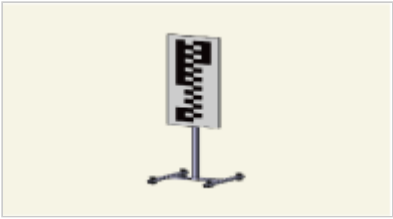
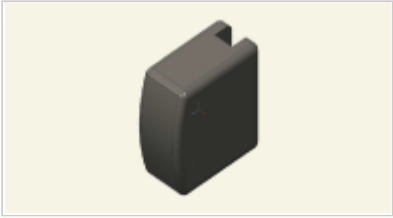


FRONT VIEW CAMERA UNIT (ADAS) - ADJUSTMENT

CARNIVAL(KA4) > 2022 > G 3.5 GDI LAMBDA III > Advanced Driver Assistance System (ADAS)

Special Service Tools

Tool Name / Number	Illustration	Description
LKA Calibration target 09890 - 3V100		Used for compensating front view camera unit
SCC Setting Beam 09964 - C1200		Used for front radar unit setting. Used for front view camera unit setting.

Adjustment

NOTICE

Perform the camera calibration under the following cases.

- If the front view camera is replaced with a new one.
- If the front view camera is removed and mounted.
- If the front view camera coupler of the windshield glass is deformed.
- If the windshield glass is changed.
- When a failure code (System Out of Calibration) occurs.

Check the procedure below before performing the camera calibration.

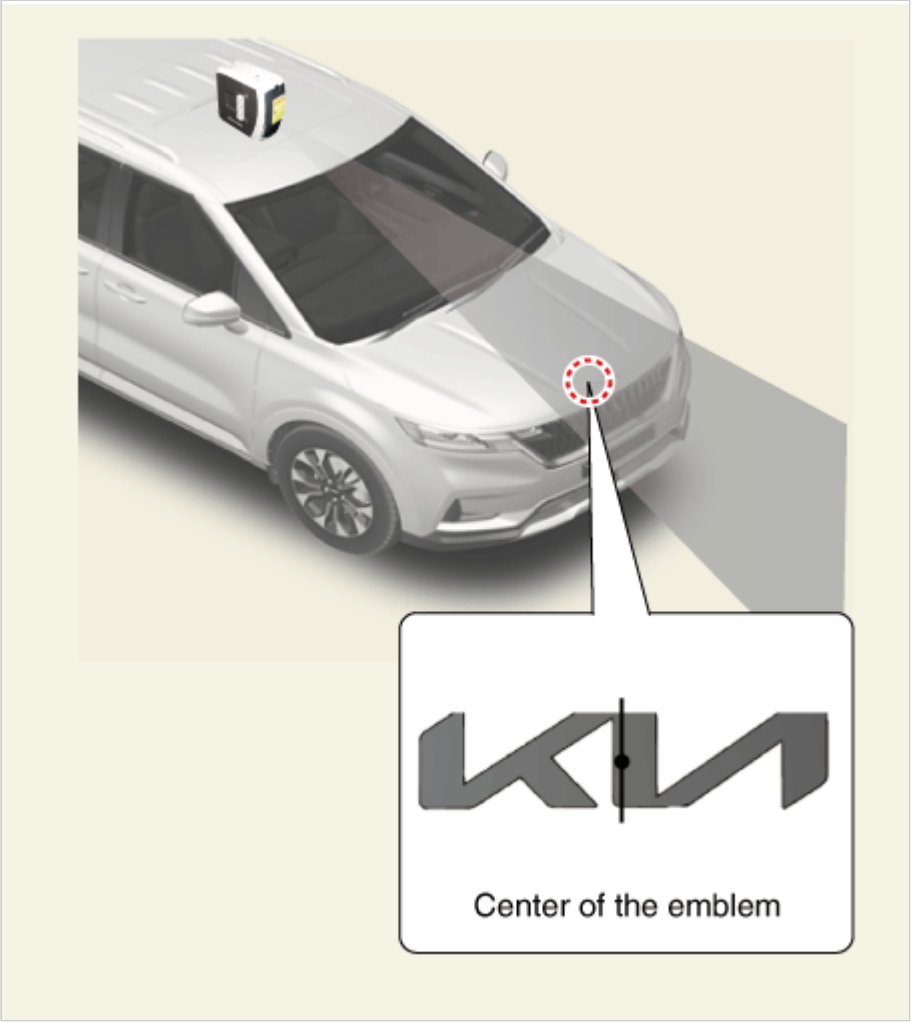
- Check for vehicle alignment and tire pressure for accurate camera calibration.
- Windshield must be clean and free of any dirt or object.

Service Point Target Auto Calibration (SPTAC) Procedure

1. Install the SST (09964 - C1200) on the roof center above the vehicle's front windshield.



2. Make the laser illuminate starting from the roof center line and passing through the center of the emblem.



NOTICE

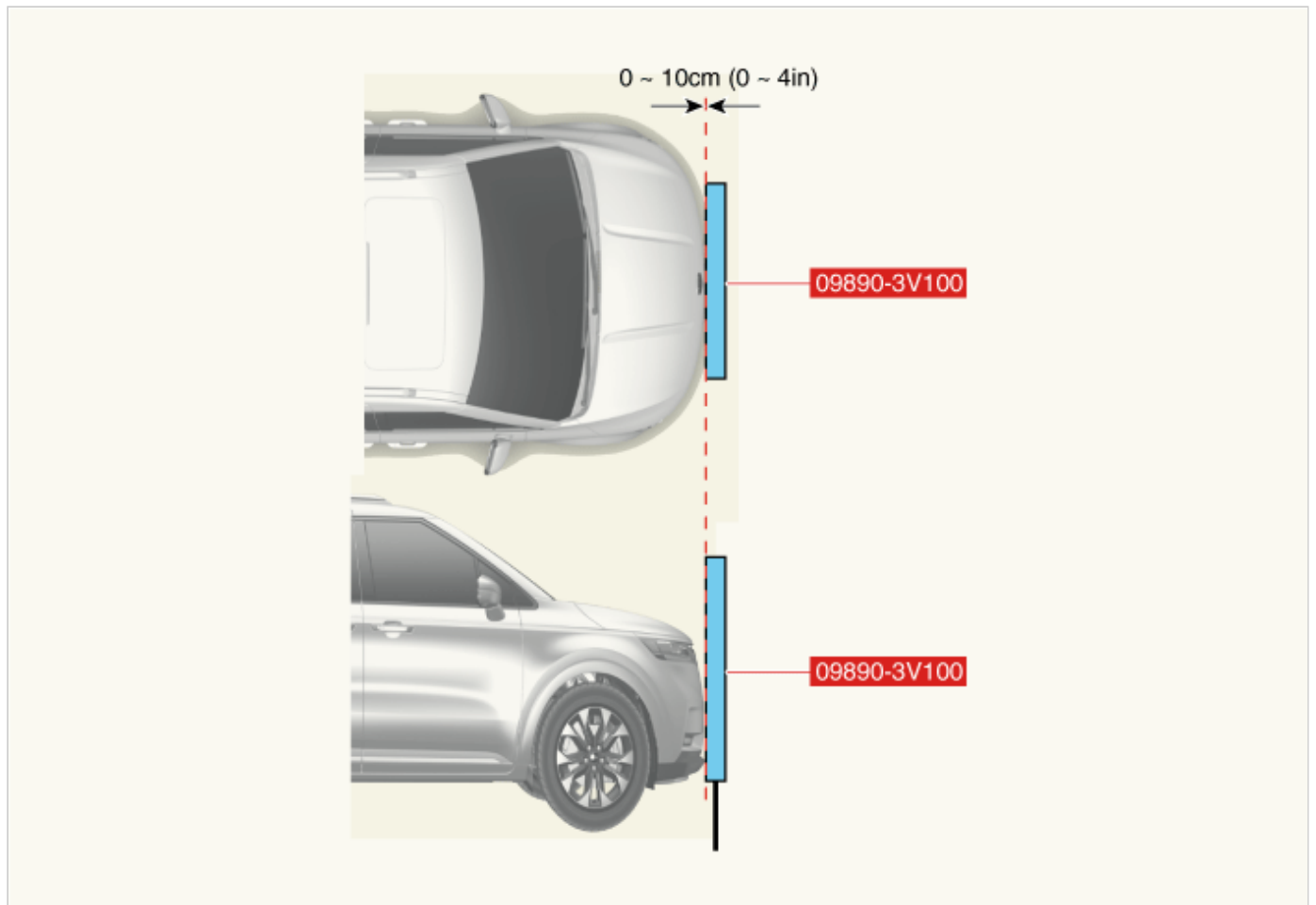
- Displaying as asymmetric as shown in figure is the correct emblem centered reference.
- Must mark the emblem center by measuring the length of both ends.

Information

The level laser must be set to 'ON' and the holding (locking) function is not used.

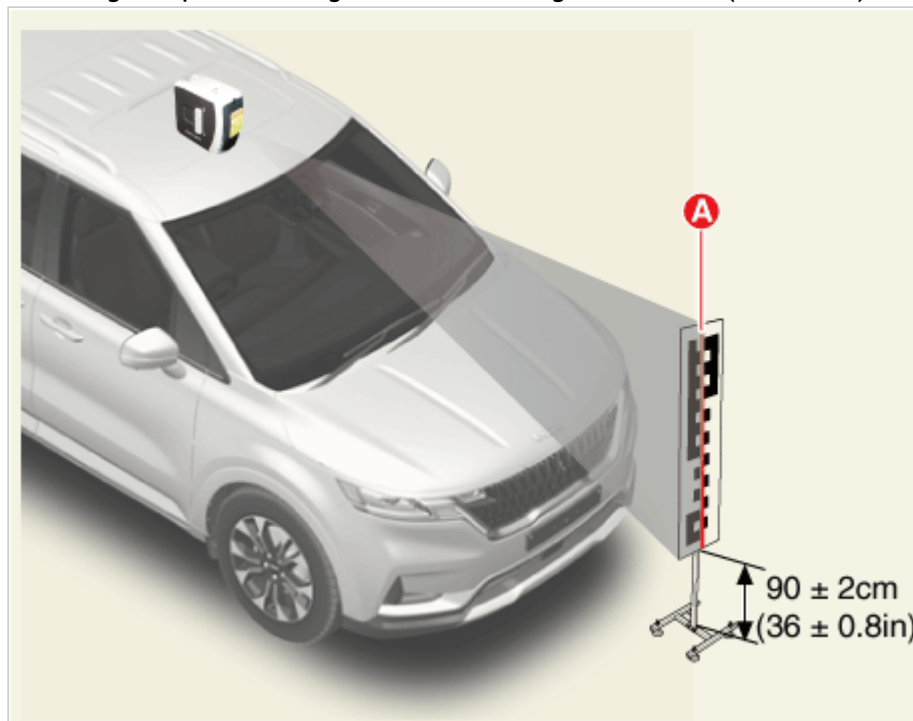


3. Place the calibration target (09890 - 3V100) so that it maintains a distance of 0 cm (0 in) to the front of the bumper. [Max. tolerance: 10 cm (4 in)]



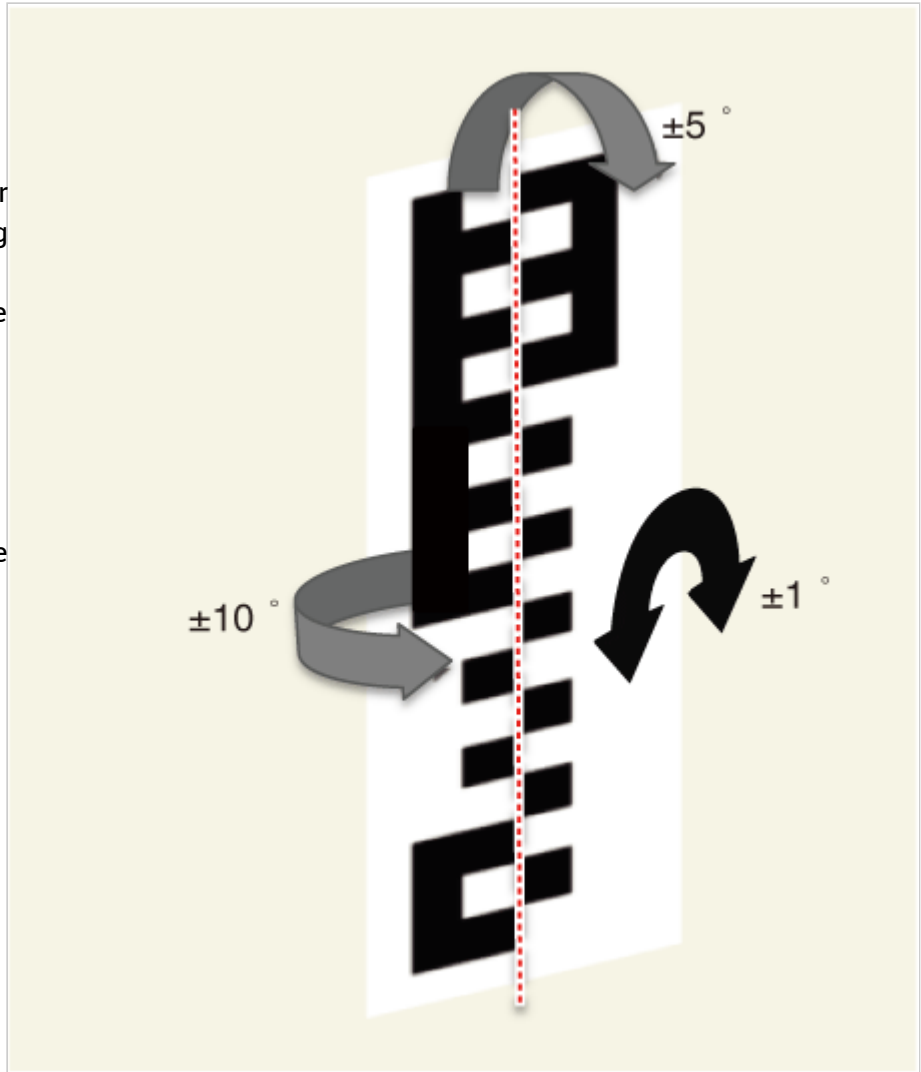
4. Set the calibration target height to 90 ± 2 cm (36 ± 0.8 in) from the ground and align the center of calibration target with center line (A) of laser beam.

The target is placed along the vehicle's longitudinal axis (centerline) within ± 5 cm (± 2 in) of target center.



NOTICE















- The vehicle horizontal plane shall be completely parallel to the target horizontal plane ($\pm 1^\circ$).
- Align the calibration target (09890 - 3V100) referring to the tolerance angle below.
- Mounting area must not have cross hatch patterns or textual markings near the target.
- Target should be well lit for optimal performance using non-fluctuating illumination. There shall be no continuous shadows cast on the target.
- The light should be directed toward the target front and the target front should be brighter than the target rear and target.



	L / R torsion	F/ B gradient	L / R gradient
Tolerance angle	$\pm 10^\circ$	$\pm 5^\circ$	$\pm 1^\circ$

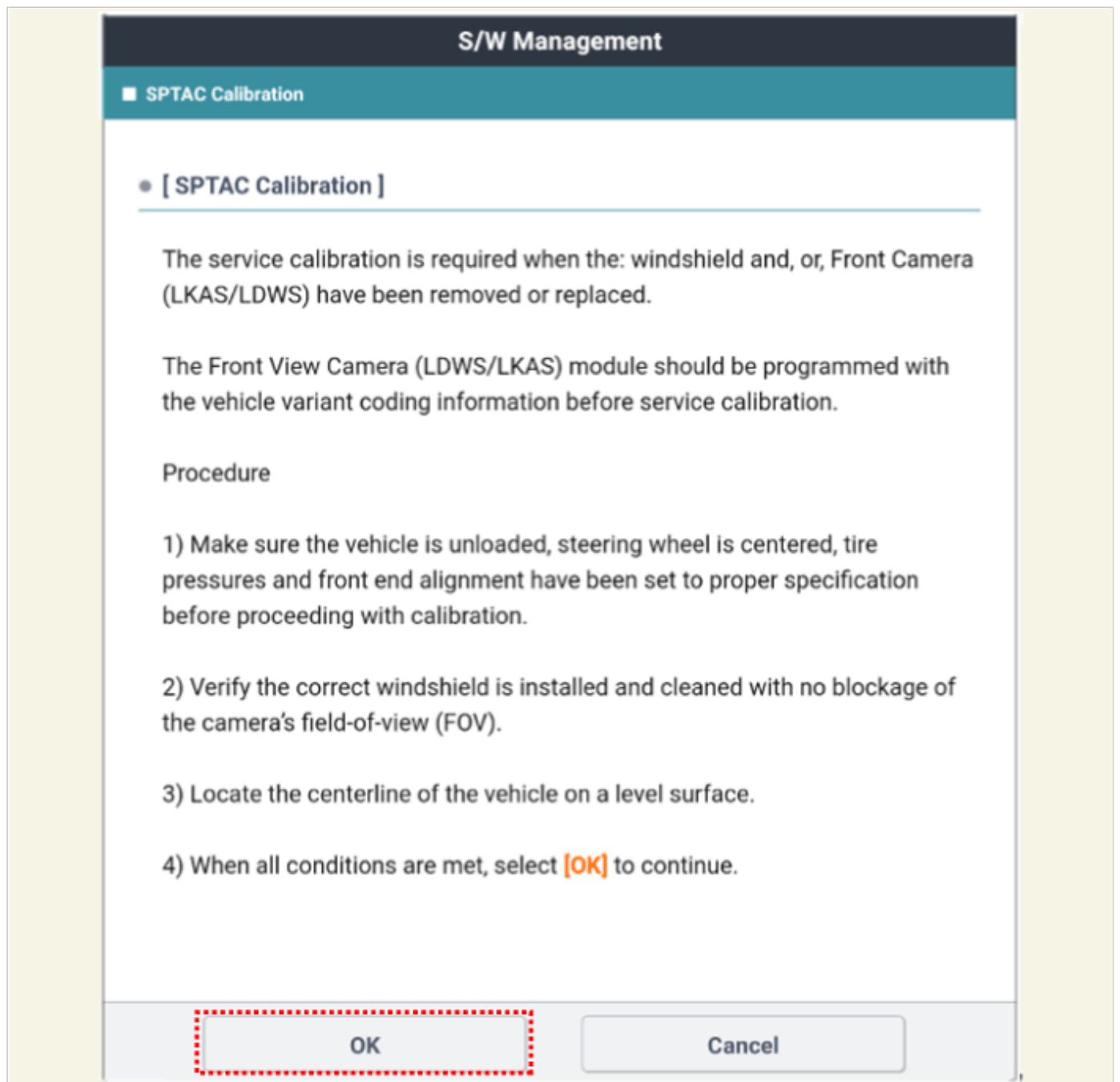
5. Perform the "SPTAC(Service Point Target Auto Calibration)" using the KDS.



- Front View Camera 
- System Identification 
- Variant Coding 
- SPTAC Calibration 
- Rear Corner Radar-Left 
- Rear Corner Radar-Right 
- Electronic Shifter(SBW) 
- SBW Control Unit 
- Amplifier 
- Audio Video Navigation 
- Cluster Module 
- Driver Door Module 
- Head Up Display 
- Identity Authentication Unit 
- Integrated Body Control Unit-BCM 
- Integrated Body Control Unit-IMMO 



Do not touch any system buttons while performing this function.



6. Perform the close range calibration by selecting the "OK" message on the KDS after checking the calibration target location.

S/W Management

■ SPTAC Calibration

● [SPTAC Calibration]

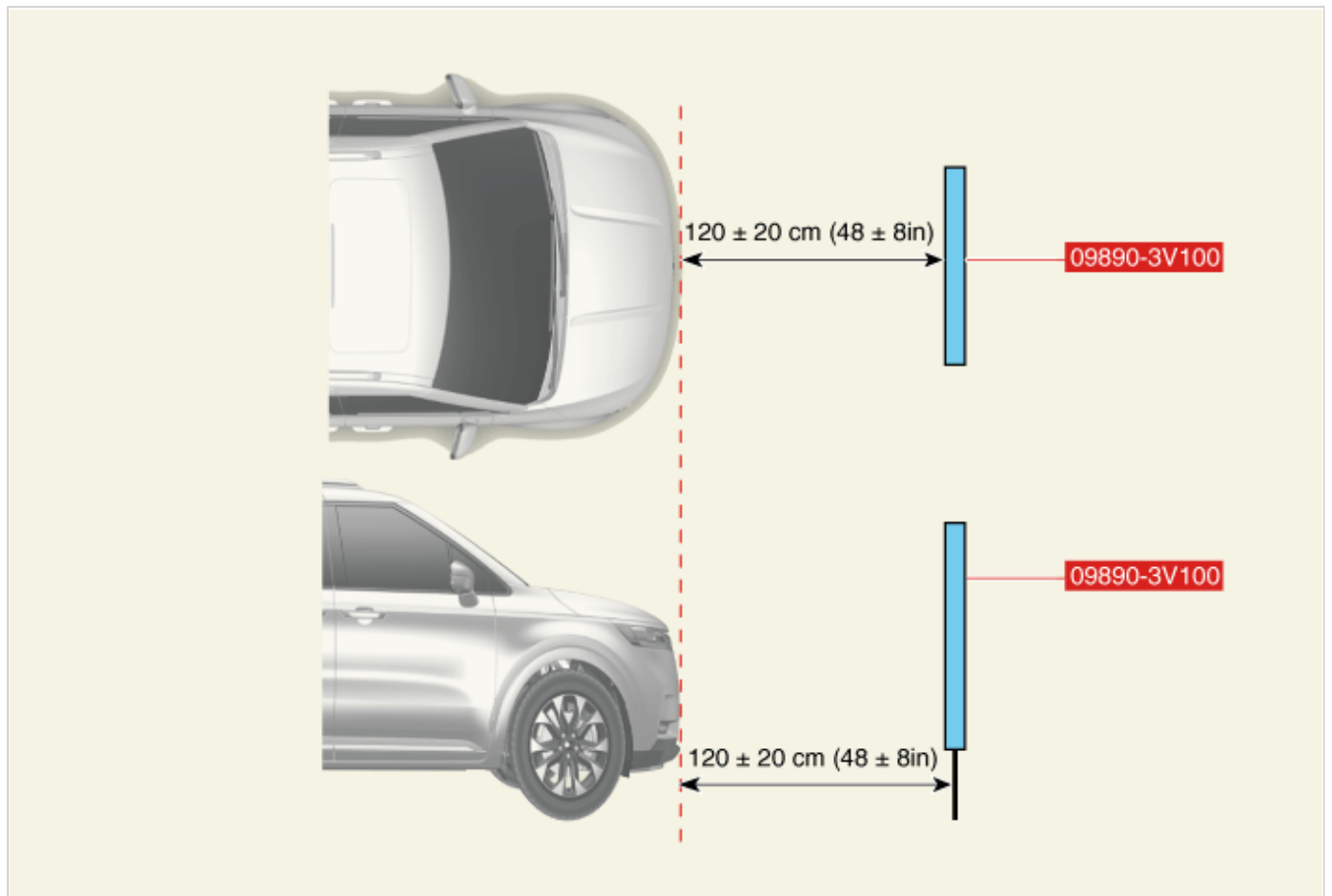
Close range target position setting

1. The bottom of the SST should be $35.4'' \pm .78''$ ($90\text{cm} \pm 2\text{cm}$) from the ground.
2. The SST should be within $\pm 1.96''$ ($\pm 5\text{cm}$) of the vehicle's centerline.
3. The SST should be $3.94''$ (10cm) from the center of the front bumper.
4. When all conditions are met, select **[OK]** to begin calibration.

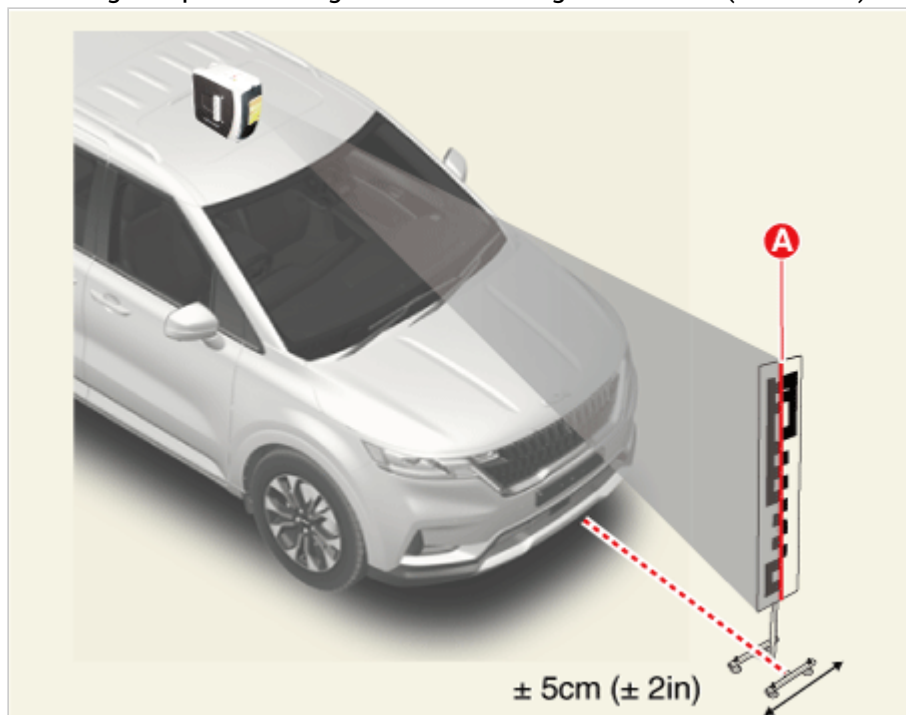
OK

Cancel

7. Move the calibration target (09890 - 3V100) to 120 cm (48 in) from the bumper. [Max. tolerance : ± 20 cm (± 8 in)]

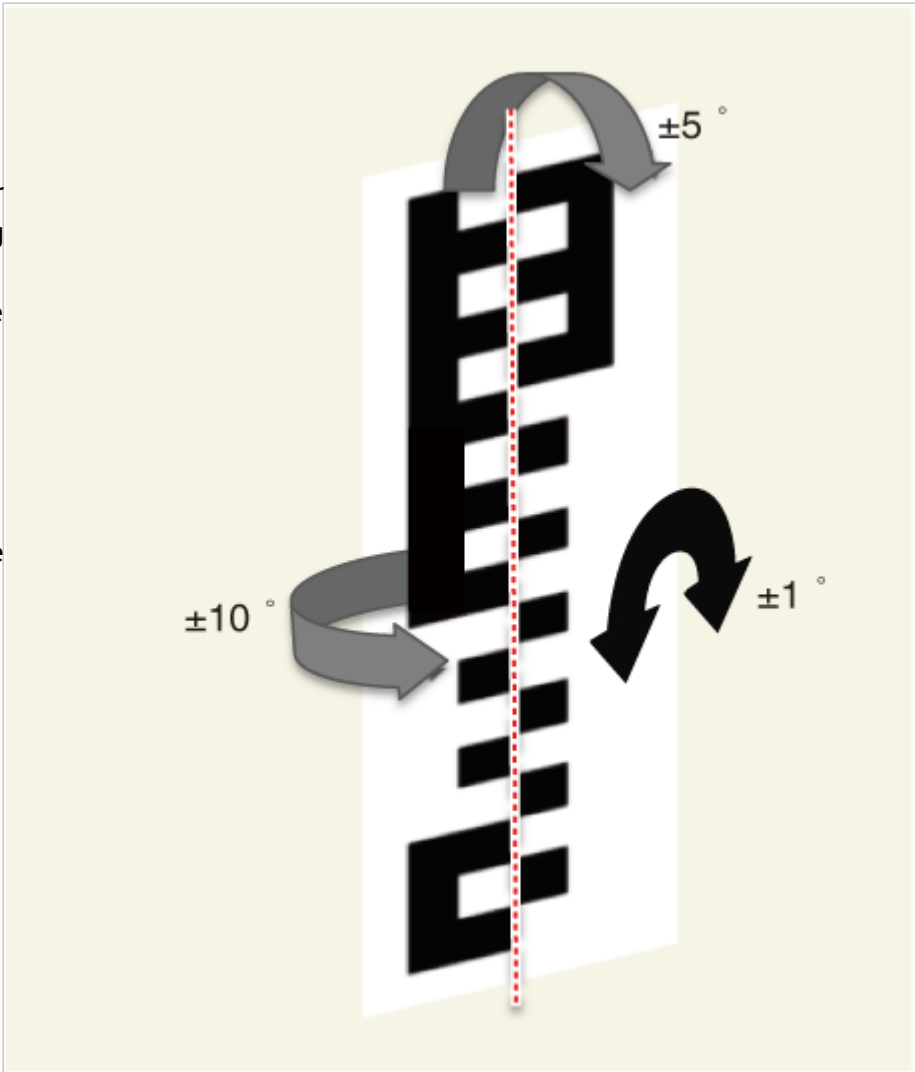


8. Set the calibration target height to 90 ± 2 cm (35.43 ± 0.8 in) from the ground and align the center of calibration target with center line (A) of laser beam. The target is placed along the vehicle's longitudinal axis (centerline) within ± 5 cm (± 2 in) of target center.



NOTICE

- The vehicle horizontal plane shall be completely parallel to the target horizontal plane ($\pm 1^\circ$).
- Align the calibration target (09890 - 3V100) referring to the below tolerance angle.
- Mounting area must not have cross hatch patterns or textual markings near the target.
- Target should be well lit for optimal performance using non-fluctuating illumination. There shall be no continuous shadows cast on the target.
- The light should be directed toward the target front and the target front should be brighter than the target rear.



	L / R torsion	F/ B gradient	L / R gradient
Tolerance angle	$\pm 10^\circ$	$\pm 5^\circ$	$\pm 1^\circ$

9. Perform the long-distance calibration by selecting the "OK" button on the KDS after checking the calibration target location.

S/W Management

■ SPTAC Calibration

● [SPTAC Calibration]

Far range target position setting

1. The bottom of the SST should be $35.4'' \pm 0.78''$ ($90\text{cm} \pm 2\text{cm}$) from the ground.
2. The SST should be within $\pm 1.96''$ ($\pm 5\text{cm}$) of the vehicle's centerline.
3. The SST should be $47.2'' \pm 7.87''$ ($1.2\text{m} \pm 20\text{cm}$) from the center of the front bumper.
4. When all conditions are met, select **OK** to begin calibration.

OK

Cancel

10. Erase the diagnostic trouble codes (DTC) using the KDS.

11. Check the DTC and warning lamp.