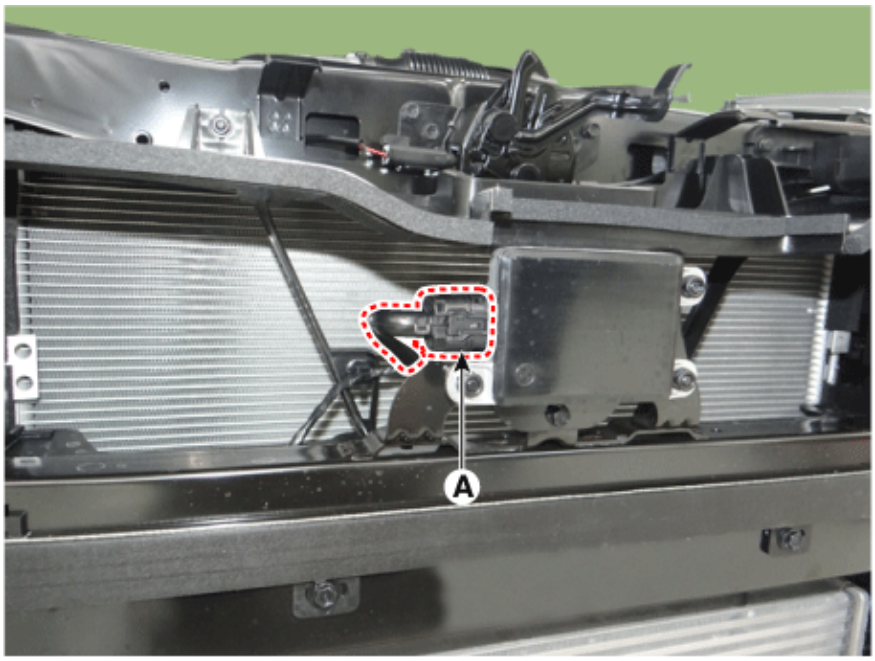
INSPECTION

Inspection procedures for front radar system failure:

1. Check the bumper appearance and accident history (visual appearance of the vehicle, maintenance and bumper replacement history).
   → If the vehicle has been crashed, front radar unit mounting part is highly likely to be twisted.
2. Check whether the radar cover of the bumper is dirty.
3. After starting engine, check the warning message on the cluster and DTC code.

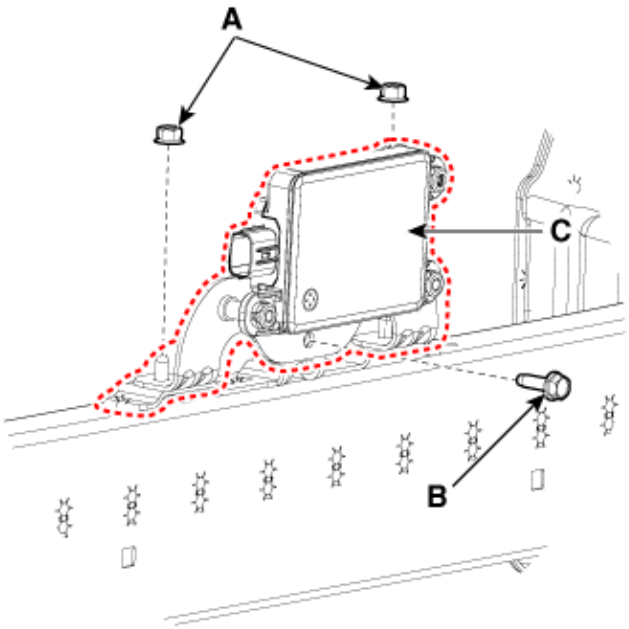
REMOVAL

1. Turn ignition switch OFF and disconnect the negative (-) battery cable.
2. Remover the front bumbper assembly.
   (Refer to Body - "Front bumper assembly")
3. Disconnect the front radar connector (A).



4. Loosen the front radar nuts (A) and bolt (B) and then remove the front radar (C).
   Tightening torque:
   (A,B) : 9.8 - 11.8 N·m (1.0 - 1.2 kgf·m, 7.2 - 8.7 lb·ft)

English



INSTALLATION

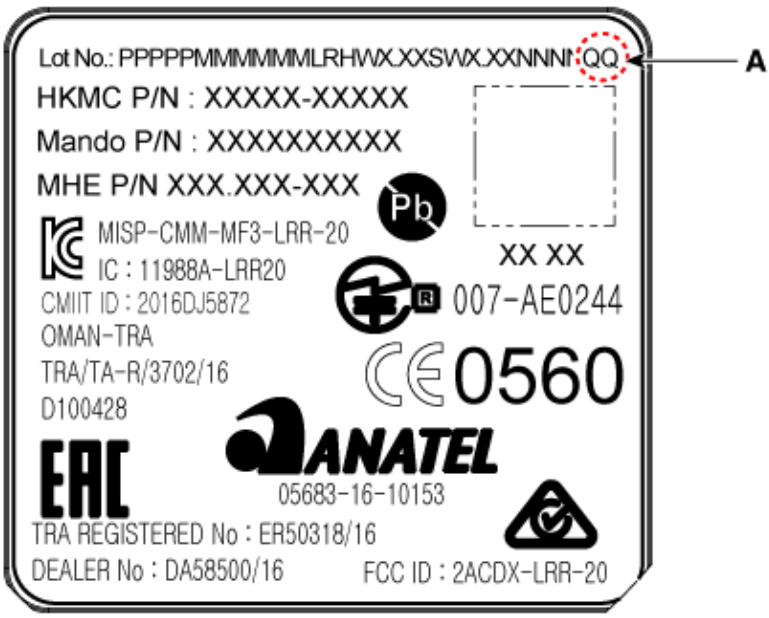
NOTICE

- Put the vehicle on the level ground.
- Take out heavy luggage from the vehicles' seats or trunk.
- Set all tires according to the specified pressure.
- Check wheel alignment.
- Check that the front surface of the front radar is clean.

1. Check the last 2 digits of Lot. No (A) on label at rear side before installing the front radar.

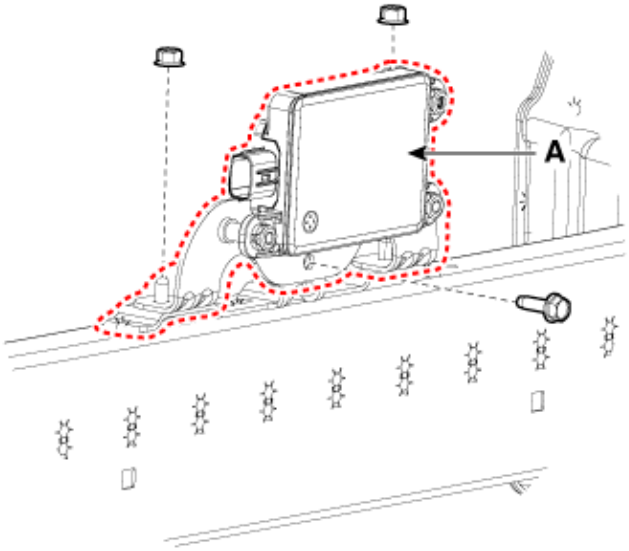
Information

The meaning of Lot. No (A) is the vertical deviation angle of front radar inner side.

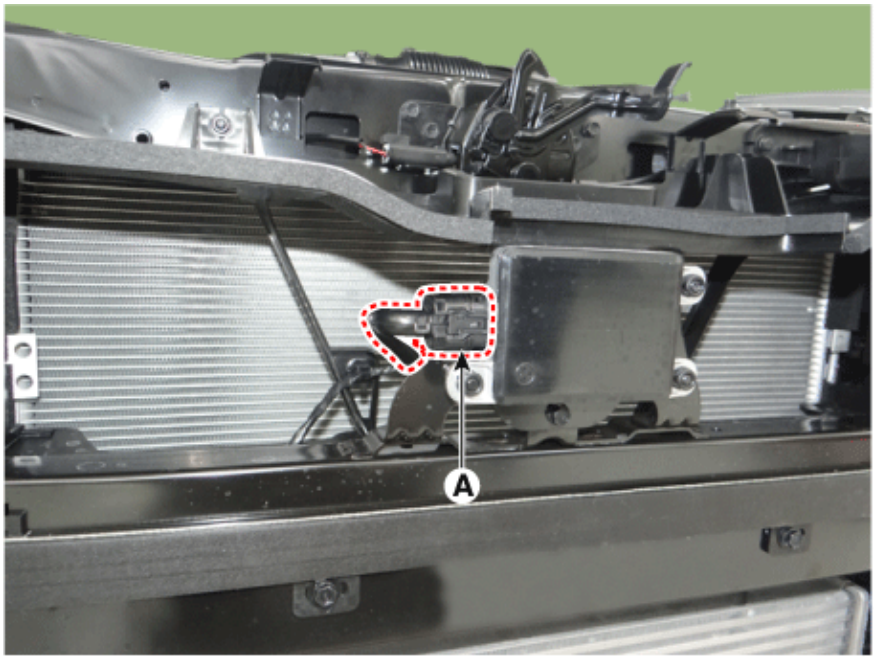


2. Install the front radar (A) by tightening the nuts.
   Tightening torque :

9.8 - 11.8 N·m (1.0 - 1.2 kgf·m, 7.2 - 8.7 lb·ft)

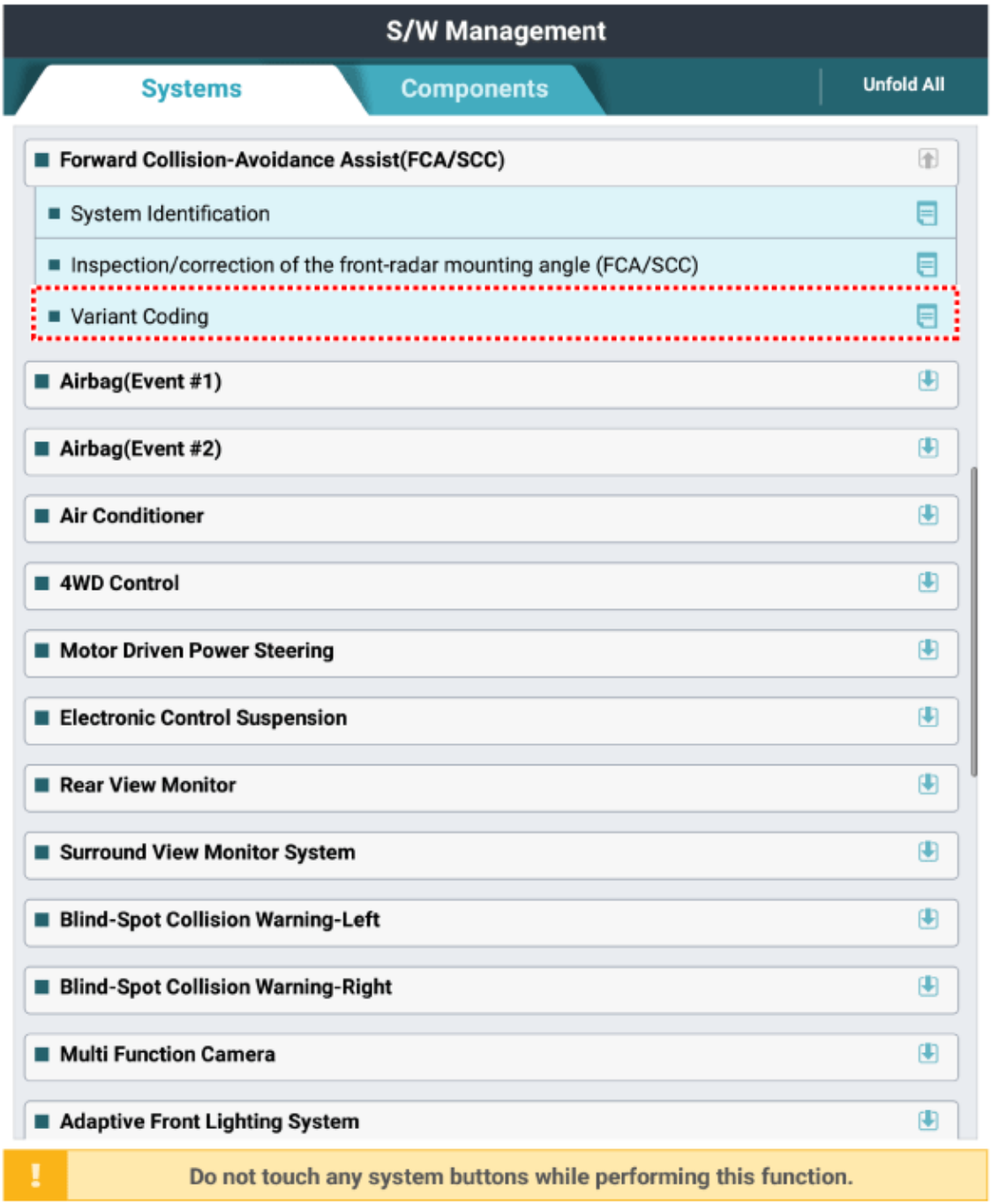


3. Connect the front radar connector (A).



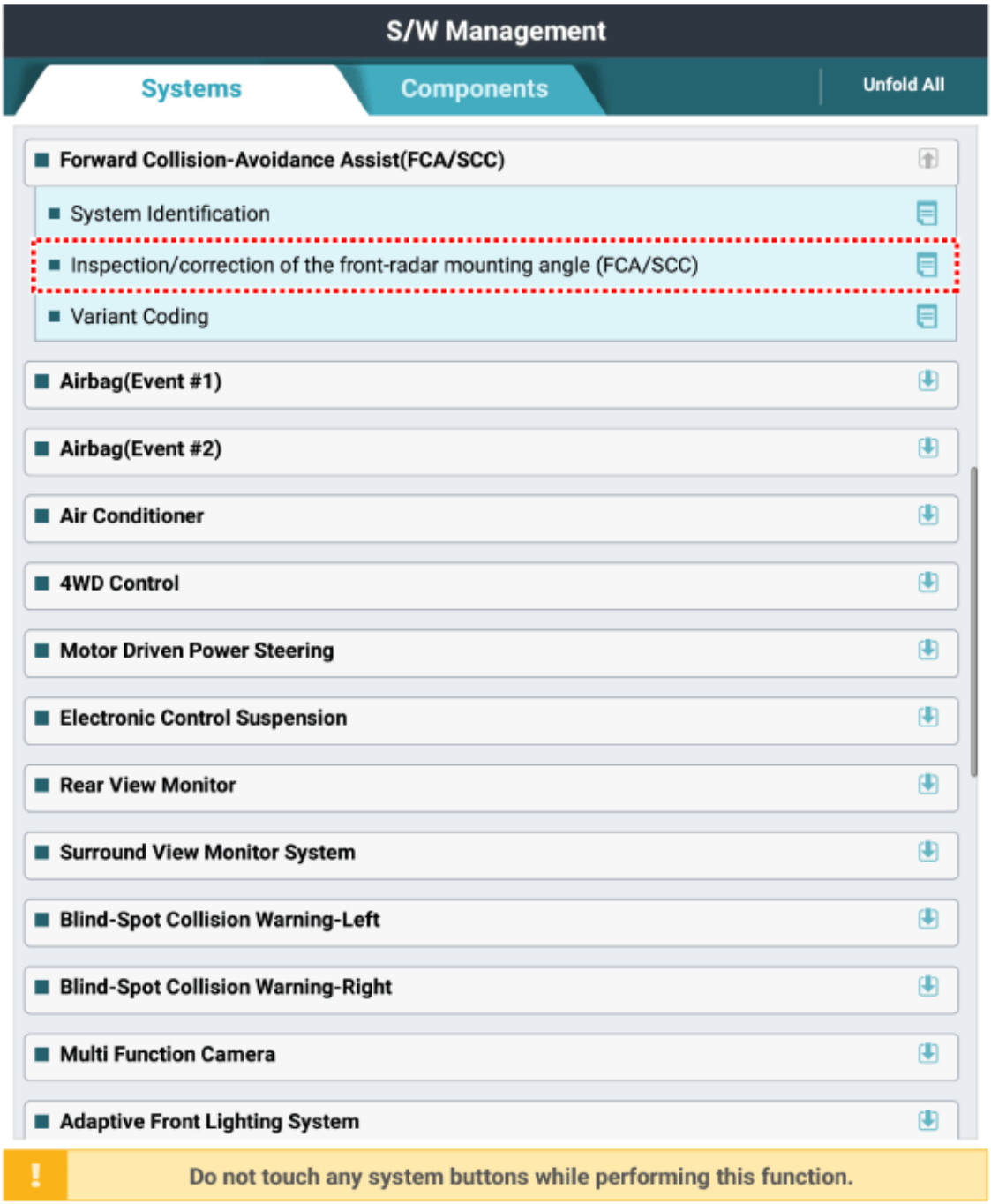
4. If replaced the front radar with a new one, perform variant coding procedure by using the KDS.

English



5. Check and align the front radar mounting angle.
   (1) Perform the “inspection/correction of the front-radar mounting angle” using the KDS.

English


S/W Management
Systems
Components
Unfold All
Forward Collision-Avoidance Assist(FCA/SCC)
System Identification
Inspection/correction of the front-radar mounting angle (FCA/SCC)
Variant Coding
Airbag(Event #1)
Airbag(Event #2)
Air Conditioner
4WD Control
Motor Driven Power Steering
Electronic Control Suspension
Rear View Monitor
Surround View Monitor System
Blind-Spot Collision Warning-Left
Blind-Spot Collision Warning-Right
Multi Function Camera
Adaptive Front Lighting System
Do not touch any system buttons while performing this function.

English

S/W Management

• **Inspection/correction of the front-radar mounting angle (FCA/SCC)**

Purpose	This is the function for inspecting and correcting the vehicle-mounting angle of the front radar.
Enable Condition	1. Engine stopped 2. IG ON 3. No DTC other than C1620 (alignment failed).
Concerned Component	- UNIT ASSY-FCA - UNIT ASSY-SCC - UNIT ASSY-FR RADAR
Concerned DTC	C1620
Fail Safe	Warning lamp ON
Etc	When a sensor of the front radar needs to be corrected 1. When the front radar is remounted after removal and replacement 2. When C1620 (alignment failed) DTC occurs 3. When the front radar and its vicinity are impacted by collision including minor collisions 4. When there is an error including FCA, SCC, and HDA in the detection/sensing function of the front

OK

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

(2) Input 2 digits of value in the code input box, then press "OK"

English

S/W Management

■ Inspection/correction of the front-radar mounting angle (FCA/SCC)

● [Inspection/correction of the front-radar mounting angle (FCA/SCC)]

[Checking of vertical error angle]
1. Check the value of the last two digits (QQ) of the lot no. marked on the label attached to the rear part of the radar.
2. Enter the value of the last two digits into the code input window, and click the [OK] button.

Code input :

OK Cancel

Do not touch any system buttons while performing this function.

(3) Check the vertical angle which is compensated error on KDS.

Information

The result value is final goal vertical angle which is compensated inner error of criteria vertical installation angle -1°.

English

S/W Management

■ Inspection/correction of the front-radar mounting angle (FCA/SCC)

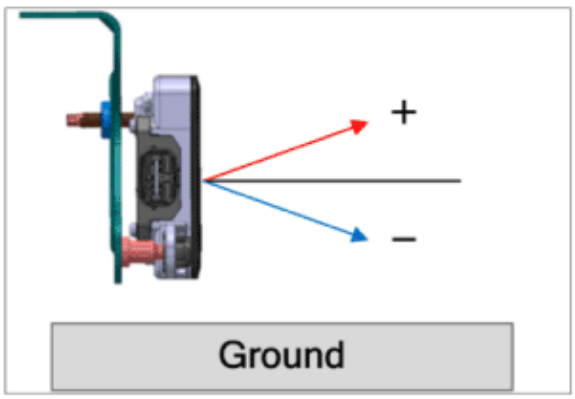
● [Inspection/correction of the front-radar mounting angle (FCA/SCC)]

[Correction of the vertical error angle]
Adjust the vertical angle of the front radar so that the angle matches the result value displayed below.

⚠
* In checking the vertical angle, make sure that the electronic clinometer (verticality meter) is calibrated to zero.
Make sure that the adjustment is made in accordance with the maintenance instructions.

After the adjustment is completed, click the [OK] button.

Result value : -2.7 DEG



OK Cancel

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

(4) Check the front radar vertical angle by using the vertical protractor (tiltmeter).

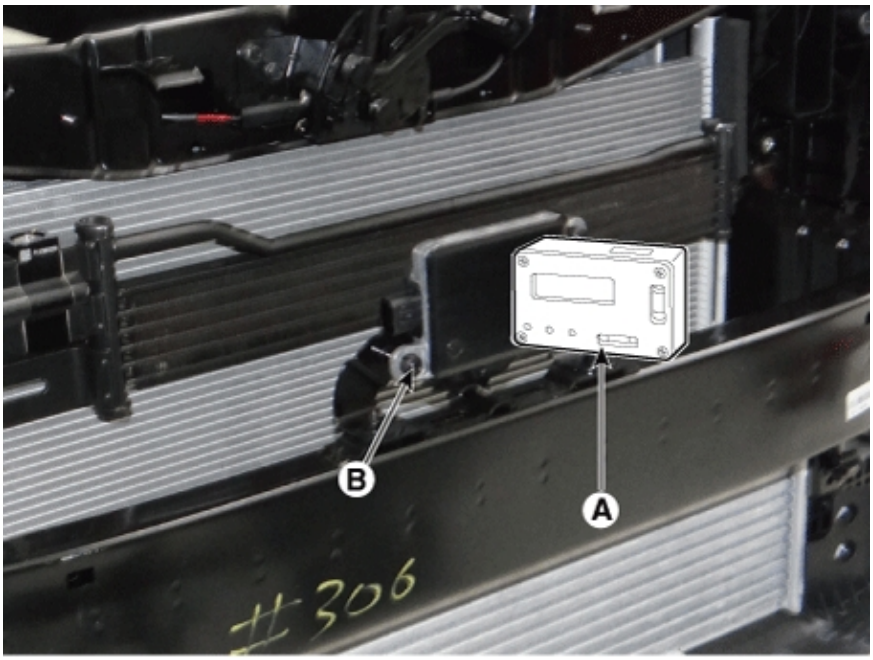
NOTICE

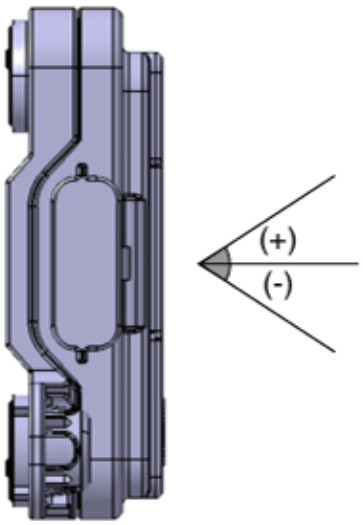
- Make sure to perform zero setting before using vertical protractor. (perform this procedure periodically)
- Be careful with +/- readings when finding true vertical using vertical protractor.

(5) Adjust to "target vertical angle" by turning adjusting screw (B) of front radar.

– turning clockwise : adjusting (+) angle

– turning counterclockwise : adjusting (-) angle





Ground

Number of adjustment screw rotation	Correction angle	
	Clockwise	Counter clockwise
0.5	+ 0.5°	- 0.5°
1	+ 1.0°	- 1.0°
1.5	+ 1.5°	- 1.5°
2	+ 2.0°	- 2.0°
2.5	+ 2.5°	- 2.5°
3	+ 3.0°	- 3.0°
3.5	+ 3.5°	- 3.5°
4	+ 4.0°	- 4.0°
4.5	+ 4.5°	- 4.5°
5	+ 5.0°	- 5.0°

6. Install the front bumper assembly.
   (Refer to Body - "Front bumper assembly")
7. Perform the front radar inspection/correction procedure by using the SST.

(Refer to Engine Electrical System - "Smart cruise control (Stop & Go) unit-radar")

English

ADJUSTMENT

Front radar installation angle checking/adjustment overview

The front radar detects the object in front of the vehicle, and recognizes the distance from the object,comparing speed, etc,. For these reasons the direction of installation has to be llinear with vehicle. Therefore, performing angle inspection and adjustment have to be done in case of the front radar repairs caused by accident or failure and replacement of a new front radar.
Accuracy of the front radar cannot be guaranteed if inspection and adjustment have not been performed properly.
Front radar inspection/adjustment have to be done with either stop mode (C1) using the KDS.
Perform adjustment procedure with exclusive adjustment reflector (SST) for stop mode (C1).

Information

The front radar installation angle checking/adjustment are needed in the following cases.

- Front radar has been replaced.
- Front radar has been removed and reinstalled.
- Calibration failure DTC is present.
- Front radar detecting and recognition function failure.

– failed to detect vehicle in front while functioning

– often detecting error of road side lane

– often detecting error of object when no objects are present

How to check/adjust front radar installation angle - stop mode

NOTICE

Preparation before the front radar alignment:

- Put the vehicle on the level ground.
- Take out heavy luggage from the vehicles' seats or trunk.
- Set all tires according to the specified pressure.
- Check wheel alignment.
- Check that the front surface of the front radar is clean.

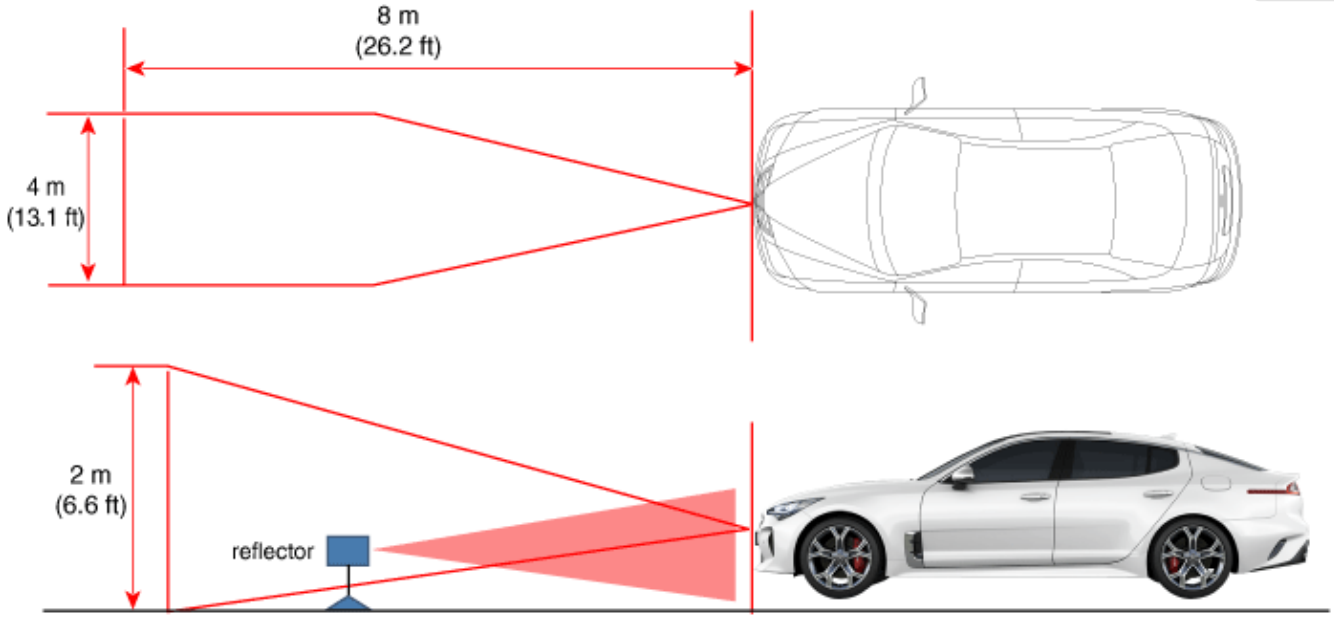
NOTICE

- Perform in an area with minimum clearance of 8m (26.2 ft) front, 4m (13.1 ft) sides, and 2 m (6.6 ft) above the vehicle.
- Install the reflector exactly 2.5 m (8.2 ft) away from the Front Radar.
- The reflector has to be installed at same place(height and angle) as front radar center.
  (If height and angle are different, then adjustment can not be done correctly.)
- Remove objects (metal plates, resins, etc.) that may cause electric signal interference from the area where front radar alignment is performed.
- Make sure to use exclusive reflector (OK964-J5100)
- Be sure that the vehicle is not moved and free from vibration when performing front radar alignment.
  (getting in/out or opening/closing doors).
- IG has to be on when performing front radar alignment. (engine stop condition)

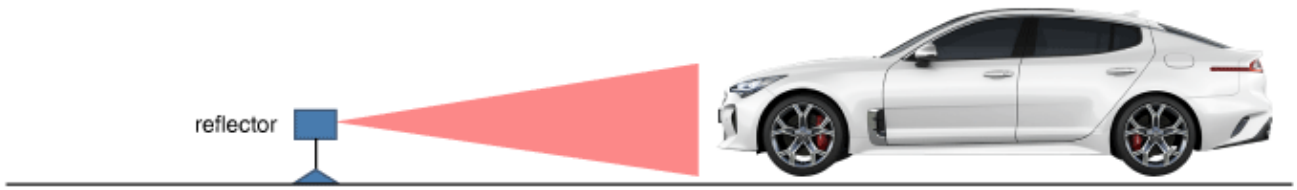
1. Park the vehicle in a flat ground.

English

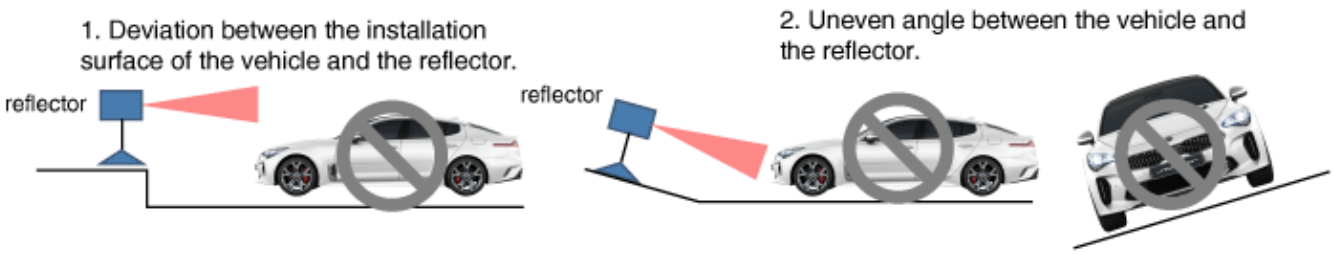
[Work Area Specification]



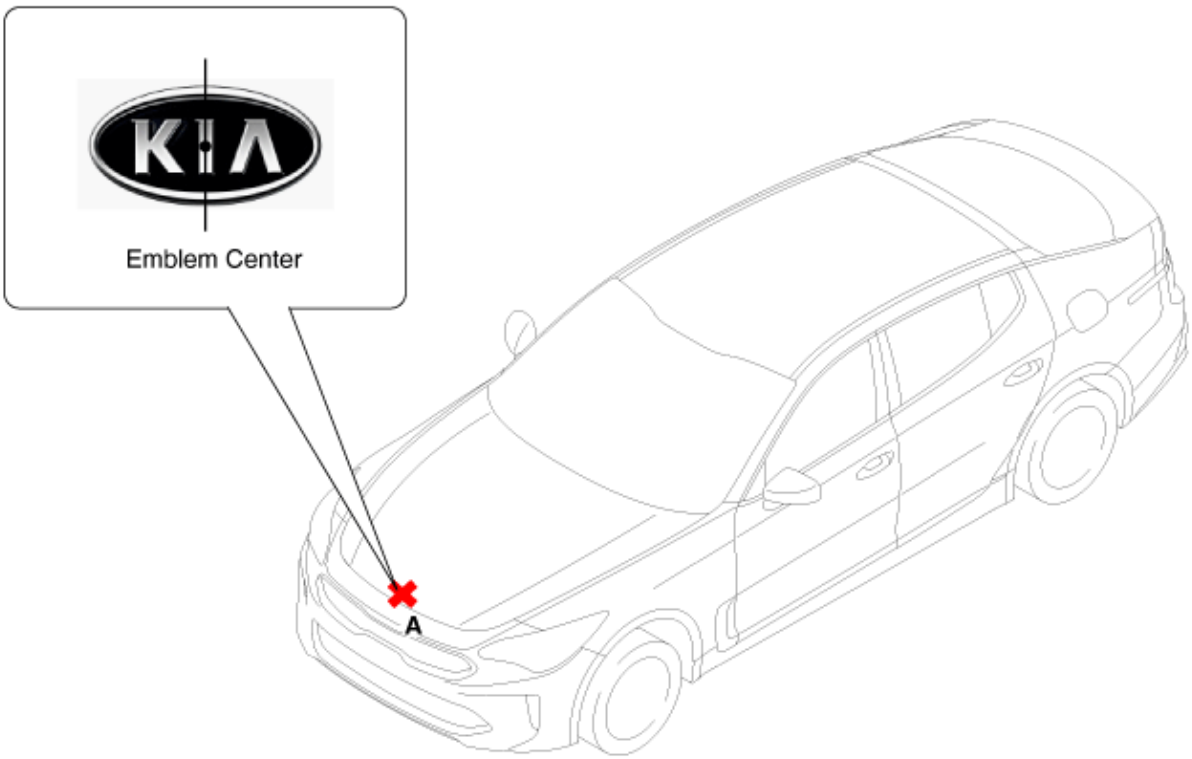
[Leveling: Installation surface of the vehicle and the reflector must be evenly levelled.]



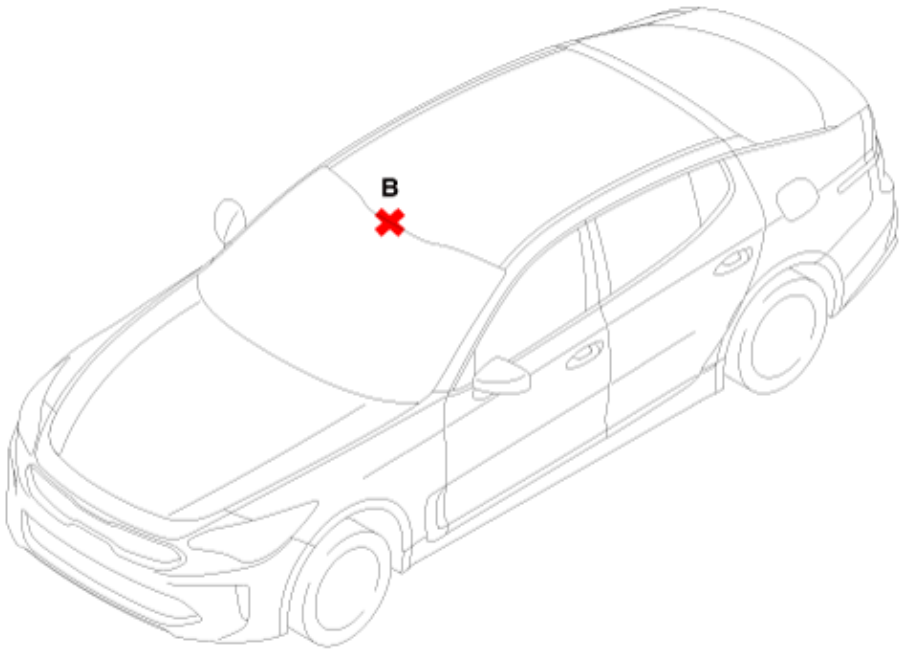
[Inappropriate Location - Example]



2. Mark the center point of emblem (A).

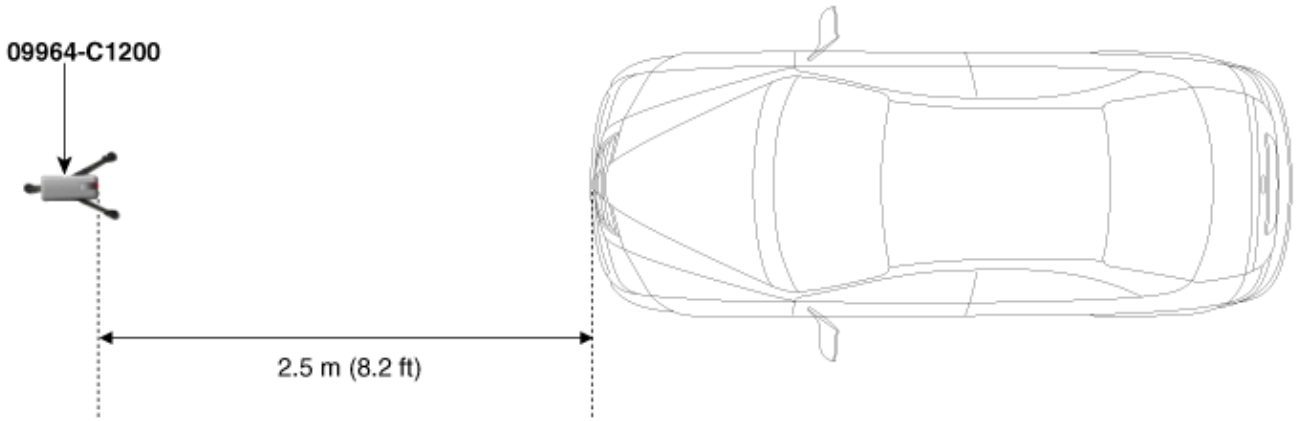


3. Mark the center point (B) after measuring the distance on top of the windshield glass.

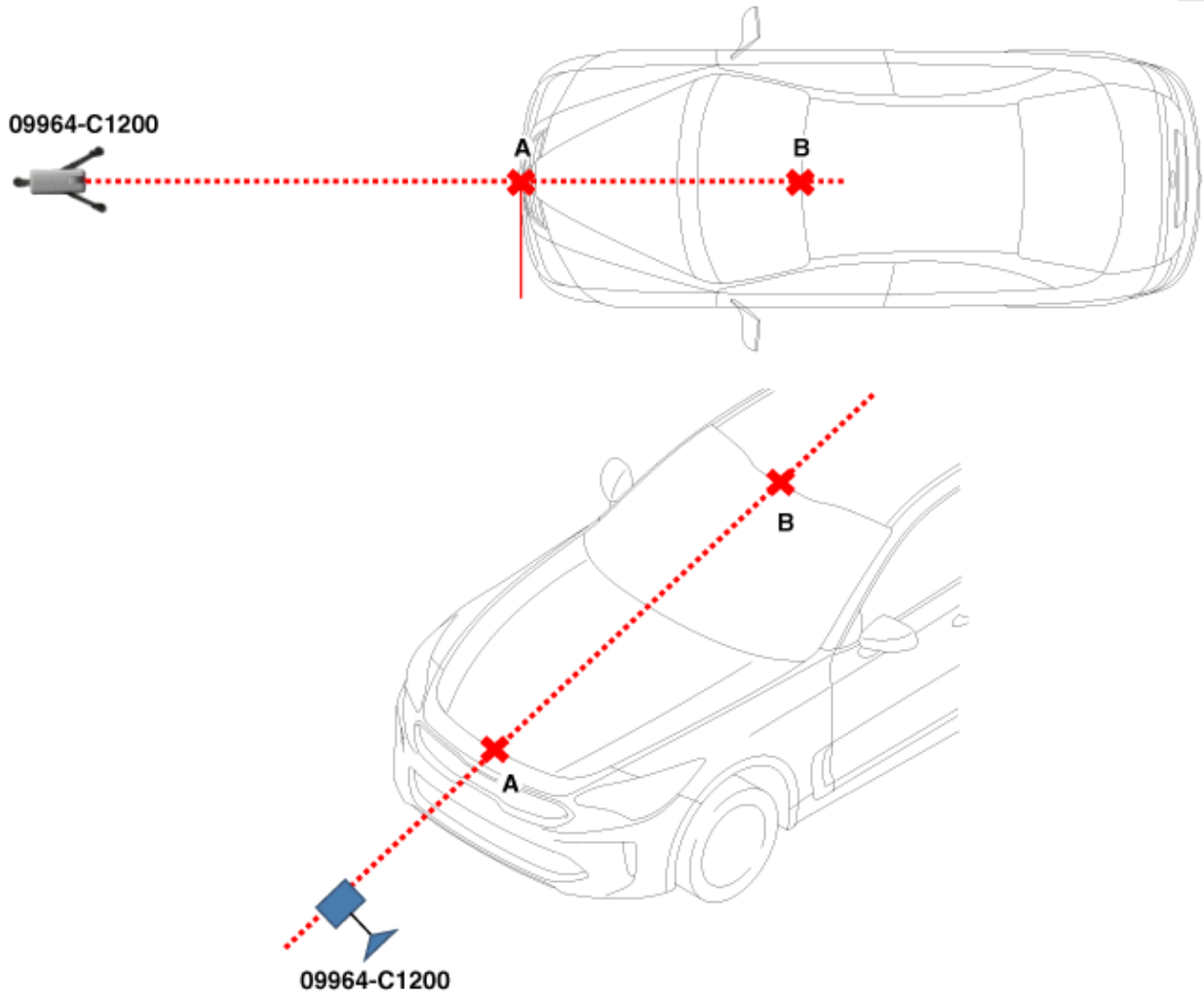


4. Install the laser (09964-C1200) to the tripod (09964-C1300).

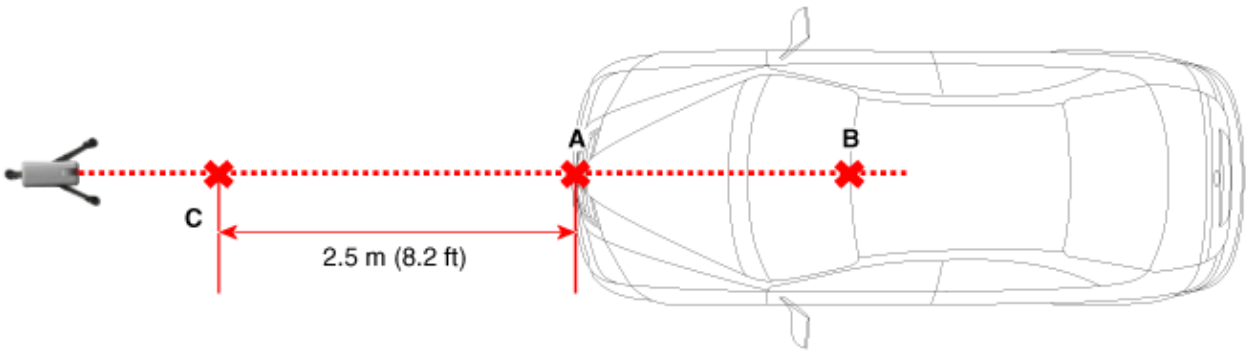
5. Place the laser (09964-C1200) at 2.5m (8.2 ft) to the front of the vehicle.



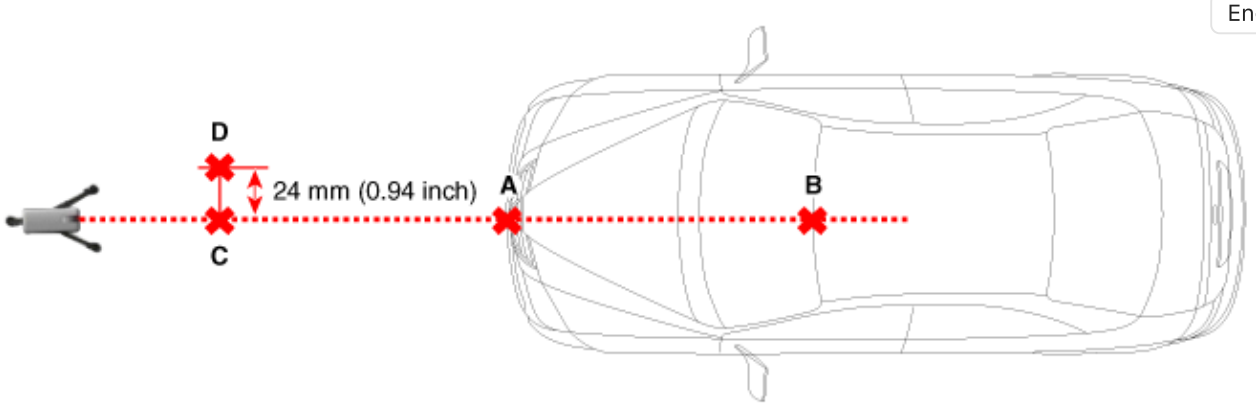
6. Match the vertical line of laser to (A) and (B) using the laser (09964-C1200).



7. Mark (C) at 2.5m (8.2 ft) from (A) in front of the vehicle.



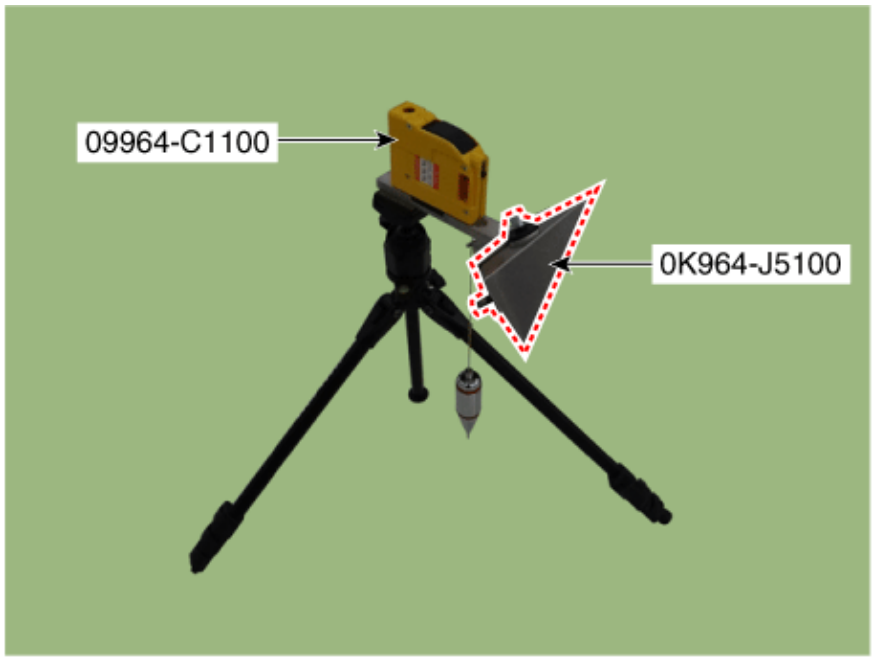
8. Mark (D) at the place which is 24 mm (0.94 inch) away from (C) to the left in vertical direction.



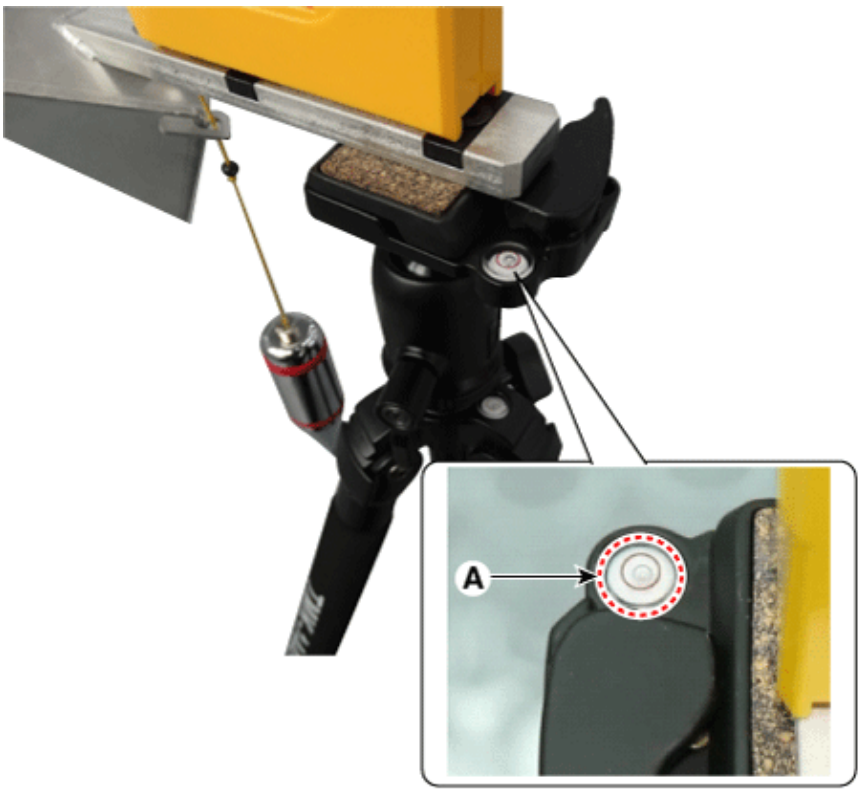
9. Remove the laser (09964-C1200) from the tripod (09964-C1300).

10. Mount the reflector (09964-C1100) onto the tripod (09964-C1300).

11. Mount the reflector adapter (0K964-J5100) to the reflector (09964-C1100).

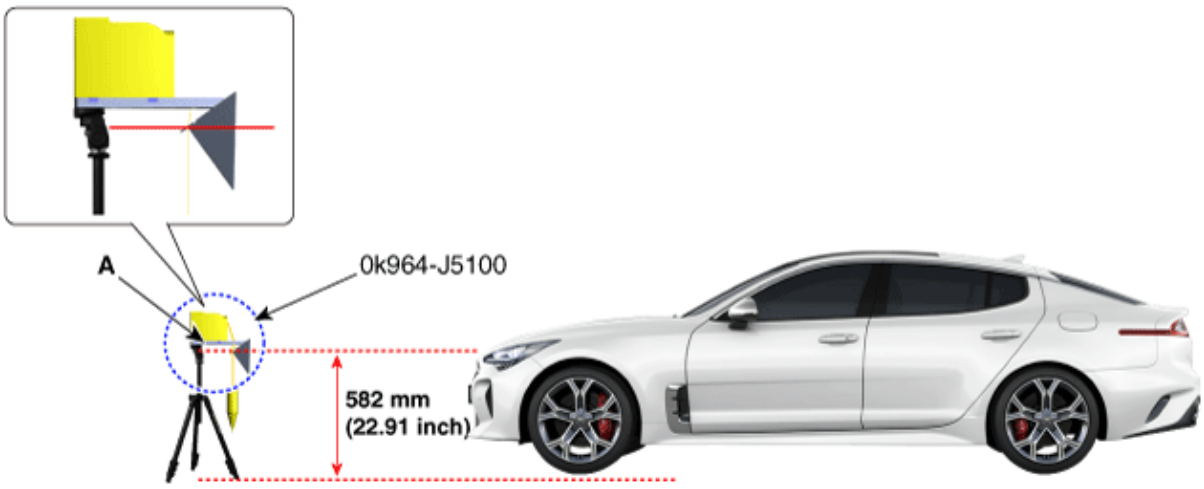


12. Set the reflector horizontal using the leveler (A) which is built in the tripod (09964-C1300).



13. Align the vertical weight (A) of the reflector (09964-C1100) with the point (D).

14. Set the height of the reflector adapter (0K964-J5100) to 582 mm (22.91 inch).



15. Remove the vertical weight from the reflector (09964-C1100).

NOTICE

If the weight is not removed it can affect the adjustment.

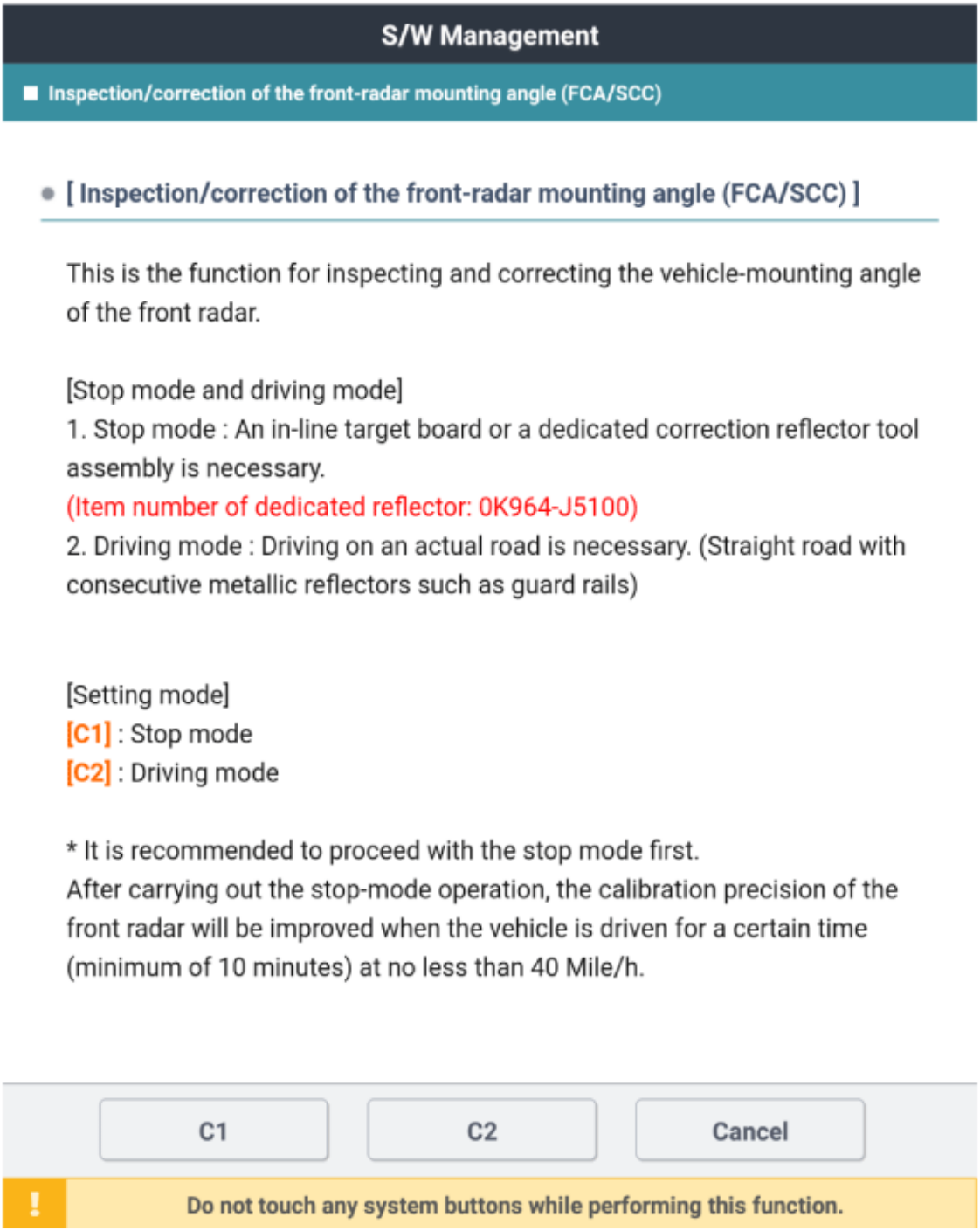
English

16. Check again the front radar and the surface of front bumper for the following items with the eyes.

NOTICE

- Make sure that there is no debris, or reflecting object on the surface of the radar.
- Make sure that there is no debris, or reflecting object on the radiator grill.

17. Select C1 (stop mode) to inspect and adjust the front radar installation angle by following procedure on KDS screen.



English

S/W Management

■ Inspection/correction of the front-radar mounting angle (FCA/SCC)

[Inspection/correction of the front-radar mounting angle (FCA/SCC)]

[Stop mode]

1. Make sure that open space exists in front of the vehicle.
(Minimum space to be secured: 8-m front, 4-m width, and 2-m height from the front bumper)
2. Install the reflector exactly at 2.5 m away from the front radar.
3. Install the reflector so that its left, right, upper, and lower center positions match the center of the front radar in accordance with its installation position.
4. Remount the front bumper before carrying out inspection/correction.
- Fasten the hardware to afffix the bumper at the correct position.

⚠

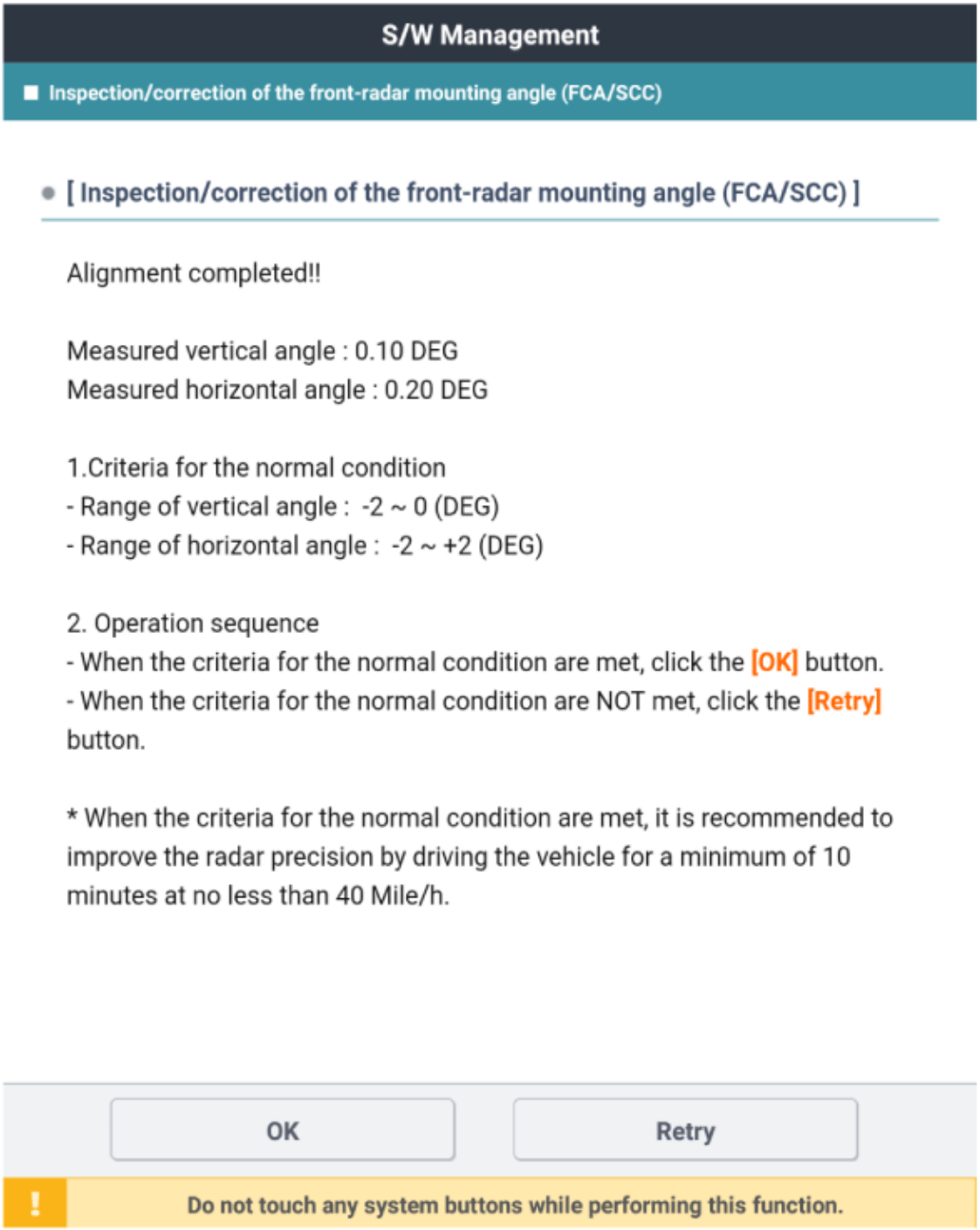
* In installing the reflector, make sure to refer to the maintenance instructions with regard to the precautions and the installation method.
If the position of the reflector is incorrect, or if a dedicated reflector (0K964-J5100) is not used, it may lead to serious functionality problems due to improper correction even after the correction is completed.

When you are ready, click the **[OK]** button.

OK | Cancel

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

English



18. In case of front radar inspection/correction failure, check the inspection/correction conditions.

*** Thanks for your cooperation for the more quality. Please surely rate this document before closing.**