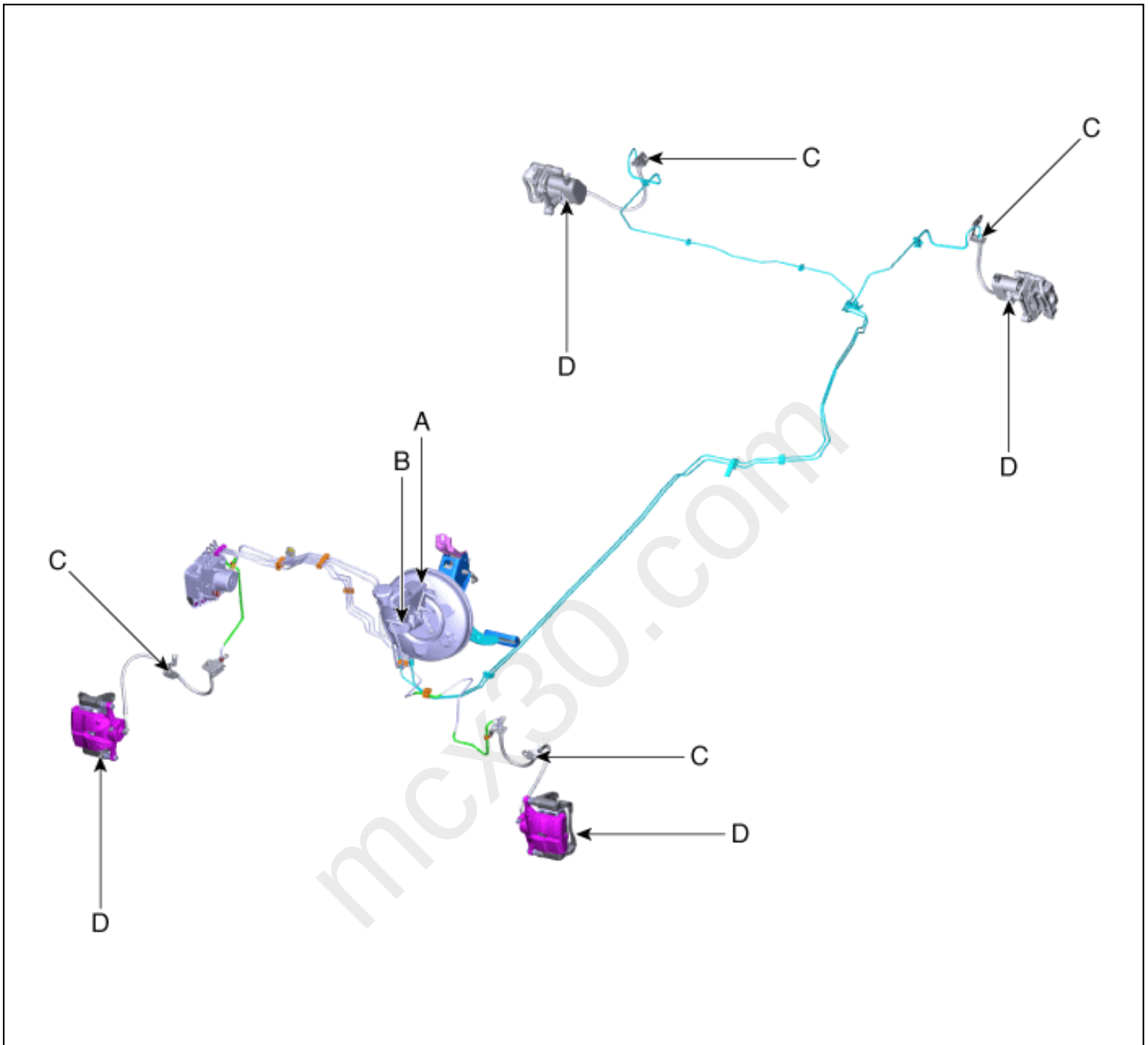


Inspection

Operation and Leakage Check



1. Brake Booster (A)

(1) Check brake operation by applying the brakes during a test drive. If the brakes do not work properly, check the brake booster. Replace the brake booster as an assembly if it does not work properly or if there are signs of leakage.

2. Piston cup and pressure cup inspection (B)

(1) Check brake operation by applying the brakes. Look for damage or signs of fluid leakage. Replace the master cylinder as an assembly if the pedal does not work properly or if there is damage or signs of fluid leakage.

(2) Look for damage or signs of fluid leakage.

(3) Replace the master cylinder as an assembly if the pedal does not work properly or if there is damage or signs of fluid leakage.

(4) Check for a difference in brake pedal stroke between quick and slow brake applications.

(5) Replace the master cylinder if there is a difference in pedal stroke.

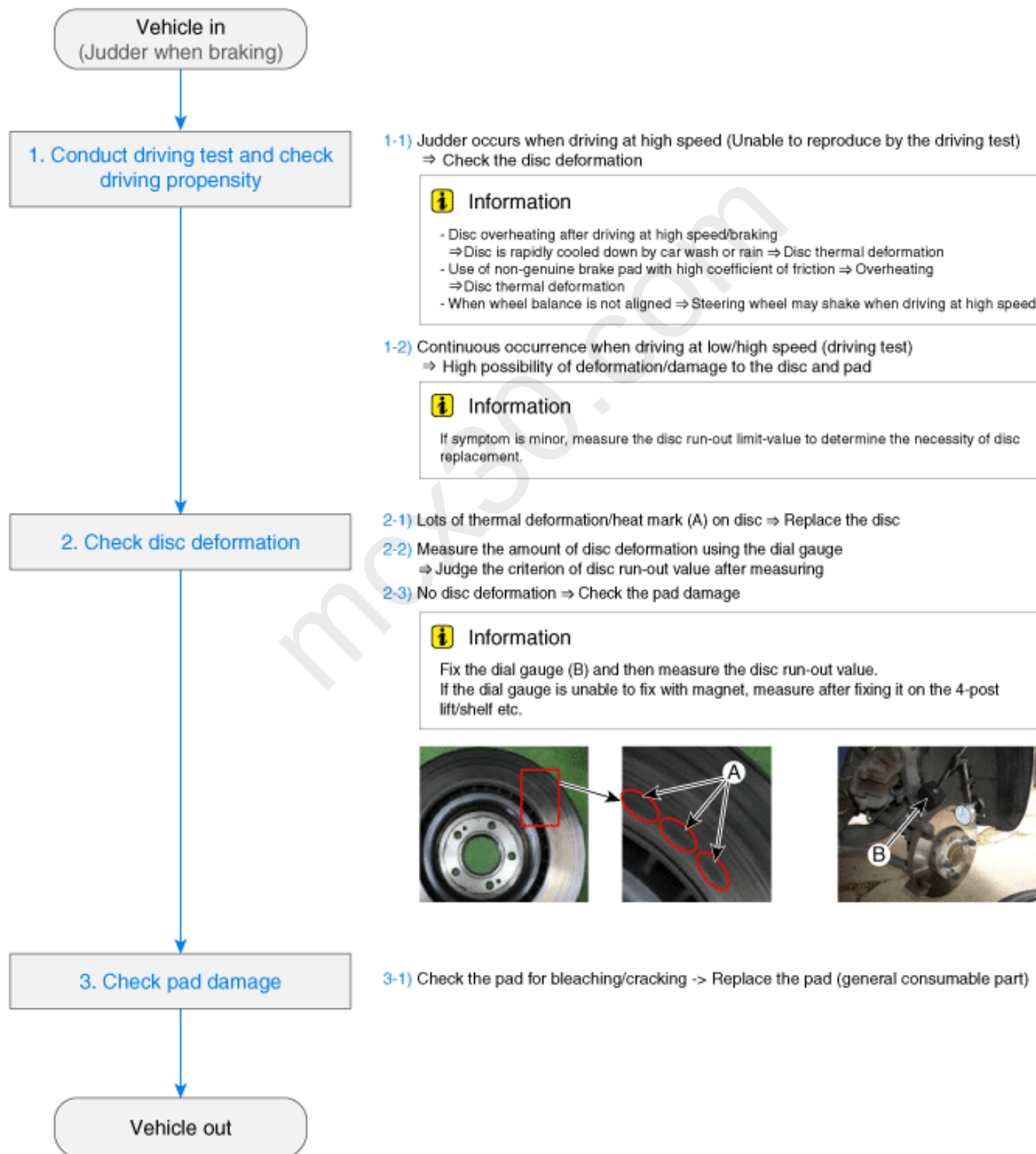
3. Brake hoses (C)

- (1) Look for damage or signs of fluid leakage.
- (2) Replace the brake hose with a new one if it is damaged or leaking.

4. Caliper piston seal and piston boots (D)

- (1) Check brake operation by applying the brakes.
- (2) Look for damage or signs of fluid leakage. If the pedal does not work properly, the brakes drag, or there is damage or signs of fluid leakage, disassemble and inspect the brake caliper. Replace the boots and seals with new ones whenever the brake caliper is disassembled.

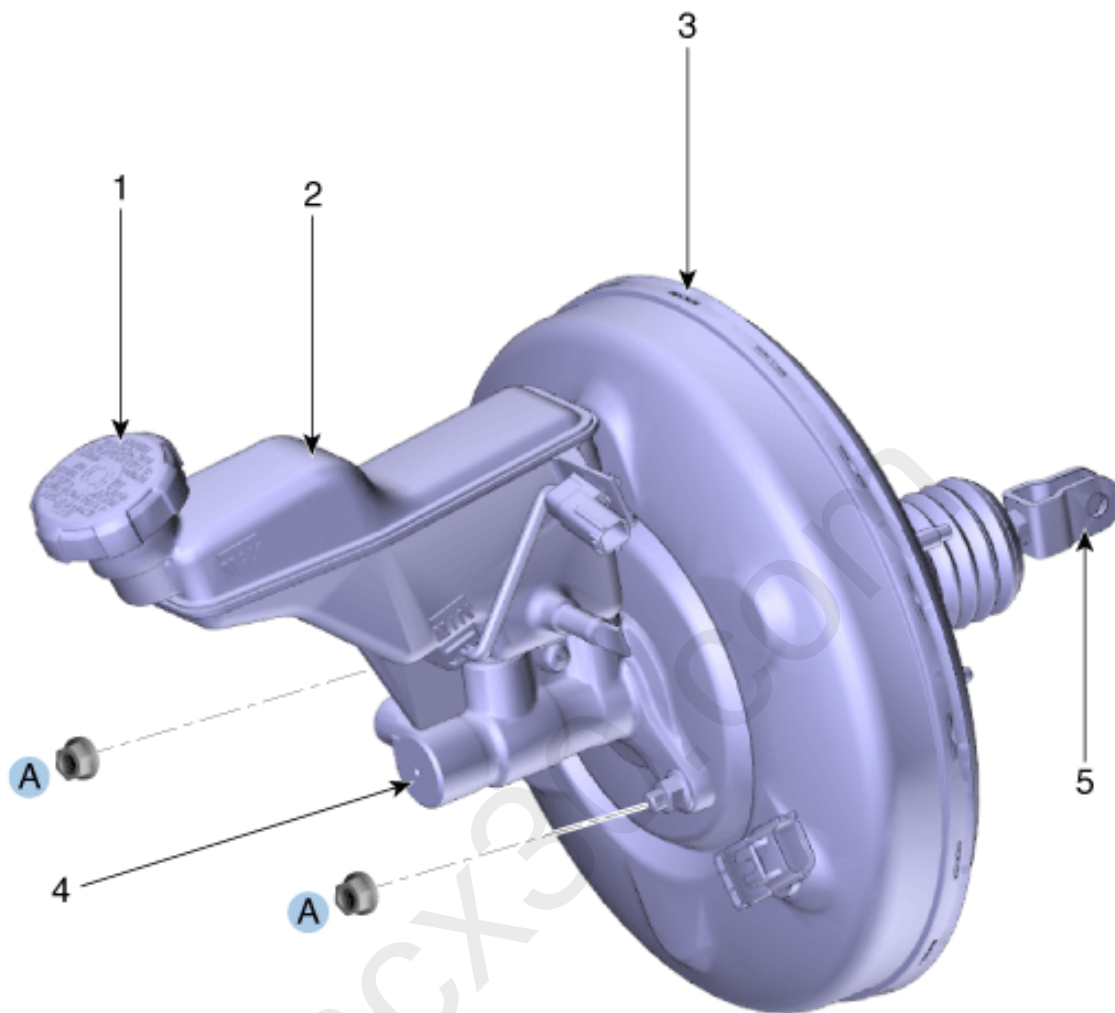
Brake System (Judder Inspection)



Vehicle out

mcx30.com

Components



Tightening torque :

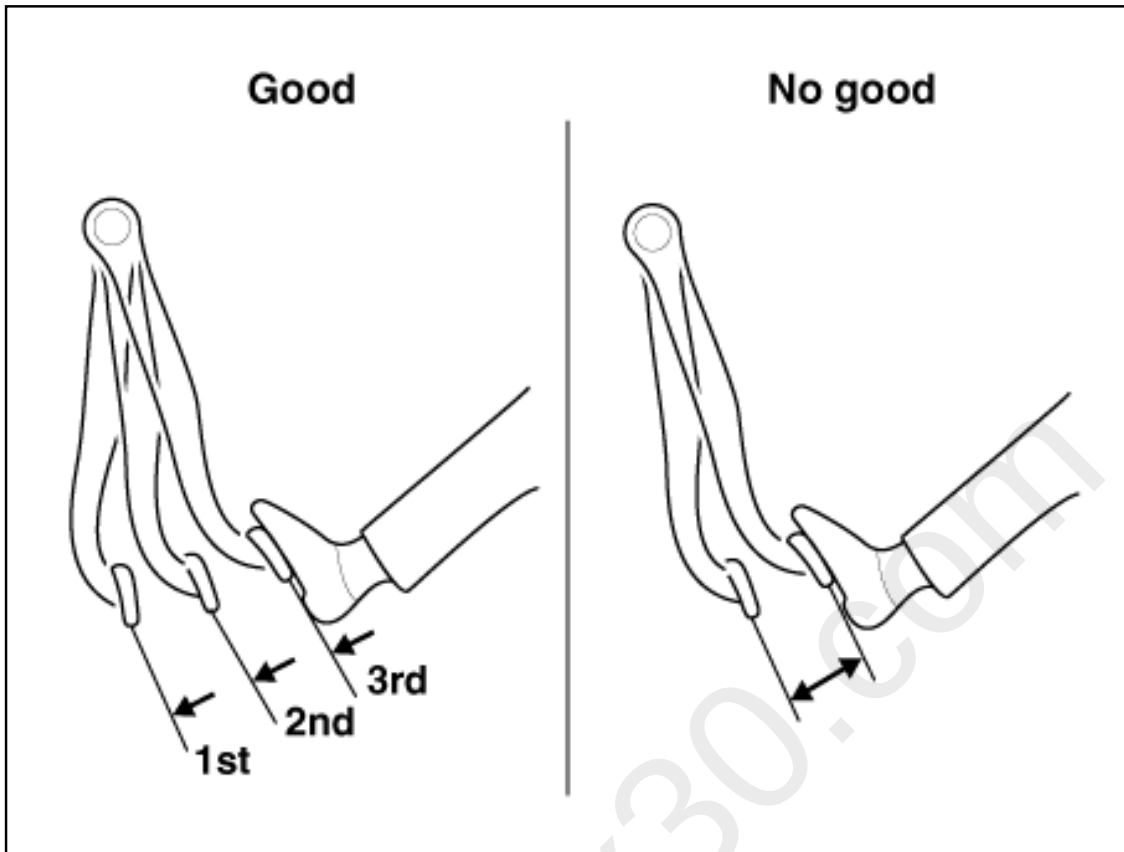
A : 9.8 - 15.7 N.m (1.0 - 1.6 kgf.m, 7.2 - 11.6 lb-ft)

- 1. Reservoir cap
- 2. Reservoir
- 3. Brake booster

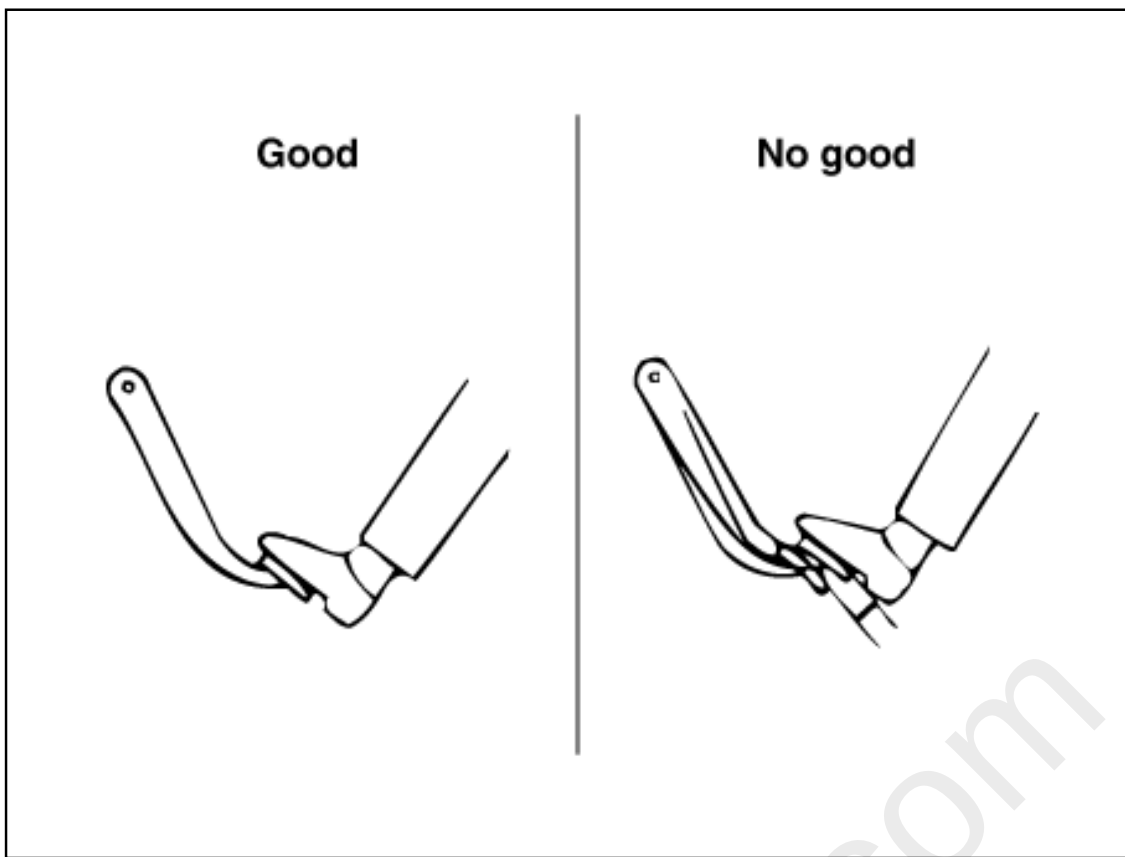
- 4. Master cylinder
- 5. Push rod

Brake Booster Operating Test

1. Run the engine for one or two minutes, and then stop it. If the pedal depresses fully the first time but gradually becomes higher when depressed succeeding times, the booster is operating properly, if the pedal height remains unchanged, the booster is inoperative.



2. With the engine stopped, step on the brake pedal several times. Then step on the brake pedal and start the engine. If the pedal moves downward slightly, the booster is in good condition. If there is no change, the booster is inoperative.
3. With the engine running, step on the brake pedal and then stop the engine. Hold the pedal depressed for 30 seconds. If the pedal height does not change, the booster is in good condition, if the pedal rises, the booster is inoperative.



If the above three tests are okay, the booster performance can be determined as good.

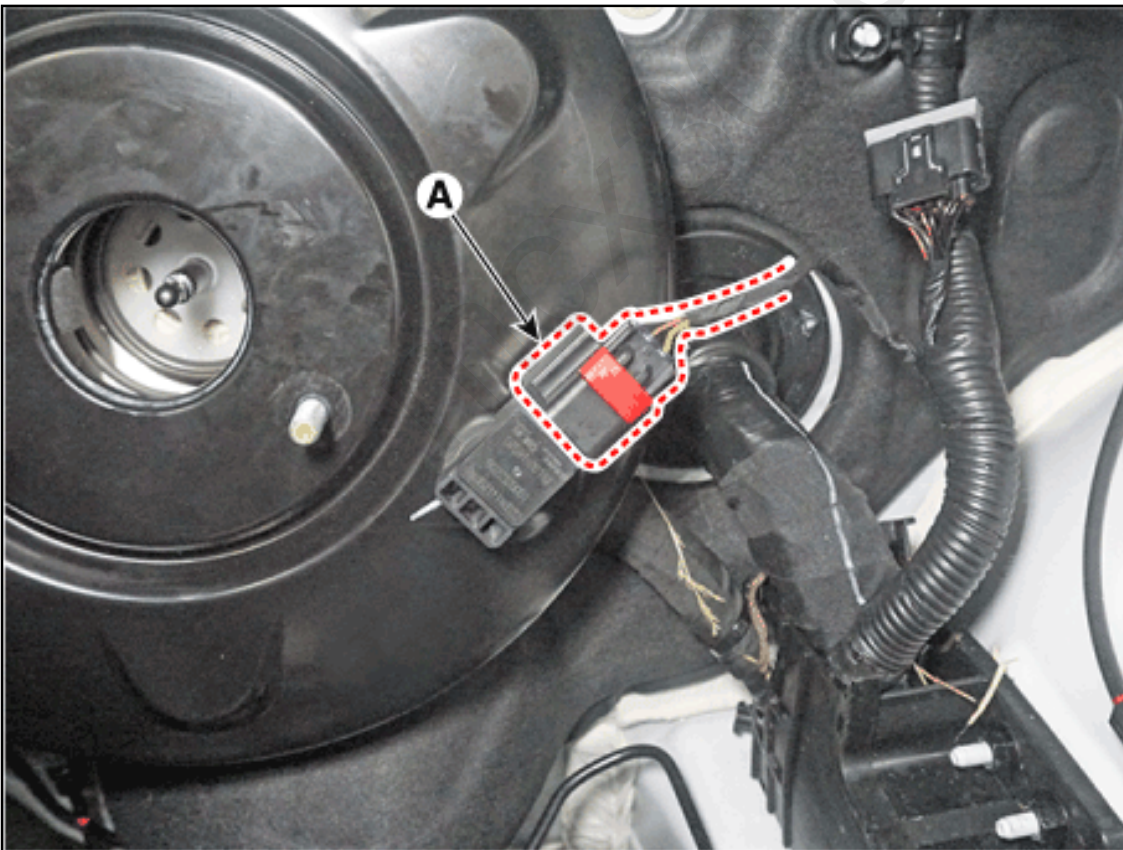
Even if one of the above three tests is not okay, check the check valve, vacuum hose and booster for malfunction.

Removal

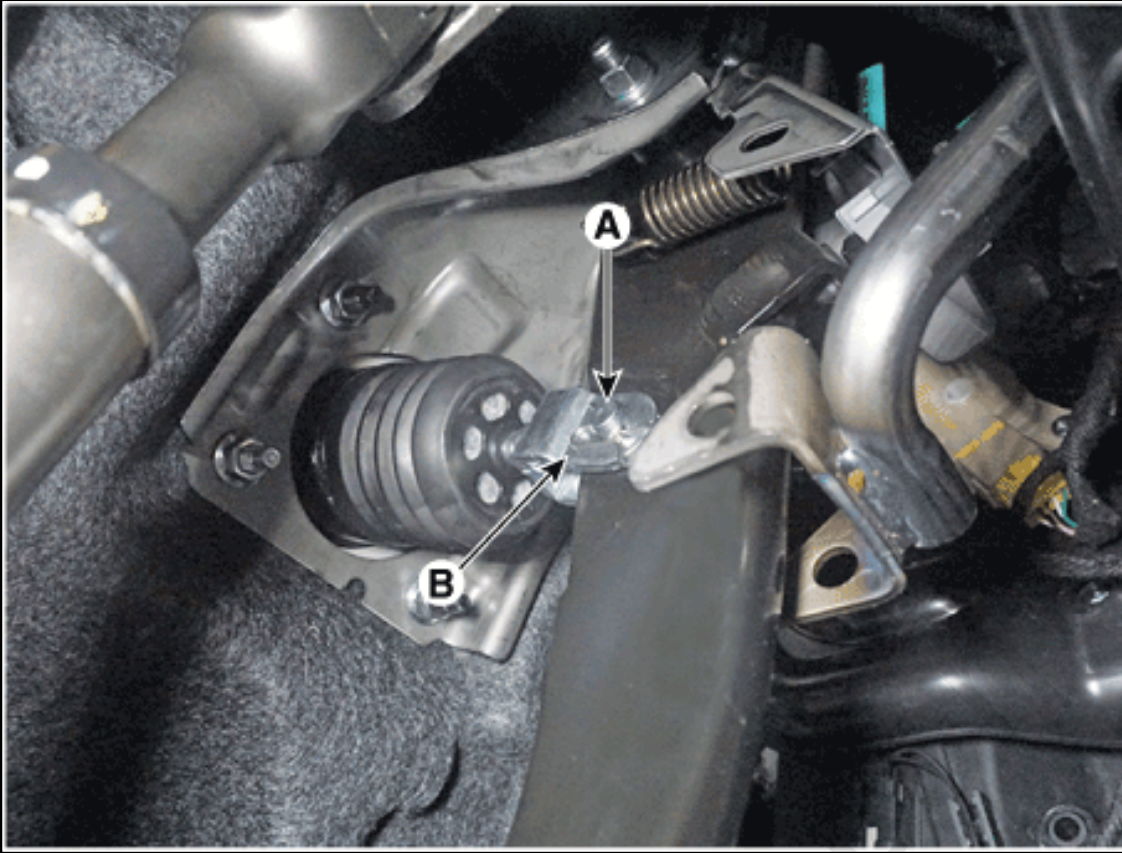
1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the battery and battery tray.
(Refer to Engine Electrical System - "Battery")
3. Remove the air duct and air cleaner assembly.
(Refer to Intake and Exhaust System - "Air Cleaner")
4. Remove the master cylinder.
(Refer to Brake System - "Master Cylinder")
5. Remove the fixing clip and the vacuum hose (A) from the brake booster.



6. Disconnect the brake booster vacuum pressure sensor connector (A).



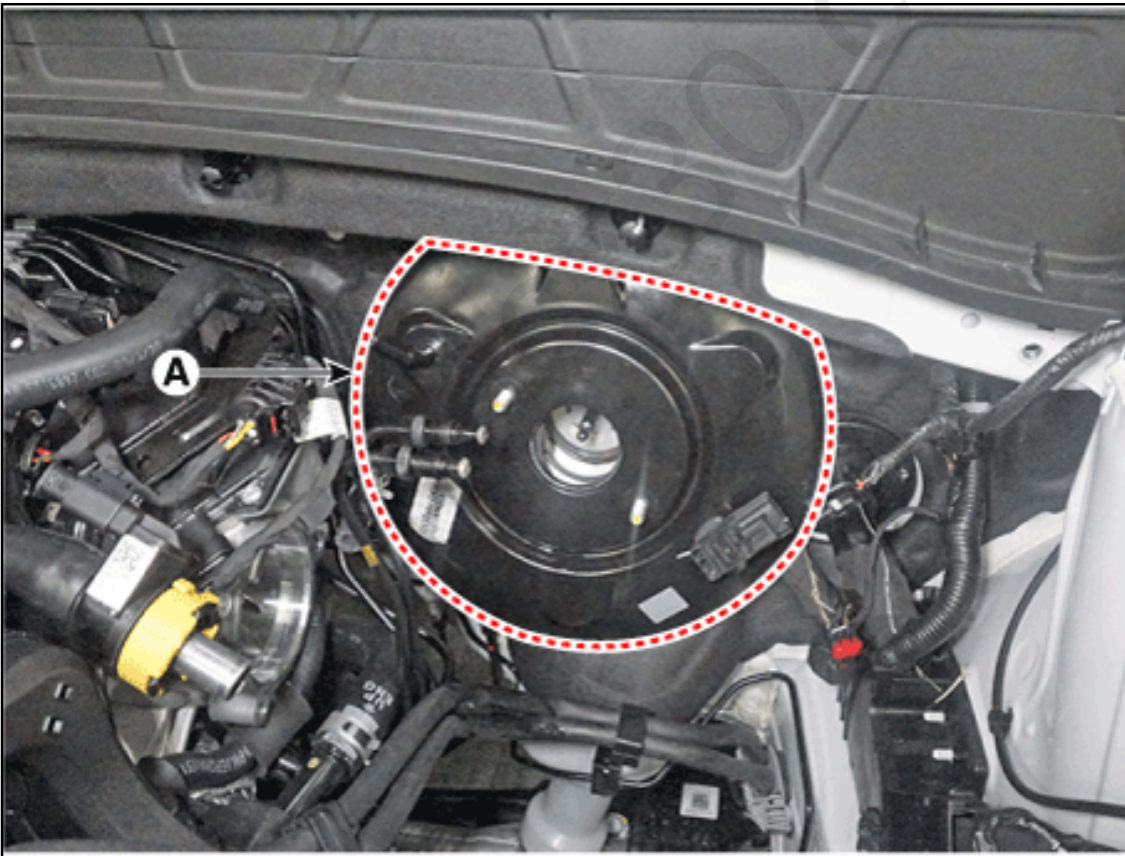
7. Remove the snap pin (B) and the clevis pin (A).



8. Remove the brake booster (B) after loosening the mounting nuts (A).

Tightening torque :

16.7 - 25.5 N.m (1.7 - 2.6 kgf.m, 12.3 - 18.8 lb-ft)



Inspection

1. Inspect the vacuum hose.
2. Check the boot for damage.

Installation

1. Installation is the reverse of removal.



- Before installing the pin, apply the grease to the joint pin.
- Use a new snap pin whenever installing.

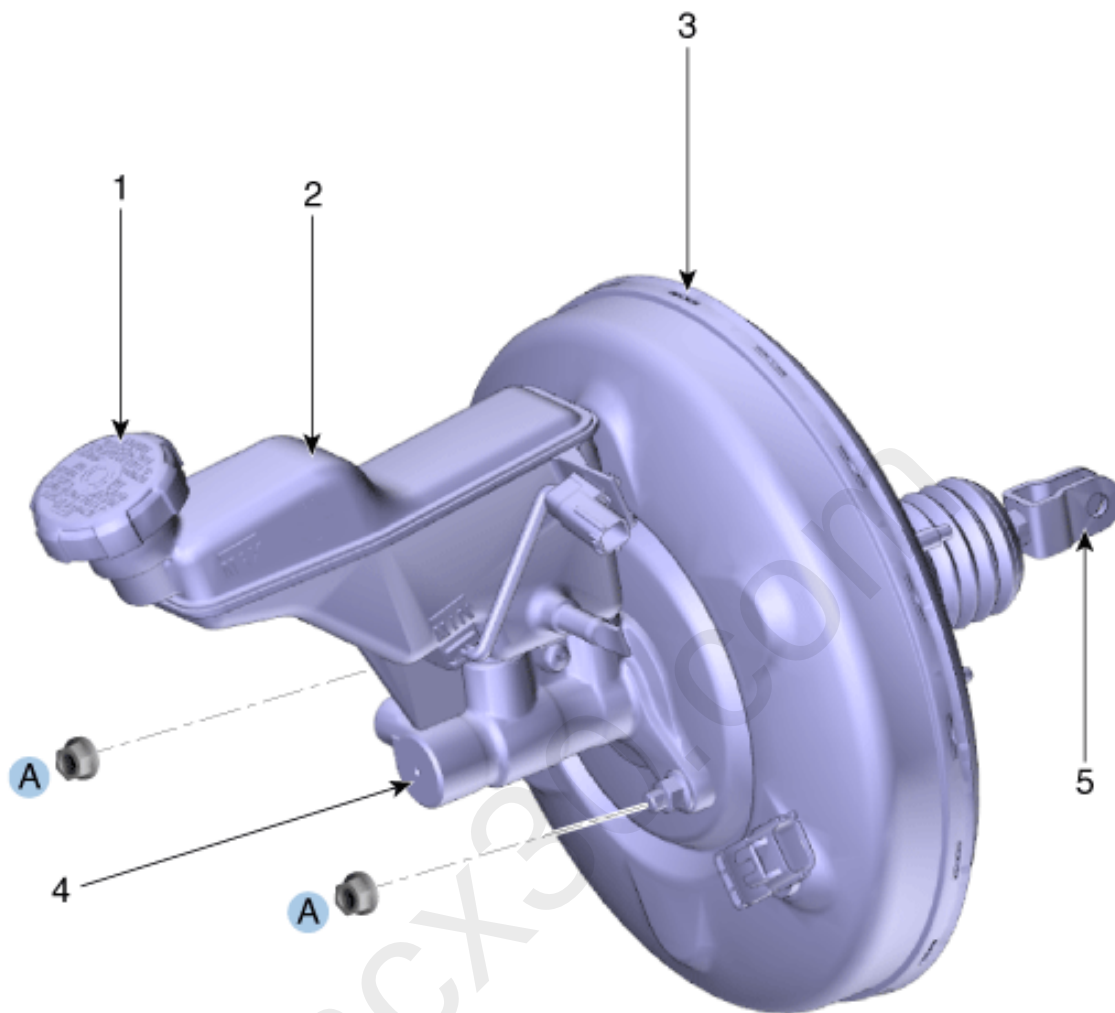
2. After installation, bleed the brake system.

(Refer to Brake System - "Brake Bleeding Procedures")

3. Check the brake oil leakage and pedal operating condition.

mcx30.com

Components



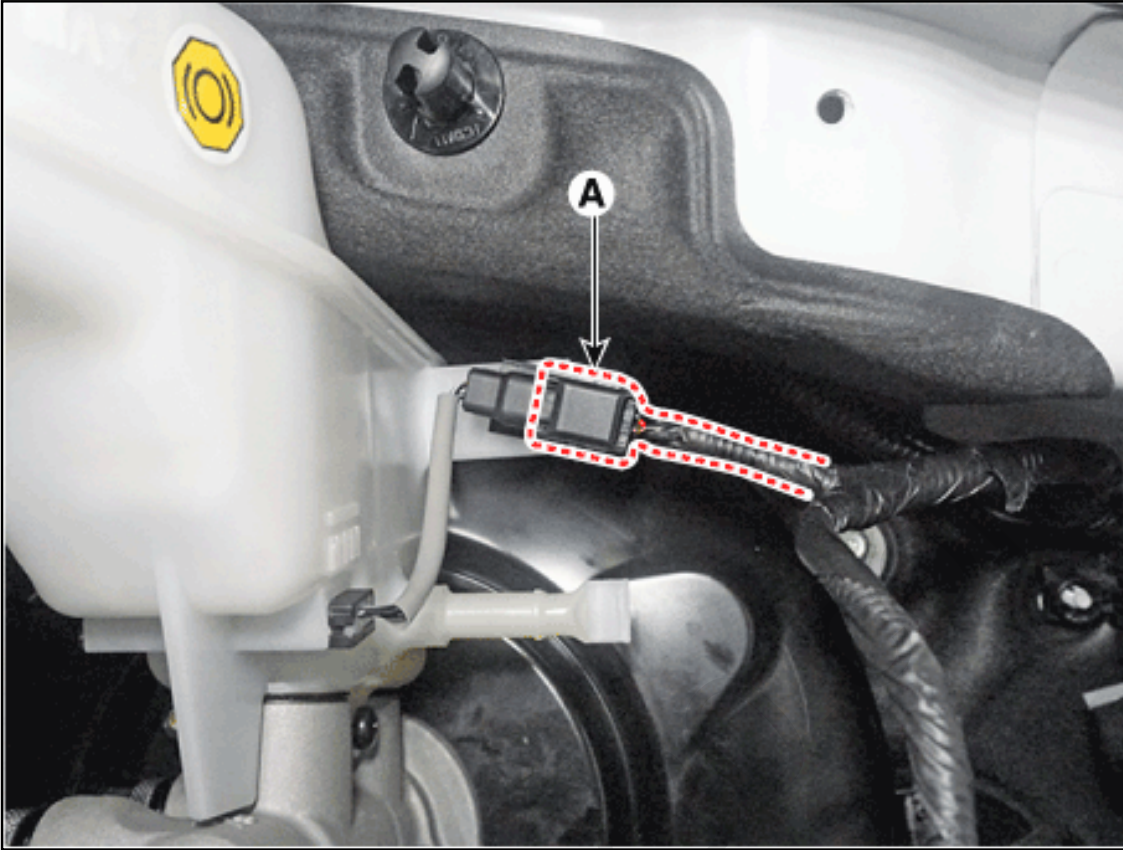
Tightening torque :
A : 9.8 - 15.7 N.m (1.0 - 1.6 kgf.m, 7.2 - 11.6 lb-ft)

- 1. Reservoir cap
- 2. Reservoir
- 3. Brake booster

- 4. Master cylinder
- 5. Push rod

Removal

1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the battery.
(Refer to Engine Electrical System - "Battery")
3. Disconnect the brake fluid level sensor connector (A).



4. Remove the brake fluid from the master cylinder reservoir with a syringe.

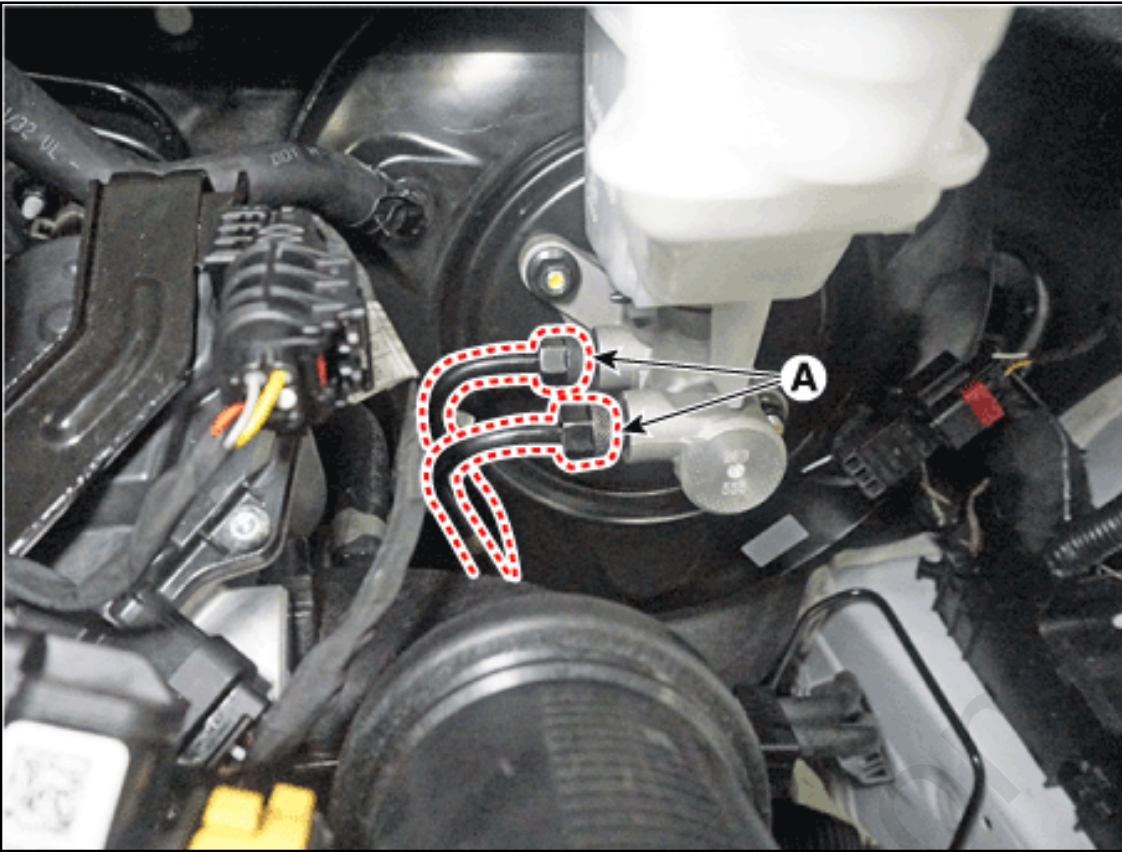


- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.

5. Separate the brake tube (A) from the master cylinder after loosening the tube flare nut.

Tightening torque :

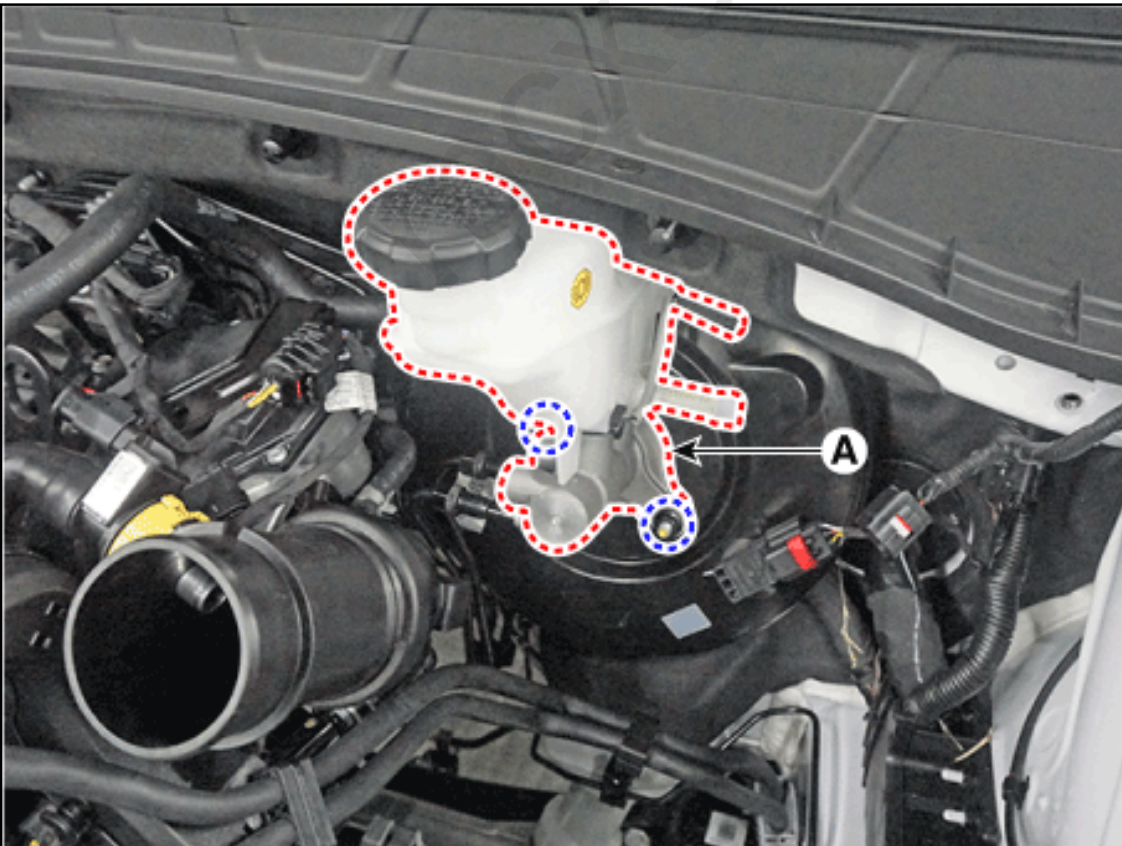
18.6 - 22.6 N.m (1.9 - 2.3 kgf.m, 13.7 - 16.6 lb-ft)



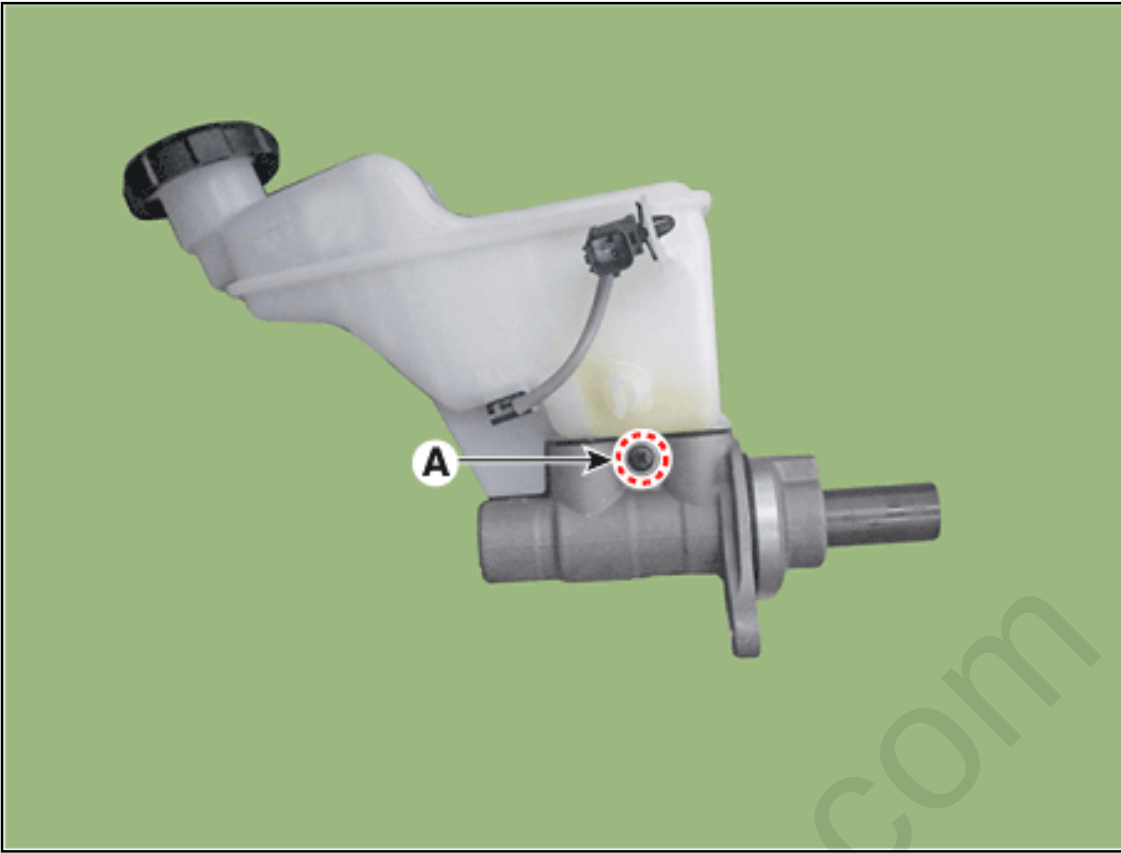
6. Remove the master cylinder (A) after loosening the master cylinder nuts.

Tightening torque :

9.8 - 15.7 N.m (1.0 - 1.6 kgf.m, 7.2 - 11.6 lb-ft)



7. Separate the reservoir from the master cylinder after removing the screw (A).



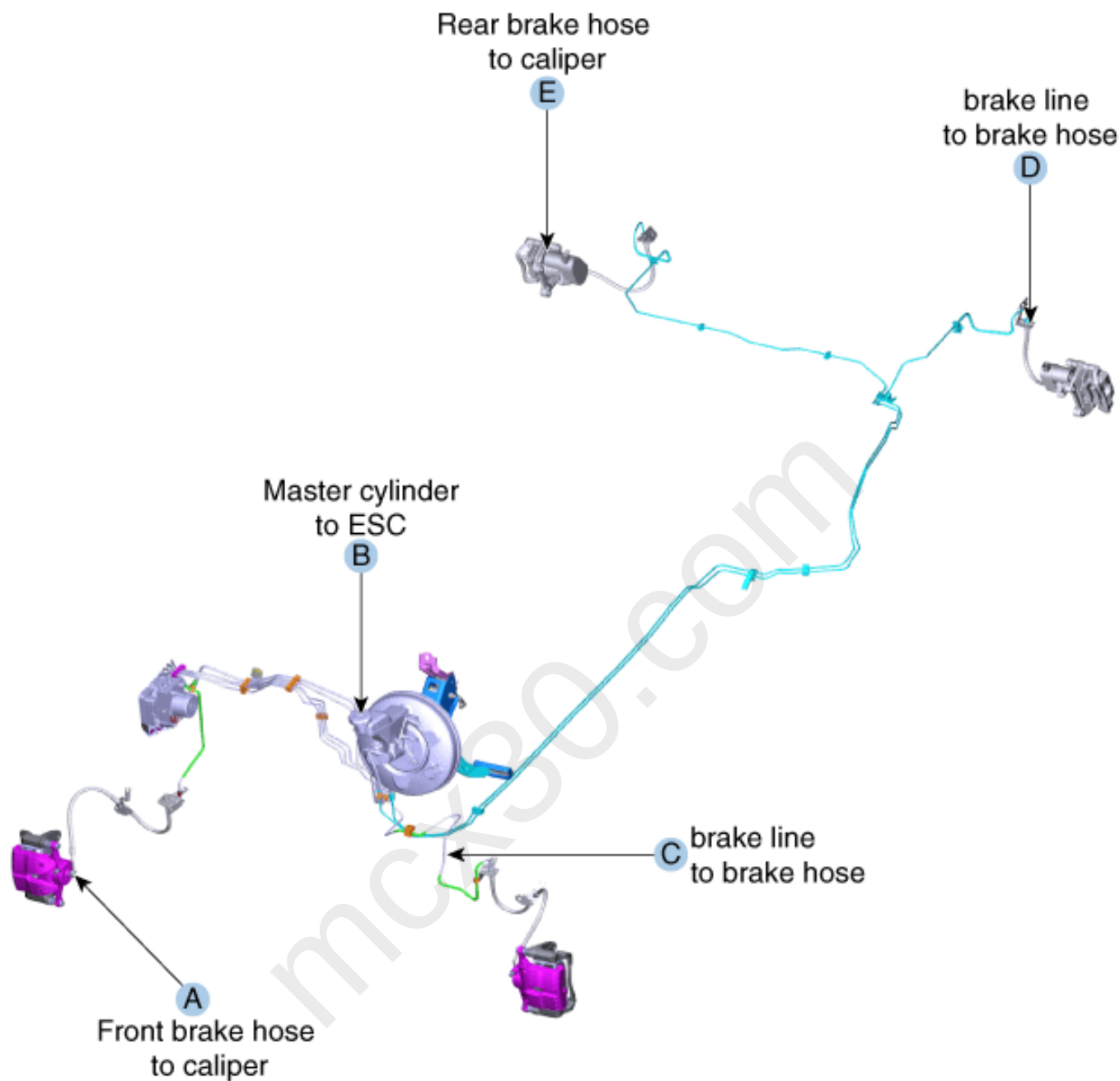
Installation

1. Installation is the reverse of removal.



- Before installing the pin, apply the grease to the joint pin.
- Use a new snap pin whenever installing.

2. After installation, bleed the brake system.
(Refer to Brake System - "Brake Bleeding Procedures")
3. Check the brake oil leakage and pedal operating condition.



Tightening torque :

- A : 24.5- 29.4 N.m (2.5 - 3.0 kgf.m, 18.1 - 21.7 lb-ft)
- B : 18.6 - 22.6 N.m (1.9 - 2.3 kgf.m, 13.7 - 16.6 lb-ft)
- C : 13.7 - 16.7 N.m (1.4 - 1.7 kgf.m, 10.1 - 12.3 lb-ft)
- D : 13.7 - 16.7 N.m (1.4 - 1.7 kgf.m, 10.1 - 12.3 lb-ft)
- E : 24.5- 29.4 N.m (2.5 - 3.0 kgf.m, 18.1 - 21.7 lb-ft)

Removal



- Be careful not to damage the parts located under the vehicle (floor under cover, fuel filter, fuel tank and canister) when raising the vehicle using the lift.

(Refer to General Information - "Lift and Support Points")

Brake Tube [Engine Room]

1. Disconnect the brake fluid level switch connector, and remove the reservoir cap.
2. Remove the brake fluid from the master cylinder reservoir with a syringe.



- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.

3. Remove the brake tube after loosening the flare nuts from the ESC, master cylinder and brake tube connector.

Tightening torque

ESC : 18.6 - 22.6 N.m (1.9 - 2.3 kgf.m, 13.7 - 16.6 lb-ft)

Master cylinder :

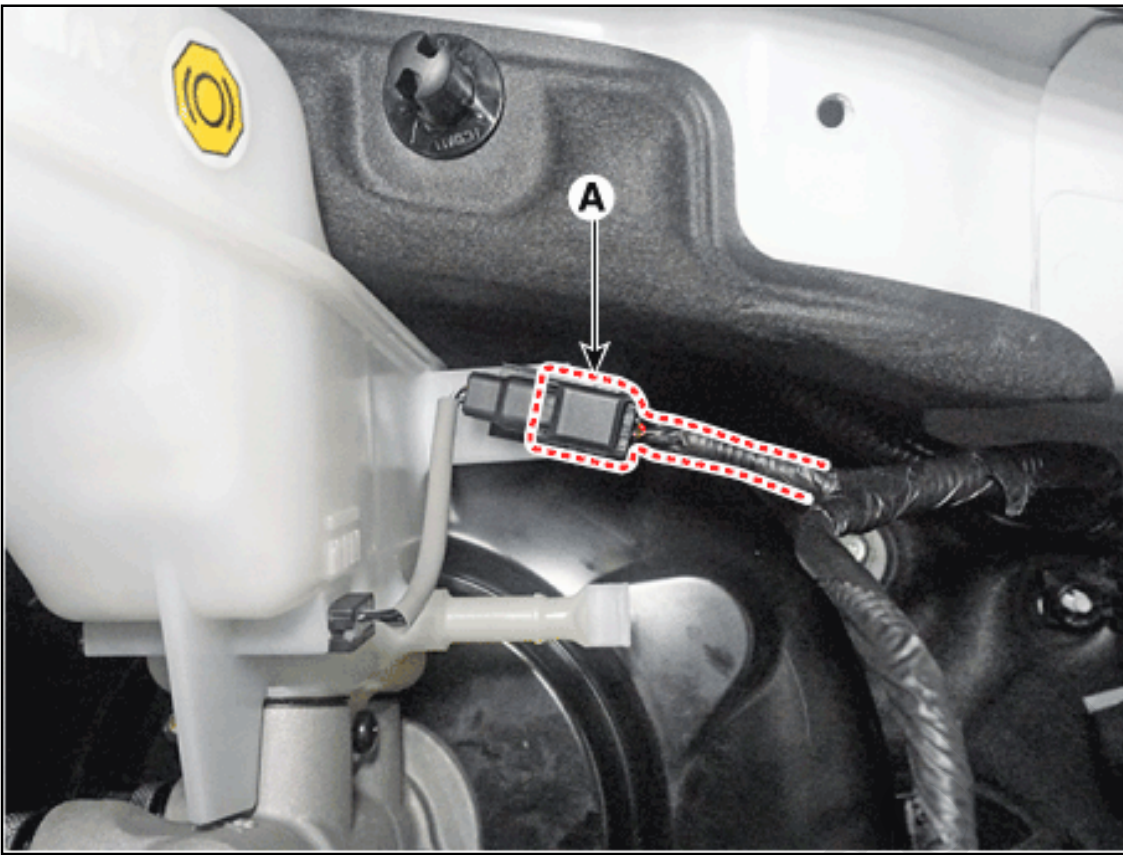
18.6 - 22.6 N.m (1.9 - 2.3 kgf.m, 13.7 - 16.6 lb-ft)

Brake tube connector :

13.7 - 16.7 N.m (1.4 - 1.7 kgf.m, 10.1 - 12.3 lb-ft)

Brake Hose

1. Disconnect the brake fluid level sensor connector (A).



2. Remove the brake fluid from the master cylinder reservoir with a syringe.



- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

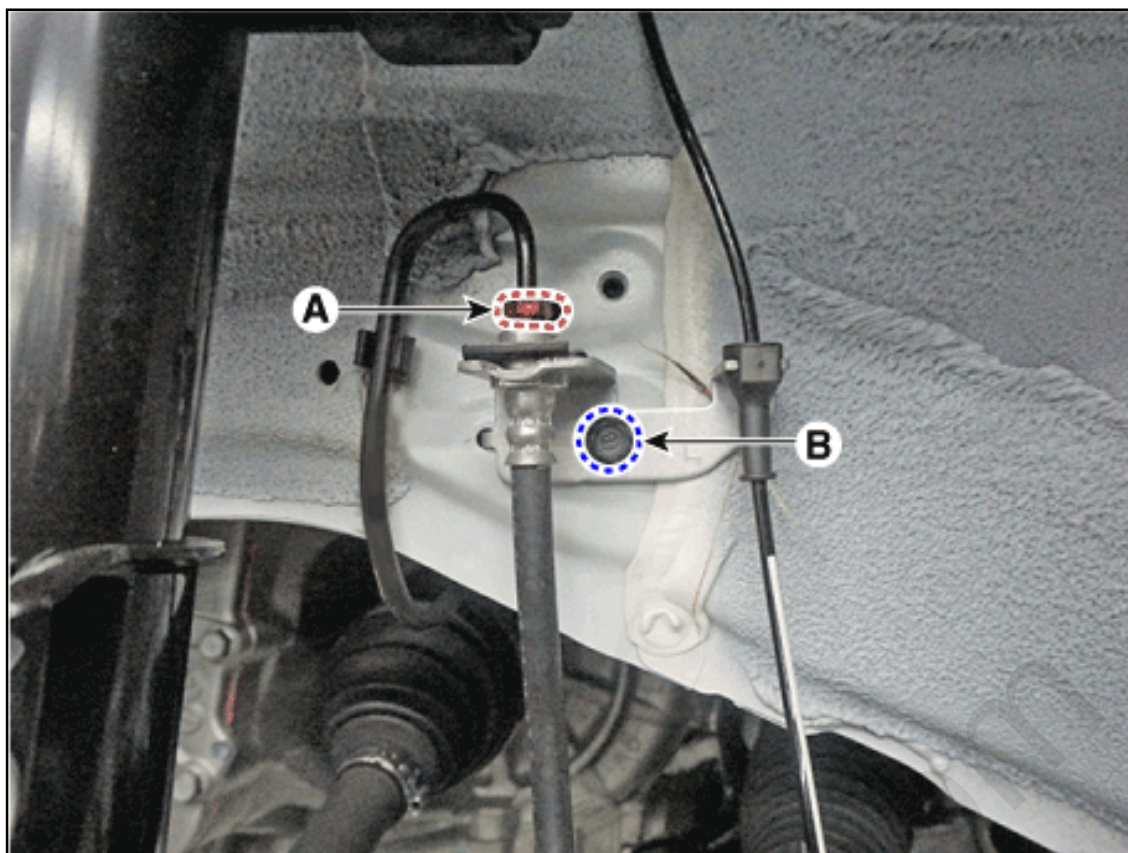
3. Remove the wheel & tire.
(Refer to Suspension System - "Wheel")
4. Remove the tube flare nut (A) and brake hose bracket bolt (B).

Tightening torque

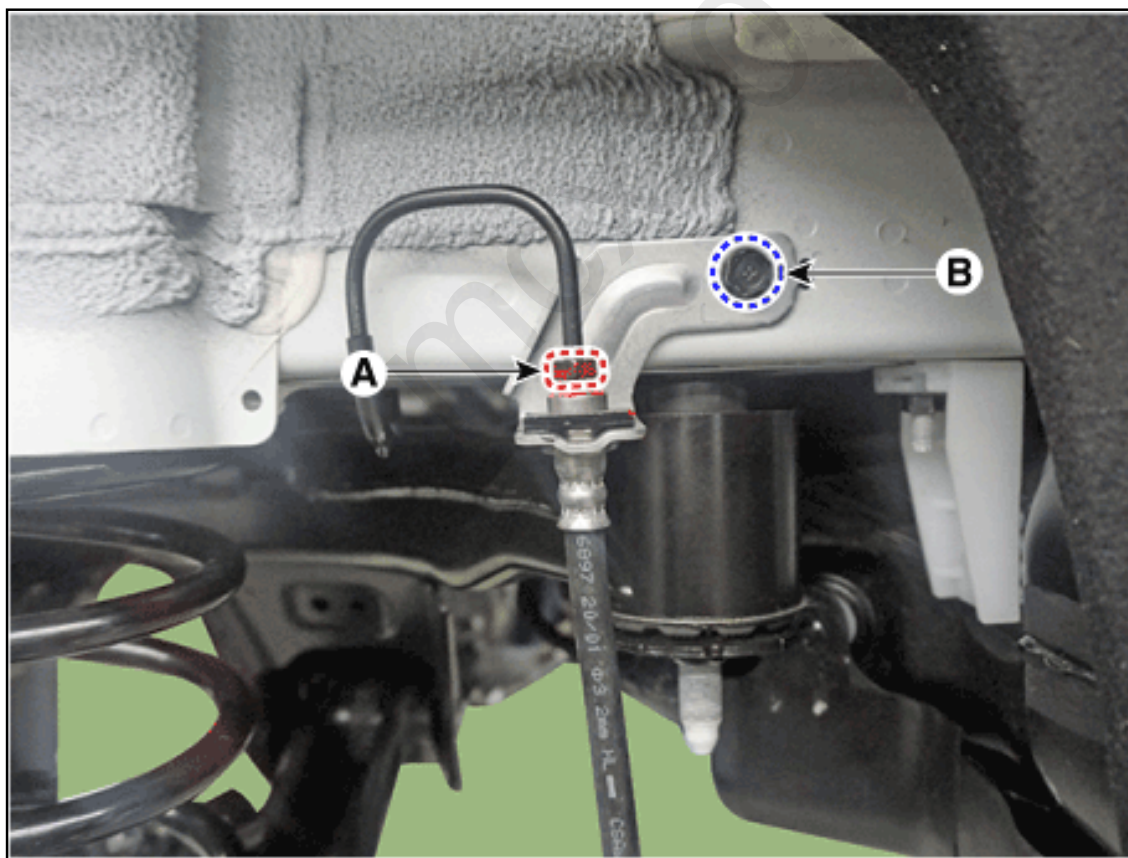
(A) : 13.7 - 16.7 N.m (1.4 - 1.7 kgf.m, 10.1 - 12.3 lb-ft)

(B) : 19.6 - 29.4 N.m (2.0 - 3.0 kgf.m, 14.5 - 21.7 lb-ft)

[Front]



[Rear]



5. Remove the hose after loosening the brake hose bolt (A) from the caliper.

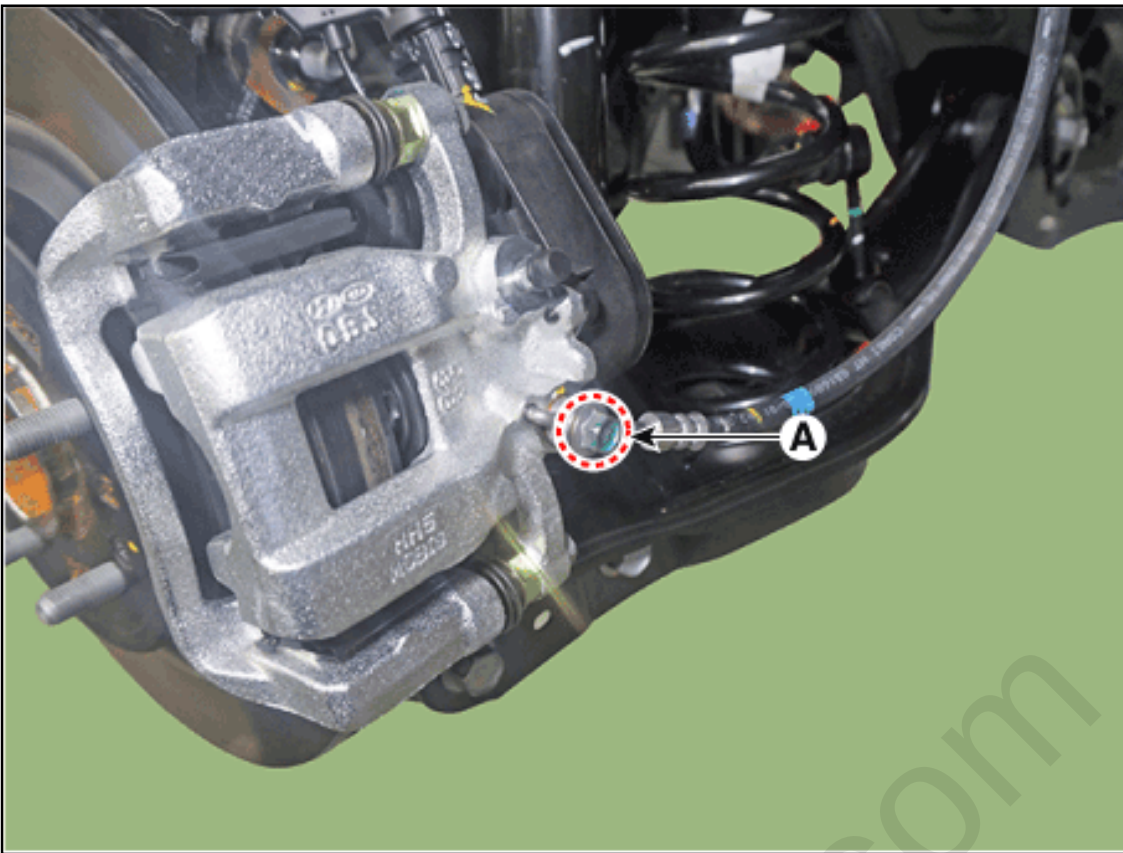
Tightening torque :

24.5 - 29.4 N.m (2.5 - 3.0 kgf.m, 18.1 - 21.7)

[Front]



[Rear]



Inspection

1. Check the brake tubes for cracks, crimps and corrosion.
2. Check the brake tube flare nuts for damage and fluid leakage.

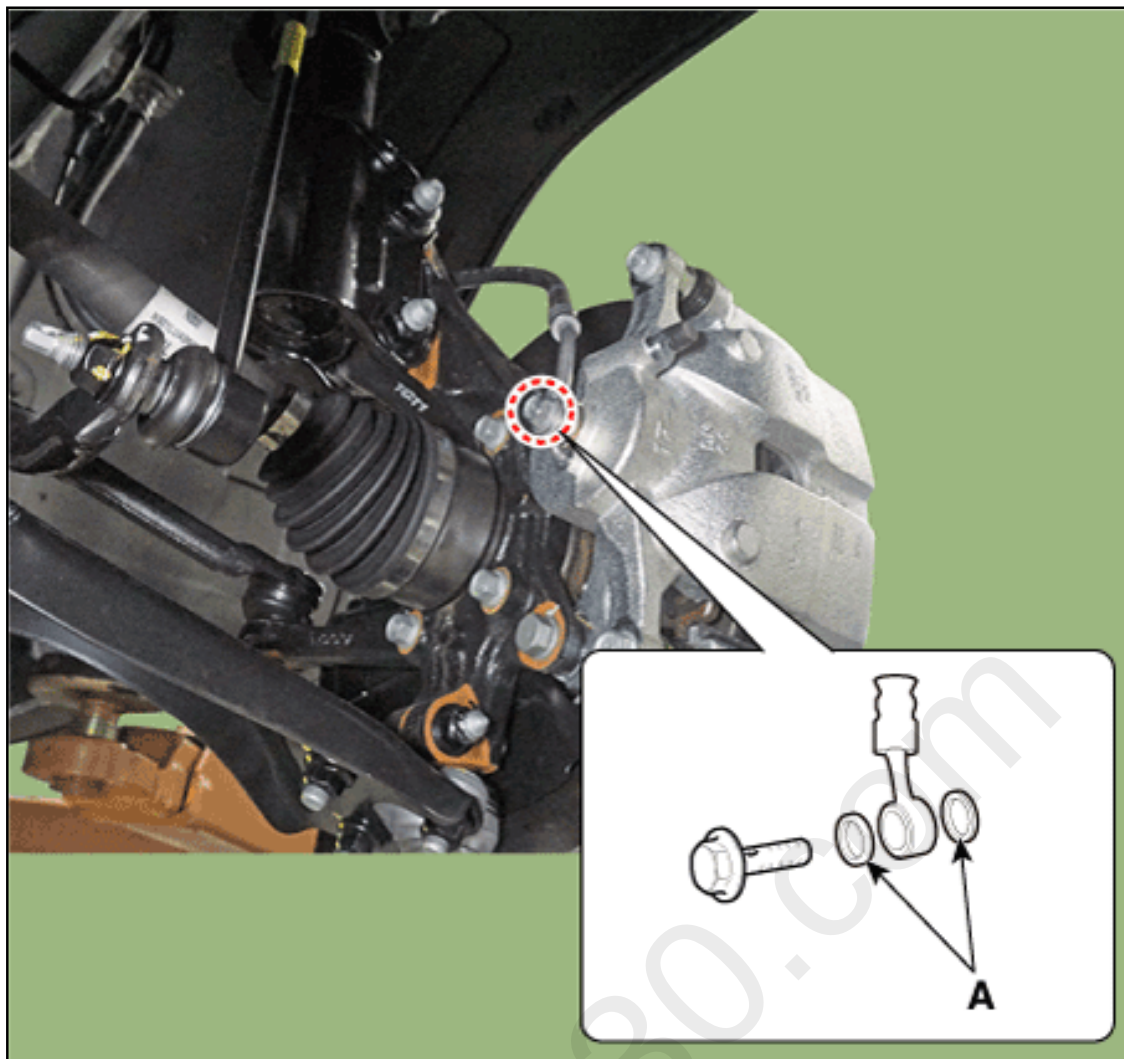
Installation

1. Installation is the reverse of removal.

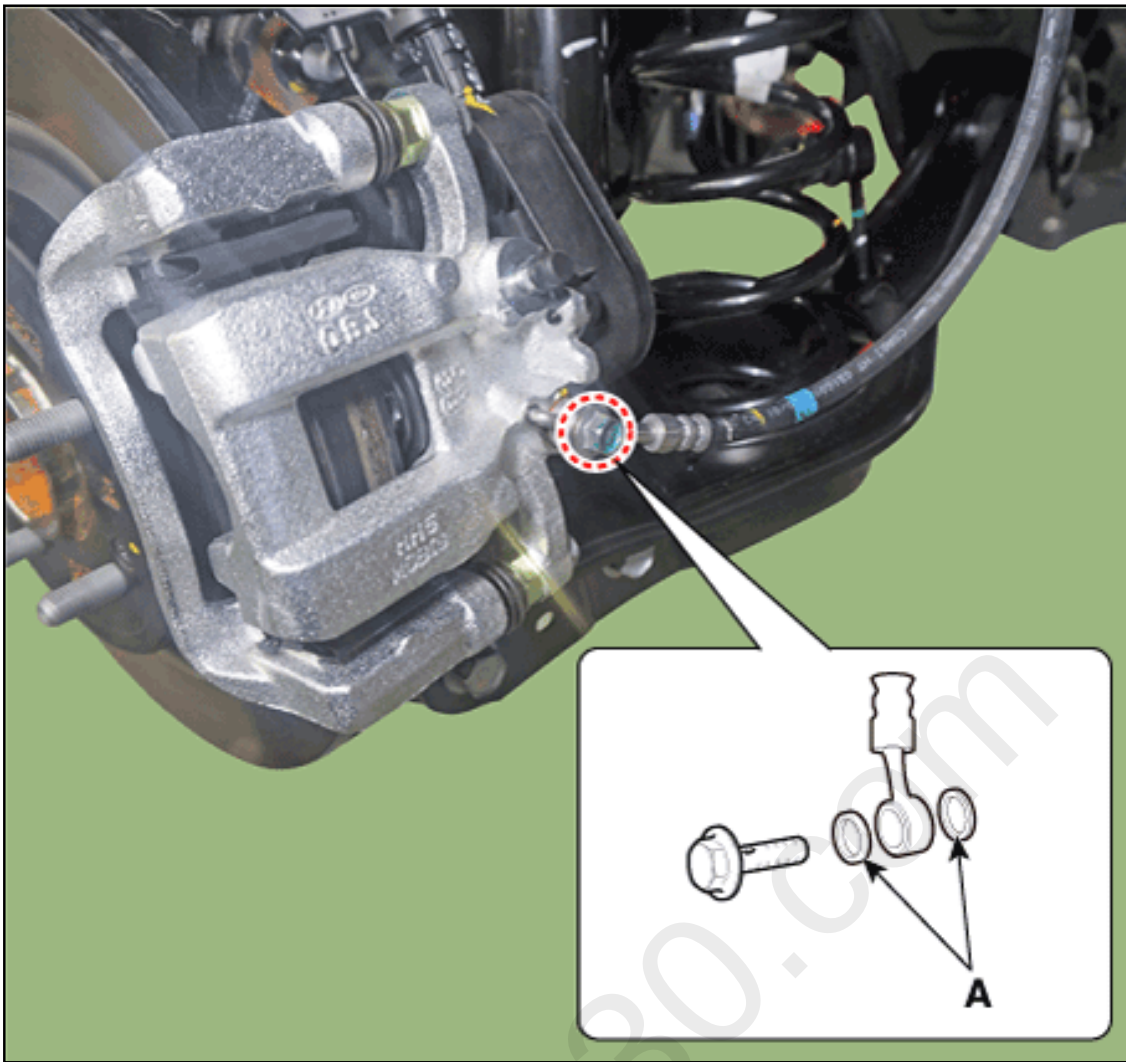


- Use a new washer (A) whenever installing.

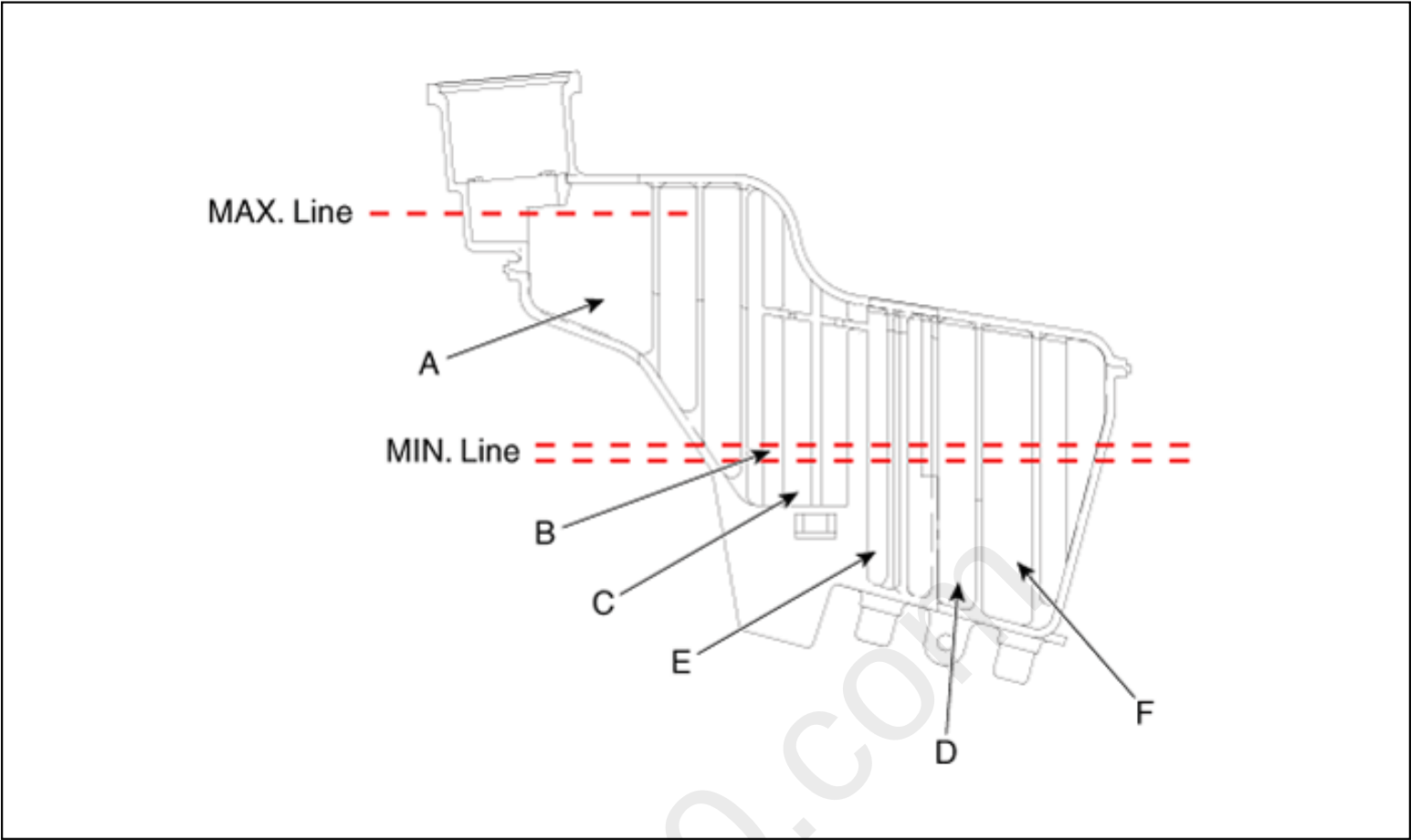
[Front]



[Rear]



2. After installation, bleed the brake system.
(Refer to Brake System - "Brake Bleeding Procedures")



Fluid Type
DOT 4

Reservoir Quantity (cc)		
TOTAL VOLUME	$A + B + C + D + E + F$	410 ± 20
MAX LEVEL	$A + B + C + D + E$	396 ± 20
ON LEVEL	$B + C + D + E$	128 ± 20
MIN LEVEL	$C + D + E$	100 ± 20
PART LEVEL	D	Pri : 29 ± 5
	E	Sec : 35 ± 5
CLUTCH LEVEL	F	14 ± 5

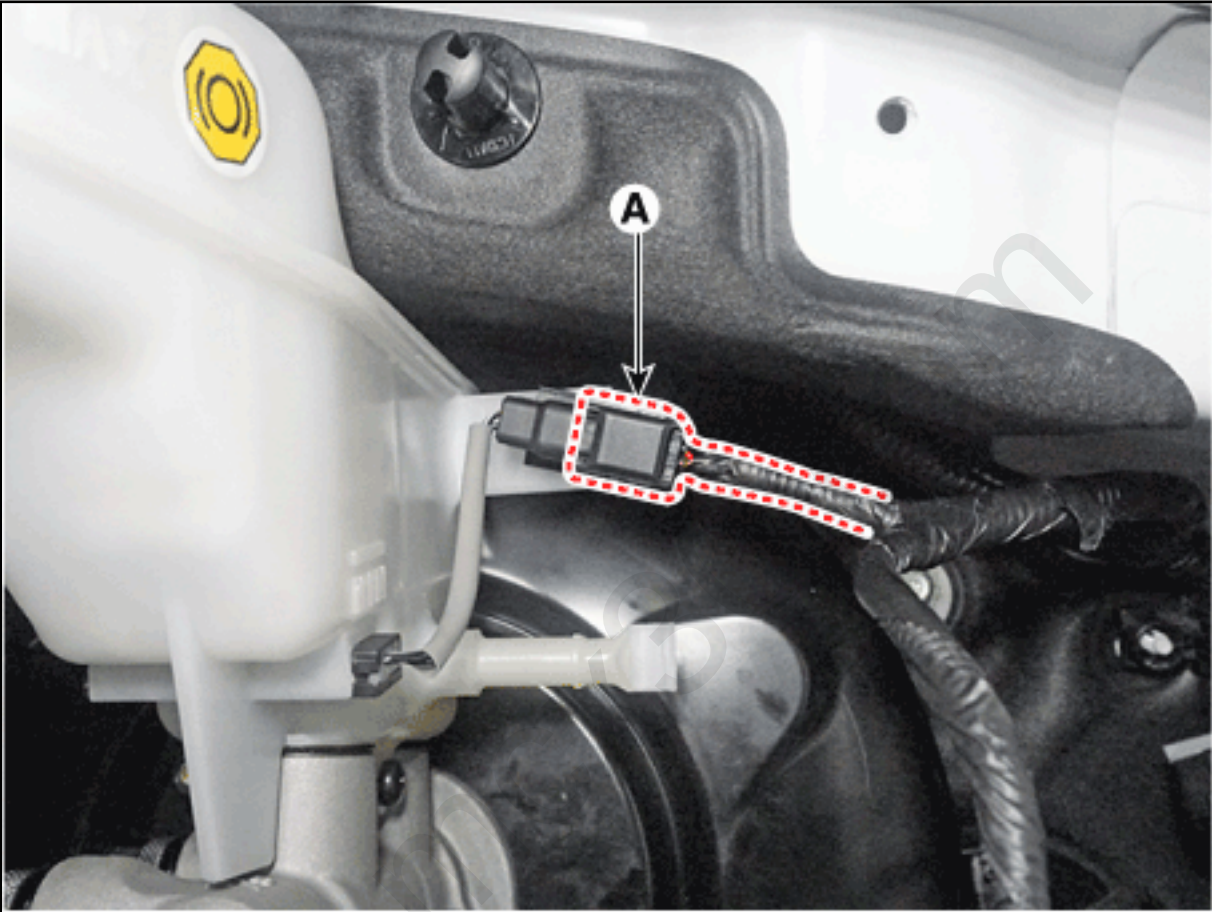
Replacement



- Be careful not to damage the parts located under the vehicle (floor under cover, fuel filter, fuel tank and canister) when raising the vehicle using the lift.

(Refer to General Information - "Lift and Support Points")

1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Disconnect the brake fluid level sensor connector (A).



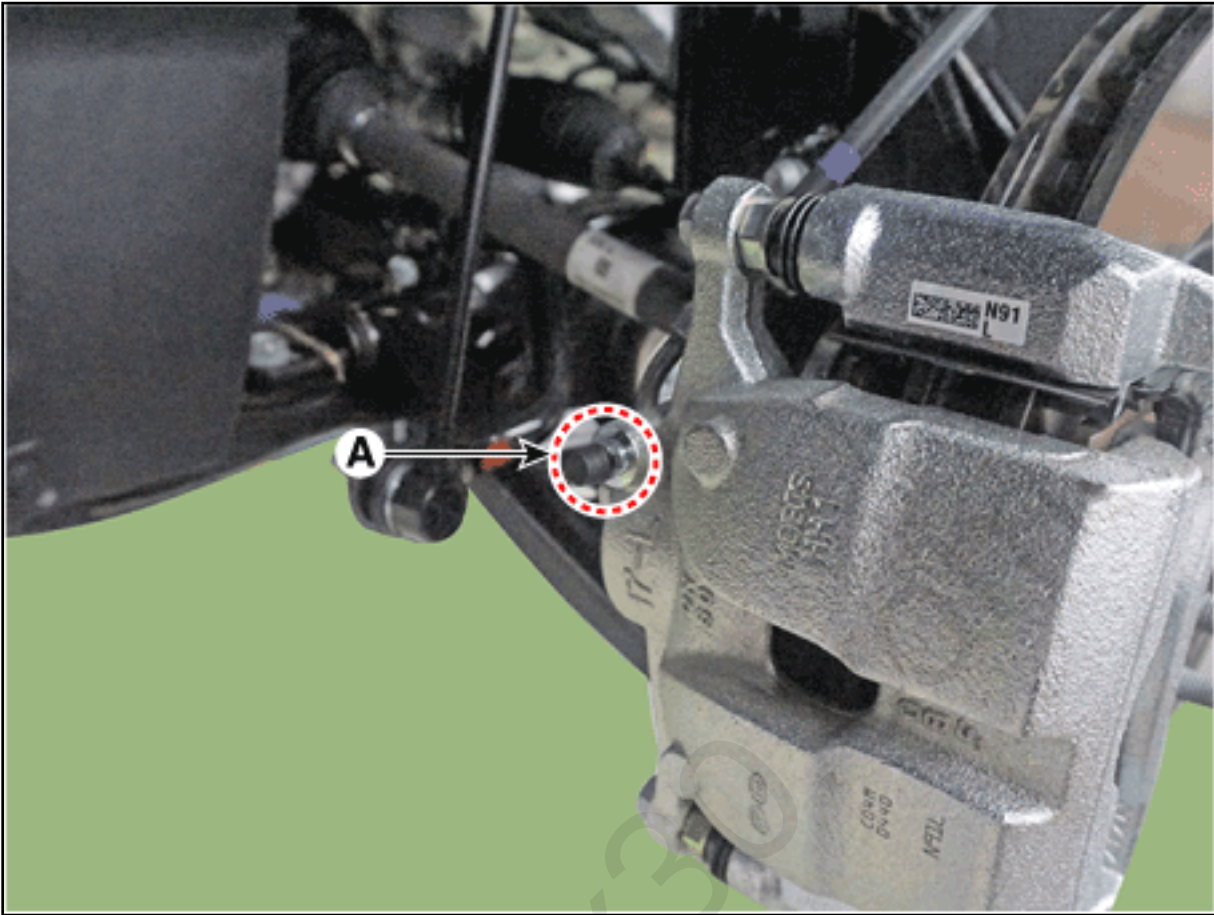
3. Remove the brake fluid from the master cylinder reservoir with a syringe.



- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.

4. Loosen the bleed screw (A) and depress the brake pedal repeatedly several times until the brake fluid reaches the caliper cylinder.

[Front]



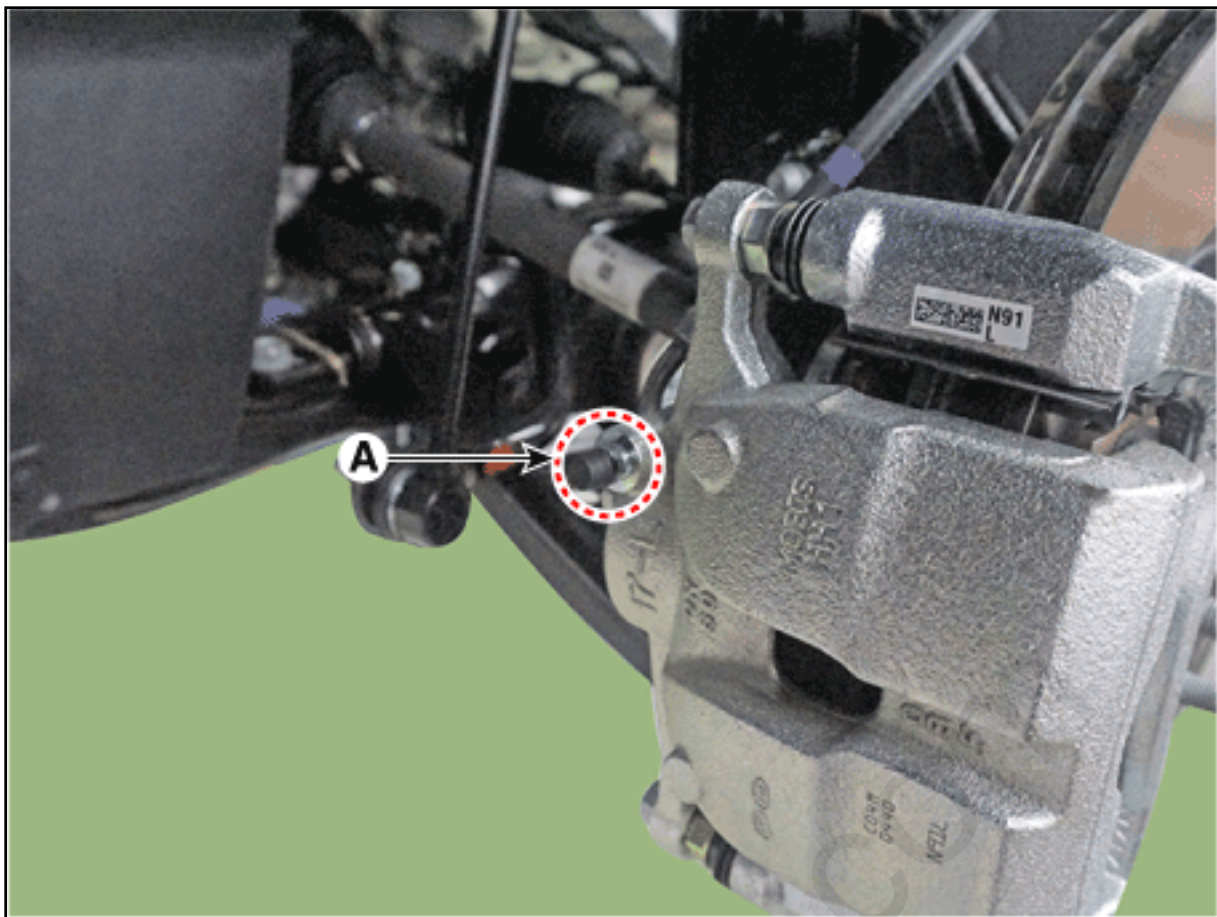
[Rear]



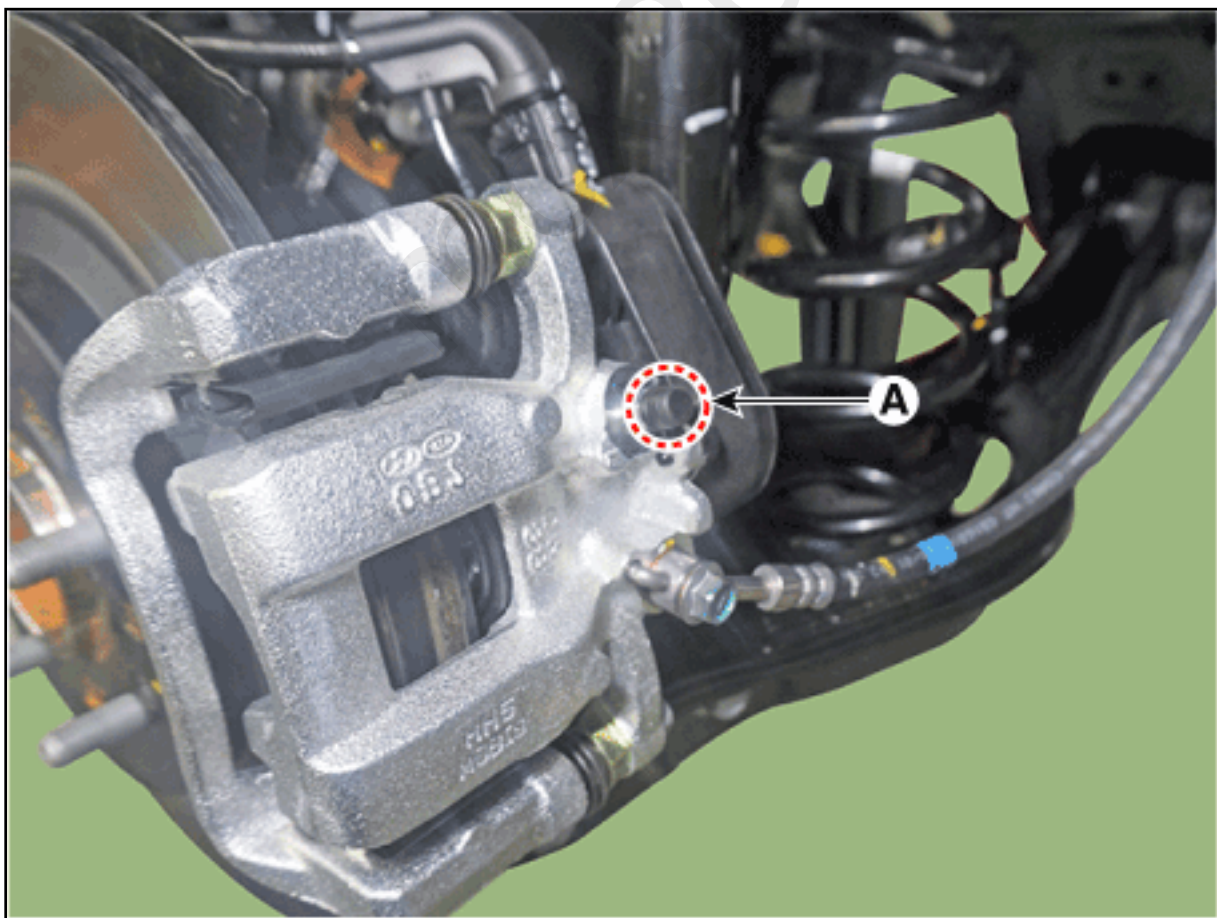
- Work from rear right, front left, rear left to front right.
- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

5. Retighten the bleed screw and then make sure the brake fluid in the reservoir is at the MAX (upper) level line.
6. Loosen the right-rear brake bleed screw (A) to allow air to escape from the system. Then tighten the bleed screw securely.

[Front]



[Rear]

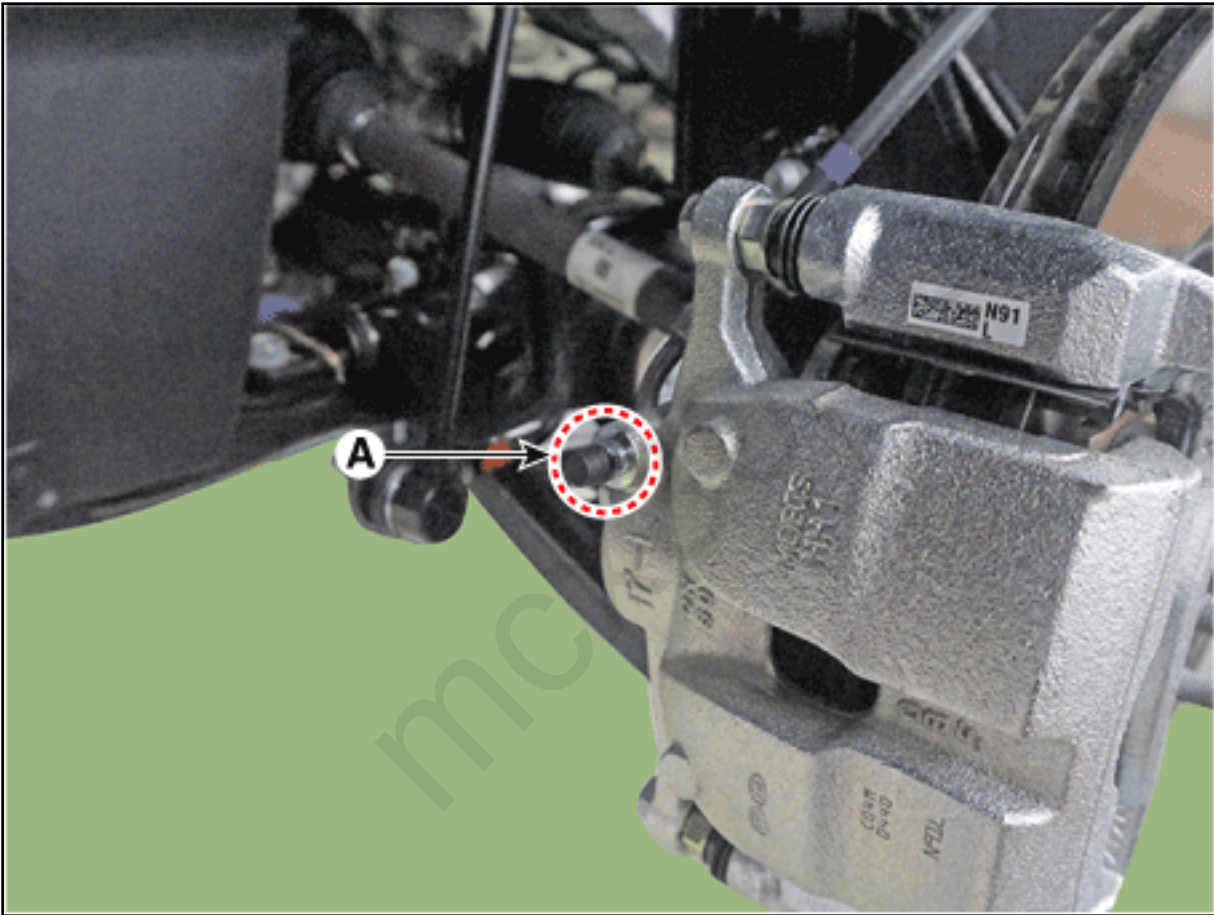




- Work from rear right, front left, rear left to front right.
- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Make sure the brake fluid in the reservoir is at the MAX (upper) level line.

7. Re-tighten the bleed screw.
8. Have an assistant press the brake pedal several times to pressurize it and keep it pressed.
9. Pump the brake pedal several times, and then loosen the bleeder screw until fluid starts to run out without bubbles. Then close the bleeder screw.

[Front]



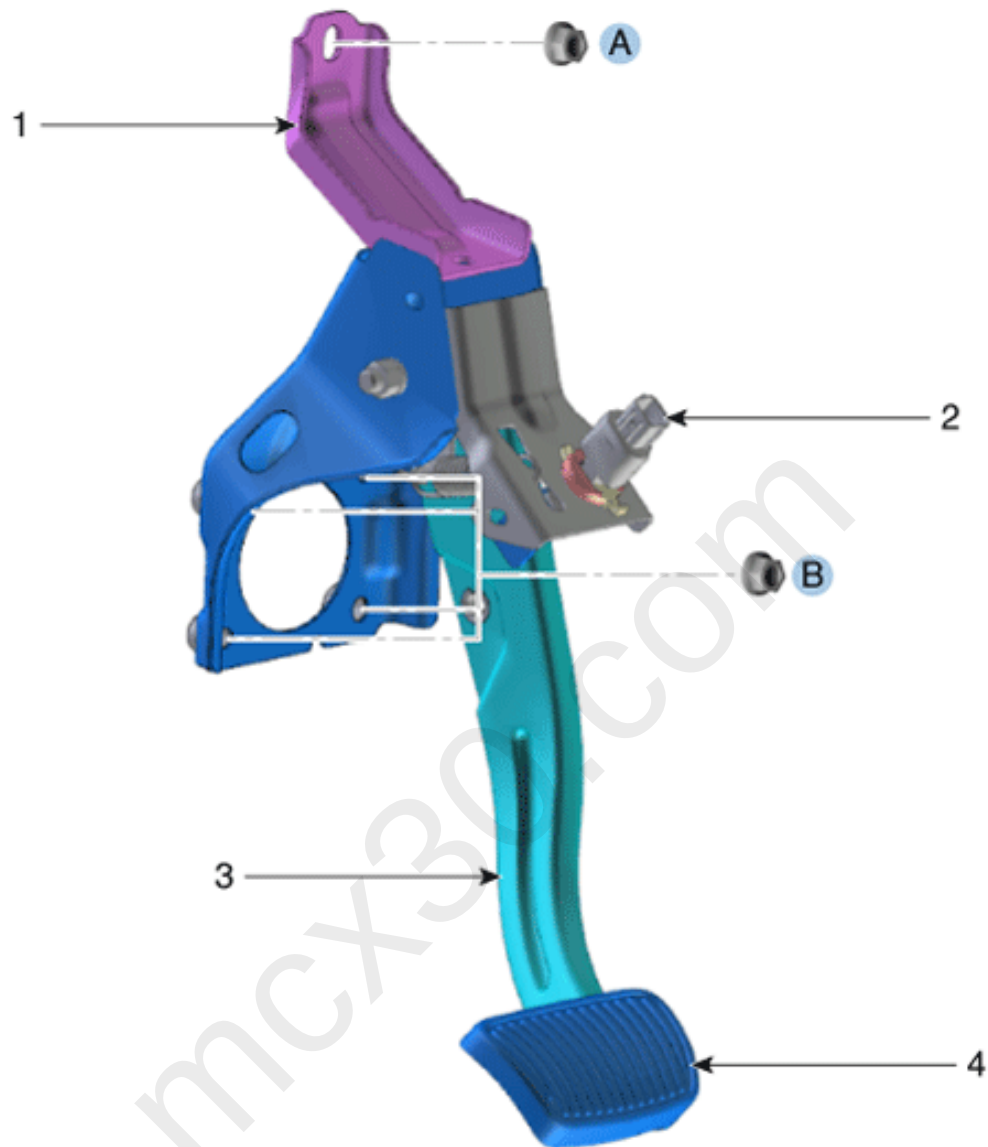
[Rear]



- Work from rear right, front left, rear left to front right.
- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Make sure the brake fluid in the reservoir is at the MAX (upper) level line.

10. Repeat the procedure for wheel in the sequence until air bubbles no longer appear in the fluid.
11. Connect the negative (-) cable.
12. Connect the brake fluid level sensor.

Components



Tightening torque :

A : 16.7 - 25.5 N.m (1.7 - 2.6 kgf.m, 12.3 - 18.8 lb-ft)

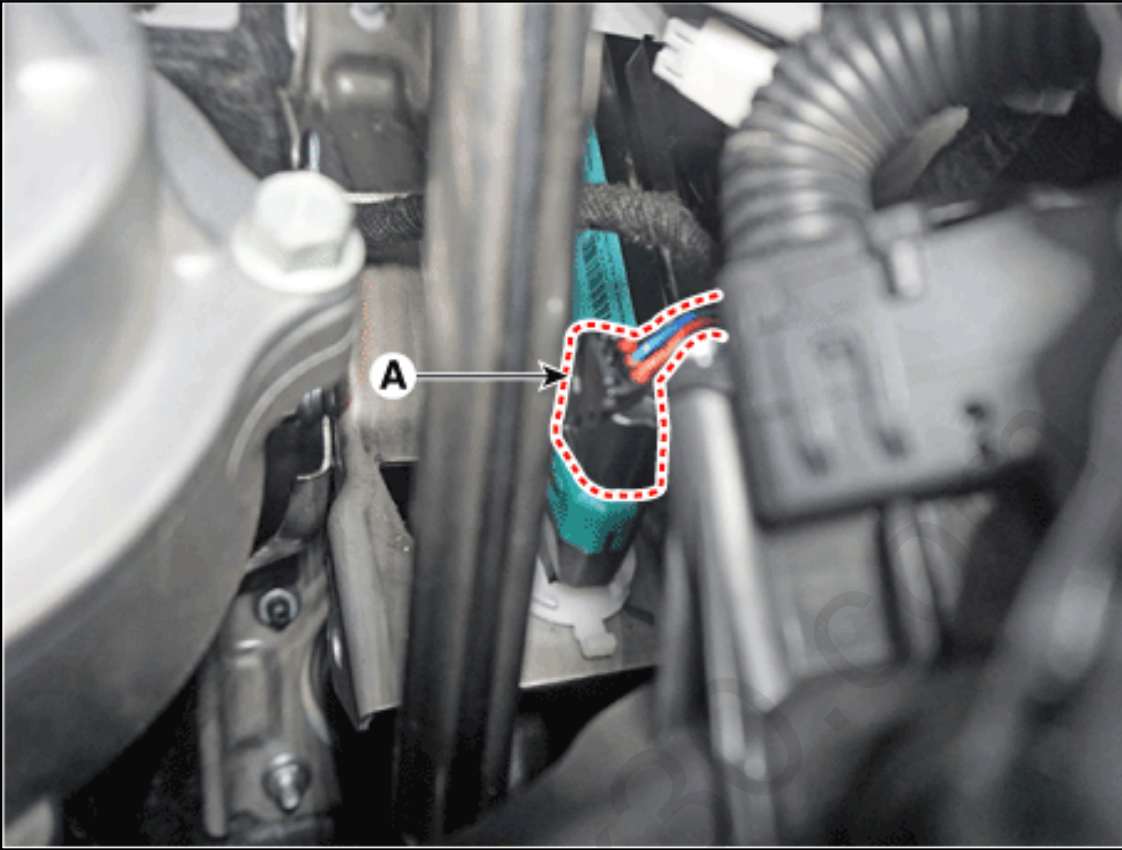
B : 16.7 - 25.5 N.m (1.7 - 2.6 kgf.m, 12.3 - 18.8 lb-ft)

- 1. Brake member assembly
- 2. Stop lamp switch

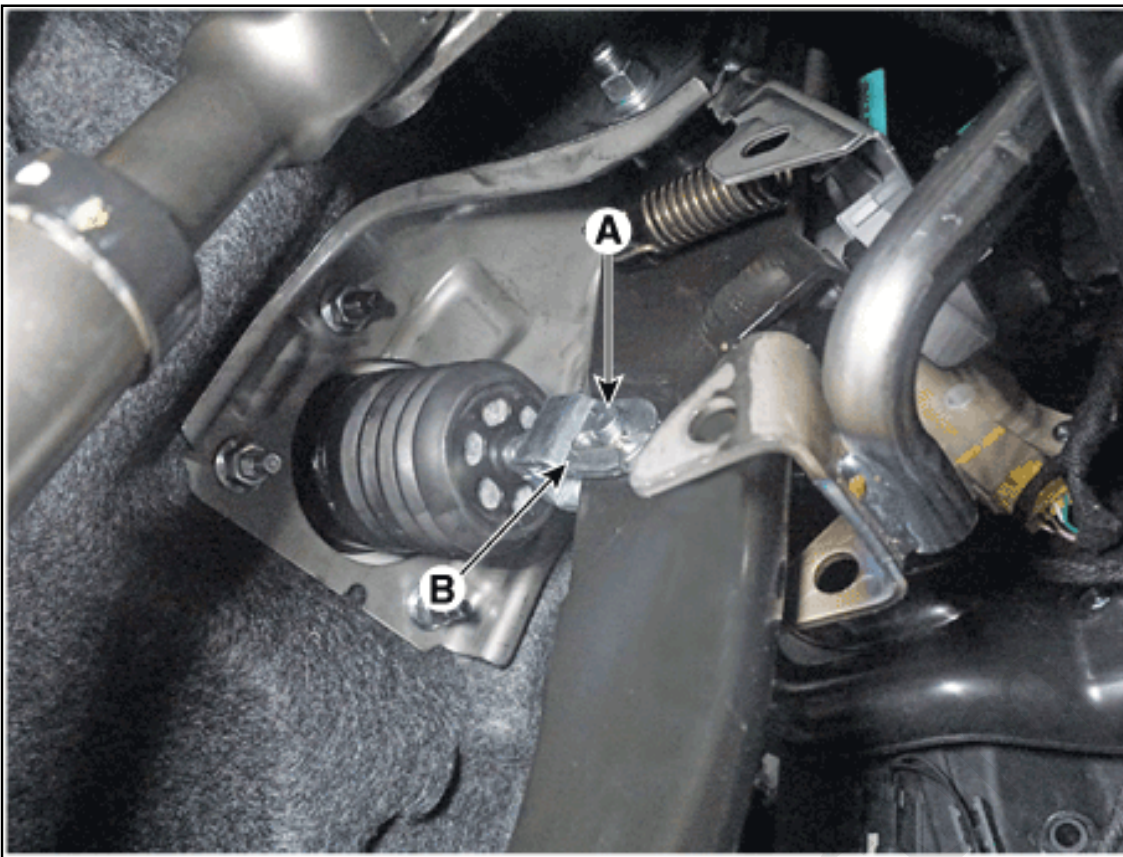
- 3. Brake pedal arm assembly
- 4. Brake pedal pad

Removal

1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the crash pad lower panel.
(Refer to Body - "Crash Pad Lower Panel")
3. Disconnect the stop lamp switch connector (A).



4. Remove the brake pedal arm split pin (B) and the clevis pin (A).

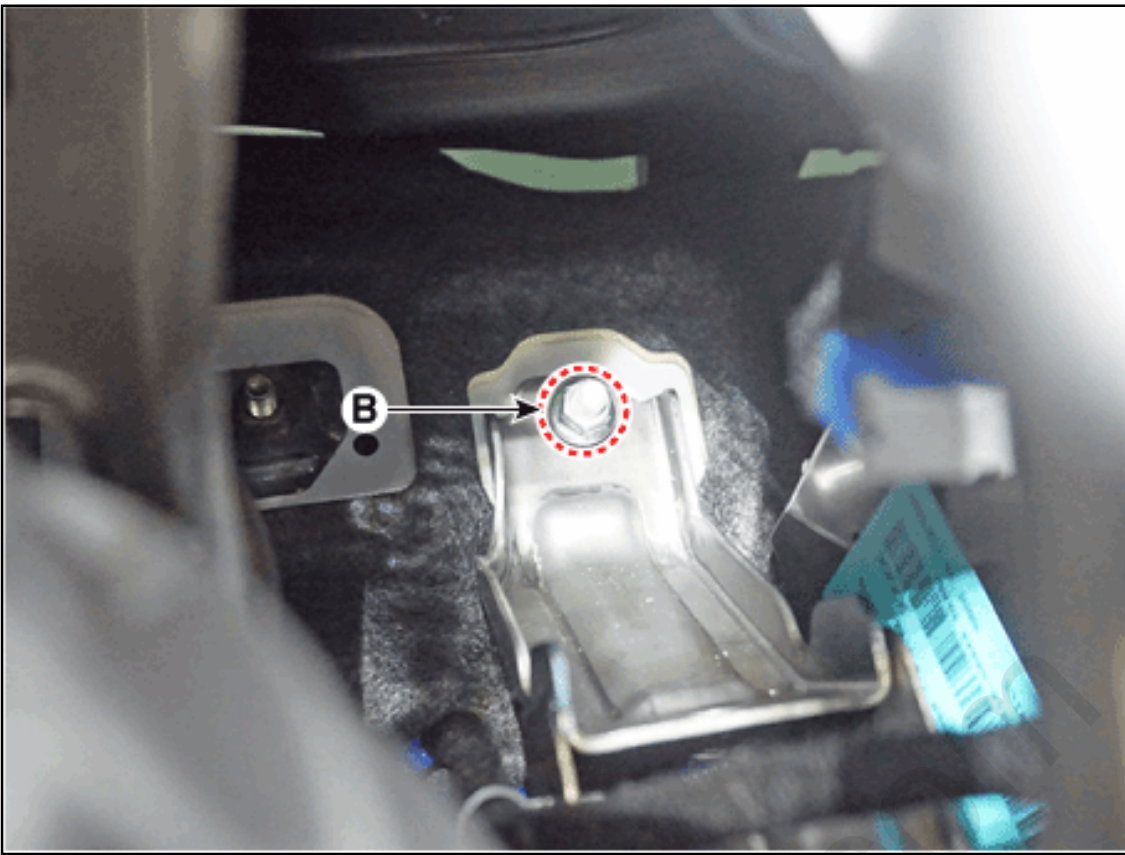


5. Loosen the nuts (A, B) and then remove the brake pedal assembly.

Tightening torque :

16.7 - 25.5 N.m (1.7 - 2.6 kgf.m, 12.3 - 18.8 lb-ft)





Inspection

1. Check the brake pedal for bending or twisting.
2. Check the brake pedal return spring for damage.
3. Check the stop lamp switch.

(Refer to Brake System - "Stop Lamp Switch")

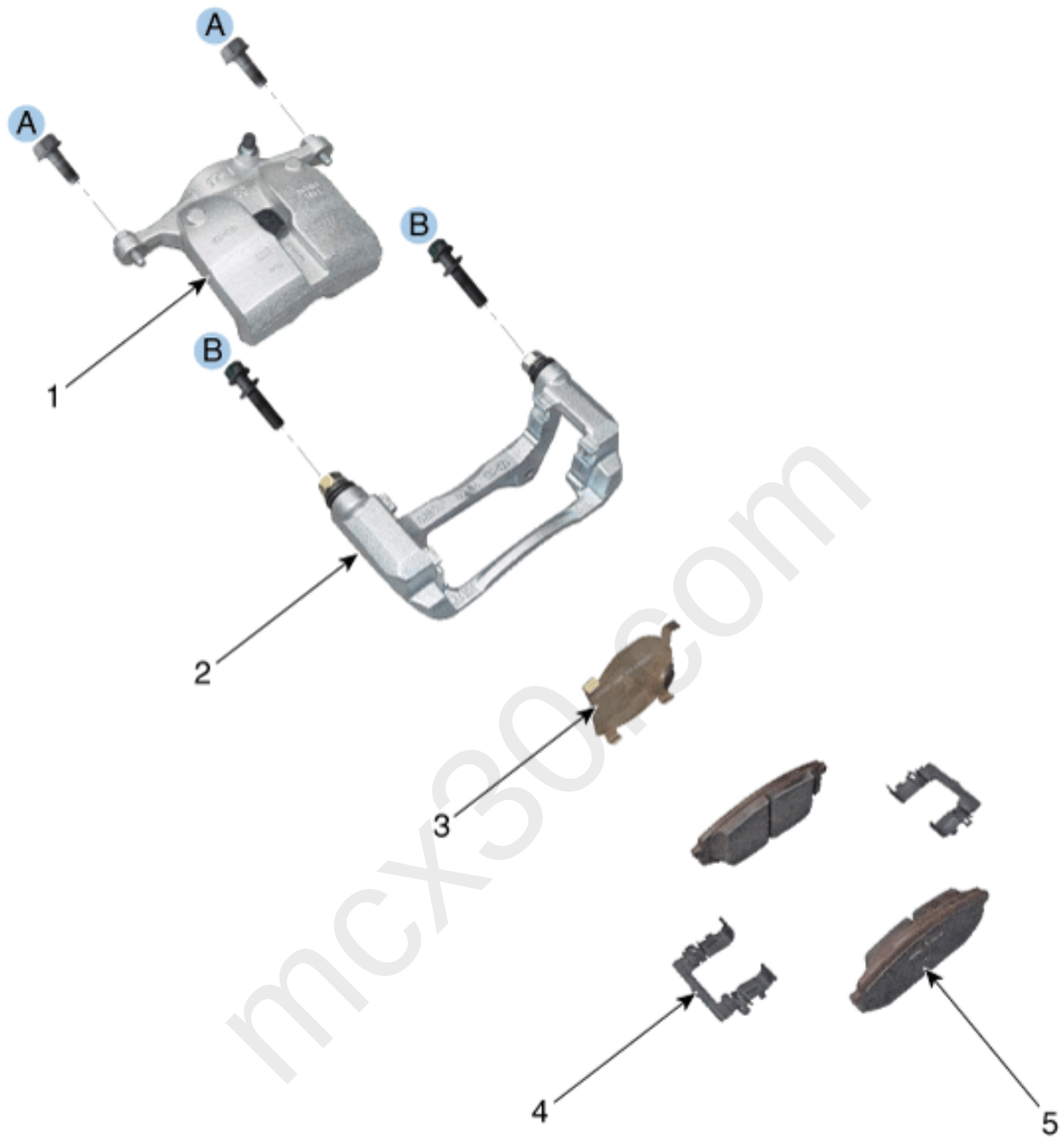
Installation

1. Installation is the reverse of removal.



- When installing the clevis pin, apply the grease.
- Use a new snap pin whenever installing.

Components



Tightening torque :

A : 21.6 - 31.4 N.m (2.2 - 3.2 kgf.m, 15.9 - 23.1 lb - ft)
B : 78.5 - 98.1 N.m (8.0 - 10.0 kgf.m, 57.9 - 72.3 lb - ft)

- 1. Caliper body
- 2. Caliper carrier
- 3. Pad inner shim

- 4. Pad retainer
- 5. Brake pad

Removal

1. Loosen the wheel nuts slightly.
Raise the vehicle, and make sure it is securely supported.
2. Remove the front wheel and tire (A) from the front hub.

Tightening torque :

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



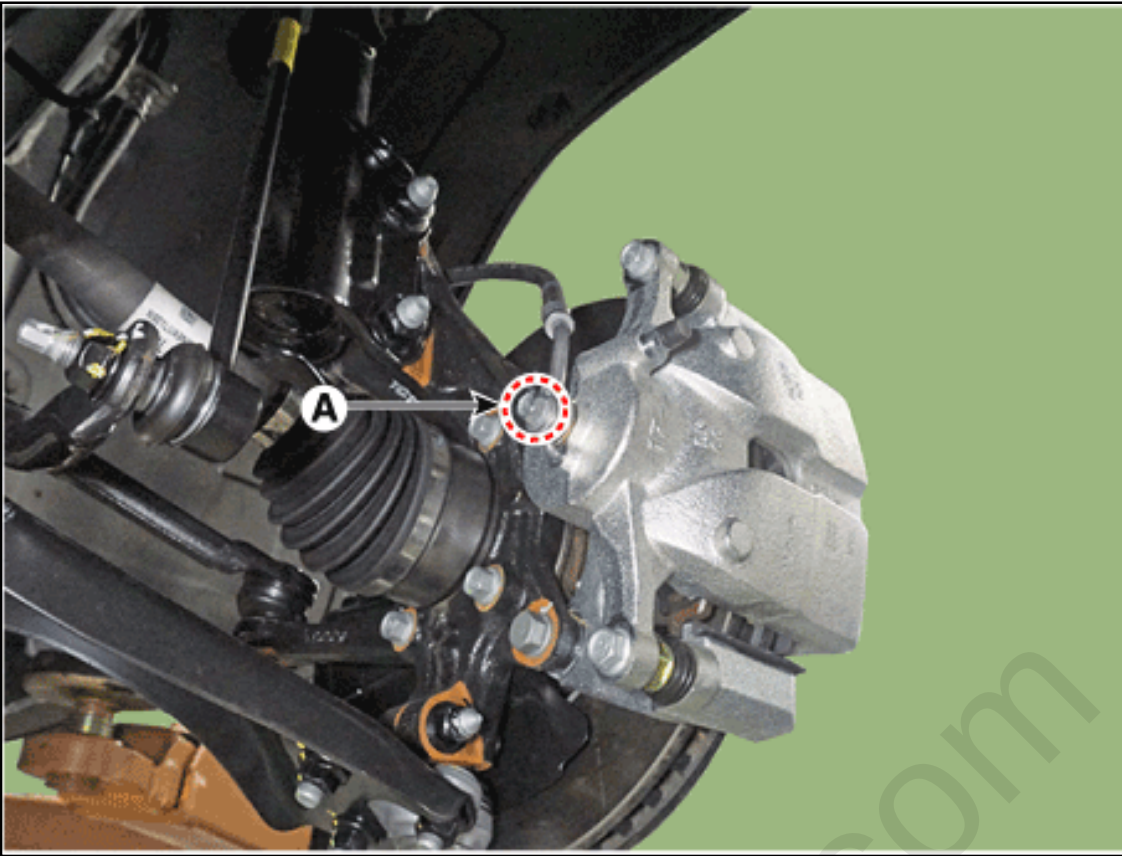
- Be careful not to damage the hub bolts when removing the front wheel and tire (A).



3. Loosen the brake hose bolt (A) from the caliper separate the brake hose.

Tightening torque :

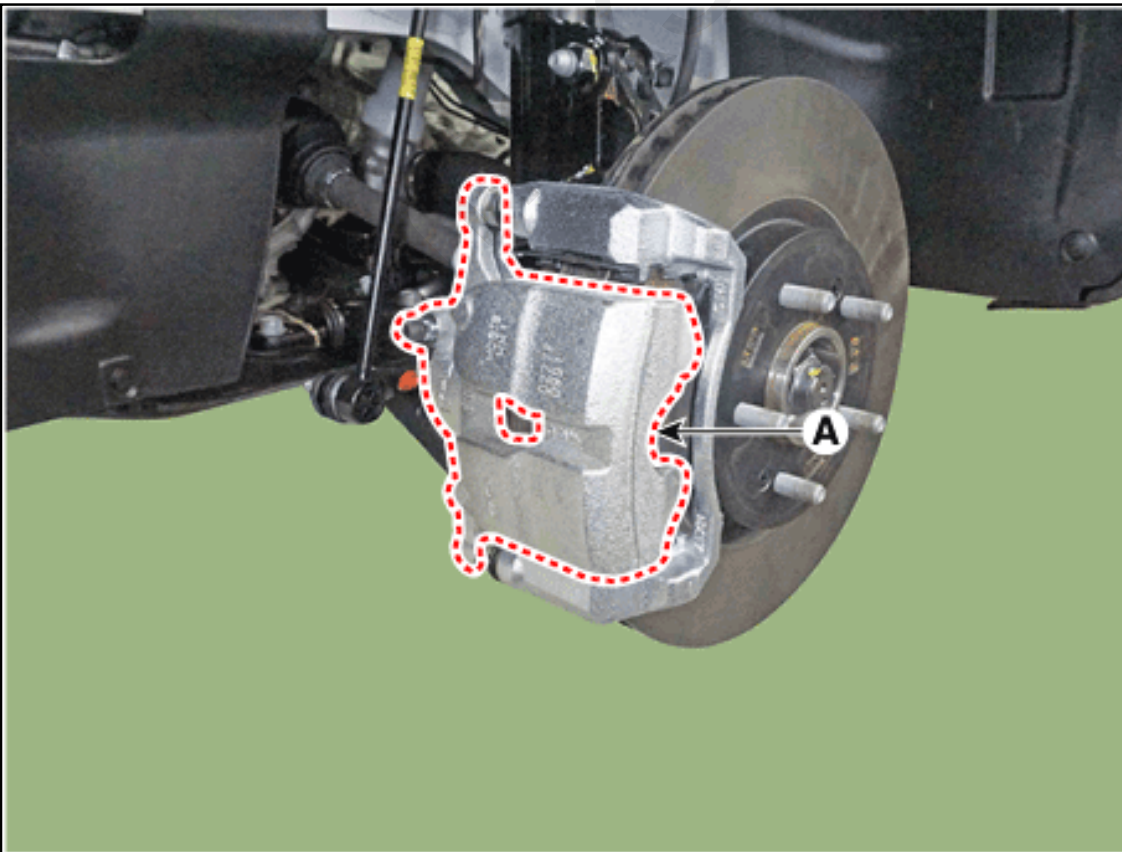
24.5 - 29.4 N.m (2.5 - 3.0 kgf.m, 18.1 - 21.7 lb-ft)



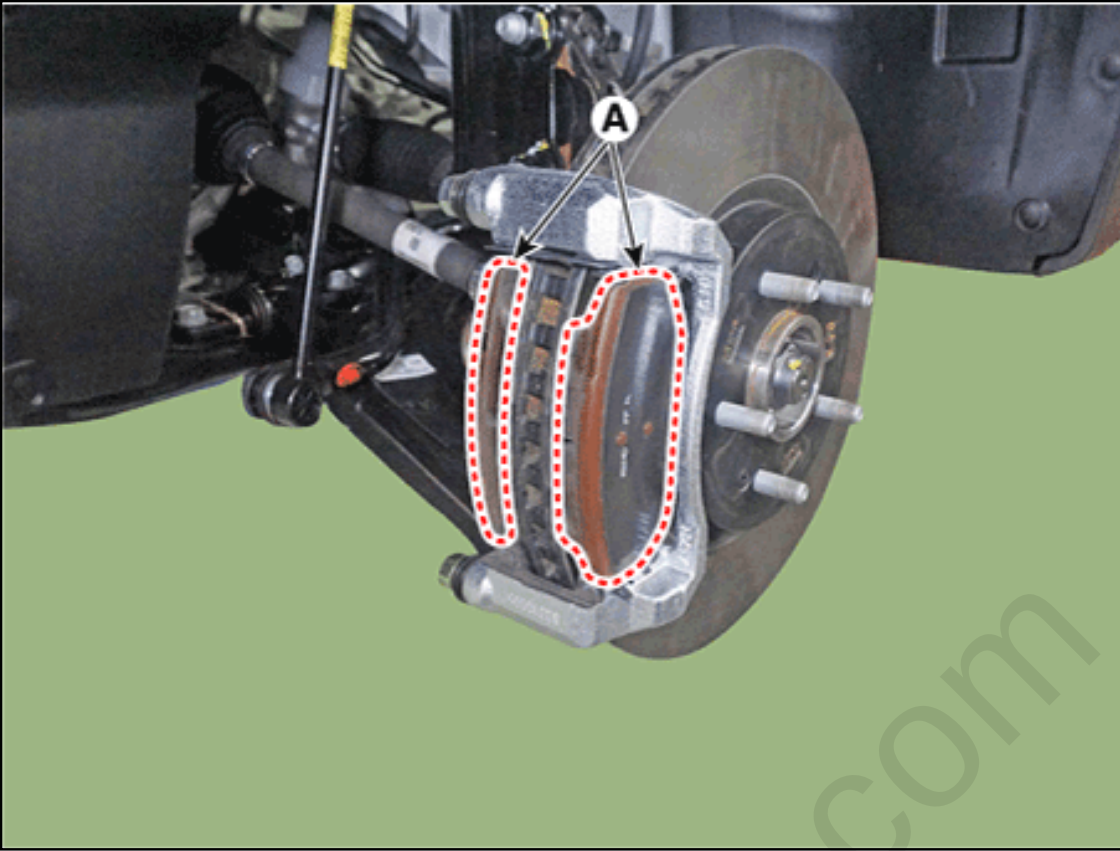
4. Remove the caliper body (A) by loosening the guided rod bolt.

Tightening torque :

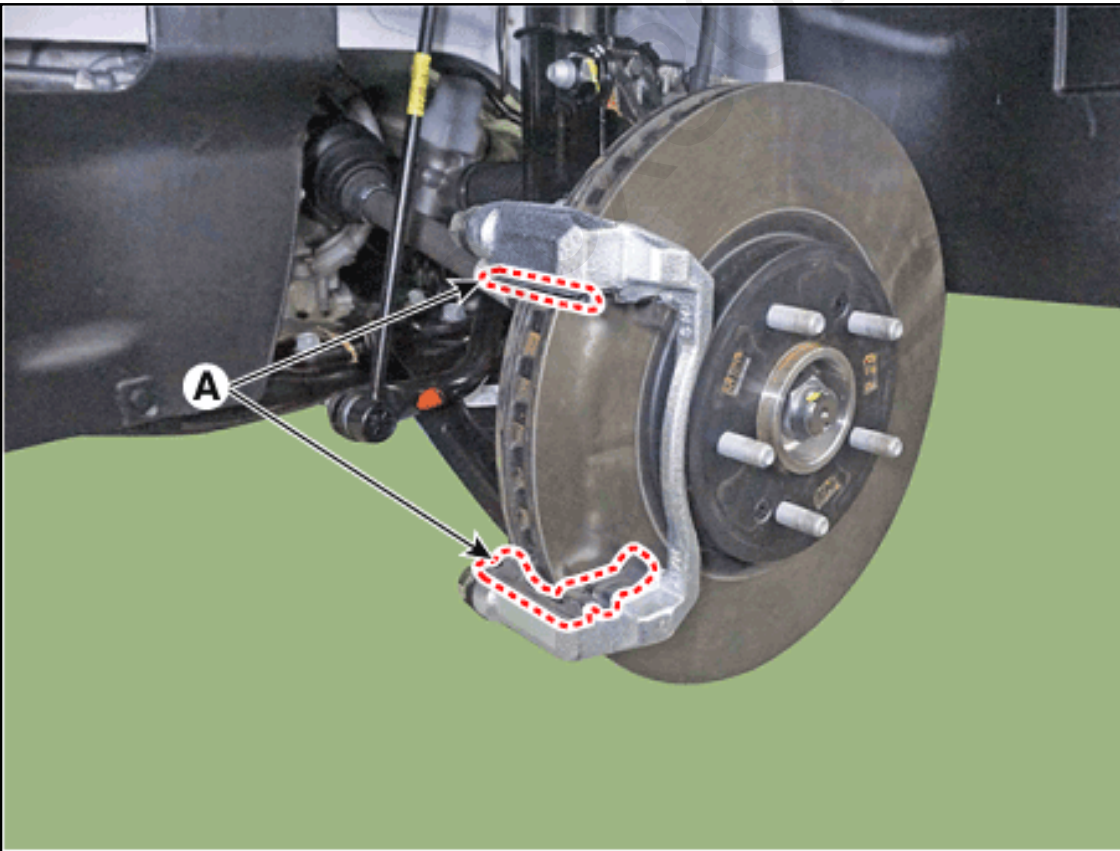
21.6 - 31.4 N.m (2.2 - 3.2 kgf.m, 15.9 - 23.1 lb-ft)



5. Remove the brake pad (A).



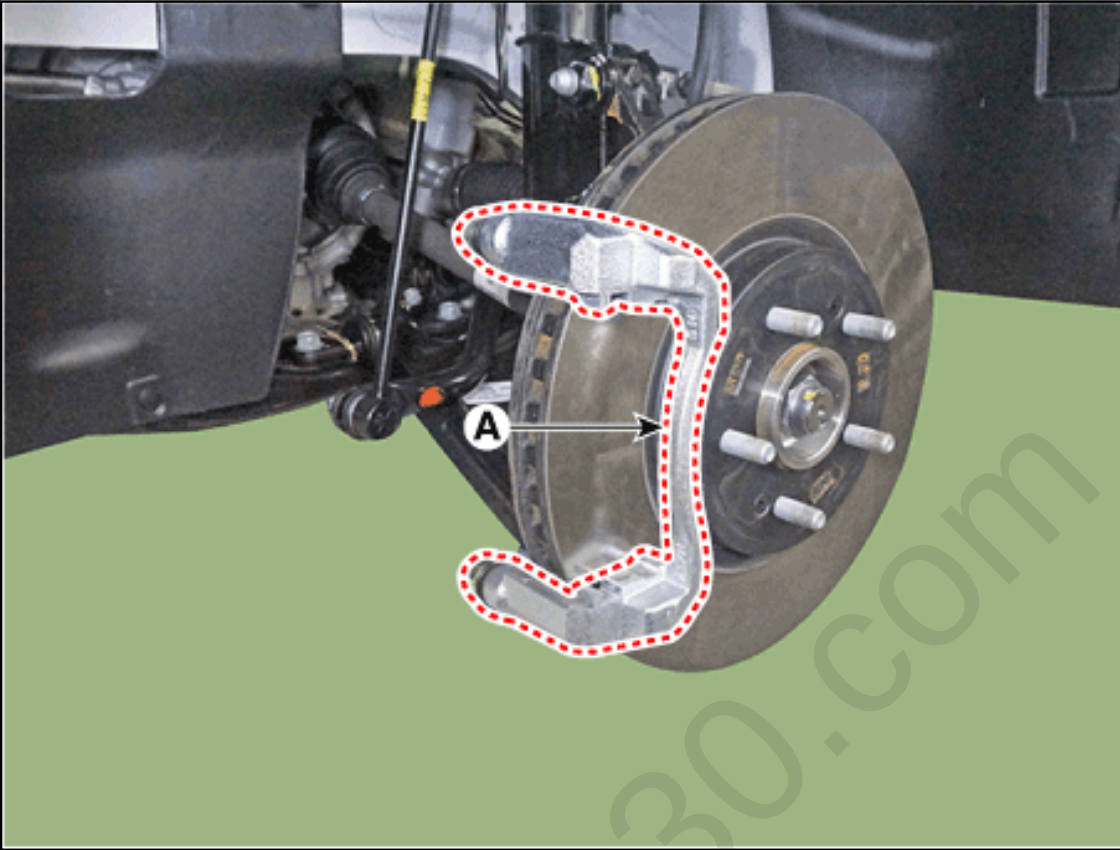
6. Remove the pad pad liner (A).



7. Remove the caliper carrier (A) by loosening the caliper mounting bolts.

Tightening torque :

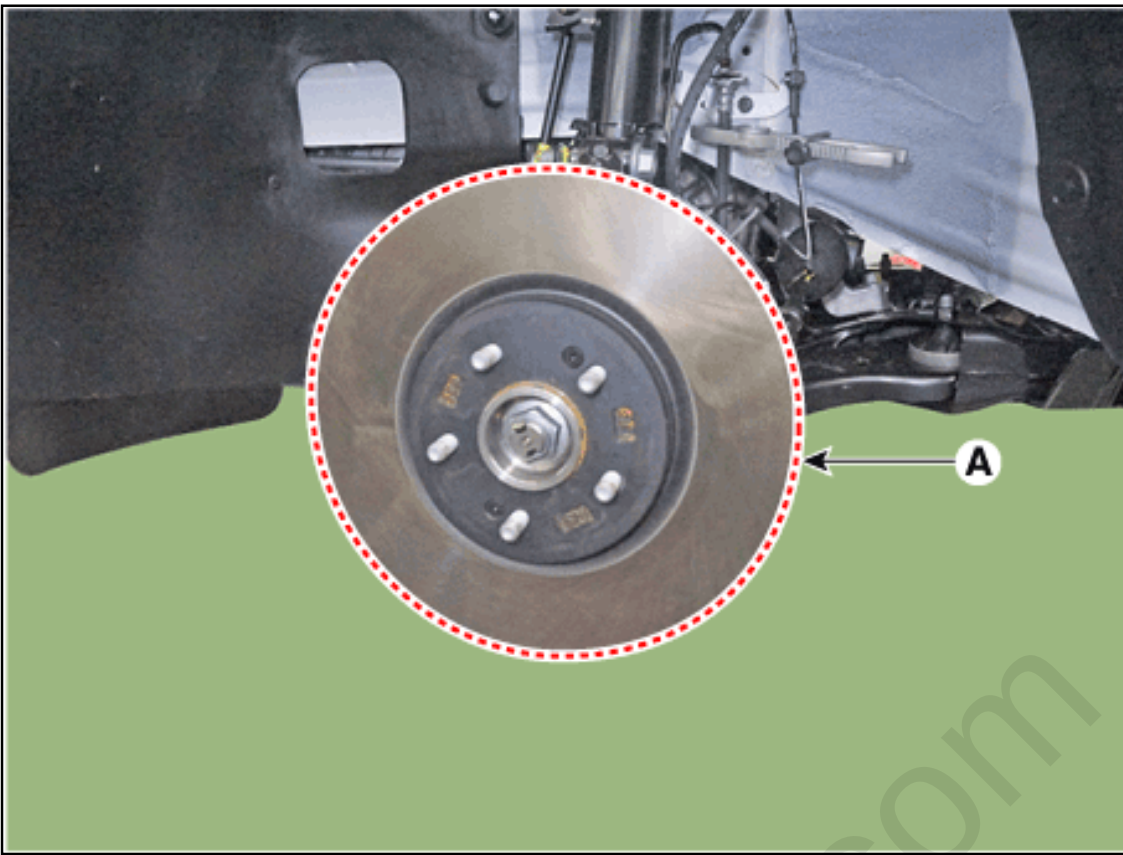
98.1 - 117.7 N.m (10.0 - 12.0 kgf.m, 72.3 - 86.8 lb-ft)



8. Remove the front brake disc (A) by loosening the screws.

Tightening torque :

4.9 - 5.8 N.m (0.5 - 0.6 kgf.m, 3.6 - 4.3 lb-ft)



Inspection

Front Brake Disc Thickness Check

1. Check the brake pads for wear and fade.
2. Check the brake disc for damage and cracks.
3. Remove all rust and contamination from the surface, and measure the disc thickness at 24 points, at least, of same distance (5mm) from the brake disc outer circle.

Front brake disc thickness

16 inch Standard : 25 mm (0.98 in)

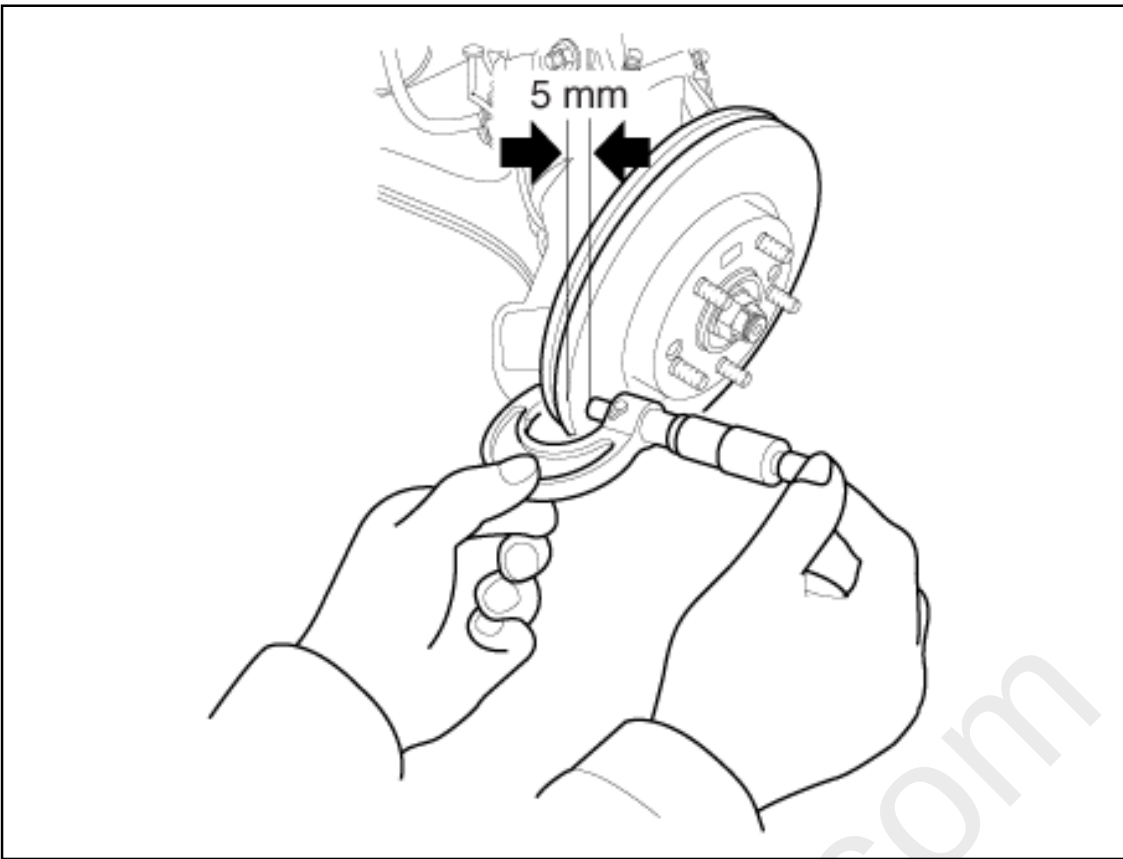
16 inch Service limit : 23 mm (0.90 in)

17 inch Standard : 30 mm (1.18 in)

17 inch Service limit : 28 mm (1.10 in)

Difference in thickness of each measuring part :

Less than 0.005 mm (0.0002 in) (Circumferential direction), 0.01 mm (0.0004 in) (Radial)



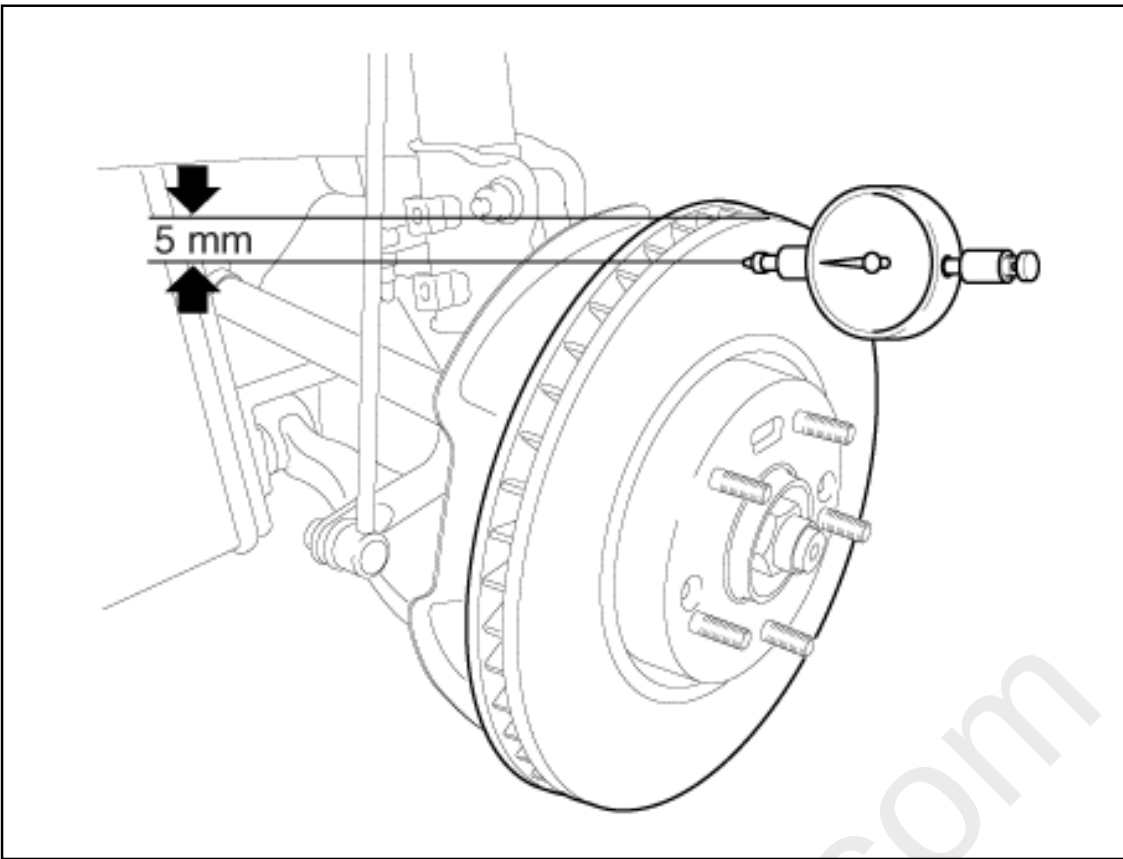
4. If wear exceeds the limit, replace the discs and pad assembly left and right of the vehicle.

Front Brake Disc Runout Check

1. Place a dial gauge about 5mm (0.2 in.) from the outer circumference of the brake disc, and measure the runout of the disc.

Brake disc runout

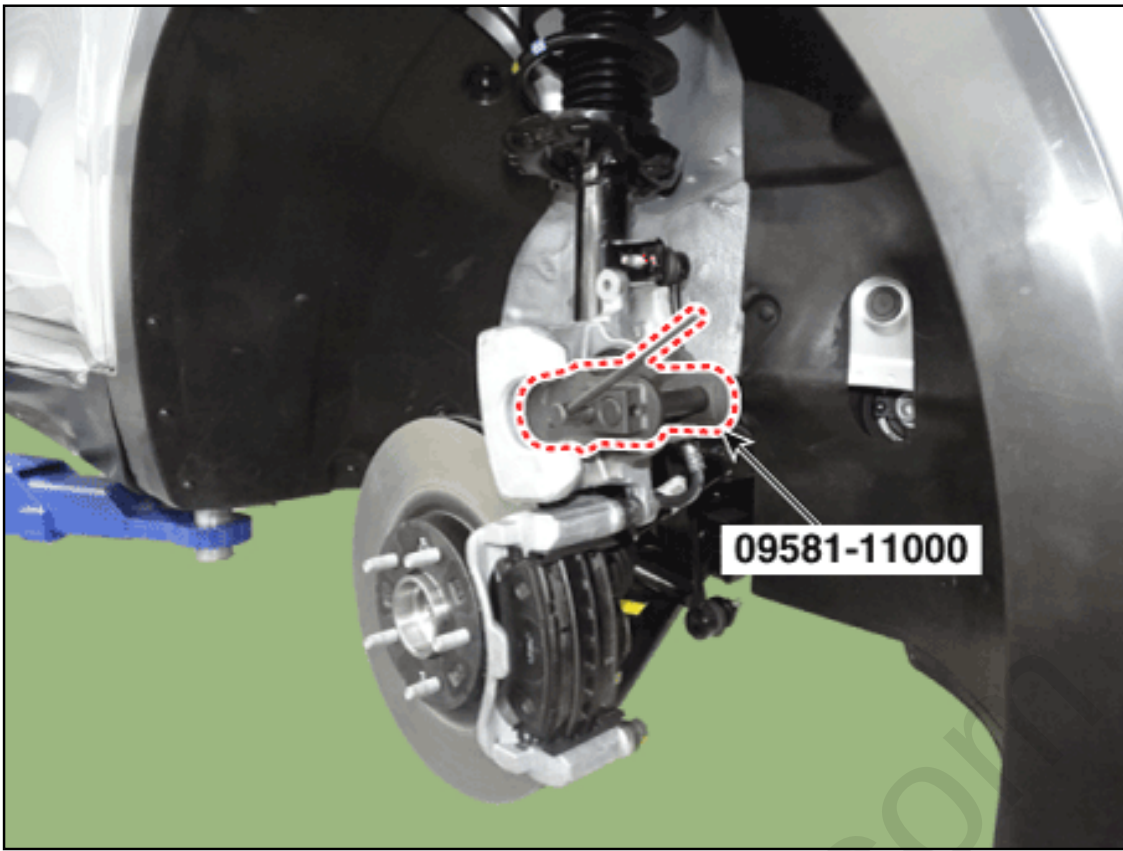
Limit : 0.04 mm (0.0016 in.) or less (new one)



2. If the runout of the brake disc exceeds the limit specification, replace the disc, and then measure the runout again.
3. If the runout does not meet the limit specification, remove the disc, turn it 180° and reinstall. Then check the runout of the brake disc again.
4. If the runout cannot be corrected by changing the position of the brake disc, replace the brake disc.

Installation

1. Installation is the reverse of removal.
2. Use a SST (09581-11000) when installing the brake caliper assembly.



3. After installing, bleed the brake system.
(Refer to Brake System - "Brake Bleeding Procedures")

Components



- 1. EPB Actuator
- 2. Caliper body
- 3. Caliper carrier

- 4. Pad retainer
- 5. Brake pad

Removal

1. Before removing the rear caliper, perform “Brake Pad Replacement Mode” using the self-diagnosis.
Raise the vehicle, and make sure it is securely supported.

•EPB Apply : Release the EPB, push the EPB switch or using self-diagnosis.

S/W Management

Systems

Components

Unfold All

■ Engine Control

■ Automatic Transaxle

■ ABS/ESP

■ System Identification

■ HCU Air Bleeding Mode

■ Steering Angle Sensor(SAS) Calibration

■ Auto Detected Configuration(ESC Only)

■ Longitudinal G Sensor Calibration(HAC/DBC Only)

■ VARIANT CODING

■ Break Pad Change Mode

■ Assembly Check(ECU replacement)

■ Forward Collision-Avoidance Assist

■ Airbag(Event #1)

■ Airbag(Event #2)

■ Air Conditioner

■ 4WD Control

■ Motor Driven Power Steering

!

Do not touch any system buttons while performing this function.



• Pad Change Mode

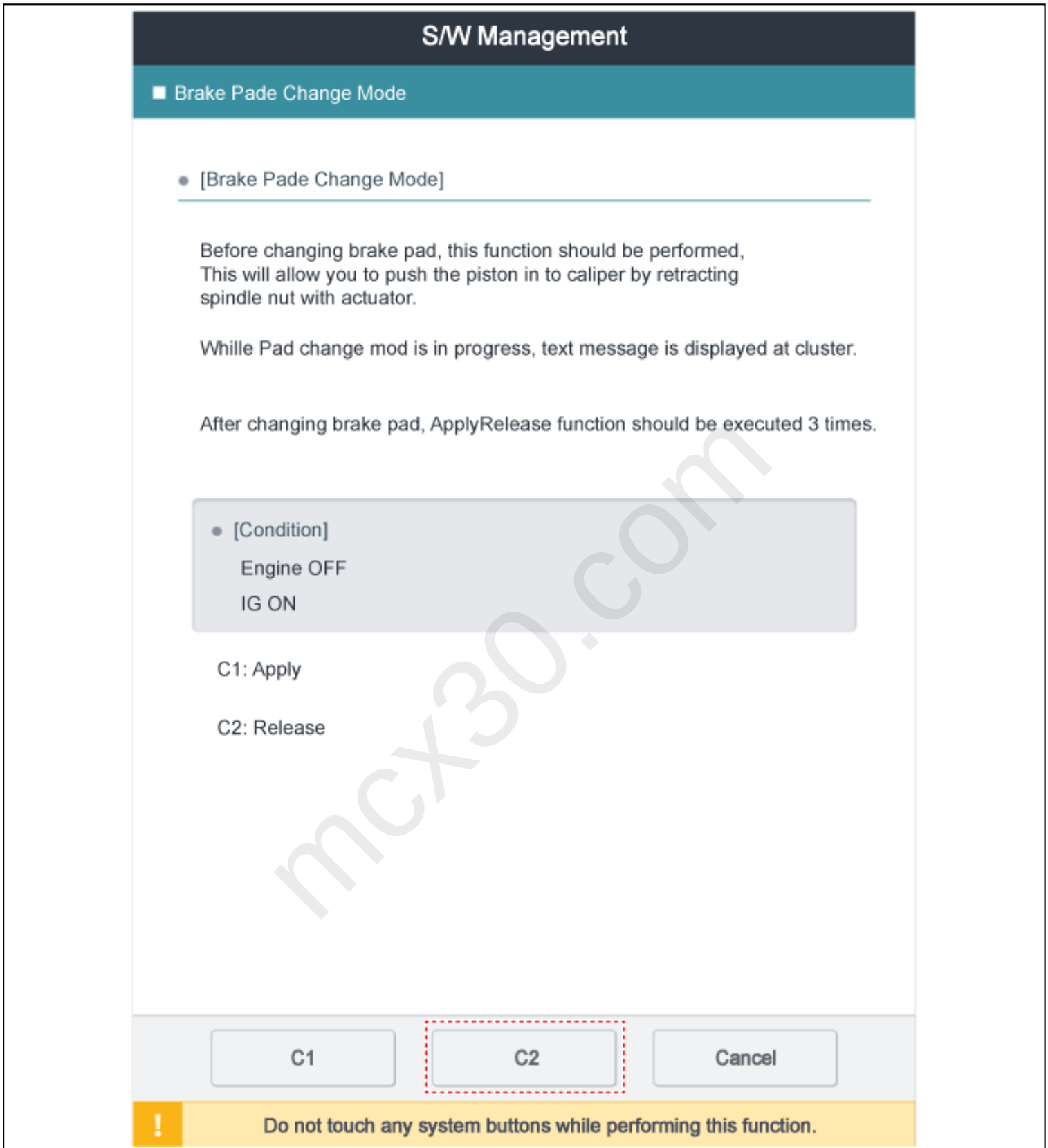
Purpose	To push the piston into caliper by retracting spindle nut with actuator for replacing brake pad.
Enable Condition	1.Engine Off 2.Ignition Switch On
Concerned Component	Electric Parking Brake(EPB) ECU, EPB Switch, Brake Caliper, Cluster
Concerned DTC	-
Fail Safe	-
Etc	C1 : Applying C2 : Releasing

OK



Do not touch any system buttons while performing this function.

2. Select C2 (Release) on the screen below.



•EPB None Apply : Release the parking brake pedal and parking brake cable is loose.

3. Turn ignition switch OFF and disconnect the negative (-) battery cable.

4. Loosen the wheel nuts slightly.

Raise the vehicle, and make sure it is securely supported.

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

Tightening torque :

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

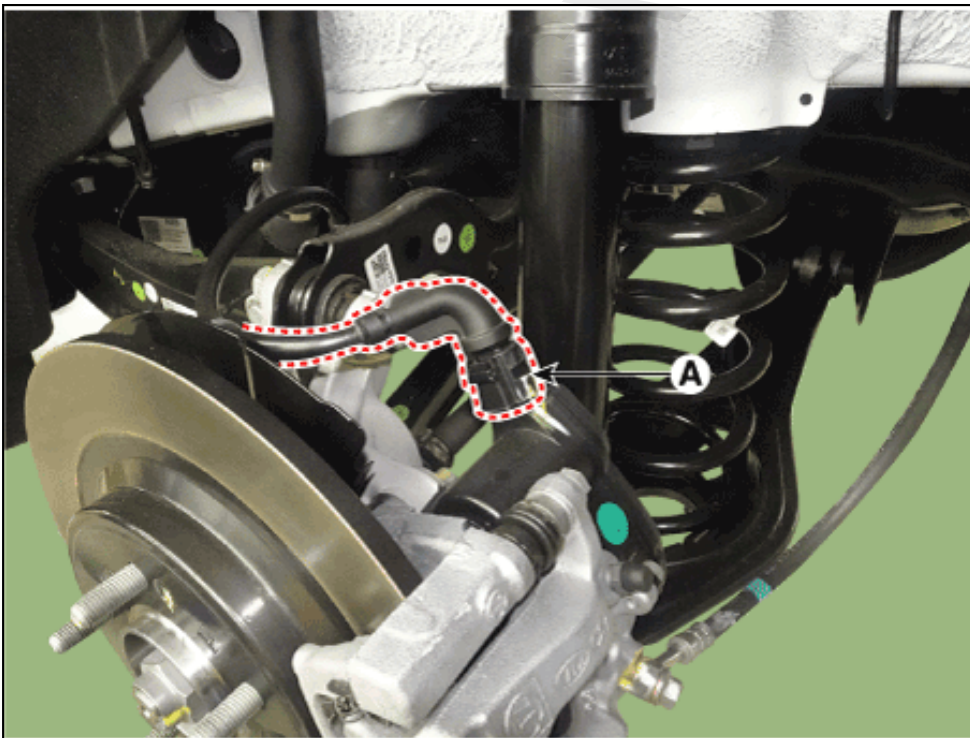


- Be careful not to damage the hub bolts when removing the rear wheel and tire (A).

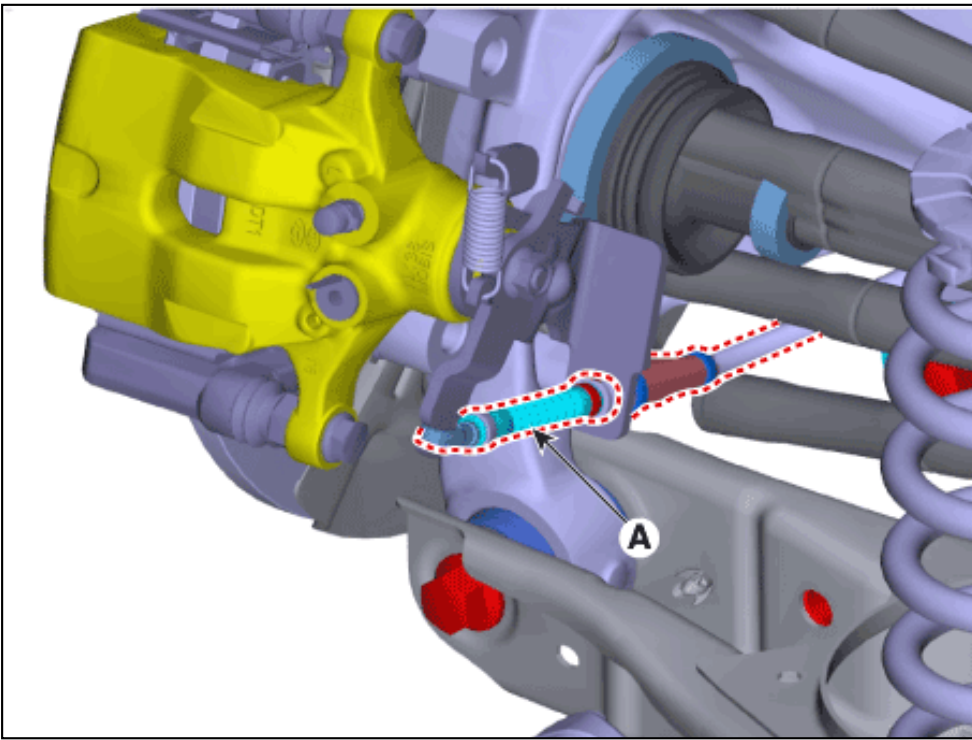


6. Disconnect the EPB connector or parking brake cable.

- EPB Apply : Disconnect the EPB connector (A).



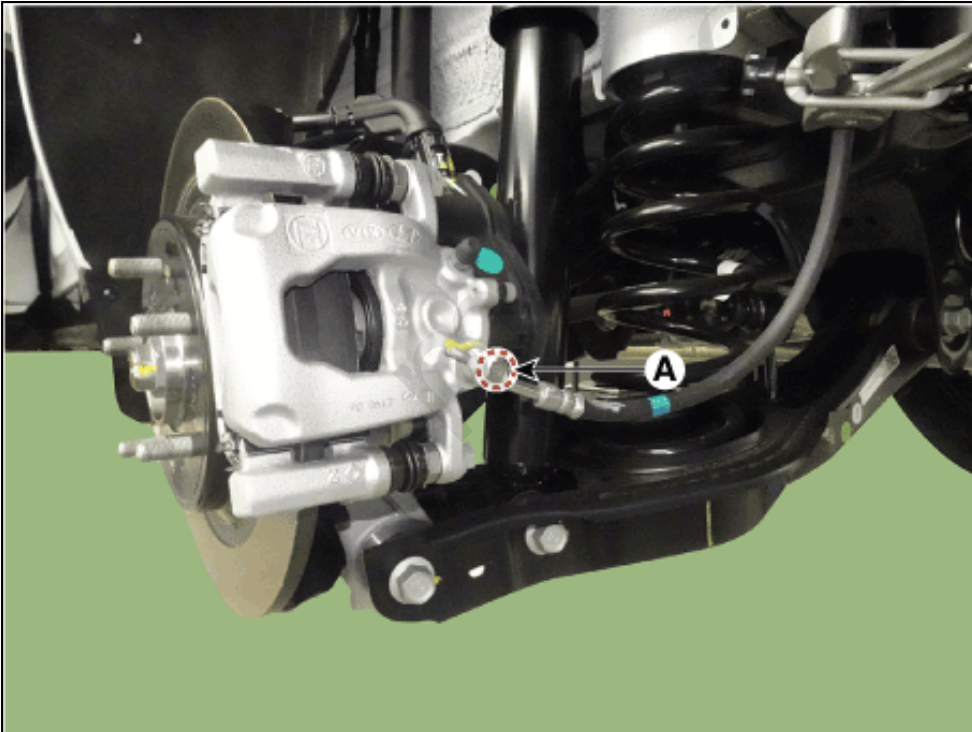
- EPB None Apply : Remove the parking brake cable (A), after removing the clip.



7. Remove the hose after loosening the brake hose bolt (A) from the caliper.

Tightening torque :

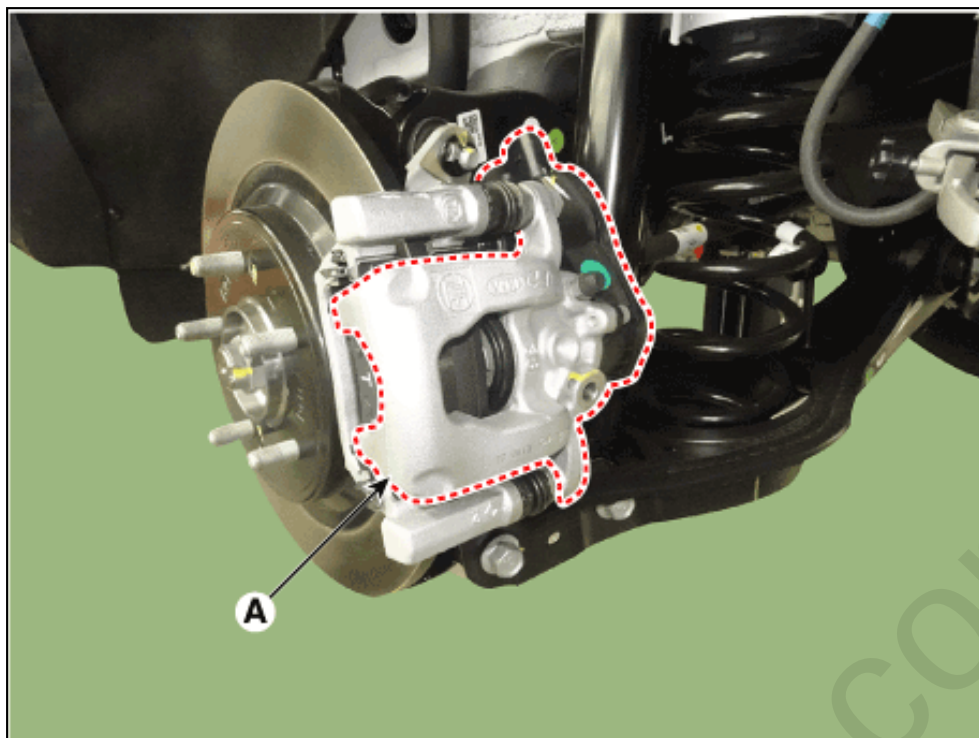
24.5 - 29.4 N.m (2.5 - 3.0 kgf.m, 18.1 - 21.7 lb-ft)



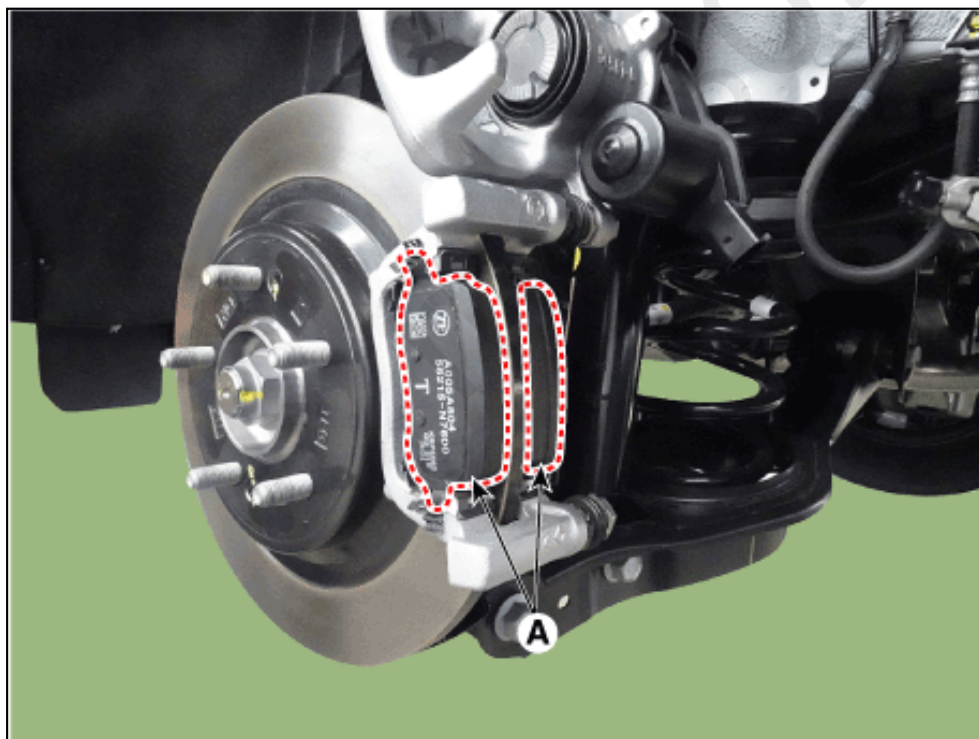
8. Remove the guide rod bolt and then pivot the caliper body (A) up out of the way.

Tightening torque :

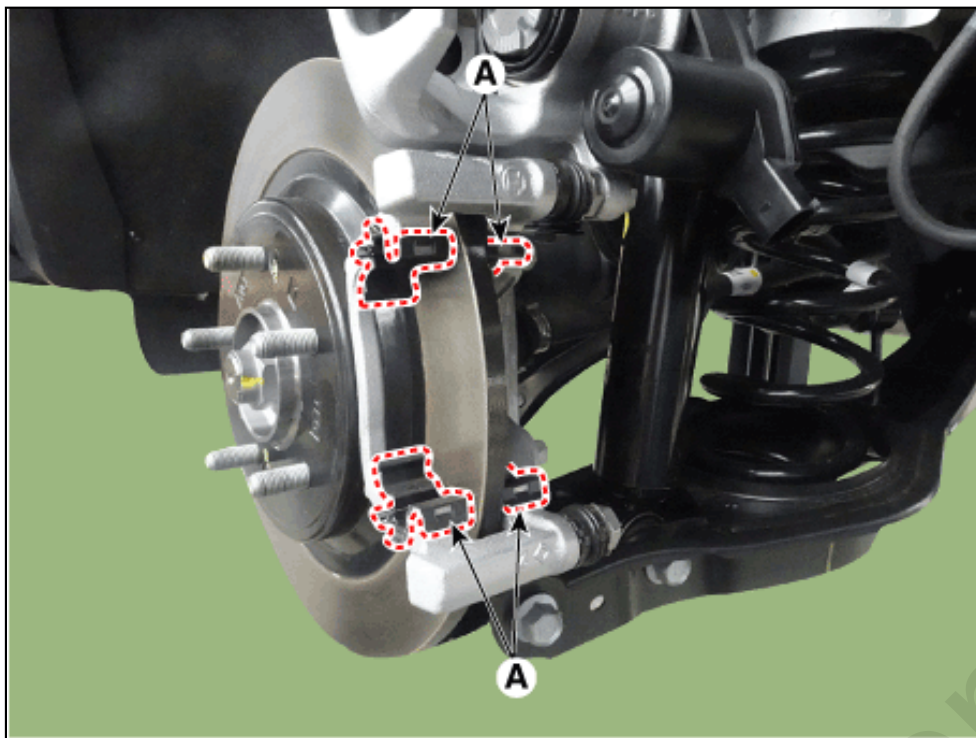
21.6 - 31.4 N.m (2.2 - 3.2 kgf.m, 15.9 - 23.1 lb - ft)



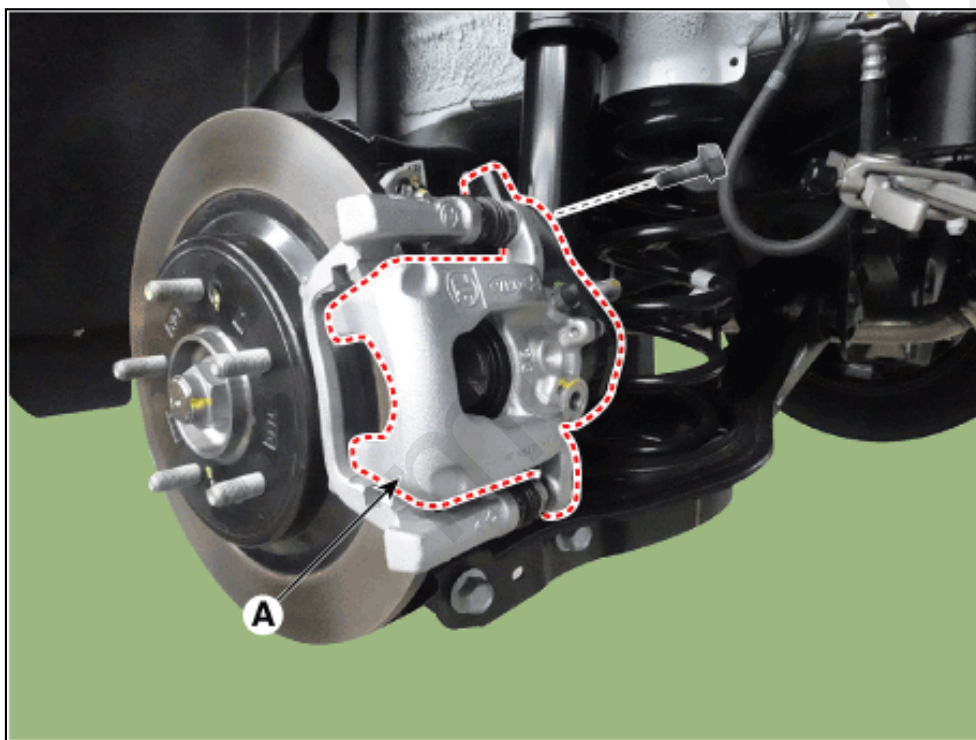
9. Remove the brake pad (A).



10. Remove the pad liner (A).



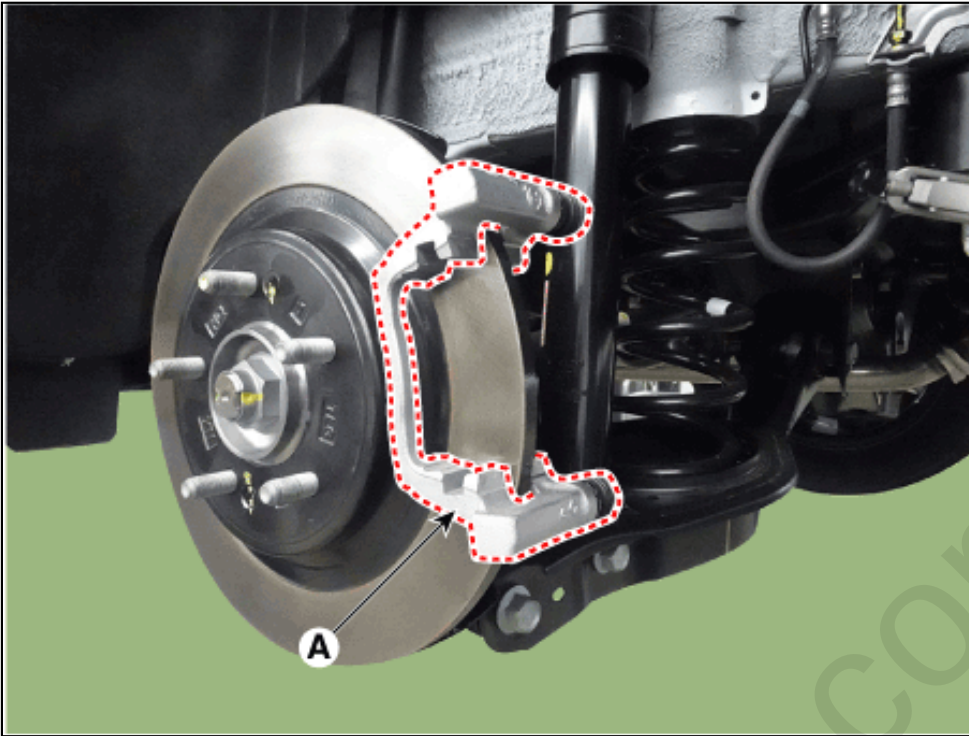
11. Remove the brake caliper body (A) by loosening the upper bolt of the brake caliper guide.



12. Remove the caliper carrier (A) after loosening the caliper mounting bolt.

Tightening torque :

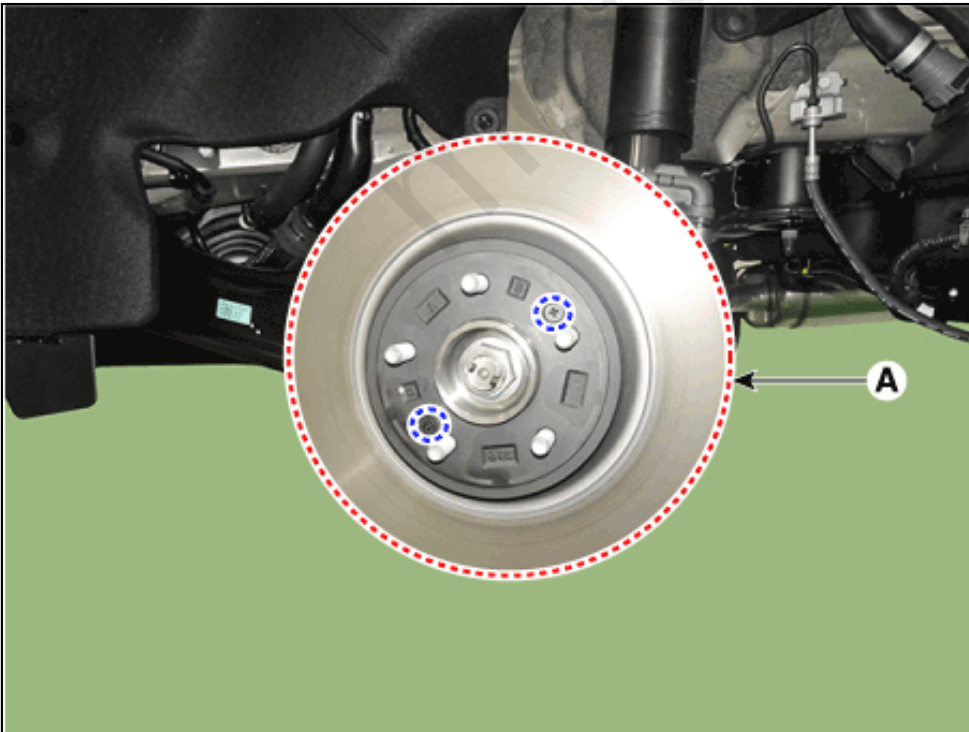
78.5 - 98.1 N.m (8.0 - 10.0 kgf.m, 57.9 - 72.3 lb-ft)



13. Remove the rear brake disc (A) after loosening the screw.

Tightening torque :

4.9 - 5.9 N.m (0.5 - 0.6 kgf.m, 3.6 - 4.3 lb-ft)



Inspection

Rear Brake Disc Thickness Check

1. Check the brake disc for damage and cracks.
2. Remove all rust and contamination from the surface, and measure the disc thickness at 24 points, at least, of same distance (5mm) from the brake disc outer circle.

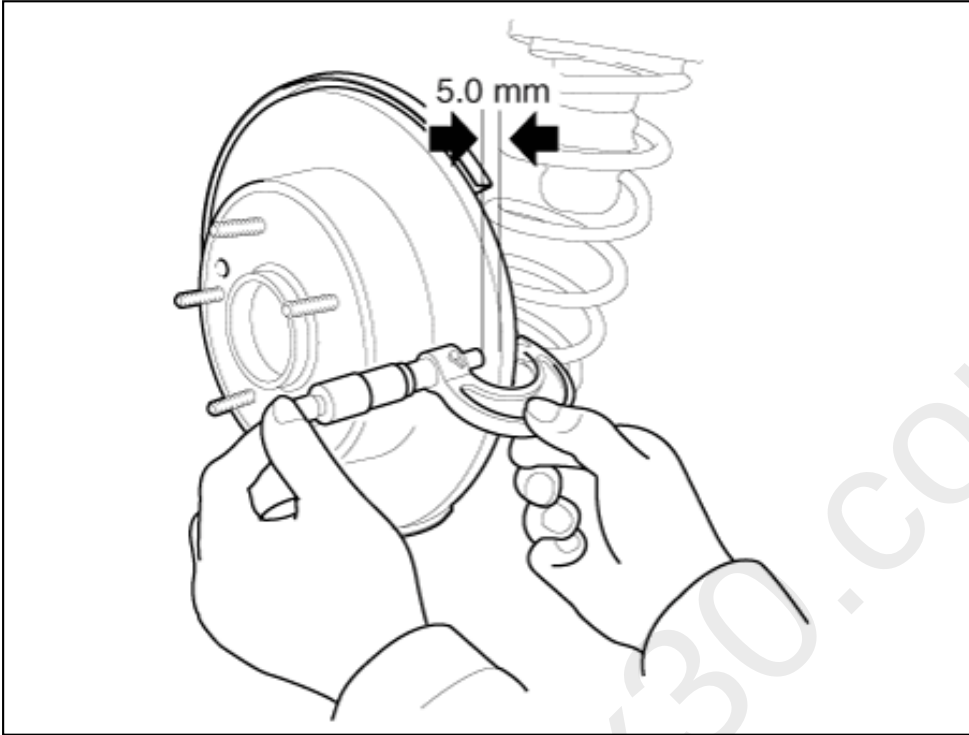
Rear brake disc thickness

- Standard (Solid disc) : 10 mm (0.39 in)

- Service Limit : 8.0 mm (0.32 in)

Difference in thickness of each measuring part :

Less than 0.005 mm (0.0002 in) (Circumferential direction), 0.01 mm (0.0004 in) (Radial)



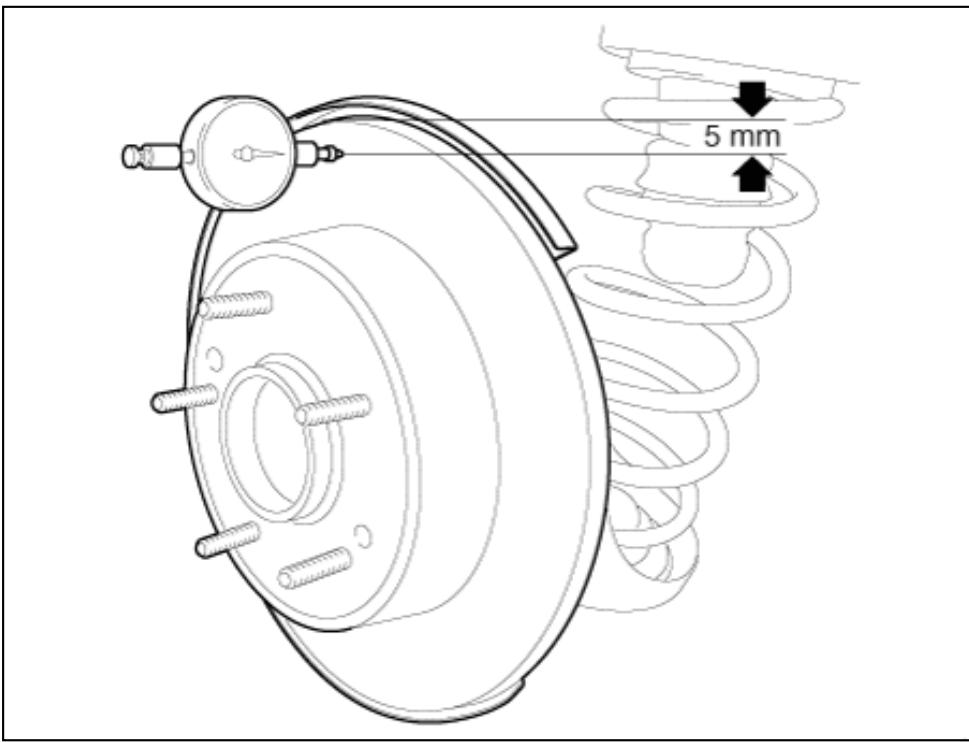
3. If wear exceeds the limit, replace the discs and pad assembly left and right of the vehicle.

Rear Brake Disc Runout Check

1. Place a dial gauge about 5mm (0.20 in.) from the outer circumference of the brake disc, and measure the runout of the disc.

Brake disc runout

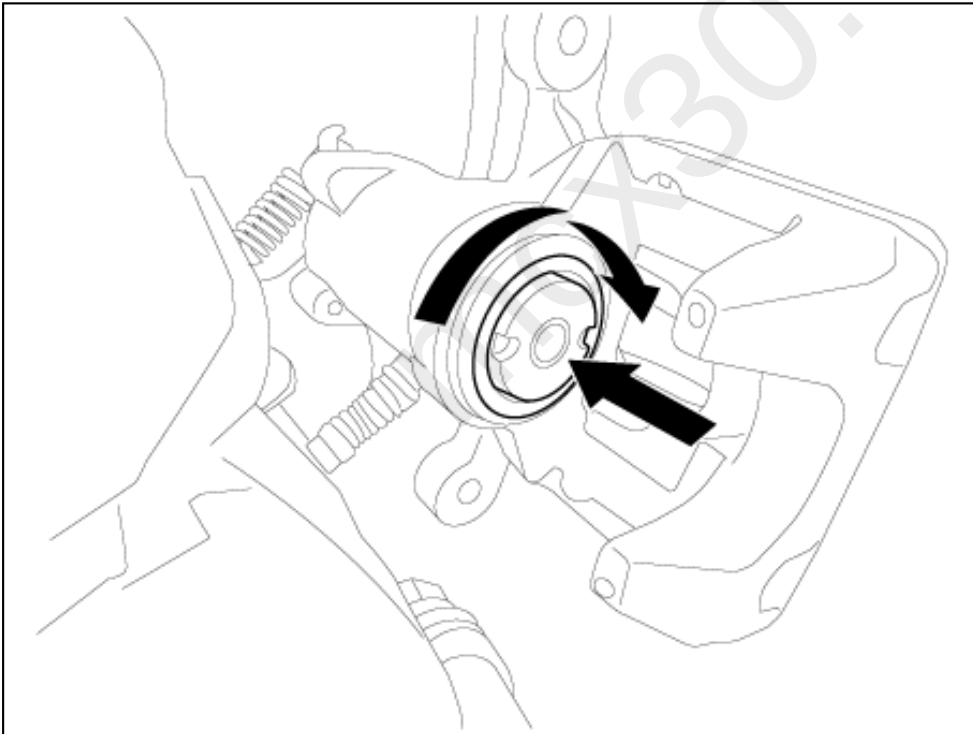
Limit : 0.05 mm (0.0020 in.) or less (new one)



2. If the runout of the brake disc exceeds the limit specification, replace the disc, and then measure the runout again.
3. If the runout cannot be corrected by changing the position of the brake disc, replace the brake disc.

Installation

1. Install in the reverse order of removal.
2. When installing, press and rotate the piston into the caliper body until it is fully retracted.



3. After installation, bleed the brake system.
(Refer to Brake System - "Brake Bleeding Procedures")

4. After installing the rear caliper, perform “Brake Pad Replacement Mode” using the self-diagnosis. [EPB Apply]

S/W Management

Systems

Components

Unfold All

■ Engine Control

■ Automatic Transaxle

■ ABS/ESP

■ System Identification

■ HCU Air Bleeding Mode

■ Steering Angle Sensor(SAS) Calibration

■ Auto Detected Configuration(ESC Only)

■ Longitudinal G Sensor Calibration(HAC/DBC Only)

■ VARIANT CODING

■ Break Pad Change Mode

■ Assembly Check(ECU replacement)

■ Forward Collision-Avoidance Assist

■ Airbag(Event #1)

■ Airbag(Event #2)

■ Air Conditioner

■ 4WD Control

■ Motor Driven Power Steering

!

Do not touch any system buttons while performing this function.



• Pad Change Mode

Purpose	To push the piston into caliper by retracting spindle nut with actuator for replacing brake pad.
Enable Condition	1.Engine Off 2.Ignition Switch On
Concerned Component	Electric Parking Brake(EPB) ECU, EPB Switch, Brake Caliper, Cluster
Concerned DTC	-
Fail Safe	-
Etc	C1 : Applying C2 : Releasing

OK



Do not touch any system buttons while performing this function.

5. Select C1 (Apply) on the screen below.

SW Management

■ Brake Pade Change Mode

● [Brake Pade Change Mode]

Before changing brake pad, this function should be performed,
This will allow you to push the piston in to caliper by retracting
spindle nut with actuator.

Whille Pad change mod is in progress, text message is displayed at cluster.

After changing brake pad, ApplyRelease function should be executed 3 times.

● [Condition]

Engine OFF
IG ON

C1: Apply

C2: Release

C1

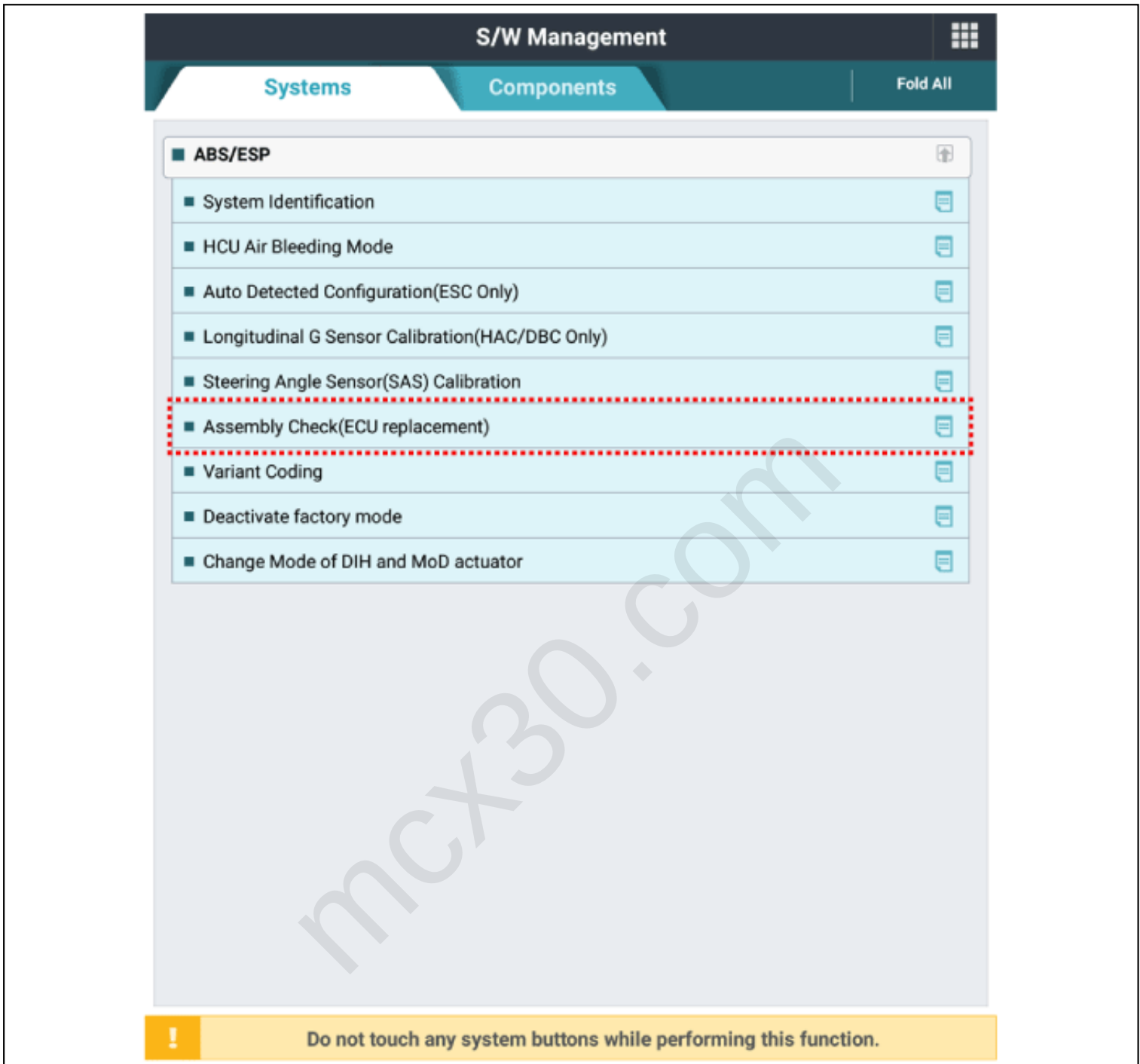
C2

Cancel

!

Do not touch any system buttons while performing this function.

6. After replacing the rear caliper, make sure that the caliper is installed correctly by performing "Check assembling (ECU replaced)" from the option



7. After disassembling/assembling the caliper body or replacing the brake caliper, parking brake cable or brake disc, re-adjust the parking brake. [EPB None Apply]
8. Apply the parking brake several times and check for normal operation.
9. Check if the parking brake is operating normally.

Replacement



- Be careful not to damage the parts located under the vehicle (floor under cover, fuel filter, fuel tank and canister) when raising the vehicle using the lift.

(Refer to General Information - "Lift and Support Points")

Front Brake Pad

1. Loosen the wheel nuts slightly.
Raise the vehicle, and make sure it is securely supported.
2. Remove the front wheel and tire (A) from front hub.



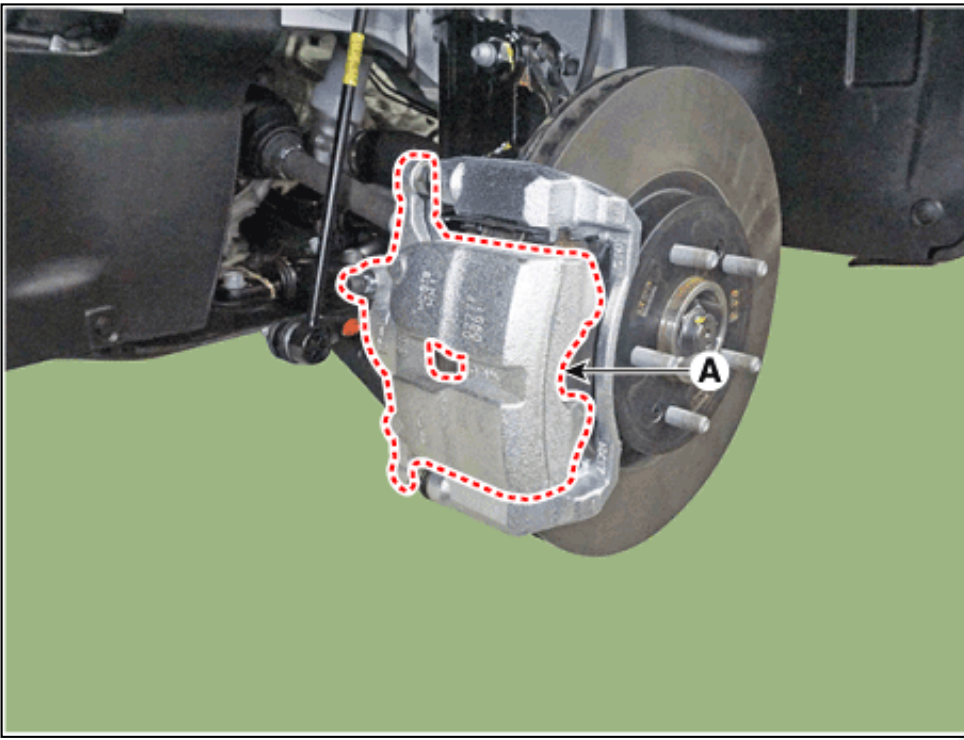
- Be careful not to damage the hub bolts when removing the front wheel and tire (A).



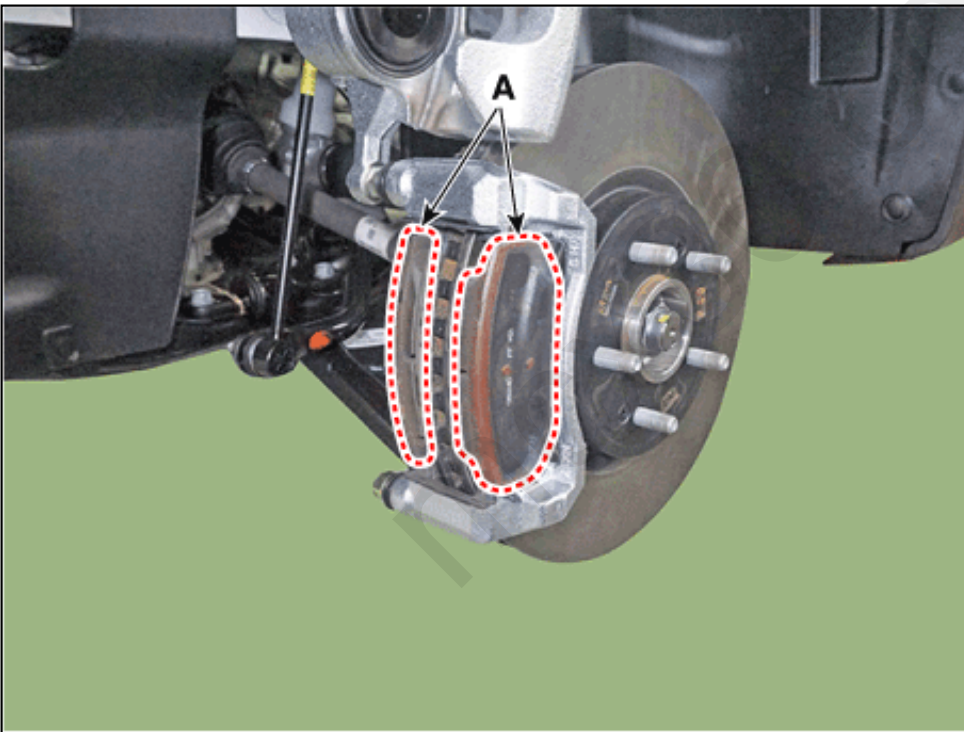
3. Up the brake caliper body (A) by loosening the guided rod bolt.

Tightening torque :

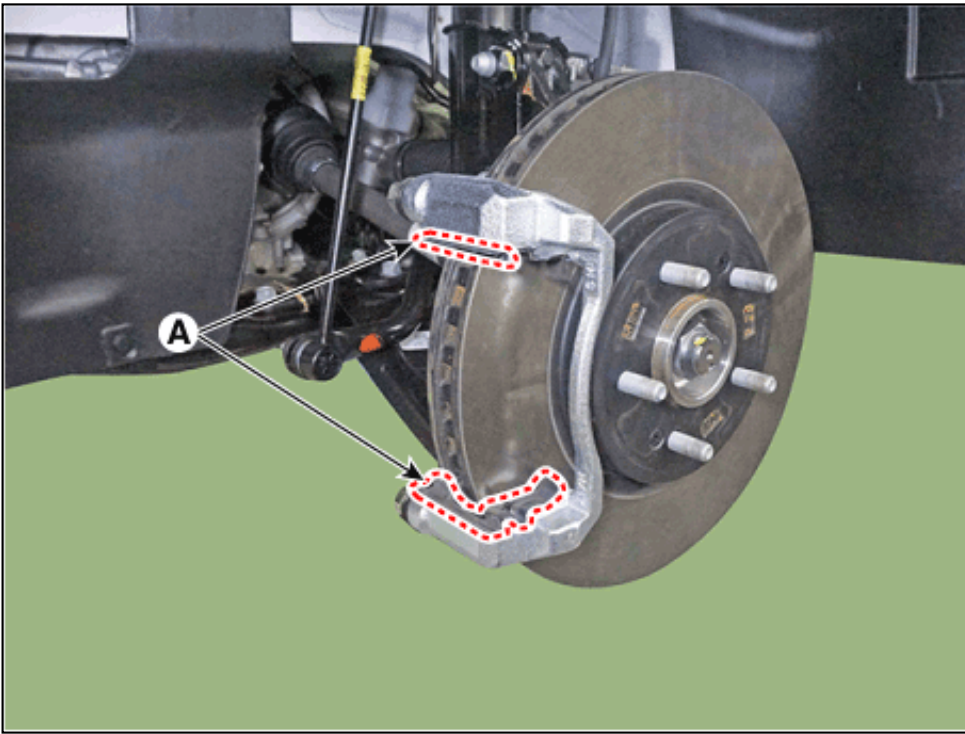
37.3 - 41.2 N.m (3.8 - 4.2 kgf.m, 27.5 - 30.4 lb-ft)



4. Remove the brake pad (A).

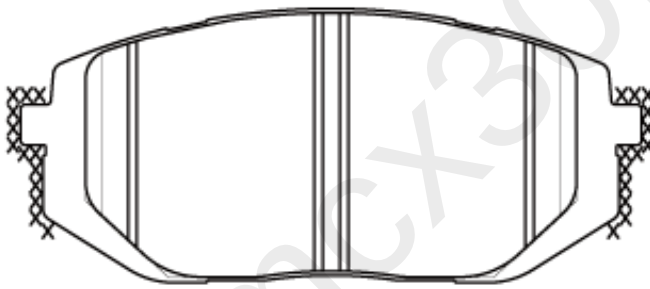


5. Replace the pad liner (A) with a new one.

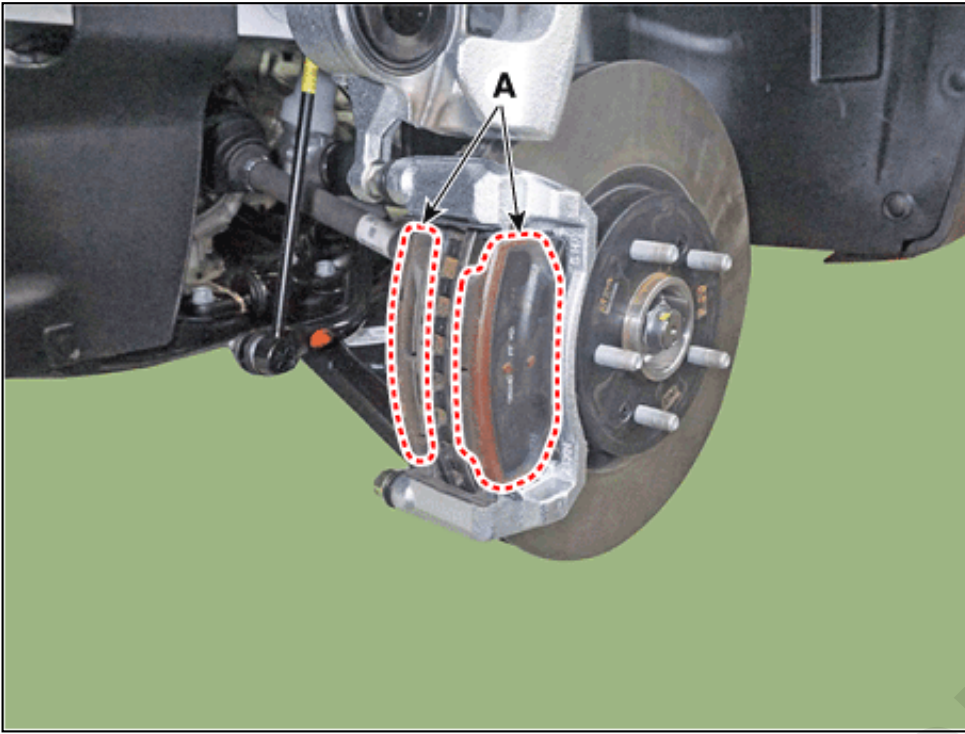


- Brake apply a small amount of grease to the areas marked with "X" on both ends of the new product.
(Be careful as excessive coating may cause noise due to contamination on the disk or friction material.)

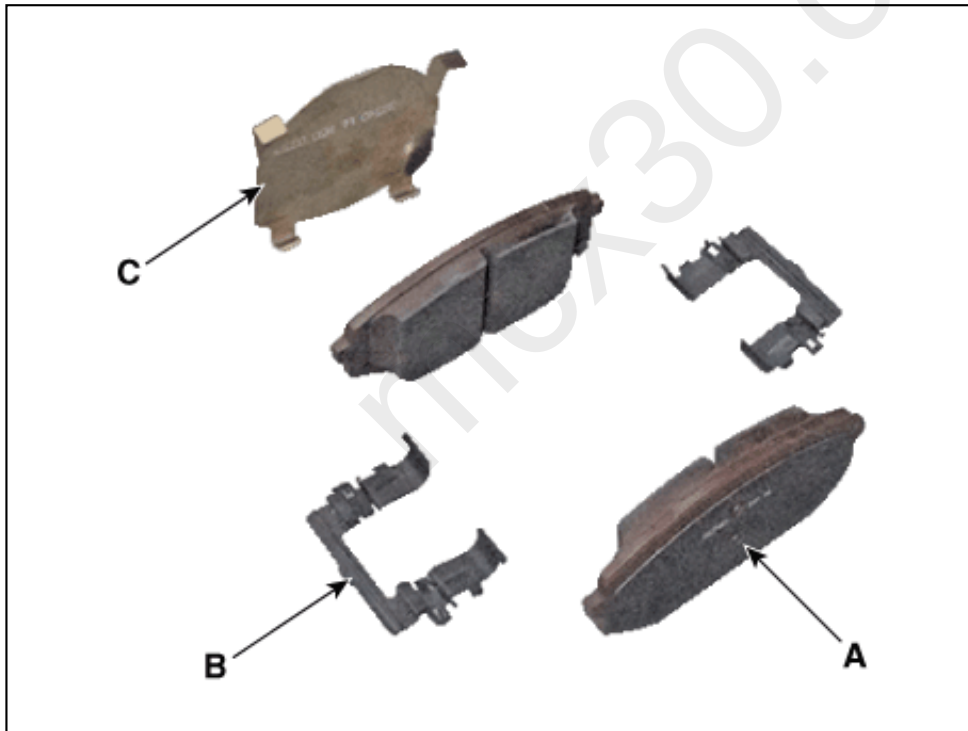
[Inner/Outside brake pads]



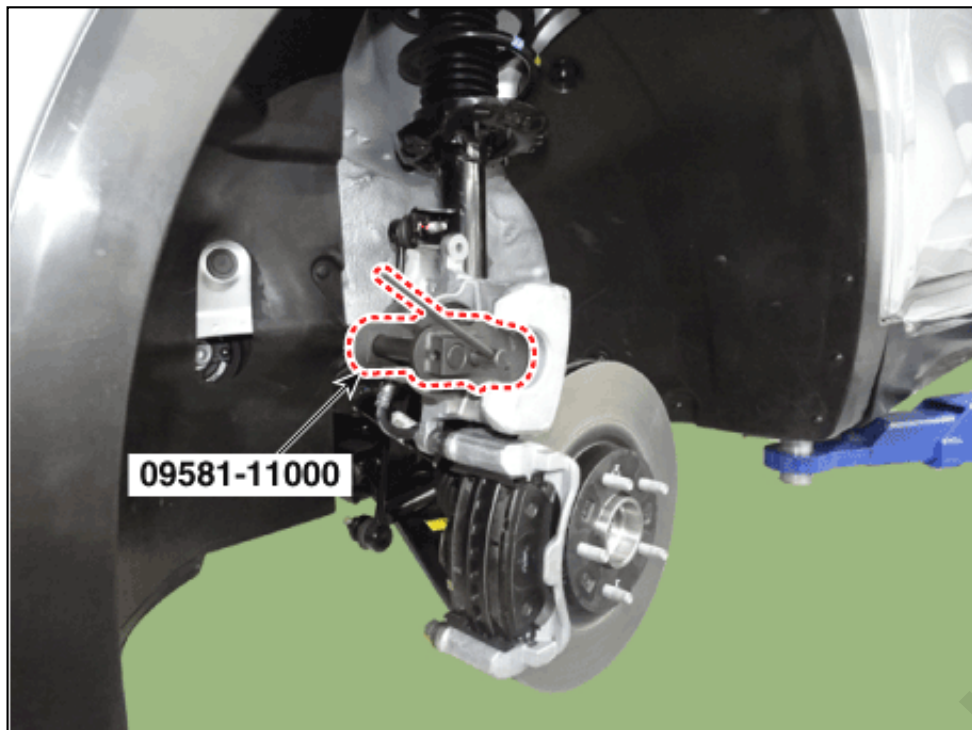
6. Replace the brake pad (A) with a new one.



- When replacing the brake pads, replace both the brake pads (A), pad retainer (B), and pad shim (C).



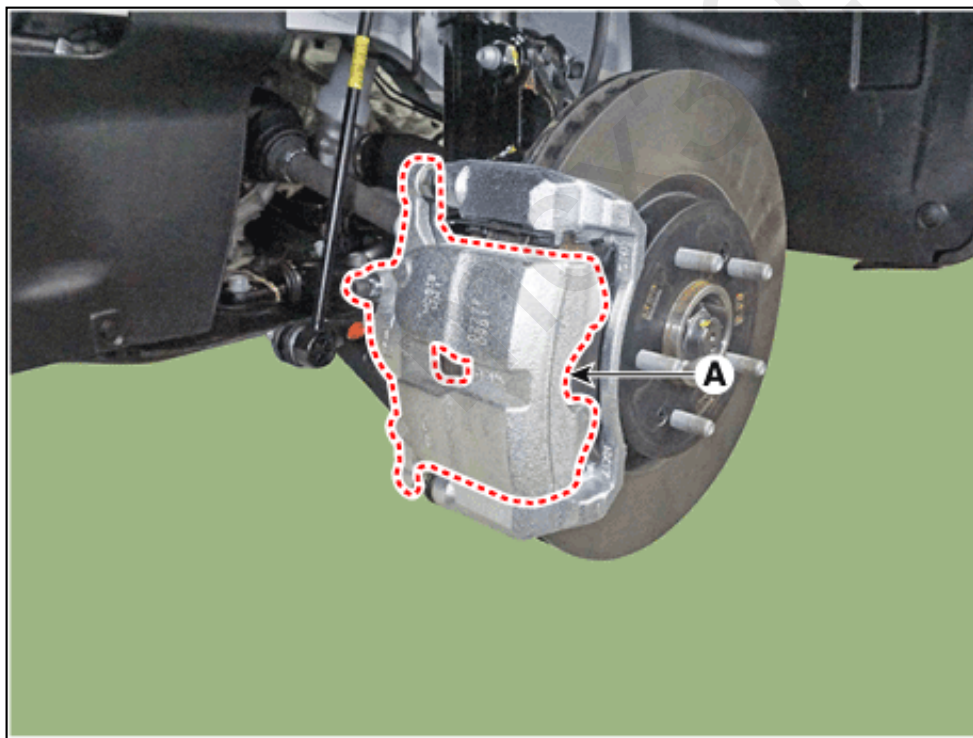
7. Use a SST (09581-11000) when installing the brake caliper assembly.



8. Install the caliper body (A) then tighten the guide rod bolt.

Tightening torque :

21.6 - 31.4 N.m (2.2 - 3.2 kgf.m, 15.9 - 23.1 lb-ft)



9. Install the front wheel and tire (A).

Tightening torque :

107.8 - 127.4 N.m (11.0 - 13.0 kgf.m, 79.5 - 94.0 lb-ft)



Rear Brake Pad

1. After installing the rear caliper, perform “Brake Pad Replacement Mode” using the self-diagnosis. [EPB Apply]



■ Engine Control



■ Automatic Transaxle



■ ABS/ESP



■ System Identification



■ HCU Air Bleeding Mode



■ Steering Angle Sensor(SAS) Calibration



■ Auto Detected Configuration(ESC Only)



■ Longitudinal G Sensor Calibration(HAC/DBC Only)



■ VARIANT CODING



■ Break Pad Change Mode



■ Assembly Check(ECU replacement)



■ Forward Collision-Avoidance Assist



■ Airbag(Event #1)



■ Airbag(Event #2)



■ Air Conditioner



■ 4WD Control



■ Motor Driven Power Steering



Do not touch any system buttons while performing this function.



• Pad Change Mode

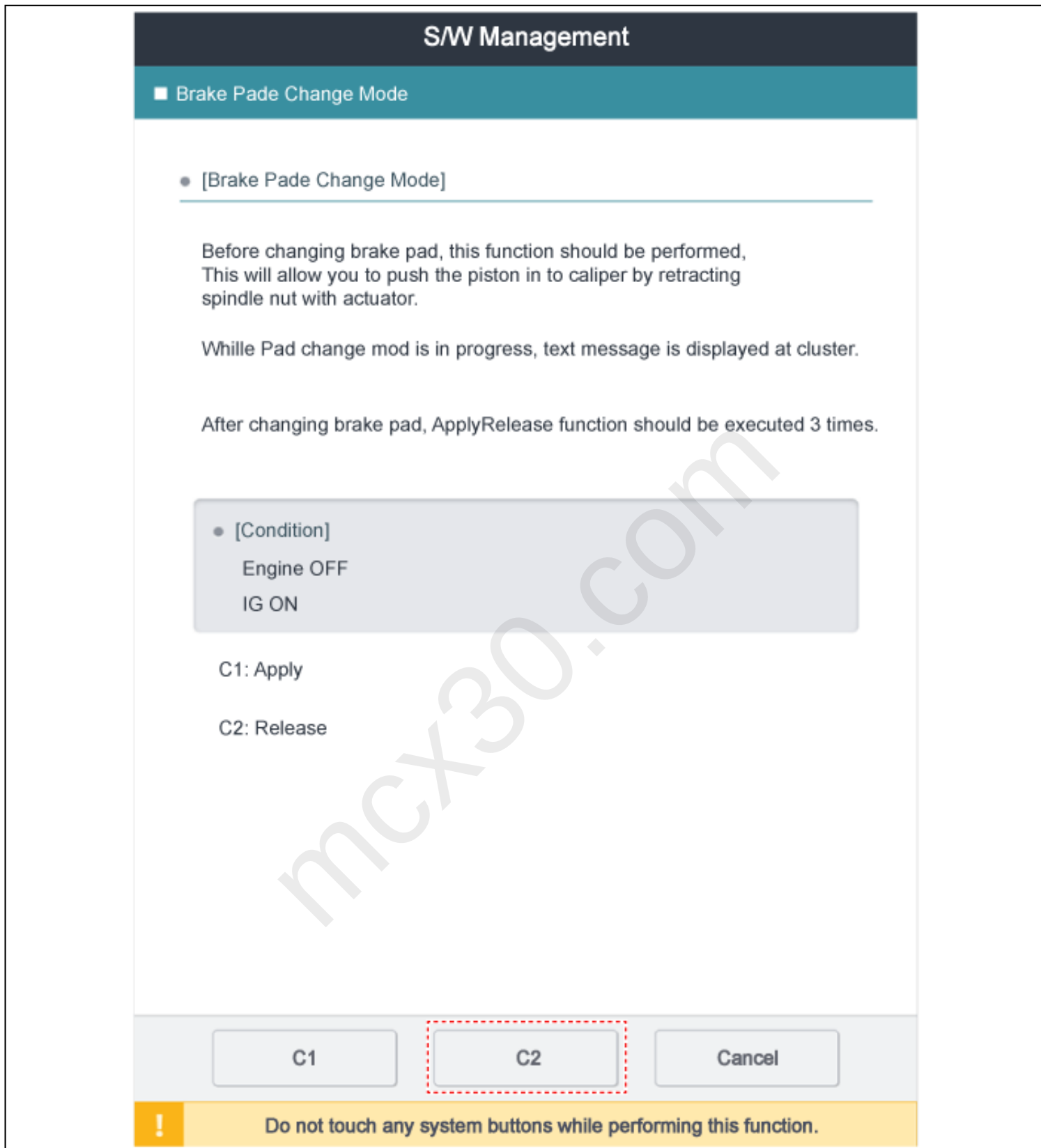
Purpose	To push the piston into caliper by retracting spindle nut with actuator for replacing brake pad.
Enable Condition	1.Engine Off 2.Ignition Switch On
Concerned Component	Electric Parking Brake(EPB) ECU, EPB Switch, Brake Caliper, Cluster
Concerned DTC	-
Fail Safe	-
Etc	C1 : Applying C2 : Releasing

OK



Do not touch any system buttons while performing this function.

2. Select C2 (Release) on the screen below.



S/W Management

■ Brake Pade Change Mode

● [Brake Pade Change Mode]

Before changing brake pad, this function should be performed,
This will allow you to push the piston in to caliper by retracting
spindle nut with actuator.

Whille Pad change mod is in progress, text message is displayed at cluster.

After changing brake pad, ApplyRelease function should be executed 3 times.

● [Condition]
Engine OFF
IG ON

C1: Apply
C2: Release

C1 C2 Cancel

! Do not touch any system buttons while performing this function.

3. After disassembling/assembling the caliper body or replacing the brake caliper, parking brake cable or brake disc, re-adjust the parking brake. [EPB None Apply]

4. Loosen the wheel nuts slightly.

Raise the vehicle, and make sure it is securely supported.

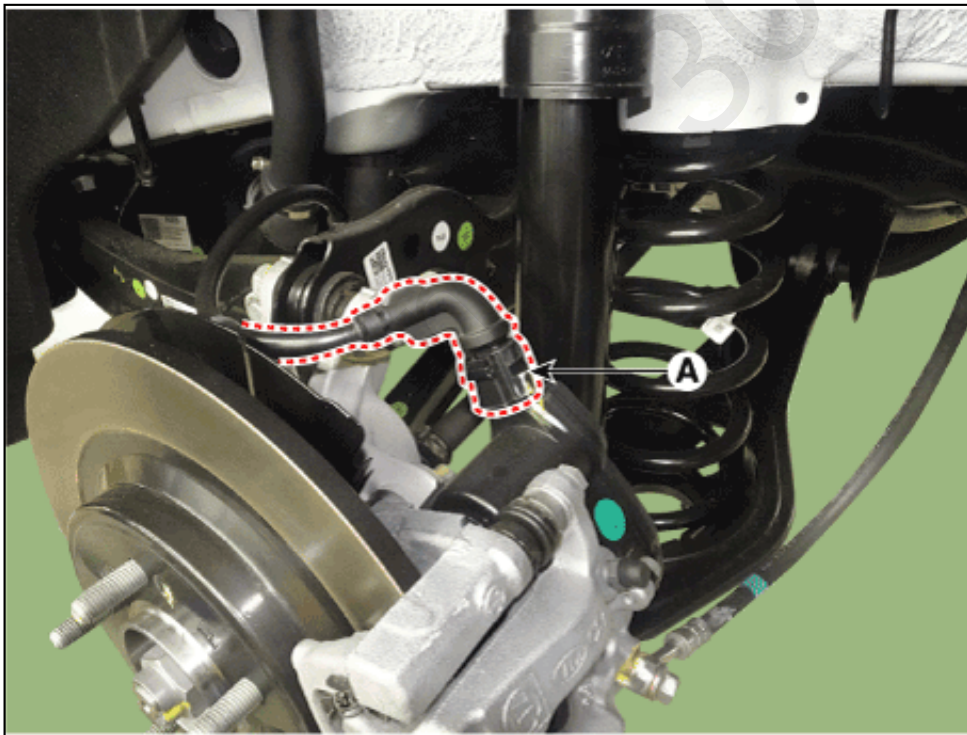
5. Remove the rear wheel and tire (A) from the rear hub.

- ☐
- Be careful not to damage the hub bolts when removing the rear wheel and tire (A).

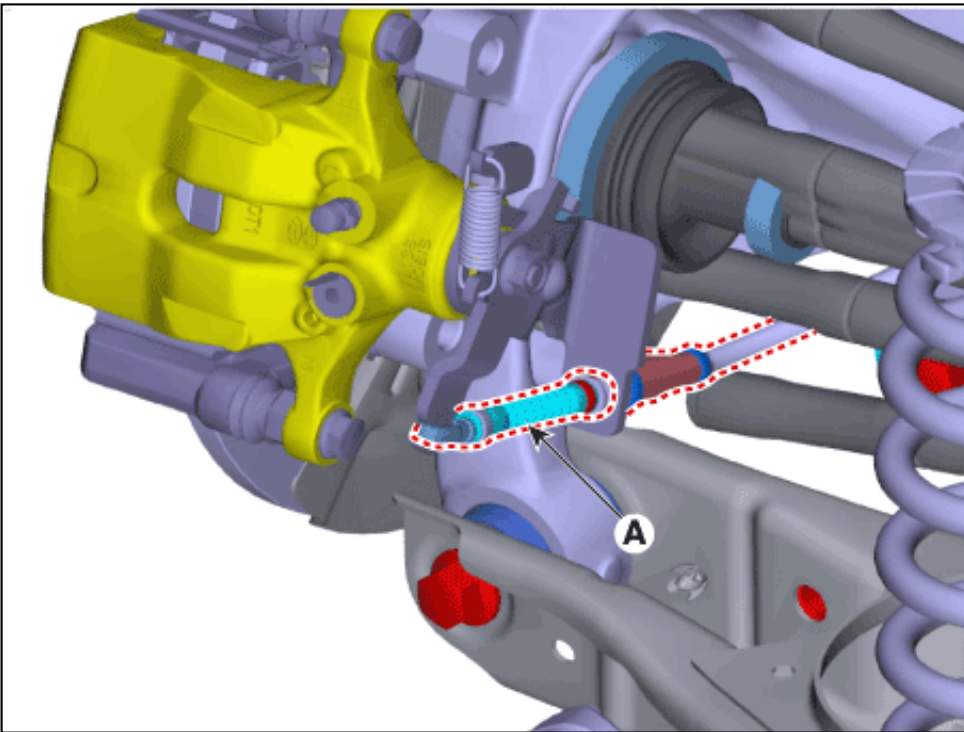


6. Disconnect the EPB connector or parking brake cable.

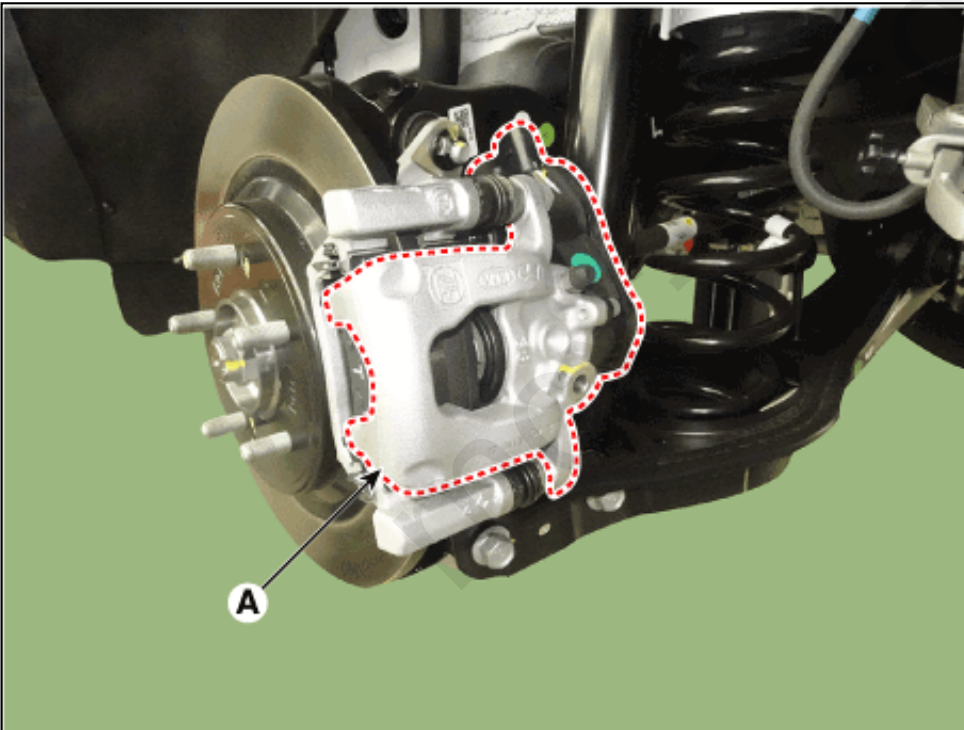
- EPB Apply : Disconnect the EPB connector (A).



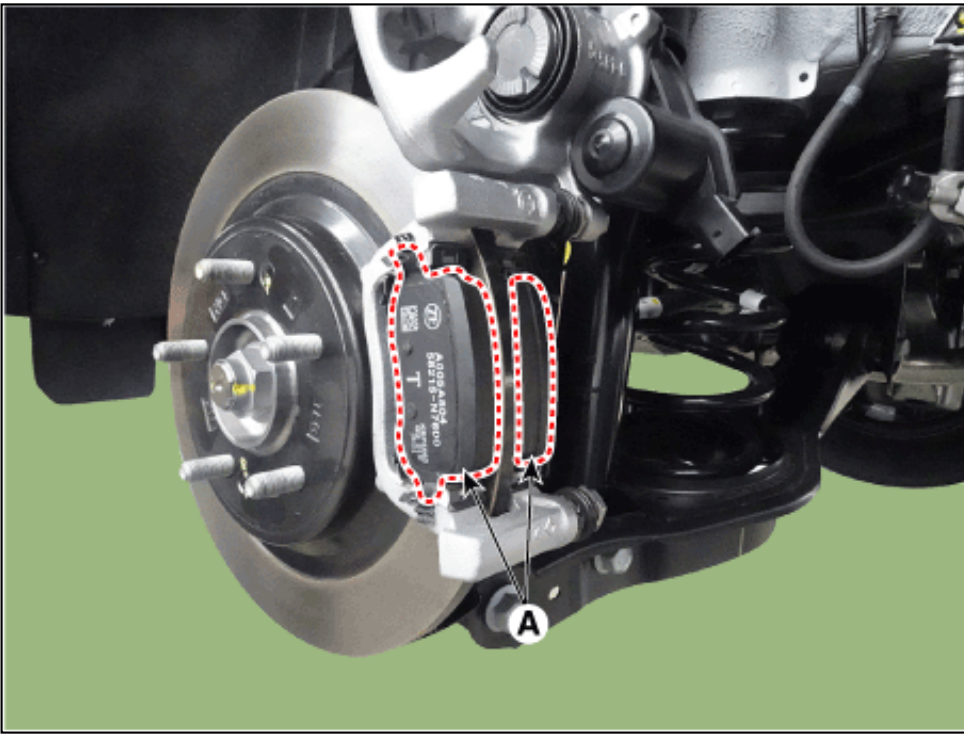
- EPB None Apply : Remove the parking brake cable (A), after removing the clip.



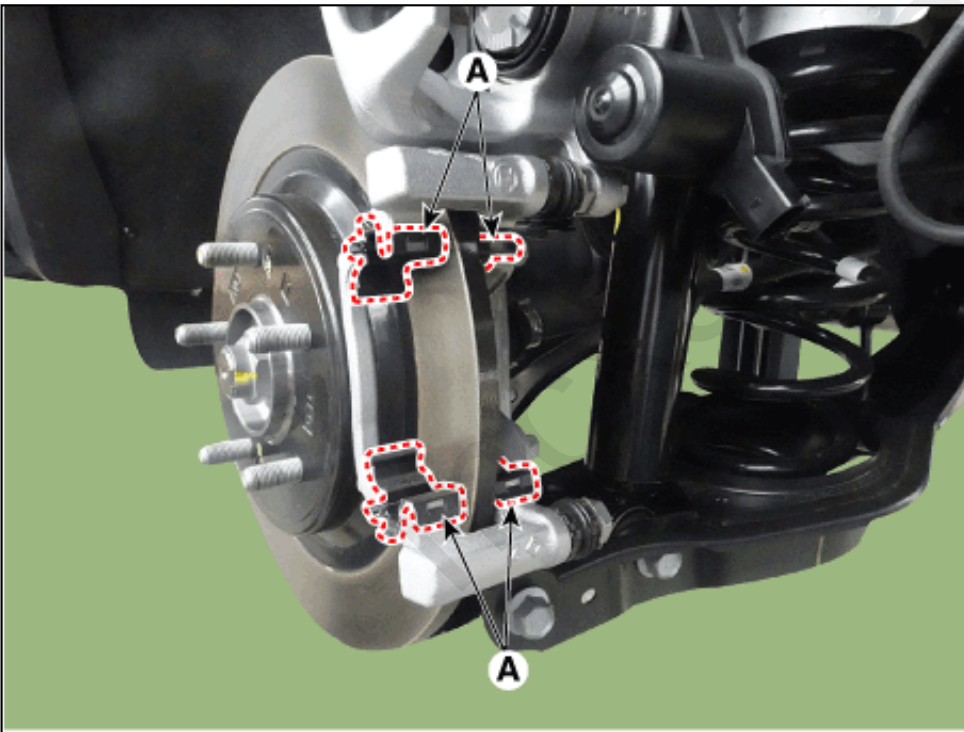
7. Remove the guide rod bolt and then pivot the caliper body (A) up out of the way.



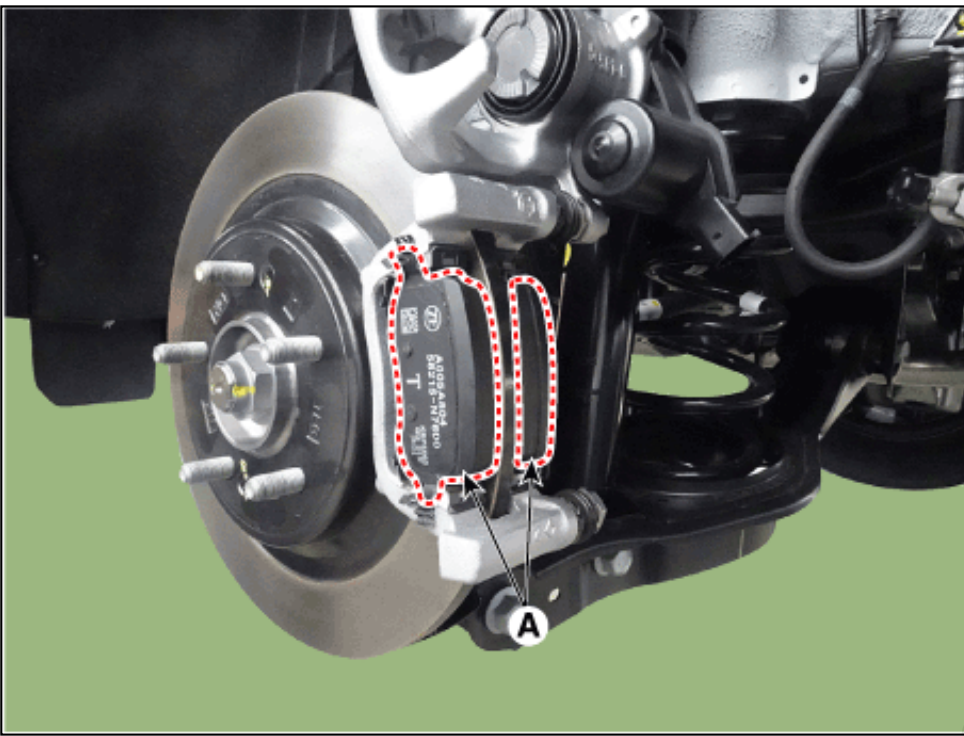
8. Remove the brake pad (A).



9. Replace the pad liner (A) with a new one.



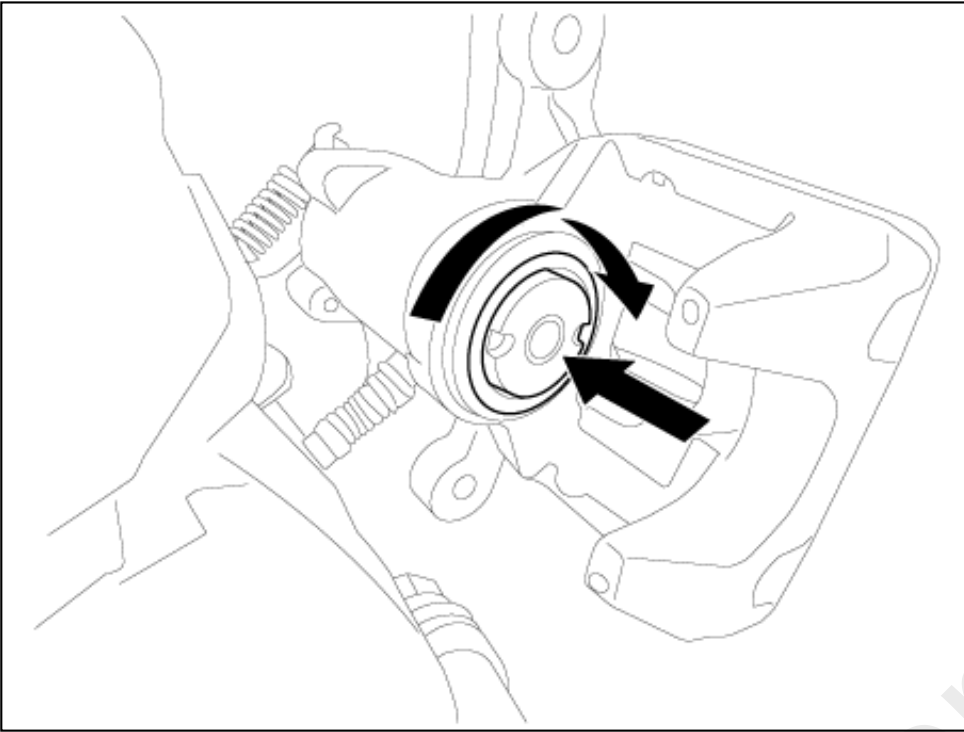
10. Replace the brake pad (A) with a new one.



- When installing, use a new one pad retainer (A), brake pad (B).



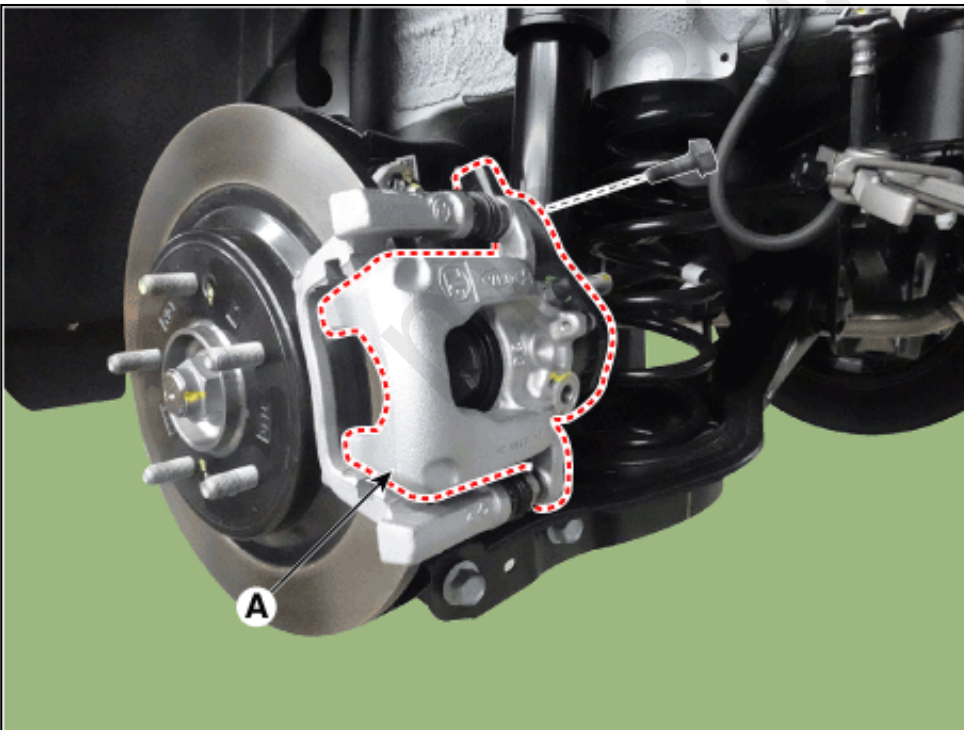
11. Rotate the caliper piston and push the direction of the arrow.



12. Install the caliper body (A) then tighten the guide rod bolt.

Tightening torque :

21.6 - 31.4 N.m (2.2 - 3.2 kgf.m, 15.9 - 23.1 lb - ft)



13. Install the rear wheel and tire (A).

Tightening torque :

107.9 - 127.5 N.m (11.0 - 13.0 kgf.m 79.6 - 94.0 lb-ft)



- Be careful not to damage the hub bolts when removing the rear wheel and tire (A).



14. After installing the rear caliper, perform “Brake Pad Replacement Mode” using the self-diagnosis. [EPB Apply]



- Engine Control 
- Automatic Transaxle 
- ABS/ESP 
- System Identification 
- HCU Air Bleeding Mode 
- Steering Angle Sensor(SAS) Calibration 
- Auto Detected Configuration(ESC Only) 
- Longitudinal G Sensor Calibration(HAC/DBC Only) 
- VARIANT CODING 
- Break Pad Change Mode 
- Assembly Check(ECU replacement) 
- Forward Collision-Avoidance Assist 
- Airbag(Event #1) 
- Airbag(Event #2) 
- Air Conditioner 
- 4WD Control 
- Motor Driven Power Steering 



Do not touch any system buttons while performing this function.



• Pad Change Mode

Purpose	To push the piston into caliper by retracting spindle nut with actuator for replacing brake pad.
Enable Condition	1.Engine Off 2.Ignition Switch On
Concerned Component	Electric Parking Brake(EPB) ECU, EPB Switch, Brake Caliper, Cluster
Concerned DTC	-
Fail Safe	-
Etc	C1 : Applying C2 : Releasing

OK



Do not touch any system buttons while performing this function.

15. Select C1 (Apply) on the screen below.

S/W Management

■ Brake Pade Change Mode

- [Brake Pade Change Mode]

Before changing brake pad, this function should be performed,
This will allow you to push the piston in to caliper by retracting
spindle nut with actuator.

Whille Pad change mod is in progress, text message is displayed at cluster.

After changing brake pad, ApplyRelease function should be executed 3 times.

- [Condition]
Engine OFF
IG ON

C1: Apply

C2: Release

C1

C2

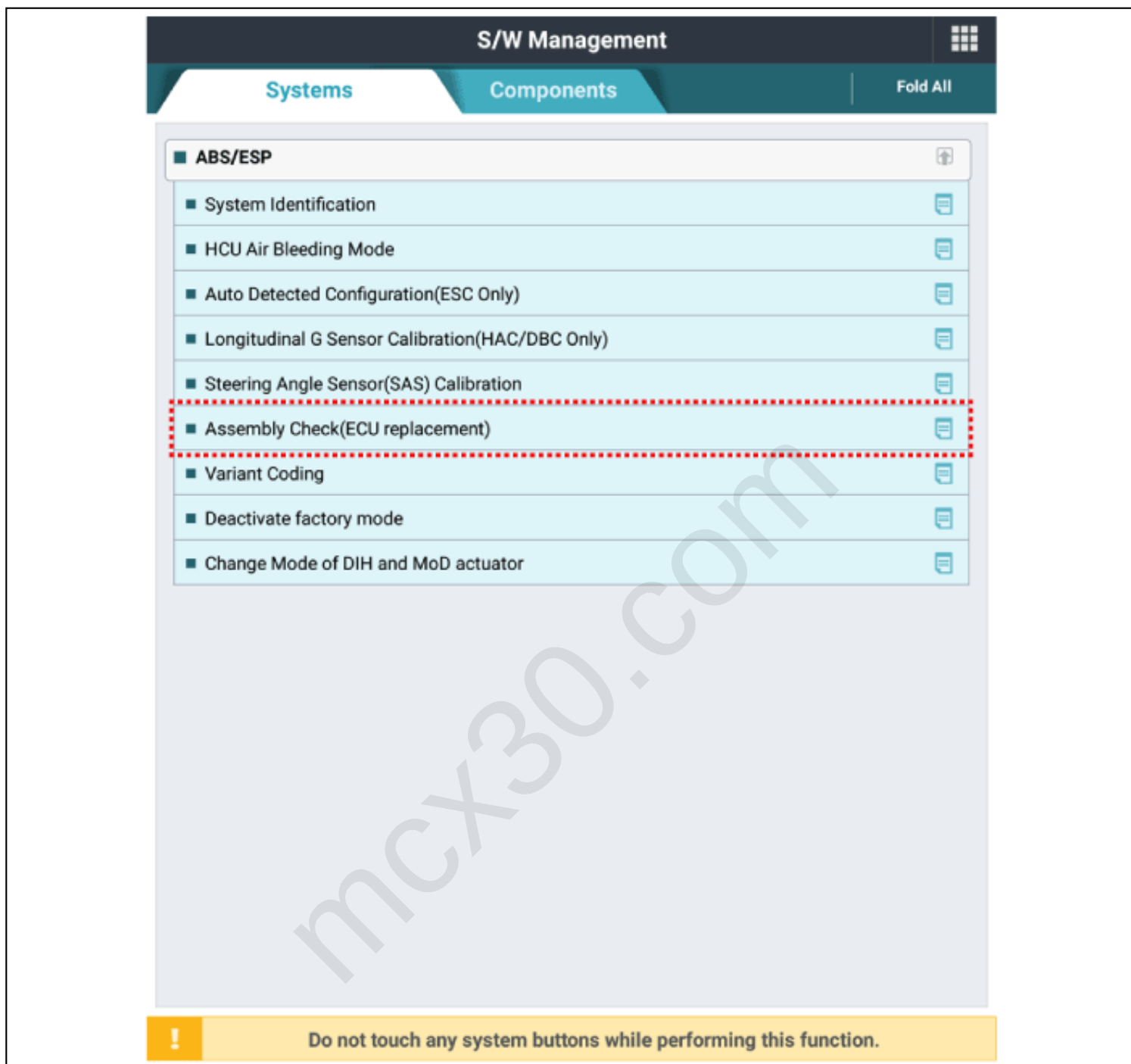
Cancel

 Do not touch any system buttons while performing this function.



- After replacing the brake pad is complete, make sure to repeat engagement/disengagement 3 times at "Brake Pad Replacement Mode".

16. After replacing the brake pad, make sure that the caliper is installed correctly by performing "Check assembling (ECU replaced)" from the optional function.



17. After disassembling/assembling the caliper body or replacing the brake caliper, parking brake cable or brake disc, re-adjust the parking brake. [EPB None Apply]
18. Apply the parking brake several times and check for normal operation.
19. Check if the parking brake is operating normally.

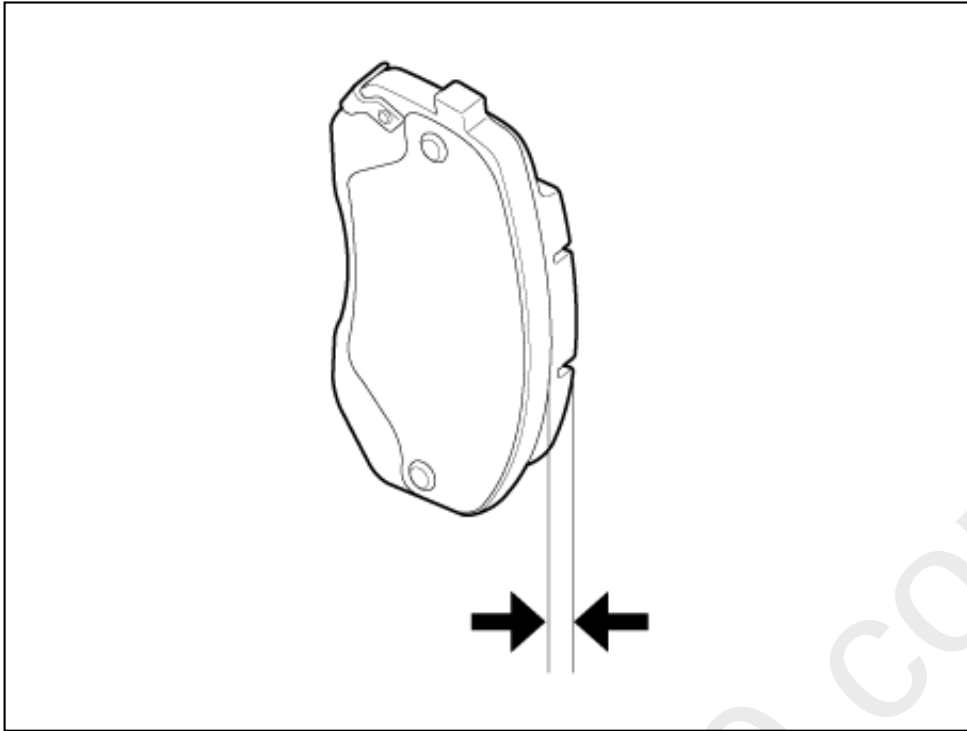
Inspection

Front Brake Pad Check

1. Check the pad wear. Measure the pad thickness and replace it, if it is less than the specified value.

Front brake disc thickness Pad thickness

- Standard : 10 mm (0.39 in)
 - Service Limit : (0.07 in)
-



2. Check that grease is applied, to sliding contact points and the pad and backing metal for damage.

Rear Brake Pad Check

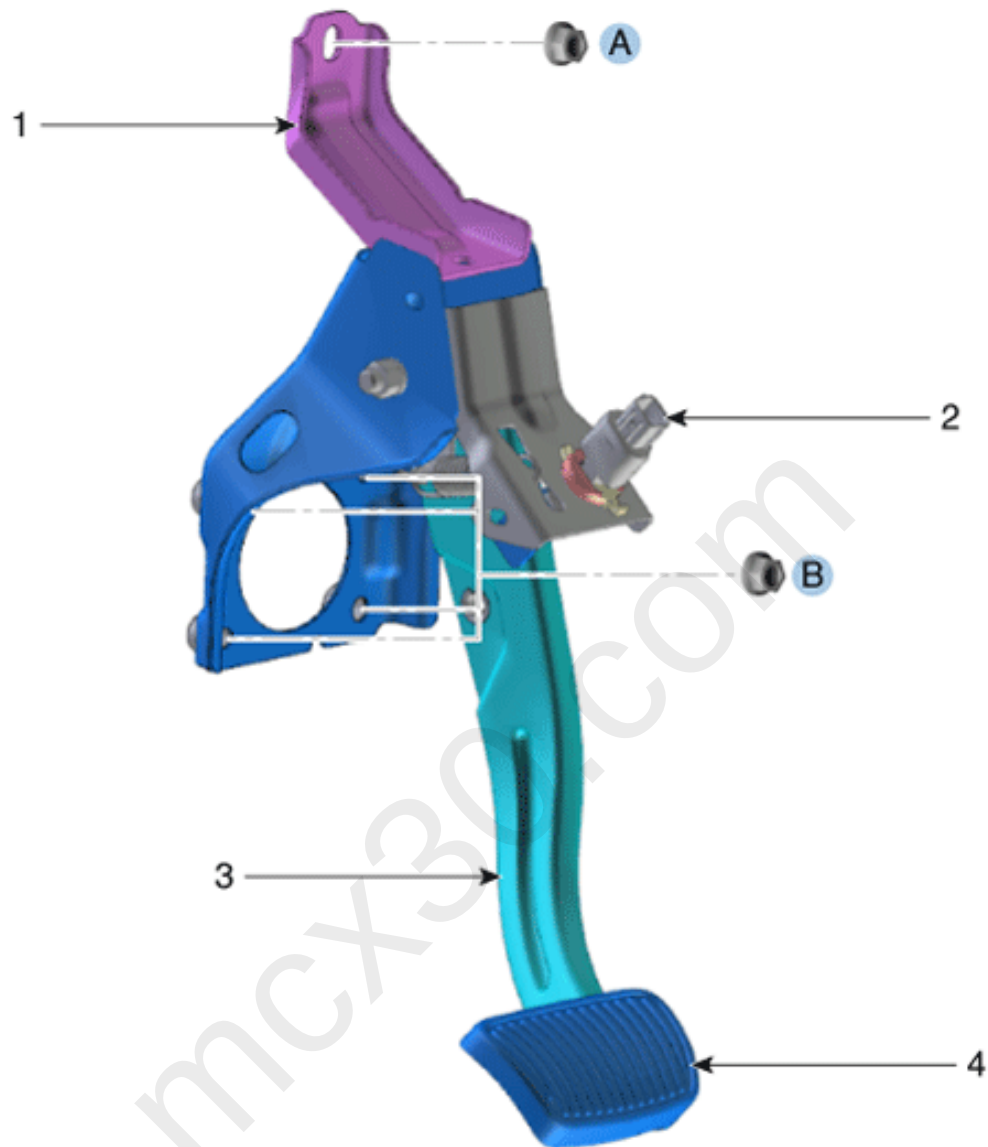
1. Check the pad wear. Measure the pad thickness and replace it, if it is less than the specified value.

Pad thickness

- Standard value : 10.0 mm (0.39 in)
 - Service limit : 2.0 mm (0.08 in)
-

2. Check the damage of pad, backing metal and contamination with grease.

Components



Tightening torque :

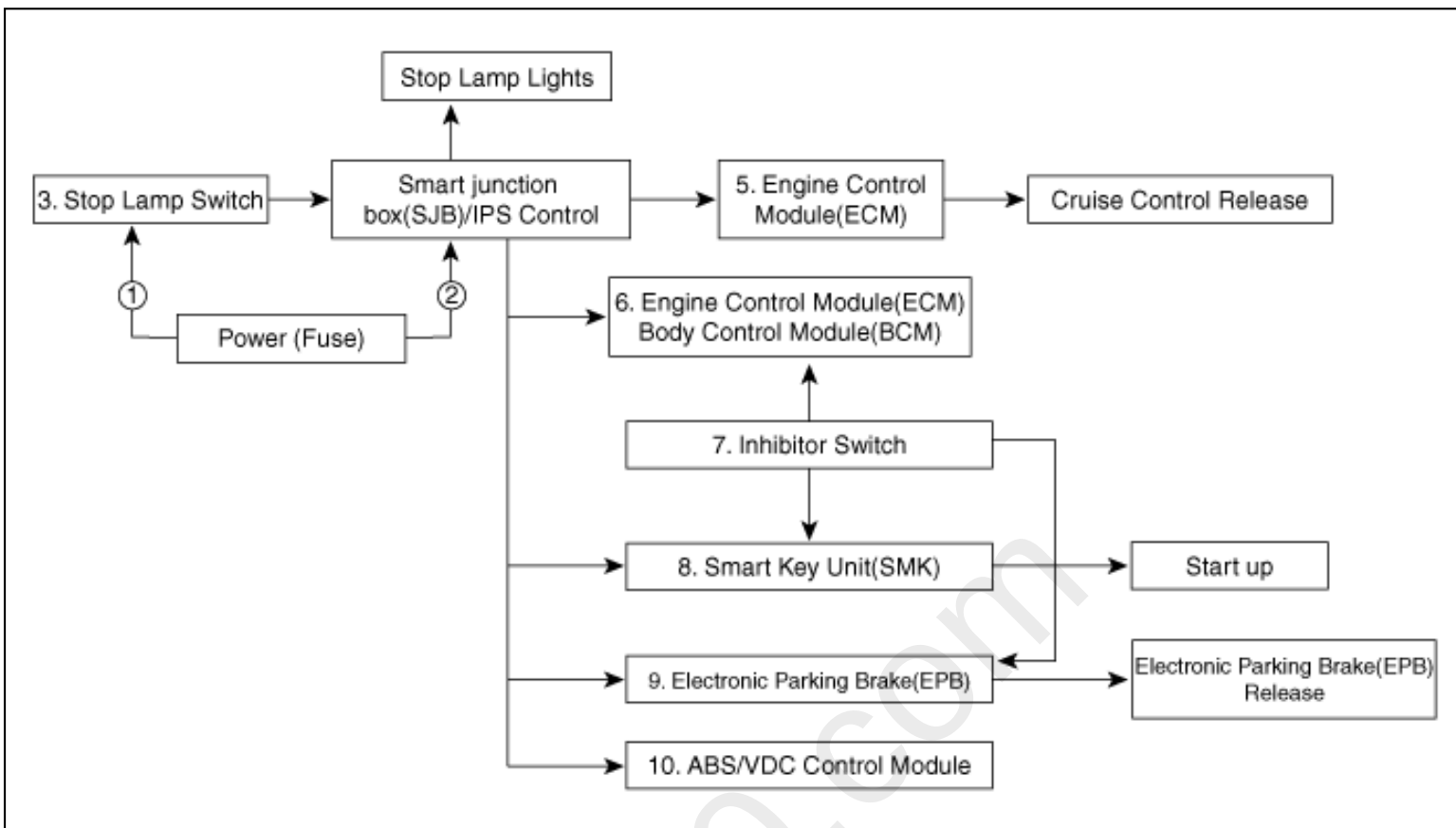
A : 16.7 - 25.5 N.m (1.7 - 2.6 kgf.m, 12.3 - 18.8 lb-ft)

B : 16.7 - 25.5 N.m (1.7 - 2.6 kgf.m, 12.3 - 18.8 lb-ft)

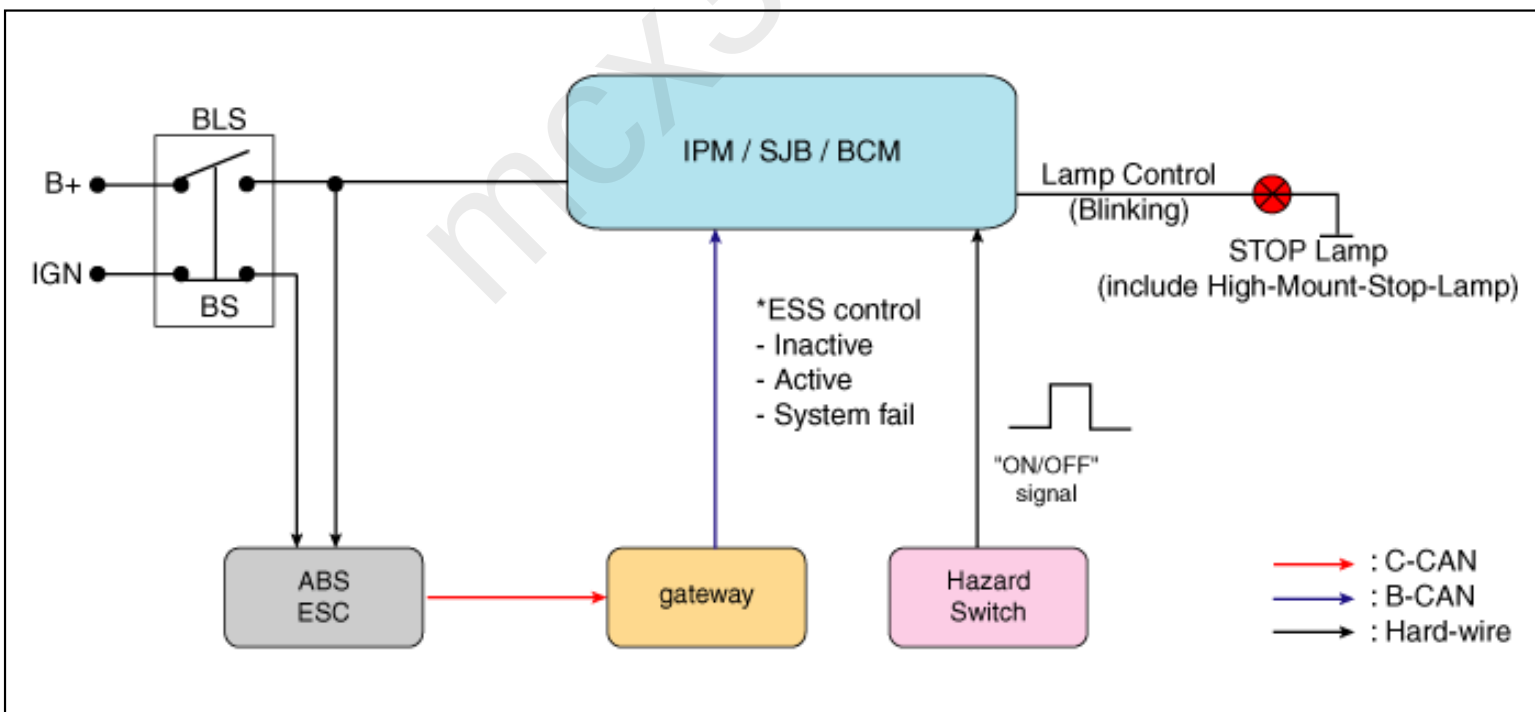
1. Brake member assembly
2. Stop lamp switch

3. Brake pedal arm assembly
4. Brake pedal pad

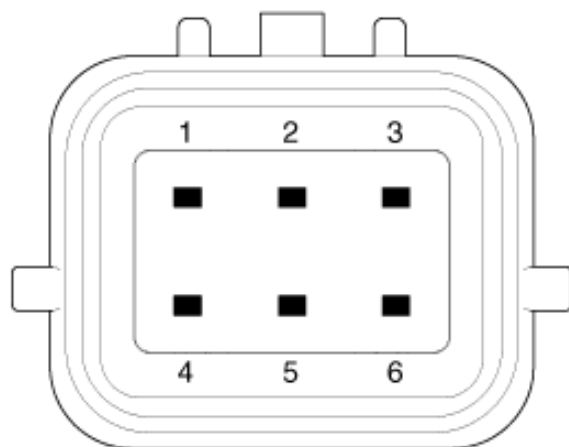
Schematic Diagram



System circuit diagram



Terminal Function

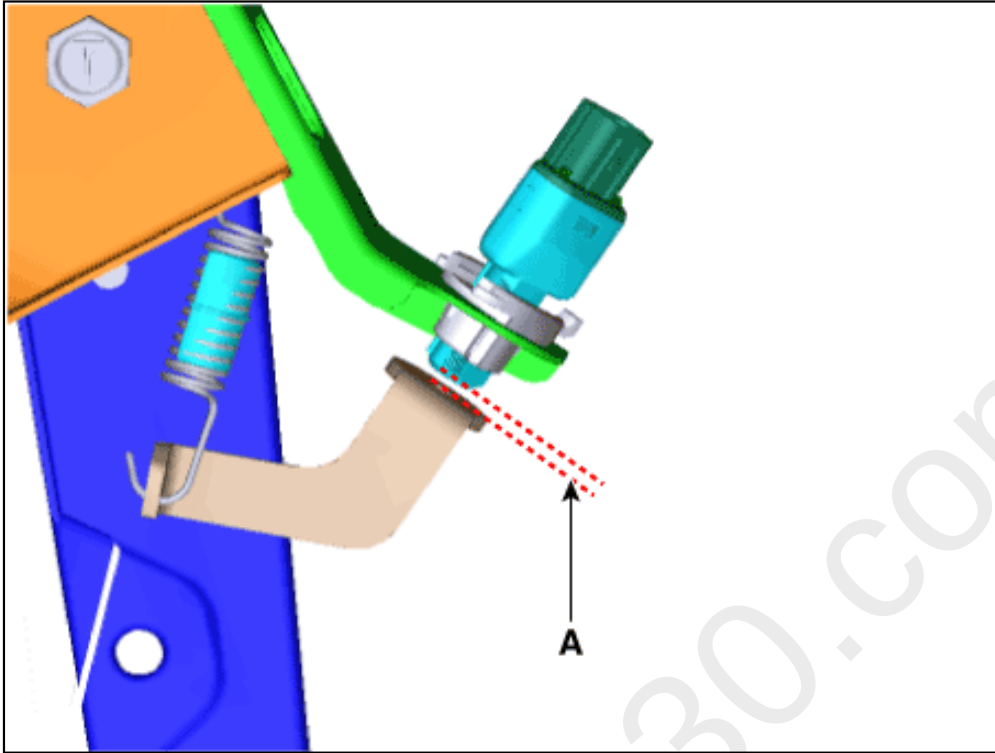


Teminal	Description
1	IGN1
2	Engine Control Module (ECM)
3	-
4	B+
5	Stop Lamp
6	Gruound

Adjustment

1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the crash pad lower panel.
(Refer to Body - "Crash Pad Lower Panel")
3. Confirm the gap between stop lamp switch and bracket.

Stop lamp clearance (A) : 1.0 - 2.0 mm (0.04 - 0.08 in.)

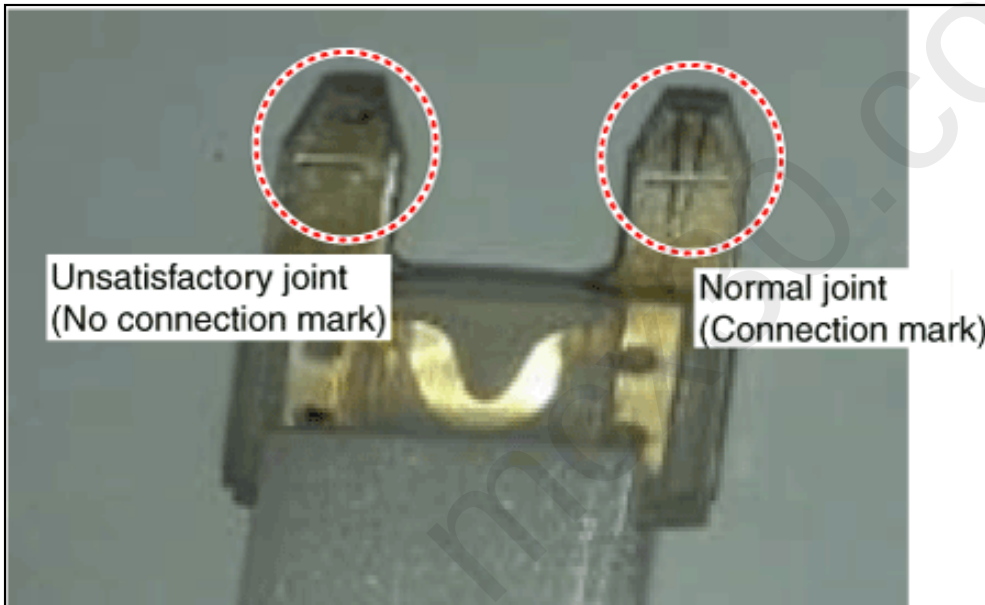
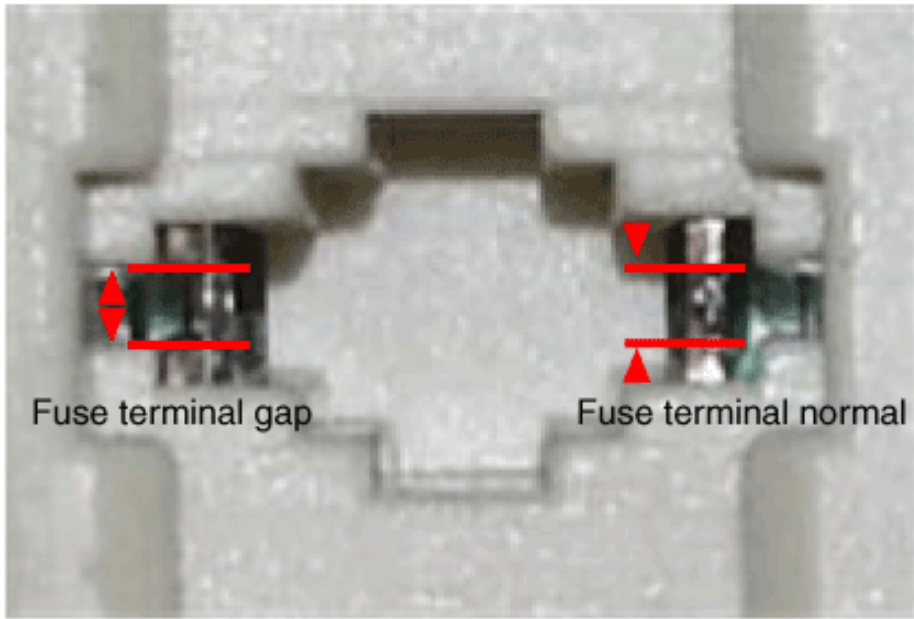


4. If the gap between stop lamp switch and bracket is not 1.0 - 2.0 mm (0.04 - 0.08 in), check the mounting clip and other part of around stop lamp.
5. If there is normal, remove the stop lamp switch and then install again.

Inspection

1. Fuse inspection

Mount the test fuse to the switch fuse and relay fuse part to confirm a normal joint fit.

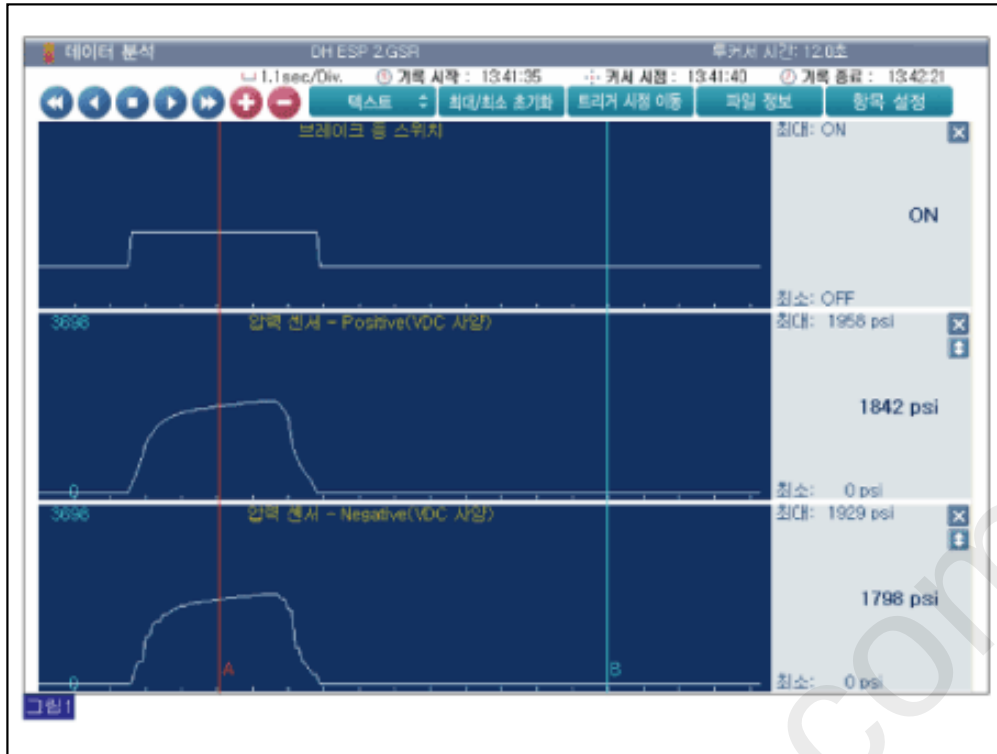


2. Diagnostic tool Data Analysis

1. Analyze diagnostic tool data and confirm if there is anything wrong with the stop lamp switch.
 - (1) Connect the diagnostic tool to the self-diagnosis connector.
 - (2) Turn the spark switch on
 - (3) Step on the brake pedal.

(4) Inspect the "brake switch" category that displays the "sensor data" diagnostic tool.

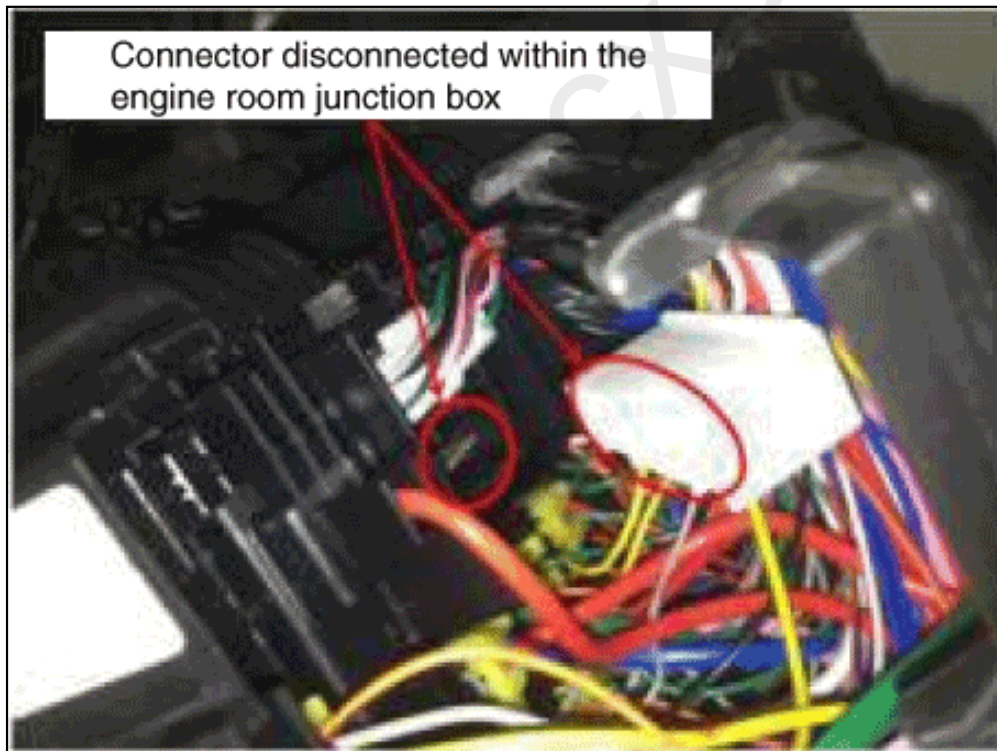
Normal waveform : The pressure sensor signal value will change according to the brake ON/OFF switch.



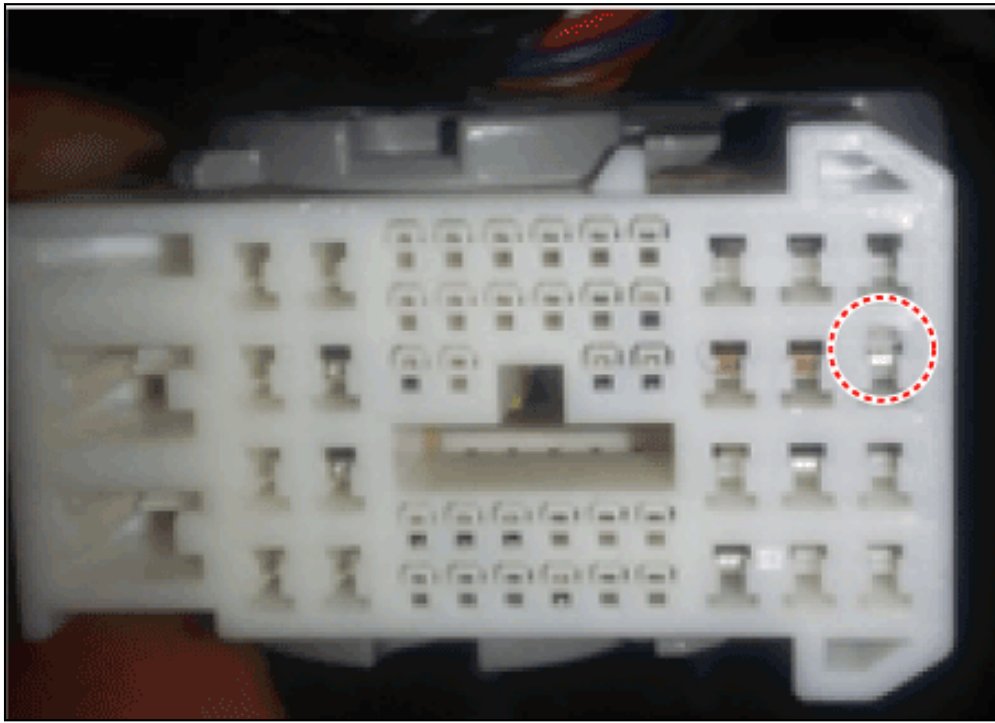
3. Inspection of connector by each part

Check to see whether or not each connector has been damaged, or terminal surge, or incomplete connection has taken place

[Engine room junction box]



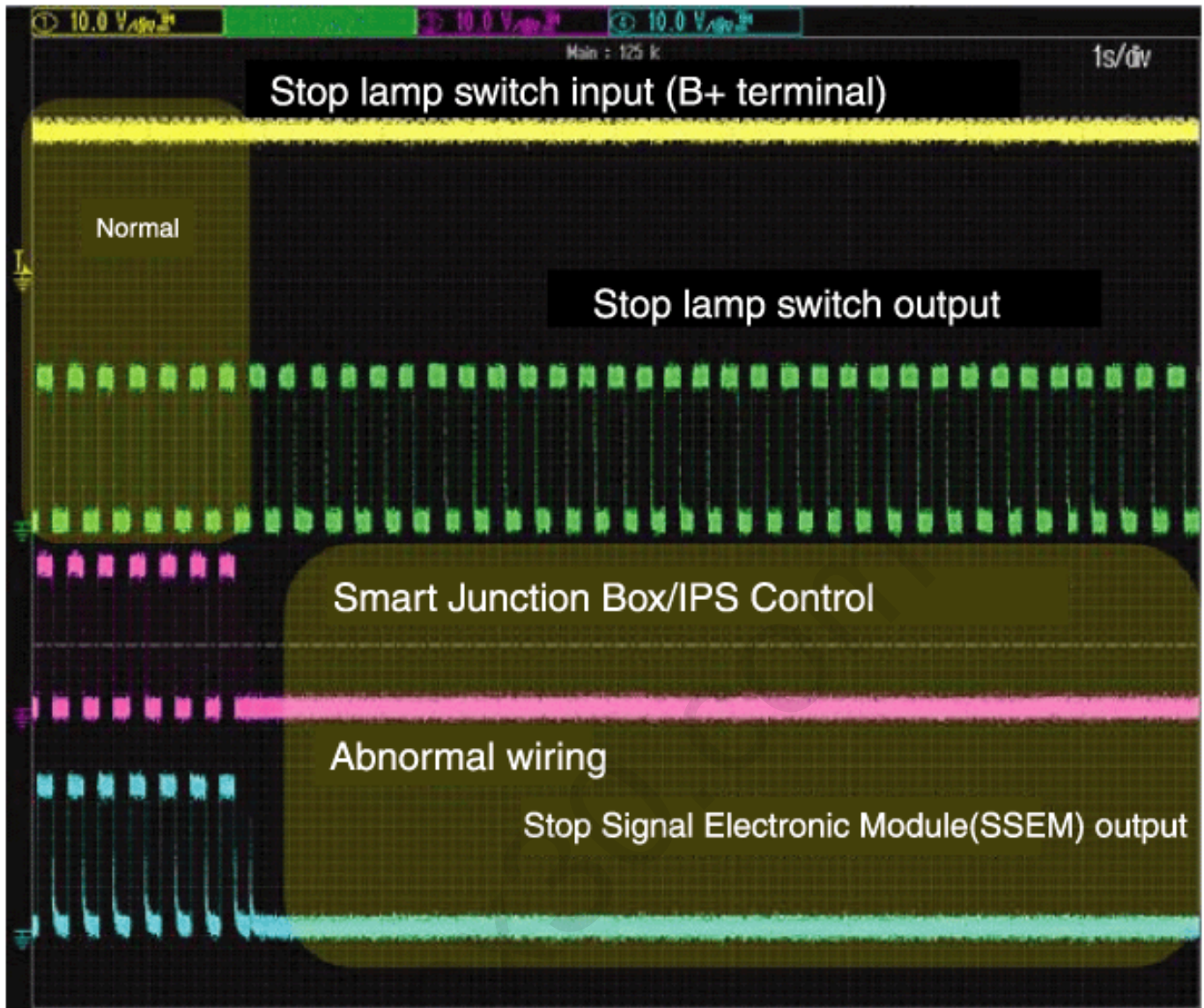
[ABS/VDC control module]



4. Inspect the stop lamp circuit
Connect probe to each terminal wire and confirm oscilloscope waveform.
[Stop lamp switch input/output]

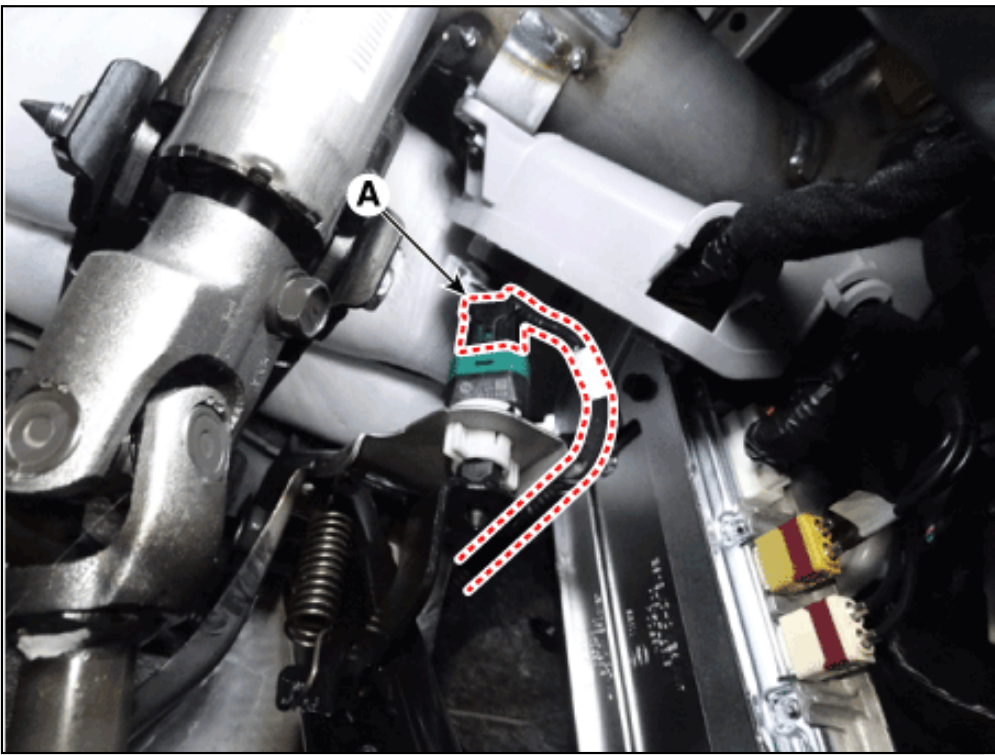


[Oscilloscope waveform screen]

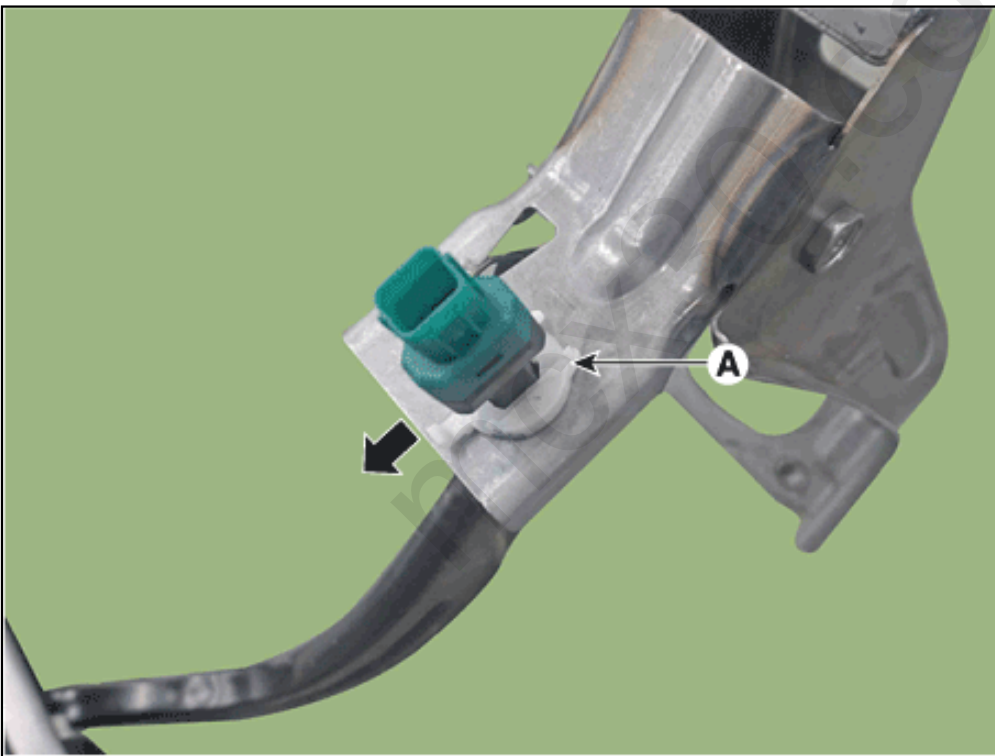


Removal

1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remove the crash pad lower panel.
(Refer to Body - "Crash Pad Lower Panel")
3. Disconnect the stop lamp switch connector (A).



4. Pull the locking plate (A) as indicated by the arrow.



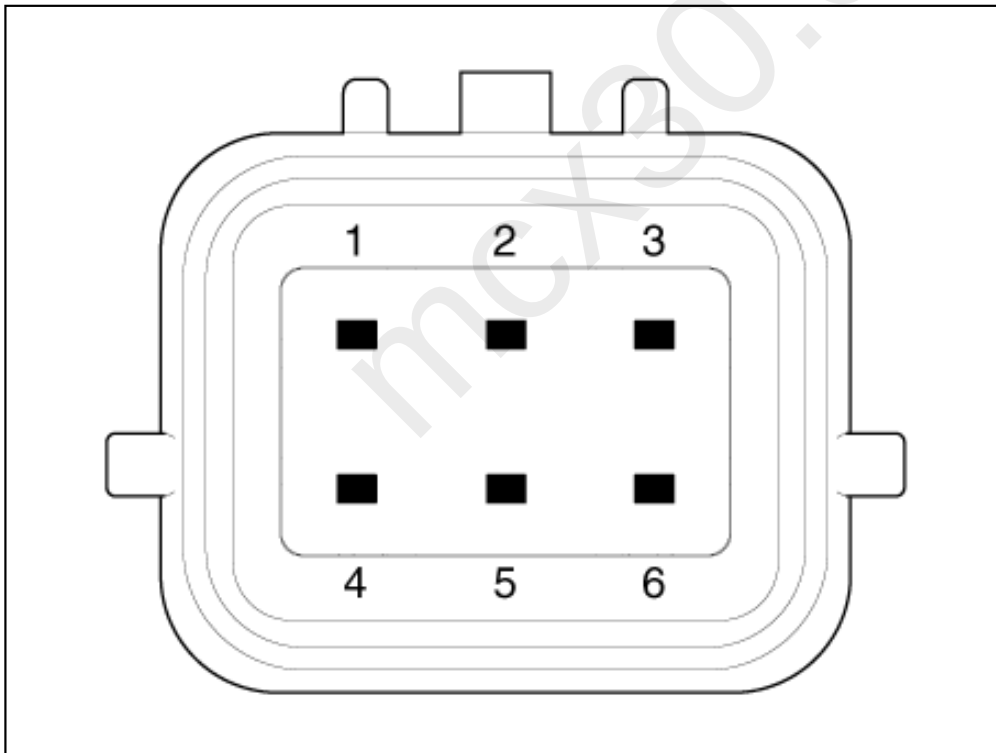
5. Turn stop lamp switch (A) 45° counterclockwise and remove it.



6. Inspect a removed stop lamp switch along the below procedures.

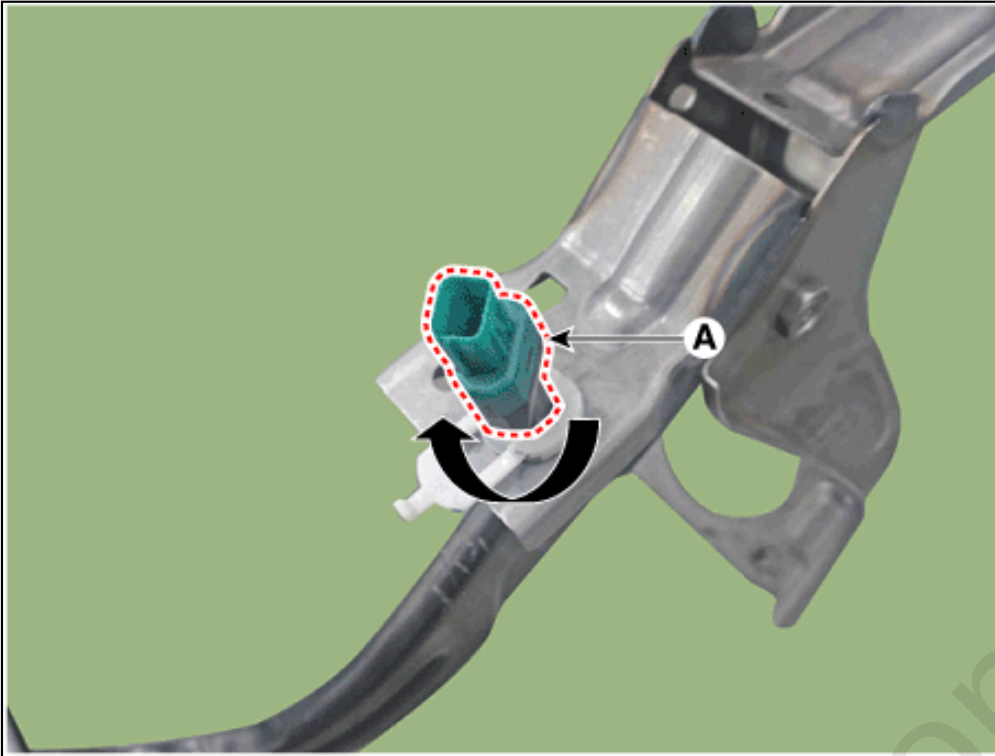
(1) Confirm a normal connection with terminal part.

A confirmation can be made to see if the connector has been secured properly and if a connection mark is present.

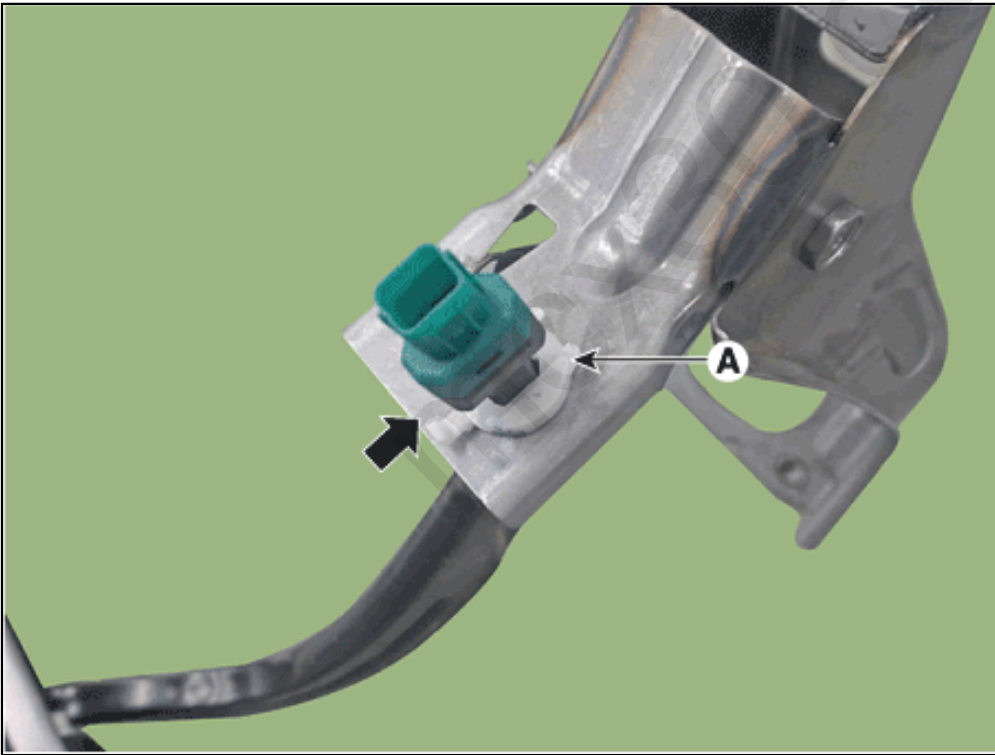


Installation

1. After inserting, turn the stop switch (A) 45° clockwise, and then assemble locking plate by pushing.

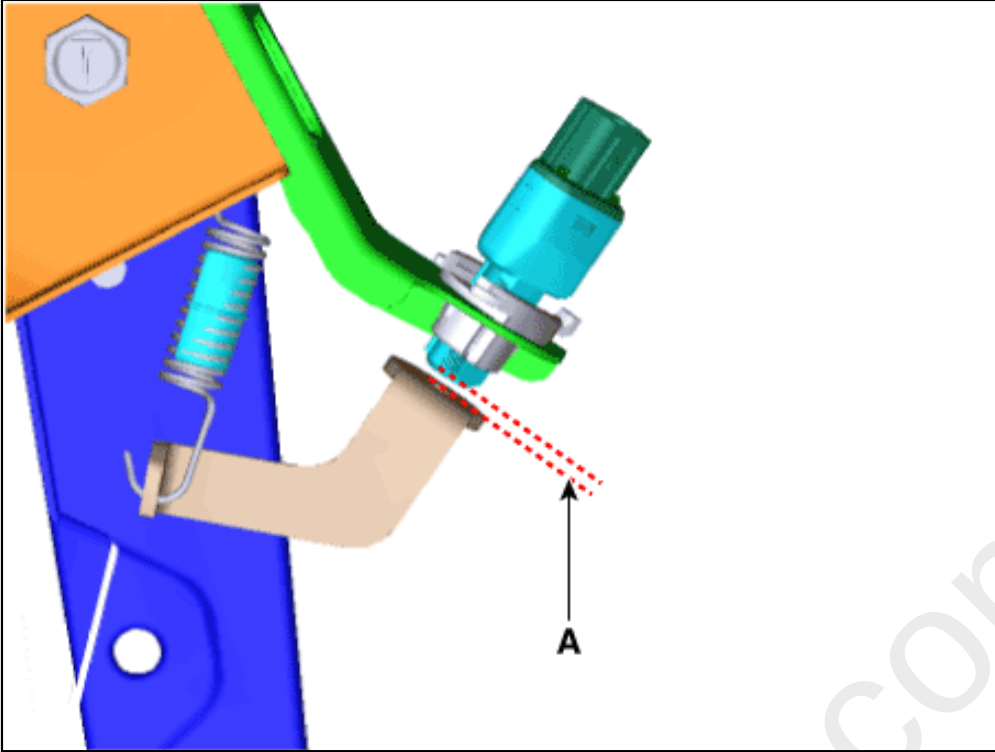


2. Assemble the locking plate (A) by pushing it in the direction of the arrow.



3. Confirm the gap between stop lamp switch and bracket.

Stop lamp clearance (A) : 1.0 - 2.0 mm (0.04 - 0.08 in.)



- If the gap between stop lamp switch and bracket is not 1.0-2.0mm (0.04-0.08in), perform the above process again.

4. Connect the stop lamp switch connector (A).



5. Install the crash pad lower panel.
(Refer to Body - "Crash Pad Lower Panel")
6. Connect the (-) battery terminal.

Troubleshooting

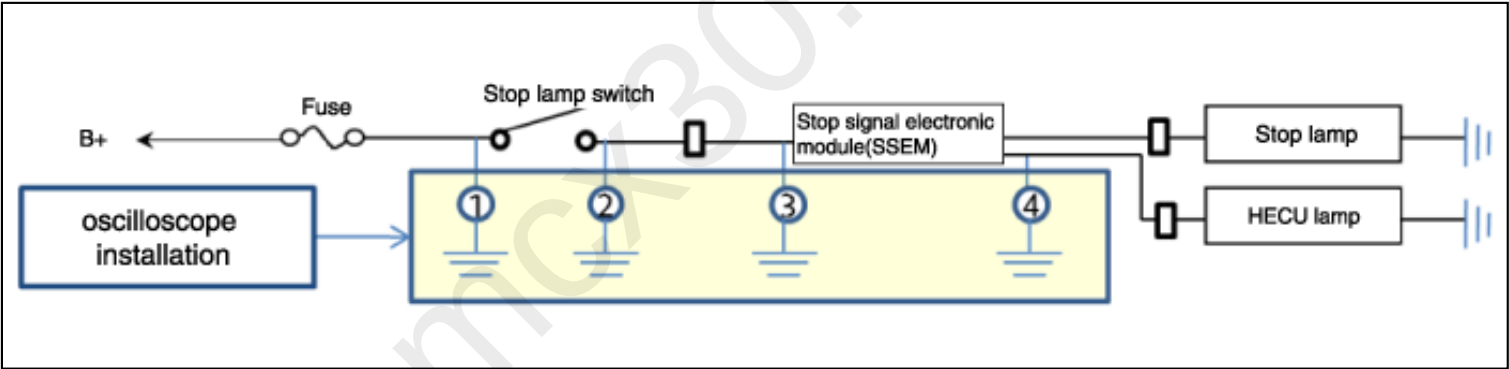
1. Part diagnosis

Items	Cause	Symptom	
Switch fuse	Faulty fuse connection, Damaged fuse	–DTC Code : P0504 –Symptom : Shifting gear trouble, Starting failure, Cruise control function cancelation trouble, EPB function cancelation trouble, Stop lamp lighting trouble, ESC OFF light illuminated.	
Relay fuse	Faulty fuse connection, Damaged fuse	–DTC Code : P0504 –Symptom : Shifting gear trouble, Starting failure, Cruise control function cancelation trouble, EPB function cancelation trouble, Stop lamp lighting trouble , ESC OFF light illuminated.	① A waveform inspection is performed using an oscilloscope on each part during vehicle acceleration/braking. (Refer to stop lamp switch circuit inspection procedures) ② Refer to the relevant repair procedures of the part when something abnormal is discovered in the waveform (Refer to the repair procedures of the relevant part and if necessary replace it)
Stop lamp switch	• Damaged wiring of each part • Faulty connection to connector • Each part is defective	–DTC Code : P0504 –Symptom : Shifting gear trouble, Starting failure, Cruise control function cancelation trouble, EPB function cancelation trouble, Stop lamp lighting trouble , ESC OFF light illuminated.	
Stop signal electronic module (If it applies)		–DTC Code : P0504, C2130, C2131 –Symptom : Shifting gear trouble, Starting failure, Cruise control function cancelation trouble, EPB function cancelation trouble, Stop lamp lighting trouble , ESC OFF light illuminated.	
Engine control module (ECM)		–DTC Code : P0504 –Symptom : Shifting gear trouble, Cruise control function cancelation trouble	
Body control module (BCM)		–Shifting gear trouble	
Shift-lock solenoid		–Shifting gear trouble	
Inhibitor switch		–Symptom : Shifting gear trouble, Starting failure, Cruise control function cancelation trouble, EPB function cancelation trouble	
Smart Key Unit (SMK)		–Starting failure	
Electronic parking brake		–Symptom : EPB function cancelation trouble , ESC OFF light illuminated.	
ABS/VDC Control module (Pressure sensor)		–Symptom : ESC OFF light illuminated.	

2. Symptom diagnosis

Symptom	Part that could be the cause	
Trouble starting	Switch fuse, Relay fuse, Stop lamp switch, Stop signal electronic module, ABS/VDC control module, Each wire, Connector	① Inspect waveform using an oscilloscope on each part during vehicle acceleration/braking. (Refer to stop lamp switch circuit inspection Procedures) ② Refer to the relevant repair procedures of the part when something abnormal is discovered in the waveform (Refer to the repair procedures of the relevant part and if necessary replace it)
Trouble shifting gears	Switch fuse, Relay fuse, Stop lamp switch, Stop signal electronic module, BCM, ECM, Inhibitor switch, Each wire, Connector	
ESC OFF light illuminated	Switch fuse, Relay fuse, Stop lamp switch, Stop signal electronic module, ABS/VDC control module, Each wire, Connector	
P0504	Switch fuse, Relay fuse, Stop lamp switch, Stop signal electronic module, ECM, Each wire, Connector	
Stop lamp does not working	Switch fuse, Relay fuse, Stop lamp switch, Stop signal electronic module, Wire/Connector disconnected	
Stop lamp always turns on	Stop lamp switch, Stop signal electronic module, Wiring short circuit, Damaged fuse	

3. Stop lamp switch system diagnosis



● : Always ON ○ : ON - OFF operation X : Always OFF

Symptom (When the ESC OFF lamp illuminated)	System				Remedy
	① Power Supply(B+)	② End of the Stop Lamp Switch	③ SSEM Input	④ SSEM Output	
Switch internal open	●	X	X	X	Replace a new one and check it
Switch internal short	●	●	●	●	Check the stop lamp switch after removing it ① Switch failure : Replace a new one ② Wiring failure : Check part that could be the cause
SSEM internal short	●	○	○	● or X	Check the SSEM after removing it ① SSEM failure : Replace a new one ② Wiring failure : Check the part that could be the cause
SSEM Internal open	●	○	○	X	Check the SSEM after removing it
Power supply open	X	X	X	X	Check the power supply connector or the fuse
Power supply short (Current reduction)	●	○	○	● or X	If the power supply line is shorted, SSEM ON-OFF may not be operating well due to the amount of current reduction Check the fuse damage
Failure between SSEM and output	●	○	X	X	Check the connector and the wiring
Failure between SSEM and Stop lamp (Not operating the stop lamp No signals on self-diagnosis)	●	○	○	○	Check the connector and the wiring

SSEM : Stop Signal Electronic Module

4. Refer to DTC guide when the related DTC codes are displayed.