tool (Number and Name)	Illustration	Use
09568-4A000 Ball joint remover	 KPRE103I	Removal of the front lower arm and tie rod end ball joint
09517-21500 Front hub remover and installer	 EIRF001A	Measurement of wheel bearing preload
09432-11000 Bearing and gear puller	 EIRF001B	Removal of the bearing inner race from the front hub
09532-11600 Preload socket	 EIRF001C	Measurement of the wheel bearing preload (use with torque wrench)
09216-21100 Mount bushing remover and installer	 KIRE103D	<ul style="list-style-type: none"><li>• Removal of the center bearing</li><li>• Press-fitting of the front wheel bearing outer race (Use with 09495-33100, 09216-21600)</li></ul>

Tool (Number and Name)	Illustration	Use
09495-33000 Mainshaft bearing puller	 <small>KIRE103E</small>	Removal of the tone wheel
09216-21600 Mount bushing remover and installer	 <small>KIRE103D</small>	Removal of the wheel bearing outer race
09545-21100 Ball joint dust cover installer	 <small>EIRF001D</small>	Press-fitting of the front hub to the knuckle
09545-34100 Lower arm bushing remover and installer	 <small>KIRE103H</small>	Removal of the bearing inner race from the front hub



**TROUBLESHOOTING**

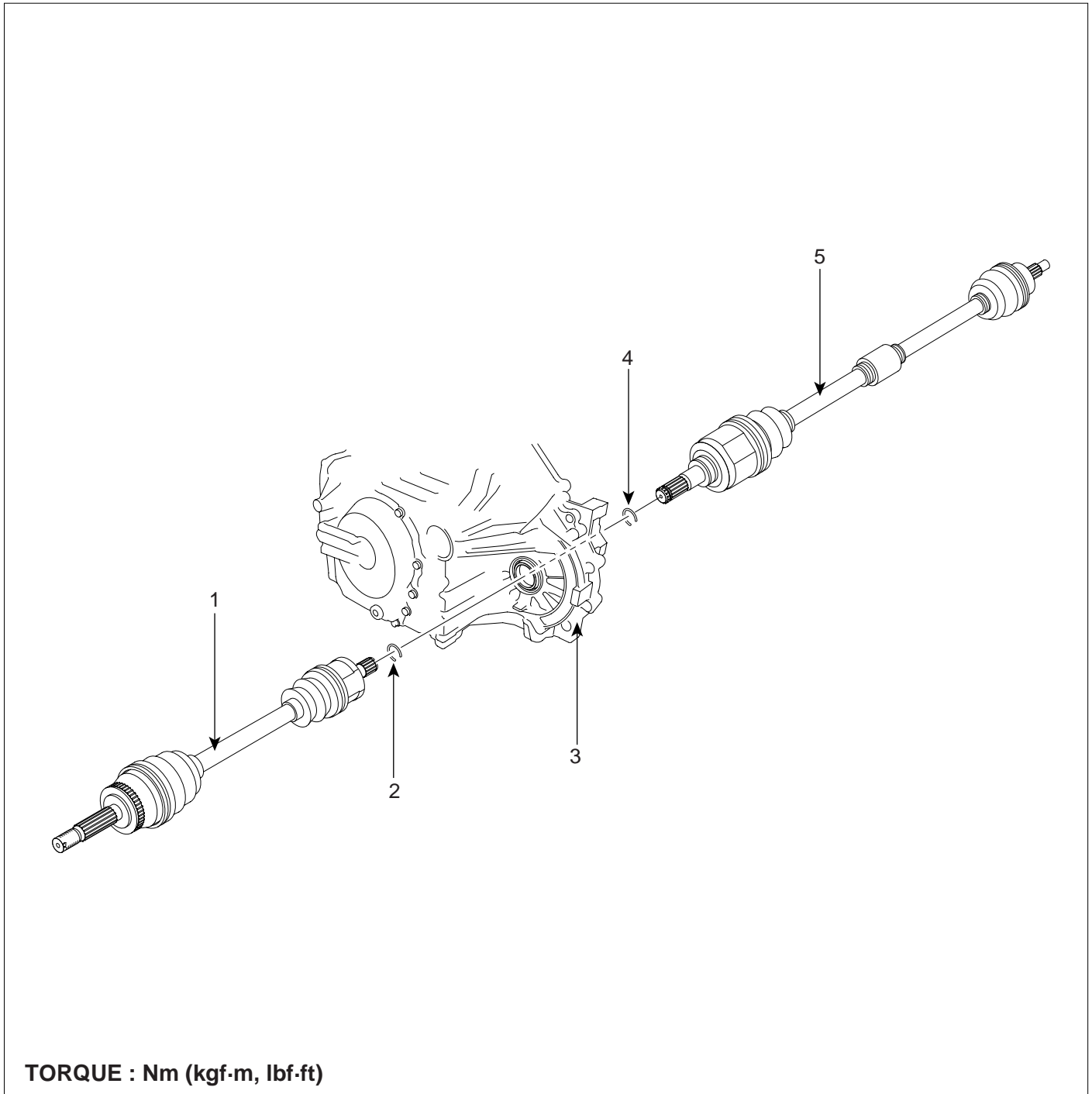
E7A3AAA3

Symptom	Possible cause	Remedy
Vehicle pulls to one side	Scoring of driveshaft ball joint Wear, rattle or scoring of wheel bearing Defective front suspension and steering	Replace Replace Adjust or replace
Vibration	Wear, damage or bending of driveshaft Driveshaft rattle and worn hub splines Wear, rattle or scratching of wheel bearing	Replace Replace Replace
Shimmy	Improper wheel balance Bent wheel Defective front suspension and steering	Adjust or replace Replace Adjust or replace
Excessive noise	Wear, damage or bending of driveshaft Driveshaft rattle and worn hub splines Driveshaft rattle and worn side gear splines Wear, rattle or galling of wheel bearing Loose hub nut Defective front suspension and steering	Replace Replace Replace Replace Adjust or replace Adjust or replace
Bent cage	Cage damaged by improper handling or tool usage	Replace bearing
Galling	Metal smears on roller end due to overheating, incorrect lubricant or overloading	Replace bearing Check seals, check for proper lubrication
Cracked inner race	Race cracked due to improper fit, cocking or poor bearing seats	Replace bearing
Etching	Bearing surfaces appear gray or grayish black in color accompanied by material etched away usually at roller spacing	Replace bearing Check seals, check for proper lubrication
Brinelling	Surface indentations on race surface caused by rollers being under impact loading or vibration while the bearing is not rotating	Replace bearing
Heat discoloration	Heat discoloration is dark blue resulting from overload or no lubricant (Yellow or brown color is normal)	Replace bearing Check seals and other parts
Fatigue spalling	Flaking of surface metal resulting from fatigue	Replace bearing Clean all related parts

# DRIVESHAFT

## FRONT DRIVESHAFT ASSEMBLY

### COMPONANTS E3D60C34

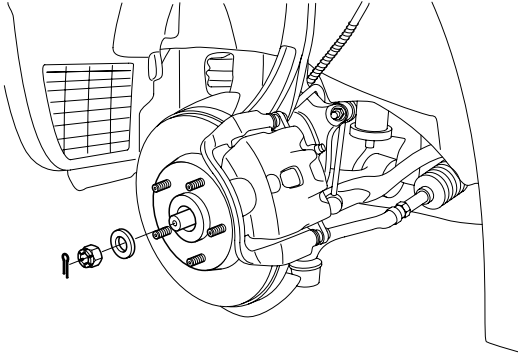


**TORQUE : Nm (kgf·m, lbf·ft)**

- 1. Driveshaft (LH)
- 2. Circlip
- 3. Transaxle
- 4. Circlip
- 5. Driveshaft (RH)

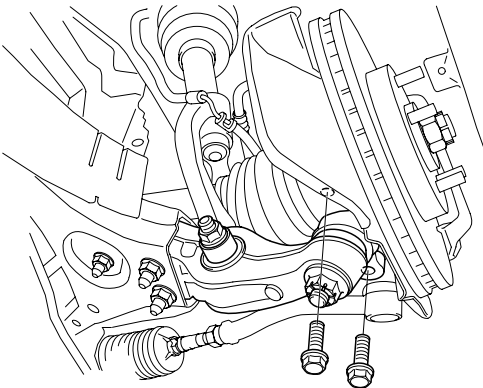
**REMOVAL** E89AD40C

1. Remove the wheel and tire.
2. Remove the split pin and driveshaft castle nut from the front hub.



KIRE201A

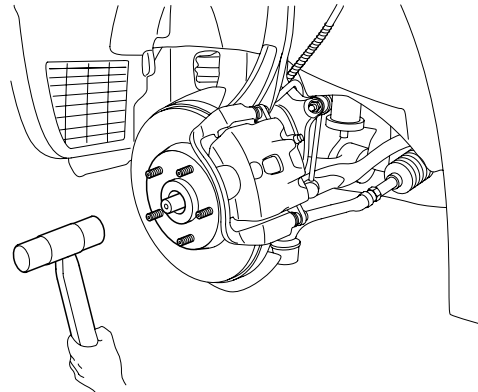
3. Remove the 2 bolts and disconnect the ball joint from the knuckle.



KHRE120A

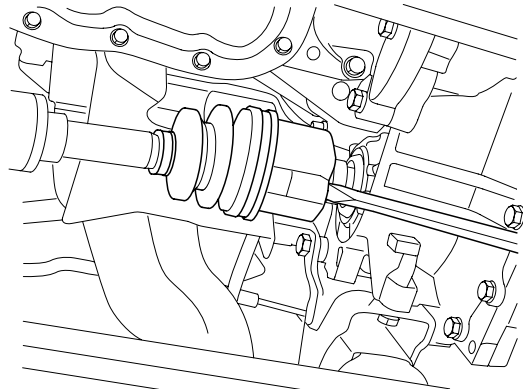
4. Remove the tie rod end ball joint from the front axle assembly.

5. Using a plastic hammer, disconnect the driveshaft from the axle hub.



KIRE201C

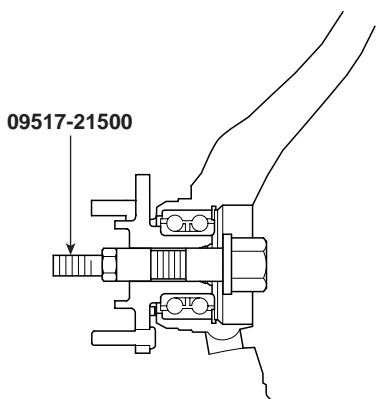
6. Removing the driveshaft from the transaxle by using a pry bar as shown below.



KIRE201D

**CAUTION**

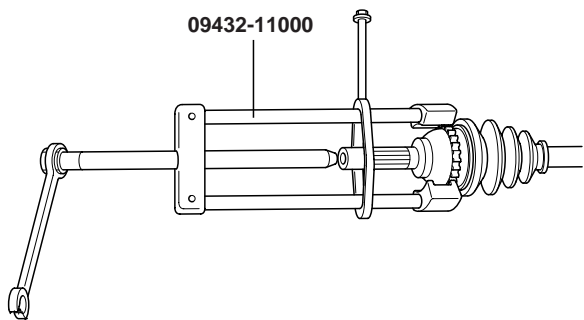
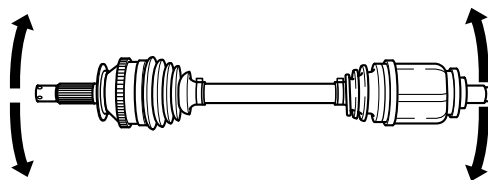
- Use a pry bar so you do not damage the joint.
- If you pull the driveshaft by excessive force, components inside the joint can be displaced causing the boot to be torn and the bearing to be damaged.
- Plug the transaxle case opening with an oil seal cap in order to avoid contamination.
- Support the driveshaft properly.
- Replace the retainer ring each time the driveshaft is removed from the transaxle case.
- While loosening the driveshaft nut, do not allow vehicle weight to be concentrated on the wheel bearing. If the vehicle moves, hold the wheel bearing using the special tool.



KIRE201E

7. Using the special tool (09432-11000), remove the tone wheel.

KIRE203A



EIOF110E

### INSPECTION

EBD4EC0E

1. Check the driveshaft boots for damage and deterioration.
2. Check the splines for wear and damage.

3. Check the ball joints for wear and operating condition.

### INSTALLATION

E1143DDC



#### CAUTION

*Replace the circlip with new ones after removal.*

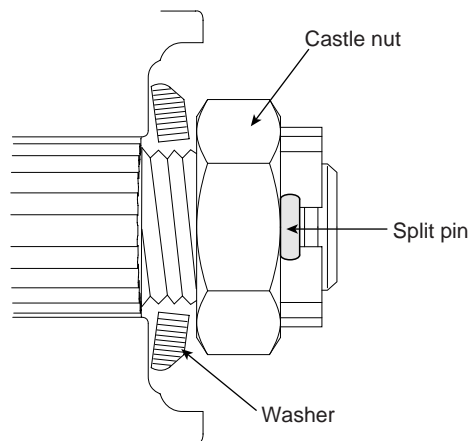
1. Tighten the following parts to the specified torque.

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Drive shaft castle nut :  
200~280N·m 20~28kgf·m 148~207 lbf·ft  
Lower arm ball joint to knuckle nut :  
100~120N·m 10~12kgf·m 74~88 lbf·ft  
Lower arm ball joint self locking nut :  
75~90N·m 7.5~9kgf·m 54.2~66 lbf·ft

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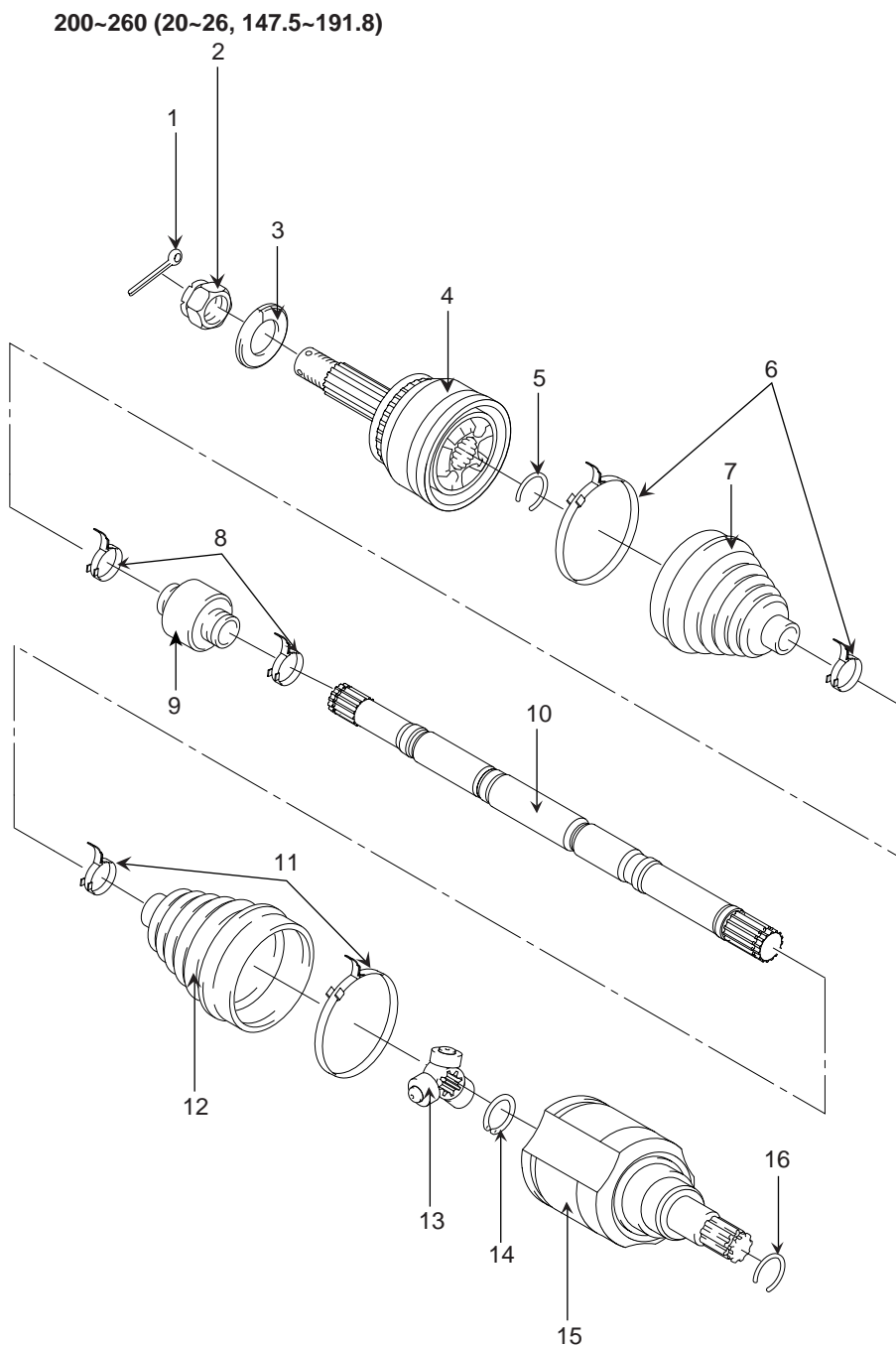
2. Replace the retainer ring with new one whenever removing the driveshaft from the transaxle.
3. Position the washer so that the convex side faces outside and install the castle nut and split pin.



EIRF205A

# FRONT DRIVESHAFT (TJ-BJ TYPE)

## COMPONANTS E2DD6B50



**TORQUE : Nm (kgf·m, lbf·ft)**

- |                 |                         |                    |                     |
|-----------------|-------------------------|--------------------|---------------------|
| 1. Split pin    | 5. Clip A               | 9. Dynamic damper  | 13. Spider assembly |
| 2. Castle nut   | 6. BJ. boot bends       | 10. Shaft          | 14. Circlip         |
| 3. Lock washer  | 7. BJ. boot             | 11. TJ. boot bends | 15. TJ. case        |
| 4. BJ. assembly | 8. Dynamic damper bends | 12. TJ. boot       | 16. Clip B          |

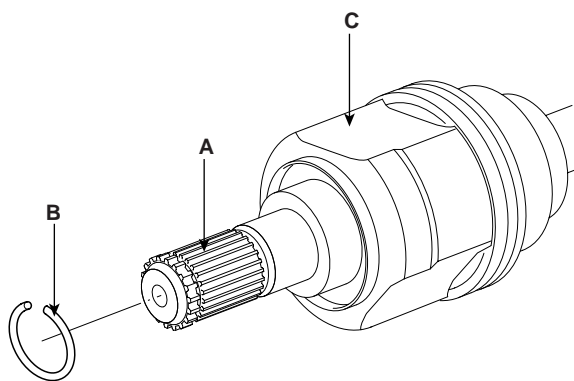
DISASSEMBLY E8D29E44

DRIVESHAFT (LH)

 NOTE

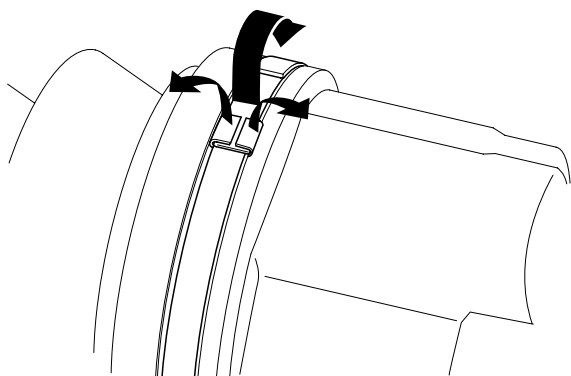
- Do not disassemble the BJ. assembly.
- Special grease must be applied to the driveshaft joint. Do not substitute with another type of grease.
- The boot band should be replaced with a new one.

1. Remove the circlip(B) from driveshaft splines(A) of the transaxle side TJ. case(C).

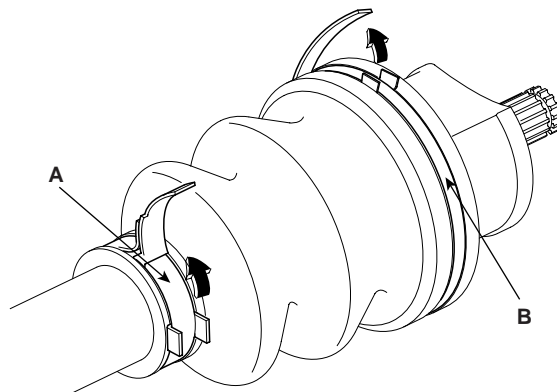


EIRF301A

2. Remove the both boot clamps from the transaxle side TJ. case.  
a. Using a plier or flat-tipped (-) screwdriver, remove the both clamps(TJ. boot band(B), boot band(A)) of the transaxle side.

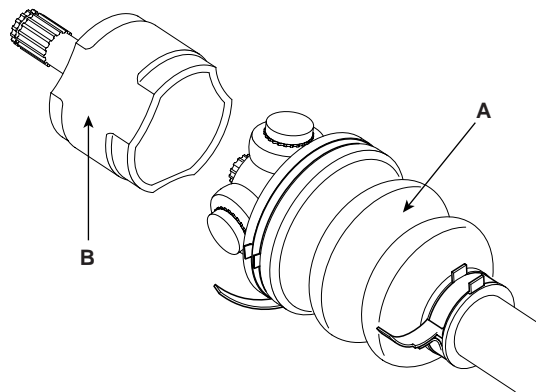


EIRF301B



EIRF301C

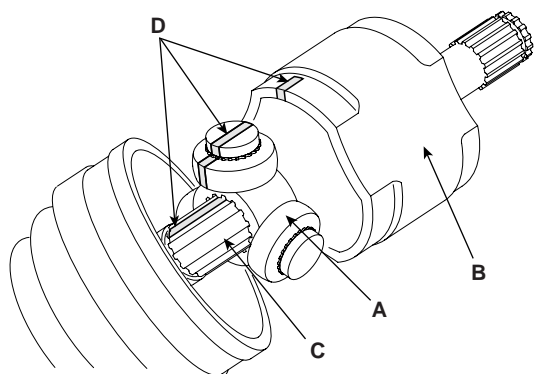
3. Pull out the boot from the transaxle side joint(TJ).  
4. While dividing joint(TJ) boot(A) of the transaxle side wipe the grease in TJ. case(B) and collect them respectively.



EIRF301D

 CAUTION

- Be careful not to damage the boot.
- According to below the illustrated, put marks(D) on roller of spider assembly(A), TJ. case(B) and spline part(C), for providing assembly.



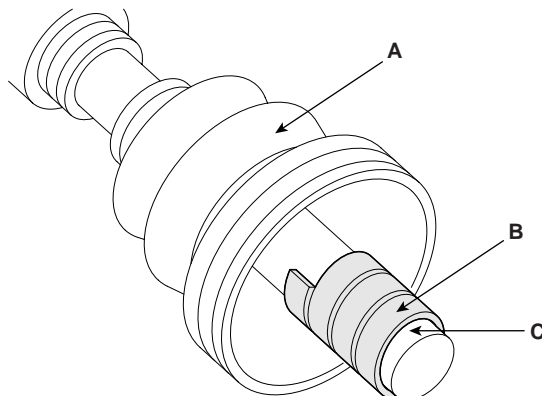
EIRF301E

- Using a plier or flat-tipped (-) screwdriver, remove the circlip(A).



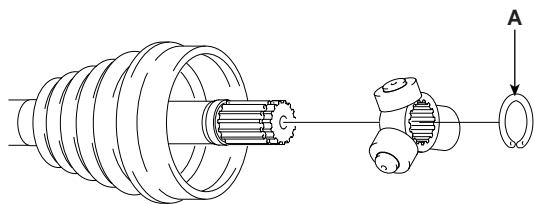
**CAUTION**

For reusing the boot(A) wrap tape(B) around the driveshaft splines(C) to protect the boot(A).



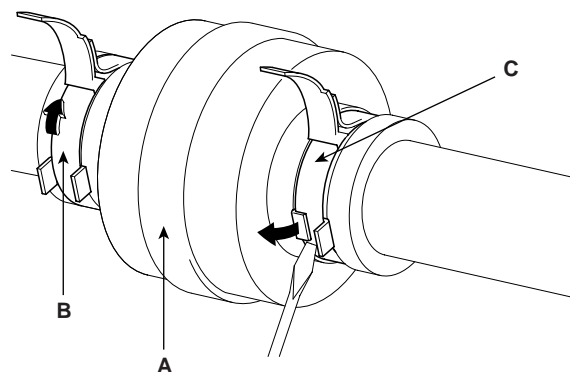
EIRF301H

- Using a plier or flat-tipped (-) screwdriver, remove the both side of clamps(B,C) of the dynamic damper(A).



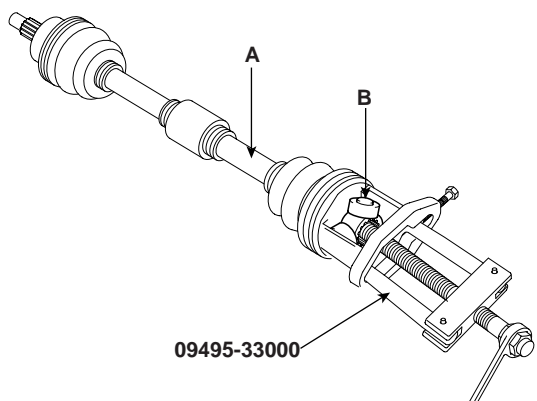
EIRF301F

- Remove the spider assembly(B) from driveshaft(A) by using the Special Tool(09495-33000).



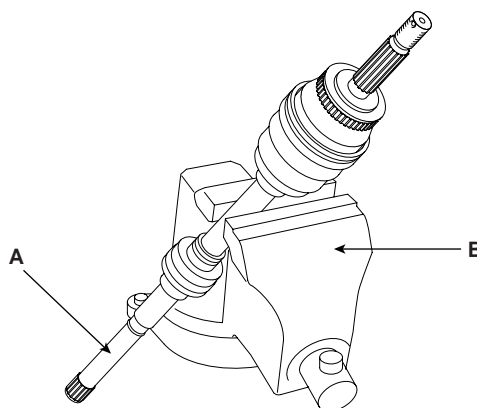
EIRF301I

- Fix the driveshaft(A) with a vice(B) as illustrated.



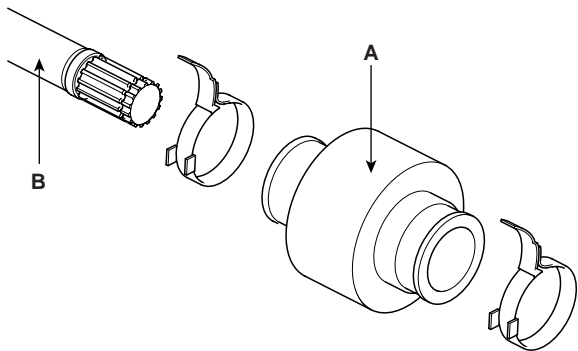
EIRF301G

- Clean the spider assembly.
- Remove the boot(A), of the transaxle side joint(TJ).



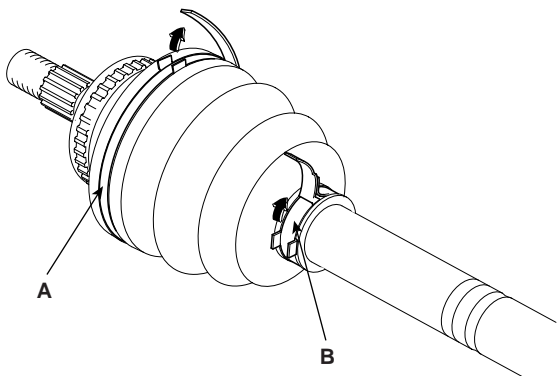
EIRF301J

11. Apply soap powder on the shaft to prevent being damaged between the shaft spline and the dynamic damper when the dynamic damper is removed.
12. Saperate the dynamic damper(A) from the shaft(B) carefully.



EIRF301K

13. Using a plier or flat-tipped (-) screwdriver, remove the both clamps(A,B) on the side of wheel.



EIRF301L

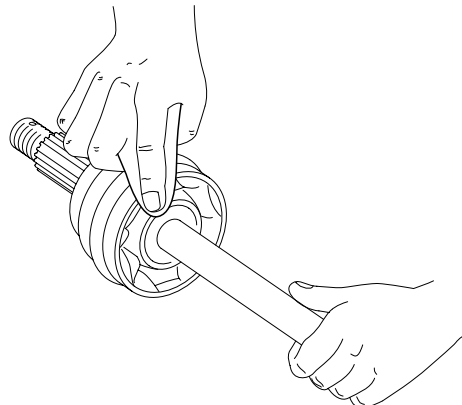
14. Pull out the joint(BJ) on the side of wheel into the transaxle direction.  
Be carefull not to damage the boot.

**INSPECTION**

EECFD53D

1. Check the driveshaft spline for wear or damage.
2. Check that there is no water or foreign material in the BJ.
3. Check the spider assembly for roller rotation, wear or corrosion.
4. Check the groove inside the TJ. case for wear or corrosion.

5. Check the dynamic damper for damage or cracks.



EIRF301M

**REASSEMBLY**

EECA8033

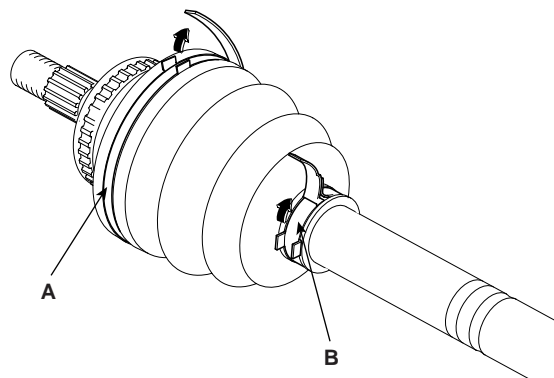
1. Wrap tape around the driveshaft splines (TJ. side) to prevent damage to the boots.
2. Apply grease to the driveshaft and install the boots.

**Recommended lubricant :**

B.J. Boot grease : CENTOPLEX 278M/136K

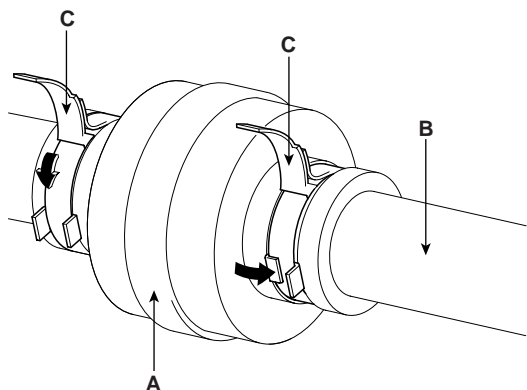
T.J. Boot grease : MX-13KT

3. Install the clamps(A,B) to both boots.



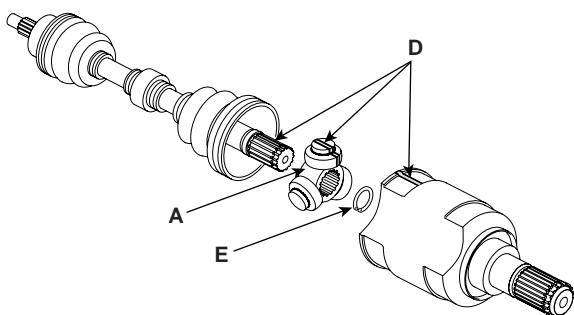
EIRF301L

4. To reassemble the dynamic damper(A), keeping the shaft(B) in the straight, tighten the dynamic damper(A) with dynamic bands(C), as the illustration.



EIRF301N

5. Install the T.J. boot bands and T.J. boot.
6. Install the spider assembly(A) and the circlip(E) to the spline(C) on the drivershaft. At this time align the marks(D) each other.



EIRF301O

7. Add the specified grease to the T.J. as much as wiped away at inspection.

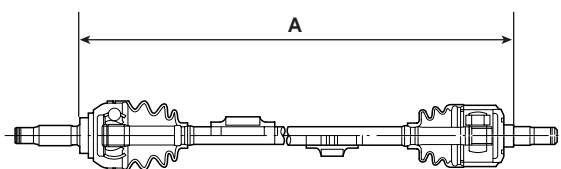
**T.J. boot grease gr. :**

		joint	boot
DSL 2.0	AT	115 ± 5g	60 ± 5g
	MT	100g ± 5g	45 ± 5g
GAS 2.4		100g ± 5g	45g ± 5g

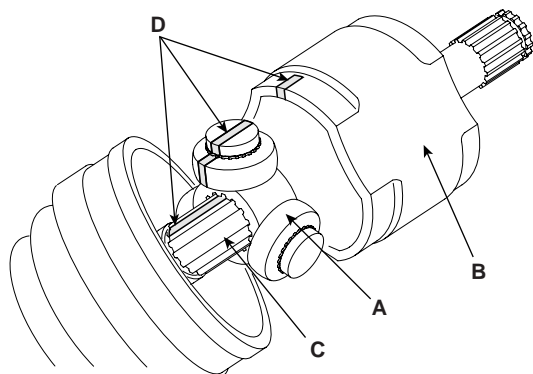
8. Install the boots.
9. Tighten the T.J. boot bands.
10. To control the air in the T.J. boot, keep the specified distance between the boot bands when they are tightened.

**Standard value (A/B) :**

	LH side	RH side
A/T	543.8	833.9
M/T	528.1	849.9



EIRF301P

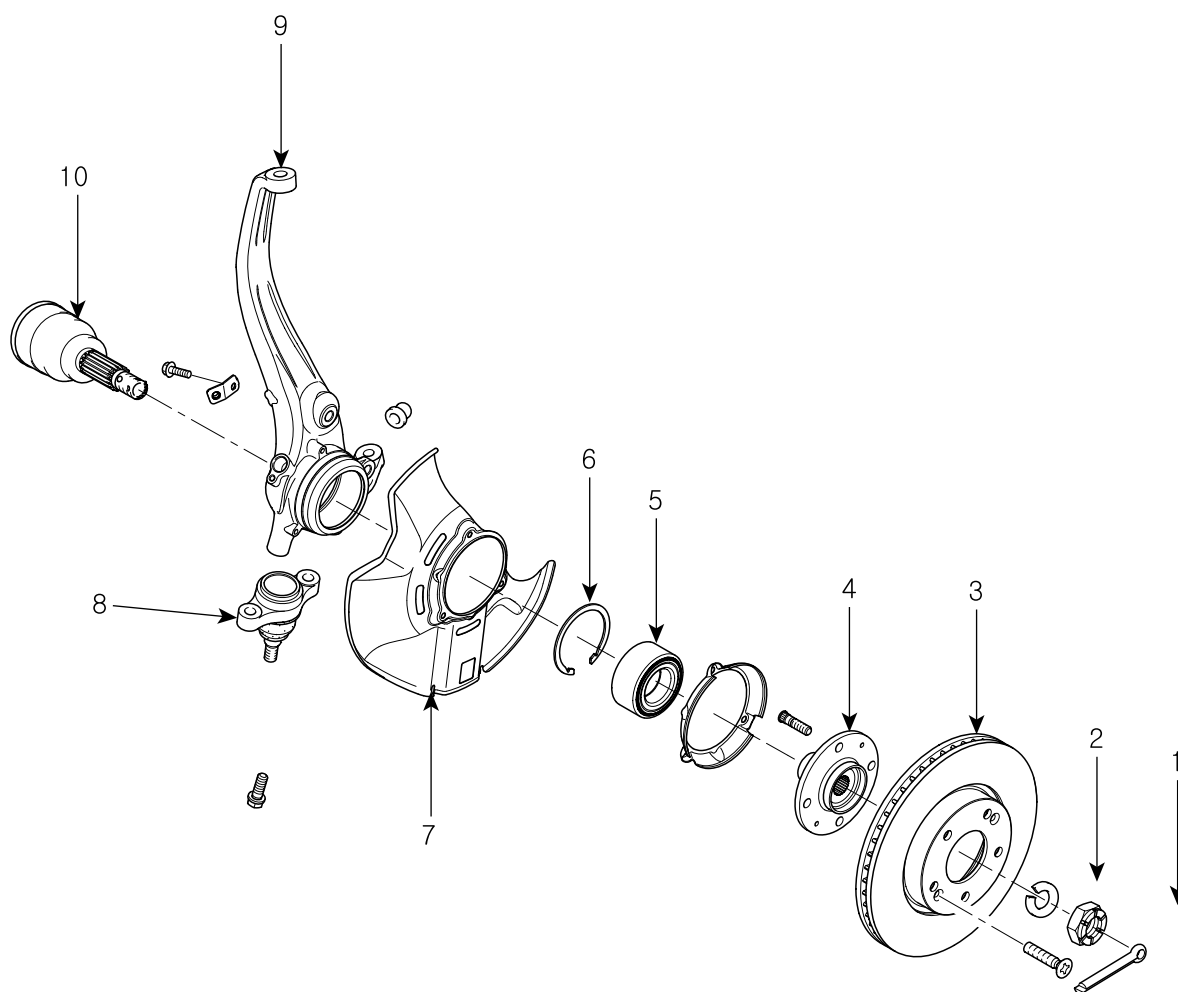


EIRF301E

# FRONT AXLE

## FRONT HUB / KNUCKLE

### COMPONANTS E8CC0B30



**TORQUE : Nm (kgf·m, lbf·ft)**

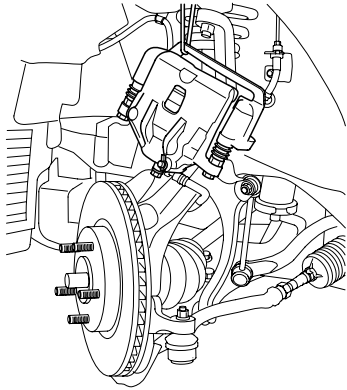
- |                   |                         |
|-------------------|-------------------------|
| 1. Split pin      | 7. Dust cover           |
| 2. Driveshaft nut | 8. Lower arm ball joint |
| 3. Brake disc     | 9. Knuckle              |
| 4. Hub            | 10. Driveshaft          |
| 5. Wheel bearing  |                         |
| 6. Snap ring      |                         |

**DS -16**

**DRIVESHAFT AND AXLE**

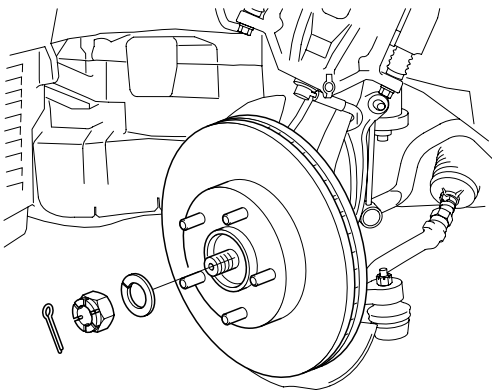
**REMOVAL** EBEA1BC8

1. Remove the wheel and tire.
2. Disconnect the wheel speed sensor from the knuckle.
3. Disconnect the brake hose from the knuckle.
4. Remove the caliper assembly and suspend it with wire.



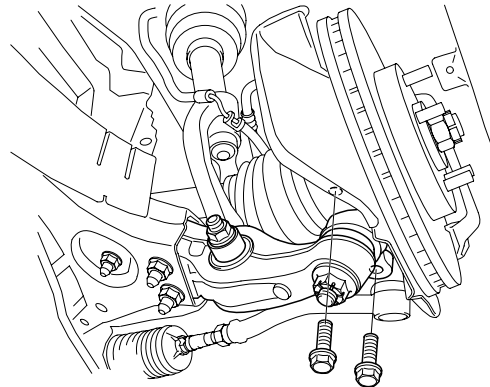
KIRE401A

5. Remove the split pin and driveshaft castle nut from the front hub.



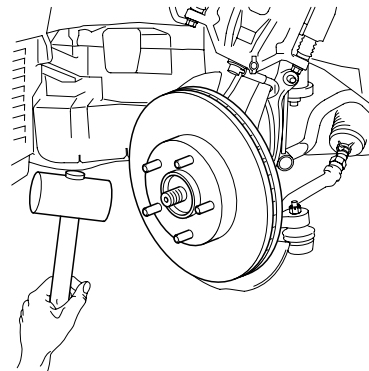
KIRE401B

6. Remove the 2 bolts and disconnect the ball joint from the knuckle.



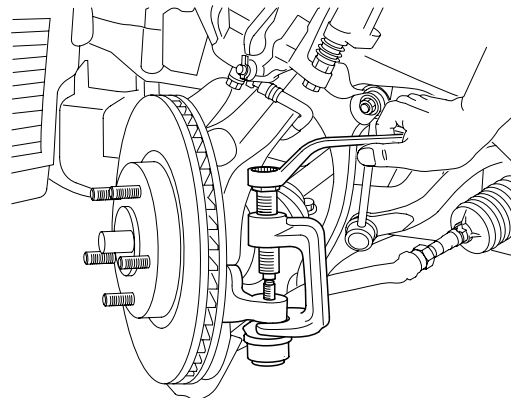
KHRE120A

7. Using a plastic hammer, disconnect the driveshaft from the axle hub.



KIRE401C

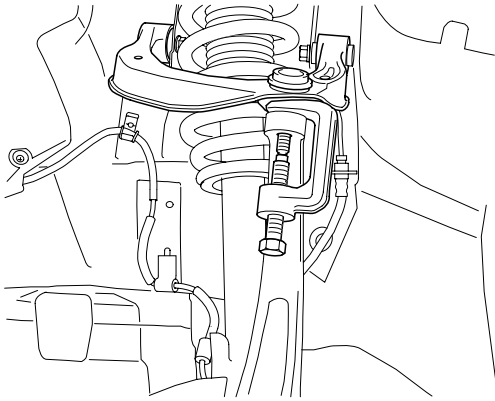
8. Using the special tool (09568-4A000), disconnect the tie rod end from the knuckle.



KIRE401D

**FRONT AXLE**

- 9. Loosen the upper arm mounting nut but do not remove it.
- 10. Using the special tool (09568-4A000), disconnect the upper arm from the knuckle.



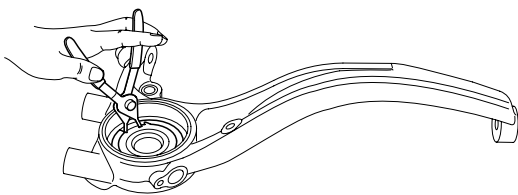
KHRE130B

- 11. Remove the front axle and knuckle together.
- 12. Installation is the reverse of removal.

**DISASSEMBLY**

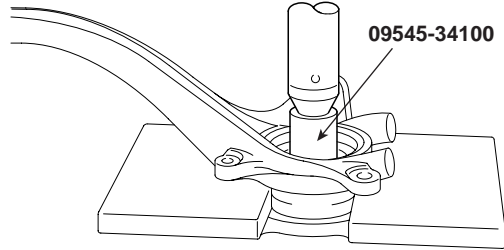
E1FE2C0B

- 1. Remove the brake disc from the hub.
- 2. Remove the snap ring.



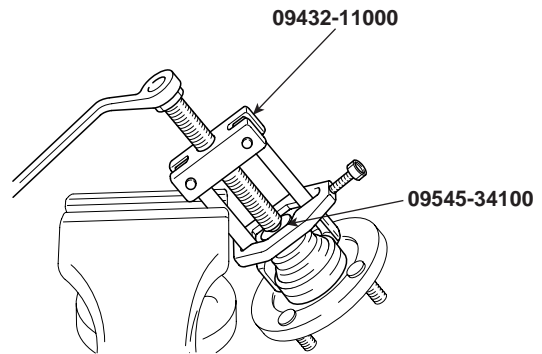
KIRE402A

- 3. Using the special tool (09545-34100), disconnect the hub from the knuckle.



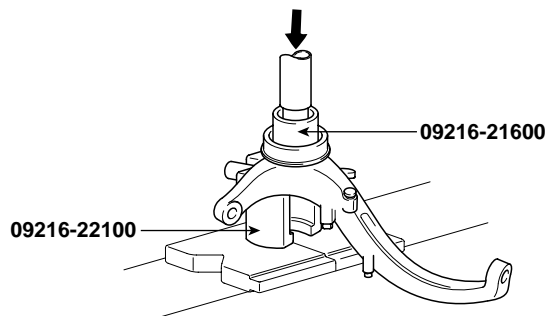
EIRF402B

- 4. Using the special tools (09432-11000, 09545-34100), remove the wheel bearing inner race from the hub.



EIRF402C

- 5. Using the special tools (09216-21600, 09216-22100), remove the wheel bearing outer race from the knuckle.



EIRF402D

**INSPECTION** E035D6E3

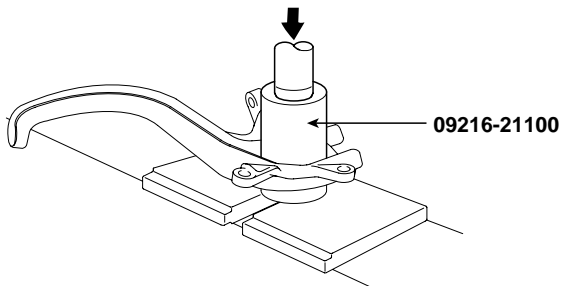
1. Check the hub for cracks and splines for wear.
2. Check the snap ring for cracks or damage.
3. Check the knuckle inner surface for scoring and cracks.

**REASSEMBLY** EF2B011E

1. Apply a thin coat of multi-purpose grease to the knuckle and bearing contact surface.
2. Using the special tool (09216-21100), press-in the bearing to the knuckle.

**NOTE**

- Do not press against the inner race of the wheel bearing because that can cause damage to the bearing assembly.
- Always use a new bearing assembly.



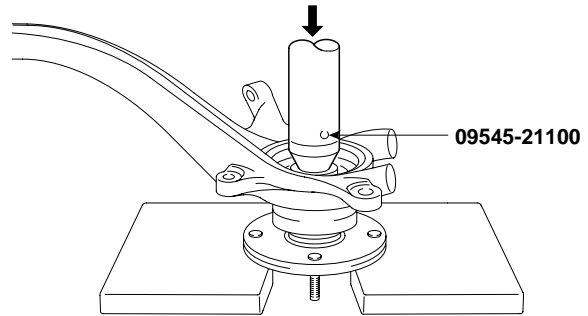
EIRF404A

3. Install the snap ring into the groove of the knuckle.

4. Using the special tool (09545-21100), press the hub on to the knuckle.

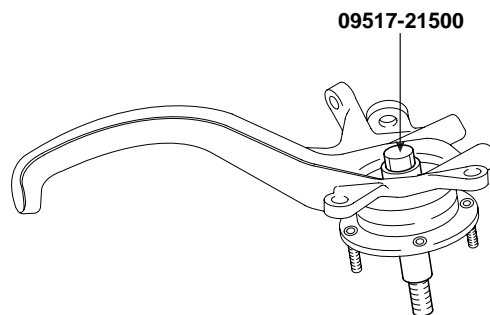
**NOTE**

Do not press against the outer race of the wheel bearing because that can cause damage to the bearing assembly.



EIRF404B

5. Tighten the hub to the knuckle to 200 Nm (20 kgf·m, 148 lbf·ft) with the special tool (09517-21500).



EIRF404C

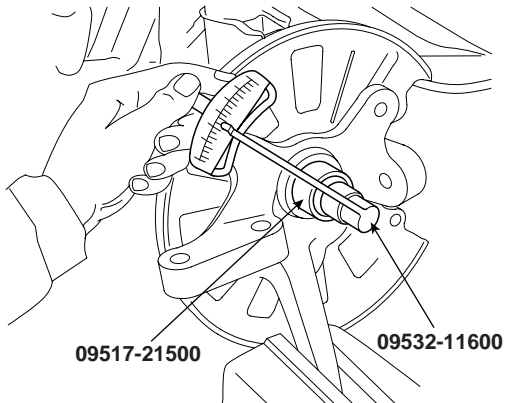
6. Rotate the hub to seat the bearing.
7. Measure the wheel bearing starting torque.

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**Standard value**

Starting torque : 1.8 Nm (0.18 kgf-m, 16 lbf-ft) or less

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EIRF404D

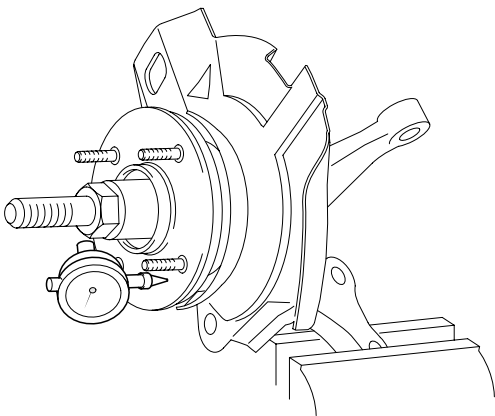
Fix a dial gauge and measure the hub end play. Check that it is within the standard value.

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**Standard value**

Hub end play : 0.008 mm (0.0003 in) or less

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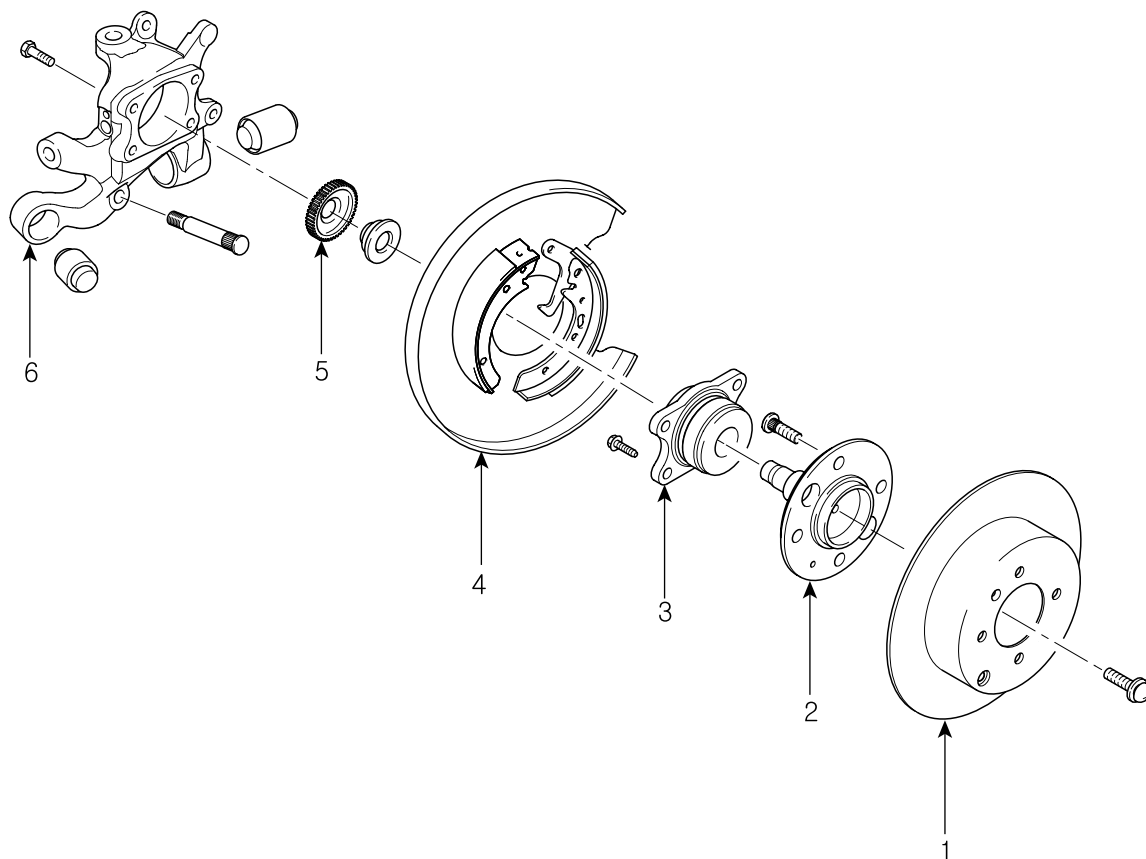
EIRF404E

8. Remove the special tool.
9. Install the disc to the hub.

## REAR AXLE

### REAR HUB / AXLE

#### COMPONENTS E4ED39BA



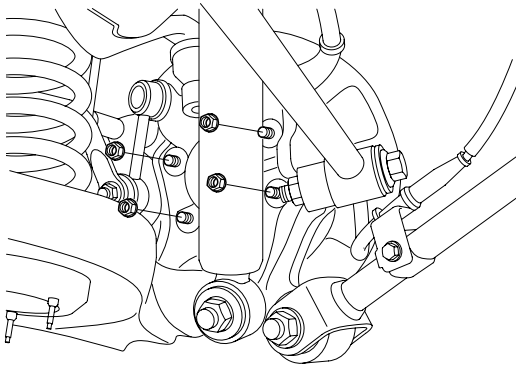
**TORQUE : Nm (kgf-m, lbf-ft)**

- 1. Brake disc
- 2. Hub
- 3. Hub bearing

- 4. Brake assembly
- 5. Tone wheel (ABS System)
- 6. Carrier assembly

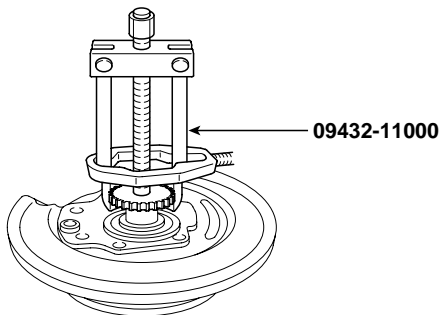
REMOVAL EDE8C2FE

1. Release the parking brake.
2. Remove the wheel and tire.
3. Remove the ABS sensor from the carrier.
4. Remove the caliper assembly from the carrier and suspend it with wire.
5. Remove the brake disc.
6. Remove the rear axle hub mounting bolts (4).



KIRE501A

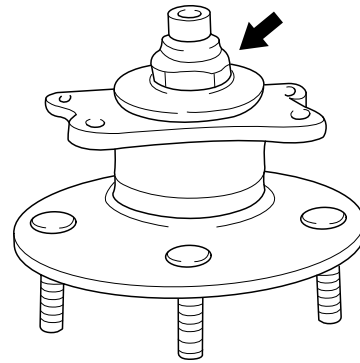
7. Using the special tool (09432-11000), remove the tone wheel.



EIRF501B

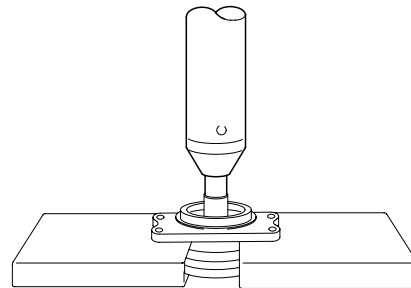
8. Remove the carrier assembly.

9. After unstaking the flange nut, remove the nut.



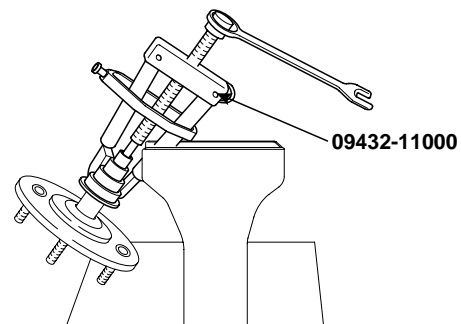
EIRF501C

10. While supporting the flange area of the bearing outer race, press out the rear axle hub.



EIRF501D

11. Using the special tool (09432-11000), remove the bearing inner race from the axle hub.



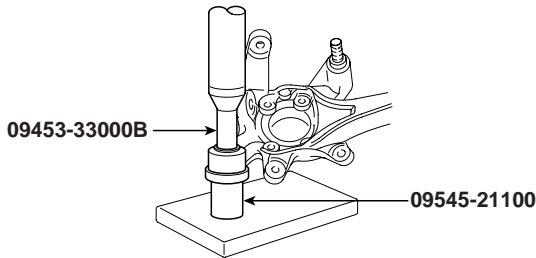
EIRF501E

**DS -22**

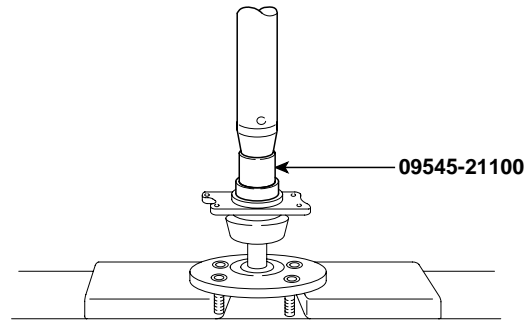
**DRIVESHAFT AND AXLE**

- Using the special tools (09453-33000B, 09545-21100), remove the 2 bushings from the carrier.

- Apply a thin coat of multi-purpose grease to the hub and bearing contact surface.
- Using the special tool (09545-21100), press-in the bearing to the hub.



EIRF501F



EIRF504C

**INSPECTION**

E1D4BE99

- Check the rear hub bearing for wear or damage.
- Check the rear tone wheel for chipped teeth.
- Check the hub inner surface for scoring.
- Check the carrier for crack.



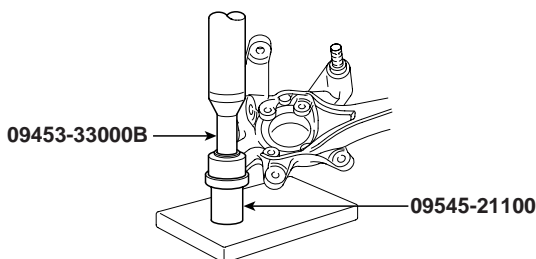
**NOTE**

- Do not press against the outer race of the bearing because that can cause the damage to the bearing assembly.
  - Always use a new bearing assembly.
- After tightening the flange nut, stake the nut to meet the concave portion of the spindle.

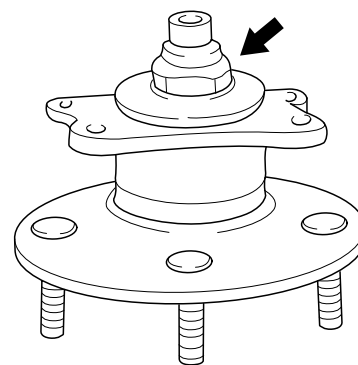
**INSTALLATION**

E2680CDA

- Using the special tools (09453-33000B, 09545-21100) press-in the 2 bushings to the carrier.

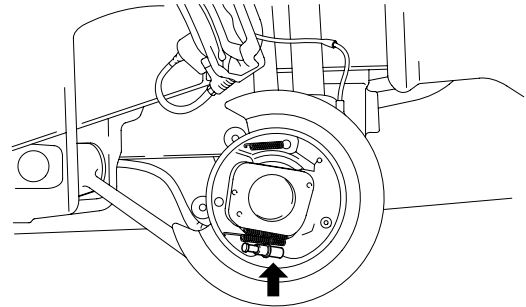
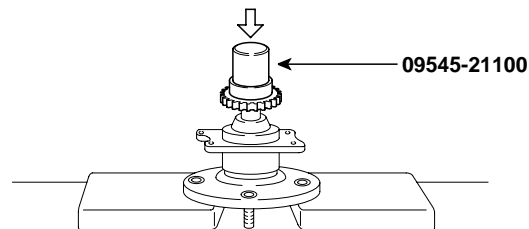


EIRF501F



EIRF501C

5. Using the special tool (09221-21000), press-in the tone wheel.

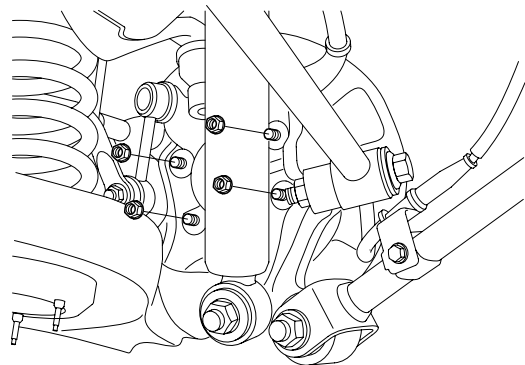
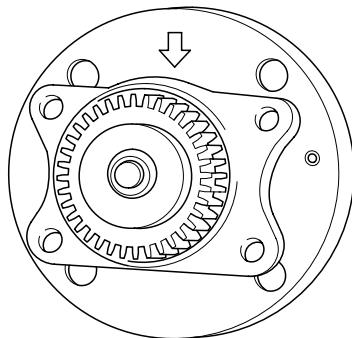


EIRF504F

6. Fix the hub and bearing assembly to the brake backing plate so that the rounded area of the bearing outer race is placed facing upward.

EIRF504D

7. Tighten the 4 bolts to the specified torque.



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8. Rotate the hub to seat the bearing.

EIRF504E

**NOTE**

If it is difficult to fix, adjust the parking brake adjusting nut in clockwise direction to enlarge the space between the shoe and lining assembly.

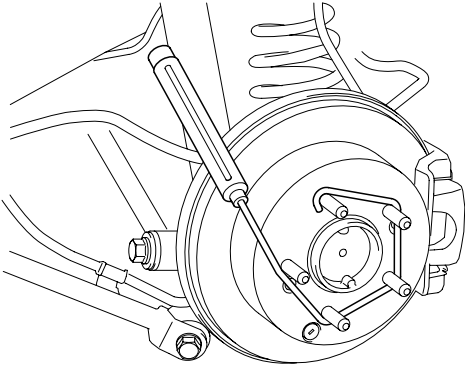
9. Using a spring balance, measure the wheel bearing starting torque.

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**Standard value**

Starting torque : 1.76 Nm (0.18 kgf·m, 15.6 lbf-in) or less

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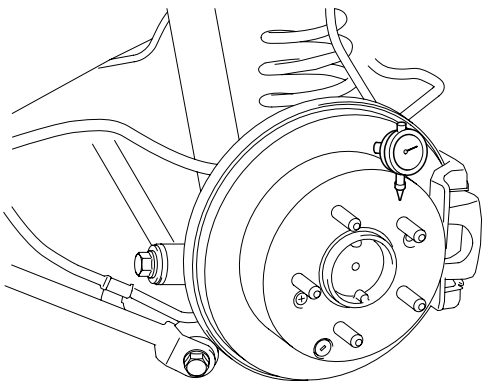
10. Fix a dial gauge and measure the hub end play. Check that it is within the standard value.

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**Standard value**

Hub end play : 0.008 mm (0.0003 in) or less

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KIRE504B