

2008 Mazda CX-9 Grand Touring

2008 BODY & ACCESSORIES Symptom Troubleshooting (Car Navigation System) - Mazda CX-9

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Symptom Troubleshooting (Car Navigation System) - Mazda CX-9

CAR-NAVIGATION SYSTEM [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING INDEX

- Use the chart below and verify the trouble in order to diagnose the appropriate area.

TROUBLESHOOTING CHART

No.	Malfunction symptom
1	Display screen changes to black.
2	Display screen changes to white.
3	System does not load map disc.
4	Vehicle position deviates from the route map.
5	No voice navigation
6	Display screen does not change to the night mode. (Front and rear combination lights operate normally.)
7	Display does not change to the back camera image.
8	Speech recognition does not start.

QUICK DIAGNOSTIC CHART

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X: Applicable

Possible factor	Troubleshooting item							
	1 Display screen changes to black.	2 Display screen changes to white.	3 System does not load the map disc.	4 Vehicle position deviates from the route map.	5 No voice navigation.	6 Display screen does not change to the night mode.	7 Display does not change to the back camera image.	8 Speech recognition does not start.
Open or short circuit in power supply (B+) wiring harness, or burnt fuse	X							
Open or short circuit in power supply (ACC) wiring harness, or burnt fuse	X							
Open or short circuit in GND wiring harness	X							
Audio unit malfunction	X	X				X	X	
Poor connection of audio unit connector, terminal damage	X					X	X	X
Poor connection of car-navigation unit connector, terminal damage	X				X			X
Car-navigation unit malfunction		X	X	X	X	X		X
Improper adjustment of screen contrast		X						
Map disc malfunction			X					
Moisture inside of car-navigation unit			X					
Non-designated disc inserted			X					
Jammed radio signals from after market equipment				X				
Open or short circuit in vehicle speed signal wiring harness				X				
Poor connection of GPS antenna connector, terminal damage				X				
GPS antenna malfunction				X				
Car-navigation control switch malfunction								
Open or short circuit in remote control signal wiring harness								
Poor connection of car-navigation control switch connector, terminal damage								
Improper adjustment of NAVI voice volume					X			
Poor connection of driver-side front door speaker connector, terminal damage					X			
Driver-side front door speaker malfunction					X			
Open or short circuit in driver-side front door speaker wiring harness					X			
Improper setting of NAVI map indication						X		
Open or short circuit in TNS signal wiring harness						X		
Poor connection of audio amplifier connector, terminal damage					X			
Back camera malfunction							X	
Poor connection of back camera connector, terminal damage							X	
Open or short circuit in wiring harness between back camera and rear audio unit							X	
Open or short circuit in reverse signal wiring harness							X	
Microphone unit								X
Audio control switch malfunction								X
Open or short circuit in wiring harness between audio unit and car-navigation unit								X
Open or short circuit in wiring between audio amplifier and car-navigation unit								X

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Fig. 1: Quick Diagnostic Chart - Car Navigation System
 Courtesy of MAZDA MOTORS CORP.

NO.1 DISPLAY SCREEN CHANGES TO BLACK. [CAR-NAVIGATION

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SYSTEM]

TROUBLESHOOTING CHART

1	Display screen changes to black.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in car-navigation unit (power supply (B+)) wiring harness • Open or short circuit in car-navigation unit (power supply (ACC)) wiring harness • Open or short circuit in car-navigation unit (GND) wiring harness • Open or short circuit in wiring harness between audio unit and car-navigation unit • Poor connection of rear mount camera control module connector, terminal damage • Open or short circuit in audio unit (power supply (B+)) wiring harness • Open or short circuit in audio unit (power supply (ACC)) wiring harness • Open or short circuit in audio unit (power supply (IG1)) wiring harness • Open or short circuit in audio unit (GND) wiring harness • Open or short circuit in wiring harness between audio unit and rear view monitor • Poor connection of car-navigation unit connector, terminal damage • Poor connection of audio unit connector, terminal damage • Car-navigation unit malfunction • Audio unit malfunction

DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ACC position. • Does the display screen change from blank to NAVI mode when pressing the joystick of the car-navigation control switch? 	Yes	<p>The system is normal.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • If the "VOICE" button is pressed for <i>approx. 2 s or more</i>, the "DISP OFF" menu appears on the bottom-left side of screen. If "DISP OFF" mode is selected, the audio unit will not display anything. "DISP OFF" mode is cancelled when the ignition switch is turned to the LOCK position or the joystick of the car-navigation control switch is pressed.
		No	Go to the next step.
	<ul style="list-style-type: none"> • Shift the selector lever in R position. 	Yes	Go to the next step.

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2	<ul style="list-style-type: none"> • Does it change to rear view screen? 	No	Go to Step 11.
3	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the car-navigation unit. • Inspect the car-navigation unit connector (24-pin). • Is the car-navigation unit connector connected securely? 	Yes	Go to the next step.
		No	Securely connect the car-navigation unit connector.
4	<ul style="list-style-type: none"> • Disconnect the car-navigation unit connector. • Inspect both car-navigation unit connector and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion). • Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> • Replace the car-navigation unit. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
5	<ul style="list-style-type: none"> • Inspect the voltage between the car-navigation unit wiring harness-side connector (16-pin) terminals B (B+) and A (GND). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the suspect wiring harness and repair or replace the wiring harness as necessary.
6	<ul style="list-style-type: none"> • Turn the ignition switch to the ACC position. • Inspect the voltage between the car-navigation unit wiring harness-side connector (16-pin) terminals D (ACC) and A (GND). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the suspect wiring harness and repair or replace the wiring harness as necessary.
7	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the audio unit. • Inspect the audio unit connector (24-pin). • Is the audio unit connector connected securely? 	Yes	Go to the next step.
		No	Securely connect the audio unit connector.
	<ul style="list-style-type: none"> • Disconnect the audio unit connector (24-pin). • Inspect both audio unit connector 	Yes	Go to the next step.
			<p>If the audio unit connector is wrong:</p>

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8	<p>and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> • Are all the pins normal? 	No	<ul style="list-style-type: none"> • Replace the audio unit. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
9	<ul style="list-style-type: none"> • Inspect the continuity between the following wiring harness: <ul style="list-style-type: none"> ○ Audio unit terminal I (24-pin)-car-navigation unit terminal N (24-pin) ○ Audio unit terminal E (24-pin)-car-navigation unit terminal P (24-pin) • Is there continuity? 	Yes	<p>Inspect for short circuit in wiring harness. If there is a short circuit, repair or replace the suspect wiring harness.</p> <p>If the wiring harness is okay, replace the audio unit, then go to the next step.</p>
		No	Repair or replace the suspect wiring harness.
10	<ul style="list-style-type: none"> • Does system work properly? 	Yes	Troubleshooting is completed.
		No	Replace the car-navigation unit.
11	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the rear view monitor. • Inspect the connection of the rear mount camera connector (4-pin). • Is the rear mount camera connector connected securely? 	Yes	Go to the next step.
		No	Securely connect the rear view monitor.
12	<ul style="list-style-type: none"> • Disconnect the rear mount camera connector (4-pin). • Inspect both rear mount camera connector and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion). • Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the rear mount camera connector is wrong:</p> <ul style="list-style-type: none"> • Replace the rear view monitor. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
13	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the audio unit. • Inspect the audio unit connector (4-pin). • Is the audio unit connector connected securely? 	Yes	Go to the next step.
		No	Securely connect the audio unit connector.
	<ul style="list-style-type: none"> • Disconnect the audio unit 	Yes	Go to the next step.

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14	<p>connector (4-pin).</p> <ul style="list-style-type: none"> • Inspect both audio unit connector and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion). • Are all the pins normal? 	No	<p>If the audio unit connector is wrong:</p> <ul style="list-style-type: none"> • Replace the audio unit. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
15	<ul style="list-style-type: none"> • Verify continuity between rear mount camera and audio unit at harness-side connector. <ul style="list-style-type: none"> ○ Rear mount camera terminal A (4-pin, POWER) and audio unit terminal A (4-pin, POWER) ○ Rear mount camera terminal B (4-pin, P-GND) and audio unit terminal B (4-pin, P-GND) ○ Rear mount camera terminal C (4-pin, V-GND) and audio unit terminal D (4-pin, V-GND) ○ Rear mount camera terminal D (4-pin, CONPOSITE) and audio unit terminal C (4-pin, CONPOSITE) • Is there any continuity? 	Yes	Go to the next step.
		No	Inspect the suspect wiring harness and repair or replace the wiring harness as necessary.
16	<ul style="list-style-type: none"> • Does system work properly? 	Yes	Troubleshooting is completed.
		No	Replace the car-navigation unit.

NO.2 DISPLAY SCREEN CHANGES TO WHITE. [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING CHART

2	Display screen changes to white.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Car-navigation unit malfunction • Audio unit malfunction • Improper adjustment of the screen contrast

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DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ACC position. • Shift the selector lever in R position. • Is the rear view screen normal? 	Yes Replace the car-navigation unit.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Does the display screen change to "display quality adjustment" mode when pressing the MODE button for approx. 2 s or more? 	Yes Go to the next step.
		No Replace the audio unit.
3	<ul style="list-style-type: none"> • Select "default display" or "display quality adjustment" mode in the NAVI mode. • Press "ENTER" button. • Does system work properly? 	Yes Troubleshooting is completed.
		No Replace the audio unit, then go to the next step.

NO.3 SYSTEM DOES NOT LOAD THE MAP DISC. [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING CHART

3	System does not load the map disc.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Car-navigation unit malfunction • Map disc malfunction • Moisture inside of car-navigation unit • Non-designated disc is inserted
	<p>NOTE:</p> <ul style="list-style-type: none"> • If dewdrops are formed inside of the car-navigation unit, the display screen shows the "The disc installed is not a map DVD" message. Remove the map disc, ventilate or remove moisture from the passenger compartment, and then leave it <i>for approx. 1 h</i>. The dewdrops will be removed and the car-navigation unit will operate normally. • In case of a dirty/damaged map disc or car-navigation unit malfunction, the display screen will show the "Please insert a map DVD" message for few seconds to 1 min, then change to "The disc installed is not a map DVD" message after the ignition switch is turned to the ACC position. • If a non-designated disc is inserted, the display screen shows the "The disc installed is not a map DVD" message.

DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION

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1	<ul style="list-style-type: none"> • Eject the map disc. • Is the map okay? 	Yes	Go to the next step.
		No	Insert a designated disc, then go to the next step.
2	<ul style="list-style-type: none"> • Eject the map disc then insert the map disc again. • Does the system load the map disc? 	Yes	Trouble shooting is completed.
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Eject the map disc and clean the surface of map disc with a soft cloth. • Insert map disc again. • Does the "Cannot Read Disc" error message show up on the screen? 	Yes	Trouble shooting is completed.
		No	Replace car-navigation unit and map disc at the same time, (consult distributor) (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .)

NO.4 VEHICLE POSITION DEVIATES FROM THE ROUTE MAP. [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING CHART

4	Vehicle position deviates from the route map.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Jammed radio signals from after market equipment (radar, remote engine starter, anti-theft device etc.) • Open or short circuit in the wiring harness (vehicle speed signal related). • Car-navigation unit malfunction. • Poor connection of the GPS antenna connector, terminal damage • GPS antenna malfunction. • Open or short circuit in feeder line between GPS antenna feeder and car-navigation unit.

DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Is any of the following after-market equipment installed? (Inspect especially near the GPS antenna.) <ul style="list-style-type: none"> ○ Radar ○ Remote engine starter ○ Anti-theft device. 	Yes	Go to the next step.
		No	Go to Step 3.

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	<ul style="list-style-type: none"> ○ Other 		
2	<ul style="list-style-type: none"> ● Remove the after-market equipment. <p>NOTE:</p> <ul style="list-style-type: none"> ● The procedure requires an assistant. <ul style="list-style-type: none"> ● Drive the vehicle without any obstacles. ● Does the vehicle indicator follow the steering wheel direction? 	Yes	System is normal. The after-market electrical device might be interrupting to the GPS reception.
		No	Go to the next step.
3	<ul style="list-style-type: none"> ● Position the vehicle without any obstacles and receive GPS for 5 min at idle. ● Does "GPS" show up on the left lower side of the display screen? 	Yes	Go to the next step.
		No	Go to Step 8.
4	<p>CAUTION:</p> <ul style="list-style-type: none"> ● This procedure requires an assistant. ● Start the diagnostic function. ● Drive the vehicle. ● Check the "Speed" on the diagnosis screen. ● Does the "Speed" change according to the vehicle speed? <p>NOTE:</p> <ul style="list-style-type: none"> ● If the engine is started after diagnostic functions activated, the diagnostic function mode is reset. 	Yes	Go to the next step.
		No	Go to Step 6.
5	<p>CAUTION:</p> <ul style="list-style-type: none"> ● This procedure requires an assistant. ● Drive the vehicle and turn the steering wheel to the left and/or right. ● Does the vehicle indicator follow the steering direction? 	Yes	<p>The system is normal.</p> <p>NOTE:</p> <ul style="list-style-type: none"> ● The vehicle indicator might be out of position in the following areas: <ul style="list-style-type: none"> ○ Parallel road, high-level road, loop road, tower type parking, high-rise buildings lot
		No	Replace the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .)
	<ul style="list-style-type: none"> ● Turn the ignition switch to the LOCK position. 	Yes	Go to the next step.

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6	<ul style="list-style-type: none"> Remove the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .) Inspect the connection of the car-navigation unit connector (16-pin). Is the connector securely connected? 	No	Securely connect the car-navigation unit connector.
7	<ul style="list-style-type: none"> Disconnect the car-navigation unit connector (16-pin). Inspect both car-navigation unit connector and wiring harness-side connector terminal H for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Inspect for vehicle speed signal input circuit. Repair or replace if necessary.
		No	<p style="text-align: center;">If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .) <p style="text-align: center;">If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
8	<p>NOTE:</p> <ul style="list-style-type: none"> If the engine is started after diagnostic functions activated, the diagnostic function mode is reset. Turn the ignition switch to ON position. Start the diagnostic function. Inspect the "GPS antenna" on diagnosis screen. Is the "OK" indicated? 	Yes	Go to the next step.
		No	Go to Step 6.
9	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .) Inspect the connection of the car-navigation unit connector and GPS antenna connector. Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the GPS antenna connector.
		Yes	Replace the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .)

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10	<ul style="list-style-type: none"> • Disconnect the GPS antenna connector. • Inspect both GPS antenna connector and car-navigation unit connector for poor connection (such as damaged/pulled-out pins, corrosion). • Are all the pins normal? 	No	<p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the suspect wiring harness. <p>If the car-navigation unit side connector is wrong:</p> <ul style="list-style-type: none"> • Replace the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .)
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NO.5 NO VOICE NAVIGATION [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING CHART

5	No voice navigation
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper adjustment of the NAVI voice volume • Car-navigation unit malfunction • Poor connection of the driver-side front door speaker connector, terminal damage • Driver-side front door speaker malfunction • Poor connection of the car-navigation unit connector, terminal damage • Open or short circuit in driver-side front door speaker wiring harness • Poor connection of the audio amplifier connector, terminal damage

DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Is the voice navigation volume mute? 	Yes Go to the next step.
		No Turn on the voice navigation.
2	<ul style="list-style-type: none"> • Turn the audio power switch (CD, MD, radio) to ON. • Does the driver-side front door speaker work? 	Yes Go to step 7.
		No Go to the next step.
3	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the driver-side front door speaker. (See <u>FRONT DOOR SPEAKER</u>) 	Yes Go to the next step.
		No Go to the next step.

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	<p><u>REMOVAL/INSTALLATION</u> .)</p> <ul style="list-style-type: none"> Inspect the connection of the driver-side front door speaker connector (2-pin). Is the connector securely connected? 	No	Securely connect the driver-side front door speaker connector.
4	<ul style="list-style-type: none"> Disconnect the driver-side front door speaker connector (2-pin). Inspect both the driver-side front door speaker and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the driver-side front door speaker side connector is wrong:</p> <ul style="list-style-type: none"> Replace the driver-side front door speaker. (See <u>FRONT DOOR SPEAKER REMOVAL/INSTALLATION</u> .) <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
5	<ul style="list-style-type: none"> Inspect for continuity between audio amplifier and the driver-side front door speaker. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness.
6	<ul style="list-style-type: none"> Inspect the driver-side front door speaker. (See <u>FRONT DOOR SPEAKER INSPECTION</u> .) Is it normal? 	Yes	Go to the next step.
		No	Replace the driver-side front door speaker. (See <u>FRONT DOOR SPEAKER REMOVAL/INSTALLATION</u> .)
7	<ul style="list-style-type: none"> Remove the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .) Inspect the connection of the car-navigation unit connector (16-pin). Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the car-navigation unit connector.
8	<ul style="list-style-type: none"> Disconnect the car-navigation unit connector (16-pin). Inspect both the car-navigation unit and wiring harness-side connector terminal F, I and K for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the car-navigation unit side connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .) <p>If the wiring harness-side connector is</p>

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			wrong:
			<ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
9	<ul style="list-style-type: none"> Remove the audio amplifier. Inspect connection of the audio amplifier connector (40-pin). Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the audio amplifier.
10	<ul style="list-style-type: none"> Disconnect the audio amplifier connector (40-pin). Inspect the audio amplifier and wiring harness connector terminal 3B, 3G and 3H for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	Repair or replace the pins and/or the connector.
11	<ul style="list-style-type: none"> Inspect the continuity between following car-navigation unit and audio amplifier at harness-side connector. <ul style="list-style-type: none"> Car-navigation unit terminal F (16-pin, MUTE) and audio amplifier terminal 3B (40-pin, NAVI INT) Car-navigation unit terminal I (16-pin, PRE SP OUT+) and audio amplifier terminal 3G (40-pin, NAVI-) Car-navigation unit terminal K (16-pin, PRE SP OUT-) and audio amplifier terminal 3H (40-pin, NAVI+) Is there continuity? 	Yes	Inspect for short circuit in wiring harness. If there is a short circuit, repair or replace the suspect wiring harness. If the wiring harness is okay, go to the next step.
		No	Repair or replace the wiring harness.
12	<ul style="list-style-type: none"> Replace the audio amplifier. (See <u>AUDIO AMPLIFIER REMOVAL/INSTALLATION</u> .) Does the voice navigation operate properly. 	Yes	Troubleshooting completed. (The audio amplifier malfunction)
		No	Replace the car-navigation unit.

NO.6 DISPLAY SCREEN DOES NOT CHANGE TO THE NIGHT MODE. (FRONT AND REAR COMBINATION LIGHTS OPERATE NORMALLY.) [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING CHART

	Display screen does not change to the night mode. (Front and rear combination
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6	<p>lights operate normally.)</p> <ul style="list-style-type: none"> • Improper setting of NAVI map indication • Open or short circuit in TNS signal wiring harness (TNS signal related) • audio unit malfunction • Poor connection of the audio unit connector, terminal damage • Car-navigation unit malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • The car-navigation control switch is inoperative if the following circuit has malfunction <ul style="list-style-type: none"> ○ Audio unit connector (24-pin) terminal I (UART-2)-car-navigation unit connector (24-pin) terminal N (UART-2) ○ Audio unit connector (24-pin) terminal E (UART-1)-car-navigation unit connector (24-pin) terminal P(UART-1) • When the ignition switch is turned to LOCK position, then ACC position, display screen changes to black.
POSSIBLE CAUSE	

DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Does the display screen change to the night mode when the light switch is turned to the TNS position, and the dimmer cancel switch is turned to OFF? 	Yes	The system is normal.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Press the "MENU" button. • Select "Navigation Set Up". • Select "User Setting". • Inspect "MAP Mode". • Is the "MAP Mode" set to "Auto"? 	Yes	Go to the next step.
		No	System is normal. Set the "MAP Mode" to "Auto".
3	<ul style="list-style-type: none"> • Start diagnostic function is started. • Turn the light switch to TNS position. • Inspect the "TNS" on the diagnosis check screen. • Does the "TNS" indicate "ON"? 	Yes	Replace the car-navigation unit. (See <u>CAR-NAVIGATION UNIT REMOVAL/INSTALLATION</u> .)
		No	Go to the next step.
	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the audio unit. (See AUDIO 	Yes	Go to the next step.

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4	<p><u>UNIT REMOVAL/INSTALLATION</u> .)</p> <ul style="list-style-type: none"> Inspect the connection of the audio unit connector (24-pin). Is the connector securely connected? 	No	Securely connect the audio unit connector.
5	<ul style="list-style-type: none"> Disconnect the audio unit connector (24-pin). Inspect both the audio unit and wiring harness-side connector terminal E for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the audio unit side connector is wrong:</p> <ul style="list-style-type: none"> Replace the audio unit. (See <u>AUDIO UNIT REMOVAL/INSTALLATION</u> .) <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
6	<ul style="list-style-type: none"> Inspect the voltage of the audio unit wiring harness-side connector (24-pin) terminal E (TNS signal) Is voltage B+ when the light switch is turned to the TNS position? 	Yes	Replace the audio unit, then go to the next step. (See <u>AUDIO UNIT REMOVAL/INSTALLATION</u> .)
		No	Inspect for TNS signal circuit. Repair or replace if necessary.
7	<ul style="list-style-type: none"> Does system work properly? 	Yes	Troubleshooting is completed.
		No	Replace the car-navigation unit.

NO.7 DISPLAY DOES NOT CHANGE TO THE BACK CAMERA IMAGE. [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING CHART

7	Display does not change to the back camera image
POSSIBLE CAUSE	<ul style="list-style-type: none"> Back camera malfunction Poor connection of the back camera connector, terminal damage Audio unit malfunction Poor connection of the audio unit connector, terminal damage Open or short circuit in wiring harness between audio unit and rear view monitor Open or short circuit in reverse signal wiring harness

DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION

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1	<ul style="list-style-type: none"> Is the lens of the back camera dirty or view is obstructed? 	Yes	Clean the lens of the back camera or remove the obstruction.
		No	Go to the next step.
2	<ul style="list-style-type: none"> Does the lens of the back camera have a crack and damage? 	Yes	Replace the back camera.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the back camera. Inspect the connection of the back camera connector (4-pin). Disconnect the back camera connector (4-pin). Inspect both the back camera and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If poor connection of back camera connector:</p> <ul style="list-style-type: none"> Securely connect the back camera connector. <p>If the back camera connector is wrong:</p> <ul style="list-style-type: none"> Replace the back camera. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
4	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the audio unit. Inspect the connection of the audio unit connector (4-pin). Disconnect the audio unit connector (4-pin). Inspect both the audio unit connector terminal for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If poor connection of audio unit connector:</p> <ul style="list-style-type: none"> Securely connect the audio unit connector. <p>If the audio unit connector is wrong:</p> <ul style="list-style-type: none"> Replace the audio unit. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
	<ul style="list-style-type: none"> Inspect the following wiring harnesses between the audio unit and rear mount camera. 	Yes	Go to the next step.

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5	<ul style="list-style-type: none"> ○ Terminal A (4-pin, POWER)-terminal A (4-pin, POWER) ○ Terminal B (4-pin, P-GND)-terminal B (4-pin, P-GND) ○ Terminal C (4-pin, V-GND)-terminal D (4-pin, V-GND) ○ Terminal D (4-pin, COMPOSITE)-terminal C (4-pin, COMPOSITE) <ul style="list-style-type: none"> ● Is there open or short circuit? 	No	<p>Inspect the suspect wiring harness. Repair or replace if necessary.</p>
6	<ul style="list-style-type: none"> ● Turn the ignition switch to the LOCK position. ● Remove the audio unit. ● Disconnect the audio unit connector (24-pin). ● Turn the ignition switch to ON. ● Shift the selector lever in R range. ● Inspect the voltage between the rear view monitor control module terminals M (24-pin, REV) and W (24-pin, GND). ● Is the voltage B+? 	Yes	<p>Replace the back camera, then inspect generating of malfunction symptom. Even if it exchanges back camera, when a fault phenomenon occurs:</p> <ul style="list-style-type: none"> ● Replace the audio unit. ● Reinspect the malfunction symptom, then repeat from Step 1 if malfunction recurs.
		No	<p>Inspect the suspect wiring harness (reverse signal). Repair or replace if necessary.</p>

NO.8 SPEECH RECOGNITION DOES NOT START [CAR-NAVIGATION SYSTEM]

TROUBLESHOOTING CHART

8	Speech recognition does not start
POSSIBLE CAUSE	<ul style="list-style-type: none"> ● Microphone malfunction ● Car-navigation unit malfunction ● Audio control switch malfunction ● Poor connection of audio unit connector, terminal damage ● Poor connection of car-navigation unit connector, terminal damage ● Open or short circuit in wiring harness between audio unit and car-navigation unit

DIAGNOSTIC PROCEDURE

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION
	<ul style="list-style-type: none"> ● Turn the ignition switch to the ACC position. 	Yes Go to the next step.

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1	<ul style="list-style-type: none"> • Start the car-navigation. • Display the map screen. • Press the VOICE button (audio control switch). • Is the speech recognition icon displayed on the screen upper left? 	No	Go to Step 4.
2	<ul style="list-style-type: none"> • Start the diagnostic function. • Press the Menu button inside of diagnostic screen. • Select "Navigation check". • Select "Microphone check". • After pressing the VOICE button, it utters somewhat greatly toward a microphone. • Inspect the display of "Microphone input level judging". • Is a judgment "OK" (blue display)? 	Yes	The system is normal. CAUTION: <ul style="list-style-type: none"> • Sound may not be recognized by the influence of the following. <ul style="list-style-type: none"> ○ Speaker's utterance method ○ Road noise ○ Other noises
		No	Replace the microphone, then go to the next step.
3	<ul style="list-style-type: none"> • Does the fault phenomenon improve? 	Yes	Troubleshooting is completed.
		No	Replace the car-navigation unit.
4	<ul style="list-style-type: none"> • Start the diagnostic function. • Inspect the display of "Microphone" in diagnostic screen. • Is it display "OK"? 	Yes	Go to the next step.
		No	Go to Step 6.
5	<ul style="list-style-type: none"> • The power supply of the audio unit is turned on. • Press the VOICE button (audio control switch). • Does it muffle? 	Yes	Replace the car-navigation unit.
		No	Audio control switch system malfunction. Go to the audio symptom troubleshooting.
6	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the microphone. • Inspect the connection of the microphone connector (6-pin). • Is the connection securely connected? 	Yes	Go to the next step.
		No	Securely connect the microphone connector.
7	<ul style="list-style-type: none"> • Disconnect the microphone connector (6-pin). • Inspect both microphone connector and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion). • Are all the pins normal? 	Yes	Go to the next step.
		No	<p style="text-align: center;">If the microphone connector is wrong:</p> <ul style="list-style-type: none"> • Replace the microphone. <p style="text-align: center;">If the wiring harness-side connector is wrong:</p>

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			<ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
8	<ul style="list-style-type: none"> Remove the car-navigation unit. Inspect the connection of the car-navigation unit connector (6-pin). Is the connection securely connected? 	Yes	Go to the next step.
		No	Securely connect the car-navigation unit connector.
9	<ul style="list-style-type: none"> Disconnect the car-navigation unit connector (6-pin). Inspect both car-navigation unit connector and wiring harness-side connector for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
10	<ul style="list-style-type: none"> Inspect the following wiring harnesses between the microphone and HF/TEL unit. <ul style="list-style-type: none"> Terminal A (6-pin, MIC+)-terminal B (24-pin, MIC IN+) Terminal B (6-pin, MIC-)-terminal D (24-pin, MIC IN-) Terminal C (6-pin, MIC +B)-terminal U (24-pin, MIC+B) Terminal D (6-pin, GND)-terminal F (24-pin, MIC IN SHIELD) Terminal E (6-pin, MIC SENSE)-terminal J (24-pin, MIC SENSE) Is there open or short circuit? 	Yes	Repair or replace suspect wiring harness.
		No	Go to the next step.
11	<ul style="list-style-type: none"> Inspect the following wiring harnesses between the hands-free unit and car-navigation unit. <ul style="list-style-type: none"> Terminal A (24-pin, MIC OUT+)-terminal A (6-pin, MIC+) Terminal C (24-pin, MIC OUT-)-terminal B (6-pin, MIC-) Terminal E (24-pin, MIC OUT SHIELD)-terminal D (6-pin, GND) Terminal J (24-pin, MIC SENSE)-terminal E (6-pin, MIC SENSE) Is there open or short circuit? 	Yes	Repair or replace suspect wiring harness.
		No	Replace the microphone, then go to the next step.

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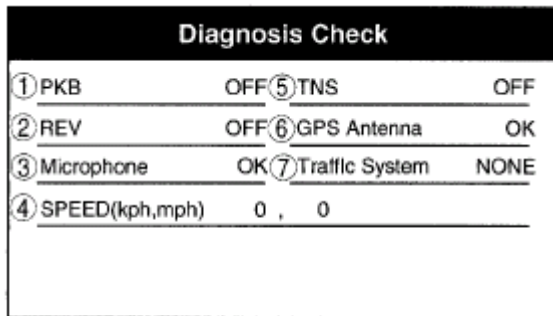
12	<ul style="list-style-type: none"> • Does the fault phenomenon improve? 	Yes	Troubleshooting is completed.
		No	Replace the car-navigation unit.

REFERENCE INFORMATION [CAR-NAVIGATION SYSTEM]

STARTING PROCEDURE FOR DIAGNOSTIC FUNCTION

1. Turn the ignition switch to the ON position.
2. Press the MENU button.
3. Select "Navigation Set Up".
4. Select "Calibration".
5. Select "Map Version".
6. Press the upper left part of the screen 2 times, then press the lower left part 2 times.
7. Perform the following procedures according to the purpose of the item checked.

Vehicle status signal inspection:



ac9uuw00002818

Fig. 2: Diagnosis Check Screen Display - Vehicle Status Signal
 Courtesy of MAZDA MOTORS CORP.

VEHICLE STATUS SIGNAL INSPECTION CHART

No.	Display item	Description
1	PKB	NOTE: <ul style="list-style-type: none"> • Displayed but not used in the inspection.
2	REV	Indicates reverse signal status. <ul style="list-style-type: none"> • ON: Reverse • OFF: Others
3	Microphone	Indicates the connection status of the microphone. <ul style="list-style-type: none"> • OK: Connected • NCON: Disconnected

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4	SPEED ⁽¹⁾	Indicates the present vehicle speed in kph/mph (maximum of 3 digits).
5	TNS ⁽¹⁾	Indicates TNS signal status. <ul style="list-style-type: none"> • ON: Turn TNS ON • OFF: Turn TNS OFF
6	GPS Antenna ⁽¹⁾	Indicates the connection status of the GPS antenna. <ul style="list-style-type: none"> • OK: Connected • NCON: Disconnected
7	Traffic System	Indicates RDS-TMC system availability on the vehicle. <ul style="list-style-type: none"> • TMC: Equipped • NONE: Not equipped
<p>(1) Used for symptom troubleshooting. (Troubleshooting index No. 5 and No. 8)</p>		

Microphone related signal inspection:

1. Press the "Menu" button on the "Diagnosis Check" screen.
2. Select "Navigation Check Menu".
3. Select "Microphone Check".

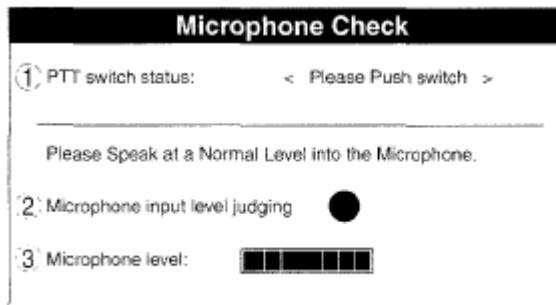


Fig. 3: Diagnosis Check Screen Display - Microphone Check
 Courtesy of MAZDA MOTORS CORP.

MICROPHONE CHECK INSPECTION CHART

No.	Display item	Description
1	PTT switch status	Indicates the status of the VOICE button. <ul style="list-style-type: none"> • < OK >: Press the button (Keep the state until the screen is changed.) • < Please Push Switch >: Other than above condition.
		Indicates the test results.

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2	Microphone input level judging	<ul style="list-style-type: none">• Blue indicator: Sound is input from the microphone correctly.• Gray indicator: Sound is input from the microphone incorrectly.
3	Microphone level	Indicates the input level of the microphone using a bar graph.

FINISHING PROCEDURE FOR DIAGNOSTIC FUNCTION

1. Turn the ignition switch to the LOCK position.
2. Turn the ignition switch to the ACC or ON position.
3. Return to the normal screen.