2004 ACCESSORIES & EQUIPMENT

Navigation System - TSX

SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
①	07PAZ-0010100	SCS Service Connector	1

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Fig. 1: Special Tools (1 Of 2)

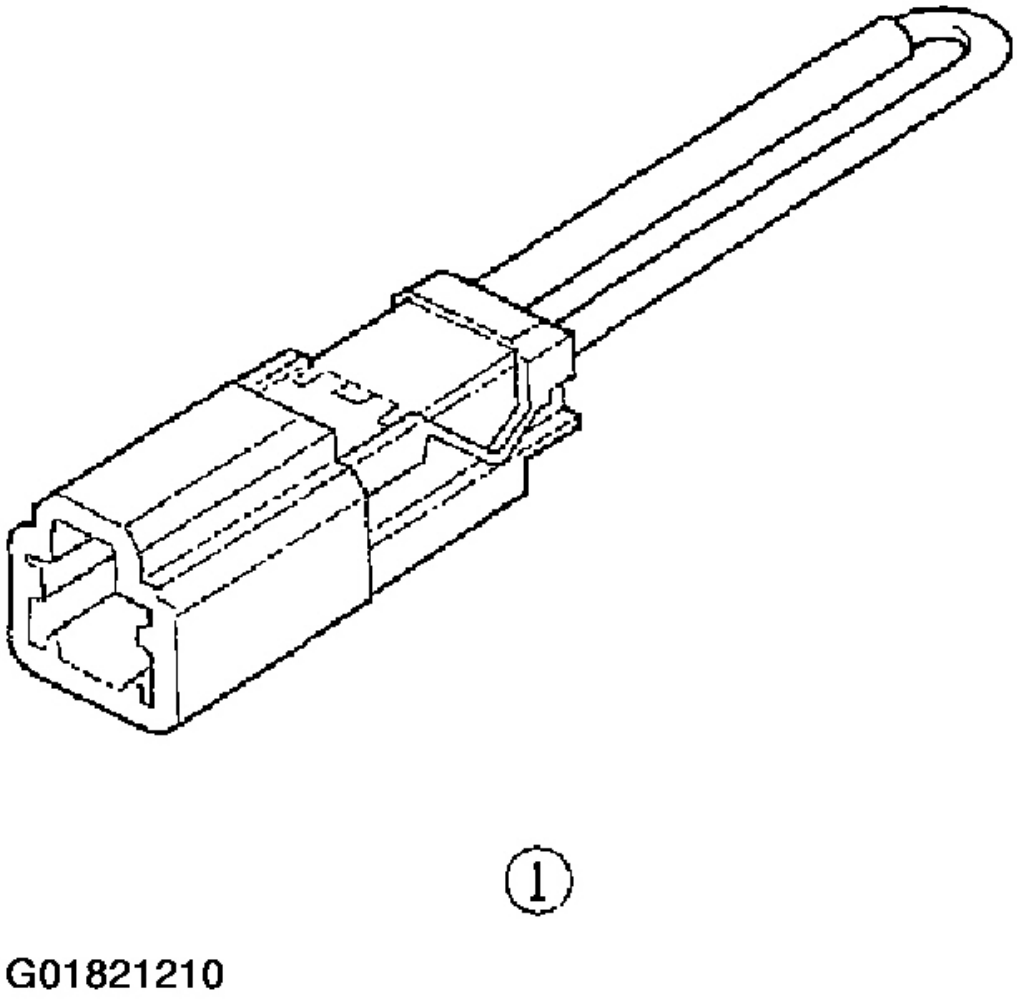

Fig. 2: Special Tools (2 Of 2)

COMPONENT LOCATION INDEX

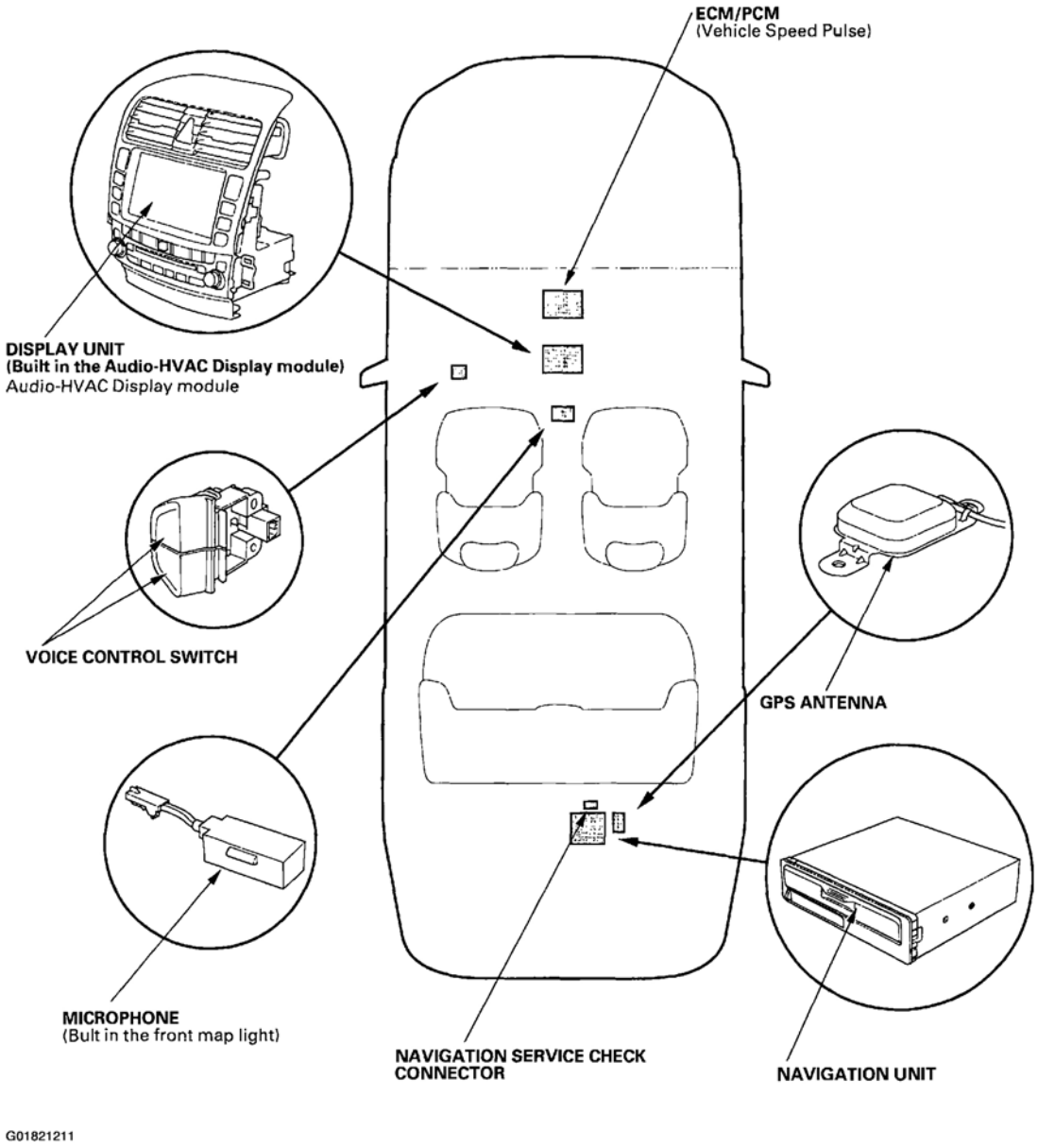

Fig. 3: Locating Navigation System Components

GENERAL TROUBLESHOOTING INFORMATION

GENERAL OPERATION

Refer to the Acura Navigation System Owner's manual, for the navigation system operating procedures.

ANTI-THEFT FEATURE

The navigation system has a coded theft protection circuit. Be sure to get the customer's 4-digit security code number before;

- disconnecting the battery
- disconnecting the navigation unit 8P connector
- removing the No. 7 (10A) fuse from the under-dash fuse/relay box

After service, reconnect power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit security code, then select "Done".

If the code cannot be found, use the Interactive Network (**i** N) to look it up. You will need the serial number for the navigation unit in the trunk. It is on a tag on the underside of the unit. Alternatively, you can view the serial number in one of the Navi ECU diagnostic screen (see **NAVI ECU**).

When replacing the navigation unit, be sure to give the customer the new anti-theft security code.

SYMPTOM DIAGNOSIS

Certain circumstances and system limitations will result in occasional vehicle positioning errors. Some customers may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing customers about symptoms of the navigation system.

SELF-INERTIAL NAVIGATION LIMITATIONS

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause some discrepancies between the vehicle's actual position and the indicated vehicle position (GPS vehicle position). However, if GPS signals cannot be received, you must tune the vehicle's position manually.

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the navigation system on and the vehicle stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table
- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
  - Continuous tire slippage on a slippery surface
  - Driving with snow chains mounted
  - Abnormal tire pressure
  - Incorrect tire size
  - Frequent lane changes across a wide highway
  - Continuous driving on a straight or gently curving highway
- Tolerances in the system and map inaccuracies sometimes limit how precisely the vehicle position is indicated. Examples of this include:

- Driving on roads not shown on the map (map matching is not possible)
- Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage
- Driving on a road with a series of sharp hair-pin turns
- Driving near a gradual highway exit or transition
- Driving on one of two close parallel roads
- Making many 90 degree turns

GLOBAL POSITIONING SYSTEM (GPS) LIMITATIONS

The GPS cannot detect the vehicle's position during the following instances:

- For the first 5 to 10 minutes after reconnecting the battery (This can take as long as 45 minutes)
- When the satellite signals are blocked by tall building, mountains, tunnels, large trees, or large trucks
- When the GPS antenna is blocked by something on the rear shelf
- When there is no satellite signal output (Signal output is sometimes stopped for satellite servicing)
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, and theft recovery systems) and window tinting above the GPS antenna

The accuracy of GPS is reduced during these instances:

- When only two satellite signals can be received (Three satellite signals are required for accurate positioning)
- When the satellite control centers are experiencing problems
- When driving near high tension power lines

MUTING LOGIC

Whenever the navigation system is giving guidance the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

LCD DISPLAY UNIT LIMITATIONS

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops.
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the touch panel may sometimes be noticeable because of the panel's low-reflection coating. When cleaning the panel, wipe it gently with a soft cloth. To avoid scratching the panel, do not rub too hard, or use abrasive cleaners or shop towels.
- The touch panel consists of a touch sensitive resistive membrane covering the display. Unlike previous

systems, you must actually "touch" the display to activate it. Never use hard or sharp implements to operate the screen because you risk damaging the sensing membrane. If a touch "switch" does not function immediately, shift your finger slightly, and touch it again.

NOTE: The display is unaffected by sunlight, as in previous displays.

SYMPTOM DUPLICATION

- When the symptom can be duplicated, follow the self-diagnostic procedures and the appropriate troubleshooting procedures.
- When the symptom does not reappear or only reappears intermittently, ask the customer about the conditions when the symptom occurred.
  - Try to establish if outside interference may have been the cause.
  - Try to duplicate the symptom under the same conditions the customer was experiencing.
  - Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
  - Inspect the vehicle for after-market electronic devices (vehicle locators, radar detectors, amps, etc.) that may be hidden.

SERVICE PRECAUTIONS

- Before disconnecting the battery, make sure you have the anti-theft codes for the radio and the navigation system, and write down the frequencies for the radio's preset buttons.
- When the battery is disconnected, the internal GPS clock is reset to "0:00". The clock will reset to the correct time after the system finishes GPS initialization.
- After reconnecting the battery, you have to wait to get the initial signal from the satellites. This may take from 10 to 45 minutes.
- After reconnecting the battery, do the power window control unit resetting procedure (see **RESETTING THE POWER WINDOW**).
- Before returning the vehicle to the customer, enter the radio code, then enter the customer's radio station presets, and set the clock. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

AFTER SERVICING-MAP MATCHING

- Park the vehicle in an area where the GPS satellite signals will be unobstructed, and make sure the satellite mark is displayed on the screen.
- Drive the vehicle 1 mile before entering a destination and confirm the road being used is displayed at the bottom of the screen (map matched).
- Enter the dealer address and confirm the system routes and performs normally.
- Clear any previous destinations that may have been entered for testing purposes.

OBTAINING A NAVIGATION DVD

If the Navigation DVD is lost or damaged, or you need a yearly update DVD, you can order on-line at www.Acura.com. This requires a credit card. The DVD for this model has an orange label, and cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Earlier model Acura navigation DVDs (black label)
- Map software programs manufactured by other companies
- DVD movies, or DVDs containing audio recordings

Update DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced map and Points of Interest (POI) coverage
- Fixes for minor software bugs
- Additional features

NOTE: Update is of course optional, and there is not program to provide free DVDs containing yearly mapping updates.

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
No picture is displayed	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
Picture is missing a red/green/blue color or tone, or rolling picture	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
Picture has lines/other issues	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
Display unit buttons do not work	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
GPS icon is white	Troubleshooting	• Navigation unit • GPS antenna/cable • Harness/fuses/switches
Voice guidance cannot be heard	Troubleshooting	• Navigation unit • Audio unit/amplifier • Harness/fuses/switches
Voice control does not work	Troubleshooting	• Navigation unit • Microphone/voice control switch • Harness/fuses/switches
Touch switch malfunction	Troubleshooting	
Cursor constantly leaves road	Troubleshooting	• Navigation unit • GPS antenna/cable • ECM/PCM (speed and fuel pulses) • Harness/fuses/switches
DVD screen error messages	Troubleshooting	• Navigation unit • Display unit • DVD
Trip computer-no distance	Troubleshooting	• ECM/PCM (speed and fuel pulses) • Harness/fuses/switches
Trip computer-no fuel information	Troubleshooting	• Gauge assembly (CAN) • Harness/fuses/switches
Navigation cannot control A/C	Troubleshooting	• Display unit • Harness/fuses/switches
Display day/night mode does not work	Troubleshooting	• Display unit • Gauge assembly (CAN) • Harness/fuses/switches
System locks up constantly	Troubleshooting	• Navigation unit • Harness/fuses/switches • DVD
Vehicle icon spins when parked	Troubleshooting	• Navigation unit
Navigation drives by itself when parked	Troubleshooting	

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Fig. 4: Symptom Troubleshooting Table (1 Of 2)

Symptom	Diagnostic procedure	Also check for
Navigation cannot control audio/CD	Troubleshooting	
Audio-HVAC subdisplay does not work properly	Troubleshooting	• Navigation unit • Audio-HVAC subdisplay • Harness/fuses/switches

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Fig. 5: Symptom Troubleshooting Table (2 Of 2)

SYSTEM DESCRIPTION

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR A (20P)

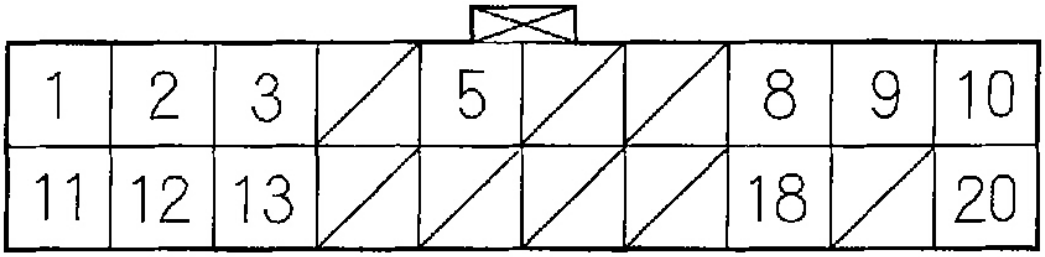

Fig. 6: Identifying Navigation Unit Connector A (20P) Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	R SIG (Red signal)	Red color signal	0−1 V	If open: Red color missing (see "RGB Color" diagnostic). If short to ground: Red color missing (see "RGB Color" diagnostic).
2	RED	G SIG (Green signal)	Green color signal	0−1 V	If open: Green color missing (see "RGB Color" diagnostic). If short to ground: Green color missing (see "RGB Color" diagnostic).
3	GRY	SH SIG (Shield signal)	Shield for terminal No. 1, 2, 11, 12, 13	0 V	If open: No change to display. If short to ground: No change to display.
5	RED/BLK	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights, under-hood "Relay fuse box"	Lights on= battery voltage, Lights off=0 V	If open: When brightness="Auto", night mode for the display is inoperative when lights on. If short to ground: Blows fuse 4 in under-hood fuse/relay box.
8	WHT	CAN-H (CAN high)	F-CAN bus communication	Pulses 2.5−6 V average 3 V	If open: 1) System Links FI-ECU, and Meter both show "NG". 2) F-CAN diagnostic="NG". 3) B-CAN diagnostic="NG". 4) Car status CHG (CAN)=0. 5) Functional Setup, Trip into, FUP & Sampled FL=0. If short to ground: Same diagnostic conditions as when open, and also sets the following DTCs. • B1168 Gauge Control Module loss of Comm. (Engine) • B1169 Gauge Control Module loss of Comm. (A/T) • B1178 F-CAN communication Circuit error. • U0073 (F-CAN bus off) • U0155 (F-CAN Gauge control) • U0121 (F-CAN TCS control)
9	GRN/BLK	SH DISP BUS (Shield display bus)	Shield for display bus terminal No. 10, 20	0 V	If open: No change to display. If short to ground: No change to display.
10	RED/WHT	DISP BUS (+) (Display bus positive)	Date bus (+) GA-Net	0 V−5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.

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Fig. 7: Navigation Unit Pin Voltage Chart Connector A (20P) (1 Of 2)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
11	YEL	B SIG (Blue signal)	Blue color signal	0—1 V AC	If open: Blue color missing (see "RGB Color" diagnostic). If short to ground: Blue color missing (see "RGB Color" diagnostic).
12	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) Synchronizing signal	0.3 V AC	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
13	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	RED	CAN-L (CAN low)	F-CAN bus communication	Pulses 2.5—6 V average 3 V	If open: 1) System Links ECM/PCM, and Gauge Control Module both show "NG". 2) F-CAN diagnostic="NG". 3) B-CAN diagnostic="NG". 4) Car status CHG (CAN)=0. 5) Functional Setup, Trip into, FUP & Sampled FL=0. If short to ground: Same diagnostic conditions as when open, and also sets the following DTCs. • B1168 Gauge Control Module loss of Comm. (Engine) • B1169 Gauge Control Module loss of Comm. (A/T) • B1178 F-CAN communication Circuit error. • U0073 (F-CAN bus off) • U0155 (F-CAN Gauge control) • U0121 (F-CAN TCS control)
20	RED/BLU	DISP BUS (—) (Display bus negative)	Date bus (—) GA-Net	0 V—5 V pulses nominally 2.5 V	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.

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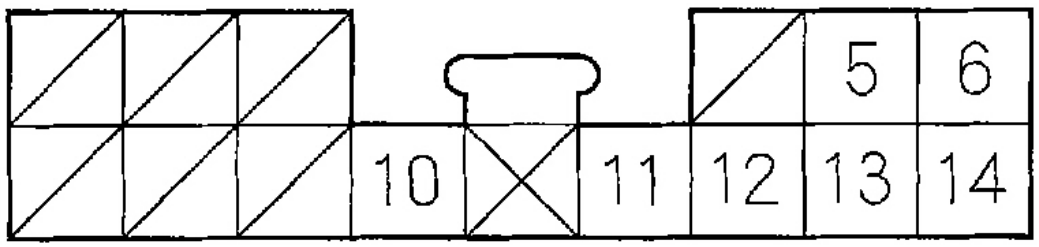
Fig. 8: Navigation Unit Pin Voltage Chart Connector A (20P) (2 Of 2)

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR B (14P)



Wire side of female terminals

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Fig. 9: Identifying Navigation Unit Connector B (14P) Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
5	WHT/GRN	RG L (+) (Route guidance voice left positive)	Left audio signal of voice guidance, and Voice Recognition (VR) prompts	Audio signal 0.004−0.04 V	If open: If voice activated, radio speakers buzz; if voice off, no effect. If short to ground: If voice activated, radio speakers buzz; if voice off, no effect.
6	BLU	MIC SIG (+) (Mic signal positive)	Microphone output signal positive	4−5 V	If open: No microphone signal shown in diagnostic screens: "Navi System Link" and Functional Setup "Mic Level". If short to ground: No microphone signal shown in diagnostic screens: "Navi System Link" and Functional Setup "Mic Level".
10	GRY	STRG SW (Steering switches)	Steering switch output	4−5 V (Talk button depressed) 2.5−3 V (Back button depressed)	If open: Steering wheel "Talk", and "Back" buttons do not work. If short to ground: Steering wheel "Talk", and "Back" buttons do not work.
11	LT GRN	SH RG (Shield route guidance)	Shield for terminal No. 5, 12	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
12	GRN	GND RG (Ground route guidance)	Ground for voice guidance, and Voice Recognition (VR) prompts	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
13	LT BLU	SH MIC (Shield mic)	Shield for terminal No. 6, 14	0 V	If open: No effect on voice control. If short to ground: No effect on voice control.
14	PNK	GND MIC (Ground mic)	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: "Navi System Link" and Functional Setup "Mic Level". If short to ground: No effect on voice recognition.

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Fig. 10: Navigation Unit Pin Voltage Chart Connector B (14P)

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR C (8P)

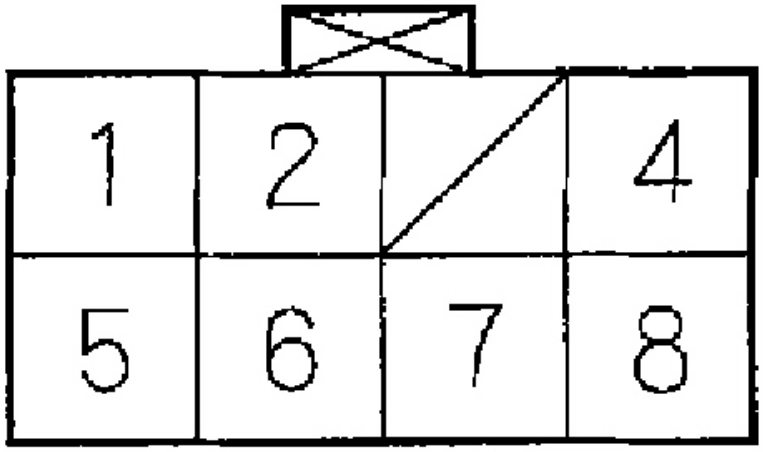

Fig. 11: Identifying Navigation Unit Connector C (8P) Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/RED	+B (+B Power source)	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to "enter code" screen. If short to ground: Blows fuse No. 7 (10A) in the under-dash fuse/relay box.
2	YEL/RED	ACC (Accessory)	Power source for accessories	Battery voltage at ACC (I)	If open: Display picture goes out (display back light still on). If short to ground: Blows fuse No. 32 (7.5A) in the under-dash fuse/relay box.
4	BLK	GND (Ground)	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
5	GRN	BACK LT (Back light)	Reverse signal of select lever from "Multiplex Integrated Control Unit" (A/T) or backup light switch (M/T)	In reverse, battery voltage: Otherwise 0 V	If open: Navigation never sees reverse. Diagnostic screen "Car Statue", "Back"=0. If short to ground: Blows fuse No. 21 (7.5A) in the under-dash fuse/relay box.
6	BLU/WHT	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from PCM	Pulses 0–5 V: Average 2.5 V, when moving	If open: No vehicle speed pulses. Diagnostic screen "Car Status", VSP Navi=0. If short to ground: No vehicle speed pulses. Diagnostic screen "Car Status" VSP Navi=0.
7	GRN/RED	DIAG P (Diagnostic positive)	Service check signal for navigation system	5–6 V	If open: No effect on system. If short to ground: System goes into diagnostic mode.
8	GRN/YEL	DIAG N (Diagnostic negative)	Ground for service check signal	0 V	If open: No effect on system. If short to ground: No effect on system.

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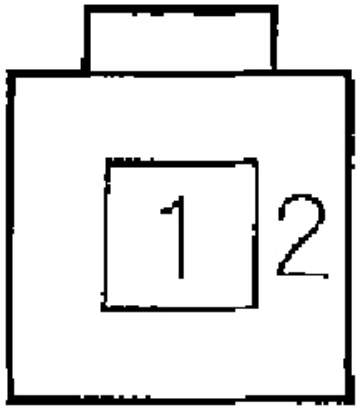
Fig. 12: Navigation Unit Pin Voltage Chart Connector C (8P)

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR E (2P)



Wire side of female terminals

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Fig. 13: Identifying Navigation Unit Connector E (2P) Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	——	GPS	GPS signal	5 V	If open: GPS icon on screen is white, system links screen ANT shows "NG". If short to body ground: Same as open.
2	——	GND GPS	Ground for GPS signal	0 V	If open: GPS icon on screen is white, system links screen ANT shows "NG". If short to body ground: No effect on system.

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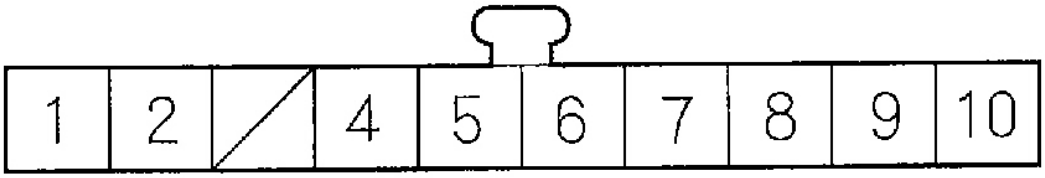
Fig. 14: Navigation Unit Pin Voltage Chart Connector E (2P)

AUDIO-HVAC DISPLAY PANEL INPUTS AND OUTPUTS FOR CONNECTOR C (10P)



Wire side of female terminals

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Fig. 15: Identifying Audio-HVAC Display Panel Connector C (10P) Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BLK	GND SIG		0 V	If open: Audio-HVAC subdisplay visible, but very dim. If short to ground: Audio-HVAC subdisplay unaffected.
2	BLU/ORN	5 V		5 V	If open: All Audio-HVAC subdisplay segments show briefly at key on. If short to ground: All Audio-HVAC subdisplay LCD segments do not work Audio-HVAC subdisplay backlight on.
4	YEL/RED	RESET	Time set sync signal	5 V	If open: Clock Audio-HVAC subdisplay will not set to navigation time (when time offset is applied or when "Reset" touched in Setup "Clock Adjustment" screen). If short to ground: All Audio-HVAC subdisplay LCD segments do not work display backlight on.
5	YEL	CLOCK		0 – 5 V Data 0.04 V Average	If open: Audio-HVAC subdisplay randomly displays some characters, display backlight on. If short to ground: Audio-HVAC subdisplay randomly displayed characters, display backlight on.
6	BLU/RED	DATA		0 – 5 V Data 4 – 6 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
7	BLU	CE		0 – 5 V Data 4 – 6 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
8	GRY	SH SIG	Shield for terminal No. 4, 5, 6, 7	0 V	If open: No effect on Audio-HVAC subdisplay. If short to ground: No effect on Audio-HVAC subdisplay.
9	RED	LCD BL – (LCD backlight –)	Power for LCD backlight –	0 – 0.2 V	If open: Audio-HVAC subdisplay function normal, but display is very dim. If short to ground: Audio-HVAC subdisplay functions normally.
10	GRN	LCD BL + (LCD backlight +)	Power for LCD backlight +	9.5 V	If open: Audio-HVAC subdisplay completely blank. If short to ground: Audio-HVAC subdisplay completely blank.

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Fig. 16: Audio-HVAC Display Panel Pin Voltage Chart Connector C (10P)

DISPLAY UNIT INPUTS AND OUTPUTS FOR 20P CONNECTOR

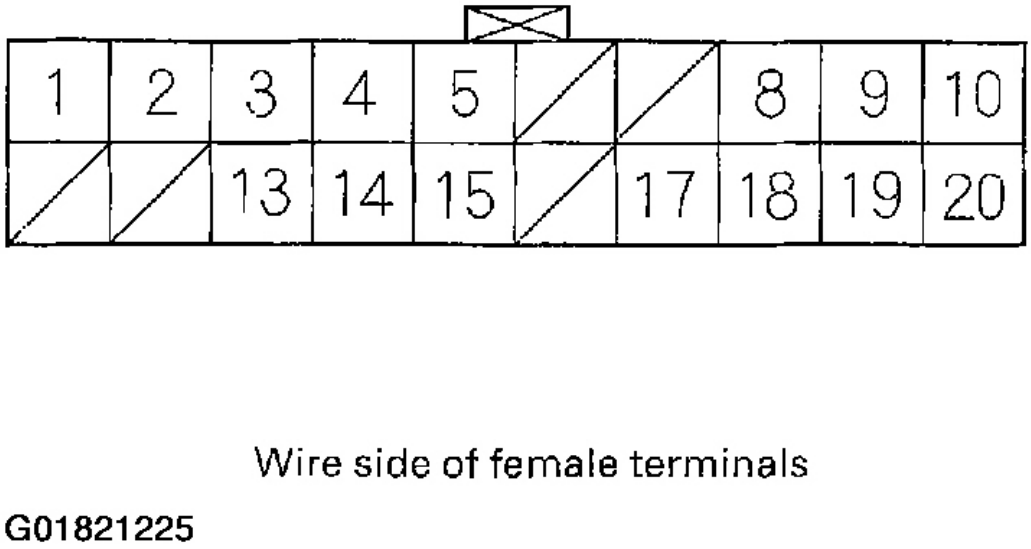

Fig. 17: Identifying Display Unit Connector Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/RED	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows fuse No. 7 (10A) in the under-dash fuse/relay box.
2	YEL/RED	ACC (Accessory)	Power source for accessory	Battery voltage at ACC (I)	If open: Display and buttons do not work. If short to ground: Blows fuse No. 32 (7.5A) in the under-dash fuse/relay box.
3	BLU/RED	AUD BUS (+) (Audio bus positive)	Data bus (+) GA-Net	0−5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.
4	BLK	SH AUD BUS (Shield audio bus)	Shield for audio bus terminal No. 3, 13	0 V	If open: No change to display. If short to ground: No change to display
5	RED/WHT	DISP BUS (+) (Display bus positive)	Data bus (+) GA-Net	0−5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.
8	WHT	R SIG (Red signal)	Red color signal	0−1 V	If open: Red color missing (see "RGB Color" diagnostic). If short to ground: Red color missing (see "RGB Color" diagnostic).
9	RED	G SIG (Green signal)	Green color signal	0−1 V	If open: Green color missing (see "RGB Color" diagnostic). If short to ground: Green color missing (see "RGB Color" diagnostic).
10	BLK	GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.
13	WHT	AUD BUS (−) (Audio bus negative)	Data bus (−) GA-Net	0−5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.
14	GRN/BLK	SH DISP BUS (Shield display bus)	Shield for display bus terminal No. 5, 15	0 V	If open: No change to display. If short to ground: No change to display.
15	RED/BLU	DISP BUS (−) (Display bus negative)	Date bus (−) GA-Net	0−5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.
17	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	YEL	B SIG (Blue signal)	Blue color signal	0−1 V	If open: Blue color missing (see "RGB Color" diagnostic). If short to ground: Blue color missing (see "RGB Color" diagnostic).
19	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) synchronizing signal	0.3 V	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
20	GRY	SH SIG (Shield signal)	Shield for terminal No. 8, 9, 17, 18, 19	0 V	If open: No change to display. If short to ground: No change to display.

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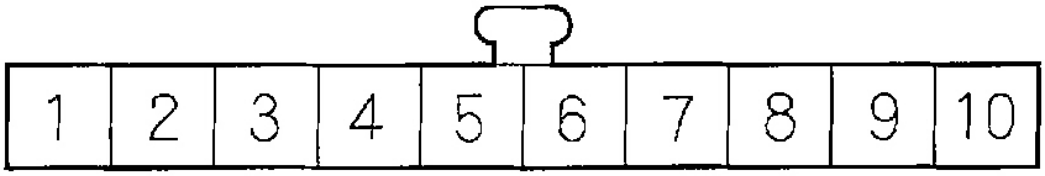
Fig. 18: Display Unit Pin Voltage Chart (1 Of 2)

AUDIO-HVAC SUBDISPLAY INPUTS AND OUTPUTS FOR 10P CONNECTOR



Wire side of female terminals

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Fig. 19: Identifying Audio-HVAC Subdisplay Connector Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BLK	GND SIG		0 V	If open: Audio-HVAC subdisplay visible, but very dim. If short to ground: Audio-HVAC subdisplay unaffected.
2	BLU/ORN	5 V		5 V	If open: All Audio-HVAC subdisplay segments show briefly at key on. If short to ground: All Audio-HVAC subdisplay LCD segments do not work Audio-HVAC subdisplay backlight on.
3	BLK	GND		0 V	
4	YEL/RED	RESET	Time set sync signal	5 V	If open: Clock Audio-HVAC subdisplay will not set to navigation time (when time offset is applied or when "Reset" touched in Setup "Clock Adjustment" screen). If short to ground: All Audio-HVAC subdisplay LCD segments do not work display backlight on.
5	YEL	CLOCK		0−5 V Data 0.04 V Average	If open: Audio-HVAC subdisplay randomly displays some characters, display backlight on. If short to ground: Audio-HVAC subdisplay randomly displayed characters, display backlight on.
6	BLU/RED	DATA		0−5 V Data 4−6 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
7	BLU	CE		0−5 V Data 4−6 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
8	GRY	SH SIG	Shield for terminal No. 4, 5, 6, 7	0 V	If open: No effect on Audio-HVAC subdisplay. If short to ground: No effect on Audio-HVAC subdisplay.
9	RED	LCD BL− (LCD backlight−)	Power for LCD backlight−	0−0.2 V	If open: Audio-HVAC subdisplay function normal, but display is very dim. If short to ground: Audio-HVAC subdisplay functions normally.
10	GRN	LCD BL+ (LCD backlight+)	Power for LCD backlight+	9.5 V	If open: Audio-HVAC subdisplay completely blank. If short to ground: Audio-HVAC subdisplay completely blank.

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Fig. 20: Audio-HVAC Subdisplay Pin Voltage Chart

OVERVIEW

The Acura navigation system is a highly-sophisticated, hybrid locating system that uses satellites and a map database to show you where you are and to help guide you to a desired destination.

The navigation system receives signals from the global positioning system (GPS), a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude elevation of the vehicle. In addition, signals from the system's yaw rate sensor and the ECM/PCM (vehicle speed pulse) enable the system to keep track of the vehicle's direction and speed of travel.

This hybrid system has advantages over a system that is either entirely self-contained or one that relies totally on the GPS. For example, the self-contained portion of the system can keep track of vehicle position even when satellite signals cannot be received. When the navigation system is on, the GPS can keep track of the vehicle position even when the vehicle is transported by ferry.

The navigation system applies all this location, direction, and speed information to the maps and calculates a route to the destination entered. As you drive to that destination, the system provides both visual and audio guidance.

This navigation system also has voice recognition that allows voice control of most of the navigation functions. The TALK and BACK buttons on the steering wheel activate the voice control. The voice control also allows control of the audio and climate control.

The navigation system provides a trip computer function. The fuel economy display is calculated by data provided by the ECM/PCM. The ECM/PCM provides fuel pulses via the F-CAN bus, and a dedicated speed signal.

The illumination signal is used by the navigation unit to automatically switch the display between "Night" and "Day" brightness modes. When the instrument panel brightness control is set to full brightness, the navigation system stays in the day mode, even with the headlights on.

The audio amplifier gets its power either from the navigation system (if the audio unit is off) or from the audio unit (if the navigation system is off). When the navigation system is giving guidance commands, the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

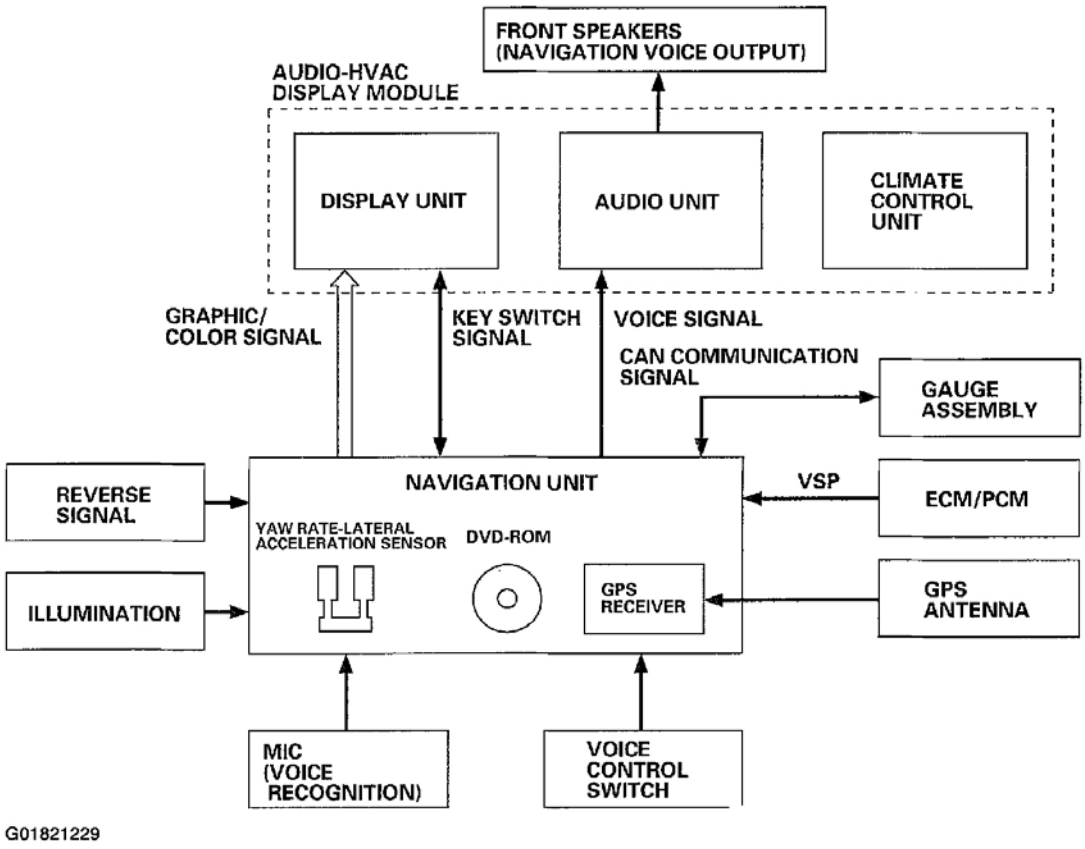

Fig. 21: Navigation System Schematic

NAVIGATION FUNCTION

The navigation system is composed of the navigation unit, the ECM/PCM (vehicle speed signal), the GPS antenna, microphone, voice control switch, audio unit, climate control unit, and the display unit.

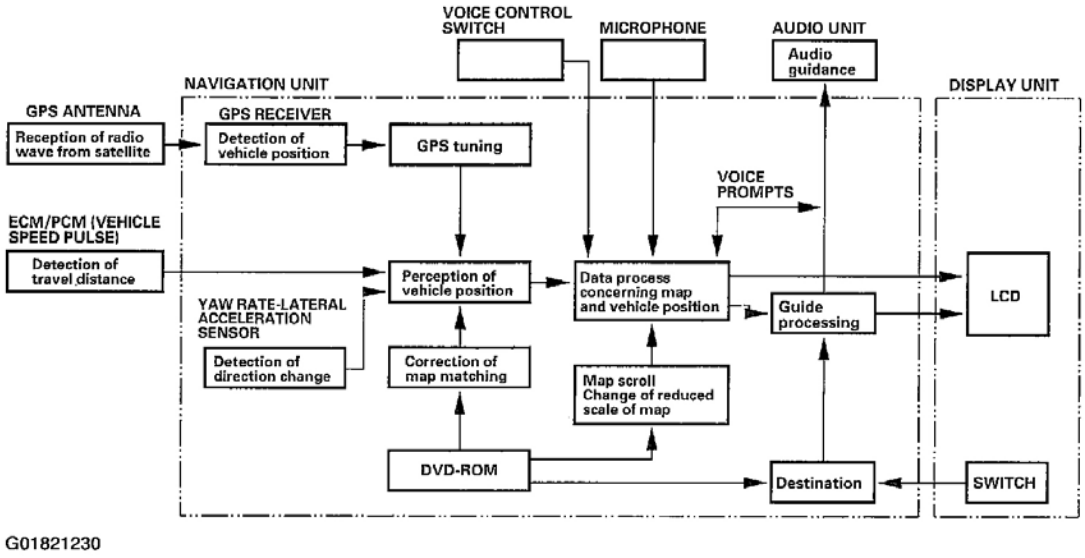

Fig. 22: Navigation Function Diagram

VEHICLE SPEED PULSE

The vehicle speed pulse is sent by the ECM/PCM. The ECM/PCM receives a signal from the countershaft speed sensor, then the processes the signal and transmits it to the speedometer and other systems.

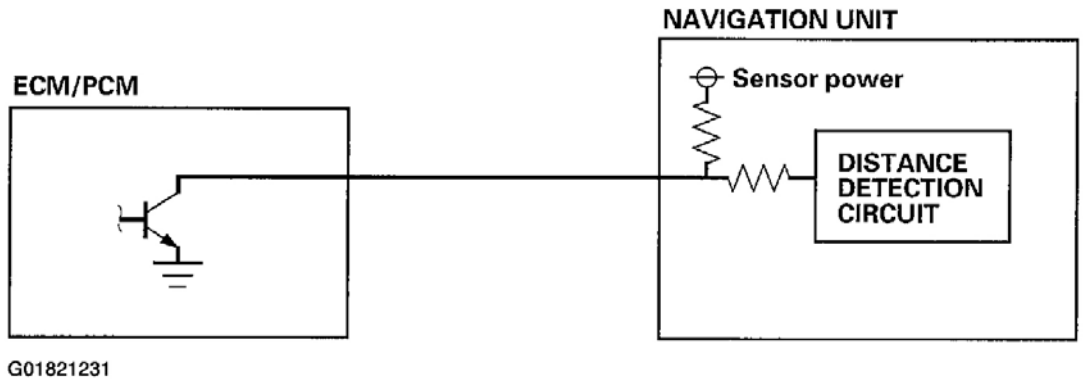

Fig. 23: Vehicle Speed Pulse Input

YAW RATE-LATERAL ACCELERATION SENSOR

The yaw rate-lateral acceleration sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

SENSOR ELEMENT STRUCTURE

The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

OSCILLATION GYRO PRINCIPLES

The piezoelectric parts have "electric/mechanical transfer characteristics." They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and "Coriolis force." (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

OPERATION

1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part, The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force)
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.

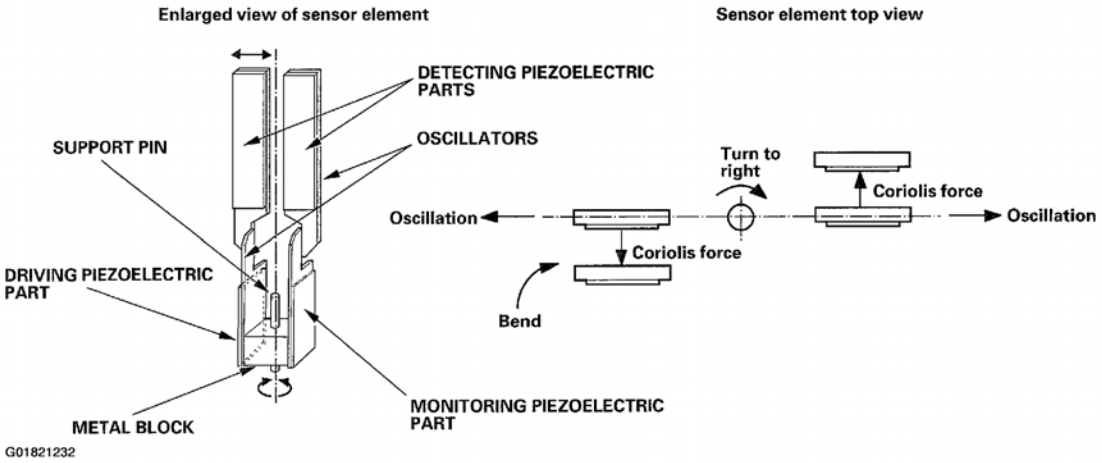

Fig. 24: Piezoelectric Operation

GLOBAL POSITIONING SYSTEM (GPS)

The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by utilizing the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from three or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellite positions on their respective orbits.

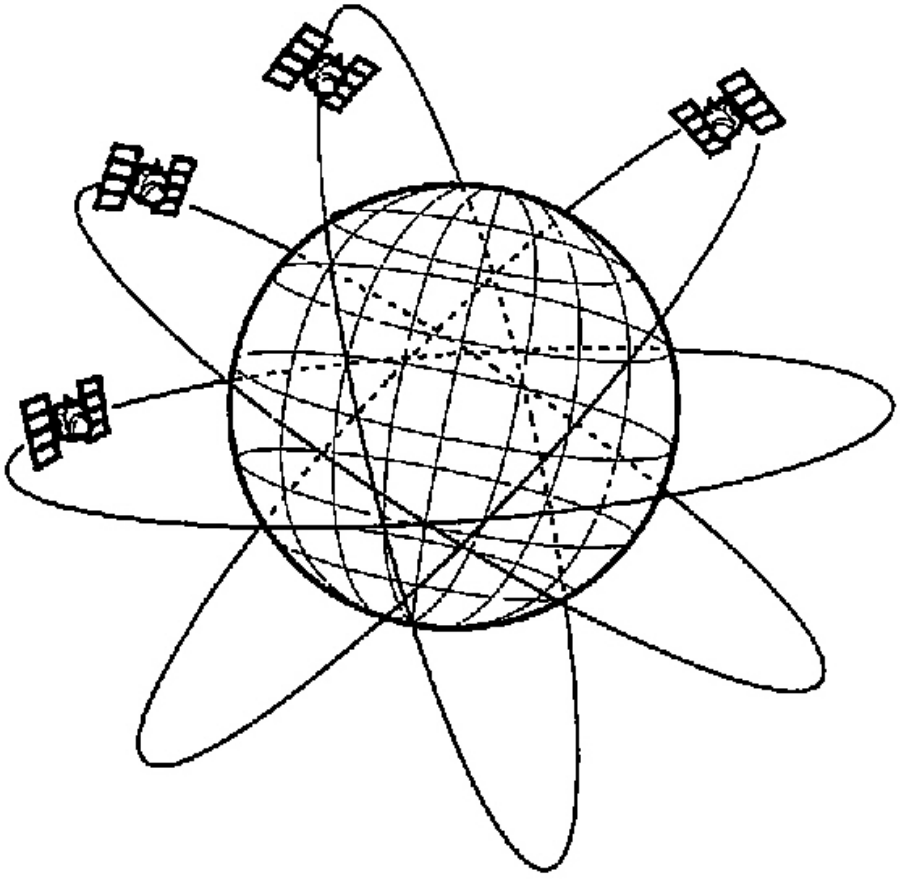

Fig. 25: Position Detection Image With GPS Satellite

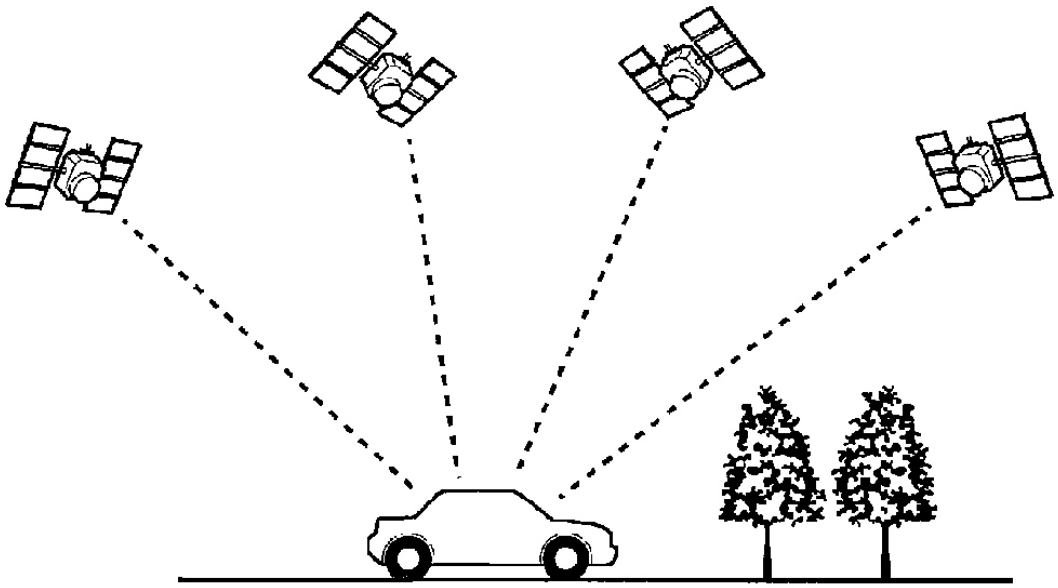

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Fig. 26: GPS Receiver Receiving A Signal From Three Or More Satellites Simultaneously

PRECISION OF GPS

The precision of the GPS varies according to the number of satellites from which electric waves are received and the control condition. The precision is indicated by the color of the GPS icon shown on the upper right of the display.

GPS ICON	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
White GPS icon	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Green GPS icon	3	Vehicle position detectable in 2 demensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
Green GPS icon	4 or more	Vehicle position detectable in 3 dimensions	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)
Not indicated	——	Faulty	The GPS can't be utilized due to a faulty GPS receiver, open in the wire, or other fault or interference.

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Fig. 27: Identifying GPS Icon Display

GPS ANTENNA

The GPS antenna amplifies and transmits the signals received from the satellites to the GPS receiver.

GPS RECEIVER

The GPS receiver is built in the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The vehicle position and signal reception condition is transmitted from the GPS receiver to the navigation control unit to adjust vehicle position.

NAVIGATION UNIT

The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions and the DVD-ROM drive, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the display unit and audio driving instructions to the audio unit.

CALCULATION OF VEHICLE POSITION

The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCMs vehicle speed pulse (VSP) signal.

MAP MATCHING TUNING

The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicated on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS TUNING

The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

DISTANCE TUNING

The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

ROUTE GUIDANCE

The navigation unit can calculate different routes to a selected destination. You have five options:

- Direct Route - Calculate a route that is the most direct.
- Easy Route - Calculate a route that minimizes the number of turns needed.

- Minimize Freeways - Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Minimize Toll Roads - Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways - Calculate a route that uses freeways as much as possible.

AUDIO GUIDANCE

The navigation unit transmits audio driving instructions before entering an intersection or passing a junction. The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers when the voice control system is being used.

DVD-ROM

The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:

- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.

AUDIO UNIT

The audio unit receives the audio driving instructions from the navigation unit and transmits the instructions through the front speakers even when the audio system is in use.

DISPLAY UNIT

The display unit uses a liquid crystal display (LCD). The LCD is a 8-inch-diagonal, thin film transistor (TFT), stripe type with 336,960 picture elements. The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD consists of a touch sensitive resistive membrane with an infinite number of possible touch locations. To maintain compatibility with earlier display units the sensing locations are confined to a grid of 20 vertical and 9 horizontal touch locations. This produces 180 total sensing points. The display unit transmits the signal from each operation key and the touch switches to the navigation unit over the GA-Net bus.

MICROPHONE

The microphone receives voice commands and transmits them to the navigation unit for interpretation.

TALK BUTTON (VOICE CONTROL SWITCH)

Activates the voice control system in the navigation unit to accept voice commands.

BACK BUTTON (VOICE CONTROL SWITCH)

Returns the display to the previous screen.

GLOSSARY

The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

Item	Definition
B-CAN	Body CAN Bus (see CAN)
Breadcrumbs	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CAN	Controller Area Network. This communication network allows processors in the vehicle to send/receive information. The fuel pulses used by the trip computer are received from the PCM using the F-CAN (Fast Controller Area Network) bus.
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed Coverage Area. Main metropolitan areas in the Lower 48 states, and Canada are mapped to this level. See the Navigation Owner's manual for a list of these areas.
DTC	Diagnostic Trouble Codes. Use the PGM Tester, or HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead Reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when the GPS signal is obscured by tall buildings, or while driving in a tunnel.
Digitized Road	A road that appears on the navigation screen. The road name will appear at the bottom of the navigation screen. If the user drives "off road" the navigation system will display "Not on a digitized road", and if 1/2 mile, then "breadcrumbs" will appear.
Disclaimer Screen	Screen containing cautionary information. It is meant to read carefully and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation Owner's Manual for information on how to order a replacement or update DVD.
ECM	Engine Control Module. Typically referred to as the PCM.
E/T	Elapsed Time for the current trip as displayed by the trip computer screen.
FAQ	Frequency Asked Question. See the Navigation Owner's Manual for a list of the customer FAQs, and troubleshooting information.
F-CAN	Fast CAN Bus (see CAN)
FE	Fuel Economy value as displayed on the trip computer screen.
Fuel Pulses	This signal is transmitted on the CAN bus, and is used by the Trip Computer to calculate the fuel economy.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately positioning the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC for use in diagnosing vehicle problems. This device can be used to obtain DTC codes for diagnosis of navigation system CAN related problems.
H/U	Head Unit. The navigation system display assembly in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
LCD	Liquid Crystal Display (the navigation screen)
Map Matching	The received GPS information allows the navigation system to position the vehicle on the map. Map matching has occurred if the map screen is displaying the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling.

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Fig. 28: Voice Recognition Navigation System Glossary (1 Of 3)

Item	Definition
MW	Maneuver Window. While on-route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System.
Off Route	This occurs when the user leaves mapped roads. Off road tracking dots (''breadcrumbs'') are displayed if the option is enabled in Setup. The user can use them to return to a mapped road. The bottom of the navigation screen will say ''Not on a digitized road''
Outlying Areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since they have not been verified.
PC Card Slot	The PC Card (PCMCIA, type II) slot is for factory use only. Make sure that the sliding door is closed at all items, if opened, an error message is displayed on the screen.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal, and sends fuel pulses for the trip computer function via the F-CAN network.
PCMCIA	An computer industry defined term referring to the PC Card slot standard.
PGM Tester	A Honda diagnostic tool for use in diagnosing vehicle problems.
PIN	Personal Identification Number, a random 4 digit number created by the customer to protect personal information.
POI	Point Of Interest. These are the businesses, schools etc. found under the ''places'' option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools etc. See the Navigation Owner's Manual ''Traveling to Your Destination'' for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
SCS connector	The 2-pin connector used to put the navigation system into the diagnostic mode.
Security Code	Code needed to activate the navigation system. The security code can be obtained from the ''IN'' by entering the navigation system control serial number. The serial number can be found from the diagnostic screens (Unit Check, Navi ECU), or from the under side of the control unit.
Touch Switches or Touch Sensor	The touch sensitive resistive membrane covering the display. The navigation software artificially creates a grid of 20 horizontal and 9 vertical lines for a total of 180 sensing locations. Unlike earlier navigation systems, the screen surface must be touched in order to operate.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either ''System Description'', or ''System Diagnosis Mode'' (see page 22-360) in this manual.
Unverified Streets	These streets have not been verified for turn restrictions, one-way, etc. They are shown in light brown on the map. You can enter address destinations in these areas, but voice guidance ends at the last verified street closest to your destination.

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Fig. 29: Voice Recognition Navigation System Glossary (2 Of 3)

Item	Definition
Verified Streets	These streets consist of the detailed metropolitan coverage areas, and all other inter-town connection roads. These roads are shown in black on the map.
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map. Touch this icon to show the latitude, longitude, and elevation of your current position.
VR	Voice Recognition. This allows voice control of many of the navigation functions. The hardware consists of the microphone, voice control switch (Talk/Back buttons), and the front speakers. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the PCM is used to update the Vehicle position on the map, and to calculate the trip computer fuel economy. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal from the MICU and directs the VP to move backwards on the map.
VSS	Vehicle Speed Sensor. This sensor reads the output shaft speed at the transmission and, provides a speed pulse to the PCM. The PCM sends this pulse to the navigation system and speedometer.
Yaw Sensor	This device is located in the navigation system control unit and senses the side-to-side twisting force generated when the vehicle turns. See a detailed description of how this sensor works in this manual.

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Fig. 30: Voice Recognition Navigation System Glossary (3 Of 3)

CIRCUIT DIAGRAM

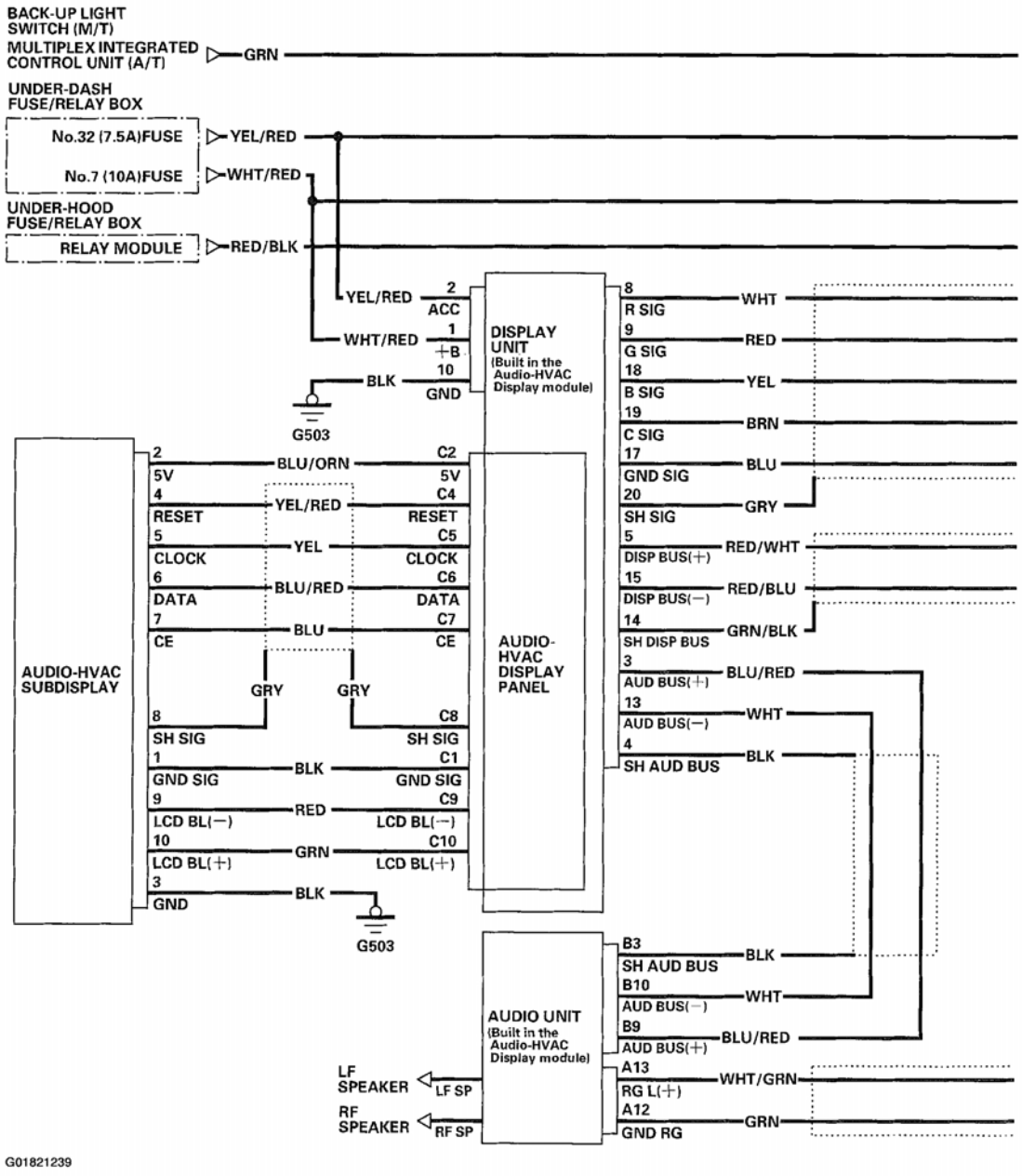

Fig. 31: Voice Recognition Navigation System Wiring Diagram (1 Of 2)

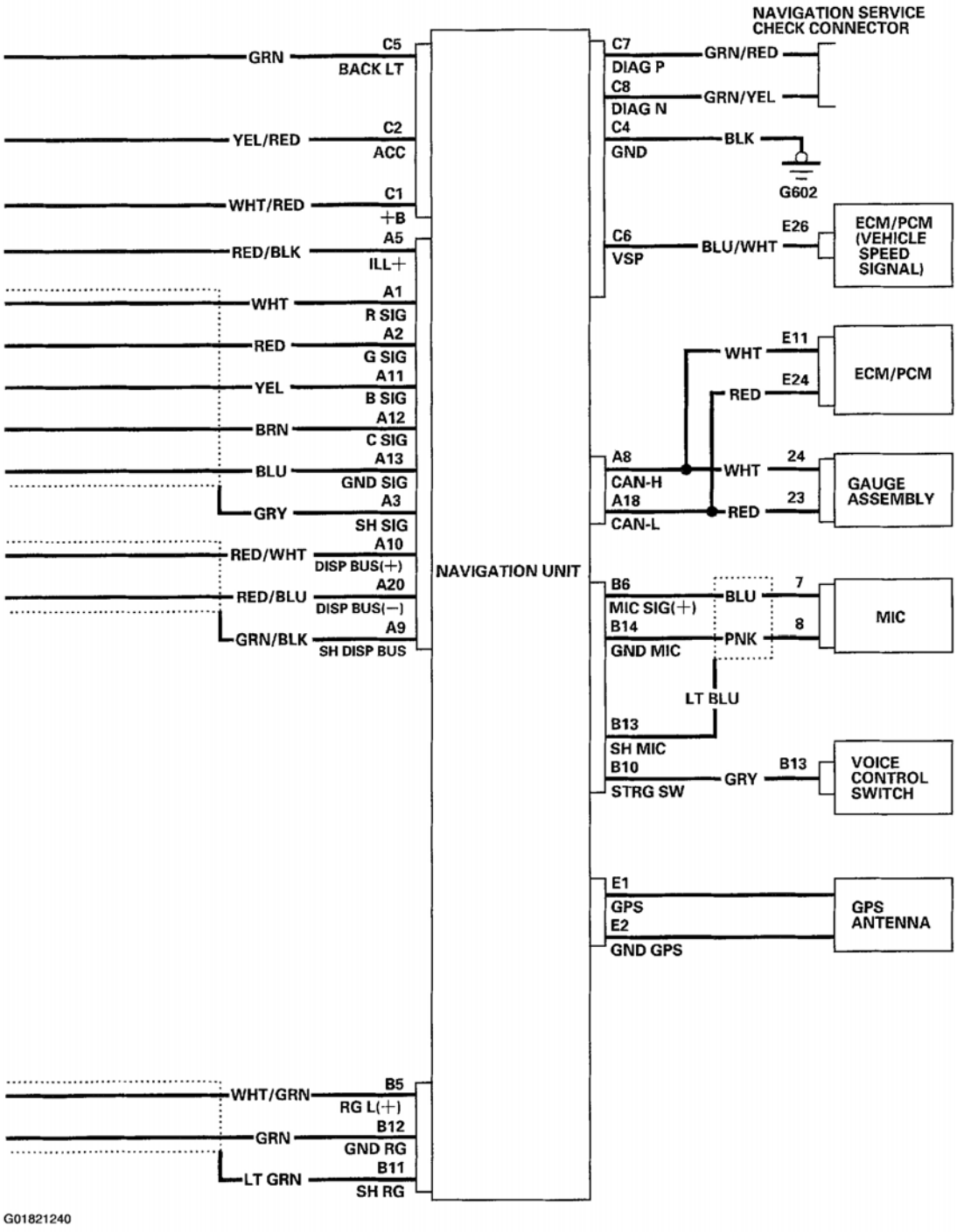

Fig. 32: Voice Recognition Navigation System Wiring Diagram (2 Of 2)

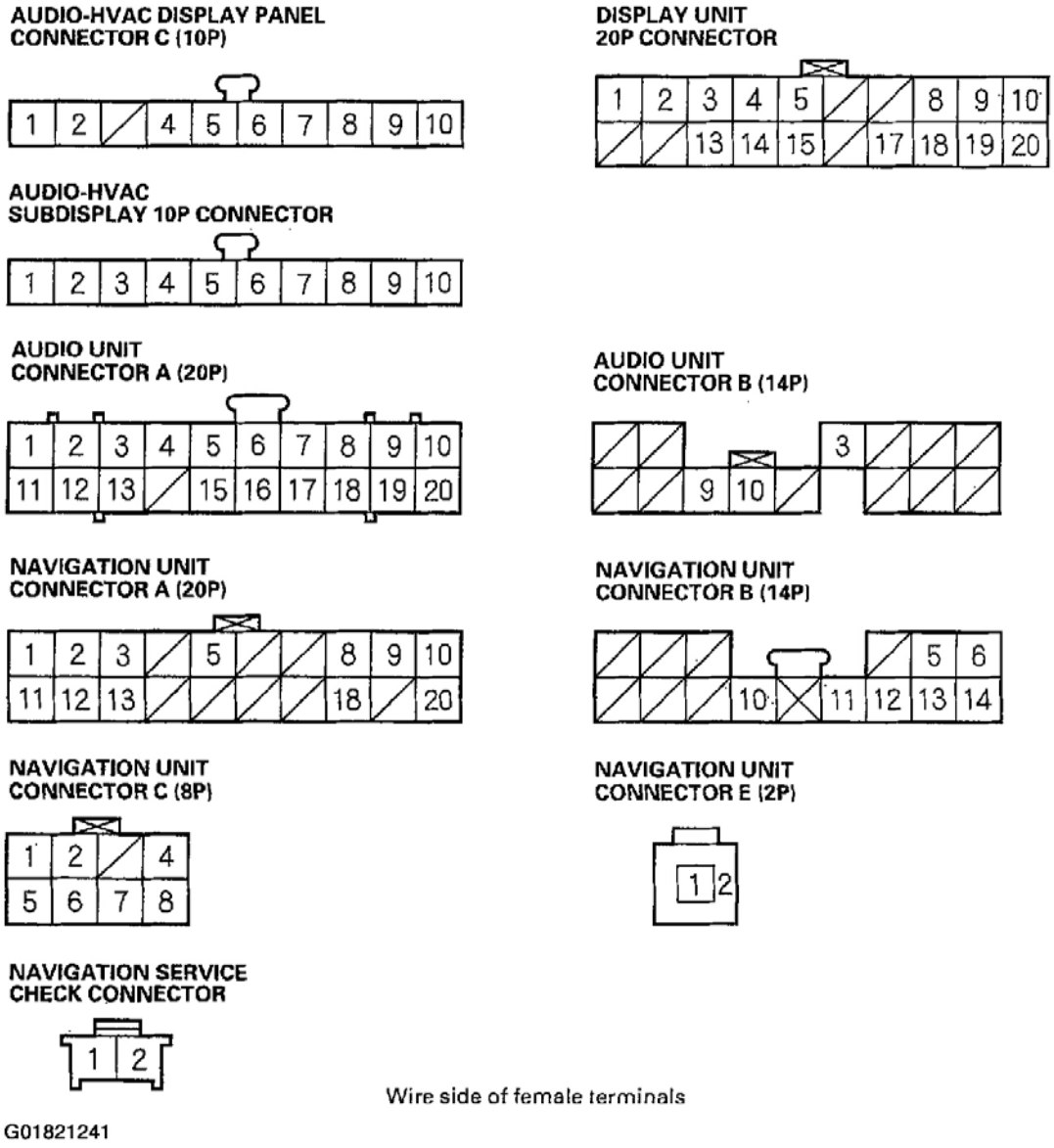

Fig. 33: Identifying Voice Recognition Navigation System Connector Terminals

SYMPTOM TROUBLESHOOTING

NO PICTURE IS DISPLAYED

Diagnostic Test: Navi System Link

NOTE: Always check the connectors for poor connections or loose terminals.

1. Check the No. 7 (10A) fuse and No. 32 (7.5A) fuse in the under-dash fuse relay box, and reinstall the

fuses if they are OK.

Are the fuses OK?

YES -Go to step 2.

NO -Replace the fuse and recheck.

2. Turn the ignition switch to ACC (I).
3. Operate the radio and listen to the audio.

   Can audio be heard?

   YES -Go to step 4.

   NO -Check the ACC circuit.

4. Turn the ignition switch ON (II).
5. Measure the voltage between body ground and navigation unit connector C (8P) terminals No. 1 and No. 2 individually.

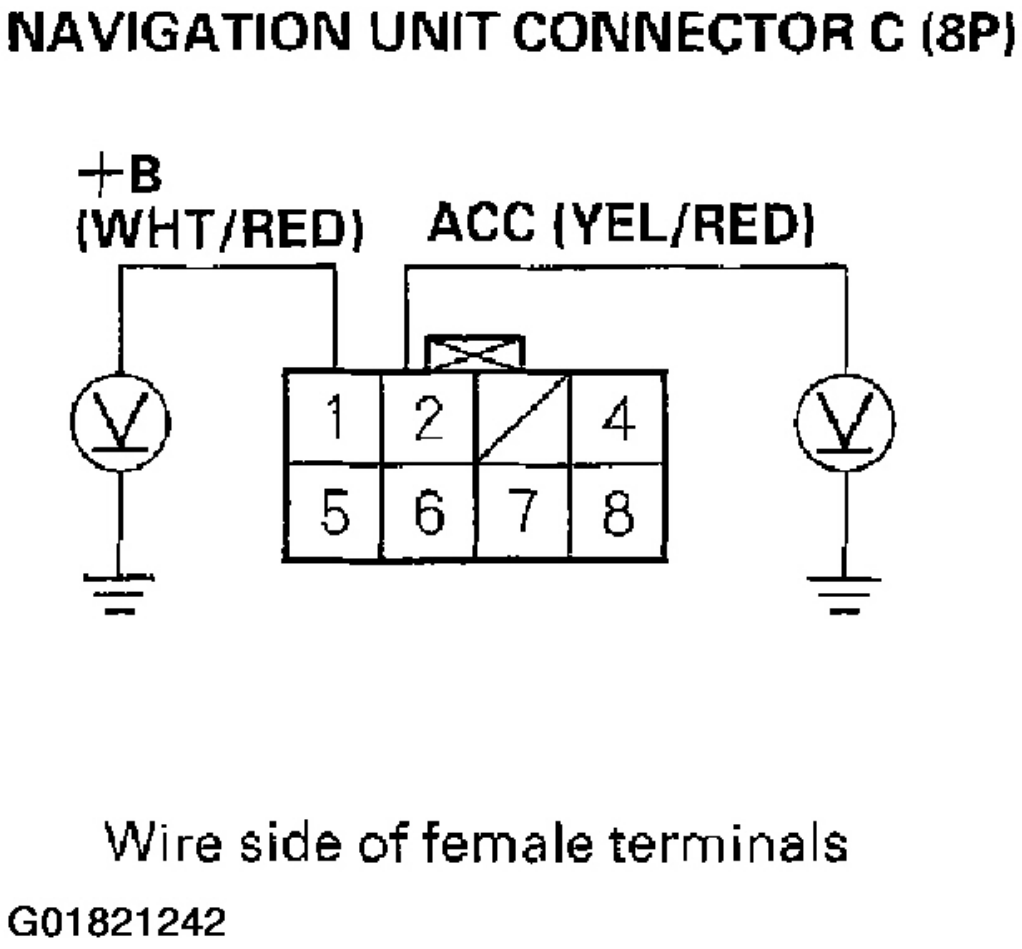

Fig. 34: Measuring The Voltage Between Body Ground And Navigation Unit Connector C (8P) Terminals No. 1 And No. 2

Is there battery voltage?

YES -Go to step 6.

NO -If the + B wire does not have voltage, repair open in the wire between the under-dash fuse relay box and the navigation unit. If the ACC wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the navigation unit.

6. Turn the ignition switch OFF.
7. Disconnect the navigation unit connector C (8P).
8. Check for continuity between navigation unit connector C (8P) terminal No. 4 and body ground.

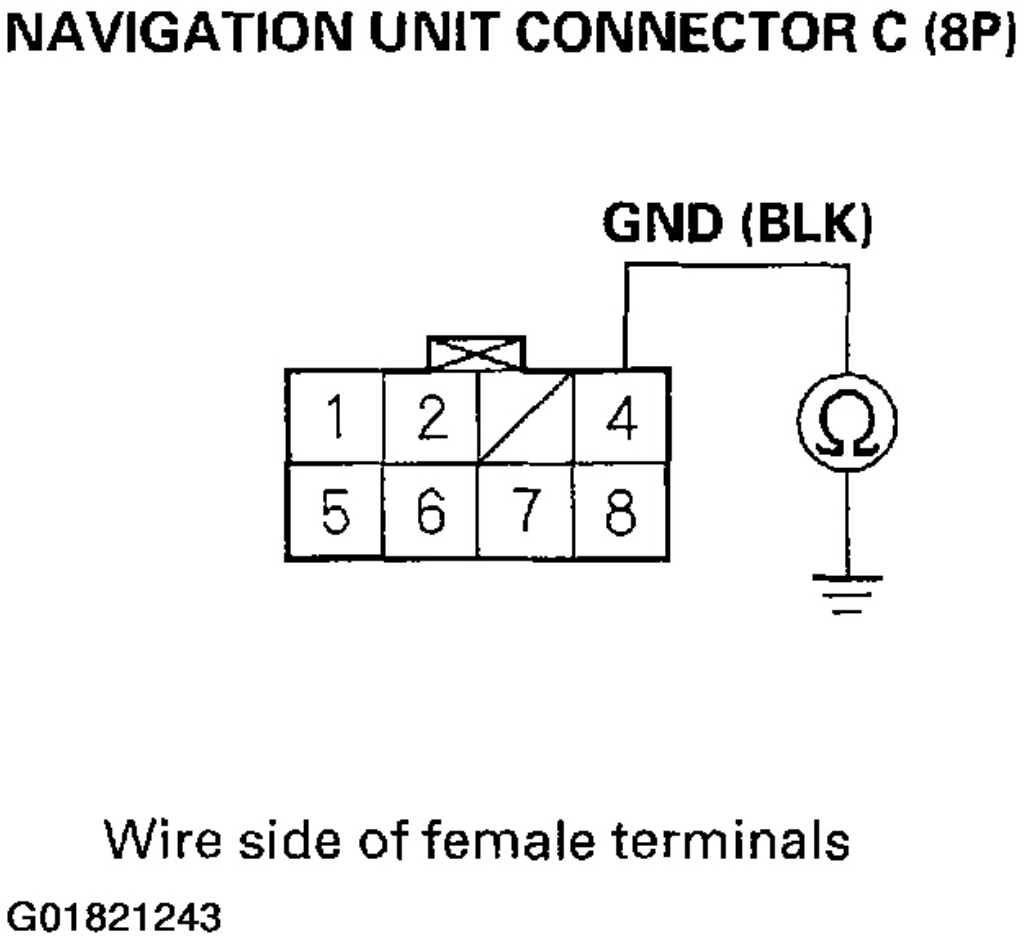

Fig. 35: Checking For Continuity Between Navigation Unit Connector C (8P) Terminal No. 4 And Body Ground

Is there continuity?

YES -Go to step 9.

NO -Repair open in the wire between the navigation unit and body ground (G602).

9. Reconnect the navigation unit connector C (8P).
10. Perform the forced starting of the display (see **FORCED STARTING OF DISPLAY**).

Is the diagnosis menu of the picture diagnosis displayed?

YES -Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **DIAGNOSTIC TEST: NAVI SYSTEM LINK**) to check the links.

NO -Go to step 11.

11. Shield the display unit from the sun with your hand, and check that the display is back lit (only back light is ON.)

Can you see the back light?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Go to step 12.

12. Turn the ignition switch ON (II).
13. Measure the voltage between body ground and display unit 20P connector terminal No. 1 and No. 2 individually.

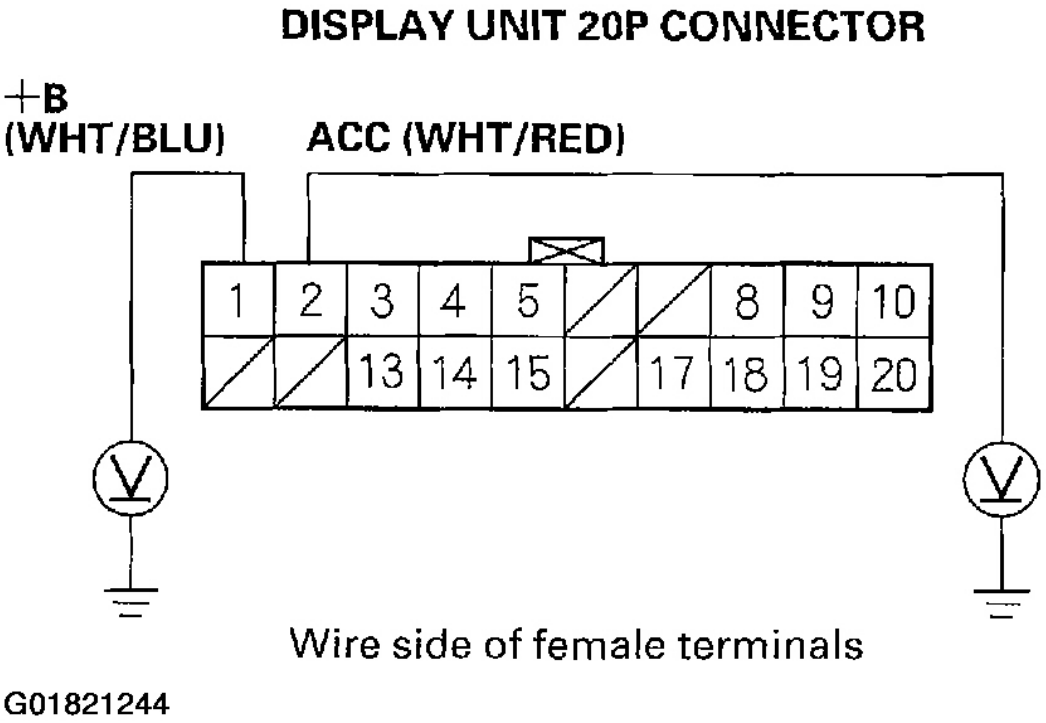

Fig. 36: Measuring The Voltage Between Body Ground And Display Unit 20P Connector Terminal No. 1 And No. 2

Is there battery voltage?

YES -Replace the display unit.

NO -If the +B wire does not have voltage, repair open in the wire between the under-dash fuse relay box and the display unit. If the ACC wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the display unit.

PICTURE IS MISSING A RED/GREEN/BLUE COLOR OR TONE, OR ROLLING PICTURE

Diagnostic Test: Monitor Check

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Go into the Diagnostic mode and use "RGB Color" diagnostic under Monitor Check (see **RGB Color**).

   Are the red, green, and blue colored circles shown?

   YES -The system is OK at this time.

   NO -Go to step 2.

2. Turn the ignition switch to OFF.
3. Disconnect the navigation unit connector A (20P) and display unit 20P connector.
4. Check for loose terminals at navigation unit connector A (20P) and display unit 20P connector.

   Are there loose terminals?

   YES -Repair the terminal.

   NO -Go to step 5.

5. Check for continuity between the appropriate terminals of navigation unit connector A (20P) and display unit 20P connector based on the missing color(s).

Missing color	Navigation unit connector A (20P)	Display unit 20P connector	Wire color
Blue	A11	18	YEL
Green	A2	9	RED
Red	A1	8	WHT
Rolling Picture	A12	19	BRN

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Fig. 37: Checking For Continuity Between The Appropriate Terminals Of Navigation Unit Connector A (20P) And Display Unit 20P Connector Based On The Missing Color(s)

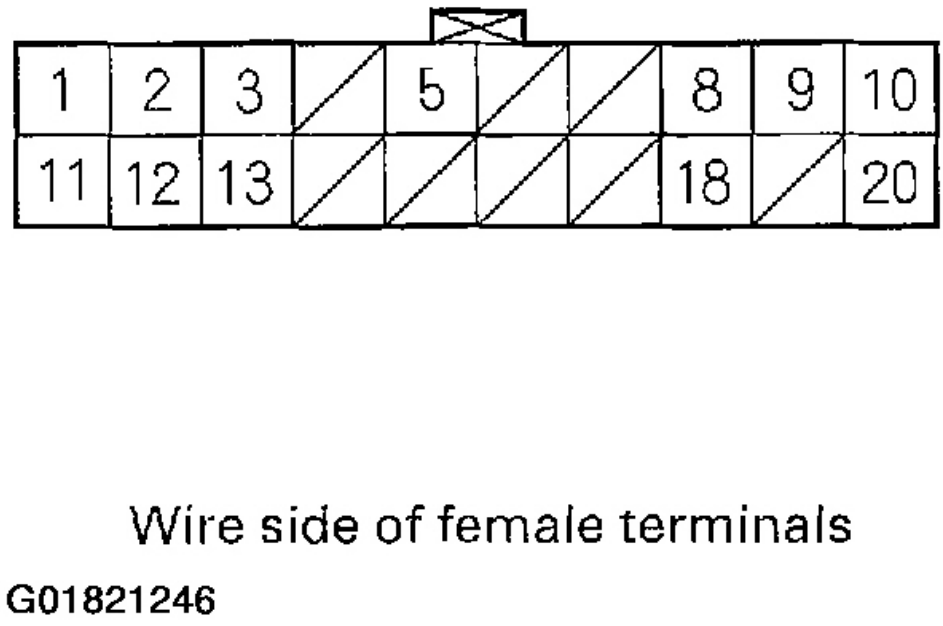

Fig. 38: Identifying Navigation Unit Connector A (20P) Terminals

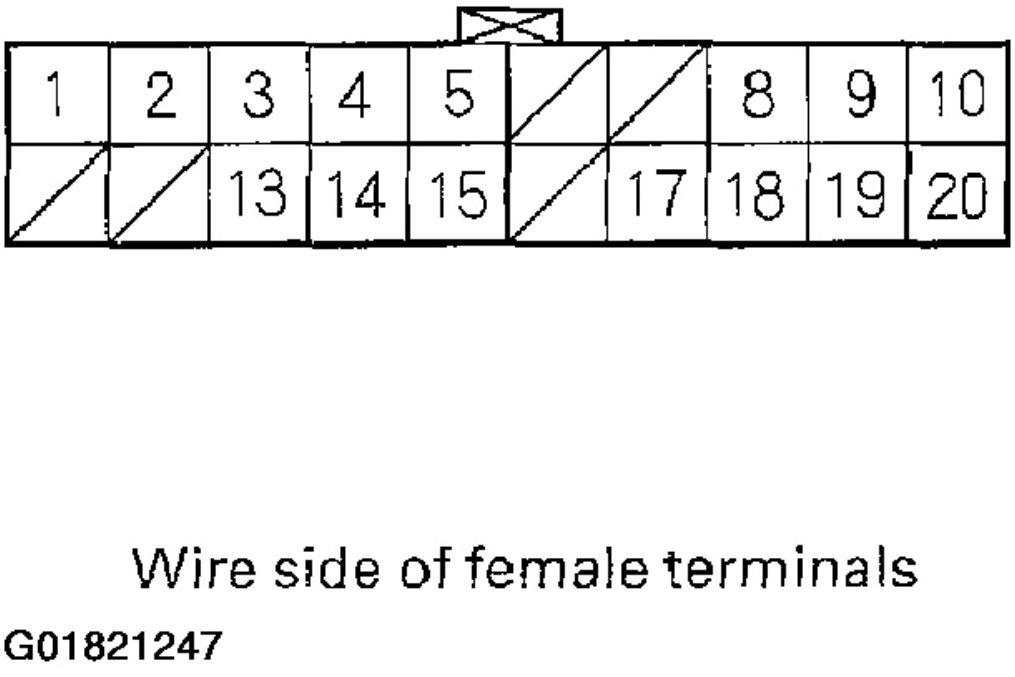

Fig. 39: Identifying Display Unit 20P Connector Terminals

Is there continuity?

YES -Go to step 6.

NO -There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display unit and navigation unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

6. Check for continuity between the appropriate terminals of display unit 20P connector based on the missing color(s).

Missing color	Display unit 20P connector terminal	Display unit 20P connector terminals
Blue	18	10, 20
Green	9	10, 20
Red	8	10, 20
Rolling Picture	19	10, 20

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Fig. 40: Checking For Continuity Between The Appropriate Terminals Of Display Unit 20P Connector Based On The Missing Color(s)

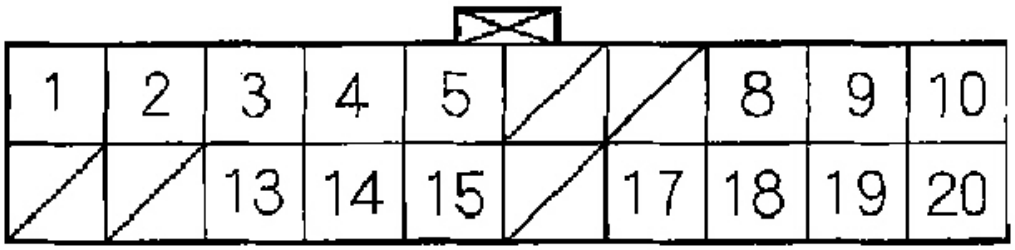

Fig. 41: Identifying Display Unit 20P Connector Terminals

Is there continuity?

YES -There is a short to body ground in the circuit between the display unit and the navigation unit. Replace the affected shielded harness.

NO -Check for poor connections or loose terminals at the navigation unit and recheck. If a poor connection or loose terminal is found, replace the shielded harness. If no poor connections or loose terminals are found, substitute a known-good navigation unit and recheck. If the problem is gone, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**). If not replace the display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

PICTURE HAS LINES/OTHER ISSUES

Diagnostic Test: Monitor Check

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the display unit or the navigation unit.

   Are there any electronic accessories?

   YES -Disable the accessories, and recheck.

   NO -Go to step 2.

2. Start up the navigation picture.

   Is the picture scrolling horizontally (left to right or right to left)?

   YES -Check for an open or short to ground in the C SIG wire from navigation unit connector A (20P) terminal No. 12 to display unit 20P connector terminal No. 19. Also check for a short to ground between display unit 20P connector terminal No. 19 and terminal No. 20.

   NO -Go to step 3.

3. Go into the Diagnostic mode and use "RGB Color" diagnostic under Monitor Check (see **RGB Color**).

   Is the picture missing a red, green or blue color?

   YES -Do troubleshooting for the picture is missing a red, green or blue color or tone (see **PICTURE IS MISSING A RED/GREEN/BLUE COLOR OR TONE, OR ROLLING PICTURE**).

   NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Substitute a known-good display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**), and recheck.

   Is the picture OK?

   YES -Check for loose connections, then replace the original display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

   NO -Check for loose connections and recheck. If a poor connection or loose terminal is found, replace the shielded harness. If no poor or loose terminals are found, substitute a known-good navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**) and recheck. If the problem is gone, replace

the original navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

DISPLAY UNIT BUTTONS DO NOT WORK

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Turn the ignition switch to ACC (I).
2. Try several navigation buttons and touch screen buttons.

   Do all buttons function properly?

   YES -The system is OK at this time.

   NO -

   - If all navigation buttons and touch screen are inoperative, go to step 3.
   - If some navigation buttons operate normally, while others do not, go into the Diagnostic mode and use "Touch Panel" diagnostic under Monitor Check (see **TOUCH PANEL CHECK**) and if necessary, "Display" diagnostic under Unit Check (see **DISPLAY**).
3. Measure the voltage between body ground and display unit 20P connector terminal No. 1 and No. 2 individually.

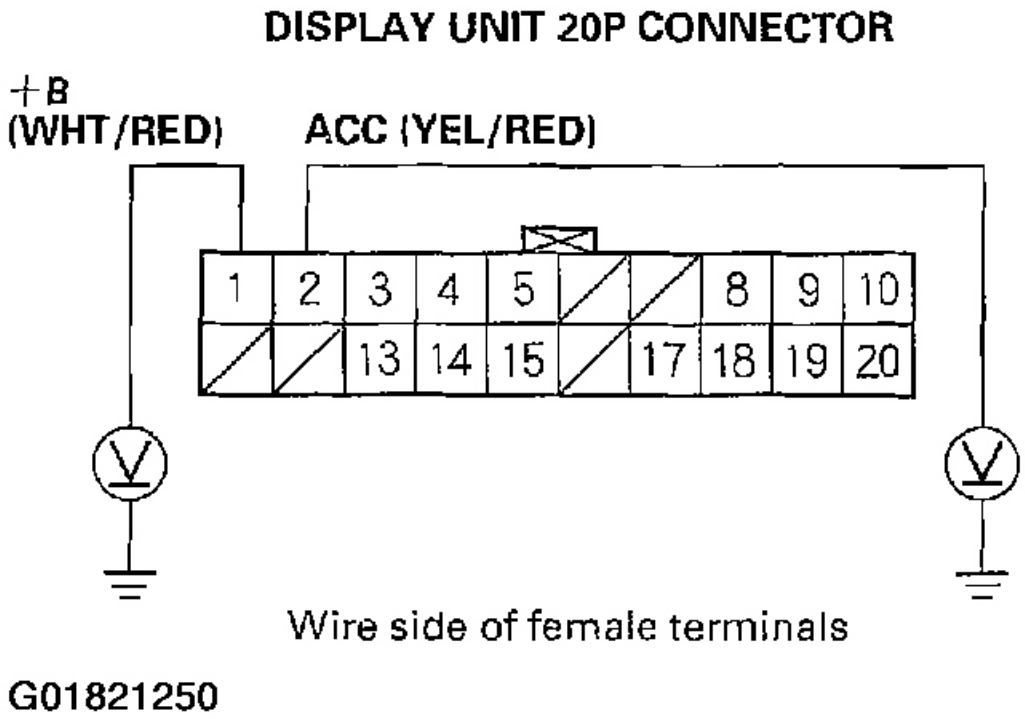

Fig. 42: Measuring The Voltage Between Body Ground And Display Unit 20P Connector Terminal No. 1 And No. 2

Is there battery voltage?

YES -Go to step 4.

NO -If the +B wire does not have voltage, repair the open in the wire between the under-dash fuse/relay box and the display unit. If the ACC wire does not have voltage, repair the open in the wire between the under-dash fuse/relay box and the display unit.

4. Turn the ignition switch OFF.
5. Disconnect the display unit 20P connector.
6. Disconnect the navigation unit connector A (20P).
7. Check for continuity between display unit 20P connector terminal No. 10 and body ground.

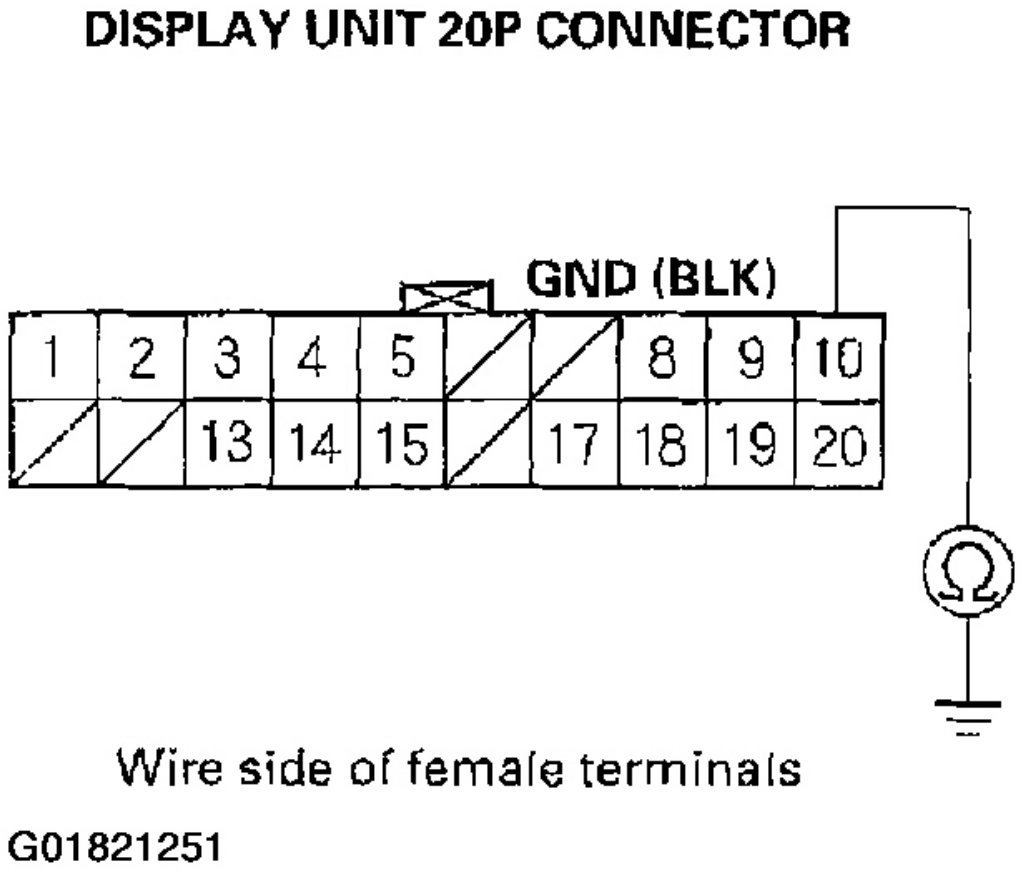

Fig. 43: Checking For Continuity Between Display Unit 20P Connector Terminal No. 10 And Body Ground

Is there continuity?

YES -Go to step 7.

NO -Repair the open in the wire between the display unit and body ground (G503).

8. Check for continuity between body ground and display unit 20P connector terminal No. 3, No. 5, No. 13 and No. 15 individually.

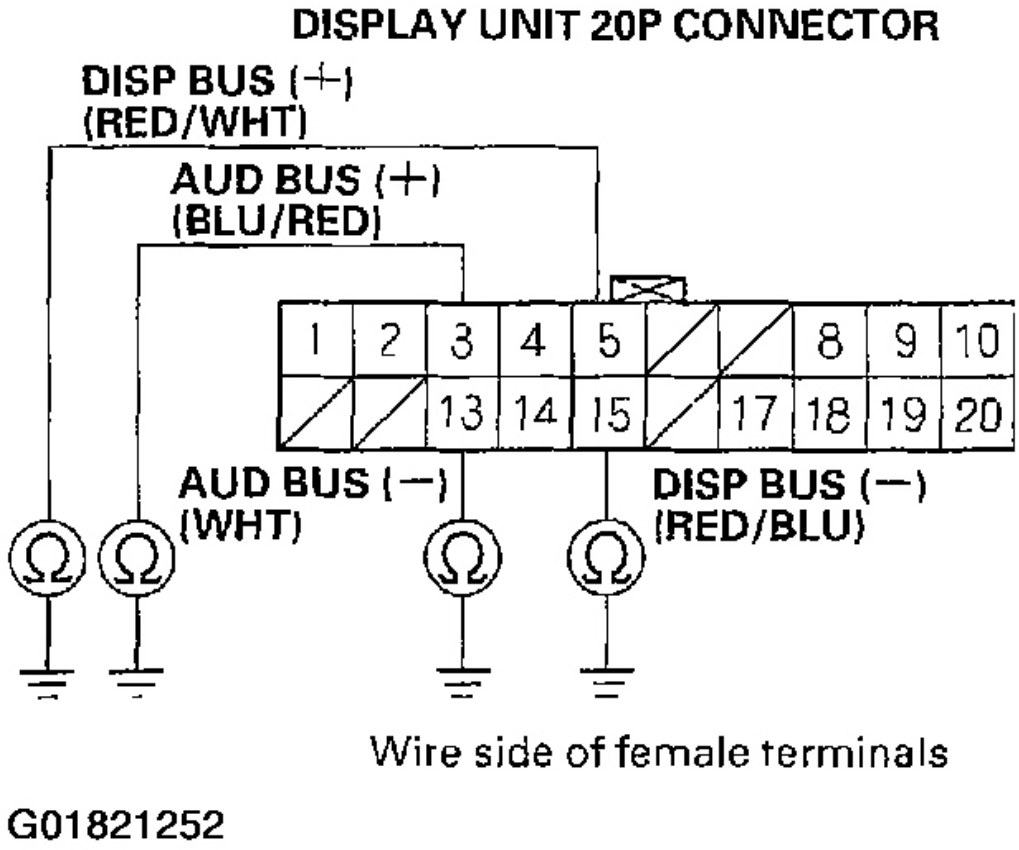

Fig. 44: Checking For Continuity Between Body Ground And Display Unit 20P Connector Terminal No. 3, No. 5, No. 13 And No. 15

Is there continuity?

YES -There is a short to body ground in the circuit between the display unit and the navigation unit. Replace the affected shielded harness.

NO -Go to step 9.

9. Check for continuity between display unit 20P connector terminal No. 4 and terminals No. 3 and No. 13 individually.

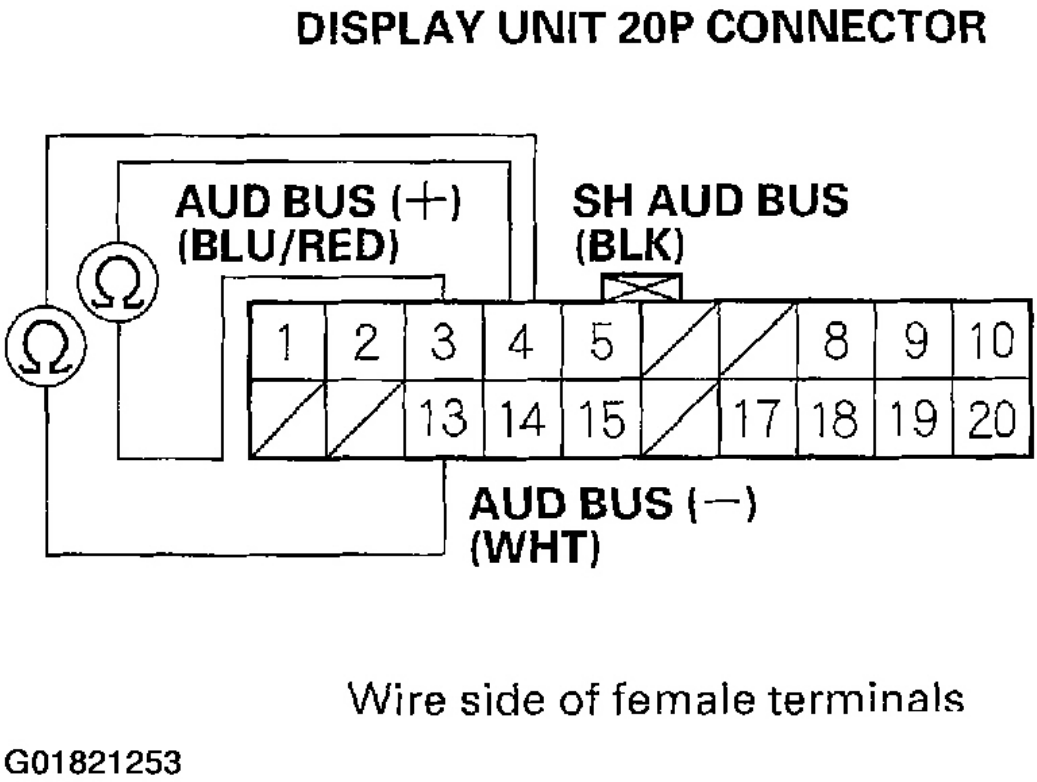

Fig. 45: Checking For Continuity Between Display Unit 20P Connector Terminal No. 4 And Terminals No. 3 And No. 13

Is there continuity?

YES -There is a short between the display unit and the audio unit. Replace the shielded harness.

NO -Go to step 10.

10. Check for continuity between display unit 20P connector terminal No. 14 and terminals No. 5 and No. 15 individually.

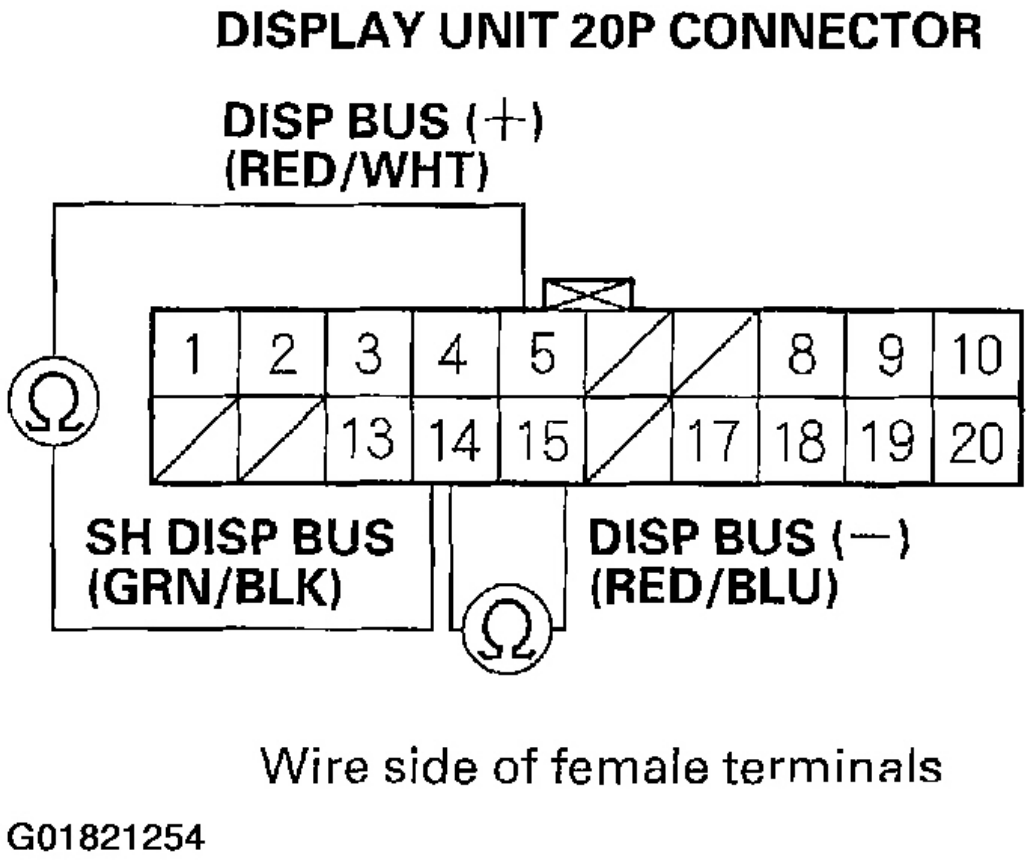

Fig. 46: Checking For Continuity Between Display Unit 20P Connector Terminal No. 14 And Terminals No. 5 And No. 15

Is there continuity?

YES -There is a short between the display unit and the navigation unit. Replace the affected shielded harness.

NO -Go to step 11.

11. Check for continuity between display unit 20P connector terminal No. 5 and navigation unit connector A (20P) terminal No. 10.

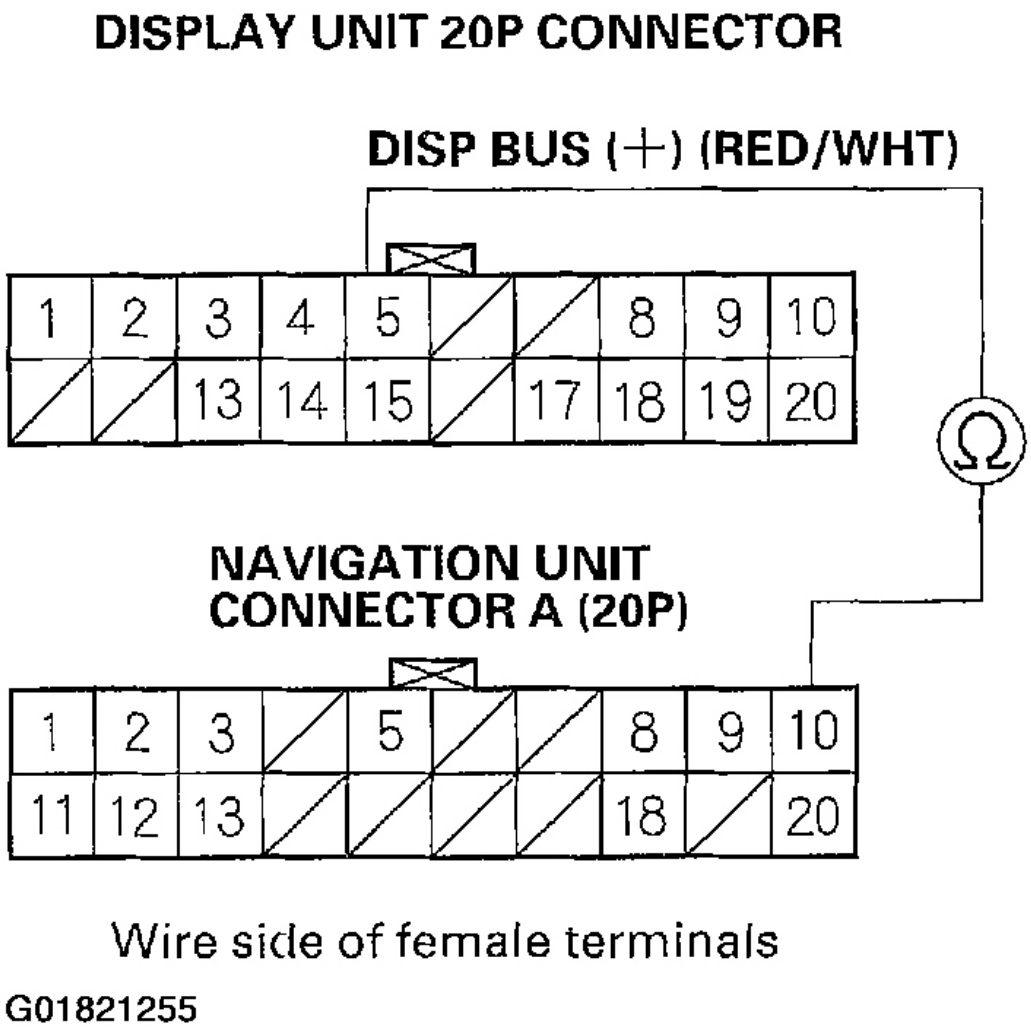

Fig. 47: Checking For Continuity Between Display Unit 20P Connector Terminal No. 5 And Navigation Unit Connector A (20P) Terminal No. 10

Is there continuity?

YES -Go to step 12.

NO -There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display unit and navigation unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

12. Check for continuity between display unit 20P connector terminal No. 15 and navigation unit connector A (20P) terminal No. 20.

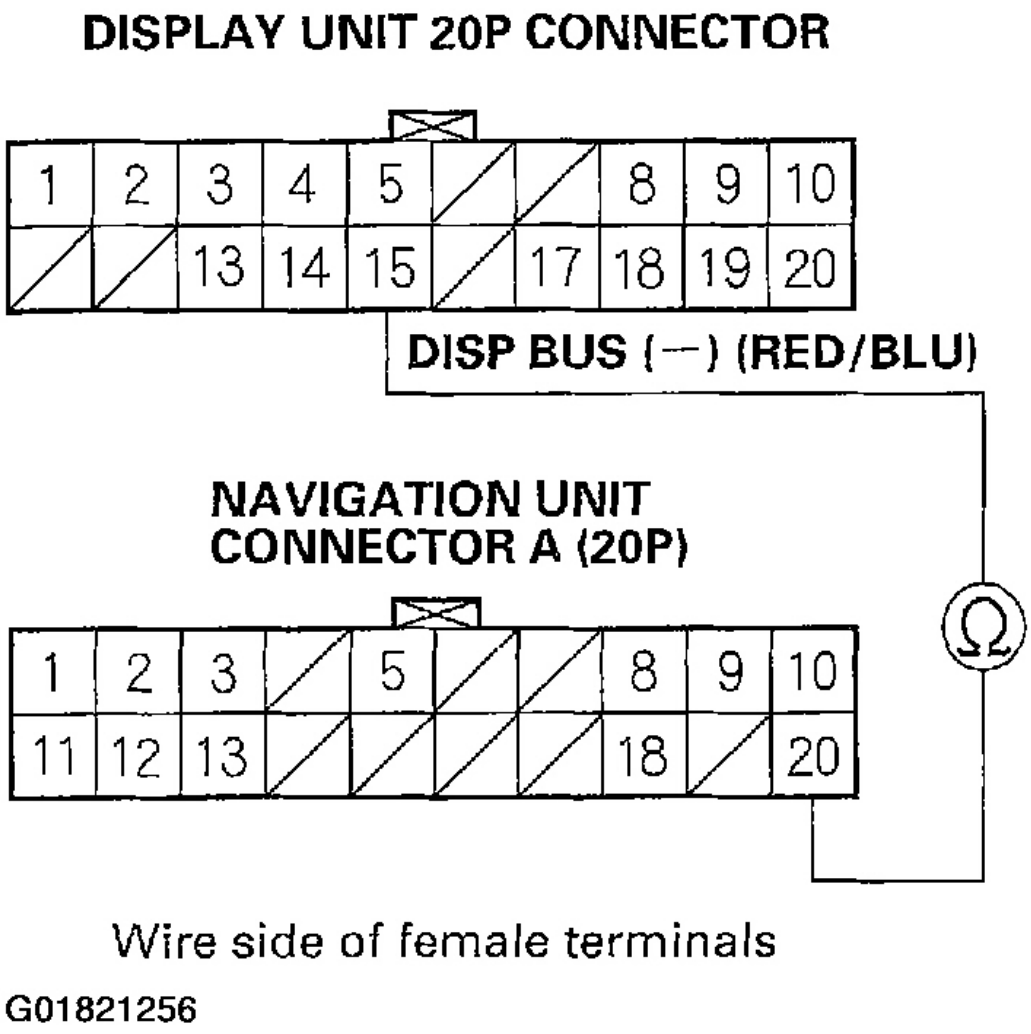

Fig. 48: Checking For Continuity Between Display Unit 20P Connector Terminal No. 15 And Navigation Unit Connector A (20P) Terminal No. 20

Is there continuity?

YES -Go to step 13.

NO -There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display unit and navigation unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

13. Check for continuity between display unit 20P connector terminal No. 3 and audio unit connector B (14P) terminal No. 9.

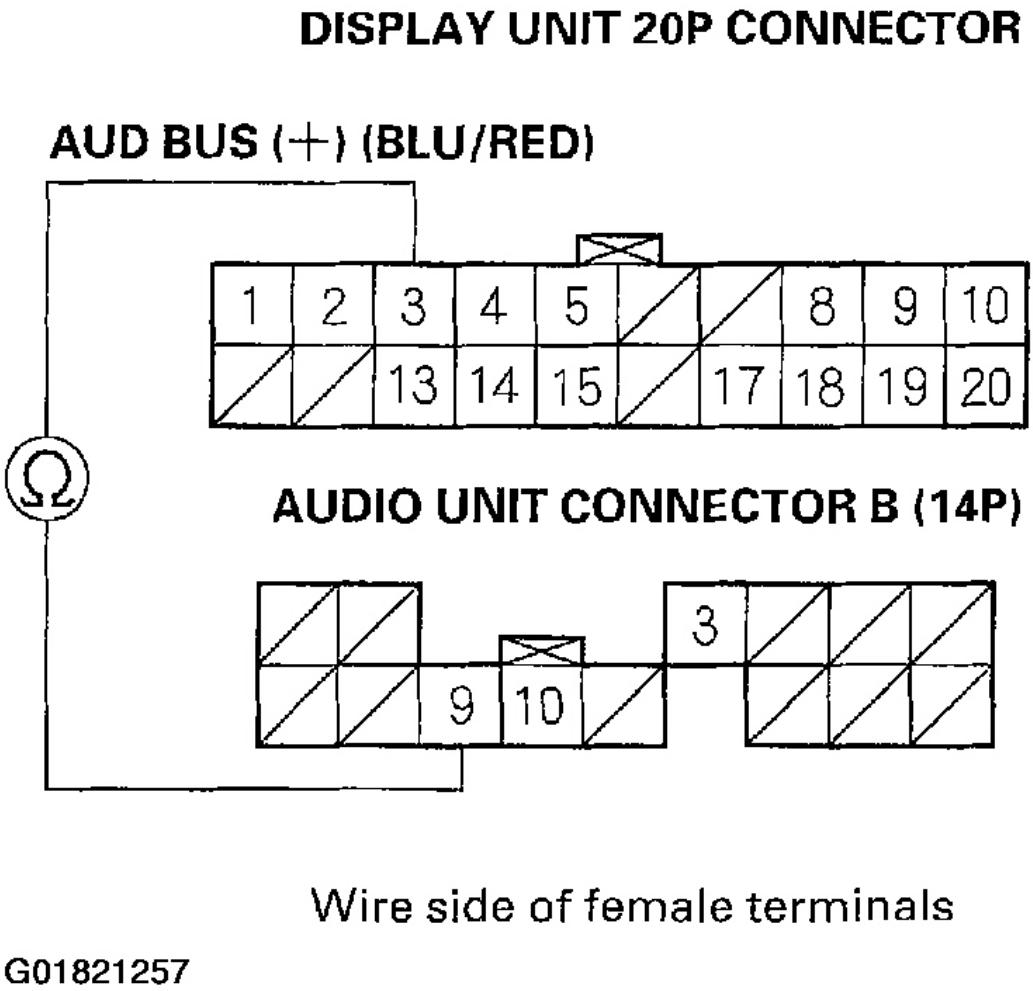

Fig. 49: Checking For Continuity Between Display Unit 20P Connector Terminal No. 3 And Audio Unit Connector B (14P) Terminal No. 9

Is there continuity?

YES -Go to step 14.

NO -There is an open in the circuit between the display unit and the audio unit. Check for poor connections or loose terminals at the display unit and audio unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

14. Check for continuity between display unit 20P connector terminal No. 13 and audio unit connector B (14P) terminal No. 10.

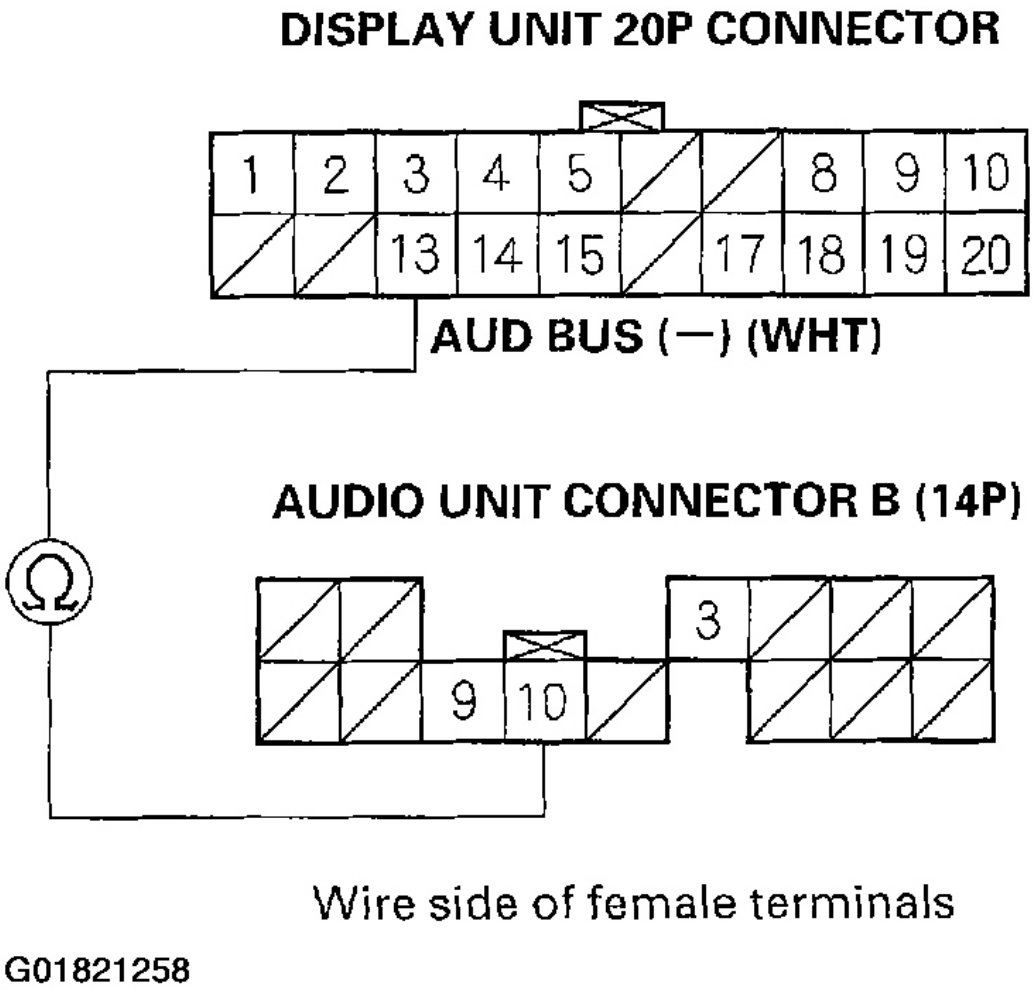

Fig. 50: Checking For Continuity Between Display Unit 20P Connector Terminal No. 13 And Audio Unit Connector B (14P) Terminal No. 10

Is there continuity?

YES -Replace the display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

NO -There is an open in the circuit between the display unit and the audio unit. Check for poor connections or loose terminals at the display unit and audio unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

GPS ICON IS WHITE

Diagnostic Test: Navi System Link

NOTE:

- **Make sure the vehicle is parked outside and away from buildings.**
- **Refer to GPS Information (see GPS INFORMATION) for realtime satellite reception display.**

Before assuming that a GPS antenna reception complaint is hardware related, be aware of the following:

- The GPS signal is extremely weak (about one billionth the strength of a radio broadcast signal received by a radio antenna)
- If the rear window has been tinted with metallic tint, this can seriously degrade or block GPS reception.
- Loose items on the rear package tray can block satellite antenna reception.
- Aftermarket devices like Lo-Jack, remote starters or other electronic devices located near the navigation unit or GPS antenna can potentially interfere with the operation of the navigation system.

1. Check for metallic window tint on the windshield and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

   Is there metallic window tint or electronic accessories?

   YES -Remove tint or the accessories and recheck.

   NO -Go to step 2.

2. Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **NAVI SYSTEM LINK**) to check the GPS antenna.

   Is "GPS Ant" icon red?

   YES -Check for a kinked, crushed, or disconnected GPS antenna wire. If icon is still red, replace the GPS antenna.

   NO -Check that nothing is blocking the GPS antenna located under the package shelf and recheck. Substitute a known-good GPS antenna, and recheck.

   - If the symptom is gone, replace the GPS antenna.
   - If the symptom is still present, substitute a known-good navigation unit and recheck. If the symptom is gone, replace the original navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

VOICE GUIDANCE CANNOT BE HEARD

Diagnostic Test: Navi System Link

NOTE:

- **Always check the connectors for poor connections or loose terminals.**

- **Before troubleshooting, write down the customer's radio station presets, and get the radio and navigation system anti-theft codes.**
- **After troubleshooting, enter the radio and navigation system anti-theft codes, and the radio station presets.**

1. Press the display unit SET-UP button.
2. Check the volume setting for the navigation system.

   Is it set to OFF?

   YES -Set the volume to an audible level.

   NO -Go to step 3.

3. Check the radio operation.

   Can you hear the radio?

   YES -Go to step 4.

   NO -Troubleshoot the audio system.

4. Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **NAVI SYSTEM LINK**) to check the radio.

   Is "Radio" icon red?

   YES -Troubleshoot the audio system.

   NO -Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the navigation unit connector B (14P) and the audio unit connector A (20P).
7. Check for continuity between body ground and navigation unit connector B (14P) terminals No. 5, No. 12 individually.

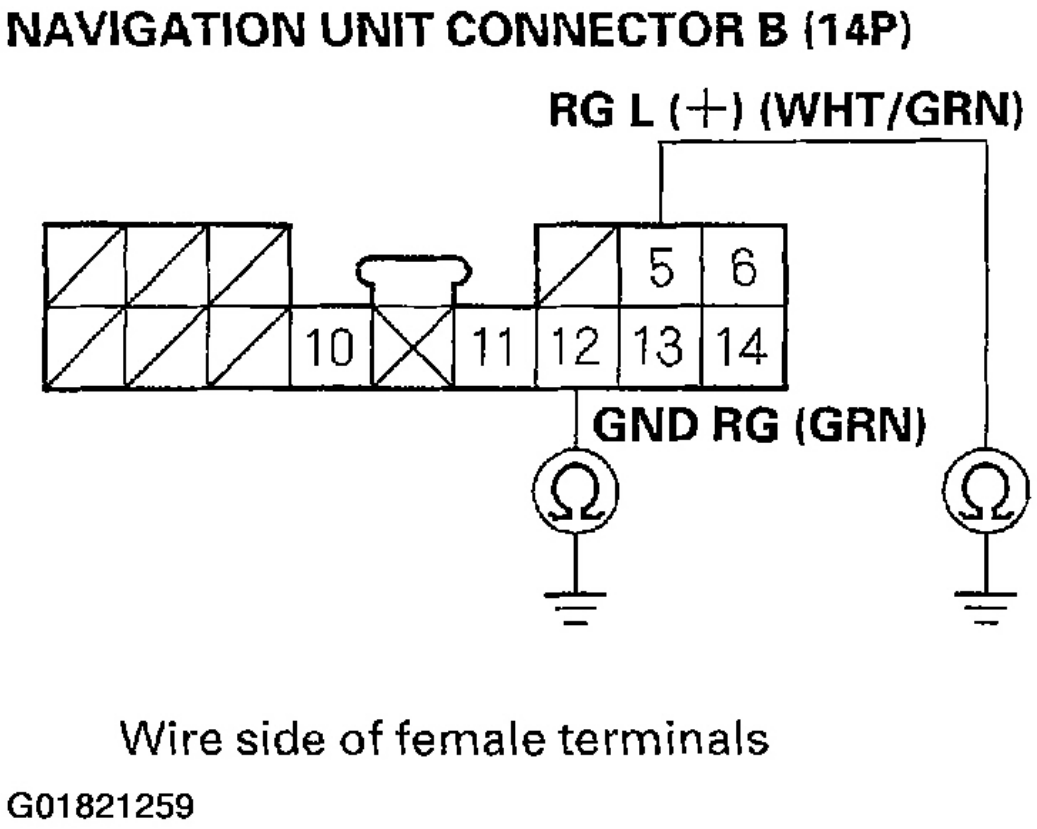

Fig. 51: Checking For Continuity Between Body Ground And Navigation Unit Connector B (14P) Terminals No. 5, No. 12

Is there continuity?

YES -Repair short to ground in the harness between the navigation and audio units. Replace the affected shielded harness.

NO -Go to step 8.

8. Check for continuity between navigation unit connector B (14P) terminal No. 11 and terminals No. 5 and No. 12 individually.

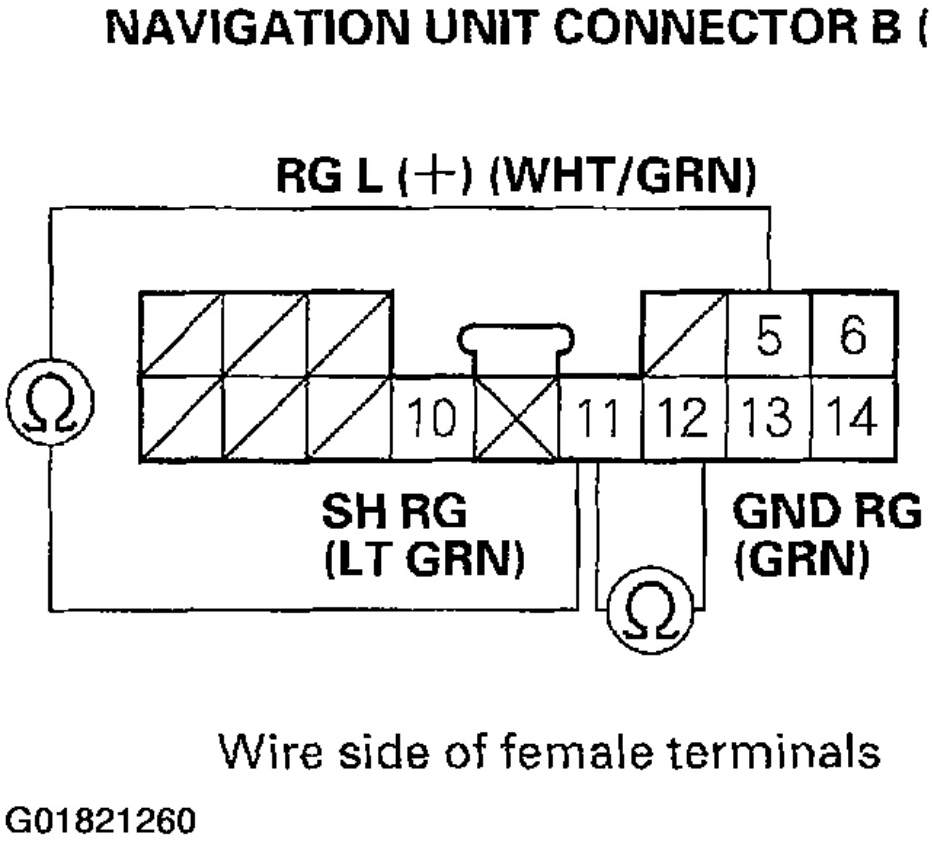

Fig. 52: Checking For Continuity Between Navigation Unit Connector B (14P) Terminal No. 11 And Terminals No. 5 And No. 12

Is there continuity?

YES -Repair short to ground in the harness between the navigation and audio units. Replace the affected shielded harness.

NO -Go to step 9.

9. Check for continuity between navigation unit connector B (14P) terminal No. 5 and the audio unit connector A (20P) terminal No. 13.

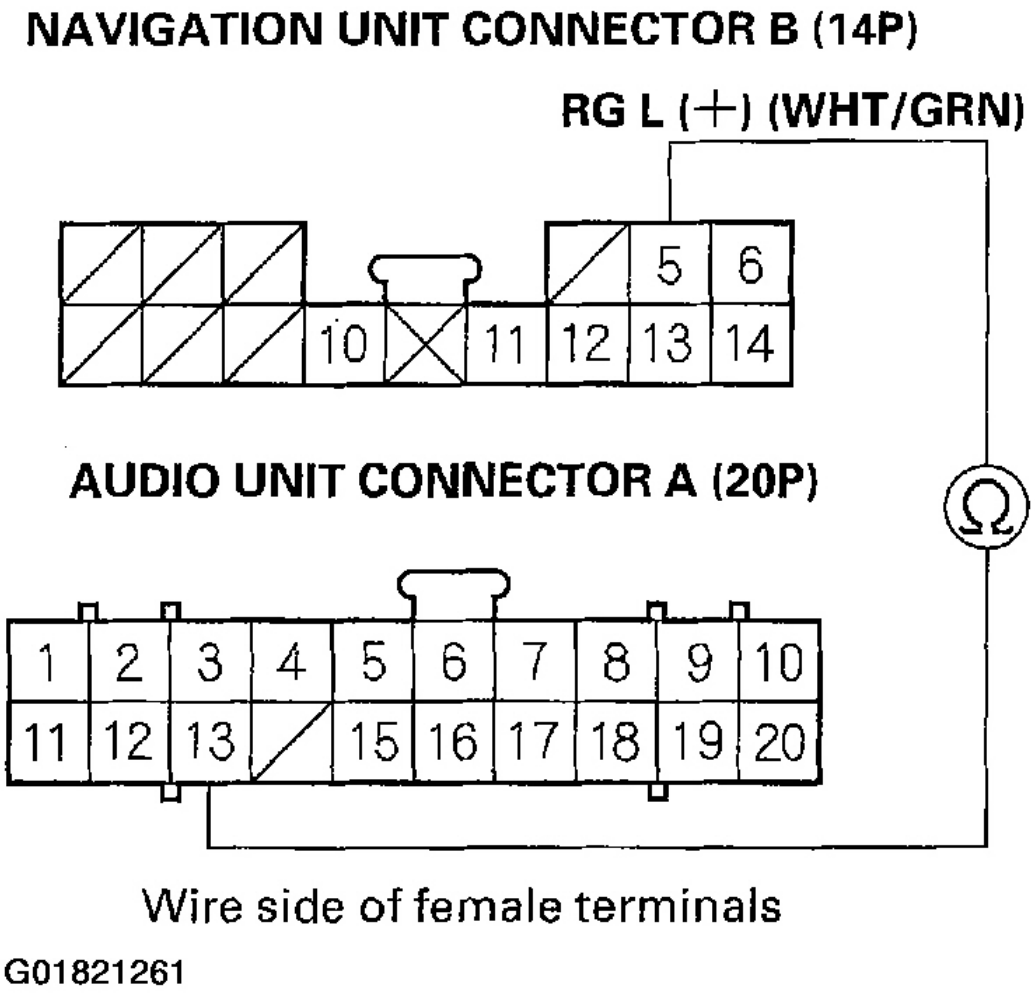

Fig. 53: Checking For Continuity Between Navigation Unit Connector B (14P) Terminal No. 5 And The Audio Unit Connector A (20P) Terminal No. 13

Is there continuity?

YES -Go to step 10.

NO -There is an open in the circuit between the navigation unit and audio unit. Check for poor connections or loose terminals at the audio and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness.

10. Check for continuity between navigation unit connector B (14P) terminal No. 12 and the audio unit connector A (20P) terminal No. 12.

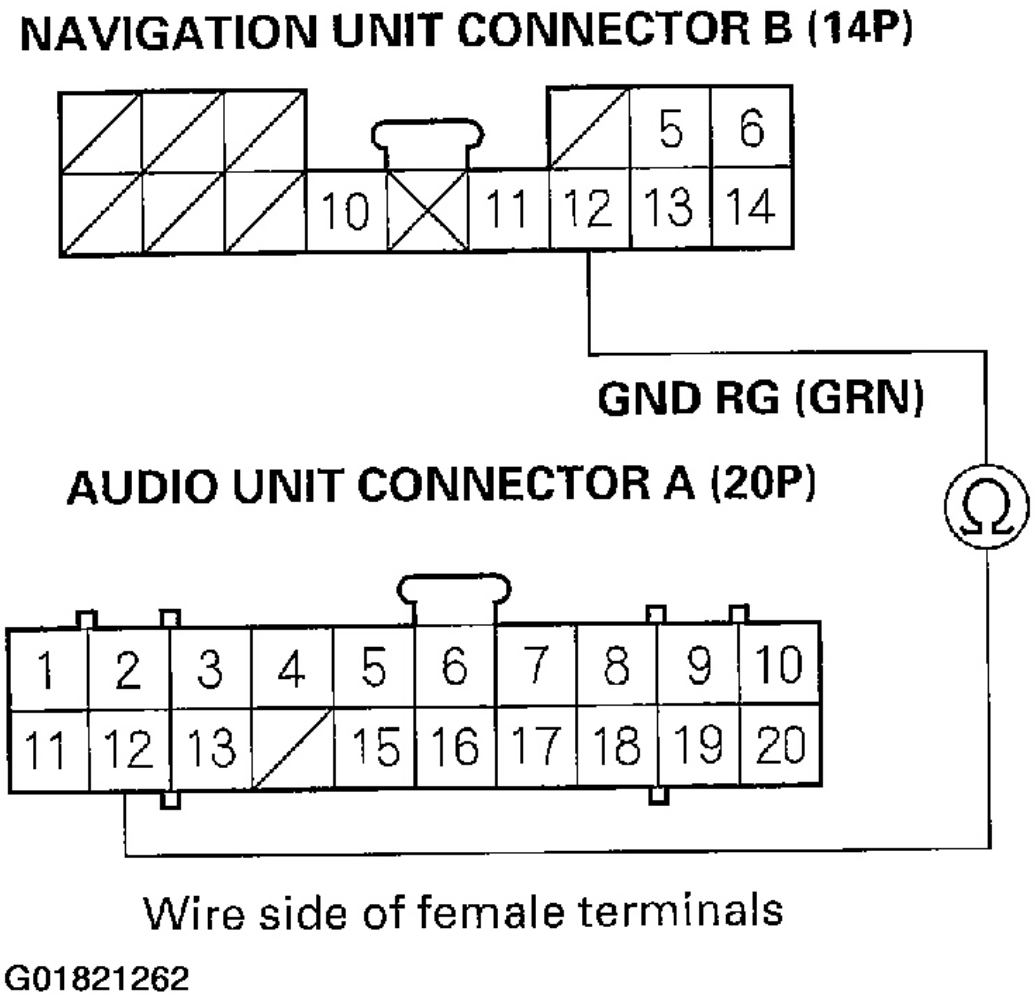

Fig. 54: Checking For Continuity Between Navigation Unit Connector B (14P) Terminal No. 12 And The Audio Unit Connector A (20P) Terminal No. 12

Is there continuity?

YES -Go to step 11.

NO -There is an open in the circuit between the navigation unit and the audio unit. Check for poor connections or loose terminals at the audio and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness.

11. Substitute a known-good audio unit, and recheck.

Is the system OK?

YES -Replace the audio unit.

NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

VOICE CONTROL DOES NOT WORK

Diagnostic Test: Navi System Link and Functional Setup

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, write down the customer's radio station presets, and get the radio and navigation system anti-theft codes.**
- **After troubleshooting, enter the radio and navigation system anti-theft codes, and the radio station presets.**

Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.

- Make sure you are on the correct screen when trying to issue a voice command. For instance, the command "Find the nearest Italian Restaurant" only works on a Map screen. (See the Navigation Owner's manual for a complete list of allowed voice commands for the information being displayed).
- Close the windows and sunroof
- Set the fan speed to low (1 of 2).
- Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
- Pause after pressing the TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
- If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
- If you speak a command with something in your mouth, the system may misunderstand your command.

1. Go into the Diagnostic mode and use the "Mic Level" diagnostic under Functional Setup (see **MIC LEVEL**) to check the operation of the TALK and BACK buttons.

   Are the TALK and BACK buttons operational?

   YES -Go to step 2.

   NO -Check for an open or short to ground on navigation unit connector B (14P) terminal No. 10 or a faulty voice control switch assembly.

2. Use the "Mic Level" diagnostic under Functional Setup (see **MIC LEVEL**) to check the operation of the microphone.

   Is the microphone operational?

YES -Check the operation of the voice control system (see the Navigation System Owner's Manual).

NO -Check for a loose front map light (microphone) assembly. If OK, check for an open or short to ground on navigation unit connector B (14P) terminals No. 6 and No. 14. If the wiring is OK, replace the front map light assembly.

TOUCH SWITCH MALFUNCTION

Diagnostic Test: Display Under Unit Check

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, write down the customer's radio station presets, and get the radio and navigation system anti-theft codes.**
- **After troubleshooting, enter the radio and navigation system anti-theft codes, and the radio station presets.**

1. Go into the Diagnostic mode and use "Touch Panel Check" diagnostic the under Monitor Check (see **TOUCH PANEL CHECK**) to check the operation of the touch switches.

   Do the switches operate normally?

   YES -The system is OK at this time.

   NO -Replace the display unit.

CURSOR CONSTANTLY LEAVES ROAD

Diagnostic Test: Yaw Rate and Car status

1. Check the GPS icon on the navigation picture.

   Is the GPS icon white?

   YES -Do the troubleshooting for GPS icon is white (see **GPS ICON IS WHITE**).

   NO -Go to step 2.

2. Go into the Diagnostic mode and use the "Yaw Rate" diagnostic (see **YAW RATE**), to check the yaw rate sensor.
3. Go into the Diagnostic mode and use the "Car Status" diagnostic (see **CAR STATUS**), to check the vehicle speed pulse.

   Are the yaw rate sensor and vehicle speed pulse OK?

   YES -The problem may be normal. Check to see if the problem occurs in the same place. If it does, the

problem could be in the database. Go to step 4.

NO -If the problem is the yaw rate sensor, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**) If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit.

4. Substitute a known-good navigation unit and check to see if the problem occurs in the same place.

   Does the problem occur in the same place?

   YES -The problem is in the database. Report the problem according to the Navigation System Owner's Manual under "Reporting Errors".

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

DVD SCREEN ERROR MESSAGES

Diagnostic Test: Car Status

NOTE:

- **Check the Navigation System Owner's Manual for a list of common DVD screen error messages and the probable cause.**
- **Go into the Diagnostic mode and use the "Car Status" diagnostic (see CAR STATUS) to check the status of the DVD lid.**

1. Check the DVD-ROM reading surface for scratches.

   Are there any scratches on the DVD-ROM reading surface?

   YES -Replace the DVD-ROM (see **DVD-ROM REPLACEMENT**).

   NO -If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

TRIP COMPUTER-NO DISTANCE

Diagnostic Test: Car Status

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**
- **If the Previous button on the Trip Computer screen is not active, make sure to answer OK to the Disclaimer screen.**

1. Go into the Diagnostic Mode and use "Car Status" diagnostic (see **CAR STATUS**) to check for a vehicle

speed pulse (VSP).

Is there a VSP when the vehicle is moving?

YES -Check the CAN bus wires for an open or short to ground between navigation unit connector A (20P) terminals No. 8 and No. 18 and PCM connector B (56P) terminals No. 6 and No. 2. If OK, replace the navigation unit.

NO -Check the VSP wire for an open or short to ground between navigation unit connector C (8P) terminal No. 6 and PCM connector B (56P) terminal No. 46.

TRIP COMPUTER-NO FUEL INFORMATION

Diagnostic Test: Navi System Link

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**
- **If the Previous button on the Trip Computer screen is not active, make sure to answer OK to the Disclaimer screen.**

Perform the "Navi System Link" check (see **NAVI SYSTEM LINK**) to check the communication line between the PCM (FI-ECU) and the navigation unit.

1. Start the engine.
2. Go into the Diagnostic mode and use "Trip Information" diagnostic under Functional Setup (see **TRIP INFORMATION**).

   Are the values greater than zero?

   YES -The system is OK.

   NO -Check for B or F-CAN DTCs, then troubleshoot them.

NAVIGATION CANNOT CONTROL A/C

Diagnostic Test: Navi System Link

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Go into the Diagnostic Mode and perform the "Navi System Link" check (see **NAVI SYSTEM LINK**).

Is "Air-con" icon red?

YES -Do the climate control system troubleshooting.

NO -Check for loose connection at the climate control unit and display unit. If OK, replace the display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

DISPLAY DAY/NIGHT MODE DOES NOT WORK

Diagnostic Test: Car Status

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**
- **Full brightness on the instrument panel brightness control causes the system to stay in the day mode, even when the lights are on.**

1. Make sure the instrument panel brightness control is not on full brightness.
2. Change the day/night mode to AUTO under "Set-up" and recheck.

   Does the display change to day and night modes?

   YES -The system is OK at this time.

   NO -Go to step 3.

3. Go into the Diagnostic Mode and use "Car Status" to check the ILL signal (see **CAR STATUS**) by turning the head lights ON, then OFF.

   Is the "ILL" signal OK?

   YES -The system is OK.

   NO -Check the ILL+ circuit between the navigation unit and relay module.

SYSTEM LOCKS UP CONSTANTLY

Diagnostic Test: Unit Check

Check the DVD for scratches or damage and the navigation unit for water damage. If OK, perform all of the "Unit Check" checks under System Diagnosis Test (see **UNIT CHECK**).

VEHICLE ICON SPINS WHEN PARKED

Diagnostic Test: Yaw Rate

NOTE: Perform this diagnostic when the vehicle is cold.

1. Go into the Diagnostic Mode and use the "Yaw Rate" diagnostic (see **YAW RATE**).

   Are the values correct?

   YES -The system is OK.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION DRIVES BY ITSELF WHEN PARKED

Diagnostic Test: Functional Setup

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft code.**
- **After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system.**

1. Start the engine.
2. From the main menu, select places, then select any destination, and begin the trip.
3. With the vehicle parked, watch the vehicle icon on the display.

   Does the vehicle position icon move by itself?

   YES -Go to step 4.

   NO -The system is OK at this time.

4. Go into the Diagnostic mode, select "Functional Setup", then select "Demonstration".

   Is "Demonstration Mode" set to "YES"?

   YES -Set the Demonstration mode to "NO".

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION CANNOT CONTROL AUDIO/CD

Diagnostic Test: Navi System Link

1. Make sure the anti-theft code for the audio system is entered.
2. Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **NAVI SYSTEM LINK**).

   Is the "Radio" icon red?

YES -Do the troubleshooting for the voice guidance cannot be heard (see **VOICE GUIDANCE CANNOT BE HEARD**).

NO -Go to step 3.

3. Substitute a known-good navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**), and recheck.

   Can the navi control audio/CD?

   YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

   NO -Do the audio system troubleshooting.

AUDIO-HVAC SUBDISPLAY DOES NOT WORK PROPERLY

1. Check the connections at the audio-HVAC subdisplay 10P connector and the audio-HVAC display panel connector C (10P).

   Are the connections and terminals connected properly?

   YES -Go to step 2.

   NO -Repair the connection and recheck.

2. Check for continuity between the audio-HVAC subdisplay 10P connector and the audio-HVAC display panel connector C (10P) terminals for each wire listed in the chart.

Wire	Audio-HVAC subdisplay 10P connector terminal	Audio-HVAC display panel connector C (10P) terminal
BLU/ORN	2	C2
YEL/RED	4	C4
YEL	5	C5
BLU/RED	6	C6
BLU	7	C7
GRY	8	C8
BLK	1	C1
RED	9	C9
GRN	10	C10
BLK	3	(Body ground)

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Fig. 55: Audio-HVAC Subdisplay And Audio-HVAC Display Panel Continuity Chart

Is there continuity?

YES -Go to step 3.

NO -Repair the open in the wire between the audio-HVAC display panel and the audio-HVAC subdisplay.

3. Check for continuity between each audio-HVAC subdisplay 10P connector terminal and body ground.

Wire	Audio-HVAC subdisplay 10P connector terminal
BLU/ORN	2
YEL/RED	4
YEL	5
BLU/RED	6
BLU	7
GRY	8
BLK	1
RED	9
GRN	10
BLK	3

G01821264

Fig. 56: Checking For Continuity Between Each Audio-HVAC Subdisplay 10P Connector Terminal And Body Ground

Is there continuity?

YES -Repair short to ground in the wire between the audio-HVAC display panel and the audio-HVAC subdisplay.

NO -Go to step 4.

4. Substitute a known-good audio-HVAC subdisplay and recheck.

   Does the subdisplay work properly?

   YES -Replace the original audio-HVAC subdisplay.

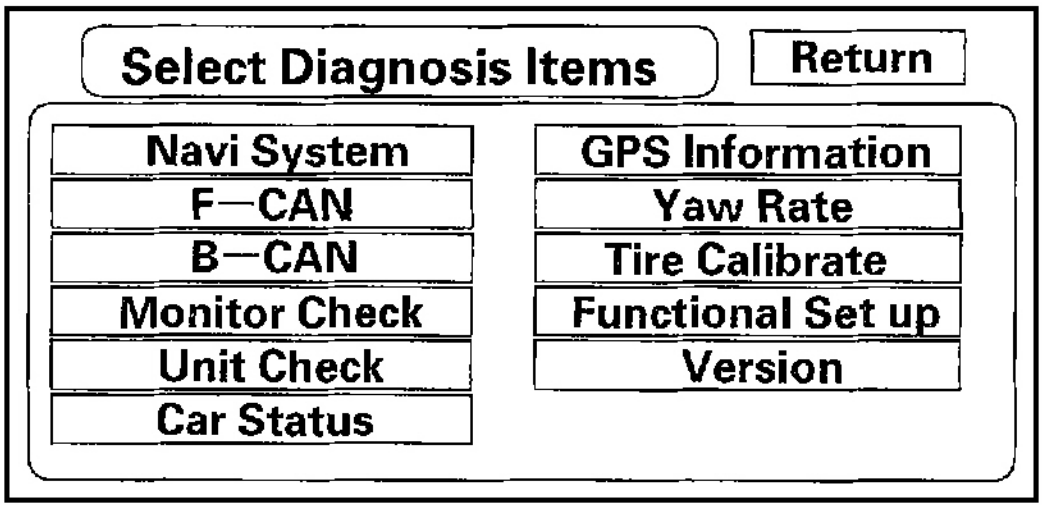
   NO -Substitute a known-good audio-HVAC display panel and retest. If the problem is gone, replace the original audio-HVAC display panel.

SYSTEM DIAGNOSIS MODE

START-UP PROCEDURE AND DIAGNOSIS MENU

1. Turn the ignition switch ON (II).
   A. If the battery has not been disconnected, then press and hold Menu, Map/Guide, and Cancel buttons. Keep them pressed for approximately 5 seconds. The display screen then goes directly to the "Select Diagnosis Items" menu.
   B. If the battery was disconnected and reconnected prior to this test, hold down the Menu and Zoom Out button. You will see the "Navi System Link" screen. Push the joystick to go directly to the "Select Diagnosis Items" menu.

NOTE: This only allows access to the diagnostic screens. All other Navigation functions are disabled.



G01821265

Fig. 57: Select Diagnosis Items Menu Display

2. After the display changes to the select Diagnosis Items menu, touch the item you want to check, and the check will start. To return to the previous screen, touch "Return".
    - Navi System. (Link)
    - F-CAN (System Link)
    - B-CAN (System Link)
    - Monitor Check.
    - Unit Check.
    - Car Status.
    - GPS Information.
    - Yaw Rate.
    - Tire Calibrate.
    - Functional Setup.
    - Version.

Navi System Link

- This diagnostic tests the cables connecting the navigation components. Ensure that the ignition switch is in the ON (II) position. When the diagnostic begins, a "bong" sound is heard. The system is in a "Detecting" mode, and is waiting for all items in white to be tested. This includes the steering wheel (TALK/BACK) switches, and microphone, Push the "TALK" button on the steering wheel, and in a normal voice, say "testing". The Talk indicator on the screen should become green, and the voice level indicator should move to the 6^{th} bar to pass. Next, touch the Steering wheel "BACK" button. This should

cause the "Cancel" indicator to go green.

- If all of the communication lines connecting the system components, and the steering wheel buttons/microphone check out OK (all block diagram items green), then the "OK" indicator will become green.
- If there is a problem with the system, the faulty system component item will change to red, and the screen will show "NG" in red. Use the troubleshooting index, and other diagnostic screens to help locate the problem.
- The indication on the screen will not change until the ignition switch is cycled. After repairing the affected cable or system, repeat this diagnostic.
- NOTE: Green boxes and green "OK" indicate that the communications lines (cables) are intact. This diagnostic does not necessarily imply that the individual components are functioning properly. For instance, the GPS antenna wire may be crushed, but still show as "green." A road test, or other diagnostic may be necessary to find the problem.
- Touch the "Exit Diag" button to exit.

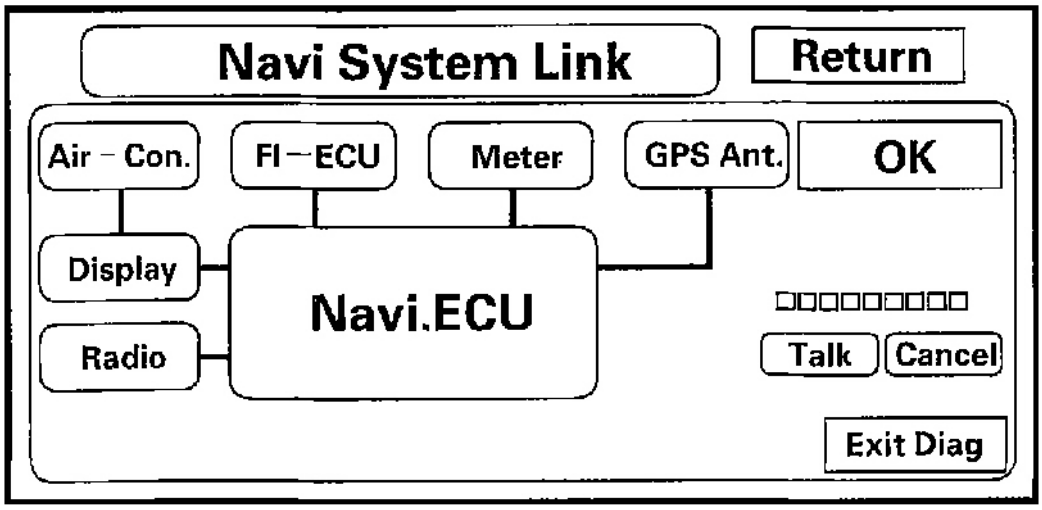


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Fig. 58: Navi System Link Display

F-CAN System Link

F-CAN (Fast Controller Area Network) passes information between processors on the network. For example, the F-CAN network is used to pass fuel pulses between the PCM and the navigation for the trip computer function. The F-CAN network uses a communication protocol that transmits data at 500 Kbps.

- If the diagnostic screen below reads NG, then diagnostic trouble codes (DTCs) for the F-CAN can be retrieved with a PGM Tester or HDS (Honda Diagnostic System). The data displayed in the ID boxes is

for troubleshooting at the factory.

- For more details on troubleshooting the F-CAN, refer to multiplex system.

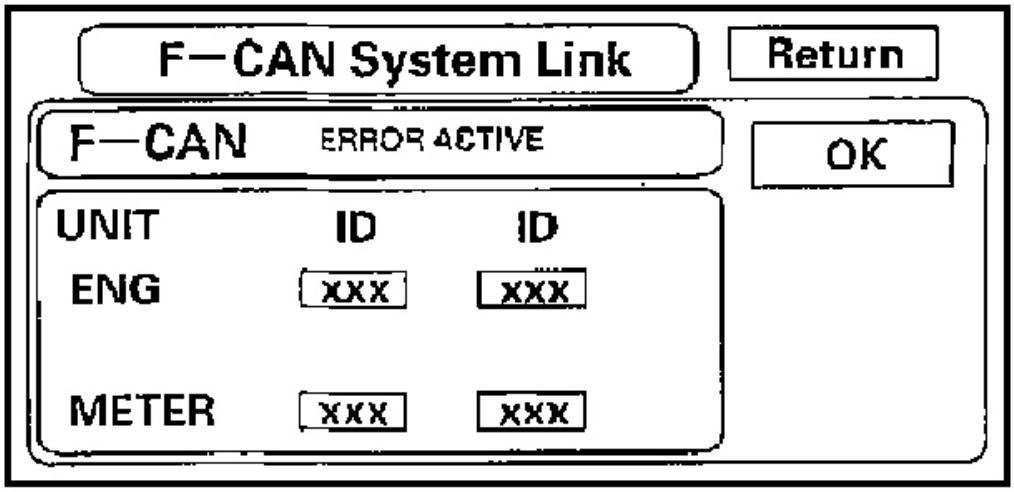

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Fig. 59: F-CAN System Link Display

B-CAN System Link

B-CAN (Body Controller Area Network) communication moves at a slower speed for convenience related items, and for other functions.

- If the diagnostic screen below reads NG, then diagnostic trouble codes (DTCs) for the B-CAN can be retrieved with a PGM Tester or HDS (Honda Diagnostic System). The data displayed in the ID boxes is for troubleshooting at the factory.
- For more details on troubleshooting the B-CAN, refer to multiplex system.

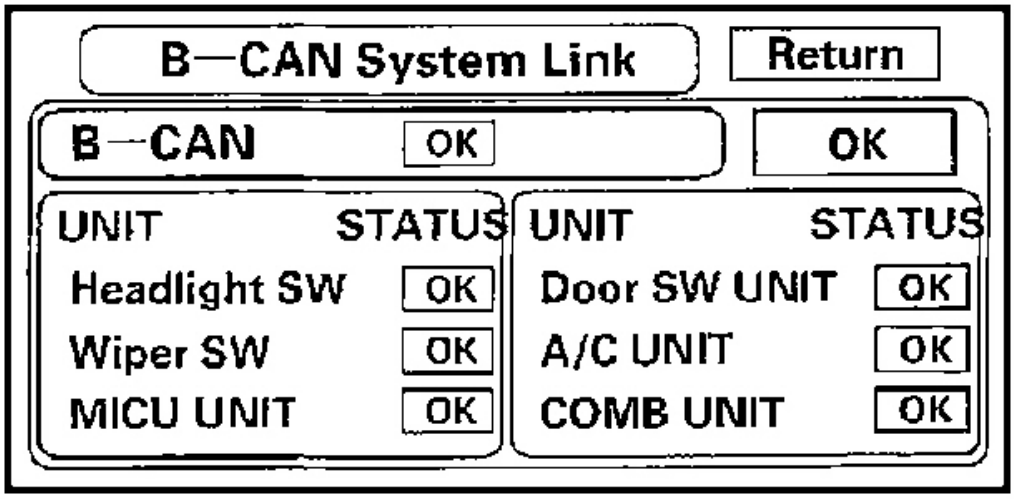

Fig. 60: B-CAN System Link Display

Monitor Check

Overview of display unit

- The display unit communicates with the navigation unit over its own GA-Net bus. Information is sent to the navigation unit whenever the user activates the touch screen, or hard buttons. Information sent by the navigation unit to the display unit includes commands to control the LCD back light.
- The display unit is protected by the security system by daisy-chaining the security signal through it, and then passing the signal to the audio unit.
- The illumination input from the gauge brightness control provides back lighting for the hard buttons surrounding the screen.
- The display unit also communicates with the climate control module to set the A/C mode, and fan speed, and to receive the outside temperature that is displayed on the A/C-INFO screen.

These screens allow troubleshooting of the display unit. Touch the menu item you want to troubleshoot, and follow the diagnostic instructions.

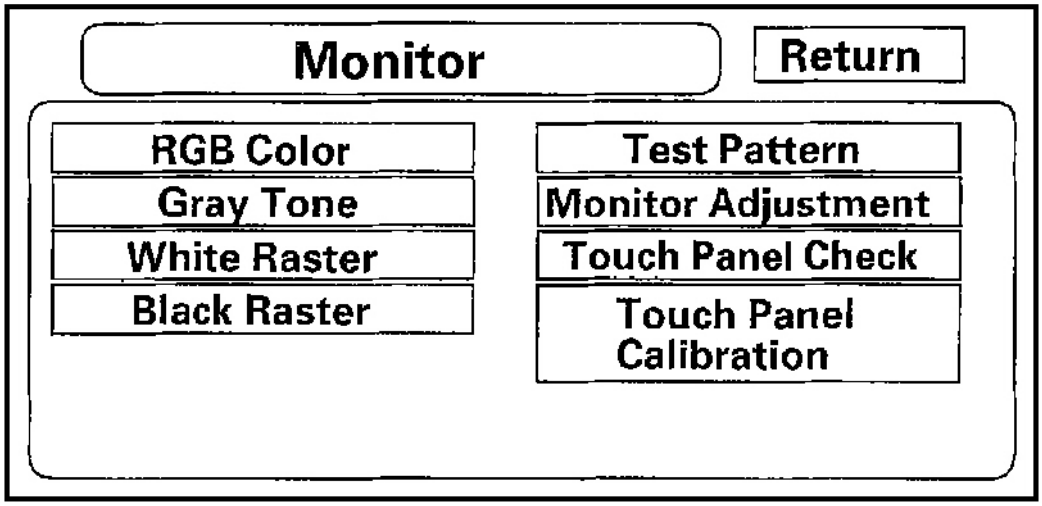

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Fig. 61: Monitor Display

RGB Color

This screen verifies that the display unit is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all be shown without distortion. The combination of all three should produce a central white section. If any of the colors are missing, troubleshoot for the color signal (see **PICTURE IS MISSING A RED/GREEN/BLUE COLOR OR TONE, OR ROLLING PICTURE**). If the picture has lines in it, or scrolls horizontally or vertically, troubleshoot for a Composite sync problem (see **Picture is missing a red/green/blue color or tone, or rolling picture** page 22-344).

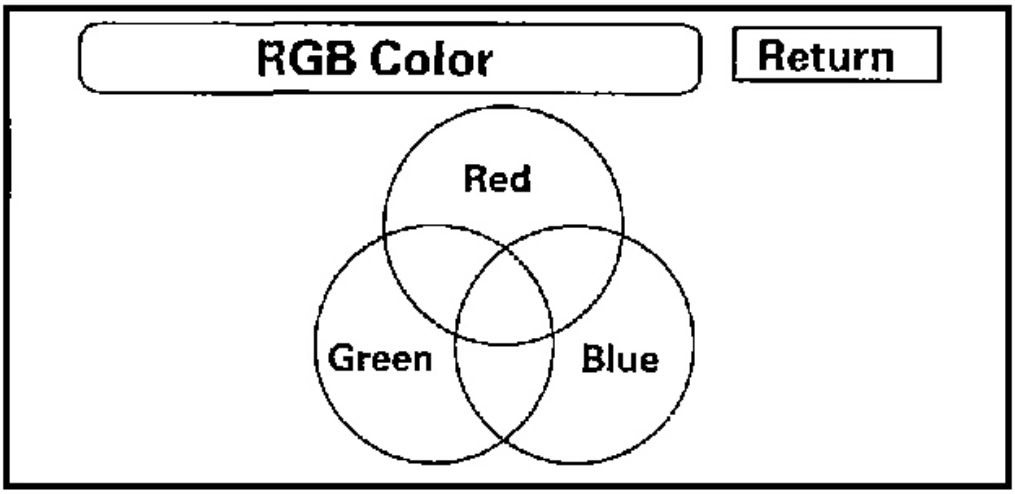

Fig. 62: RGB Color Display

Gray Tone

This screen diagnoses problems with contrast. You should be able to see the changes from bar to bar across the scale. It is normal for the 2 bars on either side to appear the same.

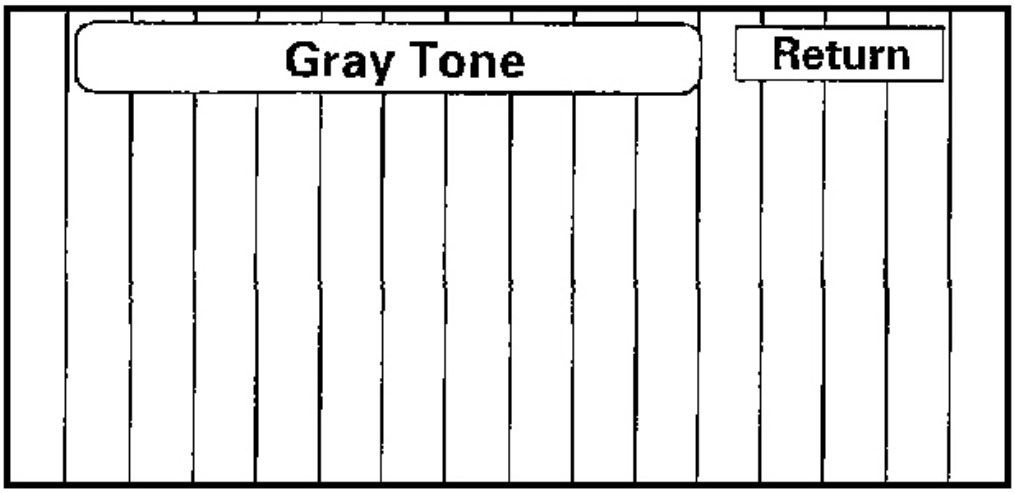

Fig. 63: Gray Tone Display

White Raster

The entire display must be shown in white.

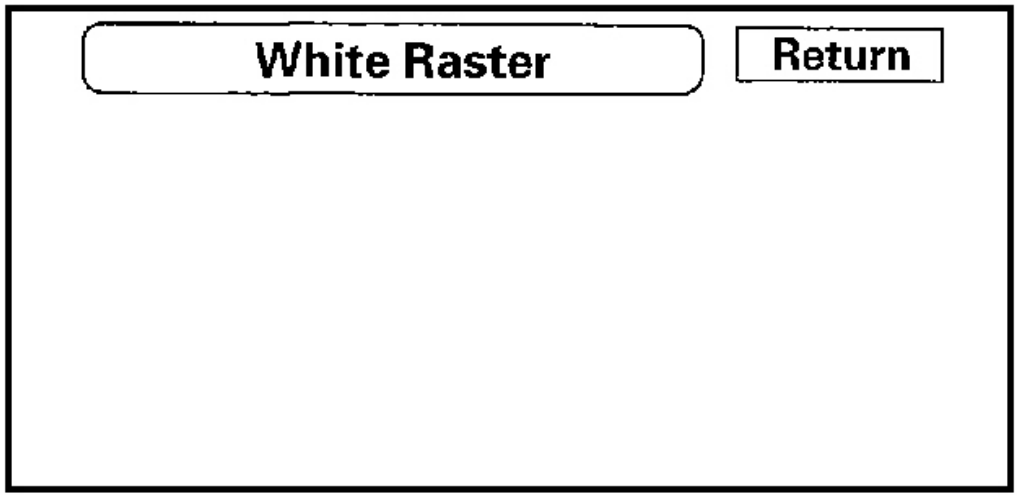

Fig. 64: White Raster Display

Black Raster

The entire display must be shown in black.

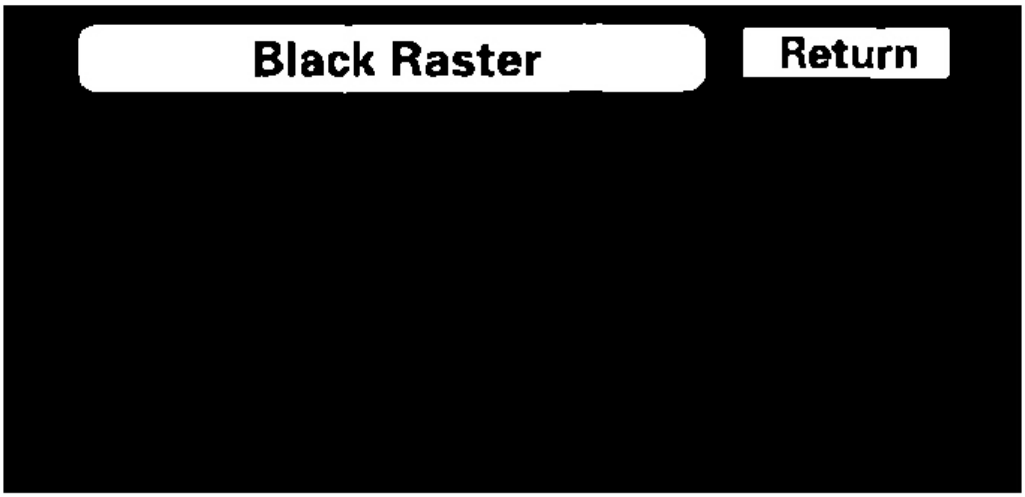

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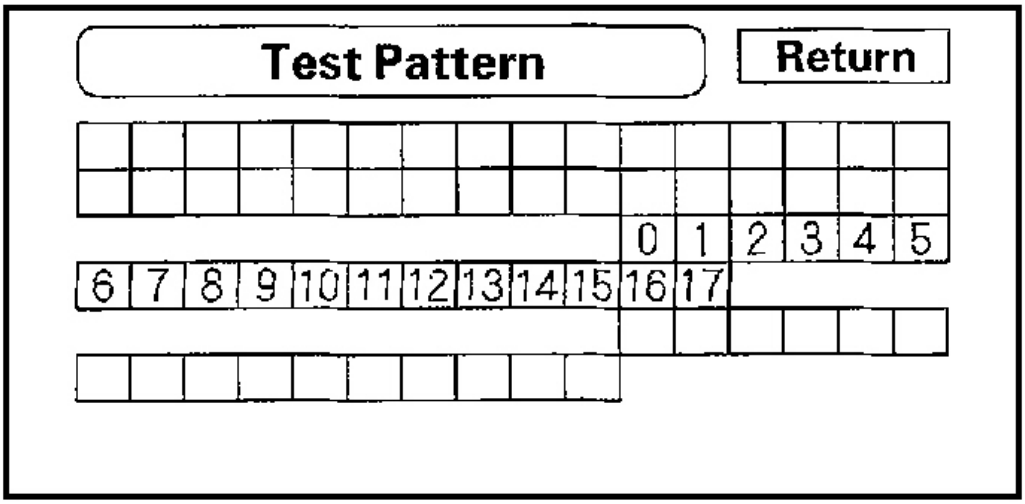
Fig. 65: Black Raster Display

Test Pattern

The chart below; shows the colors being used for the map and menu screens. This is for factory use only. To check the color signal use the "RGB Color" diagnostic.

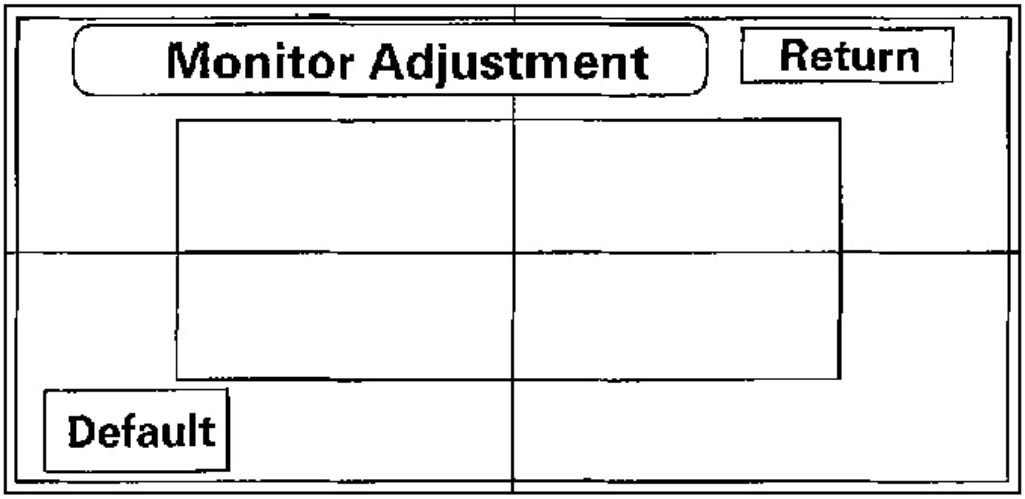


G01821274

Fig. 66: Test Pattern Display

Monitor Adjustment

This allows the navigation display to be centered. Use the joystick to move the picture up/down or left/right. It is unlikely that you will ever need to adjust the monitor position. The "Default" button will reset the display position to factory specifications.



G01821275

Fig. 67: Monitor Adjustment Display

Touch Panel Check

The panel touch sensing system consists of a touch sensitive resistive membrane covering the display. Contrary to other systems using infrared beams, the screen has to be physically "touched" to make it work. The display has capability of an almost infinite number of touch locations. However, to be compatible with earlier systems, the software only senses the locations shown on the diagnostic screen below. Every possible touch button position is shown on this diagnostic screen. Touching one of these areas should cause its color to reverse, and sound a "beep". If the touch locations are off slightly (by less than one touch location), use the "Touch Panel Calibration" diagnostic to re-align the touch "zones" with the screen image. If any areas of the screen either don't respond, or respond at some other location when touched, then replace the display unit.

NOTE: Unlike earlier screens that used infrared sensors, direct sunlight will not affect this test.

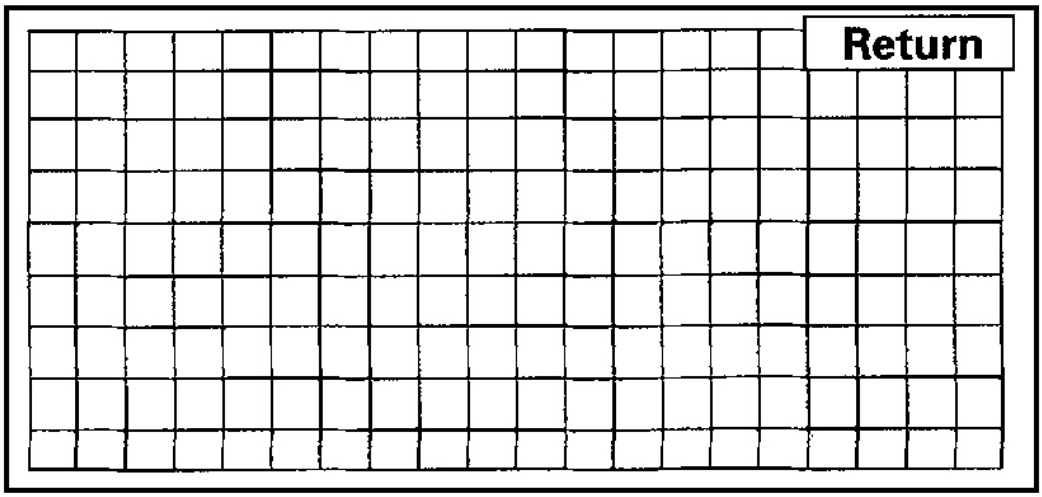


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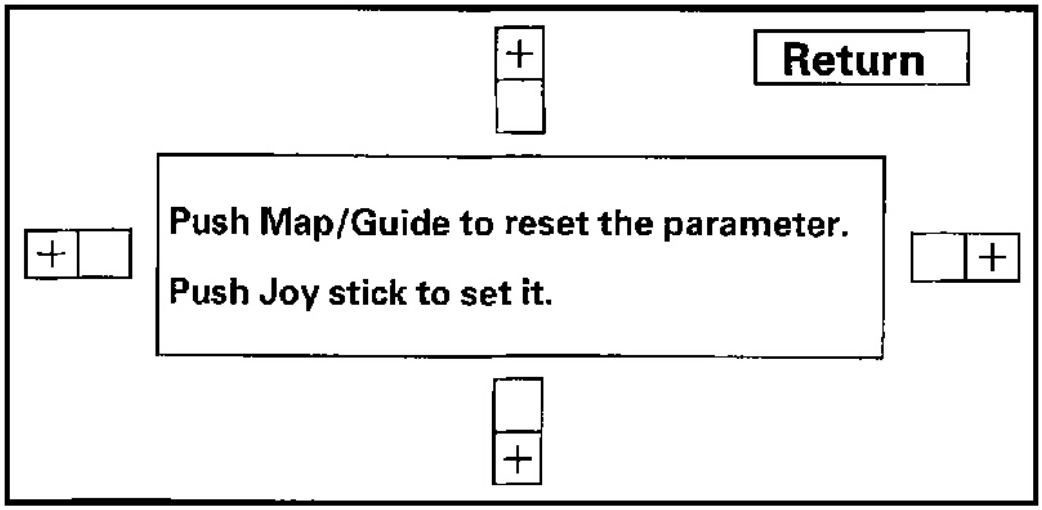
Fig. 68: Touch Panel Check Display

Touch Panel Calibration

Touch the four "+" item on the screen. If the screen responds at some other location when touched, adjust respond point to touched point using the joy stick.

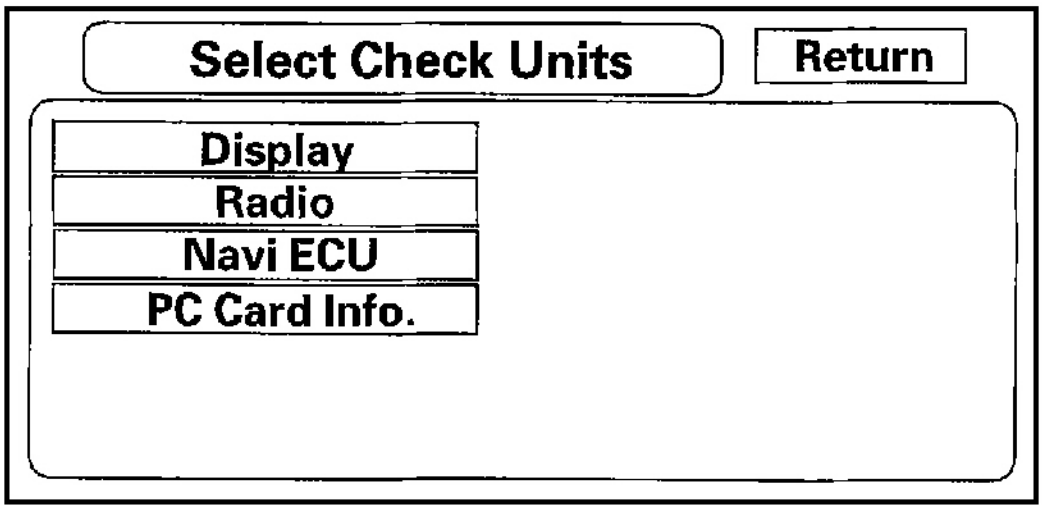


G01821277

Fig. 69: Touch Panel Calibration Display

Unit Check

Touch the item you want to check, and the check starts.



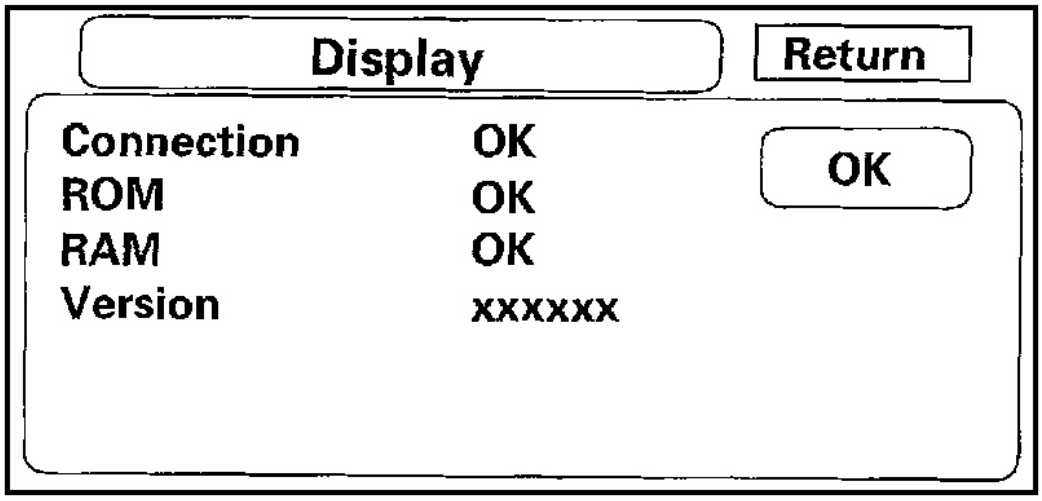
G01821278

Fig. 70: Select Check Units Display

Display

This diagnostic performs additional checks on the communication bus between the control unit, and the display. In addition, the internal display electronics components are check.

- When the connection is NG, first check for loose terminals at the navigation unit and the display unit connections. Next check for an open or short in the communication line between the navigation unit and the display unit. If the line is found to have an open or short, replace the affected shielded harness.
- If the ROM or RAM is NG, replace the display unit.
- The version represents the software version in the display, and is for factory use only.

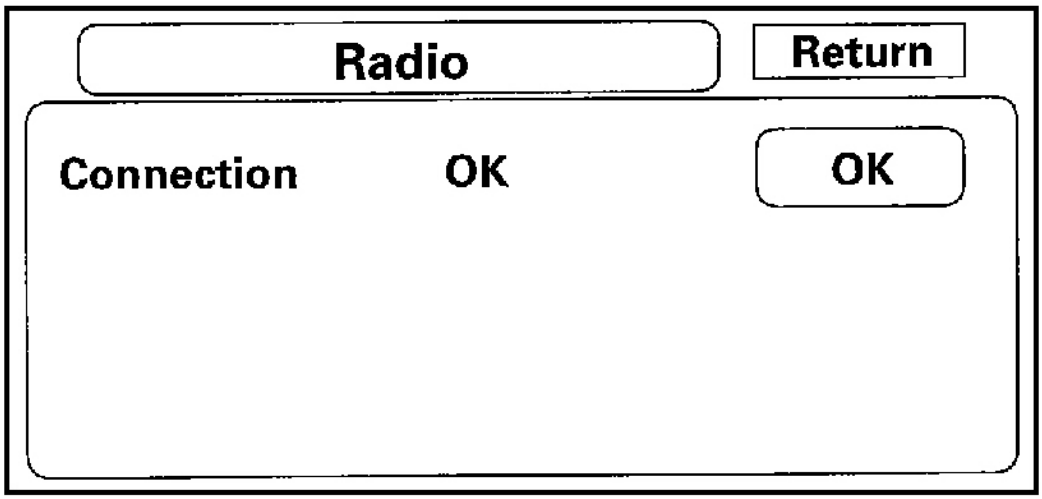


G01821279

Fig. 71: "Display" Display

Radio

If the NG is indicated, check for loose audio unit connector.



G01821280

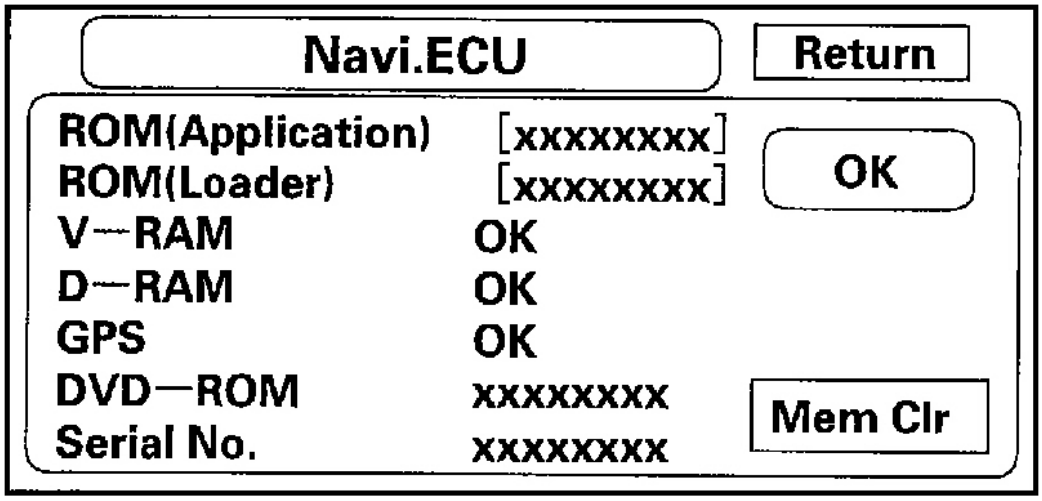
Fig. 72: Radio Display

Navi ECU

This screen diagnosis the navigation unit. When this diagnostic is initiated, there is a delay of up to a minute while it runs.

- "ROM (Application)", and "ROM (Loader)" are for factory use.
- If "V-RAM" or "D-RAM" is NG, then replace the navigation unit.
- If "GPS" indicates "NG (ANT)", then check the entire GPS Antenna wire from the navigation unit to the antenna. If the wire is crushed or damaged, try a known-good antenna. If this diagnostic reads OK, then order a new GPS antenna. If the diagnostic still reads NG (ANT), then replace the navigation unit.
- "DVD-ROM" represents the database version on the DVD. This information can also be found in Setup Screen 4 by touching "information".
- "Serial No." should be the same as the serial number found on the underside of the navigation unit. This number is needed to obtain the security code from the Interactive Network (IN) system.
- The "Mem Clr" button is for factory use and should not be used unless instructed by the factory.

  Touching this button will erase the customer's settings, personal information, GPS orbital data, and anything else stored in memory.

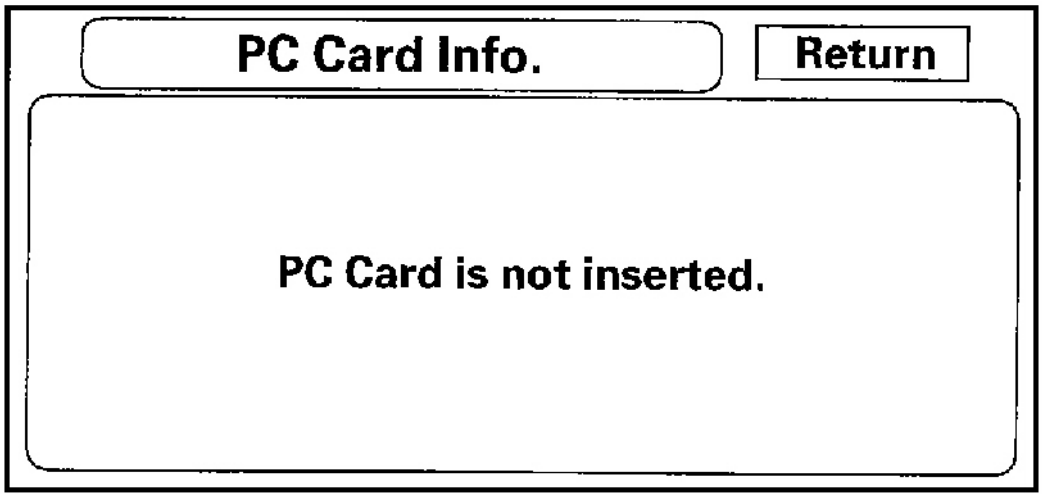


G01821281

Fig. 73: Navi ECU Display

PC Card info

Normally there is no PC Card in the PC slot, and the screen should say, "PC Card is not inserted".



G01821282

Fig. 74: PC Card Info Display (PC Card is not inserted)

If the factory instructs you to insert a card, then this screen displays the Manufacturer, and Product Name as shown in the following screen.

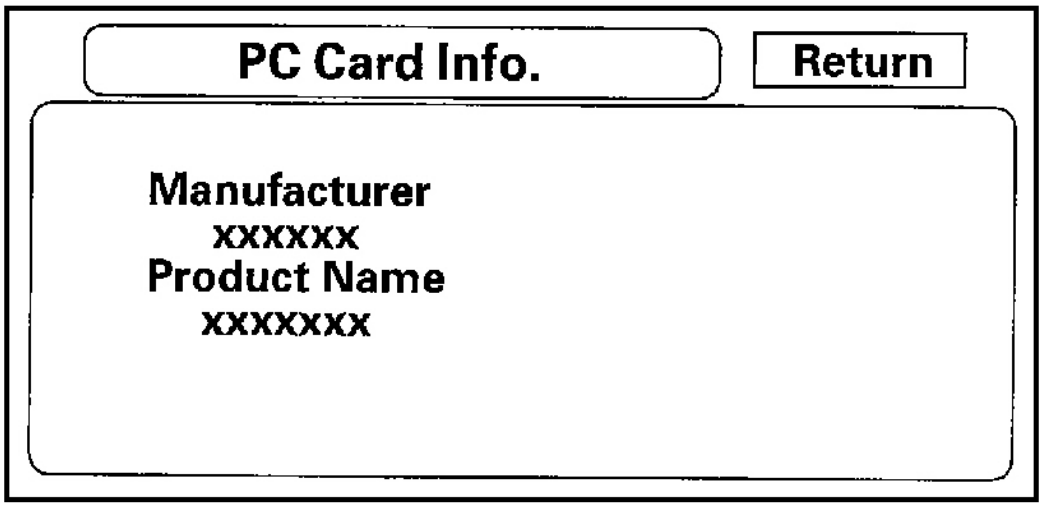


Fig. 75: PC Card Info Display (Manufacturer And Product Name)

Car Status

This screen is used to confirm that navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.

- CHG-(OBSELETE-NOT USED) Charge indicator (Pin 3 of C-Connector)

  a) OFF (0) when engine is off, or alternator is not charging

  b) ON (1) when engine is running

This signal was used by the previous DVD navigation system. If CHG was off, then the screen was shut off after 10 minutes of inactivity to minimize battery consumption.

- VSP-Vehicle Speed Pulse from PCM (Pin 6 of C-connector)

  a) OFF (0) when vehicle is not moving

b) ON (1) when vehicle is moving

The VSP comes from the PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor. As this scaling factor becomes more accurate, the "Level" gradually increases from 0 to 10.

- BACK-Reverse indication from taillight relay (Pin 5 of C-connector)

  a) OFF (0) when shift lever is in any position other than reverse

  b) ON (1) when shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse. This signal is needed because the Speed Pulse has no direction indication.

- CHG (CAN)-Charge indicator from PCM using F-CAN bus (Pin 8, 18 of navigation unit A-connector)

  a) OFF (0) when engine is off

  b) ON (1) when engine is running

This signal is obtained off of the F-CAN bus. For problems, see the service manual section for troubleshooting F-CAN. Diagnostic trouble codes (DTCs) for the F-CAN can be retrieved with a PGM Tester or a HDS (Honda Diagnostic System).

- ILL-Illumination Indication (Pin 5 of navigation unit A-connector)

  a) OFF (0) when parking lights, or headlights are off

  b) ON (1) when parking lights, or headlights are off

This signal is used by the navigation unit to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- DVD Lid-senses if DVD door is open

  a) (Close) when door is closed

  b) (Open) when door is open

The navigation unit has a micro switch to detect this. If open is indicated when the door is closed, replace the navigation unit.

- PC Card Lid-Senses if PC Card door is open

  a) (Close) when door is closed

b) (Open) when door is open

The navigation unit has a micro switch to detect this. If open is indicated when the door is slid shut, then replace the navigation unit. This slot is for insertion of PC Flash memory cards for gathering diagnostic information. This is for factory use only.

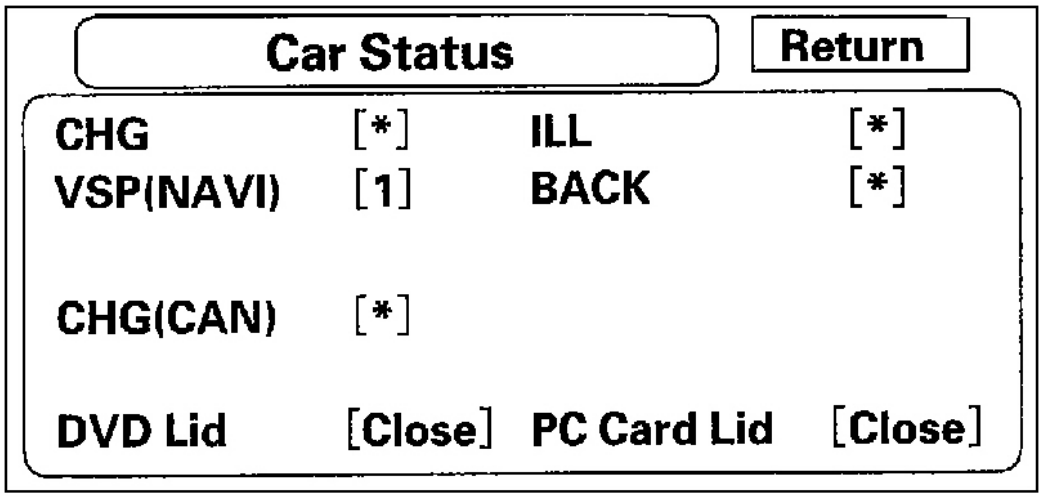


Fig. 76: Car Status Display

GPS Information

This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow numbers) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represents 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Naturally, nearby obstructions, like tall buildings will block satellites in that direction. That is why it is necessary to be in an open area to effectively troubleshoot GPS reception issues.

The satellite numbers shown on the diagram correspond to the "PRN" number in the "GPS Details" screen. There are always 24 "active" GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

NOTE: To use this screen for troubleshooting, the vehicle should be out side away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.

- The "Number of Satellites" box shows the number of acquired satellites (maximum of 12). It should

contain 3 or more icons. If not troubleshoot for "GPS icon is white" (see**GPS ICON IS WHITE**).

- The "Current Position" shows latitude, longitude, and elevation (in meters). If there are less than 3 satellites, the elevation can be grossly inaccurate.
- The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the customer in Setup screen 2 "Adjust Time Zone/Clock".

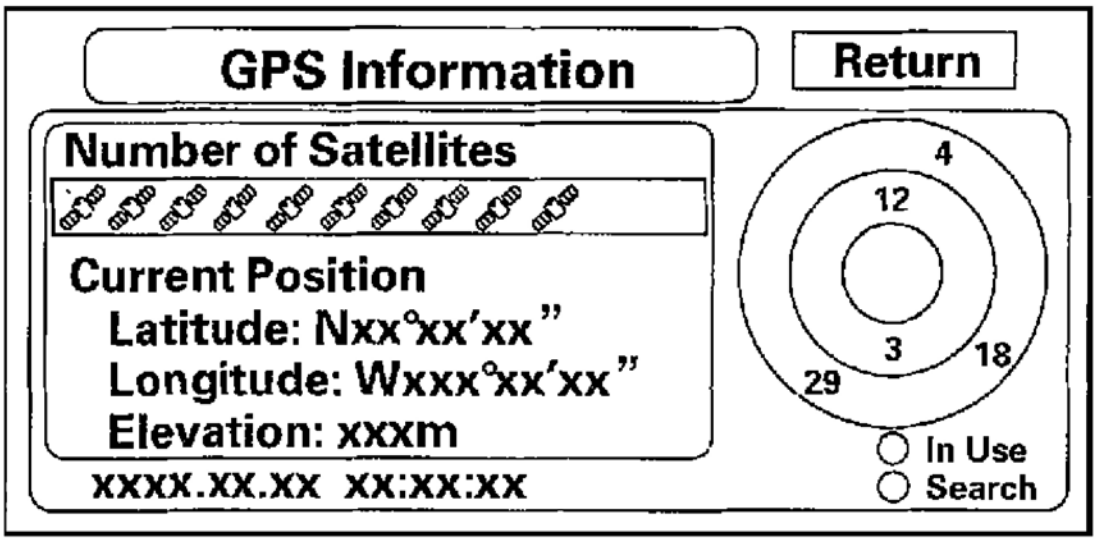


Fig. 77: GPS Information Display

GPS Detail

By pressing and holding the MENU button for 10 seconds, a GPS Detail screen is displayed. This screen displays real time incoming satellite positional data. Most of the information shown on this screen is for factory use, however some of the data can indicate partial GPS signal interference.

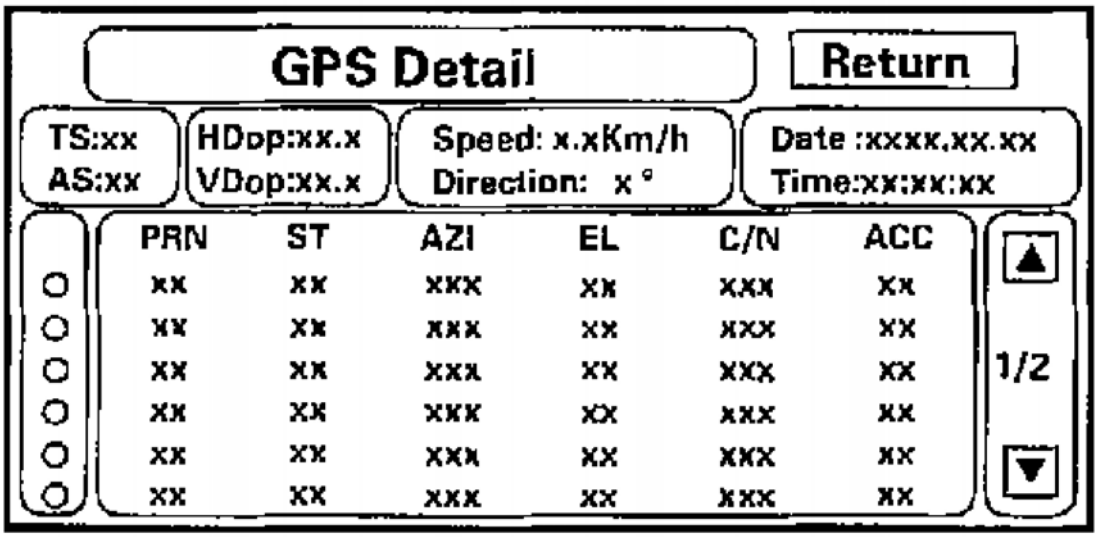


Fig. 78: GPS Detail Display

- The box TS/AS and HDop/VDop is for factory use.
- The Speed and Direction information is updated in real time when driving, and can be used to detect intermittent speed sensor problems.
- The Date/Time Information is the same as in Setup screen 2 "Adjust Time Zone/Clock".
- If the "3D" icon is shown above the yellow dots, this implies that at least 4 satellites are available for map positioning, and the "GPS" indicator on the map screen will be green. See the "Global Positioning System" detailed explanation in the "System Description" (see **SYSTEM DESCRIPTION**).
- If the row of data in the table below begins with a "yellow dot", the AZI and EL fields can be used to locate each satellite on the circular GPS diagram (see prior screen).

NOTE: The data shown in the "GPS Detail" screen is an example only.

The table of values shown on the screen below has the following columns:

Column	Description	Problem indication
Active	Active satellites (Yellow Dot)	If "3D" is missing, follow troubleshooting (see page 22-351).
PRN	The satellite ID number	See "GPS Information."
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, follow troubleshooting (see page 22-351).
AZI	Azimuth, the angle (0—360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Healthy signal is 49—52, no signal: 27—33
ACC	N/A	

G01821287

Fig. 79: GPS Detail Table

Yaw Rate

This diagnostic checks the yaw rate sensor in the control unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see the yaw rate sensor theory of operation under "System Description" (see **SYSTEM DESCRIPTION**)

- "Sensor" indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 bolts when stopped.
- "Offset" is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 volts when stopped.
- A "sensor" output voltage HIGHER than the "Offset" voltage indicates that the vehicle is turning to the right. A "sensor" output voltage LOWER than the "Offset" voltage indicates that the vehicle is turning to the left.
- The yaw rate offset, and sensor should both indicate about 2.500 volts when stopped. If either reads zero, or 5.000 volts, replace the navigation unit.
- The yaw rate offset and sensor should be within +/- 0.01 V of each other when stopped. The sensor value should change relative to the offset as the car is turned while driving. If not, replace the navigation unit.

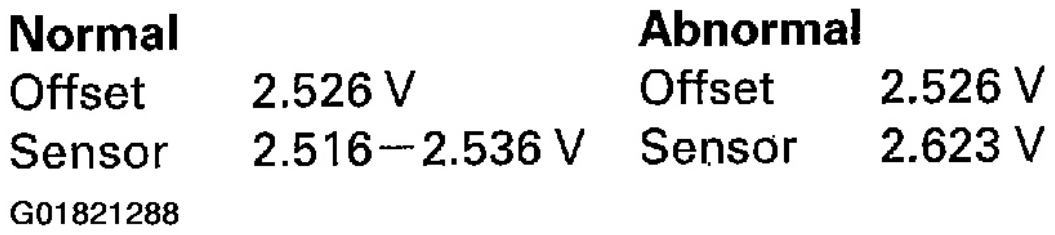


Fig. 80: Yaw Rate Display (Example: Car Stopped)

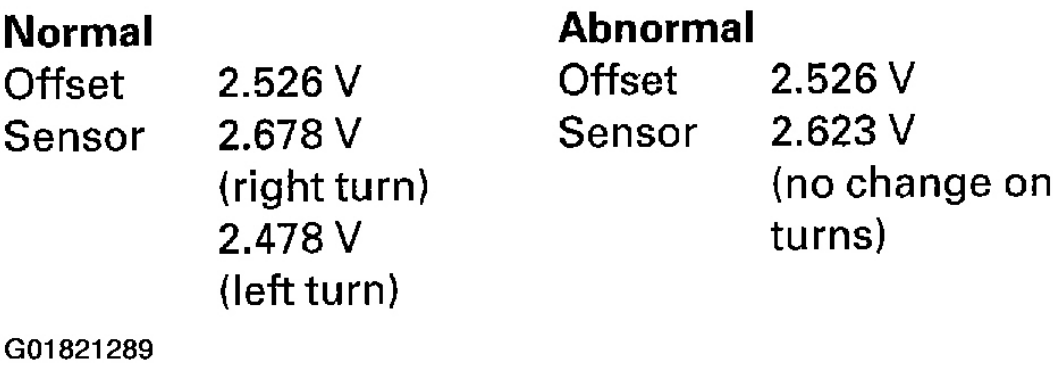
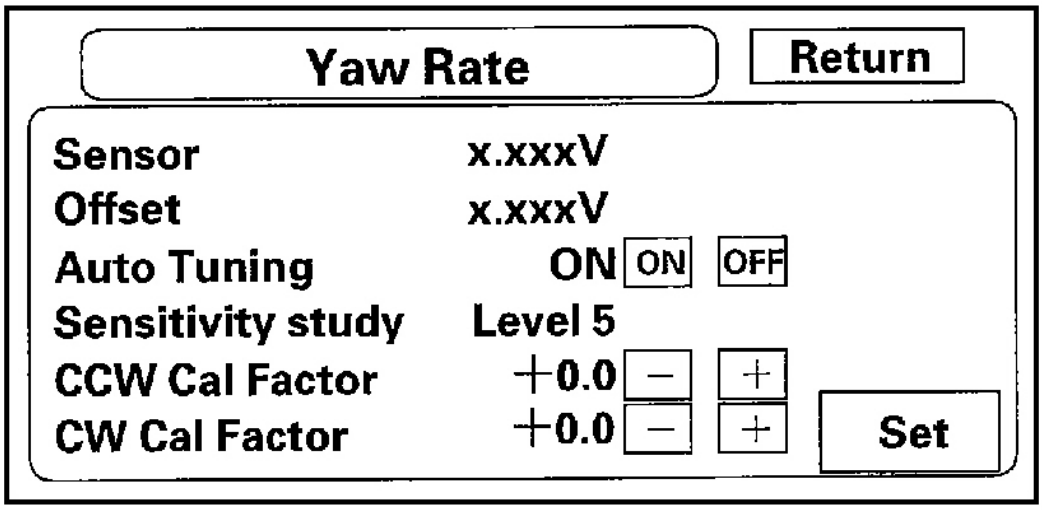


Fig. 81: Yaw Rate Display (Example: Car Turning)

- Auto tuning should always be on. If it is off, turn it on.
- "Sensitivity study" represents the status of the internal tuning function. At initialization, this value starts at 6 and increases to # 10 as the internal correction values become more accurate.
- The settings "CCW Cal Factor", "CW Cal Factor", and "Set" are for factory use only. THIS SHOULD NEVER BE USED.



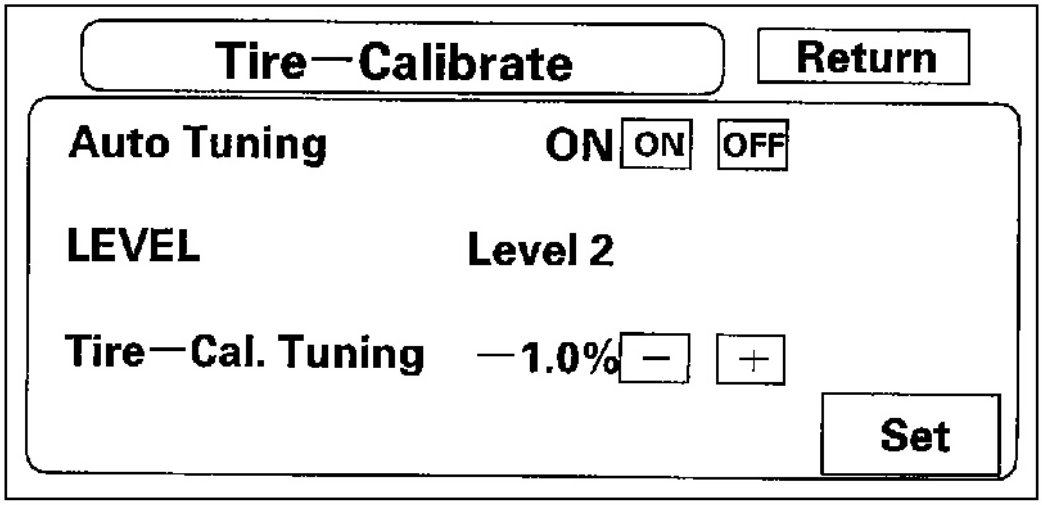
G01821290

Fig. 82: Yaw Rate Display

Tire Calibrate

As the vehicle moves, the navigation system receives speed pulses from the PCM. These pulses are converted using a conversion factor to a mph speed that moves the vehicle position (VP) on the map. The navigation system has an internal tuning function that generates and refines this factor based on actual driving. The "Level" indicates the status of the tuning. At navigation initialization, it begins at 0, and increases to 10 as the navigation system is used.

- The "Auto Tuning" is factory set to "ON", and should remain on.
- The "LEVEL" indicates the tuning status. If it is less than 10, the unit is still calibrating.
- The "Tire-Cal. Tuning" and the "Set" button should not be used. It is for factory use only.

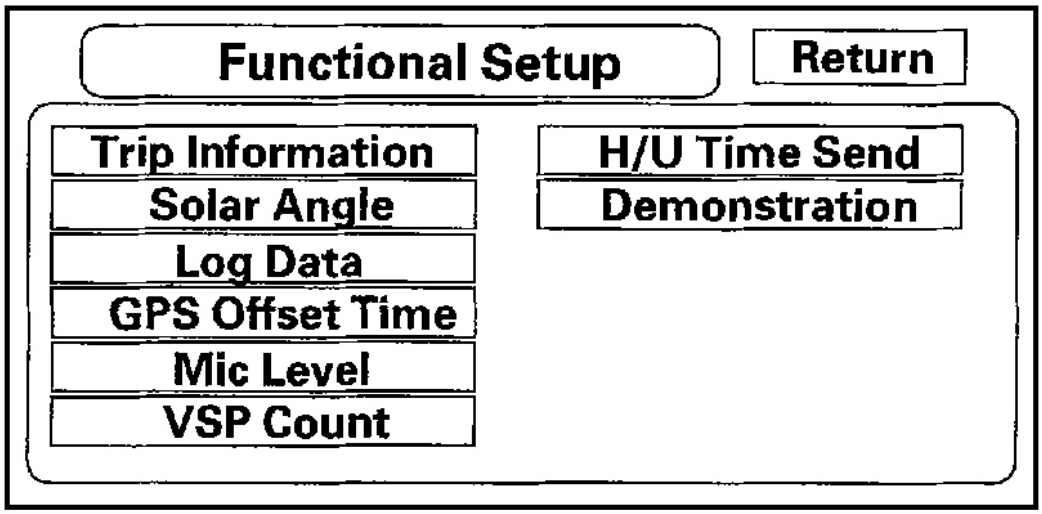


G01821291

Fig. 83: Tire Calibrate Display

Functional Setup

Touch the item you want to check.



G01821292

Fig. 84: Functional Setup Display

Trip Information

This screen shows current internal values used for trip computer calculations. They are for factory use only.

- The simulation "Start" button is for factory use.
- The "Data Save" button should always be on. It is for factory use only.

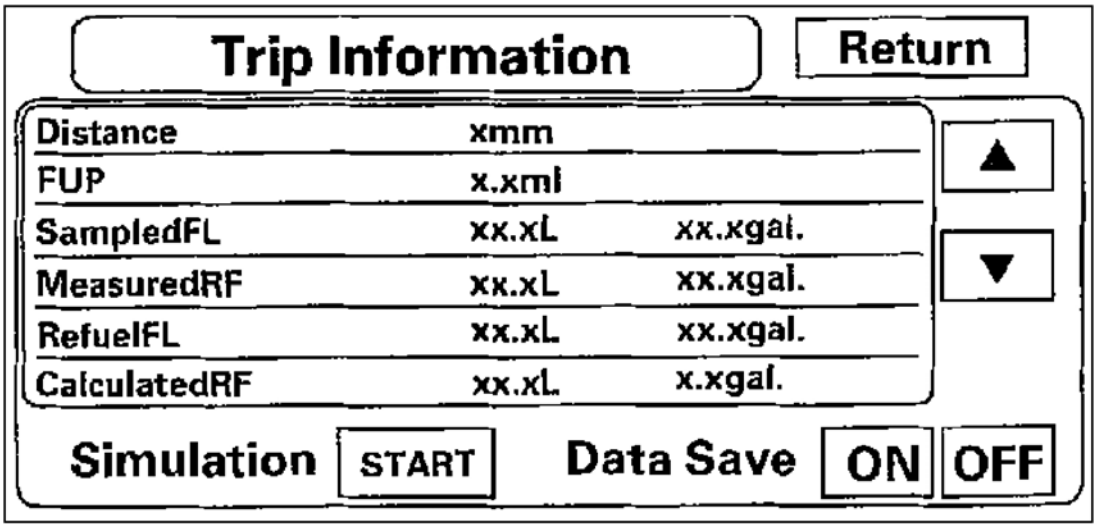


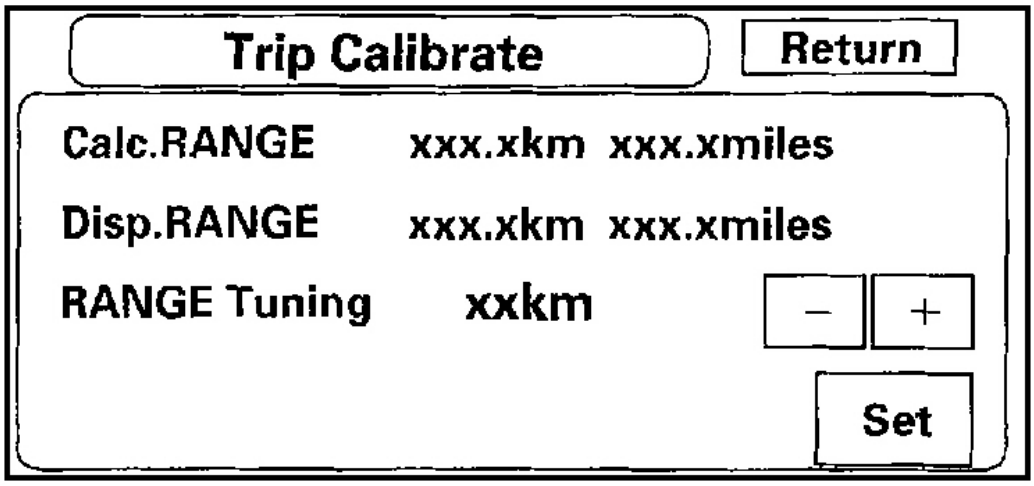
Fig. 85: Trip Information Display

Trip Calibrate

By holding down the MENU button while on the "Trip Information" screen, you will see the screen below. This screen allows you to adjust the vehicle range (distance to empty).

- "Calc. RANGE" is the calculated value.
- "Disp. RANGE" is the distance displayed on the trip computer "Range" field. If it reads "0", the vehicle will have enough fuel to travel approximately 20 miles.
- Range Tuning can be adjusted "+" or "-" to adjust the range to empty. It is recommended that this value not be changed.

NOTE: Setting the range offset too low (+10) could result in the vehicle running out of gas before the display reads "0". Make changes slowly when changing this value.



G01821294

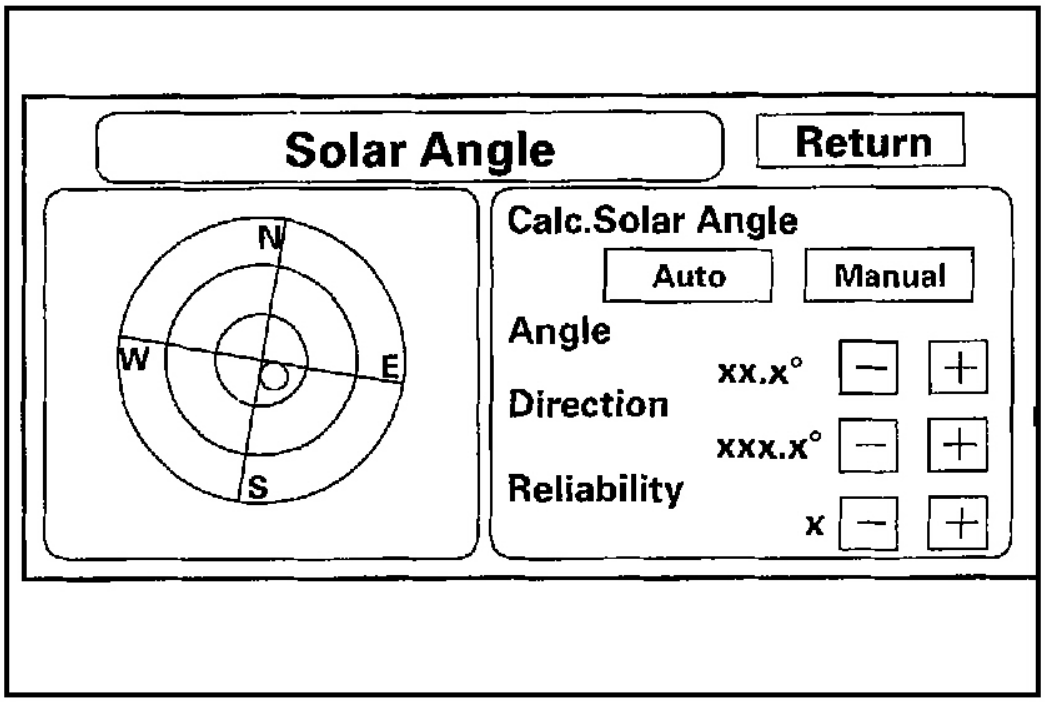
Fig. 86: Trip Calibrate Display

Solar Angle

NOTE: This model does not use this feature.

This screen is used to graphically display the sun's position as determined by GPS. The Navi System uses the sun's angle, along with the sunlight sensor to control the driver/passenger A/C air flow. The heat that must be removed by the A/C unit varies, depending on the angle of the sun entering the vehicle. This screen is for factory use only, and should not be adjusted.

- The screen shows a circular diagram of the sky oriented in the direction that the vehicle is pointing. During daylight hours a red dot is shown, representing the direction and elevation of the sun. The outer circle represents the horizon (0 degrees elevation). The middle circle is 30 degrees, the center circle is 60 degrees, and the very center is directly overhead (90 degrees).
- The "Auto button" should always be on (yellow).
- The "Angle", "Dir", and "Reliability" settings are used by the factory to simulate the sun's position for debugging this function.



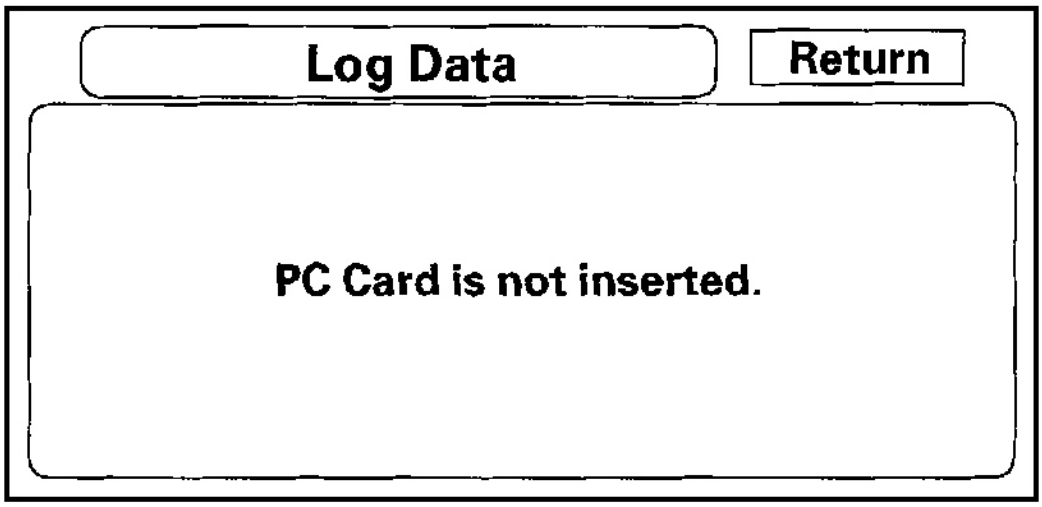
G01821295

Fig. 87: Solar Angle Display

Log Data

This screen allows the factory to select log data to troubleshoot navigation system issues.

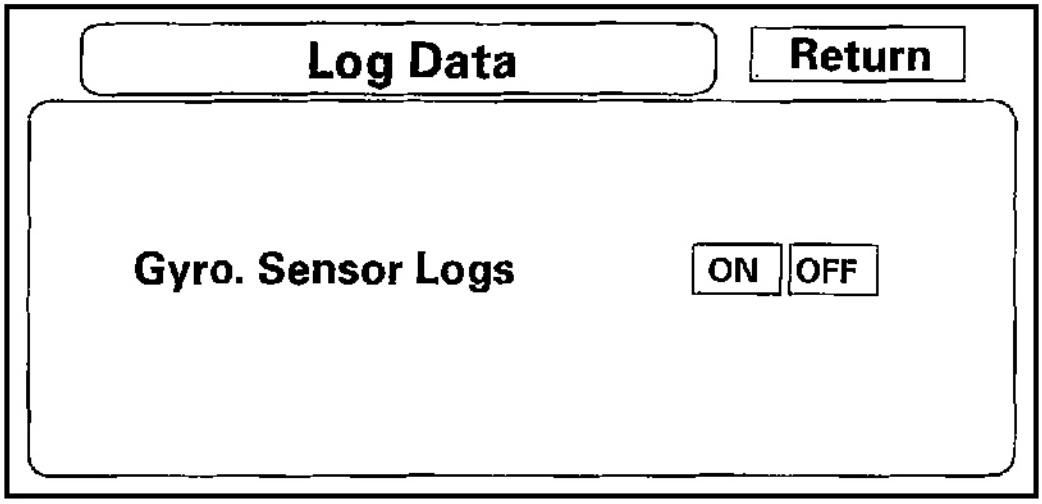
- Normally there is no card in the "PC Card Slot", and, the PC slot door should always be closed. The screen should look like below.



G01821296

Fig. 88: Log Data Display (PC Card Not Inserted)

- However, if the factory instructs you to insert a PC Card, insert it into the card slot (label side up), and then slide the PC Card door shut. If instructed by the factory, touch the "Gyro. Sensor Logs ON" button on the screen. Follow the factory procedure for gathering test data, and properly ending the test.



G01821297

Fig. 89: Log Data Display (PC Card Inserted)

GPS Offset Time

This screen is for factory use only. It allows adjustment of the GPS time. This display updates in real time.

- "GPS Time" is the time as received from the GPS satellites. It is in Greenwich Mean Time (GMT).
- "System Time" is the internal time used by the navigation unit to calculate your position on the map. It is also in Greenwich Mean Time (GMT).
- "Display Time" is the time shown on Setup screen 2 "Adjust Time Zone/Clock", and reflects any changes due to daylight savings time or time adjustments entered by the customer.
- Date, Hour, Minute, and "Set" buttons should not be used.

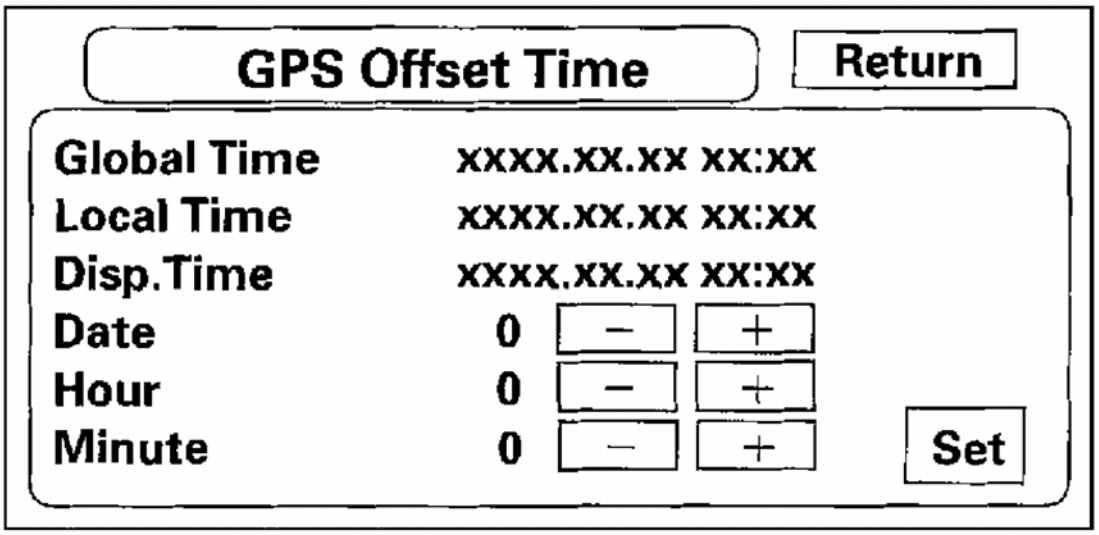


Fig. 90: GPS Offset Time Display

Mic Level

This diagnostic allows you to independently test the microphone and steering wheel TALK, and BACK buttons. The microphone and steering wheel buttons are used to activate the voice control system. The microphone is located near the map light in the ceiling. It is directional, and works best if the voice is coming from the drivers seat.

- Push the TALK button on the steering wheel, and in a normal voice say "testing". The TALK indicator on the screen should momentarily become green, and the text "Now Recording..." should appear in yellow. In addition, the Mic Level indicator should on the screen does not briefly become green, then check the wiring from the steering wheel talk button to the navigation unit. If there is no "Mic Level" movement when you speak, then you should check the wire running from the microphone to the control unit.
- Push the BACK button on the steering wheel. This should cause the Cancel indicator on the screen to momentarily become green. If it does not briefly change to green, then check the wiring from the steering

wheel BACK button to the navigation unit.

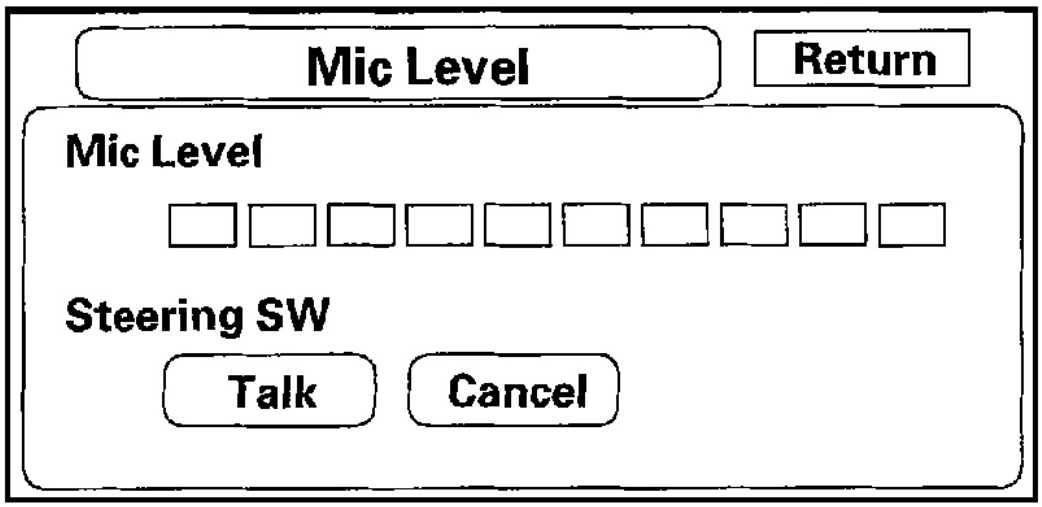
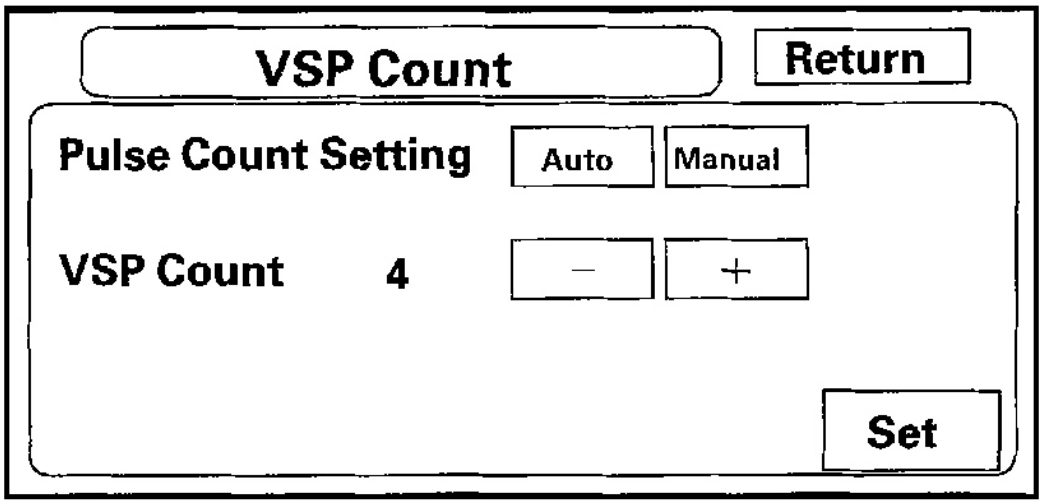


Fig. 91: Mic Level Display

VSP Count

This screen displays the number of pulses per revolution of the tire. This is for factory use only, and should not be changed.

- "Pulse Count Setting" should always be set to "Auto".
- "VSP Count" should always be "4", and should never be adjusted or set to any other value.



G01821300

Fig. 92: VSP Count Display

H/U Time Send

This screen determines whether to automatically send the navigation time to the audio-HVAC subdisplay. The audio-HVAC display panel connector C (10P) passes this information to the audio-HVAC subdisplay. The navigation time can be found in the Setup screen 2 "Adjust Time Zone/Clock" setting.

- "H/U Time Send" should always be set to "ON".

NOTE: Touching "Reset" on the Adjust Time Zone/Clock screen automatically resets this diagnostic function to "ON".

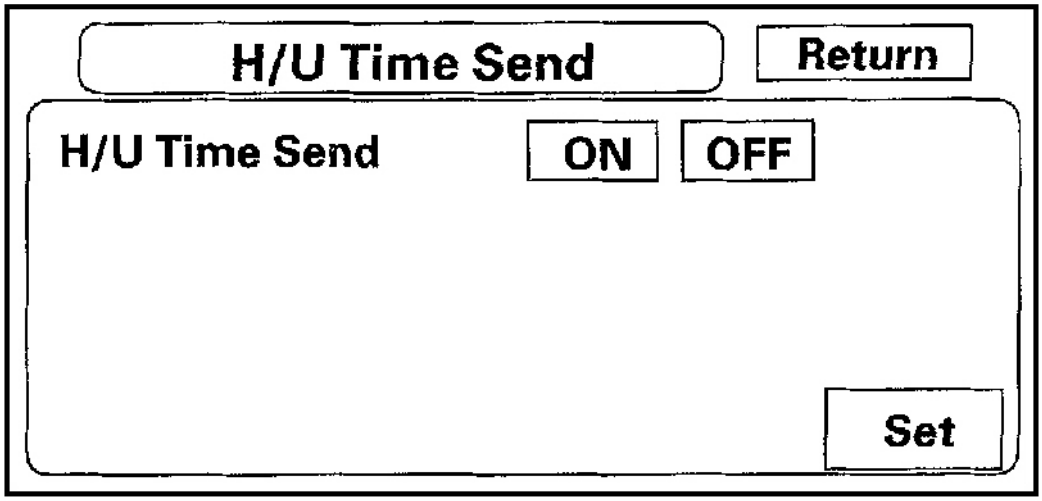


Fig. 93: H/U Time Send Display

Demonstration

This screen is for factory use only, and should always be set to "OFF". Occasionally this setting is turned "ON" when vehicles are being used at Auto Shows or similar events. Turning this feature on, allows the navigation system to automatically follow a route to a destination when the vehicle is stationary.

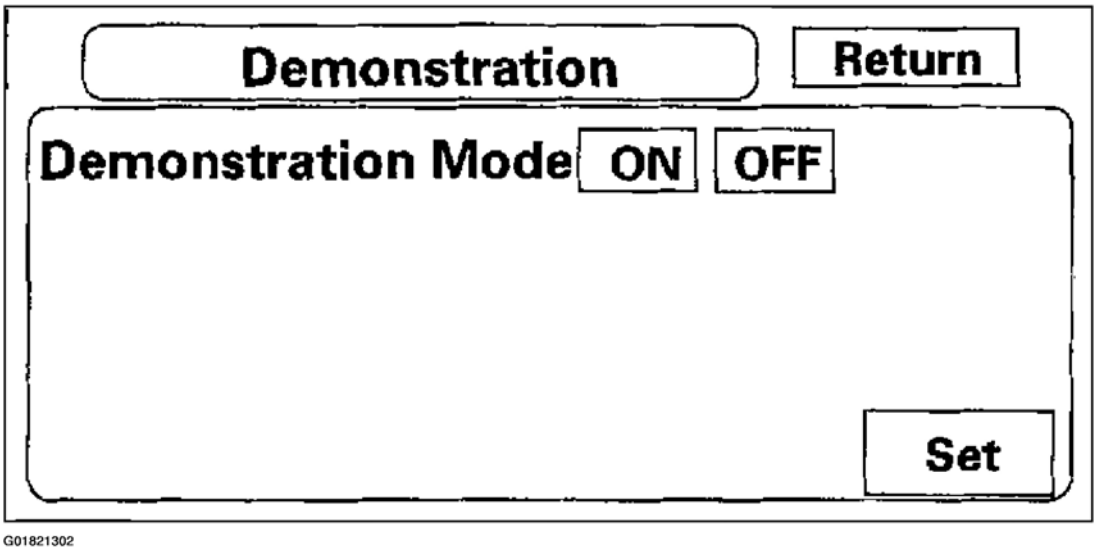


Fig. 94: Demonstration Display

Version

This screen displays the current version of the program, and allows the loading of a new version of the program either from a CD/DVD or from a PC card.

The D-Ram Program version should always be greater than or equal to the Disc Program version. The mapped database version is the date of the database on the DVD.

The Model code is 22H, and is for factory use only. This code is stored on a chip in the navigation unit. Therefore, every model has a unique part number for the navigation unit.

Do not use either of the load buttons, unless instructed to do so by the factory.

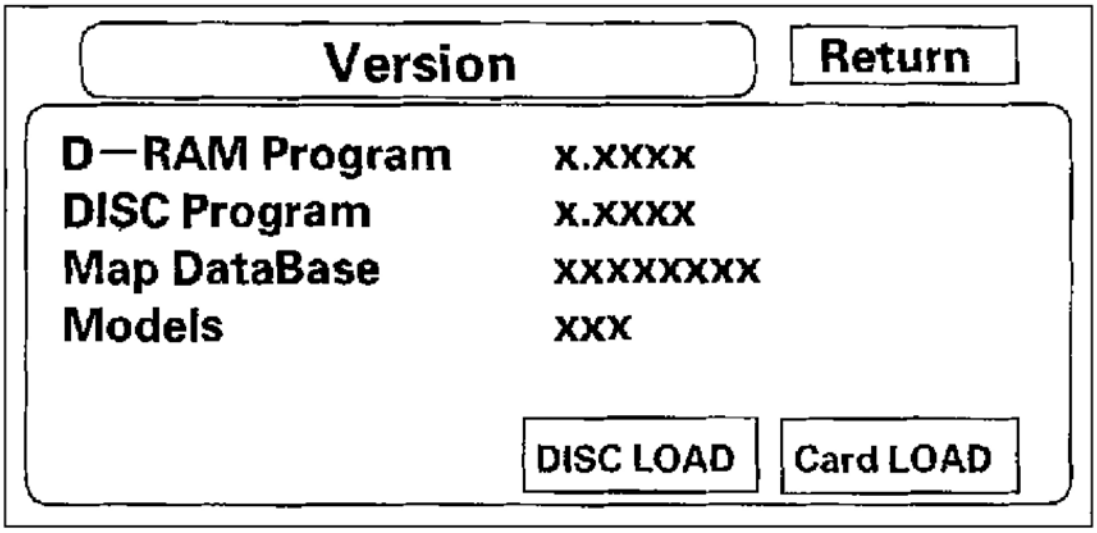


Fig. 95: Version Display

FORCED STARTING OF DISPLAY

1. Connect the SCS service connector (A) to the navigation service check connector (B) located behind the navigation unit.

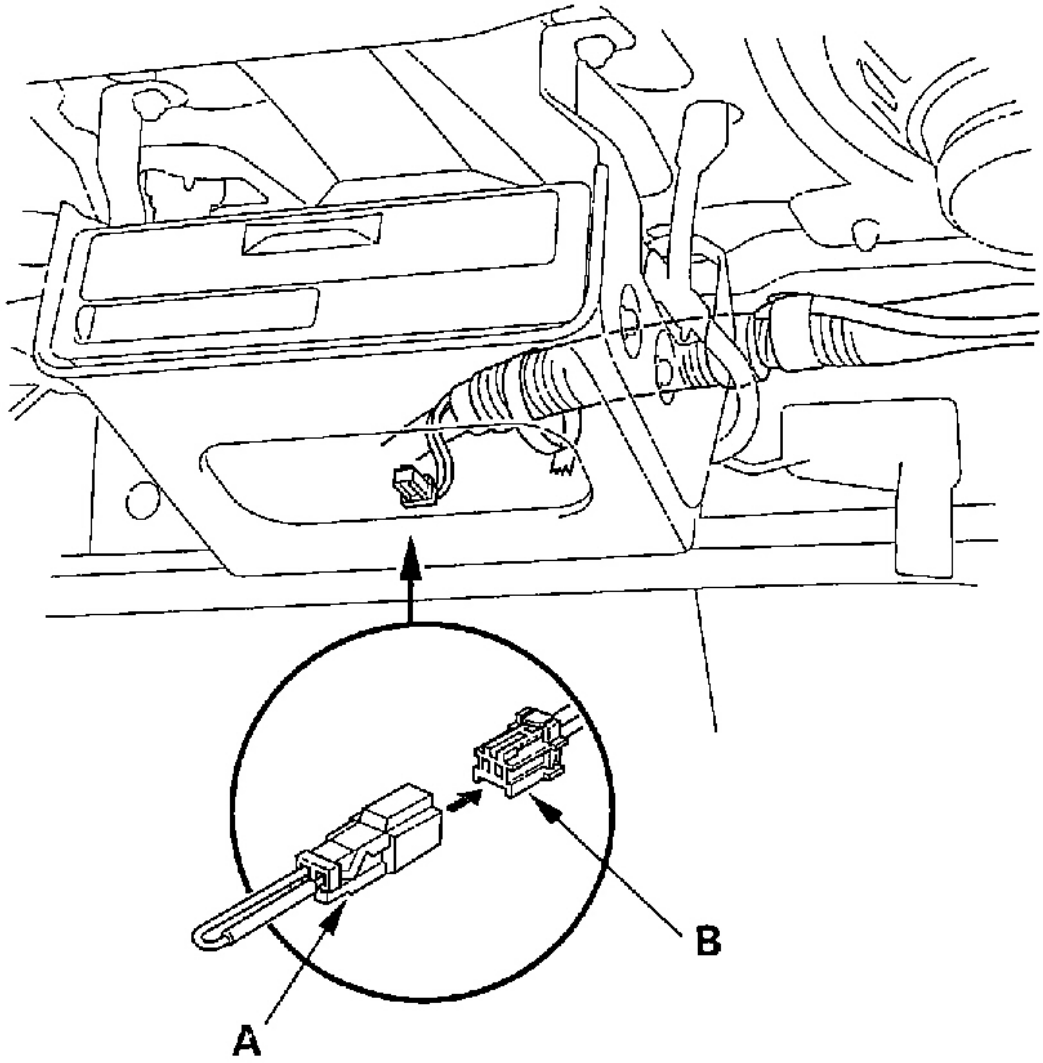


Fig. 96: Connecting The SCS Service Connector To The Navigation Service Check Connector Located Behind The Navigation Unit

2. Check that the diagnosis menu for the picture diagnosis starts up and then changes to the system link menu.

NOTE: If the display fails to the system link screen is not displayed, refer to no picture is displayed (see NO PICTURE IS DISPLAYED).

DVD-ROM REPLACEMENT

NOTE: When the DVD-ROM is re-inserted or replaced, a map match must be done (see AFTER SERVICING-MAP MATCHING).

1. Turn the ignition switch ON (II).
2. Open the front cover (A) of the navigation unit (B) located trunk room.

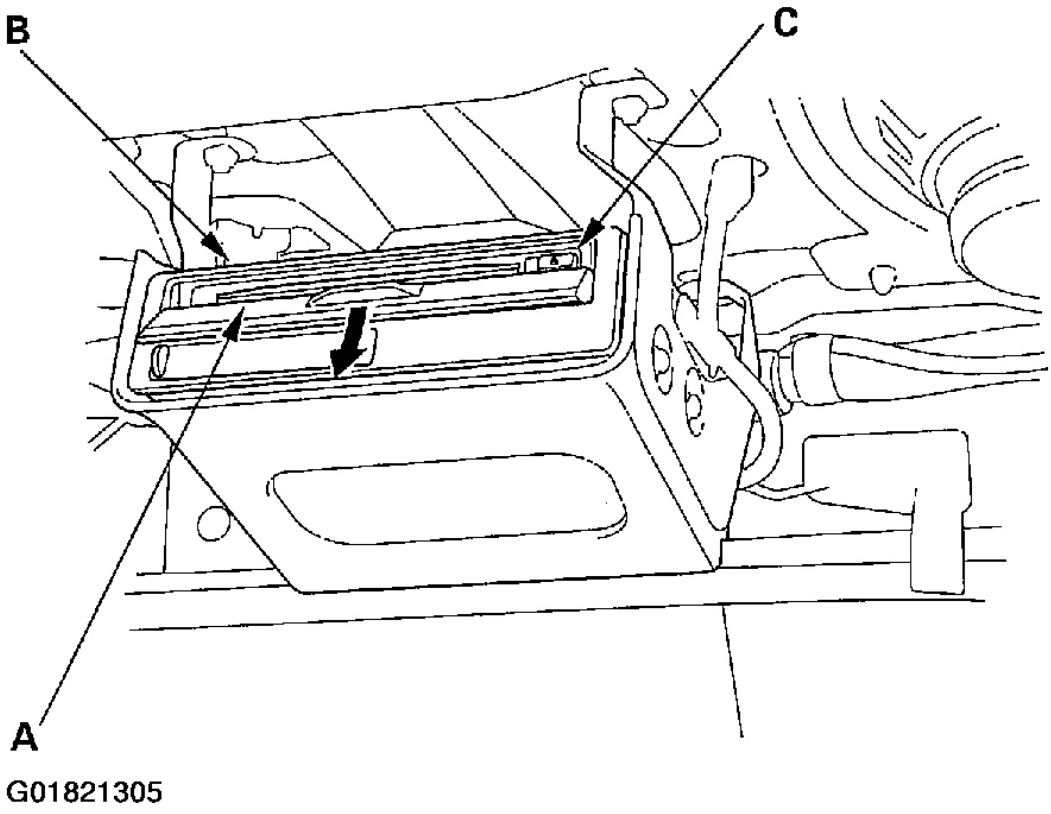


Fig. 97: Opening The Front Cover Of The Navigation Unit Located Trunk Room

3. Press the EJECT button (C).
4. Remove the DVD-ROM.
5. Insert the new DVD-ROM.
6. Close the front cover. Do not turn the ignition switch OFF, until data is down loaded to navigation unit.

NOTE: After servicing, the front cover must be closed. If you start up the navigation system with the front cover open, the display will indicate. "Navigation unit door is open or No DVD Disk installed. Please check system".

NAVIGATION UNIT REMOVAL/INSTALLATION

1. Remove the four screws (A) from the bracket (B) located the trunk room.

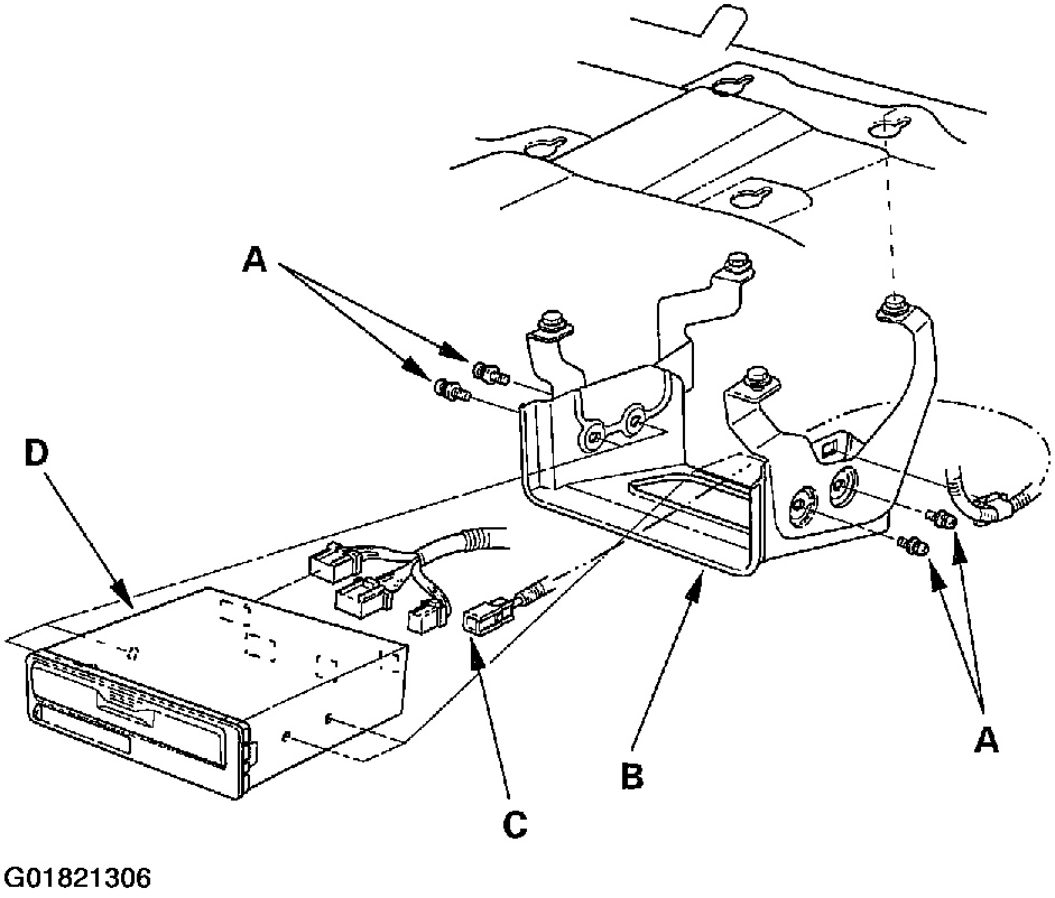


Fig. 98: Remove The Four Screws From The Bracket Located The Trunk Room

2. Disconnect the navigation unit connectors (C).
3. Remove the navigation unit (D).
4. Install in the reverse order of removal.

GPS ANTENNA REMOVAL/INSTALLATION

1. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).
2. Disconnect the GPS antenna connector (A).

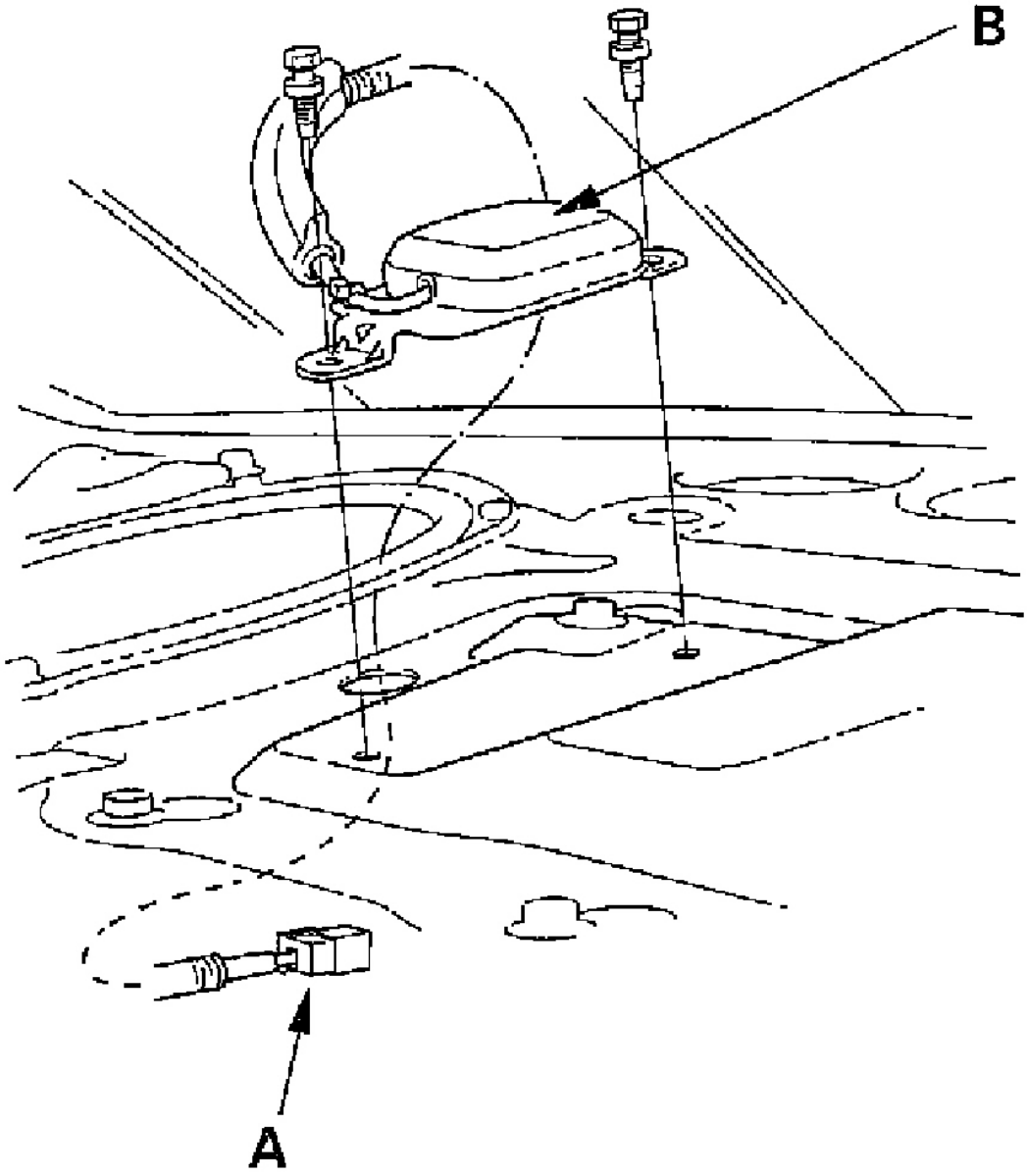


Fig. 99: Removing The GPS Antenna

3. Remove the GPS antenna (B).
4. Install in the reverse order of removal.

VOICE CONTROL SWITCH REMOVAL/INSTALLATION

1. Remove the voice control switch cover (A) from left side of the steering wheel.

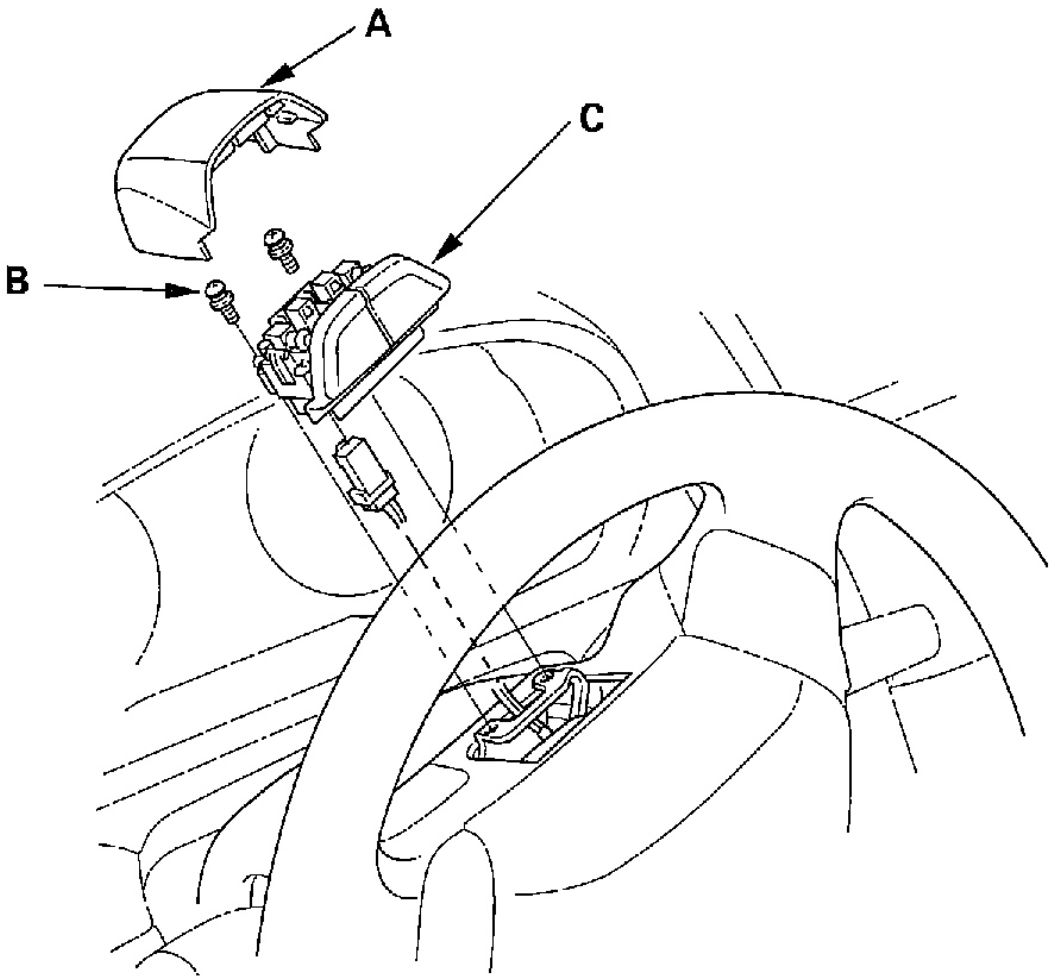


Fig. 100: Removing The Voice Control Switch

2. Remove the two screws (B) from the voice control switch (C), then remove the voice control switch.
3. Disconnect the voice control switch connector.
4. Install in the reverse order of removal.