General Information

SPECIFICATIONS

FRONT SUSPENSION

Item			Specification
Suspension type			Macpherson strut
Shock absorber	Type		Gas pressurized
	225 Tire	Stroke	149.0mm (5.87in.)
		I.D. color	Blue
	Other	Stroke	154.2mm (6.07in.)
		I.D. color	Europe: Red
			Except Europe: Yellow
Coil spring	Free Height - I.D. color		296.3mm (11.67in.) - White
			305.6mm (12.03in.) - Blue
			311.9mm (12.28in.) - Green
			318.5mm (12.54in.) - Red
			324.8mm (12.79in.) - Yellow
			344.5mm (13.56in.) - Violet
			330.2mm (13.00in.) - Green-White
			342.1mm (13.47in.) - Green-Blue
			350.2mm (13.79in.) - Green-Red
			350.5mm (13.80in.) - Green-Yellow
			358.3mm (14.11in.) - Green-Violet
			382.3mm (15.05in.) - Green-Gray

REAR SUSPENSION

Item			Specification
Suspension type			Multi link coil spring
Shock absorber	Type		Gas pressurized
	225 Tire	Stroke	148.4mm (5.84in.)
		I.D. color	Blue
	Other	Stroke	162.6mm (6.40in.)
		I.D. color	Europe: Red
			Except Europe: Yellow
Coil spring	Free Height - I.D. color		327.4mm (12.89in.) - White
			333.5mm (13.13in.) - Blue
			310.8mm (12.24in.) - Green
			317.1mm (12.48in.) - Red
			330.5mm (13.01in.) - Yellow
			336.8mm (13.26in.) - Violet

WHEEL AND TIRE

Item		Specification
Tire		185/65 R15
		195/65 R15
		205/55 R16
		225/45 R17
Wheel	Steel	5.5J × 15
		6.0J × 16
	Aluminum	5.5J × 15
		6.0J × 16
		7.0J × 17
Tire pressure	Front	2.2kg/cm² (32psi)
	Rear	2.2kg/cm² (32psi)

WHEEL ALIGNMENT

Item	Specification	
	Front	Rear
Toe	0°±0.2° (0±0.079in)	0.1±0.2° (0.039±0.079in)
Camber angle	-0.6°±0.5°	-1.15°±0.5°
Caster angle	4.43°±0.5°	-
King-pin angle	13.65°±0.5°	-

TIGHTENING TORQUE

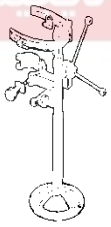
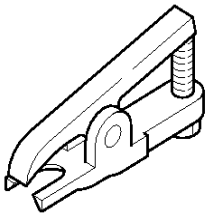
FRONT SUSPENSION

Item	Tightening torque (kgf.m)		
	Nm	Kgf.m	lb-ft
Hub nuts	90 ~ 110	9.0 ~ 11.0	65 ~ 80
Strut assembly to wheel housing penal bolts	45 ~ 60	4.5 ~ 6.0	33 ~ 43
Strut assembly to knuckle bolts	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Strut assembly self locking nut	50 ~ 70	5.0 ~ 7.0	36 ~ 51
Stabilizer link to strut assembly nut	100 ~ 120	10.0 ~12.0	72 ~ 87
Lower arm to sub frame bolt & nut (Front)	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Lower arm to sub frame bolt & nut (Rear)	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Lower arm ball joint castle nut	80 ~ 90	8.0 ~ 9.0	58 ~ 65
Stabilizer bar to stabilizer link nut	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Stabilizer bracket mounting bolts	45 ~ 55	4.5 ~ 5.5	33 ~ 40
Sub frame to body bolts and nuts	160 ~ 180	16.0 ~ 18.0	116 ~ 130
Sub frame stay mounting bolts & nut	45 ~ 55	4.5 ~ 5.5	33 ~ 40
Front & Rear roll stopper bolt & nut	50 ~ 65	5.0 ~ 6.5	36 ~ 47
Lower arm ball joint to knuckle bolts	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Tie-rod end castle nut	24 ~ 34	2.4 ~ 3.4	17 ~ 25
Universal join to pinion of steering gear bolt	30 ~ 35	3.0 ~ 3.5	22 ~ 25

REAR SUSPENSION

Item	Tightening torque (kgf.m)		
	Nm	Kgf.m	lb-ft
Hub nuts	90 ~ 110	9.0 ~ 11.0	65 ~ 80
Shock absorber to wheel housing penal bolts	50 ~ 65	5.0 ~ 6.5	36 ~ 47
Shock absorber to carrier bolt & nut	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Shock absorber self locking nut	20 ~ 25	2.0 ~ 2.5	14 ~ 18
Upper arm to carrier bolt & nut	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Upper arm to cross member bolt	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Lower arm to carrier bolt & nut	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Lower arm to cross member bolt	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Assist arm to carrier castle nut	45 ~ 55	4.5 ~ 5.5	33 ~ 40
Assist arm to cross member cam bolt & nut	100 ~ 120	10.0 ~ 12.0	72 ~ 87
Trailing arm to carrier bolts	35 ~ 55	3.5 ~ 5.5	25 ~ 40
Trailing arm to body bolts	140 ~ 160	14.0 ~ 16.0	101 ~ 116
Stabilizer link to trailing arm nut	45 ~ 55	4.5 ~ 5.5	33 ~ 40
Stabilizer bar to stabilizer link nut	45 ~ 55	4.5 ~ 5.5	33 ~ 40
Stabilizer bar bracket bolts	45 ~ 55	4.5 ~ 5.5	33 ~ 40

SPECIAL SERVICE TOOLS

Tool (Number and Name)	Illustration	Use
09546-26000 Strut spring compressor		Compression of coli spring
09568-34000 Ball joint puller		Removal of ball joint

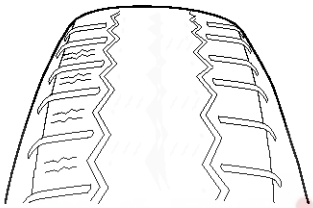
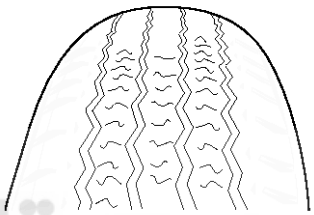
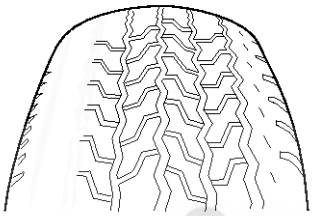
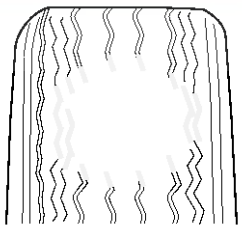
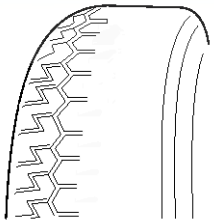
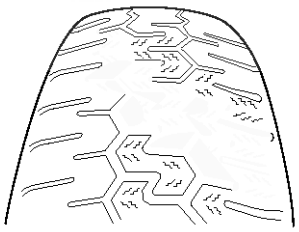
TROUBLESHOOTING

Symptom	Possible cause	Remedy
Hard steering	Improper front wheel alignment Excessive turning resistance of lower arm ball joint Low tire pressure No power assist	Correct Replace Adjust Repair and replace
Poor return of steering wheel to center	Improper front wheel alignment	Correct
Poor or rough ride	Improper front wheel alignment Malfunctioning shock absorber Broken or worn stabilizer Broken or worn coil spring Worn lower arm bushing	Correct Repair or replace Replace Replace Replace the lower arm assembly
Abnormal tire wear	Improper front wheel alignment Improper tire pressure Malfunctioning shock absorber	Correct Adjust Replace
Wandering	Improper front wheel alignment Poor turning resistance of lower arm ball joint Loose or worn lower arm bushing	Correct Repair Retighten or replace
Vehicle pulls to one side	Improper front wheel alignment Excessive turning resistance of lower arm ball joint Broken or worn coil spring Bent lower arm	Correct Replace Replace Repair
Steering wheel shimmy	Improper front wheel alignment Poor turning resistance of lower arm ball joint Broken or worn stabilizer Worn lower arm bushing Malfunctioning shock absorber Broken or worn coil spring	Correct Replace Replace Replace Replace Replace
Bottoming	Broken or worn coil spring Malfunctioning shock absorber	Replace Replace

Wheel /tire noise, vibration and harshness concerns are directly related to vehicle speed and are not generally affected by acceleration, coasting or decelerating. Also, out-of-balance wheel and tires can vibrate at more than one speed. A vibration that is affected by the engine rpm, or is eliminated by placing the transmission in Neutral is not related to the tire and wheel. As a general rule, tire and wheel vibrations felt in the steering wheel are related to the front tire and wheel assemblies. Vibrations felt in the seat or floor are related to the rear tire and wheel assemblies. This can initially isolate a concern to the front or rear.

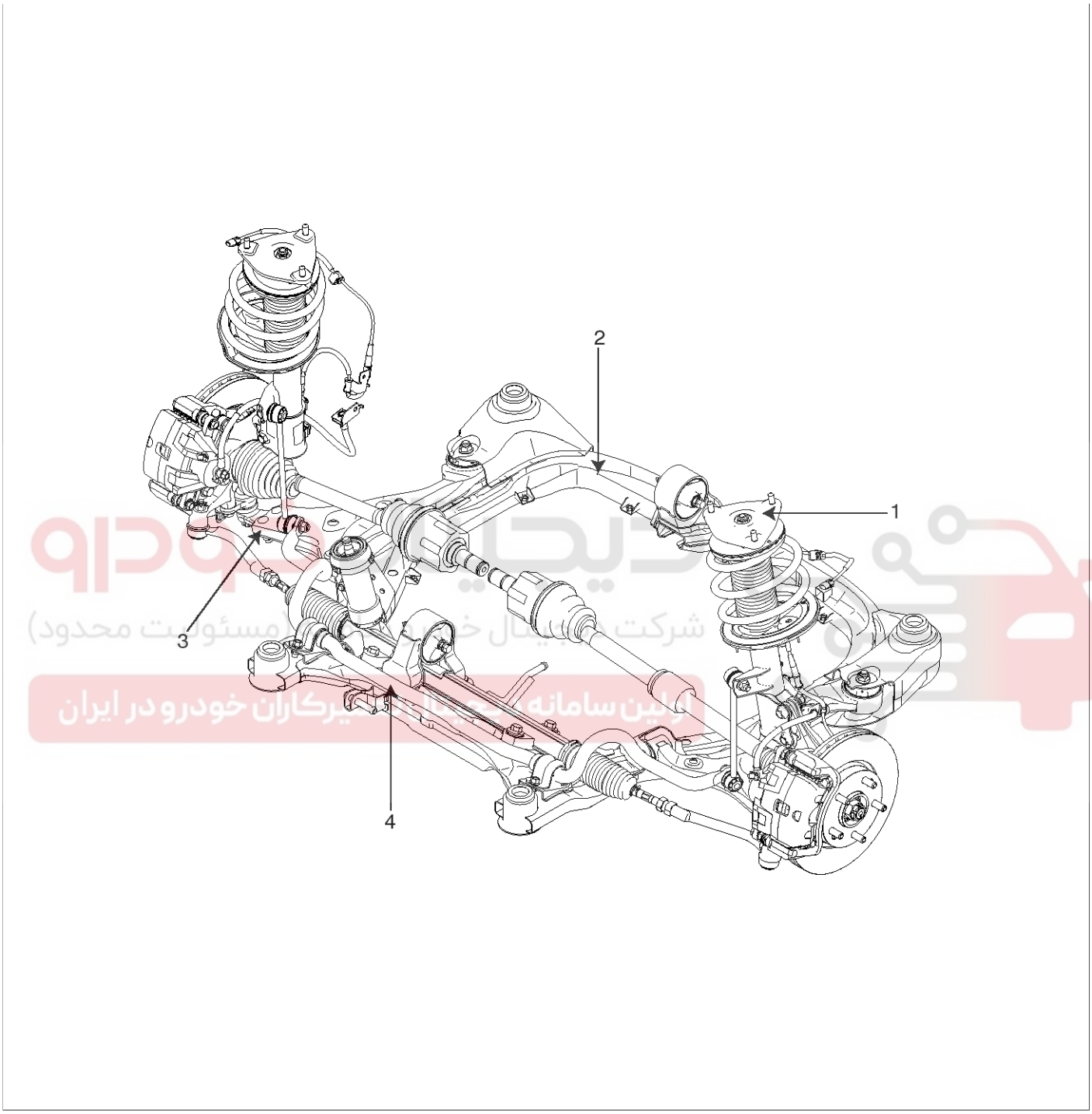
Careful attention must be paid to the tire and wheels. There are several symptoms that can be caused by damaged or worn tire and wheels. Perform a careful visual inspection of the tires and wheel assemblies. Spin the tires slowly and watch for signs of lateral or radial runout. Refer to the tire wear chart to determine the tire wear conditions and actions

WHEEL AND TIRE DIAGNOSIS

Rapid wear at the center	Rapid wear at both shoulders	Wear at one shoulder
		
• Center-tread down to fabric due to excessive over inflated tires • Lack of rotation • Excessive toe on drive wheels • Heavy acceleration on drive	• Under-inflated tires • Worn suspension components • Excessive cornering speeds • Lack of rotation	• Toe adjustment out of specification • Camber out of specification • Damaged strut • Damaged lower arm
Partial wear	**Feathered edge**	**Wear pattern**
		
• Caused by irregular burrs on brake drums	• Toe adjustment out of specification • Damaged or worn tie rods • Damaged knuckle	• Excessive toe on non-drive wheels • Lack of rotation

Front Suspension System

COMPONENTS

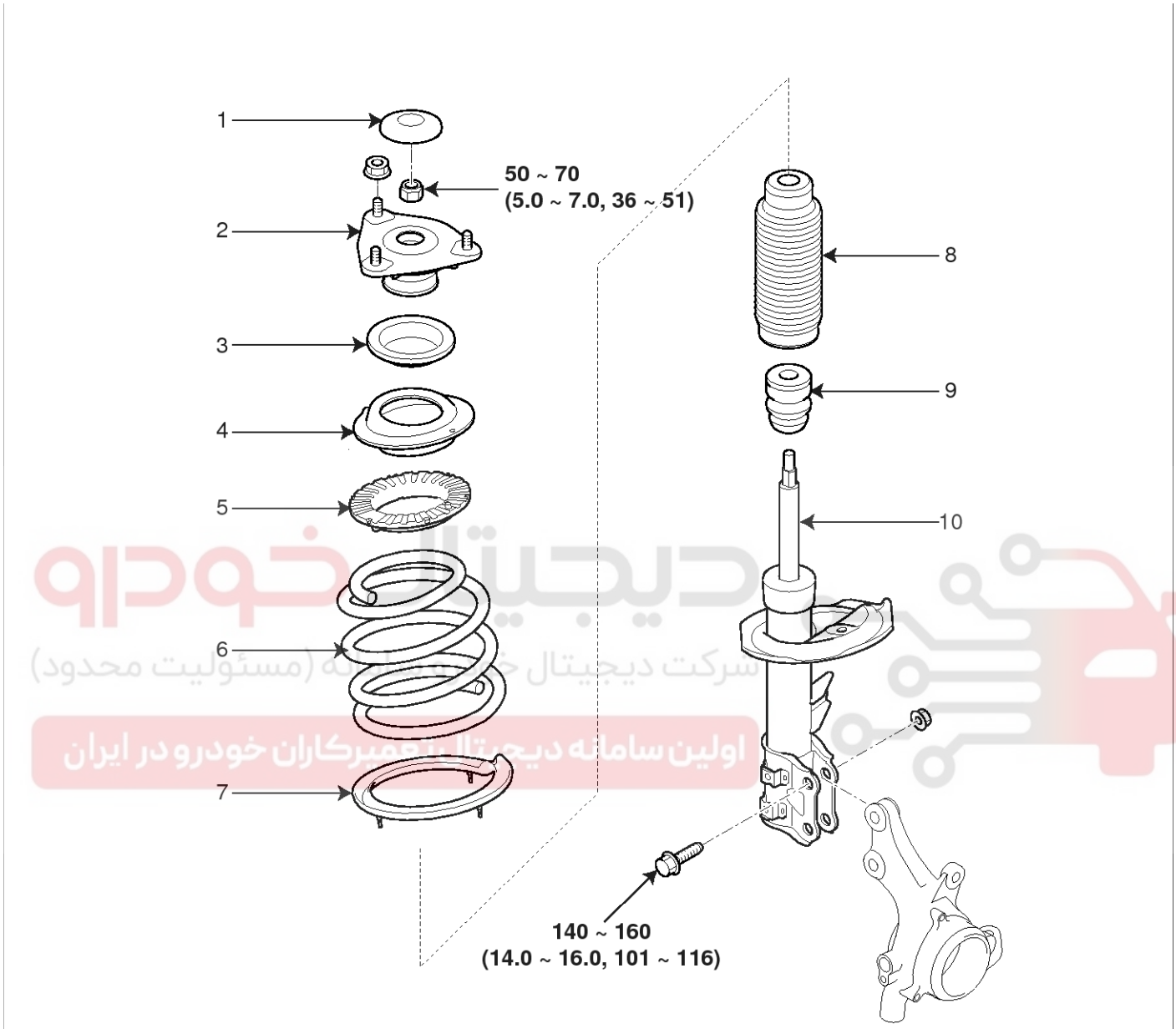


1. Front strut assembly
2. Sub frame
3. Front lower arm
4. Front stabilizer bar

SEDSS7500L

Front Strut Assembly

COMPONENTS



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

1. Insulator cap
2. Insulator assembly
3. Strut bearing
4. Spring upper seat
5. Spring upper pad
6. Coil spring
7. Spring lower pad
8. Dust cover
9. Bumper rubber
10. Shock absorber

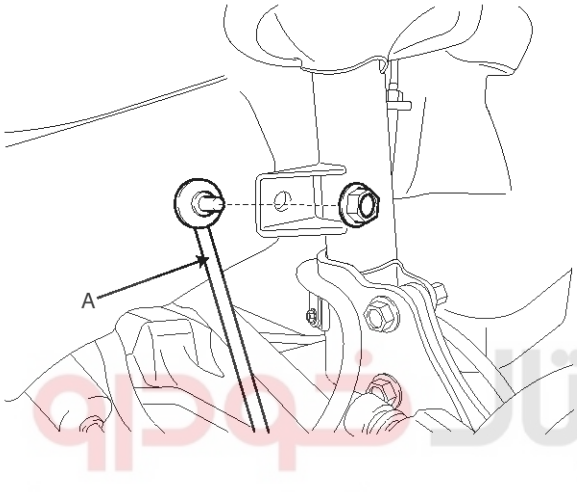
SFDSS8300L

REMOVAL

1. Remove the front wheel & tire.

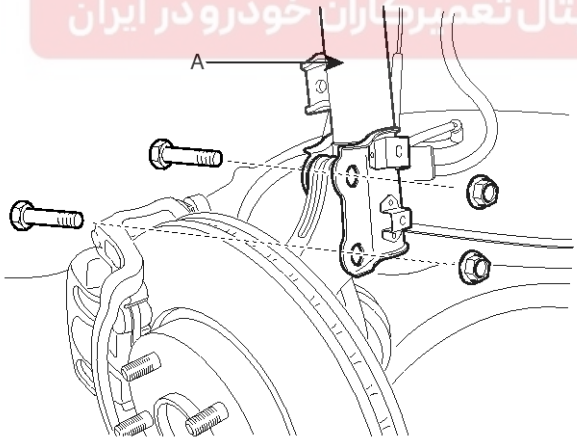
   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the front wheel & tire.

2. Remove the brake hose and the wheel speed sensor bracket from the front strut assembly by loosening the mounting bolts.
3. Disconnect the stabilizer link (A) with the front strut assembly after loosening the nut.



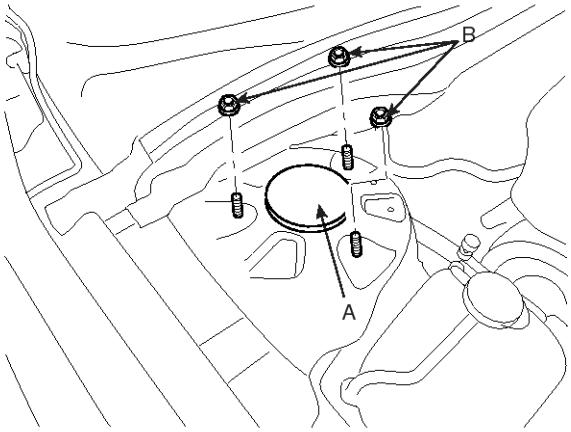
SUNST6020D

4. Disconnect the front strut assembly (A) with the knuckle by loosening the bolt & nut.



SUNSS6534D

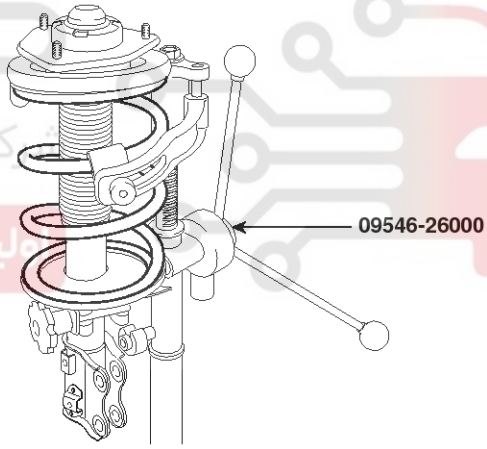
5. Remove the front strut cap (A).
6. Remove the front strut assembly from the wheel housing panel by loosening the mounting nuts (B).



SFDSS8001L

DISASSEMBLY

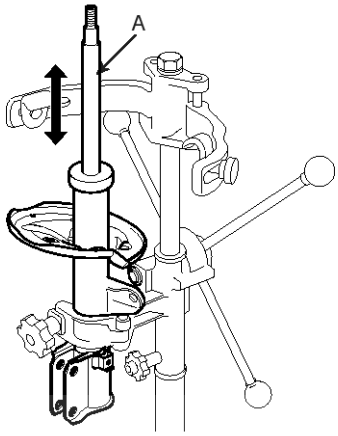
1. Compress the coil spring with a SST (09546-26000). Do not compress the spring more than necessary.
2. Loosen the self-locking nut.



SUNSS6006D

INSPECTION

1. Check the strut bearing for wear and damage.
2. Check the spring upper and lower seat for damage and deterioration.
3. Compress and extend the piston rod (A) and check that there is no abnormal resistance or unusual sound during operation.



AHJF101L

REASSEMBLY

1. Install the front shock absorber to SST (09546-26000).
2. Assemble the components of the front strut assembly in sequence. (Refer to Front strut assembly components)
3. After seating the upper and lower ends of the coil spring in the upper and lower spring seat grooves correctly, tighten new self-locking nut.

Tightening torque Nm (kgf.m, lb-ft):
50 ~ 70 (5.0 ~ 7.0, 36 ~ 51)

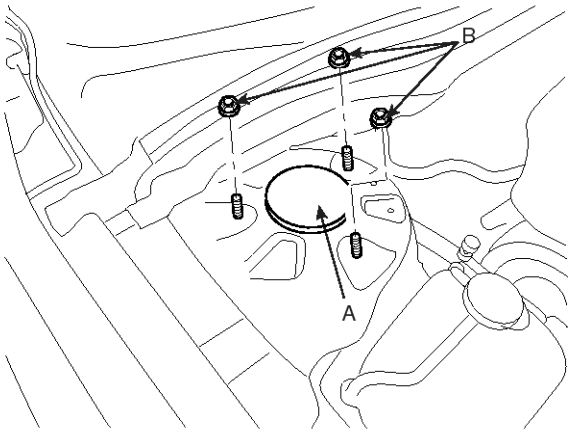
4. Remove the special service tool.

INSTALLATION

1. Install the front strut assembly to the wheel housing panel by tightening the mounting nuts (B).

Tightening torque Nm (kgf.m, lb-ft):
45 ~ 60 (4.5 ~ 6.0, 33 ~ 43)

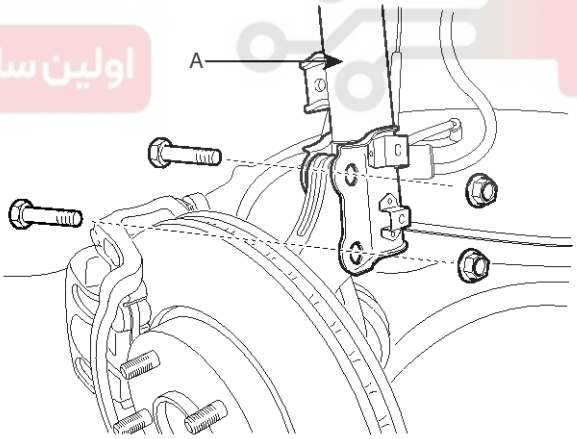
2. Install the front strut cap (A).



SFDSS8001L

3. Connect the front strut assembly (A) with the knuckle by tightening the bolts & nuts.

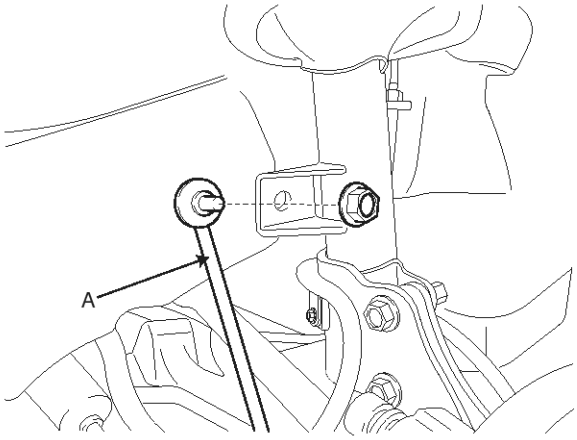
Tightening torque Nm (kgf.m, lb-ft):
140 ~ 160 (14.0 ~ 16.0, 101 ~ 116)



SUNSS6534D

4. Install the stabilizer link (A) to the front strut assembly and then tighten the nut.

Tightening torque Nm (kgf.m, lb-ft):
100 ~ 120 (10.0 ~ 12.0, 72 ~ 87)



SUNST6020D

5. Install the brake hose and wheel speed sensor bracket to front strut assembly by tightening the mounting bolts.
6. Install the front wheel & tire.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

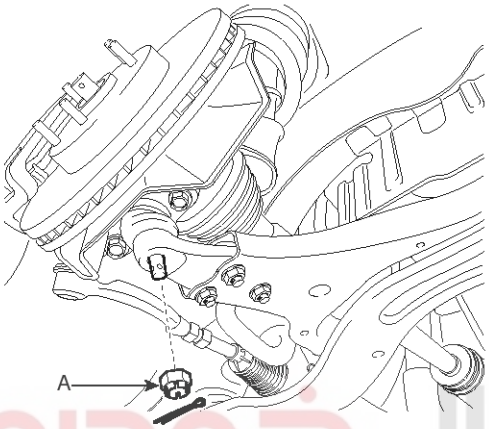
Front Lower Arm

REMOVAL

1. Remove the front wheel & tire.

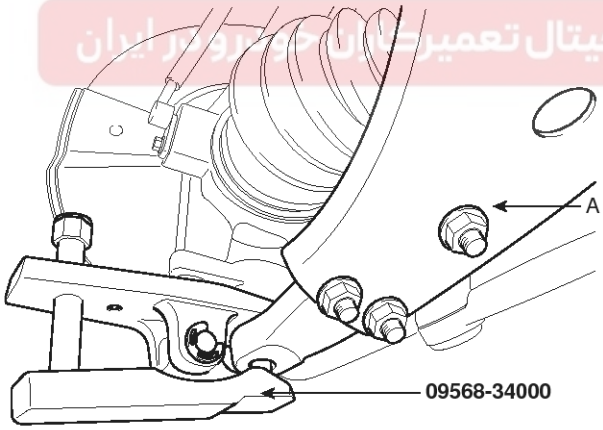
   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the front wheel & tire.

2. Remove the split pin and the castle nut (A) from the lower arm ball joint.



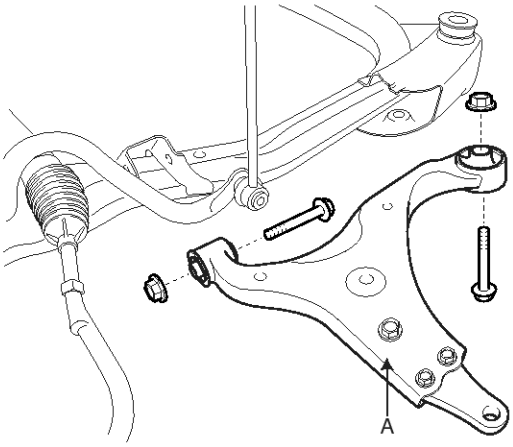
SUNSS6314D

3. Separate the lower arm (A) from the lower arm ball joint by using SST (09568-34000).



SUNSS6015D

4. Loosen the bolts and nuts and then remove the lower arm (A) from the sub frame.



SFDSS8319L

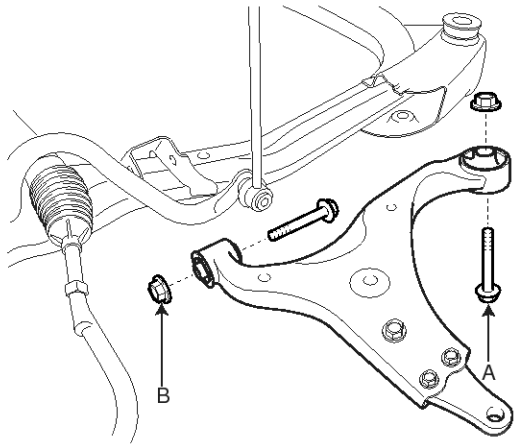
INSPECTION

1. Check the bushing for wear and deterioration.
2. Check the lower arm for deformation.
3. Check the all bolts and nuts

INSTALLATION

1. Install the front lower arm to the sub frame and then tighten the bolts (A, B) and nuts.

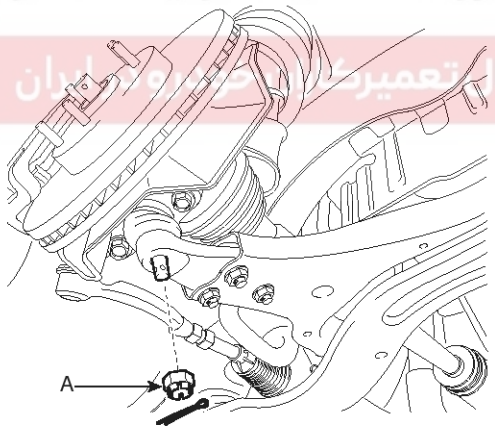
Tightening torque Nm (kgf.m, lb-ft)
Bolt & nut (A): 140 ~ 160 (14.0 ~ 16.0, 101 ~ 116)
Bolt & nut (B): 100 ~ 120 (10.0 ~12.0, 72 ~ 87)



SFDSS8320L

2. Connect the lower arm with the ball joint and then install the castle nut (A) and the split pin.

Tightening torque Nm (kgf.m, lb-ft):
80 ~ 90 (8.0 ~ 9.0, 58 ~ 65)



SUNSS6314D

3. Install the front wheel & tire.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

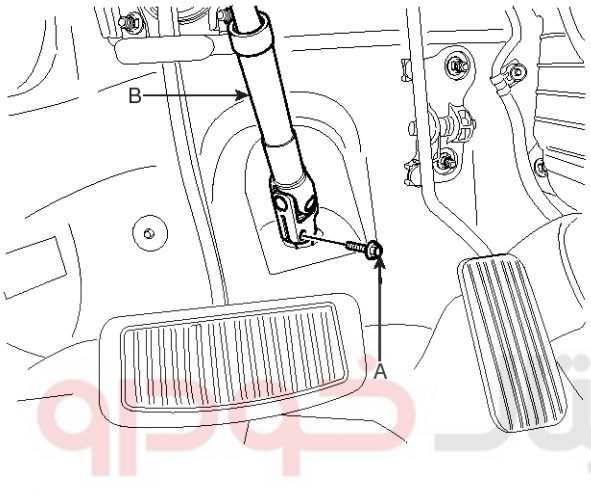
Front Stabilizer Bar

REMOVAL

1. Remove the front wheel & tire.

⚠CAUTION
Be careful not to damage to the hub bolts when removing the front wheel & tire.

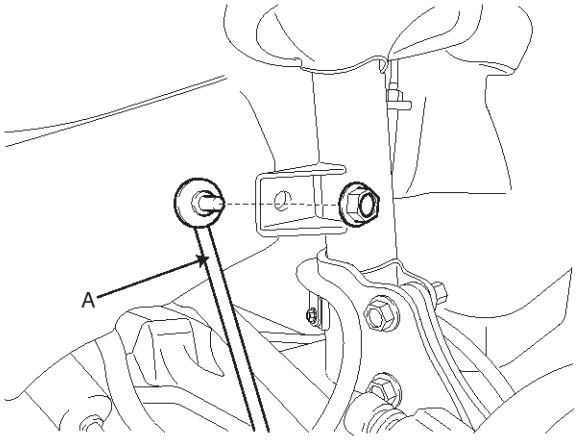
2. Loosen the bolt (A) and then disconnect the universal joint assembly (B) from the pinion of the steering gear box.



SHDST6011D

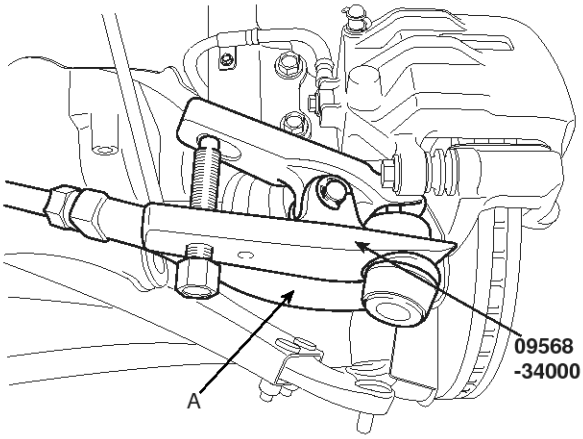
⚠CAUTION
Keep the neutral-range to prevent the damage of the clock spring inner cable when you handlethe steering wheel.

3. Disconnect the stabilizer link (A) from the front strut assembly by loosening the nut.



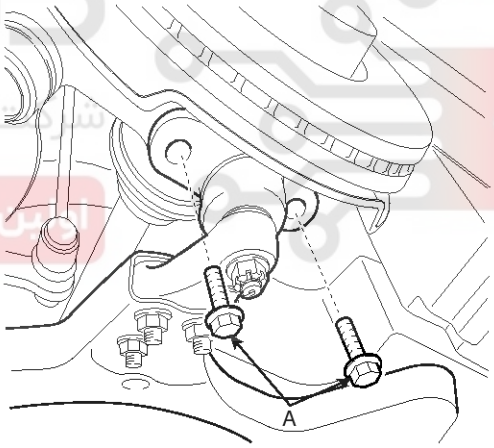
SUNST6020D

4. Remove the split pin and castle nut and then disconnect the tie rod end (A) from the front knuckle by using a SST (09568-34000).



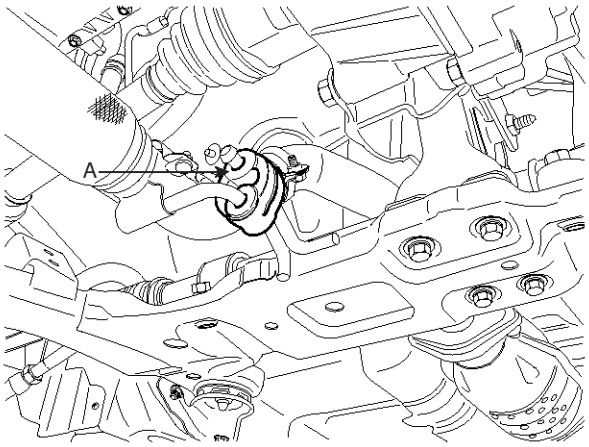
SUNST6021D

5. Disconnect the front lower arm with the knuckle by loosening the mounting bolts (A).



SUNST6510D

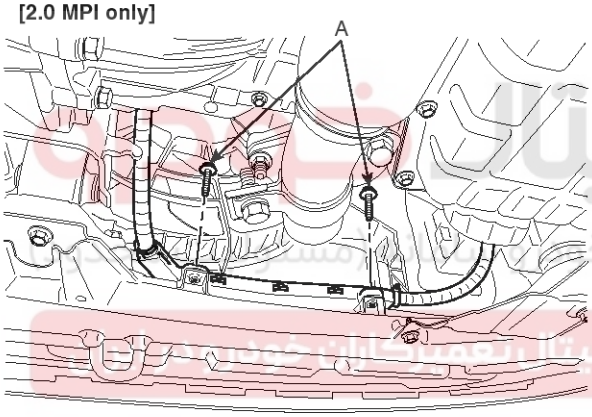
6. Remove the muffler rubber hanger (A).



SHDST6020D

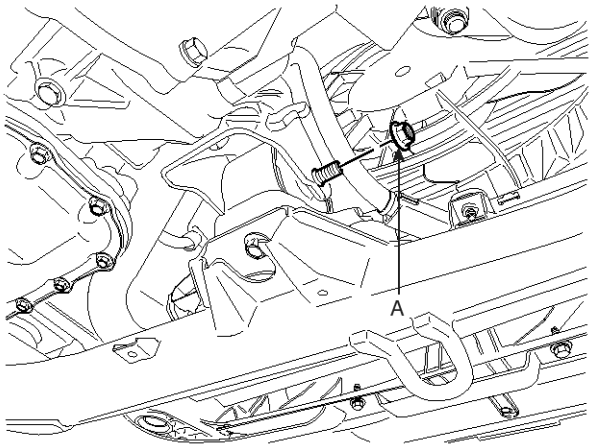
7. Loosen the wiring harness protector mounting bolts (A).

[2.0 MPI only]

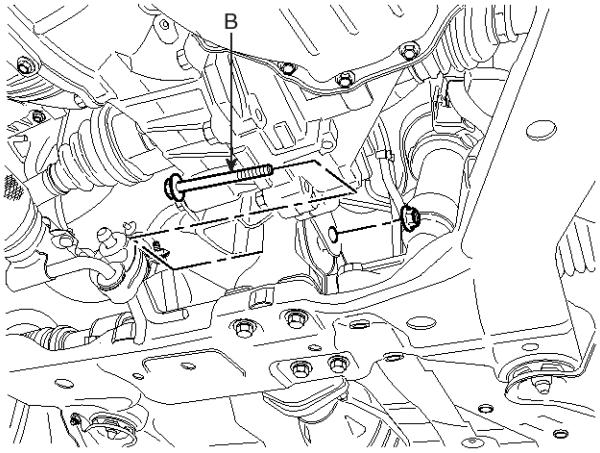


SHDSS6519D

8. Remove the front and rear roll stopper bolts & nut (A, B).

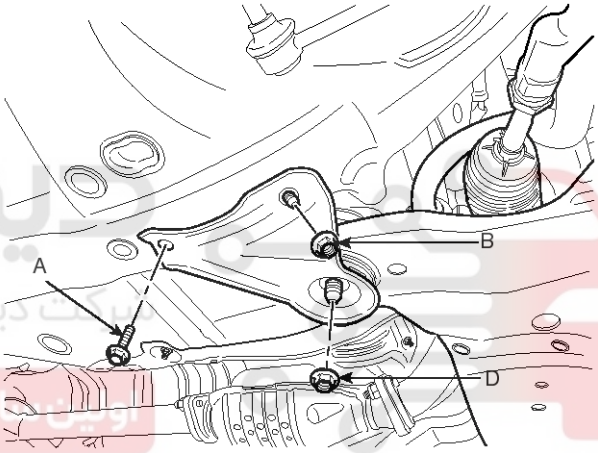


SHDST6021D

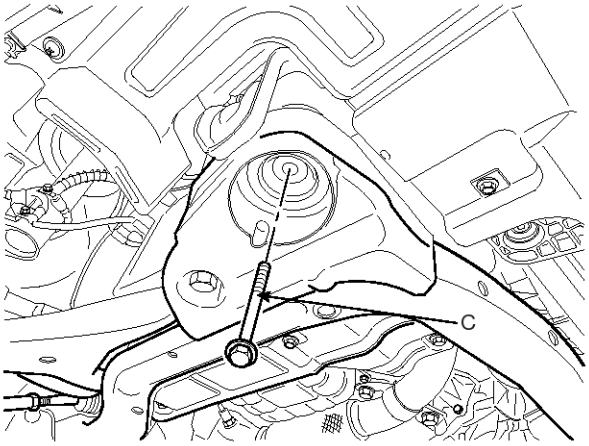


SEDST7504L

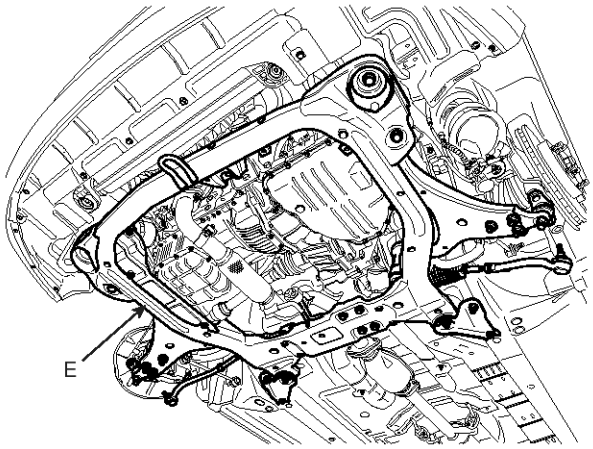
9. Remove the sub frame (E) and the sub frame stay by loosening the mounting bolts (A, C) and nuts (B, D).



SHDST6038D

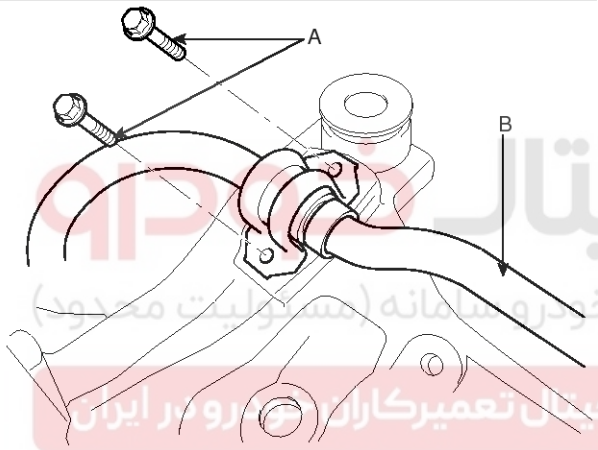


SHDST6039D



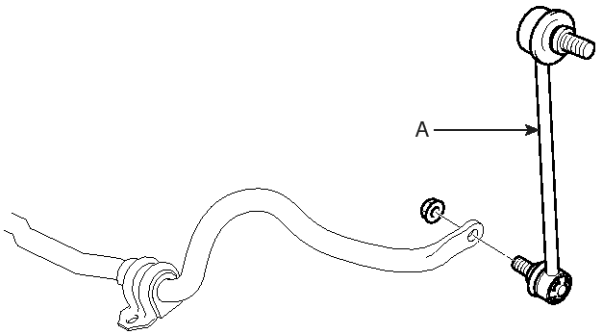
SHDST6023D

10. Remove stabilizer (B) from the sub frame by loosening the bracket mounting bolts (A).



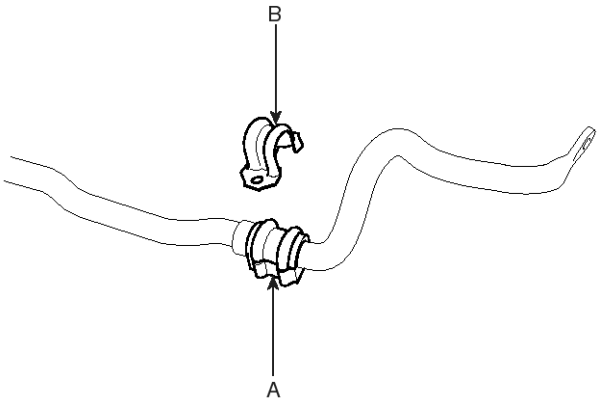
SHDSS6001D

11. Disconnect the stabilizer link (A) with the stabilizer bar by loosening the nut.



SHDSS6002D

12. Remove the bushing (A) and the bracket (B) from the stabilizer bar.



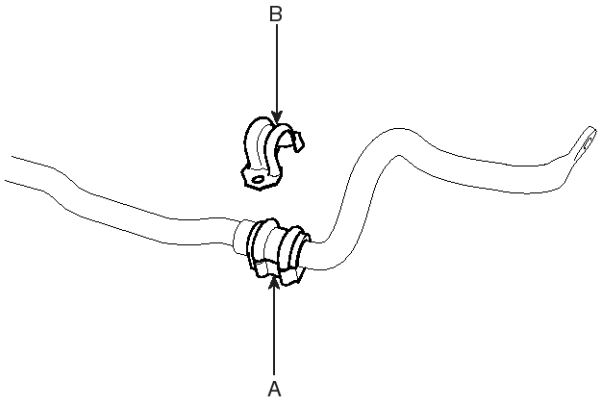
SHDSS6003D

INSPECTION

1. Check the bushing for wear and deterioration.
2. Check the front stabilizer bar for deformation.
3. Check the front stabilizer link ball joint for damage.

INSTALLATION

1. Install the bushing (A) and the bracket (B) to the stabilizer bar.



SHDSS6003D

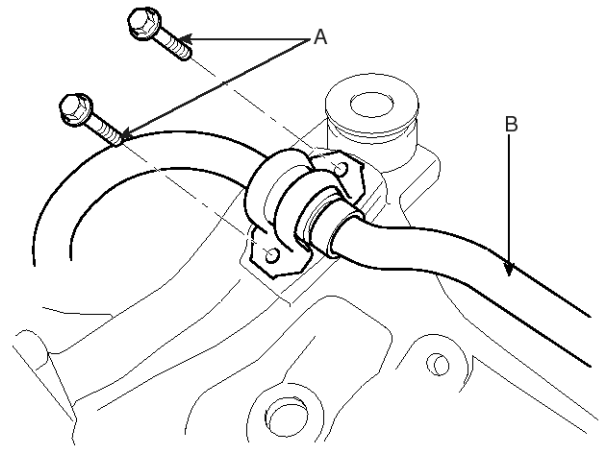
2. Connect the stabilizer link (A) with the stabilizer bar by tightening the nut.

Tightening torque Nm (kgf.m, lb-ft):
100~ 120 (10.0 ~ 12.0, 72 ~ 87)

SHDSS6002D

3. Install the stabilizer (B) to the sub frame by tightening the bracket mounting bolts (A).

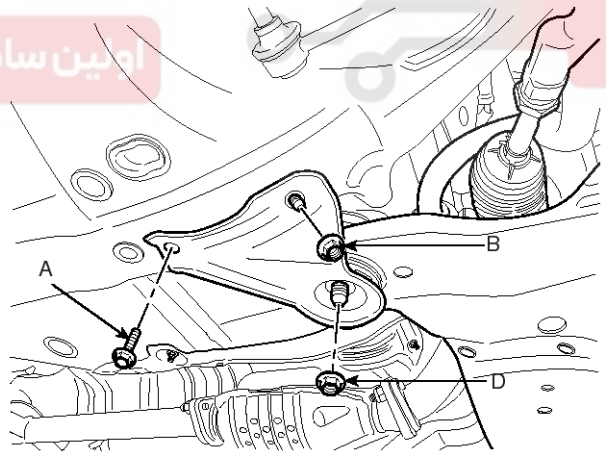
Tightening torque Nm (kgf.m, lb-ft):
45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)



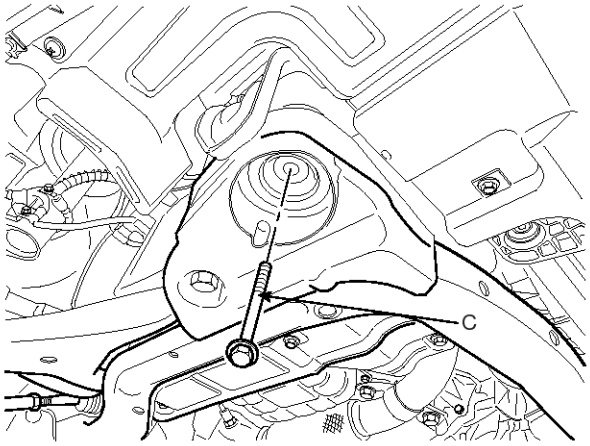
SHDSS6001D

4. Install the sub frame (E) and the sub frame stay by tightening the mounting bolts (A, C) and nuts (B, D).

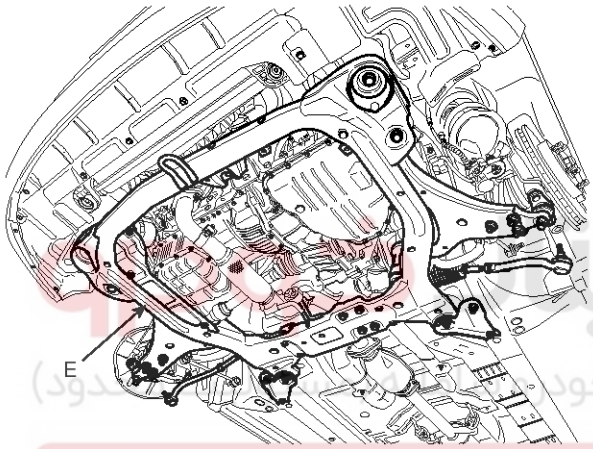
Tightening torque Nm (kgf.m, lb-ft):
Sub fame mounting bolts (C) and nuts (D):
160 ~ 180 (16.0 ~ 18.0, 116 ~ 130)
Sub frame stay mounting bolts (A) and nuts (B):
45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)



SHDST6038D



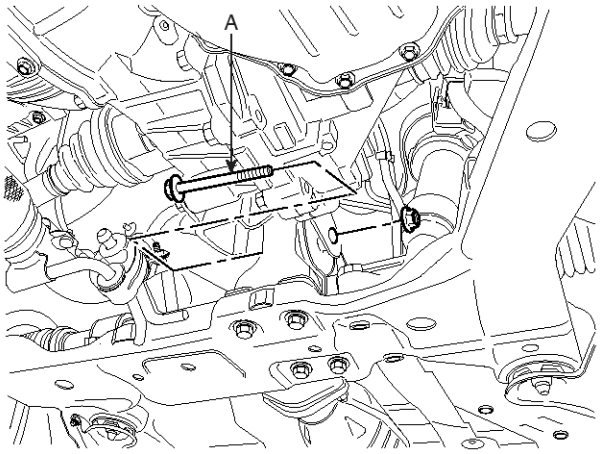
SHDST6039D



SHDST6023D

5. Tighten the rear roll stopper through bolt(A).

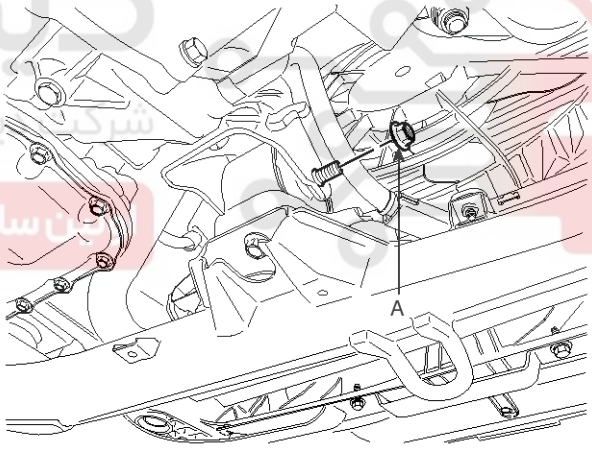
Tightening torque Nm (kgf.m, lb-ft):
50 ~ 65 (5.0 ~ 6.5, 36 ~ 47)



SEDSS7513L

6. Tighten the front roll stopper through bolt & nut (A).

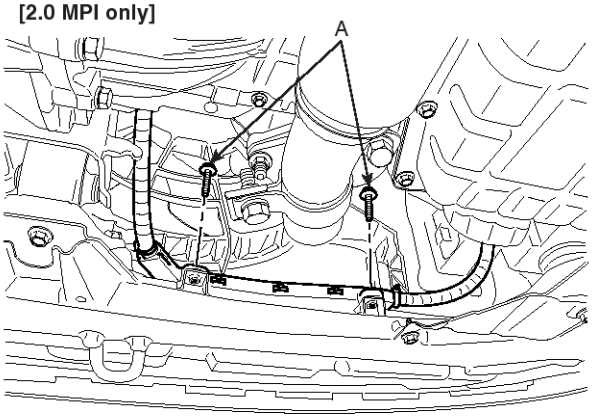
Tightening torque Nm (kgf.m, lb-ft):
50 ~ 65 (5.0 ~ 6.5, 36 ~ 47)



SHDST6021D

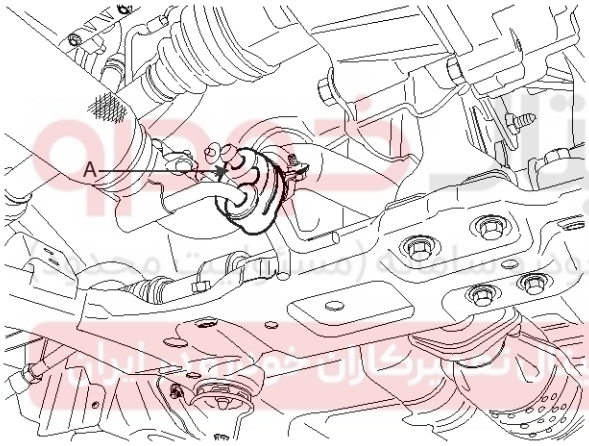
7. Install the wire harness protector to sub frame by tightening the mounting bolts (A).

[2.0 MPI only]



SHDSS6519D

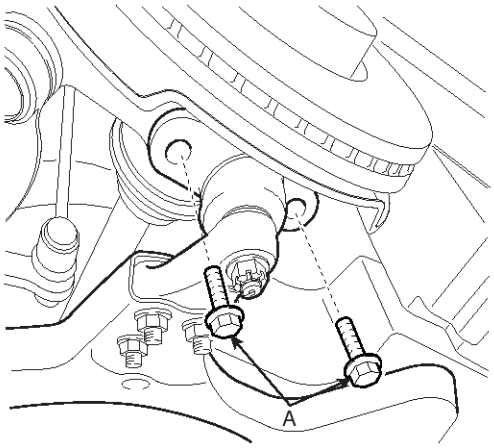
8. Install the muffler rubber hanger (A).



SHDST6020D

9. Connect the lower arm with the knuckle by tightening the mounting bolts (A).

Tightening torque Nm (kgf.m, lb-ft):
100 ~ 120 (10.0 ~ 12.0, 72 ~ 87)



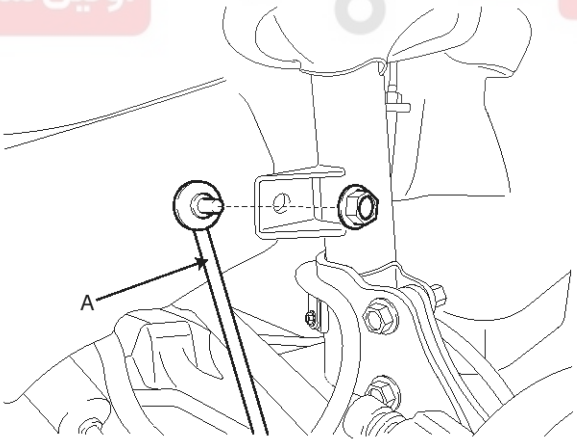
SUNST6510D

10. Connect the tie rod end with the knuckle and then install the castle nut and split pin.

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

11. Connect the stabilizer link (A) with the front strut assembly and then tighten the nut.

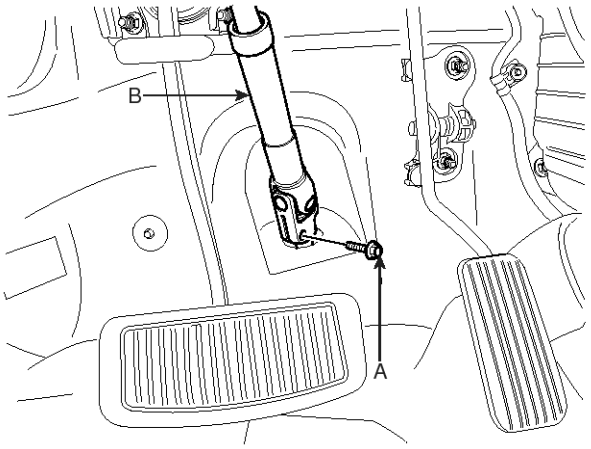
Tightening torque Nm (kgf.m, lb-ft):
100 ~ 120 (10.0 ~ 12.0, 72 ~ 87)



SUNST6020D

12. Connect the universal joint assembly (B) with the pinion of the steering gear box and then tighten the bolt (A).

Tightening torque Nm (kgf.m, lb-ft):
30 ~ 35 (3.0 ~ 3.5, 22 ~ 25)



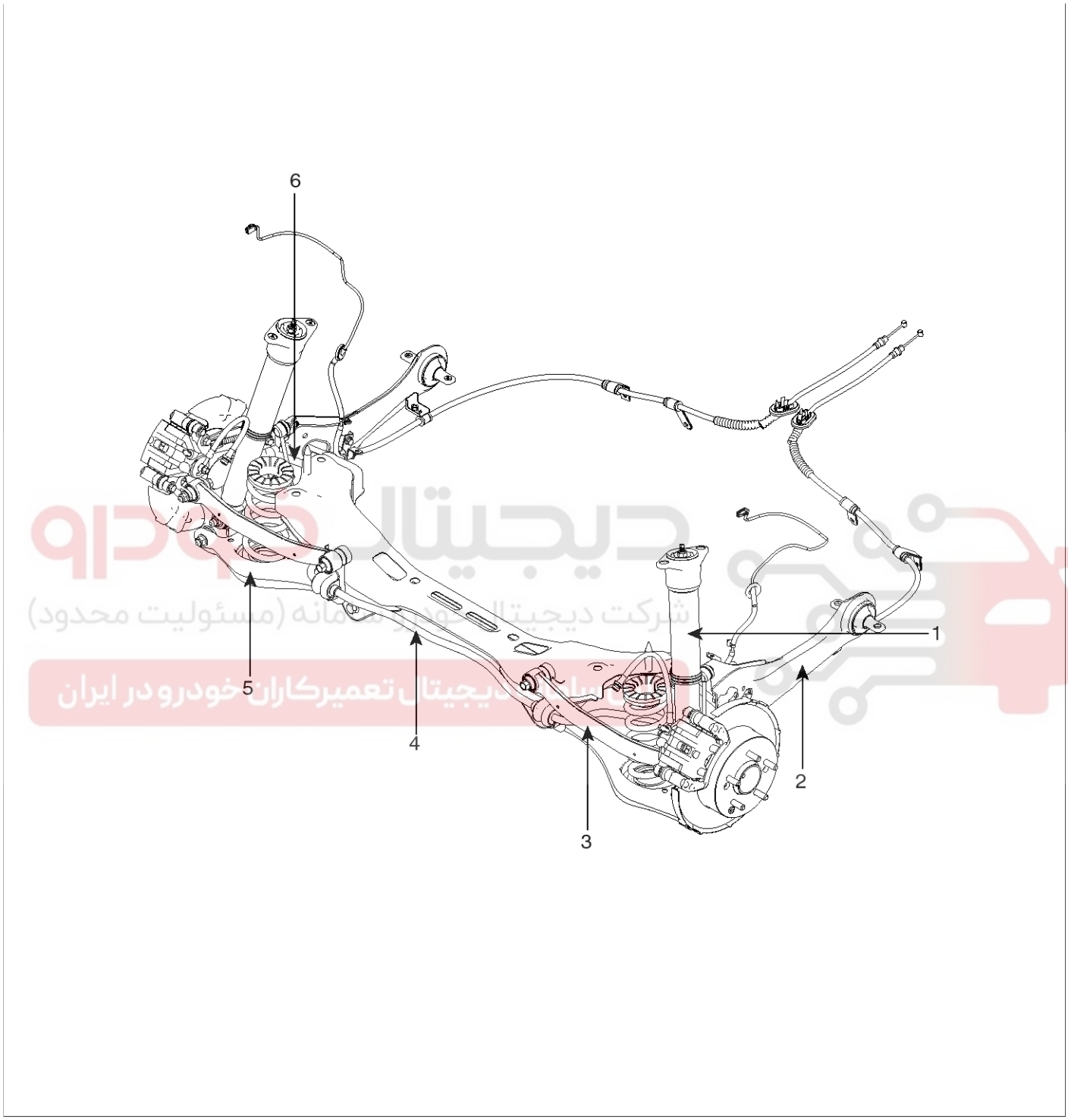
SHDST6011D

13. Install the front wheel & tire.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

Rear Suspension System

COMPONENTS

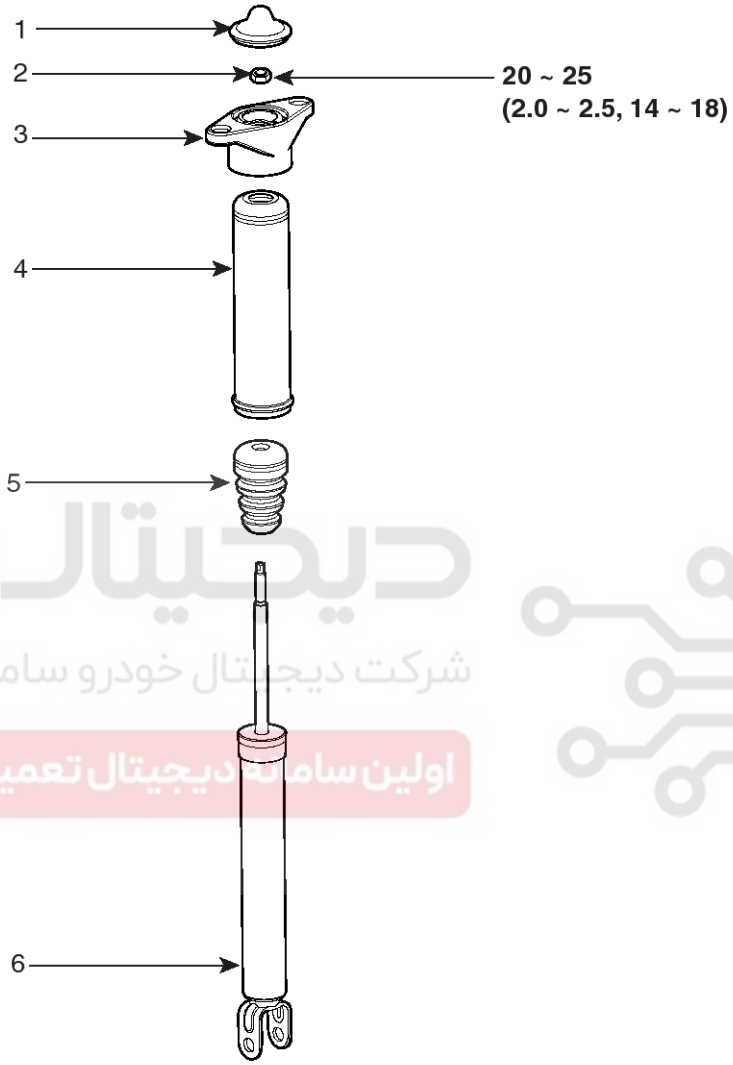


1. Rear shock absorber
2. Rear trailing arm
3. Rear upper arm
4. Rear stabilizer bar
5. Rear lower arm
6. Rear assist arm

SEDSS7509L

Rear Shock Absorber

COMPONENTS



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

1. Insulator cover
2. Self locking nut
3. Bracket assembly
4. Dust cover
5. Bumper rubber
6. Shock absorber

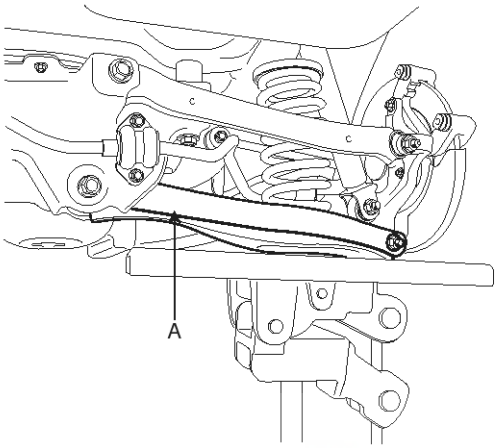
SEDSS7511L

REMOVAL

1. Remove the rear wheel & tire.

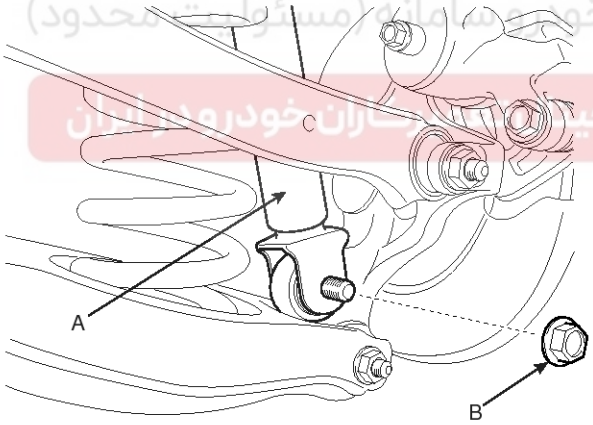
   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the rear wheel & tire.

2. Support the lower portion of the rear lower arm (A) with the jack.



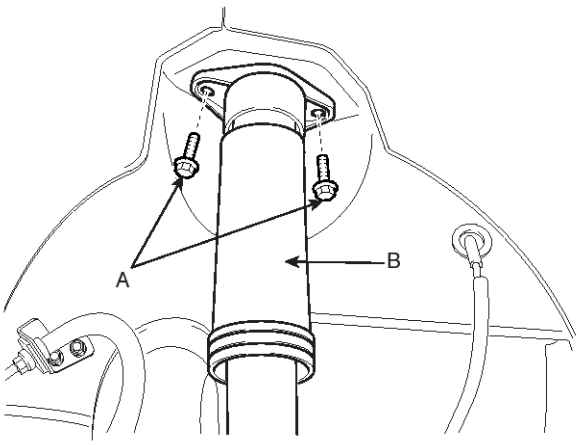
SUNSS6533D

3. Remove the bolt & nut (B) holding the rear shock absorber (A) to the carrier assembly.



SUNSS6537D

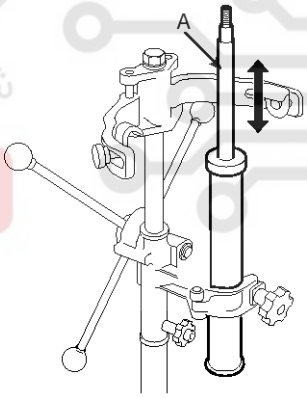
4. Remove the rear shock absorber (B) from the wheel housing by loosening the mounting bolts (A).



SEDSS7510L

INSPECTION

1. Check the rubber parts for wear and deterioration.
2. Compress and extend the piston rod (A) and check that there is no abnormal resistance or unusual sound during operation.

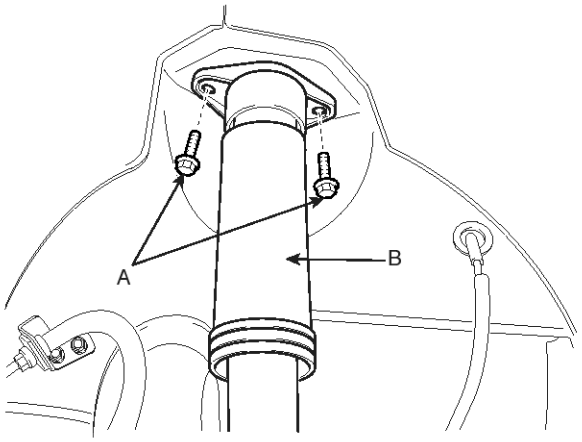


KHRE112A

INSTALLATION

1. Install the rear shock absorber (B) to the wheel housing penal by tightening the bracket mounting bolts (A).

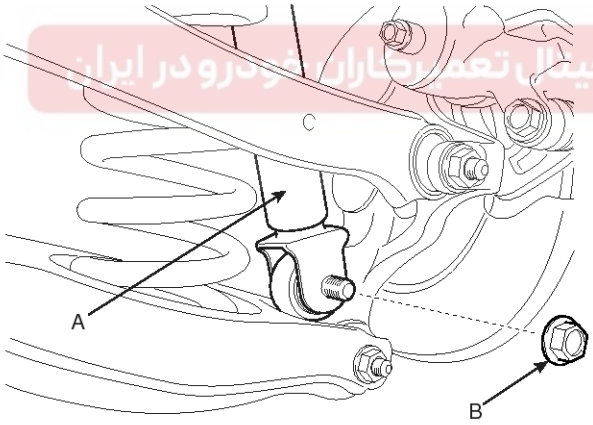
Tightening torque Nm (kgf.m, lb-ft):
50 ~ 65 (5.0 ~ 6.5, 36 ~ 47)



SEDSS7510L

2. Connect the rear shock absorber (A) with the carrier assembly and then tighten the bolt & nut (B).

Tightening torque Nm (kgf.m, lb-ft):
140 ~ 160 (14.0 ~ 16.0, 101 ~ 116)



SUNSS6020D

3. Install the rear wheel & tire.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

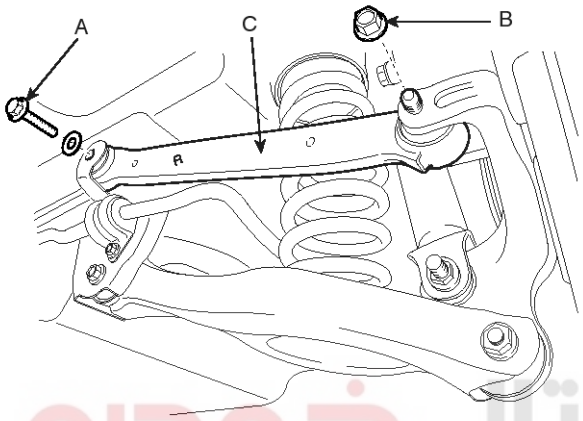
Rear Upper Arm

REMOVAL

1. Remove the rear wheel & tire.

   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the rear wheel & tire.

2. Remove the rear upper arm (C) by loosening the mounting bolts & nut (A, B).



SHDSS6510D

INSPECTION

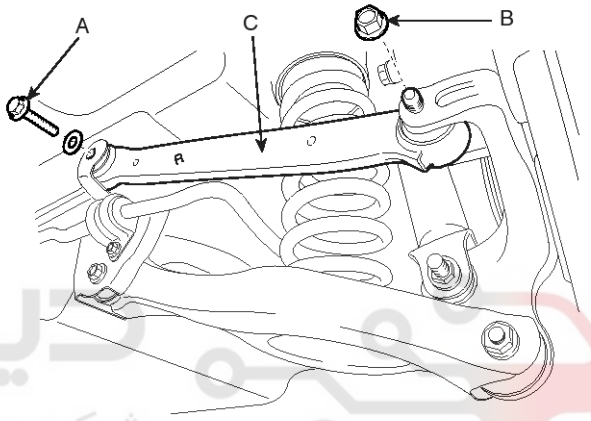
1. Check the bushing for wear and deterioration.
2. Check the rear upper arm or damage and deformation.
3. Check for all bolts and nut.

INSTALLATION

1. Install the rear upper arm (C) between the rear cross member and the carrier assembly and then tighten the mounting bolts and nut (A, B).

Tightening torque Nm (kgf.m, lb-ft)
Bolt (A): 100 ~ 120 (10.0 ~ 12.0, 72 ~ 87)
Bolt & Nut (B): 100 ~ 120 (10.0 ~ 12.0, 72 ~ 87)

⚠CAUTION
Install the rear upper arm so that the letter "R" can face the rear of vehicle.



SHDSS6510D

2. Install the rear wheel & tire.

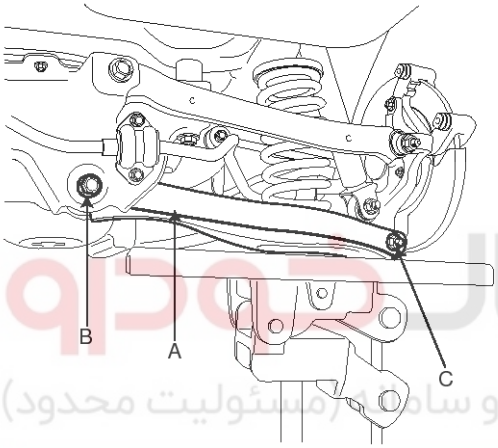
Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

Rear Lower Arm

REMOVAL

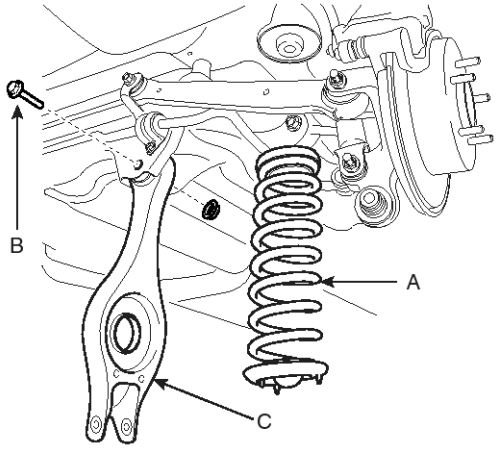
1. Remove the rear wheel & tire.

   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the rear wheel & tire.
2. Support the lower portion of the rear lower arm (A) with a jack.
3. Temporarily loosen the bolt (B) holding the cross member to the rear lower arm. Do not remove it.
4. Remove the bolt & nut (C) holding the rear lower arm to the carrier assembly.



SUNSS6516D

5. Lower the jack and then remove the coil spring (A) and the spring pad.
6. Remove the rear lower arm (C) from the cross member by removing the bolt (B) completely.



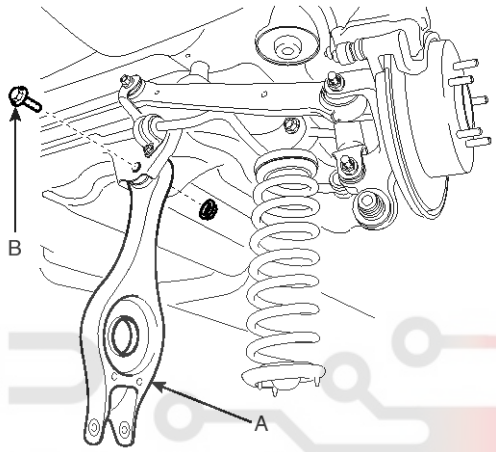
SHDSS6515D

INSPECTION

1. Check the bushing for wear and deterioration.
2. Check the rear lower arm for deformation.
3. Check the coil spring and spring pad for deterioration and deformation.
4. Check for all bolts and nut.

INSTALLATION

1. Connect the rear lower arm (A) with the cross member and then temporarily tighten the bolt (B).

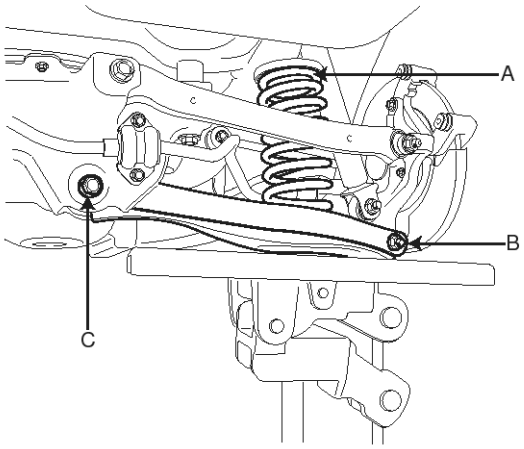


SHDSS6516D

2. Install the coil spring (A) and support the lower portion of the rear lower arm with a jack.
3. Adjust height of the jack to place the bolt (B) holding rear lower arm and carrier assembly through the mating holes.

4. Tighten the bolt and nut (B, C) to the specified torque.

Tightening torque Nm (kgf.m, lb-ft):
140 ~ 160 (14.0 ~ 16.0, 101 ~ 116)



SUNSS6518D

5. Install the rear wheel & tire.

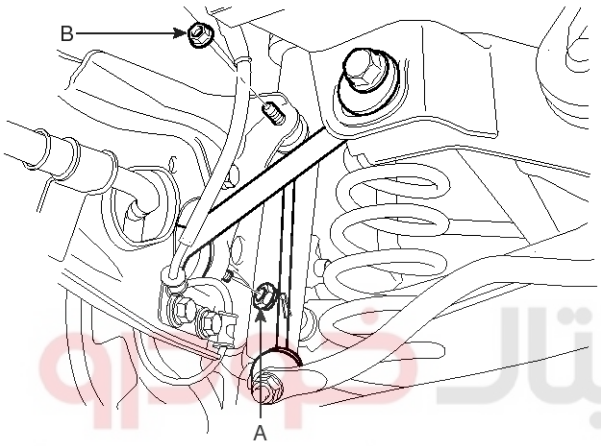
Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

Rear Assist Arm

REMOVAL

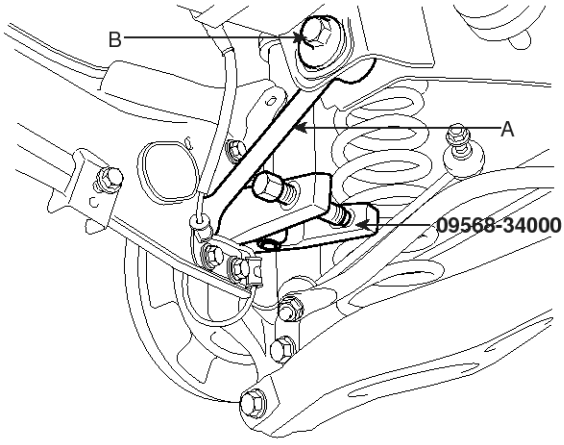
1. Remove the rear wheel & tire.

   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the rear wheel & tire.
2. Remove the split pin and castle nut (A) from the rear assist arm.
3. Disconnect the rear stabilizer link with the trailing arm by loosening the nut (B).



SHDSS6513L

4. Disconnect the ball joint of the rear assist arm (A) with the carrier assembly with the SST (09568-34000).
5. Loosen the nut and then remove the cam bolt (B) rear assist arm (A) from the cross member.



SHDSS6005D

INSPECTION

1. Check the bushing for wear and deterioration.
2. Check the rear assist arm for deformation.
3. Check the ball joint for damage.
4. Check for the all bolts, nut, and washer.

INSTALLATION

1. Install the rear assist arm (A) and the cam bolt (B) to cross member and then tighten the nut.

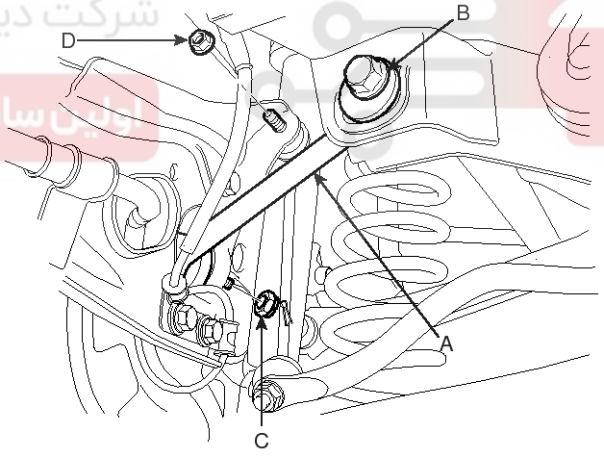
Tightening torque Nm (kgf.m, lb-ft):
100 ~ 120 (10.0 ~ 12.0, 72 ~ 87)

2. Connect the ball joint of the rear assist arm (A) with the carrier assembly.
3. Install the castle nut (C) and split pin to the ball joint of the rear assist arm.

Tightening torque Nm (kgf.m, lb-ft):
45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)

4. Connect the rear stabilizer link with the trailing arm and then tighten the nut (D).

Tightening torque Nm (kgf.m, lb-ft):
45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)



SHDSS6004D

5. Install the rear wheel & tire.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

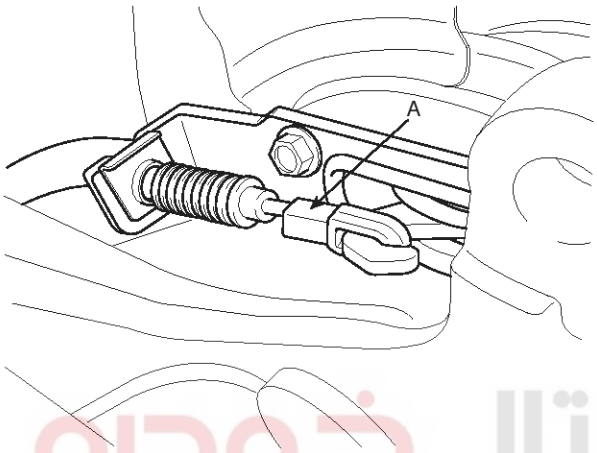
Trailing Arm

REMOVAL

1. Remove the rear wheel & tire.

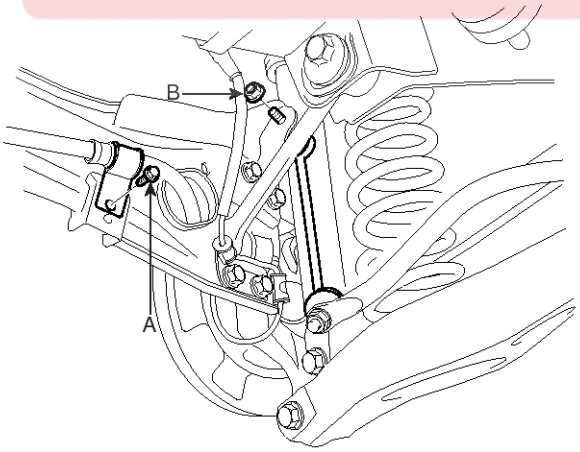
   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the rear wheel & tire.

2. Disconnect the parking brake cable (A) with the rear brake assembly.



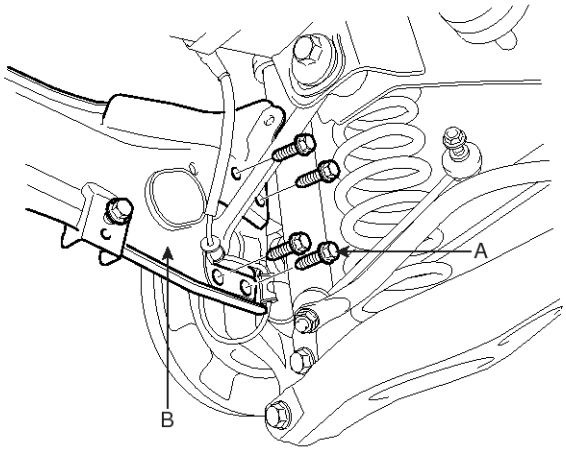
SUNSS6540D

3. Remove the parking brake cable bracket from the trailing arm by loosening the mounting bolt (A).
4. Disconnect the rear stabilizer link with the trailing arm by loosening the nut (B).



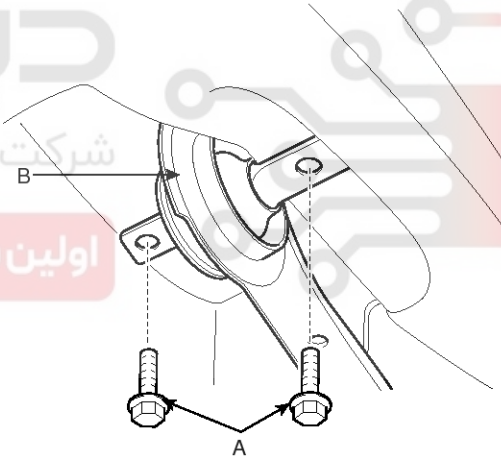
SHDSS6006D

5. Disconnect the trailing arm (B) with the carrier assembly by loosening mounting bolts (A).



SHDSS6007D

6. Remove the rear trailing arm (B) by loosening the mounting bolts (A).



SHDSS6500D

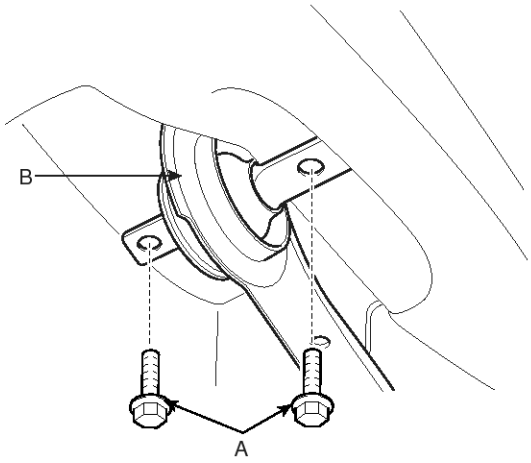
INSPECTION

1. Check the bushing for wear and deterioration.
2. Check the rear trailing arm for deformation.
3. Check for all bolts and nuts.

INSTLLATION

1. Install the rear trailing arm (B) to the body by tightening the mounting bolts (A).

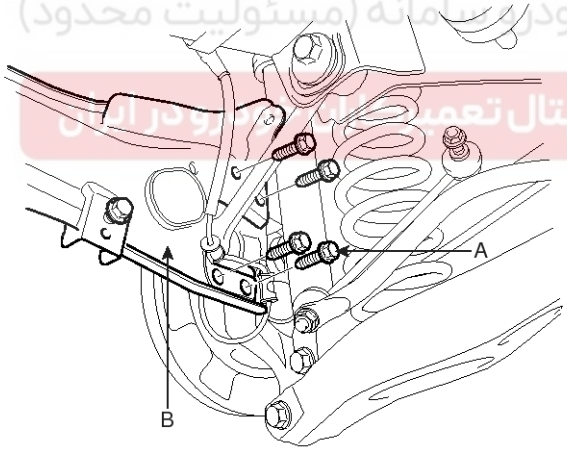
Tightening torque Nm (kgf.m, lb-ft):
140 ~ 160 (14.0 ~ 16.0, 101 ~ 116)



SHDSS6500D

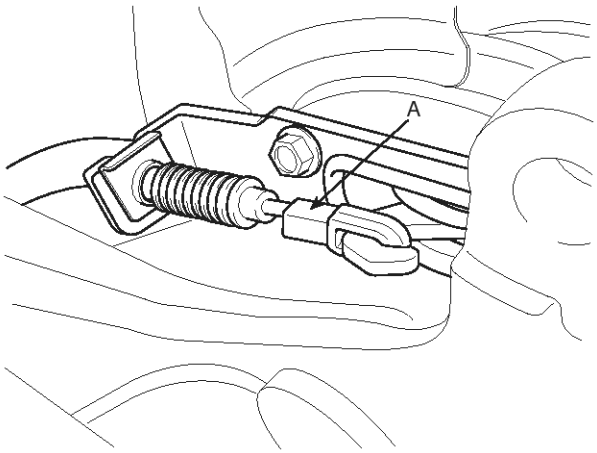
2. Connect the trailing arm (B) with the carrier assembly by tightening the bolts (A).

Tightening torque Nm (kgf.m, lb-ft):
35 ~ 55 (3.5 ~ 5.5, 25 ~ 40)



SHDSS6007D

3. Connect the parking brake cable (A) with the rear brake assembly.

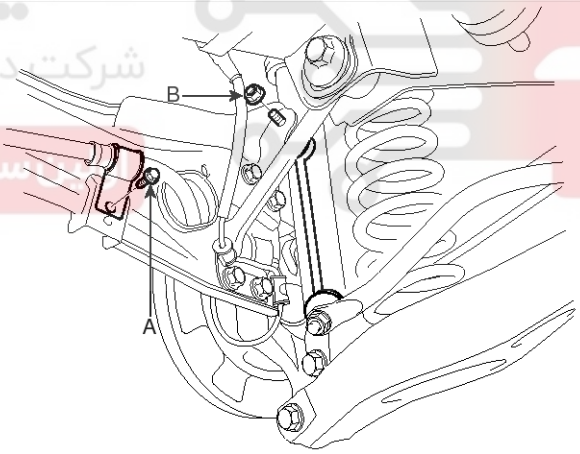


SUNSS6540D

4. Connect the rear stabilizer link with the trailing arm and then tightening the nut (B).

Tightening torque Nm (kgf.m, lb-ft):
45 ~ 55 (4.5 ~ 5.5, 30 ~ 40)

5. Install the parking brake cable bracket to the trailing arm by mounting bolt (A).



SHDSS6006D

6. Install the rear wheel & tire.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

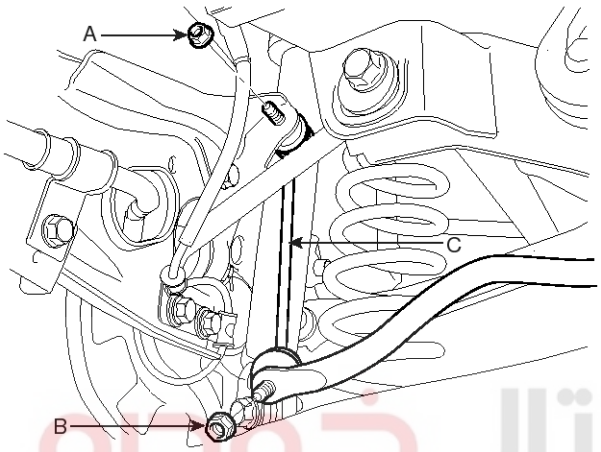
Rear Stabilizer Bar

REMOVAL

1. Remove the rear wheel & tire.

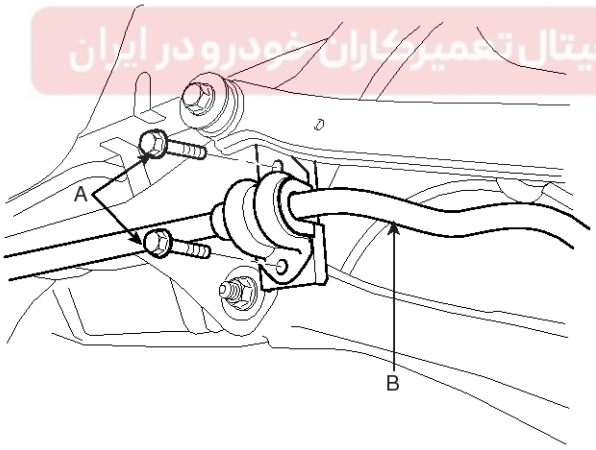
   ⚠CAUTION
   Be careful not to damage to the hub bolts when removing the rear wheel & tire.

2. Remove the stabilizer link (C) by loosening the nuts (A, B).



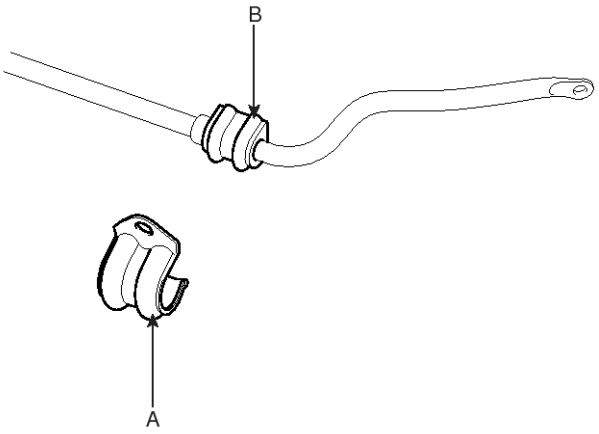
SHDSS6008D

3. Remove the rear stabilizer bar (B) from the cross member by loosening the bracket mounting bolts (A).



SHDSS6009D

4. Remove the mounting bracket (A) and bushing (B) from the rear stabilizer bar.



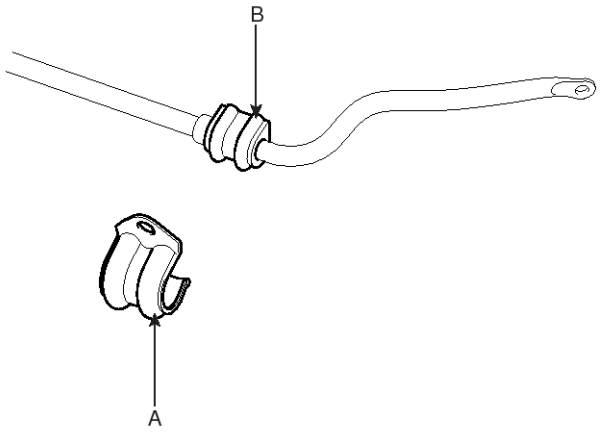
SHDSS6010D

INSPECTION

1. Check the rear stabilizer bar for deformation.
2. Check the rear stabilizer link ball joint for damage.

INSTALLATION

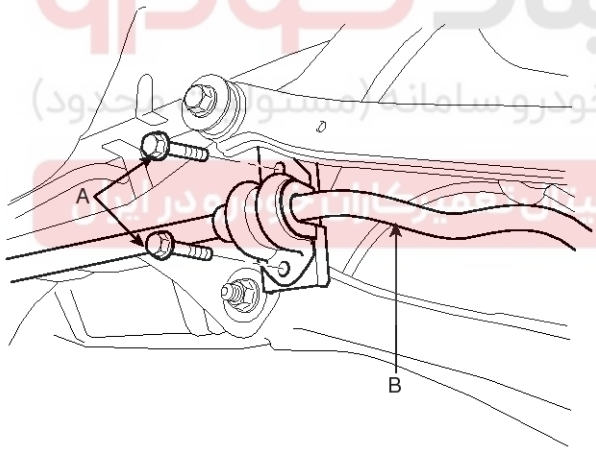
1. Install the mounting bracket (A) and bushing (B) to the rear stabilizer bar.



SHDSS6010D

2. Install the rear stabilizer bar (B) to the cross member by tightening the bracket mounting bolts (A).

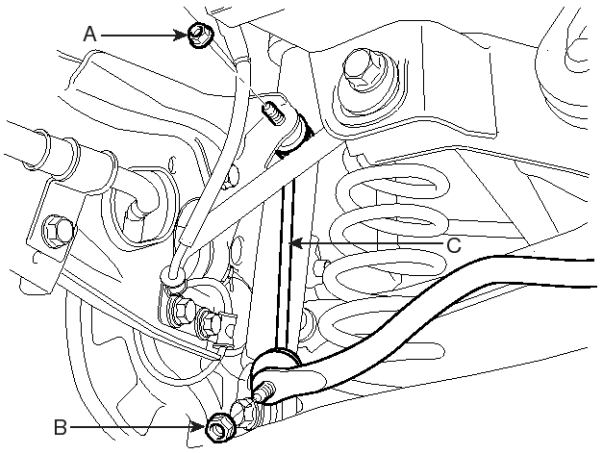
Tightening torque Nm (kgf.m, lb-ft):
45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)



SHDSS6009D

3. Connect the rear stabilizer link (C) between the rear stabilizer bar and the trailing arm and then tighten the nut (A, B).

Tightening torque Nm (kgf.m, lb-ft):
45 ~ 55 (4.5 ~ 5.5, 33 ~ 40)



SHDSS6008D

4. Install the rear wheel & tire.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)

Tires/Wheels

Alignment

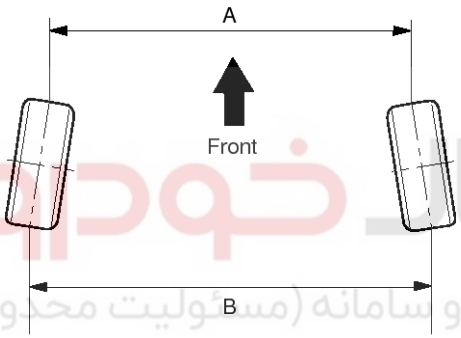
FRONT WHEEL ALIGNMENT

⚠CAUTION

When using a commercially available computerized wheel alignment equipment to inspect the front wheel alignment, always position the vehicle on a level surface with the front wheels facing straight ahead.

Prior to inspection, make sure that the front suspension and steering system are in normal operating condition and that the tires are inflated to the specified pressure.

Toe



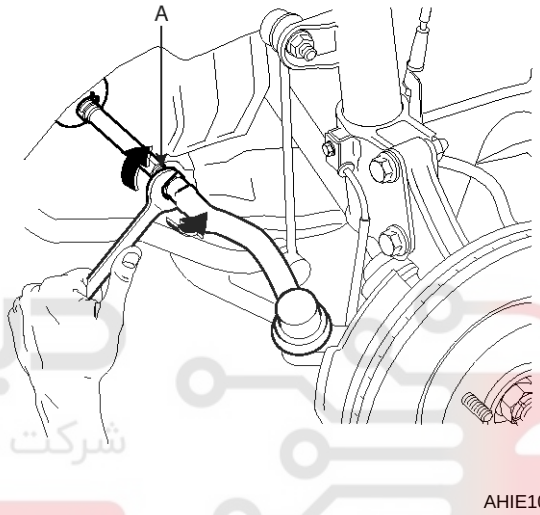
SHDSS6512L

B - A > 0: Toe in (+)
B - A < 0: Toe out (-)

Toe adjustment

1. Loosen the tie rod end lock nut.
2. Remove the bellows clip to prevent the bellows from being twisted.
3. Adjust the toe by screwing or unscrewing the tie rod. Toe adjustment should be made by turning the right and left tie rods by the same amount.

Toe: 0˚±0.2˚(0± 0.079)



AHIE107B

4. When completing the toe adjustment, install the bellows clip and tighten the tie rod end lock nut to specified torque.

Tightening torque Nm (kgf.m, lb-ft):
50 ~ 55 (5.0 ~ 5.5, 36 ~ 40)

Camber and Caster

Camber and Caster are pre-set at the factory, so they do not need to be adjusted. If the camber and caster are not within the standard value, replace or repair the damaged parts and then inspect again.

Camber angle: -0.6˚±0.5˚

Caster angle : 4.43˚±0.5˚

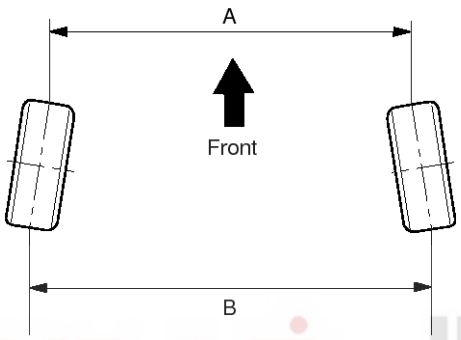
REAR WHEEL ALIGNMENT

⚠CAUTION

When using a commercially available computerized wheel alignment equipment to inspect the rear wheel alignment, always position the vehicle on a level surface.

Prior to inspection, make sure that the rear suspension system is in normal operating condition and that the tires are inflated to the specified pressure.

Toe



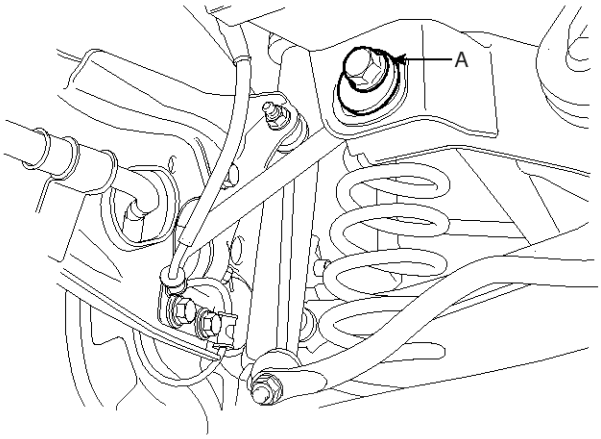
SHDSS6512L

B - A > 0: Toe in (+)
B - A < 0: Toe out (-)

Toe adjustment

1. Loosen the nut holding the assist arm cam bolt (A).
2. Adjust rear toe by turning the rear assist arm cam bolt (A) clockwise or counter clockwise. Toe adjustment should be made by turning the right and left cam bolt by the same amount.

Toe: 0.1˚±0.2˚(0.039 ±0.079)



SHDSS6014D

3. When completing the toe adjustment, tighten the nut to specified torque.

Tightening torque Nm (kgf.m, lb-ft):
100 ~ 120 (10.0 ~ 12.0, 72 ~ 87)

Camber

Camber is pre-set at the factory, so it does not need to be adjusted. If the camber is not within the standard value, replace or repair the damaged parts and then inspect again.

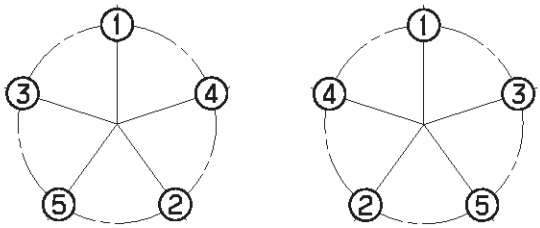
Camber: -1.15˚±0.5˚

Wheel

Hub nut tightening sequence

Tighten the hub nuts as follows.

Tightening torque Nm (kgf.m, lb-ft):
90 ~ 110 (9.0 ~ 11.0, 65 ~ 80)



SUNSS6551D

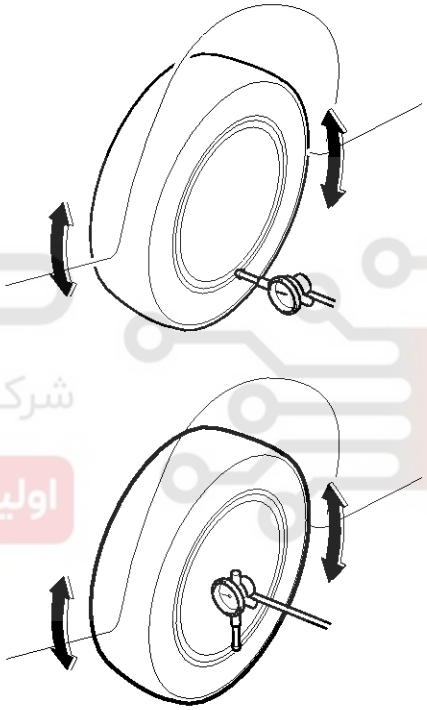
CAUTION
When using an impact gun, final tightening torque should be checked using a torque wrench.

Run out inspection

1. Jack up the vehicle.
2. Measure the wheel Run-out by using a dial indicator as illustration below.

Run-out	Aluminum	Steel
Radial mm(in)	Below 0.3(0.012)	Below 0.6(0.024)
Lateral mm(in)	Below 0.3(0.012)	Below 1.0(0.039)

3. If measured value exceeds the standard value, replace the wheel.



KHRE402A

Tire

TIRE WEAR

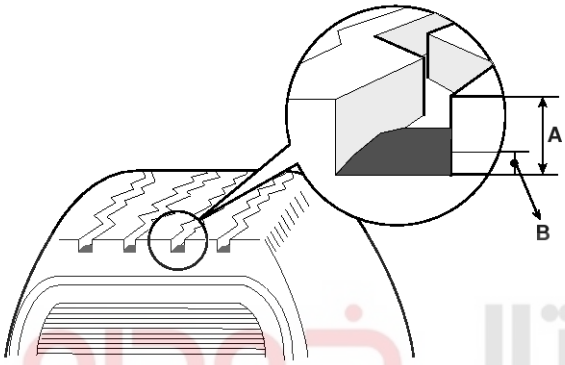
1. Measure the tread depth of the tires.

Tread depth [limit] : 1.6 mm (0.063 in)

2. If the remaining tread depth (A) is less than the limit, replace the tire.

NOTICE

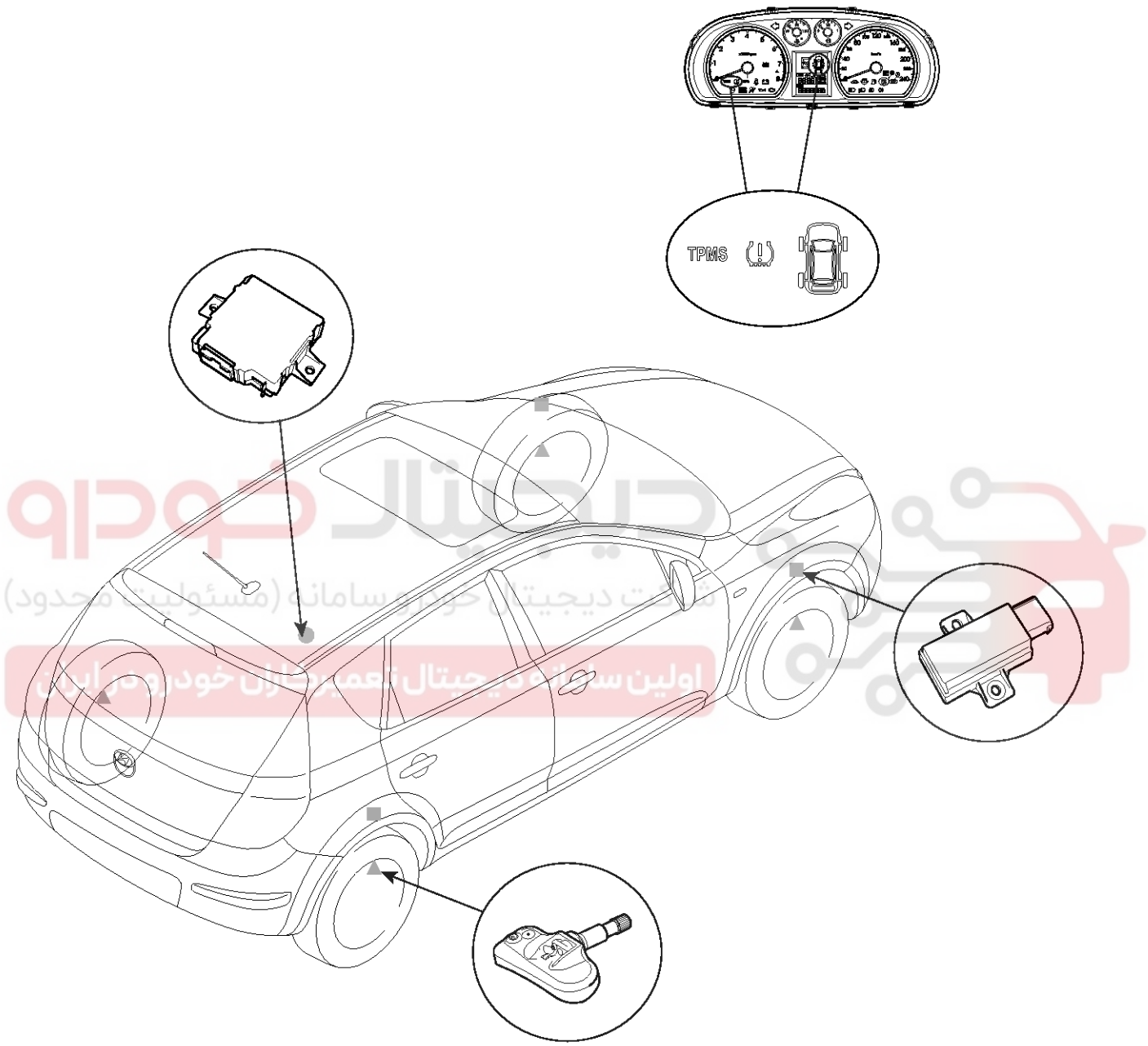
When the tread depth of the tires is less than 1.6 mm(0.063 in), the wear indicators (B) will appear.



KHRE404A

Tire Pressure Monitoring System

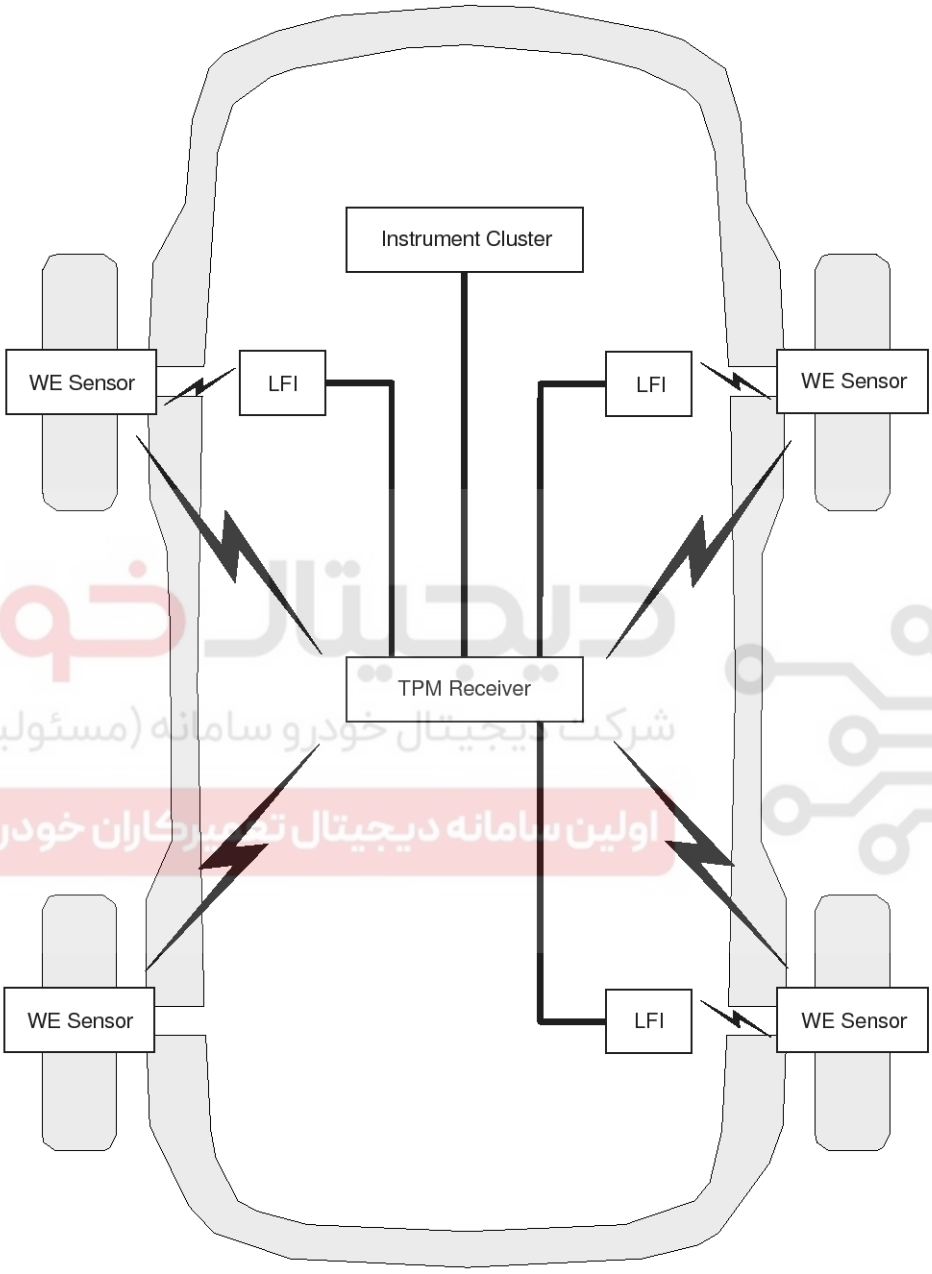
COMPONENTS



▲ : TPM Sensor (4EA)
■ : LFI Low Frequency Initiator (3EA)
● : TPM Receiver

SFDSS8302L

SCHEMATIC DIAGRAM



SFDSS8303L

DESCRIPTION

1. SYSTEM DESCRIPTION

NOTICE

AL: Auto Learning

CAN: Controller Area Network

ECU: Electronic Control Unit

IC: Instrument Cluster

LF: Low Frequency

LFI: Low Frequency Initiator

MIL: Malfunction Indicator LED

RF: Radio Frequency

WE: Wheel Electronic

WU: Wheel Unit

The TPMS monitors the pressure and temperature of a vehicles tire to alert on pressure variations that may impact the driving conditions. Messages deduced from processed data are displayed at the Instrument Cluster (IC) via 2 warning lamps and 4 tire-related LEDs. In parallel, the ECU executes error evaluation on input and output signals. Pressure monitoring during parking is provided.

The ECU processes data from the WE sensor, determines the state of the tires and communicates the required warning message via the CAN line to the driver.

2. FUNCTIONAL DESCRIPTION

WARNING THRESHOLDS

Hard warning

One non temperature compensated hard warning threshold applies to front and rear axle of vehicle. If the pressure reported by the WE sensor is below the tire-specific minimum pressure then the low pressure warning telltale and the telltale indicating position of the under-inflated tire is illuminated immediately. A warning is reset when tire pressure is reported to be at 211kPa (30.6psi).

FAST PRESSURE LOSS

Fast pressure loss function is deactivated during parking and only active while driving. So it is avoided that a warning is set when the driver manually deflates the tire to a level above hard warning threshold.

Upon a rapid pressure decrease the WE emits a delta-p telegram which triggers the fast pressure loss function to start. Including the first dp-telegram the function waits for a 2nd telegram of the same wheel electronic and calculates the pressure loss rate. If the pressure drops by more than 20kPa/min, a "fast pressure loss" warning is generated and displayed with a maximum of 60s delay while driving.

INITIALIZATION

The initialization function determines which WE sensor identifier belongs to the vehicle.

The corresponding set of identifiers is stored in the ECU memory and used to determine if a received RF telegram comes from a wheel unit, which belongs to the vehicle.

Only telegrams containing known (initialized) identifiers are being supervised in the warning algorithm.

The initialization function is implemented in two independent parts: as an auto learning function and as an auto location function.

INITIALIZATION-Auto Learning

AL starts every time, the vehicle was parked long enough to change or permute wheels (19min), and is traveling again at a speed that ensures that the WE sensors are transmitting.

AL is automatically considering all WE identifiers received and extracts, based on statistical evaluation, IDs belonging to the WEs mounted on the vehicle. If new (unknown) IDs are detected, their recurrence will be tracked by AL.

AI compares the acceleration reported by the wheel unit to the vehicle speed to rule out transmissions received from neighboring vehicles traveling with different speeds.

A WE sensor identifier is assigned to the vehicle when 8 RF telegrams have been received while driving above 25km/h.

INITIALIZATION-Auto Location

This function gives very reliable full localization information.

It relies on the physical properties of long wave emissions in the frequency range of 125 kHz. These emissions are inductively sensed in the wheel unit.

The localization consists in a classification of the WU identifiers in the following order:

0. Left Front Wheel
1. Right Front Wheel
2. Right Rear Wheel

After activation of the initiators the system listens for wheel units reporting that their transmission was caused by an LF trigger signal. If such a transmission is received, the respective identifier is assigned to the triggered wheel well.

The position of the WE, which belongs to the wheel well without LF initiator, is deduced by identifying the WE sensor, that never detected LF, but assigned to the vehicle by auto learning.

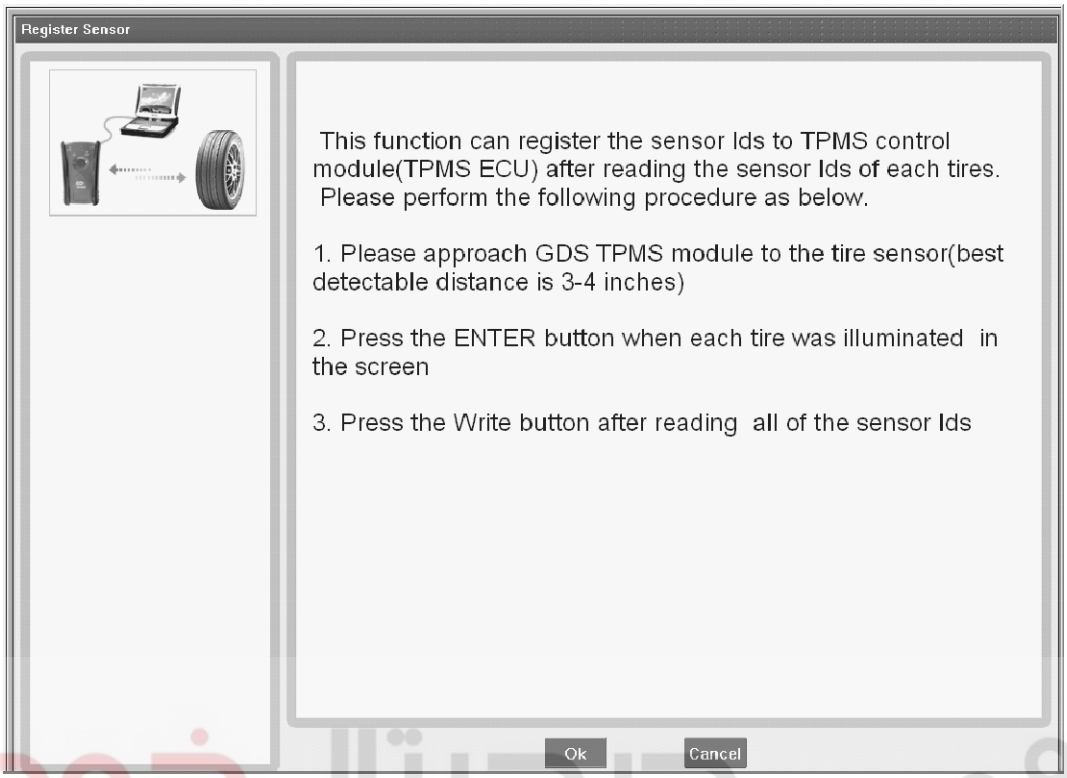
SENSOR REGISTRAION

⚠CAUTION

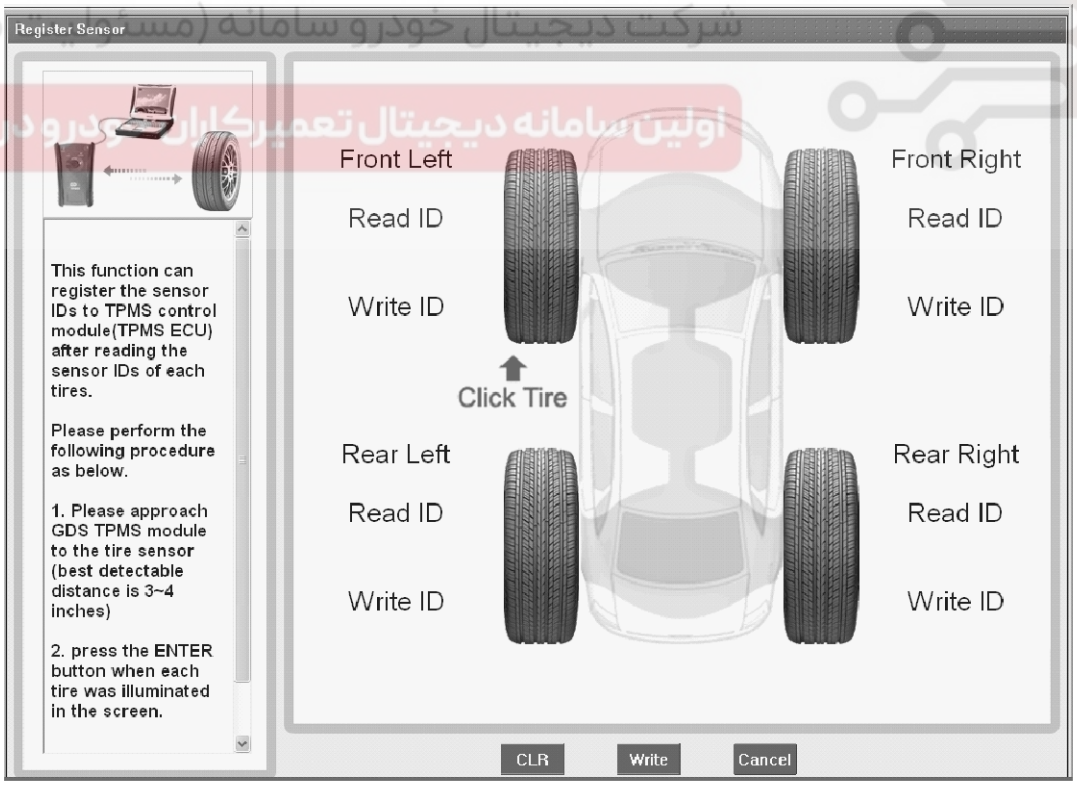
If the sensor registration procedure is not performed by GDS after replacing the TPM sensor or Receiver, TPMS is not operated.

1. Install GDS (Global Diagnostic System) and GDS TPMS module to vehicle.
2. Select the model and perform the sensor registration procedure according to instruction of the GDS as follows.

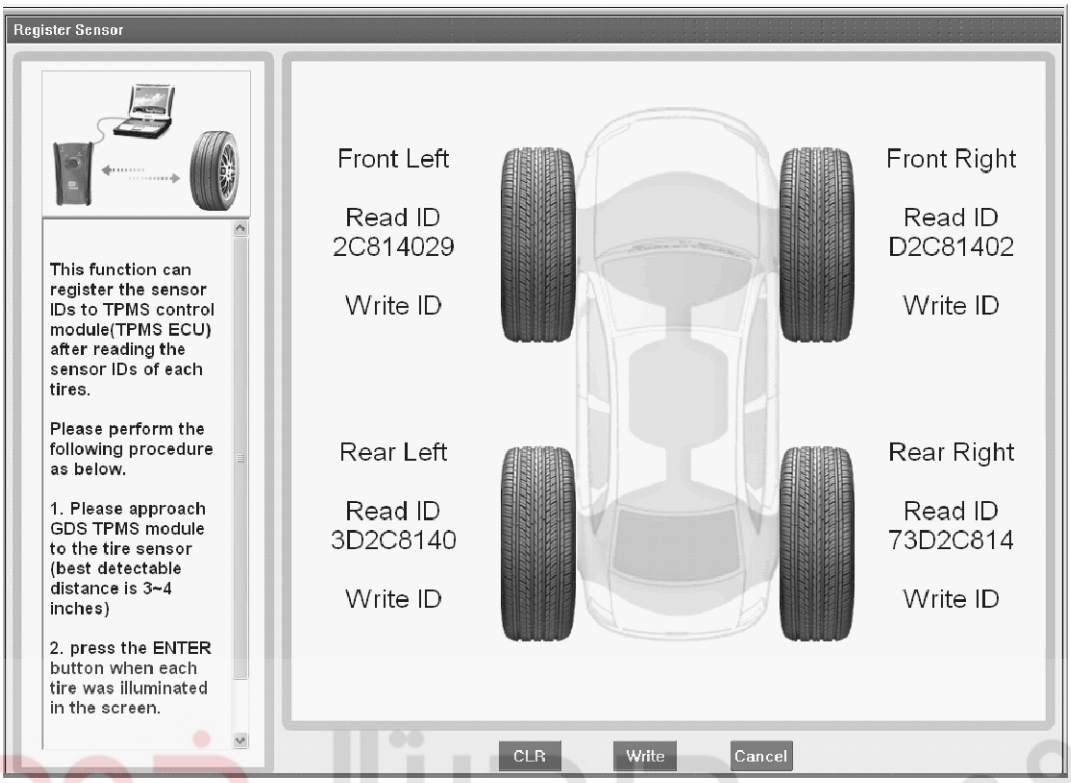
SFDSS8304L



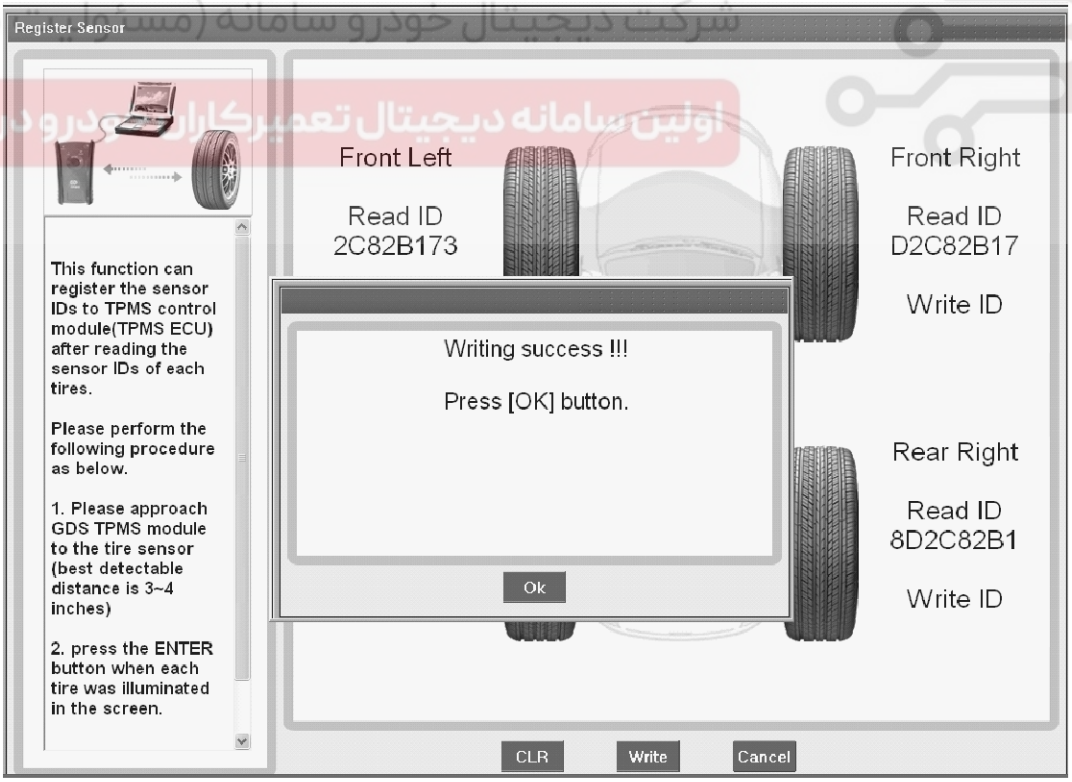
SFDSS8305L



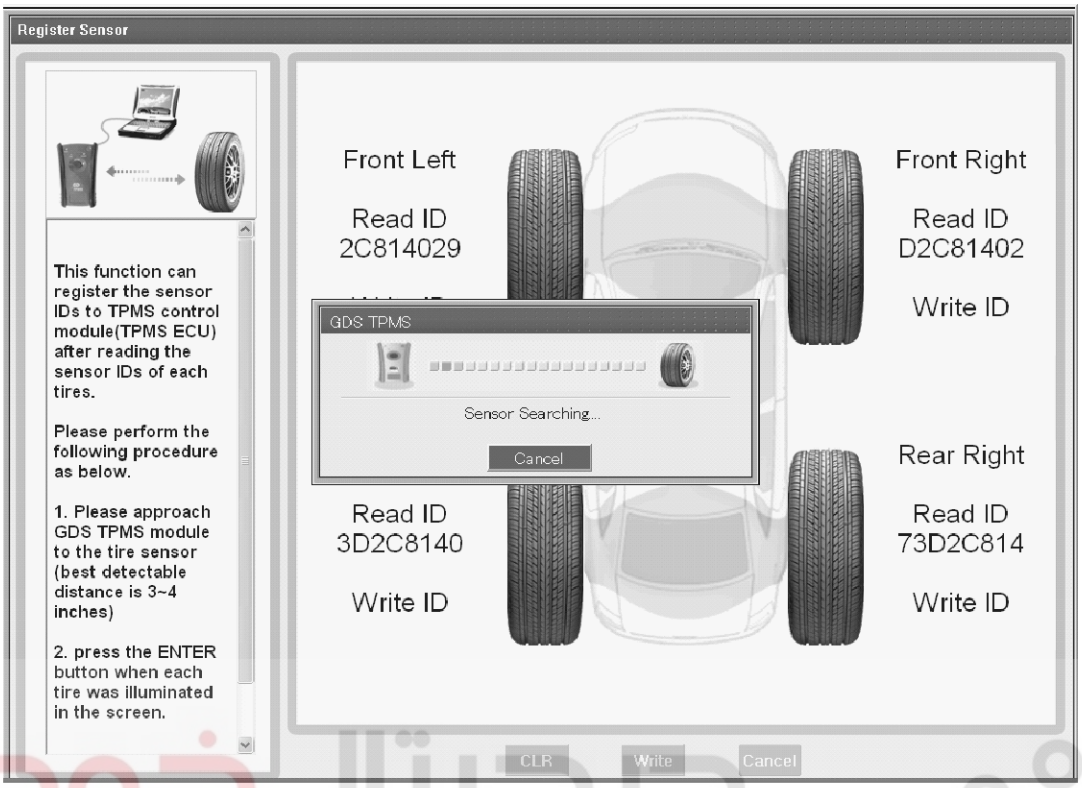
SFDSS8306L



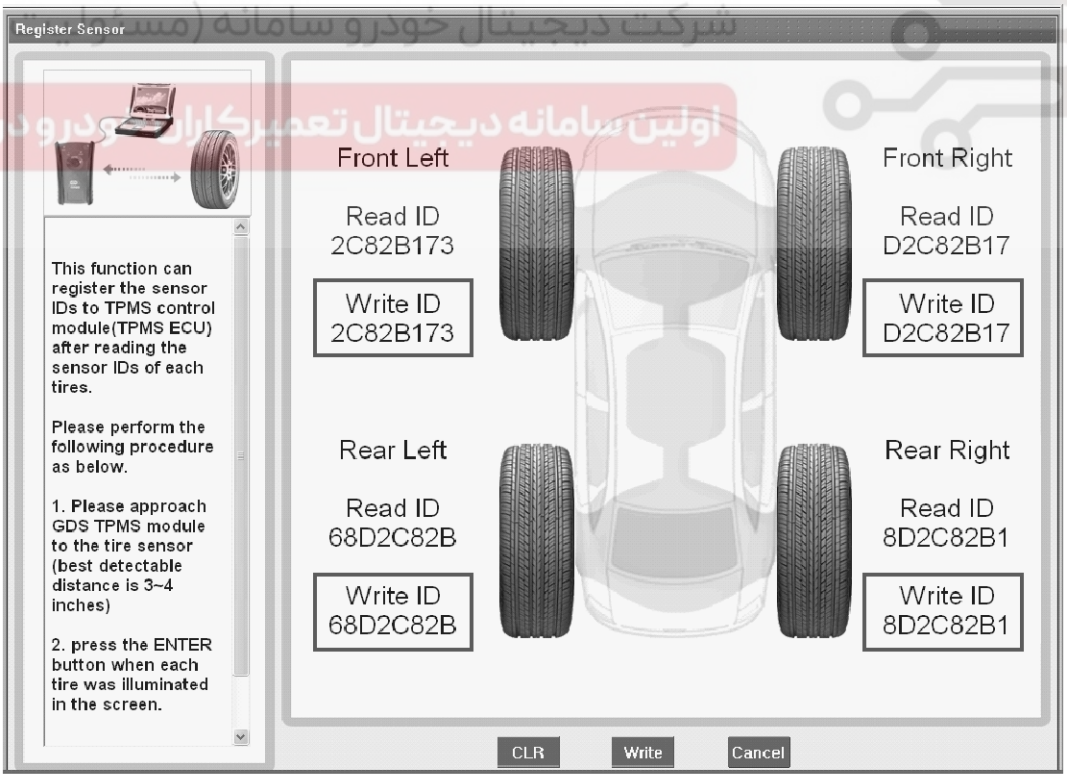
SFDSS8307L



SFDSS8309L



SFDSS8308L



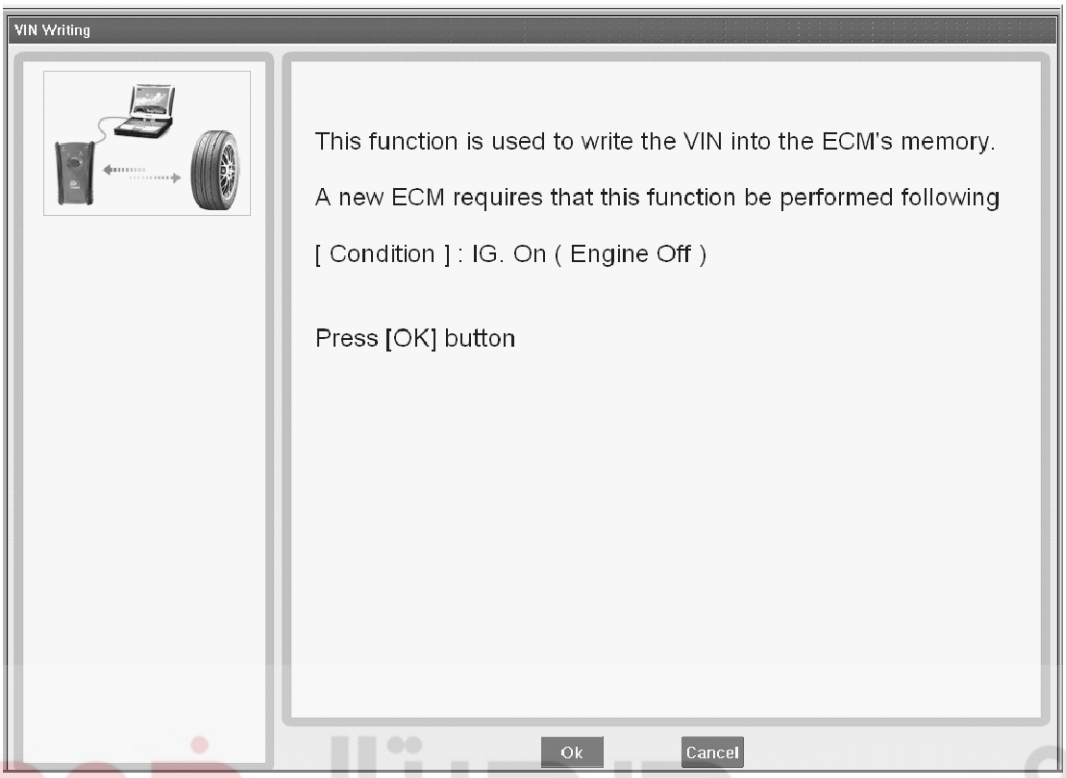
SFDSS8310L

VIN AND VEHICLE NAME WRITING

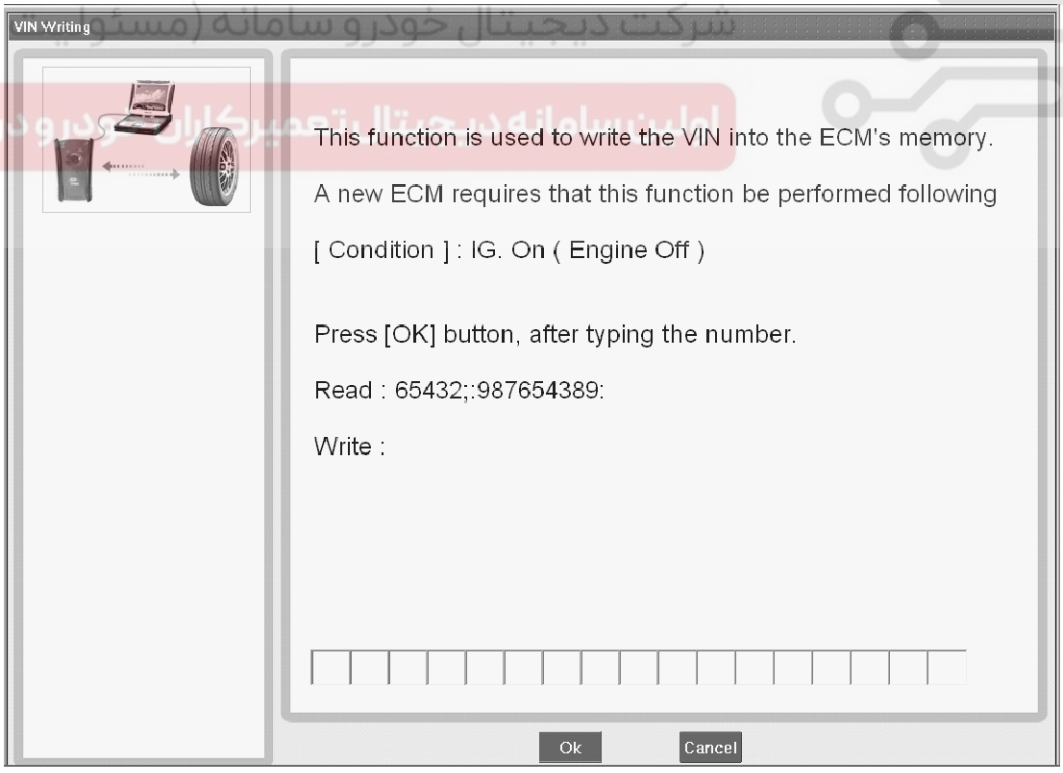
1. Install GDS (Global Diagnostic System) and GDS TPMS module to vehicle.
2. Select the model and perform the VIN and vehicle name writing procedure according to instruction of the GDS as follows.

[VIN Writing]

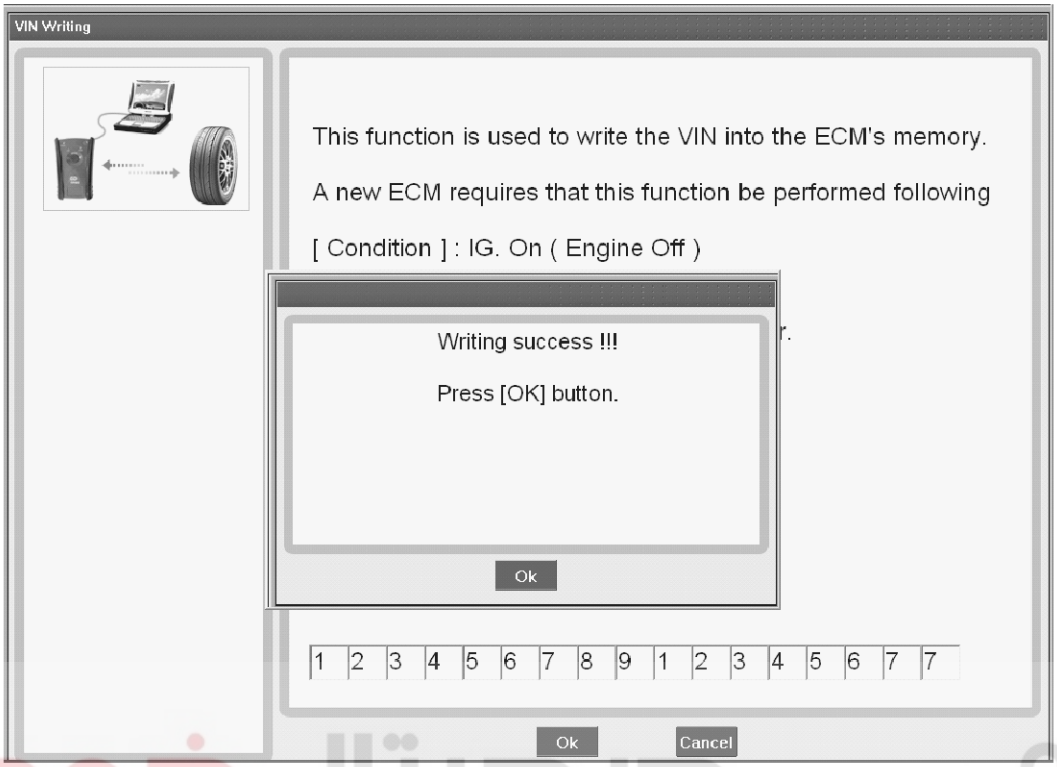
SFDSS8318L



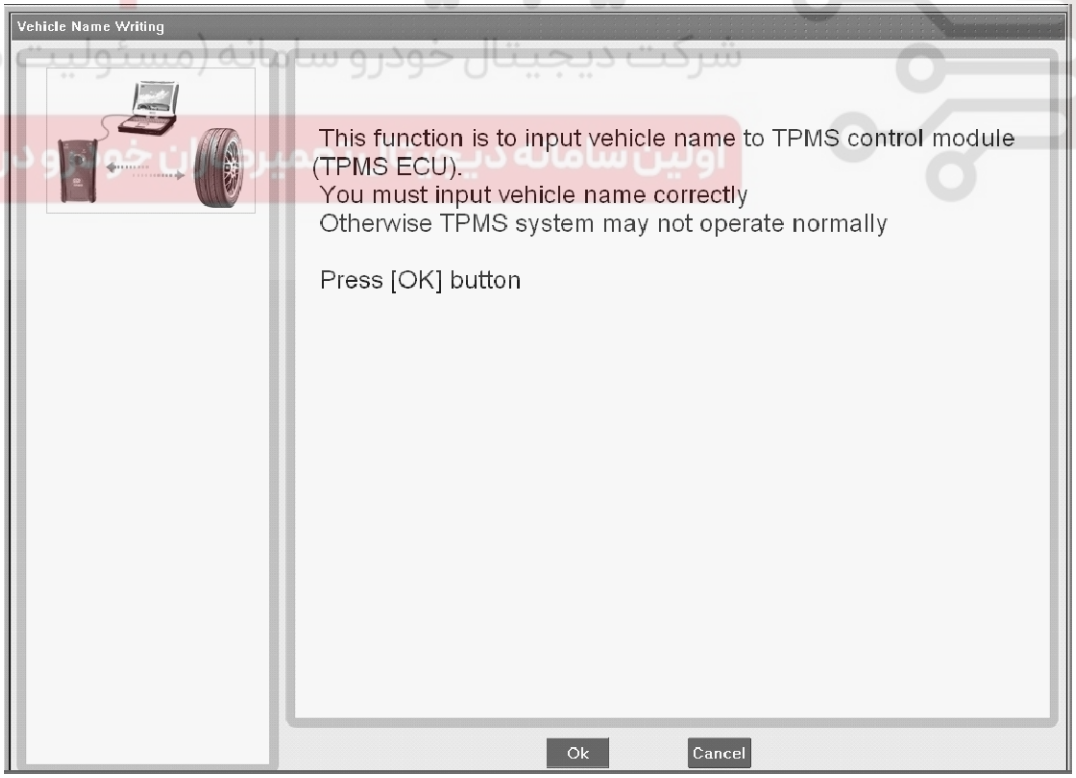
SFDSS8312L



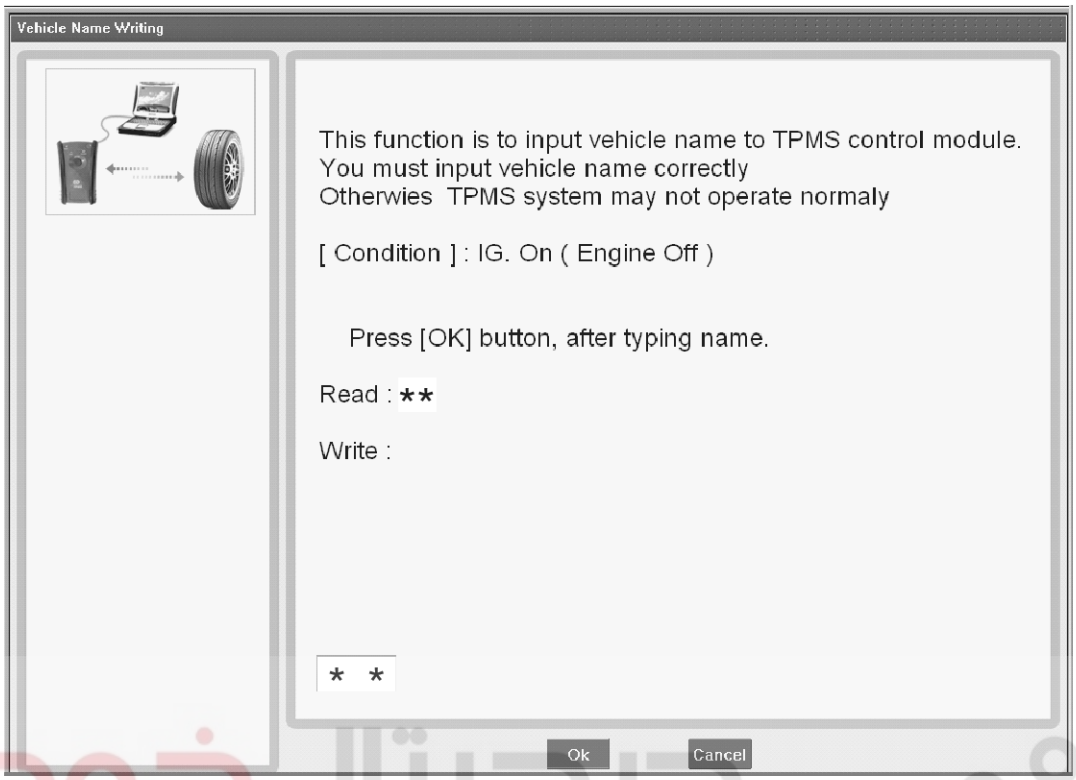
SFDSS8313L



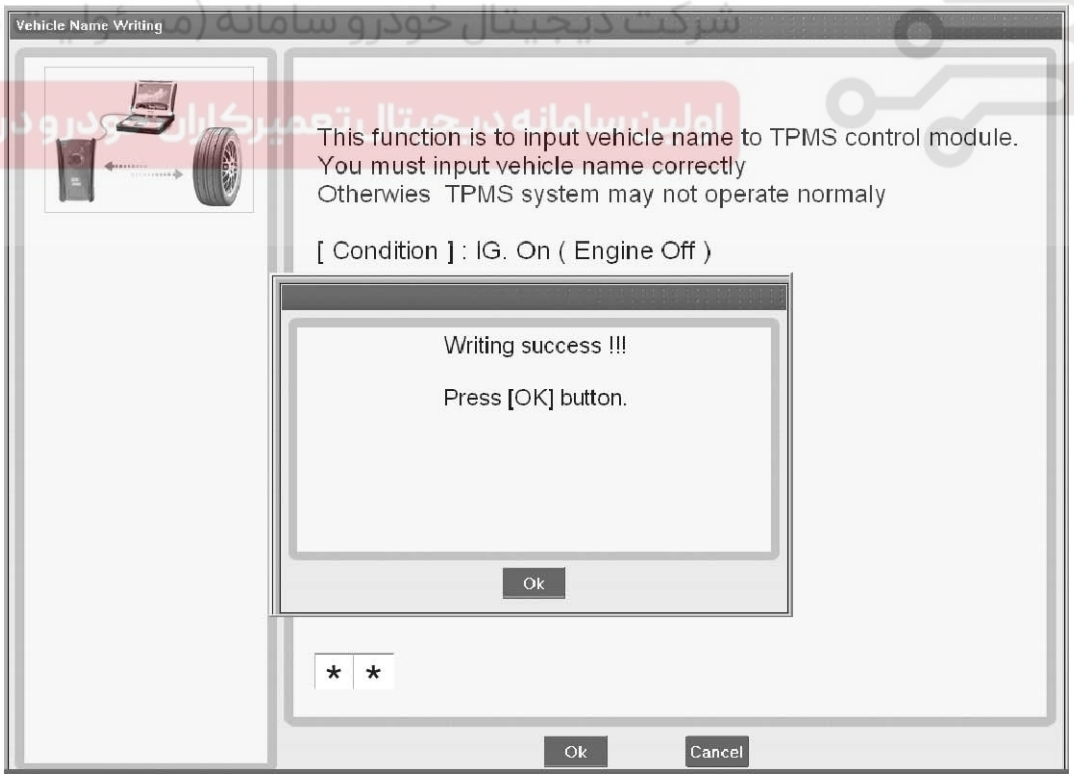
SFDSS8314L



SFDSS8315L



SFDSS8316L



SFDSS8317L

TPMS Sensor

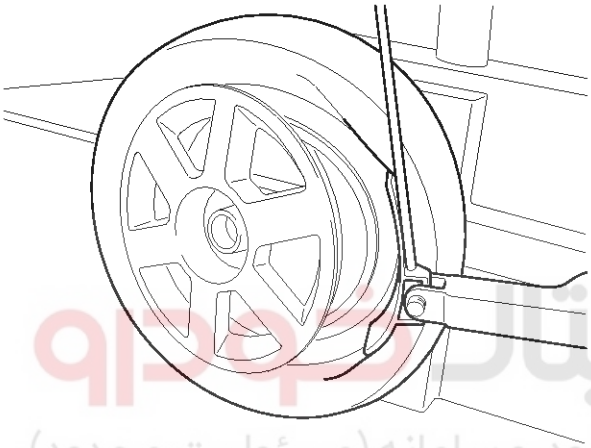
REMOVAL

REMOVING THE TIRE FROM THE RIM

⚠CAUTION

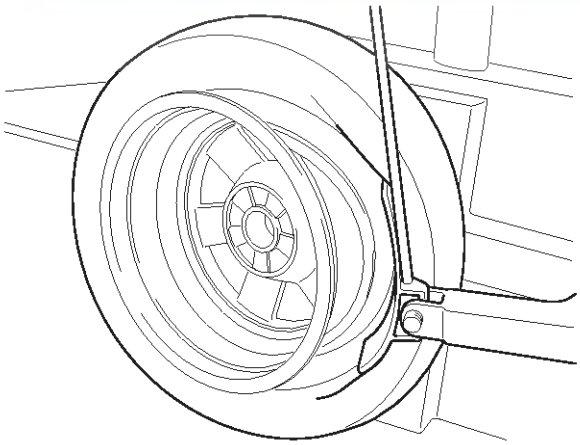
During all the operations on the tire, the sensor must be correctly maintained and thus it is FORBIDDEN to unscrew the nut and to force the sensor into the wheel. This could damage the sensor.

1. Take off the first side of the tire. The tool should not be used near the valve (no less than 30 cm).



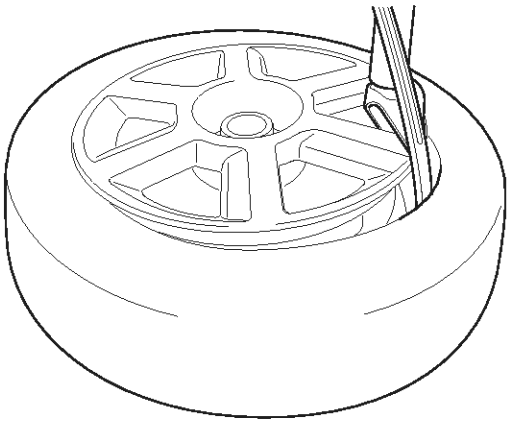
SEDSS7101L

2. Take off the second side of the tire. The tool should not be used near the valve (No less than 30 cm).



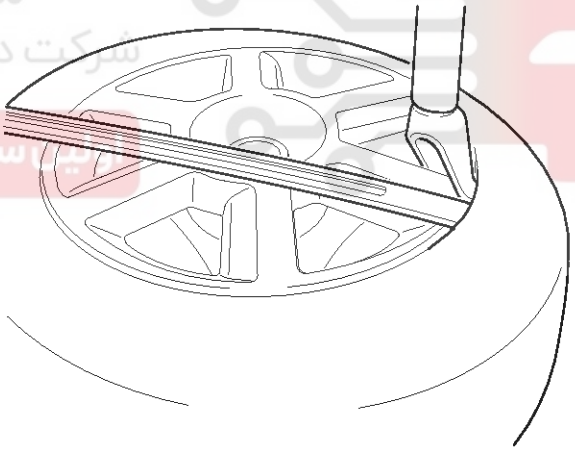
SEDSS7102L

3. Dismount the first side of the tire: Place the shoe of the tool between 5 and 15 cm away from the sensor and use the tire lever as shown in the picture.



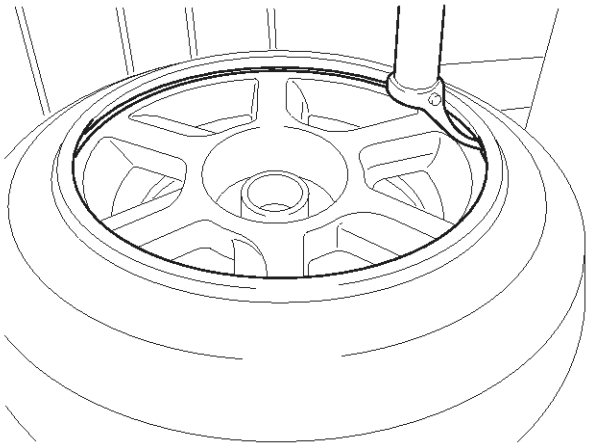
SEDSS7103L

4. By using the tire lever, extract the external side wall of the tire and engage on the shoe of the machine. The lever and the tire must not come into contact with the sensor. Then remove the lever.



SEDSS7104L

5. The wheel rotation allows the complete extraction of the first side of tire.

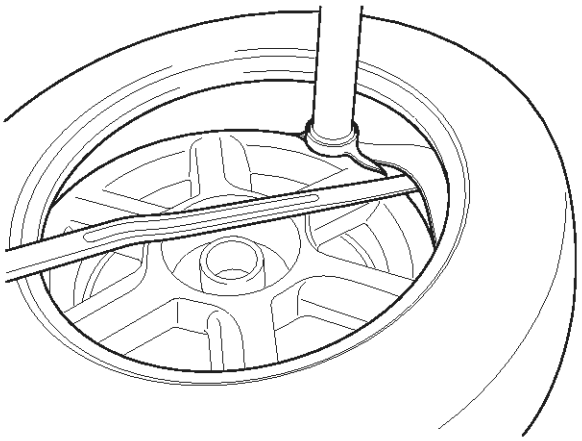


SEDSS7105L

6. Raise the tire to prepare the introduction of the tire lever to aid extraction of the second side wall, the same recommendations as for the first side wall will apply.

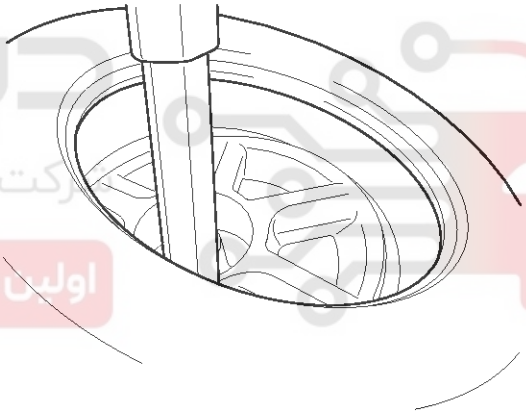
SEDSS7106L

7. By using the tire lever, extract the external side wall of the tire and engage the shoe of the machine. The lever and the tire must not come into contact with the sensor. Then remove the lever.



SEDSS7107L

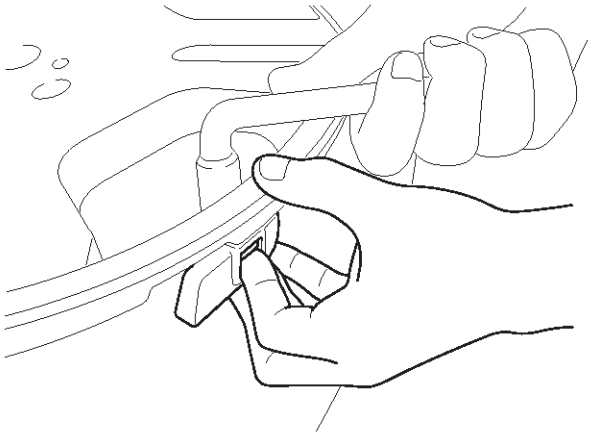
8. Extract entirely the second side wall of the tire.



SEDSS7108L

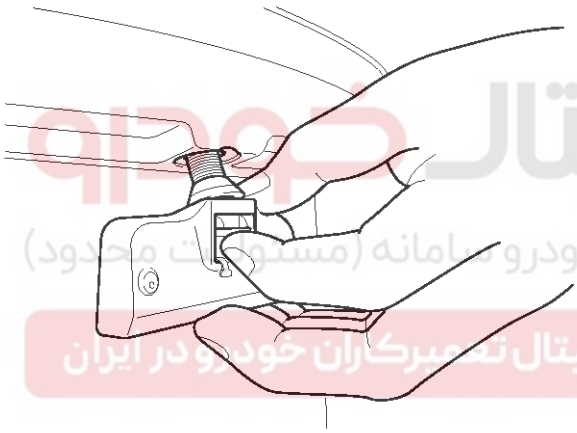
PRESSURE SENSOR REMOVING

1. While supporting the sensor unit, unscrew the nut.



SEDSS7109L

2. Remove the sensor.

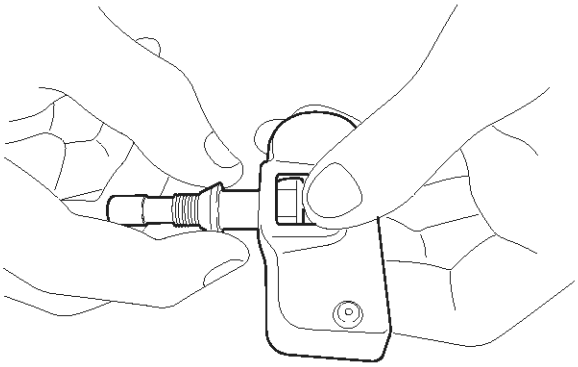


SEDSS7110L

INSTALLATION

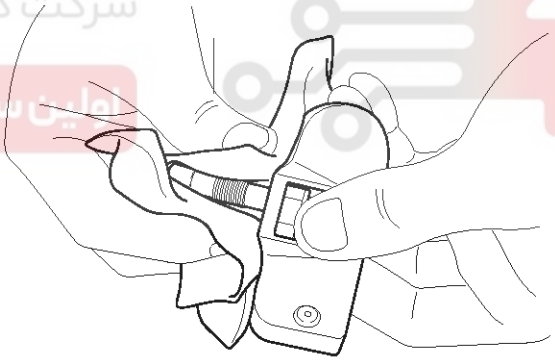
SENSOR REINSTALLATION

1. Hold the sensor and the seal washer, then extract it, this also extracts the seal. Take care to not damage the valve thread.



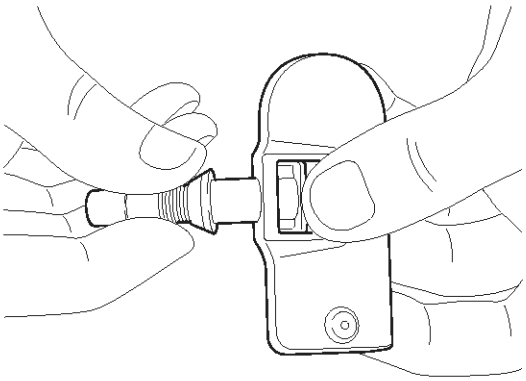
SEDSS7111L

2. Clean the sensor and the valve stem holding the valve using a dry cloth as shown on the picture. Take care to support the rear of the valve with a thumb so that there is no movement of the stem.



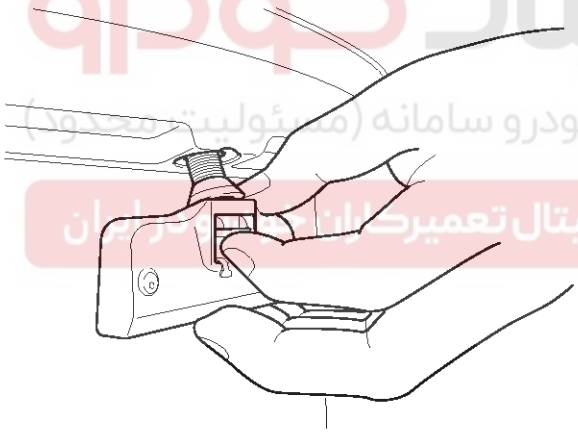
SEDSS7112L

3. When removing the sensor, a new washer and seal must be used. Insert these up to the base of the sensor, making sure to secure the valve base with a thumb, as shown. Wipe the seal and threading.



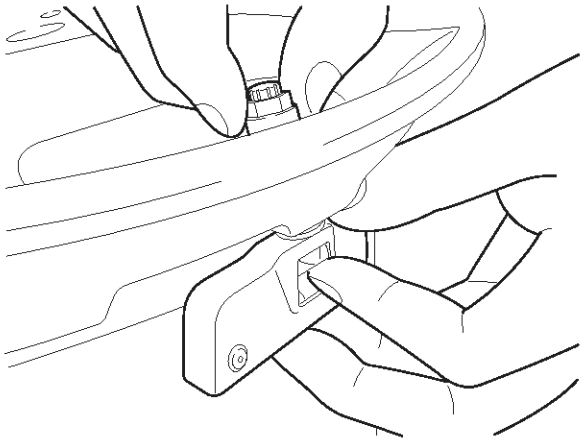
SEDSS7113L

4. Insert the valve, in the valve hole, without modifying the angle of the stem (retain position of delivery). The laser marking should be visible to the operator.



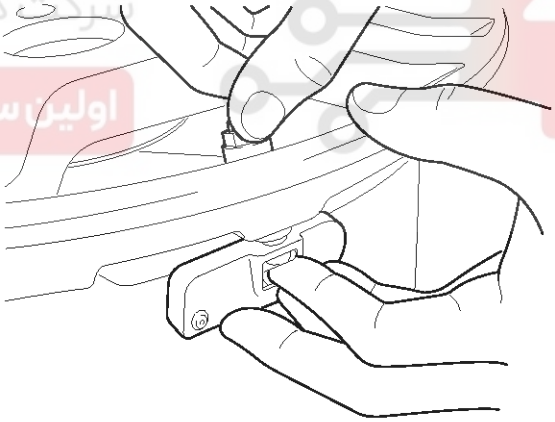
SEDSS7110L

5. When the valve is completely inserted, maintain the sensor in contact with the rim (as shown on the picture), then screw manually the nut until it is in contact with the wheel (without force).



SEDSS7115L

6. While maintaining the sensor contact with the rim by applying pressure to the back of the valve, slightly press on the cap towards the center of the wheel in order to adapt the angle of the valve/sensor to the profile of the rim. It is mandatory to guarantee the contact of the housing unit on the rim drop center.

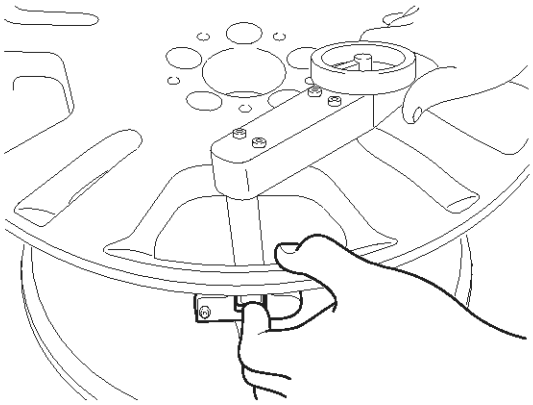


SEDSS7116L

7. While maintaining the sensor unit and valve in position, screw the nut with a torque wrench.

   Apply a torque of 7.5 ~ 8.5Nm (0.76 ~ 0.86kgf.m, 5.5 ~ 6.2lb-ft).

   Take care that the wrench socket is correctly inserted on the nut.



SEDSS7117L

8. Check the followings.
   1) It is normal that the seal washer becomes bent during the nut tightening.
   2) Check that the visible part of the antenna is not damaged or broken.
   3) The plastic bridge should neither be cracked nor broken. It is designed so that it will fracture due to an error in the assembly process (too high torque, bad positioning……). Any defect must mean the rejection of the sensor.

MOUNTING OF TIRE

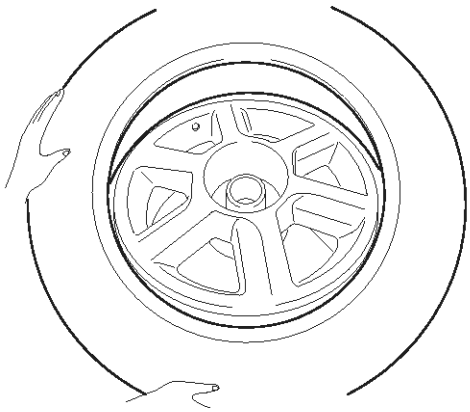
⚠CAUTION

- **Before any tire mounting operation, make sure that the sensor has been correctly mounted and tightened to the rim.**
- **No lubricant product or any other material may partially or completely cover the air pressure inlet hole of the sensor.**
- **The assembly tools have to never have a collision with the sensor.**
- **The tire cannot be in contact with the sensor only after it is engaged in the rim and after the exceeded peak of traction. Therefore, generally at the end of the assembly.**

1. Prepare the tire and fix the rim as usual.

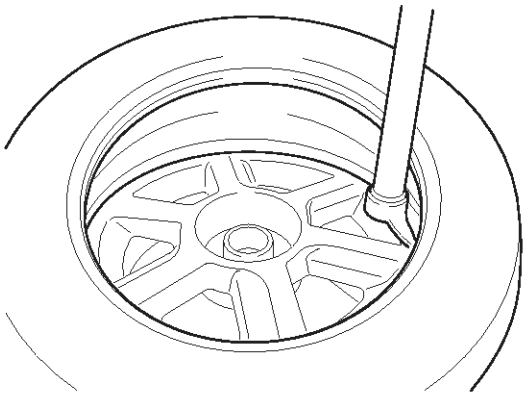
SEDSS7118L

2. Put the tire on the rim, so that the cross point of the belt with the rim is between 15 and 20 cm away from the valve (see the picture).



SEDSS7119L

3. Engage the shoe and make sure that 20cm is maintained between the cross point and the valve. The arrow shows the direction of rotation of the wheel.

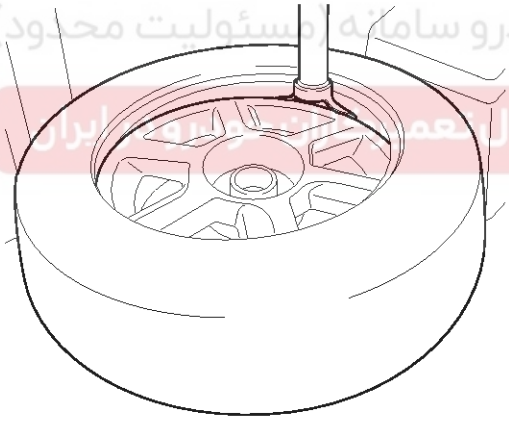


SEDSS7120L

4. Turn the wheel in order to engage all the first side of the tire.

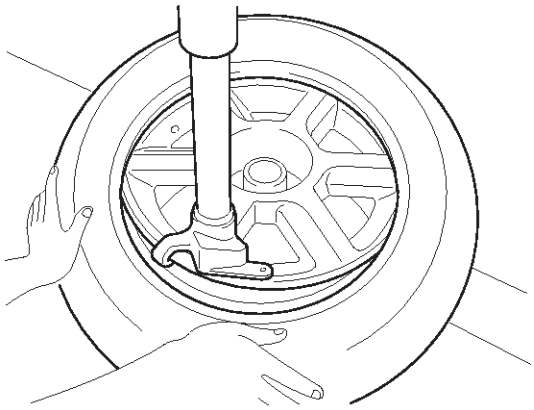
NOTICE

The standard shoes can pass over the sensor without damaging it.



SEDSS7121L

5. Put the second side of the tire in position, so that the cross point of the belt with the rim is approximately 20 cm away from the valve (see the picture). The curved arrow shows the direction of rotation of the wheel.

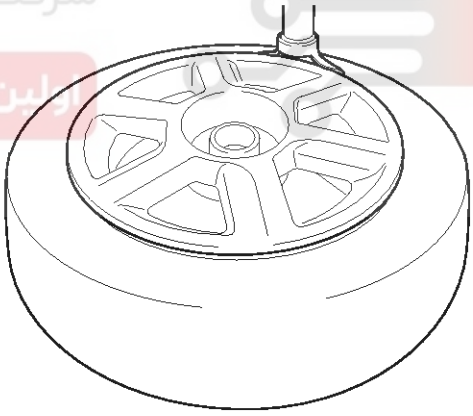


SEDSS7122L

6. Turn the wheel in order to engage all of the second side of the tire.

NOTICE

The standard shoes can pass over the sensor without damaging it.



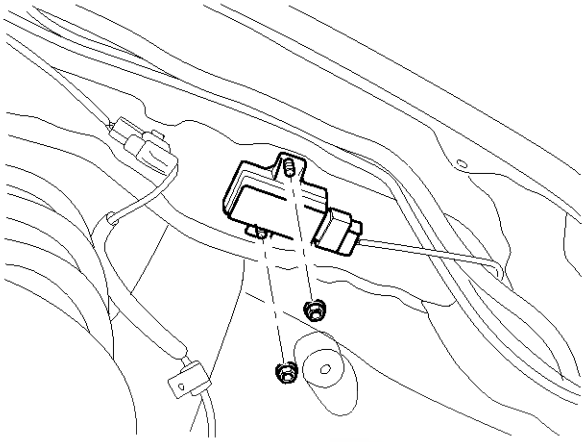
SEDSS7123L

7. Perform the Register Sensor procedure. (Refer to Register Sensor.)

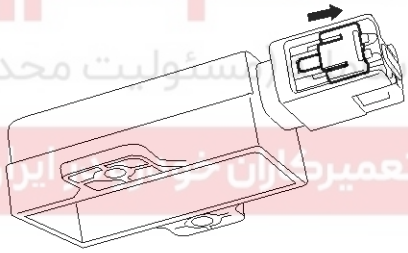
TPMS Initiator

REPLACEMENT

1. Disconnect the battery negative cable from the battery.
2. Remove the wheel and the wheel cover.
3. Remove the malfunctioning part and fit new part.



SFDSS8002L



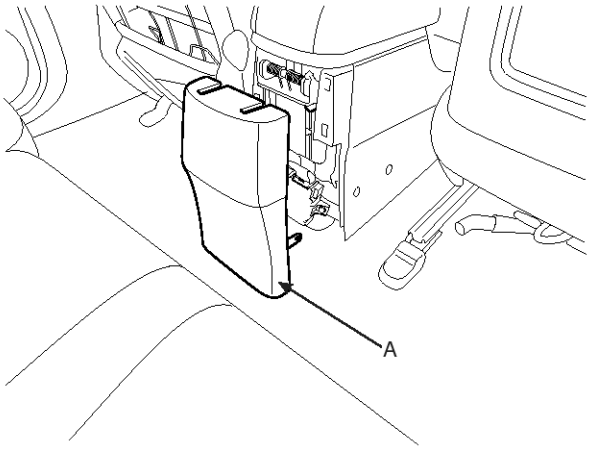
SFDSS8004L

4. Reinstall the wheel and wheel cover.
5. Connect the battery negative cable to the battery.

TPMS Receiver

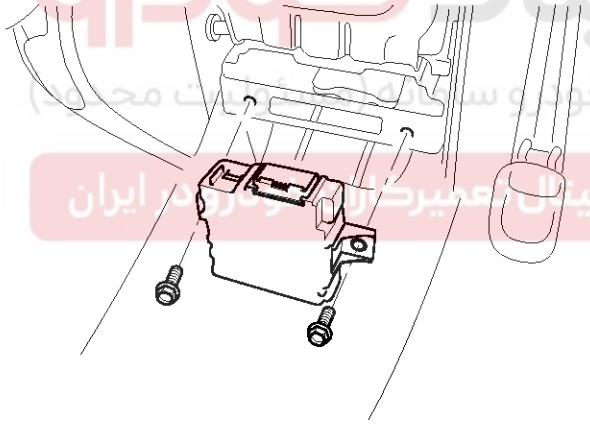
REPLACEMENT

1. Disconnect the battery negative cable from the battery.
2. Remove the floor console rear cover (A).



SFDSS8007L

3. Remove the malfunctioning part and fit new part.



SFDSS8006L

4. Reinstall the floor console rear cover.
5. Connect the battery negative cable to the battery.
6. Perform the VIN and Vehicle name writing procedure. (Refer to VIN and Vehicle name writing.)
7. Perform the sensor registration procedure. (Refer to Sensor registration.)