GENESIS COUPE(BK) > 2013 > G 3.8 GDI > Driveshaft and axle

Driveshaft and axle > General Information > Specifications

Specification

Items		Inner side		Outer side	
Rear drive shaft	Joint type	TSJ		BJ	
	Max. permissible angle	28.5°		15°	
	Backlash	M/T : 0.4° below A/T : 0.4° below			
Differential	Oil type	Hypoid gear oil, MS 517-15 GT (API GL-5, SAE 75W/90)			
	Oil capacity (L)	About 1.4L ± 0.05L			
	Reduction gear type	Hypoid gear			
	Reduction gear ratio	Theta 2.0 T-MPI AT	Theta 2.0 T-MPI MT	Lambda 3.8 GDI AT	Lambda 3.8 GDI MT
		4.181	3.538	4.181	3.538
	Differential gear backlash mm(in.)	0.10 ~ 0.15mm (0.0039 ~ 0.0059 in.)			

Tightening Torque

Items		Nm	Kgf.m	lb-ft
Front	Wheel nut	88.3 ~ 107.9	9.0 ~ 11.0	65.1 ~ 79.6
	Strut assembly lower mounting bolt	137.2 ~ 160	14.0 ~ 16.0	101.1 ~ 115.7
	Break caliper mounting bolt	49 ~ 58.8	5.0 ~ 6.0	36.1 ~ 43.3
	Wheel speed sensor mounting bolt	6.9 ~ 10.8	0.7 ~ 1.1	5.1 ~ 8.0
	Break disc mounting screw	4.9 ~ 5.9	0.5 ~ 0.6	3.6 ~ 4.3
	Hub assembly mounting bolt	78.5 ~ 98.1	8.0 ~ 10.0	57.9 ~ 72.3
	Lower arm ball joint mounting bolt	98.1 ~ 117.7	10.0 ~ 12.0	72.3 ~ 86.8
	Tie rod end ball joint mounting nut	78.4 ~ 88.2	8.0 ~ 9.0	57.8 ~ 65.0
Rear	Wheel nut	88.3 ~ 107.9	9.0 ~ 11.0	65.0 ~ 75.6
	Driveshaft castle nut	196.1 ~ 255.0	20.0 ~ 26.0	144.7 ~ 188.1
	Shock absorber upper mounting bolt	137.3 ~ 156.9	14.0 ~ 16.0	101.3 ~ 115.7
	Shock absorber upper mounting nut	137.3 ~ 156.9	14.0 ~ 16.0	101.3 ~ 115.7

Break caliper mounting bolt	49.1 ~ 58.8	5.0 ~ 6.0	36.1 ~ 43.4
Wheel speed sensor mounting bolt	6.9 ~ 10.8	0.7 ~ 1.1	5.1 ~ 8.0
Break disc mounting screw	4.9 ~ 5.9	0.5 ~ 0.6	3.6 ~ 4.3
Hub assembly mounting bolt	78.5 ~ 88.3	8.0 ~ 9.0	57.9 ~ 65.1
Upper arm ball joint mounting nut	78.5 ~ 88.3	8.0 ~ 9.0	57.9 ~ 65.1
Lower arm mounting bolt	137.3 ~ 156.9	14.0 ~ 16.0	101.3 ~ 115.7
Assist arm ball joint mounting nut	98.1 ~ 117.7	10.0 ~ 12.0	72.3 ~ 86.8
Trailing arm mounting bolt	98.1 ~ 117.7	10.0 ~ 12.0	72.3 ~ 86.8

CAUTION

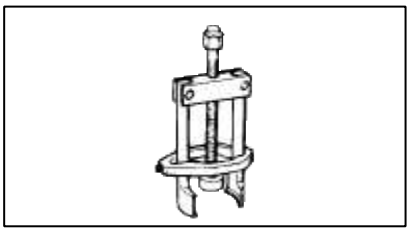
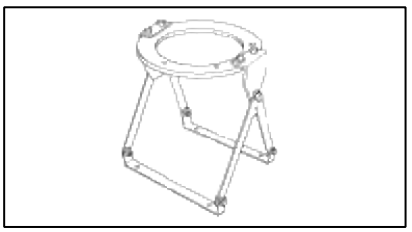
Replace self-locking nuts with new ones after removal.

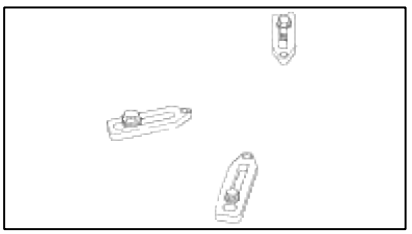
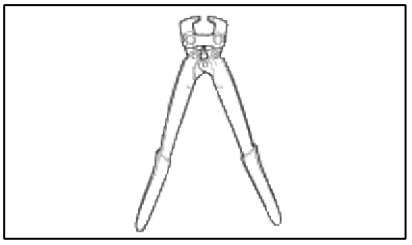
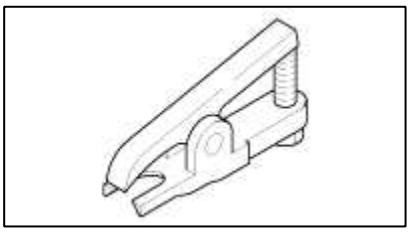
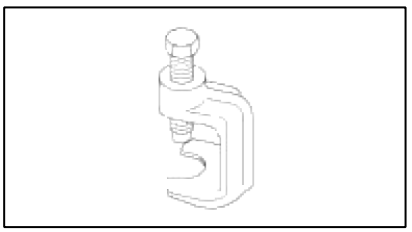
Lubricants

Items		Lubricants	Quantity
Rear driveshaft	BJ	RBA	115 ± 5g
	TSJ	RBA	130 ± 5g

Driveshaft and axle > General Information > Special Service Tools

Special Service Tools

Tool(Number and Name)	Illustration	Use
09495-33000Puller		Removal of spider assembly from a drive shaft.
09517-43401Working base		Support for the differential carrier

09517-43500Adapter		Support for the differential carrier(Use with 09517-43401)
09495-3K000Band installer		Installation of ear type boot band
09568-34000Ball joint remover		Removal of the rear upper arm ball joint
09568-4A000Ball joint remover		Removal of the front lower arm and tie rod end ball joint

Driveshaft and axle > General Information > Troubleshooting

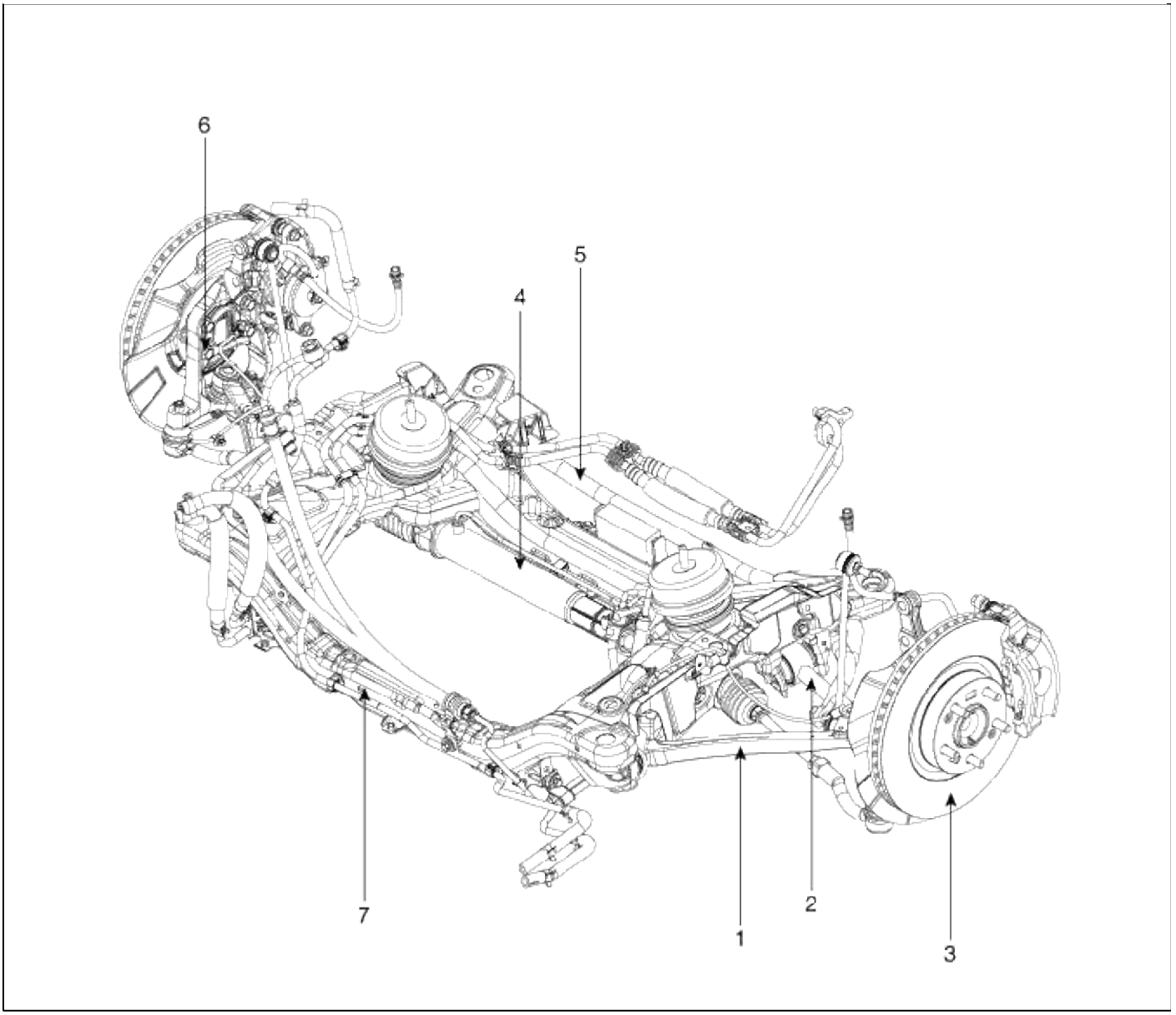
Troubleshooting

Trouble Symptom	Probable cause	Remedy
Vehicle pulls to one side	Scoring of driveshaft ball joint	Replace
	Wear, rattle or scoring of wheel bearing	Replace
	Defective front suspension and steering	Adjustment or Replace
	Tire inflation	Adjustment
	Tire pull, rotate tires	Adjustment
	Front camber/caster value	Adjustment
	Brakes dragging	Adjustment
	Road test on flat road (no crown)	Adjustment
	Etc	Adjustment
Vibration	Wear, damage or bending of driveshaft	Replace
	Driveshaft rattle and hub serration	Replace

	Wear, rattle or scratching of wheel bearing	Replace
Shimmy	Defective wheel balance	Adjustment or Replace
	Defective front suspension and steering	Adjustment or Replace
Excessive noise	Wear, damage or bending of driveshaft	Replace
	Rattle of driveshaft and worn hub splines	Replace
	Wear, rattle or scoring of wheel bearing	Replace
	Loose hub nut	Adjustment or Replace
	Defective front suspension and steering	Adjustment or Replace

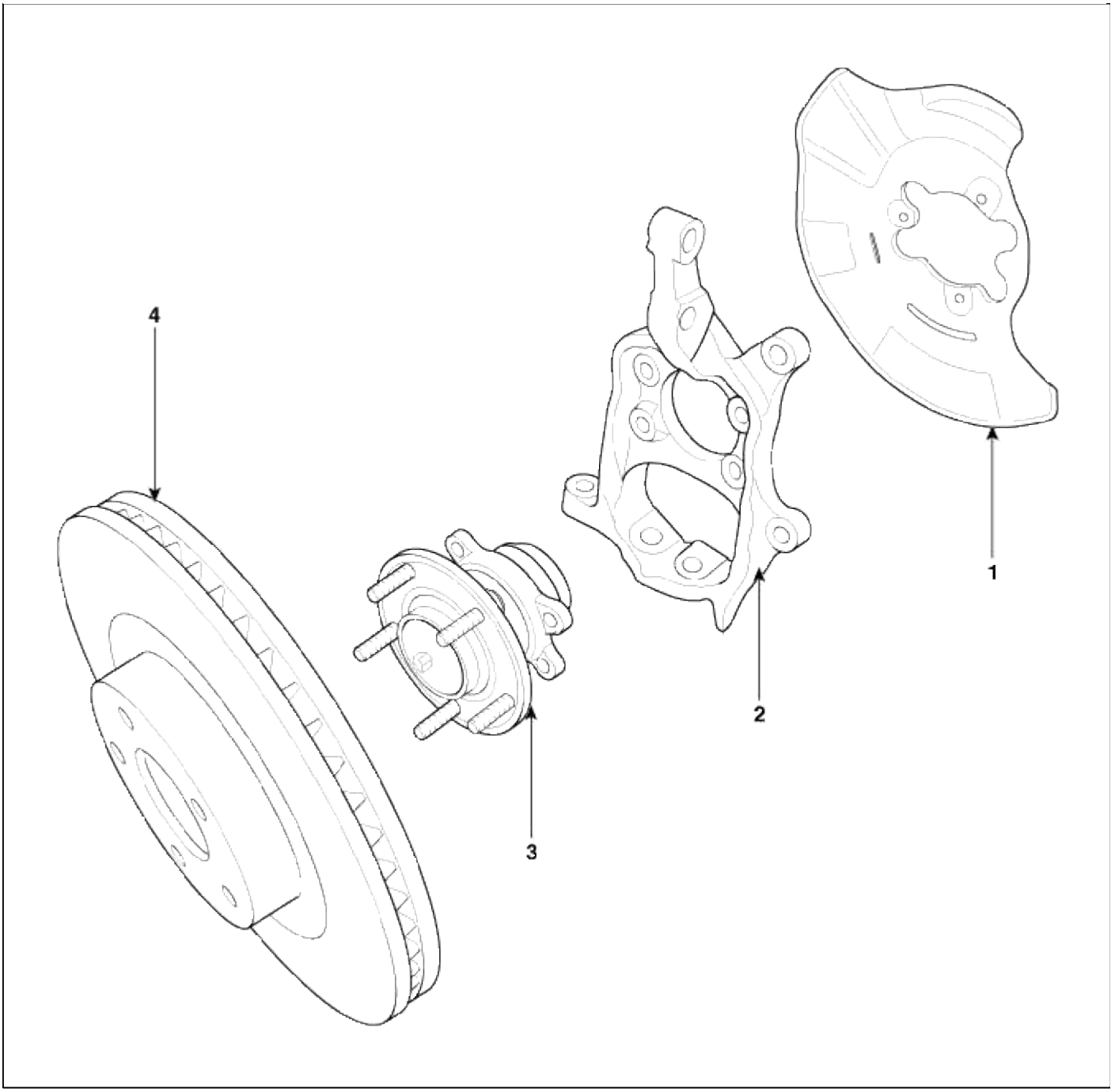
Driveshaft and axle > Front Axle Assembly > Front Hub / Knuckle / Tone Wheel > Components and Components Location

Component Locations



1. Tension arm 2. Lateral arm 3. Front disc 4. Steering gear box	5. Stabilizer bar 6. Front axle 7. Sub frame

Component



1. Dust cover 2. Knuckle	3. Hub assembly 4. Brake disc

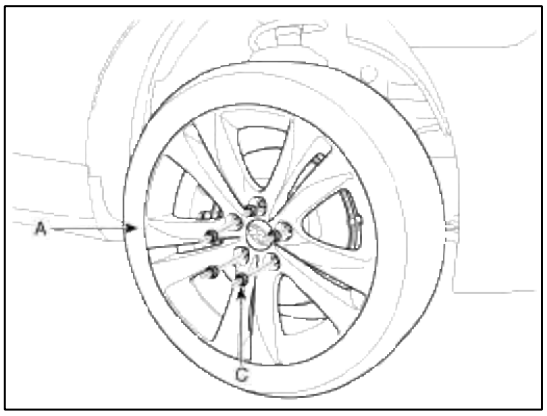
Driveshaft and axle > Front Axle Assembly > Front Hub / Knuckle / Tone Wheel > Repair procedures

Replacement

1. Loosen the wheel nuts slightly. Raise the vehicle, and make sure it is securely supported.

2. Remove the front wheel and tire(A) from front hub .

Tightening torque :
88.3 ~ 107.9 N.m (9.0 ~ 11.0 kgf.m, 65.1 ~ 79.6 lb-ft)

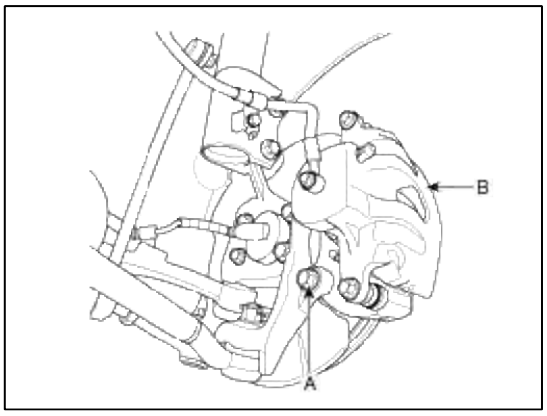


CAUTION

Be careful not to damage to the hub bolts when removing the front wheel and tire.

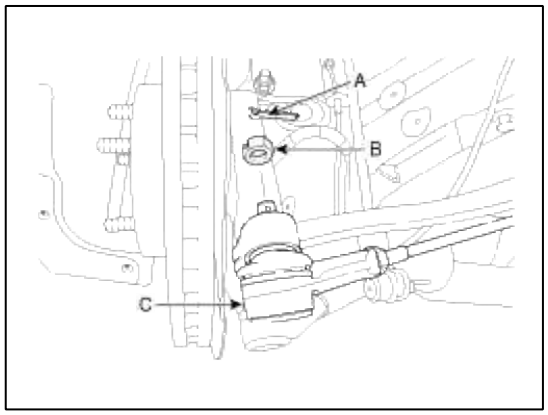
3. Remove the brake caliper mounting bolts (A), and then place the brake caliper assembly (B) with wire.

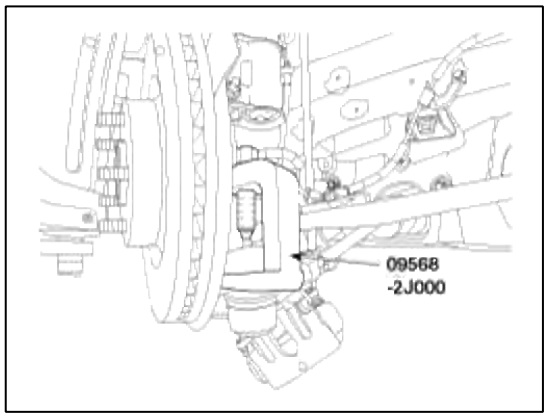
Tightening torque :
49 ~ 58.8 N.m (5.0 ~ 6.0 kgf.m, 36.1 ~ 43.3 lb-ft)



4. Remove the tie rod end ball joint from the knuckle.
   (1) Remove the split pin.
   (2) Remove the castle nut.
   (3) Disconnect the ball joint(A) from knuckle(B) using the special tool (09568-4A000).

Tightening torque :
78.4 ~ 88.2 N.m (8.0 ~ 9.0 kgf.m, 57.8 ~ 65.0 lb-ft)





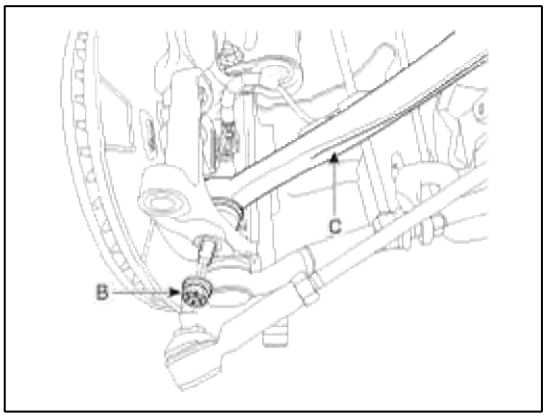
CAUTION

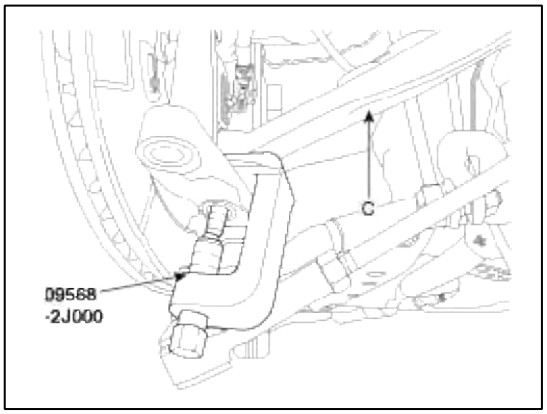
Apply a few drops of oil to the special tool. (Boot contact part)

5. Loosen the tension arm mount bolt(A), and then remove the tension arm(B).
   (1) Remove the split pin.
   (2) Remove the castle nut.

(3) Disconnect the ball joint(A) from tension arm(B) using the special tool (09568-4A000).

Tightening torque :
78.4 ~ 88.2 N.m (8.0 ~ 9.0 kgf.m, 57.8 ~ 65.0 lb-ft)



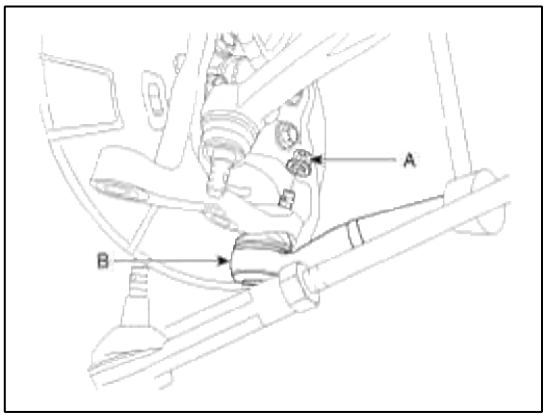


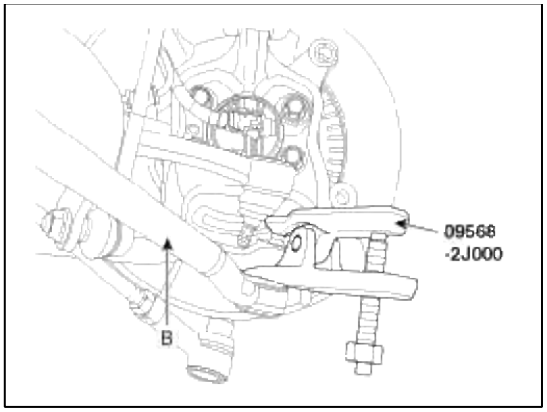
CAUTION

Be careful not to damage the boot and rotor teeth.

6. Loosen the lateral mount nut(A) and then disconet the laterral arm(B).

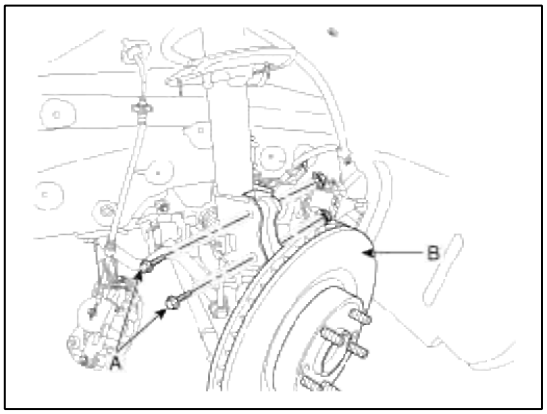
Tightening torque :
90 ~ 110 N.m (9.0 ~ 11.0 kgf.m, 65 ~ 79.5 lb-ft)



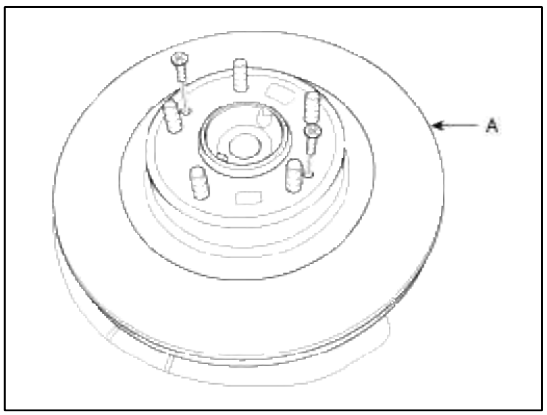


7. Remove the strut mounting bolt and then remove the knuckle assembly(A).

Tightening torque :
6.9 ~ 10.8 N.m (14 ~ 16 kgf.m, 5.1 ~ 8.0 lb-ft)

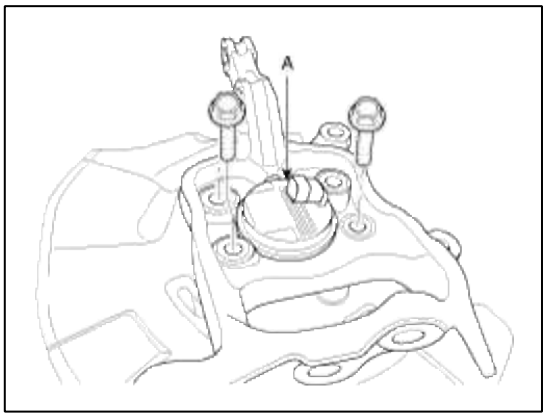


8. Remove the brake disc(A) from knuckle.

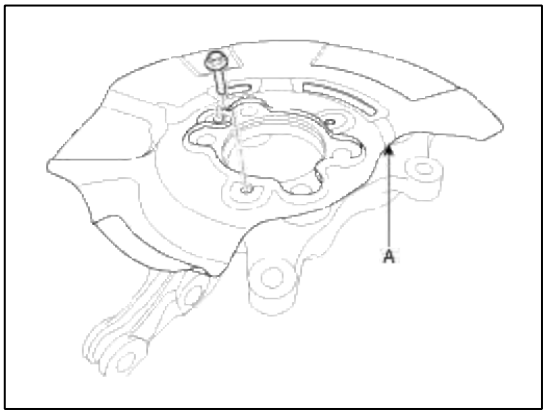


9. Remove the hub assembly(A) from knuckle assembly.

Tightening torque :
80 ~ 100 N.m (8.0 ~ 10.0 kgf.m, 57.8 ~ 72.3 lb-ft)



10. Loosen the dust cover mount bolts and then remove the dust cover(B).



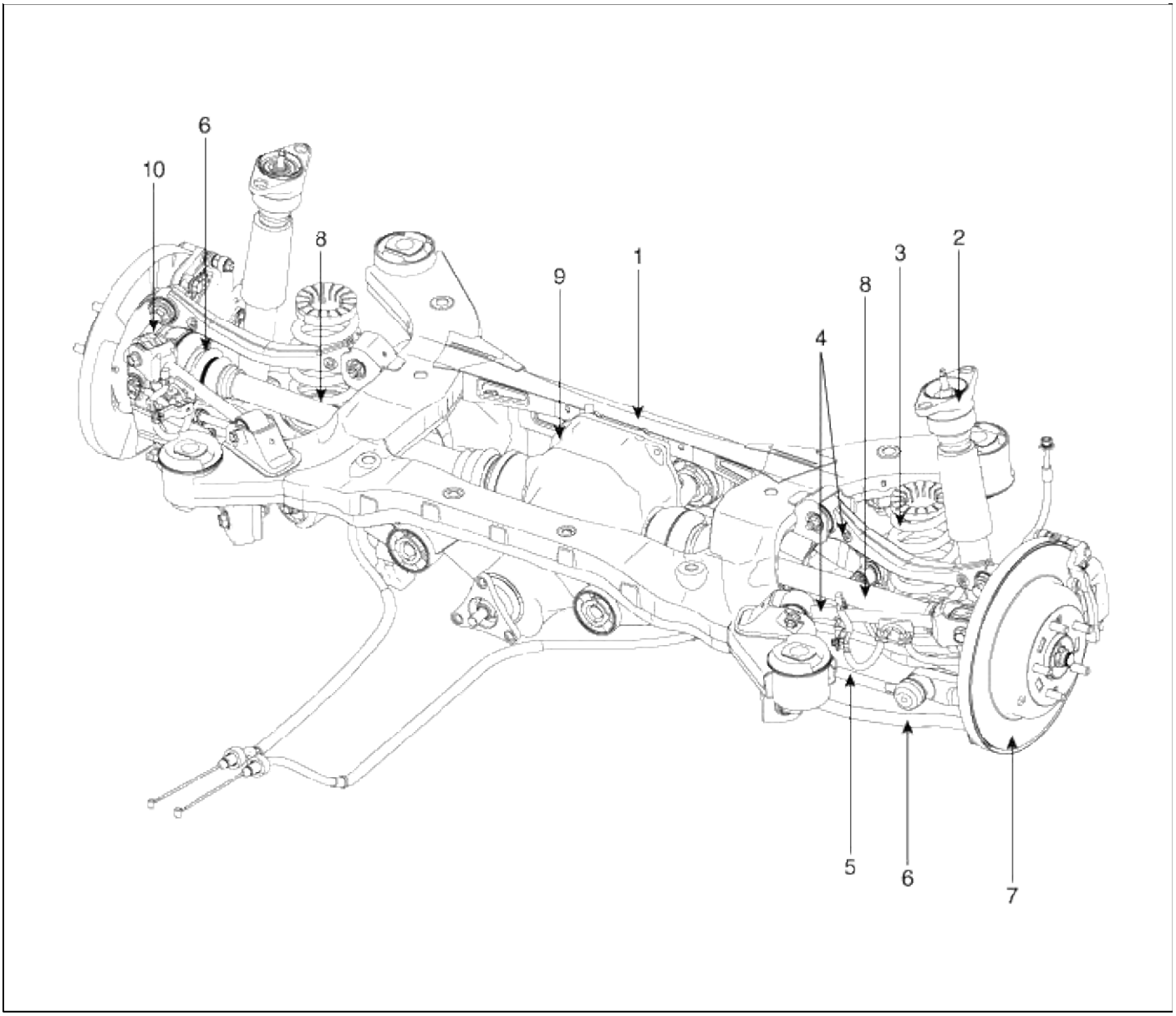
11. Installation is the reverse order of removal.

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.
4. Check the bearing for cracks or damage.

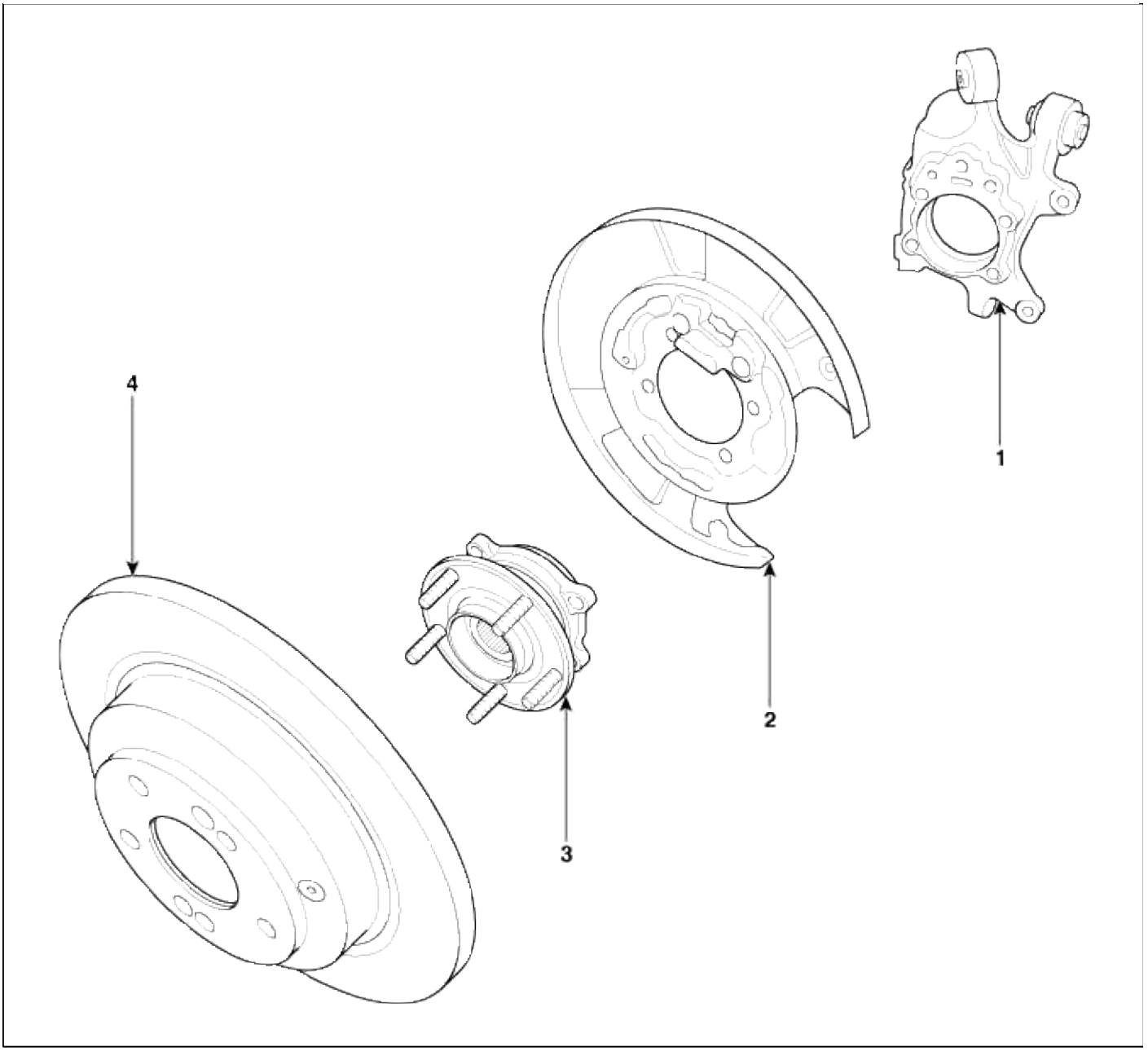
Driveshaft and axle > Rear Axle Assembly > Rear Hub - Carrier > Components and Components Location

Component Locations



1. Sub frame 2. Rear shock absorber 3. Coil spring 4. Rear upper arm 5. Assist arm	6. Trailing arm 7. Rear disc 8. Rear drive shaft 9. Differential assembly 10. Rear axle

Components



1. Rear carrier assembly 2. Rear dust cover	3. Rear hub assembly 4. Rear brake disc

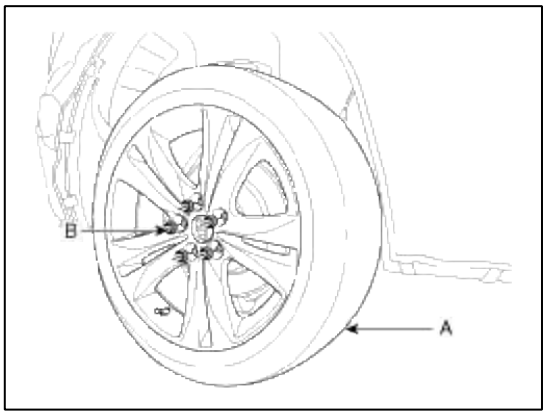
Driveshaft and axle > Rear Axle Assembly > Rear Hub - Carrier > Repair procedures

Replacement

1. Loosen the wheel nuts slightly. Raise the vehicle, and make sure it is securely supported.

2. Remove the rear wheel and tire(A) from rear hub .

Tightening torque :
88.3 ~ 107.9 N.m (9.0 ~ 11.0 kgf.m, 65.1 ~ 79.6 lb-ft)

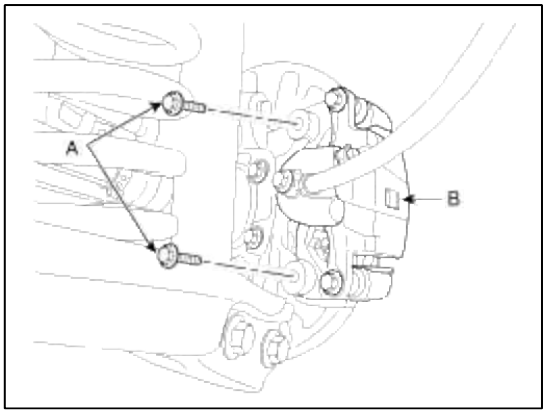


CAUTION

Be careful not to damage to the hub bolts when removing the rear wheel and tire.

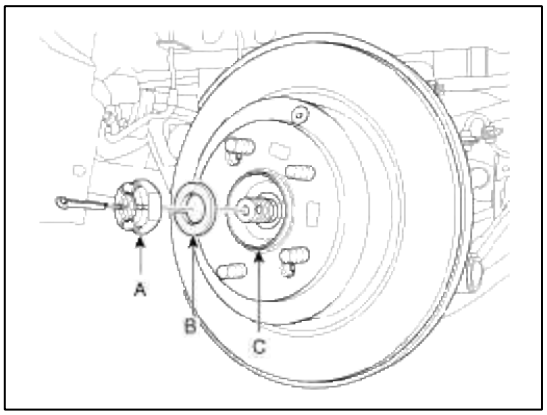
3. Remove the brake caliper mounting bolts (A), and then place the brake caliper assembly (B) with wire as shown in the illustration.

Tightening torque :
49 ~ 58.8 N.m (5.0 ~ 6.0 kgf.m, 36.1 ~ 43.3 lb-ft)



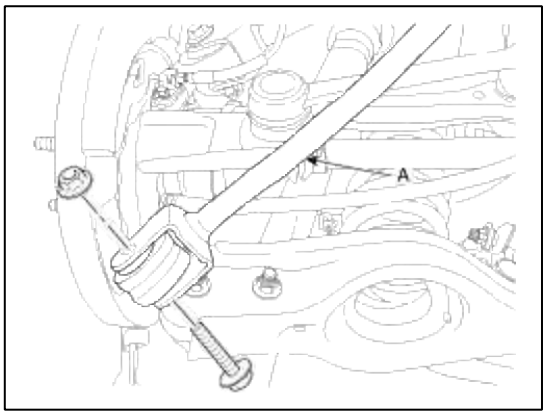
4. Remove the split pin(A), then remove castle nut(B) and washer(C) from the front hub under applying the break.

Tightening torque :
196.1 ~ 255.0 N.m (20.0 ~ 26.0 kgf.m, 144.7 ~ 188.1 lb-ft)



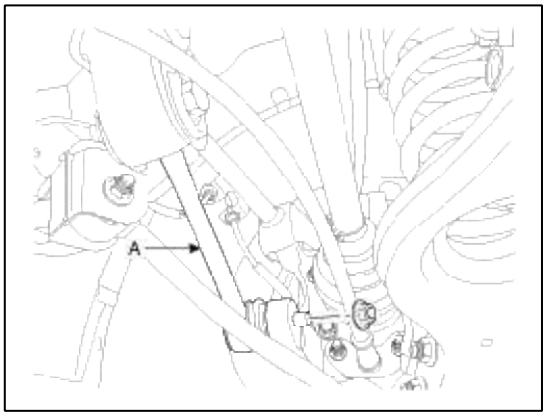
5. Remove the rear break lining. (Refer to BR group-Rear Brake)
6. Loosen the trailing arm mount bolt & nut and than remove the trailing arm(A).

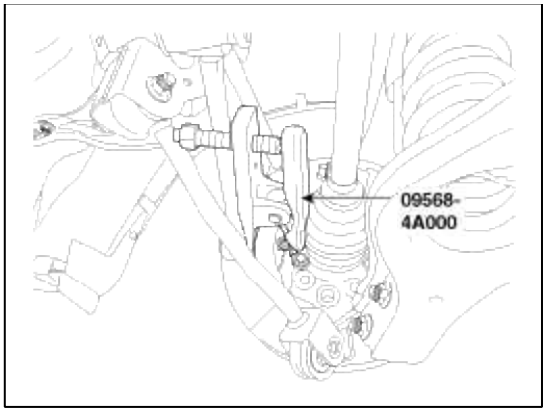
Tightening torque :
98.1 ~ 117.7 N.m (10.0 ~ 12.0 kgf.m, 72.3 ~ 86.8 lb-ft)



7. Loosen the assist arm mount nut and than disconnect the assist arm(A).

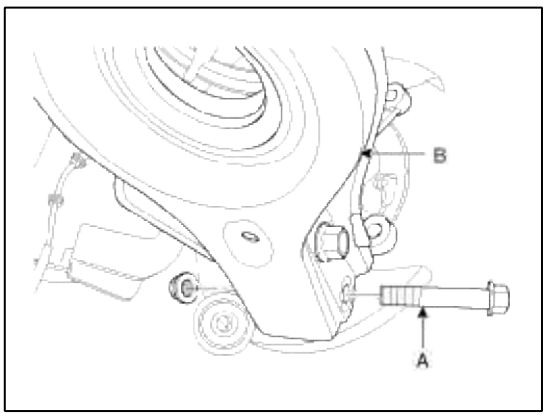
Tightening torque :
98.1 ~ 117.7 N.m (10.0 ~ 12.0 kgf.m, 72.3 ~ 86.8 lb-ft)





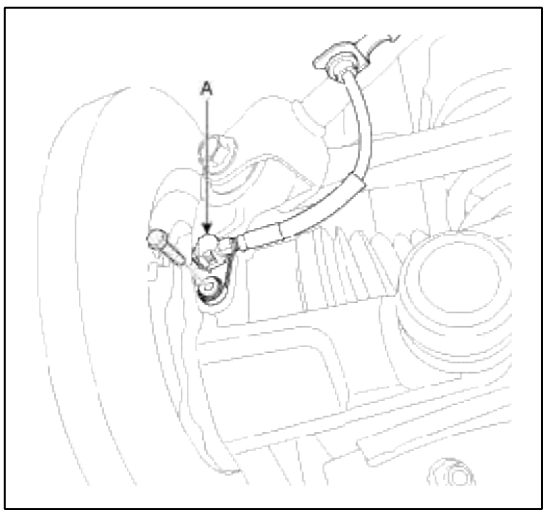
8. Remove lower arm mount bolt(A) and than remove the lower arm(B).

Tightening torque :
140 ~ 160 N.m (14.0 ~ 16.0 kgf.m, 101.2 ~ 115.7 lb-ft)

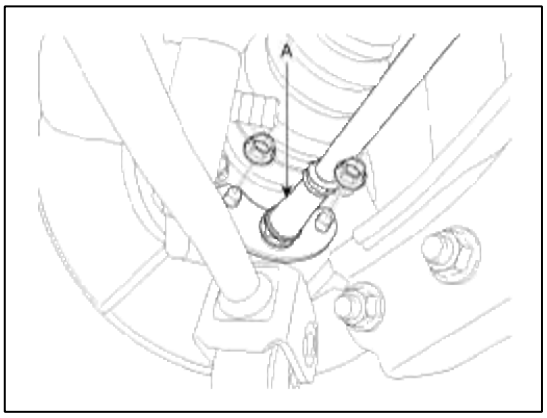


9. Remove the wheel speed sensor(A).

Tightening torque :
6.9 ~ 10.8 N.m (0.7 ~ 1.1 kgf.m, 5.1 ~ 8.0 lb-ft)

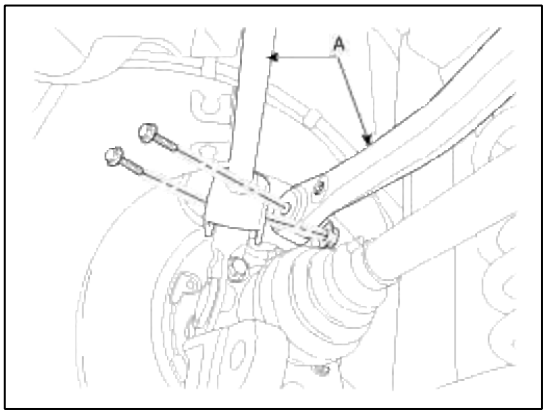


10. Loosen the brake cable mount nuts and than remove the brake cable(A).



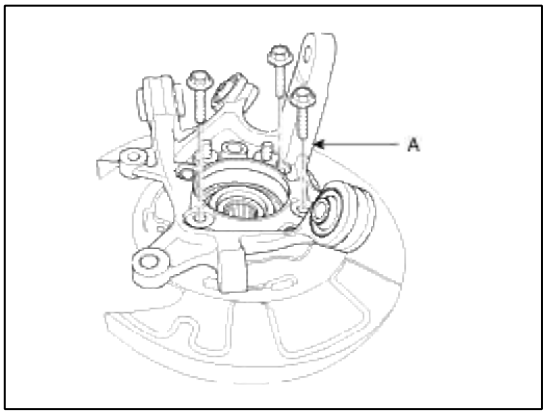
11. Loosen the upper arm(A) link mount bolt & nut and then remove the carrier assembly(B).

Tightening torque :
78.5 ~ 88.3 N.m (8.0 ~ 9.0 kgf.m, 57.9 ~ 65.1 lb-ft)



12. Remove the hub assembly mount bolts from the rear axle carrier(A).

Tightening torque :
78.5 ~ 88.3 N.m (8.0 ~ 9.0 kgf.m, 57.9 ~ 65.1 lb-ft)



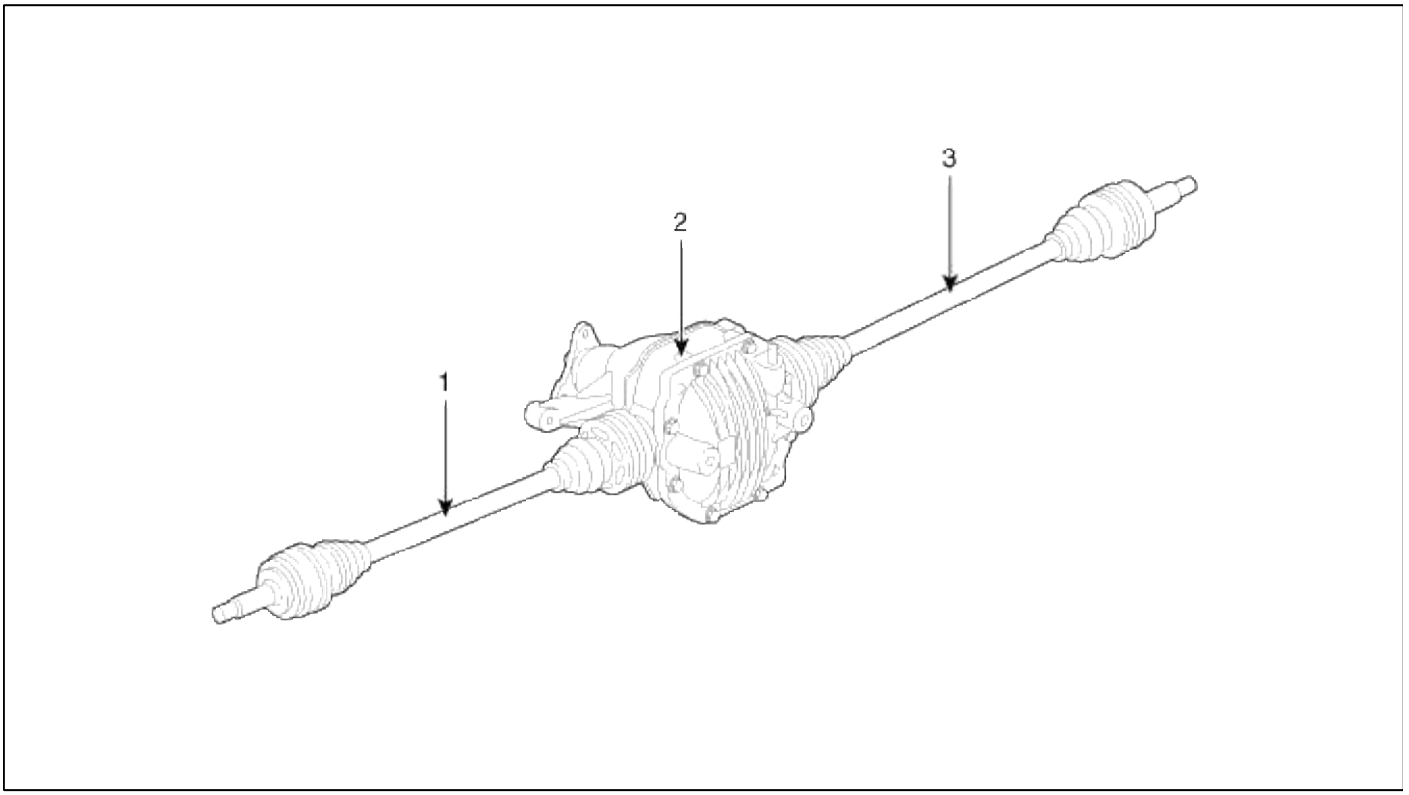
13. Installation is the reverse order of removal.

Ispection

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

Driveshaft and axle > Rear Driveshaft Assembly > Rear Driveshaft > Components and Components Location

Component Location



1. Drive shaft (LH) 2. Drive shaft (RH)	3. Defferential assembly

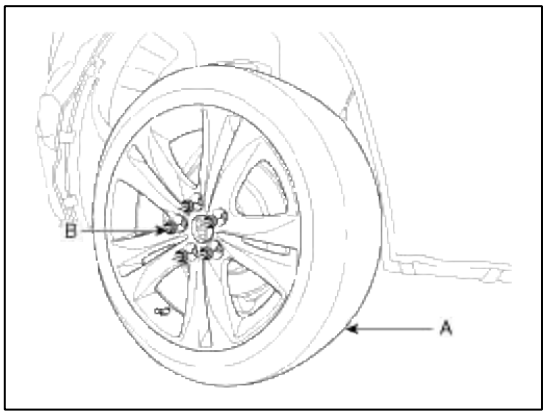
Driveshaft and axle > Rear Driveshaft Assembly > Rear Driveshaft > Repair procedures

Replacement

1. Loosen the wheel nuts slightly. Raise the vehicle, and make sure it is securely supported.

2. Remove the rear wheel and tire(A) from rear hub .

Tightening torque :
88.3 ~ 107.9 N.m (9.0 ~ 11.0 kgf.m, 65.1 ~ 79.6 lb-ft)

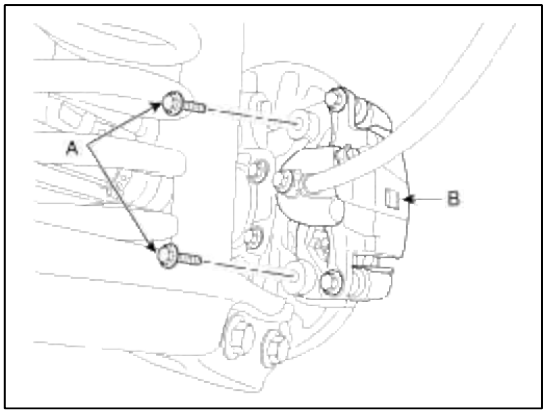


CAUTION

Be careful not to damage to the hub bolts when removing the rear wheel and tire.

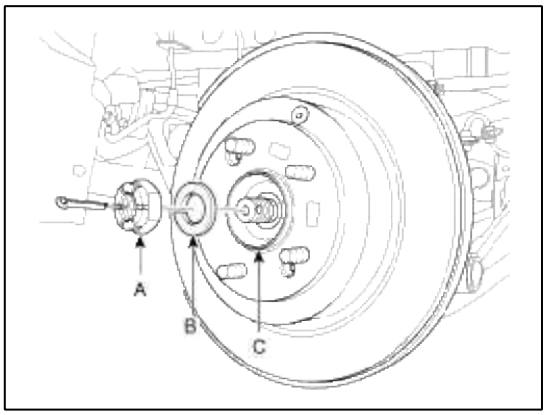
3. Remove the brake caliper mounting bolts (A), and then place the brake caliper assembly (B) with wire as shown in the illustration.

Tightening torque :
49.0 ~ 58.8 N.m (5.0 ~ 6.0 kgf.m, 36.1 ~ 43.3 lb-ft)



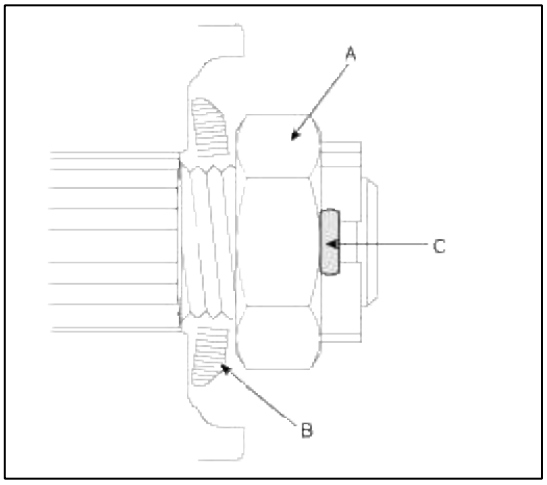
4. Remove the split pin(A), then remove castle nut(B) and washer(C) from the front hub under applying the break.

Tightening torque :
200 ~ 280 N.m (20.0 ~ 28.0 kgf.m, 144.6 ~ 202.5 lb-ft)



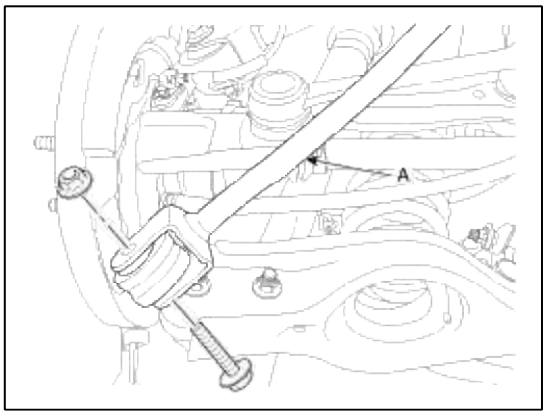
CAUTION

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

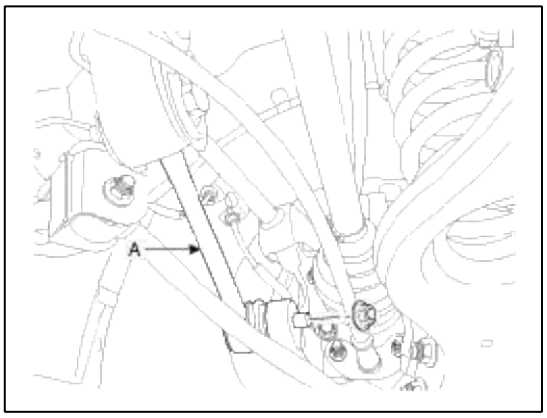


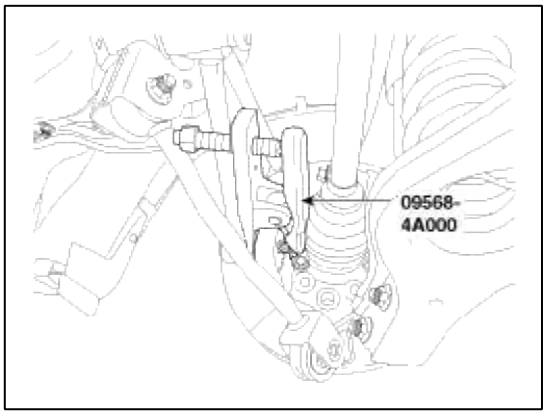
5. Remove the rear break lining (Refer to BR group-Front brake).
6. Loosen the trailing arm mount bolt & nut and than remove the trailing arm (A).

Tightening torque :
98.1 ~ 117.7 N.m (10.0 ~ 12.0 kgf.m, 72.3 ~ 86.8 lb-ft)



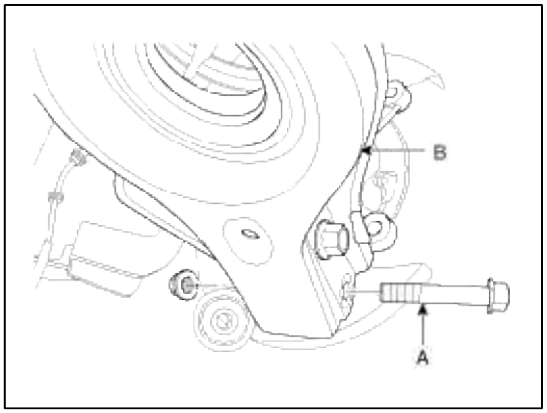
7. Loosen the assist arm mount nut and than disconnect the assist arm(A).





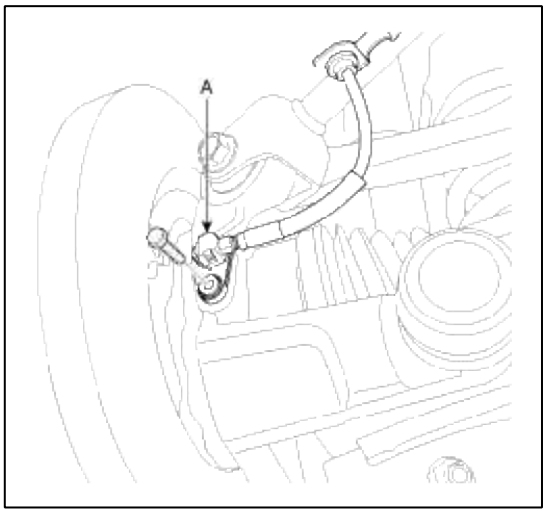
8. Remove lower arm mount bolt(A) and than remove the lower arm(B).

Tightening torque :
140 ~ 160 N.m (14.0 ~ 16.0 kgf.m, 101.2 ~ 115.7 lb-ft)

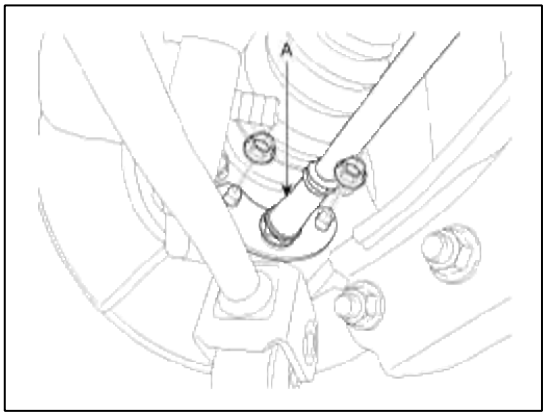


9. Remove the wheel speed sensor(A).

Tightening torque :
6.9 ~ 10.8 N.m (0.7 ~ 1.1 kgf.m, 5.1 ~ 8.0 lb-ft)

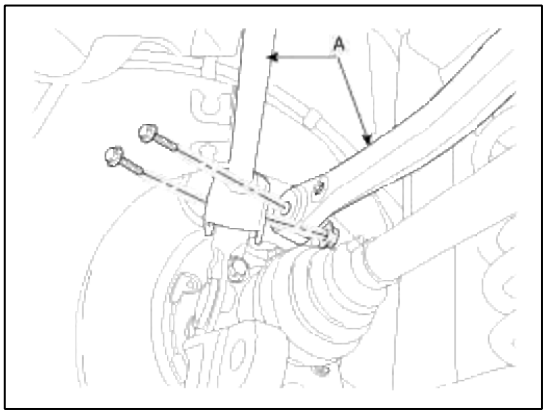


10. Loosen the brake cable mount nuts and than remove the brake cable(A).

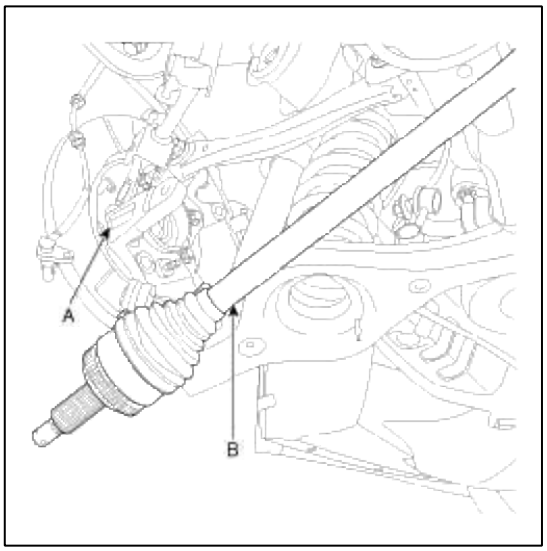


11. Loosen the upper arm(A) link mount bolt & nut and then remove the carrier assembly(B).

Tightening torque :
78.5 ~ 88.3 N.m (8.0 ~ 9.0 kgf.m, 57.9 ~ 65.1 lb-ft)

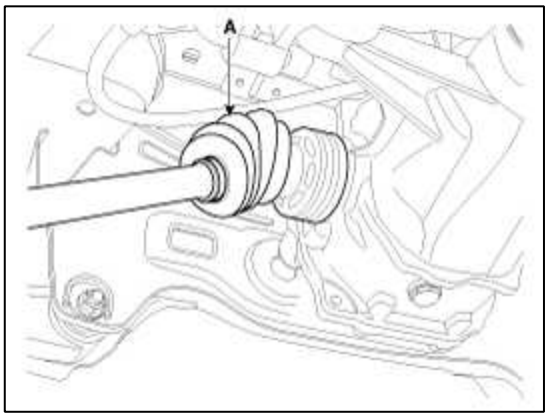


12. Push the rear axle carrier (A) outward and separate the driveshaft (B) from the axle hub.



13. Remove driveshaft (A)from differential after loosen bolt(6ea).

Tightening torque :
8.8 ~ 9.8 N.m (0.9 ~ 1.0 kgf.m, 6.5 ~ 7.2 lb-ft)



CAUTION

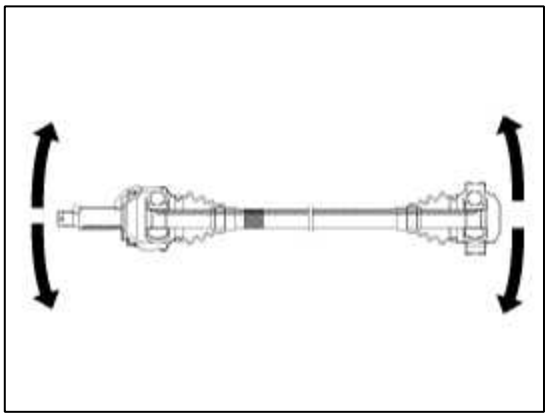
- Use a pry bar(A) being careful not to damage the differential and joint.
- Do not insert the pry bar(A) too deep, as this may cause damage to the oil seal.
- Do not pull the driveshaft by excessive force it may cause components inside the joint kit to dislodge resulting in a torn boot or a damaged bearing.
- Plug the hole of the differential case with the oil seal cap to prevent contamination.
- Support the driveshaft properly.
- Replace the retainer ring whenever the driveshaft is removed from the differential case.
- Do not take the drive shaft a part. Please, replace drive shaft with assembly.

14. Installation is the reverse order of removal.

Inspection

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

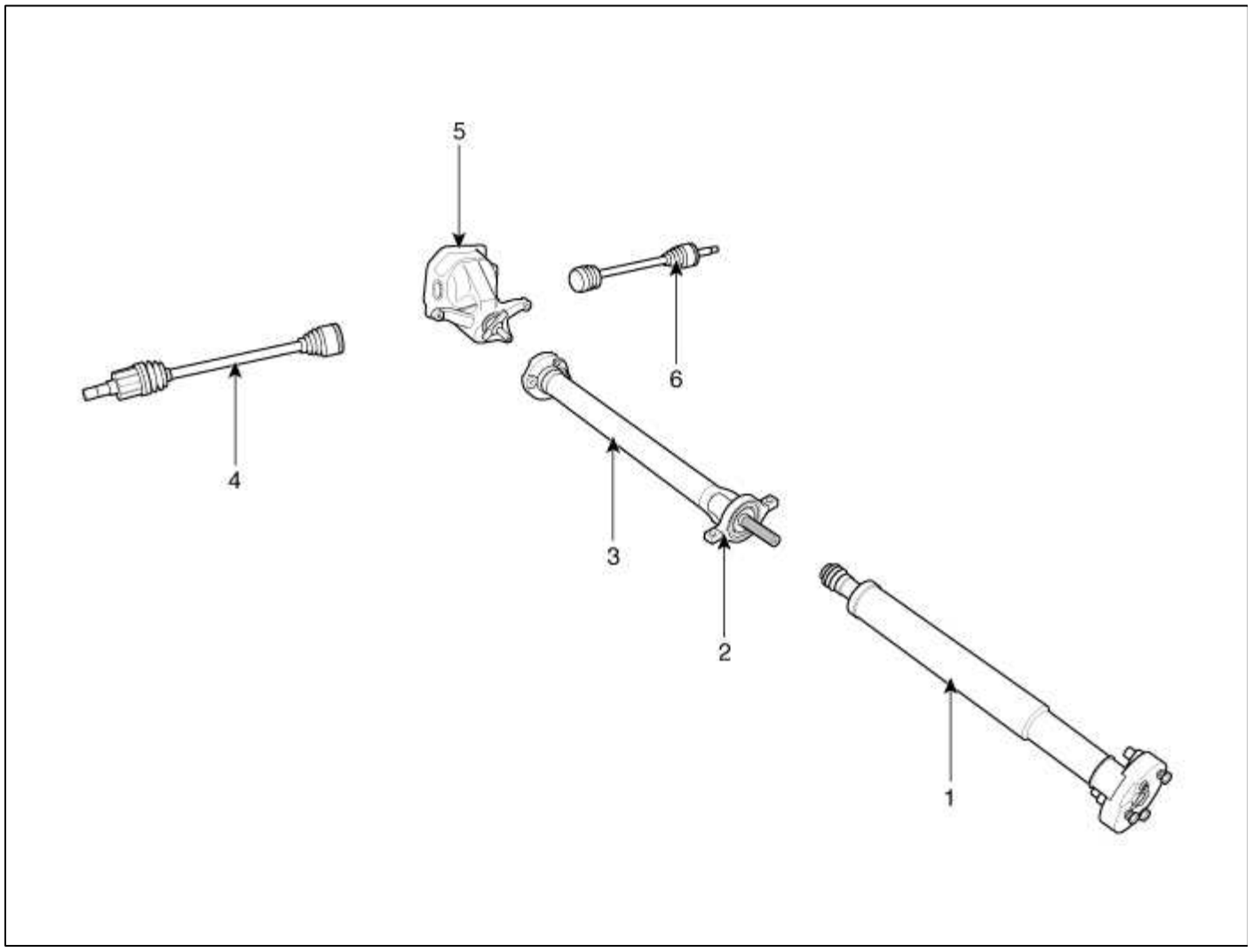
4. Check the dynamic damper for cracks, wear and position.



5. Check the driveshaft for cracks and wears.

Driveshaft and axle > Propeller Shaft Assembly > Propeller Shaft > Components and Components Location

Components



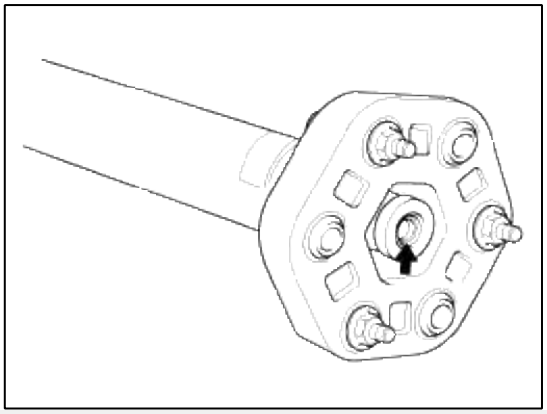
1. Front propeller shaft 2. Center bearing bracket 3. Rear propeller shaft	4. Drive shaft (R) 5. Differential carrier 6. Drive shaft (L)

Driveshaft and axle > Propeller Shaft Assembly > Propeller Shaft > Repair procedures

Inspection

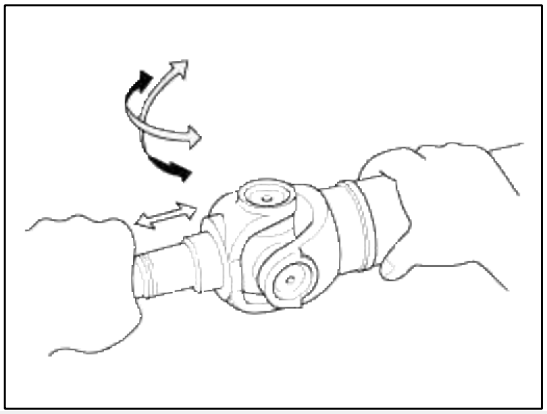
Inspect Flexible Coupling

1. Check the front and rear flexible couplings for cracks or damage.
2. Inspect the flexible coupling centering bushing. If the busing is damaged, replace the propel shaft assembly.



Universal Joint Inspect

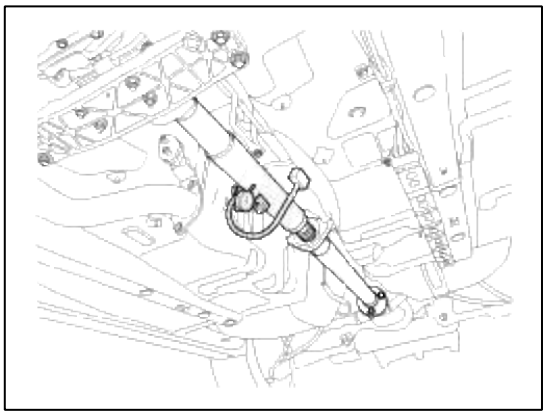
1. Check that the spider berring rotates smoothly.
2. Check that there is no play in the spider bearing if necessary, replace the propeller shaft.



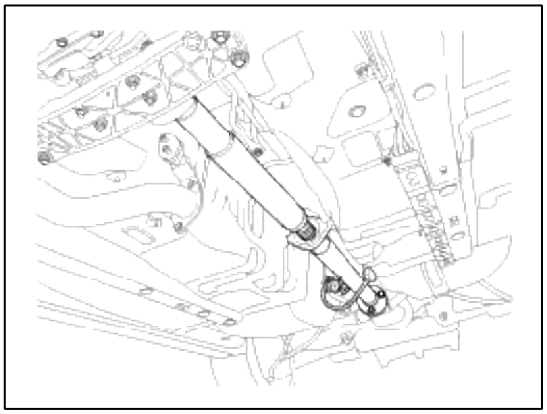
Propeller Shaft Runout

1. Install a dial indicator with its needle on the center of front propeller shaft or rear propeller shaft.
2. Turn the other propeller shaft slowly and check the runout. Repear this procedure for the other propeller shaft.

Front Propeller Shaft Runout : 0.3mm (0.012in.)



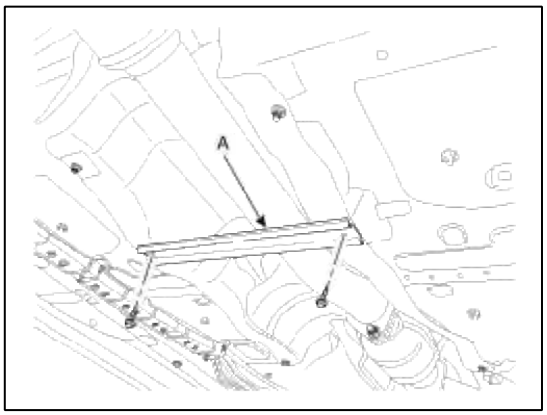
Rear Propeller Shaft Runout : 0.3mm (0.012in.)



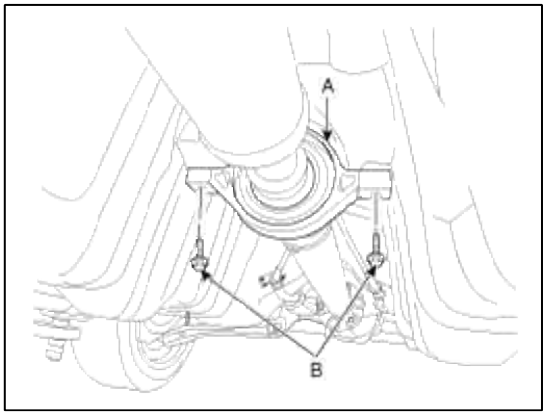
3. If the runout on either propeller shaft exceeds the service limit, replace the propeller shaft assembly.

Replacement

1. Loosen the mount bolt and then remove the bracket(A).

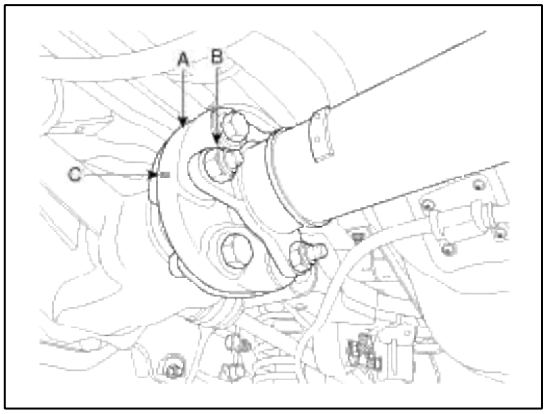


2. Remove the rear muffler(Refer to FL group-Muffler)
3. Loosen the mount bolts and then heating bracket.
4. Remove the center bearing bracket(A) mounting bolts(B).

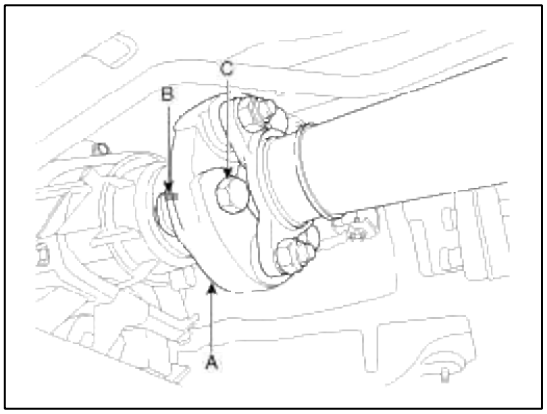


5. After making a match mark(C) on the rubber coupling(A) and rear differential companion(B), remove the propeller shaft mounting bolts(D).

Tightening torque :
90 ~ 110 N.m (9.0 ~ 11.0 kgf.m, 65.0 ~ 79.5 lb-ft)



Tightening torque :
90 ~ 110 N.m (9.0 ~ 11.0 kgf.m, 65.0 ~ 79.5 lb-ft)



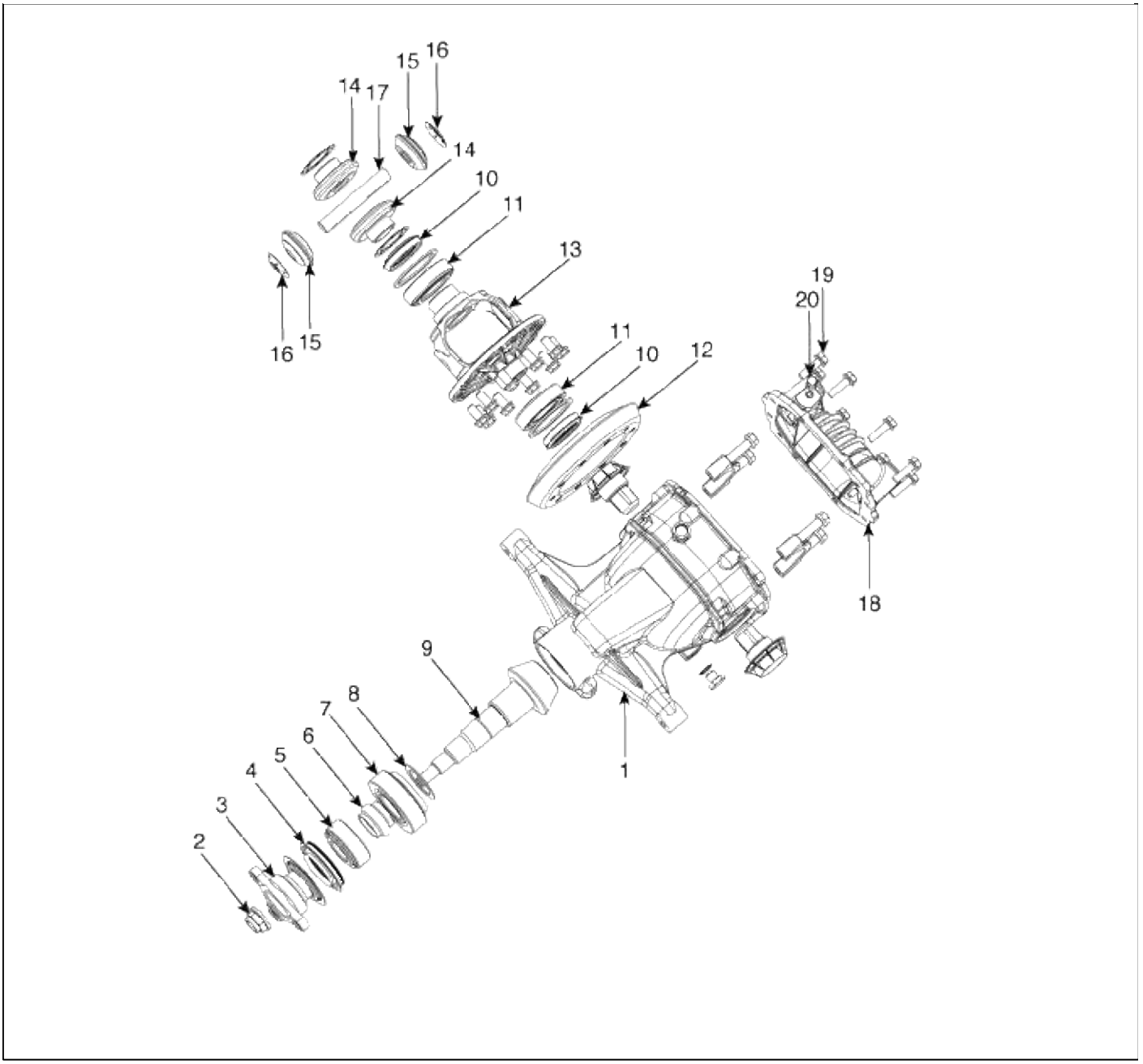
CAUTION

A. Use the hexagonal wrench to prevent damage of bolt head when removing bolts.
B. When retightening the propeller shaft mounting bolts after removing them, each bolt and washer must be placed in its original position and bolt insertion direction must be the same as before, so make marks not to allow the bolts and washers to be mixed up before removing the propeller shaft.
C. If the position and direction of the propeller shaft mounting bolts and washers are reversed, it may cause vibration and noise at high vehicle speeds due to imbalance in the propeller shaft.
D. If abnormal vibration and noise occur at high vehicle speeds after replacing propeller shaft with new one, balance the propeller shaft with a balancing machine.

6. Installation is the reverse order of removal.

Driveshaft and axle > Differential Carrier Assembly > Rear Differential Carrier > Components and Components Location

Components



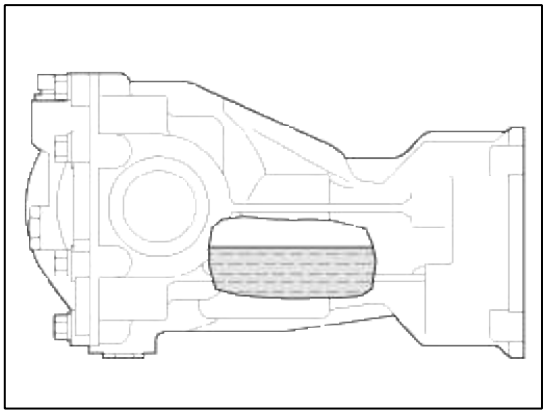
1. Differential	8. Inner bearing adjust shim	15. Pinion gear
2. Pinion locking nut	9. Drive gear	16. Thrust washer
3. Oil Seal guide	10. Oil seal	17. Differential pinion shaft
4. Pinion oil swal	11. Differential side bearing	18. Differential cover
5. Outer pinion bearing	12. Ring gear	19. Differential cover mounting bolts
6. Pinion bearing spacer	13. Differential	20. Air breather
7. Inner pinion bearing	14. Cam side gear	21. Filler piug

Driveshaft and axle > Differential Carrier Assembly > Rear Differential Carrier > Repair procedures

Replacement

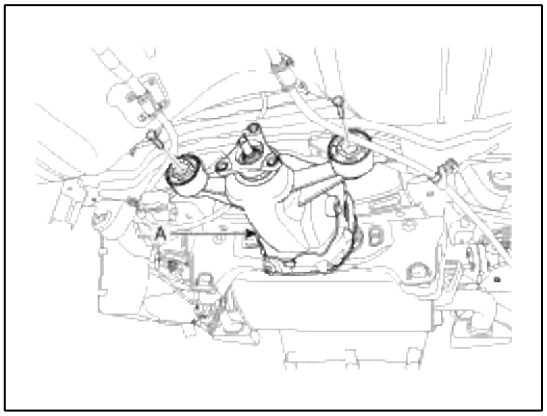
1. Fill the gear oil.

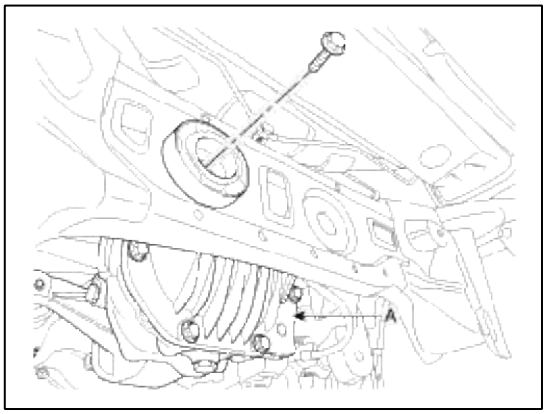
Specified lubricant:
Hypoid ger oil, MS 517-15 (API GL-5, SAE 75W/90)
Oil quantity: Fill the reservoir to the plug hold (About 1.4L ± 0.05L)



2. Remove the rear driveshaft(Refer to DS group-Rear driveshaft)
3. Remove the propellshaft assembly(Refer to DS group-Propellshaft)
4. Loosen the differential carrier assembly mount bolts and than remove the differential assembly(A)

Tightening torque :
80 ~ 100 N.m (8.0 ~ 10.0 kgf.m, 57.8 ~ 72.3 lb-ft)



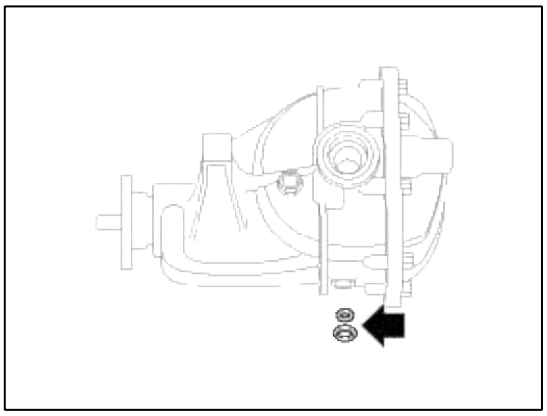


5. Installation is the reverse order of removal.

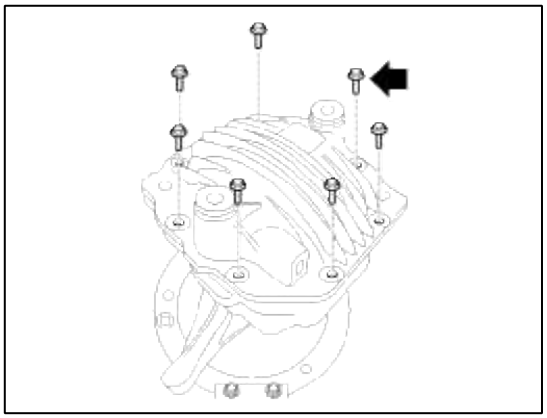
Disassembly

Rear differential carrier

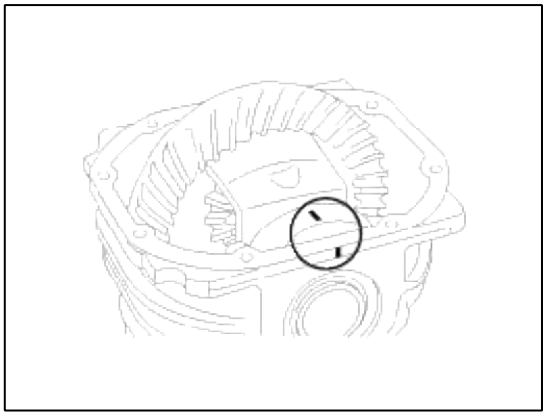
1. Fill the gear oil.



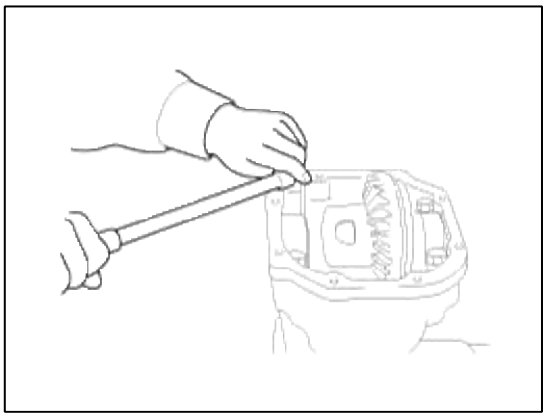
2. Loosen the mount bolts and than remove the cover.



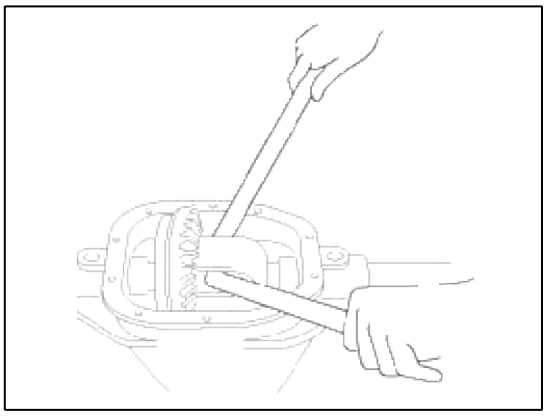
3. Mark as below before removing the differential assembly not to be changed with the left/right side of bearing caap.



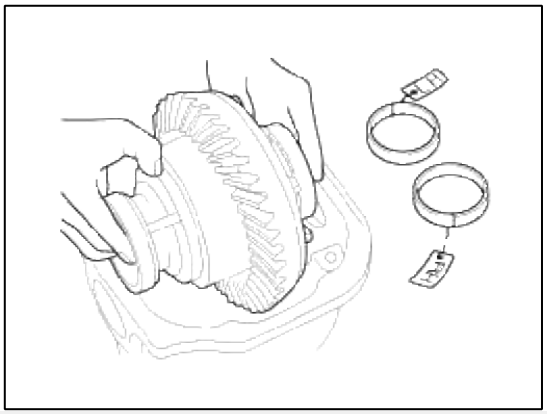
4. Loosen the bearing cap bolts and than bearing cap.



5. Disassembly the differential assembly.

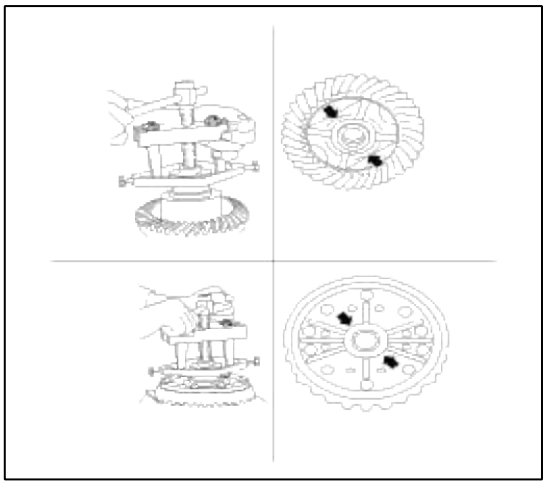


6. Mark as below removing the differential assembly not to be changed with the left/right side of bearing race.

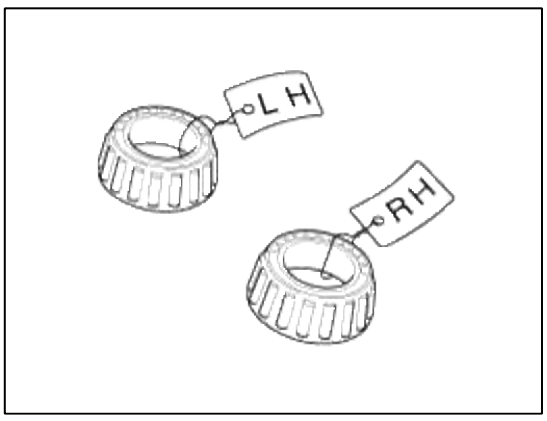


Diff assembly Disassembly

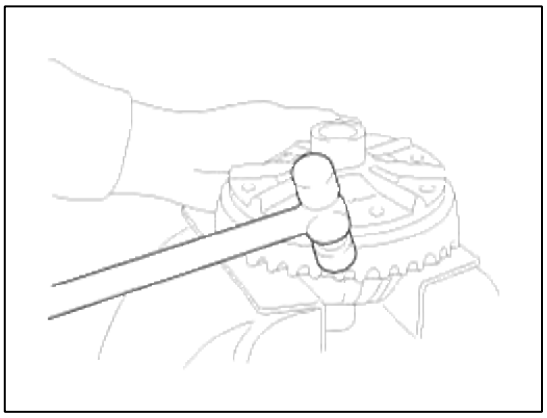
1. Remove the bearing not to be dameged after setting the bearing remover at the discape hole.



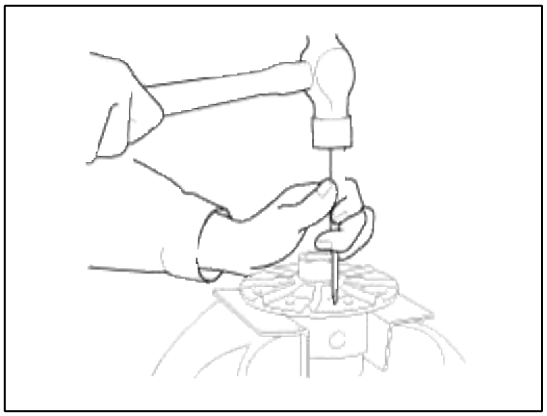
2. Mark as blow removing the bearing no to be changed with the left/right side of bearing.



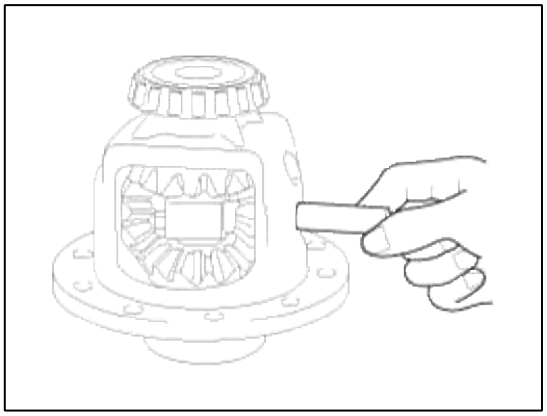
3. Loosen the ring gear bolt and than remove the drive gear.



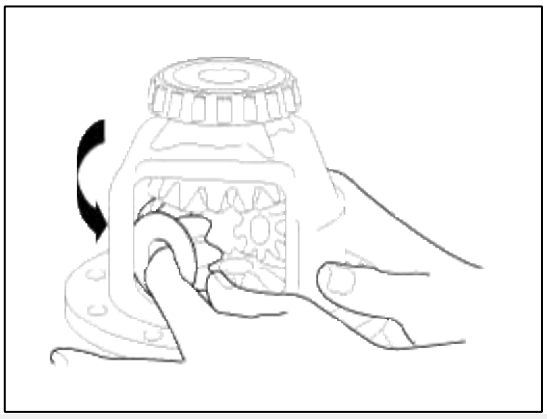
4. Disconnect the lock pin.



5. Disconnect the dif shafe.

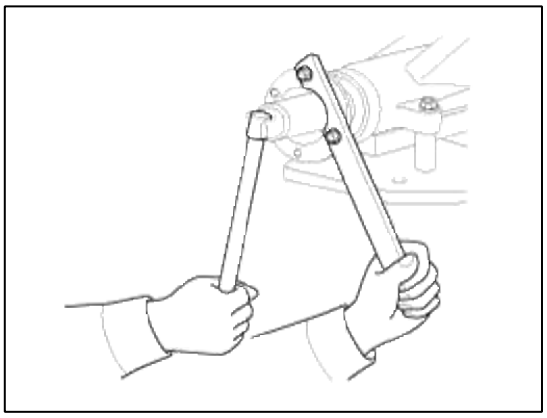


6. Disassembly the diff shat/diff side gear/diffpinion gear/washer as below by putting a finger into the hole of diff shaft.

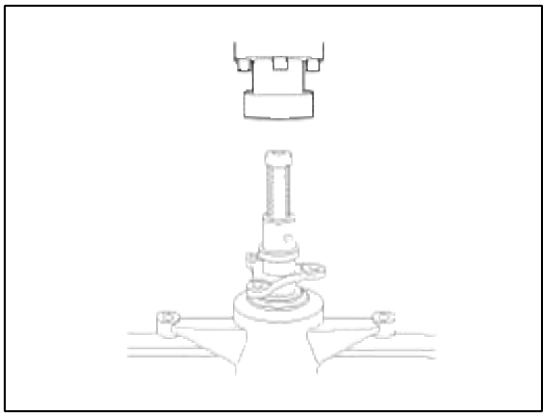


Pinion assembly disassembly

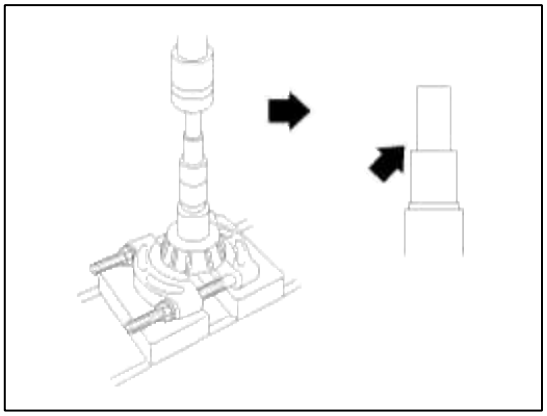
1. Loosen the pinion locking nut.



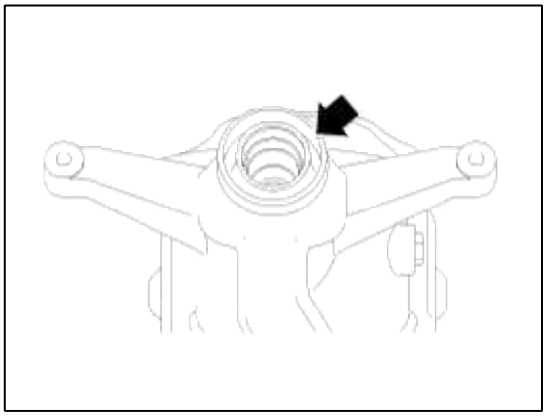
2. Remove the flang/pinion gear/pinion outter bearing by compressing the pinion gear with the pressing machine.



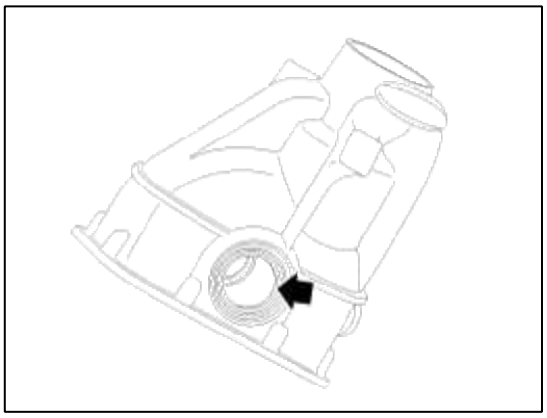
3. Remove the pinion inner bearing using the pinion gear press.



4. Remove the pinion oil seal.

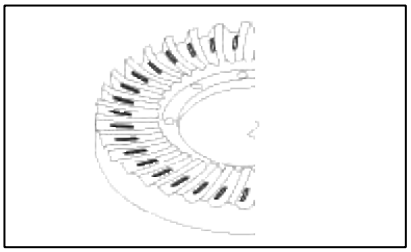
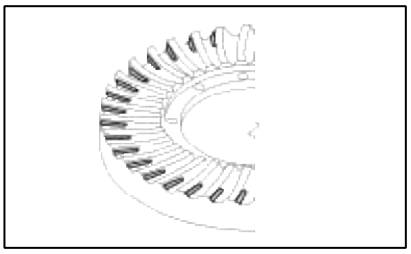
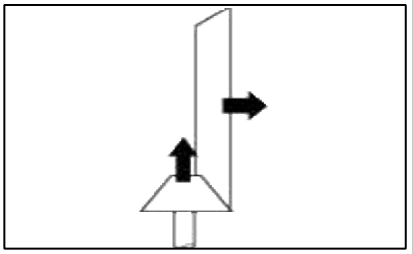
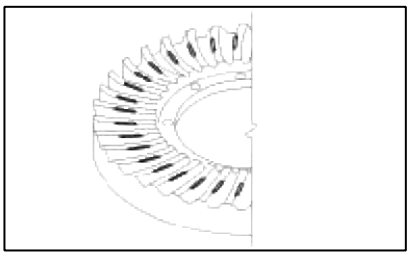
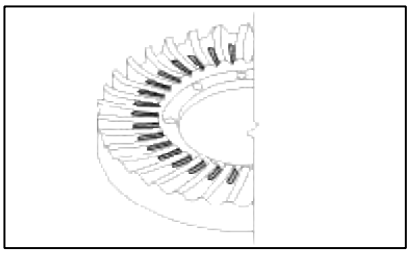
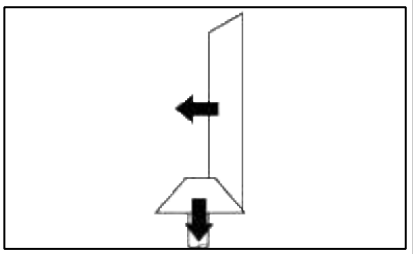
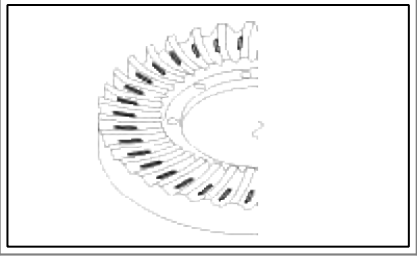


5. Remove the right /left deff oil seal.



Inspection

1. Check the tooth contact pattern.

Tooth contact	Contact state	Solution	
Standard contact			
1. Heal contact		Increase the thickness of the pinion height adjusting shim, and position the drive pinion closer to the center of the drive gear. Also, for backlash adjustment, reposition the drive gear further from the drive pinion.	
2. Face contact			
3. Toe contact		Decrease the thickness of the pinion height adjusting shim, and position the drive pinion further from the center of the drive gear. Also, for backlash adjustment, reposition the drive gear closer to the drive pinion.	
4. Flank contact			

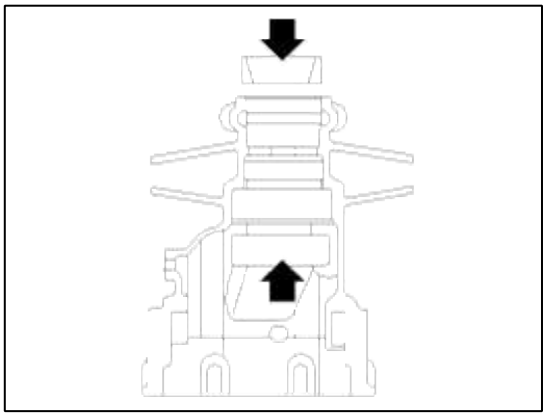
NOTE

1. Tooth contact pattern is a method for judging the result of the adjustmentof drive pinion height and final drive gear backlash. The adjustment of drivepinion height and final drive gear backlash should be repeated until the toothcontact patterns are similar to the standard tooth contact pattern.
2. When you cannot obtain a correct pattern, the drive gear and drive pinionhave exceeded their limits. Both gears should be replaced as a set.

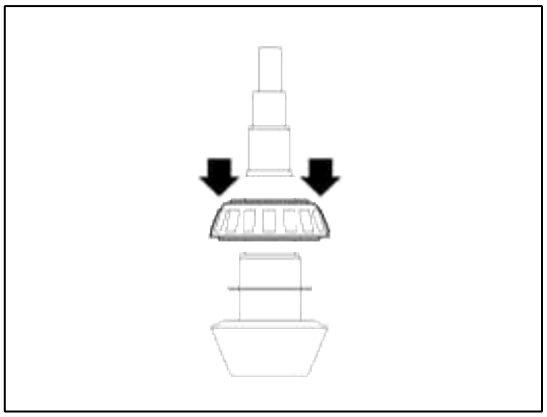
Reassembly

Pinion assembly

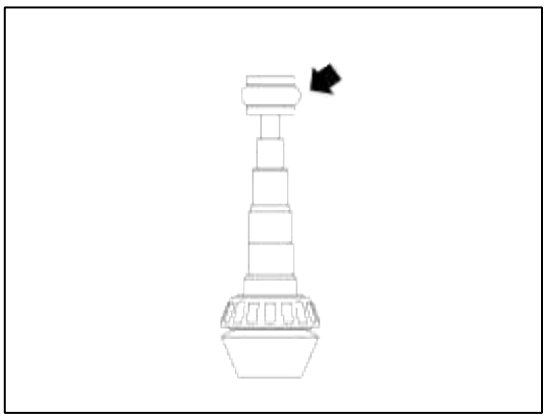
1. Press the inner/outer bearing race.



2. Select the pinion gear adjust shim and install it to the pinio gear. And then press the inner bearing.



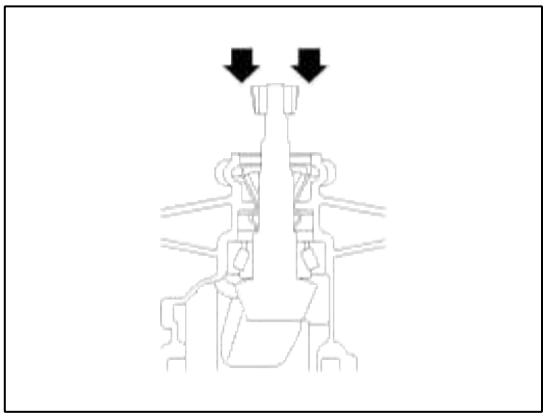
3. Instell the bearing spacer.



CAUTION

Will have to use from new spacer.

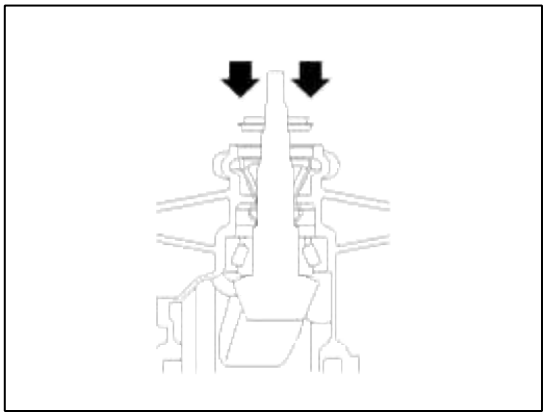
4. Press the installed pinion assembly to carrier with outer bearing in the ilustration.



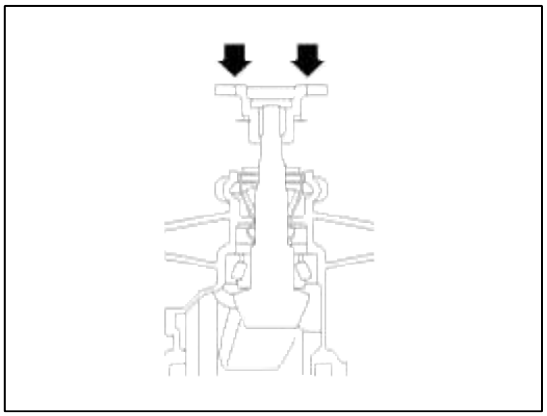
NOTE

Will have to be below pressure 5 ton.

5. Press the pinion oil seal.

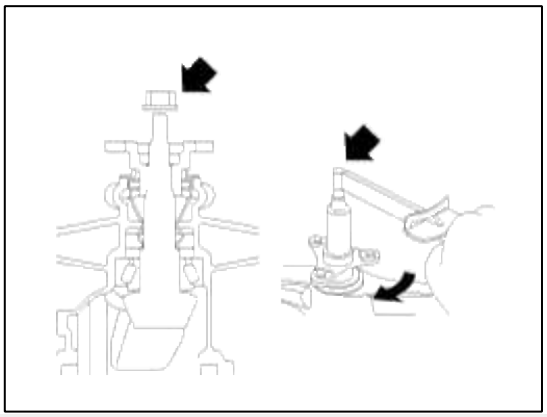


6. Press the companion flange.



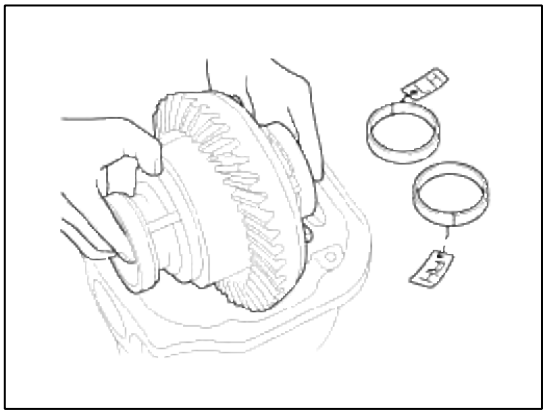
7. Install the pinion locking nut to make that the bearing freeroad is standard.

Tightening torque :
112.7 ~ 161.8 N.m (11.5 ~ 16.5 kgf.m, 83.1 ~ 119.3 lb-ft)

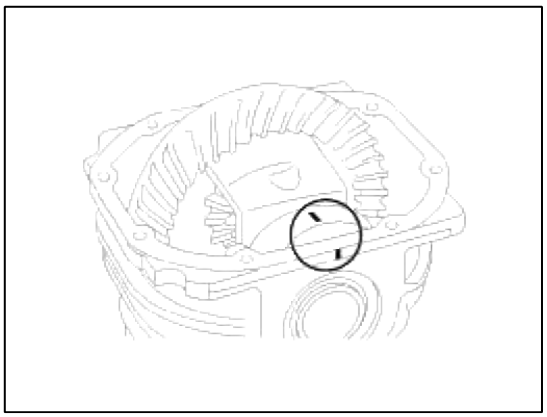


Differential case

1. Fix the diff assembly with both hands and install it to the differential carrier.

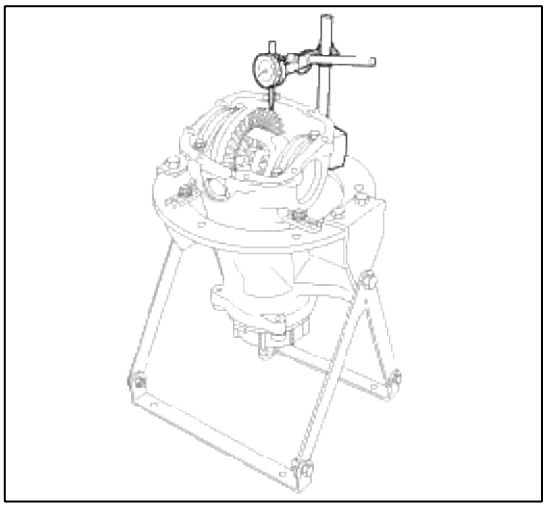


2. Instert the left/right diff shim between the diff side bearing and carrier. And then install the bearing cap with marks.



3. Adjust the diff shim.

Standard :0.10~0.15mm

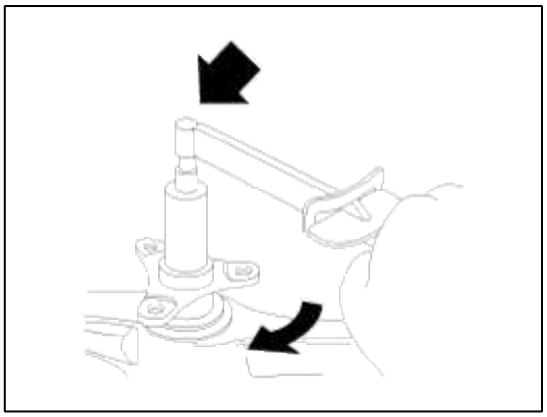


NOTE

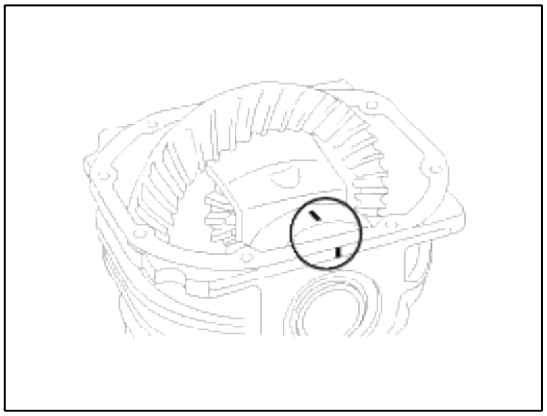
Thickness of the diff shim need to adjusted if backrash is small. Lessen the thickness of the left side diff shim. By contraries enlarge the thickness of the right side diff shim that much.

4. Measures the frea road.

Standard : Pinion freeroad : 1.9~4.9(0.2~0.5, 1.4~3.6)

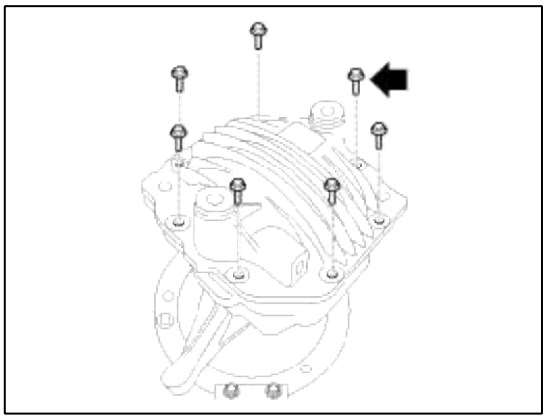


5. Applies a sealant in the carrier.

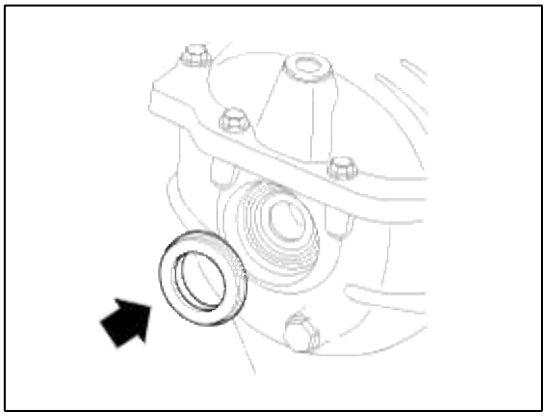


6. Install the differential cover.

Tightening torque Nm (kgf.m, lb-ft) :
39.2 ~ 49.0 N.m (4.0 ~ 5.0 kgf.m, 28.9 ~ 39.1 lb-ft)

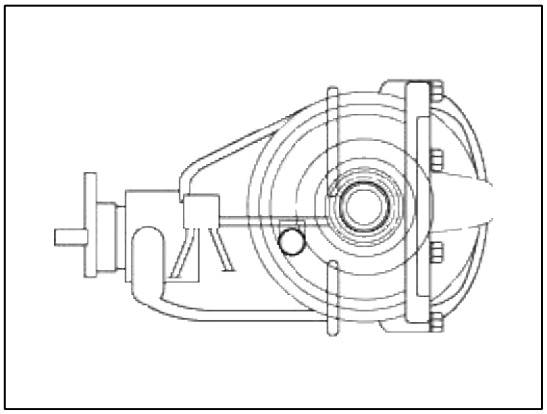


7. Install the diff oil seal.



8. Install the drain plug and pinar plug.

Pillar plug : 4 ~ 6 kgf.m
Drain plug : 5 ~ 7 kgf.m



9. Install the air breather.

Tightening torque :
9.8 ~ 19.6 N.m (1.0 ~ 2.0 kgf.m, 7.2 ~ 14.4 lb-ft)