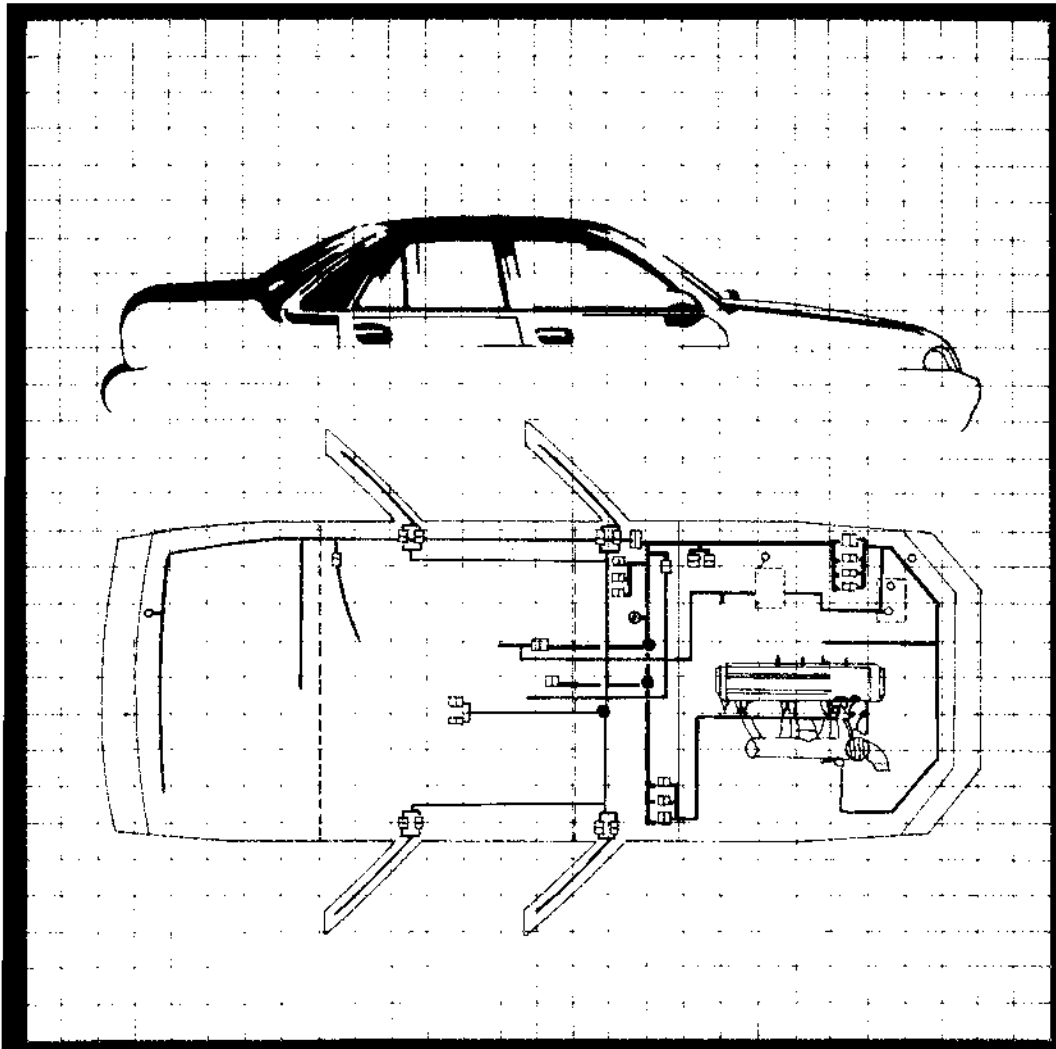


# ELECTRICAL WIRING DIAGRAM

**NEXIA  
CIELO  
RACER II**



**DAEWOO MOTOR CO., LTD.**

# **ELECTRICAL WIRING DIAGRAM**

**NEXIA ■**

**CIELO ■**

**RACER II ■**



**DAEWOO MOTOR CO., LTD**

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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

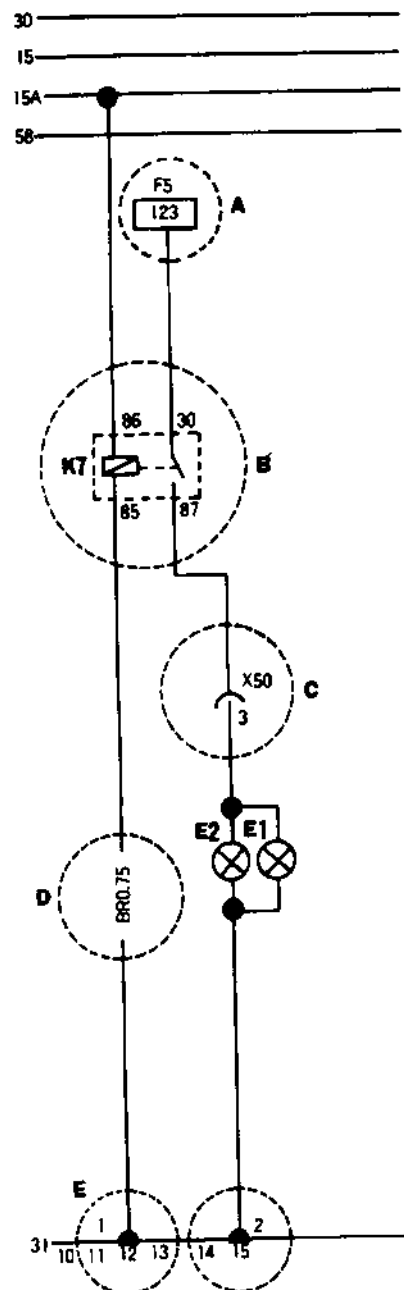
"30" Line: Battery Positive(+) Line

"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     |

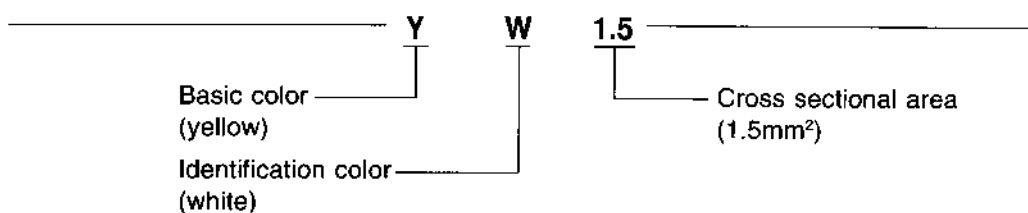
## 3. WIRING COLOR

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.

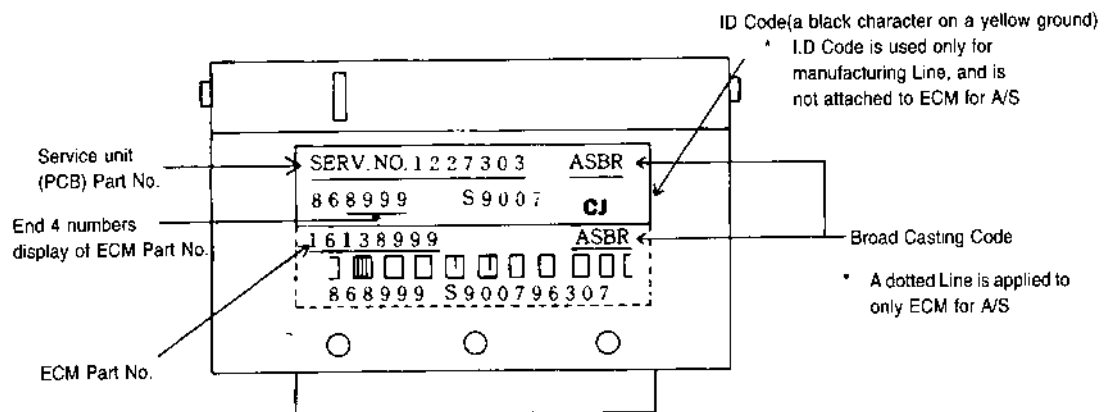


## 3. ECM CLASSIFICATION

○ ECM Part Number

| ENGINE   | EMIS-<br>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                          |
|          |               |     | IEFI-6 | 16236659 | CK   | OPEN  |       | ISRAEL                                           |
|          |               |     |        | 16207729 | EU   |       |       | NON IMMO.                                        |
|          |               |     |        | 16212869 | SS   |       |       |                                                  |
|          |               | A/T | IEFI-S | 16214689 | RL   | CLOSE | O     | Western Europe IMMO.                             |
|          |               |     |        |          |      |       |       | Western Europe non IMMO.                         |
|          |               |     |        | 16211889 | PU   |       |       | Chile                                            |
|          |               |     | IEFI-6 | 16205729 | EL   | CLOSE |       | General area, Australia                          |
|          |               |     |        | 16236669 | CL   |       |       | ISRAEL                                           |
|          |               |     |        | 16214659 | NA   |       |       |                                                  |
| 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 | O     | Europe IMMO.(Only France)                        |
|          |               |     |        | 16219819 | GP   |       |       | High altitude area                               |
|          |               |     |        | 16217239 | HE   |       |       | General area, Chile, Australia, Europe non immo. |
|          |               |     |        | 16235989 | SE   |       |       | ISRAEL                                           |
|          |               |     |        | 16217249 | HG   | CLOSE | O     | Europe IMMO.                                     |
|          |               | A/T | IEFI-6 | 16214589 | PF   | CLOSE |       | Gneral area, Chile, Israel, Australia            |
|          |               |     |        | 16214639 | NB   | CLOSE | O     | Europe IMMO.                                     |
|          |               |     |        | 16207779 | EX   |       |       | General area, Chile, Australia, Europe non immo. |
|          |               |     |        | 16235999 | SF   |       |       | ISRAEL                                           |
|          |               |     |        |          |      |       |       |                                                  |

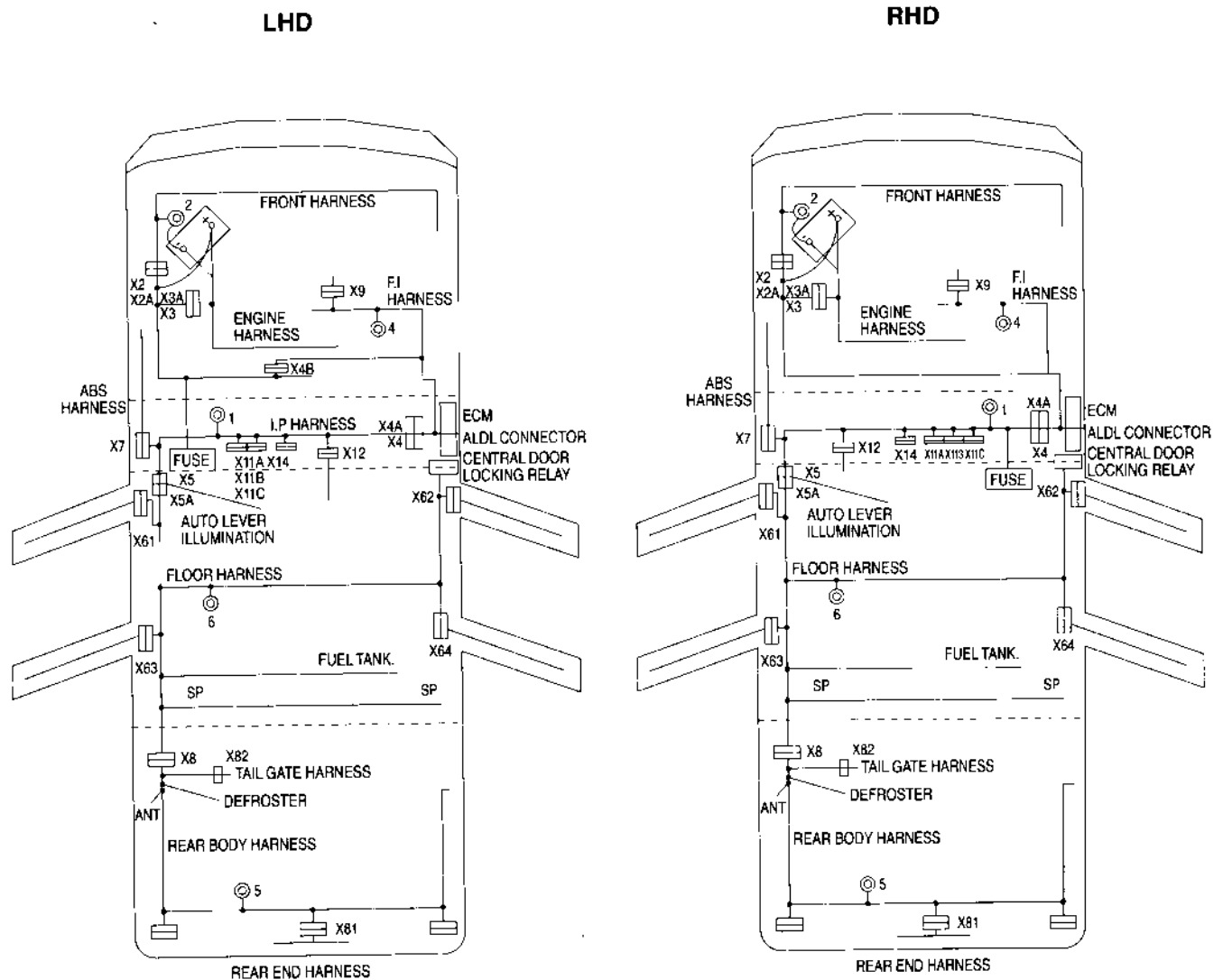
### ○ ECM Identification Method



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

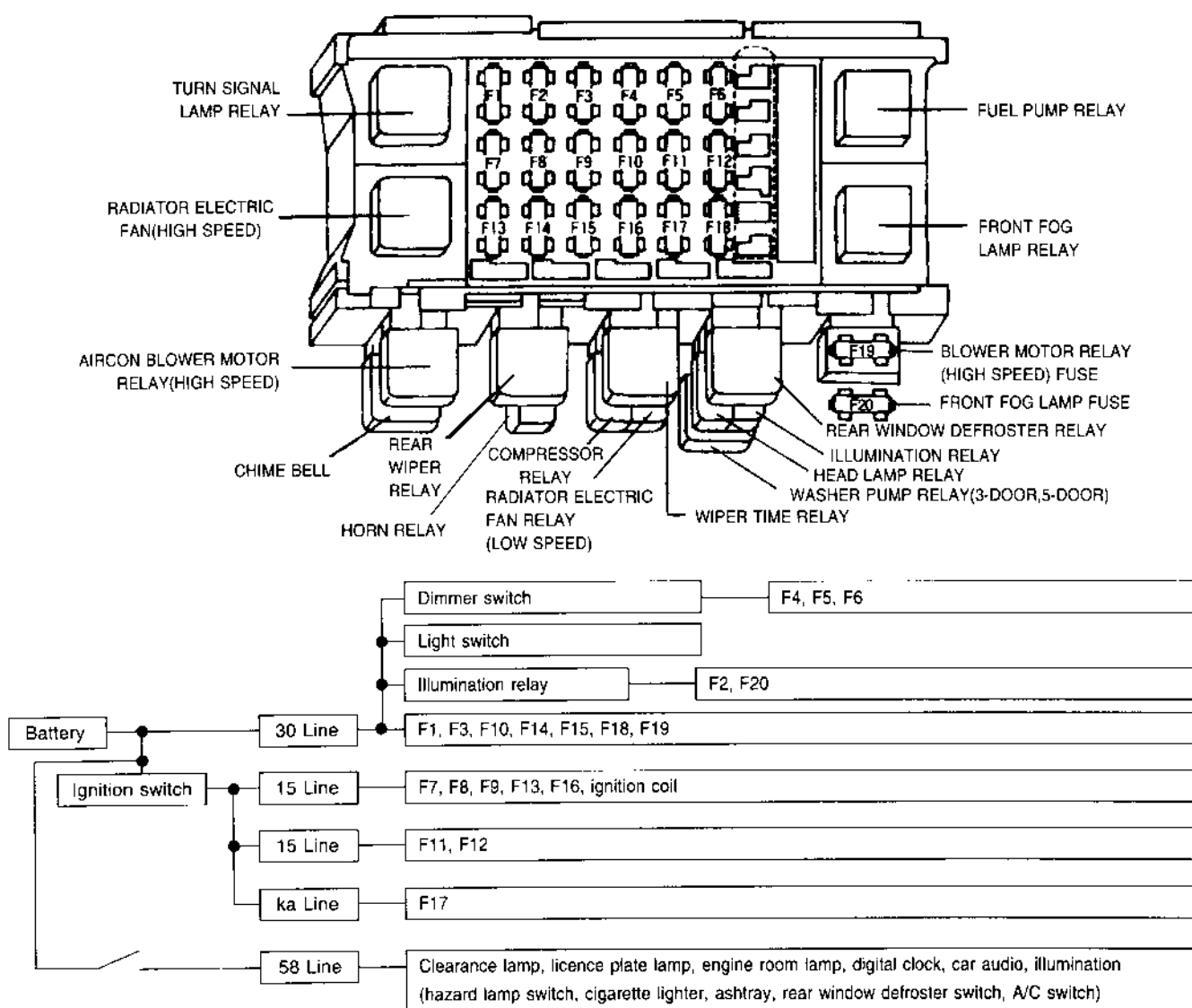
4: Located on the head side of engine cylinder

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

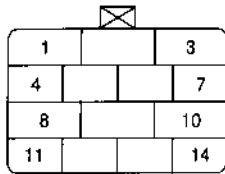
| Fuse No. | Capacity (A) | Usage                                                   | Fuse No. | Capacity (A) | Usage                                                                                                                            |
|----------|--------------|---------------------------------------------------------|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------|
| 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

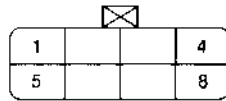
### C-1 Harness Connector Faces

### C-2 Electrical Wiring Diagram

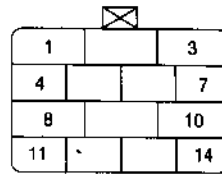
|                                                                                            |    |
|--------------------------------------------------------------------------------------------|----|
| 1) Ignition Switch, Starter Motor, Alternator, Wiring .....                                | 14 |
| 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,<br>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,<br>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**

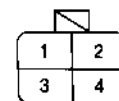
X2 CONNECTOR



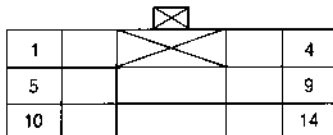
X2A CONNECTOR



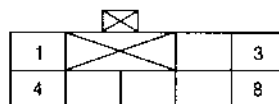
X3 CONNECTOR



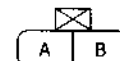
X3A CONNECTOR



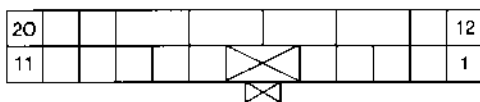
X4 CONNECTOR



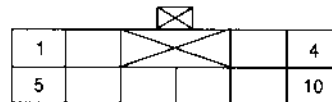
X4A CONNECTOR



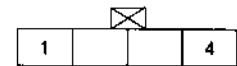
X4B CONNECTOR



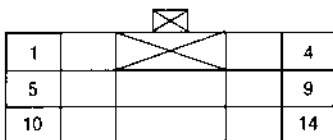
X5 CONNECTOR



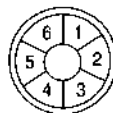
X5A CONNECTOR



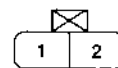
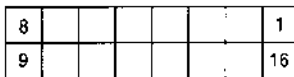
X13 CONNECTOR(AIR BAG)



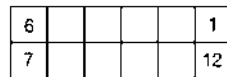
X61, X62, X8 CONNECTOR



X63, X64 CONNECTOR

X9 CONNECTOR  
(DOHC VEHICLE)

X11A

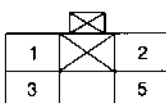


X11B

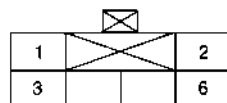


X11C

I-P CONNECTOR



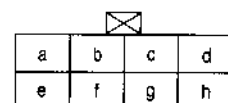
X12 CONNECTOR



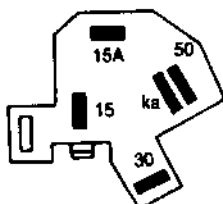
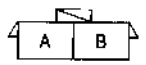
X7 CONNECTOR



X14 CONNECTOR (CASSETTE RADIO)



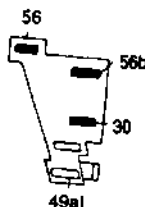
A/C SWITCH CONNECTOR

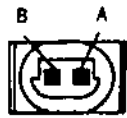


IGNITION SWITCH



DIMMER SWITCH CONNECTOR

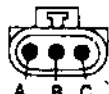




INJECTOR CONNECTOR



CTS CONNECTOR



MAP SENSOR



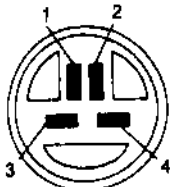
TPS CONNECTOR



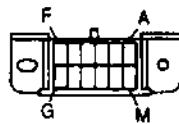
IACV CONNECTOR



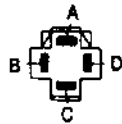
O<sub>2</sub> SENSOR CONNECTOR



WIPER MOTOR CONNECTOR



ALDL CONNECTOR



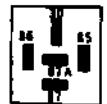
BRAKE SWITCH CONNECTOR



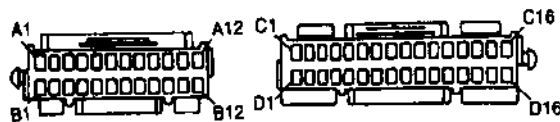
TCC SOLENOID VALVE CONNECTOR



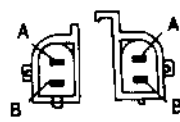
FUEL PUMP CONNECTOR



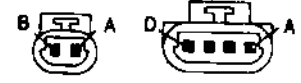
FUEL PUMP RELAY CONNECTOR



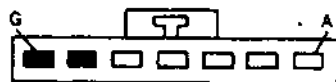
ECM CONNECTOR



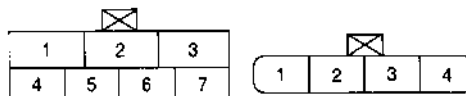
IGNITION COIL CONNECTOR



DISTRIBUTOR CONNECTOR



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



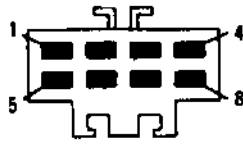
NSBU SWITCH(4-SP A/T)



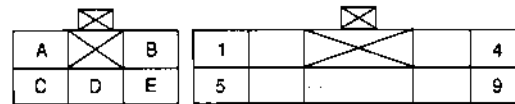
BLOWER MOTOR RESISTER



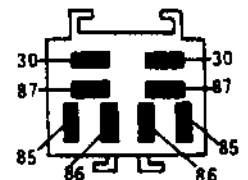
CLOCK CONNECTOR



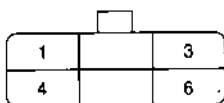
WARNING BUZZER



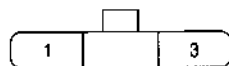
POWER WINDOW MAIN SWITCH



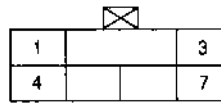
HEAD LAMP RELAY



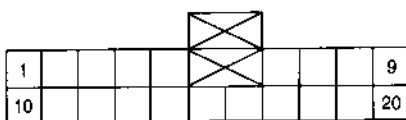
HEAD LAMP CONNECTOR



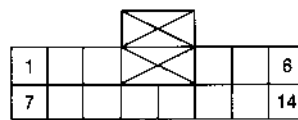
SIGNAL LAMP CONNECTOR



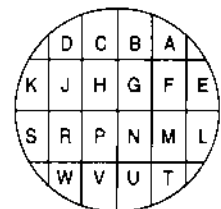
REAR COMBI LAMP CONNECTOR



X41 CONNECTOR(4-SP A/T)



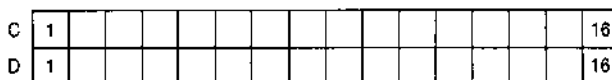
X42 CONNECTOR(4-SP A/T)



X43 CONNECTOR(4-SP A/T)

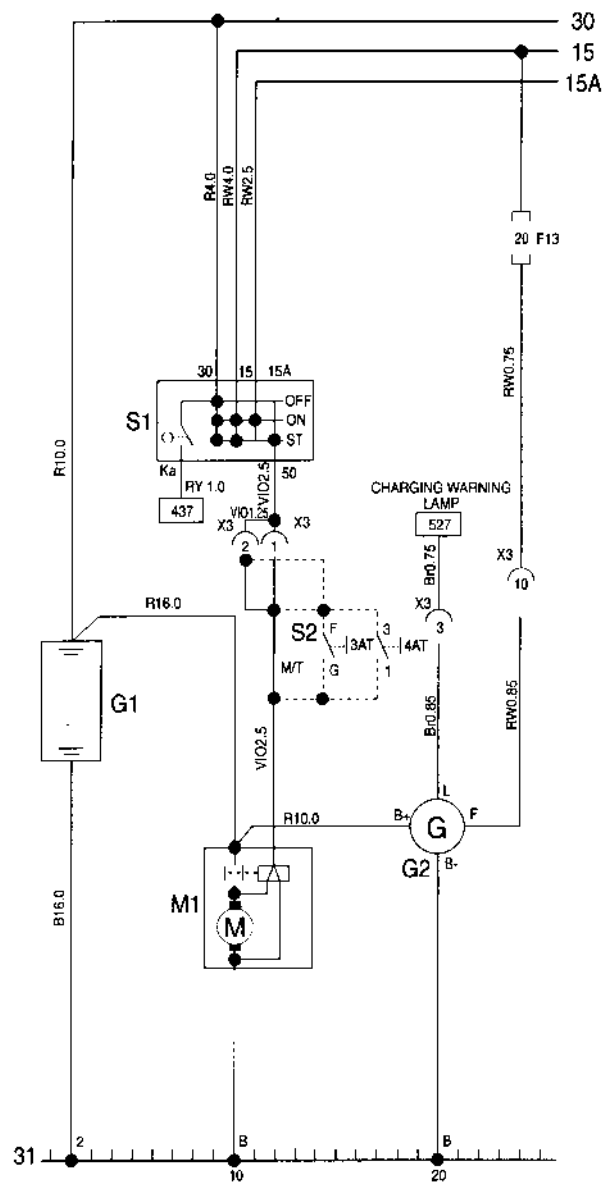


TCM CONNECTOR(4-SP A/T)

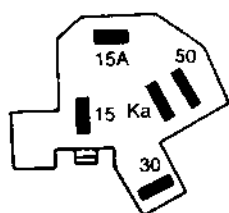


**C-2. ELECTRICAL WIRING DIAGRAM****1) IGNITION SWITCH, STARTER MOTOR, ALTERNATOR WIRING**

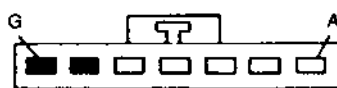
G1 BATTERY  
 M1 STARTER MOTOR  
 S1 IGNITION SWITCH  
 S2 P/N SWITCH  
 G2 ALTERNATOR



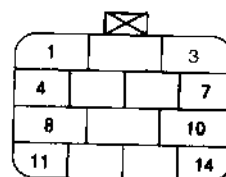
IGNITION SWITCH



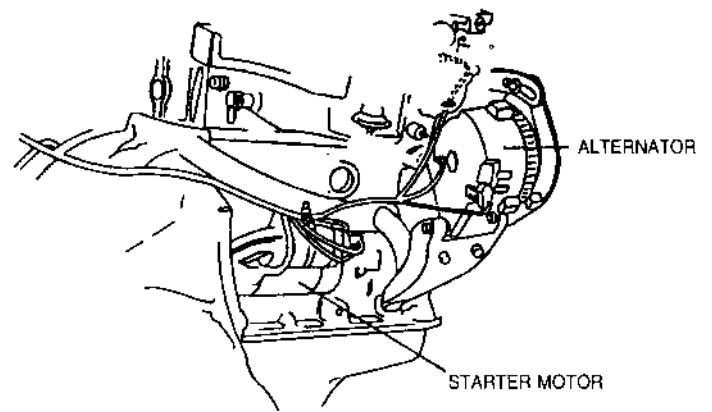
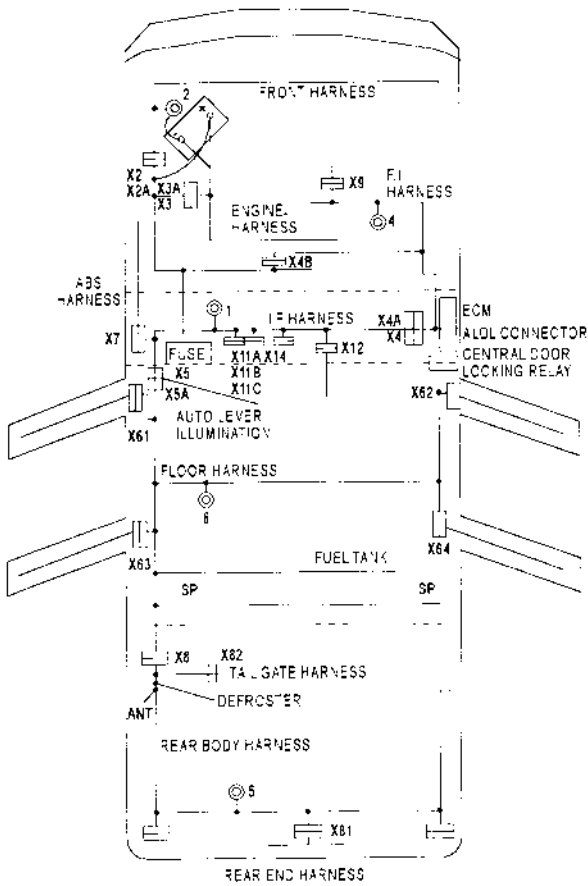
IGNITION SWITCH



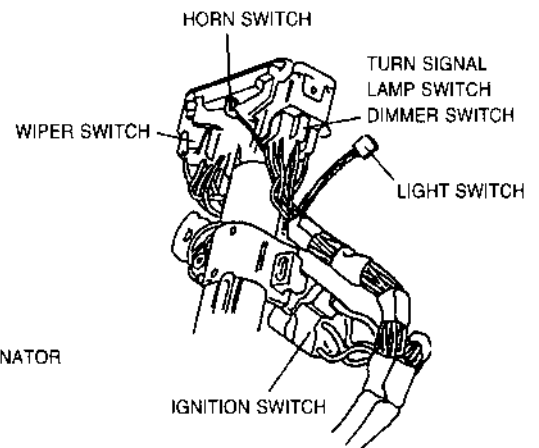
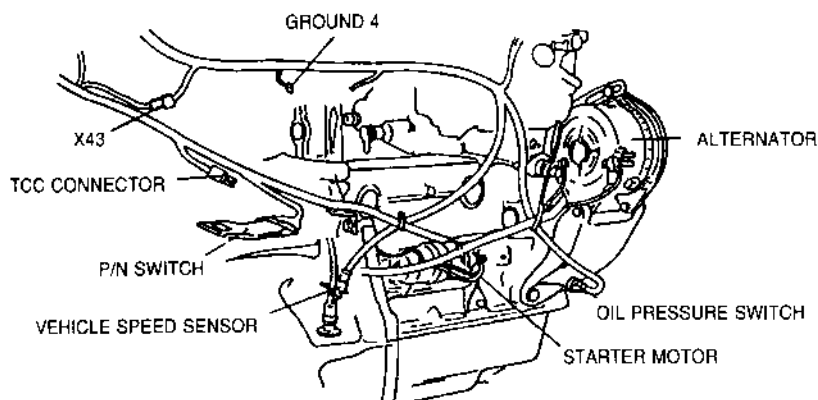
P/N SWITCH CONNECTOR

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

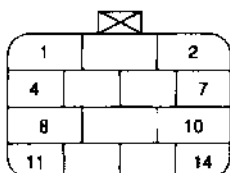
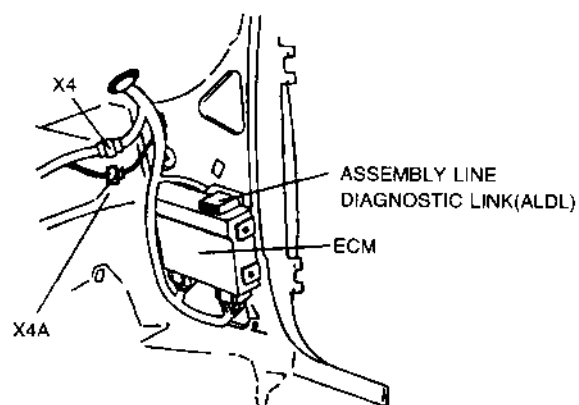
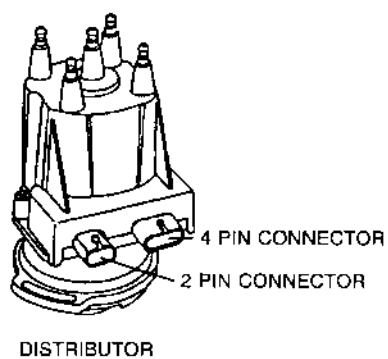
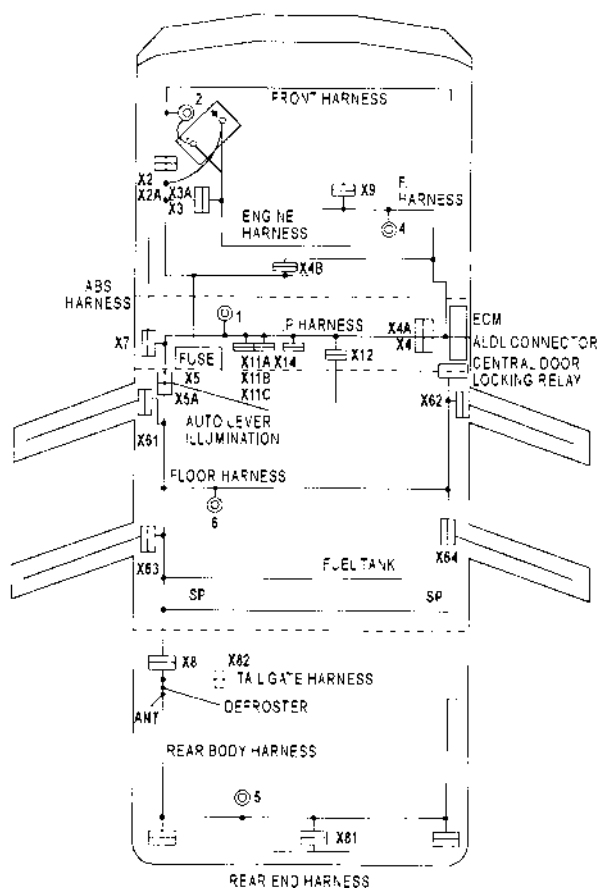
- S2: P/N Switch(Auto Transmission)  
 This is a safety circuit to start an engine only when a shift lever is the position of P or N on a vehicle. A cross point is "ON" at the P or N position.
- 527 Analog, Instrument Panel.
  - This is a line connected to a battery charging warning lamp on the instrument 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





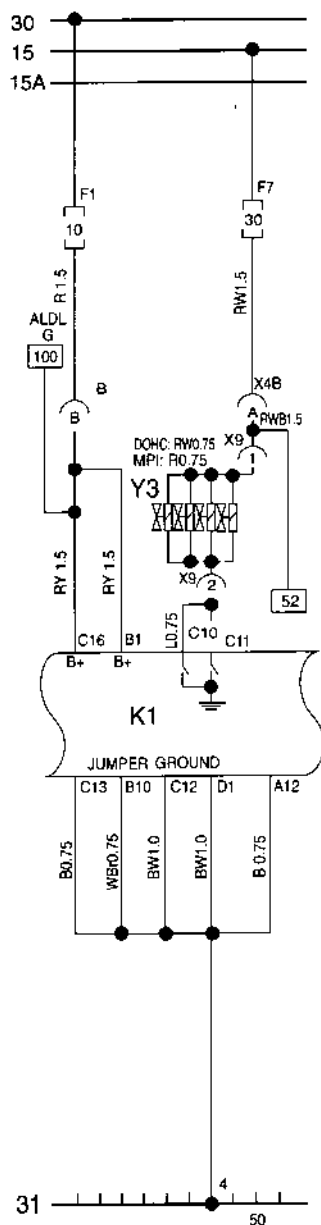


X2, X3 CONNECTOR  
(I.P. WIRING HARNESS REFERENCE)

### 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:

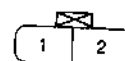
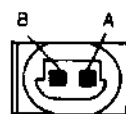
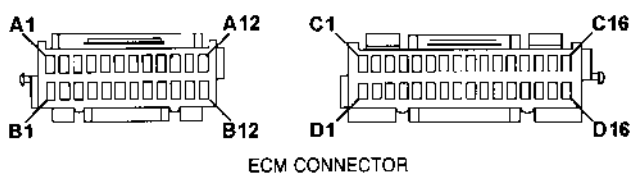
- Set Ignition Switch to "OFF" position
- Disconnect Fuse and wait for about 10 seconds
- Connect Fuse again

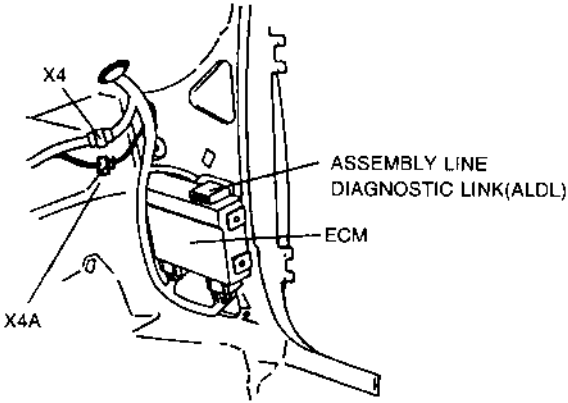
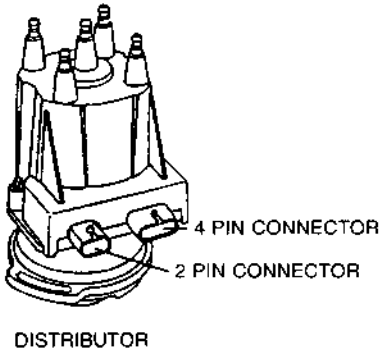
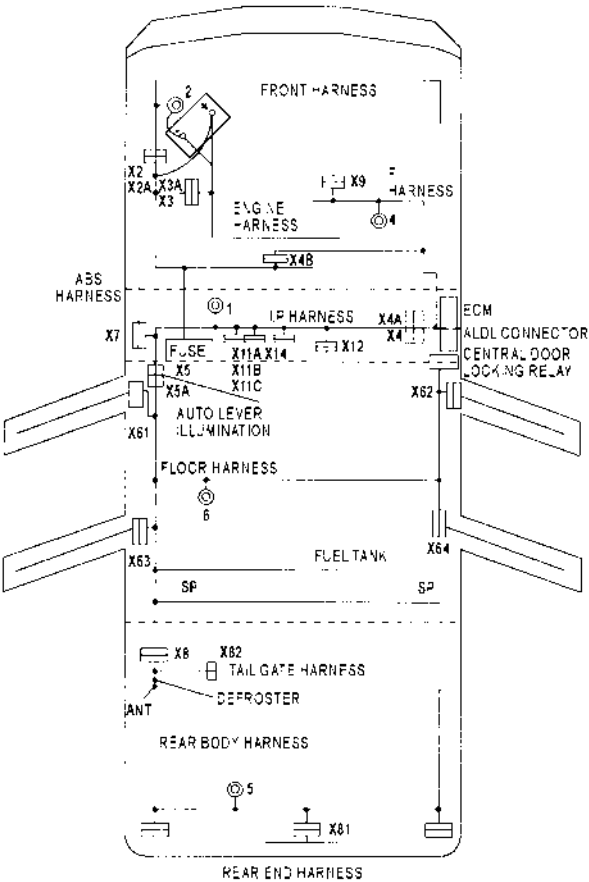
#### - Y3 Injection Valve(Injector)

- 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.



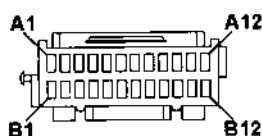
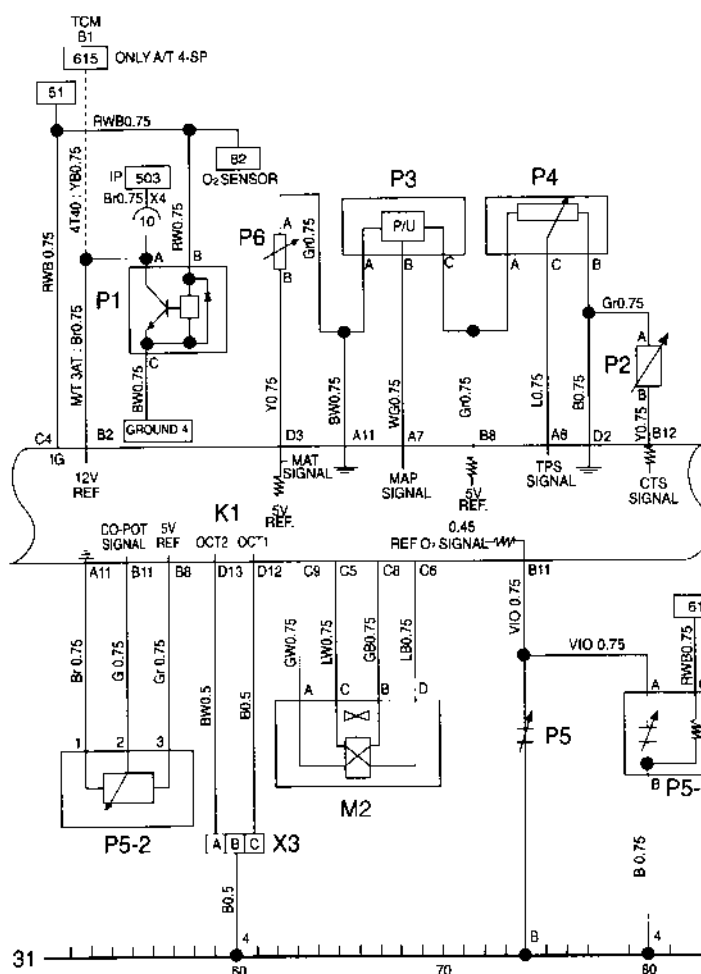


#### 4) COOLANT TEMPERATURE SENSOR(CTS), MANIFOLD AIR PRESSURE(MAP) SENSOR, VEHICLE SPEED SENSOR, THROTTLE POSITION SENSOR(TPS) IAC VALVE, O<sub>2</sub> SENSOR WIRING(IEFI-6)

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 O<sub>2</sub> SENSOR (UNLEADED TYPE)  
P5-1 O<sub>2</sub> 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  
CONNECTORO<sub>2</sub>  
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 O<sub>2</sub> Sensor

- Voltage is changed between 0.1 and 0.9V

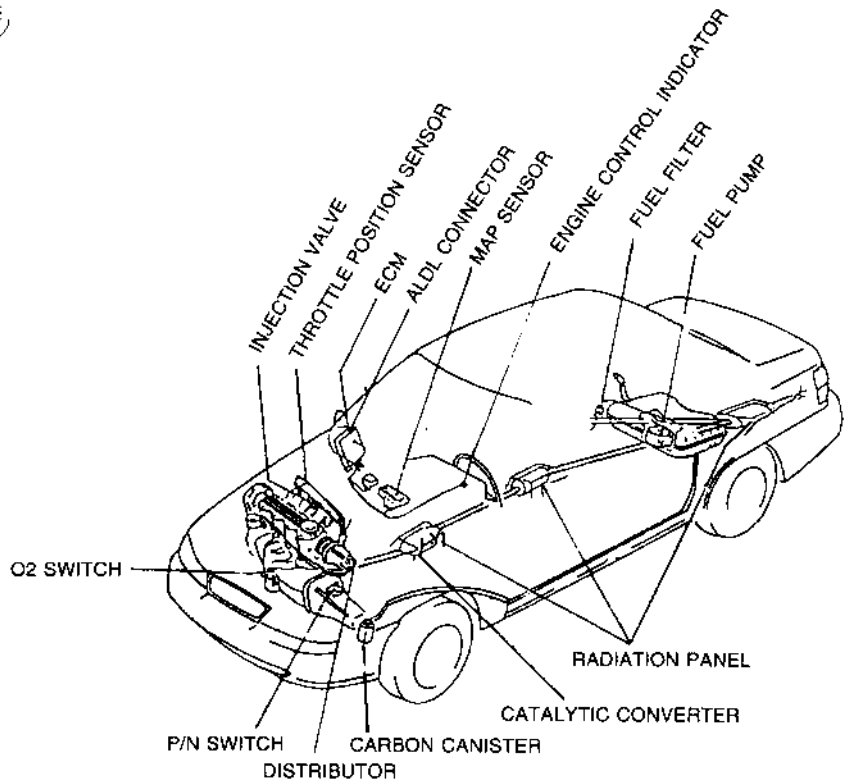
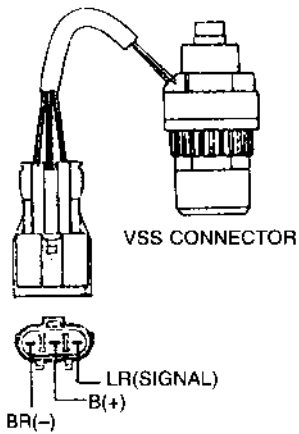
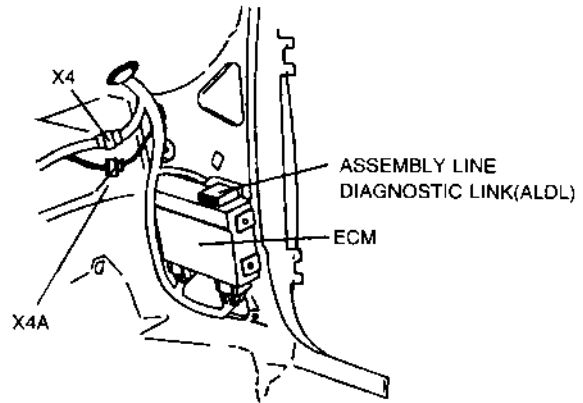
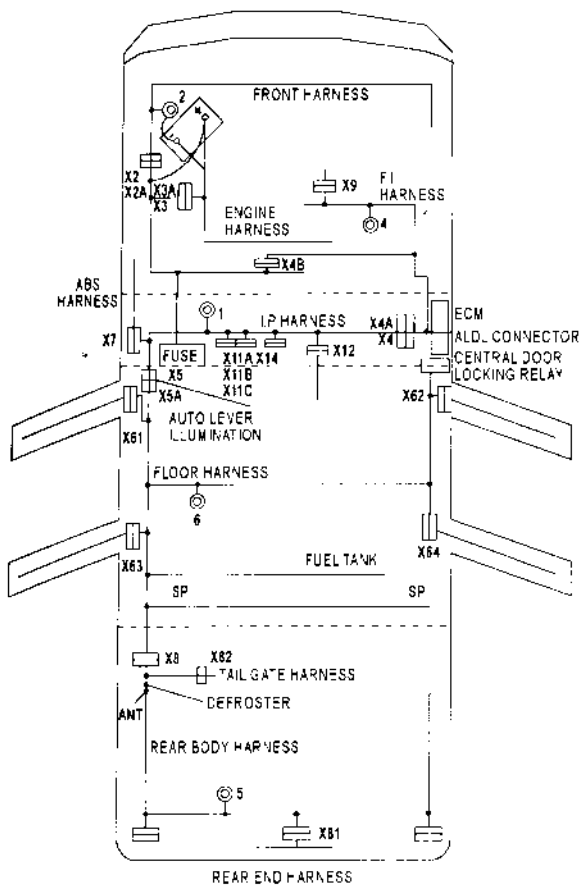
##### - M2 Idle Air Control Valve(IAC Valve)

- 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 |

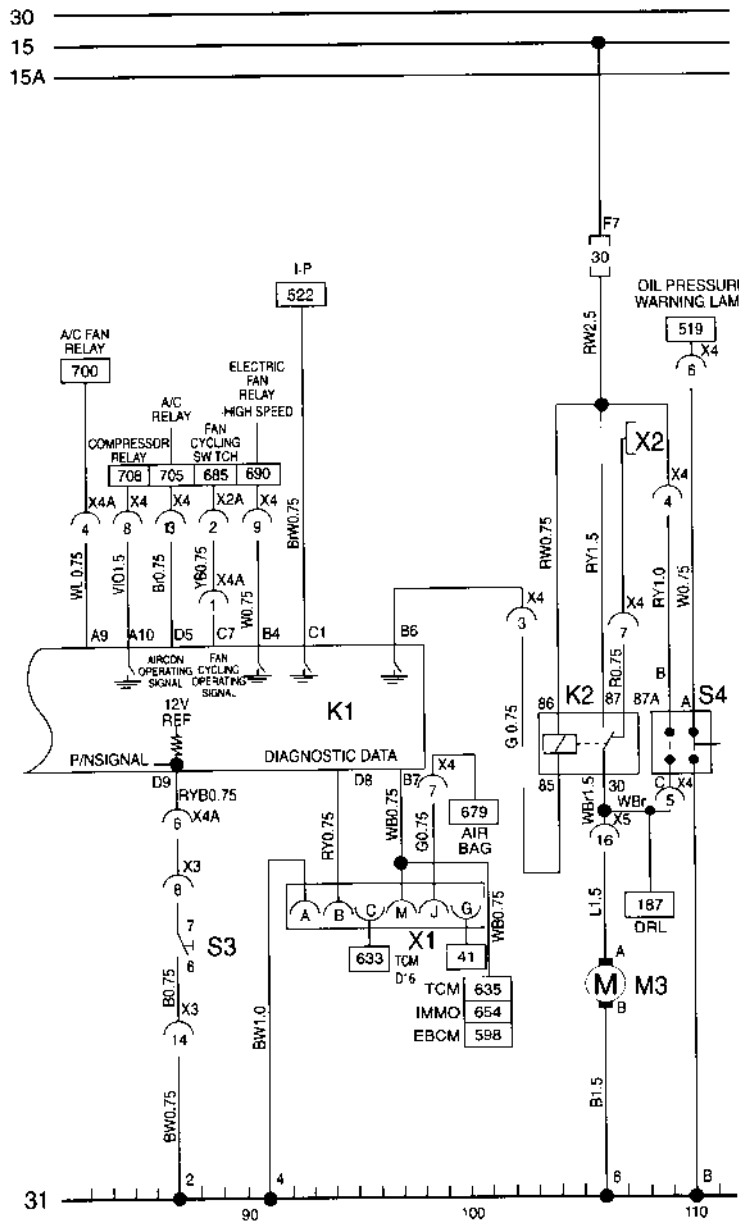
##### - P1 VSS

- 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.

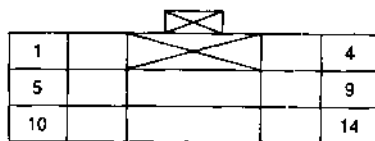
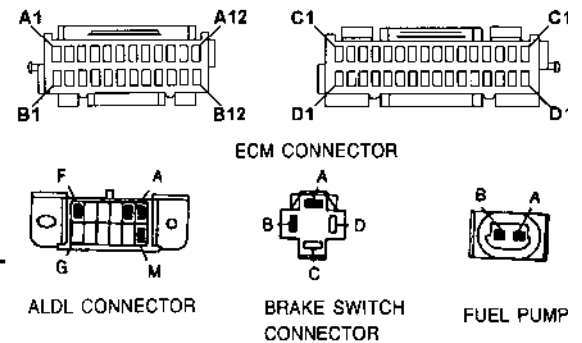


### 5) "SERVICE ENGINE SOON" LIGHT, FUEL PUMP, ALDL TESTER WIRING(IEFI-6)

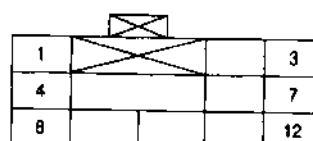
|    |                     |    |                          |
|----|---------------------|----|--------------------------|
| K1 | ECM                 | X1 | ALDL CONNECTOR           |
| M3 | FUEL PUMP MOTOR     | X2 | FUEL PUMP TEST CONNECTOR |
| S3 | P/N SWITCH          | K2 | FUEL PUMP RELAY          |
| 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.



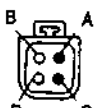
X4 CONNECTOR



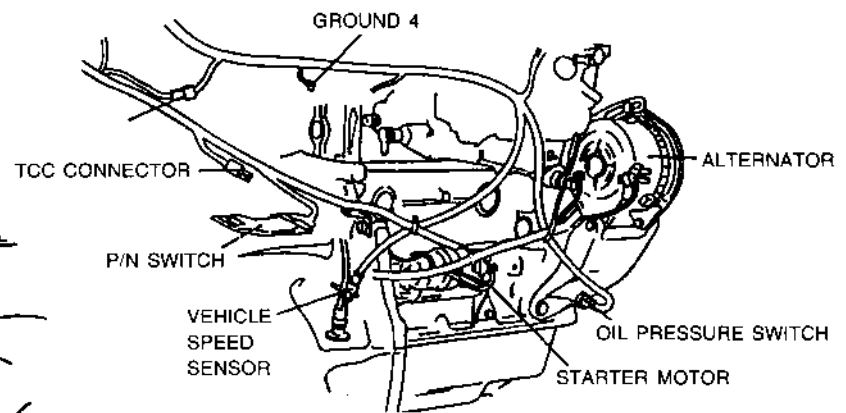
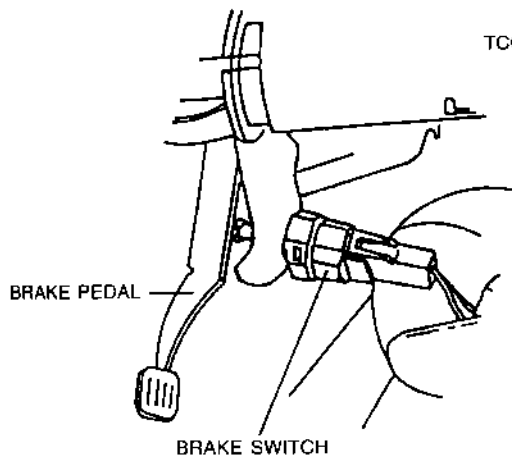
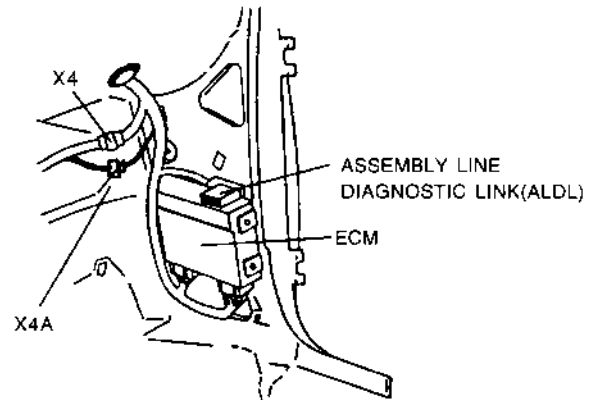
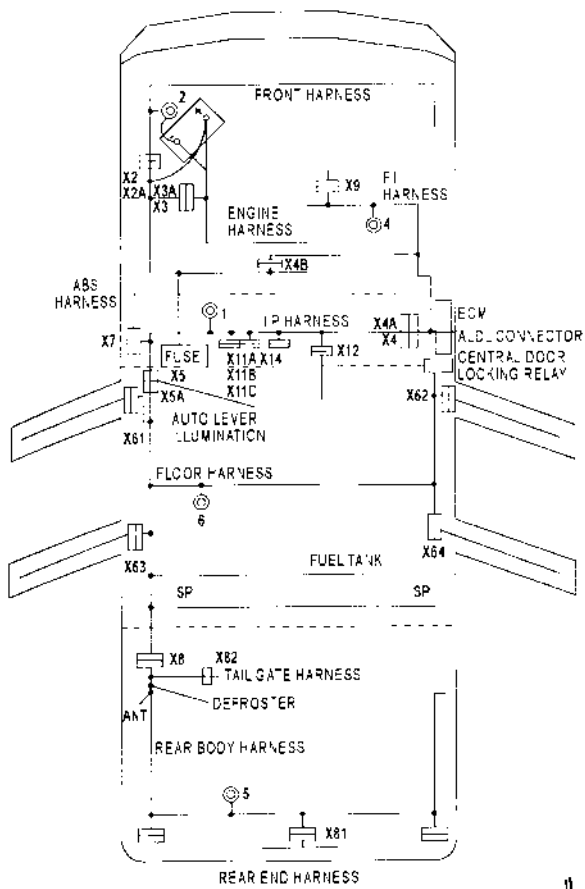
X4A CONNECTOR



FUEL PUMP RELAY



T.C.C SOLENOID VALVE

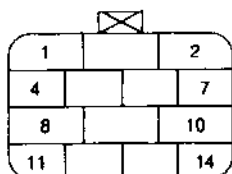
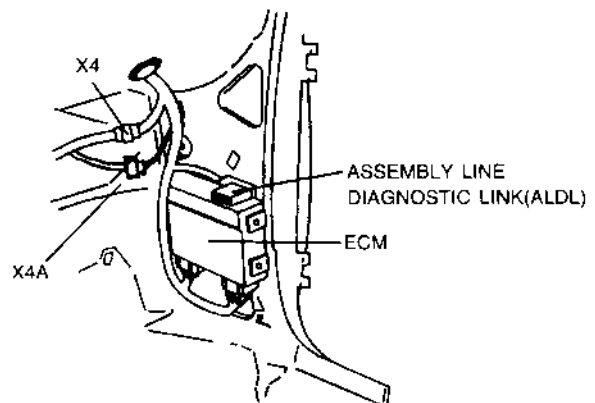
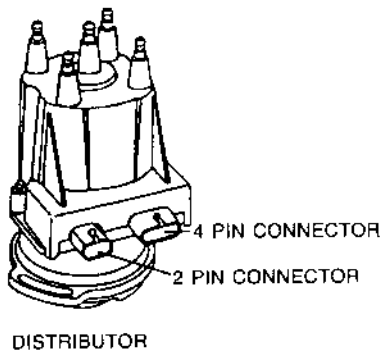
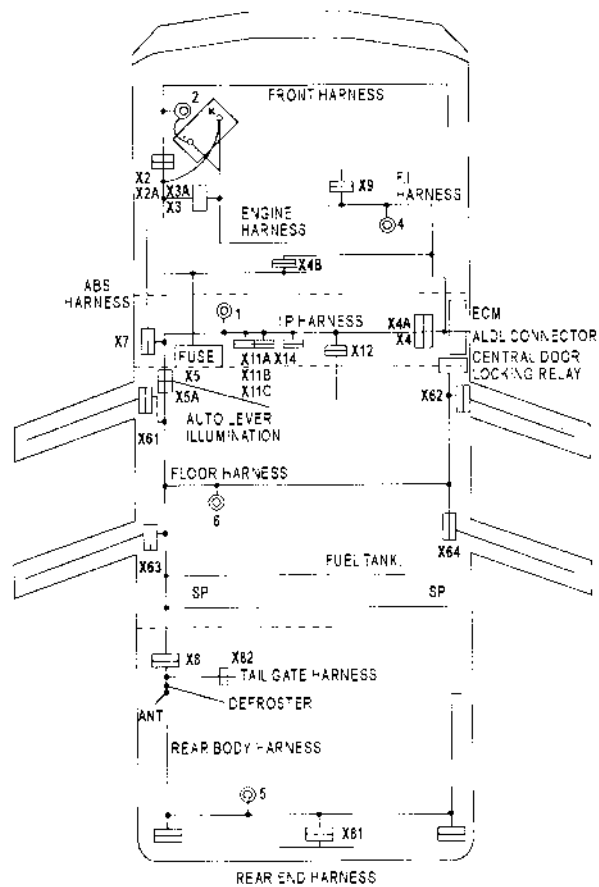


AUTO TRANSMISSION VEHICLE

|    |  |  |  |  |  |  |  |    |
|----|--|--|--|--|--|--|--|----|
| 20 |  |  |  |  |  |  |  | 12 |
| 11 |  |  |  |  |  |  |  | 1  |

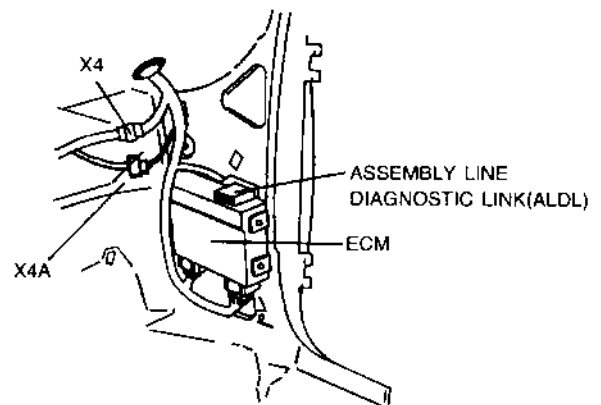
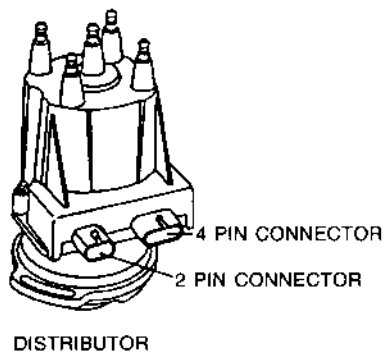
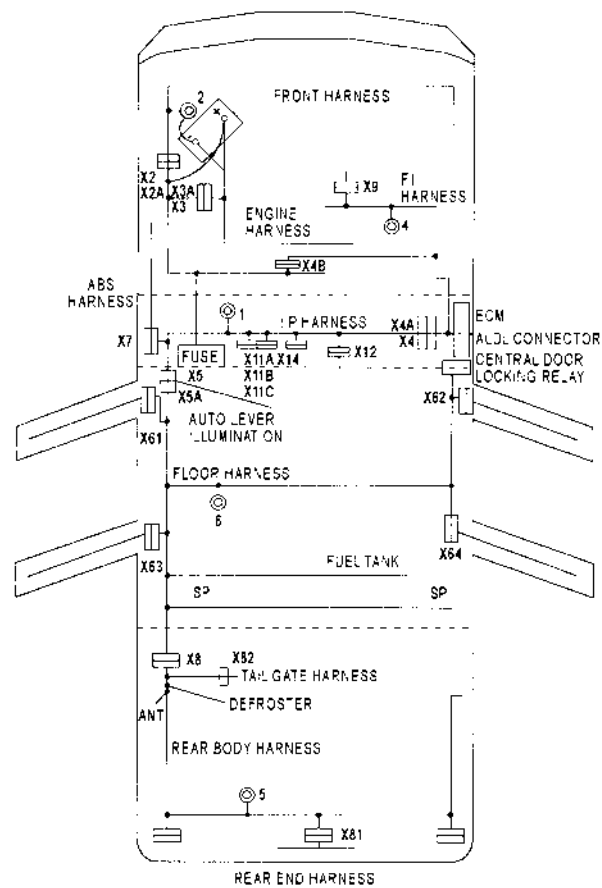
## X5 CONNECTOR





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



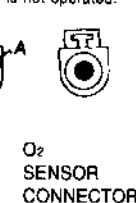
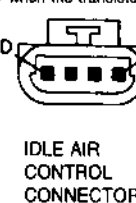
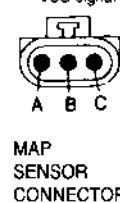
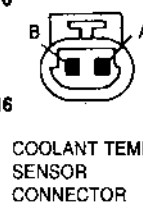
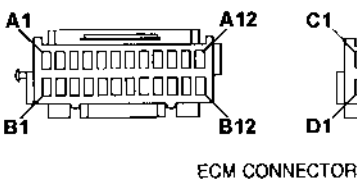
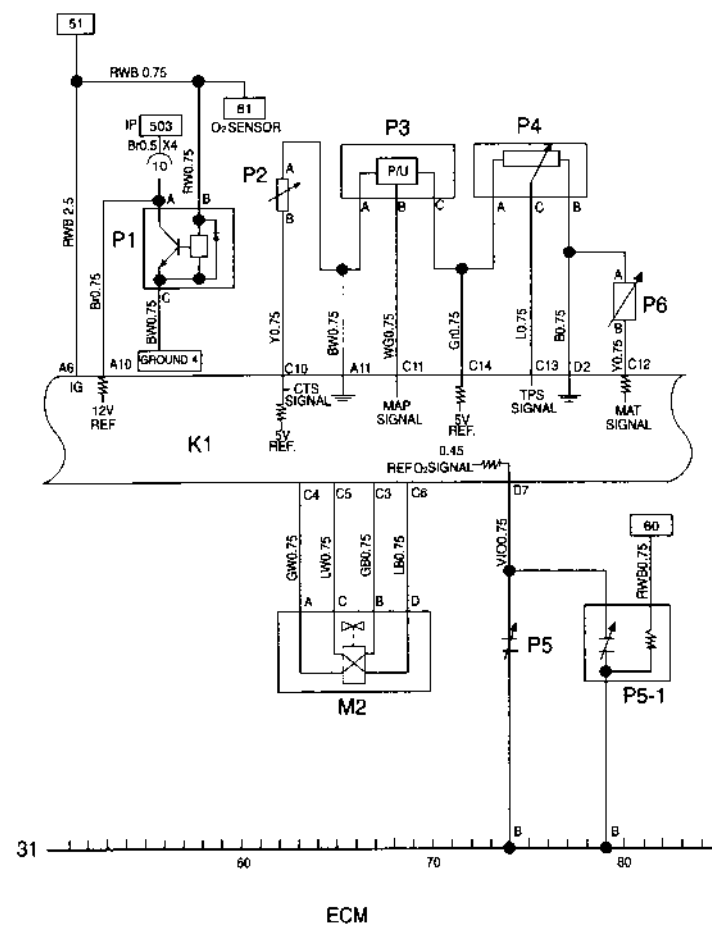


## 8) COOLANT TEMPERATURE SENSOR(CTS), MANIFOLD AIR PRESSURE(MAP) SENSOR, VEHICLE SPEED SENSOR, THROTTLE POSITION SENSOR(TPS) IAC VALVE, O<sub>2</sub> SENSOR WIRING(IEFI-S)

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 O<sub>2</sub> SENSOR(UN LEADED TYPE)  
P5-1 O<sub>2</sub> 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           |                                       |

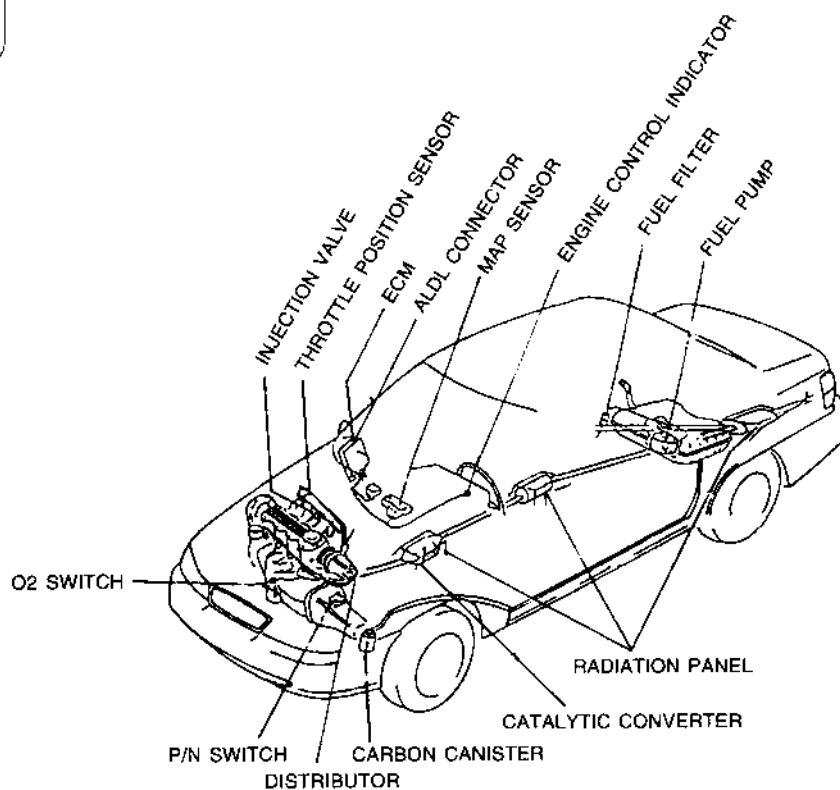
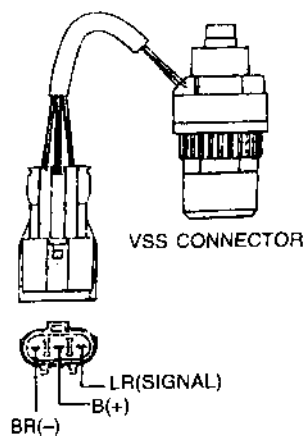
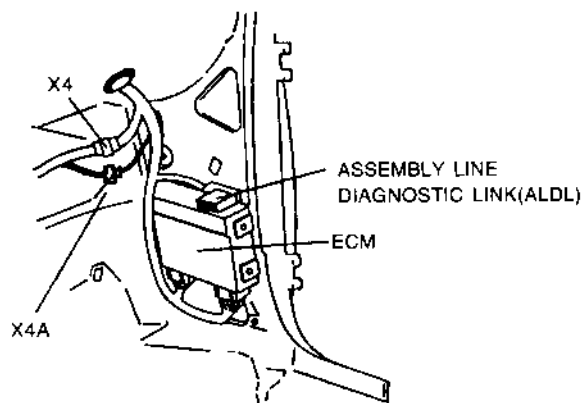
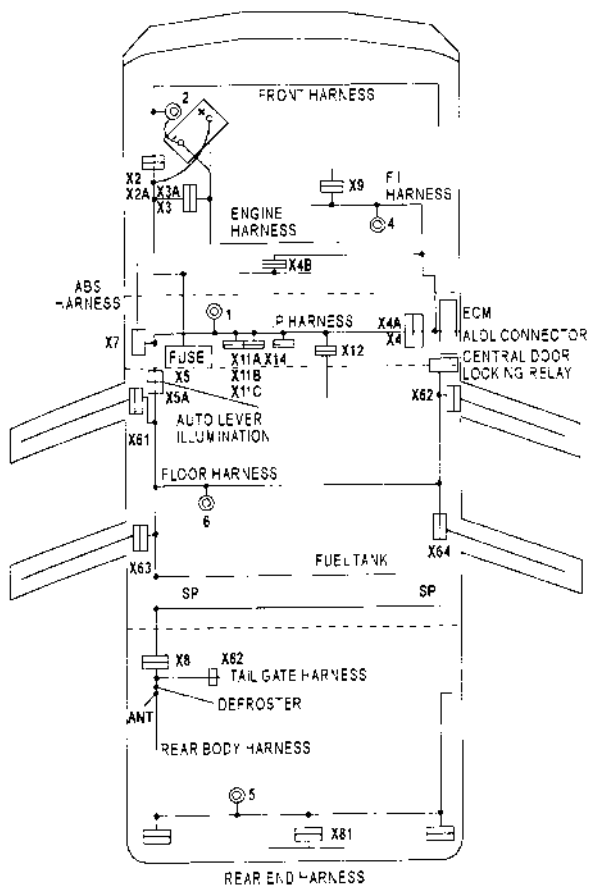
### - P5 O<sub>2</sub> Sensor

- 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 |

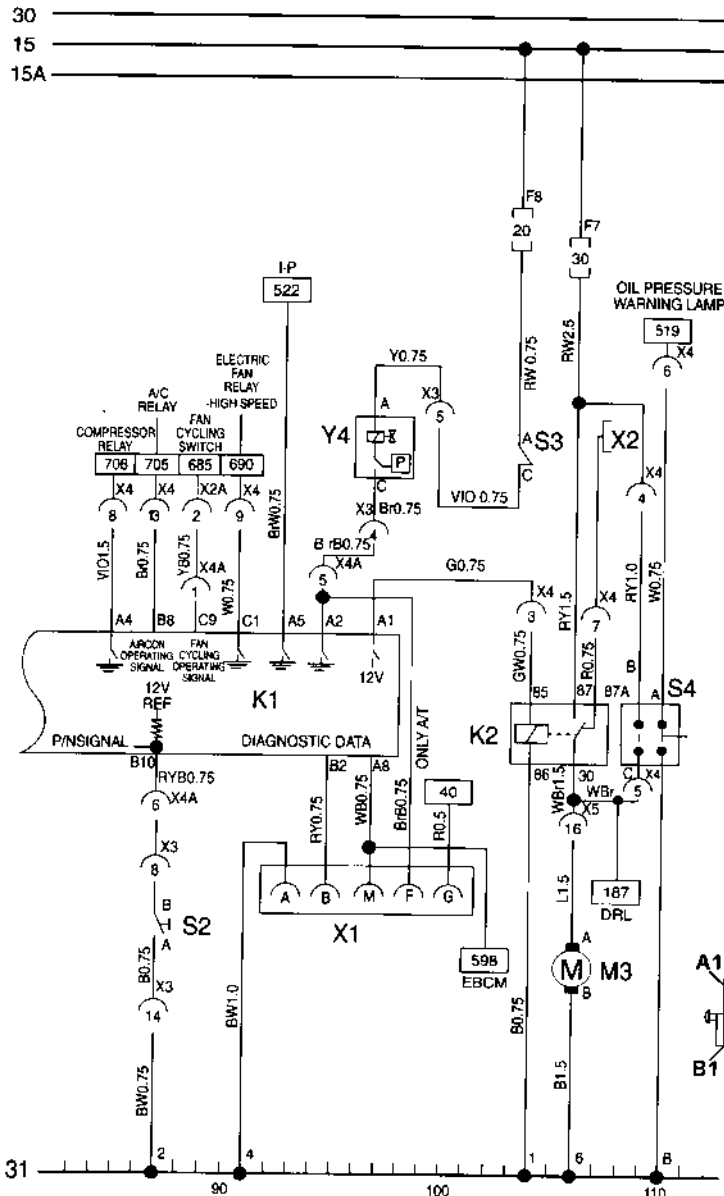
### - P1 VSS

- 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

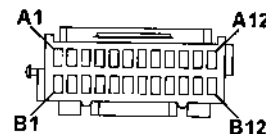
A cross-point between A and B in the P/N Switch is "ON" in case that a shift lever is at the P or N Position.

## - K1 ECM Ter. A1

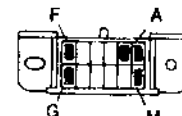
- B+ power is feeded to K2 fuel pump relay for 2 seconds when an ignition switch is "ON".
- During engine in cranking or starting, the ECM detects RPM signals to feed B+ power to K2 Relay.

## - X1 ALDL Connector

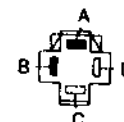
- Connect Scanner-1
- On jumpering wire between A and B terminal or connecting ALDL key, initial ignition line is controlled or fault codes are identified.



ECM CONNECTOR



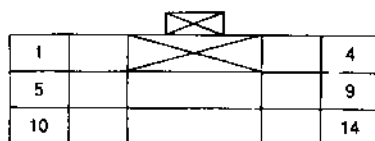
ALDL CONNECTOR



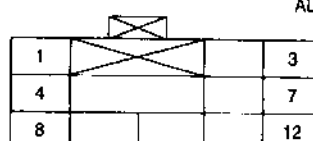
BRAKE SWITCH CONNECTOR



FUEL PUMP



X4 CONNECTOR



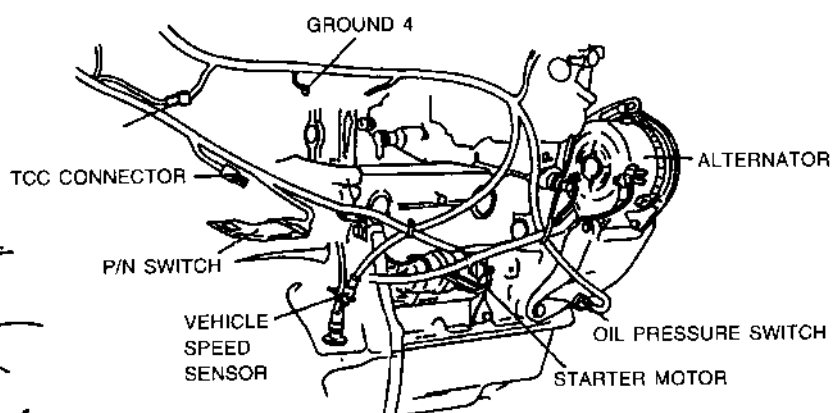
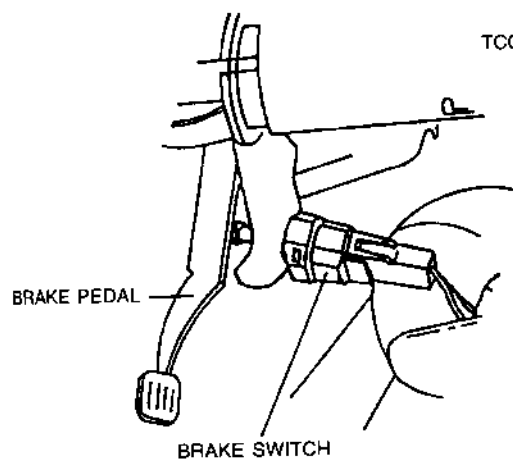
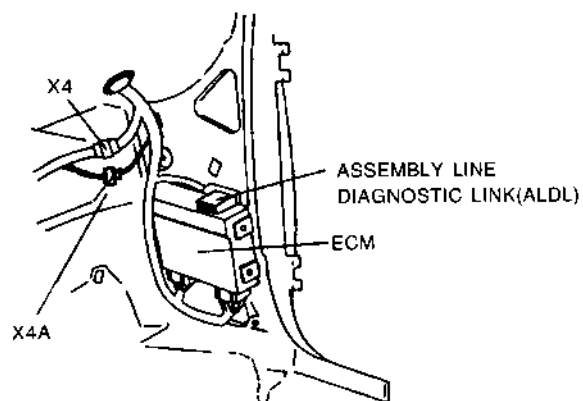
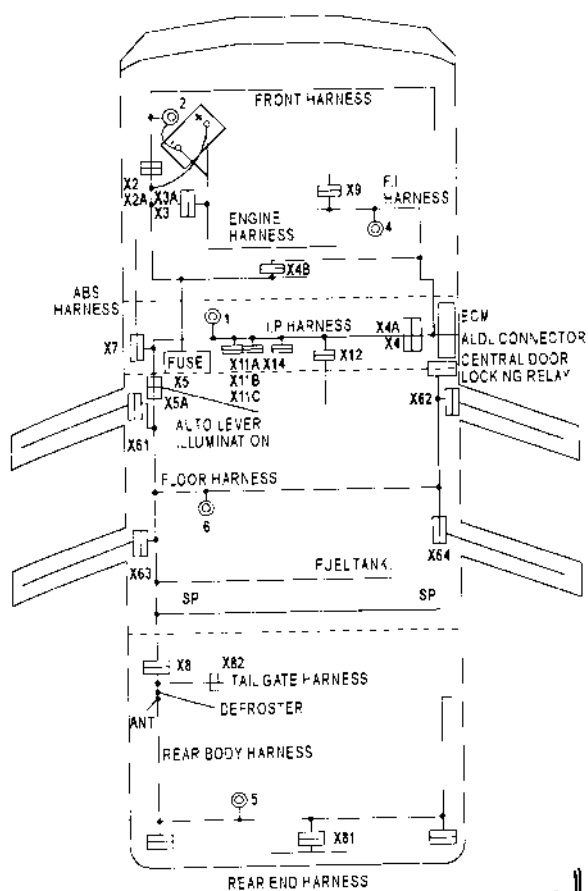
X4A CONNECTOR



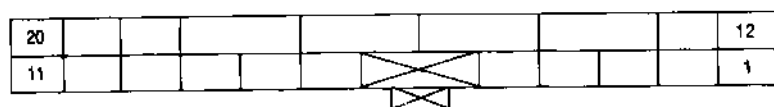
FUEL PUMP RELAY



T.C.C SOLENOID VALVE



AUTO TRANSMISSION VEHICLE

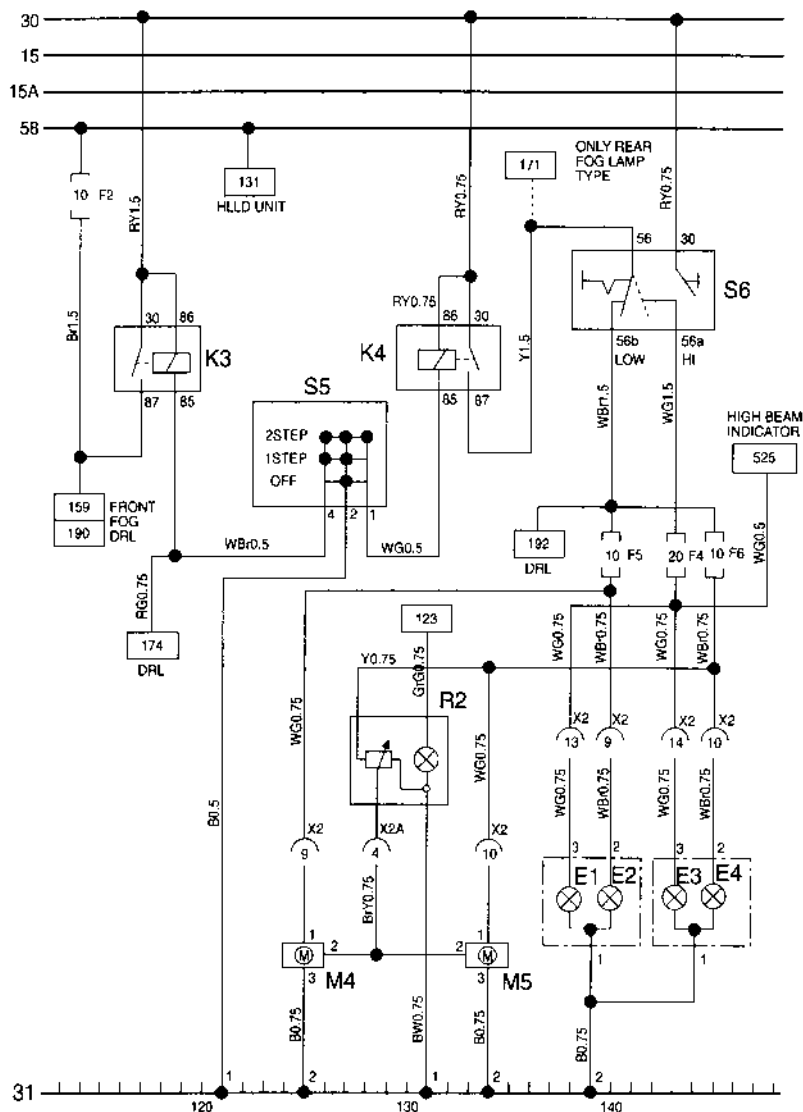


## X5 CONNECTOR

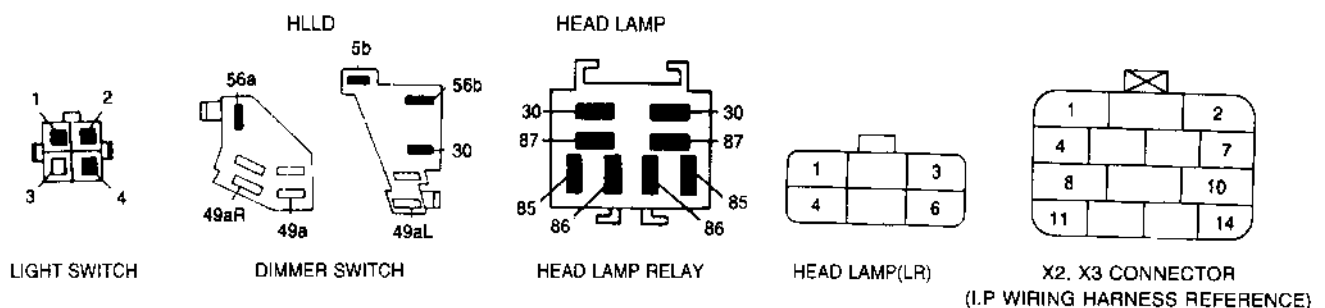
## 10) LIGHT WIRING

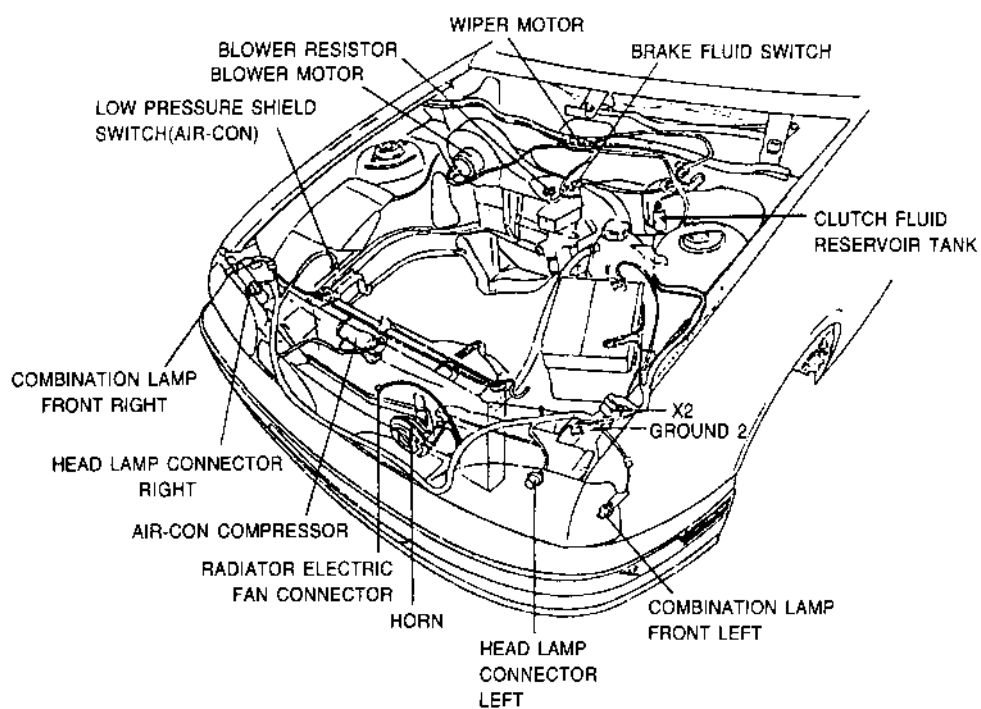
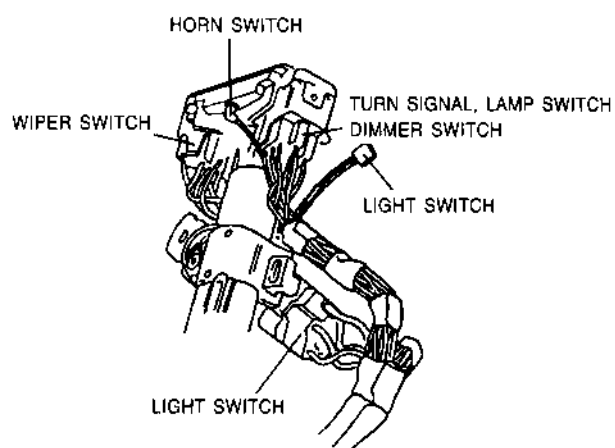
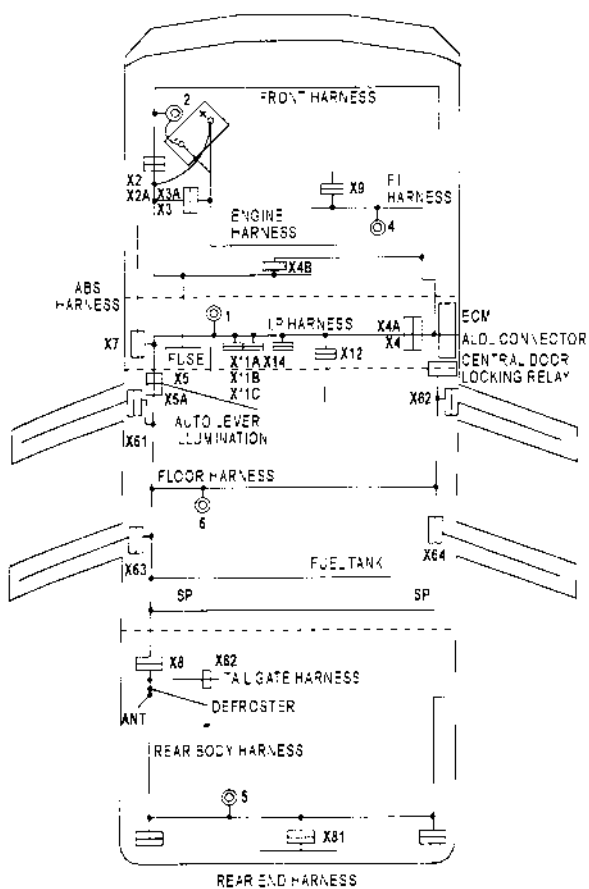
E1 HEAD LAMP HIGH BEAM(LEFT)  
 E2 HEAD LAMP LOW BEAM(LEFT)  
 E3 HEAD LAMP HIGH BEAM(RIGHT)  
 E4 HEAD LAMP LOW BEAM(RIGHT)  
 K3 ILLUMINATION RELAY  
 K4 HEAD LAMP RELAY

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



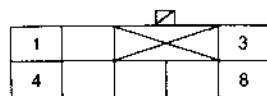
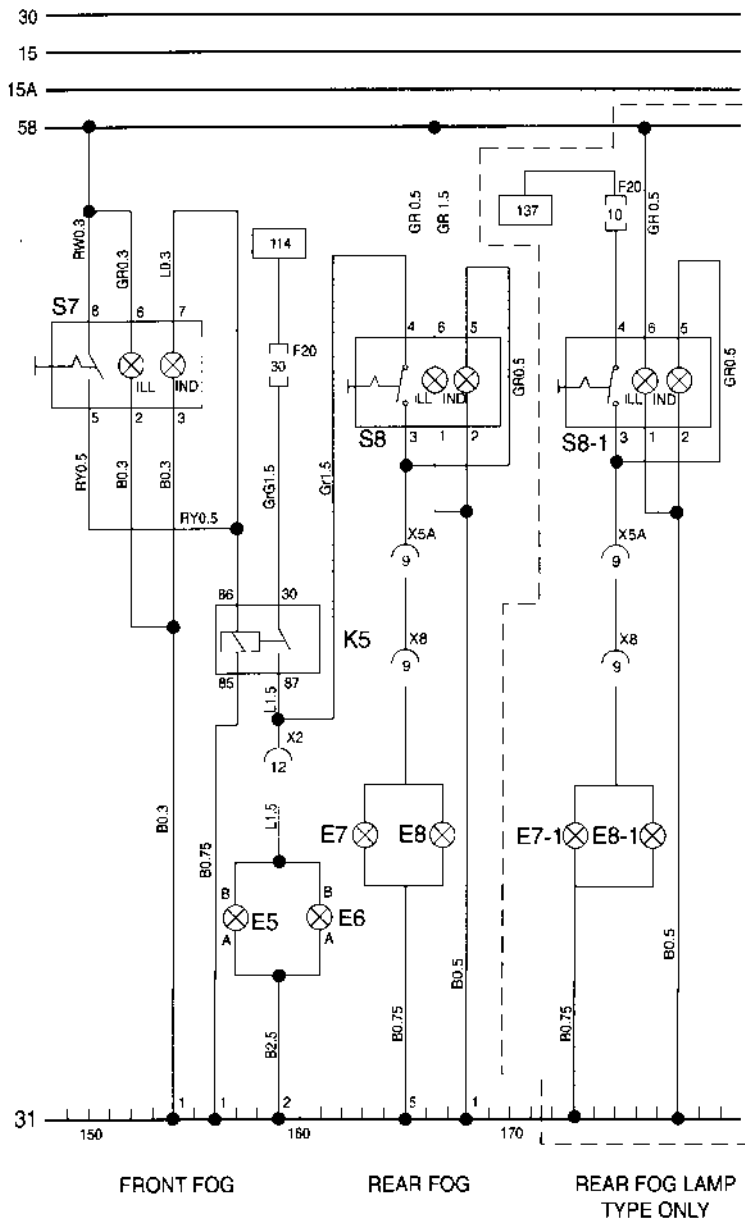
- F2 58 Line  
 After a light switch is set to 1st or 2nd step, a illumination relay is operating to feed power to Fuse 2.  
 The line connect to F2 is called a 58 Line.  
 The 58 Line feeds power to various Illumination lamps and clearance lamps, etc.
- S5 Switch, S6 Dimmer Switch  
 A light Switch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



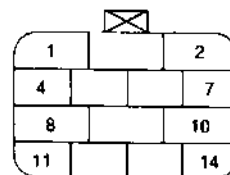


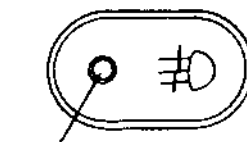
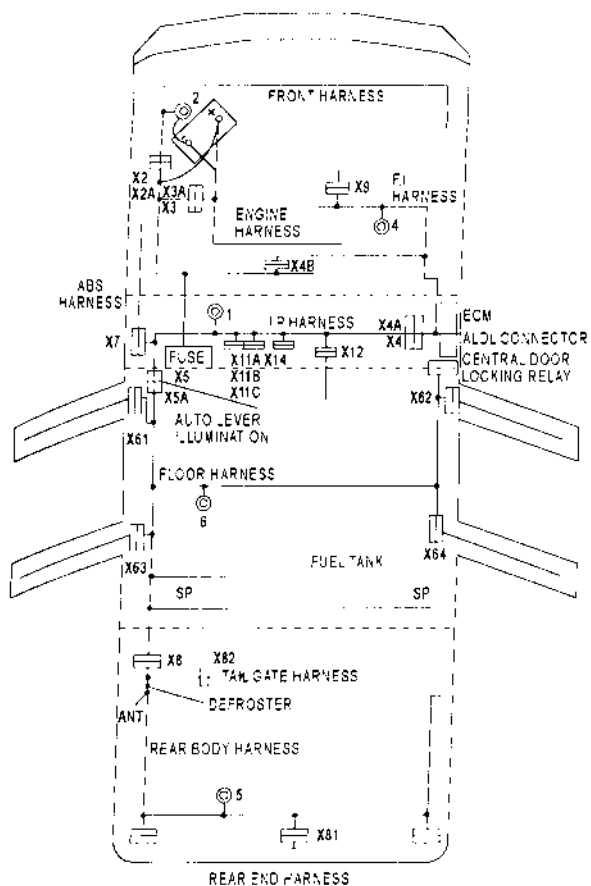
**11) FRONT FOG LAMP & REAR FOG LAMP**

- |    |                       |      |                                                 |
|----|-----------------------|------|-------------------------------------------------|
| E5 | FRONT FOG LAMP(LEFT)  | S7   | FRONT FOG LAMP SWITCH                           |
| E6 | FRONT FOG LAMP(RIGHT) | S8   | REAR FOG LAMP SWITCH                            |
| E7 | REAR FOG LAMP(LEFT)   | S8-1 | REAR FOG LAMP SWITCH (REAR FOG LAMP TYPE ONLY)  |
| E8 | REAR FOG LAMP(RIGHT)  | E7-1 | REAR FOG LAMP (LEFT) (REAR FOG LAMP TYPE ONLY)  |
| K5 | FRONT FOG LAMP RELAY  | E8-1 | REAR FOG LAMP (RIGHT) (REAR FOG LAMP TYPE ONLY) |



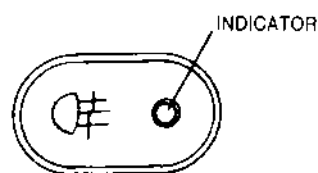
FRONT FOG S/W

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

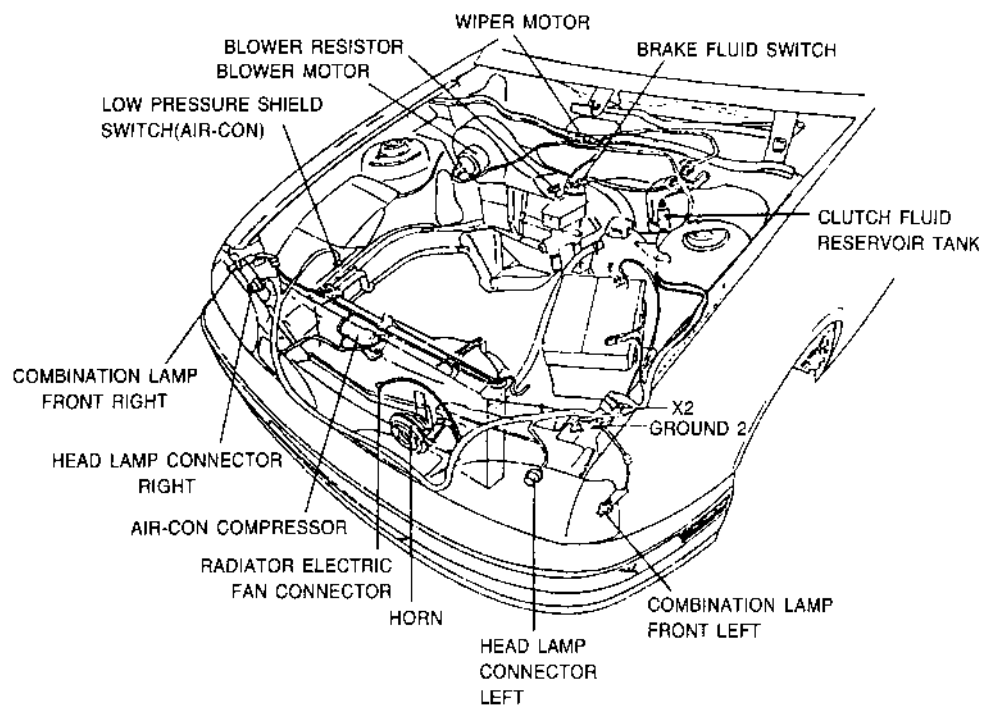


INDICATOR

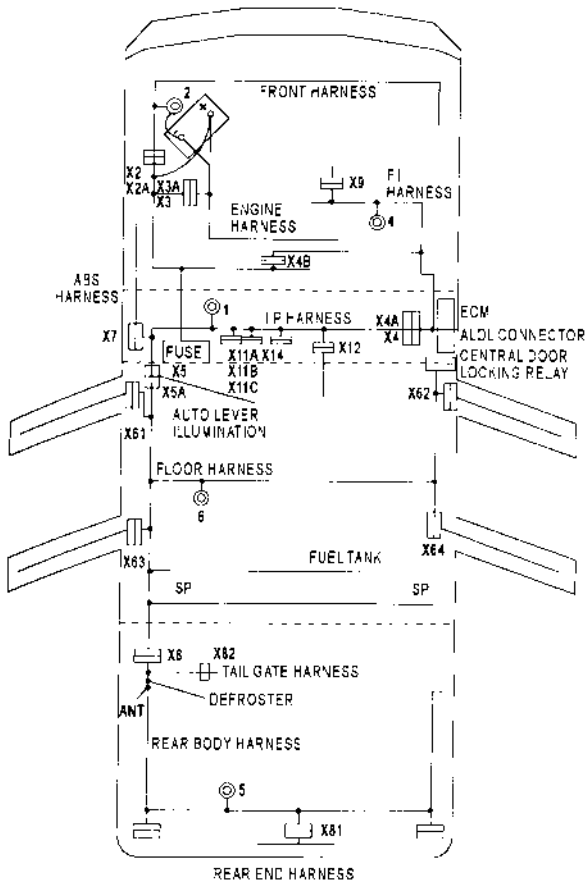
FRONT FOG LAMP S/W



REAR FOG LAMP S/W



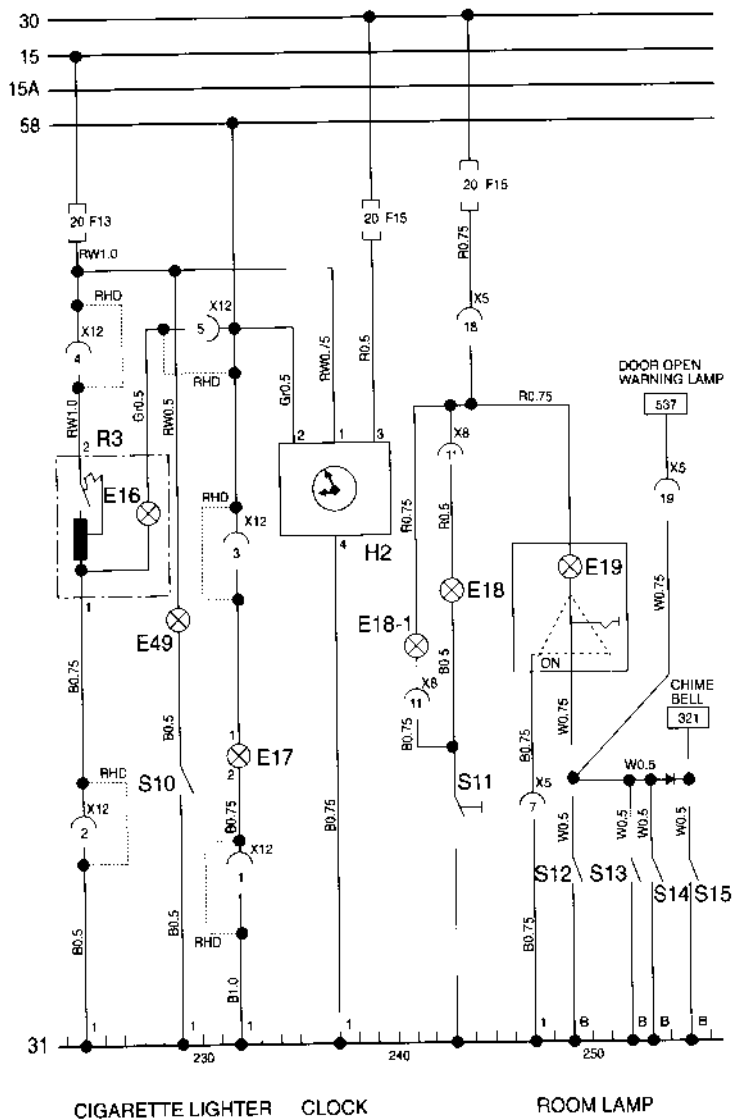




### 13) GLOVE BOX LAMP, CIGARETTE LIGHTER, DIGITAL CLOCK ROOM LAMP, TRUNK ROOM LAMP, WIRING

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

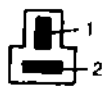
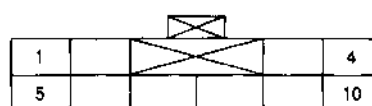
- "H" hour adjusting(an ignition switch is "ON") adjust hour by pushing the "H" button. It is adjusted fastly pushing continuously but done by one hour at one time.
- "M" minute adjusting(an ignition switch is "ON") adjust minute by pushing the "M" button. On pushing continuously be adjusted fastly but 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.



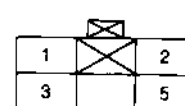
GLOVE BOX LAMP



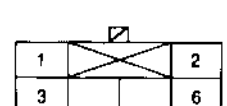
GLOVE BOX SWITCH

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

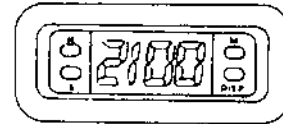
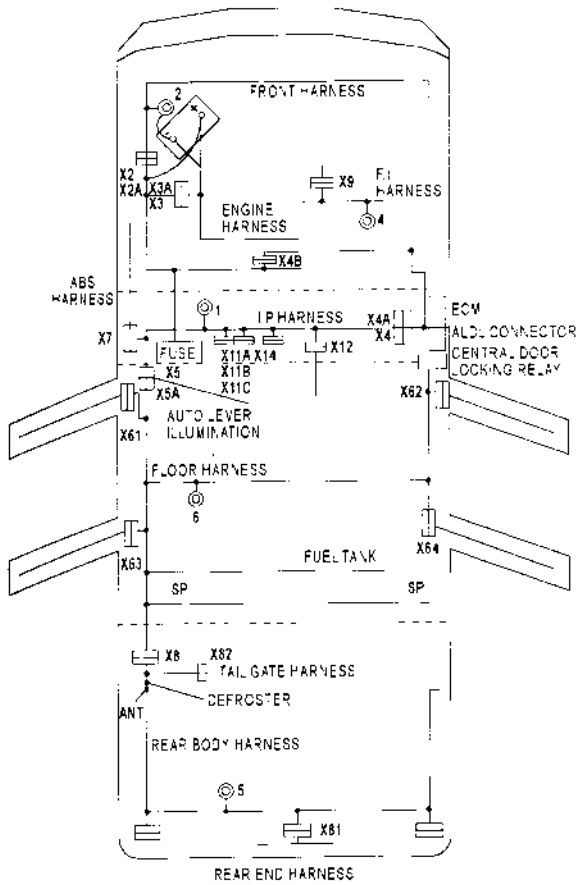
X5A CONNECTOR



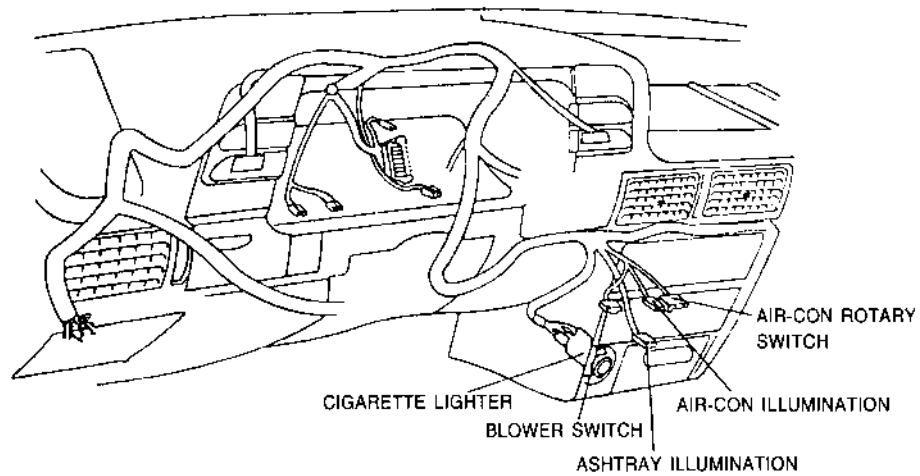
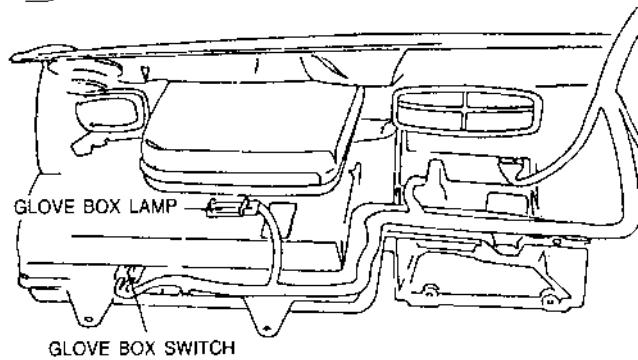
X12 CONNECTOR



REAR FOG S/W



DIGITAL CLOCK

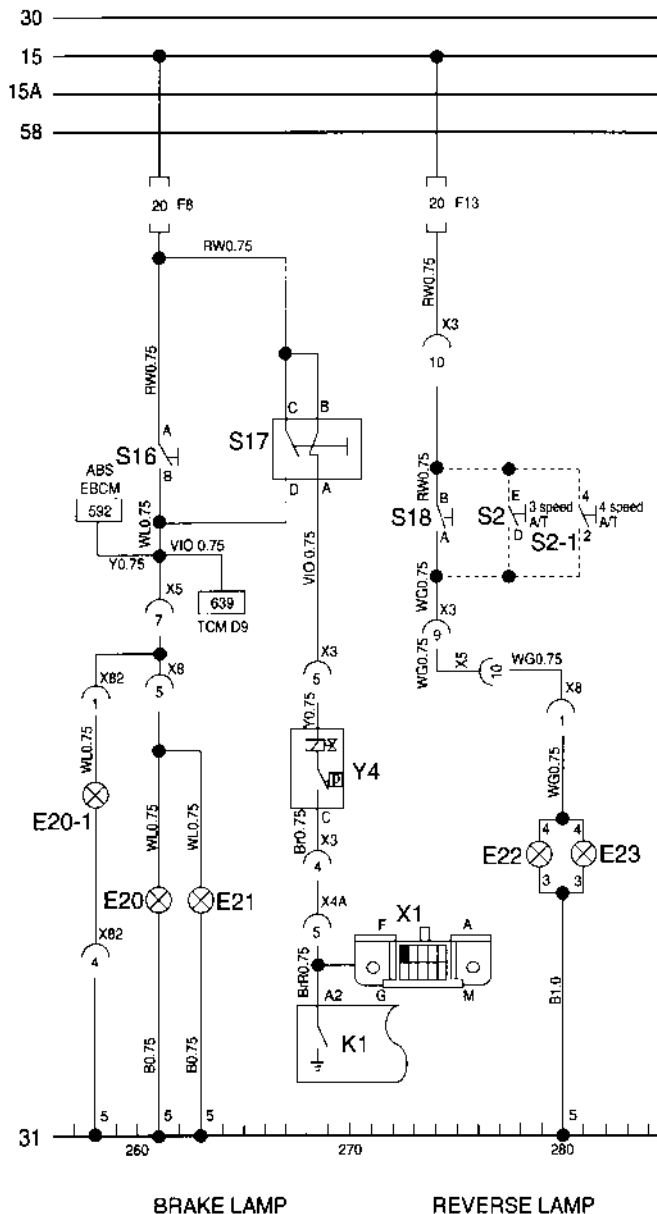


**14) BRAKE LAMP, REVERSE LAMP, TCC WIRING**

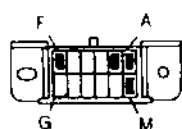
E20 BRAKE LAMP(LEFT)  
 E20-1 CENTER HIGH MOUNTING  
 BRAKE LAMP(3-DOOR,5-DOOR)  
 E21 BRAKE LAMP(RIGHT)  
 E22 REVERSE LAMP(LEFT)

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

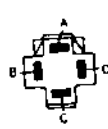
S17 BRAKE SWITCH(3AT)  
 S18 REVERSE LAMP SWITCH(MT)  
 X1 ALDL CONNECTOR  
 Y4 TCC SOLENOID VALVE



- 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.



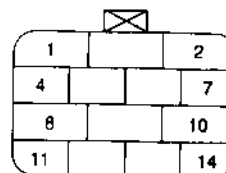
ALDL CONNECTOR



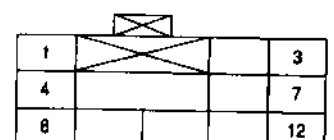
BRAKE SWITCH CONNECTOR



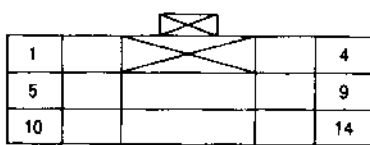
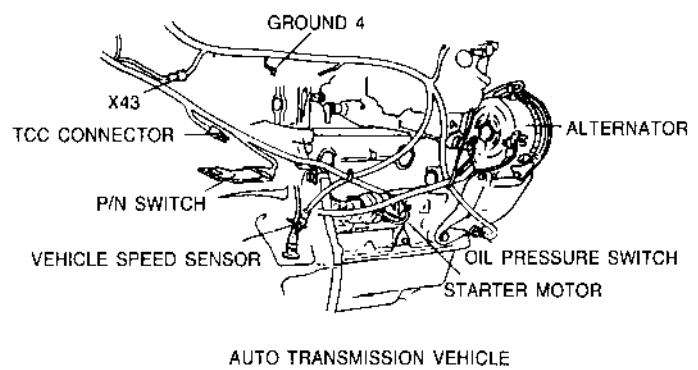
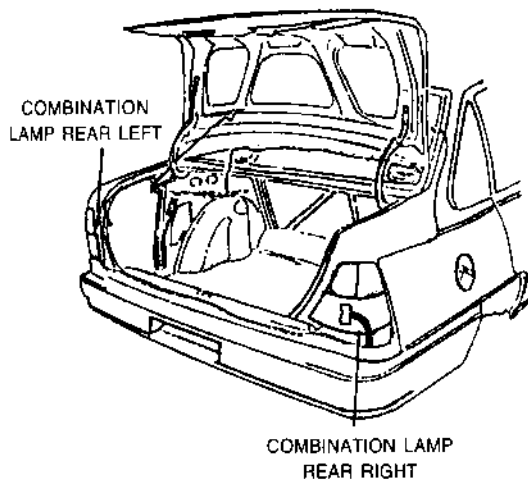
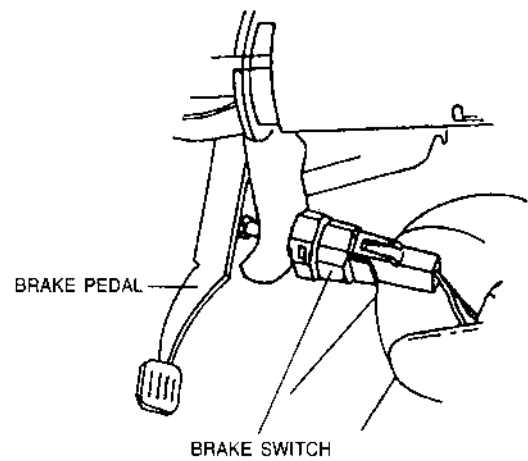
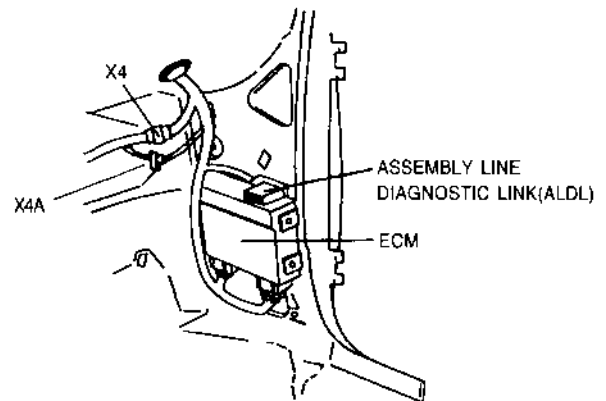
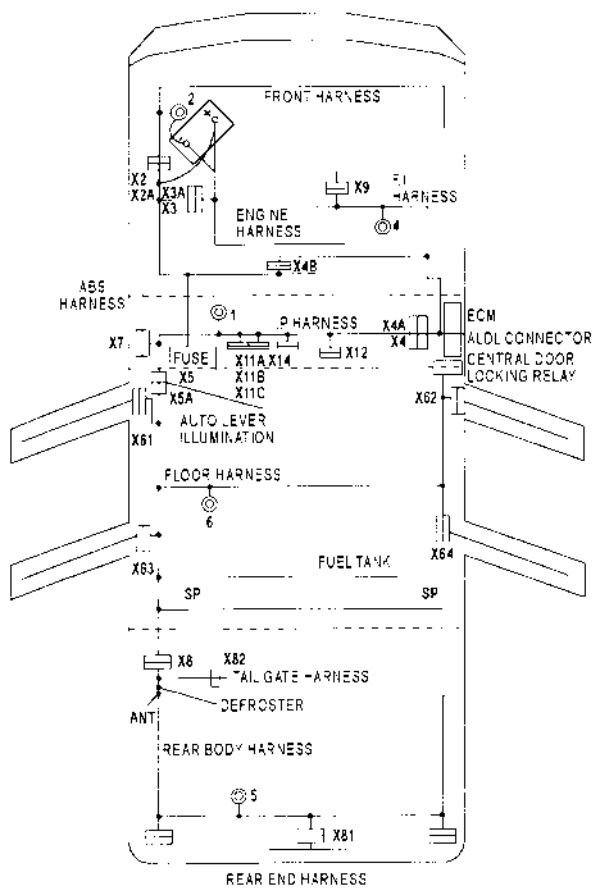
T.C.C SOLENOID VALVE



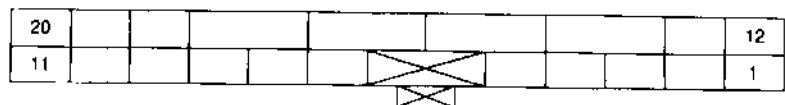
X3 CONNECTOR



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

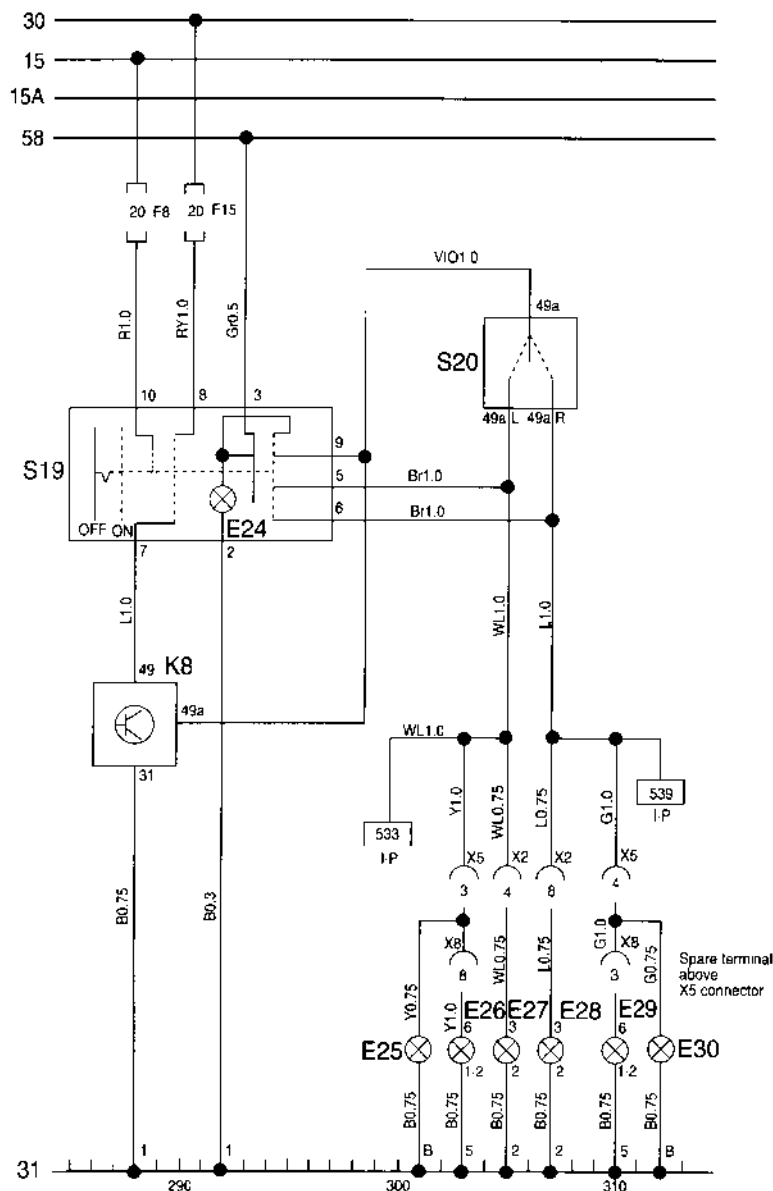
E29 TURN SIGNAL LAMP-R.R

E30 ADDITIONAL TURN SIGNAL LAMP-RIGHT

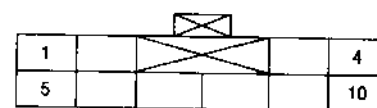
K8 TURN SIGNAL LAMP RELAY

S19 HAZARD LAMP SWITCH

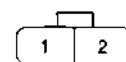
S20 TURN SIGNAL LAMP SWITCH



- 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



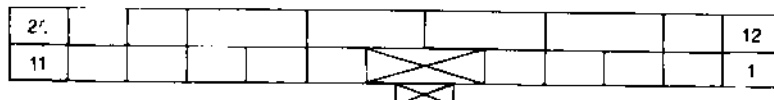
TURN SIGNAL LAMP(R)



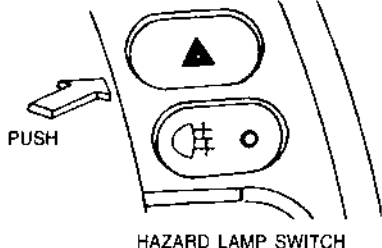
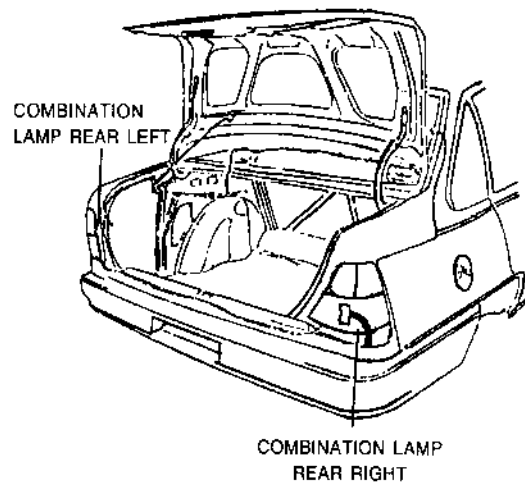
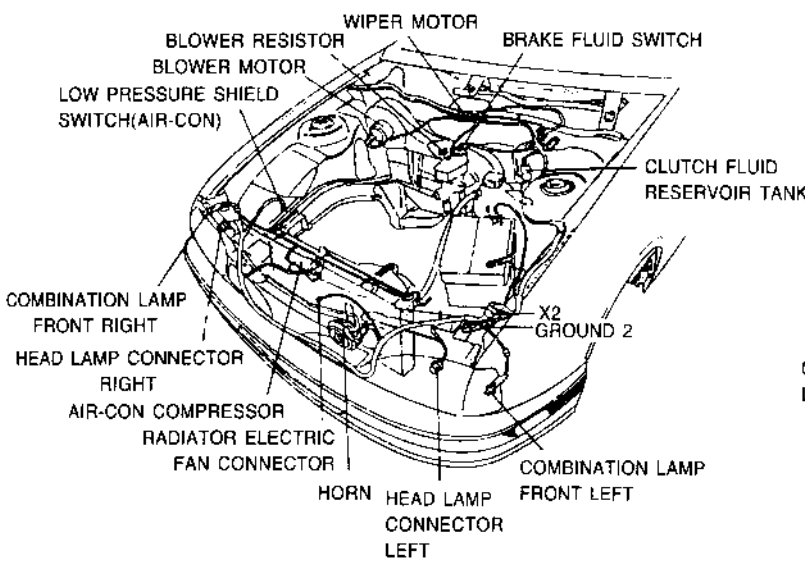
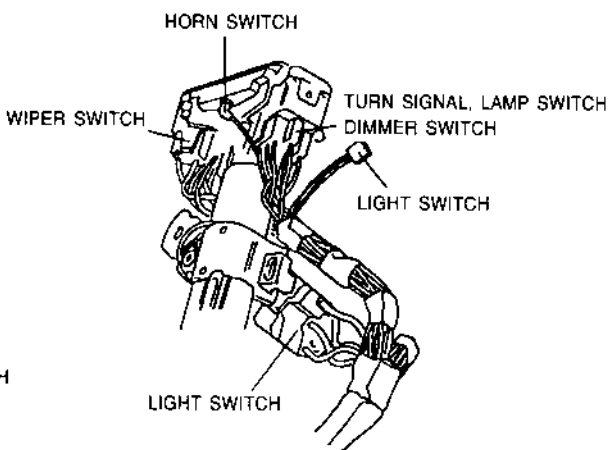
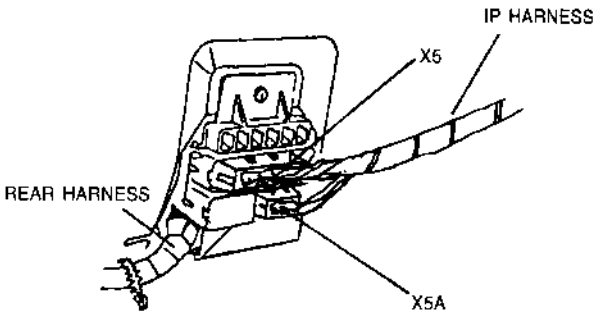
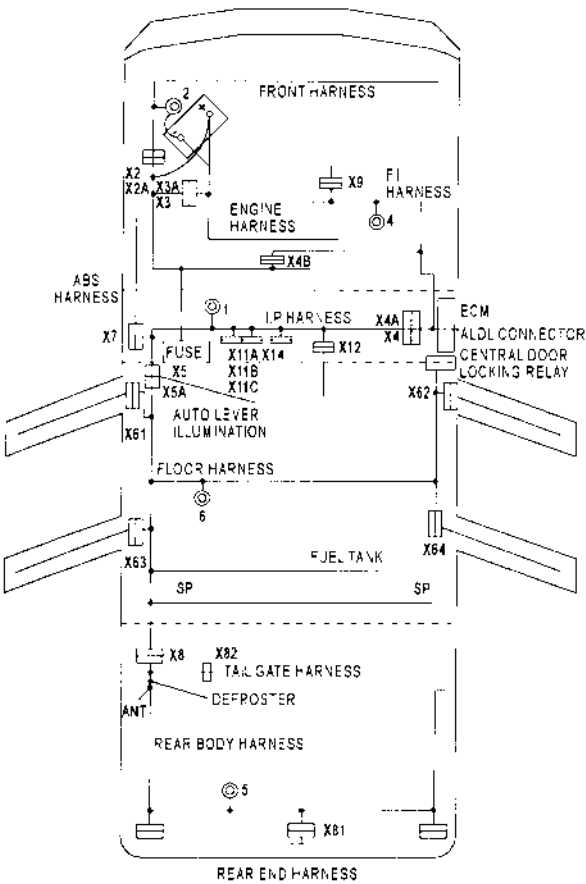
TURN SIGNAL LAMP(R)



BLINICER UNIT



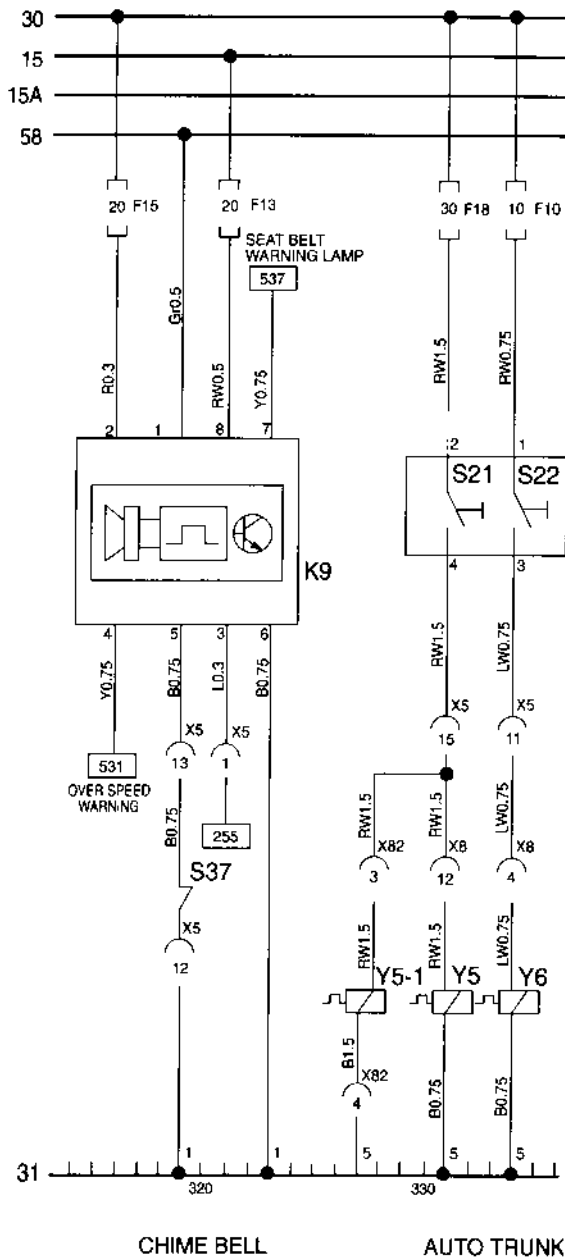
X5 CONNECTOR



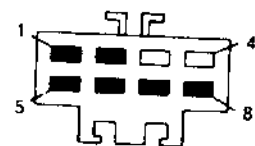
## 16) CHIME BELL, AUTO TRUNK, FUEL INLET SWITCH WIRING

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

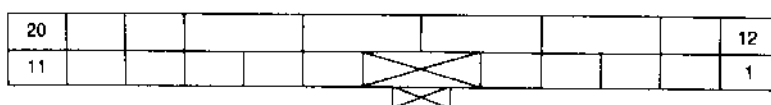
Y5 AUTO TRUNK SOLENOID  
Y5-1 AUTO TRUNK SOLENOID(3-DOOR,5-DOOR)  
Y6 FUEL INLET SOLENOID



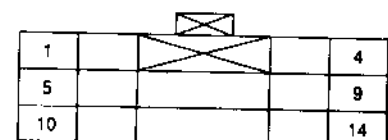
- S37 seat belt switch  
This switch is "OFF", when fixing a seat belt.
- **S37** Analog I/P  
• This is connected to a seat belt warning lamp in I/P.



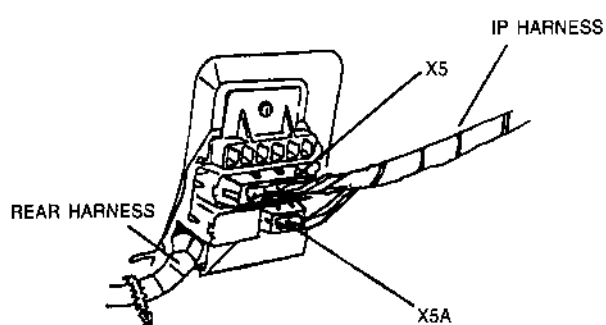
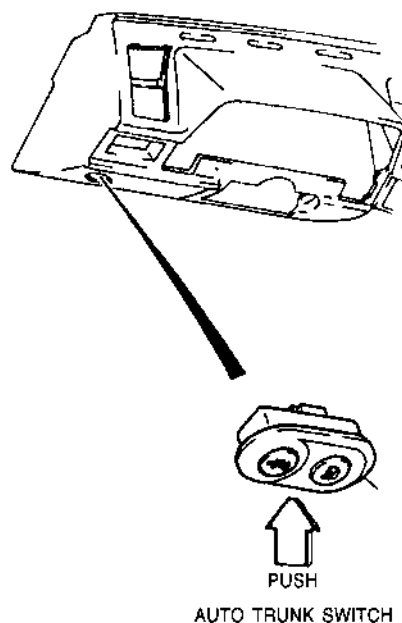
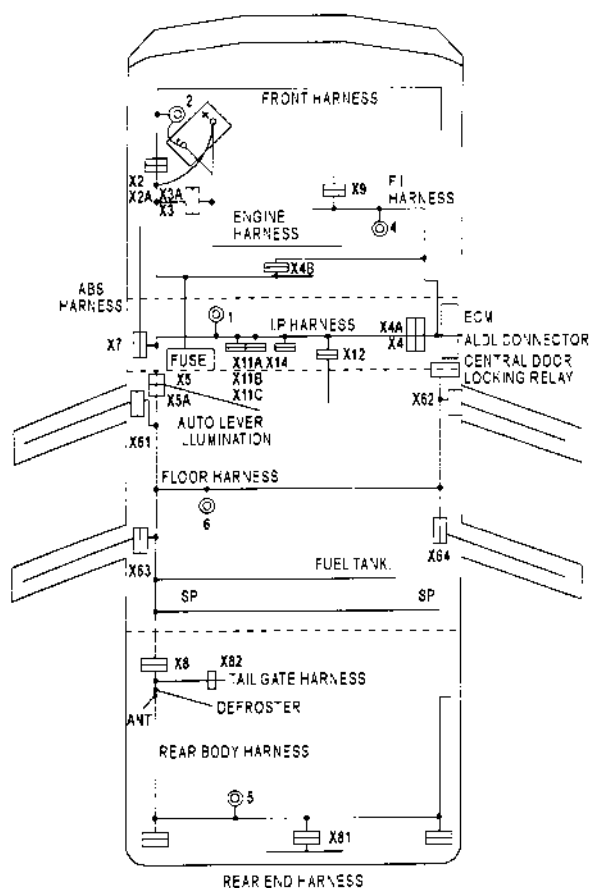
CHIME - WARNING  
RELAY CONNECTOR



X5 CONNECTOR



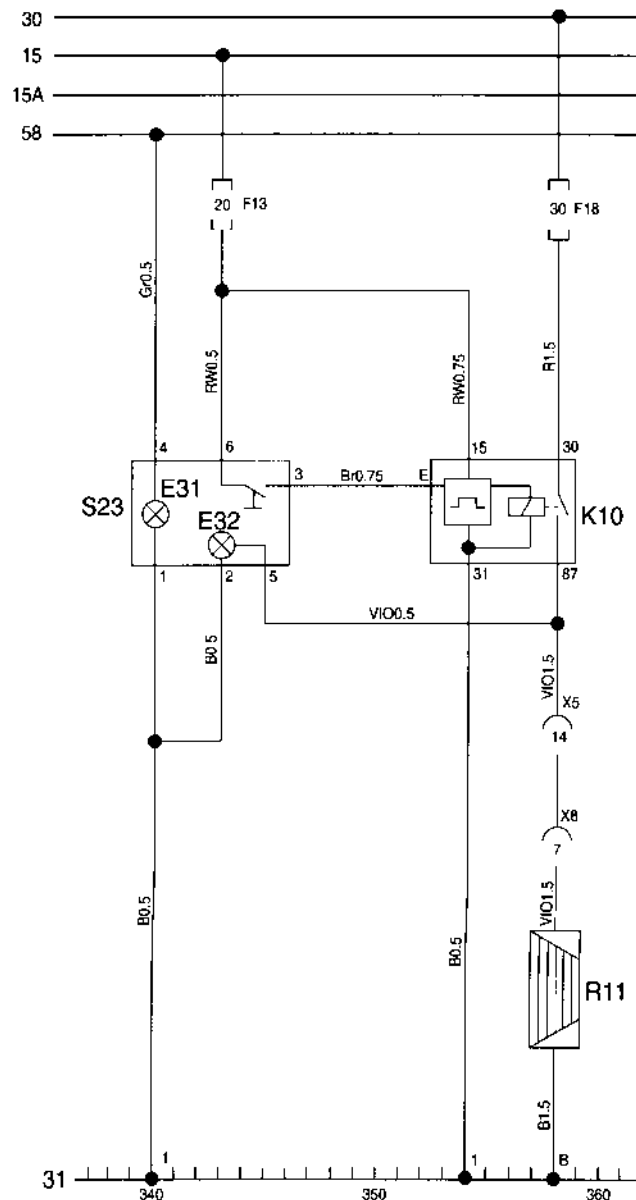
X8 CONNECTOR



**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

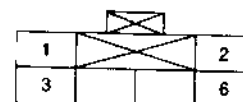


REAR WINDOW DEFROSTER

- 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.

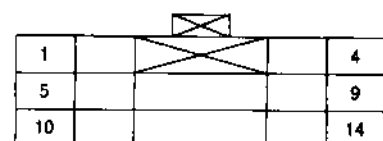
- Defroster operation(ON)  
When pushing this switch one-time, power is feeded to the terminal E of K10 relay and you can identify the defroster switch is operating and after the defroster time relay is operating for ten minute, it is off automatically a light emitting diode is on during a defroster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



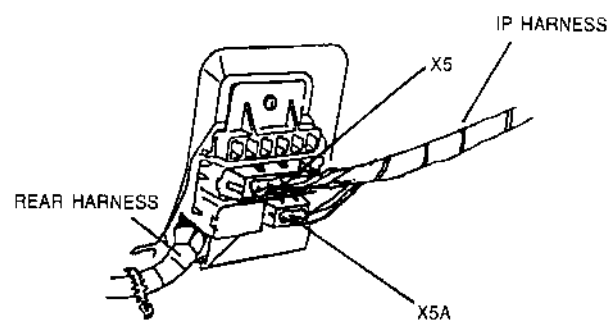
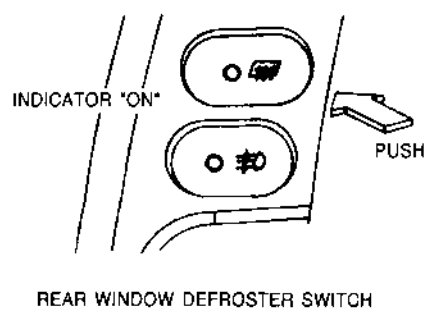
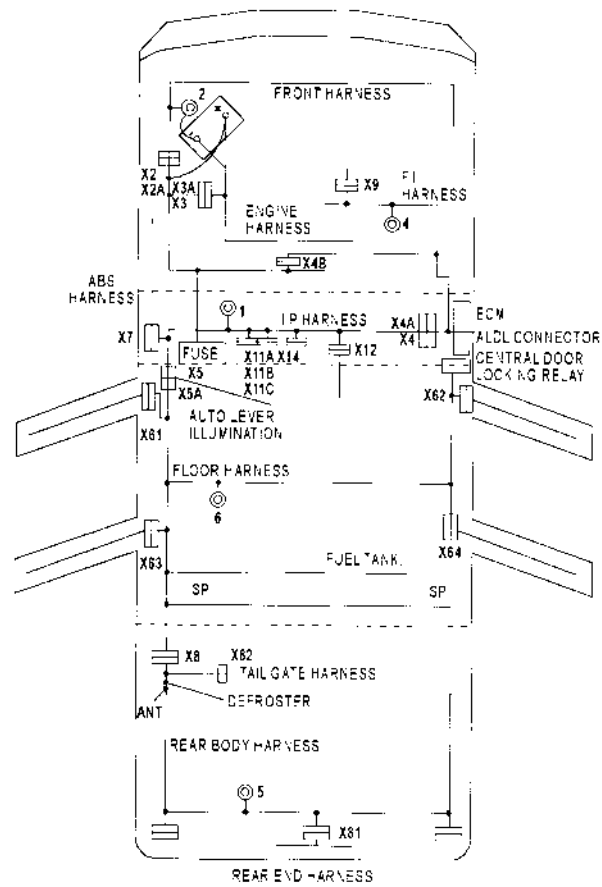
REAR WINDOW DEFROSTER TIME RELAY CONNECTOR



X5 CONNECTOR

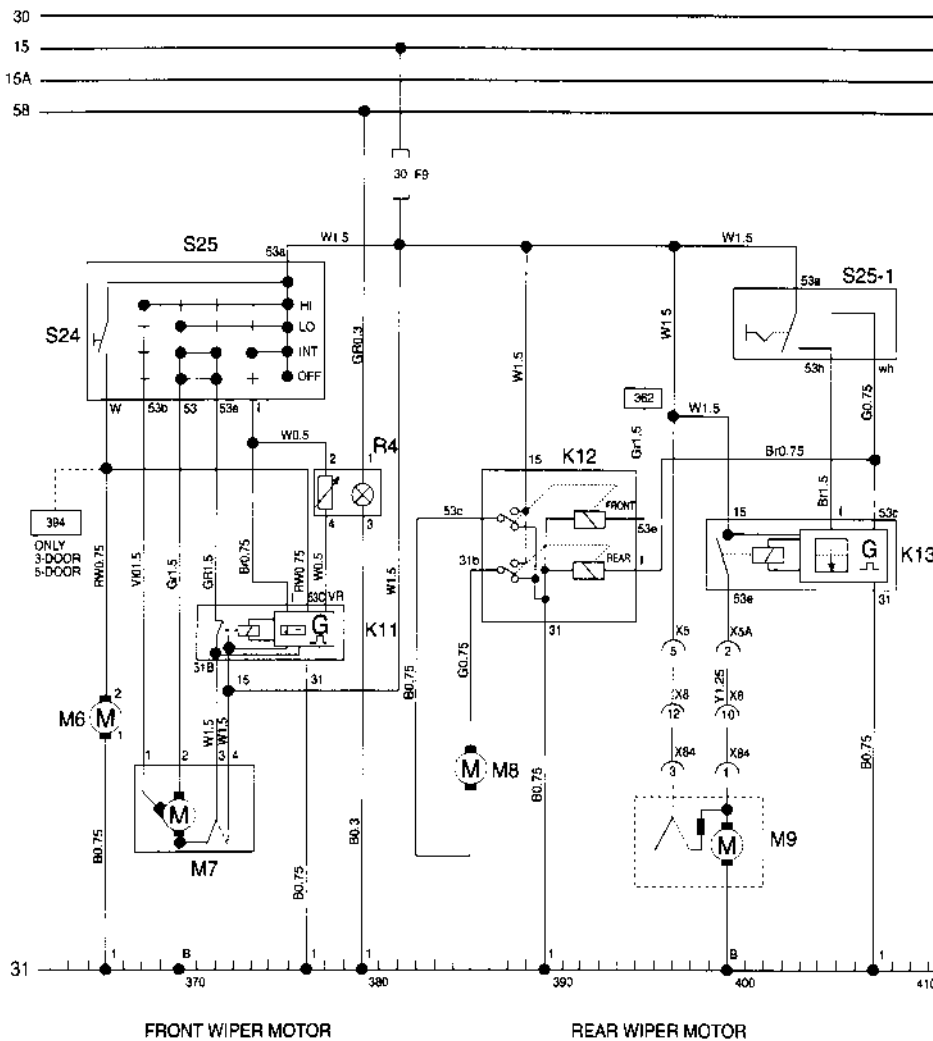


X8 CONNECTOR

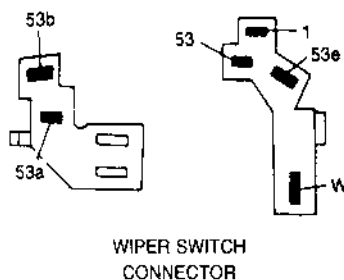


## 18) WIPER WIRING

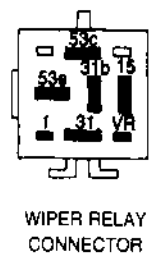
|     |                                  |       |                                  |
|-----|----------------------------------|-------|----------------------------------|
| K11 | FRONT WIPER RELAY                | M9    | REAR WIPER MOTOR(3-DOOR,5-DOOR)  |
| K12 | WASHER PUMP RELAY(3-DOOR,5-DOOR) | 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) |

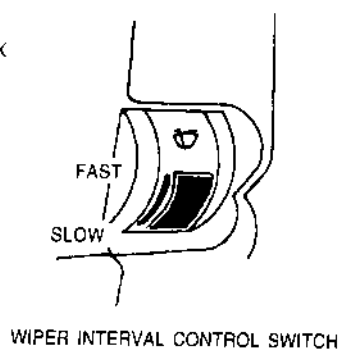
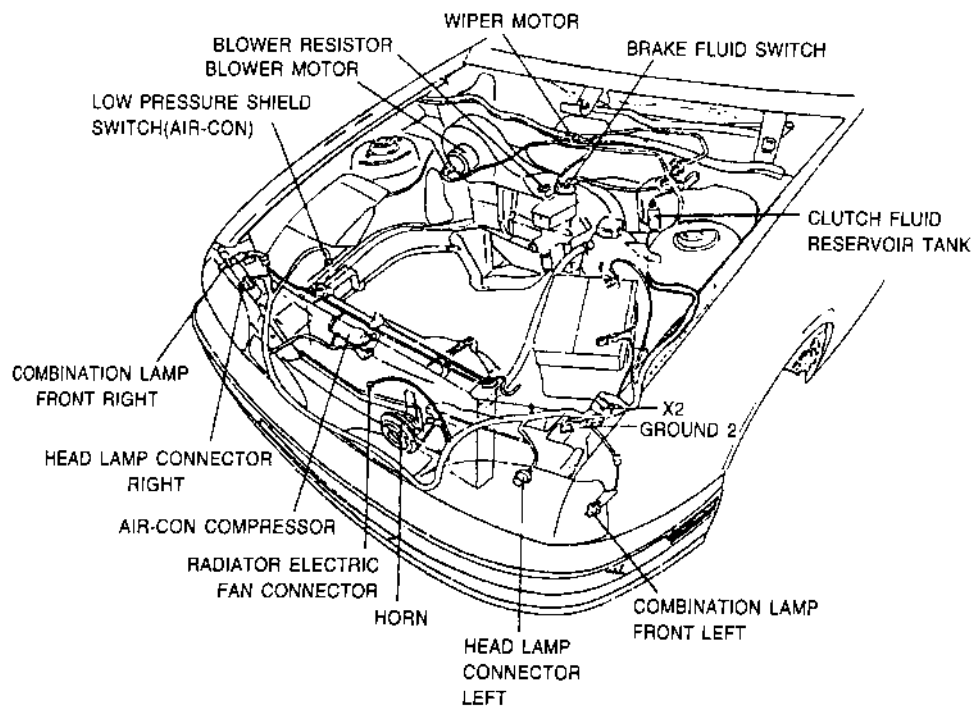
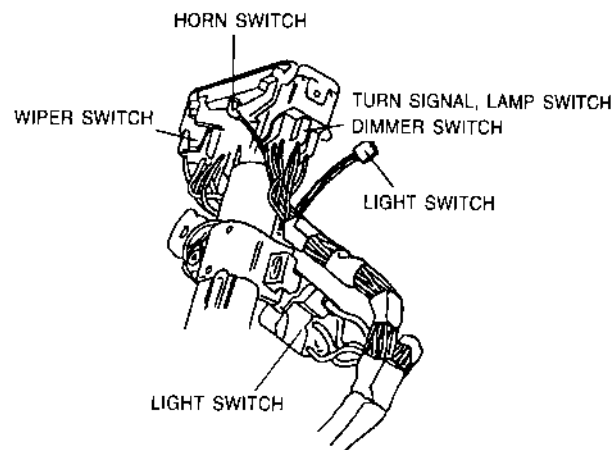
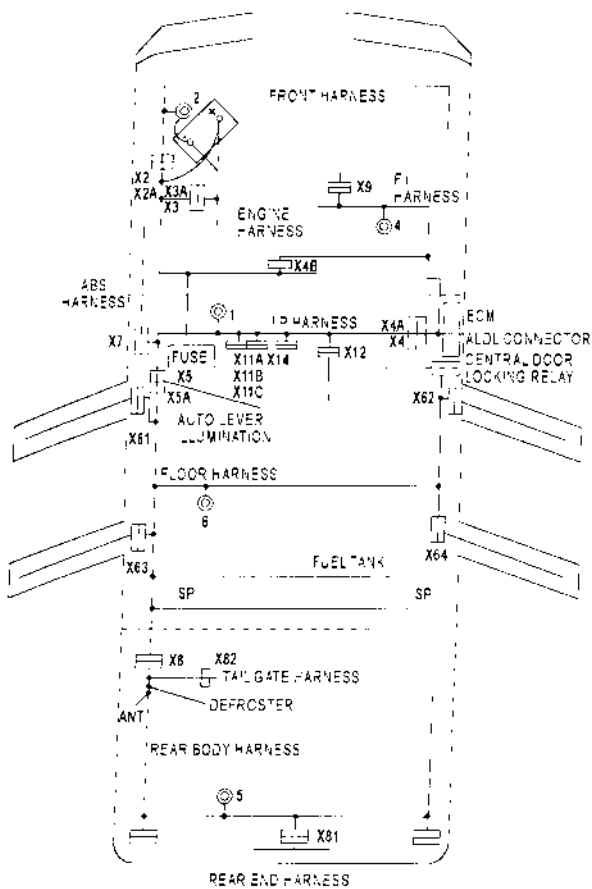


- S24 Wiper Switch  
A wiper switch has two functions as follows;
  - OFF, INT, LO, HI function.
  - Operating a washer fluid pump motor terminal numbers indexed on the switch.
- K11 Wiper Relay  
A wiper relay has two major functions.
  - When a switch is at the INT position, this wiper relay operates 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



WASHER FLUID  
PUMP MOTOR  
CONNECTOR  
\* HARNESS REF.

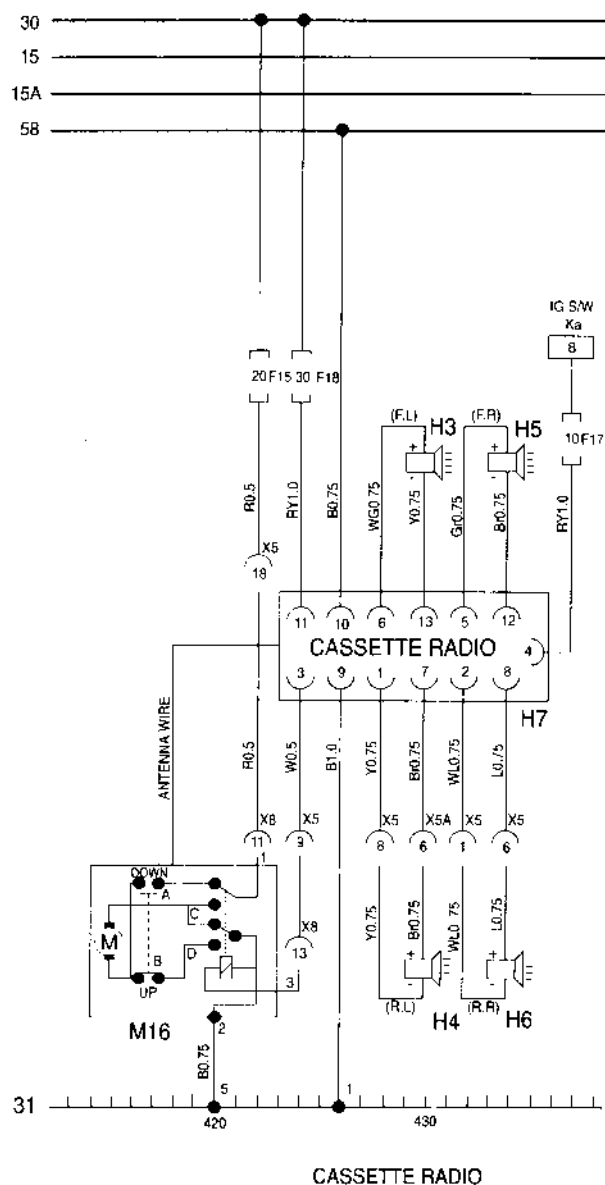




## 19) CASSETTE RADIO WIRING

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

H6 SPEAKER-R.R  
H7 CASSETTE RADIO



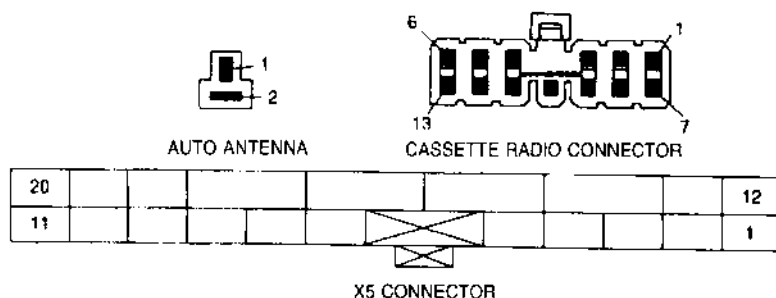
## - M16 Auto Antenna

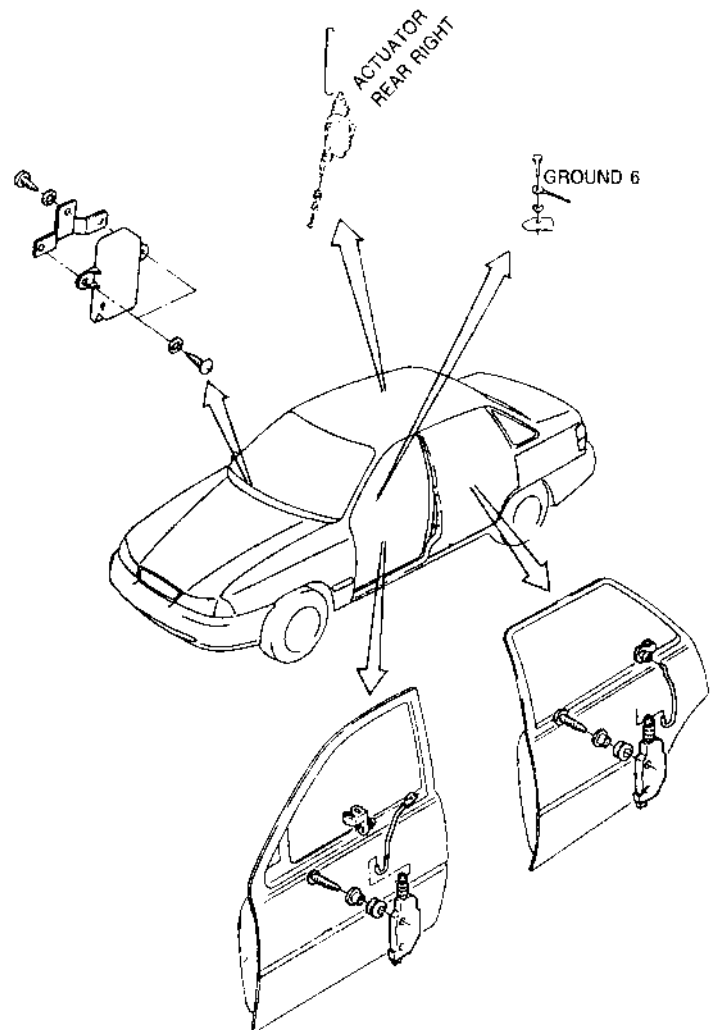
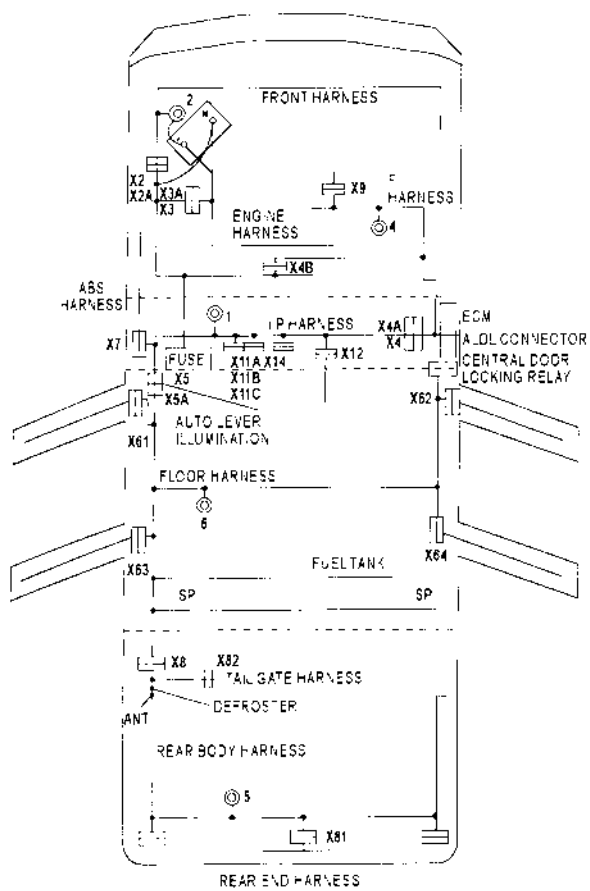
- When a radio is "ON";  
12V power is supplied to terminal 3 of cassette radio and the inner relay of an auto antenna operates.

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.

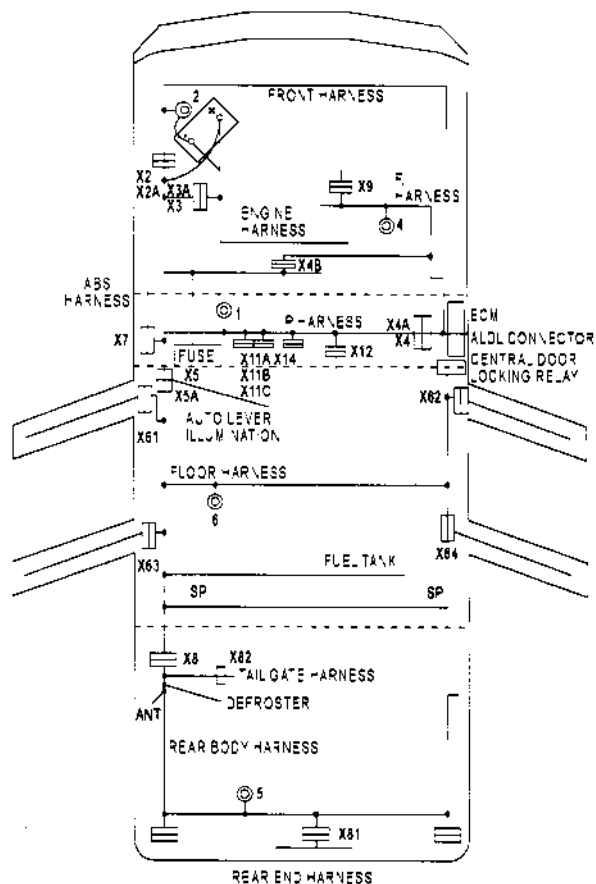
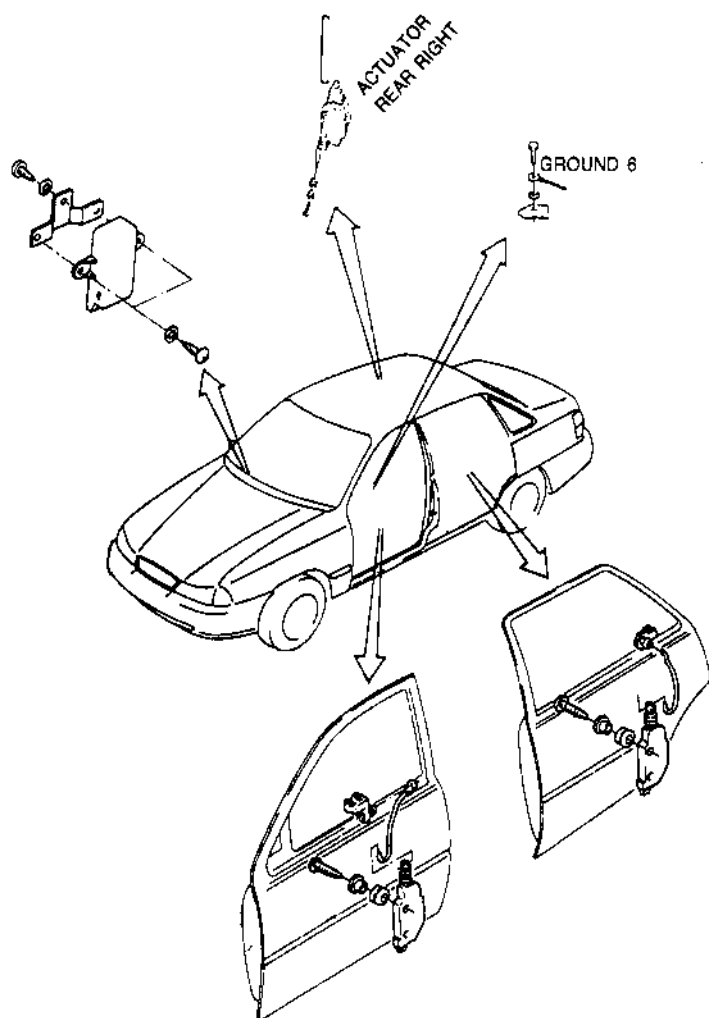
- When a radio is "OFF";  
The inner relay does not operate because power is not feeded from terminal 3 of H6 radio. At this time, the cross of C is connected to "-", and the cross of A is connected to "+" so that the antenna motor operates and the antenna is down. When the antenna arrives at the bottom, the cross of A is disconnected, and the cross of B is connected to so that the antenna motor stops.



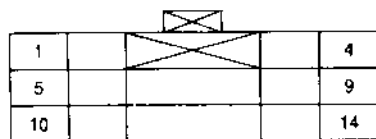




- Whenever the power window main switch(S26, S26-1) is not operated, all contact points is connected to the ground.  
If the power window S/W of the front driver seat is down, the terminal 8 is connected to B+(C) and 9 is not operated so that the ground terminal.
- The main power is ON/OFF by the rear 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.)



|       |                                 |       |                                 |
|-------|---------------------------------|-------|---------------------------------|
| K14   | CENTRAL DOOR LOCKING RELAY      | M22   | ACTUATOR, FRONT LEFT-RHD        |
| K14-1 | CENTRAL DOOR LOCKING RELAY(RHD) | M23   | ACTUATOR, REAR RIGHT-RHD        |
| M19   | ACTUATOR, FRONT RIGHT-LHD       | M24   | ACTUATOR, REAR LEFT-RHD         |
| M20   | ACTUATOR, REAR RIGHT-LHD        | S27   | CENTRAL DOOR LOCKING SWITCH-LHD |
| M21   | ACTUATOR, REAR LEFT-LHD         | S27-1 | CENTRAL DOOR LOCKING SWITCH-RHD |

[illegible]

A diagram of a 6-bit shift register. It consists of six rectangular cells arranged in a horizontal row. The first cell on the left is labeled '1' above it, and the sixth cell on the right is labeled '6' above it. Arrows indicate data flow: an arrow enters the first cell from the left, and an arrow exits the sixth cell to the right. There are also feedback loops: an arrow from the output of the sixth cell goes back to the input of the first cell, and an arrow from the output of the fifth cell goes back to the input of the fourth cell.

ACTUATOR  
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;

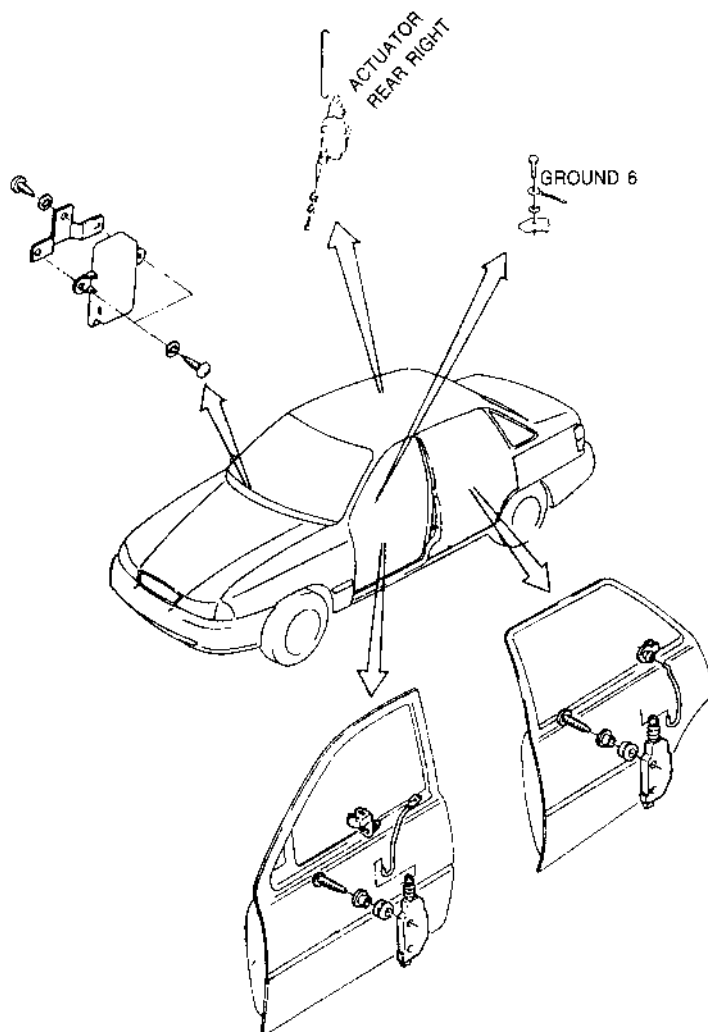
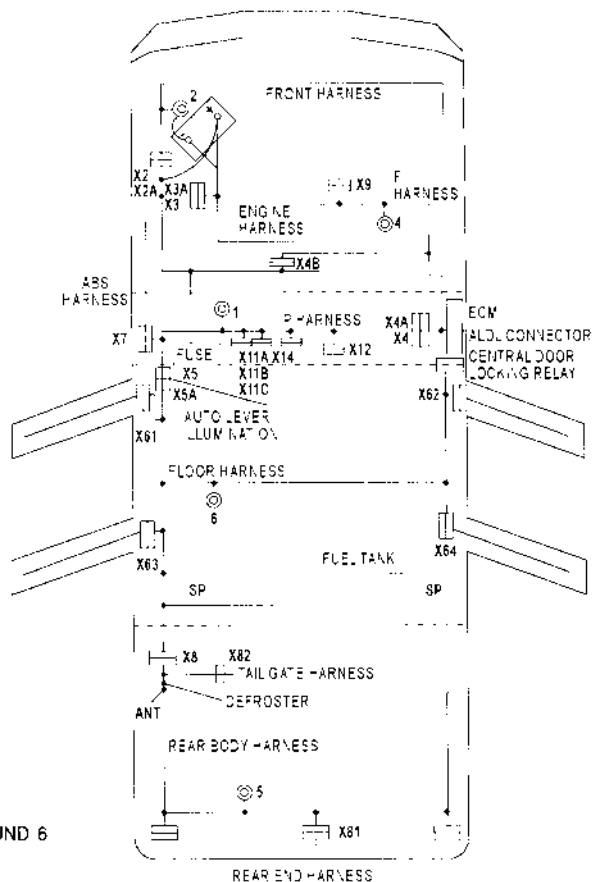
When S27, S27-1 central door locking switch is set to the locking position, terminal 7 is connected to the ground and "A" relay in the relay is operating for 0.7 second.

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.

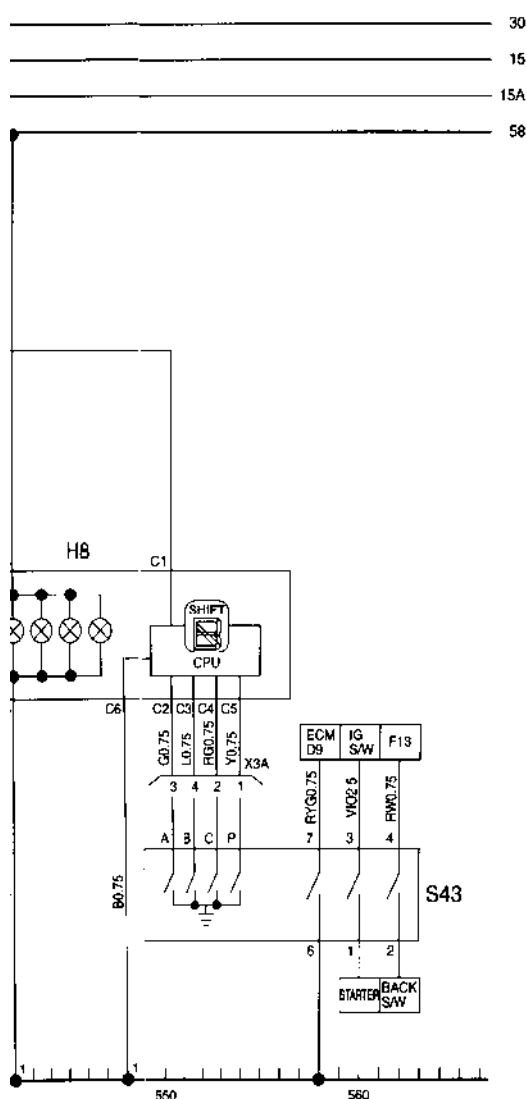




LAMP  
 IING LAMP  
 LH  
 3 LAMP  
 LAMP  
 P

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

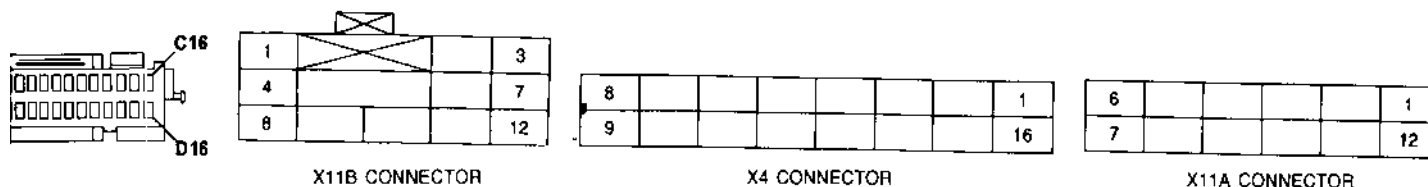
A Fuse 4 is connected to a high beam lamp(right)

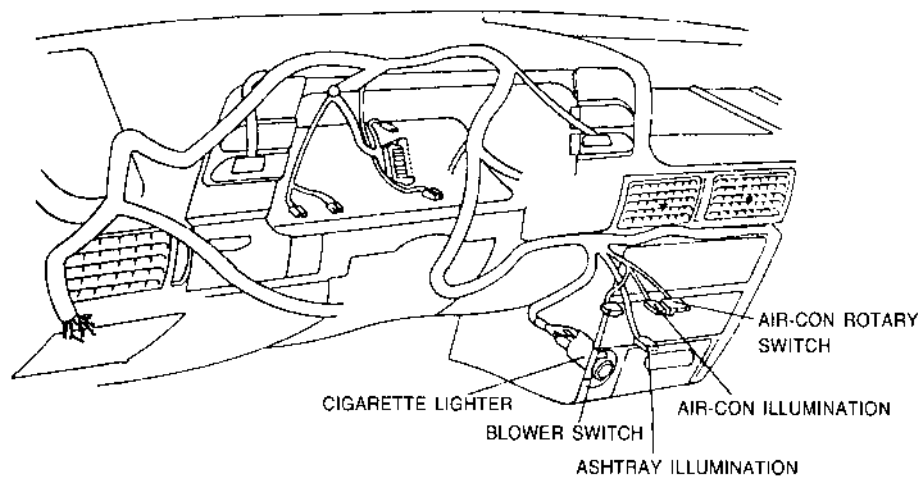
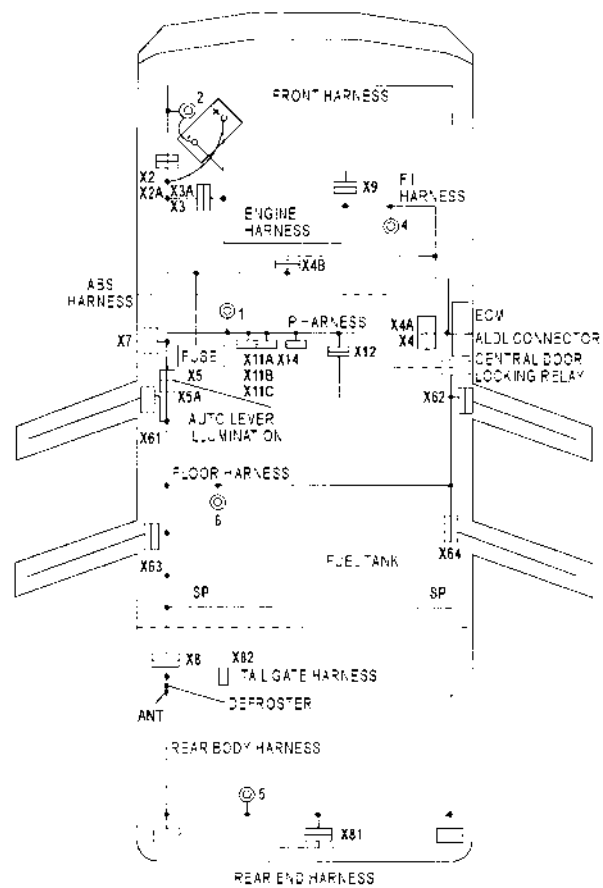
#### - 300 L

Turn signal lamp left

#### - 312 R

Turn signal lamp right





**23) ABS(OPTION)**

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)

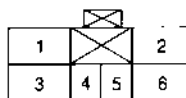
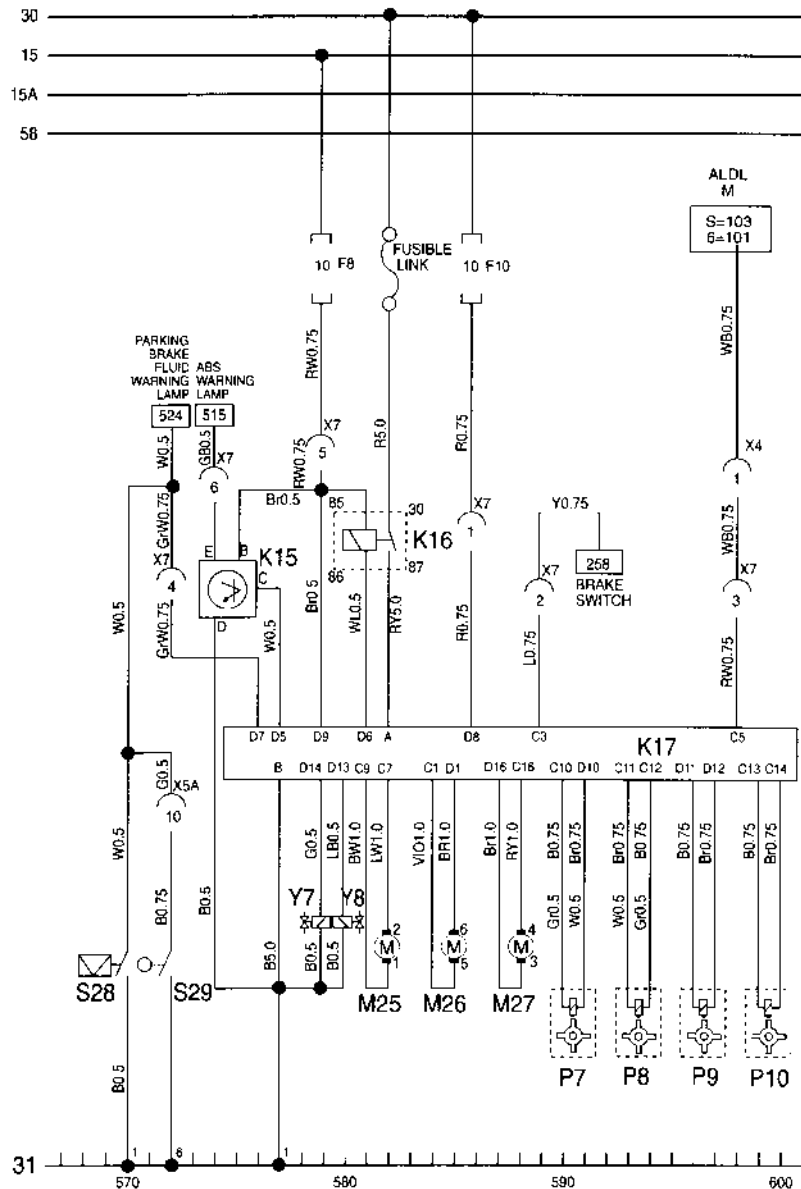
P10 WHEEL SPEED SENSOR(R.R)

S28 BRAKE FLUID LEVEL SWITCH

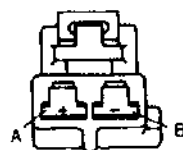
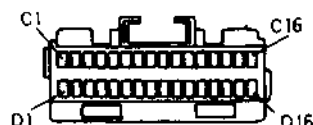
S29 PARKING BRAKE SWITCH

Y7 SOLENOID(F.R)

Y8 SOLENOID(F.L)



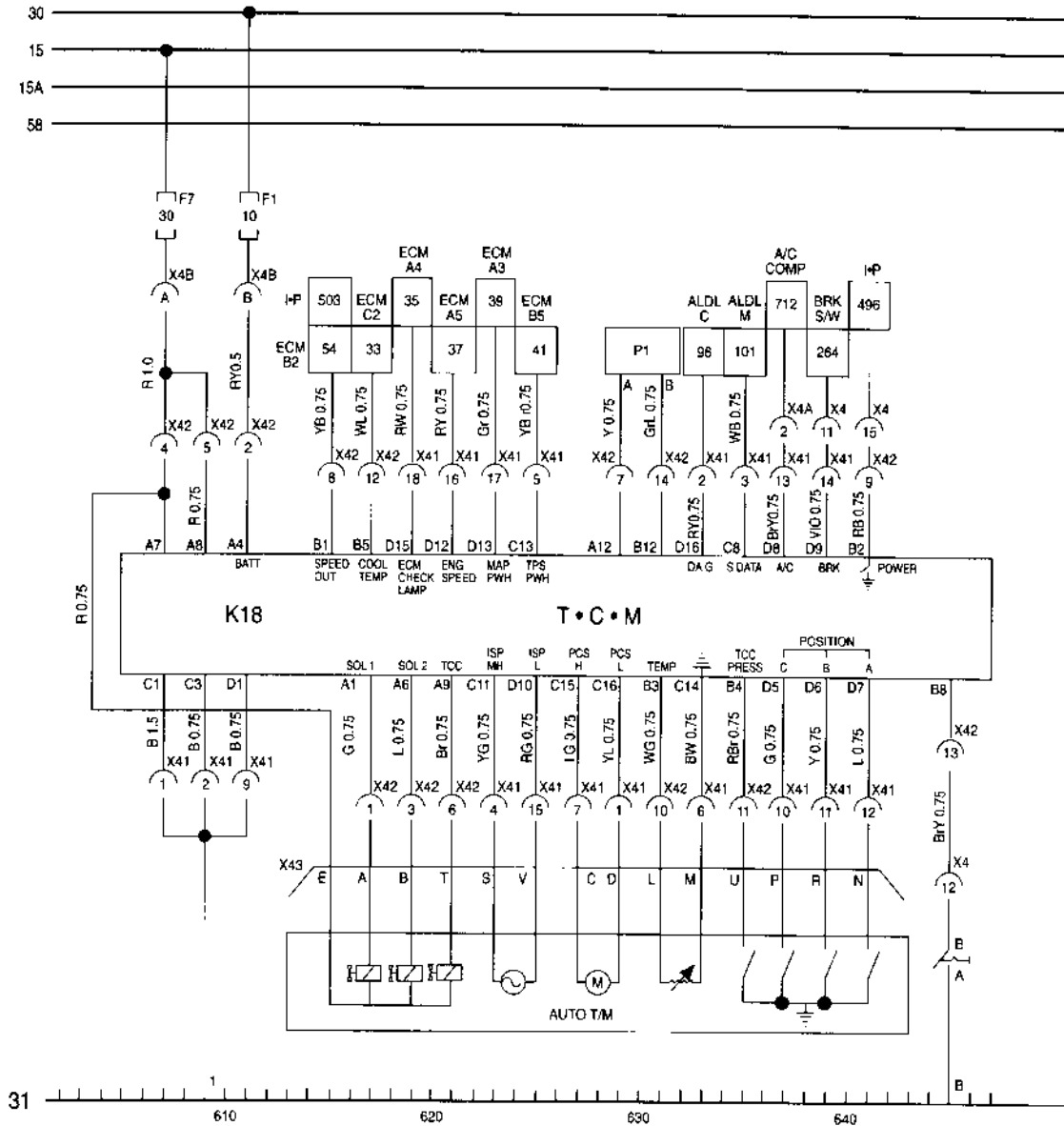
X7 CONNECTOR

ABS-ECU POWER END GROUND  
(ABS HARNESS REF.)ABS-ECU  
(ABS HARNESS REF.)

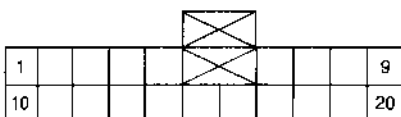
**24) TCM(OPTION)**

K18 TRANSAXLE CONTROL MODULE(TCM)

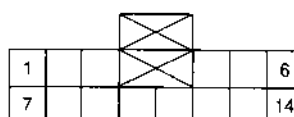
P1 VEHICLE SPEED SENSOR(VSS)



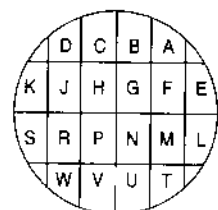
T • C • M



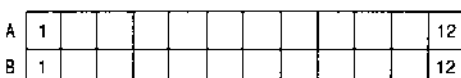
X41 CONNECTOR(4-SP A/T)



X42 CONNECTOR(4-SP A/T)



X43 CONNECTOR(4-SP A/T)



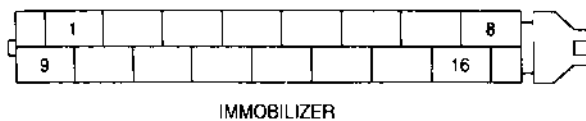
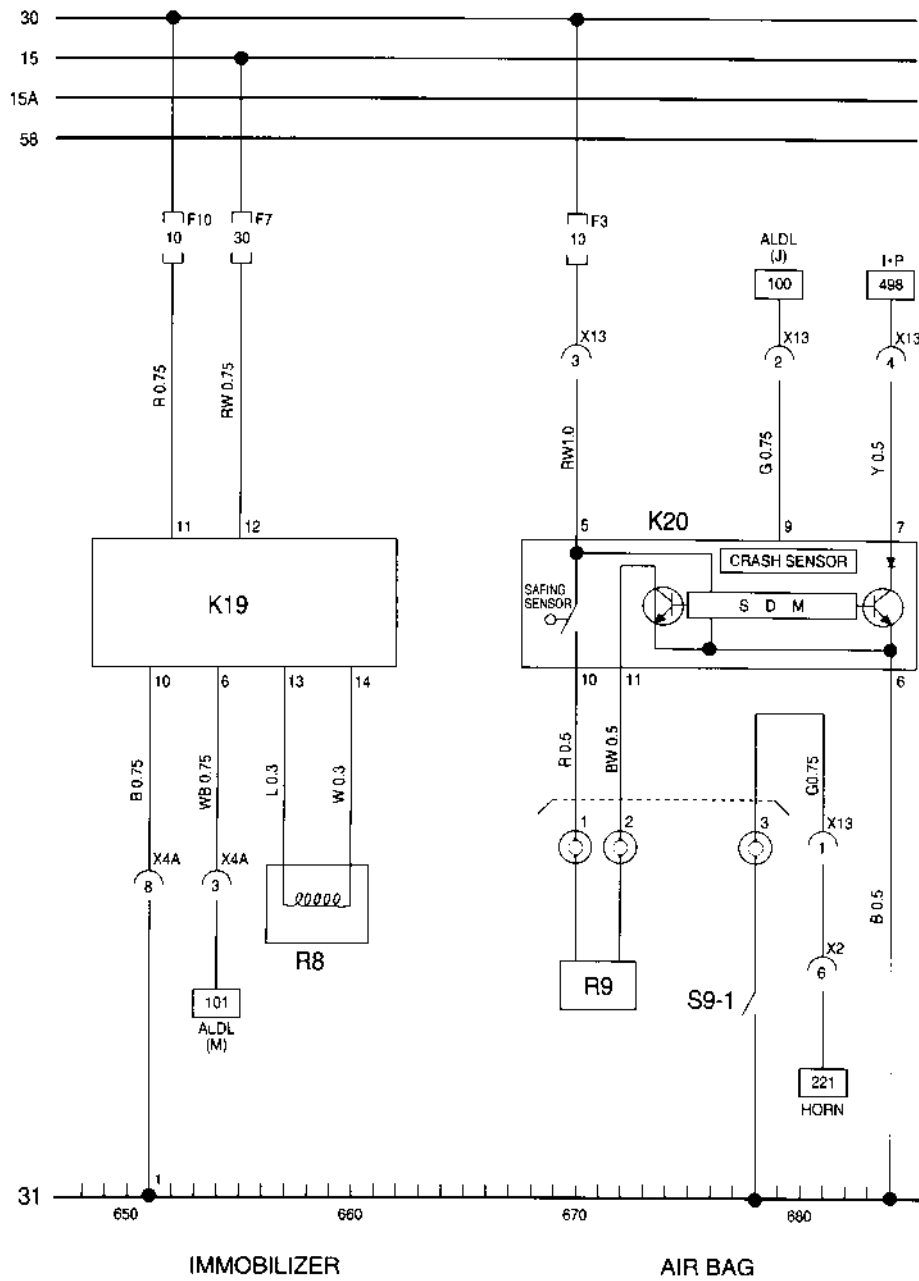
TCM CONNECTOR(4-SP A/T)



**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)



[illegible]

## EXPERIMENTAL

#### CONCLUSIONS AND RECOMMENDATIONS

### 10.1 SLOWER MOTOR DELAY

— *Journal of the American Medical Association*, 1997

### Hot Blower Motor

### B10. BLOWER MOTOR

B41 ELECTRIC FAN LOW SPEED

### S22 FAN CYCLING SWITCH

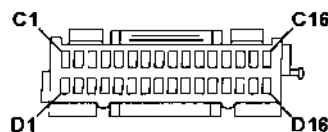
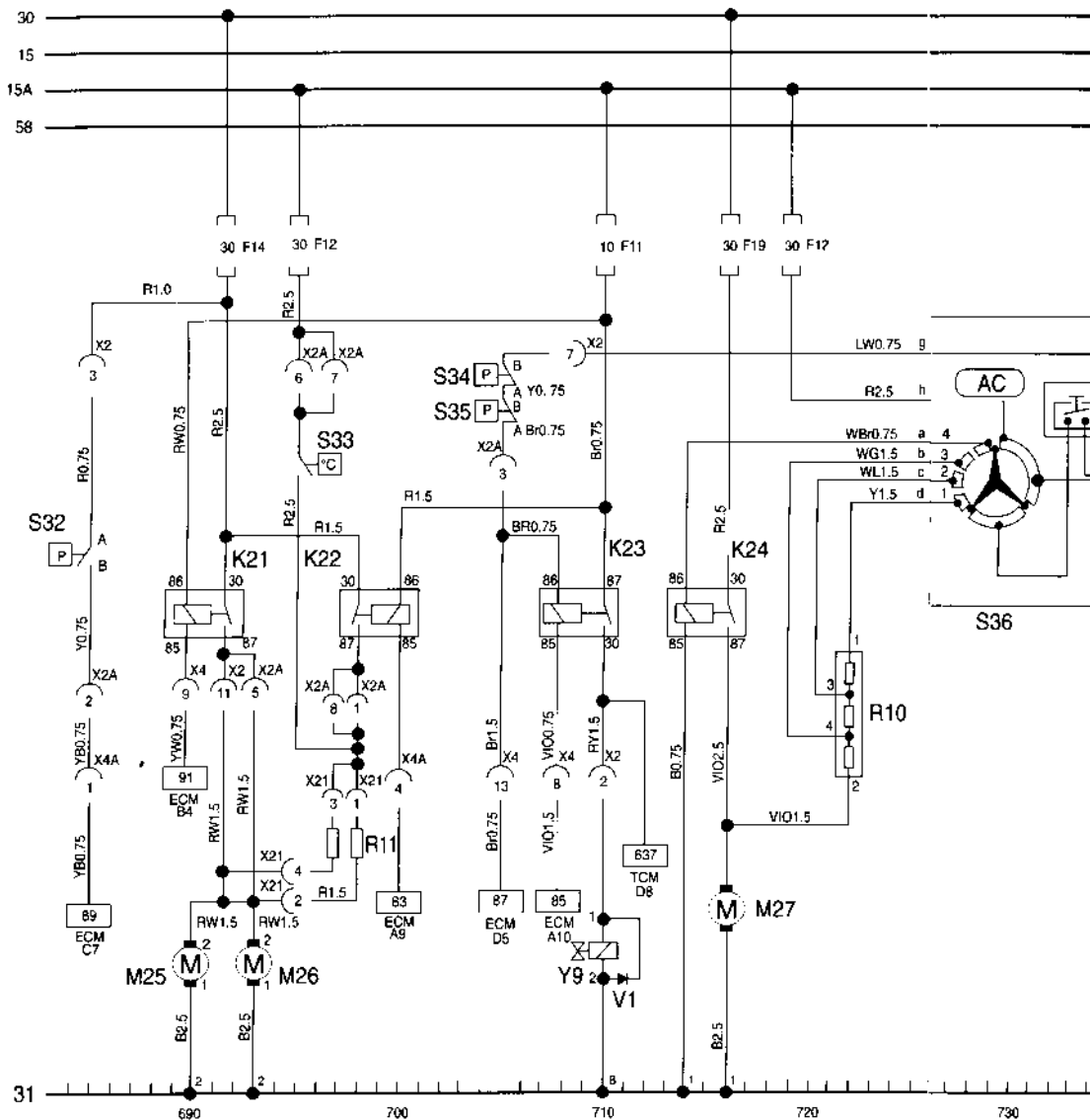
602 RADIATOR TEMPERATURE

— — — — —

2014 年 12 月 10 日

11 10 00155

### References



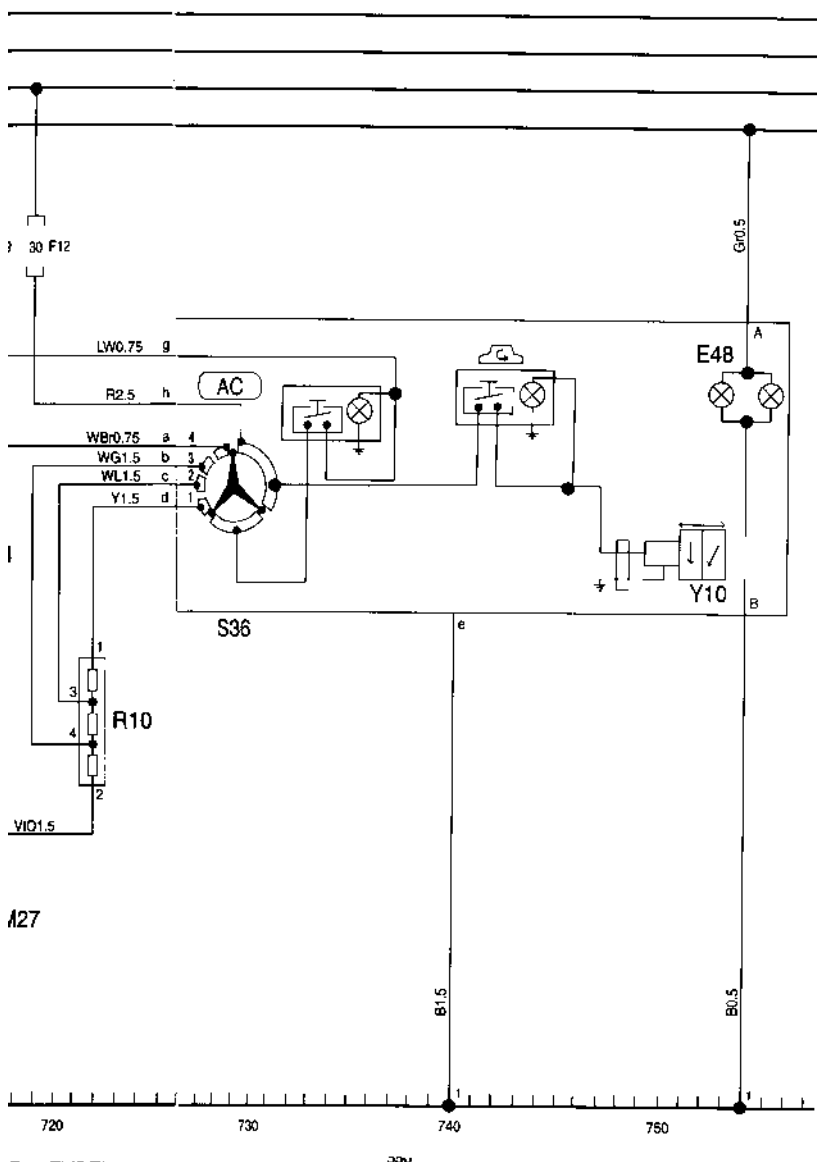
## ECM CONNECTOR

## 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

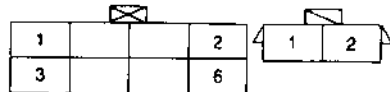
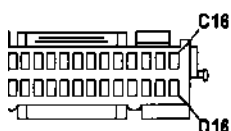
SISTER

TCH

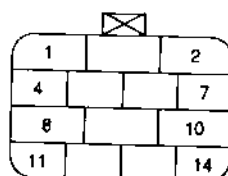


- S34 Low Pressure Shield Switch  
This is installed on the air-con low pressure line and the switch is "OFF" in case that the pressure is below  $1.6 \pm 0.5 \text{ kg/cm}^2$ .
- S35 High Pressure Shield Switch  
This is installed at the rear side of an air-con compressor (on the high pressure line) and the switch is "OFF" in case that the pressure is over  $29 \text{ kg/cm}^2$ .
- 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  $18-21 \text{ kg/cm}^2$ . 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  $106^\circ\text{C}$ .
  - 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  $90^\circ\text{C}$ , this switch is operated so that the cooling fan is operated when the temperature is  $85^\circ\text{C}$ , the switch is disconnected and the cooling fan is off.

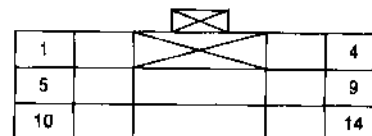
## FI-6 TYPE)



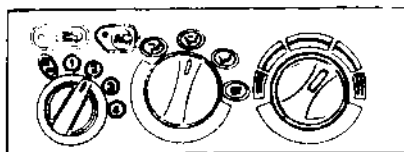
AIRCON CONTROL SWITCH



X2 CONNECTOR

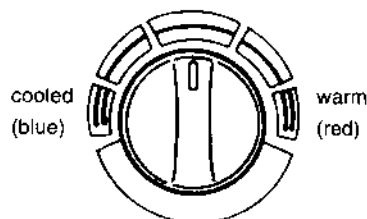


X4 CONNECTOR



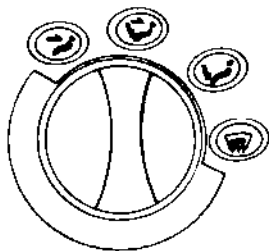
A/C SWITCH

TEMPERATURE SWITCH

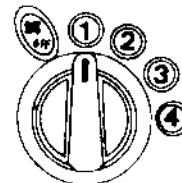


Pressing air conditioning switch A/C once makes air conditioning system ON and lightens the indication lamp. Pressing the switch twice makes A/C system OFF and turn off the lamp.

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.

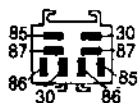
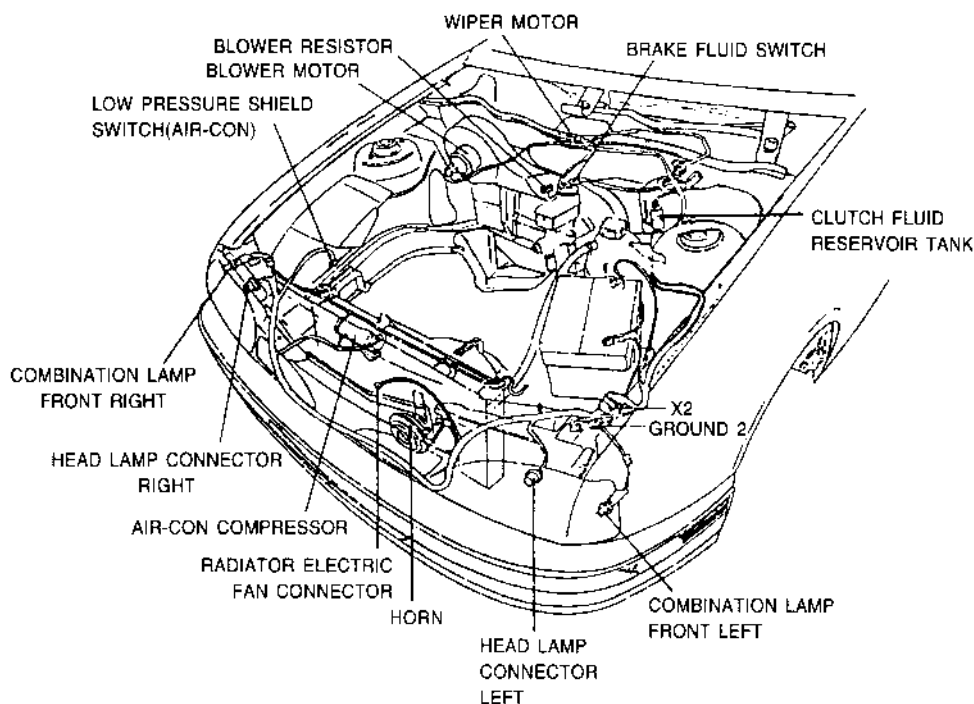


Defrosting of front and side windows can be possible.

FRESH AIR CONTROL LEVER



↑ Circulate the air inside the vehicle.



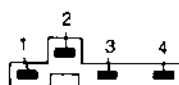
AIRCON COMPRESSOR, ELECTRIC FAN RELAY LOW SPEED (MICRO RELAY)



ELECTRIC RELAY HIGH SPEED



BLOWER SWITCH



BLOWER RESISTOR



FAN CYCLING SWITCH



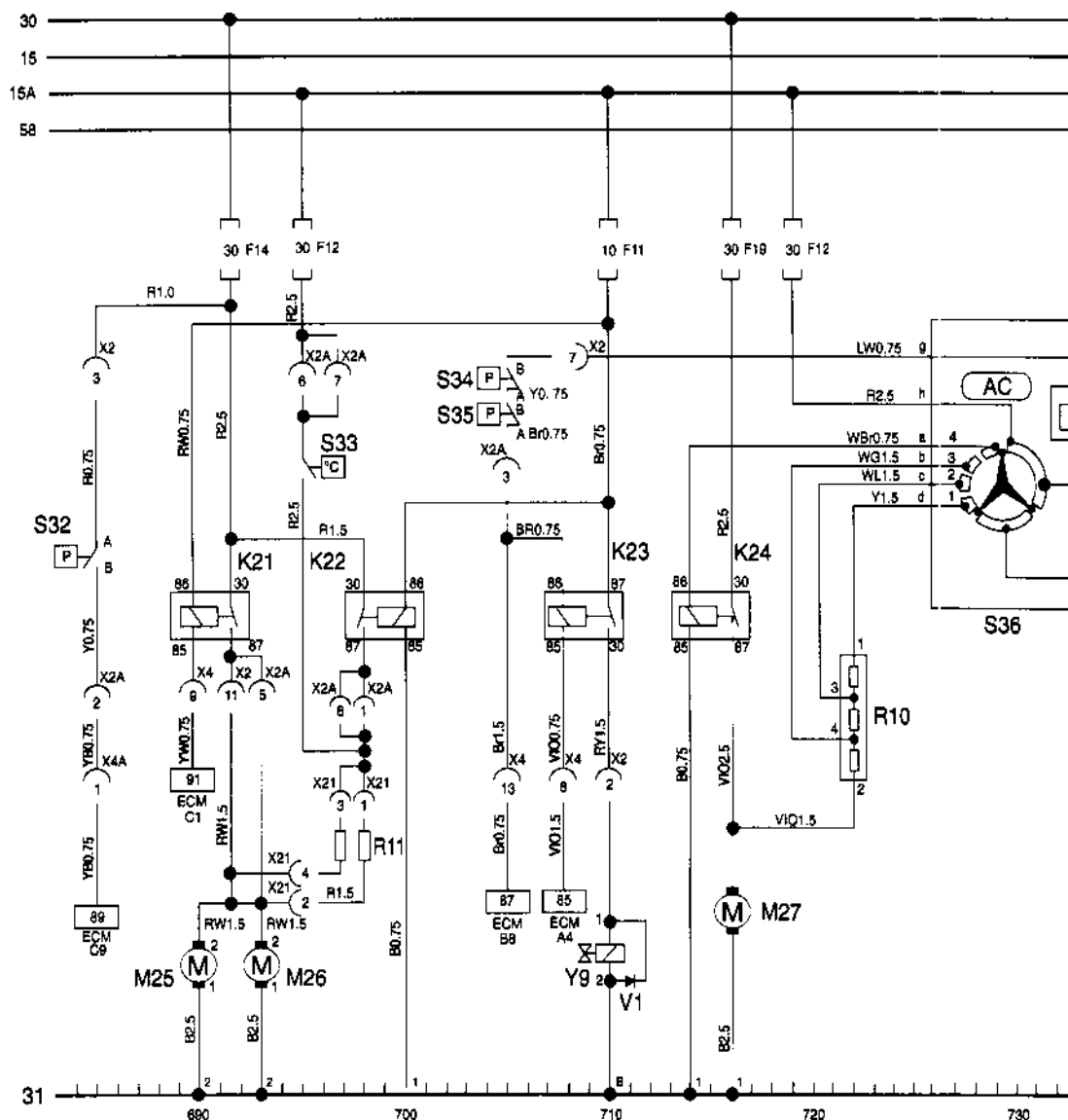
ELECTRIC FAN

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

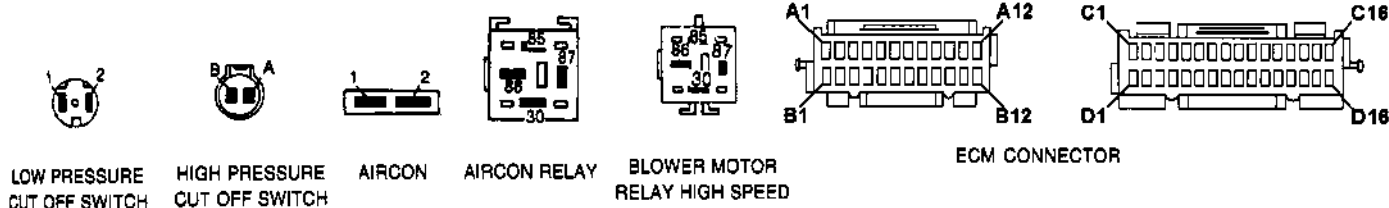
E48 ILLUMINATION LAMP - A/C CONTROL SWITCH  
K21 ELECTRIC FAN RELAY - HIGH SPEED  
K22 ELECTRIC FAN RELAY - LOW SPEED  
K23 A/C COMPRESSURE RELAY  
K24 BLOWER MOTOR RELAY  
M25 ELECTRIC MOTOR - AUX

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)

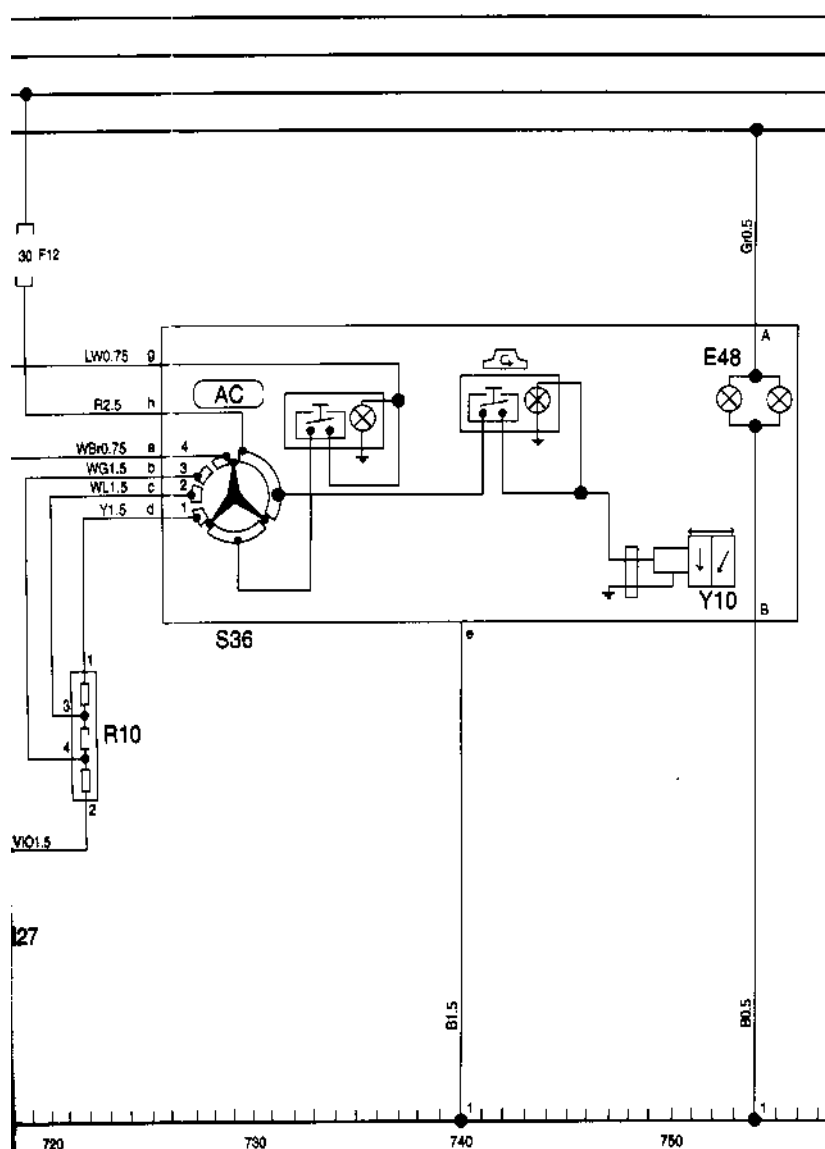


I TYPE)

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

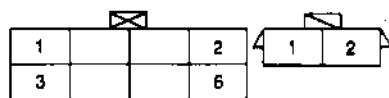
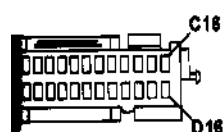
ISTER

CH

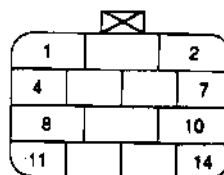


- S34 Low Pressure Shield Switch  
This is installed on the air-con low pressure line and the switch is "OFF" in case that the pressure is below  $1.6 \pm 0.5 \text{ kg/cm}^2$ .
- S35 High Pressure Shield Switch  
This is installed at the rear side of an air-con compressor (on the high pressure line) and the switch is "OFF" in case that the pressure is over  $29 \text{ kg/cm}^2$ .
- 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  $106^\circ\text{C}$ .
  - 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  $90^\circ\text{C}$ , this switch is operated so that the cooling fan is operated when the temperature is  $85^\circ\text{C}$ , the switch is disconnected and the cooling fan is off.

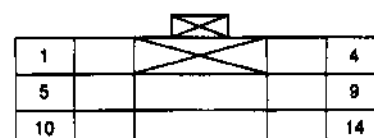
FI-S TYPE)



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.

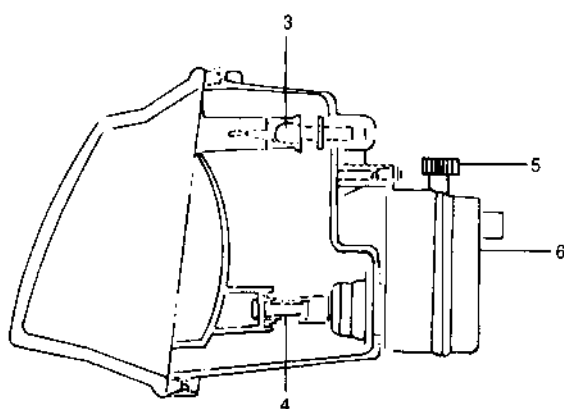
The shaft linked with the reflector, moves forward and backward.

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

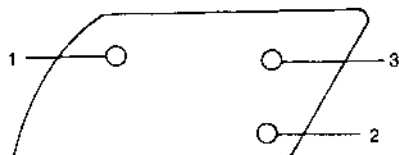
The more the reflector turns downward the bigger the downward – inclination of dipped – beam, and vice versa.

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.

