SUB FRAME ASSEMBLY

4012-01/4015-01/

GENERAL INFORMATION

CONFIGURATION AND FUNCTIONS

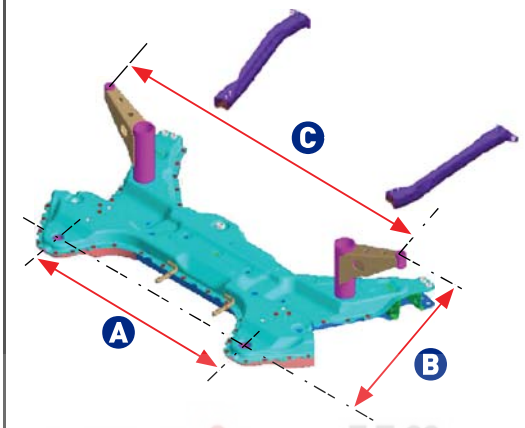
REMOVAL AND INSTALLATION

SUB FRAME ASSEMBLY 4012-01

GENERAL INFORMATION

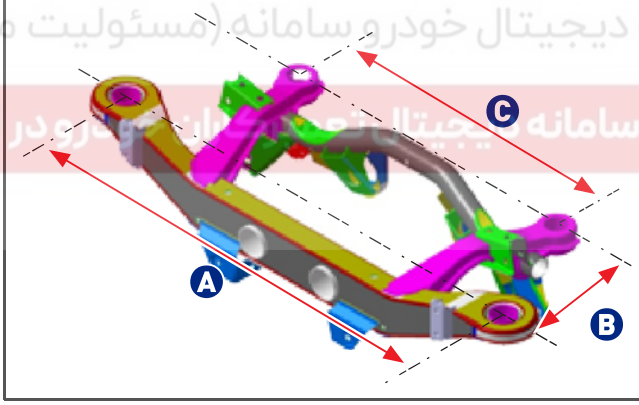
1. SPECIFICATIONS

Front sub frame



Category		Specifications	Remarks
Sub frame	Weight	17.1kg	-
	Mounting	4-point mounting	-
	A	610mm	-
	B	339.5mm	-
	C	950mm	-
Impact beam	Weight	1.42kg	-

Rear sub frame (AWD)



Category	Specifications	Remarks
Weight	17.1kg	-
Mounting	4-point mounting	-
A	1033.6mm	-
B	308.5mm	-
C	707mm	-

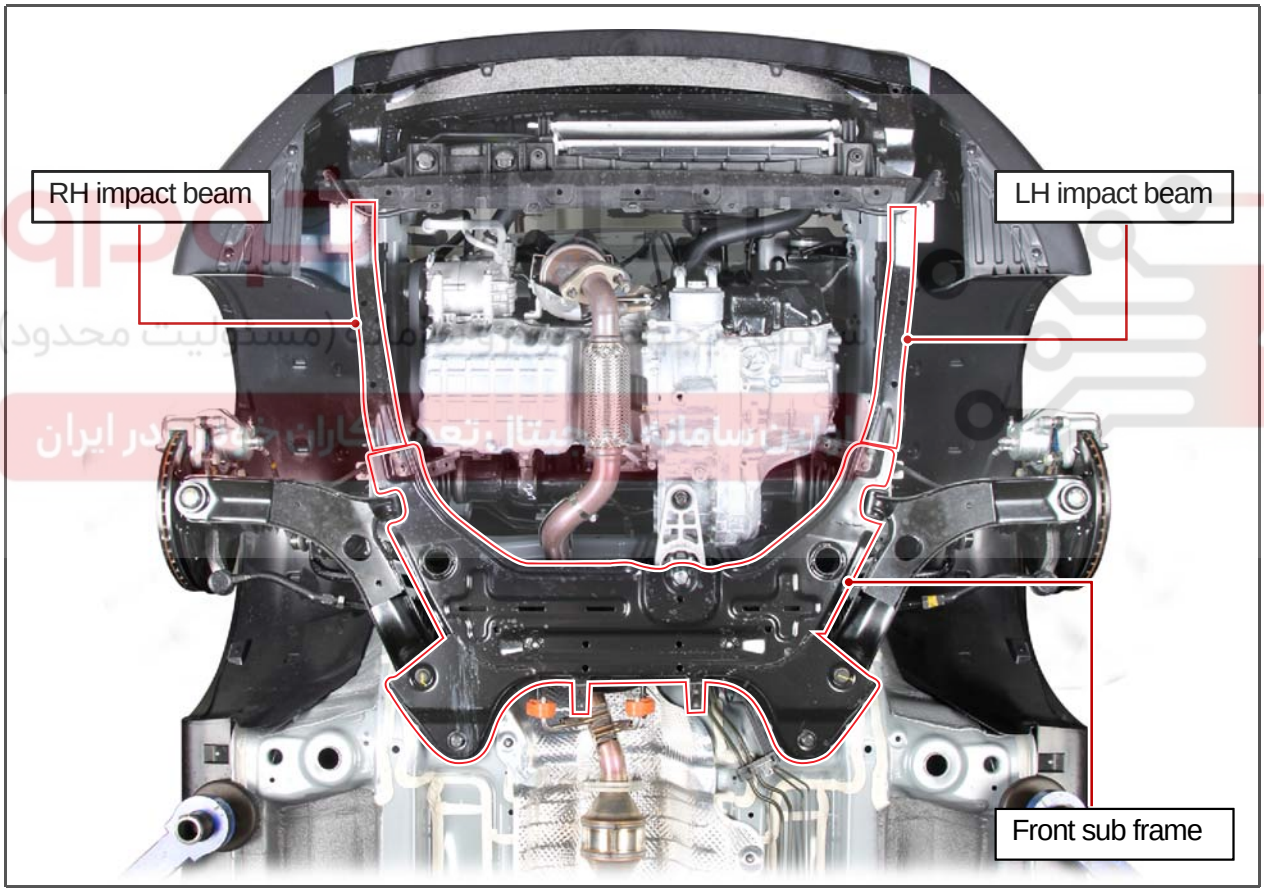
CONFIGURATION AND FUNCTIONS

S.G.N. 4012-01 FRONT SUB FRAME ASSEMBLY

1) Overview

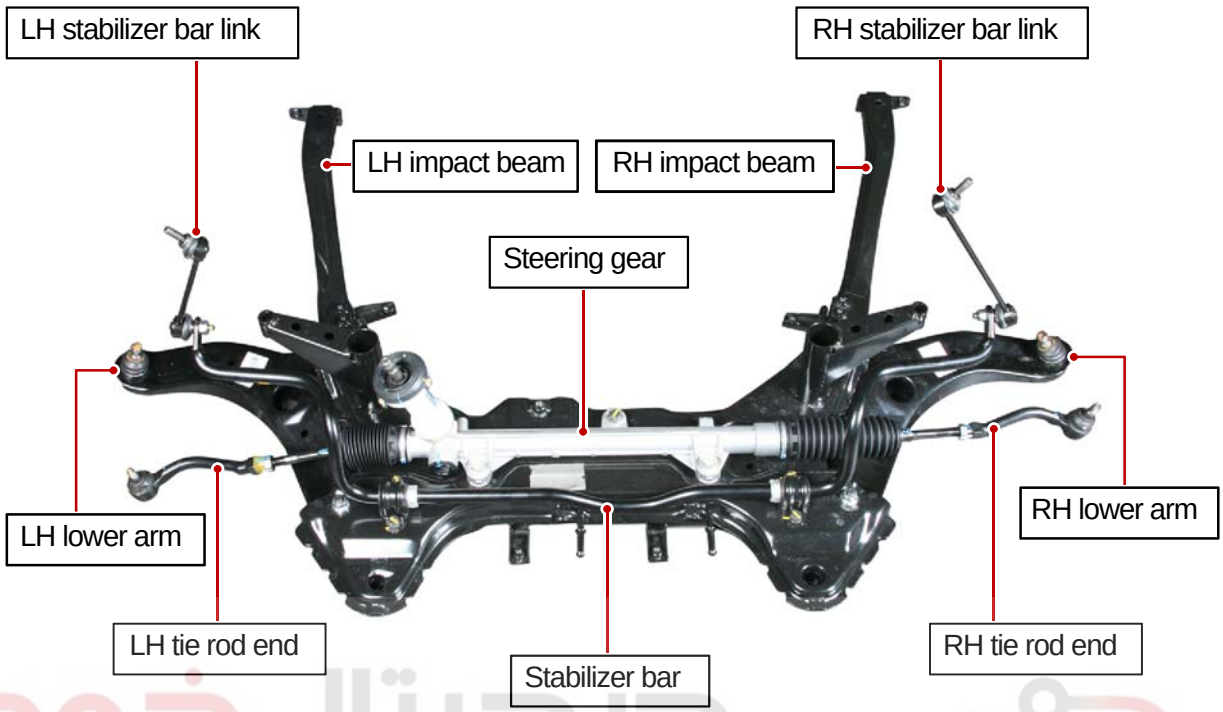
The front sub frame assembly is intended to reduce the vibrations from the power train and the road surfaces to the vehicle body. The front sub frame assembly used in the vehicle is equipped with impact beams which ensure the safety during a collision with a half-type frame. Also, it is connected to the vehicle body and each suspension system to enhance riding comfort and to improve service process.

2) Mounting Location and Components



Modification basis	
Application basis	
Affected VIN	

Front sub frame assembly



Front sub frame

1. Main member
2. Front lower arm mounting bracket
3. Front body mounting bracket
4. Front exhaust pipe hanger
5. Rear lower arm mounting bracket

Impact beam

Modification basis	
Application basis	
Affected VIN	

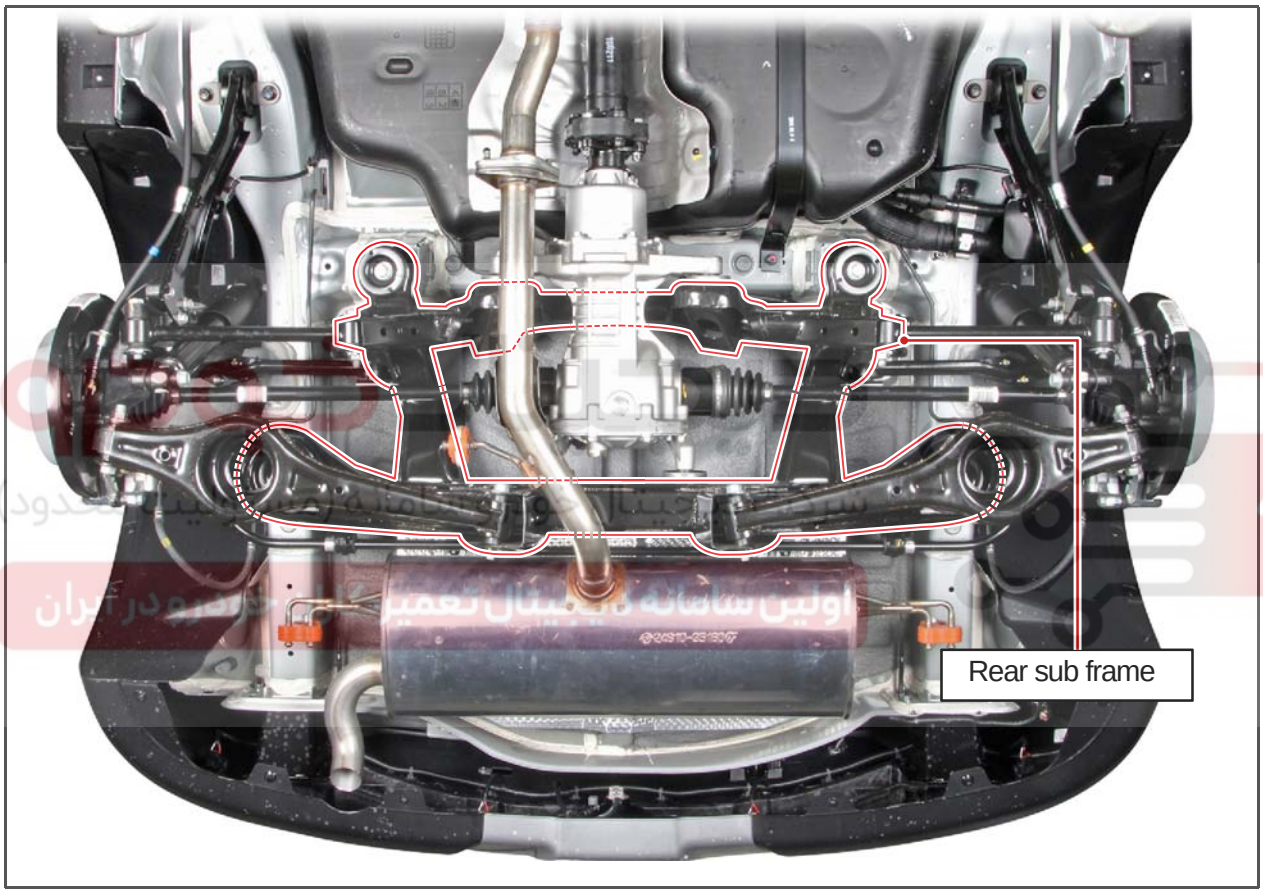
S.G.N. 4015-01

REAR SUB FRAME ASSEMBLY (AWD)

1) Overview

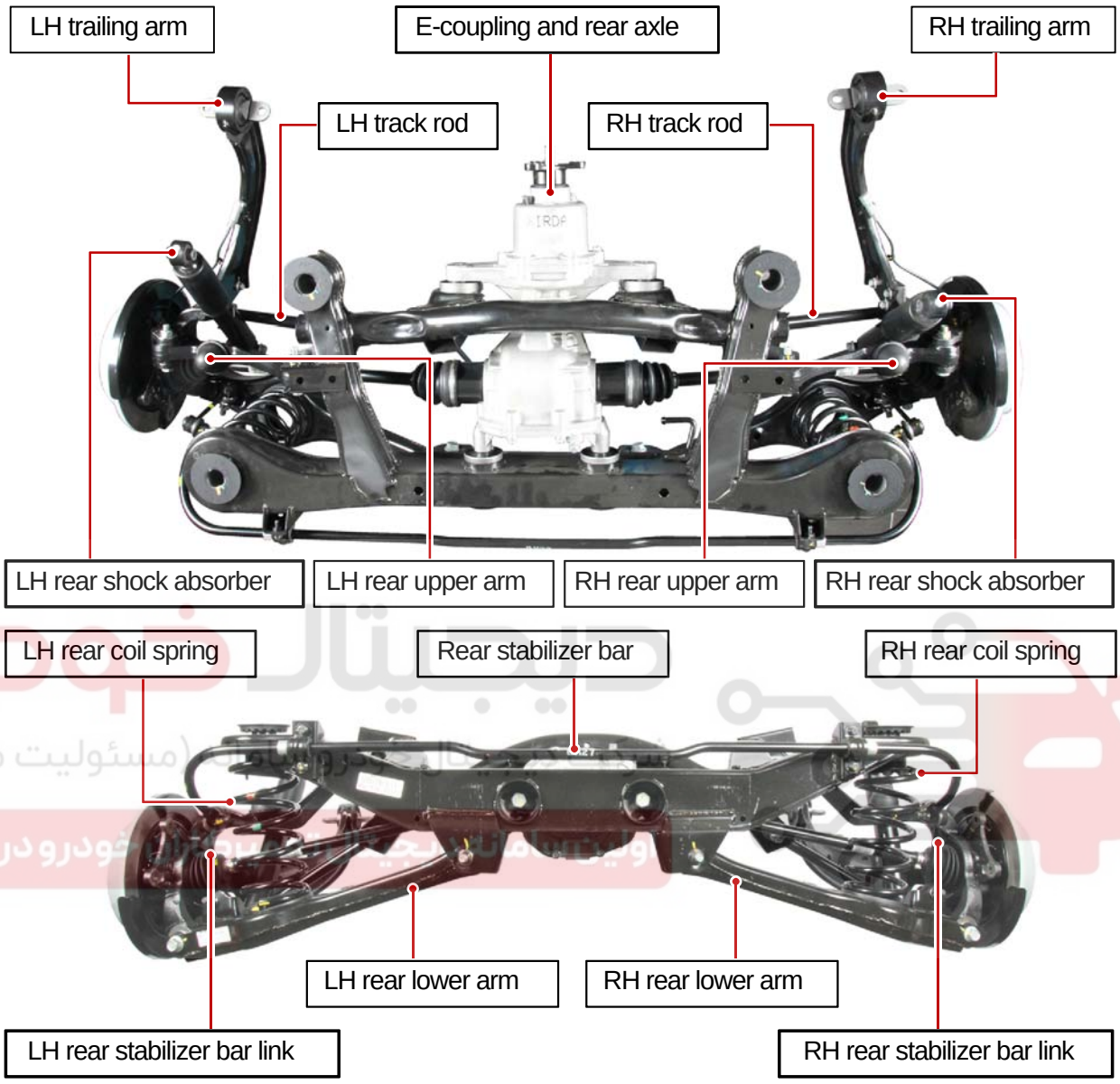
The rear sub frame assembly is intended to reduce the vibrations from the powertrain and the road surfaces to the vehicle body. It serves as a mounting for the rear axle and rear suspension (rear lower arm, rear upper arm, track rod, rear coil spring, rear stabilizer bar link).

2) Mounting Location and Components



Modification basis	
Application basis	
Affected VIN	

Rear sub frame assembly (AWD)



Rear sub frame

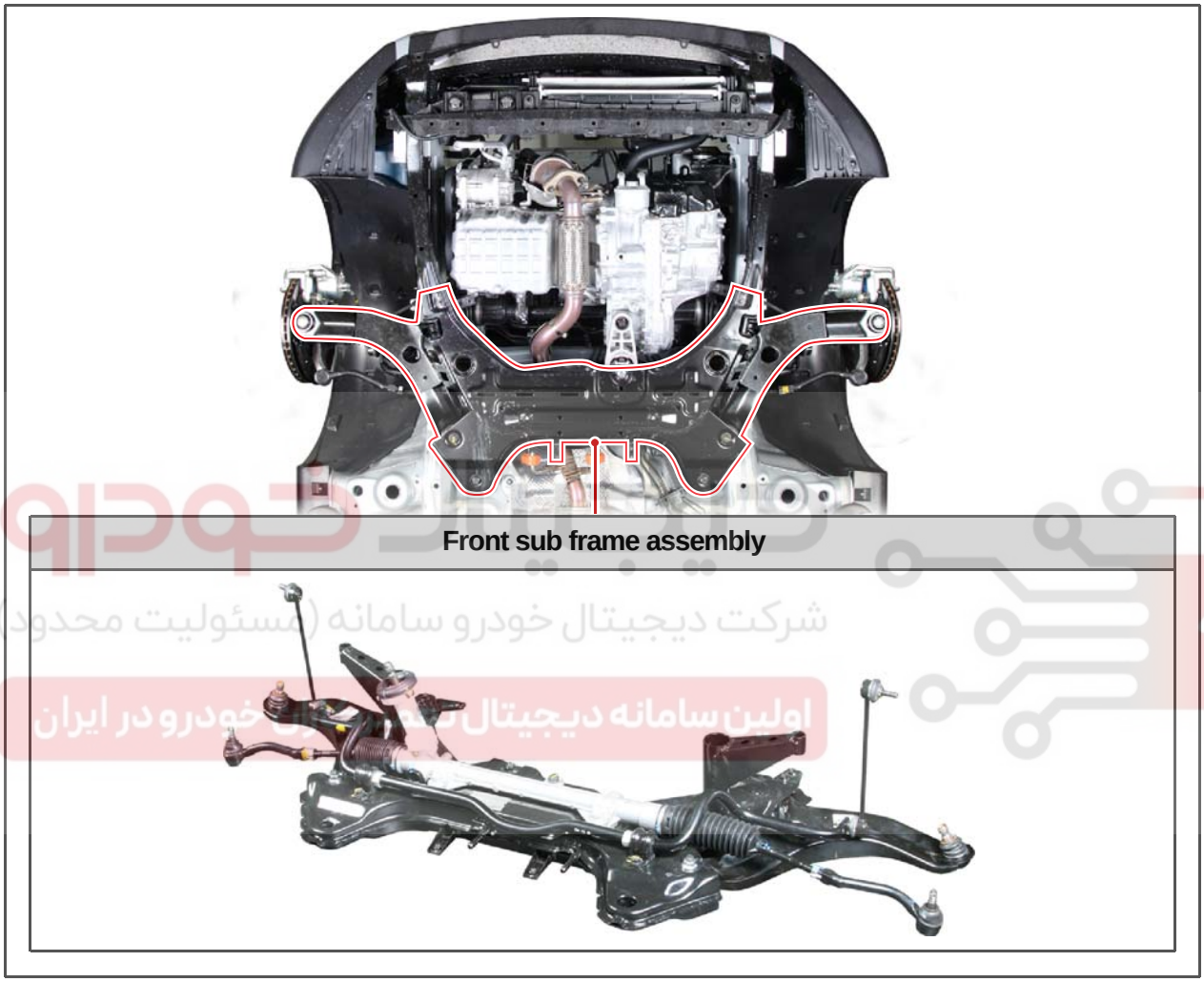
Modification basis	
Application basis	
Affected VIN	

REMOVAL AND INSTALLATION

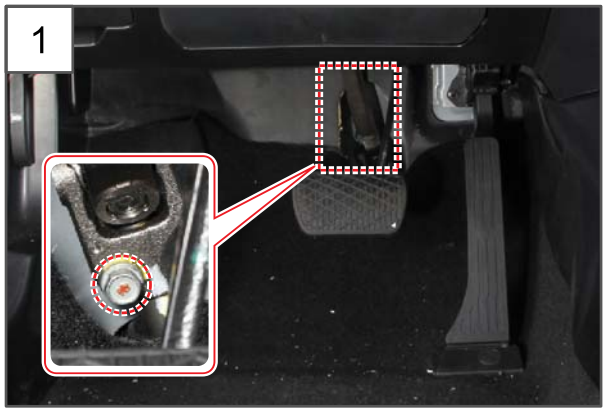
S.G.N. 4012-01

FRONT SUB FRAME ASSEMBLY

Preceding work
- Remove the front wheels and tires.
- Remove the under cover from the underside of the vehicle.



Front sub frame assembly



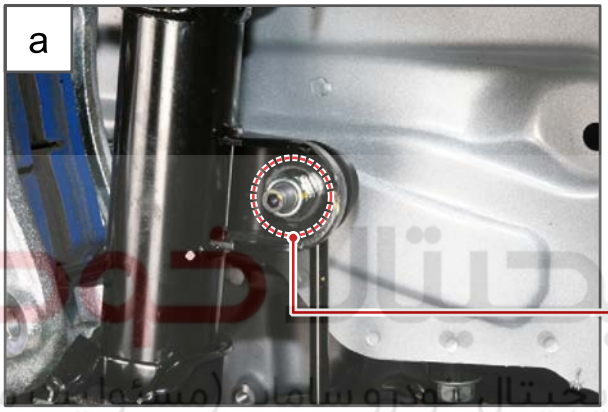
1. Place the vehicle with its wheels in the straight ahead position. Unscrew the lower shaft lower mounting bolt (12 mm) from the inside of the vehicle.

Tightening torque 27.4 to 32.3 Nm

Make a mark using the paint before removing the lower shaft as shown in the picture.

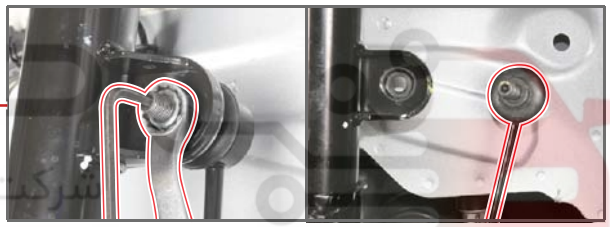
Modification basis	
Application basis	
Affected VIN	

2. Remove the stabilizer bar link, tie rod end, and lower arm from the left and right knuckle assemblies and shock absorber.



a. Unscrew the upper mounting nut (17 mm) on the font stabilizer bar link for both sides.

Tightening torque 49.0 to 68.6 Nm

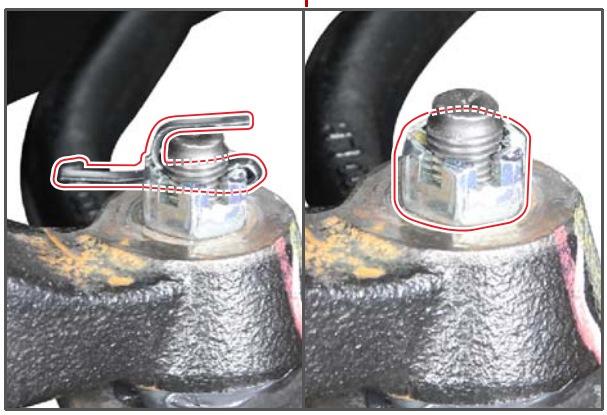


b. Unscrew the castle nut (B, 17 mm) after removing the split pin (A) on the tie rod end.

Tightening torque 34.3 to 44.1 Nm

CAUTION

Replace the split pin (A) with a new one when installing.



Modification basis	
Application basis	
Affected VIN	

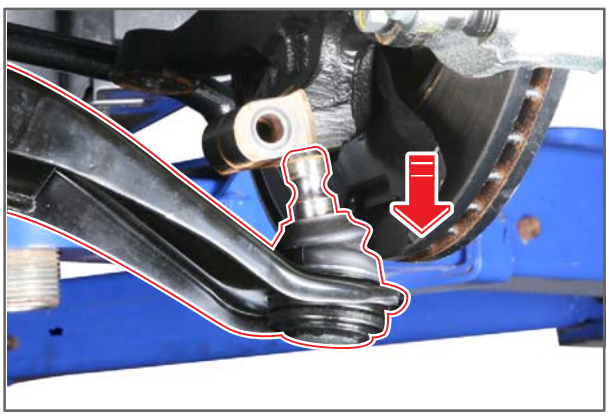
c. Remove the tie rod end from the knuckle with a special service tool.

CAUTION

- Be careful not to damage the boot installed to the tie rod end.
- If there are fuel leaks or damage, replace the tie rod end.

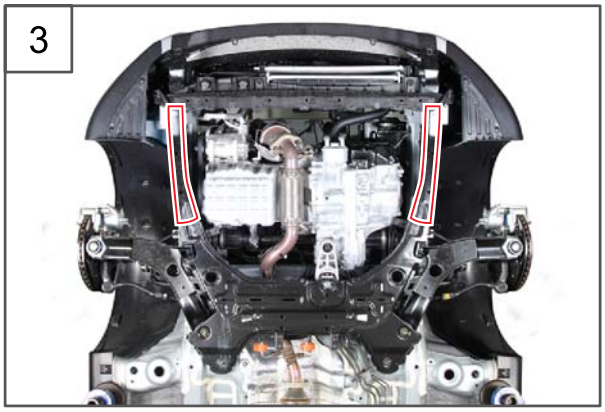
d. Unscrew the mounting bolt/nut (19 mm) on the lower arm ball joint.

Tightening torque 107.8 to 127.4 Nm



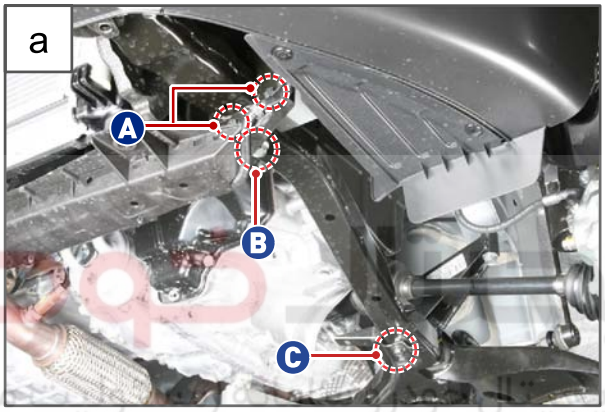
Modification basis	
Application basis	
Affected VIN	

3



3. Remove the LH and RH front impact beams from the underside of the vehicle.

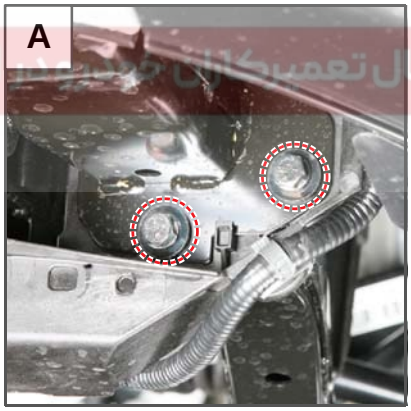
a



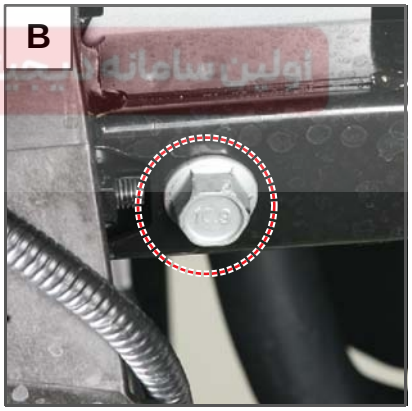
a. Unscrew the 2 mounting bolts (A, 12 mm), mounting bolt (B, 17 mm), and mounting bolt (C, 12 mm) for the front impact beam. (same for both sides)

Tightening torque
A: 29.4 to 34.3 Nm
B: 88.2 to 107.8 Nm
C: 29.4 to 34.3 Nm

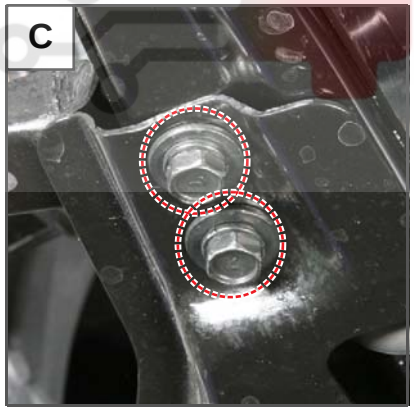
A



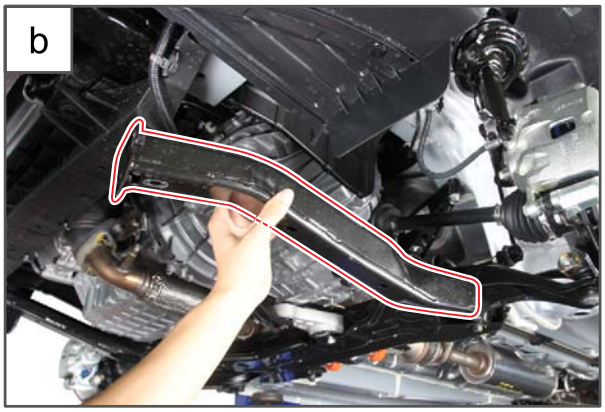
B



C



b

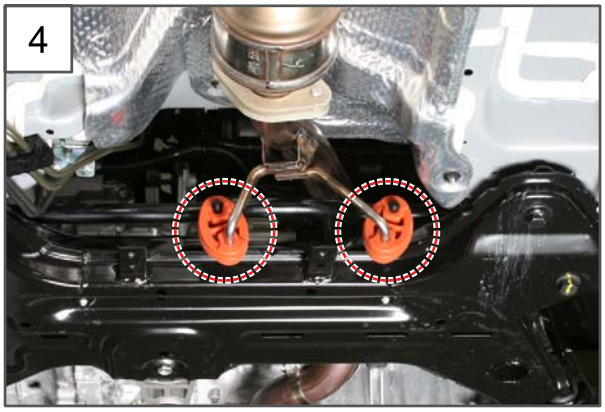


b. Remove the LH and RH front impact beams.

CAUTION
Tighten the mounting bolts for the front impact beam in the sequence of: A → B → C.

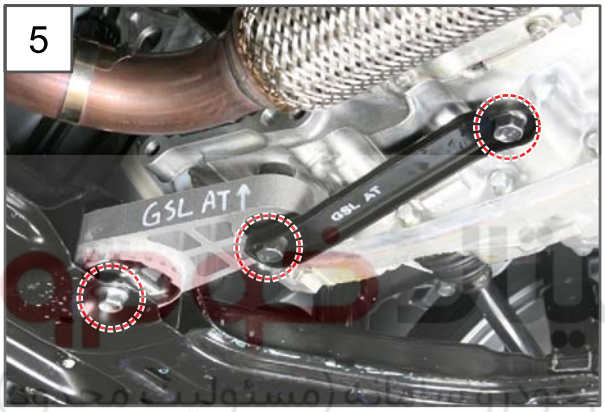
Modification basis	
Application basis	
Affected VIN	

4



4. Remove the 2 mountings for the front exhaust pipe hanger.

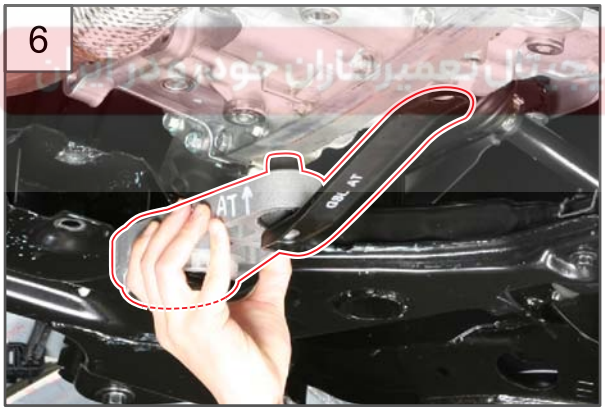
5



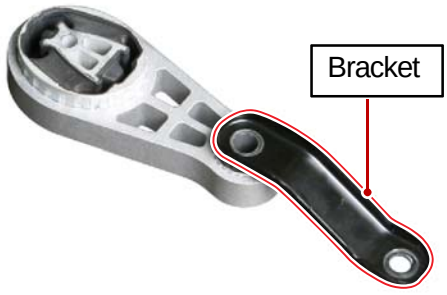
5. Unscrew the 3 mounting bolts (17 mm) for the rear engine mounting insulator.

Tightening torque 68.6 to 88.2 Nm

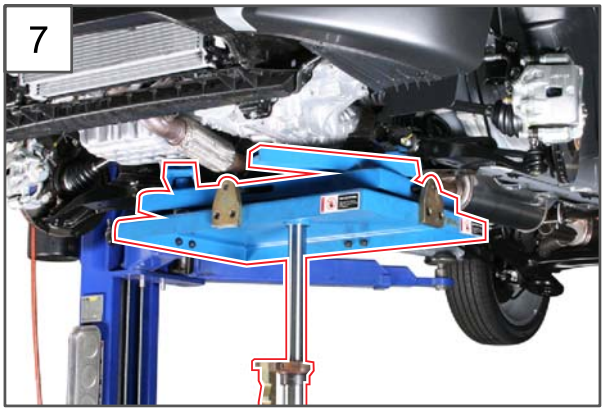
6



6. Remove the rear engine mounting insulator.

For a vehicle with A/T	For a vehicle with M/T
	

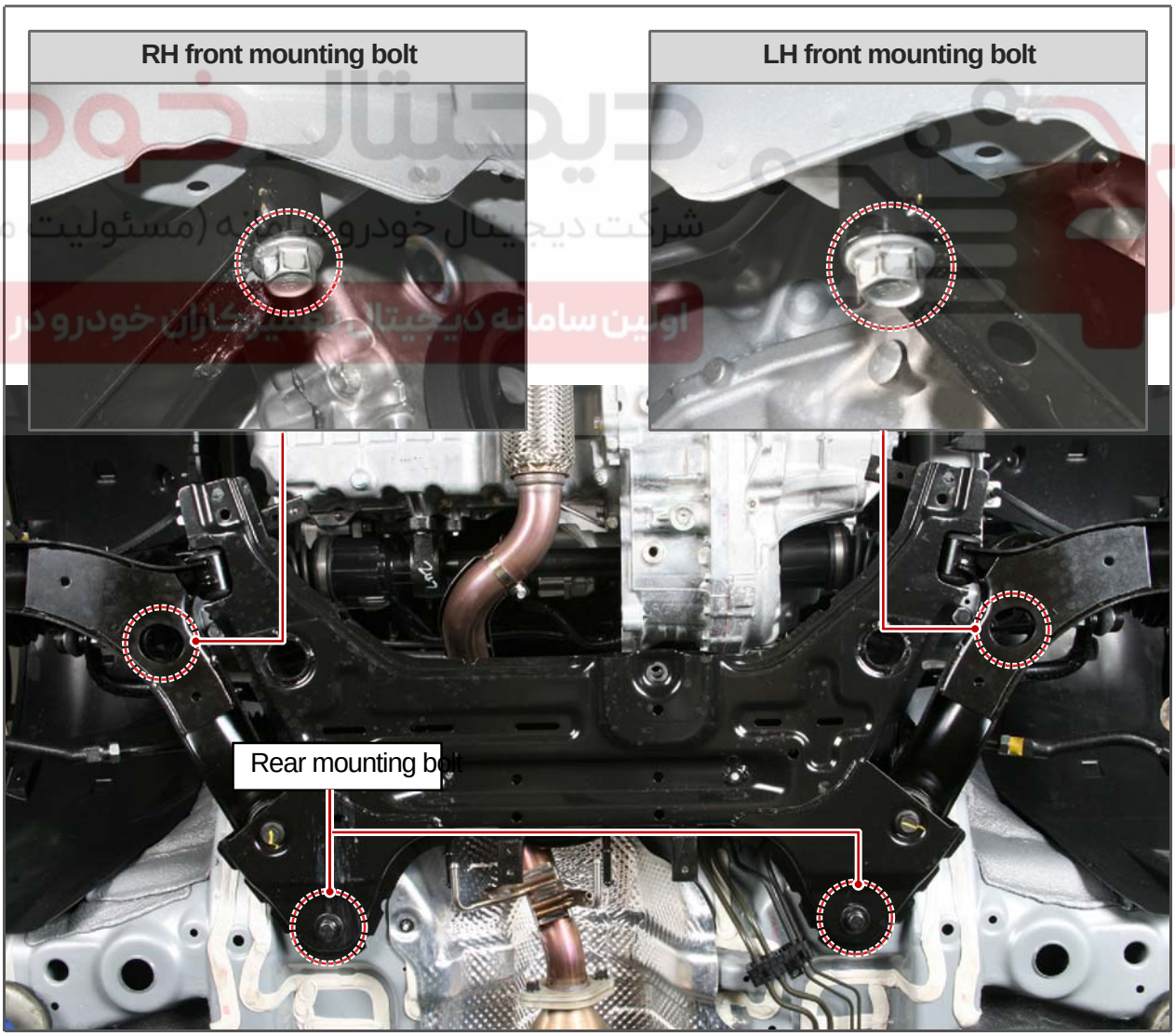
Modification basis	
Application basis	
Affected VIN	



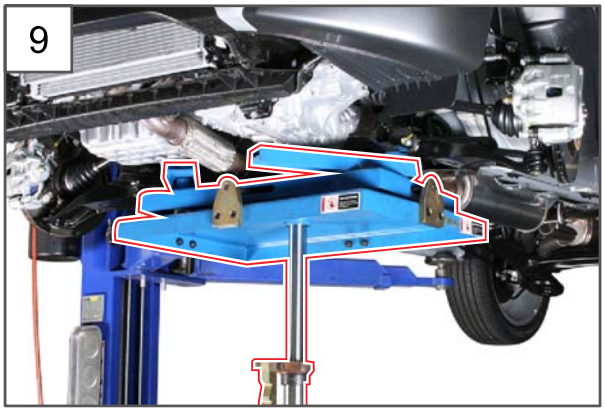
7. Securely support the sub frame by placing a transmission jack or equivalent under the sub frame.

8. Unscrew the 4 mounting bolts (17 mm) for the sub frame module.

Tightening torque 88.2 to 107.8 Nm

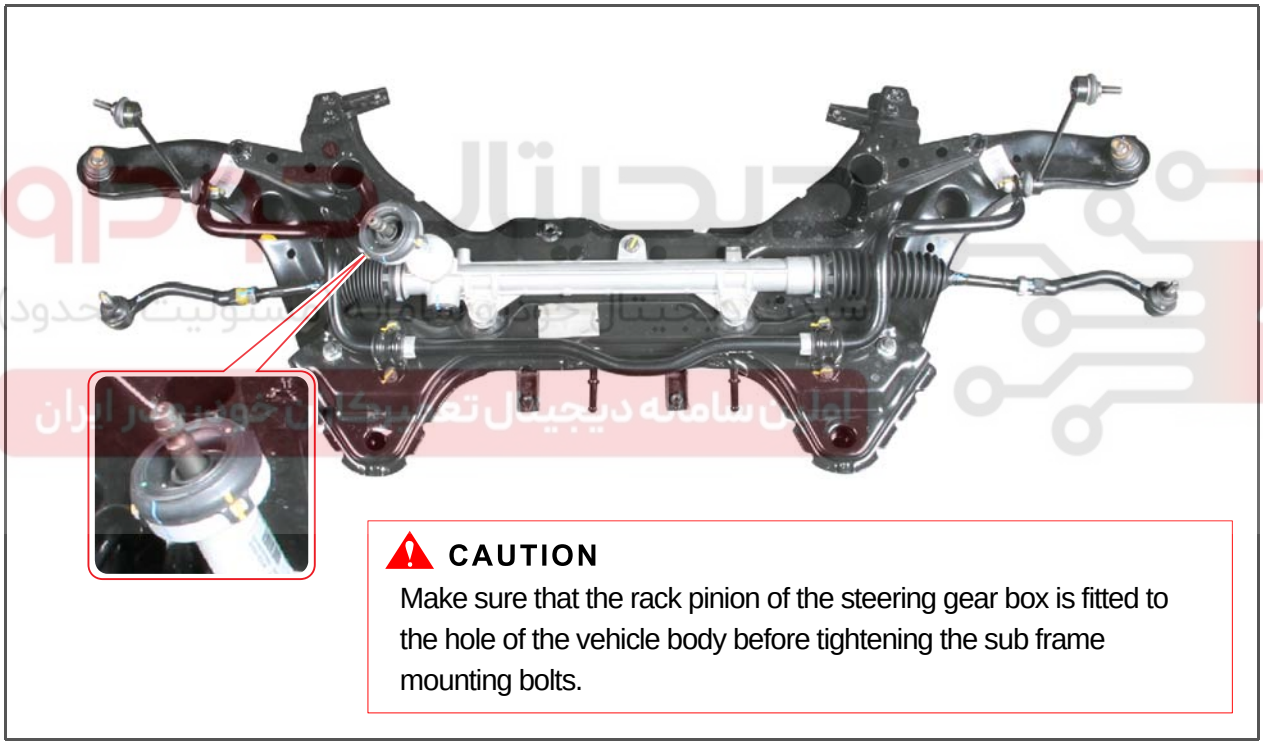


Modification basis	
Application basis	
Affected VIN	



9. Lower the transmission jack while being careful of interferences. Remove the sub frame assembly.

10.Install in the reverse order of removal.



CAUTION

Make sure that the rack pinion of the steering gear box is fitted to the hole of the vehicle body before tightening the sub frame mounting bolts.

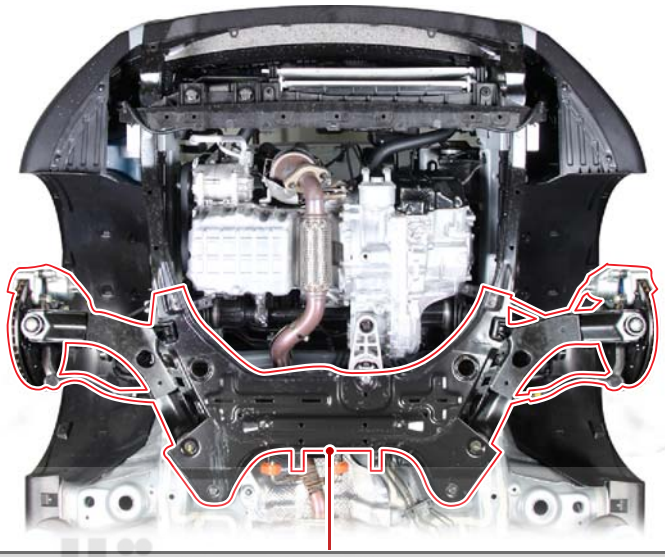
Modification basis	
Application basis	
Affected VIN	

S.G.N. 4012-01

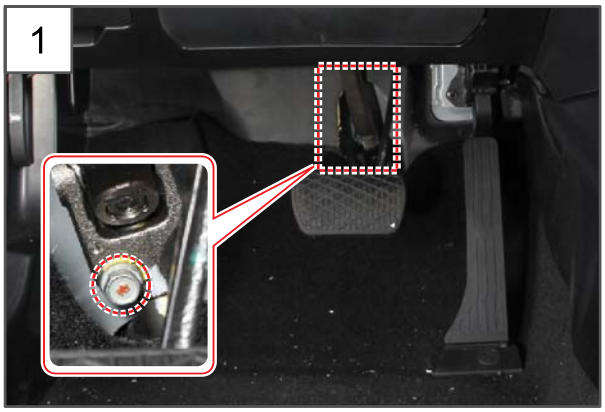
FRONT SUB FRAME MODULE

Preceding work

- Remove the front wheels and tires.
- Remove the under cover from the underside of the vehicle.



Front sub frame module



1. Place the vehicle with its wheels in the straight ahead position. Unscrew the lower shaft lower mounting bolt (12 mm) from the inside of the vehicle.

Tightening torque 27.4 to 32.3 Nm

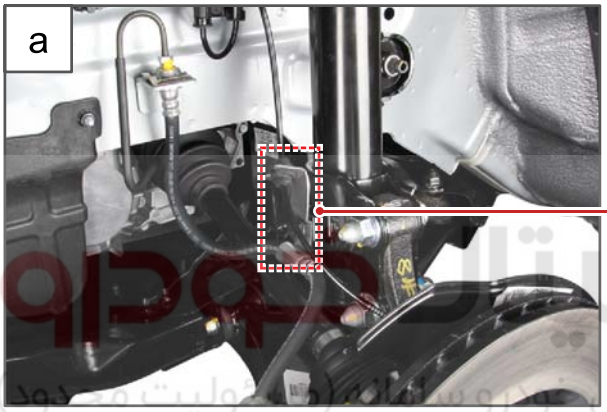
Make a mark using the paint before removing the lower shaft as shown in the picture.

Modification basis	
Application basis	
Affected VIN	

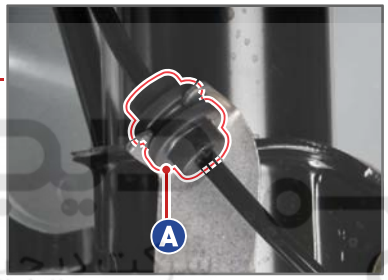
2

2. Remove the front wheel speed sensor, brake caliper, and shock absorber from the left and right knuckle assemblies.

a



a. Free the mounting for the front wheel speed sensor (A). (same for both sides)

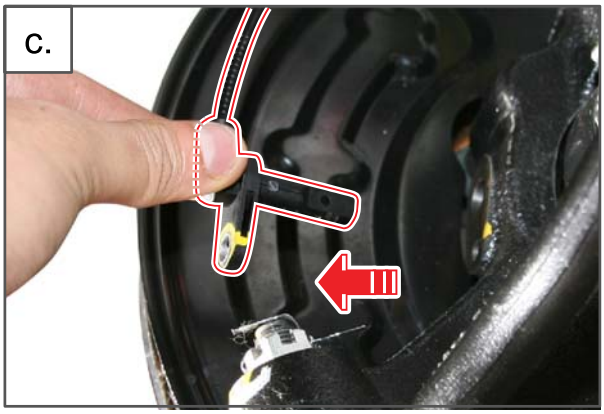


b

b. Unscrew the mounting bolt (10 mm) for the front wheel speed sensor. (same for both sides)

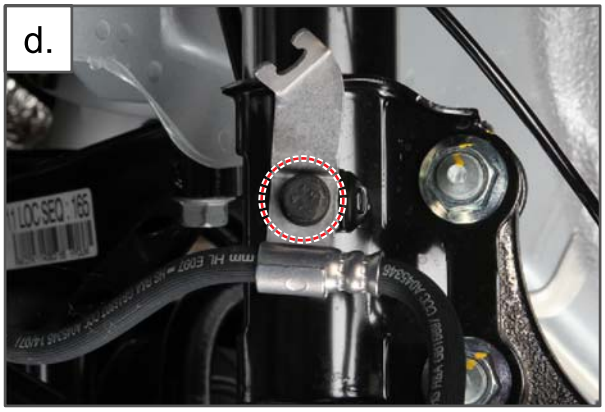
Tightening torque 3.9 to 7.8 Nm

c.



c. Remove the LH and RH front wheel speed sensors from the knuckle assemblies.

Modification basis	
Application basis	
Affected VIN	

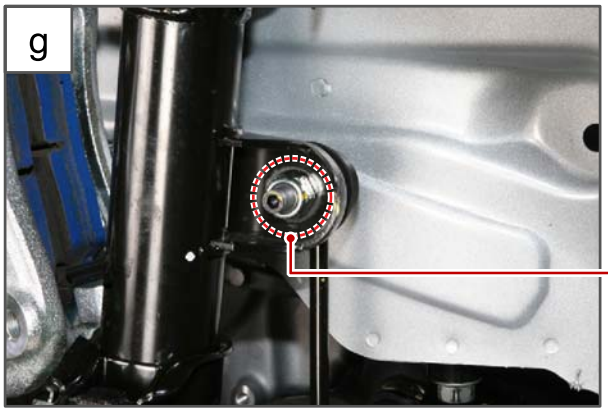


d. Unscrew the mounting bolt (12 mm) for the brake hose bracket. (same for both sides)

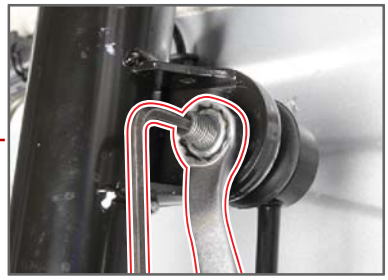
Tightening torque 9.8 to 12.7 Nm

e. Unscrew the 2 mounting bolts (19 mm) on the front brake caliper. (same for both sides)

f. Separate the LH and RH front caliper assemblies and secure them to the vehicle body.

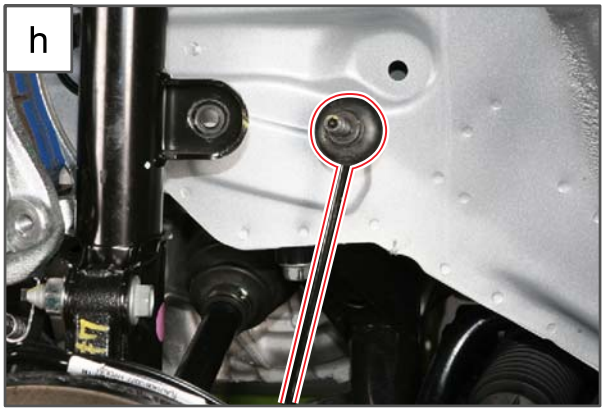


g. Unscrew the upper mounting nut (17 mm) on the font stabilizer bar link for both sides.



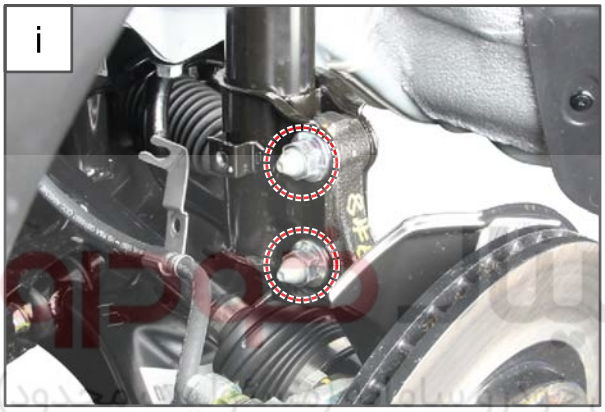
Modification basis	
Application basis	
Affected VIN	

h



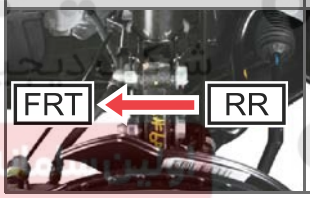
h. Remove the LH and RH front stabilizer bar links from the shock absorber.

i

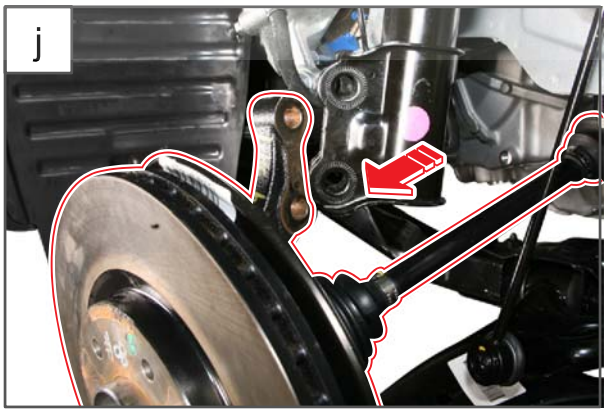


i. Unscrew the 2 lower mounting bolts (17 mm) and the 2 mounting nuts (19 mm) for the front shock absorber. (same for both sides)

Tightening torque 137 to 156 Nm

LH bolt tightening direction	RH bolt tightening direction
	

j

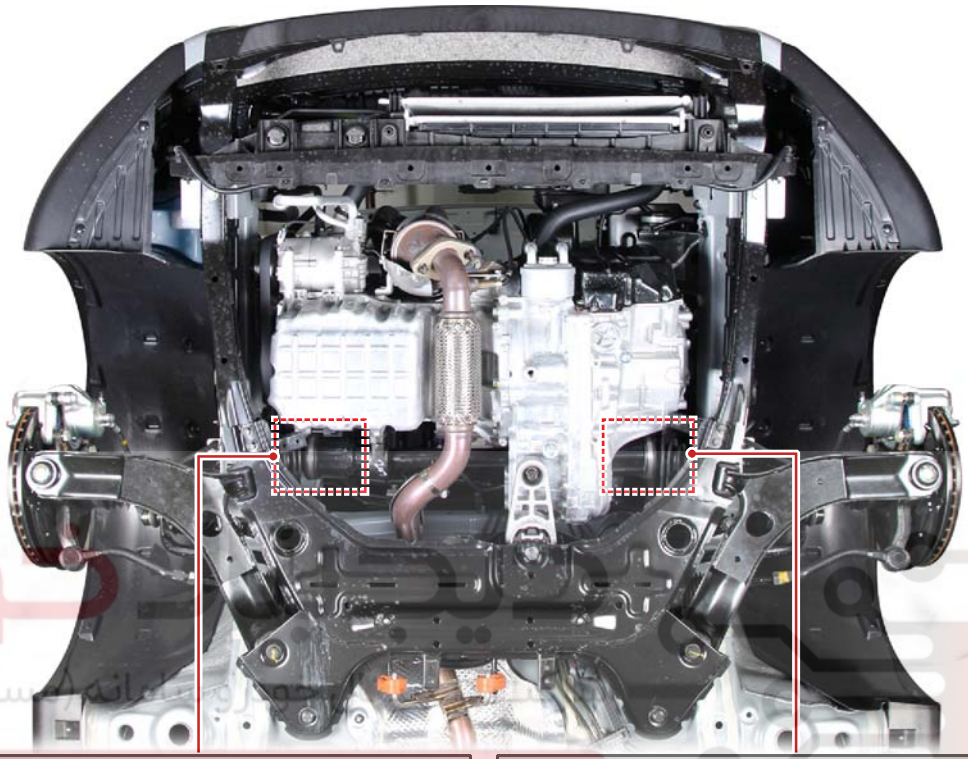


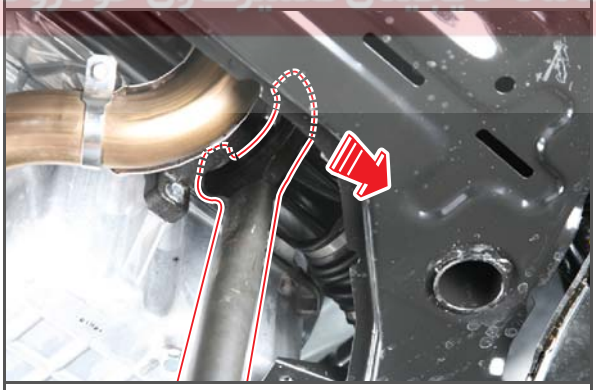
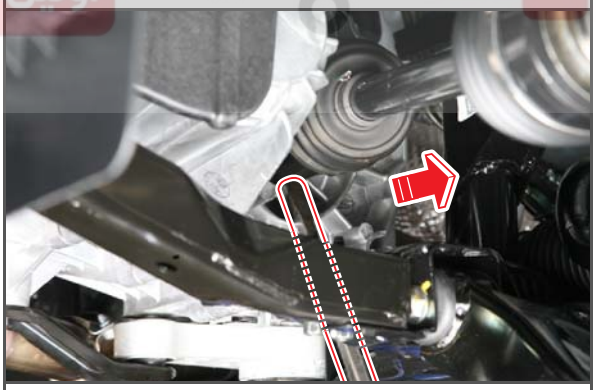
j. Separate the LH and RH knuckle assemblies from the shock absorber.

Modification basis	
Application basis	
Affected VIN	

3. Remove the LH and RH drive shafts from the transmission with intermediate shaft.
(For a vehicle with M/T, drain the transmission fluid before removing the drive shaft.)

3

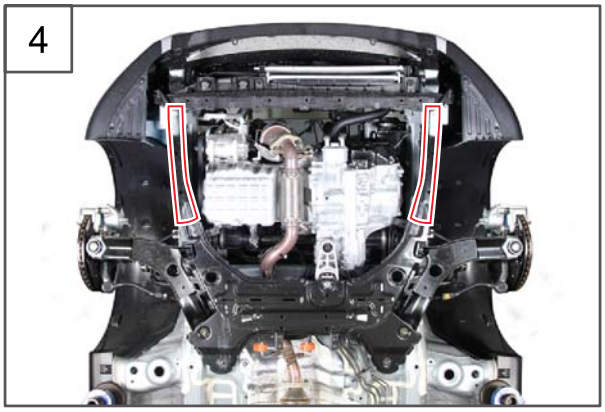


RH drive shaft	LH drive shaft
	
Separate the drive shaft from the intermediate shaft in the direction of the arrow using a special tool.	Remove the drive shaft from the transmission using a special tool.

CAUTION

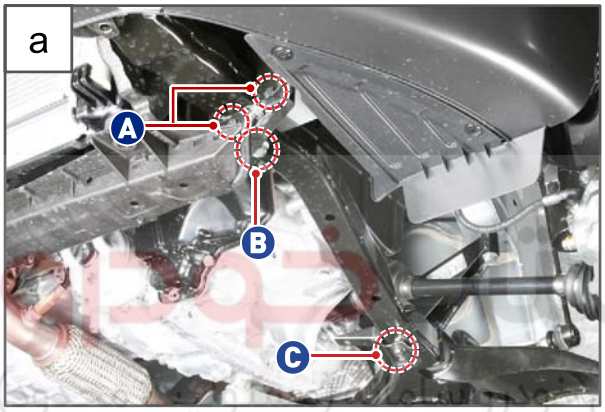
- Be careful not to damage the oil seal when removing the drive shaft from the transmission.
- Do not pull the drive shaft from the outside with an excessive force. It causes the boot to tear or bearing to damage.

4



4. Remove the LH and RH front impact beams from the underside of the vehicle.

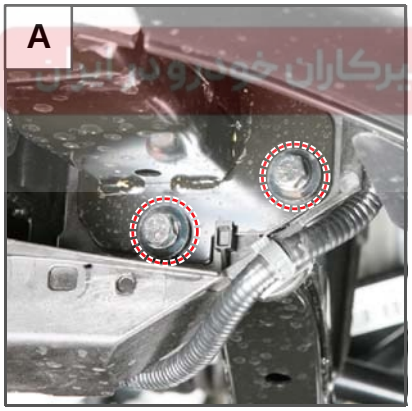
a



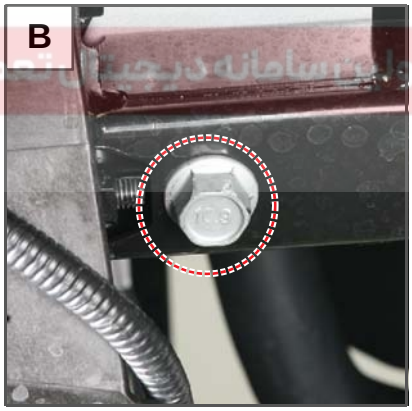
a. Unscrew the 2 mounting bolts (A, 12 mm), mounting bolt (B, 17 mm), and mounting bolt (C, 12 mm) for the front impact beam. (same for both sides)

Tightening torque
A: 29.4 to 34.3 Nm
B: 88.2 to 107.8 Nm
C: 29.4 to 34.3 Nm

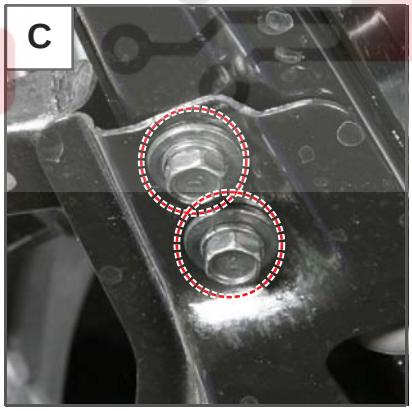
A



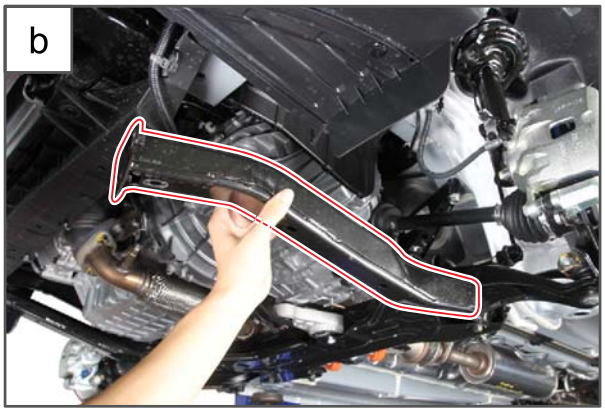
B



C



b

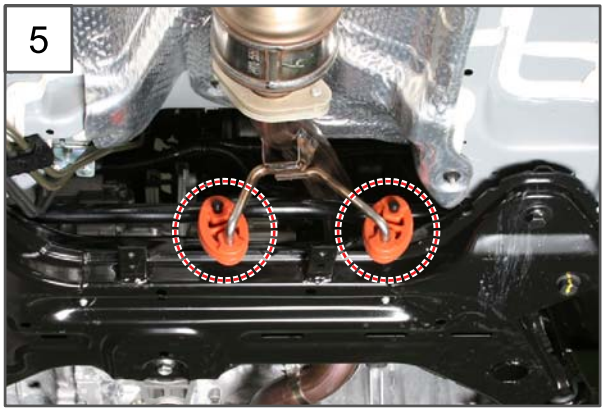


b. Remove the LH and RH front impact beams.

CAUTION
Tighten the mounting bolts for the front impact beam in the sequence of: A → B → C.

Modification basis	
Application basis	
Affected VIN	

5



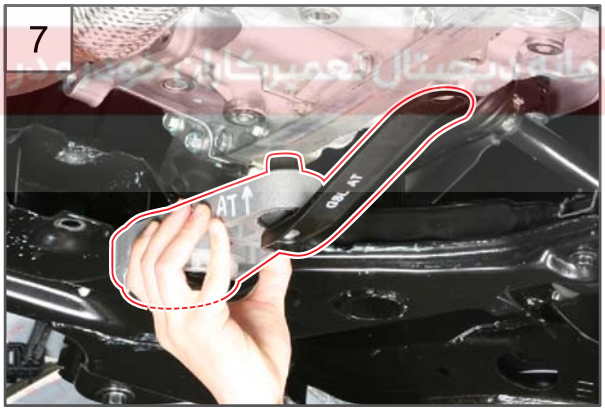
5. Remove the 2 mountings for the front exhaust pipe hanger.

6

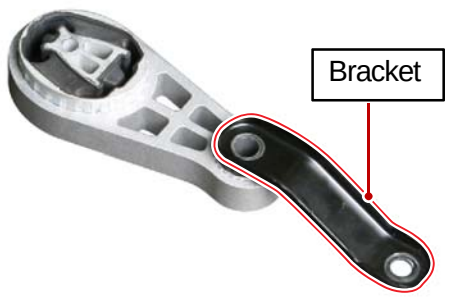
6. Unscrew the 3 mounting bolts (17 mm) for the rear engine mounting insulator.

Tightening torque 68.6 to 88.2 Nm

7

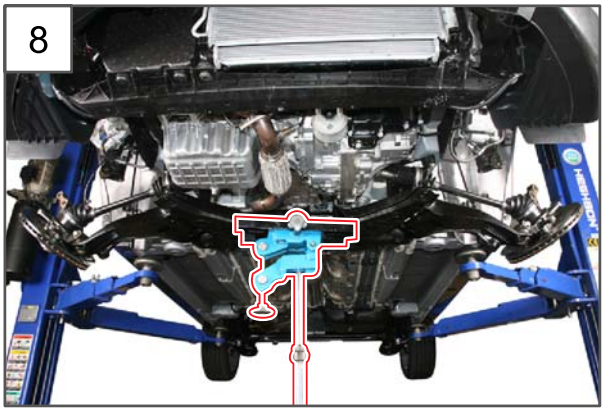


7. Remove the rear engine mounting insulator.

For a vehicle with A/T	For a vehicle with M/T
	

Modification basis	
Application basis	
Affected VIN	

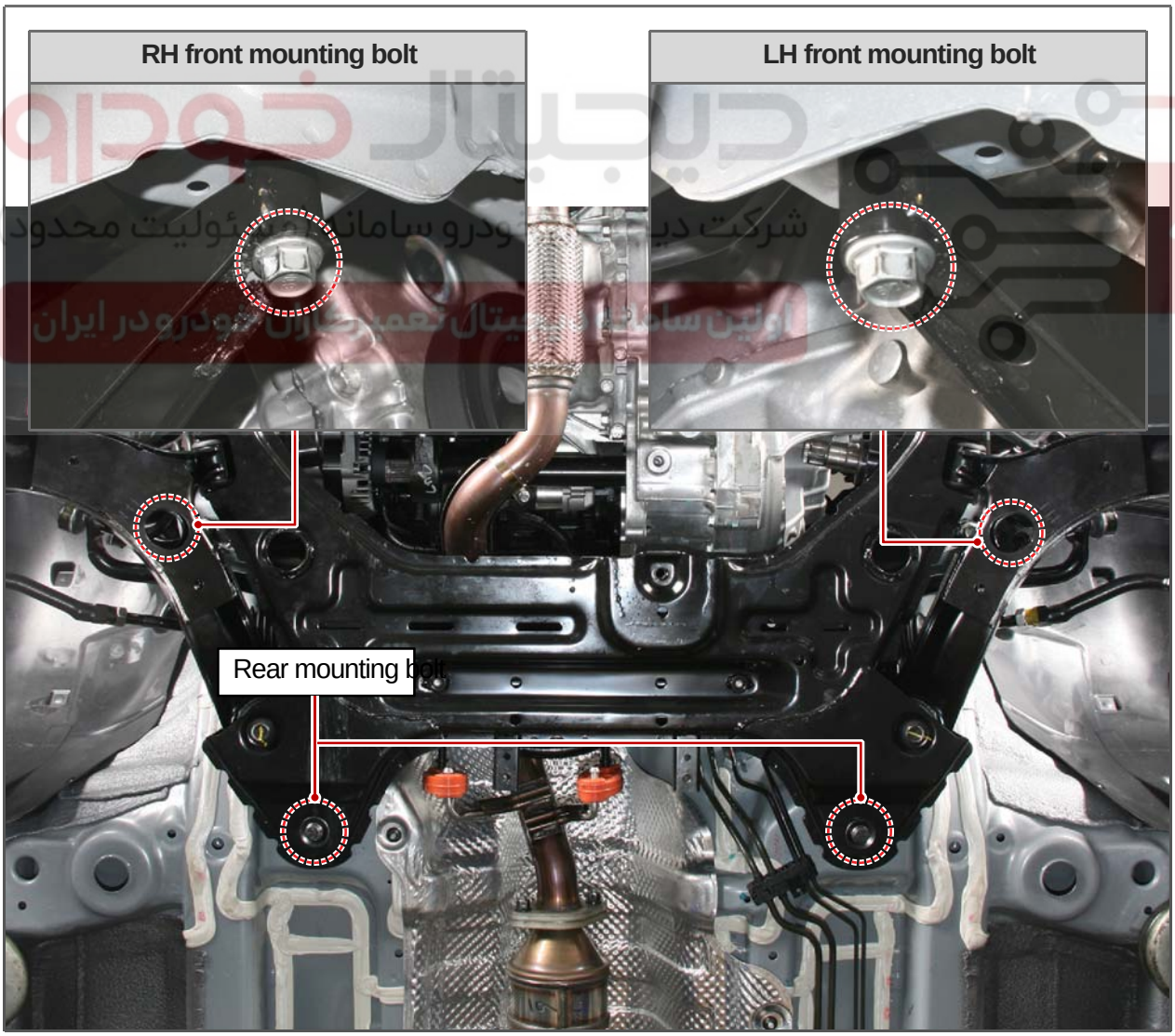
8



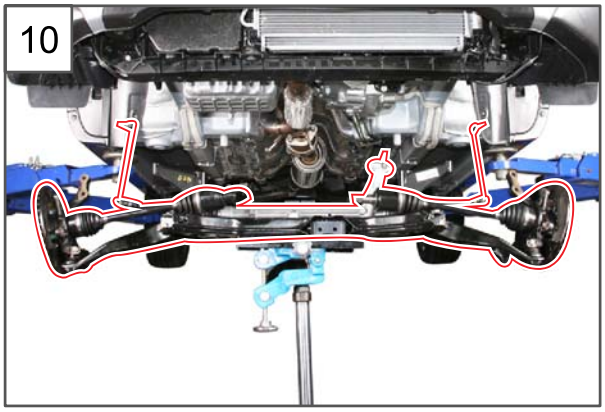
8. Securely support the sub frame by placing a transmission jack or equivalent under the sub frame.

9. Unscrew the 4 mounting bolts (17 mm) for the sub frame module.

Tightening torque 88.2 to 107.8 Nm

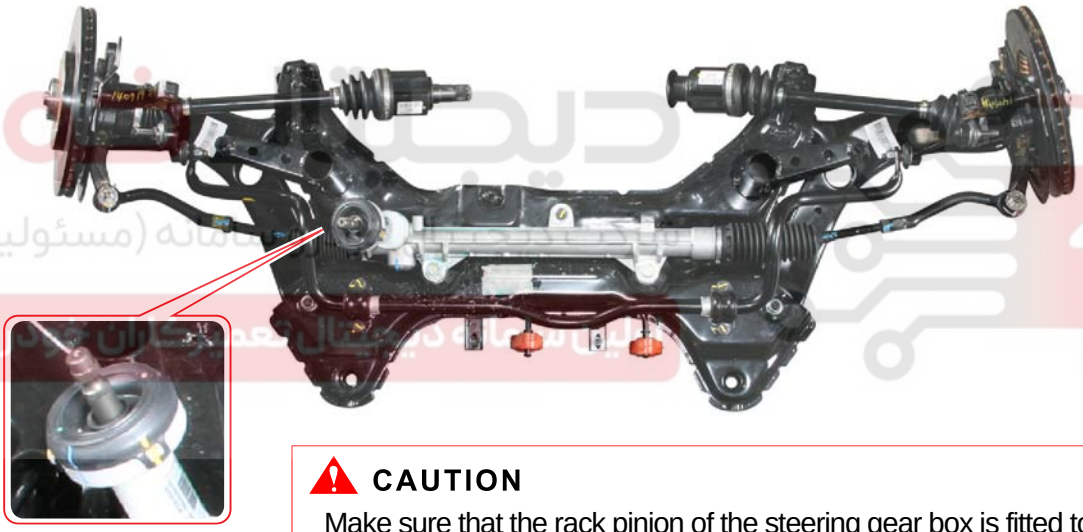


Modification basis	
Application basis	
Affected VIN	



10.Lower the transmission jack while being careful of interferences. Remove the sub frame module.

11.Install in the reverse order of removal.



CAUTION

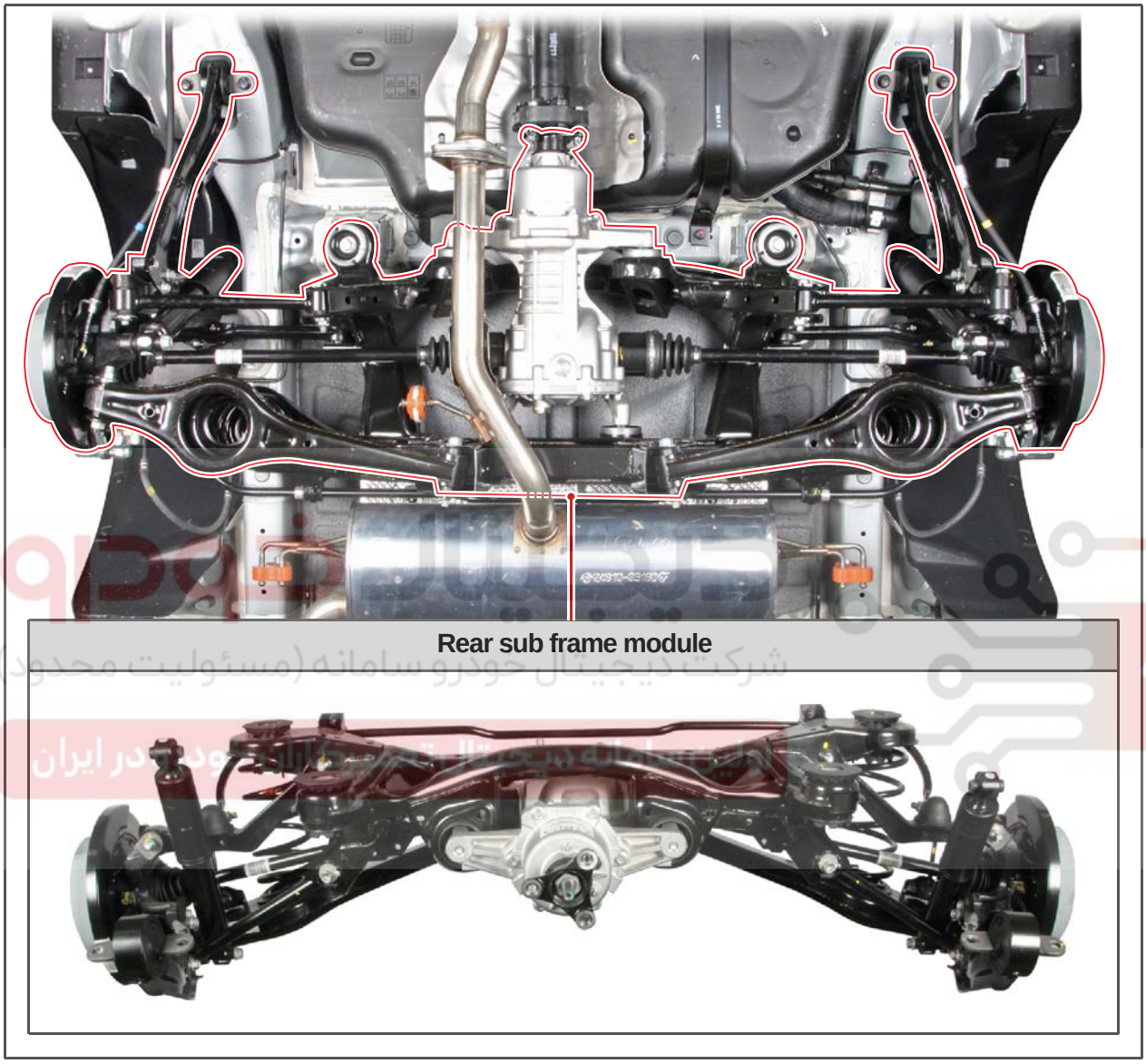
Make sure that the rack pinion of the steering gear box is fitted to the hole of the vehicle body before tightening the sub frame mounting bolts.

Modification basis	
Application basis	
Affected VIN	

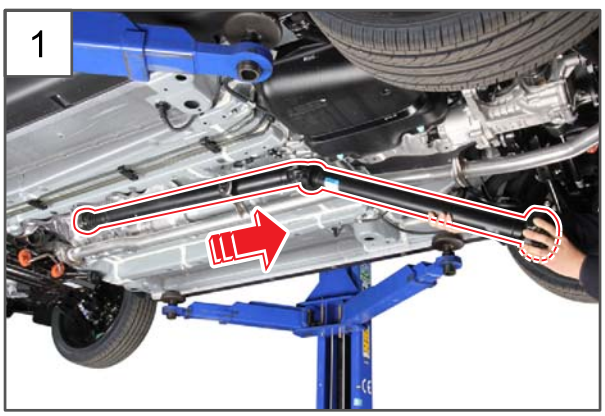
S.G.N. 4015-01

REAR SUB FRAME MODULE (AWD)

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



Rear sub frame module



1. Remove the propeller shaft.

NOTE

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

Modification basis	
Application basis	
Affected VIN	

2

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

3

3. Remove the rear exhaust muffler.

NOTE

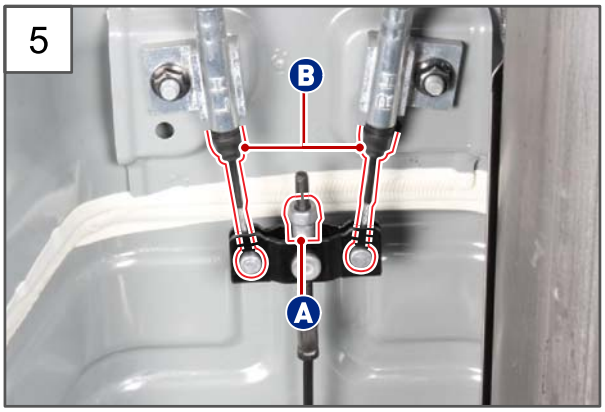
Refer to "REAR EXHAUST MUFFLER" under "REMOVAL AND INSTALLATION" subsection of "EXHAUST SYSTEM" section in "ENGINE" chapter.

4

4. Unscrew the 2 mounting bolts (17 mm) on each side of the rear brake caliper and fix the caliper separated from the brake disk to the vehicle body.

Tightening torque 53.9 to 63.7 Nm

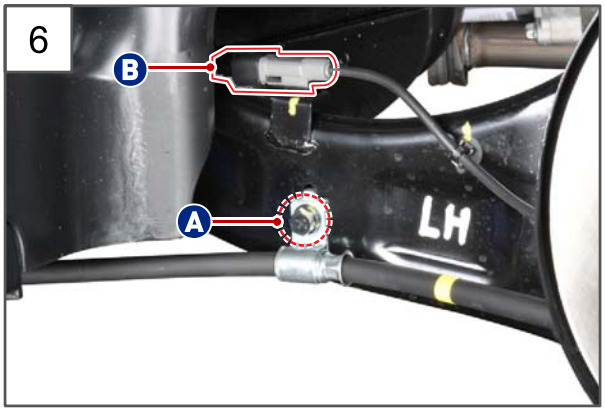
5



5. Unscrew the equalizer nut (A, 12 mm) separate the rear parking brake cable (B) from the center parking brake cable.

Modification basis	
Application basis	
Affected VIN	

6

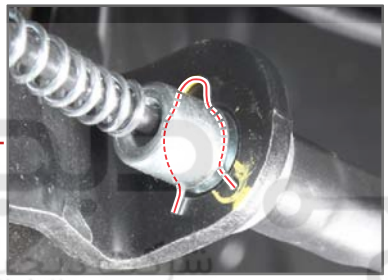


6. Unscrew the left and right mounting bolts (A, 12 mm) for the rear parking brake cable on the rear trailing arm side to remove the left and right rear wheel speed sensor connectors (B).

Tightening torque (A) 9.8 to 12.7 Nm

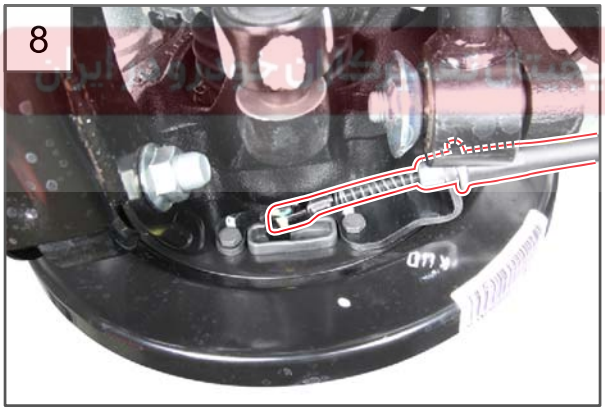
7

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



Retaining pin

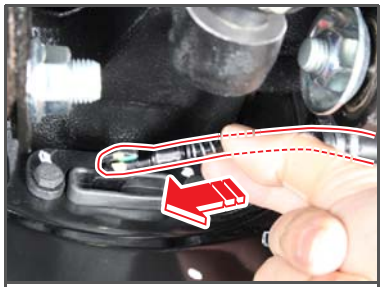
8



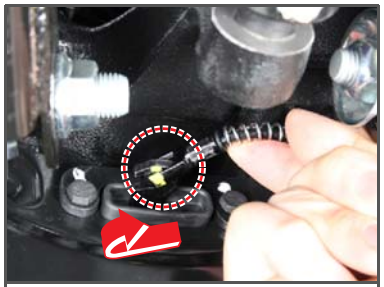
8. Remove the rear parking brake cable from the rear brake caliper.

NOTE

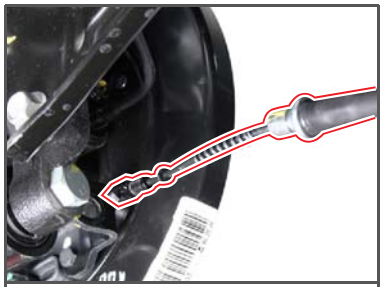
Use the same procedure for both sides.



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

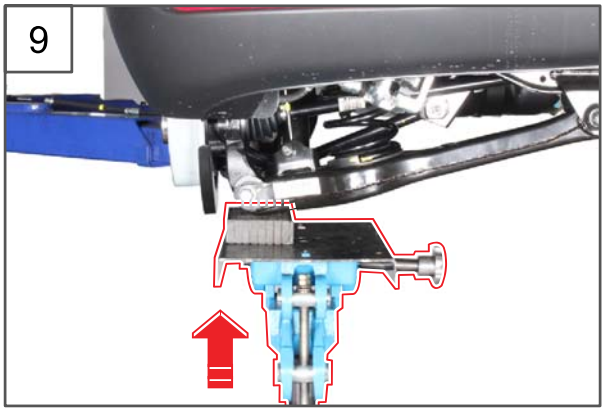


Separate the rear parking cable from the operating lever.



Remove the rear parking brake cable from the dust shield.

Modification basis	
Application basis	
Affected VIN	



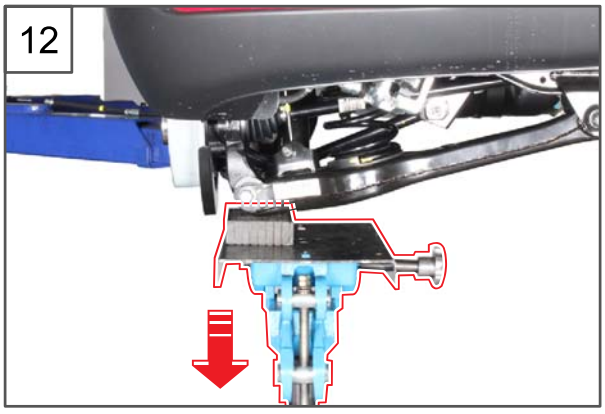
9. Place a jack firmly under the rear lower arm knuckle side.

10. Unscrew the 4 mounting bolts (14 mm) for the left and right rear trailing arms (2 on each side) on the vehicle body side.

Tightening torque 88.3 to 107.9 Nm

11. Unscrew the mounting bolts (19 mm) for the left and right rear shock absorber (one on each side) on the vehicle body side.

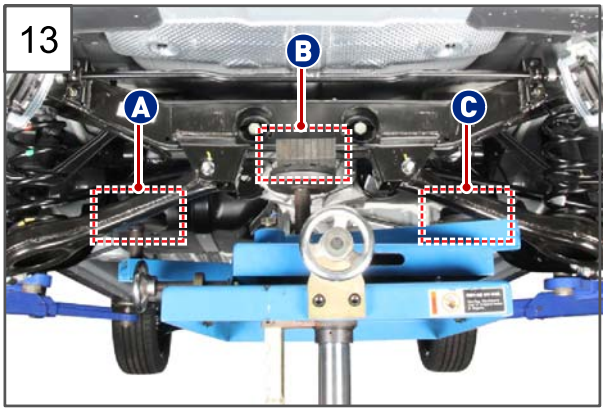
Tightening torque 78.5 to 98.0 Nm



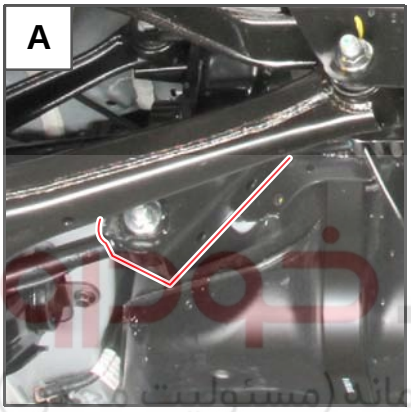
12. Lower the jack slowly to free the trailing arm and shock absorber from the vehicle.

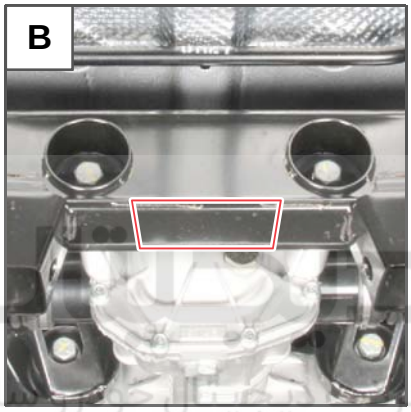
Modification basis	
Application basis	
Affected VIN	

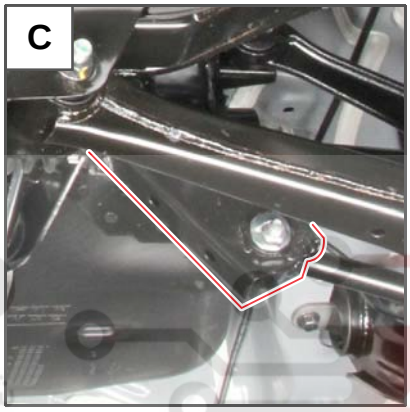
13



13.Place the sub frame jack on the lower section of the rear sub frame.
(A) LH track rod mounting
(B) Rear center
(C) RH track rod mounting

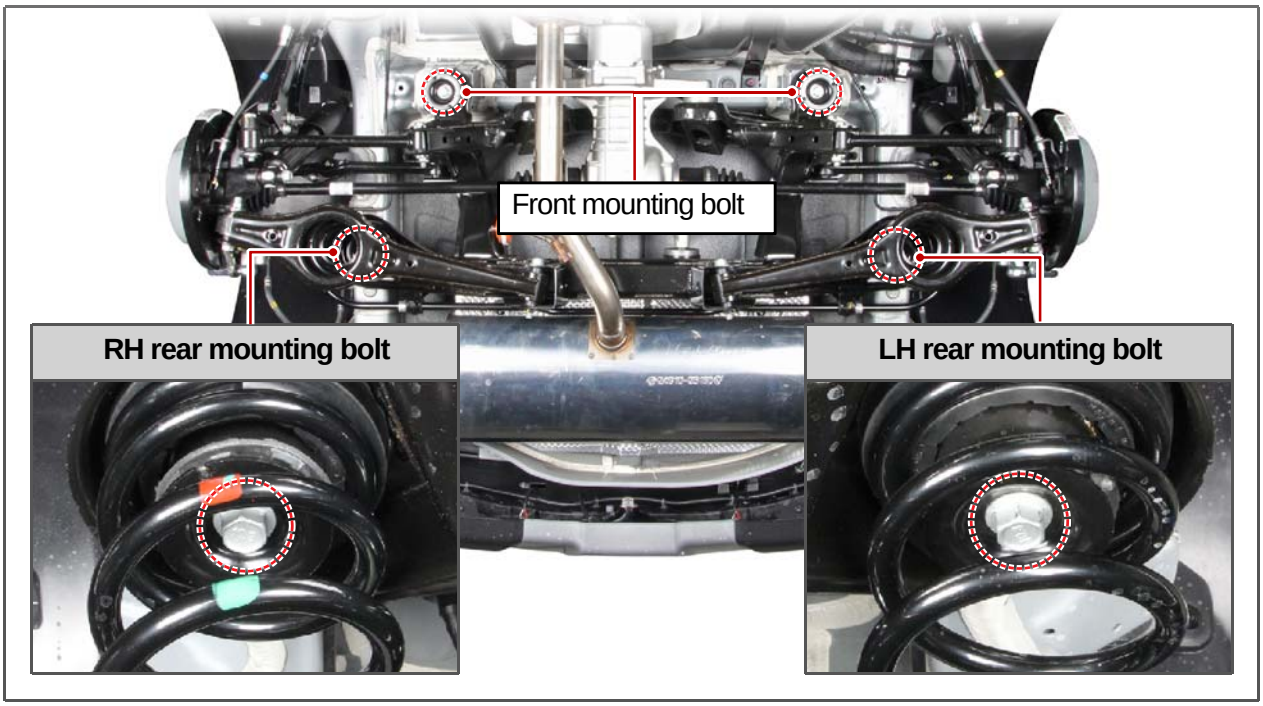






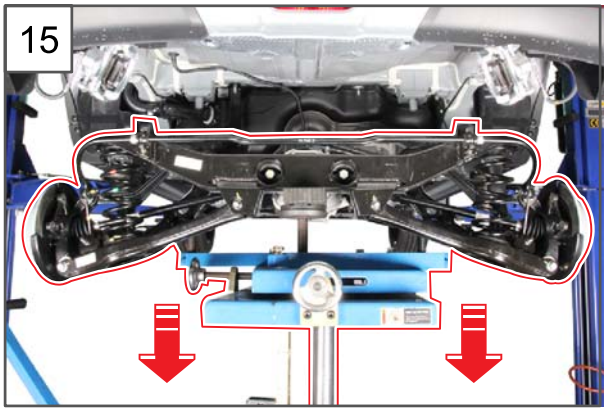
14.Unscrew the 4 rear sub frame mounting bolts (17 mm).

Tightening torque 88.2 to 107.8 Nm



Modification basis	
Application basis	
Affected VIN	

15



15.Lower the sub frame jack and remove the rear sub frame module from the vehicle.

16.Install in the reverse order of removal.

CAUTION

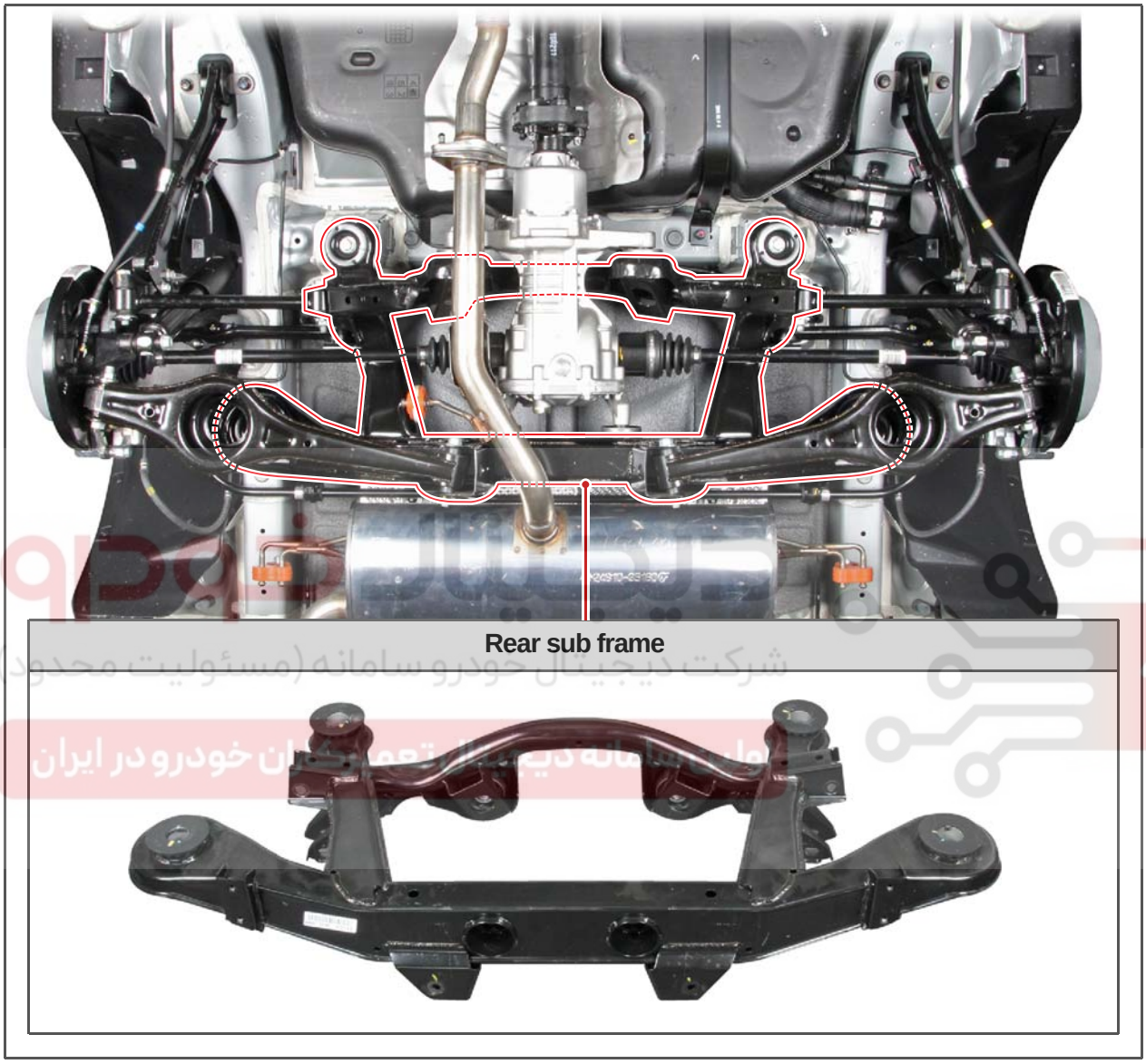
Make sure that the rear shock absorber and trailing arm are not under excessive force because of interference with the vehicle body when installing.

Modification basis	
Application basis	
Affected VIN	

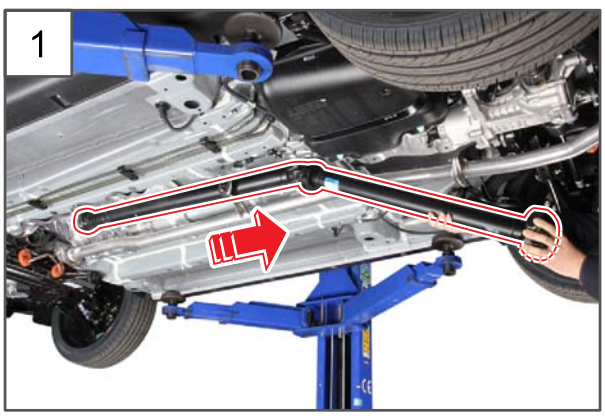
S.G.N. 4015-01

REAR SUB FRAME (AWD)

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



Rear sub frame



1. Remove the propeller shaft.

NOTE

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

Modification basis	
Application basis	
Affected VIN	

2

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

3

3. Remove the rear exhaust muffler.

NOTE

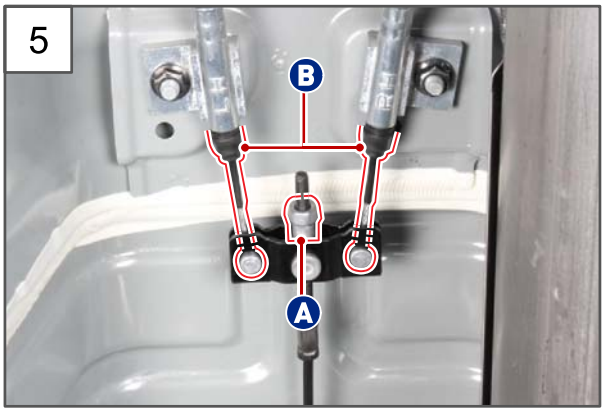
Refer to "REAR EXHAUST MUFFLER" under "REMOVAL AND INSTALLATION" subsection of "EXHAUST SYSTEM" section in "ENGINE" chapter.

4

4. Unscrew the 2 mounting bolts (17 mm) on each side of the rear brake caliper and fix the caliper separated from the brake disk to the vehicle body.

Tightening torque 53.9 to 63.7 Nm

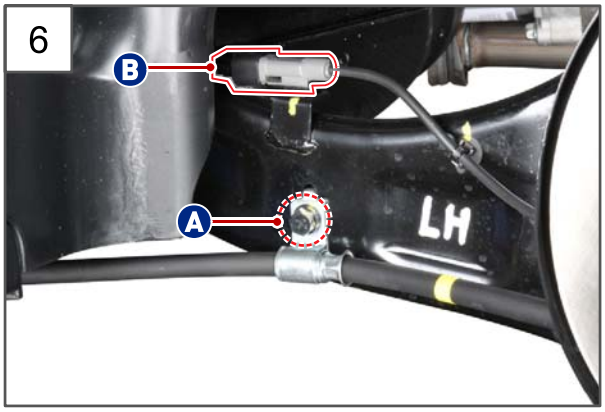
5



5. Unscrew the equalizer nut (A, 12 mm) separate the rear parking brake cable (B) from the center parking brake cable.

Modification basis	
Application basis	
Affected VIN	

6

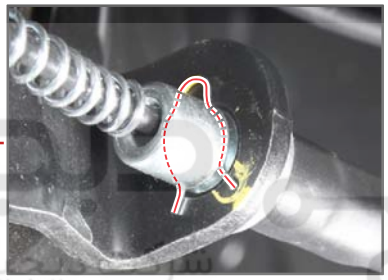


6. Unscrew the left and right mounting bolts (A, 12 mm) for the rear parking brake cable on the rear trailing arm side to remove the left and right rear wheel speed sensor connectors (B).

Tightening torque (A) 9.8 to 12.7 Nm

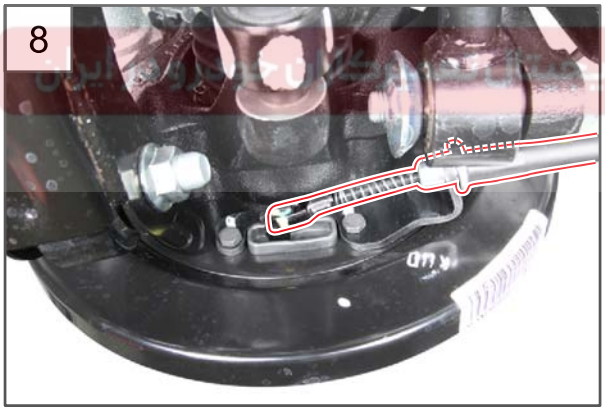
7

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



Retaining pin

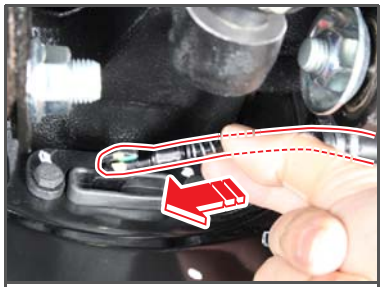
8



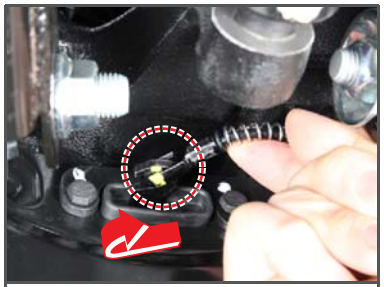
8. Pull out the rear parking cable from the operating lever.

NOTE

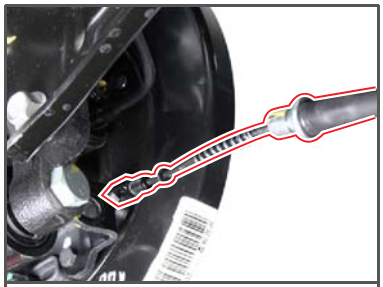
Use the same procedure for both sides.



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



Separate the rear parking cable from the operating lever.



Remove the rear parking brake cable from the dust shield.

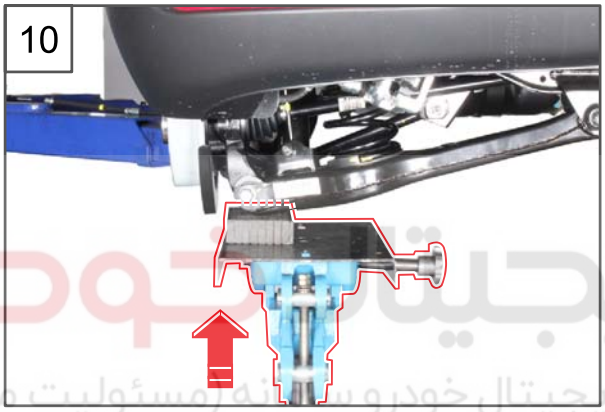
Modification basis	
Application basis	
Affected VIN	

9

9. Unscrew the mounting nuts (17 mm) of the left and right rear stabilizer bar links (one on each side) on the lower arm side to free the rear stabilizer bar link.

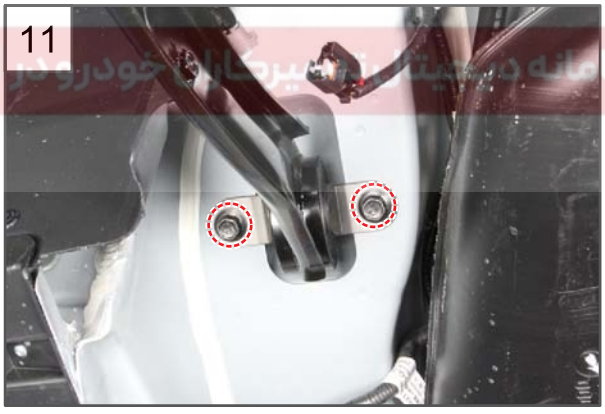
Tightening torque 39.2 to 58.8 Nm

10



10. Place a jack firmly under the rear lower arm knuckle side.

11



11. Unscrew the 4 mounting bolts (14 mm) for the left and right rear trailing arms (2 on each side) on the vehicle body side.

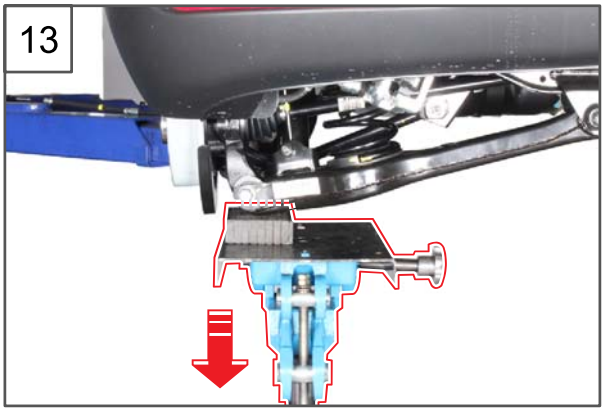
Tightening torque 88.3 to 107.9 Nm

12

12. Unscrew the mounting bolts (19 mm) for the left and right rear shock absorber (one on each side) on the vehicle body side.

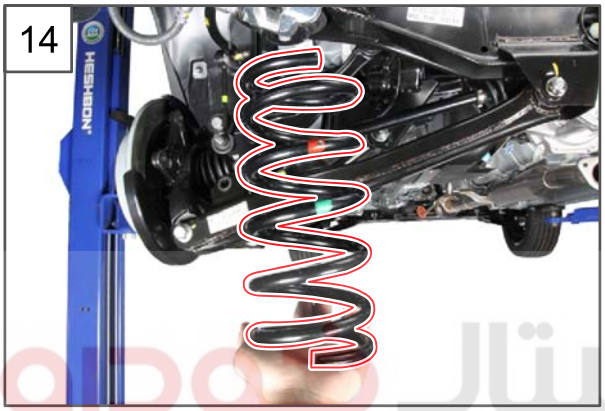
Tightening torque 78.5 to 98.0 Nm

13



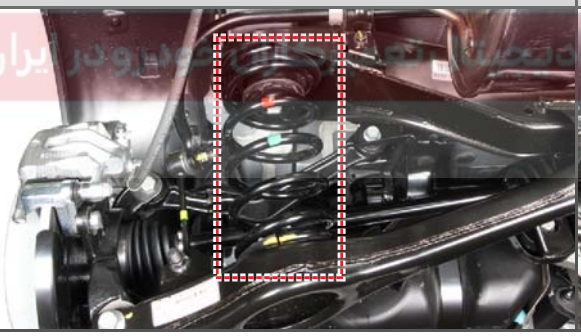
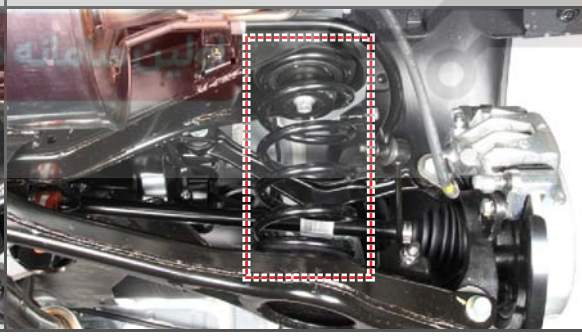
13.Lower the jack slowly to free the trailing arm and shock absorber from the vehicle.

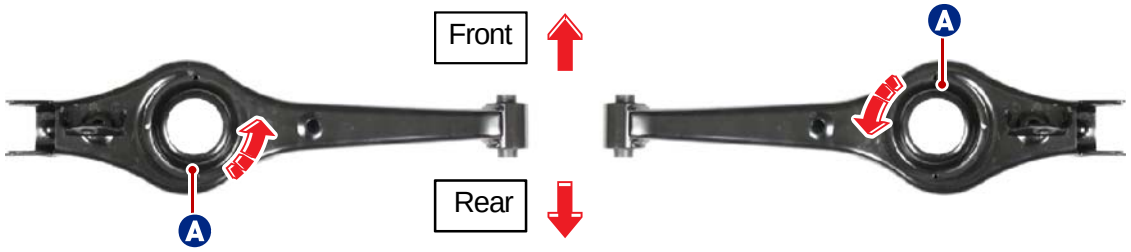
14



14.Snap off the rear lower arm downward and remove the left and right rear coil springs.

Cautions for installation

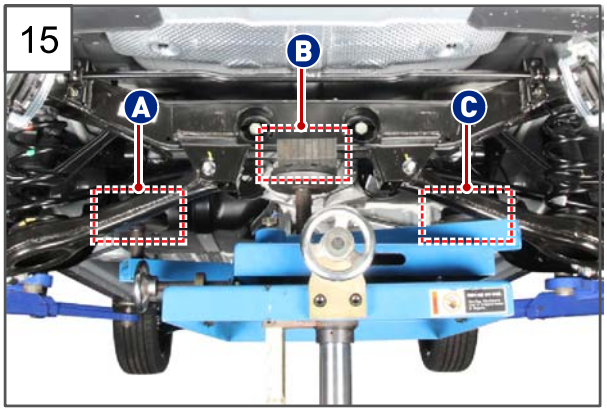
LH rear coil spring	RH rear coil spring
	



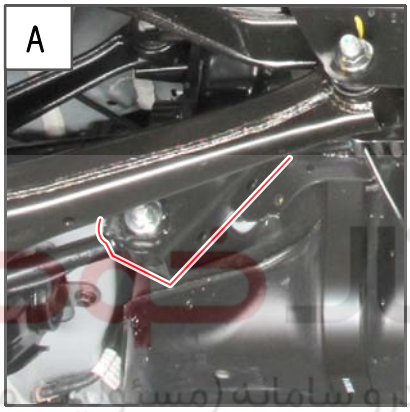
CAUTION

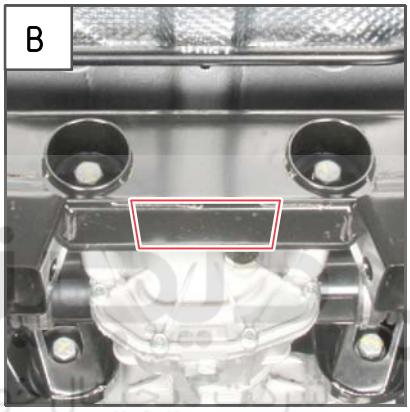
The rear coil spring is wound to the arrow direction respectively, starting at point (A) (LH: rear direction, RH: front direction). Install the rear lower arm to the coil spring lower pad while paying attention to this.

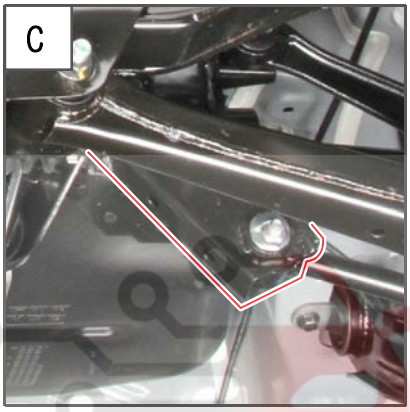
Modification basis	
Application basis	
Affected VIN	



15.Place the sub frame jack on the lower section of the rear sub frame.
(A) LH track rod mounting
(B) Rear center
(C) RH track rod mounting

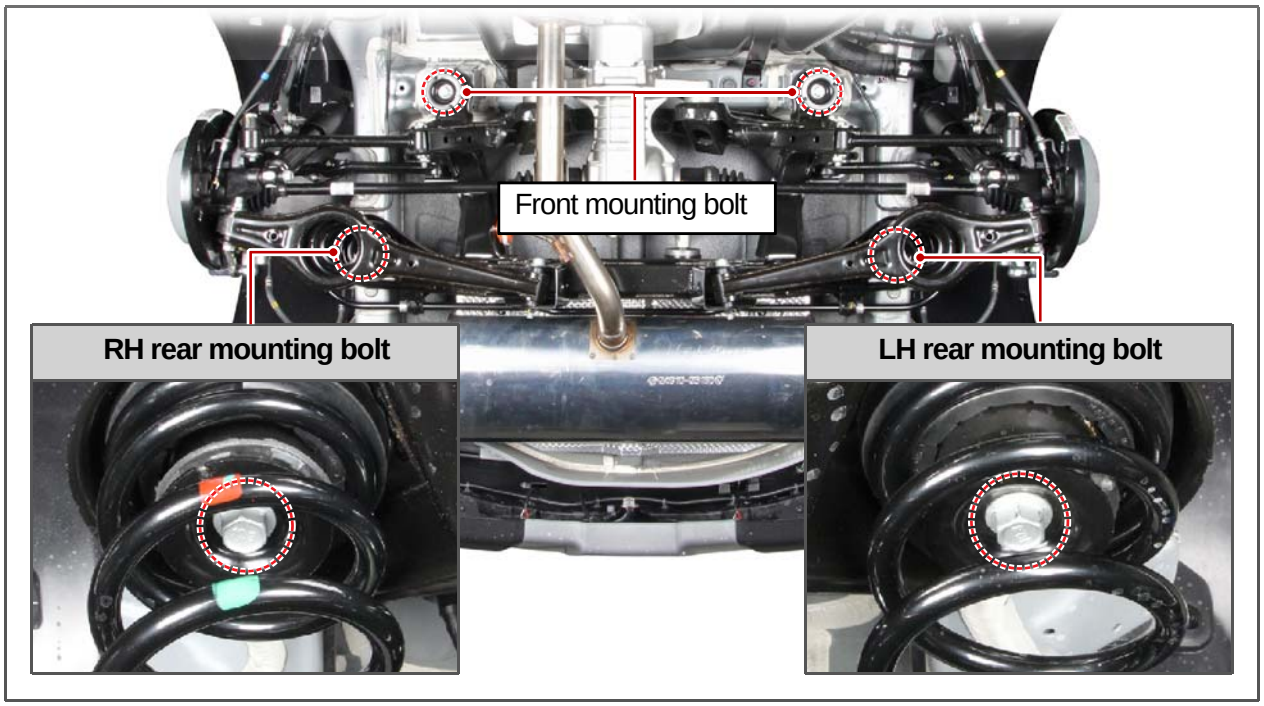






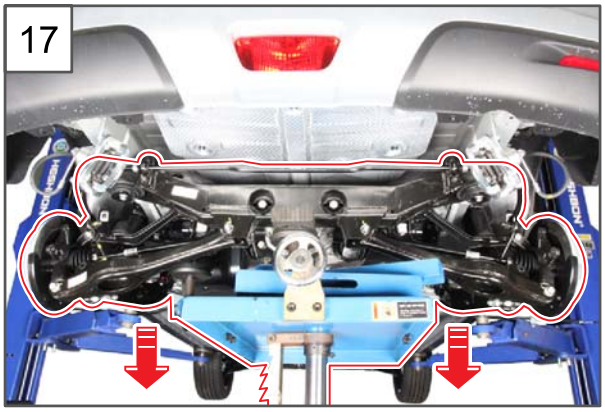
16.Unscrew the 4 rear sub frame mounting bolts (17 mm).

Tightening torque 88.2 to 107.8 Nm



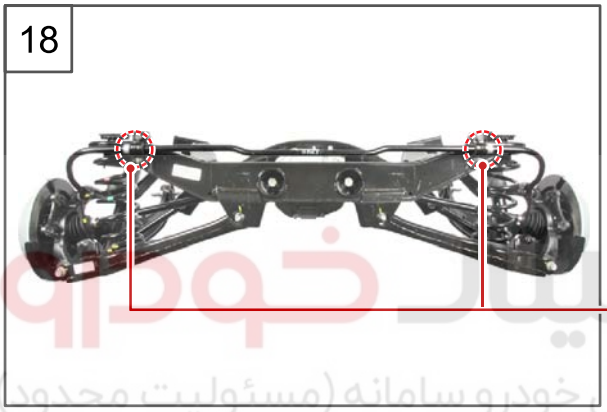
Modification basis	
Application basis	
Affected VIN	

17



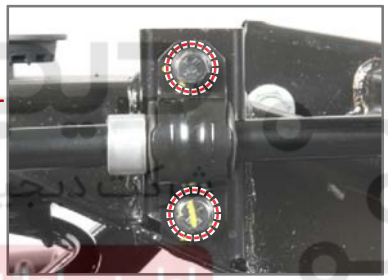
17.Lower the sub frame jack and remove the rear sub frame module from the vehicle.

18

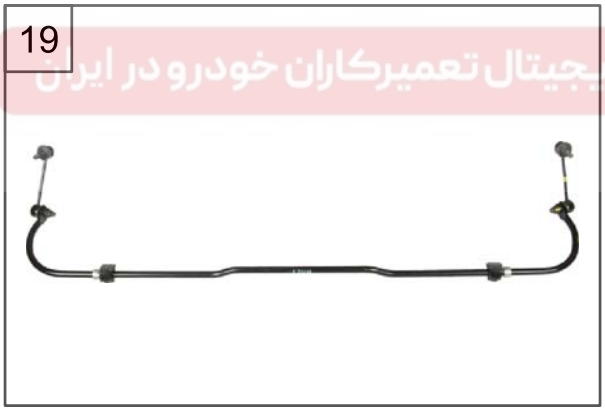


18.Unscrew the 4 mounting bolts (12 mm) for the left and right clamps (2 on each side) of rear stabilizer bar.

Tightening torque 19.6 to 29.4 Nm

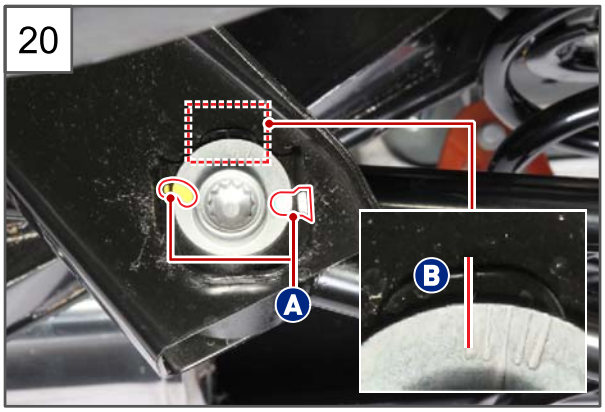


19



19.Remove the rear stabilizer bar assembly.

20



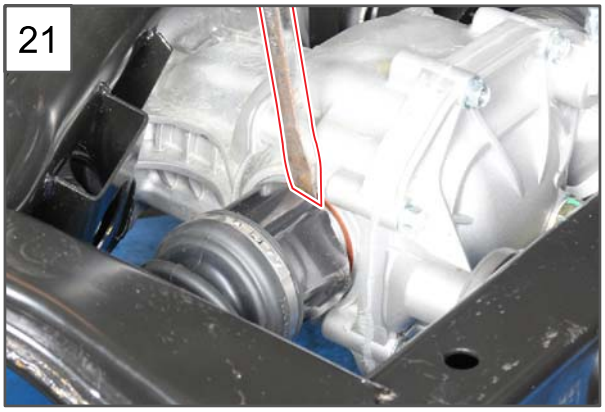
20.Paint a mark (A) on the cam bolt of the rear track rod on the sub frame side, and note down the reading (B).

CAUTION

Make sure that the mark and the scale are aligned with each other when installing.

Modification basis	
Application basis	
Affected VIN	

21



21.Pry apart the rear drive shaft from the rear axle with a flat bladed screwdriver.

CAUTION

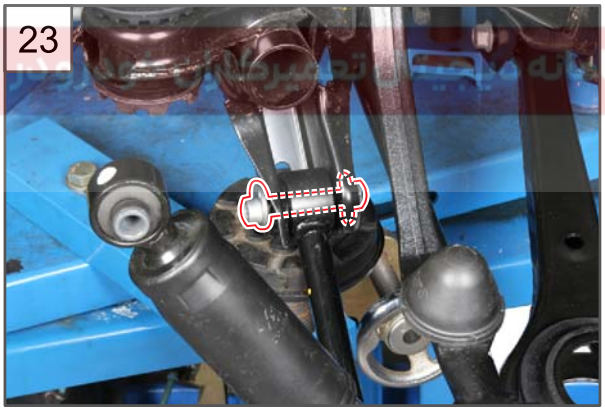
Make sure that the oil seal of the rear axle is not damaged when using a flat bladed screwdriver.
Do not pull the drive shaft from the outside with an excessive force. It causes the boot to tear or bearing to damage.

22

22.Unscrew the mounting bolt/nut (19 mm) of the rear lower arm on the rear sub frame side.

Tightening torque 98.0 to 117.6 Nm

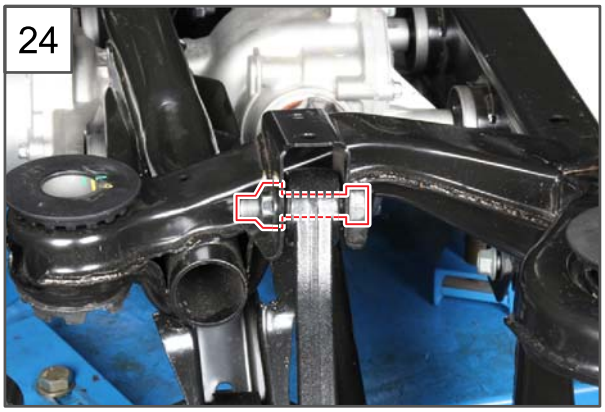
23



23.Unscrew the mounting bolt/nut (mm/19 mm) of the rear track rod on the sub frame side.

Tightening torque 98.0 to 117.6 Nm

24

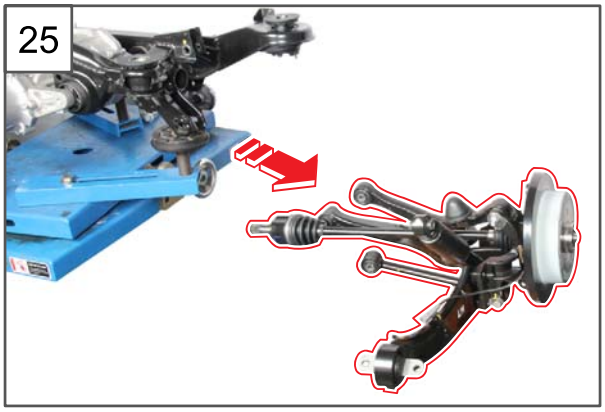


24.Unscrew the mounting bolt/nut (17 mm/19 mm) of the rear upper arm on the sub frame side.

Tightening torque 98.0 to 117.6 Nm

Modification basis	
Application basis	
Affected VIN	

25



25.Remove the rear lower arm, track rod, rear upper arm, rear drive shaft, and rear knuckle at the same time.

NOTE
Use the same procedure for the other side.

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

26

26.Unscrew the 4 mounting bolts (22 mm) for the rear axle and remove the rear sub frame.

Tightening torque 98.0 to 117.6 Nm

27.Install in the reverse order of removal.

Modification basis	
Application basis	
Affected VIN	