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Model Year Start: 2014	Model: GX460	Prod Date Range: [08/2013 -]
Title: PARK ASSIST / MONITORING; PARKING ASSIST MONITOR SYSTEM: CALIBRATION; 2014 MY GX460 [08/2013 -]		

CALIBRATION

1. ADJUST PARKING ASSIST MONITOR SYSTEM

- (a) This parking assist monitor system can be set from the diagnostic screen of the multi-display assembly.
- (b) If the following operations are performed, it is necessary to perform adjustments and checks on the diagnostic screen.

PART NAME	OPERATION	ADJUSTMENT ITEM	PROCEED TO
Spiral with sensor cable sub-assembly	<ul style="list-style-type: none"> Removal and installation of the spiral with sensor cable sub-assembly Removal and installation of the connector of the spiral with sensor cable sub-assembly 	Steering angle neutral point (Initialize parking assist monitor system)	INFO
		Steering angle setting	Procedure 2
	Replacement	Steering angle neutral point (Initialize parking assist monitor system)	INFO
		Steering angle setting	Procedure 2
Multi-media module receiver assembly	Replacement	DCM activation	INFO
Parking assist ECU	Replacement	Parking assist ECU initialization	Procedure 1
Suspension, tires, etc.	The vehicle height changes because of suspension or tire replacement	Rear television camera optical axis (Back camera position setting)	Procedure 3
		Side television camera optical axis (Side camera position setting)	INFO
Rear television camera assembly	<ul style="list-style-type: none"> Replacement Installation angle of the rear television camera changes because of the removal and installation of the rear television camera, etc. 	Rear television camera optical axis (Back camera position setting)	Procedure 3

NOTICE:

After the engine switch is turned off, the multi-media module receiver assembly requires approximately a minute to record various types of memory and settings. As a result, after turning the engine switch

off, wait a minute or more before disconnecting the cable from the negative (-) battery terminal.

HINT:

The adjustment values stored while performing parking assist monitor system calibration are stored in the parking assist ECU.

2. PARKING ASSIST ECU INITIALIZATION (Procedure 1)

- Be sure to check for DTCs before performing this procedure INFO.
- Illustrations may differ from the actual vehicle screen depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle screen.

(a) Preparation for adjustment

- (1) Park the vehicle with the steering wheel centered.
- (2) Set a target bar for optical axis adjustment of the rear television camera assembly.

HINT:

Only when adjusting the optical axis of the camera, create a target bar for adjustment.

Dimension:

AREA	SPECIFICATION
A	965 to 985 mm (3.17 to 3.23 ft.)
B	1995 to 2005 mm (6.55 to 6.58 ft.)

Text in Illustration

*a	Vehicle Center
*b	Target Bar for Back Camera Adjustment
*c	Vehicle End
*d	Front Side

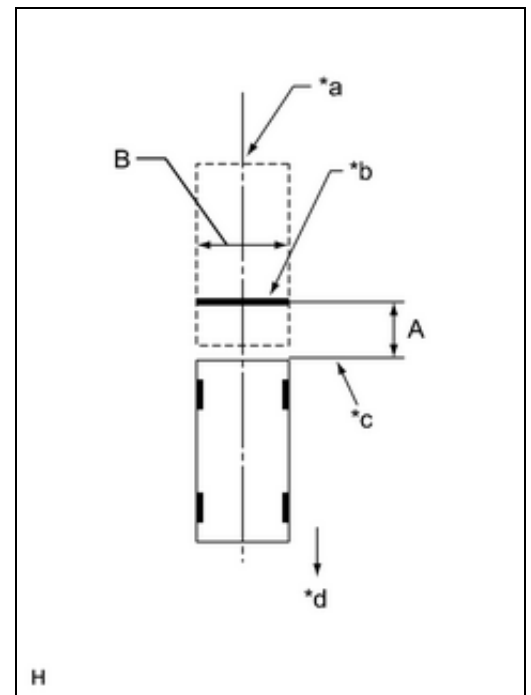
HINT:

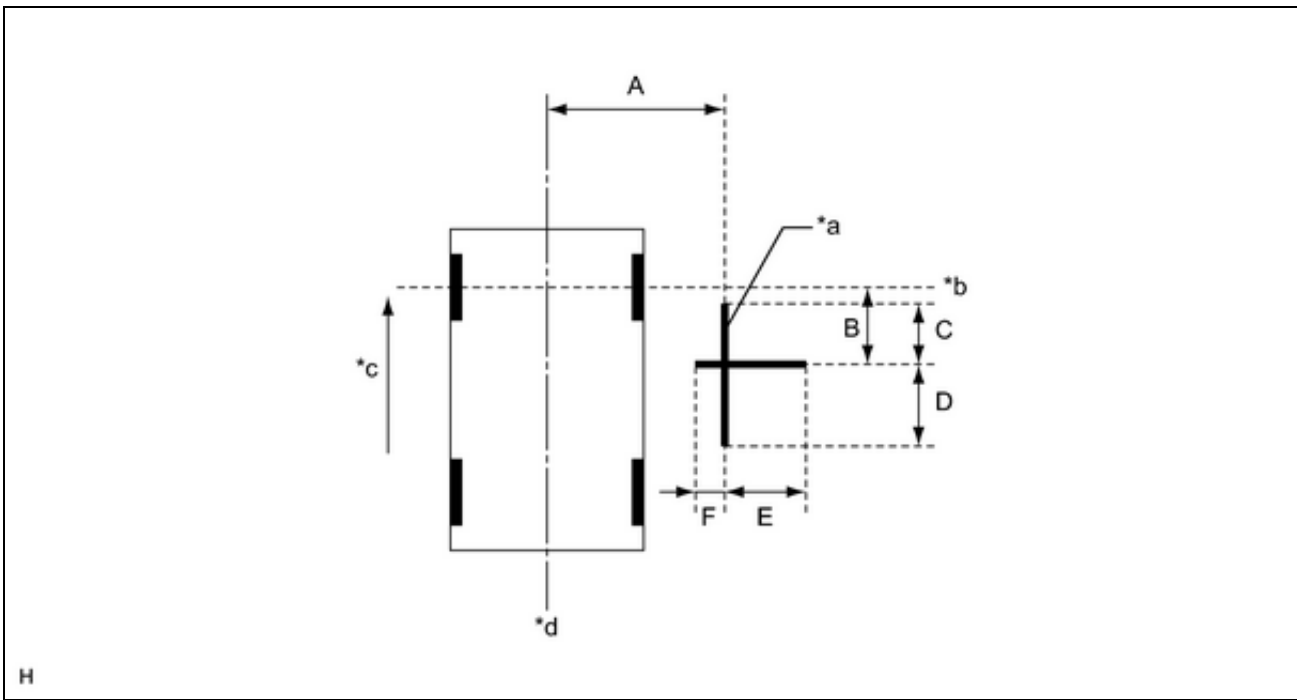
- Set a piece of tape on the ground as the target bar for adjustment. Its width and length are 20 to 30 mm (0.787 to 1.18 in.) and 1995 to 2005 mm (6.55 to 6.58 ft.), respectively. Check the color on the multi-media module receiver assembly and choose a tape color which can be easily seen.
- Before parking the vehicle, be sure to move the vehicle forward and in reverse to check that the tires are facing straight ahead with the steering wheel centered.
- Check that the back door is fully closed.

(3) Set a target bar for optical axis adjustment of the side television camera.

HINT:

Only when adjusting the optical axis of the camera, create a target bar for adjustment.





Text in Illustration

*a	Target Bar for Side Camera Adjustment	*b	Front Wheel Axis
*c	Front Side	*d	Vehicle Center

Dimension:

A	B	C	D	E	F
1183 mm (3.88 ft.)	1181 mm (3.87 ft.)	500 mm (1.64 ft.)	500 mm (1.64 ft.)	500 mm (1.64 ft.)	180 mm (7.09 in.)

HINT:

Target bars for side camera adjustment should be made with 2 pieces of 2.5 cm wide tape; one piece should be 100 cm (3.28 ft.) (C+D) and the other should be 68 cm (2.23 ft.) (E+F) long. Check the tape color on the multi-display assembly and choose a tape color which can be easily seen.

(b) Start diagnostic mode.

w/ Navigation System: INFO

w/o Navigation System: INFO

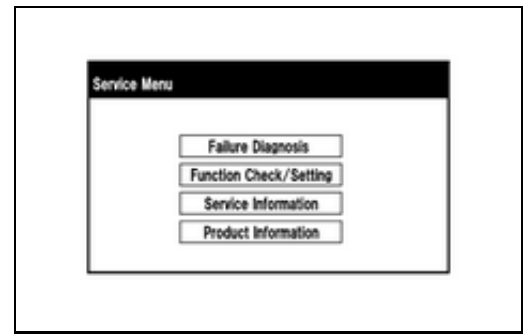
NOTICE:

Alignment must be performed with the engine running. For this reason, it is necessary to apply the parking brake, depress the brake pedal, and move the shift lever into the P position, and to exercise all other necessary caution to ensure that the vehicle does not begin moving unexpectedly.

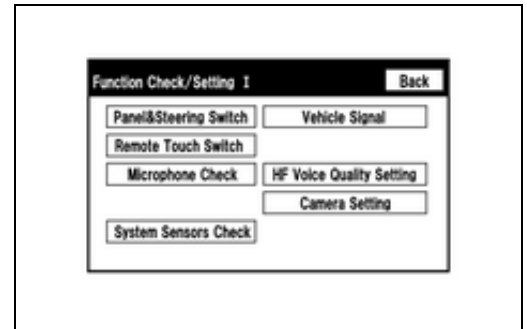
HINT:

The displayed items may differ depending on vehicle specifications.

(1) Select "Function Check/Setting" on the "Service Menu" screen.



(2) Select "Camera Setting" on the "Function Check/Setting I" screen.



(3) Select "Next" on the "Signal Check" screen.

Text in Illustration

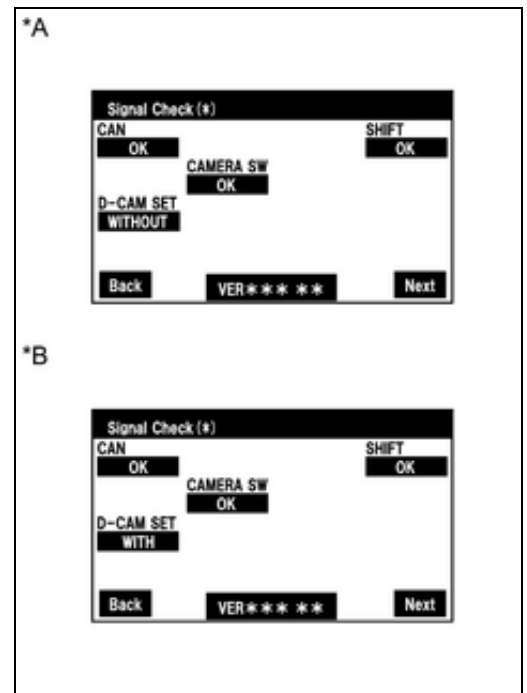
*A	w/o Multi-terrain Monitor
*B	w/ Multi-terrain Monitor

NOTICE:

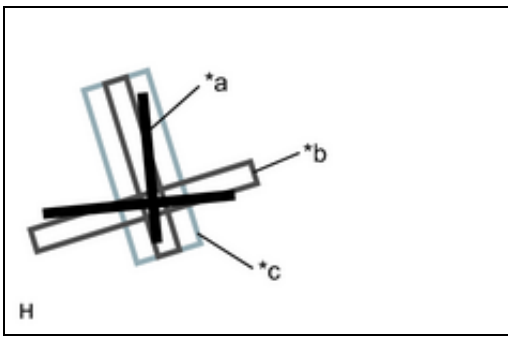
- When "CHK" (red) is displayed for any items on the "Signal Check" screen, selecting "Next" will not change the screen to the "Side Camera Position Setting" screen.
- When "CHK" (red) is displayed for any items on the "Signal Check" screen, perform inspections using the "Signal Check" screen [INFO](#) .

HINT:

- When the outer mirrors are retracted, selecting "Next" will not change the screen to the "Side Camera Position Setting" screen.
- If the screen does not change to the "Side Camera Position Setting" screen even though the outer mirrors are extended, perform the "MIRROR SW" check on the "Signal Check" screen [INFO](#) .
- If the screen does not change to the "Side Camera Position Setting" screen even after "OK" (blue) is displayed as a result of the MIRROR SW check on the "Signal Check" screen, replace the parking assist ECU [INFO](#) .



(c) Side Camera Position Setting:



HINT:

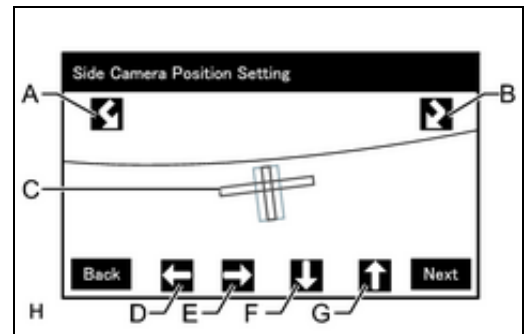
Colors used on the "Side Camera Position Setting" screen

Text in Illustration

*a	Target Adjustment Bar for Side Camera Position Setting
*b	Red Frame
*c	Yellow Frame

(1) Perform the roll angle adjustment.

- Select switches A and B to rotate C so that it is parallel to the target adjustment bar.



(2) Perform the vertical and horizontal position adjustment.

- Select the directional switches D, E, F and G to move C so that the target adjustment bar is centered in C.

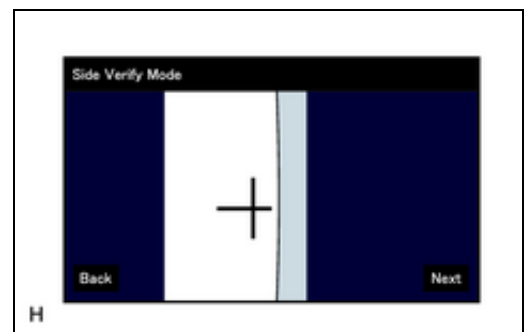
(3) Select "Next" to display "Side Verify Mode".

(d) Side Verify Mode:

(1) Check that the red cross and the target adjustment bar are aligned.

HINT:

If they are not aligned, select "Back" and perform "Side Camera Position Setting" again.



(2) Select "Next" to display "Side Camera Signal Check".

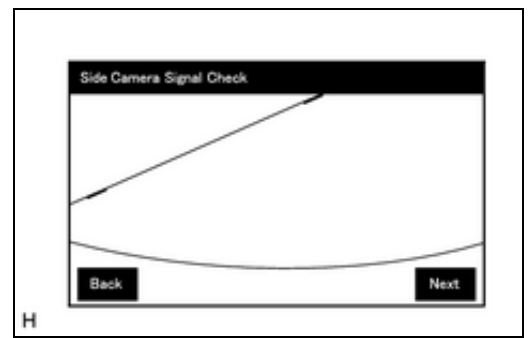
(e) Side Camera Signal Check:

(1) Select "Next" to store the side camera aiming adjustment

value and change the screen to the "Steering Angle Setting" screen.

HINT:

- When "Next" is selected, a beep will sound to confirm that the side camera aiming adjustment values have been stored.
- The adjustment value will not be stored unless "Next" is selected.



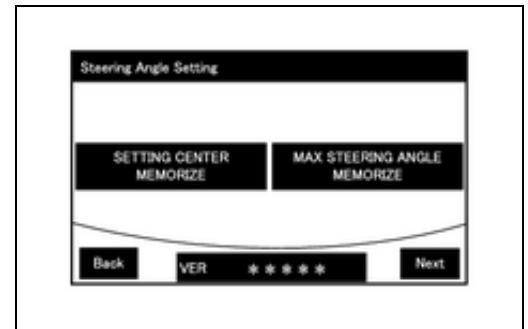
(f) Steering Angle Setting:

(1) Perform the "STEERING CENTER MEMORIZE" operation.

- Check that the steering wheel is centered, and then select "STEERING CENTER MEMORIZE".

HINT:

When performing removal and installation, or replacement of the television camera, steering angle adjustment is not required.



(2) Perform the "MAX STEERING ANGLE MEMORIZE" operation.

- After adjusting the steering angle neutral point, turn the steering wheel to the left and right lock positions and select "MAX STEERING ANGLE MEMORIZE". The maximum steering angle is then stored and the screen changes to the "Back Camera Position Setting" screen.

HINT:

- The "Next" button does not respond until the system stores the steering angle neutral point and maximum steering angle.
- It is also possible to start by initially turning the steering to the right side.
- When "MAX STEERING ANGLE MEMORIZE" is selected, a beep will sound to confirm that the steering adjustment values have been stored.
- The adjustment value will not be stored unless "MAX STEERING ANGLE MEMORIZE" is selected after turning the steering wheel side to side.
- When "Back" is selected, the screen changes to "Side Verify Mode" without storing the set values.
- Even if no DTCs are detected, selecting "MAX STEERING ANGLE MEMORIZE" may not cause the adjustment value to be stored if the steering sensor is malfunctioning.
- If selecting "MAX STEERING ANGLE MEMORIZE" does not cause the adjustment value to be stored after adjusting the steering angle, replace the steering sensor.

(g) Back Camera Position Setting:

Text in Illustration

*a	Target Bar for Back Camera Position Setting
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HINT:

- When adjusting the camera optical axis, "Back door is open. Do not use the rear view monitor when the back door is not completely closed." is displayed even after the back door has been closed.
- When the back door is open, the "Back door is open. Do not

use the rear view monitor when the back door is not completely closed." message will be displayed and camera position setting will not be possible.

- If the "Back door is open. Do not use the rear view monitor when the back door is not completely closed." message is displayed even when the back door is closed, perform inspections according to Problem Symptoms Table (A back door open warning message is displayed even after back door is closed) **INFO** .

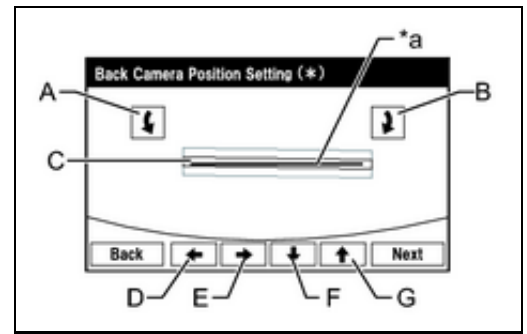
(1) Perform the roll angle adjustment.

- Select switches A and B to rotate C so that it is parallel to the target adjustment bar.

(2) Perform the vertical and horizontal position adjustment.

- Select the directional switches D, E, F and G to move C so that the target adjustment bar is centered in C.

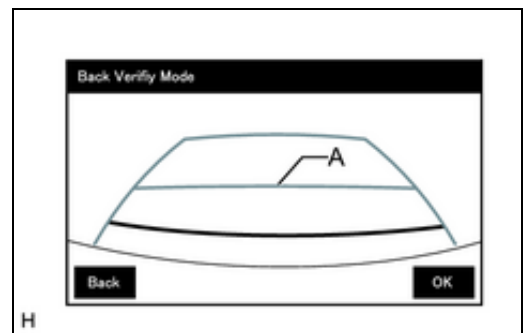
(3) Select the "Next" to display "Back Verify Mode".



(h) Back Verify Mode:

(1) Check that A and the target adjustment bar are overlapping.

- If the steering angle neutral point is not aligned, perform the "STEERING CENTER MEMORIZE" and "MAX STEERING ANGLE MEMORIZE" operations.
- If A and the target adjustment bar are not aligned even if the tires are aligned straight ahead, perform the camera position setting operation.



(2) Selecting "OK" will return the screen to the "Service Menu" screen, and complete the adjustment.

HINT:

- The update is not completed until "OK" is selected.
- When "OK" is selected, a beep will sound to confirm that the rear camera aiming adjustment values have been stored.
- The adjustment values are not stored until the beep has sounded.

(i) Finish diagnostic mode.

w/ Navigation System: **INFO**

w/o Navigation System: **INFO**

3. STEERING ANGLE SETTING (Procedure 2)


HINT:


- Be sure to check for DTCs before performing this procedure **INFO** .
- Illustrations may differ from the actual vehicle screen depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle screen.

(a) Preparation for adjustment

(1) Park the vehicle with the steering wheel centered.

(b) Start diagnostic mode.

w/ Navigation System: 

w/o Navigation System: 

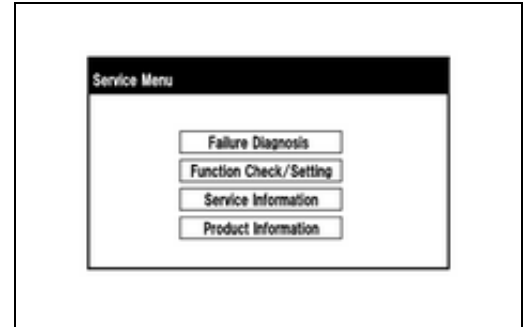
NOTICE:

Alignment must be performed with the engine running. For this reason, it is necessary to apply the parking brake, depress the brake pedal, and move the shift lever into the P position, and to exercise all other necessary caution to ensure that the vehicle does not begin moving unexpectedly.

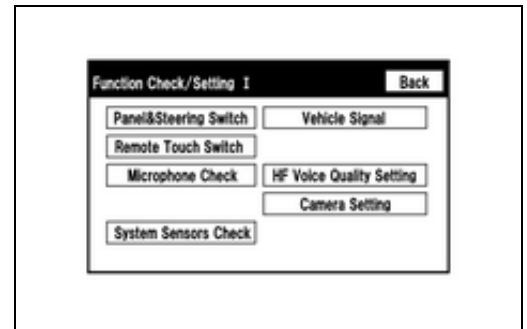
HINT:

The displayed items may differ depending on vehicle specifications.

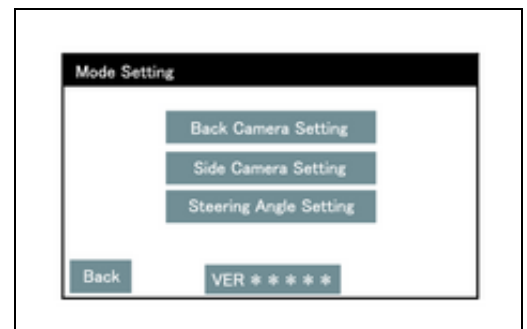
(1) Select "Function Check/Setting" on the "Service Menu" screen.



(2) Select "Camera Setting" on the "Function Check/Setting" screen.



(3) Select "Steering Angle Setting" on the "Mode Setting" screen.



HINT:


To select a grayed out item, select and hold the item for 2 seconds or more.

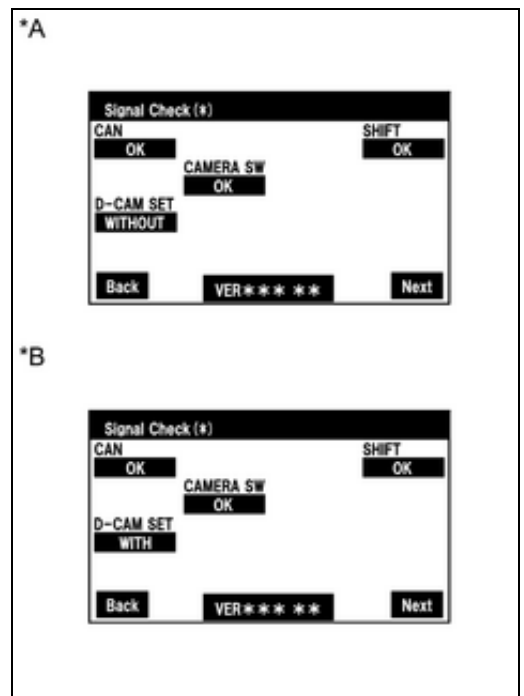
(4) Select "Next" on the "Signal Check" screen.

Text in Illustration

*A	w/o Multi-terrain Monitor
*B	w/ Multi-terrain Monitor

NOTICE:

- When "CHK" (red) is displayed for any items on the "Signal Check" screen, selecting "Next" will not change the screen to the "Steering Angle Setting" screen.
- When "CHK" (red) is displayed for any items on the "Signal Check" screen, perform inspections using the "Signal Check" screen .



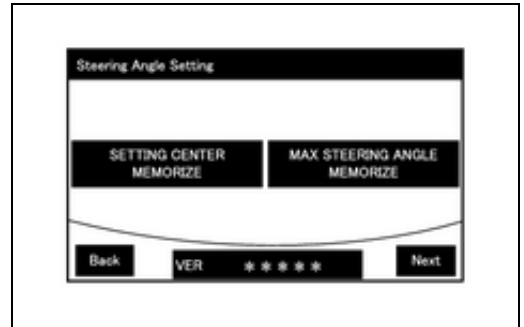
(c) Steering Angle Setting:

- (1) Perform the "STEERING CENTER MEMORIZE" operation.

Check that the steering wheel is centered, and then select "STEERING CENTER MEMORIZE".

HINT:

When performing removal and installation, or replacement of the television camera, steering angle adjustment is not required.



- (2) Perform the "MAX STEERING ANGLE MEMORIZE" operation.

After adjusting the steering angle neutral point, turn the steering wheel to the left and right lock positions and select "MAX STEERING ANGLE MEMORIZE". The maximum steering angle is then stored and the screen changes to the "Mode Setting" screen.


HINT:

- The "Next" button does not respond until the system stores the steering angle neutral point and maximum steering angle.
- It is also possible to start by initially turning the steering to the right side.
- When "MAX STEERING ANGLE MEMORIZE" is selected, a beep will sound to confirm that the steering adjustment values have been stored.
- The adjustment value will not be stored unless "MAX STEERING ANGLE MEMORIZE" is selected after turning the steering wheel side to side.
- When "Back" is selected, the screen changes to "Signal Check" without storing the set values.
- Even if no DTCs are detected, selecting "MAX STEERING ANGLE MEMORIZE" may not cause the adjustment value to be stored if the steering sensor is malfunctioning.
- If selecting "MAX STEERING ANGLE MEMORIZE" does not cause the adjustment value to be stored after adjusting the steering angle, replace the steering sensor.

- (3) Select "OK" to display "Mode Setting".

(d) Finish diagnostic mode.

w/ Navigation System: 

w/o Navigation System: 

(e) Confirm steering angle adjustment.

HINT:

If the steering angle has been adjusted, confirm the steering angle adjustment on the parking assist monitor screen after finishing diagnostic mode.

(1) Check on the parking assist screen that the predicted path line moves until the steering wheel is fully turned to either the left or right.

HINT:

If the predicted path line stops moving before the steering wheel is fully turned to either the left or right, the steering angle adjustment values have not been stored correctly. In this case, perform "STEERING CENTER MEMORIZE" and "MAX STEERING ANGLE MEMORIZE" again.

4. BACK CAMERA POSITION SETTING (Procedure 3)

HINT:

Be sure to check for DTCs before performing this procedure  .

(a) Preparation for adjustment

- (1) Park the vehicle with the steering wheel centered.

- (2) Set a target bar for optical axis adjustment of the rear television camera.

HINT:

Only when adjusting the optical axis of the camera, create a target bar for adjustment.

Dimension:

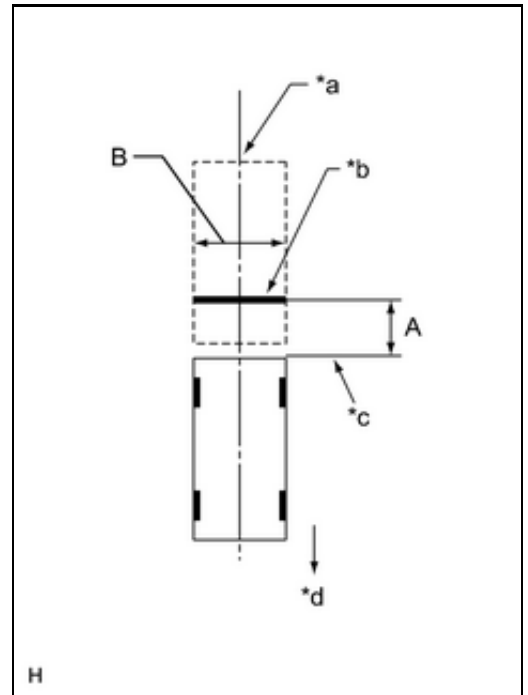
AREA	SPECIFICATION
A	965 to 985 mm (3.17 to 3.23 ft.)
B	1995 to 2005 mm (6.55 to 6.58 ft.)

Text in Illustration

*a	Vehicle Center
*b	Target Bar for Back Camera Adjustment
*c	Vehicle End
*d	Front Side

HINT:

- Set a piece of tape on the ground as the target bar for adjustment. Its width and length should be 20 to 30 mm (0.787 to 1.18 in.) and 1995 to 2005 mm (6.55 to 6.58 ft.), respectively. Check the color on the multi-display and choose a tape color which can be easily seen.
- Before parking the vehicle, be sure to move the vehicle forward and in reverse to check that the tires are facing straight ahead with the steering wheel centered.
- Check that the back door is fully closed.



(b) Start diagnostic mode.

w/ Navigation System: **INFO**

w/o Navigation System: **INFO**

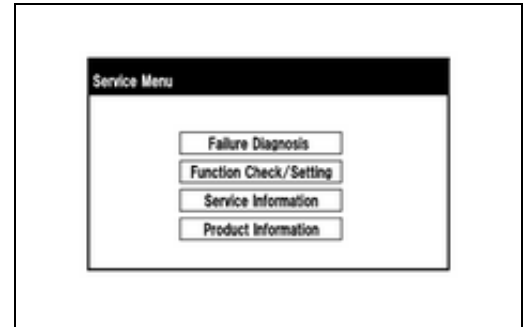
NOTICE:

Alignment must be performed with the engine running. For this reason, it is necessary to apply the parking brake, depress the brake pedal, and move the shift lever into the P position, and to exercise all other necessary caution to ensure that the vehicle does not begin moving unexpectedly.

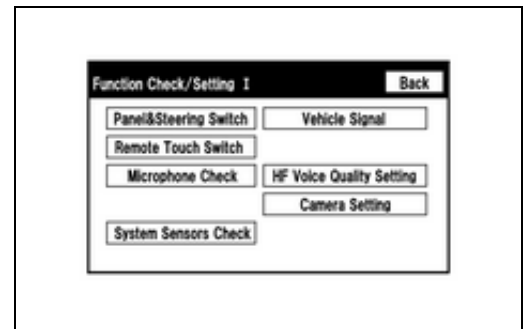
HINT:

The displayed items may differ depending on vehicle specifications.

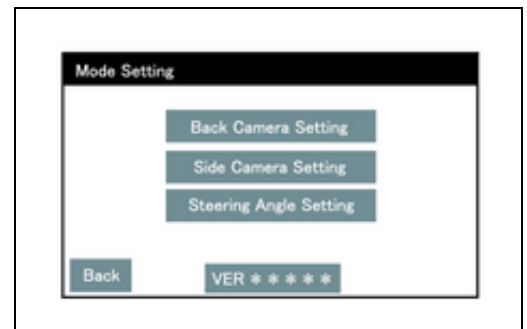
- (1) Select "Function Check/Setting" on the "Service Menu" screen.



- (2) Select "Camera Setting" on the "Function Check/Setting" screen.



- (3) Select "Back Camera Setting" on the "Mode Setting" screen.



HINT:

To select a grayed out item, select and hold the item for 2 seconds or more.

- (4) Select "Next" on the "Signal Check" screen.

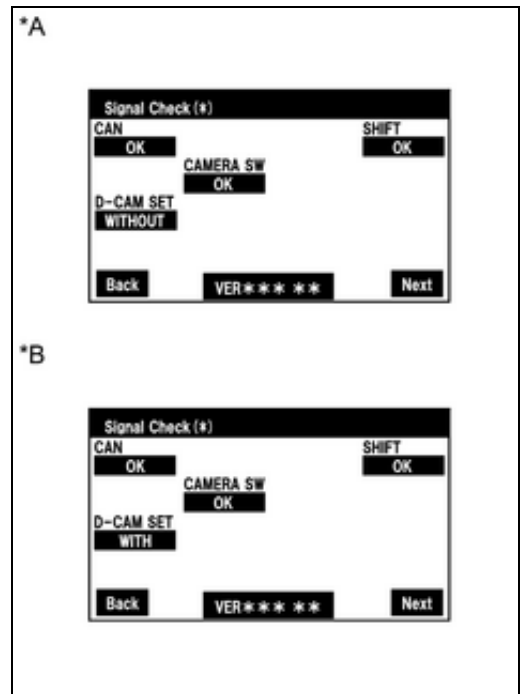
Text in Illustration

*A	w/o Multi-terrain Monitor
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*B	w/ Multi-terrain Monitor
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NOTICE:

- When "CHK" (red) is displayed for any items on the "Signal Check" screen, selecting "Next" will not change the screen to the "Back Camera Position Setting" screen.
- When "CHK" (red) is displayed for any items on the "Signal Check" screen, perform inspections using the "Signal Check" screen **INFO** .



(c) Back Camera Position Setting:

Text in Illustration

*a	Target Bar for Back Camera Position Setting
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HINT:

- When adjusting the camera optical axis, "Back door is open. Do not use the rear view monitor when the back door is not completely closed." is displayed even after the back door has been closed.
- When the back door is open, the "Back door is open. Do not use the rear view monitor when the back door is not completely closed." message will be displayed and camera position setting will not be possible.
- If the "Back door is open. Do not use the rear view monitor when the back door is not completely closed." message is displayed even when the back door is closed, perform inspections according to Problem Symptoms Table (A back door open warning message is displayed even after back door is closed) **INFO** .

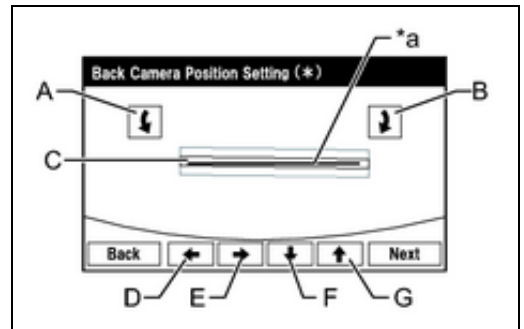
(1) Perform the roll angle adjustment.

- Select switches A and B to rotate C so that it is parallel to the target adjustment bar.

(2) Perform the vertical and horizontal position adjustment.

- Select the directional switches D, E, F and G to move C so that the target adjustment bar is centered in C.

(3) Select the "Next" button on the "Back Camera Position Setting" screen.

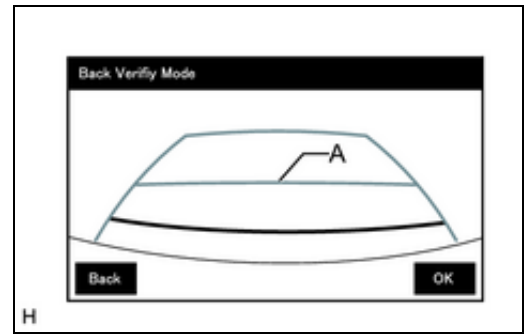


(d) Back Verify Mode:

(1) Check that A and the target adjustment bar are overlapping.

- If the steering angle neutral point is not aligned, perform the "STEERING CENTER MEMORIZE" and "MAX STEERING ANGLE MEMORIZE" operations.
- If A and the target adjustment bar are not aligned even if the tires are aligned straight ahead, perform the camera position setting operation.

(2) Selecting "OK" will return the screen to the "Service Menu", and complete the adjustment.



HINT:

- The update is not completed until "OK" is selected.
- When "OK" is selected, a beep will sound to confirm that the rear camera aiming adjustment values have been stored.

(e) Finish diagnostic mode.

w/ Navigation System: 

w/o Navigation System: 