Driveshaft and Axle

GENERAL

SPECIFICATIONS EC30F42D

Items			3.3 A/T	3.8 A/T
Drive shaft	Joint type	Outer side	BJ	EBJ104
		Inner side	SFJ	PTJ100
	Max. permissible angle	Outer side	45°	47°
		Inner side	23°	23°
Center bearing	Type		Radial ball bearing	
	Dimension (O.D X I.D.) mm (in)		Ø 62 X Ø 30 (Ø 2.44 X Ø 1.18)	Ø 75 X Ø 30 (Ø 2.95 X Ø 1.18)
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 87 X Ø 45	
Hub end play			0.008 mm (0.0003 in) or less	

TIGHTNING TORQUE EA571CBE

Item	Nm	kgf·m	lb-ft
Wheel nut	90 ~ 110	9 ~ 11	66 ~ 81
Drive shaft castle nut	200 ~ 280	20 ~ 28	148 ~ 207
Front Upper arm to knuckle self locking nut	35 ~ 45	3.5 ~ 4.5	26 ~ 33
Front Subframe mounting bolt	140 ~ 160	14 ~ 16	101 ~ 118
Front Shock absorber lower mounting bolt	60 ~ 80	6 ~ 8	44 ~ 59
Front lower arm connector nut (to fork)	140 ~ 160	14 ~ 16	101 ~ 118
Lower arm and ball joint	100 ~ 120	10 ~ 12	74 ~ 88
Lower arm ball joint self locking nut	75 ~ 90	7.5 ~ 9	54.2 ~ 66
Tie rod end self locking nut	24 ~ 34	2.4 ~ 3.4	18 ~ 25
Stabilizer link self locking nut	100 ~ 120	10 ~ 12	74 ~ 88
Stabilizer link mounting nut	45 ~ 55	4.5 ~ 5.5	33 ~ 39.7
Hub assembly	60 ~ 70	6 ~ 7	44 ~ 52
Wheel speed sensor	7 ~ 11	0.7 ~ 1.1	5 ~ 7.9
Brake caliper to knuckle	80 ~ 100	8 ~ 10	59 ~ 74
Rear brake disc	5 ~ 6	0.5 ~ 0.6	3.6 ~ 4.3
Rear Lower arm to knuckle	140 ~ 160	14 ~ 16	101 ~ 118
Rear Brake caliper to knuckle bolt	50 ~ 60	5 ~ 6	36 ~ 44
Rear upper arm to carrier self locking nut	80 ~ 90	8 ~ 9	59 ~ 66
Rear axle mounting bolt	60 ~ 70	6 ~ 7	44 ~ 52
Inner shaft cover	9 ~ 14	0.9 ~ 1.4	6.5 ~ 10
Inner shaft bearing bracket	50 ~ 65	5 ~ 6.5	36 ~ 47

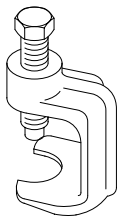
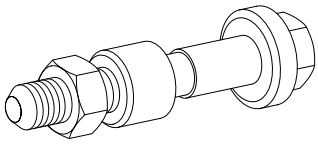
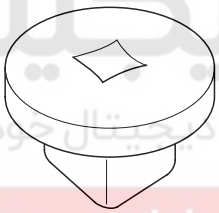
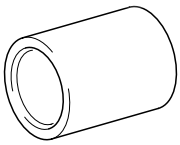
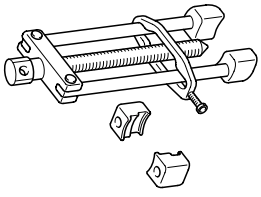
CAUTION

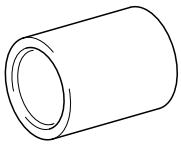
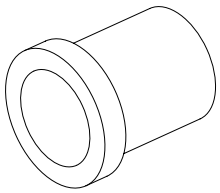
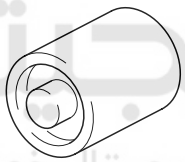
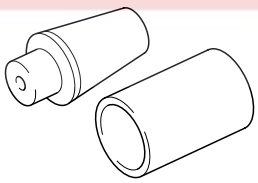
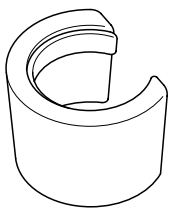
Replace self-locking nuts with new ones after removal.

LUBRICANTS

Items	Specified lubricants	3.3L	3.8L
BJ			
Joint	MS511-50	85g ± 5g	70g ± 5g
Boot		70g ± 5g	55g ± 5g
EBJ			
Joint	NTG2218-M	85g ± 5g	70g ± 5g
Boot		70g ± 5g	55g ± 5g
SFJ			
Joint	MX-13KT (UREA)	140g ± 5g	150g ± 5g
Boot		60g ± 5g	70g ± 5g
PTJ			
Joint	NKG302	140g ± 5g	150g ± 5g
Boot		60g ± 5g	70g ± 5g

SPECIAL TOOLS EFF7E140

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
09532-11600 Preload socket	 EIRF001C	Measurement of the wheel bearing preload (use with torque wrench)
09216-21100 Mount bushing remover and installer	 EIRF002J	• Removal of the center bearing • Press-fitting of the front wheel bearing outer race (Use with 09495-33100, 09216-21600)
09432-11000 Main shaft bearing puller	 EIRF002A	Removal of the tone wheel

Tool (Number and Name)	Illustration	Use
09216-21600 Mount bushing remover and installer	 EIRF002J	Removal of the wheel bearing outer race
09545-21100 Ball joint dust cover installer	 EIRF001D	Press-fitting of the front hub to the knuckle
09545-34100 Lower arm bushing remover and installer	 EIRF002K	Removal of the bearing inner race from the front hub
09453-33000B Snap ring installer	 EIRF002L	Removal and installation of the rear axle carrier bushing (Use with 09552-38200)
09216-22100 Mount bushing remover and installation base	 EIRF002B	Removal of the wheel bearing outer race (Use with 09216-21600)

TROUBLESHOOTING E8D0BF9D

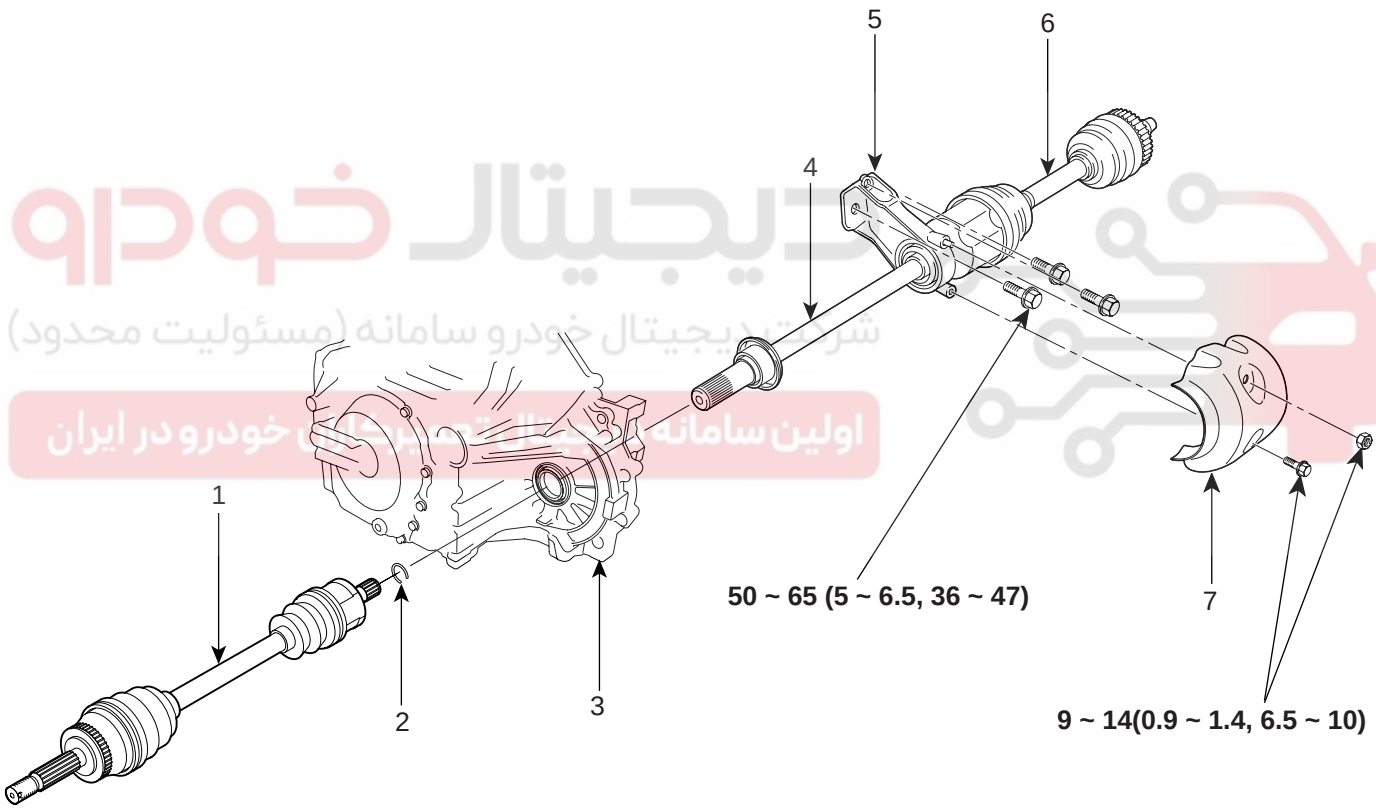
Symptom	Possible cause	Remedy
Vehicle pulls to one side	Scoring of driveshaft ball joint Wear, rattle or scoring of wheel bearing Defective front suspension and steering	Replace Replace Adjust or replace
Vibration	Wear, damage or bending of driveshaft Driveshaft rattle and worn hub splines Wear, rattle 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

COMPONENTS E78E1915

[3.3L, 3.8L]



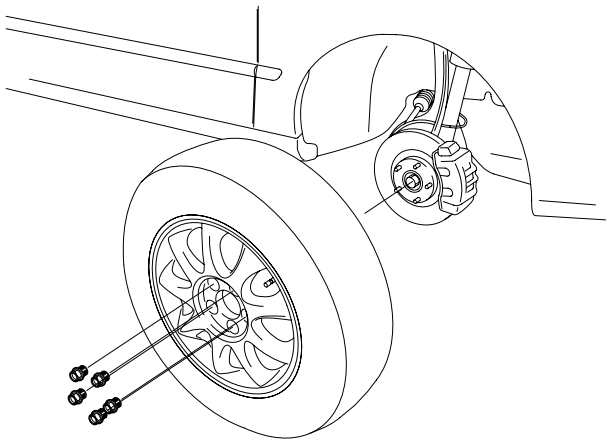
TORQUE : Nm (kgf·m, lb-ft)

1. Driveshaft (LH)
2. Circlip
3. Transaxle
4. Inner shaft
5. Inner shaft bracket mounting
6. Driveshaft (RH)
7. Inner shaft bracket cover

EIBF500A

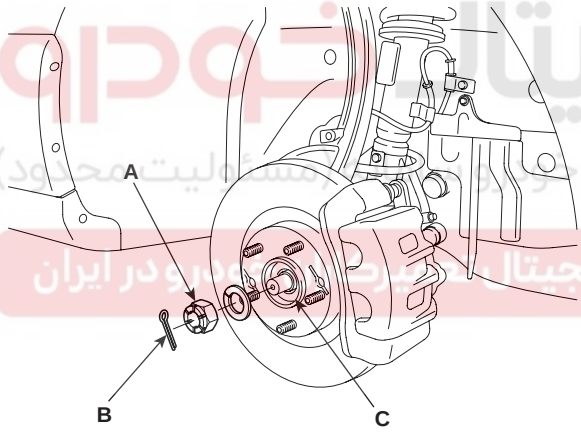
REMOVAL EEF81E40

1. Remove the wheel and tire.



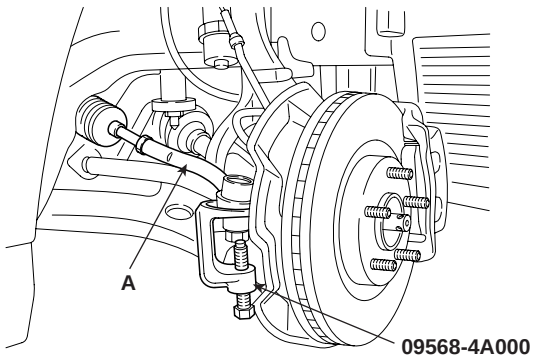
KIBF101A

2. Remove the spilt pin(B) and driveshaft castle nut(A) and washer from the front hub(C).



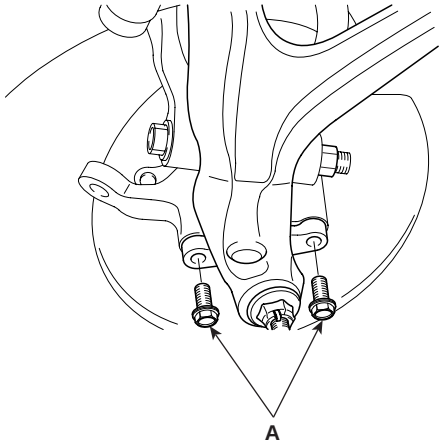
KIBF101B

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



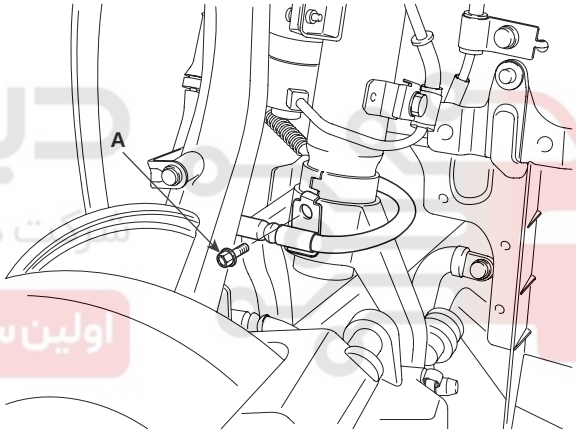
KIBF101C

4. Remove the 2 bolts(A) and disconnect the ball joint from the knuckle.



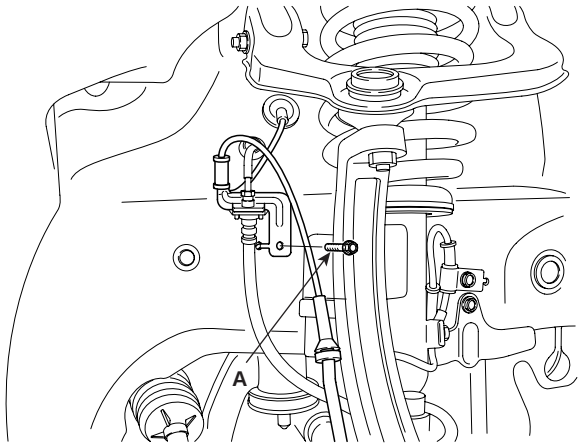
KHBF140D

5. Disconnect the brake hose(A) from the knuckle.



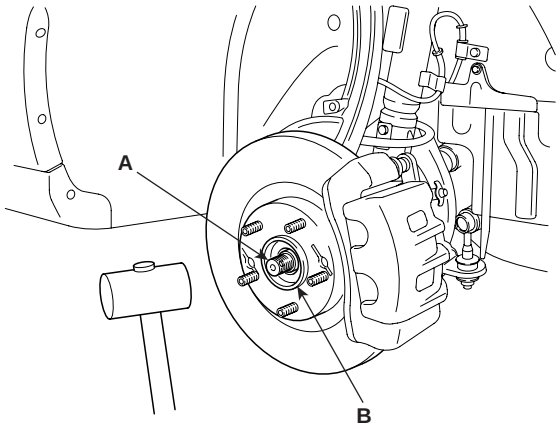
KIBF101E

6. Disconnect the wheel speed sensor(A) from the knuckle.



KIBF101F

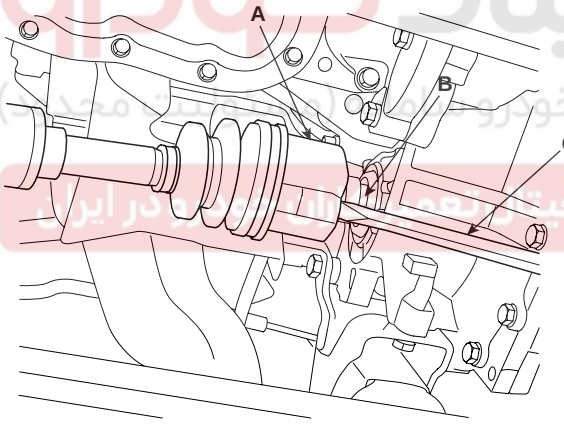
7. Using a plastic hammer, disconnect the driveshaft(A) from the axle hub(B).



KIBF101G

8. Removing the driveshaft(A) from the transaxle(B) by using a pry bar(C) as shown below.

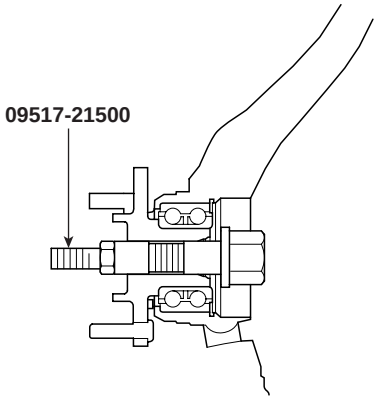
[LH]



KIBF101H

CAUTION

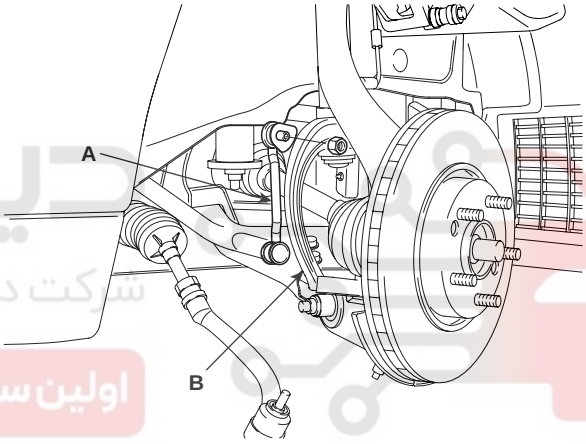
- ***Use a pry bar so you do not damage the joint.***
- ***If you pull the driveshaft by excessive force,components inside the joint can be displaced causing the boot to be torn and the bearing tobe damaged.***
- ***Plug the transaxle case opening with an oil seal cap in order to avoid contamination.***
- ***Support the driveshaft properly.***
- ***Replace the retainer ring each time the drive-shaft 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.***



KIBF101I

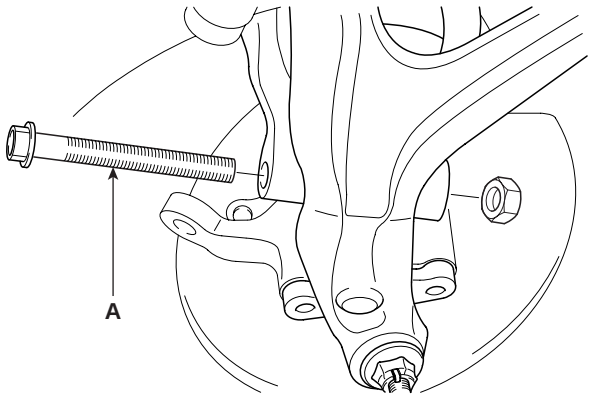
[RH]

a. Remove the stabilzer link(A) from the fork(B).



EIRF001F

b. Remove the fork(A) from the front lower arm.

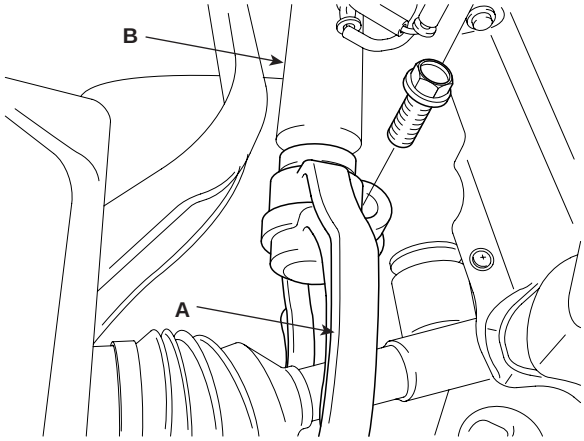


KHBF140E

CAUTION

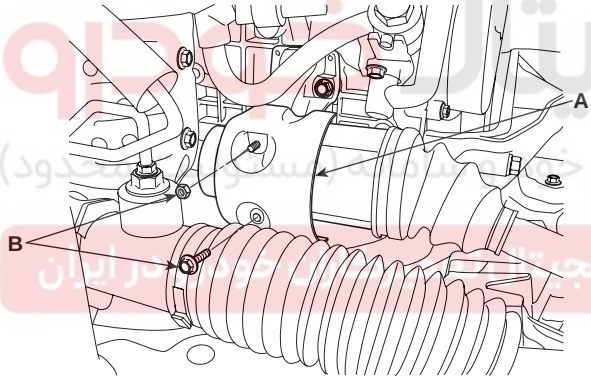
Be careful not to damage to the aluminium lower arm.

c. Remove the fork(A) from the front strut assembly(B).



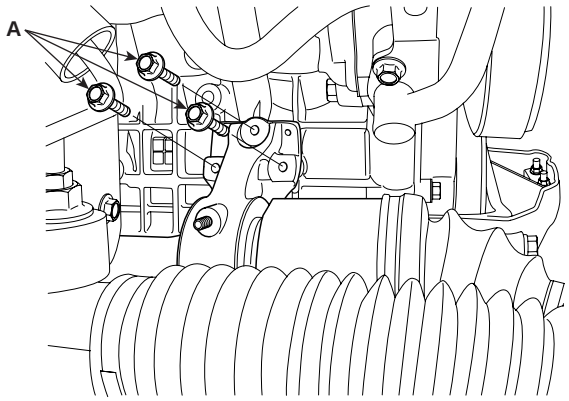
KHBF110D

d. Remove the inner shaft cover(A) from the innershaft bracket(B).



KIBF101L

e. Remove the inner shaft bracket mounting bolt(A).

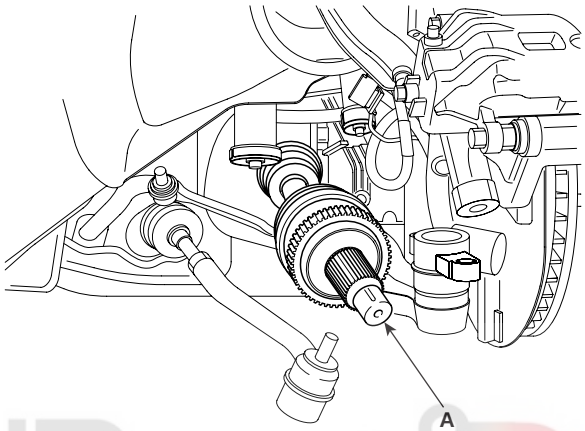


KIBF101M

f. Remove the front driveshaft assembly(A) with the inner shaft from the transaxle.

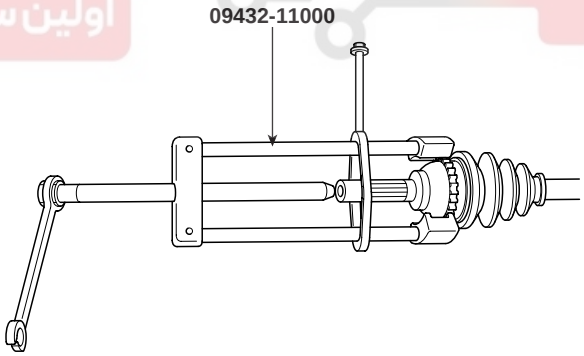
CAUTION

Do not try to disconnect the inner shaft from the driveshaft. Because they can not be disconnected once assembled.
Do not reuse the driveshaft which is disassembled from the innershaft.



KIBF101N

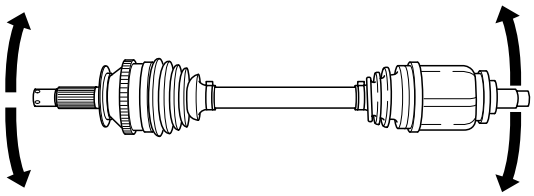
9. Using the special tool (09432-11000), remove the tone wheel.



EIRF002C

INSPECTION EF89BBCE

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.
4. Check the boots for damage and deterioration.



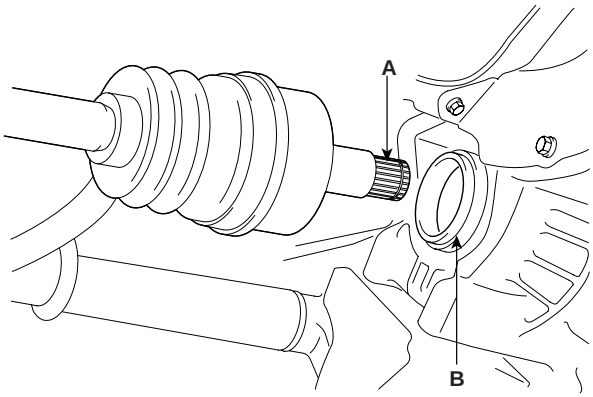
EIRF002D

INSTALLATION ED9000AF

⚠ ***CAUTION***

Replace the circlip with new ones after removal.

1. Apply gear oil on the drive shaft spliness(A) and the contacting surface of differential case oil seal(B).



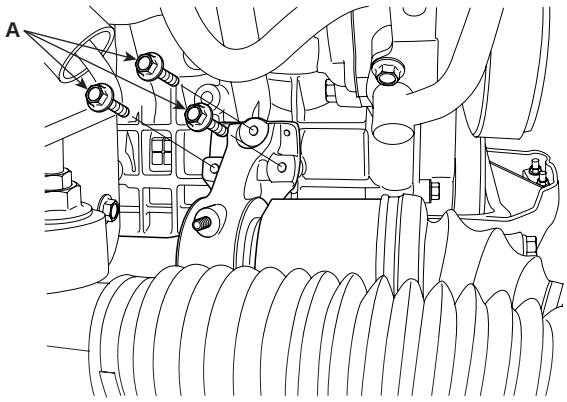
KIBF105A

2. After installation, check if the drive shaft can not be removed.

[RH]

a. Install the inner shaft bracket mounting bolt(A).

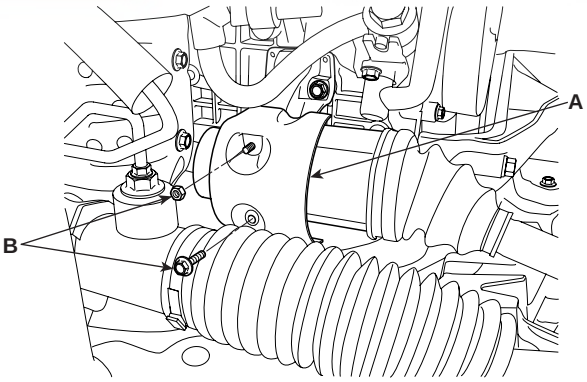
Tightening Torque Nm(kgf·m, lb-ft) :
50 ~ 65(5 ~ 6.5, 36 ~ 47)



KIBF101M

b. Install the inner shaft cover(A) by installing the cover mounting bolts(B).

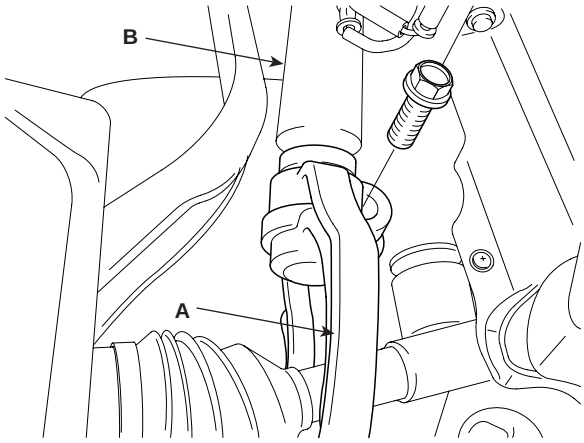
Tightening Torque Nm(kgf·m, lb-ft) :
9 ~ 14(0.9 ~ 1.4, 6.5 ~ 10)



KIBF101L

c. Install the front strut assembly(B) to the fork(A).

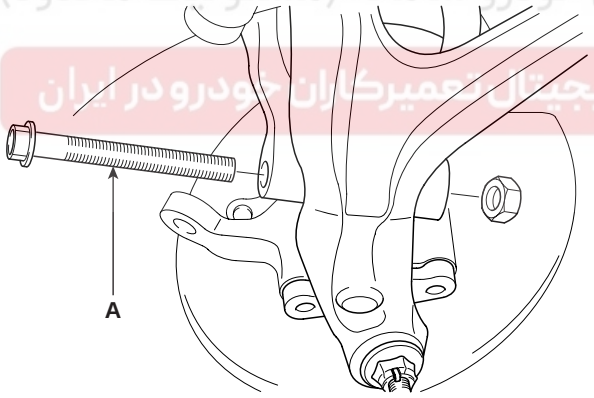
Tightening Torque Nm(kgf·m, lb-ft) :
60 ~ 80(6 ~ 8, 44 ~ 59)



KHBF110D

d. Install the connecting bolt(A) between the fork and the lower arm.

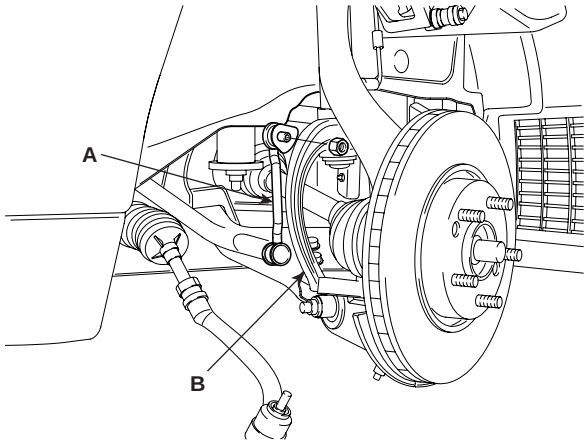
Tightening Torque Nm(kgf·m, lb-ft) :
140 ~ 160(14 ~ 16, 101 ~ 118)



KHBF140E

e. Install the stabilizer link(A) to the frok(B).

Tightening Torque Nm(kgf·m, lb-ft) :
100 ~ 120(10 ~ 12, 74 ~ 88)

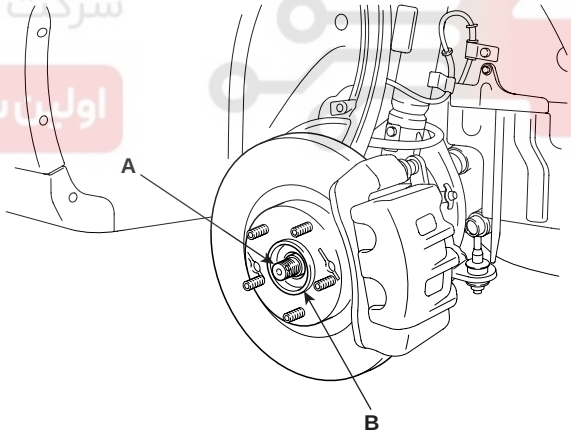


EIRF001F

3. Install the drive shaft into the knuckle.

CAUTION

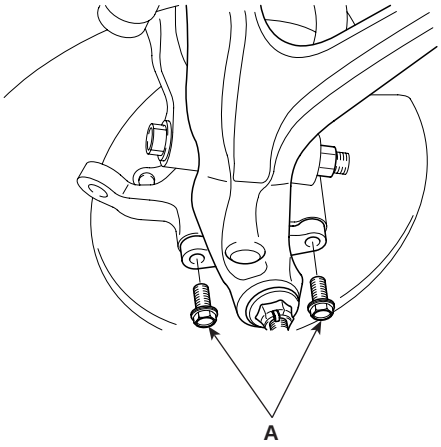
Be careful not to damage the boot.



KIBF105B

4. Install the knuckle in the lower arm assembly.

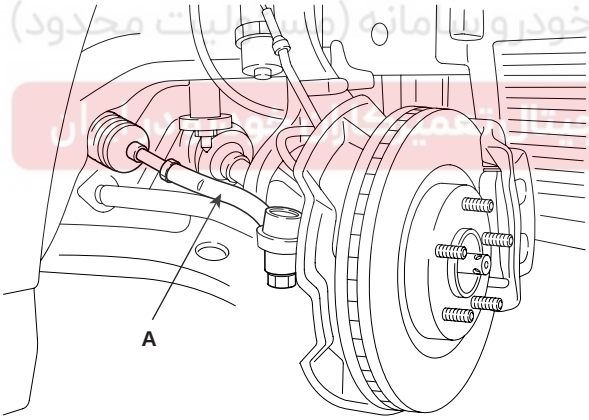
Tightening Torque Nm(kgf·m, lb-ft) :
100 ~ 120(10 ~ 12, 74 ~ 88)



KHBF140D

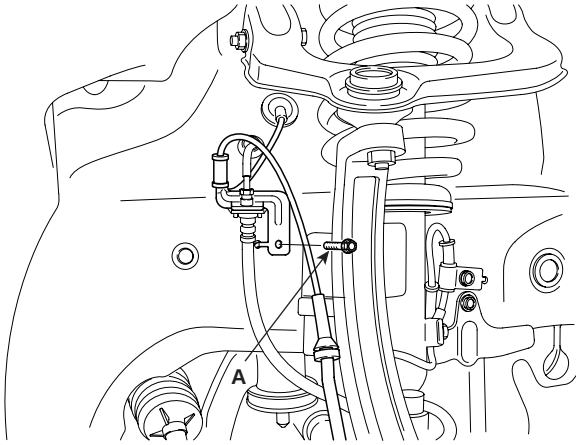
5. Install the tie rod end(A) in the knuckle.

Tightening Torque Nm(kgf·m, lb-ft) :
24 ~ 34(2.4 ~ 3.4, 18 ~ 25)



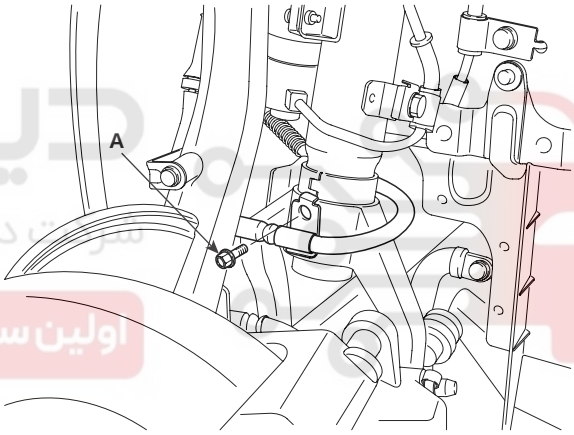
KIBF105C

6. Install the wheel speed sensor in the knuckle.



KIBF101F

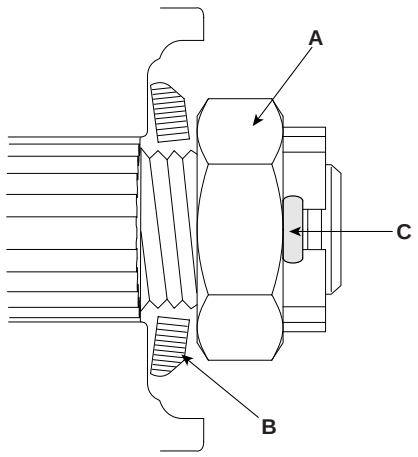
7. Install the brake hose bracket mounting bolt(A) to the front knuckle.



KIBF101E

8. After installing the washer(B) with convex surface outward, install the lock nut(A) and the spilt pin(C).

Tightening Torque Nm(kgf·m, lb-ft) :
200~280(20~28, 148~207)

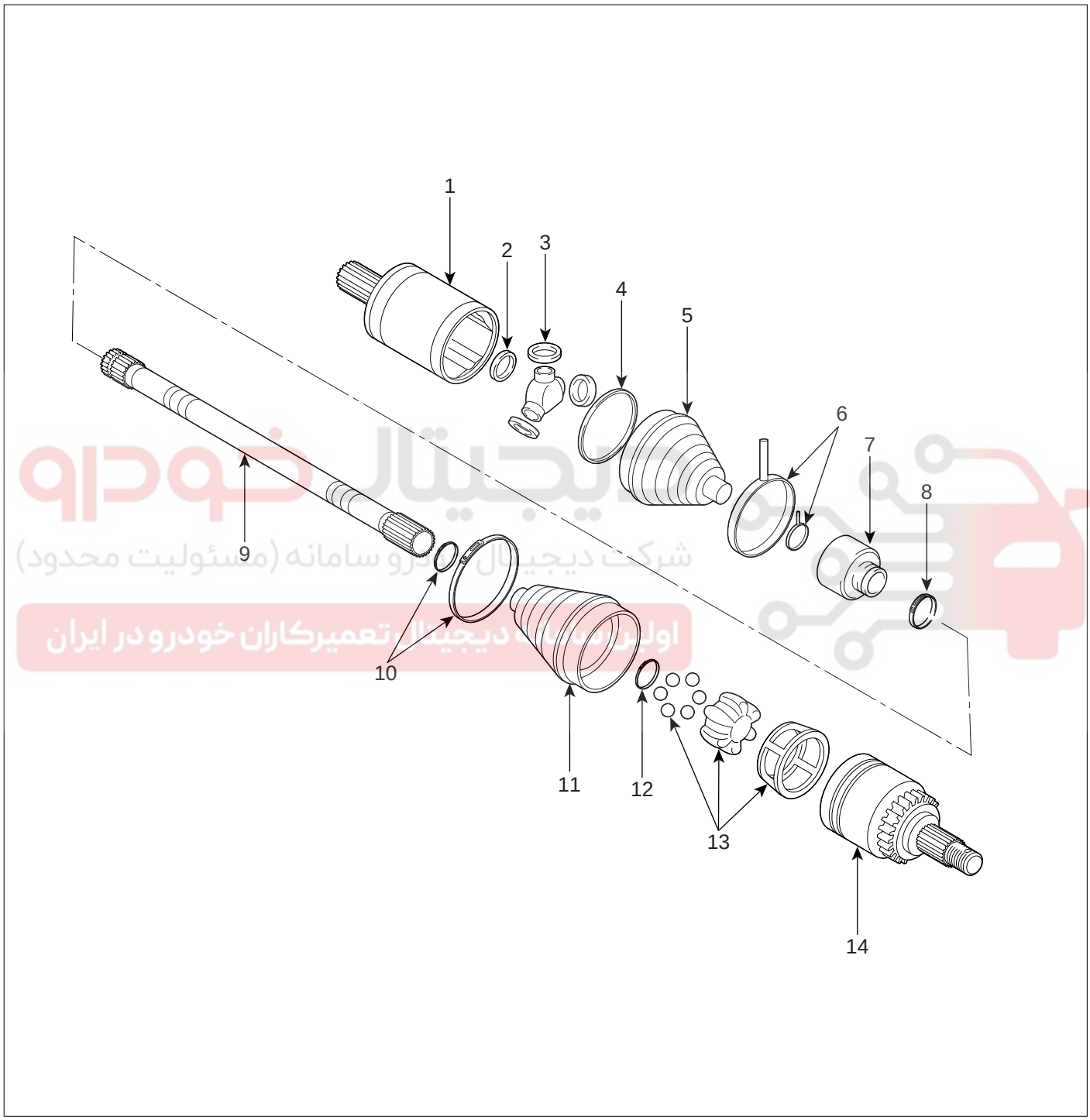


KIBF105D

9. Install the wheel and tire.

FRONT DRIVESHAFT (SFJ-BJ TYPE)

COMPONENTS ED007F4A



1. SFJ assembly
2. Snap ring
3. Spider assembly
4. Circle ring
5. SFJ boot
6. SFJ boot band
7. Dynamic damper
8. Dynamic damper bands
9. Driveshaft (RH)
10. BJ boot band
11. BJ boot
12. Snap ring
13. BJ inner race and ball
14. BJ assembly

EIBF500B

DISASSEMBLY E3A5C118

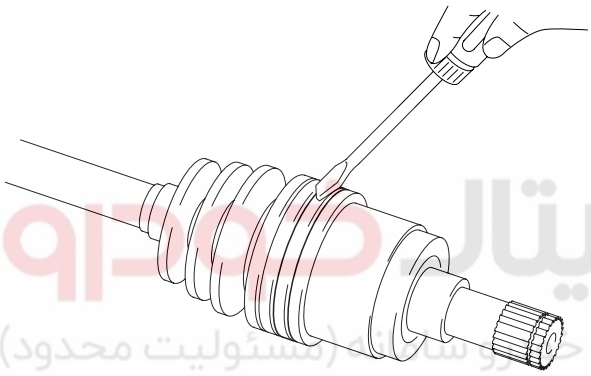
NOTE

- *Do not disassemble the BJ assembly.*
- *The Driveshaft joint uses special grease. Do not subtitute with another type of grease.*
- *The Boot band should be replaced with a new one.*

1. Remove the SFJ boot band and pull the boot from SFJ outer race.

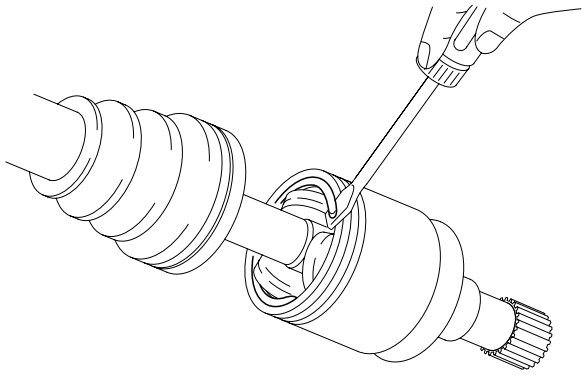
NOTE

Be careful not to damage it.



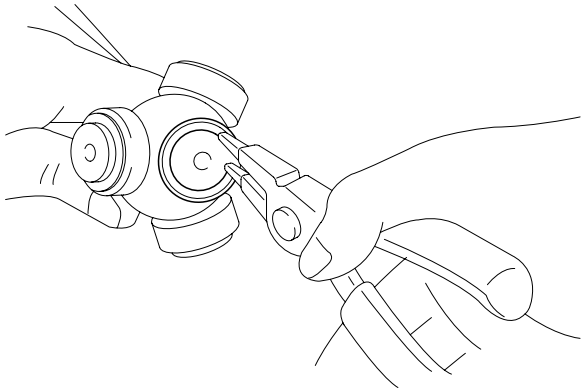
EIRF003B

2. Remove the circlip using a screwdriver.
(ASAN) KOREA



EIRF003C

3. Remove the driveshaft from SFJ outer race.



EIRF003D

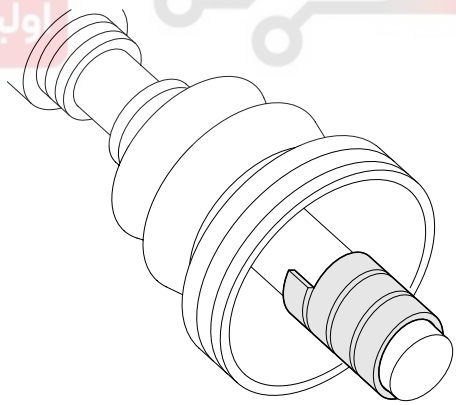
4. Remove the snap ring and disassemble the spider assembly from the shaft.

5. Clean the spider assembly.

6. Remove the BJ boot band and removal of the SFJ boot and the BJ boot.

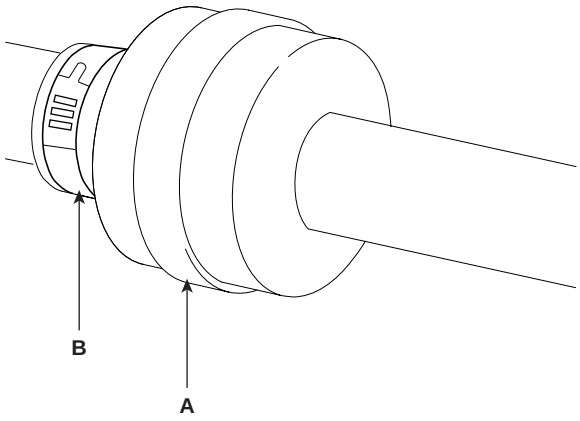
CAUTION

If the boot is reused, wrap a tape around the drive-shaft splines to protect the boot.



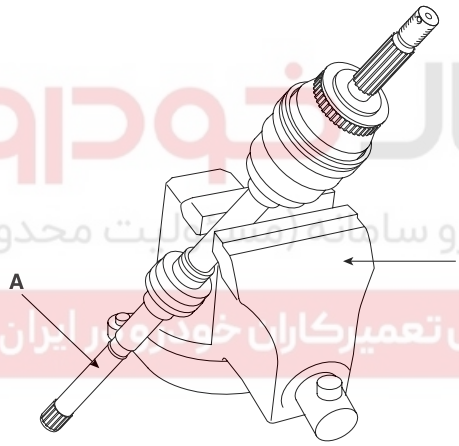
EIRF003K

7. Remove both side of bands(B, C) of the dunamic damper(A).



EIRF004C

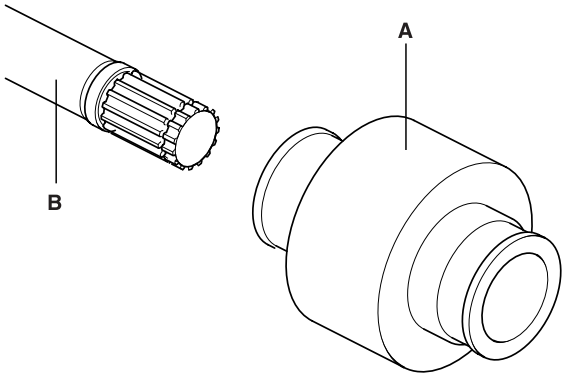
8. Fix the drive shaft(A) with a vice(B) as illustrated.



BIGE005I

9. Apply soapy water to the shaft to prevent being damaged between the shaft spline and the dynamic damper when the dynamic damper is removed.

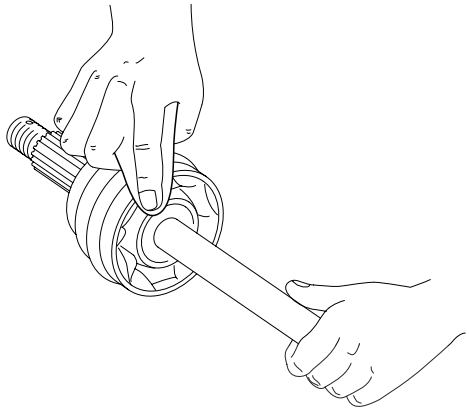
10. Separate dynamic damper(A) from the shaft(B) carefully.



AIGE004D

INSPECTION EFEA55C3

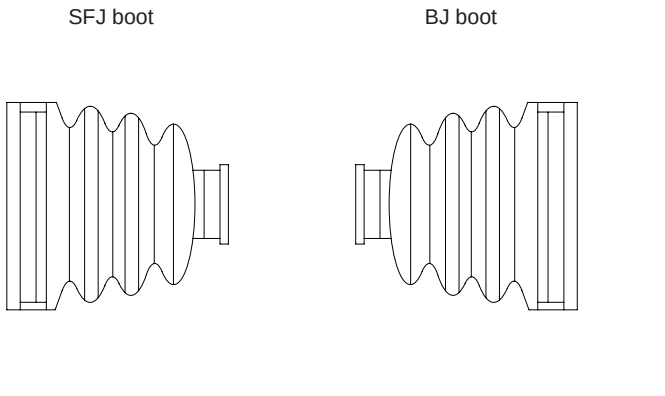
1. Check the driveshaft spline part for wear.
2. Check for entry of water and foreign material into boot.
3. Check the spider ring for revolution and wear.
4. Check the SFJ case inside wear and rust.



EIRF301M

REASSEMBLY E8BC00CB

1. Install the dynamic damper.
2. Wrap a tape around the driveshaft spline(SFJ side) to avoid boot damage.

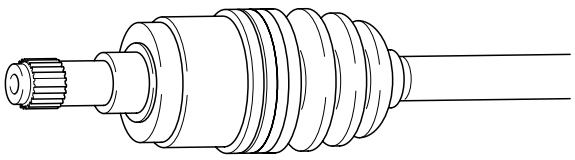


EIRF003F

3. Apply specified grease at the driveshaft and install the boot.(DS-3)
4. Add the specified grease in the amount wiped away at the of inspection.
5. Tighten the boot band.

CAUTION

Adjust the distance between boot bands within the specification range when tightening the boot band to adjust air in the boot.

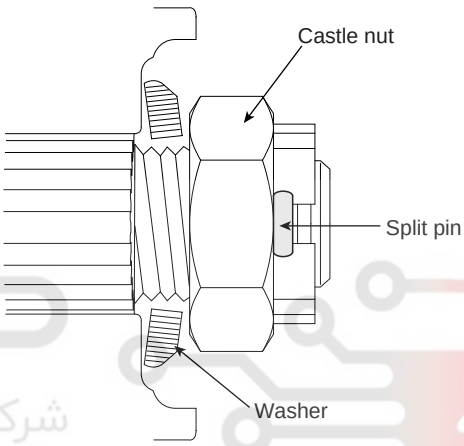


EIRF003E

INSTALLATION EBE50BBE

1. Tighten the components with the tightening torque.

Tightening Torque Nm(kgf·m, lb-ft) :
Driveshaft castle nut
200 ~ 280(20 ~ 28, 148 ~ 207)
Lower arm and ball joint
100 ~ 120(10 ~ 12, 74 ~ 88)
Shock absorber lower mounting bolts
140 ~ 160(14 ~ 16, 101 ~ 118)
Tie rod end and knuckle
24 ~ 34(2.4 ~ 3.4, 18 ~ 25)



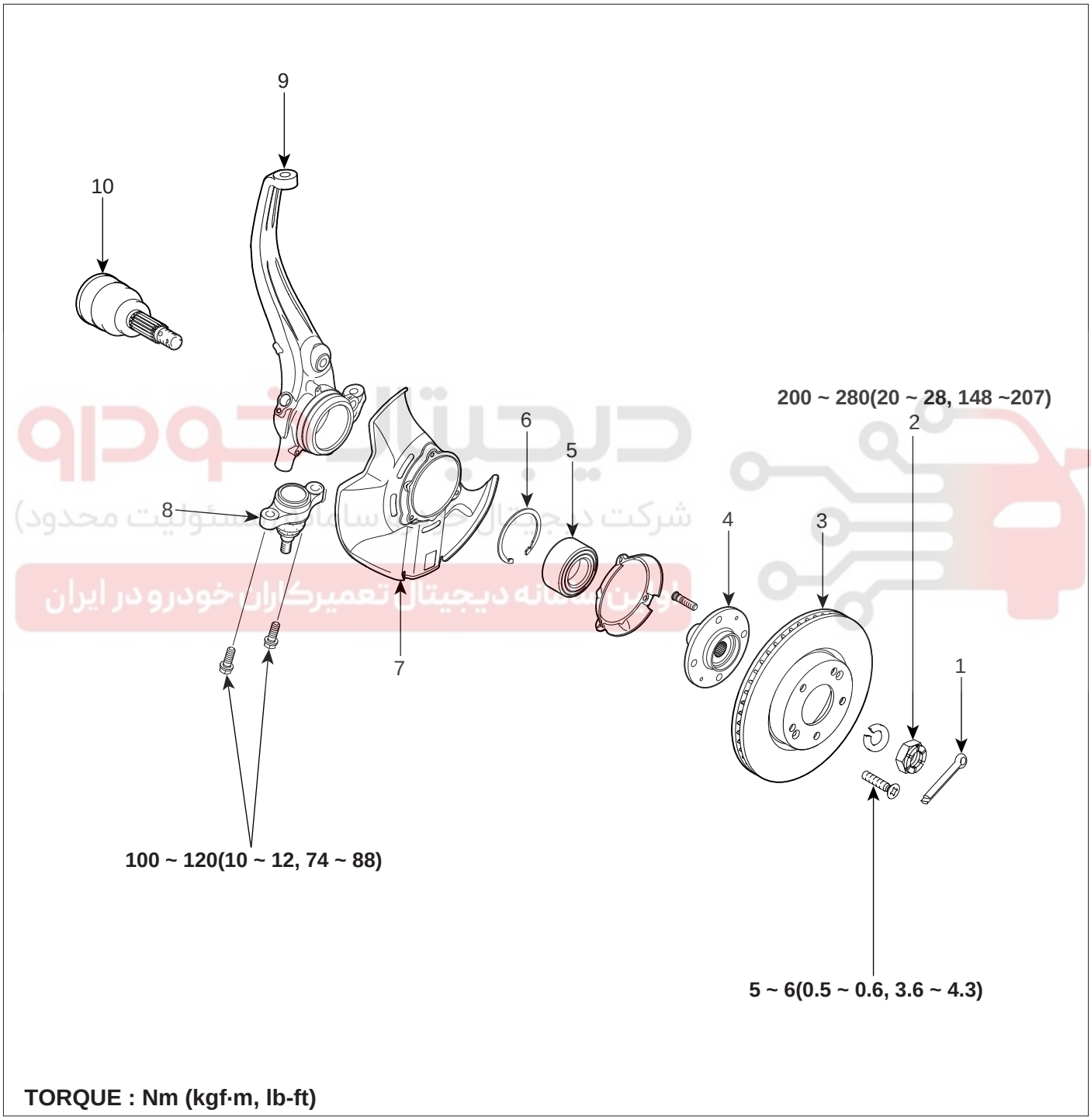
EIRF205A

2. Replace the retainer ring every time the driveshaft is removed from the transaxle case.
3. Install the washer on driveshaft and tighten the nut as illustrated.
4. Install the split pin.

FRONT AXLE

FRONT HUB / KNUCKLE

COMPONENTS EBDDEEF6

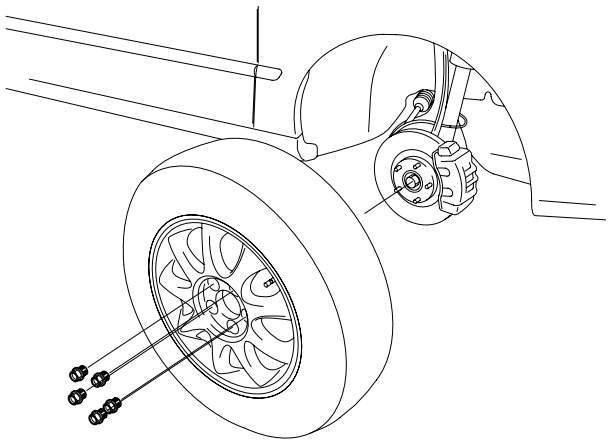


1. Split pin
2. Driveshaft nut
3. Brake disc
4. Hub
5. Wheel bearing
6. Snap ring
7. Dust cover
8. Lower arm ball joint
9. Knuckle
10. Driveshaft

EIBF500C

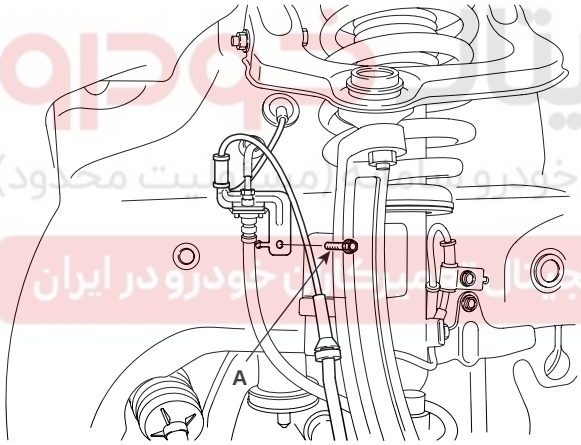
REMOVAL EB2B6418

1. Remove the wheel and tire.



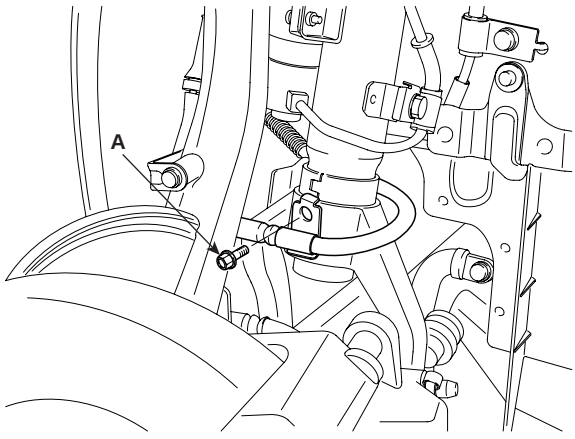
KIBF101A

2. Disconnect the wheel speed sensor(A) from the knuckle.



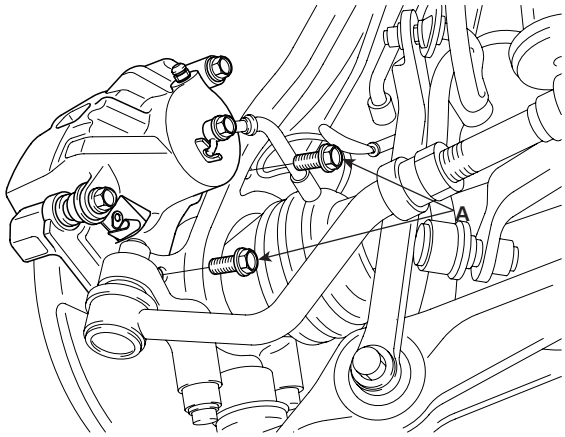
KIBF101F

3. Disconnect the brake hose(A) from the knuckle.

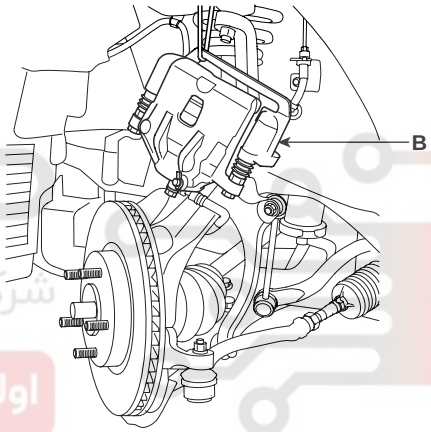


KIBF101E

4. Remove the caliper assembly(B) and suspend it with wire.

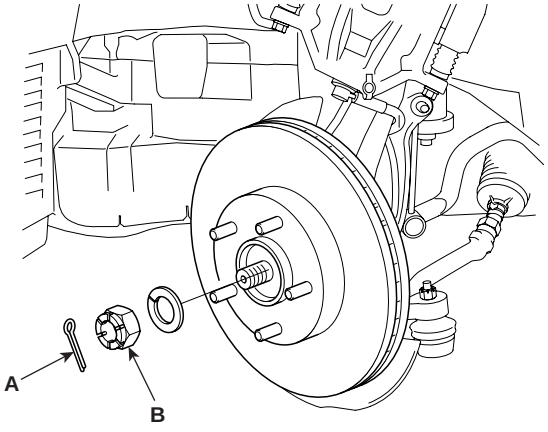


KIBF311A



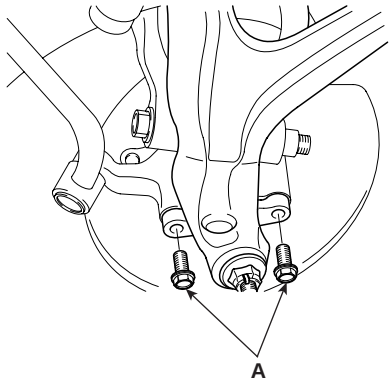
KIBF301A

5. Remove the split pin(A) and driveshaft castle nut(B) from the front hub.



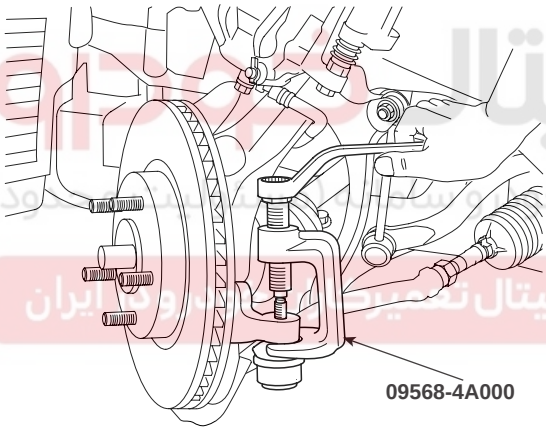
KIBF301B

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



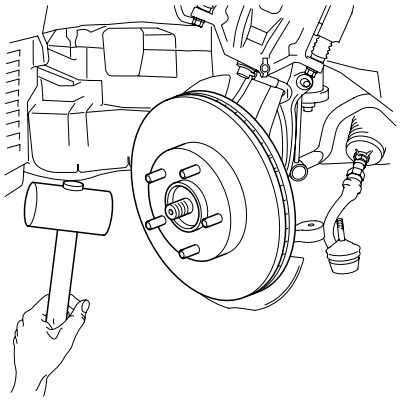
KHBF120A

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



KIBF301E

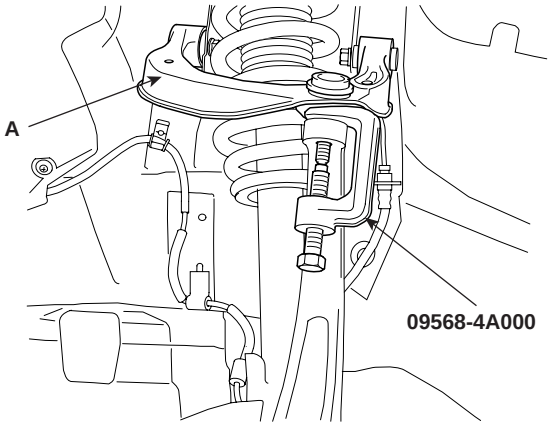
8. Using a plastic hammer, disconnect the driveshaft from the axle hub.



EIRF001O

9. Loosen the upper arm mounting nut but do not remove it.

10. Using the special tool (09568-4A000), disconnect the upper arm(A) from the knuckle.



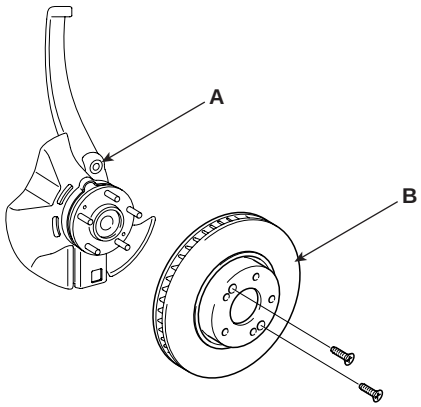
KIBF301F

11. Remove the front axle and knuckle together.

12. Installation is the reverse of removal.

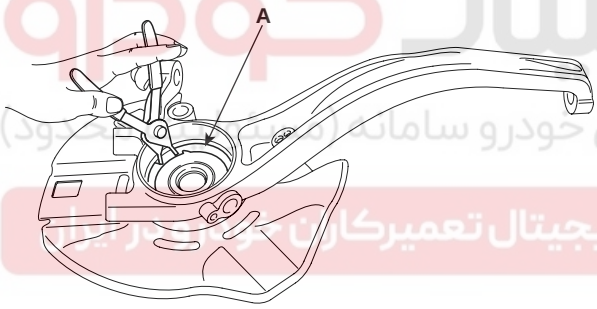
DISASSEMBLY E1406F70

1. Remove the brake disc(B) from the hub(A).



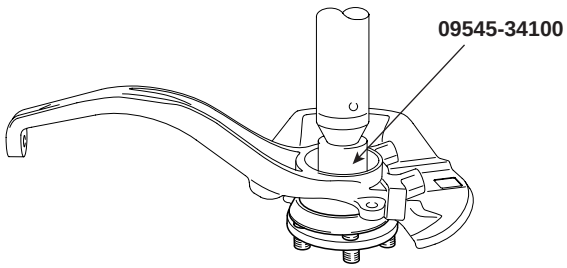
KIBF311B

2. Remove the snap ring(A).



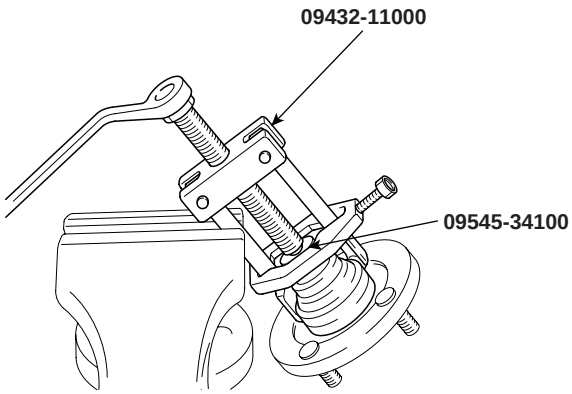
KIBF302A

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



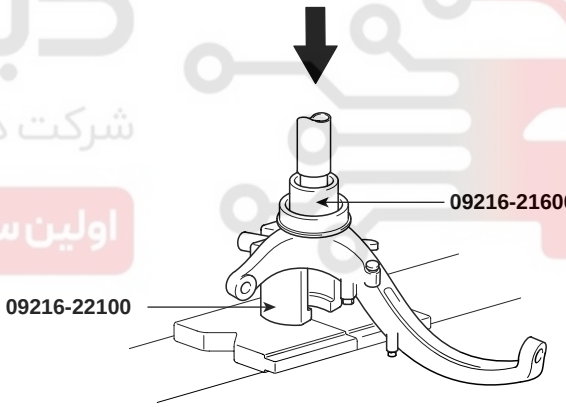
KIBF302B

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



EIRF002F

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



EIRF002G

INSPECTION E517B8C4

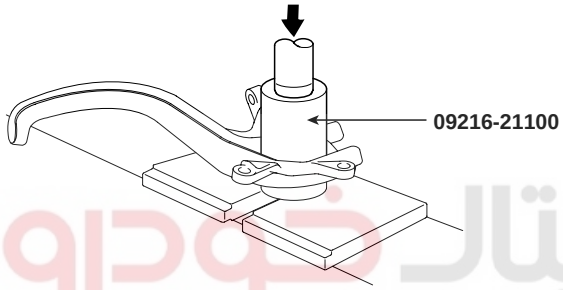
1. Check the hub for cracks and splines for wear.
2. Check the oil seal for cracks or damage.
3. Check the brake disc for scoring or damage.
4. Check the knuckle for cracks.
5. Check the bearing for cracks or damage

REASSEMBLY E51F1572

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.

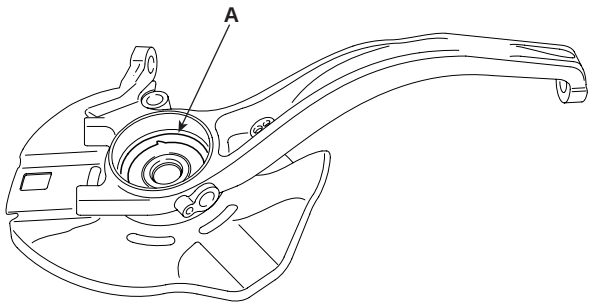
NOTE

- *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.

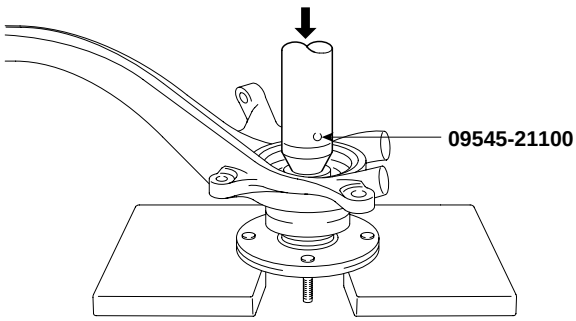


EIBF500E

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

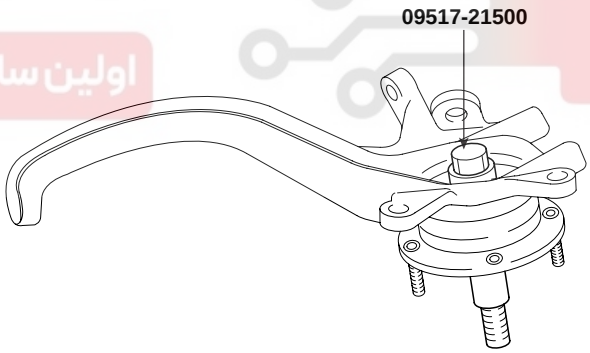
NOTE

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 lb-ft) with the special tool (09517-21500).

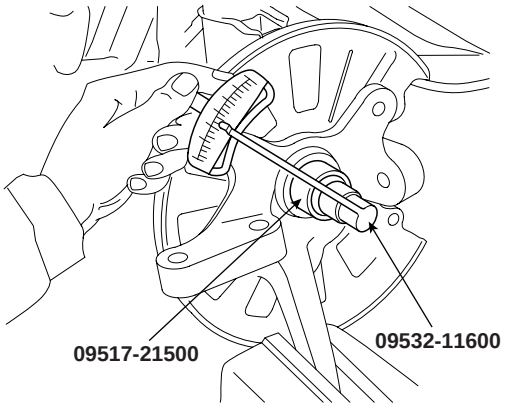


EIRF404C

6. Rotate the hub to seat the bearing.

7. Measure the wheel bearing starting torque.

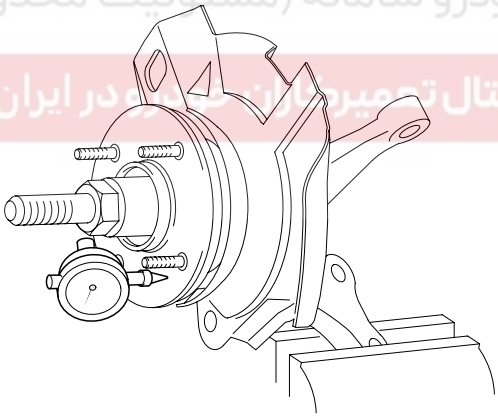
Standard value
Starting torque : 1.8 Nm (0.18 kgf·m, 16 lb-ft) or less



EIRF404D

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

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



EIRF404E

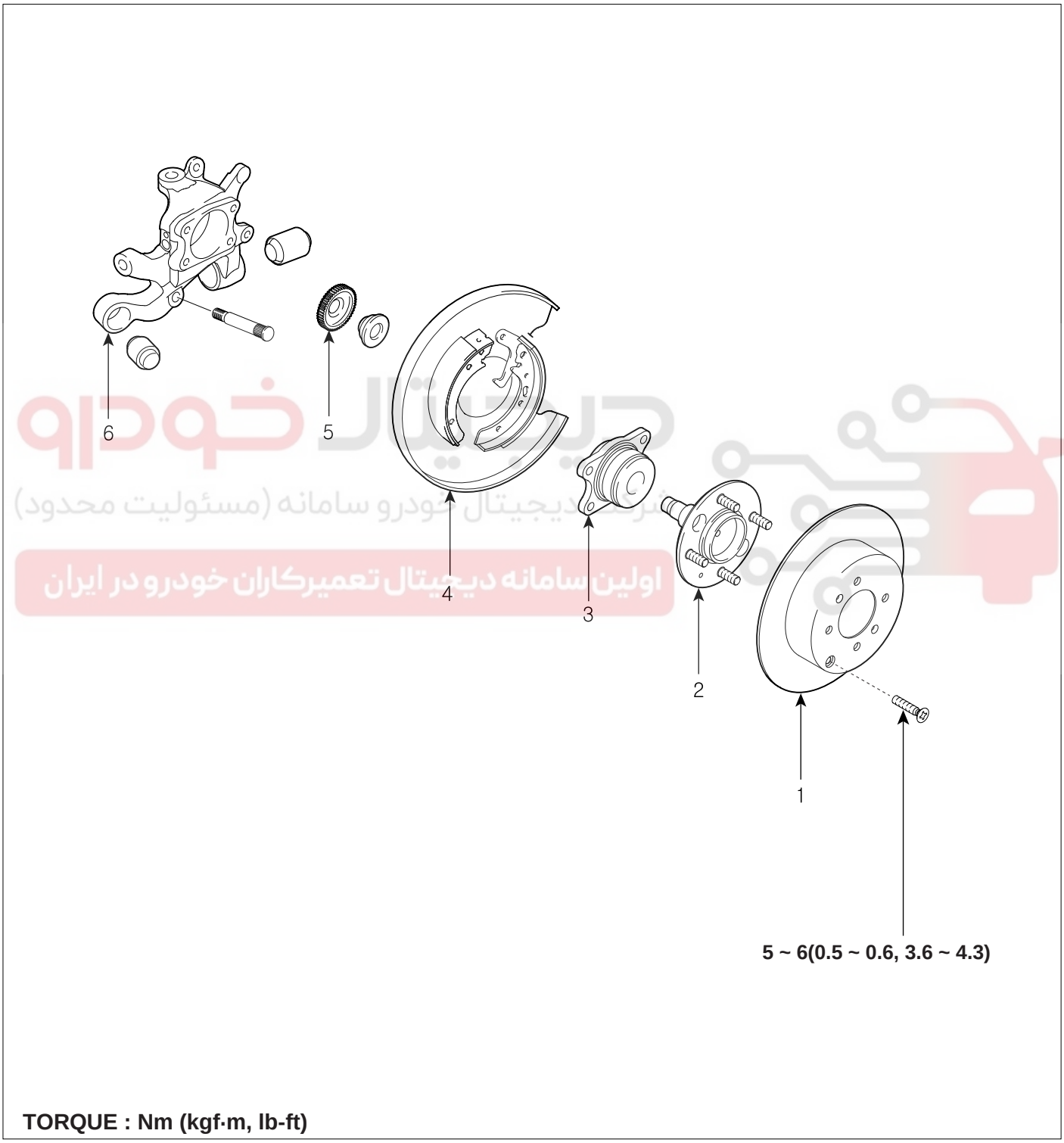
9. Remove the special tool.

10. Install the disc to the hub.

REAR AXLE

REAR HUB / AXLE

COMPONENTS EA062CC6

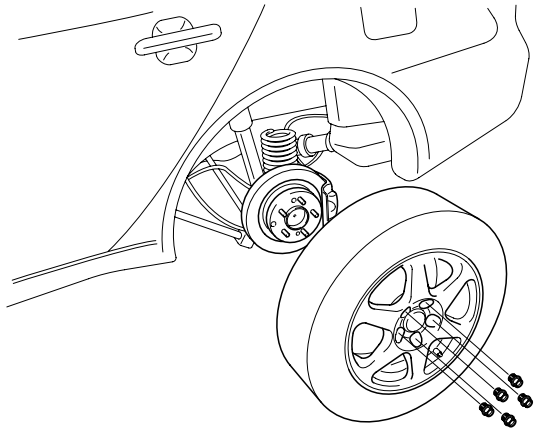


1. Brake disc
2. Hub
3. Hub bearing assembly
4. Brake assembly
5. Tone wheel (ABS System)
6. Carrier assembly

EIBF500D

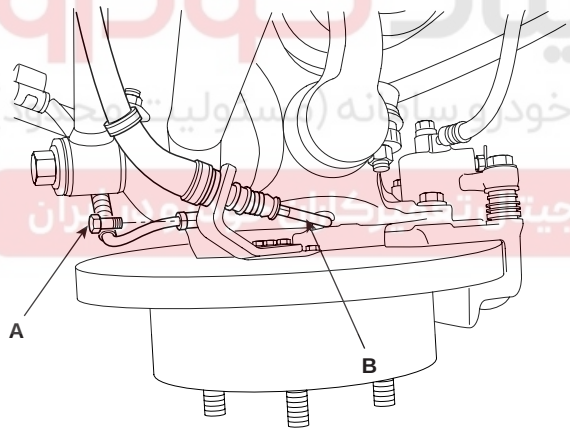
REMOVAL E4C26950

1. Release the parking brake.
2. Remove the wheel and tire.



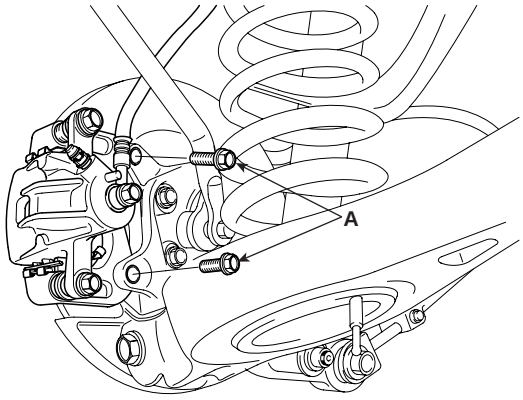
EIRF001L

3. Remove the ABS sensor(A) from the carrier.

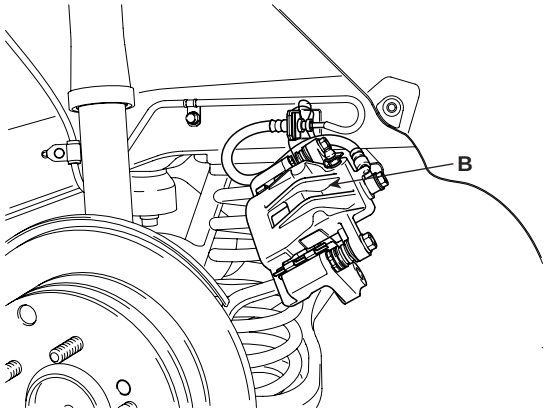


KIBF220A

4. Remove the caliper assembly(B) from the carrier and suspend it with wire.

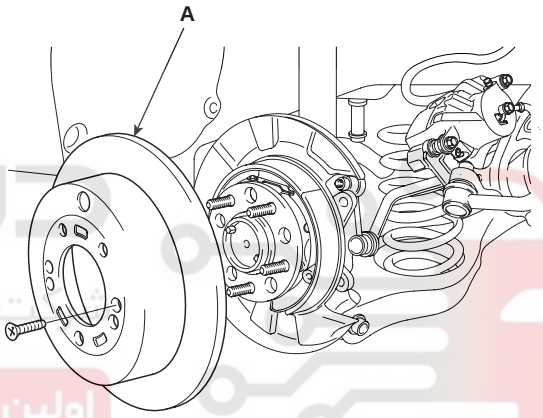


KHBF220F



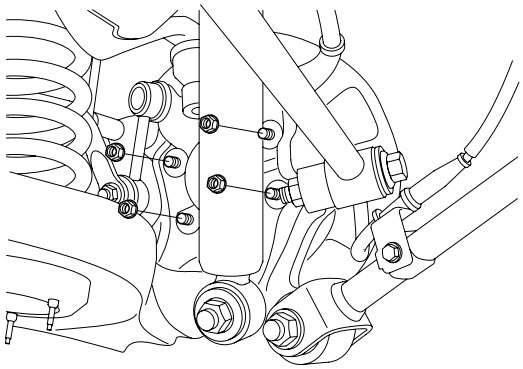
KHBF220G

5. Remove the brake disc(A).

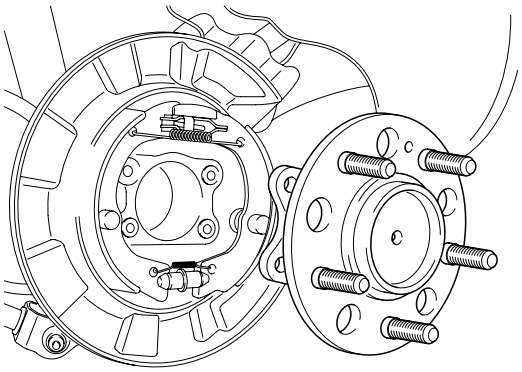


KIBF401K

6. Remove the rear axle hub mounting bolts (4).

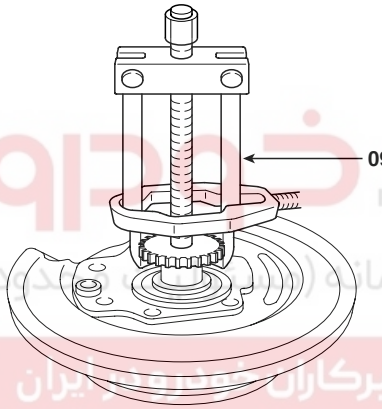


KIRE501A



KIBF401G

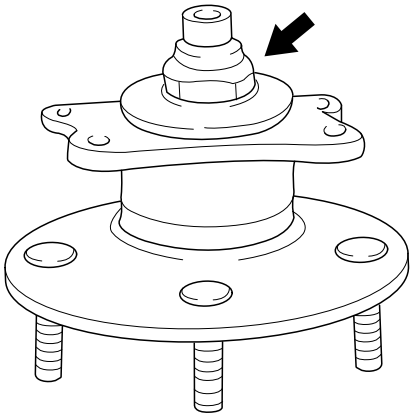
7. Using the special tool (09432-11000), remove the tone wheel.



EIRF501B

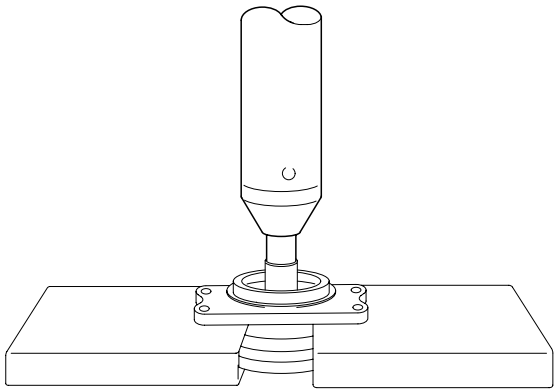
8. Remove the carrier assembly.

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



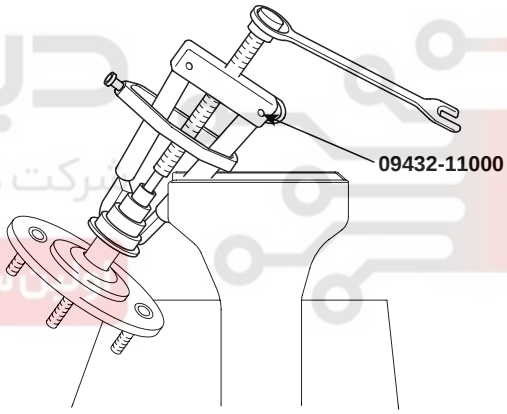
EIRF501C

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



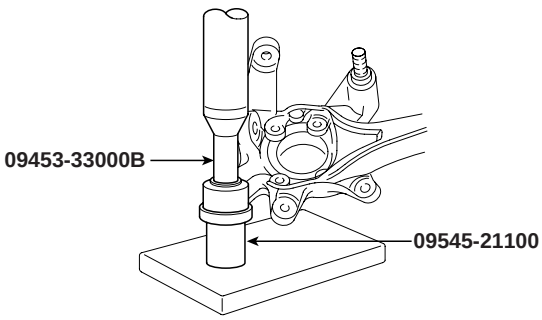
EIRF501D

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



EIRF501E

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



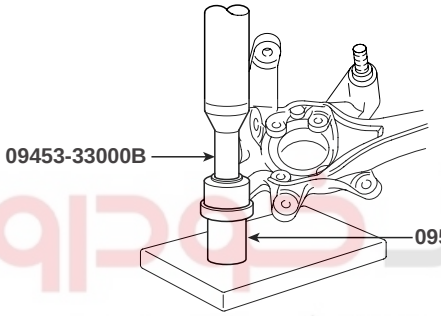
EIRF501F

INSPECTION EB13FF30

1. Check the rear hub bearing for wear or damage.
2. Check the rear tone wheel for chipped teeth.
3. Check the hub inner surface for scoring.
4. Check the carrier for crack.

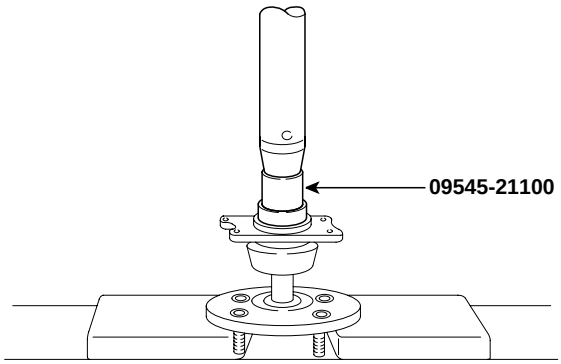
REASSEMBLY E05EC7F9

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



EIRF501F

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

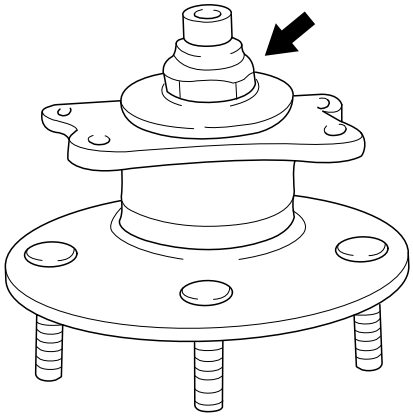


EIRF504C

NOTE

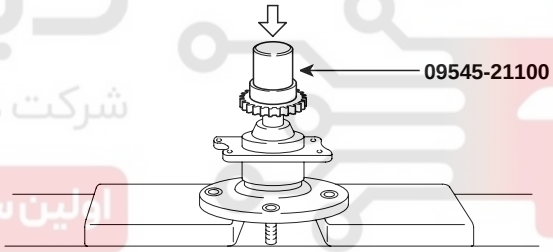
- *Do not press against the outer race of the bearing because that can cause the damage to the bearing assembly.*
- *Always use a new bearing assembly.*

4. After tightening the flange nut, stake the nut to meet the concave portion of the spindle.



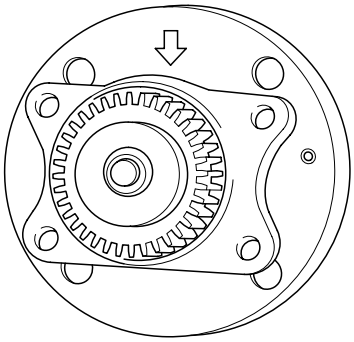
EIRF501C

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



EIRF504D

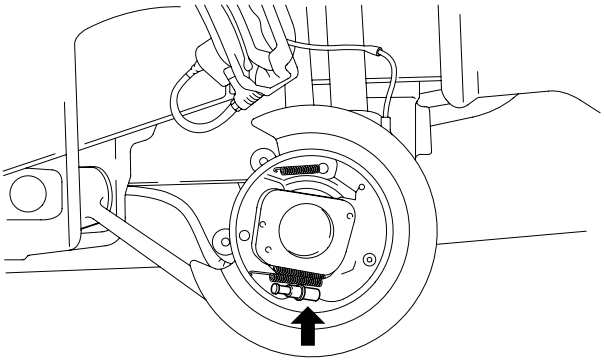
6. Fix the hub and bearing assembly to the brake backing plate so that the rounded area of the bearing outer race is placed facing upward.



EIRF002I

NOTE

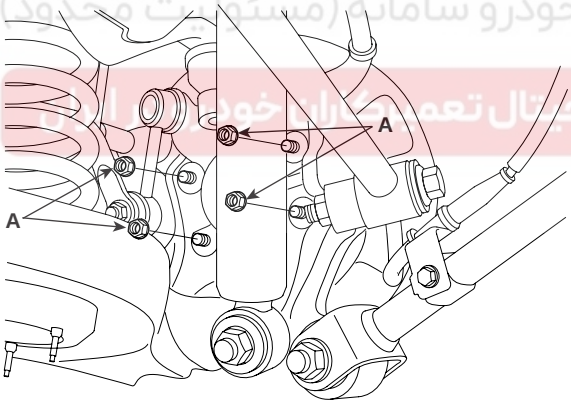
If it is difficult to fix, adjust the parking brake adjusting nut in clockwise direction to enlarge the space between the shoe and lining assembly.



EIRF504F

7. Tighten the 4 bolts to the specified torque.

Tightening Torque Nm(kgf·m, lb-ft) :
60 ~ 70(6 ~ 7, 44 ~ 52)

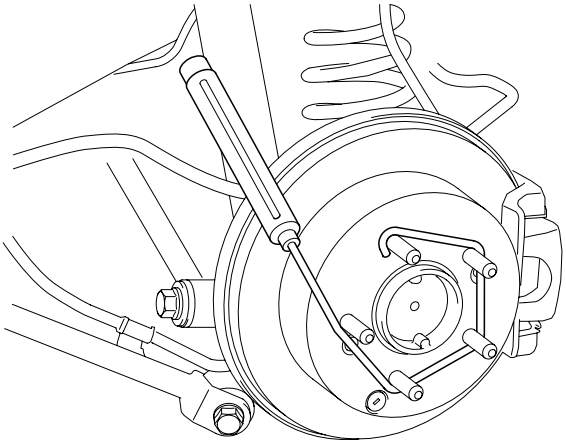


KIBF401A

8. Rotate the hub to seat the bearing.

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

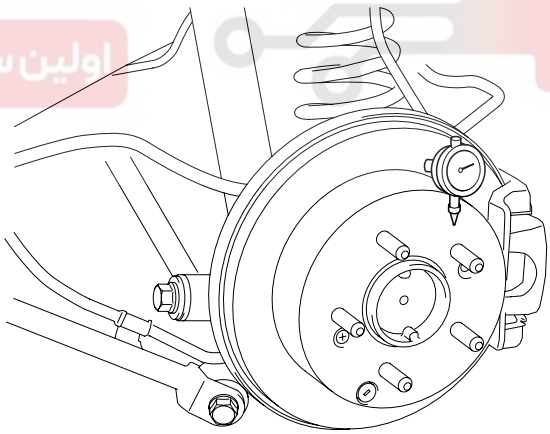
Standard value
Starting torque : 1.76 Nm (0.18 kgf·m, 15.6 lb-in) or less



KIRE504A

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

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



KIRE504B