Driveshaft and Axle

GENERAL

SPECIFICATIONS EAF5882A

Driveshaft				
Joint type	2.0L M/T	2.0L A/T	2.0L 6M/T	2.7L
Outer	B.J.	B.J.	B.J.	B.J.
Inner	D.O.J.	T.J.	T.J.	T.J.
Maximum permissible joint angle				
B.J.	46° or more	45.8° or more	46° or more	46.5° or more
D.O.J.	22° or more			
T.J.		23° or more	23° or more	23° or more
Hub end play mm(in.)	0.008 (0.0003) or less			
Wheel bearing starting torque Nm (kg·cm, lbf·ft)	1.8 (18, 1.33) or less			

B. J. : Birfield joint
D.O.J. : Double offset joint
T. J. : Tripod joint

M/T : 5 Speed Manual transaxle
6M/T : 6 Speed Manual transaxle
A/T : Automatic transaxle

TIGHTENING TORQUE

	Nm	Kgf·cm	lbf·ft
Driveshaft nut 2.0L 2.7L	 200 ~ 260 200 ~ 280	 2000 ~ 2600 2000 ~ 2800	 148 ~ 192 148 ~ 207
Knuckle to strut assembly nut	140 ~ 160	1400 ~ 1600	104 ~ 118
Lower arm ball joint to knuckle nut	60 ~ 72	600 ~ 720	44 ~ 53
Tie rod end to knuckle	24 ~ 34	240 ~ 340	18 ~ 25
Front brake caliper to knuckle	69 ~ 85	690 ~ 850	51 ~ 63
Wheel nut	90 ~ 110	900 ~ 1100	66 ~ 81
Rear hub bearing flange nut	200 ~ 260	2000 ~ 2600	148 ~ 192
Rear brake to rear axle carrier mounting bolt	65 ~ 75	650 ~ 750	48 ~ 56
Rear strut to carrier nut	110 ~ 130	1100 ~ 1300	81 ~ 96
Trailing arm to rear axle carrier mounting nut	100 ~ 120	1000 ~ 1200	74 ~ 88
Rear suspension arm to rear axle carrier mounting nut	160 ~ 180	1600 ~ 1800	118 ~ 133

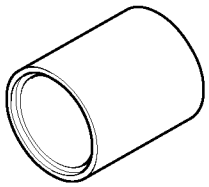
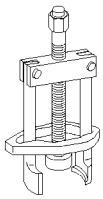
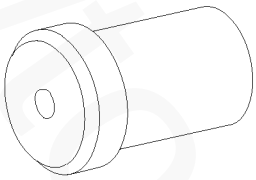
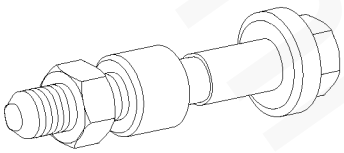
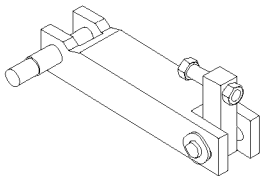
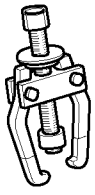
CAUTION

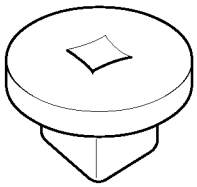
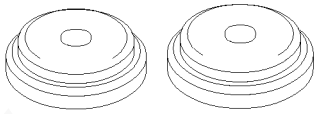
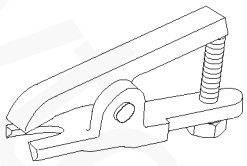
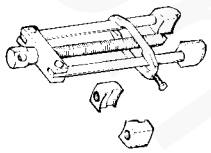
Replace self-locking nuts with new ones after removal.

LUBRICANTS E37BCE3B

Items	Recommended	Quantity
Birfield joint + Double offset joint Type driveshaft (For 2.0L M/T)		
Birfield joint boot grease	CENTOPLEX 278M/136K CASMOLY BJ ROLLUBE BJ Sunlight SW-2	115 ± 6gr.
Double offset joint boot greasE	AMBLYGON TA 10/2A CASMOLY DOJ DURALUBE DOJ Variant SD-R2	100 ± 6gr.
Birfield joint + Tripod joint Type driveshaft (For 2.0L 6M/T)		
Birfield joint boot grease	CENTOPLEX 278M/136K CASMOLY BJ ROLLUBE BJ Sunlight SW-2	115 ± 6gr.
Tripod joint boot greas	KLK TJ 41-182 CASMOLY TJ ROLLUBE TJ Oneluber MK	145 ± 6gr.
Birfield joint +Tripod joint Type driveshaft (For 2.0L A/T)		
Birfield joint boot grease	CENTOPLEX 278M/136K CASMOLY BJ ROLLUBE BJ Sunlight SW-2	110 ± 6gr.
Tripod joint boot greas	KLK TJ 41-182 CASMOLY TJ ROLLUBE TJ Oneluber MK	145 ± 6gr.
Birfield joint + Tripod joint Type driveshaft (For 2.7L)		
Birfield joint boot grease	CENTOPLEX 278M/136K CASMOLY BJ ROLLUBE BJ Sunlight SW-2	135 ± 6gr.
Tripod joint boot grease	KLK TJ 41-182 CASMOLY TJ ROLLUBE TJ Oneluber MK	145 ± 6gr.

SPECIAL TOOLS E1011B65

Tool (Number and Name)	Illustration	Use
09216-21100 Mounting bushing remover and installer	 B1621100	Removal of the center bearing. (Use with 09495-33100)
09495-33000 Puller	 D9533000	Removal of wheel bearing inner race from the hub.
09495-33100 Center bearing remover and installer	 D9533100	1. Removal of wheel bearing from the knuckle. (Use with 09517-29000) 2. Installation of hub to the knuckle. 3. Removal of the center bearing. (Use with 09216-21100)
09517-21500 Front hub remover and installer	 E1721500	1. Removal of front hub from the knuckle. (Use with 09517-29000) 2. Measurement of front wheel bearing pre-load. (Use with 09532-11600)
09517-29000 Knuckle arm bridge	 E1729000	1. Removal of wheel bearing outer race from the knuckle. (Use with 09495-33100)
09517-43001 Bearing puller	 EIOF900A	Removal of the center bearing bracket.

Tool (Number and Name)	Illustration	Use
09532-11600 Preload socket	 E3211600	Measurement of front wheel bearing pre-load. (Use with 09517-21500)
09532-11500 Pinion bearing outer race	 E3231200	Installation of wheel bearing to the knuckle.
09568-34000 Ball joint puller	 E6834000	Separation of front lower arm and tie rod end ball joint.
09432-11000 Main shaft bearing puller	 D3211000	Removal of tone wheel.

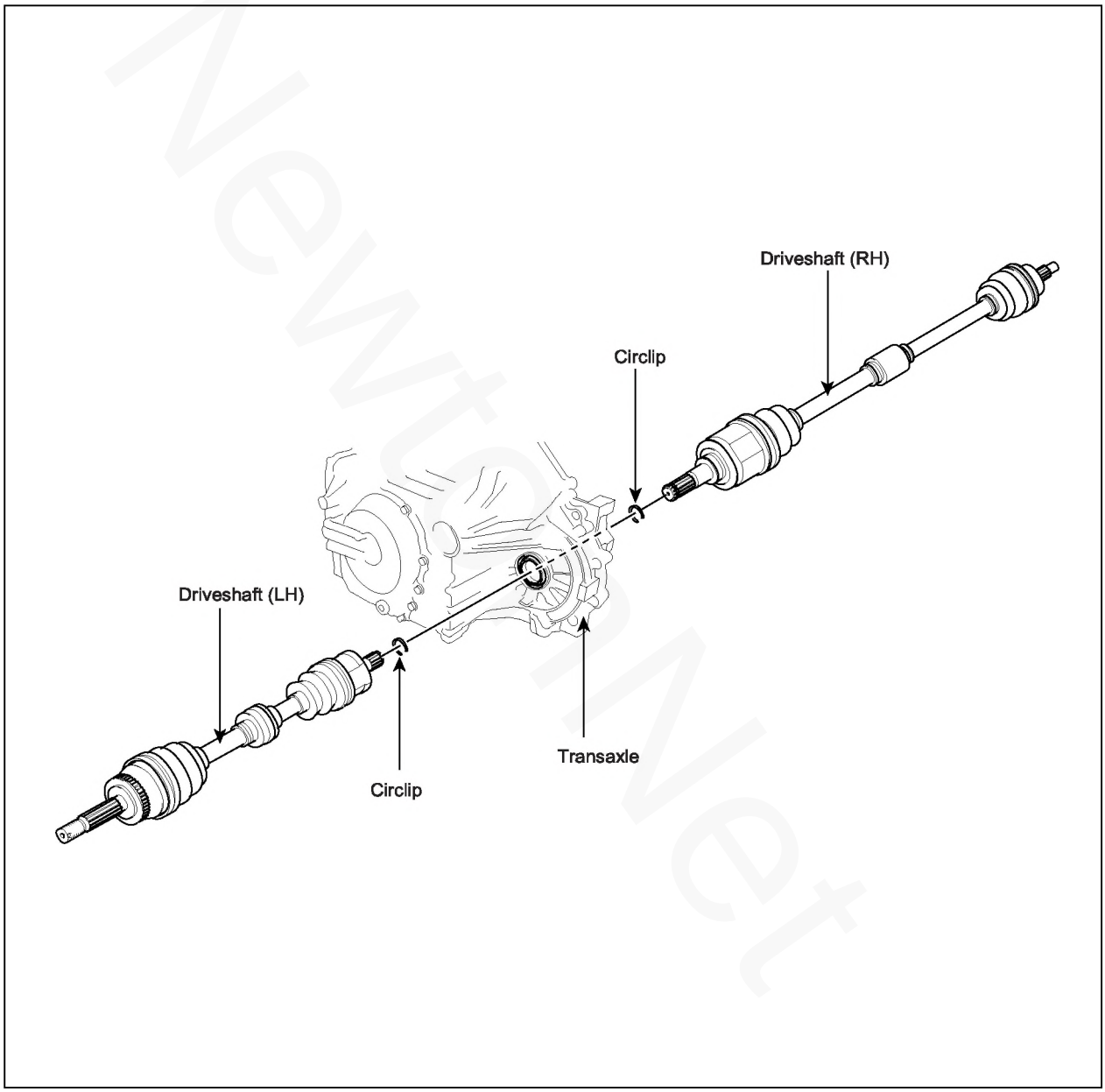
TROUBLESHOOTING EB9DE2CB

Symptom	Possible cause	Remedy
Vehicle pulls to one side	Galling of drive shaft ball joint Wear, rattle or galling of wheel bearing Defective front suspension and steering	Replace Replace Adjust or replace
Vibration	Wear, damage or bending of drive shaft Drive shaft rattle and hub serration Wear, rattle or scratching of wheel bearing	Replace Replace Replace
Shimmy	Improper wheel balance Defective front suspension and steering	Adjust or replace Adjust or replace
Excesive noise	Wear, damage or bent drive shaft Drive shaft rattle and hub serration Drive shaft rattle and side gear serration 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

DRIVESHAFT

FRONT DRIVESHAFT ASSEMBLY

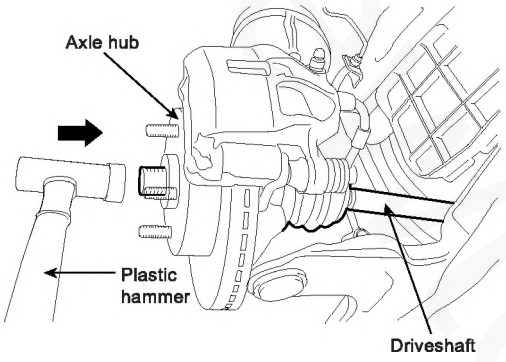
COMPONENTS E9E6823F



EIOF100A

REMOVAL EF3F40AA

1. Raise the vehicle and remove the front wheel.
2. Remove the split pin and driveshaft nut from the front hub.
3. Drain the transaxle fluid.
4. Disconnect the tie rod end ball joint from knuckle, and the knuckle from strut assembly.
5. Using a plastic hammer, disconnect the driveshaft from the axle hub.

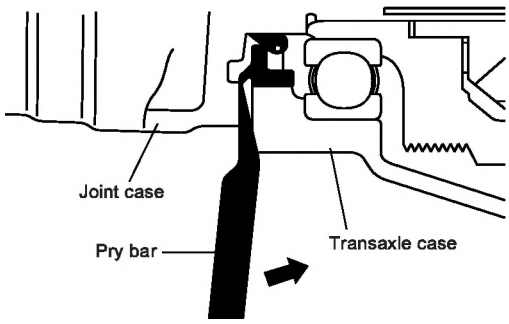


EIOF110A

6. Push the axle hub toward the outside of the vehicle, and separate the driveshaft from the axle hub.
7. Insert a pry bar between the transaxle case and joint case, and separate the driveshaft from the transaxle case.

CAUTION

1. ***Use a pry bar being careful not to damage the transaxle and joint.***
2. ***Do not insert the pry bar too deep, as this may cause damage to the oil seal. [max. depth : 7 mm (0.28 in.)]***
3. ***Do not pull the driveshaft by excessive force it may cause components inside the double offset joint or tripod joint kit to dislodge resulting in a torn boot or a damaged bearing.***

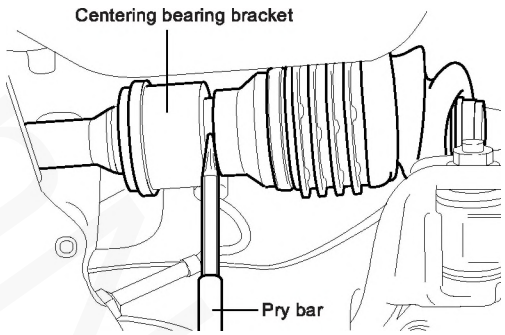


EIOF110B

8. Insert a pry bar between the center bearing bracket and the driveshaft, and then pry the driveshaft from the center bearing. (2.7L engine)

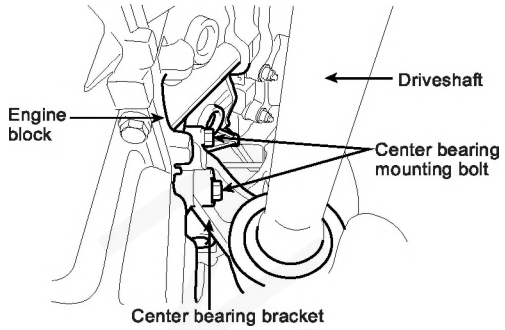
NOTE

Do not pull on the driveshaft; doing so will damage the tripod joint : be sure to use the pry bar.



EIOF110C

9. Remove the center bearing bracket mounting bolts. Insert the pry bar between the center bearing bracket and the cylinder block to disconnect the bracket from the cylinder block. (for 2.7L engine)

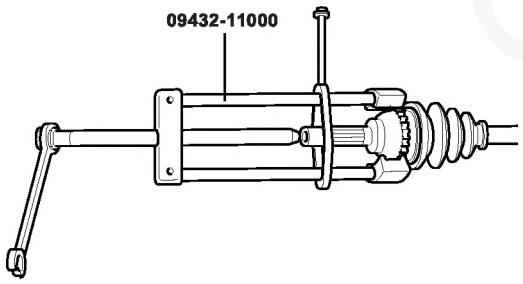


EIOF110D

10. Remove the inner shaft from the center bearing. (for 2.7L engine)
11. Using the special tool (09432-11000), remove the tone wheel.

NOTE

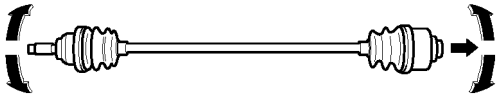
Before removing the tone wheel, be sure to remove the B.J. assembly side dust cover.



EIOF110E

INSPECTION E29A256D

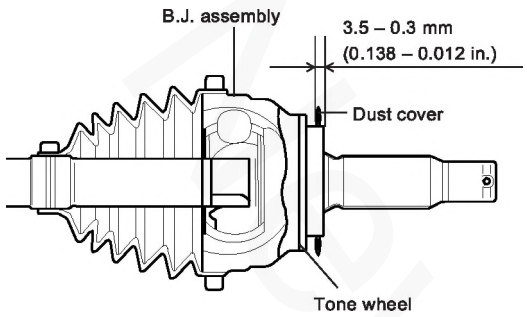
1. Check the driveshaft boots for damage and deterioration.
2. Check the ball joints for wear and damage.
3. Check the splines for wear and damage.
4. Check the dynamic damper for cracks and wear.



EIOF112A

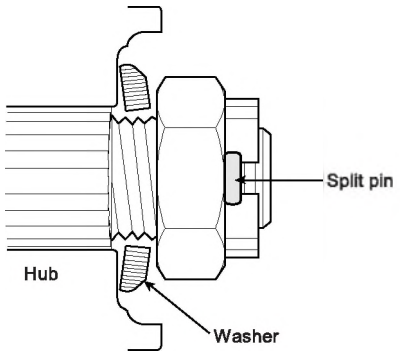
INSTALLATION E5F58FEF

1. After installing the birfield joint assembly side tone wheel, install the dust cover, keeping the specified clearance as below.



EIOF114A

2. Apply gear oil on the driveshaft splines and differential case contacting surface.
3. Before installing the driveshaft, set the opening side of the circlip facing downward.
4. After installation, check that the driveshaft cannot be removed by hand.
5. Position the convex side of the washer to face outside and install the nut and split pin.
6. Replace the self-locking nuts and split pin with new ones after removal.



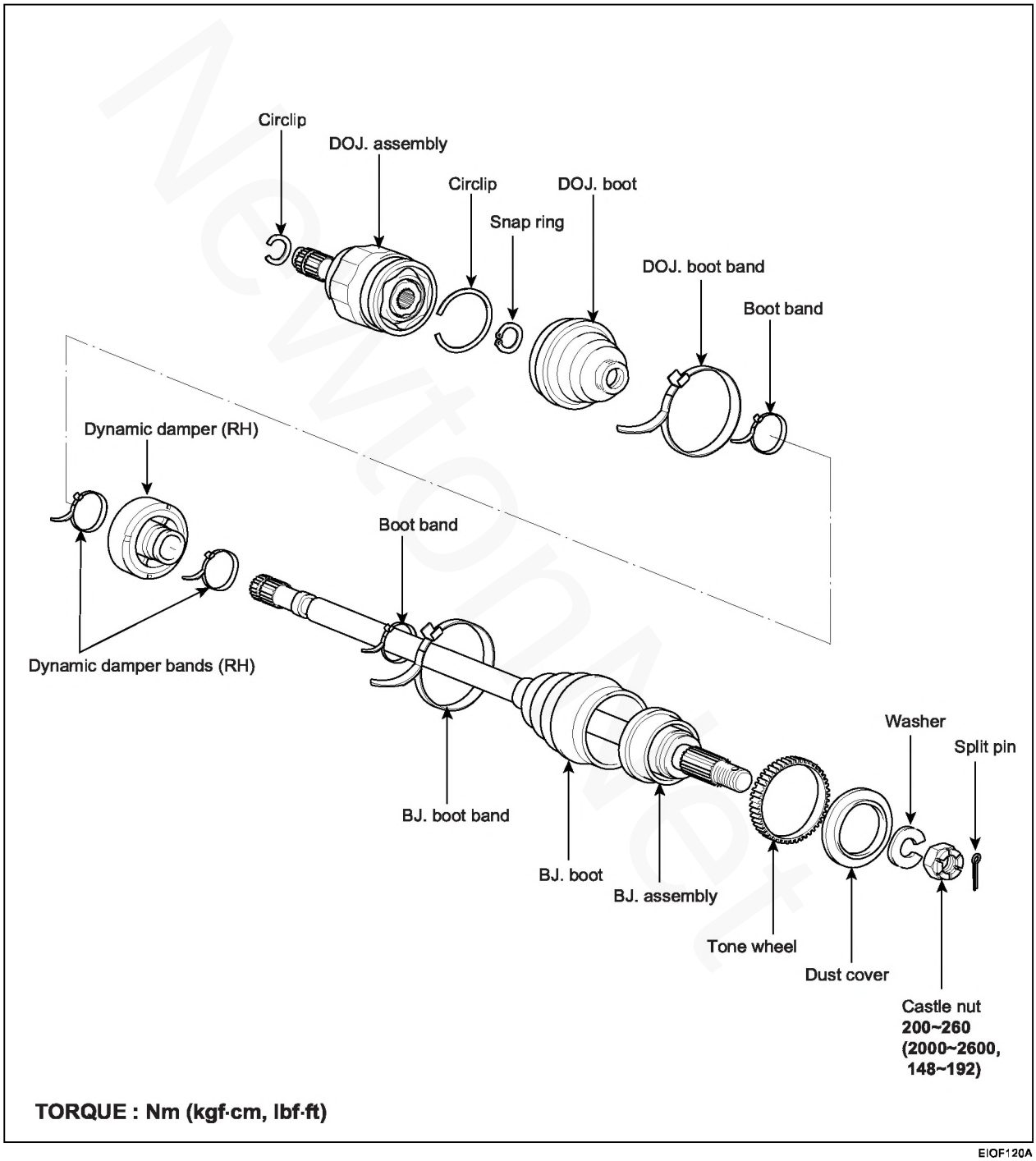
EIOF114B

7. Tighten the below parts to the specified torque.

Driveshaft nut
2.0L : 200~260Nm (2000~2600 kgf·cm, 148~192 lbf·ft)
2.7L : 200~280Nm (2000~2800 kgf·cm, 148~207 lbf·ft)
Lower arm ball joint nut
60~72Nm (600~720 kgf·cm, 44~53 lbf·ft)

FRONT DRIVESHAFT (DOJ-BJ TYPE)

COMPONENTS EDFDA1D6



EIOF120A

DISASSEMBLY E14F374F

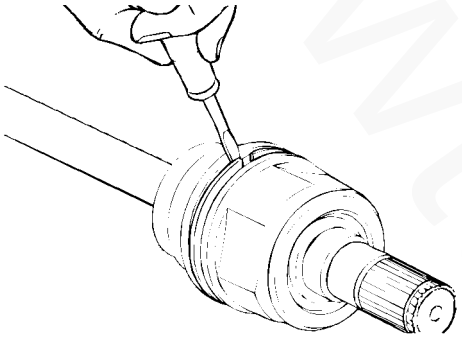
CAUTION

1. ***Do not disassemble the birfield joint assembly.***
2. ***Special grease must be applied to the driveshaft joint. Do not substitute with another type of grease.***
3. ***The boot band should be replaced with a new one.***

1. Remove the double offset joint boot bands and pull the double offset joint boot from the double offset joint outer race.

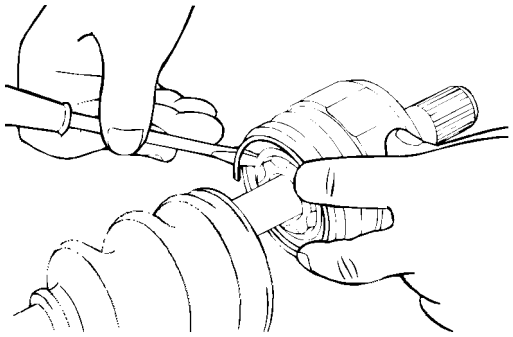
CAUTION

Be careful not to damage the boot.



EIDA251A

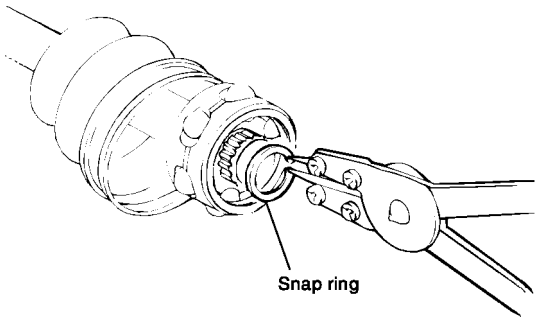
2. Remove the circlip with a flat-tipped screwdriver.



EIDA251B

3. Pull out the driveshaft from the double offset joint outer race.

4. Remove the snap ring and take out the inner race, cage and balls as an assembly.



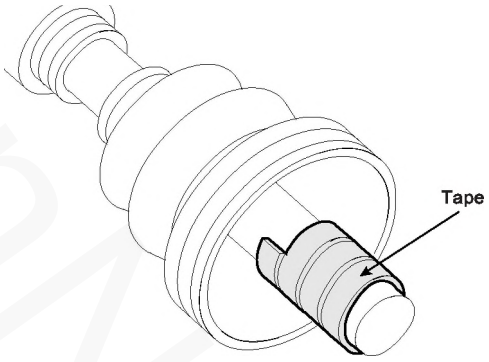
EIDA251C

5. Clean the inner race, cage and balls without disassembling.

6. Remove the birfield joint boot bands and pull out the double offset joint boot and birfield joint boot.

CAUTION

If the boot is to be reused, wrap tape around the driveshaft splines to protect the boot.



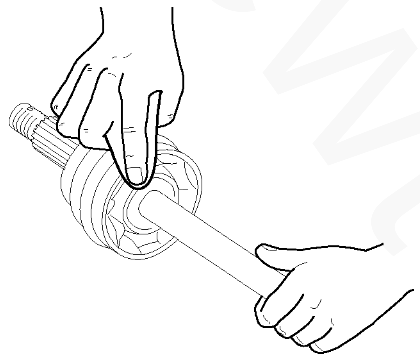
EIOF121A

INSPECTION E4D7909E

1. Check the double offset joint outer race, inner race, cage and balls for rust or damage.
2. Check splines for wear.
3. Check for water, foreign matter, or rust in the birfield joint boot.

CAUTION

When the birfield joint assembly is to be reused, do not wipe away the grease. Check that there are no foreign substances in the grease. If necessary, cleanthe birfield joint assembly and replace grease.



EIOF122A

REASSEMBLY EE049BB0

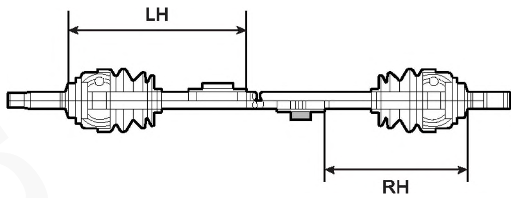
1. Wrap tape around the driveshaft splines (double offset joint side) to prevent damage to the boots.
2. Apply grease to the driveshaft and install the boots. (see page DS-3)
3. To install the dynamic damper, keep the birfield joint and driveshaft in a straight line and secure the dynamic damper with the dynamic damper band in the directionillustrated.

Standard value (LH, RH) mm (in.)

	LH	RH
2.0L M/T :	469^{+2}_{0} $(18.47^{+0.08}_{0})$	208 ± 2 (8.19 ± 0.08)

LH : Left Hand side
RH : Right Hand side

EIOC120A

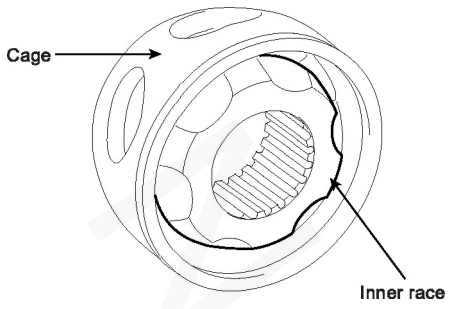


EIOF123A

4. Apply the specified grease to the inner race and cage. Install the cage so that it is offset on the race as shown.

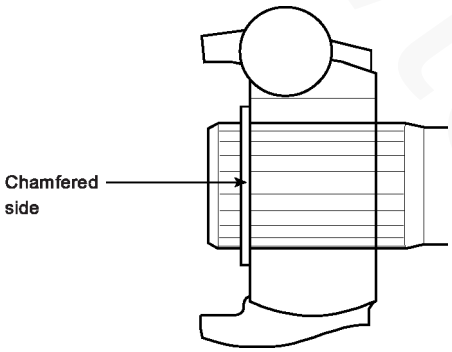
NOTE

Use the grease included in the repair kit.



EIOF123B

5. Apply the specified grease to the cage and fit the balls into the cage.
6. Position the chamfered side as shown in the illustration. Install the inner race on the driveshaft, and then the snap ring.



EIOF123C

7. Apply the specified grease to the outer race and install the birfield joint outer race onto the driveshaft.
8. Apply the specified grease into the double offset joint boot and install the boot with a clip.

Double offset joint boot grease (gr.) (2.0L M/T)
Total : 100 ± 6
In the joint : 60 ± 3
In the boot : 40 ± 3

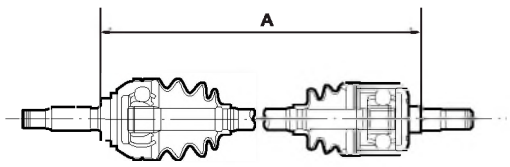
M/T : Manual Transmission

9. Tighten the double offset joint boot bands.
10. Add the specified grease to the birfield joint as much as was wiped away at inspection.
11. Install the boots.
12. Tighten the birfield joint boot bands.
13. To control the air in the double offset joint boot, keep the specified distance between the boot bands when they are tightened.

Standard value (A) mm(in.)

	LH	RH
2.0L M/T	497.7 ~ 533.7 (19.59 ~ 21.01)	780.7 ~ 816.9 (30.73 ~ 32.16)

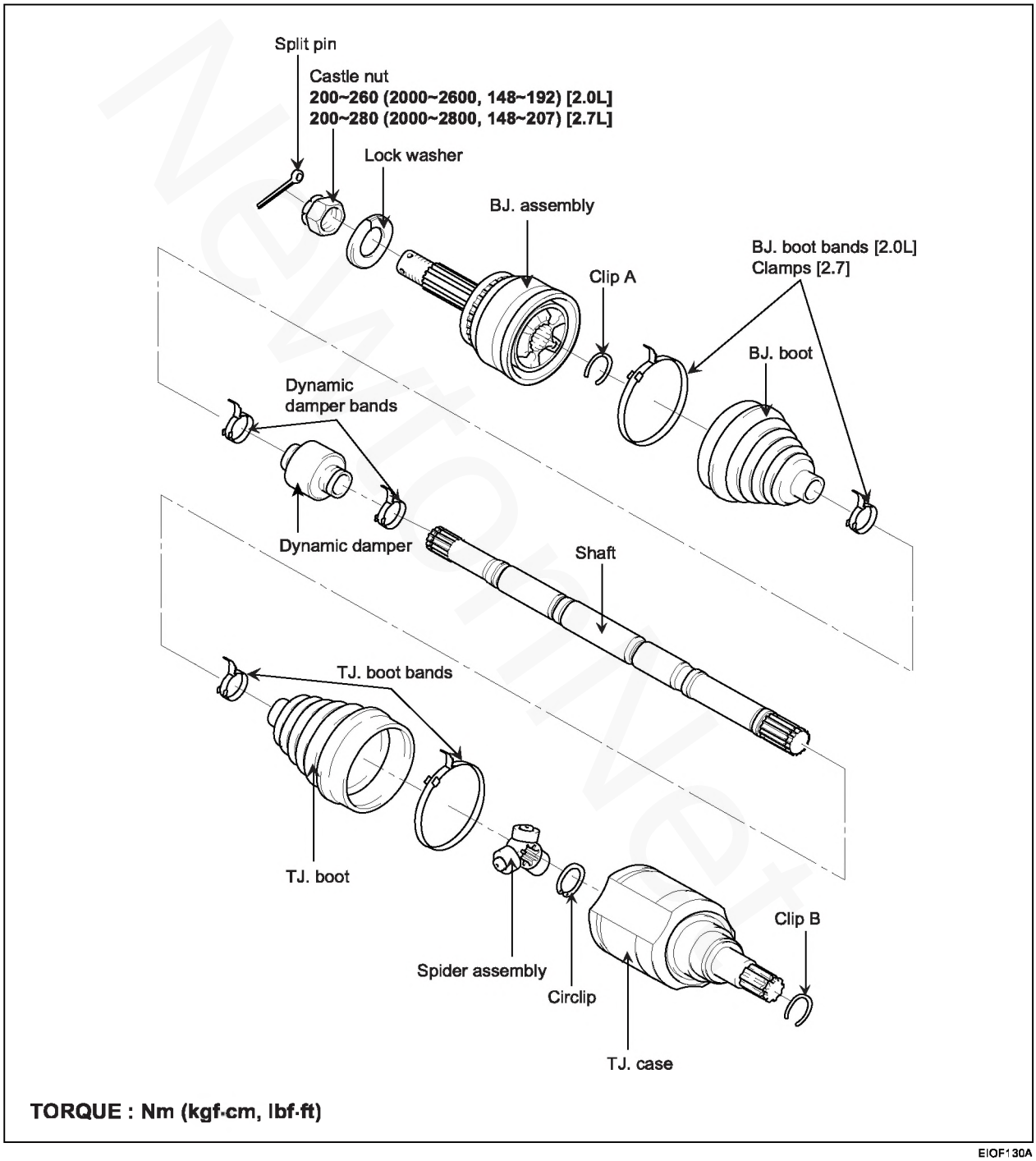
M/T : Manual Transmission
LH : Left Hand side
RH : Right Hand side



EIOF123D

FRONT DRIVESHAFT (TJ-BJ TYPE)

COMPONENTS E961C373



EIOF130A

DISASSEMBLY E7C082EE

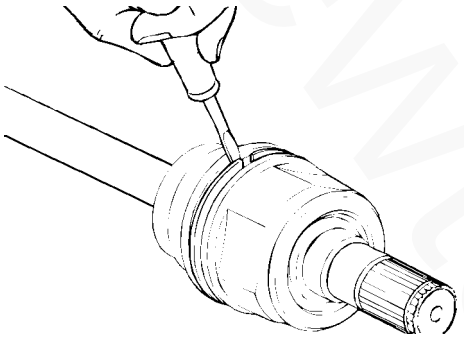
NOTE

- *Do not disassemble the birfield joint 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 tripod joint boot bands and pull the tripod joint boot from the tripod joint case.

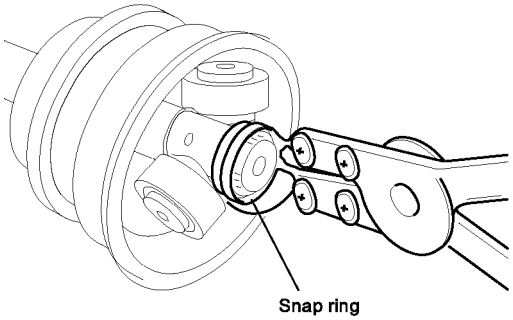
NOTE

Be careful not to damage the boot.



EIDA251A

2. Remove the snap ring and spider assembly from the driveshaft.

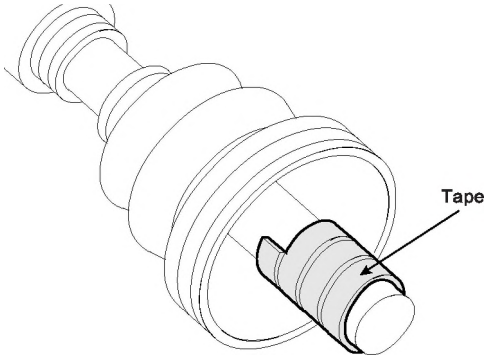


EIOF130B

3. Clean the spider assembly.
4. Remove the birfield joint boot bands and pull out the tripod joint boot and birfield joint boot.

NOTE

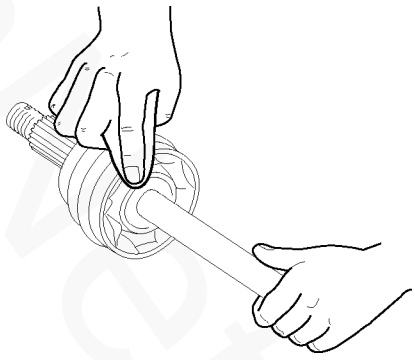
If the boot is to be reused, wrap tape around the driveshaft splines to protect the boot.



EIOF121A

INSPECTION E12D201B

1. Check the driveshaft spline for wear or damage.
2. Check that there is no water or foreign material in the birfield joint.
3. Check the spider assembly for roller rotation, wear or corrosion.
4. Check the groove inside the tripod joint case for wear or corrosion.
5. Check the dynamic damper for damage or cracks.



EIOF122A

REASSEMBLY EC0085D4

1. Wrap tape around the driveshaft splines (tripod joint side) to prevent damage to the boots.
2. Apply grease to the driveshaft and install the boots. (see page DS-3)

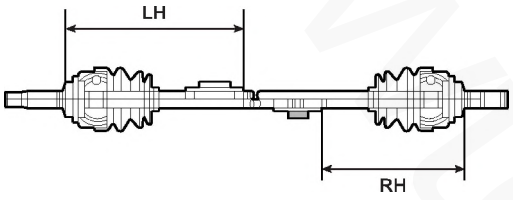
3. To install the dynamic damper, keep the B.J. and driveshaft in a straight line and secure the dynamic damper with the dynamic damper band inthe direction illustrated.

Standard value (LH, RH) mm (in.)

	LH	RH
2.0L A/T :	469^{+2}_{0} ($18.47^{+0.08}_{0}$)	213 ± 2 (8.23 ± 0.08)
2.0L 6M/T :	-	334.6 (13.17)

LH : Left Hand side RH : Right Hand side
A/T : Automatic Transmission
M/T : Manual Transmission

EIOE160A



EIOF123A

4. Apply grease into the tripod joint boot and install the boot.

Tripod joint boot grease (gr.)
(2.0L A/T, 2.0 L 6M/T, 2.7L)
Total : 145 ± 6
In the joint : 100 ± 3
In the boot : 45 ± 3

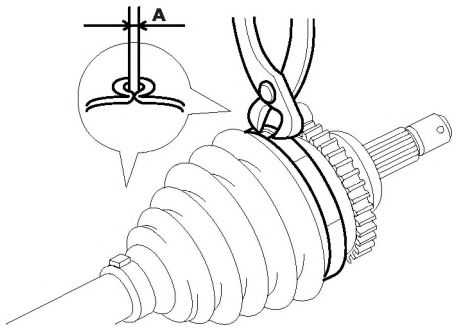
A/T : Automatic Transmission M/T : Manual Transmission

5. Tighten the tripod joint boot bands.
6. Add the specified grease to the birfield joint as much as was wiped away at inspection.
7. Install the boots.
8. Tighten the new birfield joint boot bands.

NOTE

Keep the specified distance (A) between the bellows when they are clampped with an Oetiker crimping tool (P/No. : 1094)or a commercially available hand pincers (2.7L).

Specified distance (A) : 1.8 mm (0.071 in.) or less



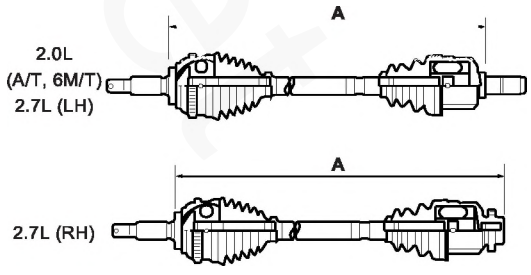
EIOF133B

9. To control the air in the tripod joint boot, keep the specified distance between the boot bands when they are tightened.

Standard value (A) mm(in.)

	LH	RH
2.0L A/T	514 ± 2 (20.24 ± 0.08)	799.2 ± 2 (31.47 ± 0.08)
2.0L 6M/T	492.6 ± 2 (19.39 ± 0.08)	803.6 ± 2 (31.64 ± 0.08)
2.7L 6M/T	514.2 ± 2 (19.43 ± 0.08)	508.7 ± 2 (20.03 ± 0.08)
2.7L M/T, A/T	515 ± 2 (20.28 ± 0.08)	508.7 ± 2 (20.03 ± 0.08)

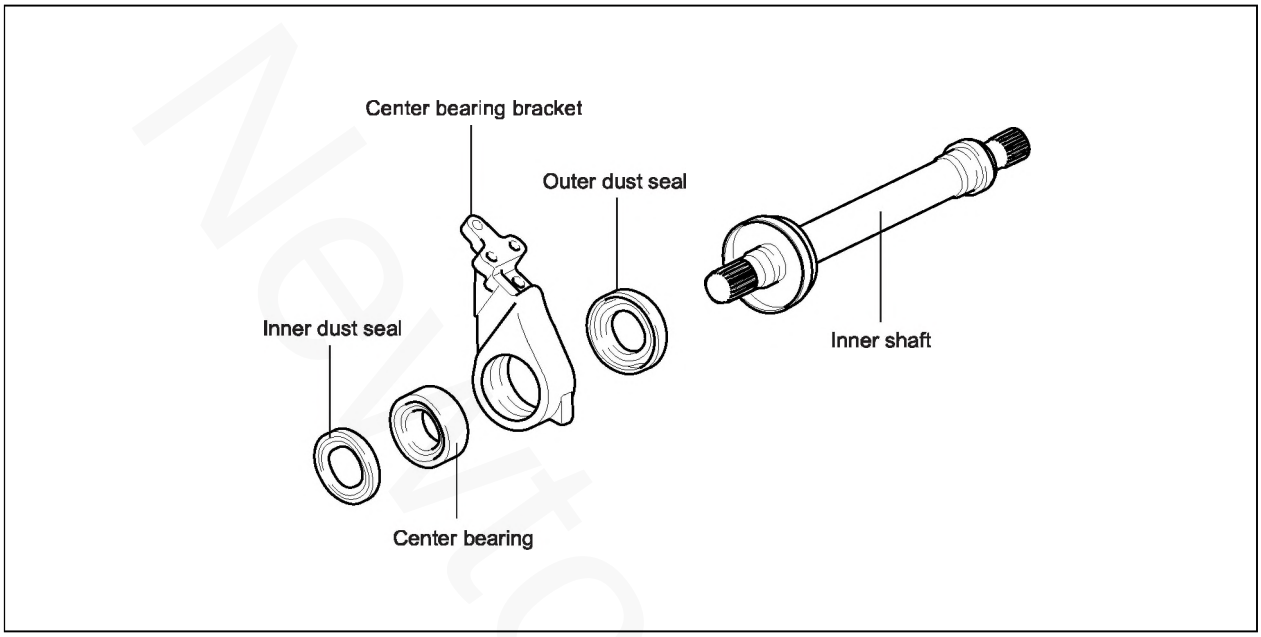
LH : Left Hand side, RH : Right Hand side
A/T : Automatic Transmission
M/T : Manual transmission



EIOF133C

CENTER BEARING AND INNER SHAFT

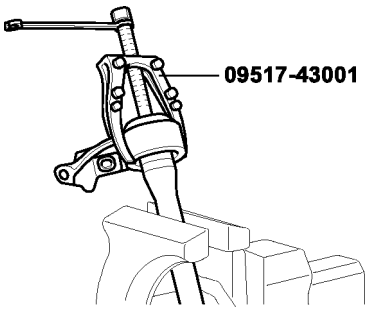
COMPONENTS (2.7L) EFC6C29E



EIOF140A

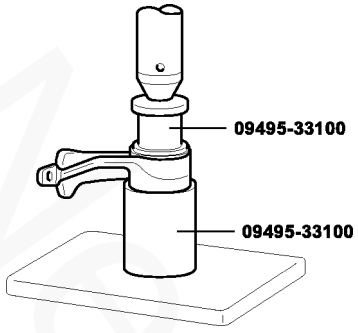
DISASSEMBLY EF49DB1D

1. Using the special tool (09517-43001), disassemble the center bearing bracket from the inner shaft.



EIOF142A

2. Using the special tools (09216-21100, 09495-33100), press out the center bearing from the outside to the inside direction of the center bearingbracket as shown in the illustration.



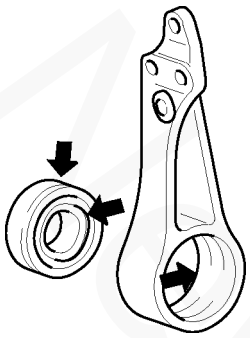
EIOF142B

INSPECTION E5B04EE8

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 roller journals moving surfaces.

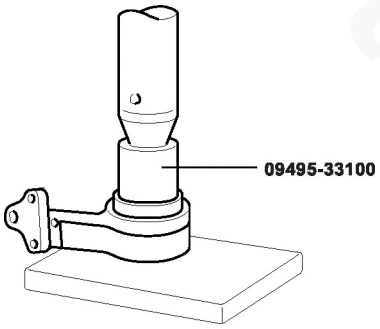
REASSEMBLY EA3C5D5C

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



EIOF143A

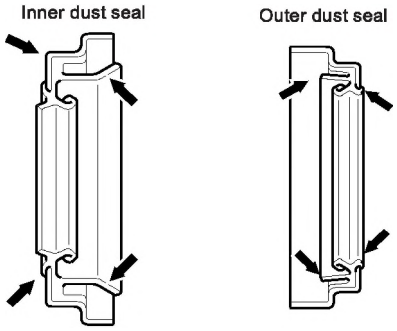
2. Using the special tool (09495-33100), press the center bearing into the center bearing bracket.



EIOF143B

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

Recommended grease : Sunlight No.2
Inner dust seal : 7~10 gr.
Outer dust seal : 4~6 gr.



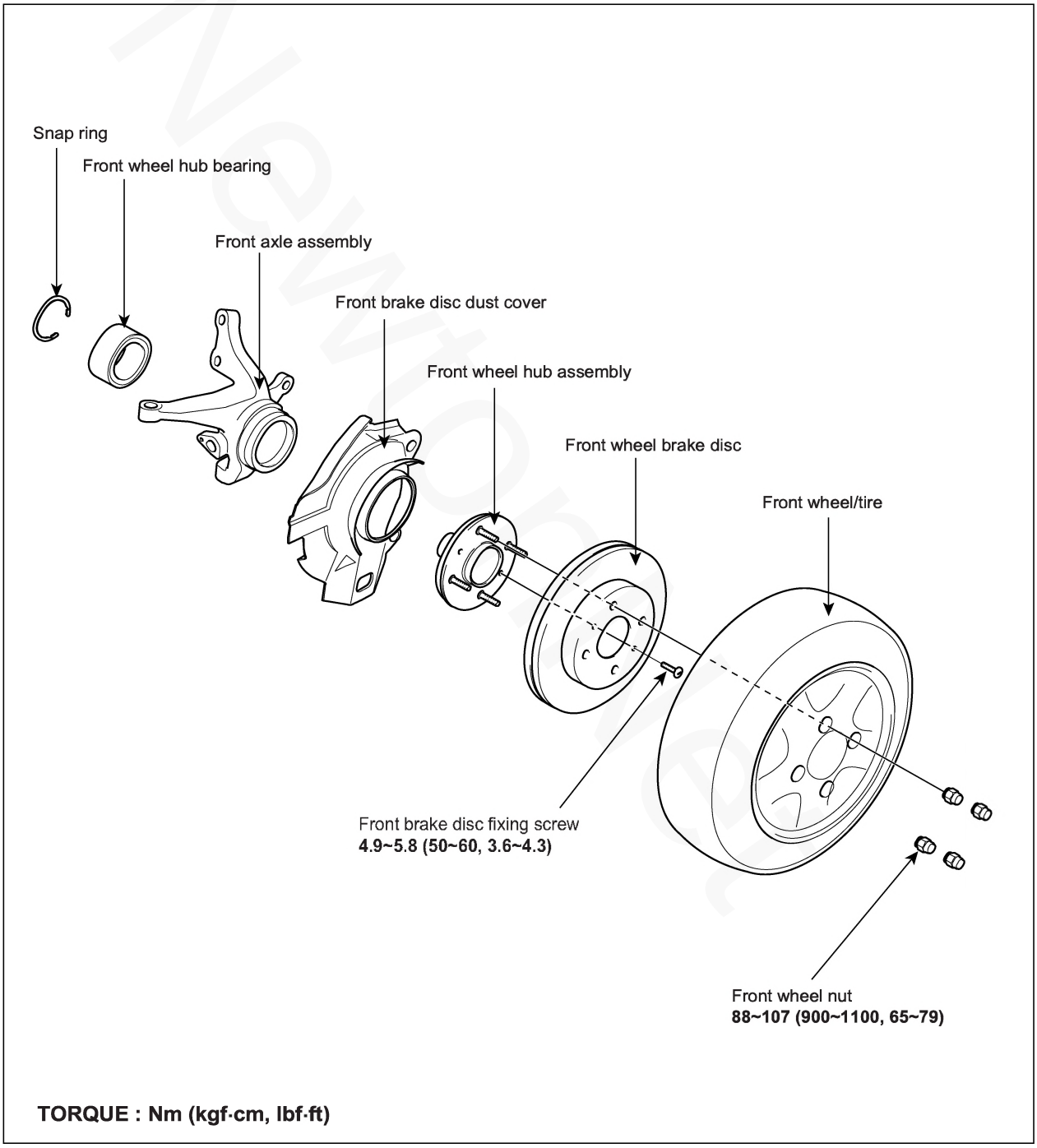
EIOF143C

4. Install the inner shaft into the center bearing bracket.

FRONT AXLE

FRONT HUB / KNUCKLE

COMPONENTS EC1C9EDF



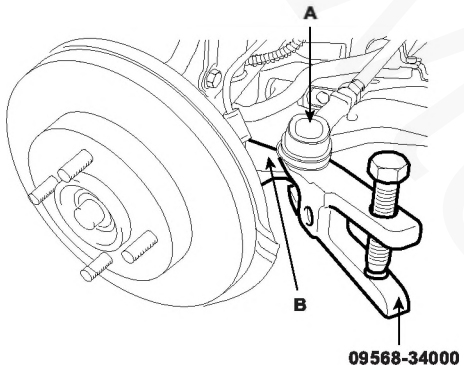
EIOF150A

REMOVAL ED979A00

1. Remove the front wheel.
2. Remove the split pin and driveshaft nut from the front hub.
3. Remove the front brake assembly from the knuckle and suspend it with a wire.
4. Remove the vehicle speed sensor from the knuckle.
5. Disconnect the tie rod end ball joint from the knuckle by using the special tool (09568 - 34000).

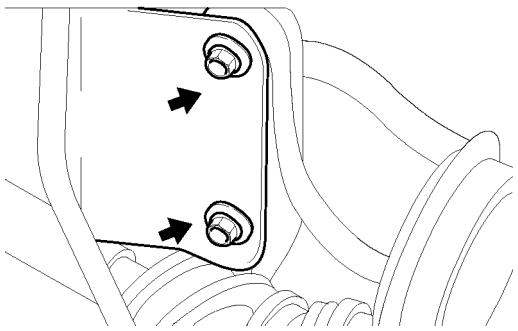
NOTE

Be sure to tie the special tool (09568 - 34000) to the near part with a cord not to fall.



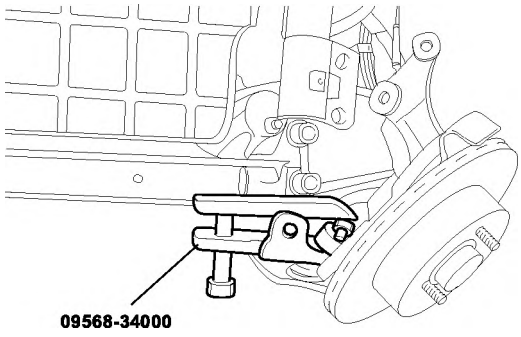
EIOF150B

6. Disconnect the strut assembly from the knuckle.



EIOF150C

7. Disconnect the driveshaft from the hub.
8. Disconnect the lower arm ball joint from the knuckle by using the special tool (09568 - 34000).

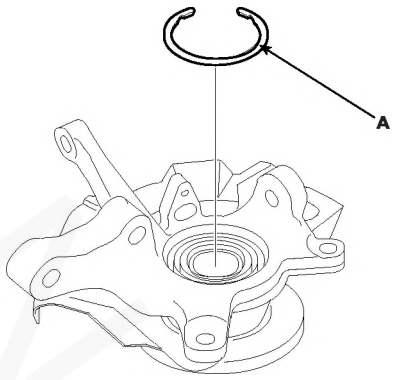


EIOF150D

9. Remove the hub and knuckle as an assembly.

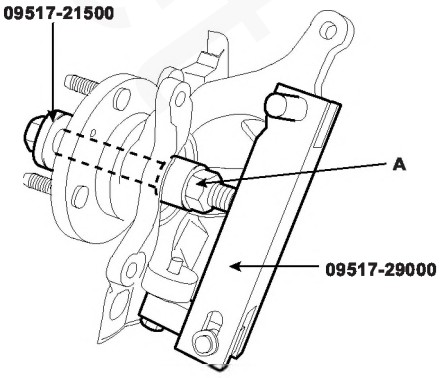
DISASSEMBLY E1ED5EBE

1. After removing the screws(2) mounting the brake disc, remove the brake disc from the hub.
2. Remove the snap ring.



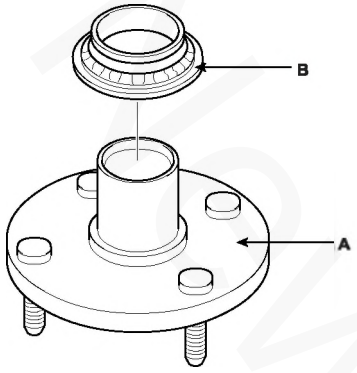
EIOF151A

3. Install the special tools as illustrated.



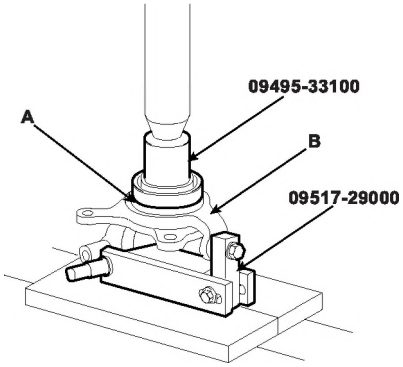
EIOF151B

4. Remove the hub from the knuckle by turning the special tool.
5. Remove the special tool and dust cover.
6. Remove the bearing inner race from the hub by using the special tool(09495-33000).



EIOF151C

7. Using the special tool (09495-33100, 09517-29000), remove the wheel bearing outer race from the knuckle.



EIOF151D

INSPECTION E99232C7

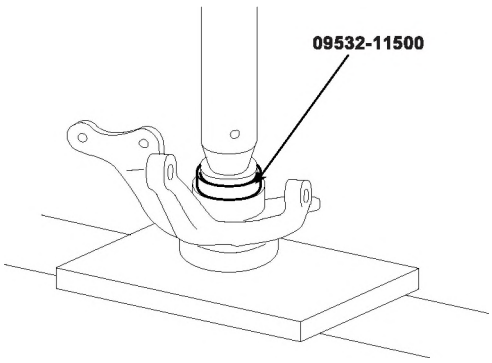
1. Check the hub for cracks and the splines for wear.
2. Check the brake disc for scoring and damage.
3. Check the knuckle for cracks.
4. Check the bearing for cracks or damage.

REASSEMBLY EA61B5DF

1. Apply multi-purpose grease to the contacting surface of the knuckle hub and bearing thinly.
2. Using the special tools (09495-33100, 09517-29000), press-in the bearing to the knuckle.

NOTE

1. *Press-in the outer race of the wheel bearing to prevent damage to the bearing assembly.*
2. *When installing a bearing assembly, always use a new one.*

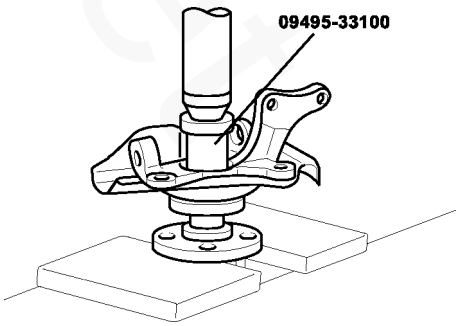


EIOF153A

3. Install the dust cover.
4. Using the special tool (09495-33100), press-in the hub to the knuckle.

NOTE

Press-in the inner race of the wheel bearing to prevent damage to the bearing assembly.

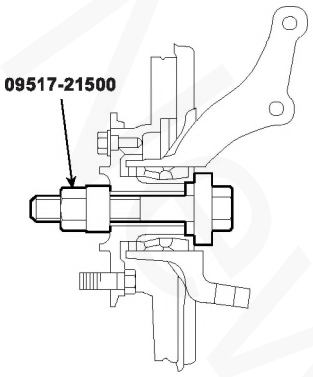


EIOF153B

5. Install the brake disc.

6. Tighten the hub and the knuckle to the specified torque by using the special tool (09517-21500).

Specified torque Nm (kgf·cm, lbf·ft)
2.0L : 200~260 (2000~2600, 148~192)
2.7L : 200~280 (2000~2800, 148~207)

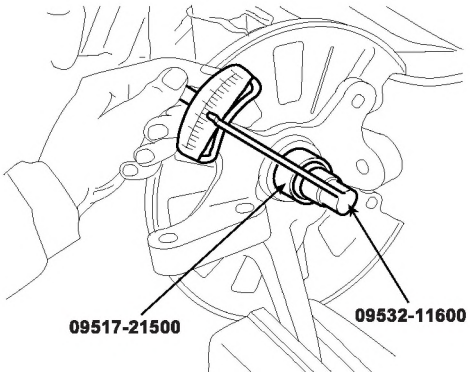


EIOF153C

7. Rotate the hub several times to seat the bearing.

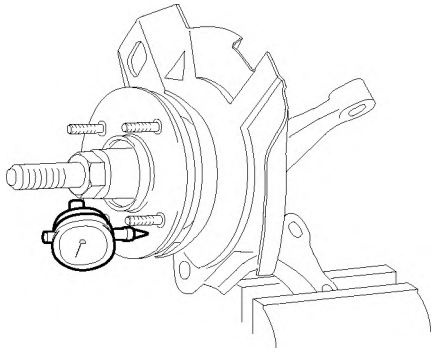
8. Measure the hub bearing starting torque.

Hub bearing starting torque [Limit]
1.8 Nm (18 kgf·cm, 1.33 lbf·ft) or less



EIOF153D

9. If the starting torque is 0 Nm (0 kgf·cm, 0 lbf·ft), measure the hub bearing axial play.



EIOF153E

10. If the hub axial play exceeds the limit while the nut is tightened to 200~260 Nm (2000~2600Kgf·cm, 148~192 lbf·ft), the bearing, hub and knuckle are not installed correctly. Repeat the disassembly and assemblyprocedure.

Hub bearing axial play [Limit]
0.008 mm (0.0003 in.) or less

11. Remove the special tool (09517-21500).

INSTALLATION E1BFBAA1

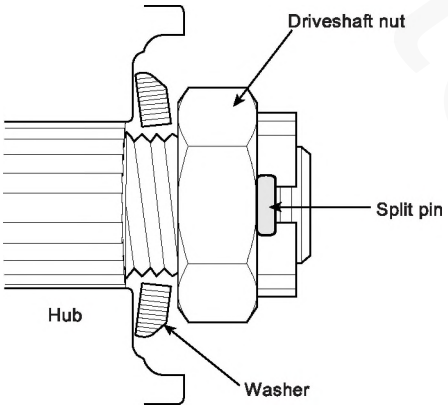
1. Installation is the reverse of removal.

NOTE

1. Tighten the components below to the specified torque as follows :

Items	Torque Nm (kgf·cm, lb·ft)
Driveshaft nut (2.0L) Driveshaft nut (2.7L)	200~260 (2000~2600, 148~192) 200~280 (2000~2800, 148~207)
Lower arm ball joint to knuckle nut	60~72 (600~720, 44~53)
Knuckle to strut assembly nut	140~160 (1400~1600, 103~118)

2. Install the washer behind the driveshaft nut with the convex side outward as shown in the illustration.

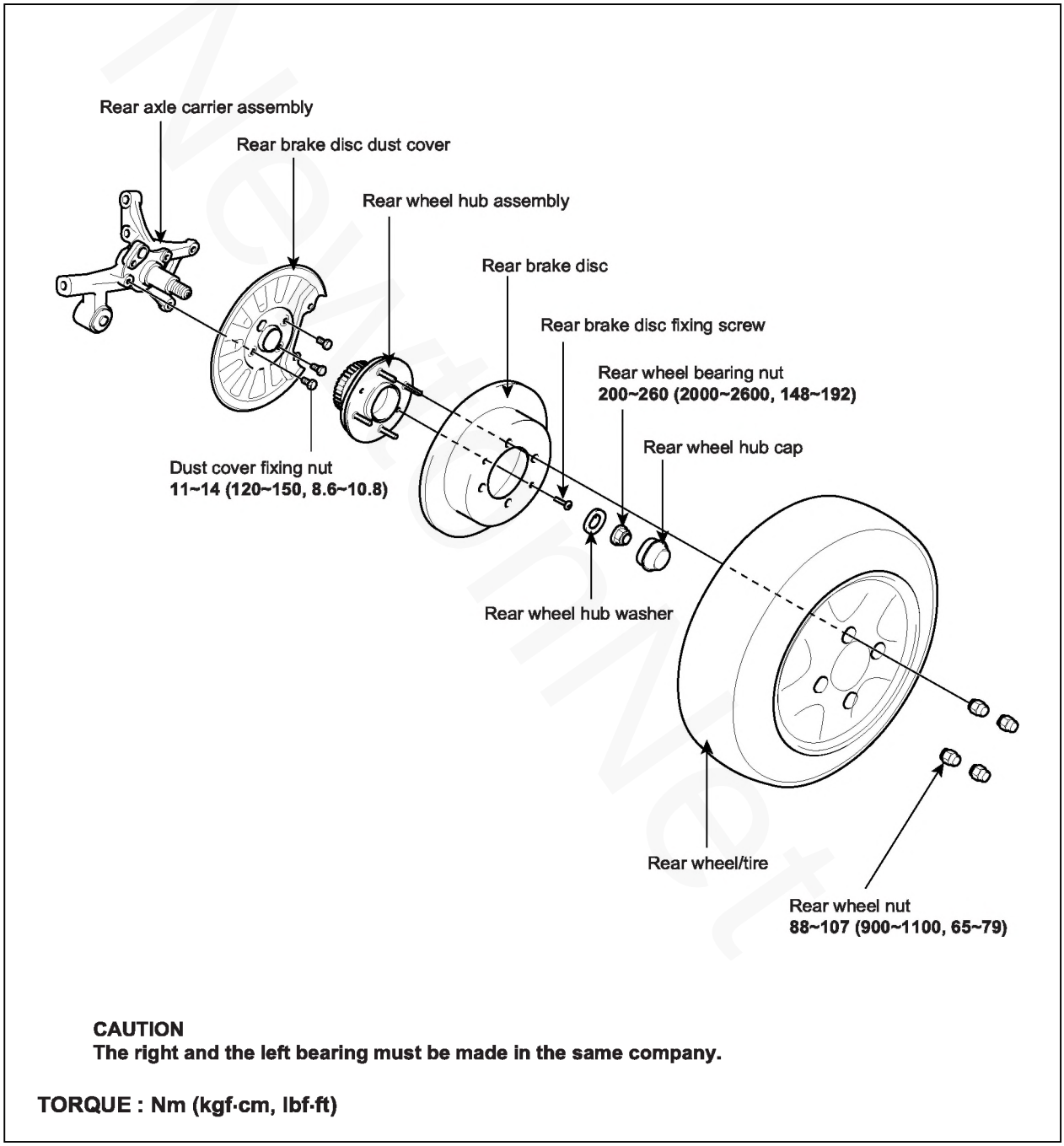


EIOF154A

REAR AXLE

REAR HUB / CARRIER

COMPONENTS E6681AB5



CAUTION
The right and the left bearing must be made in the same company.

TORQUE : Nm (kgf·cm, lbf·ft)

EIOF210A

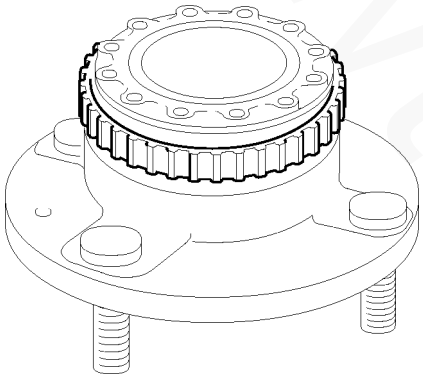
REMOVAL E1F86EDD

1. Remove the rear wheel speed sensor (for vehicles equipped with ABS(Anti-lock Brake System)).

   ⚠ ***CAUTION***

   When removing the speed sensor from the adapter, be careful so that the end of the pole piece doesn't strike teeth on the rotor or other components.

2. Remove the caliper assembly and suspend it with a wire.
3. Remove the brake disc.
4. Remove the hub cap, wheel bearing nut and tongue washer.
5. Remove the hub assembly.



EIOF210B

⚠ ***CAUTION***

- ***The rear hub assembly should not be disassembled.***
- ***(For vehicles equipped with ABS(Anti-lock Brake System))***
  Care must be taken not to scratch or damage the teeth of the rotor. The rotor must never be dropped. If the teeth of the rotor are chipped, it results in deformation of the rotor. It will make it impossible to detect the wheel rotation speed accurately and to operate the system normally.

INSPECTION E3155DCE

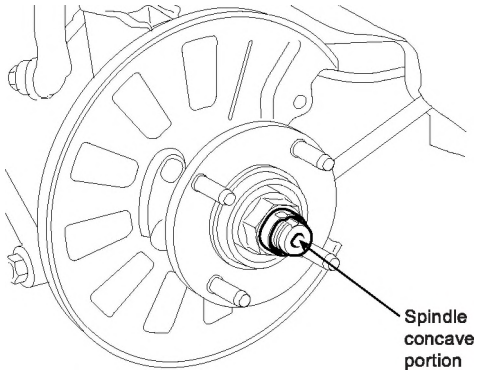
1. Check the oil seal for cracks or damage.
2. Check the rear hub bearing for wear or damage.
3. Check the rear rotor for chipped teeth.
4. Check the rear carrier for cracks.

INSTALLATION E4480955

1. After tightening the flange nut, caulk the concave portion of the spindle by crimping the nut.

   ⚠ ***CAUTION***

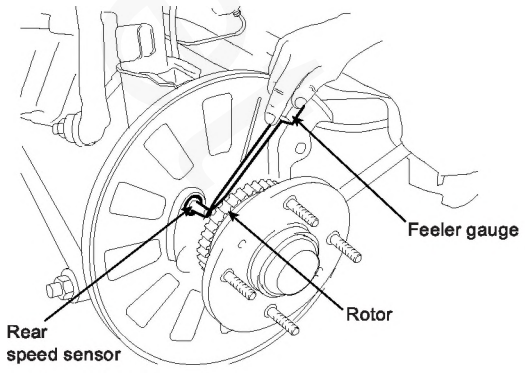
   Replace the flange nut with new ones after removal.



EIOF214A

2. Installation of the rear speed sensor (For vehicles equipped with ABS(Anti-lock Brake System)) :
   Insert a feeler gauge into the space between the pole piece of the speed sensors and the rotor teeth surface, and then tighten the speed sensors at the position where the clearance at all places is within the standard value.

Standard value
Clearance : 0.2~1.3 mm (0.008~0.051 in.)



EIOF214B

3. Install the hub cap.