

DRIVE SHAFT AND AXLE

4110-01

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DRIVE SHAFT AND AXLE

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



DRIVE SHAFT AND AXLE**4110-01****GENERAL INFORMATION****1. SPECIFICATIONS**

Category		Items		Specifications
Common for 2WD and AWD	Front drive shaft	Joint type		Inner: Tripod joint Outer: Ball joint
		Max. allowed angle		Inner: 23° Outer: 46°
		Compensation for bending angle	DSL-AT (2WD)	Non-same length shaft (Hollow shaft)
			Others	Same length shaft
Dedicated AWD	Rear drive shaft	Joint type		Inner: Tripod joint Outer: Ball joint
		Max. allowed angle		Inner: 23° Outer: 46°
		Type		Split axle type (IRDA)
	Rear differential carrier	Reduction gear type		Hypoid gear
		Reduction gear ratio		2.533
		Diameter of ring gear		Φ145mm
		Oil type		Hypoid gear oil (SAE 80W/90, API GL-5)
		Pinion offset		22mm
		Hypoid gear backlash		Max 0.15mm
		Differential gear backlash		Max 0.05mm
		Air breather type		Built-in type

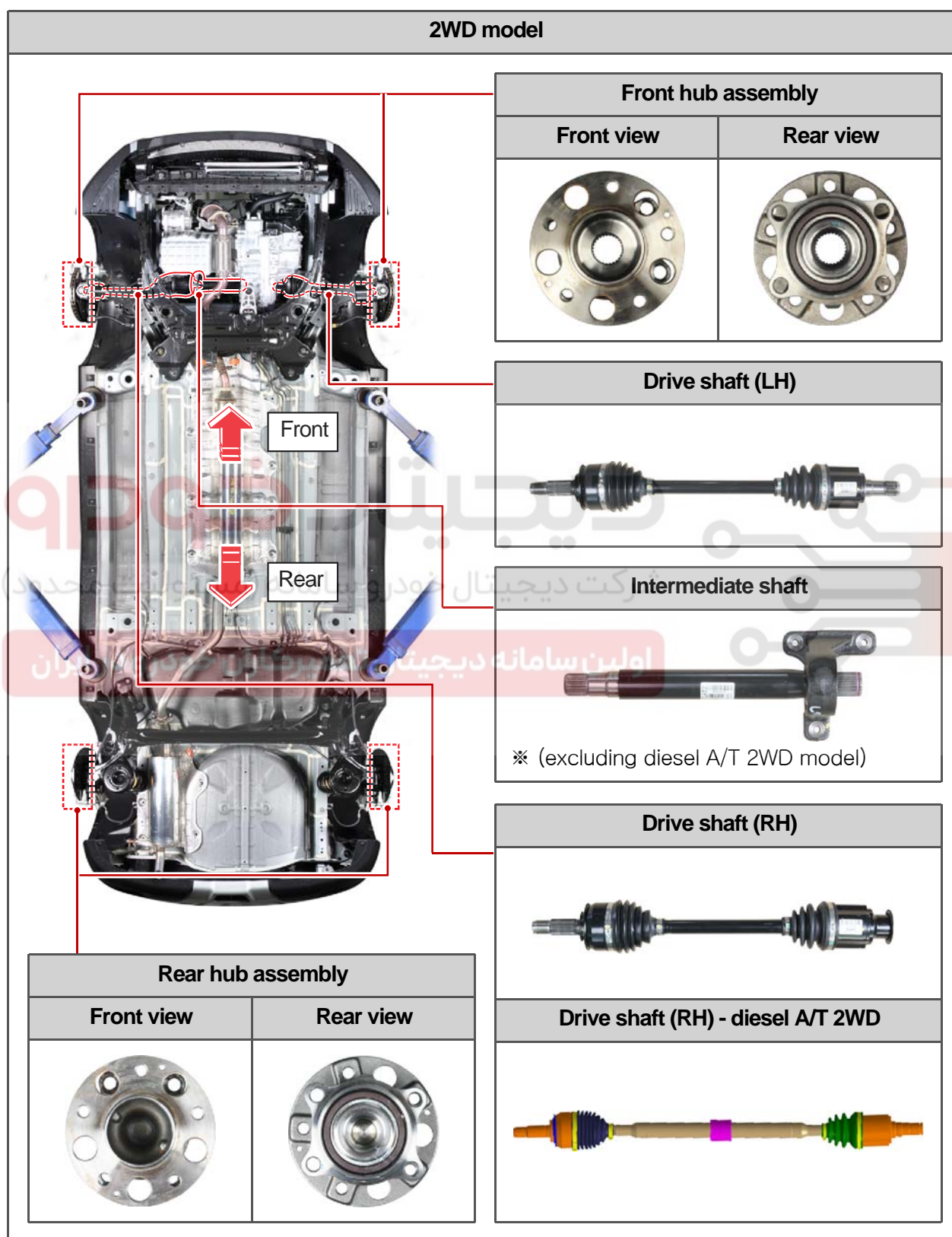
Modification basis	
Application basis	
Affected VIN	

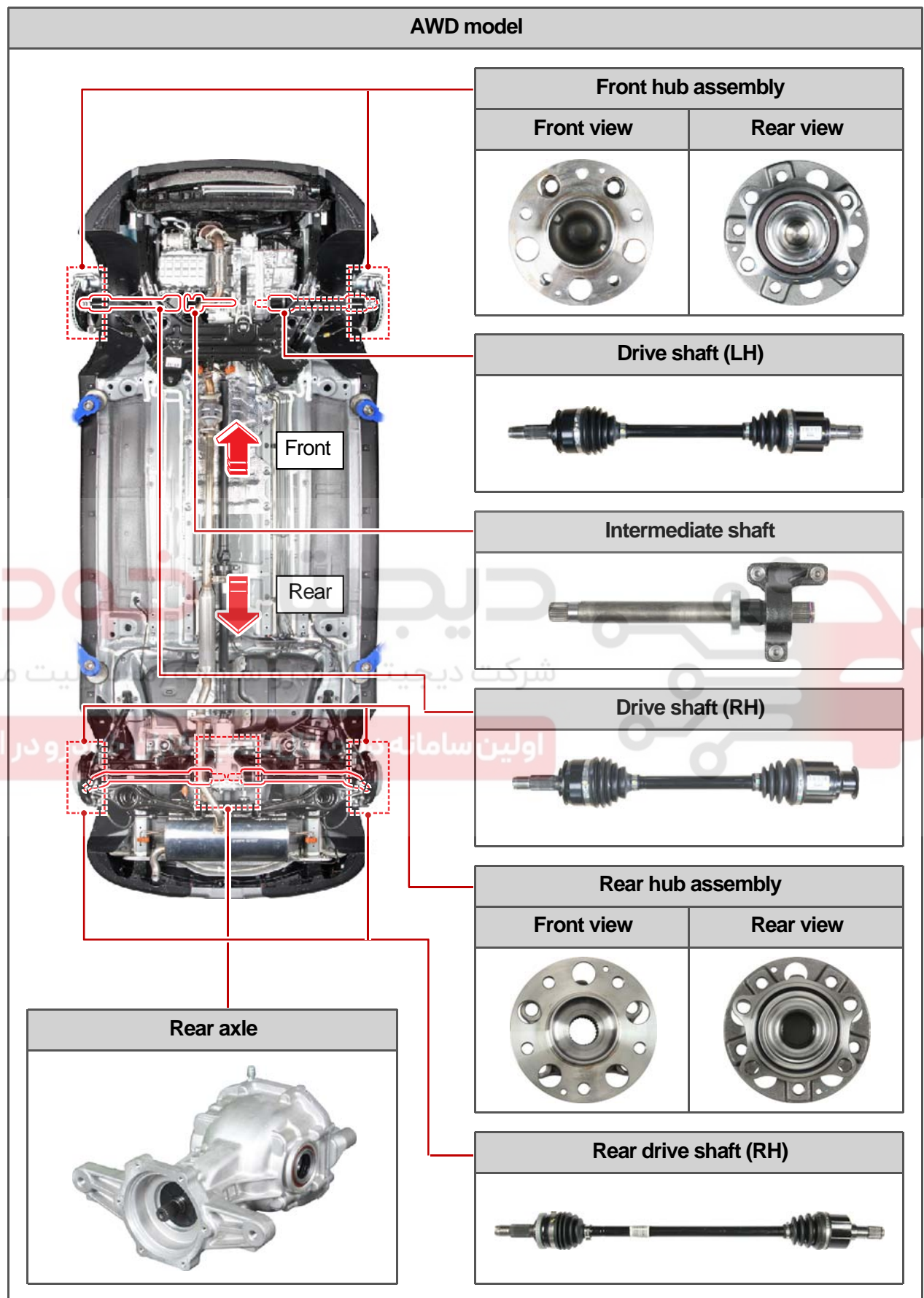
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OVERVIEW AND OPERATING PROCESS

1. COMPONENTS





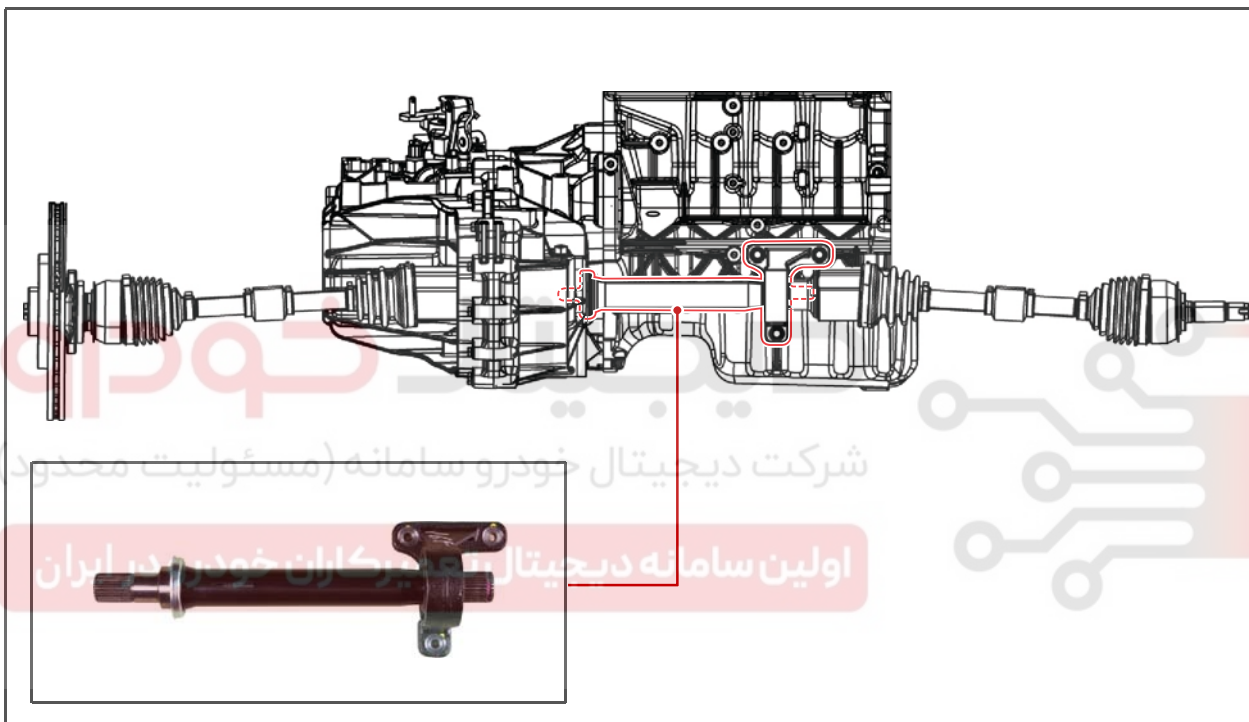
Modification basis	
Application basis	
Affected VIN	

2. TORQUE STEER

Torque steer is a condition in which a vehicle pulls to either side because of an inequality of traction between the left and right driving wheels when a large torque is applied to the front wheels of a FWD or 4WD vehicle.

Especially for a FWD vehicle, this mechanical condition can cause the steering effect because of the output torque (rotational force) produced by the gyroscope. This rotational force is due to the difference in distance between the left/right front wheels and the transaxle, which leads to the change of the shaft bending angle.

To prevent this, the intermediate shaft, called equivalent length shaft, is employed so that the bending angle and the length are kept constant for both sides.

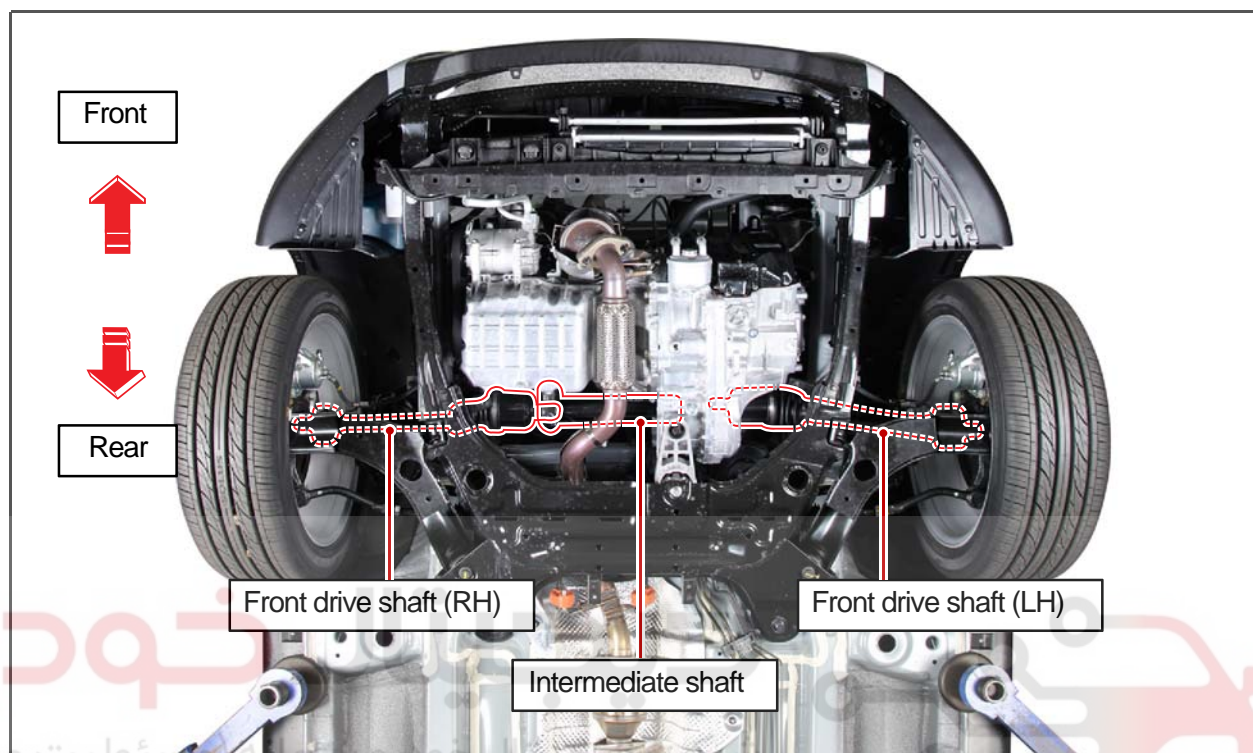


NOTE

Gyroscope: Gyroscope is a device consists of a spinning mass like a top, usually mounted on a gimbal so that its axis can turn freely in any directions and thereby maintain its orientation regardless of any movement of the base.

CONFIGURATION AND FUNCTIONS

4110-01 FRONT DRIVE SHAFT ASSEMBLY



► Gasoline engine

Classification	Drive shaft (LH)	Intermediate shaft	Drive shaft (RH)
M/T (2WD & AWD)			
A/T (2WD)			
A/T (AWD)			

Modification basis	
Application basis	
Affected VIN	

DRIVE SHAFT AND AXLE









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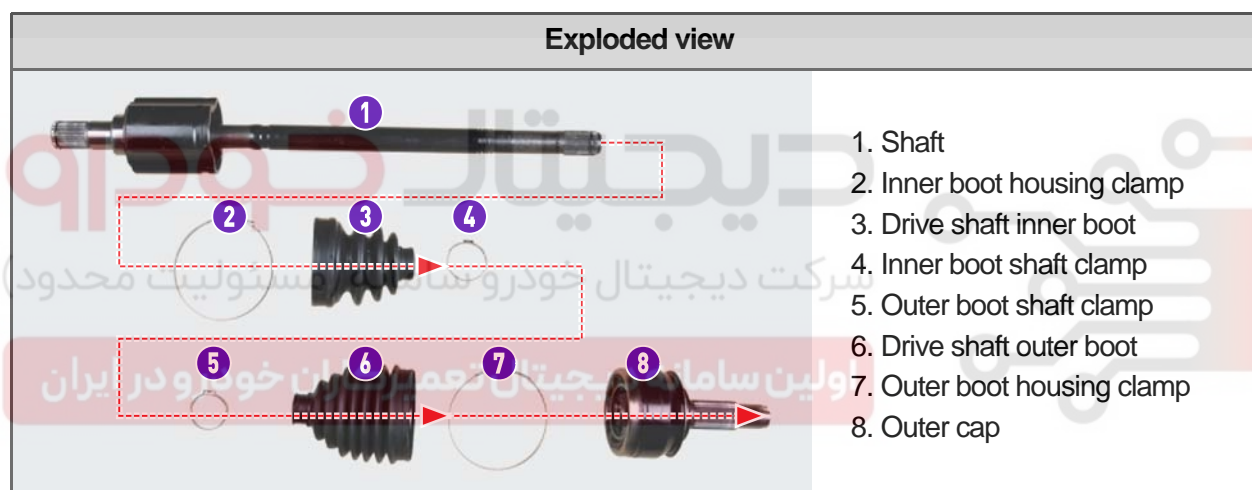
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4110-01

T I V O L I

► Diesel engine

Classification	Drive shaft (LH)	Intermediate shaft	Drive shaft (RH)
M/T (2WD & AWD)			
A/T (2WD)		Without intermediate shaft 	
A/T (AWD)			



Modification basis	
Application basis	
Affected VIN	

S.G.N.

4115-04 FRONT HUB ASSEMBLY**1) Overview**

The front hub assembly has the wheel and disc brake. They are connected through the drive shaft and spline gear.

The power from the engine is transmitted to the wheel through the drive shaft.

2) Mounting Location

Modification basis	
Application basis	
Affected VIN	

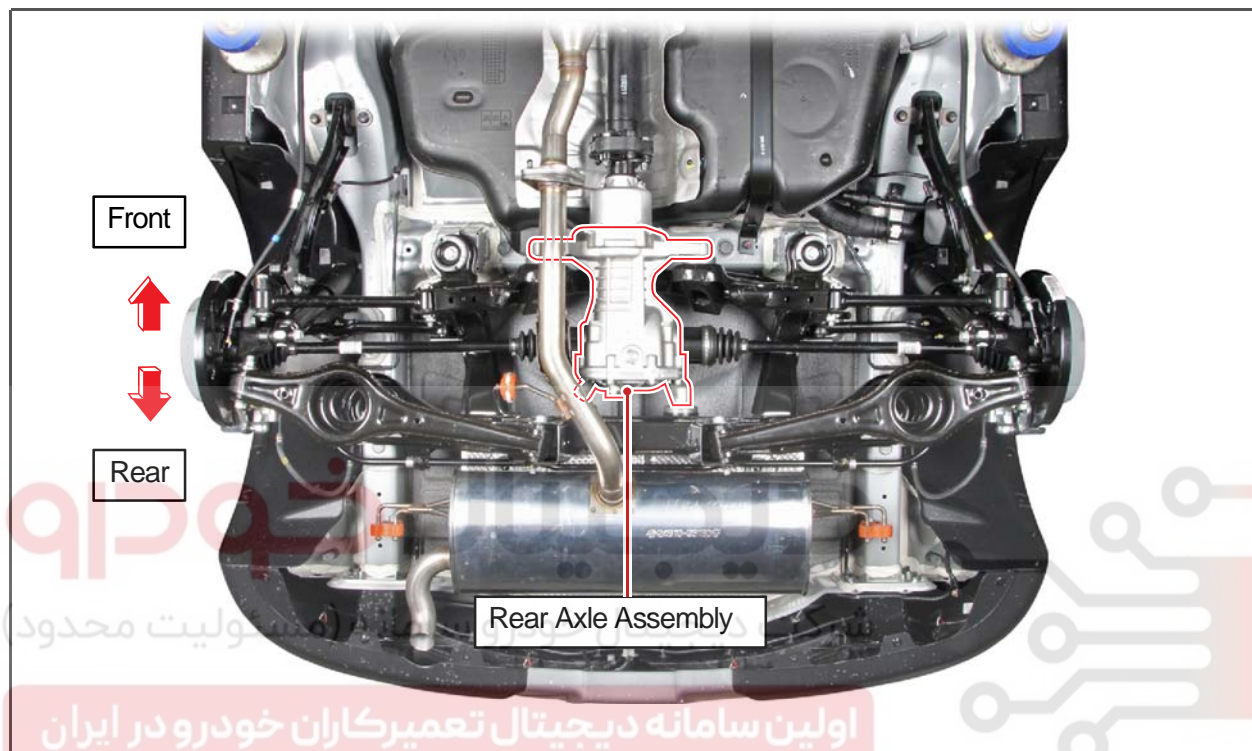
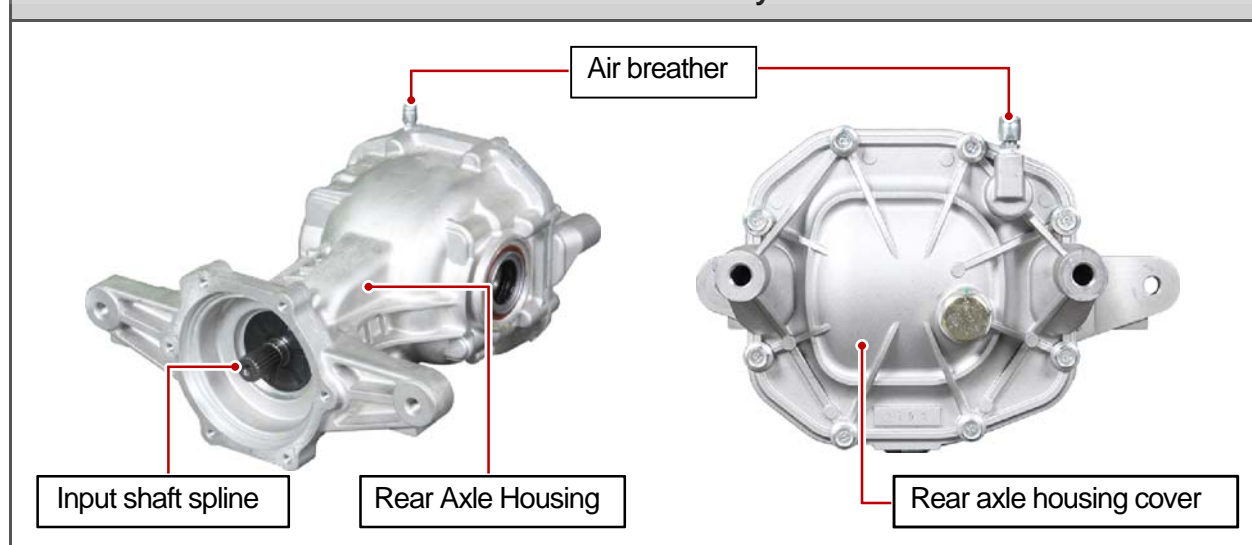
DRIVE SHAFT AND AXLE

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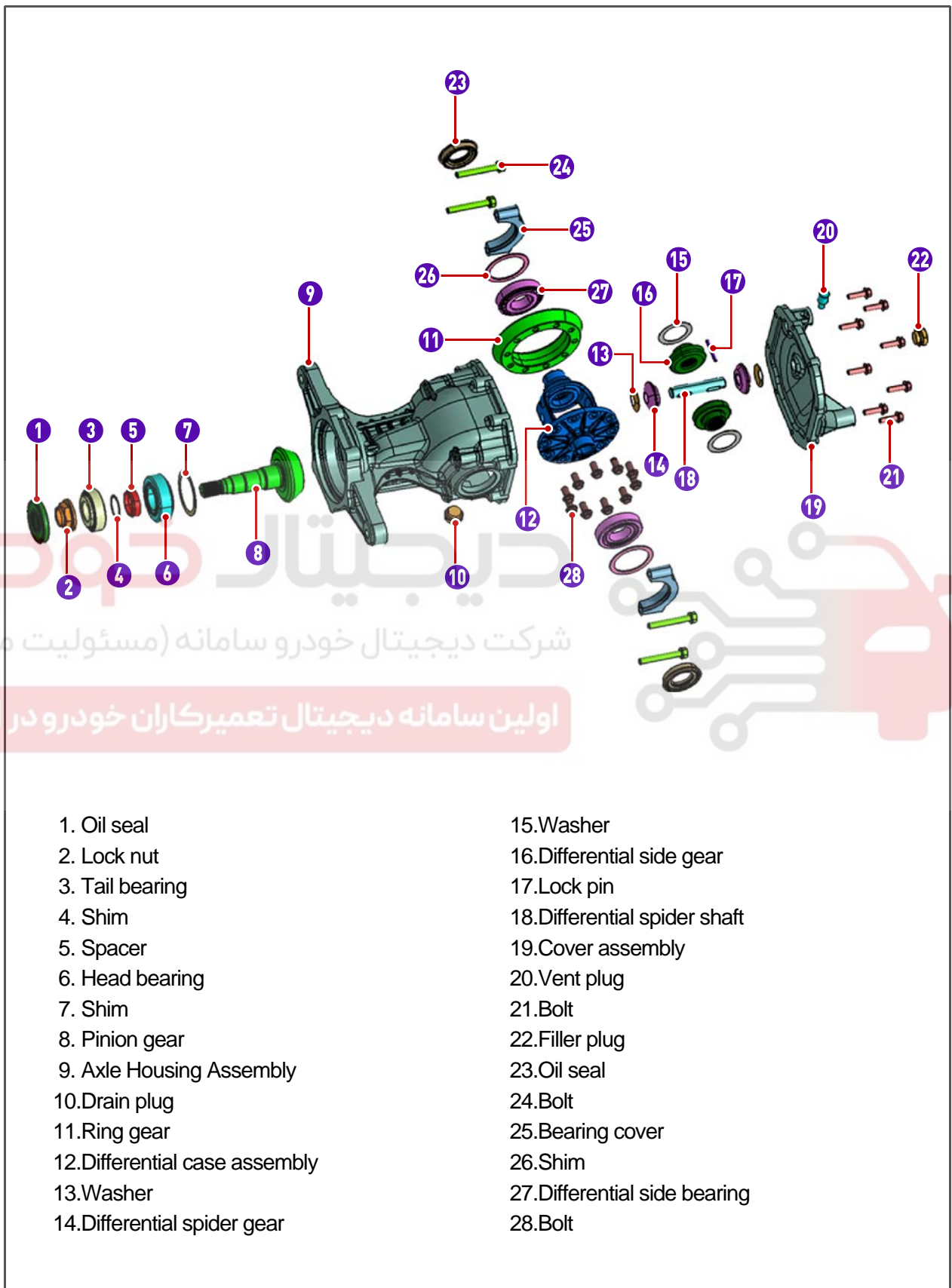
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0000-00 REAR AXLE ASSEMBLY (AWD)**1) Overview**

The rear axle is of the split axle type, IRDA (Independent Rear Drive Axle). It changes the direction of driving force from the E-coupling using a hypoid type gear and transmits the driving force to the rear hub connected directly to the wheel through the rear drive shaft.

**Rear Axle Assembly**

2) Exploded view



Modification basis	
Application basis	
Affected VIN	

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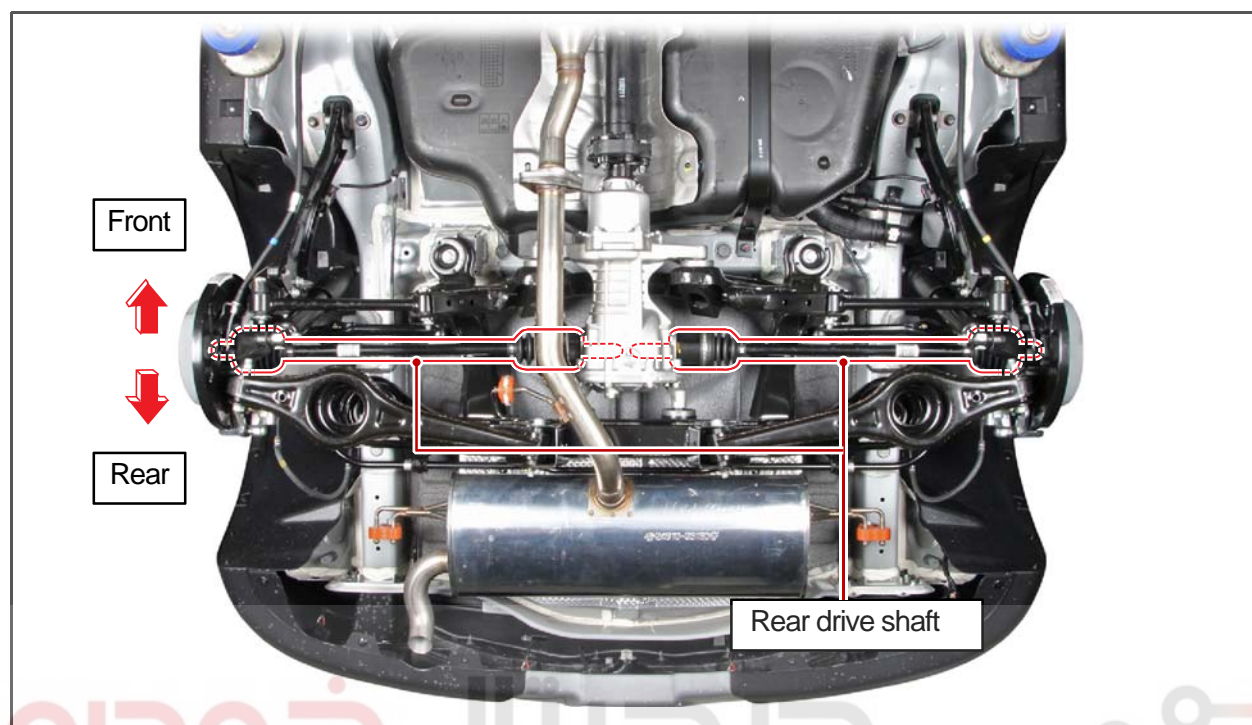
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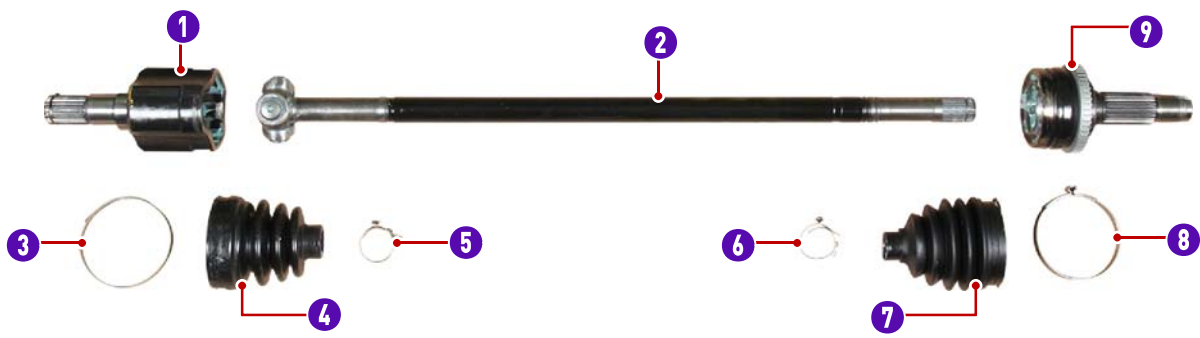
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REAR DRIVE SHAFT ASSEMBLY (AWD)



Classification	Rear drive shaft
Common for AWD (LH/RH)	

Exploded view	
	
1. Inner cap	6. Outer boot shaft clamp
2. Shaft	7. Drive shaft outer boot
3. Inner boot housing clamp	8. Outer boot housing clamp
4. Drive shaft inner boot	9. Outer cap
5. Inner boot shaft clamp	

DRIVE SHAFT AND AXLE

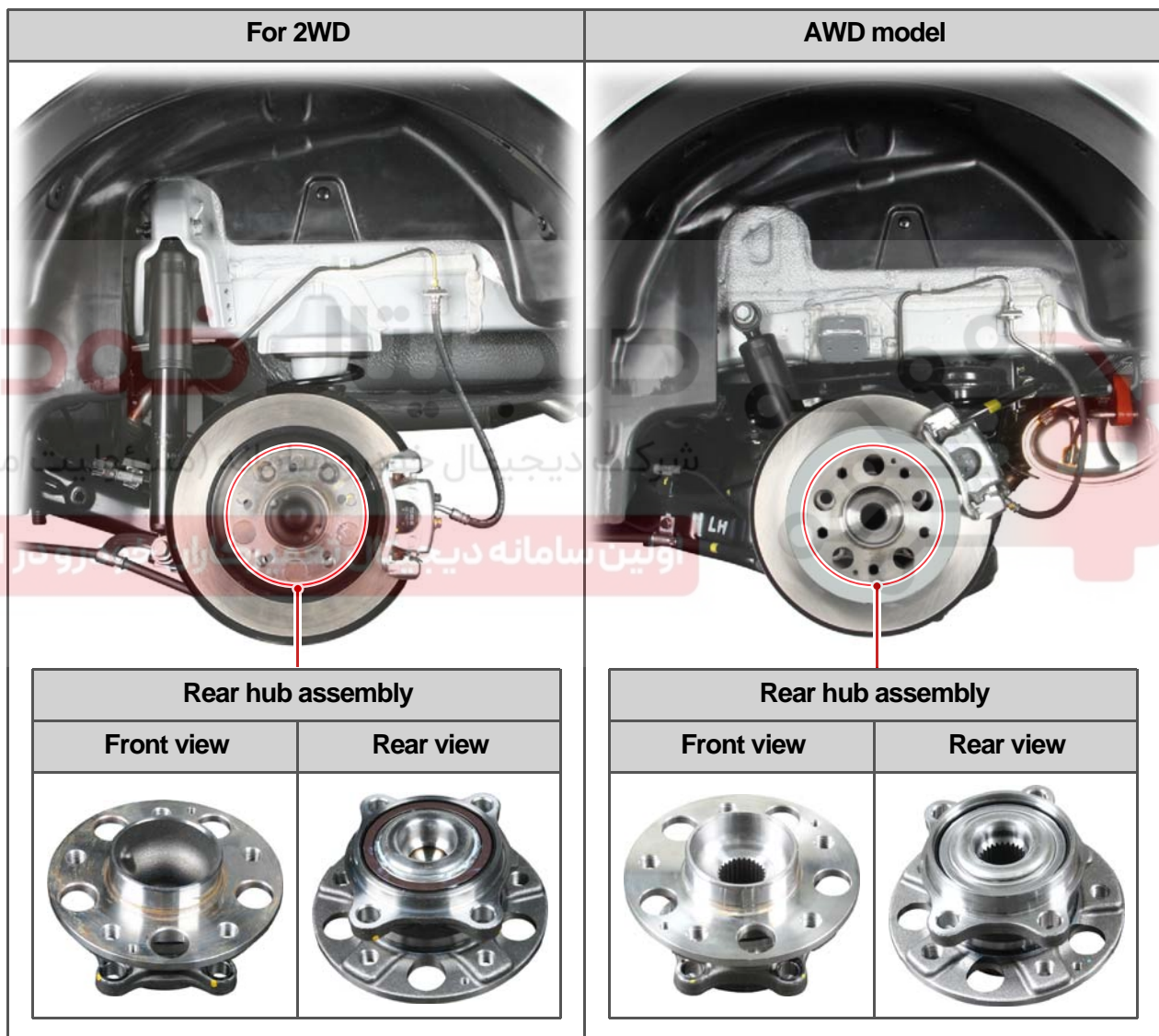
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Modification basis	
Application basis	
Affected VIN	

S.G.N.

4221-03 REAR HUB ASSEMBLY**1) Overview**

The rear hub assembly has the wheel and disc brake. The disc brake transmits the power. The 2WD model in which driving force is not transmitted directly uses a non-driven hub. The AWD model uses a driven hub such as the front hub since the driving force is transmitted directly to the rear hub.

2) Mounting Location

Modification basis	
Application basis	
Affected VIN	

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REMOVAL AND INSTALLATION

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4110-00 TROUBLESHOOTING

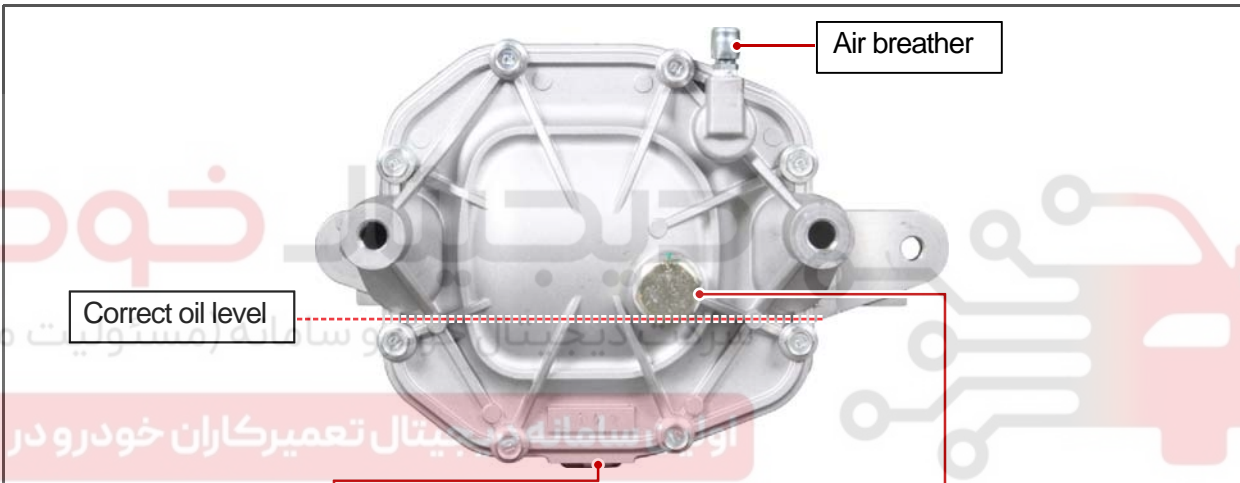
Symptom	Cause	Action
Vehicle pulls to either side	Damaged drive shaft ball joint	Replace
	Burn-on or wear of wheel bearing	Replace
	Faulty front suspension or st	Adjust or replace
Vibrations	Worn, bent or damaged drive shaft	Replace
	Protruded drive shaft hub	Replace
	Deteriorated or worn wheel bearing	Replace
Shuddering front wheel	Incorrect wheel balance	Adjust or replace
	Faulty front suspension or steering	Adjust or replace
Noise	Worn, bent or damaged drive shaft	Replace
	Protruded drive shaft hub	Replace
	Damaged or worn wheel bearing	Replace
	Loose hub nut	Adjust or replace
	Faulty front suspension or steering	Adjust or replace
	Low rear axle oil level	Add
	Worn or damaged differential gear or invalid backlash	Adjust or replace

S.G.N.

0000-00 REAR AXLE OIL CHECK CHANGE (AWD)**► Top up or change rear axle oil when:**

- The axle oil is leaked.
- Water is entered into the axle through the air breather when driving across the river or puddle.
- Engagement state between the ring and pinion gears is determined by the volume and viscosity of the oil. Make sure to check the oil volume and foreign material inside the axle if noise occurs from the axle.

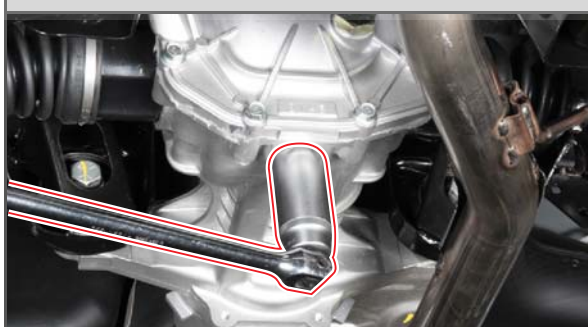
Fluid specification	SAE80W90
Oil capacity	Approx. 0.6 L
Check & change interval	Check and top up at every 15,000 km of driving. Change at every 100,000 km of driving.



Air breather

Correct oil level


Drain plug



Remove the drain plug (27 mm), drain the rear axle oil and tighten the drain plug to the specified torque.

Tightening torque 49.0 ~ 68.6Nm

Filler plug



Remove the filler plug (27 mm), check or top up the rear axle oil and tighten the filler plug to the specified torque.

Tightening torque 49.0 ~ 68.6Nm

⚠ CAUTION

When checking and topping up the oil, park the vehicle on the level ground.

Modification basis	
Application basis	
Affected VIN	

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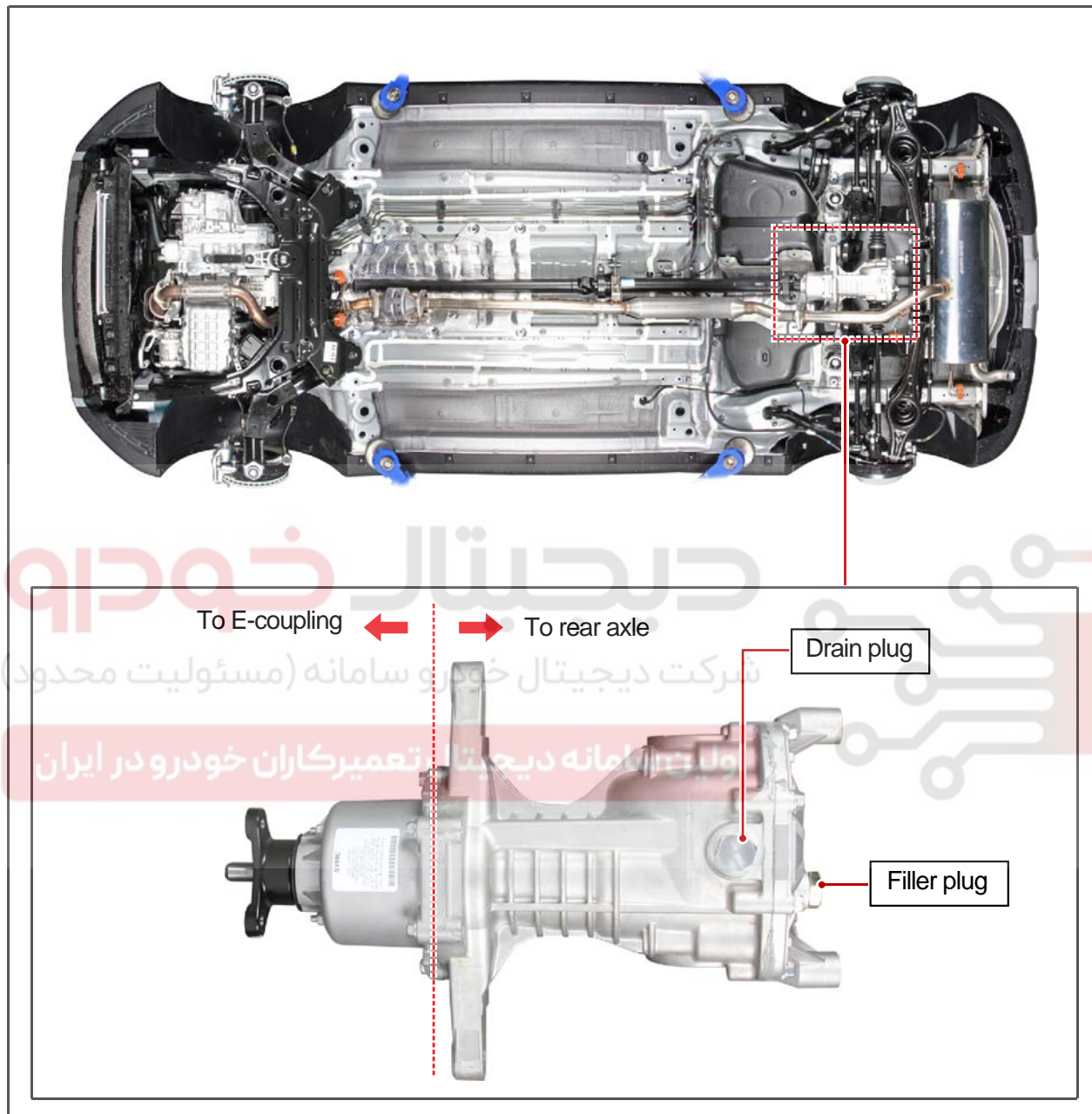
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REAR AXLE (AWD)

Preceding work

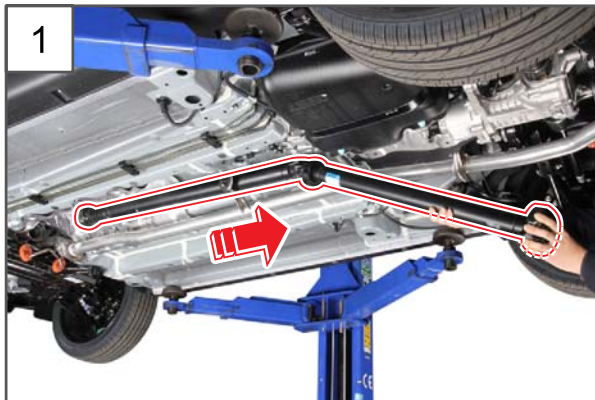
- Remove the drain plug and drain the axle oil completely.



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Modification basis	
Application basis	
Affected VIN	



1. Remove the propeller shaft.



NOTE

Refer to "PROPELLER SHAFT" under "REMOVAL AND INSTALLATION" in "PROPELLER SHAFT SYSTEM".



2. Disconnect the E-coupling connector (A).



3. Unscrew the 6 E-coupling mounting bolts (12 mm).

Tightening torque 19.6 ~ 24.5 Nm



4. Remove the E-coupling.

Modification basis	
Application basis	
Affected VIN	

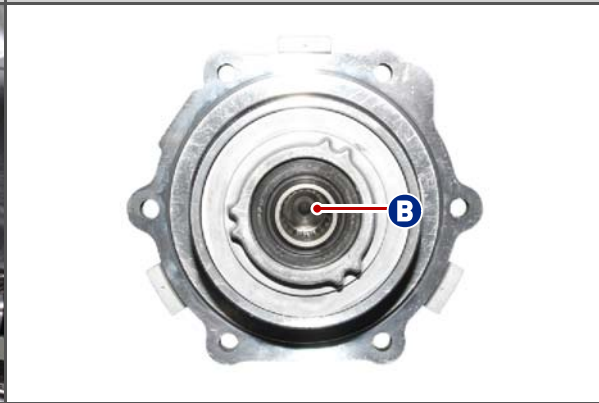
Cautions for installation of E-coupling

1. Apply the extreme pressure grease to the rear axle's input shaft spline part (A) and E-coupling's spline groove (B).

Rear axle's input shaft spline part

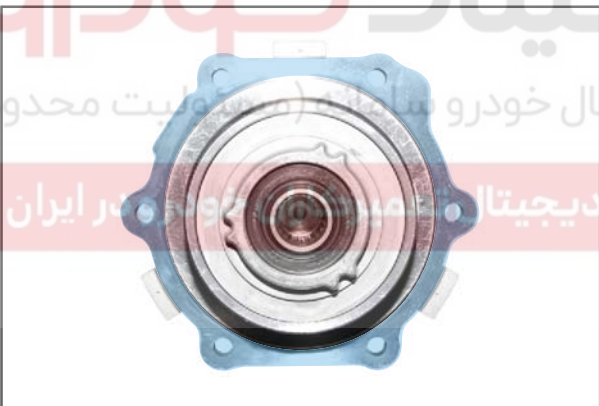


E-coupling's spline part



NOTE

Extreme pressure grease: grease for KLUBER MICROLUBE GNY 202 or transmission (MS 511-55, TMG-2)



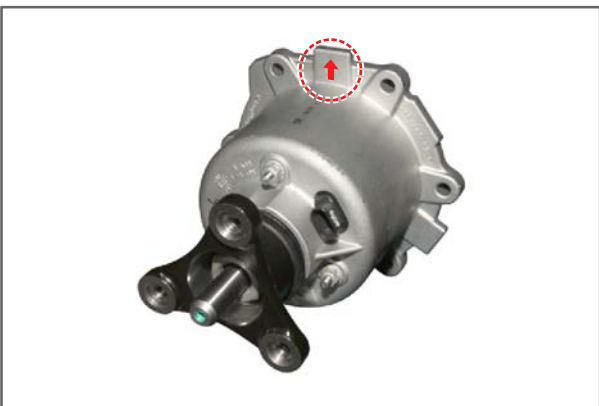
2. Apply the sealant (liquid gasket B type: MS 721-40, LT 5702 or the equivalent) to the E-coupling housing in the following order:

- A. Clean the contact surface before applying the sealant.
- B. Make sure that the starting point and ending point of the sealant bead are overlapped by about 10 mm.
- C. Fit the E-coupling to the rear axle housing within about 3 minutes of applying the sealant.



CAUTION

Make sure that you do not get the sealant on other parts.



3. The arrow marked on the E-coupling outer housing should be at 12 o'clock when fitting.

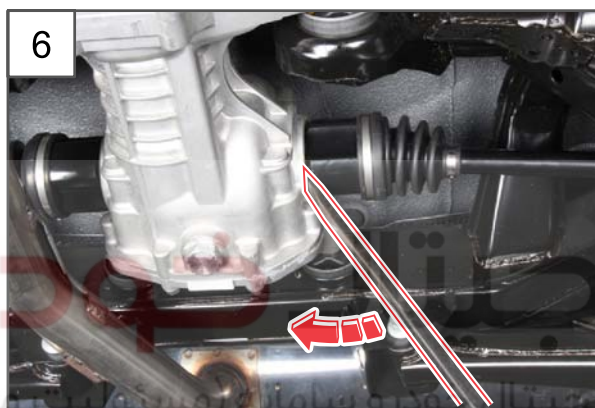


5. Remove the rear exhaust muffler.



NOTE

Refer to "REAR EXHAUST MUFFLER" under "REMOVAL AND INSTALLATION" subsection of "EXHAUST SYSTEM" section in "ENGINE" chapter.



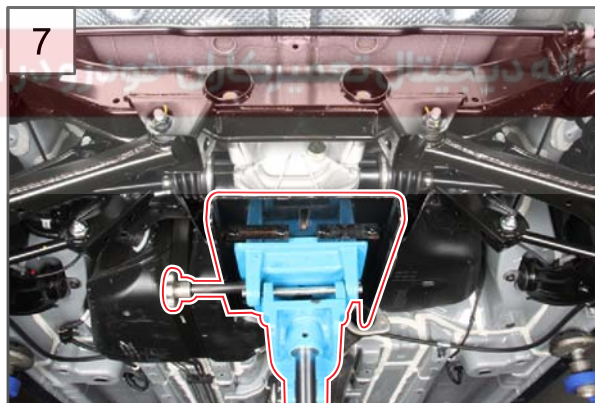
6. Separate the rear LH/RH drive shafts from the rear axle using a flat bladed screwdriver.



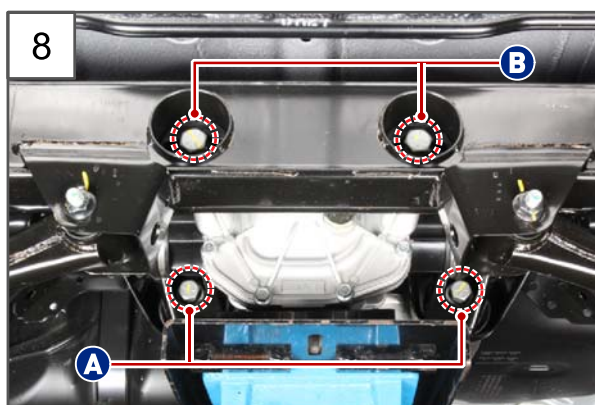
CAUTION

Make sure that the oil seal of the rear axle is not damaged when using a flat bladed screwdriver.

Do not pull the drive shaft from the outside with an excessive force. It causes the boot to tear or bearing to damage.



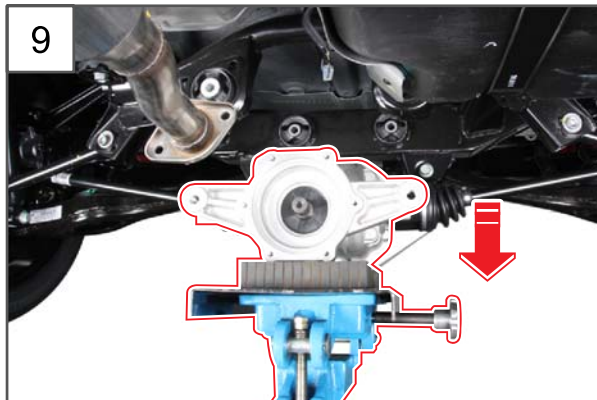
7. Place the jack under the rear axle.



8. Unscrew the 2 front mounting bolts (A, 22 mm) and the 2 rear mounting bolts (B, 22 mm) on the rear axle.

Tightening torque 98.0 ~ 117.6 Nm

Modification basis	
Application basis	
Affected VIN	



9. Separate the rear LH/RH drive shafts from the rear axle in order to remove the rear axle while lowering the jack slowly.



10. Lift up and secure the detached rear LH/RH drive shafts in order not to be damaged.

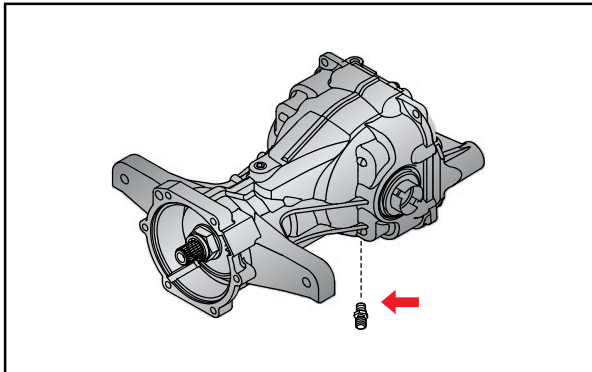


11. Install in the reverse order of removal.

CAUTION

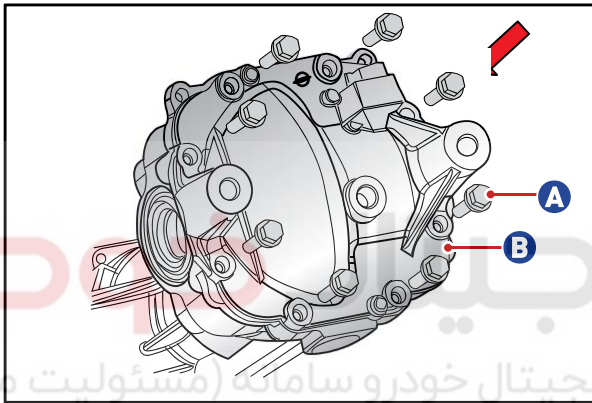
Make sure that the rear drive shafts are installed to the rear axle correctly.

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0000-00 REAR AXLE ASSEMBLY (AWD)**► Rear differential carrier**

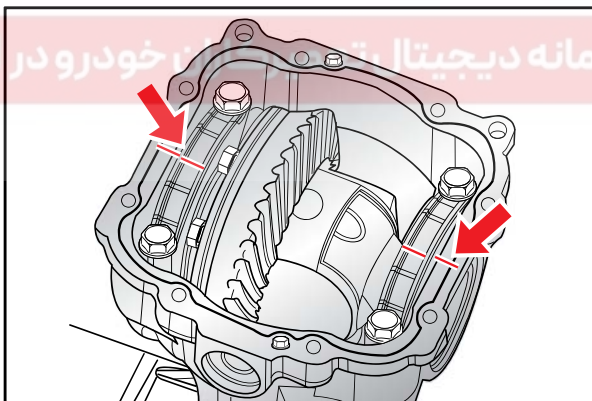
1. Remove the drain plug and drain the oil into an appropriate container before disassembling the rear differential carrier.

Tightening torque 49.0 ~ 68.6Nm

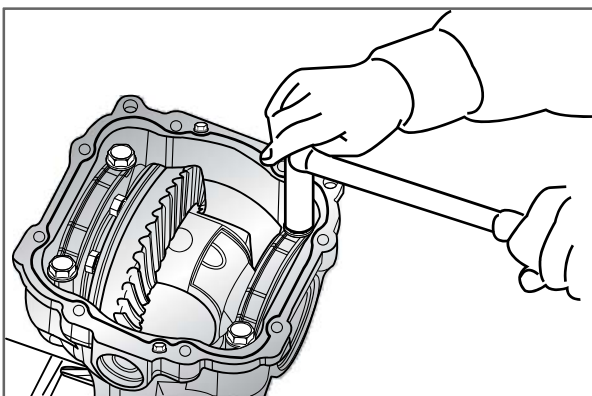


2. Unscrew bolts (A) and remove the cover (B).

Tightening torque 23.5 ~ 27.4Nm



3. Put match marks on the bearing not to mix up the left and right sides before disassembling the differential assembly.



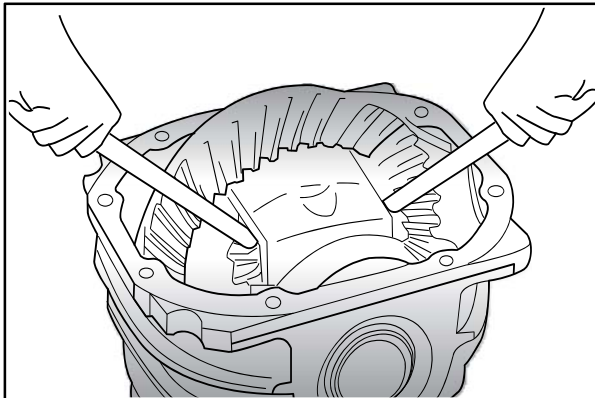
4. Unscrew the bolts and remove the bearing cap.

Tightening torque 44.1 ~ 49.0Nm

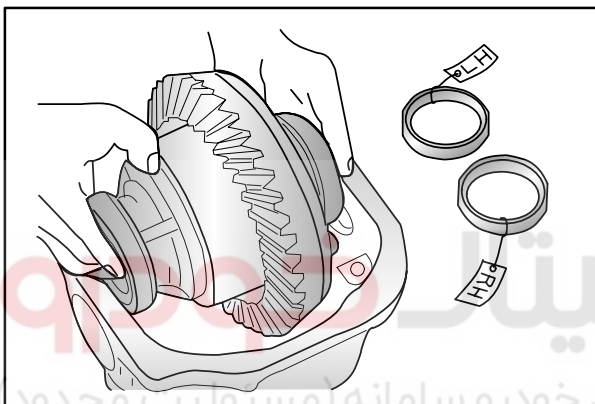
Modification basis	
Application basis	
Affected VIN	

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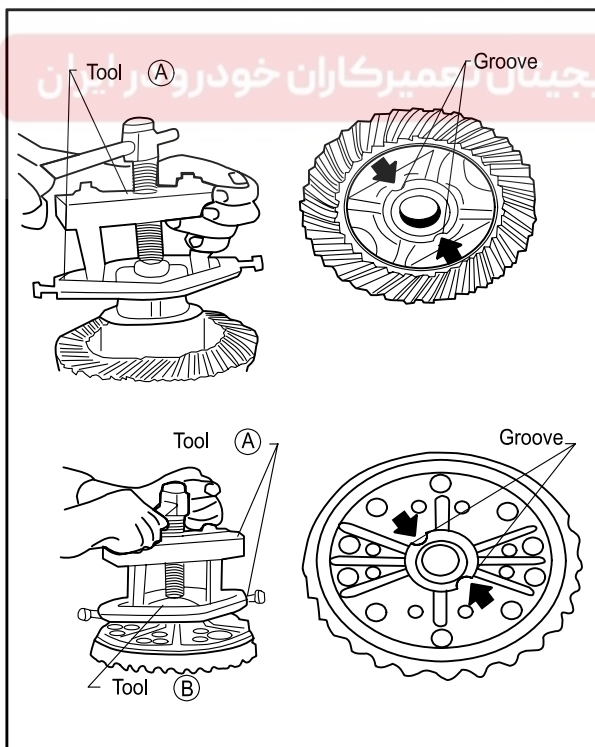
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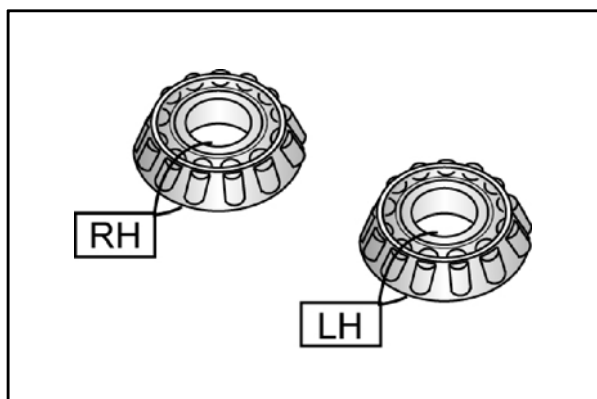
5. Remove the differential assembly using a tool.



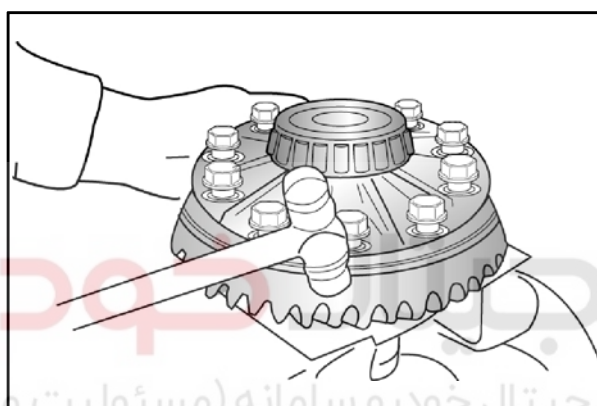
6. Attach labels to the side bearing races (left and right) not to be mixed up.



7. Fit the tool to the grooves on the differential case and then remove the bearing while paying attention not to damage it.

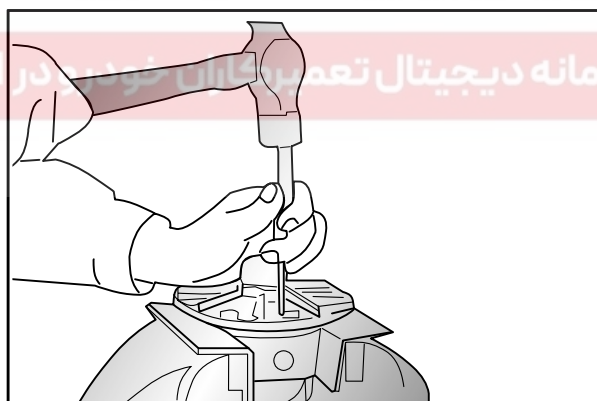


8. Attach labels to the left and right bearings not to mix up after removing them.

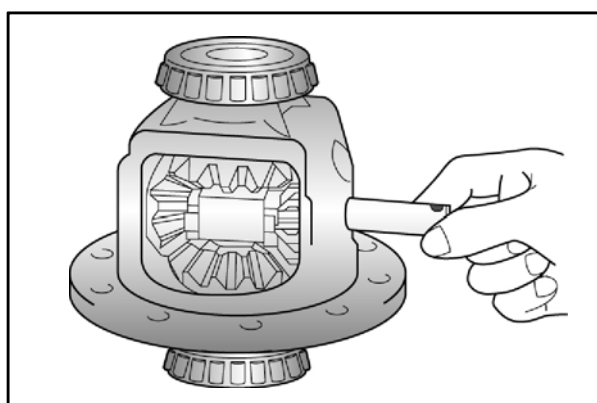


9. Unscrew the ring gear bolts and carefully tap using a rubber hammer to release the drive gear.

Tightening torque 58.8 ~ 63.7Nm

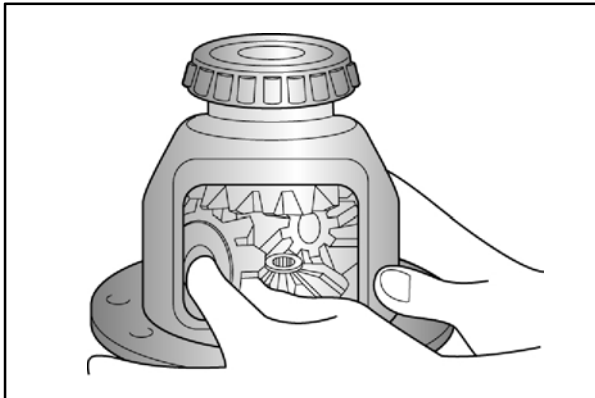


10. Remove the lock pin with a punch.



11. Remove the differential shaft.

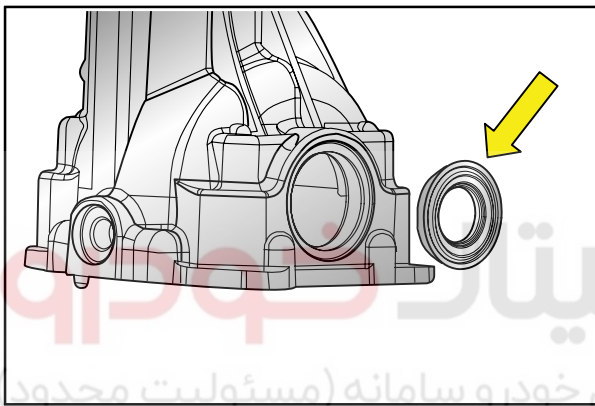
Modification basis	
Application basis	
Affected VIN	



12. Use your finger to remove the differential side gear, the differential pinion gear and the washers as shown in the figure.

**NOTE**

Measure the backlash after reassembly.
(Specified value: 0 ~ 0.05 mm)
If it is out of the specified value, adjust it with the thrust washer in side gear.



13. Pry out the left and right differential oil seals with a flat blade screwdriver.

14. Reassemble the rear axle assembly in the reverse order of removal.

- a. Verify the backlash is within the specification. Adjust with the differential shims if required.

Specified value

0.10 ~ 0.15mm

**CAUTION**

When the backlash is smaller than the specified value, adjust the thickness of the differential shims. Reduce the thickness of the left differential shims and add the right differential shims with the same thickness as the left ones removed. If the backlash is not within the specification, perform the above procedure in the opposite way.

- b. Remove the filler plug (Tightening torque: 39.2~58.8 Nm) and add the axle oil.

Oil capacity	Approx. 0.7 L
Specification	80W/90 (SYMC genuine oil)

Modification basis	
Application basis	
Affected VIN	

► Inspection

1. Clean the removed parts thoroughly and visually check them for any damage or wear. Perform the following procedures if the removed component is worn or damaged.

Component	Action
Gear set	If the gear tooth or tooth surface is damaged (crack, pitting, nick), replace the gear set with new one.
Bearing	If the bearing roller or race is damaged (crack, pitting, nick, unusual noise when rotating), replace it with new bearing.
Oil seal	Always replace the removed oil seal with new one.
Carrier case	If the bearing-seating surface of the carrier is damaged (wear, nick), replace the carrier with new one.
Differential assembly	<ul style="list-style-type: none"> - If the gear tooth or tooth surface is damaged (crack, pitting, nick), replace the gear set with new one. - If the washer surface is damaged (crack, pitting, nick), replace the washer with new one.

دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

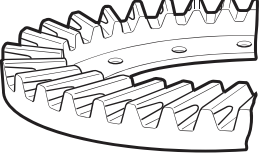
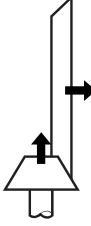
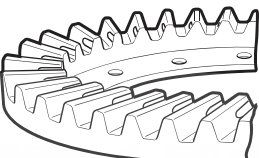
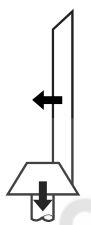
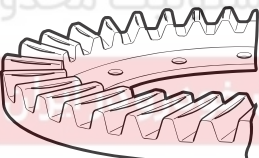

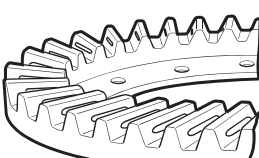
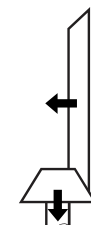


Modification basis	
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Affected VIN	

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2. Also check the gear set tooth contact pattern.

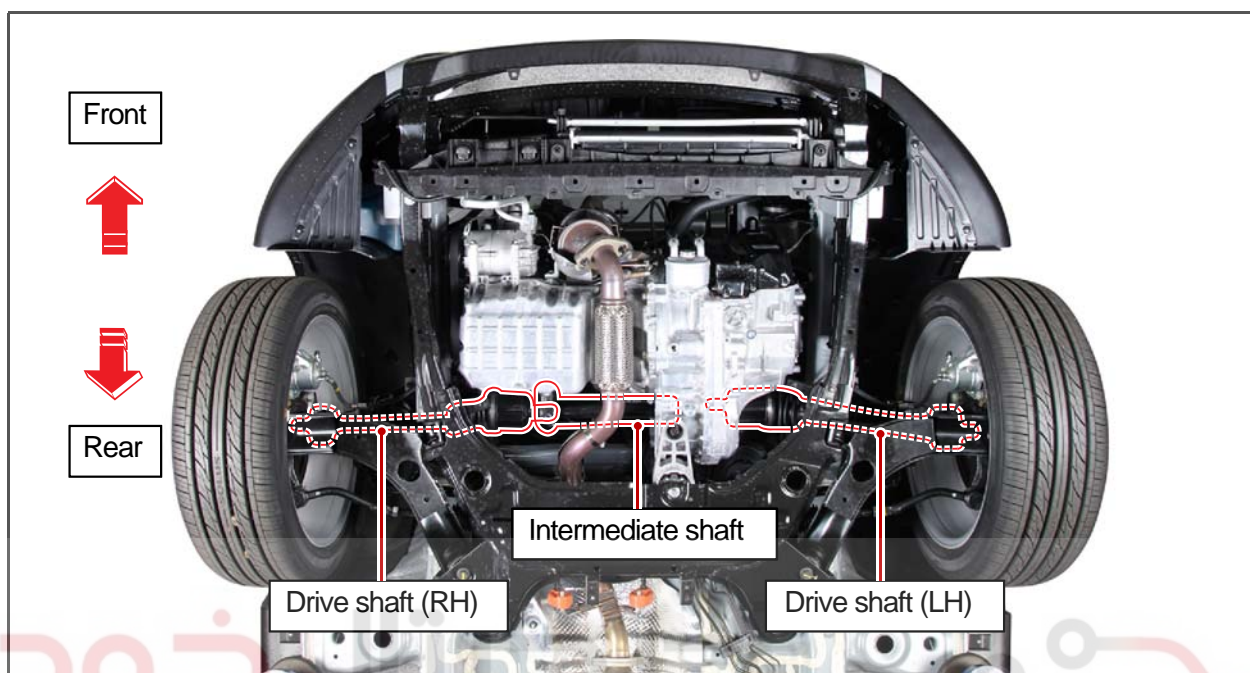
Teeth contact	Cause	Action
<p>1. Wheel contact</p>  <p>A</p>	The backlash is relatively large and noise is generated easily.	<p>Select the shim so that the driving pinion gets close to the ring gear. Then, adjust the backlash.</p>  <p>B</p>
<p>2. Toe contact</p>  <p>A</p>	The backlash is relatively small. Teeth are easily damaged if loaded heavily.	<p>Select the shim so that the driving pinion gets away from the ring gear. Then, adjust the backlash.</p>  <p>B</p>
<p>3. Face contact</p>  <p>A</p>	The backlash is large and noise occurs since the driving pinion shaft is too distant from the ring gear.	<p>Increase the thickness of the driving pinion shim so that the driving pinion is moved toward the ring gear. Then, adjust the backlash.</p>  <p>B</p>
<p>4. Plank contact</p>  <p>A</p>	The gear is in contact with the inner section of the teeth. Since the backlash is too small, gear damage, noise and wear can occur.	<p>Decrease the thickness of the driving pinion shim so that the ring gear gets close to the driving pinion. Then, adjust the backlash.</p>  <p>B</p>

S.G.N.

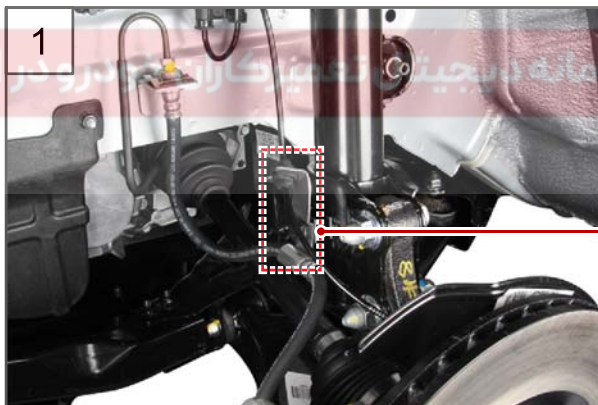
4110-01 FRONT DRIVE SHAFT

Preceding work

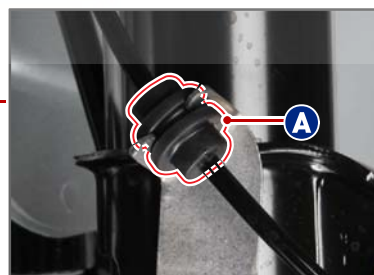
- Remove the front wheel.



► Removing front drive shaft (LH)



1. Free the mounting for the front wheel speed sensor (A).



2. Unscrew the mounting bolt (12 mm) for the brake hose bracket.

Tightening torque 9.8 to 12.7 Nm

Modification basis	
Application basis	
Affected VIN	

DRIVE SHAFT AND AXLE

TIVOLI 2015.06

AISIN 6
SPEED6-SPEED
M/T

CLUTCH

PROPELLER

DRIVE
SHAFT

AWD

SUSPENSION

BRAKE
SYSTEM

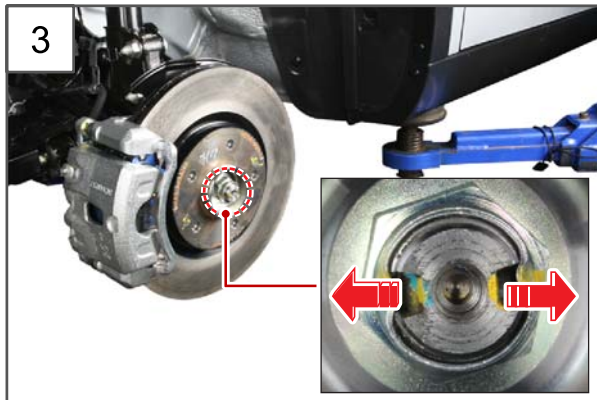
ESP

ABS

ELECTRIC
POWERWHEEL
AND TIRE

TPMS

SUB
FRAME

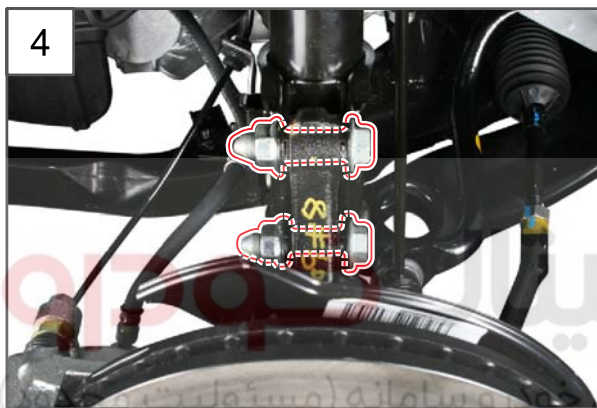


3. Release the caulking of the front hub nut in the direction of the arrow shown in the picture to remove the front hub nut (30 mm).

Tightening torque 245 to 343 Nm

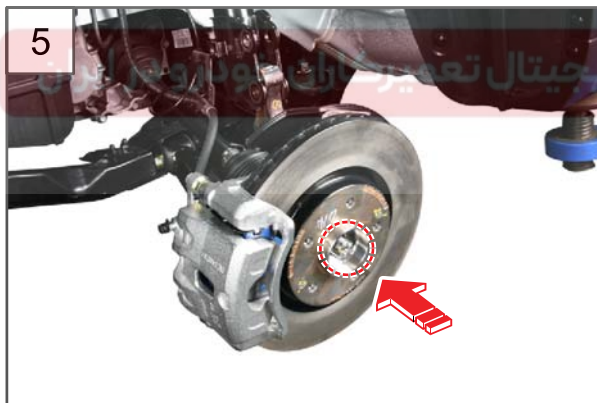
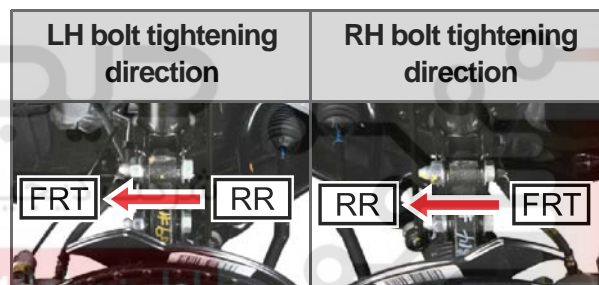
CAUTION

Replace the hub nut with a new one when installing.

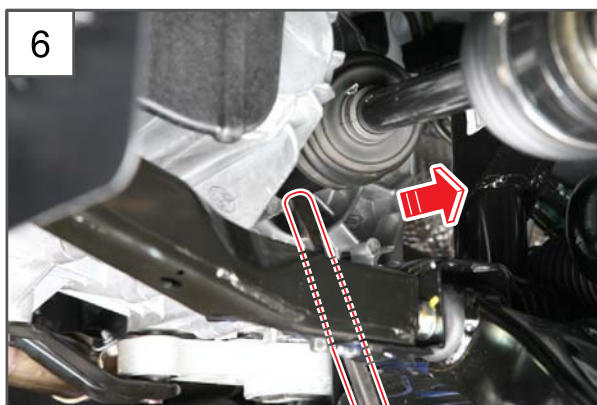


4. Unscrew the 2 mounting bolts (17 mm) and 2 mounting nuts (19 mm) fitted to the upper part of the knuckle assembly.

Tightening torque 137 to 156 Nm



5. Push out the drive shaft in the direction of the arrow to remove from the knuckle assembly.



6. Remove the drive shaft from the transmission using a flat bladed screwdriver.

CAUTION

- Be careful not to damage the oil seal when removing the drive shaft from the transmission.
- Do not pull the drive shaft from the outside with an excessive force. It causes the boot to tear or bearing to damage.



7. Remove the drive shaft (LH).

CAUTION

Plug the oil seal opening of the transmission with the service cap to prevent entry of moisture and foreign matter.

8. Install in the reverse order of removal.

CAUTION

Add the transmission fluid after installing the drive shaft.

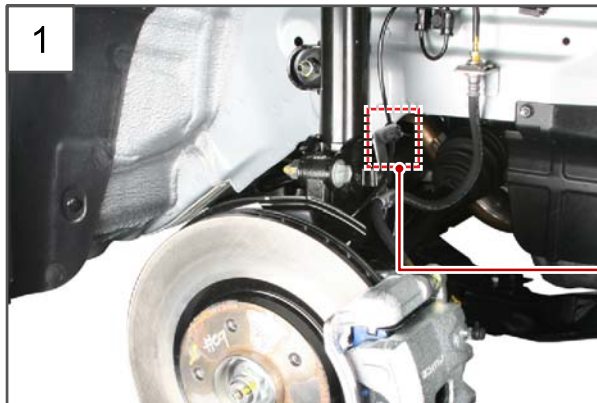
Engine	Classification	Front drive shaft (LH)
Gasoline	M/T (2WD & AWD)	
	A/T (2WD & AWD)	
Diesel	M/T (2WD & AWD)	
	A/T (2WD)	
	A/T (AWD)	

Modification basis	
Application basis	
Affected VIN	

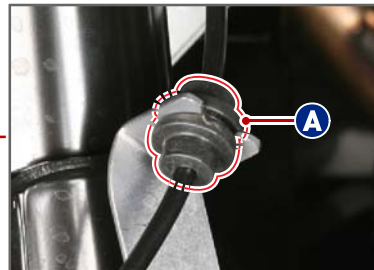
DRIVE SHAFT AND AXLE

TIVOLI 2015.06

► Removing front drive shaft (RH)

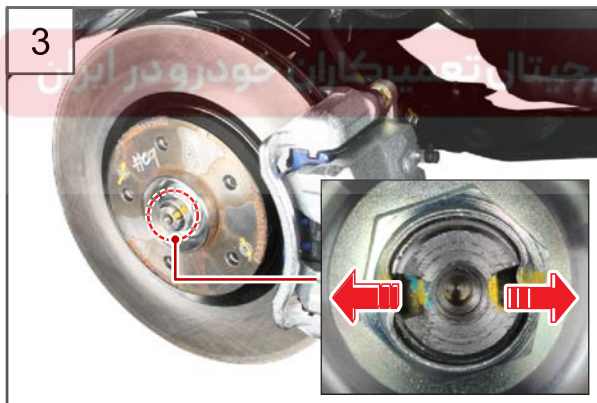


1. Free the mounting for the front wheel speed sensor (A).



2. Unscrew the mounting bolt (12 mm) for the brake hose bracket.

Tightening torque 9.8 to 12.7 Nm

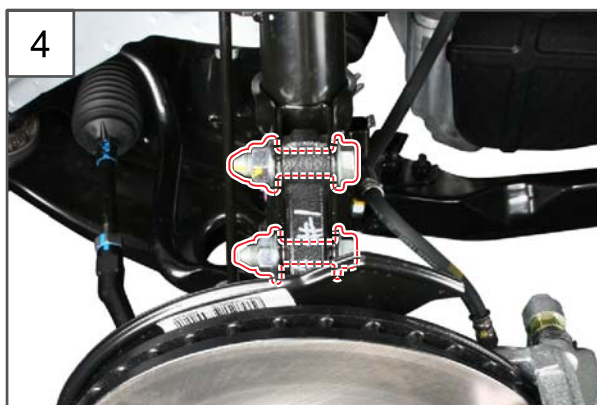


3. Release the caulking of the front hub nut in the direction of the arrow shown in the picture to remove the front hub nut (30 mm).

Tightening torque 245 to 343 Nm

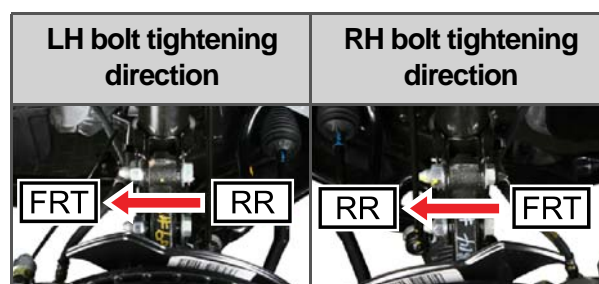
CAUTION

Replace the hub nut with a new one when installing.



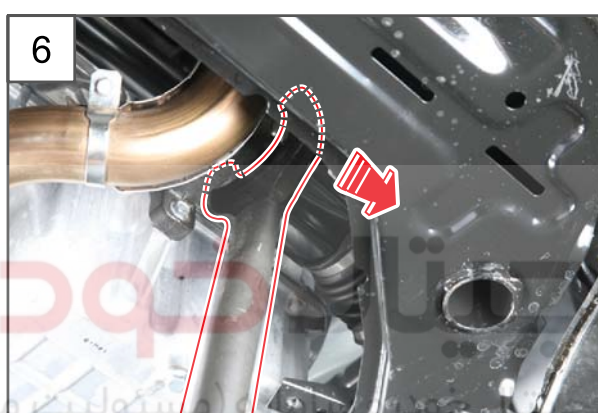
4. Unscrew the 2 mounting bolts (17 mm) and 2 mounting nuts (19 mm) fitted to the upper part of the knuckle assembly.

Tightening torque 137 to 156 Nm





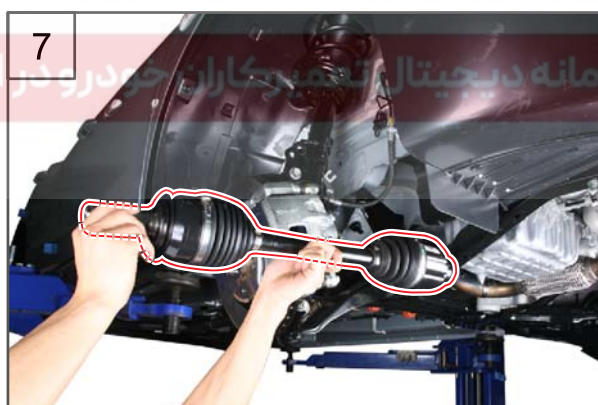
5. Push out the drive shaft in the direction of the arrow to remove from the knuckle assembly.



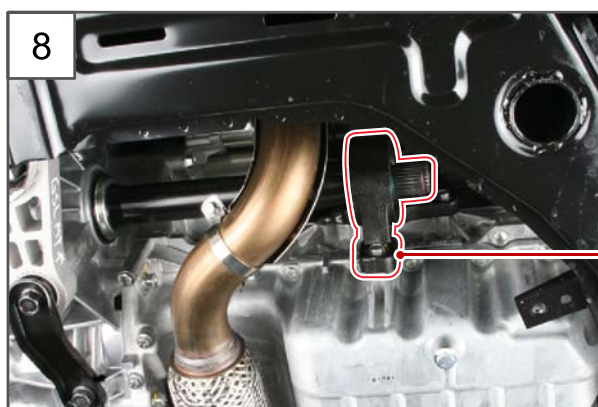
6. Separate the drive shaft from the intermediate shaft in the direction of the arrow using a special tool.

CAUTION

Do not pull the drive shaft from the outside with an excessive force. It causes the boot to tear or bearing to damage.



7. Remove the drive shaft (RH).

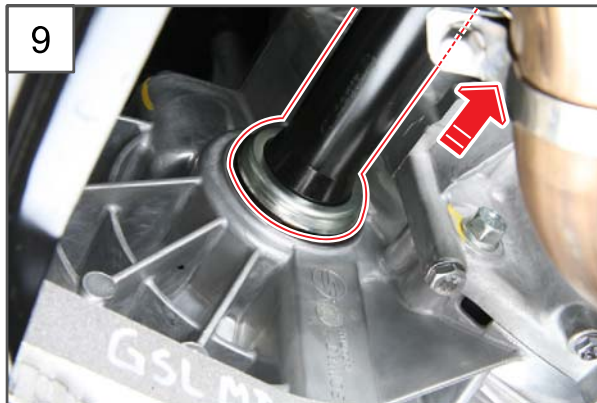


8. Unscrew the 3 intermediate shaft mounting bolts (12 mm).

Tightening torque 24.5 to 29.4 Nm



Modification basis	
Application basis	
Affected VIN	



9. Remove the intermediate shaft from the transmission.

CAUTION

Be careful not to damage the oil seal when removing the intermediate shaft from the transmission.



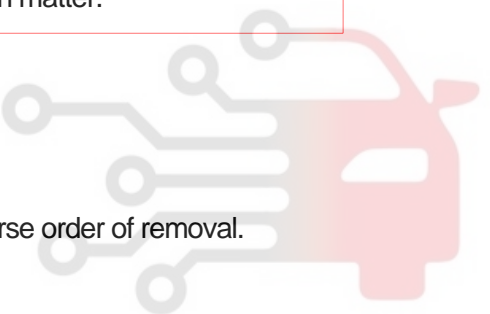
10. Remove the intermediate shaft.












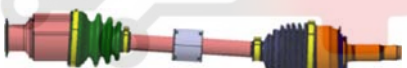
CAUTION

Plug the oil seal opening of the transmission with the service cap to prevent entry of moisture and foreign matter.

11. Install in the reverse order of removal.

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Engine	Classification	Intermediate shaft	Front drive shaft (RH)
Gasoline	M/T (2WD & AWD)		
	A/T (2WD)		
	A/T (AWD)		
Diesel	M/T (2WD & AWD)		
	A/T (2WD)		
	A/T (AWD)		

Modification basis	
Application basis	
Affected VIN	

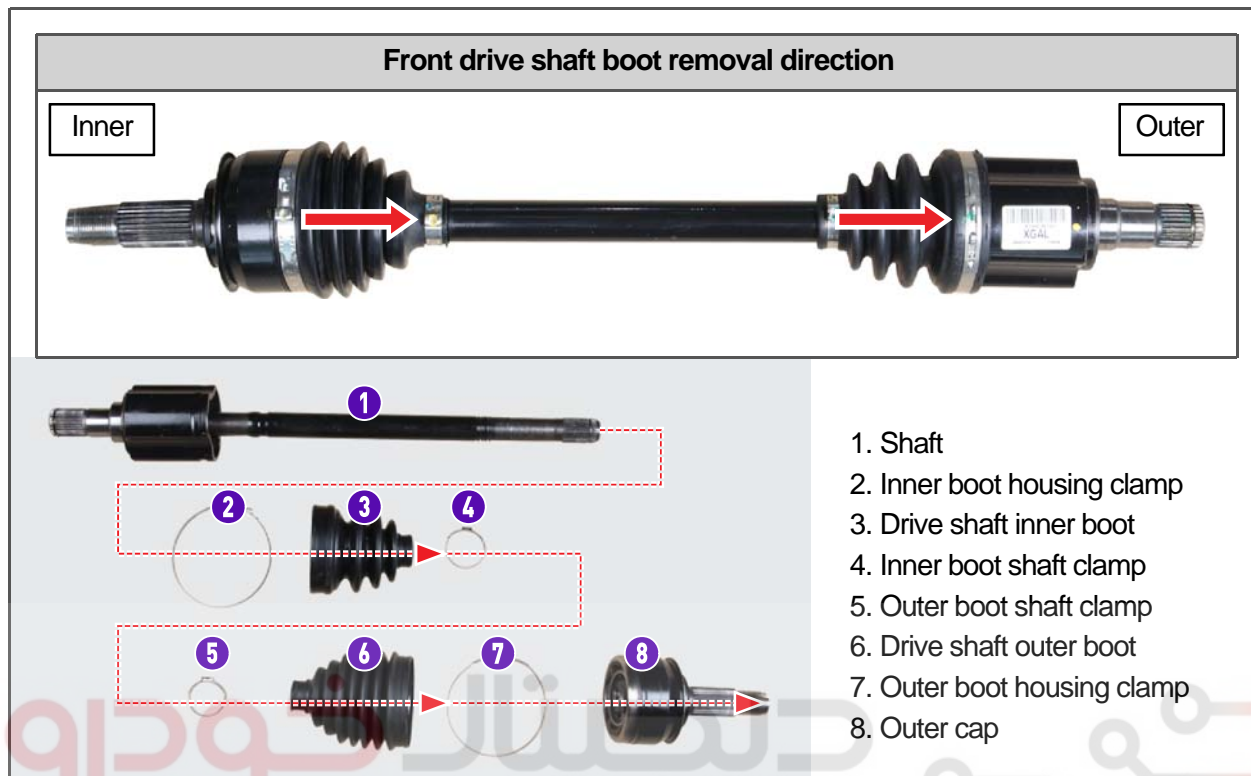
DRIVE SHAFT AND AXLE

TIVOLI 2015.06

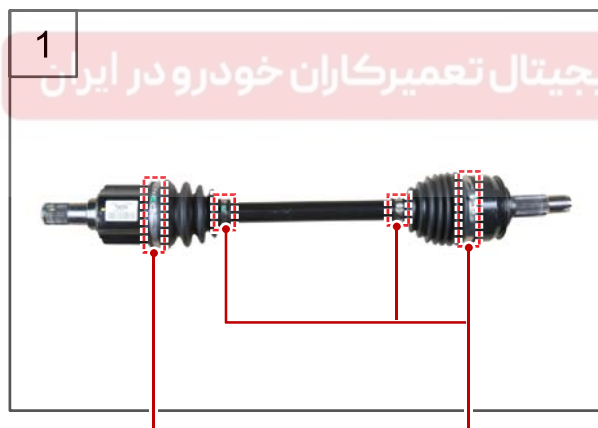
S.G.N.

4110-02

REPLACING FRT DRIVE SHAFT BOOT



► Removing front drive shaft inner/outer boots



1. Remove the drive shaft inner and outer boot clamps.



Modification basis	
Application basis	
Affected VIN	



2. Remove the drive shaft outer boot in the direction of the arrow to remove the grease.



3. Fit the drive shaft between the table top vise jaws.



4. Remove the outer cap in the direction of the arrow from the drive shaft.



5. Remove the drive shaft outer boot.

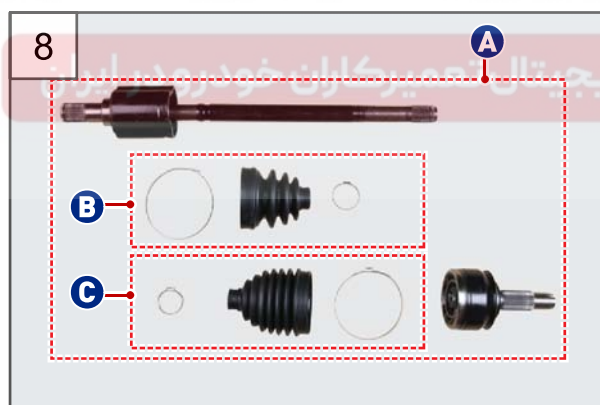
Modification basis	
Application basis	
Affected VIN	



6. Remove the drive shaft inner boot in the direction of the arrow to remove the grease.



7. Remove the drive shaft inner boot.



CAUTION

- Do not reuse the removed boot clamp. Always replace it with a new one.
- Use Ssangyong genuine grease for the drive shaft grease.

	Components
A	Drive shaft assembly
B	Inner boot assembly
C	Outer boot assembly

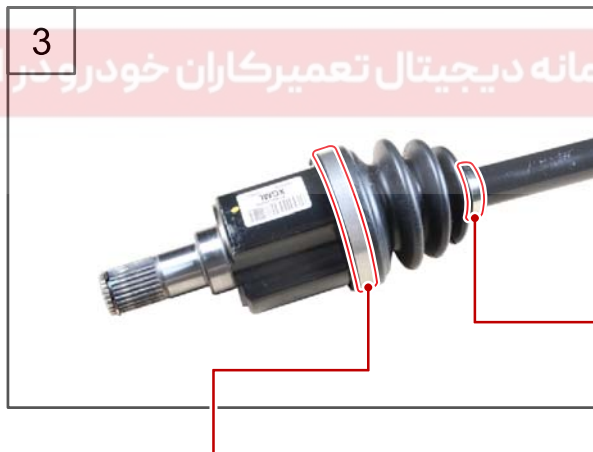
► Installing front drive shaft inner/outer boots



1. Install the drive shaft inner boot.



2. Apply the grease inside the inner boot.

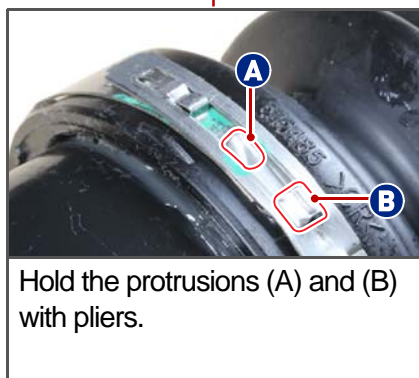


3. Install the inner boot clamp.

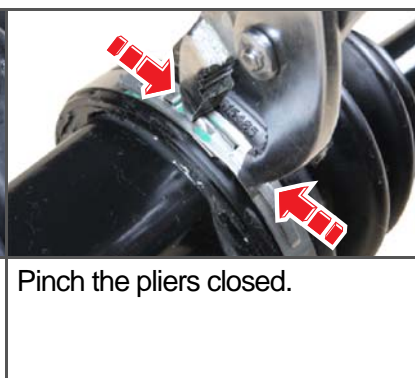
CAUTION
Replace the clamp with a new one.



Use a clamp pressing tool to secure the clamp.



Hold the protrusions (A) and (B) with pliers.



Pinch the pliers closed.



Check the clamp is engaged correctly at the mounting hole (C).

Modification basis	
Application basis	
Affected VIN	

DRIVE SHAFT AND AXLE

TIVOLI 2015.06



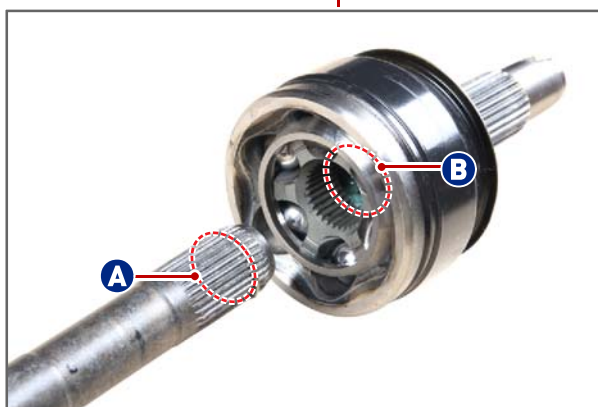
4. Fit the outer boot shaft clamp to the shaft.



5. Install the drive shaft outer boot.



6. Apply the grease inside the outer cap and fit the cap to the shaft.



CAUTION

The snap ring (A) of the shaft should be seated to the groove for snap ring (B) of the outer cap correctly.



7. Apply the grease inside the outer boot.



8. Install the outer boot clamp.

CAUTION

Replace the clamp with a new one.



Use a clamp pressing tool to secure the clamp.



NOTE

Check the following items after replacing the drive shaft boot.

1. Check if the drive shaft moves freely in axial directions.
2. Check the spline of inner/outer shafts for wear.

Modification basis	
Application basis	
Affected VIN	

05-40

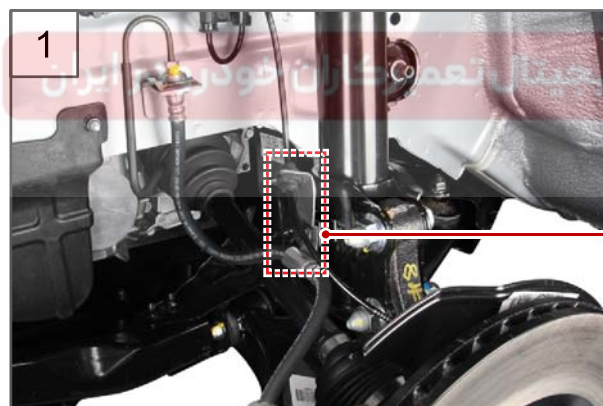
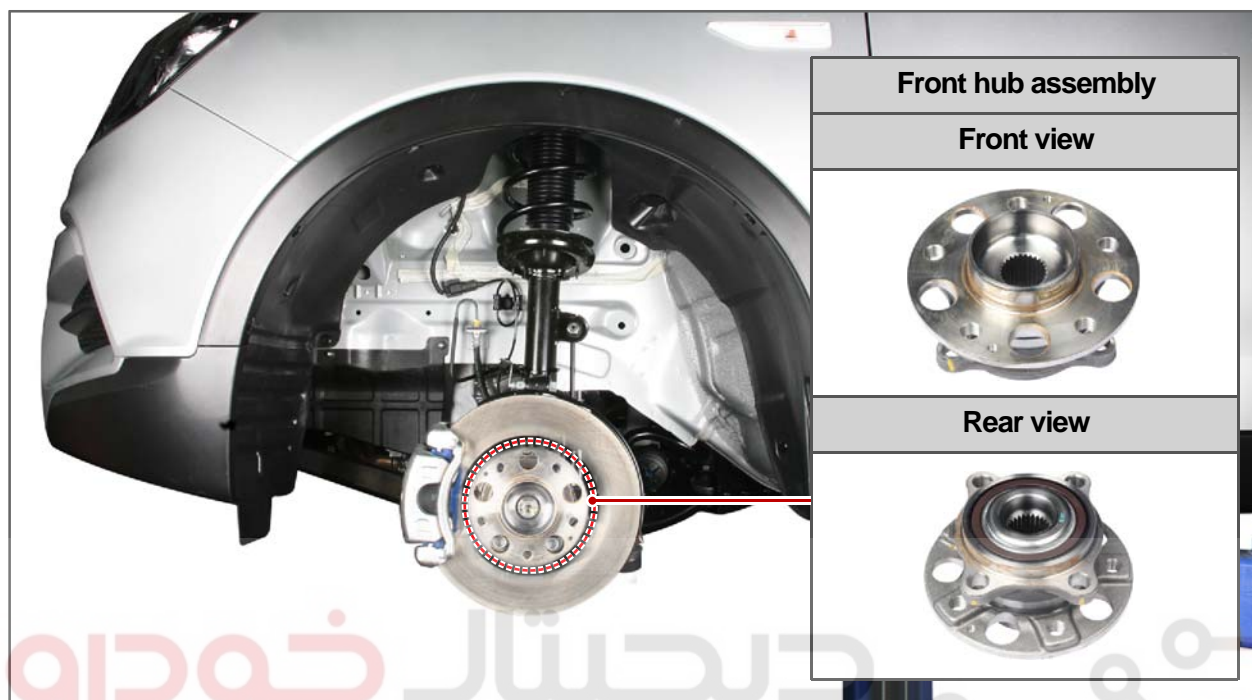
4115-04

T I V O L I

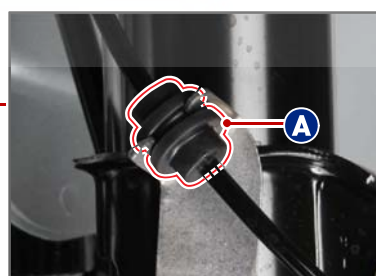
S.G.N.

4115-04 FRONT HUB ASSEMBLY**Preceding work**

- Remove the front wheel.



1. Free the mounting for the front wheel speed sensor (A).



2. Unscrew the mounting bolt (12 mm) for the brake hose bracket.

Tightening torque 9.8 to 12.7 Nm

DRIVE SHAFT AND AXLE

TIVOLI 2015.06

Modification basis	
Application basis	
Affected VIN	



3. Unscrew the 2 mounting bolts (19 mm) on the front brake caliper.

Tightening torque 83.3 to 102.9 Nm



4. Remove the front caliper assembly.



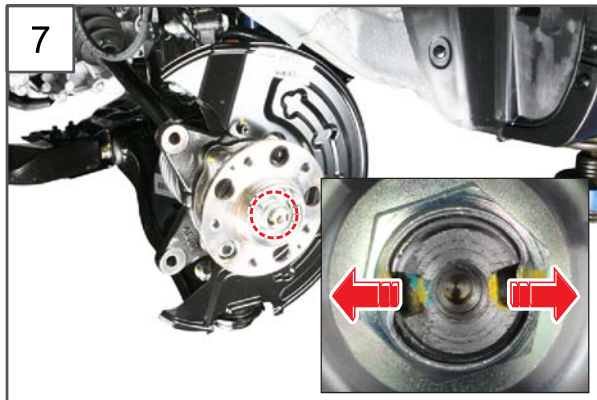
5. Unscrew the 2 front brake disc mounting screws.

Tightening torque 4.9 to 6.8 Nm



6. Remove the front brake disc from the hub assembly.

Modification basis	
Application basis	
Affected VIN	



7. Release the caulking of the front hub nut in the direction of the arrow shown in the picture.



8. Unscrew the front hub nut (30 mm) to remove the hub assembly.

Tightening torque 245 to 343 Nm

CAUTION

Replace the hub nut with a new one when installing.



9. Unscrew the 4 front hub hexagon mounting bolts (10 mm).

Tightening torque 107 to 127 Nm



10. Remove the front hub assembly.

11



11. Install in the reverse order of removal.

دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Modification basis	
Application basis	
Affected VIN	

DRIVE SHAFT AND AXLE

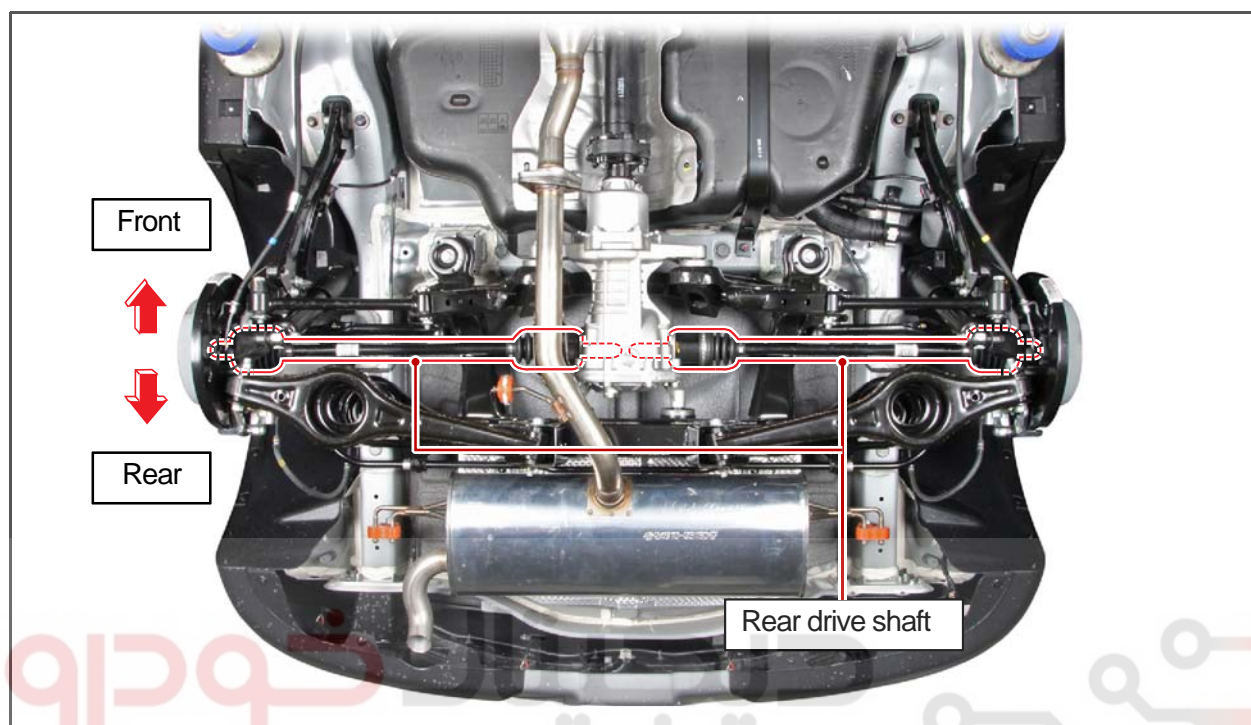
TIVOLI 2015.06

S.G.N.

0000-00 REAR DRIVE SHAFT (AWD)

Preceding work

- Remove the rear wheel.



شرکت دیجیتال خودرو سامانه (مسئولیت محدود)



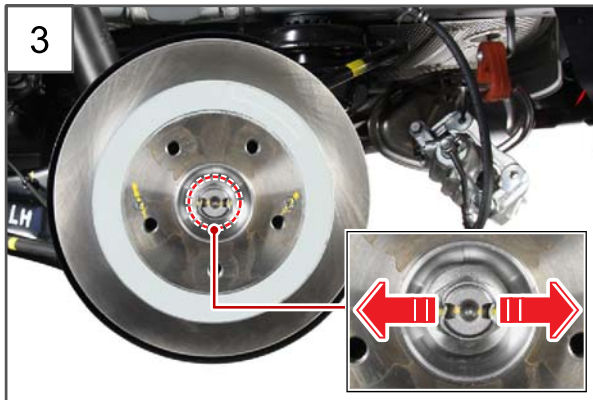
1. Unscrew the 2 mounting bolts (17 mm) on the rear brake caliper.

Tightening torque 53.9 ~ 63.7 Nm



2. Detach the rear caliper assembly and secure it to the vehicle body.

Modification basis	
Application basis	
Affected VIN	



3. Release the caulking of the rear hub nut in the direction of the arrow shown in the picture to remove the rear hub nut (30 mm).

Tightening torque 245 ~ 343 Nm

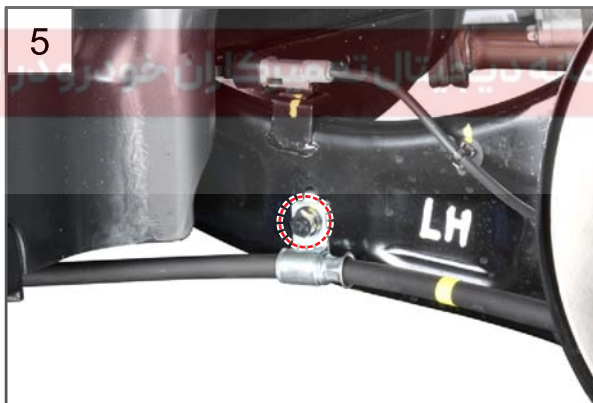
CAUTION

Replace the hub nut with a new one when installing.



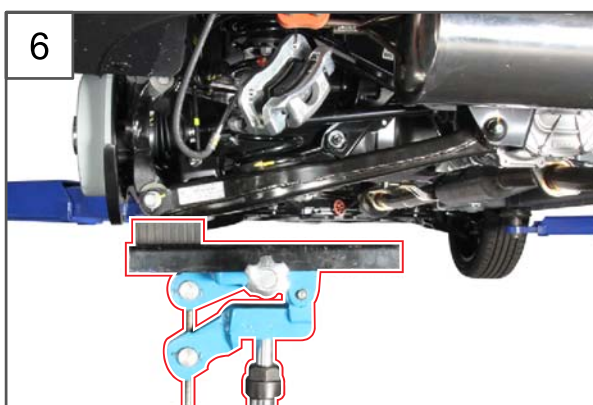
4. Unscrew the mounting bolt (10 mm) for the wheel speed sensor to remove the sensor from the knuckle.

Tightening torque 7.8 ~ 11.7 Nm



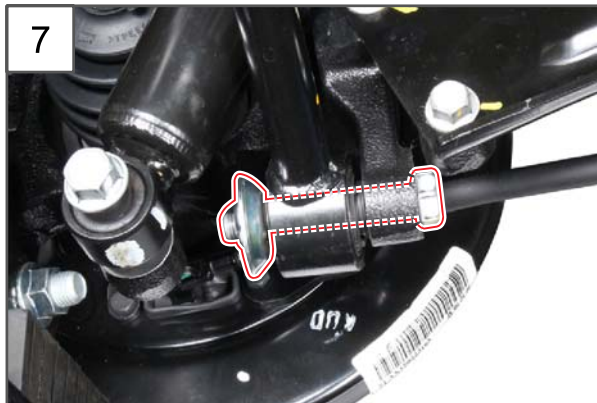
5. Unscrew the parking brake cable mounting bolt (12 mm) and separate the parking brake cable from the trailing arm.

Tightening torque 9.8 ~ 12.7 Nm



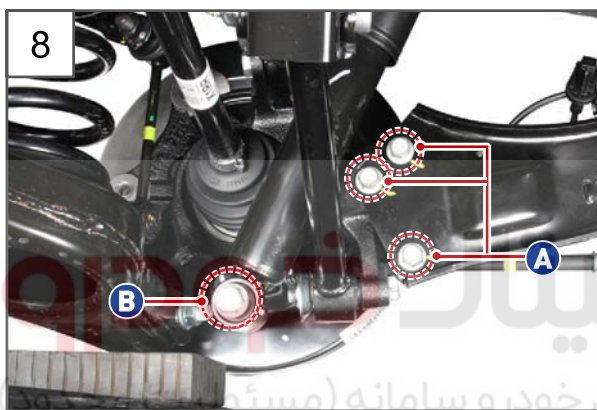
6. Place the jack under lower arm securely.

Modification basis	
Application basis	
Affected VIN	



7. Loosen the track rod mounting bolt/nut (19 mm) on the knuckle slightly so that the knuckle moves freely.

Tightening torque 98.0 ~ 117.6 Nm



8. Unscrew the 3 mounting bolts (A, 14 mm) for the trailing arm on the knuckle side and mounting bolt (B, 17 mm) on the bottom of the shock absorber.

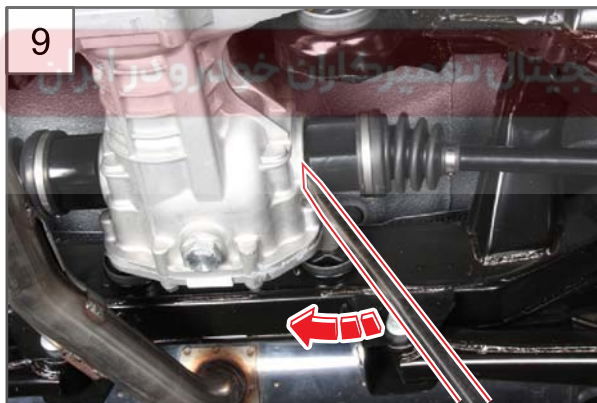
Tightening torque (A) 49.0 ~ 68.6 Nm

(B) 78.4 ~ 98.0 Nm



NOTE

Align the bolt with the bolt groove by adjusting the jack up or down when installing.



9. Separate the rear drive shaft from the rear axle by prising a flat bladed screwdriver to the arrow direction.



CAUTION

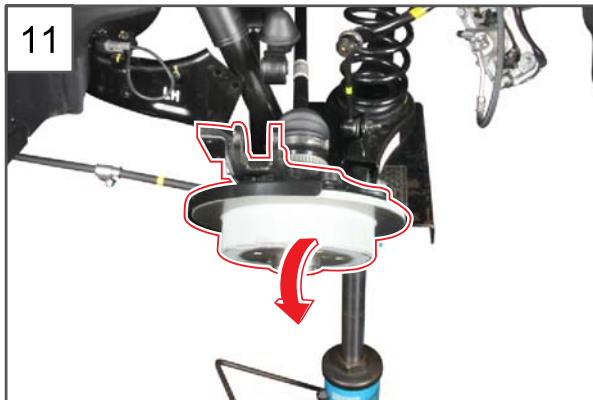
Make sure that the oil seal of the rear axle is not damaged when using a flat bladed screwdriver.

Do not pull the drive shaft from the outside with an excessive force. It causes the boot to tear or bearing to damage.



10. Unscrew the mounting bolt/nut (19 mm) of the upper arm on the knuckle side.

Tightening torque 98.0 ~ 117.6 Nm



11. Remove the drive shaft by prising the upper part of the knuckle to the arrow direction.



12. Remove the rear drive shaft.

CAUTION

Plug the oil seal opening of the rear axle with the service cap to prevent entry of moisture and foreign matter.

Do not pull the drive shaft from the outside with an excessive force. It causes the boot to tear or bearing to damage.

Make sure that the drive shaft is installed to the rear axle completely.

13. Removal sequences are same for both LH and RH rear drive shafts. Install in the reverse order of removal.

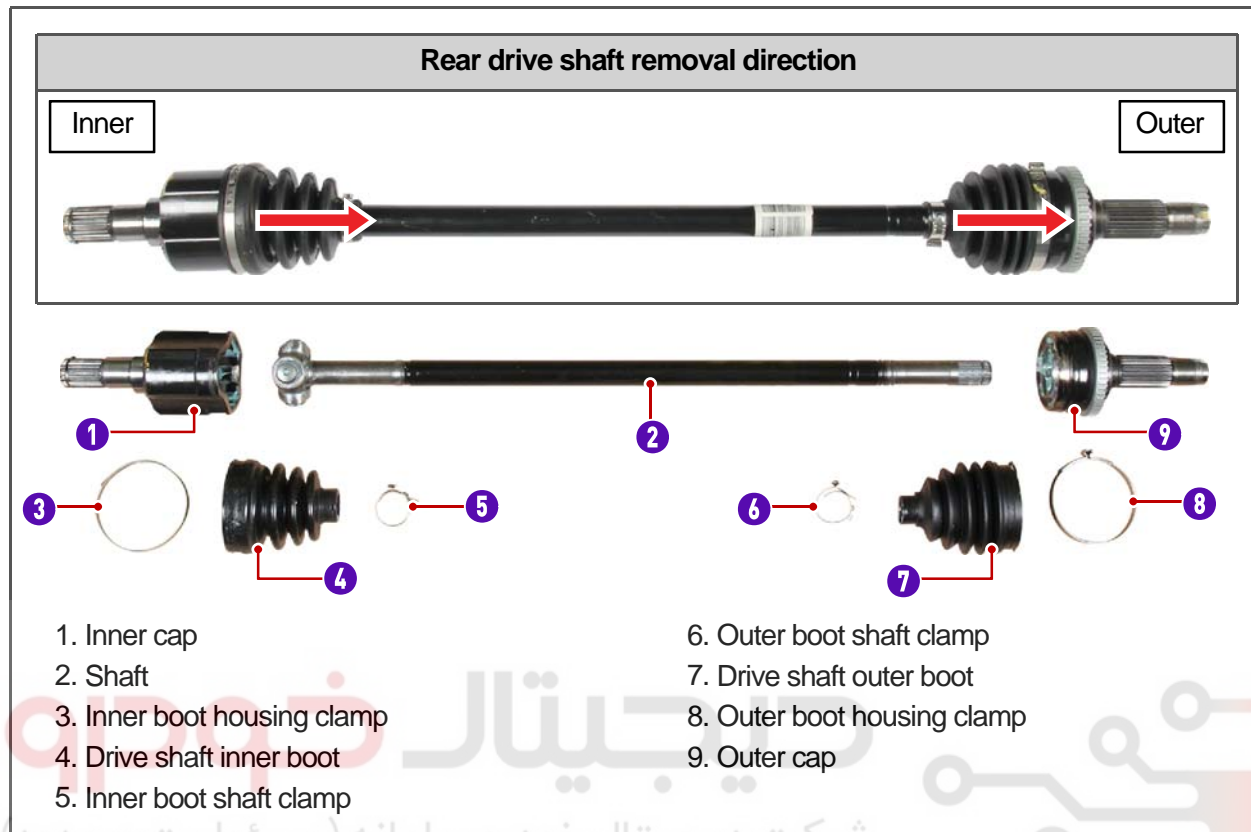
Classification	Common for AWD
Rear drive shaft (LH/RH)	

Modification basis	
Application basis	
Affected VIN	

S.G.N.

0000-00

REPLACING REAR DRIVE SHAFT BOOT (AWD)



► Removing rear drive shaft inner/outer boots

1

1. Remove the drive shaft outer boot clamp.

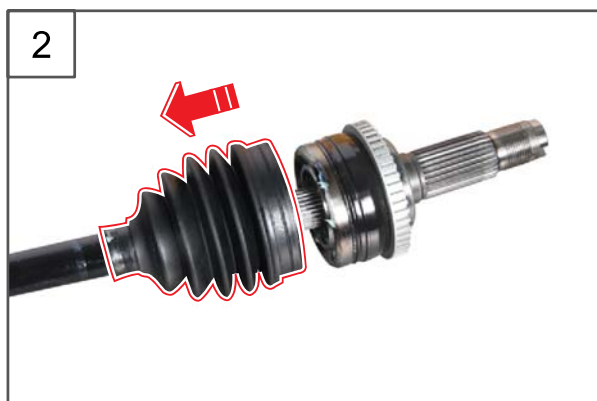


Detach the clamp fixture using a flat bladed screwdriver to remove it.

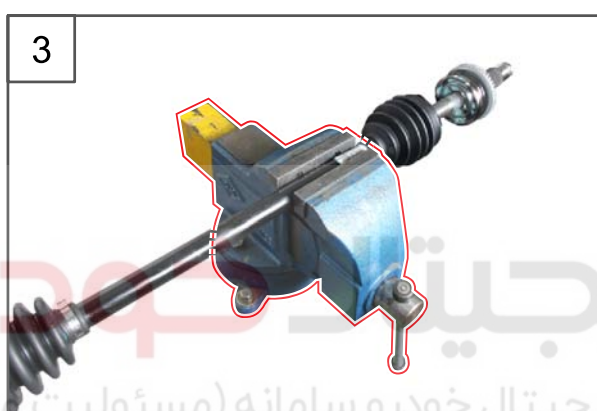


Release the clamp fixture using a flat bladed screwdriver to remove it.

Modification basis	
Application basis	
Affected VIN	



2. Remove the drive shaft outer boot in the direction of the arrow to remove the grease.



3. Fit the rear drive shaft between the table top vise jaws.



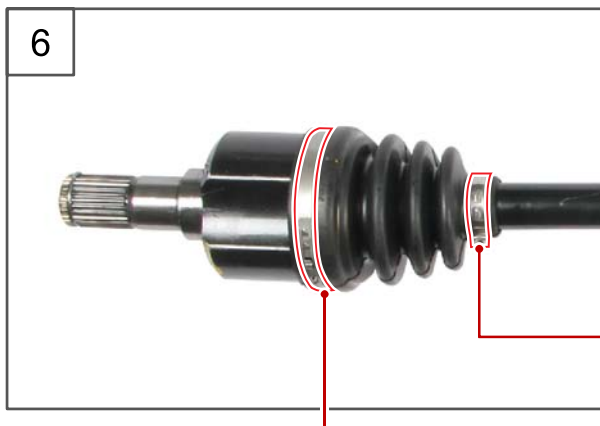
4. Remove the outer cap in the direction of the arrow from the shaft.



5. Remove the drive shaft outer boot.

Modification basis	
Application basis	
Affected VIN	

6



6. Remove the drive shaft inner boot clamp.



Remove the fixture by making the clamp round with a plier.



Detach the clamp fixture using a flat bladed screwdriver to remove it.

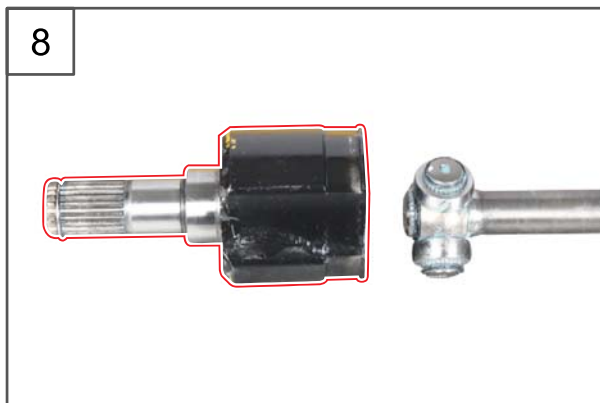
7



7. Remove the drive shaft inner boot in the direction of the arrow.



8



8. Remove the inner cap from the shaft to remove the grease.

**CAUTION**

- Do not reuse the remove the boot and clamp. Replace them with new ones.
- Use Ssangyong genuine grease for the drive shaft grease.

► Installing rear drive shaft inner/outer boots



1. Install the drive shaft inner boot and apply the grease.



2. Apply the grease to the inner cap.



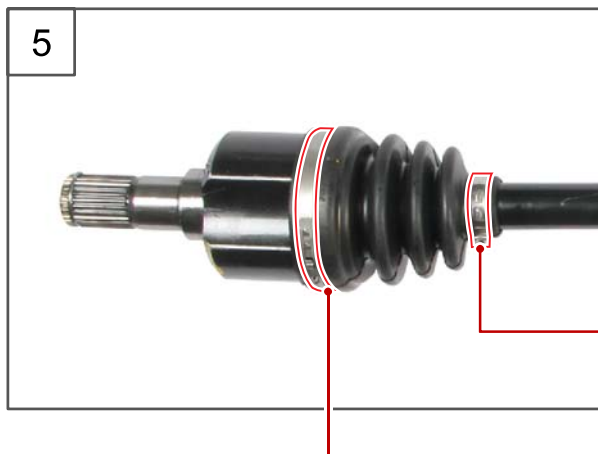
3. Install the inner cap to the shaft.



4. Fit the drive shaft inner boot to the inner cap.

Modification basis	
Application basis	
Affected VIN	

5



5. Install the inner boot clamp.

CAUTION

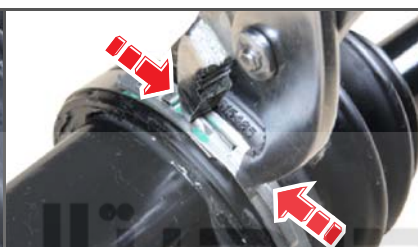
Replace the clamp with a new one.



Use a clamp pressing tool to secure the clamp.



Hold the protrusions (A) and (B) with pliers.



Pinch the pliers closed.



Check the clamp is engaged correctly at the mounting hole (C).

6



6. Install the drive shaft outer boot.

**CAUTION**

Fit the outer boot shaft clamp to the shaft before installing the drive shaft outer boot.

7



7. Apply the grease to the drive shaft outer boot.



8. Apply the grease to the drive shaft outer boot.



9. Install the outer cap.

CAUTION

The snap ring (A) of the shaft should be seated to the groove for snap ring (B) of the outer cap correctly.



10. Install the outer boot clamp.

CAUTION

Replace the clamp with a new one.



Use a clamp pressing tool to secure the clamp.



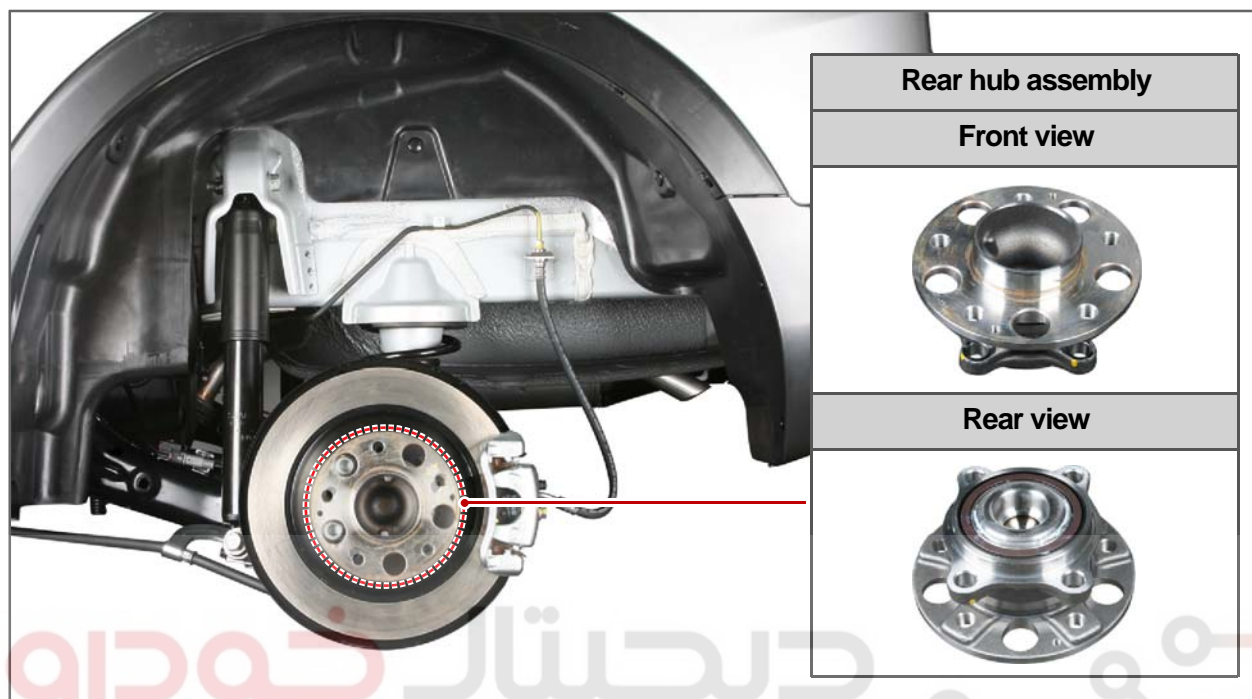
NOTE

Check the following items after replacing the drive shaft boot.

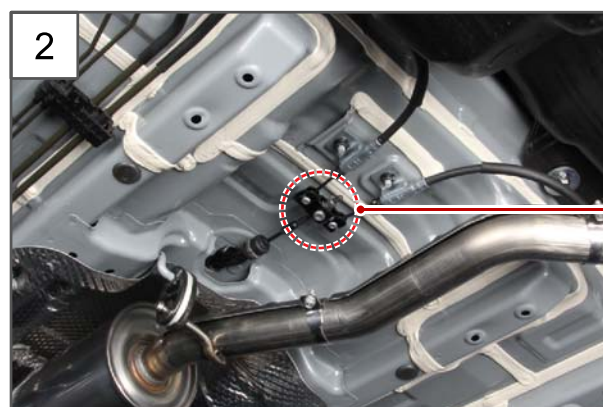
1. Check if the drive shaft moves freely in axial directions.
2. Check the spline of inner/outer shafts for wear.

Modification basis	
Application basis	
Affected VIN	

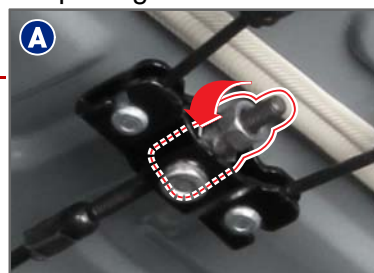
S.G.N.

4221-03 REAR HUB ASSEMBLY(2WD)**Preceding work** - Remove the rear wheel.

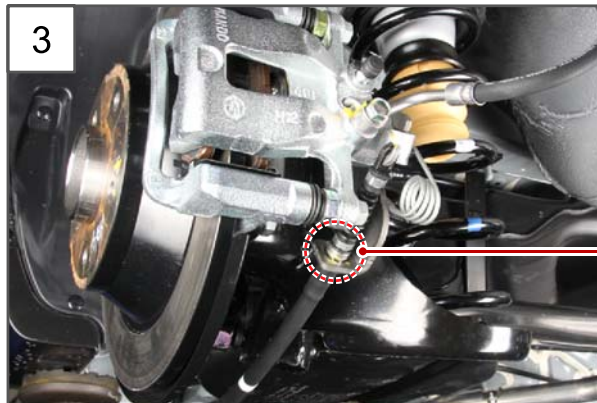
1. Prior to removing the equalizer nut, make the installation mark at the front, under the vehicle.



2. Loosen the equalizer nut (12 mm) completely by rotating it counterclockwise to loosen the parking brake cable.



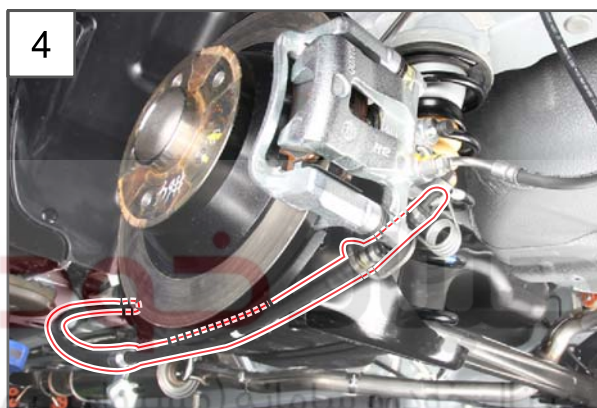
Modification basis	
Application basis	
Affected VIN	



3. Remove the retaining pin for the rear parking brake cable.



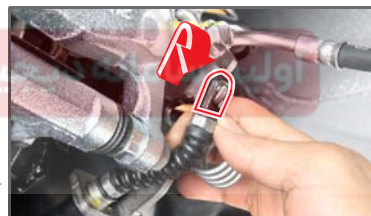
Retaining pin



4. Remove the rear parking brake cable from the rear brake caliper.



Pull on the rear parking brake cable in the direction of the arrow.



Free the end of rear parking brake cable by moving it in the direction of the arrow.



Remove the rear parking brake cable.



5. Unscrew the 2 rear brake caliper mounting bolts (17 mm).

Tightening torque 53.9 to 63.7 Nm



Modification basis	
Application basis	
Affected VIN	



6. Unscrew the rear brake disc mounting screw.

Tightening torque 4.9 to 6.8 Nm



7. Remove the rear brake disc from the hub assembly.



8. Unscrew the 4 rear hub hexagon mounting bolts (10 mm).

Tightening torque 107 to 127 Nm



9. Remove the rear hub assembly.

10



10. Install in the reverse order of removal.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

AISIN 6
SPEED6-SPEED
M/T

CLUTCH

PROPELLER

DRIVE
SHAFT

AWD

SUSPENSION

BRAKE
SYSTEM

ESP

ABS

ELECTRIC
POWERWHEEL
AND TIRE

TPMS

SUB
FRAME

Modification basis	
Application basis	
Affected VIN	

DRIVE SHAFT AND AXLE

TIVOLI 2015.06

05-58

0000-00

T I V O L I

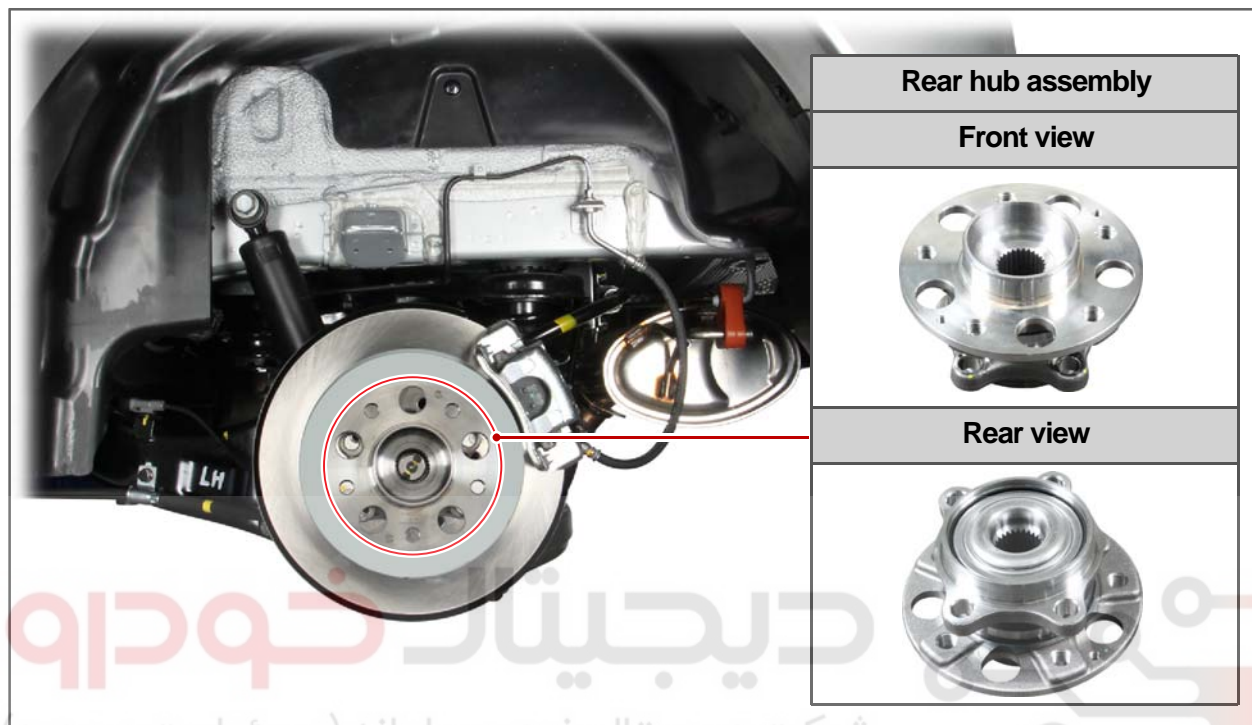
S.G.N.

0000-00

REAR HUB ASSEMBLY (AWD)

Preceding work

- Remove the rear wheel.
- Release the parking brake.



1

1. Unscrew the 2 mounting bolts (17 mm) on the rear brake caliper.

Tightening torque 53.9 ~ 63.7 Nm



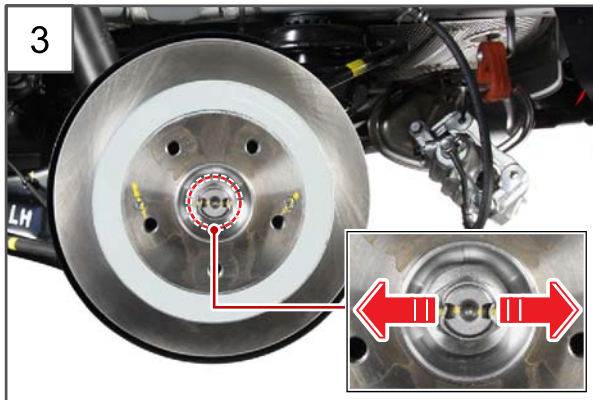
2

2. Detach the rear caliper assembly and secure it to the vehicle body.

DRIVE SHAFT AND AXLE

TIVOLI 2015.06

Modification basis	
Application basis	
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3. Release the caulking of the rear hub nut in the direction of the arrow shown in the picture to remove the rear hub nut (30 mm).

Tightening torque 245 ~ 343 Nm

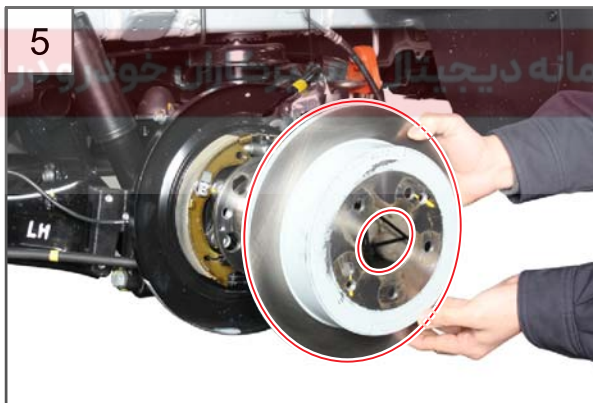
CAUTION

Replace the hub nut with a new one when installing.



4. Unscrew the 2 rear brake disc mounting screws.

Tightening torque 4.9 ~ 6.9 Nm



5. Remove the rear brake disc.



6. Unscrew the 4 hexagon mounting bolts (10 mm) for the rear hub.

Tightening torque 107 ~ 127 Nm

Modification basis	
Application basis	
Affected VIN	

05-60

4110-01

T I V O L I



7. Remove the rear hub.



8. Install in the reverse order of removal.



Modification basis	
Application basis	
Affected VIN	