APPENDIX

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INTRODUCTION

This Group consists of five major diagnostic sections for electrical problem troubleshooting.

- · Schematic diagrams
- Component location indexes
- · Harness layouts
- Component location
- Connector configurations

The starting point of each system section is the schematic diagram, these diagrams show how all the components work together, such as electrical current paths from power source to ground (via electrical load), switch connections at each positions, and other related circuit functions.

It is important to fully understand how a circuit work prior to troubleshooting and diagnosis.



An Example of Schematic Diagram

COMPONENT LOCATION INDEXES

When you want to locate the schematic components on the vehicle, use the Component Location Index which follows each schematic. A Component Location Index lists major components, connectors, grounds and their physical location and page figure reference.

	Location reference-page	
Components		
FCM (CO1-2 \sim CO1-3)	WS-182	
ECM control relay (C02)	WS-182	
Ignition coil (C14)	WS-183	
Ignition switch (M24)	WS-189	
Noise filter (Cl 1)	WS-182	
Power transistor (Cl 3)	WS-183	
Connector		
MC01	WS-201	
Ground		
G09	WS-204	

Where connectors are listed, the number of cavities are provided. This figure indicates the total number of cavities in the connector, regardless of how many are actually used. This information along with housing color will be useful for you to identify connectors on the vehicle. Almost all components, connectors, grounds or splices shown on a schematic can be pinpointed visually by using the Component Location Illustrations.

HARNESS LAYOUTS

Harness layouts show the routing of the major wiring harnesses and the in-line connectors between the major harnesses. These layouts will make electrical troubleshooting easier.



An example of Harness Layouts-Engine Harness

COMPONENT LOCATIONS

Component Locations give easy access to find the schematic components on the vehicle shown in the Component Location Index. Where connectors are listed, the total number of cavities, how many are actually used, is provided to help identify connectors on the vehicle.

CONNECTOR CONFIGURATIONS

This section shows the cavity or terminal locations in all the multi-pin connectors shown in the schematic diagrams. It is helpful for you to locate check points, together with the wire colors and terminal numbers in the schematic. The configuration drawings show the connector views as seen from a component after the harness connector has been disconnected. When more than on connector is connected to a component, the connectors are all shown together. Both halves of in line connectors are shown together.



SYMBOLS

The symbols and the abbreviations explained in this section are used throughout the manual.

SYMBOLS IN SCHEMATIC

COMPONENTS



A solid line means the entire component is shown.



A broken line indicates only part of the component is shown.

STOP LAMP SWITCH Closed with pedal deoressed

The name of the component appears next to its upper right corner.

depressed Notes about component function follow its name.

CONNECTORS



Each connector is numbered for reference in the component location index.

The index also lists the total number of cavities and the color the connector. Wires may not be used in all cavities.



This means the connector connects directly to the component.

, This indicates the connector connects to a lead (pigtail), wired directly to the component.

This indicates a screw terminal on the component.

DIODE



This diode allows current to flow only in the direction of the arrow.

FUSE AND FUSIBLE LINK



CIRCUIT BREAKER



Basically a reusable fuse, a circuit breaker will heat and open if *too* much current flows through it. Some units automatically reset when cool, others must be manually reset.



SWITCHES



These switches move together: a dashed line shows a mechani-cal connection between them.

RELAYS



This is a relay shown with no current flowing through its coil. When a current flows through coil, contact will toggle.





INDICATOR

This indicates seat belt warning indicator continues to other indicaters within instrument cluster.



WIRE COLOR ABBREVIATIONS

The following abbreviations are used to identify wire colors in the circuit schematics:

Symbol	Color of wire	Symbol	Color of wire
BLK	Black	LT GRN	Light Green
BLU	Blue	ORN	Orange
BRN	Brown	PNK	Pink
GRN	Green	RED	Red
GRY	Gray	wнт	White
LT BLU	Light Blue	YEL	Yellow

CONNECTOR CLASSIFICATION SYMBOLS

Electrical wiring connectors are classified according to the wiring parts in the Harness Layout.

Harness name	Location	Symbol
Engine and its extension harness	Engine compartment	E
Main and its extension harness	Passenger compartment	м
Control (ECM) harness	Engine compartment	С
T/A (TCM) and its extension harness	Engine compartment	т
Floor and Rear floor, Trunk lid (Tail gate), Rear and their extension harnesses	Passenger compartment/ Luggage compartment	R
Crash pad, Instrument and their extension harnesses	Under crash pad	1
Door and its extension harness	Door	D

A connector identification symbol consists of a wiring harness location classification symbol corresponding to each other wiring harness location and number peculiar to the connector.

These connector locations can be found in the WIRING HARNESS LAYOUT.



Number peculiar to sub-connector (Serial Number)
Number peculiar to main connector (Serial Number)
Symbol indicating wiring harness (Engine wiring harness)

NOTE

Connectors which connect each wiring harness are represented by the following symbols. For example:



TROUBLESHOOTING INSTRUCTIONS TROUBLESHOOTING PROCEDURES

The following five-step troubleshooting procedure is recommended.

Step 1. Verify the customer complaints

Turn on all the components in the problem circuit **to** check the accuracy of the customer complaints. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the probable causes.

Step 2. Read and analyze the schematic diagram

Locate the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power source through the system components to ground. If you do not understand how the circuit should work, read the circuit operation text. Also check other circuits that share with the problem circuit. The name of circuits that share the same fuse, ground, or switch, for example, are referred to on each diagrams. Try to operate any shared circuits you did not check in step 1. If the shared circuit works, the shared wiring is okay, and the cause must be within the wiring used only by the problem circuit. If several circuit fails at the same time, the fuse or ground is a likely cause.

Step 3. Inspect the circuit/component with the problem isolated

Make a circuit test to check the diagnosis you made in step 2. Remember that a logical, simple procedure is the key to efficient troubleshooting. Narrow down the probable causes using the Troubleshooting Hints, System Diagnosis Charts. Test for the most likely cause of failure first. try to make tests at points that are easily accessible.

Step 4. Repair the problem

Once the problem is found, make the necessary repairs.

Step 5. Make sure the circuit works

Repeat the system check to be sure you have repaired the problem. If the problem was a blown fuse, be sure to test all of the circuits on that fuse.

TROUBLESHOOTING EQUIPMENTS

Voltmeter And Test Lamp

Use a test lamp or a voltmeter on circuits without solid-state units, use a test lamp to check for voltage. A test lamp is made up of 12-volt bulb with a pair of leads attached. After grounding one lead to various points along the circuit where voltage should be present. When the bulb goes on, there is voltage at the point being tested.

CAUTION:

A number of circuits include solid-state modules such as Electronic Control Unit (ECU) used with computer command control injection. Voltage in these circuits should be tested only with a 10-megohm or higher impedance digital voltmeter. Never use a test lamp on circuits that contain solid-state units. Damage to the units may result.

A voltmeter can be used in place of a test lamp. While a test lamp shows whether the voltage is present or not, a voltmeter indicates how much voltage there is.

Self-Powered Test Lamp And Ohmmeter

Use a self-powered test lamp or a ohmmeter to check for continuity. Self-powered test lamp is made of a bulb, battery and two leads and is used only on an unpowered circuit. If the leads are touched together, the lamp will go on. Prior to checking the points, first disconnect the battery ground cable or remove the fuse which feeds the circuit you are working on.

CAUTION:

Never use a self-powered test lamp on circuits that contain solidstate units. Damage to these units may result.

An ohmmeter can be used in place of a self-powered test lamp. The ohmmeter shows how much resistance there is between two points along a circuit. Low resistance means good continuity.

Circuits which include any solid-state devices should be tested only with a 10-megohm or higher impedance digital multimeter. When measuring resistance with a digital multimeter, battery negative terminal should be disconnected. Otherwise, there may incorrect readings. Diodes and solid-state devices in a circuit can make an ohmmeter give a false reading. To find out if a component is affecting a measurement, take one reading, reverse the leads and take a second reading. If the readings differ, the solid-state device is affecting the measurement.





Jumper Wire With Fuse

Use a jumper wire with fuse to by pass an open circuit. A jumper wire is made up of an in-line fuse holder connected to a set of test leads. This tool is available with small clamp connectors providing adaption to most connectors without damage.

CAUTION:

Do not use a fuse with a higher rating then the specified fuse that protests the circuit being tested. Do not use this tool in any situation to substitute for input or output at the solid-state control module, such as ECU, TCU, etc.

Short Finder

Short finder is available to locate short to ground. The short finder creates a pulsing magnetic field in the shorted circuit and shows you the location of the short through body trim or sheet metal.



TROUBLESHOOTING TEST

Testing For Voltage

This test measures voltage in a circuit. When testing for voltage at a connector, you do not have to separate the two halves of the connector. Instead, probe the connector from the back. Always check both sides of the connector because dirt and corrosion between its contact surfaces can cause electrical problems.

- 1. Connect one lead of a test lamp or voltmeter to a ground. If you are using a voltmeter, be sure it is the voltmeter's negative lead test you have connected to ground.
- 2. Connect the other lead of the test lamp or voltmeter to a selected test point (connector or terminal).
- 3. If the test lamp glows, there is voltage present. If you are using
- a voltmeter, note the voltage reading. A loss of more than 1 volt from specifications indicates a problem.



1. Disconnect the battery negative terminal.

2. Connect one lead of a self-powered test lamp or ohmmeter to one end of the part of the circuit you wish to test. If you are using an ohmmeter, hold the leads together and adjust the ohmmeter to read zero ohms.

3. Connect the other lead to the other end.

4. If the self-powered test lamp glows, there is continuity. If you are using an ohmmeter, low or zero resistance means good continuity.

Testing For Short To Ground

1. Remove the blown fuse and disconnect the battery and load.

3. Connect one lead of a self-powered test lamp or an ohmmeter to the fuse terminal on the load side.

3. Connect the other lead to a ground.

4. Beginning near the fuse block move the harness from side to side. Continue this point (about six inches apart) while watching the selfpowered test lamp or ohmmeter.

5. When the self-powered test lamp glows, or ohmmeter registers, there is a short to ground in the wiring near that point.



Testing For A Short With A Short Finder

- 1. Remove the blown fuse. Leave the battery connected.
- 2. Connect the short finder across the fuse terminals.
- 3. Close all switches in series in the circuit you're testing.
- 4. Turn on the short circuit locator. It sends pulses of current to the short.

This creates a pulsing magnetic field around the wiring between the fuse box and the short.

5. Beginning at the fuse box, slowly move the short finder along the circuit wiring. The meter will show current pulses through sheet metal and body trim. As long as the meter is between the fuse and the short, the needle with move with each current pulse. One you move the meter past the point of the short, the needle will stop moving. Check around this area to locate the cause of the short circuit.



FUSE AND RELAY INFORMATION DASH FUSE BOX

Layout



Fuse	Amperages	Circuits
1	10A	SRS warning lamp
2	10A	Hazard warning
3	15A	Cruise controls, stop lamps
4	<u>10A</u>	TCM, audio, power antenna, clock
5	15A	Power door lock, trunk lid opener
6	15A	Sunroof, courtesy lamps
7	20A	Rear defogger
8	10A	Chime, door warning
9	10A	Back up lamps, turn signal lamps
10	10A	Cluster, seat belt
11	15A	Wiper and washer controls
12	10A	Power windows, blower, head lamps, sunroof
13	15A	Cruise, TCM, ABS
14	10A	Audio, power door mirror
15	15A	Cigarette lighter
16	10A	LH tail lamps
17	10A	RH tail lamps
18	15A	SRS (Air bag) controis
19	10A	Passive seat beit

ENGINE COMPARTMENT RELAY BOX

Layout



Description	Amperages	Circuit protected	Remark		
Sub-fusible link					
A(Pink)	30A	Ignition power source			
B(Blue)	20A	MFI system controls			
C(Pink)	30A	Power windows *			
D(Blue)	20A	Condenser fan controls			
E(Red)	50A	Battery power source			
F(Pink)	40A	Headlamps			
G(Blue)	20A	Radiator fan controls			
Fuse					
H/LAMP	20A	Headlamps			
A/C SWITCH	10A	Air conditioning controls			
A/C	10A	Air conditioning controls			
H/ LAMP IND	10A	Head lamp indicator			
HORN	10A	Horns			
BLOWER	30A	Blower			

PASSENGER COMPARTMENT RELAY BOX Layout



FUSIBLE LINK BOX Layout/circuit



POWER DISTRIBUTION

SCHEMATIC DIAGRAM (1)





SCHEMATIC DIAGRAM (3)



SCHEMATIC DIAGRAM (4)



DASH FUSE BOX DETAILS

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)



SCHEMATIC DIAGRAM (4)



SCHEMATIC DIAGRAM (5)



SCHEMATIC DIAGRAM (6)



SCHEMATIC DIAGRAM (7)





SCHEMATIC DIAGRAM (9)



MEMO

GROUND DISTRIBUTION

SCHEMATIC DIAGRAM (GO1)-1





SCHEMATIC DIAGRAM (G01)-3



SCHEMATIC DIAGRAM (G02-1)



SCHEMATIC DIAGRAM (G03)




SCHEMATIC DIAGRAM (G05)



SCHEMATIC DIAGRAM (G06)



SCHEMATIC DIAGRAM (GO7)





SCHEMATIC DIAGRAM (G09/GI0)



SCHEMATIC DIAGRAM (G11/G12)



JOINT DISTRIBUTION

SCHEMATIC DIAGRAM (E01-1)



SCHEMATIC DIAGRAM (E01-2/3)



SCHEMATIC DIAGRAM (M01-1)





SCHEMATIC DIAGRAM (M01-3)





SCHEMATIC DIAGRAM (M01-5)



MEMO

IGNITION SYSTEM

SCHEMATIC DIAGRAM



COMPONENT LOCATION INDEX

	Location reference-page
Components ECM (C01 -2 ~ C01 -3) ECM control relay (C02) Ignition coil (C14) Ignition switch (M24)	WS-182 WS-182 WS-183 WS-189
Noise filter (Cl 1) Power transistor (Cl 3)	WS-182 WS-183
MC01 Ground	WS-201
G09	WS-204

STARTING SYSTEM

SCHEMATIC DIAGRAM



COMPONENT LOCATION INDEX

	Location reference-page
Components Ignition lock switch (M29) Starter motor (C18) Starter relay (M15) Transaxle range switch (E28)	WS-195 WS-183 WS-194 WS-189
Connectors EM04/EM05 MC01	WS-191 WS-201
Ground G01	WS-203

CHARGING SYSTEM

SCHEMATIC DIAGRAM



COMPONENT LOCATION INDEX

	Location reference-page
Components	
Generator (E31-1 ~ E31-2)	WS-189
Instrument cluster (I13-1)	WS-193
Relay with diode (C07)	WS-182
Connectors	
EI01	WS-192
EM03	WS-191
MC01	WS-201

COOLING SYSTEM

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



COMPONENT LOCATION INDEX

	Location reference-page
Components AC switch (110) Condenser fan (E29)	WS-193 WS-189
Condenser fan control relay (E04) Condenser fan relay (E05) Radiator fan (E26)	WS-188 WS-188 WS-189
Radiator fan relay (E07) Thermo switch (E26-2) Thermo sensor (E44)	WS-188 WS-189 WS-190
Connectors El01 EM03	WS-192 WS-191
MI01 Ground	WS-201
G05 G07	WS-203 WS-203

MEMO

DOHC SYSTEM (For California)

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)



SCHEMATIC DIAGRAM (4)



SCHEMATIC DIAGRAM (5)



SCHEMATIC DIAGRAM (6)



COMPONENT LOCATION INDEX

	Location	reference-page
Companyation		
Components	14/6	2 4 0 0
NC relay (E08) AC switch (440)		D-100 D-100
AC SWITCH (110)		5-193
Auto cruise module (M21)		5-194
Crankshaft position sensor (CO9)	VVS	5-182
Data link conn. (M33)	VVS	5-196
ECM control relay (C02)	VVS	5-182
ECM (CO1-1 ~ CO1-3)	VVS	5-162
ELC module (E02-2)	VVS	5-188
ECIS (C20)	VVS	5-183
Fuel pump motor (M50)	VVS	5-197
Idle switch (C30)	WS	5-184
Ignition switch (M24)	WS	S-195
Ignition coil (CI 4)	WS	5-183
Ignition lock switch (M29)	WS	5-195
Injectors (C12-1 ~ C12-4)	WS	5-182
Instrument cluster (113-I)	WS	S-193
ISC motor (C15)	WS	S-183
Ignition control adjusting conn. (Cl 9)	WS	S-183
Low pressure switch (C06)	WS	S-182
Oxygen sensor (C21)	WS	S-183
Power steering switch (E30)	WS	S-189
Power transistor (Cl 3)	WS	S-183
Starter relay (M15)	WS	S-194
Transaxle range switch (E28)	WS	S-189
Them-to sensor (El 9)	WS	S-188
Thermo switch (I12)	WS	S-193
TPS (CI 7)	WS	S-183
VAFS (C22)	WS	S-183
Connectors		
EM02	WS	5-191
EM03	WS	S-191
EM04	WS	5-191
EM05	WS	5-191
MC01	WS	5-201
MI01	WS	5-201
MI02	WS	5-201
Ground		
	\\/C	203
	VVC \\/C	200
	VVC	203
	VVS	D-204
611	VVS	5-∠ 04

MEMO

DOHC SYSTEM (Except California)

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)


SCHEMATIC DIAGRAM (4)



SCHEMATIC DIAGRAM (5)



SCHEMATIC DIAGRAM (6)



	Location	reference-page
Components		
Δ/C relay (E08)	W	S-188
Λ/C relay (L00) Λ/C switch (110)	W/	S-103
Ave switch (110) Auto cruico modulo (M21)	W	S-194
Crankshaft position sonsor (COO)	\/\/	S-182
Deta link conn (M22)	VV. \\//	S-102 S-108
Data III K COTIT. (NISS) ECM control relay (CO2)	10/0	S-190 S-192
		S-102 S-182
$EUM (UUI - 1 \sim UUI - 3)$	۷۷۰ ۱۸/۹	S-102 S-188
ELC MODULE (EU2-2)	۷۷۰ ۱۸/۹	S-100 S-183
EUIS (U20) Evid avera meter (M40)	VV. \//	S-105 S-107
Fuel pump motor (M49)		S-197 S-197
Idle Switch (C30)	V V V	S-104 S 105
Ignition Switch (M24)		C 100
Ignition Coll (C14)	V V V	S-105 S 105
Ignition lock switch (M29)		5-190 6 100
Injectors (C12-1 ~ C12-4)		0-10Z
Instrument cluster (113-1)		5-193
ISC motor (C15)		5-183
Ignition control adjusting conn. (C19)	VV	5-183
Low pressure switch (C06)	VV	5-182
Oxygen sensor (C21)	VV	5-183
Power steering switch (E30)	VV	5-189
Power transistor (C13)	VV	5-183
Starter relay (M15)	VV	5-194
Transaxle range switch (E28)	VV	5-189
Therms sensor (El 9)	VV	5-188
Thermo switch (112)	VV	5-193
TPS (C17)	VV	5-183
VAFS (C22)	VV	5-183
Connectors		
EM02	W	S-191
EM03	W	S-191
EM04	WS	S-191
EM05	W	S-191
MC01	W	S-201
MI01	W	S-201
MI02	W	S-201
Ground		
	۱۸/	5-203
	VV- \\//	S-203 S-203
		S-203 S-204
	VV- \\//	0-204 S-204
GII	VV.	5-204

MEMO

VEHICLE SPEED SENSOR

SCHEMATIC DIAGRAM



	Location reference-page
Components	
A/C switch (I10)	WS-193
Cruise control module (M21)	WS-194
Data link connector (M33)	WS-196
ECM (C01 -1)	WS-182
Instrument cluster (113-1 ~ 113-4)	WS-193
TCM (E02-2)	WS-188
Connectors	
EM04	WS-191
MC01	WS-201
MI01	WS-201
MI02	WS-201
Ground	
G01	WS-203

CRUISE CONTROL SYSTEM

SCHEMATIC DIAGRAM (1)





SCHEMATIC DIAGRAM (3)



	Location reference-page
Components	
Audio (M43)	WS-196
Clutch switch (M30)	WS-195
Cruise control actuator (E09)	WS-188
Cruise control module (M21)	WS-194
Cruise main switch (107)	WS-193
Data link connector (M33)	WS-196
Digital clock (I11)	WS-193
Ignition switch (M24)	WS-195
Multi switch (M26-1)	WS-195
Overdrive switch (M60)	WS-198
Stop lamp switch (M28)	WS-195
Transaxle range switch (E28)	WS-189
TCM (E20-2-E20-3)	WS-188
Connectors	
EM04	WS-191
EM05	WS-191
MC01	WS-201
MI02	WS-201
MI01	WS-201
MR01	WS-201
Ground	
GO1	WS-203
G04	WS-203

ELECTRONIC LOCK UP CONTROLS

SCHEMATIC DIAGRAM (1)





SCHEMATIC DIAGRAM (3)



	Location reference-page
Components	
Accelerator pedal switch (M22)	WS-194
Cruise control module (M21)	WS-194
Data link connector (M33)	WS-196
ECT switch (M41)	WS-196
ECM (CO1 -1)	WS-182
Kick down servo switch (El 1)	WS-188
Oil Temperature sensor (El 2)	WS-188
Over drive switch (M60)	WS-188
Pulse generator (El 3)	WS-188
Transaxle range switch (E28)	WS-189
TCM (E02-1 ~ E02-2)	WS-188
TP sensor (Cl 7)	WS-183
Transaxle valve body (E25)	WS-189
Vehicle speed sensor (I13-2)	WS-193
Connectors	
EM04	WS-191
MC01	WS-201
MI02	WS-201
Grounds	
G01	WS-203
G06	WS-203

HORNS

SCHEMATIC DIAGRAM



	Location reference-page	
Components		
Horn relay (E08-1)	WS-188	
Left horn (E38)	WS-190	
Multifunction switch (M26-1)	WS-195	
Right horn (E18)	WS-188	
Connector		
EM03	WS-191	

CIGARETTE LIGHTER

SCHEMATIC DIAGRAM



	Location reference-page	
Components Cigarette lighter (M44)	WS-197	
Ground G11	WS-204	

INDICATORS

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)



	Location reference-page
Components	
A/C switch (I10)	WS-193
Digital clock (I11)	WS-193
Fuel sender (M50)	WS-197
Instrument cluster (113-1 ~ 113-4)	WS-193
Oil pressure switch (E32)	WS-195
Rheostat (I01)	WS-193
TACM (M38)	WS-196
Connectors	
El01	WS-192
MC01	WS-201
MI01	WS-201
MI02	WS-201
Ground	
G01	WS-203
G11	WS-204

GAUGES

SCHEMATIC DIAGRAM



	Location reference-page
Components NC switch (110) Cluster (113-I) Coolant temperature sender (Cl 9)	WS-193 WS-193 WS-183
Fuel sender (M50)	WS-197
Connectors	
MC01	WS-201
MI02	WS-201
MI01	WS-201
Grounds	
G01	WS-203
G11	WS-204

BRAKE AND CHARGE WARNING SYSTEM

SCHEMATIC DIAGRAM



	Location reference-page
Components Generator (E31-2) Brake fluid level sensor (E14) instrument cluster (113-2)	WS-189 WS-188 WS-193
Parking brake switch (M36) TACM unit IM38) Relay with diode (C07)	WS-196 WS-196 WS-182
Connectors El01 EM03 MI01/MI02	WS-192 WS-191 WS-201
Ground GO5	WS-203

HEAD LAMPS

SCHEMATIC DIAGRAM



	Location reference-page
Components	
Cluster (I13-1)	WS-193
Head lamp relay (E06)	WS-188
LH head lamp (E36)	WS-190
Multifunction switch (M26-2)	WS-195
RH head lamp (E23)	WS-188
Connectors	
El01	WS-192
EM02	WS-191
EM03	WS-191
MI02	WS-201
Ground	
G01	WS-203

DAYTIME RUNNING LIGHTS (DRL)

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



	Location reference-page
Components Generator (E31-2) Brake fluid level sensor (El 4) COND. fan motor (E29) COND. fan relay (E05) DRL module (E40) Instrument cluster (I13-2) LH head lamp (E36) Multi switch (M26-2) RH head lamp (E22) Tail lamp relay (M18) Parking brake switch (M36) DRL resistor (E60)	WS-189 WS-188 WS-189 WS-188 WS-190 WS-193 WS-190 WS-195 WS-195 WS-188 WS-194 WS-196 WS-192
Connectors El01 EM02/EM03 Ml02	WS-192 WS-191 WS-201
Ground G01/G05/G07	WS-203

MEMO

EXTERIOR LAMPS

SCHEMATIC DIAGRAM (1)





SCHEMATIC DIAGRAM (3)


	Location reference-page
Components Tail lamp relay (M18) Multi switch (M26-2) Digital clock (I11) LH side marker lamp (E34) LH tail/top lamp (R01) LH license lamp (R12) Trunk lid opener (R15) RH license lamp (R13) Fuel pump (M49) Cigarette lighter illum. (M44) RH tail/stop lamp (R03) RH side marker lamp (E21)	WS-194 WS-195 WS-193 WS-202 WS-202 WS-202 WS-202 WS-202 WS-197 WS-197 WS-202 WS-188
Connectors EM02/EM03 MI01/MR01/MR02	WS-191 WS-201
Ground G01/G03 G10/G11	WS-203 WS-204

STOP LAMPS



	Location reference-page
Components High mounted stop lamp (M56) LH stop lamp (R01) RH stop lamp (R03) Stop lamp switch (M28) Stop lamp switch (M27)	WS-198 WS-202 WS-202 WS-195 WS-195
Connector MR01	WS-201
Grounds GO3 G10	WS-203 WS-204

TURN/HAZARD LAMPS

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



	Location reference-page
Components	
Cluster (113-1, 113-2)	WS-193
Flasher unit (M16)	WS-194
Hazard switch (109)	WS-193
LH front turn (E33)	WS-190
LH rear turn (R01)	WS-202
NUITI SWITCH (NI26-2)	WS-195
RH Iront turn (E20)	WS-188 WS-202
	W3-202
Connectors	N/C 404
EM02	WS-191
MIU1	WS-201
MR01	WS-201
Ground C011/C05	W/S-203
G10	WS-203
010	

MEMO

BACK UP LAMPS



	Location reference-page
Components	
Transaxle range switch (E28)	WS-189
LH back up lamp (R01)	WS-202
RH back up lamp (R03)	WS-202
Connectors	
EM02	WS-191
MR01	WS-201
Ground	
G10	WS-204

COURTESY LAMPS

SCHEMATIC DIAGRAM (1)-With Sunroof







	Location reference-page
Components Cluster (I13-3) Courtesy lamp (M73) LH door lamp (D10) LH front door switch (M47) LH rear door switch (M52) Map lamp (M71) Overhead console lamp (M78) RH door lamp (D20) RH front door switch (M45) RH rear door switch (M46) Trunk lamp (M55) Trunk lamp switch (R02)	WS-193 WS-199 WS-186 WS-197 WS-197 WS-199 WS-199 WS-187 WS-197 WS-197 WS-198 WS-202
Connectors MD01/MD05 MI02/MR01	WS-201 WS-201
Ground G02	WS-203

MEMO

DASH, CONSOLE AND SWITCH LAMPS

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)



SCHEMATIC DIAGRAM (4)



	Location reference-page
Components	
Audio ILL. (M43)	WS-196
A/T shift lamp (M66)	WS-198
Cigarette lighter lamp (M44)	WS-197
Cluster (I13-3)	WS-193
Digital clock (I11)	WS-193
ECT switch (M41)	WS-196
Fuel pump (M49)	WS-196
Hazard switch (109)	WS-193
Heater control ILL. (M68)	WS-198
LH front window switch (D03)	WS-186
LH rear window switch (D31)	WS-187
Main cruise switch (107)	WS-193
Multi switch (M26-2)	WS-195
Rear window defogger switch (108)	WS-193
Rheostat (101)	WS-193
RH front window switch (D13)	WS-187
RH rear window switch (D41)	WS-187
Connectors	
EM02	WS-191
EM03	WS-191
MD01	WS-201
MD05	WS-201
MD08	WS-201
MD09	WS-201
MI01	WS-201
Ground	
G01	WS-203
G02	WS-203
G11	WS-204

MEMO

TRUNK LID OPENER



	Location reference-page
Components	
LH licence lamp (R12)	WS-202
Trunk lid opener (R15)	WS-202
Trunk lid opener switch (D21)	WS-187
Connectors	
MD01	WS-201
MD02	WS-201
MR02	WS-201
Ground	
G03	WS-203

SOUND SYSTEM



	Location reference-page
Components	
Audio (M43)	WS-196
Heater control illum (M66)	WS-198
LH front speaker (D02)	WS-186
LH rear speaker (M54)	WS-198
Rheostat (101)	WS-193
RH front speaker (D12)	WS-186
RH rear speaker (M57)	WS-198
Connectors	
MD01	WS-201
MD05	WS-201
MI01	WS-201
MR02	WS-201

POWER ANTENNA



Location reference-page

Components Antenna motor (M58) Audio (M43)

WS-198 WS-196

DIGITAL CLOCK



	Location reference-page
Components	
A/C switch (110)	WS-193
Audio (M43)	WS-196
Cluster (I13-I)	WS-193
Digital clock (I11)	WS-193
Connectors	
MI01	WS-201
MI02	WS-201
Ground	
G01	WS-203
G01	VVS-203

TIME AND ALARM CONTROL (TAC) SYSTEM

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)



	Location reference-page
Components	
A/C switch (I10)	WS-193
Generator (E31-2)	WS-189
Chime bell (M32)	WS-195
Cluster (I13-1)	WS-193
Cluster (113-3)	WS-193
Door warning switch (M23)	WS-195
Front wiper motor (E16)	WS-188
LH front door switch (M47)	WS-197
Multi switch (M26-1)	WS-195
Rear defogger glass (M53)	WS-197
Rear defogger switch (108)	WS-196
Seat belt switch (M37)	WS-193
TACM (M38)	WS-196
Washer motor (E37)	WS-190
Connectors	
EM02	WS-191
EM03	WS-191
MI01	WS-201
MI02	WS-201
Ground	
G01	WS-203
G02	WS-203
G05	WS-203
G11	WS-204
G12	WS-204

BLOWER CONTROLS



	Location reference-page	
Components		
Blower motor (M61)	WS-198	
Blower relay (M17)	WS-194	
Blower resistor (M63)	WS-198	
Blower switch (M62)	WS-198	
Connectors		
EM02	WS-191	
EM03	WS-191	
Ground		
G01	WS-203	

A/C COMPRESSOR CONTROLS

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



	Location reference-page	
Components		
A/C compressor (C08)	WS-182	
A/C control relay (E08)	WS-188	
A/C low pressure switch (C06)	WS-182	
A/C switch (I10)	WS-193	
Blower relay (M17)	WS-194	
Blower switch (M62)	WS-198	
ECM (CO1-1/C01-2)	WS-182	
TCM (E02-1)	WS-188	
Thermo sensor-I (EI 9)	WS-188	
Therm switch (I1 2)	WS-193	
Connectors		
El01	WS-192	
EM02	WS-191	
MC01	WS-201	
MI01	WS-201	
Ground		
G01	WS-203	
MEMO

A/T AND IGNITION KEY LOCK CONTROLS

SCHEMATIC DIAGRAM



	Location reference-page
Components	
AT and ignition key lock control module (M35)	WS-196
A/T shift lock sol. (M65)	WS-198
Audio (M43)	WS-196
Cigar lighter (M44)	WS-197
lanition key lock solenoid (M25)	WS-195
P-position switch (M64)	WS-198
Stop lamp switch (M27/M28)	WS-195
Ground	
G02	WS-203
G11	WS-204

POWER WINDOWS

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)



	Location reference-page
Components	
LH front window motor (D05)	WS-186
LH rear window motor (D32)	WS-187
LH rear window switch (D31)	WS-187
Power window main switch (D03)	WS-186
RH front window motor (D15)	WS-187
RH front window switch (D13)	WS-187
RH rear window motor (D42)	WS-187
RH rear window switch (D41)	WS-187
Connectors	
EM03	WS-191
MD01	WS-201
MD02	WS-201
MD05	WS-201
MD08	WS-201
MD09	WS-201
Ground	
004	WS-203

POWER DOOR LOCK

SCHEMATIC DIAGRAM



	Location reference-page
Components	
LH front door actor (D06)	WS-186
LH rear door actor (D33)	WS-187
RH front door actor (D16)	WS-187
RH rear door actor (D43)	WS-187
Trunk lid opener switch (D21)	WS-187
Connectors	
MD01	WS-201
MD05	WS-201
Ground	
G01	WS-203

POWER DOOR MIRROR

SCHEMATIC DIAGRAM



	Location reference-page
Components Audio (M43) LH power door mirror (D01) Power door mirror switch (M42) RH power door mirror (D11)	WS-196 WS-186 WS-196 WS-187
Connectors MD01 MD05	WS-201 WS-201
Ground G11	WS-204

SUNROOF

SCHEMATIC DIAGRAM



	Location reference-page
Components	
Sun roof close/tilt up relay (M77)	WS-199
Sun roof motor (M80)	WS-199
Sun roof open/tilt down relay (M76)	WS-199
Sun roof switch (overhead console) (M78)	WS-199
Connectors	
M34	WS-196
M72	WS-199
Ground	
G01	WS-203

PASSIVE SEAT BELTS

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



	Location reference-page
Components	
Instrument cluster (I13-1)	WS-193
Passive seat belt unit (M48)	WS-197
RH door latch switch (D17)	ws-187
RH lap retractor (D19)	WS-187
RH shoulder retractor (D18)	WS-187
Connectors	
MD07	WS-201
MI01	WS-201
MI02	WS-201
Grounds	
G01	WS-203
G02	WS-203

MEMO

ANTI-LOCK BRAKE SYSTEM

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)



SCHEMATIC DIAGRAM (3)



	Location reference-page
Components	
ABS control module (M93)	WS-200
ABS modulator (E57)	WS-191
ABS relay (E58/E59)	WS-191
Cluster (113-1)	WS-193
Motor nump (F80)	WS-191
Data link connector (M33)	WS-190
Stop Jamp switch (M27/M28)	WS-189
Wheel sensor (E55/E56/M94/M95)	WS-191/200
Connectors	
FM07-1	WS-192
EM07-2	WS-192
Grounds	
G01	WS-203
G02	WS-203
G05	WS-203

AIR BAG

SCHEMATIC DIAGRAM



	Location reference-page
Components	
Clock spring (Initiator) (M84)	WS-200
SRS control module (M81)	WS-200
Data link connector (M33)	WS-196
Cluster (I13-1-I13-2)	WS-193
Connectors	
MI01	WS-201
M82	WS-200
Grounds	
GO1	WS-203
GO2	WS-203

CONFIGURATION OF CONNECTOR

C01-1 ~ C20



C21 ~ D16



D17 ~ E05



E06 ~ E29











I10 ~ M12



M13 ~ M32



M33 ~ M57



M58 ~ M81



M82 ~ MD05



MD06-R10

R11 ~ R16


MEMO

COMPONENTS (C01-1 ~ C12-4)





COMPONENTS (C13 ~ C25)





COMPONENTS (C28 ~ C47)





COMPONENTS (C48 ~ C101)





COMPONENTS (D01 ~ D10)





COMPONENTS (D13 ~ D33)





COMPONENTS (E02-1 ~ E23)





COMPONENTS (E24 ~ E31-2)





COMPONENTS (E32 ~ E44)





COMPONENTS (E50 ~ E60)





COMPONENTS (EM01 ~ El02)





rescan ws-193

COMPONENTS (M02 ~ M22)





COMPONENTS (M23 ~ M32)





COMPONENTS (M33 ~ M43)





COMPONENTS (M44 ~ M53)





COMPONENTS (M54 ~ M68)





COMPONENTS (M70 ~ M80)





COMPONENTS (M81 ~ M95)





COMPONENTS (MC01 ~ MR02)





COMPONENTS (R01 ~ R15)





COMPONENTS (G01 ~ G08)





COMPONENTS (G09 ~ G12)





HARNESS LAYOUTS

Harness layouts show the routing of the major wiring harnesses and the in-line connectors between the major harnesses. These layouts will make electrical troubleshooting easier.



An example of Harness Layouts-Engine Harness

COMPONENT LOCATIONS

Component Locations give easy access to find the schematic components on the vehicle shown in the Component Location Index. Where connectors are listed, the total number of cavities, how many are actually used, is provided to help identify connectors on the vehicle.

HARNESS LAYOUT

ENGINE HARNESS (1)



- E01-1 Joint connector (IGN)
- E01-2 Joint connector (TAIL, LH)
- E01-3 Joint connector (TAIL, RH)
- E04 Radiator fan control relay
- E05 Condenser fan relay
- E06 Head lamp relay
- E07 Radiator fan relay
- E08 Air conditioning relay
- E08-1 Horn relay
- E09 Cruise control actuator
- E11 Kick down switch (A/T)
- E12 Oil temperature sensor (A/T)
- E13 Pulse generator (A/T)
- E14 Brake fluid sensor
- E16 Wiper motor
- E18 Horn (RH)
- E19 Thermo sensor (U.S.A)
- E20 Front turn signal lamp (RH)
- E23 Head lamp

- E25 T/A control solenoid (A/T)
- E26 Radiator fan
- E27 Back up lamp switch (M/T)
- E28 Transaxle range switch (A/T)
- E29 Condenser fan
- E30 Power steering switch
- E31-1 Generator (B+)
- E31-2 Generator (S.L)
- E32 Oil pressure switch
- E33 Front turn signal lamp (LH)
- E36 Head lamp (LH)
- E37 Washer motor
- E38 Horn (LH)
- E40 DRL module
- E55 Front sensor RH (ABS)
- E56 Front sensor LH (ABS)
- E57 ABS modulator
- E58 ABS relay box connector 2
- E59 ABS relay box connector 1
- E60 DRL resistor



CONTROL HARNESS



- C03 Purge solenoid C04 Ignition timing adjuster
- C04 Ignition timing adjus
- C06 Dual pressure switch (A/C)
- C07 Relay with diode
- C08 A/C compressor
- C09 Crankshaft position sensor
- C11 Noise filter
- C12-1 Injector #1
- C12-2 Injector #2
- C12-3 Injector #3
- C12-4 Injector #4
- C13 Power transistor

- C14 Ignition coil
- C15 ISC motor
- C17 Throttle position sensor
- C18 Starter solenoid extension
- C19 Coolant temp gauge
- C20 Coolant temp sensor
- C21 Front oxygen sensor
- C22 Volume air flow sensor
- C25 EGR solenoid
- C28 EGR temp sensor
- C30 Idle switch

CONTROL HARNESS



MAIN HARNESS (1)



MAIN HARNESS (2)



M35 M36 M37 M38 M41 M45 M46 M47 M48 M49 M50 M52 M53 M54 M55 M56 M57	A/T & key lock control unit Parking brake switch Seat belt switch TACM ECT switch Door switch (FRT, RH) Door switch (FRT, RH) Door switch (FRT, LH) Passive s/belt module Fuel pump Fuel sender Door switch (RR, LH) Rear heated glass (+) Speaker (RR, RH) Trunk room lamp High mounted stop lamp Speaker (RR, LH)	M60 M64 M65 M70 M81 M93 M94 M95 MR01 MR02 MD08 MD09 MD10 MD11 EM07-1 EM07-2	Over drive (O/D) switch P/Position switch AK Solenoid AK Illumination Rear oxygen sensor A/Bag control module (ESPS) ABS control module Rear sensor RH (ABS) Rear sensor LH (ABS) Connection with REAR wiring harness Connection with TRUNK LID wiring harness Connection with DOOR wiring harness (RR, LH) Connection with DOOR wiring harness (RR, RH) Connection with DOOR wiring harness (RR, RH) Connection with DOOR wiring harness (RR, RH) Connection with ENGINE wiring harness Connection with ENGINE wiring harness
M57 M58	Speaker (RR, LH) Power antenna	EM07-2	Connection with ENGINE wiring harness

CRASH PAD HARNESS



REAR/TRUNK LID HARNESS



Rear wiring harness

- R01 Combination lamp (LH)
- R02 Trunk room lamp switch
- R03
- Combination lamp (RH) Connection with MAIN harness MR01

Trunk lid wiring harness

- R12 License lamp (LH)
- R13 License lamp (RH)
- Trunk lid opener R15
- MR02 Connection with MAIN harness

ROOF HARNESS



FRONT DOOR HARNESS



D01 (D11)	Outside mirror
D02 (D12)	Speaker (FRT, LH)
D03 (D13)	Power window switch
D04	Power window switch
D05 (D15)	Power window motor
D06 (D16)	Central door locking actuator
D17	Door latch switch (FRT, RH)
D18	Shoulder retractor (FRT, RH)
D19	Lap retractor (FRT, RH)
D10 (D20)	Door lamp
D21	Trunk lid switch
MD01	Connection with MAIN wiring harness (FRT, LH)
MD02	Connection with MAIN wiring harness (FRT, LH)
MD03	Connection with MAIN wiring harness (FRT, LH)
MD05	Connection with MAIN wiring harness (FRT, RH)
MD06	Connection with MAIN wiring harness (FRT, RH)

REAR DOOR HARNESS

