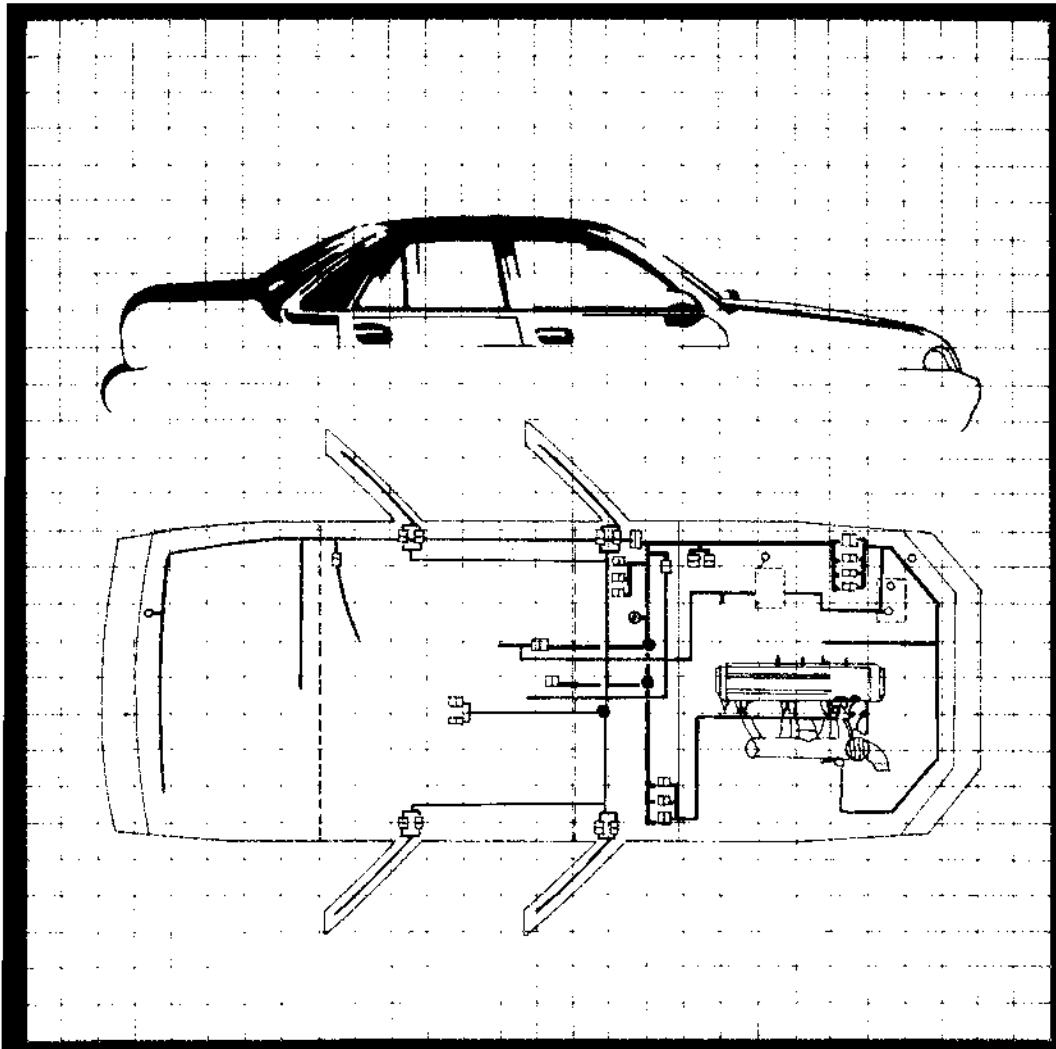


ELECTRICAL WIRING DIAGRAM

**NEXIA
CIELO
RACER II**



DAEWOO MOTOR CO., LTD.

ELECTRICAL WIRING DIAGRAM

NEXIA ■

CIELO ■

RACER II ■



DAEWOO MOTOR CO., LTD

CONTENTS

A. GENERAL DESCRIPTION

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2. Circuit identification code
3. Wiring color
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2. Fuse and relay location

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FOREWORD

All information illustrations and specifications contained in this manual are based on the latest product information available at the time of manual approval.
The right is reserved to make changes at any time without notice.



DAEWOO MOTOR CO., LTD.
INCHON, KOREA

A. GENERAL DESCRIPTION

1. HOW TO READ WIRING DIAGRAM

Ex) E1: Head Lamp(Left)
E2: Head Lamp(Right)
K7: Head Lamp Relay

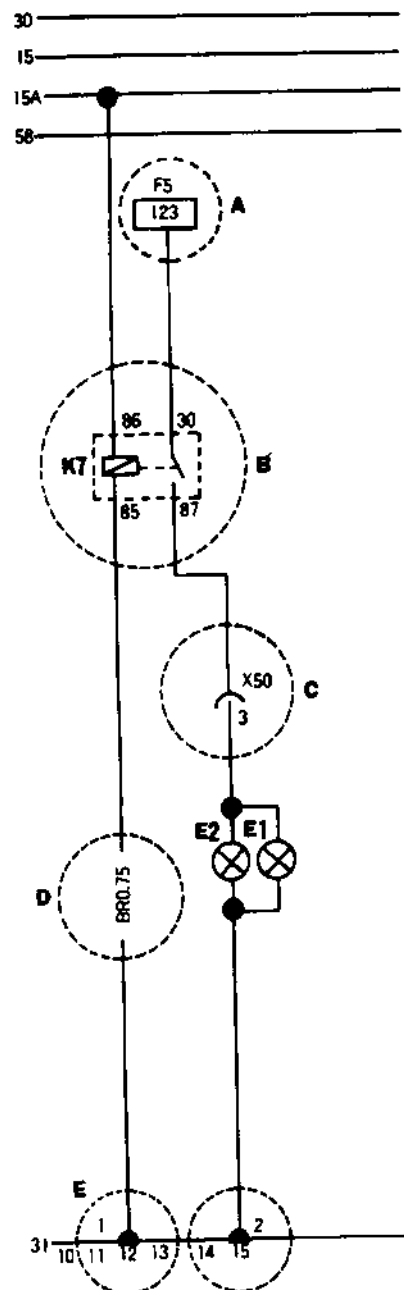
"30" Line: Battery Positive(+) Line

"15" Line: Ignition ON

"15A" Line: Ignition ON

(But, when cranking engine(Ignition III position), power is not supplied.)

"58" Line: Light Switch ON



A. 123: A number(123) indicates the location of connecting wiring in this diagram.

F5: Component connected with this wiring

B. Components and Terminal Number.

K7: Head lamp Relay

86, 30, 85, 87: Terminal Number

C. Connector No. and Terminal No. of the two connecting harness.
- Terminal of X 50 Connector

D. Cable Color and Wiring Sectional Area
First Letter: Basic Color
Second Letter: Identification Color
Figure: Cross Sectional Area

E. Ground Location

"B — A": A and B lines are connected.

"B — A": A and B lines are not connected, but different lines.

2. CIRCUIT IDENTIFICATION CODE

IDENTIFICATION	COMPONENT	PART NAME(EXAMPLE)
E	Lamp	Head Lamp, Fog Lamp
F	Protector	Fuse
G	Power Supply	Alternator, Battery
H	Transfer	Horn, Speaker, Turn Signal Lamp
K	Relay	Relay
L	Sensor	Ignition Coil
M	Motor	Wiper Motor, Window Motor
D	Meter	Tachometer, Volt Meter
R	Resistor	Blower Resistor
S	Switch	Wiper Switch: Defroster Switch
X	Connector	Connectors Between Harnesses
Y	Electrical	Driving Unit Solenoid Valve

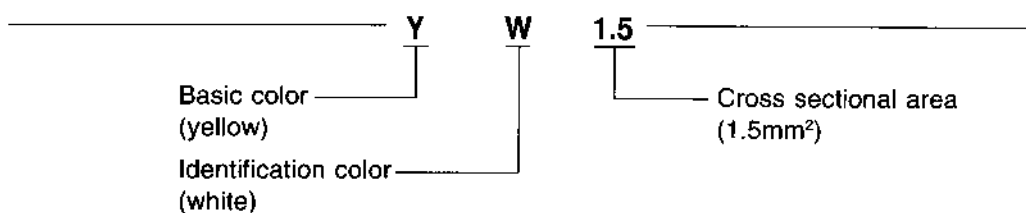
3. WIRING COLOR

As the wiring harness includes a large number of cables to complete individual circuits, the insulator of each cable is color coded to prevent wrong wiring. The alphabetical symbols in the following table represent the color of cables and the same symbols are also used the wiring. The cable identification symbol consists of a figure and letters.

Symbol	Color	Symbol	Color
L	blue	Br	brown
Y	yellow	Gr	grey
G	green	R	red
W	white	B	black
VIO	violet		

The figure indicates the size of wire and the first and second letters denote the basic color and identification color, respectively.

The size of wire is indicated in terms of sectional area.

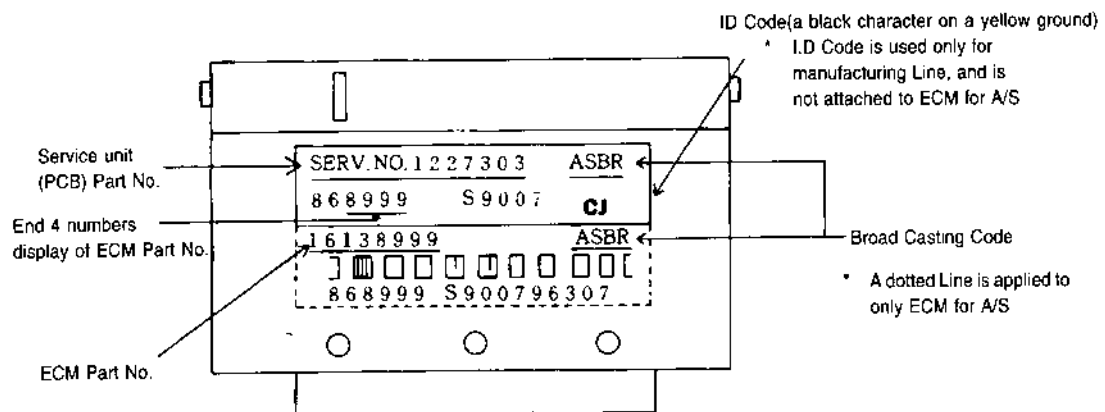


3. ECM CLASSIFICATION

○ ECM Part Number

ENGINE	EMIS- SION	T/M	E C M			LOOP	IMMO.	AREA
			TYPE	PART/NO.	I. D			
1.5 TBI	Leaded	M/T	EFI-4	16198389	ER	OPEN		Intense cold area
				16186399	EN			High altitude area
				16191059	EQ			General area
		A/T	EFI-4	16191419	ED	OPEN		
				16186389	EB			High altitude area
				16194919	RC			Hong kong, Singapore
	Unleaded	M/T	IEFI-S	16199339	UD	CLOSE		Chile
				16201659	TF			Guatemala
		A/T	IEFI-S	16186529	EC			General area
1.5 MPI	Leaded	M/T	IEFI-6	16209699	SX	OPEN		High altitude area
				16209689	SW			Intense heat/cold area
				16207709	ES			General area
		A/T	IEFI-S	16211909	PQ	CLOSE		High altitude area
				16211899	PR			Intense cold area
			IEFI-6	16207719	ET	OPEN		General area
				16214669	PJ			Intense heat/cold area
	Unleaded	M/T	IEFI-S	16211879	PT	CLOSE		Chile
				16217289	SC			Guatemala
				16221479	FC			General area, Australia
				16236659	CK			ISRAEL
			IEFI-6	16207729	EU	OPEN		NON IMMO.
				16212869	SS		○	Western Europe IMMO.
		A/T	IEFI-6	16214689	RL	CLOSE		Western Europe non IMMO.
								Chile
			IEFI-S	16211889	PU	CLOSE		General area, Australia
				16205729	EL			ISRAEL
			IEFI-6	16214659	NA	CLOSE	○	Europe IMMO.
				16207739	EV			General area, Western Europe
				16236679	CM			Non immo., Australia
1.5 DOHC	Leaded	M/T	IEFI-6	16219829	GQ	CLOSE		Intense heat/cold area
		A/T	IEFI-6	16219329	NK	CLOSE		Intense heat/cold area
	Unleaded	M/T	IEFI-6	16217229	HD	CLOSE	○	Europe IMMO.(Only France)
				16219819	GP			High altitude area
				16217239	HE			General area, Chile, Australia,
				16235989	SE			Europe non immo.
								ISRAEL
			IEFI-6	16217249	HG	CLOSE	○	Europe IMMO.
		A/T	IEFI-6	16214589	PF	CLOSE		Gneral area, Chile, Israel, Australia
				16214639	NB		○	Europe IMMO.
				16207779	EX			General area, Chile, Australia,
								Europe non immo.
				16235999	SF			ISRAEL

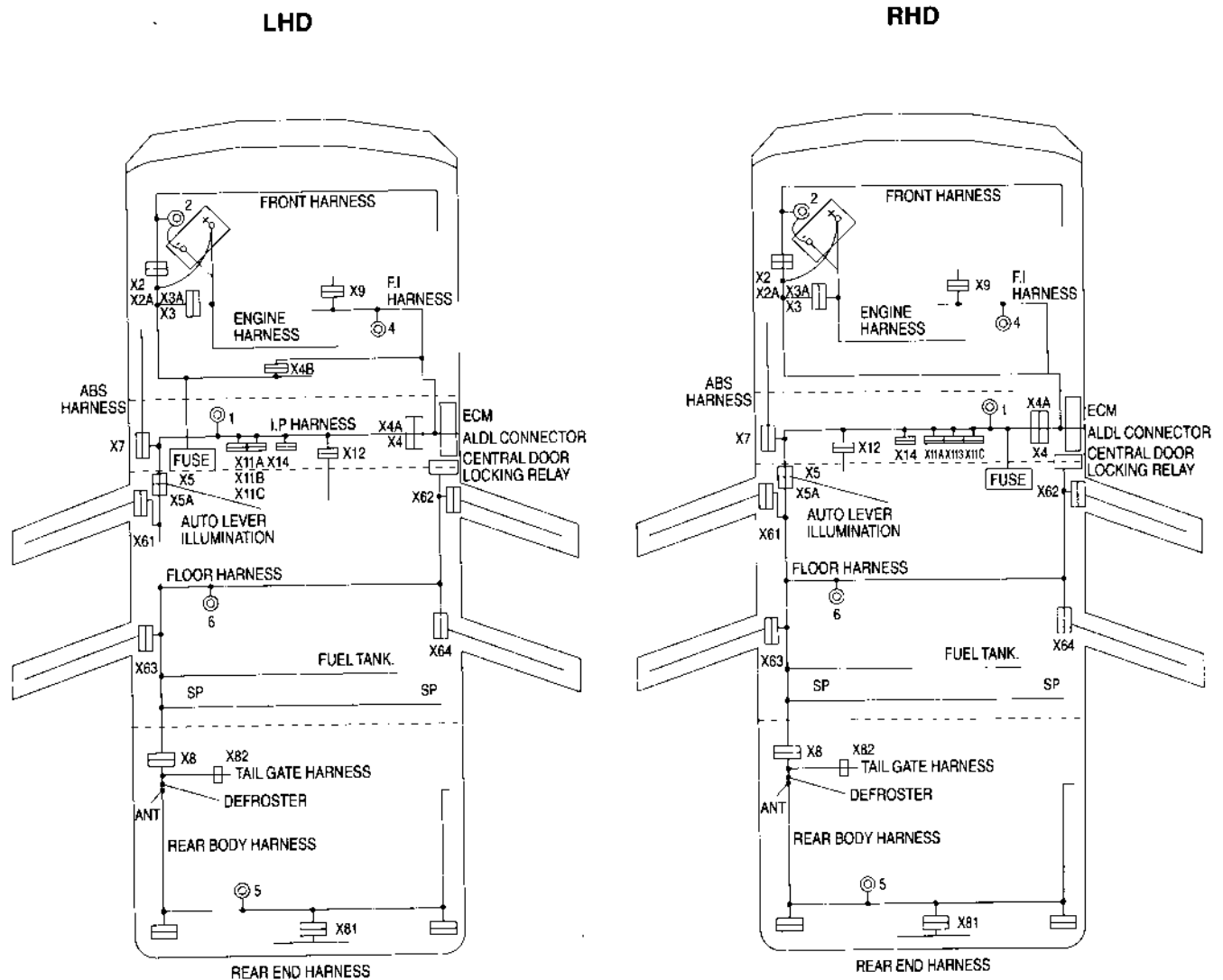
○ ECM Identification Method



You can not exchange IEFI-S ECM, and IEFI-6 ECM each other because those are different.

B. HARNESS CONNECTORS AND FUSE, RELAYS

1. HARNESS CONNECTORS AND GROUND LOCATION



1-1. CONNECTOR DESCRIPTION

X2	Connector for IP and Front Harness(14 pin)
X2A	Connector for IP and Front Harness(8 pin)
X3	Connector for IP and Engine Harness(14 pin)
X3A	Connector for IP and Engine Harness(4 pin)
X4	Connector for IP and FI Harness(14 pin)
X4A	Connector for IP and FI Harness(8 pin)
X4B	Connector for IP and FI Harness(2 pin)
X41	Connector for FI and TCM Extension Harness(20 pin)
X42	Connector for FI and TCM Extension Harness(14 pin)
X43	Connector for FI and TCM Body Harness(20 pin)
X5	Connector for IP and Floor Harness(20 pin)
X5A	Connector for IP and Floor Harness(10 pin)
X61	Connector for Floor and Front-Left Door Harness(14 pin)
X62	Connector for Floor and Front-Right Door Harness(14 pin)
X63	Connector for Floor and Rear-Left Door Harness(7 pin)
X64	Connector for Floor and Rear-Right Door Harness(7 pin)
X7	Connector for IP and ABS Harness(6 pin)
X8	Connector for Floor and Rear Body Harness(14 pin)
X81	Connector for Rear Body and Rear-End Harness(2 pin)
X82	Connector for Rear Body and Tail Gate Harness(2 pin) - 3 Door, 5 Door Vehicle
X9	Connector for FI and DOHC Injector Harness(2 pin) - DOHC Vehicle
X11A	Connector for IP Harness and Instrument Panel(16 pin)
X11B	Connector for IP Harness and Instrument Panel(12 pin)
X11C	Connector for IP Harness and Instrument Panel(6 pin) - Auto T/M 4-SP Vehicle
X12	Connector for IP Harness and Center Console Harness(5 pin)
X13	Connector for IP harness and Air Bag Harness(4 pin)
X14	Connector for IP and Car Audio(13 pin)

* Abbreviation

IP: Instrument Panel

FI: Fuel Injection

1-2. GROUND LOCATION

1: Located at the center of steering column

2: Located at the side of battery

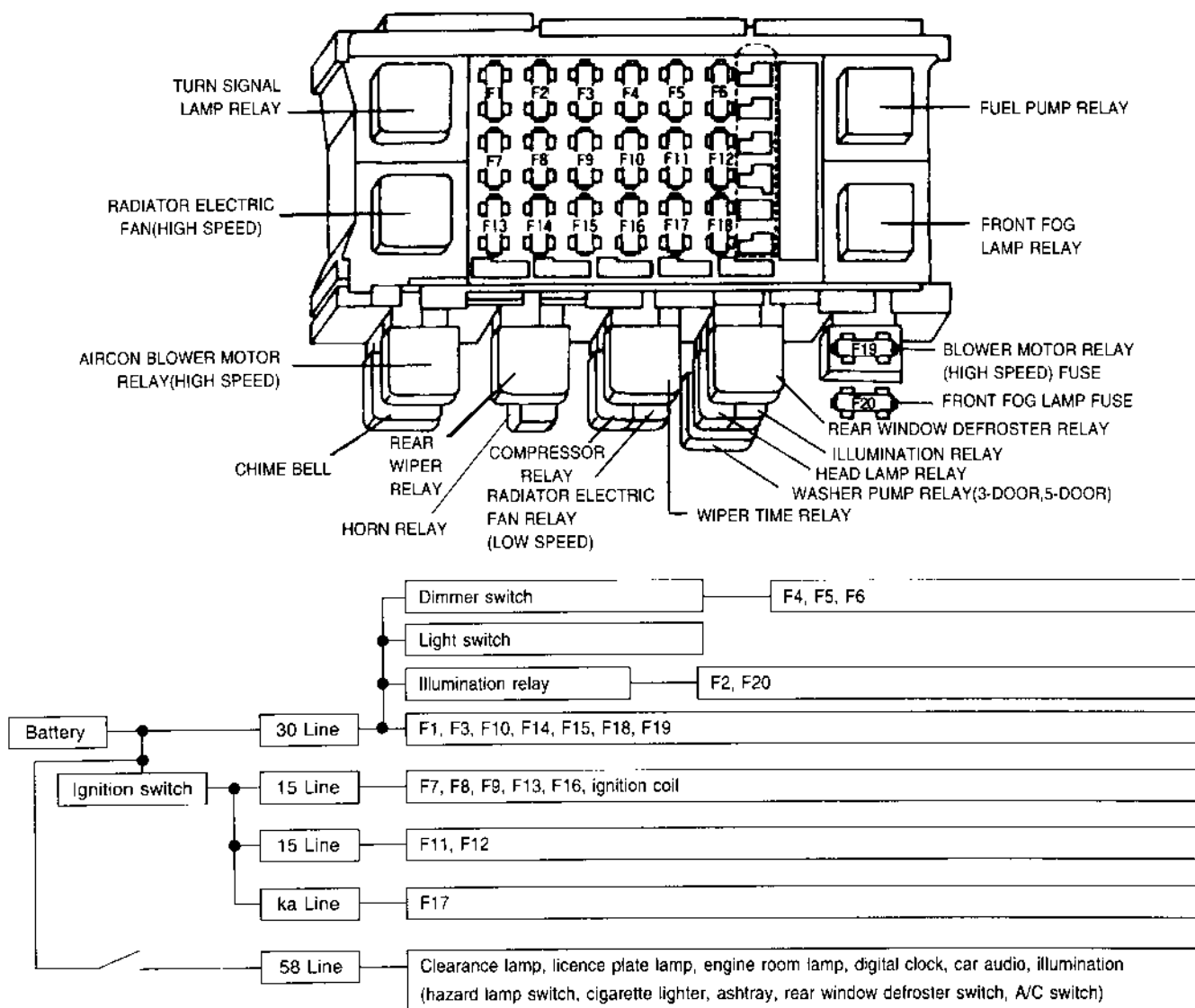
4: Located on the head side of engine cylinder

5: Located in the trunk room

6: Located under the drivers seat

B: Body ground(part body is directly grounded to the vehicle body)

2. FUSE AND RELAY LOCATION



2) Fuse usage

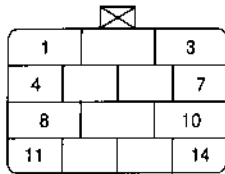
Fuse No.	Capacity (A)	Usage	Fuse No.	Capacity (A)	Usage
1	10	ECM, TCM	12	30	Radiator temperature switch, A/C control switch
2	10	Parking lamp	13	20	Digital clock, reverse lamp, warning buzzer, rear window defroster switch, alternator "F", IP, cigarette lighter, glove box lamp
3	10	Air bag	14	30	Horn, electric fan relay
4	20	Head lamp high beam	15	20	Digital clock, hazard lamp switch, room lamp, trunk room lamp, warning buzzer, auto antenna
5	10	Head lamp low beam(left), HLLD motor(left)	16	30	Power window
6	10	Head lamp low beam(right), HLLD unit, HLLD motor(right)	17	10	Cassette
7	30	injector, TCM, Immobilizer	18	30	Auto trunk switch, rear window defroster time relay, central door locking relay, cassette
8	20	Brake s/w, fuel pump relay, hazard lamp switch, ABS	19	30	Blower motor relay
9	30	Wiper relay	20	30	Front fog
10	10	Fuel inlet solenoid switch, ABS, immobilizer			
11	10	A/C compressor relay			

C. ELECTRICAL WIRING DIAGRAMS

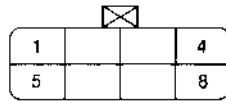
C-1 Harness Connector Faces

C-2 Electrical Wiring Diagram

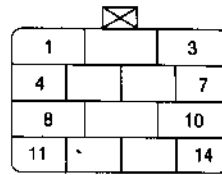
1) Ignition Switch, Starter Motor, Alternator, Wiring	14
2) Ignition Wiring (IEFI-6)	16
3) Injection Nozzle, ECM Power, ECM Ground "Wiring(IEFI-6)	18
4) Coolant Temperature Sensor(CTS), Manifold Air Pressure(Map) Sensor,	20
Vehicle Speed Sensor, Throttle Position Sensor(TPS) IAC Valve, O2 Sensor wiring(IEFI-6)	
5) "Service Engine Soon" Light, TCC, Fuel Pump, ALDL Tester Wiring(IEFI-6)	22
6) Ignition Wiring(IEFI-S)	24
7) Injection Nozzle, ECM Power, ECM Ground Wiring(IEFI-S)	26
8) Coolant Temperature Sensor(CTS), Manifold Air Pressure(MAP) Sensor,	28
Vehicle Speed Sensor, Throttle Position Sensor(TPS) IAC Valve, O2 Sensor wiring(IEFI-S)	
9) "Service Engine Soon" Light, TCC, Fuel Pump, ALDL Tester Wiring(IEFI-S)	30
10) Light Wiring	32
11) Front Fog Lamp & Rear Fog Lamp	34
12) Day Time Running Light, Clearance Lamp, Licence Plate Lamp, Horn Wiring	36
13) Glove Box Lamp, Cigarette Lighter, Digital Clock Room Lamp,	38
Trunk Room Lamp, Wiring	
14) Brake Lamp, Reverse Lamp, TCC Wiring	40
15) Turn Signal Lamp, hazard Lamp Wiring	42
16) Warning Buzzer, Auto Trunk, Fuel Inlet Switch Wiring	44
17) Rear Window Defroster Wiring	46
18) Wiper Wiring	48
19) Cassette Radio Wiring	50
20) Power Window Wiring(LHD, RHD)	52
21) Central Door Locking System Wiring(LHD, RHD)	54
22) I-P Wiring	57
23) ABS (Option)	60
24) TCM(Option)	61
25) Immobilizer, Air Bag(Option)	62
26) Air-Conditioning Wiring, Electric Fan, Blower Motor Wiring(IEFI-6 type)	63
26-1) Air-Conditioning Wiring, Electric Fan, Blower Motor Wiring(IEFI-S type)	67
27) Head Lamp Leveling Device(Option)	69

C-1. HARNESS CONNECTOR FACES

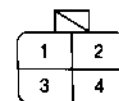
X2 CONNECTOR



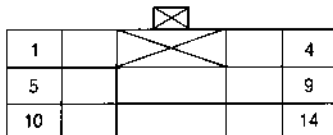
X2A CONNECTOR



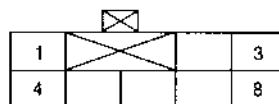
X3 CONNECTOR



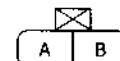
X3A CONNECTOR



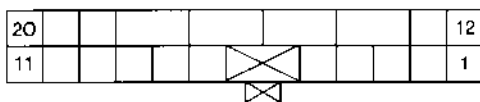
X4 CONNECTOR



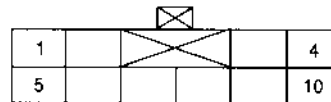
X4A CONNECTOR



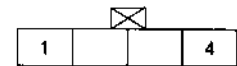
X4B CONNECTOR



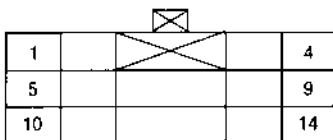
X5 CONNECTOR



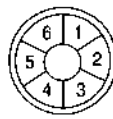
X5A CONNECTOR



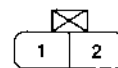
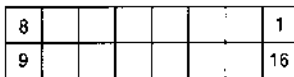
X13 CONNECTOR(AIR BAG)



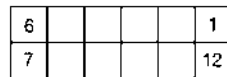
X61, X62, X8 CONNECTOR



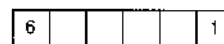
X63, X64 CONNECTOR

X9 CONNECTOR
(DOHC VEHICLE)

X11A

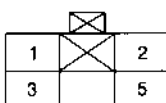


X11B

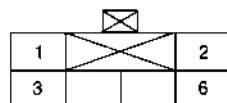


X11C

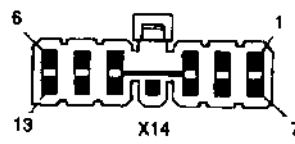
I-P CONNECTOR



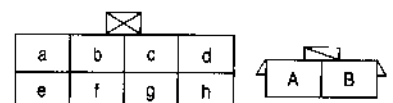
X12 CONNECTOR



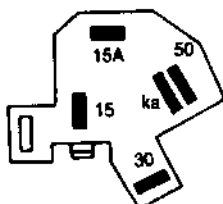
X7 CONNECTOR



X14 CONNECTOR (CASSETTE RADIO)



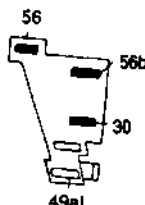
A/C SWITCH CONNECTOR

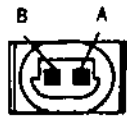


IGNITION SWITCH



DIMMER SWITCH CONNECTOR

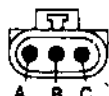




INJECTOR CONNECTOR



CTS CONNECTOR



MAP SENSOR



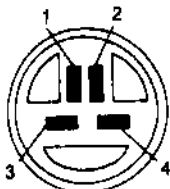
TPS CONNECTOR



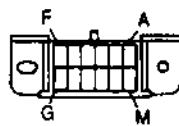
IACV CONNECTOR



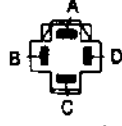
O₂ SENSOR CONNECTOR



WIPER MOTOR CONNECTOR



ALDL CONNECTOR



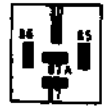
BRAKE SWITCH CONNECTOR



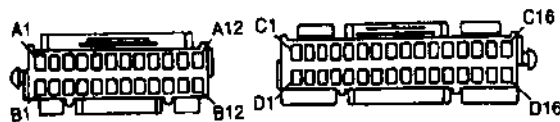
TCC SOLENOID VALVE CONNECTOR



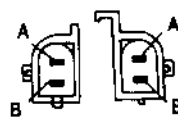
FUEL PUMP CONNECTOR



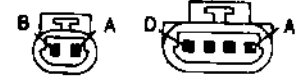
FUEL PUMP RELAY CONNECTOR



ECM CONNECTOR



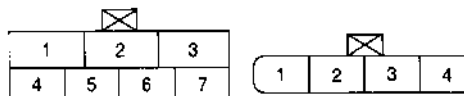
IGNITION COIL CONNECTOR



DISTRIBUTOR CONNECTOR



P/N S/W CONNECTOR(3-SP A/T)



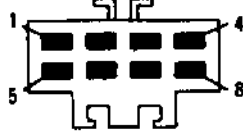
NSBU SWITCH(4-SP A/T)



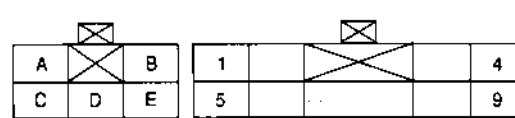
BLOWER MOTOR RESISTER



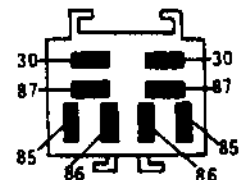
CLOCK CONNECTOR



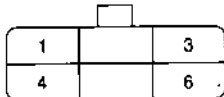
WARNING BUZZER



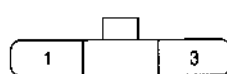
POWER WINDOW MAIN SWITCH



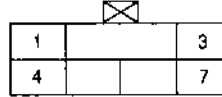
HEAD LAMP RELAY



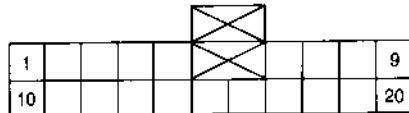
HEAD LAMP CONNECTOR



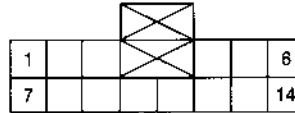
SIGNAL LAMP CONNECTOR



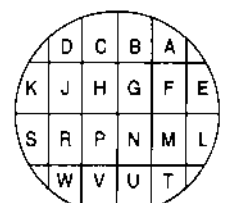
REAR COMBI LAMP CONNECTOR



X41 CONNECTOR(4-SP A/T)



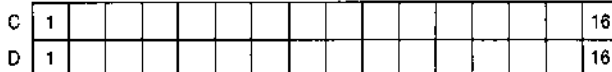
X42 CONNECTOR(4-SP A/T)



X43 CONNECTOR(4-SP A/T)

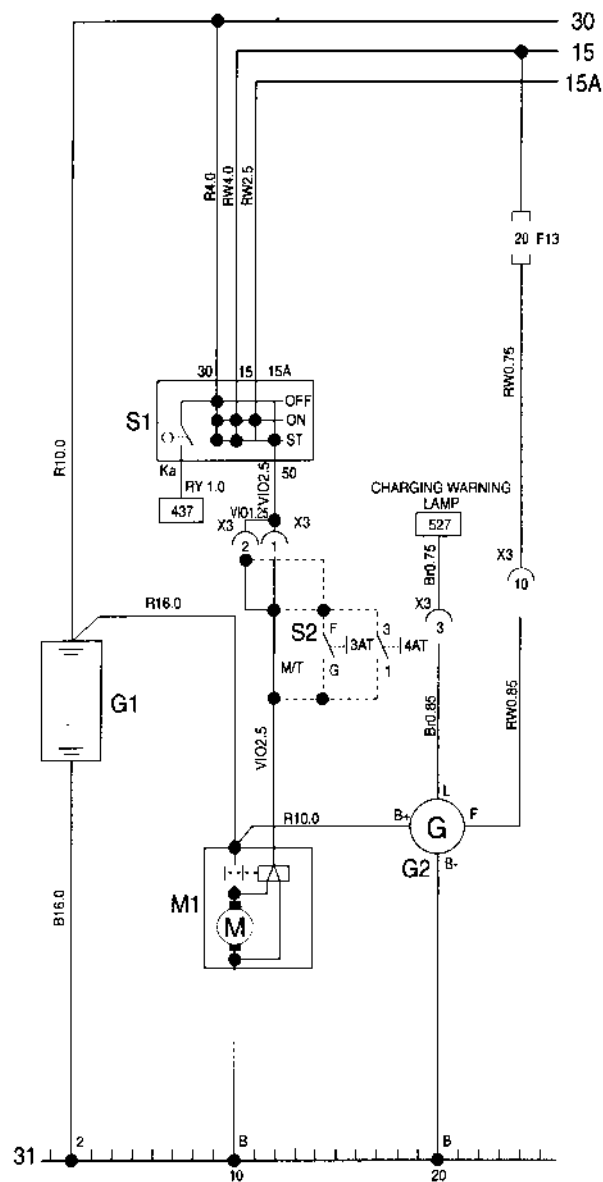


TCM CONNECTOR(4-SP A/T)

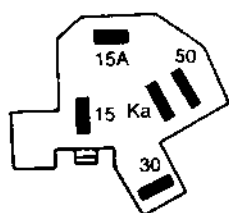


C-2. ELECTRICAL WIRING DIAGRAM**1) IGNITION SWITCH, STARTER MOTOR, ALTERNATOR WIRING**

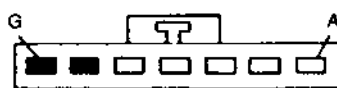
G1 BATTERY
 M1 STARTER MOTOR
 S1 IGNITION SWITCH
 S2 P/N SWITCH
 G2 ALTERNATOR



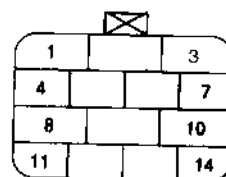
IGNITION SWITCH



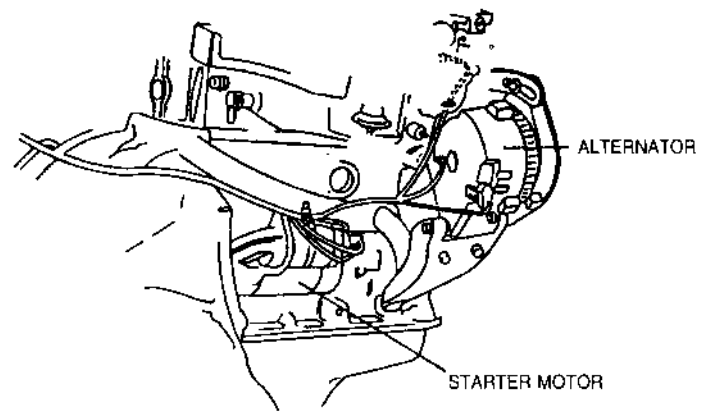
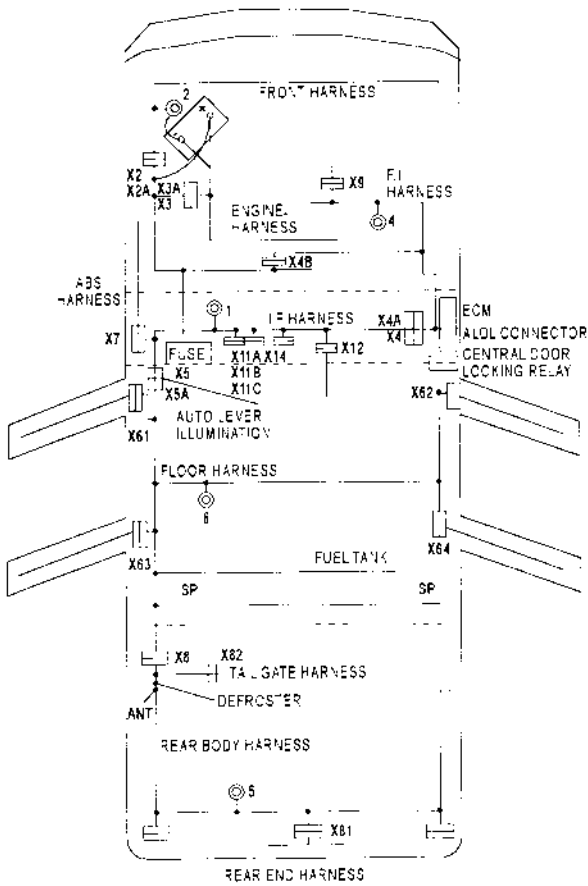
IGNITION SWITCH



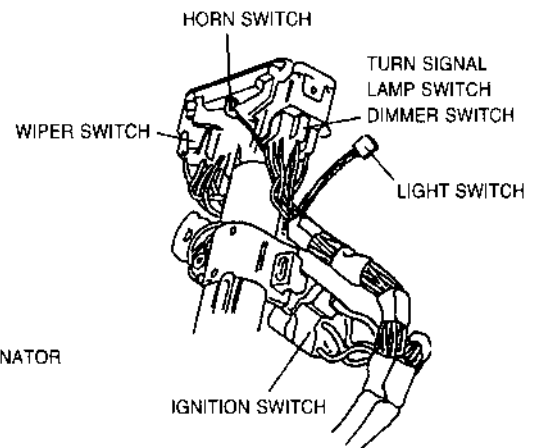
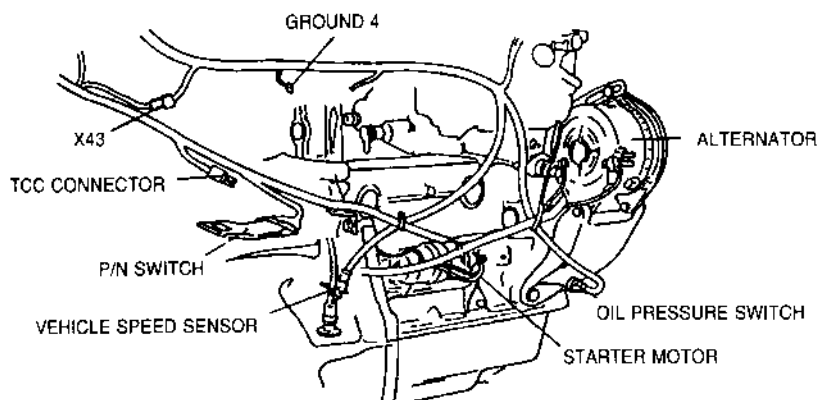
P/N SWITCH CONNECTOR

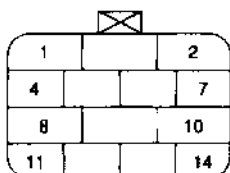
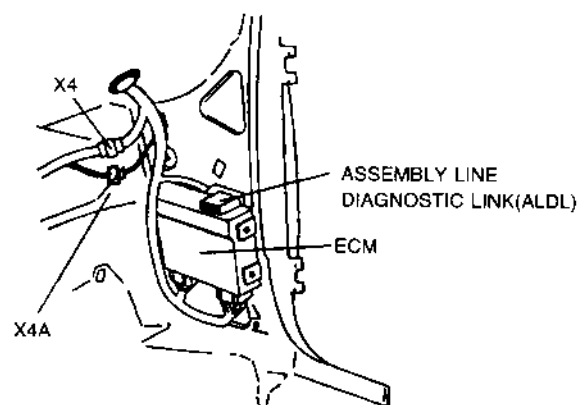
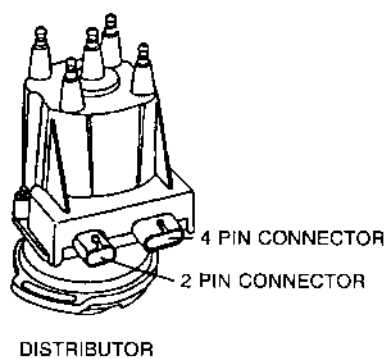
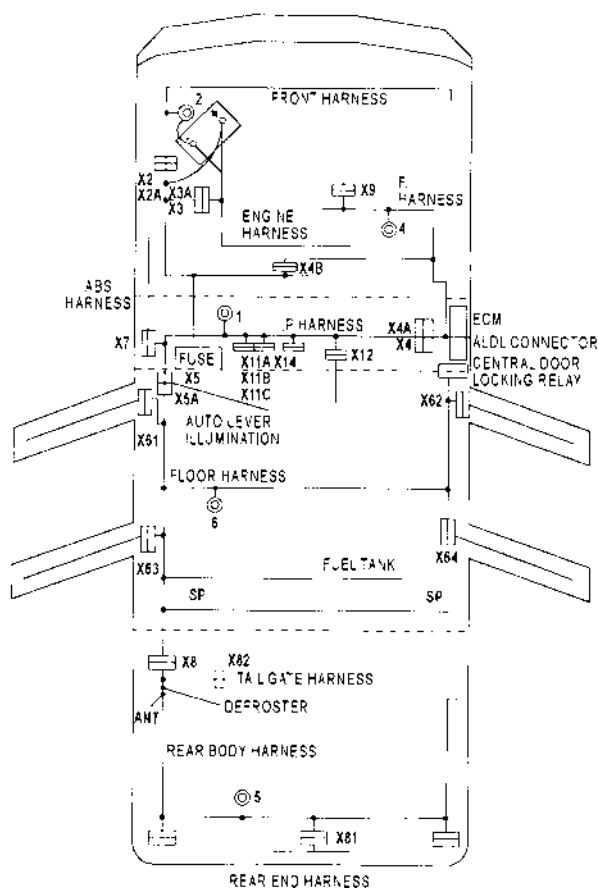
X2, X3 CONNECTOR
(I.P. WIRING HARNESS REFERENCE)

- S2: P/N Switch(Auto Transmission)
 This is a safety circuit to start an engine only when a shift lever is the position of P or N on a vehicle. A cross point is "ON" at the P or N position.
- 527 Analog, Instrument Panel.
 - This is a line connected to a battery charging warning lamp on the instrument panel.
 - When an ignition switch is "ON" a rotor coil is magnetized through the "L" terminal of an alternator. At this time, the "L" terminal power is 1 to 3 Volt when an engine is started, the "L" terminal power is equal to the charging voltage.
 - When a terminal "L" is disconnected or cut off, the terminal "F" is an compensating circuit to magnetics a rotor coil instead of the terminal "L".
 - When an ignition switch is on, the current flows as follows: F13 → battery charging warning lamp → L terminal → rotor coil → ground and the charging warning lamp is on. But when an engine is started, the charging warning lamp is off because "L" terminal power is equal to B+ voltage.



MANUAL TRANSMISSION VEHICLE



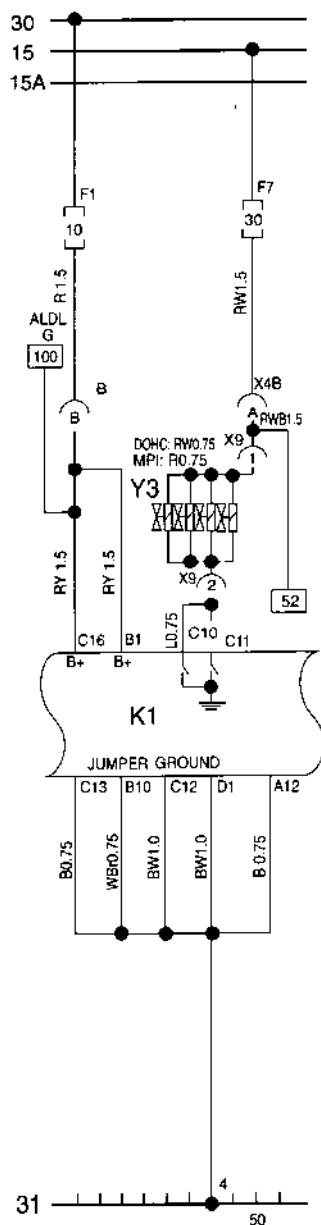


X2, X3 CONNECTOR
(I.P. WIRING HARNESS REFERENCE)

3) INJECTION NOZZLE, ECM POWER, ECM GROUND WIRING(IEFI-6)

K1 ECM

Y3 INJECTOR



- F1 Fuse Number 1

This is a fuse which always feeds "B+" power to ECM.

If you are to delete a fault code memorized on the ECM. Do as follows:

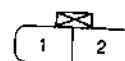
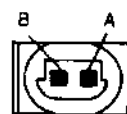
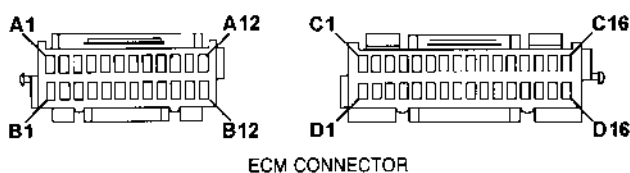
- Set Ignition Switch to "OFF" position
- Disconnect Fuse and wait for about 10 seconds
- Connect Fuse again

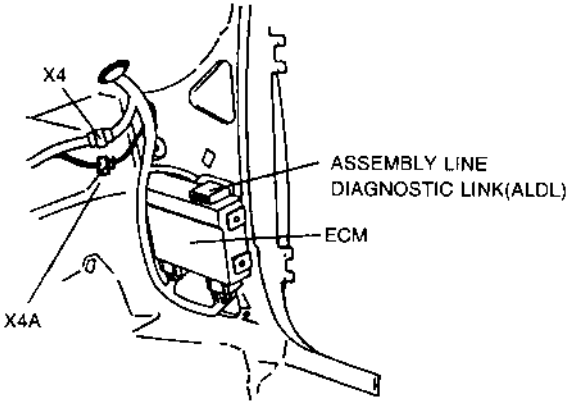
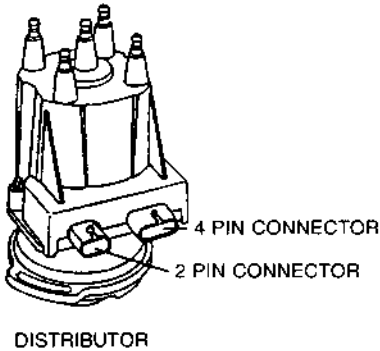
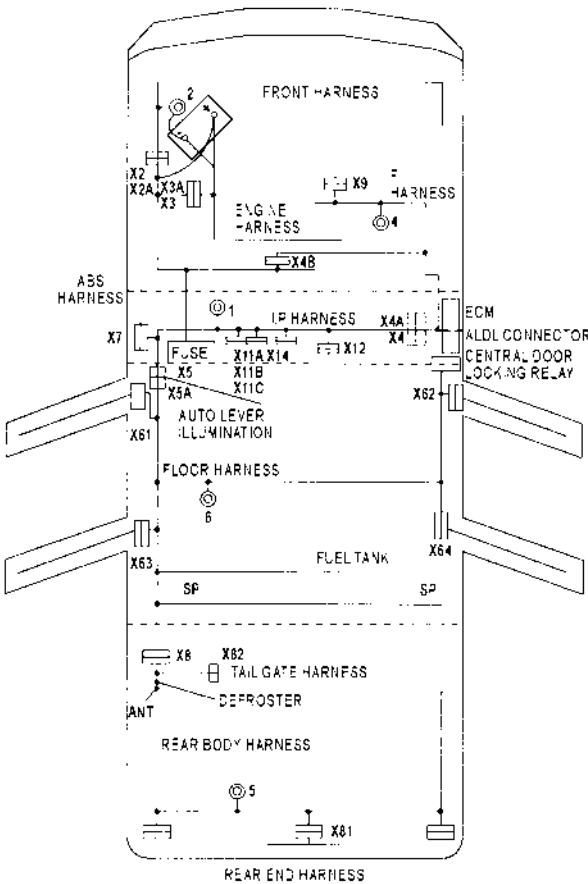
- Y3 Injection Valve(Injector)

- Resistance Valve: 1-2ohms
- Fuel Pressure: 0.75 bar

- K1 ECM Ground

- ECM ground is at the terminal of ECM such as D1, C12 and B10.
- Three ground terminals are at one location which is on the cylinder head.



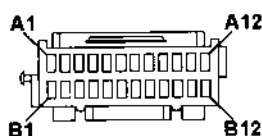
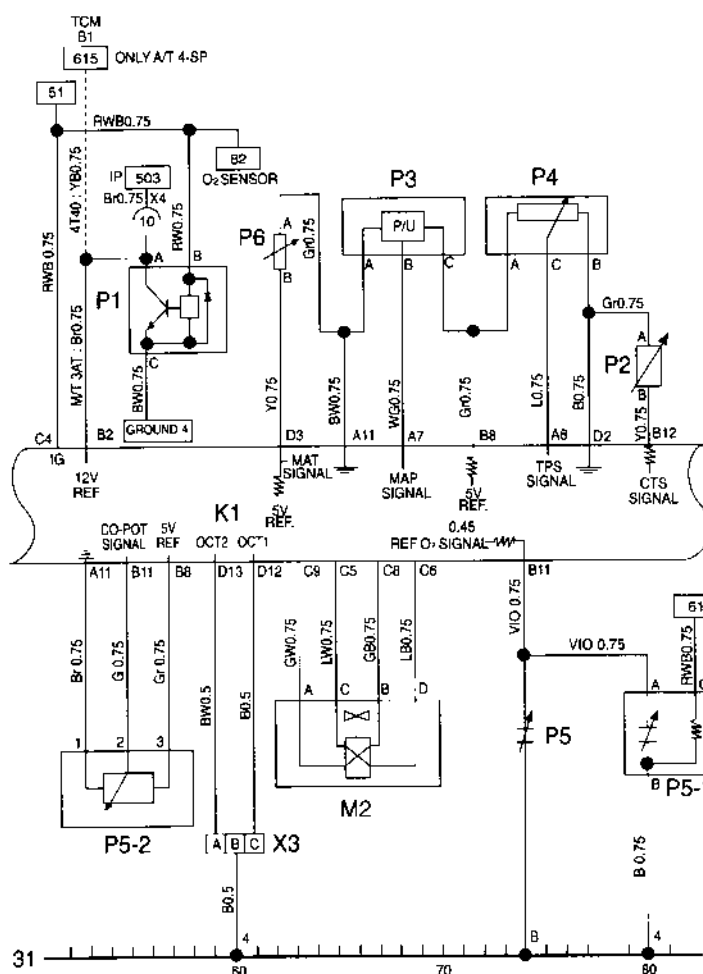


4) COOLANT TEMPERATURE SENSOR(CTS), MANIFOLD AIR PRESSURE(MAP) SENSOR, VEHICLE SPEED SENSOR, THROTTLE POSITION SENSOR(TPS) IAC VALVE, O₂ SENSOR WIRING(IEFI-6)

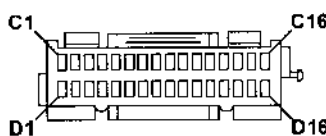
K1 ECM
M2 IDLE AIR CONTROL VALVE(IAC VALVE)
P1 VEHICLE SPEED SENSOR(VSS)
P2 COOLANT TEMPERATURE SENSOR(CTS)
P3 INTAKE MANIFOLD-AIR PRESSURE SENSOR(MAP)
X3 OCTANE SELECTOR CONNECTOR
P4 THROTTLE POSITION SENSOR(TPS)

P5 O₂ SENSOR (UNLEADED TYPE)
P5-1 O₂ SENSOR (1.5 DOHC LEADED TYPE)
P5-2 CO POTENTIO METER(1.5 MPFI LEADED TYPE)
P6 MANIFOLD AIR TEMPERATURE SENSOR(MAT)

30 _____
15 _____
15A _____



ECM CONNECTOR

COOLANT TEMP.
SENSOR
CONNECTORMAP
SENSOR
CONNECTORTHROTTLE
POSITION
SENSOR
CONNECTORIDLE AIR
CONTROL
CONNECTORO₂
SENSOR
CONNECTOR

- Fault Code

Stored fault code	Information sensor	Cause of fault
13	Oxygen sensor	No voltage change
14	Coolant temperature sensor	Voltage too high or low
21	Throttle position sensor	Voltage too high or low
23	Manifold air temperature sensor	Voltage too high or low
24	Vehicle speed sensor	No speed impulses
32	EGR failure	
33	Manifold absolute pressure(MAP) sensor	Voltage too high or low
42	Electrical spark advance	No electr. spark advance
44	Oxygen sensor	Air/fuel mixture too lean
45	Oxygen sensor	Air/fuel mixture too rich
51	ECM	ECM/EPROM fault
53	Immobilizer failure	
54	Co adjust error	

- How to check a fault code

- If the "Service Engine Soon" indicator lights up while driving the engine, a fault has occurred to electronic control system.
- Trouble code can be obtained by flashing the "Service Engine Soon" light if jumpering ALDL terminal "B" to "A" (using ALDL key) with the ignition "ON".
- To erase the trouble code, disconnect fuse #1 for 10 seconds with ignition switch "OFF".

- P2 Coolant Temperature Sensor(CTS)

Temperature(°C)	Resistance(kilo-ohms)
100	0.185
70	0.45
20	3.4
-4	7.5
-40	100

- P3 Intake manifold Air Pressure Sensor(MAP)

Pressure(bar)	MAP signal voltage(v)	Remarks
-0.2	3.7±0.2	Measuring at the Ter A and Ter B of MAP
-0.4	2.5±0.2	Measuring at the Ter A and Ter B of MAP
-0.6	1.5±0.2	Measuring at the Ter A and Ter B of MAP
-0.8	0.5±0.2	Measuring at the Ter A and Ter B of MAP

- P4 Throttle Position Sensor(TPS)

Throttle valve opening(%)	Resistance (kilo-ohms)	Signal Voltage(V)	Remarks
0	2±1	0.5±0.2	Measuring between the TPS Ter B and C
50	3.5±1	2.5±0.2	
100	6.5±1	4.5±0.2	

- P5 O₂ Sensor

- Voltage is changed between 0.1 and 0.9V

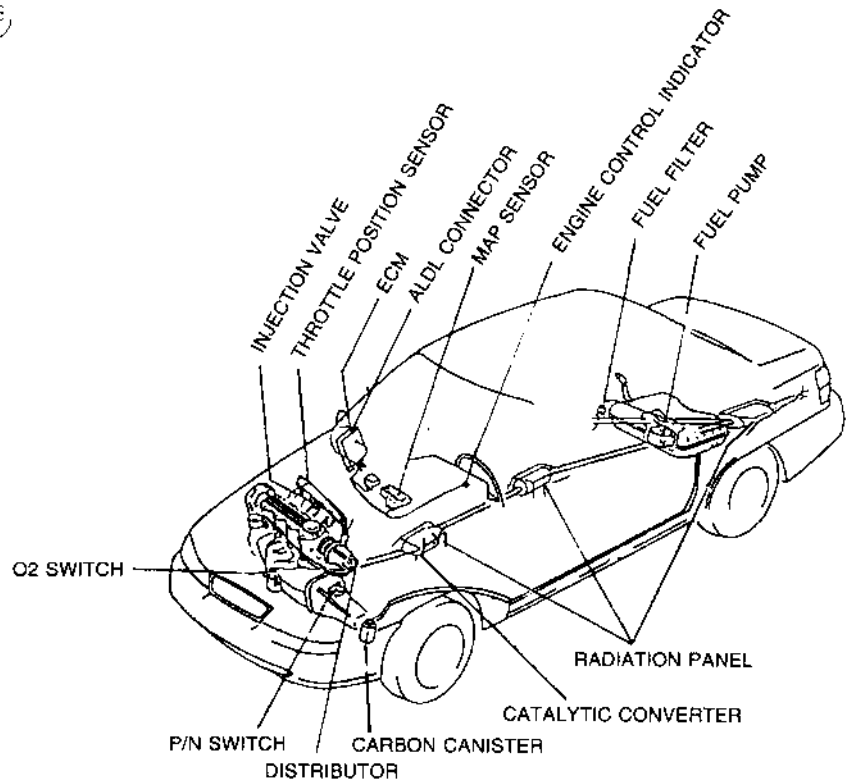
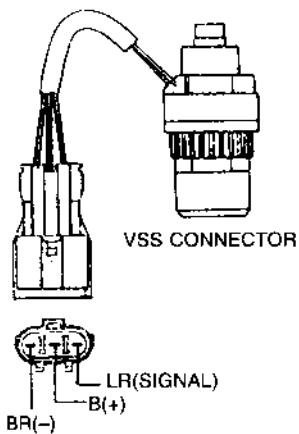
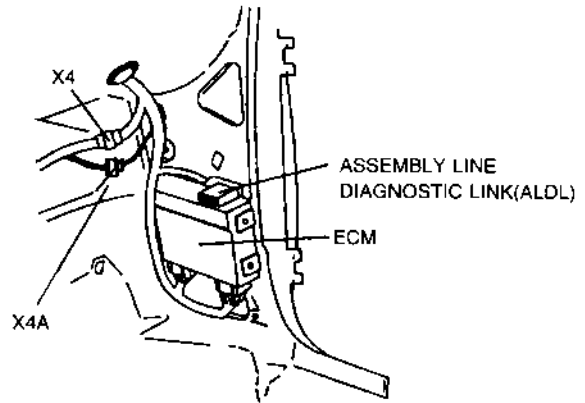
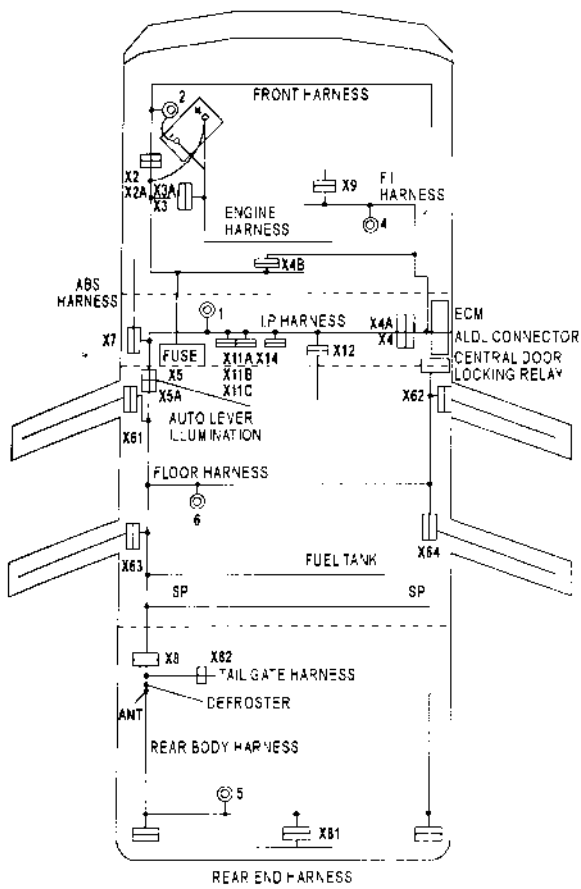
- M2 Idle Air Control Valve(IAC Valve)

- Idle RPM speed: 800-850 RPM

Resistance(ohms)	Remarks
20-100	Measuring between IAC Valve TER A and D
20-100	Measuring between IAC Valve TER B and C

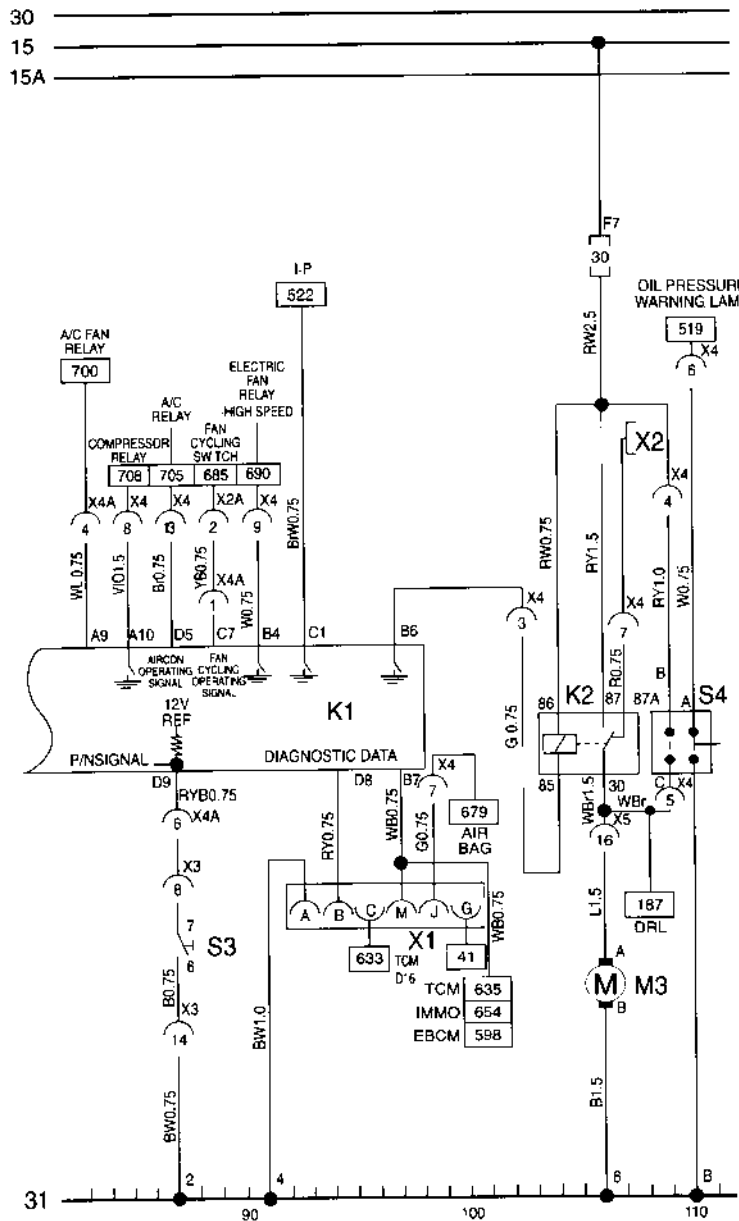
- P1 VSS

- VSS utilized hole sensor theory:
- VSS signal is detected below 0.5V when VSS transistor is operated.
- VSS signal is detected about 12V when the transistor is not operated.

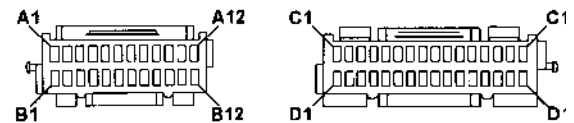


5) "SERVICE ENGINE SOON" LIGHT, FUEL PUMP, ALDL TESTER WIRING(IEFI-6)

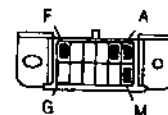
K1	ECM	X1	ALDL CONNECTOR
M3	FUEL PUMP MOTOR	X2	FUEL PUMP TEST CONNECTOR
S3	P/N SWITCH	K2	FUEL PUMP RELAY
S4	OIL PRESSURE SWITCH		



- S3 P/N Switch
A cross-point between A and B in the P/N Switch is "ON" in case that a shift lever is at the P or N Position.
- X1 ALDL Connector
 - Connect Scanner-11
 - On jumpering wire between A and B terminal connecting ALDL key, initial ignition line is controlled or fault codes are identified.
- K1 ECM TER B6
 - Ground is feeded to K2 fuel pump relay for seconds when an ignition key is "ON".
 - During engine in cranking or starting. The ECM detects rpm signal to feed ground to K2 relay.



ECM CONNECTOR



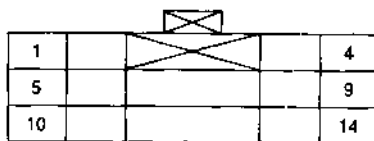
ALDL CONNECTOR



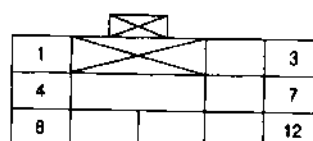
BRAKE SWITCH CONNECTOR



FUEL PUMP



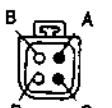
X4 CONNECTOR



X4A CONNECTOR



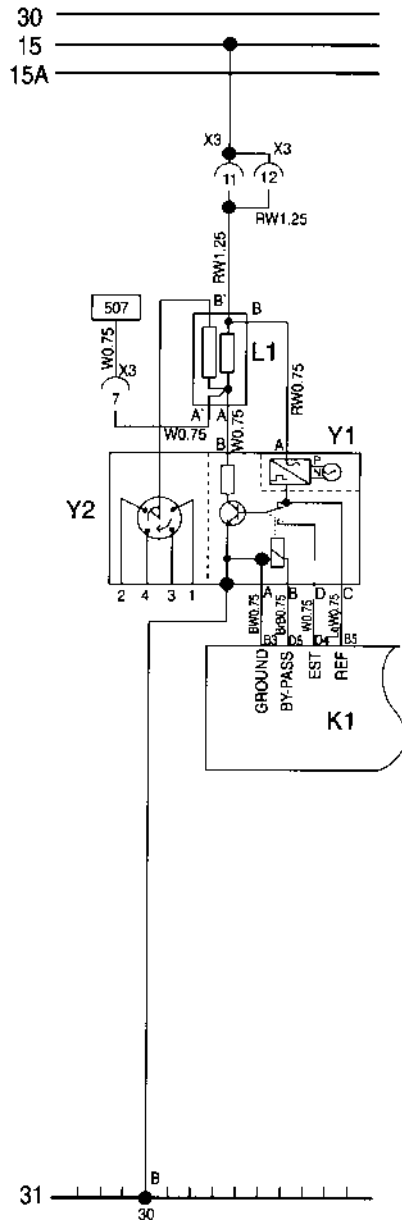
FUEL PUMP RELAY



T.C.C SOLENOID VALVE

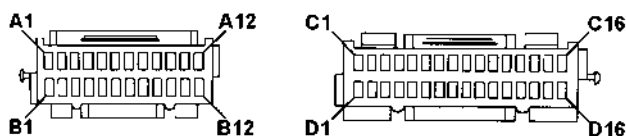
6) IGNITION WIRING(IEFI-S)

K1 ECM
 L1 IGNITION COIL
 Y1 IGNITION MODULE
 Y2 DISTRIBUTOR

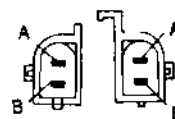


- L1 Ignition Coil
 - Insulation Resistance: ∞
 - 1st Resistance: 0.35-0.45ohms
 - 2nd Resistance: 7.5-9.5kilo-ohms
- Y1 Ignition Module
 - Pick up Coil
 - Insulation Resistance: ∞
 - Coil Resistance: 500-1500ohms
 - Ignition System Check

Measuring terminal	Cranking	Starting
Ground - Distributor A	0V	0V
Ground - Distributor B	10-20mV	4.5-5.0V
Ground - Distributor C	0.5-1.5V	0.7-2.7V
Ground - Distributor D	0.2-0.3V	1.0-3.0V



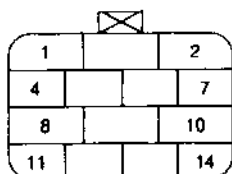
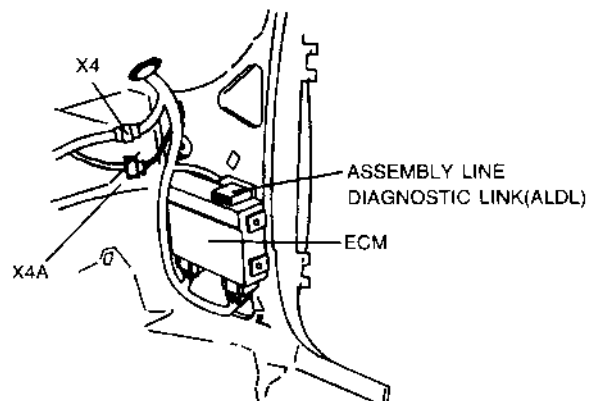
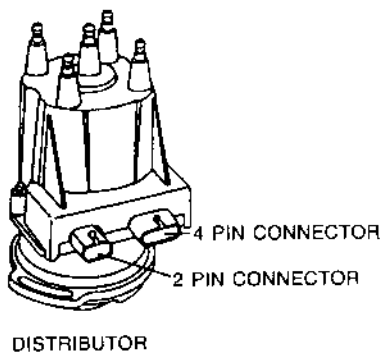
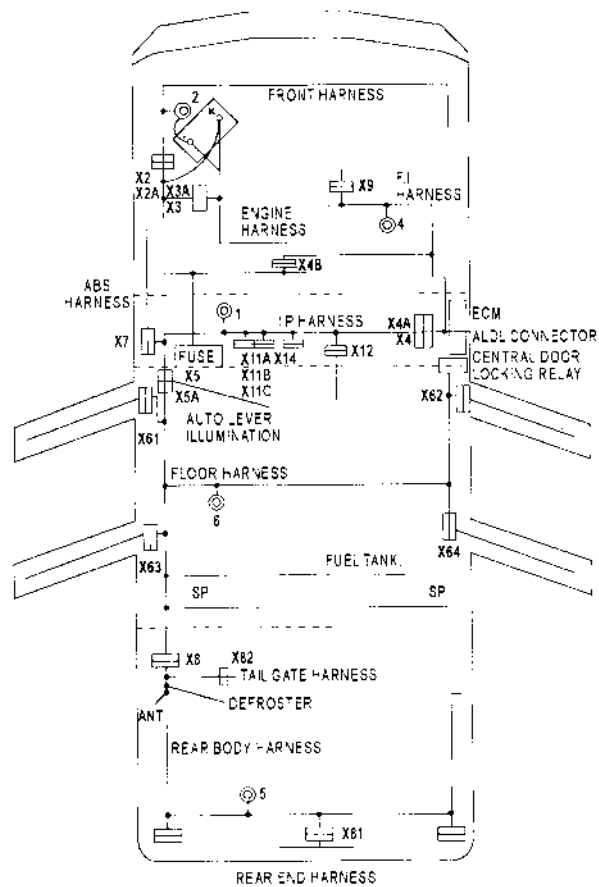
ECM CONNECTOR



IGNITION COIL



DISTRIBUTOR

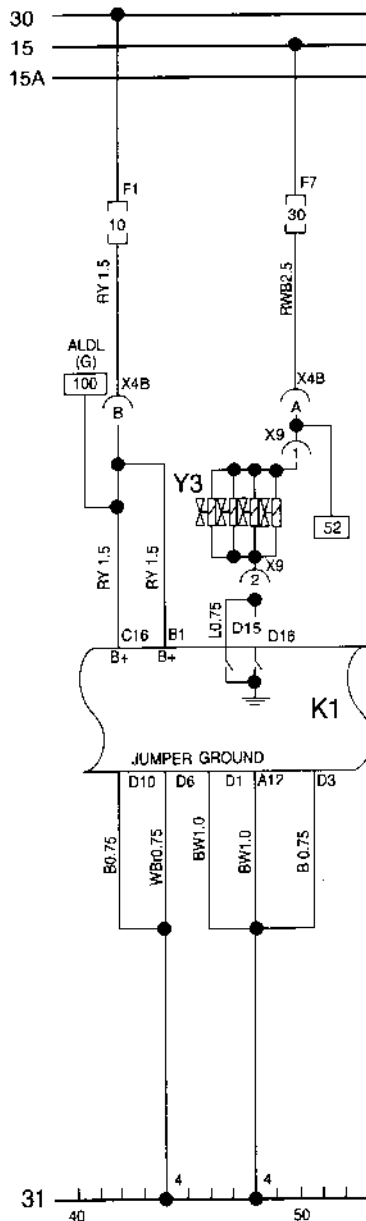


X2, X3 CONNECTOR
(I.P. WIRING HARNESS REFERENCE)

7) INJECTION NOZZLE, ECM POWER, ECM GROUND WIRING(IEFI-S)

K1 ECM

Y3 INJECTOR



- F1 Fuse Number 1

This is a fuse which always feeds "B+" power to ECM.

If you are to delete a fault code memorized on the ECM. Do as follows:

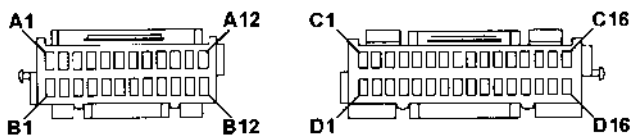
- Set Ignition Switch to "OFF" position
- Disconnect Fuse1 and wait for about 10 seconds
- Connect Fuse again

- Y3 Injection Valve(Injector)

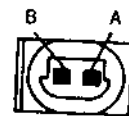
- Resistance Valve: 1-2ohms
- Fuel Pressure: 0.75 bar

- K1 ECM Ground

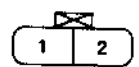
- ECM ground is at the terminal of ECM such as A12, D1 and D6.
- Three ground terminals are at one location which is on the cylinder head.



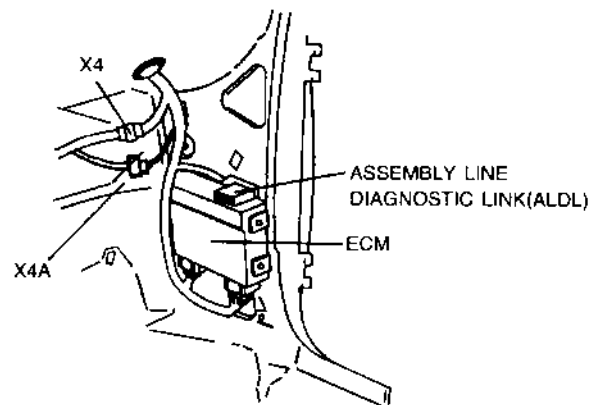
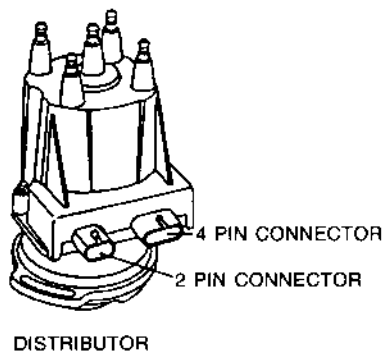
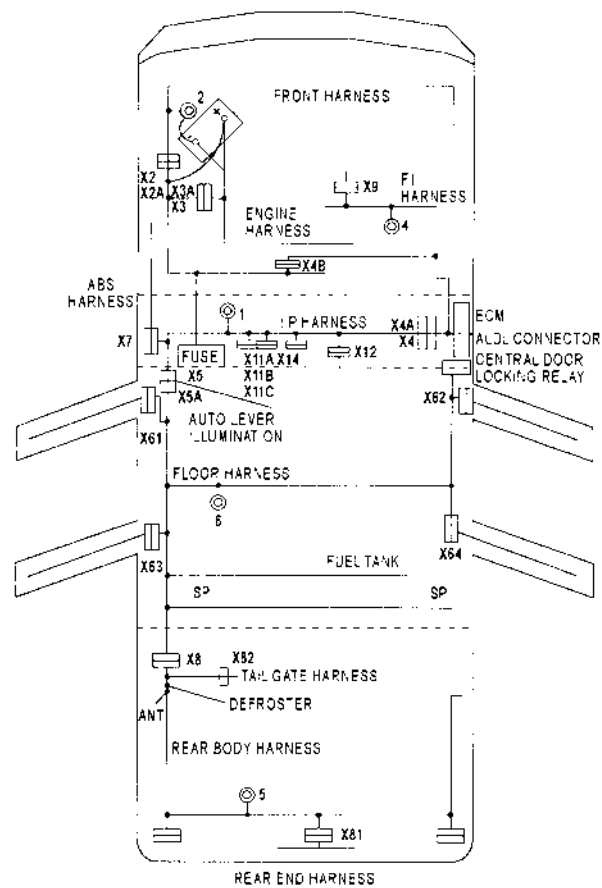
ECM CONNECTOR



INJECTION VALVE



X9 CONNECTOR

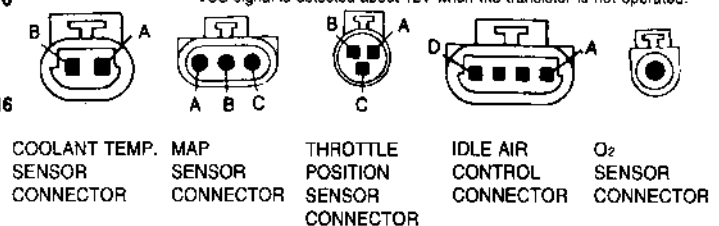
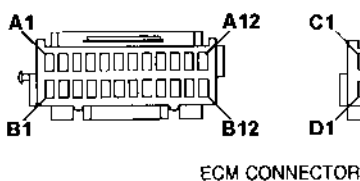
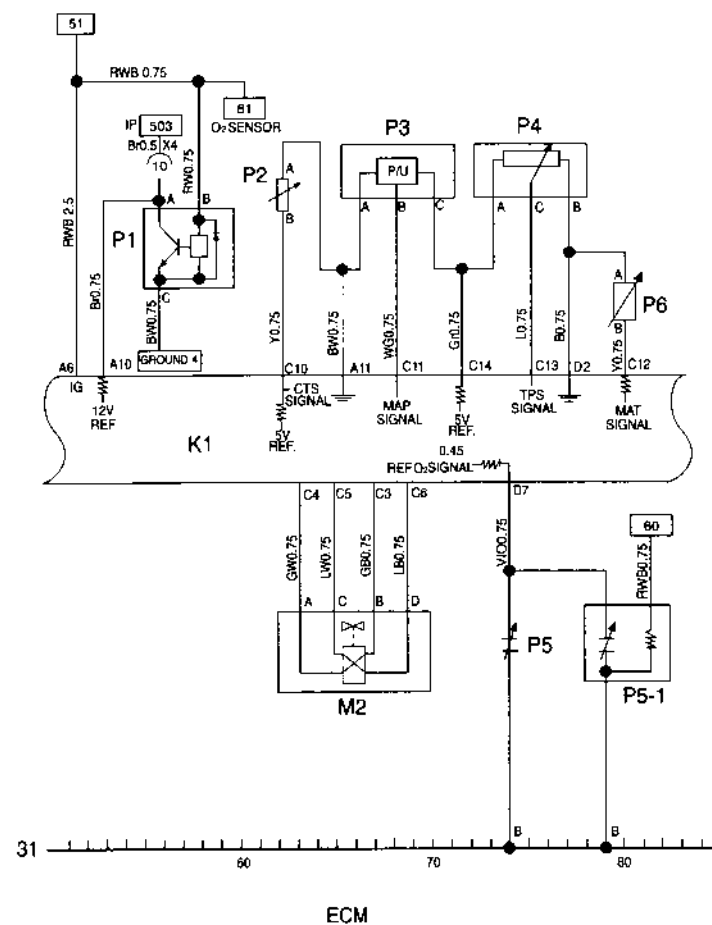


8) COOLANT TEMPERATURE SENSOR(CTS), MANIFOLD AIR PRESSURE(MAP) SENSOR, VEHICLE SPEED SENSOR, THROTTLE POSITION SENSOR(TPS) IAC VALVE, O₂ SENSOR WIRING(IEFI-S)

K1 ECM
M2 IDLE AIR CONTROL VALVE(IAC VALVE)
P1 VEHICLE SPEED SENSOR(VSS)
P2 COOLANT TEMPERATURE SENSOR(CTS)
P3 INTAKE MANIFOLD AIR PRESSURE SENSOR(MAP)

P4 THROTTLE POSITION SENSOR(TPS)
P5 O₂ SENSOR(UN LEADED TYPE)
P5-1 O₂ SENSOR(LEADED TYPE)
P6 MANIFOLD AIR TEMPERATURE SENSOR(MAT)

30
15
15A



- Fault Code

Stored fault code	Information sensor	Cause of fault
13	Oxygen sensor	No voltage change
14	Coolant temperature sensor	Voltage too high or low
21	Throttle position sensor	Voltage too high or low
23	Manifold air temperature sensor	Voltage too high or low
24	Vehicle speed sensor	No speed impulses
33	Manifold absolute pressure(MAP) sensor	Voltage too high or low
42	Electrical spark advance	No electr. spark advance
44	Oxygen sensor	Air/fuel mixture too lean
45	Oxygen sensor	Air/fuel mixture too rich
51	ECM	ECM/EPROM fault

- How to check a fault code

- If the "Service Engine Soon" indicator lights up while driving the engine, a fault has occurred to electronic control system.
- Trouble code can be obtained by flashing the "Service Engine Soon" light if jumpering ALDL terminal "B" to "A" (using ALDL key) with the ignition "ON".
- To erase the trouble code, disconnect fuse #1 for 10 seconds with ignition switch "OFF".

- P2 Coolant Temperature Sensor(CTS)

Temperature(°C)	Resistance(kilo-ohms)
100	0.165
70	0.45
20	3.4
-4	7.5
-40	100

- P3 Intake manifold Air Pressure Sensor(MAP)

Pressure(bar)	MAP signal voltage(v)	Remarks
-0.2	3.7±0.2	Measuring at the Ter A and Ter B of MAP
-0.4	2.5±0.2	Measuring at the Ter A and Ter B of MAP
-0.6	1.5±0.2	Measuring at the Ter A and Ter B of MAP
-0.8	0.5±0.2	Measuring at the Ter A and Ter B of MAP

- P4 Throttle Position Sensor(TPS)

Throttle valve opening(%)	Resistance (kilo-ohms)	Signal Voltage(V)	Remarks
0	2±1	0.5±0.2	Measuring between the TPS Ter B and C
50	3.5±1	2.5±0.2	
100	6.5±1	4.5±0.2	

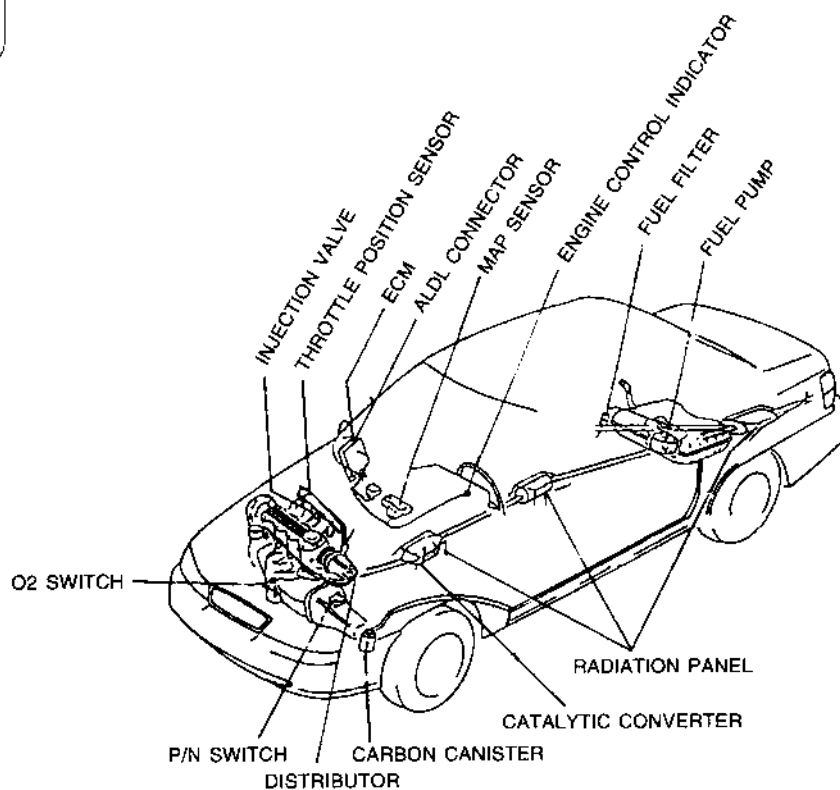
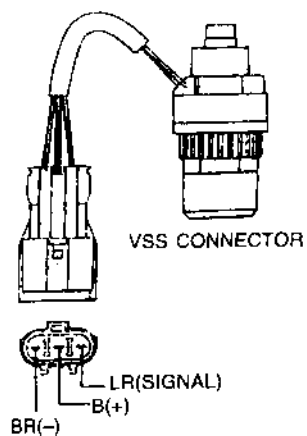
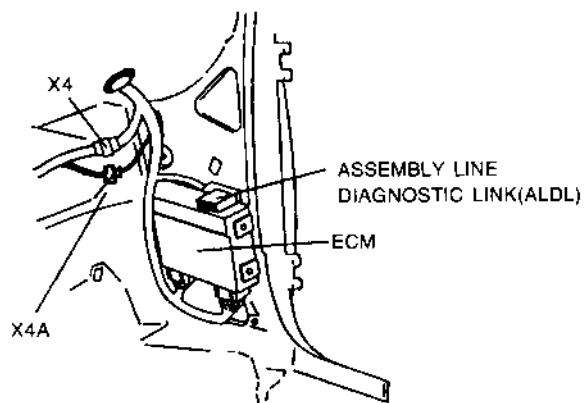
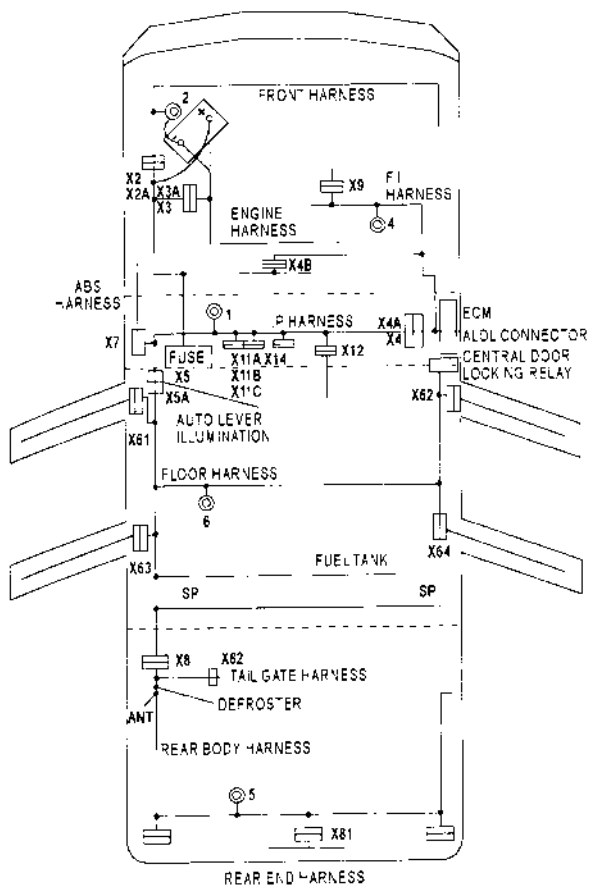
- P5 O₂ Sensor

- Voltage is changed between 0.1 and 0.9V
- M2 Idle Air Control Valve(IAC Valve)
- Idle RPM speed: 800-850 RPM

Resistance(ohms)	Remarks
20-100	Measuring between IAC Valve TER A and D
20-100	Measuring between IAC Valve TER B and C

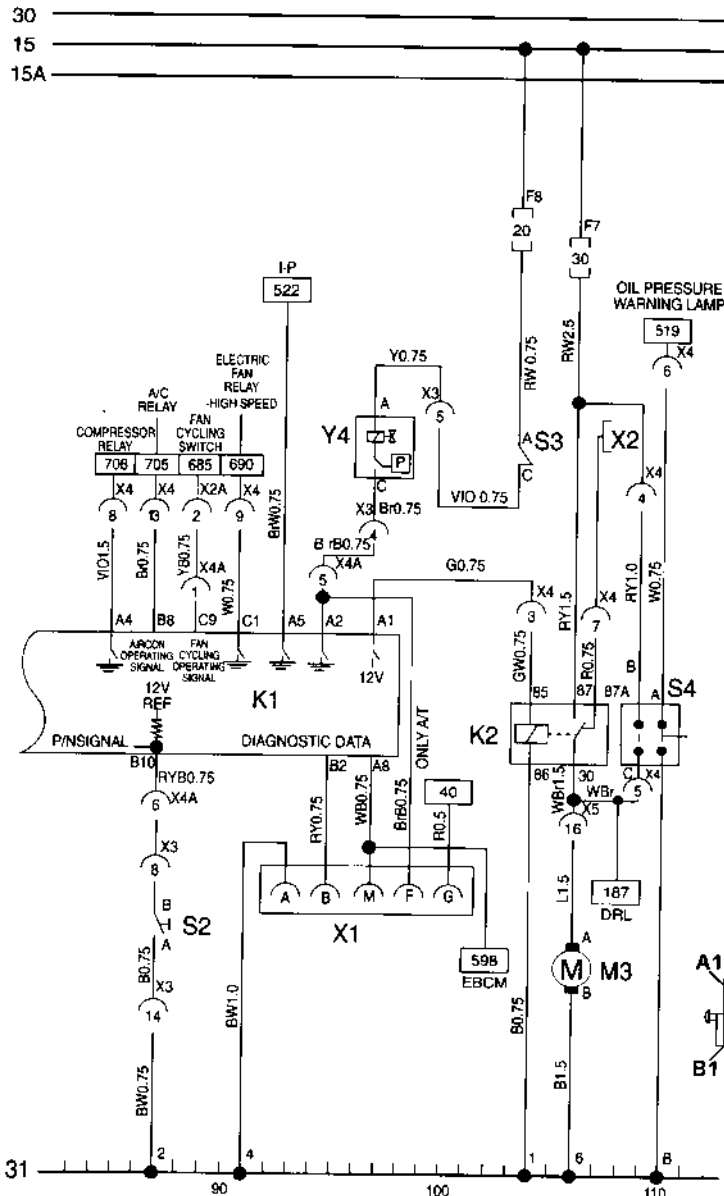
- P1 VSS

- VSS utilized hole sensor theory:
- VSS signal is detected below 0.5V when VSS transistor is operated.
- VSS signal is detected about 12V when the transistor is not operated.

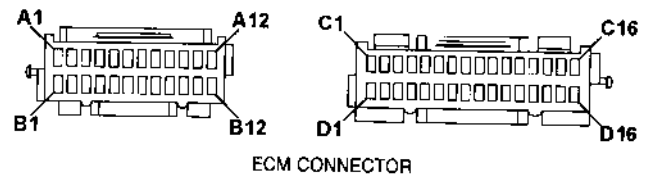


9) "SERVICE ENGINE SOON" LIGHT, TCC, FUEL PUMP, ALDL TESTER WIRING(IEFI-S)

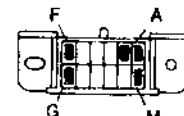
- | | | | |
|----|---------------------|----|--------------------------|
| K1 | ECM | X1 | ALDL CONNECTOR |
| K2 | FUEL PUMP RELAY | X2 | FUEL PUMP TEST CONNECTOR |
| M3 | FUEL PUMP MOTOR | Y4 | TCC SOLENOID VALVE |
| S3 | BRAKE SWITCH | | (AUTO T/M 3-SPEED) |
| S4 | OIL PRESSURE SWITCH | | |
| S2 | P/N SWITCH | | |



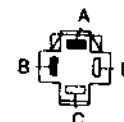
- S2 P/N Switch
A cross-point between A and B in the P/N Switch is "ON" in case that a shift lever is at the P or N Position.
- K1 ECM Ter. A1
 - B+ power is feeded to K2 fuel pump relay for 2 seconds when an ignition switch is "ON".
 - During engine in cranking or starting, the ECM detects RPM signals to feed B+ power to K2 Relay.
- X1 ALDL Connector
 - Connect Scanner-1
 - On jumpering wire between A and B terminal or connecting ALDL. key, initial ignition line is controlled or fault codes are identified.



ECM CONNECTOR



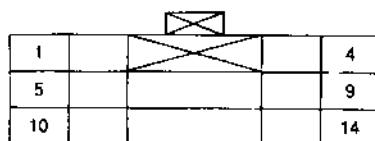
ALDL CONNECTOR



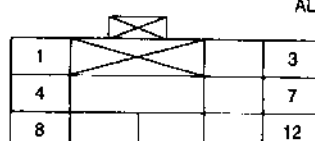
BRAKE SWITCH CONNECTOR



FUEL PUMP



X4 CONNECTOR



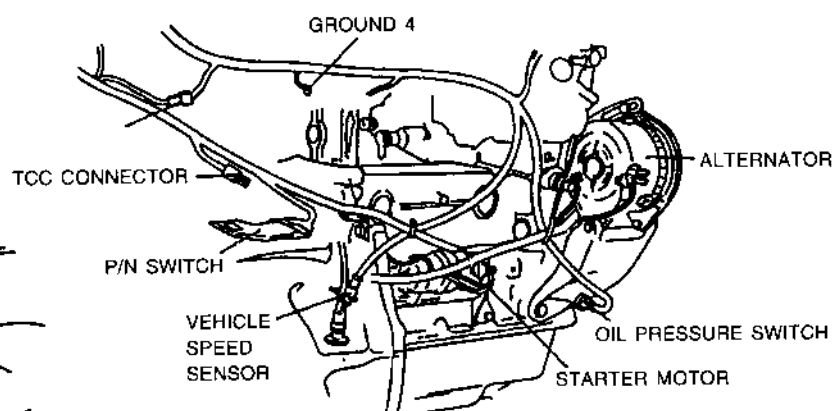
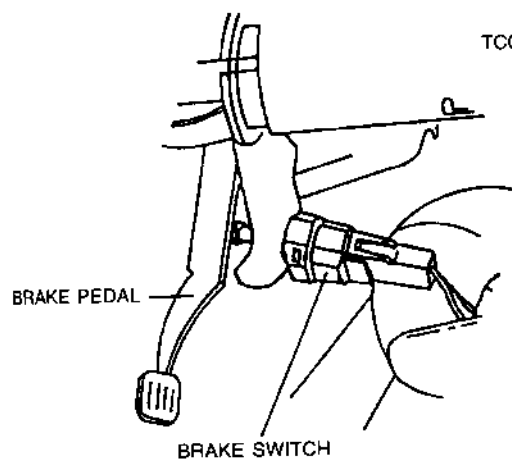
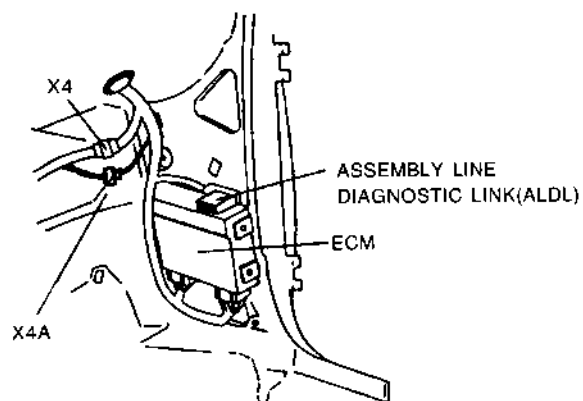
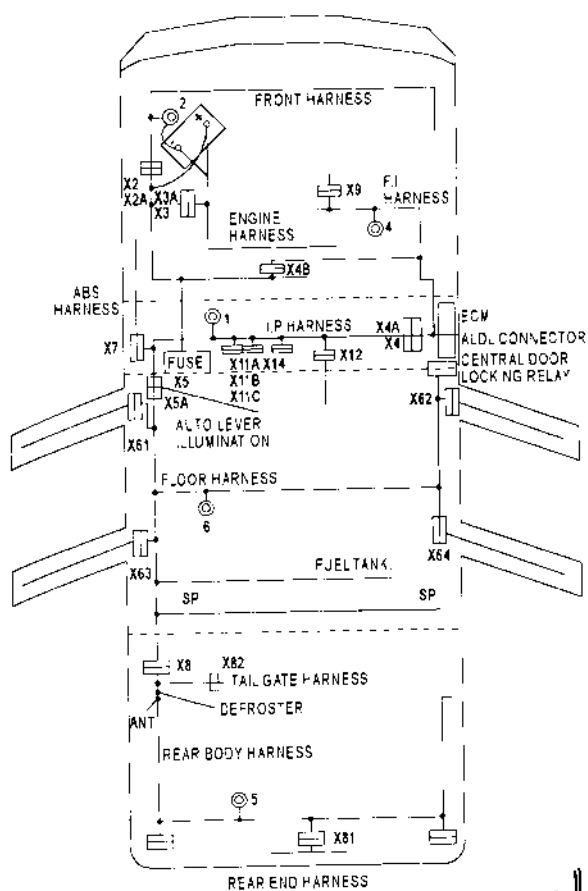
X4A CONNECTOR



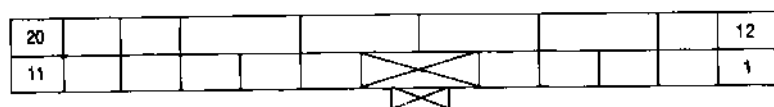
FUEL PUMP RELAY



T.C.C SOLENOID VALVE



AUTO TRANSMISSION VEHICLE

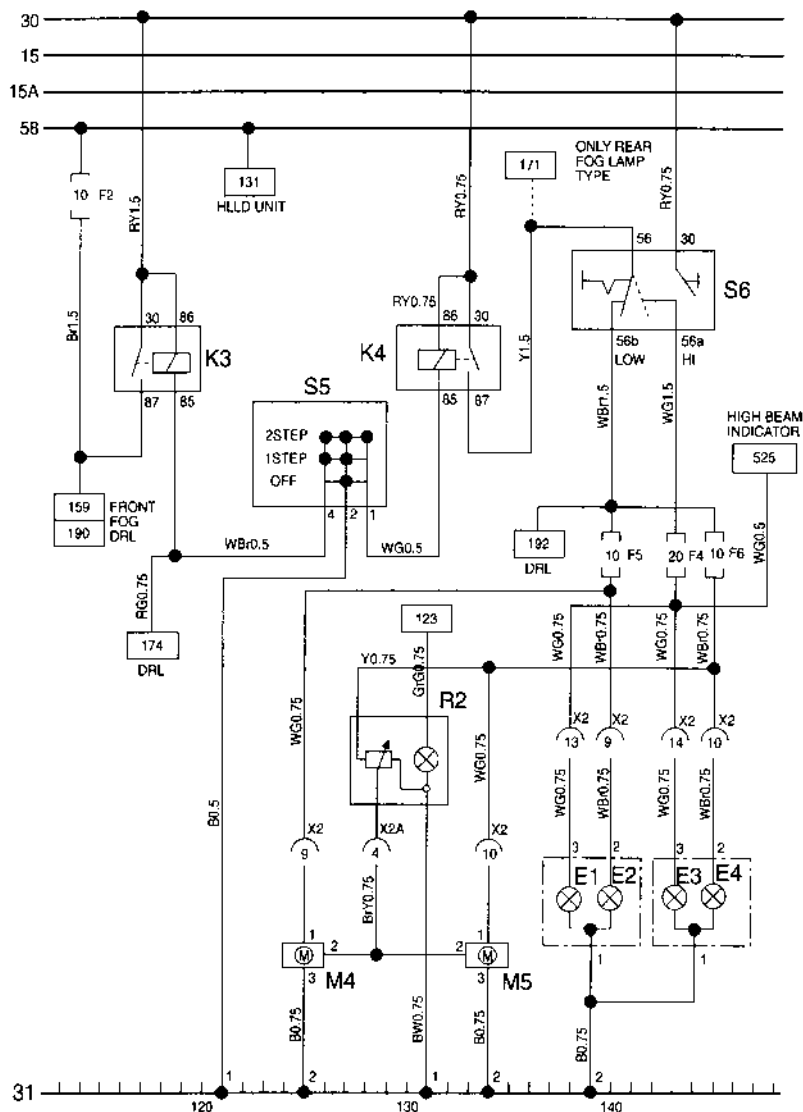


X5 CONNECTOR

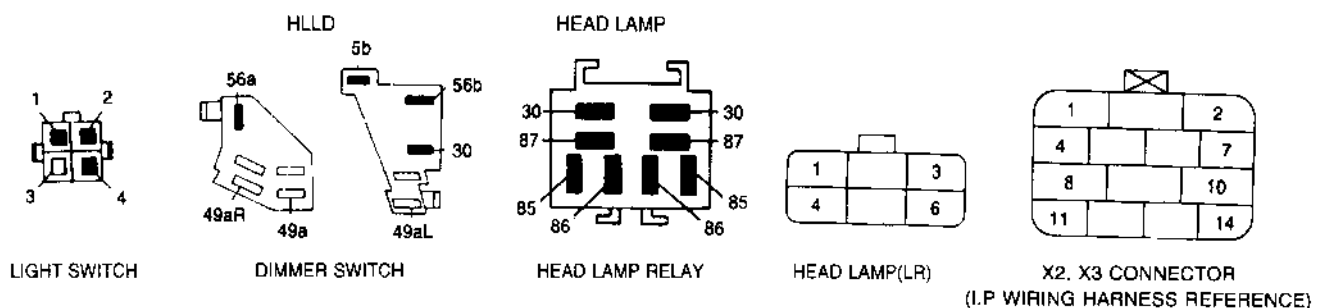
10) LIGHT WIRING

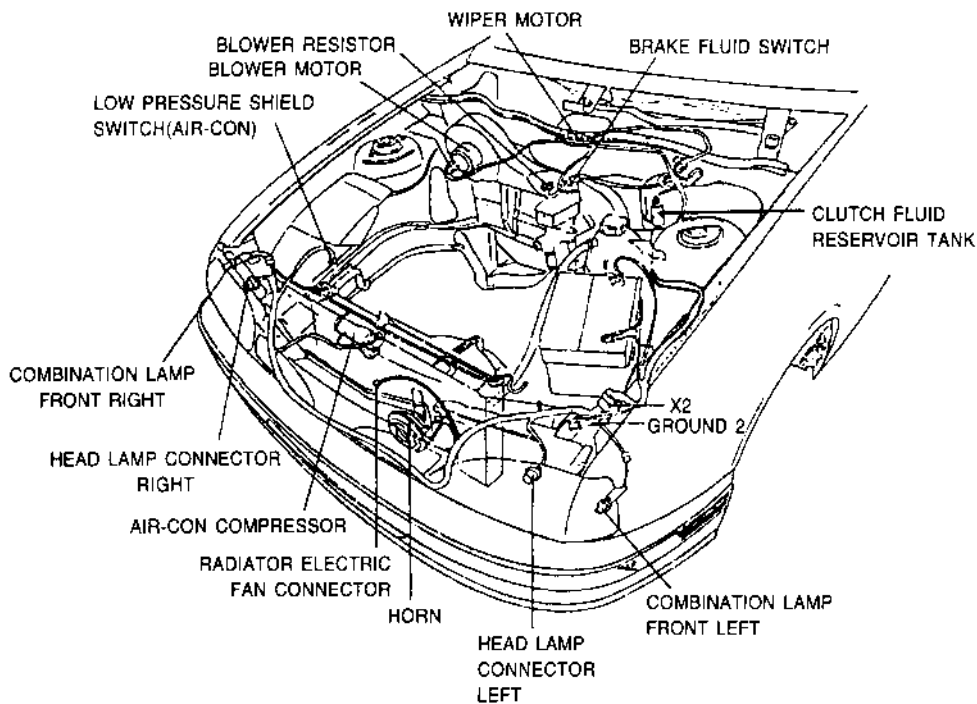
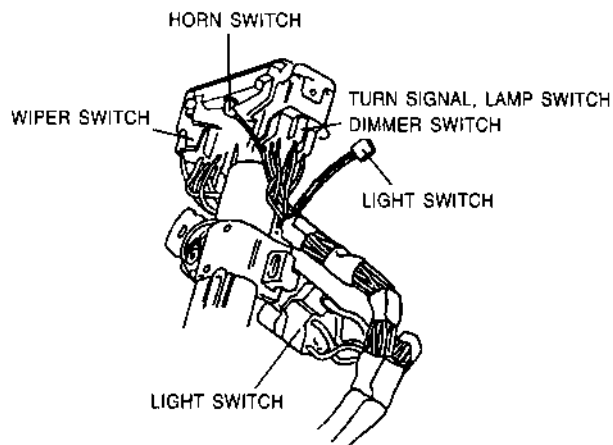
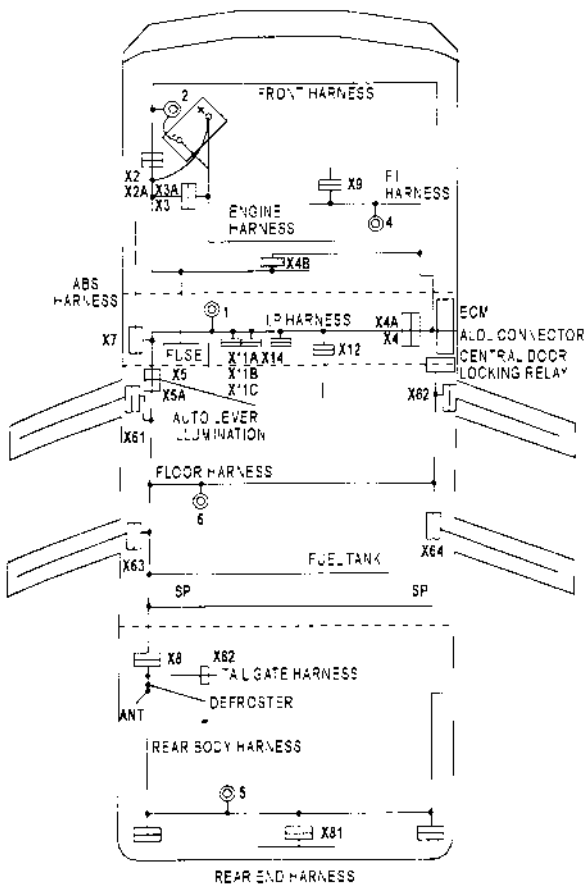
E1 HEAD LAMP HIGH BEAM(LEFT)
 E2 HEAD LAMP LOW BEAM(LEFT)
 E3 HEAD LAMP HIGH BEAM(RIGHT)
 E4 HEAD LAMP LOW BEAM(RIGHT)
 K3 ILLUMINATION RELAY
 K4 HEAD LAMP RELAY

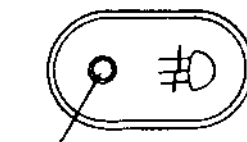
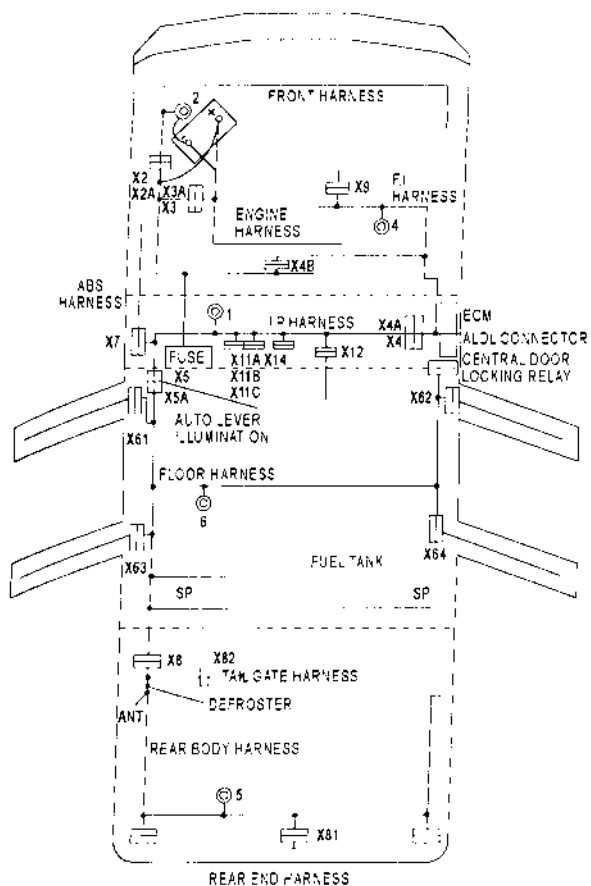
M4 HLLD MOTOR(LEFT)
 M5 HLLD MOTOR(RIGHT)
 R2 HEAD LAMP LEVELING DEVICE(HLLD) CONTROL UNIT
 S5 LIGHT SWITCH
 S6 DIMMER SWITCH



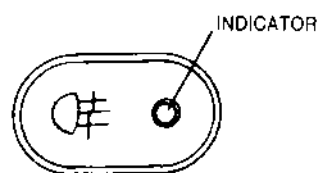
- F2 58 Line
 After a light switch is set to 1st or 2nd step, a illumination relay is operating to feed power to Fuse 2.
 The line connect to F2 is called a 58 Line.
 The 58 Line feeds power to various Illumination lamps and clearance lamps, etc.
- S5 Switch, S6 Dimmer Switch
 A light Switch and A dimmer switch are display respectively on the wiring diagram.
 But these are assembled physically in a device.
- [525] Analog, Instrument panel.
 This is connected to I/P Head Lamp high beam Indicator.



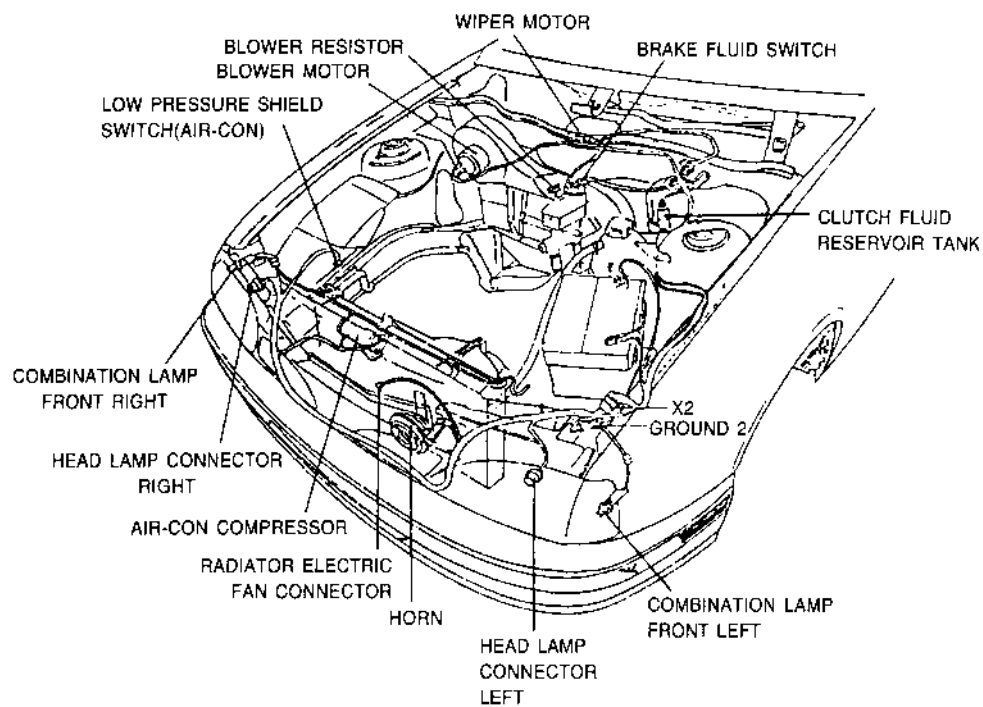


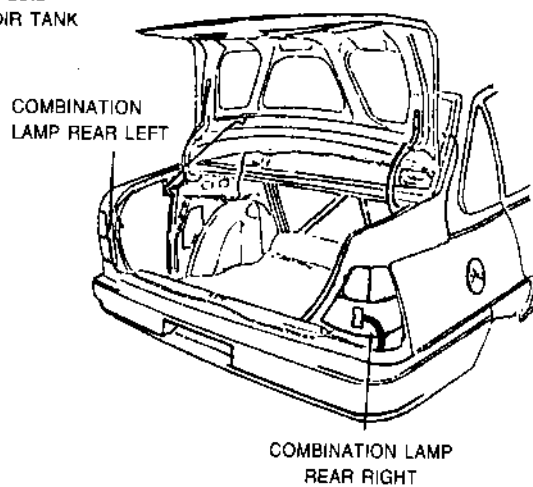
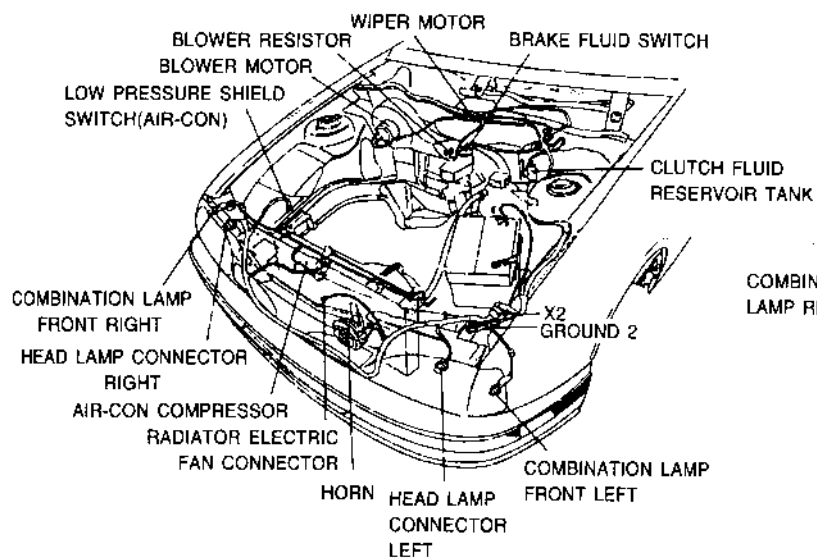
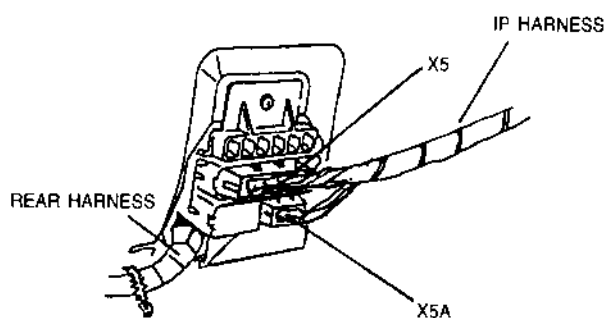
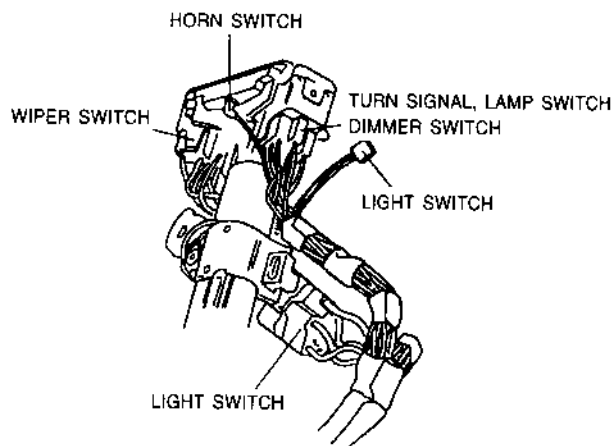
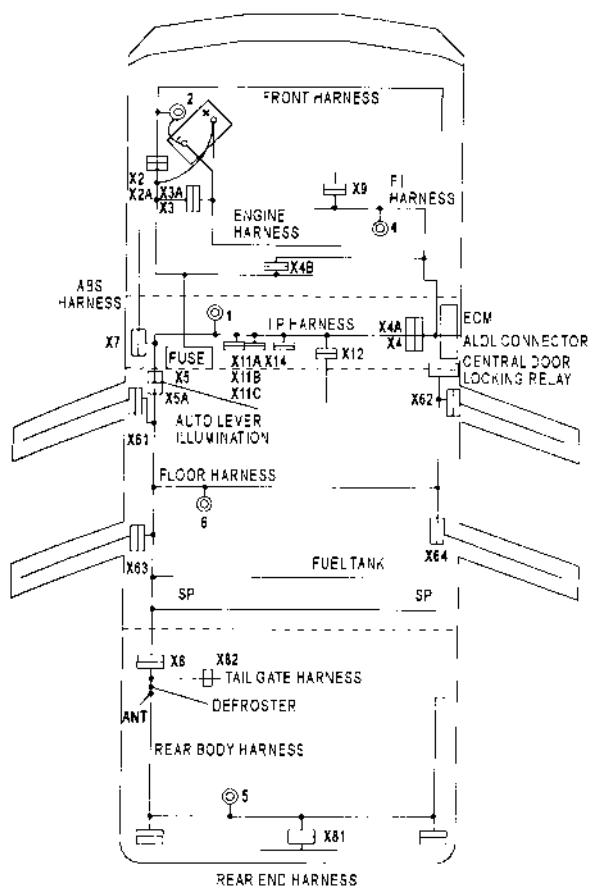


FRONT FOG LAMP S/W



REAR FOG LAMP S/W

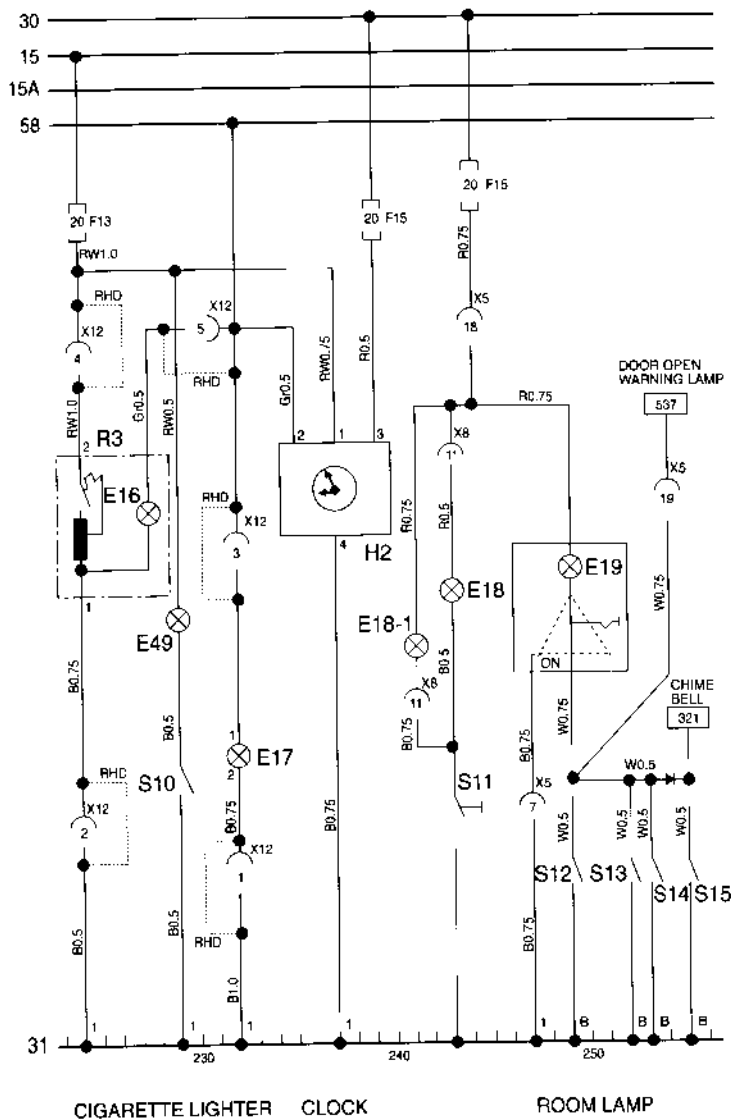




13) GLOVE BOX LAMP, CIGARETTE LIGHTER, DIGITAL CLOCK ROOM LAMP, TRUNK ROOM LAMP, WIRING

E16 ILLUMINATION LAMP – CIGARETTE LIGHTER
 E17 ILLUMINATION LAMP – ASH TRAY
 E18 TRUNK ROOM LAMP
 E18-1 TRUNK ROOM LAMP(5-DOOR)
 E19 ROOM LAMP
 E49 GLOVE BOX ILLUMINATION LAMP
 H2 DIGITAL CLOCK

R3 CIGARETTE LIGHTER
 S10 GLOVE BOX ILLUMINATION SWITCH
 S11 TRUNK ROOM LAMP SWITCH(5-DOOR)
 S12 DOOR CONTACT SWITCH-R.R
 S13 DOOR CONTACT SWITCH-R.L
 S14 DOOR CONTACT SWITCH-F.R
 S15 DOOR CONTACT SWITCH-F.L



– H2 Digital Clock

- The power operating a clock is H2 digital clock terminal 3 supplied B+ and H2 digital clock terminal 4 connected to ground line.
- H2 digital clock terminal 1 is feeded from 15 line through fuse 13. The 15 line is connected to an illumination lamp when an ignition switch is "ON".
- H2 digital clock terminal 2 is feeded from 58 line and this is a circuit for controlling brightness of an illumination lamp when light switch is on the first step.

– How to adjust a digital clock

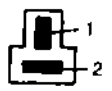
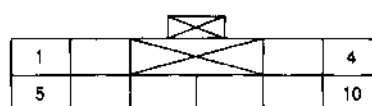
- "H" hour adjusting(an ignition switch is "ON") adjust hour by pushing the "H" button. It is adjusted fastly pushing continuously but done by one hour at one time.
- "M" minute adjusting(an ignition switch is "ON") adjust minute by pushing the "M" button. On pushing continuously be adjusted fastly but on pushing onetime, be done by one minute.
- "S" minute setting
On pushing this button, minute become zero.
- "DISP" display button
When an ignition switch is "OFF" position, time is displayed in case of pushing this button.



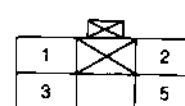
GLOVE BOX LAMP



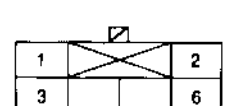
GLOVE BOX SWITCH

CIGARETTE LIGHTER
(I/P H.R.)ASH TRAY
ILLUMINATION LAMPCLOCK
CONNECTOR

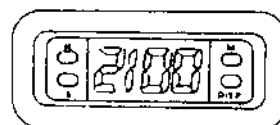
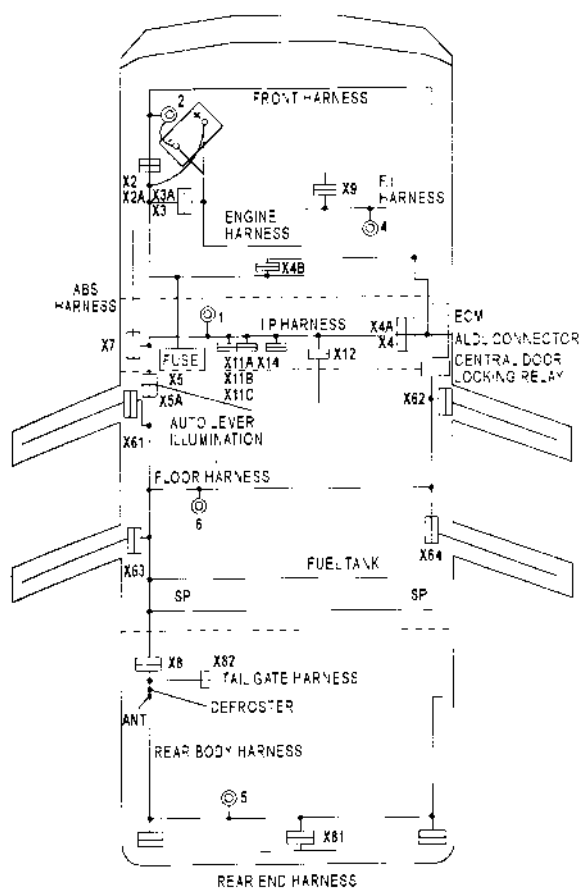
X5A CONNECTOR



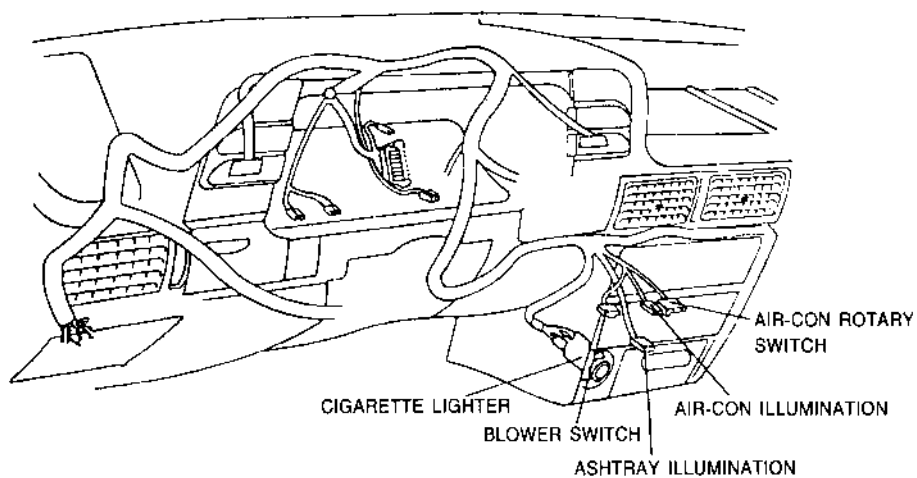
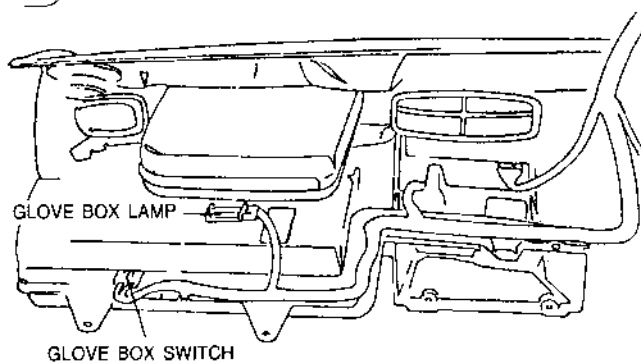
X12 CONNECTOR



REAR FOG S/W



DIGITAL CLOCK

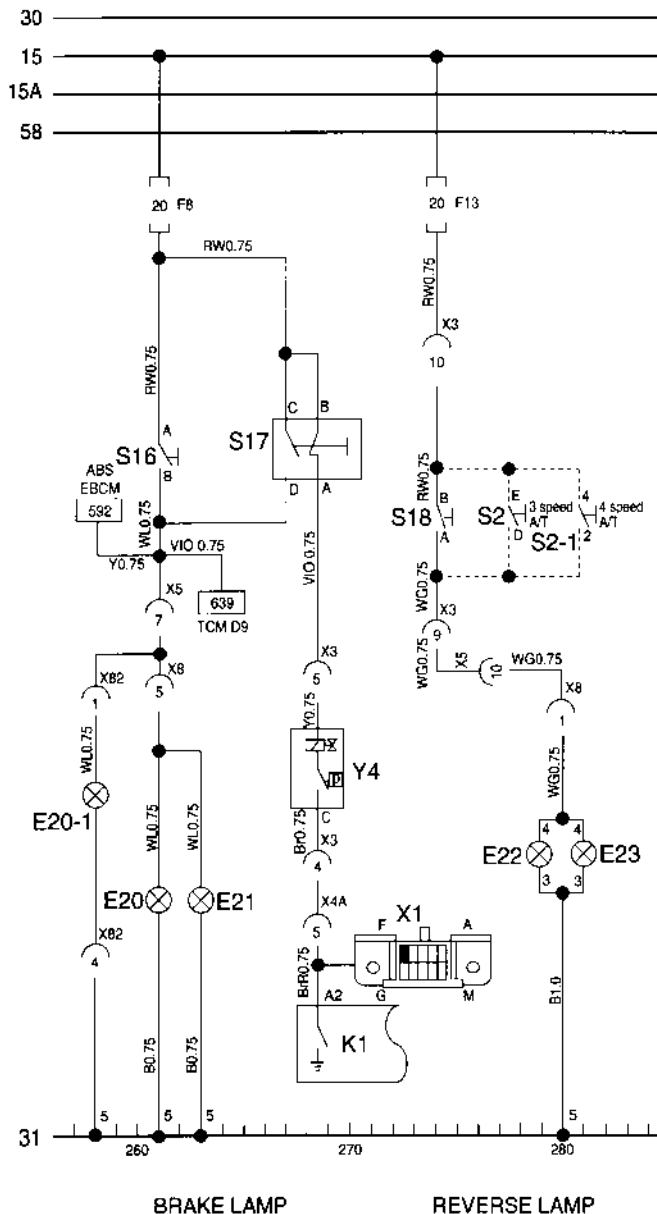


14) BRAKE LAMP, REVERSE LAMP, TCC WIRING

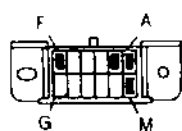
E20 BRAKE LAMP(LEFT)
 E20-1 CENTER HIGH MOUNTING
 BRAKE LAMP(3-DOOR,5-DOOR)
 E21 BRAKE LAMP(RIGHT)
 E22 REVERSE LAMP(LEFT)

E23 REVERSE LAMP(RIGHT)
 S2 P/N SWITCH(3AT)
 S2-1 P/N SWITCH(4AT)
 S16 BRAKE SWITCH(M/T)

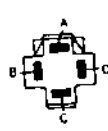
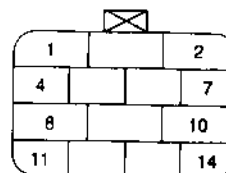
S17 BRAKE SWITCH(3AT)
 S18 REVERSE LAMP SWITCH(MT)
 X1 ALDL CONNECTOR
 Y4 TCC SOLENOID VALVE



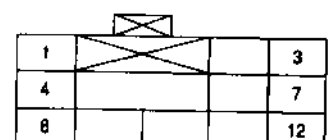
- S2 P/N Switch(A/T)
 "D" and "E" Terminal of P/N Switch is "ON" when Selector Switch is at the R position.
- S17 Brake Switch(A/T)
 A brake Switch for A/T has four terminals. A and B terminals are always "on" and then "off" on braking the pedal. Because this is connected to TCC Controller. TCC is released on braking. C and D terminals are "ON" during being braked.
- S16 Brake Switch(M/T)
 A break switch for M/T has two terminals. When braking a cross point of A and B is "ON" and Brake system Warning Light is ON.
- S18 Reverse Lamp Switch(M/T)
 A Reverse Switch – installed on the trans axle – has two cross points. A cross point is "ON" only when a shift lever is at R position.
- K1 ECM Ter A2(3A/T)
 ECM actuates Torque Converter Clutch Solenoid valve under the TCC operating Condition.
- TCC operating condition is as follows:
 - 1) Brake pedal is off.
 - 2) When Oil pressure switch is closed to operate 3 step gear.
 - 3) When the throttle valve opening percentage is constant.
 - 4) When coolant temperature is over about 70°C.
 - 5) When vehicle speed is over 41km/h.
- Reference
 ECM Terminal A2 is used for controlling TCC in case of A/T, and for controlling a shift-up indicator in case of M/T respectively.



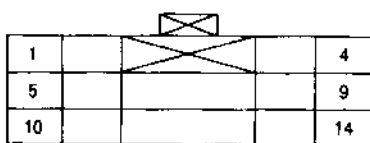
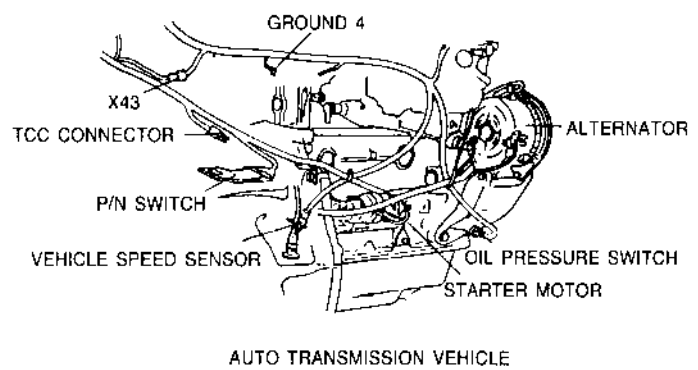
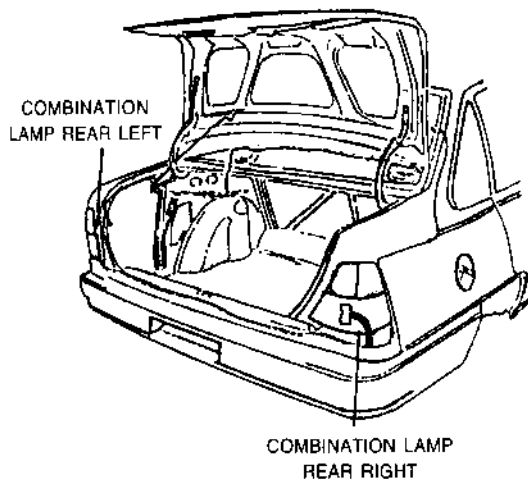
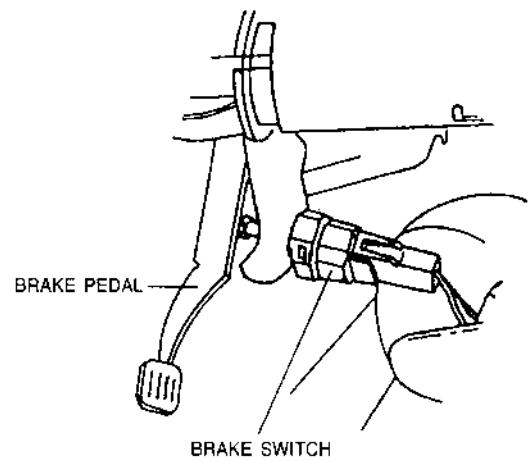
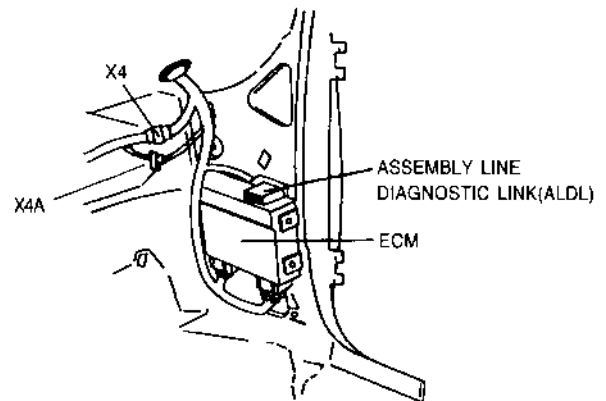
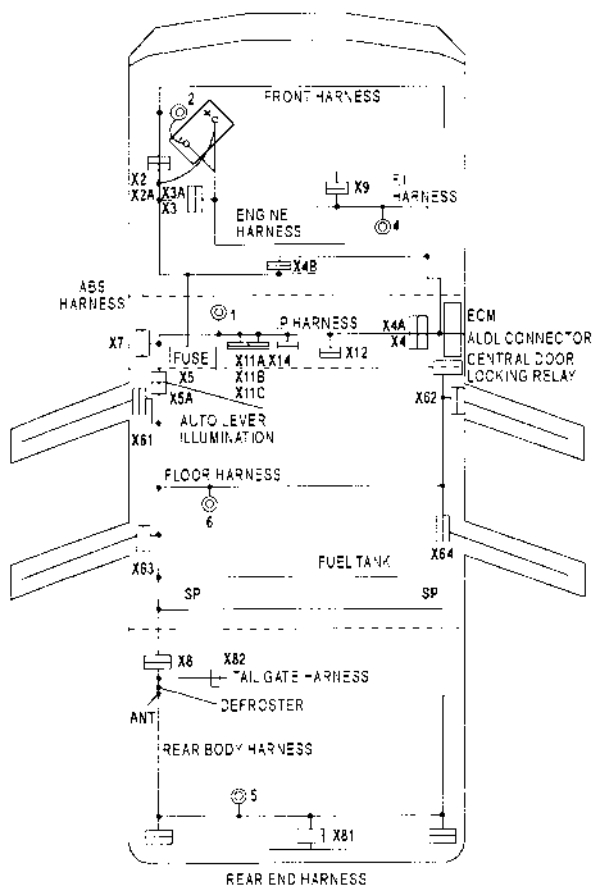
ALDL CONNECTOR

BRAKE SWITCH
CONNECTORT.C.C
SOLENOID
VALVE

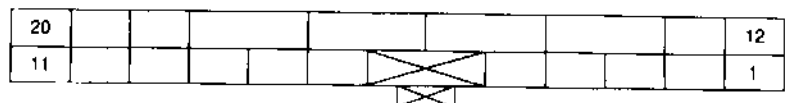
X3 CONNECTOR



X4A CONNECTOR



X8 CONNECTOR



X5 CONNECTOR

15) TURN SIGNAL LAMP, HAZARD LAMP WIRING

E24 ILLUMINATION LAMP - HAZARD LAMP SWITCH

E25 ADDITIONAL TURN SIGNAL LAMP(LEFT)

E26 TURN SIGNAL LAMP-R.L

E27 TURN SIGNAL LAMP-F.L

E28 TURN SIGNAL LAMP-F.R

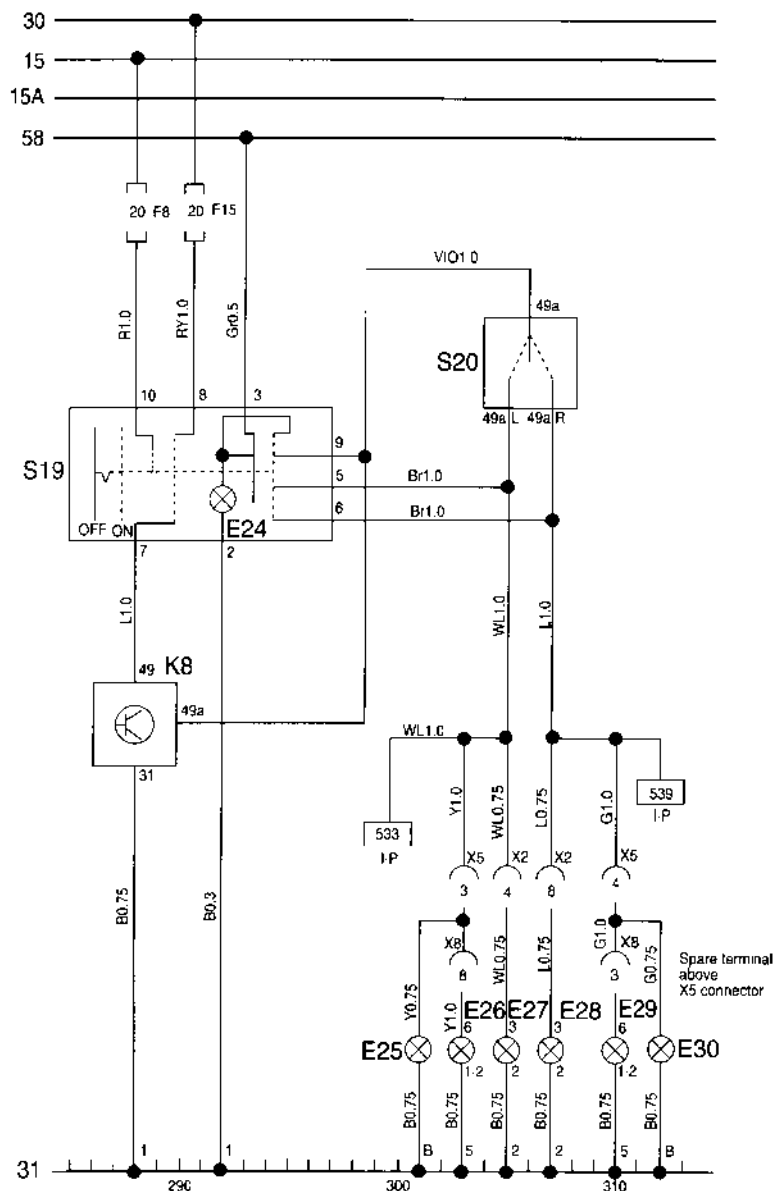
E29 TURN SIGNAL LAMP-R.R

E30 ADDITIONAL TURN SIGNAL LAMP-RIGHT

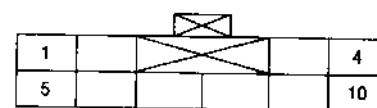
K8 TURN SIGNAL LAMP RELAY

S19 HAZARD LAMP SWITCH

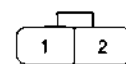
S20 TURN SIGNAL LAMP SWITCH



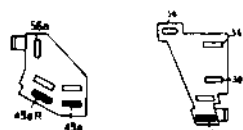
- E24 Illumination Lamp-Hazard Lamp Switch
This lamp has two functions.
 - Only Illumination Lamp function at the 1 step of the switch.
 - When Hazard Lamp Switch is "ON". It is on and off to notice that Hazard lamp is operating.
- S19 Hazard Lamp Switch
Each Hazard Lamp and Turn Signal Lamp have a fuse.
- S20 Turn Signal Lamp Switch
Turn Signal Lamp Switch is drawn individually on the wiring diagram but physically assembled within one body.
- K8 Turn Signal Lamp Relay
This relay receive power through Hazard lamp switch and supply current periodically. The current feed Hazard lamp Terminal 49a and Turn Signal Lamp Terminal 49a via Turn Signal lamp relay Terminal 49a. So that Each Turn signal Lamp is on and off.
- [533], [539] analog I/P
This is connected to a turn signal lamp left and right.



HAZARD LIGHT SWITCH



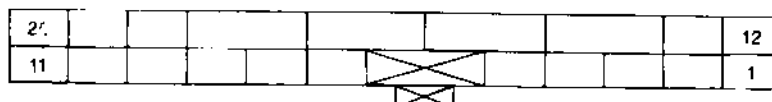
TURN SIGNAL LAMP(R)



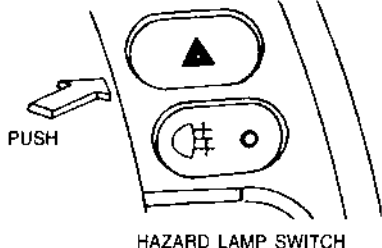
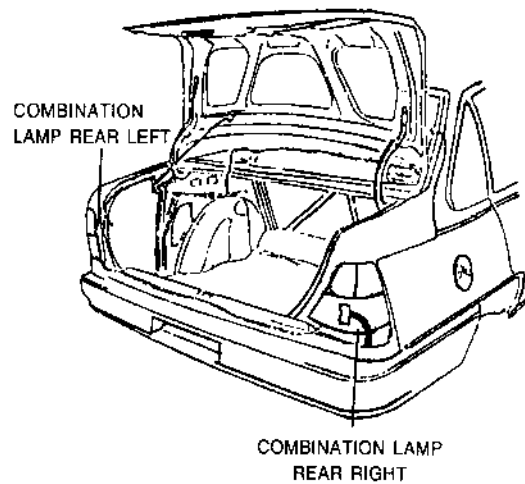
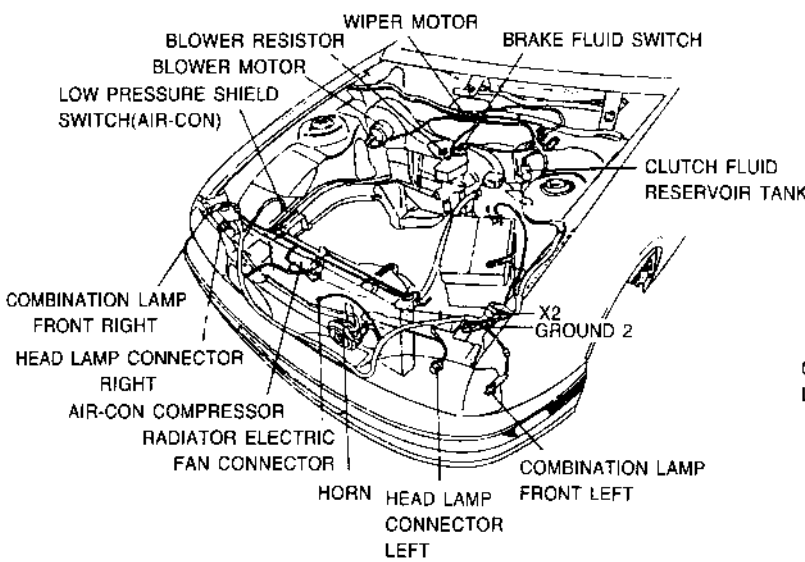
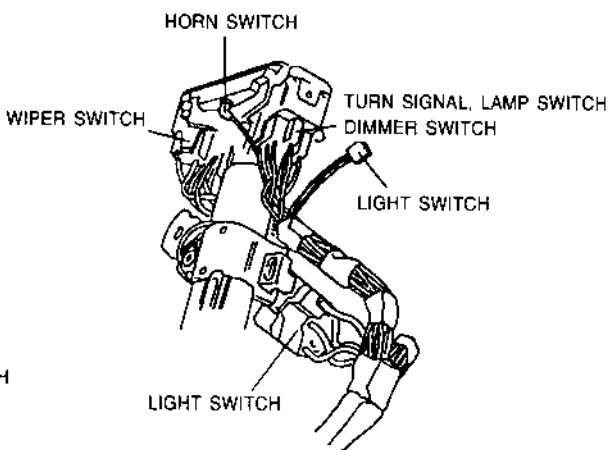
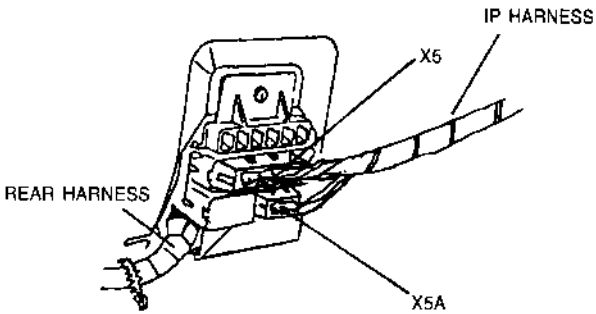
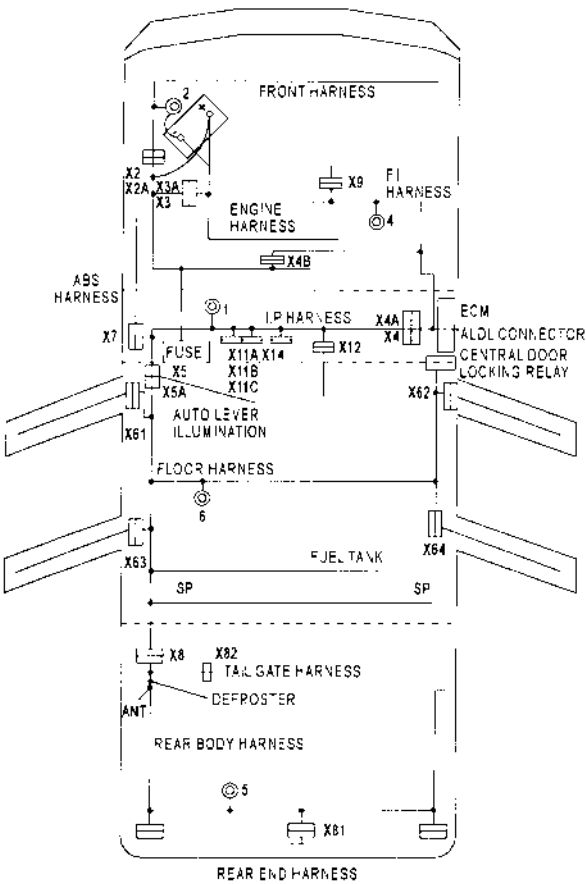
TURN SIGNAL LAMP(R)



BLINICER UNIT



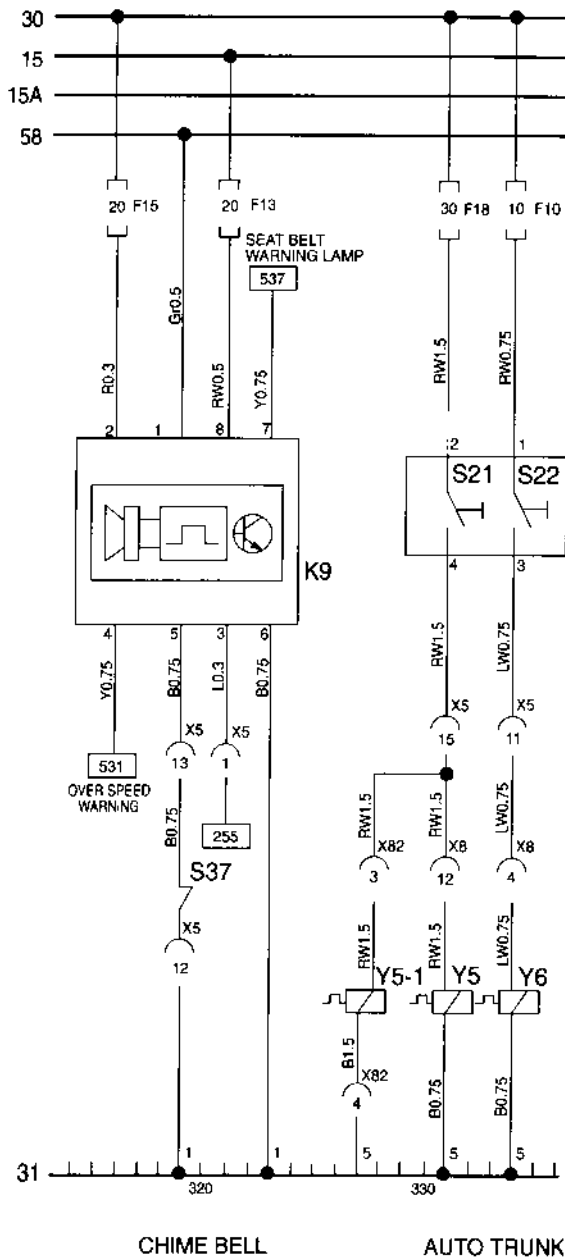
X5 CONNECTOR



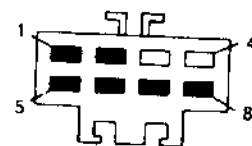
16) CHIME BELL, AUTO TRUNK, FUEL INLET SWITCH WIRING

K9 CHIME BELL
S21 AUTO TRUNK SWITCH
S22 FUEL INLET SWITCH
S37 SEAT BELT SWITCH

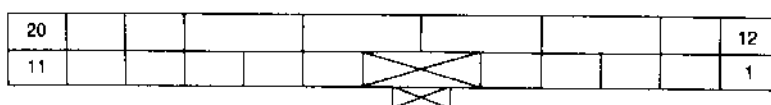
Y5 AUTO TRUNK SOLENOID
Y5-1 AUTO TRUNK SOLENOID(3-DOOR,5-DOOR)
Y6 FUEL INLET SOLENOID



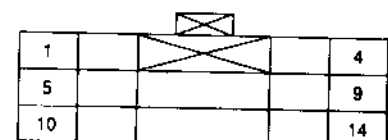
- S37 seat belt switch
This switch is "OFF", when fixing a seat belt.
- **537** Analog I/P
• This is connected to a seat belt warning lamp in I/P.



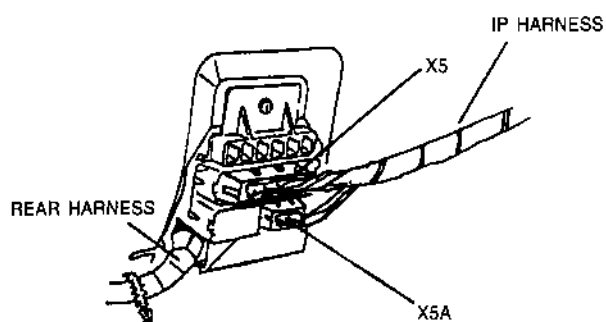
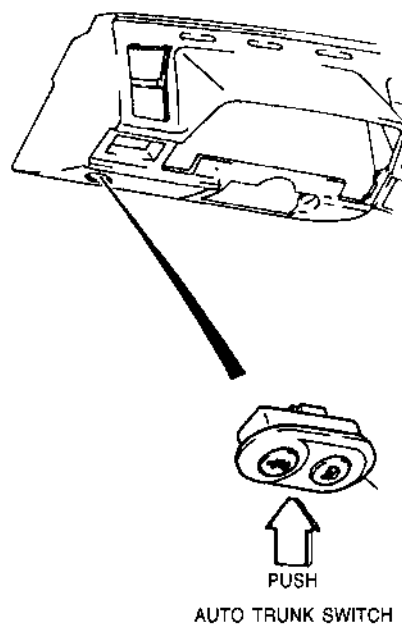
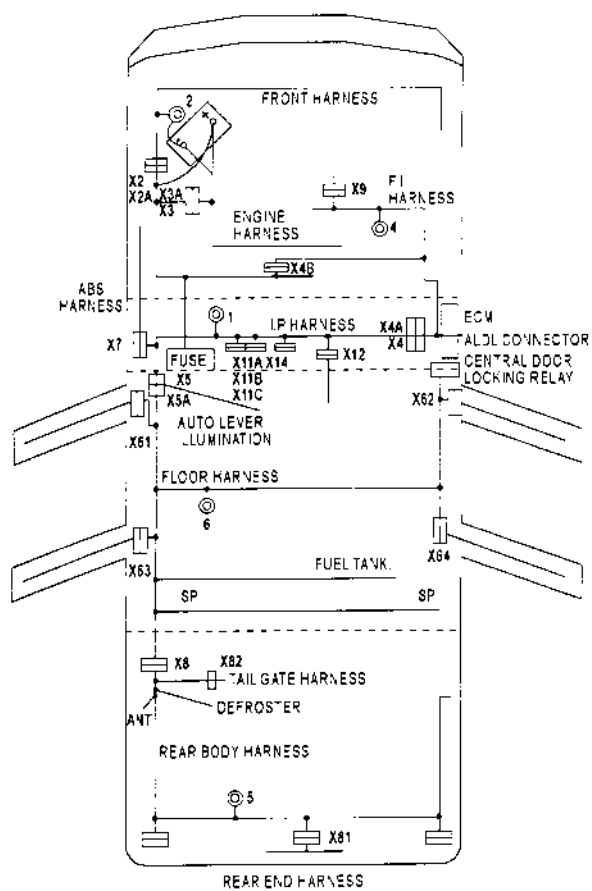
CHIME - WARNING
RELAY CONNECTOR



X5 CONNECTOR



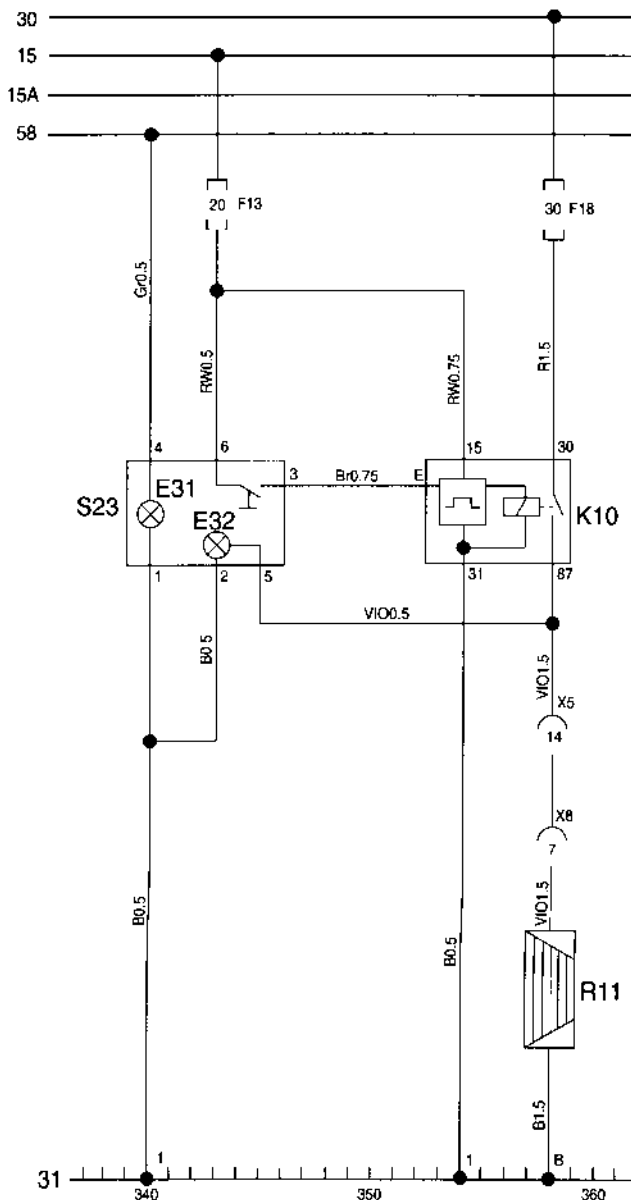
X8 CONNECTOR



17) REAR WINDOW DEFROSTER WIRING

E31 ILLUMINATION – REAR WINDOW DEFROSTER SWITCH
 E32 OPERATION INDICATION-REAR WINDOW DEFROSTER SWITCH

K10 REAR WINDOW DEFROSTER TIME RELAY
 R11 REAR WINDOW DEFROSTER
 S23 REAR WINDOW DEFROSTER SWITCH

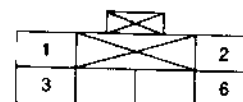


REAR WINDOW DEFROSTER

- S23 Rear window defroster switch
This is composed of E31 illumination lamp, defroster switch of one touch type, and a light emitting diode announcing that timer is operating.
- K10 Rear window defroster time relay

This has a 10 minute timer.

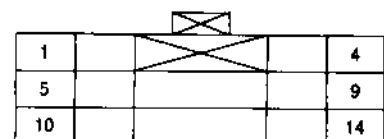
- Defroster operation(ON)
When pushing this switch one-time, power is feeded to the terminal E of K10 relay and you can identify the defroster switch is operating and after the defroster time relay is operating for ten minute, it is off automatically a light emitting diode is on during a defroster is operating.
- Releasing defroster operation (OFF)
When touching a defroster switch onetime, the K10 time relay operates. On touching again during operating, the defroster switch operation is released.



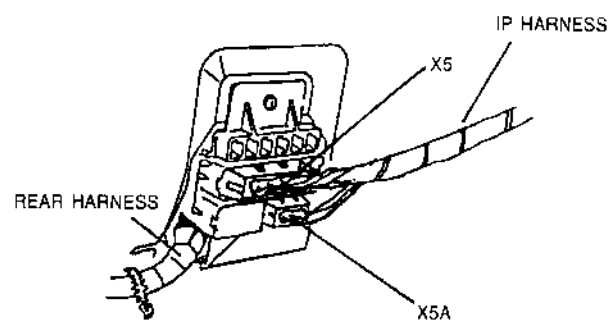
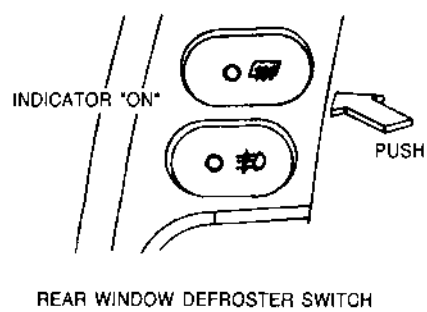
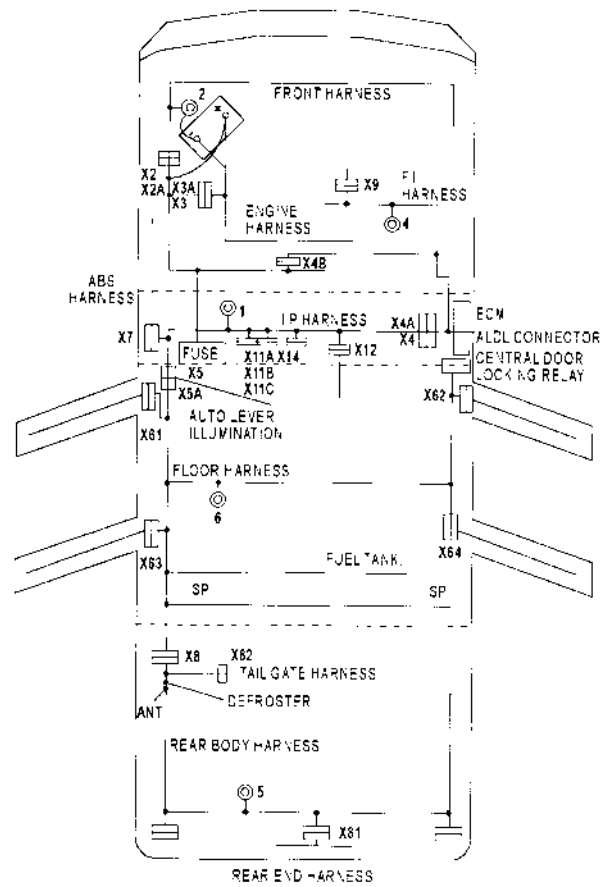
REAR WINDOW DEFROSTER TIME RELAY CONNECTOR



X5 CONNECTOR

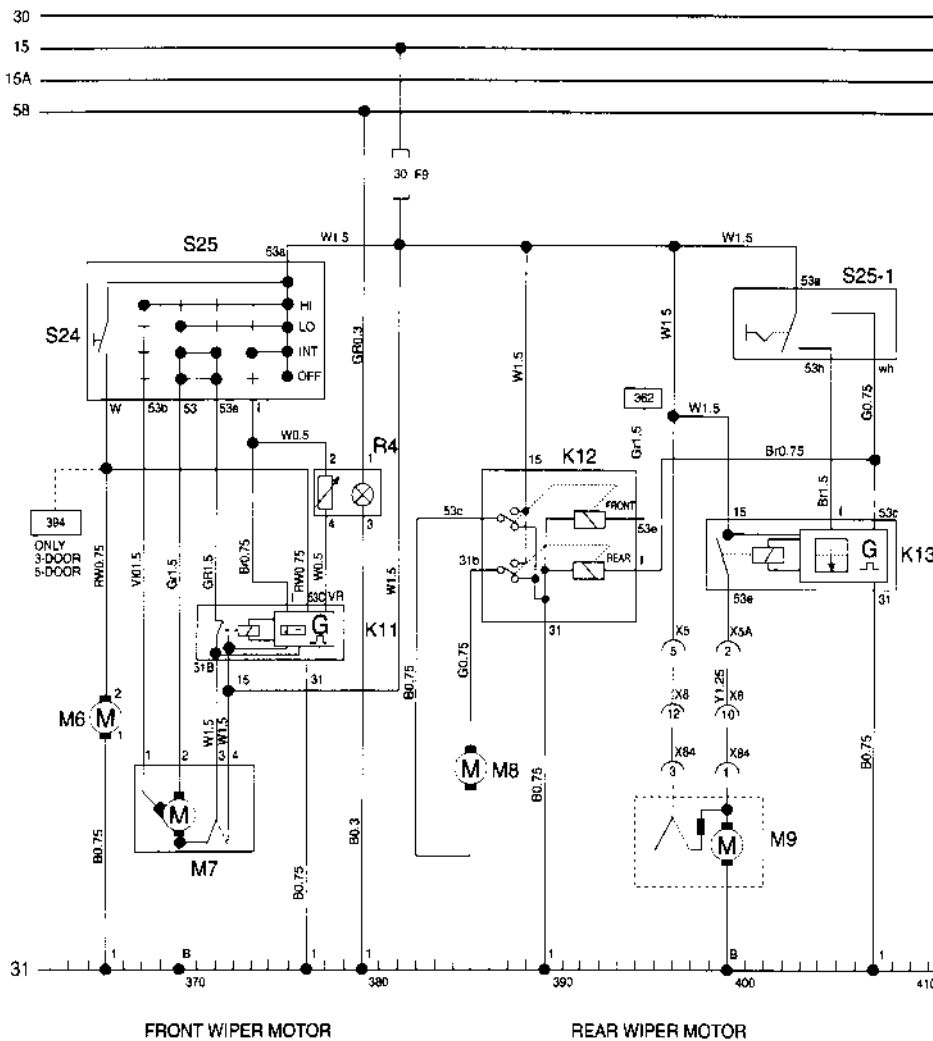


X8 CONNECTOR

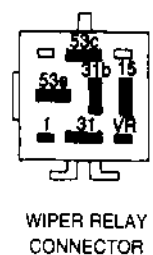
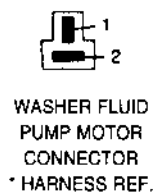
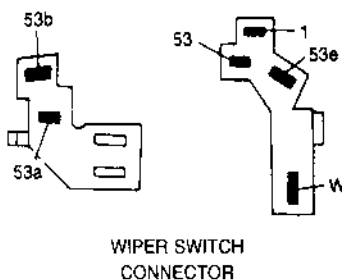


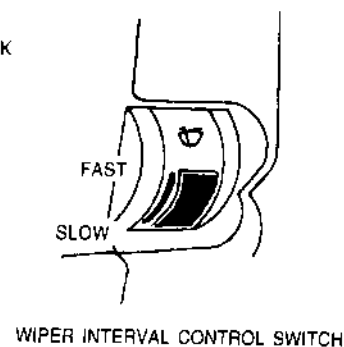
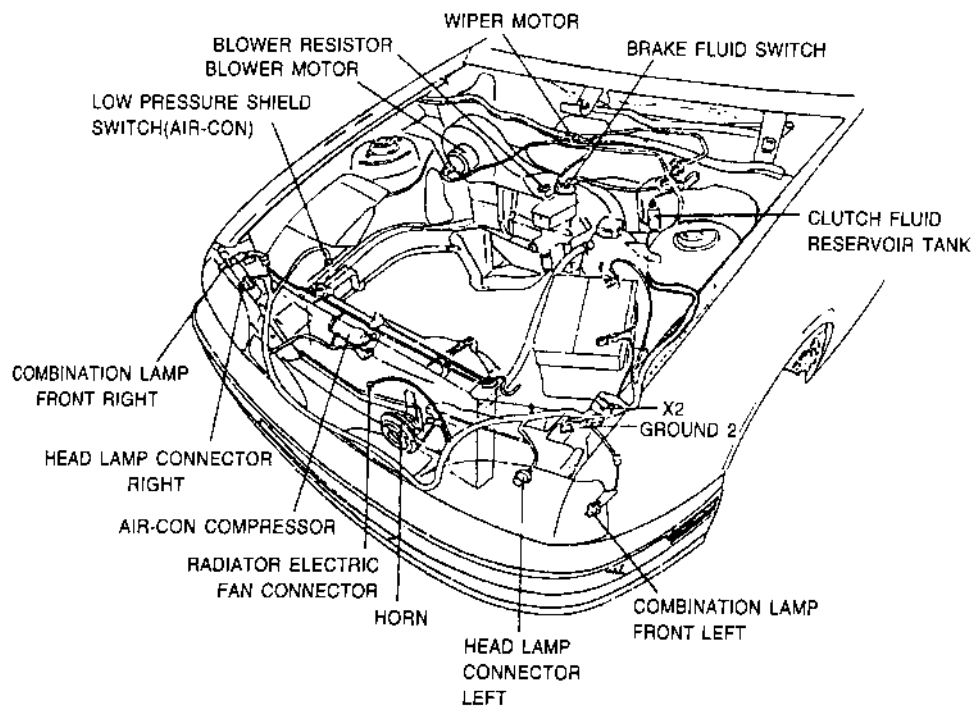
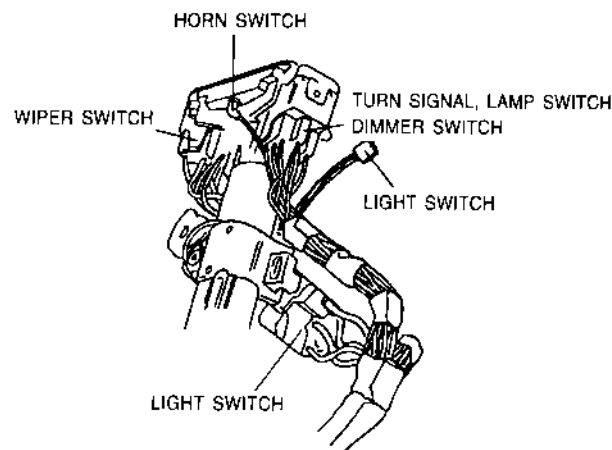
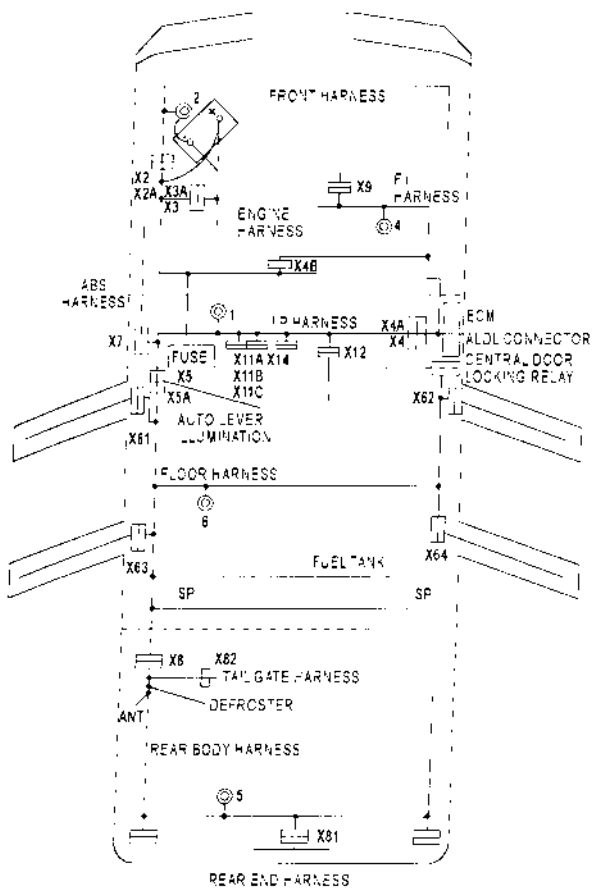
18) WIPER WIRING

K11	FRONT WIPER RELAY	M9	REAR WIPER MOTOR(3-DOOR,5-DOOR)
K12	WASHER PUMP RELAY(3-DOOR,5-DOOR)	M10	AUTO ANTENNA
K13	REAR WIPER RELAY(3-DOOR,5-DOOR)	R4	WIPER INTERVAL CONTROL SWITCH
M6	WASHER PUMP	S24	WASHER SWITCH
M7	WIPER MOTOR	S25	WIPER SWITCH
M8	WASHER MOTOR(3-DOOR,5-DOOR)	S25-1	REAR WIPER SWITCH(3-DOOR,5-DOOR)



- S24 Wiper Switch
A wiper switch has two functions as follows;
 - OFF, INT, LO, HI function.
 - Operating a washer fluid pump motor terminal numbers indexed on the switch.
- K11 Wiper Relay
A wiper relay has two major functions.
 - When a switch is at the INT position, this wiper relay operates periodically with 4 to 21 seconds interval according to manipulate the interval control switch.
 - When operating a washer fluid switch, a washer fluid pump motor operates and power is supplied to terminal 53C of K11 wiper relay.
A wiper relay operates for about 4 seconds from the moment when a washer fluid switch is OFF.
- S25 wiper switch, s25-1 rear wiper switch
A wiper switch and A rear wiper switch are display respectively on the wiring diagram.
But these are assembled physically in a device

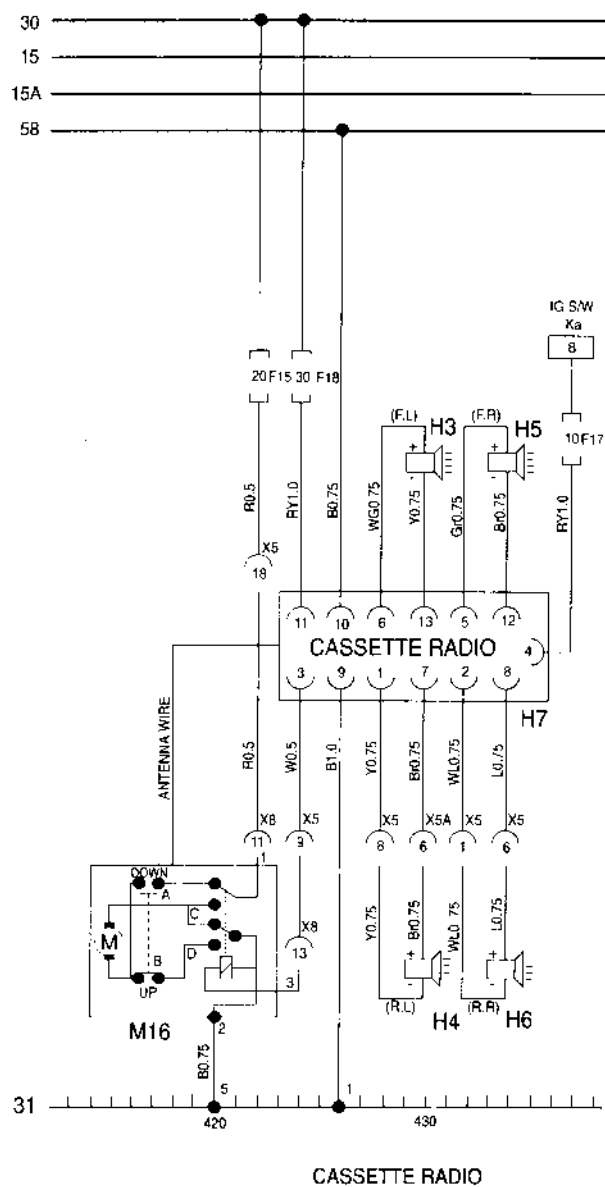




19) CASSETTE RADIO WIRING

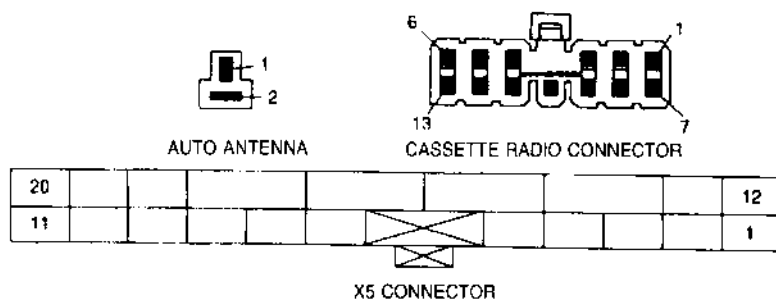
H3 SPEAKER-F.L
H4 SPEAKER-R.L
H5 SPEAKER-F.R

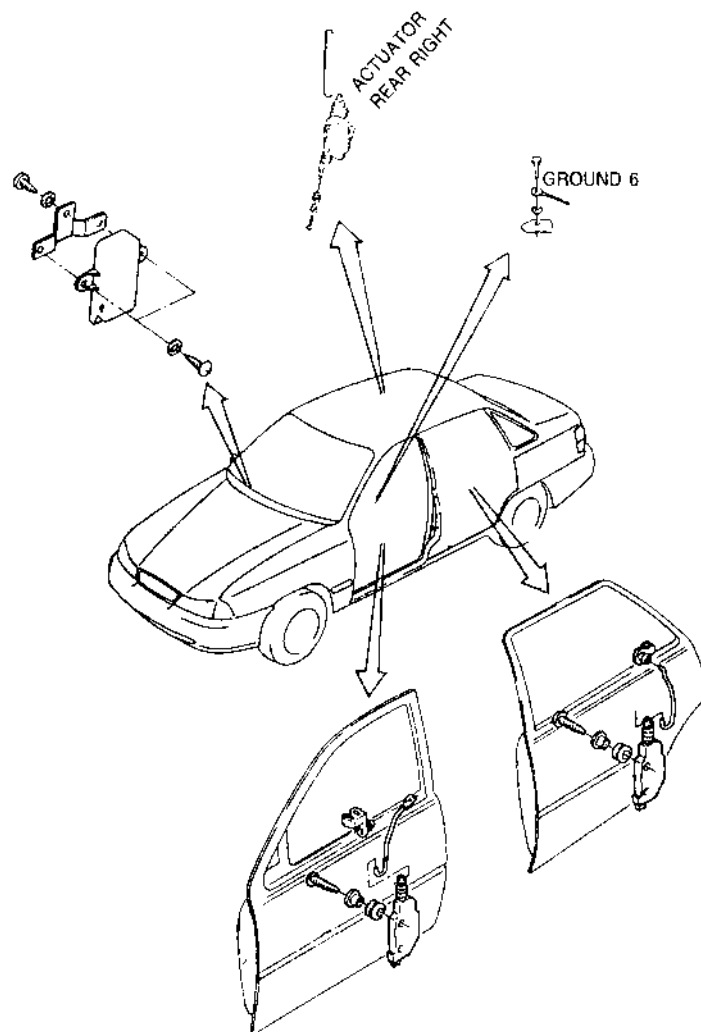
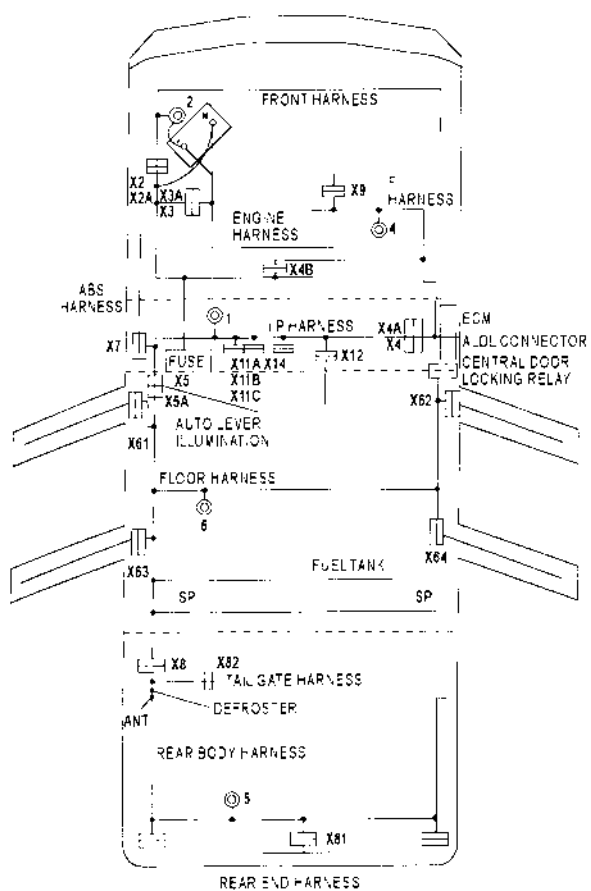
H6 SPEAKER-R.R
H7 CASSETTE RADIO



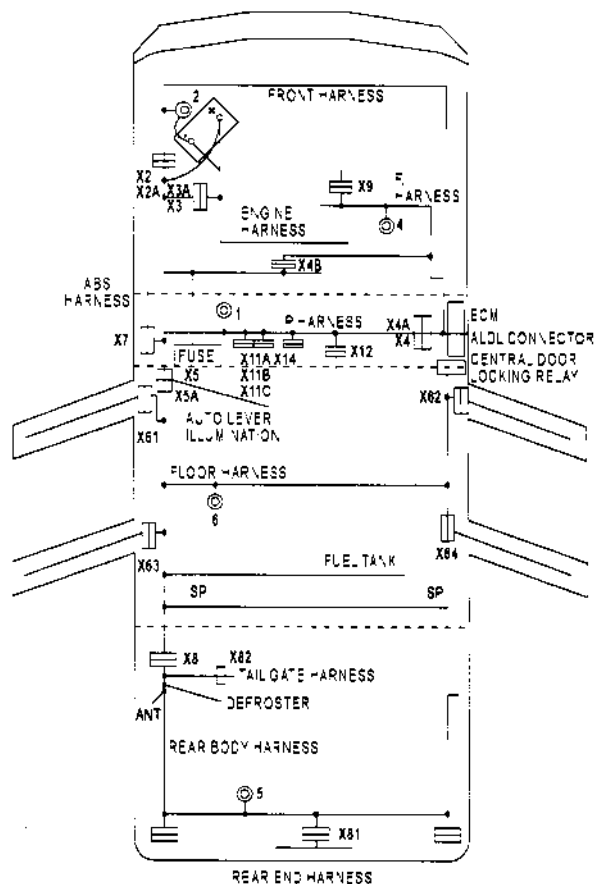
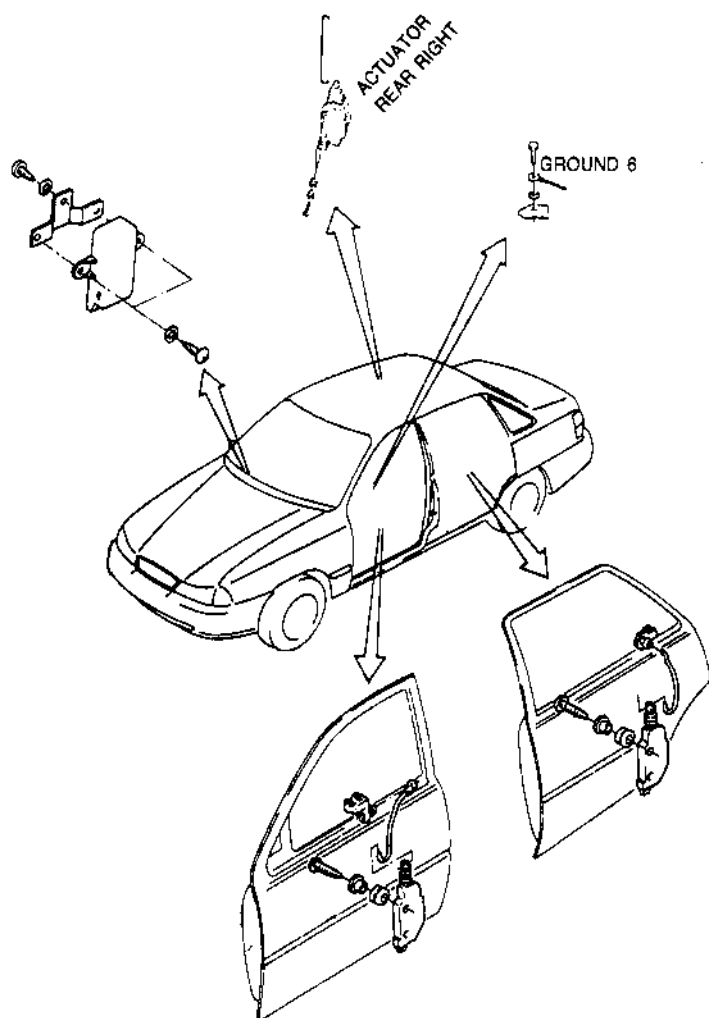
- M16 Auto Antenna

- When a radio is "ON";
12V power is supplied to terminal 3 of cassette radio and the inner relay of an auto antenna operates. Because the cross of C is connected to "+" and the cross of D is connected to "-", the antenna motor circulates. When an antenna reaches at the end position, the cross of "A" is connected and the cross of "B" is disconnected. At this time, the antenna motor stops and keeps the current status on.
- When a radio is "OFF";
The inner relay does not operate because power is not feeded from terminal 3 of H6 radio. At this time, the cross of C is connected to "-", and the cross of A is connected to "+" so that the antenna motor operates and the antenna is down. When the antenna arrives at the bottom, the cross of A is disconnected, and the cross of B is connected to so that the antenna motor stops.





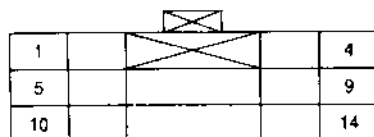
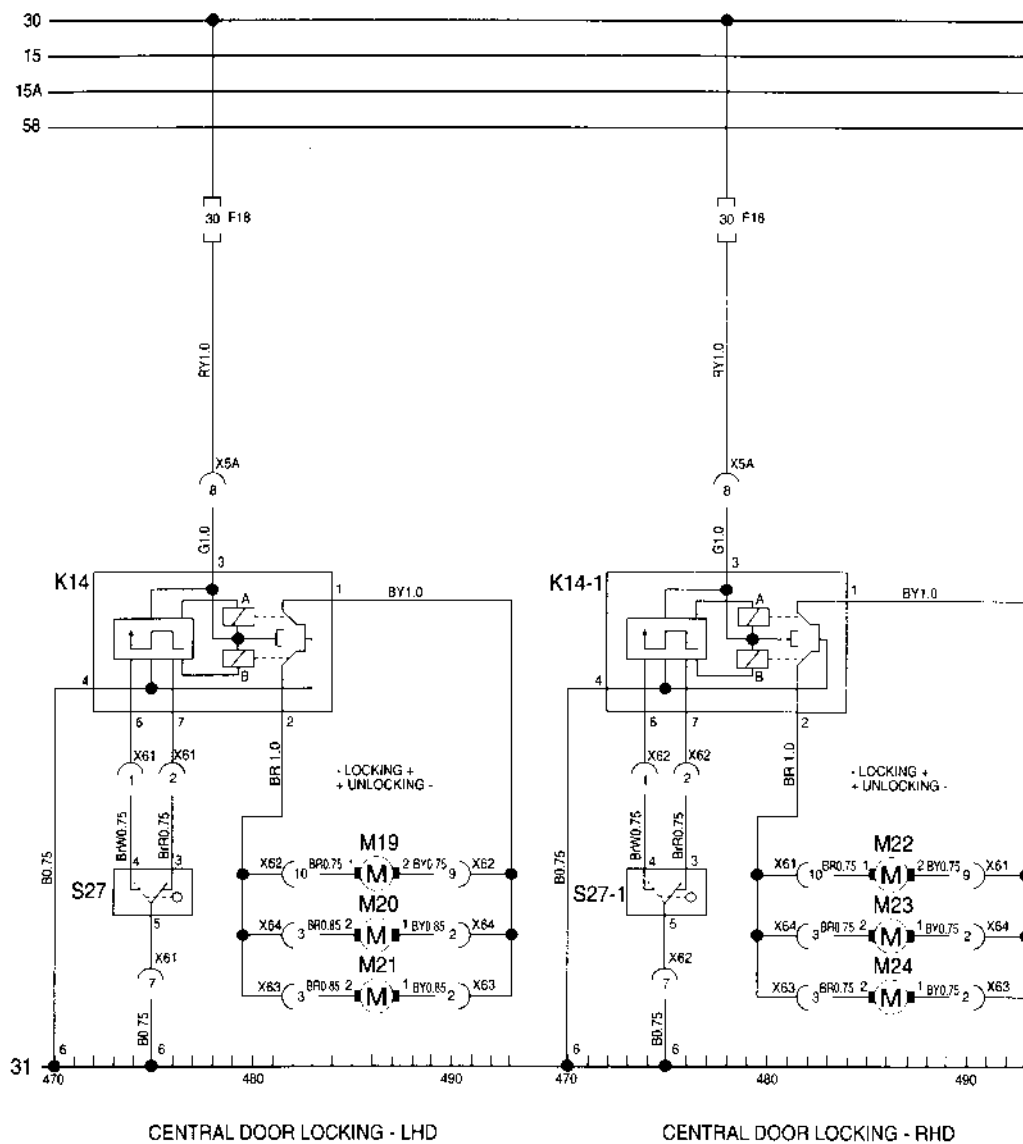
- Whenever the power window main switch(S26, S26-1) is not operated, all contact points is connected to the ground.
If the power window S/W of the front driver seat is down, the terminal 8 is connected to B+(C) and 9 is not operated so that the ground terminal.
- The main power is ON/OFF by the rear power window lock S/W so that it is impossible to operate the power windows a individually at the co-driver seat or the rear seats.
(For example: when a children is in the car, the main S/W is OFF so that the rear power window S/W is not operated.)



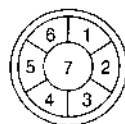
21) CENTRAL DOOR LOCKING SYSTEM WIRING (LHD, RHD)

K14 CENTRAL DOOR LOCKING RELAY
 K14-1 CENTRAL DOOR LOCKING RELAY(RHD)
 M19 ACTUATOR, FRONT RIGHT-LHD
 M20 ACTUATOR, REAR RIGHT-LHD
 M21 ACTUATOR, REAR LEFT-LHD

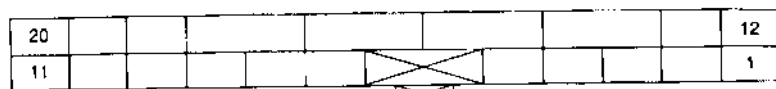
M22 ACTUATOR, FRONT LEFT-RHD
 M23 ACTUATOR, REAR RIGHT-RHD
 M24 ACTUATOR, REAR LEFT-RHD
 S27 CENTRAL DOOR LOCKING SWITCH-LHD
 S27-1 CENTRAL DOOR LOCKING SWITCH-RHD



X61, 62 CONNECTOR



X63, 64 CONNECTOR



X5 CONNECTOR

CENTRAL DOOR
LOCKING SWITCH
CONNECTORACTUATOR
CONNECTOR

- K14, K14-1 central door locking relay

A central door locking relay operates for 0.7 second when opening or locking.

• No Operating;

When the relay is not operating, the terminal 1 and terminal 7 are connected to terminal 4 in the relay.

• When Locking;

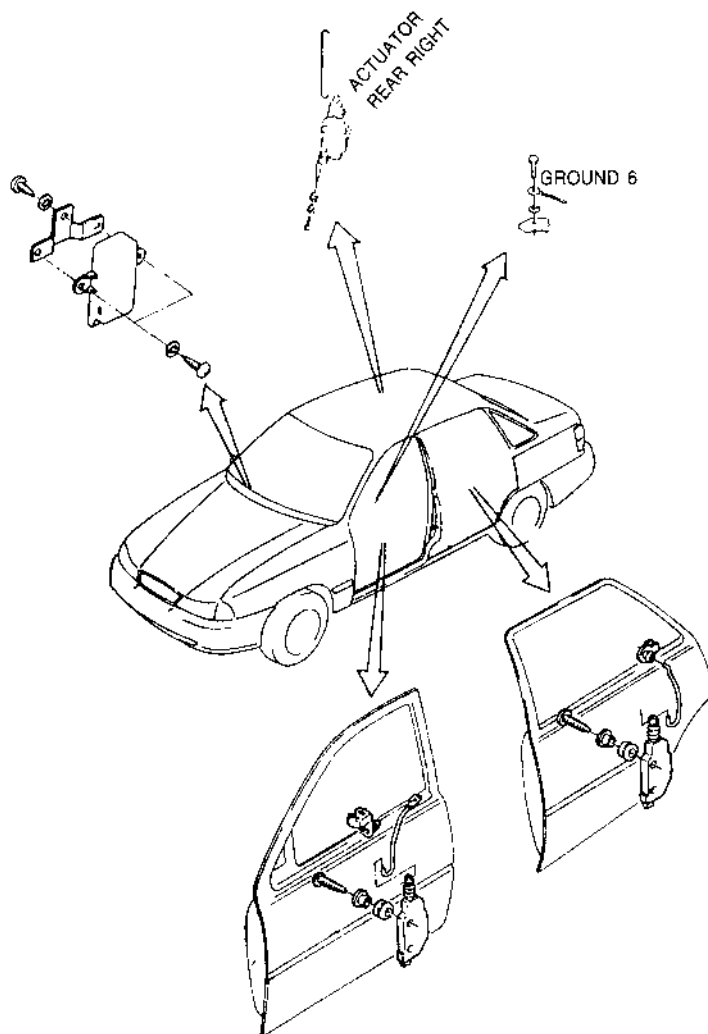
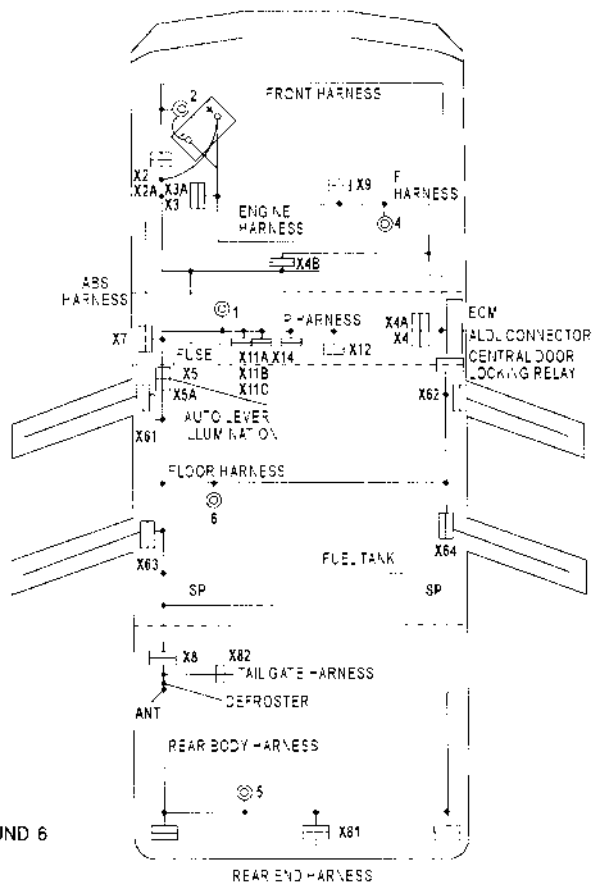
When S27, S27-1 central door locking switch is set to the locking position, terminal 7 is connected to the ground and "A" relay in the relay is operating for 0.7 second.

At this time, terminal 1 is "+" and terminal 2 is "-" so that three actuators operates contemporary to the locking direction.

• On Opening;

When S27, S27-1 is set to the opening position, terminal 6 is connected to the ground and the inner "B" relay of the relay is operating for 0.7 second.

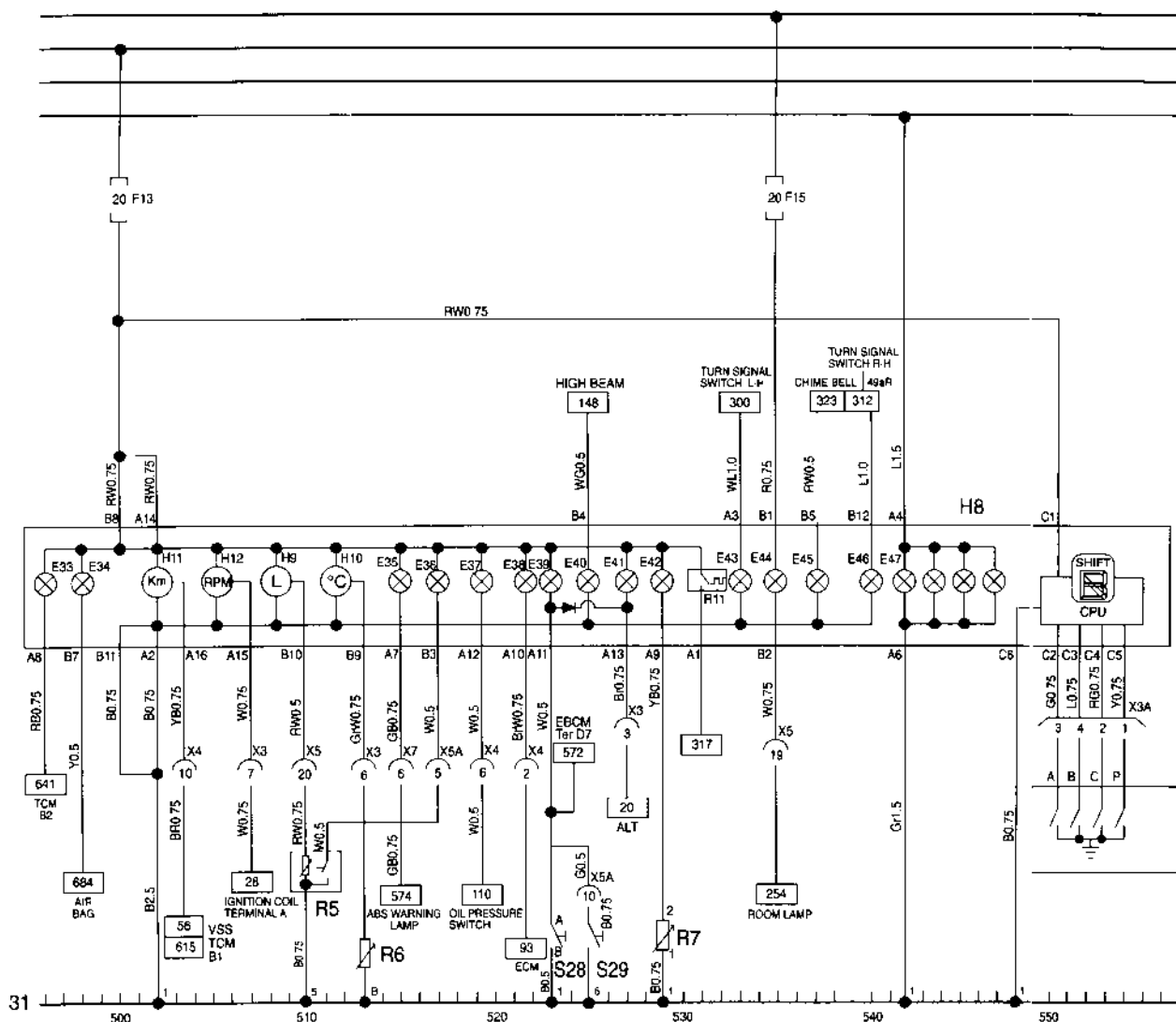
The terminal 1 is "-" and the terminal 2 is "+" so that three actuators operates contemporary to the opening direction.



22) I-P WIRING

E33 POWER WARNING LAMP
E34 AIR BAG WARNING LAMP
E35 ABS WARNING LAMP
E36 FUEL WARNING LAMP
E37 OIL WARNING LAMP
E38 "SES" INDICATOR
E39 PARKING BRAKE FLUID WARNING LAMP
E40 HIGH BEAM INDICATOR
E41 CHARGING WARNING LAMP
E42 WASHER FLUID WARNING LAMP
E43 TURN SIGNAL LAMP - LH
E44 DOOR OPEN WARNING LAMP
E45 SEAT BELT WARNING LAMP
E46 TURN SIGNAL - RH
E47 I-P ILLUMINATION LAMP
H8 I-P

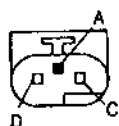
E41 CHARGING WARNING LAMP
E42 WASHER FLUID WARNING LAMP
E43 TURN SIGNAL LAMP - LH
E44 DOOR OPEN WARNING LAMP
E45 SEAT BELT WARNING LAMP
E46 TURN SIGNAL - RH
E47 I-P ILLUMINATION LAMP
H8 I-P



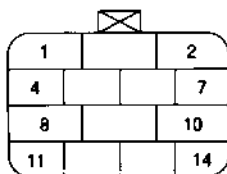
INSTRUMENT PANEL



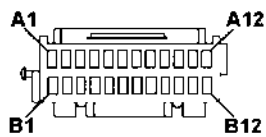
BRAKE FLUID SWITCH CONNECTOR



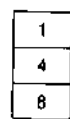
OIL PRESSURE SWITCH CONNECTOR



X3 CONNECTOR



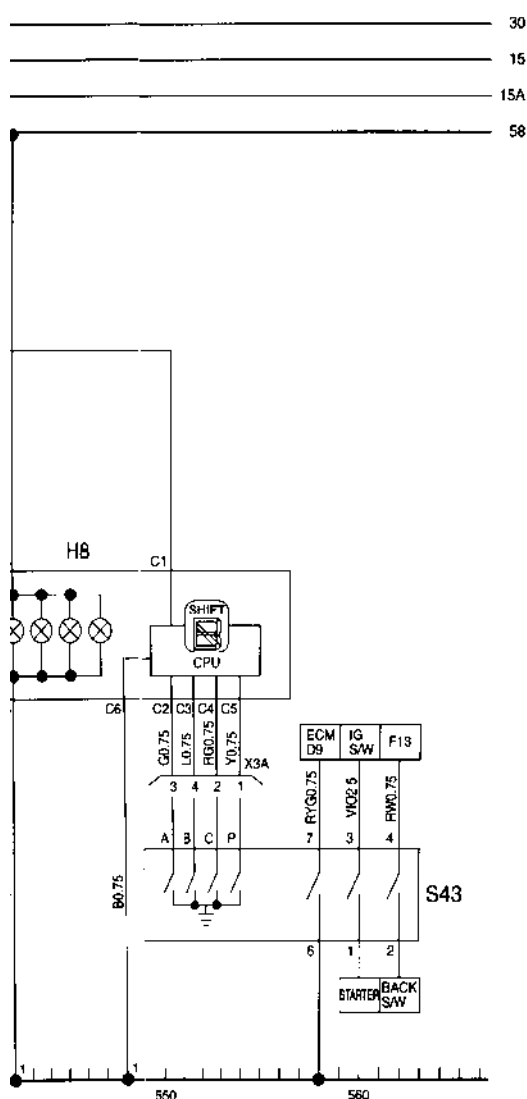
ECM CONNECTOR



LAMP
 IING LAMP
 LH
 3 LAMP
 LAMP
 P

H9 FUEL LEVEL GAUGE
 H10 TEMPERATURE GAUGE
 H11 SPEEDO METER
 H12 TACHO METER
 R5 FUEL TANK UNIT
 R6 COOLANT TEMPERATURE UNIT
 R7 WASHER FLUID LEVER SWITCH
 S43 NSBU SWITCH(4 AT)

S28 BRAKE FLUID LEVEL SWITCH
 S29 PARKING BRAKE SWITCH
 R11 OVER SPEED WARNING SWITCH



- E38 "Engine Service Soon" indicator

An "Engine Service Soon" indicator is ON when an ignition switch is "ON" or ECM has any trouble.(K1 ECM controls terminal) to be connected to a ground and when terminal A and B of ALDL connector is jumped with wire and an ignition switch is "ON" an engine control indicator is ON and OFF to indicate a fault code.

- R5 Fuel Sensor

A fuel level sensor and a fuel warning lamp switch is installed in the fuel tank and these are assembled in a housing.

• Fuel level sensor resistance

1/4 degree of fuel level: 148~192ohms

1/2 degree of fuel level: 97~127ohms

3/4 degree of fuel level: 66~86ohms

• Fuel warning lamp

After a fuel warning lamp is "ON", a driver can drive up to about 50km.

- R6 Temperature Sensor

Resistance

50°C: 226-340ohms

70°C: 123-185ohms

80°C: 92-138ohms

100°C: 53-80ohms

110°C: 42-62ohms

120°C: 32-82ohms

- 20 ALT(Alternator) L Terminal

When an ignition switch is ON, the current is supplied as below and a battery charging warning lamp is ON:

F13 → Battery charging warning lamp → ALT L Terminal

→ Rotary coil Ground.

- 28 Ignition Coil "-"

An Ignition Coil "-" Terminal detects engine RPM

- 148 F4 High Beam Lamp

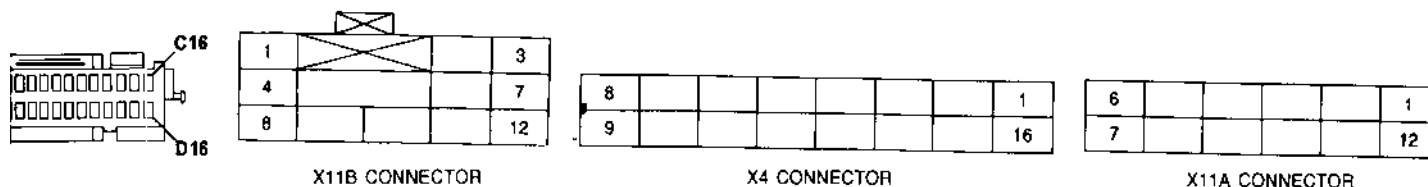
A Fuse 4 is connected to a high beam lamp(right)

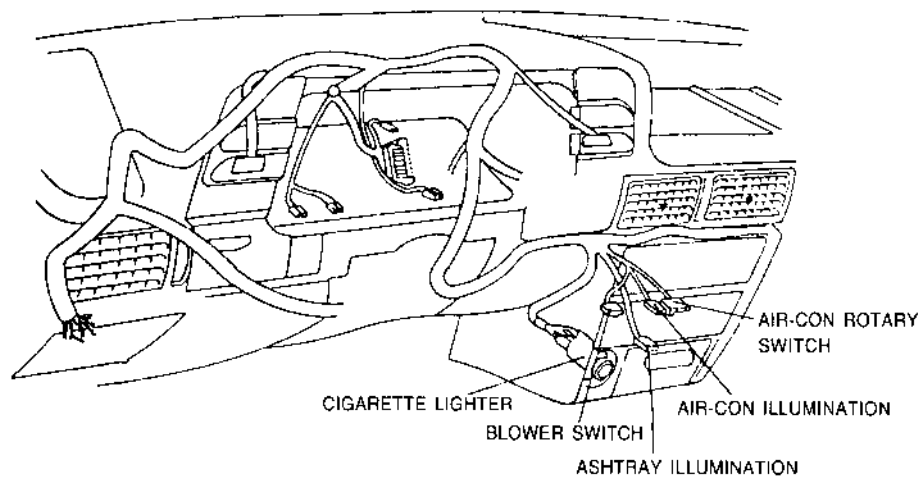
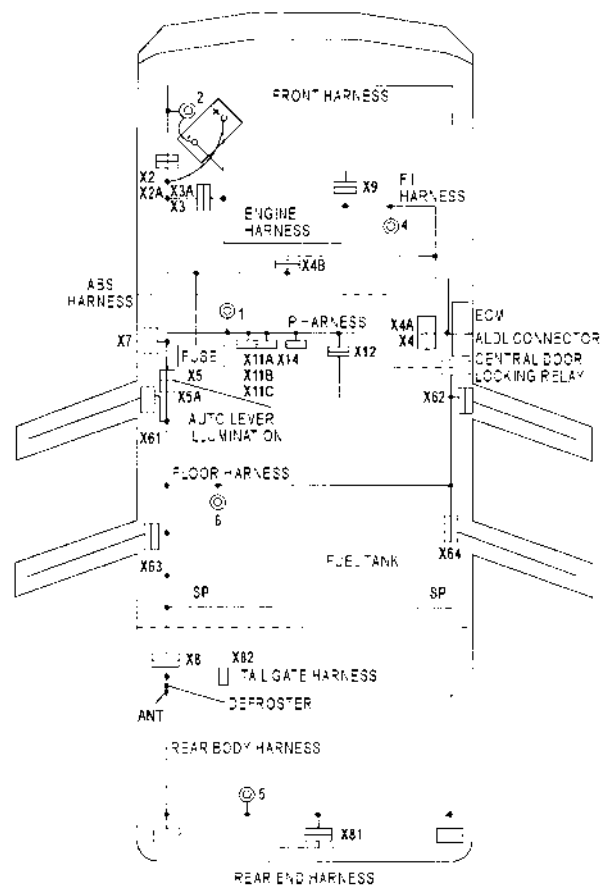
- 300 L

Turn signal lamp left

- 312 R

Turn signal lamp right

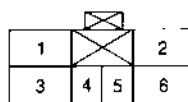




K15 ABS WARNING LAMP MODULE
K16 ABS RELAY
K17 ABS – ECM(EBCM)
M25 ABS MOTOR(F.L)
M26 ABS MOTOR(F.R)
M27 ABS MOTOR(R.R)

P7 WHEEL SPEED SENSOR(F.L)
P8 WHEEL SPEED SENSOR(F.R)
P9 WHEEL SPEED SENSOR(R.L)
P10 WHEEL SPEED SENSOR(R.R)
S28 BRAKE FLUID LEVEL SWITCH
S29 PARKING BRAKE SWITCH

Y7 SOLENOID(F.R)
Y8 SOLENOID(F.L)



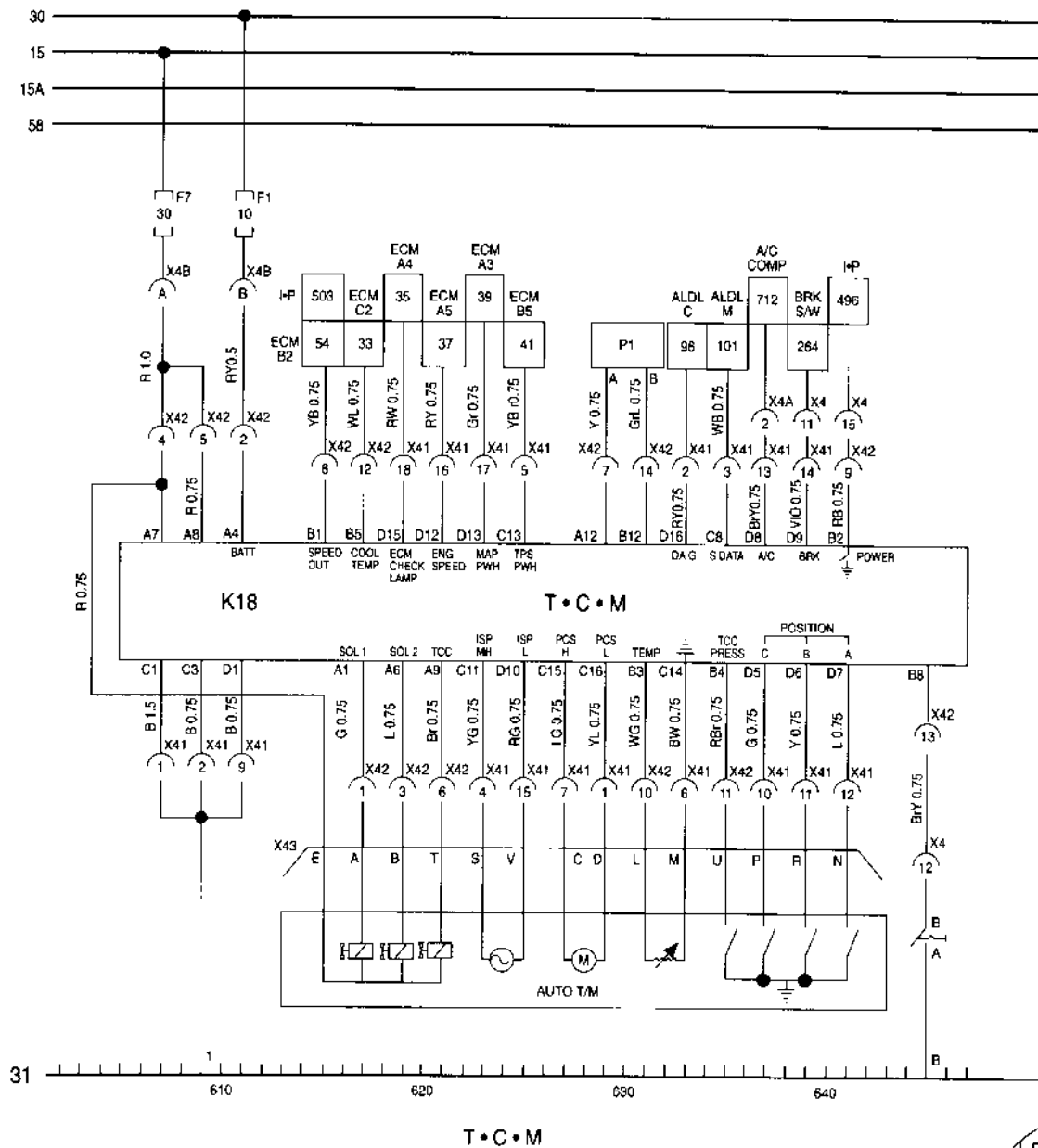
A schematic diagram of a three-stage hydraulic cylinder. It consists of a main body with three internal stages. The top stage is a single-acting cylinder. The middle stage is a double-acting cylinder. The bottom stage is a double-acting cylinder. Port A is located at the bottom left, and port B is located at the bottom right. The diagram shows the internal connections and the flow of fluid between the stages and ports.

ABS-ECU
(ABS HARNESS REF.)

24) TCM(OPTION)

K18 TRANSAXLE CONTROL MODULE(TCM)

P1 VEHICLE SPEED SENSOR(VSS)

[illegible]

X41 CONNECTOR(4-SP A/T)

1						6
7						14

X42 CONNECTOR(4-SP A/T)

	D	C	B	A	
K	J	H	G	F	E
S	R	P	N	M	L
W	V	U	T		

X43 CONNECTOR(4-SP A/T)

A	1									12
B	1									12

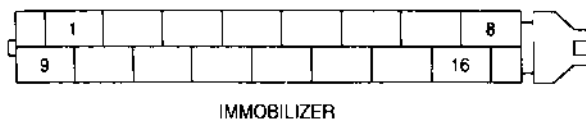
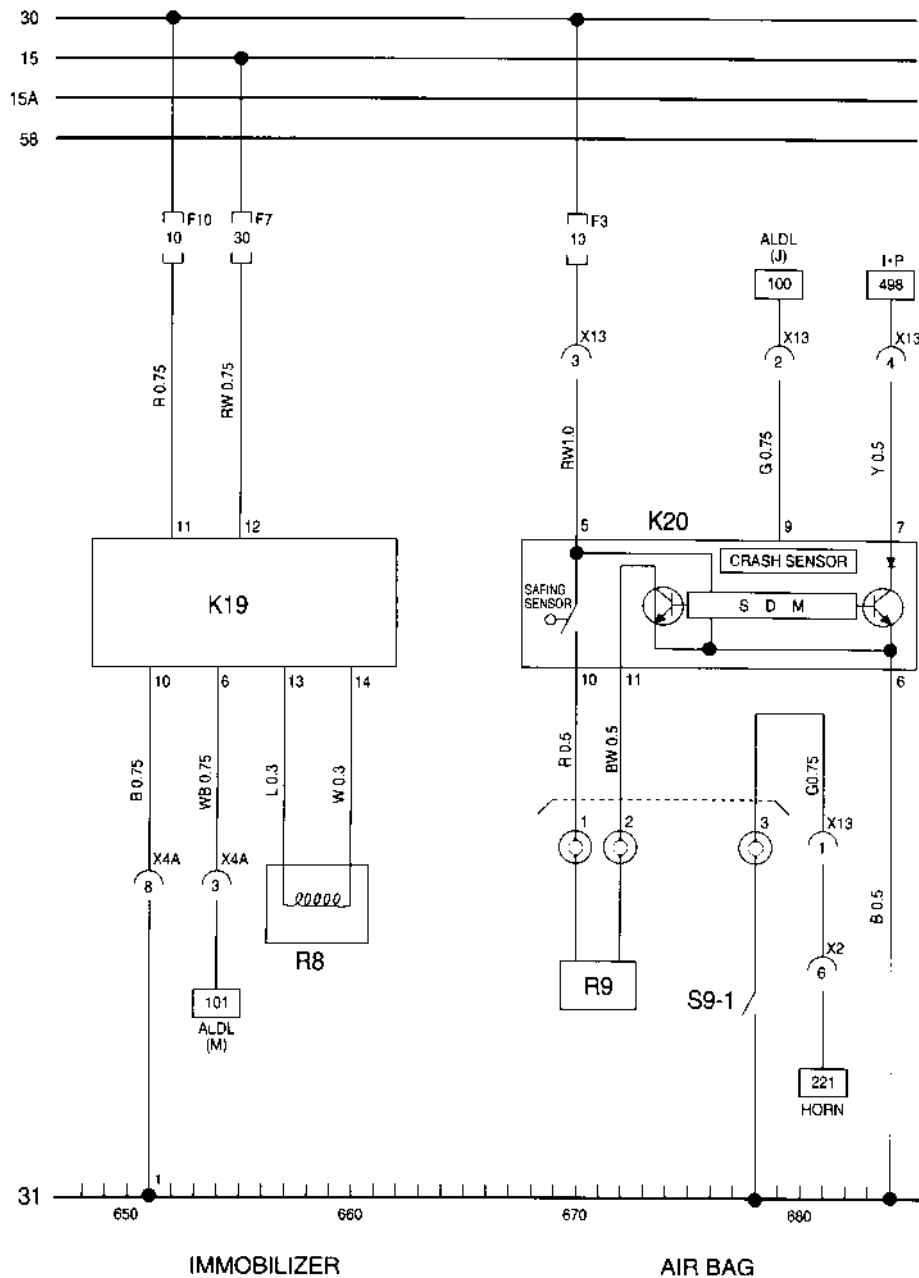
[illegible]

TCM CONNECTOR(4-SP A/T)

25) IMMOBILIZER, AIR BAG(OPTION)

K19 IMMOBILIZER CONTROL UNIT
K20 AIR BAG CONTROL UNIT

R8 TRANSPONDER DETECTION COIL
R9 CONTACT COIL
S9-1 HORN SWITCH(AIR BAG TYPE)

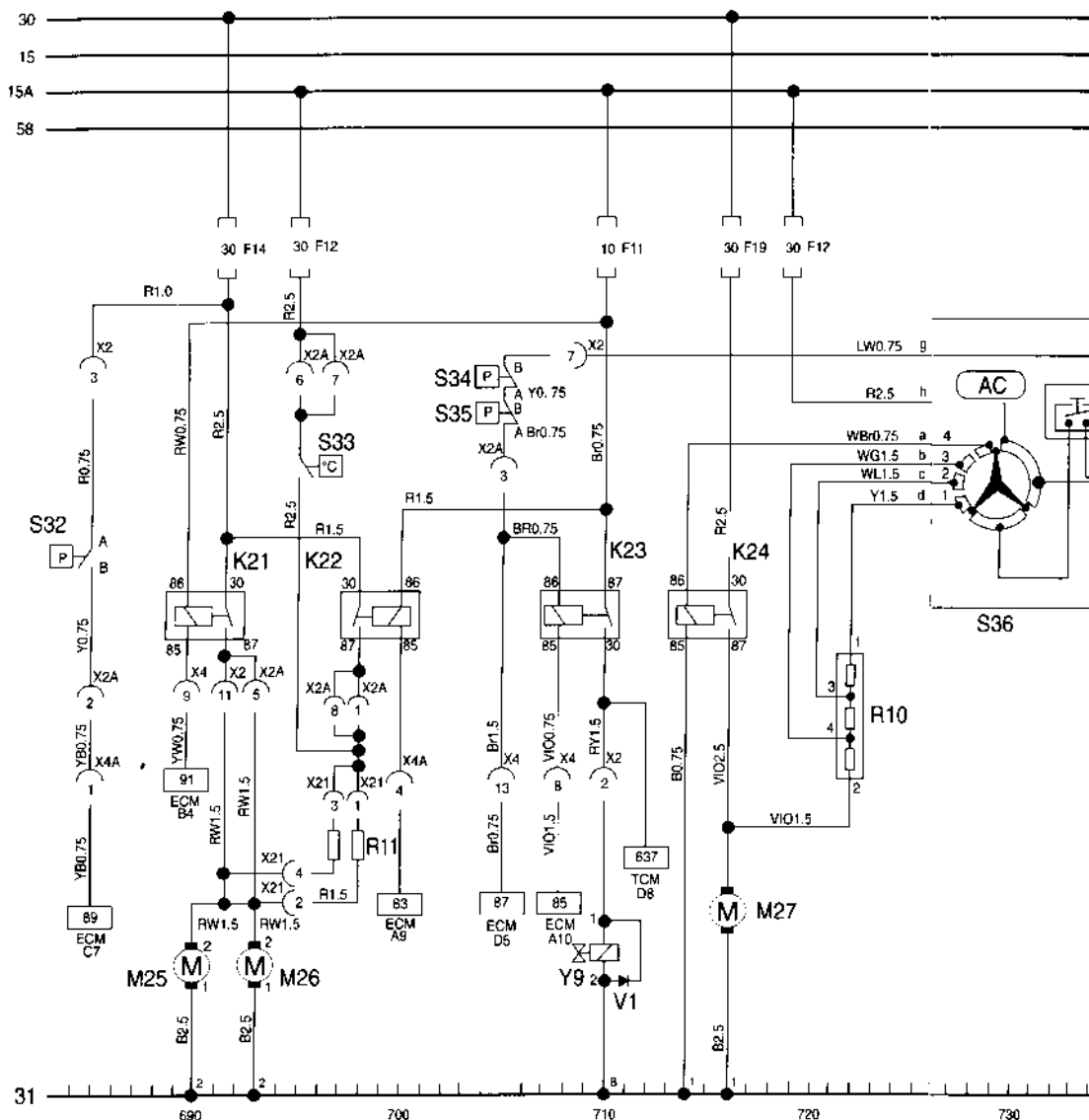


26) AIR-CONDITIONING WIRING, ELECTRIC FAN, BLOWER MOTOR WIRING(IEFI-6 TYPE)

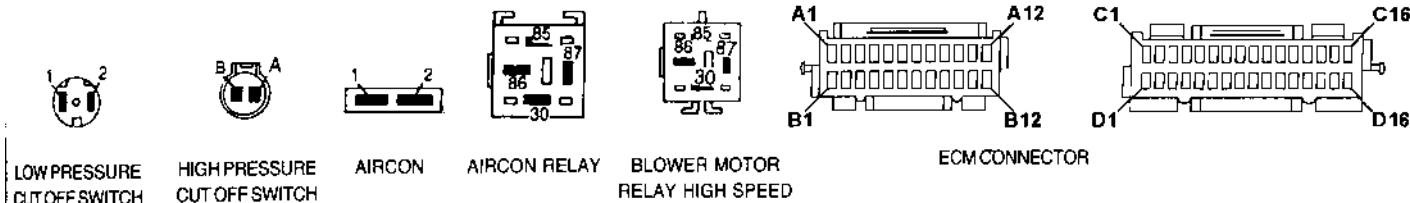
E48 ILLUMINATION LAMP - A/C CONTROL SWITCH
K21 ELECTRIC FAN RELAY - HIGH SPEED
K22 ELECTRIC FAN RELAY - LOW SPEED
K23 A/C COMPRESSURE RELAY
K24 BLOWER MOTOR RELAY
M25 ELECTRIC MOTOR - AUX

M26 ELECTRIC MOTOR
M27 BLOWER MOTOR
R10 BLOWER MOTOR RESISTER
R11 ELECTRIC FAN LOW SPEED RESISTER
S32 FAN CYCLING SWITCH
S33 RADIATOR TEMPERATURE SWITCH

S34 LOW PRESSURE CUT OFF SWITCH
S35 HIGH PRESSURE CUT OFF SWITCH
S36 A/C CONTROL SWITCH
V1 DIODE
Y1 A/C COMPRESSOR
Y10 FRESH AIR



A/C (IEFI-6 TYPE)



TYPE)

S34 LOW PRESSURE CUT-OFF SWITCH

S35 HIGH PRESSURE CUT-OFF SWITCH

S36 A/C CONTROL SWITCH

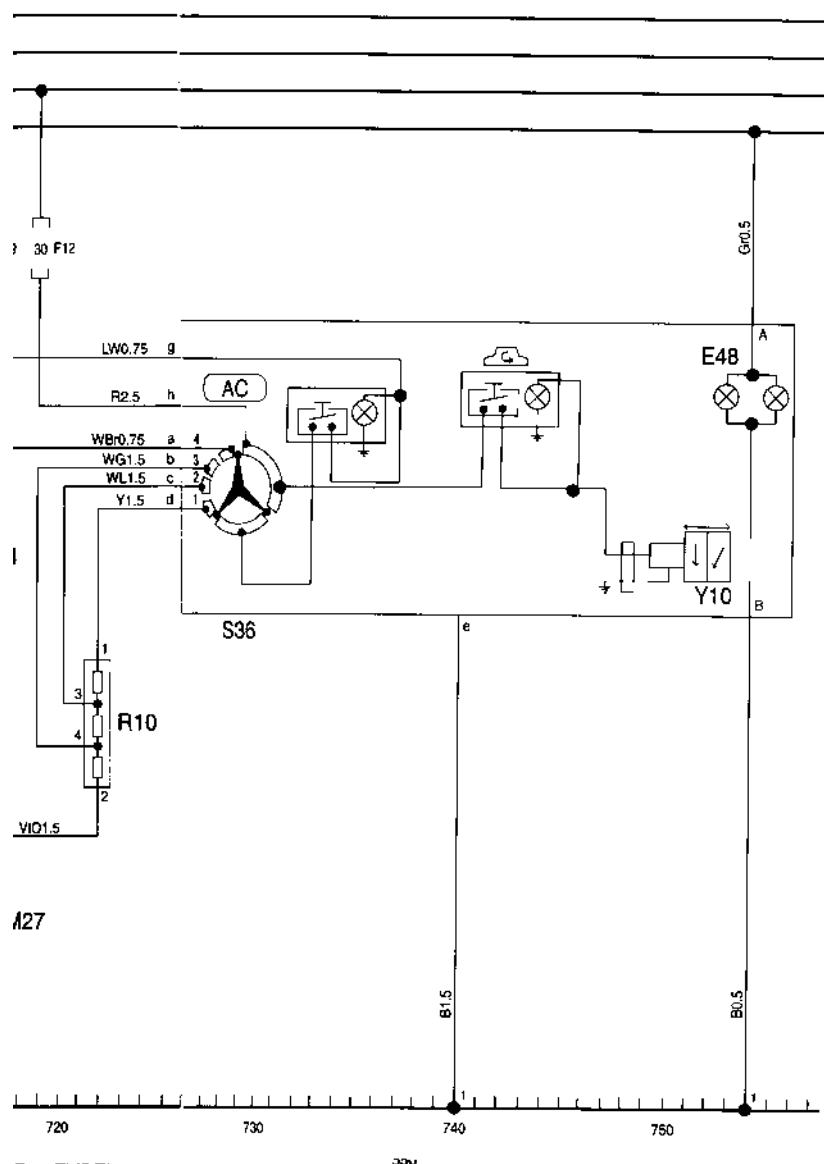
```
V1 DIODE
```

Y1 A/C COMPRESSURE

Y10 FRESH AIR CONTROL MODE SOLENOID

SISTER

TCH



- **S34 Low Pressure Shield Switch**
This is installed on the air-con low pressure line and the switch is "OFF" in case that the pressure is below $1.6 \pm 0.5 \text{ kg/cm}^2$.
- **S35 High Pressure Shield Switch**
This is installed at the rear side of an air-con compressor (on the high pressure line) and the switch is "OFF" in case that the pressure is over 29 kg/cm^2 .
- **V1 Diode**
This prohibits the instant re-operation from reverse power when an air-con compressor is "OFF".
- **87 ECM Ter B8**
When an air-con rotary switch is operated, ECM detects an air-con operating signal.
- **85 ECM Ter A4**
When an air-con operating signal is detected from Terminal A4 and an air-con is not over load, the terminal A4 of ECM is connected to ground so that K23 air-con compressor relay is operated.
- **89 ECM Ter C9**
The fan cycling switch (violet) is installed on the high pressure line at the rear side of an air-con compressor and the switch is "ON" when the pressure is over $18\text{--}21 \text{ kg/cm}^2$. At this time, the terminal C9 of ECM detects the fan cycling switch operating signal.
When ECM receives the operating signal of the fan cycling switch, under the control of ECM the terminal B4 of ECM is connected to ground so that the K21 electric fan high speed relay is operated.
- * **Notice**
An electric fan high speed relay operates under the condition as follows:
 - 1) Coolant temperature is over 106°C .
 - 2) When the operating signal of the fan cycling switch is detected by ECM.
 - 3) When the fault code 14 of the temperature sensor is input.
 - 4) When the terminal A and B of ALDL connector is jumpered.
- **S33 Temperature Switch**
When the coolant temperature is over 90°C , this switch is operated so that the cooling fan is operated. When the temperature is 85°C , the switch is disconnected and the cooling fan is off.

This is installed on the air-con low pressure line and the switch is "OFF" in case that the pressure is below $1.6 \pm 0.5 \text{ kg/cm}^2$.

- **S35 High Pressure Shield Switch**
This is installed at the rear side of an air-con compressor (on the high pressure line) and the switch is "OFF" in case that the pressure is over 29kg/cm².

- V1 Diode
This prohibit the instant re-operation from reverse power when an air-con compressor is "OFF".

- 87 ECM Ter B8
When an air-con rotary switch is operated, ECM detects an air-con operating signal.

- 85 ECM Ter A4
When an air-con operating signal is detected from Terminal A4 and an air-con is not over load, the terminal A4 of ECM is connected to ground so that K23 air-con compressor relay is operated.

- 89 ECM Ter C9
The fan cycling switch(violet) is installed on the high pressure line at the rear side of an air-con compressor and the switch is "ON" when the pressure is over 18-21kg/cm². At this time, the terminal C9 of ECM detects the fan cycling switch operating signal.

When ECM receive the operating signal of the fan cycling switch, under the control of ECM the terminal B4 of ECM is connected to ground so that the K21 electric fan high speed relay is operated.

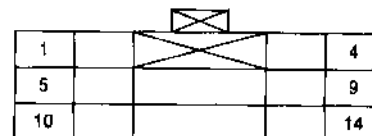
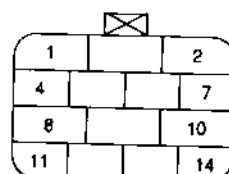
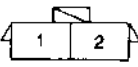
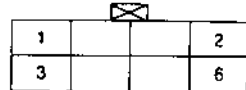
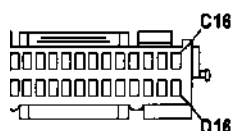
- **Notice**
An electric fan high speed relay operate under the condition as below:

- 1) Coolant temperature is over 106°C.
- 2) When the operating signal of the fan cycling switch is detected by ECM.

- 3) When the fault code 14 of the temperature sensor is input.
- 4) When the terminal A and B of ALDL connector is jumpered.

- **S33 Temperature Switch**
When the coolant temperature is over 90°C, this switch is operated so that the cooling fan is operated when the temperature is 85°C, the switch is disconnected and the cooling fan is off.

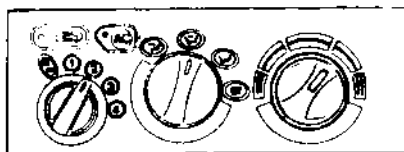
FI-6 TYPE)



AIRCON CONTROL SWITCH

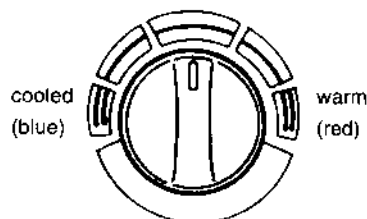
X2 CONNECTOR

X4 CONNECTOR



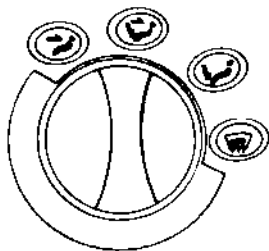
A/C SWITCH

TEMPERATURE SWITCH

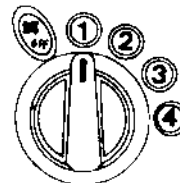


Pressing air conditioning switch A/C once makes air conditioning system ON and lightens the indication lamp. Pressing the switch twice makes A/C system OFF and turn off the lamp.

MODE SWITCH



FAN SWITCH



The fan switch provides speed control of the blower fan (4 fan speeds).



Air flow can be directed towards the center and sides of the vehicle.



Air flow can be directed towards the floor area of the front seat, center, and side window.



Air flow can be directed towards the floor area of the front seat.

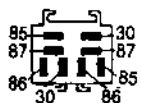
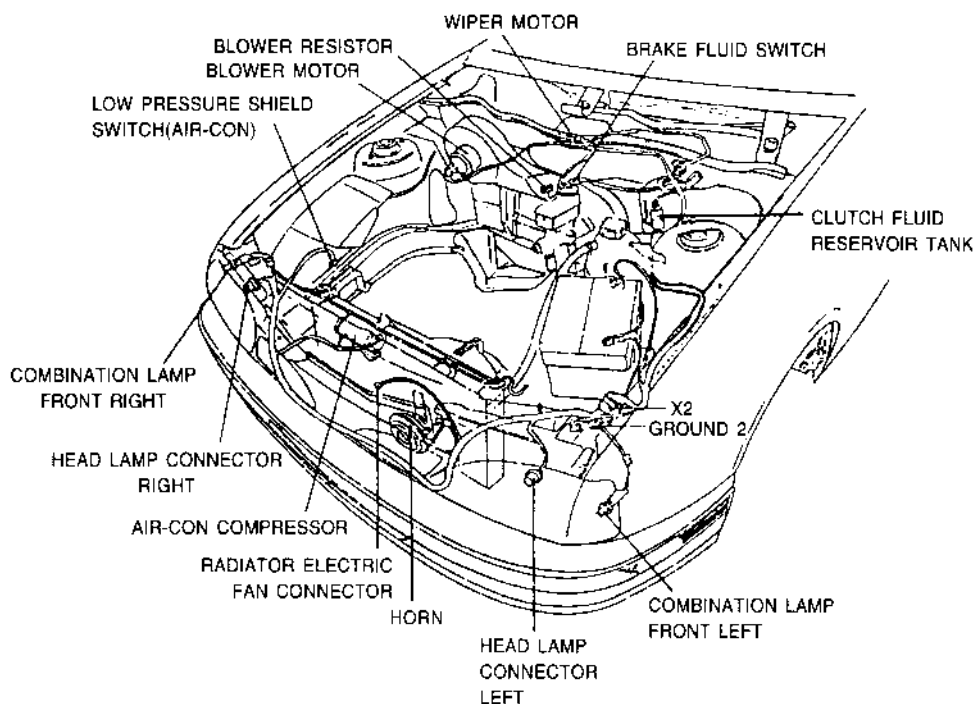


Defrosting of front and side windows can be possible.

FRESH AIR CONTROL LEVER



↑ Circulate the air inside the vehicle.



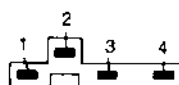
AIRCON COMPRESSOR, ELECTRIC FAN RELAY LOW SPEED (MICRO RELAY)



ELECTRIC RELAY HIGH SPEED



BLOWER SWITCH



BLOWER RESISTOR



FAN CYCLING SWITCH



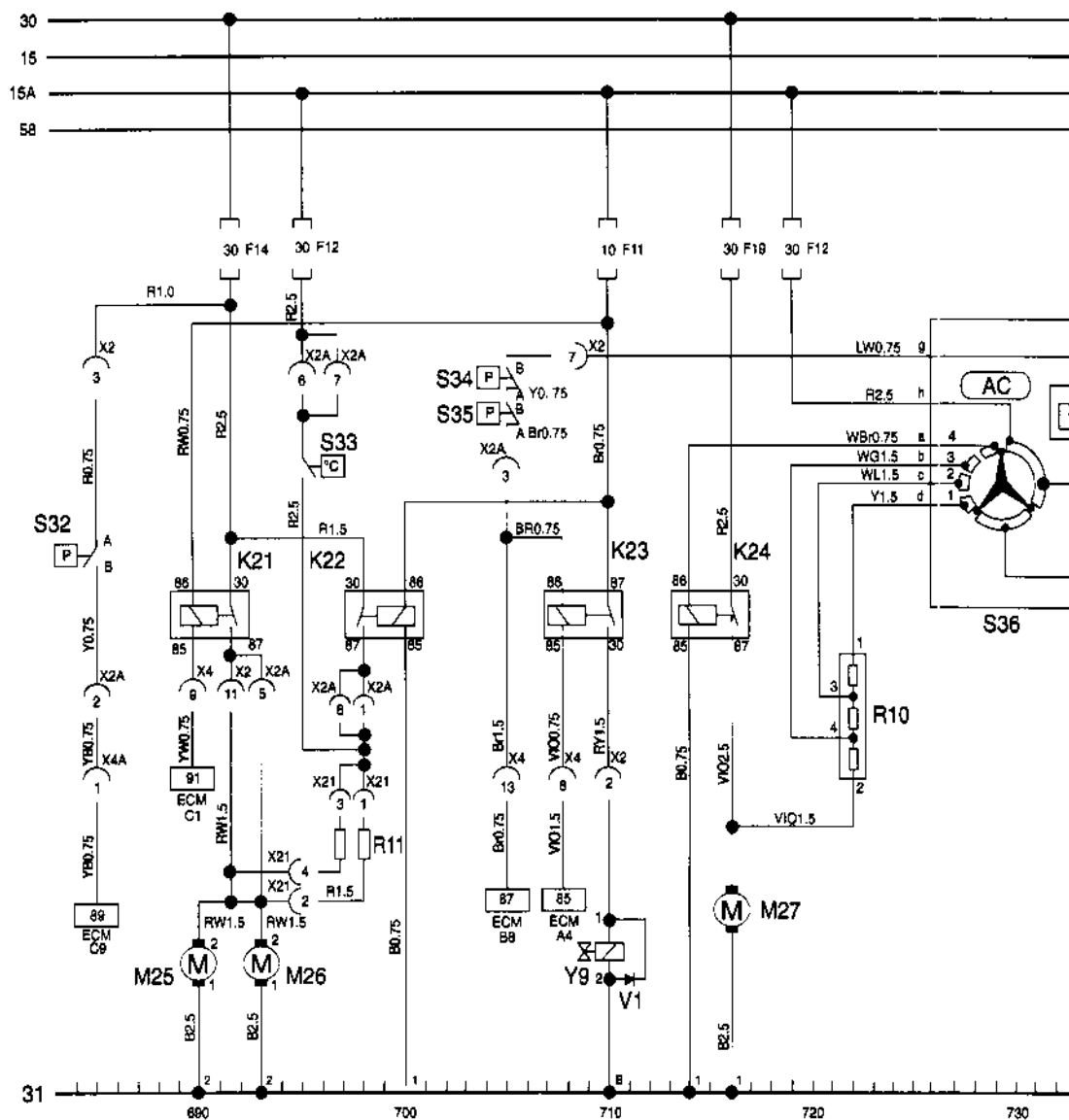
ELECTRIC FAN

26-1) AIR-CONDITIONING WIRING, ELECTRIC FAN, BLOWER MOTOR WIRING(IEFI-S TYPE)

E48 ILLUMINATION LAMP - A/C CONTROL SWITCH
K21 ELECTRIC FAN RELAY - HIGH SPEED
K22 ELECTRIC FAN RELAY - LOW SPEED
K23 A/C COMPRESSURE RELAY
K24 BLOWER MOTOR RELAY
M25 ELECTRIC MOTOR - AUX

M26 ELECTRIC MOTOR
M27 BLOWER MOTOR
R10 BLOWER MOTOR RESISTER
R11 ELECTRIC FAN LOW SPEED RESISTER
S32 FAN CYCLING SWITCH
S33 RADIATOR TEMPERATURE SWITCH

S34 LOW PRI
S35 HIGH PR
S36 A/C CON
V1 DIODE
Y1 A/C COM
Y10 FRESH A



A/C (IEFI-S TYPE)



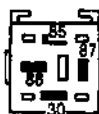
LOW PRESSURE
CUT OFF SWITCH



HIGH PRESSURE
CUT OFF SWITCH



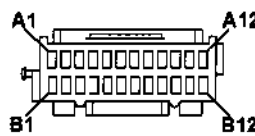
AIRCON



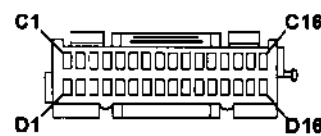
AIRCON RELAY



BLOWER MOTOR
RELAY HIGH SPEED



ECM CONNECTOR

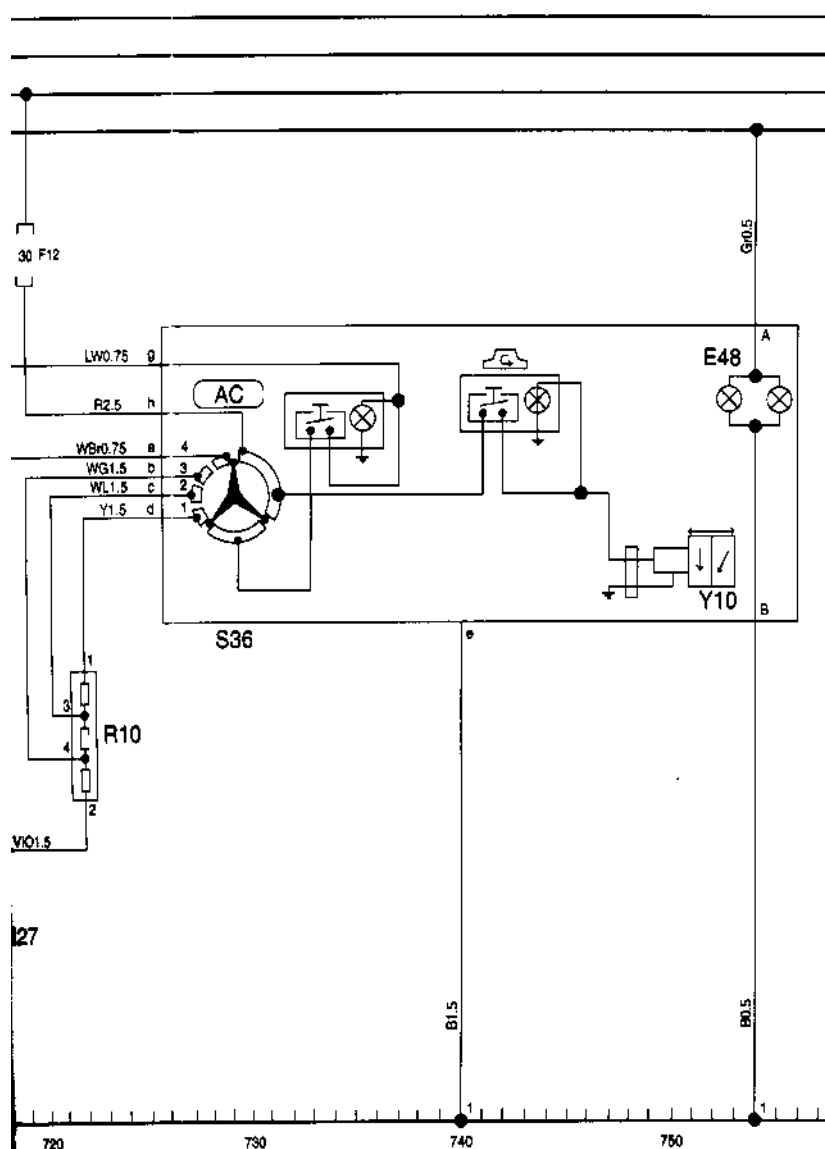


I TYPE)

S34 LOW PRESSURE CUT-OFF SWITCH
 S35 HIGH PRESSURE CUT-OFF SWITCH
 S36 A/C CONTROL SWITCH
 V1 DIODE
 Y1 A/C COMPRESSURE
 Y10 FRESH AIR CONTROL MODE SOLENOID

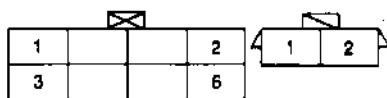
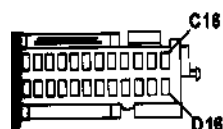
ISTER

CH

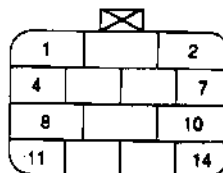


- S34 Low Pressure Shield Switch
This is installed on the air-con low pressure line and the switch is "OFF" in case that the pressure is below $1.6 \pm 0.5 \text{ kg/cm}^2$.
- S35 High Pressure Shield Switch
This is installed at the rear side of an air-con compressor (on the high pressure line) and the switch is "OFF" in case that the pressure is over 29 kg/cm^2 .
- V1 Diode
This prohibits the instant re-operation from reverse power when an air-con compressor is "OFF".
- 87 ECM Ter B8
When an air-con rotary switch is operated, ECM detects an air-con operating signal.
- 85 ECM Ter A4
When an air-con operating signal is detected from Terminal A4 and an air-con is not over load, the terminal A4 of ECM is connected to ground so that K23 air-con compressor relay is operated.
- 89 ECM Ter C9
The fan cycling switch (violet) is installed on the high pressure line at the rear side of an air-con compressor and the switch is "ON" when the pressure is over $18-21 \text{ kg/cm}^2$. At this time, the terminal C9 of ECM detects the fan cycling switch operating signal.
When ECM receive the operating signal of the fan cycling switch, under the control of ECM the terminal B4 of ECM is connected to ground so that the K21 electric fan high speed relay is operated.
- * Notice
An electric fan high speed relay operate under the condition as below:
 - 1) Coolant temperature is over 106°C .
 - 2) When the operating signal of the fan cycling switch is detected by ECM.
 - 3) When the fault code 14 of the temperature sensor is input.
 - 4) When the terminal A and B of ALDL connector is jumpered.
- S33 Temperature Switch
When the coolant temperature is over 90°C , this switch is operated so that the cooling fan is operated when the temperature is 85°C , the switch is disconnected and the cooling fan is off.

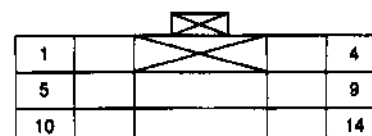
FI-S TYPE)



AIRCON CONTROL SWITCH



X2 CONNECTOR



X4 CONNECTOR

27) HEAD LAMP LEVELING DEVICE(OPTION)

1. HLLD Actuating Motor

(1) Construction and working principle

Actuating motor works by electric power supplied by driver's operation of head lamp leveling device switch. Worm and worm gear change the rotating power of the actuating motor into linear movement which pushes and pulls the device shaft.

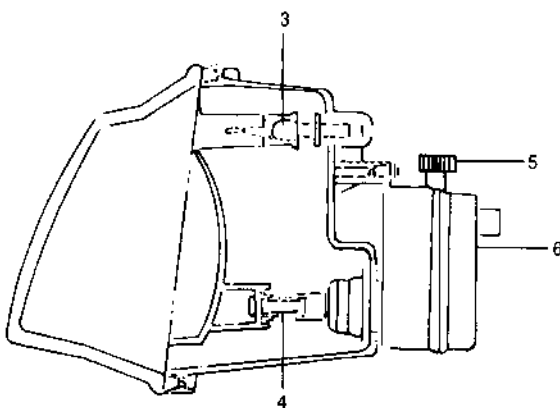
The shaft linked with the reflector, moves forward and backward.

Then the reflector of the head lamp can rotate up and down around the pivot.

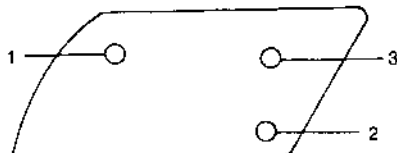
The more the reflector turns downward the bigger the downward – inclination of dipped – beam, and vice versa.

So, when driver rotates the switch to downward, the reflector of the lamp turns downward around the pivot.

If the driver turns it to the opposite direction the reflector moves upward around the pivot.

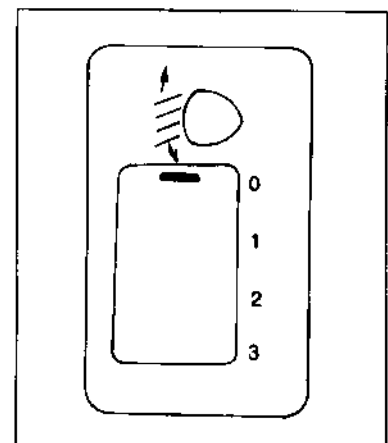


1. AIMING POINT TO LEFT AND RIGHT
2. AIMING POINT TO UP AND DOWN
3. PIVOT
4. DEVICE SHAFT
5. ADJUSTING KNOB
6. ACTUATING MOTOR



(2) HLLD switch

- Position 0
One person on driver's seat .
Two persons on front seat.
(One driver and one co-driver)
- Position 1
All seats occupied
(5 persons in passenger compartment)
- Position 2
5 persons in passenger compartment plus weight(Max 160 kg) in load-
ing compartment.
- Position 3
One person on driver's seat plus weight(Max 350 kg) in loading com-
partment.



2. Test Method

R2 HLLD CONTROL SWITCH
 M4 HLLD MOTOR (LEFT)
 M5 HLLD MOTOR (RIGHT)

- 1) With ignition switch "ON", disconnect the HLLD switch connector.
- 2) Connect voltage meter between the HLLD switch connector, terminal "2" and the vehicle body ground, and measure the voltage.

Normal : 12V

If the voltage is abnormal, check the open of the wiring and fuse No. 6.

- 3) Measure the resistance between the HLLD switch terminal "4" and "2".

If the resistance is abnormal, exchange the HLLD switch.

Position 0	0.2ohm
Position 1	156.6ohms
Position 2	234ohms
Position 3	252ohms

