

DS-2

Driveshaft and axle

General Information

Specifications

Driveshaft					
Engine	T/M	Joint type		Max. permissible angle	
		Outer	Inner	Outer	Inner
2.0 MPI	M/T	BJ#24	UTJ-II#24	46.5°	23°
	A/T				
2.4 MPI	M/T				
	A/T				
2.7 MPI	A/T	BJ#25	UTJ-II#25		
Front wheel bearing					
Bearing type		Double row angular contact ball bearing			
Starting torque		1.8 Nm (18 kgf.cm, 1.31 lb-ft) or below			
Rear hub & bearing assembly					
Bearing type		Double row angular contact ball bearing			
Starting torque		1.5 Nm (15 kgf.cm, 1.09 lb-ft) or below			

NOTICE

Inner: On transaxle side

Outer: On tire side

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

General Information

DS-3

Tightening Torque

Items	Nm	Kgf.m	lb-ft
Hub nut	90 ~ 110	9.0 ~ 11.0	65 ~ 80
Driveshaft nut (Castle nut)	200 ~ 280	20.0 ~ 28.0	145 ~ 203
Lower arm ball joint assembly to knuckle bolts	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Inner shaft bearing bracket	50 ~ 65	5.0 ~ 6.5	36 ~ 47
Wheel speed sensor bolt	7 ~ 10	0.7 ~ 1.0	5 ~ 7
Front caliper assembly to knuckle bolts	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Tie rod end castle nut	24 ~ 34	2.4 ~ 3.4	17 ~ 25
Front strut assembly to knuckle bolts	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Rear lower arm to carrier assembly bolts	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Rear lower arm to cross member	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Rear upper arm to carrier assembly bolts	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Rear caliper assembly to carrier assembly bolts	50 ~ 60	5.0 ~ 6.0	36 ~ 43
Rear strut assembly to carrier assembly bolts	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Assist arm to carrier assembly bolts	45 ~ 55	4.5 ~ 5.5	33 ~ 40
Trailing arm to carrier assembly bolts	45 ~ 55	4.5 ~ 5.5	33 ~ 40
Carrier assembly to rear hub assembly bolts	70 ~ 90	7.0 ~ 9.0	51 ~ 65

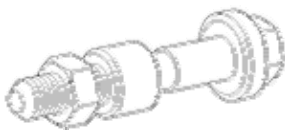
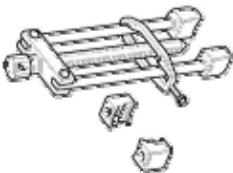
Lubricant

Joint type	Recommended grease	Quantity
BJ#24	RBA	130 g
BJ#25	RBA	160 g
UTJ-II#24	CW-13TJ	160 g
UTJ-II#25	CW-13TJ	200 g

DS-4

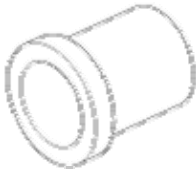
Driveshaft and axle

Special Tools

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

General Information

DS-5

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)
09216-21100 Mount bushing remover and installation base	 EIRF002B	Removal of the wheel bearing outer race (Use with 09216-21600)
09495-3K000 Band installer	 KINF500C	Installation of ear type boot band

DS-6

Driveshaft and axle

Tool (Number and Name)	Illustration	Use
09495-39100 Band installer	 AILG650A	Installation of hook type boot band

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



General Information

DS-7

Troubleshooting

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

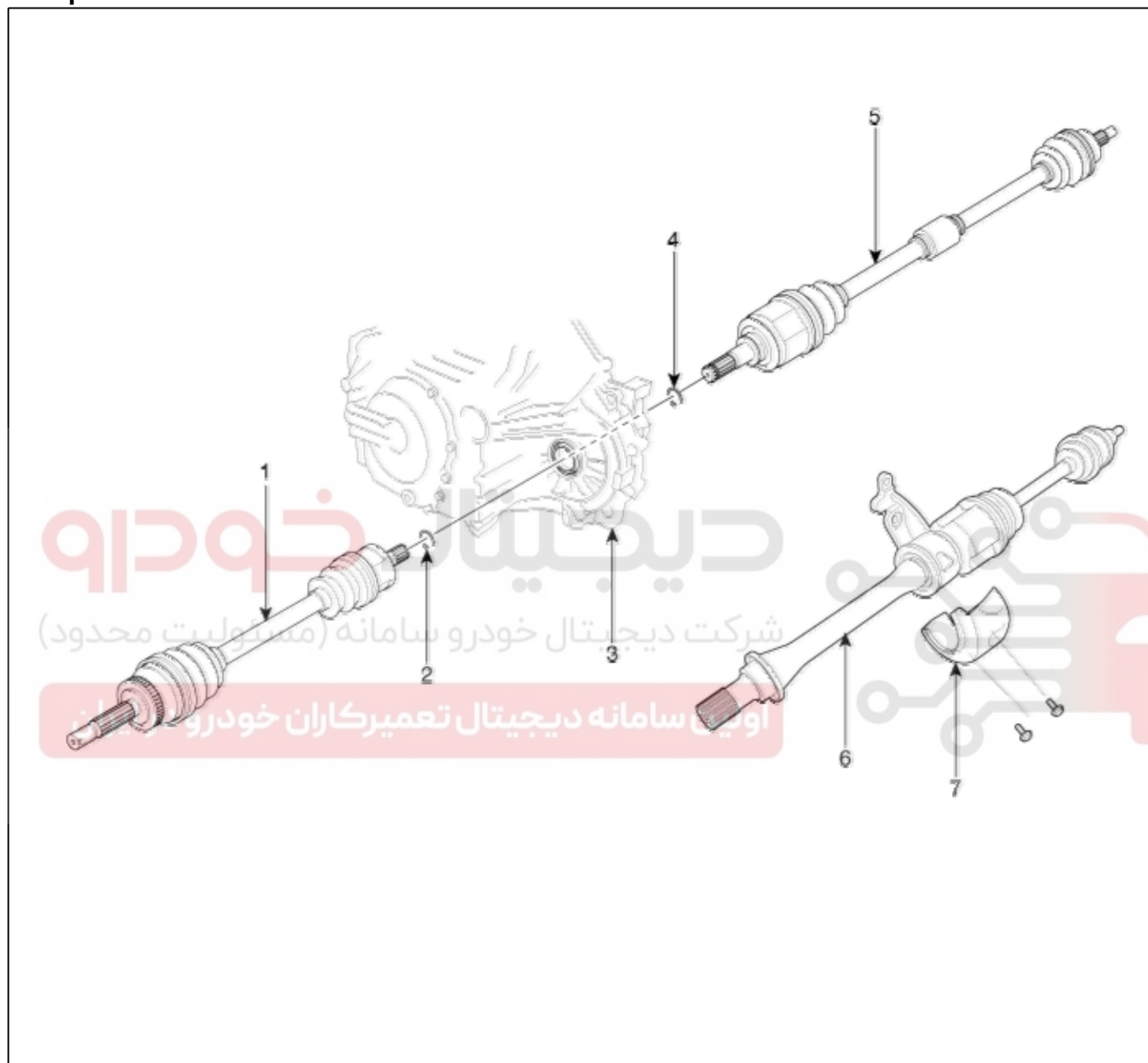
DS-8

Driveshaft and axle

Driveshaft Assembly

Front Driveshaft

Components



SMGDS9001L

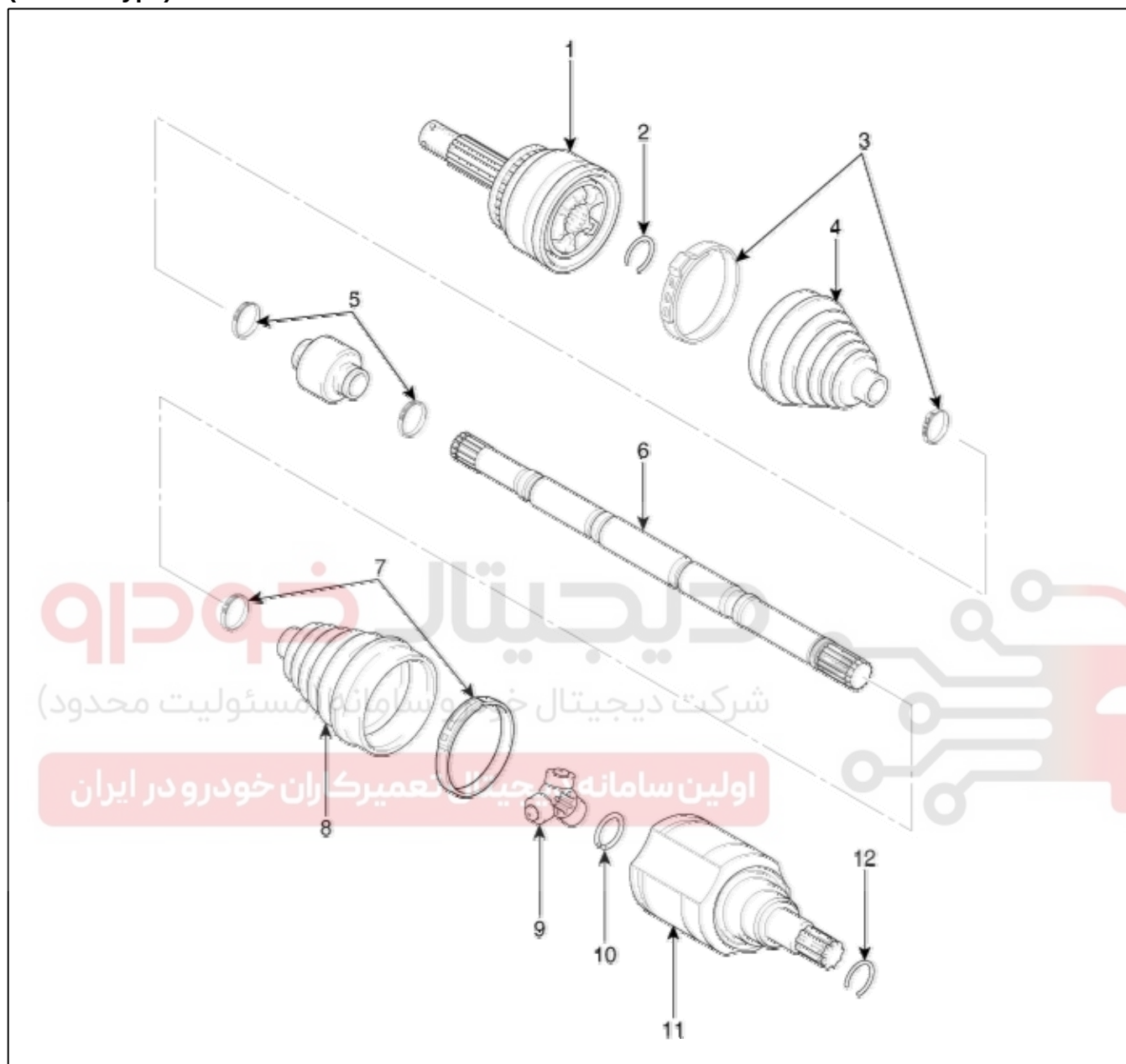
1. Driveshaft (LH)
2. Circlip
3. Transaxle
4. Circlip

5. Driveshaft (RH)
6. Driveshaft (2.7L RH)
7. Heat protector

Driveshaft Assembly

DS-9

Components
(UTJ-TJ Type)



SMGDS9002L

- | | |
|-------------------------|--------------------|
| 1. BJ assembly | 7. UTJ boot bands |
| 2. Circlip | 8. UTJ boot |
| 3. BJ boot bands | 9. Spider assembly |
| 4. BJ boot | 10. Circlip |
| 5. Dynamic damper bands | 11. UTJ case |
| 6. Shaft | 12. Clip |

DS-10

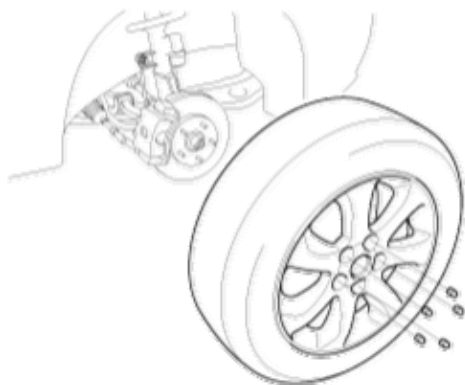
Driveshaft and axle

Removal

1. Raise the vehicle and remove the front wheel.

Tightening torque Nm (kgf.m, lb-ft):

90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)



AILG001A

2. Remove the split pin (A), castle nut (B) and washer from the front hub assembly.

Tightening torque Nm (kgf.m, lb-ft):

200 ~ 280 (20 ~ 28, 145 ~ 203)

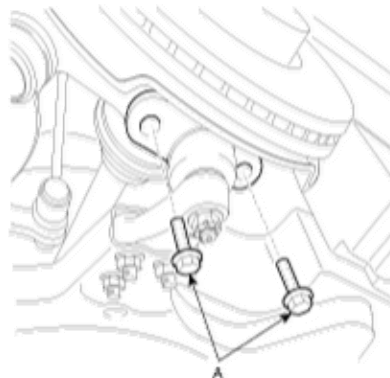


AILG002A

3. Remove the ball joint assembly mounting bolt (A) from the knuckle.

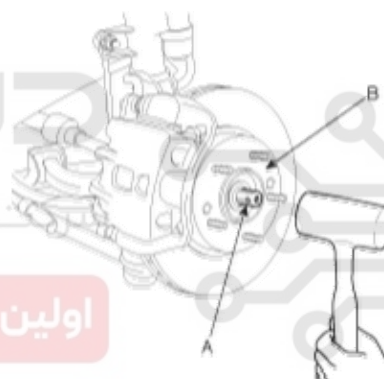
Tightening torque Nm (kgf.m, lb-ft):

100 ~ 120 (10 ~ 12, 72 ~ 86)



AILG005A

4. Using a plastic hammer, disconnect driveshaft (A) from the front hub assembly (B).



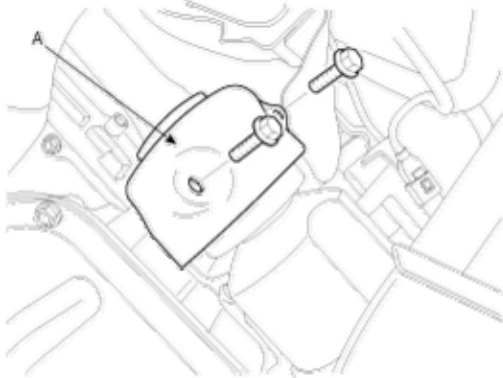
AILG006A

Driveshaft Assembly

DS-11

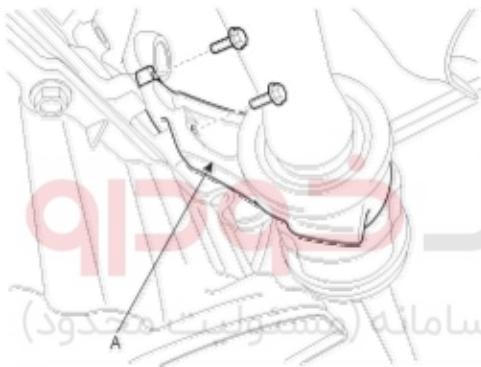
5. [2.7 MPI RH driveshaft only]

- a. Remove the heat protector (A).



LILG500B

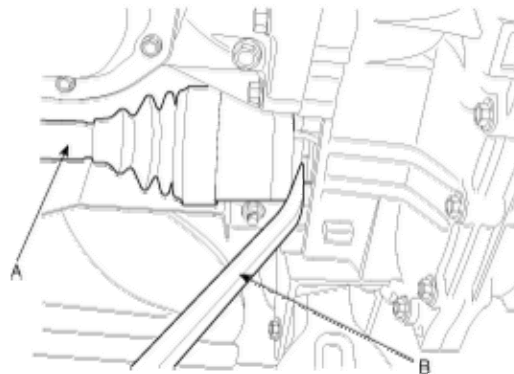
- b. Remove the bearing & bracket assembly (A).



LILG500C

6. Push the front hub assembly outward and separate the driveshaft from the hub assembly.

7. Insert a pry bar (B) between the transaxle case and joint, separate the driveshaft (A) from the transaxle assembly.



AILG007A

⚠ CAUTION

- Use a pry bar being careful not to damage the transaxle and joint.
- Do not insert a pry bar too deep, as this may cause damage to the oil seal.
- Do not pry on the driveshaft by excessive force it may cause components inside the joint kit to dislodge resulting in a torn boot or a damaged bearing.

8. Pull out the driveshaft from the transaxle case.

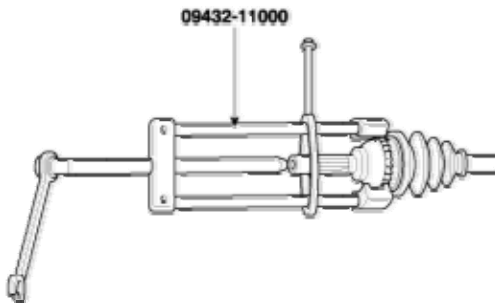
⚠ CAUTION

- Plug the hole of the transaxle case with the oil seal cap to prevent contamination.
- Support the drive shaft properly.
- Replace the retainer ring whenever the driveshaft is removed from the transaxle case.

DS-12

Driveshaft and axle

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

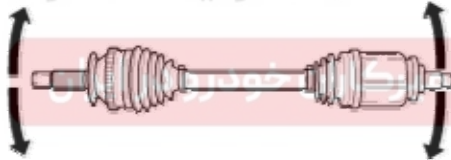


EIRF002C

10. Repeat on the other side of driveshaft.

Inspection

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.



EIRF002D

Inspection

(UTJ-TJ Type)

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 UTJ case for wear or corrosion.
5. Check the dynamic damper for damage or cracks.



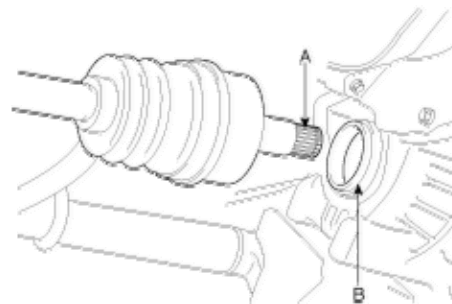
EIKD025B

Installation

1. Installation is the reverse of removal.

⚠ CAUTION

- Replace the circlip with new ones before the installation.
- Before the installation, apply the gear oil on the driveshaft splines (A) and contacting surface (B) of differential case oil seal.



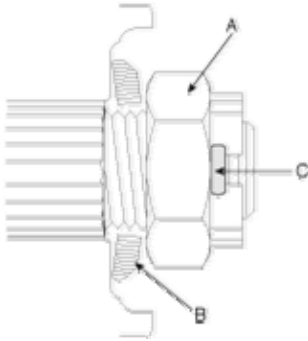
KIBF105A

Driveshaft Assembly

DS-13

CAUTION

- Be sure to install both sides of the driveshaft.
- The washer (B) should be assembled with convex surface outward when installing the castle (A) nut and split pin (C).

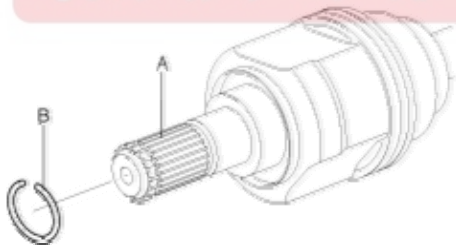


KIBF105D

Disassembly

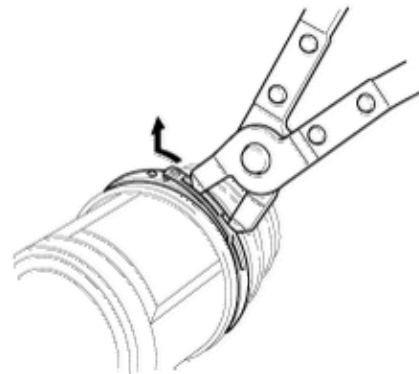
NOTICE

- Do not disassemble the BJ assembly.
 - Special grease must be applied to the drive shaft joint. Do not substitute with another type of grease.
 - The boot band should be replaced with a new one.
1. Remove the clip (B) from driveshaft splines (A) of the transaxle side.



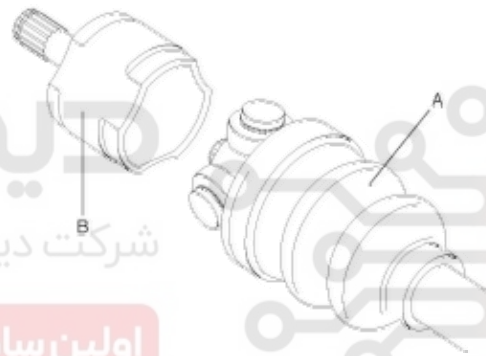
KXDDE07A

2. Remove both boot bands from the transaxle side UTJ case.



AIGE004A

3. Pull out the boot from the transaxle side joint(UTJ).
4. When separating the joint and boot (A), remove the grease from the UTJ case (B).



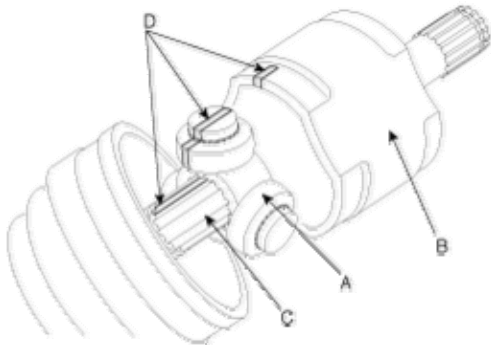
AIGE004B

DS-14

Driveshaft and axle

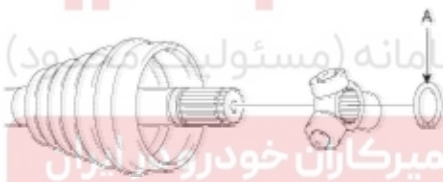
CAUTION

- Be careful not to damage the boot.
- According to illustration below, put alignment marks across spider roller assembly (A), UTJ case (B), shaft splines (C) to aid in reassembly.



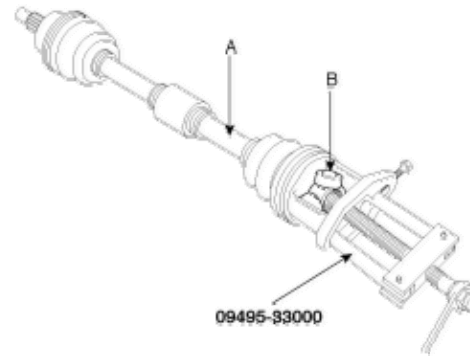
B1GE005D

5. Using a plier or flat-tipped (-) screwdriver, remove the snap ring (A).



B1GE005E

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

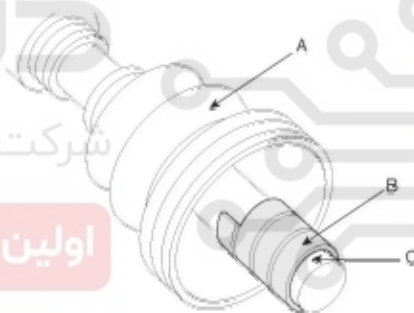


B1GE005F

7. Clean the spider assembly.
8. Remove the boot (A), of the transaxle side joint(UTJ).

CAUTION

Wrap tape (B) around the driveshaft splines (C) to protect the boot (A).

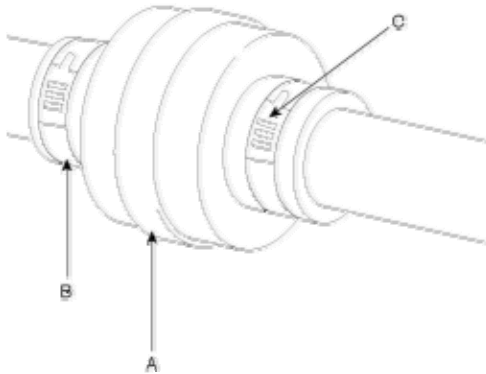


B1GE005G

Driveshaft Assembly

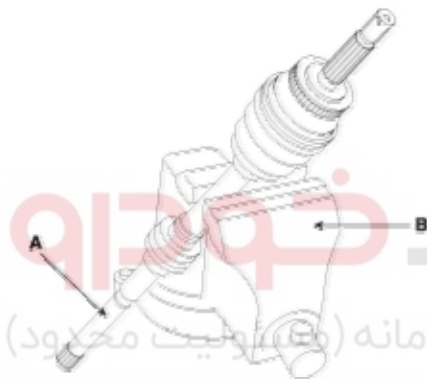
DS-15

9. Remove both side of bands (B,C) of the dynamic damper (A).



LIJF004C

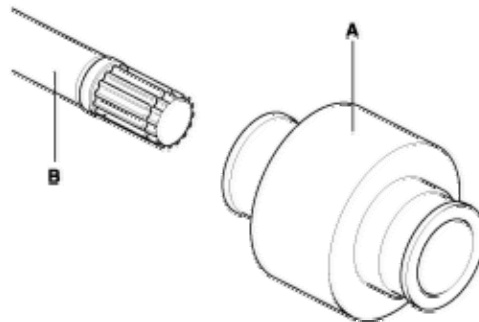
10. Fix the driveshaft (A) with a vice (B) as illustrated.



BIGE005I

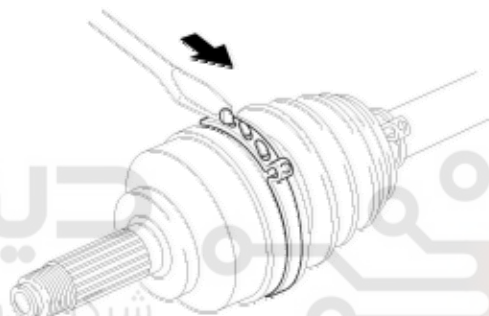
11. Apply soap powder on the shaft to prevent being damaged between the shaft spline and the dynamic damper when the dynamic damper is removed.

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



AIGE004D

13. Remove both bands on the side of wheel.



EIRF003H

14. Pull out the joint(BJ) boot on the side of wheel into the transaxle direction.

⚠ CAUTION

Be careful not to damage the boot.

DS-16

Driveshaft and axle

Reassembly (UTJ-TJ Type)

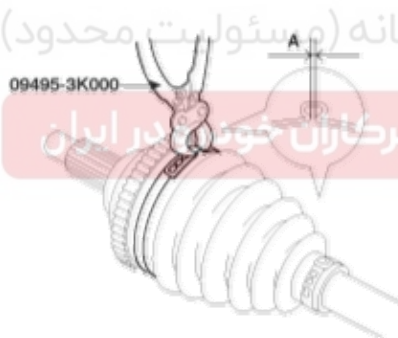
1. Wrap tape around the drive shaft splines (UTJ side) to prevent damage to the boots.
2. Apply grease to the joint(BJ) boot on the side of wheel and install the boots.
3. Install the bands to both boots.



EIRF003I

4. Using the SST(09495-3K000), secure the boot bands.

Clearance (A) : 2.0 mm (0.079 in.) or less

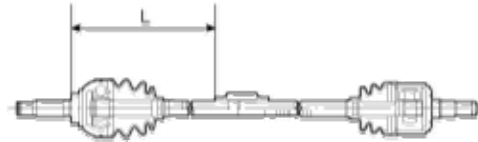


KINF500B

5. To install the dynamic damper, keep the BJ shaft in a straight line and secure the dynamic damper with the dynamic damper bands.

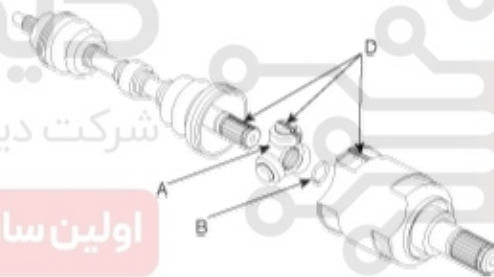
Standard value mm(in) :

L mm (in) : 425 ± 3 (16.7 ± 0.118)

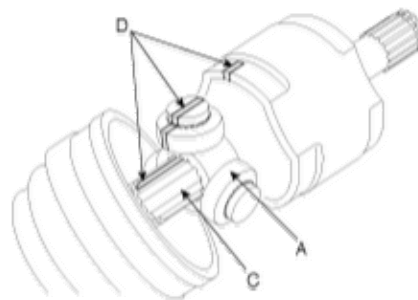


LILG500L

6. Install the UTJ boot bands and UTJ boot.
7. Using the alignment marks (D) made during disassembly as a guide, install the spider assembly (A) and snap ring (B) on the driveshaft splines (C).



BIGE007D



BIGE007E

8. Add the specified grease to the joint(UTJ) boot as mush as wiped away at inspection.
9. Install the boots.
10. To control the air in the UTJ boot, keep the specified

Driveshaft Assembly

DS-17

distance between the boot bands when they are tightened.

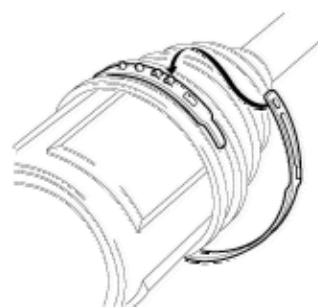
Standard value [L]

Items	L mm(in)	
	LH	RH
2.0L	554.9 (21.85)	823.6 (32.43)
2.4L M/T	554.9 (21.85)	839.6 (33.06)
2.4L A/T	546.0 (21.50)	832.6 (32.78)
2.7L A/T	546.0 (21.50)	529.9 (20.86)



AILG500K

11. Using the SST(09454-39100), install the boot bands.



AIGE005D

09495-39100

AILG600A

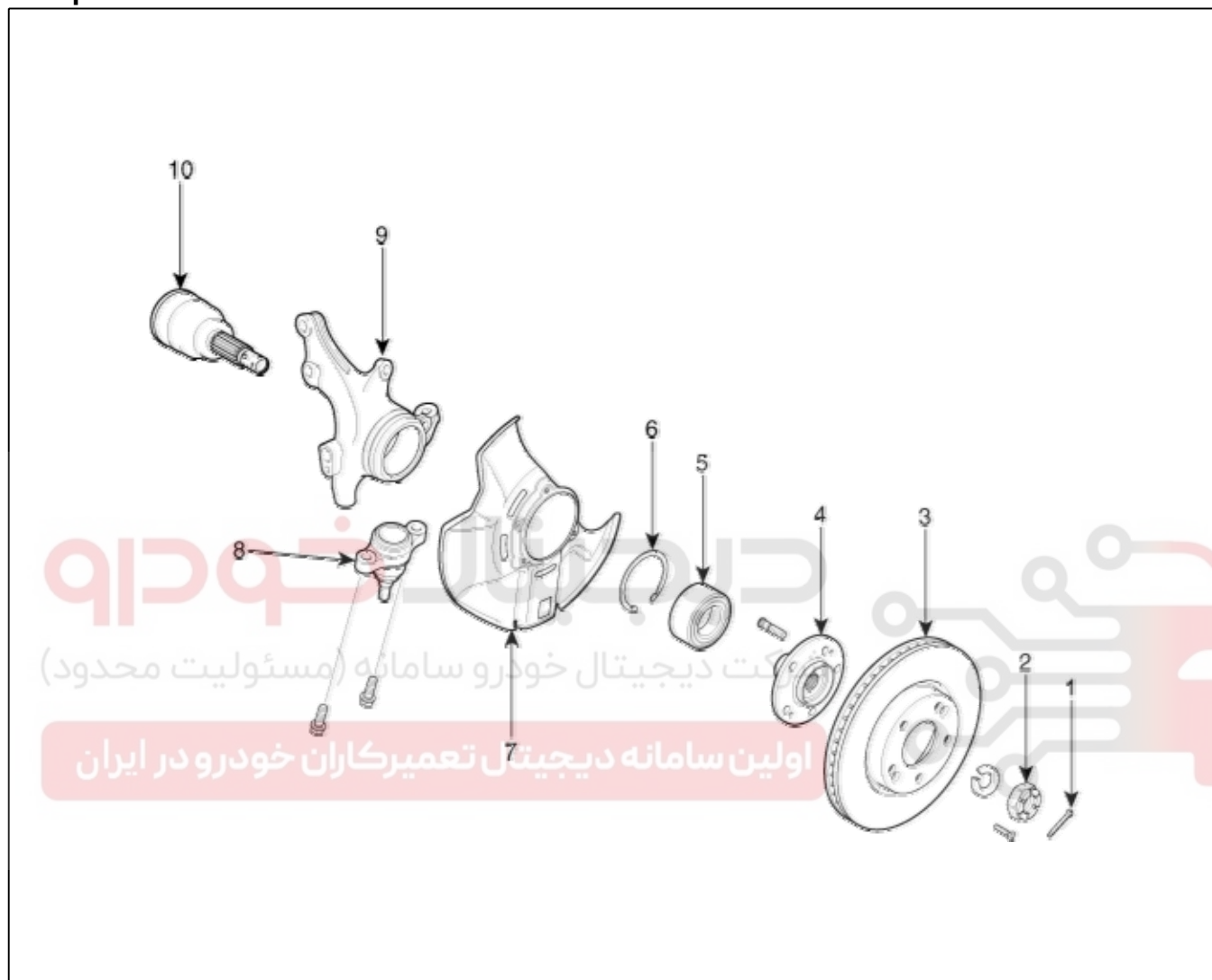
DS-18

Driveshaft and axle

Front Axle Assembly

Front Hub - Axle

Components



SMGDS9003L

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

Front Axle Assembly

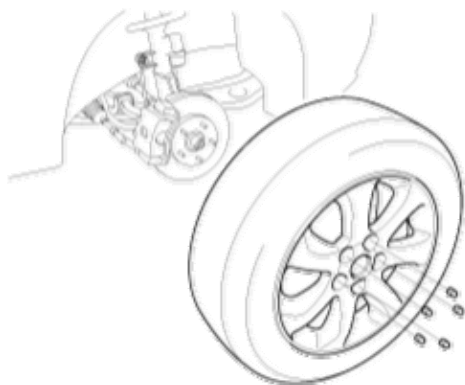
DS-19

Removal

1. Raise the vehicle and remove the front wheel.

Tightening torque Nm (kgf.m, lb-ft):

90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)



AILG001A

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

Tightening torque Nm (kgf.m, lb-ft):

7 ~ 10 (0.7 ~ 1.0, 5.0 ~ 7.2)

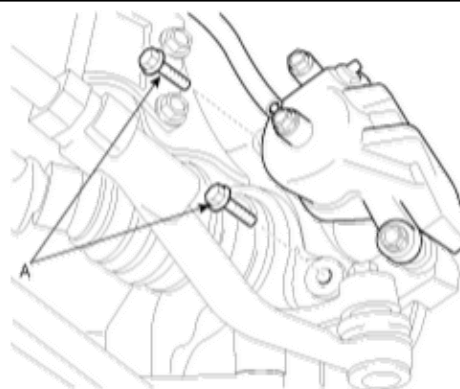


AILG010A

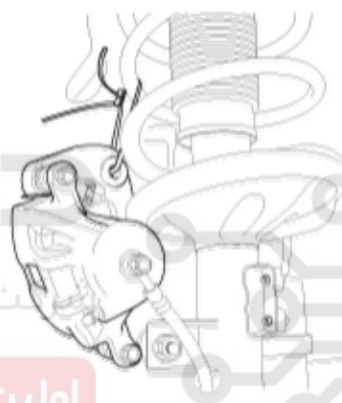
3. Remove the caliper assembly by loosening the bolts (A), and then suspend it with wire.

Tightening torque Nm (kgf.m, lb-ft):

80 ~ 100 (8 ~ 10, 58 ~ 72)



AILG011A



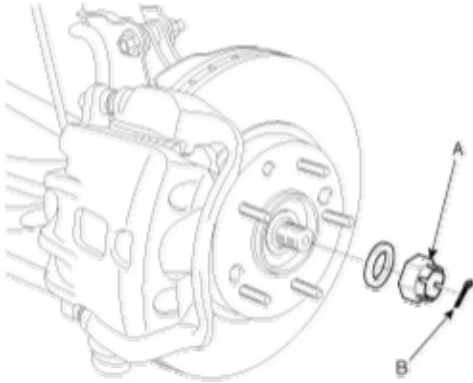
AILG012A

DS-20

Driveshaft and axle

4. Remove the split pin (B), castle nut (A) and washer from the front hub assembly.

Tightening torque Nm (kgf.m, lb-ft):
200 ~ 280 (20 ~ 28, 145 ~ 203)



AILG500C

5. Remove the ball joint assembly mounting bolt (A) from the knuckle.

Tightening torque Nm (kgf.m, lb-ft):
100 ~ 120 (10 ~ 12, 72 ~ 86)



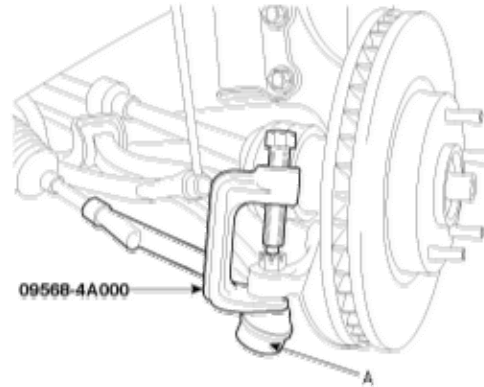
AILG005A

6. Remove the tie rod end split pin and castle nut.

Tightening torque Nm (kgf.m, lb-ft):
24 ~ 34 (2.4 ~ 3.4, 17 ~ 25)

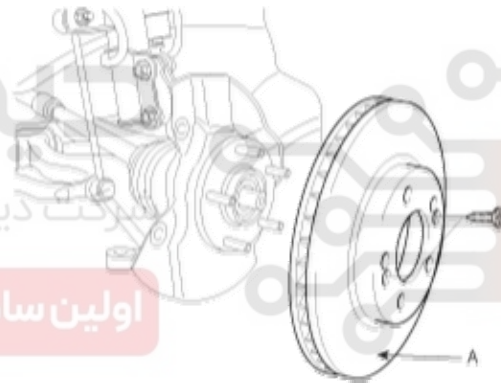
7. Disconnect the tie rod end (A) from the knuckle using the SST (09568 - 4A000).

Tightening torque Nm (kgf.m, lb-ft):
100 ~ 120 (10 ~ 12, 72 ~ 86)



AILG024A

8. Loosen the screws and remove the brake disc (A) from the front hub assembly.



AILG014A

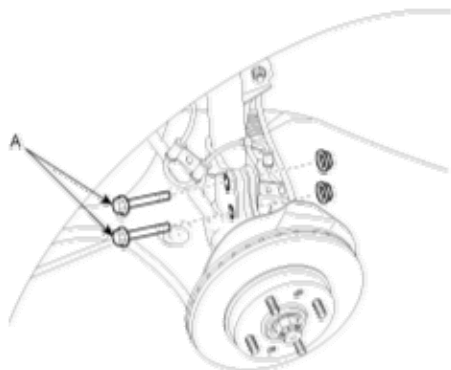
Front Axle Assembly

DS-21

9. Remove the strut assembly mounting bolts (A) and nuts.

Tightening torque Nm (kgf.m, lb-ft):

140 ~ 160 (14.0 ~ 16.0, 101 ~ 116)



AIJF106A

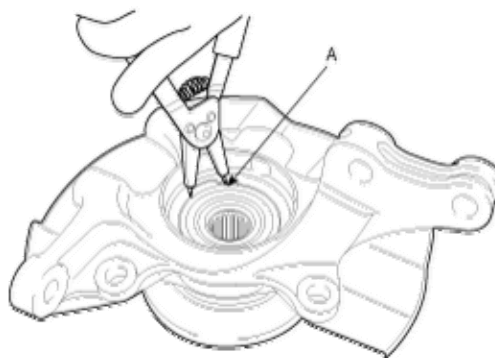
10. Remove the hub and knuckle as an assembly.

⚠ CAUTION

Be careful not to damage the boot and tone wheel.

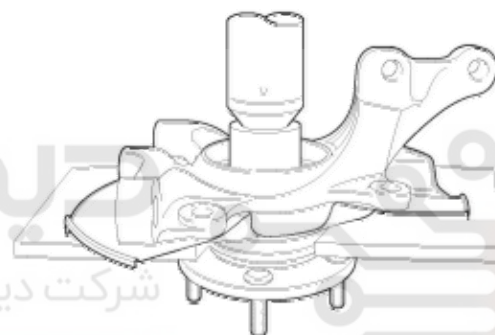
Disassembly

1. Remove the snap ring (A).



AILG500E

2. Remove the hub from the knuckle assembly using the SST (09545-34100).

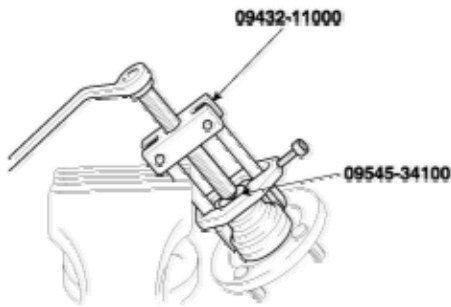


AILG500F

DS-22

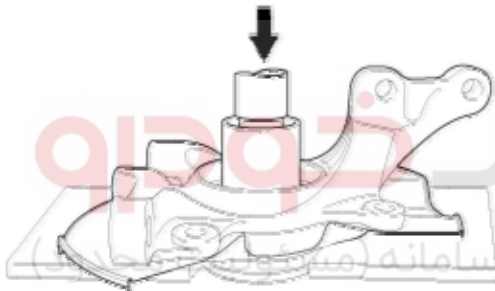
Driveshaft and axle

3. Remove the wheel bearing inner race from the hub using the SST (09432-11000, 09545-34100).



EIRF002F

4. Remove the wheel bearing outer race from the hub using the SST (09216-21600, 09216-21100).



AILG500G

Inspection

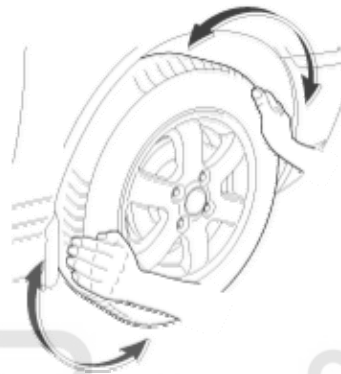
Wheel Bearing Check

1. Raise the vehicle until the front tires are off the floor.
 - Make sure the wheels are in a straight forward position.

NOTICE

Make sure the wheel rotates freely and that the brake pads are retracted sufficiently to allow free movement of the tire and wheel assembly.

Spin the tire by hand to check the wheel bearings for roughness.



BIGE011A

2. Grip each front tire at the top and bottom and move the wheel inward and outward while lifting the weight of the tire off the front wheel bearings.



BIGE011B

Front Axle Assembly

DS-23

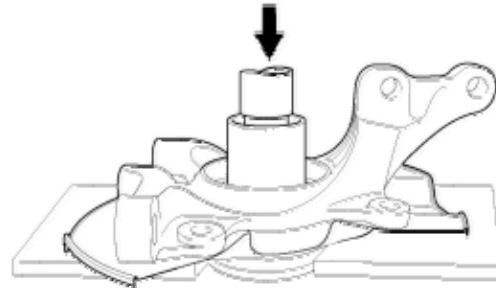
3. If the tire and wheel (hub) is loose on the spindle, does not rotate freely, or has a rough feeling when spun, carry out one of the following.

On vehicles with inner and outer bearings, inspect the bearings and races for wear or damage. Adjust or install new bearing and races as necessary.

4. Check the hub for cracks and the splines for wear.
5. Check the brake disc for scoring and damage.
6. Check the knuckle for cracks.
7. Check the bearing for cracks or damage.

Reassembly

1. Apply the multi-purpose grease to the contacting surface of the knuckle and wheel bearing thinly.
2. Press-in the wheel bearing to the knuckle using the SST (09216-21100).



AILG500G

⚠ CAUTION

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

3. Install the snap ring into the groove the knuckle.
4. Press-in the hub to the knuckle using the SST (09454-21100).

⚠ CAUTION

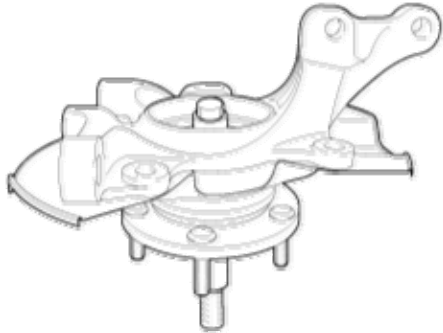
- Do not against the outer race of the wheel bearing because that can cause damage to the bearing assembly.

DS-24

Driveshaft and axle

5. Tighten the hub to the knuckle with the SST (09517-21500).

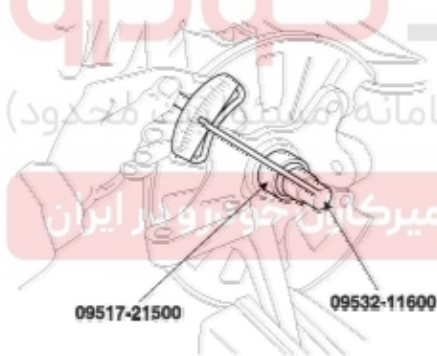
Tightening torque Nm (kgf.m, lb-ft):
200 ~ 260 (20 ~ 26, 145 ~ 188)



AILG500I

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

Wheel bearing starting torque:
1.8 Nm (18kgf.cm, 1.3 lb-ft) or below



EIRF404D

8. Measure the hub run-out by using a dial gauge.

Run-out : 0.04mm (0.00157in)

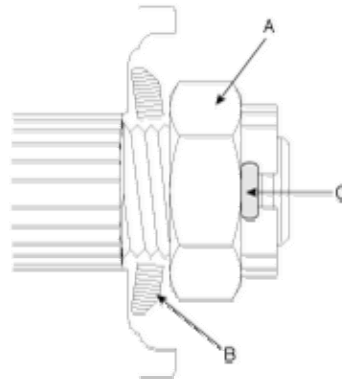
9. Remove the SST (09517-21500).

Installation

1. Installation is the reverse of removal.

⚠CAUTION

The washer (B) should be assembled with convex surface outward when installing the castle (A) nut and split pin (C).



BIGE003B

Rear Axle Assembly

DS-25

Rear Axle Assembly

Rear Hub - Carrier

Components



SMGDS9004L

1. Carrier assembly
2. Rear brake assembly

3. Hub & bearing assembly
4. Rear brake disc

DS-26

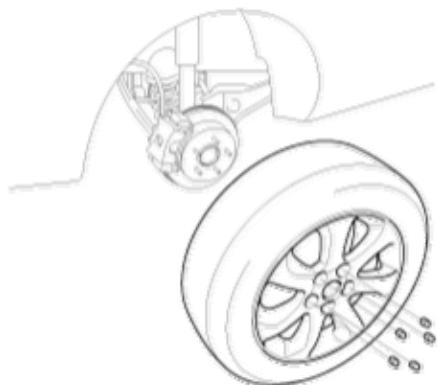
Driveshaft and axle

Removal

1. Release the parking brake.
2. Remove the rear wheel.

Tightening torque Nm (kgf.m, lb-ft):

90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

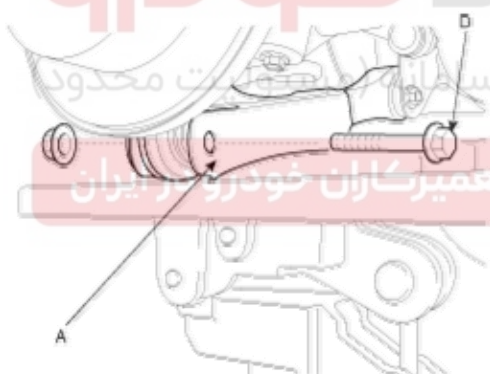


AILG017A

3. After support the lower part of the lower arm (A) by using a jack, then remove the bolt (B).

Tightening torque Nm (kgf.m, lb-ft):

140 ~ 160 (14 ~ 16, 101 ~ 116)

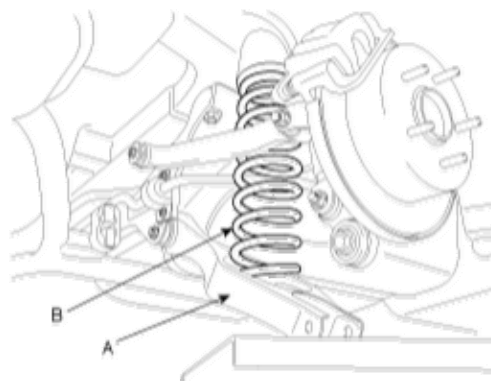


AILG026A

4. Temporarily loosen the lower arm (A) to cross member nut, then remove the coil spring (B) by taking down the jack.

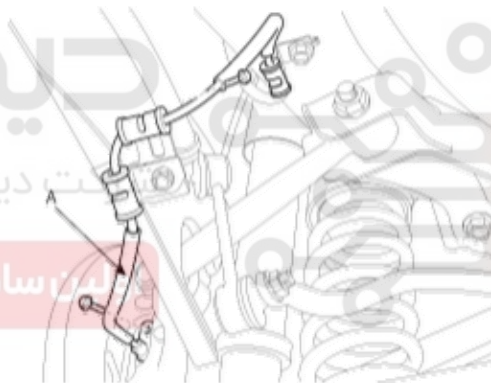
Tightening torque Nm (kgf.m, lb-ft):

140 ~ 160 (14 ~ 16, 101 ~ 116)



LILG500G

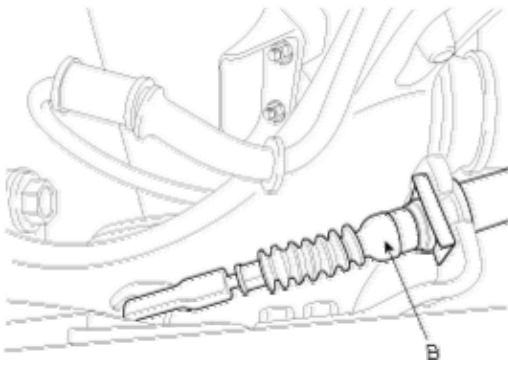
5. Remove the wheel speed sensor (A) and parking brake wire bracket (B).



AILG019A

Rear Axle Assembly

DS-27

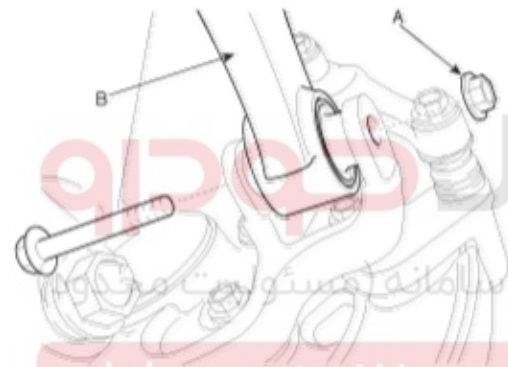


AILG018A

6. Disconnect the upper arm (B) from the carrier assembly after loosening the nut (A).

Tightening torque Nm (kgf.m, lb-ft):

100 ~ 120 (10 ~ 12, 72 ~ 87)

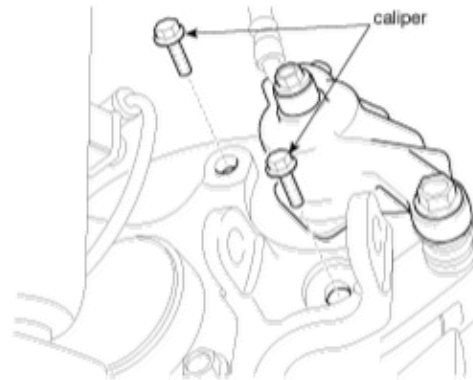


AILG030A

7. Remove the brake caliper assembly (A) from the carrier assembly and suspend it with wire.

Tightening torque Nm (kgf.m, lb-ft):

50 ~ 60 (5.0 ~ 6.0, 36 ~ 43)

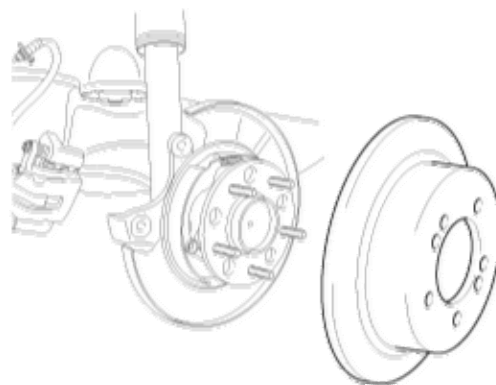


LILG500H



LILG500I

8. Loosen the screw and remove the rear brake disc assembly.



AILG022A

DS-28

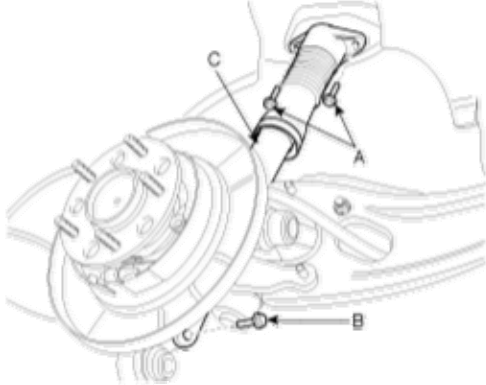
Driveshaft and axle

9. Loosen the bolt (A, B), then remove the rear strut assembly (C).

Tightening torque Nm (kgf.m, lb-ft):

Bolts (A): 45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)

Bolt (B): 140 ~ 160 (14 ~ 16, 101 ~ 116)

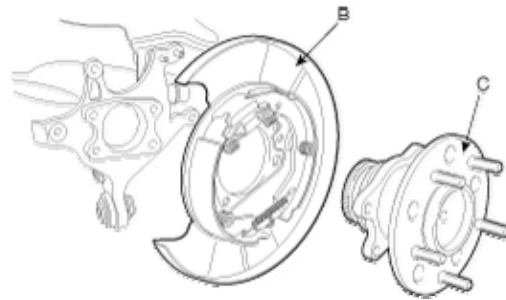


LILG500J

10. Loosen the bolts (A) and remove the rear hub & carrier assembly (B) and rear brake assembly (C).



AILG028A



AILG029A

11. Remove the split pin and castle nut from the assist arm.

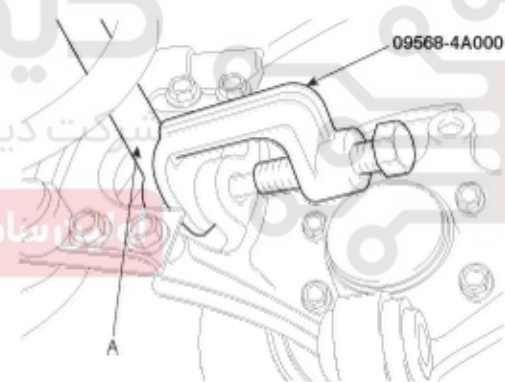
Tightening torque Nm (kgf.m, lb-ft):

45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)

12. Using the SST (09568-4A000), disconnect the assist arm (A) from the carrier assembly.

Tightening torque Nm (kgf.m, lb-ft):

45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)



LILG500K

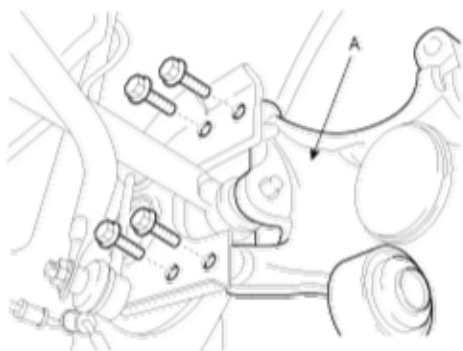
Rear Axle Assembly

DS-29

13. Remove the carrier assembly (A) from the trailing arm by loosening bolts.

Tightening torque Nm (kgf.m, lb-ft):

45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)



AILG032A

Inspection

1. Check the hub & bearing assembly for wear or damage.
2. Check the carrier assembly for cracks.
3. Check the rear tone wheel for chipped the teeth.

Installation

1. Installation is the reverse of removal.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

