

NAVIGATION SYSTEM

SECTION **EL**

MODIFICATION NOTICE:

- Navigation system has been adopted for Europe.

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NAVIGATION SYSTEM

Precautions

Precautions

NFEL0001

WARNING:

Do not attempt to disassemble the monitor. Parts of the monitor have high voltages that can result in severe and dangerous electric shock.

CAUTION:

- Do not reverse battery connections.
- Do not attach unauthorized parts.
- Protect the unit from severe impact.

NOTE:

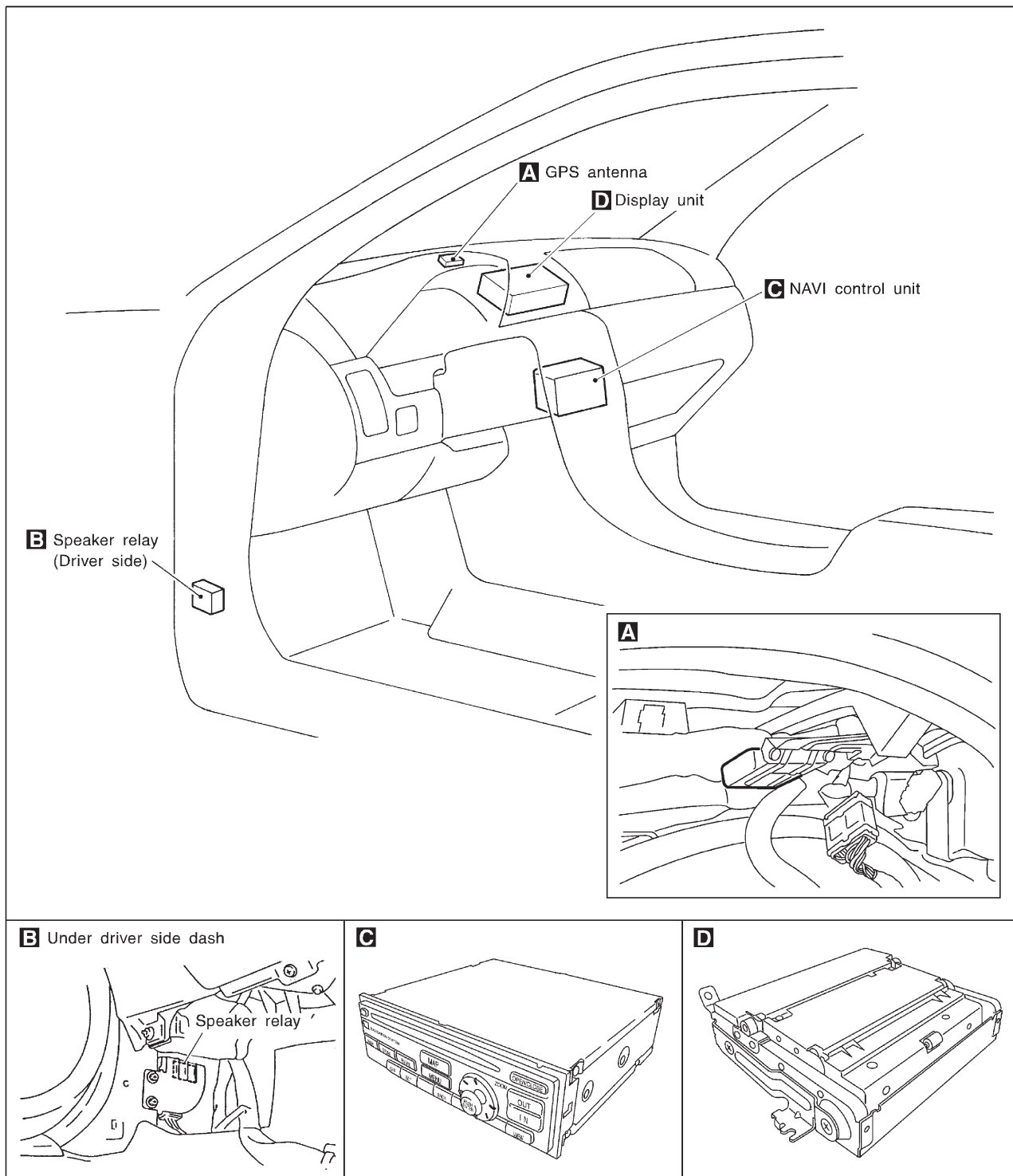
Before beginning repair, determine whether or not the unit is defective. Refer to “This Condition Is Not Abnormal” (EL-50).

NAVIGATION SYSTEM

Component Parts Location

Component Parts Location

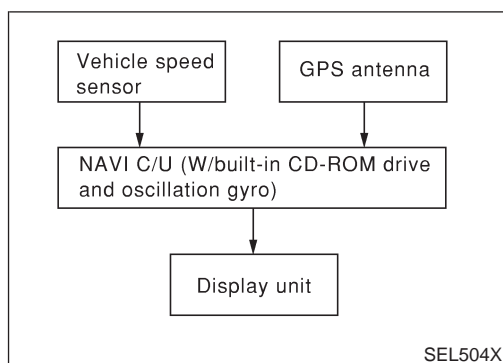
NFEL0002



SEL505X

NAVIGATION SYSTEM

System Description



System Description

NFEL0003

OUTLINE

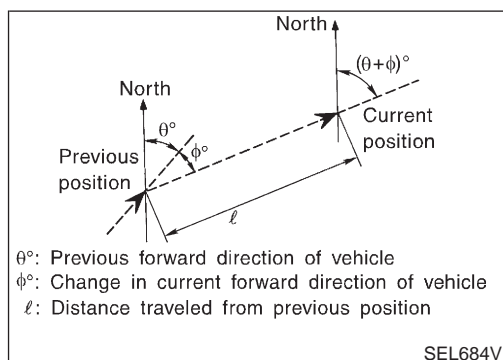
NFEL0003S01

The Navigation System (Multi-AV System) relies upon three sensing devices in order to determine vehicle location at regular time intervals.

1. Vehicle speed sensor: Determines the distance the vehicle has traveled.
2. Gyro (Angular velocity sensor): Determines vehicle steering angle and directional change.
3. GPS antenna (GPS data): Determines vehicle forward movement and direction.

The data provided by the three sensing functions together with a comparison of the mapping information read from the CD-ROM drive permit accurate determination of the vehicle's current location and subsequent course (map matching). The information appears on a liquid crystal display.

This comparison of GPS data (vehicle position sensing) and map matching permits precise determination of vehicle location.



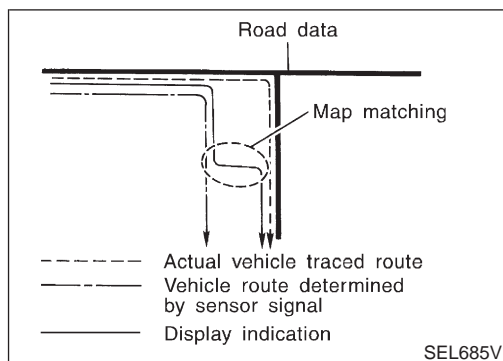
Position Sensor Operating Principles

NFEL0003S0101

The sensor determines current vehicle location by calculating the previously sensed position, the distance traveled from this position, and the directional changes occurring during this travel.

1. Distance traveled
The distance traveled is calculated using signals received from the vehicle speed sensor. The sensor automatically compensates for the slightly reduced wheel and tire diameter resulting from tire wear.
2. Forward movement (Direction)
Changes in the direction of forward movement are calculated by the gyro (angular velocity sensor) and the GPS antenna (GPS data). Each of these functions has its advantage and disadvantages. Depending upon conditions, one function takes precedence over the other to accurately determine the direction of forward movement.

Function type	Advantage	Disadvantage
Gyro (Angular velocity sensor)	<ul style="list-style-type: none"> • Able to accurately detect minute changes in steering angle and direction. 	<ul style="list-style-type: none"> • Calculation errors may accumulate over a long period of continuous vehicle travel.
GPS antenna (GPS data)	<ul style="list-style-type: none"> • Able to sense vehicle travel in four general directions (North, South, East, and West) 	<ul style="list-style-type: none"> • Unable to detect direction of vehicle travel at low vehicle speeds.

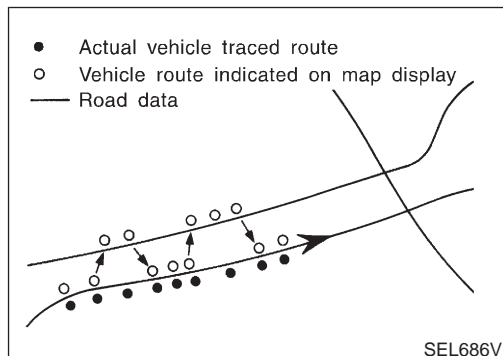


Map Matching

NFEL0003S0102

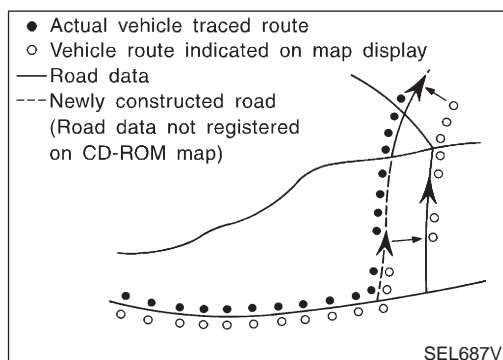
Map matching allows the driver to compare the sensed vehicle location data with the road map contained in the CD-ROM drive. Vehicle position is marked on the CD-ROM map. This permits the driver to accurately determine his/her present position on the highway and to make appropriate course decisions.

When GPS data reception is poor during travel, the vehicle position is not amended. At this time, manual manipulation of the CD-ROM map position marker is required.



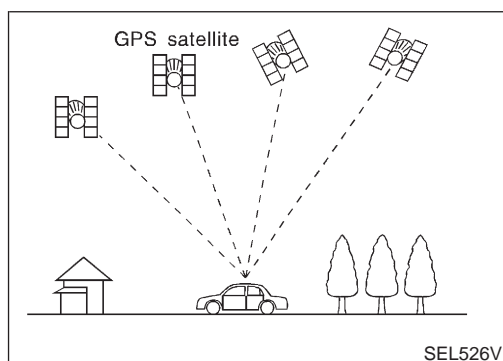
Map matching permits the driver to make priority judgments about possible appropriate roads other than the one currently being traveled.

If there is an error in the distance or direction of travel, there will also be an error in the relative position of other routes. When two routes are closely parallel to one another, the indicated position for both routes will be nearly the same priority. This is so that, slight changes in the steering direction may cause the marker to indicate both routes alternately.



Newly constructed roads may not appear on the CD-ROM map. In this case, map matching is not possible. Changes in the course of a road will also prevent accurate map matching.

When driving on a road not shown on the CD-ROM map, the position marker used for map matching may indicate a different route. Even after returning to a route shown on the map, the position marker may jump to the position currently detected.



GPS (Global Positioning System)

NFEL0003S0103

GPS is the global positioning system developed and operated by the US Department of Defense. GPS satellites (NAVSTAR) transmit radio waves and orbit around the earth at an altitude of approximately 21,000 km (13,000 miles).

GPS receiver calculates the three-dimensional position of the vehicle (latitude, longitude, and altitude from the sea level) by the time difference of the radio wave arriving from more than four GPS satellites (three-dimensional positioning).

When the radio wave is received from only three GPS satellites, the two-dimensional position (latitude and longitude) is calculated, using the altitude from the sea level data calculated by using four GPS satellites (two-dimensional positioning).

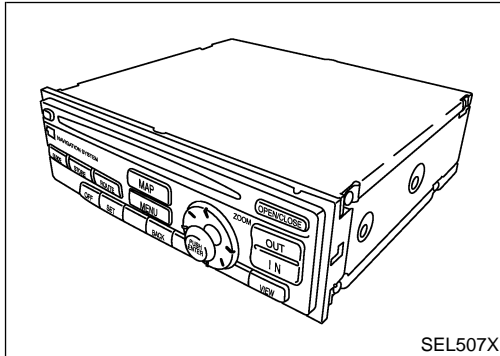
Positioning capability is degraded in the following cases.

- In two-dimensional positioning, when the vehicle's altitude from the sea level changes, the precision becomes lower.
- The location detection performance can have an error of about 100 m (300 ft) even in three-dimensional positioning with high precision. Because the precision is influenced by the location of GPS satellites used for positioning, the location detection performance may drop depending on the location of GPS satellites.
- When the radio wave from GPS satellites cannot be received,

NAVIGATION SYSTEM

System Description (Cont'd)

for example, when the vehicle is in a tunnel, in a parking lot inside building, under an elevated superhighway or near strong power lines, the location may not be detected. Turbulent/electric weather conditions may also affect positioning performance. If something is placed on the antenna, the radio wave from GPS satellites may not be received.



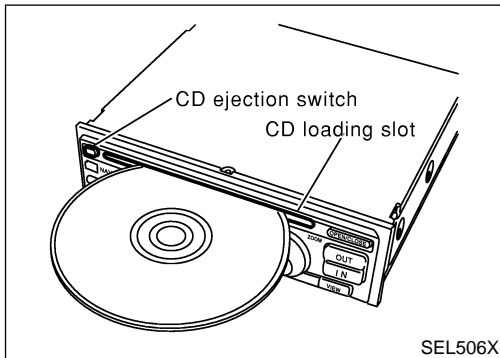
COMPONENT DESCRIPTION

NAVI Control Unit

NFEL0003S02

NFEL0003S0201

- The gyro (angular speed sensor) and the CD-ROM drive are built-in units that control the navigation functions.
- Signals are received from the gyro, the vehicle speed sensor, and the GPS antenna. Vehicle location is determined by combining this data with the data contained in the CD-ROM map. Locational information is shown on liquid crystal display panel.



CD-ROM Driver

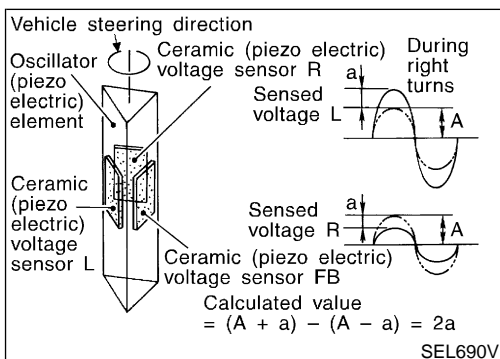
NFEL0003S0202

Maps, traffic control regulations, and other pertinent information can be easily read from the CD-ROM disc.

Map CD-ROM

NFEL0003S0203

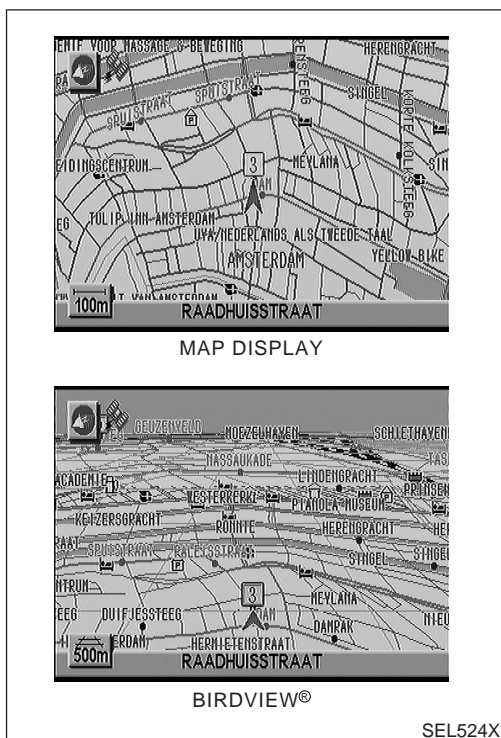
- The map CD-ROM has maps, traffic control regulations, and other pertinent information.
- To improve CD-ROM map matching and route determination functions, the CD-ROM uses an exclusive Nissan format. Therefore, the use of a CD-ROM provided by other manufacturers cannot be used.



Gyro (Angular Speed Sensor)

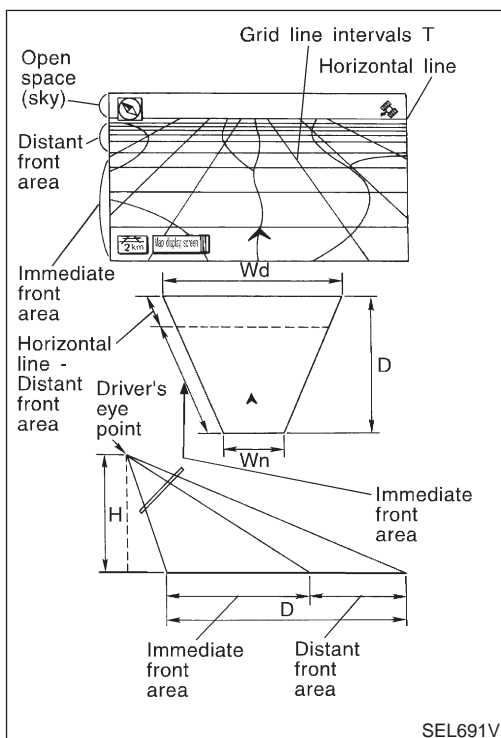
NFEL0003S0204

- The oscillator gyro sensor is used to detect changes in vehicle steering angle.
- The oscillator gyro periodically senses oscillatory variation at the oscillation terminals. This variation is caused by changes in the vehicle angular velocity. Voltage variations are sensed by ceramic voltage sensors at the left and right sides of the terminals. Vehicle angular velocity corresponds directly with these changes in voltage.
- The gyro is built into the navigation (NAVI) control unit.



BIRDVIEW®

The BIRDVIEW® provides a detailed and easily seen display of road conditions covering the vehicle's immediate to distant area. NFEL0003S0205



Description

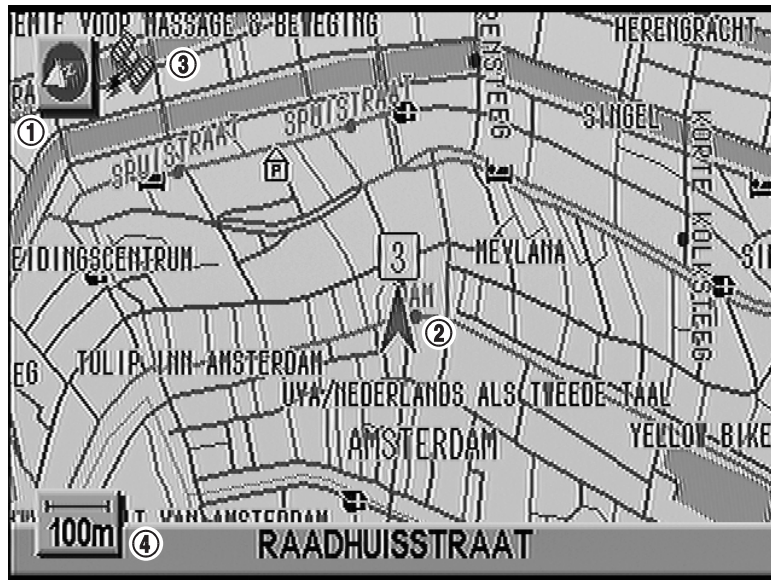
- Display area: Trapezoidal representation showing approximate distances (W_n , D , and W_d). NFEL0003S0206
- Ten horizontal grid lines indicate display width while six vertical grid lines indicate display depth and direction.
- Drawing line area shows open space, depth, and immediate front area. Each area is to a scale of approximately 5:6:25.
- Pushing the "ZOOM IN" button during operation displays the scale change and the view point height on the left side of the screen. The height of the view point increases or decreases when "ZOOM" or "WIDE" is selected with the joystick.

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System Description (Cont'd)

MAP DISPLAY

=NFEL0003S03



SEL525X

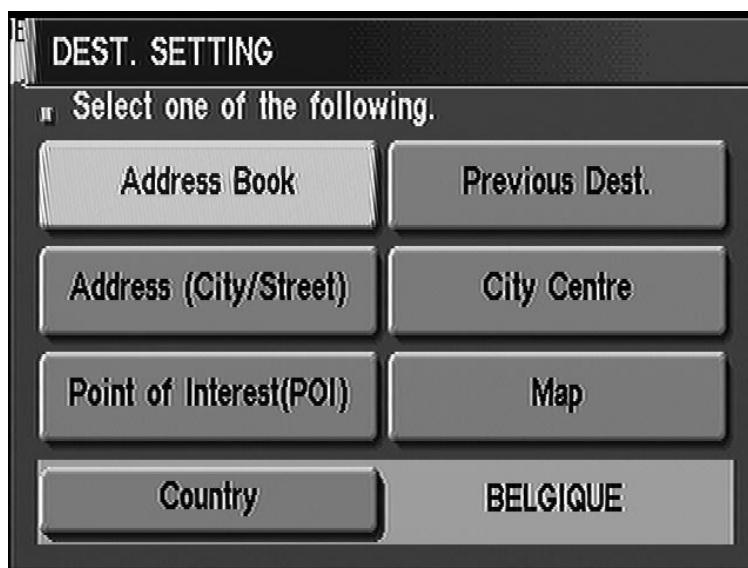
Function of each icon is as follows:

- 1) Azimuth indication.
- 2) Position marker
The tip of the arrow shows the current position. The shaft of the arrow indicates the direction in which the vehicle is traveling.
- 3) GPS reception signal (indicates current reception conditions)
- 4) Distance display (shows the distance in a reduced scale)

FUNCTION OF PANEL SWITCH Display with Pushed "DEST" Switch

=NFEL0003S04

NFEL0003S0401



SEL615X

The function of each icon is as follows:

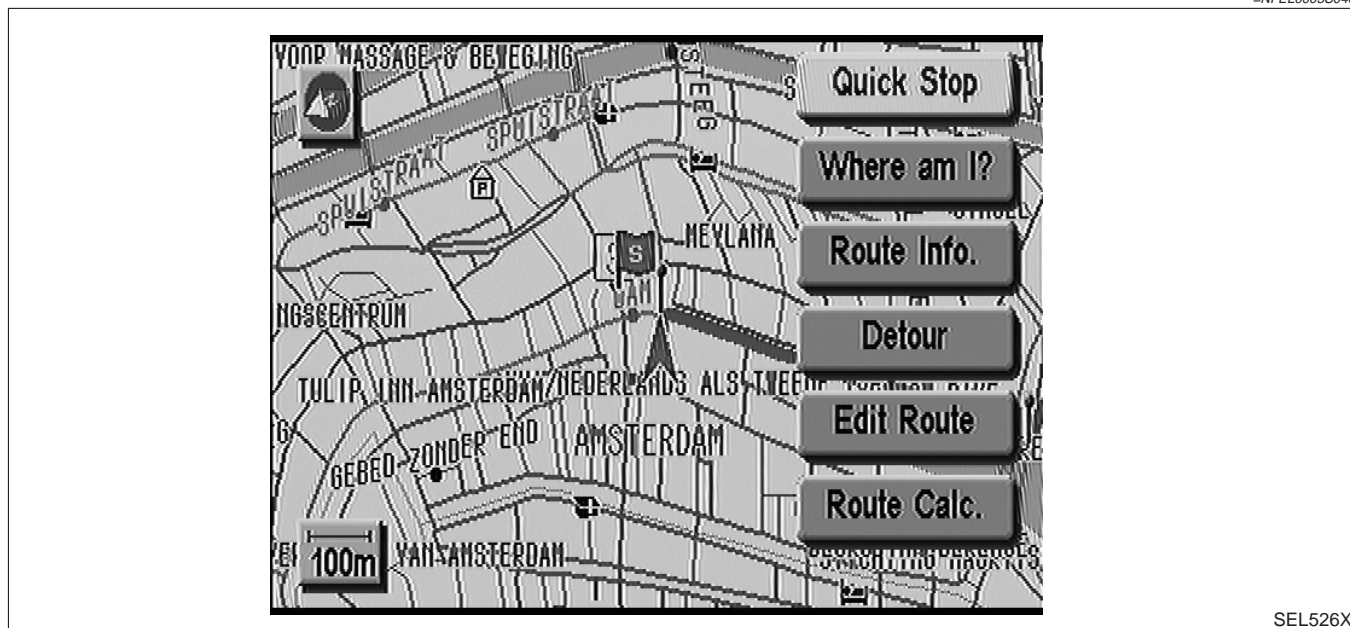
Icon	Description
Address Book	Favorite place can be saved to memory.
Address (City/Street)	The destination can be searched from the address.
Point of Interest (POI)	The destination of favorite facility can be searched.
Previous Dest.	The previous ten destinations stored in memory are displayed.
City Centre	The destination can be searched from city name.
Map	The destination can be searched from the map.
Country	When two or more countries are included in one CD-ROM, the destination can be searched for under the country name.

NAVIGATION SYSTEM

System Description (Cont'd)

Display with Pushed "ROUTE" Switch

=NFEL0003S0402



SEL526X

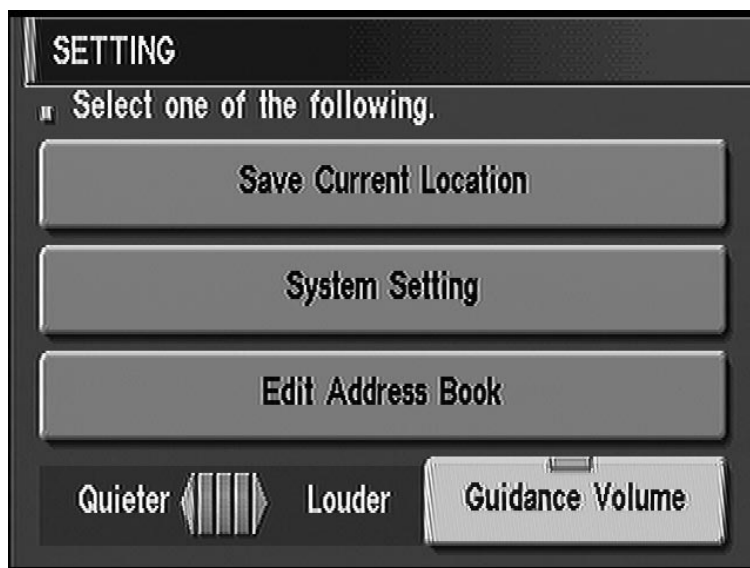
The function of each icon is as follows:

Icon	Description
Quick Stop	The selected facility is set as the destination or way-point. (Route guidance has been turned OFF or the destination has been reached)
Where am I?	Next, current and previous street names can be displayed.
Route Info.*	The following items can be set. <ul style="list-style-type: none"> ● Complete Route ● Turn List ● Route Simulation (Displayed only when the destination area has been set.)
Detour*	Based on the selected distance, an alternative route is searched. [Displayed only when the recommended route (not its reverse) is followed.]
Edit Route*	Change the destination or add the transit points of the route set in the route guide. (Displayed only when the automatic reroute function has been turned OFF and the recommended route is not followed.)
Route Calc.	Search for a recommended route between the vehicle's current location and the destination area. (Displayed only when the destination area has been set.)

*: When destinations have been entered, route guidance has been turned OFF or destination has been reached, "Route Info.", "Detour", "Edit Route" and "Route Clac." are not displayed.

Display with Pushed "SETTING" Switch

=NFEL0003S0403



SEL614X

The function of each icon is as follows:

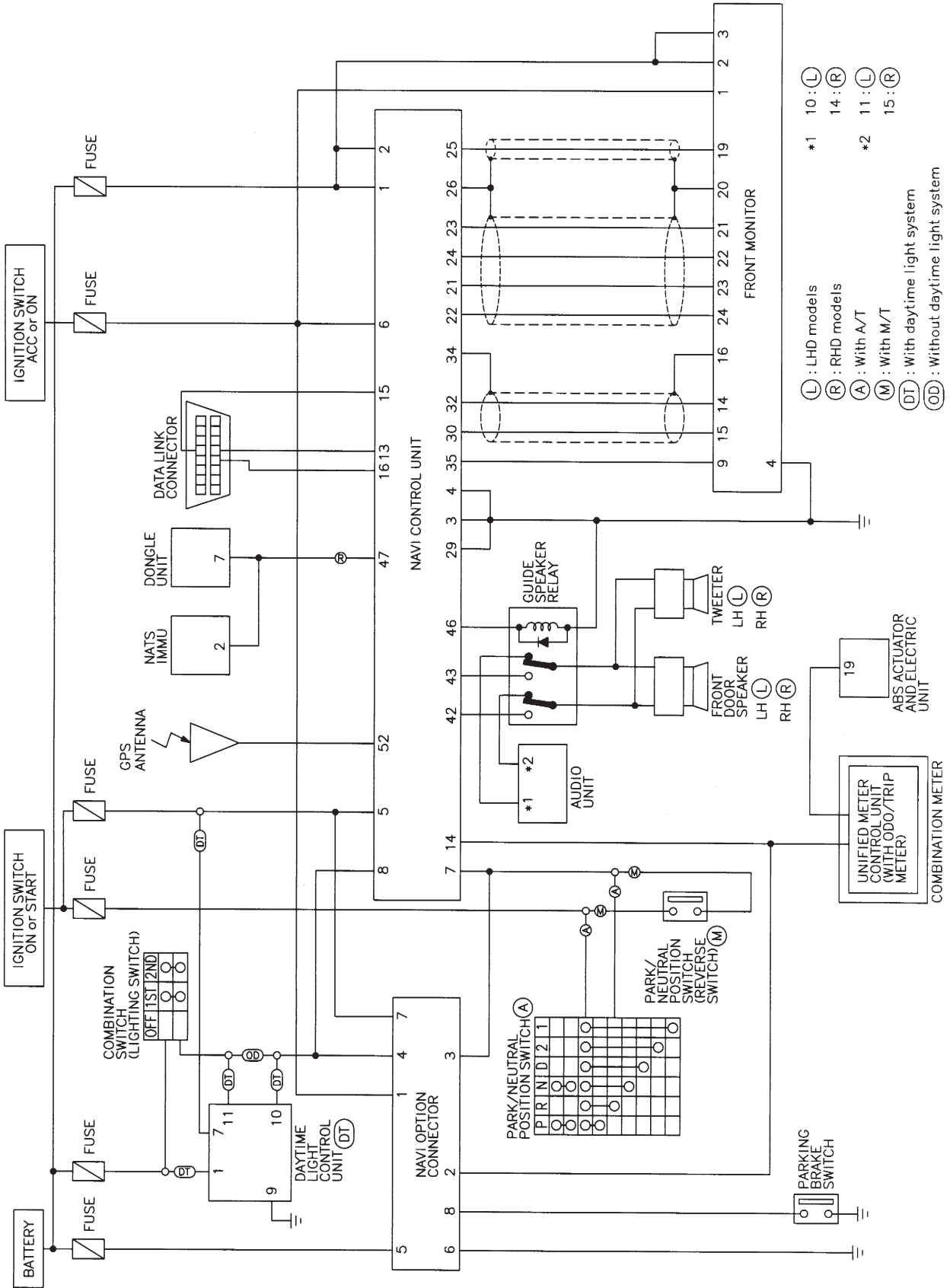
Icon	Description
Save Current Location	The current location can be stored in the Address Book.
System Setting	Many adjustments and settings can be made for maximum driving pleasure and convenience.
Edit Address Book	The Address Book data can be edited.
Guidance Volume	The volume and/or on/off of voice prompt can be controlled by the joystick.

NAVIGATION SYSTEM

Schematic

NFEL0012

Schematic



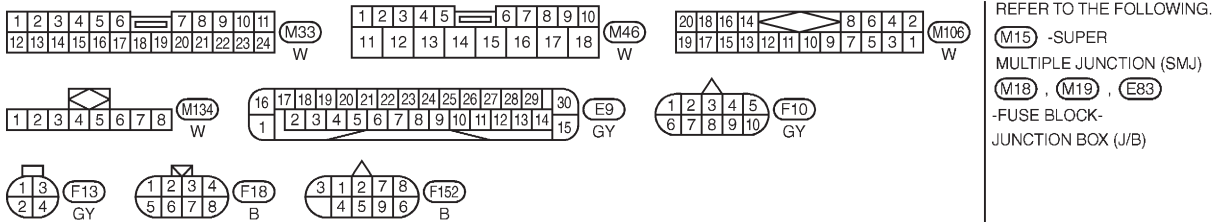
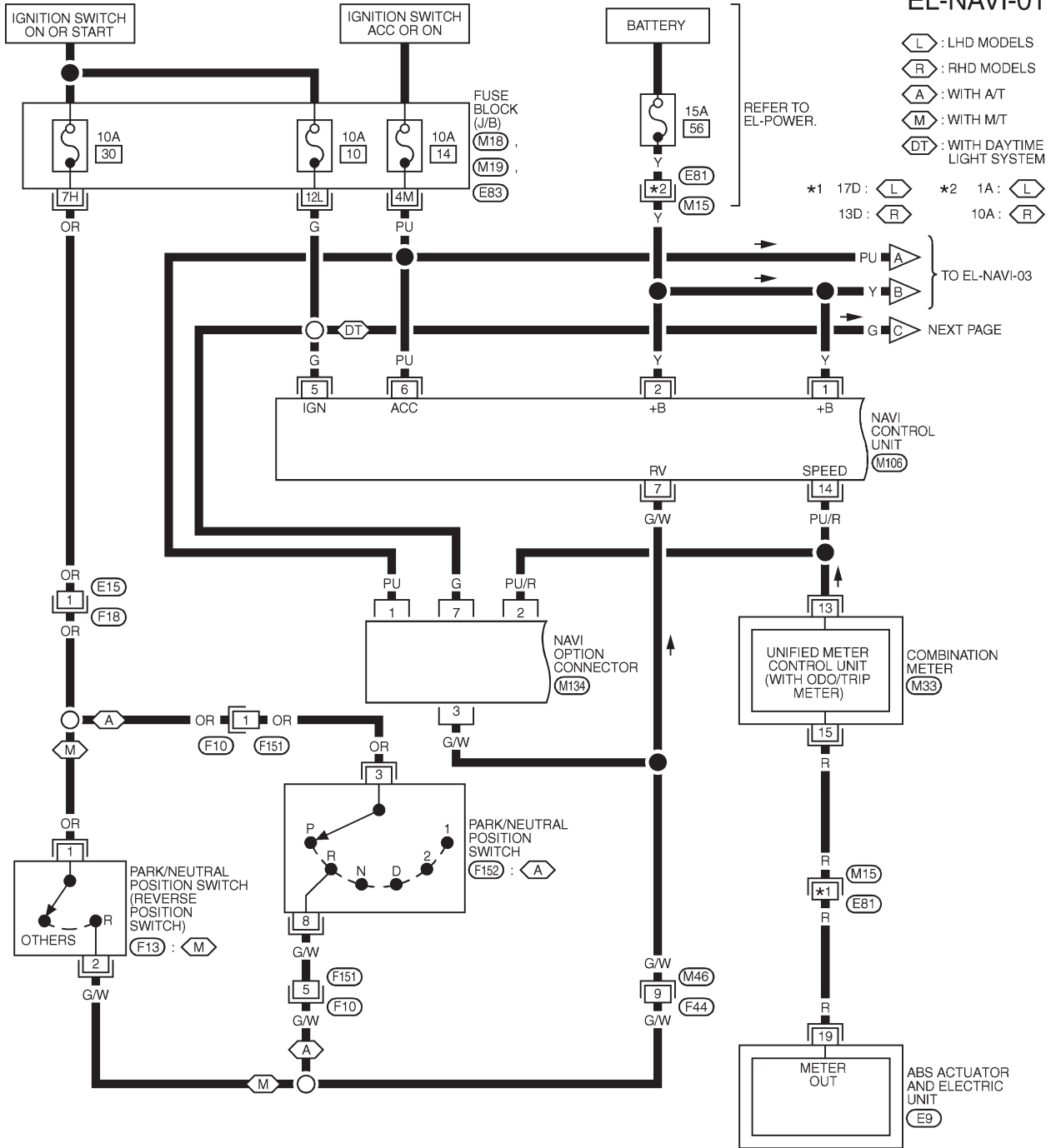
MEL574L

NAVIGATION SYSTEM

Wiring Diagram — NAVI —

Wiring Diagram — NAVI —

NFEL0013

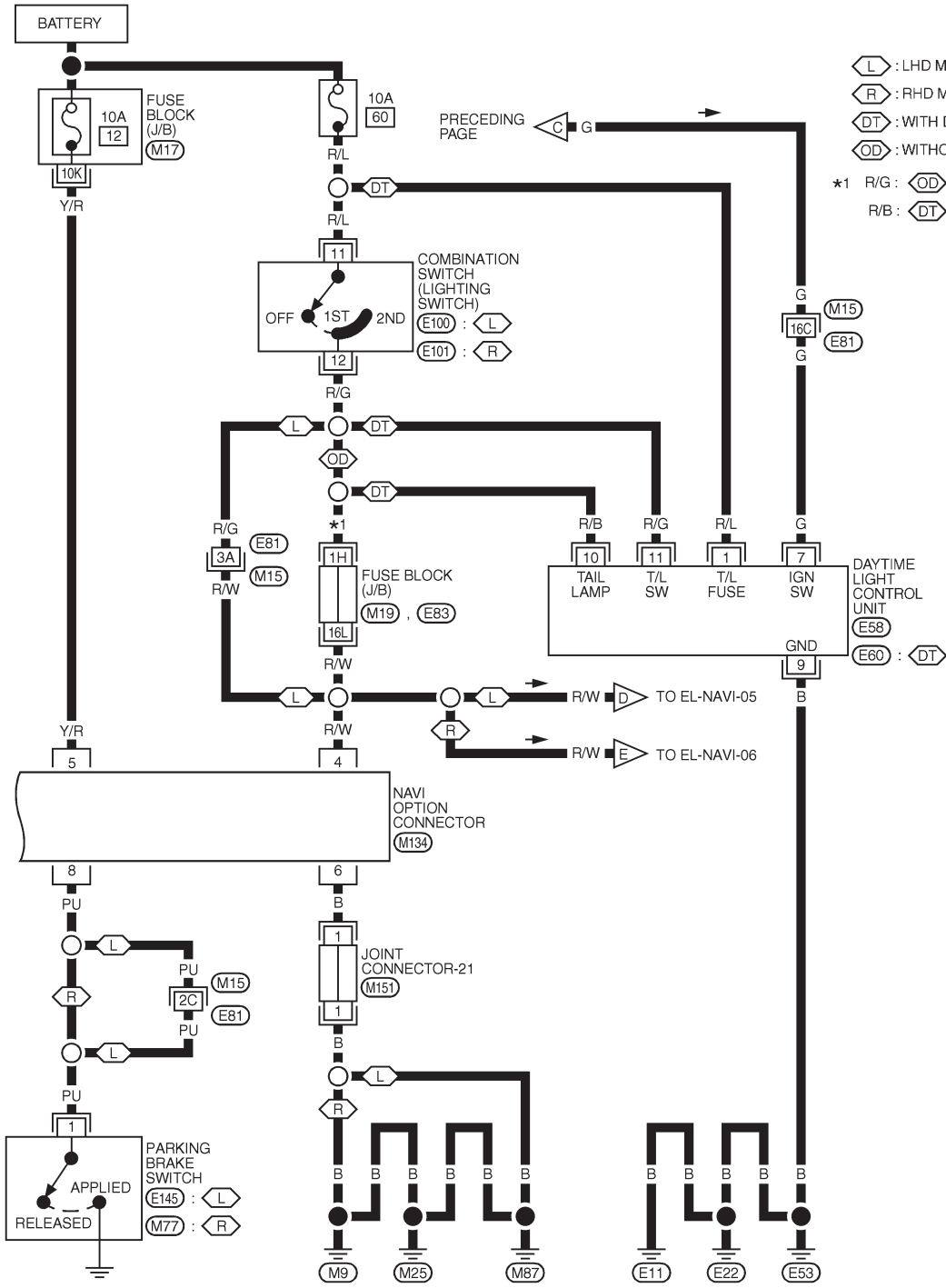


MEL575L

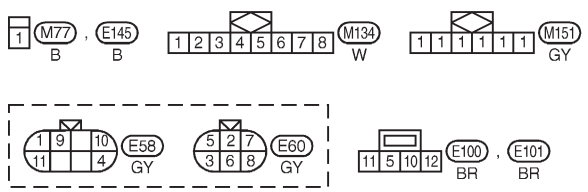
NAVIGATION SYSTEM

Wiring Diagram — NAVI — (Cont'd)

EL-NAVI-02



- (L) : LHD MODELS
- (R) : RHD MODELS
- (DT) : WITH DAYTIME LIGHT SYSTEM
- (OD) : WITHOUT DAYTIME LIGHT SYSTEM
- *1 R/G : (OD)
- R/B : (DT)



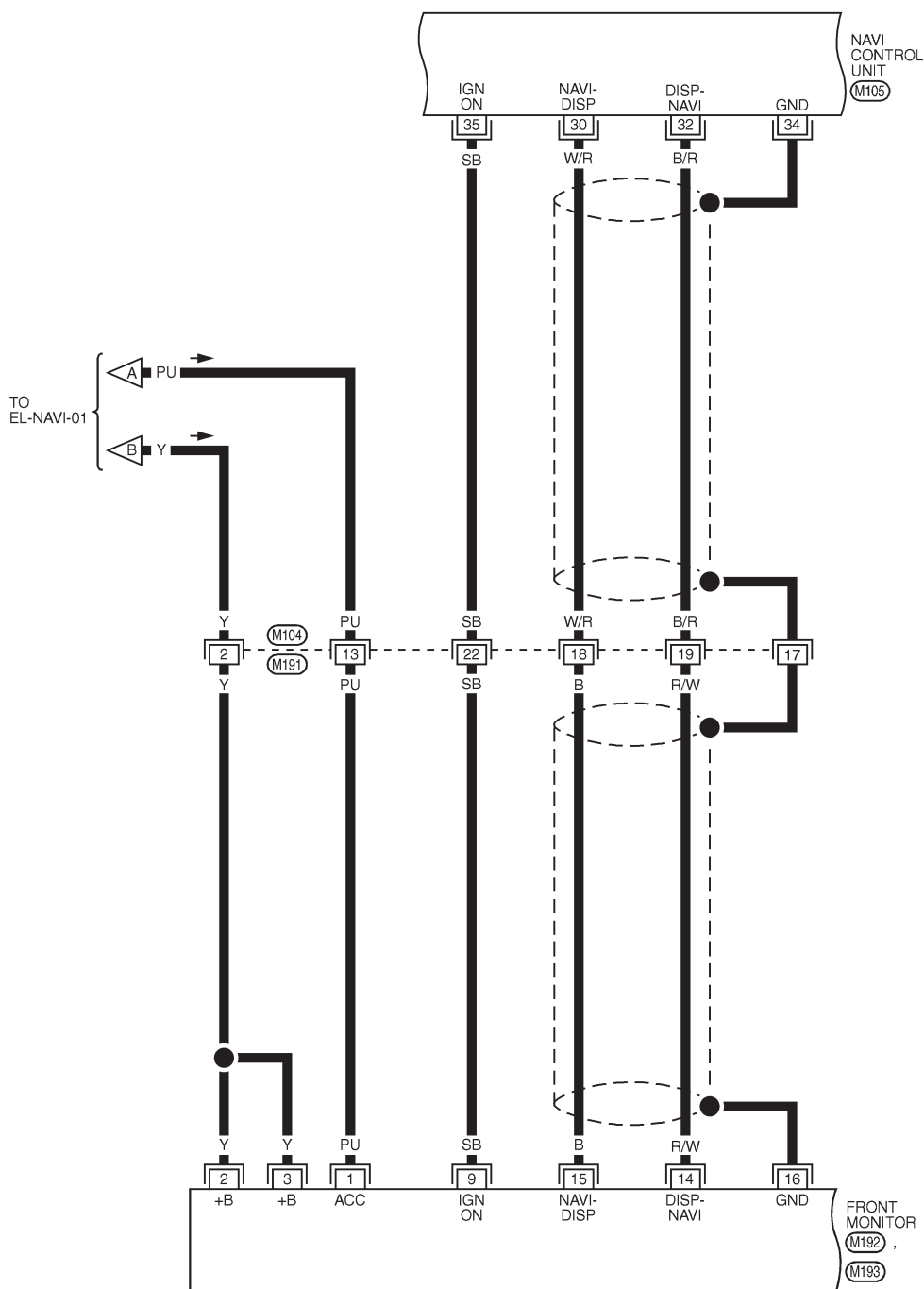
REFER TO THE FOLLOWING.
 (M15) -SUPER
 MULTIPLE JUNCTION (SMJ)
 (M17), (M19), (E83)
 -FUSE BLOCK-
 JUNCTION BOX (J/B)

MEL576L

NAVIGATION SYSTEM

Wiring Diagram — NAVI — (Cont'd)

EL-NAVI-03



1	2	3	4	5	6	7	8	9	10	11		
12	13	14	15	16	17	18	19	20	21	22	23	24

(M104)
BR

36	34	32	26	24	22				
35	33	31	30	29	28	27	25	23	21

(M105)
W

24	22	20	18	16	12	10	8	6		
23	21	19	17	15	14	13	11	9	7	5

(M192)
W

4	3	2	1
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(M193)
W

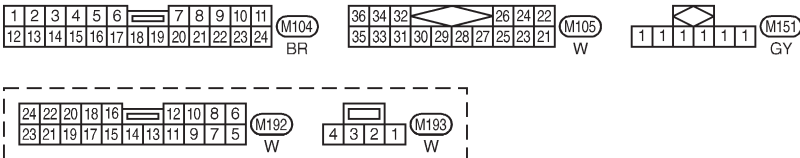
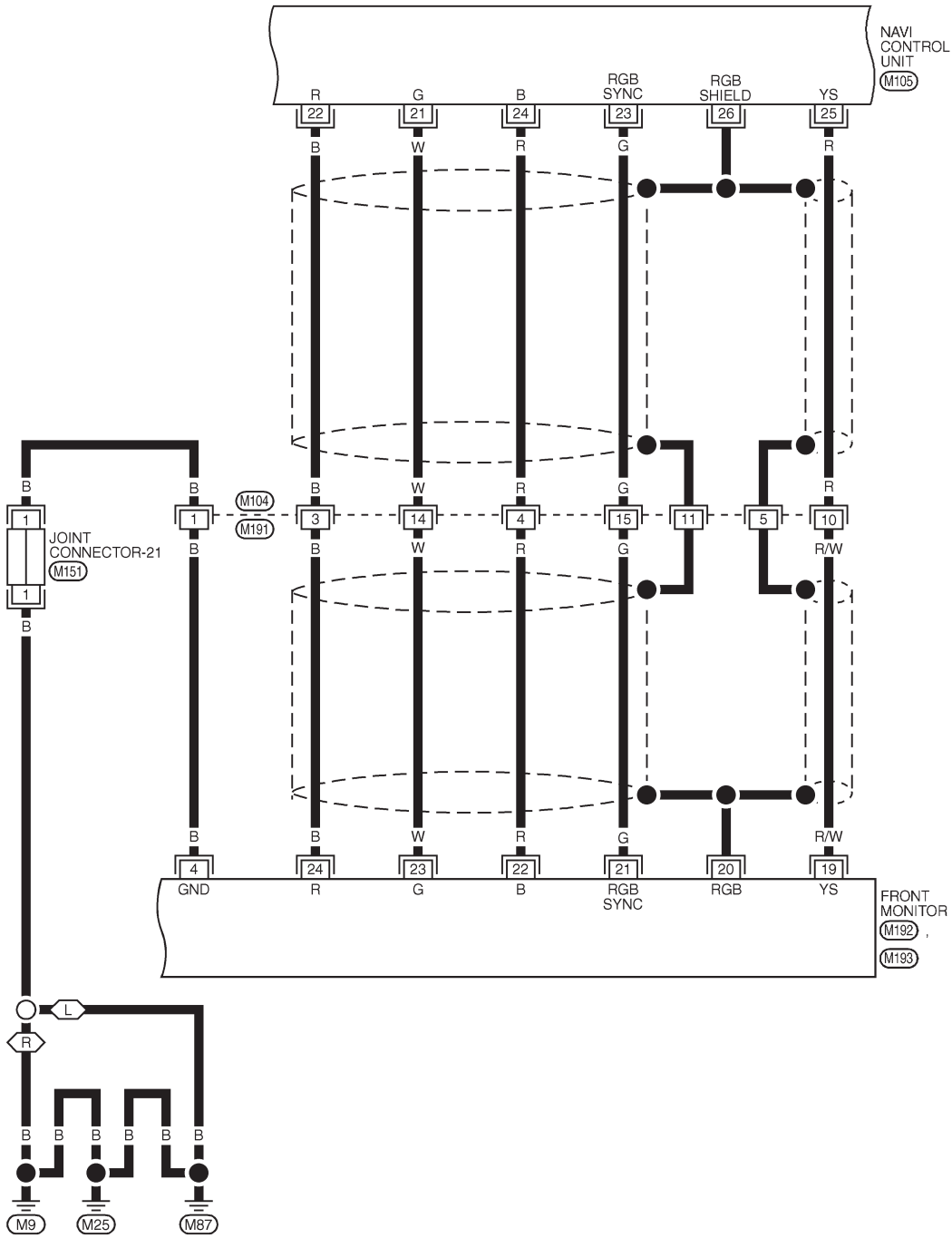
MEL578L

NAVIGATION SYSTEM

Wiring Diagram — NAVI — (Cont'd)

EL-NAVI-04

◁ L ▷ : LHD MODELS
 ◁ R ▷ : RHD MODELS



MEL579L

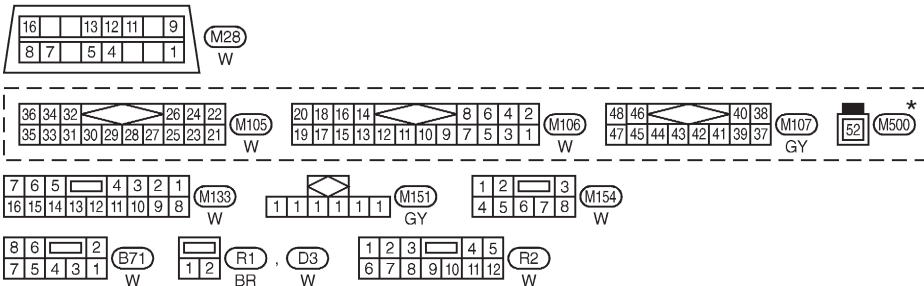
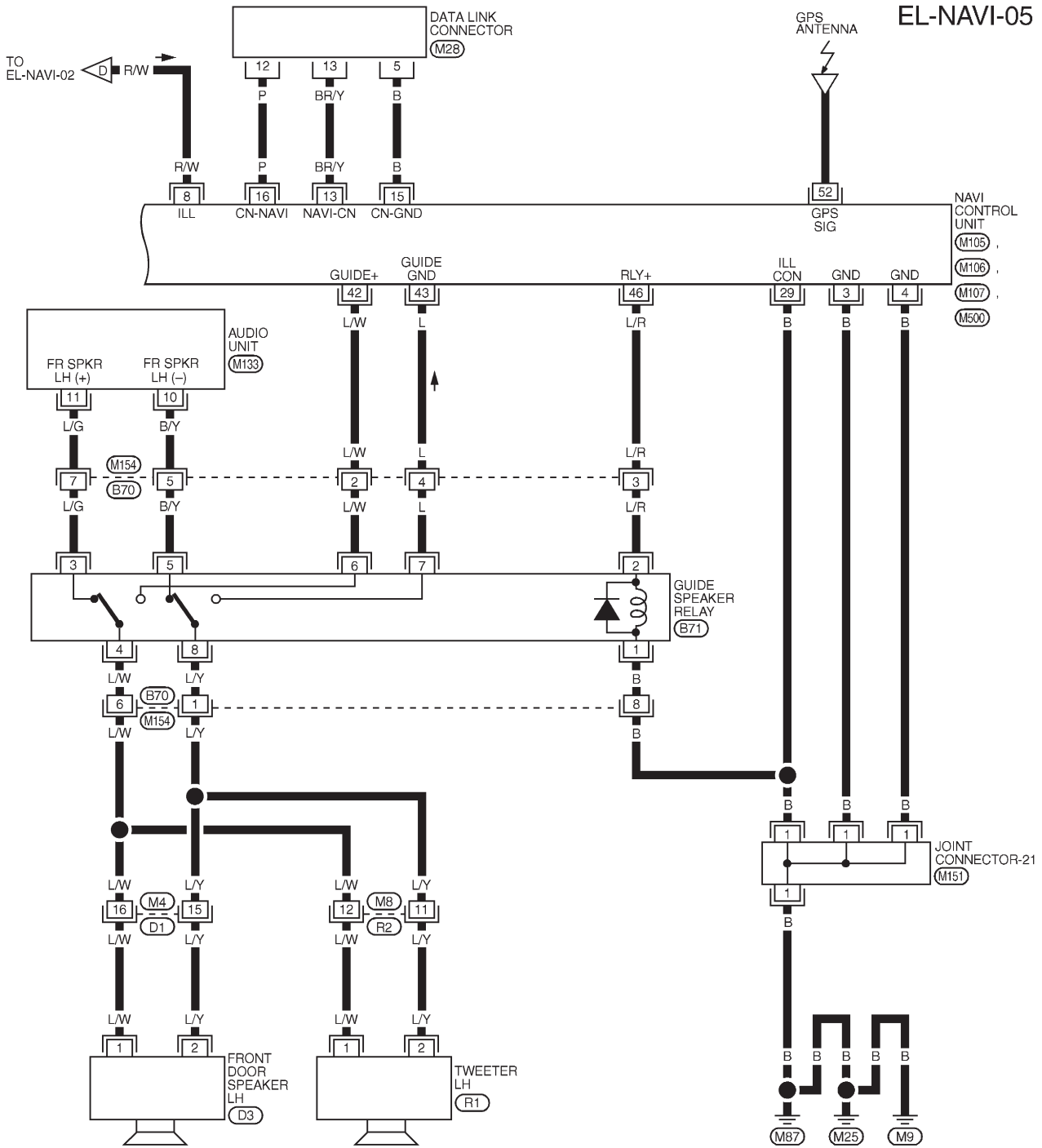
NAVIGATION SYSTEM

Wiring Diagram — NAVI — (Cont'd)

LHD MODELS

NFEL0013S01

EL-NAVI-05



REFER TO THE FOLLOWING.
 (D1) -SUPER
 MULTIPLE JUNCTION (SMJ)

* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", EL SECTION.

MEL577L

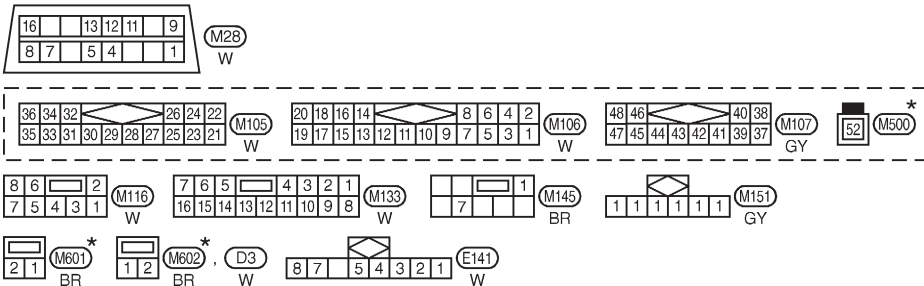
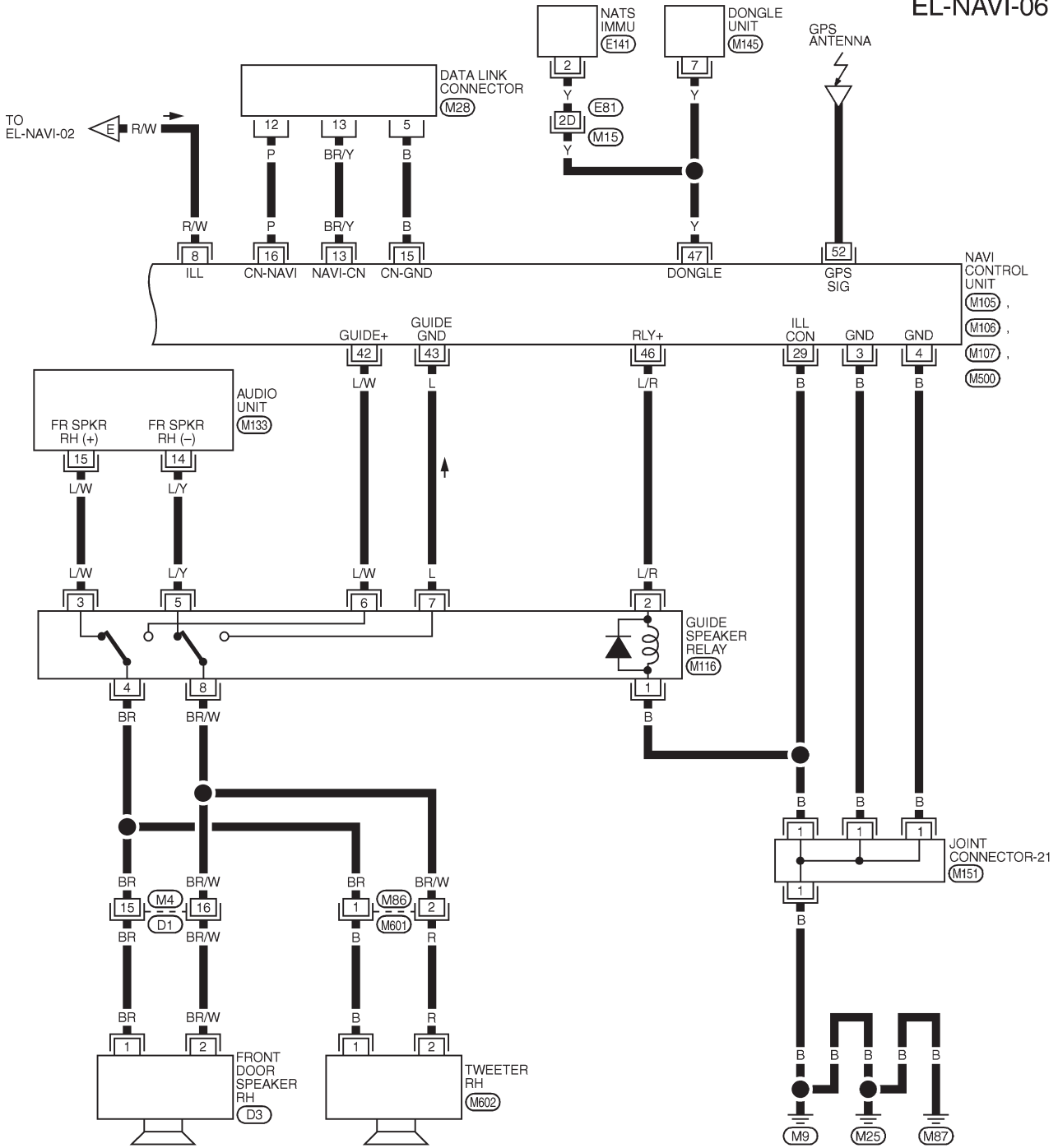
NAVIGATION SYSTEM

Wiring Diagram — NAVI — (Cont'd)

RHD MODELS

NFEL0013S02

EL-NAVI-06



REFER TO THE FOLLOWING:
 (M15), (D1) -SUPER
 MULTIPLE JUNCTION (SMJ)

* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", EL SECTION.

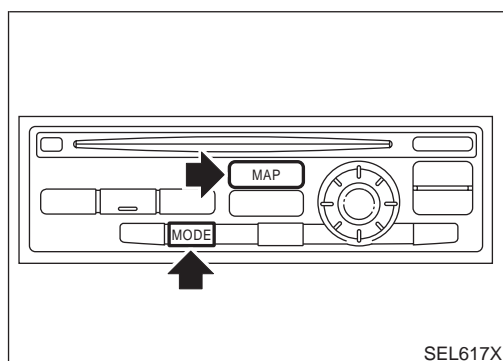
MEL220M

Self-diagnosis Mode APPLICATION ITEMS

NFEL0004

NFEL0004S01

Mode	Description	Reference page		
Self Diagnosis	Self-diagnosis for Navigation, Display and GPS Antenna connection.	EL-20		
Confirmation/ adjustment	Diagnose the Display	Color and gray gradation of display can be checked in this mode.	EL-28	
	Diagnosis for Signals from the Car	Several input signals to NAVI control unit, can be monitored in this mode.	EL-26	
	Navigation	Check the map CD-ROM version	The version (parts number) of inserted CD-ROM can be checked in this model.	EL-27
		Error history	Diagnosis results previously stored in the memory (before turning ignition switch ON) are displayed in this mode. Time and location when/where the errors occurred are also displayed.	EL-22
		Longitude & Latitude	Display the map. Use the joystick to adjust position. Longitude and latitude will be displayed.	EL-29
		Adjust the Angle	Turning angle of the vehicle on the display can be adjusted in this mode.	EL-30
		Speed Calibration	Under ordinary conditions, the navigation system distance measuring function will automatically compensate for minute decreases in wheel and tire diameter caused by tire wear or low pressure. Speed calibration immediately restores system accuracy in cases such as when distance calibration is needed because of the use of tire chains in inclement weather.	EL-31
Initialize Location	This mode is for initializing the current location. Use when the vehicle is transported a long distance on a trailer, etc.	EL-32		



HOW TO PERFORM SELF-DIAGNOSIS MODE

NFEL0004S02

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push both of "MAP" and "MODE" switches at the same time for more than five seconds.
4. Select "Self Diagnosis" or "Confirmation/ adjustment".
 - For further procedure, refer to the following pages which describe each application item of the self-diagnosis mode.

NAVIGATION SYSTEM

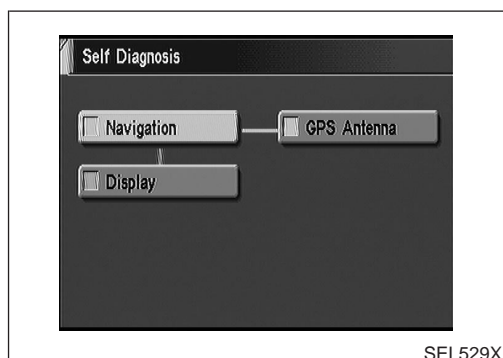
Self-diagnosis Mode (Cont'd)



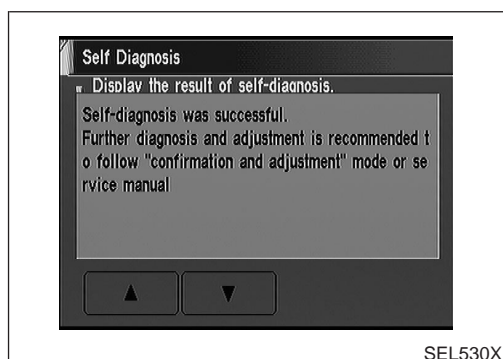
SEL527X



SEL528X



SEL529X



SEL530X

“Self Diagnosis”

NFEL0004S0201

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switches at the same time for more than 5 seconds.
4. Select “Self Diagnosis”.
5. Self-diagnosis will be performed.
6. Diagnosis results will be displayed. Diagnosis results are indicated by display color. For details refer to EL-21, “SELF-DIAGNOSIS RESULTS”.

To obtain detailed diagnosis results on the screen, touch “Navigation” or “Display” or “GPS Antenna”.

NAVIGATION SYSTEM

Self-diagnosis Mode (Cont'd)

SELF-DIAGNOSIS RESULTS

=NFEL0004S03

Diagnosed item	Displayed color	Detailed result	Description	Diagnoses/service procedure Recheck system at each check or replacement (When malfunction is eliminated, further repair work is not required.)
“GPS Antenna” (GPS antenna connection)	Green	—	GPS antenna is connected to NAVI control unit correctly.	—
	Yellow	Connection to the following unit is abnormal. See the Service Manual for further diagnosis.	GPS antenna connection error is detected.	<ol style="list-style-type: none"> 1. Check GPS antenna feeder cable connection at NAVI control unit. 2. Visually check GPS antenna feeder cable. If NG, replace GPS antenna assembly. 3. Replace GPS antenna.
“Navigation”	Green	—	No failure is detected.	—
	Red	[*** is abnormal.]	NAVI control unit is malfunctioning.	Replace NAVI control unit.
	Gray	Self-diagnosis for CD-ROM DRIVER of NAVI was not conducted due to no insertion of CD-ROM.	Any CD-ROM is not inserted or NAVI control unit is malfunctioning.	<ol style="list-style-type: none"> 1. Confirm that map CD-ROM is not inserted into NAVI control unit. 2. Replace NAVI control unit.
	Yellow	CD-ROM or CD-ROM DRIVER of NAVI is abnormal. See the Service Manual for further diagnosis.	NAVI control unit judges that inserted CD-ROM is malfunctioning. Map CD-ROM or CD-ROM driver of the unit is malfunctioning.	<ol style="list-style-type: none"> 1. Confirm the disc is installed correctly (not up side down.) 2. Perform “Check the Map CD-ROM version MODE” in EL-27 to confirm whether correct CD-ROM is inserted or not. 3. Check the disc surface. Are there any scratches, abrasions or pits on the surface? 4. Replace the CD-ROM. 5. Replace NAVI control unit.
		CD-ROM is abnormal. Please check the disc.	Inserted map CD-ROM can not be read. Map CD-ROM or CD-ROM driver of the unit is malfunctioning.	
		Connection to the following unit is abnormal. See the Service Manual for further diagnosis.	GPS antenna connection error is detected.	

NOTE:

Connection between NAVI control unit and display unit should be normal. Therefore, “Display connection error” will not occur when the display can be opened or closed properly.

NAVIGATION SYSTEM

Confirmation/Adjustment Mode

=NFEL0005

“ERROR HISTORY” MODE

NFEL0005S01

Description

NFEL0005S0101

In this mode, historical errors of the system are displayed with the following data.

- How many times the error was detected
- The last time data when the error was detected
- The last place where the error was detected

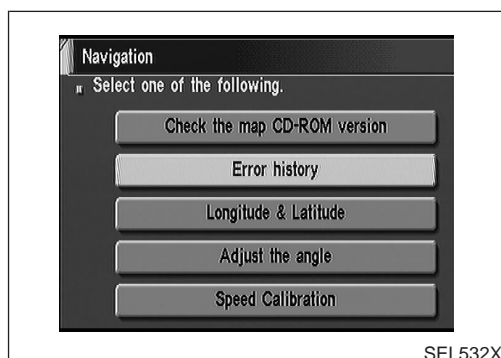
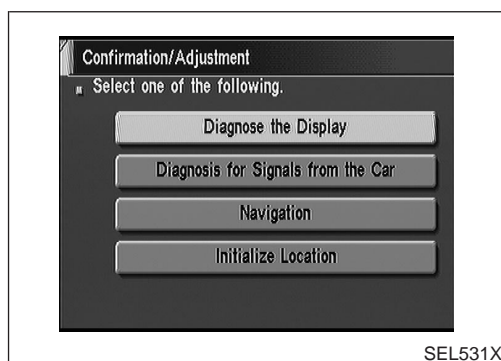
NOTE:

- The number of errors can be counted up to 50 times. More than 51 times will be indicated as 50 times.
- Malfunction of the GPS board (inside the NAVI control unit) will result in the display of incorrect time data.
- When an error occurs, an incorrect position marker appears on the display. The accuracy of the display data (position marker) will be affected.

How to Perform

NFEL0005S0102

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switch at the same time for more than 5 seconds.
4. Select “Confirmation/ adjustment”.
5. Select “Navigation”.
6. Select “Error history”.

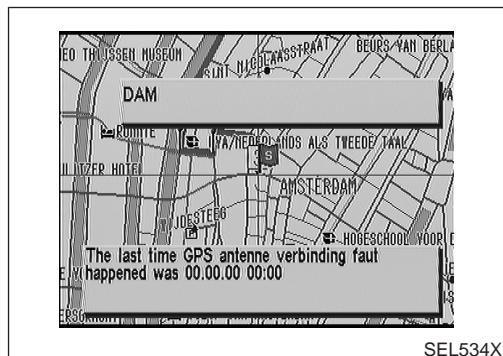


NAVIGATION SYSTEM

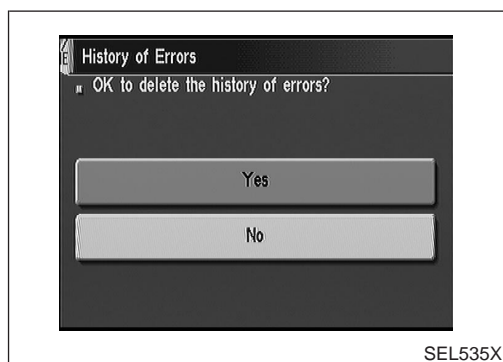
Confirmation/Adjustment Mode (Cont'd)



7. If trouble items are displayed with time count, repair/replace the system according to "ERROR HISTORY" TABLE, EL-24.



8. If necessary, touch error item to display the time when the error was detected and the place where the error was detected.



9. After repairing the system, erase the diagnosis memory.

NOTE:

When the NAVI control unit must be replaced, do not erase the diagnosis memory for further inspection of malfunctions.

- 1) Start the engine.
- 2) Push both "Map" and "MODE" switches at the same time for more than 5 seconds.
- 3) Select "Confirmation/ adjustment".
- 4) Select "Navigation".
- 5) Select "Error history".
- 6) Select "Delete".
- 7) Select "Yes".

NAVIGATION SYSTEM

Confirmation/Adjustment Mode (Cont'd)

“ERROR HISTORY” TABLE

=NFEL0005S02

Detected items	Description	Diagnosis/service procedure	Reference page
Gyro sensor disconnected	Communications malfunction between NAVI control unit and internal gyro	Perform self-diagnosis to confirm whether the NAVI control unit is malfunctioning or not. If no failure is detected, a momentary and/or temporary malfunction may have been caused by strong electromagnetic wave interference.	EL-19
Connection problem of speed sensor	Input malfunction of NAVI control unit and speed sensor	Check vehicle speed sensor signal in “Diagnosis for signals from the car” mode. If the input signal is not detected correctly, check harness for open or short between combination meter and NAVI control unit.	EL-26
GPS disconnected	Communications malfunction between NAVI control unit and GPS board	Perform self-diagnosis to confirm whether the NAVI control unit is malfunctioning or not. If no failure is detected, a momentary and/or temporary malfunction may have been caused by strong electromagnetic wave interference.	EL-19
GPS transmission cable malfunction			
GPS input line connection error			
GPS TCXO over	The transmission circuit of the GPS board frequency synchronization oscillator (inside the NAVI control unit) is sending an oscillation frequency that is greater or less than the set value.	A location error occurs. Strong electromagnetic wave interference may have occurred. The GPS antenna may be in a very hot or very cold environment. This is usually a temporary malfunction.	—
GPS TCXO under			
GPS ROM malfunction	Internal malfunction of GPS board RAM or ROM inside the NAVI control unit.	Perform self-diagnosis to confirm whether the NAVI control unit is malfunctioning or not. If no failure is detected, a momentary and/or temporary malfunction may have been caused by strong electromagnetic wave interference.	EL-19
GPS RAM malfunction			
GPS RTC malfunction	Malfunction of GPS board clock IC inside the NAVI control unit.		
GPS antenna disconnected	—	Perform self-diagnosis to confirm GPS antenna connection. If no failure is detected, a momentary and/or temporary malfunction may have been caused by a strong impact.	EL-19
Low voltage of GPS	Power supply voltage for GPS board inside the NAVI control unit is low.	1. Check power supply circuits for NAVI control unit.	EL-47
		2. Perform self-diagnosis to confirm GPS antenna connection.	EL-19
		3. If above diagnosis results are OK, a momentary and/or temporary malfunction may have been caused by a strong impact.	—
CD-ROM communication error	CD-ROM driver malfunction (inside the NAVI control unit)	Perform self-diagnosis to confirm whether the NAVI control unit is malfunctioning or not. If no failure is detected, a momentary and/or temporary malfunction may have been caused by strong electromagnetic wave interference.	EL-19

NAVIGATION SYSTEM

Confirmation/Adjustment Mode (Cont'd)

Detected items	Description	Diagnosis/service procedure	Reference page
Loading mechanism malfunction	—	Check that whether the disc can be inserted and ejected correctly. If the loading function does not operate correctly, replace NAVI control unit.	—
CD-ROM reading error	It is confirmed that the appropriate CD-ROM disc is positioned in the CD-ROM loader. However, no data can be read.	Perform self-diagnosis to confirm whether the inserted disc is malfunctioning or not.	EL-19
Malfunctioning of error correction for CD-ROM	Erroneous data is read from the CD-ROM. The errors cannot be corrected.		
CD-ROM focus error	CD-ROM data reading beam is out of focus.	Rough road driving might create CD skipping like music CD audio unit.	—
CD-ROM malfunction	—	Perform self-diagnosis to confirm whether the inserted disc is malfunctioning or not.	EL-19

NAVIGATION SYSTEM

Confirmation/Adjustment Mode (Cont'd)

“DIAGNOSIS FOR SIGNALS FROM THE CAR” MODE NFEL0005S03

Description

In “Diagnosis for Signals from the Car” mode, following input signals to the NAVI control unit can be checked on the display. NFEL0005S0301

Item	Indication	Vehicle condition
Vehicle Speed*	ON	Vehicle speed is greater than 0 km/h (0 MPH).
	OFF	Vehicle speed is 0 km/h (0 MPH).
Light	ON	Lighting switch is in 1st or 2nd position.
	OFF	Lighting switch is in “OFF” position.
IGN	ON	Ignition switch is in “ON” position.
	OFF	Ignition switch is in “ACC” position.
Reverse*	ON	Selector/shift lever is in “Reverse” position.
	OFF	Selector/shift lever is in other than “Reverse” position.

*: When ignition switch is in “ACC” position, indication will be changed to “-”.

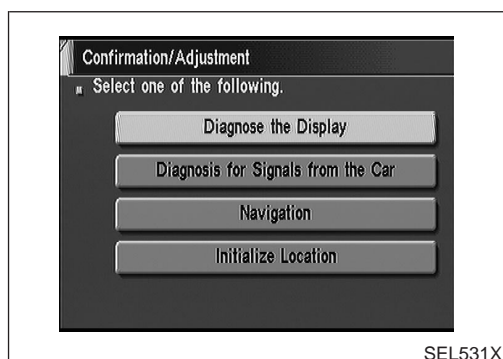
How to Perform

NFEL0005S0302

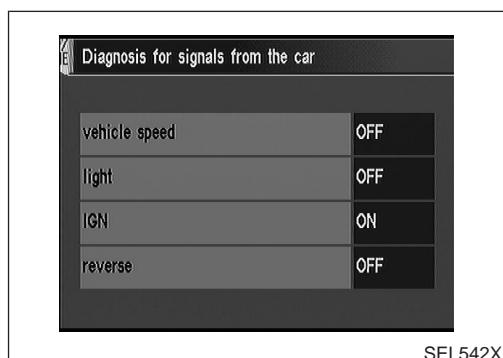
1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switches at the same time for more than 5 seconds.
4. Select “Confirmation/ adjustment”.
5. Select “Diagnosis for Signals from the Car”.
6. Then “Diagnosis for Signals from the Car” mode is performed.



SEL527X



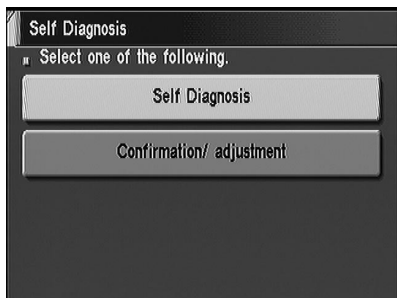
SEL531X



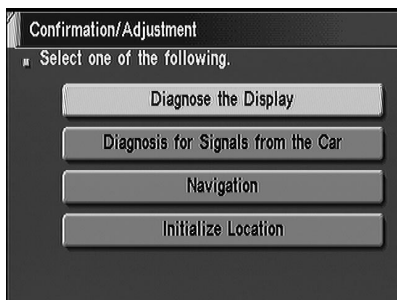
SEL542X

NAVIGATION SYSTEM

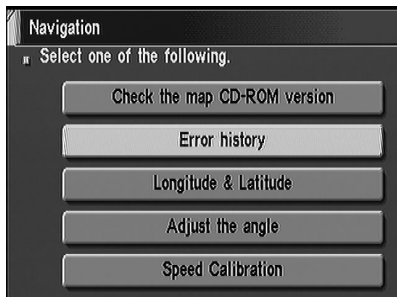
Confirmation/Adjustment Mode (Cont'd)



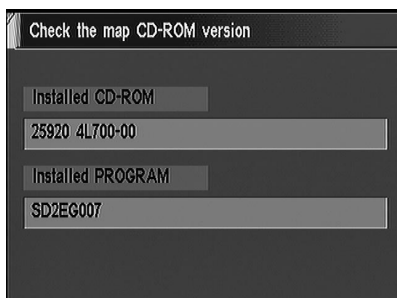
SEL527X



SEL531X



SEL532X



SEL536X

“CHECK THE MAP CD-ROM VERSION” MODE

=NFEL0005S04

How to Perform

NFEL0005S0401

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switches at the same time for more than 5 seconds.
4. Select “Confirmation/ adjustment”.
5. Select “Navigation”.
6. Select “Check the map CD-ROM version”.
7. The version (parts number) of CD-ROM loaded to the NAVI control unit will be displayed.

NAVIGATION SYSTEM

Confirmation/Adjustment Mode (Cont'd)

“DIAGNOSE THE DISPLAY” MODE

=NFEL0005S05

Description

NFEL0005S0501

Use the “Diagnose the Display” mode to check the display color brightness and shading. The NAVI control unit must be replaced if the color brightness and shading are abnormal.

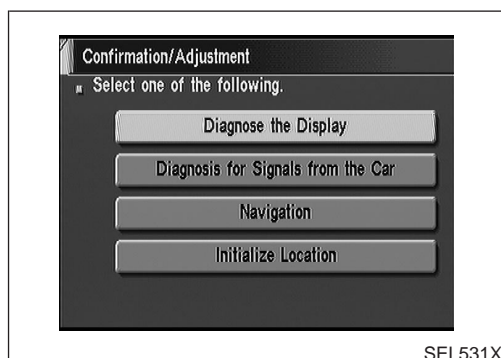
How to Perform

NFEL0005S0502

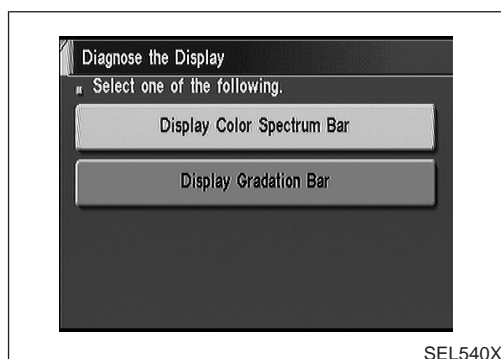
1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switches at the same time for more than 5 seconds.
4. Select “Confirmation/ adjustment”.
5. Select “Diagnose the Display”.
6. Select “Display color spectrum bar” or “Display gradation bar”.
7. Then color bar/gray scale will be displayed.



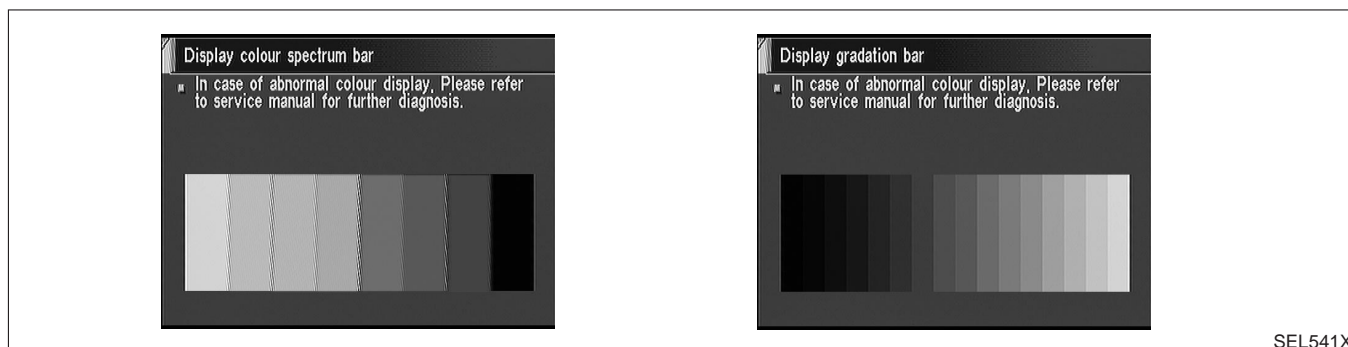
SEL527X



SEL531X



SEL540X



SEL541X

“LONGITUDE & LATITUDE” MODE

NFEL0005S06

Description

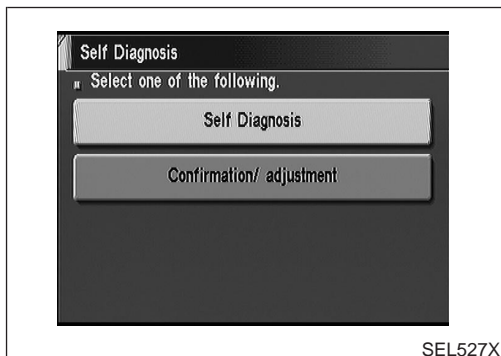
NFEL0005S0601

The “Longitude & Latitude” is used to confirm the longitude and latitude of some optional area point.

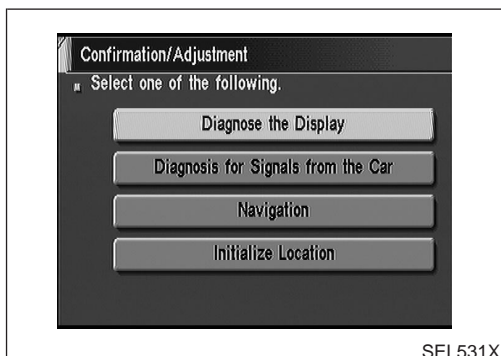
How to Perform

NFEL0005S0602

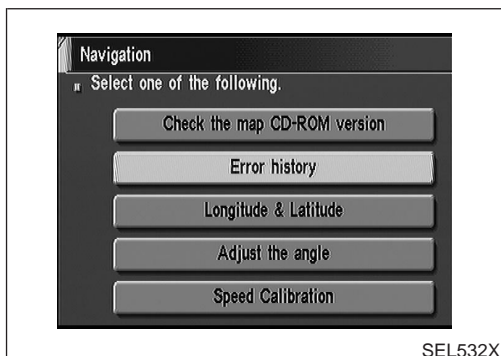
1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switches at the same time for more than 5 seconds.
4. Select “Confirmation/ adjustment”.



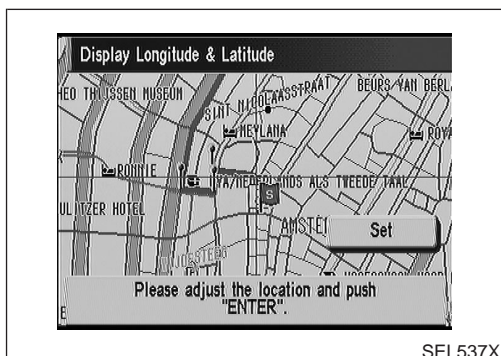
SEL527X



SEL531X



SEL532X



SEL537X

5. Select “Navigation”.

6. Select “Longitude & Latitude”.

7. Adjust the pointer with using the joystick and touch “Set”.
8. The longitude and latitude are displayed.

NAVIGATION SYSTEM

Confirmation/Adjustment Mode (Cont'd)

“ADJUST THE ANGLE” MODE

NFEL0005S07

Description

NFEL0005S0701

If the display indicates a larger or smaller turning angle than the actual turning angle, the gyro (angular speed sensor) sensing values must be checked.

In case that the vehicle on the display makes larger angle turn than reality, touch “-”. In case that the vehicle on the display makes smaller angle turn than reality, touch “+”.

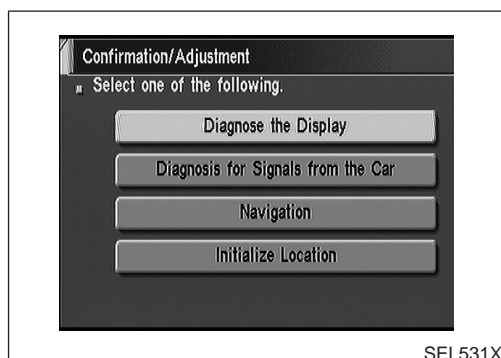
How to Perform

NFEL0005S0702

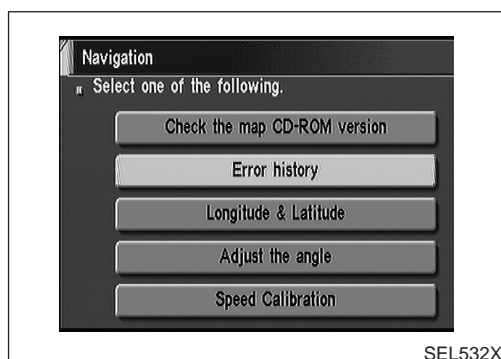
1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switches at the same time for more than 5 seconds.
4. Select “Confirmation/ adjustment”.
5. Select “Navigation”.
6. Select “Adjust the angle”.
7. Select “Left Turn” to adjust the angle to the left. Touch “Right Turn” to adjust the angle to the right.
8. Select “+” to increase the angle change coefficient or “-” to reduce the angle change coefficient.
9. Select “Set” to save the changed values in memory.
10. Then the vehicle turning angle on the display has adjusted.



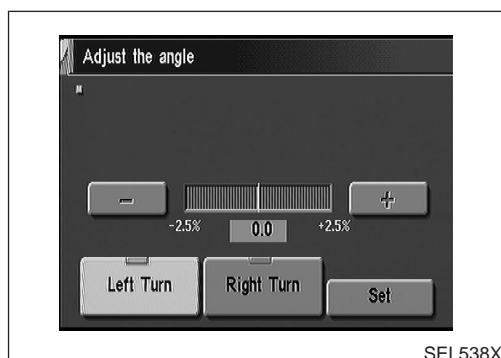
SEL527X



SEL531X



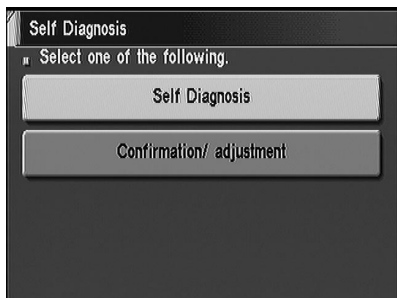
SEL532X



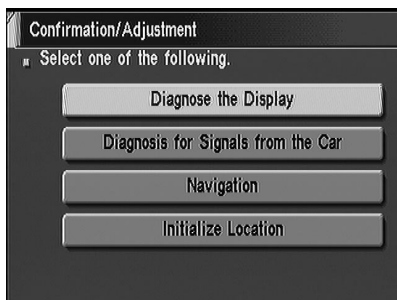
SEL538X

NAVIGATION SYSTEM

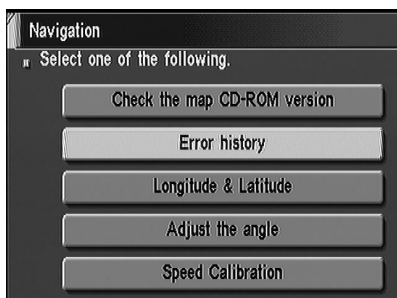
Confirmation/Adjustment Mode (Cont'd)



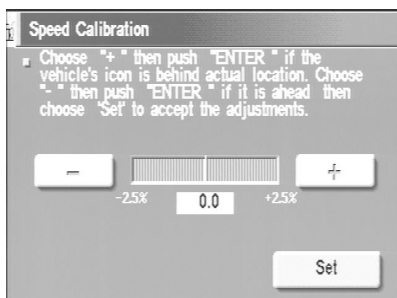
SEL527X



SEL531X



SEL532X



SEL539X

“SPEED CALIBRATION” MODE

=NFEL0005S08

How to Perform

NFEL0005S0801

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “MODE” switches at the same time for more than 5 seconds.
4. Select “Confirmation/ adjustment”.
5. Select “Navigation”.
6. Touch “Speed Calibration”.
7. Touch “+” or “-” to adjust the distance change coefficient.
 - To make the distance change coefficient smaller, touch “-”.
 - To make the distance change coefficient larger, touch “+”.
8. Select “Set”.

NAVIGATION SYSTEM

Confirmation/Adjustment Mode (Cont'd)

“INITIALIZE LOCATION” MODE

=NFEL0005S09

This procedure is for initializing the current location. Perform “Initialize Location” when the vehicle is transported a long distance on a trailer, etc.

Map with grey background appears and the vehicle location cannot be adjusted by scrolling the display when the vehicle location in the memory is out of the area of the inserted map data.

Perform “Initialize Location” when this occurs.

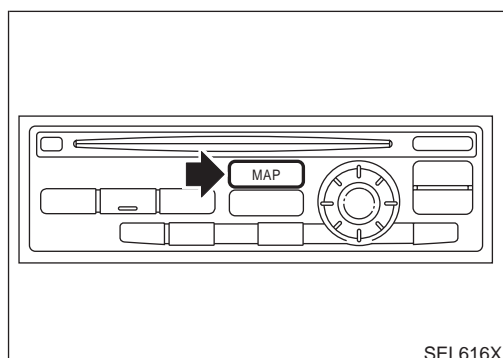
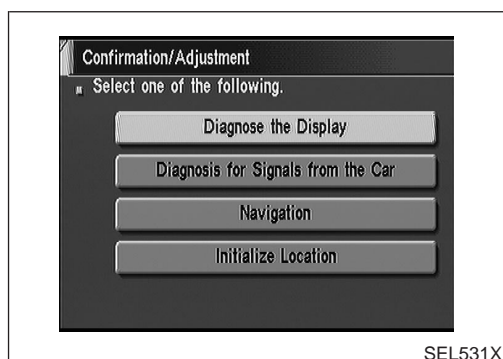
NOTE:

- Only initialize the system when the NAVI control unit is replaced. If the system is initialized in other cases, it may cause inaccurate positioning of the position marker for a while.
- Initialize the system outside for receiving the radio wave from the GPS satellite.

How to Perform

NFEL0005S0901

1. Switch the navigation system mode to self-diagnosis by pushing both “MAP” and “MODE” switches at the same time for more than 5 seconds.



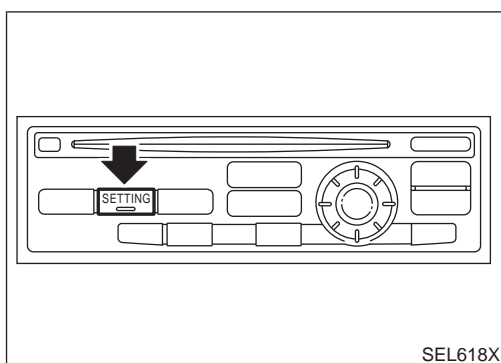
2. Select “Confirmation/ adjustment”.

3. Select “Initialize Location”. Then the previous screen is displayed.

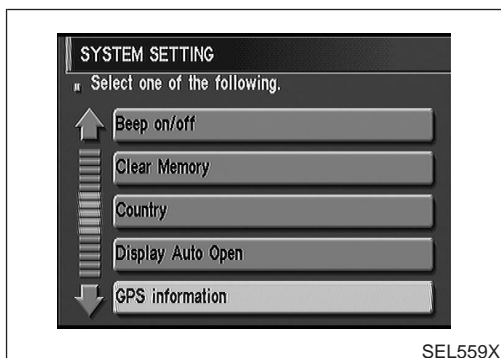
4. Push “MAP” switch.

NAVIGATION SYSTEM

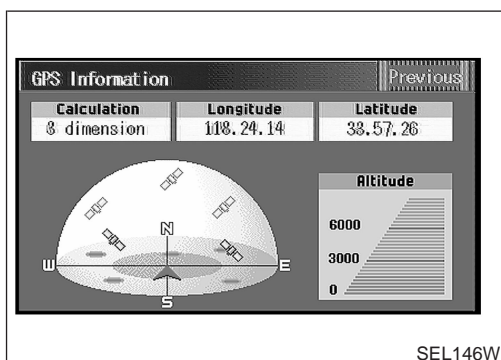
Confirmation/Adjustment Mode (Cont'd)



5. Push "SETTING" switch.
6. Select "System Setting".



7. Select "GPS Information".



8. More than one GPS satellite icon turns green. (It may take 1 to 15 minutes.)

NOTE:

Drive the vehicle for a while* in order to change the receiving condition of the radio wave from the GPS satellite if the GPS icon does not turn green.

* The driving distance which is necessary depends on the receiving condition of the radio wave from the GPS satellite.

9. Push "MAP" switch and check the following.
 - Confirm that the GPS icon on the map turns green.
 - Then the position marker should show the current location.
 - Position marker rotates corresponding to the movement of the vehicle.
10. Initialization is completed.

NAVIGATION SYSTEM

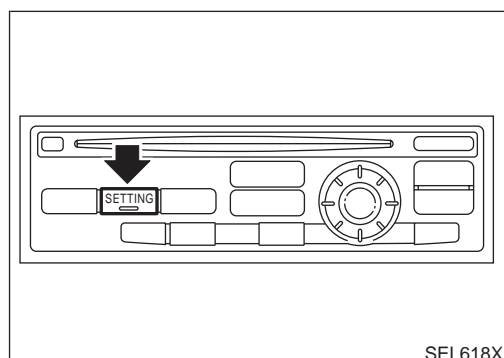
Control Panel Mode

Control Panel Mode APPLICATION ITEMS

=NFEL0006

NFEL0006S01

Mode	Description	Reference page
Display Auto Open	Display can be set to open by either of the following controls. <ul style="list-style-type: none"> ● Display will be opened when OPEN/CLOSE SW is selected with Key SW positioned ACC. ● Display will be automatically opened when Key SW is turned from OFF to ACC. 	EL-35
GPS Information	The GPS data includes longitude, latitude and altitude (distance above sea level) of the present vehicle position, and current date and time for the area in which the vehicle is being driven. Also indicated are the GPS reception conditions and the GPS satellite position.	EL-35
Language	Language can be selected for the display and voice guidance. To change the language, the program CD-ROM is required.	EL-36
Quick Stop Customer Setting	One facility of your selection can be added to your Quick Stop.	EL-36
Route Priorities	Priorities of search request and automatic re-searching can be set for route search.	EL-36
Tracking	Tracking to the present vehicle position can be displayed.	EL-37
Display Setting	The following display settings can be customized. <ul style="list-style-type: none"> ● Display color (Day mode or Night mode) ● Brightness of display 	EL-37
Heading	Heading of the map display can be customized for either north heading or the actual driving direction of the vehicle.	EL-38
Nearby Display Icons	Icons of facilities can be displayed. Facilities to be displayed can be selected from the variety selections.	EL-38
Adjust Current Location	Current location of position marker can be adjusted. Direction of position marker also can be calibrated when heading direction of the vehicle on the display is not matched with the actual direction.	EL-39
Avoid Area Setting	A particular area can be avoided when routing.	—
Beep On/Off	Beep sounds which corresponds to the system operation can be activated/deactivated.	EL-39
Clear Memory	Address book, Previous destination or Avoid area can be deleted.	EL-40
Country	When two or more countries are included in one CD-ROM, the destination can be searched for under the country name.	EL-40



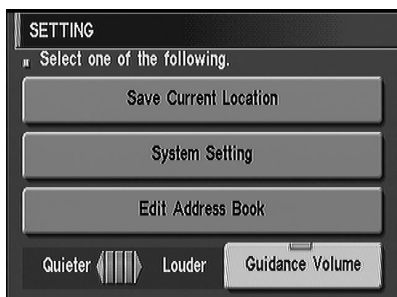
HOW TO PERFORM CONTROL PANEL MODE

NFEL0006S02

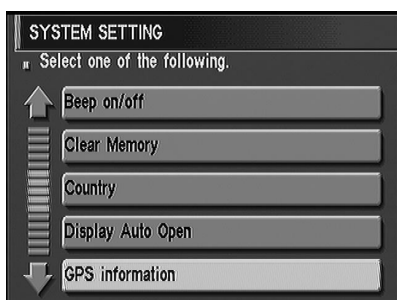
1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push "SETTING" switch.
 - For further procedures, refer to the following pages which describe each application item of the control panel mode.

NAVIGATION SYSTEM

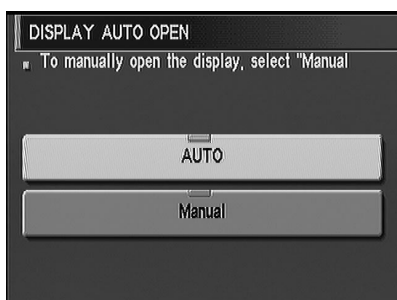
Control Panel Mode (Cont'd)



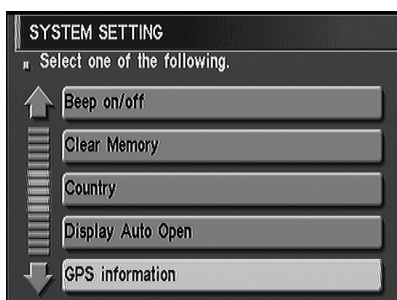
SEL619X



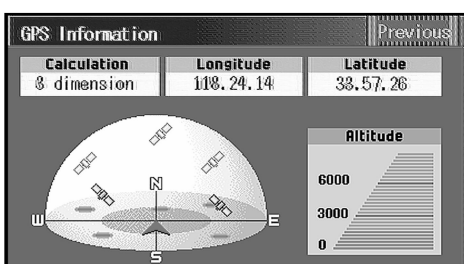
SEL620X



SEL621X



SEL559X



SEL146W

“DISPLAY AUTO OPEN” MODE

NFEL0006S03

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.

5. Select “Display Auto Open”.

6. Select “Auto” or “Manual” icon.
 - To manually open the display, select “Manual”.
 - To automatically open the display, select “Auto”.
7. Push “MAP” switch, then the display will go back to the current location map.

“GPS INFORMATION” MODE

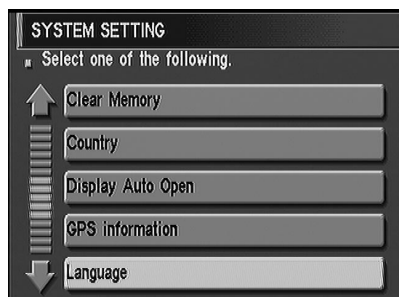
NFEL0006S04

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “GPS information”.

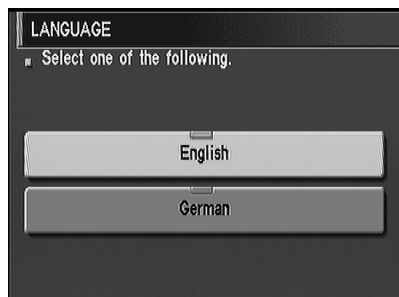
6. Then GPS information will be displayed.

NAVIGATION SYSTEM

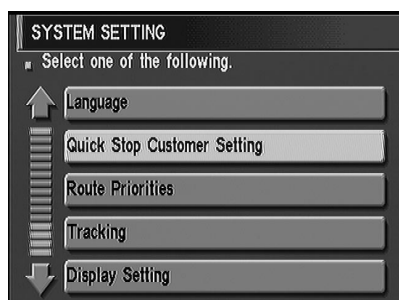
Control Panel Mode (Cont'd)



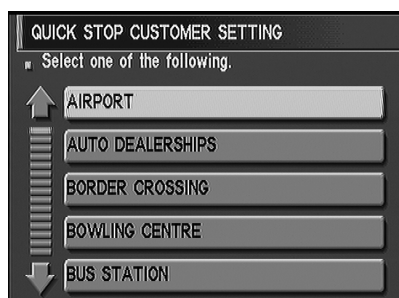
SEL565X



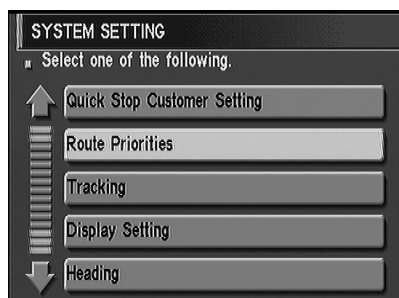
SEL566X



SEL543X



SEL544X



SEL545X

“LANGUAGE” MODE

=NFEL0006S05

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “Language”.
6. Select “English” or “German” icon.
 - When display indicates English, select “English”.
 - When display indicates German, select “German”.
7. Push “MAP” switch, then the display will go back to the current location map.

NOTE:

To change the language, the program CD-ROM is required.

“QUICK STOP CUSTOMER SETTING” MODE

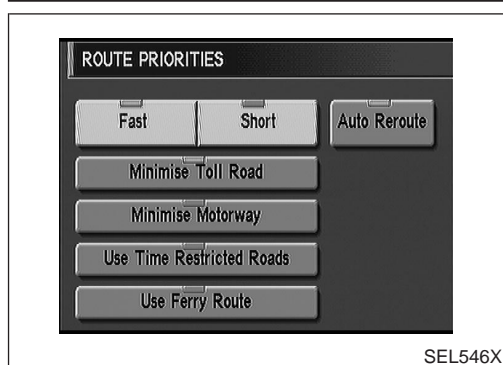
NFEL0006S06

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “Quick Stop Customer Setting”.
6. Select an item from the list.

“ROUTE PRIORITIES” MODE

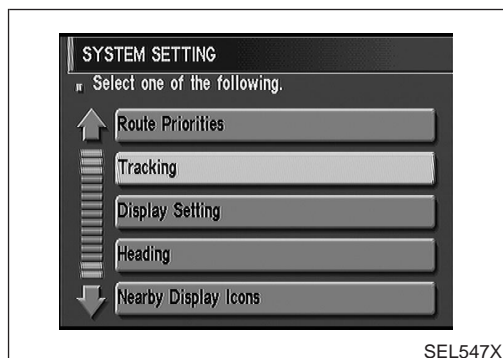
NFEL0006S07

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “Route Priorities”.



SEL546X

6. Select an item from the list.

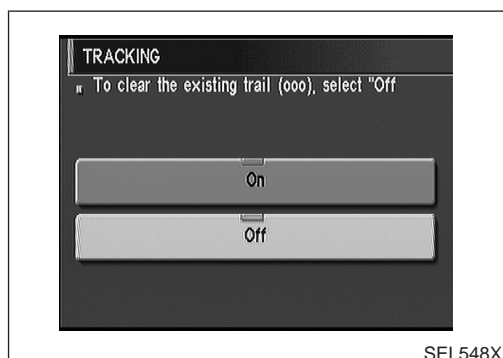


SEL547X

“TRACKING” MODE

NFEL0006S08

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “Tracking”.

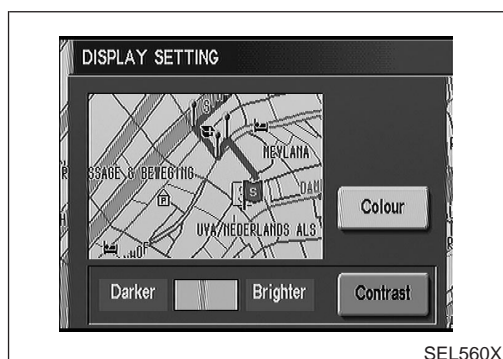


SEL548X

6. Select “On” or “Off” icon.
 - To leave no trail on the map, select “Off”.
 - To leave a trail in the map, select “On”.
7. Push “MAP” switch, then the display will go back to the current location map.

NOTE:

When a trail display is turned OFF, trail data is erased from the memory.



SEL560X

“DISPLAY SETTING” MODE

NFEL0006S09

Display Color Setting

NFEL0006S0901

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “Color”. Display color will change to Day mode/Night mode.
6. Select “MAP” switch, then the display will go back to the current location map.

NOTE:

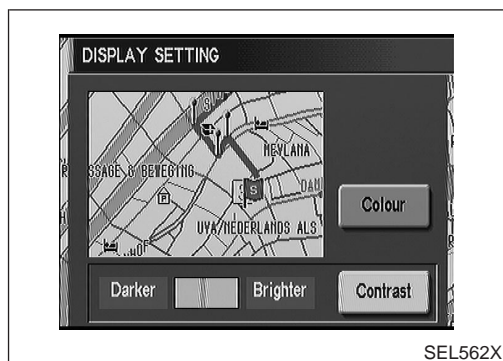
- Display color can be changed independently when light-switch is turned on and off.
- Initial setting of the color is as follows:
 When lighting switch is turned off: Day mode
 When lighting switch is turned on: Night mode
 Day mode: White background
 Night mode: Black background



SEL561X

NAVIGATION SYSTEM

Control Panel Mode (Cont'd)



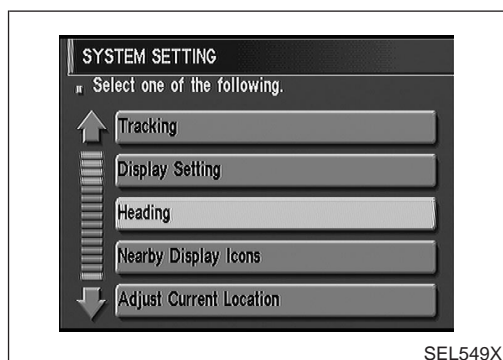
Brightness Setting

NFEL0006S0902

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push "SETTING" switch.
4. Select "System Setting".
5. Select "Bright" or "Dark" to adjust the brightness of display.
6. Select "MAP" switch, then the display will go back to the current location map.

NOTE:

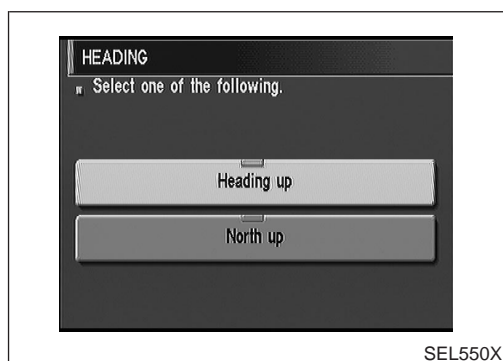
Display brightness can be adjusted independently when lighting switch is turned on and off.



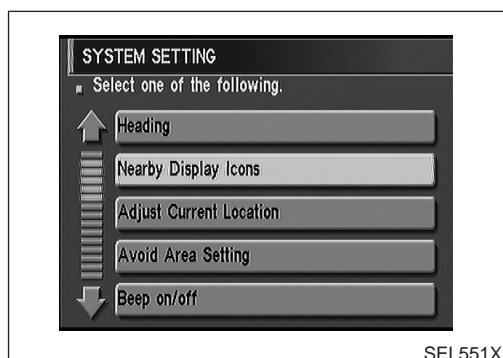
"HEADING" MODE

NFEL0006S10

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push "SETTING" switch.
4. Select "System Setting".
5. Select "Heading".



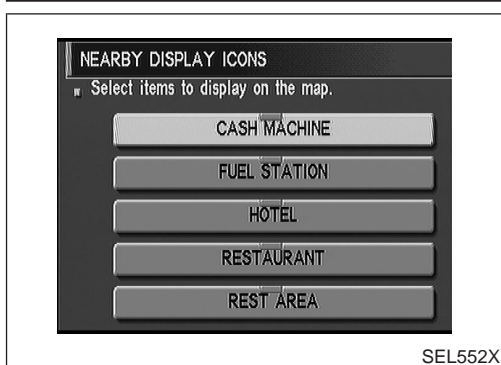
6. Select "Heading up" or "North up" icon.
 - To display North up, select "North up".
 - To display the car heading up, select "Heading up".
7. Push "MAP" switch, then the display will go back to the current location map.



"NEARBY DISPLAY ICONS" MODE

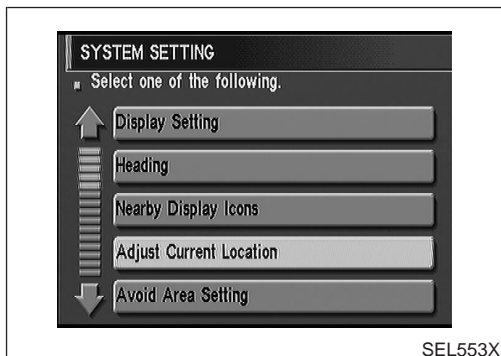
NFEL0006S11

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push "SETTING" switch.
4. Select "System Setting".
5. Select "Nearby Display Icons".



SEL552X

6. Select and touch an item on the list.
7. Push "MAP" switch, then the display will go back to the current location map.

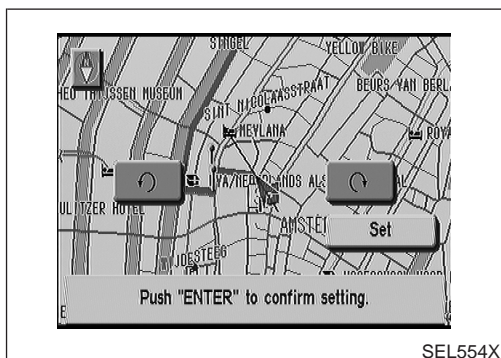


SEL553X

“ADJUST CURRENT LOCATION” MODE

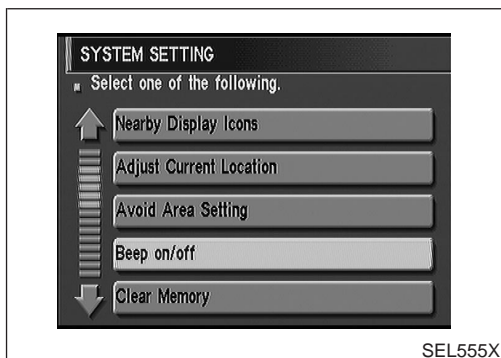
NFEL0006S12

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push "SETTING" switch.
4. Select "System Setting".
5. Select "Adjust Current Location".



SEL554X

6. Select "↶" or "↷" to calibrate the heading direction. (Arrow marks will rotate corresponding to the calibration key.)
7. Select "Set". Then the vehicle mark will be matched to the arrow mark.
8. Display will show "Heading direction has been calibrated" and then go back to the current location map.

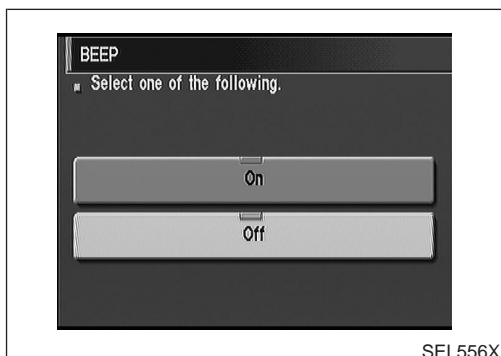


SEL555X

“BEEP ON/OFF” MODE

NFEL0006S13

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open display.
3. Push "SETTING" switch.
4. Select "System Setting".
5. Touch "Beep On/Off".

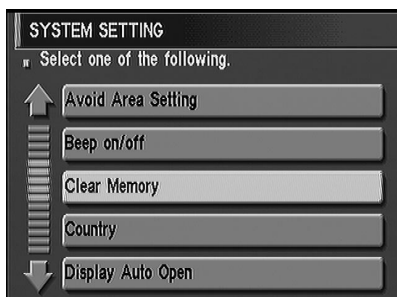


SEL556X

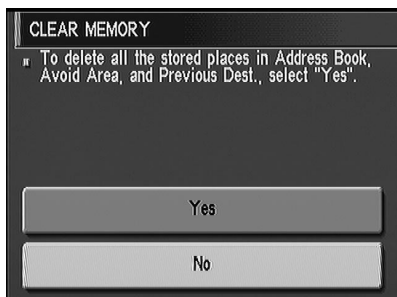
6. Select "On" or "Off" icon.
 - If you want the beep sound, select "On".
 - If you do not want the beep sound, select "Off".
7. Push "PREVIOUS" switch, then the display will go back to the current location map.

NAVIGATION SYSTEM

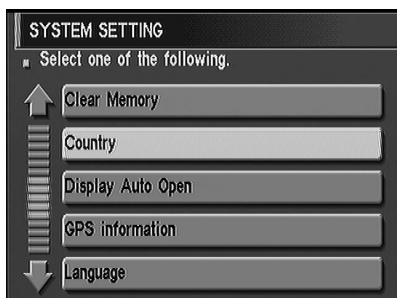
Control Panel Mode (Cont'd)



SEL557X



SEL558X



SEL567X



SEL653X

“CLEAR MEMORY” MODE

=NFEL0006S14

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “Clear Memory”.

6. To delete all the stored places in “Address Book”, “Avoid Area” and “Previous Dest”, select “Yes”.

“COUNTRY” MODE

NFEL0006S15

1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push “SETTING” switch.
4. Select “System Setting”.
5. Select “Country”.

6. Select and touch an item on the list.

Guide Volume Setting

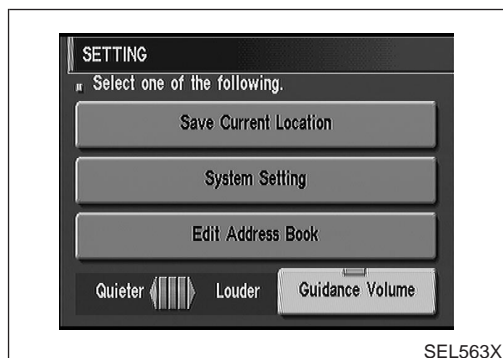
=NFEL0007

DESCRIPTION

NFEL0007S01

Following voice guidance setting can be changed.

- Voice guidance activation/deactivation
- Voice volume of the guidance

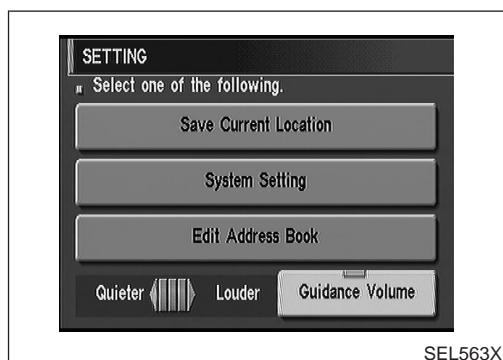


SEL563X

ACTIVATION/DEACTIVATION SETTING

NFEL0007S02

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push "SETTING" switch.
4. The voice prompt can be turned on/off by pressing the "Guidance Volume" button.



SEL563X

VOICE VOLUME SETTING

NFEL0007S03

1. Start the engine.
2. Push "OPEN/CLOSE" switch and then open the display.
3. Push "SETTING" switch.
4. Volume of the voice can be controlled by bending the joystick to left/right.

NAVIGATION SYSTEM

Anti-theft System

Anti-theft System

NFEL0014S01

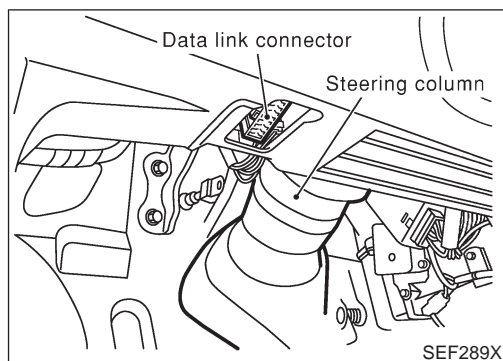
Description

The 4-digit PIN must be entered when the display shows “enter your PIN” at the time the vehicle is purchased.

RHD models

NFEL0014S01

By integrating the Navigation System in the vehicle’s interior and linking it to the vehicle’s immobilizer system, the possibility of the Navigation unit being stolen is effectively reduced. Each time the Navigation System is switched on, the Navigation System will start up communication with the vehicle’s immobilizer control unit (IMMU) and verify an identification code. If communication cannot be established, or the verified code is incorrect, the Navigation System will lock up showing “ANTI-THEFT FUNCTION” on the Navigation display.

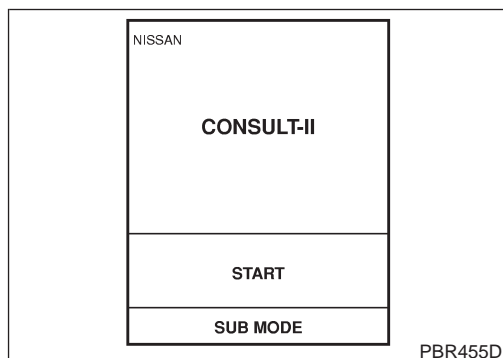


CONSULT-II CONSULT-II INSPECTION PROCEDURE

=NFEL0008

NFEL0008S01

1. Turn ignition switch OFF.
2. Connect CONSULT-II to data link connector.

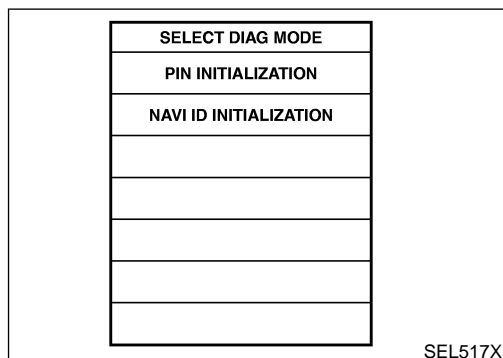


3. Insert NVIS (NATS) program card into CONSULT-II.

← : Program card

NATS-AEN00A

4. Turn ignition switch ON.
5. Touch "START".



6. Perform each diagnostic test mode according to each service procedure.

For further information, see the CONSULT-II Operation Manual, NVIS (NATS).

CONSULT-II DIAGNOSTIC TEST MODE FUNCTION

NFEL0008S02

CONSULT-II DIAGNOSTIC TEST MODE	Description
PIN INITIALIZATION	Navigation system will be locked when the vehicle's owner enters the wrong PIN five consecutive times. To release the lock, use "PIN INITIALIZATION".
NAVI ID INITIALIZATION	In normal times regulation codes are being communicated between Navigation Control Unit and Dongle Control Unit. Use "NAVI ID INITIALIZATION" to match the codes when either one has been replaced due to breakdown or etc.

NOTE:

When any initialization is performed, all NAVI ID and PIN previously registered will be erased and then must be registered again.

NAVIGATION SYSTEM

Trouble Diagnoses

Trouble Diagnoses SYMPTOM CHART

=NFEL0009

NFEL0009S01

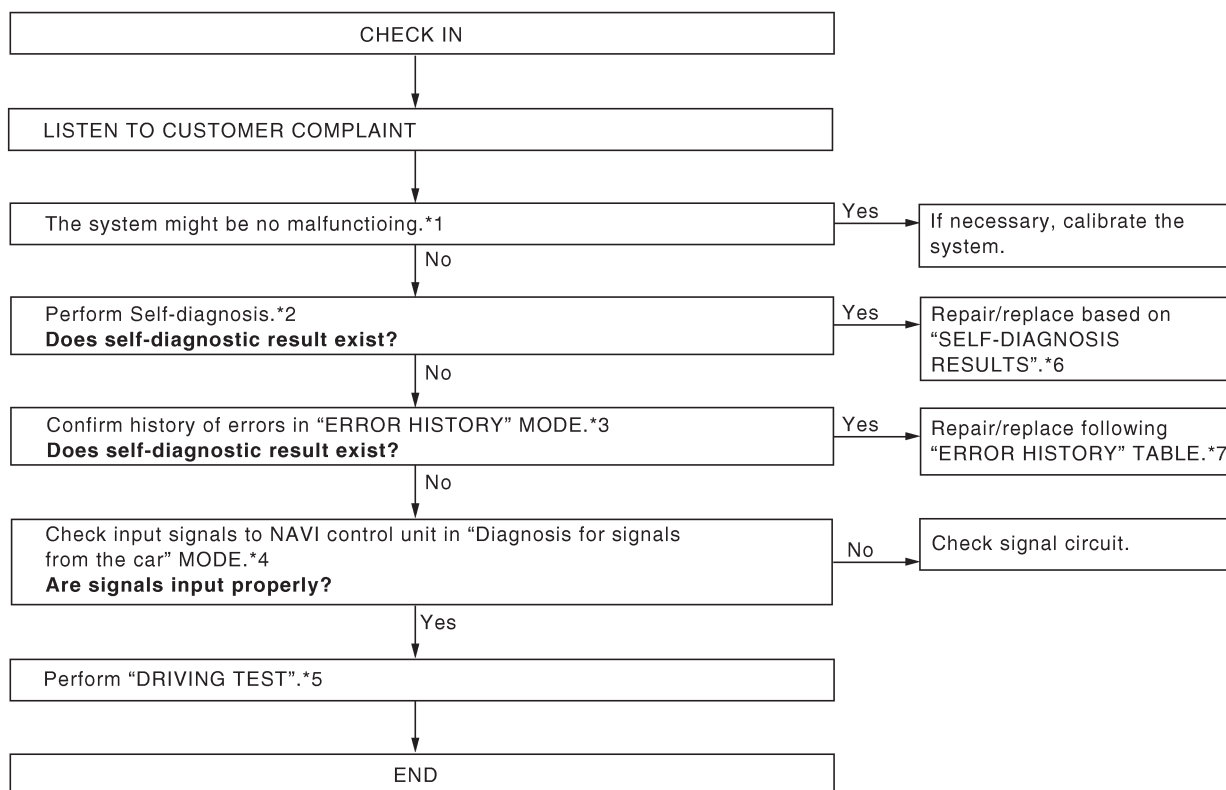
Symptom	Diagnoses/service procedure	Reference page
Any function of the system does not operate.	Check power supply and ground circuit for NAVI control unit.	EL-47
Strange screen color or unusual screen brightness.	1. Check "Display Setting" MODE.	EL-37
	2. Check display in "Diagnose the Display" MODE.	EL-28
The display is not dimmed when turning lighting switch to ON.	1. Check "Display Setting" MODE.	EL-37
	2. Check lighting switch signal input to NAVI control unit correctly in "Diagnosis for the signals from the car" MODE.	EL-26
No navigation guide voice are heard from front driver side speaker.	1. Check "Guide Volume Setting".	EL-41
	2. Check speaker relay.	EL-48
Beep does not sound when the system guides route.	Check "Beep On/Off" MODE.	EL-39
Position marker does not trace along the route being traveled.	Go to "WORK FLOW FOR NAVIGATION INSPECTION".	EL-45
Position marker does not indicate forward or backward movement.	Check reverse signal input to NAVI control unit correctly by "Diagnosis for the signals from the car" MODE.	EL-26
Radio wave of GPS cannot be received. (GPS marker on the display does not become green color.)	1. Is there anything obstructing the GPS antenna on the rear parcel finisher? (GPS antenna located under the rear parcel finisher.)	—
	2. Check GPS radio wave receive condition in "GPS Information MODE".	EL-35
	3. Check GPS antenna in "Self Diagnosis" MODE.	EL-20
Heading direction of position marker does not match vehicle direction.	1. Perform "Adjust Current Location" MODE.	EL-39
	2. Go to "WORK FLOW FOR NAVIGATION INSPECTION".	EL-45
Stored location in the address book and other memory functions are lost when battery is disconnected or becomes discharged.	Stored location in the address book and other memory functions may be lost if the battery is disconnected or becomes discharged. If this should occur, charge or replace the battery as necessary and re-enter the information.	—
Map appears grey and cannot be scrolled.	The current location in the memory is out of the map data area. Perform "Initialize Location".	EL-32

NAVIGATION SYSTEM

Trouble Diagnoses (Cont'd)

WORK FLOW FOR NAVIGATION INSPECTION

=NFEL0009S02



SEL519X

*1: EL-50

*4: EL-26

*6: EL-21

*2: EL-19

*5: EL-46

*7: EL-24

*3: EL-22

NAVIGATION SYSTEM

Trouble Diagnoses (Cont'd)

DRIVING TEST

During the driving test, diagnose the system by checking the difference of symptoms with each sensor ON or OFF. =NFEL0009S03

Test Pattern 1

Test method in which current position adjustment is not made according to GPS data. NFEL0009S0301

- Remove the GPS antenna connector from the NAVI control unit. Drive the vehicle.
Before driving the vehicle, perform "Adjust Current Location" MODE (EL-39).

Test Pattern 2

Test procedure in which map matching is not used. NFEL0009S0302

- Before driving the vehicle, perform "Adjust Current Location" MODE (EL-39). With the ignition switch OFF and the map CD-ROM removed from the NAVI control unit, drive the vehicle. After driving the vehicle, reinstall the map CD-ROM. Compare the saved driving tracks for the vehicle's current location with roads on the map.

Example

<The position marker consistently indicates the wrong position when driving in the same area. Determine if this is the result of the map matching function or the GPS function.> NFEL0009S0303

→ Perform test pattern 1.

<To verify the accuracy of the road configuration shown on the display>

→ Perform test patterns 1 and 2.

- Compare the map and the saved driving tracks. The precision of the saved driving tracks is within several hundred meters.

<To make distance calibration and adjustments>

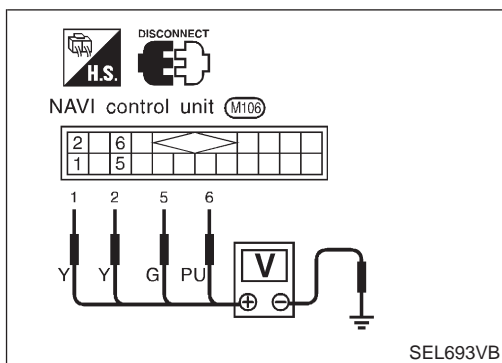
→ Perform test patterns 1 and 2.

- Make adjustments by driving the vehicle over a known course (highway or other road where distances are clearly marked). Calibrate the distance against the known distance. Use the formula below.

Calibration value = Screen display distance/Actual distance

NAVIGATION SYSTEM

Trouble Diagnoses (Cont'd)



POWER SUPPLY AND GROUND CIRCUIT CHECK FOR NAVI CONTROL UNIT

=NFEL0009S04

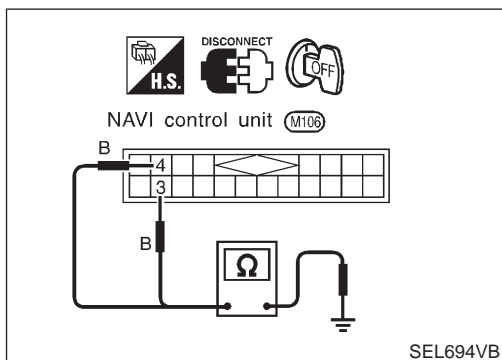
Power Supply Circuit Check

NFEL0009S0401

Terminal		Ignition switch		
(+)	(-)	OFF	ACC	ON
1	Ground	Battery voltage	Battery voltage	Battery voltage
2	Ground	Battery voltage	Battery voltage	Battery voltage
5	Ground	0V	0V	Battery voltage
6	Ground	0V	Battery voltage	Battery voltage

If NG, check the following.

- 10A fuse [No. 10, located in the fuse block (J/B)]
- 10A fuse [No. 14, located in the fuse block (J/B)]
- 15A fuse [No. 56, located in the fuse block (J/B)]
- Harness for open or short between fuse and NAVI control unit



Ground Circuit Check

NFEL0009S0402

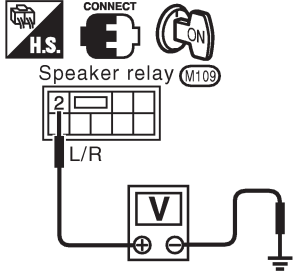
Terminals	Continuity
3 - Ground	Yes
4 - Ground	Yes

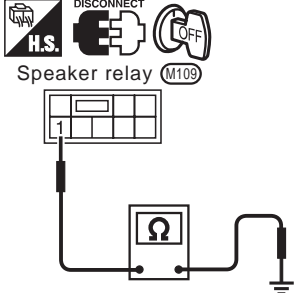
NAVIGATION SYSTEM

Trouble Diagnoses (Cont'd)

SPEAKER RELAY CHECK



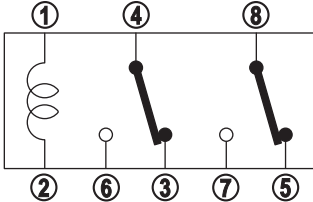
=NFEL0009S05

1	CHECK RELAY ON SIGNAL	
<p>1. Push "VOICE" button. 2. Check voltage between speaker relay terminal 2 and ground.</p>		
		
SEL622X		
OK or NG		
OK	▶	GO TO 2.
NG	▶	Check harness for open or short between NAVI control unit terminal 46 and speaker relay terminal 2.

2	CHECK GROUND CIRCUIT FOR SPEAKER RELAY	
<p>1. Disconnect speaker relay. 2. Check continuity between speaker relay terminal 1 and ground.</p>		
		
SEL623X		
OK or NG		
Does continuity exist?		
OK	▶	GO TO 3.
NG	▶	Repair harness.

NAVIGATION SYSTEM

Trouble Diagnoses (Cont'd)

3	CHECK SPEAKER RELAY																												
<p>Check continuity speaker relay terminals in the condition below.</p>																													
 		<table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Condition</th> <th colspan="6">Terminal</th> </tr> <tr> <th>③</th> <th>④</th> <th>⑤</th> <th>⑥</th> <th>⑦</th> <th>⑧</th> </tr> </thead> <tbody> <tr> <td>5V direct current applied between terminal ① and ②</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>○—○</td> </tr> <tr> <td>Other than above</td> <td>○—○</td> <td></td> <td>○—○</td> <td></td> <td></td> <td>○—○</td> </tr> </tbody> </table>	Condition	Terminal						③	④	⑤	⑥	⑦	⑧	5V direct current applied between terminal ① and ②						○—○	Other than above	○—○		○—○			○—○
Condition	Terminal																												
	③	④	⑤	⑥	⑦	⑧																							
5V direct current applied between terminal ① and ②						○—○																							
Other than above	○—○		○—○			○—○																							
SEL624X																													
OK or NG																													
OK	▶	GO TO 4.																											
NG	▶	Replace speaker relay.																											

4	CHECK SPEAKER OPERATION	
<p>Does front LH speaker sound when audio operates?</p>		
Yes or No		
Yes	▶	Check harness for open or short between speaker relay terminals 6, 7 and also between NAVI control unit terminals 42 and 43.
No	▶	<p>Check the following.</p> <ul style="list-style-type: none"> ● Speaker ● Harness for open or short between audio and speaker relay

NAVIGATION SYSTEM

This Condition Is Not Abnormal

This Condition Is Not Abnormal

=NFEL0010

EXAMPLE OF BASIC OPERATIONAL ERRORS

NFEL0010S01

Symptom	Possible cause	Repair order
No image is displayed.	Monitor brightness control is set to full dark.	Readjust monitor brightness.
Map does not appear on display.	Map CD is not inserted or inserted upside down.	Insert the map CD with the label facing up.
	Map mode is turned OFF.	Press the "MAP" button.
No guide tone is heard.	Voice guide adjustment OFF/Volume is set to the lowest or highest level.	Adjust the voice guide level.
Voice guide volume is too high or too low.		
Dark display/Slow image movement	Low vehicle interior temperature	Wait until vehicle interior temperature rises to appropriate level.
Small black or white dots appear on the screen.	Unique liquid crystal display phenomena	No problem
"Unable to read CD" message appears only during specified operation.	Map CD surface is tainted/CD surface is partially scratched.	Check map CD surface. If dirty, wipe clean with a soft cloth.
		If map CD surface is damaged, replace the CD.

Area place names are not displayed.

If area place names do not appear on the map display, these names may not be available. Use the BIRDVIEW[®] flat surface map display function. Display output may differ. Note the items related to BIRDVIEW[®] below.

- Priority is given to the display of place names in the direction of vehicle travel.
- Extended display of vehicle travel distance for both surfaces and steering angle (flat directional changes). This phenomenon disappears after the display image has been replaced by another one.
- The names of route and area might vary between the immediate front area and distance front area.
- Alphanumeric display characters are limited to maintain display simplicity and clarity. Display details may differ with time and place.
- Identical place and road names may appear on the display at more than one location.

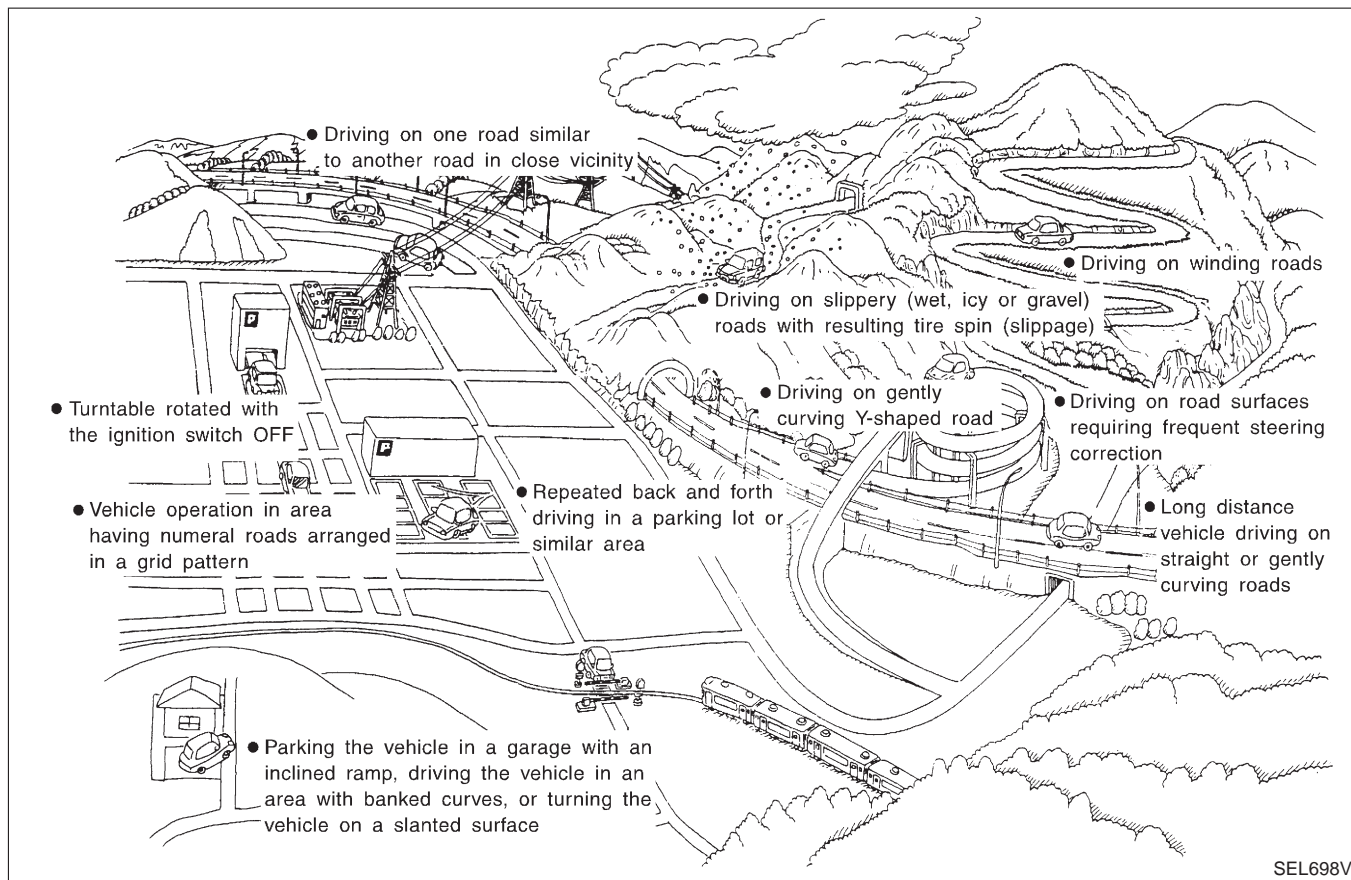
NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

EXAMPLE OF CURRENT VEHICLE POSITION MARKER ERROR

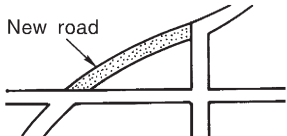

=NFEL0010S02

The navigation system reads the vehicle distance and steering angle data. Because the vehicle is moving, there will be an error in the current position indication. After the error appears, drive the vehicle for a short distance. Stop the vehicle. If the position marker does not return to its original position, perform "Adjust Current Location" MODE (EL-39).



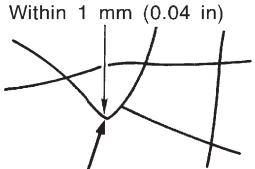
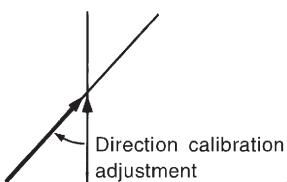
NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

Possible cause		Drive condition	Service procedure
Area	Slippery road surface	On wet, icy, or gravel road where frequent wheel slippage occurs, distance calculations may be erroneous. The position marker may show the vehicle to be in inaccurate position.	If the position marker does not move to the correct position even after the vehicle has been driven approximately 10 km (6 miles), perform "Adjust Current Location" MODE (EL-39). If necessary, perform "Speed Calibration" (EL-31).
	Slanted area	Hilly areas where the road has banked curves. When the vehicle enters these banked curves, there may be an error in steering angle measurement. The position marker may show the vehicle to be in inaccurate position.	
Map data	Map display for a given road does not appear.  SEL699V	When the vehicle is driven on a newly constructed road that does not appear on the existing map. Map marking and calibration are not possible. The position marker may indicate inaccurate position in close proximity to the actual position. Subsequently, when the vehicle is driven on a road which is available as map data, the position marker may still indicate an inaccurate position.	
	The vehicle is driven on a road whose course has been altered (usually to improve the road or to eliminate some hazard).  SEL700V	When the map data shown on the display and the actual conditions are different. Map matching will not be possible. The position marker may indicate inaccurate position in close proximity to the actual position. If the vehicle is driven on the indicated road, further errors may occur.	
Vehicle	Use of tire chains (Stormy weather)	Tire chains will affect distance sensing. The position marker may indicate inaccurate position.	


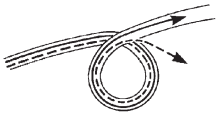
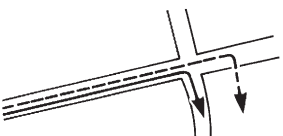
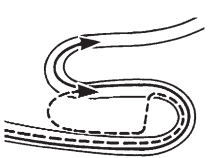
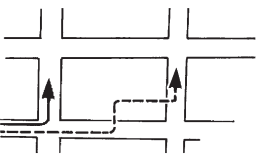
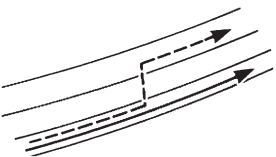
NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

	Possible cause	Drive condition	Service procedure
Operation	Driving immediately after starting engine.	The gyro (angular velocity sensor) needs about 15 seconds after the engine is started to precisely sense the angular velocity. Directional sensing errors will occur if the vehicle is moved immediately after starting the engine. The position marker may indicate inaccurate position.	Wait a few moments between starting the engine and actually driving the vehicle.
	Continuous driving for long distances (non-stop)	When the vehicle is driven continuously without stopping over a long distance, errors in directional sensing may occur. The position marker may indicate inaccurate position.	Stop the vehicle. Perform "Speed Calibration" (EL-31).
	Rough or violent driving	Wheel spinning (peeling out) or similar rough driving techniques can adversely affect sensing accuracy. The position marker may indicate inaccurate position.	If the position marker does not move to the correct position even after the vehicle has been driven approximately 10 km (6 miles), perform "Adjust Current Location" MODE (EL-39).
Positional calibration procedures	Positional calibration precision Within 1 mm (0.04 in)  SEL701V	If current vehicle location is roughly set, the system may be unable to locate the road that the vehicle is traveling on. (This is especially true in an area where there are many roads.)	Perform "Adjust Current Location" MODE (EL-39) within a precision standard of 1 mm (0.04 in) on the display. NOTE: During calibration, use the most detailed map possible.
	Position calibration direction  SEL702V	When calibrating the position, check the vehicle direction. If the vehicle direction is not correct, subsequent precision of current location will be affected.	Perform "Adjust Current Location" MODE, refer to EL-39.

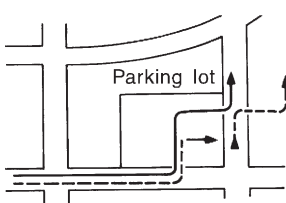
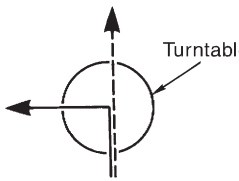
NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

Possible cause: —: Vehicle running ---: Indication		Drive condition	Service procedure
Road shapes	<p>Y-intersection</p>  <p style="text-align: right;">SEL703V</p>	<p>In Y-intersections with a very gradual change in course, a directional sensing may be inaccurate. This may result in the position marker giving the wrong road indication.</p>	<p>If the position marker does not move to the correct position even after the vehicle has been driven approximately 10 km (6 miles), perform "Store place". If required, also perform "Adjust Current Location" MODE (EL-39).</p>
	<p>Spiral road</p>  <p style="text-align: right;">SEL704V</p>	<p>On loop bridges and similar structures which result in a large and continuous turn, turning angle may be sensed inaccurately. As a result, the position marker may separate from the route on the map.</p>	
	<p>Straight road</p>  <p style="text-align: right;">SEL705V</p>	<p>In long distance driving on a straight road or road with very gradual curves, map marking inaccuracies may occur. In such cases, the position marker may stray from the route being traveled during subsequent turns due to inaccurate distance calculation.</p>	
	<p>Winding road</p>  <p style="text-align: right;">SEL706V</p>	<p>Directional sensing precision errors may occur when traveling on winding roads. During map matching, the position marker may stray to an adjacent road having a similar shape. Subsequent position marker error may occur.</p>	
	<p>Grid-like road shape</p>  <p style="text-align: right;">SEL707V</p>	<p>Directional sensing and distance sensing, precision errors may occur because of many roads having a similar shape in the immediate area. During map matching, the position marker may stray to an adjacent road having a similar shape. Subsequent position marker error may occur.</p>	
	<p>Parallel roads</p>  <p style="text-align: right;">SEL708V</p>	<p>When driving on a parallel road, map matching errors may occur. Subsequent position marker error may also occur.</p>	

NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

	Possible cause: —: Vehicle running ---: Indication	Drive condition	Service procedure
Location	Parking lot or similar area 	SEL709V When the vehicle is driven in a parking lot or similar area, such as in an area not normally marked as a road on map, during map matching, the system may select nearby roads. This error may continue after the vehicle exits the parking area and begins to run on ordinary roads. Vehicle operation in a parking area may involve frequent turns and up and/or down operation. Directional sensing errors may occur leading to subsequent route and position mistakes.	If the position marker does not move to the correct position even after the vehicle has been driven approximately 10 km (6 miles), perform "Store place". If required, also perform "Adjust Current Location" MODE (EL-39).
	Turntable 	SEL710V When the ignition switch is OFF (the usual situation when the vehicle is on a turntable), the navigation system receives no data from the gyro (angular velocity sensor). When the turntable rotates, no directional change is sensed. During subsequent vehicle operation, directional and route errors may occur.	

Position marker displays a completely different location

In circumstances such as those described below, GPS signal reception conditions may result in an erroneous position of the position marker. Perform "Adjust Current Location" MODE (EL-39).

NOTE:

- When GPS satellite signal reception conditions are poor, the position of position marker may be erroneous. If correction is not made immediately, the position marker error will be compounded and a completely different location will be indicated. In an area where GPS satellite signal reception conditions are good, the system can be returned to normal operation.
- The vehicle is driven aboard a car ferry or is towed for some distance with the ignition switch OFF. Vehicle movement is not sensed. Current location calculations do not occur and current location data does not appear on the display screen. Use GPS to accurately determine actual vehicle position. The system can be returned to normal operation when the GPS satellite signal reception conditions are good.

Position marker jumps

In circumstances such as those described below, the position marker may jump as a result of automatic current location corrections made by the system.

During map matching

- During map matching, the position marker may jump from one spot to another. In this case, it may be corrected to a wrong road or to an area where no road exist.

GPS location correcting

- Vehicle current location is sensed using the GPS data. Positional calibration is performed. The position marker continues to be in the wrong position. It may jump about from one area of the screen to another. In this case, it may be corrected to a wrong road or to an area where no road exist.

Position marker indicates that the vehicle is in the middle of an ocean or large river

The navigation system does not distinguish between land and water surfaces. In some cases, a position marker error may cause the display to show the vehicle above a water surface.

Position of position marker varies when the vehicle is repeatedly operated on the same road

Driving lane and steering wheel movement results in a variety of different positions of the position mark when traveling on the same road based on sensing results by the GPS antenna and gyro (angular velocity sensor). Slow locational correction using map matching

- The map matching function requires verification of local data. To make the map matching function, some distance needs to be driven.
- The map matching function may not provide accurate performance in an area where there are numerous parallel roads. Until the system judges the road characteristics, an incorrect position may be shown.

NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

GPS signal reception conditions are good. However, the position mark does not return to its proper position.

- The system senses the vehicle location with an error of approximately 100 m (328 ft). Due to the limitation of precision, the position marker may be inaccurate even if the GPS signal reception condition is good.
- The navigation system uses GPS data to determine vehicle location. GPS data is compared with other locational sensing data during the map matching process. The system decides which data is more precise and uses that data.
- When the vehicle is stationary, GPS data cannot be used to make system corrections.

Area designations on the map display and the BIRDVIEW® display differ.

To prevent the display from becoming congested, alphanumeric information is abridged.

[No problem]

Correct position of your vehicle is not displayed.

Vehicle position changed after ignition key was turned to the OFF position (Vehicle is transported on car ferry, car train, or by some other means).

[Operate vehicle for short time under GPS receiving conditions.]

The display does not change to night-time mode even though the light switch has been turned ON.

Lights have been turned on. In "DISPLAY CHANGE" mode, night-time mode on display has been switched to day-time mode and still is.

[Turn lights on again. Set the display to night-time mode. Refer to EL-37.]

Map does not scroll even though the position of your vehicle is changed.

Present area does not appear on the display.

[Press the "MAP" switch.]

Vehicle position marker does not appear.

Present area does not appear on the display.

[Press the "MAP" switch.]

The map surface precision display (GPS satellite marker) still remains gray.

Vehicle is parked inside a building or in the shadow of a large building. This intercepts the GPS signal.

[Move the vehicle to a more open position.]

GPS signal is not received because objects are placed on the rear parcel shelf.

[Remove objects from the rear parcel shelf.]

GPS satellite position is bad.

[Wait until GPS satellite position improves.]

Vehicle position precision is bad.

The map surface precision display (GPS satellite marker) still remains gray.

[Refer to "The map surface precision display (GPS satellite marker) still remains gray" item (Symptoms)]

Vehicle speed and elapsed distance is calculated from the vehicle speed pulse. This pulse is dependent upon tire size. If tire chains are used on the vehicle, accuracy will be affected (pulse rate will be too fast or too slow). The same is true if the system installed to your vehicle is removed and installed on another vehicle.

[Drive the vehicle at a speed higher than 30 km/h (19 MPH) for approximately 30 minutes. Automatic readjustment should occur. If it does not (remains too fast or too slow), distance calibration is required. Or, drive the vehicle for a short distance. Perform "SPEED CALIBRATION" (EL-31). After removing the tire chains, sensing accuracy may recover by itself.]

Bad map data or system defect (same error consistently occurs in the same area)

ROUTE SEARCH/ROUTE GUIDE

NFEL0010S03

- If the present location or the destination location is displayed in the avoid area, it is not possible to search routes.
- If the avoid area is set to wide range area, it may not be possible to find appropriate routes or search for alternate routes.
- The automatic re-route calculates a return to the original route. Because of this, it may not be possible to search appropriate new routes. If you deviate from the original route and wish to select an appropriate new route, touch "Route Calculation".
- The automatic re-route function may sometimes require considerable time.
- Displayed route number and directional information at a highway junction may differ from the information posted on the actual road signs.
- Displayed street name information at a highway exit may differ from the information posted on the actual road signs.
- Street name information displayed on the enlarged intersection map may differ from the information posted on the actual road signs.

NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

- The enlarged intersection map may display a “Unknown street” message at some street intersections.
- Because of road configuration, etc. the guide may finish early. If this occurs, follow the marker to reach your destination.
- Destination area side information (left side and right side) may differ from actual conditions because of data error.

Unable to Set Destination, Way Point, and/or menu items

NFEL0010S0301

Symptom	Possible cause	Repair order
Unable to search way points in re-search mode	A way point already crossed or determined to have been crossed.	If you desire to pass through a way point for a second time, reperform route edit.
Turn list is not displayed.	Route search does not occur.	Set designation areas and perform route search.
	Car marker does not appear on recommended route.	Drive on the recommended route.
	Route guide is canceled.	Turn the route guide ON. (Push “VOICE” switch)
Automatic search does not function.	Vehicle is not running on search object route (road indicated by orange, brown or red line).	Drive the vehicle on the search object route or perform a manual route search. Note that all routes will be re-searched at this time.
Unable to select detour route.	Vehicle is not running on recommended route.	Use the “RE-ROUTE” mode to search again or return to the recommended route.
Detour route search results are identical to previous search.	All possible conditions were considered, but results are the same.	This is not abnormal.
Unable to set a way point.	More than five way points have been previously set (and not cleared).	More than five way points cannot be specified at the same time. Break down into smaller segments and perform search.
Unable to select starting point during route edit.	Starting point will normally be your present location during route edit.	This is not abnormal.
Cannot select certain menu items.	While vehicle is running.	Park the vehicle in a safe area and perform operation.

Voice Guide Information

NFEL0010S0302

Symptom	Possible cause	Repair order
Voice guide does not function.	Voice guide is only available at certain intersections (marked with ♯). In some cases, the guide is not available even when the vehicle makes a turn.	This is not abnormal.
	Vehicle is not running on recommended route.	Return to recommended route or reperform route search.
	Voice guide is OFF.	Set voice guide to the ON position.
	Route guide is canceled.	Turn the route guide ON. (Push “VOICE” switch)
The guide content does not correspond to actual conditions.	The content of the voice guide may vary depending on the type of junction.	Operate vehicle following the traffic rules and regulation.

Route Search Information

NFEL0010S0303

Symptom	Possible cause	Repair order
Proceeding in desired direction. However, route search in desired direction does not function.	Unable to find appropriate route in the desired direction.	This is not abnormal.

NAVIGATION SYSTEM

This Condition Is Not Abnormal (Cont'd)

Symptom	Possible cause	Repair order
No route is displayed.	No object route is searched near destination area.	Adjust position to wide road (brown) near destination area. In an area where traffic direction is displayed separately, pay close attention to the direction of travel. Set the destination area and the way point over the road.
	Starting point and destination areas are very near.	Move destination areas away from starting point on the screen.
Recommended route which has been passed disappears from the display.	The recommended route is divided into individual control segments. When way point 1 is passed, the data from the starting point to the way point 1 is erased.	This is not abnormal.
Search recommends roundabout route.	There may be special conditions for roads near the starting point and destination area (one-way traffic, etc.). A roundabout route may be displayed.	Slightly change starting point and destination area settings.
Landmark display does not show actual conditions.	Mistaken or missing map data may result in erroneous display.	Change map CD.
Recommended route drawn slightly away from starting point, way points, and destination area.	Course search data may not exist for closely positioned starting point, way points, and destination area shown on the map. Route guide starting point, way point, and destination point may be separated.	Set the destination area to the general route (indicated by a thick brown line). However, even if the selected route is a major one, appropriate route search data may not be available.

LOCATION OF CAR MARKER

NFEL0010S04

- If the vehicle has been parked in a multi-level parking facility or underground parking facility, the car marker position may be inaccurate immediately after exiting the parking facility.
- The GPS accuracy is within ± 100 m (300 ft). Even when receiving conditions are excellent, further positional correction may not occur.

STREET INDICATION

NFEL0010S05

- Street names displayed on the map may differ from the actual street names.
- A "Unknown street" message may appear on the map in place of street name information.

RESEARCH

NFEL0010S06

- Position may be searched by house number. However, the displayed position and street may differ from the actual position and street.
- When position is searched using POI, the displayed position may differ from the actual position.
- Some data may not be available for new buildings and other structures in a map.

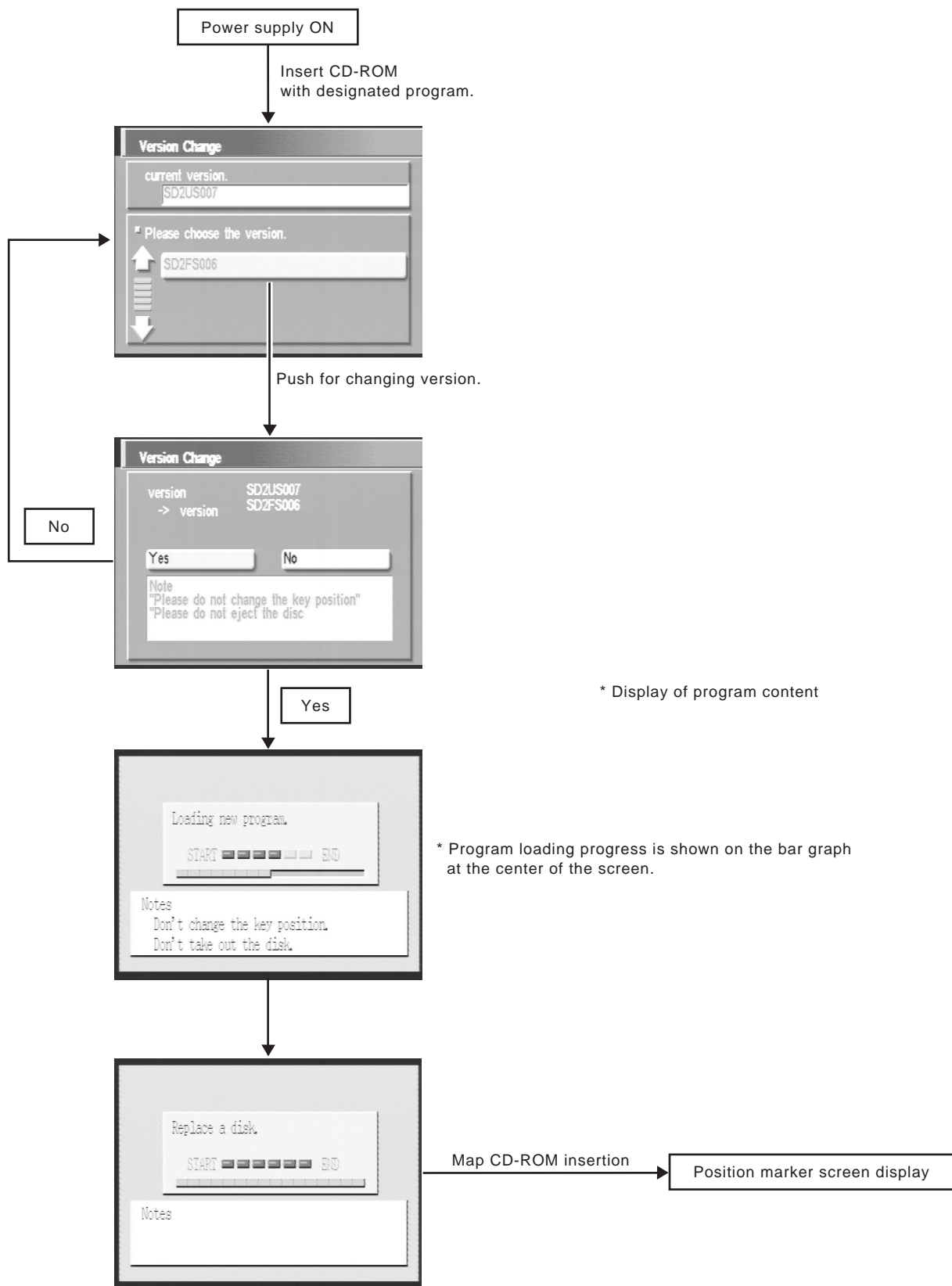
GPS ANTENNA

NFEL0010S07

- Do not place metal objects above the GPS antenna mounted on the rear parcel shelf. This will cause interference with signal reception.
- Do not place mobile telephones or vehicle radio transceivers in close proximity to the GPS antenna mounted on the rear parcel shelf. This may cause interference with signal reception.

Program Loading

NFEL0011



Note: Load the program only after the engine has been started.

SEL564X

NAVIGATION SYSTEM

Note

Note