

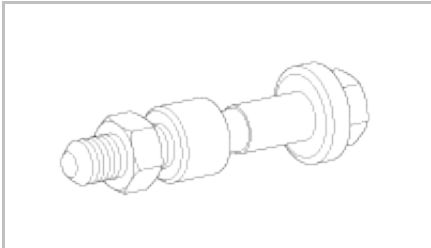
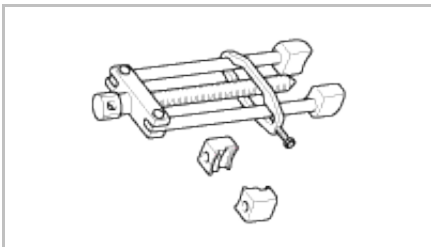
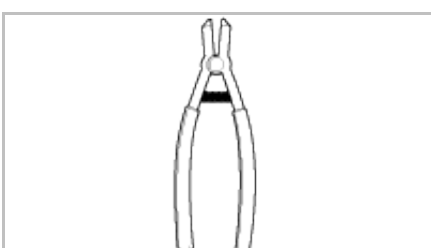


Driveshaft and Axle

General Information



SPECIAL TOOLS

Tool(Number and name)	Illustration	Use
Tie rod end puller 09568-4A000		Separation of a lower arm and a tie rod end ball joint
Front hub remover and installer 09517-21500		Removal of a front hub from a knuckle. (use with 09517-21600)
Main shaft bearing puller 09432-11000		Removal of a tone wheel from a driveshaft
09495-3K000 Band installer		Installation of ear type boot band
09495-39100 Band installer		Installation of hook type boot band



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



SPECIFICATIONS

Driveshaft

Engine	Transaxle	Joint type		Max. permissible angle	
		Inner	Outer	Inner	Outer
2.9 CRDi	M/T	TSJ#26	BJ#28	46.5°	23°
	A/T	UTJ-II#25	BJ#26	46.5°	23°
3.8 MPI	A/T	UTJ-II#25	BJ#26	46.5°	23°

Front hub & bearing assembly

Starting torque	1.97 Nm (20 kgf.cm, 1.45 lb-ft)
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Rear hub & bearing assembly

Starting torque	1.97 Nm (20 kgf.cm, 1.45 lb-ft)
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NOTICE

Inner: On transaxle side

Outer : On tire side

TIGHTENING TORQUE

Items	Nm	Kgf.m	lb-ft
Hub nut	90 ~ 110	9.0 ~ 11.0	65 ~ 80
Driveshaft lock nut	245 ~ 275	24.5 ~ 27.5	177 ~ 199
Tie rod end castle nut	60 ~ 80	6.0 ~ 8.0	43 ~ 58
Front lower arm to knuckle bolt & nut	90 ~ 120	9.0 ~ 12.0	65 ~ 87
Inner shaft bearing & bracket assembly bolts (DSL)	43 ~ 63	4.3 ~ 6.3	31 ~ 46
Inner shaft bearing & bracket assembly bolts (GSL)	50 ~ 65	5.0 ~ 6.5	36 ~ 47
Front caliper assembly to knuckle bolts	85 ~ 100	8.5 ~ 10.0	61 ~ 72
Front strut assembly to knuckle bolts	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Front hub & bearing assembly to knuckle bolts	160 ~ 180	16.0 ~ 18.0	116 ~ 130
Rear lower arm to carrier bolt & nut	160 ~ 180	16.0 ~ 18.0	116 ~ 130
Rear caliper assembly to carrier assembly bolts	50 ~ 60	5.0 ~ 6.0	36.2 ~ 43.4
Rear hub lock nut	200 ~ 260	20.0 ~ 26.0	145 ~ 188
Rear brake assembly to carrier assembly bolts	50 ~ 60	5.0 ~ 6.0	36 ~ 43
Carrier assembly to assist arm bolt	90 ~ 100	9.0 ~ 10.0	65 ~ 72
Carrier assembly to upper arm bolt	90 ~ 100	9.0 ~ 10.0	65 ~ 72

LUBRICANTS

Joint type	Recommended grease	Quantity
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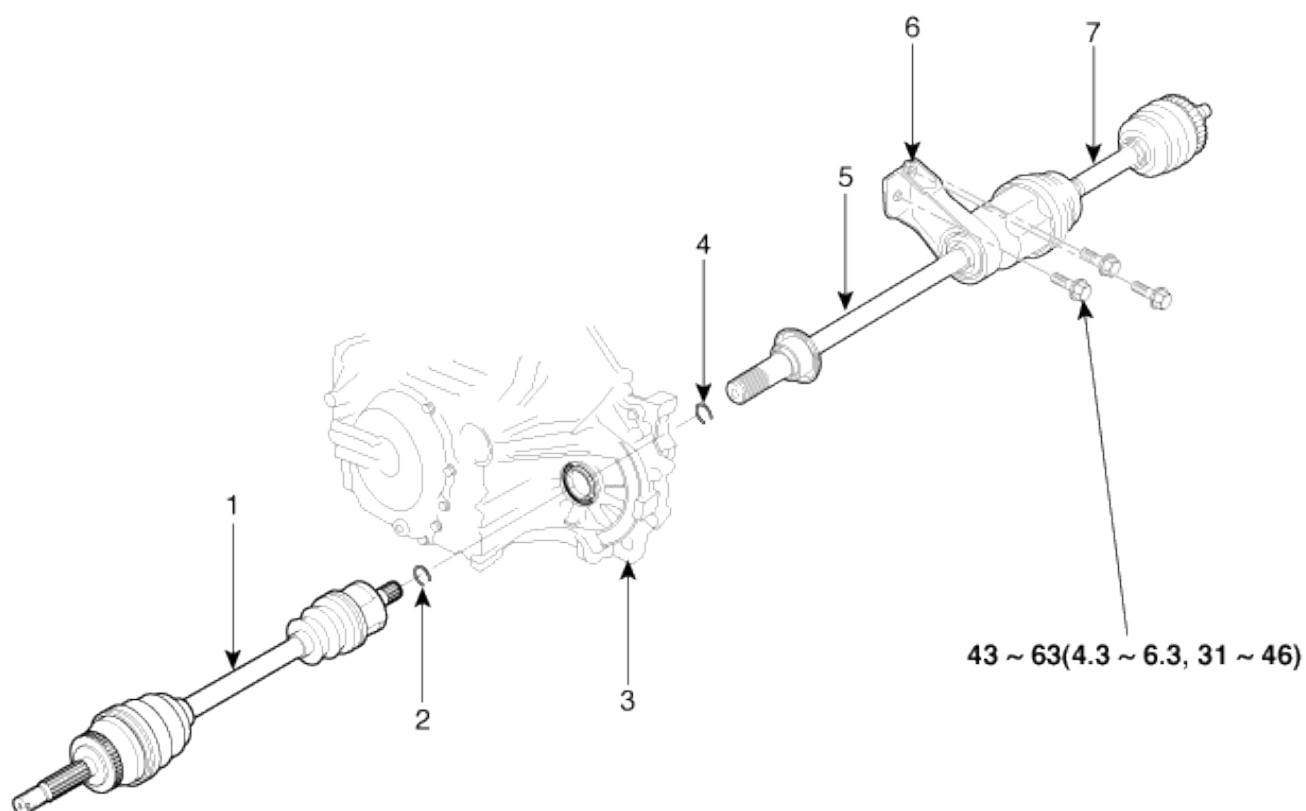
BJ#28	RBA	250 g
BJ#26	RBA	210 g
TSJ#26	RBA	150 g
UTJ-II#25	CK-2	220 g



Driveshaft and Axle

Driveshaft Assembly - Front Driveshaft

COMPONENTS

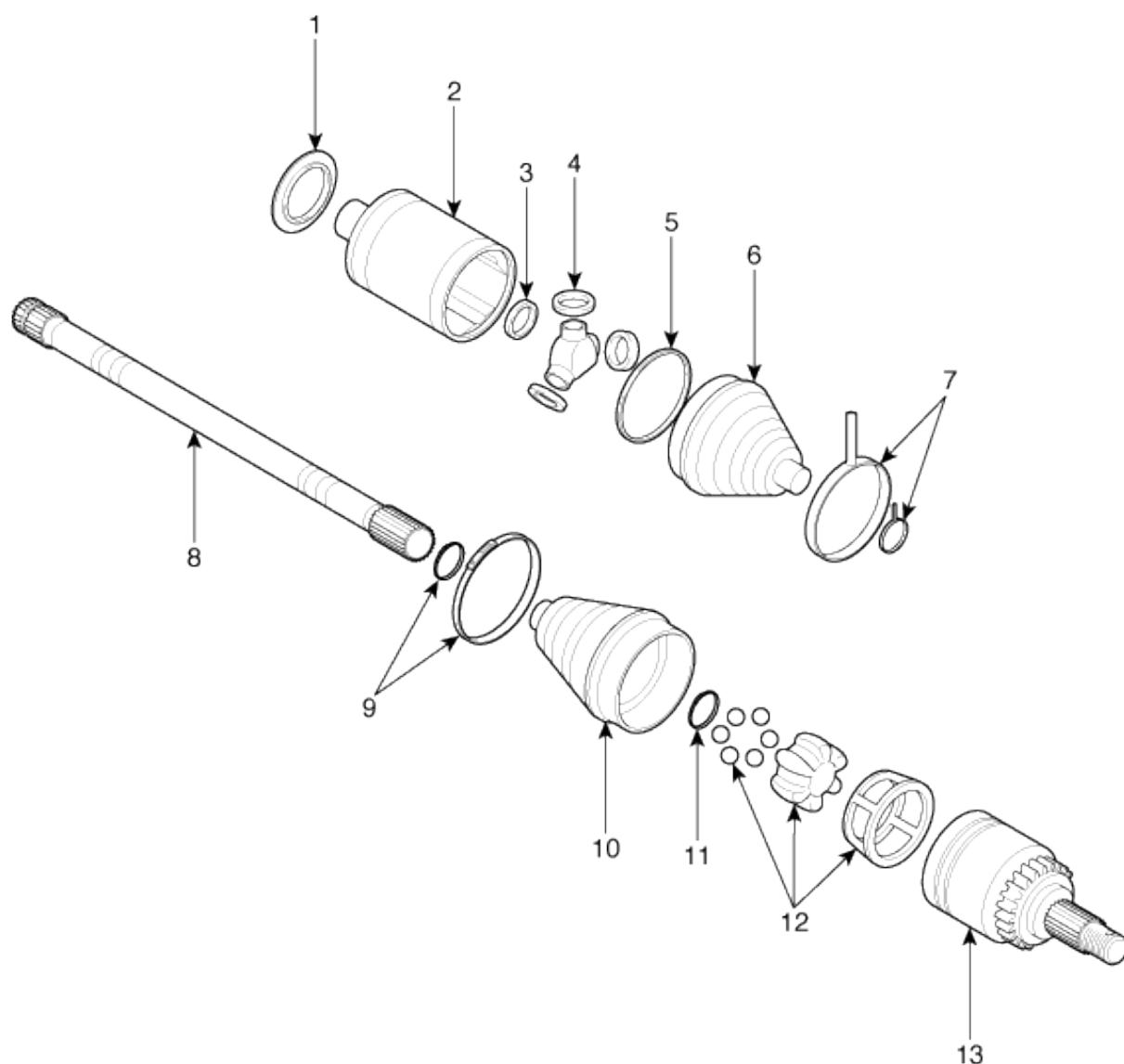


TORQUE : Nm (kgf-m, lb-ft)

1. Driveshaft [LH]
2. Circlip
3. Transaxle
4. Circlip

5. Inner shaft
6. Bearing & bracket assembly
7. Driveshaft [RH]

COMPONENTS



1. Dust cover

2. TSJ assembly

3. Snap ring

4. Spider assembly

5. Circle ring

6. TSJ boot

7. TSJ boot band

8. Shaft

9. BJ boot band

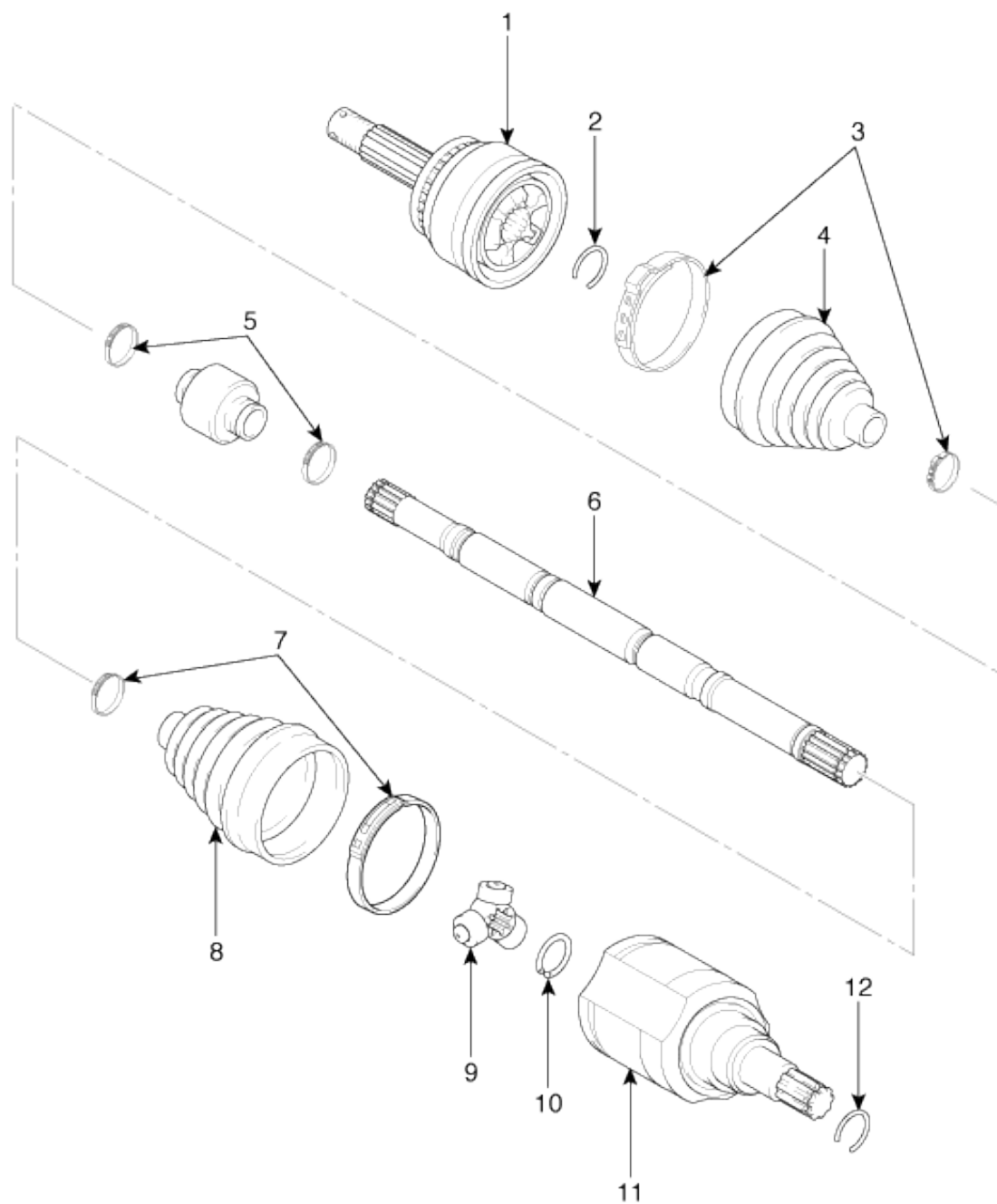
10. BJ boot

11. Snap ring

12. BJ inner race and ball

13. BJ assembly

COMPONENTS



1. BJ assembly
2. Circlip
3. BJ boot bands
4. BJ boot
5. Dynamic damper bands
6. Shaft

7. UTJ boot bands
8. UTJ boot
9. Spider assembly
10. Circlip
11. UTJ case
12. Clip

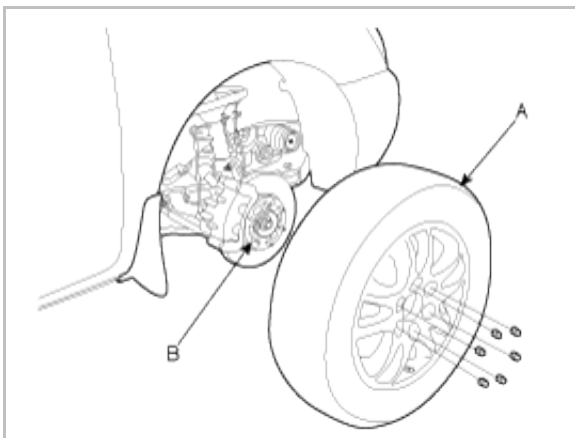


REMOVAL

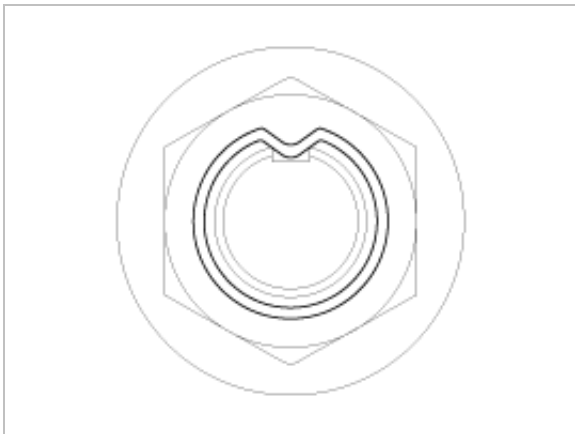
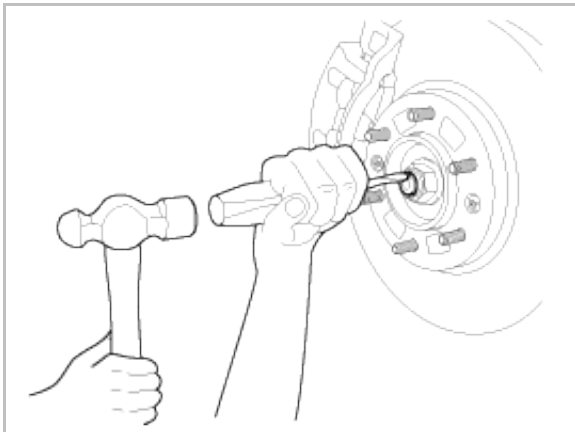
1. Raise the vehicle and remove the wheel & tire assembly (A) from the front hub assembly (B).

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

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



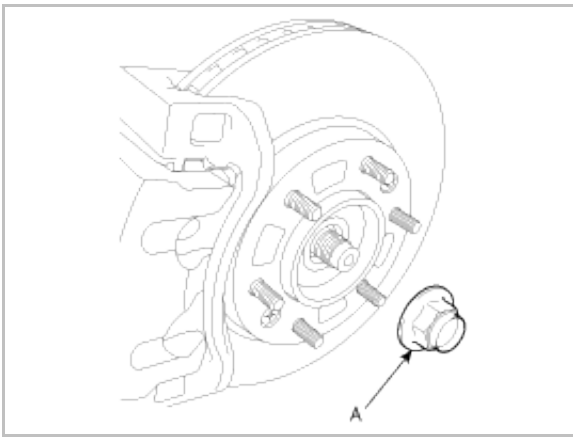
2. Unstake the driveshaft lock nut using a chisel and hammer.



3. Remove the driveshaft lock nut (A).

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

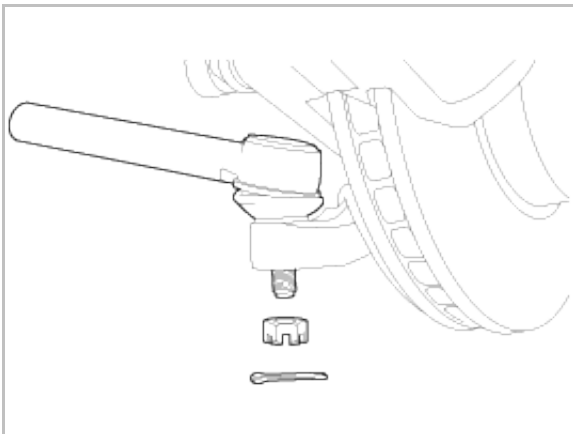
245 ~ 275 (24.5 ~ 27.5, 177 ~ 199)



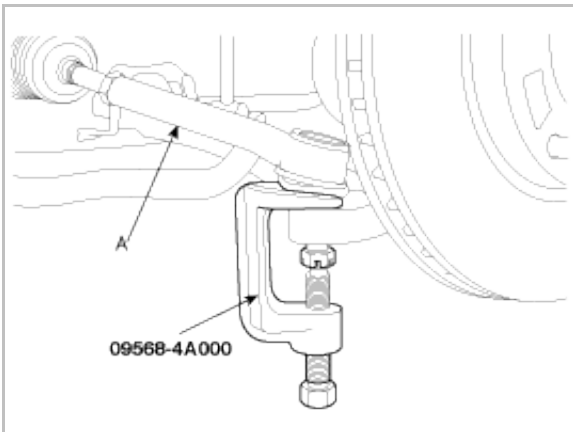
4. Remove the split pin and castle nut from the tie rod end ball joint.

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

60 ~ 80 (6.0 ~ 8.0, 43 ~ 58)



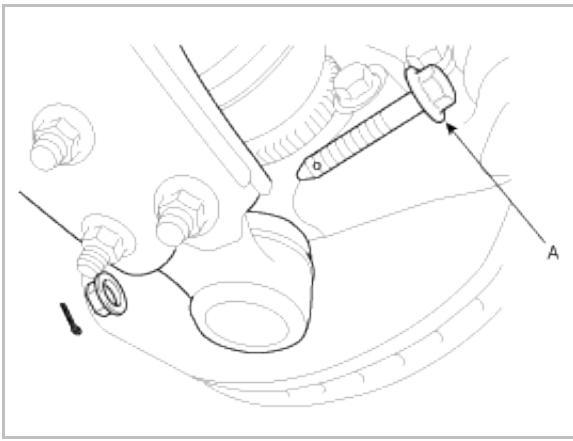
5. Disconnect the tie rod end (A) from the knuckle using a SST (09568-4A000).



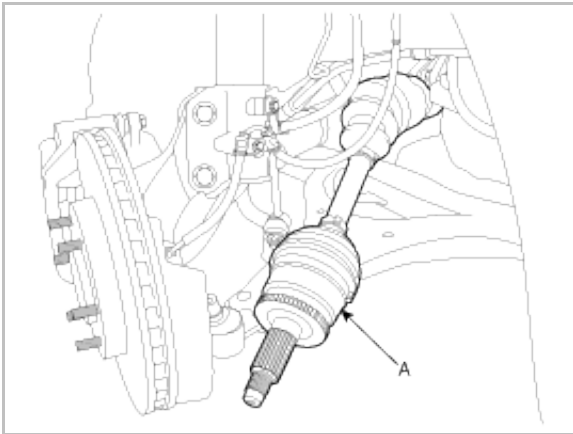
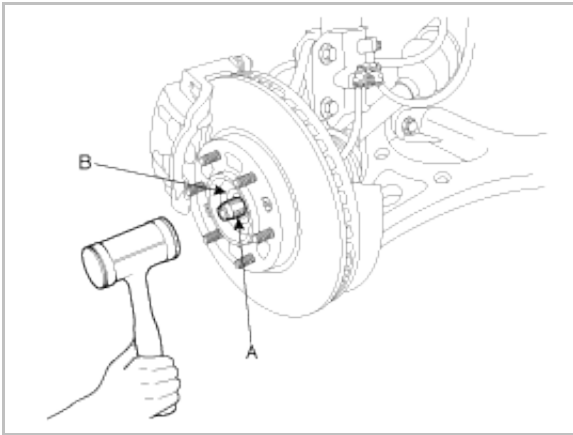
6. Remove the split pin and lower arm bolt and nut (A).

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

90 ~ 120 (9.0 ~ 12.0, 65 ~ 87)



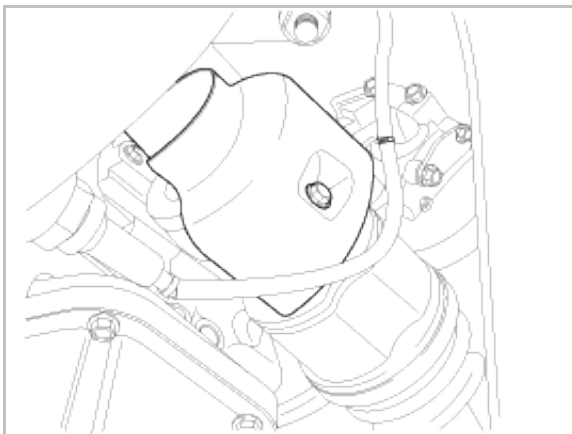
7. Using a plastic hammer, disconnect the driveshaft (A) from the front hub assembly (B).



8. Removal of the driveshaft [RH].

A. [Gasoline 3.8 only]

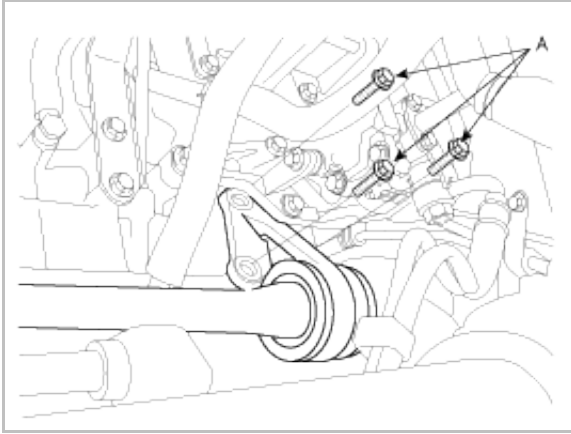
Remove the heat protector (A).



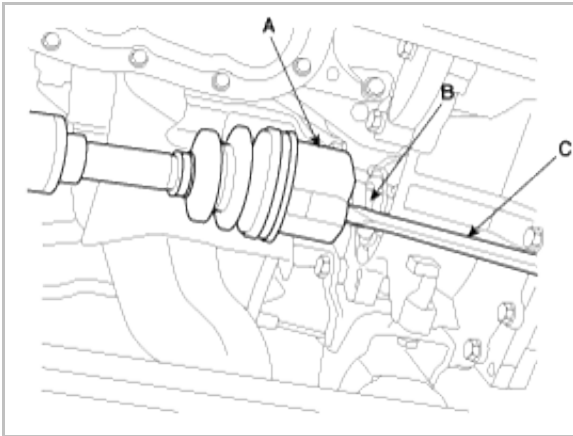
B. Remove the inner shaft bearing bracket assembly mounting bolts (A).

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

Diesel: 43 ~ 63 (4.3 ~ 6.3, 31 ~ 46)



9. Insert pry bar (C) between the transaxle case (B) and driveshaft joint (A), separate driveshaft from the transaxle.



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.

10. Pull out the driveshaft from the transaxle case.

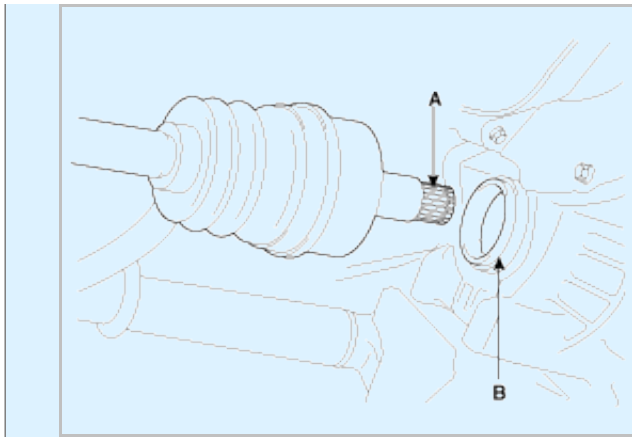
CAUTION

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

INSTALLATION

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 of differential case oil seal (B).

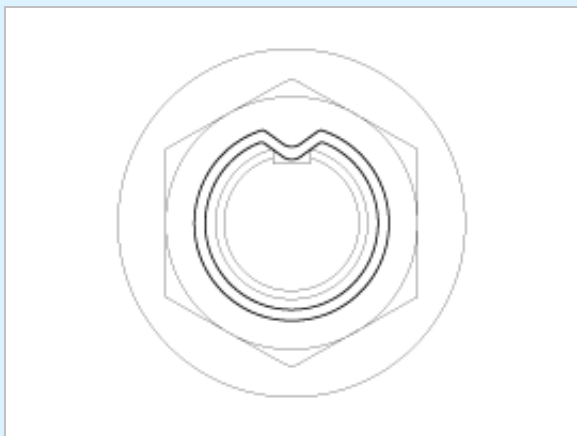
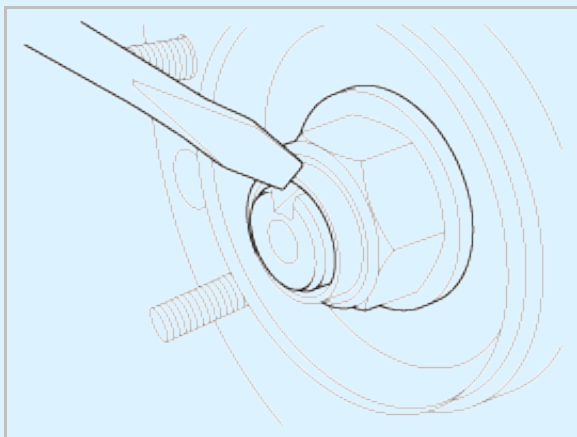


1. Installation is reverse of the removal.

CAUTION

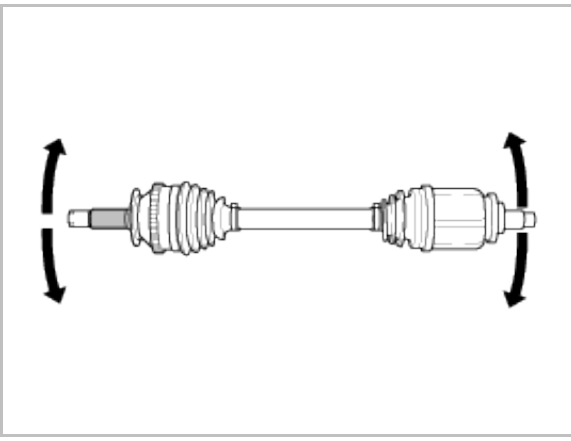
- The driveshaft lock nut should be replaced with new ones.
- After installation driveshaft lock nut, stake the lock nut using a chisel and hammer as shown in the illustration below.

CAUTION



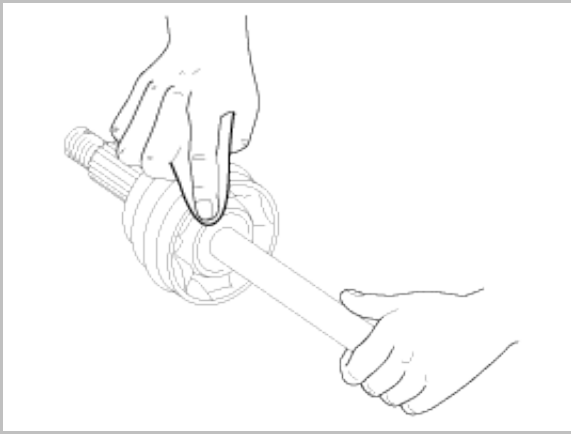
INSPECTION

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.



INSPECTION

1. Check the drive shaft 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.



DISASSEMBLY

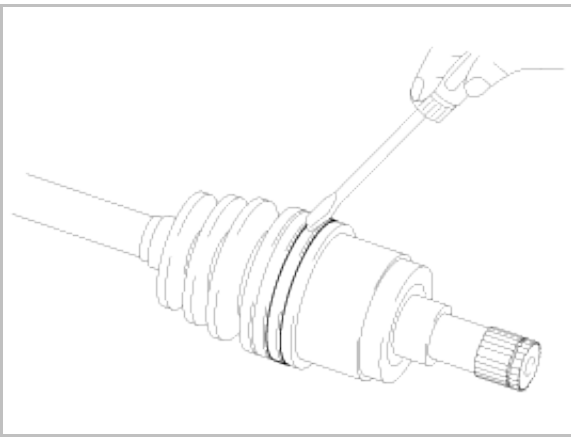
NOTICE

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

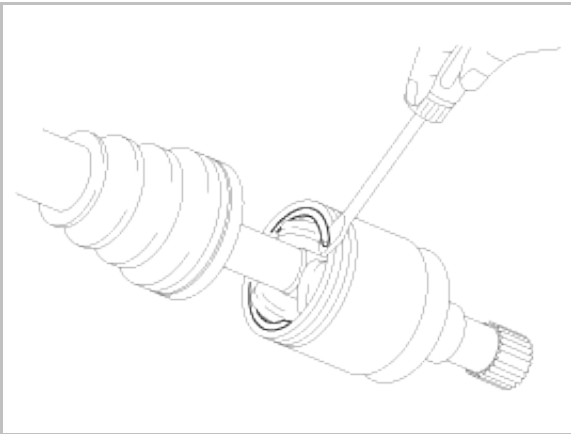
1. Remove the TSJ boot band and pull the boot from TSJ outer race.

NOTICE

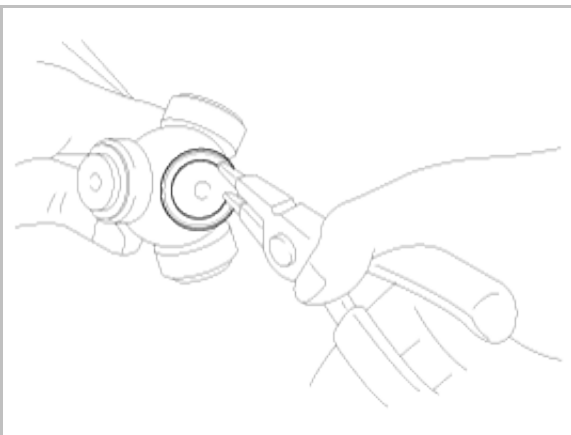
Be careful not to damage it.



2. Remove the circlip using a screwdriver.



3. Remove the driveshaft from TSJ outer race.



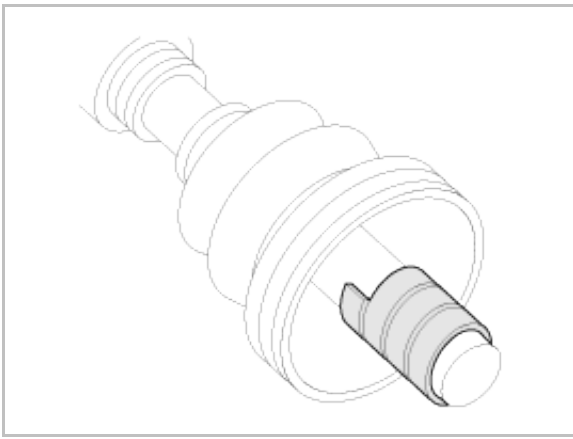
4. Remove the snap ring and disassemble the spider assembly from the shaft.

5. Clean the spider assembly.

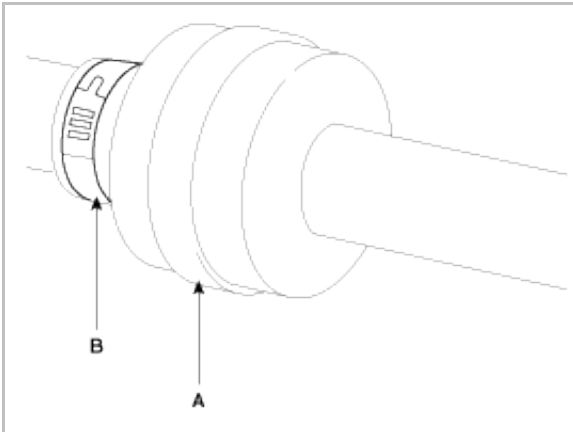
6. Remove the BJ boot band and removal of the TSJ boot and the BJ boot.

CAUTION

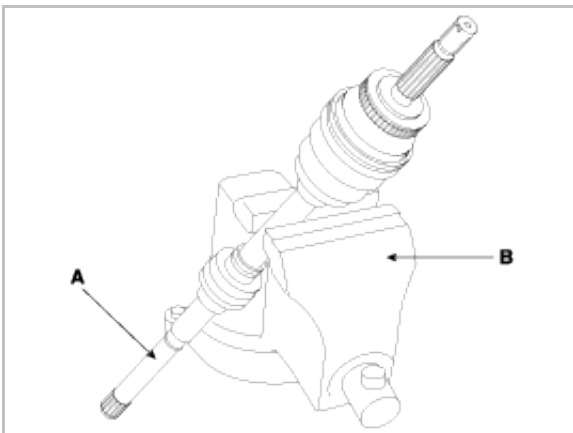
If the boot is reused, wrap a tape around the driveshaft splines to protect the boot.



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

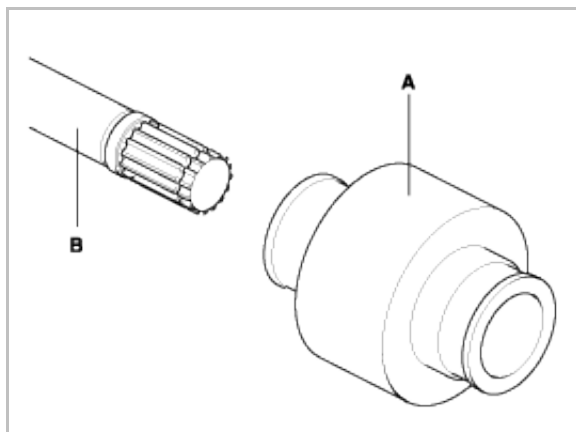


8. Fix the drive shaft(A) with a vice(B) as illustrated.



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

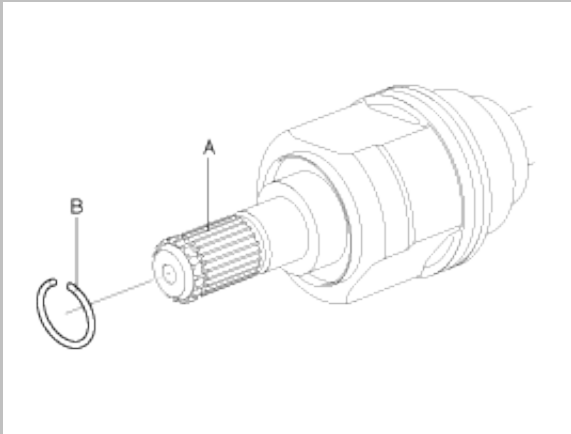
10. Separate dynamic damper(A) from the shaft(B) carefully.



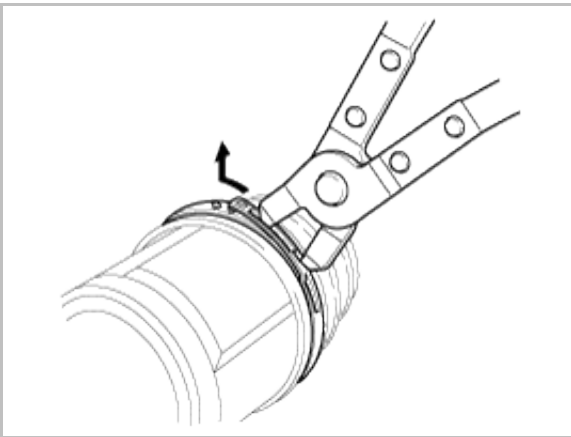
NOTICE

- 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 drive shaft splines (A) of the transaxle side.

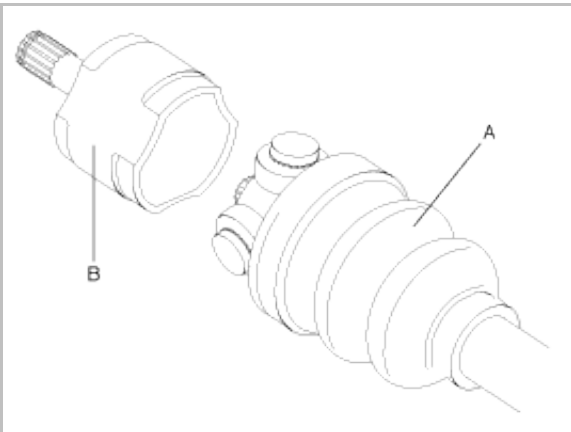


2. Remove both boot bands from the transaxle side UTJ case.



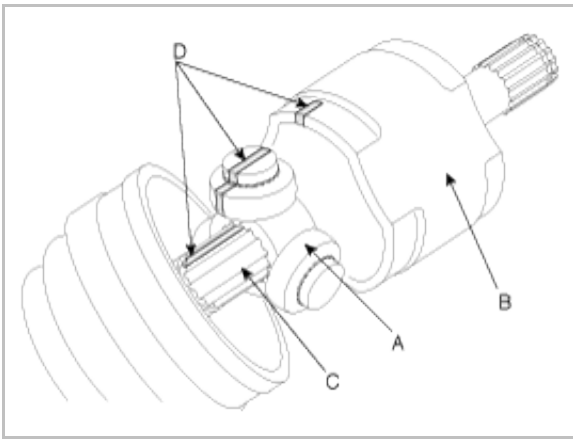
3. Pull out the boot from the transaxle side joint(UTJ).

4. When separating the joint and boot (A), remove the grease from the UTJ case (B).

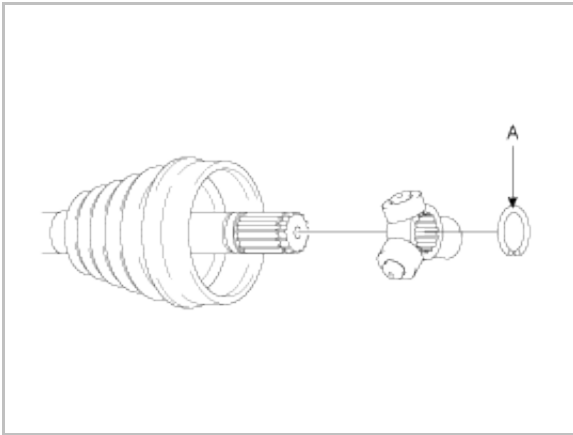


CAUTION

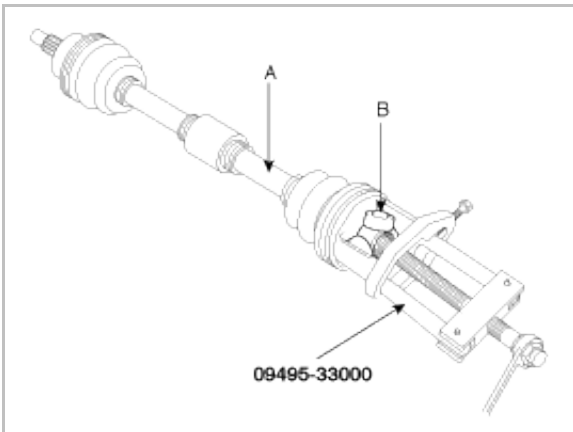
- Be careful not to damage the boot.
- According to illustration below, put alignment marks across spider roller assembly (A), UTJ case (B), and shaft splines (C) to aid in reassembly.



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



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

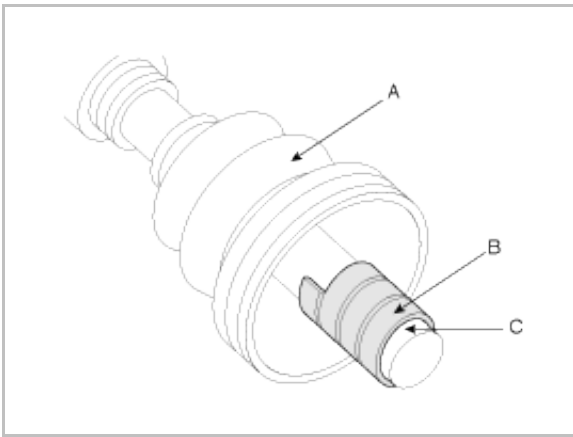


7. Clean the spider assembly.

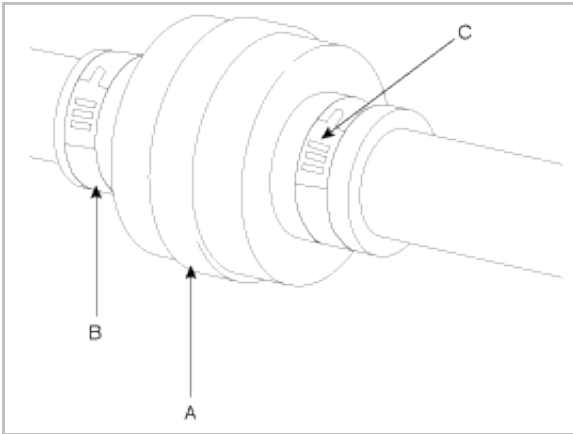
8. Remove the boot (A), of the transaxle side joint(UTJ).

CAUTION

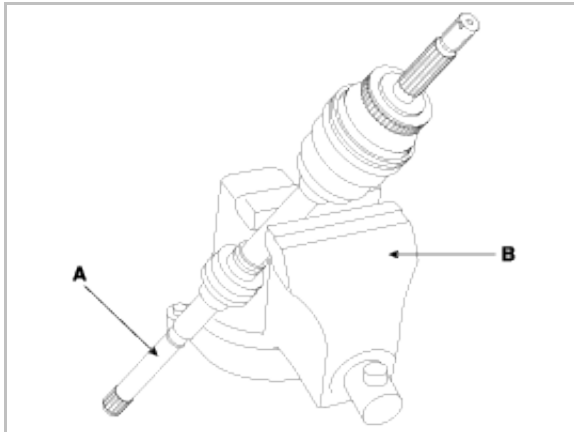
Wrap tape (B) around the driveshaft splines (C) to protect the boot (A).



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

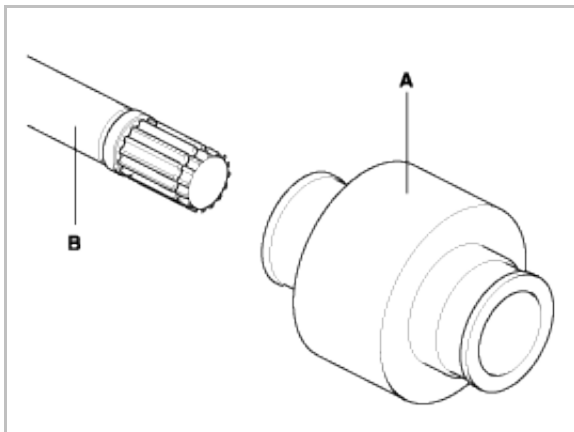


10. Fix the driveshaft (A) with a vice (B) as illustrated.

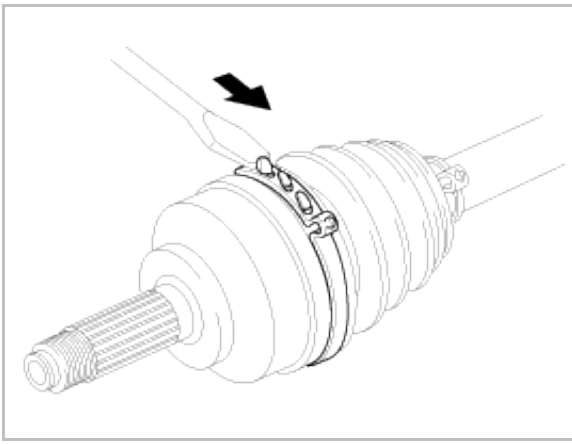


11. Apply soap powder on the shaft to prevent being damage between the shaft spline and the dynamic damper when the dynamic damper is removal.

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



13. Remove both bands on the side of wheel.



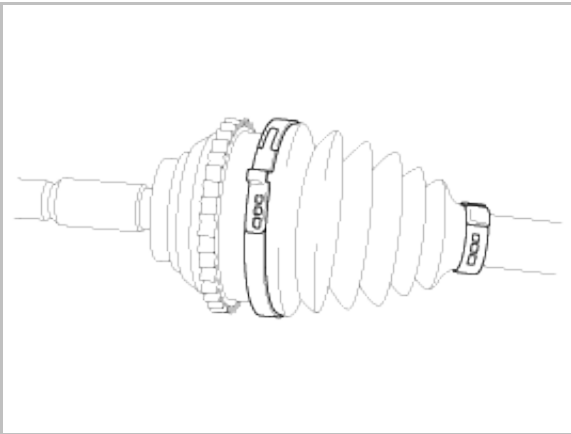
14. Pull out the joint(BJ) boot on the side of wheel into the transaxle direction.

CAUTION

Be careful not to damage the boot.

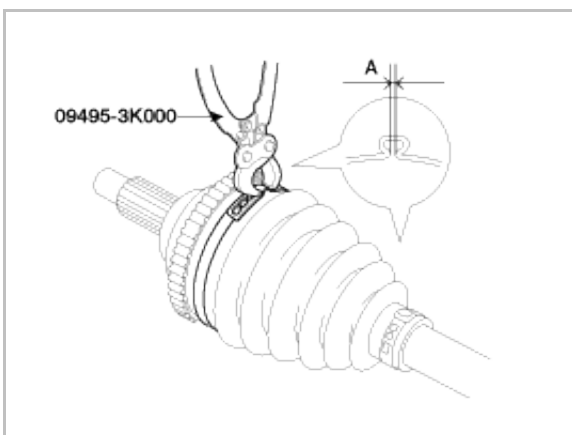
REASSEMBLY

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.



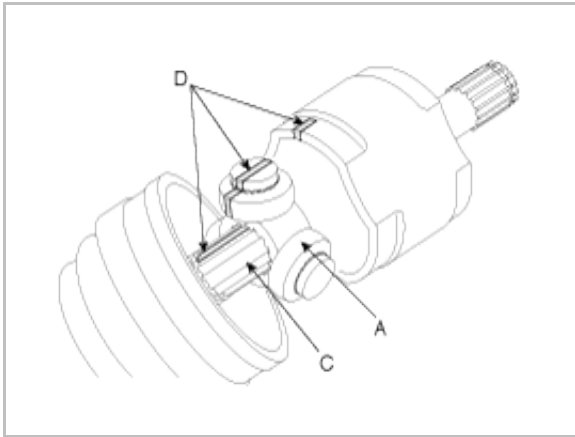
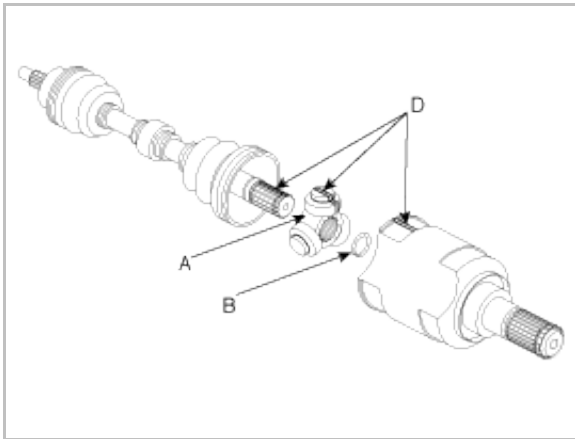
4. Using clamp, secure the boot bands.

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



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

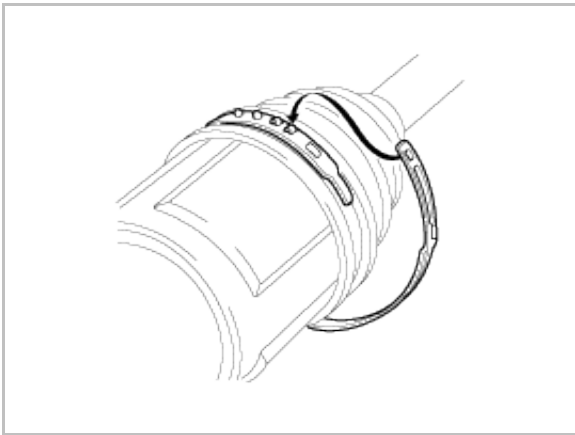
(B) on the driveshaft splines (C).

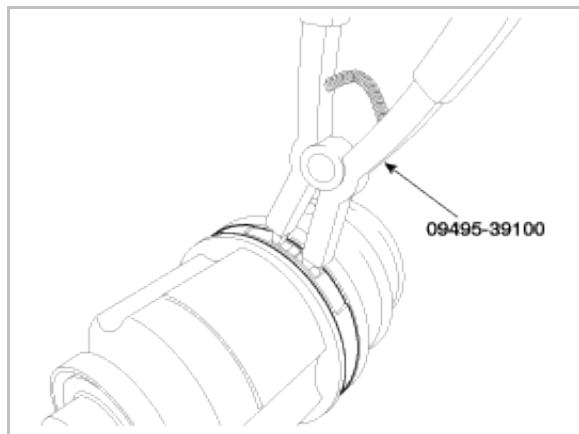


8. Add the specified grease to the joint(UTJ) boot as much as wiped away at inspection.
9. Install the boots.
10. To control the air in the UTJ boot, keep the specified distance between the boot bands when they are tightened.
- Standard value [A]**

Items	Standard (A) mm(in)	
	LH	RH
2.9 Diesel M/T	505.4 (19.90)	466.8 (18.38)
2.9 Diesel A/T	507.5 (19.98)	466.9 (18.38)
3.8 Gasoline A/T	557.1 (21.93)	570.7 (22.47)

11. Install both sides of the boot bands by using SST (09495-39100).



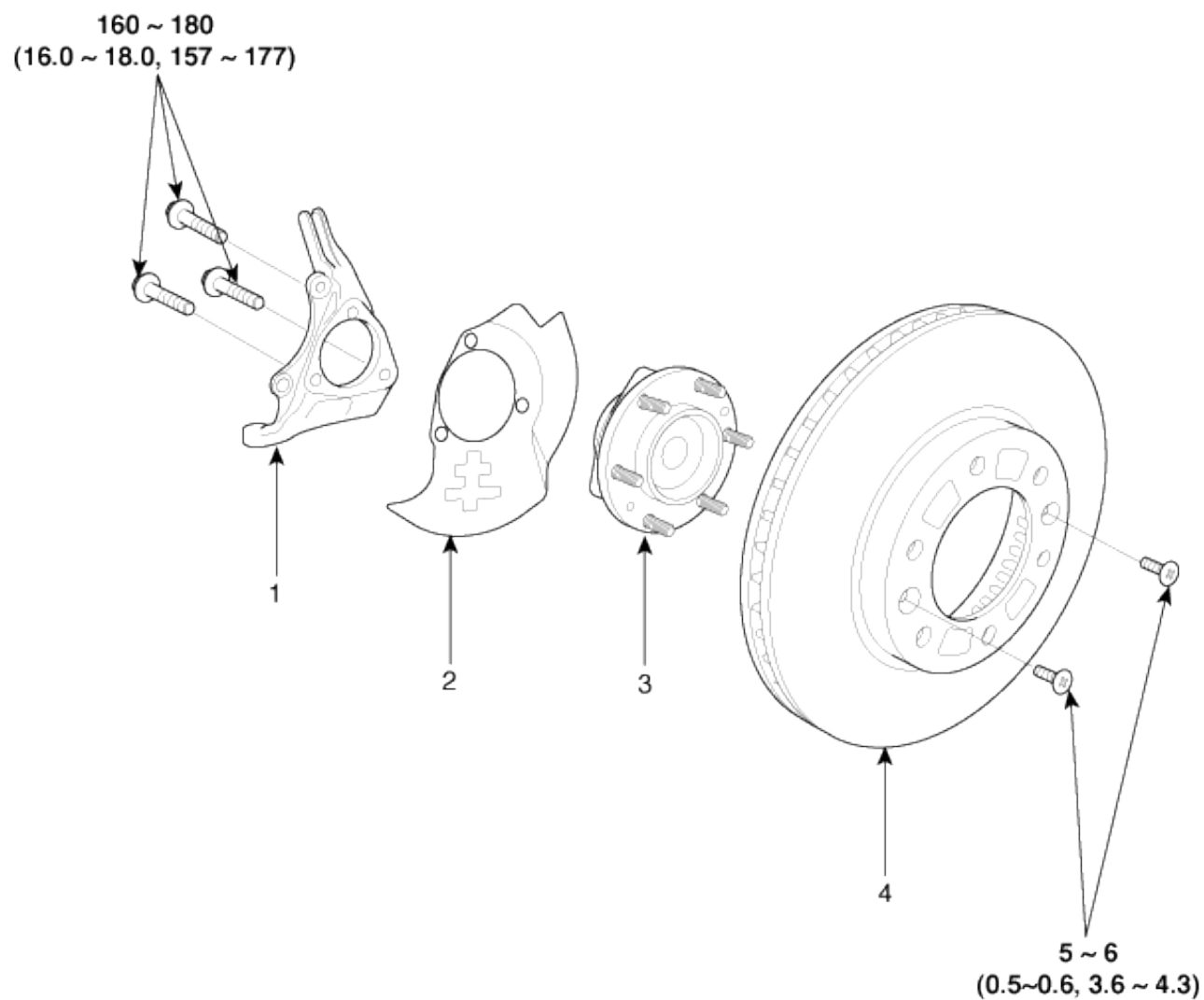




Driveshaft and Axle

Front Axle Assembly - Front Hub/Axle

COMPONENTS



TORQUE : Nm (kgf·m, lb-ft)

- 1. Knuckle
- 2. Dust cover

- 3. Front hub & bearing assembly
- 4. Brake disc

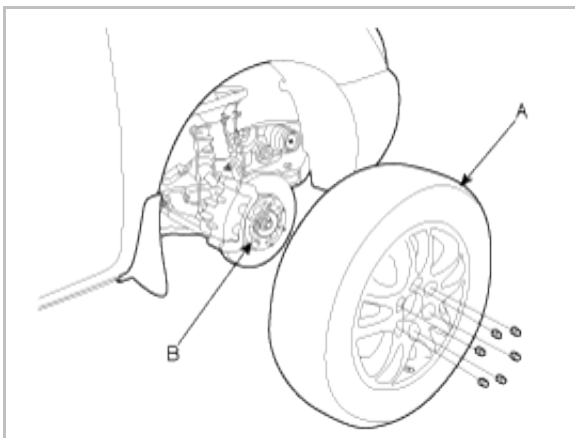


REMOVAL

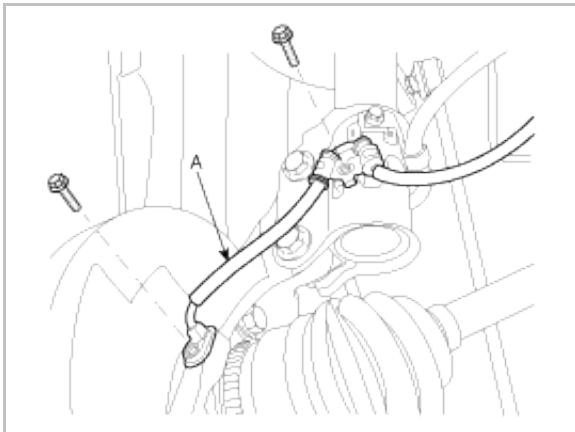
1. Raise the vehicle and remove the wheel & tire assembly (A) from the front hub assembly (B).

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

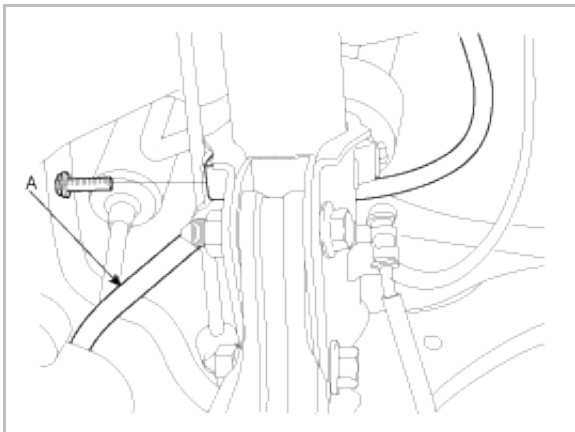
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)



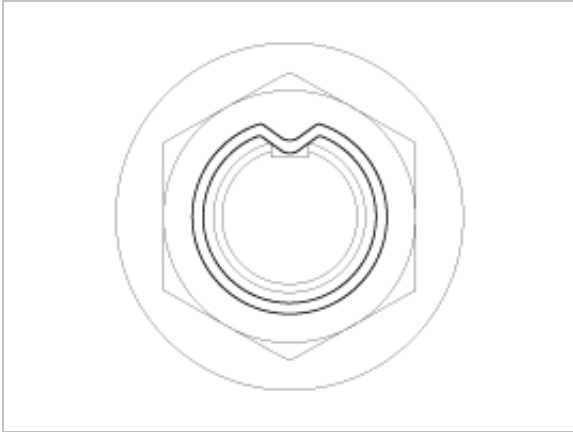
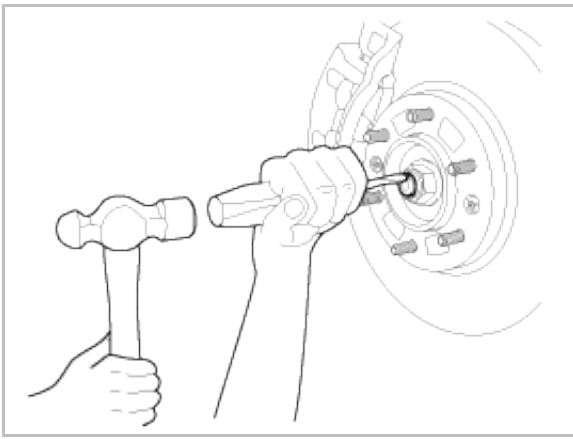
2. Remove the wheel speed sensor & wire (A) by loosening the bolts.



3. Disconnect the brake hose (A) from the strut assembly.



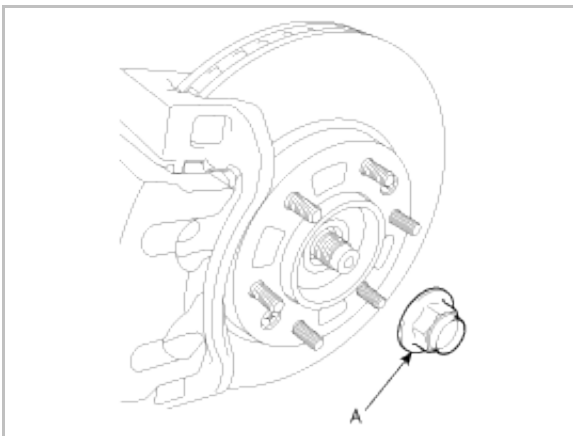
4. Unstake the driveshaft lock nut using a chisel and hammer.



5. Remove the driveshaft lock nut (A).

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

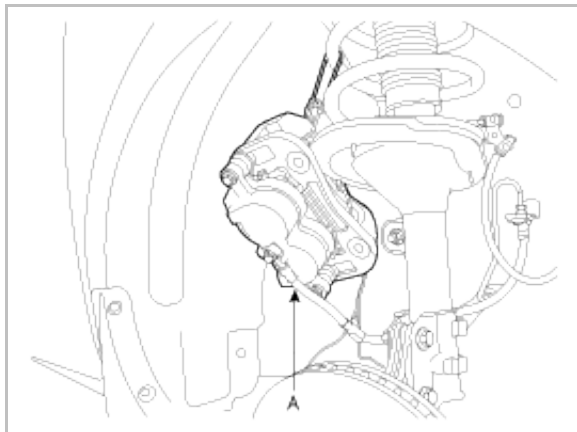
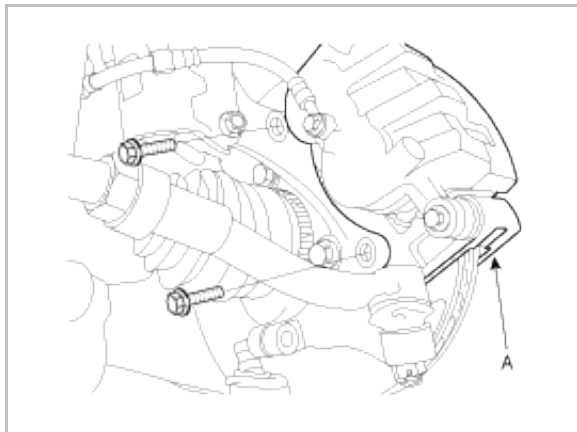
245 ~ 275 (24.5 ~ 27.5, 177 ~ 199)



6. Remove the caliper assembly (A) from the knuckle and suspend it with wire.

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

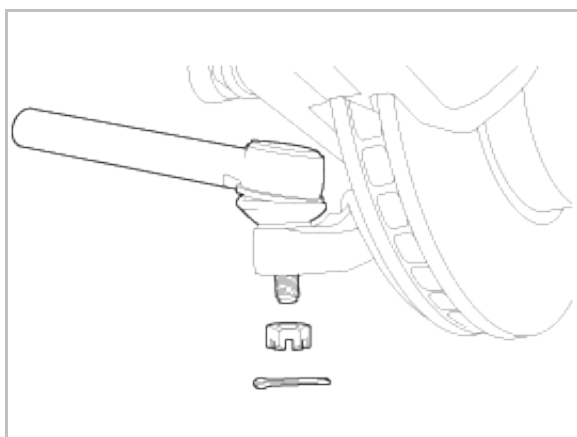
85 ~ 100 (8.5 ~ 10.0, 61 ~ 72)



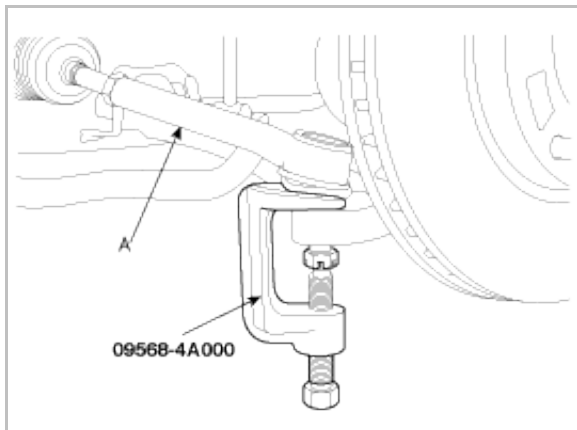
7. Remove the split pin and castle nut from the tie rod end ball joint.

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

60 ~ 80 (6.0 ~ 8.0, 43 ~ 58)



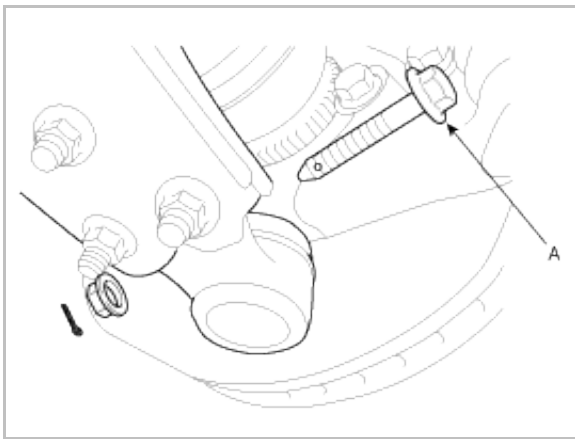
8. Disconnect the tie rod end (A) from the knuckle using a SST (09568-4A000).



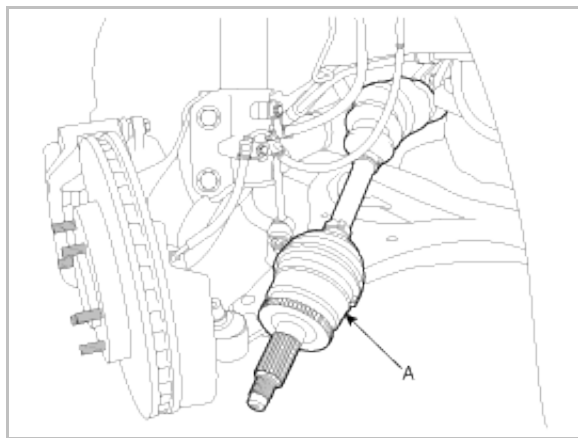
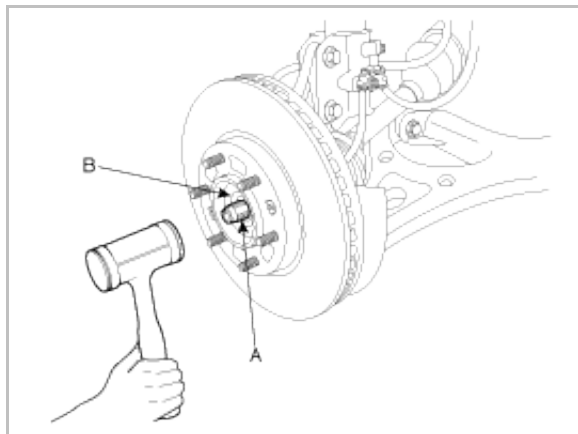
9. Remove the split pin and lower arm bolt and nut (A).

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

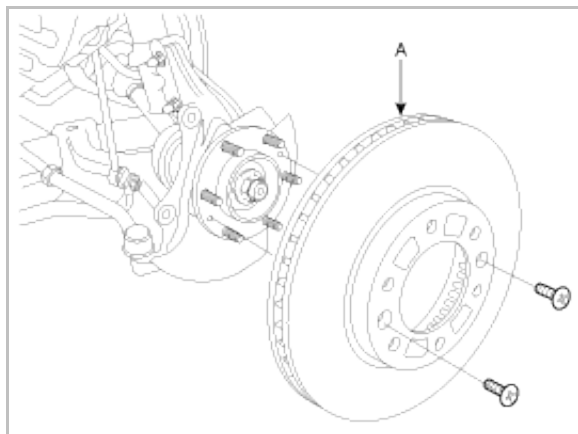
90 ~ 120 (9.0 ~ 12.0, 65 ~ 87)



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



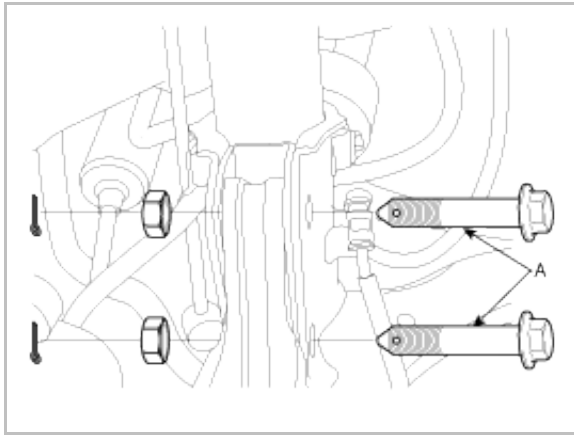
11. Remove the brake disc (A) from the front hub assembly.



12. Remove the knuckle from the strut assembly by loosening the bolts (A).
-

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

100 ~ 120 (10.0 ~12.0, 72 ~ 87)

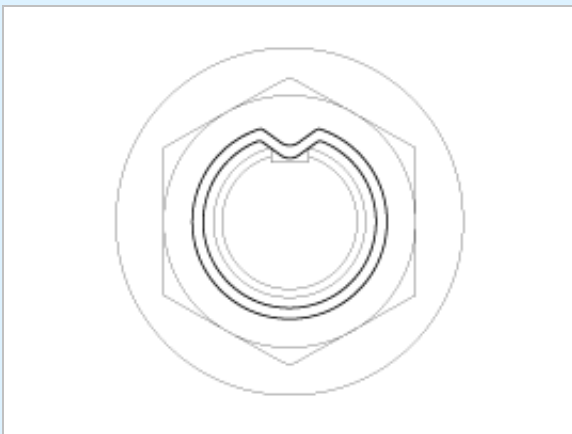
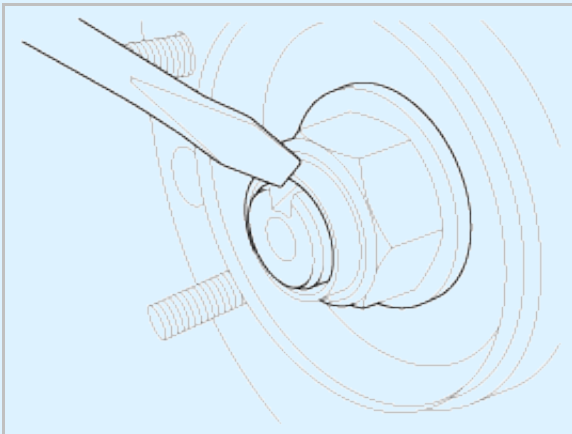


INSTALLATION

1. Installation is reverse of the removal.

CAUTION

- The driveshaft lock nut should be replaced with new ones.
- After installation driveshaft lock nut, stake the lock nut using a chisel and hammer as shown in the illustration below.

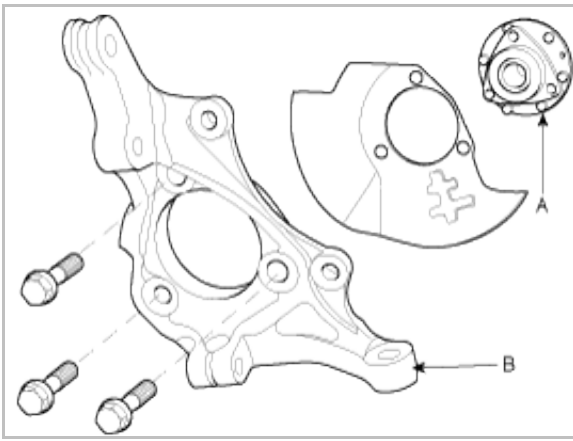


DISASSEMBLY

1. Separate the hub & bearing assembly (A) from the knuckle (B) by loosening the bolts.

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

160 ~ 180 (16.0 ~ 18.0, 116 ~ 130)



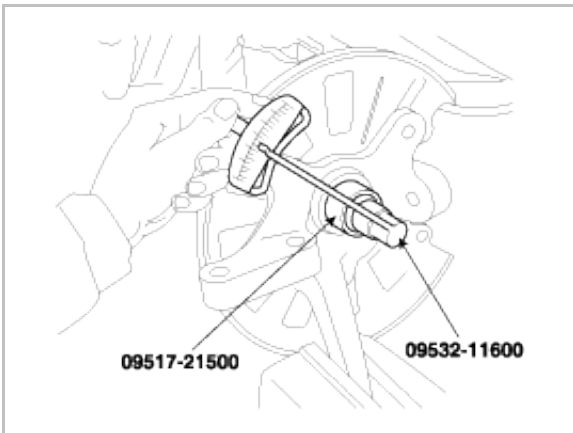
INSPECTION

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.

REASSEMBLY

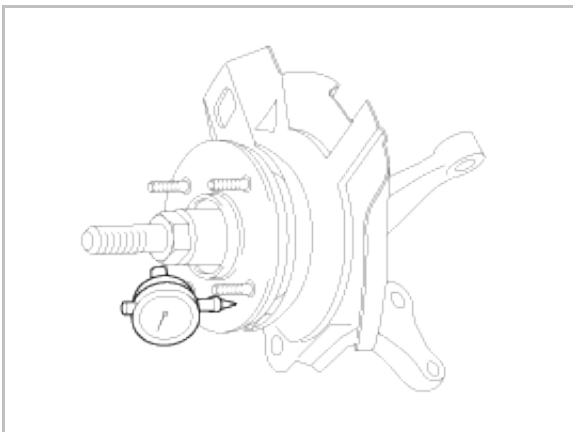
1. Reassembly is reverse of the disassembly.
2. Measure the wheel bearing starting torque.

20 kgf.cm or less



3. Measure the hub assembly axial play using a dial gauge.

0.008 mm or less

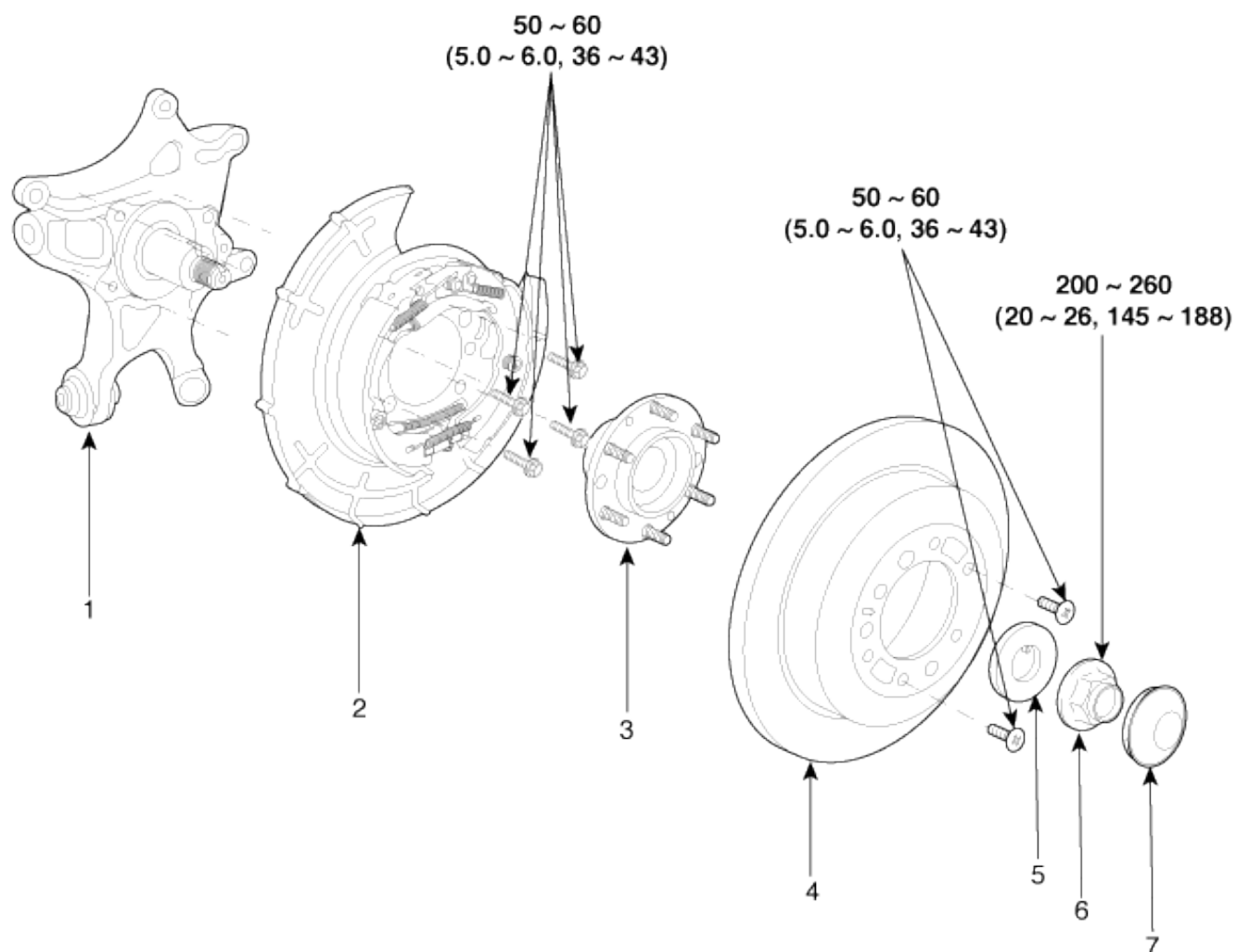




Driveshaft and Axle

Rear Axle Assembly - Rear Hub/Carrier

COMPONENTS



TORQUE : Nm (kgf·m, lb·ft)

1. Carrier assembly
2. Brake assembly
3. Hub & bearing assembly
4. Brake disc

5. Washer
6. Nut
7. Cap

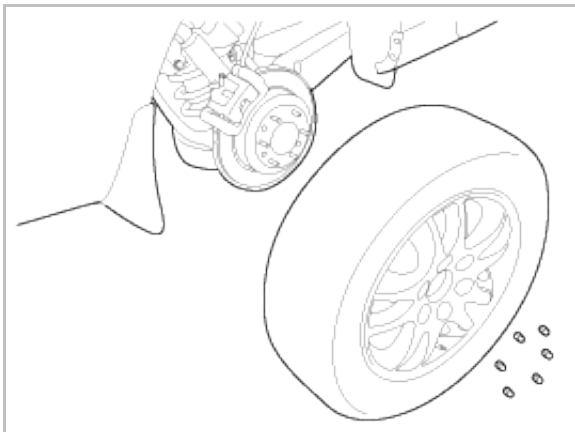


REMOVAL

1. Release the parking brake.
2. Remove the wheel & tire assembly.

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

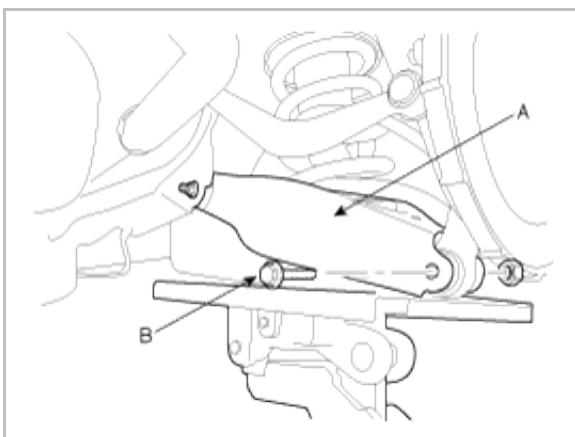
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)



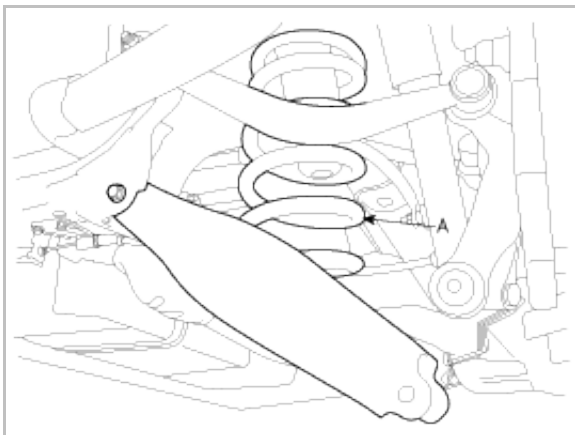
3. Support lower part of the lower arm (A) using a jack and remove the bolt & nut (B).

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

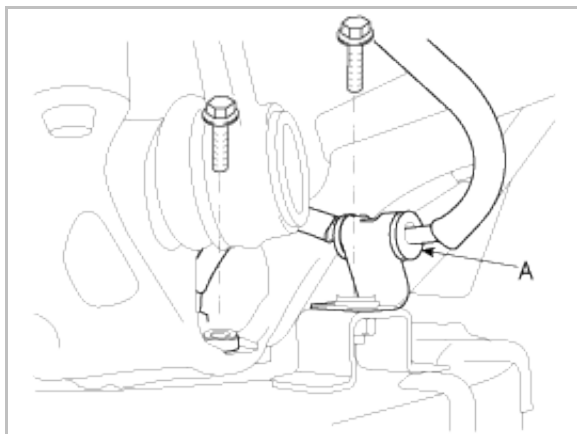
160 ~ 180 (16.0 ~ 18.0, 116 ~ 130)



4. Remove the coil spring (A) and upper pad.



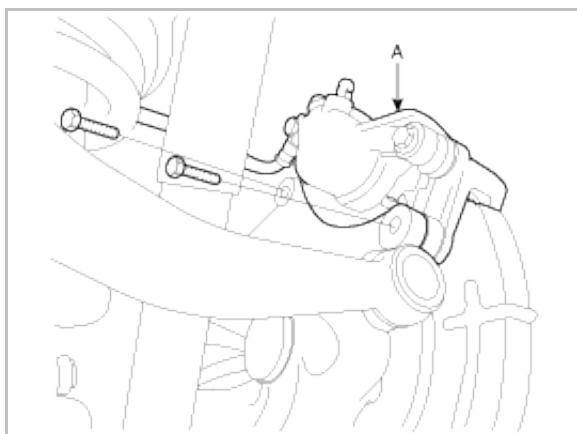
5. Remove the wheel speed sensor (A).



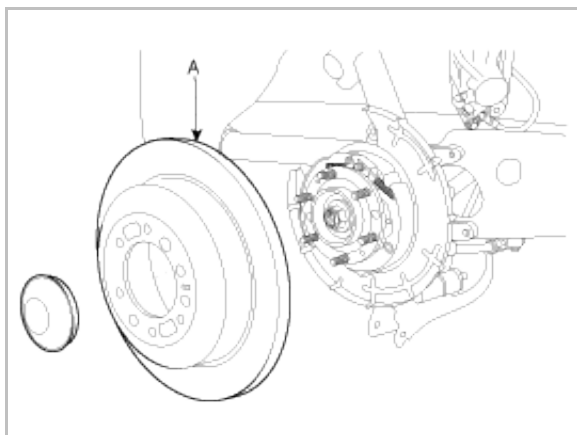
6. Remove the rear brake caliper assembly (A) from the carrier assembly and suspend it with wire.

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

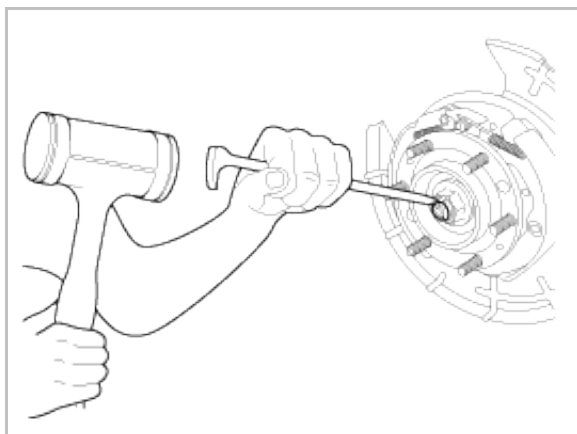
50 ~ 60 (5.0 ~ 6.0, 36 ~ 43)

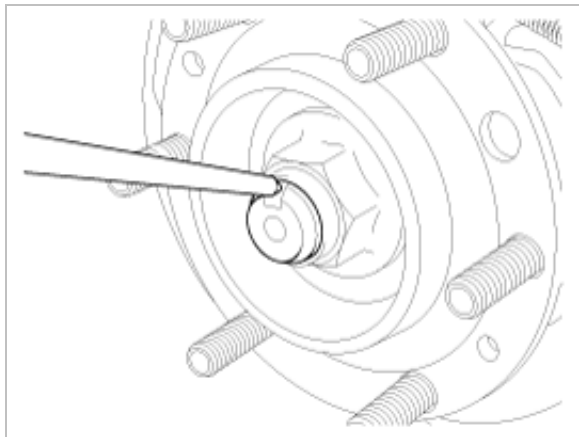


7. Remove the rear brake disc (A) by loosening the screws.



8. Unstake the lock nut using a chisel and hammer.

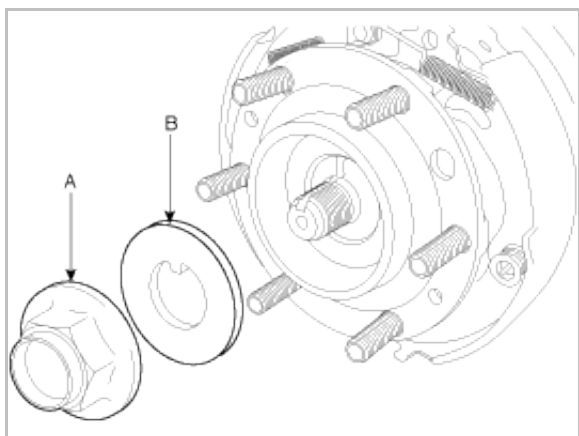




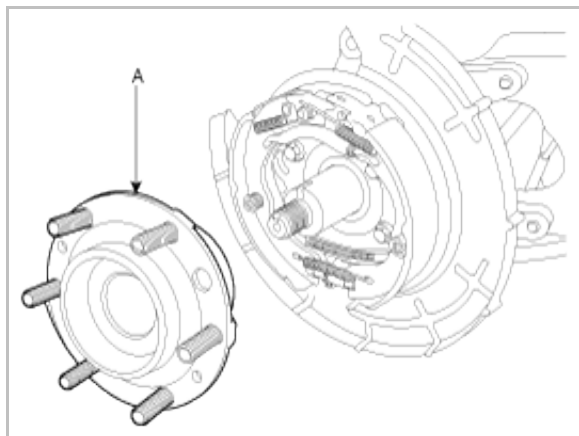
9. Remove the lock nut (A) and washer (B).

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

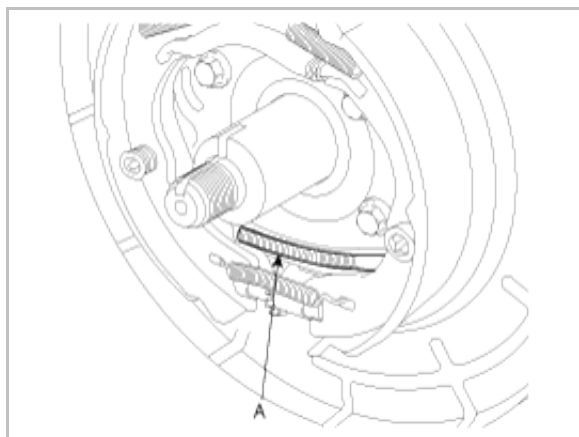
200 ~ 260 (20.0 ~ 26.0, 145 ~ 188)



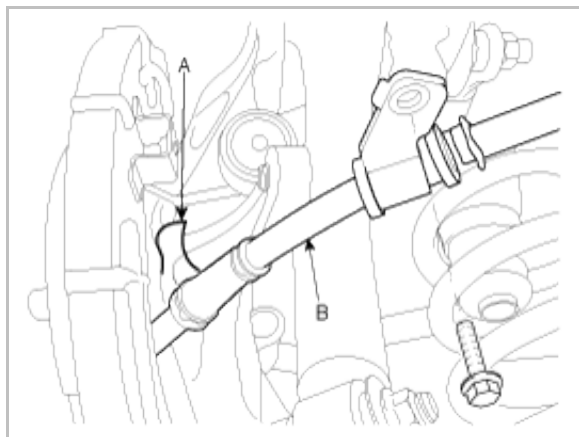
10. Remove the hub & bearing assembly (A).



11. Disconnect the parking brake cable (A) from the brake assembly.



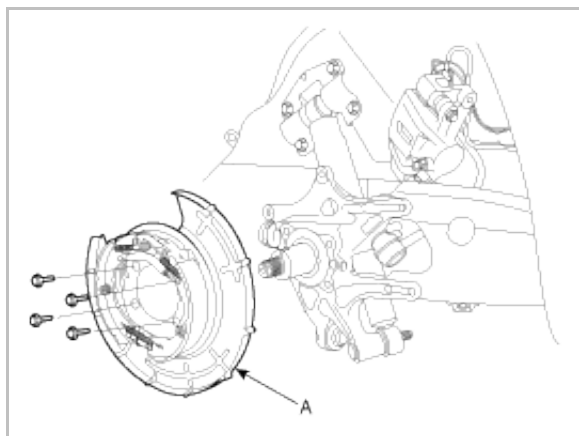
12. Remove the clip (A) and bracket mounting bolt and disconnect the parking brake cable (B) from the carrier assembly.



13. Remove the rear brake assembly (A).

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

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



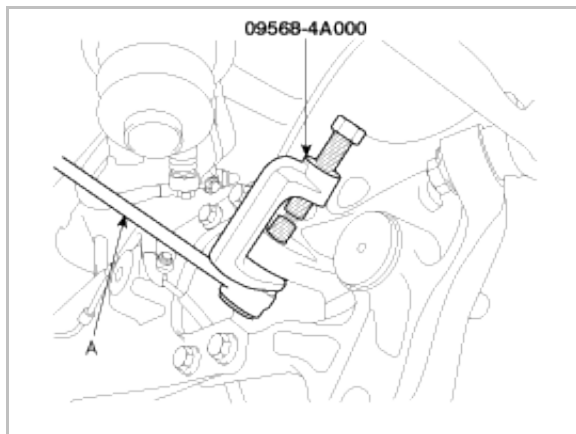
14. Remove the rear shock absorber (A).



15. After loosening the castle nut and split pin, disconnect the assist arm (A) from the carrier assembly using a SST (09568-4A000).

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

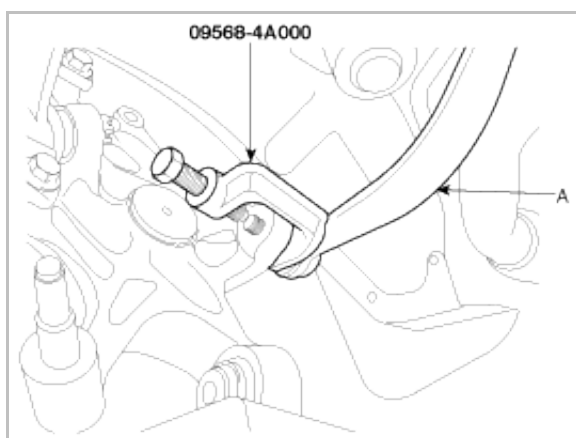
90 ~ 100 (9.0 ~ 10.0, 65 ~72)



16. After loosening the castle nut and split pin, disconnect the upper arm (A) from the carrier assembly using a SST (09562-4A000).

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

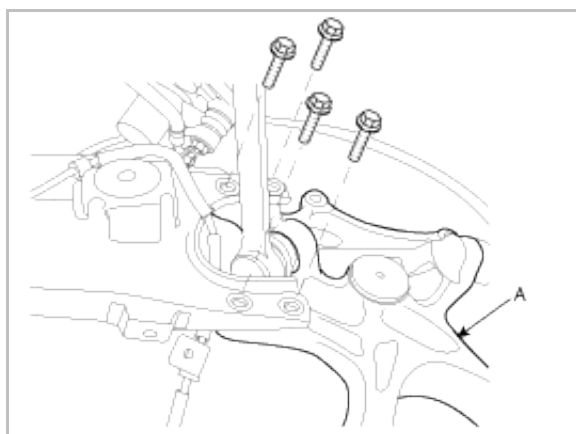
90 ~ 100 (9.0 ~ 10.0, 65 ~ 72)



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

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

80 ~ 110 (8.0 ~ 11.0, 58 ~ 80)

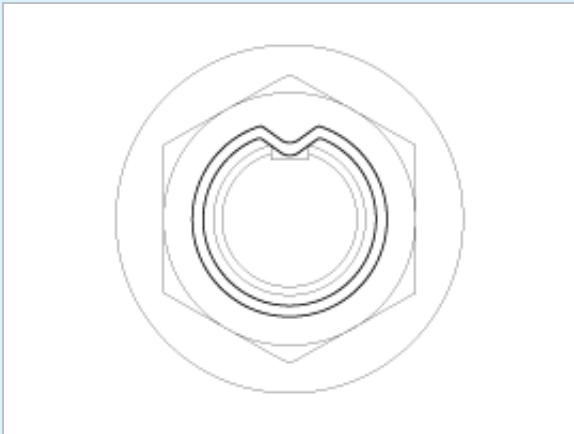
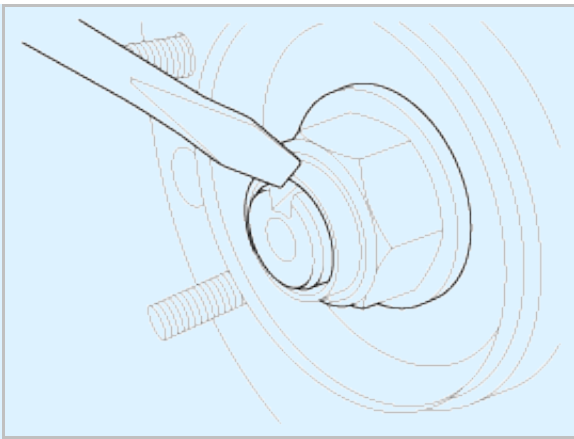


INSTALLATION

1. Installation is the reverse of removal.

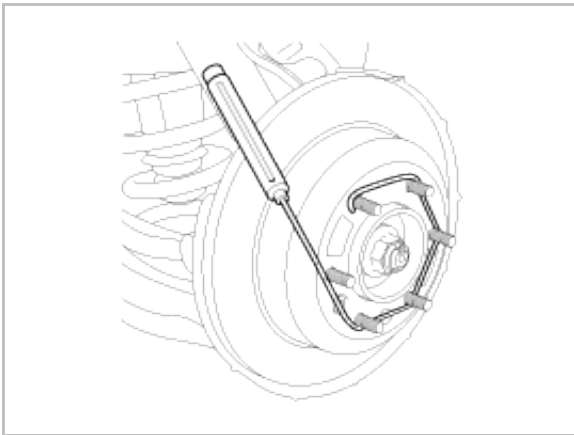
CAUTION

- The rear hub lock nut should be replaced with new ones.
- After installation lock nut, stake the lock nut using a chisel and hammer as shown in the illustration below.



2. Check the rear hub & bearing assembly starting torque using a spring balance.

20 kgf.cm



INSPECTION

1. Check the hub for cracks and wear.
2. Check the brake disc for scoring and damage.
3. Check the carrier for cracks.