BASIC INSPECTION > ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION > DESCRIPTION

Refer to the table below to determine if adjustment of steering angle sensor neutral position is required.

: Required : Not required

Situation	Adjustment of steering angle sensor neutral position
Removing/Installing ABS actuator and electric unit (control unit)	-
Replacing ABS actuator and electric unit (control unit)	*
Removing/Installing steering angle sensor	*
Replacing steering angle sensor	*
Removing/Installing steering components	*
Replacing steering components	*
Removing/Installing suspension components	-
Replacing suspension components	*
Changing tires to new ones	-
Tire rotation	-
Adjusting wheel alignment	*

BASIC INSPECTION > ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION > WORK PROCEDURE > ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

⚠ *CAUTION:*

To adjust neutral position of steering angle sensor, make sure to use CONSULT.

(Adjustment cannot be done without CONSULT).

1. ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

GO TO STEP 2 .

2. PERFORM THE NEUTRAL POSITION ADJUSTMENT FOR THE STEERING ANGLE SENSOR

CONSULT

1. Select "Work support" and "ST ANGLE SENSOR ADJUSTMENT" in order.
2. Select "Start".

> *CAUTION:*
>
> *Do not touch steering wheel while adjusting steering angle sensor.*

3. After approximately 10 seconds, select "End".

> *NOTE:*
>
> *After approximately 60 seconds, it ends automatically.*

4. Turn ignition switch OFF then turn it ON again.

> *CAUTION:*
>
> *Be sure to perform above operation.*

GO TO STEP 3 .

3. CHECK DATA MONITOR

1. Run vehicle with front wheels in straight-ahead position then stop.
2. Select "Data Monitor". Then make sure "STR ANGLE SIG" is within 0+-3.5°.

Is the steering angle within the specified range?

YES

GO TO STEP 4 .

NO

Perform the neutral position adjustment for the steering angle sensor again. **GO TO STEP 1** .

4. ERASE THE SELF DIAGNOSTIC RESULT MEMORY

Erase the "Self Diagnostic Result" memory of the ABS actuator and electric unit (control unit) and ECM.

1. ABS actuator and electric unit (control unit): Refer to CONSULT FUNCTION .
2. ECM: Refer to CONSULT FUNCTION .

Are the memories erased?

YES

Inspection End.

NO

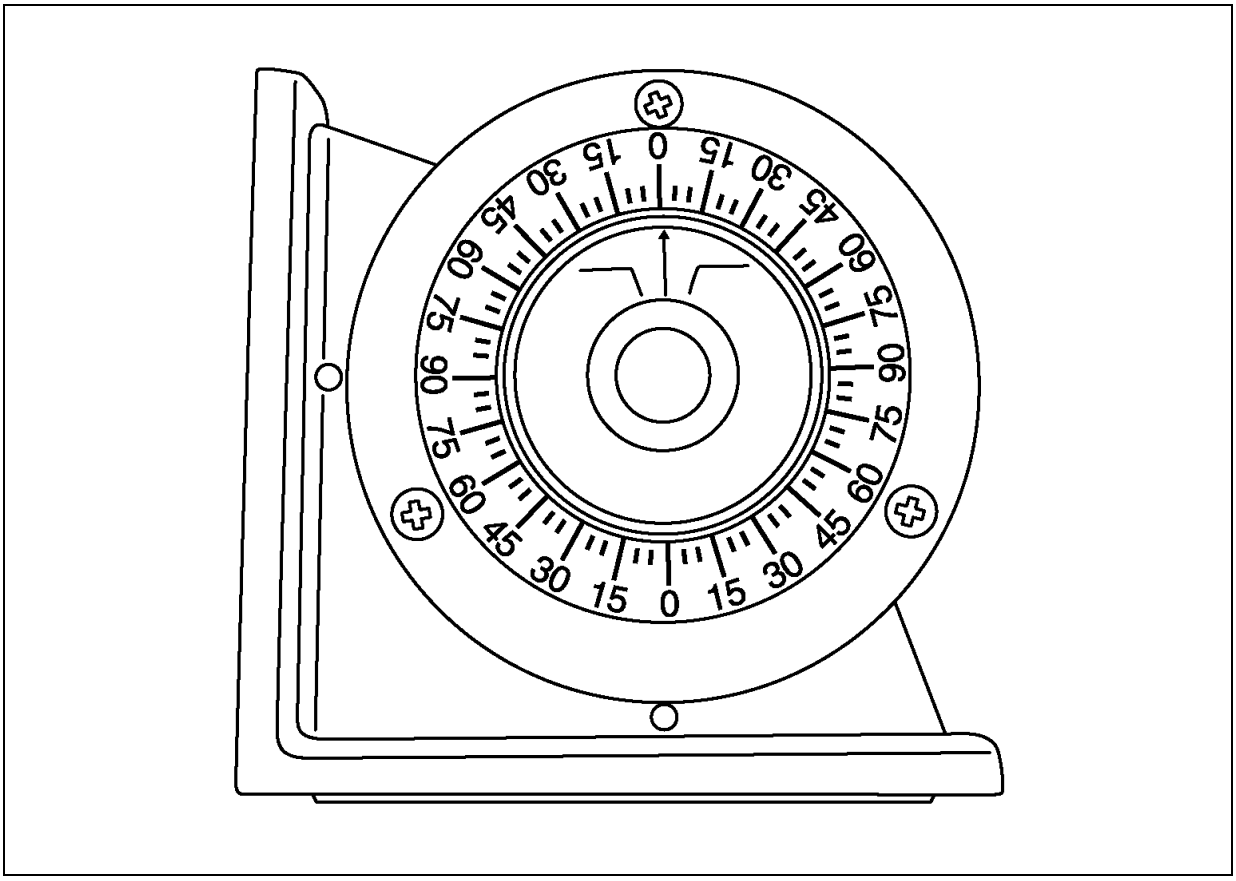
Check the items indicated by the "Self Diagnostic Result".

BASIC INSPECTION > ICC SENSOR INITIAL VERTICAL ALIGNMENT > REQUIRED TOOLS

The following tool is necessary to perform the ICC sensor initial vertical alignment:

- Small level or angle meter.

Fig 1: Identifying Angle Meter



Courtesy of NISSAN NORTH AMERICA, INC.

BASIC INSPECTION > ICC SENSOR INITIAL VERTICAL ALIGNMENT > PREPARATION

1. PREPARATION FOR ICC SENSOR INITIAL VERTICAL ALIGNMENT PROCEDURE

    1. Verify correct vehicle suspension height. Refer to TIRE .
    2. Repair or replace any damaged body components.
    3. Verify proper tire inflation pressures. Refer to WHEELARCH HEIGHT (UNLADEN * 1) .
    4. Remove any accumulations of mud, snow or ice from the vehicle underbody.
    5. Verify that there is no load in the vehicle (cargo or passenger).
    6. Place the vehicle on a known level horizontal surface such as a wheel or frame alignment rack to achieve satisfactory sensor vertical alignment results.

    Refer to ICC SENSOR INITIAL VERTICAL ALIGNMENT .

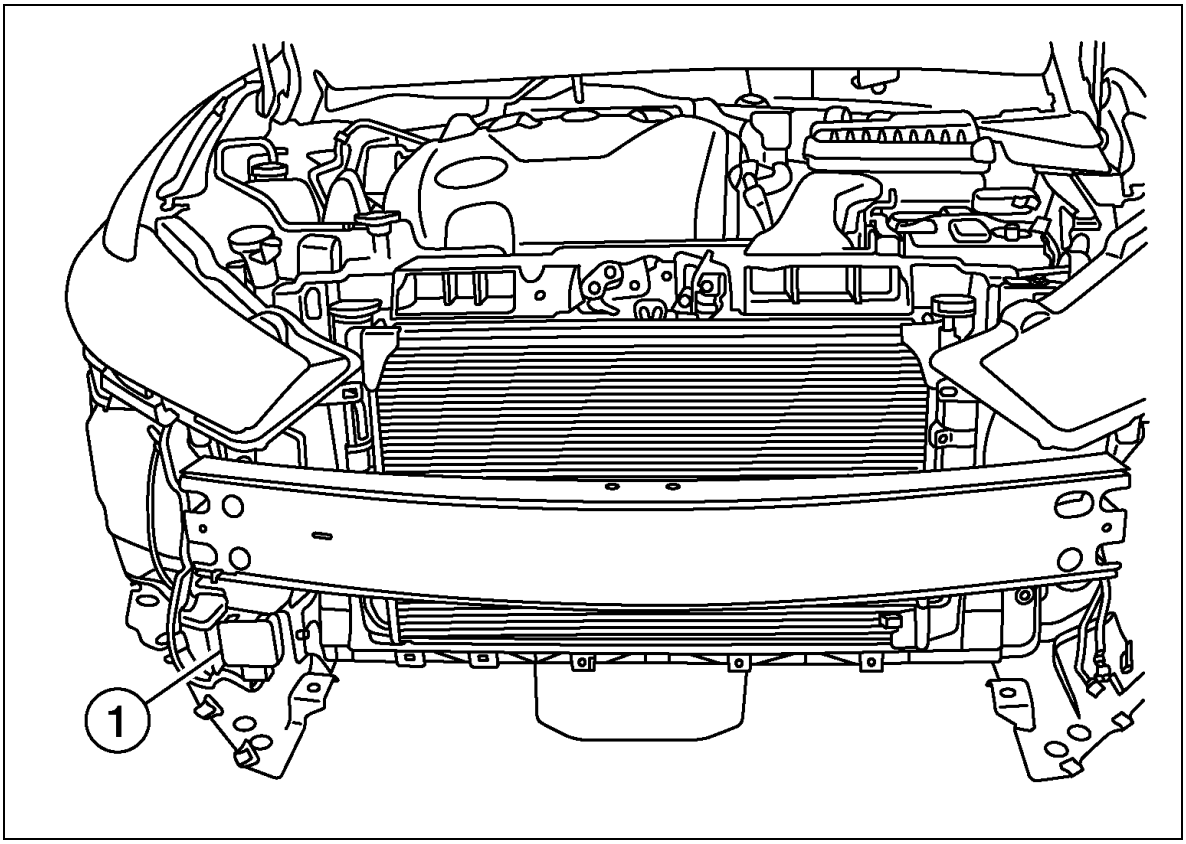
BASIC INSPECTION > ICC SENSOR INITIAL VERTICAL ALIGNMENT > ICC SENSOR INITIAL VERTICAL ALIGNMENT

NOTE:

The ICC sensor initial vertical alignment procedure must be performed anytime the ICC sensor is removed and reinstalled.

1. The ICC sensor (1) is located near the right front headlamp behind the front bumper fascia.

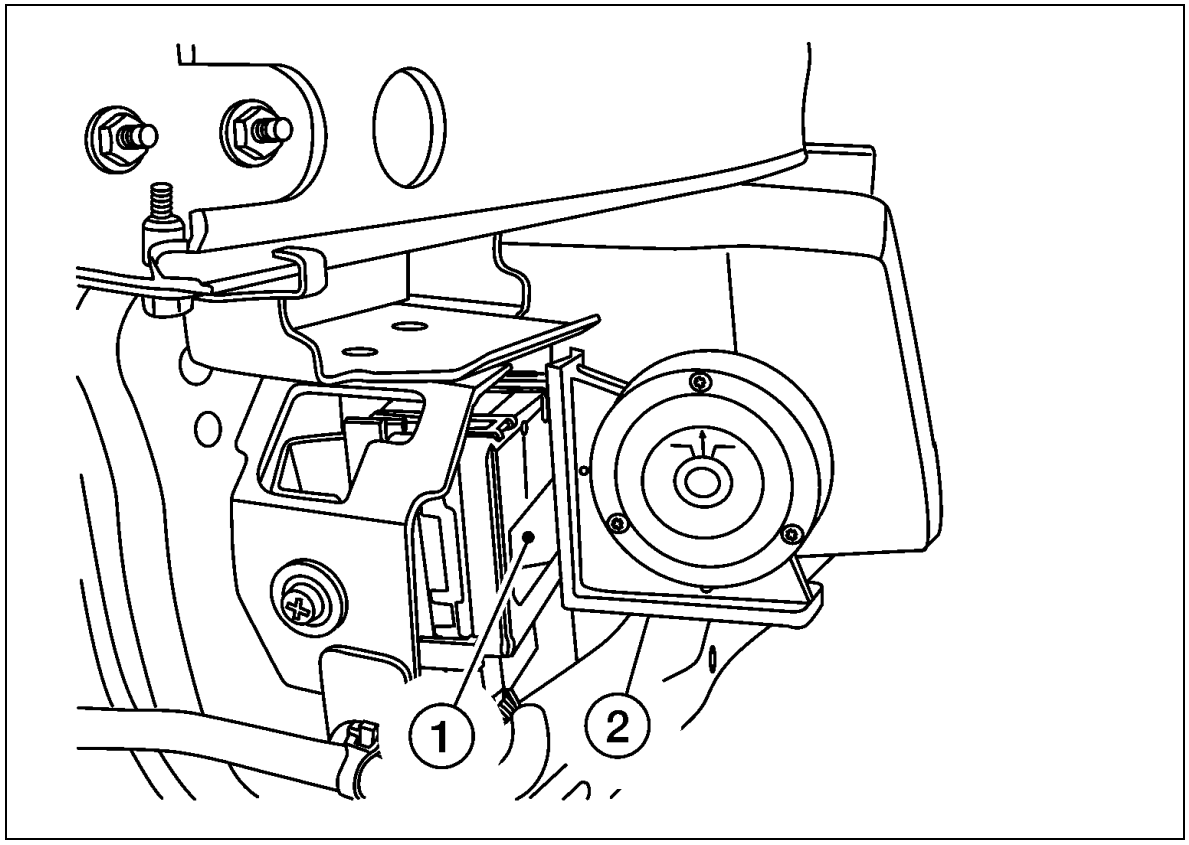
   Fig 1: Locating ICC Sensor



Courtesy of NISSAN NORTH AMERICA, INC.

2. Place the small level or angle meter (2) against the face of the ICC sensor (1).

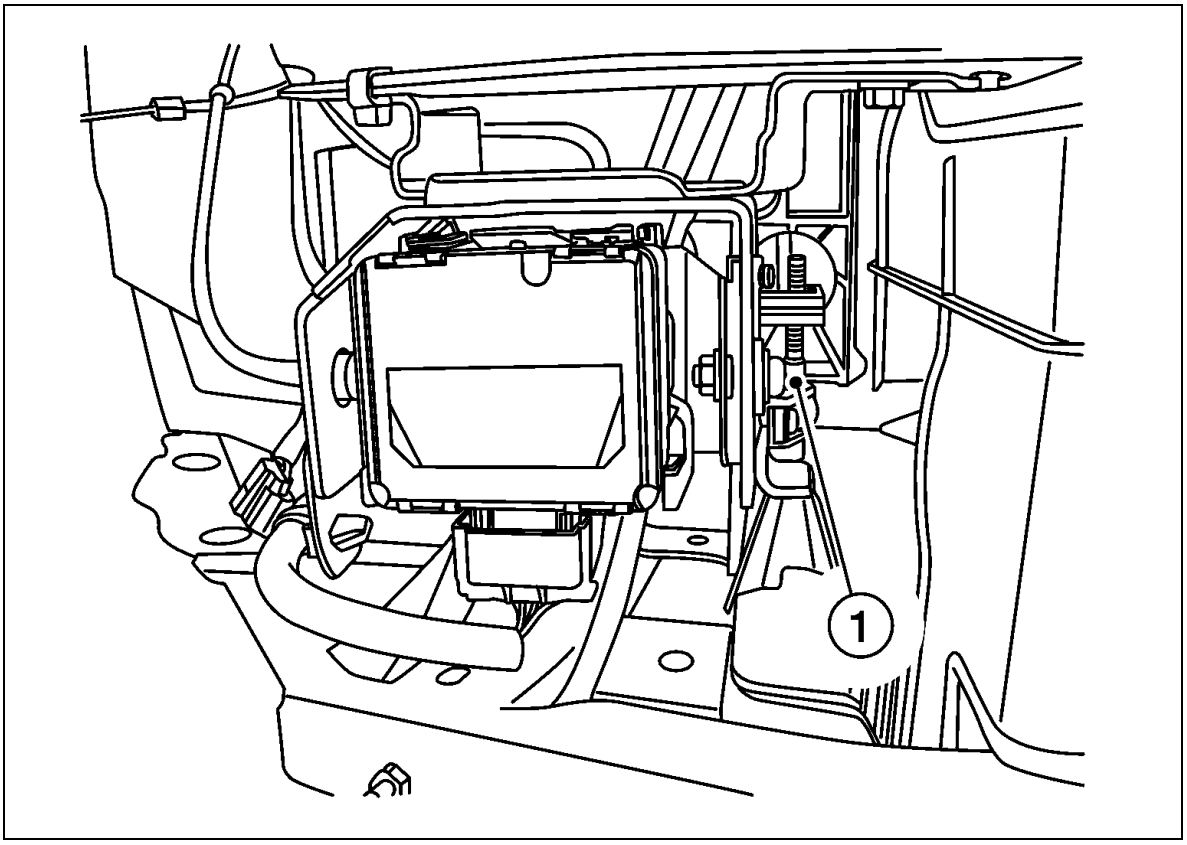
Fig 2: Placing Angle Meter On ICC Sensor



Courtesy of NISSAN NORTH AMERICA, INC.

3. Turn the ICC sensor adjustment screw (1) to level the sensor.

Fig 3: Locating ICC Sensor Angle Adjustment Screw



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4. Ensure the ICC sensor electrical connector located on the bottom of the sensor is connected.
5. Perform the ICC sensor alignment procedure. Refer to DESCRIPTION .

BASIC INSPECTION > ICC SENSOR ALIGNMENT > REQUIRED TOOLS

- ICC alignment kit 1-20-2721-1-IF in addition to one of the following:

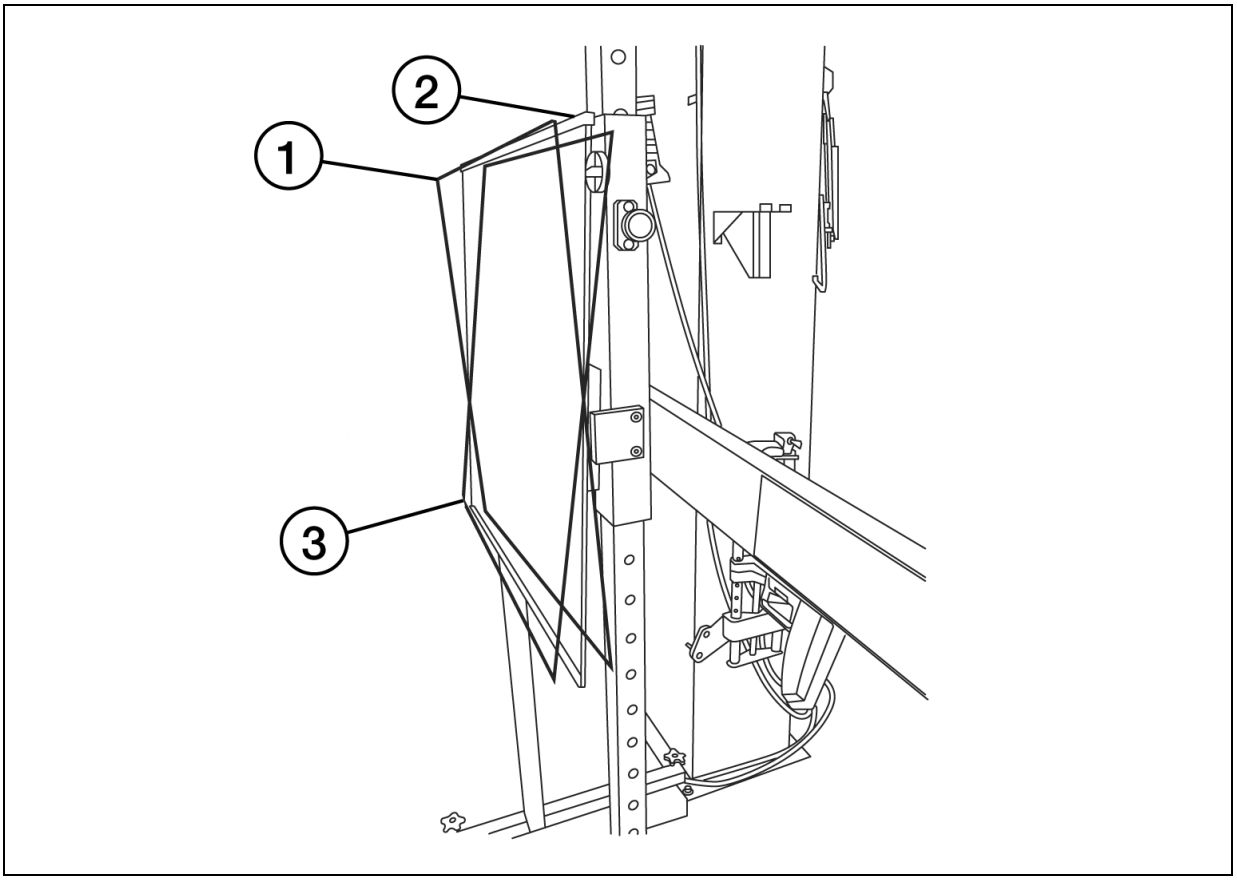
  a) Hunter self-centering wheel adapter (Hunter wheel alignment tool)

  b) Special Service Tool kit 1-20-2722-1-IF (kit SCA W/Tire Clamp-ICC Aiming)

The following ICC alignment kit 1-20-2721-1-IF is necessary to perform the ICC sensor alignment:

- ICC target board:

Fig 1: Identifying ICC Target Board Positions



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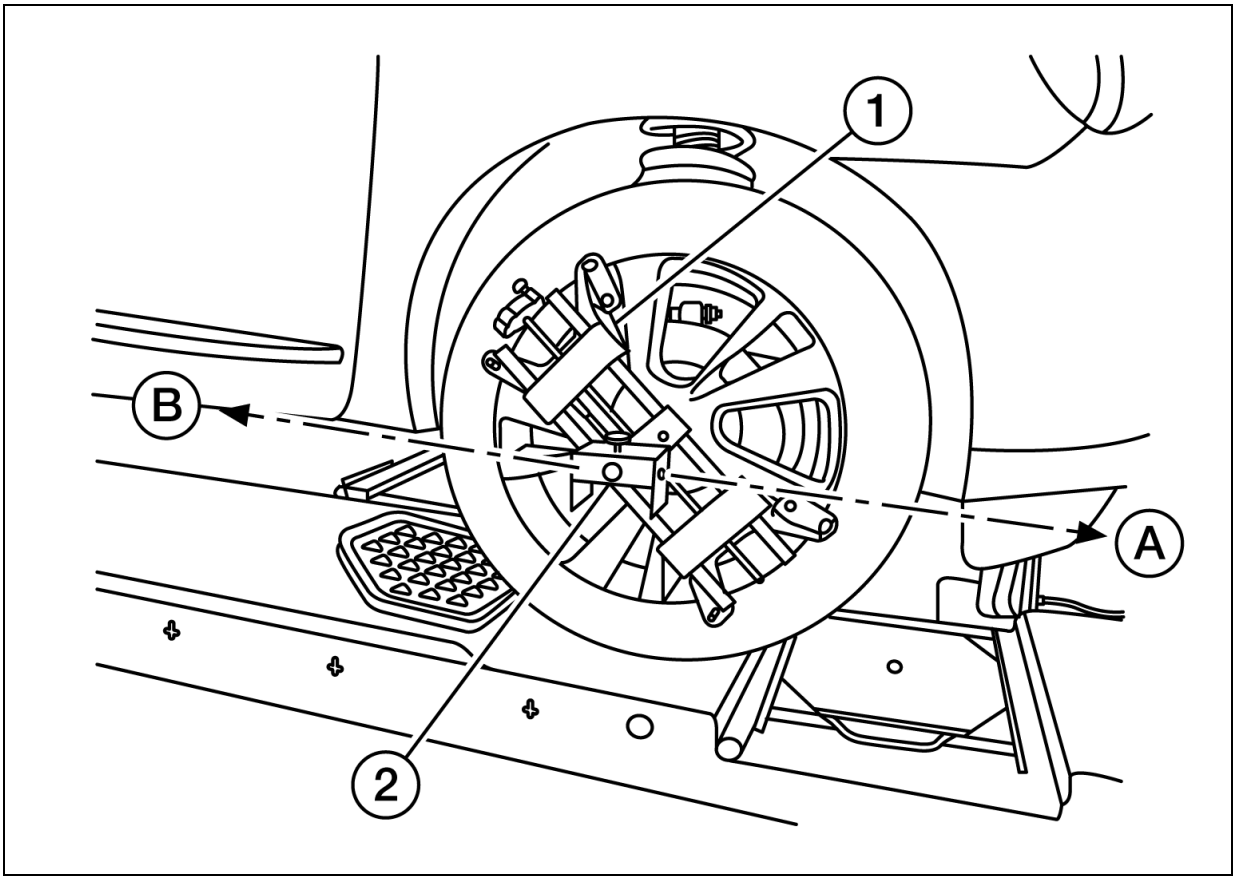
1. Position 1: with top tilted 2° toward vehicle (1).
2. Position 2: vertical (2).
3. Position 3: with top tilted 2° away from vehicle (3).

- Hunter self-centering wheel adapter (1) [shown with laser assembly (2) installed] (Hunter alignment rack head may be substituted).

Fig 2: Identifying Self-Centering Wheel Adapter And Laser Assembly



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NOTE:

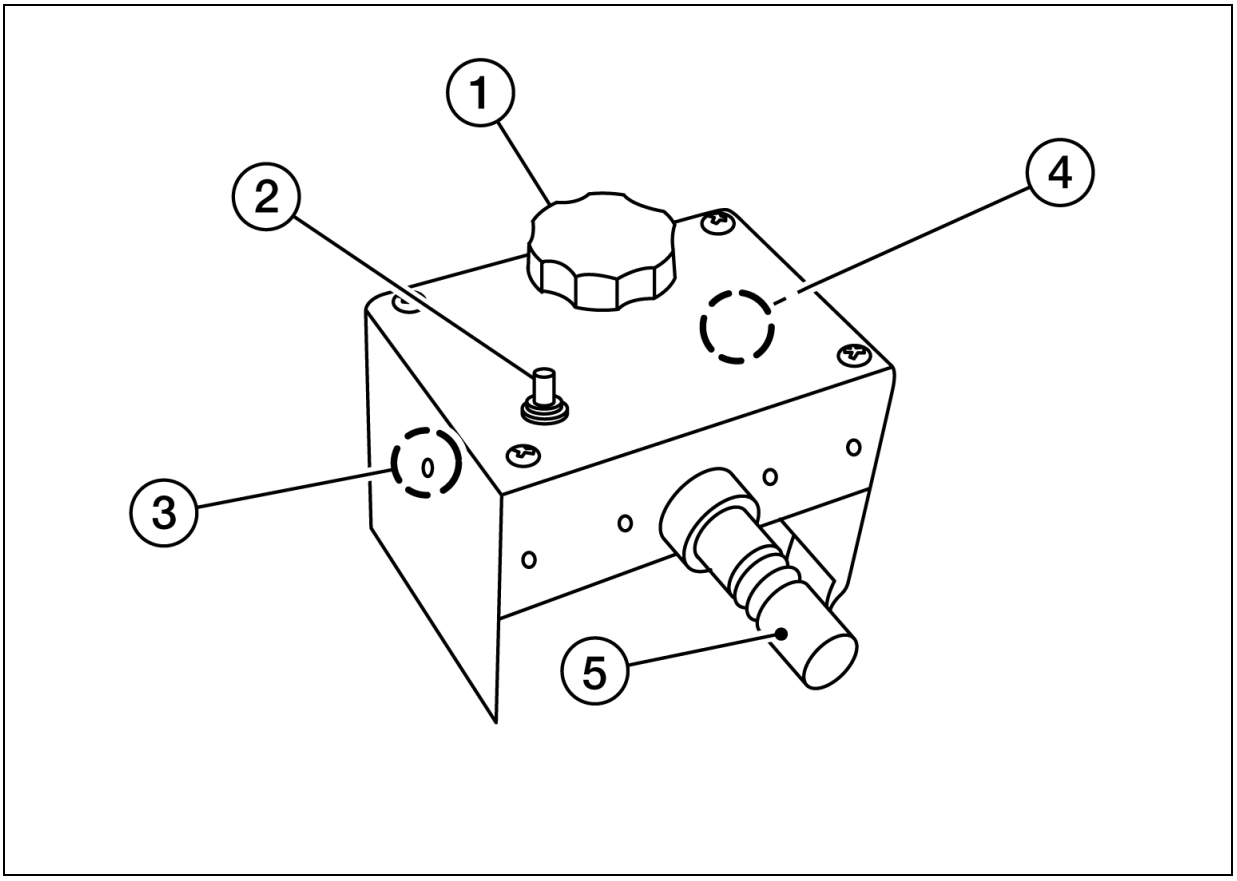
Retailers that are not equipped with a Hunter self-centering wheel adapter will require the following kit:

Part No. 1-20-2722-1-IF (kit SCA with Tire Clamp-ICC Aiming).

When the power switch is turned ON, the front laser (A) will be emitted toward the front ICC target board, and the rear laser signal (B) will be emitted toward the rear of the vehicle.

- Laser assembly (with bi-directional laser beam) as shown in the illustration.

Fig 3: Identifying Laser Assembly Related Components

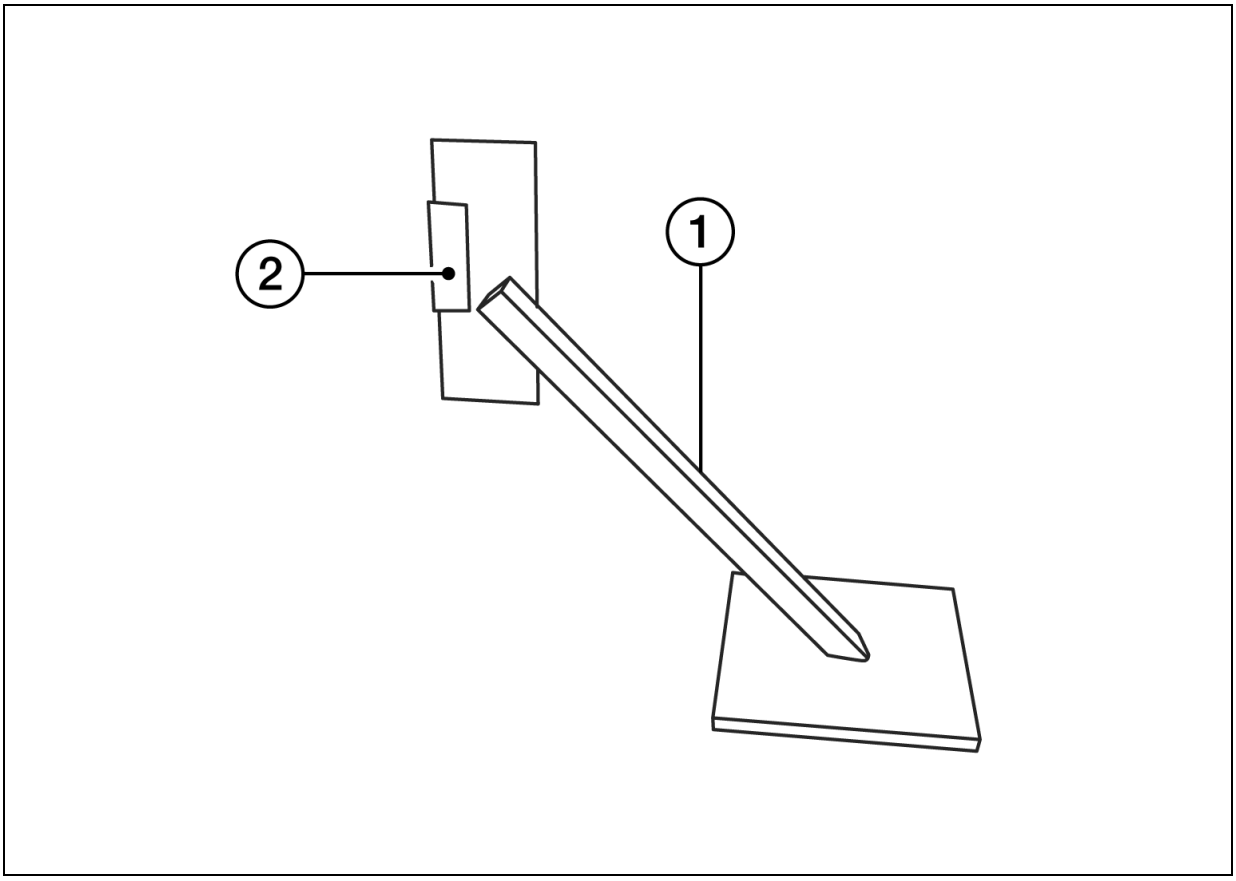


Courtesy of NISSAN NORTH AMERICA, INC.

1. Tightening knob (1)
2. Power ON/OFF button (2)
3. Front laser beam opening (3)
4. Rear laser beam opening (4)
5. Attaching shaft (5)

- Stationary target as shown in the illustration.

Fig 4: Identifying Stationary Target And Laser Signal Reception Plate



Courtesy of NISSAN NORTH AMERICA, INC.

1. Stationary target (1)
2. Laser signal reception plate (2)

- Distance chain (not shown).

BASIC INSPECTION > ICC SENSOR ALIGNMENT > PREPARATION

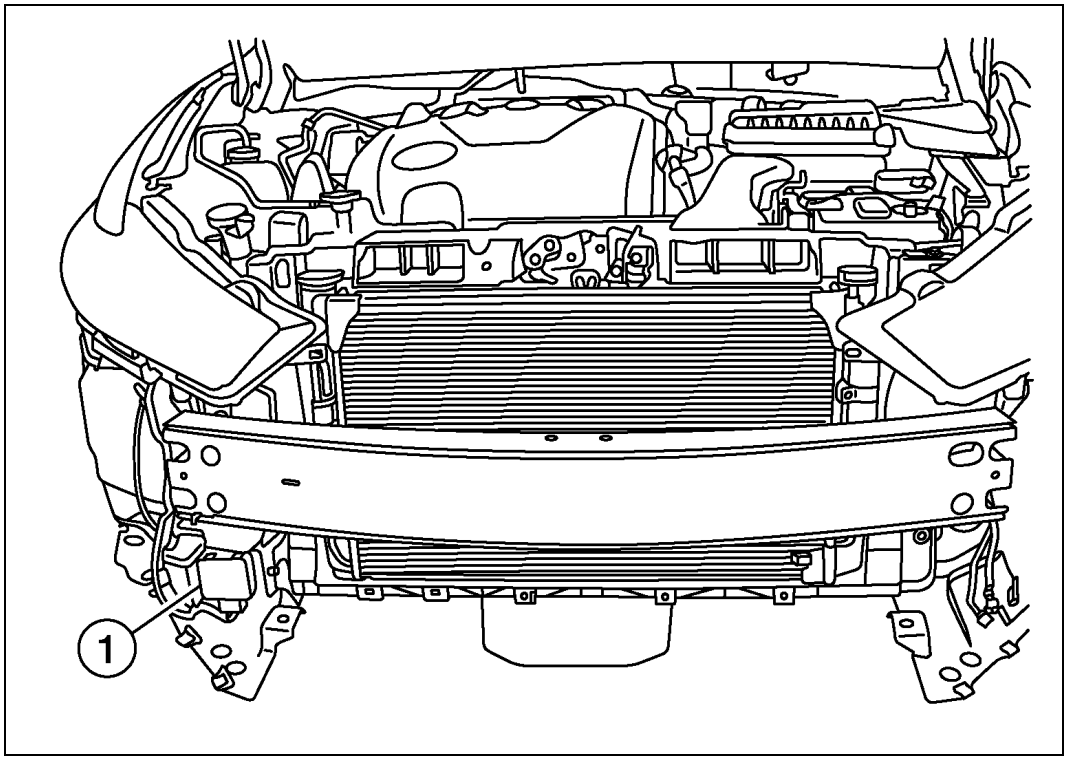
1. ADVANCE PREPARATION FOR ICC SENSOR ALIGNMENT PROCEDURE

    1. Adjust all tire pressure to the specified value.
    2. Empty the vehicle. (Remove any luggage from the passenger compartment, luggage room, etc.)
    3. Shift the selector lever to "P" position, and release the parking brake.
    4. Fully fill the fuel tank, and then check that the coolant and oils are filled to correct level.
    5. Clean off the front of the ICC sensor.

NOTE:

The ICC sensor is located behind the fascia and it is not exposed to the elements. Therefore, it should not require any cleaning.

Fig 1: Locating ICC Sensor



Courtesy of NISSAN NORTH AMERICA, INC.

1	: ICC sensor

Refer to VEHICLE SET UP .

BASIC INSPECTION > ICC SENSOR ALIGNMENT > VEHICLE SET UP > DESCRIPTION

Accurate adjustment of the ICC sensor alignment requires that the ICC target board, wheel adapter, laser assembly, and stationary target be properly positioned.

CAUTION:

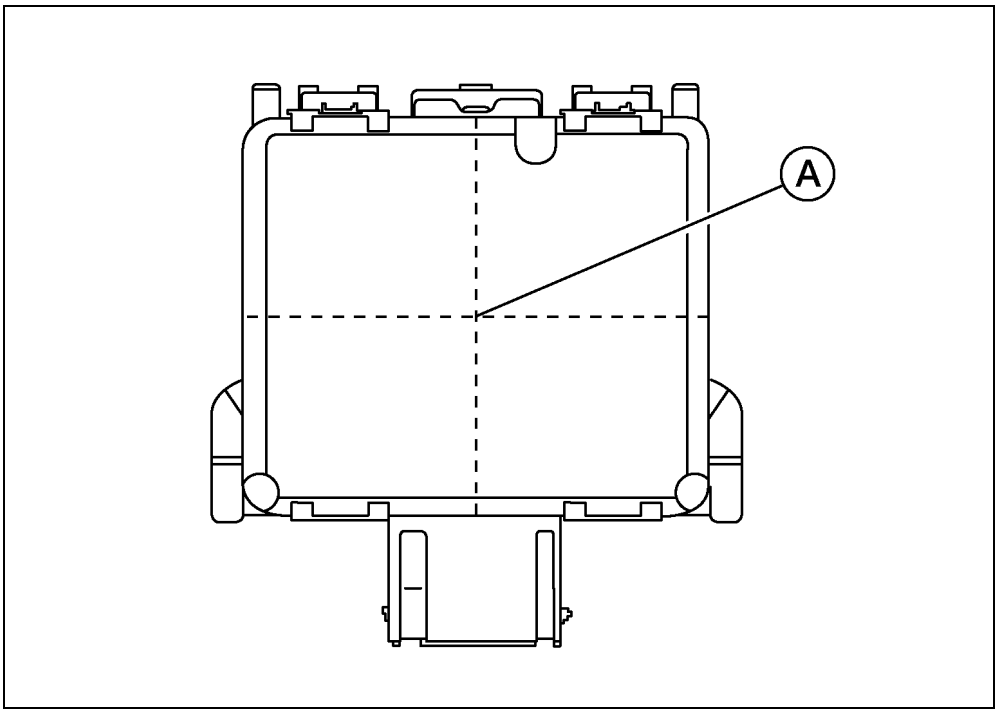
If the ICC sensor alignment is adjusted with the ICC target board, wheel adapter, laser assembly, or stationary target in the incorrect position, the ICC system will not function properly or the alignment procedure may not be completed successfully.

1. PREPOSITION TARGET BOARD

NOTE:

1. *The center of the sensor wave axis (A) is located at the center of the front lens.*

Fig 1: Center Of The Sensor Wave Axis



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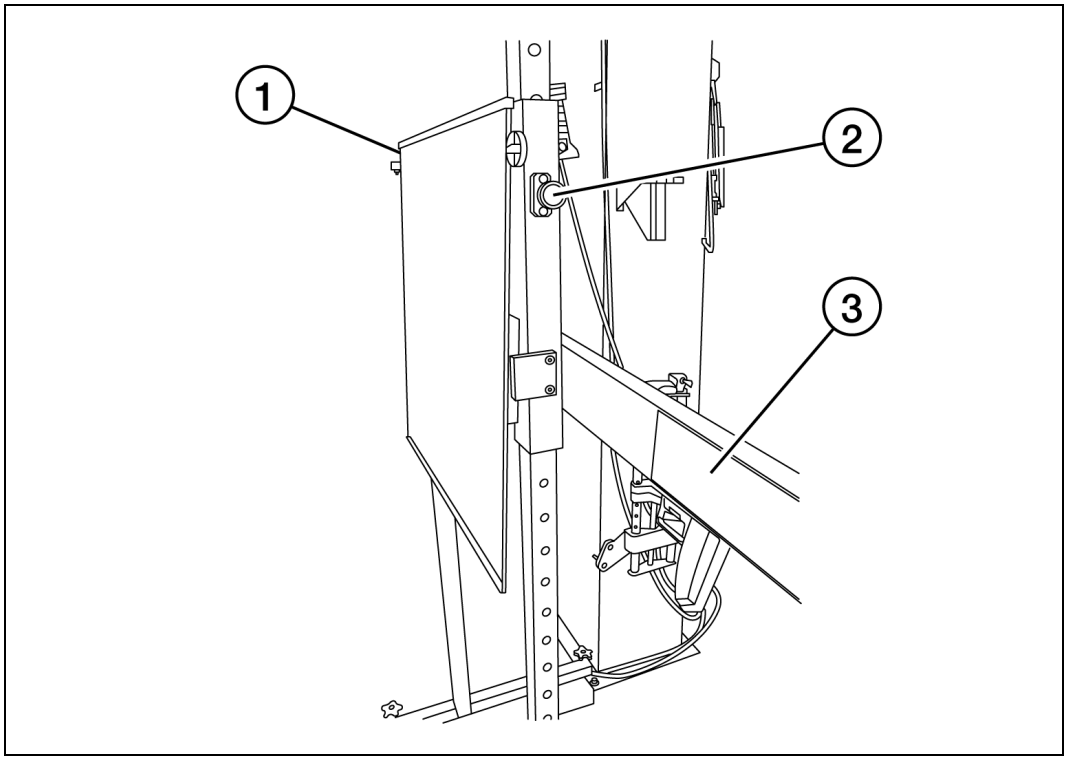
2. *Initial ICC target board setting must be in the center position.*

1. Position the ICC target board in front facing the right front side of the vehicle:

Fig 2: Adjusting Height Of ICC Target Board Using Adjustable Nut

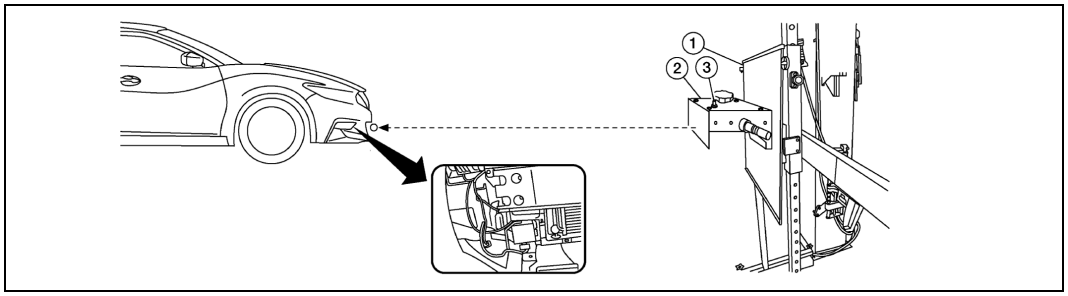


Courtesy of NISSAN NORTH AMERICA, INC.

1. Using the full length of the supplied chain for distance, place the marked center of the ICC target board (1) 1200 mm (47.2 in.) +- 625 mm (24.6 in) away facing the ICC sensor.
2. Adjust the height of the ICC target board using the adjustable nut (2) to achieve the proper height. The up/down tolerance is +- 80 mm (3.15 in).
3. Adjust the ICC target board lateral position aligning the marked center of the board horizontally with the center of the ICC sensor front lens. The right/left tolerance is +- 80 mm (3.15 in).

2. Extend the machined arm of the ICC target board exposing the reflective surface (3) to the right front side of the vehicle.
3. Place one side of the laser assembly (2) flush against the center of the ICC target board (1) to assist in the positioning.

Fig 3: Placing Laser Assembly Flush Against The Center Of ICC Target Board



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4. Turn the laser assembly ON (3) allowing the laser beam to emit through the opening of the laser assembly toward the center of the ICC sensor.
5. Move the ICC target board (1) as necessary so that center of ICC target board aligns with center of ICC sensor.
6. Turn the laser assembly OFF when done.

Are you using Hunter alignment equipment?

YES

Refer to Hunter's equipment instructions for complete vehicle set up and ICC target board setting. Then, refer to ICC SENSOR ADJUSTMENT .

NO

GO TO STEP 2.

2. INSTALLING LASER ASSEMBLY

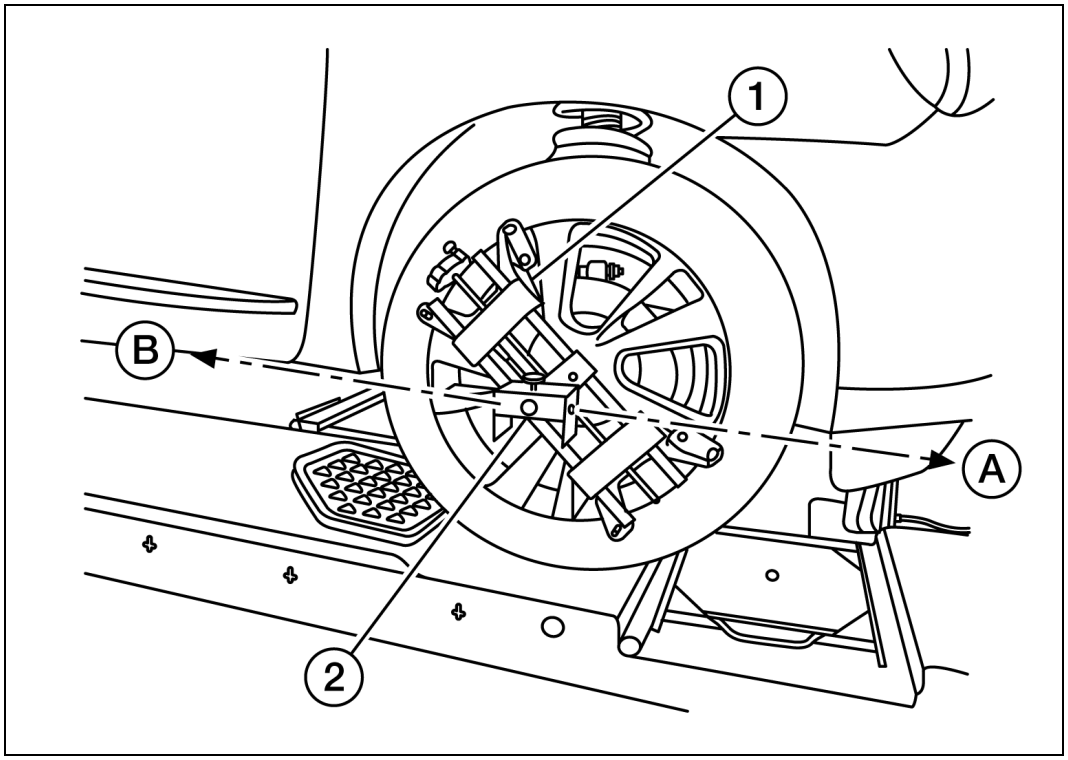
NOTE:

1. Ensure the steering wheel is positioned in the center straight-forward position.

2. Ensure all four vehicle wheels do not have any physical damage.

1. Install the wheel adapter (1) on the right front wheel.

Fig 4: Identifying Self-Centering Wheel Adapter And Laser Assembly



Courtesy of NISSAN NORTH AMERICA, INC.

2. Mount the laser assembly (2) to the wheel adapter (1) as shown in the figure.

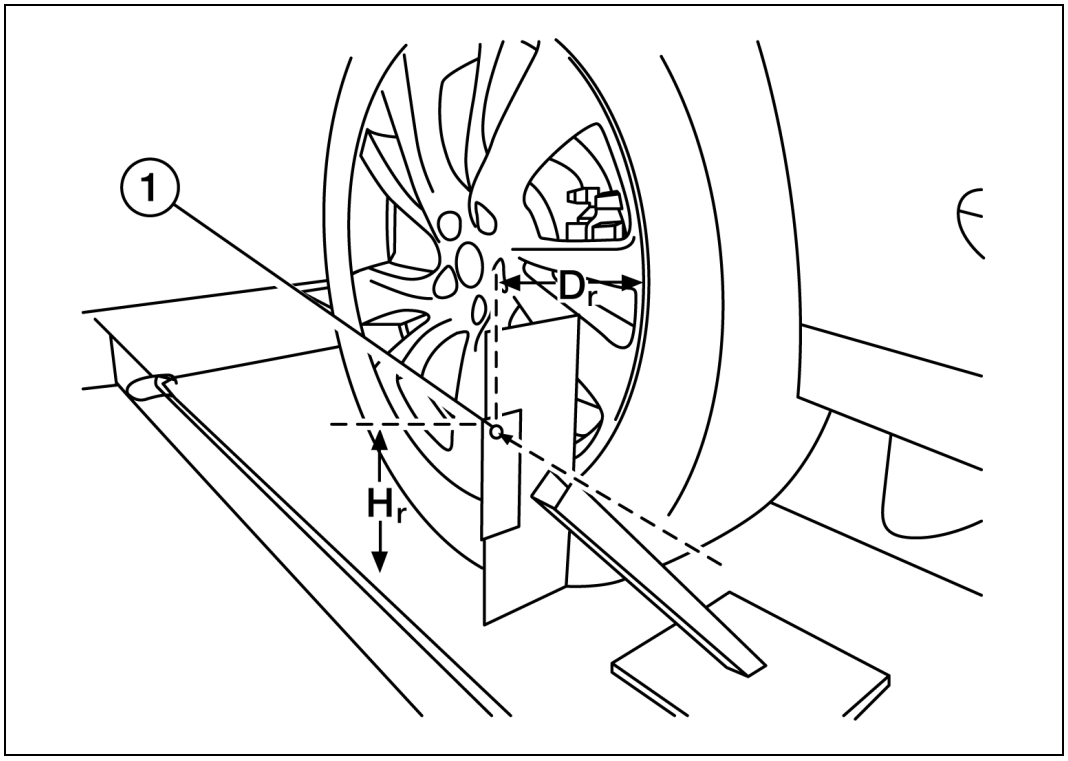
> *NOTE:*
>
> *When the power switch is turned ON, the front laser signal (A) will be emitted toward the front ICC target board, and the rear laser signal (B) will be emitted toward the rear of the vehicle.*

GO TO STEP 3.

3. SETTING UP STATIONARY TARGET

1. Place the stationary target next to the right rear tire as shown in the figure.

   Fig 5: Placing Stationary Target Next To Right Rear Tire



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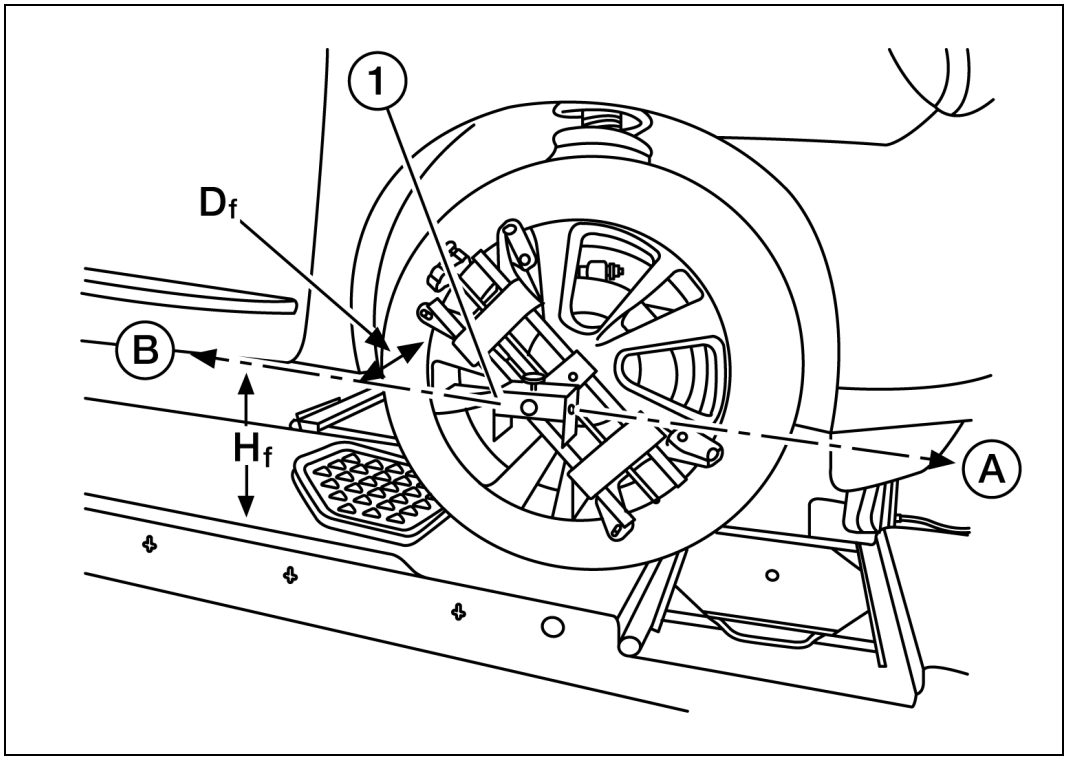
2. Turn the laser assembly ON allowing the laser beam to be emitted through the front and rear laser assembly openings.
3. Measure and record the distance (D_r) between the edge of the right rear wheel and the laser beam (1) on the stationary target (horizontal line).
4. Measure and record the height (H_r) between the laser beam (1) on the stationary target and ground level (vertical line).
5. Measure and record the distance (D_f) between the edge of the right front wheel and the laser beam signal/opening (1) on the laser assembly (horizontal line).

Fig 6: Measuring Height Between Laser Beam Signal/Opening On Laser Assembly And Ground Level



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6. Measure and record the height (H_f) between the laser beam signal/opening (1) on the laser assembly and ground level (vertical line).

> *NOTE:*
>
> 1. *Horizontal adjustment [front distance (D_f) and rear distance (D_r)] is accomplished by slowly turning the steering wheel until the two distances are the same.*
> 2. *Vertical adjustment [front height (H_f) and rear height (H_r)] is accomplished by rotating the laser assembly around its axis until the two heights are the same.*
> 3. *Directional arrows (A) and (B) are shown to illustrate the direction of the laser assembly beams.*

7. Adjust laser beam as necessary until the two distances match and the two heights match.

> *NOTE:*
>
> *You will have to verify both horizontal and vertical adjustments anytime one adjustment is made.*

Refer to SETTING THE ICC TARGET BOARD .

BASIC INSPECTION > ICC SENSOR ALIGNMENT > SETTING THE ICC TARGET BOARD > DESCRIPTION

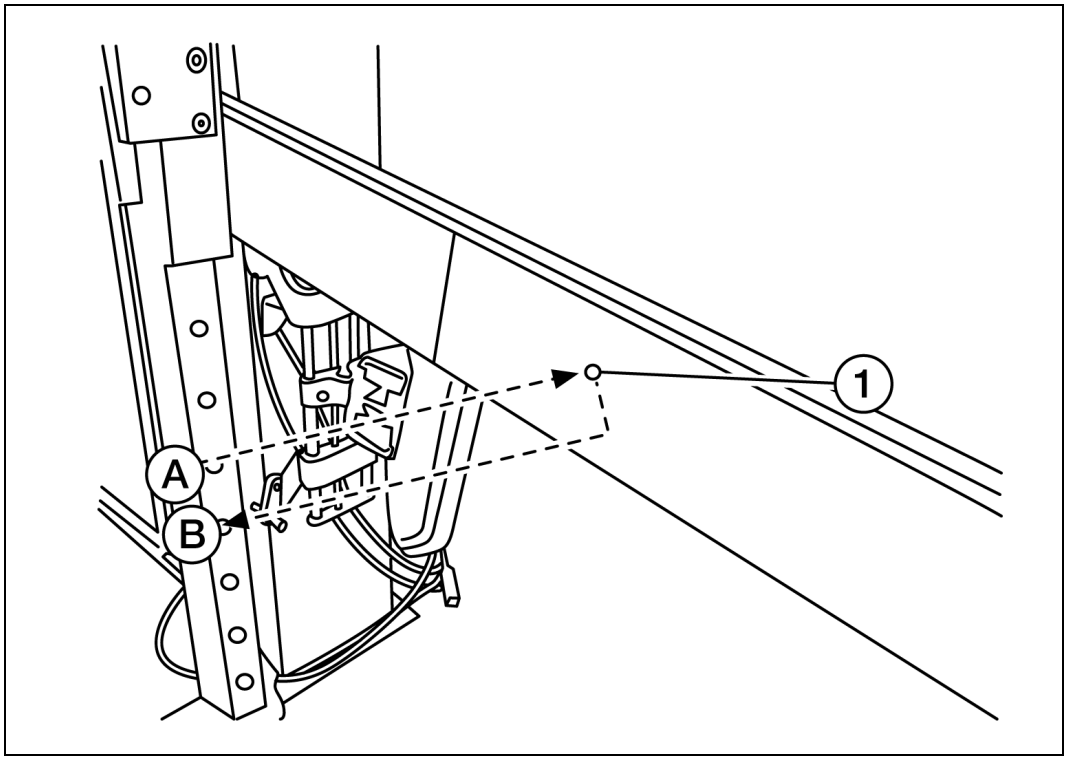
Accurate adjustment of the ICC sensor alignment requires that the ICC target board be accurately positioned.

> ⚠ *CAUTION:*
>
> *If the ICC sensor alignment is adjusted with the ICC target board in the incorrect position, the ICC system will not function properly or the alignment procedure may not be completed successfully.*

1. ICC TARGET BOARD FINAL SETTING

    1. With the ICC target board arm extended, the laser beam (1) emitted by the laser assembly (A) will be reflected back (B) toward the laser assembly.

        Fig 1: Setting ICC Target Board

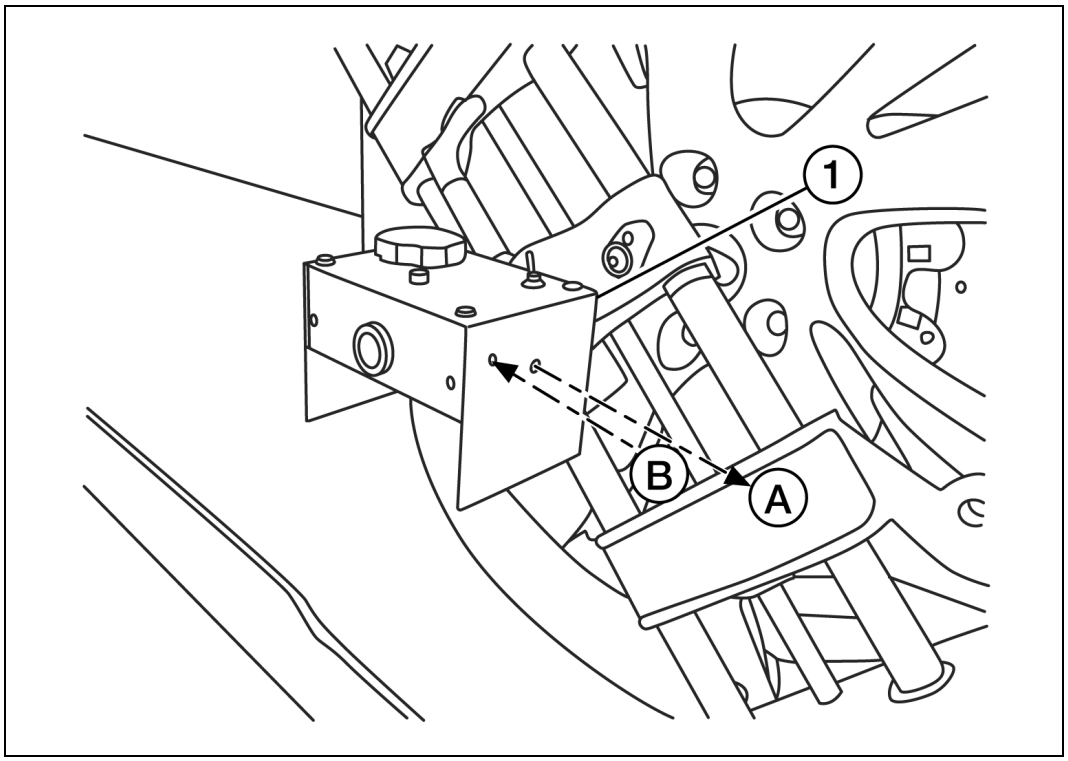
        Courtesy of NISSAN NORTH AMERICA, INC.

> 📝 *NOTE:*

When adjusted properly, reflected laser beam (B) must align with emitted laser beam (A) and the two laser beams will be seen as one.

2. Rotate the ICC target board to achieve the necessary horizontal adjustment.
3. Adjust the ICC target board leveling screws to achieve the necessary vertical adjustment.
4. The figure shown illustrates the laser beam (A) emitted by the laser assembly (1) and its reflection (B) off the ICC target board arm.

Fig 2: Identifying Laser Beam Reflection From ICC Target Board Arm



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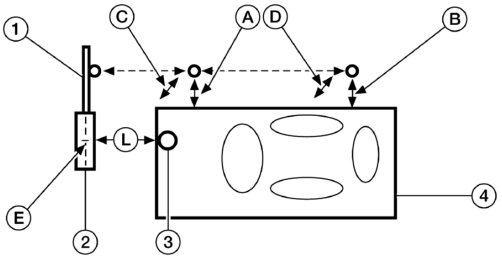
GO TO STEP 2.

2. CHECK THE POSITION OF THE ICC TARGET BOARD

Do not place anything other than the ICC target board in the space shown in front of the vehicle (view from top).

Fig 3: Identifying ICC Target Board Area



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1.	ICC target board arm	2.	ICC target board	3.	ICC sensor
4.	Vehicle	A .	Distance between front wheel and laser beam ($D_{f)}$	B.	Distance between rear wheel and laser beam ($D_{r)}$
C.	Height between front laser beam and ground ($H_{f)}$	D.	Height between rear laser beam and ground ($H_{r)}$	E.	ICC target board center position (Position 2)
L.	1 - 1.5 m (39.3 - 59 in.)				

Refer to ICC SENSOR ADJUSTMENT .

BASIC INSPECTION > ICC SENSOR ALIGNMENT > ICC SENSOR ADJUSTMENT > DESCRIPTION

- Adjust the ICC sensor alignment in a vertical direction with CONSULT as per the following.
- The ICC sensor alignment in the horizontal direction is performed automatically and cannot be adjusted manually.

⚠ *CAUTION:*

- *Never look directly into or block the ICC sensor source (between the front fascia and ICC target board) during the ICC sensor alignment procedure.*
- *Perform all necessary work for ICC sensor alignment procedure until the adjustment completes as shown in the procedure. If the procedure is started but not completed, the ICC system is rendered inoperable.*

1. SET CONSULT TO THE ICC SENSOR ALIGNMENT MODE

    1. Place ignition switch in the ON position.

2. Connect CONSULT and select "LASER/RADAR" then "Work Support".
3. Select "RADAR Alignment".
4. Select "Start" after the "RADAR Alignment" screen is displayed.

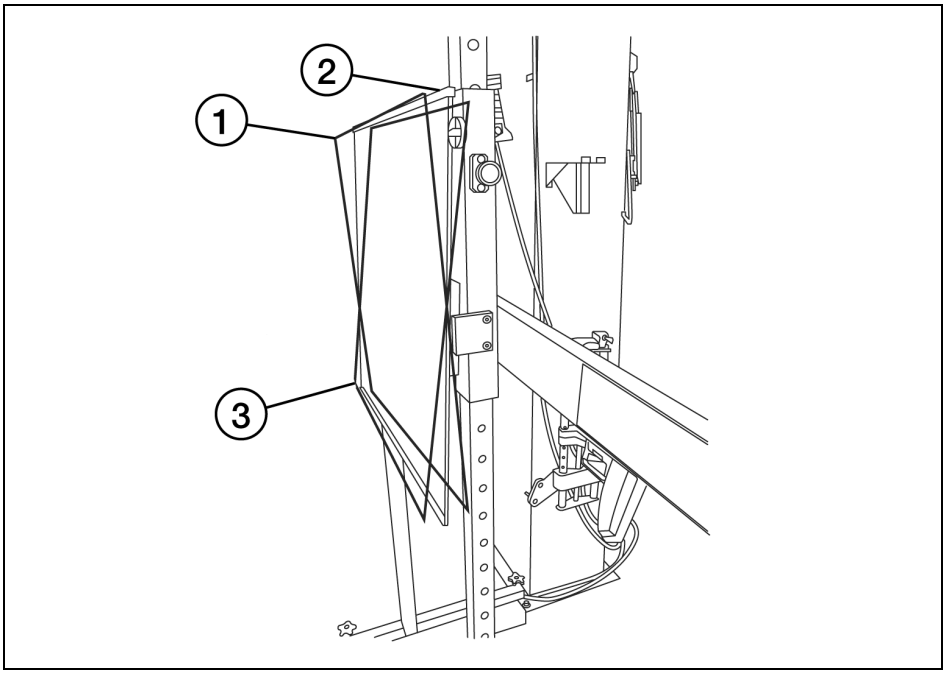
> *NOTE:*
>
> *If the adjustment screen does not appear or an error appears within approximately 10 seconds after "RADAR Alignment" is selected, the following causes are possible:*
>
> 1. *The ICC target board is not installed in the correct position.*
> 2. *Adequate space is not secured around the ICC target board.*
> 3. *The ICC sensor alignment procedure exceeds its proper installation range:*
>   1. *Deformation of vehicle body*
>   2. *Deformation of unit*
>   3. *Deformation of bracket*
> 4. *The area is not suitable for the adjustment work.*
> 5. *Right front side of fascia (ICC sensor view) is not clean.*
> 6. *The ICC system warning lamp illuminates.*
> 7. *Battery voltage is low.*
> 8. *The extended arm and mirror are not stationary.*

GO TO STEP 2.

2. ICC SENSOR ALIGNMENT

1. Once the ICC sensor alignment procedure is started, you will be prompted by CONSULT for the next instruction.
2. Follow all the instructions exactly as requested by CONSULT which will include the following:
    1. Adjust ICC target board to position 1 (top tilted toward vehicle).

Fig 1: Identifying ICC Target Board Positions

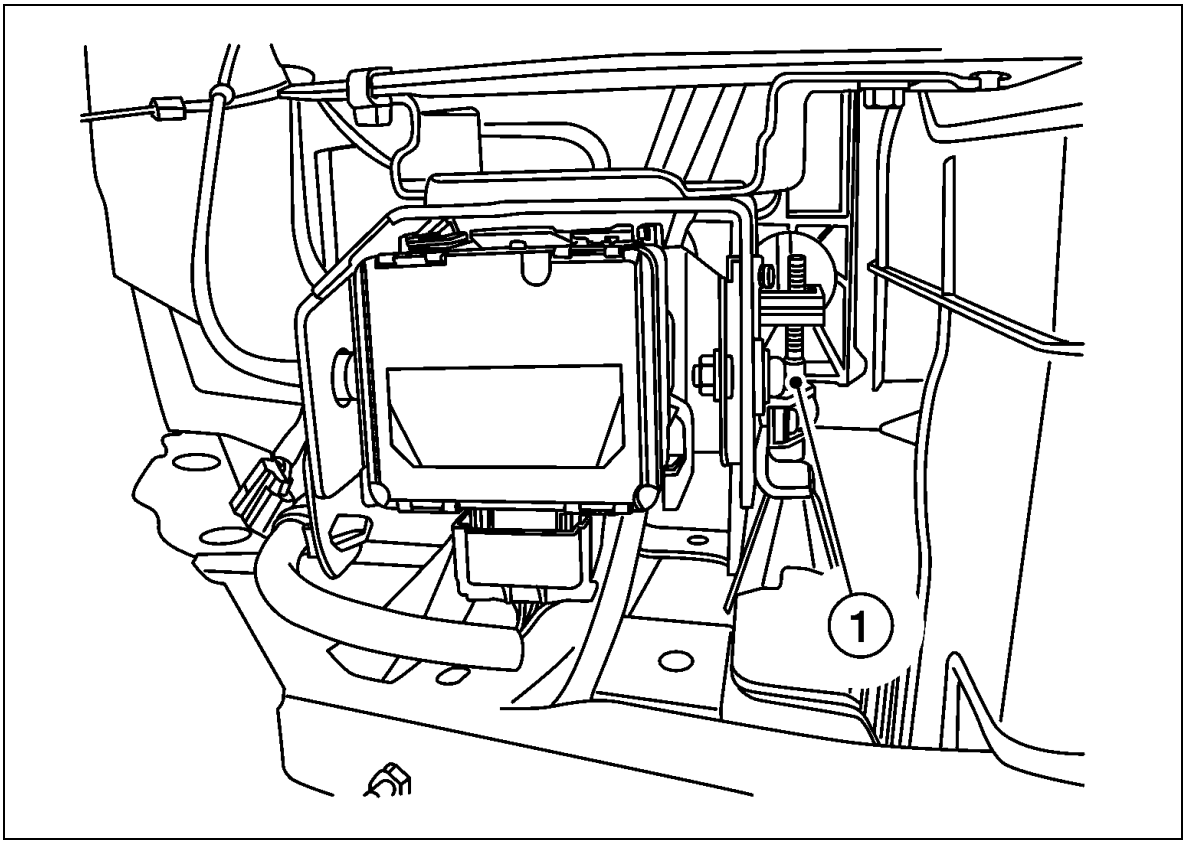


Courtesy of NISSAN NORTH AMERICA, INC.

2. Adjust ICC target board to position 2 (vertical position).
3. Adjust ICC target board to position 3 (top tilted away from vehicle)

3. You will be prompted with specific instructions to perform physical adjustment to the sensor which may include turning the adjustment screw (1) for a certain number of turns in increments of 0.25 in either direction.

Fig 2: Locating ICC Sensor Angle Adjustment Screw



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NOTE:

CONSULT is not live and will not automatically update while turning the tool.

CAUTION:

Be careful not to cover the right front side of the fascia (ICC sensor view) with a hand or any other body part during adjustment.

GO TO STEP 3.

3. ICC SENSOR ALIGNMENT CONFIRMATION

    1. When the "U/D CORRECT" value is executed and the "ADJ VALUE" has been performed, select "End".
    2. When "COMPLETED THE VERTICAL AIMING OF LASER BEAM" display appears, select "End".

> ⚠ *CAUTION:*
>
> *Always check that the value of "U/D CORRECT" remains accurate (within specification) when the ICC sensor is left alone for at least 2 seconds.*

3. Check that "ADJUSTING AUTOMATIC HORIZONTAL LASER BEAM AIMING" is displayed and wait for a short period of time (Maximum: Approx. 10 seconds).
4. Check that "Normally Completed" is displayed, and select "End" to end "RADAR Alignment".

> ⚠ *CAUTION:*
>
> *Once "RADAR Alignment" is started with CONSULT, always continue the work until the ICC sensor alignment is completed successfully. If the job is stopped midway, the ICC sensor alignment is not completed and the ICC system is rendered inoperative.*

5. Confirm proper ICC sensor alignment by following CONSULT steps until it shows "ADJ VALUE" to be 0.00 turn.

Alignment End.