General Information

Specifications

Front Suspension

Item		Specification
Suspension type		MacPherson Strut
Shock absorber	Type	Gas
		A.S.D
Coil spring	Free Height [I.D. color]	312.0mm (12.28 in.) [Violet - Violet]
		321.6mm (12.66 in.) [Violet - Yellow]

Rear Suspension

Item		Specification
Suspension type		Multi link
Shock absorber	Type	Gas
		A.S.D
Coil spring	Free Height [I.D. color]	306.9mm (12.08 in.) [White - White]
		313.7mm (12.35 in.) [Green - Blue]
		312.3mm (12.29 in.) [Green - Green]
		319.1mm (12.56 in.) [Green - Yellow]

Wheel & Tire

Item		Specification
Wheel		6.5J * 16, 41 (Wheel off set)
		6.5J * 17, 44 (Wheel off set)
		7.5J * 18, 46 (Wheel off set)
Tire		P205/ 65 R16
		P215/ 55 R17
		225/ 45 R18
Tire pressure	P205/ 65R16	2.3+0.07kg/cm2 (33+1.0psi)
	P215/ 55R17	2.3+0.07kg/cm2 (33+1.0psi)
	225/ 45R18	2.5+0.07kg/cm2 (35+1.0psi)
	T125/ 80D16	4.2+0.07kg/cm2 (60+1.0psi)
	T135/ 80D17	4.2+0.07kg/cm2 (60+1.0psi)

Wheel Alignment

Item		Specification	
		Front	Rear
Toe-in	Total	0.16˚±0.2˚	0.17˚±0.2˚
	Individual	0.08˚±0.1˚	0.085˚±0.1˚
Camber angle		-0.5˚±0.5˚	-1.0˚±0.5˚
Caster angle		4.44˚±0.5˚	-
King-pin angle		12.73˚±0.5˚	-

Tightening Torque

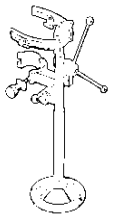
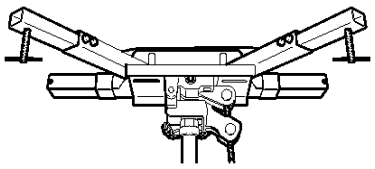
Front Suspension

Item	Tightening torque (kgf.m)		
	Nm	kgf.m	lb-ft
Hub nuts	88.3 ~ 107.9	9.0 ~ 11.0	65.1 ~ 79.6
Strut assembly to knuckle	156.9 ~ 176.5	16.0 ~ 18.0	115.7 ~ 130.2
Strut assembly lock nut	53.9 ~ 68.6	5.5 ~ 7.0	39.8 ~ 50.6
Stabilizer link to strut assembly	98.1 ~ 117.7	10.0 ~12.0	72.3 ~ 86.8
Lower arm to sub frame (Front)	117.7 ~ 137.3	12.0 ~14.0	86.8 ~ 101.3
Lower arm to sub frame (Rear)	137.3 ~ 156.9	14.0 ~16.0	101.3 ~ 115.7
Lower arm to knuckle	98.1 ~ 117.7	10.0 ~12.0	72.3 ~ 86.8
Stabilizer bar to stabilizer link	98.1 ~ 117.7	10.0 ~ 12.0	72.3 ~ 86.8
Stabilizer bracket mounting bolts	44.1 ~ 53.9	4.5 ~ 5.5	32.5 ~ 39.8
Cross member to body	156.9 ~ 176.5	16.0 ~ 18.0	115.7 ~ 130.2
Tie rod end castle nut	34.3 ~ 44.1	3.5 ~ 4.5	25.7 ~ 32.5
Universal joint to pinion of steering gear	29.4 ~ 34.3	3.0 ~ 3.5	21.7 ~ 25.7

Rear Suspension

Item	Tightening torque (kgf.m)		
	Nm	kgf.m	lb-ft
Hub nuts	88.3 ~ 107.9	9.0 ~ 11.0	65.1 ~ 79.6
Trailing arm to body	98.1 ~ 117.7	10.0 ~12.0	72.3 ~ 86.8
Trailing arm to knuckle	34.3 ~ 53.9	3.5 ~ 5.5	25.3 ~ 39.8
Assist arm to sub frame	107.9 ~ 117.7	11.0 ~ 12.0	79.6 ~ 86.8
Assist arm to knuckle	44.1 ~ 53.9	4.5 ~ 5.5	32.5 ~ 39.8
Lower arm to sub frame	117.7 ~ 137.3	12.0 ~14.0	86.8 ~ 101.3
Lower arm to knuckle	137.3 ~ 156.9	14.0 ~ 16.0	101.3 ~ 115.7
Upper arm to sub frame	137.3 ~ 156.9	14.0 ~ 16.0	101.3 ~ 115.7
Upper arm to knuckle	137.3 ~ 156.9	14.0 ~ 16.0	101.3 ~ 115.7
Shock absorber to frame	49.0 ~ 63.7	5.0 ~ 6.5	36.2 ~ 47.0
Shock absorber to knuckle	137.3 ~ 156.9	14.0 ~ 16.0	101.3 ~ 115.7
Stabilizer bar to stabilizer link	98.1 ~ 117.7	10.0 ~ 12.0	72.3 ~ 86.8
Stabilizer bar to sub frame	44.1 ~ 53.9	4.5 ~ 5.5	32.5 ~ 39.8
Sub frame mounting bolt & nut	156.9 ~ 176.5	16.0 ~ 18.0	115.7 ~ 130.2

Special Service Tools

Tool (Number and Name)	Illustration	Use
09546-26000 Strut spring compressor		Compression of coil spring
09624-38000 Crossmember supporter		Supporting of the crossmember

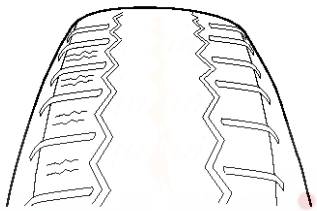
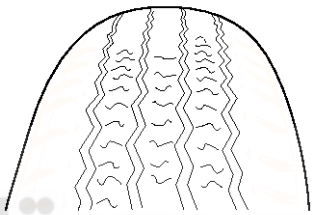
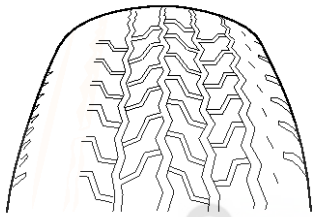
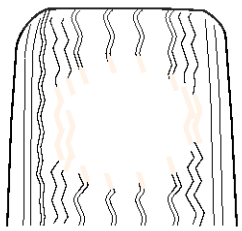
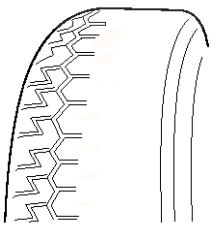
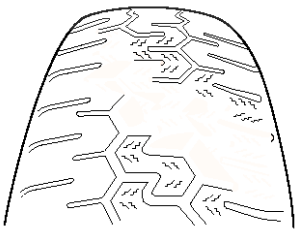
Troubleshooting

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.

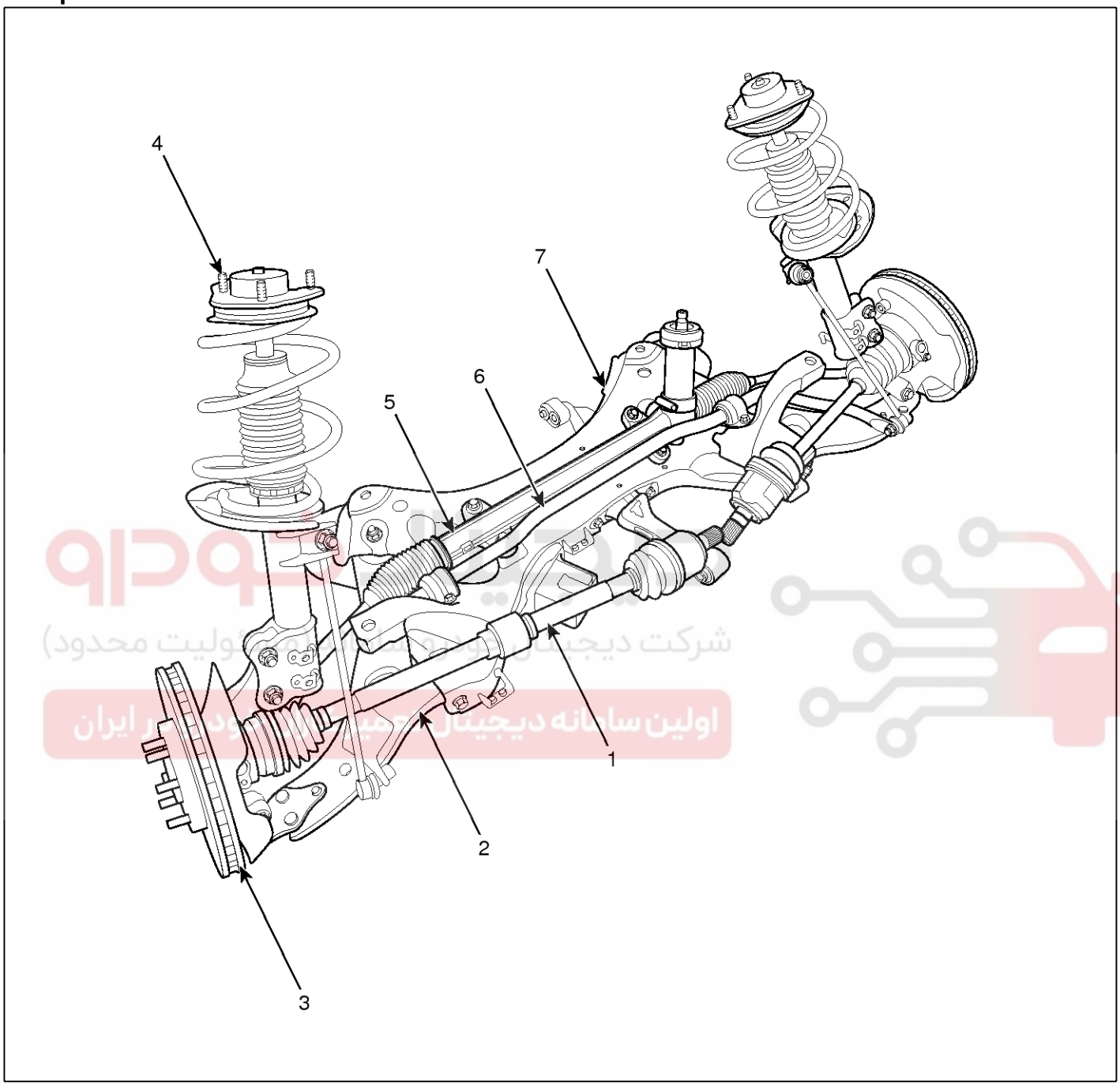
Careful attention must be paid to the tire and wheels. There are several symptoms that can be caused by damaged or worn tire and wheels. Perform a careful visual inspection of the tires and wheel assemblies. Spin the tires slowly and watch for signs of lateral or radial runout. Refer to the tire wear 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
 AHIE002A	 AHIE002B	 AHIE002C
• 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**
 AHIE002D	 AHIE002F	 AHIE002G
• 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 Location

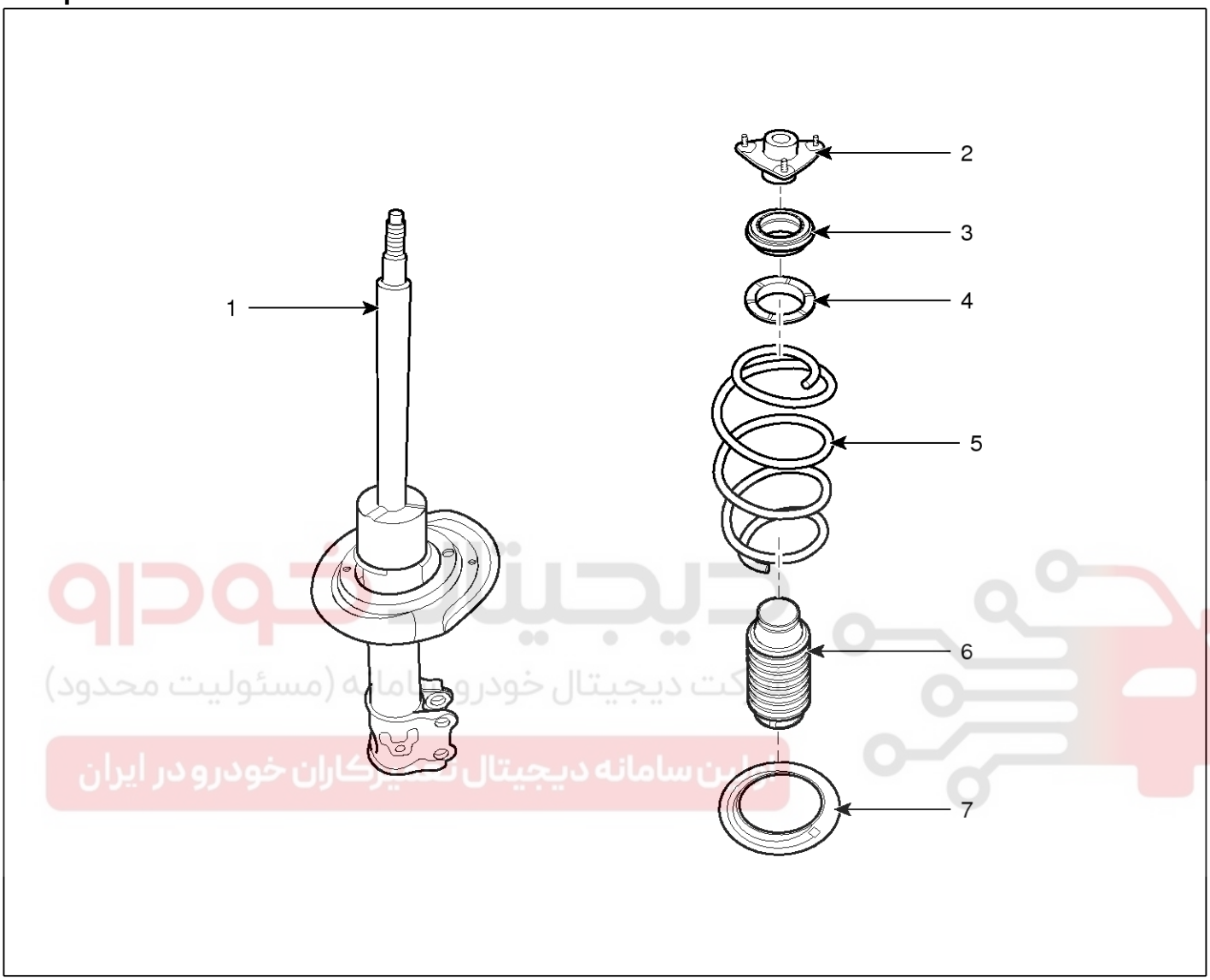


STFSS1021D

1. Drive shaft
2. Lower arm
3. Front disk
4. Front strut assembly
5. Steering gearbox
6. Front stabilizer bar
7. Sub frame

Front Strut Assembly

Components



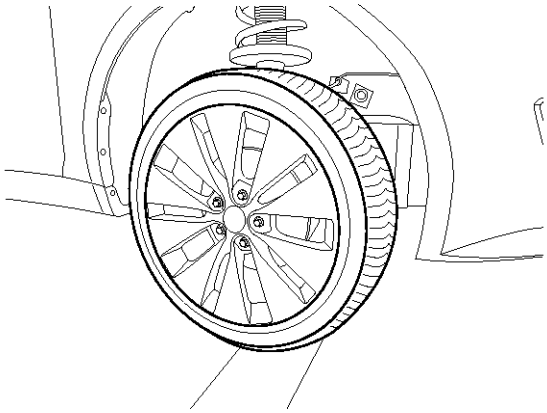
SSLSS1016D

1. Strut assembly
2. Insulator
3. Bearing
4. Spring upper pad
5. Coil spring
6. Dust cover
7. Spring lower pad

Replacement

1. Remove the front wheel & tire.

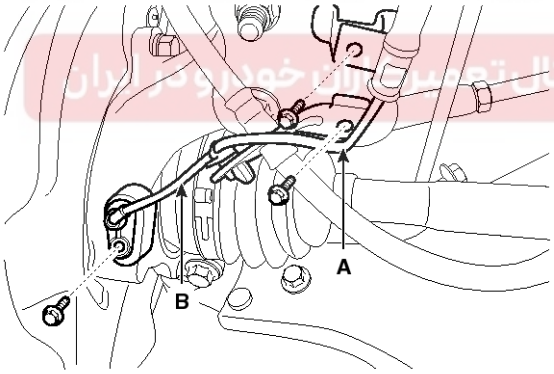
Tightening torque:
88.3 ~ 107.9N.m(9.0 ~ 11.0kgf.m, 65.1 ~ 79.6lb-ft)



STFSS1001D

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

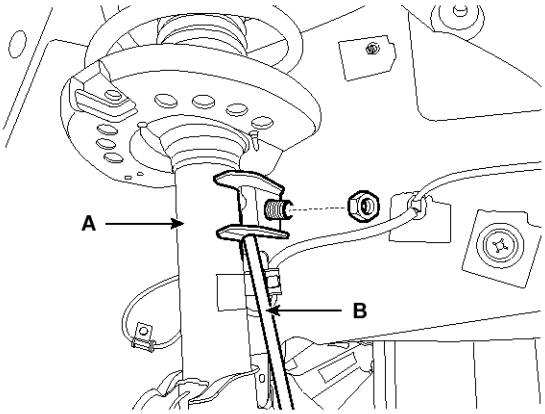
2. Remove the wheel speed sensor (B) from the front strut assembly by loosening mounting bolts (A).



SYFSS0003D

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

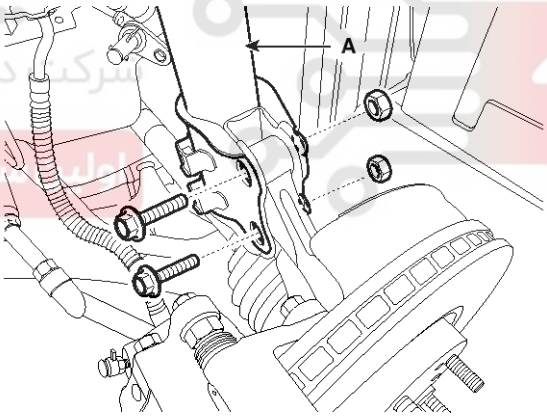
Tightening torque:
98.1 ~ 117.7N.m(10.0 ~ 12.0kgf.m, 72.3~86.8lb-ft)



STFSS1004D

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

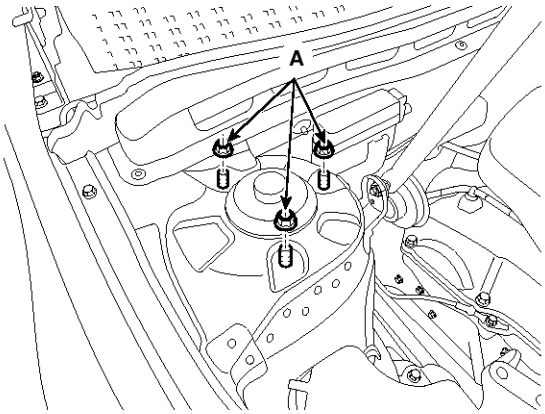
Tightening torque:
156.9 ~ 176.5N.m (16.0 ~ 18.0kgf.m, 115.7 ~ 130.2lb-ft)



STFSS1006D

5. Remove the front strut assembly and then loosen the strut mounting nuts (A).

Tightening torque:
53.9 ~ 68.6N.m(5.5 ~ 7.0kgf.m, 39.8 ~ 50.6lb-ft)



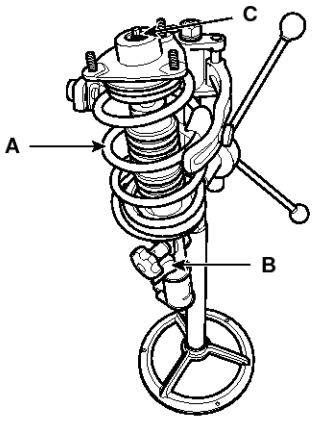
STFSS1022D

6. Installation is the reverse of removal.

Disassembly

1. Using the special tool (09546-26000), compress the coil spring (A).

Tightening torque:
58.8 ~ 68.6N.m(6.0 ~ 7.0kgf.m, 43.4 ~ 50.6lb-ft)

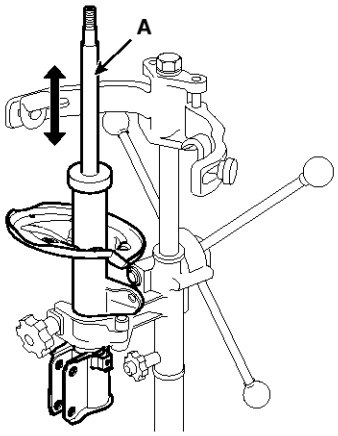


SSLSS1015D

2. Remove the self-locking nut (C) from the strut assembly (B).
3. Remove the insulator, spring seat, coil spring and dust cover from the strut assembly.
4. Reassembly is the reverse of the disassembly.

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.



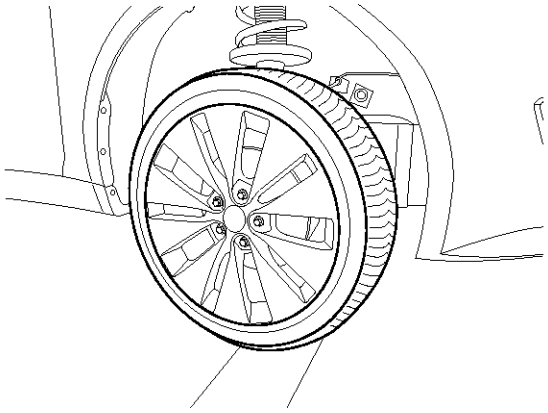
AHJF101L

Front Lower Arm

Replacement

1. Remove the front wheel & tire.

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

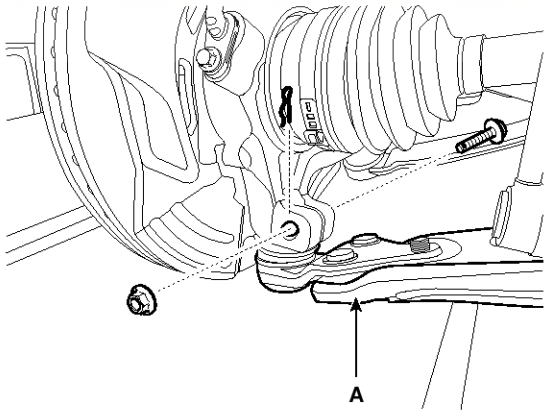


STFSS1001D

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

2. Loosen the bolt & nut and then remove the lower arm (A).

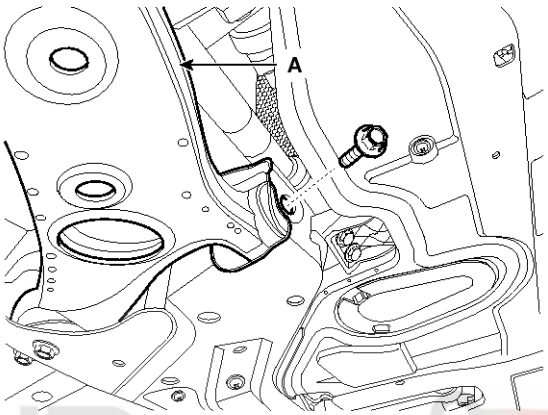
Tightening torque:
98.1 ~ 117.7N.m(10.0 ~ 12.0kgf.m, 72.3 ~ 86.6lb-ft)



STFSS1009D

3. Loosen the bolts and nuts and then remove the front lower arm (A).

Tightening torque
Front:
117.7 ~ 137.3N.m(12.0 ~ 14.0kgf.m, 86.8 ~ 101.3lb-ft)
Rear:
137.3 ~ 156.9N.m(14.0 ~ 16.0kgf.m, 101.3 ~ 115.7lb-ft)



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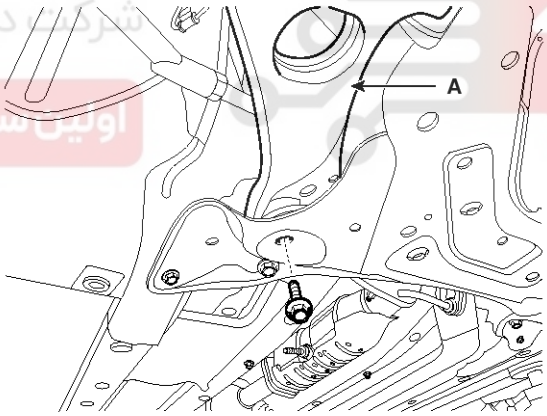


STFSS1007D

4. Installation is the reverse of removal.

Inspection

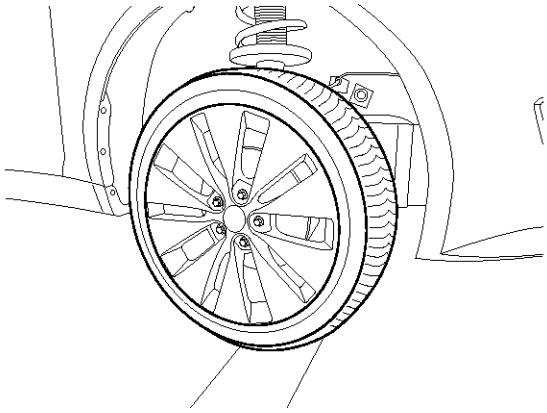
1. Check the bushing for wear and deterioration.
2. Check the front stabilizer bar for deformation.
3. Check the all bolts and nuts.

Front Stabilizer Bar

Replacement

1. Remove the front wheel & tire.

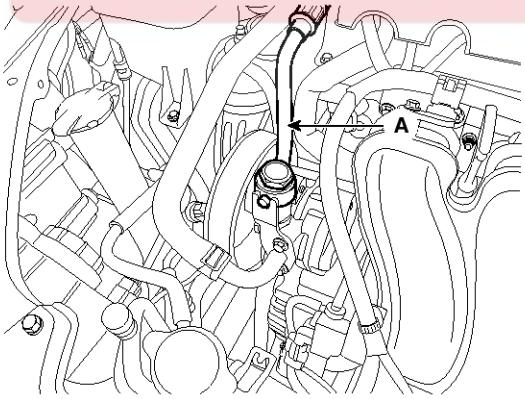
Tightening torque:
88.3 ~ 107.9N.m(9.0 ~ 11.0kgf.m, 65.1~79.6lb-ft)



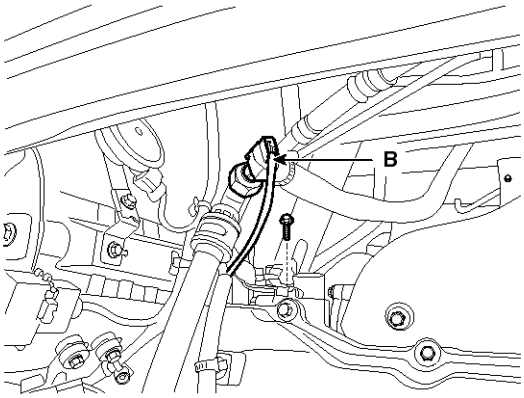
STFSS1001D

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

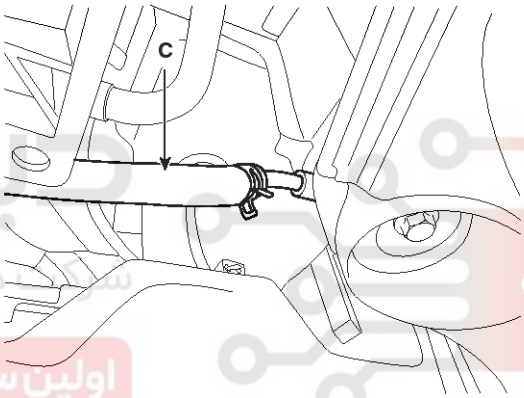
2. Disconnect the pressure hose (A), pressure switch (B), return hose (C) and then drain the power steering fluid.



SYFST0001D



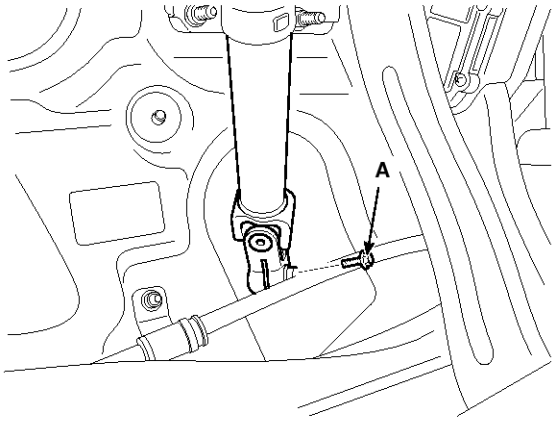
SYFST0002D



SYFST0003D

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

Tightening torque:
29.4 ~ 34.3N.m(3.0 ~ 3.5kgf.m, 21.7 ~ 25.7lb-ft)

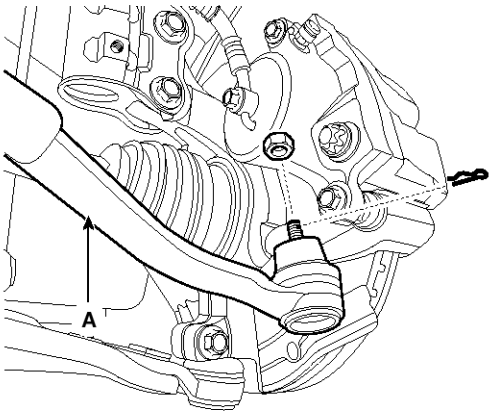


STFST1017D

⚠CAUTION
Lock the steering wheel in the straight ahead position to prevent the damage of the clock spring inner cable when you handle the steering wheel.

4. Remove the split pin and castle nut and then disconnect the tie-rod end (A) from the front knuckle.

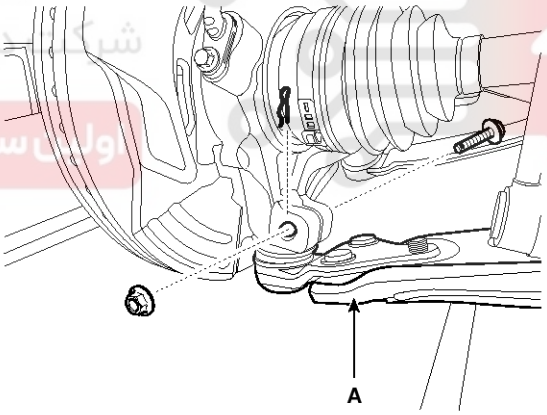
Tightening torque:
34.3 ~ 44.1N.m(3.5 ~ 4.5kgf.m, 25.7 ~ 32.5lb-ft)



STFSS1008D

5. Loosen the bolt & nut and then remove the lower arm (A).

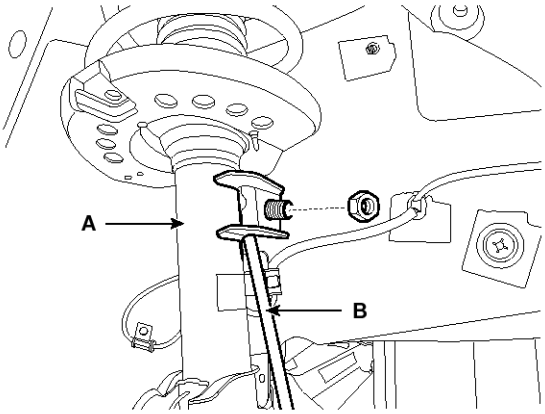
Tightening torque:
98.1 ~ 117.7N.m(10.0 ~ 12.0kgf.m, 72.3 ~ 86.8lb-ft)



STFSS1009D

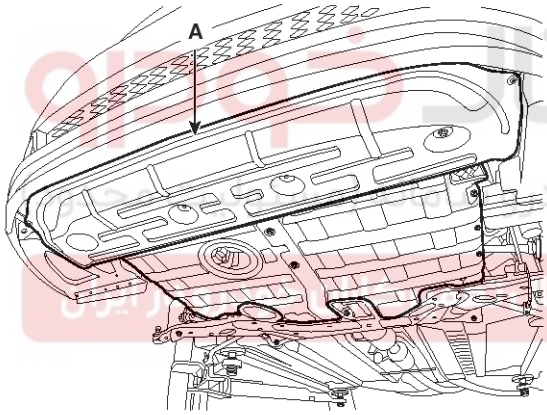
6. Disconnect the stabilizer link (B) from the front strut assembly (A) after loosening the nut.

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



STFSS1004D

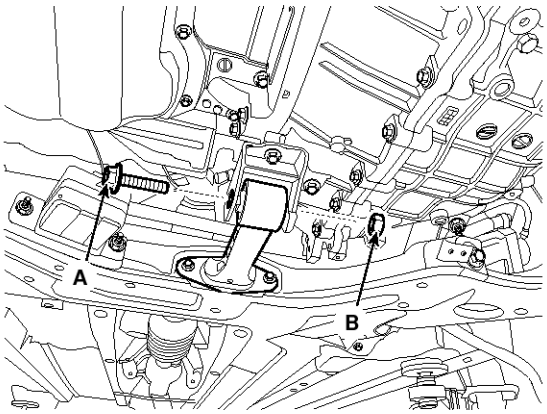
7. Remove the undercover (A).



STFSS1010D

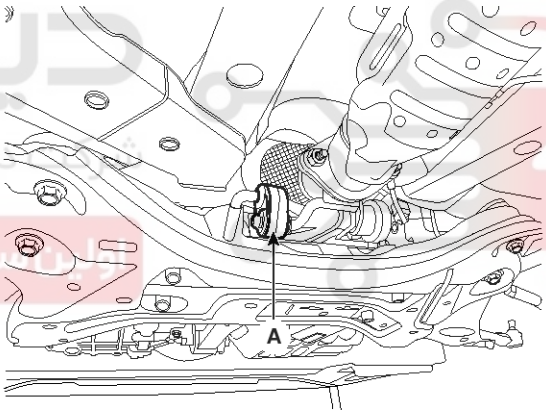
8. Loosen the bolt (A) & nut (B) and then remove the roll rod stopper.

Tightening torque:
107.9 ~ 127.5N.m(11.0 ~ 13.0kgf.m, 79.6 ~ 94.0lb-ft)



STFSS1013D

9. Disconnect the muffler rubber hanger (A).



STFSS1014D

10. Loosen the bolts & nuts and then remove the sub frame (A).

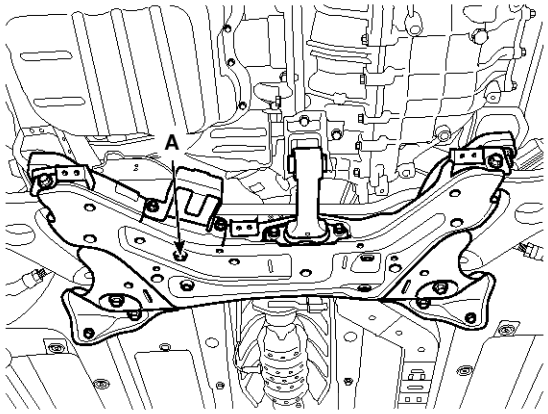
Tightening torque

Sub frame mounting bolts & nuts:

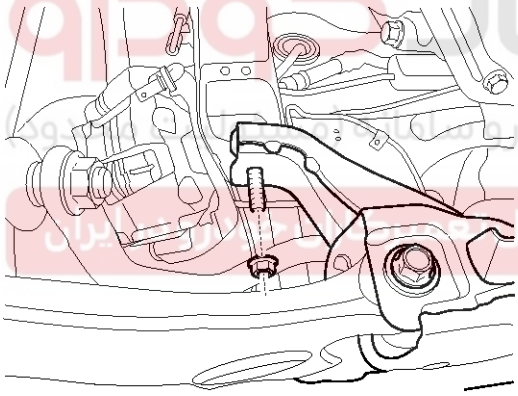
156.9 ~ 176.5N.m (16.0 ~ 18.0kgf.m, 115.7 ~ 130.2lb-ft)

Sub frame stay bolts & nuts:

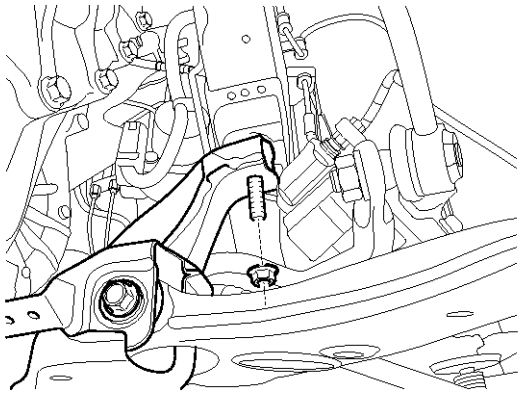
44.1 ~ 58.8N.m (4.5 ~ 6.0kgf.m, 32.5 ~ 43.4lb-ft)



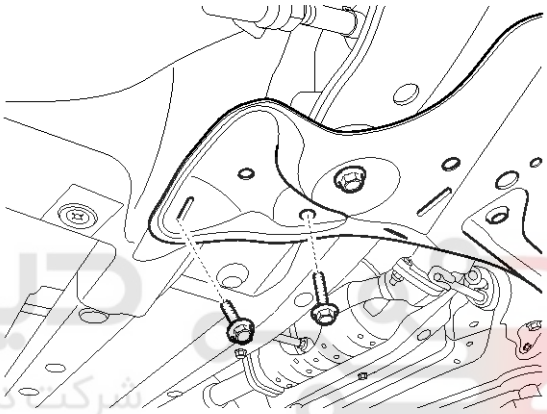
STFSS1015D



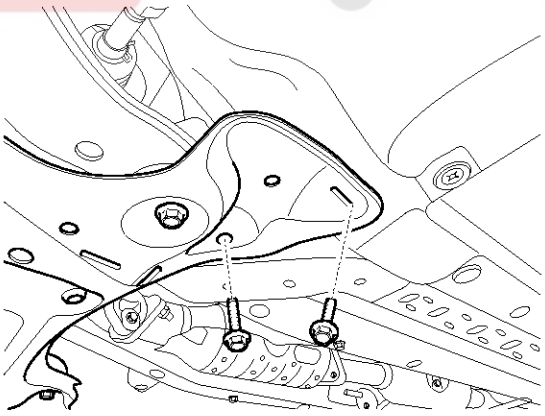
STFSS1016D



STFSS1017D



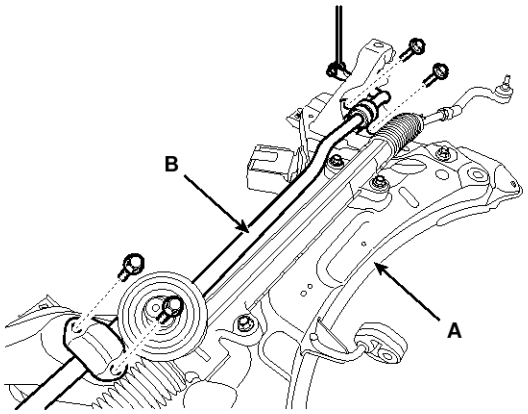
STFSS1018D



STFSS1019D

11. Loosen the mounting bolt and then remove the stabilizer bar (B) from the sub frame(A).

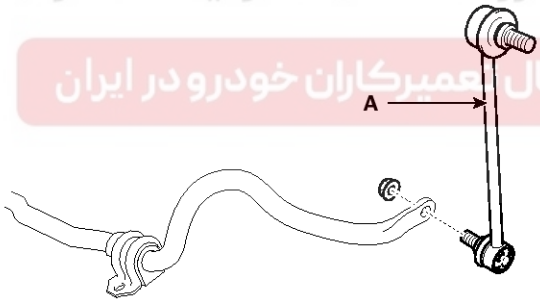
Tightening torque:
44.1 ~ 53.9N.m(4.5 ~ 5.5kgf.m, 32.5 ~ 39.8lb-ft)



STFSS1020D

12. Loosen the nut and then remove the stabilizer link (A) from the stabilizer bar.

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



SHDSS6002D

13. Installation is the reverse of removal.
14. Add power steering fluid to reservoir.
15. Bleed the power steering system.
    (Refer to Air bleeding)

Inspection

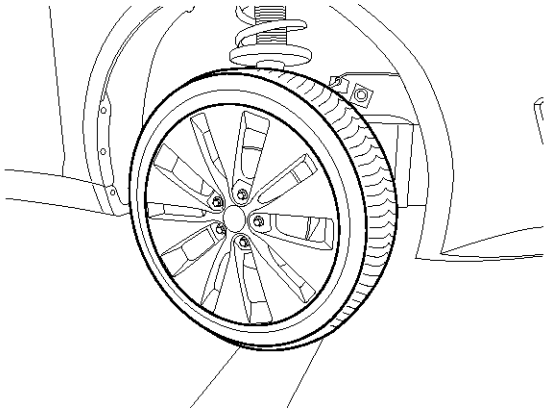
1. Check the bushing for wear and deterioration.
2. Check the front stabilizer bar for deformation.
3. Check the front stabilizer link ball joint for damage.

Front Cross Member

Replacement

1. Remove the front wheel & tire.

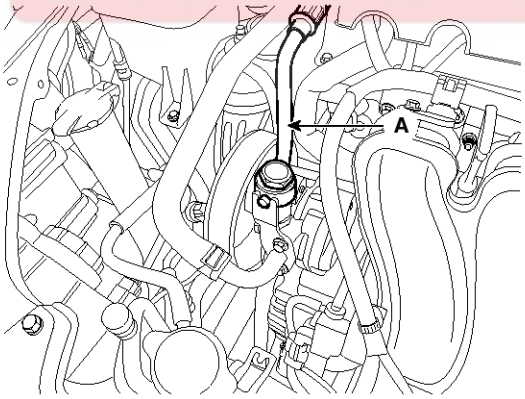
Tightening torque:
88.3 ~ 107.9N.m(9.0 ~ 11.0kgf.m, 65.1~79.6lb-ft)



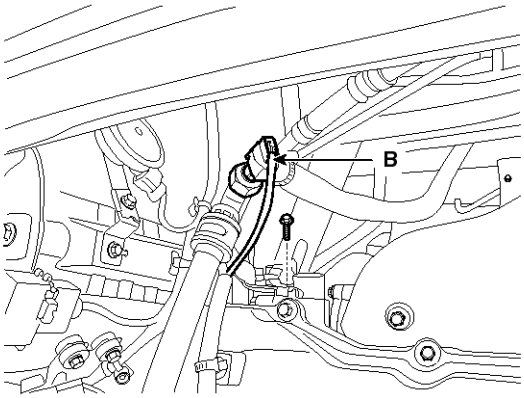
STFSS1001D

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

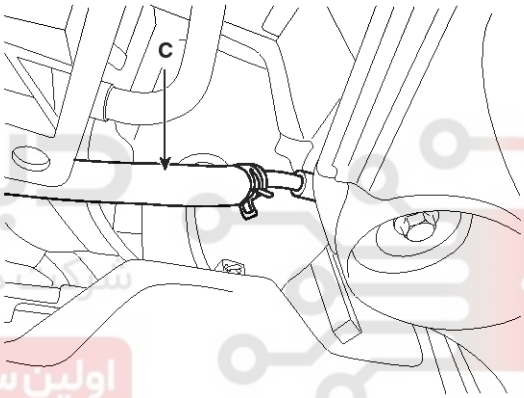
2. Disconnect the pressure hose (A), pressure switch (B), return hose (C) and then drain the power steering fluid.



SYFST0001D



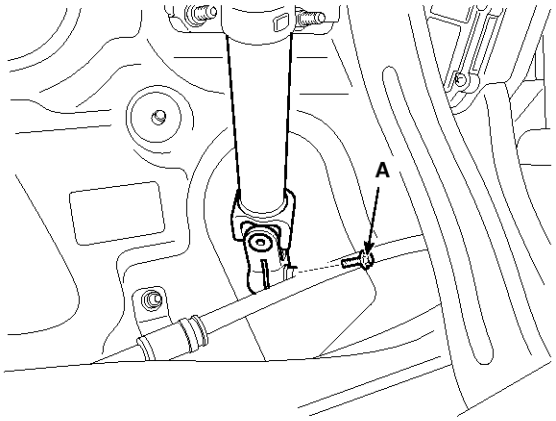
SYFST0002D



SYFST0003D

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

Tightening torque:
29.4 ~ 34.3N.m(3.0 ~ 3.5kgf.m, 21.7 ~ 25.7lb-ft)

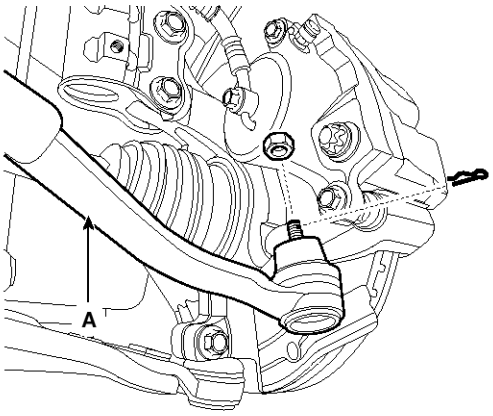


STFST1017D

⚠CAUTION
Lock the steering wheel in the straight ahead position to prevent the damage of the clock spring inner cable when you handle the steering wheel.

4. Remove the split pin and castle nut and then disconnect the tie-rod end (A) from the front knuckle.

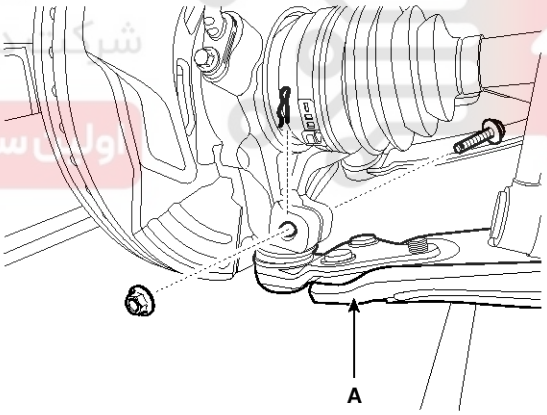
Tightening torque:
34.3 ~ 44.1N.m(3.5 ~ 4.5kgf.m, 25.7 ~ 32.5lb-ft)



STFSS1008D

5. Loosen the bolt & nut and then remove the lower arm (A).

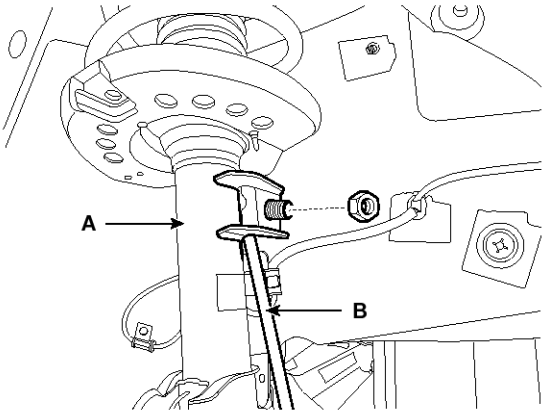
Tightening torque:
98.1 ~ 117.7N.m(10.0 ~ 12.0kgf.m, 72.3 ~ 86.8lb-ft)



STFSS1009D

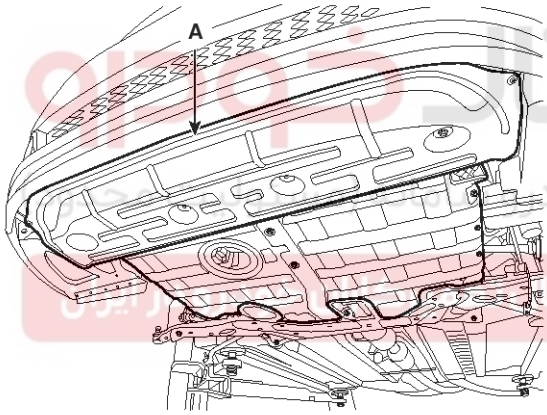
6. Disconnect the stabilizer link (B) with the front strut assembly (A) after loosening the nut.

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



STFSS1004D

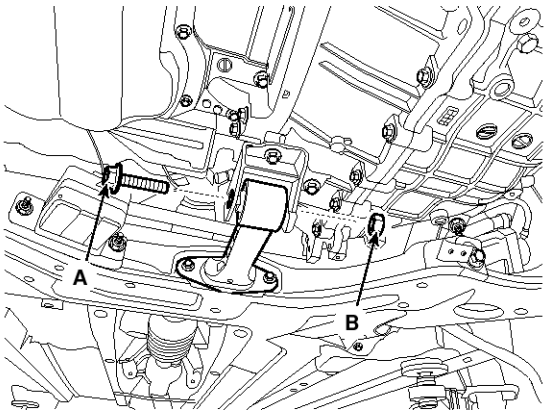
7. Remove the undercover (A).



STFSS1010D

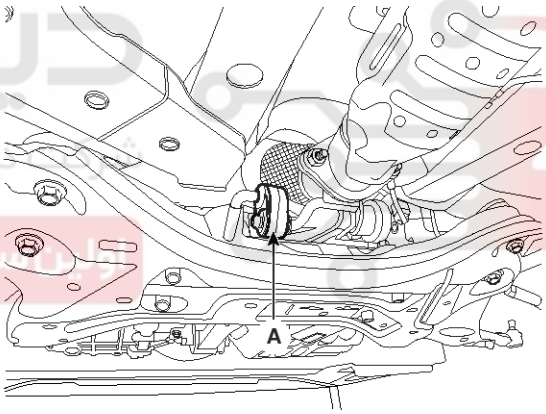
8. Loosen the bolt (A) & nut (B) and then remove the roll rod stopper (A).

Tightening torque:
107.9 ~ 127.5N.m(11.0 ~ 13.0kgf.m, 79.6 ~ 94.0lb-ft)



STFSS1013D

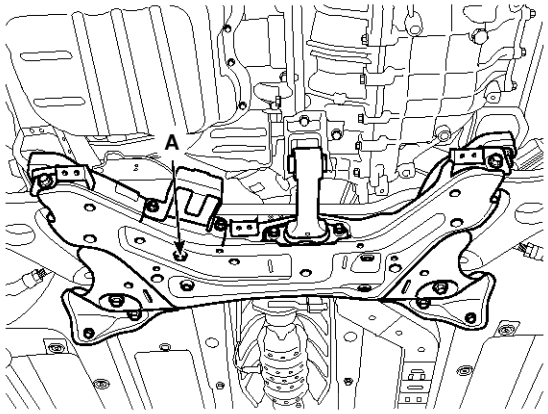
9. Disconnect the muffler rubber hanger (A).



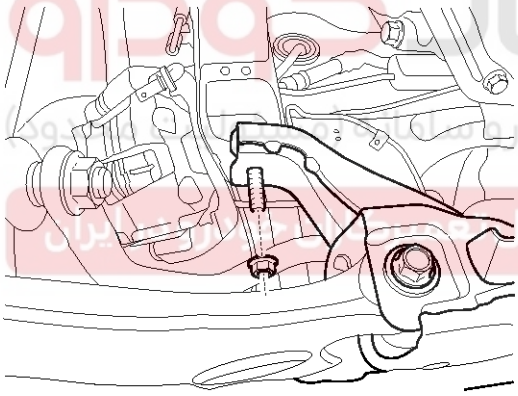
STFSS1014D

10. Loosen the bolts & nuts and then remove the sub frame (A).

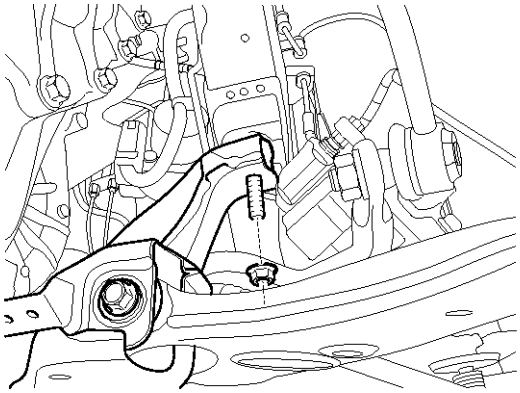
Tightening torque
Sub frame mounting bolts & nuts:
156.9 ~ 176.5N.m (16.0 ~ 18.0kgf.m, 115.7 ~ 130.2lb-ft)
Sub frame stay bolts & nuts:
44.1 ~ 58.8N.m (4.5 ~ 6.0kgf.m, 32.5 ~ 43.4lb-ft)



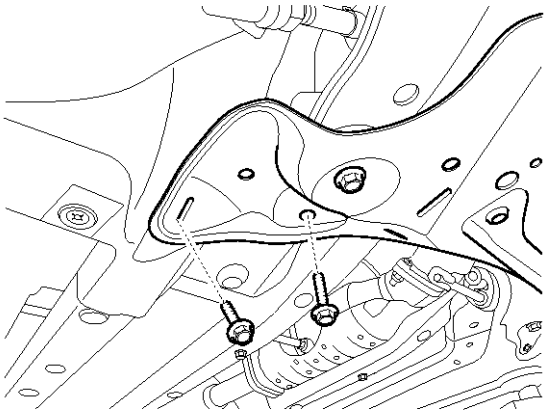
STFSS1015D



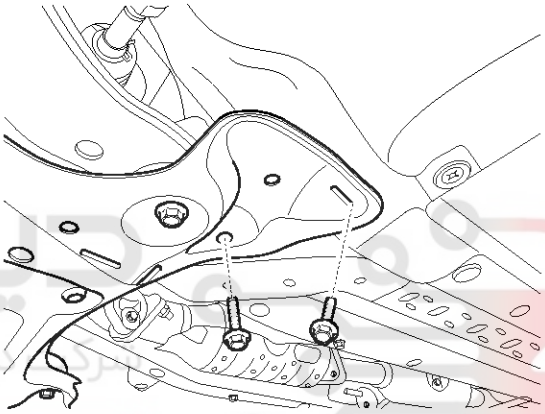
STFSS1016D



STFSS1017D



STFSS1018D

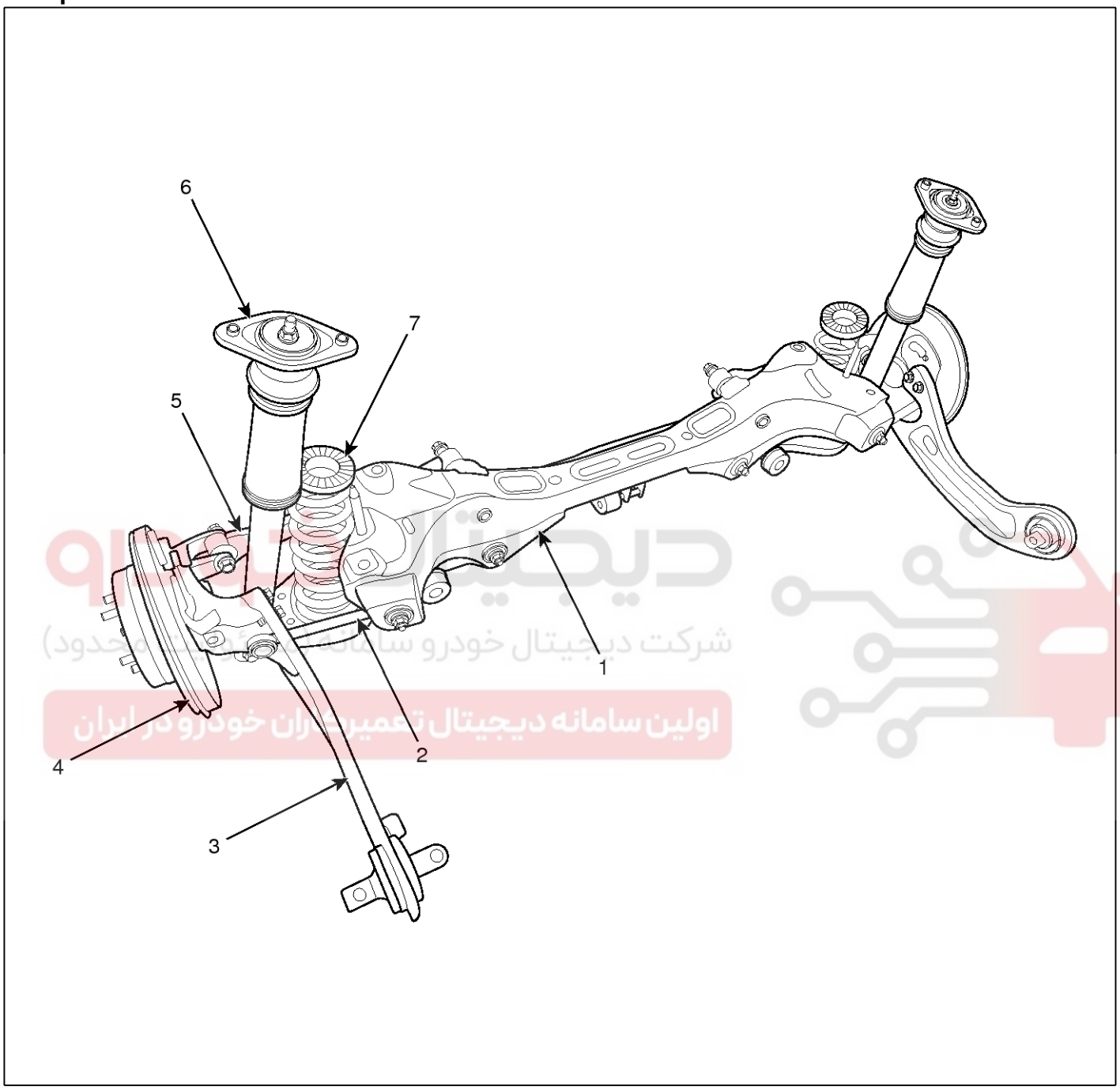


STFSS1019D

11. Remove the front lower arm.
(Refer to Front lower arm)
12. Remove the front stabilizer.
(Refer to Front stabilizer)
13. Remove the steering gearbox.
(Refer to ST group - "Steering Gearbox")
14. Installation is the reverse of removal.
15. Add power steering fluid to reservoir.
16. Bleed the power steering system.
(Refer to ST group - "Air Bleeding")

Rear Suspension System

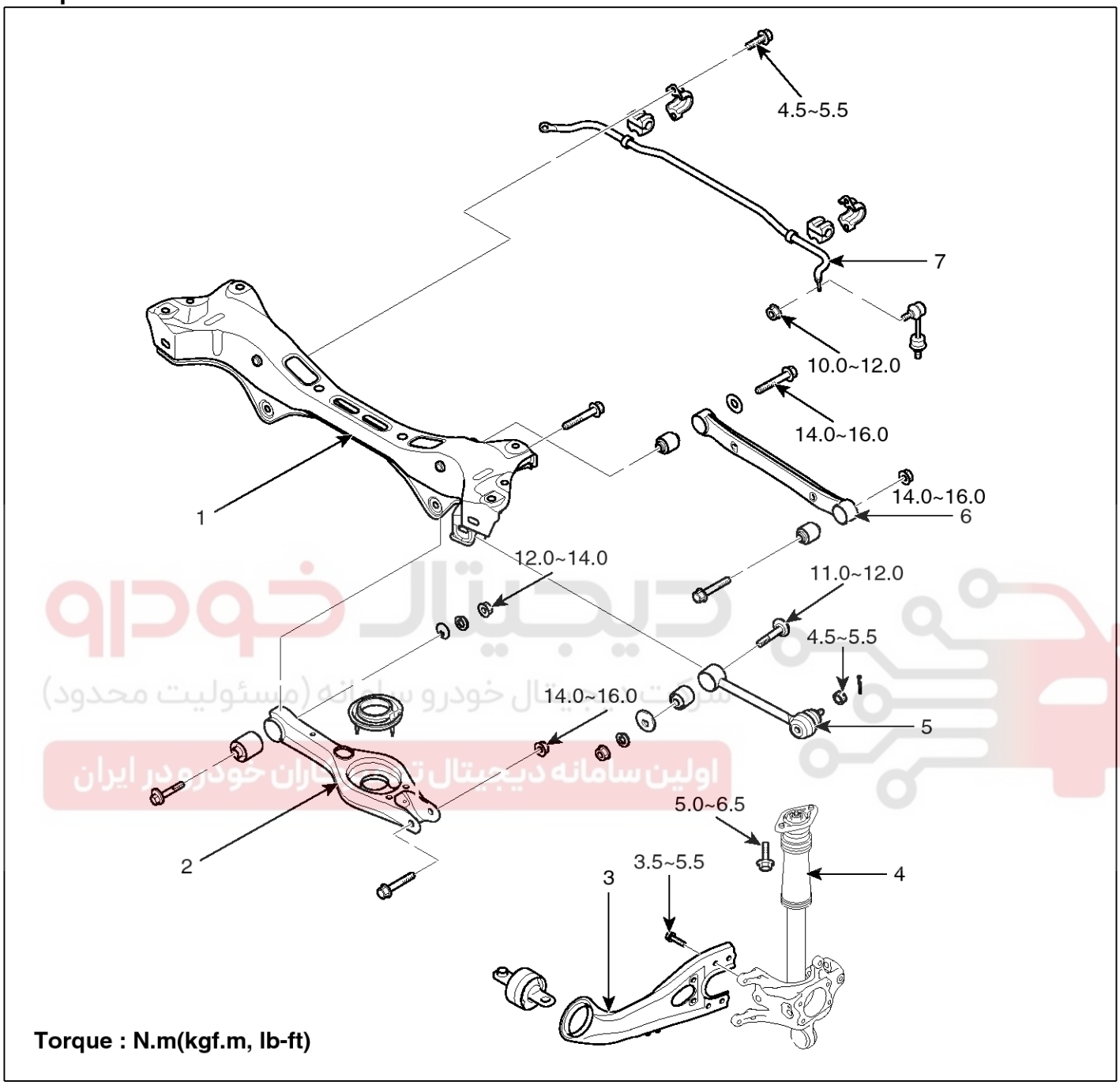
Components Location



STFSS1046D

1. Sub frame
2. Assist arm
3. Trailing arm
4. Rear disc
5. Rear upper arm
6. Rear shock absorber
7. Coil spring

Components

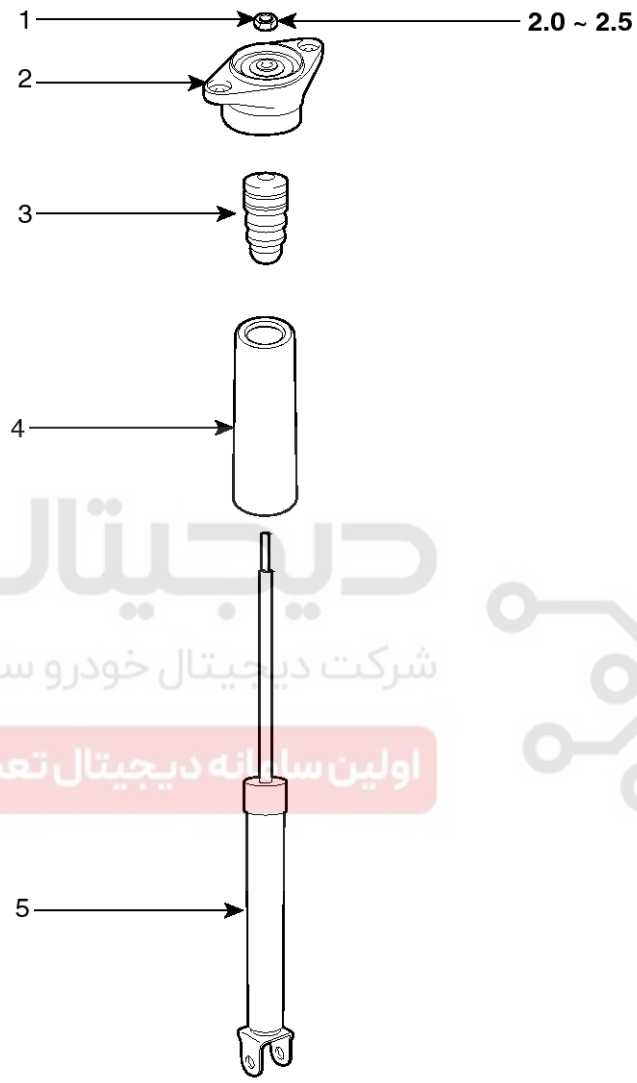


STFSS1001L

1. Sub frame
2. Rear lower arm
3. Trailing arm
4. Rear shock absorber
5. Assist arm
6. Rear upper arm
7. Rear stabilizer bar

Rear Shock Absorber

Components



Torque : N.m(kgf.m, lb-ft)

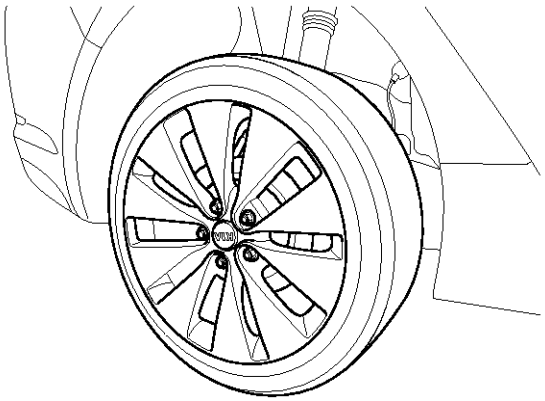
STFSS1002L

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

Replacement

1. Remove the rear wheel & tire.

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

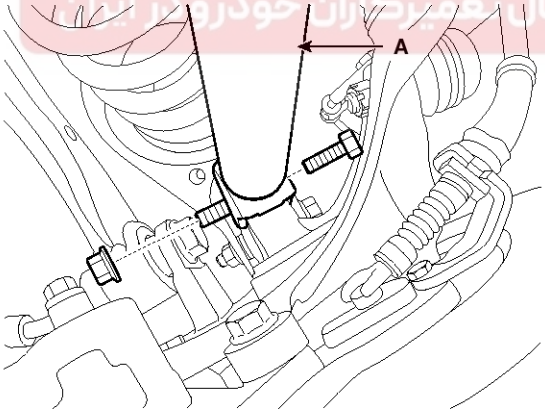


STFSS1023D

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

2. Loosen the bolt & nut and then disconnect the shock absorber (A) from the rear axle.

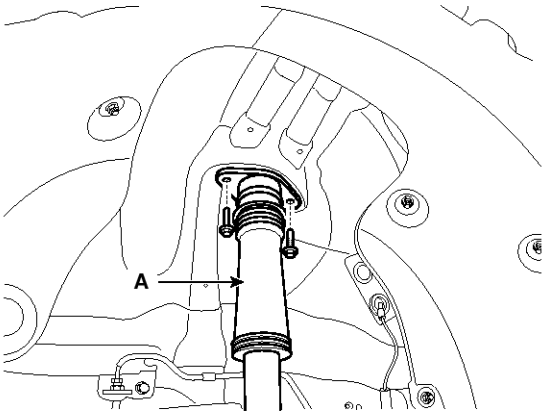
Tightening torque:
137.3 ~ 156.9N.m(14.0 ~ 16.0kgf.m, 101.3 ~ 115.7lb-ft)



STFSS1032D

3. Loosen the mounting bolts and then remove the shock absorber (A).

Tightening torque:
49.0 ~ 63.7N.m (5.0 ~ 6.5kgf.m, 36.2 ~ 47.0lb-ft)



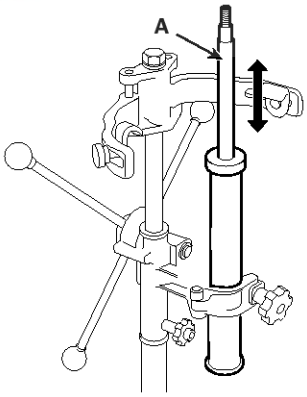
STFSS1027D

4. Installation is the reverse of removal.

⚠CAUTION
Don't reuse rear shock absorber upper self-locking nut.

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.



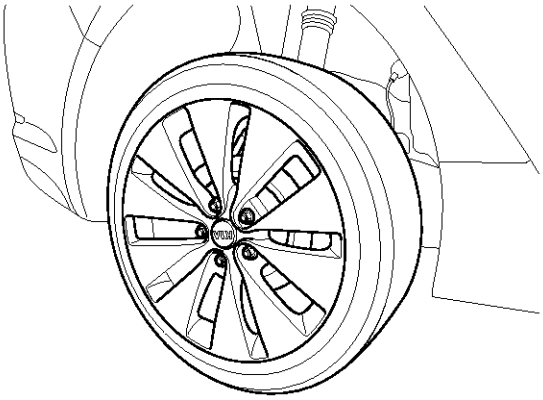
KHRE112A

Rear Upper Arm

Replacement

1. Remove the rear wheel & tire.

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

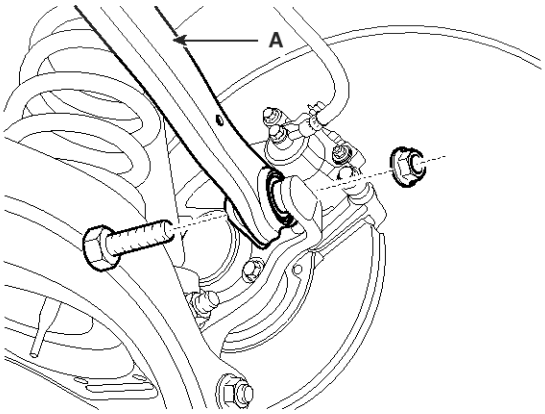


STFSS1023D

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

2. Loosen the bolt & nut and then remove the rear upper arm (A) from the rear axle.

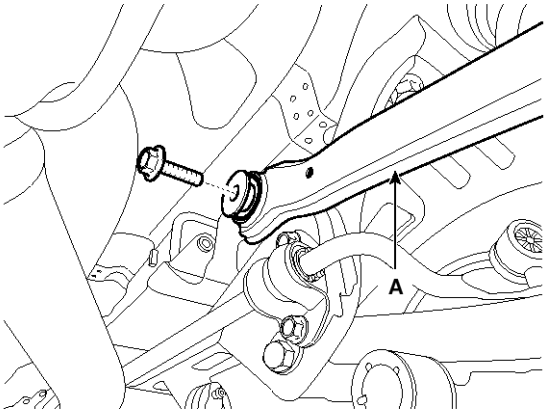
Tightening torque:
137.3 ~ 156.9N.m(14.0 ~ 16.0kgf.m, 101.3 ~ 115.7lb-ft)



STFSS1035D

3. Loosen the bolt & nut and then remove the rear upper arm (A) from the sub frame.

Tightening torque:
137.3 ~ 156.9N.m(14.0 ~ 16.0kgf.m, 101.3 ~ 115.7lb-ft)



STFSS1033D

4. Installation is the reverse of removal.

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

Inspection

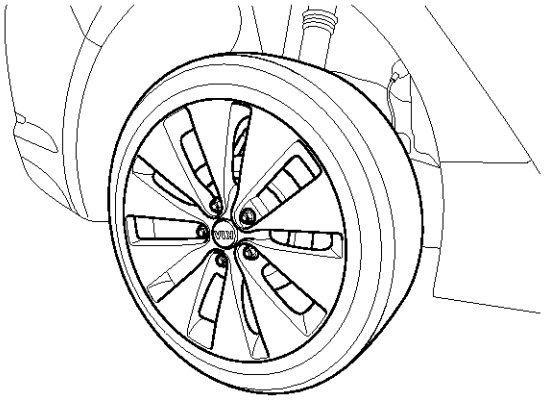
1. Check the bushing for wear and deterioration.
2. Check the rear lower arm for deformation.
3. Check the coil spring and spring pad for deterioration and deformation.
4. Check for all bolts and nut.

Rear Lower Arm

Replacement

1. Remove the rear wheel & tire.

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

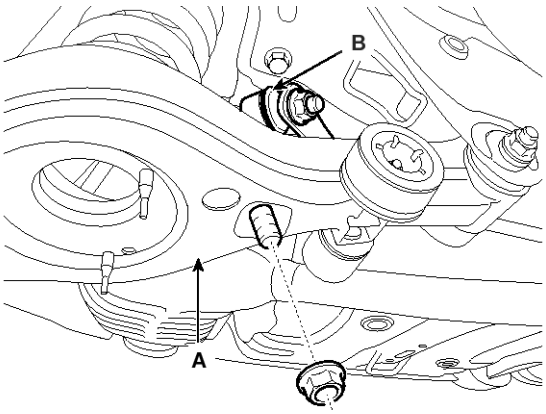


STFSS1023D

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

2. Loosen the nut and then remove the rear stabilizer link (B) from the rear lower arm (A).

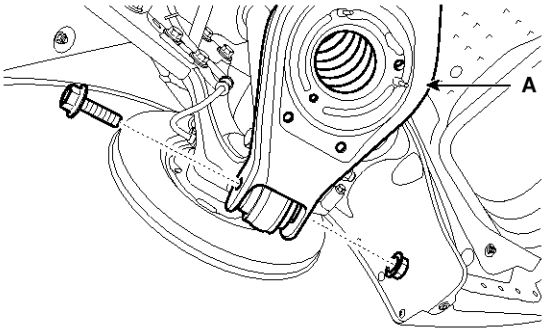
Tightening torque:
98.1 ~ 117.7N.m(10.0 ~ 12.0kgf.m, 72.3 ~ 86.8lb-ft)



STFSS1030D

3. Loosen the bolt & nut and then remove the rear lower arm (A) from the rear axle.

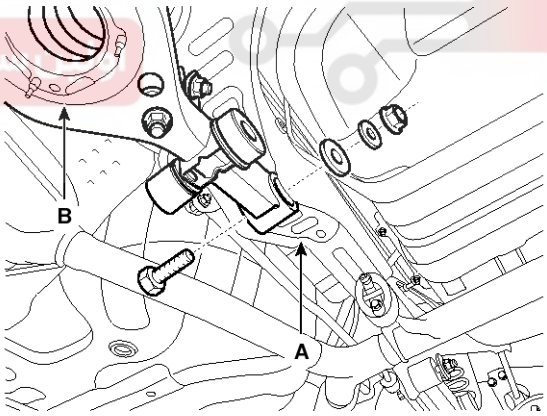
Tightening torque:
137.3 ~ 156.9N.m(14.0 ~ 16.0kgf.m, 101.3 ~ 115.7lb-ft)



STFSS1031D

4. Loosen the bolt & nut and then remove the rear lower arm (B) from the sub frame (A).

Tightening torque:
117.7 ~ 137.3N.m (12.0 ~ 14.0kgf.m, 86.8 ~ 101.3lb-ft)



STFSS1029D

5. Installation is the reverse of removal.

CAUTION
Be careful not to cover the drain hole of lower arm with spring.

Inspection

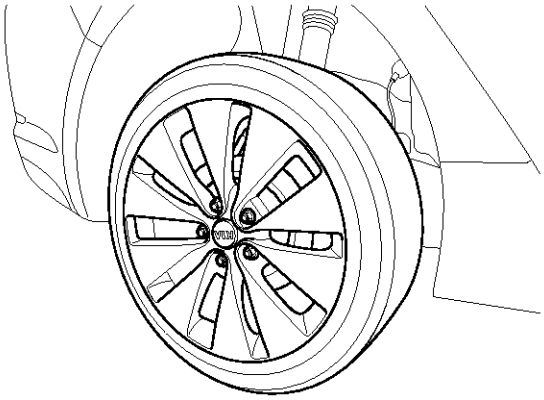
1. Check the bushing for wear and deterioration.
2. Check the rear lower arm for deformation.
3. Check the coil spring and spring pad for deterioration and deformation.
4. Check for all bolts and nut.

Rear Stabilizer Bar

Replacement

1. Remove the rear wheel & tire.

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

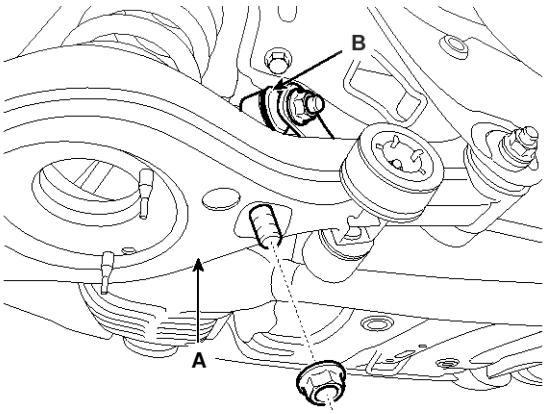


STFSS1023D

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

2. Loosen the nut and then remove the rear stabilizer link (B) from the rear lower arm (A).

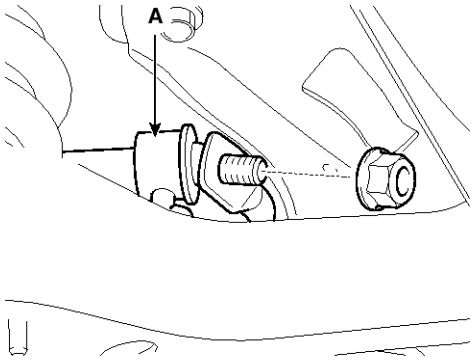
Tightening torque:
98.1 ~ 117.7N.m (10.0 ~ 12.0kgf.m, 72.3 ~ 86.8lb-ft)



STFSS1030D

3. Loosen the nut and then remove the stabilizer link (A) from the rear stabilizer bar.

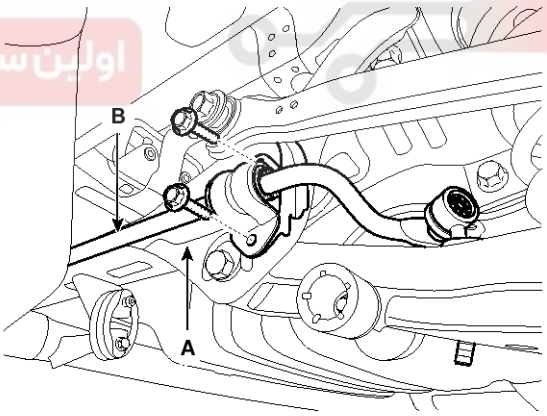
Tightening torque:
98.1 ~ 117.7N.m(10.0 ~ 12.0kgf.m, 72.3 ~ 86.8lb-ft)



SYFSS0022D

4. Loosen the mounting bolt and then remove the stabilizer bar (B) from the sub frame (A).

Tightening torque:
44.1 ~ 53.9N.m(4.5 ~ 5.5kgf.m, 32.5 ~ 39.8lb-ft)



STFSS1034D

5. Installation is the reverse of removal.

Inspection

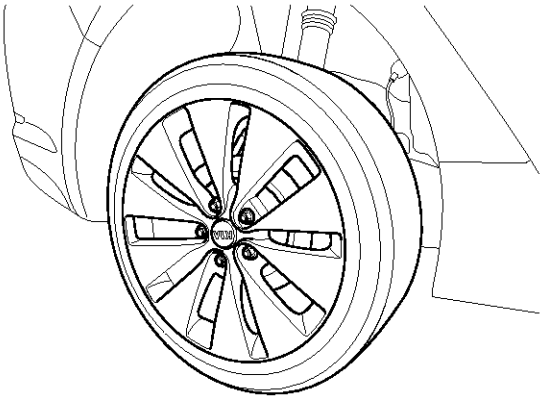
1. Check the rear stabilizer bar for deformation.
2. Check the rear stabilizer link ball joint for damage.

Rear Assist Arm

Replacement

1. Remove the rear wheel & tire.

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

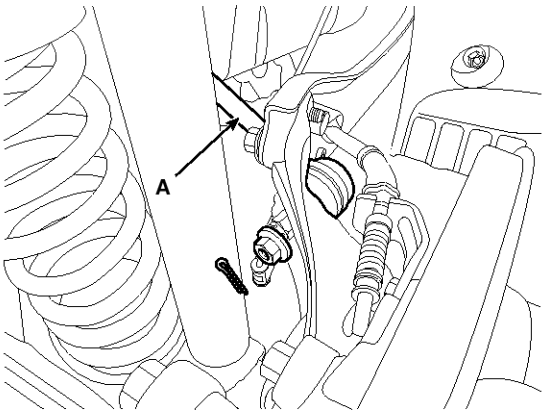


STFSS1023D

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

2. Remove the sprit pin and castle nut and then disconnect the rear assist arm (A) from the rear axle.

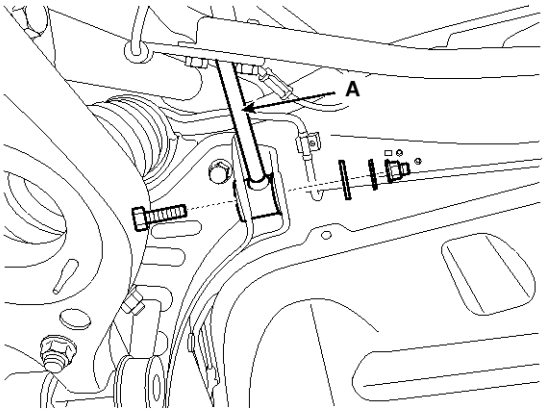
Tightening torque:
44.1 ~ 53.9N.m(4.5 ~ 5.5kgf.m, 32.5 ~ 39.8lb-ft)



STFSS1039D

3. Loosen the bolt & nut and then remove the rear assist arm (A) from the sub frame.

Tightening torque:
107.9 ~ 117.7N.m(11.0 ~ 12.0kgf.m, 79.6 ~ 86.8lb-ft)



STFSS1028D

4. Installation is the reverse of removal.

Inspection

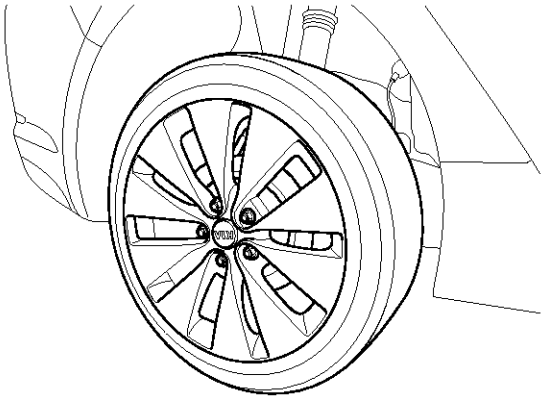
1. Check the bushing for wear and deterioration.
2. Check for all bolts and nut.

Trailing Arm

Replacement

1. Remove the rear wheel & tire.

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

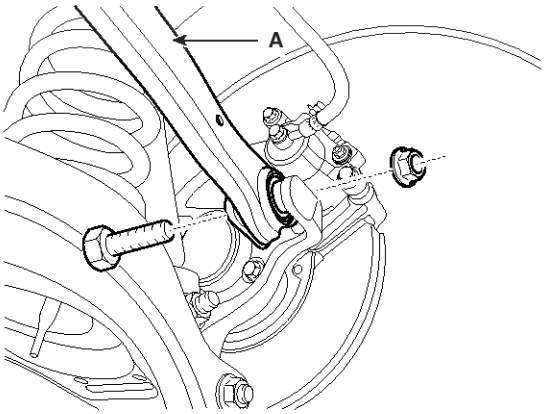


STFSS1023D

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

2. Loosen the bolt & nut and then remove the rear upper arm (A) from the rear axle.

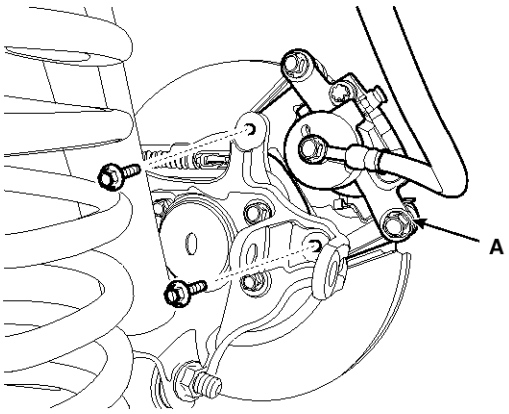
Tightening torque:
137.3 ~ 156.9N.m(14.0 ~ 16.0kgf.m, 101.3 ~ 115.7lb-ft)



STFSS1035D

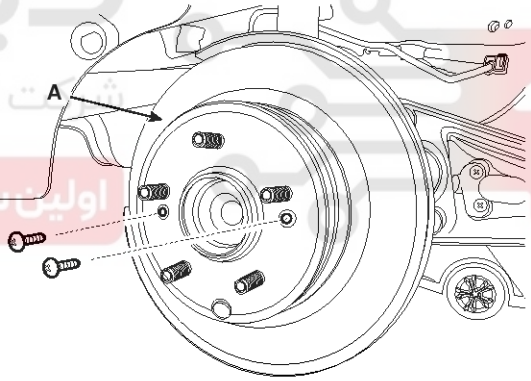
3. Loosen the bolt and then remove the rear caliper (A).

Tightening torque:
49.0 ~ 58.8N.m (5.0 ~ 6.0kgf.m, 36.2 ~ 43.4lb-ft)



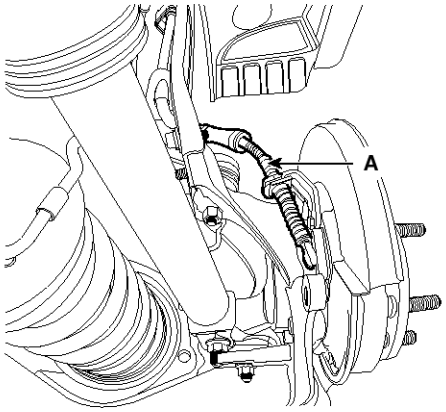
STFSS1049D

4. Loosen the screw and then remove the rear disc (A).



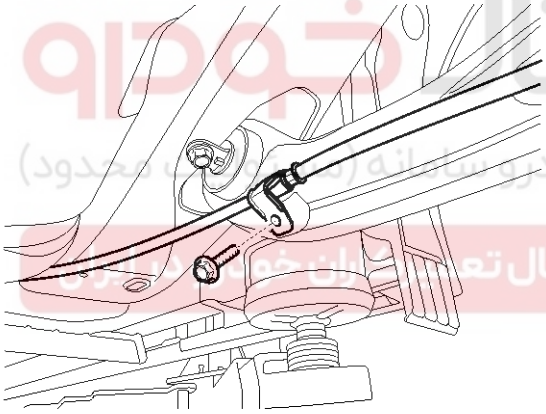
STFSS1047D

5. Disconnect the parking brake cable (A) from the rear brake assembly.
   (Refer to BR group - "Parking brake system")

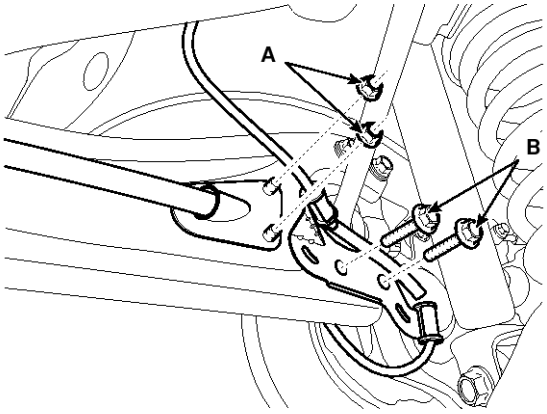


STFSS1048D

6. Loosen the parking brake cable bracket bolt (A) & height sensor bracket bolt (B).



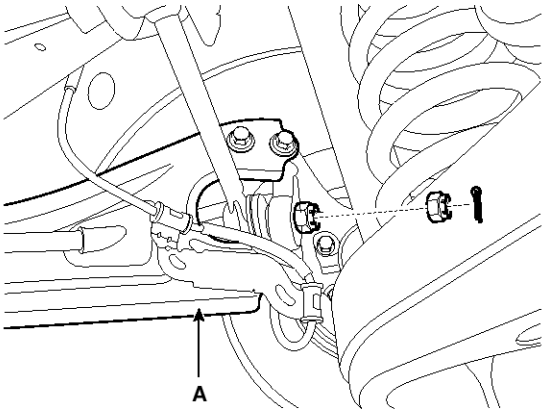
STFSS1036D



STFSS1037D

7. Loosen the mounting bolt and then remove the trailing arm (A) from the rear axle.

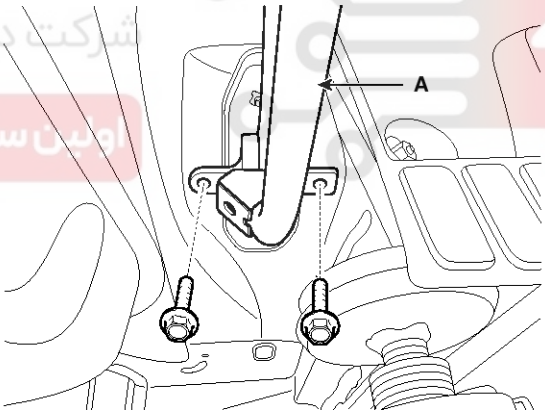
Tightening torque:
44.1 ~ 53.9N.m(4.5 ~ 5.5kgf.m, 32.5 ~ 39.8lb-ft)



STFSS1038D

8. Loosen the mounting bolt and then remove the trailing arm (A) from the frame.

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



STFSS1041D

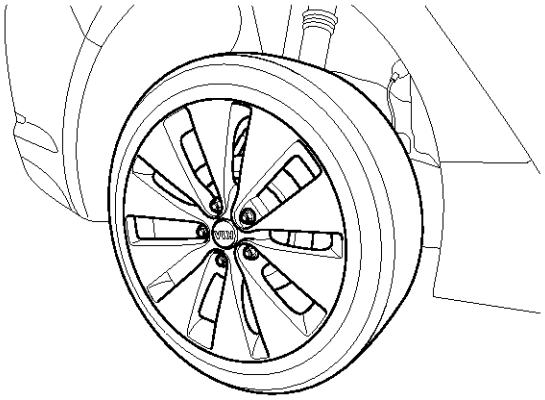
9. Installation is the reverse of removal.

Rear Cross Member

Replacement

1. Remove the rear wheel & tire.

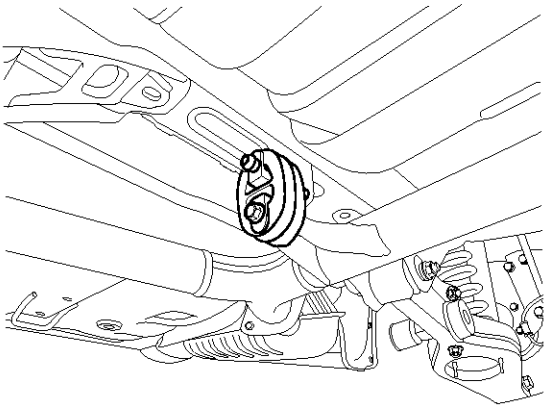
Tightening torque:
88.3 ~ 107.9N.m(9.0 ~ 11.0kgf.m, 65.1 ~ 79.6lb-ft)



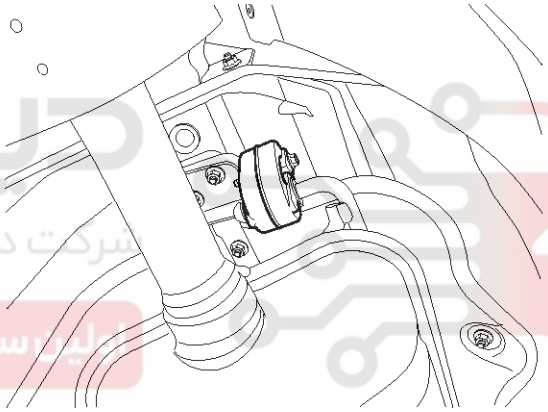
STFSS1023D

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

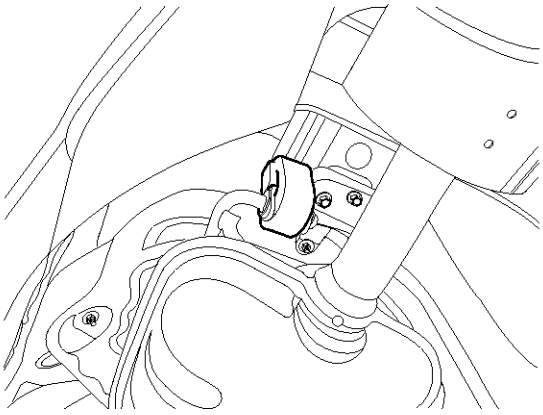
2. Remove the rear lower arm.
   (Refer to lower arm)
3. Remove the rear shock absorber.
   (Refer to rear shock absorber)
4. Remove the rear upper arm.
   (Refer to rear upper arm)
5. Remove the trailing arm.
   (Refer to trailing arm)
6. Remove the rear assist arm.
   (Refer to rear assist arm)
7. Remove the rear muffler.



STFSS1043D



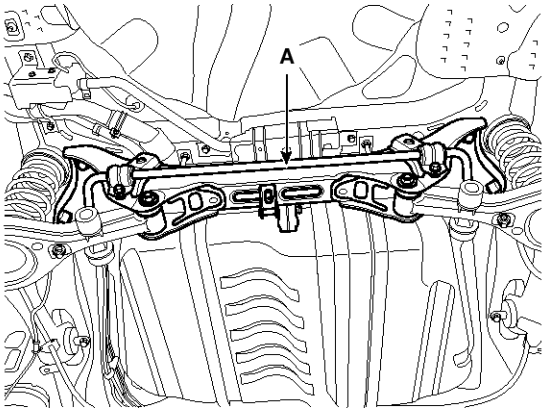
STFSS1044D



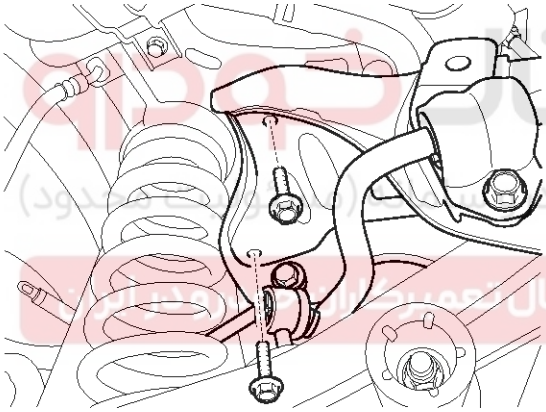
STFSS1045D

8. Loosen the mounting bolts and then remove the rear cross member (A) from the frame.

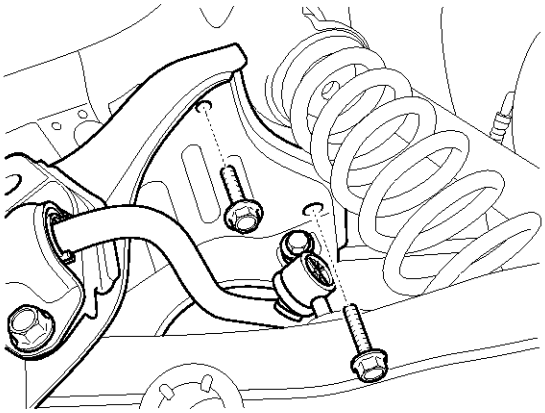
Tightening torque:
156.9 ~ 176.5N.m(16.0 ~ 18.0kgf.m, 115.7~130.2lb-ft)



STFSS1024D



STFSS1025D



STFSS1026D

9. Installation is the reverse of removal.

Tires/Wheels

Tire

Tire wear

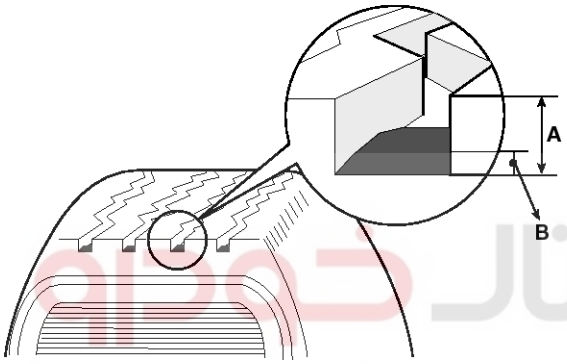
1. Measure the tread depth of the tires.

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.



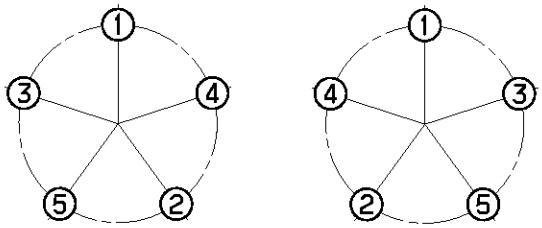
KHRE404A

Wheel

Hub nut tightening sequence

Tighten the hub nuts as follows.

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



SUNSS6551D

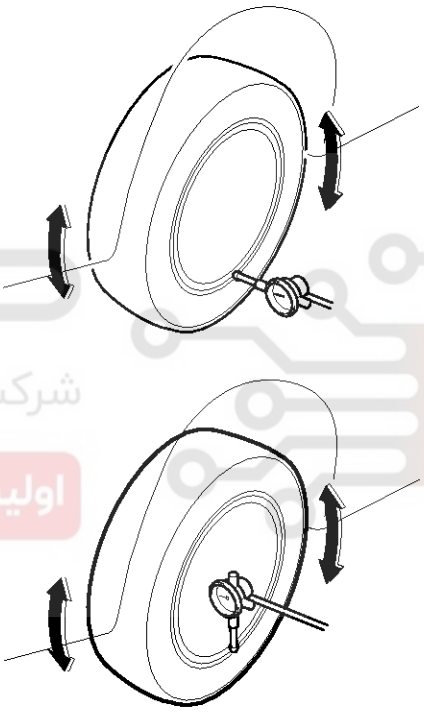
CAUTION
When using an impact gun, final tightening torque should be checked using a torque wrench.

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 1.4(0.055)
Lateral mm(in.)	Below 0.3(0.012)	Below 0.9(0.035)

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



KHRE402A

Alignment

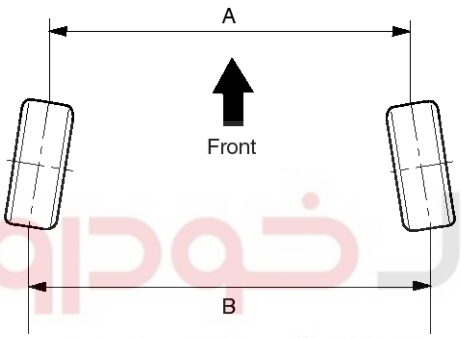
Front wheel alignment

⚠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



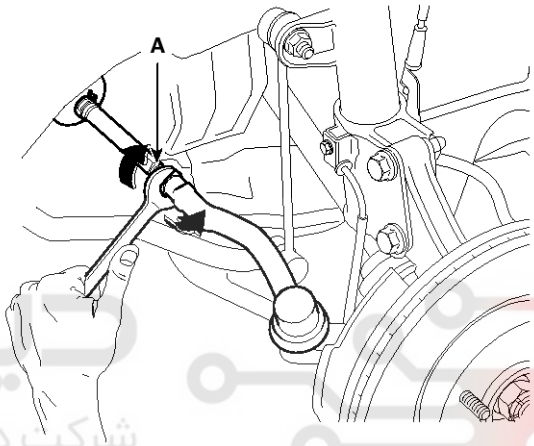
SHDSS6512L

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-in
Total : 0.16˚ ± 0.2˚
Individual : 0.08˚ ± 0.1˚



AHIE107B

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

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

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: -0.5˚ ± 0.5˚

Caster angle : 4.44˚ ± 0.5˚

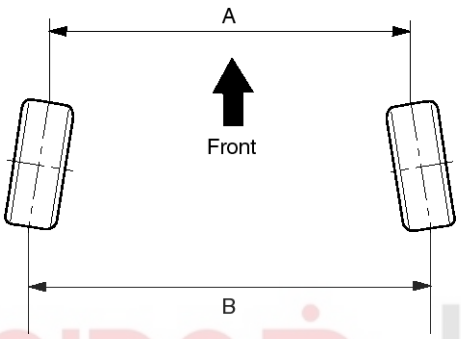
Rear wheel alignment

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



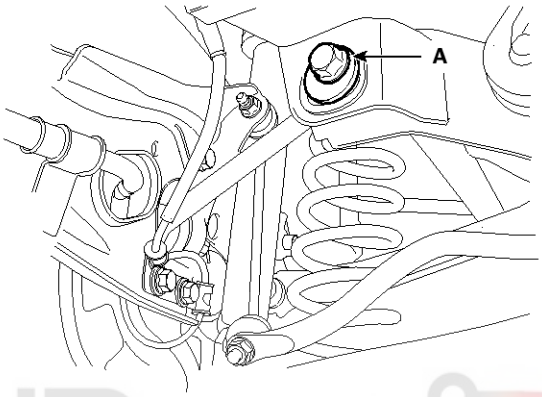
SHDSS6512L

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-in
Total : 0.17˚±0.2˚
Individual : 0.085˚±0.1˚



SHDSS6014D

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

Tightening torque:
107.9 ~ 117.7 N.m (11.0 ~ 12.0 kgf.m,79.6 ~ 86.8 lb-ft)

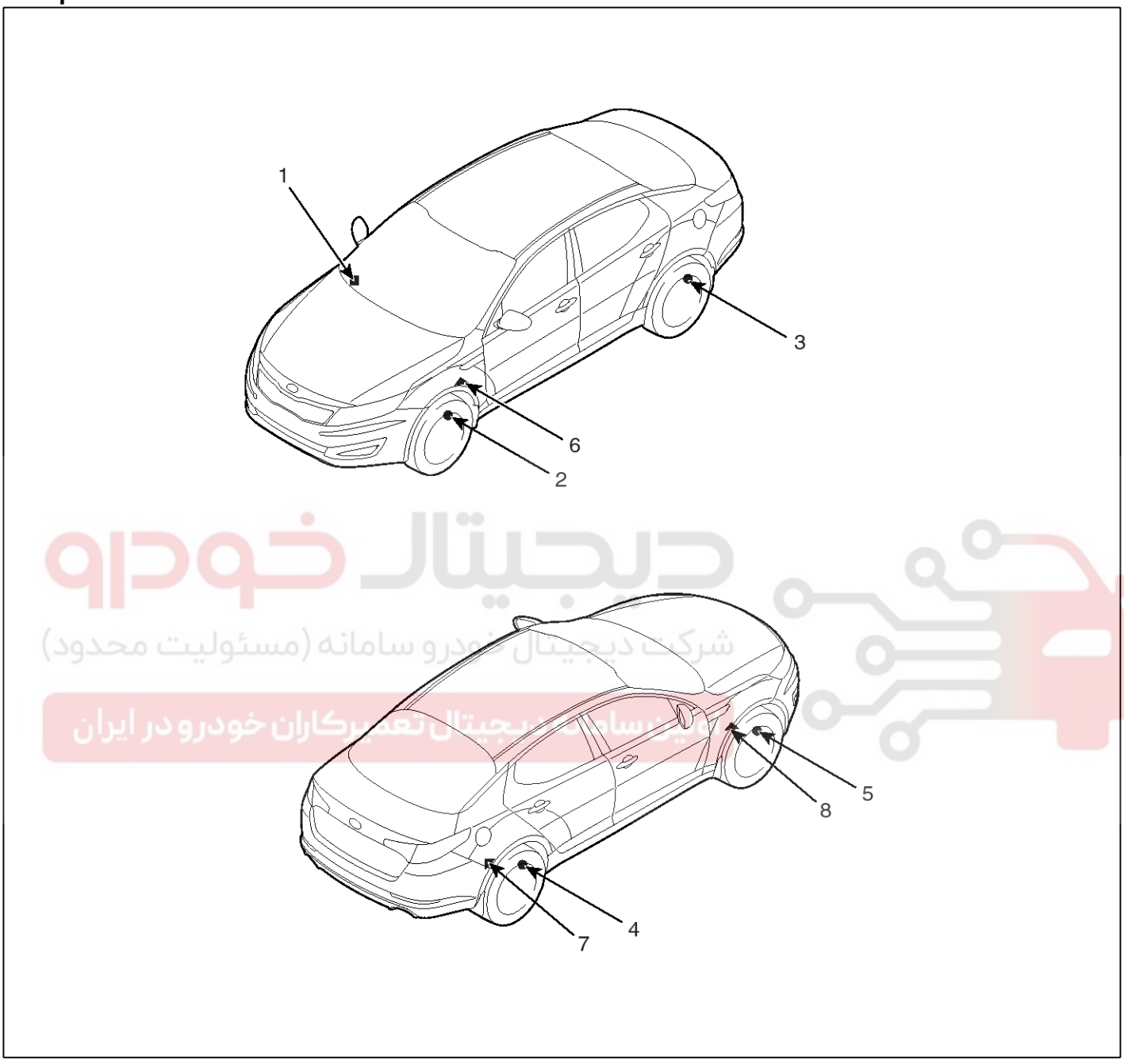
Camber

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: -1.0˚ ± 0.5˚

Tire Pressure Monitoring System

Components Location



STFSS1007L

1. Receiver
2. TPMS sensor (FL)
3. TPMS sensor (RL)
4. TPMS sensor (RR)
5. TPMS sensor (FR)
6. Initiator (FL)
7. Initiator (RR)
8. Initiator (FR)

Description

Tread Lamp

- Tire Under Inflation / Leak Warning.

BHIE500C

1. Turn on condition
   - When tire pressure is below allowed threshold
   - When rapid leak is detected by the sensor.
2. Turn off condition
   - When tire pressure is above(warning threshold + hysteresis).
   - When tire pressure is above (leakwarning threshold).

Wheel Location

1. Turn on condition
   - At the same time as TREAD Lamp.
   - Indicates wheel location where under inflation / leak has occurred.
2. Turn off condition
   - At the same time as TREAD Lamp.

NOTICE

If wheel locations change in between Ignition cycles, then the system assumes the previous Auto-Located position. Once Auto-Location completes on the current Ignition cycle, the correct lamp will be lit.

DTC Warning

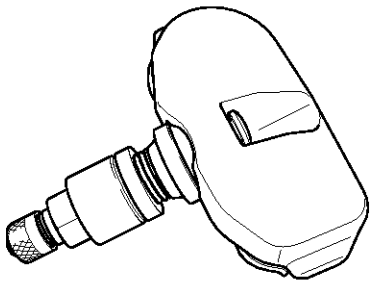
1. Turn on condition
   - When the system detects a fault that is external to the receiver / initator / sensor.
   - When the system detects a receiver fault.
   - When the system detects an initiator fault.
   - When the system detects a sensor fault.
2. Turn off condition
   - If the fault is considered as 'critical', then the lamp is held on throughout the current Ignition cycle (even if the DTC has been demoted). This is because it is important to bring the problem to the drivers attention. On the following Ignition cycle, the demotion conditions will be re-checked. If the demotion conditions occur, the lamp will be turned off. It will be held on until DTC demotion checking is completed.
   - 'Non critical' faults are those that can occur temporarily e.g. vehicle battery under voltage. The lamp is therefore turned off when the DTC demotion condition occurs.

System Fault

1. General Function
   - The system monitors a number of inputs across time in order to determine that a fault exists.
   - Faults are prioritized according to which has the most likely cause.
   - Maximum fault store is equal to 15.
   - Certain faults are not covered through DTC. The main ones are:
     a. Receiver Micro-controller lock up ; requires observation of lamps at Ignition ON to diagnose.
     b. Ignition Line stuck ; requires observation of lamps at Ignition ON to diagnose.

TPMS Sensor

Description



BHIE510A

1. Mode
   1) Configuration State
      - All sensors should be in the Low Line state.
      - In Low Line configuration, sensor transmissions occur every 1 minute (nominal) and pressure is measured every 4 seconds.
   2) Normal Delayed Auto State
      - This is Low Line specific and is used for all High Line applications.
      - In this state, the sensor will transmit for approx. 12 minutes before automatically entering storage state.
   3) Storage Auto State
      - This state is a Low quiescent current state.
      - In this state;
        a. Ignition off.
        b. The sensor does not measure pressure / temperature / battery level.
        c. The sensor will not transmit, unless requested to do so by the initiate command.
   4) Alert State
      - The sensor automatically enters this state if the measured temperature exceeds 110˚C and over temperature shutdown is likely.
      - In this state, pressure is measured every 4 seconds and RF data transmitted every 4 seconds.
      - The state lasts for 1 minute if it is pressure triggered.

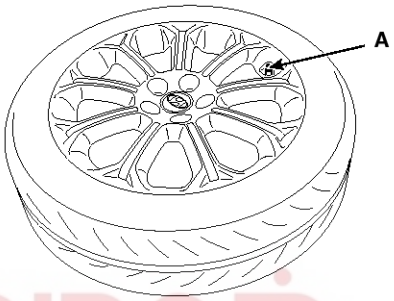
Removal

Tire Removal

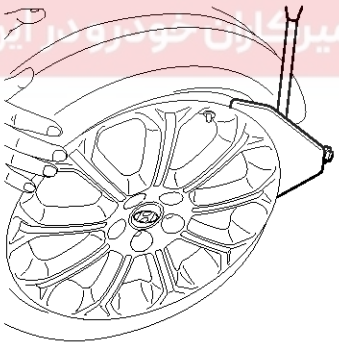
1. Deflate tire & remove balance weights.

⚠CAUTION

- **The tire bead should be broken approx. 90° from the valve side of the wheel. The bead breaker should not be set too deep.**
- **Avoid tire/tool contact with the valve on dismount.**
- **Dismount should end near the valve.**



SBHSS8105D



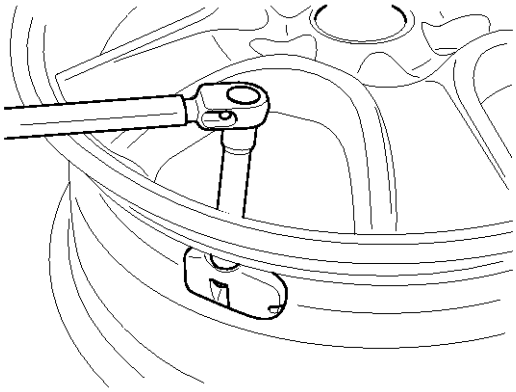
SBHSS8106D

Sensor Removal

⚠CAUTION

Handle the sensor with care.

1. Remove the valve nut.



BHIE511B

⚠CAUTION

The valve nut should not be re-used.

2. Discard the valve assembly.

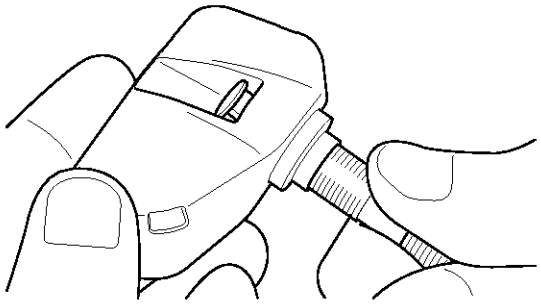
Installation

Sensor Fit

CAUTION

- **Handle the sensor with care.**
- **Avoid lubricant contact if possible.**

1. Assemble valve to sensor and turn valve 3 times with the square part of the screw in the slot.



BHIE510B

CAUTION

- **The fit should not be tight i.e. it should still be possible to easily adjust valve angle.**
- **Ensure that the wheel to be fitted is designed for sensor mount. There should normally be a mark to indicate this.**
- **Ensure that the valve hole and mating face of the wheel are clean.**

2. Mount assembly to wheel.

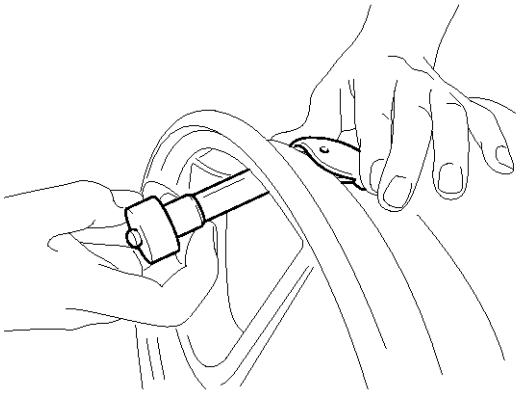
CAUTION

Ensure sensor feet are against the wheel throughout the remainder of the assembly process.

3. Tighten washer and nut by hand until the valve thread meets the nut built-in calibrated stop.

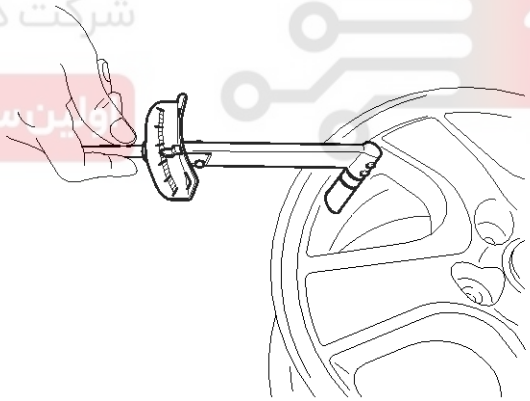
CAUTION

Ensure that the grommet remains in contact with the wheel.



BHIE510C

4. Using a torque wrench, tighten the nut to 2.95±0.37 lb-ft (0±0.5 Nm) It is normal to feel a break as the 1.7 lb-ft (2.3Nm) calibrated stop in the nut snaps and the torque falls.



BHIE510D

CAUTION

- **Increase torque smoothly in order to achieve a clean break of the stop.**
- **Do not exceed allowed torque.**
- **Do not use electric or pneumatic tools.**

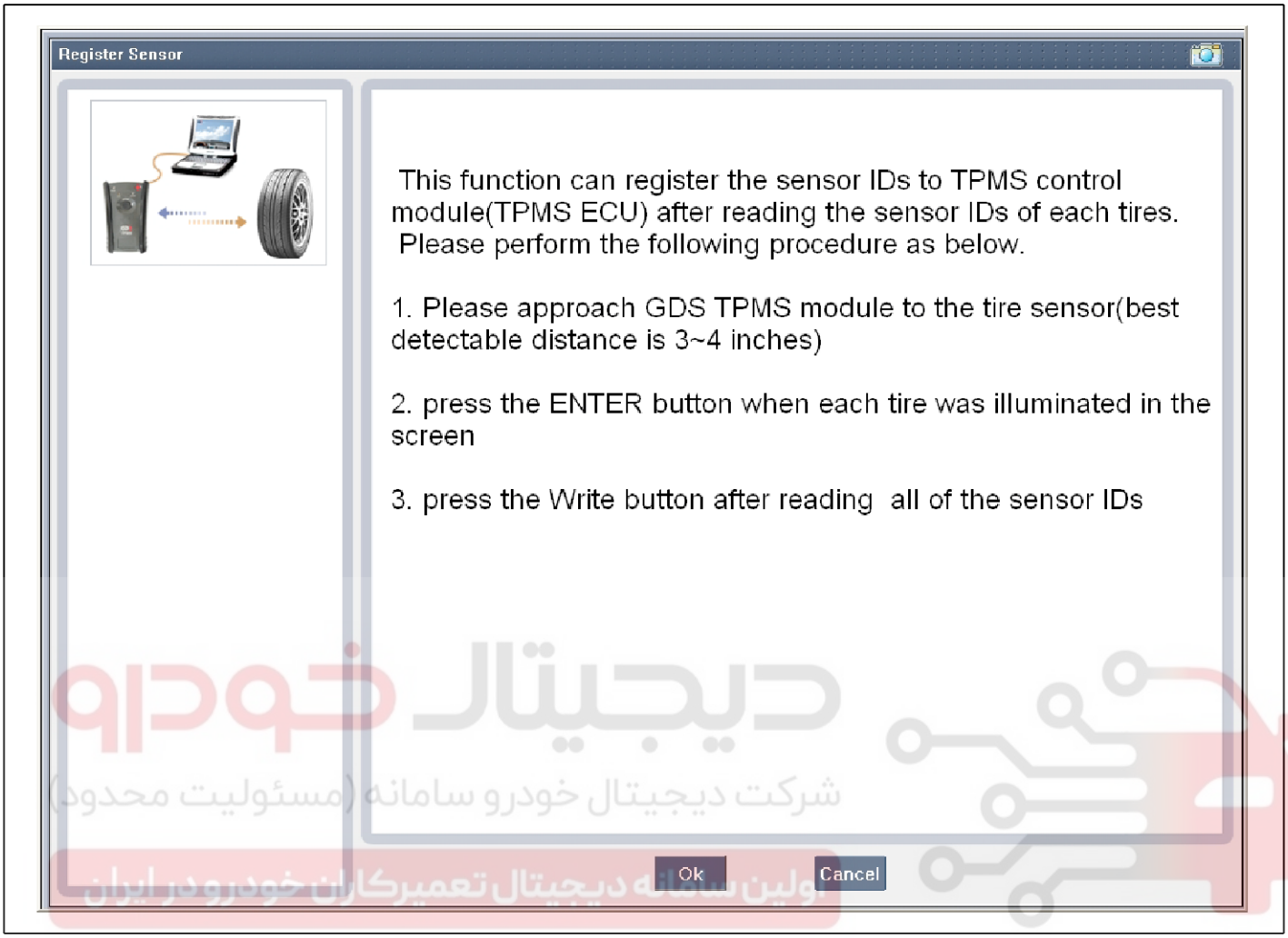
Tire Fit

⚠CAUTION
Only use wheels designed to accommodate the TPMS sensor.

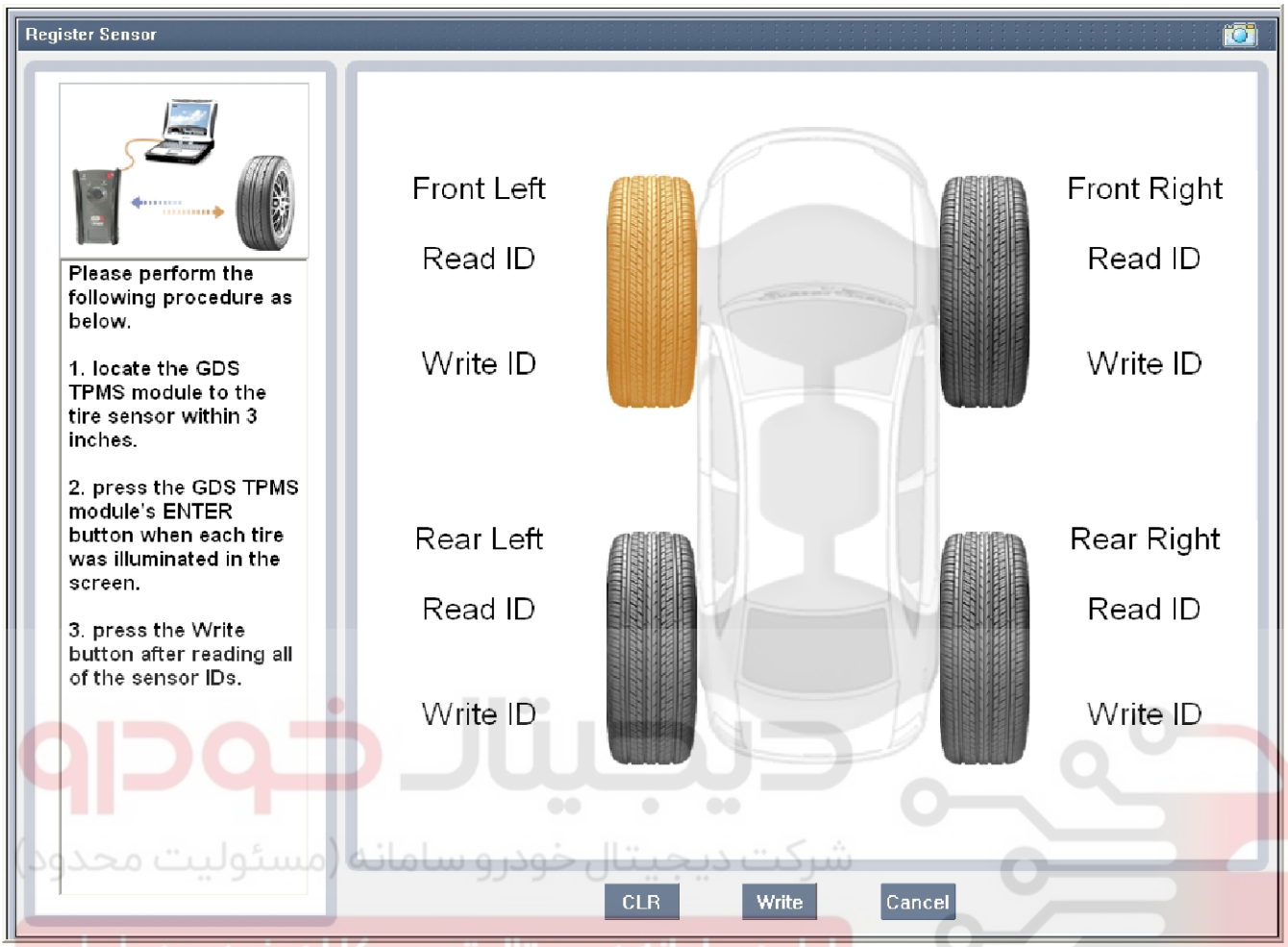
1. Lubricate the tire bead not the rim. Excessive lubrication should not be applied.
2. Start tire mounting approx. 5.9 in(15 cm) from valve.
3. Move the mounting tool away from the valve.

   ⚠CAUTION
   Avoid tire / tool contact with the valve.
4. Finish with mounting tool near to valve.
5. Carry out inflation / pressure correction and then fit valve cap.

Sensor ID Writing (Wireless)

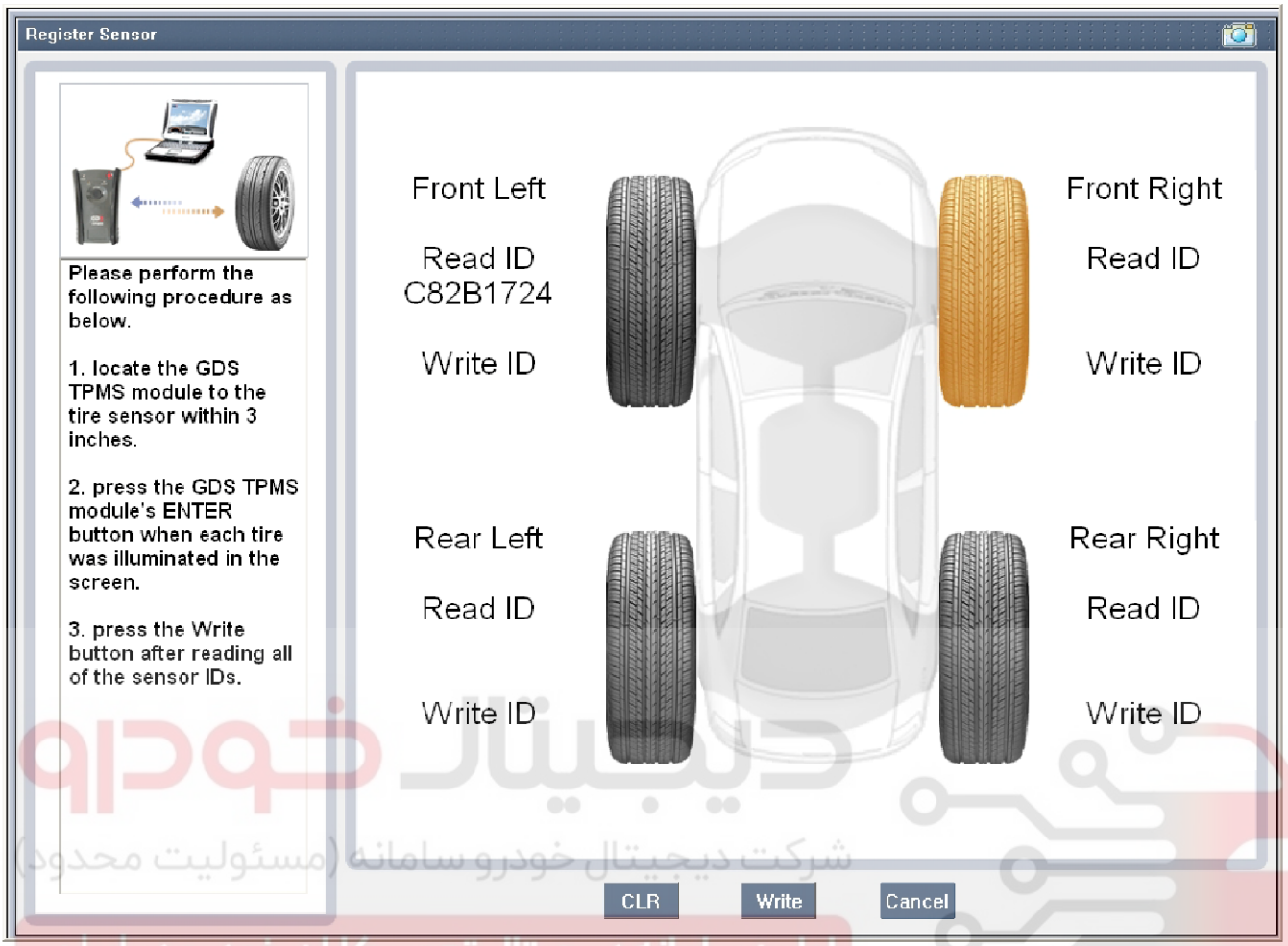


SXMSS9041L



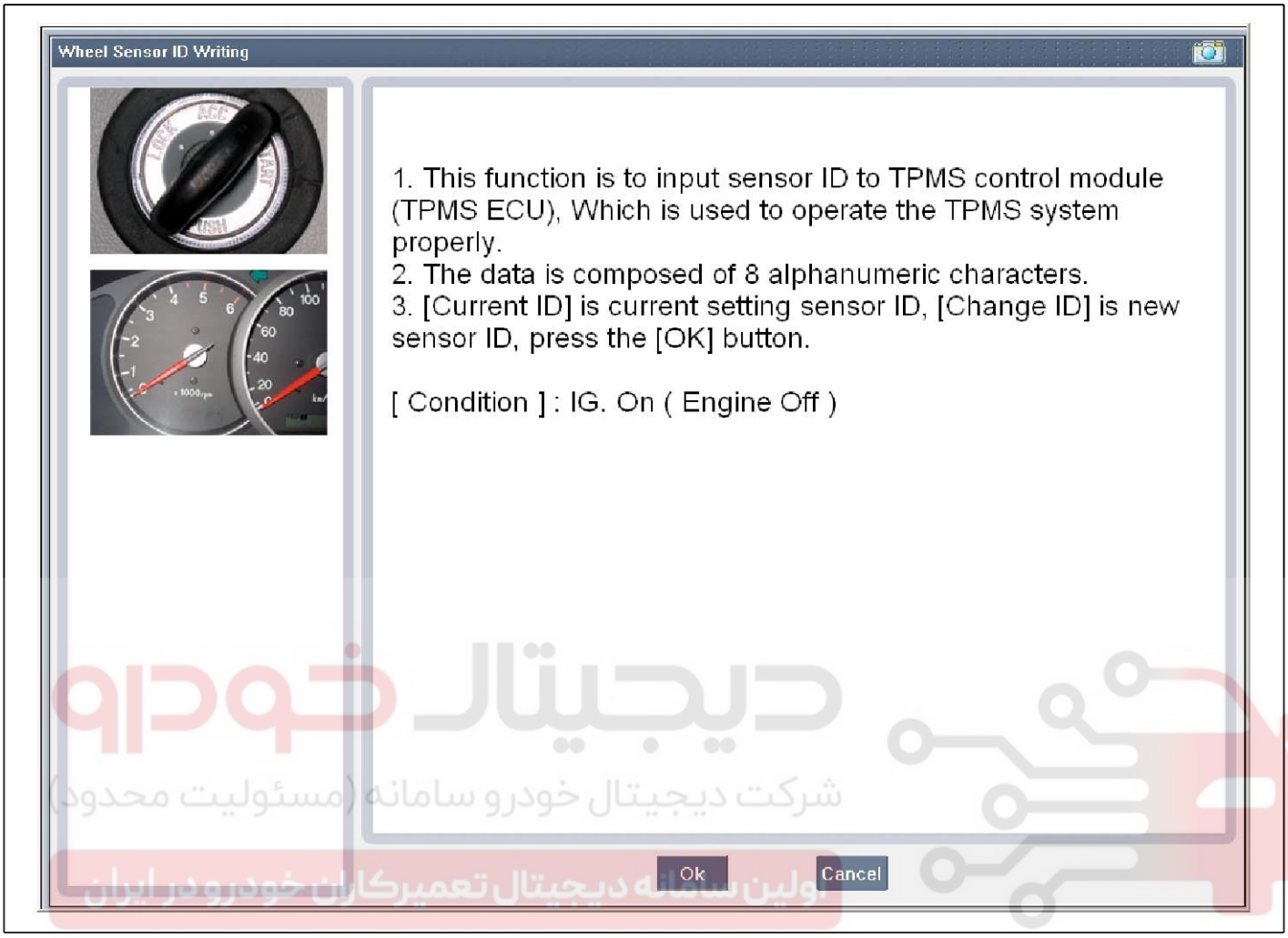
SXMSS9042L

SXMSS9043L



SXMSS9044L

Sensor ID Writing



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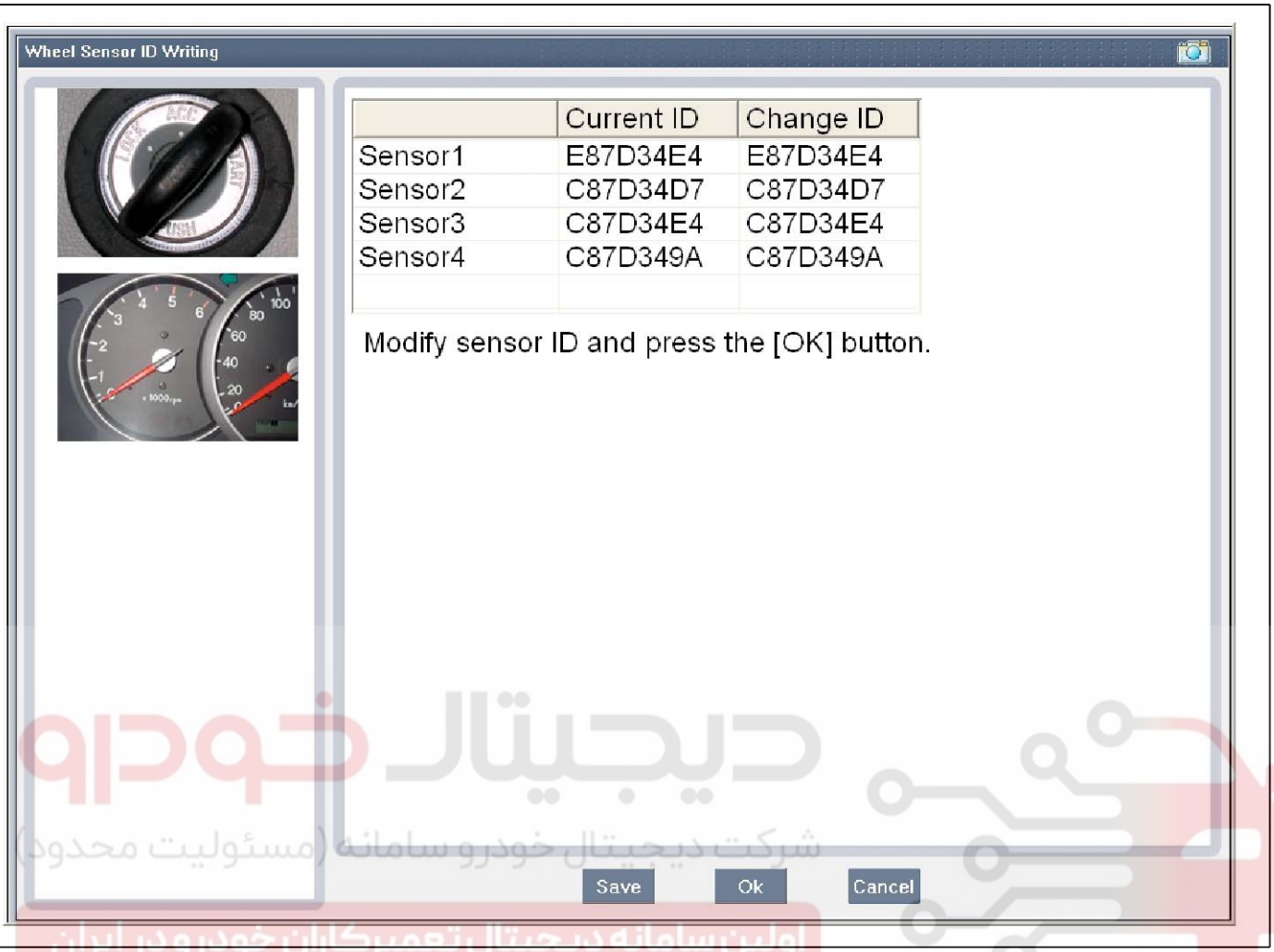

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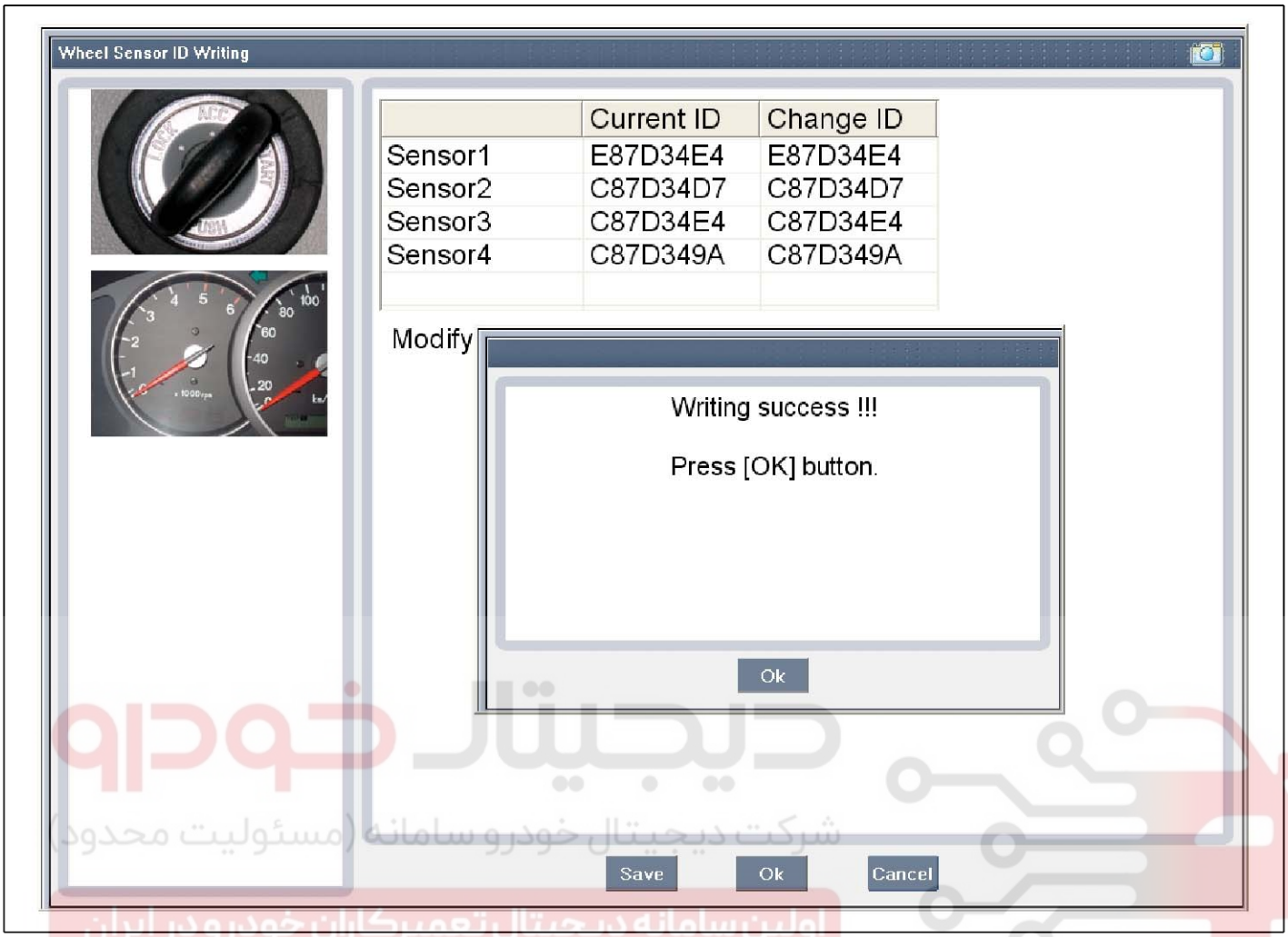
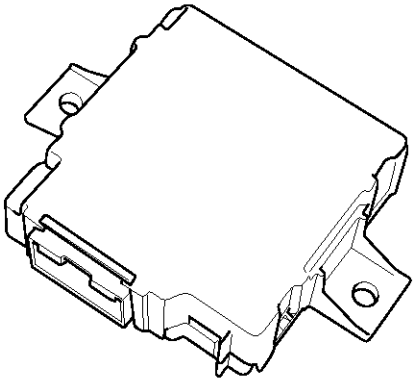


SXMSS9047L

TPMS Receiver

Description

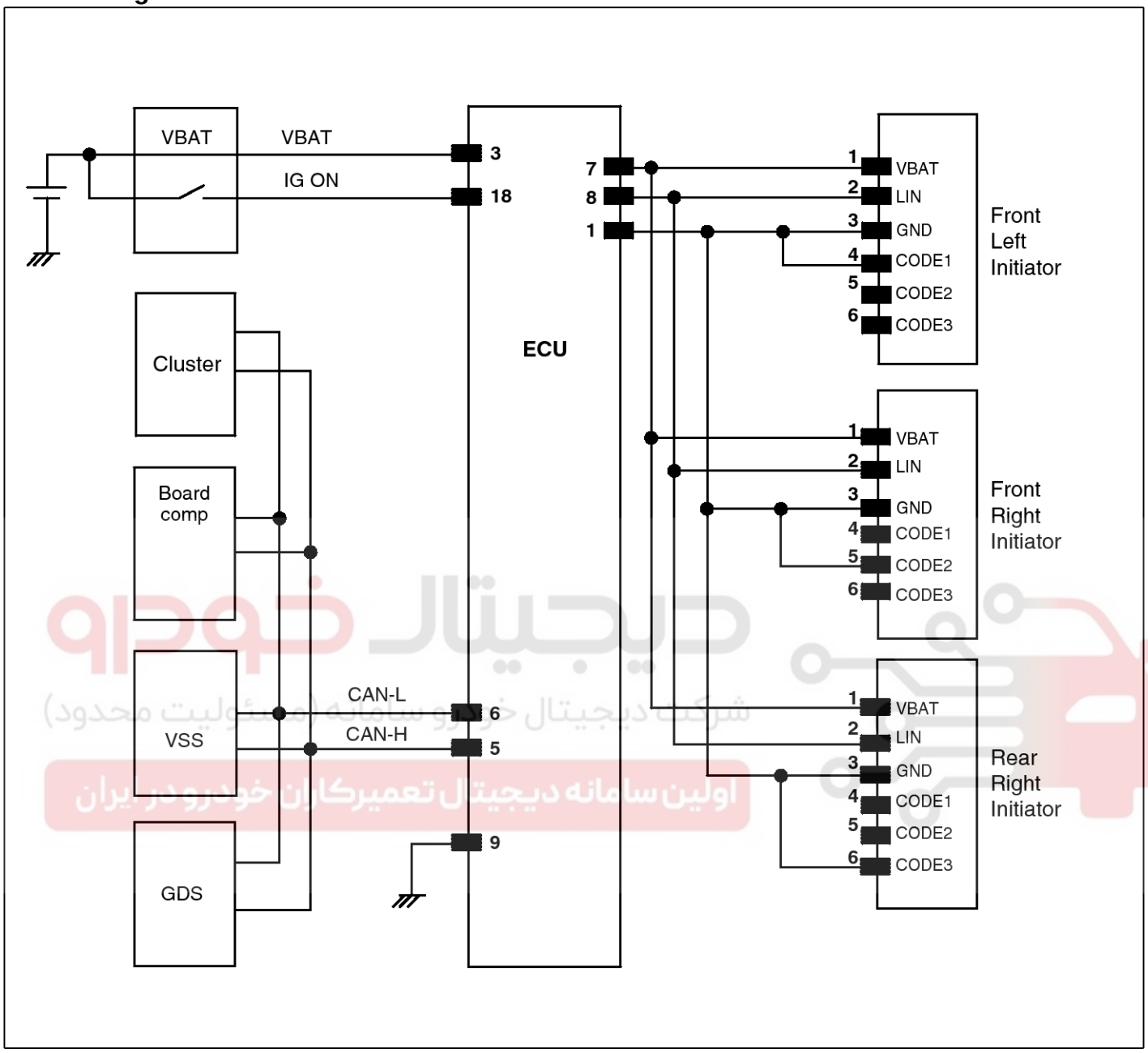


SVGSS0051D

1. Mode
   1) Virgin State
      - The receiver as a sole part is shipped in this state. Replacement parts should therefore arrive in this state.
      - In this state, there is no Auto-Location, no sensor wake-up, no sensor monitoring and no DTC monitoring..
      - The state indicates that platform specific parameters must be written to the receiver and that sensors are un-learned.
   2) Normal State
      - In order for tire inflation state and DTC monitoring to occur, the receiver must be in this state.
      - In this state, automatic sensor location / learning is enabled.

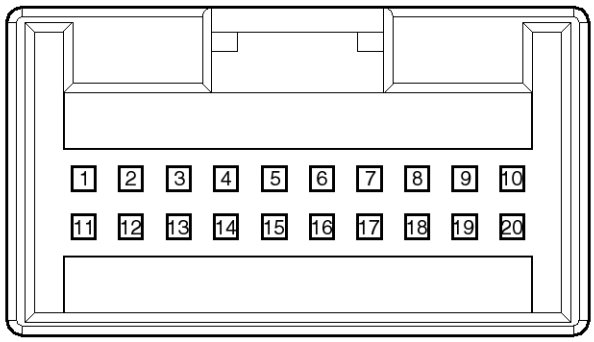
2. Overview
   - Sends LF command data to initiators.
   - Controls sensor state:
     Ignition on - Normal Delayed
     Ignition off - Storage.
   - Auto-Locates sensors.
   - Auto-Learns new sensors.
   - Receives RF data from sensor.
   - Uses sensor data to decide whether to turn on TREAD Lamp / wheel location LED's.
   - Uses sensor information, distance traveled, background noise levels, Auto-learn status, short circuit output status, vehicle battery level, internal receiver states to determine if there is a system or a vehicle fault.

Circuit Diagram



STFSS1003L

Connector pin number



SYFSS0038D

Pin NO.	Discription	Remark
1	-	
2	-	
3	ECU battery terminal	
4	-	
5	CAN_High	
6	CAN_Low	
7	-	
8	-	
9	Ground	
10	-	
11	-	
12	-	
13	-	
14	-	
15	-	
16	-	
17	-	
18	Ignition ON	
19	-	
20	-	

Operation

1. General Function
   - Auto-locate/learn takes place only once per Ignition cycle.
   - On successful completion, 4 road wheel sensor ID's, together with their respective road wheel positions are latched into memory for monitoring.
   - Until Auto-learn completes, previously learned sensors (together with their respective locations) are monitored for under inflation / leak warnings.
   - Spare tire inflation / DTC state is not displayed.
2. General Conditions to Learn New Sensors:
   - Receiver must Auto-Locate 4 road sensors.
   - Auto-location / learning only functions when speed is more than 20 kph (approx. 15 mph).
   - Receiver must determine that it is confident that sensor is not temporary:
     a. Uses vehicle speed.
     b. Uses confidence reduction of previously learned sensors.
   - Typical time at driving over 20 kph to learn a new sensor is up to 10 minutes.
3. General Conditions to Un-Learn a sensor that is removed:
   - It takes less than 10 minutes at 20~30kph.
   - Confidence reduction is dependant on vehicle speed and the number of sensors known to the receiver.

Replacement

NOTICE

When the receiver first arrives for replacement:

a. It will be in Virgin State.

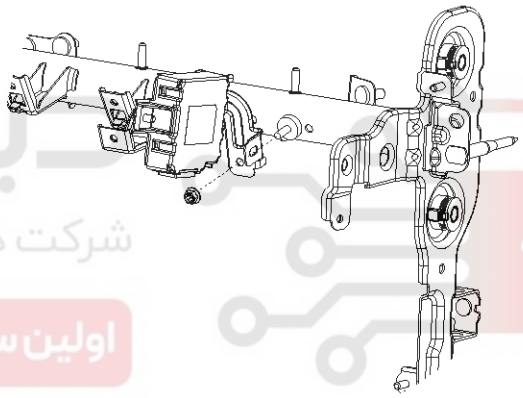
b. It will not be configured for any specific platform.

c. It will not have any sensor ID's memorized.

CAUTION

It is important to make sure that the correct receiver is used to replace the faulty part i.e. it must be Low Line in order to have the correct inflation warning thresholds set.

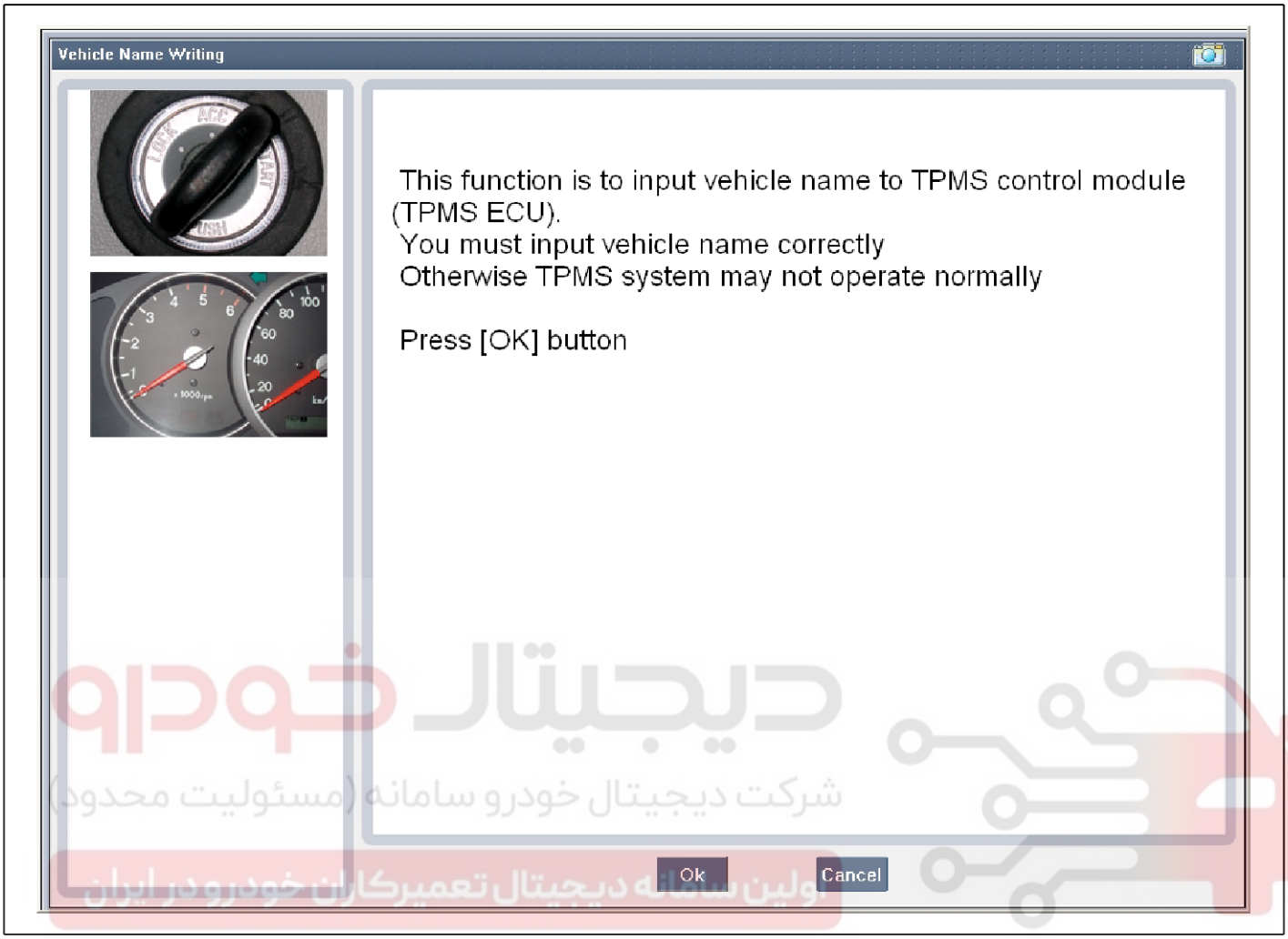
1. Disconnect vehicle battery.
2. Remove the glove box.
   (Refer to BD group - "Crash Pad")
3. Remove faulty part and fit bracket assembly to new part.



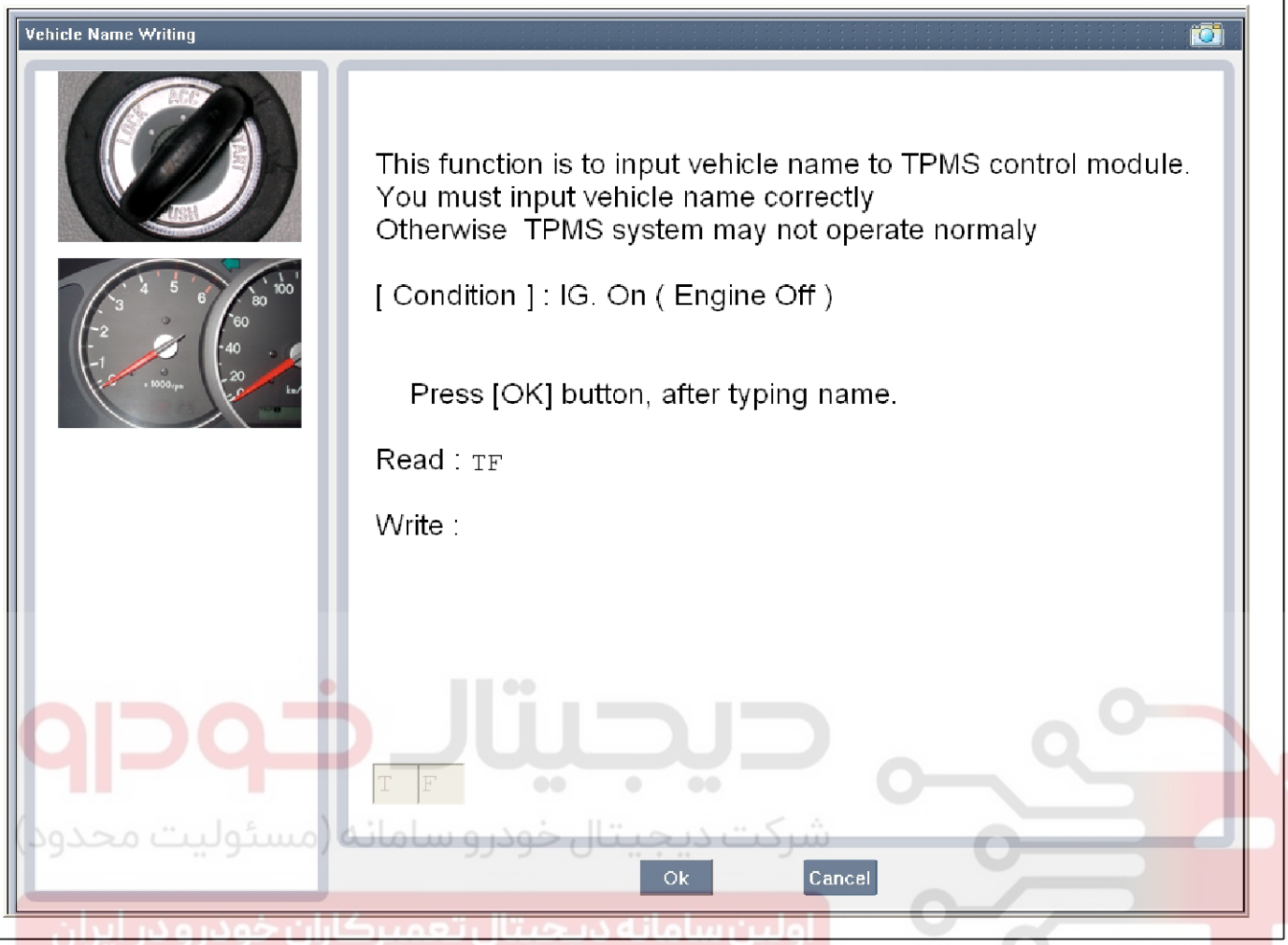
STFSS1053D

4. Secure new part to vehicle and fit connector.
5. Re-connect battery and turn Ignition on.

Vechicle Name Writing



SXMSS9051L



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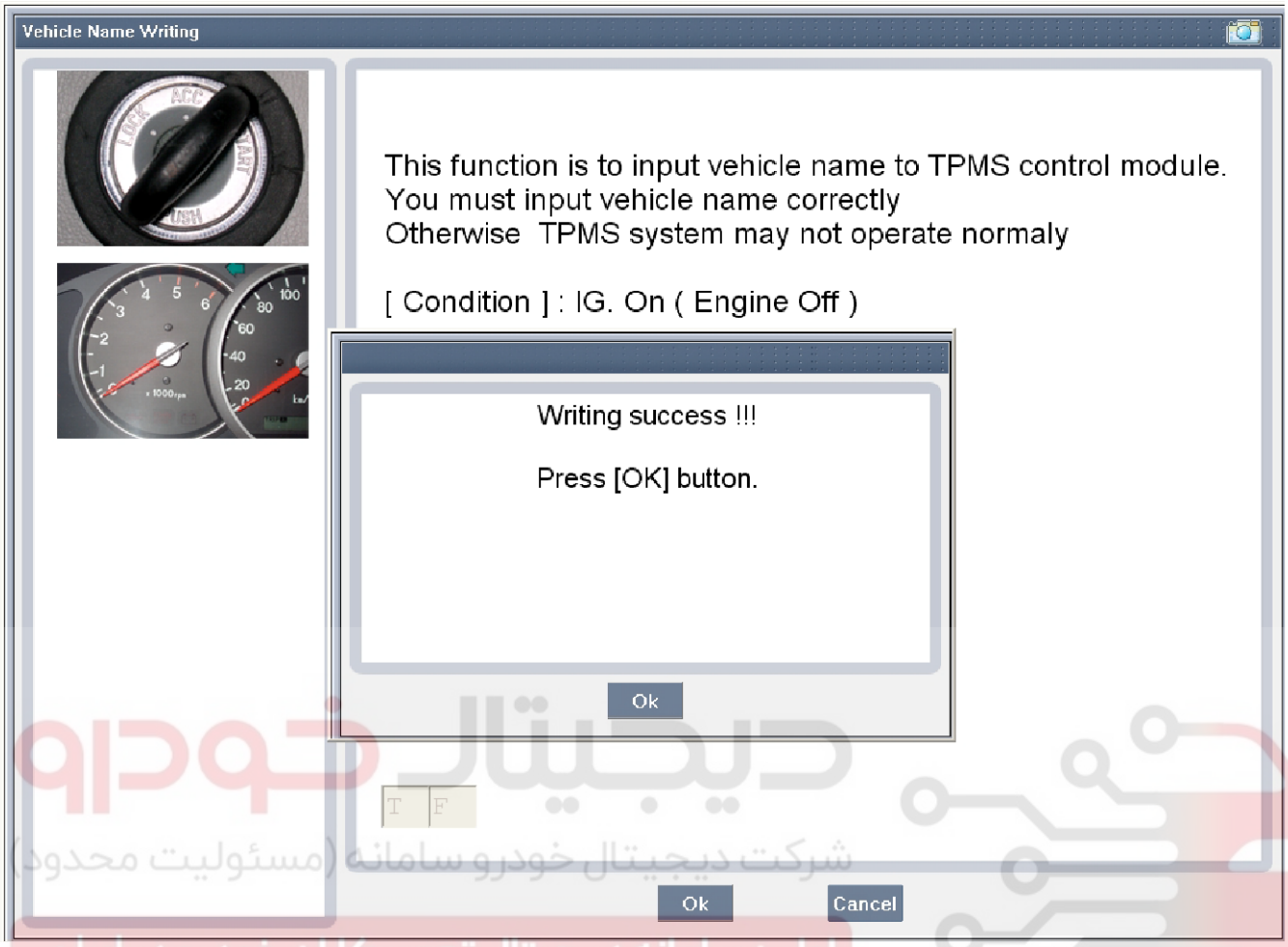

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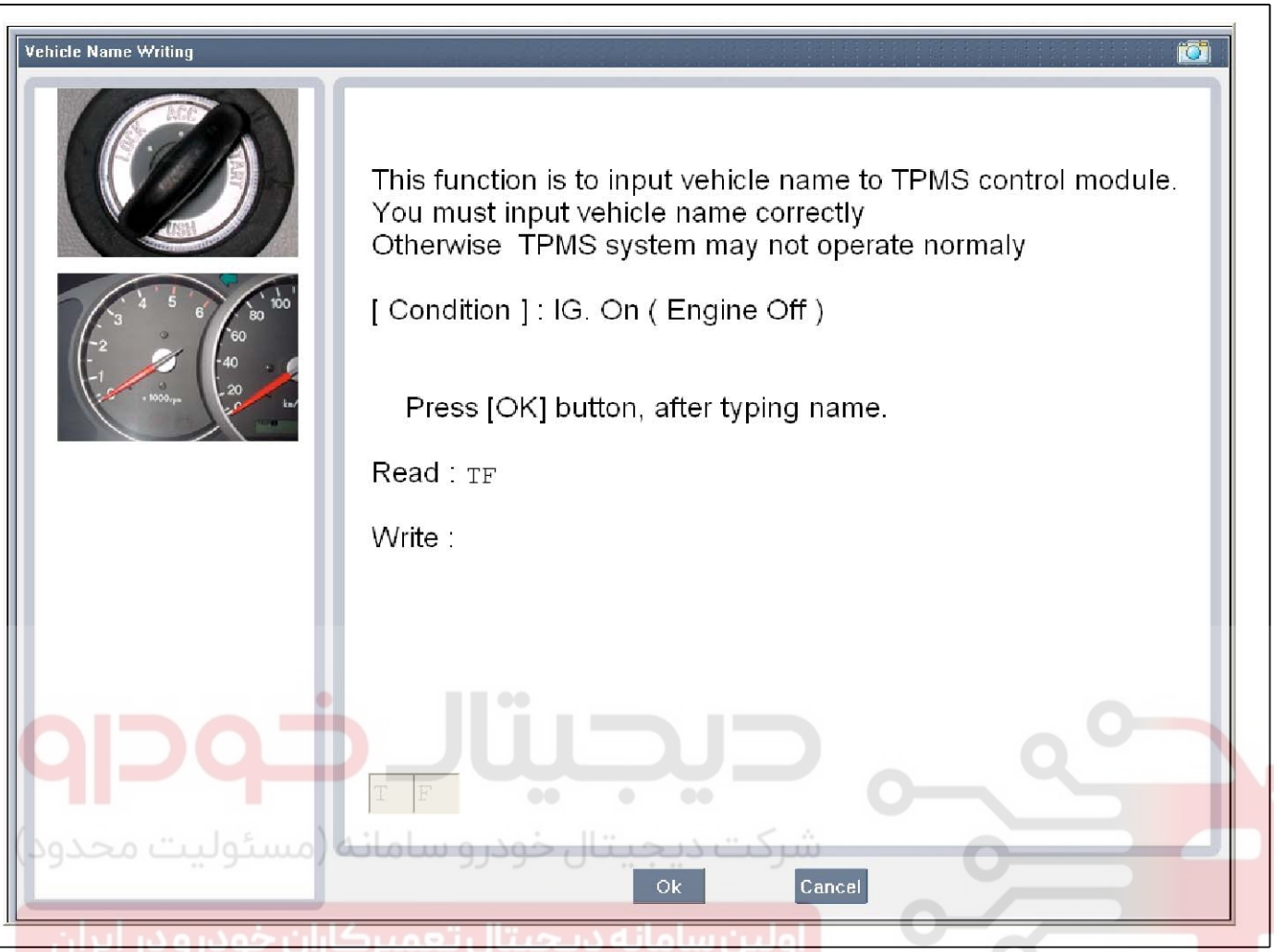
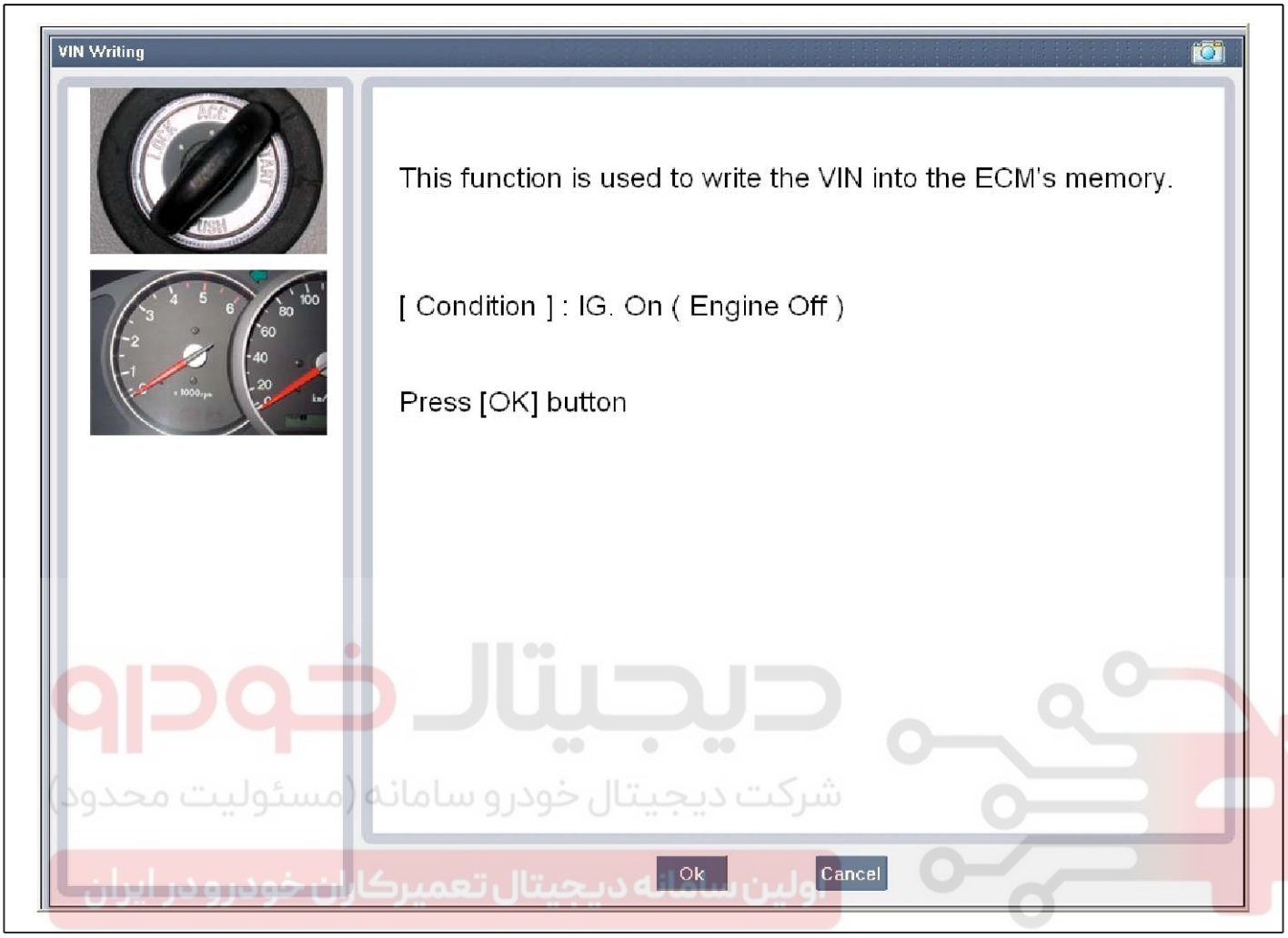


STFSS1006L

VIN Writing



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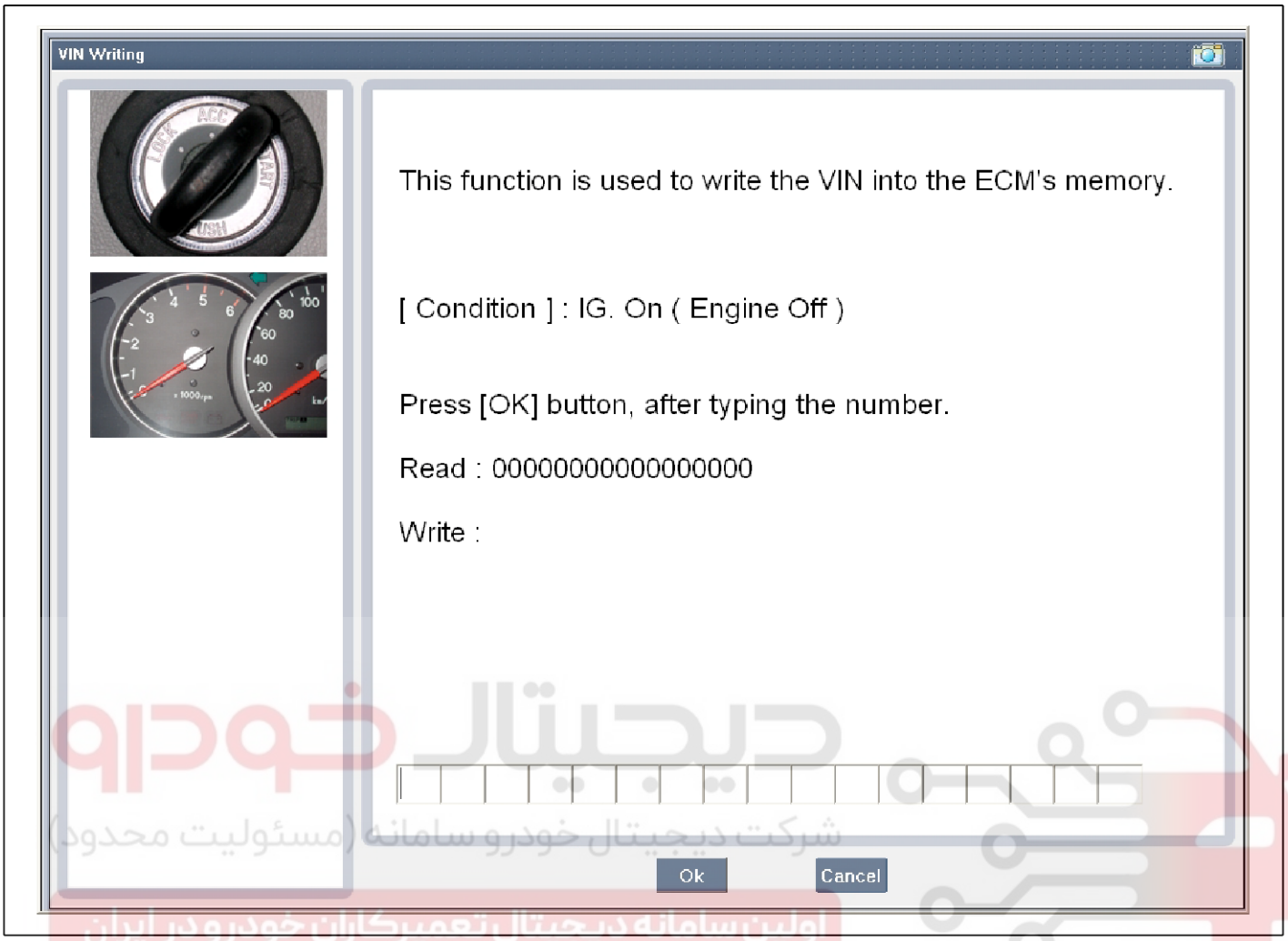

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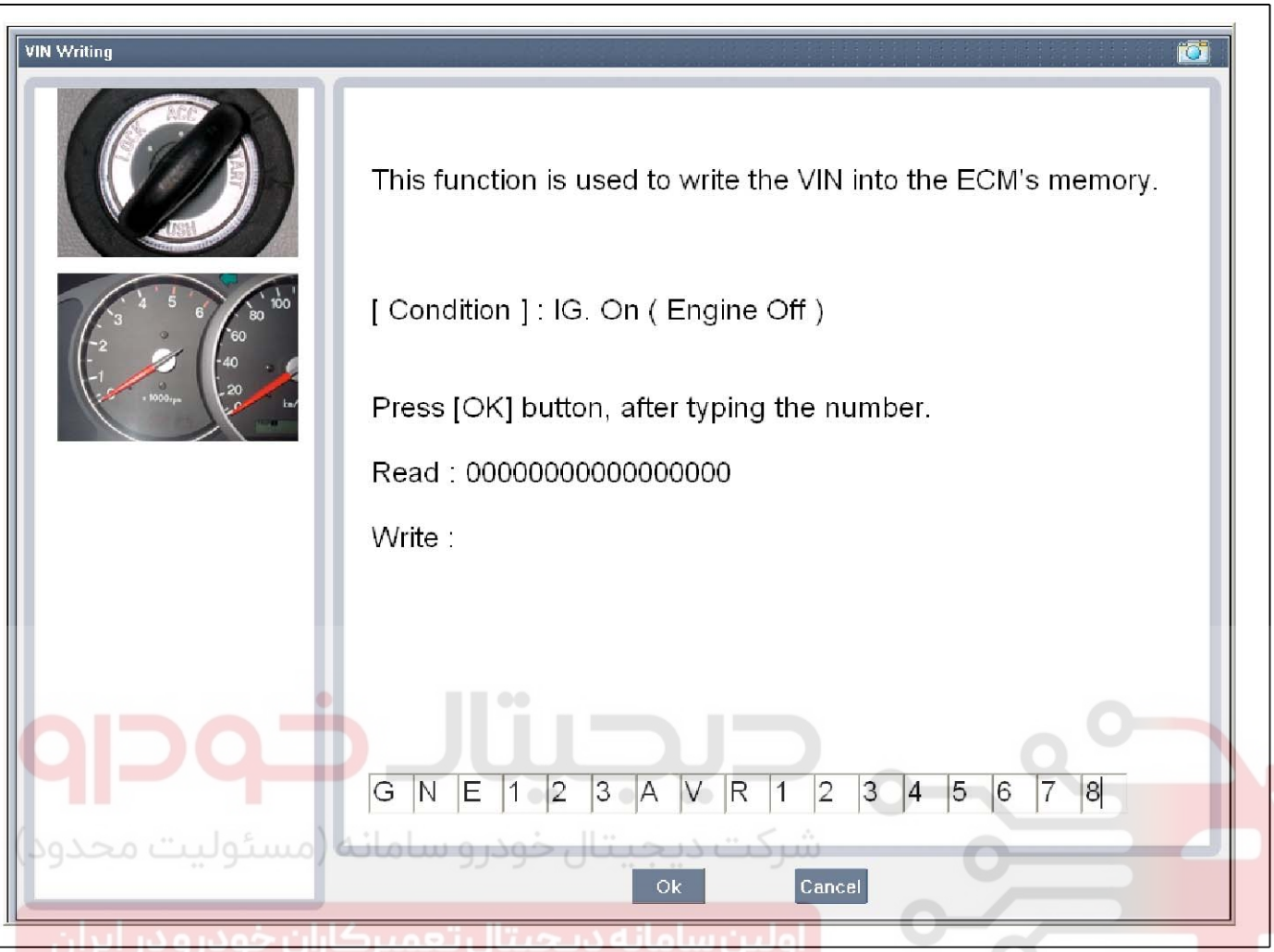

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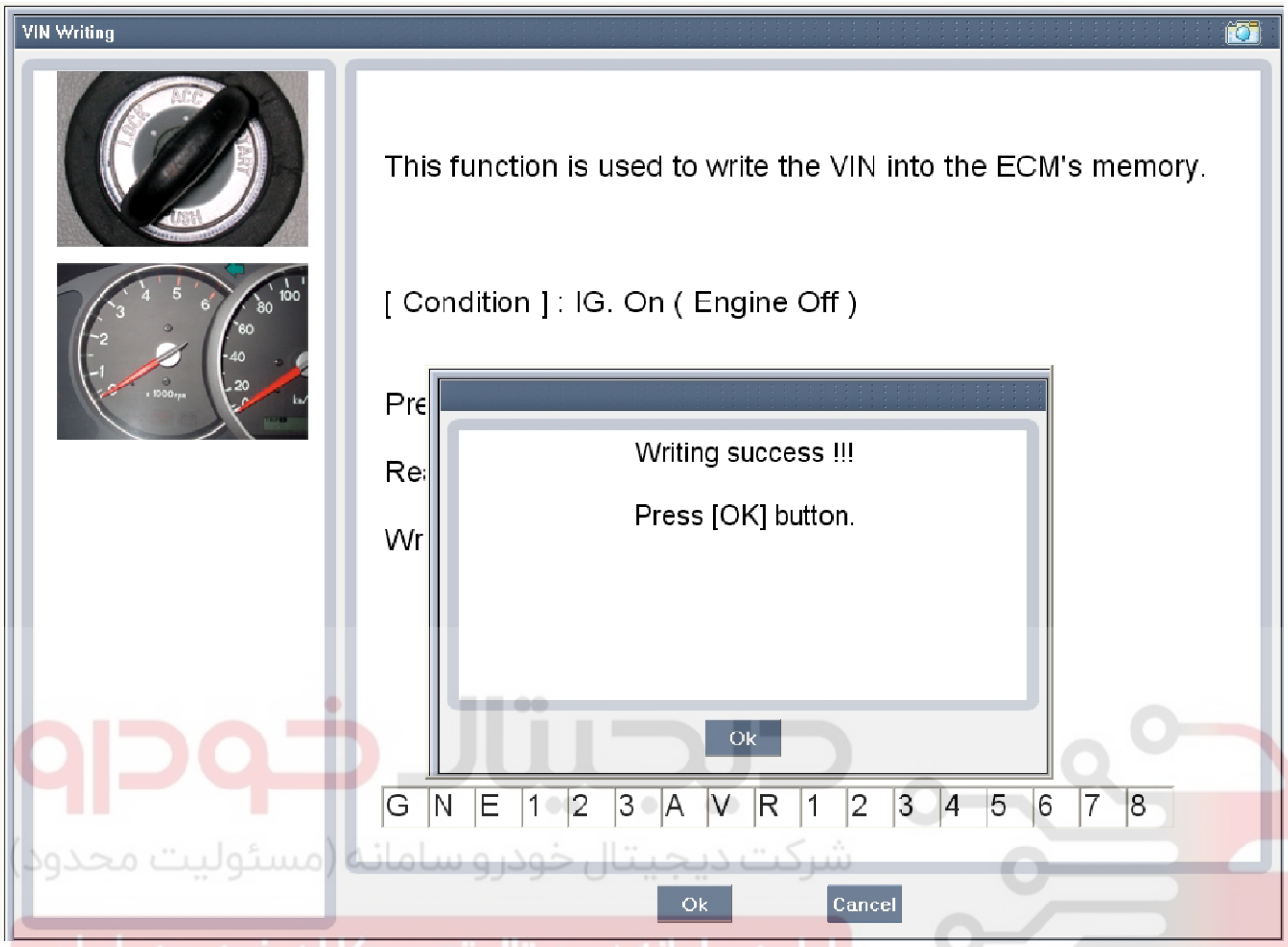

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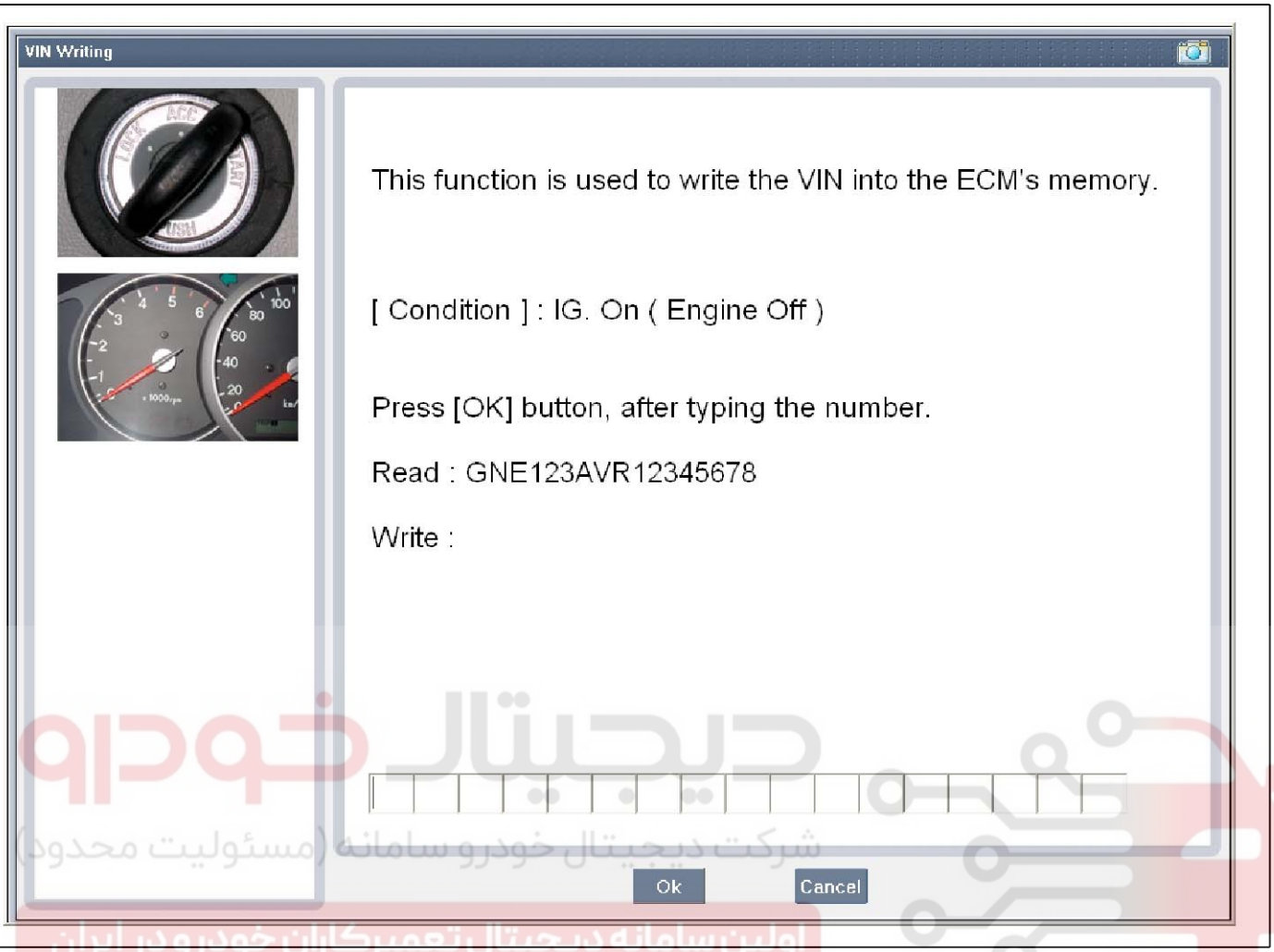

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