

Navigation System –
Diagnostic ProceduresMODEL 2002 MY-ON
X-TYPE

VIN C00001-ON

Issue:

This Technical Bulletin has been issued as information only to assist with the diagnosis of Navigation System concerns.

Action:

The following procedures will assist in diagnosing faults with the Navigation and Display System alone, troubleshooting from the symptom or logged Diagnostic Trouble Codes (DTCs). If a fault lies with the Audio, Telephone or Climate Control systems, diagnosis must be made using the diagnostic tools and information made available for those systems.

To retrieve any stored Navigation System DTCs; press and hold the 'Menu' and 'Telephone' hard keys simultaneously for 5 seconds, when the keypad screen appears release the hard keys, enter the code 917 and press the 'Enter' soft key, select the 'Self Check' soft key from the 'On Screen Diagnostics' menu and if any DTCs are stored, they will be displayed on screen.

The WDS unit can be used in multi meter mode to check wiring harness integrity.

TROUBLESHOOTING FROM SYMPTOM**Unable to insert or eject map disc**

Turn the ignition switch to the 'Accessory' position.

Check for battery voltage at navigation module electrical connector NA007 pin 11.

1. Is battery voltage seen?
If NO - Check for faulty wiring harness, or faulty battery
If YES - Check for ground at navigation module electrical connector NA007, pin 2.
2. Is a good ground present?
If NO - Check for faulty wiring
If YES - Faulty Navigation Module

NOTE: THE INFORMATION IN TECHNICAL BULLETINS IS INTENDED FOR USE BY TRAINED, PROFESSIONAL TECHNICIANS WITH THE KNOWLEDGE, TOOLS, AND EQUIPMENT TO DO THE JOB PROPERLY AND SAFELY. IT INFORMS THESE TECHNICIANS OF CONDITIONS THAT MAY OCCUR ON SOME VEHICLES, OR PROVIDES INFORMATION THAT COULD ASSIST IN PROPER VEHICLE SERVICE. THE PROCEDURES SHOULD NOT BE PERFORMED BY "DO-IT-YOURSELFERS." DO NOT ASSUME THAT A CONDITION DESCRIBED AFFECTS YOUR CAR. CONTACT A JAGUAR RETAILER TO DETERMINE WHETHER THE BULLETIN APPLIES TO YOUR VEHICLE.

Global Positioning System (GPS) mark does not disappear from screen (unable to receive GPS signals)

Note: Position vehicle outside of workshop when carrying out this diagnosis.

Ensure ignition is switched to 'Accessory' position. Enter 'On-Screen Diagnostics' screen by simultaneously pressing and holding 'Menu' and 'Telephone' hard keys for 5 seconds. When keypad screen is displayed, release hard keys, enter code '917' and press 'Enter' soft key.

1. Select the 'Navigation Info', then 'GPS Information' soft keys. After 10 or more minutes have elapsed, is a value of 'P' or 'T' displayed on the 'GPS Information' screen under any of the columns headed 'St'? This indicates that a signal is being received from a satellite.
If YES - Wait until three or more signals from satellites are being received so that the position can be calculated
If NO - ↓
2. Can signals be received after the GPS antenna has been replaced?
If YES - Faulty GPS antenna
If NO - Faulty navigation module

Present position cursor does not follow the route being taken

Ensure the map DVD is the latest level.

Ensure ignition is switched to 'Accessory' position. Enter 'On-Screen Diagnostics' screen by simultaneously pressing and holding 'Menu' and 'Telephone' hard keys. When keypad screen is displayed release hard keys, enter code '917' and press 'Enter' soft key.

1. Select the 'Navigation Info', then 'Vehicle Signals' soft keys. When the vehicle is driven at a minimum speed of 5 Km/h, is a value greater than 0 displayed against 'Speed' in the 'Vehicle Info'?
If NO - Investigate the SCP lines. Navigation module electrical connector NA007 Pins 4 and 14
If YES - ↓
2. Does the value displayed in the 'Vehicle Info' differ significantly from the value displayed on the Speedometer?
If YES - Set ignition switch to 'OFF' then back to 'Accessory' position. Switch navigation 'ON' and navigate to 'Navigation Menu', select 'Navigation Set Up', then 'Calibration', and 'Distance' soft keys. Return to the 'Navigation Info' screen and select the 'Vehicle Signals' soft key, drive the vehicle a minimum of 10 km then observe the conditions. If the value displayed in the 'Vehicle Info' differs significantly from the value displayed on the Speedometer suspect a faulty navigation module

If NO - ↓

3. Does the value next to 'Relative Bearing' in the 'Gyro Info' change when the vehicle is turned right or left?

If NO - Faulty navigation module

If YES - Refer to the diagnostic strategy associated to DTC \$A205

Navigation does not emit voice guidance

Note: The navigation system will only support voice guidance when a route has been calculated for a desired destination.

1. Does the audio system emit sound when AM/FM or CD is selected?

If NO - Faulty audio system

If YES - ↓

2. Ensure ignition is switched to 'Accessory' position, press NAV hard button, agree soft button, then navigate to 'Navigation Menu'. Is the voice guidance enable soft key selected (graphic of speaker with sound waves)?

If NO - Select the voice guidance soft key, plan a new route and re-test

If YES - ↓

3. Select the 'Menu' hard key, then the 'Volume Preset' soft key. Is the 'NAV' volume preset set to minimum?

If YES - Increase the volume level and re-test

If NO - ↓

4. Select a desired position as a destination and allow the system to calculate the route. Press the start soft key. Is voice emitted?

If YES - Normal, no further action required

If NO - ↓

5. Check the D2B network fiber optic cable integrity using the D2B network tester 415-S003. Was a fault identified?

If NO - Faulty audio system or navigation module

If YES - Faulty wiring harness

Nothing appears on the display screen (blank screen)

1. Was the ignition turned 'OFF' when the software was being updated to a later version?
If YES - Turn the ignition from 'OFF' to 'ON', insert the software update disc
 - a. Does the display screen recover after five minutes have elapsed from ignition 'ON'?
If YES - No further action required
If NO - ↓
 - b. Check both sides of map disc for contamination and damage to surfaces. Is contamination/damage evident?
If NO - Replace navigation module
If YES - ↓
 - c. Remove contamination from disc or replace if it is damaged, turn the ignition from 'OFF' to 'ON', and re-insert map disc into navigation module
 - d. Does the display screen recover after five minutes have elapsed after re-inserting the disc?
If YES - No further action required
If NO - Faulty navigation module
If NO - ↓
2. Ensure ignition switch is set to 'Accessory' position. Check for battery voltage at navigation module electrical connector NA007 pins 1 and 11. Is battery voltage seen?
If NO - Check for faulty wiring harness
If YES - ↓
3. Check for ground at navigation module connector NA007, pin 2. Is ground good?
If NO - Check for faulty wiring harness
If YES - ↓
4. Does the compact LCD display appear normal?
If NO - Ensure ignition switch is set to 'Accessory' position. Check for battery voltage at navigation switch and display module electrical connector IP070 pins 1 and 2. Is battery voltage seen?
If NO - Check for faulty wiring harness
If YES - ↓
 - a. Check for ground at IP070, pin 12
If NO - Check for faulty wiring harness
If YES - ↓
If YES - ↓

5. Enter the "Display Inspection Menu" screen by simultaneously pressing and holding 'Menu' and 'Telephone' hard keys for 5 seconds. When keypad screen is displayed release hard keys, enter code '917' and press 'Enter' soft key. Then select "manual check" soft button followed by "display test" soft button.
6. Select the 'DIAG.' soft key. Are any DTCs logged?
If YES - Carry out associated diagnostic strategy and re-test
If NO - ↓
7. Select the 'HARD SW' soft key and check all hard keys. Are all hard keys functioning correctly?
If NO - Faulty navigation switch and display module
If YES - ↓
8. Select the 'SOFT SW' soft key and check soft key operation. Are soft keys functioning correctly?
If NO - Faulty navigation switch and display module
If YES - -
9. Select the 'COLOR BAR' soft key and select each color in turn to check screen color. Is screen color management correct?
If NO - Faulty navigation switch and display module
If YES - Faulty navigation module

Navigation screen is not displayed when 'NAV' hard key is selected

<p>Note: A map disc must be inserted for the navigation system screen to be displayed.</p>

Ensure ignition is switched to 'Accessory' position. Enter 'On-Screen Diagnostics' screen by simultaneously pressing and holding 'Menu' and 'Telephone' hard keys for 5 seconds. When keypad screen is displayed release hard keys, enter code '917' and press 'Enter' soft key.

1. Select 'Manual Check', 'Display Test' then 'HARD SW' soft keys. Check the 'NAV' hard switch functionality. Is the switch functioning OK?
If NO - Faulty navigation switch and display module
If YES - ↓
2. Navigate back to the 'On-Screen Diagnostics' menu, select 'Navigation Info', 'Reset position' then 'Reset' soft keys. Switch ignition 'OFF' then back to 'Accessory' position. Is the navigation screen displayed when the 'NAV' hard key is selected?
If YES - No further action required
If NO - ↓
3. Check electrical harness between navigation module and navigation switch and display module. Is a fault evident?

If YES - Repair/replace harness as required

If NO - Faulty navigation module

Map screen is not displayed

1. Is there a message displayed on the navigation display screen stating 'The disk installed is not a MAP DVD'?

If YES - Ensure the disc inserted is a map DVD and it is installed in the correct orientation

If NO - ↓

2. Is the inserted map disc correct for market?

If NO - Replace with the correct map disc

If YES - ↓

3. Check both sides of map disc for contamination and damage to surfaces. Is contamination/damage evident?

If YES - Remove contamination from disc or replace if it is damaged, re-insert map disc into navigation module

If NO - Replace the navigation module

No audible feedback from hard or soft keys

1. Select the 'Menu' hard key, then 'System Setup' and 'User Settings' soft keys. Select 'All' soft key against 'Audible Feedback' then 'OK' soft key. Is there now audible feedback from the hard and soft keys?

If YES - No further action required

If NO - ↓

2. Check the DC-LAN wiring harness integrity between navigation module electrical connector NA001 pins 7 and 20, and navigation switch and display module electrical connector IP070 pins 4 and 15. Is there a fault with the wiring harness?

If YES - Repair the wiring harness

If NO - Faulty navigation switch and display module

Soft keys do not function

Ensure ignition is switched to 'Accessory' position. Enter 'On-Screen Diagnostics' screen by simultaneously pressing and holding 'Menu' and 'Telephone' hard keys. When keypad screen is displayed release hard keys, enter code '917' and press 'Enter' soft key.

Note: If "Enter" softkey is inoperative, replace faulty navigation module.

1. Select the 'Manual Check' then 'Display Test' soft keys. Select and run the soft key test within the 'Disp. Inspection Menu'. Was a fault identified?
If YES - Faulty display
If NO - ↓
2. Turn the ignition switch 'OFF' then back to 'Accessory' position. Can the soft keys be operated on the navigation screen?
If NO - Faulty navigation module
If YES - ↓
3. Can the soft keys be operated on the audio screen?
If NO - Check audio and related devices
If YES - ↓
4. Can the soft keys be operated (to switch modes) on the climate control screen?
If NO - Check the climate control and related devices
If YES - ↓
5. Can the soft keys be operated on the telephone screen?
If NO - Check telephone and other related devices
If YES - Check screen for damage and cleanliness

Clock is not displayed on the compact LCD display

1. Select the 'Audio' hard key. Can the audio be operated using the touch screen soft keys?
If NO - Check SCP lines at navigation module electrical connector NA007 pins 4 and 14 for integrity
If YES - ↓
2. Select the temperature up or down switch. Does the temperature displayed on the compact LCD screen change?
If NO - Faulty navigation switch and display module
If YES - ↓
3. Check the DC-LAN wiring harness integrity between navigation module electrical connector NA001 pins 7 and 20 and navigation switch and display module electrical connector IP070 pins 4 and 15. Is a fault evident?
If YES - Repair/replace wiring harness
If NO - Check the audio system and the related devices

TROUBLESHOOTING FROM DTC

\$A204 Open or short circuit in GPS antenna circuit

1. Disconnect GPS antenna electrical connector NA006 from the navigation module.

Check if circuit resistance between pins 1 and 2 is 190 ohms or greater.

If YES - Check for poor connection between GPS antenna electrical connector NA006 and navigation module. If fault found, rectify and re-test. If no fault found suspect faulty navigation module

If NO - ↓

2. Disconnect GPS antenna electrical connector NA012 from the GPS antenna. Check if circuit resistance between pins 1 and 2 is 190 ohms or greater.

If NO - Replace the GPS antenna

If YES - ↓

3. Check the integrity of the wiring between NA006 and NA012. Was a fault identified?

If YES - Rectify and re-test

If NO - Suspect poor connection at NA012

\$A205 GPS receiver malfunction

Note: When the signals from three or more satellites are received, the GPS mark disappears. If two or fewer signals are received the GPS mark will continue to be displayed on screen.

1. Carry out diagnostic strategy associated with DTC \$A204. Is a fault evident?

If YES - Rectify as required and re-test

If NO - Faulty navigation module

\$A206 Gyro malfunction

1. Is the navigation module mounted securely?

If NO - Correctly mount the navigation module

If YES - ↓

2. Ensure ignition is switched to 'Accessory' position. Enter 'On-Screen Diagnostics' screen by simultaneously pressing and holding 'Menu' and 'Telephone' hard keys, when keypad screen is displayed release hard keys, enter code '917' and press 'Enter' soft key. Then select the 'Navigation Info' and 'Vehicle Signals' soft keys and monitor the voltage in the 'Gyro Info'. When the vehicle is stopped, in Park with the parking brake applied, the voltage output should be approximately 2400-2500 mV. Is it within this range?

If NO - Replace the navigation module

If YES - ↓

Note: Carry out the following step approximately five times.

3. When driving the vehicle does the output voltage vary when the vehicle is turned left or right?
If NO - Replace the navigation module
If YES - Clear DTC and re-test

\$A207 Navigation module malfunction

Replace the navigation module

\$A208 Communication failure between navigation module and navigation switch and display module

1. Disconnect the navigation switch and display module electrical connector IP070 and check resistance through switch and display module between pins 4 and 15. Is it 68 ± 7 ohms?
If NO - Replace the navigation switch and display module
If YES - ↓
2. Disconnect the navigation module electrical connector NA001 and check for continuity through the module at pin 7 to ground and pin 20 to ground. Is there continuity?
If YES - Replace the navigation module
If NO - ↓
3. Check wiring harness for integrity between electrical connectors IP070 pins 4 and 15 and NA001 pins 7 and 20. Is a fault present?
If YES - Replace or repair the affected wiring harness
If NO - ↓
4. Does the fault code 50 or 51 appear on the small LCD display?
If YES - Replace the navigation module
If NO - Replace the navigation switch and display module

LCD DISPLAY FAULT CODES

CODE DESCRIPTION

- 50** Communication failure between control module and display unit at startup.
- 51** Communication failure between control module and display unit during operation.
- 52** Communication failure between control module and display unit during operation.
- 61** Control module ROM failure. Checksum error during start up.
- 62** Control module RAM failure. Read/write error during start up.
- 71** Backlight lamp failure during operation.
- 74** Backlight lamp overcurrent.
- 75** Video power supply failure.
- 76** Display unit over temperature.
- 79** Teletext failure (when fitted)
- 91** Soft switch malfunction.
- 92** Soft switch malfunction.
- C1** Communication failure between synchronised signals.