Navigation System Diagnosis – Access to Diagnostic Menu – Troubleshooting

MODEL 2000 MY-ON S-TYPE

VIN L00001-ON

Issue:

This Technical Bulletin provides diagnostic information for the Navigation System used on S-TYPE vehicles. Within the Navigation System there is a Diagnostic Procedure to which a technician may gain access.

The Bulletin contains the following information:

Access to the Diagnostic Menu — Diagnosis Codes

Troubleshooting Flowcharts — 'Adjust Position' Procedure

The Adjust Position Procedure provides a method of rapid re-orientation of the system should a vehicle have been unable to 'see' satellites for some time, during which the vehicle has been transported a considerable distance - a situation which may arise during the delivery cycle, or where a customer's vehicle is on board a car ferry for a considerable period of time.

> **Note:** The navigation control module is designed to operate in the secured upright position. Failure to secure the navigation control module will result in misdiagnosis of the system.
> After changing a map CD-ROM, the ignition key should be cycled off then on again, to ensure the system recognizes the new CD-ROM.

Action:

ACCESS TO THE DIAGNOSTIC MENU:

1. Turn the ignition to position I or II.
2. If the Navigation System has not yet started, press any of the touch buttons.
3. The Caution screen will follow the Jaguar logo.
4. With the Caution screen still displayed, depress the touch buttons RAPIDLY in the following order: F3, F4, F3, F4, F3, F4, ENTER, ENTER, ENTER.
5. The screen will then show the Diagnosis Menu.

   The menus now available are:

   a. **System Inspection**

   b. **Display & SW**

   c. **Diag. Memory Menu**

   d. **NAV Diag. Menu**

   e. **Connections Info**

   f. **Adjust position**

The following is a summary of the features of each of the above menus.

a.	**System Inspection**	Shows any abnormality of the system at the moment of testing. If the components and signals are correct, then **OK** will appear adjacent to the items tested. Should a fault exist, then a **Fault Code** will be displayed. Where system components are not fitted (e.g. TV-TUNER is only available for the Japanese Market - not fitted for all other Markets) an Error code will be displayed adjacent to the name of the component concerned.

b.	**Display & SW**	Allows testing of the Display and Switch functions. There are 8 possible selections:
1.	**Diag**	Will display OK, or error code if faulty. (Press 'MAP' to return to Display & SW menu).
2.	**SW**	Allows testing of the push button and cursor control switches.
3.	**TV**	For the Japanese Market ONLY - checks connection. (Press 'MAP' to return to Display & SW menu).
4.	**VER**	Displays the version of the software on which the system is running. Also available is the MAP version and the type of TV fitted. (Press 'MAP' to return to Display & SW menu).
5.	**COLOR BAR**	A check will indicate whether the R (Red), G (Green) and B (Blue) signals are correct. (When in this screen, press F1 or F4 to check the color bar 'Pixels'). (Press 'MAP' to return to Display & SW menu).
6.	**CON BRI**	Adjustments of Contrast and Brightness may be checked. (Press 'MAP' to return to Display & SW menu).
7.	**RAM CLEAR**	Clears the back-up RAM i.e. Diagnosis, Brightness and Contrast. (Press 'MAP' to return to Display & SW menu).
8.	**END**	Will return to the Display & SW menu.

c.	**Diag. Memory**	Allows access to the error history screens - faults that were intermittent. Where a system fault has been logged, the error code together with the date and time of the occurrence are displayed. There are 5 possible selections:
1.	**NAV**	Navigation Control Module faults.
2.	**DISPLAY**	Display/Control Panel faults.
3.	**GPS**	Global Position System faults.
4.	**CD-ROM**	Faults with the CD or Driver
5.	**VICS**	Japanese Market ONLY

d.	**NAV Diagnosis Menu**	Allows monitoring of the system signals in real time (built-in datalogger). There are 5 screens available:
1.	**Program**	Displays the current version of the Map area - e.g., UK, Japan, Germany, etc. This is also the menu to be accessed when upgrading or changing the system software version (NOT Map Version).
2.	**GPS Information**	Will show information regarding the number of satellite signals being captured at that moment; the latitude and longitude at which the satellites are positioned; aerial status.
3.	**RGB Signal**	Shows a color bar so that the RGB signals may be checked
4.	**Vehicle Signal**	In this screen the vehicle's road speed is displayed; the gyro voltage (determines rotation/turns) may also be monitored. Also shows direction of travel - if vehicle is in reverse gear, screen will show '1'.
5.	**VICS Diag**	Japanese Market ONLY

e.	**Connections Information**	This screen indicates which Options are deemed to be available. The availability of an option **is** determined on the initial communication attempt to the components; if a failure in communication to a component occurs the words 'Not Available' will be displayed adjacent to the component.
	TV & **VICS**	Japanese Market ONLY.
	VEMS	North American Market ONLY. Is hard-wired to the Navigation System, hence Open Circuit to the VEMS would indicate 'Not Available'. Only available with the Deluxe Communications Package.
	Traffic Info	UK & German Market ONLY. If Nav CM does not connect with "Traffic Master", then 'Not Available' is displayed.

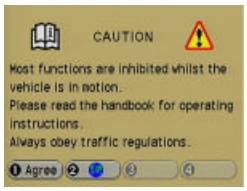
f.	**Adjust Position**	Allows the system to re-calibrate to a new position following the vehicle being transported over a long distance.

	To Exit:	To Exit the Diagnostic screens, turn the ignition 'Off'. When the ignition is next turned 'On' the Navigation System will revert to normal customer use condition.

On the following 3 pages there are illustrations of the Diagnosis Menu screens that may be accessed. Note that although the normal user display may be selected in several languages, the majority of the Diagnostic Menu screens are displayed in English ONLY.
Certain TV and VICS Diagnostic screens, applicable to the Japanese Market only, are in Japanese, not English.

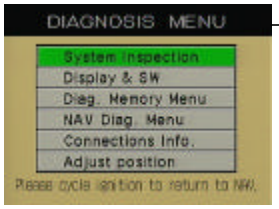
Initial Screen

Caution

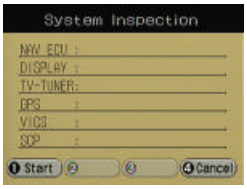


F3→F4
→F3→F4
→F3→F4
→ENTER
→ENTER
→ENTER

Diagnosis Menu

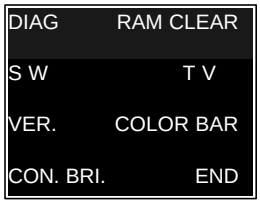


System Inspection



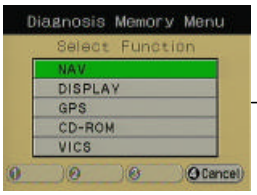
Performs a system inspection and displays the results

Display Inspection Menu



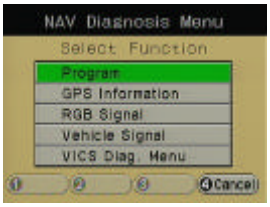
Inspects TV picture quality and switches (Japan ONLY)
Illustrations of these screens are not available.

Diagnosis Memory Menu



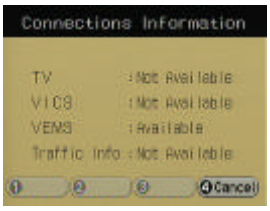
Displays data in each diagnosis memory

NAV Diagnosis Menu



Displays status of each navigation unit

Connections Information



Displays the availability of options

Adjust Position

Adjusts (calibrates) the current geographical location.

MENU

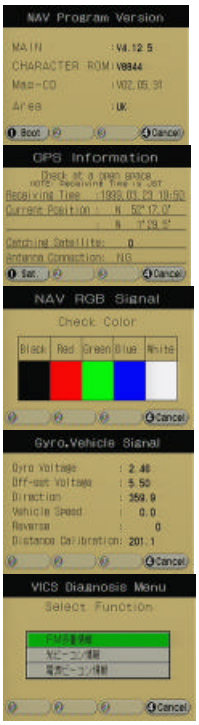
Displays data in the Navigation System

Displays data in the Display Diagnosis Memory

Displays data in the GPS Diagnosis Memory

Displays data in the CD-ROM diagnosis memory

Displays data in the VICS diagnosis memory (Japan ONLY)



Displays the version of the navigation program

Displays the GPS and satellite status

Inspects the RGB signals in the navigation unit

Displays the gyro sensor and vehicle signals

Displays the VICS receiving status (Japan ONLY)

DIAGNOSIS CODES

The diagnosis codes listed on the following tables can be displayed on the System Inspection screen and/or on the Diagnosis Memory screen. (The "System Inspection" and "Diagnosis Memory" columns in the table below show their availability on respective screens). The table also shows the status of the FAIL LED (to the left of the information key) associated with the output of each diagnosis code.

1. Display Unit

Diagnosis Code	Diagnosed Item	Message	Corrective Action	System Inspection	Diagnosis Memory	Fail LED
50	No connection between the Navigation CM and Display/ Control Panel	The attempt to make an initial communication failed	• Check the connector • Check the wiring harness • Check the Navigation CM	O	-	OFF
51	Communication error	Error in communication between the Display/Control		O	-	ON
52	(Navigation CM)	Panel and Navigation CM		O	-	ON
61	ROM abnormality	Error detected by check sum test	Check the Display/Control Panel	O	-	OFF
62	RAM abnormality	A part of the RAM cannot be accessed to read or write		O	-	OFF
71	Back light abnormality (1)	The back light bulb has failed (no current)		O	O	ON
74	Back light abnormality (2)	Overcurrent to back light (abnormality in back light power supply)		O	O	ON
76	Abnormally high temperature	Abnormally high temperature within the Display/Control panel		O	O	ON
77	Backup memory abnormality	Abnormality in the backup memory		-	O	OFF
78	Abnormality in the "i" switch	The contact of the "i" button remains continuously closed for 30 seconds or longer.		O	O	ON
84	+B disconnection	Abnormality in the +B power supply	• Check the wiring harness • Check the Display/ Control Panel	O	O	OFF
C1	Synchronization signal abnormality (Navigation CM)	Abnormality in the Navigation CM synchronization signal	• Check the wiring harness • Check the Navigation CM	O	O	ON

2. Navigation CM

Diagnosis Code	Diagnosed Item	Message	Corrective Action	System Inspection	Diagnosis Memory	Fail LED
00	ROM abnormality	Error detected by check sum test	Check the Navigation CM	O	-	OFF
01	Backup memory abnormality	The check-sum before IG-OFF and the check-sum before IG-OFF are different	Check the Navigation CM (except after booting)	-	O	
03	Vehicle speed pulse abnormality	Abnormality in the vehicle speed signal (0 km/h)	• Check the connector • Check the wiring harness • Check the Navigation CM	-	O	OFF
25	SCP communication error	The attempt to make a communication from the vehicle has failed (no signal received)	• Check the connector • Check the wiring harness • Check the Navigation CM	O	O	OFF
26	No response from VEMS	Commands supporting the VEMS drivers cannot be executed	• Check the VEMS • Check the wiring harness	-	O	ON
27	Communication error	Error in communication between the Navigation CM and TrafficMaster	• Check the wiring harness • Check TrafficMaster *	O	O	OFF
28		Error in communication between the Navigation CM and Display/ Control Panel	• Check the connector • Check the wiring harness	-	O	ON
29	Display/Control Panel disconnected	The attempt to make an initial communication failed	• Check the Display/ Control Panel	-	O	OFF
30	Gyro abnormality	Abnormality in the gyro	Check the Navigation CM (Gyro system)	-	O	OFF
31	GPS receiver abnormality	Abnormality in the GPS receiver	Check the Navigation CM (GPS receiver)	O	O	OFF
3A	GPS antenna contact disconnected or short-circuited	GPS antenna contact open or short-circuited	• Check the connection of the GPS antenna • Check the GPS antenna	O	O	OFF
A1	Abnormal temperature in the CD pickup	Abnormally high temperature in the CD player	Check the Navigation CM (CD player)	-	O	ON

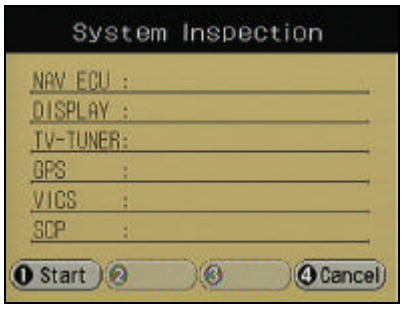
2. Navigation CM (Continued)

Diagnosis Code	Diagnosed Item	Message	Corrective Action	System Inspection	Diagnosis Memory	Fail LED
A2	No disk	No map CD is inserted into the player	Insert a map CD	-	O	OFF
A3	Wrong disk	A wrong CD has been inserted into the player	Replace a map CD	-	O	OFF
A4	CD read error	Data cannot be read from the map CD	• Replace the map CD • Check the Navigation CM (CD player)	-	O	OFF

* TrafficMaster feature will apply in UK and Germany ONLY.

Note 1: On the System Inspection screen

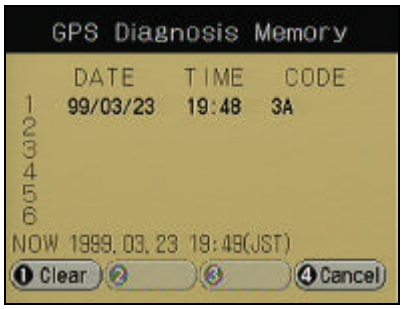
Diagnosis codes marked 'O' in the table above may be displayed



← Diagnosis codes and output date/time

Note 2: On the Diagnosis Memory menu

Diagnosis codes marked 'O' in the table above may be displayed



← Diagnosis codes and output date/time

Note 3: Fail LED

Lights up when an abnormality is detected

TROUBLESHOOTING FLOWCHARTS

Prior to following the flowcharts ensure that normal diagnostics have been carried out using PDU.

CHART 1 **UNABLE TO INSERT OR EJECT THE MAP CD**

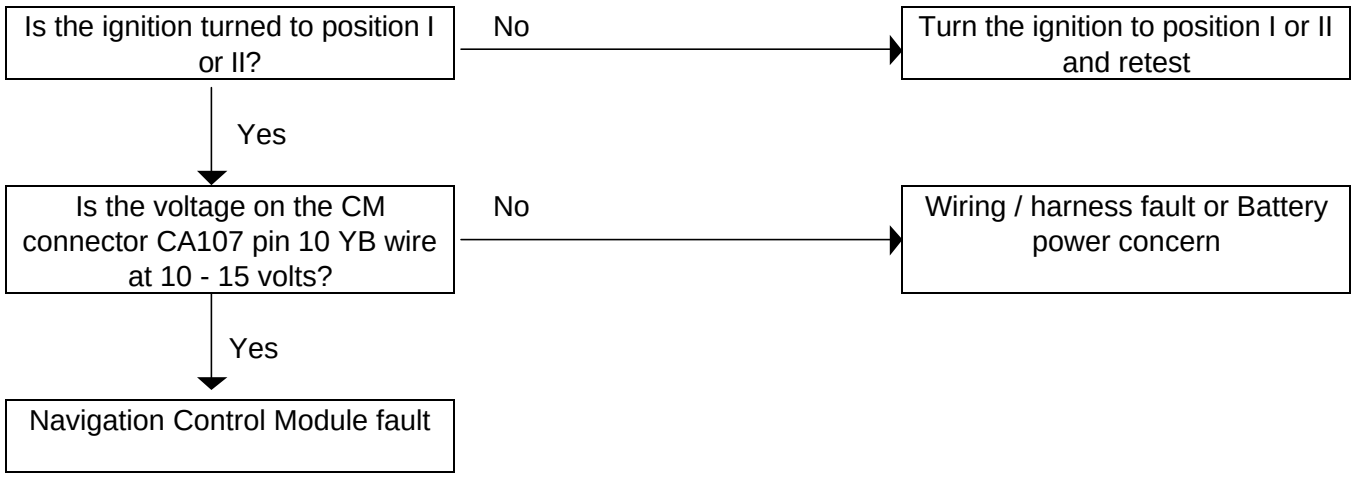


CHART 2 **CURRENT POSITION MARKER DOES NOT MOVE**

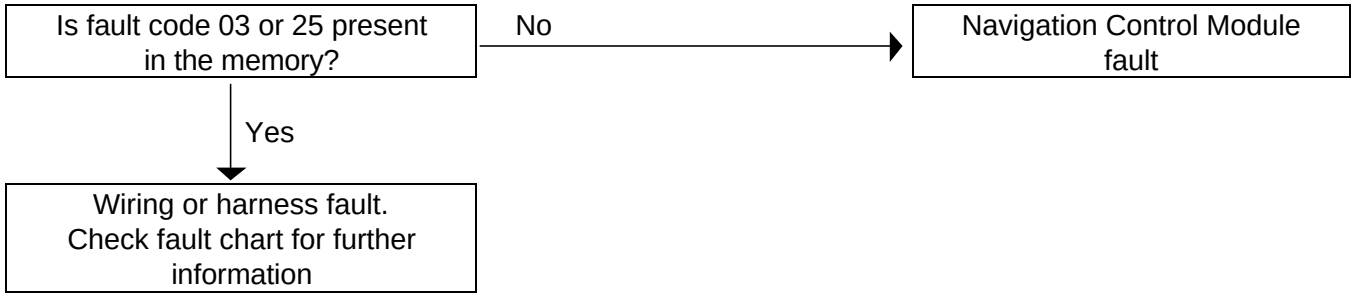


CHART 3 **RH / LH TURNS NOT RECOGNIZED**

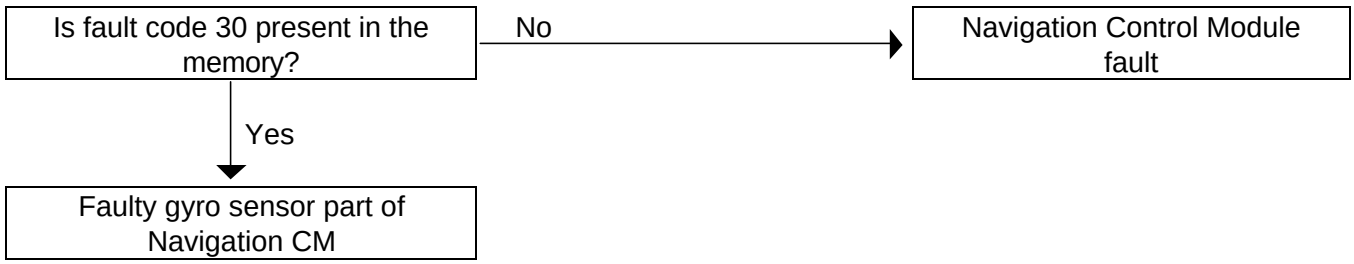


CHART 4 **GPS SIGNAL CANNOT BE RECEIVED**

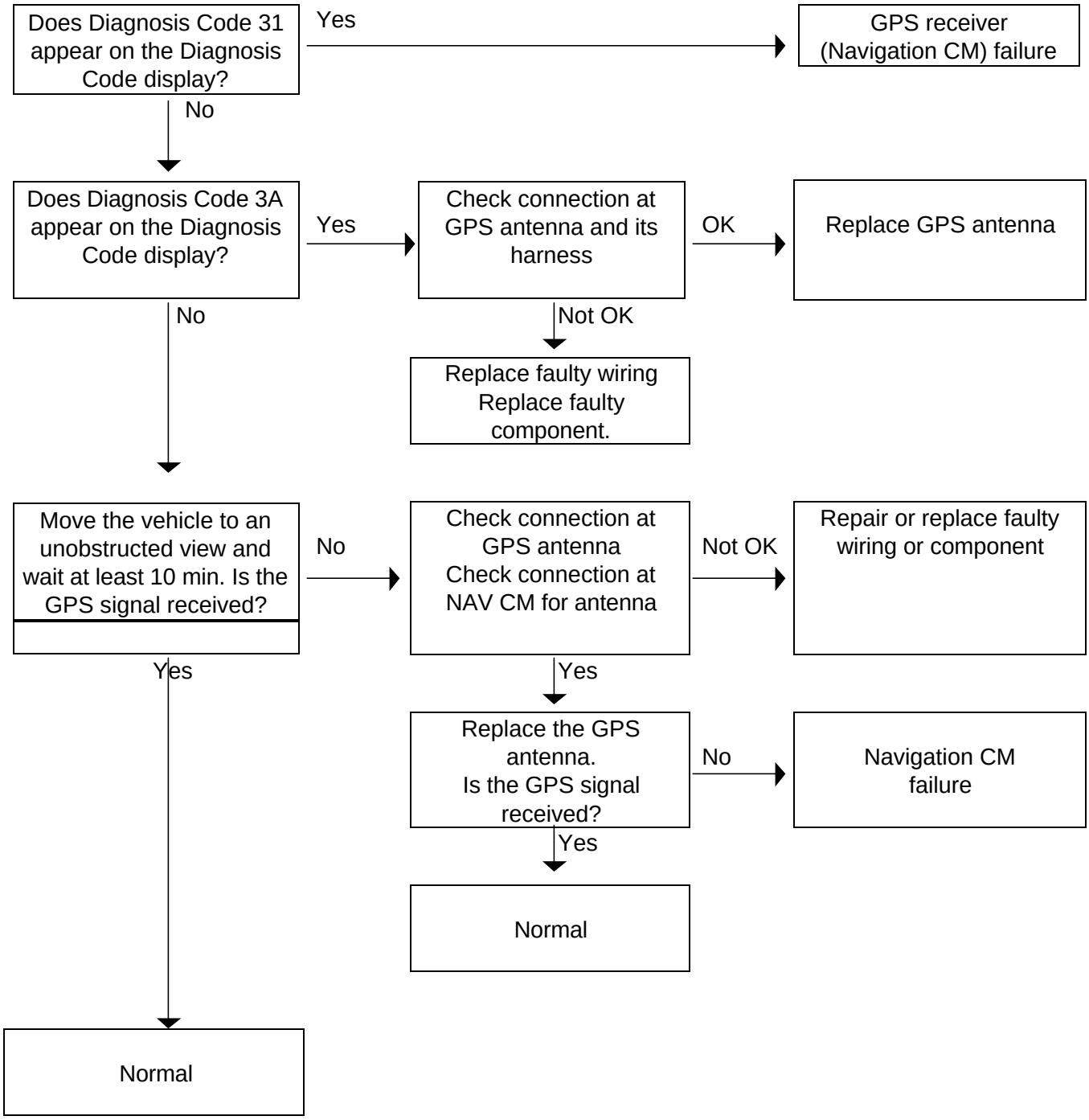


CHART 5

"CURRENT POSITION" CURSOR DOES NOT TRAVEL ON THE ROAD

Press the MAP button. Is the GPS icon displayed? (Allow 10 minutes with vehicle parked on open ground)

No → Carry out GPS diagnosis fault chart.

Yes ↓

Select "Vehicle Signal" from the NAV Diagnostic menu. Observe the vehicle speed and gyro signals during the following test sequence:

↓

When traveling above 5 km/h (3 mph) does the Vehicle Speed displayed alter?

No → Are any other components that use 'vehicle speed' signals showing faults? (Check SCP waveform) * (See foot of page)

Yes ↓

Check ABS signal and CM connections

No → Check harness and connections.

Yes ↓

With the vehicle stationary, is the gyro voltage 2 - 3 volts?

No → Navigation Control Module fault

Yes ↓

Over several turns in both directions, does the gyro voltage alter?

No → Navigation Control Module fault

Yes ↓

NO fault with the system

SCP Line Inspection *

If an oscilloscope is available, check whether the waveforms illustrated are present or not.

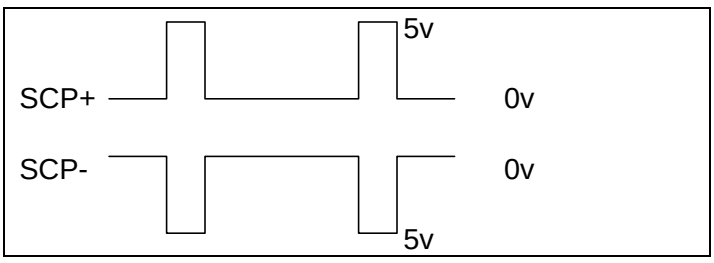


CHART 6 — AUDIO GUIDANCE MISSING

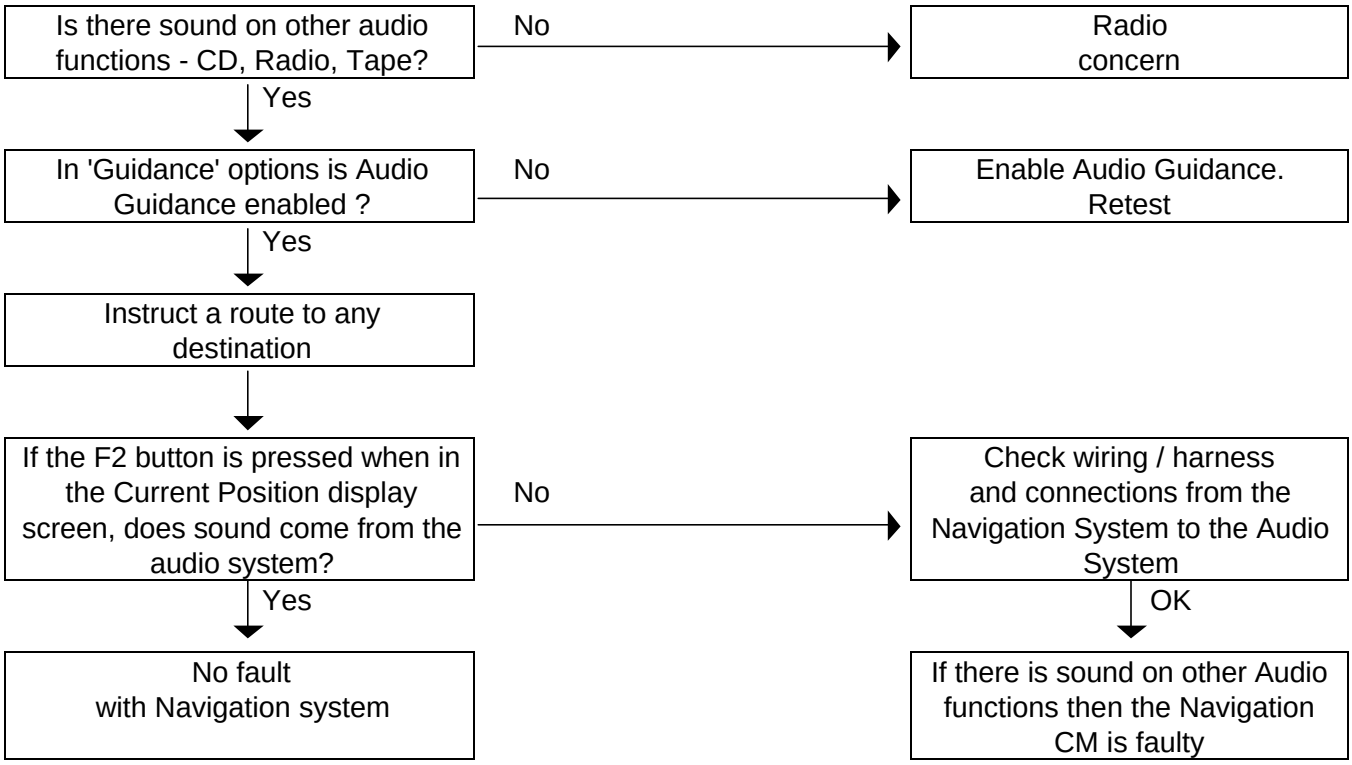


CHART 7 — NO DISPLAY / DARK DISPLAY

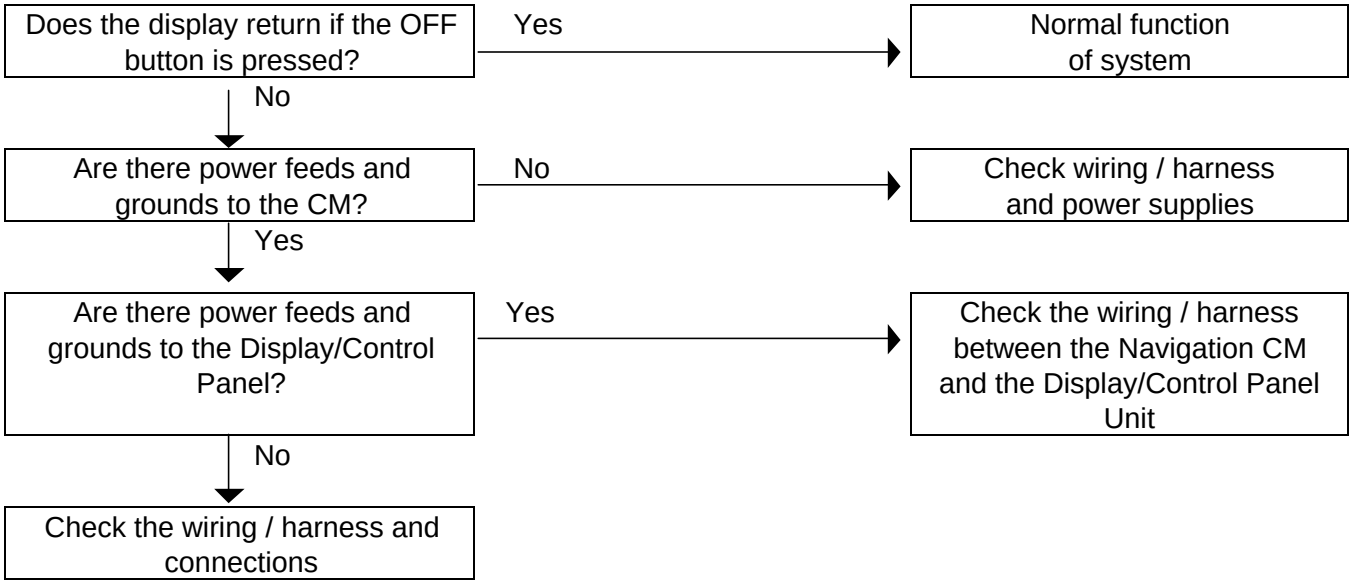
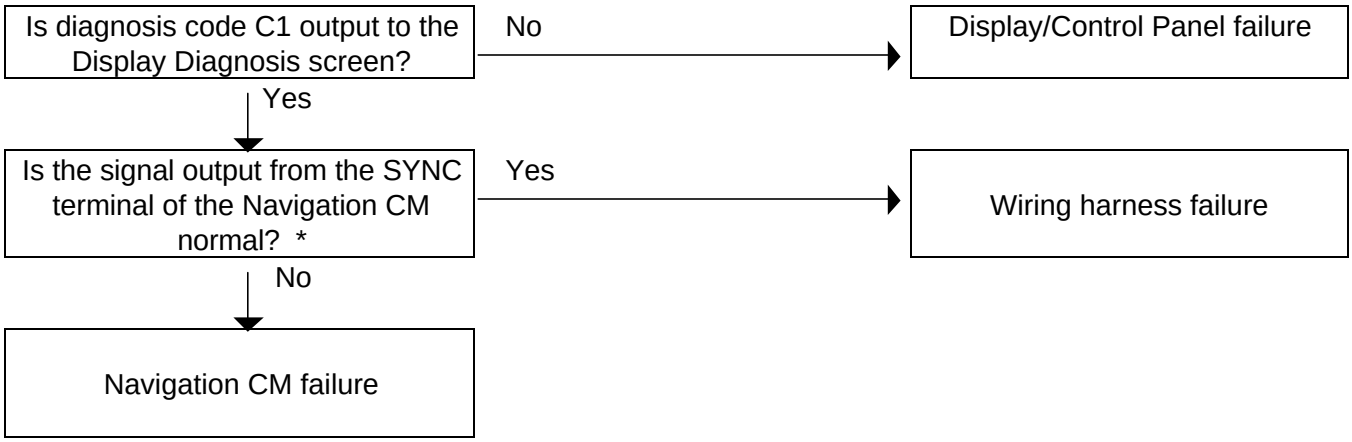
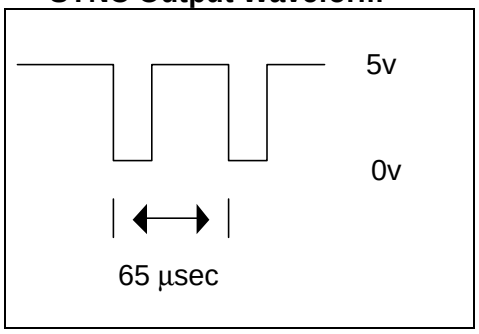


CHART 8 **IMAGES APPEAR DISTURBED**



*** SYNC Output Waveform**



If an oscilloscope is available, check whether the waveforms illustrated are present or not.

CHART 9

ONLY THE MAP DISPLAY IS UNAVAILABLE

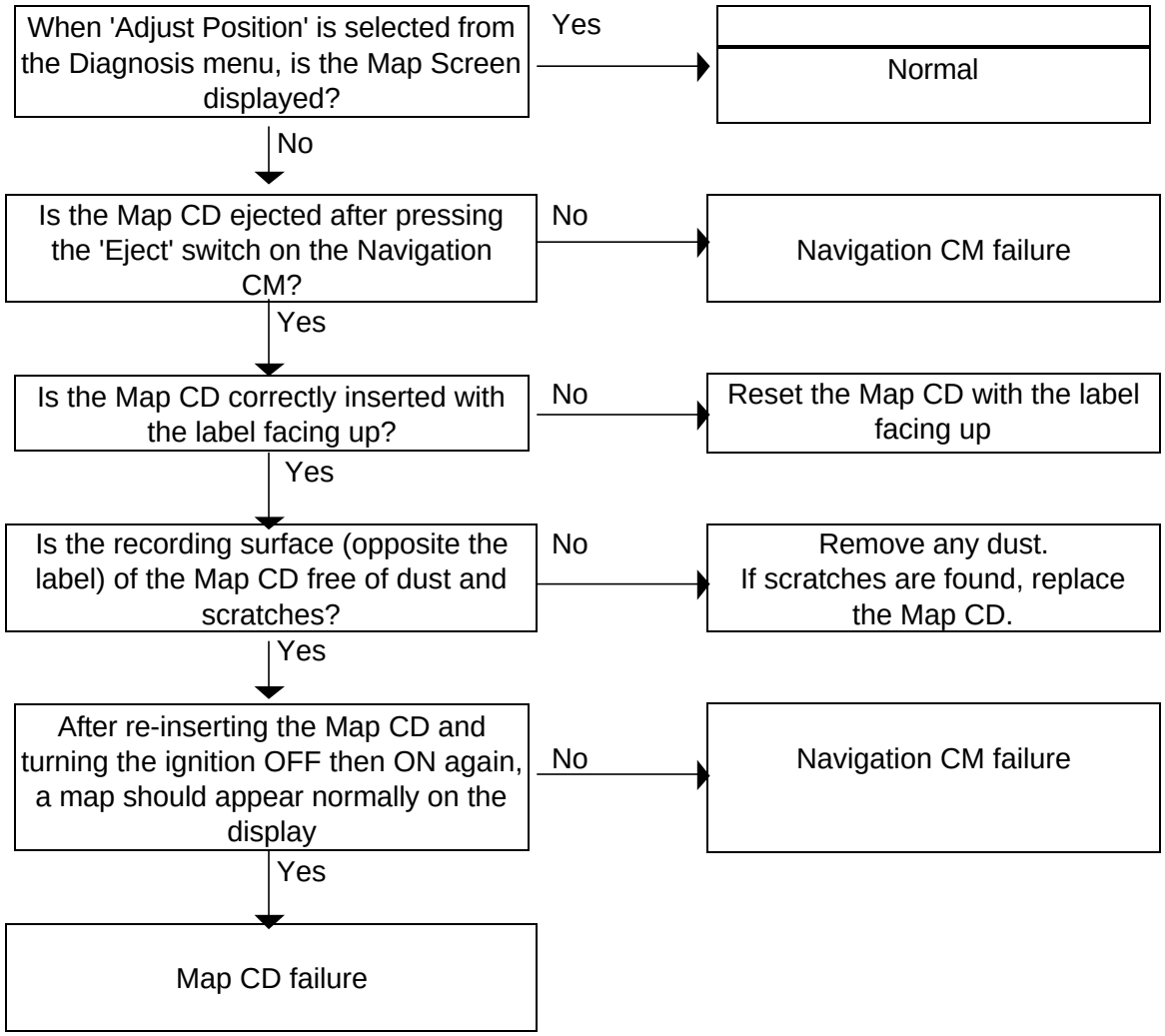
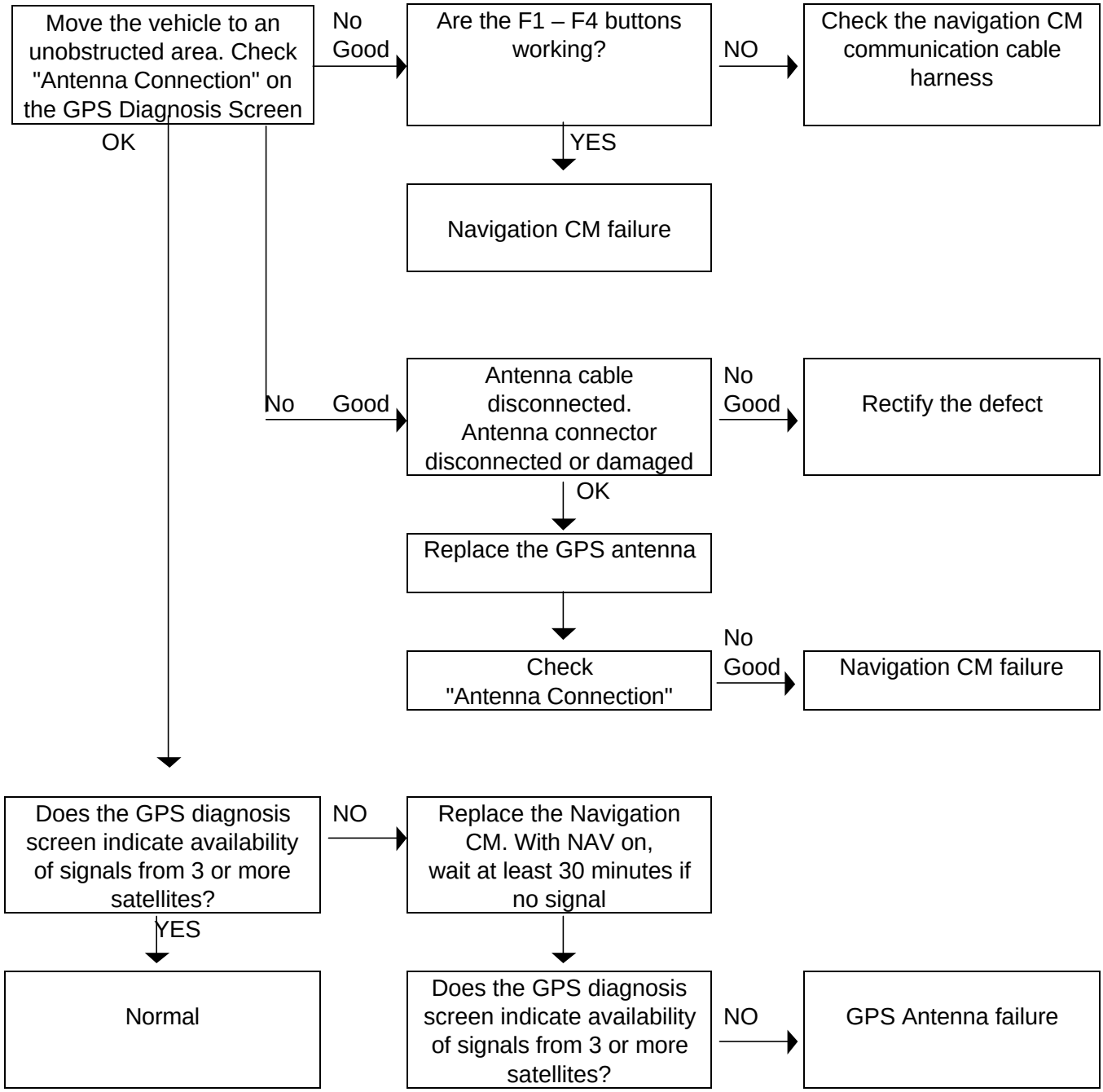
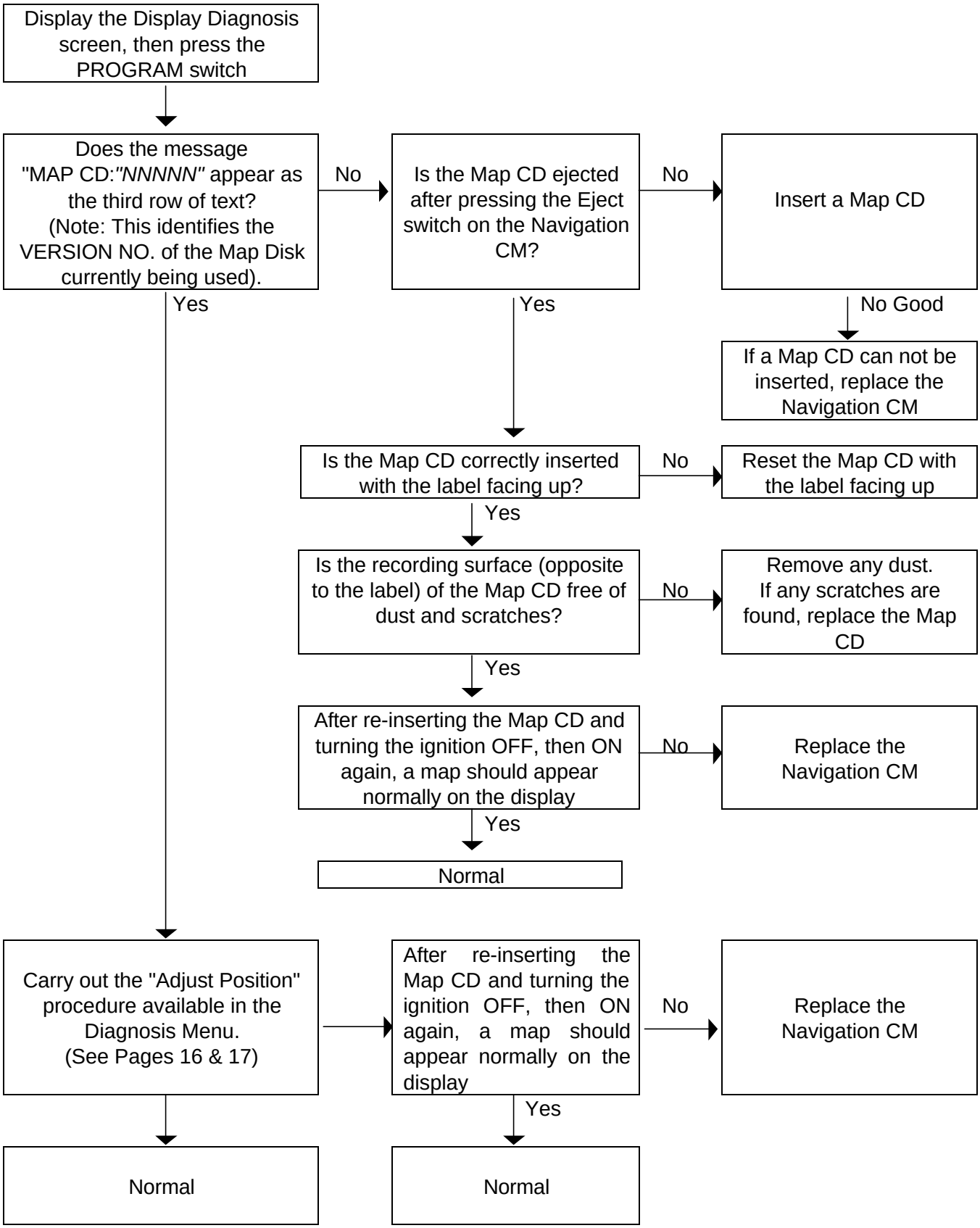


CHART 10

GPS DOES NOT DISPLAY THE CURRENT POSITION MARKER



Procedure to be followed after identification of Navigation CM failure:



DISPLAY - STRANGE COLORS or UNSTEADY DISPLAY

Should the screen display strange colors, or the display is unsteady, a fault with the R, G, B or SYNCHRO signals is to be suspected. There are no tests that can be carried out on the hardware. If, after checking the harness for short circuits and continuity, the fault has not been rectified, call Dealer Technical Support for further assistance.

“ADJUST POSITION” PROCEDURE

The Navigation System may be confused as to the geographic location of the vehicle following long-distance transportation, such as inside a car ferry or ship's hold. The system will normally recognize its location after a few minutes of operation, with the appropriate map disk in use, if driven on open roads. If driven rapidly from a ship into an enclosed building, the system may be unable to 'see' three satellites for sufficient time to enable it to determine the current location. In such situations, the following procedures provide a means of providing the system with specific details of the current location of the vehicle.
Note: This procedure will locate the vehicle to the default city on the map CD being used.

MCA 1	Los Angeles	MCA 4	Houston	MCA 7	New York City
MCA 2	Phoenix	MCA 5	Chicago	MCA 8	Washington DC
MCA 3	Kansas City	MCA 6	Pittsburgh	MCA 9	Atlanta

ADJUST POSITION FROM DIAGNOSIS MENU		**ADJUST POSITION FROM MAIN MENU (DEALER POINT OF INTEREST)**
• Ignition ON • Slide open the CD-ROM cover • Insert the appropriate Map Disk • Close the CD-ROM cover • From the CAUTION screen, input the access code sequence (Refer to Page 1 - Access to the Diagnostic Menu - Step 4) • Select ADJUST POSITION • Press F1 • Switch ignition OFF • Switch ignition ON • At the CAUTION screen, select F1 • Select F1, MAIN MENU • Select SET UP • Select CALIBRATION		• Ignition ON • Slide open the CD-ROM cover • Insert the appropriate Map Disk • Close the CD-ROM cover • At the CAUTION screen, select F1 • Select F1, MAIN MENU • Select F1, Enter DESTINATION • Select a Point of Interest / Town Center • Select F2, CLASS • Select JAGUAR DEALER • Select F1, LIST • Select DEALERSHIP and press <ENTER> • Press MAP • Select F1, MAIN MENU • Select SET UP • Select CALIBRATION • Select F1, RELOCATE

RELOCATION FROM MAIN MENU
(NO DEALER POINT OF INTEREST)

- Ignition ON
- Slide open the CD-ROM cover
- Insert the appropriate Map Disk
- Close the CD-ROM cover
- At the CAUTION screen, select F1
- Select F1, MAIN MENU
- Select F1, Enter DESTINATION
- Select F2, ADDRESS
- Enter Address of present location and press <ENTER>
- Select HOUSE NUMBER of present bcation and press <ENTER>
- Select TOWN of present location and press <ENTER>
- Press MAP
- Select F1, MAIN MENU
- Select SET UP
- Select CALIBRATION
- Select F1, RELOCATE

FAULT REPORTING:

If it is necessary to contact the Technical Hotline, make a photocopy of the attached Navigation Fault Report Sheet and fill in or check the boxes with all appropriate details prior to making contact. The Technical Hotline may request you to send the completed form by FAX.

Navigation Exchange Program

Product Problem Report

In order to assist in the verification of a failure/malfunction, during warranty testing, please complete ALL sections of this form and enclose with the failed unit upon return.

(Fill in BOTH sections completely)

Dealer Name	**Vehicle Identification Number (VIN)** Enter 17 digits	**Repair Mileage**	**In Service Date** (mm/dd/yy)
Repair Date (mm/dd/yy)	**Tech Hotline Case #** (if applicable)	**Dealer Code**	**Warranty Claim #**
JAGUAR Part Number (from failed unit) **Part Replaced:** ❑ NCM ❑ DISPLAY	**JAGUAR CD-ROM Part Number** (if NCM is replaced)	**Additional Part Replacement** ❑ GPS ANTENNA ❑ VECM ❑ AUDIO/STEREO ❑ ABS/TCCM ❑ OTHER (list) _____	

Customer Complaint Description _____

_____

_____

Can the described problem be duplicated?
❑ YES ❑ NO

Location
❑ Suburb ❑ Rural Area ❑ City
Country _____ State_____

Frequency of Occurrence
(check one)
❑ Intermittent ❑ Always

Time or Day
❑ Daytime
❑ Evening

Humidity ❑ Dry
❑ Humid ❑ Very Humid
❑ Rain ❑ All Conditions

Ambient Temperature
_____ (˚F)

Horizon (check one)
❑ Low (open area)
❑ Limited (tall buildings, structures, etc.)

Vehicle Speed
❑ At rest
❑ In motion (____mph, kph)

Engine
❑ ON
❑ OFF

System Reset
Does system reset automatically?
❑ YES ❑ NO If 'YES' within ____ min(s).

Does system reset by other methods; control switch, ignition on/off, etc.?

Describe _____
_____

Vehicle Accessories (check all that apply)

	Factory	Aftermarket		Factory	Aftermarket
Alarm	❑	❑	Radar Detector	N/A	❑
Cellular Phone	❑	❑	Rear Window Tint	❑	❑
Laptop Computer	N/A	❑	Remote Starter	N/A	❑

Technician's Name (Print)_____

DISPLAY (check all that apply)
Vehicle headlights are [1] ❑ ON [2] ❑ OFF
[3] ❑ Brightness varies [33] ❑ No display
[4] ❑ Bright or dark spot [34] ❑ Dark
[5] ❑ Bright [35] ❑ All black
[6] ❑ All white [36] ❑ Color
Indicate which Display
[8] ❑ NAV [9] ❑ [10] ❑
[11] ❑ 'i' switch LED always off?
[12] ❑ 'i' switch LED always on?
[13] ❑ Out of sync (horizontal/vertical)
[14] ❑ Contrast in coloring
[15] ❑ Switch does not function (select)
[16] ❑ F1 [19] ❑ F4 [22] ❑ '+' [25] ❑ OFF
[17] ❑ F2 [20] ❑ Enter [23] ❑ '-' [26] ❑ Cursor
[18] ❑ F3 [21] ❑ Map [24] ❑ 'i'
[27] ❑ Lines in screen
[28] ❑ Drifts [29] ❑ Poor focus
[30] ❑ Other _____

'Beep' emitted when keys are depressed?
[31] ❑ YES [32] ❑ NO

PROGRAM / NCM (check all that apply)
Cursor
[37] ❑ Shifts (jumps) during turns
[38] ❑ Continuously shifts (jumps)
[39] ❑ Continuously rotates
[40] ❑ Shifts gradually on a straight line
[41] ❑ Does not match the road driven
[42] ❑ GPS icon does not appear on display
[43] ❑ Display does not change (frozen)
[44] ❑ While driving straight, cursor goes straight
[45] ❑ Cursor skips
[46] ❑ Route guidance error
[47] ❑ Voice guidance error
[48] ❑ Map error
[49] ❑ Other _____

AUDIO (Check all that apply)
Voice Guidance Symptoms
[50] ❑ No sound (all speakers)
[51] ❑ Static
[52] ❑ Sound cuts in and out
[53] ❑ Background noise
[54] ❑ Sound distorted
[55] ❑ Sound fades in and out
[56] ❑ Weak sound

Course Route
Route and location where malfunction in the voice instruction occurred.
Location _____
Starting point _____
Target point _____

System Inspection (Diagnostic Code Displayed)
GPS _____
NCM _____
DISPLAY _____
CD-ROM _____
SCP _____
VECM _____

NOTE: Submission of an incomplete form OR failure to enclose a completed form with the returned unit MAY RESULT IN THE NON-PAYMENT OF THE WARRANTY CLAIM.

DENSO P/N: LA990009-0545