3000GT

Service Manual 1991

MITSUBISHI MOTORS

Volume 2

Electrical

BackupServiceManual

3000GT

1991: Volume 2

FOREWORD

This Service Manual has been prepared with the latest service information available at the time of publication. It is subdivided into various group categories and each section contains diagnosis, disassembly, repair, and installation procedures along with complete specifications and tightening references. Use of this manual will aid in properly performing any servicing necessary to maintain or restore the high levels of performance and reliability designed into these outstanding vehicles.

MITSUBISHI MOTOR SALES OF AMERICA, Inc.

Reprinted in USA

GROUP / SECTION INDEX

MOOAAA- -B

NOTE:
For Engine, Chassis & Body, refer to ...
Volume-1
"Engine, Chassis & Body"

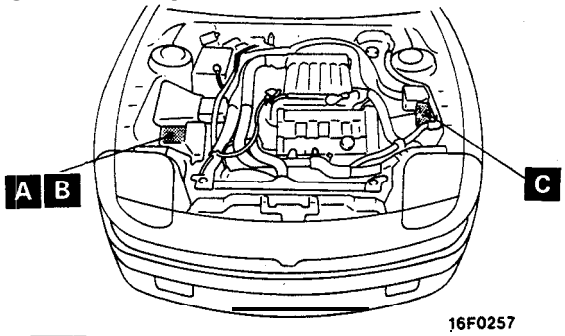
FUSIBLE LINK AND FUSE LOCATION

M16BA--

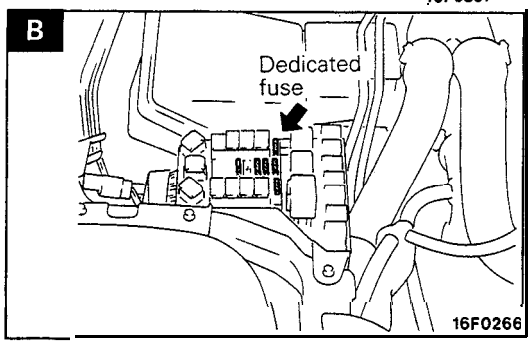
Name	Symbol	Name	Symbol
Dedicated fuse ① to ⑦	B	Fusible link	A
Dedicated fuse ⑧ ⑨	C	Multi-purpose fuse	D
Dedicated fuse ⑩	E		–

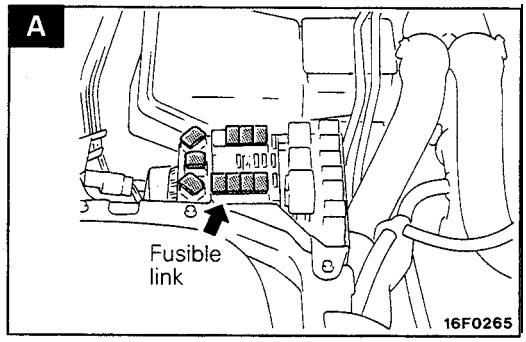
NOTE
The "Name" column is arranged in alphabetical order.

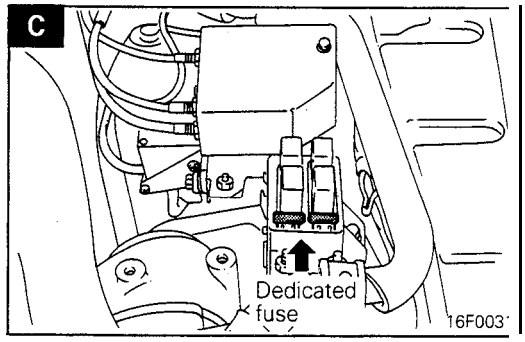
<Engine compartment>



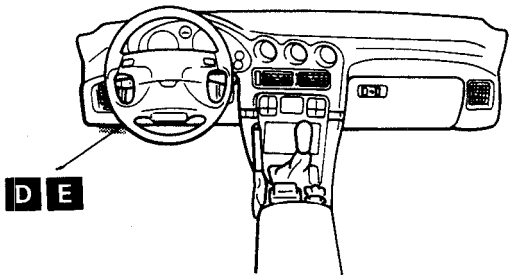
16F0257



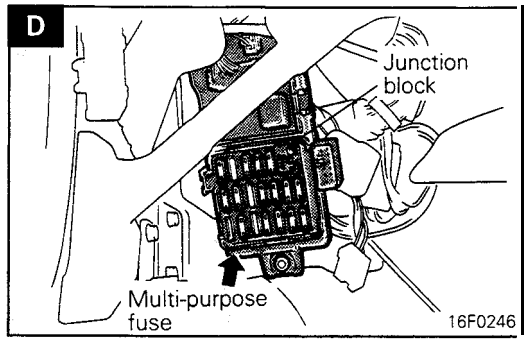


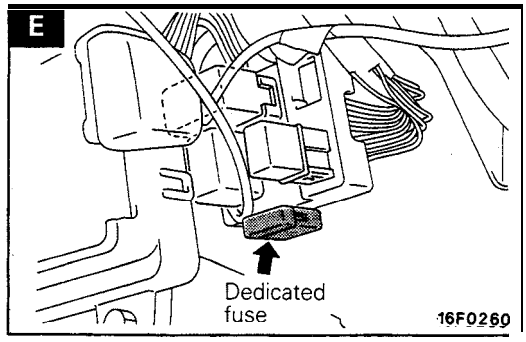


<Interior>



19F0134





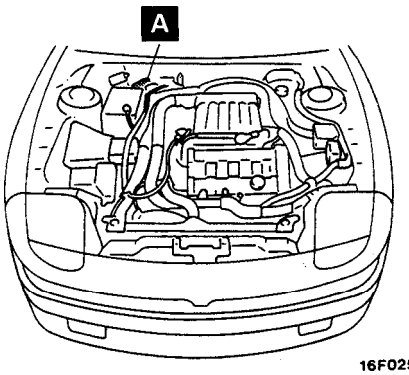
TSB Revision

INSPECTION TERMINAL LOCATION

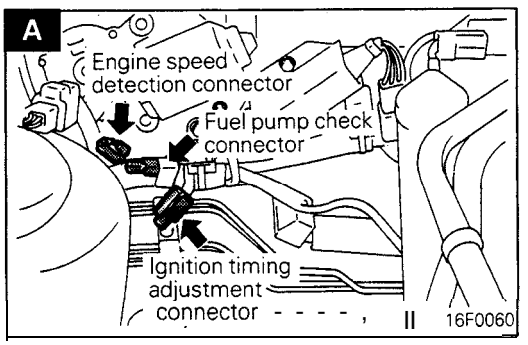
Name	Symbol	Name	Symbol
Engine speed detection connector	A	Ignition timing adjustment connector	A
Fuel pump check connector	A	Self-diagnosis check connector	B

NOTE
The "Name" column is arranged in alphabetical order.

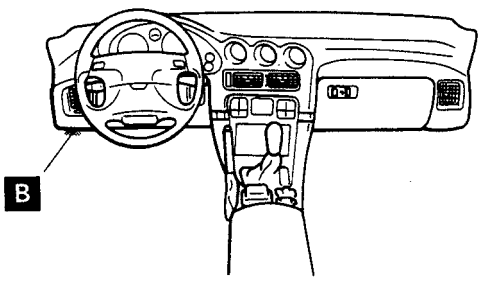
<Engine compartment>



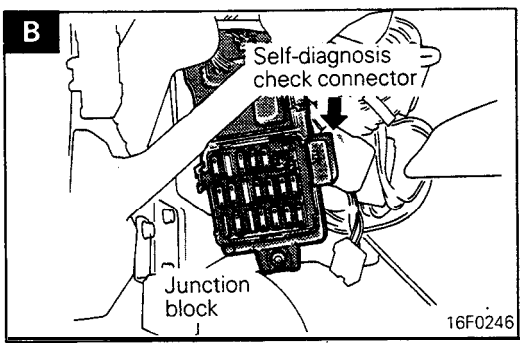
16F0257



<Interior>

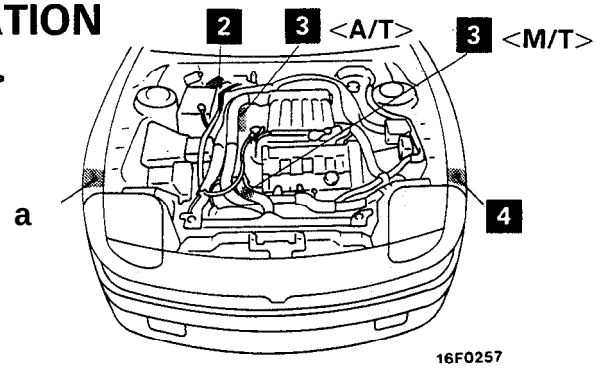


19F0134

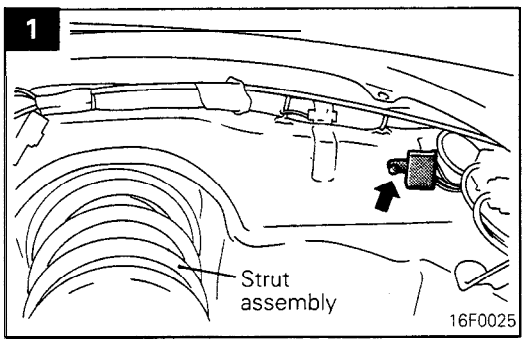


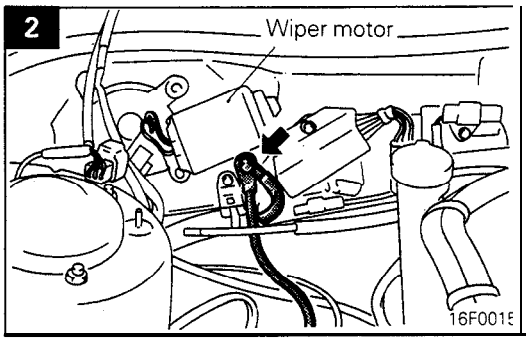
GROUNDING LOCATION

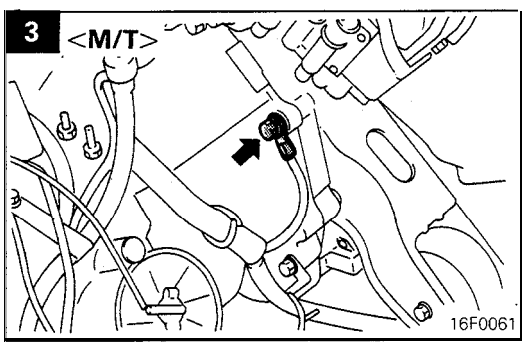
<Engine compartment>

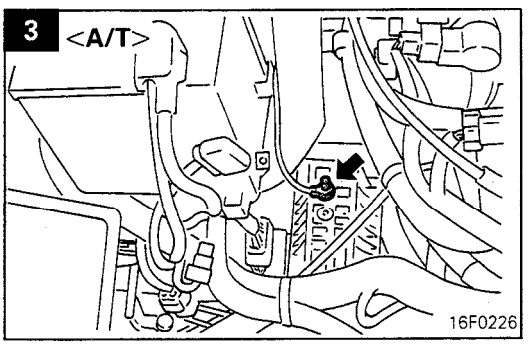


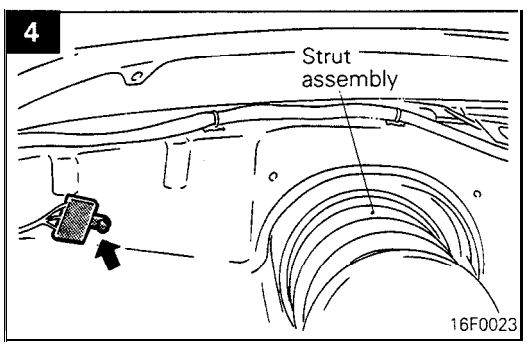
16F0257



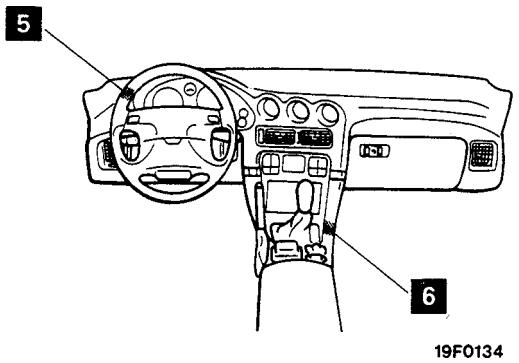




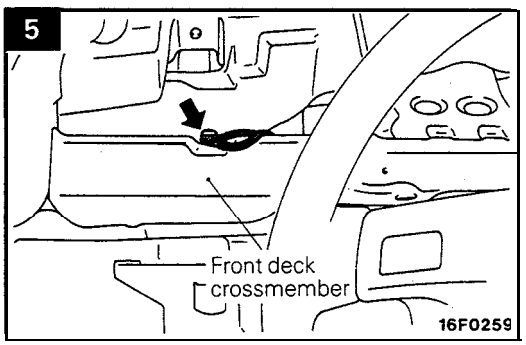


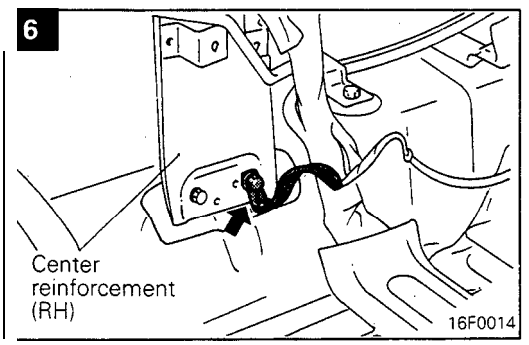


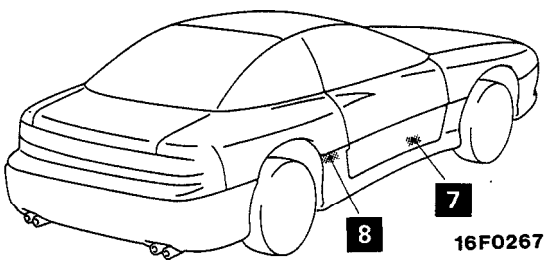
<Interior>



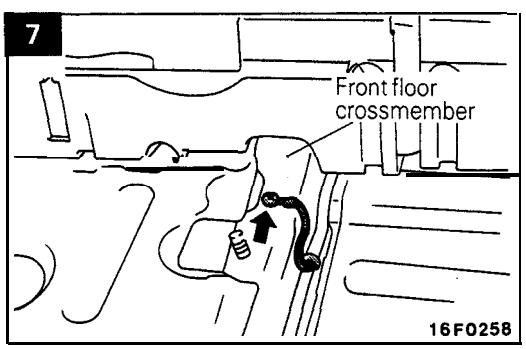
19F0134

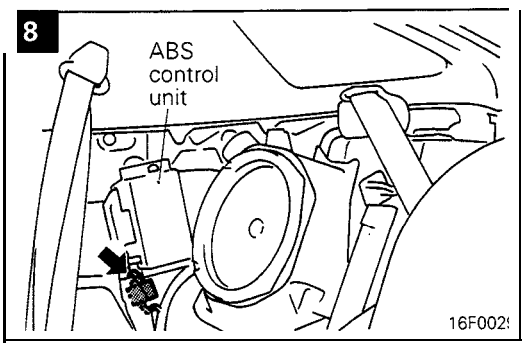


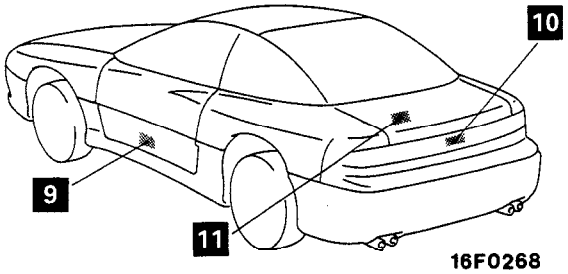




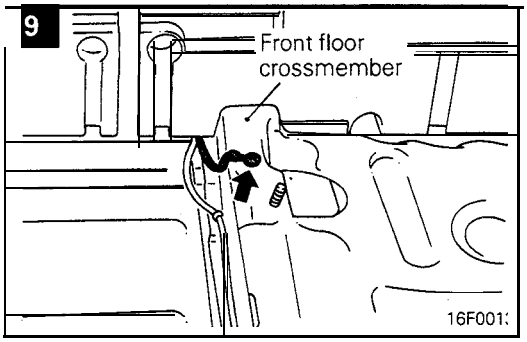
16F0267

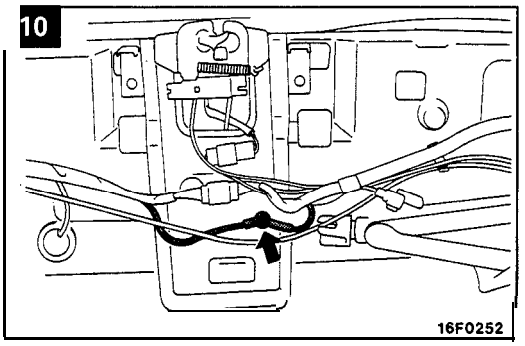


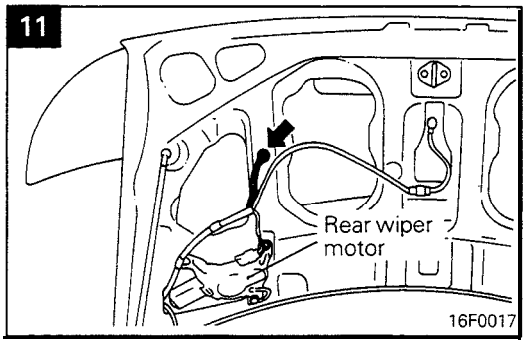



10
9
11

16F0268


9
Front floor crossmember
16F001

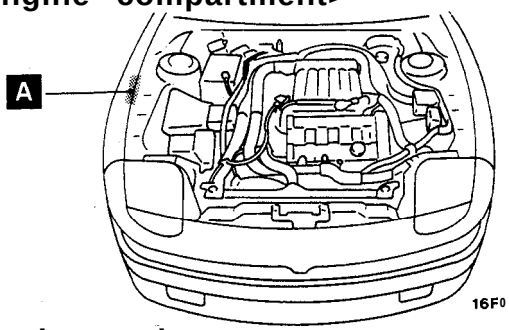

10
16F0252

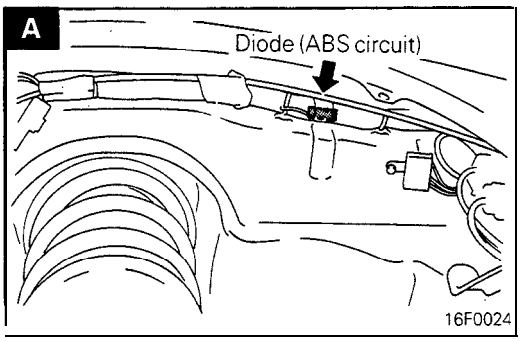

11
Rear wiper motor
16F0017

DIODE LOCATION

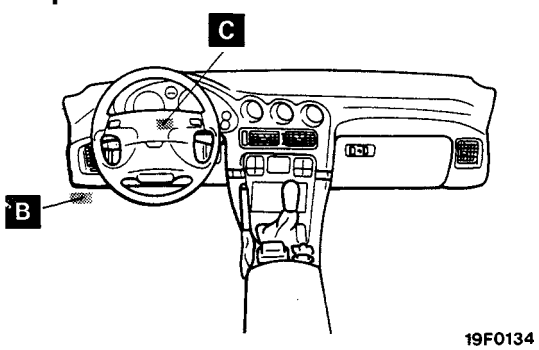
Name	Symbol	Name	Symbol
Diode (ABS circuit)	A	Diode (Seat belt warning circuit)	C
Diode (Fog light circuit)	D	Diode (Theft-alarm circuit)	C
Diode (MPI circuit)	B	Diode (4WS fluid level warning light circuit)	E

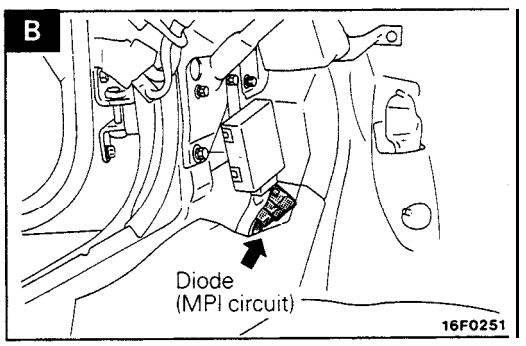
<Engine compartment>

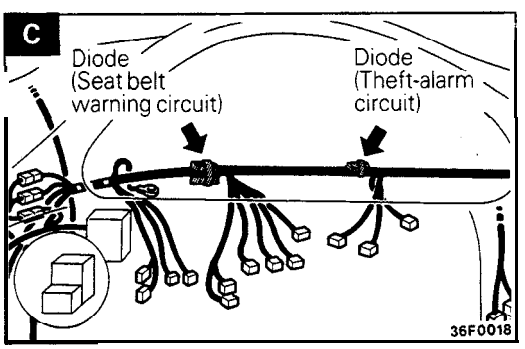




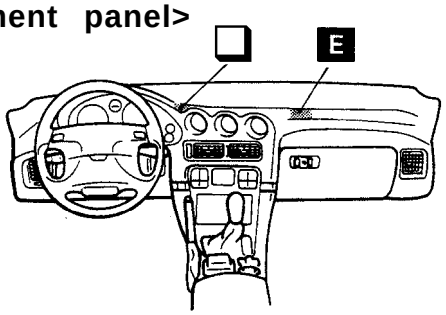
<Dash panel>

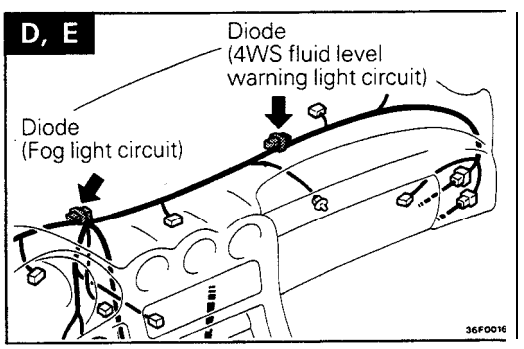






<Instrument panel>

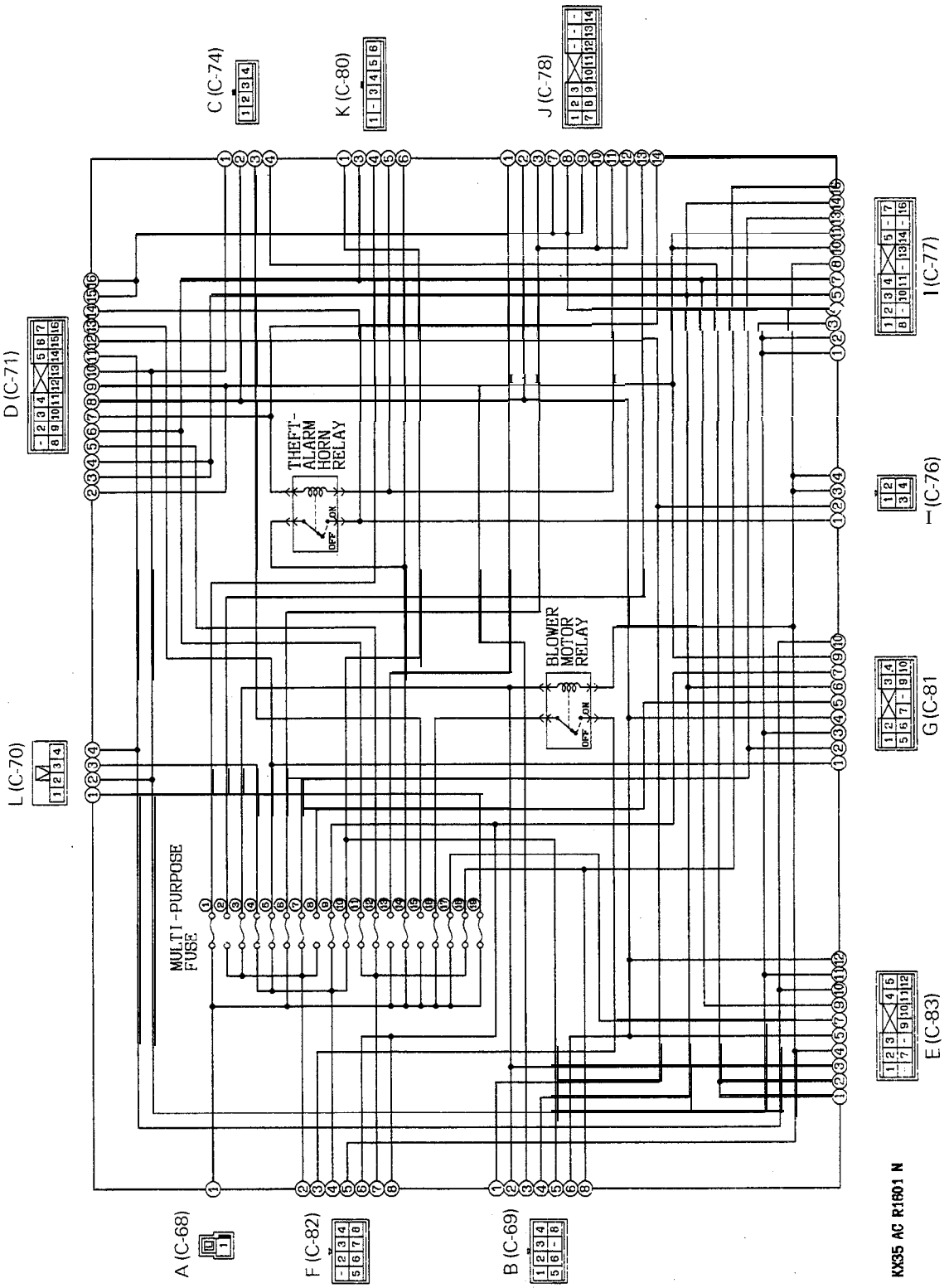




TSB Revision

JUNCTION BLOCK

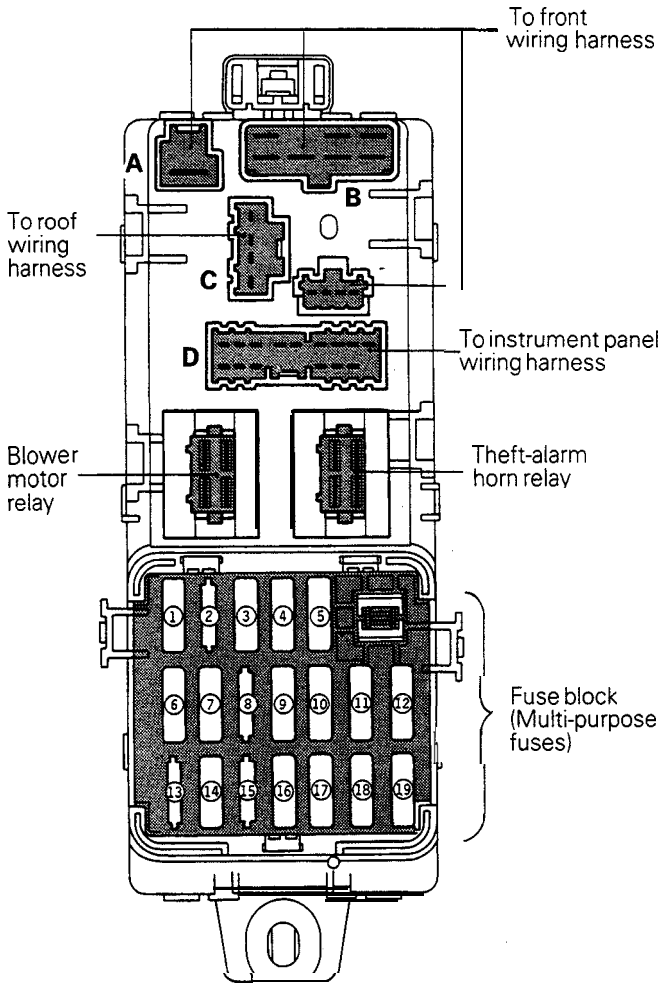
M16BC- -



Remarks
(1) Alphabets assigned to the connectors are keyed to those assigned to connectors on P.9.
(2) Terminals of the harness side connector are indicated in parentheses ( ).

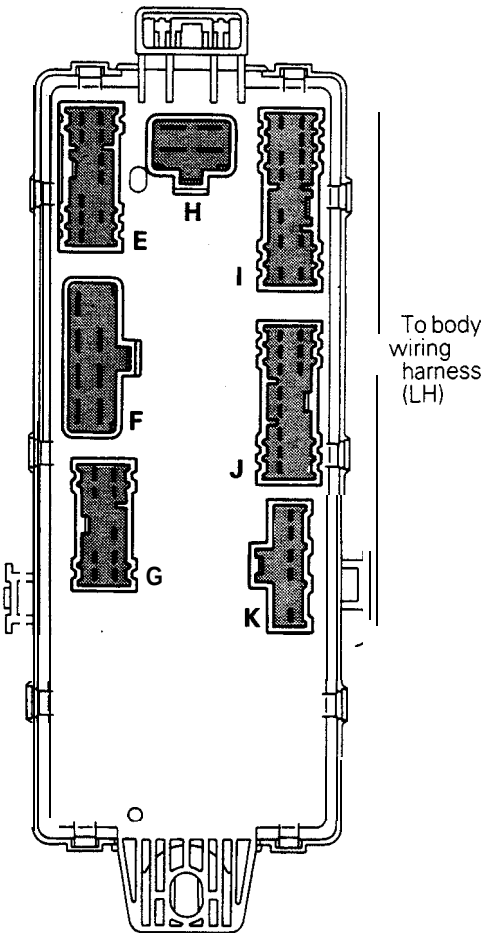
TSB Revision

Front



16F0304

Back



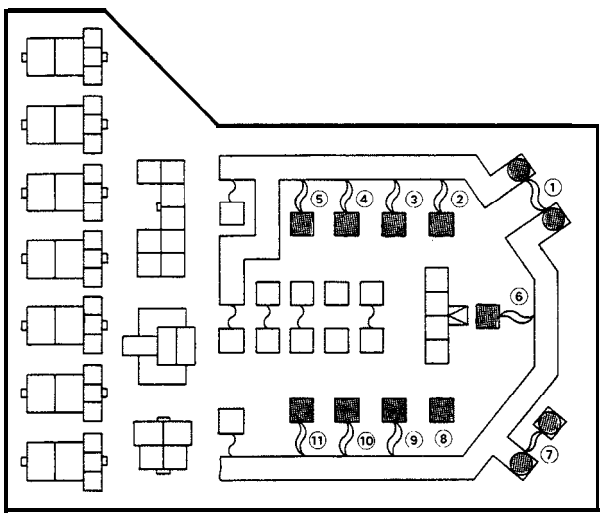
16F0058

CENTRALIZED JUNCTION

M16BB- -

FUSIBLE LINK (Relay box in engine compartment)

No.	Circuit	Housing color	Rated capacity (A)
1	Alternator circuit	Wine red	120
2	Pop-up motor circuit	Pink	30
3	Lighting circuit	Green	40
4	Ignition switch circuit	Pink	30
5	Radiator fan motor and condenser fan motor circuit	Green	40
6	Junction block (Multipurpose fuse ①, ⑥, ⑭, ⑯, ⑰, ⑲)	Green	40
7	ABS circuit	Yellow	60
8		–	–
9	Power window circuit	Pink	30
IO	Defogger circuit	Green	40
11	Active aero circuit	Pink	30

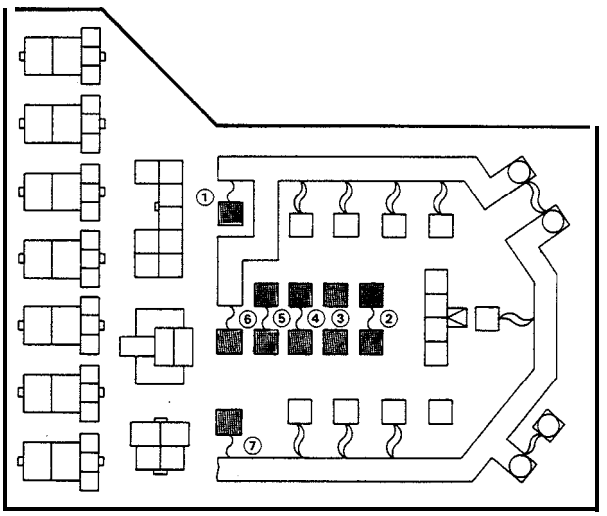


16F0256

DEDICATED FUSE

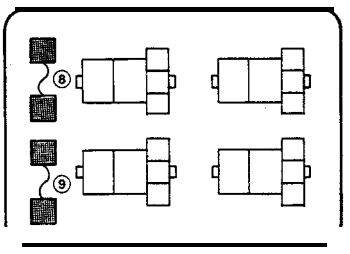
Power supply circuit	No.	Rated capacity (A)	Housing color	Circuit
Battery	1	20	Yellow	MPI circuit
Taillight relay	2	15	Blue	Taillight circuit
–	3	–	–	–
Fusible link ③	4	15	Blue	Fog light circuit
Headlight relay	5	10	Red	Upper beam circuit
Battery	6	10	Red	Horn circuit
	7	10	Red	ABS circuit
Fusible link ⑤	8	20	Yellow	Condenser fan motor circuit
	9	10	Red	Air conditioner circuit
Defogger relay	10	10	Red	Remote controlled mirror heater circuit

<Relay box in engine compartment>



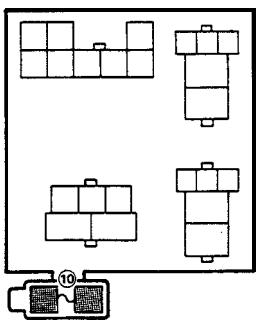
16F0256

<Air conditioner relay box in engine compartment>



16F0002

<Interior relay box>

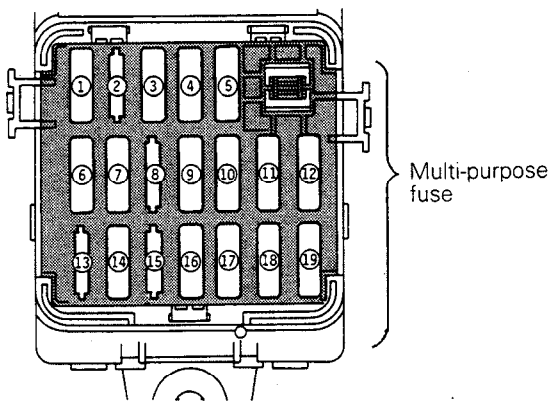


16F0003

TSB Revision

MULTI-PURPOSE FUSE (In junction block)

Power supply circuit		No.	Rated capacity (A)	Load circuit
Battery		1	10	Combination meter, Starter relay <A/T>, Theft-alarm starter relay <M/T>, Ignition key cylinder illumination light, Seat belt buzzer, Seat belt solenoid (LH), ETACS unit, Active aero control unit
–		2	–	–
Ignition switch	IG_2	3	10	Radiator fan motor relay, Air conditioner compressor lock controller, Blower motor relay, Air conditioner control unit, ABS relay, ECS control unit, Condenser fan motor relay, Defogger relay
	ACC	4	10	Audio, Motor antenna control unit, Auto-cruise control unit, ETACS unit
		5	15	Remote controlled mirror, Cigarette lighter
Battery		6	10	Door lock relay, Motor antenna control unit, Fog light relay, Daytime running light relay
Ignition switch IG_2		7	10	ELC-4A/T control unit
–		8	–	–
Ignition switch	ACC	9	15	Wiper relay, Wiper motor, Washer motor, Rear intermittent wiper relay
		10	15	Accessory socket, Headlight relay (Vehicles without theft-alarm system)
	IG_1	11	15	Combination meter, Combination gauge, ETACS unit, Speed sensor, Motor antenna control unit, Turn signal and hazard flasher unit, Auto-cruise control main switch, Active aero control unit
		12	15	Ignition coil, Power transistor, Engine control relay, Engine control unit
–		13	–	–
Battery		14	10	Theft-alarm horn, Theft-alarm horn relay
–		15	–	–
Battery		16	30	Blower motor
		17	15	Rear combination light, High-mounted stop light
Ignition switch IG_1		18	10	Back-up light, Turn-signal and hazard flasher unit, SRS diagnosis unit
Battery		19	10	Engine control unit, ELC-4 A/T control unit, ETACS unit, Dome light, Foot light, Door light, Luggage compartment light, Combination meter, Air conditioner control unit, Auto-cruise control unit, Audio, Seat belt solenoid (RH), ECS control unit, Active aero control unit



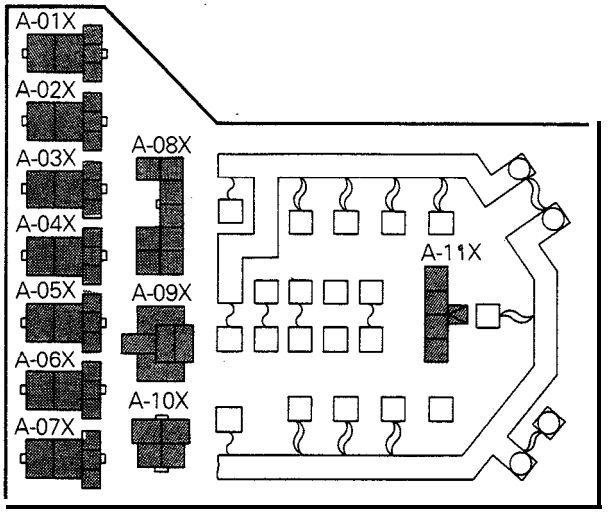
16F0304

TSB Revision

CENTRALIZED RELAY

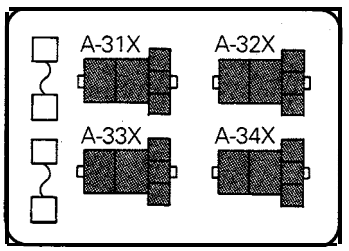
Classification		Name	Classification		Name
Relay box in engine compartment	,A-01X	Headlight relay	Air conditioner relay box in engine compartment	A-31X	Condenser fan motor relay (HI)
	A-02X	ABS power relay		A-32X	Radiator fan motor control relay
	A-03X	Fog light relay		A-33X	Magnetic clutch relay
	A-04X	Radiator fan motor relay (LO)		A-34X	Condenser fan motor relay (LO)
	A-05X	Taillight relay	Interior relay box	C-04X	Door lock relay
	A-06X	Horn relay		C-05X	–
	A-07X	Radiator fan motor relay (HI)		C-06X	Defogger relay
	A-08X	Pop-up motor relay		C-07X	Power window relay
	A-09X	Starter relay			
	A-l OX	Alternator relay			–
	A-l 1 X	Jumper connector			

<Relay box in engine compartment>



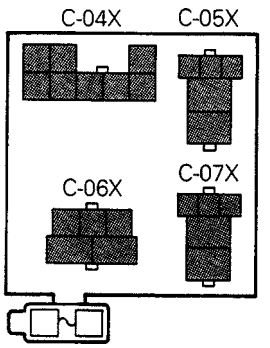
16F0256

<Air conditioner relay box in engine compartment>



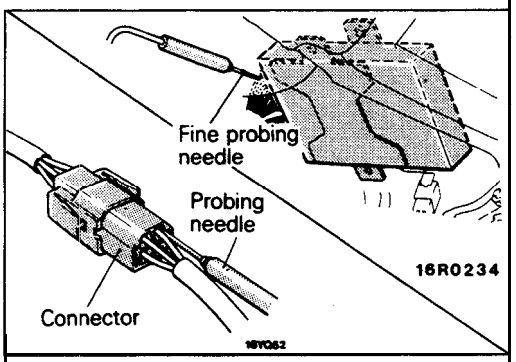
16F0002

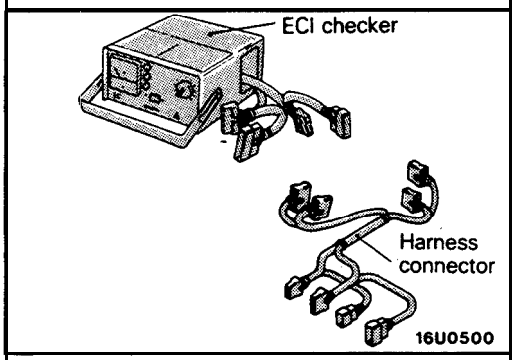
<Interior relay box>

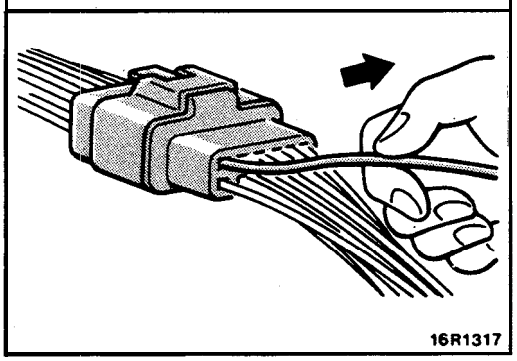


16F0003

TSB Revision







INSPECTION OF HARNESS CONNECTOR

M16C/

CONTINUITY AND VOLTAGE TEST FOR CONNECTOR

Following procedures shall be followed for testing continuity and voltage at connector in order to prevent improper contact and deterioration of waterproofing in connector.

CONVENTIONAL (NON-WATERPROOF) CONNECTOR

Check shall be done by inserting a probing needle from harness side.

WATER PROOF CONNECTOR

Caution

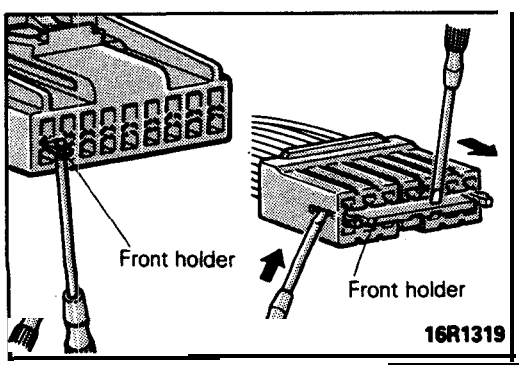
Do not insert probing needle from harness side as it will deteriorate waterproofing and cause rusting. To inspect the energized circuit, use the ECI checker.

CHECK FOR IMPROPER ENGAGEMENT OF TERMINAL

When the terminal stopper of connector is out of order, engagement of male and female terminals becomes improper even when the connector itself is engaged perfectly and the terminal sometimes slips out to the rear side of connector. Ascertain, therefore, that each terminal does not come off the connector by pulling each harness wire.

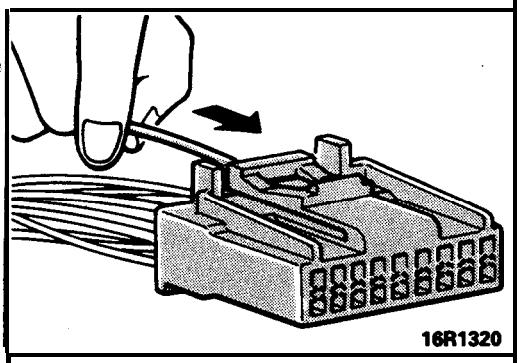
ENGAGING AND DISENGAGING OF CONNECTOR TERMINAL'

Connectors which are loose shall be rectified by removing the female terminal from connector housing and raising its lance to establish a more secure engagement. Removal of connector terminal used for ECI and 4 A/T control circuit shall be done in the following manner.

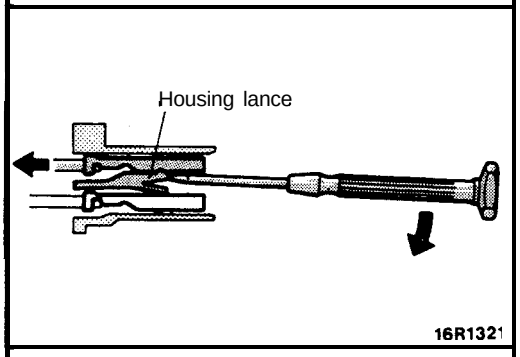


COMPUTER CONNECTOR

(1) Insert screwdriver [1.4 mm (.06 in.) width] as shown in the figure, disengage front holder and remove it.


16R1320

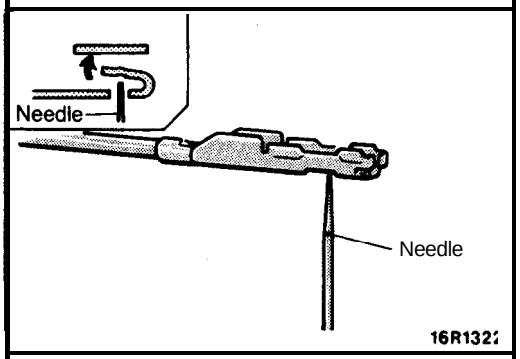
(2) Insert harness of terminal to be rectified deep into connector from harness side and hold it there.



16R1321

(3) Insert tip of screwdriver [1.4 mm (.06 in.) width] into connector in a manner as shown in the figure, raise housing lance slightly with it and pull out harness.

Caution
Tool No. 753787-I supplied by AMP can be used instead of screwdriver.

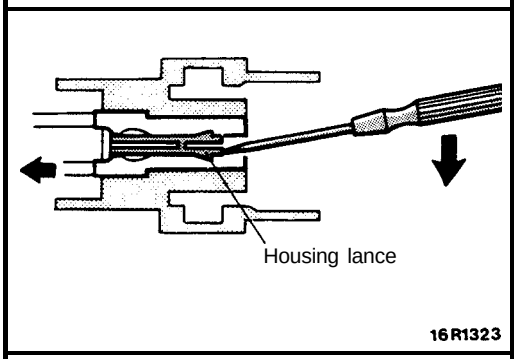


16R1322

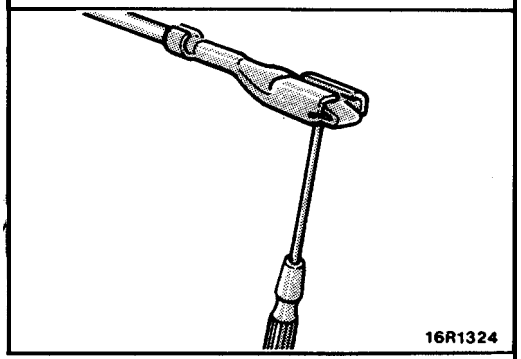
(4) Insert needle through a hole provided on terminal and raise contact point of male terminal.

ROUND WATERPROOF CONNECTOR

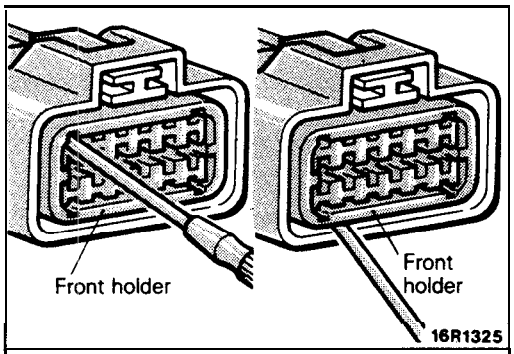
(1) Remove waterproof cap by using a screwdriver.
(2) Insert tip of screwdriver [1.4 mm (.06 in.) or 2.0 mm (.08 in.) width] into connector in a manner as shown in the figure, raise housing lance slightly with it and pull out harness.



16R1323

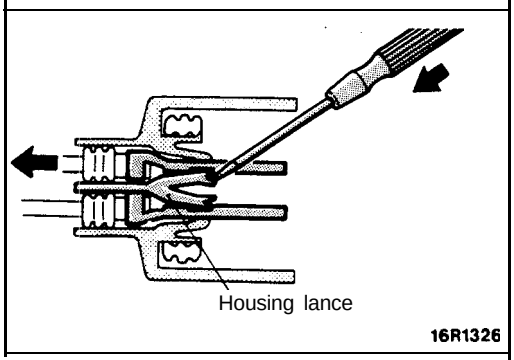

16R1324

(3) Insert screwdriver through a hole provided on terminal and raise contact point of male terminal.

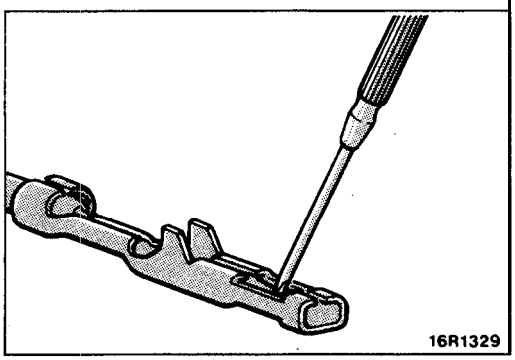


RECTANGULAR WATERPROOF CONNECTOR

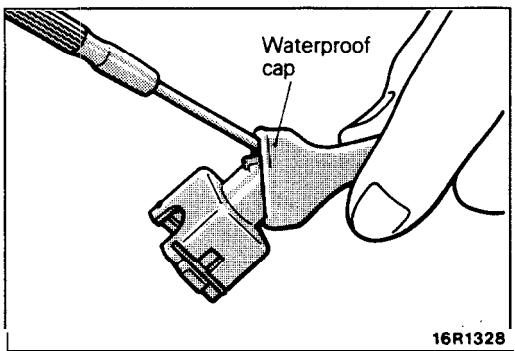
(1) Disengage front holder by using a screwdriver and remo' it.



(2) Insert tip of screwdriver [*0.8 mm (.03 in.) width] into connector in a manner as shown in the figure, push it lightly to raise housing lancer and pull out harness.
*If right size screwdriver is not available, convert a conventional drive to suit the size.

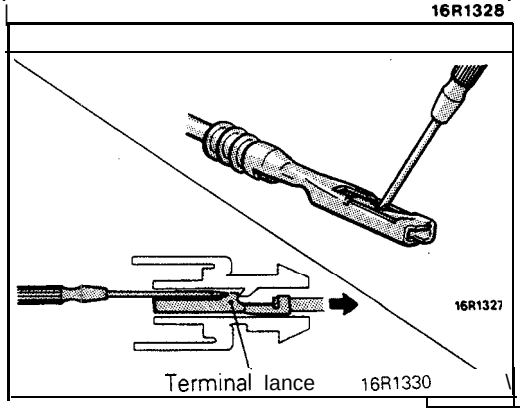


(3) Press contact point of male terminal down by holding a screwdriver [1.4 mm (.06 in.) width] in a manner as shown in the figure.



INJECTOR CONNECTOR

(1) Remove waterproof cap.



(2) Insert tip of screwdriver [1.4 mm (.06 in.) width] into connector in a manner as shown in the figure, press in terminal lance and pull out harness.
(3) Press contact point of male terminal down by holding a screwdriver [1.4 mm (.06 in.) width] in a manner as shown in the figure.

Caution
Correct lancer to be in proper condition before termi... is inserted into connector.

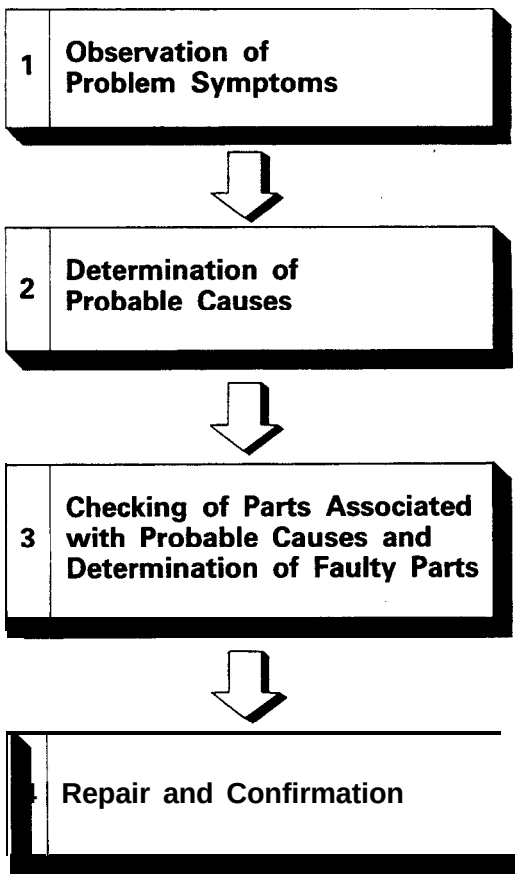
HOW TO DIAGNOSE

M16DAAB

The most important point in troubleshooting is to determine "Probable Causes". Once the probable causes are determined, parts to be checked can be limited to those associated with such probable causes. Therefore, unnecessary checks can be eliminated. The determination of the probable causes must be based on a theory and be supported by facts and must not be based on intuition only.

TROUBLESHOOTING STEPS

If an attempt is made to solve a problem without going through correct steps for troubleshooting, the problem symptoms could become more complicated, resulting in failure to determine the causes correctly and making incorrect repairs. The four steps below should be followed in troubleshooting.



Observe the symptom carefully.
Check if there are also other problems.

In determining the probable causes, it is necessary to check the wiring diagram to understand the circuit as a system. Knowledge of switches, relays and other parts is necessary for accurate determination. The causes of similar problems in the past must be taken into account.

Troubleshooting is carried out by making step by step checks until the true cause is found. Always go through the procedures considering what check is to be made where for the best results.

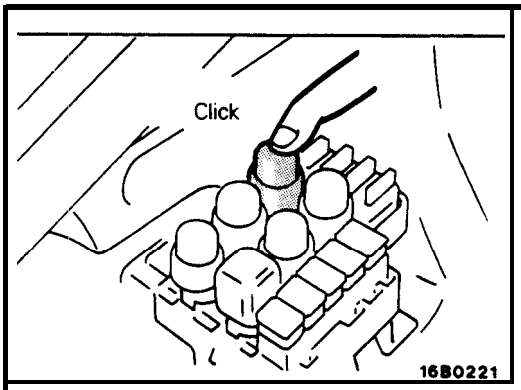
After the problems are corrected, be sure to check that the system operates correctly. Also, check that new problems have not been caused by the repair.

INFORMATION FOR DIAGNOSIS

This manual contains the cable diagrams as well as the individual circuit drawings, operational explanations, and troubleshooting hints for each component required to facilitate the task of troubleshooting. The information is compiled in the following manner:

(1) Cable diagrams show the connector positions, etc., on the actual vehicle as well as the harness path.
(2) Circuit drawings show the configuration of the circuit with all switches in their normal positions.
(3) Operational explanations include circuit drawings of voltage flow when the switch is operated and how the component operates in reaction.
(4) Troubleshooting hints include numerous examples of problems which might occur, traced backward in a common-sense manner to the origin of the trouble.
Problems whose origins may not be found in this manner are pursued through the various system circuits.

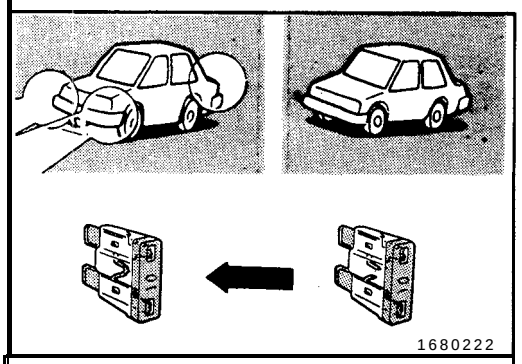
NOTE
Components of ECI, ETACS, ECS, etc. with ECU do not include 3 and 4 above. For this information, refer to a manual which includes details of these components.



INSPECTION

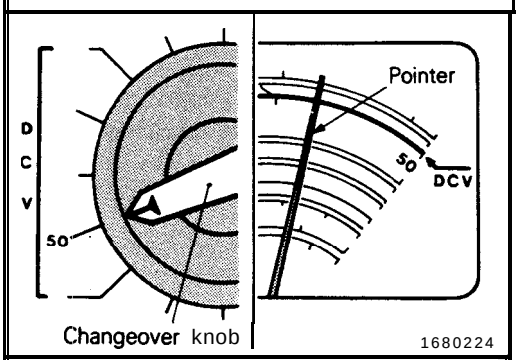
1. Visual and aural checks

Check relay operation, blower motor rotation, light illumination, etc. visually or aurally. The flow of current is invisible but can be checked by the operation of the parts.



2. Simple checks

For example, if a headlight does not come on and a faulty fuse or poor grounding is suspected, replace the fuse with a new one or ground the light to the body by a jumper wire to determine which part is responsible for the problem.



3. Checking with instruments

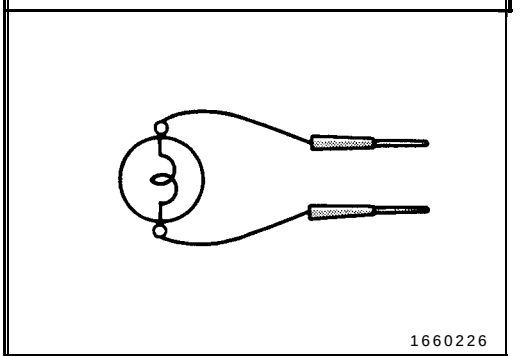
Use an appropriate instrument in an adequate range and read the indication correctly. You must have sufficient knowledge and experience to handle instruments correctly.

INSPECTION INSTRUMENTS

In inspection, make use of the following instruments.

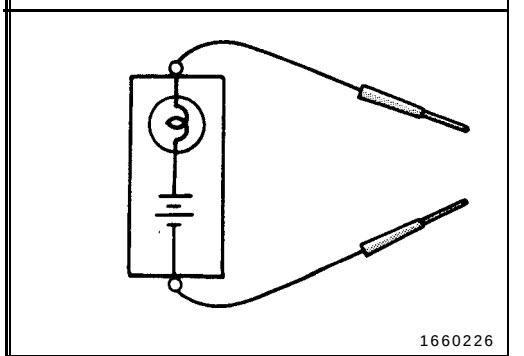
1. Test lights

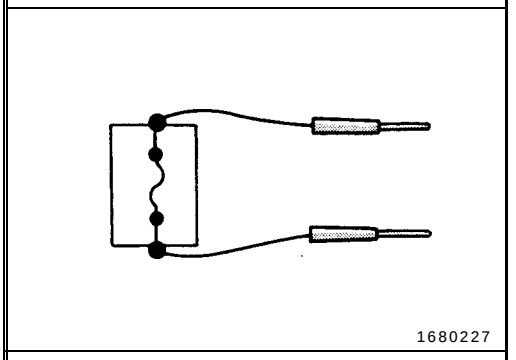
A test light consists of a 12V bulb and lead wires. It is used to check voltages or shortcircuits.



2. Self-power test light

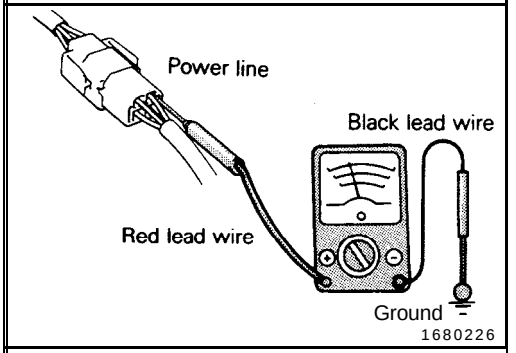
A self-power test light consists of a bulb, battery and lead wires connected in series. It is used to check continuity or grounding.




1680227

3. Jumper wire

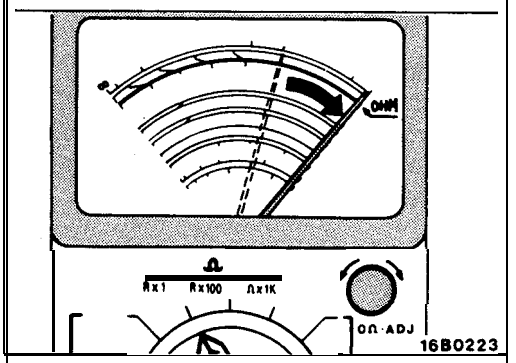
A jumper wire is used to close an open circuit. Never use one to connect a power supply directly to a load.



1680226

4. Voltmeter

A voltmeter is used to measure the circuit voltage. Normally, the positive (red lead) probe is applied to the point of voltage measurement and the negative (black lead) probe to the body ground.



16B0223

5. Ohmmeter

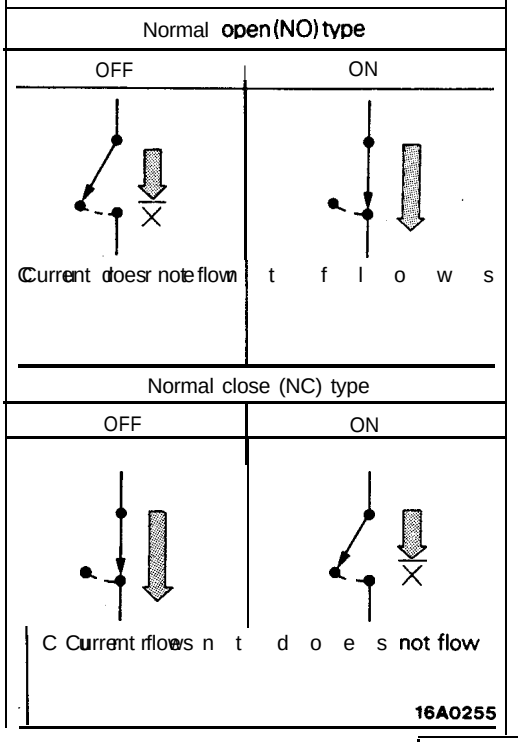
An ohmmeter is used to check continuity or measure resistance of a switch or coil. If the measuring range has been changed, the zero point must be adjusted before measurement.

CHECKING SWITCHES

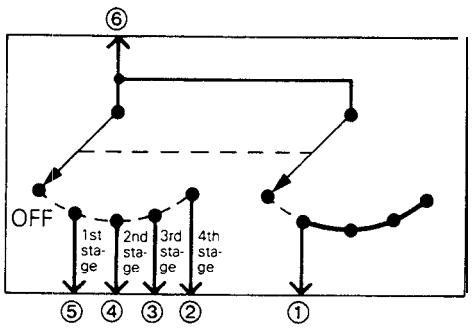
In a circuit diagram, a switch is represented by a symbol and in the idle state.

1. Normal open or normal close switch

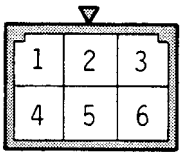
Switches are classified into those which make the circuit open and those which make the circuit closed when off.



16A0255



1640253



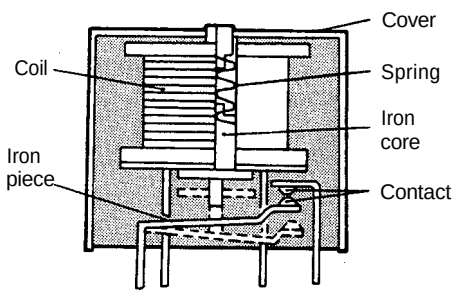
16W898

2. SWITCH CONNECTION

This figure illustrates a complex switch. The continu between terminals at each position is as indicated in t table below.

Position \ Terminal No.	1	2	3	4	5	6
OFF						
1 st stage	0				n	0
2nd stage	0			n		0
3rd stage	0		n			0
4th stage	○	0				0

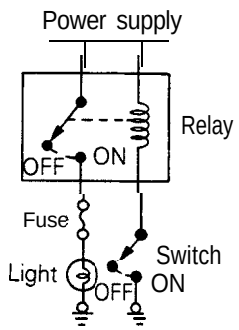
NOTE
○–○ denotes continuity between terminals.



16B0231

CHECKING RELAYS

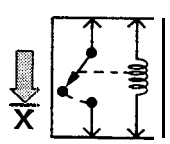
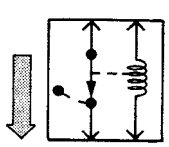
1. When current flows through the coil of a relay, its core is magnetized to attract the iron piece, closing (ON) the contact at the tip of the iron piece. When the coil current turned off, the iron piece is made to return to its origi position by a spring, opening the contact (OFF).



16A0254

2. By using a relay, a heavy current can be turned on and off by a switch of small capacity. For example, in the circuit shown here, when the switch is turned on (closed), current flows to the coil of the relay. Then, its contact is turned on (closed) and the light comes on. The current flowing at this time to the switch is the relay coil current only and is very small.

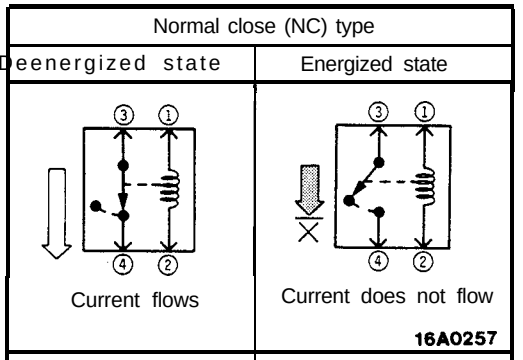
Normal open (NO) type

Deenergized state	Energized state
	
Current does not flow	Current flows

16A0256

3. The relays may be classified into the normal open type and the normal close type by their contact construction.

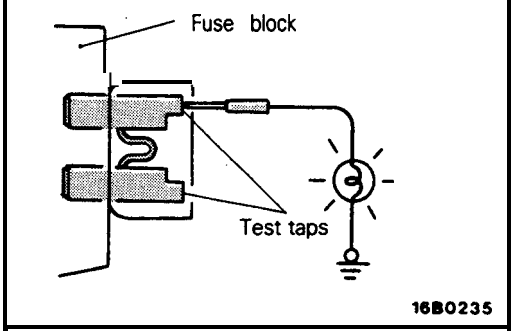
NOTE
The deenergized state means that no current is flowing through the coil and the energized state means that current is flowing through the coil.



When a normal close type relay as illustrated here is checked, there should be continuity between terminals (1) and (2) and between terminals 3 and 4 when the relay is deenergized, and the continuity should be lost between terminals 3 and 4 when the battery voltage is applied to the terminals 1 and 2. A relay can be checked in this manner and it cannot be determine if a relay is okay or faulty by checking its state only when it is deenergized (or energized).

CHECKING FUSES

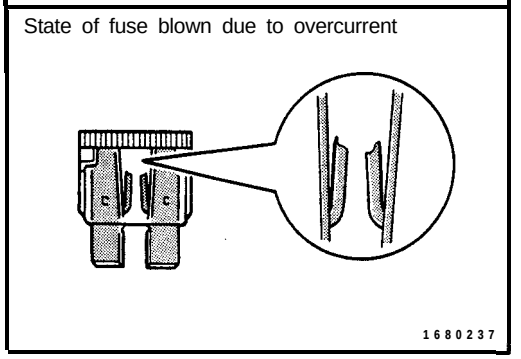
A blade type fuse has test taps provided to allow checking of the fuse itself without removing it from the fuse block. The fuse is okay if the test light comes on when its one lead is connected to the test taps (one at a time) and the other lead is grounded. (Change the ignition switch position adequately so that the fuse circuit becomes live.)

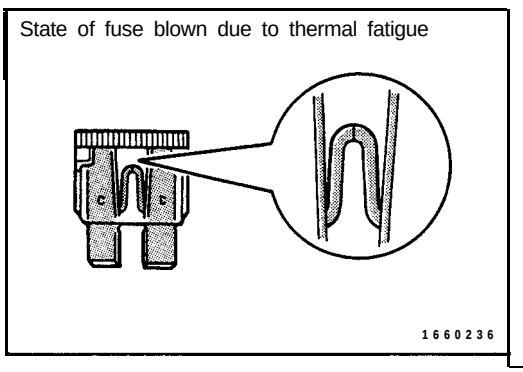


CAUTIONS IN EVENT OF BLOWN FUSE

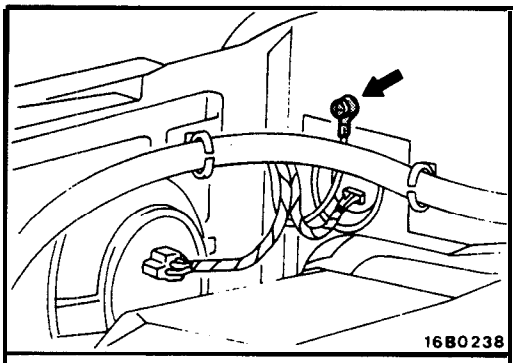
When a fuse is blown, there are two probable causes as follows: One is that it is blown due to flow of current exceeding its rating.
The other is that it is blown due to repeated on/off current flowing through it. Which of the two causes is responsible can be easily determined by visual check as described below.

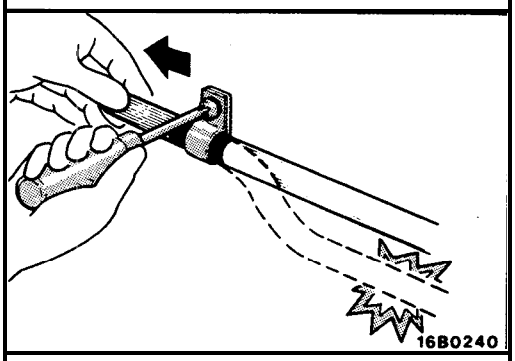
(1) Fuse blown due to current exceeding rating
The illustration shows the state of a fuse blown due to this cause. In this case, do not replace the fuse with a new one hastily since a current heavy enough to blow the fuse has flowed through it. First, check the circuit for shorting and check for abnormal electric parts. Only after the correction of such shorting or parts, fuse of the same capacity should be used as a replacement. Never use a fuse of larger capacity than the one that has blown. If such a fuse is used, electric parts or wirings could be damaged before the fuse blows in the event an overcurrent occurs again.

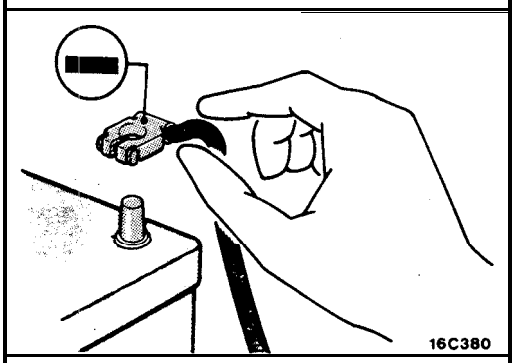


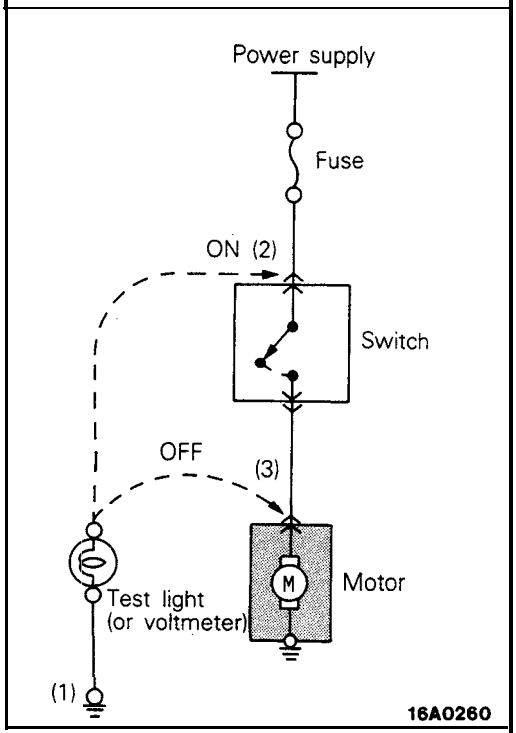


(2) Fuse blown due to repeated current on/off
The illustration shows the state of a fuse blown due to repeated current on/off. Normally, this type of problem occurs after fairly long period of use and hence is less frequent than the above type. In this case, you may simply replace with a new fuse of the same capacity.


16B0238


16B0240


16C380



16A0260

CHECKING CABLES AND WIRES

1. Check connections for looseness, rust and stains.
2. Check terminals and wires for corrosion by battery electrolyte, etc.
3. Check terminals and wires for open circuit or impending open circuit.
4. Check wire insulation and coating for damage, cracks and degrading.
5. Check conductive parts of terminals for contact with other metallic parts (vehicle body and other parts).
6. Check grounding parts to verify that there is complete continuity between attaching bolt(s) and vehicle body.
7. Check for incorrect wiring.
8. Check that wirings are so clamped as to prevent contact with sharp corners of the vehicle body, etc. or hot parts (exhaust manifold, pipe, etc.).
9. Check that wirings are clamped firmly to secure enough clearance from the fan pulley, fan belt and other rotating or moving parts.
10. Check that the wirings between the fixed parts such as the vehicle body and the vibrating parts such as the engine are made with adequate allowance for vibrations.

HANDLING ON-VEHICLE BATTERY

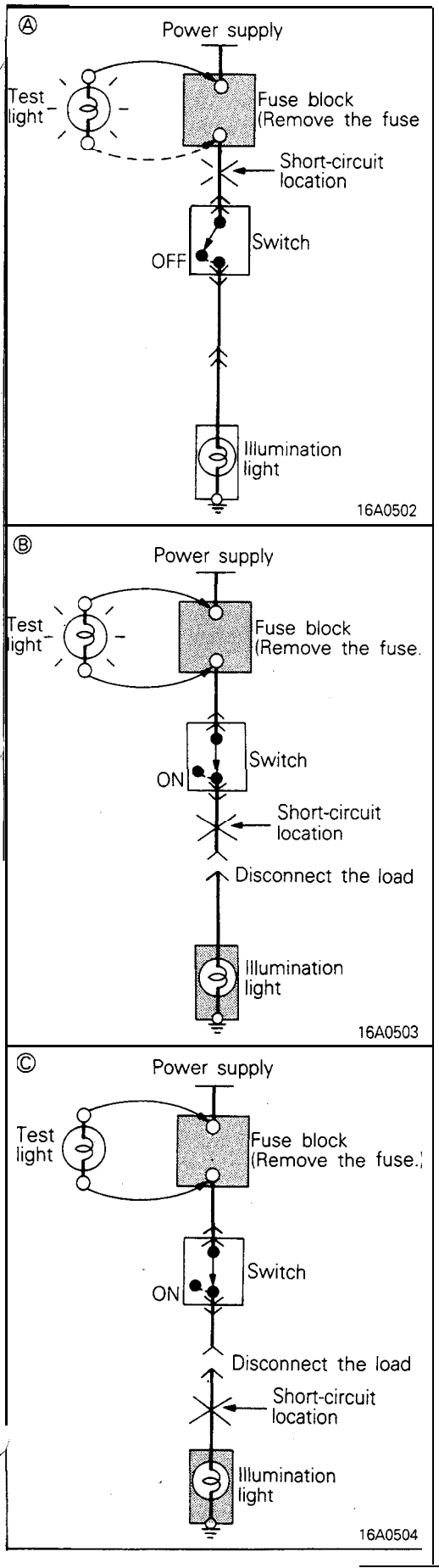
When checking or servicing does not require power from the on-vehicle battery, be sure to disconnect the cable from the battery (–) terminal. This is to prevent problems that could be caused by shorting of the circuit. Disconnect the (–) terminal first and reconnect it last.

TROUBLESHOOTING

A circuit consists of the power supply, switch, relay, load, ground, etc. There are various methods to check a circuit including an overall check, voltage check, shortcircuit check and continuity check. Each of these methods is briefly described in the following.

1. VOLTAGE CHECK

(1) Ground one lead wire of the test light. If a voltmeter is used instead of the test light, ground the grounding side lead wire.
(2) Connect the other lead wire of the test light to the power side terminal of the switch connector. The test light should come on or the voltmeter should indicate a voltage.
(3) Then, connect the test light or voltmeter to the motor connector. The test light should not come on, or the voltmeter should indicate no voltage. When the switch is turned on in this state, the test light should come on, or the voltmeter should indicate a voltage, with motor starting to run.
(4) The circuit illustrated here is normal but if there is any problem such as the motor failing to run, check voltages beginning at the connector nearest to the motor until the faulty part is identified.



2. CHECKING SHORT CIRCUITS

A blown fuse indicates that a circuit is shorted. The circuit responsible can be determined by the following procedures.

Remove the blown fuse and connect a test light in its place (Switch is in the OFF position)

↓

• Test light comes on → YES → Short circuit between fuse block and switch Ⓐ

NO ↓

Turn on the switch (Test light comes on but the illumination light does not come on)

↓

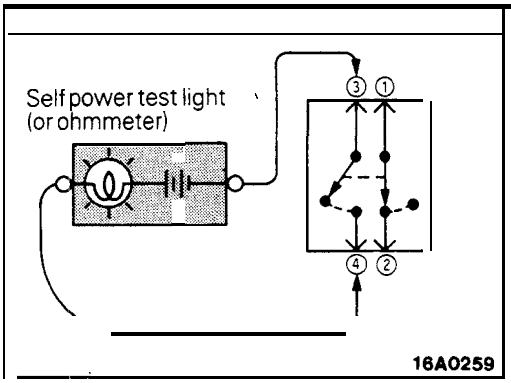
Disconnect the illumination light connector

↓

• Test light remains on → YES → Short circuit between the switch and illumination light connector Ⓑ

NO ↓

Short circuit between the illumination light connector and illumination light Ⓒ



3. CHECKING CONTINUITY

(1) When the switch is in the OFF position, the self power test light should come on or the ohmmeter should read 0 ohm only when the terminals 1 and 2 are interconnected.

(2) When the switch is the ON position, the self power test light should come on or the ohmmeter should read 0 ohm only when the terminals 3 and 4 are interconnected.

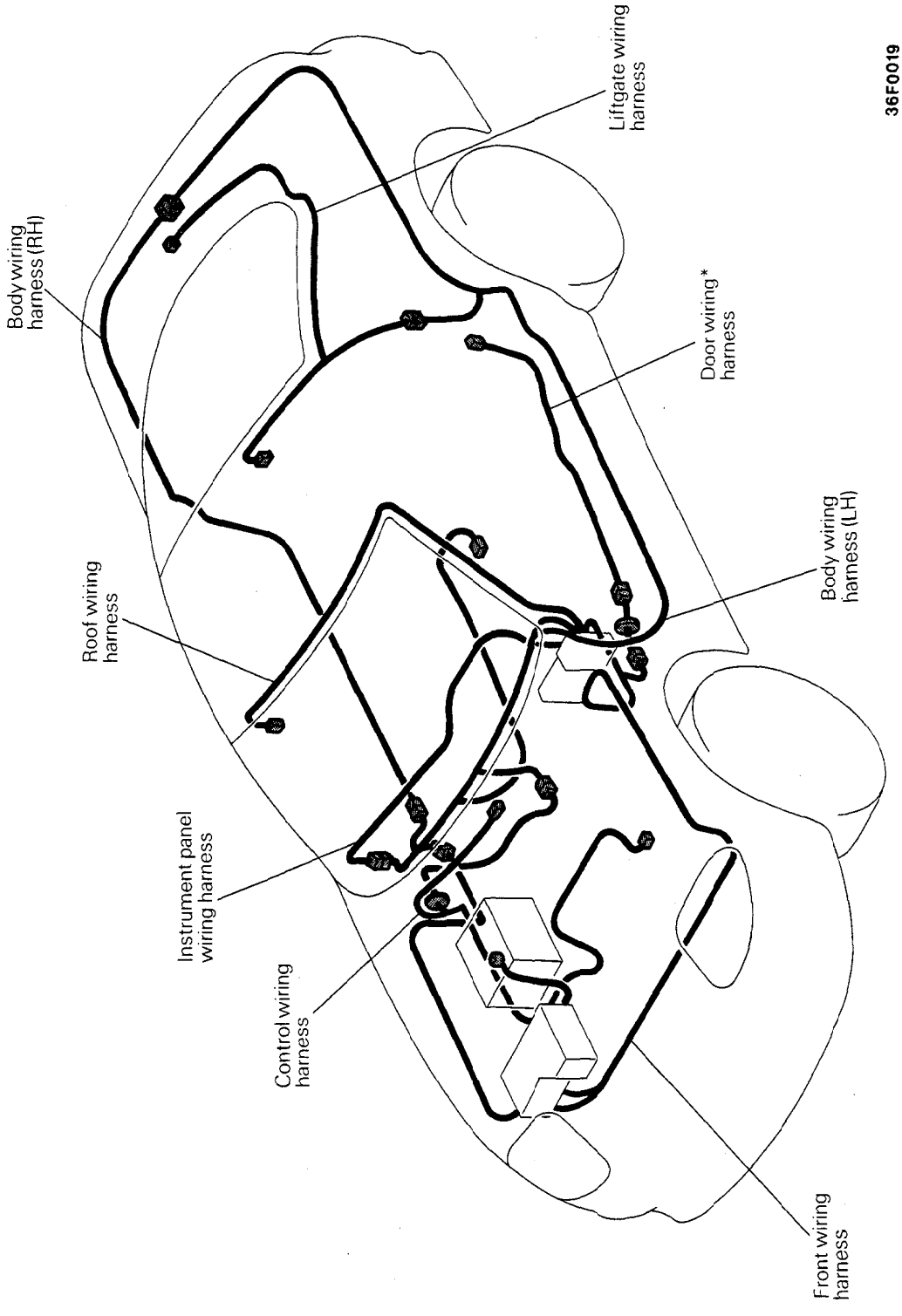
CONFIGURATION DIAGRAM

CONTENTS

M16VA--

OVERALL CONFIGURATION DIAGRAM

M16VB--



NOTE
(1) This illustration shows only the major wiring harnesses.
(2) * indicates also equipped at the right side.

HOW TO READ CONFIGURATION DIAGRAMS

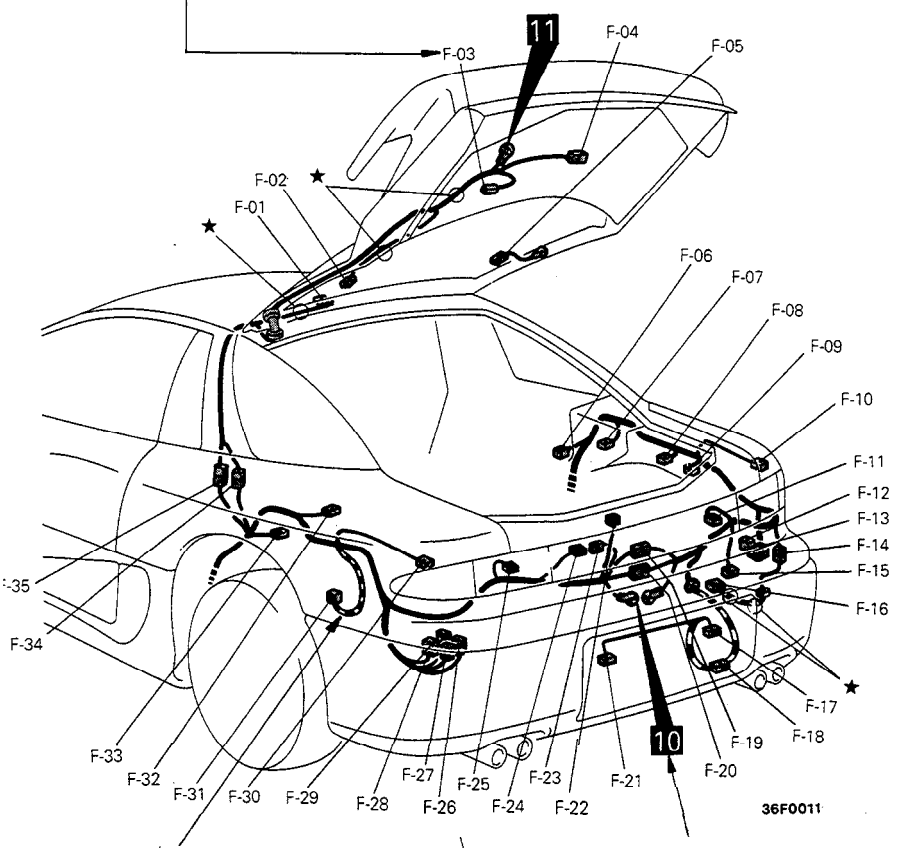
M16VCAF

The wiring harness diagrams clearly show the connector locations and harness routings at each site on actual vehicles.

Denotes connector No.
The same connector No. is used throughout the circuit diagrams to facilitate connector location searches.
The first alphabetical symbol indicates the location site of the connector and a number that follows in the unique number.
Numbers are assigned to parts in clockwise order on the diagram.
In case connectors of the same shape (same number of poles) are located close to each other, connector colors are shown to aid in identification.

Example: A-12 (black)

- A: Connector location site symbol
  - A: Engine compartment
  - B: Engine and transaxle
  - C: Dash panel
  - D: Instrument panel and floor console
  - E: Interior
  - F: Luggage compartment
- 12: Number specific to connector (serial number)
- (black): Connector color



Denotes a section cov Denotes a corrugated tube.

ground point.
Same ground number is used throughout circuit diagrams to facilitate search of ground point. Refer to GROUNDING LOCATION for details of ground points.

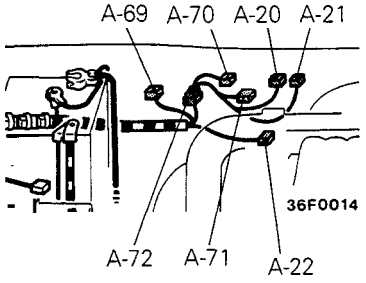
TSB Revision

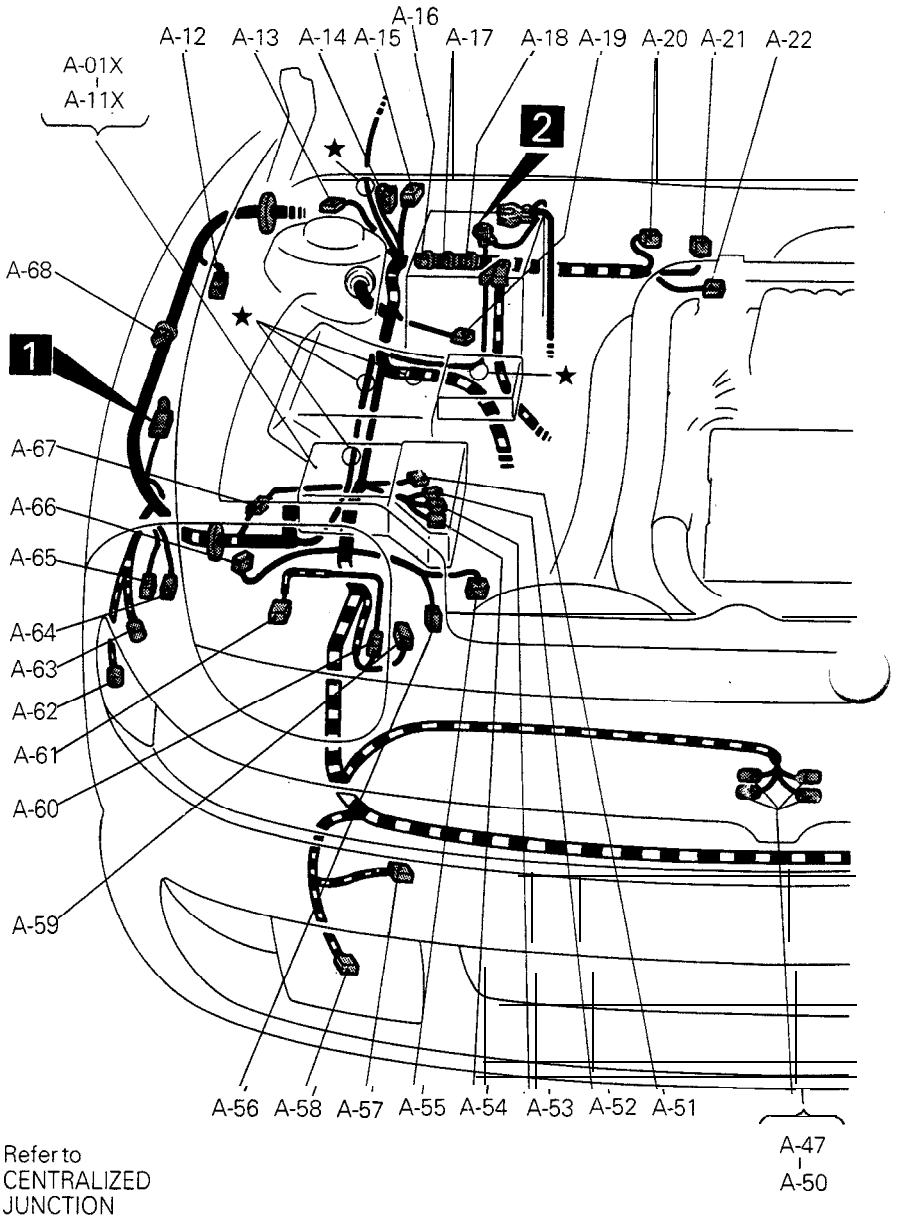
ENGINE COMPARTMENT

Connector symbol

A

<Turbo>



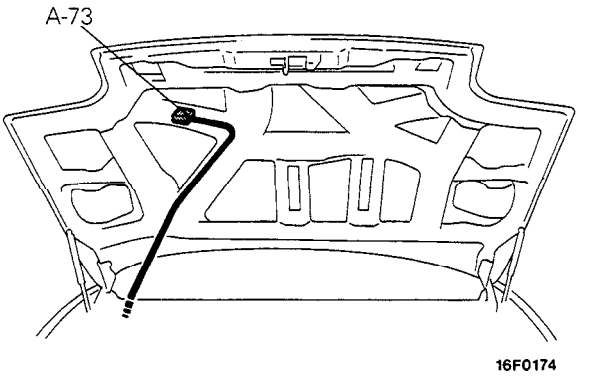


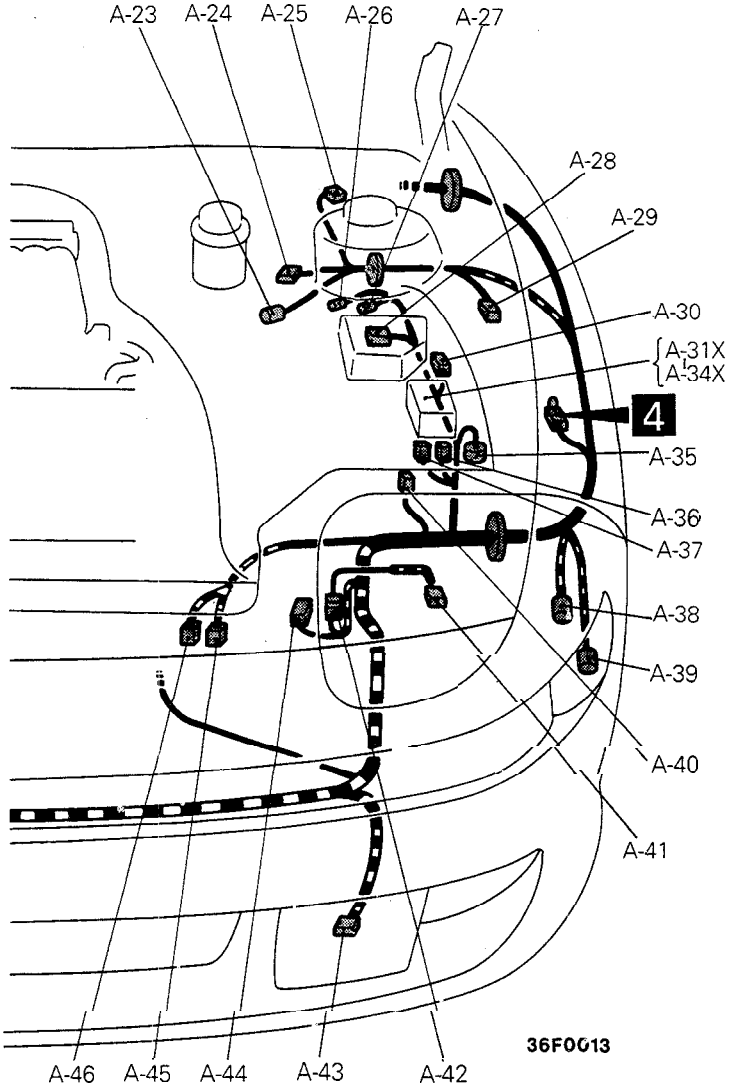
A-01X Headlight relay
A-02X ABS power relay
A-03X Foglight relay
A-04X Radiator fan motor relay (LO)
A-05X Taillight relay
A-06X Horn relay
A-07X Radiator fan motor relay (HI)
A-08X Pop-up motor relay
A-09X Starter relay
A-10X Alternator relay
A-11X Jumper connector

} Refer to CENTRALIZED JUNCTION

A-12 ABS front speed sensor (RH)
A-13 ECS front shock absorber (RH)
A-14 Washer fluid level sensor
A-15 Front wiper motor
A-16 Engine speed detection connector
A-17 Fuel pump check connector
A-18 Ignition timing adjustment connector
A-19 Front washer motor
A-20 Purge control solenoid valve
A-21 EGR control solenoid valve (Vehicles for California)
A-22 EGR temperature sensor (Vehicles for California)
A-23 No connection <Turbo>
A-24 Brake fluid level sensor
A-25 ECS front shock absorber (LH)
A-26 } Theft-alarm horn
A-27 }
A-28 Auto-cruise vacuum pump
A-29 ABS front speed sensor (LH)
A-30 4WS fluid level sensor <Turbo>

ENGINE HOOD





A-31X Condenser fan motor relay (HI)
A-32X Radiator fan motor control relay
A-33X Magnetic clutch relay
A-34X Condenser fan motor relay (LO)
} Refer to CENTRALIZED JUNCTION

A-35 Dual pressure switch
A-36 } Air conditioner relay box
A-37 }
A-38 SRS front impact sensor (LH)
A-39 Front combination light (LH)
A-40 Inspection light switch

A-41 Headlight (LH)
A-42 Front wiring harness and headlight wiring harness (LH) combination
A-43 Fog light (LH)
A-44 Pop-up motor (LH)
A-45 } Condenser fan motor
A-46 }
A-47 } Horn
A-50 }
A-51 Fuel pump resistor <Turbo>
A-52 A/T fluid temperature sensor
A-53 Kickdown servo switch <A/T>
A-54 Pulse generator <A/T>
A-55 Radiator fan motor
A-56 Engine coolant level sensor
A-57 Active aero front venturi skirt
A-58 Fog light (RH)
A-59 Pop-up motor (RH)
A-60 Front wiring harness and headlight wiring harness (RH) combination
A-61 Headlight (RH)
A-62 Front combination light (RH)
A-63 SRS front impact sensor (RH)
A-64 } ABS hydraulic unit
A-65 }
A-66 Hood switch
A-67 Front wiring harness and control wiring harness combination
A-68 Diode (for ABS circuit)
A-69 Resistor <Turbo>
A-70 Waste gate solenoid valve <Turbo>
A-71 Fuel pressure solenoid valve <Turbo>
A-72 Control wiring harness and solenoid valve harness combination
A-73 Inspection light

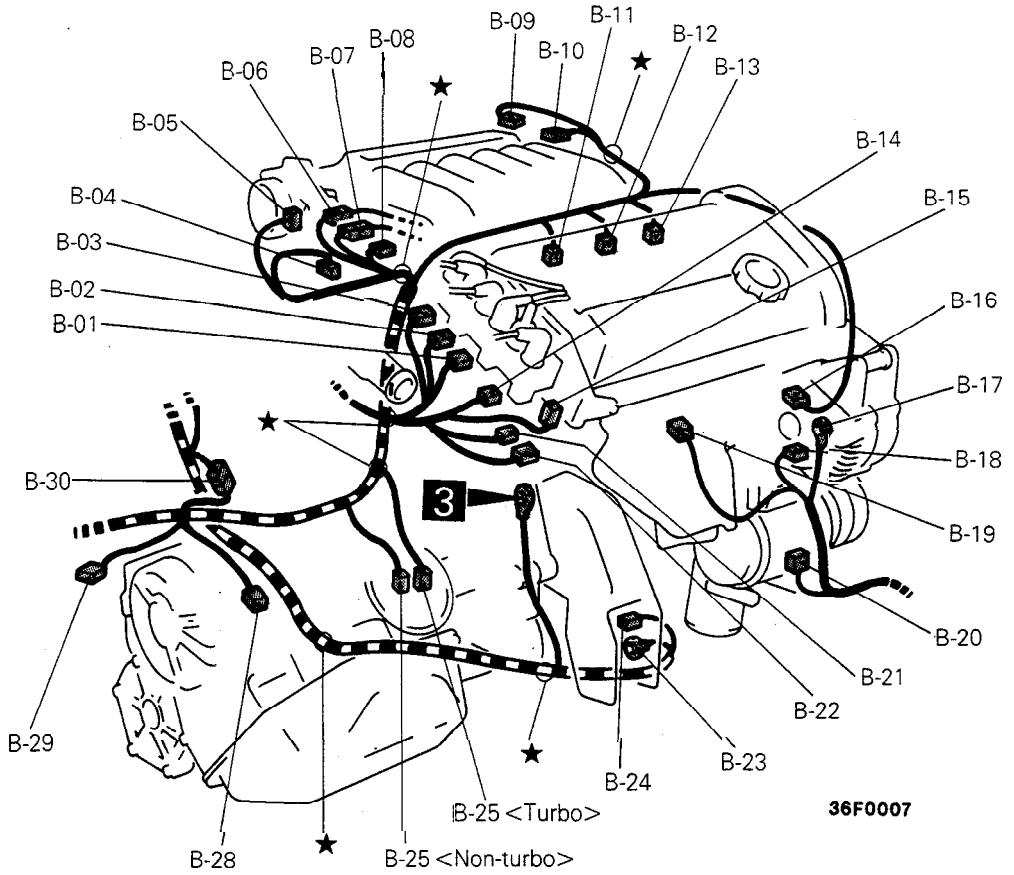
Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: 1), refer to P.4.

ENGINE AND TRANSAXLE <M/T>

Connector symbol

B

Front View

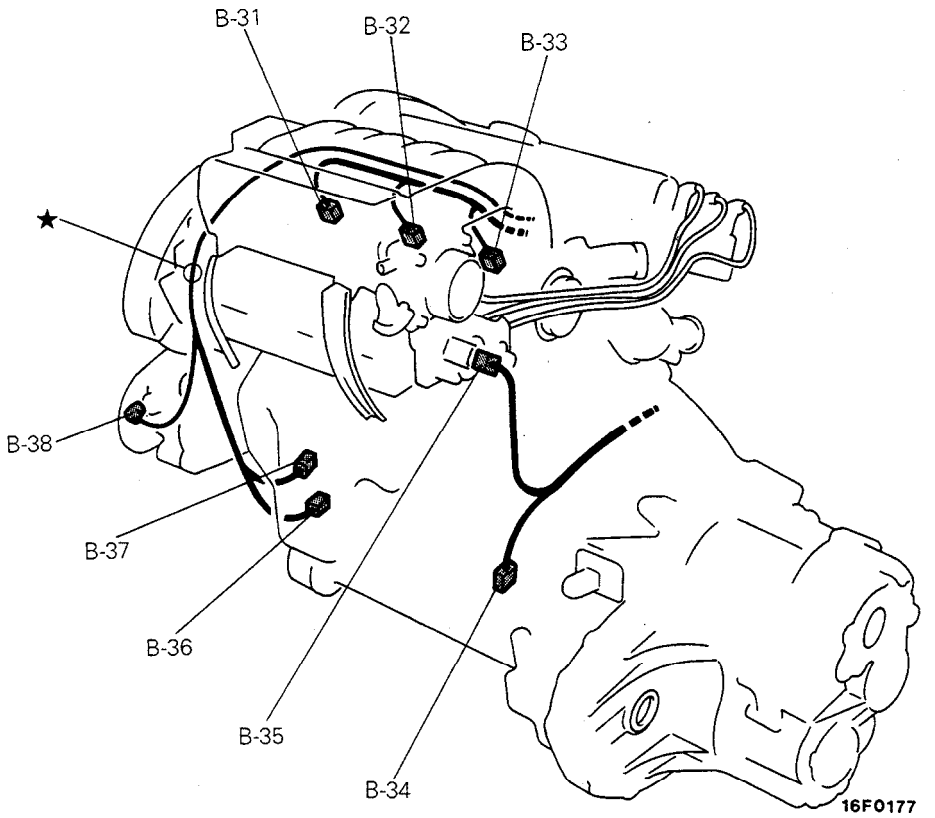


B-01 Engine coolant temperature gauge unit
B-02 Engine coolant temperature sensor
B-03 Engine coolant temperature switch (for air conditioner circuit)
B-04 Crank angle sensor and top dead center sensor
B-05 Throttle position sensor
B-06 Control wiring harness and oil pressure wiring harness combination
B-07 Control wiring harness and injector wiring harness combination
B-08 Detonation sensor

B-09 } Variable induction servo motor
B-10 } (with intake control valve position sensor) <Non-Turbo>
B-11 Injector No. 5
B-12 Injector No. 3
B-13 Injector No. 1
B-14 Ignition coil
B-15 Capacitor
B-16 Oxygen sensor (LH) <Turbo>
B-17 } Alternator
B-18 }
B-19 Oxygen sensor (RH) <Turbo>
B-20 Magnetic clutch
B-21 } Power transistor
B-22 }

TSB Revision

Rear View



B-23 } Starter motor
B-24
B-25 Back-up light switch
B-26 –
B-27 –
B-28 Fuel pump relay <Turbo>
B-29 Air flow sensor (with intake air temperature sensor and atmospheric sensor)
B-30 Control wiring harness and battery cable combination
B-31 Injector No. 2
B-32 Injector No. 4
B-33 Injector No. 6
B-34 Speed sensor <Turbo>
B-35 Idle speed control servo (stepper motor)
B-36 Oil pressure gauge unit
B-37 Oil pressure switch
B-38 Power steering oil pressure switch

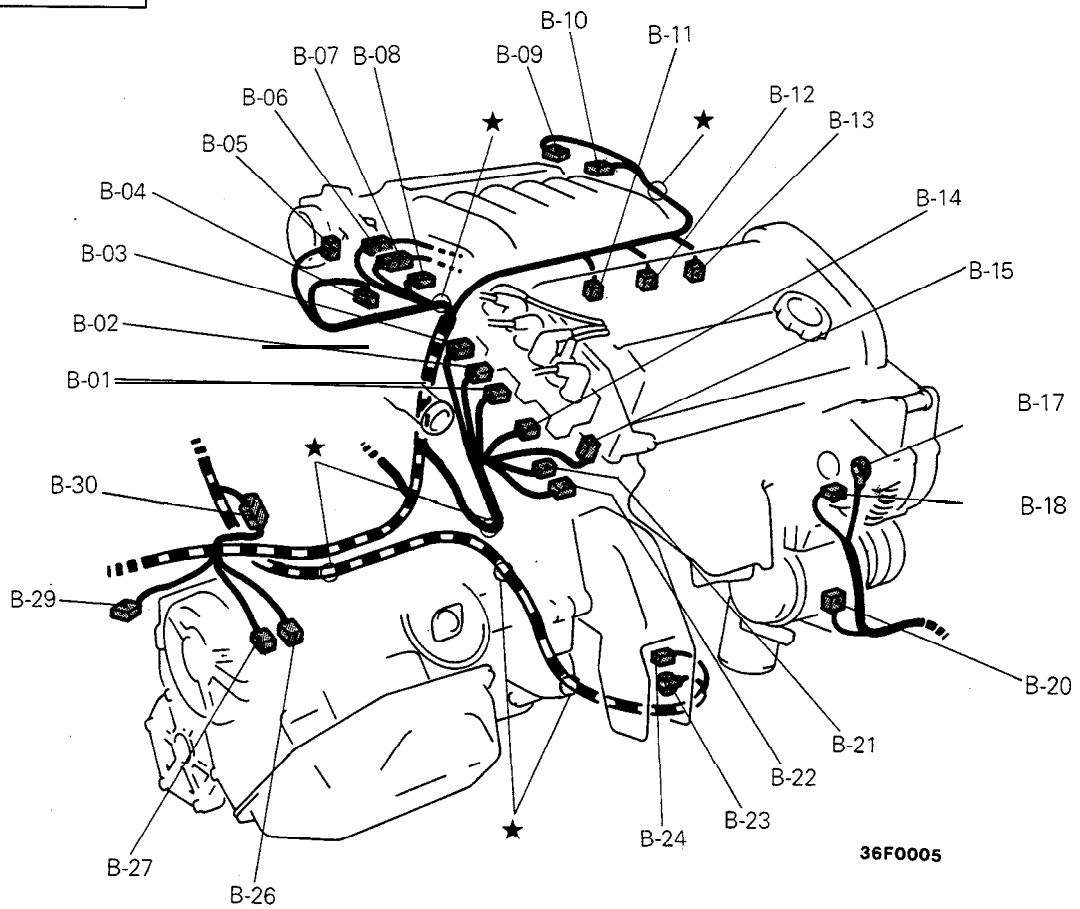
Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: 3), refer to P.4.
(3) "–" means that the connector with code-number is not used.

ENGINE AND TRANSAXLE <A/T>

Connector symbol

B

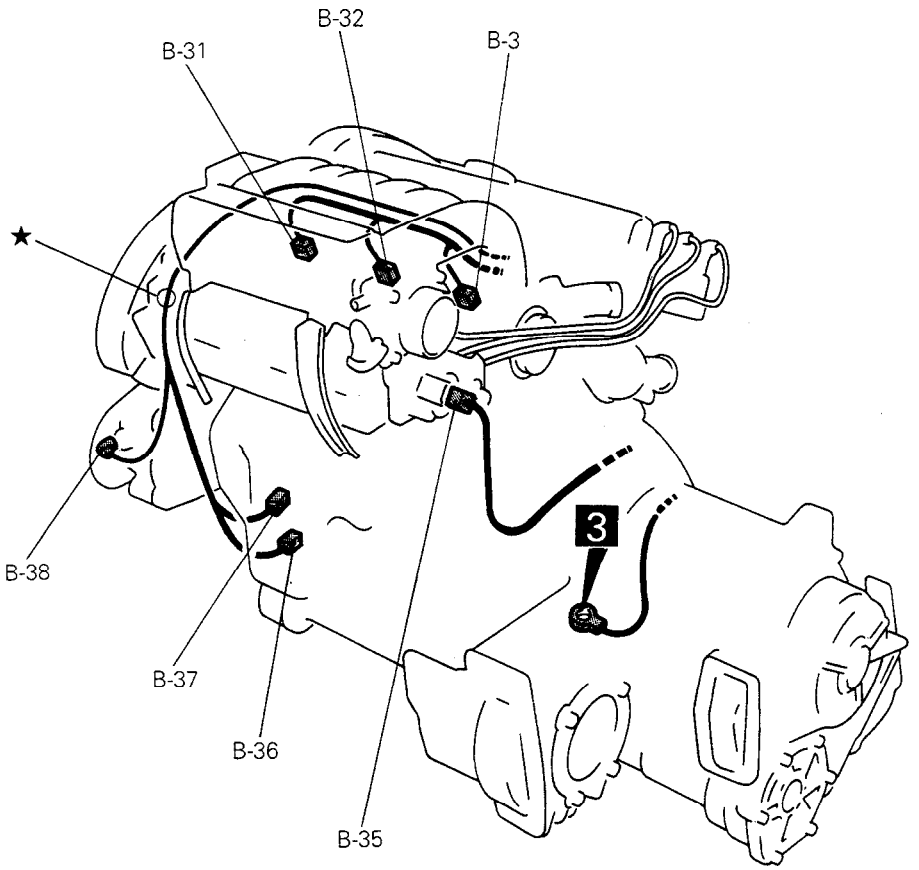
Front View



B-01 Engine coolant temperature gauge unit
B-02 Engine coolant temperature sensor
B-03 Engine coolant temperature switch (for air conditioner circuit)
B-04 Crank angle sensor and top dead center sensor
B-05 Throttle position sensor
B-06 Control wiring harness and oil pressure wiring harness combination
B-07 Control wiring harness and injector wiring harness combination
B-08 Detonation sensor
B-09 Variable induction servo motor
B-10 } (with intake control valve position sensor)

B-11 Injector No. 5
B-12 Injector No. 3
B-13 Injector No. 1
B-14 Ignition coil
B-15 Capacitor
B-16 –
B-17 } Alternator
B-18 }
B-19 –
B-20 Magnetic clutch
B-21 } Power transistor
B-22 }

Rear View



36F0004

B-23, B-24 } Starter motor
B-25
B-26 Inhibitor switch
B-27 ELC-4 A/T control solenoid valve
B-28 –
B-29 Air flow sensor (with intake air temperature sensor and atmospheric sensor)
B-30 Control wiring harness and battery cable combination
B-31 Injector No. 2
B-32 Injector No. 4
B-33 Injector No. 6
B-34 –
B-35 Idle speed control servo (stepper motor)
B-36 Oil pressure gauge unit
B-37 Oil pressure switch
B-38 Power steering oil pressure switch

Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: 3), refer to P.4.
(3) "–" means that the connector with code-number is not used.

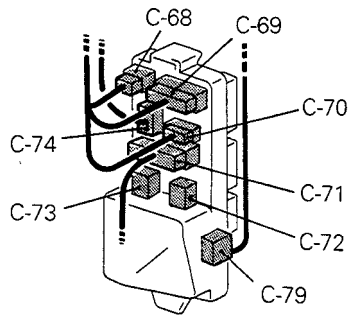
DASH PANEL

Connector symbol

C

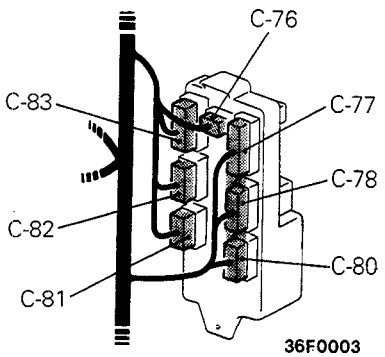
JUNCTION BLOCK

<Front side>

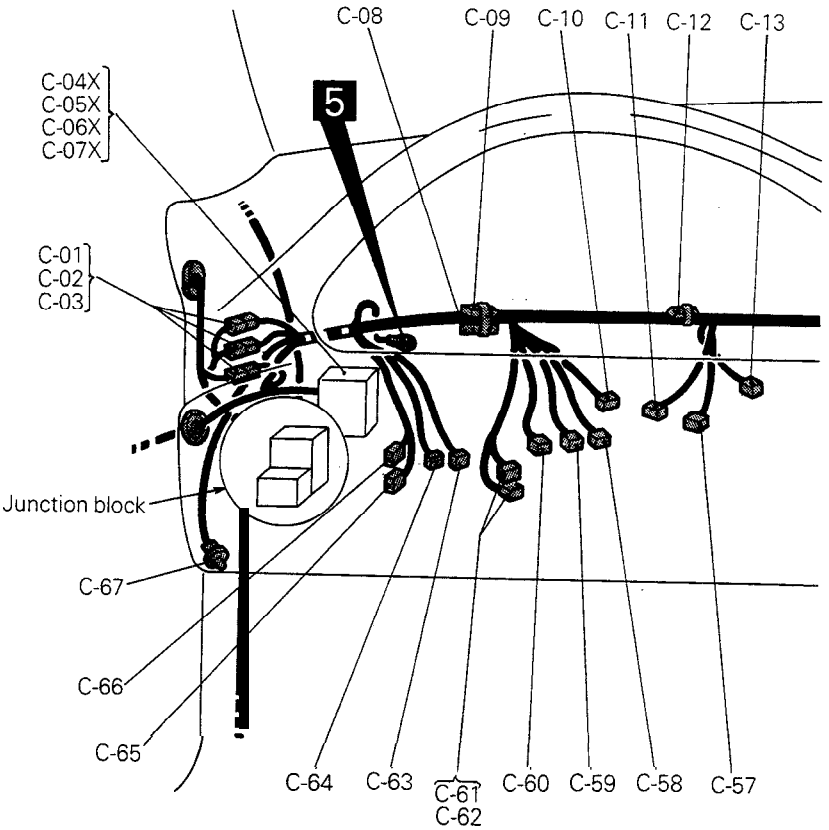


36FOOOI

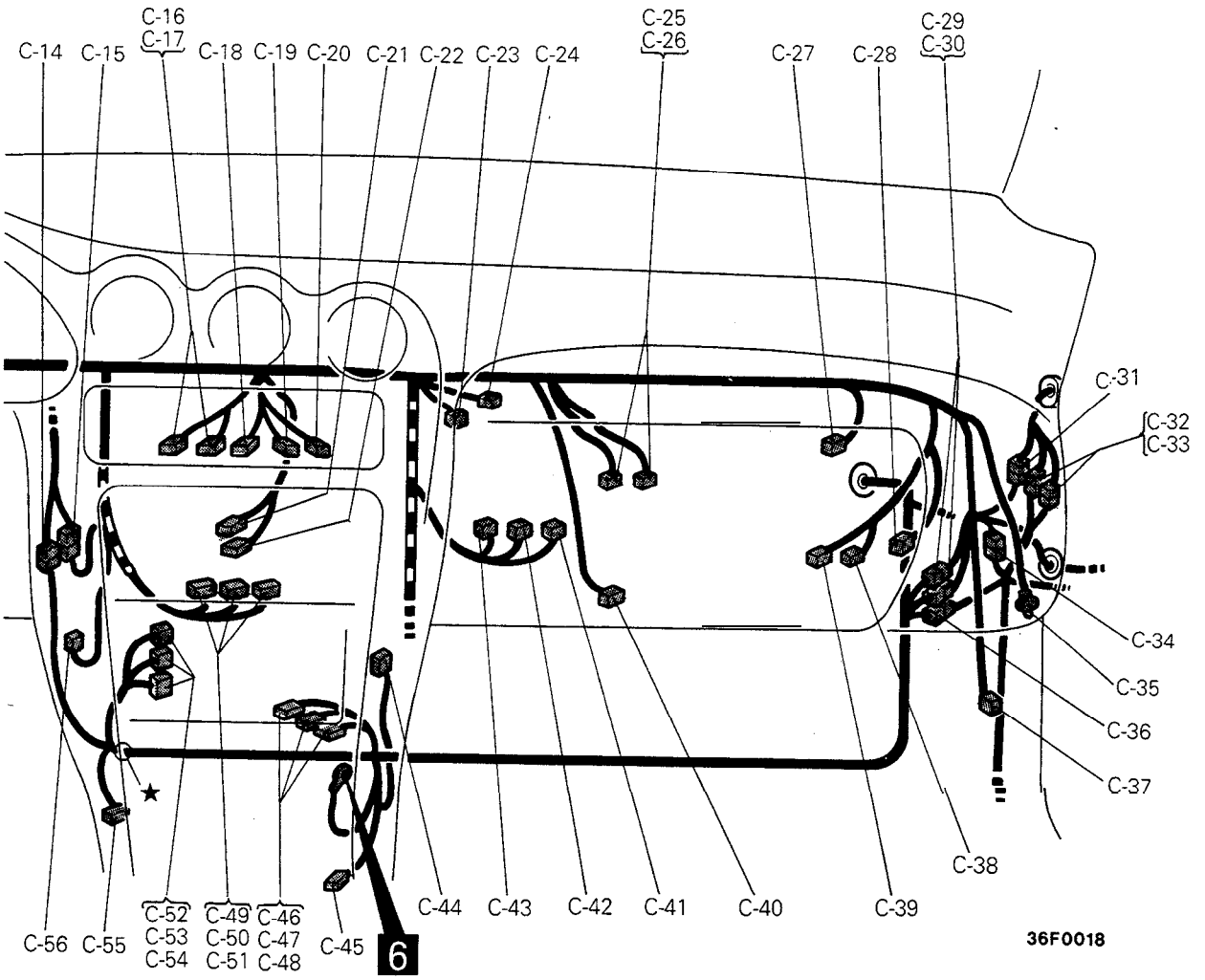
<Rear side>



36F0003



C-01, C-02, C-03 } Body wiring harness (LH) and front wiring harness combination
C-04X Door lock relay
C-05X –
C-06X Defogger relay
C-07X Power window relay } Refer to CENTRALIZED JUNCTION
C-08, C-09 } Diode (for seat belt warning circuit)
C-10, C-11 } Column switch
C-12 Diode (for theft-alarm circuit)
C-13 Accelerator pedal switch
C-14 Control wiring harness and instrument panel wiring harness combination
C-15 Body wiring harness (LH) and instrument panel wiring harness combination
C-16, C-17 } Air conditioner control panel
C-18 Air conditioner switch
C-19 Blower switch
C-20 Heater control panel illumination light
C-21 Blend air damper control motor
C-22 Mode selection damper control motor
C-23 Power transistor (for full-auto air conditioner circuit)
C-24 Blower resistor
C-25, C-26 } Air conditioner control unit <Manual air conditioner>
C-27 Air-inlet sensor <Full-auto air conditioner>
C-28 Air selection damper control motor
C-29, C-30 } Body wiring harness (LH) and control wiring harness combination
C-31 Body wiring harness (LH) and front wiring harness combination
C-32, C-33 } Body wiring harness (RH) and front wiring harness combination
C-34 Body wiring harness (LH) and body wiring harness (RH) combination
C-35 Foot light (RH)
C-36 Body wiring harness (RH) and control wiring harness combination
C-37 Auto-cruise control unit
C-38 Blower motor
C-39 Blower motor relay (HI)
C-40 Air conditioner compressor lock controller
C-41 Air-inlet sensor <Manual air conditioner>



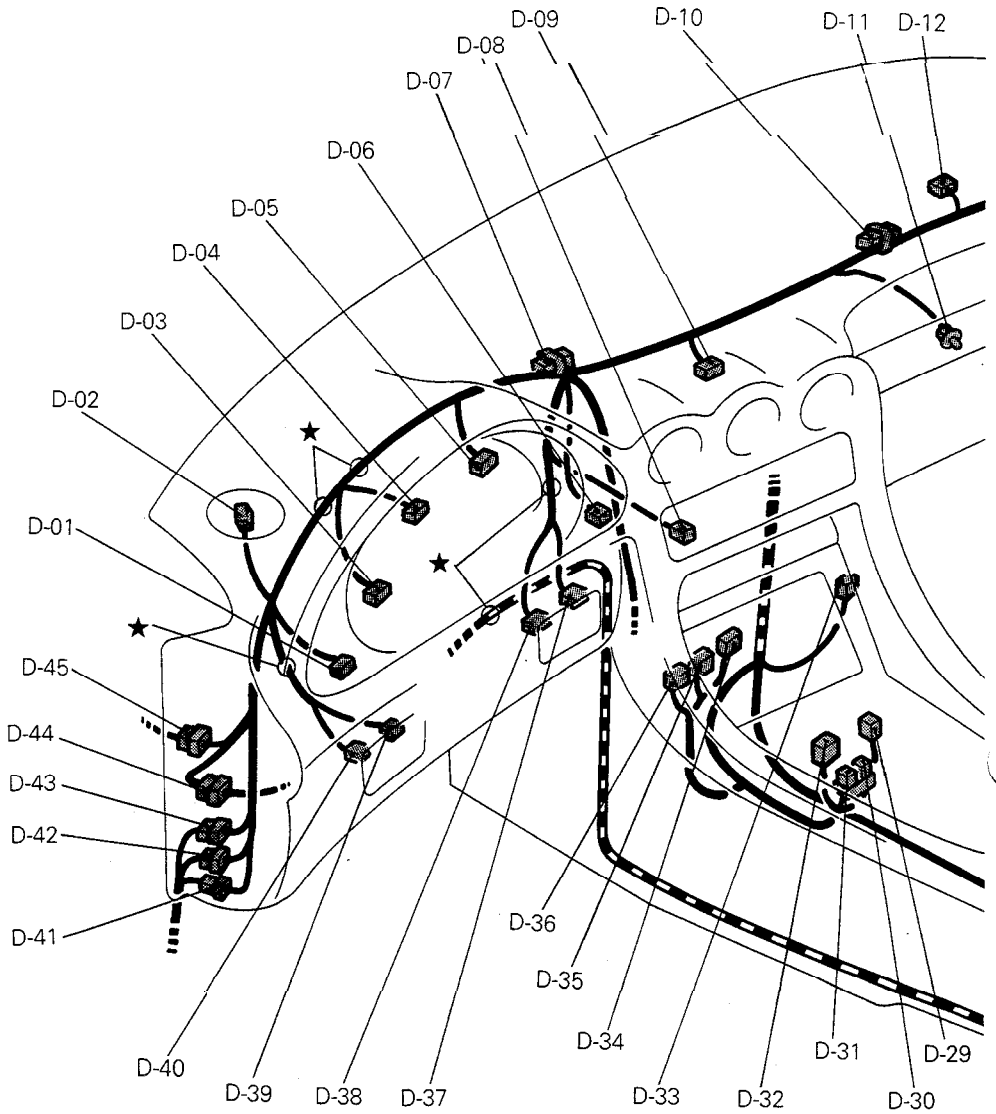
C-42 Air-thermo sensor
C-43 Engine coolant temperature sensor
C-44 Engine control relay
C-45 Over drive switch
C-46, C-47, C-48 } ELC-4 A/T control unit
C-49, C-50, C-51 } Air conditioner control unit <Full-auto air conditioner>
C-52, C-53, C-54 } Engine control unit
C-55 Oxygen sensor <Non-Trubo>
C-56 Theft-alarm starter relay
C-57 Clock spring
C-58 Key reminder switch
C-59 Ignition switch
C-60 Steering wheel angle speed sensor
C-61, C-62 } Stop light switch
C-63 Clutch pedal switch (for auto-cruise control circuit)
C-64 Clutch pedal switch (for theft-alarm circuit)
C-65, C-66 } ETACS unit
C-67 Foot light (LH)
C-68, C-69, C-70 } Front wiring harness and junction block combination
C-71 Adapter wiring harness and junction block combination
C-72 Theft-alarm horn relay
C-73 Blower motor relay
C-74 Roof wiring harness and junction block combination
C-75 –
C-76, C-77, C-78 } Body wiring harness (LH) and junction block combination
C-79 Self-diagnosis check connector
C-80, C-81, C-82, C-83 } Body wiring harness (LH) and junction block combination

Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) The details concerning the ground point (example: ❑), refer to P.5.
(3) "–" means that the connector with code-number is not used.

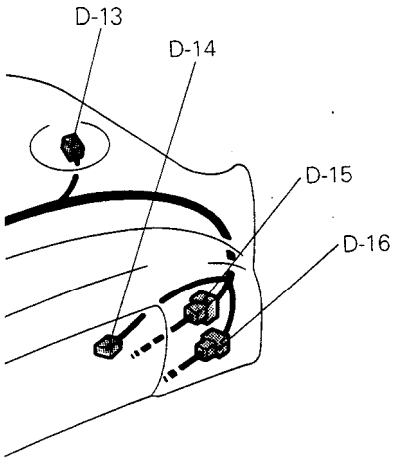
INSTRUMENT PANEL AND FLOOR CONSOLE

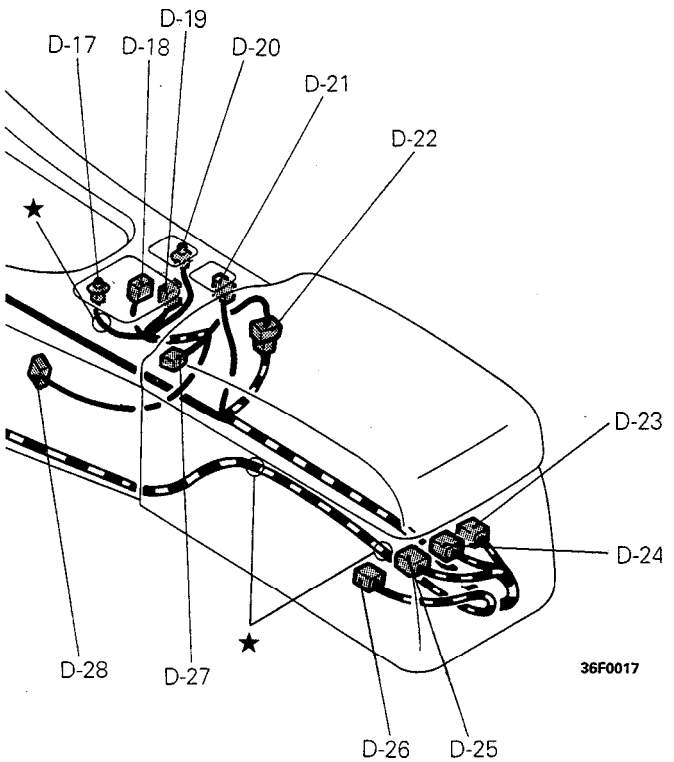
Connector symbol

D



D-01 Pop-up switch and fog light switch
D-02 Front speaker (LH)
D-03, D-04, D-05 } Combination meter
D-06 Defogger switch and ECS switch
D-07 Diode (for fog light circuit)
D-08 Hazard switch
D-09 Combination gauge
D-10 Diode (for 4WS fluid level warning light circuit)
D-11 Glove box illumination light
D-12 Photo sensor
D-13 Front speaker (RH)
D-14 Glove box illumination light switch
D-15 Instrument panel wiring harness and control wiring harness combination
D-16 Instrument panel wiring harness and body wiring harness (RH) combination
D-17 Ashtray illumination light
D-18, D-19 } Cigarette lighter
D-20 Cigarette lighter illumination light
D-21 Power seat switch
D-22 Body wiring harness (LH) and console wiring harness combination





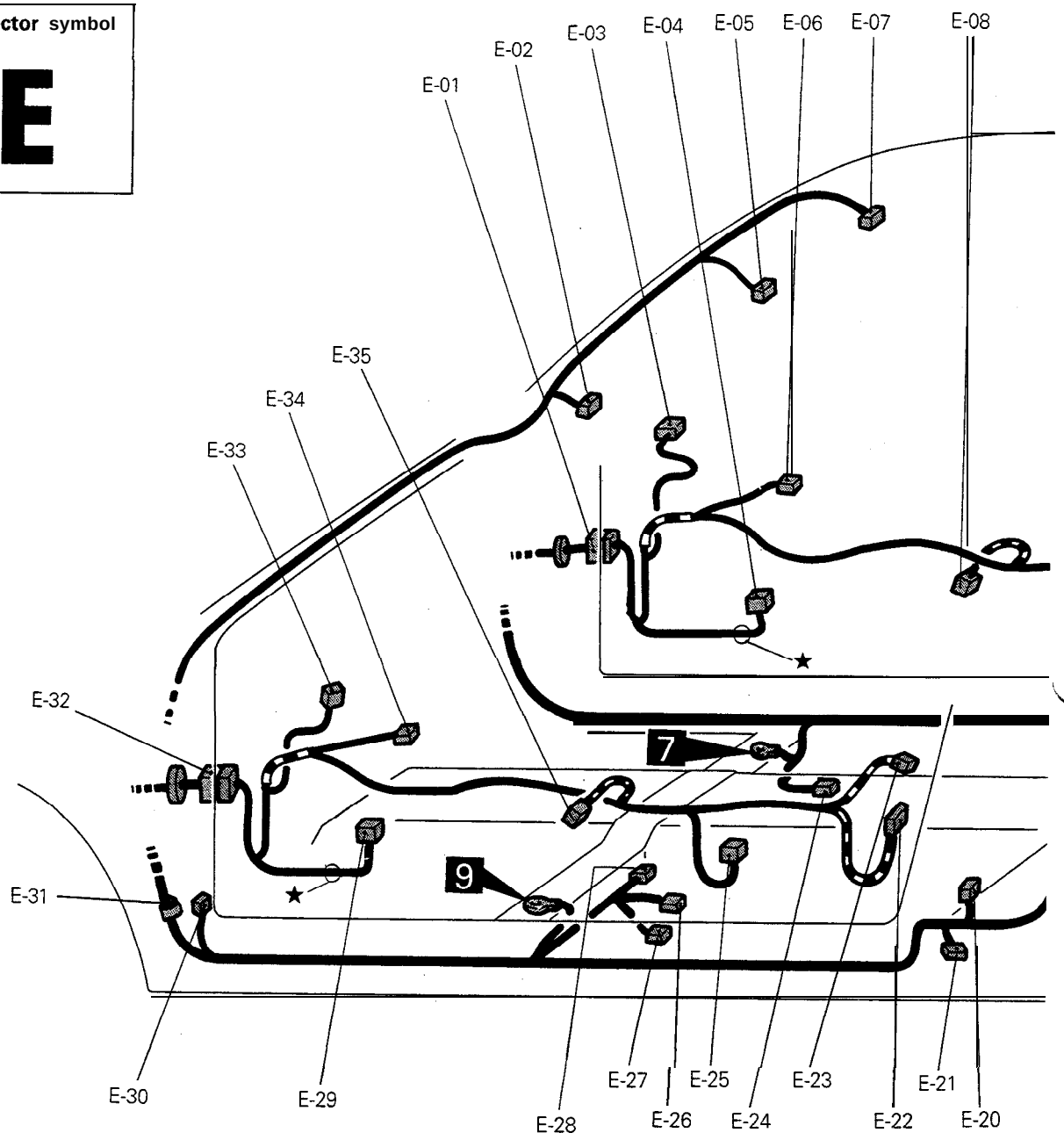
D-23, D-24, D-25, D-26: SRS diagnosis unit
D-27 ABS G sensor
D-28 Parking brake switch
D-29 Active aero switch
D-30, D-31: Accessory socket
D-32 Auto-cruise main switch
D-33 Seatbelt warning buzzer
D-34, D-35, D-36: Radio
D-37 Rear wiper and washer switch
D-38 Active exhaust switch
D-39 Remote-control mirror switch
D-40 Rheostat
D-41, D-42, D-43: Instrument panel wiring harness and body wiring harness (LH) combination
D-44 Instrument panel wiring harness and adapter wiring harness combination
D-45 Instrument panel wiring harness and front wiring harness combination

Remarks
The mark ★ shows the standard mounting position of wiring harness.

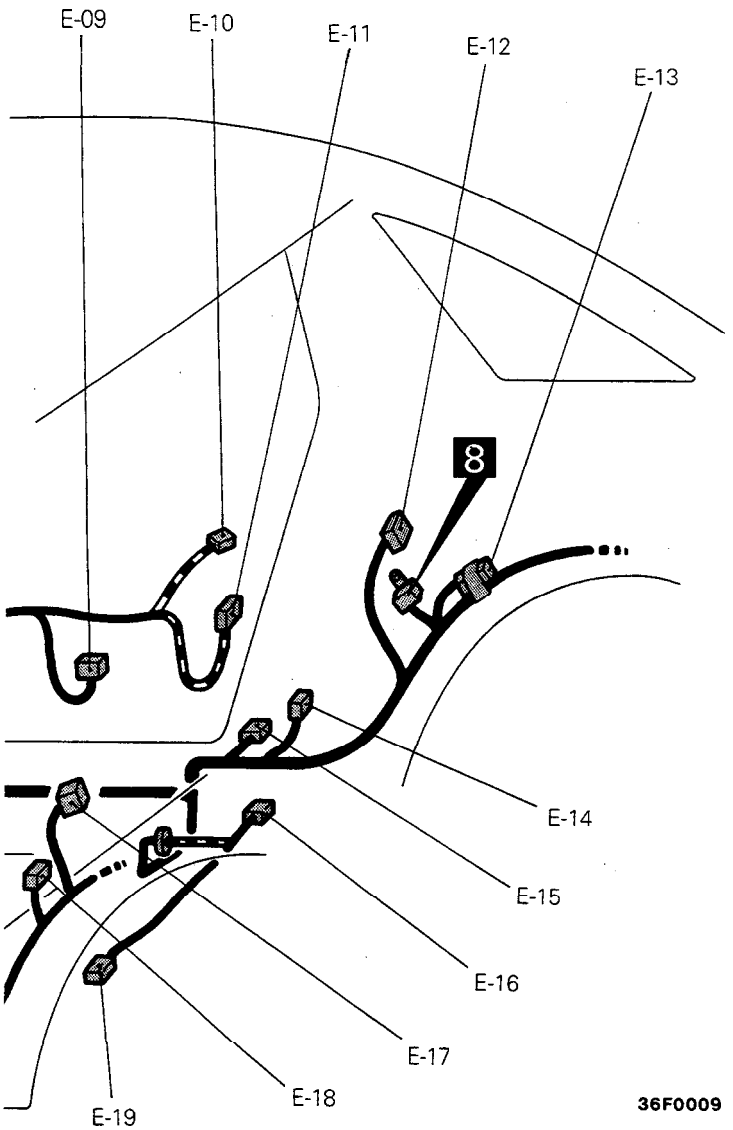
INTERIOR

Connector symbol

E



E-01 Body wiring harness (RH) and door wiring harness (RH) combination
E-02 Vanity mirror illumination light (LH)
E-03 Door mirror (RH)
E-04 Door speaker (RH)
E-05 Dome light
E-06 Power window sub switch
E-07 Vanity mirror illumination light (RH)
E-08 Power window motor (RH)
E-09 Door light (RH)
E-10 Door key cylinder unlock switch (RH)
E-11 Door lock actuator (RH)
E-12 ABS control unit
E-13 ABS resistor <AWD>
E-14 Front seat belt solenoid (RH)
E-15 Door switch (RH)
E-16 ABS rear speed sensor (RH)
E-17 No connection
E-18 Rear intermittent wiper relay
E-19 ABS rear speed sensor (LH)
E-20 Front seat belt solenoid (LH)
E-21 Door switch (LH)



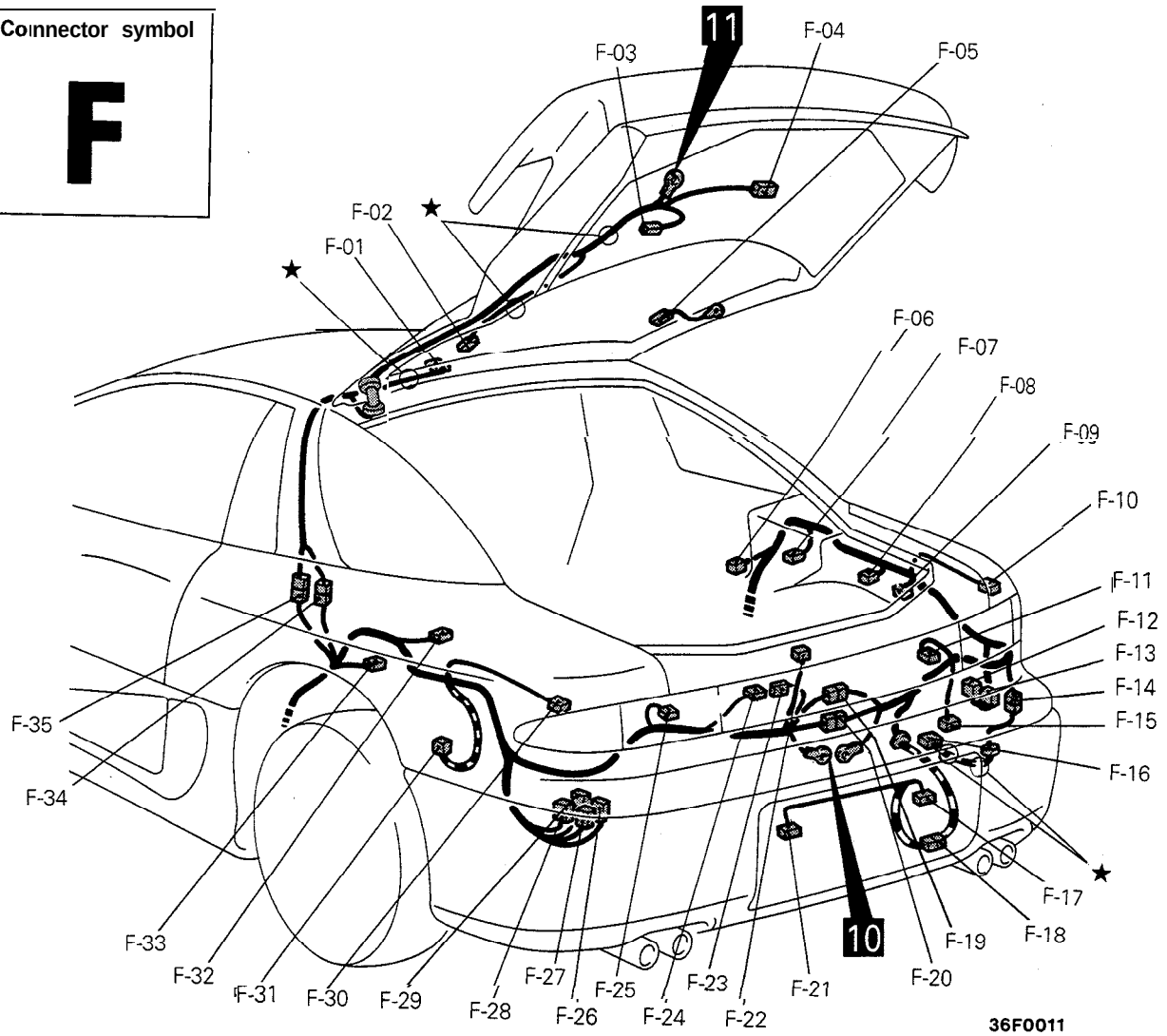
E-22 Door lock actuator (LH)
E-23 Door key cylinder unlock switch (LH)
E-24 Front seat belt switch (RH)
E-25 Door light (LH)
E-26 Front seat belt switch (LH)
E-27 Power seat assembly
E-28 ECS G sensor
E-29 Door speaker
E-30 Turn signal and hazard flasher unit
E-31 Diode (for MPI circuit)
E-32 Body wiring harness (LH) and door wiring harness (LH) combination
E-33 Door mirror (LH)
E-34 Power window main switch
E-35 Power window motor (LH)

Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: ❑), refer to P.5.

LUGGAGE COMPARTMENT

Connector symbol

F



F-01 Interior temperature sensor
F-02 Defogger (+)
F-03 Rear wiper motor
F-04 High-mounted stop light or active aero rear spoiler
E-05 Defogger (–)
F-06 Rear speaker (RH)
F-07 ECS rear shock absorber (RH)
F-08 Luggage compartment light
F-09 ABS resistor <FWD>
F-10 Rear combination light (RH)
F-11 Back-up light (RH)
F-12, F-13 } ECS control unit
F-14 Body wiring harness (RH) and fuel tank wiring harness combination
F-15 Rear washer motor
F-16 Fuel tank
F-17 License plate light (RH)
F-18 Body wiring harness (RH) and rear bumper wiring harness combination
F-19, F-20 } Body wiring harness (LH) and body wiring harness (RH) combination
F-21 License plate light (LH)
F-22 Luggage compartment light switch
F-23 Liftgate cylinder lock switch
F-24 Liftgate switch
F-25 Buck-up light (LH)
F-26 Active exhaust control unit
F-27, F-28 } Active aero control unit
F-29 Active exhaust actuator assembly
F-30 Rear combination light (LH)
F-31 Motor antenna control unit
F-32 ECS rear shock absorber (LH)
F-33 Rear speaker (LH)
F-34, F-35 } Body wiring harness (LH) and liftgate wiring harness combination

Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: 10), refer to P.6.

TSB Revision

CIRCUIT DIAGRAMS

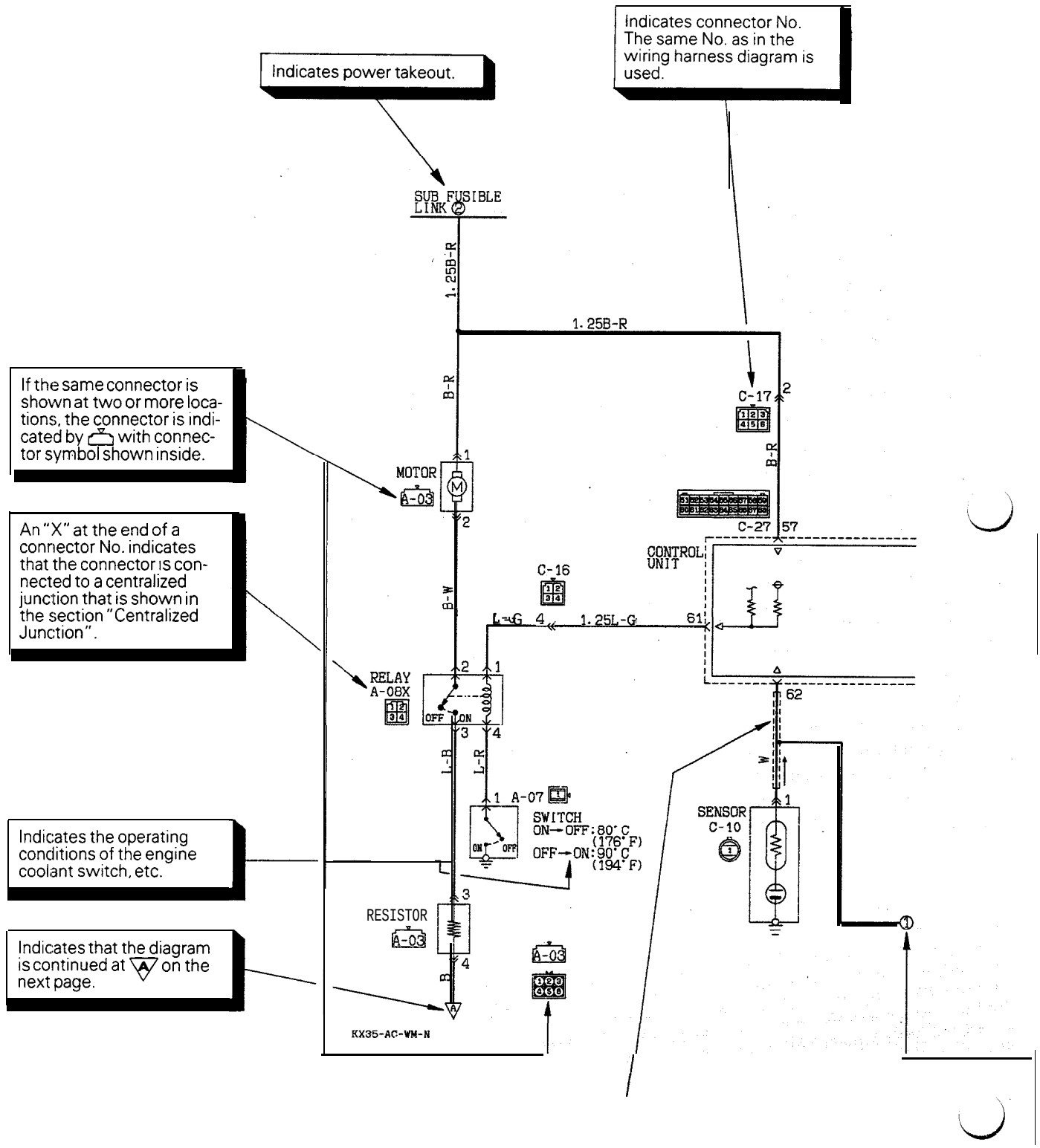
CONTENTS

M16VE-

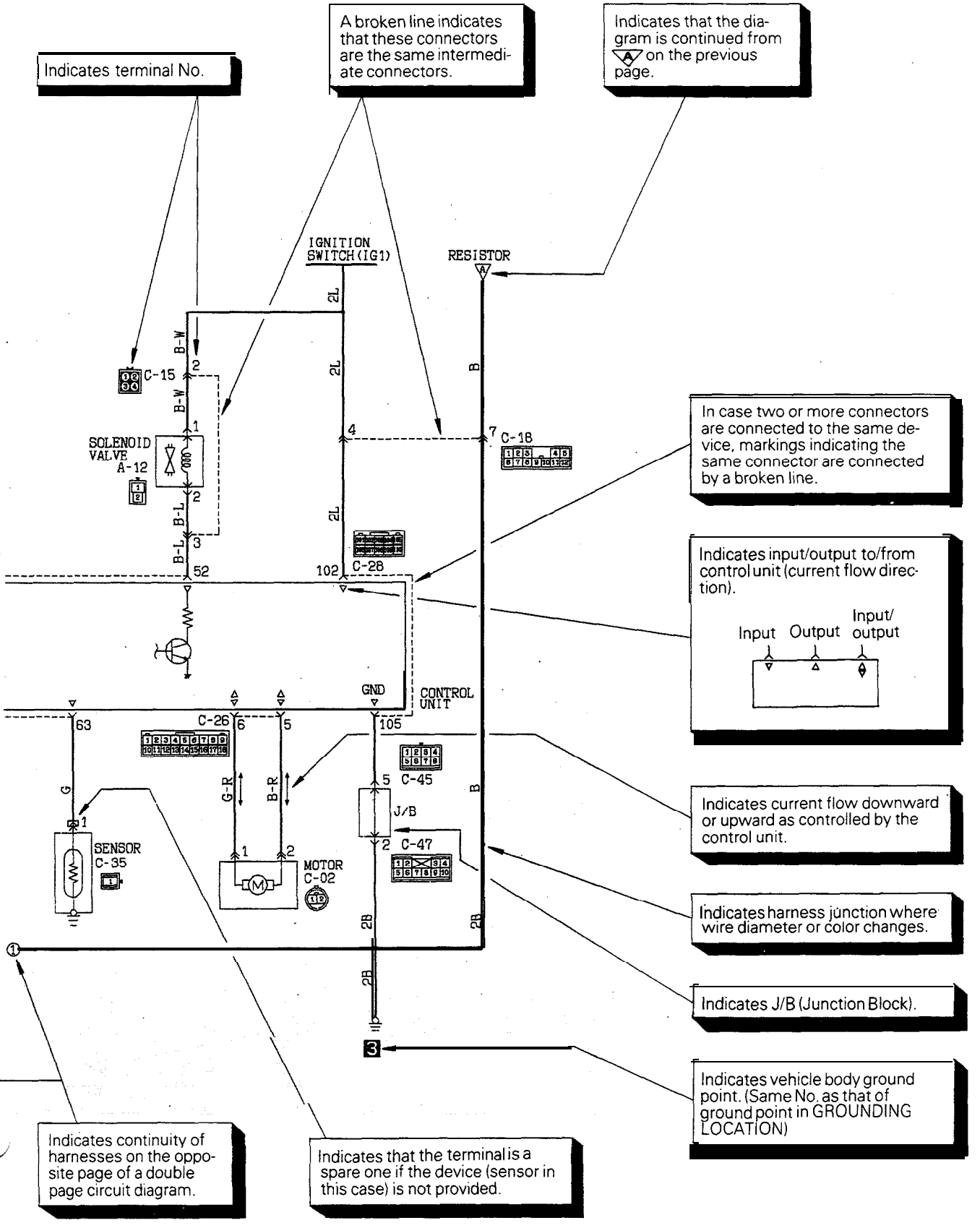
HOW TO READ CIRCUIT DIAGRAMS

M16VGAE

The circuit of each system from the fuse (or fusible link) to ground is shown. The power supply is shown at the top and the ground at the bottom to facilitate understanding of how the current flows.

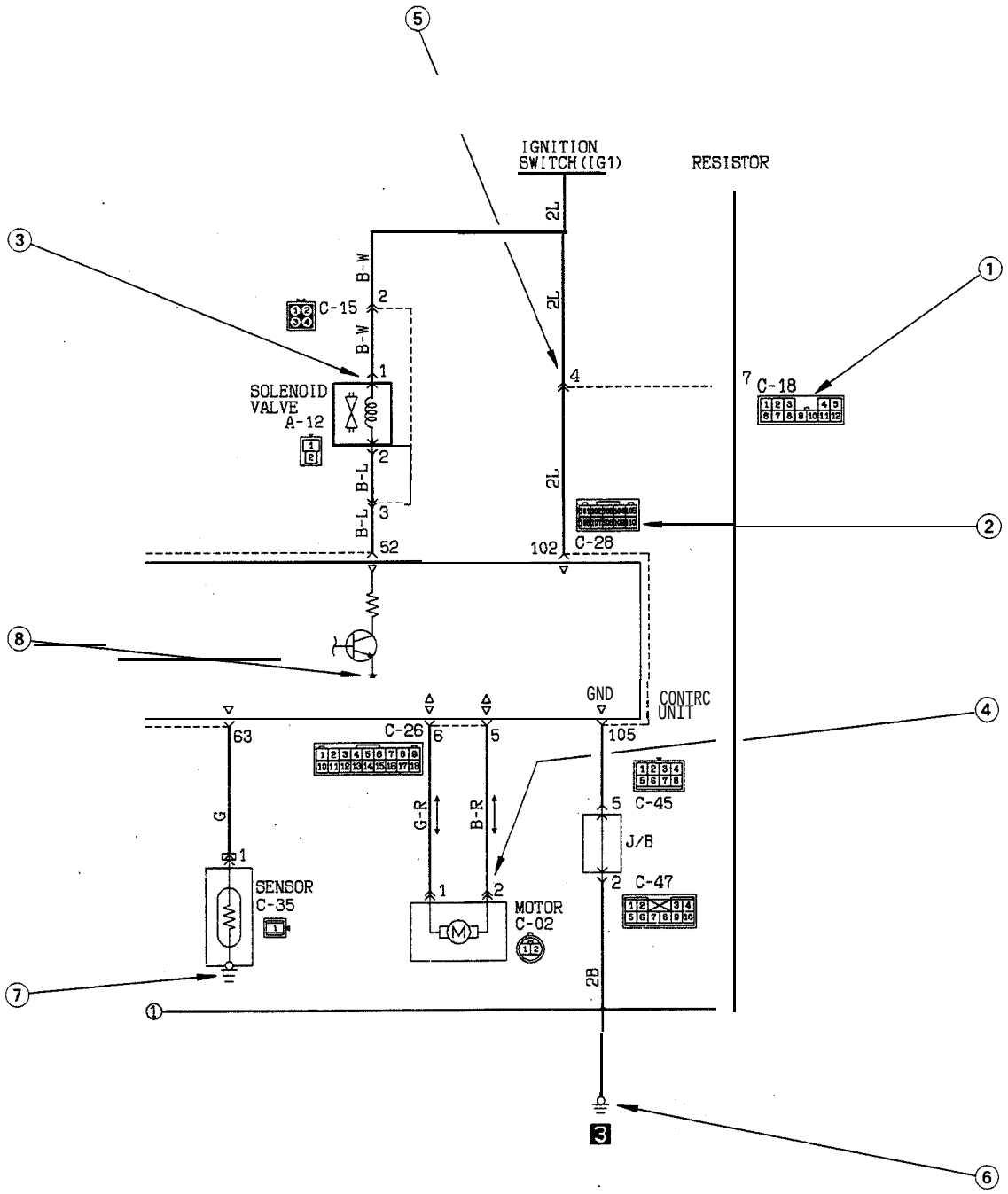


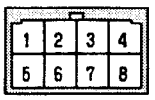
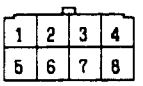
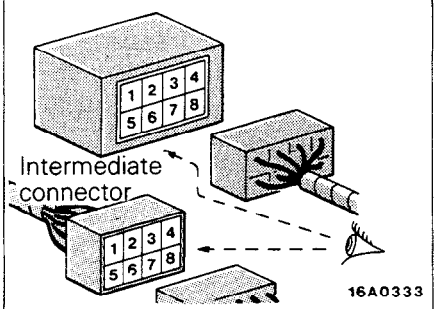
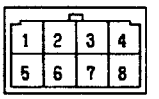
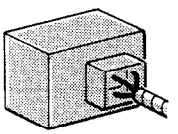
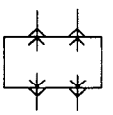
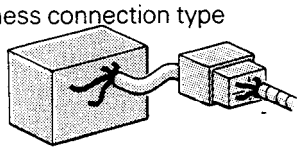
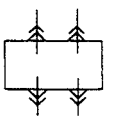
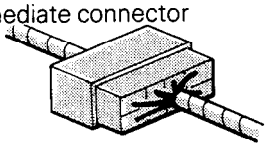
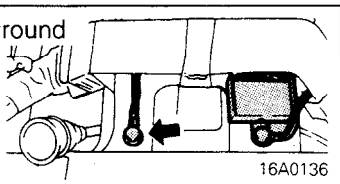
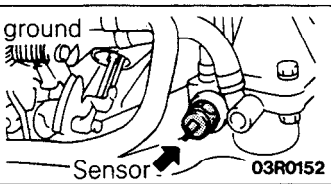
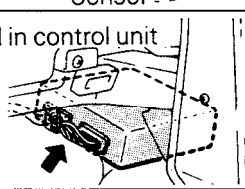
TSB Revision



TSB Revision

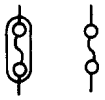
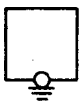
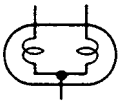
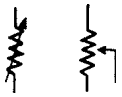
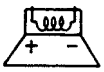
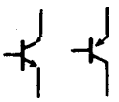
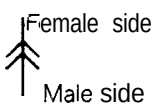
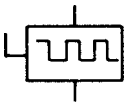
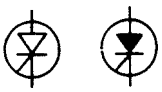
CONNECTOR / GROUNDING INDICATIONS



	No.	Item	Symbol	Contents
Connector marking	①	Male 		Double connector contour lines indicate male connector terminals and single contour lines indicates female terminals as illustrated here.
	–	Female 		
Connector symbol marking	②	Device 		The symbol indicates the connector as viewed from the illustrated direction. At the connection with a device, the connector symbol on the device side is shown, and for an intermediate connector, the male connector symbol is shown.
Connector connection marking	③	Direct connection type 		A connection between a device and connector on the harness side is either by direct insertion in the device (direct connection type) or by connection with a harness connector furnished on the device side (harness connection type). The two types are indicated as illustrated.
	④	Harness connection type 		
	⑤	Intermediate connector 		
Grounding markings	⑥	Body ground 		Grounding is either by body ground, device ground or control unit interior ground. These are indicated as illustrated.
	⑦	Device ground 		
	⑧	Ground in control unit 		

SYMBOLS

Devices appearing in circuit diagrams are indicated by the following symbols.

Battery 	Body ground 	Single bulb 	Resistor 	Diode 	Capacitor 
Fuse 	Equipment ground 	Dual bulb 	Variable resistor 	Zener diode 	Crossing of wires without connection 
Fusible link	ECU interior ground 	Speaker 	Coil 	Transistor 	Crossing of wires with connection 
Connector 	Motor 	Horn 	Pulse generator 	Buzzer 	Chime 
Thyristor 	Piezoelectric device	Thermistor 	Light emitting diode 	Photo diode 	Photo transistor 

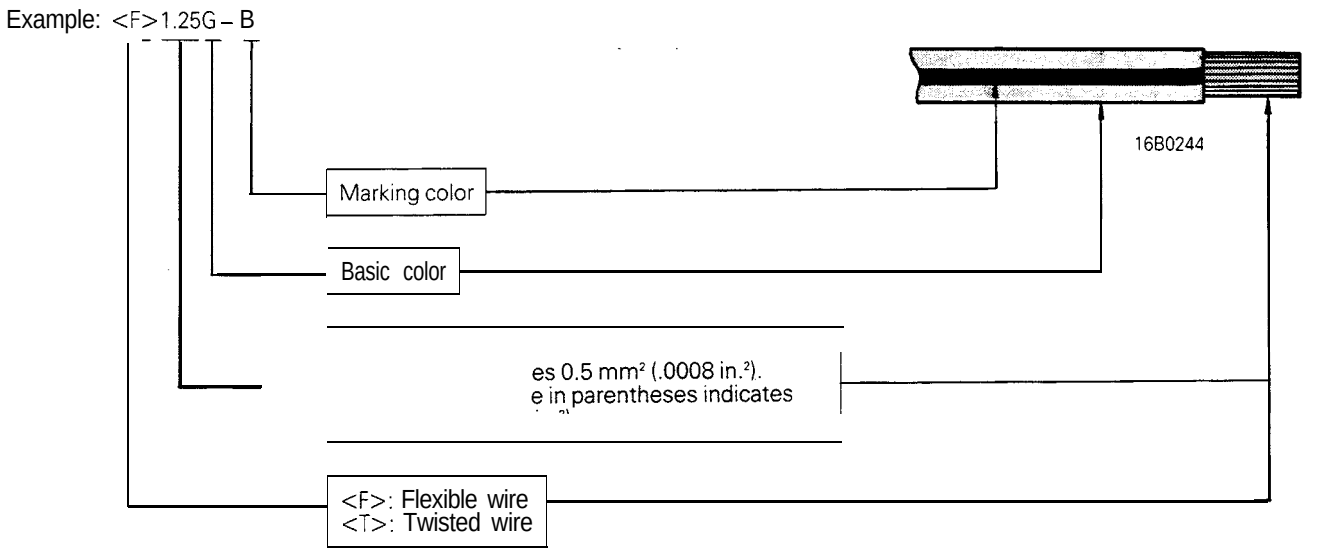
16A0252

WIRE COLOR CODES

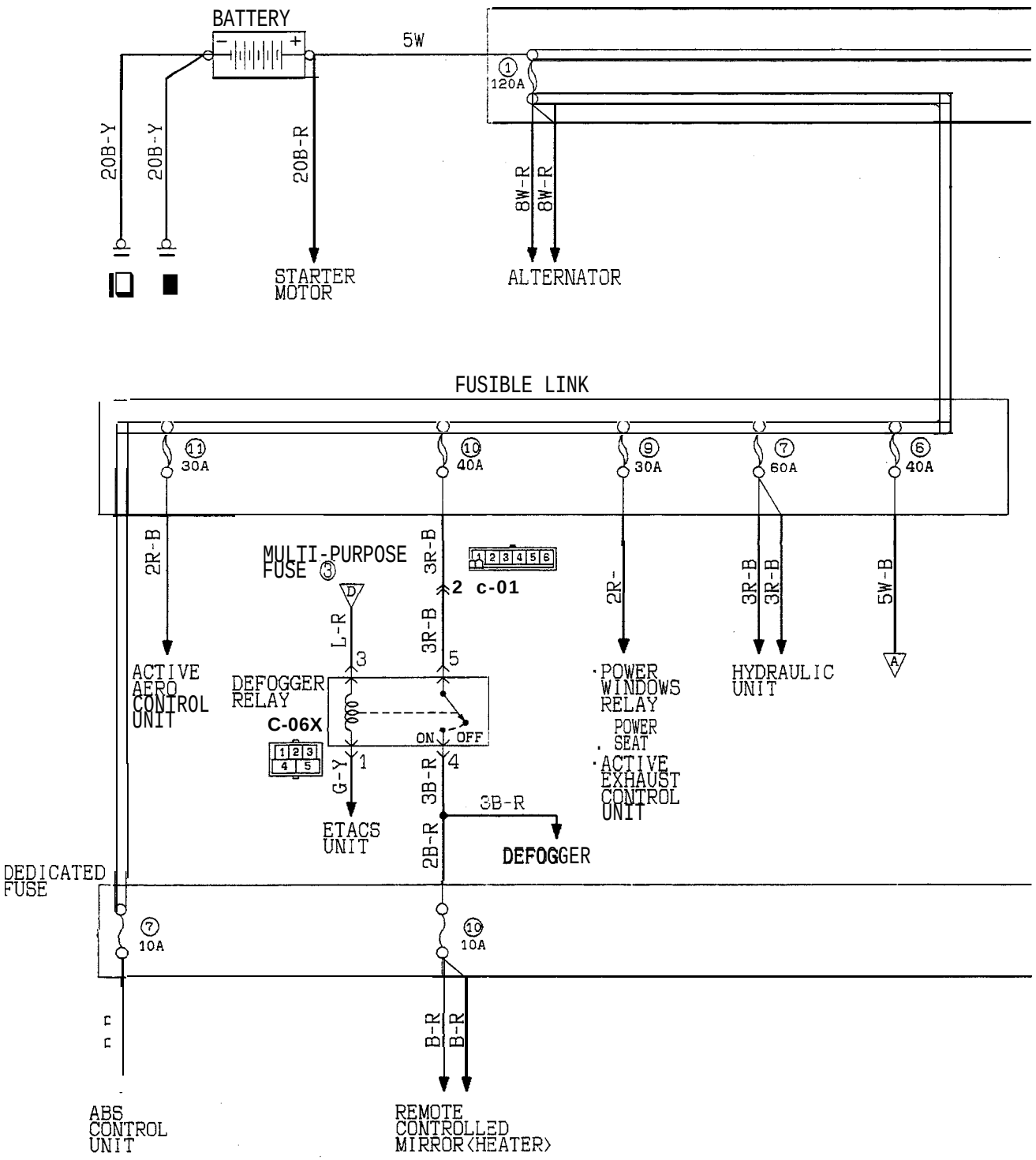
Wire colors are identified by the following color codes.

Code	Wire color	Code	Wire color
B	Black	P	Pink
BR	Brown	R	Red
G	Green	SB	Sky blue
GR	Gray	V	Violet
L	Blue	W	White
LG	Light green	Y	Yellow
O	Orange	–	–

NOTE
If a cable has two colors, the first of the two color code characters indicates the basic color (color of the cable coating) and the second indicates the marking color.

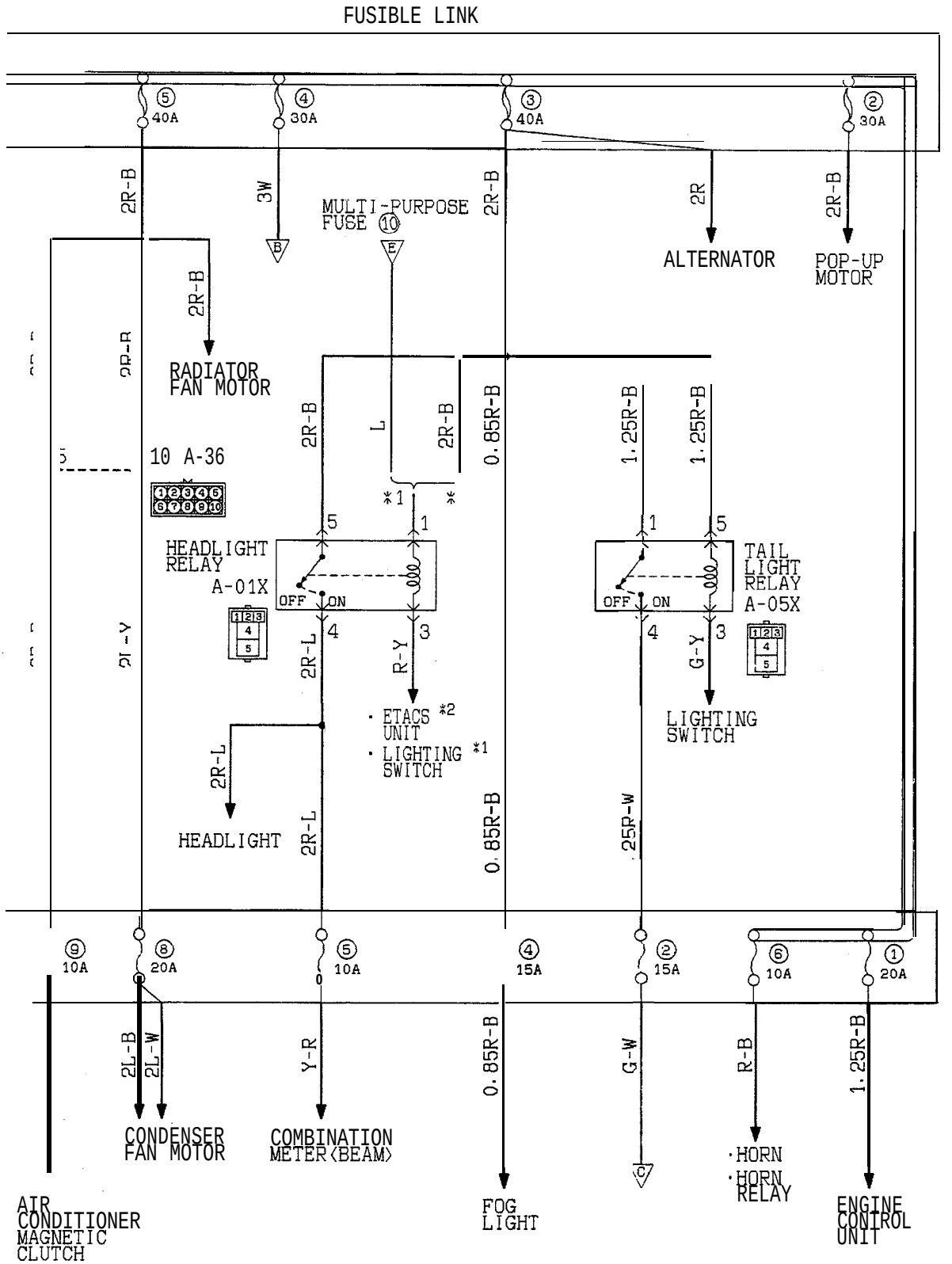


POWER DISTRIBUTION

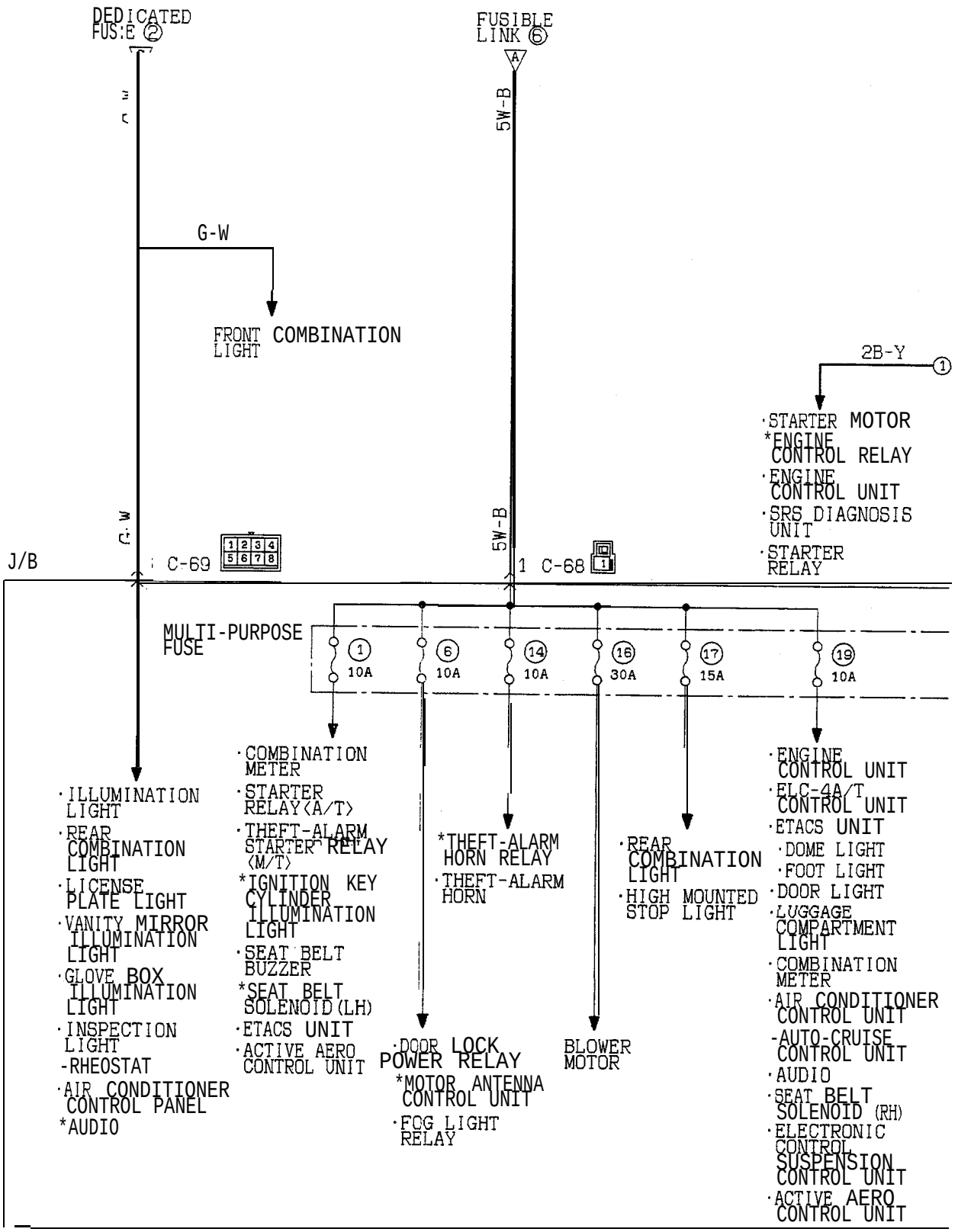


:X35-AC-ROIOI-NY

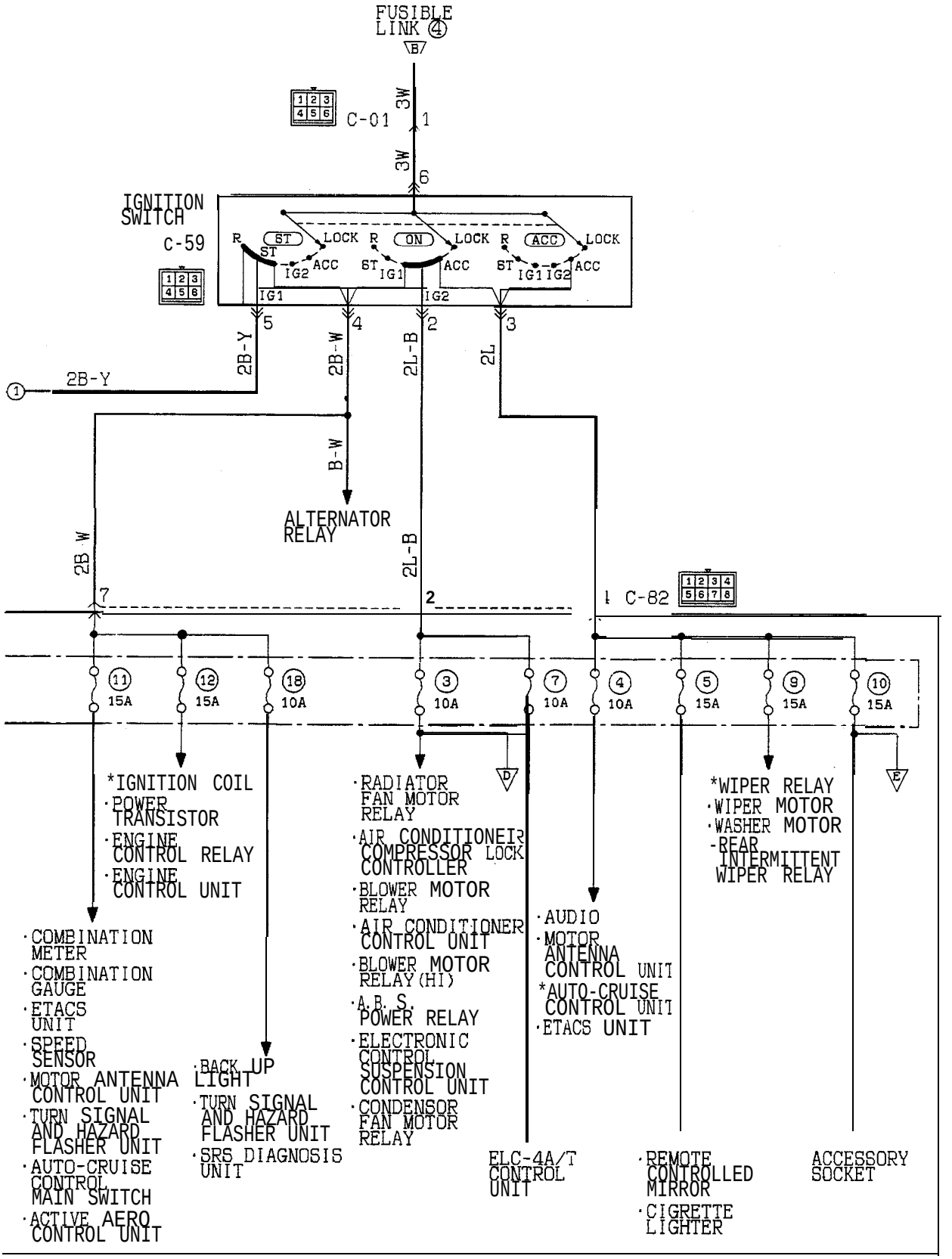
TSB Revision



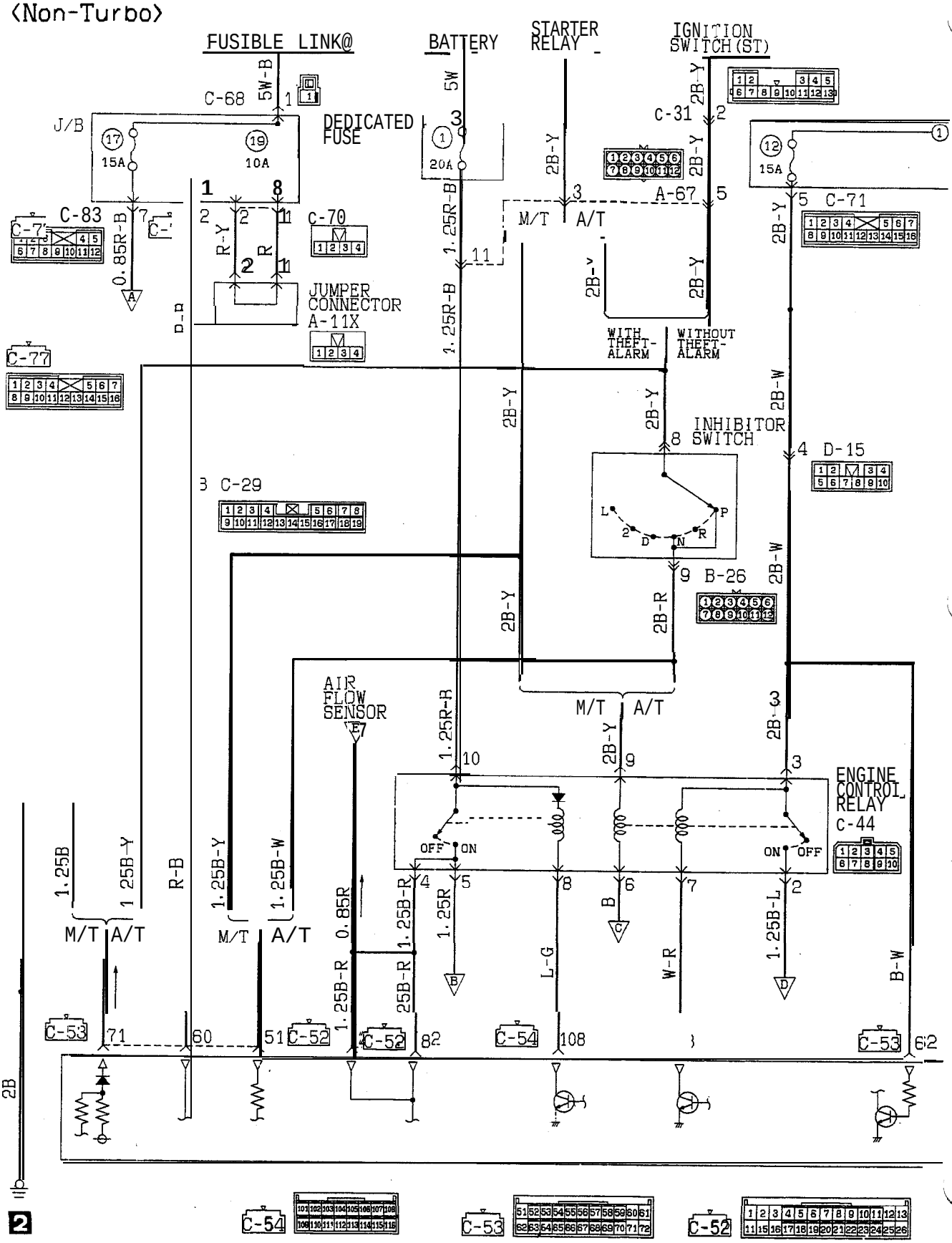
*1:VEHICLES WITHOUT THEF'T-ALARM SYSTEM
*2:VEHICLES WITH THEFT-ALARM SYSTEM



TSB Revision

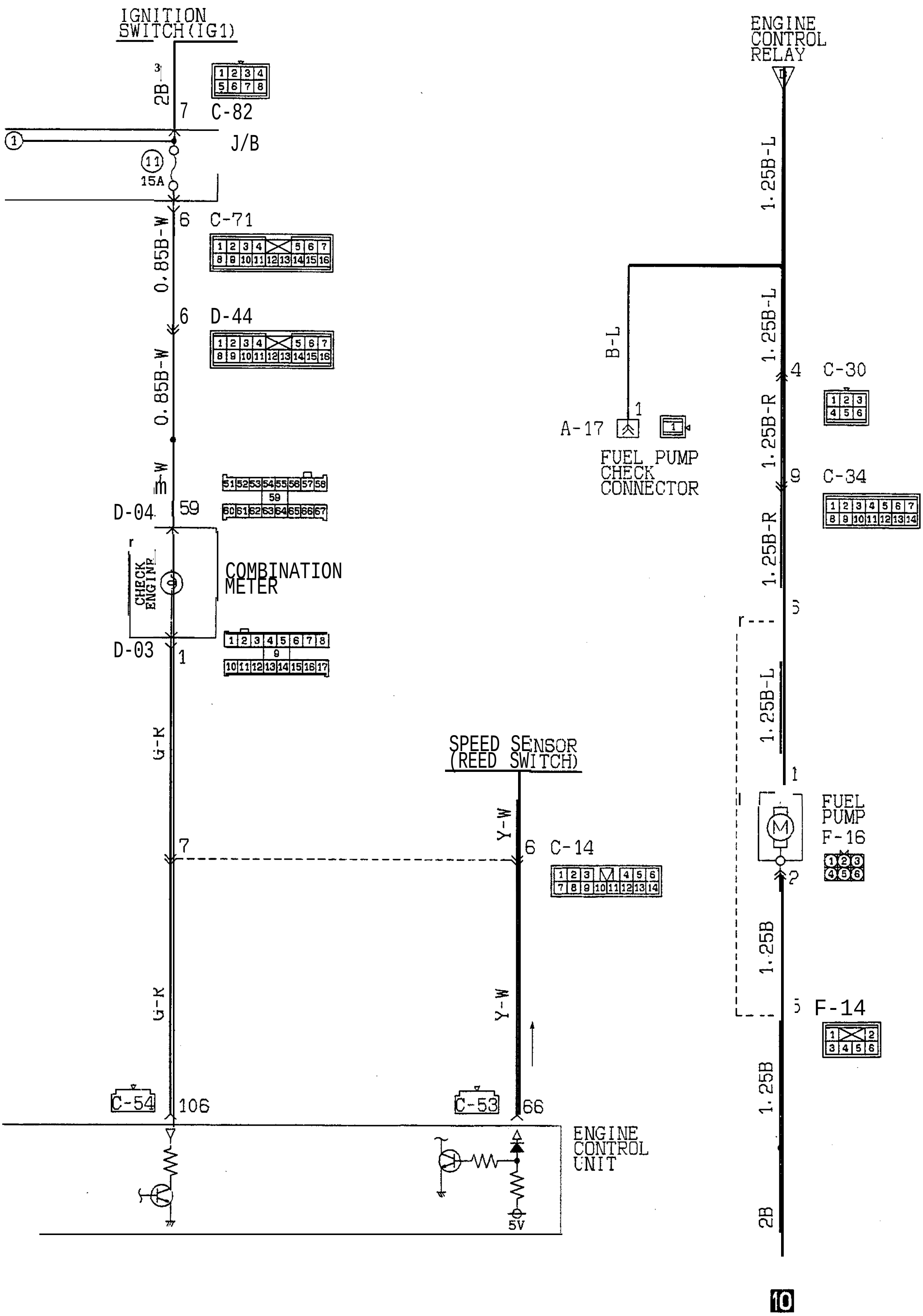

FUSIBLE LINK ④
B
C-01
3W
1
6
IGNITION SWITCH
C-59
R ST LOCK R ON LOCK R ACC LOCK
ST IG2 ACC ST IG1 ACC ST IG1 IG2 ACC
IG1 IG2
5 4 2 3
2B-Y 2B-W 2L-B 2L
1 2B-Y
B-W
ALTERNATOR RELAY
2B-W 2L-B
7 2 C-82
11 15A 12 15A 18 10A 3 10A 7 10A 4 10A 5 15A 9 15A 10 15A
*IGNITION COIL
·POWER TRANSISTOR
·ENGINE CONTROL RELAY
·ENGINE CONTROL UNIT
·COMBINATION METER
·COMBINATION GAUGE
·ETACS UNIT
·SPEED SENSOR
·MOTOR ANTENNA CONTROL UNIT
·TURN SIGNAL AND HAZARD FLASHER UNIT
·AUTO-CRUISE CONTROL MAIN SWITCH
·ACTIVE AERO CONTROL UNIT
·BACK UP LIGHT
·TURN SIGNAL AND HAZARD FLASHER UNIT
·SRS DIAGNOSIS UNIT
·RADIATOR FAN MOTOR RELAY
·AIR CONDITIONEIR COMPRESSOR LOCK CONTROLLER
·BLOWER MOTOR RELAY
·AIR CONDITIONER CONTROL UNIT
·BLOWER MOTOR RELAY(HI)
·A.B.S. POWER RELAY
·ELECTRONIC CONTROL SUSPENSION CONTROL UNIT
·CONDENSOR FAN MOTOR RELAY
D
·AUDIO
·MOTOR ANTENNA CONTROL UNIT
*AUTO-CRUISE CONTROL UNIT
·ETACS UNIT
ELC-4A/T CONTROL UNIT
*WIPER RELAY
·WIPER MOTOR
·WASHER MOTOR
-REAR INTERMITTENT WIPER RELAY
·REMOTE CONTROLLED MIRROR
·CIGRETTE LIGHTER
E
ACCESSORY SOCKET

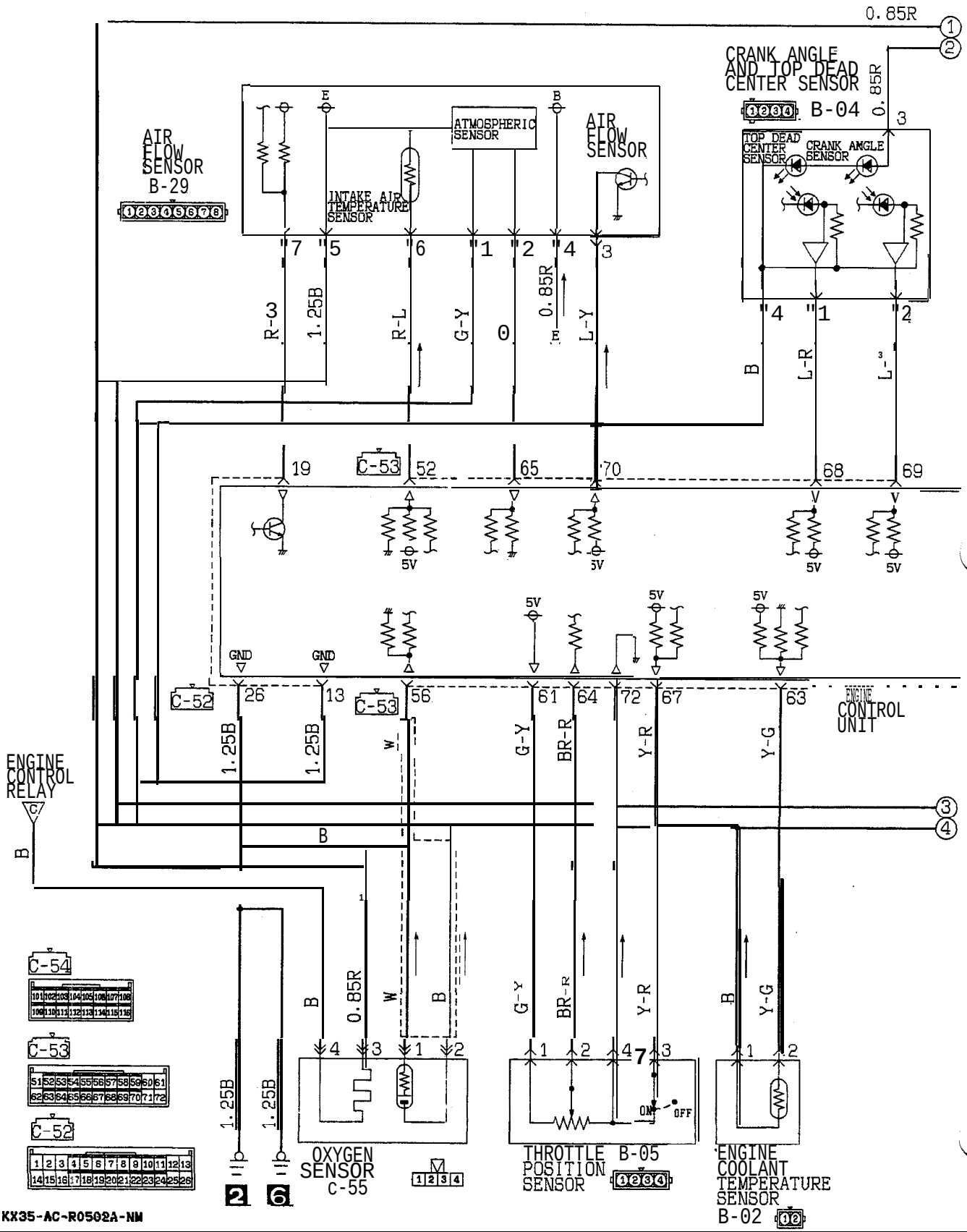
MPI CIRCUIT
(Non-Turbo)



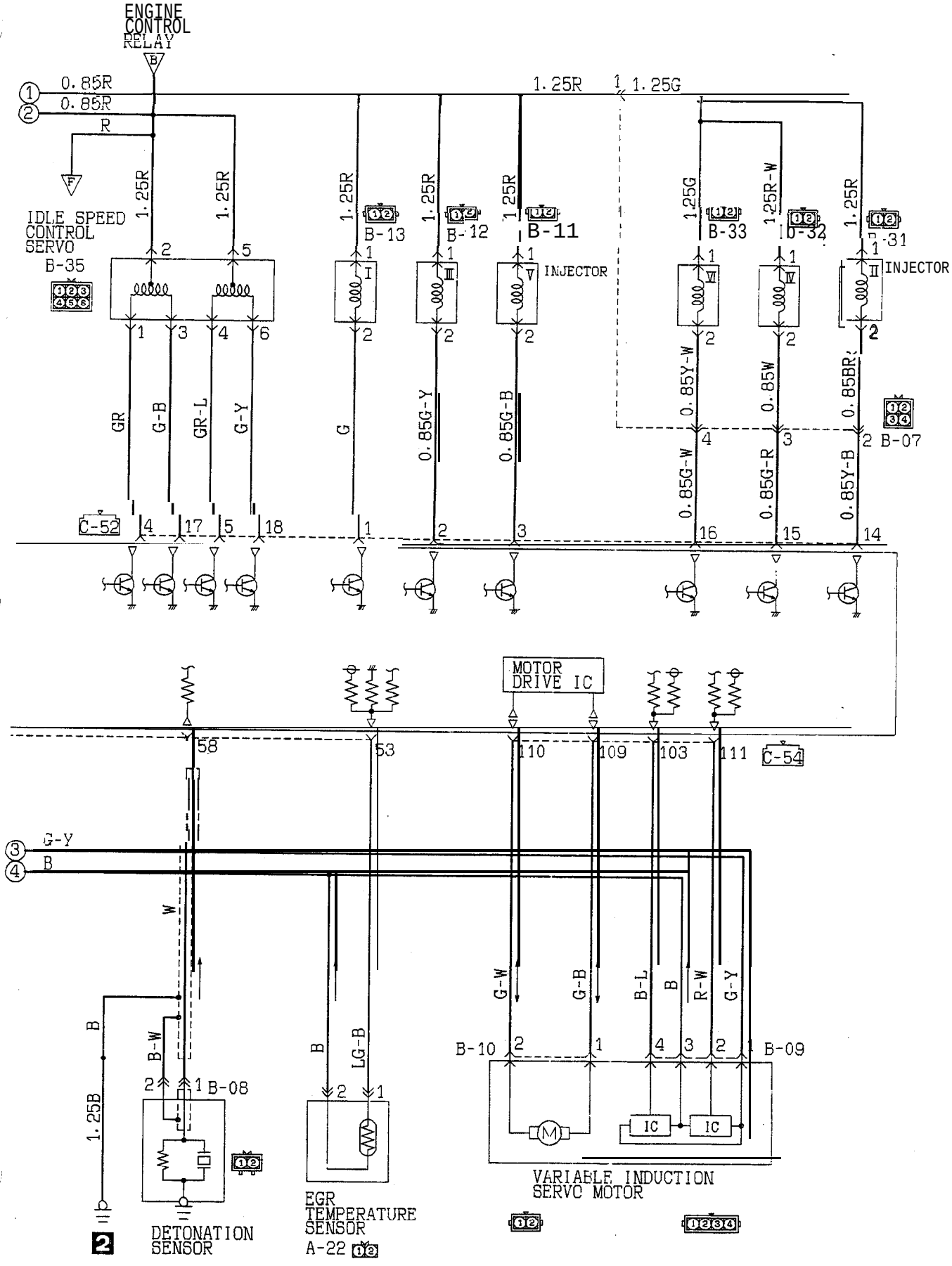
KX35-AC-R0502-NM

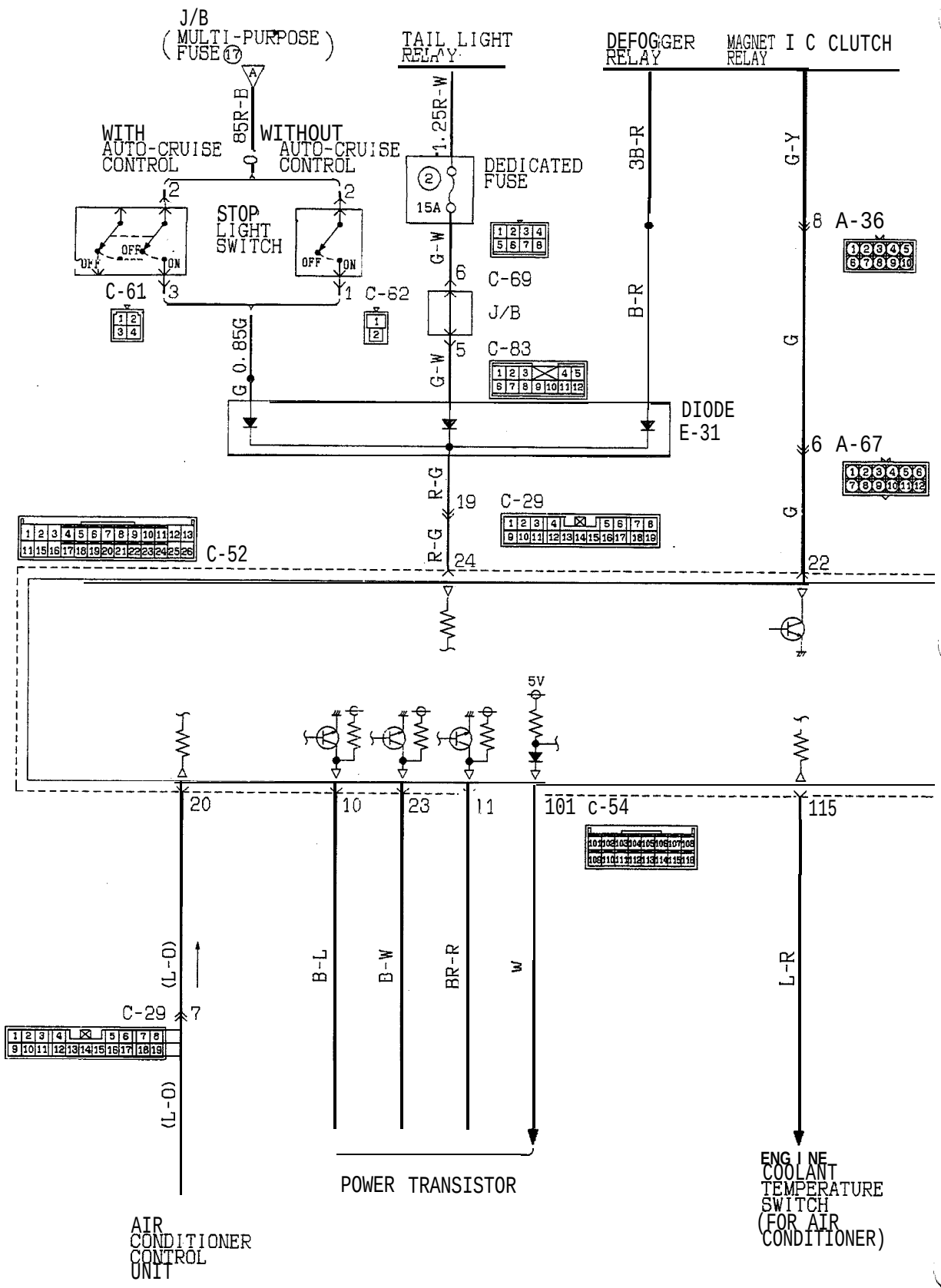
TSB Revision

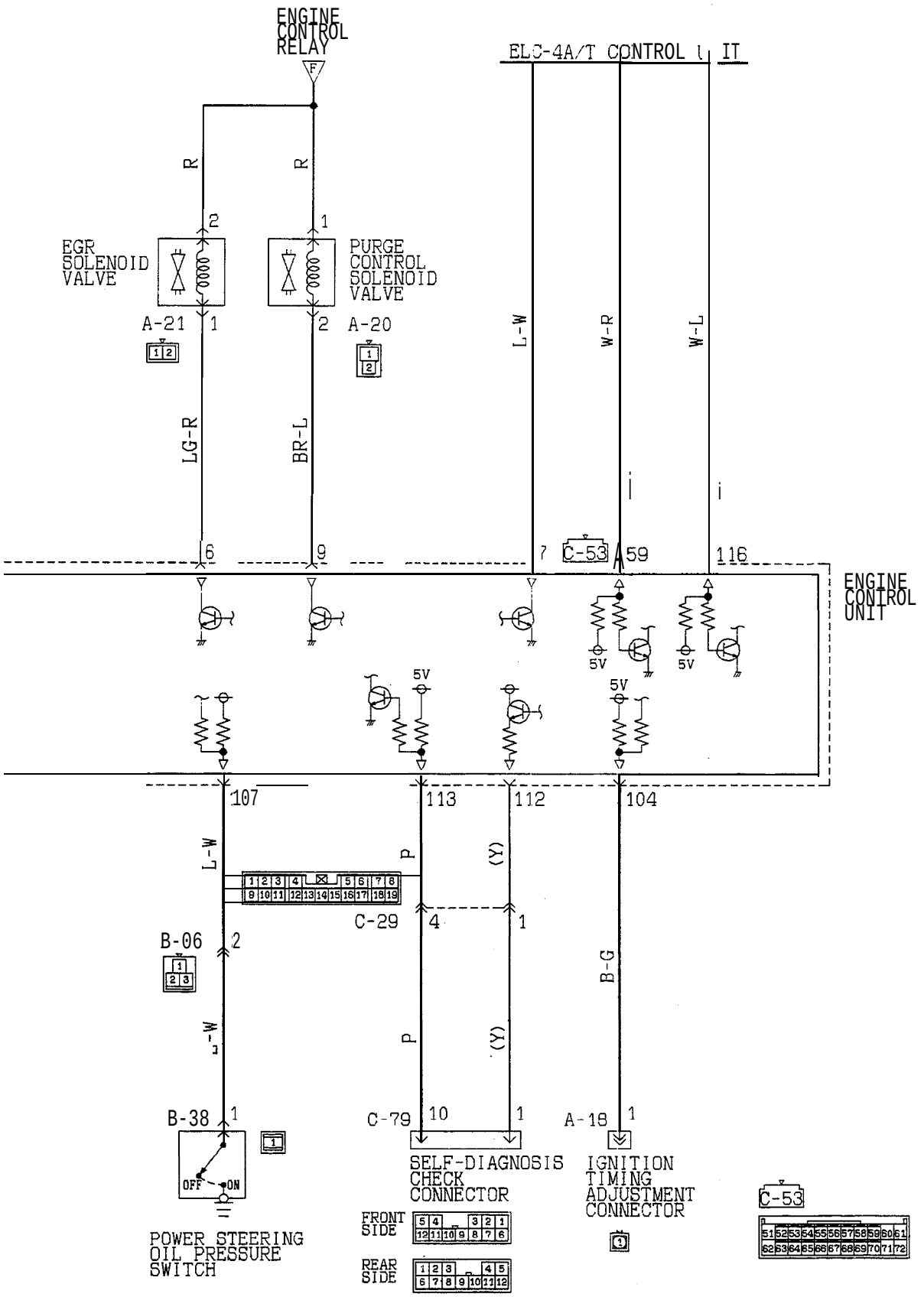

IGNITION SWITCH(IG1)
2B
7 C-82
J/B
15A
6 C-71
0.85B-W
6 D-44
0.85B-W
D-04
59
COMBINATION METER
CHECK ENGINE
D-03
1
G-R
7
SPEED SENSOR (REED SWITCH)
Y-W
6 C-14
C-54
106
C-53
66
ENGINE CONTROL UNIT
5V
ENGINE CONTROL RELAY
1.25B-L
B-L
A-17
1
FUEL PUMP CHECK CONNECTOR
4 C-30
1.25B-R
9 C-34
FUEL PUMP F-16
1.25B
F-14
2B



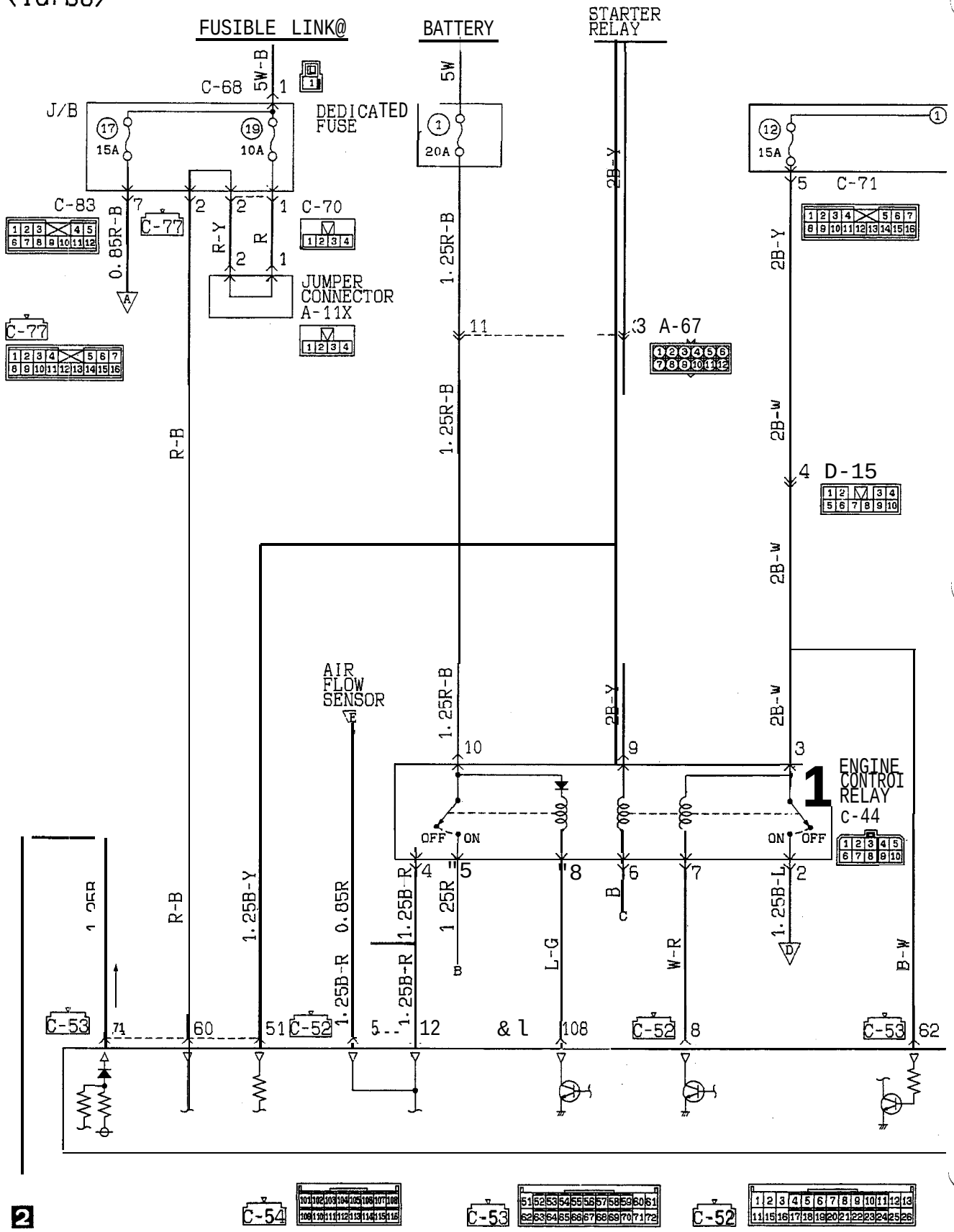
TSB Revision


ENGINE CONTROL RELAY
IDLE SPEED CONTROL SERVO
B-35
B-13
B-12
B-11
B-33
B-32
B-31
INJECTOR
B-07
C-52
C-54
MOTOR DRIVE IC
VARIABLE INDUCTION SERVO MOTOR
B-08
B-09
B-10
DETONATION SENSOR
EGR TEMPERATURE SENSOR
A-22
IC

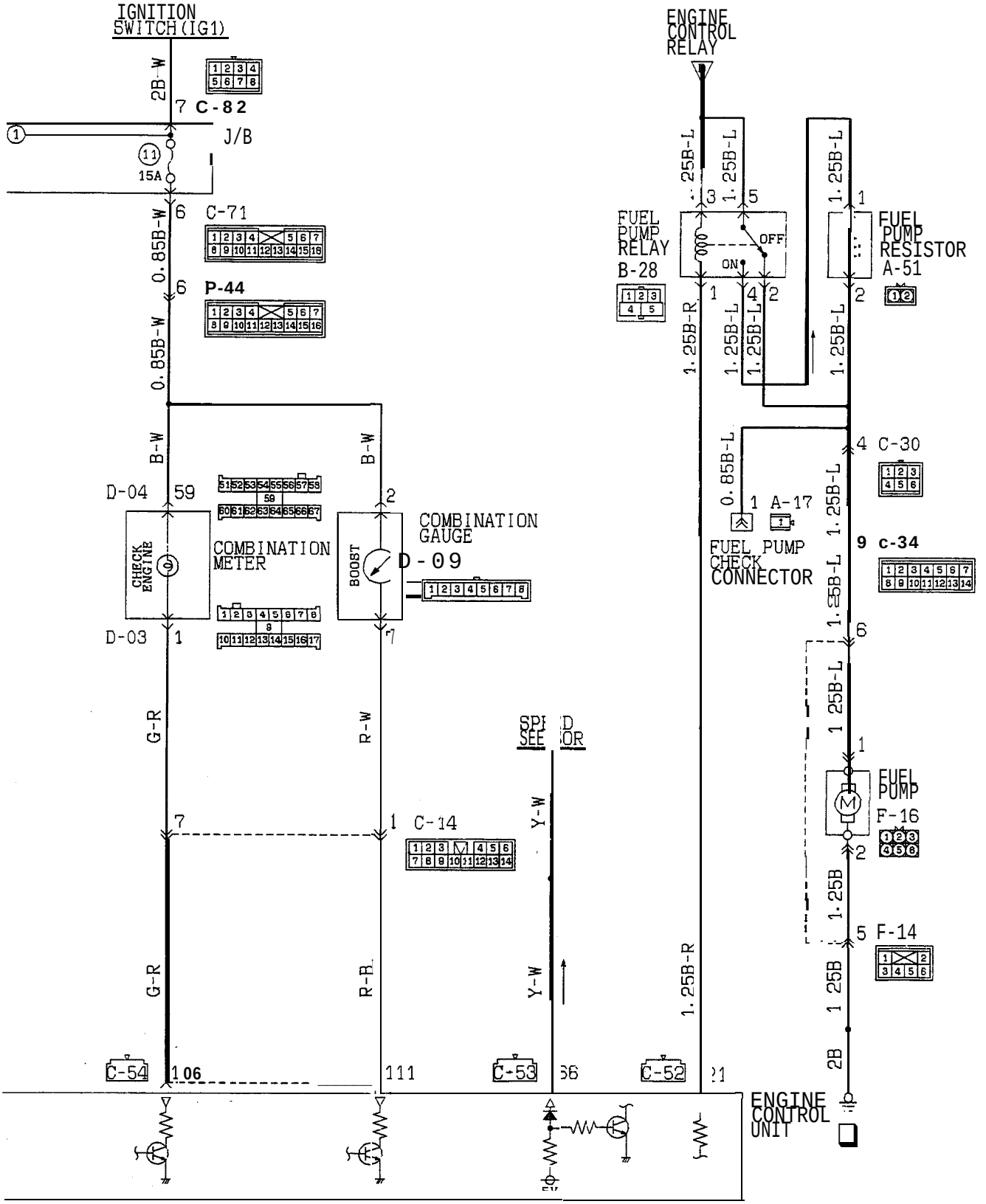

J/B
(MULTI-PURPOSE FUSE 17)
TAIL LIGHT RELAY
DEFOGGER RELAY
MAGNET I C CLUTCH RELAY
85R-B
1.25R-W
WITH AUTO-CRUISE CONTROL
WITHOUT AUTO-CRUISE CONTROL
DEDICATED FUSE
15A
STOP LIGHT SWITCH
OFF
ON
C-61
C-62
G-W
C-69
J/B
C-83
G 0.85G
3B-R
G-Y
B-R
G
6 A-36
DIODE E-31
6 A-67
R-G
19
C-29
C-52
24
22
5V
20
10
23
11
101 C-54
115
(L-O)
B-L
B-W
BR-R
W
L-R
C-29 7
POWER TRANSISTOR
ENGINE COOLANT TEMPERATURE SWITCH (FOR AIR CONDITIONER)
AIR CONDITIONER CONTROL UNIT


ENGINE CONTROL RELAY
F
ELC-4A/T CONTROL UNIT
R
R
2
1
EGR SOLENOID VALVE
PURGE CONTROL SOLENOID VALVE
A-21
1
2
A-20
LG-R
BR-L
L-W
W-R
W-L
6
9
7
C-53
59
116
ENGINE CONTROL UNIT
5V
5V
5V
5V
107
113
112
104
L-W
P
(Y)
C-29
4
1
B-06
2
L-W
P
(Y)
B-G
B-38
1
C-79
10
1
A-18
1
OFF
ON
POWER STEERING OIL PRESSURE SWITCH
SELF-DIAGNOSIS CHECK CONNECTOR
IGNITION TIMING ADJUSTMENT CONNECTOR
FRONT SIDE
REAR SIDE
C-53

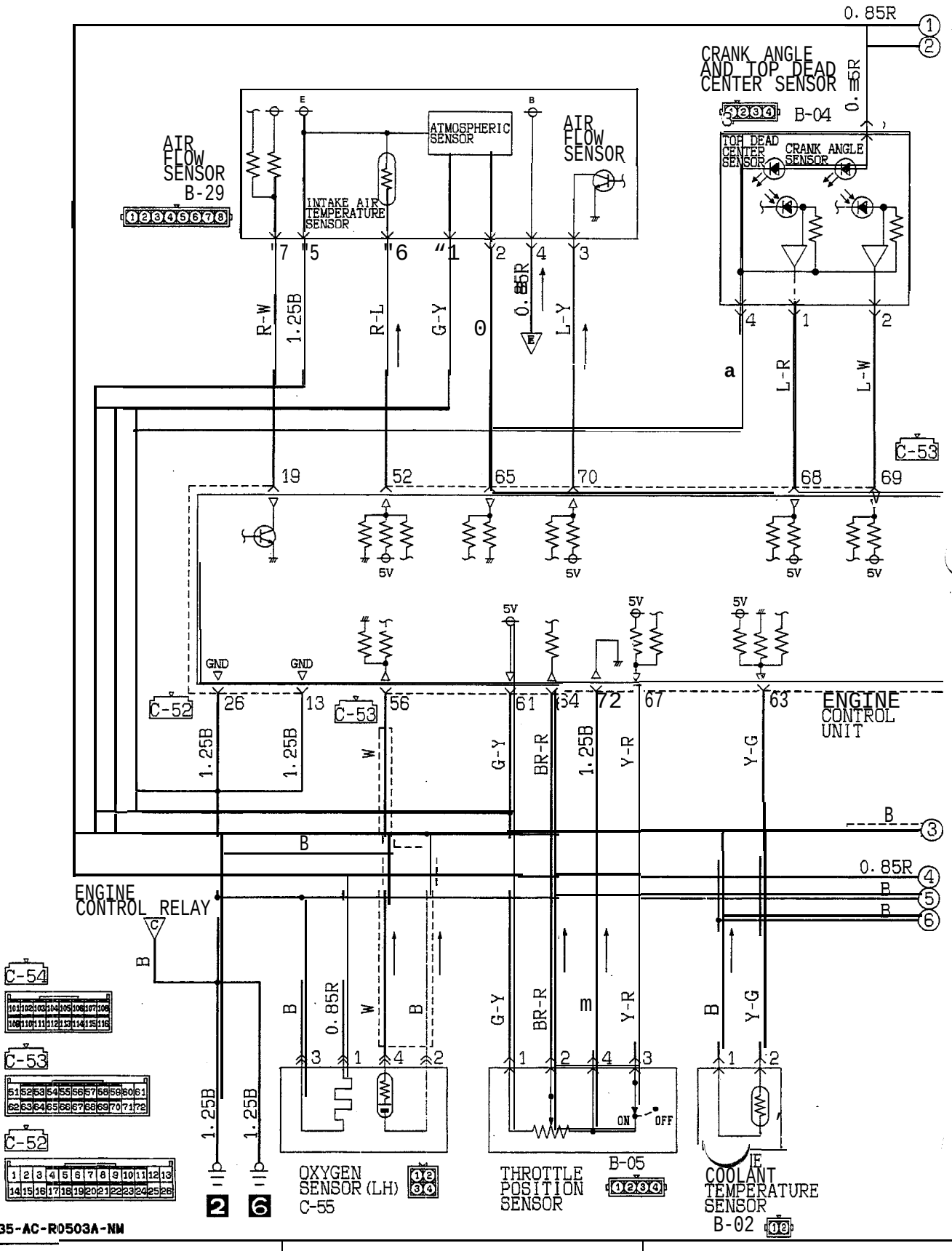
MPI CIRCUIT
<Turbo>



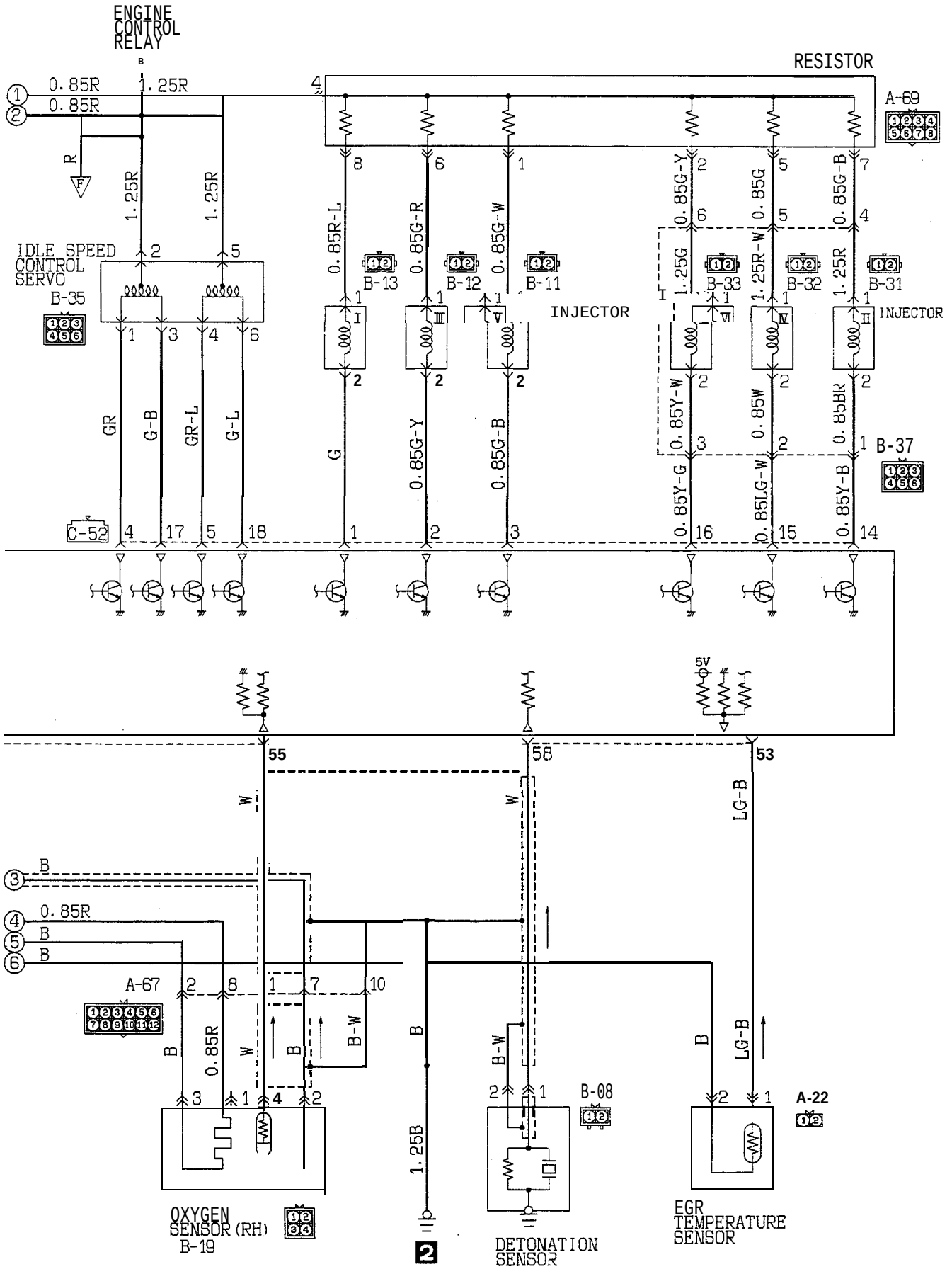
X35-AC-R0503-NM



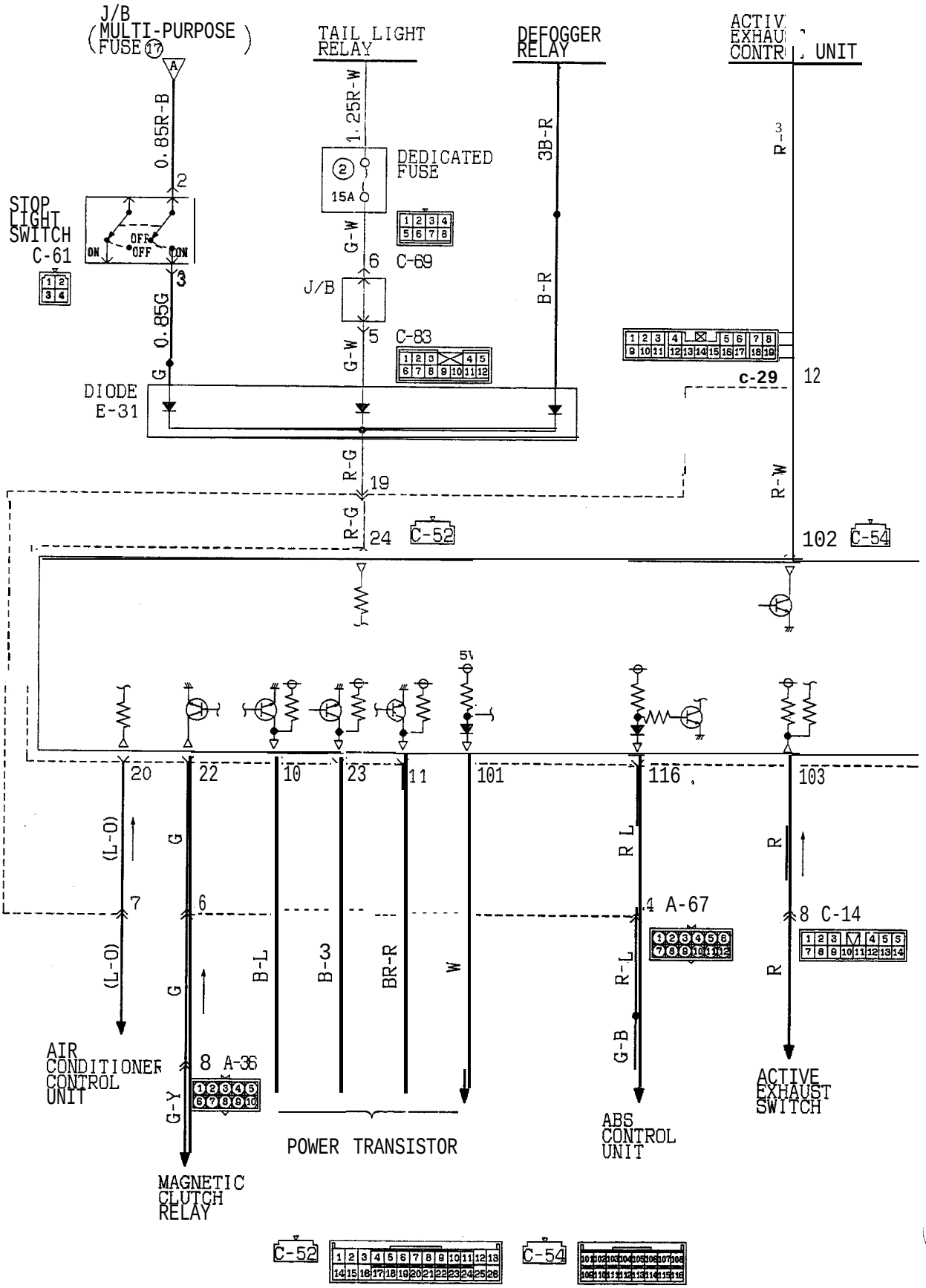
TSB Revision



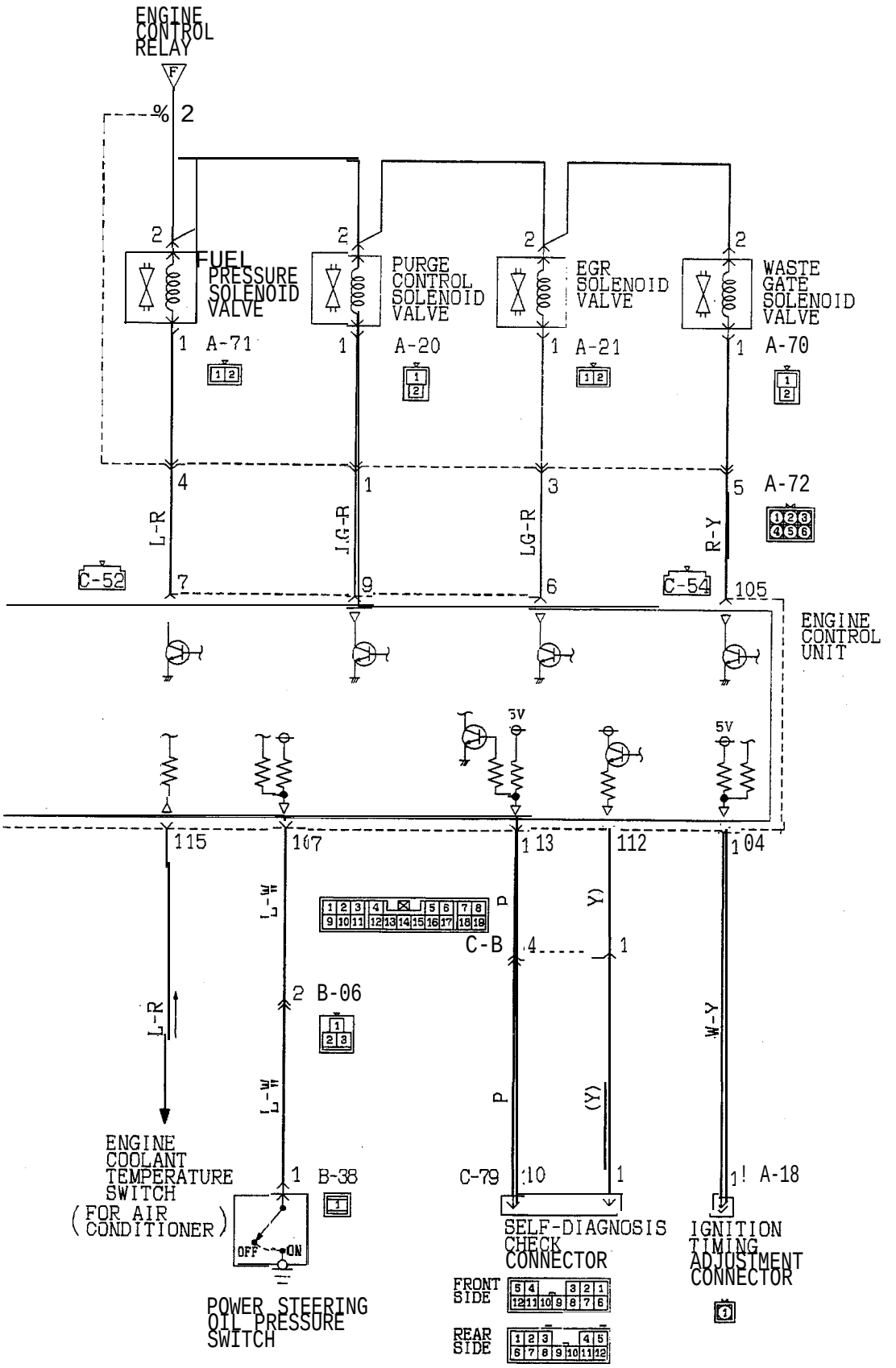
TSB Revision



TSB Revision



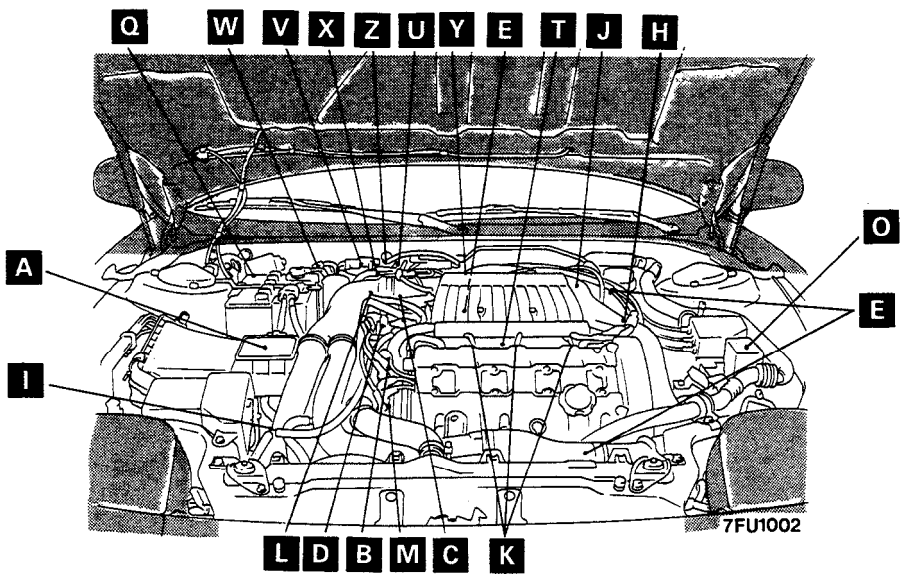
KX35-AC-R0503B-NM

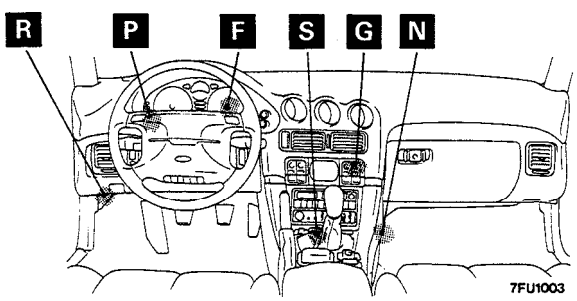

ENGINE CONTROL RELAY
F
2
FUEL PRESSURE SOLENOID VALVE
PURGE CONTROL SOLENOID VALVE
EGR SOLENOID VALVE
WASTE GATE SOLENOID VALVE
A-71
A-20
A-21
A-70
A-72
L-R
LG-R
LG-R
R-Y
C-52
C-54
ENGINE CONTROL UNIT
5V
5V
115
107
113
112
104
L-W
P
Y)
C-B
B-06
L-R
W-Y
P
(Y)
ENGINE COOLANT TEMPERATURE SWITCH (FOR AIR CONDITIONER)
B-38
C-79
A-18
OFF
ON
POWER STEERING OIL PRESSURE SWITCH
SELF-DIAGNOSIS CHECK CONNECTOR
IGNITION TIMING ADJUSTMENT CONNECTOR
FRONT SIDE
REAR SIDE

COMPONENTS LOCATION

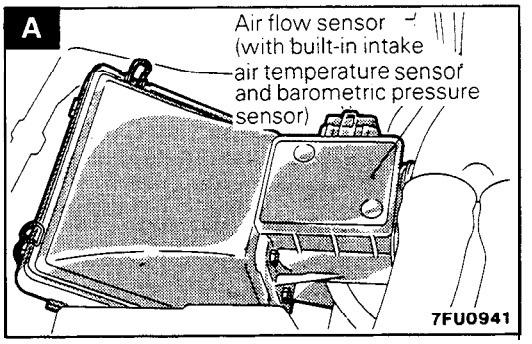
Name	Symbol	Name	Symbol
Air flow sensor (with built-in intake air temperature sensor and barometric pressure sensor)	A	Inhibitor switch <A/T>	I
Air-conditioner relay	O	Injector	K
Air-conditioner switch	G	ISC servo (stepper motor)	L
Control relay	N	Oxygen sensor	E
Detonation sensor	T	Power steering oil pressure switch	H
EGR control solenoid valve <California – Non Turbo, Turbo>	Z	Purge control solenoid valve	X
EGR temperature sensor <California>	Y	Resistor <Turbo>	W
Engine control unit	S	Self-diagnosis output terminal and self-diagnosis/ data transmission selector terminal	R
Engine coolant temperature sensor	B	TDC sensor and crank angle sensor	D
Engine warning light	P	Throttle position sensor (with built-in idle switch)	C
Fuel pressure control valve <Turbo>	V	Variable induction control servo (DC motor) (with built-in induction control valve position sensor) <Non Turbo>	J
Ignition coil (power transistor)	M	Vehicle speed sensor (reed switch)	F
Ignition timing adjusting terminal	Q	Waste gate solenoid valve <Turbo>	U

NOTE
The "Name" column is in alphabetical order.

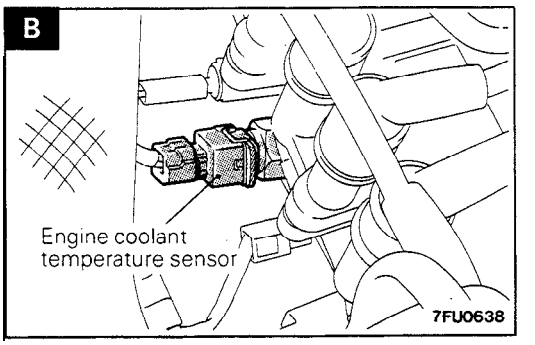




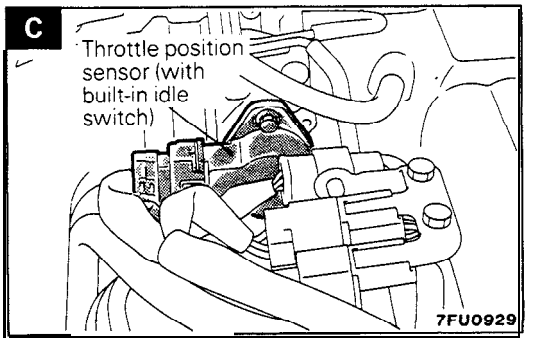
A



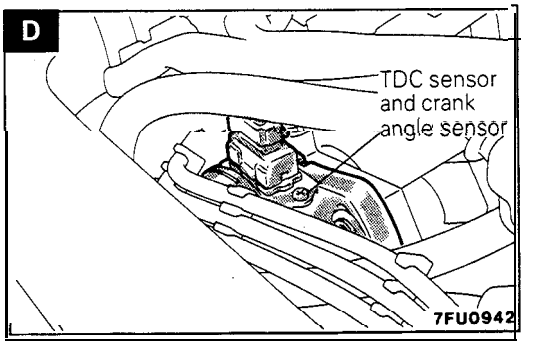
B



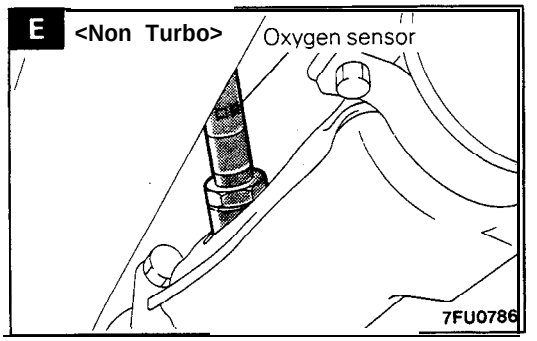
C



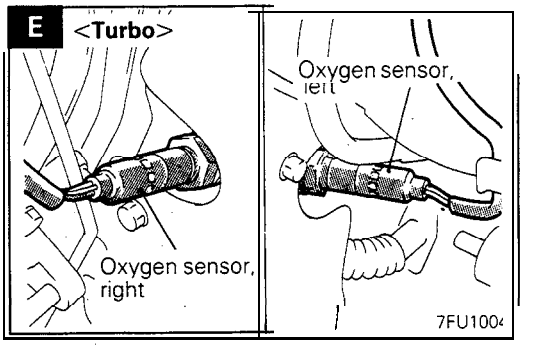
D



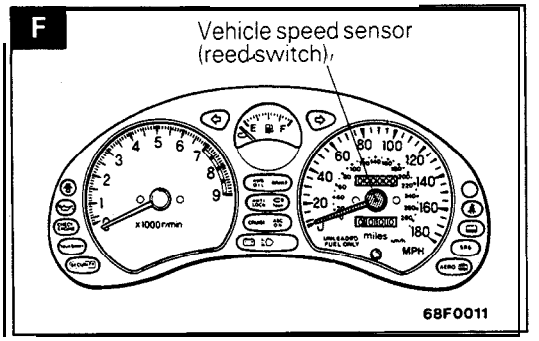
E <Non Turbo>



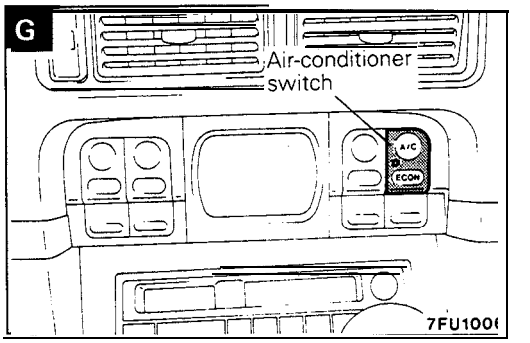
E <Turbo>



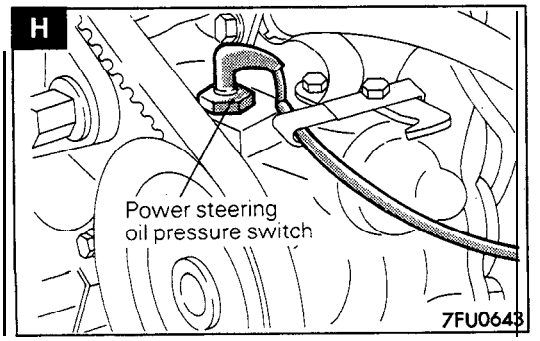
F



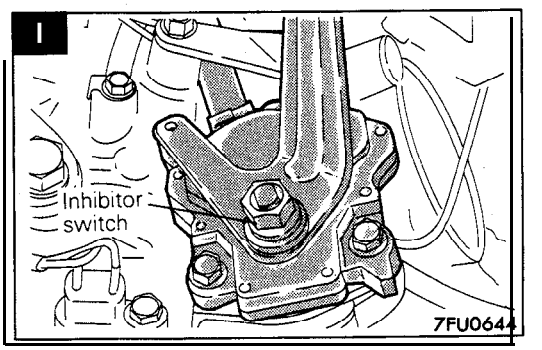
G



H

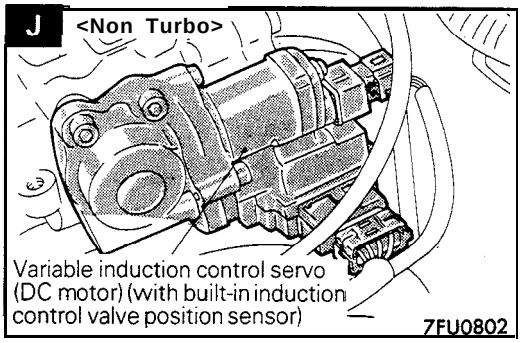


I

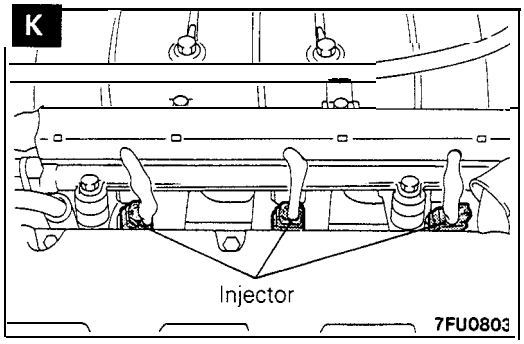


TSB Revision

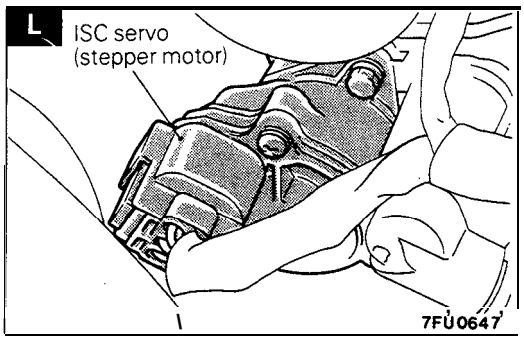
J <Non Turbo>



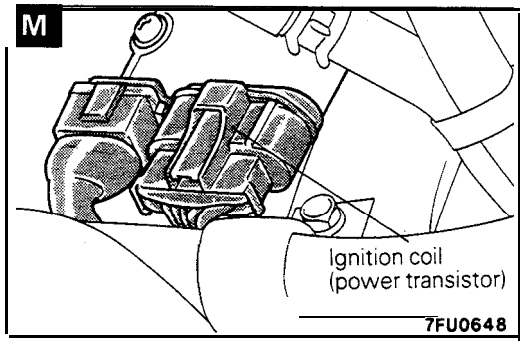
K



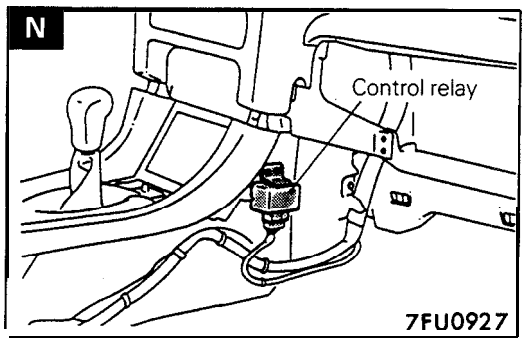
L



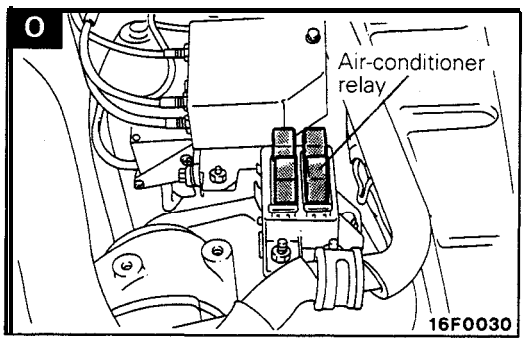
M



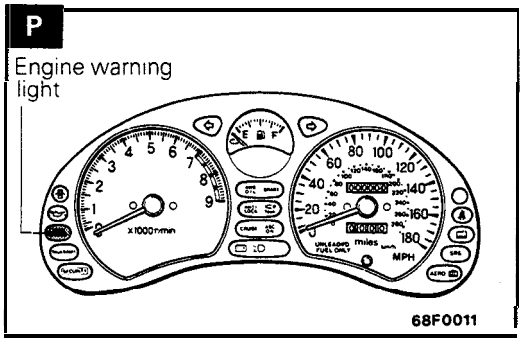
N



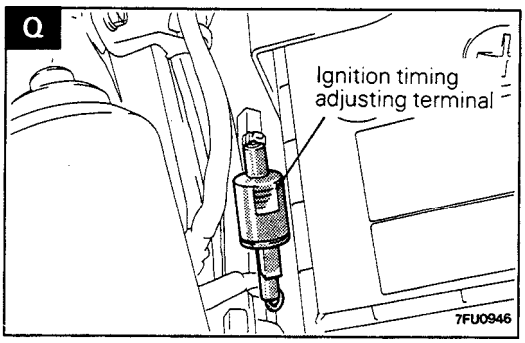
O



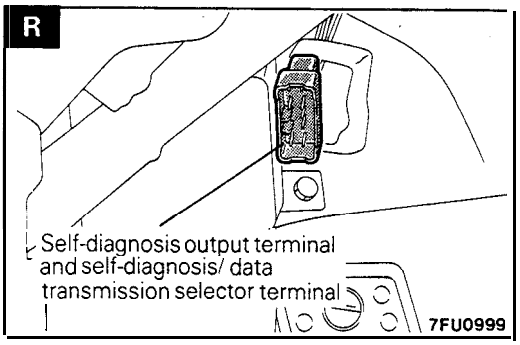
P



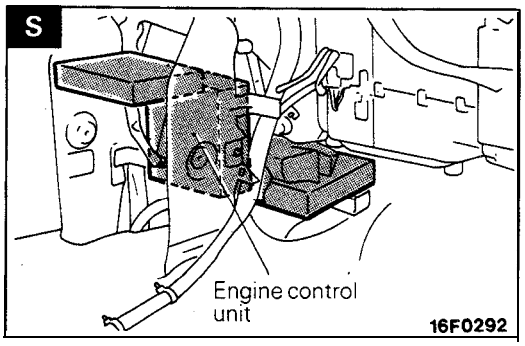
Q



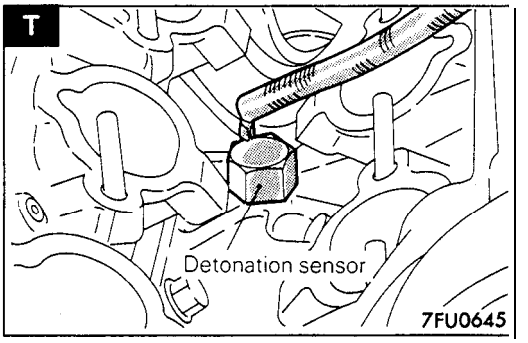
R



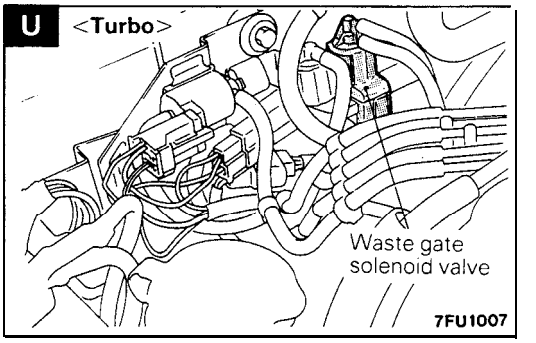
S



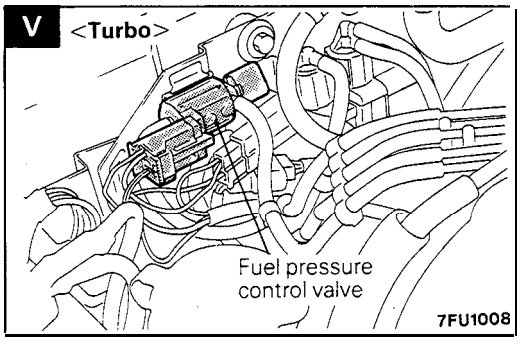
T



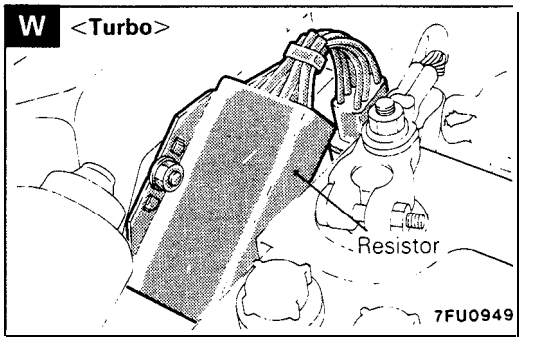
U <Turbo>



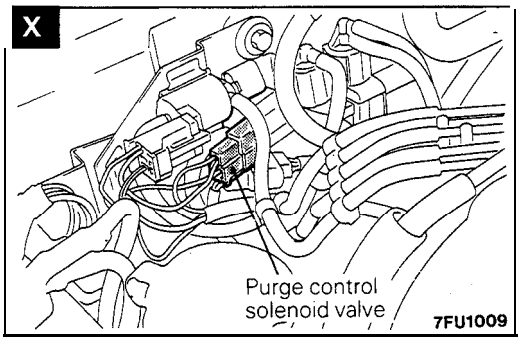
V <Turbo>



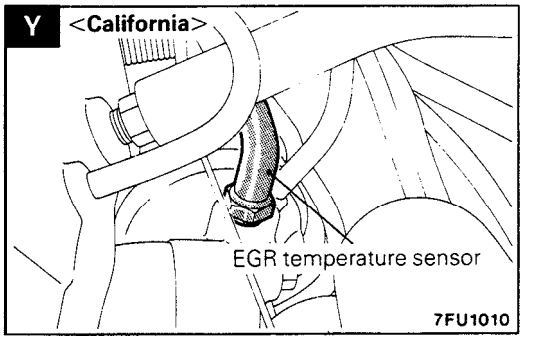
W <Turbo>



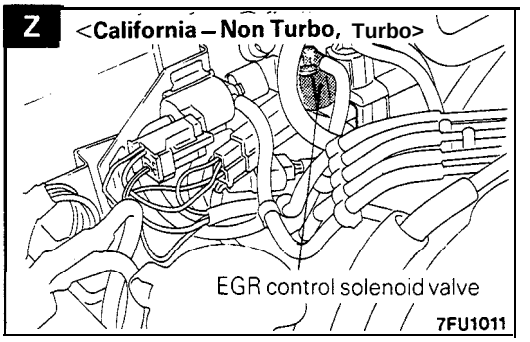
X



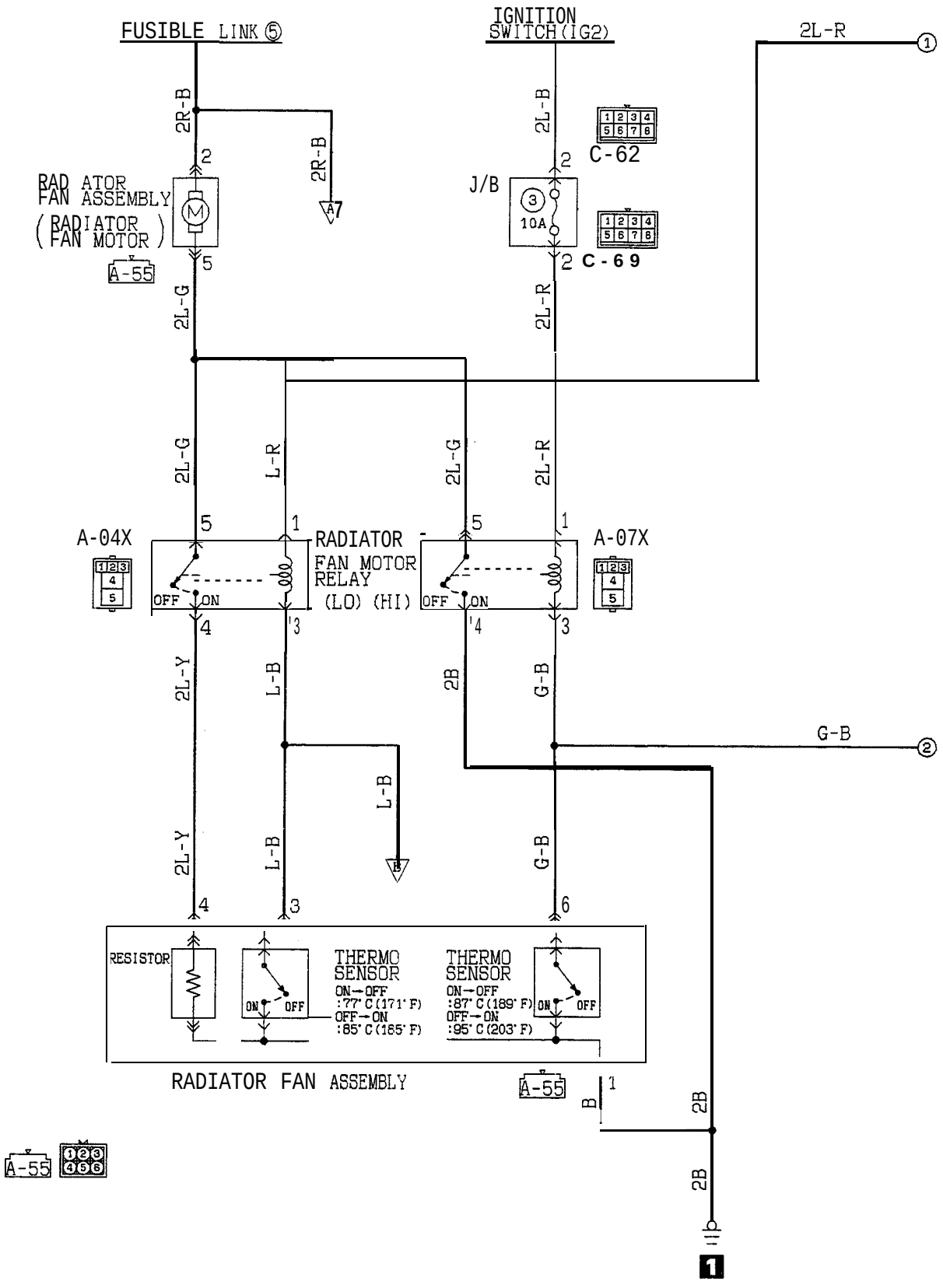
Y <California>



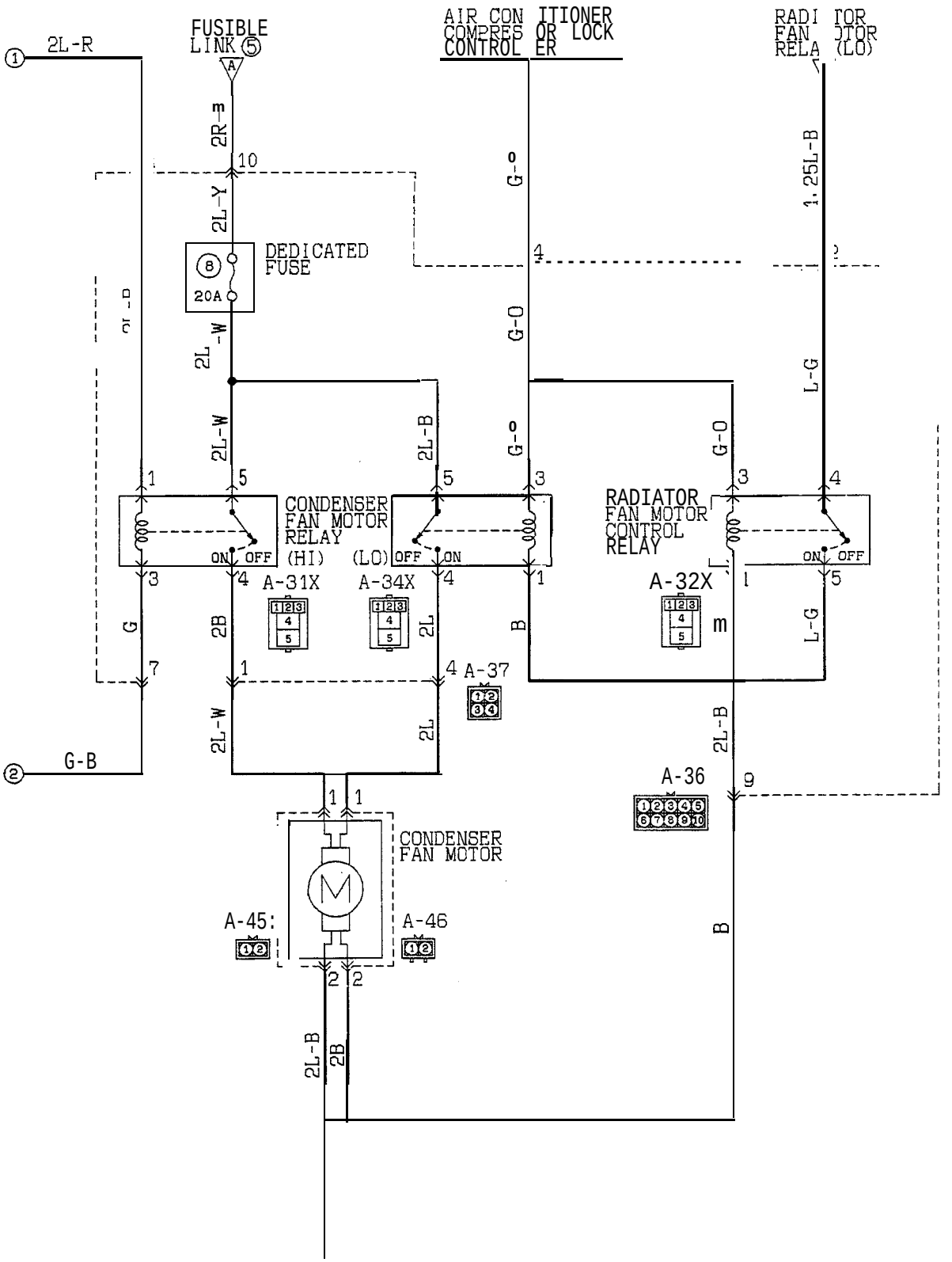
Z <California – Non Turbo, Turbo>



COOLING CIRCUIT



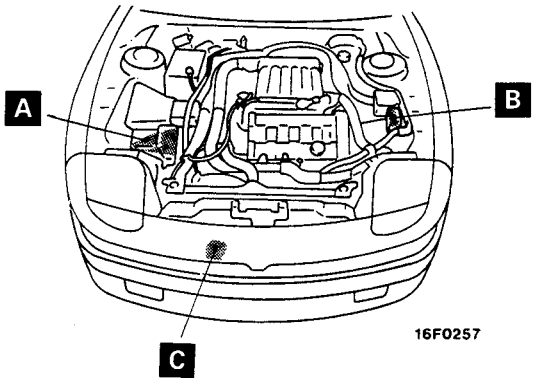
CX35-AC-R0601-NY

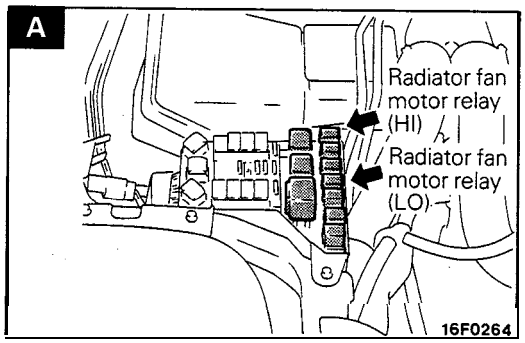

FUSIBLE LINK ⑤
AIR CON ITIONER COMPRES OR LOCK CONTROL ER
RADI TOR FAN OTOR RELA (LO)
2L-R
2R-m
10
2L-Y
DEDICATED FUSE
⑧
20A
2L-W
2L-W
2L-B
G-O
G-O
G-O
1.25L-B
L-G
CONDENSER FAN MOTOR RELAY
(HI)
(LO)
ON OFF
OFF ON
RADIATOR FAN MOTOR CONTROL RELAY
A-31X
A-34X
A-32X
G
2B
2L
B
m
L-G
A-37
2L-W
2L
2L-B
G-B
A-36
CONDENSER FAN MOTOR
A-45:
A-46
2L-B
2B
B

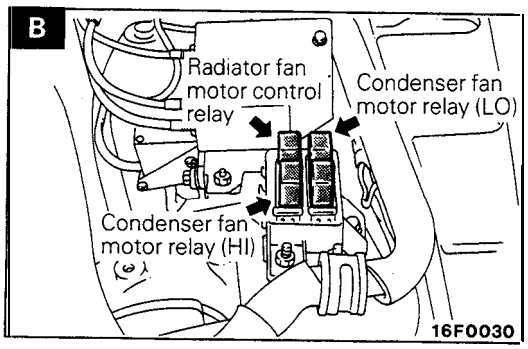
4

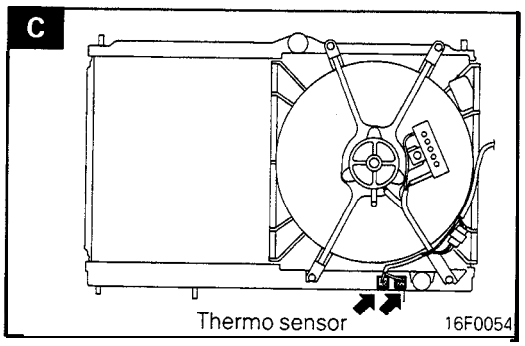
COMPONENTS LOCATION

Name	Symbol	Name	Symbol
Condenser fan motor relay (HI)	B	Radiator fan motor relay (LO)	A
Condenser fan motor relay (LO)	B	Radiator fan motor control relay	B
Radiator fan motor relay (HI)	A	Thermo sensor	C

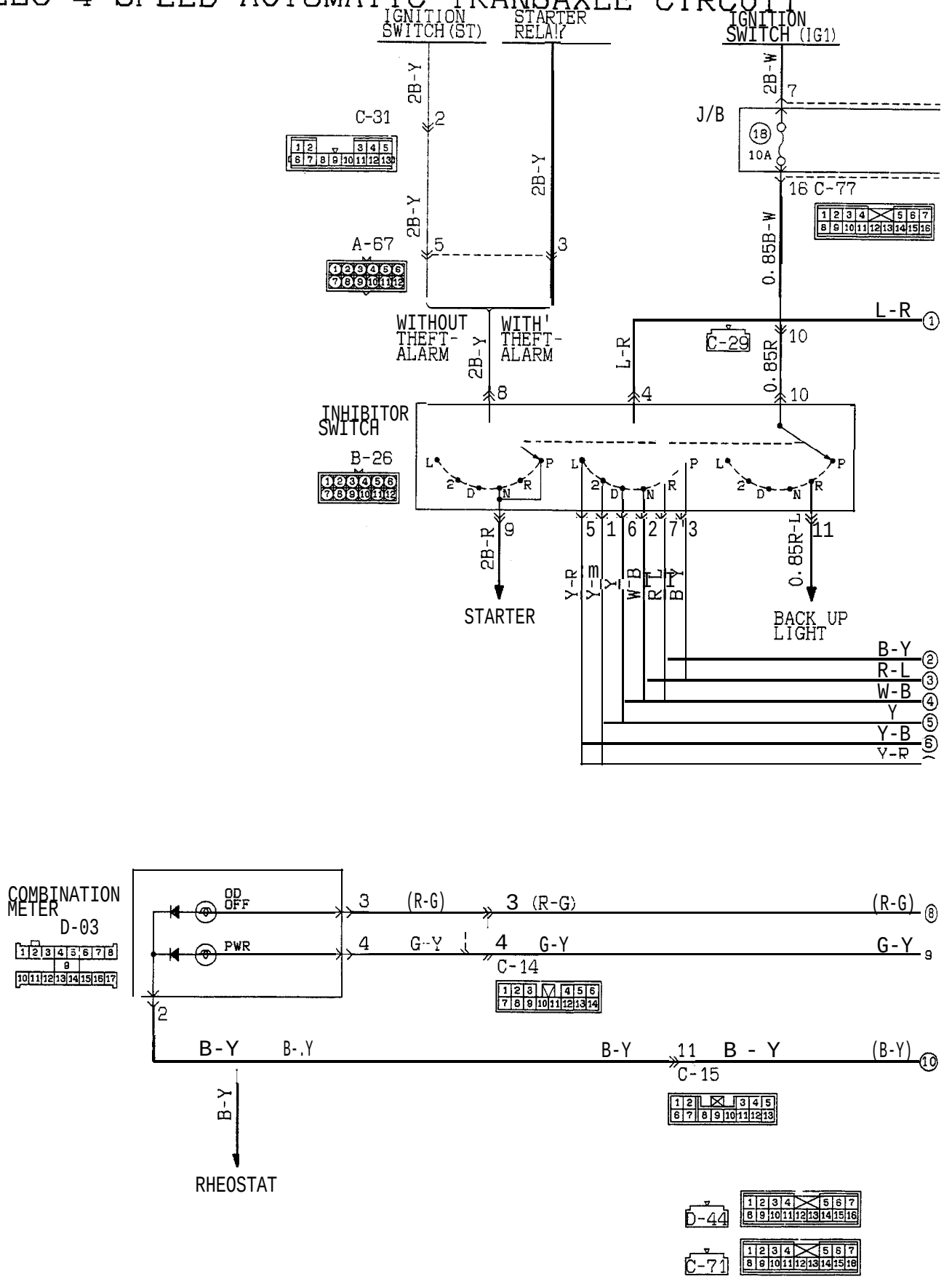




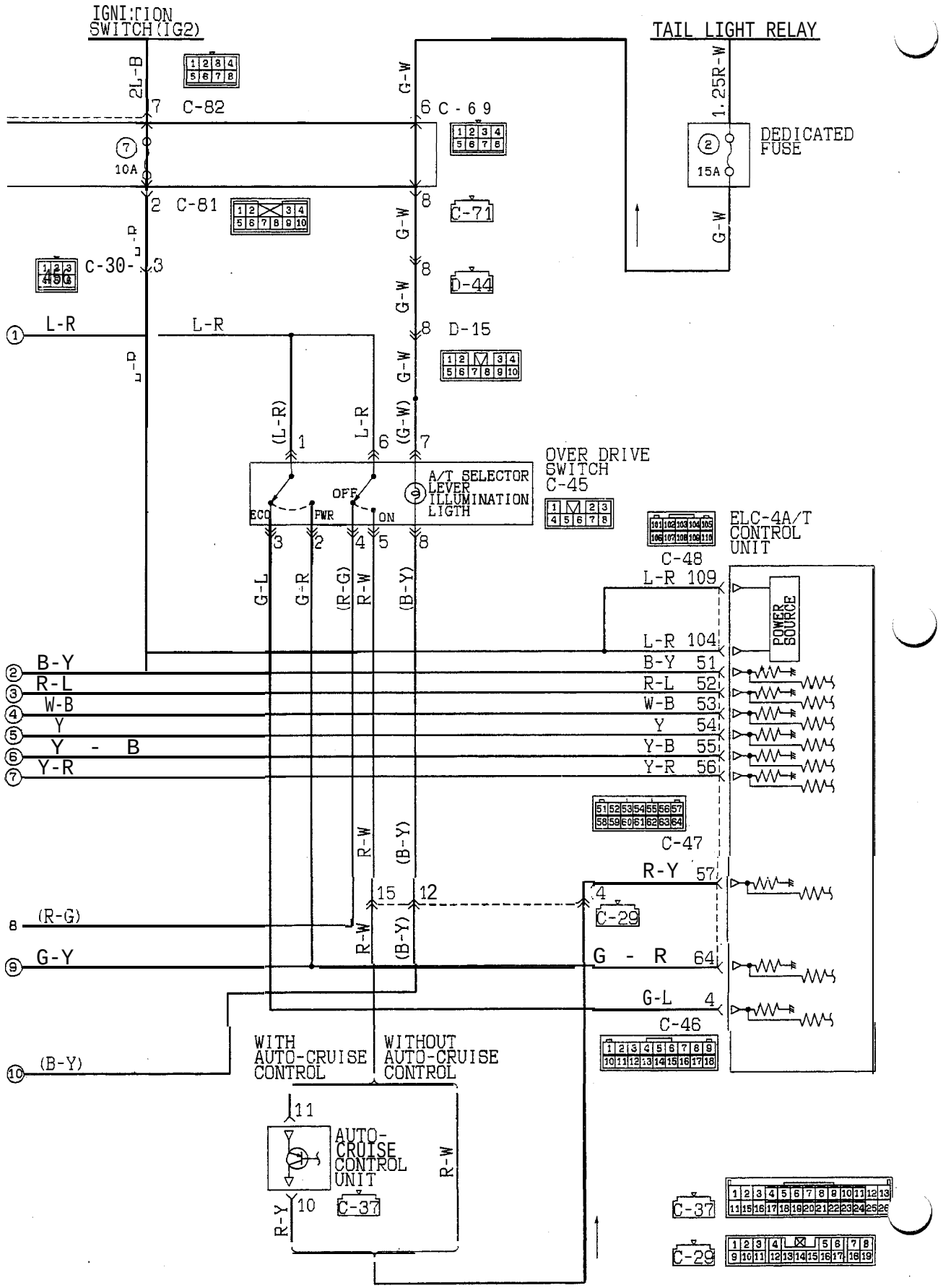




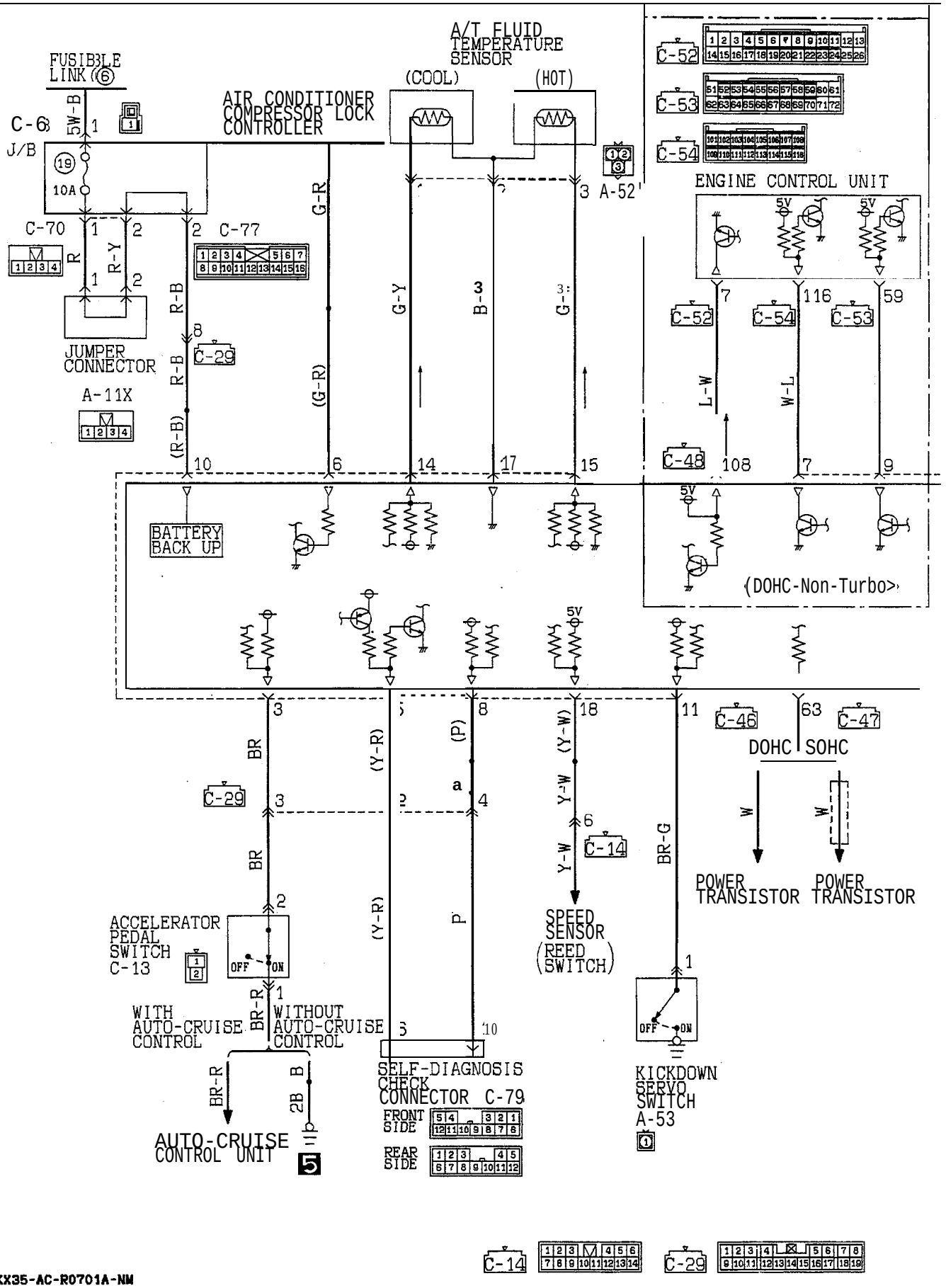
ELC 4-SPEED AUTOMATIC TRANSAXLE CIRCUIT



K35-AC-R0701-NW

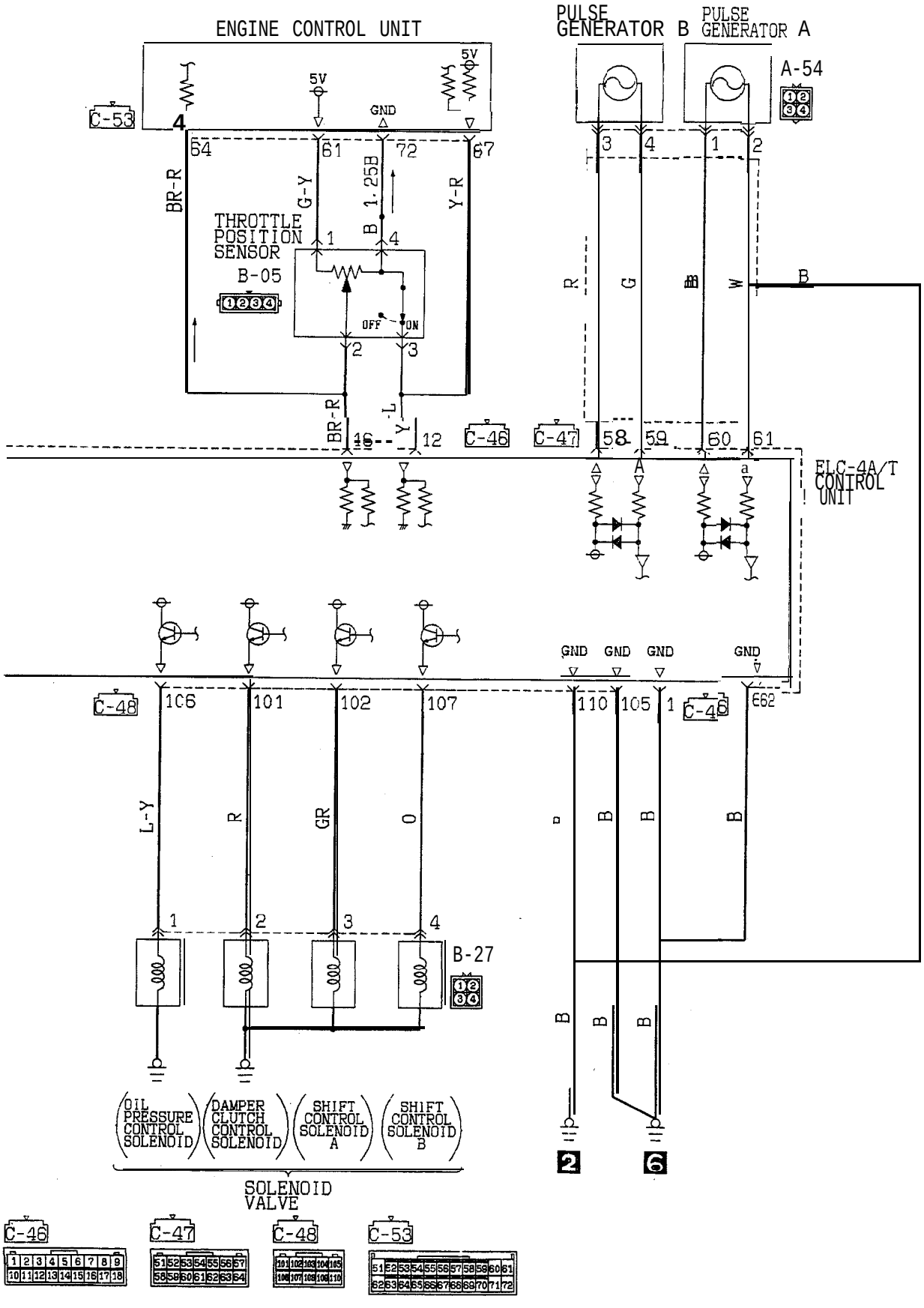


TSB Revision



KX35-AC-R0701A-NM

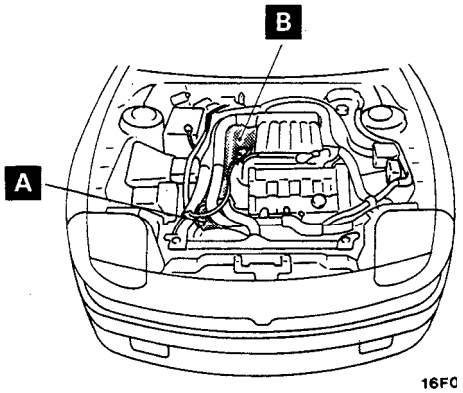
TSB Revision

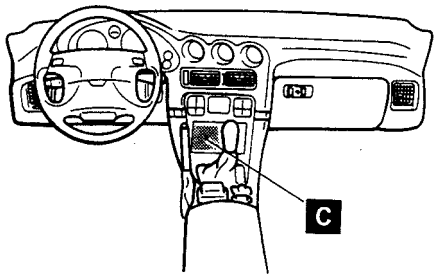


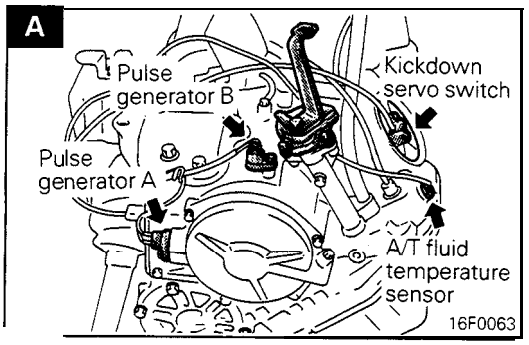
TSB Revision

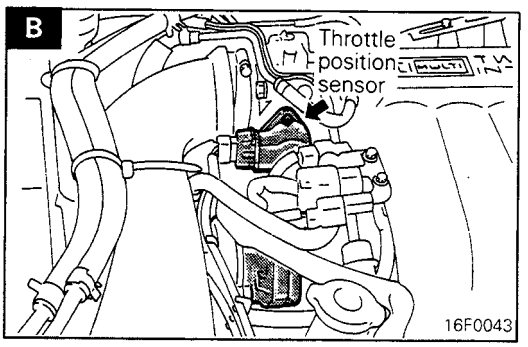
COMPONENTS LOCATION

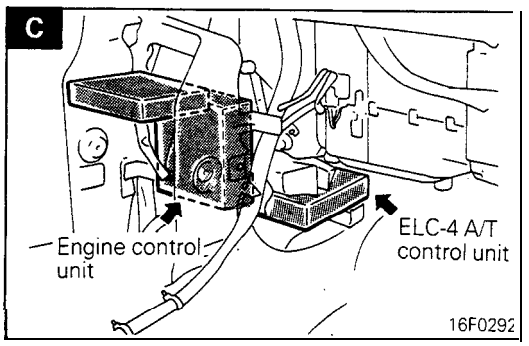
Name	Symbol	Name	Symbol
A/T fluid temperature sensor	A	Kickdown servo switch	A
ELC4 A/T control unit	C	Pulse generator	A
Engine control unit	C	Throttle position sensor	B



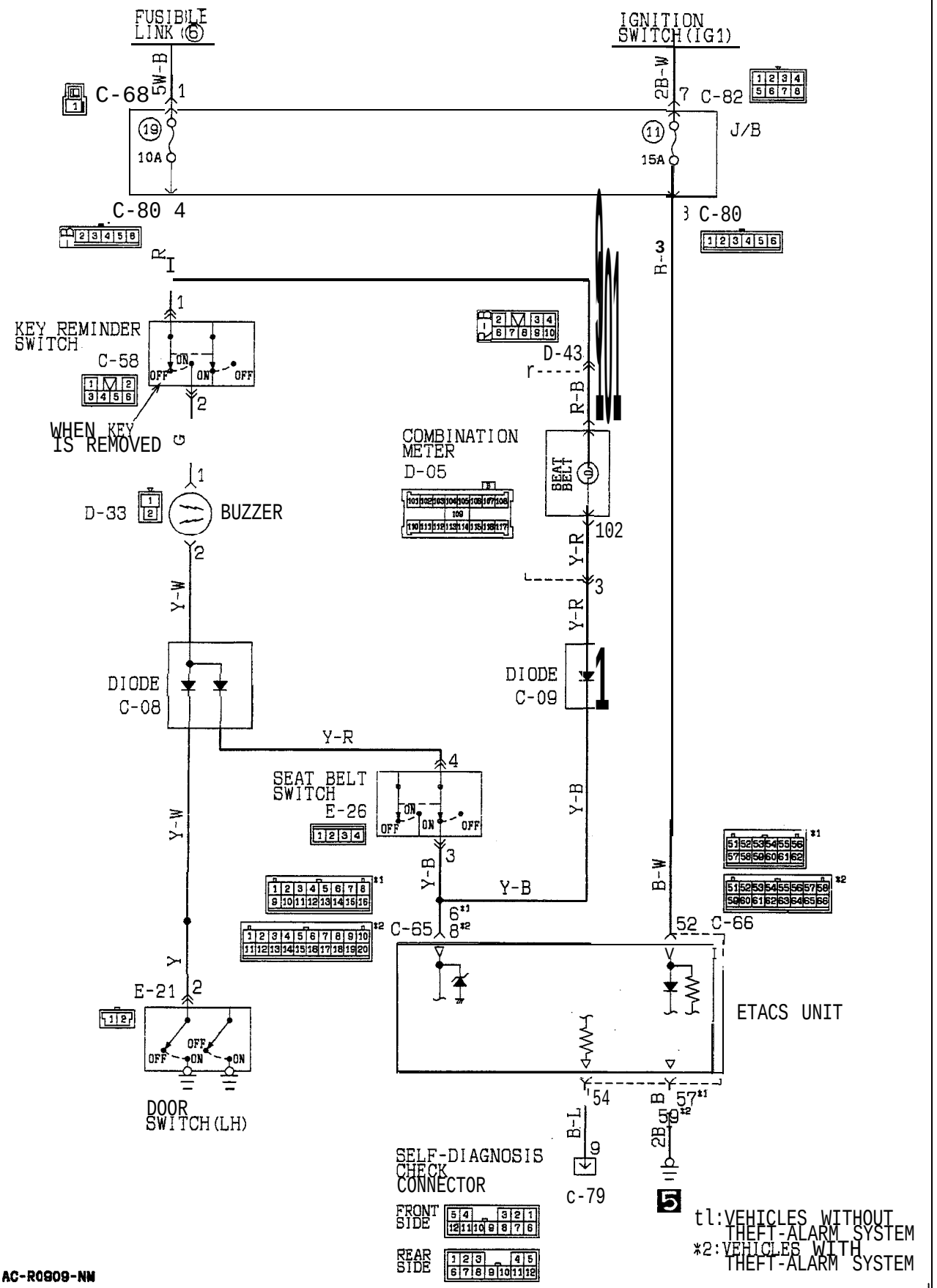








BUZZER CIRCUIT

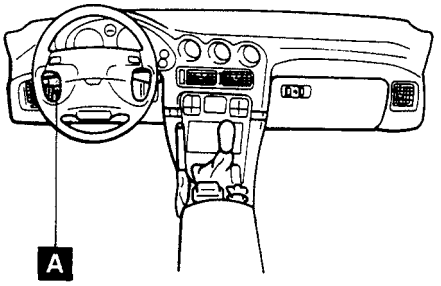


K35-AC-R0909-NM

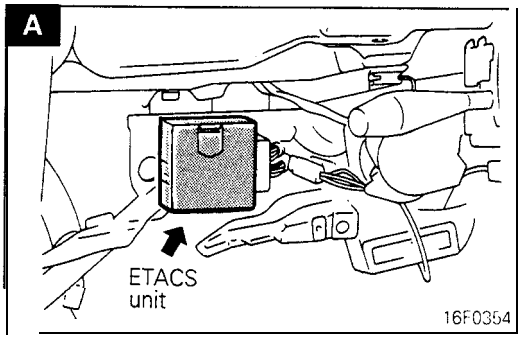
TSB Revision

COMPONENTS LOCATION

Name	Symbol
ETACS unit	A

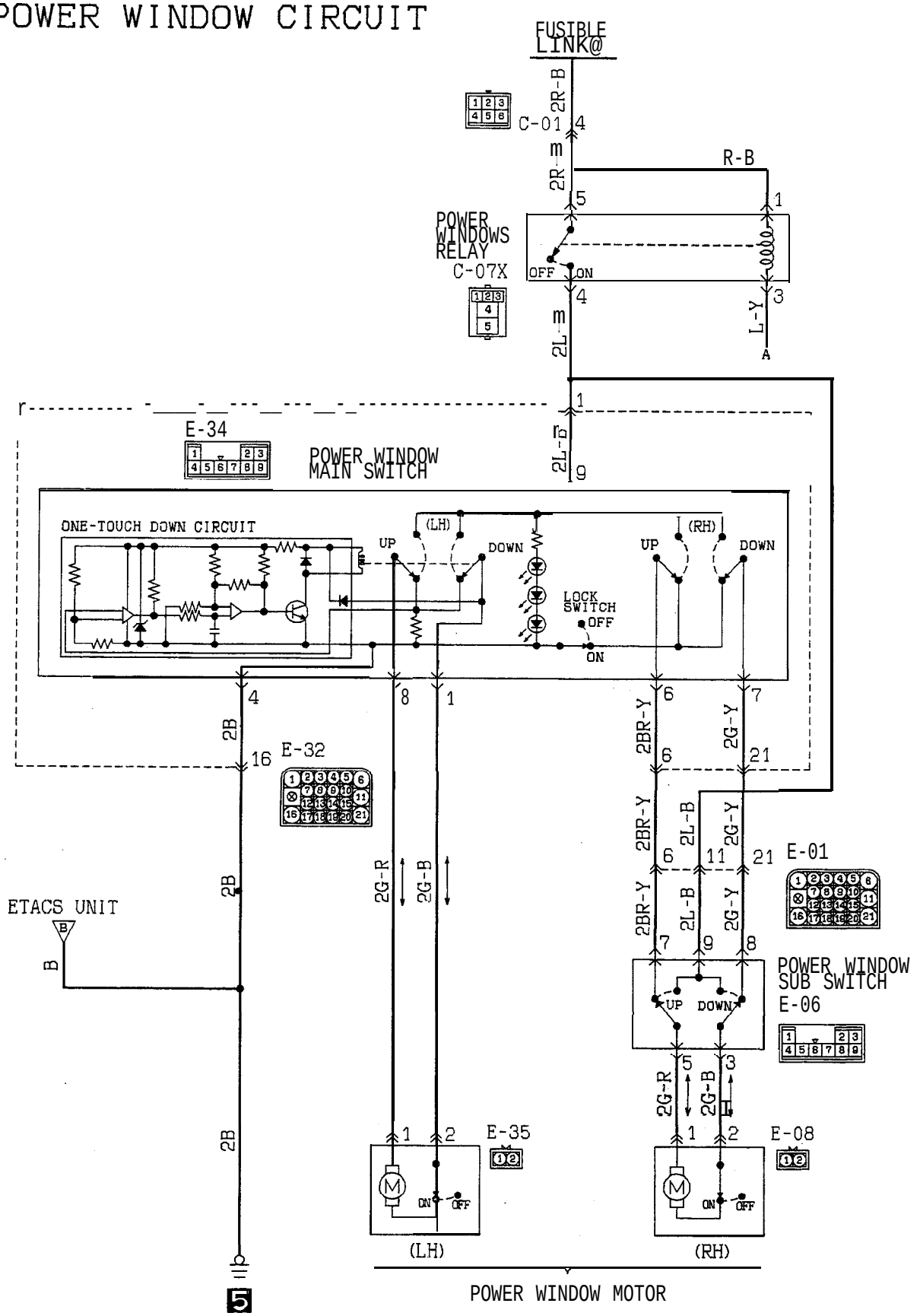


19F0134



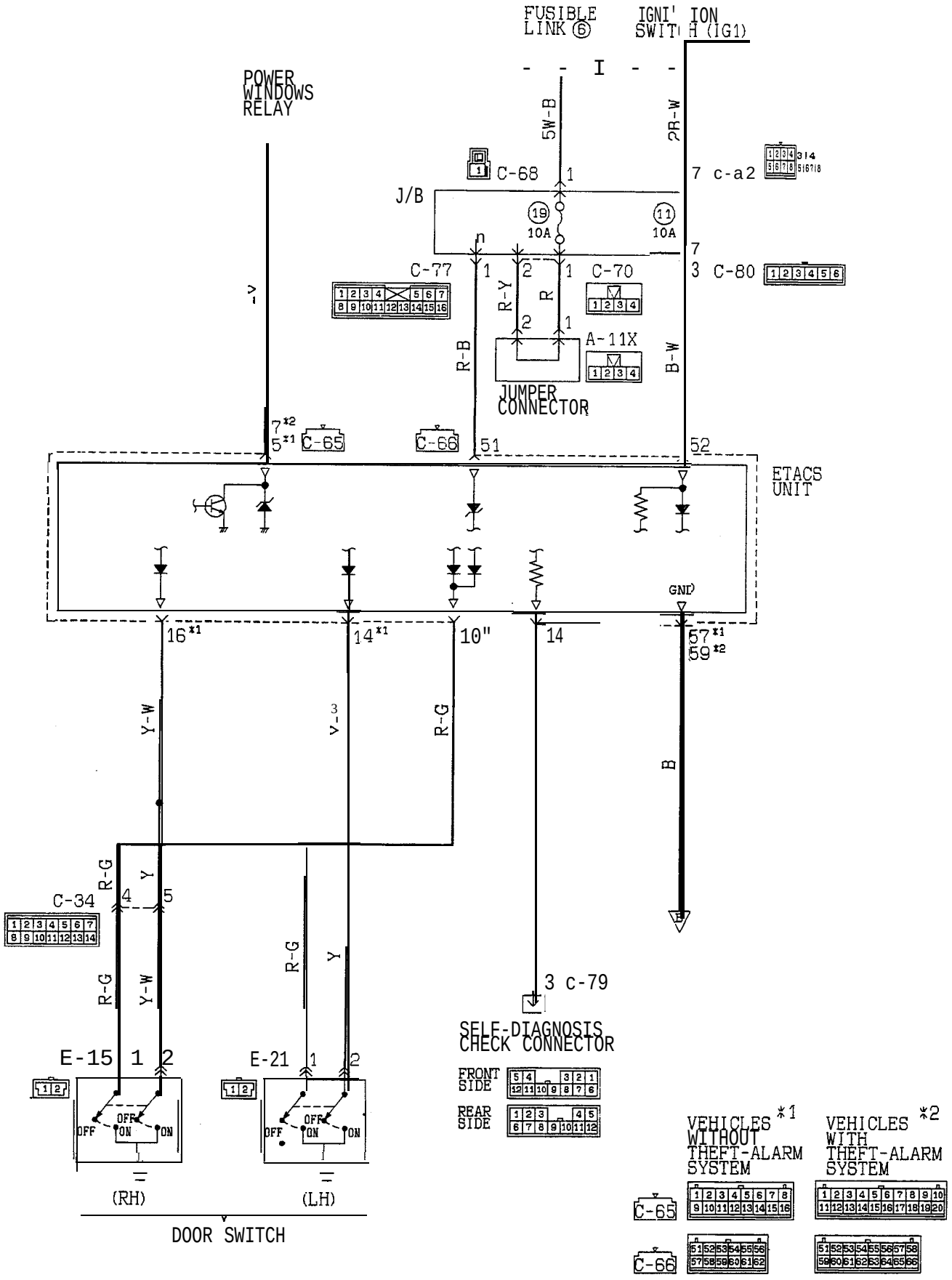
16F0354

POWER WINDOW CIRCUIT



X35-AC-RIYOI-NY

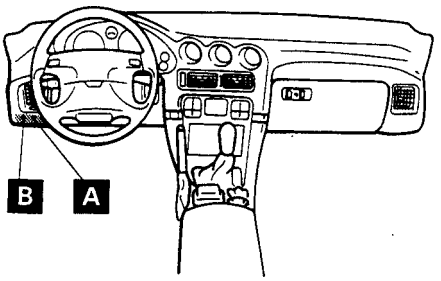
TSB Revision



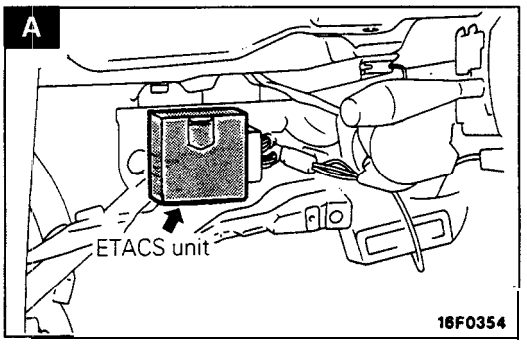
TSB Revision

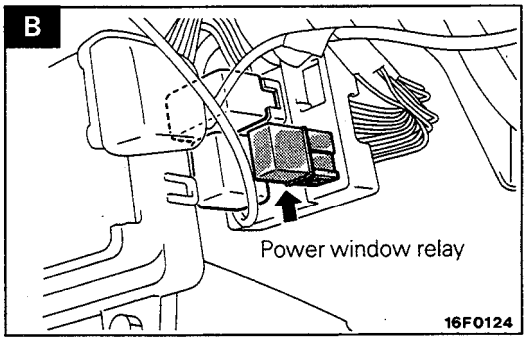
COMPONENTS LOCATION

Name	Symbol	Name	Symbol
ETACS unit	A	Power window relay	B

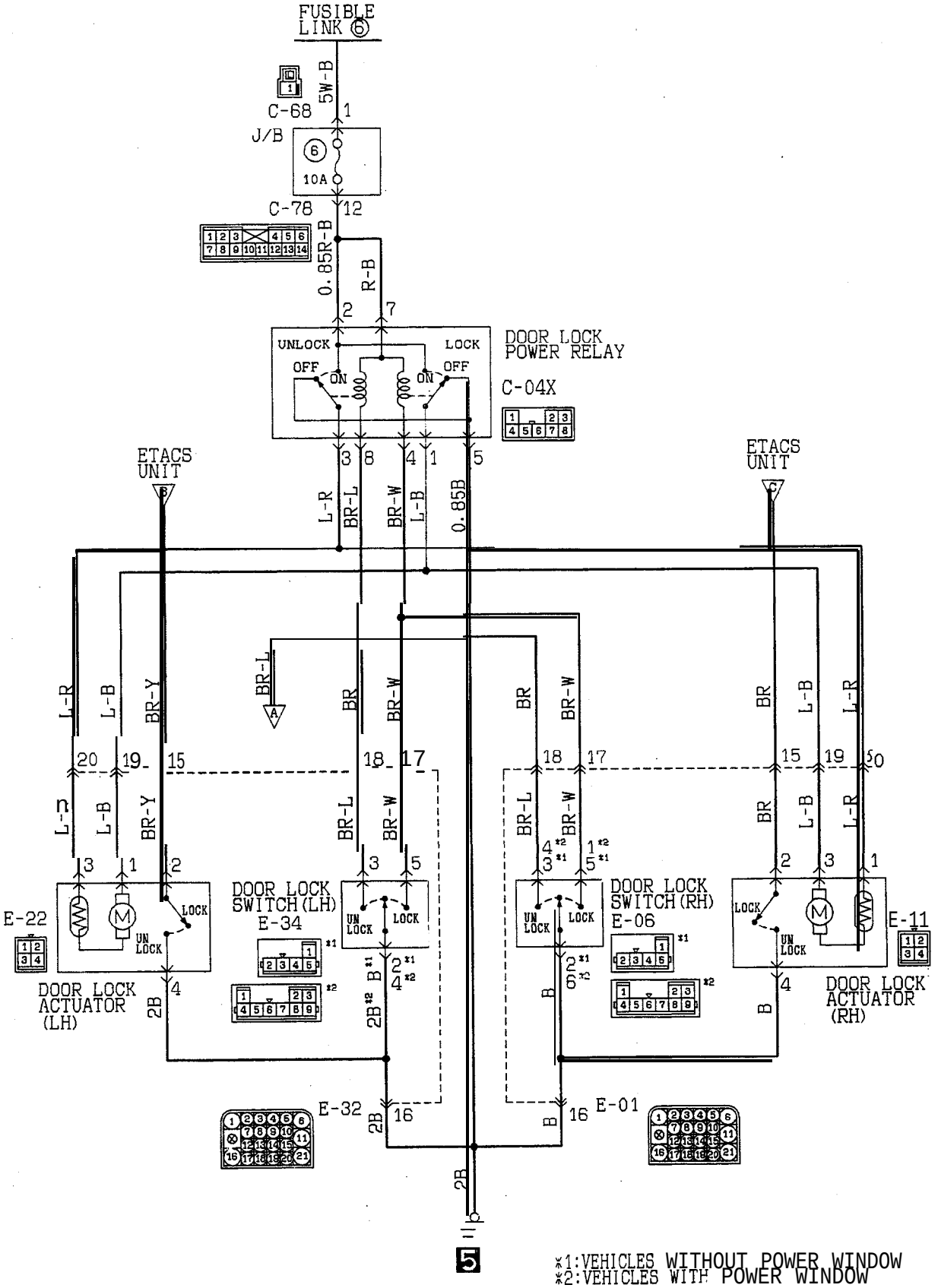


19F0134

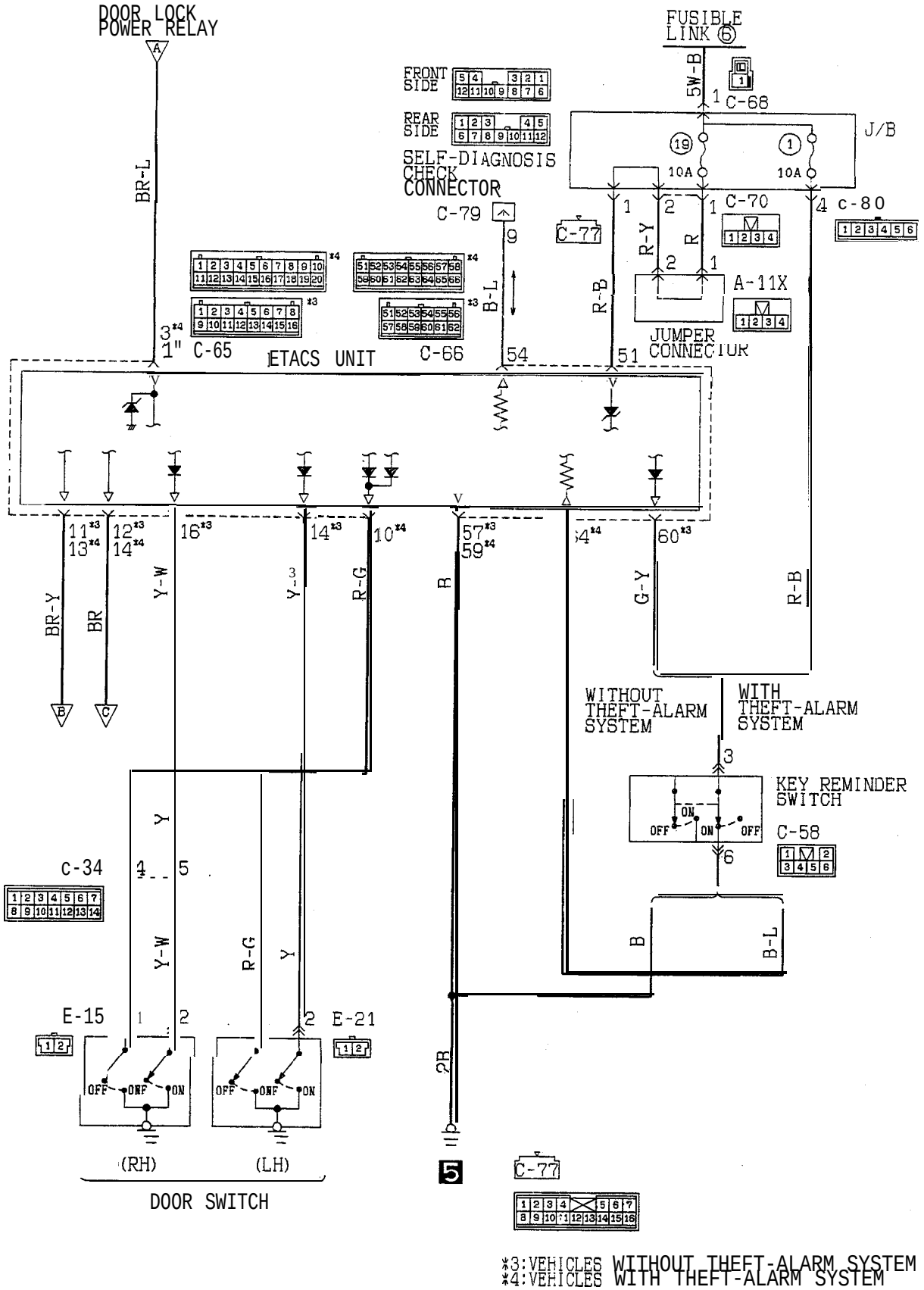




CENTRAL DOOR LOCKING CIRCUIT

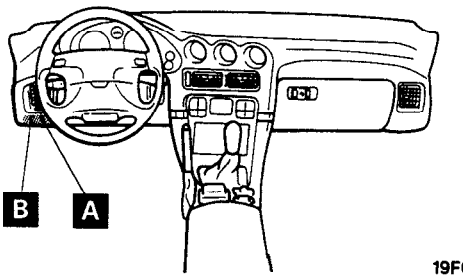


X35-AC-R1102-NM

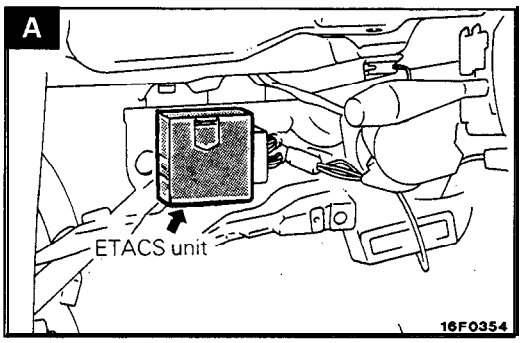

DOOR LOCK POWER RELAY
FUSIBLE LINK ⑥
5W-B
C-68
J/B
10A
10A
FRONT SIDE
REAR SIDE
SELF-DIAGNOSIS CHECK CONNECTOR
C-79
C-77
C-70
C-80
R-Y
R
R-B
B-L
A-11X
JUMPER CONNECTOR
BR-L
C-65
ETACS UNIT
C-66
54
51
BR-Y
BR
Y-W
Y
R-G
R
G-Y
WITHOUT THEFT-ALARM SYSTEM
WITH THEFT-ALARM SYSTEM
KEY REMINDER SWITCH
C-58
ON
OFF
C-34
B
B-L
E-15
E-21
2R
(RH)
(LH)
DOOR SWITCH
C-77
*3:VEHICLES WITHOUT THEFT-ALARM SYSTEM
*4:VEHICLES WITH THEFT-ALARM SYSTEM

COMPONENTS LOCATION

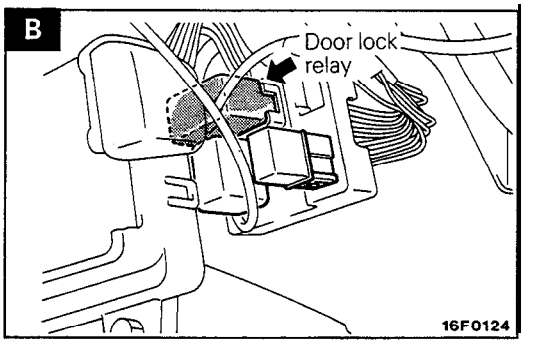
Name	Symbol	Name	Symbol
ETACS unit	A	Door lock relay	B



19F0134

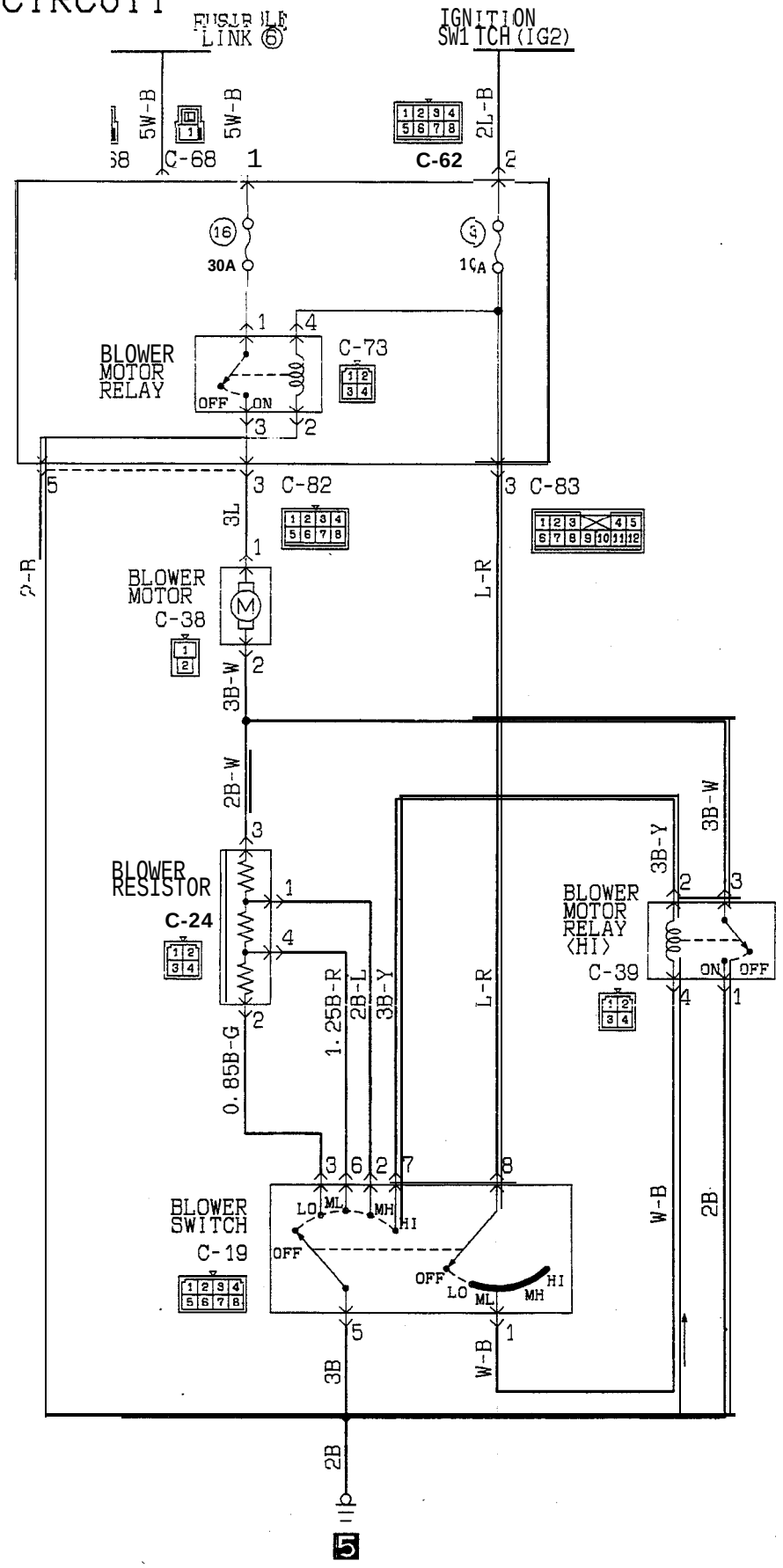


16F0354



16F0124

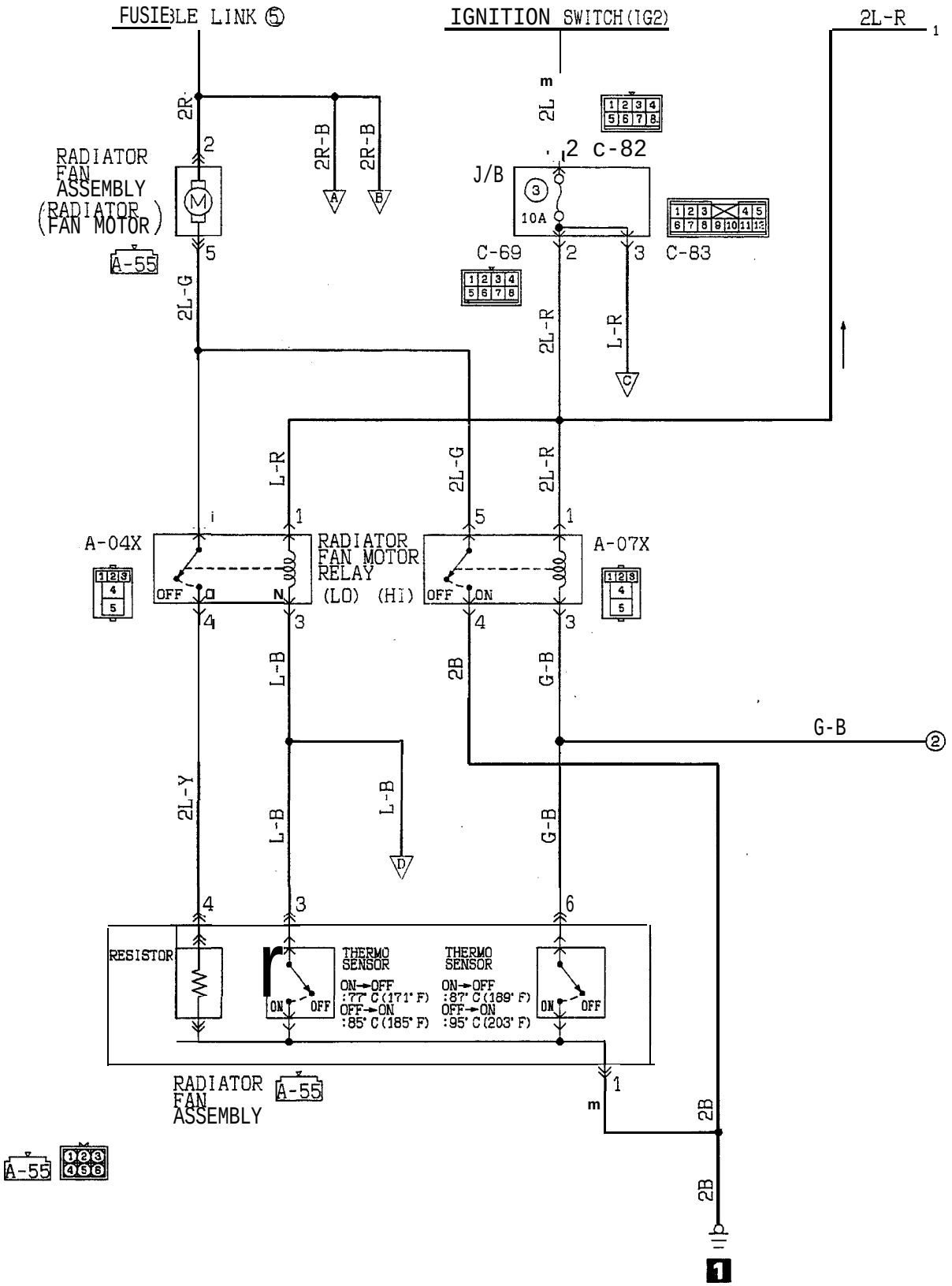
HEATER CIRCUIT



(X35-AC-R1201-NM

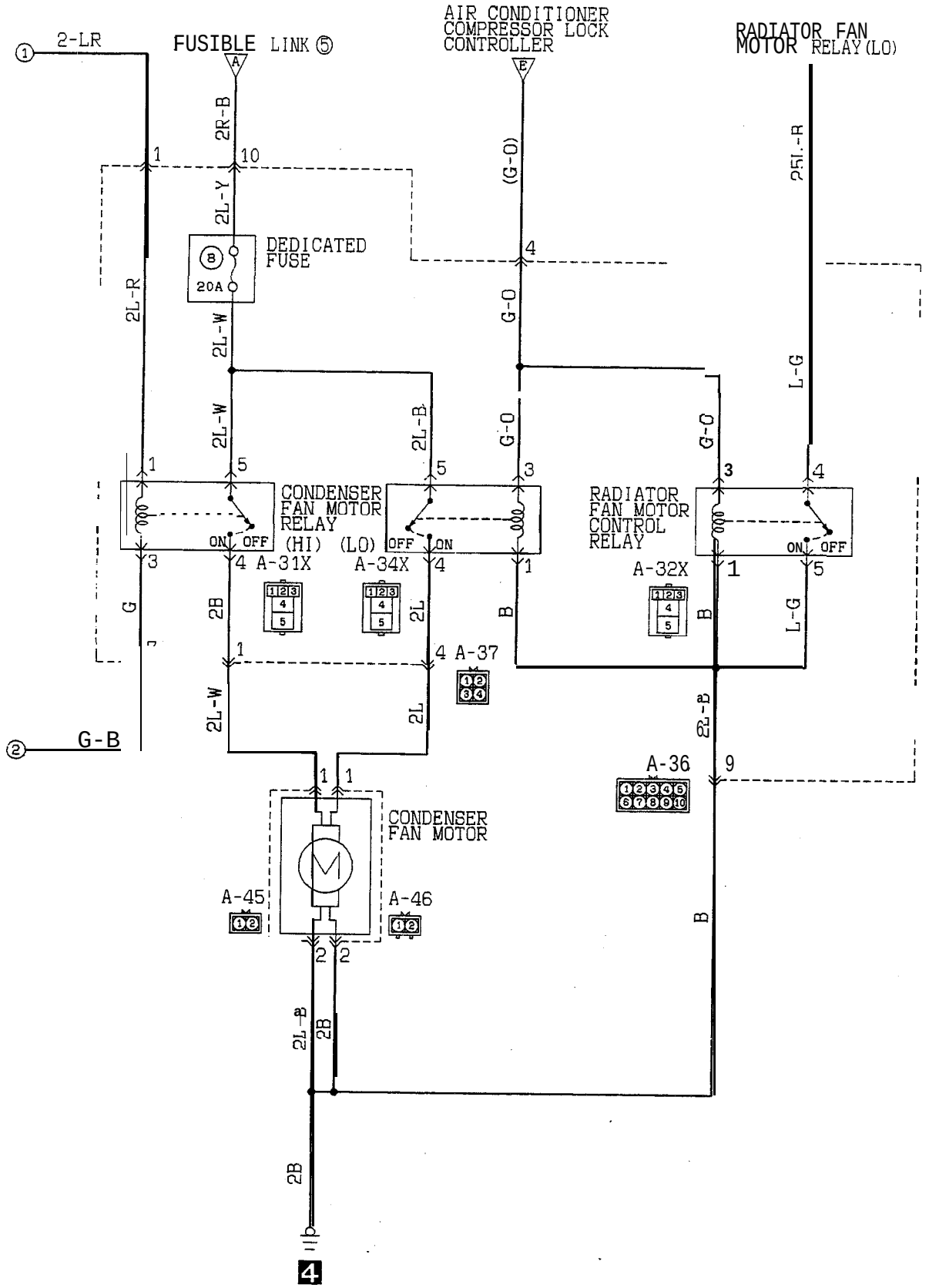
TSB Revision

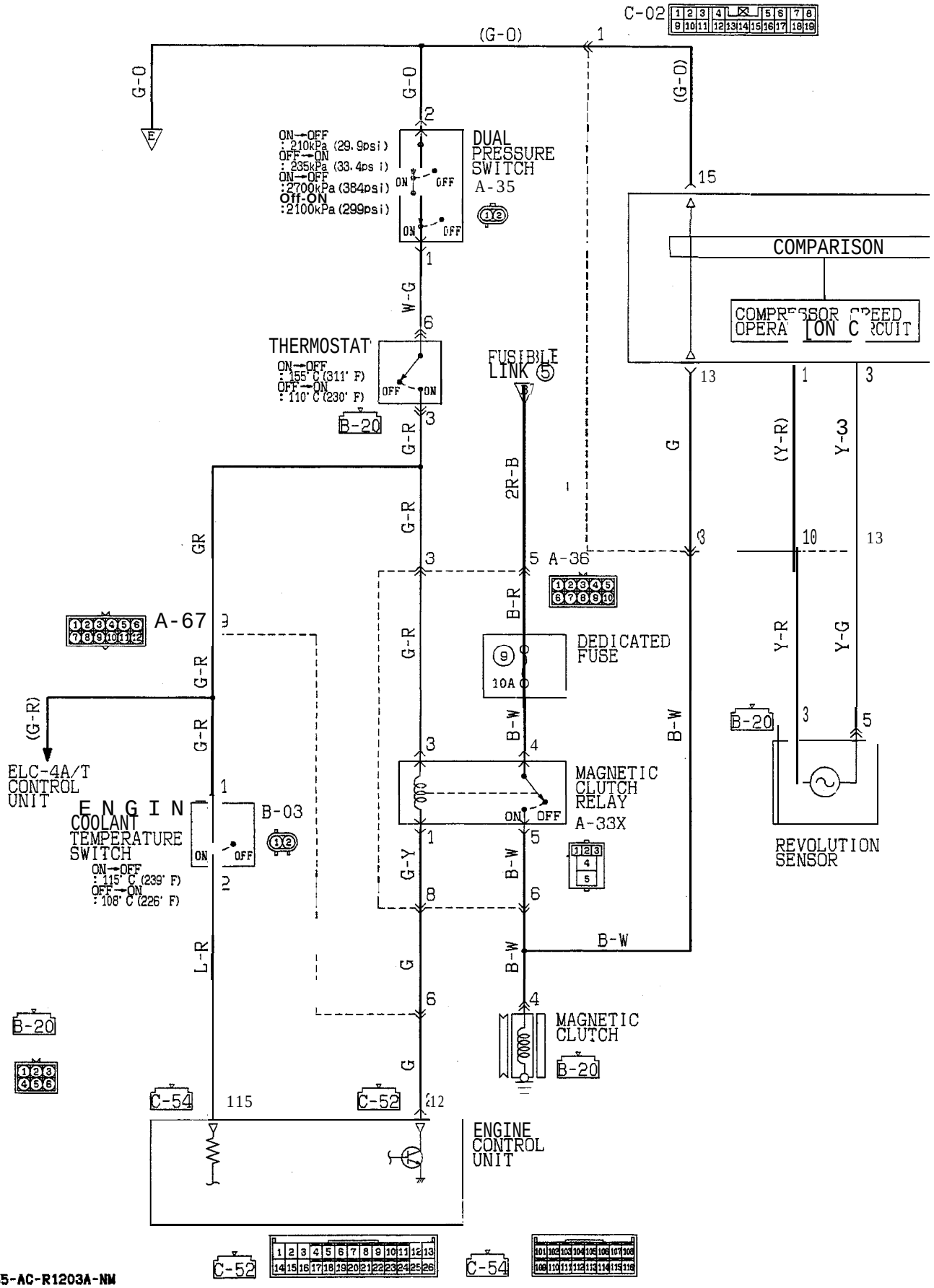
MANUAL AIR CONDITIONER CIRCUIT



KX35-AC-R1203-NM

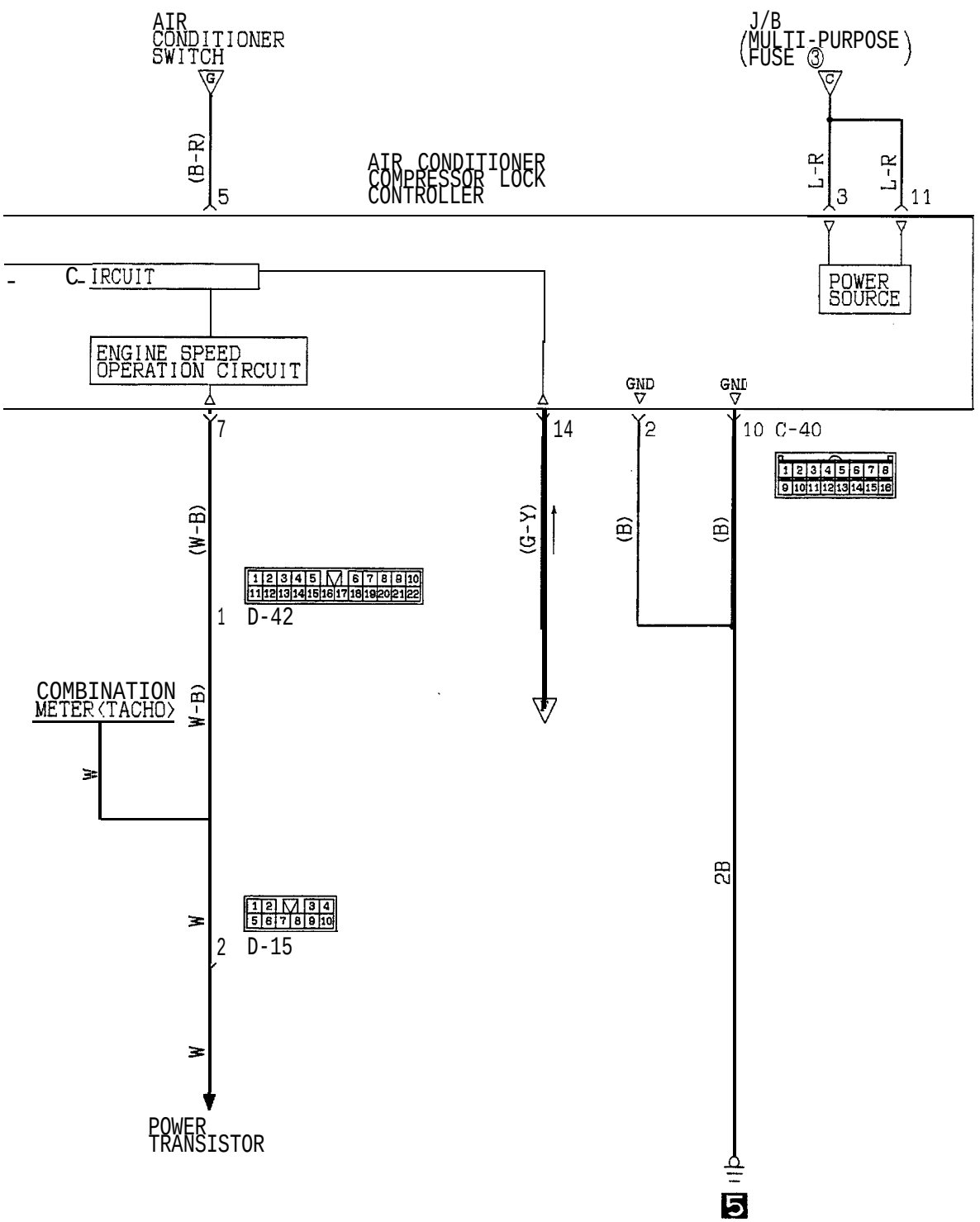
TSB Revision

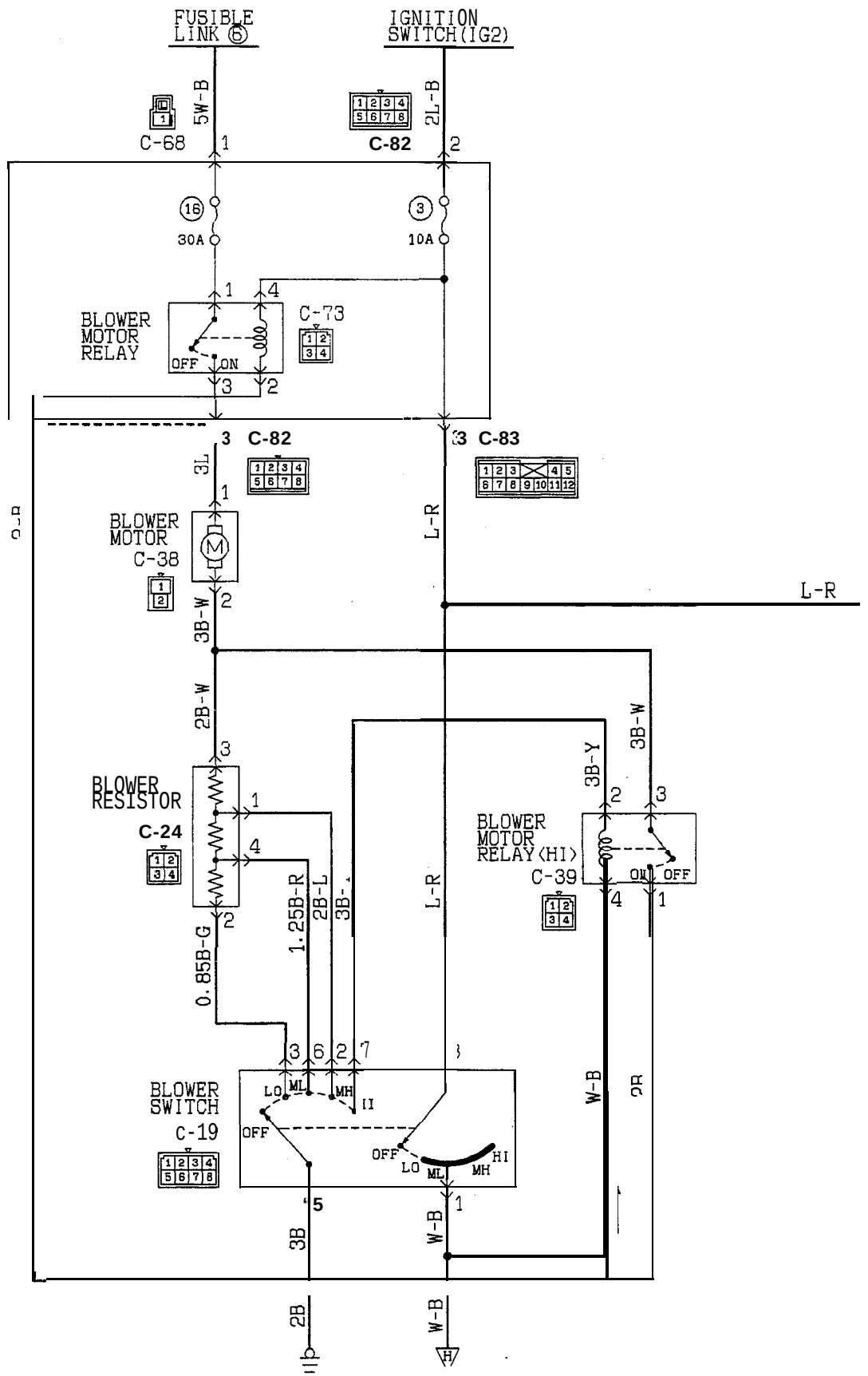

2-LR
FUSIBLE LINK ⑤
AIR CONDITIONER COMPRESSOR LOCK CONTROLLER
RADIATOR FAN MOTOR RELAY (LO)
2R-B
2L-Y
2L-R
2L-W
(G-O)
25L-R
L-G
G-O
2L-B
DEDICATED FUSE
20A
CONDENSER FAN MOTOR RELAY
(HI) (LO)
ON OFF
RADIATOR FAN MOTOR CONTROL RELAY
A-31X
A-34X
A-32X
A-37
A-36
G-B
G
2B
2L
B
CONDENSER FAN MOTOR
A-45
A-46
4



KX35-AC-R1203A-NM

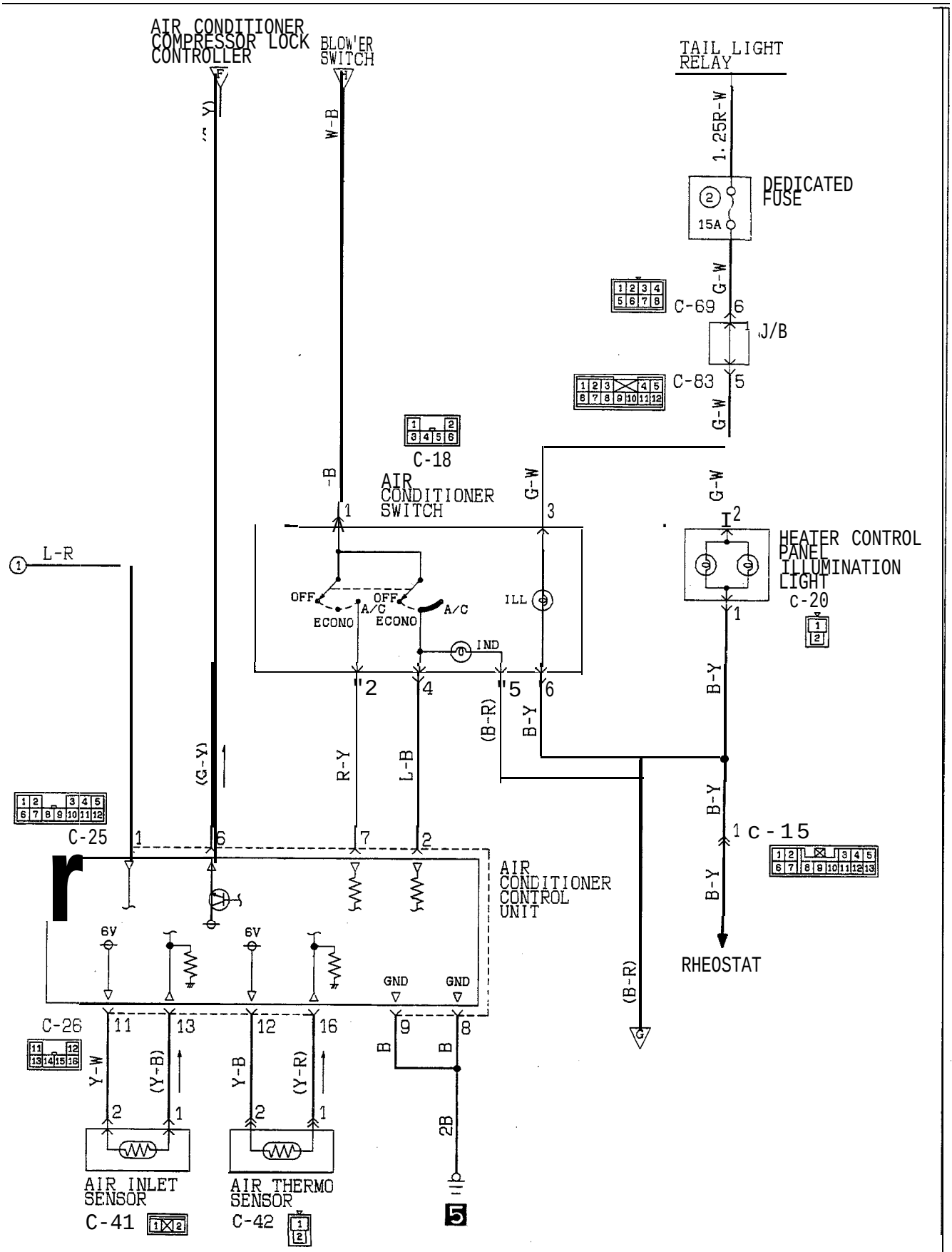
TSB Revision


AIR CONDITIONER SWITCH
G
(B-R)
5
AIR CONDITIONER COMPRESSOR LOCK CONTROLLER
J/B (MULTI-PURPOSE FUSE ③)
C
L-R
3
L-R
11
POWER SOURCE
C-IRCUIT
ENGINE SPEED OPERATION CIRCUIT
GND
GND
7
14
2
10 C-40
(W-B)
(G-Y)
(B)
(B)
1 D-42
COMBINATION METER〈TACHO〉
W-B)
W
W
2 D-15
W
2B
POWER TRANSISTOR
5

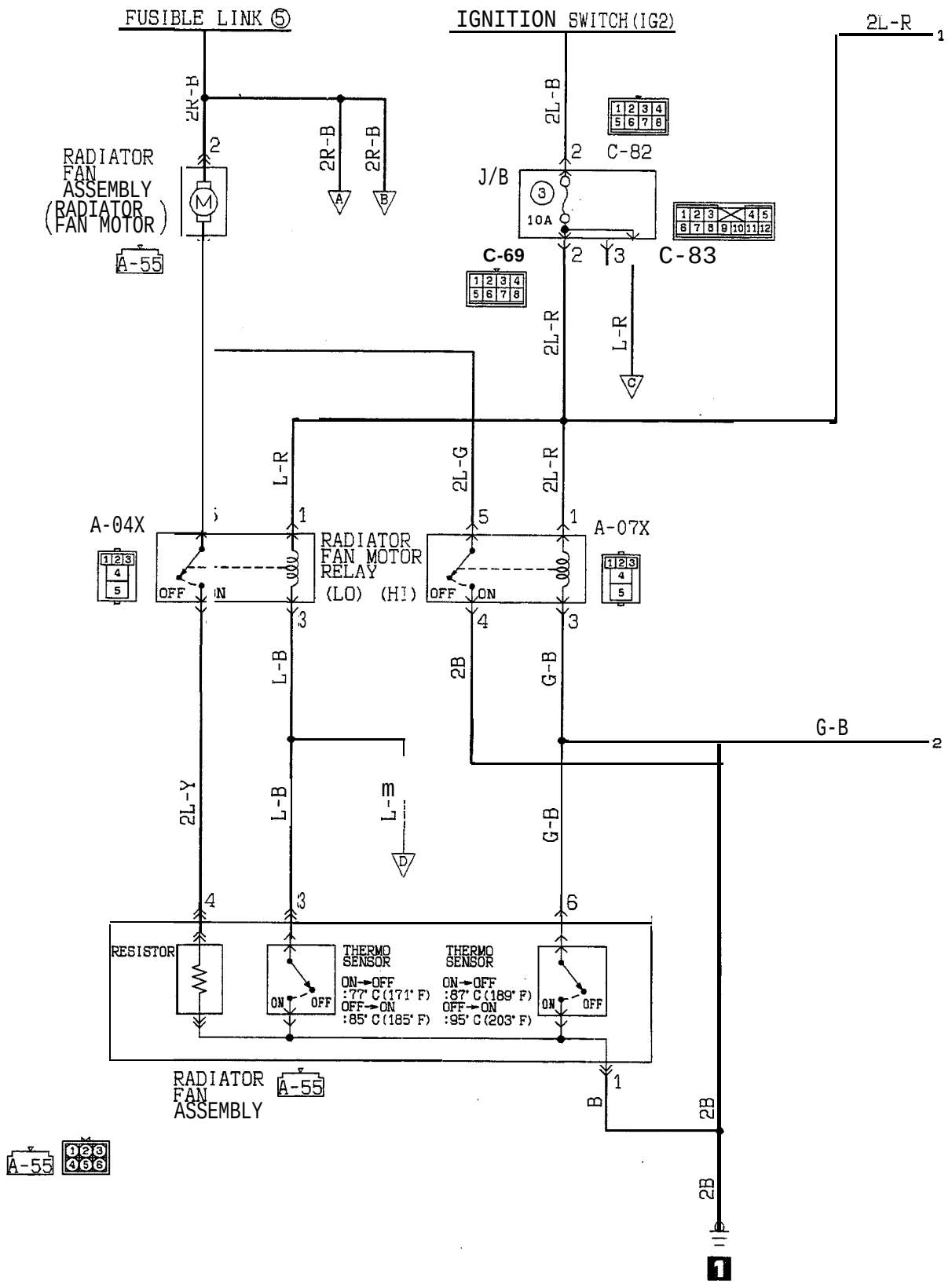


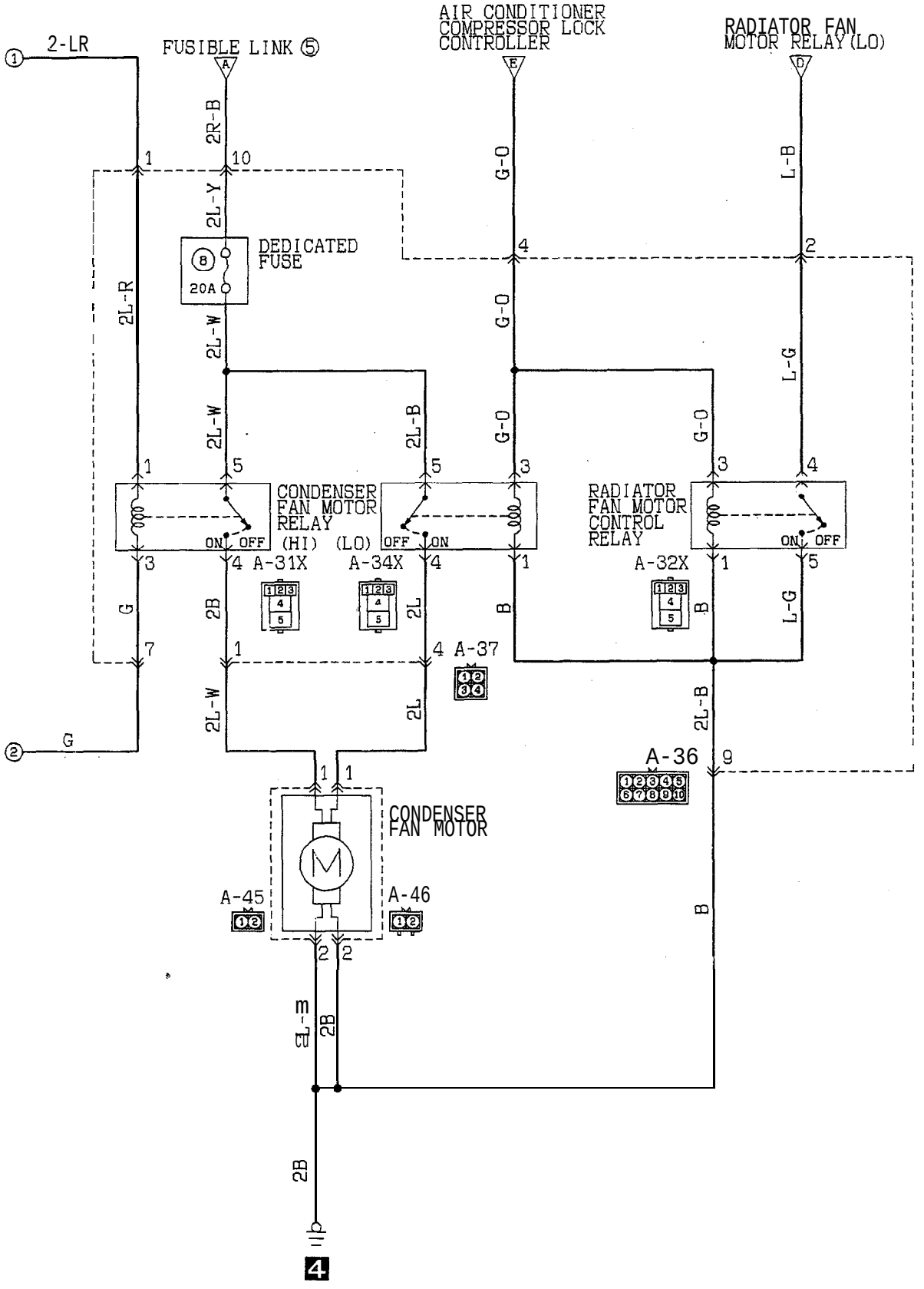
KX35-AC-R1203B-NM

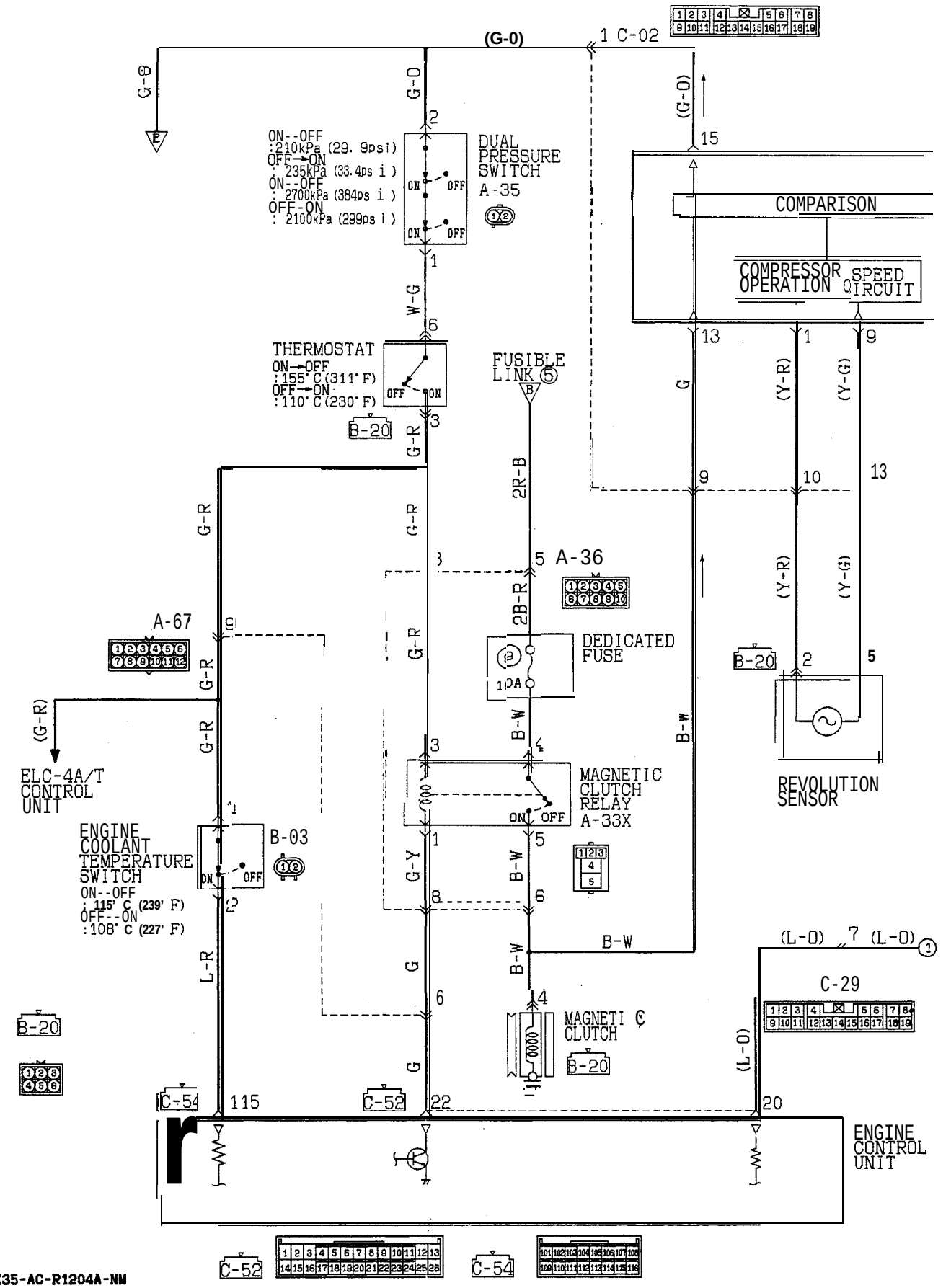
TSB Revision


AIR CONDITIONER COMPRESSOR LOCK CONTROLLER
BLOW'ER SWITCH
TAIL LIGHT RELAY
1.25R-W
DEDICATED FUSE
15A
G-W
C-69
J/B
C-83
C-18
AIR CONDITIONER SWITCH
HEATER CONTROL PANEL ILLUMINATION LIGHT
C-20
L-R
OFF
A/C
ECONO
ILL
IND
B-Y
(B-R)
(G-Y)
R-Y
L-B
C-25
C-15
AIR CONDITIONER CONTROL UNIT
6V
GND
RHEOSTAT
C-26
Y-W
(Y-B)
Y-B
(Y-R)
B
2B
AIR INLET SENSOR
C-41
AIR THERMO SENSOR
C-42

FULL AUTO AIR CONDITIONER CIRCUIT

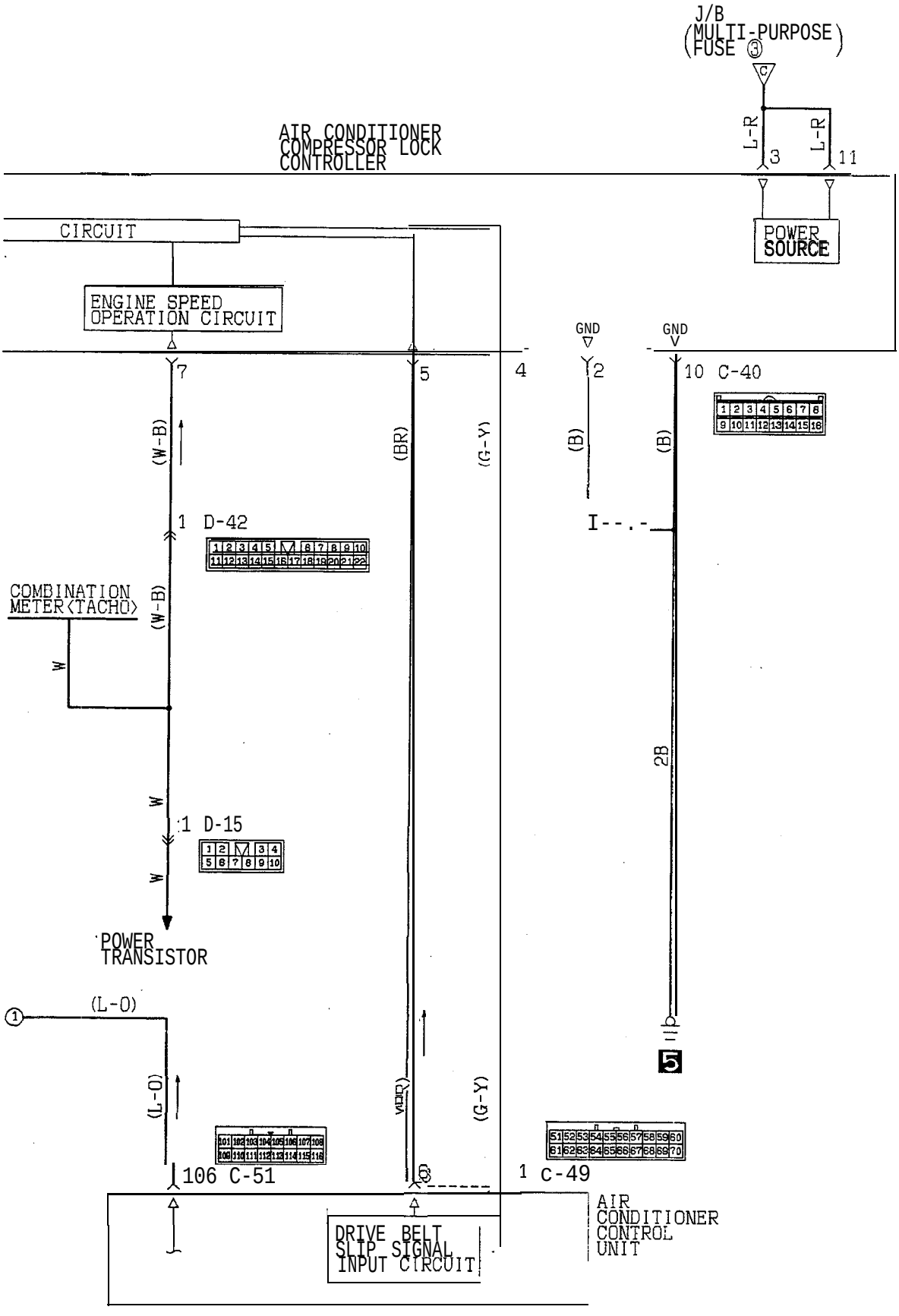



AIR CONDITIONER COMPRESSOR LOCK CONTROLLER
RADIATOR FAN MOTOR RELAY (LO)
2-LR
FUSIBLE LINK ⑤
DEDICATED FUSE
20A
CONDENSER FAN MOTOR RELAY
(HI) (LO)
RADIATOR FAN MOTOR CONTROL RELAY
ON OFF
A-31X
A-34X
A-32X
A-37
A-36
CONDENSER FAN MOTOR
A-45
A-46
2R-B
2L-Y
2L-R
2L-W
2L-B
G-O
L-B
L-G
G
2B
2L
B
4

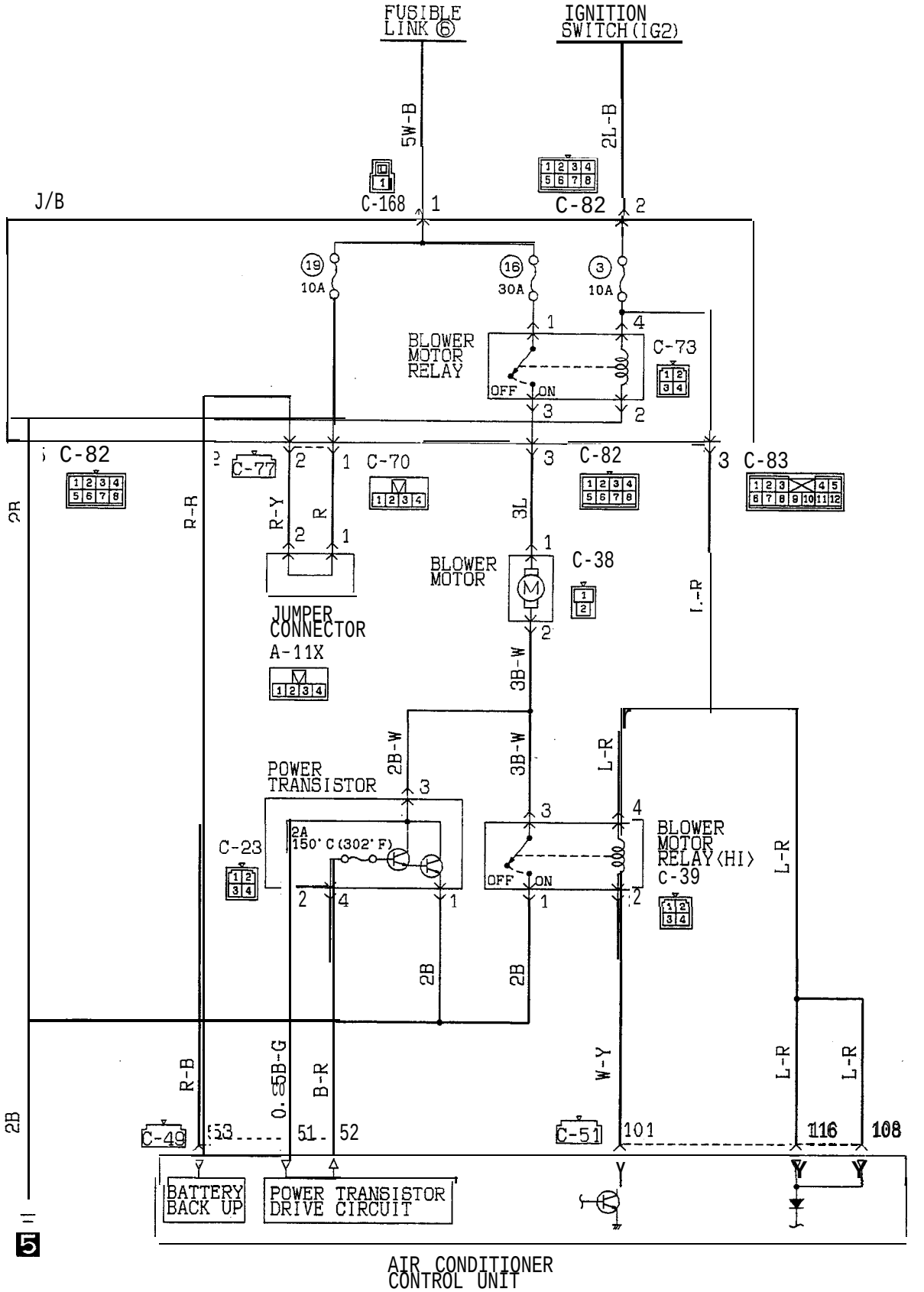


KX35-AC-R1204A-NM

TSB Revision



TSB Revision



KX35-AC-R1204B-NM

TSB Revision

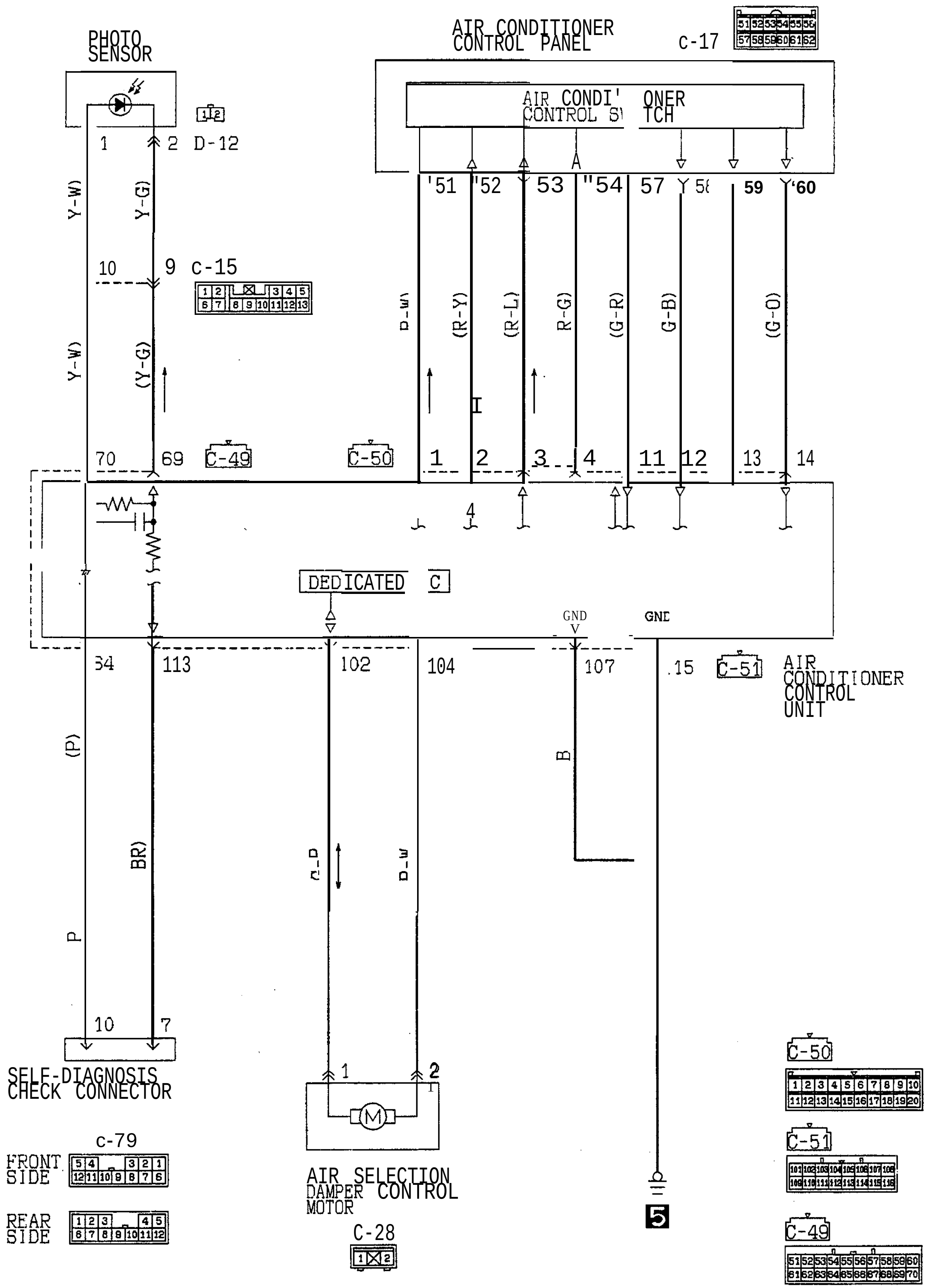
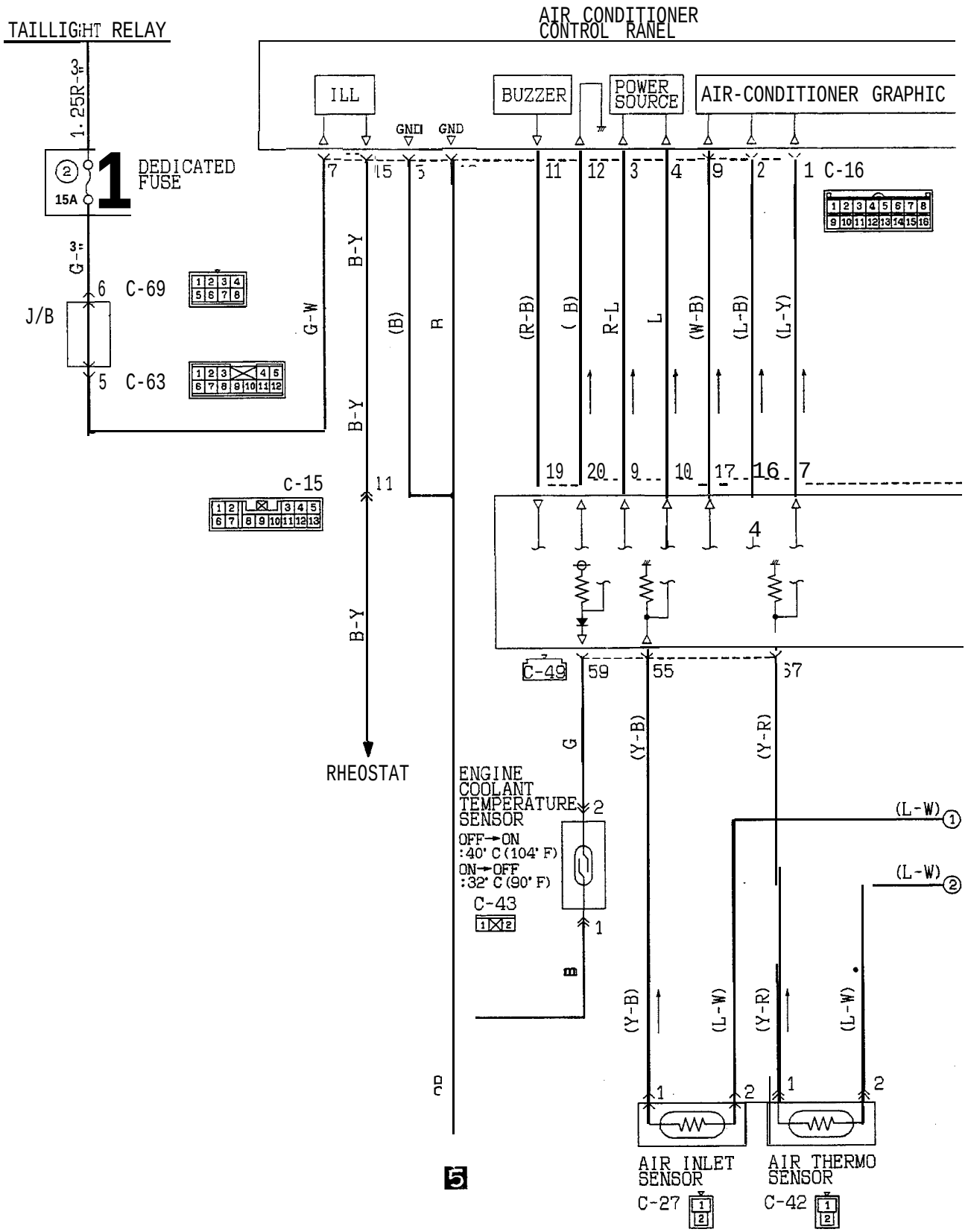
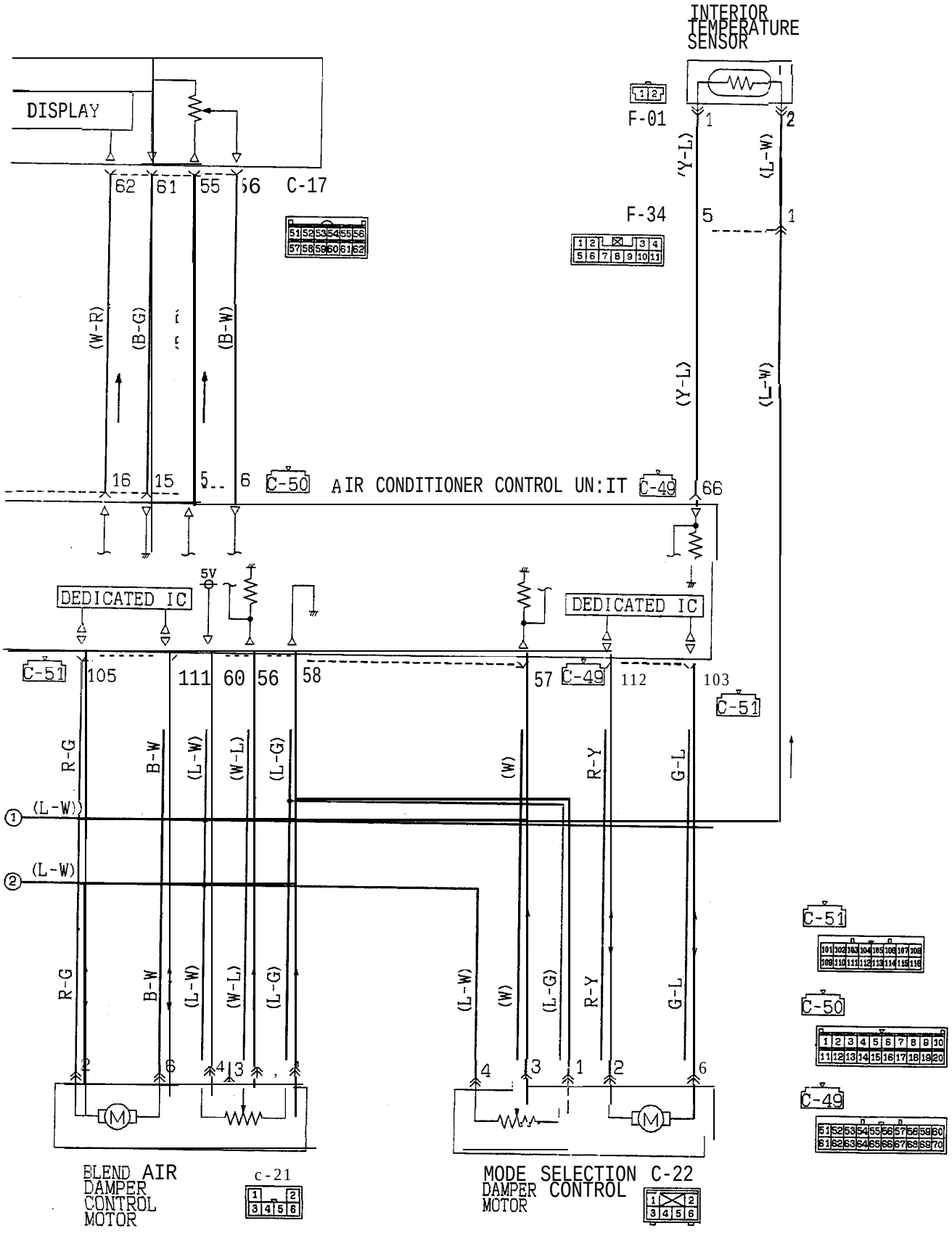


PHOTO SENSOR
D-12
AIR CONDITIONER CONTROL PANEL
C-17
AIR CONDITIONER CONTROL SWITCH
C-15
C-49
C-50
DEDICATED C
GND
C-51
AIR CONDITIONER CONTROL UNIT
SELF-DIAGNOSIS CHECK CONNECTOR
C-79
FRONT SIDE
REAR SIDE
AIR SELECTION DAMPER CONTROL MOTOR
C-28
C-50
C-51
C-49



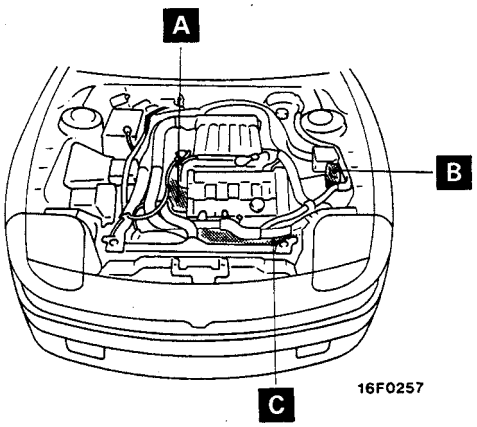
KX35-AC-R1204C-NM

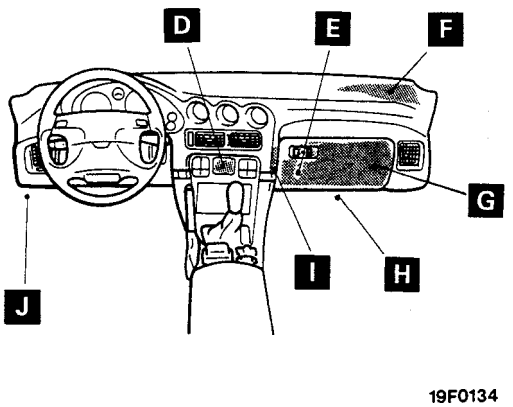


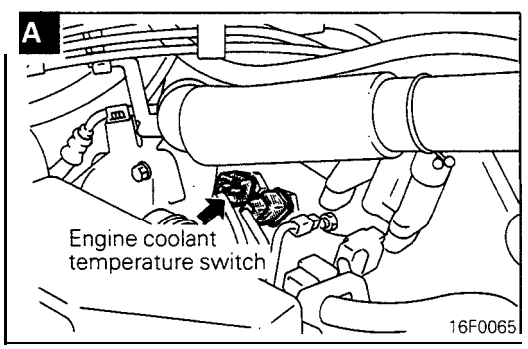
TSB Revision

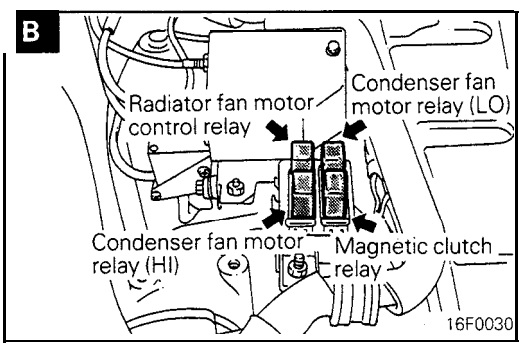
COMPONENTS LOCATION

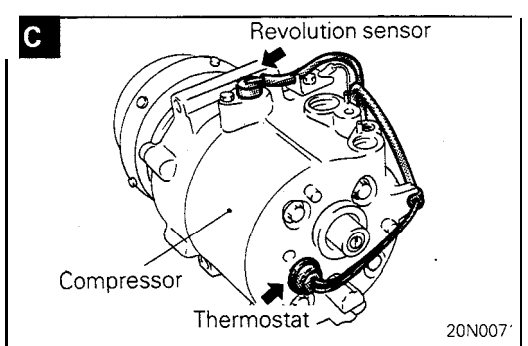
Name	Symbol	Name	Symbol
Air conditioner compressor lock controller	H	Engine coolant temperature sensor	I
Air conditioner control unit	D	Engine coolant temperature switch	A
Air-inlet sensor	G	interior temperature sensor	K
Air-thermo sensor	E	Magnetic clutch relay	B
Blower motor relay	J	Photo sensor	F
Blower motor relay (HI)	H	Radiator fan motor control relay	B
Condenser fan motor relay (LO)	B	Revolution sensor	C
Condenser fan motor relay (HI)	B	Thermostat	C
Engine control unit	D	–	–

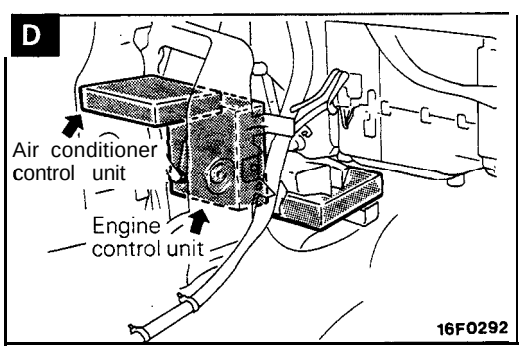




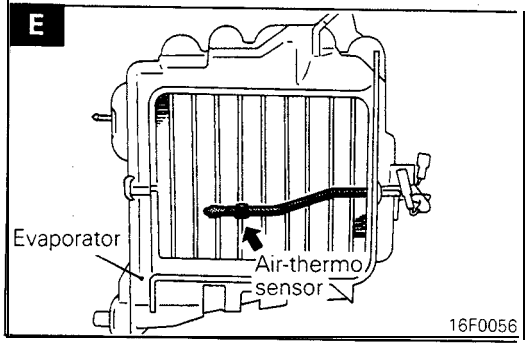




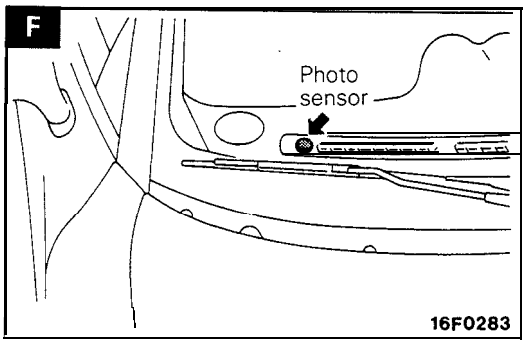




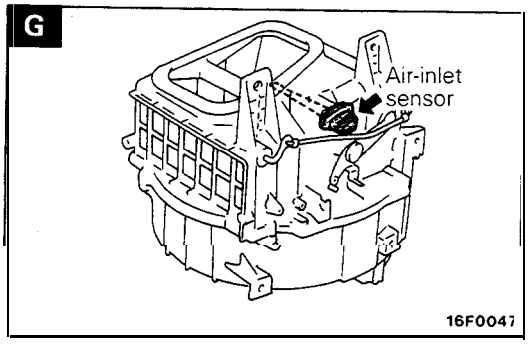
E



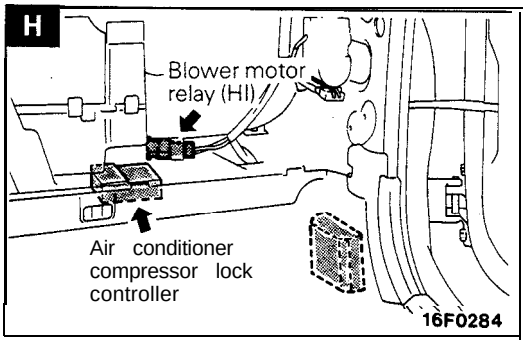
F



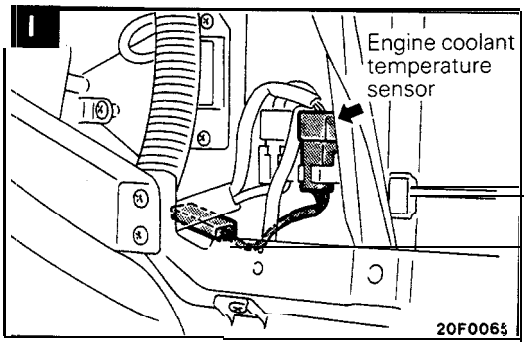
G



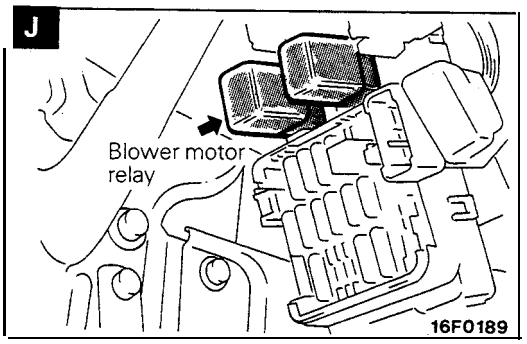
H



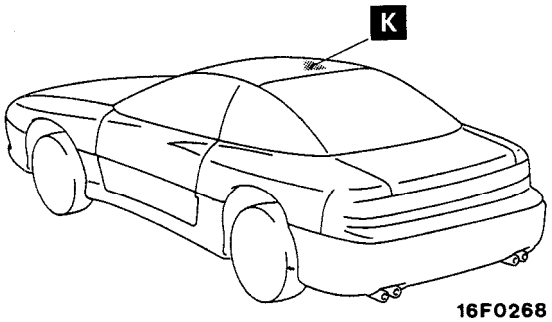
I



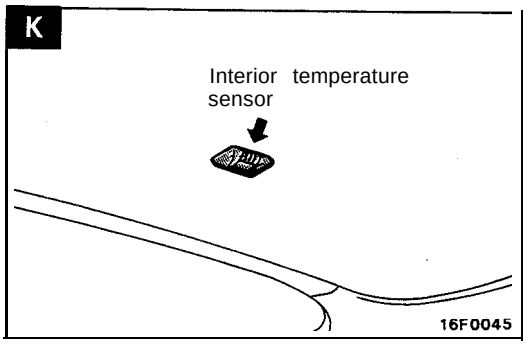
J



K

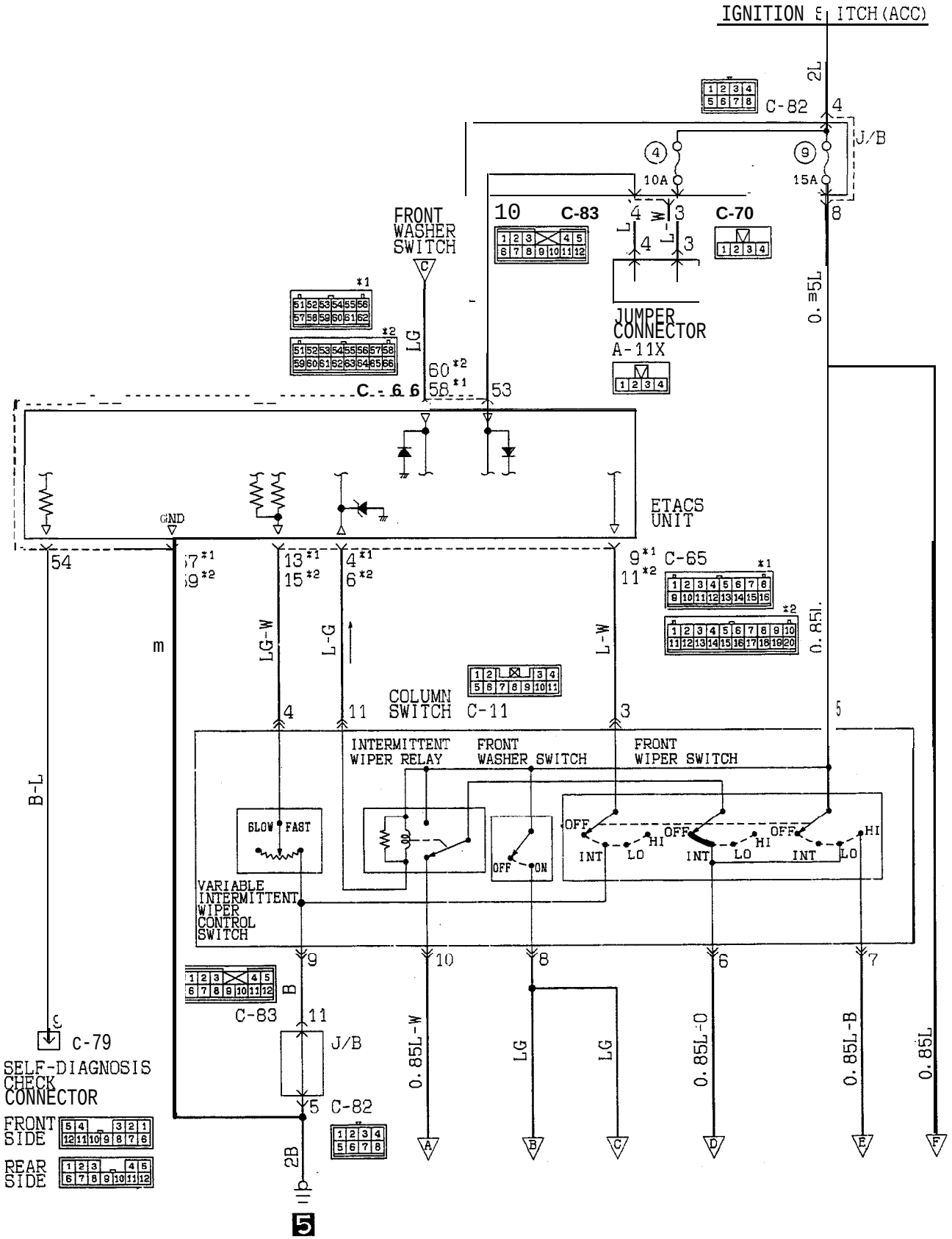


K



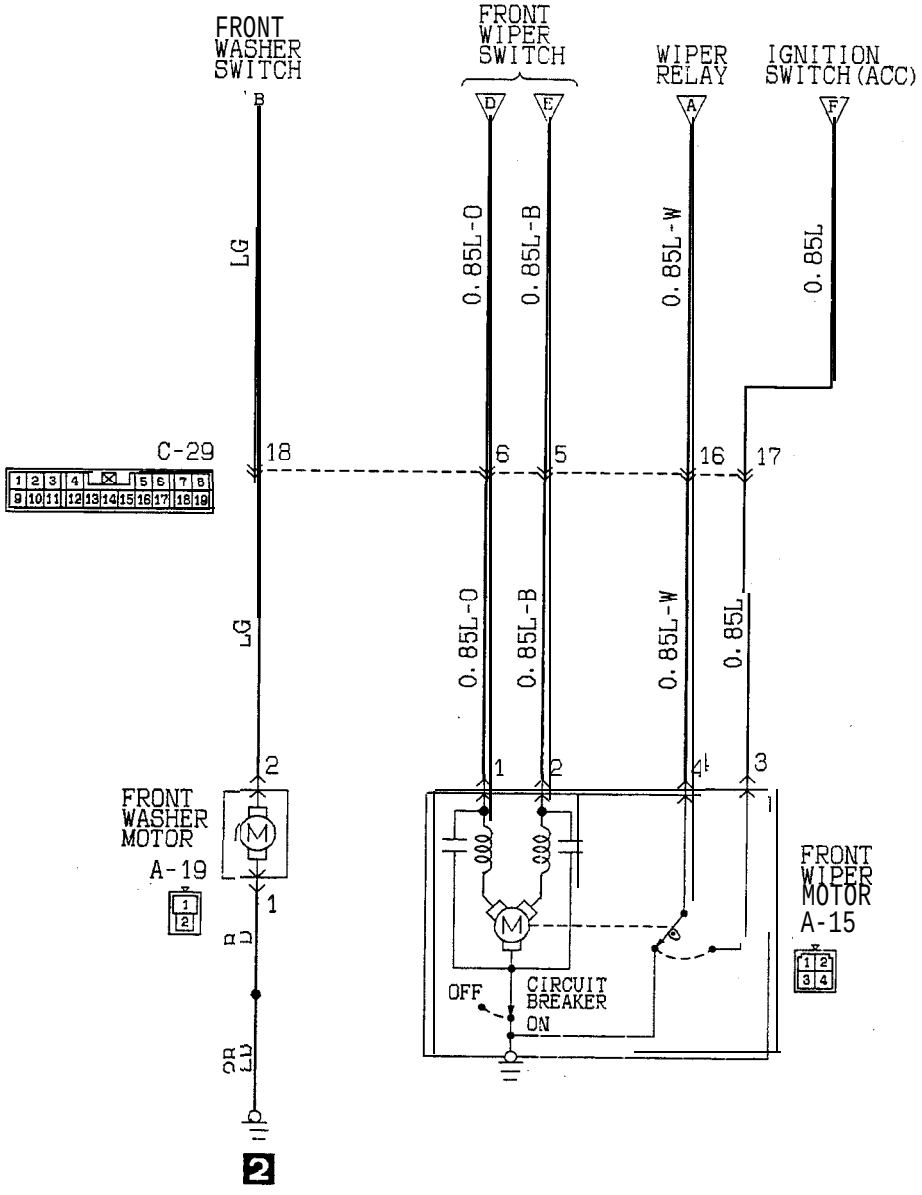
TSB Revision

WINDSHIELD WIPER AND WASHER CIRCUIT



CX35-AC-R1301-NW

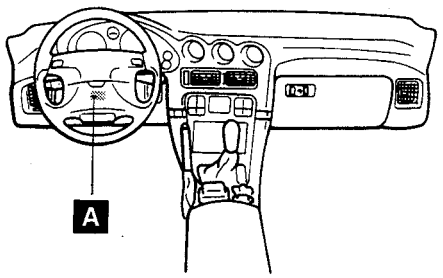
TSB Revision



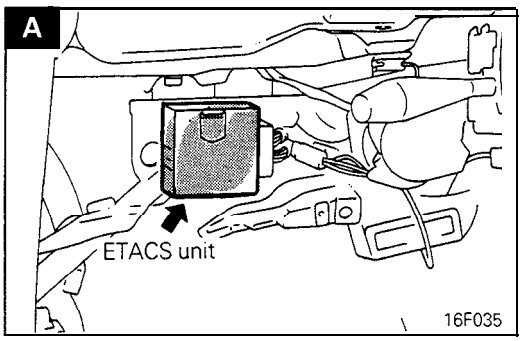
*1:VEHICLES WITHOUT THEFT-ALARM SYSTEM
*2:VEHICLES WITH THEFT-ALARM SYSTEM

COMPONENTS LOCATION

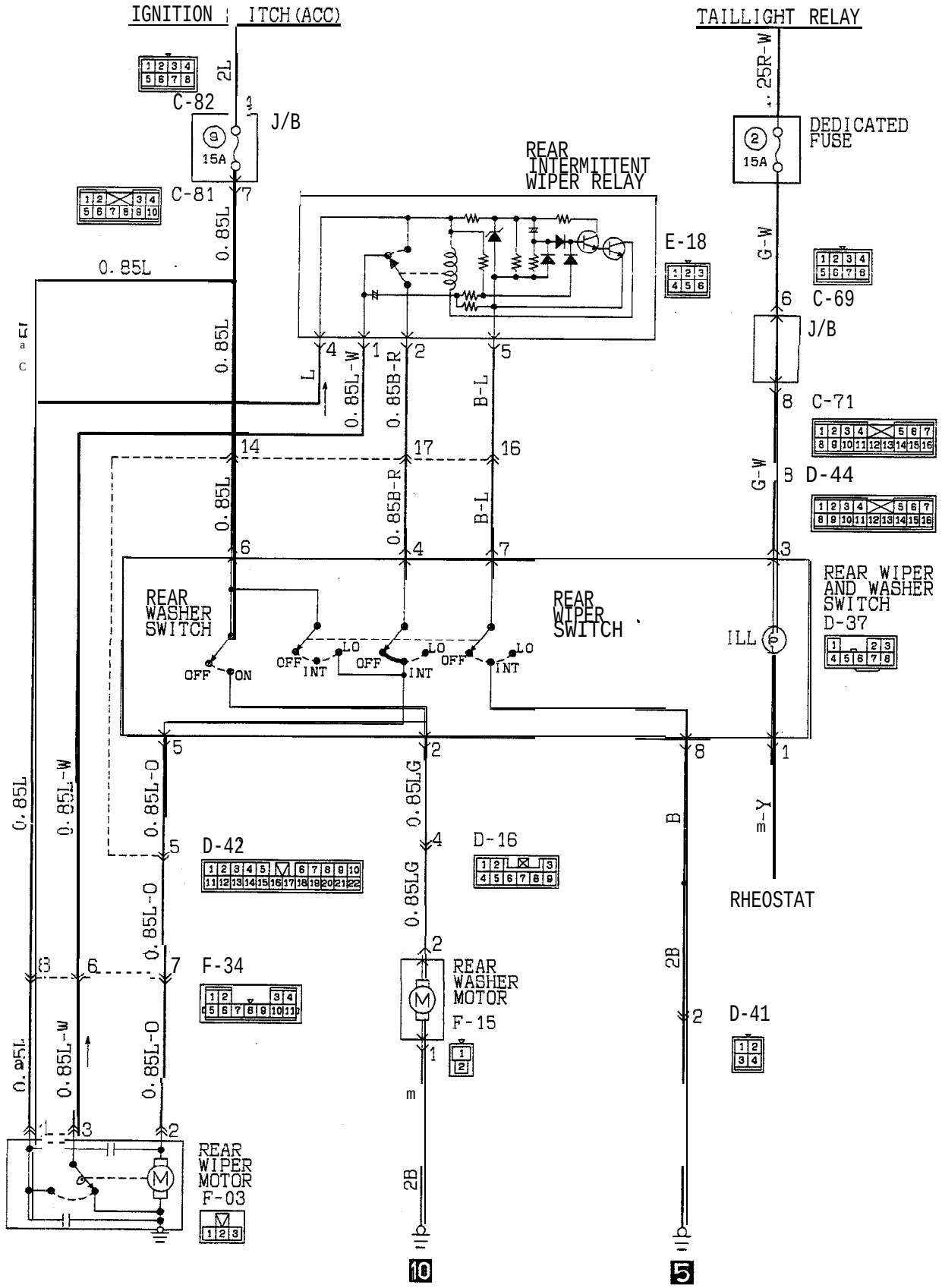
Name	Symbol
ETACS unit	A



19F0134



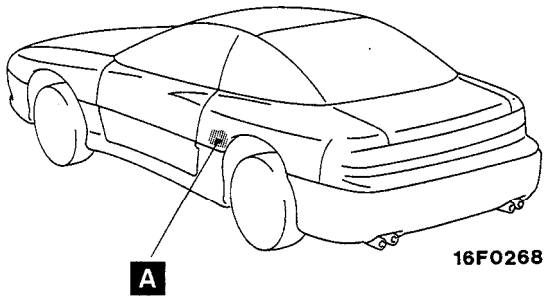
REAR WIPER AND WASHER CIRCUIT

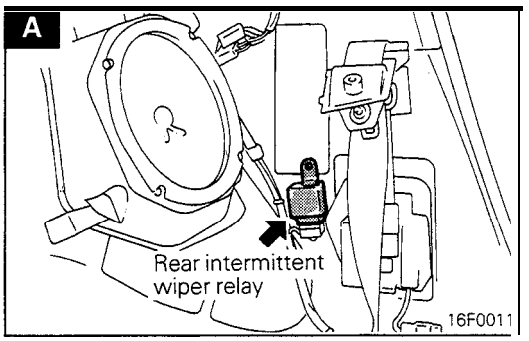


TSB Revision

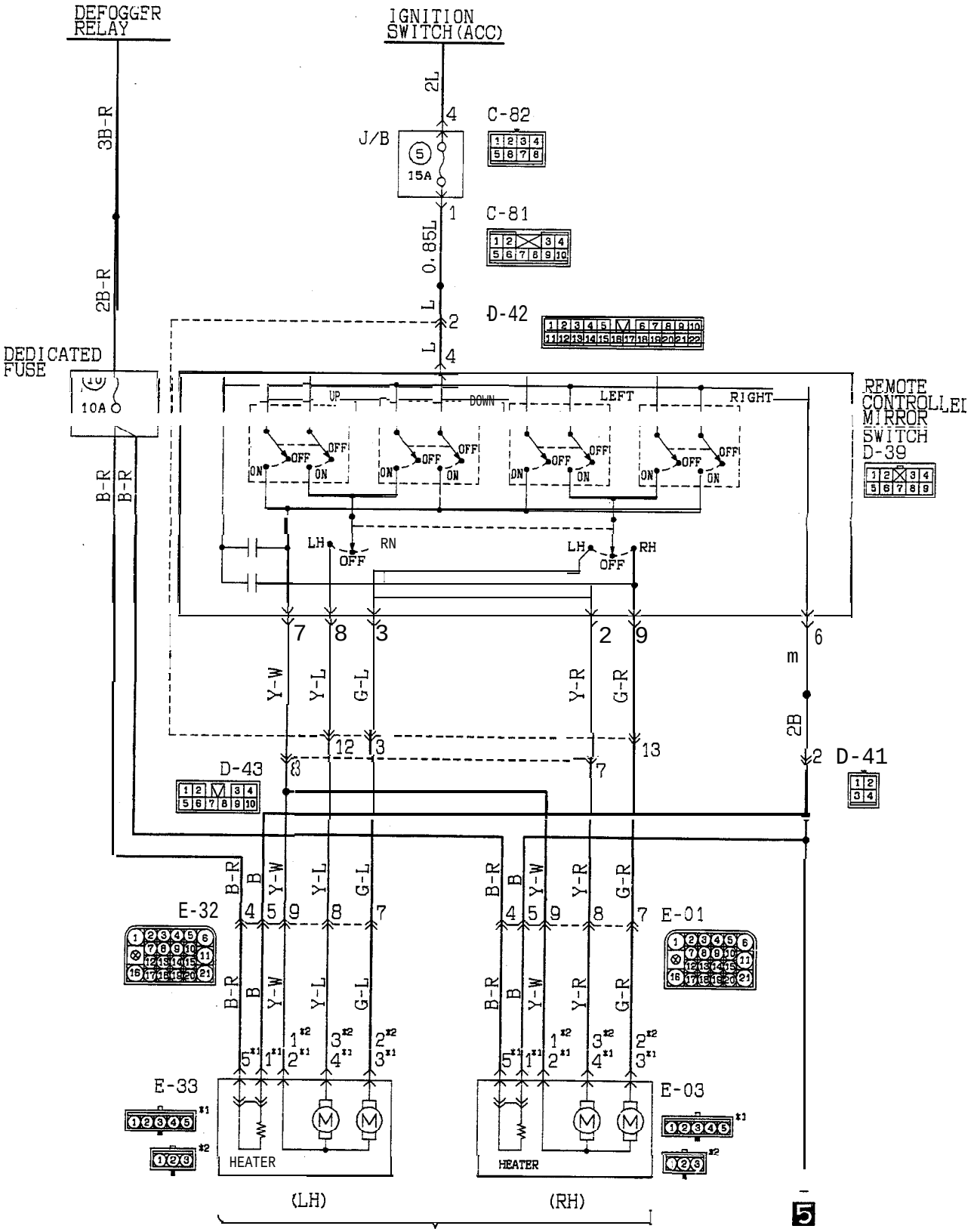
COMPONENTS LOCATION

Name	Symbol
Rear intermittent wiper relay	A





REMOTE CONTROLLED MIRROR CIRCUIT

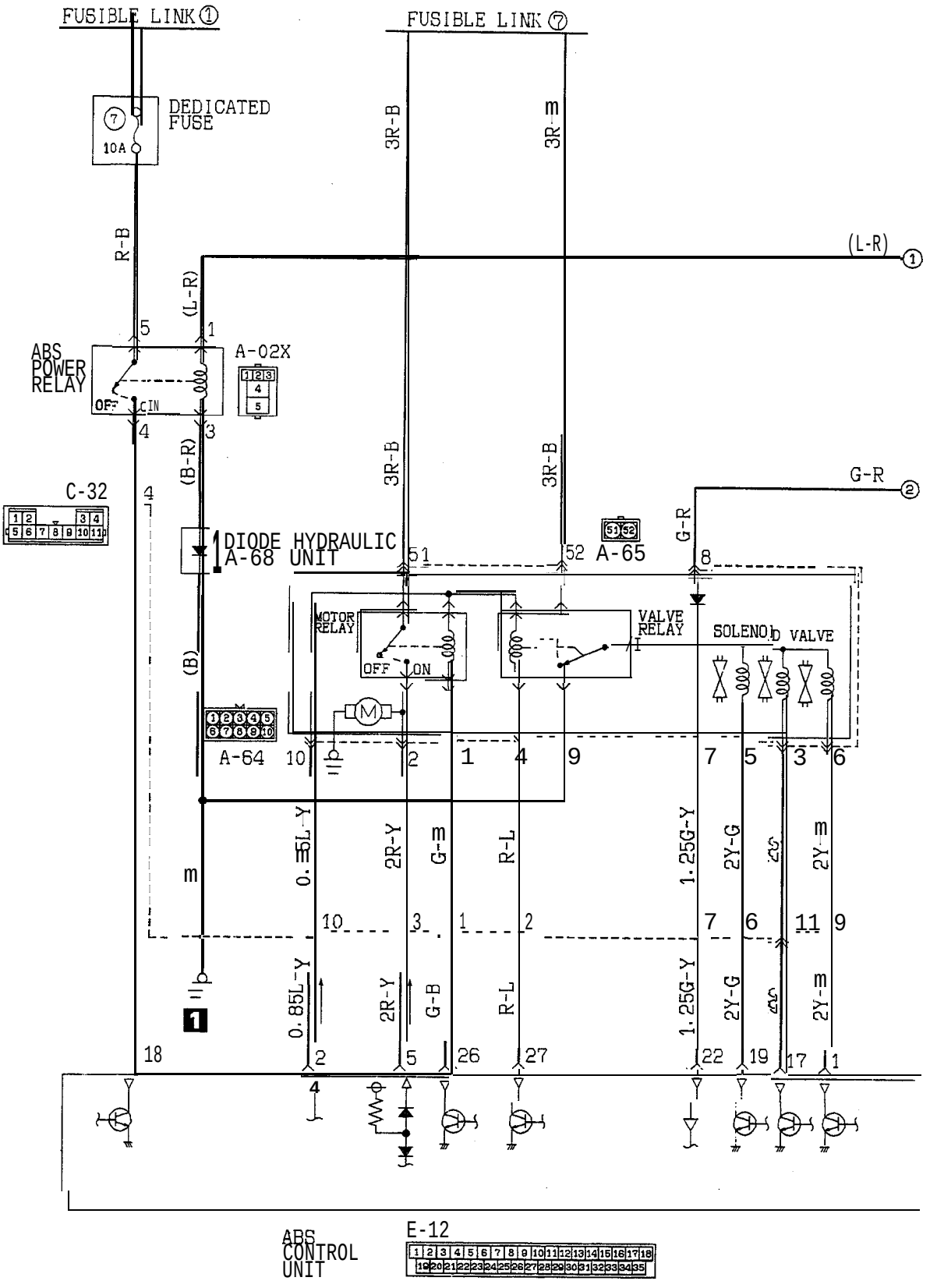


KX35-AC-R1303-NM

*1:VEHICLES WITH MIRROR HEATER
*2:VEHICLES WITHOUT MIRROR HEATER

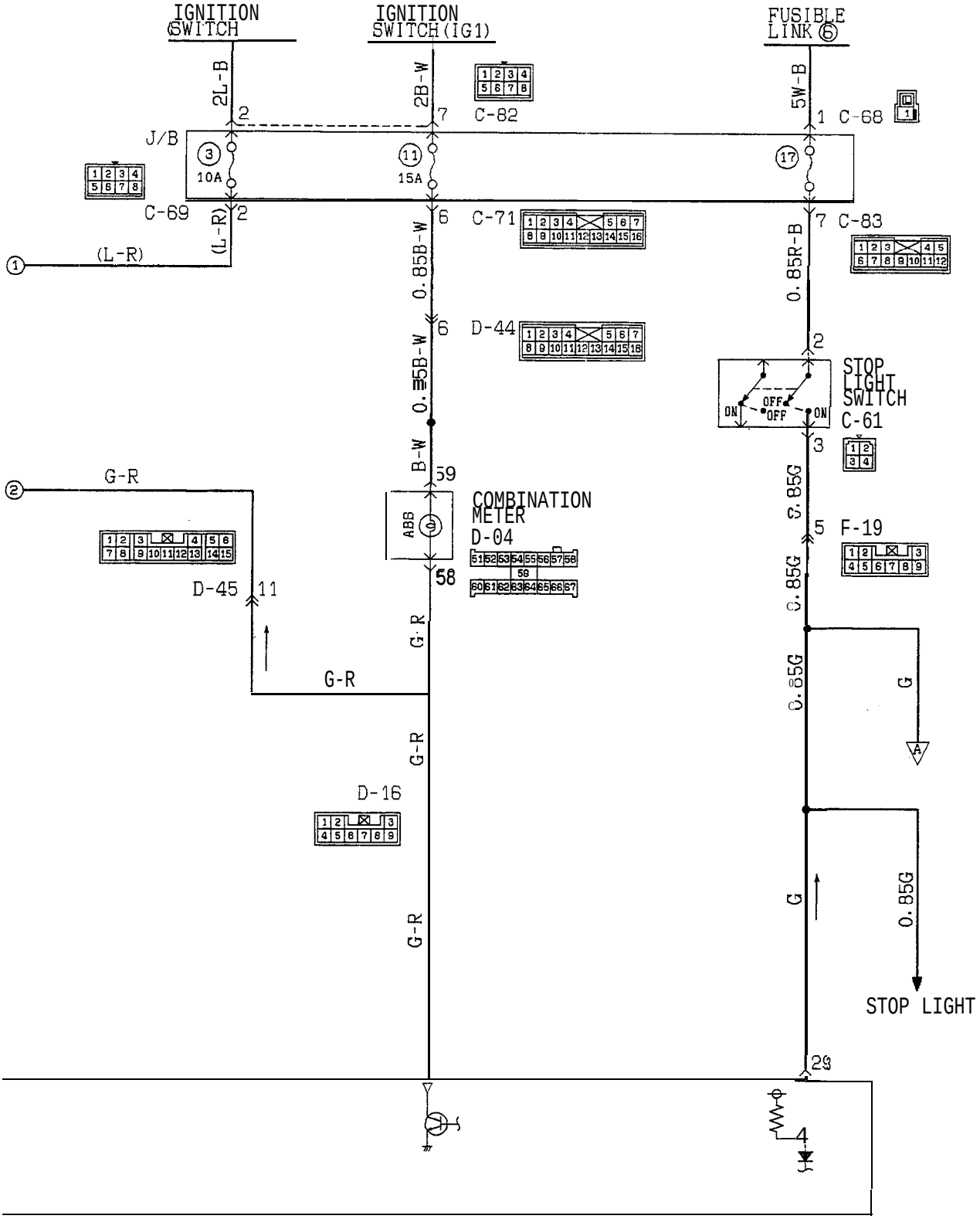
TSB Revision

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT
<FWD>

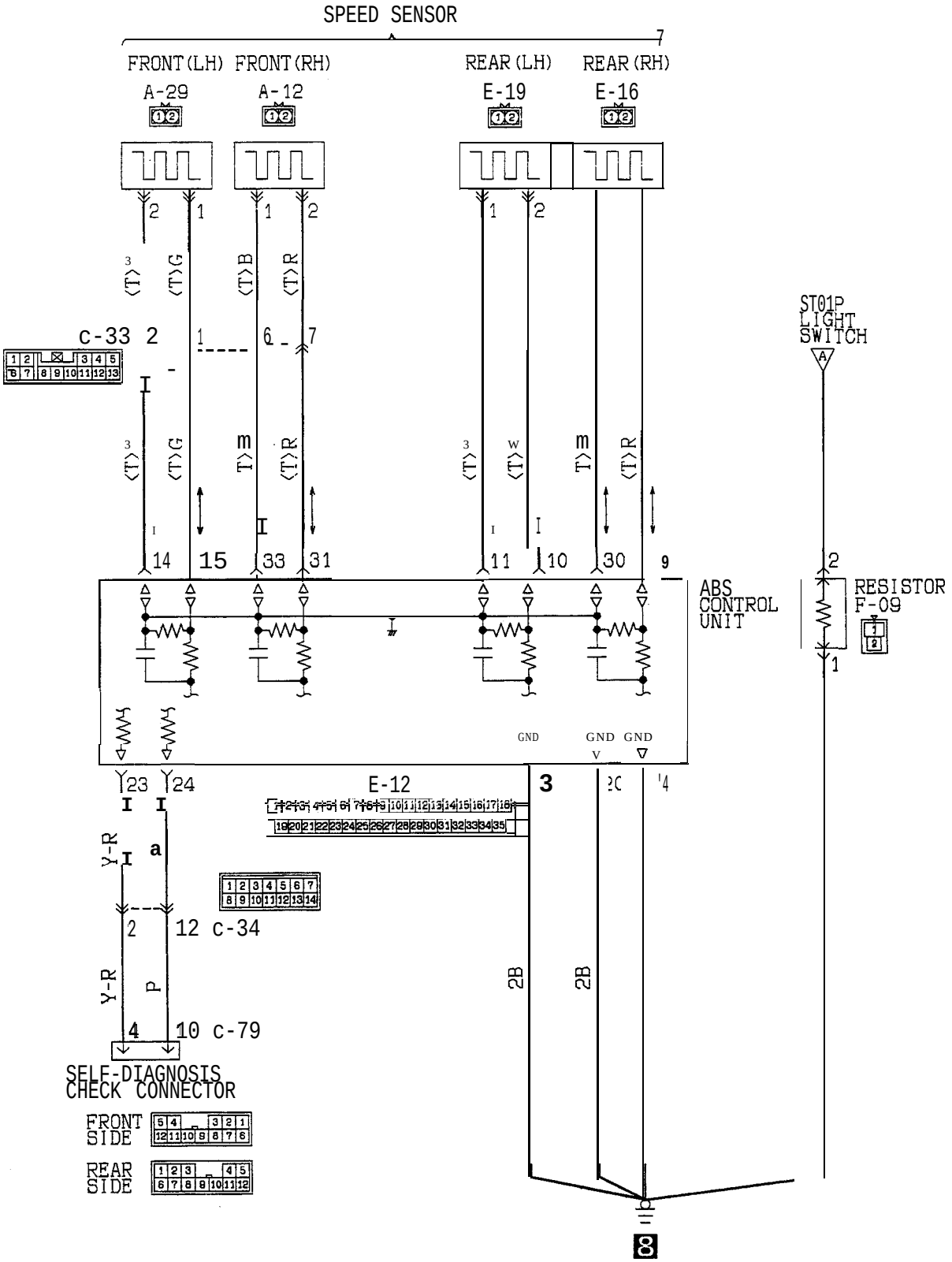


X35-AC-R1501-NY

TSB Revision



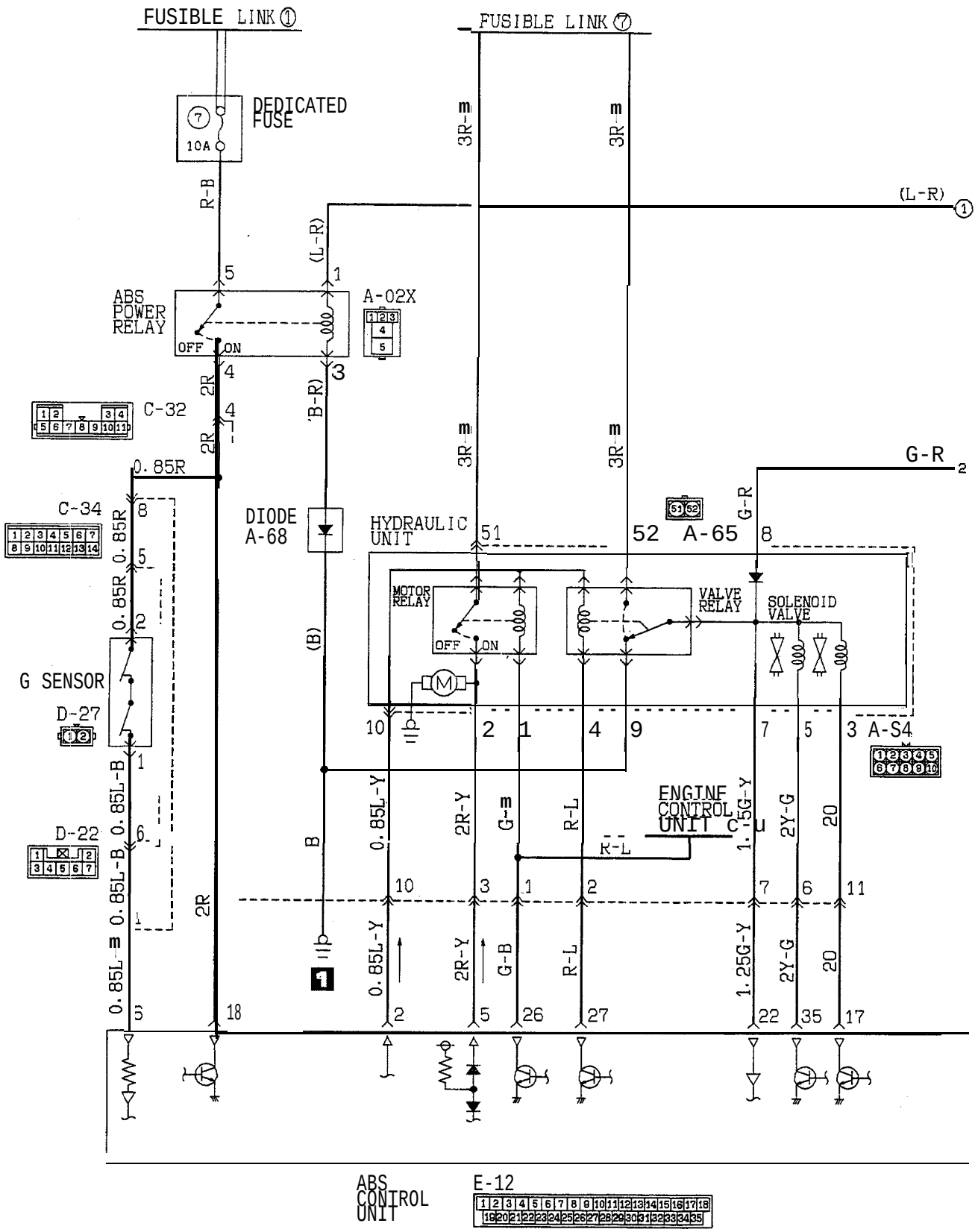
TSB Revision



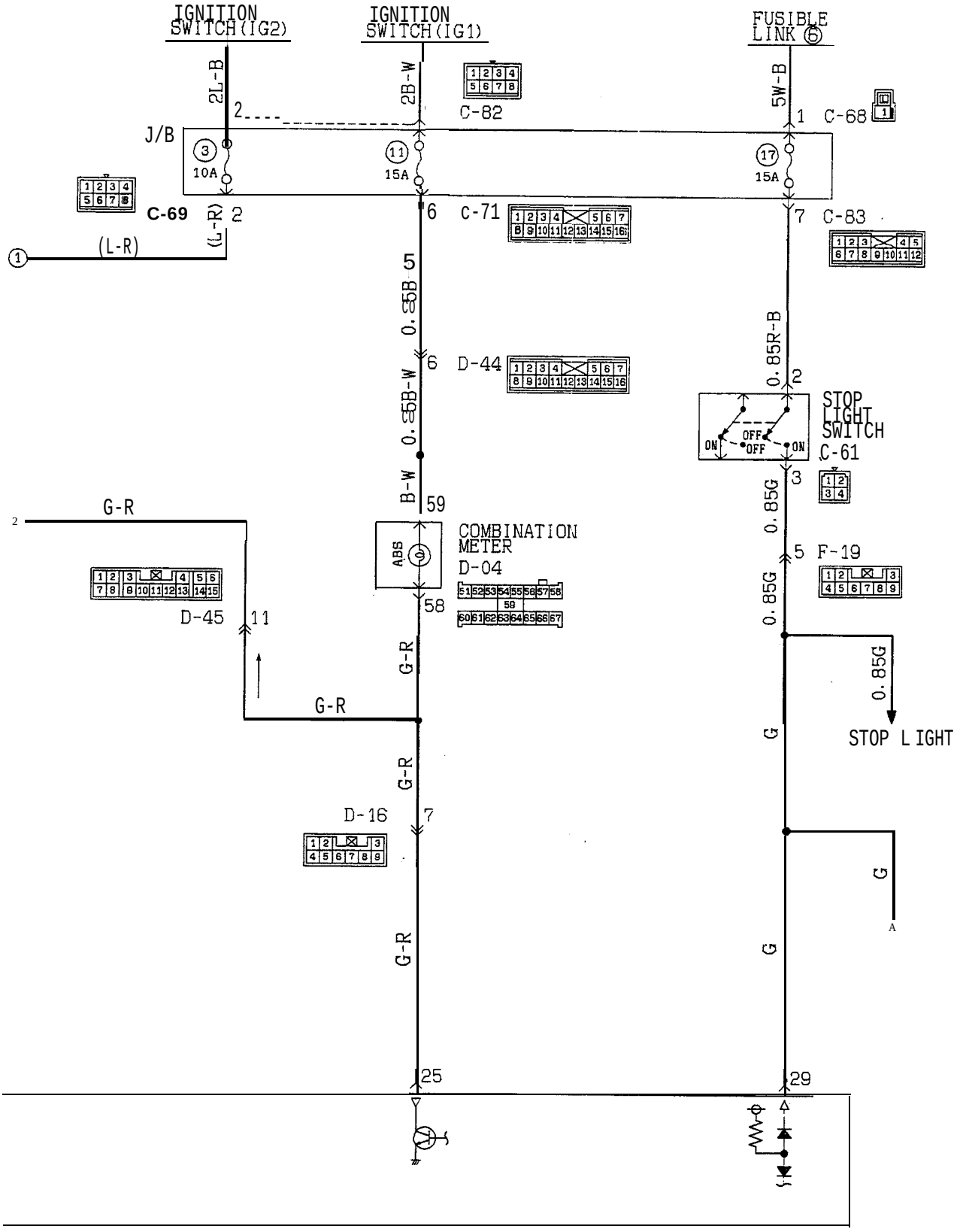
KX35-AC-R1501A-NM

TSB Revision

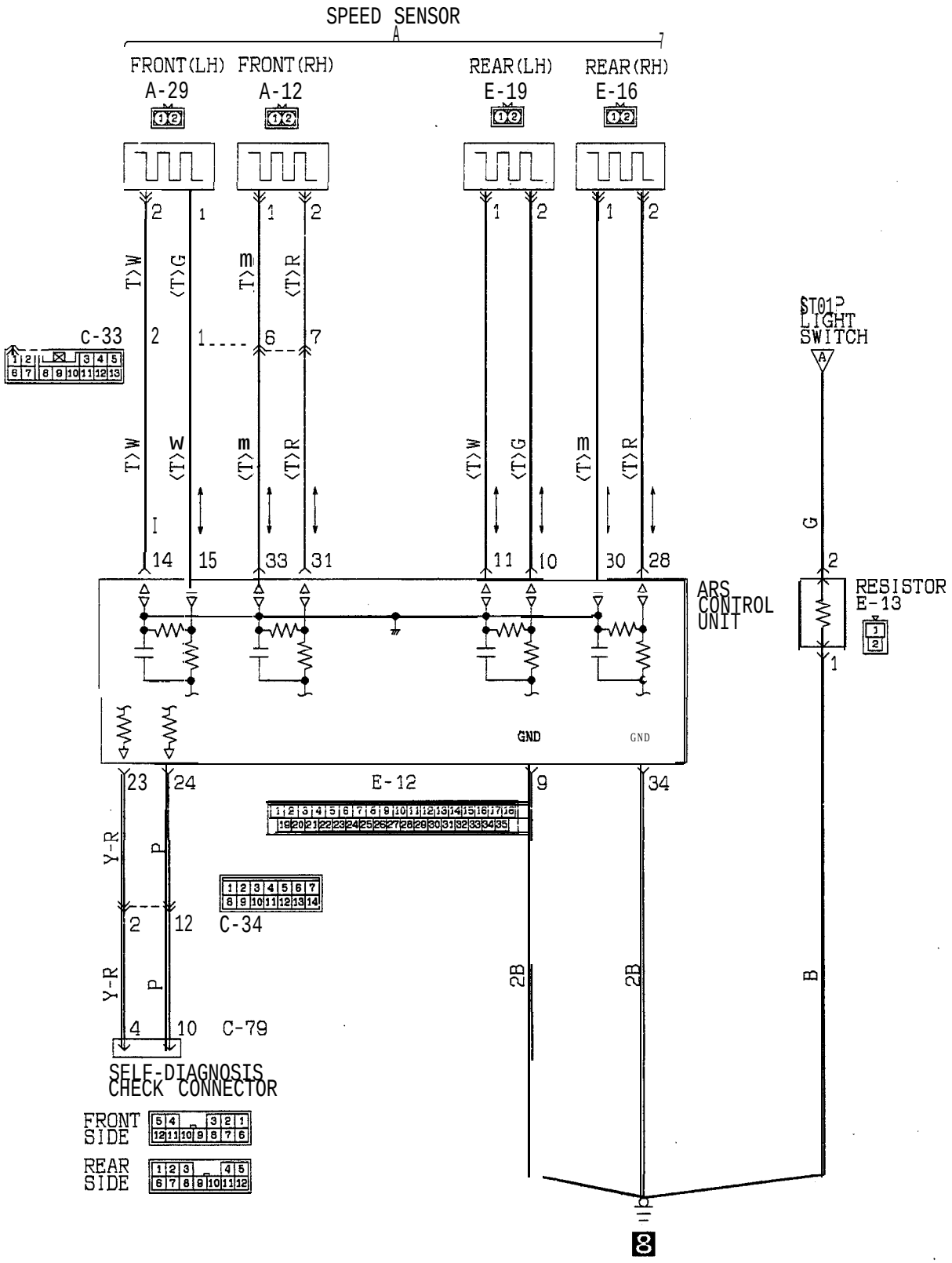
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT
<AWD>



TSB Revision



TSB Revision

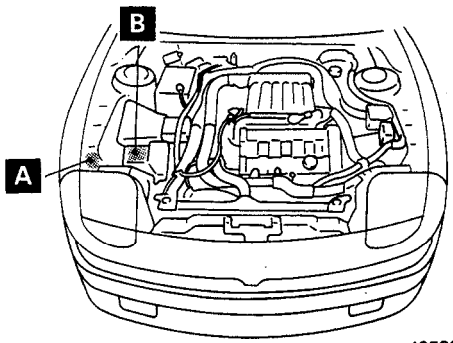


KX35-AC-R1502A-NM

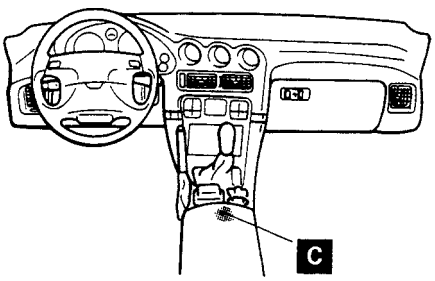
TSB Revision

COMPONENTS LOCATION

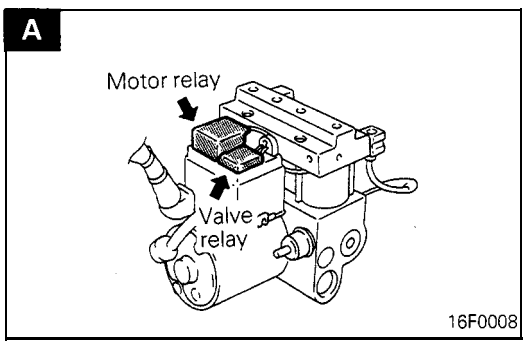
Name	Symbol	Name	Symbol
ABS control unit	D	Motor relay	A
ABS power relay	B	Rear speed sensor	F
Front speed sensor	E	Valve relay	A
G sensor	C	–	–

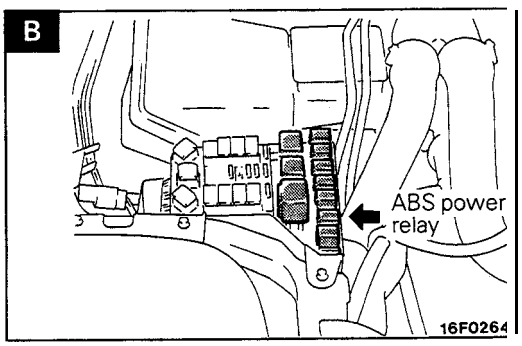


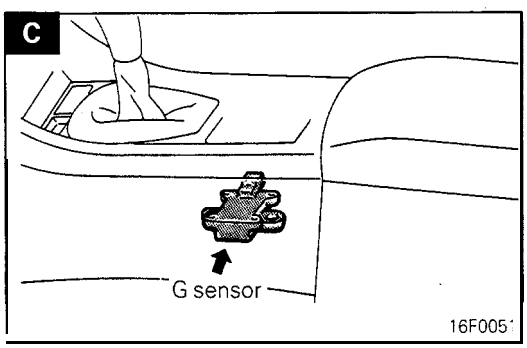
16F0257

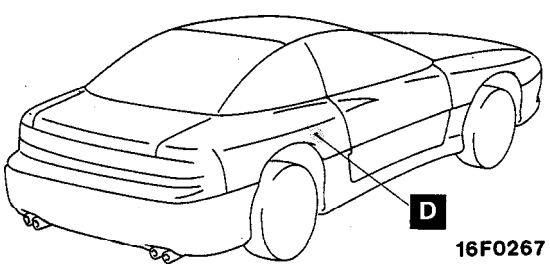


19F0134

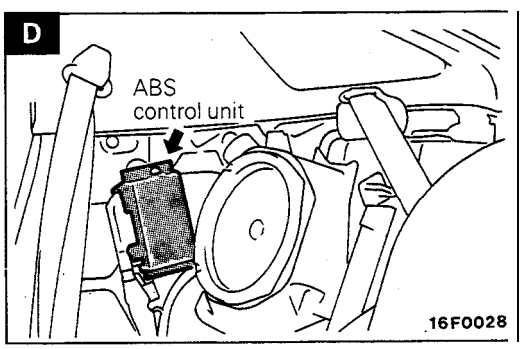




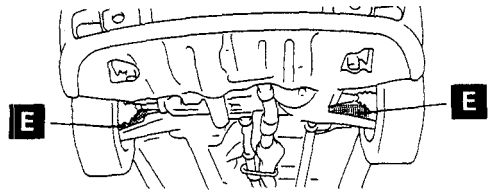




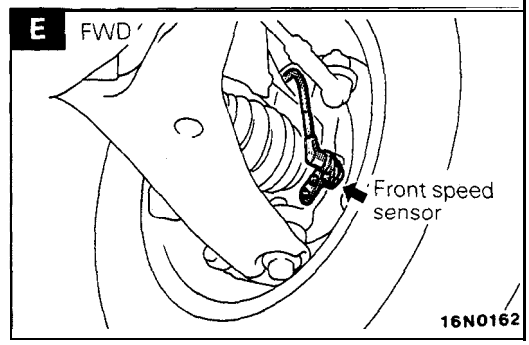
16F0267

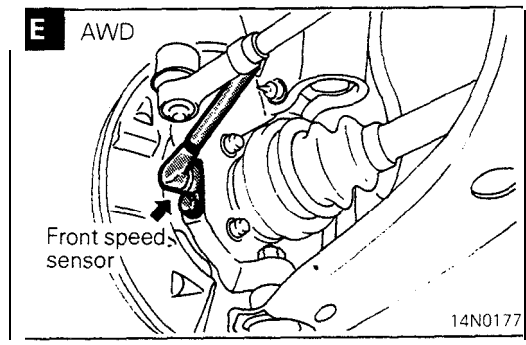


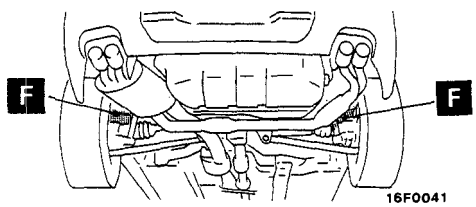
TSB Revision



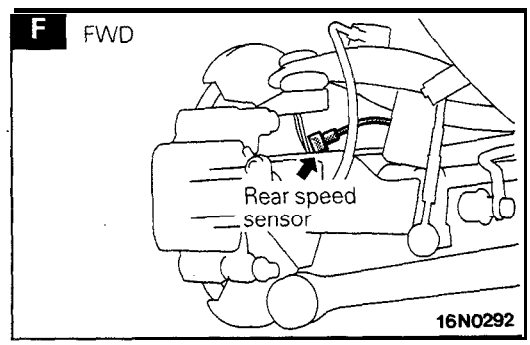
16F0040

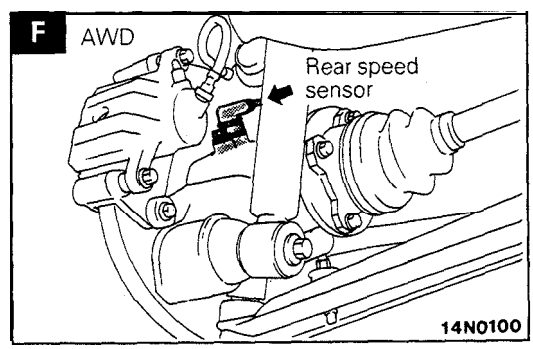




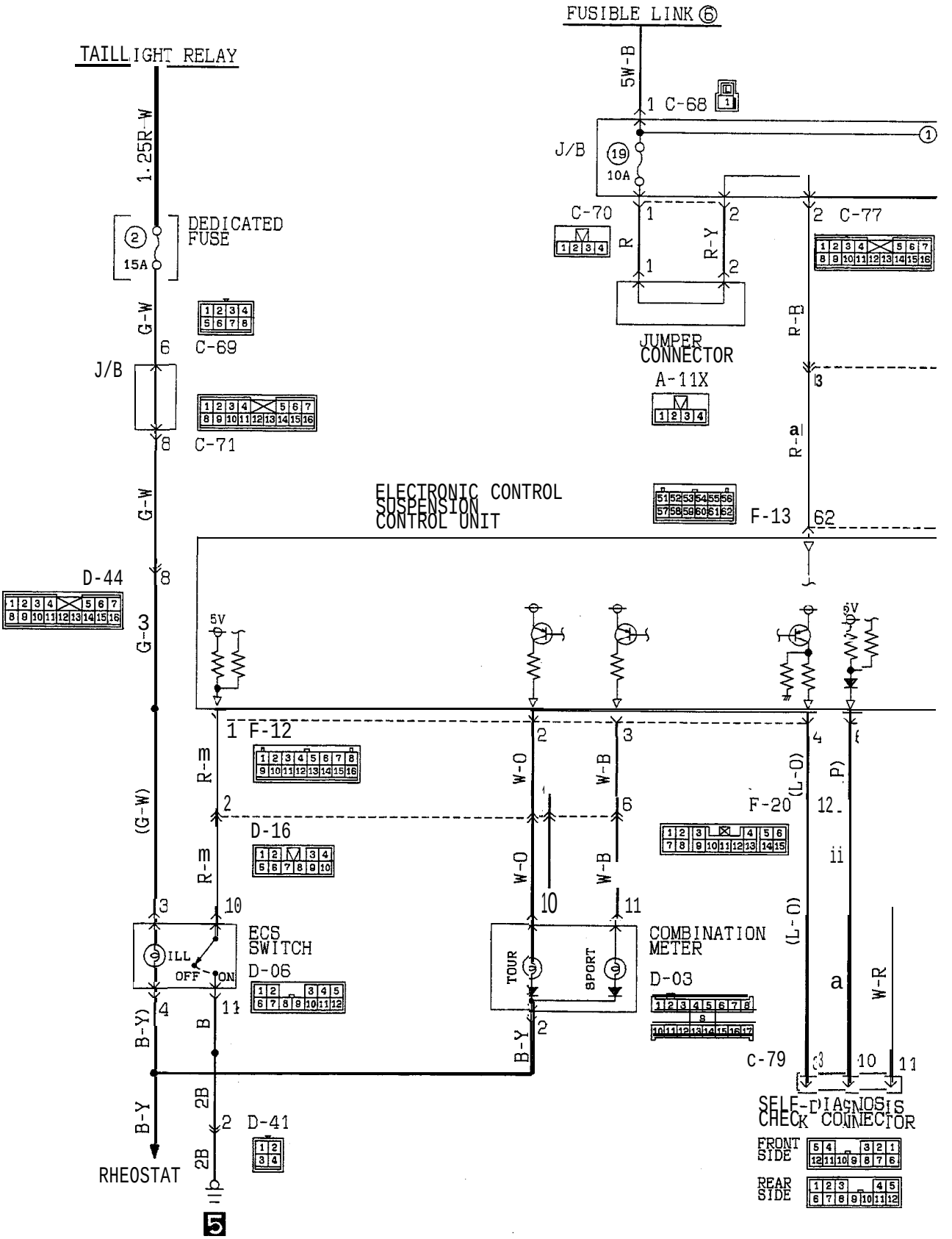


16F0041

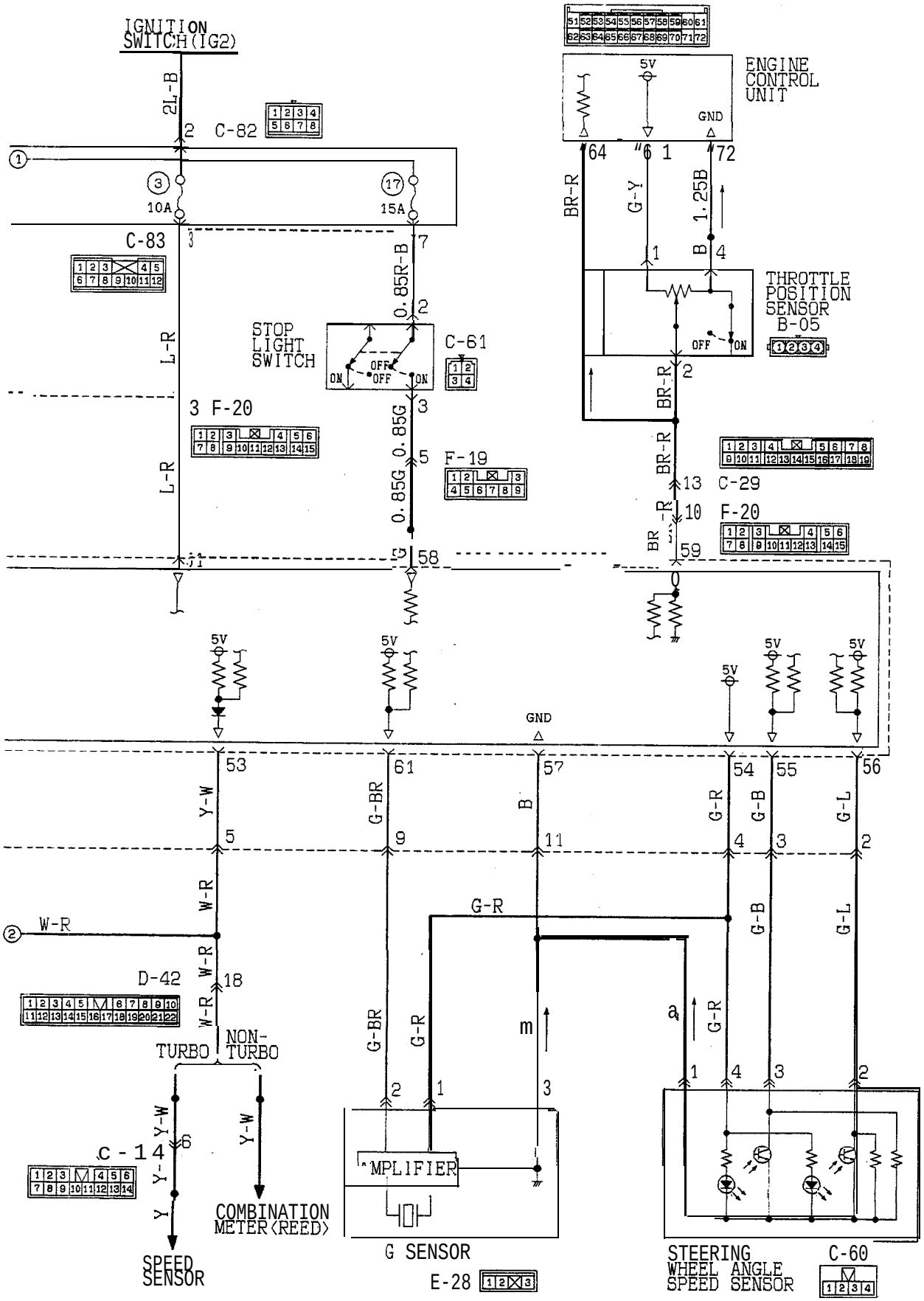




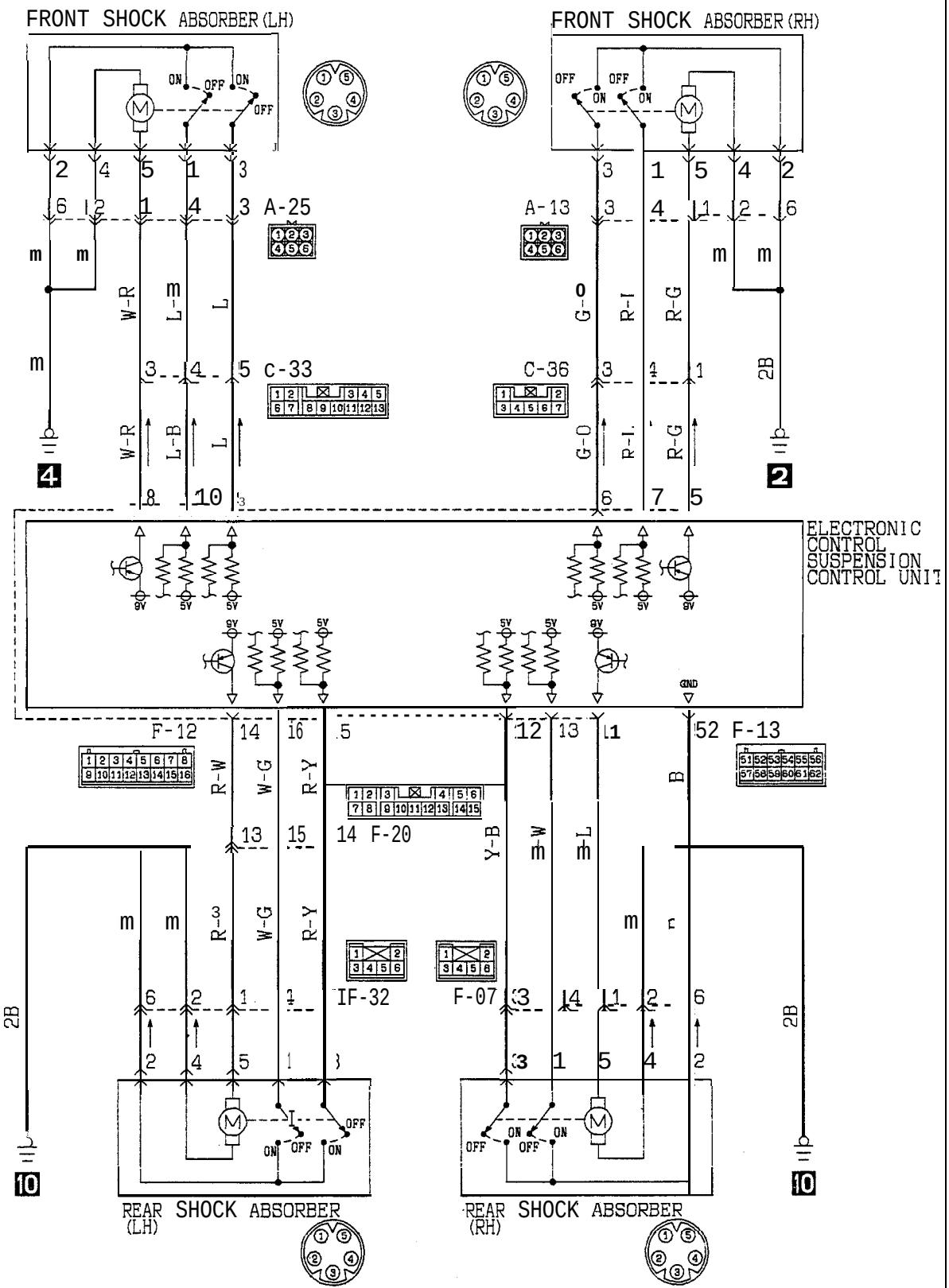
ELECTRONIC CONTROL SUSPENSION(ECS) CIRCUIT



K35-AC-R1503-NM



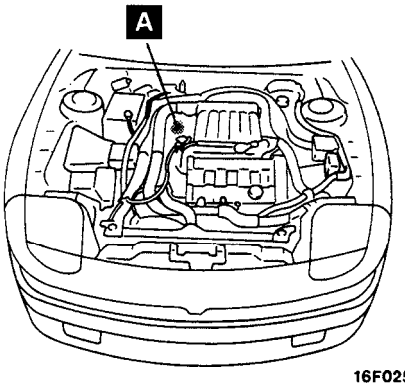
TSB Revision



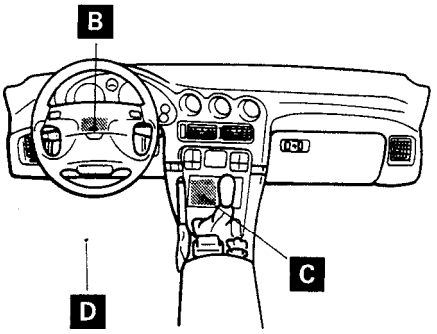
KX35-AC-R1503A-NM

COMF'ONENTS LOCATION

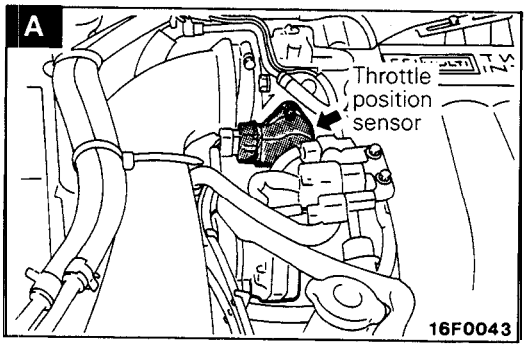
Name	Symbol	Name	Symbol
ECS control unit	E	Steering wheel angle speed sensor	B
Engine control unit	C	Throttle position sensor	A
G sensor	D	–	–



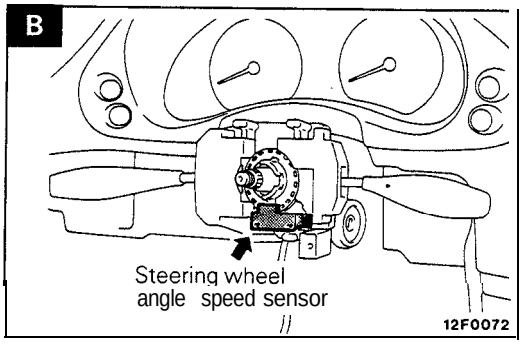
16F0257



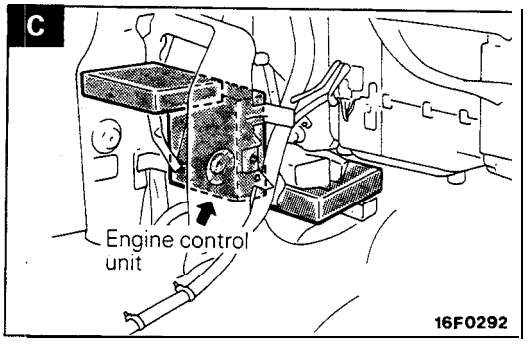
19F0134



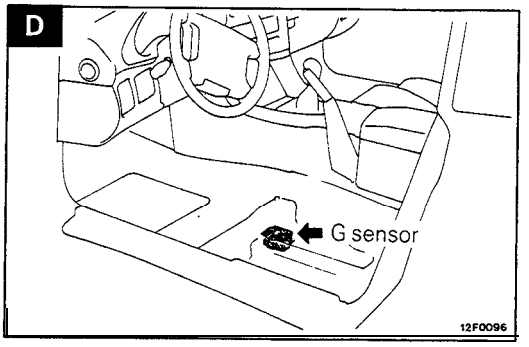
16F0043



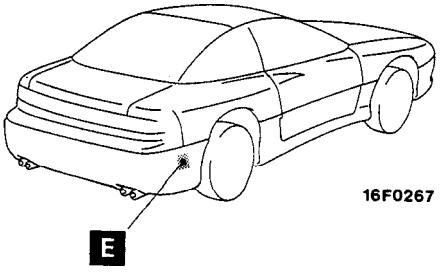
12F0072



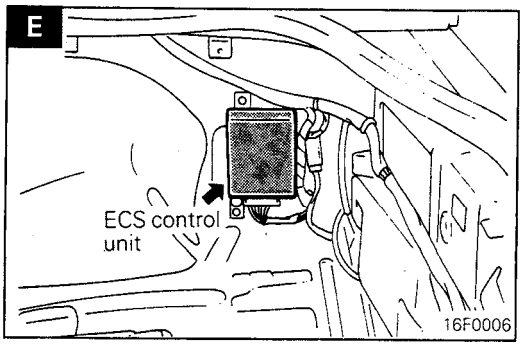
16F0292



12F0096



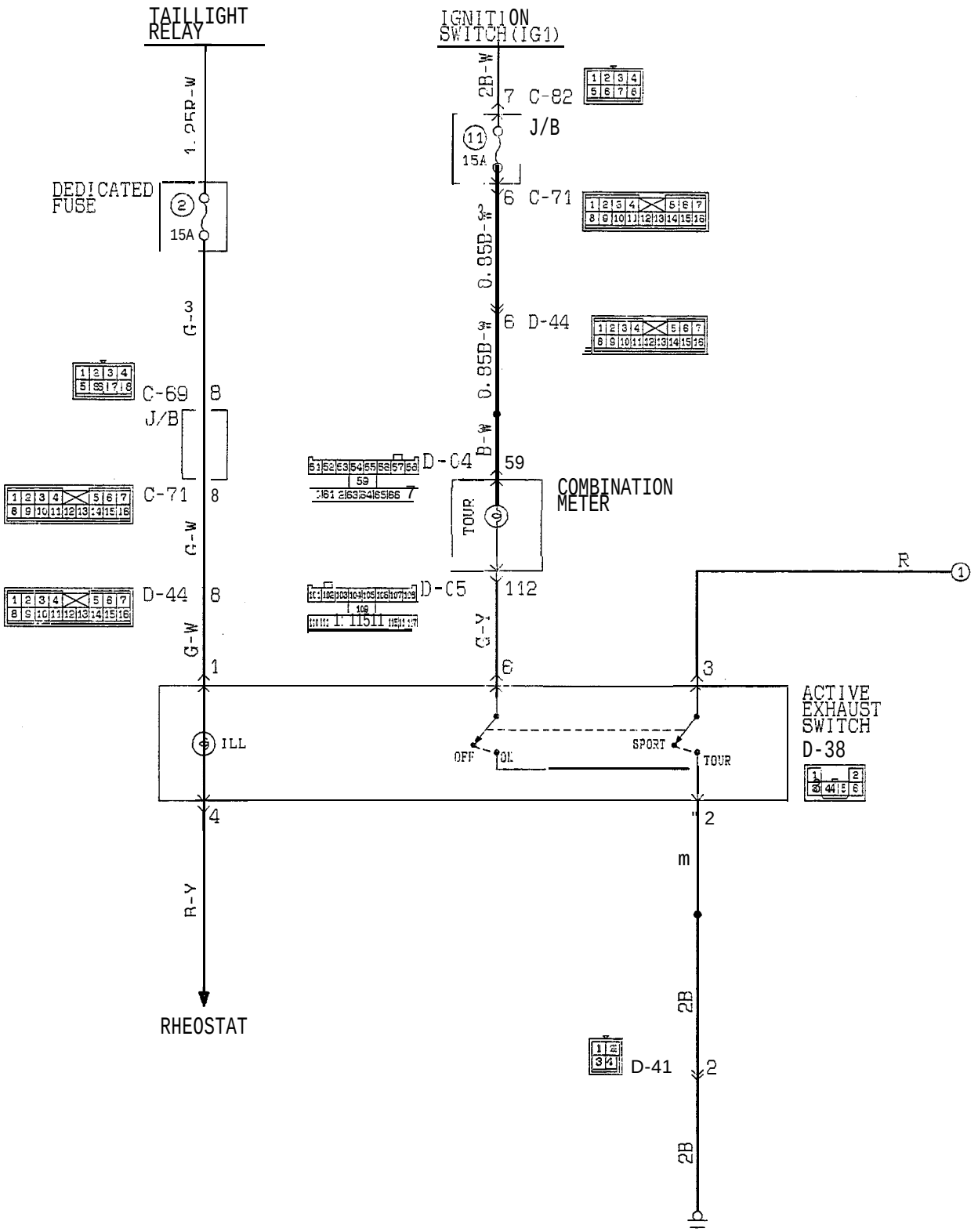
16F0267

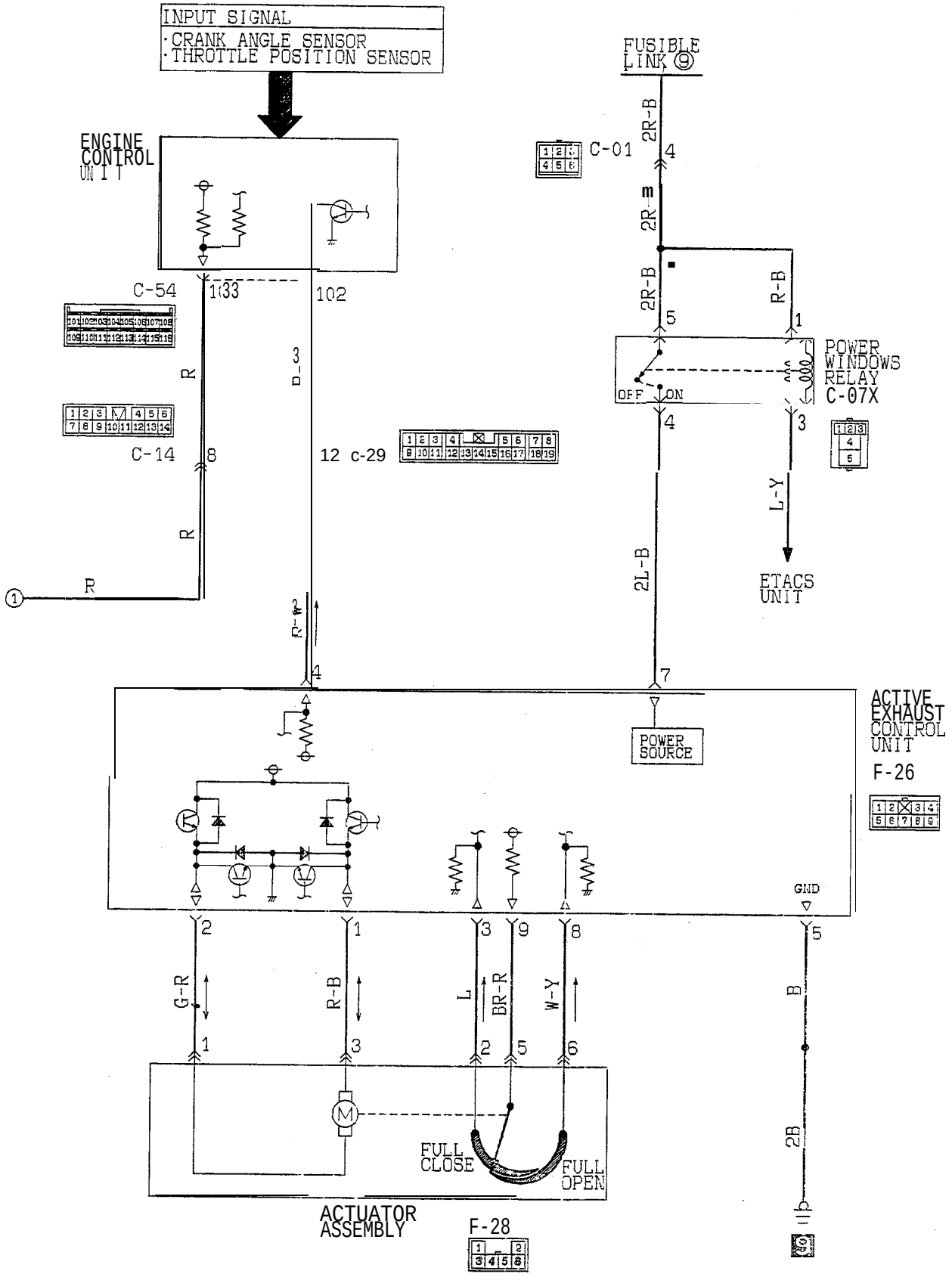


16F0006

TSB Revision

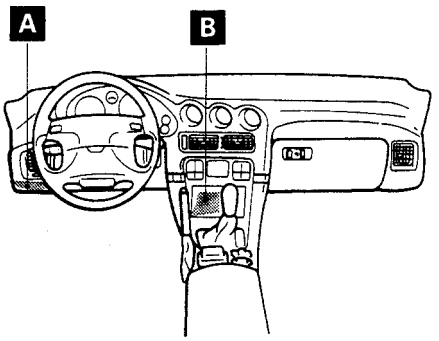
ACTIVE EXHAUST SYSTEM CIRCUIT

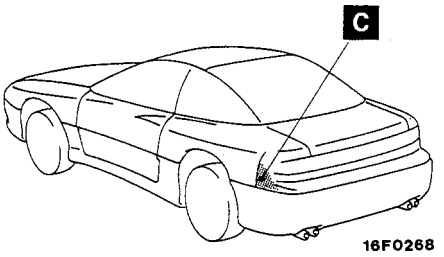



INPUT SIGNAL
·CRANK ANGLE SENSOR
·THROTTLE POSITION SENSOR
ENGINE CONTROL UNIT
C-54
C-14
C-01
C-29
FUSIBLE LINK ⑨
POWER WINDOWS RELAY C-07X
OFF
ON
ETACS UNIT
POWER SOURCE
ACTIVE EXHAUST CONTROL UNIT F-26
GND
ACTUATOR ASSEMBLY F-28
FULL CLOSE
FULL OPEN
2R-B
R-B
L-Y
2L-B
R
G-R
L
BR-R
W-Y
B
2B

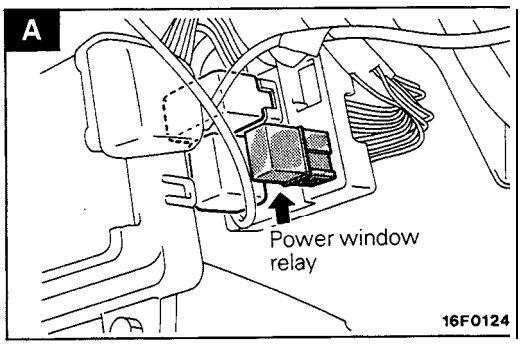
COMPONENTS LOCATION

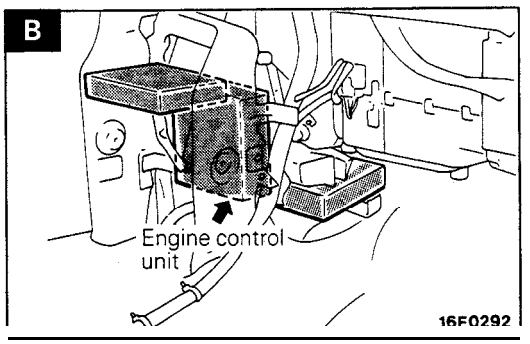
Name	Symbol	Name	Symbol
Active exhaust control unit	C	Power window relay	A
Engine control unit	B	–	–

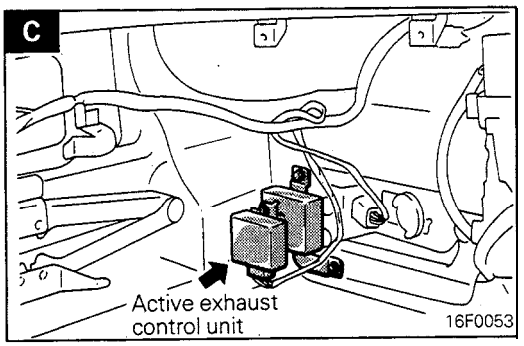




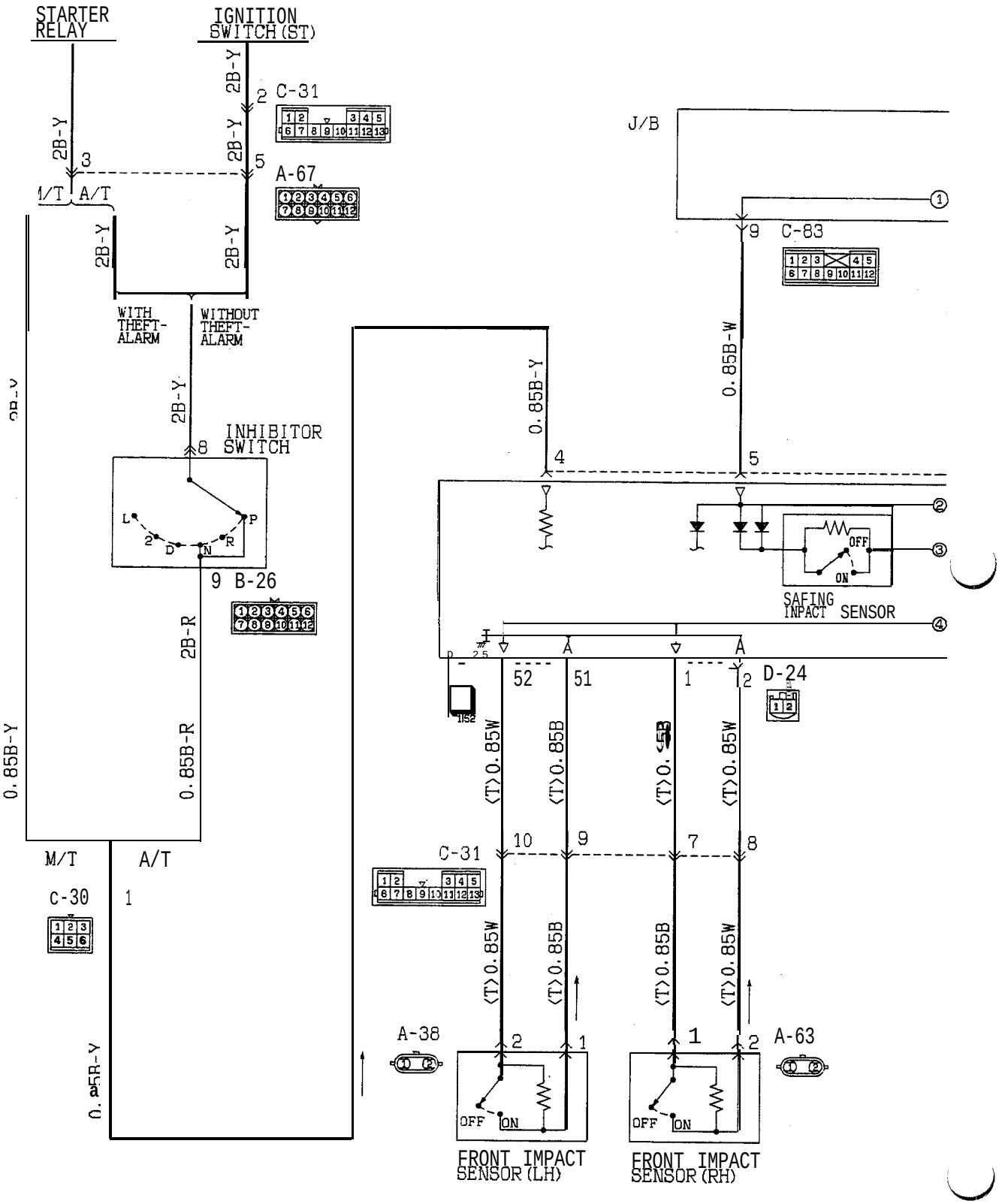
19F0134





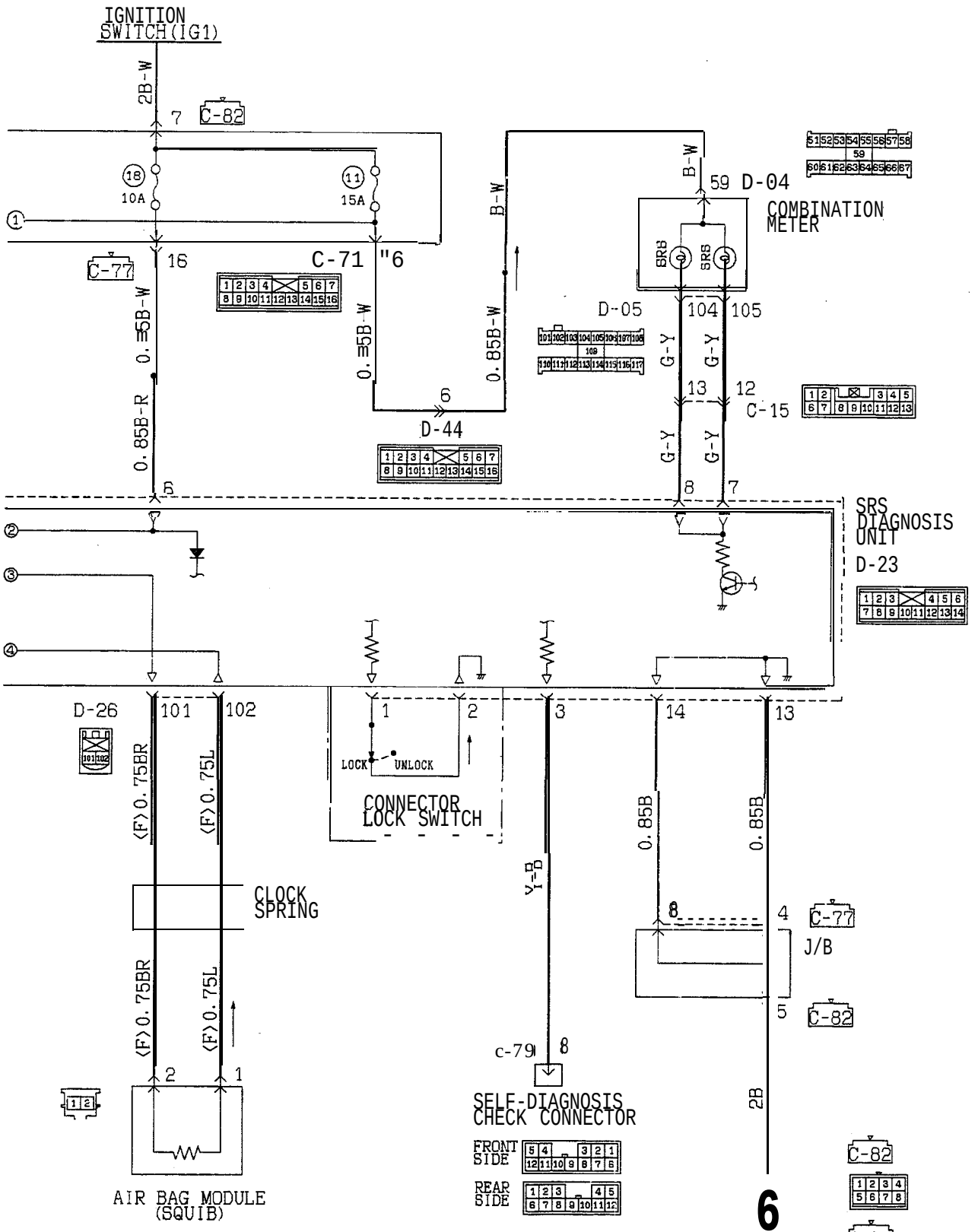


SUPPLEMENTAL RESTRAINT SYSTEM (SRS) CIRCUIT



KX35-AC-R1506-NM

TSB Revision

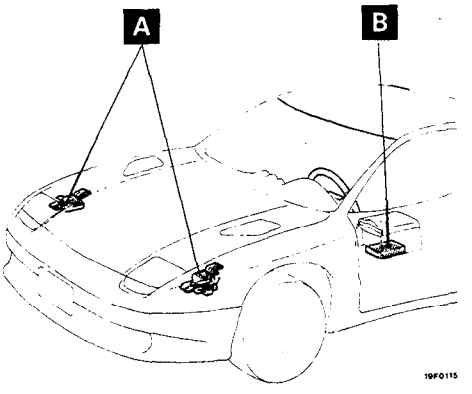


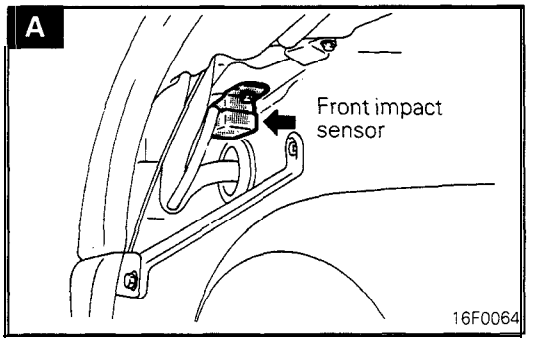
CAUTION
·Carefully read and observe the BRB SERVCE **PRECAUTIONS** (Refer to GROUP **52B**- SRS Service Precautions) prior to any service.

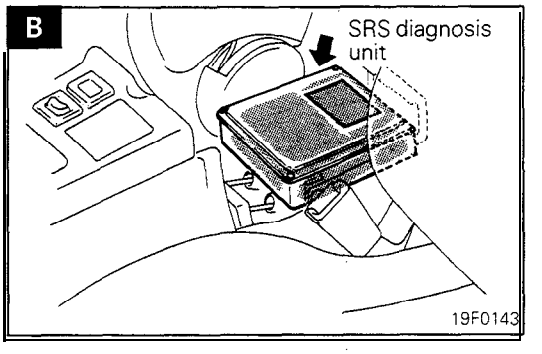
TSB Revision

COMPONENTS LOCATION

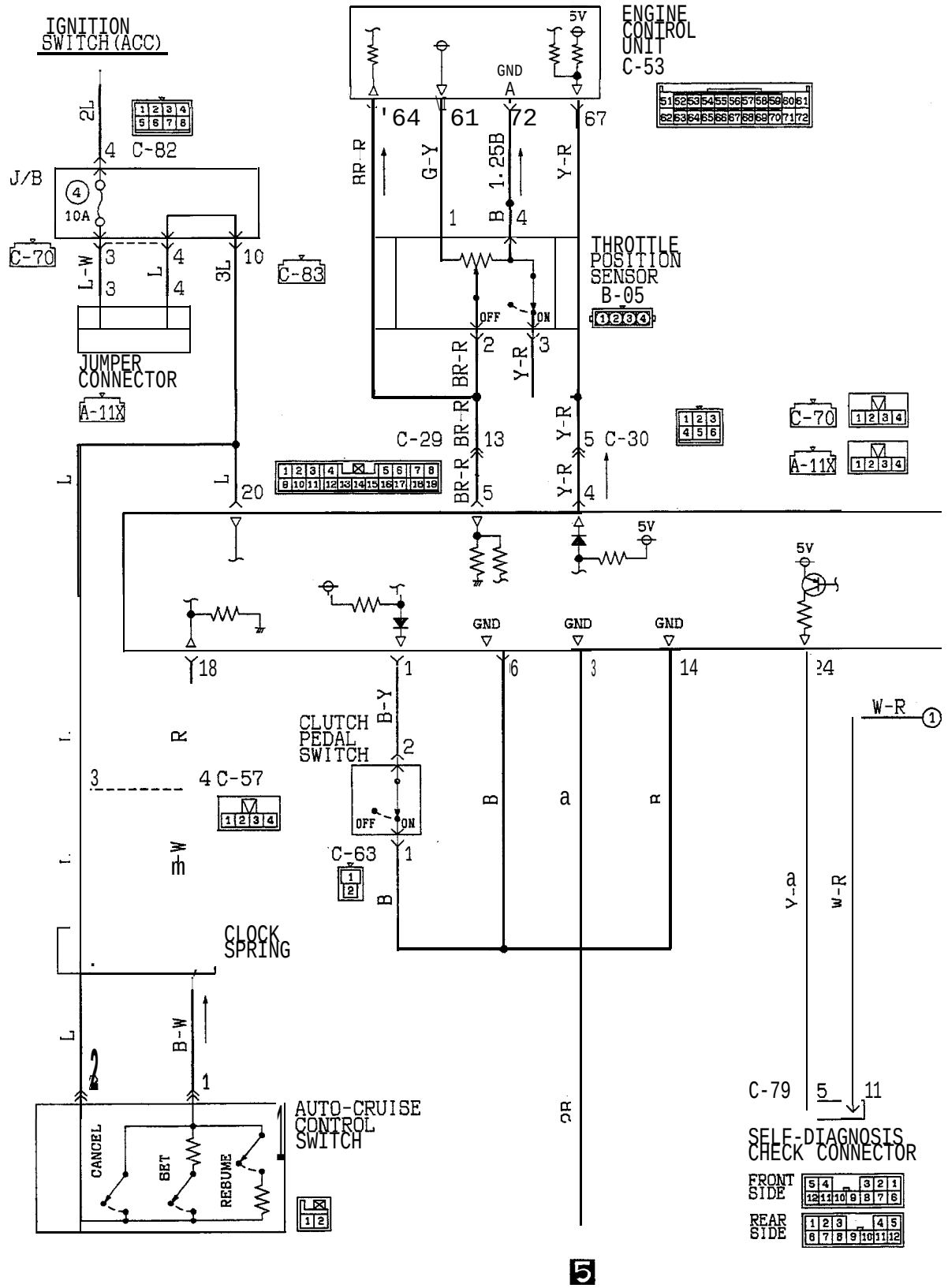
Name	Symbol
Front impact sensor	A
SRS diagnosis unit	B





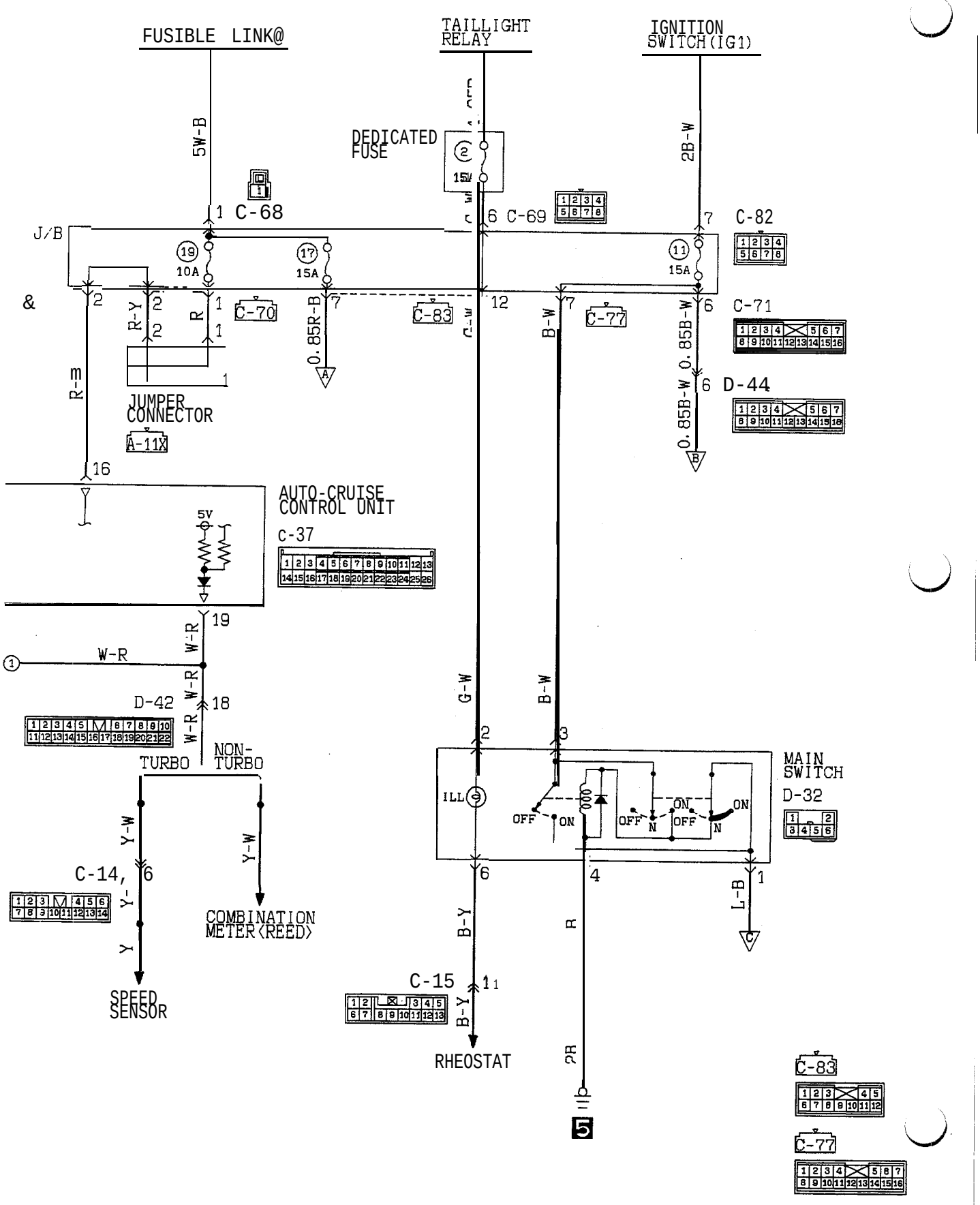


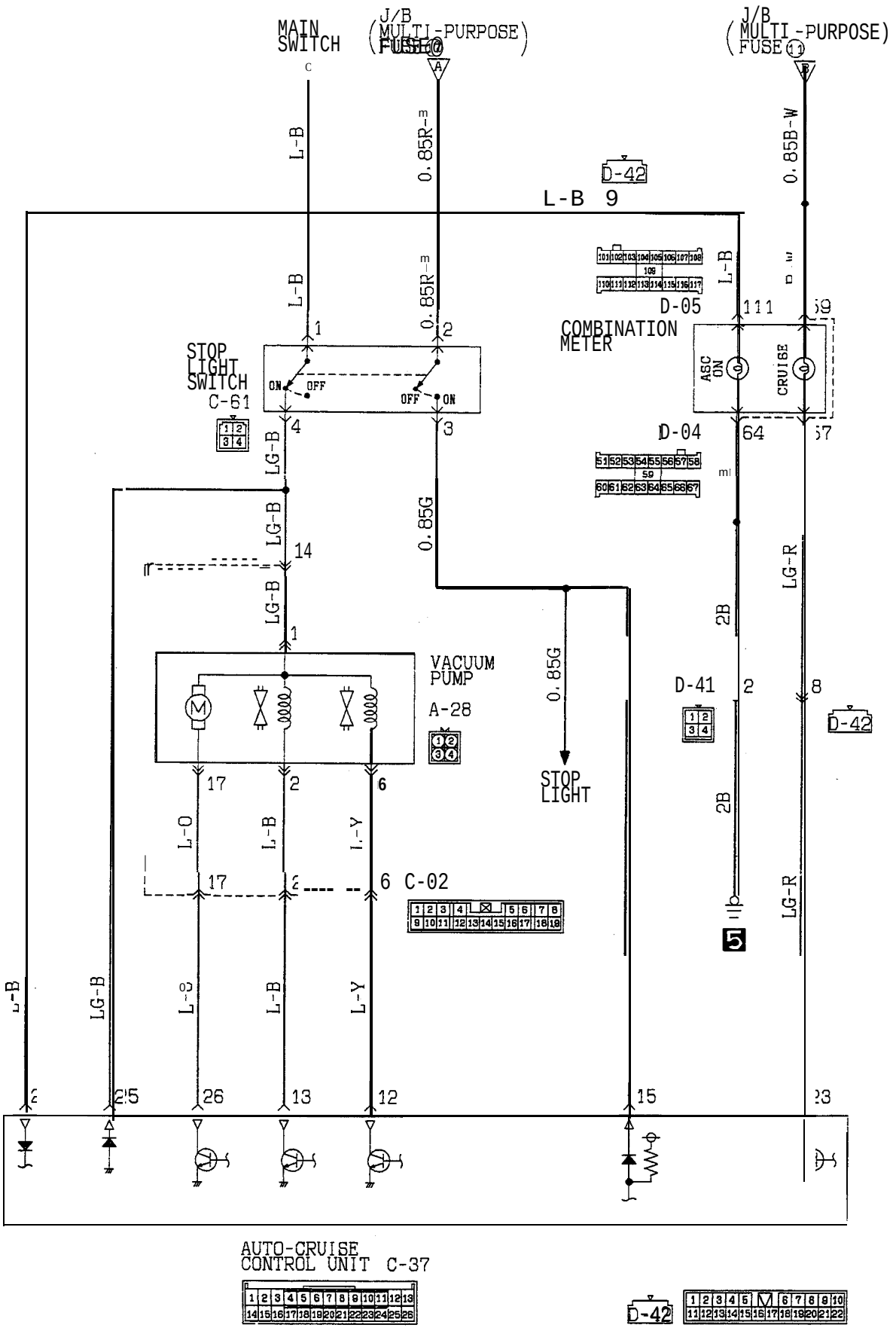
AUTO-CRUISE CONTROL CIRCUIT
<M/T>



5

KX35-AC-R1507-NM

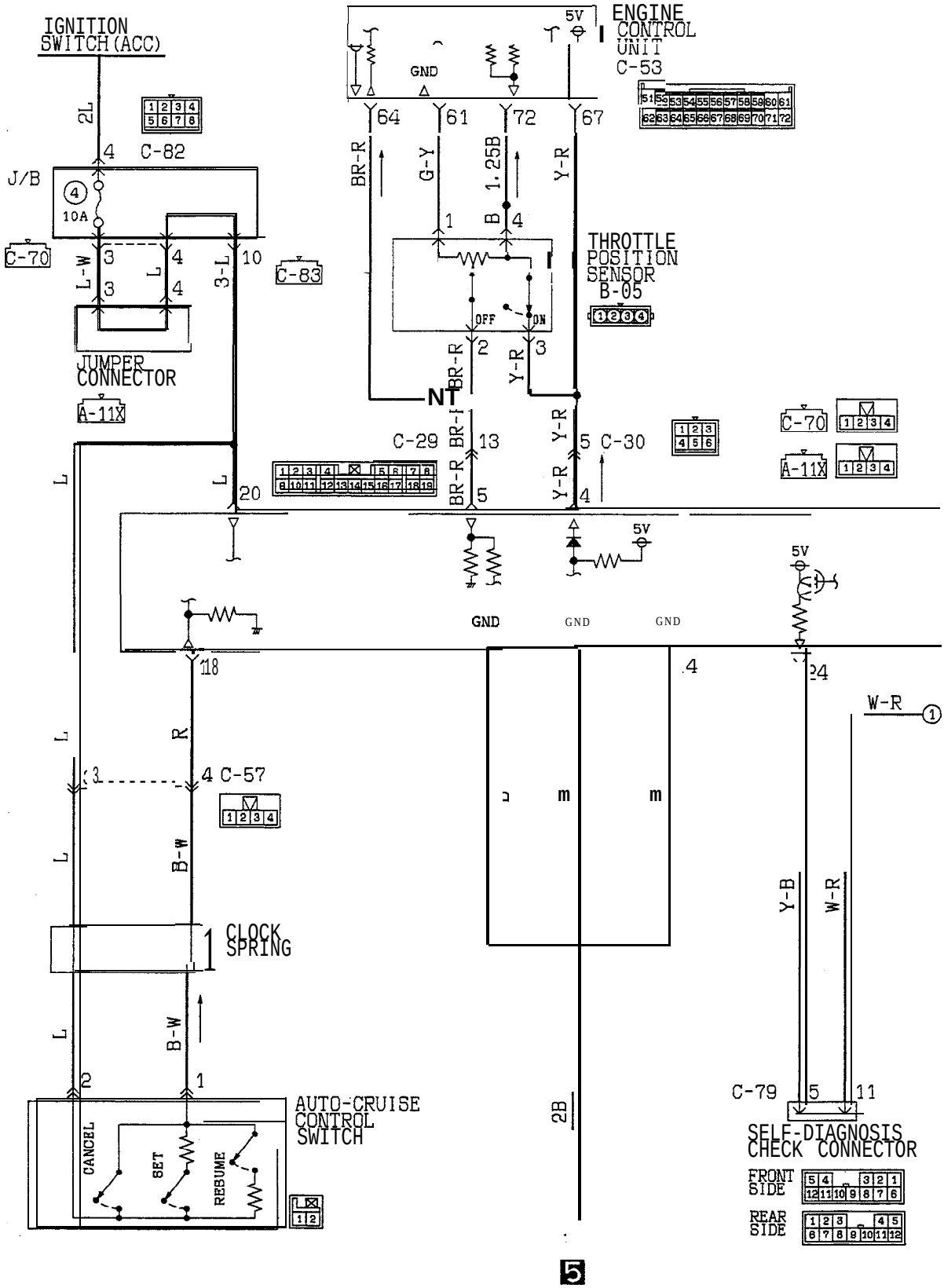

FUSIBLE LINK@
TAILLIGHT RELAY
IGNITION SWITCH(IG1)
DEDICATED FUSE
5W-B
2B-W
J/B
C-68
C-69
C-82
C-70
C-83
C-77
C-71
D-44
10A
15A
15A
R-Y
R
R-W
0.85R-B
B-W
0.85B-W
JUMPER CONNECTOR
A-11
AUTO-CRUISE CONTROL UNIT
C-37
5V
W-R
D-42
TURBO
NON-TURBO
G-W
B-W
MAIN SWITCH
D-32
ILL
OFF
ON
Y-W
C-14,
Y-
COMBINATION METER<REED>
SPEED SENSOR
B-Y
C-15
RHEOSTAT
R
L-B
2R
5



KX35-AC-R1507A-NM

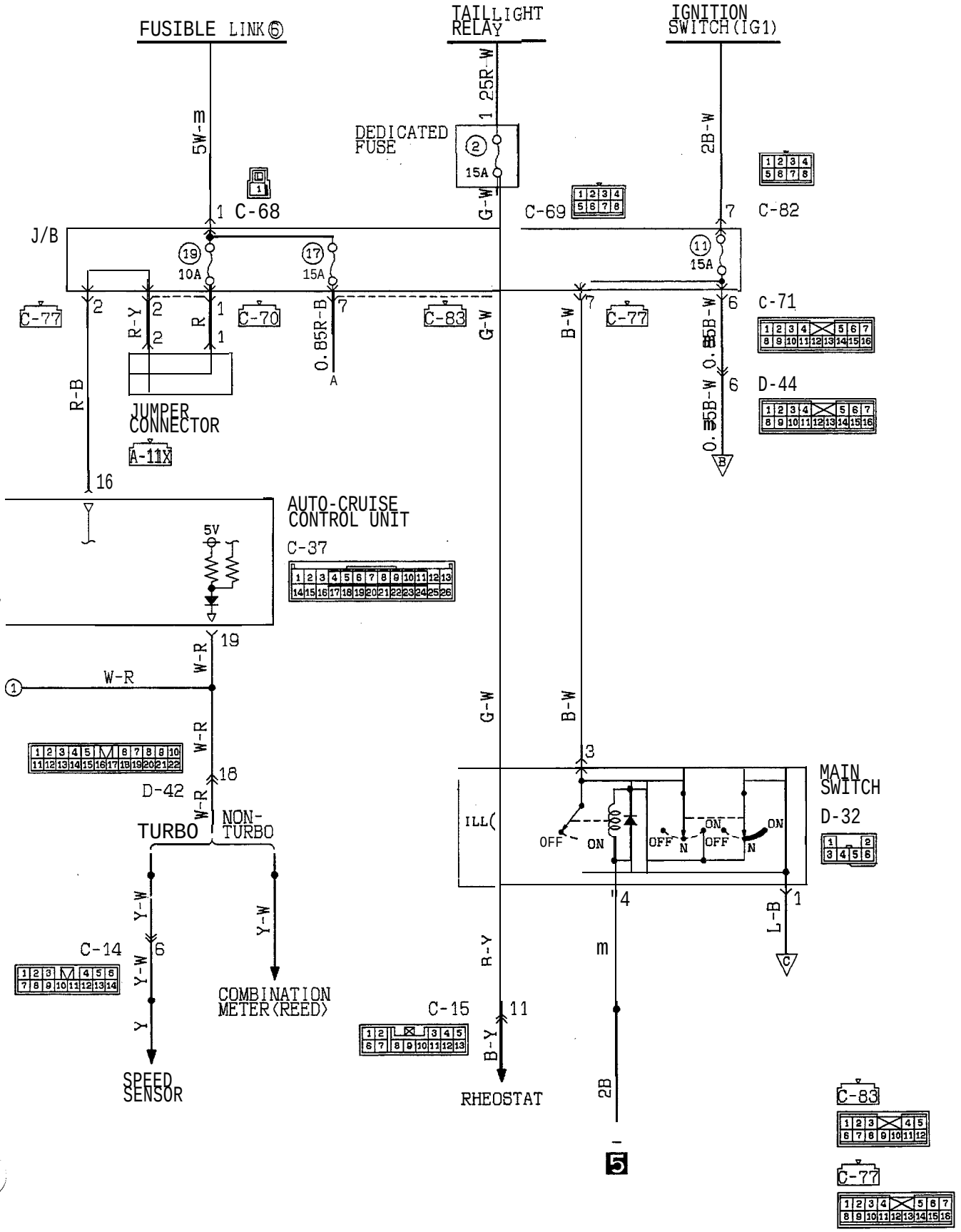
TSB Revision

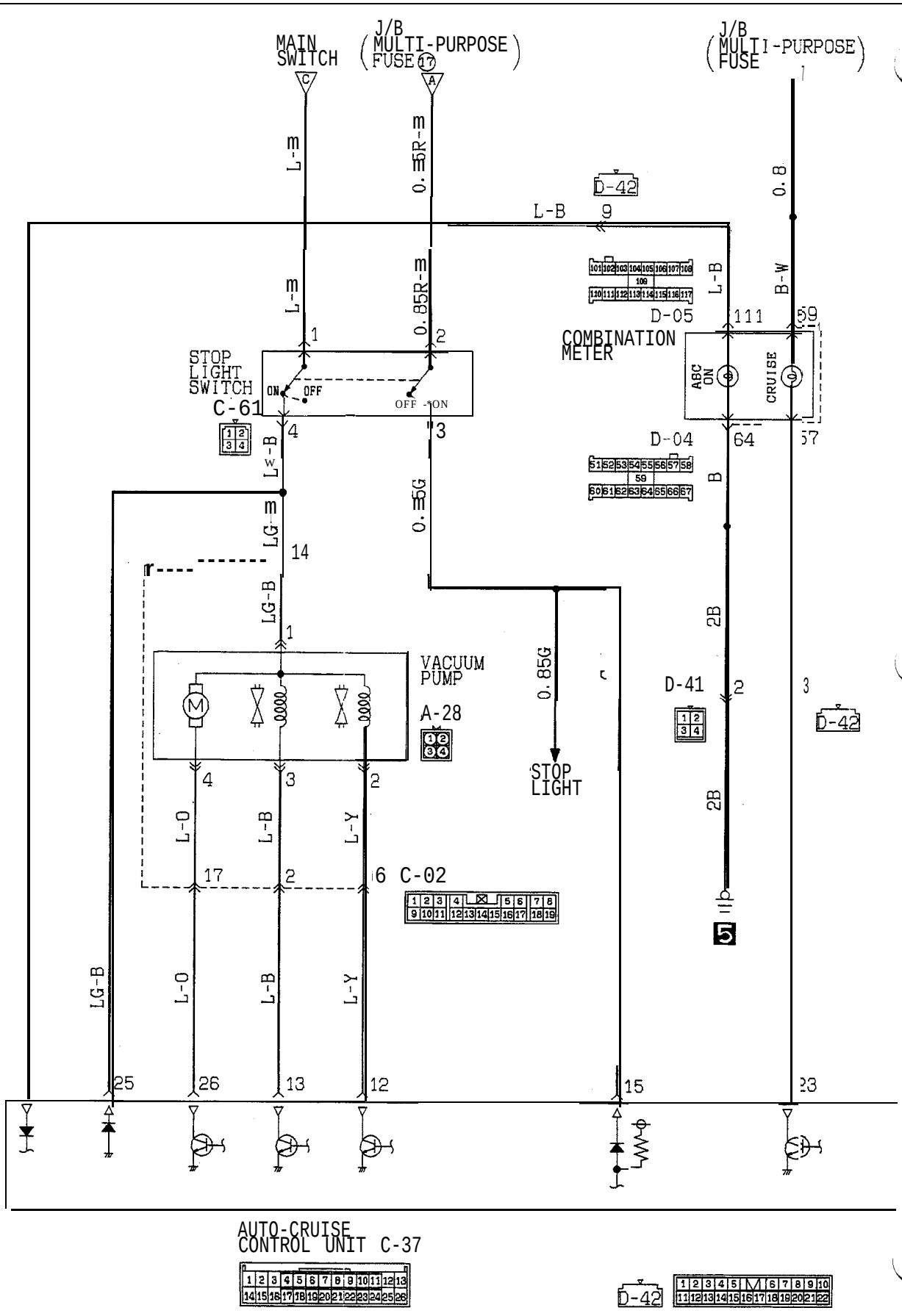
AUTO-CRUISE CONTROL CIRCUIT
<A/T>



KX35-AC-R1508-NM

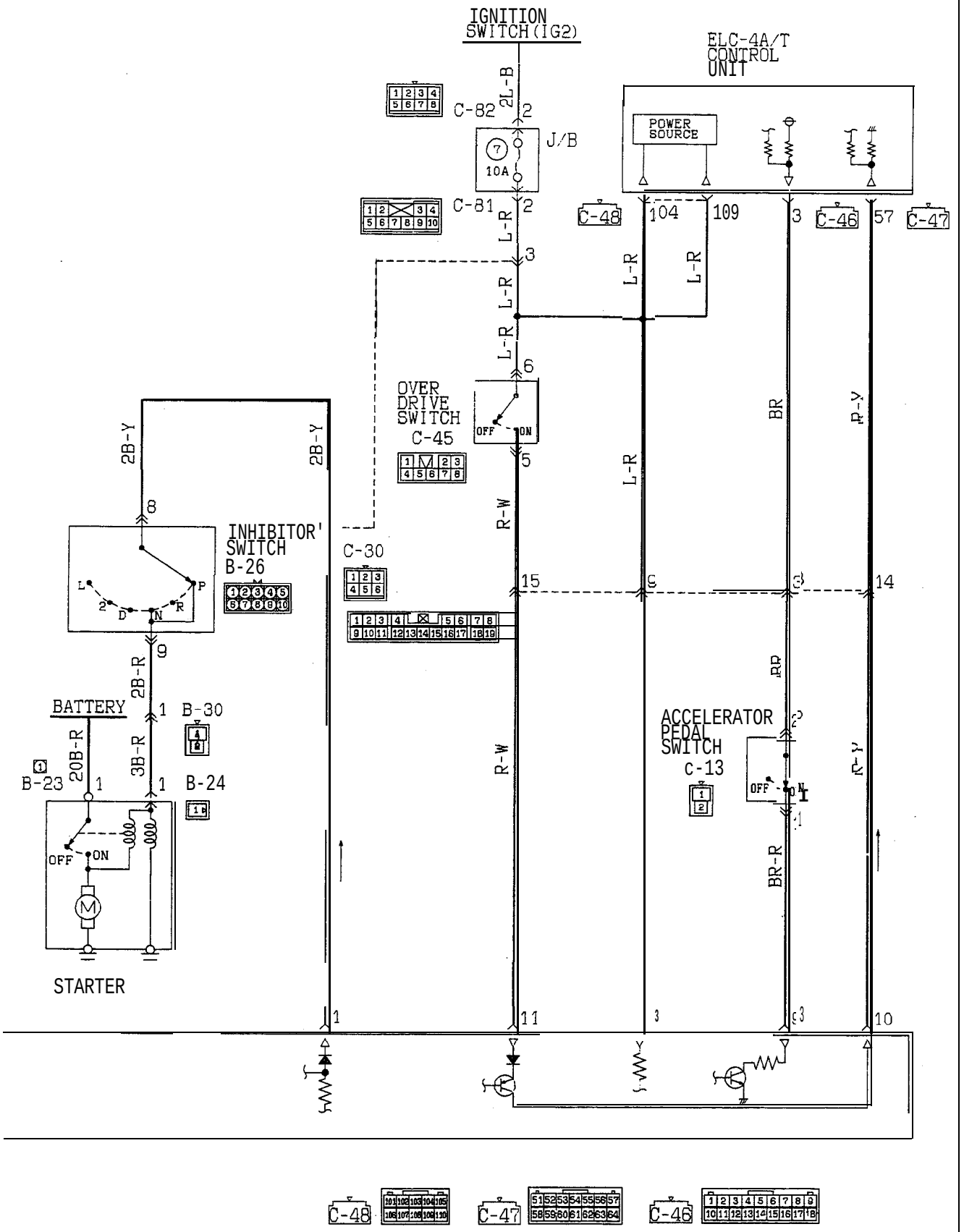
TSB Revision


FUSIBLE LINK ⑥
TAILLIGHT RELAY
IGNITION SWITCH(IG1)
DEDICATED FUSE
5W-m
1 25R-W
2B-W
15A
1 C-68
C-69
7 C-82
J/B
19 10A
17 15A
11 15A
C-77
C-70
C-83
C-71
D-44
R-Y
R
R-B
G-W
B-W
0.85R-B
JUMPER CONNECTOR
A-11
16
AUTO-CRUISE CONTROL UNIT
C-37
5V
19
W-R
D-42
TURBO
NON-TURBO
Y-W
Y
C-14
COMBINATION METER(REED)
SPEED SENSOR
C-15
11
B-Y
RHEOSTAT
3
4
1
L-B
R-Y
m
2B
MAIN SWITCH
D-32
ILL
OFF
ON
ACC
5
C-83
C-77



KX35-AC-R1508A-NM

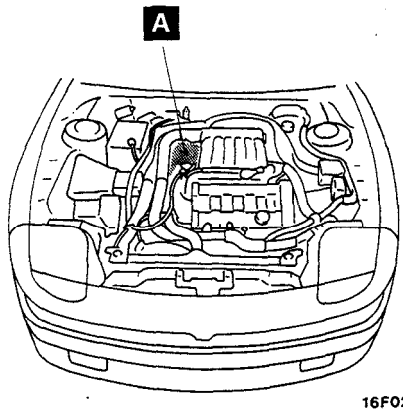
TSB Revision



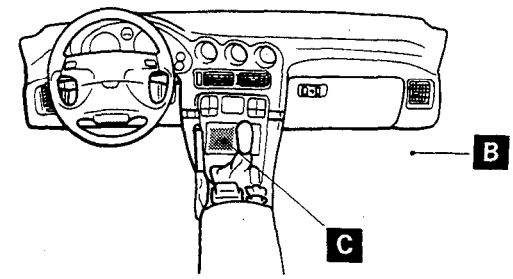
TSB Revision

COMPONENTS LOCATION

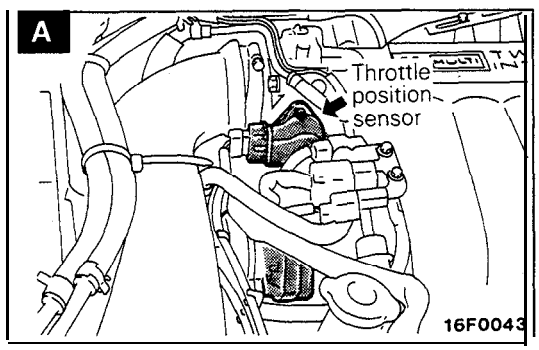
Name	Symbol	Name	Symbol
Auto-cruise control unit	B	Throttle position sensor	A
Engine control unit	C	–	–



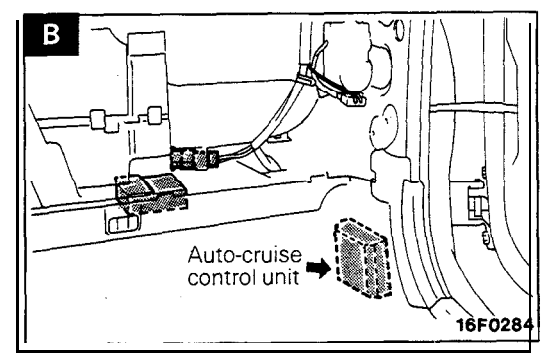
16F0257



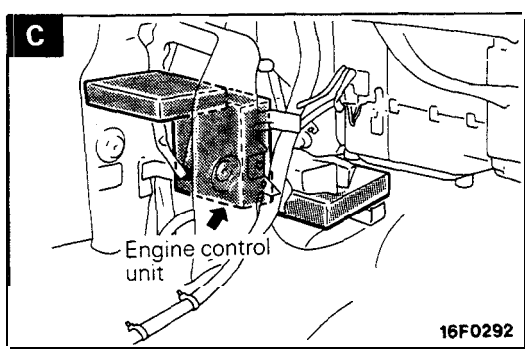
19F0134



16F0043

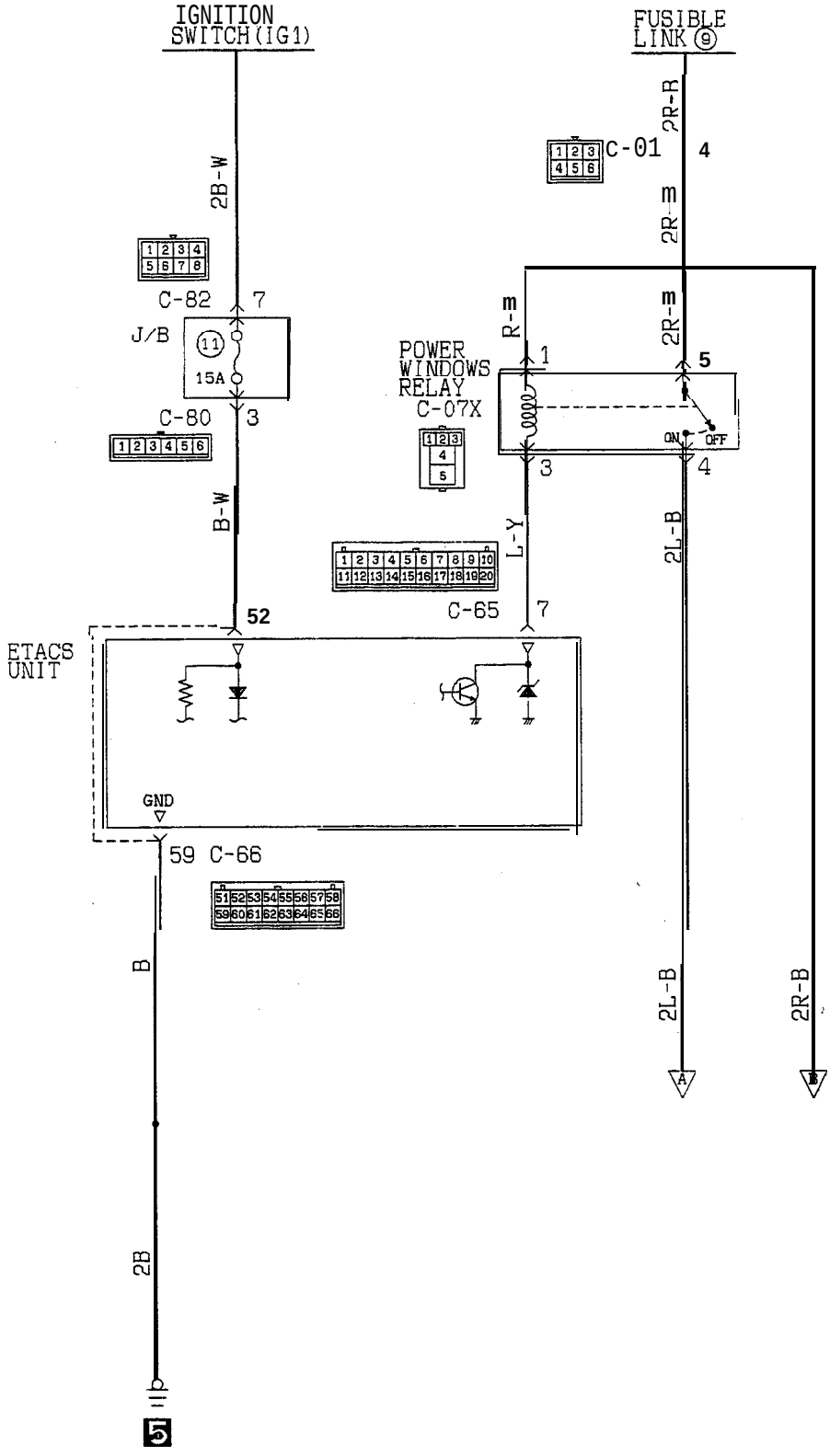


16F0284



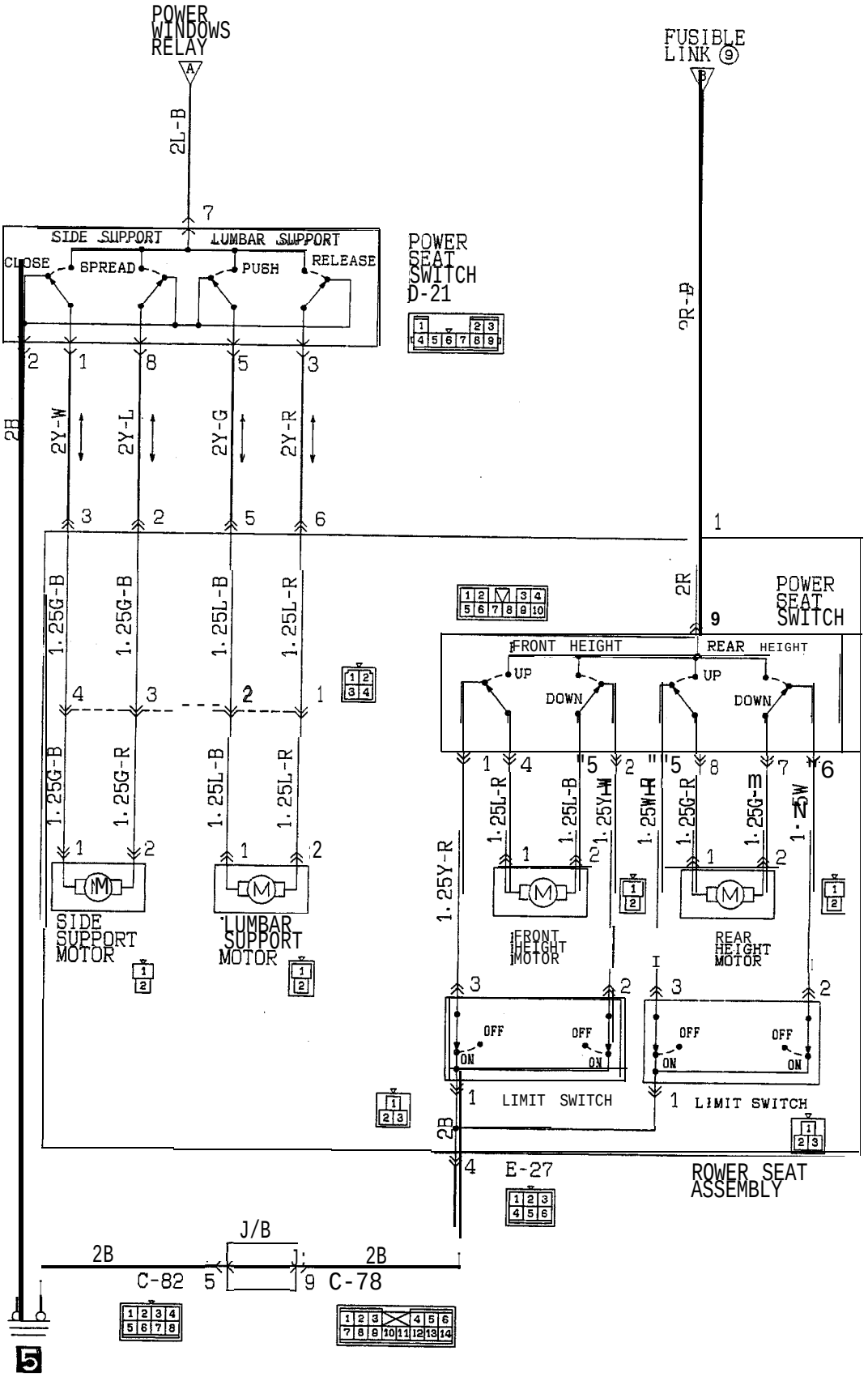
16F0292

POWER SEAT CIRCUIT

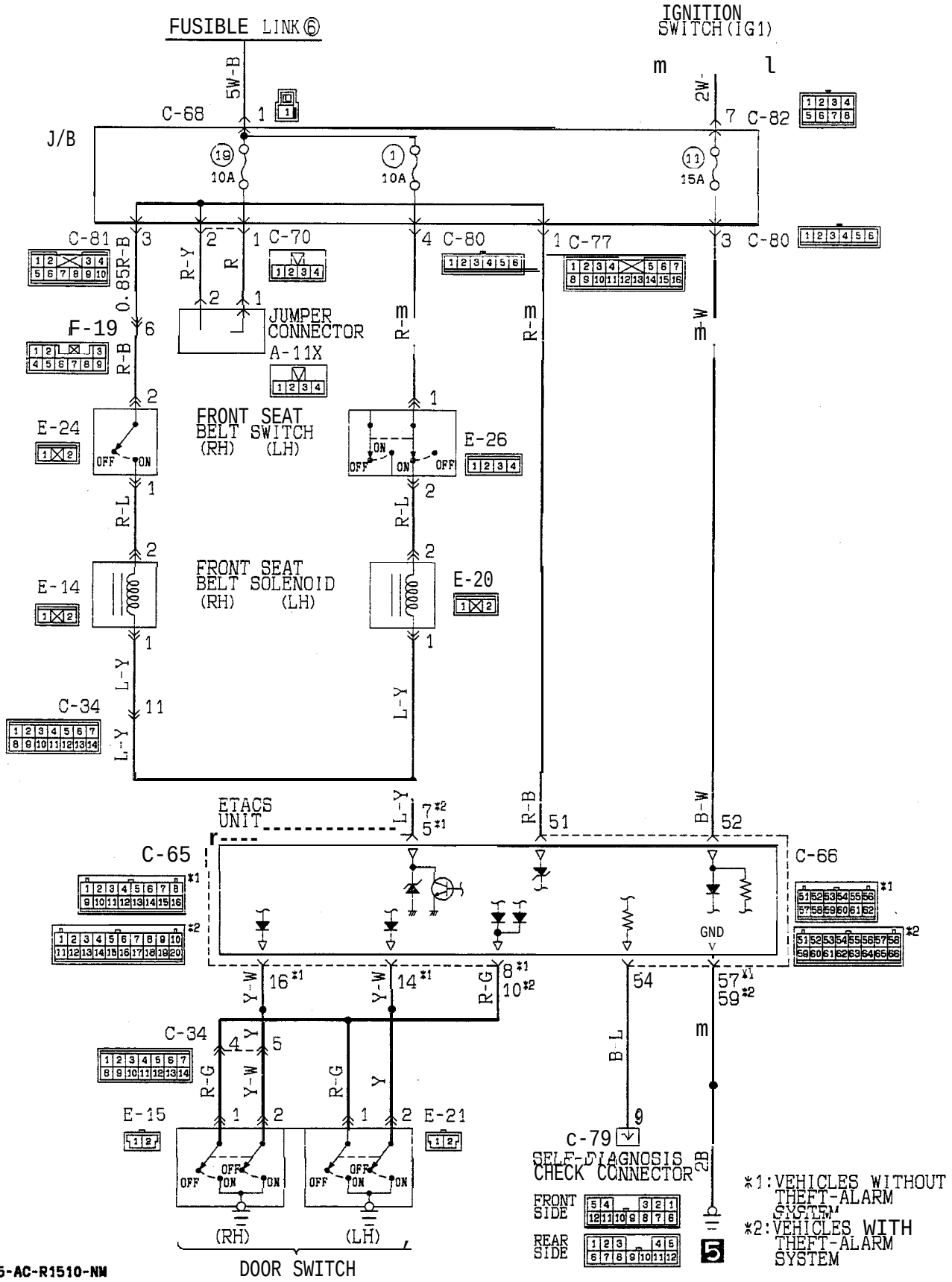


X35-AC-R1509-NW

TSB Revision


POWER WINDOWS RELAY
FUSIBLE LINK ⑨
2L-B
2R-B
SIDE SUPPORT
LUMBAR SUPPORT
CLOSE
SPREAD
PUSH
RELEASE
POWER SEAT SWITCH D-21
2B
2Y-W
2Y-L
2Y-G
2Y-R
1.25G-B
1.25G-R
1.25L-B
1.25L-R
1.25Y-R
2R
POWER SEAT SWITCH
FRONT HEIGHT
REAR HEIGHT
UP
DOWN
SIDE SUPPORT MOTOR
LUMBAR SUPPORT MOTOR
FRONT HEIGHT MOTOR
REAR HEIGHT MOTOR
OFF
ON
LIMIT SWITCH
E-27
POWER SEAT ASSEMBLY
J/B
C-82
C-78

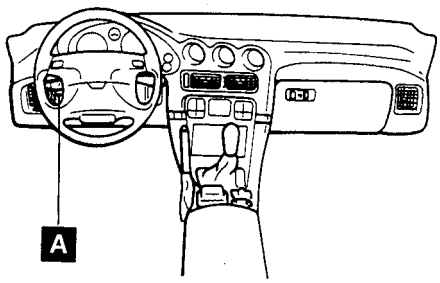
TENSION-REDUCER TYPE SEAT BELT CIRCUIT



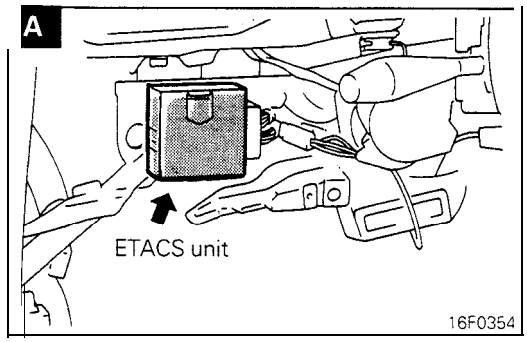
TSB Revision

COMPONENTS LOCATION

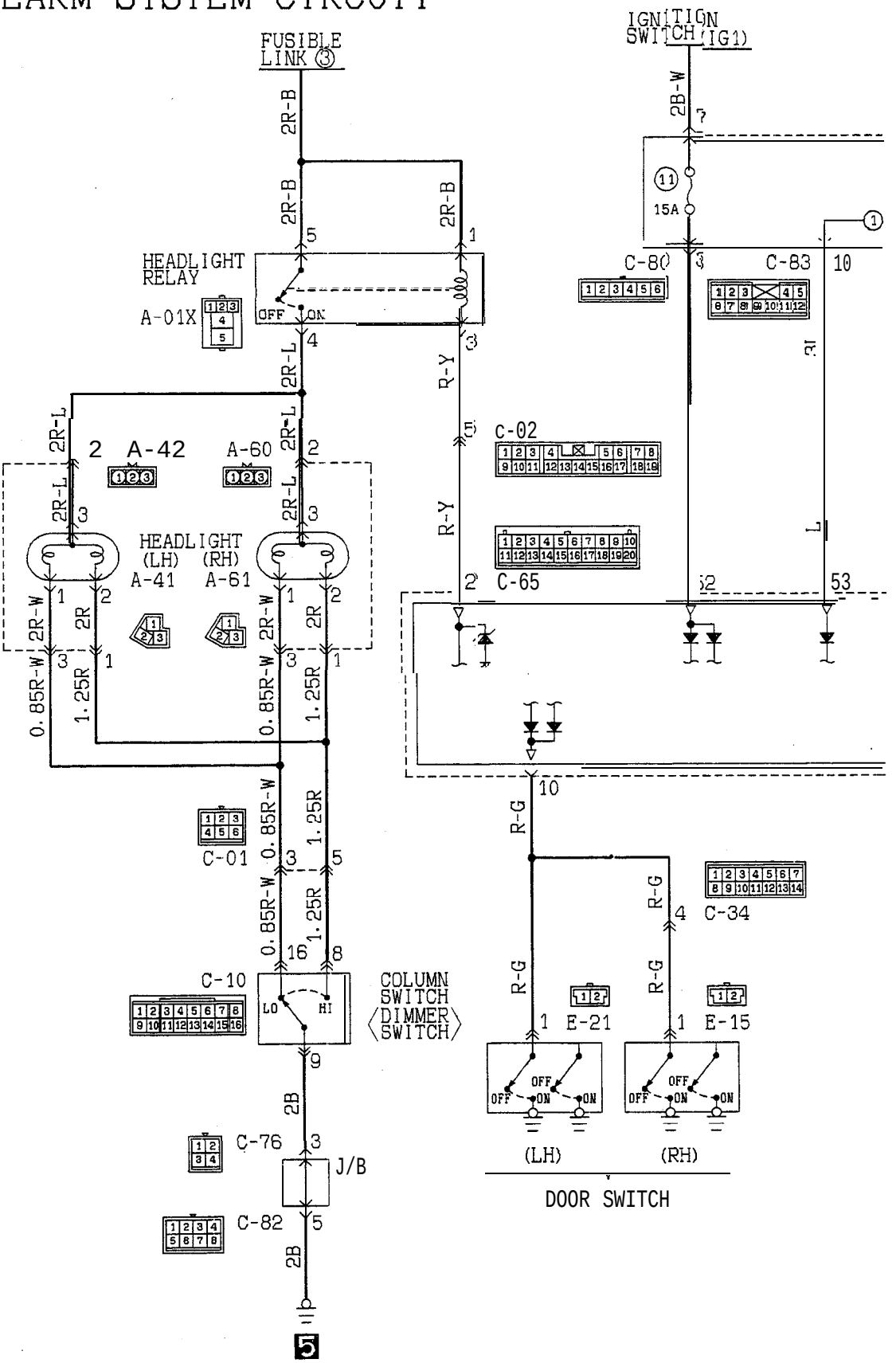
Name	Symbol
ETACS unit	A



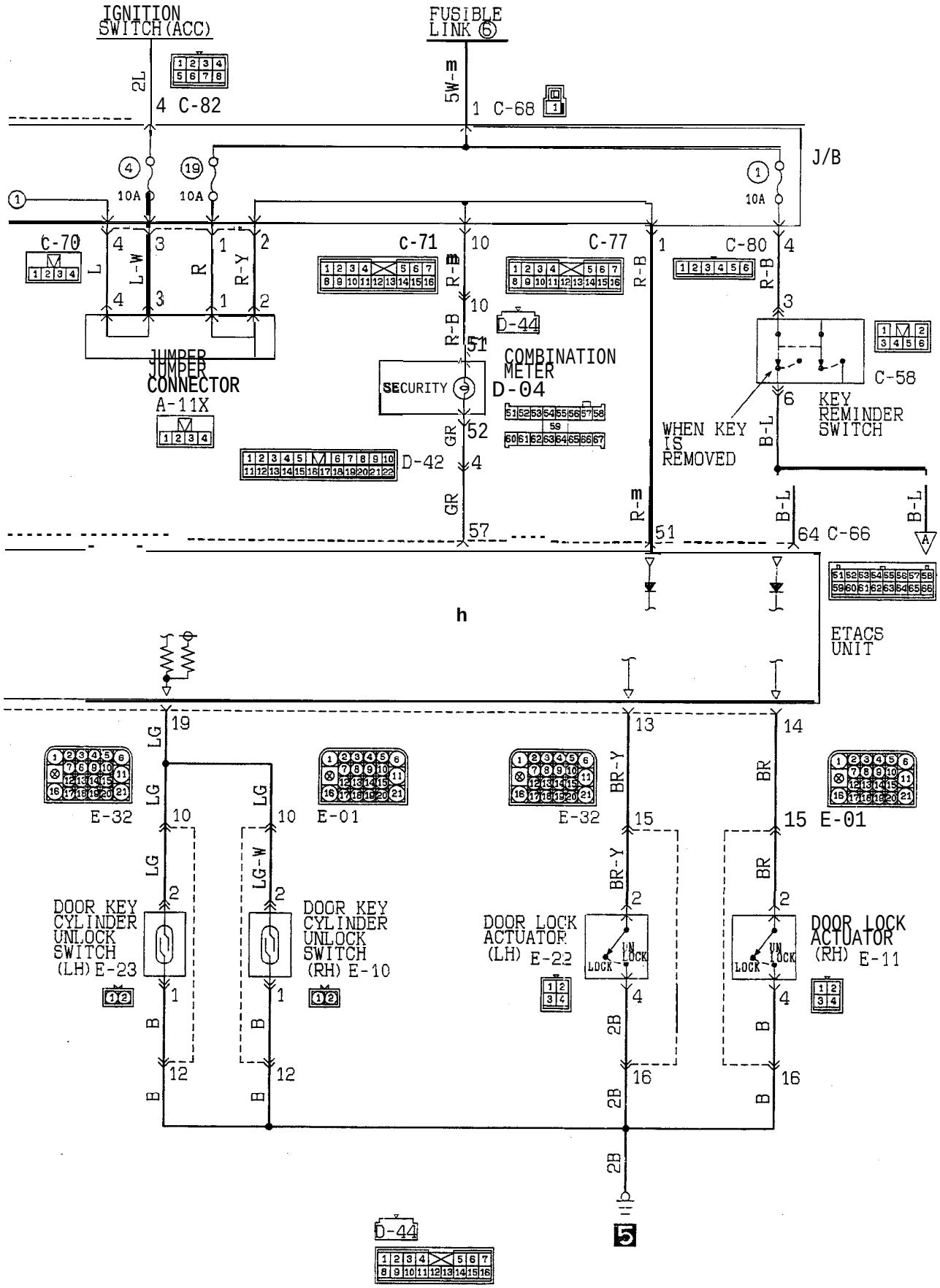
19F0134



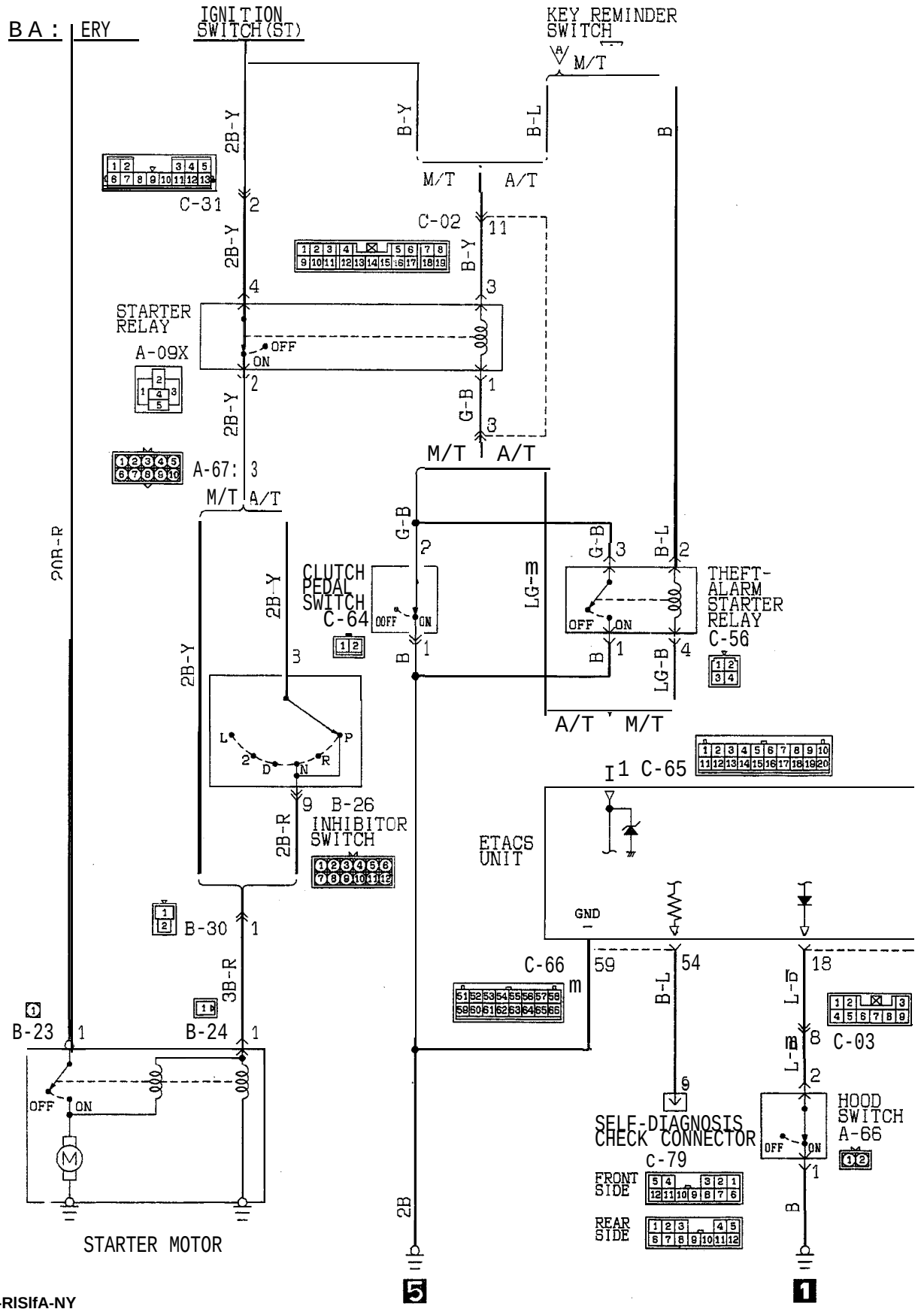
THEFT-ALARM SYSTEM CIRCUIT



X35-AC-R1511-NM

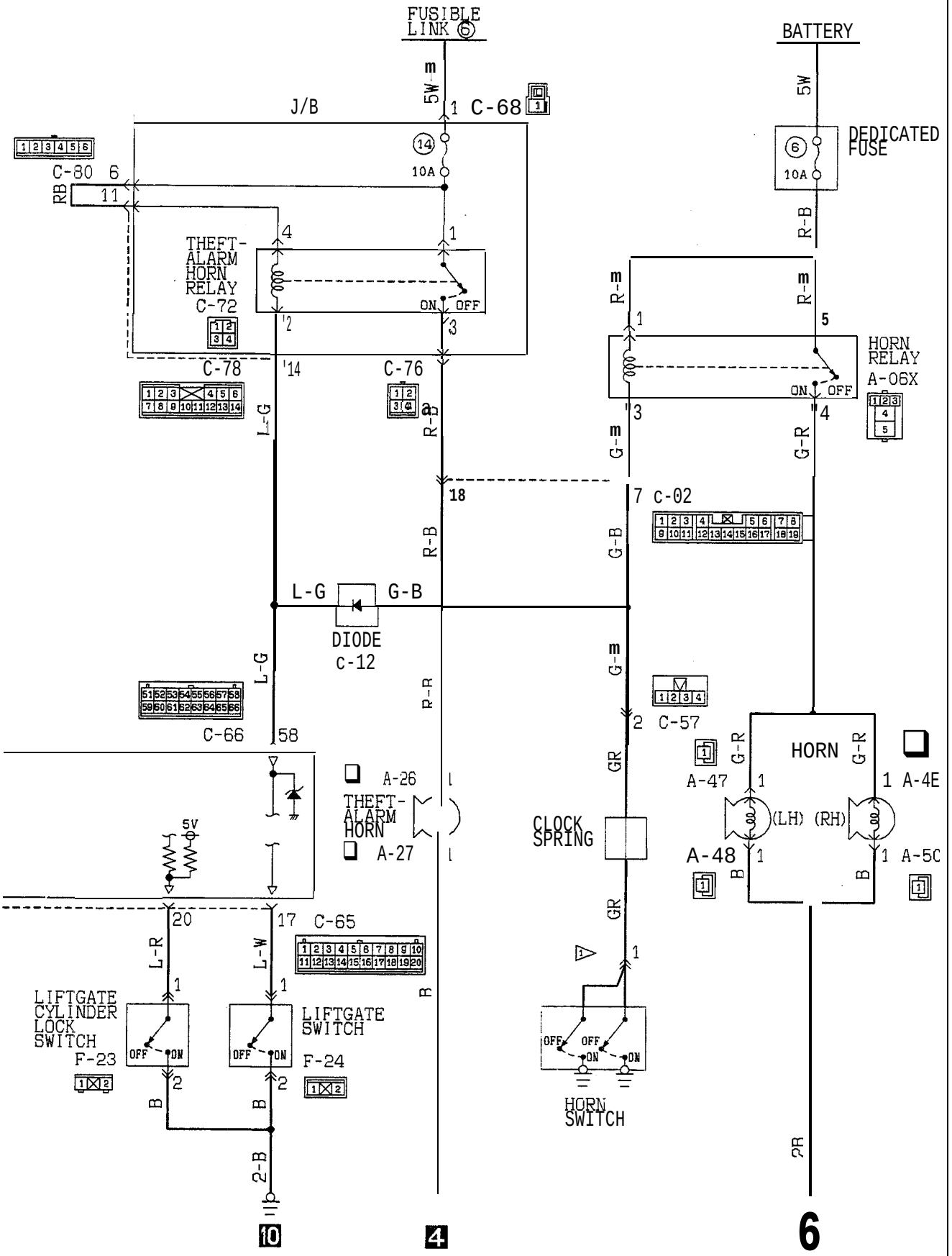


TSB Revision



X35-AC-RISIfA-NY

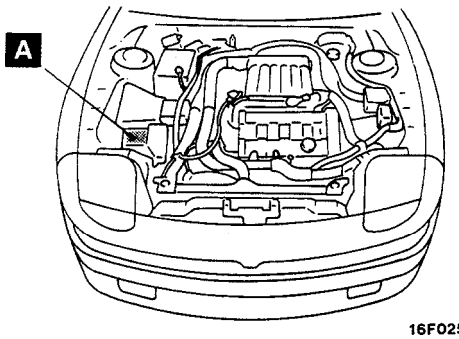
TSB Revision



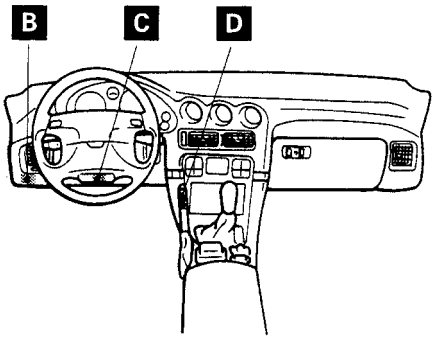
TSB Revision

COMPONENTS LOCATION

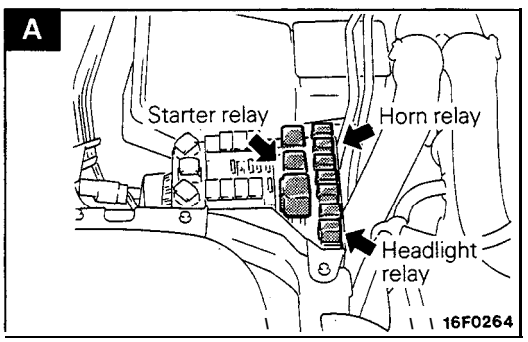
Name	Symbol	Name	Symbol
ETACS unit	C	Starter relay	A
Headlight relay	A	Theft-alarm horn relay	B
Horn relay	A	Theft-alarm starter relay	D



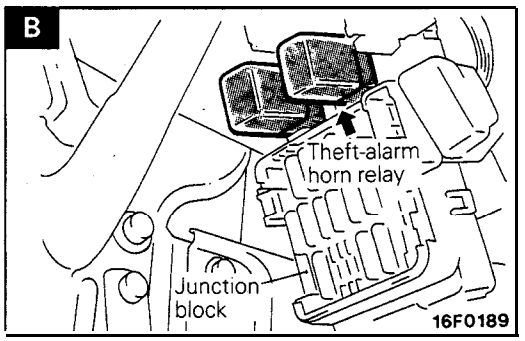
16F0257



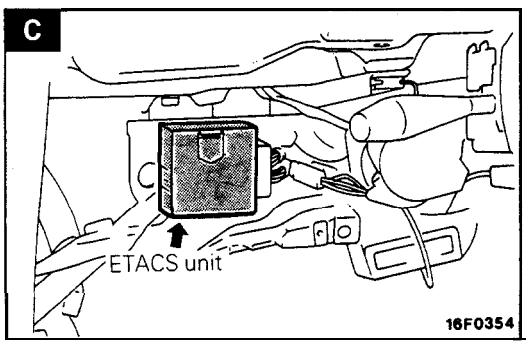
19F0134



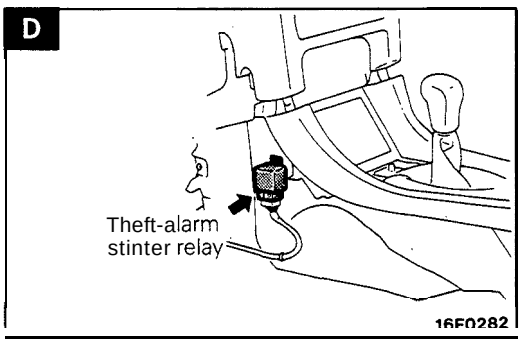
16F0264



16F0189



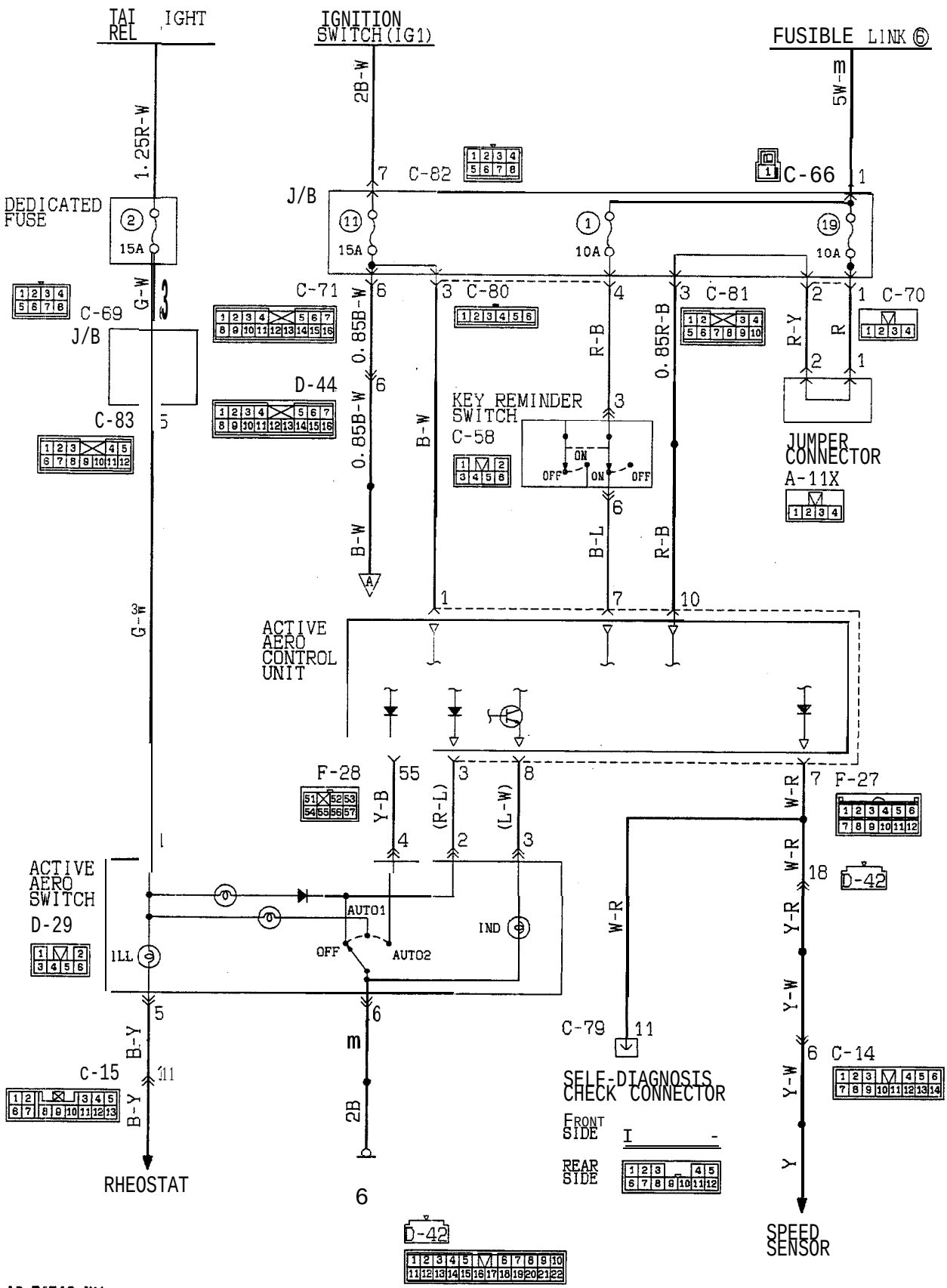
16F0354



16F0282

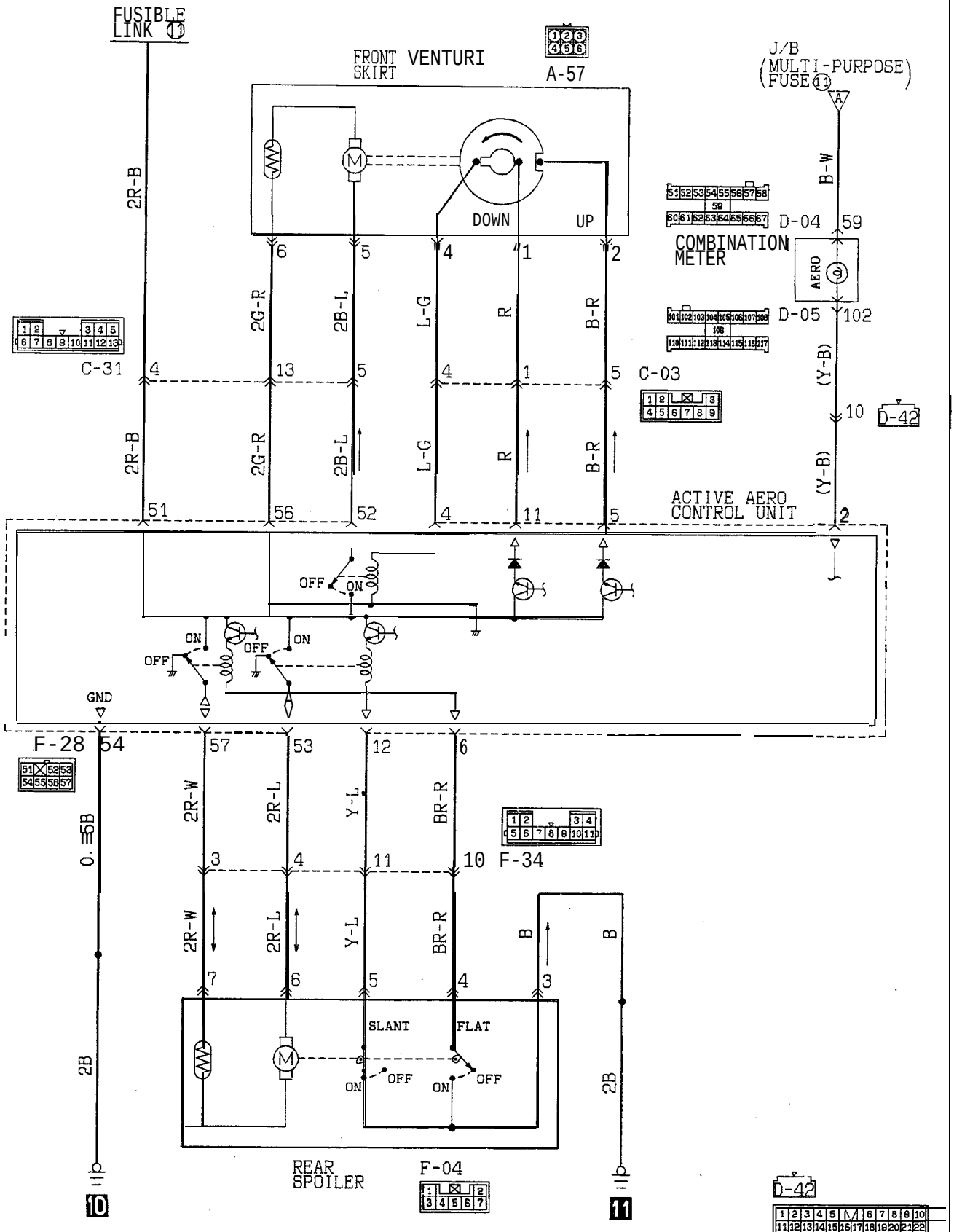
TSB Revision

ACTIVE AERO CIRCUIT



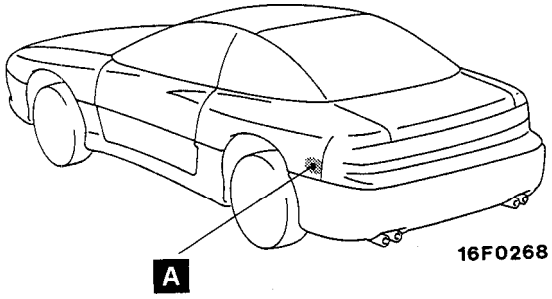
KX35-AC-R1512-NM

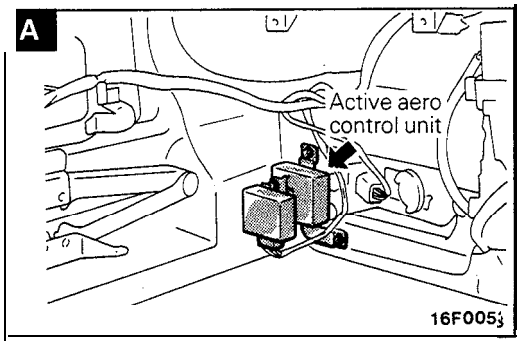
TSB Revision


FUSIBLE LINK 11
FRONT VENTURI SKIRT
A-57
J/B (MULTI-PURPOSE FUSE 11)
DOWN
UP
COMBINATION METER
D-04
D-05
C-31
C-03
D-42
ACTIVE AERO CONTROL UNIT
GND
F-28
F-34
F-04
REAR SPOILER
SLANT
FLAT
ON
OFF
2R-B
2G-R
2B-L
L-G
R
B-R
B-W
(Y-B)
2R-W
2R-L
Y-L
BR-R
B
0.5B
2B

COMPONENTS LOCATION

Name	Symbol
Active aero control unit	A





ENGINE ELECTRICAL

CONTENTS

M16AA-A

CHARGING SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS

M16EB-A

ALTERNATOR

Items	Specifications
Type	Battery voltage sensing
Rated output VIA	12/110
Voltage regulator	Electronic type

SERVICE SPECIFICATIONS

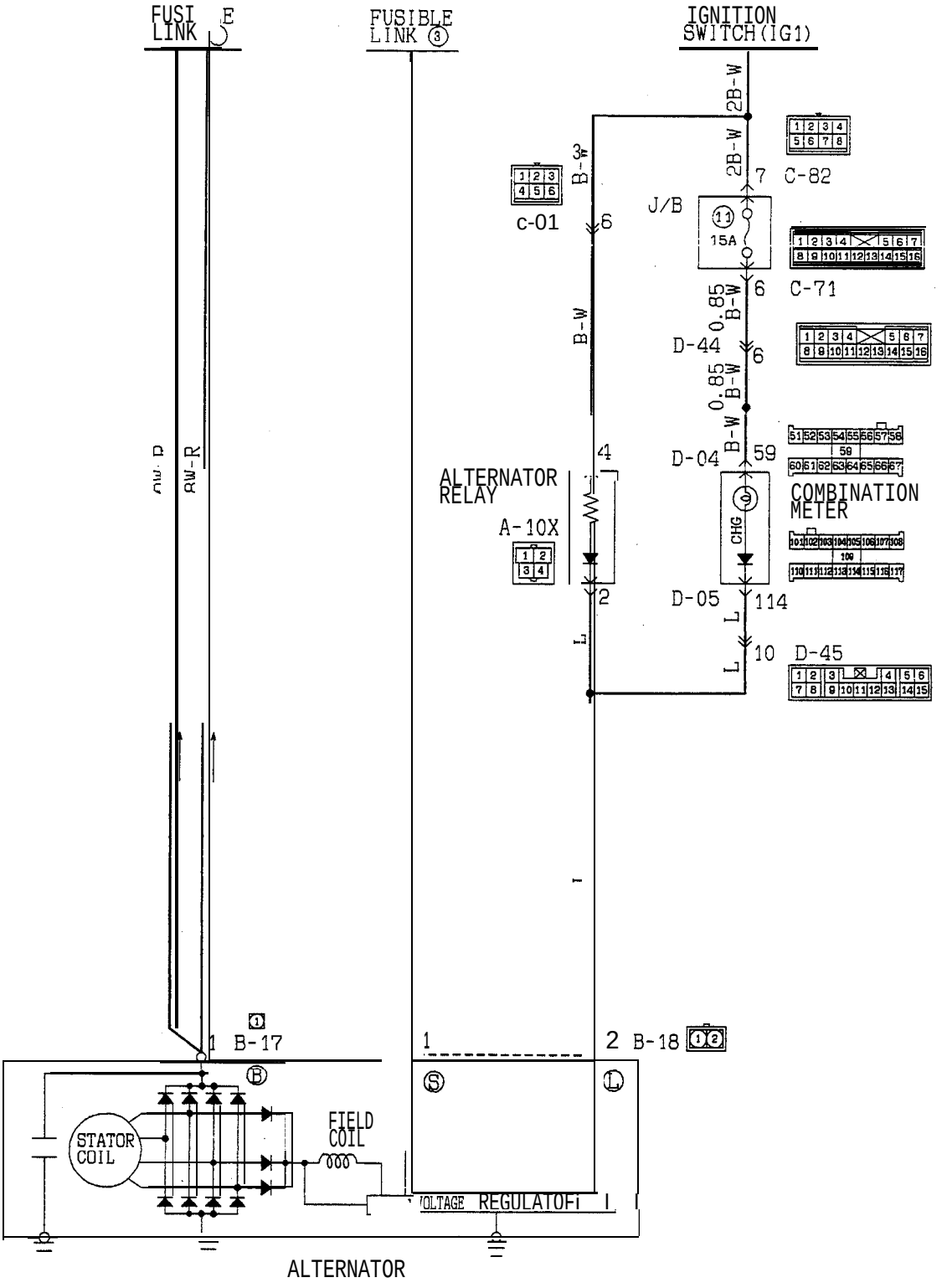
M16EC--

items	Specifications
Alternator	
Standard value	
Regulated voltage	
Ambient temp. at voltage regulator V	
-20°C (-4°F)	14.2 – 15.4
20°C (68°F)	13.9-14.9
60°C (140°F)	13.4 – 14.6
80°C (176°F)	13.1 – 14.5
Slip ring O.D. mm (in.)	26.7 (1.05)
Rotor coil resistance Ω	4pprox. 3 – 5
Limit	
Output current A	Min. 77
Slip ring O.D. mm (in.)	26.1 (1.03)

TROUBLESHOOTING

M16EHAP

CIRCUIT DIAGRAM



KX35-AC-R0402-NM

TSB Revision

OPERATION

When engine is stopped

When the ignition switch is switched to the "ON" position, electricity flows from the "L" terminal of the alternator to the field coil, and at the same time the charging warning light illuminates.

When engine is being started/has started

When the engine is started, charging voltage is applied to the "L" terminal of the alternator, with the result that the charging warning light is extinguished.

In addition, because battery voltage is applied to the "S" terminal of the alternator, this battery voltage is monitored at the IC voltage regulator, thus switching ON and OFF the current to the field coil and thereby controlling the output voltage of the alternator.

Power is supplied to each load from the "B" terminal of the alternator.

NOTE

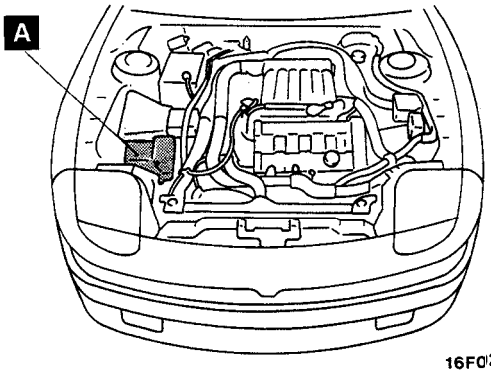
The alternator relay functions as a back-up for the flow of electricity to' the field coil if there is a disconnection or damaged wiring of the charging warning light.

TROUBLESHOOTING HINTS

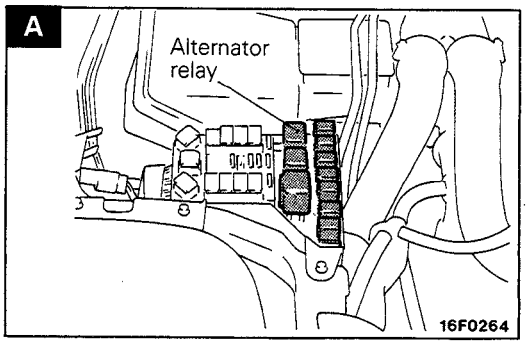
1. Charging warning light does not go on when the ignition switch is turned to "ON", before the engine starts.
   - Check the bulb.
2. Charging warning light fails to go off once the engine starts.
   - Check the IC voltage regulator (located within the alternator).
3. Discharged or overcharged battery.
   - Check the IC voltage regulator (located within the alternator).
4. The charging warning light illuminates dimly.
   - Check the diode (within the combination meter) for a short-circuit.

COMPONENT LOCATION

Name	Symbol
Alternator relay	A



16F0257



16F0264

SERVICE ADJUSTMENT PROCEDURES

CHARGING SYSTEM INSPECTION M16EIAN

VOLTAGE DROP TEST OF ALTERNATOR OUTPUT WIRE

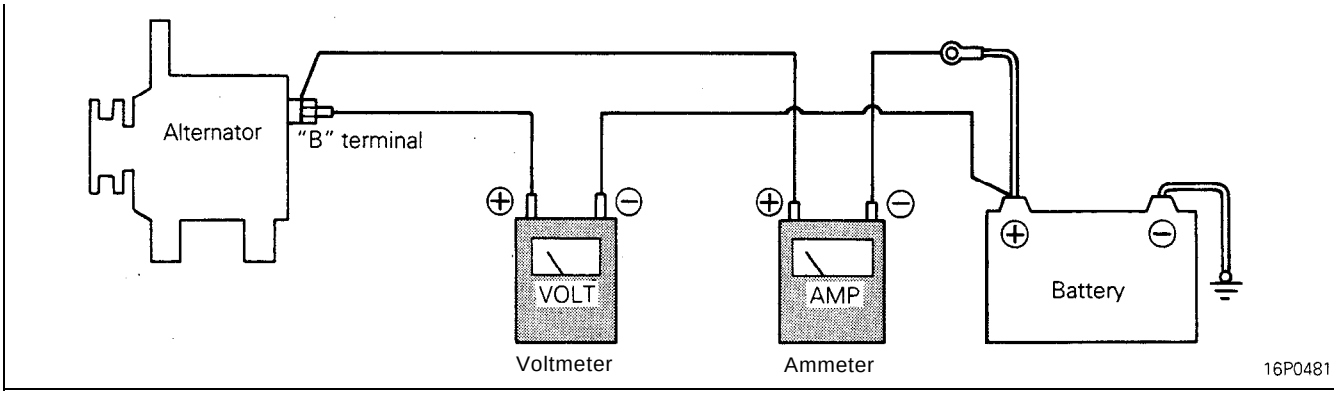
This test judges whether or not the wiring (including the fusible link) between the alternator B terminal and the battery (+) terminal is sound by the voltage drop method.

Preparation

(1) Turn the ignition switch to "OFF".
(2) Disconnect the battery ground cable.
(3) Disconnect the alternator output lead from the alternator "B" terminal.
(4) Connect a DC ammeter in series to the "B" terminal and the disconnected output lead. Connect the (+) lead of the ammeter to the "B" terminal and the (–) lead to the disconnected output wire.

NOTE
Use of a clamp type ammeter that can measure current without disconnecting the harness is preferred. The reason is that when checking a vehicle that has a low output current due to poor connection of the alternator "B" terminal, such poor connection is corrected as the "B" terminal is loosened and a test ammeter is connected in its place and as a result, causes for the trouble may not be determined.

(5) Connect a digital voltmeter between the alternator "B" terminal and battery (+) terminal. Connect the (+) lead wire of the voltmeter to the "B" terminal and the (–) lead wire to the battery (+) terminal.
(6) Connect the battery ground cable.
(7) Leave the hood open.



Test

(1) Start the engine.
(2) Turn on or off the headlights and small lights and adjust the engine speed so that the ammeter reads 20 A and read off the voltmeter indication under this condition.

Result

(1) It is okay if the voltmeter indicates the standard value.

Standard value: 0.2 V max.

(2) If the voltmeter indicates a value that is larger than the standard value, poor wiring is suspected, in which case check the wiring from the alternator "B" terminal to fusible link to battery (+) terminal. Check.for loose connection, color change due to overheated harness, etc. and correct them before testing again.
(3) Upon completion of the test, set the engine speed at idle.
Turn off the lights and turn off the ignition switch.
(4) Disconnect the battery ground cable.
(5) Disconnect the ammeter and voltmeter that have been connected for the test purpose.
(6) Connect the alternator output wire to the alternator "B" terminal.
(7) Connect the battery ground cable.

OUTPUT CURRENT TEST

This test judges whether or not the alternator gives an output current that is equivalent to the nominal output.

Preparation

(1) Prior to the test, check the following items and correct as necessary.
   (a) Check the battery installed in the vehicle to ensure that it is in sound state*. The battery checking method is described in "BATTERY"

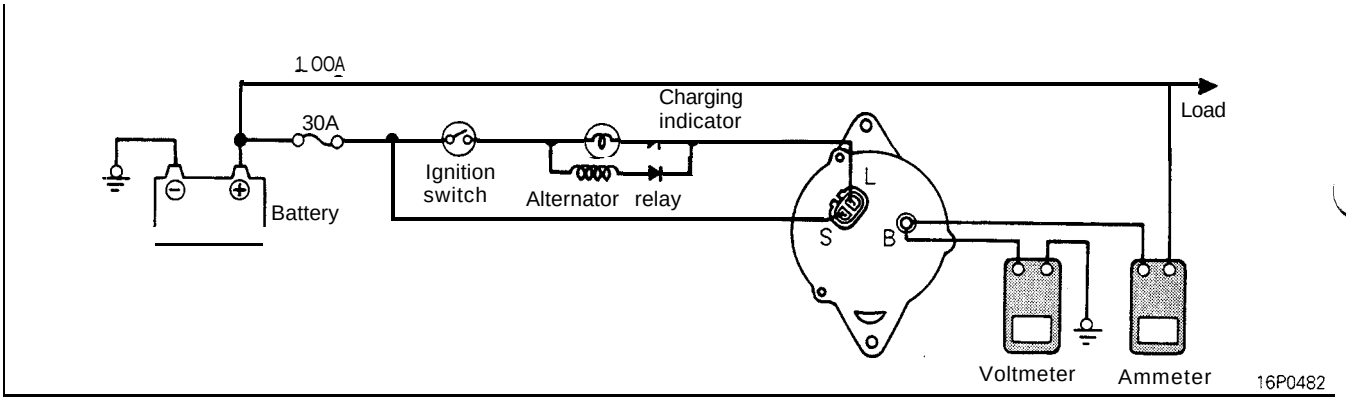
   NOTE
   '"The battery that is used to test the output current should be one that has been rather discharged. With a fully charged battery, the test may not be conducted correctly due to an insufficient load.

   (b) Check tension of the alternator drive belt. The belt tension check method is described in "GROUP 11 – Engine Adjustment"

(2) Turn off the ignition switch.
(3) Disconnect the battery ground cable.
(4) Disconnect the alternator output wire from the alternator "B" terminal.
(5) Connect a DC ammeter in series between the "B" terminal and the disconnected output wire. Connect the (+) lead of the ammeter to the "B" terminal and connect the (–) lead wire to the disconnected output wire.

   NOTE
   Tighten each connection by bolt and nut securely as a heavy current will flow. Do not relay on clips.

(6) Connect a voltmeter (0 to 20V) between the "B" terminal and ground. Connect the (+) lead wire to the alternator "B" terminal and (–) lead wire to a sound ground.
(7) Set the engine tachometer and connect the battery ground cable.
(8) Leave the engine hood open.



Test

(1) Check to see that the voltmeter reads the same value as the battery voltage.
   If the voltmeter reads OV, an open circuit in the wire between the alternator "B" terminal **and** battery (–) terminal, a blown fusible link or poor grounding is suspected.
(2) Turn on the headlight switch and start the engine.
(3) Set the headlight at high beam and the heater blower switch at HIGH, quickly increase the engine speed to 2,500 rpm and read the maximum output current value indicated by the ammeter.

   NOTE
   After the engine start up, the charging current quickly drops, therefore, above operation must be done quickly to read maximum current value correctly.

Result

(1) The ammeter reading must be higher than the limit value. If it is lower but the alternator output wire is normal, remove the alternator from the vehicle and check it.

Limit: 77A min.

Caution

(a) The nominal output current value is shown on the name plate affixed to the alternator body.

(b) The output current value changes with the electrical load and the temperature of the alternator itself.
Therefore, the nominal output current may not be obtained if the vehicle electrical load at the time of test is small.
In such a case, keep the headlights on to cause discharge of the battery or use lights of another vehicle as a load to increase the electrical load. The nominal output current may not be obtained if the temperature of the alternator itself or ambient temperature is too high. In such a case, reduce the temperature before testing again.

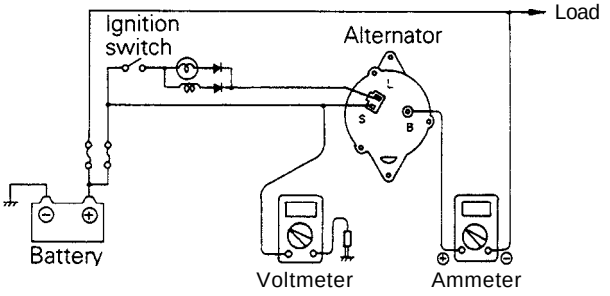
(2) Upon completion of the output current test, lower the engine speed to the idle speed and turn off the ignition switch.
(3) Disconnect the battery ground cable.
(4) Remove the test ammeter and voltmeter and the engine tachometer.
(5) Connect the alternator output wire to the alternator "B" terminal.
(6) Connect the battery ground cable.

REGULATED VOLTAGE TEST

The purpose of this test is to check that the electronic voltage regulator controls the voltage correctly.

Preparation

(1) Prior to the test, check the following items and correct if necessary.
  (a) Check the battery installed on the vehicle to see that it is fully charged. For battery checking method, see "BATTERY".
  (b) Check the alternator drive belt tension. For belt tension check, see "GROUP 11 – Engine Adjustment"
(2) Turn the ignition switch to "OFF".
(3) Disconnect the battery ground cable.
(4) Connect a digital voltmeter between the "S" terminal of the alternator and ground. Connect the (+) lead of the voltmeter to the "S" terminal of the alternator, inserting from the wire side of the 2-way connector and connect the (–) lead to sound ground or battery (–) terminal.



6EL252

(5) Disconnect the alternator output wire from the alternator "B" terminal.
(6) Connect a DC ammeter in series between the "B" terminal and the disconnected output wire. Connect the (+) lead of the ammeter to the "B" terminal and connect the (–) lead wire to the disconnected output wire.
(7) Set the engine tachometer and connect the battery ground cable.

Test

(1) Turn on the ignition switch and check that the voltmeter indicates the following value.
Voltage: Battery voltage
If it reads OV, there is an open circuit in the wire between the alternator "S" terminal and the battery (+) or the fusible link is blown.
(2) Start the engine. Keep all lights and accessories off.
(3) Run the engine at a speed of about 2,500 rpm and read the voltmeter when the alternator output current drops to 10A or less.

TSB Revision

Result

(1) If the voltmeter reading agrees with the value listed in the regulating voltage table below, the voltage regulator is functioning correctly. If the reading is other than the standard value, the voltage regulator or the alternator is faulty.

Regulating voltage table

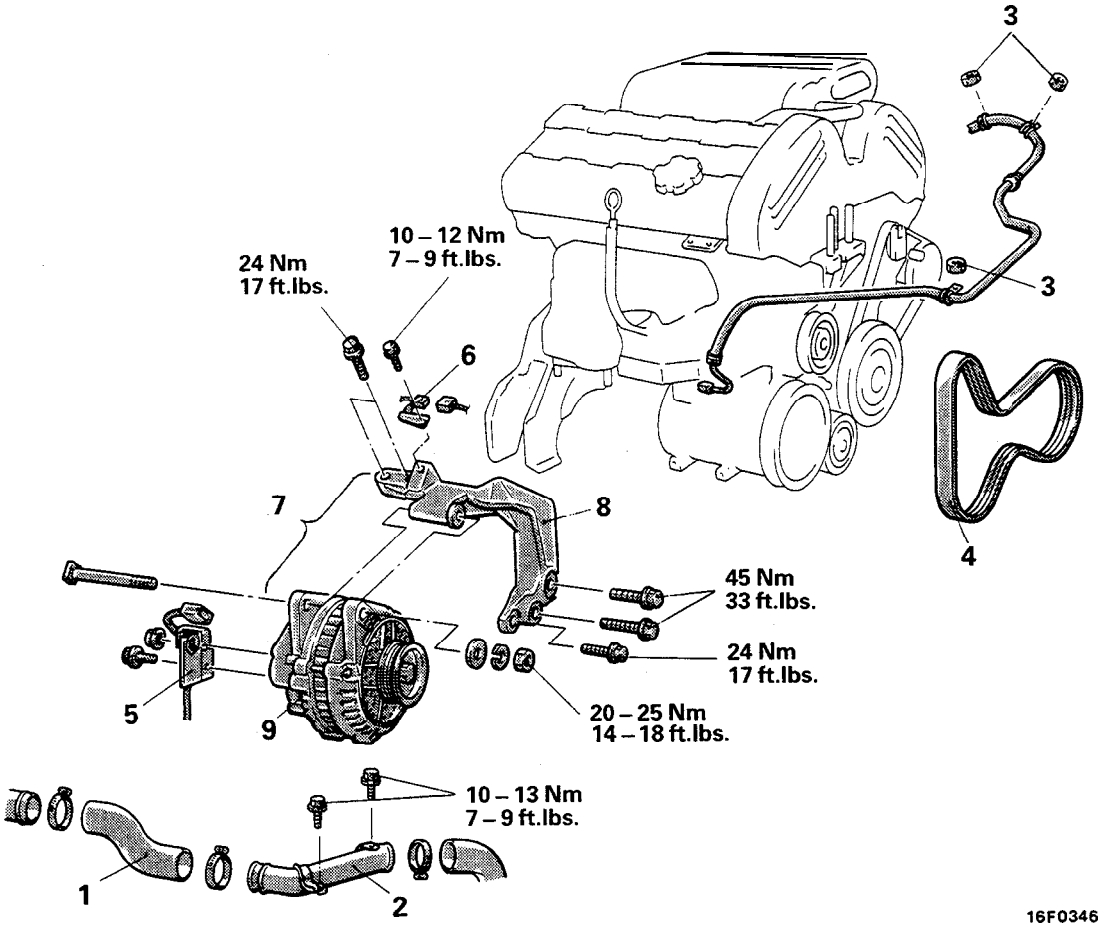
Voltage regulator ambient temperature °C (°F)	Regulating voltage V
–20 (–4)	14.2 – 15.4
20 (68)	13.9 – 14.9
60 (140)	13.4 – 14.6
80 (176)	13.1 – 14.5

(2) Upon completion of the test, set the engine speed at idle and turn off the ignition switch.
(3) Disconnect the battery ground cable.
(4) Remove the test voltmeter and ammeter and the engine tachometer.
(5) Connect the alternator output wire to the alternator "B" terminal.
(6) Connect the battery ground cable.

ALTERNATOR

M16EJAU

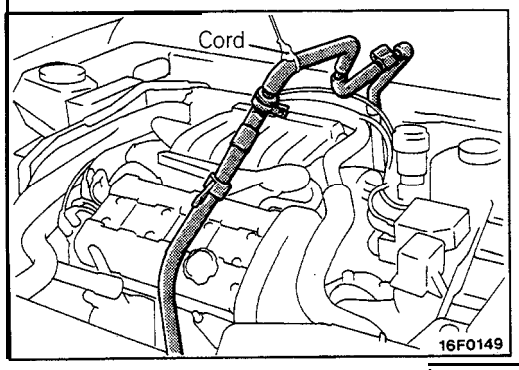
REMOVAL AND INSTALLATION



16F0346

Removal steps

1. Air hose E <Turbo>
2. Air pipe C <Turbo>
◆◆ 3. Clamp nuts of suction hose <Vehicles with air conditioner>
4. Drive belt (Refer to GROUP 11 – Engine Adjustment.)
5. Alternator connector
6. Oxygen sensor connector <Turbo>
7. Alternator and alternator bracket assembly
8. Alternator bracket
9. Alternator



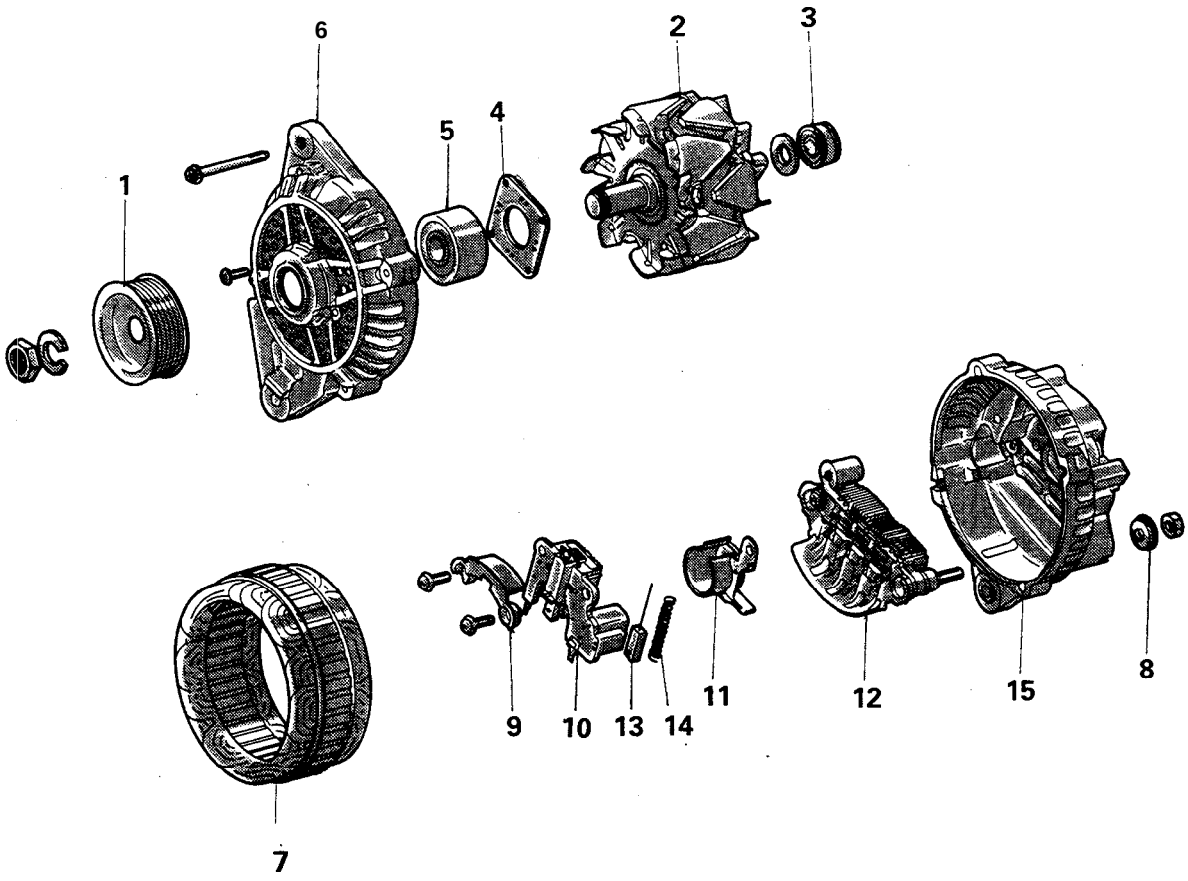
SERVICE POINT OF REMOVAL

3. REMOVAL OF CLAMP NUT

On vehicles with an air conditioner, remove the clamp nut, raise the suction hose and suspend it from the engine hood using a cord.

TSB Revision

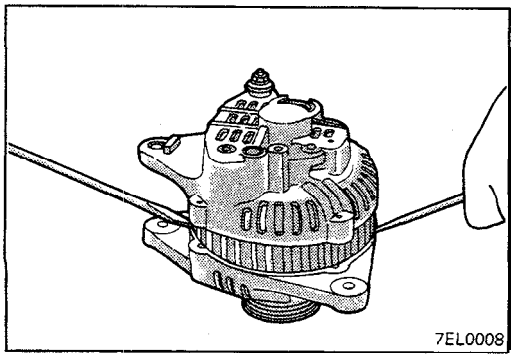
DISASSEMBLY AND REASSEMBLY



Disassembly steps

◆◆ 1. Alternator pulley
◆◆ 2. Rotor assembly
3. Rear bearing
4. Bearing retainer
5. Front bearing
6. Front bracket
◆◆ 7. Stator
8. Insulator
9. Plate
10. Regulator and brush holder
11. Slinger
12. Rectifier
13. Brush
14. Brush spring
15. Rear bracket

7EL0104



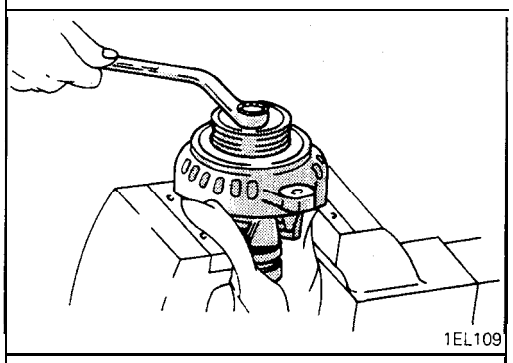
SERVICE POINTS OF DISASSEMBLY

SEPARATING THE STATOR AND FRONT BRACKET

Insert plain screwdriver between front bracket and stator core and pry downward.

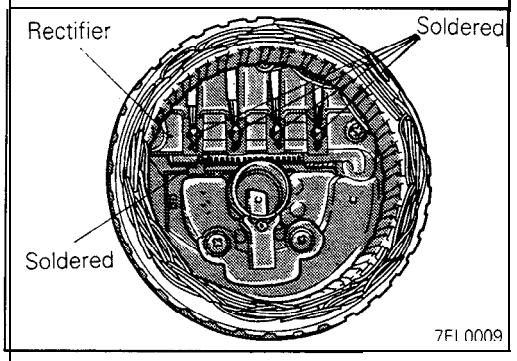
Caution
Do not insert screwdriver too deep, as there is danger of damage to stator coil.

TSB Revision



1. REMOVAL OF ALTERNATOR PULLEY

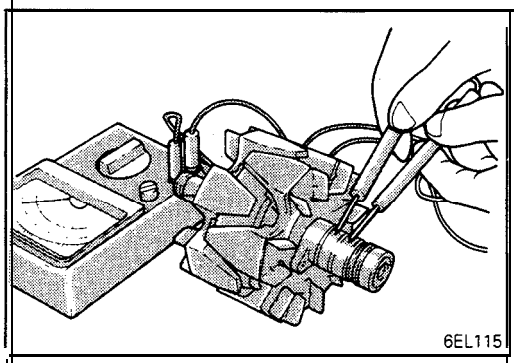
(1) Clamp the rotor in a vise with soft jaws.
(2) After removing the nut, remove the pulley and front bracket from the rotor.



7. REMOVAL OF STATOR / 10. REGULATOR AND BRUSH HOLDER

(1) When removing the meter, unsolder stator lead wire from the main diode of the rectifier.
(2) When removing the brush holder, unsolder it from the rectifier.

Caution
(1) When soldering or unsoldering, use care to make sure that heat of soldering iron is not transmitted to diodes for a long period. Finish soldering or unsoldering in as short a time as possible.
(2) Use care that no undue force is exerted to leads of diodes.

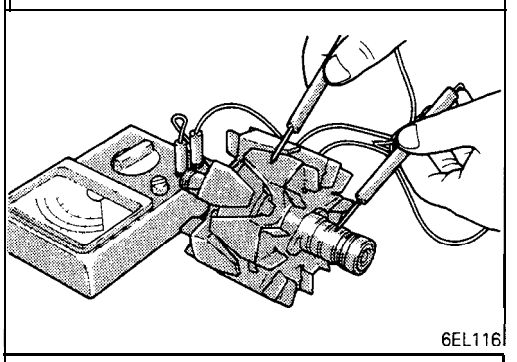


INSPECTION

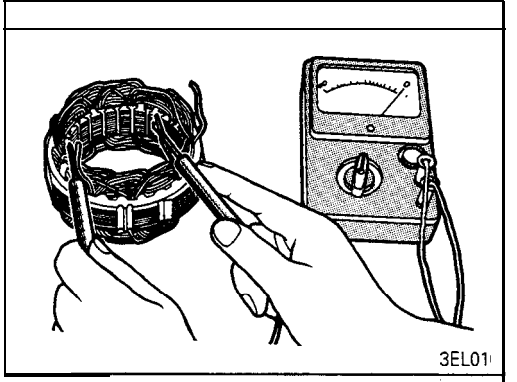
ROTOR

(1) Check rotor coil for continuity. Check to ensure that there is continuity between slip rings.
If resistance is extremely small, it means that there is a short. If there is no continuity or if there is short circuit, replace rotor assembly.

Resistance value : Approx 3 – 5 Ω

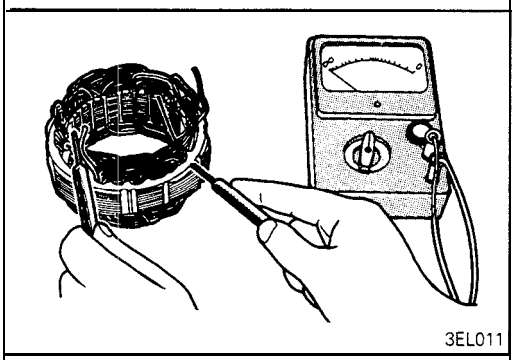


(2) Check rotor coil for grounding. Check to ensure that there is no continuity between slip ring and core. If there is continuity, replace rotor assembly.

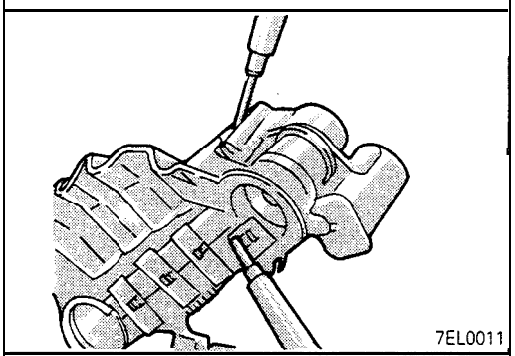


STATOR

(1) Make continuity test on stator coil. Check to ensure that there is continuity between coil leads.
If there is no continuity, replace stator assembly.


3EL011

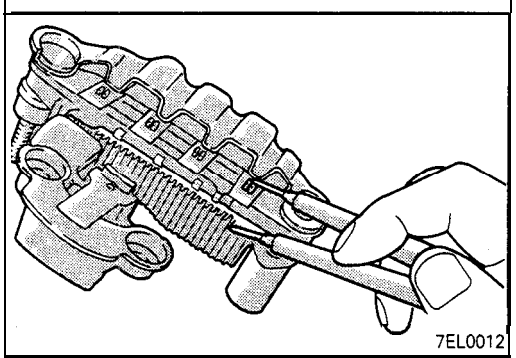
(2) Check coil for grounding. Check to ensure that there is no continuity between coil and core. If there is continuity, replace stator assembly.


7EL0011

RECTIFIERS

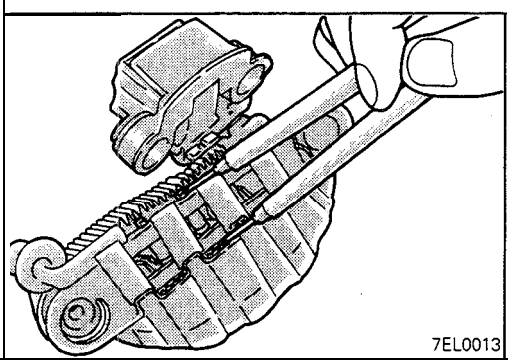
(1) Positive Rectifier Test

Check for continuity between positive rectifier and stator coil lead connection terminal with a circuit tester. If there is continuity in both directions, diode is shorted. Replace rectifier assembly.


7EL0012

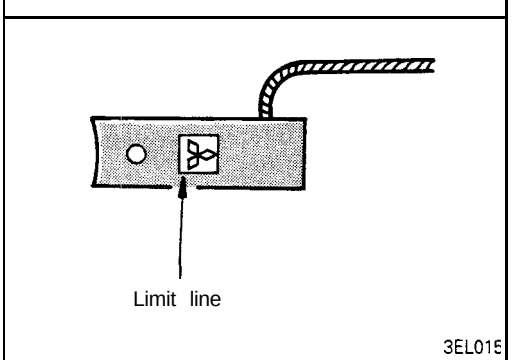
(2) Negative Rectifier Test

Check for continuity between negative rectifier and stator coil lead connection terminal. If there is continuity in both direction, diode is shorted, and rectifier assembly must be replaced.


7EL0013

(3) Diode Trio Test

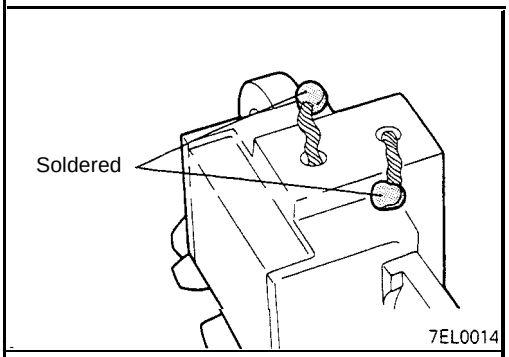
Check three diodes for continuity by connecting an ammeter to both ends of each diode. If there is no continuity in both directions, diode is faulty and heatsink assembly must be replaced.



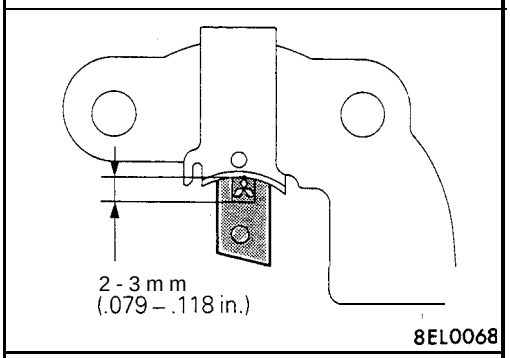
3EL015

BRUSH REPLACEMENT

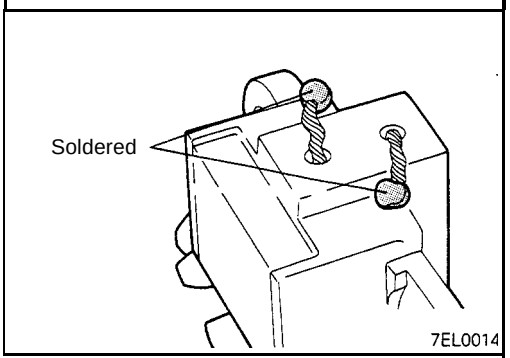
(1) Replace brush by the following procedures if it has been worn to limit line.



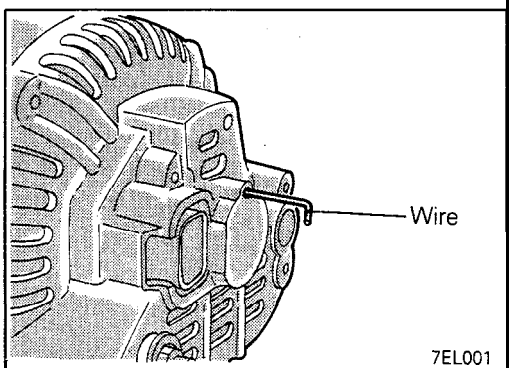
(2) Unsolder pigtail and remove old brush and spring.

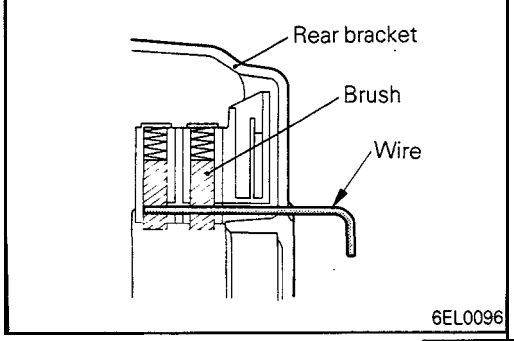


(3) Install brush spring and new brush in brush holder.
(4) Insert the brush to where there is a space 2 to 3 mm (.079 to .1 18 in.) between the limit line and the end of the brush holder.



(5) Solder pigtail to brush holder as shown in the illustration.





SERVICE POINT OF REASSEMBLY

2. INSTALLATION OF ROTOR ASSEMBLY

Before rotor is attached to rear bracket, insert wire through small hole made in rear bracket to lift brush. After rotor has been installed, remove the wire.

STARTING SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS

M16FB- -

Items	Specifications
Starter motor	
Type	Reduction drive (with planetary gear)
Rated output kW/V	I.211 2
No. of pinion teeth	8

SERVICE SPECIFICATIONS

M16FC- -

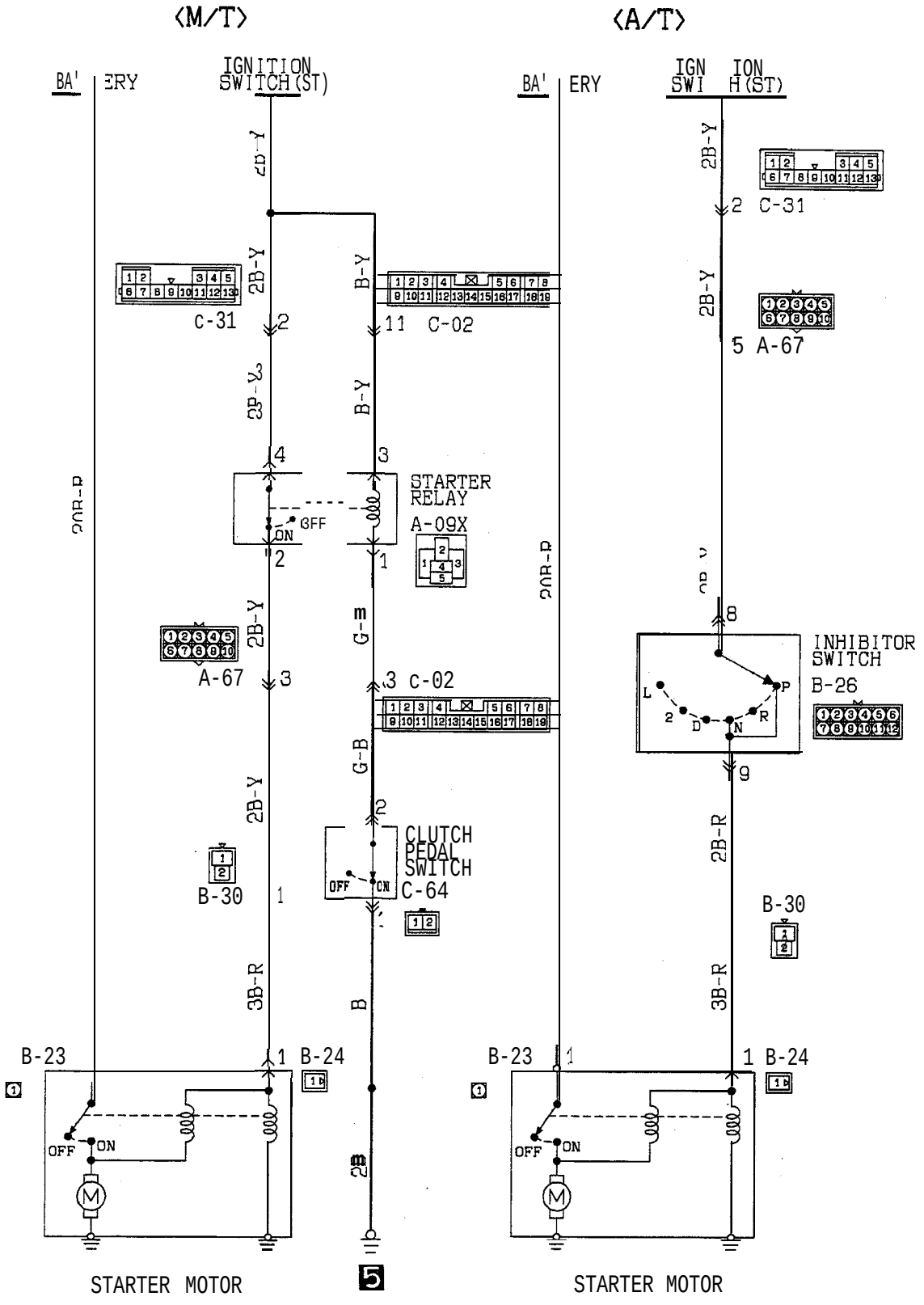
Items	Specifications
Standard value	
Starter motor	
Free running characteristics	
Terminal voltage V	11
Current A	90 or less
Speed rpm	3,000 or more
Pinion gap mm (in.)	0.5 – 2.0 (.020 – ,079)
Commutator runout mm (in.)	0.05 (.002)
Commutator diameter mm (in.)	29.4 (1.158)
Undercut depth mm (in.)	0.5 (.020)
Limit	
Cornmutator runout mm (in.)	0.1 (.004)
Cornmutator diameter mm (in.)	28.4 (1.118)

TROUBLESHOOTING

M16FHAF

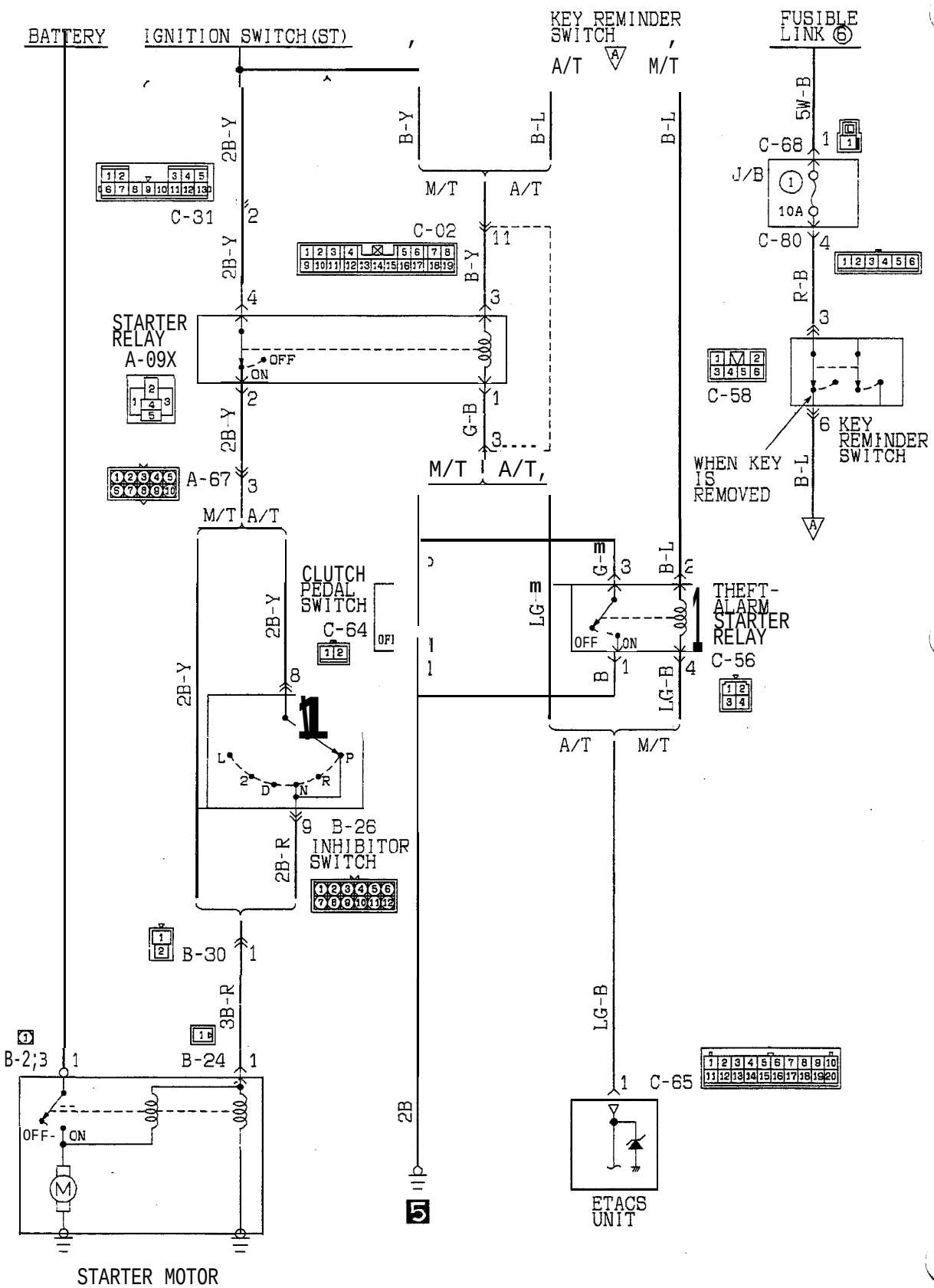
CIRCUIT DIAGRAM

<VEHICLES WITHOUT THEFT-ALARM SYSTEM>



(35-AC-R0201-NM

<VEHICLES WITH THEFT-ALARM SYSTEM>



KX35-AC-R0202-NM

TSB Revision

OPERATION

- For models equipped with the M/T, the clutch switch contact is switched OFF when the clutch pedal is depressed; when the ignition switch is then switched to the "ST" position, electricity flows to the starter relay and the starter motor, the contact (magnetic switch) of the starter is switched ON and the starter motor is activated.

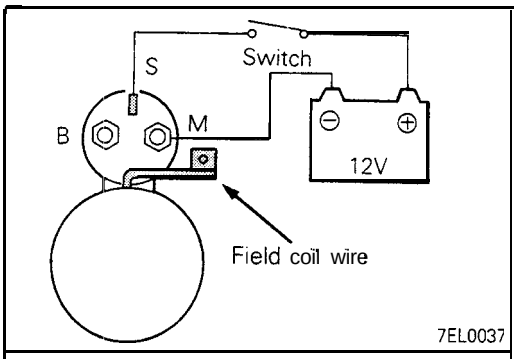
  NOTE
  If the. ignition switch is switched to the "ST" position without the clutch pedal being depressed, electricity flows to the starter relay (coil), the clutch switch (contacts) and to ground, with the result that the contacts of the starter relay are switched OFF, and, because the power to the starter motor is thereby interrupted, the starter motor is not activated.

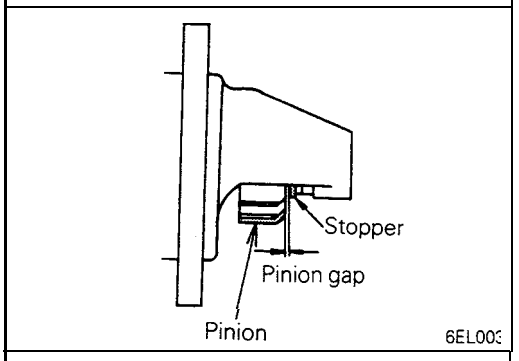
- For models equipped with the A/T, when the ignition' switch is switched to the "ST" position while the selector lever is at the "P" or "N" position, the contact (magnetic switch) of the starter is switched ON and the starter motor is activated.

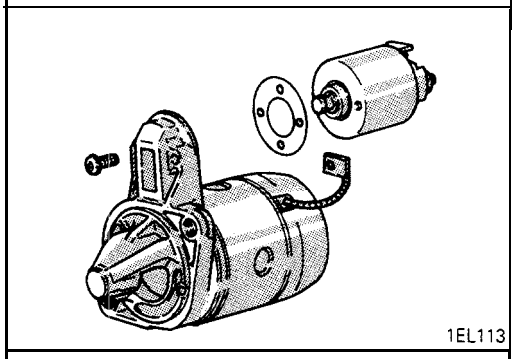
TROUBLESHOOTING HINTS

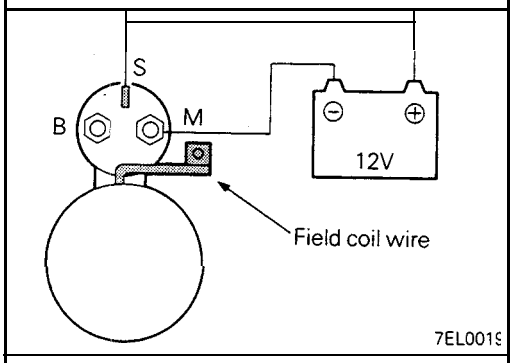
The starter motor does not operate at all.

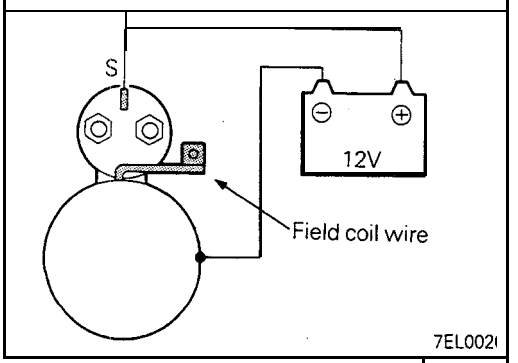
- Check the starter (coil).
- Check for poor contact at the battery terminals and starter.
- Check inhibitor switch.
- Check clutch pedal switch.
- Check starter relay.
- Check theft-alarm starter relay.
- Check key reminder switch.











STARTER MOTOR

M16FJAT

REMOVAL AND INSTALLATION

Refer to GROUP 22 – Transaxle.

INSPECTION

PINION GAP ADJUSTMENT

(1) Disconnect field coil wire from M-terminal of magnetic switch.
(2) Connect a 12V battery between S-terminal and M-terminal.
(3) Set switch to "ON", and pinion will move out.

Caution
This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

(4) Check pinion to stopper clearance (pinion gap) with a feeler gauge.

Pinion gap: 0.5 – 2.0 mm (.020 – .079 in.)

(5) If pinion gap is out of specification, adjust by adding or removing gaskets between magnetic switch and front bracket.

PULL-IN TEST OF MAGNETIC SWITCH

(1) Disconnect field coil wire from M-terminal of magnetic switch.
(2) Connect a 12V battery between S-terminal and M-terminal.

Caution
This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

(3) If pinion moves out, then pull-in coil is good. If it doesn't, replace magnetic switch.

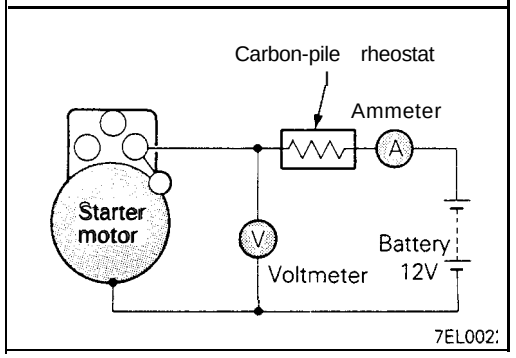
HOLD-IN TEST OF MAGNETIC SWITCH

(1) Disconnect field coil wire from M-terminal of magnetic switch.
(2) Connect a 12V battery between S-terminal and body.

Caution
This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

(3) If pinion remains out, everything is in order. If pinion moves in, hold-in circuit is open. Replace magnetic switch.

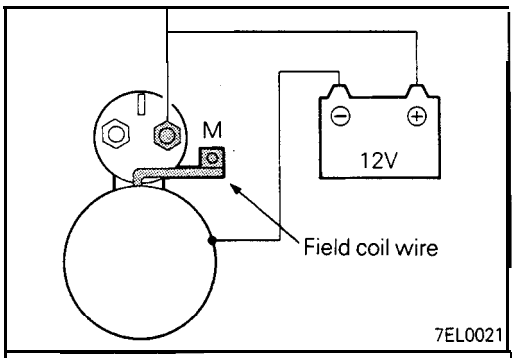
TSB Revision



FREE RUNNING TEST

(1) Place starter motor in a vise equipped with soft jaws and connect a fully-charged 12-volt battery to starter motor as follows:.
(2) Connect a test ammeter (loo-ampere scale) and carbon pile rheostat in series with battery positive post and starter motor terminal.
(3) Connect a voltmeter (15-volt scale) across starter motor.
(4) Rotate carbon pile to full-resistance position.
(5) Connect battery cable from battery negative post to starter motor body.
(6) Adjust rheostat until the battery voltage shown by the voltmeter is 11.5V (for the direct-drive type) or 11 V (for the reduction-drive type).
(7) Confirm that the maximum amperage is within the specifications and that the starter motor turns smoothly and freely.

Current: Max. 90 Amps

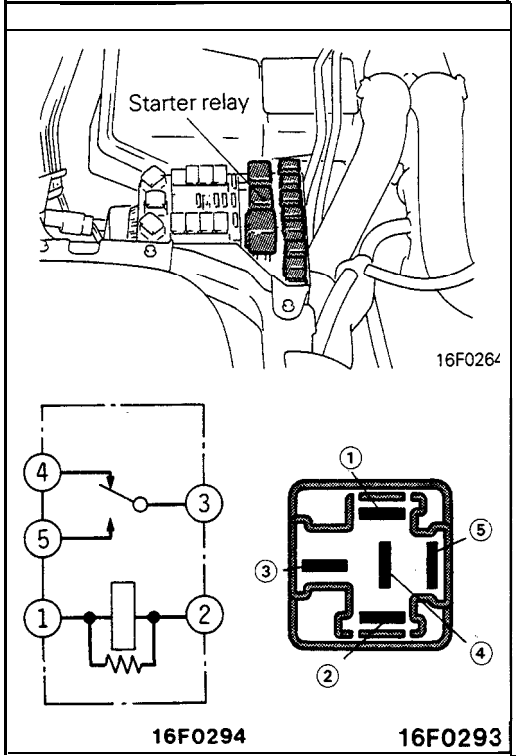


RETURN TEST OF MAGNETIC SWITCH

(1) Disconnect field coil wire from M-terminal of magnetic switch.
(2) Connect a 12V battery between M-terminal and body.

Caution
This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

(3) Pull pinion out and release. If pinion quickly returns to its original position, everything is in order. If it doesn't, replace magnetic switch.

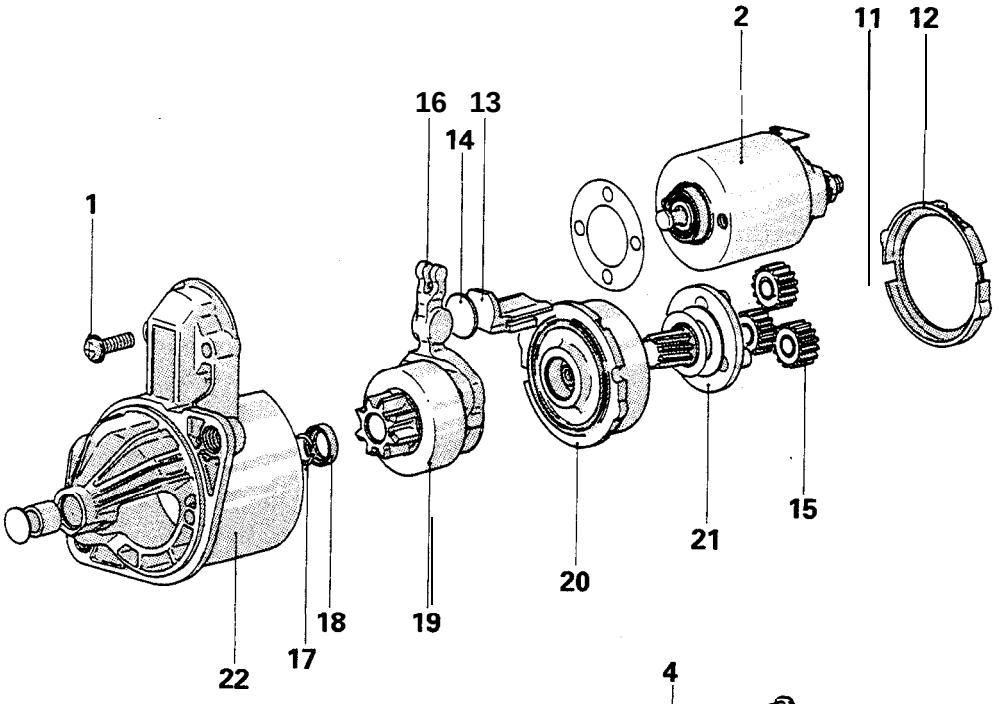


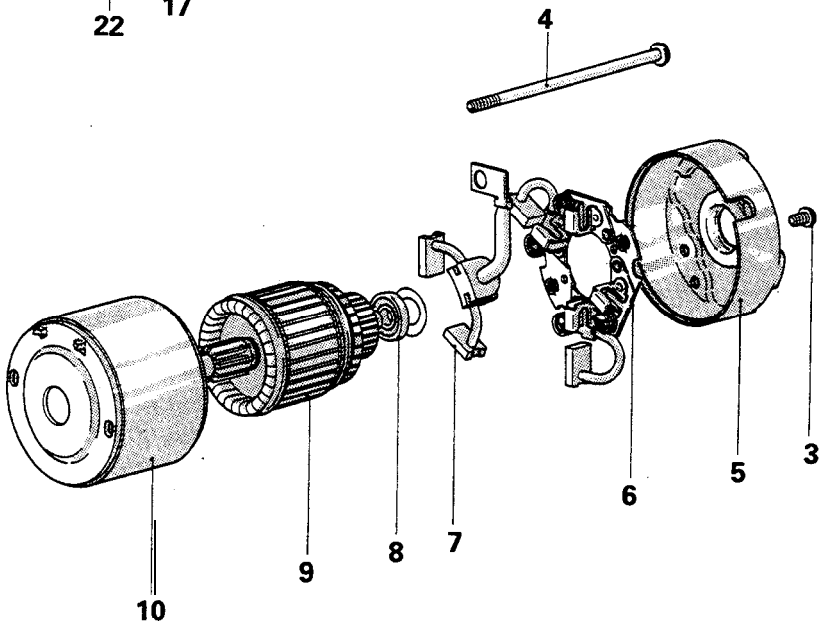
STARTER RELAY

(1) Remove the starter relay from the relay box.
(2) Connect battery to terminal 2 and check continuity between terminals with terminal 4 grounded.

Power is supplied	3-4 terminals	No continuity
	3-5 terminals	Continuity
Power is not supplied	3-4 terminals	Continuity
	3-5 terminals	No continuity
	I-2 terminals	Continuity

DISASSEMBLY AND REASSEMBLY





Disassembly steps

1. **Screw**
2. Magnetic switch
3. Screw
4. Screw
5. Rear bracket
6. Brush holder
7. Brush
8. Rear bearing
9. ➡ Armature
10. Yoke assembly
11. ➡ Ball
12. Packing A
13. Packing B
14. Plate
15. Planetary gear
16. Lever
17. ➡ ● * Snap ring
18. ➡ ● * Stop ring
19. Overrunning clutch
20. Internal gear
21. Planetary gear holder
22. Front bracket

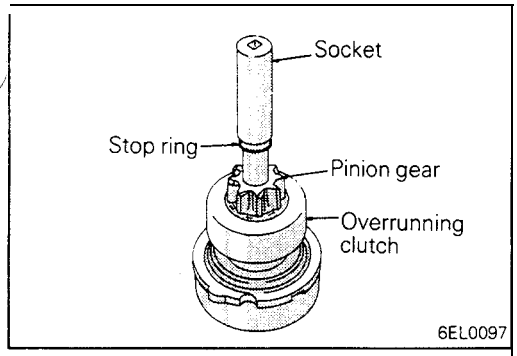
6EL199

SERVICE POINTS OF DISASSEMBLY

9. REMOVAL OF ARMATURE / 11. BALL

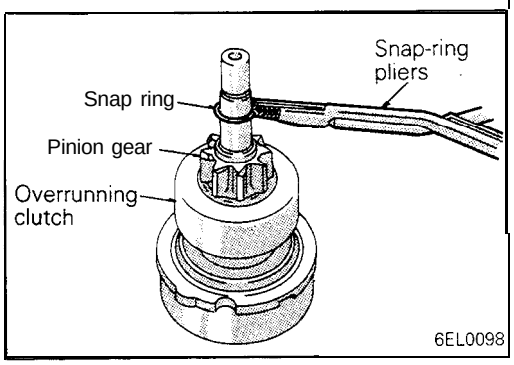
Caution
When removing the armature, take care not to lose the bail (which is used as a bearing) in the armature end.

I TSB Revision



17. REMOVAL OF SNAP RING / 18. STOP RING

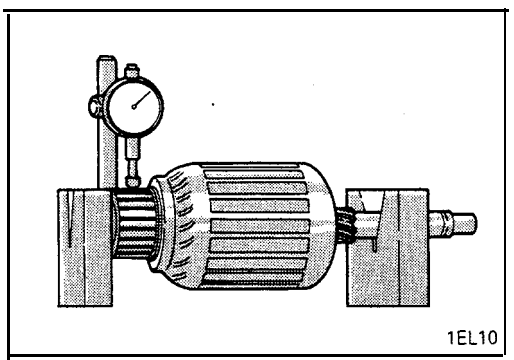
(1) Press the stop ring, by using an appropriate socket wrench, to the snap ring side.



(2) After removing the snap ring (by using snap-ring pliers), remove the stop ring and the overrunning clutch.

CLEANING STARTER MOTOR PARTS

1. Do not immerse parts in cleaning solvent. Immersing the yoke and field coil assembly and/or armature will damage insulation. Wipe these parts with a cloth only.
2. Do not immerse drive unit in cleaning solvent. Overrunning clutch is pre-lubricated at the factory and solvent will wash lubrication from clutch.
3. The drive unit may be cleaned with a brush moistened with cleaning solvent and wiped dry with a cloth.

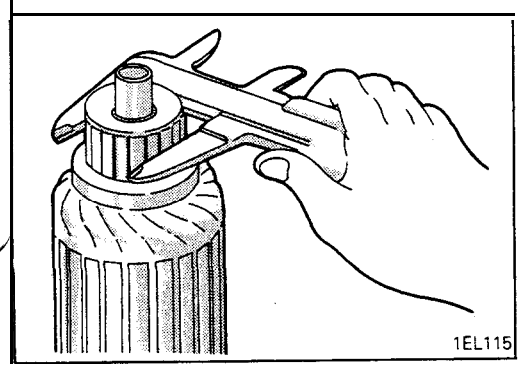


INSPECTION

CHECKING THE COMMUTATOR

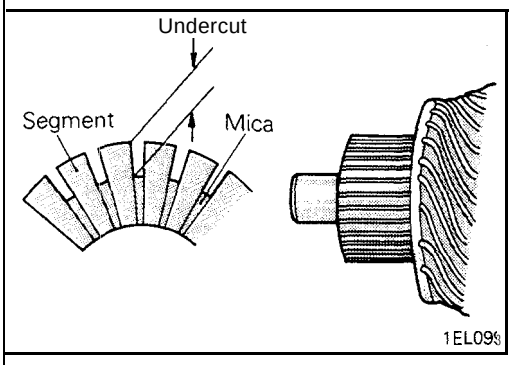
(1) Place the armature on a pair of V-blocks, and check the deflection by using a dial gauge.

Standard value: 0.05 mm (.0020 in.)
Limit: 0.1 mm (.0040 in.)

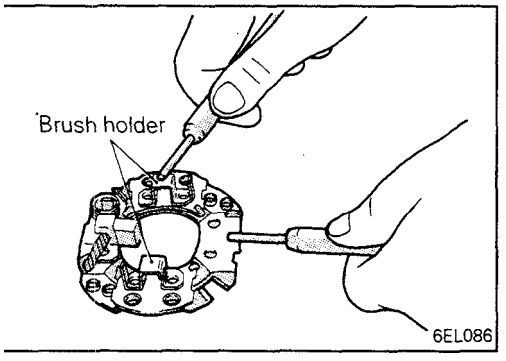


(2) Check the outer diameter of the commutator.

Standard value: 29.4 mm (1.158 in.)
Limit: 28.4 mm (1.118 in.)

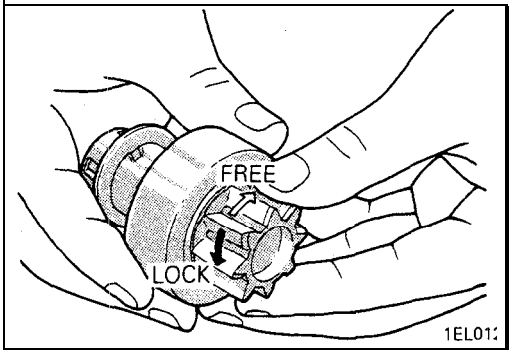


(3) Check the depth of the undercut between segments.
Standard value: 0.5 mm (.020 in.)



BRUSH HOLDER

Check for continuity between brush holder plate and brush holder.
The normal condition is non-continuity.

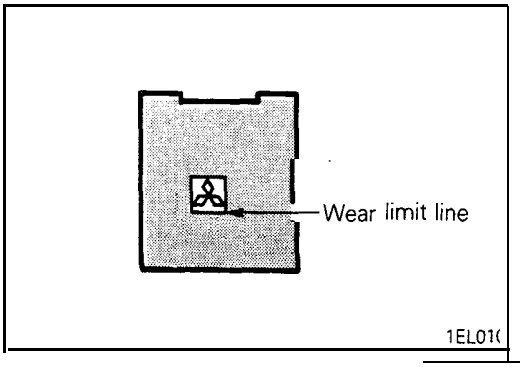


OVERRUNNING CLUTCH

1. While holding clutch housing, rotate the pinion. Drive pinion should rotate smoothly in one direction, but should not rotate in opposite direction. If clutch does not function properly, replace overrunning clutch assembly.
2. Inspect pinion for wear or burrs. If pinion is worn or burred, replace overrunning clutch assembly. If pinion is damaged, also inspect ring gear for wear or burrs.

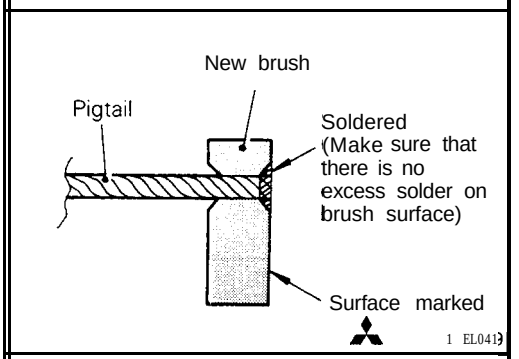
FRONT AND REAR BRACKET BUSHING

Inspect bushing for wear or burrs. If bushing is worn or burred, replace front bracket assembly or rear bracket assembly.



REPLACEMENT OF BRUSHES AND SPRINGS

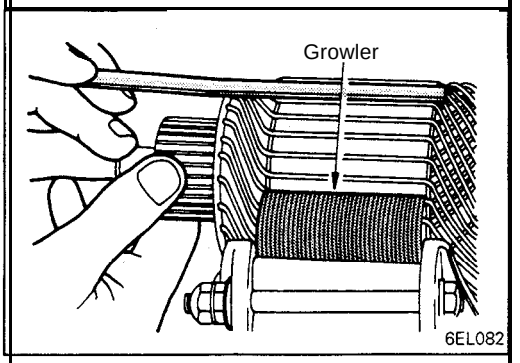
1. Brushes that are worn beyond wear limit line, or oil-soaked, should be replaced.
2. When replacing field coil brushes, crush worn brush with pliers, taking care not to damage pigtail.



3. Sand pigtail end with sandpaper to ensure good soldering.
4. Insert pigtail into hole provided in new brush and solder it. Make sure that pigtail and excess solder do not come out onto brush surface.
5. When replacing ground brush, slide the brush from brush holder by prying retaining spring back.

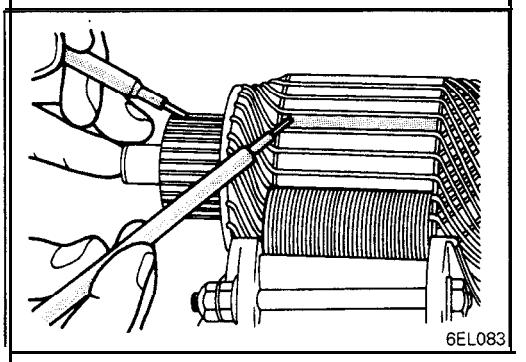
TESTING ARMATURE

TESTING ARMATURE FOR SHORT-CIRCUIT



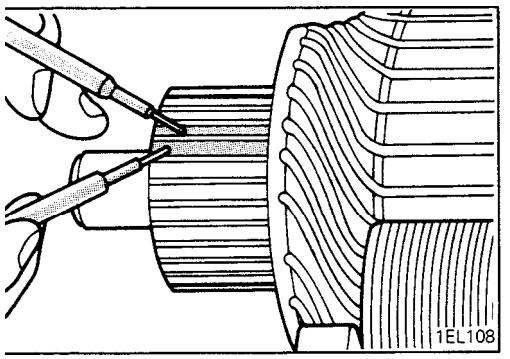
1. Place armature in a growler.
2. Hold a thin steel blade parallel and just above while rotating armature slowly in growler. A shorted armature will cause blade to vibrate and be attracted to the core. Replace shorted armature.

TESTING ARMATURE FOR GROUNDING



Check the insulation between the armature coil cores and the commutator segments. They are normal if there is no continuity.

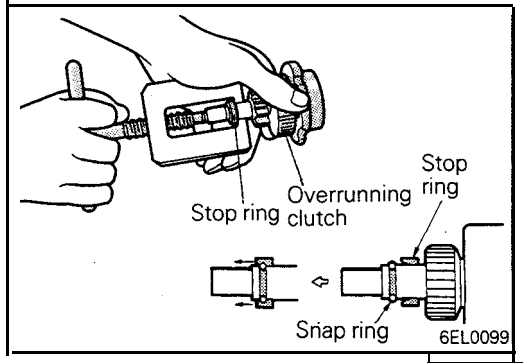
CHECKING FOR ARMATURE COIL WIRING DAMAGE / DISCONNECTION



Check for continuity between segments. The condition is normal if there is continuity.

SERVICE POINTS OF REASSEMBLY

18. INSTALLATION OF STOP RING / 17. SNAP RING



Using a suitable pulling tool, pull overrunning clutch stop ring over snap ring.

IGNITION SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS

M16GB- -

CRANK ANGLE SENSOR

Items	Specifications
Type	Contact pointless type
Identification No.	T1 T4937 1
Part No.	MD1 53464
Advance mechanism	Controlled by engine control unit
Firing order	1 - 2 - 3 4 5 - 6

IGNITION COIL

Items	Specifications
Type	Mold 3-coil
Identification No.	F-536
Part No.	MD1 52648

SPARK PLUG

Items	Specifications
NGK	PFR6J-11
NIPPON DENSO	PK20PR-P11

SERVICE SPECIFICATIONS

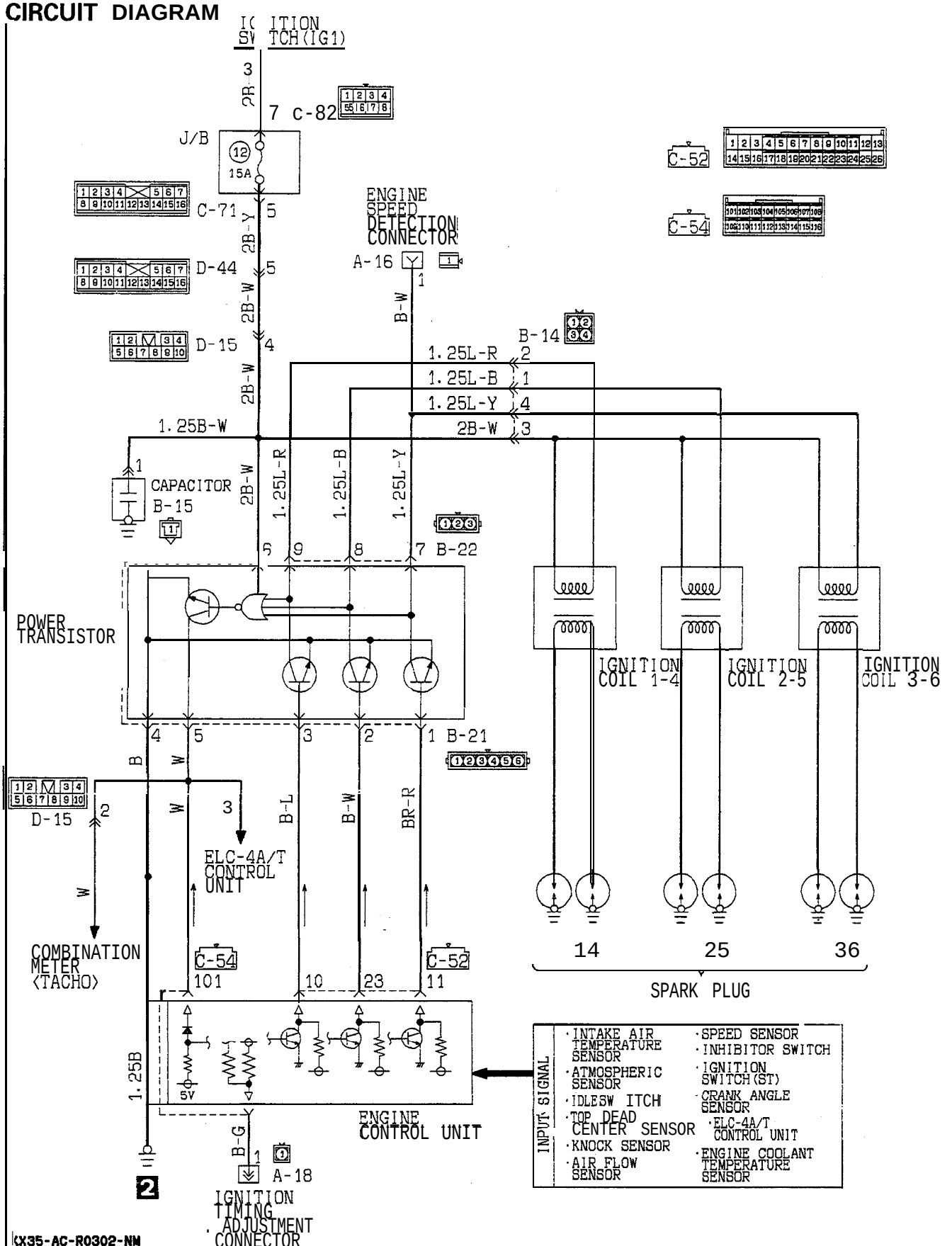
M16GC- -

Items	Specifications
Standarcl value	
Ignition coil	
Primary coil resistance at 20°C (68°F) Ω	0.67 – 0.81
Secondary coil resistance at 20°C (68°F) kΩ	11.31 – 15.30
Spark plug gap mm (in.)	1.0-1.1 (.39 – .43)

TROUBLESHOOTING

M16GHAH

CIRCUIT DIAGRAM



TSB Revision

OPERATION

- Turn ignition switch to "ON" position, and battery voltage will be applied to primary winding of ignition coil.
- When crank angle sensor signal is input to engine control unit, engine control unit makes ON-OFF control of power transistors one by one.
- When power transistor is turned on, current flows from ignition coil (primary winding) to ground through power transistor.
- When power transistor A is turned from ON to OFF, the spark plugs of No. 1 and No. 4 cylinders spark. Turning of power transistor B from ON to OFF will produce sparking in spark plugs of No. 2 and No. 5 cylinders. Furthermore, when power transistor C is turned from ON to OFF, sparking is produced in spark plugs of No. 3 and No. 6 cylinders.

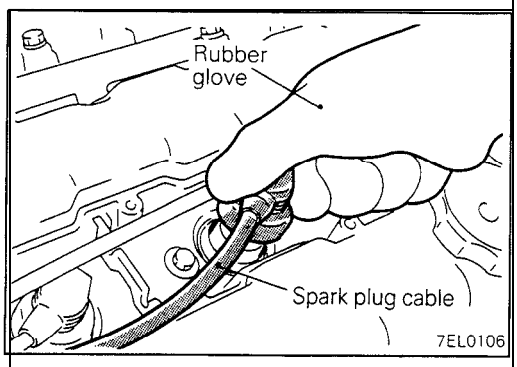
TROUBLESHOOTING HINTS

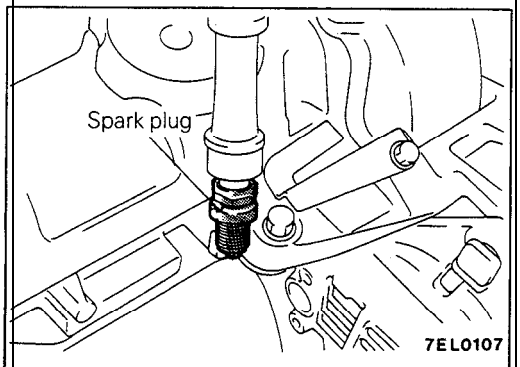
1. Engine cranks, but does not start.
   (1) Spark is insufficient or does not occur at all (on spark plug).
   - Check ignition coil.
   - Check crank angle sensor.
   - Check power transistor.
   - Check spark plugs.
   - Check spark plug cable.

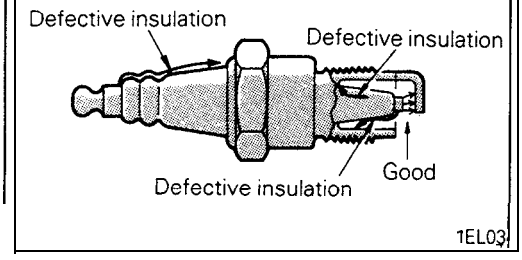
   (2) Spark is good.
   - Check ignition timing.

2. Engine idles roughly or stalls.
   - Check spark plugs.
   - Check ignition timing.
   - Check ignition coil.
   - Check spark plug cable.

3. Poor acceleration
   - Check ignition timing.
   - Check spark plug cable.
   - Check ignition coil.







SERVICE ADJUSTMENT PROCEDURES

SPARK PLUG CABLE TEST M16GIGJ

(1) Disconnect, one at a time, each of the spark plug cables while the engine is idling to check whether the engine's running performance changes or not.

Caution
Wear rubber gloves while doing so.

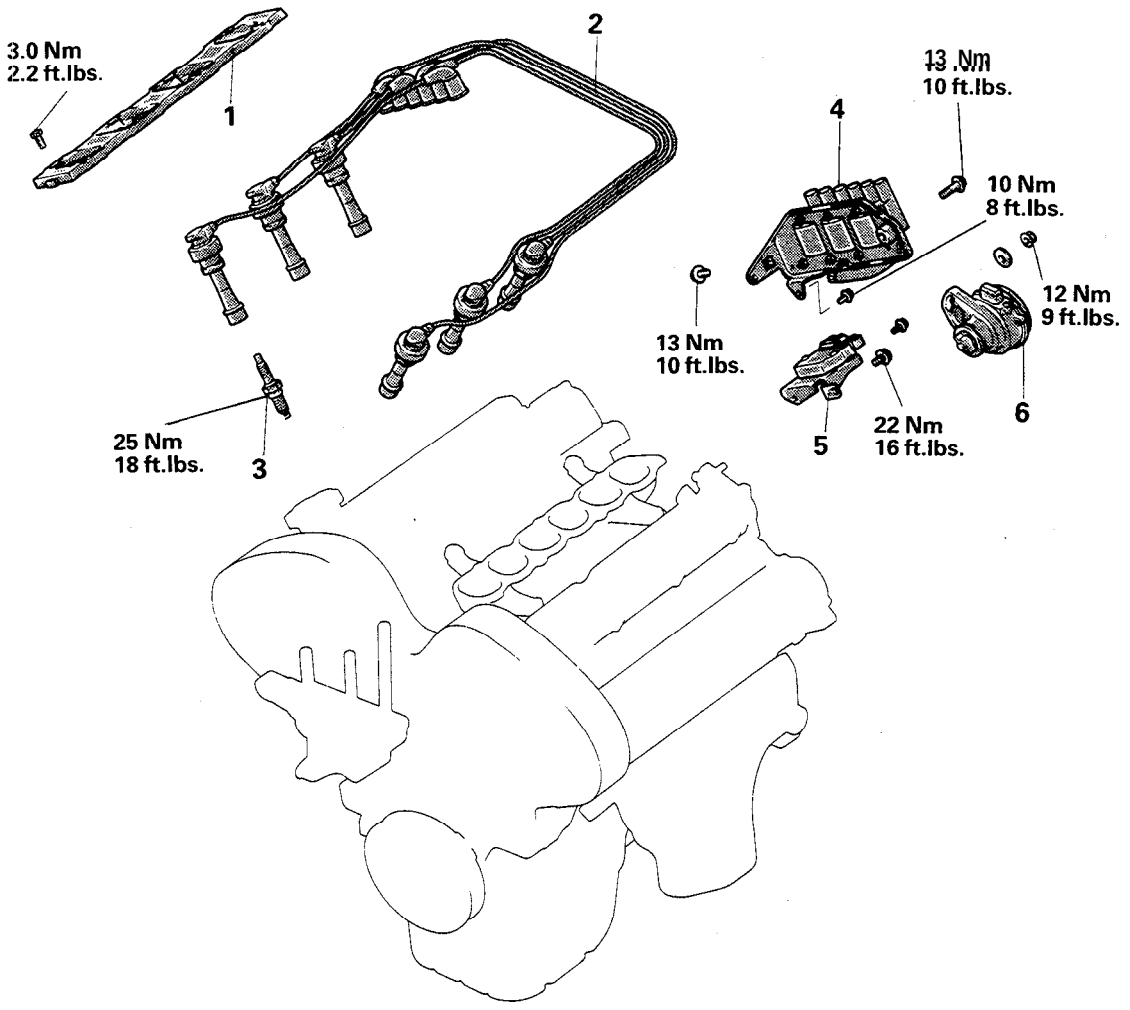
(2) If the engine performance does not change, check the resistance of the spark plug cable, and check the spark plug itself.

SPARK PLUG TEST

(1) Remove the spark plug and connect to the spark plug cable.
(2) Ground the spark plug outer electrode (body), and crank the engine.
Check to be sure that there is an electrical discharge between the electrodes at this time.

IGNITION SYSTEM

REMOVAL AND INSTALLATION



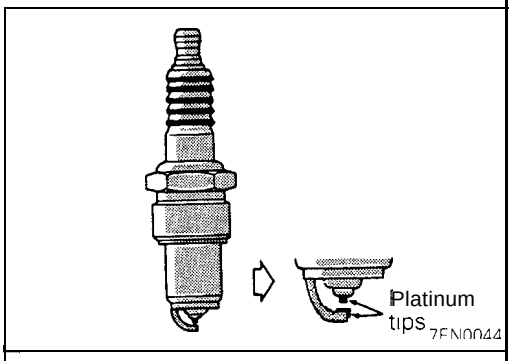
Removal steps

1. Center cover
- ● 1 2. Spark plug cable
3. Spark plug
4. Ignition coil
5. Power transistor
- ➡◀ 6. Crank angle sensor

Pre-removal and Post-installation Operation
- Removal and Installation of Surge Tank (Refer to GROUP 15-Intake Manifold.)

7EL0110

TSB Revision



INSPECTION

SPARK PLUG

Check the plug gap and replace if the limit is exceeded.

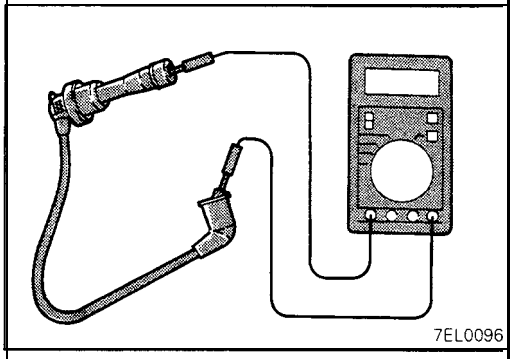
Standard value: 1.0 – 1.1 mm (.039 – .043 in.)
Limit: 1.3 mm (.051 in.)

Caution

1. **Do not attempt to adjust the gap of the platinum plug.**
2. **Cleaning of the platinum plug may result damage the platinum tip. Therefore, if carbon deposits must be removed, use a plug cleaner and complete cleaning within 20 seconds for protection of the electrode. Do not use wire brushes.**

SPARK PLUG CABLE

(1) Check cap and coating for cracks.
(2) Measure resistance.



Unit: kΩ

Spark plug cable					
No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
8.6	13.9	6.4	11.5	4.5	11.7

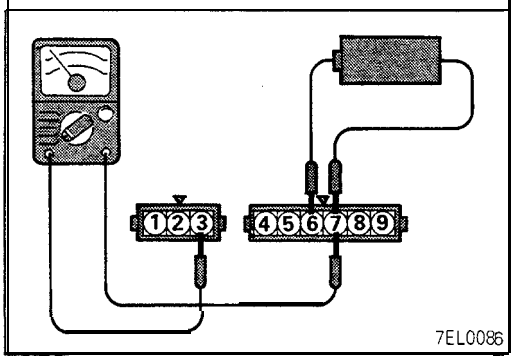
POWER TRANSISTOR

NOTE
An analog-type circuit tester should be used.

No. 1 – No. 4 coil side

(1) Connect the negative (–) terminal of the 1.5V power supply to terminal ⑦ of the power transistor; then check whether there is continuity between terminal ③ and terminal ⑦ when terminal ⑥ and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (-) probe of the circuit tester to terminal ③.



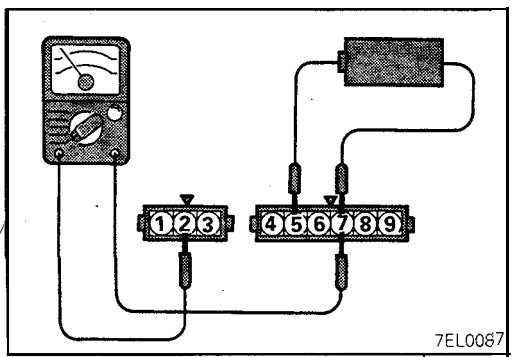
Terminal ⑥ and (+) terminal	Terminal ③ and terminal ⑦
Connected	Continuity
Unconnected	No continuity

(2) Replace the power transistor if there is a malfunction.

No. 2 – No. 5 coil side

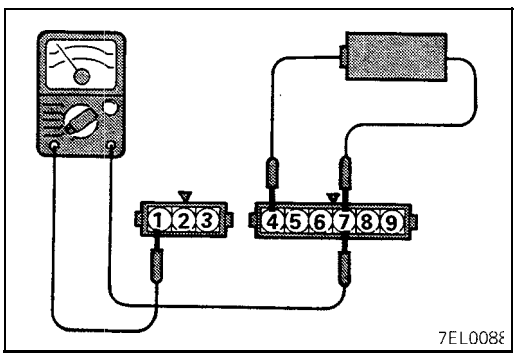
(1) Connect the negative (-) terminal of the 1.5V power supply to terminal ⑦ of the power transistor; then check whether there is continuity between terminal ② and terminal ⑦ when terminal ⑤ and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (-) probe of the circuit tester to terminal ②.



Terminal ⑤ and (+) terminal	Terminal ② and terminal ⑦
Connected	Continuity
Unconnected	No continuity

(2) Replace the power transistor if there is a malfunction.



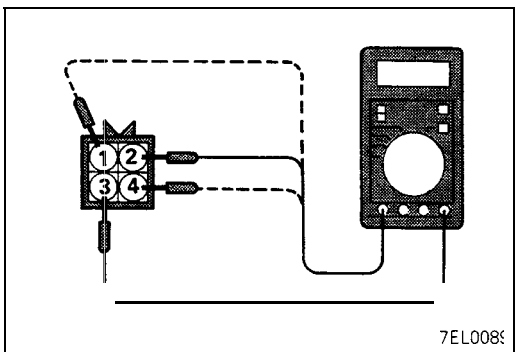
No. 3 – No. 6 coil side

(1) Connect the negative (-) terminal of the 1.5V power supply to terminal ⑦ of the power transistor; then check whether there is continuity between terminal ① and terminal ⑦ when terminal ④ and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (–) probe of the circuit tester to terminal ①.

Terminal ④ and (+) terminal	Terminal ① and terminal ⑦
Connected	Continuity
Unconnected	No continuity

(2) Replace the power transistor if there is a malfunction.



IGNITION COIL

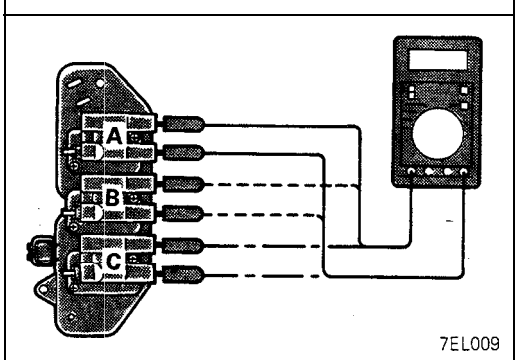
Primary Coil Resistance

Measure the resistance between connector terminal ③ (power) and each coil terminal.

Measuring point:

Coil A (No. 1 – No. 4 cylinder side coil) ..... ② – ③
Coil B (No. 2 – No. 5 cylinder side coil) ..... ① – ③
Coil C (No. 3 – No. 6 cylinder side coil) ..... ④ – ③

Standard value: 0.67 – 0.81 Ω



Secondary Coil Resistance

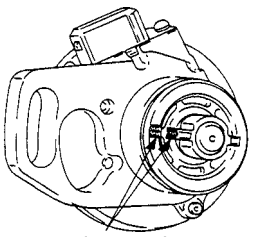
Measure the resistance between each coil high voltage terminals.

Measuring point:

Coil A (No. 1 – No. 4 cylinder side coil)
Coil B (No. 2 – No. 5 cylinder side coil)
Coil C (No. 3 – No. 6 cylinder side coil)

Standard value: 11.3 – 15.3 kΩ

TSB Revision



SERVICE POINTS OF INSTALLATION

6. INSTALLATION OF CRANK ANGLE SENSOR

(1) Turn the crankshaft so that the No. 1 cylinder is at compression top dead center.

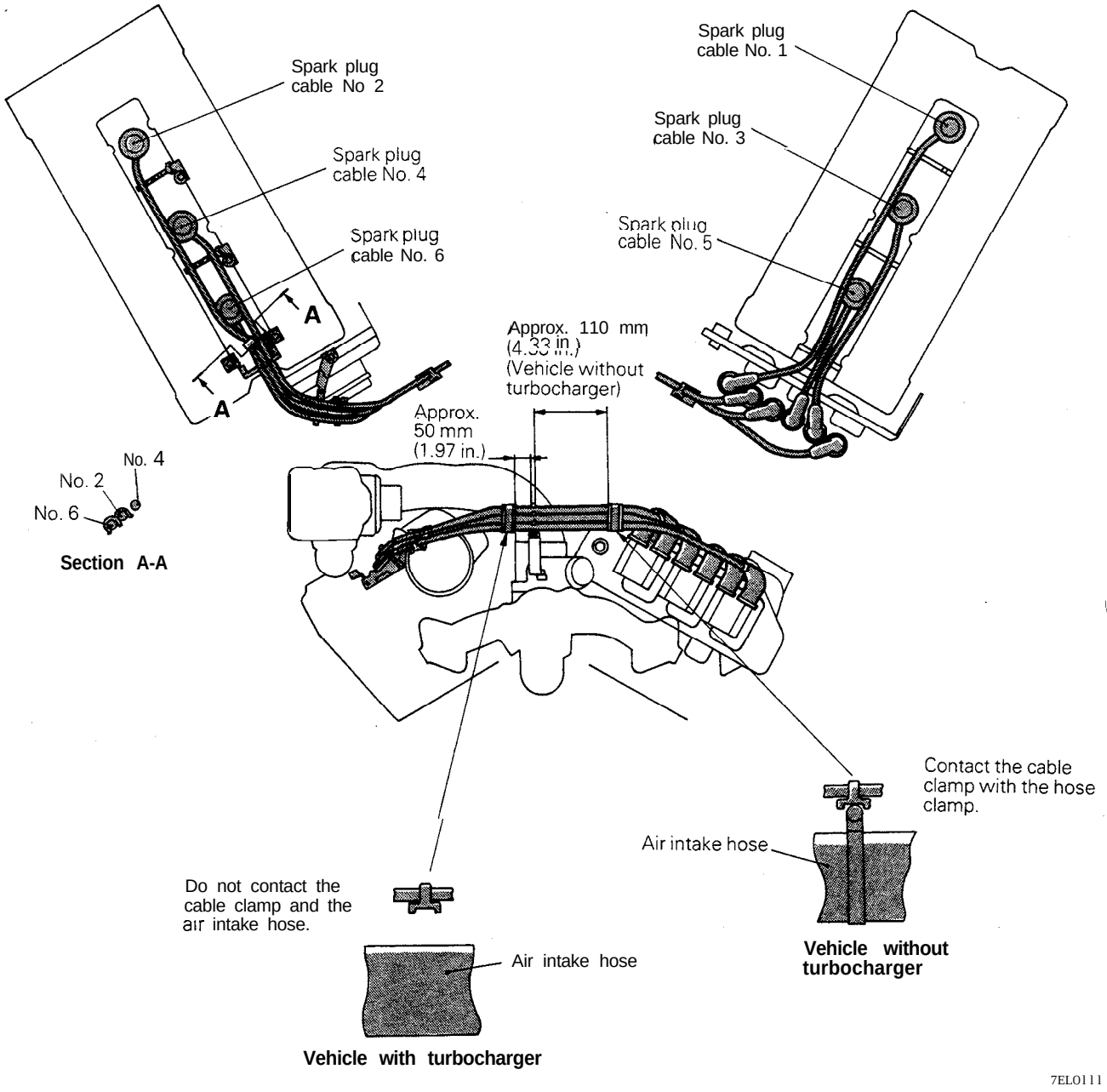
Caution
Be careful not to turn it to the No. 4 cylinder compression top dead center by mistake.

(2) Install, lining up the matchmarks on the crank angle sensor housing and the coupling.

2. INSTALLATION OF SPARK PLUG CABLE

Improper arrangement of spark plug cables will induce voltage between the cables, causing miss firing and developing a surge at acceleration in high-speed operation. Therefore, be careful to arrange the spark plug cables properly by the following procedure.

1. Install the spark plug cable clamps as shown in the illustration.
2. The numerals on the support and clamp indicate the spark 'plug cable No.
3. Pay attention to the following items when the spark plug cables are installed.
   (1) Install the cables securely to avoid possible contact with metal parts.
   (2) Install the cables neatly, ensuring they are not too tight, loose, twisted or kinked.



TSB Revision

CHASSIS ELECTRICAL

CONTENTS

M54AA-B

CONTINUED ON NEXT PAGE

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

(1) A Supplemental Restraint System (SRS), which uses a driver-side air bag, has been installed in the 3000GT.
(2) The SRS includes the following components: impact sensors, SRS diagnosis unit: SRS warning light, air bag module, clock spring, interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

WARNING!

(1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver (from rendering the SRS inoperative).
(2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.
(3) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B – Supplemental Restraint System (SRS), before beginning any service or maintenance of any component of the SRS or any SRS-related component.

BATTERY

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54EB--

Items	Specifications
Type	75D26R-MF
Ampere hours (5HR) Ah	52
Cranking rating [at – 18°C (0°F)] A	490
Reserve capacity min.	123

NOTES
1. CRANKING RATING is the current a battery can deliver for 30 seconds and maintain a terminal voltage of 7.2 volts or greater at a specified temperature.
2. RESERVE CAPACITY RATING is the amount of time a battery can deliver 25A and maintain a minimum terminal voltage of 10.5 at 27°C (80°F).

TROUBLESHOOTING

BATTERY TESTING PROCEDURE

M54EHAX

TEST STEP	RESULT ▶	ACTION TO TAKE
A0 VISUAL INSPECTION		
• Remove negative cable, then positive cable. • Check for dirty or corroded connections.	OK ▶ OK ▶	CLEAN terminals and clamps. GO to Al. GO to A1.
Al LOOSE BATTERY POST		
• Check for loose battery post.	OK ▶ OK ▶	REPLACE battery. GO toA2.
A2 CRACKED BATTERY COVER		
• Remove holddowns and shields. • Check for broken/cracked case or cover.	OK ▶ OK ▶	REPLACE battery. GOtoA3.
A3 TEST INDICATOR/OPEN CIRCUITVOLTAGE TEST		
• Turn headlights on for 15 seconds. • Turn headlights off for 2 minutes to allow battery voltage to stabilize. • Disconnect cables. • Read open circuit voltage.	OK ▶ Green dot invisible and open circuit voltage under 12.4 volts OK ▶	CHARGE battery at 5 amps, then GO to A3. GOtoA4.

TSB Revision

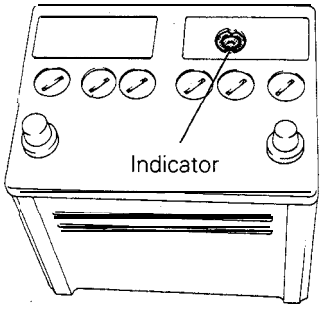
TEST STEP	RESULT	ACTION TO TAKE
A4 LOAD TEST • Connect a load tester to the battery. • Load the battery at the recommended discharge rate (See LOAD TEST RATE CHART) for 15 seconds. • Read voltage after 15 seconds, then remove load.	(OK) ▶ Voltage is less than minimum listed white indicator). (OK) ▶ Voltage is more than minimum listed.	REPLACE battery Battery OK.

LOAD TEST CHART

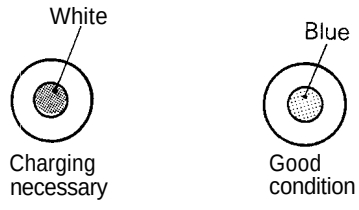
Minimum voltage	Temperature	
	°F	°C
9.6	70 and above	21 and above
9.5	60	16
9.4	50	10
9.3	40	4
9.1	30	–1
8.9	20	–7
8.7	10	–12
8.5	0	–18

LOAD TEST RATE CHART

Load test (Amps)	Cranking Rating 0°F	Reserve Capacity	Application
240 amps	490 amps	123 minutes	75D26R-MF



16F0123



16Y1814

SERVICE ADJUSTMENT PROCEDURES

BATTERY INSPECTION M54EIBN

BATTERY VISUAL INSPECTION (1)

The battery contains a visual test indicator which gives blue signal when an adequate charge level exists, and white signal when charging is required.

BATTERY VISUAL INSPECTION (2)

Make sure ignition switch is in Off position and all battery feed accessories are Off.

1. Disconnect ground cable from battery before disconnecting (+) cable.
2. Remove battery from vehicle.

Caution
Care should be taken in the event battery case is cracked or leaking to protect hands from the electrolyte. A suitable pair of rubber gloves (not the household type) should be worn when removing battery by hand.

3. Inspect battery carrier for damage caused by loss of acid from battery. If acid damage is present, it will be necessary to clean area with a solution of clean warm water and baking soda. Scrub area with a stiff bristle brush and wipe off with a cloth moistened with ammonia or baking soda in water.

TSB Revision

4. Clean top of battery with same solutions as described in step (3).
5. Inspect battery case and cover for cracks. If cracks are present, battery must be replaced.
6. Clean the battery post with a suitable battery post cleaning tool.
7. Clean the inside surfaces of the terminal clamps with a suitable battery terminal cleaning tool. Replace damaged or frayed cables and broken terminals clamps.
8. Install the battery in vehicle.
9. Connect (+) and (–) cables to battery in the order of mention.
10. Tighten the clamp nut securely.

LOAD TEST RATE CHART			
Load test (Amps)	Cranking Rating 0°F	Reserve Capacity	Application
240 amps	490 amps	123 minutes	75D26R-MF

LOAD TEST CHART		
Minimum voltage	Temperature	
	°F	°C
9.6	70 and above	21 and above
9.5	60	16
9.4	50	10
9.3	40	4
9.1	30	–1
8.9	20	–7
8.7	10	–12
8.5	0	–18

NOTE
The temperature is an ambient temperature of the battery that has been exposed to for the preceding few hours.

OPEN CIRCUIT VOLTAGE TEST (3)

1. Turn headlights on for 15 seconds.
2. Turn headlights off for 2 minutes to allow battery voltage to stabilize.
3. Disconnect cables.
4. Read open circuit voltage.
5. If the open circuit voltage is under 12.4 volts, charge the battery. (See BATTERY CHARGING)

LOAD TEST (4)

1. Connect a load tester to the battery.
2. Load the battery at 15 amps for 15 seconds to remove surface charge.
3. Load the battery at the recommended discharge rate. (See LOAD TEST RATE CHART.)
4. Read voltage after 15 seconds and then remove the load.
5. If the voltage is not maintained at the minimum voltage in the LOAD TEST CHART throughout the test, the battery should be replaced.

BATTERY CHARGING M54EICM

Caution
When batteries are being charged, an explosive gas forms beneath the cover of each cell. Do not smoke near batteries on charge or which have recently been charged.
Do not break live circuits at the terminals of the batteries on charge. A spark will occur where the live circuit is broken.
Keep all open flames away from the battery.

Battery electrolyte temperature may temporarily be allowed to rise to 55°C (131°F). Increase of electrolyte temperature above 55°C (131°F) is harmful to the battery, causing deformation of battery cell, decrease in life of battery, etc.

CHARGE RATE

If the test indicator is white, the battery should be charged as outlined below.

When the dot appears or when maximum charge shown below is reached, charging should be stopped.

NOTE
When the charging is performed at 5 amps, charging is virtually 100% three hours after the indicator's indication changes from white to green.
Use fast charging only in an emergency.
If the indicator does not turn to green even after the battery is charged, the battery should be replaced; do not overcharge.

Charge Rate Chart

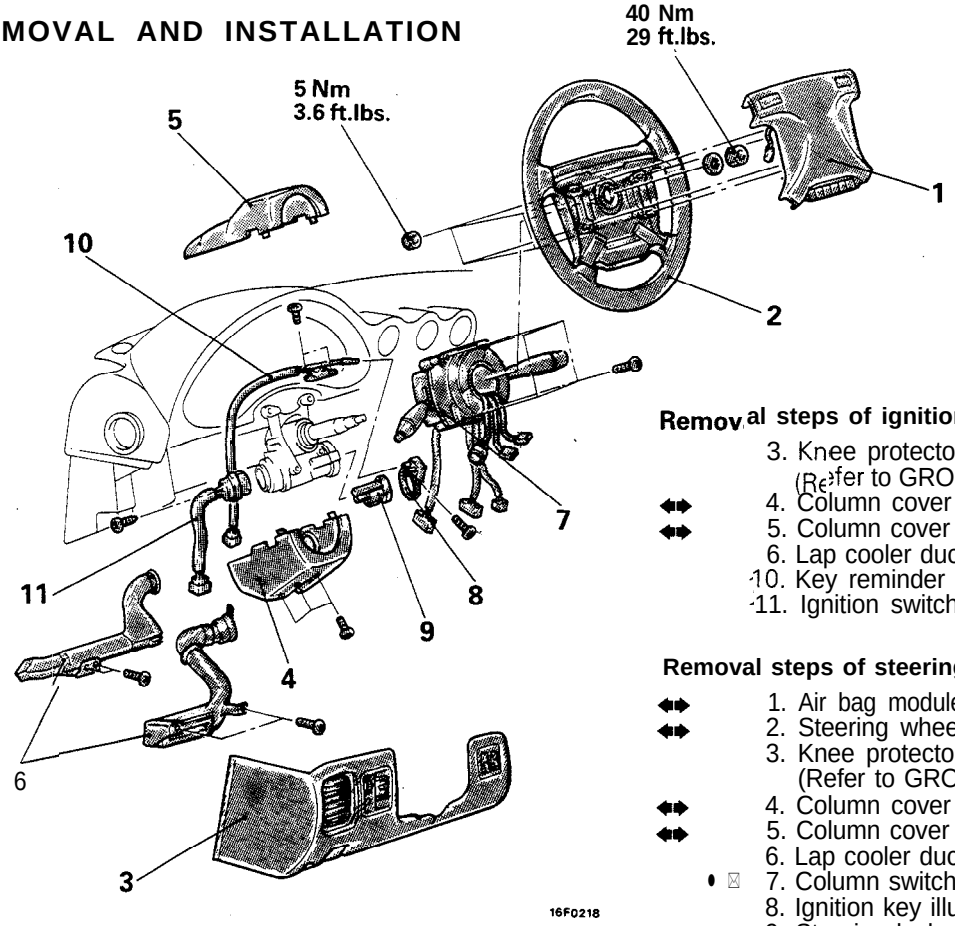
Battery	Slow Charging		Fast Charging	
75D26R-MF (490 amps)	5 amps 15 hrs.	10 amps 7.5 hrs.	20 amps 3.75 hrs.	30 amps 2.5 hrs.

IGNITION SWITCH

IGNITION SWITCH

M54GLAY

REMOVAL AND INSTALLATION

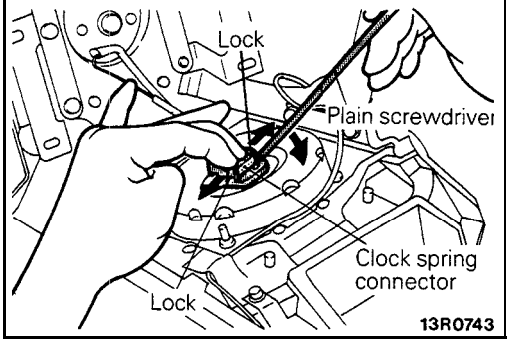


Removal steps of ignition switch segment

- 3. Knee protector (Refer to GROUP 52A – Instrument Panel.)
- ◆◆ 4. Column cover lower
- ◆◆ 5. Column cover upper
- 6. Lap cooler duct and foot shower duct
- 10. Key reminder switch segment
- 11. Ignition switch segment

Removal steps of steering lock cylinder

- ◆◆ 1. Air bag module
- ◆◆ 2. Steering wheel
- 3. Knee protector (Refer to GROUP 52A – Instrument Panel.)
- ◆◆ 4. Column cover lower
- ◆◆ 5. Column cover upper
- 6. Lap cooler duct and foot shower duct
- ● ☒ 7. Column switch and clock spring assembly
- 8. Ignition key illumination ring
- ◆◆ 9. Steering lock cylinder



SERVICE POINTS OF REMOVAL

1. REMOVAL OF AIR BAG MODULE

(1) To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

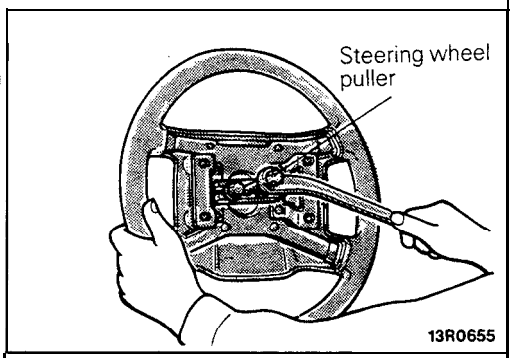
Caution

1. After the battery cables have been disconnected, allow more than 30 seconds before starting any further work.

2. The capacitor in the SRS diagnosis unit retains enough voltage to deploy the air bag for a given period after the battery voltage has been removed. If servicing is started before the end of this given period, unintended deployment of the air bag could result and cause serious injury.

(2) The removed air bag module should be stored in a clean, dry, flat place with the pad cover face up.

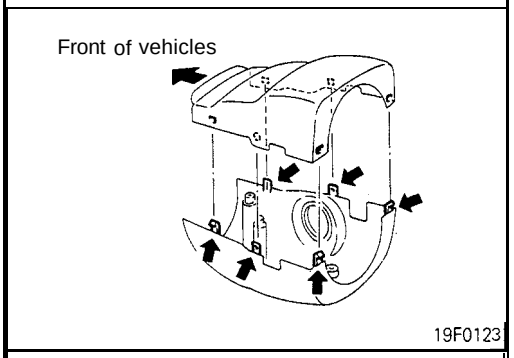
TSB Revision



2. REMOVAL OF STEERING WHEEL

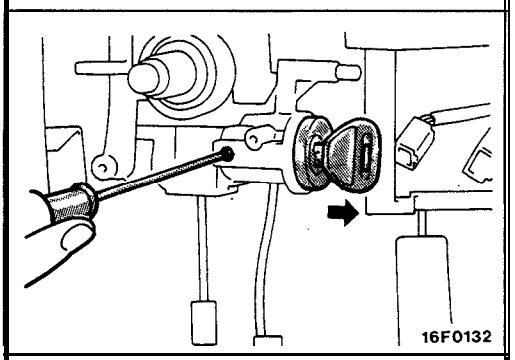
Remove the steering wheel by using a steering wheel puller.

Caution
Do not hammer on the steering wheel to remove it; doing so may damage the collapsible mechanism.



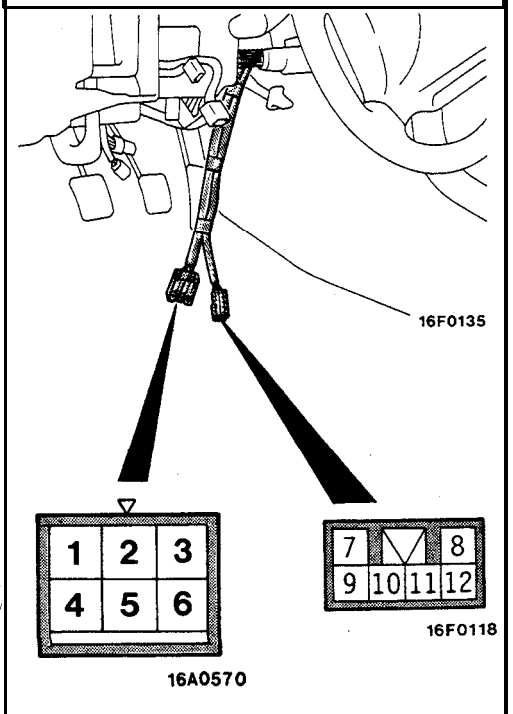
4. REMOVAL OF COLUMN COVER LOWER / 5. COLUMN COVER UPPER

After the screws have been removed, remove the covers, while making sure not to break the grippers.



9. REMOVAL OF STEERING LOCK CYLINDER

(1) Insert the ignition key into the steering lock cylinder and place the key in the ACC position.
(2) Press the lock pin down with a Phillips head screwdriver (small-size one) to remove the steering lock cylinder.



INSPECTION

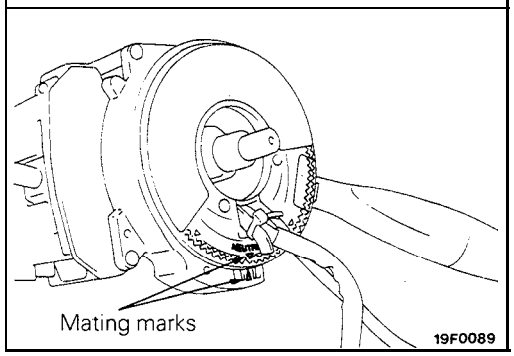
IGNITION SWITCH INSPECTION

(1) Remove the knee protector, the column cover lower and the column cover upper. (Refer to GROUP 52A – Instrument Panel.)
(2) Disconnect the wiring connector from the ignition switch and key reminder switch, and connect an ohmmeter to the switch side connector.

(3) Operate the switch, and check the continuity between the terminals.

Position \ Terminal	Key	Ignition switch 1	2	3	4	5	6	Key reminder switch 7	8	9	12	Ignition key illumination light 10	11
LOCK	Removed									○	○		
ACC	Inserted			○			○	○	○				
ON			○	○	○		○						
START		○			○	○	○						

NOTE
○–○ indicates that there is continuity between the terminals



SERVICE POINTS OF INSTALLATION

7. INSTALLATION OF COLUMN SWITCH AND CLOCK SPRING ASSEMBLY

Line up the “NEUTRAL” mark of the clock spring with the mating mark to center the clock spring.

Caution

If the clock spring is not centered, problems such as intermediate failure of the steering wheel to turn, broken ribbon cable in the clock spring, or the like could occur. As a result, they might hinder proper operation of the SRS, resulting in serious injury.

METERS AND GAUGES

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54HB-

METERS AND GAUGES

Items	Specifications
Speedometer	
Type	
<Non-turbo>	Mechanical type
<Turbo>	Electrical type
Tachometer	
Type	Pulse type
Fuel gauge	
Type	Coil type
Fuel gauge unit	
Type	Variable resistance type
Engine coolant temperature gauge	
Type	Coil type
Engine coolant temperature gauge unit	
Type	Thermistor type
Oil pressure gauge	
Type	Bi-metal type
Oil pressure gauge unit	
Type	Bi-metal type
Pressure gauge <Turbo>	
Type	Moving coil type
Voltage gauge <Non-turbo>	
Type	Moving iron type

INDICATORS AND WARNING LIGHTS

Items	Specifications
Indicator lights	
Turn signal indicator light W	3.0
High beam indicator light W	1.4 (74)
Charging system warning light W	1.4 (74)
Oil pressure warning light W	1.4 (74)
Door-ajar warning light W	1.4 (74)
Brake warning light W	1.4 (74)
Low fuel warning light W	3.4 (158)
Seat belt warning light W	1.4 (74)
Cruise control indicator light W	1.4 (74)
Engine coolant level warning light W	1.4 (74)
Check engine warning light W	1.4 (74)
Security indicator light*1 W	1.4 (74)
Power/economy changeover indicator light <A/T> W	1.12
Overclrive indicator light <A/T> W	1.12
Supplemental restraint system warning light W	1.4 (74)
Anti-lock braking system warning light W	1.4 (74)
Active aero system warning indicator light <AWD> W	1.4 (74)
Washer fluid level indicator light W	1.4 (74)
4-wheel steering oil level warning light <AWD> W	1.4 (74)
Cruise control ON indicator light W	1.4 (74)
Tour/sport mode indicator light*2 W	1.12
Tour rnode indicator light*3 W	1.12

NOTE
(1) The values in parentheses denote SAE trade numbers.
(2) The *1 symbol indicates vehicles with theft-alarm system.
(3) The *2 symbol indicates vehicles with Electronic Control Suspension.
(4) The *3 symbol indicates vehicles with Active Exhaust System.

SERVICE SPECIFICATIONS

M54HC- -

Items	Specifications
Standard Values	
Speedometer indication error mph	
20	19-22
40	38-44
60	57-66
80	76-88
100	94-110
Tachometer indication error rpm	
1,000	± 100
3,000	± 150
5,000	± 250
6,000	± 300
Fuel gauge unit resistance Ω	
Point F	3 ± 2
Point E	110 ± 7
Fuel gauge unit float height mm (in.)	
Point F	18.6 – 21.6 (.73 – .85)
Point E	193.4 – 196.4 (7.61 – 7.73)
Engine coolant temperature gauge unit resistance Ω [at 70°C (158°F)]	104 ± 13.5
Fuel gauge resistance Ω	
Between A – B	Approx. 254
Between A – C	Approx. 101
Between B – C	Approx. 153
Engine coolant temperature gauge resistance Ω	
Between A – B	Approx. 51
Between A – C	Approx. 139
Between B – C	Approx. 190
Oil pressure gauge resistance Ω	Approx. 42
Pressure gauge resistance <Turbo> Ω	Approx. 72

SEALANTS AND ADHESIVES

M54HF- -

Items	Specified sealants and adhesives	Type
Engine coolant temperature gauge unit	3M ATD Part No. 8660 or equivalent	Semi-drying sealant

TROUBLESHOOTING

M54HHAS

OPERATION

<Fuel gauge>

- When the ignition key is at the "ON" position, the fuel gauge is activated.
- When there is much fuel, the unit's resistance is small and the current flowing in the circuit is great, so the gauge's indicator indicates in the "F" area.
- When there is little fuel, the unit's resistance is high and the current flowing in the circuit is small, so the gauge's indicator indicates in the "E" area.

<Engine coolant temperature gauge>

- When the ignition key is at the "ON" position, the engine coolant temperature gauge is activated.
- When the engine coolant temperature is high, the unit's resistance is low and there is a great flow of current in the circuit, so the gauge's indicator indicates in the "H" area.
- When the engine coolant temperature is low, the unit's resistance is high and there is a small flow of current in the circuit, so the gauge's indicator indicates in the "C" area.

<Reed switch (NON-TURBO) / Speed sensor (TURBO)>

- Pulses are produced in accordance with the vehicle speed, and vehicle-speed signals are input to systems (the MPI system, etc.) that regulate according to the vehicle speed.

<Oil pressure gauge>

- When the ignition key is at the "ON" position, the oil pressure gauge is activated.
- When oil pressure is high, the internal contacts of the gauge unit are kept closed for a longer period of time. This causes more current to flow in the circuit, and the gauge pointer swings to the high pressure side.
- When oil pressure is low, the internal contacts of the gauge unit. open in a shorter period of time. Therefore, there is less current flowing in the circuit and the gauge pointer swings to the low pressure side.

<Pressure gauge (TURBO)>

- When the ignition key is set to the "ON" position, the gauge indicator will be at "0".
- When the engine is started, the indicator will move from "0" to the minus (–) side, and then, as the boost level increases, it will move to the plus (+) side.

<Voltage gauge (NON-TURBO)>

- When the ignition key is placed in the "ON" position, the voltage gauge operates and indicates a battery voltage of approximately 12V.
- When the engine is started, the voltage gauge indicates a battery voltage of 12 to 16V, indicating that the battery is on charge.

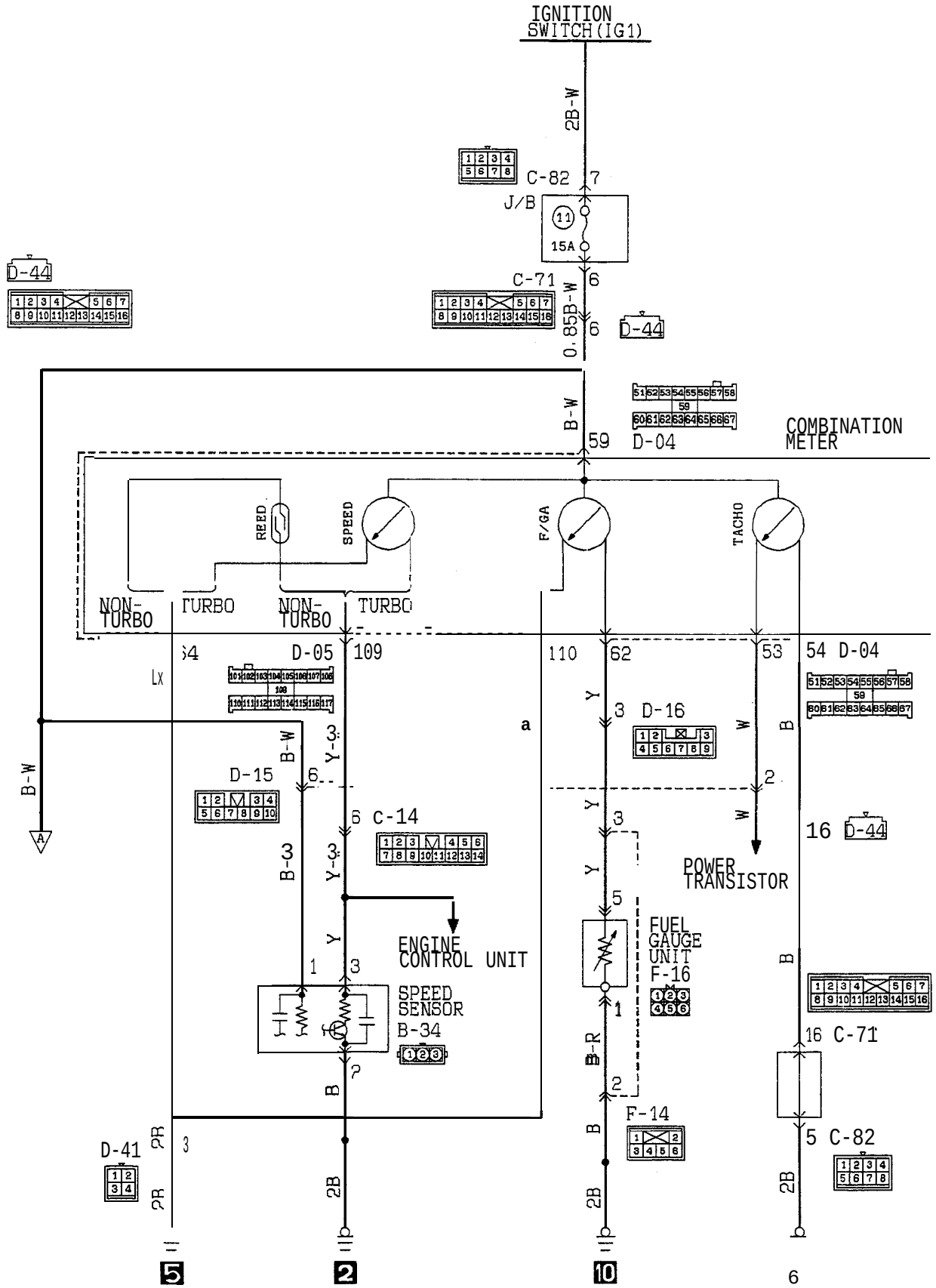
NOTE
For operation of indicator and warning light, refer to P.54-30 INDICATORS AND WARNING LIGHTS.

TROUBLESHOOTING HINTS

1. The fuel gauge doesn't function, or shows the incorrect indication.
   (1) Disconnect the connector of the fuel pump and gauge unit assembly; the "F" side is indicated when terminal ⑤ is then grounded.
   - Check the fuel gauge.
2. The engine coolant temperature gauge doesn't function, or shows the incorrect indication.
   (1) The "H" side is indicated when the connector of the engine coolant temperature gauge unit is disconnected and then grounded.
   - Check the engine coolant temperature gauge unit.
3. Systems dependent upon control according to the vehicle speed do not function correctly.
   - Check the reed switch (NON-TURBO)
   - Check the speed sensor (TURBO)
4. The oil pressure gauge doesn't function, or shows the incorrect indication.
   (1) The "H" side is indicated when the connector of the oil pressure gauge unit is disconnected and then grounded.
   - Check the oil pressure gauge unit.
5. The meter illumination light does not illuminate.
   (1) The tail lights illuminate.
   - Check the rheostat.
6. The voltage gauge doesn't function, or shows the incorrect indication.
   - Check the voltage gauge.

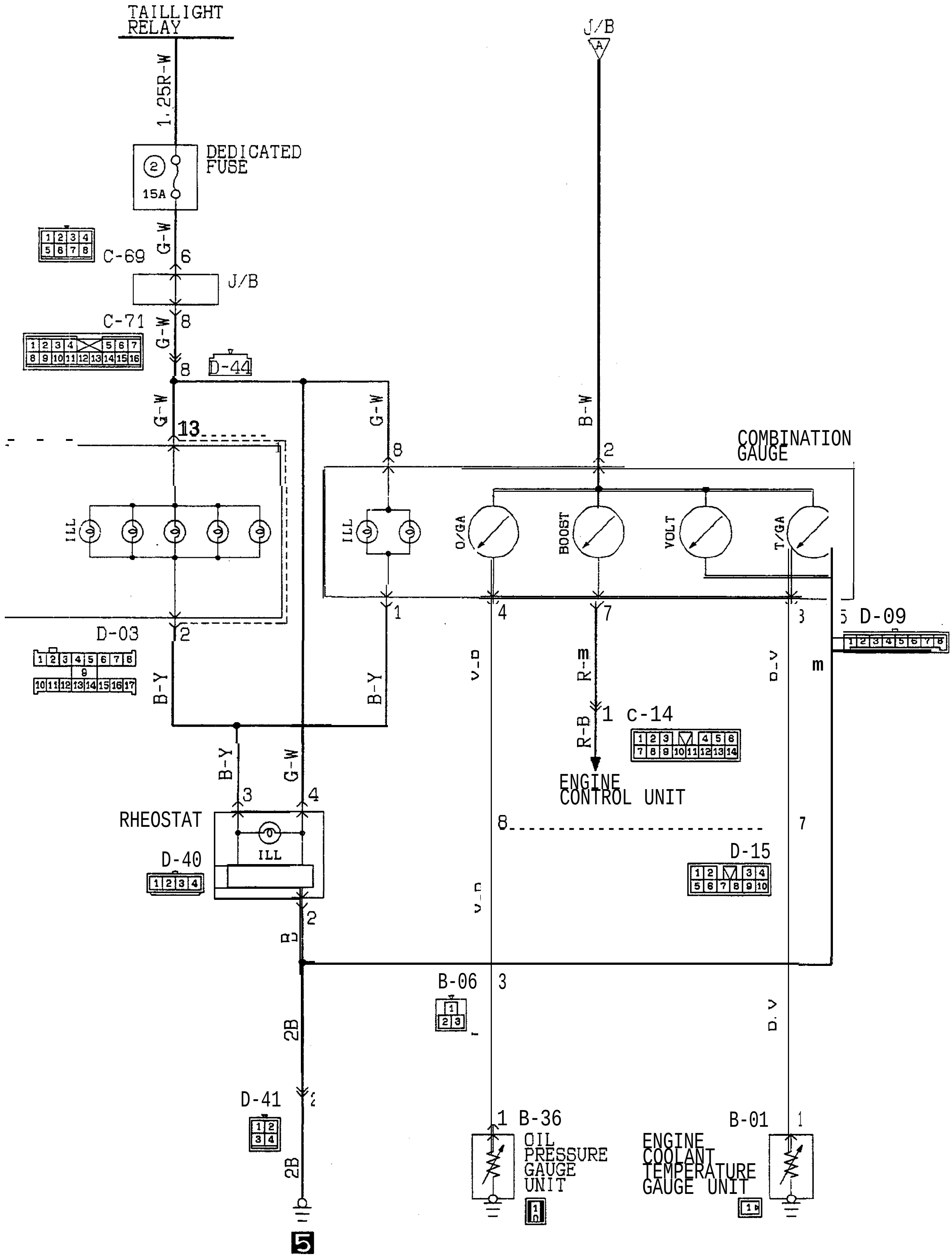
METER AND GAUGES CIRCUIT

CIRCUIT DIAGRAM



KX35-AC-RIOOI-NY

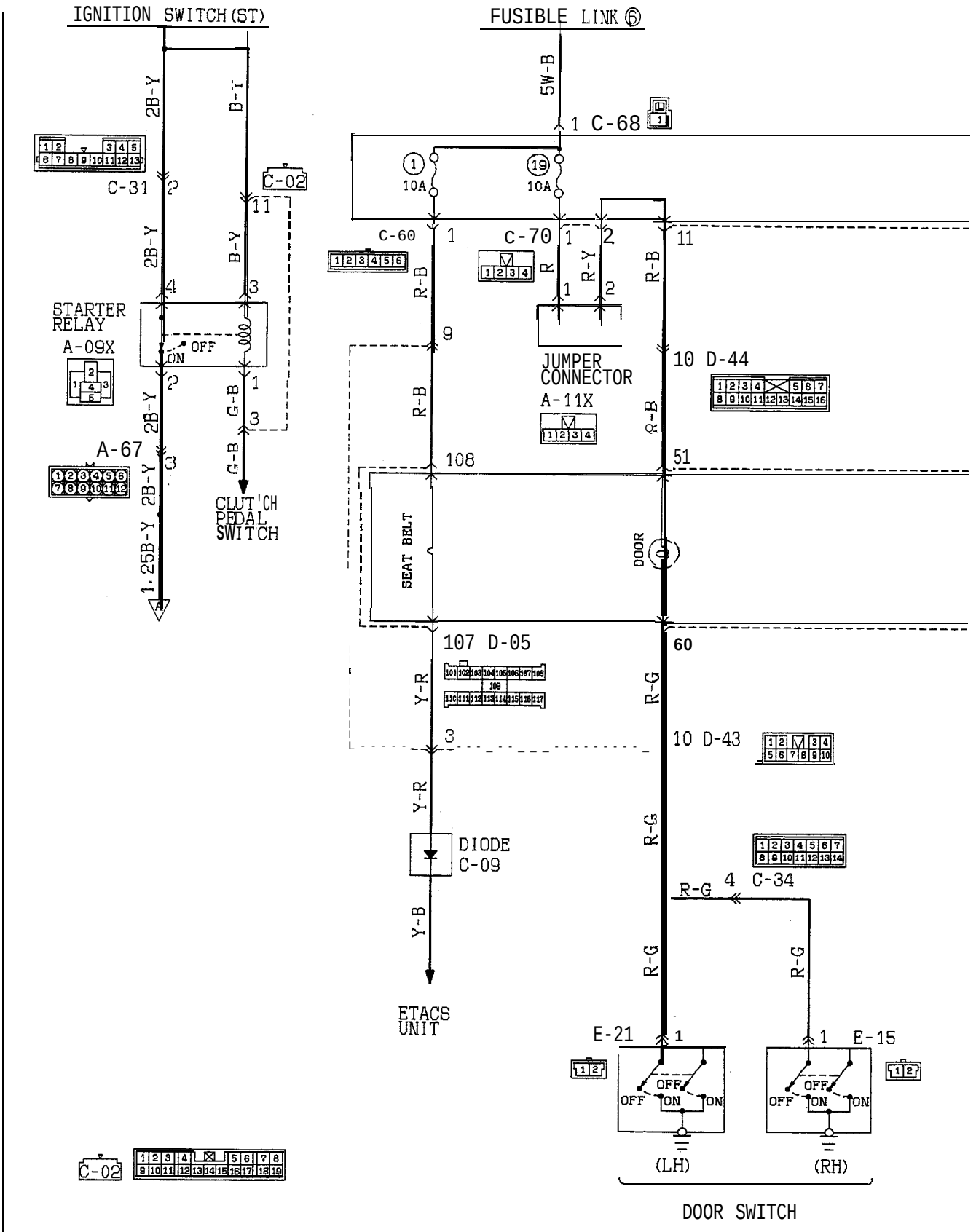
TSB Revision



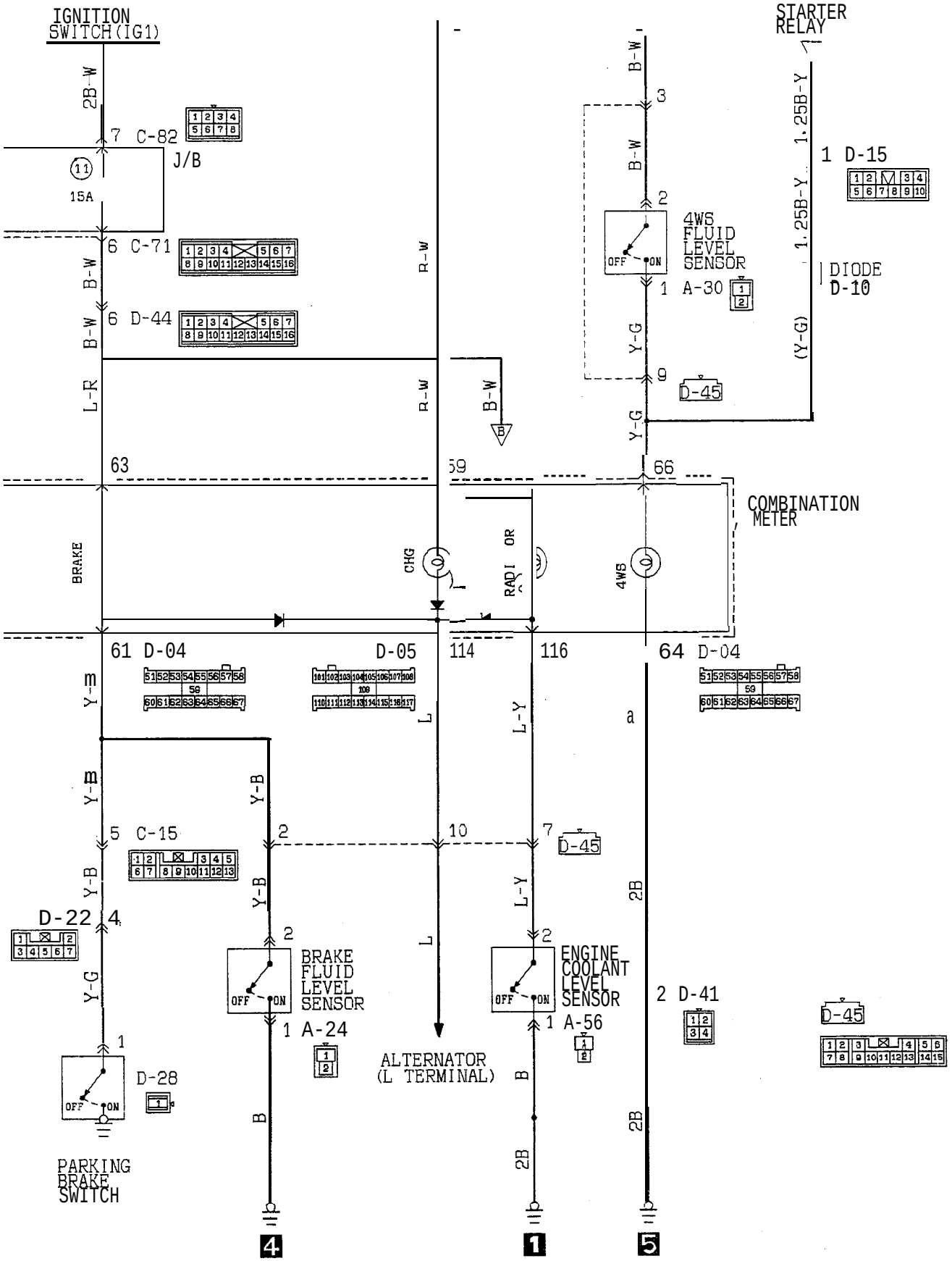
TAILLIGHT RELAY
1.25R-W
DEDICATED FUSE
2
15A
G-W
C-69
6
J/B
C-71
8
D-44
13
ILL
D-03
2
B-Y
J/B
A
B-W
COMBINATION GAUGE
O/GA
BOOST
VOLT
T/GA
1
4
7
3
5 D-09
R-B
1 C-14
ENGINE CONTROL UNIT
8
7
D-15
RHEOSTAT
D-40
3
4
2
B-06
3
2B
D-41
1 B-36
OIL PRESSURE GAUGE UNIT
B-01
1
ENGINE COOLANT TEMPERATURE GAUGE UNIT
5

WARNING LIGHT CIRCUIT

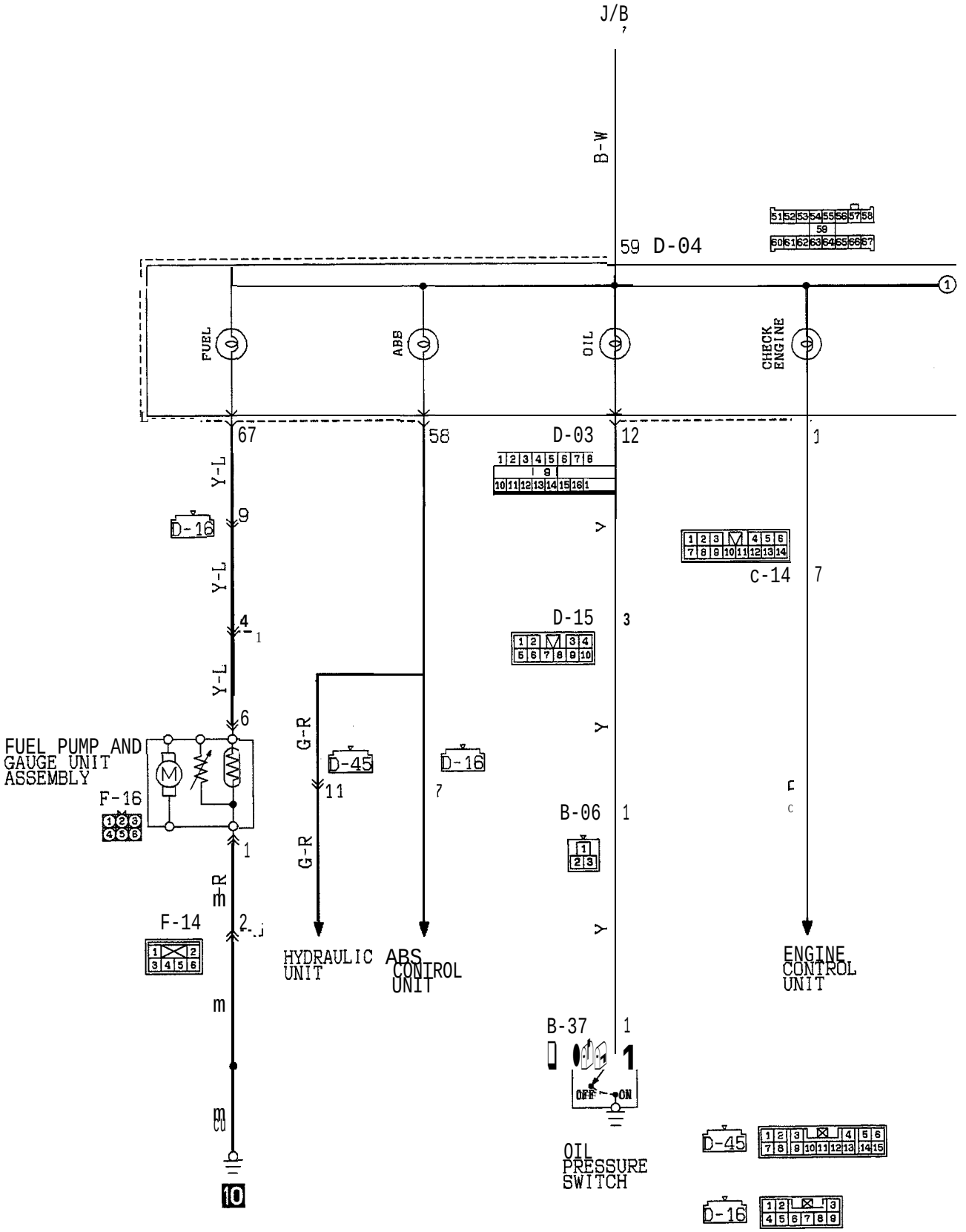
CIRCUIT DIAGRAM



135-AC-R1002-NM

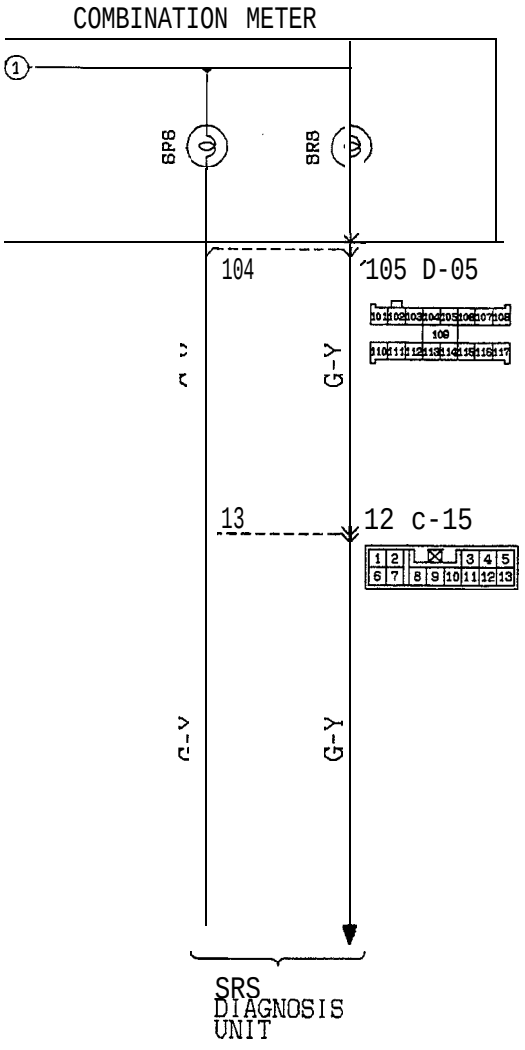


TSB Revision



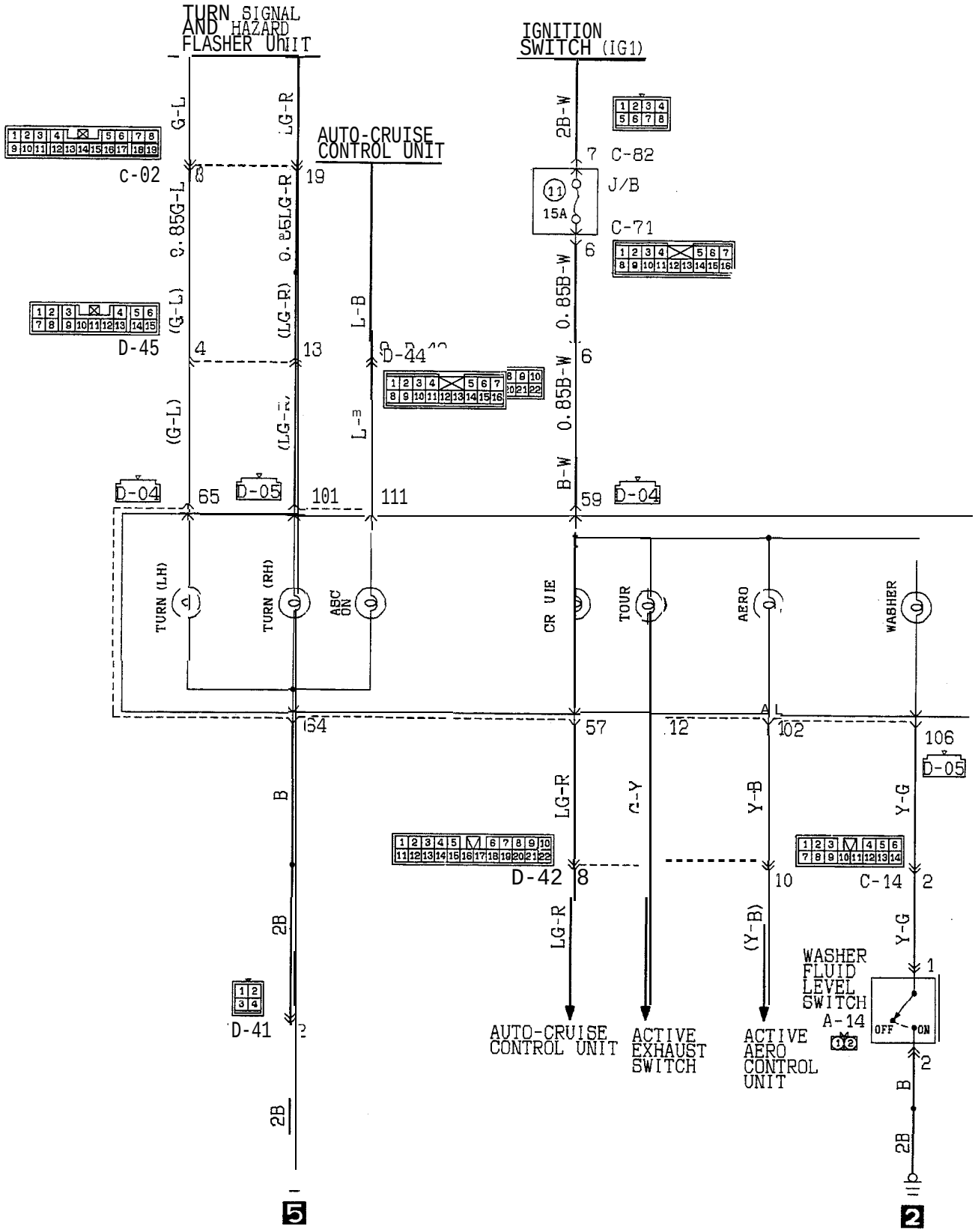
KX35-AC-R1002A-NM

TSB Revision

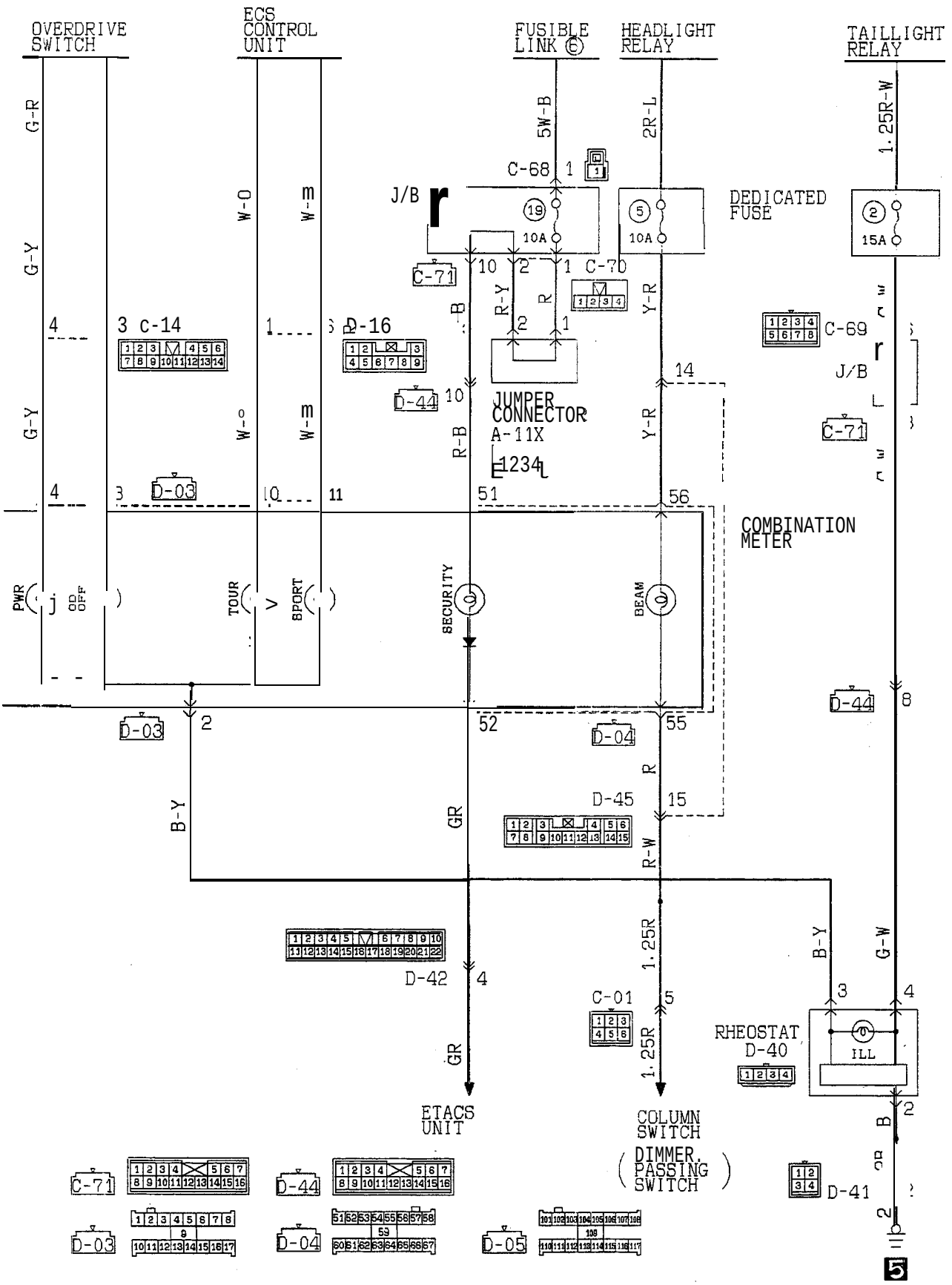

COMBINATION METER
1
BPB
BRB
104
105 D-05
G-Y
13
12 c-15
G-Y
SRS
DIAGNOSIS
UNIT

INDICATOR CIRCUIT

CIRCUIT DIAGRAM



KX35-AC-R1003-NM


OVERDRIVE SWITCH
ECS CONTROL UNIT
FUSIBLE LINK E
HEADLIGHT RELAY
TAILLIGHT RELAY
DEDICATED FUSE
JUNCTION BLOCK J/B
JUMPER CONNECTOR A-11X
COMBINATION METER
SECURITY
BEAM
PWR
TOUR
SPORT
OD OFF
RHEOSTAT D-40
ILL
ETACS UNIT
COLUMN SWITCH
DIMMER, PASSING SWITCH
C-68
C-71
C-70
C-69
C-14
D-16
D-44
D-03
D-04
D-45
D-42
C-01
D-41
D-05
10A
15A
G-R
G-Y
W-O
W-B
5W-B
2R-L
1.25R-W
R-Y
Y-R
R-B
B-Y
GR
R
R-W
1.25R
G-W
B

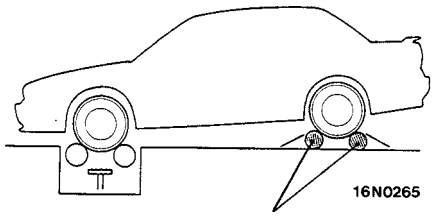
SERVICE ADJUSTMENT PROCEDURES

INSPECTION

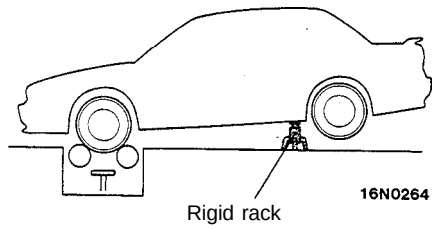
SPEEDOMETER INSPECTION M54HIAZ

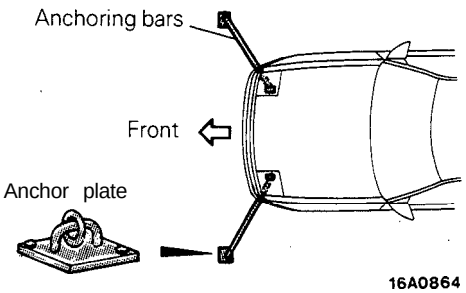
(1) Assure tire pressure at standard value.
(Refer to GROUP 31 – Specifications.)
(2) Set the vehicle on a speedometer tester.
(3) Set free rollers securely on the floor according to the wheelbase and rear tread of the vehicle (when rear wheels are to be set on free rollers).
(4) Raise the rear wheels on a jack and place rigid racks to support the specified positions of the side sills (when rear wheels are to be raised on a jack).
(5) Make sure the parking brake has been set. <FWD>

<Rear wheels on free rollers>



<Rear wheels raised on jack>



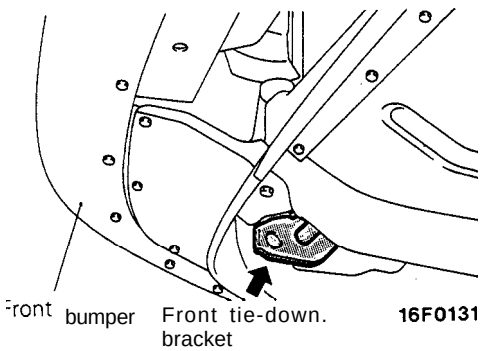


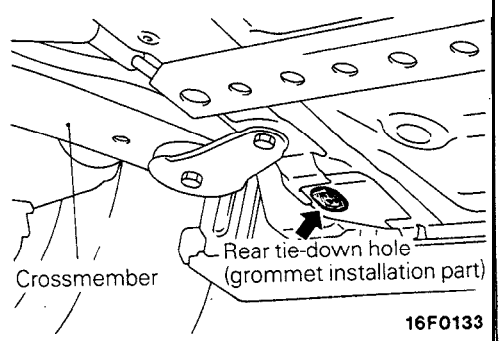
(6) Attach anchoring bars on the tie-down brackets and secure their ends to the anchor plates.
(7) Make sure the tension on the right and left bars is the same. Also be sure there is enough tension on each bar.
(8) Attach a chain or wire to the rear tie-down hole. Make sure the end of the wire or chain is secured firmly.
(9) Take all other necessary precautions.
(10) Use a speedometer tester to measure the speedometer's indication error.

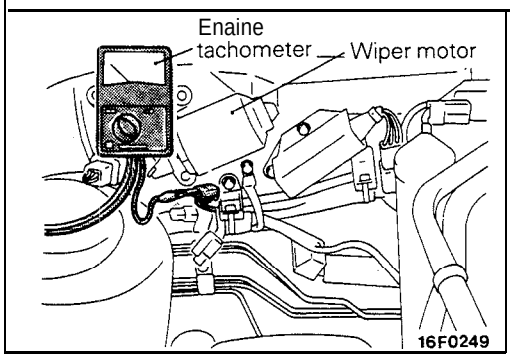
Standard value:

Standard indication mph	Allowable range mph
20	19 – 22
40	38 – 44
60	57 – 66
80	76 – 88
100	94 – 110

Caution
Do not operate the clutch or accelerator abruptly or decelerate during the operations.







TACHOMETER INSPECTION

M54HIBQ

(1) Insert paper clip into the engine revolution speed detection terminal provided in the engine compartment, and connect the engine tachometer to the inserted paper clip.

Caution
As the tachometer is negative grounded, do not connect battery conversely to prevent damaging transistor and diode.

NOTE
For tachometer inspection, use of a fluxmeter-type engine tachometer is recommended. (Because a fluxmeter only needs to be clipped to the high tension cable.)

(2) Connect the engine tachometer and compare the engine tachometer and tachometer readings. Replace tachometer if difference is excessive.

Standard value:	**1,000 rpm**	**±100 rpm**
	3,000 rpm	**f150 rpm**
	5,000 rpm	**±250 rpm**
	6,000 rpm	**±300 rpm**

Caution
The engine speed signal output from the engine is one-third of the actual speed. When the engine speed is measured, make sure that the engine tachometer is placed in the 2-cylinder range. (The real speed is indicated.)

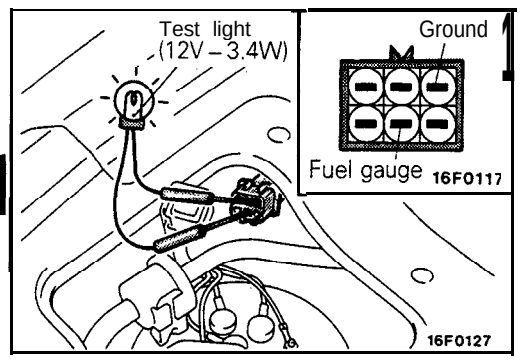
FUEL GAUGE SIMPLE INSPECTION

M54HIC

Remove the fuel gauge unit coupling connector.

↓

Connect a test light to the harness connector.



↓

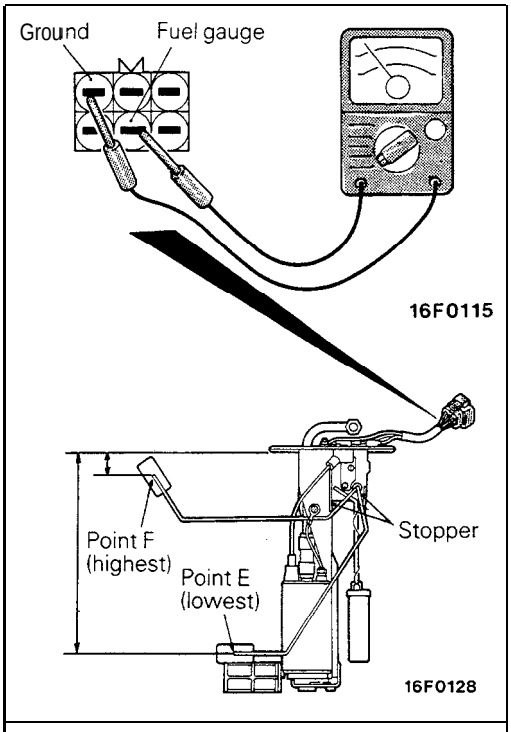
Place the ignition switch in the ON position.

↓

Check the test light and gauge conditions.

① Test light lights. (Pointer of gauge does not swing.)	→ Replace fuel gauge.
② Test light lights. (Pointer of gauge swings.)	→ Replace fuel gauge unit.
③ Test light does not light. (Pointer of gauge does not swing.)	→ Correct harness.

TSB Revision



FUEL GAUGE UNIT INSPECTION M54HIIT

To check, remove fuel gauge unit from fuel tank. (Refer to GROUP 13 – Fuel Tank.)

Fuel Gauge Unit Resistance

(1) Check that resistance value between the fuel gauge terminal and ground terminal is at standard value when fuel gauge unit float is at point F (highest) and point E (lowest).

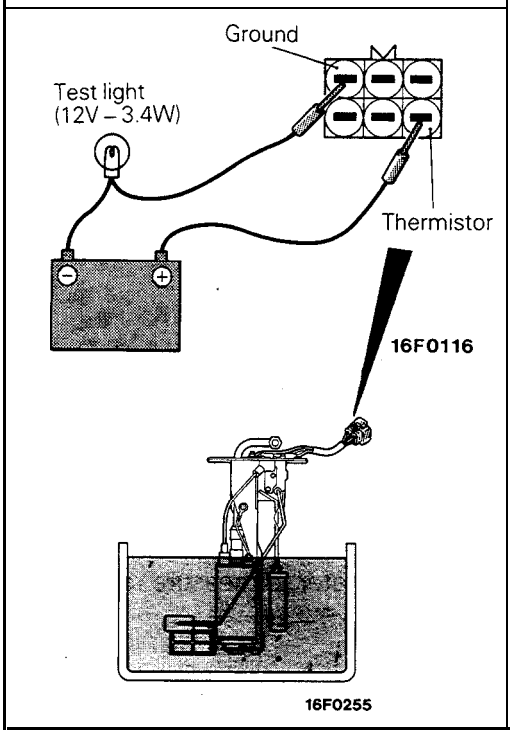
Standard value: Point F: 3±2 Ω
Point E: 110-r-7 Ω

(2) Check that resistance value changes smoothly when float moves slowly between point F (highest) and point E (lowest).

Fuel Gauge Unit Float Height

Move float and measure the height at point F (highest) and point E (lowest) with float arm touching stopper.

Standard value:
Point F: 18.6 – 21.6 mm (.73 – .85 in.)
Point E: 193.4 – 196.4 mm (7.61 – 7.73 in.)



FUEL SENSOR INSPECTION M54HINA

Connect fuel gauge unit to battery via test light (12V – 3.4W). Immerse in water. Condition good if light goes off when unit thermistor is in water and lights when unit is removed from water.

Caution
After completing this test, wipe the unit dry and install it in the fuel tank.

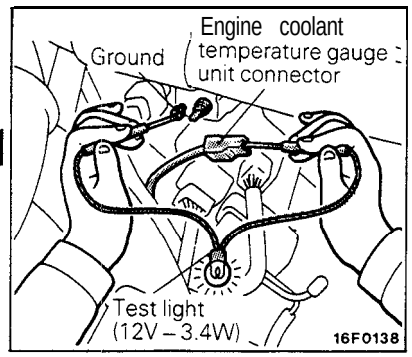
ENGINE COOLANT TEMPERATURE GAUGE SIMPLE INSPECTION

M54HIDL

Remove the water temperature gauge unit coupling connector.

↓

Connect the harness connector via a test light to the ground.



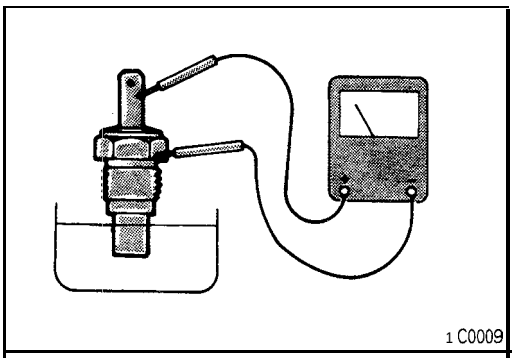
↓

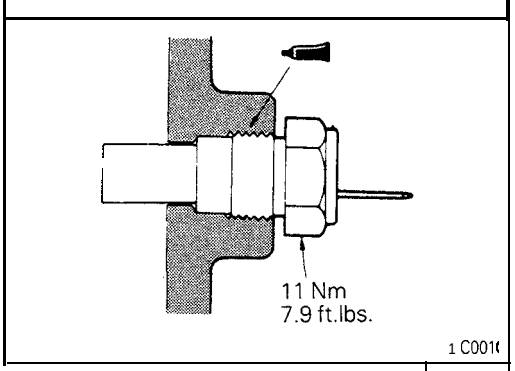
Place the ignition switch in the ON position.

↓

Check: the test light and gauge conditions.

① Test light lights. (Pointer of gauge does not swing.)	→ Replace water temperature gauge.
② Test light lights. (Pointer of gauge swings.)	→ Replace water temperature gauge unit.
@ Test light does not light. (Pointer of gauge does not swing.)	→ Correct harness.





ENGINE COOLANT TEMPERATURE GAUGE UNIT INSPECTION

M54HIKW

To check, remove engine coolant temperature gauge unit from the thermostat housing.

Engine Coolant Temperature Gauge Unit Resistance

(1) Immerse unit in 70°C (158°F) water to measure resistance.

Standard value: 104±13.5 Ω

(2) After checking, apply the specified sealant around the thread of engine coolant temperature gauge unit and install on the thermostat housing.

Specified sealant: 3M ATD Part No. 8660 or equivalent

TSB Revision

OIL PRESSURE GAUGE SIMPLE INSPECTION

M54HIFC

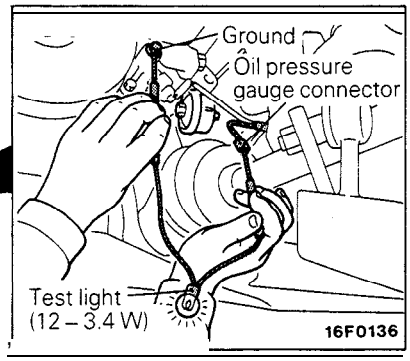
Remove the oil pressure gauge unit coupling connector.

↓

Connect the harness connector via a test light to the ground.

↓

Place the ignition switch in the ON position.



Check the test light and gauge conditions.

① Test light lights. (Pointer of gauge does not swing.)	→ Replace oil pressure gauge.
② Test light lights. (Pointer of gauge swings.)	→ Replace oil pressure gauge unit.
③ Test light does not light. (Pointer of gauge does not swing.)	→ Correct harness.

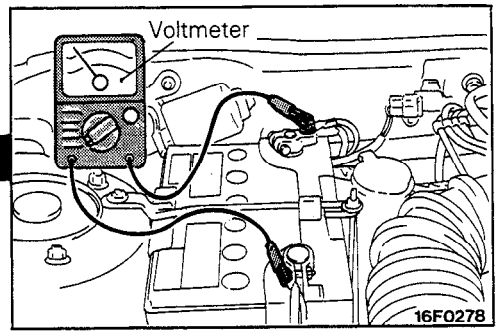
VOLTAGE GAUGE SIMPLE TEST

M540278

Start engine and let it idle.

↓

Connect voltmeter to battery.



↓

Check voltage gauge for conditions.

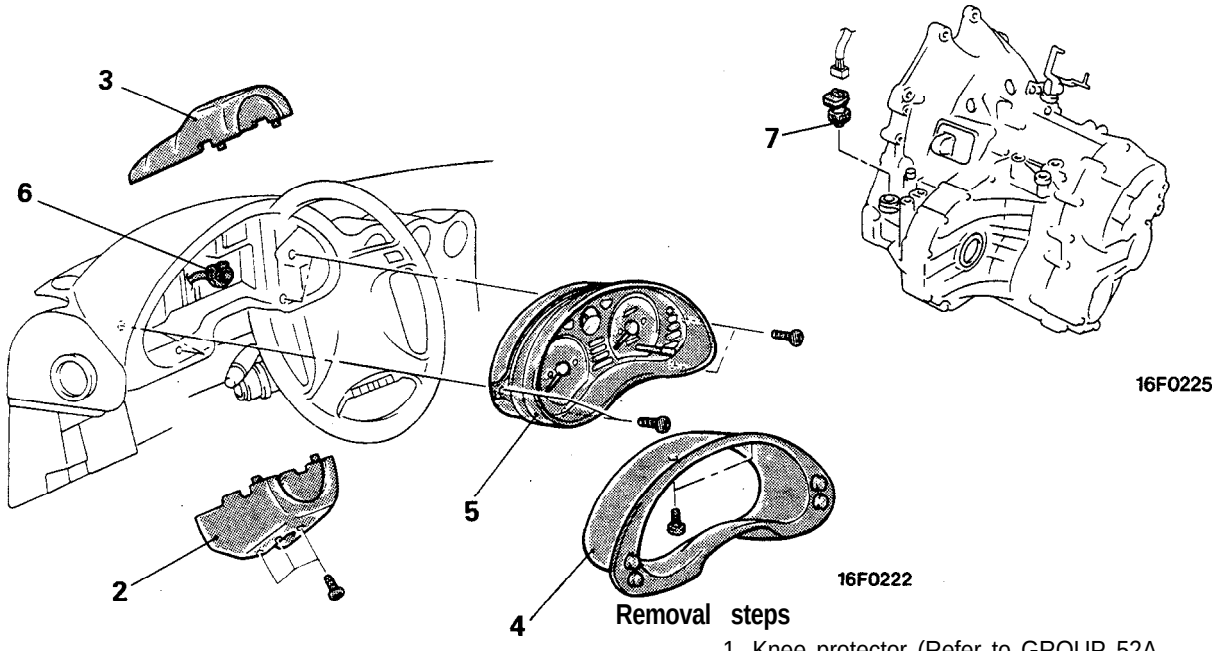
① Voltage indicated by voltmeter differs from voltage indicated by voltage gauge (position indicated by pointer).	→ Replace gauge.
② Gauge does not operate.	→ Correct harness or replace gauge.

TSB Revision

COMBINATION METERS

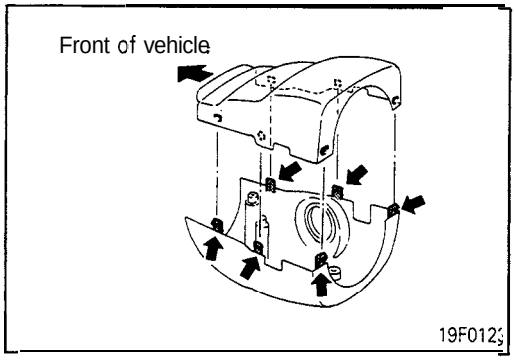
REMOVAL AND INSTALLATION

M54HJAS



Removal steps

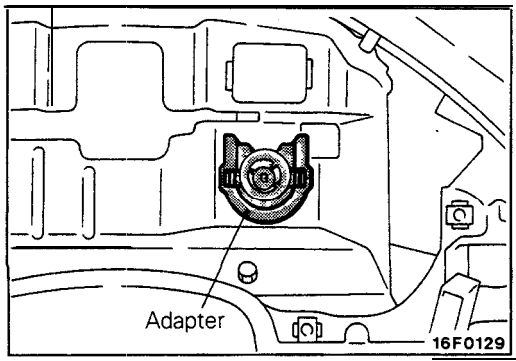
1. Knee protector (Refer to GROUP 52A – Instrument Panel.)
2. Column cover lower
3. Column cover upper
4. Meter bezel
5. Combination meter
6. Adapter (Mechanical speedometer type) / Washer tank (Refer to GROUP 51 – Windshield Wiper and Washer.)
7. Vehicles speed sensor (Electrical speedometer type)



SERVICE POINTS OF REMOVAL

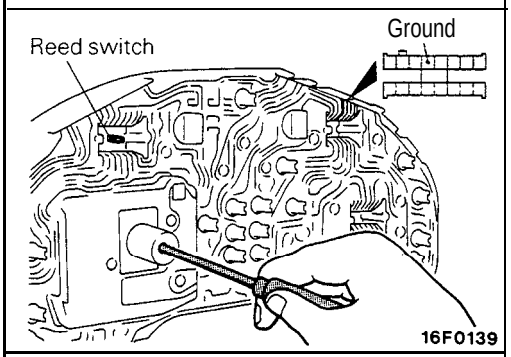
2. REMOVAL OF COLUMN COVER LOWER / 3. COLUMN COVER UPPER

After the screws have been removed, remove the covers, while making sure not to break the grippers.



6. REMOVAL OF ADAPTER <Mechanical Speedometer Type>

(1) Disconnect the speedometer cable at the transaxle end of the cable.
(2) Pull the speedometer cable slightly toward the vehicle interior, release the lock by turning the adaptor to the left or right, and then remove the adapter.

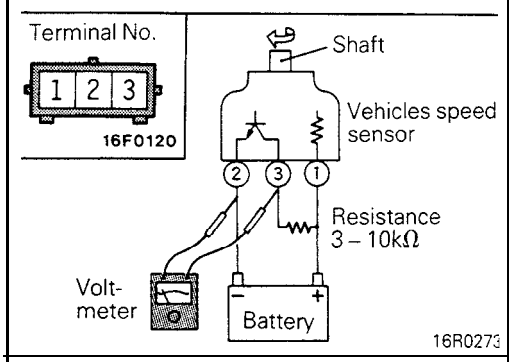


INSPECTION

REED SWITCH INSPECTION

<Mechanical Speedometer Type>

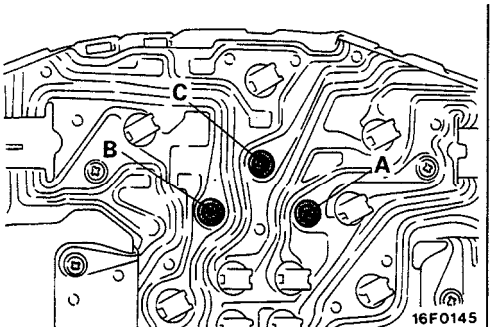
Use circuit tester to check circuit repeats off/on between terminals when speedometer shaft turned several times.



VEHICLES SPEED SENSOR INSPECTION

<Electrical Speedometer Type>

(1) Remove the vehicles speed sensor and connect as shown in the illustration, using a 3 – 10 kΩ resistance.
(2) Use a voltmeter to check for voltage at terminals ② and ③ when the pulse generator shaft is turning. (One revolution is four pulses.)



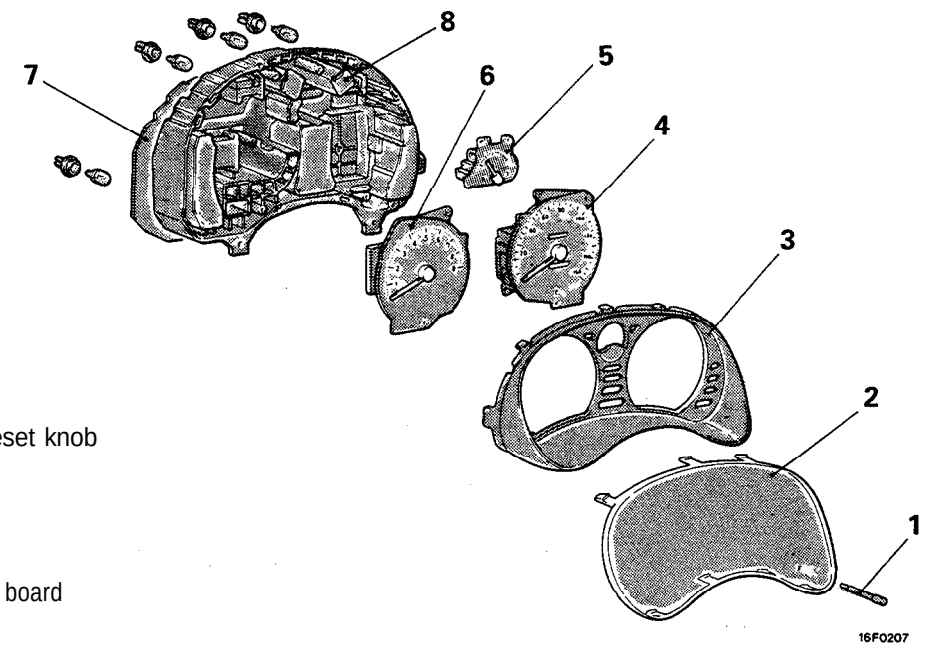
FUEL GAUGE INSPECTION

Measure resistance between terminals with circuit tester.

Standard value:

A - B	**Approx. 254 Ω**
A - C	**Approx. 101 Ω**
B - C	**Approx. 153 Ω**

DISASSEMBLY AND REASSEMBLY



Disassembly steps

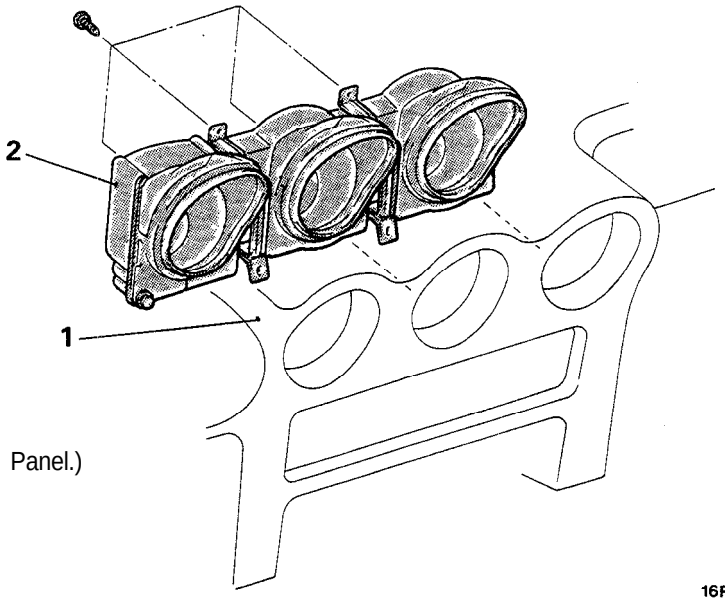
1. Trip counter reset knob
2. Meter glass
3. Window plate
4. Speedometer
5. Fuel gauge
6. Tachometer
7. Printed-circuit board
8. Meter case

TSB Revision

COMBINATION GAUGES

M54HJAT

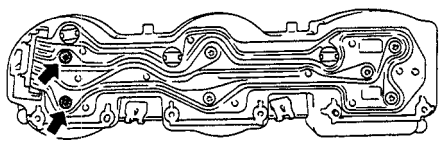
REMOVAL AND INSTALLATION



16FO211

Removal steps

1. Instrument panel
   (Refer to GROUP 52A – Instrument Panel.)
   Distribution duct
   [Refer to GROUP 55 -Ventilators (Instrument Panel).]
2. Combination gauge



16F0143

INSPECTION

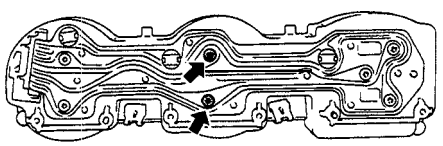
PRESSURE GAUGE INSPECTION <Turbo>

Measure resistance between terminals with circuit tester.

Standard value: Approx. 72 Ω

VOLTAGE GAUGE INSPECTION <Non-Turbo>

Refer to P.54-25

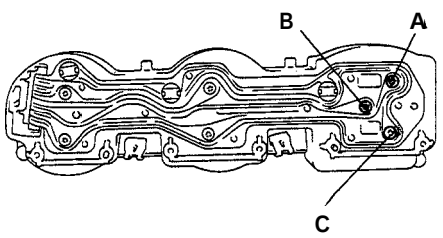


16F0142

OIL PRESSURE GAUGE INSPECTION

Measure resistance between terminals with circuit tester.

Standard value: Approx. 42 Ω



16F0141

ENGINE COOLANT TEMPERATURE GAUGE INSPECTION

(1) Remove the IG terminal screw from area A.
(2) Measure resistance between terminals with circuit tester.

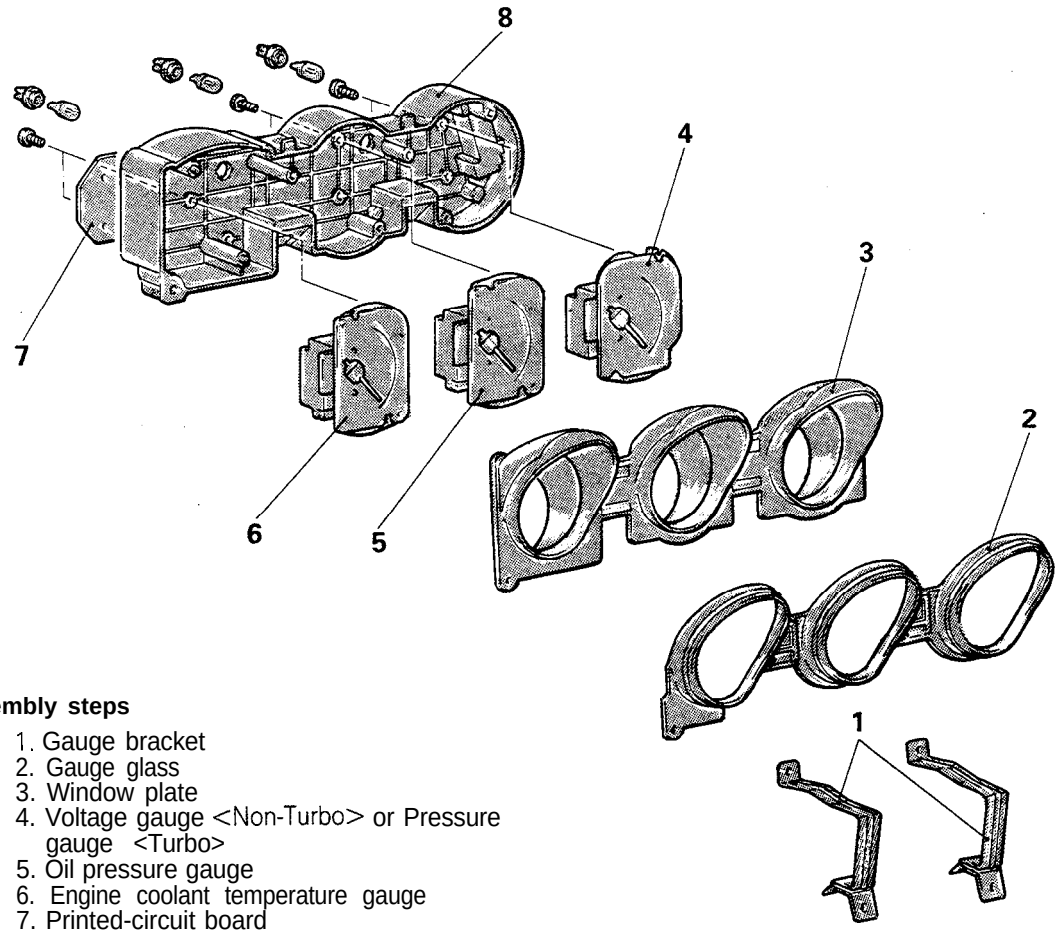
Caution
For inspection, use a circuit tester which uses a measurement current of 4mA or less.

Standard value:

A - B	**Approx. 51 Ω**
A - C	**Approx. 139 Ω**
B - C	**Approx. 190 Ω**

TSB Revision

DISASSEMBLY AND REASSEMBLY



Disassembly steps

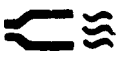
1. Gauge bracket
2. Gauge glass
3. Window plate
4. Voltage gauge <Non-Turbo> or Pressure gauge <Turbo>
5. Oil pressure gauge
6. Engine coolant temperature gauge
7. Printed-circuit board
8. Gauge case

INDICATORS AND WARNING LIGHTS

M54HKAX

Symbol		Operation
	Turn signal indicator	This indicator flashes, as do the same side of turn-signal light flashes. If the turn-signal light is burnt out, the indicator flashes faster than normal indicator. This indicator is common with hazard light.
	High beam indicator	This indicator illuminates when the headlights are on high beam.
	Door-ajar warning light	This warning light illuminates when the door or liftgate is either open or not completely closed.
	Seat belt warning light	This warning light illuminates for 6 seconds when the ignition key is in "ON" position, even if the driver has fastened his seat belt.
BRAKE	Brake warning light	This warning light illuminates when the ignition key is in "ON" position, and goes off after the engine has started. This indicator comes on when the parking brake is applied or brake fluid level falls less than the specific level.
	Low fuel warning light	This warning light illuminates when the fuel in the fuel tank falls less than approx. 10 liters (2.6 gals.).
	Charging system warning light	This warning light illuminates when the ignition key is in "ON" position, and goes off after the engine has started. This indicator comes on when the drive belt breaks or the trouble occurs in the charging system.
	Oil pressure warning light	This warning light illuminates when the ignition key is in "ON" position, and goes off after the engine has started. This indicator comes on when the oil fails or the trouble occurs in the oil circulating system while driving.
	Engine coolant level warning light	This warning light illuminates when the engine coolant level in the radiator reservoir tank falls below the specified level.
CHECK ENGINE	Check engine warning light	This warning light illuminates when the ignition key is turned to the "ON" position, but should go out in a few seconds. If the light illuminates while the vehicle is moving, there is a malfunction of a component related to exhaust gases.
CRUISE	Cruise control indicator	This indicator illuminates when the cruise control is activated.
O D OFF	Overdrive indicator	This indicator will light up when the overdrive switch is off.
SECU RITY	SECURITY indicator (Vehicles with theft-alarm system)	This indicator illuminates for about 20 seconds when the theft-alarm system can be set, and then the illumination stops.

TSB Revision

Symbol		Operation
ASC ON	Cruise control ON indicator	This indicator illuminates when the cruise control main switch is switched ON.
	Washer fluid level indicator	This indicator illuminates when the washer fluid level in the washer tank falls to a low level.
ANTI LOCK	Anti-lock braking system warning light	This warning light blinks 4 time in 0.6 to 0.8 second when the ignition key is placed in the "ON" position. With the ignition key in the "ST" position, the warning light stays on. Then move the ignition key from the "ST" position to the "ON" position, and the warning light blinks 3 times in 0.6 to 0.8 second if the warning light operates normally. This warning light illuminates when a malfunction is discovered in the anti-lock braking system.
PWR	Power/economy changeover indicator	This indicator illuminates when the Power/Economy select switch is set to the POWER position.
SRS	Supplemental Restraint System (SRS) warning light	When the ignition key is in ON position, the warning light illuminates for about 7 seconds to indicate that the light itself is illuminating normally. This light illuminates if there is a malfunction of the Supplemental Restraint System.
4WS OIL	4-wheel steering oil level warning light	This warning light illuminates when the power steering oil level in the reservoir tank falls to a low level.
 TOUR	Tour mode indicator (for Active Exhaust System)	This indicator illuminates when the active exhaust system switch is set to the TOUR mode position.
TOUR SPORT	Tour/Sport mode indicator (for Electronic Control Suspension)	When the ignition key is in ON position, depending on which is set, either the TOUR or SPORT mode indicator remain illuminated.
AERO	Active aero system warning light	This warning light illuminates in the event of a malfunction in the active aero system. It will also illuminate when the ignition key is turned to the "ON" position, and then it will go out in a few seconds. If it does not illuminate when the ignition key is turned to the "ON" position, or it remains on, take your car to your nearest authorized dealer and have the system checked.

LIGHTING SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54IB- -

Items	Specifications
Exterior lights	
Headlight W	65/45
Fog light W	55
Front combination light	
Turn-signal light/side marker light CP	3212 (2057)
Rear combination light	
Turn-signal light/side marker and tail light CP	3212 (2057)
Stop light / side marker and tail light CP	3212 (2057)
Back-up light CP	32 (1156)
License plate light CP	3 (168)
High-mounted stop light	
Vehicles without rear spoiler CP	32 (1 156)
Vehicles with fixed rear spoiler W	4
Vehicles with active rear spoiler	LED (Light Emitting Diode)
Engine compartment inspection light W	3.8 (194)
Interior lights	
Foot light W	3.4 (158)
Dome light W	8
Spot light W	8
Door light W	5
Glove compartment light W	3.4 (158)
Luggage compartment light W	5

NOTE
The values in parentheses denote SAE trade number.

SERVICE SPECIFICATIONS

M54IC- -

Items	Specifications
Limit	
Headlight intensity	20,000 cd or more

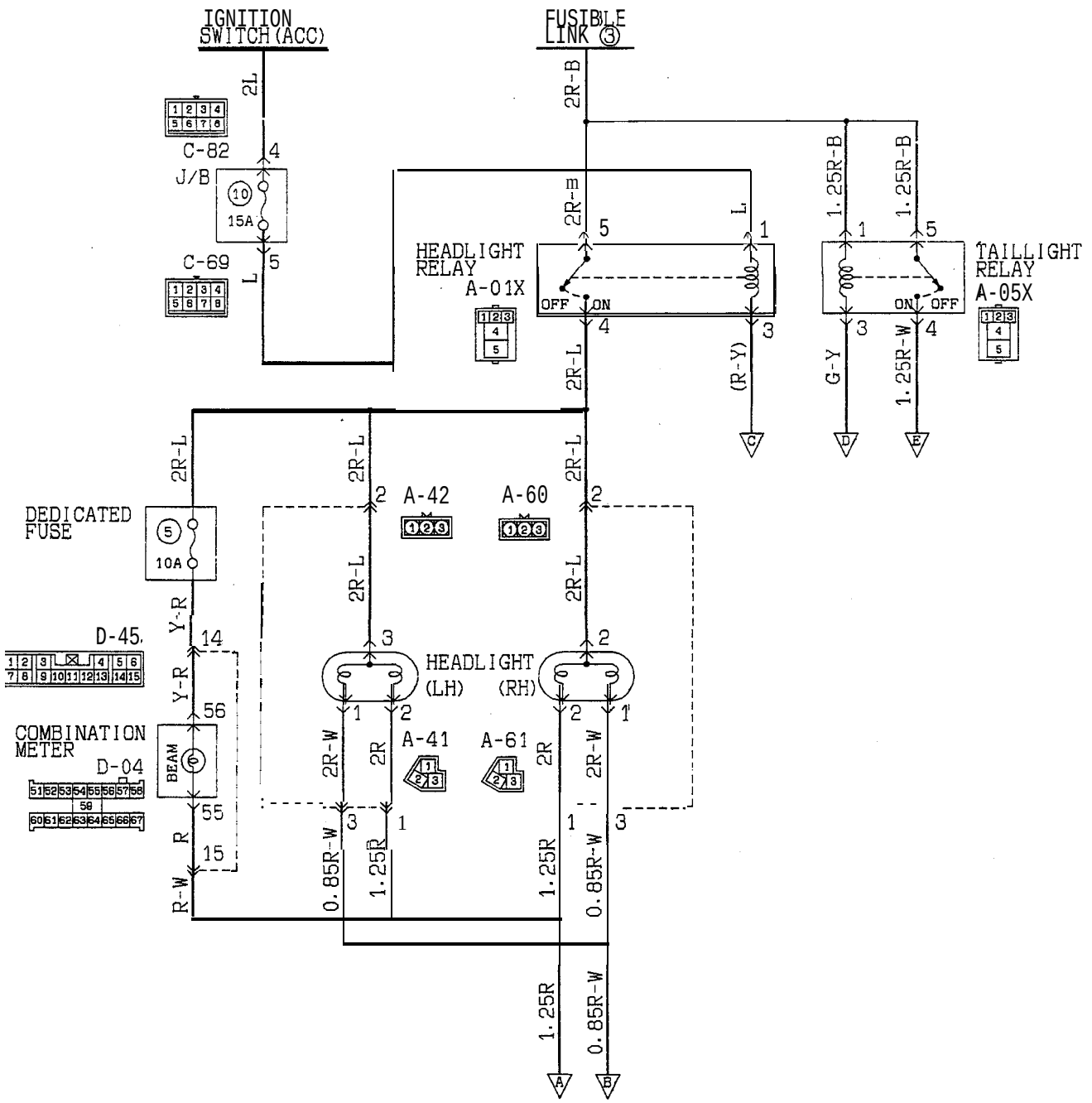
TROUBLESHOOTING

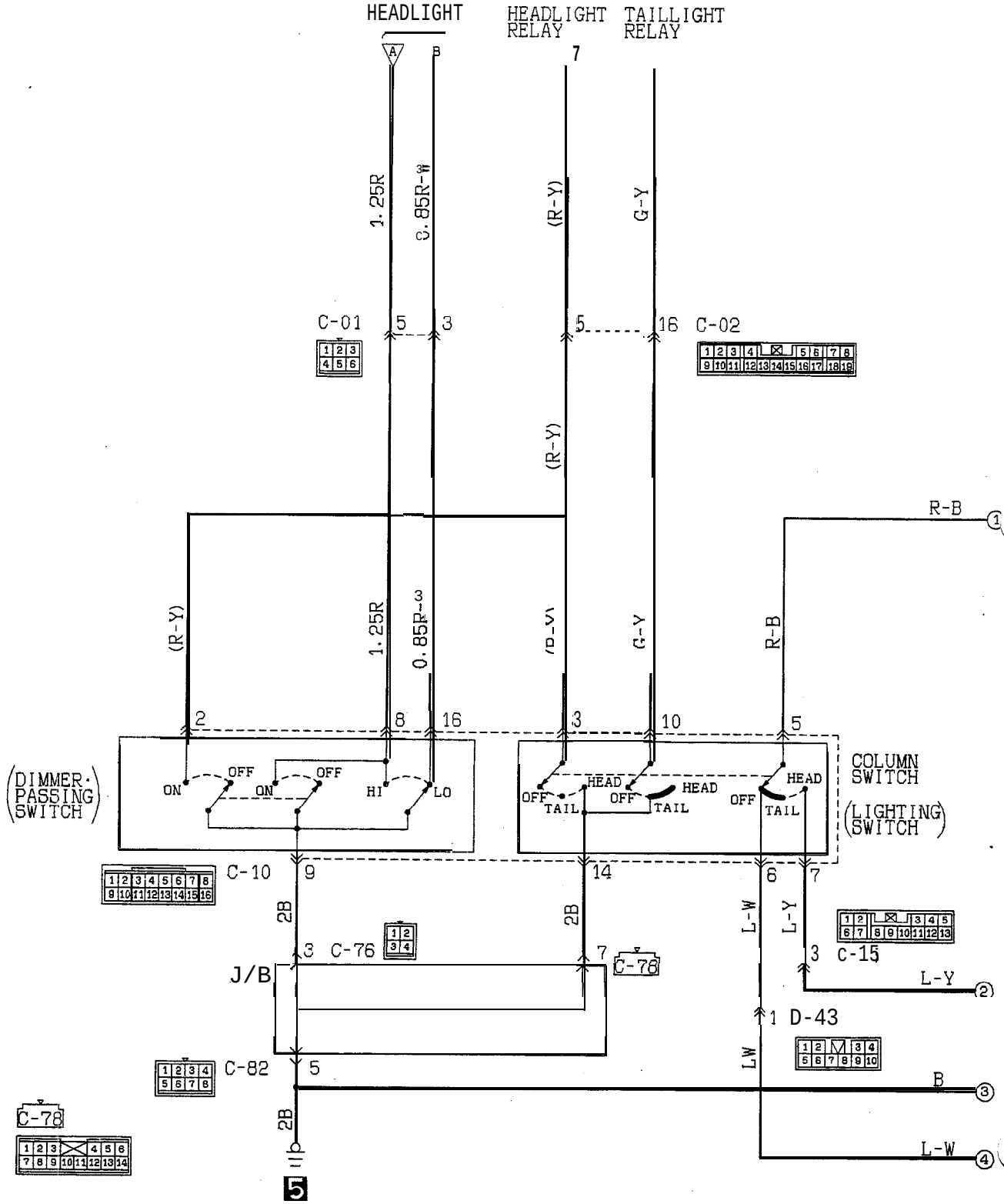
HEADLIGHT CIRCUIT

M54IHBS

<VEHICLES WITHOUT THEFT-ALARM SYSTEM>

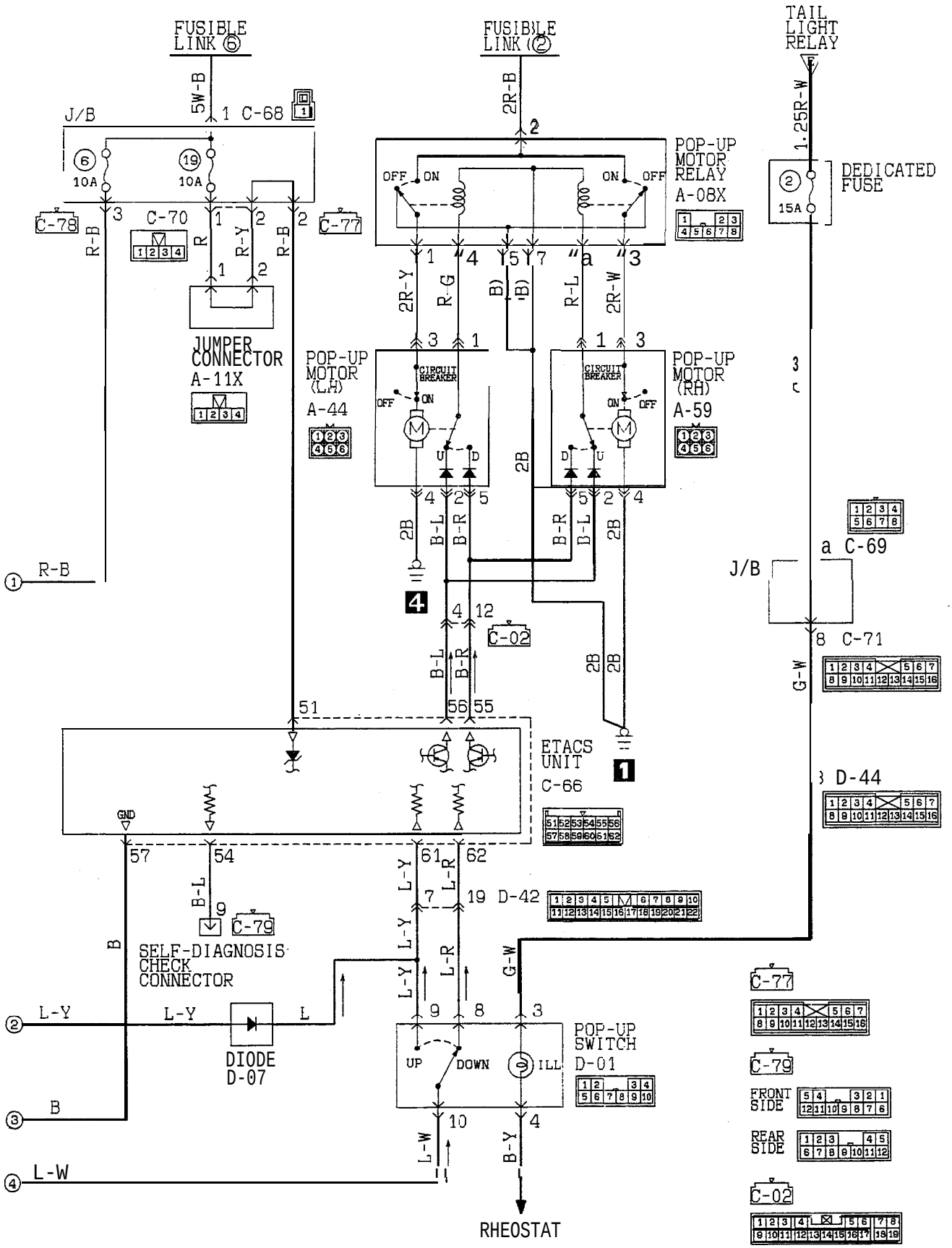
CIRCUIT DIAGRAM





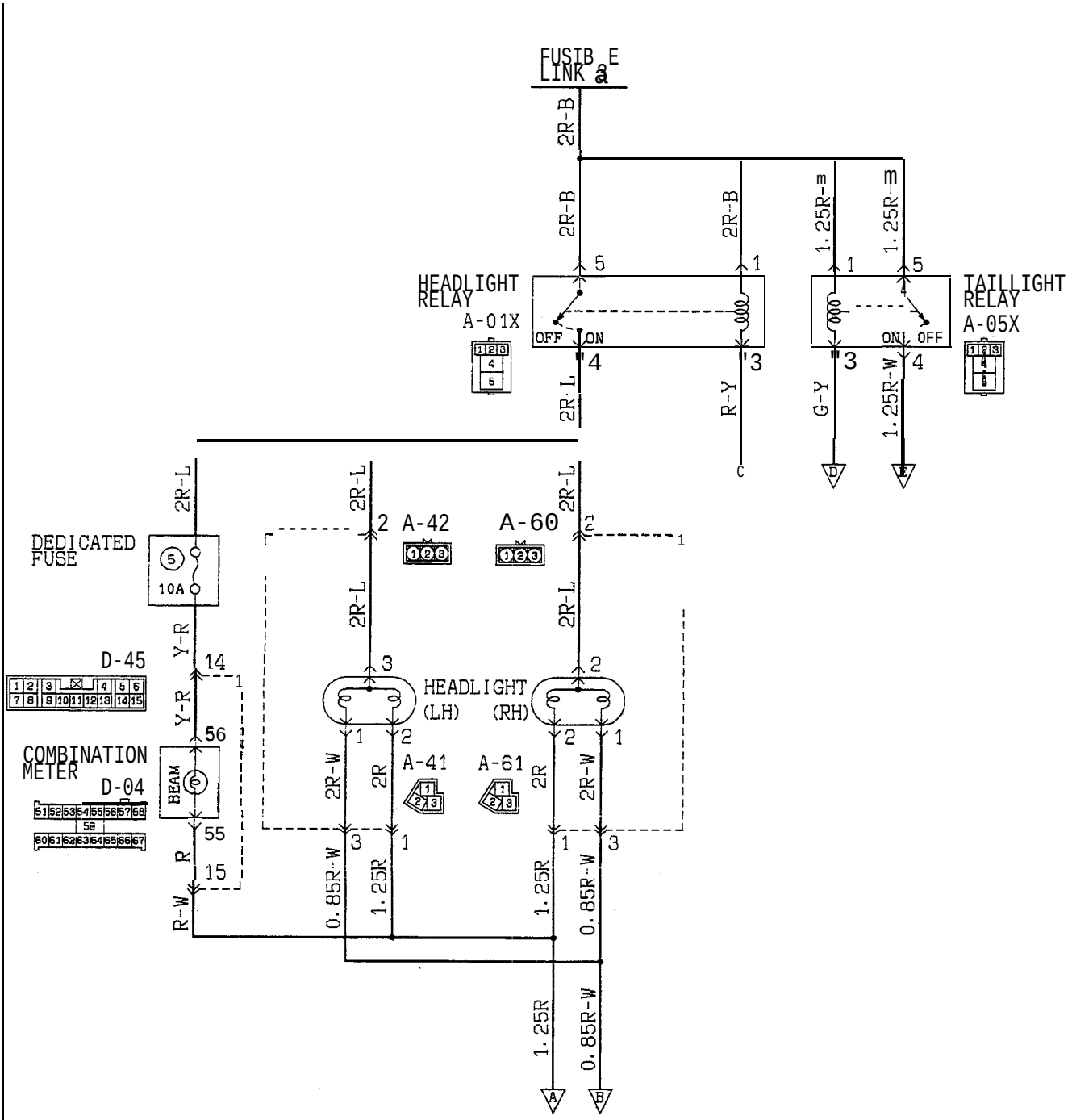
KX35-AC-R0802A-NM

TSB Revision


FUSIBLE LINK ⑥
FUSIBLE LINK ⑦
TAIL LIGHT RELAY
5W-B
2R-B
1.25R-W
J/B
1 C-68
10A
10A
15A
DEDICATED FUSE
POP-UP MOTOR RELAY A-08X
OFF ON
ON OFF
C-78
C-70
C-77
R-B
R
R-Y
R-B
JUMPER CONNECTOR A-11X
2R-Y
R-G
B)
(B)
R-L
2R-W
POP-UP MOTOR (LH) A-44
POP-UP MOTOR (RH) A-59
CIRCUIT BREAKER
2B
B-L
B-R
C-02
J/B
a C-69
8 C-71
G-W
R-B
51
56 55
ETACS UNIT C-66
GND
57 54
61 62
L-Y
L-R
19 D-42
B
B-L
C-79
SELF-DIAGNOSIS CHECK CONNECTOR
L-Y
L-Y
L
DIODE D-07
B
L-W
9 8 3
POP-UP SWITCH D-01
UP DOWN ILL
10 4
L-W
B-Y
RHEOSTAT
C-77
C-79
FRONT SIDE
REAR SIDE
C-02

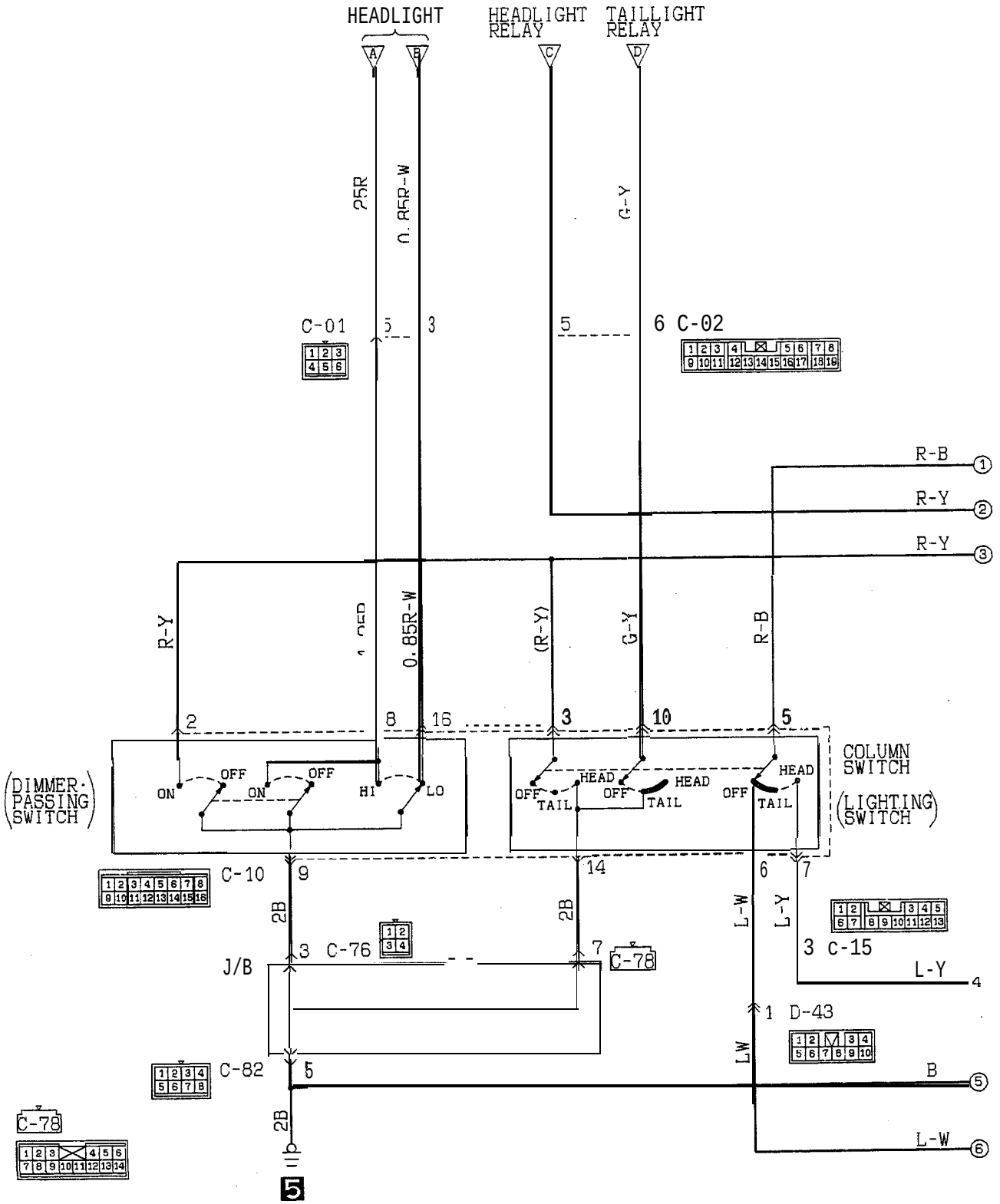
<VEHICLES WITH THEFT-ALARM SYSTEM>

CIRCUIT DIAGRAM



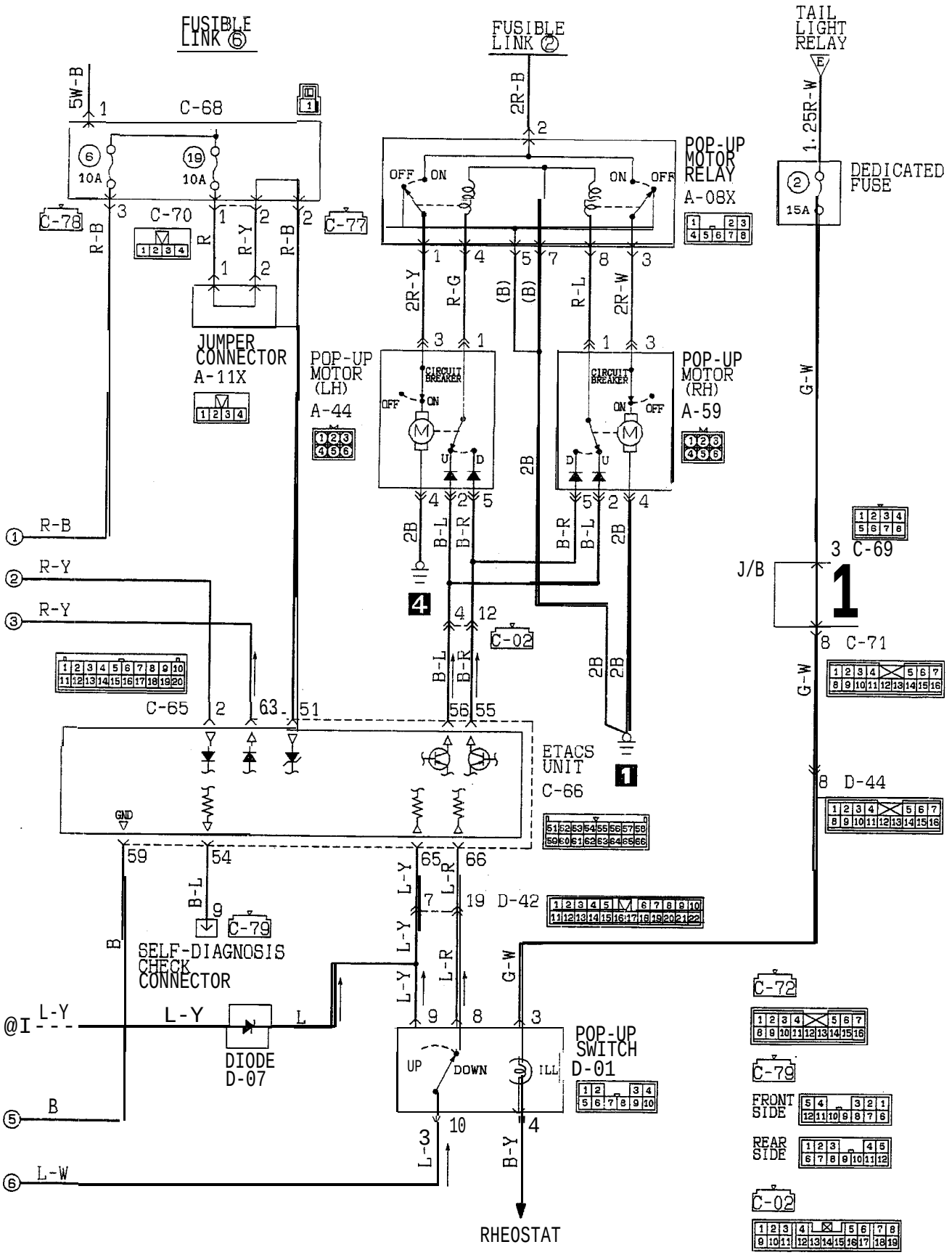
(X35-AC-R0801-NM

TSB Revision



KX35-AC-R0801A-NW

TSB Revision


FUSIBLE LINK ⑥
FUSIBLE LINK ②
TAIL LIGHT RELAY
5W-B
C-68
10A
10A
C-78
C-70
C-77
R-B
R
R-Y
JUMPER CONNECTOR A-11X
2R-B
POP-UP MOTOR RELAY A-08X
OFF ON
ON OFF
1.25R-W
DEDICATED FUSE
15A
2R-Y
R-G
(B)
(B)
R-L
2R-W
POP-UP MOTOR (LH) A-44
POP-UP MOTOR (RH) A-59
CIRCUIT BREAKER
G-W
2B
B-L
B-R
C-02
C-69
J/B
1
C-71
R-B
R-Y
R-Y
C-65
63
51
56
55
ETACS UNIT C-66
GND
D-44
59
54
65
66
B-L
L-Y
L-R
7
19
D-42
9
C-79
B
SELF-DIAGNOSIS CHECK CONNECTOR
@I
L-Y
L-Y
L
DIODE D-07
9
8
3
POP-UP SWITCH D-01
UP
DOWN
ILL
C-72
C-79
FRONT SIDE
REAR SIDE
B
L-W
10
4
3
L-3
B-Y
RHEOSTAT
C-02

OPERATION

<Headlights ON operation>

- On vehicles without a theft alarm system, when the lighting switch is placed in the HEAD position with the ignition switch in the ACC or ON position, current flows through the multi-purpose fuse ⑩ to the coil of headlight relay, the lighting switch and ground, and causes the contacts of the headlight relay to close, raising the headlights.
  On vehicles with a theft alarm system, when the lighting switch is placed in the HEAD position, current flows through the coil of the headlight relay to the ETACS control unit, the lighting switch and ground, and causes the contacts of the headlight relay to close, raising the headlights.
- When the dimmer switch is placed in the LO position, the headlight low-beams go on. When the switch is placed in the HI position, the headlight high-beams go on.

<Pop-up operation – Operation by lighting switch>

- When the lighting switch is placed in the HEAD position, current flows through multi-purpose fuse ⑥ to the lighting switch, diode and ETACS control unit. Then the UP timer circuit in the ETACS control unit is operated, and current flows from the ETACS control unit to the U contact of the pop-up motor U/D (UP/DOWN) switch, the coil of the pop-up motor relay and ground, causing the contacts of the pop-up motor relay to close.
  When the contacts of the pop-up motor relay close, current flows through the contacts of the pop-up motor relay to the pop-up motor and ground, causing the pop-up motor to rotate, which brings the headlights to the UP position.
  The pop-up motor rotates until the automatic UP stop position is reached, then the contacts of the interlocked U/D (UP/DOWN) switch change from the U to D contacts. As a result, the contacts of the pop-up motor relay open to cut off the current supplied to the pop-up motor. Then the pop-up motor ceases to rotate, holding the headlights in the UP position.
- When the lighting switch is placed in the TAIL or OFF position, current flows through the multi-purpose fuse ⑥ to the lighting switch, the diode and the ETACS control unit. Then the DOWN timer circuit in the ETACS control unit is operated and current flows from the ETACS control unit to the DOWN contacts of the pop-up motor U/D (UP/DOWN) switch, the coil of the pop-up motor relay and ground, causing the contacts of the pop-up motor relay to close.
  When the contacts of the pop-up motor relay close, current flows through the contacts of the pop-up motor relay to the pop-up motor and ground, causing the pop-up motor to rotate, which brings the headlights to the DOWN position.
  The pop-up motor rotates until the automatic DOWN stop position is reached, then the contacts of the interlocked U/D (UP/DOWN) switch change from the D to U contacts. As a result, the contacts of the pop-up motor relay open to cut off current supply to the pop-up motor. Then the pop-up motor ceases to rotate, holding the headlights in the DOWN position.

<Pop-up operation – Operation by pop-up switch>

- When the pop-up switch is placed in the UP position, current flows through multi-purpose fuse ⑥ to the lighting switch, the pop-up switch and the ETACS control unit, which brings the headlights to the UP position and holds them in the UP position just like when they are operated by the lighting switch.
- When the pop-up switch is placed in the DOWN position, current flows through the multi-purpose fuse ⑥ to the lighting switch, the pop-up switch and the ETACS control unit, which brings the headlights to the DOWN position and holds them in the DOWN position just like when they are operated by the lighting switch.

<High-beam indicator light>

- When the headlights are ON and in the high-beam position, or when the passing switch is placed in the ON position, current flows through the contacts of the headlight relay to the dedicated fuse ⑤, the high-beam indicator light and ground, causing the high-beam indicator light to go ON, indicating that the headlight high-beam are ON.

Headlight Operating Conditions

Switch position	Headlight operation (Pop-up position)	Headlight
Pop-up switch UP	Lighting switch HEAD	ON (UP)*1, OFF (UP)*2
	Lighting switch TAIL or OFF	OFF (UP)*1, OFF (UP)*2
	Passing switch ON	ON (UP)*1, OFF (UP)*2
	Passing switch OFF	OFF (UP)*1, OFF (UP)*2
Pop-up switch DOWN	Lighting switch HEAD	ON (UP)*1, OFF (UP)*2
	Lighting switch TAIL or OFF	OFF (DOWN)*1, OFF (DOWN)*2
	Passing switch ON	ON (DOWN)*1, OFF (DOWN)*2
	Passing switch OFF	OFF (DOWN)*1, OFF (DOWN)*2

NOTE
(1) Mark *1 denotes the operation of the headlights with the ignition switch in the ACC or ON position on vehicles without a theft alarm system; and operation of the headlights, regardless of ignition switch position, on vehicles with a theft alarm system.
(2) Mark *2 denotes the operation of the headlights with the ignition switch in the OFF position on vehicles without a theft alarm system.
(3) (UP) indicates that the headlights are in the UP position, whereas (DOWN) indicates that the headlights are in the DOWN position.

TROUBLESHOOTING HINTS

1. Headlights don't come on.
   (1) But the tail lights do illuminate.
   - Check the headlight relay.
   - Check the multi-purpose fuse ⑩. (Vehicles without Theft-Alarm System)

   (2) The tail lights also don't illuminate.
   - Check the lighting switch.
   - Check the fusible link ③.
2. The low beam at both sides doesn't illuminate.
   - Check the "LO" contacts of the dimmer switch.
3. The upper beam at both sides doesn't illuminate.
   (1) The passing signal functions OK.
   - Check the "HI" contacts of the dimmer switch.

   (2) The passing signal doesn't function.
   - Check the dimmer switch.
4. One headlight doesn't illuminate.
   - Check the bulb.
5. Can't switch from low to high beam or vice-versa.
   - Check the dimmer switch.
6. The high beam indicator light doesn't illuminate.
   (1) The high beam of the headlights is normal.
   - Check dedicated fuse No. ⑤.
   - Check the bulb.
7. Headlights do not rise.
   (1) They rise only when the lighting switch is operated.
   - Check the pop-up switch.

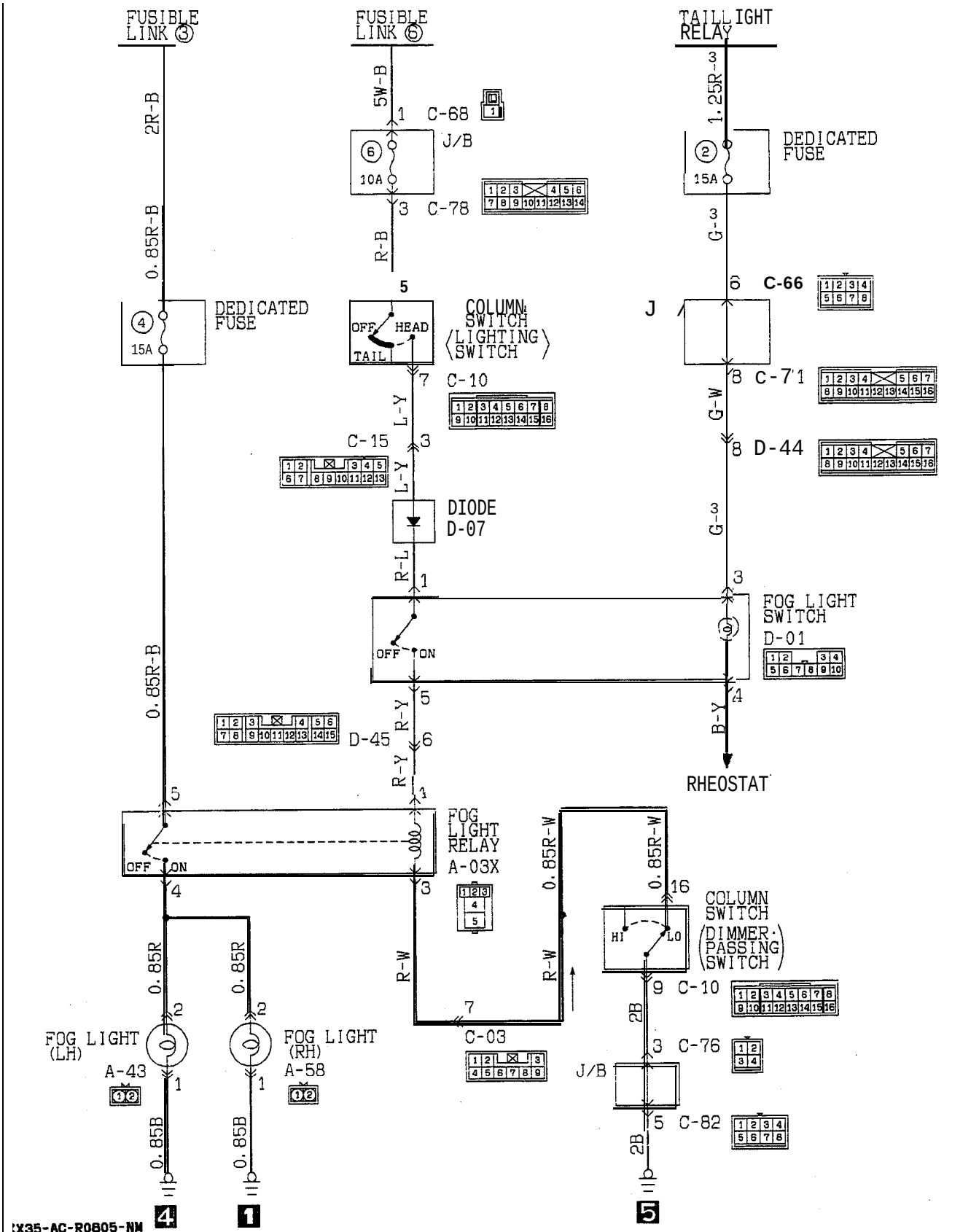
   (2) They rise only when the pop-up switch is operated.
   - Check the lighting switch.
8. Headlights do not retract.
   - Check the pop-up switch.
   - Check the ETACS control unit.
9. One headlight does not move.
   - Check the pop-up motor relay.
   - Check the pop-up motor.

NOTE
- For information concerning the headlight relay and pop-up motor relay, refer to P.54-68, 69, and for the theft-alarm system, refer to P.54-124.
- For information concerning the ETACS control unit, refer to P.54-53.

FOG LIGHT CIRCUIT

M54IHIB

CIRCUIT DIAGRAM



OPERATION

- When the fog light switch is placed in the ON position with the lighting switch in the HEAD position and the dimmer switch in the LO position, current flows through the multi-purpose fuse ⑥ to the lighting switch, the diode fog light switch, the coil of the fog light relay, the dimmer switch and ground, causing the contacts of the fog light relay to close.
  When the contacts of the fog light relay close, current flows through the dedicated fuse ④ to the contacts of the fog light relay, the fog lights and ground, causing the fog lights to come on.
- When the dimmer switch is placed in the HI position or the lighting switch is placed in the TAIL or OFF position while the fog lights are ON, current supply to the fog light relay is cut off. As a result, the contacts of the fog light relay open, and the fog lights go out.

Fog Liglhts Operation Conditions

Fog light switch	Lighting switch	Dimmer switch	Fog lights
ON position	OFF position or TAIL position	LO position	OFF
		HI position	OFF
	HEAD position	LO position	ON
		HI position	OFF

TROUBLESHOOTING HINTS

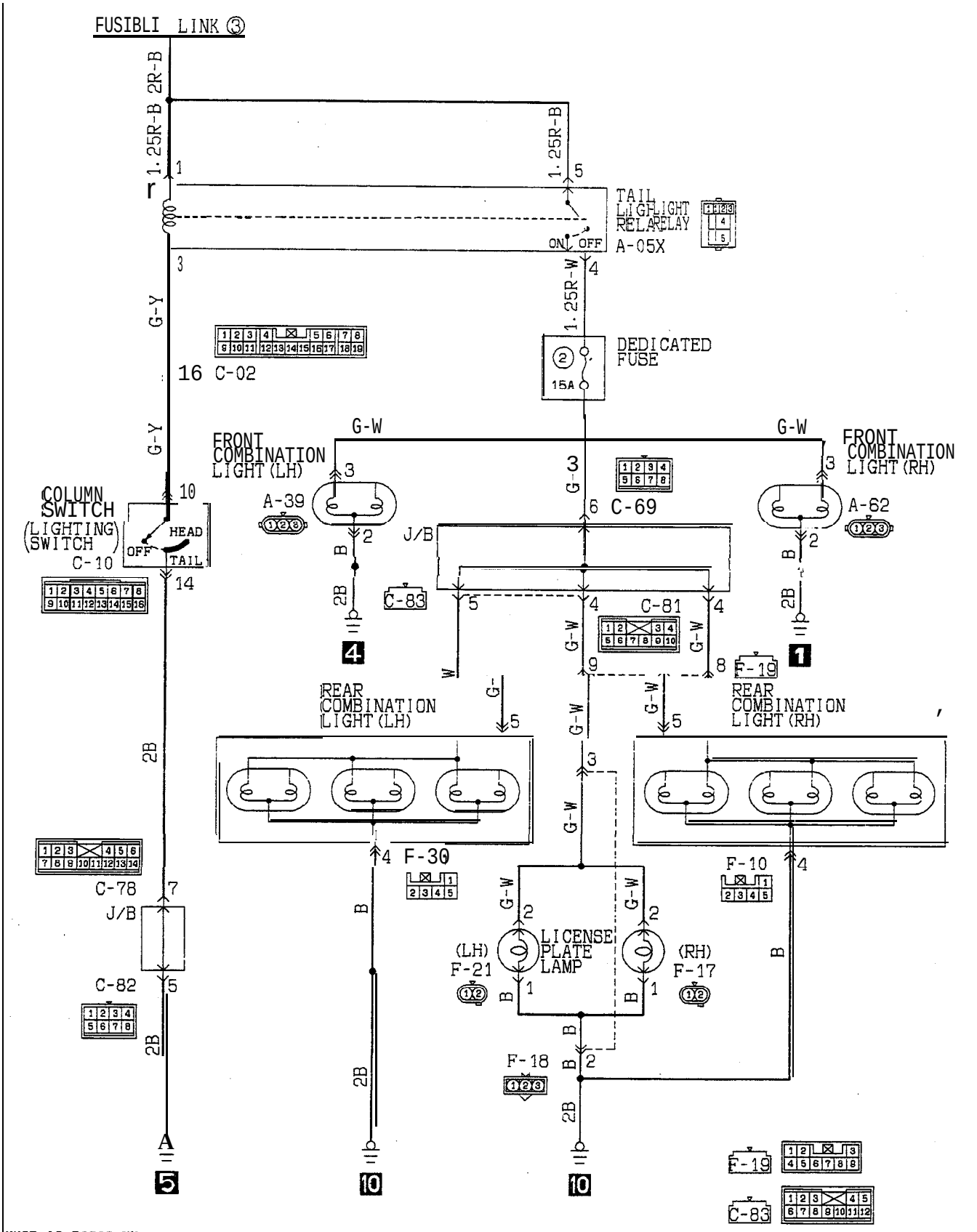
1. The right or left fog lights only go on.
   - Check the bulb.
2. Fog lights do not go on when the fog light switch is set at ON.
   - Check the dedicated fuse ④.
   - Check the fog light relay.
   - Check the fog light switch.

NOTE
For inforrnation concerning the fog light relay, refer to P.54-68.

TAIL LIGHT, POSITION LIGHT AND LICENSE PLATE LIGHT CIRCUIT

M541HCL

CIRCUIT DIAGRAM



TSB Revision

OPERATION

- When the lighting switch is placed in the ON or HEAD position, current flows through the coil of the tail light relay to the lighting switch and ground, causing the contacts of the tail light relay to close.
  Then current flows through the contacts of the tail light relay to the dedicated fuse (2), the individual lights and ground, causing the tail lights, position lights and license plate lights to go ON.

TROUBLESHOOTING HINTS

1. All rights don't illuminate.
   (1) The headlights don't illuminate, either.
   - Check the fusible link (3).

   (2) The headlights illuminate.
   - Check the tail light relay.
   - Check the dedicated fuse (2).

NOTE
For information concerning the tail light relay, refer to P.54-68.

DOME LIGHT, FOOT LIGHT AND IGNITION KEY CYLINDER ILLUMINATION LIGHT CIRCUIT

M54IHEL

OPERATION

<Dome light>

- Placing the dome light switch in the ON position causes the dome light to come on at all times.
- Opening any one of the doors with the dome light switch in the DOOR position causes the dome light to come on.
- When all doors are closed, the ETACS control unit is activated causing the dome light to decrease its intensity of light gradually and to go out in about 6 seconds.

NOTE
If the ignition switch is in the ON position, the dome light does not decrease its light intensity, rather it goes out at once.

<Foot lights and ignition key illumination light>

- When either driver or co-driver door is opened, the foot lights and ignition key illumination light come on.
- When all doors are closed, the ETACS control unit is activated causing the foot lights and ignition key illumination light to decrease its intensity of light gradually and to go out in about 6 seconds.

NOTE
If the ignition switch is in the ON position, the foot lights and ignition key illumination light does not decrease its light intensity, rather it goes out at once.

TROUBLESHOOTING HINTS

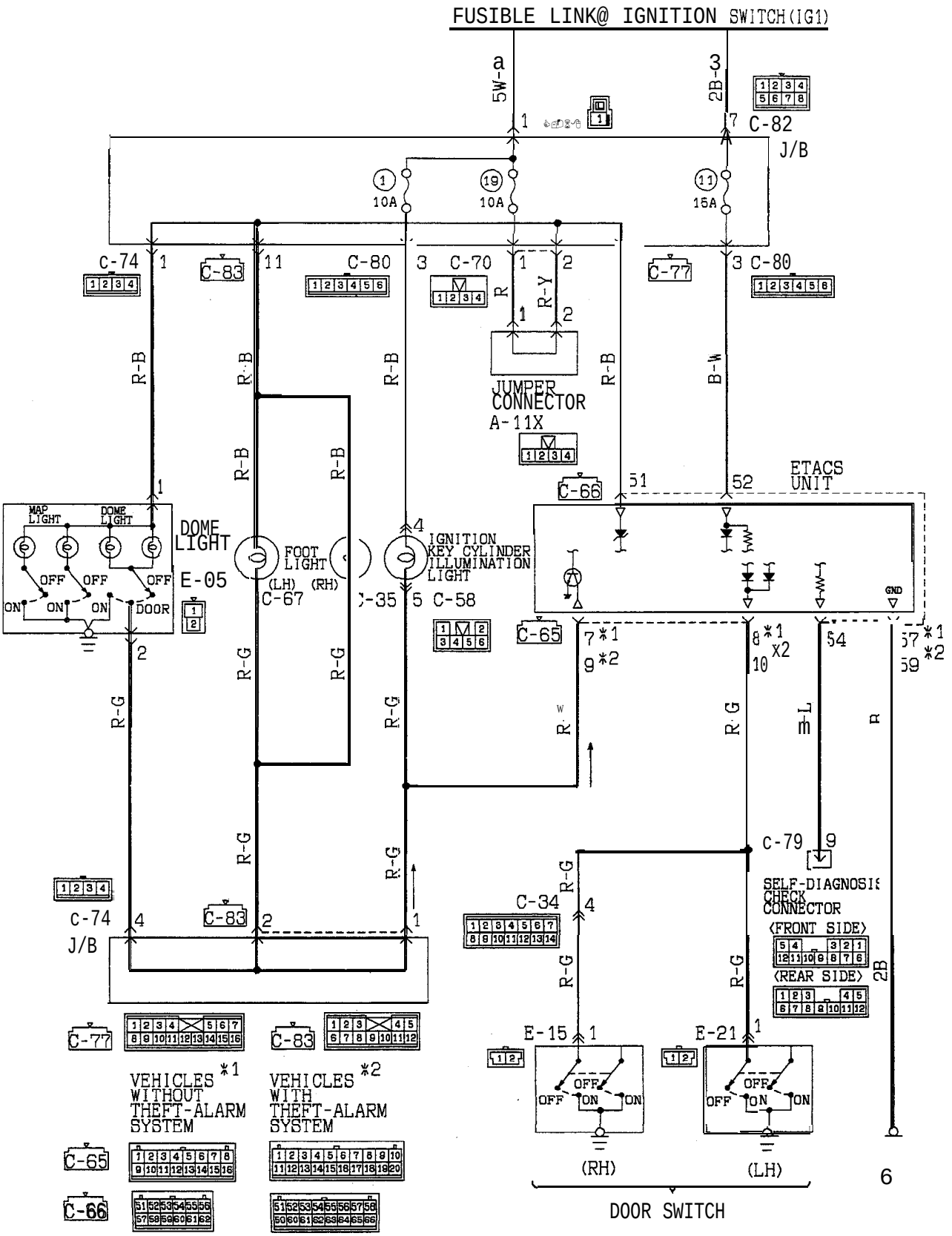
1. Dome light does not come on when a door is opened with the dome light switch in the DOOR' position.
   (1) The foot lights and ignition key cylinder illumination light don't illuminate, either.
   - Check the door switch.
   - Check the ETACS control unit.

   (2) The foot lights and ignition key cylinder illumination light illuminate.
   - Check the dome light switch.
   - Check the bulb.

2. Dome light, foot lights and ignition key illumination light go out at once when doors are closed.
   - Check the ETACS control unit.

NOTE
For information concerning the ETACS control unit, refer to P.54-58.

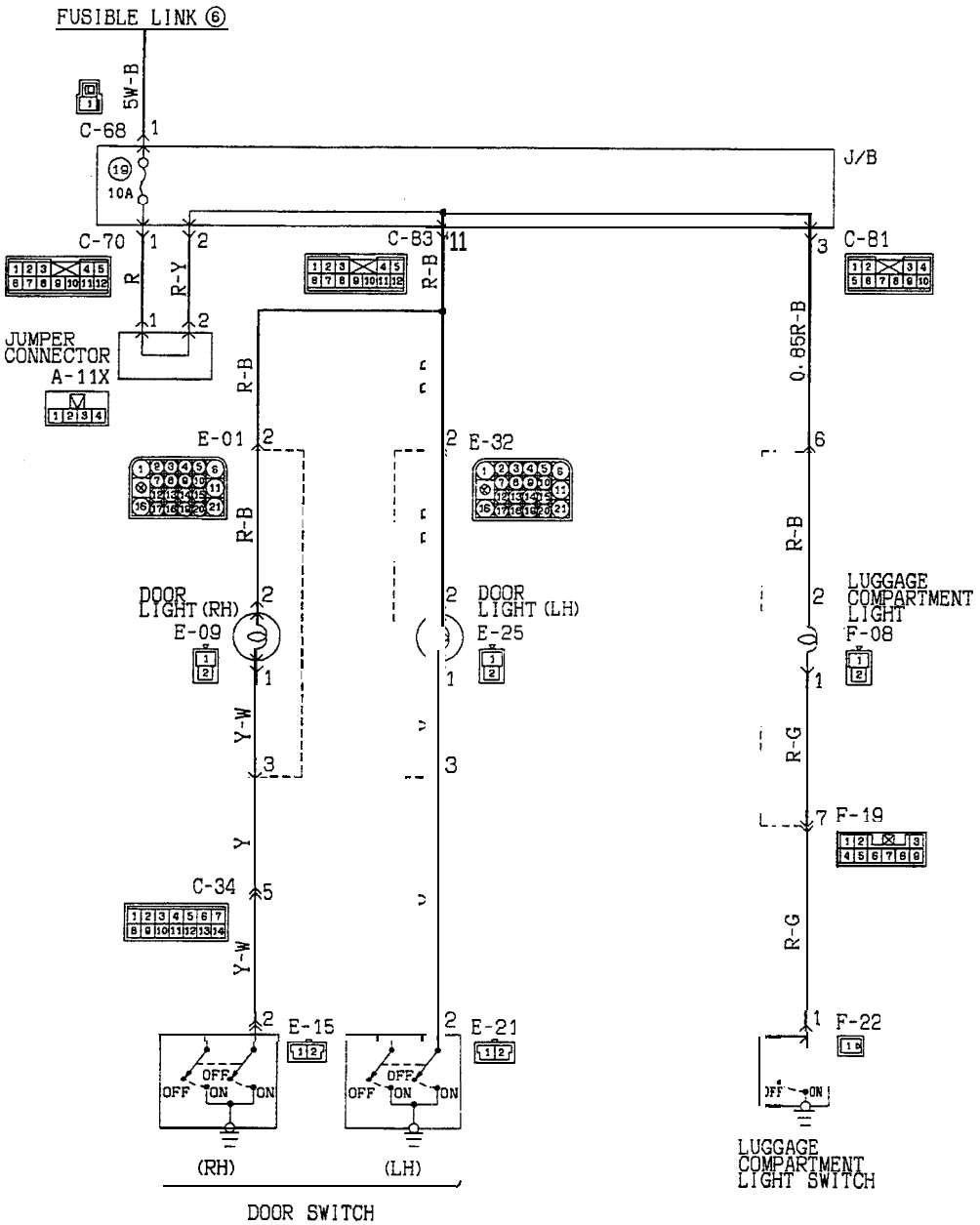
CIRCUIT DIAGRAM



DOOR LIGHT AND LUGGAGE COMPARTMENT LIGHT CIRCUIT

M541HMA

CIRCUIT DIAGRAM



X35-AC-R0809-NM

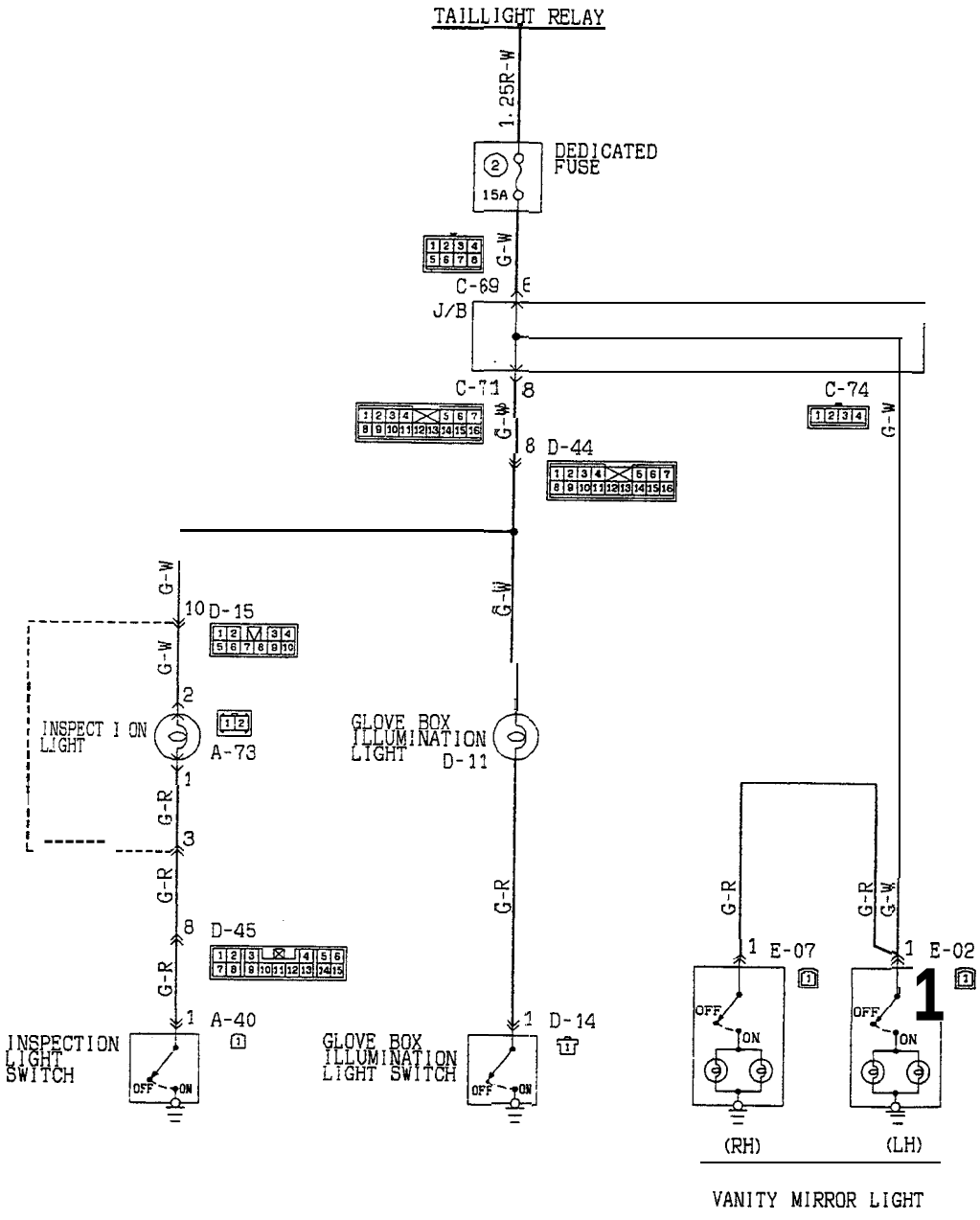
OPERATION

- Battery voltage is always applied (via sub-fusible link No. ⑥ and multipurpose fuse No. ⑲) to the luggage compartment light and door light.
- When the door is opened, the door switch is switched ON and the door light illuminates.
- When the liftgate is opened, the luggage compartment light switch is switched ON and the luggage compartment light illuminates.

TSB Revision

GLOVE BOX LIGHT, VANITY MIRROR LIGHT AND INSPECTION LIGHT CIRCUIT M541HMB

CIRCUIT DIAGRAM



KX35-AC-R0607-NM

OPERATION

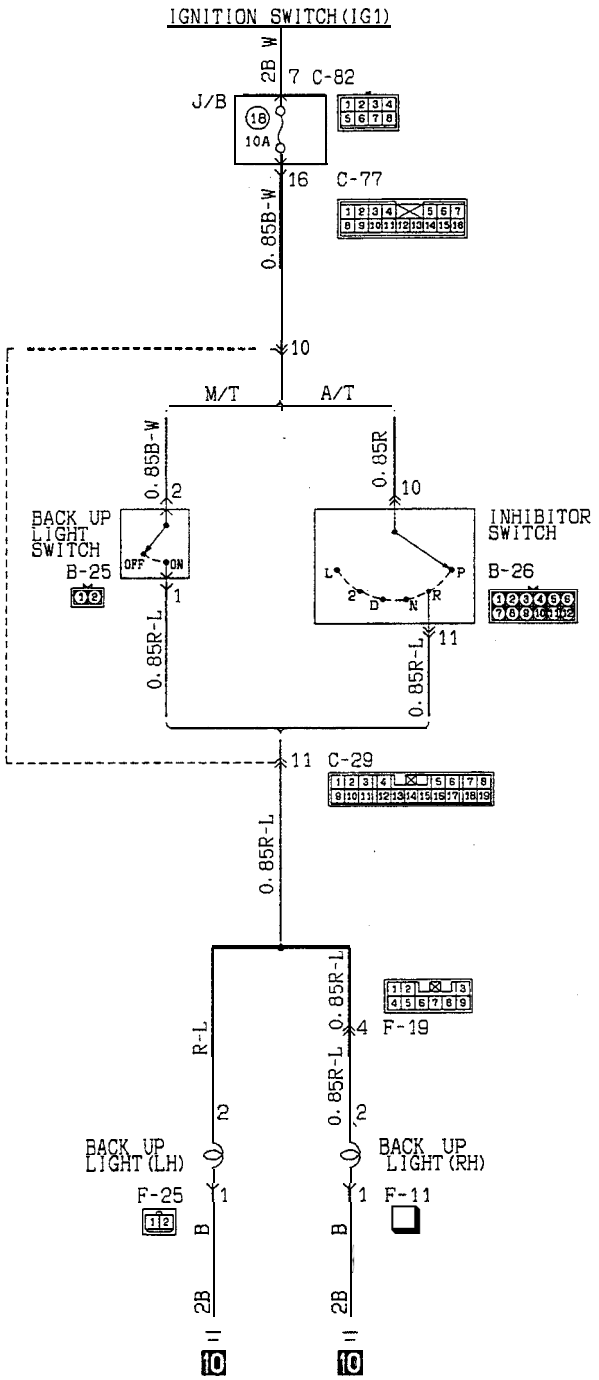
- When the lighting switch is placed in the TAIL or HEAD position, and the contacts of the tail light relay close, battery voltage is applied via the dedicated fuse ② to the glove box light, the vanity mirror light and the inspection light.
- When the glove box is opened, the glove box illumination light switch is switched ON and the glove box illumination light illuminates.
- When the vanity mirror lid is opened, the vanity mirror light switch is switched ON and the vanity mirror light illuminates.
- When the engine hood is opened, the inspection light switch is switched ON and the inspection light illuminates.

TSB Revision

BACK-UP LIGHT CIRCUIT

M54IHDI

CIRCUIT DIAGRAM



(X35-AC-R0906-NM

OPERATION

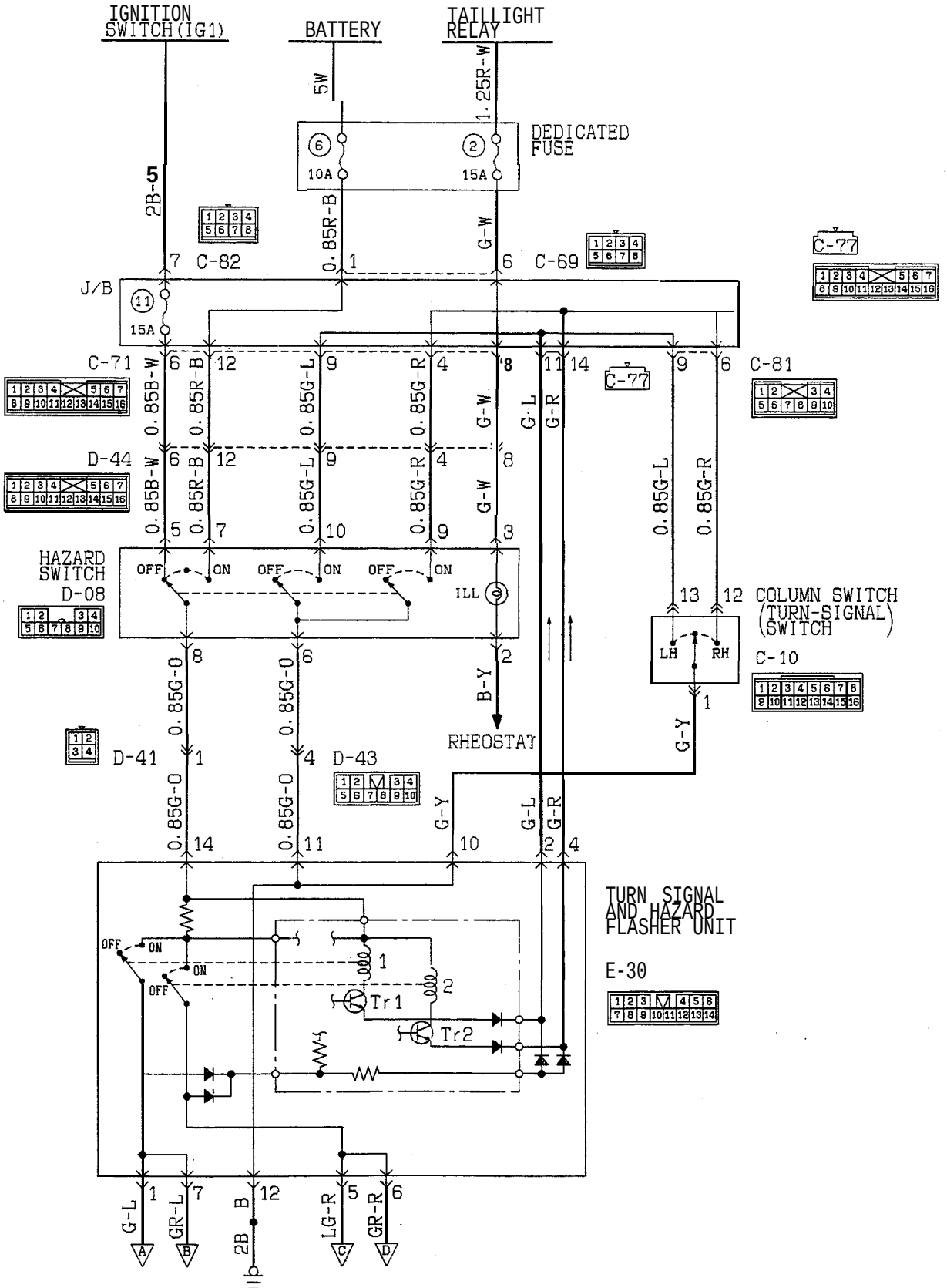
- When, with the ignition switch at the "ON" position, the shift lever (or the selector lever) is moved to the "R" position, the backup light switch (M/T) is switched ON (or the inhibitor switch (A/T) is switched to the "R" position), and the backup light illuminates.

TSB Revision

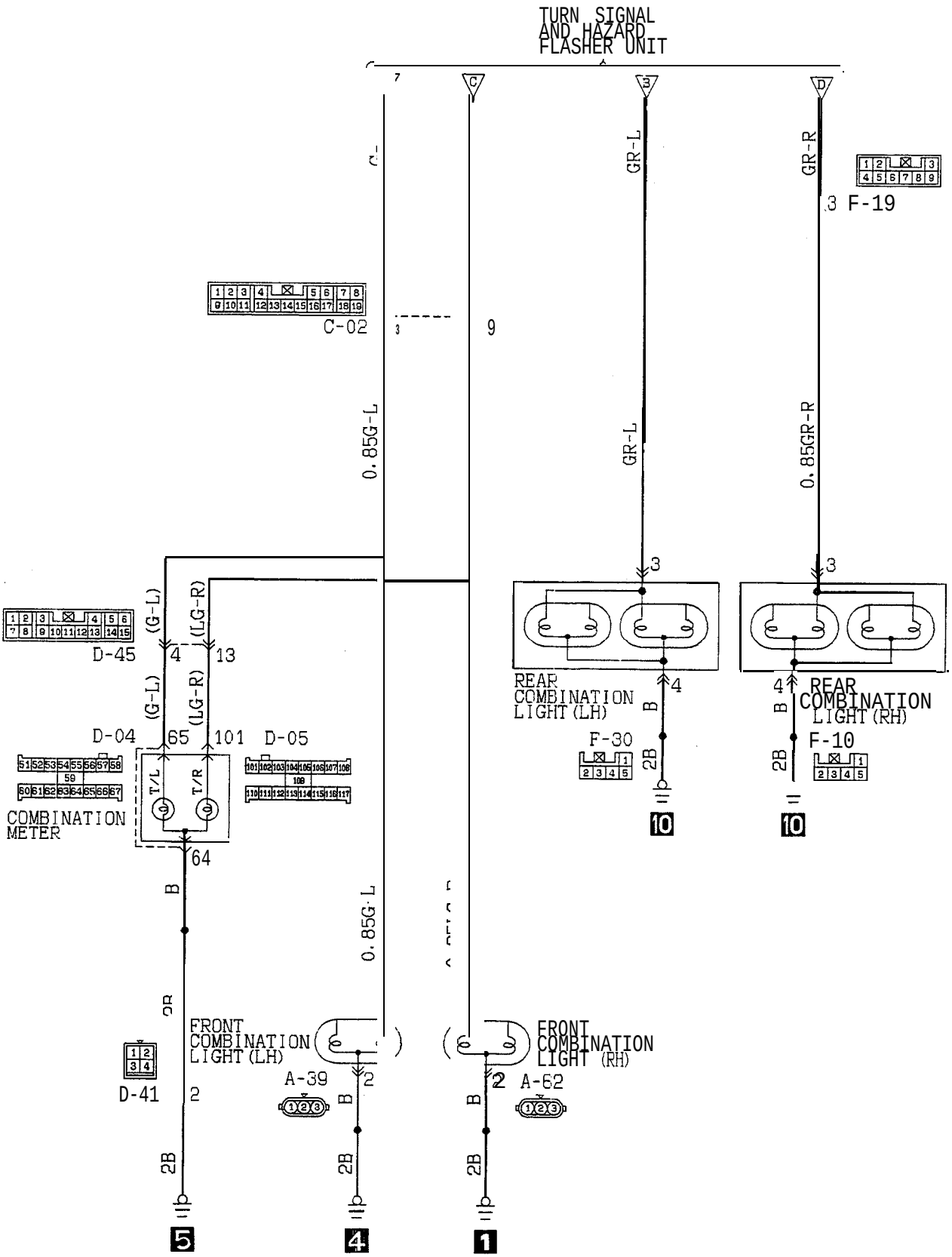
TURN-SIGNAL LIGHT AND HAZARD LIGHT CIRCUIT

M54IHGK

CIRCUIT DIAGRAM



X35-AC-R0902-NM


TURN SIGNAL AND HAZARD FLASHER UNIT
C
B
D
GR-L
GR-R
F-19
C-02
9
0.85G-L
0.85GR-R
(G-L)
(LG-R)
D-45
4
13
D-04
65
101
D-05
T/L
T/R
COMBINATION METER
64
B
2B
FRONT COMBINATION LIGHT (LH)
FRONT COMBINATION LIGHT (RH)
D-41
A-39
A-62
2
REAR COMBINATION LIGHT (LH)
REAR COMBINATION LIGHT (RH)
F-30
F-10
10
5
4
1

OPERATION

1. When operation is normal
   - When the ignition switch is switched to the ON position, battery voltage is applied (via the multi-purpose fuse @and hazard switch) to the turn-signal and hazard flasher unit.
   - When the turn-signal switch is switched to the LH position, Trl (within the flasher unit) is switched ON and OFF repeatedly. Then the contacts of the relay 1 (also within the flasher unit) repeatedly switch from ON to OFF, causing the turn-signal lights and turn-signal indicator light LH to flash.
   - When the turn-signal switch is switched to the RH position, Tr2 (within the flasher unit) is switched ON and OFF repeatedly. Then the contacts of relay 2 (also within the flasher unit) repeatedly switch from ON to OFF, causing the turn-signal lights and turn-signal indicator light RH to flash.
2. If one of the bulbs is burned out
   - If the LH (or RH) turn-signal light bulb is burned-out, the resistance of the turn-signal circuit as a whole increases, resulting in shorter ON and OFF intervals of the LH Trl (or RH Tr2) and a higher flashing rate of the LH lights (or RH lights).

<Hazard-warning lights>

- When the hazard-warning switch is switched to the "ON" position, the relay contact of the turn signal and hazard flasher unit is switched ON and OFF repeatedly, in the same manner as for the operation of the turn-signal lights, and the left and right turn-signal lights and turn-signal indicator lights simultaneously flash repeatedly.

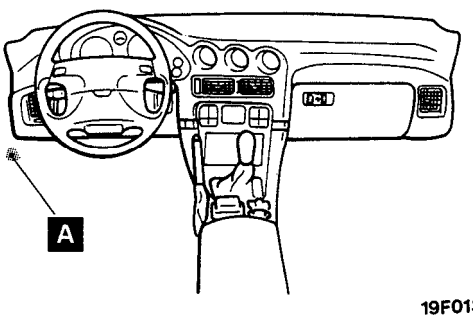
NOTE
The number of flashes of the hazard-warning lights does not change if there is damaged or disconnected wiring of one light.

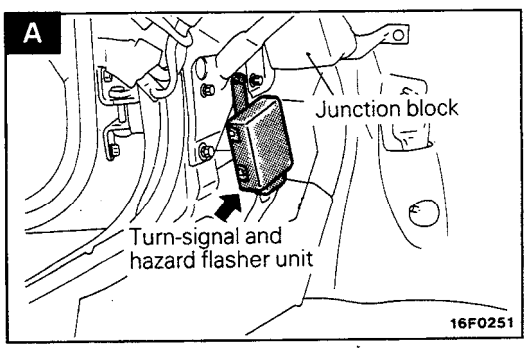
TROUBLESHOOTING HINTS

1. The turn-signal lights and hazard-warning lights do not operate at all.
   - Check the hazard switch contact (power supply side).
   - Check the turn-signal and hazard flasher unit.
2. All turn-signal lights at the left (or right) side do not function.
   (1) The hazard-warning lights function normally.
   - Check the hazard switch contact (turn-signal side).
   - Check the turn-signal switch.
3. The number of flashes of the turn-signal lights is excessive.
   - Check the bulbs.
4. The hazard-warning lights do not function.
   (1) The turn-signal lights function normally.
   - Check the hazard switch contact (hazard-warning light side).

COMPONENTS LOCATION

Name	Symbol
Turn-signal and hazard flasher unit	A



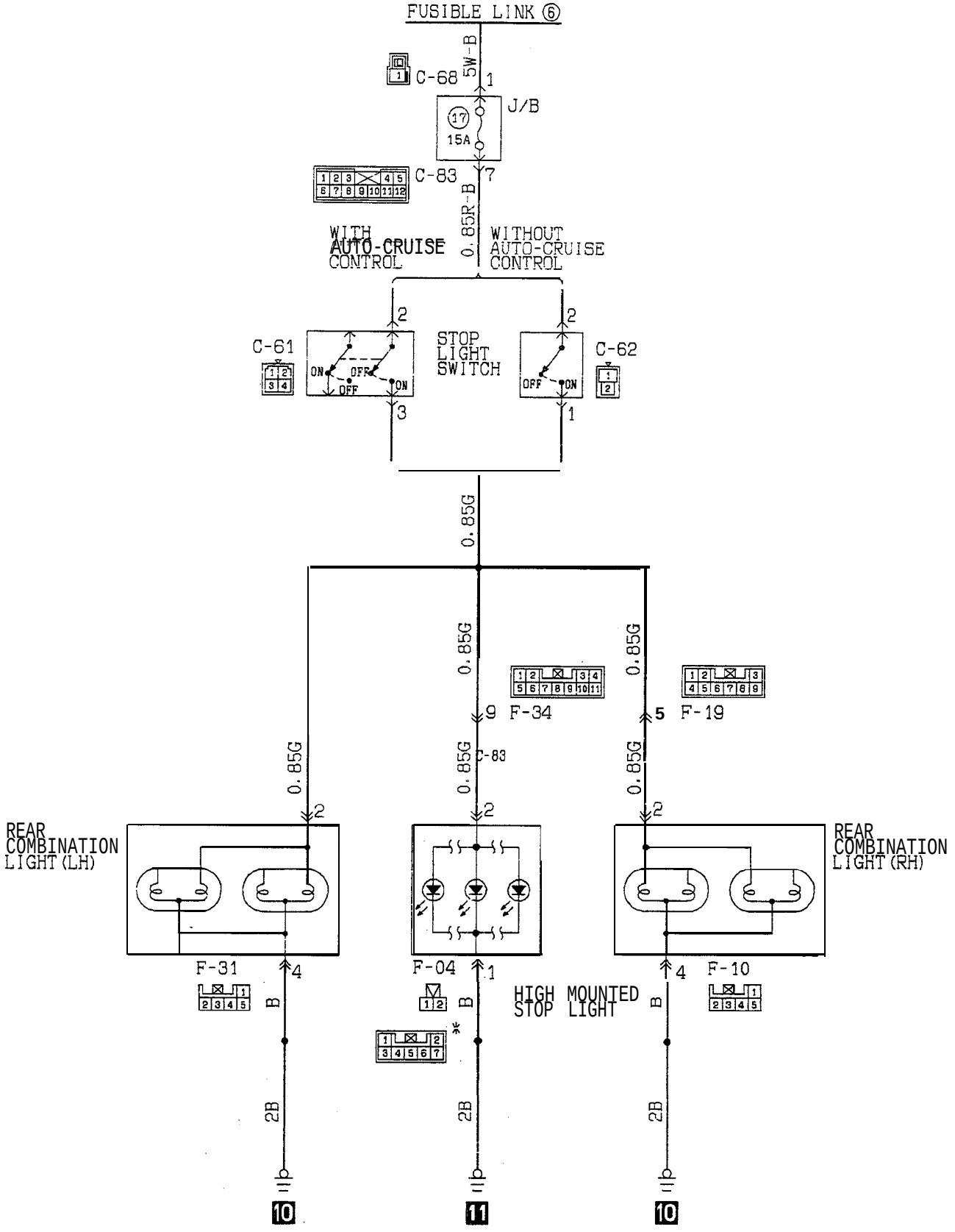


TSB Revision

STOP LIGHT CIRCUIT

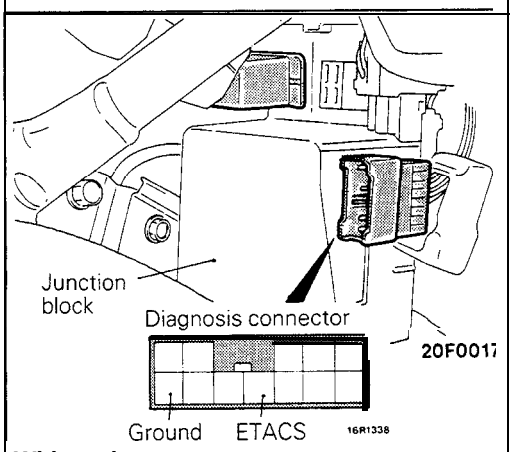
M54IHHG

CIRCUIT' DIAGRAM

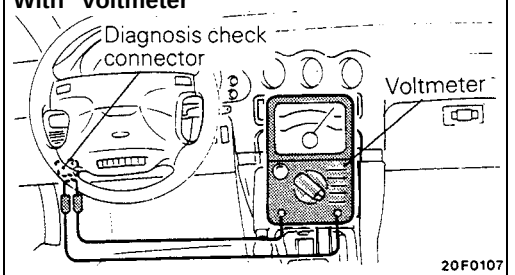


X35-AC-R0904-NM

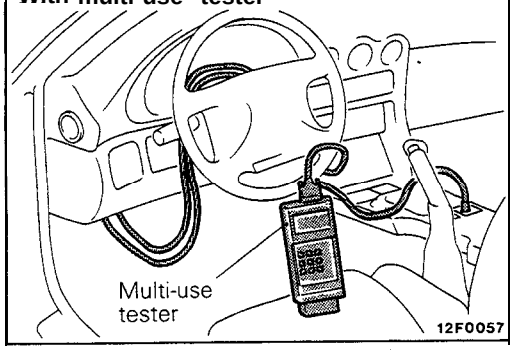
TSB Revision



With voltmeter



With multi-use tester



HEADLIGHT UP/DOWN SYSTEM M541HAC

TROUBLESHOOTING GUIDE

Input Check

Using the multi-use tester or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

(1) Connect the multi-use tester to the diagnosis check connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

(2) Check if the buzzer of the multi-use tester sounds or the needle of the voltmeter moves when each switch noted below is operated.

If the buzzer sounds or the needle moves, the input signals are being input to the ETACS unit, so that switch can be considered to be functioning normally. If not, the switch or switch input circuit is faulty. Check the switch and the switch input circuit.

. Pop-up switch

TROUBLESHOOTING QUICK-REFERENCE TABLE

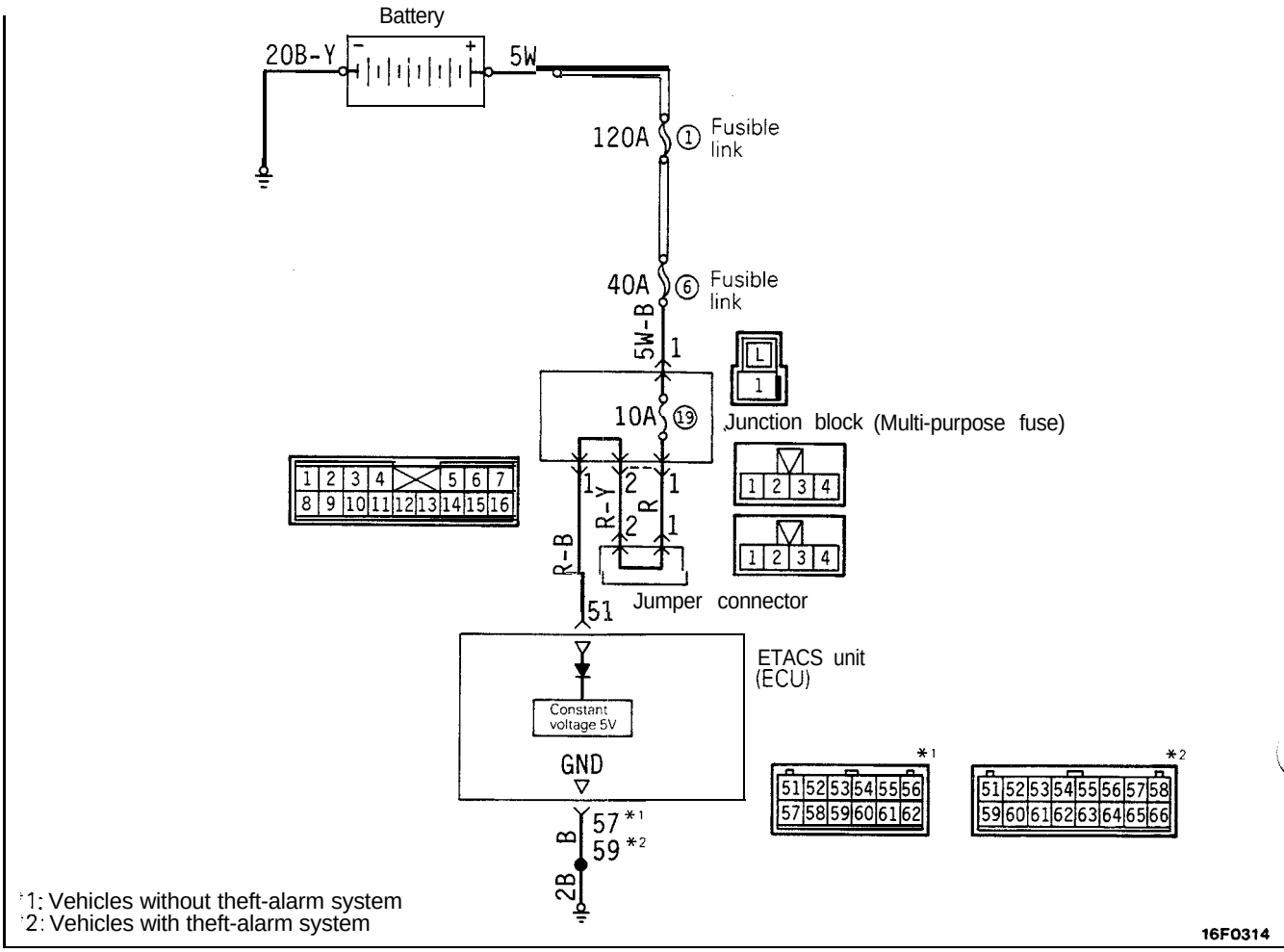
Problem	Probable cause	Check method	Remedy
Headlight do not operate when pop-up switch or lighting switch is operated.	Pop-up switch and lighting switch input circuit broken.	If input check result is not satisfactory, perform off-vehicle circuit check No. 2 (P.54-55).	Correct harness or replace pop-up switch. lighting switch.
	Pop-up motor relay and pop-up motor activation circuit broken.	Perform off-vehicle circuit check No. 3 (P.54-56).	Correct harness or replace pop-up motor relay, pop-up motor.
	Faulty ECU.	–	Replace ECU.
Headlights can be operated by lighting switch, but not by pop-up switch.	Pop-up switch and lighting switch input circuit broken.	If input check result is not satisfactory; perform off-vehicle circuit check No. 2 (P.54-55).	Correct harness or replace pop-up switch.
Headlights can be operated by pop-up switch, but not by lighting switch.	Pop-up switch and lighting switch input circuit broken.	Perform off-vehicle circuit check No. 2 (P.54-55).	Correct harness or replace lighting switch.

NOTE
"ECU" (electronic control unit) indicates the ETACS unit.

TSB Revision

CHECKING INDIVIDUAL PART AND CIRCUIT

1. ETACS Power-supply and Ground Circuit



*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

16F0314

Description of operation

A stabilizer 5V power is supplied from No. 51 terminal directly connected to the battery to ECU through the constant voltage circuit.
If the power circuit is not in normal condition, other ETACS systems do not operate either.

Electronic control unit terminal voltage (Disconnect the ECU connector and check at the wiring harness side.)

ECU terminal No.	Signal	Condition	Terminal voltage
51	Electronic control unit power supply	At all times	System voltage

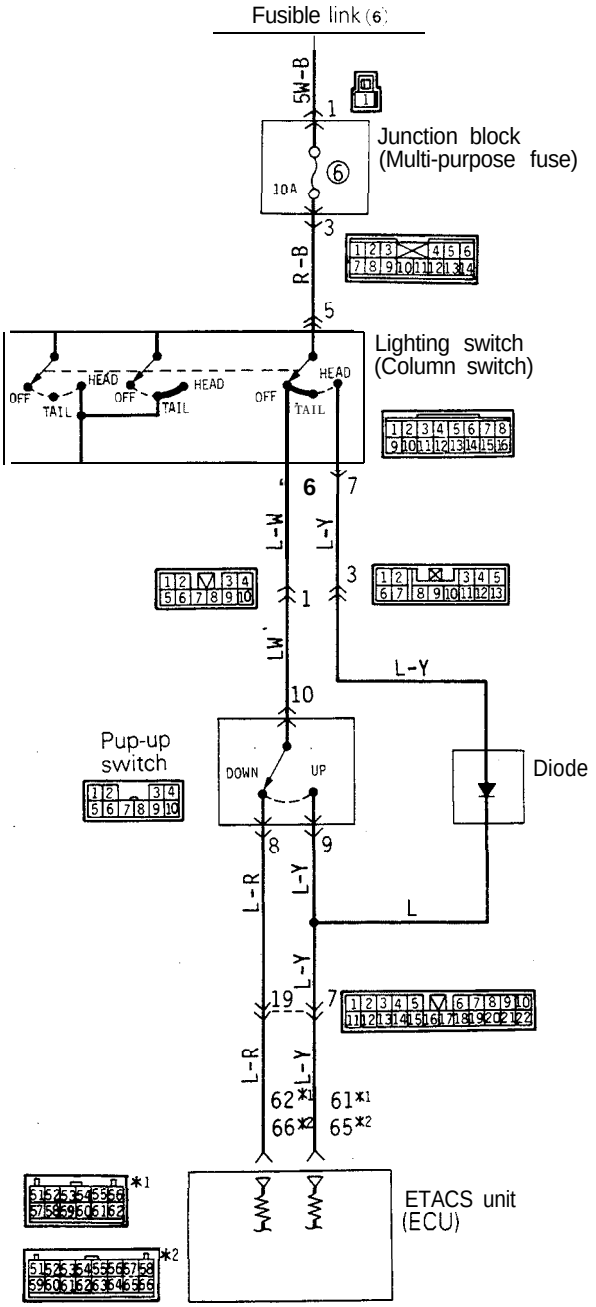
Checking the ground circuit (Disconnect the connector and check the wiring harness side.)

Terminal No.	Connected to/measured part	Measurement	Tester connection	Check conditions	Standard
57*1 59*2	Electronic control unit ground	Resistance	57*1-ground 59*2-ground	At all times	Continuity

NOTE
*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

TSB Revision

2. Pop-up Switch and Lighting Switch Input Circuit



*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

16F0348

Description of operation

When the pop-up switch is placed in the “UP” position or the lighting switch is placed in the “HEAD” position, current flow to No. 61 terminal (on vehicles without theft-alarm system) or No. 65 terminal (on vehicles with theft-alarm system) of ECU to operate the UP timer circuit for 5 seconds. When the pop-up switch is placed in the “DOWN” position or the lighting switch is placed in the “OFF” or “TAIL” position, current flows to No. 62 terminal (on vehicles without theft-alarm system) or No. 66 terminal (on vehicles with theft-alarm system) to operate the down timer circuit for 5 seconds.

TSB Revision

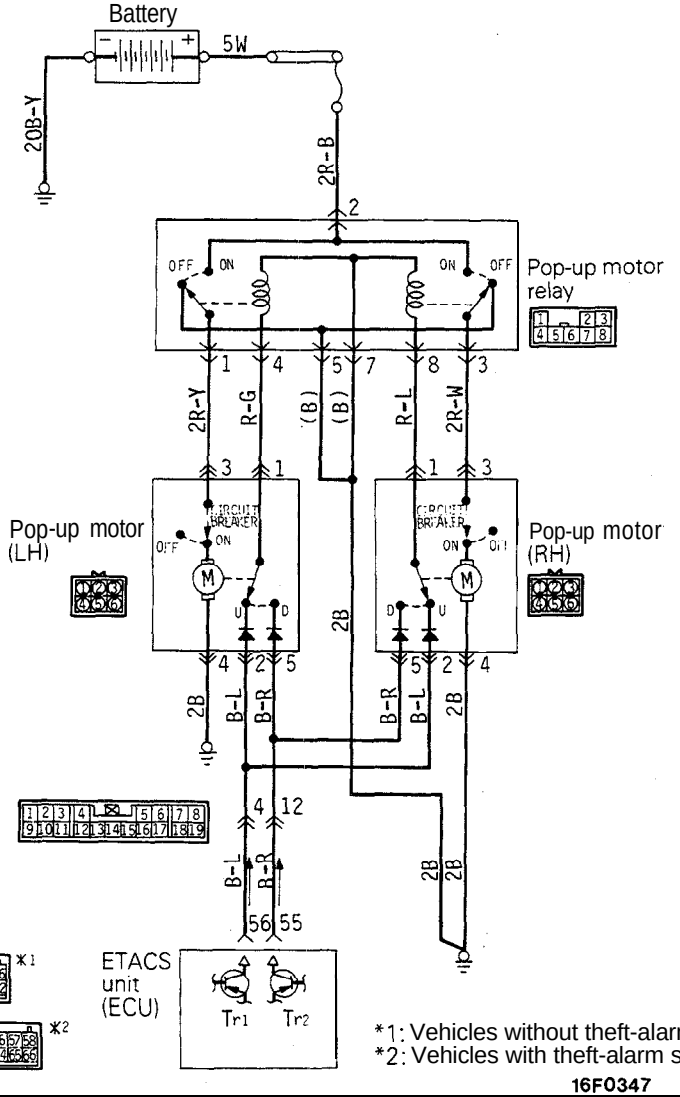
Electronic control unit terminal voltage (Disconnect the ECU connector and check at the wiring harness side.)

ECU terminal No.	Signal	Status	Standard
61*1 65*2	UP signal	Pop-up switch is in "UP" position or lighting switch is in "HEAD" position.	System voltage
		Pop-up switch is in "DOWN" position or lighting switch is in "OFF" or "TAIL" position.	0V
62*1 66*2	DOWN signal	Pop-up switch is in "DOWN" position or lighting switch is in "OFF" or "TAIL" position.	System voltage
		Pop-up switch is in "UP" position or lighting switch is in "HEAD" position.	ov

Checking individual part

Pop-up switch: Refer to P.54-70.
Lighting switch (Column switch): Refer to P.54-74.

3. Pop-up Motor Relay and Pop-up Motor Activation Circuit



*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

16F0347

TSB Revision

Description of operation

- Raising of Headlight

  When the pop-up switch is placed in the “UP” position or the lighting switch is placed in the “HEAD” position, transistor Tr of ECU is turned ON for 5 seconds to let current flow from the pop-up motor (coil side) to the ground through the U contacts of the U/D (UP/DOWN) switch for the pop-up motor, closing the contacts of the pop-up motor relay to raise the headlights. When the crank arm attached to the pop-up motor comes to the automatic up stop position, the contacts of the U/D (UP/DOWN) switch change from the U contacts to the D contacts. Therefore, the current flowing to the pop-up motor is interrupted, stopping the pop-up motor and leaving the headlight at the UP position.

- Lowering of Headlight

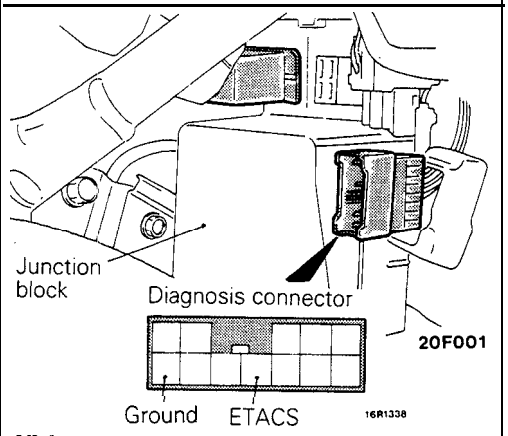
  When the pop-up switch is placed in the “DOWN” position or the lighting switch is placed in the “OFF” or “TAIL” position, transistor Tr of ECU is turned ON for 5 seconds to let current flow from the pop-up motor relay (coil side) to the ground through the D contacts of the U/D (UP/DOWN) switch for the pop-up motor. The pop-up motor relay (contact side) will be closed, lowering the headlight. When the crank arm attached to the pop-up motor comes to the automatic down stop position, the contacts of the U/D (UP/DOWN) switch change from the U contacts to the D contacts. Therefore, the current flowing to the pop-up motor is interrupted, stopping the pop-up motor and leaving the headlight at the DOWN position.

Checking the ground circuit (Disconnect the connector and check the wiring harness side.)

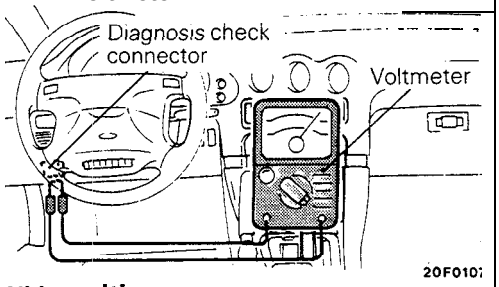
Terminal No.	Connected to/measured part	Measurement	Tester connection	Check conditions	Standard
55	Pop-up motor relay ground	Resistance	55-ground	Headlight in lowered position	No continuity
				Headlight in raised position	Continuity
56	Pop-up motor relay ground	Resistance	56-ground	Headlight in lowered position	Continuity
				Headlight in raised position	Not continuity

Checking individual part

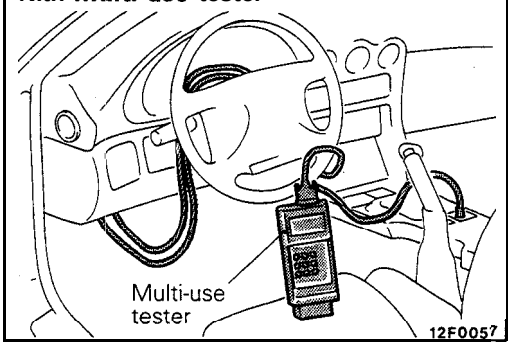
Pop-up motor relay: Refer to P.54-69.
Pop-up motor: Refer to P.54-65.



With voltmeter



With multi-use tester



LUMINOUS INTENSITY REDUCING LIGHT M541HEM

TROUBLESHOOTING GUIDE

Input Check

Using the multi-use tester or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

(1) Connect the multi-use tester to the diagnosis check connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

(2) Check if the buzzer of the multi-use tester sounds or the needle of the voltmeter moves when each switch noted below is operated.
If the buzzer sounds or the needle moves, the input signals are being input to the ETACS unit, so that switch can be considered to be functioning normally. If not, the switch or switch input circuit is faulty. Check the switch and the switch input circuit.

- Ignition switch
- Door switch

TROUBLESHOOTING QUICK-REFERENCE TABLE

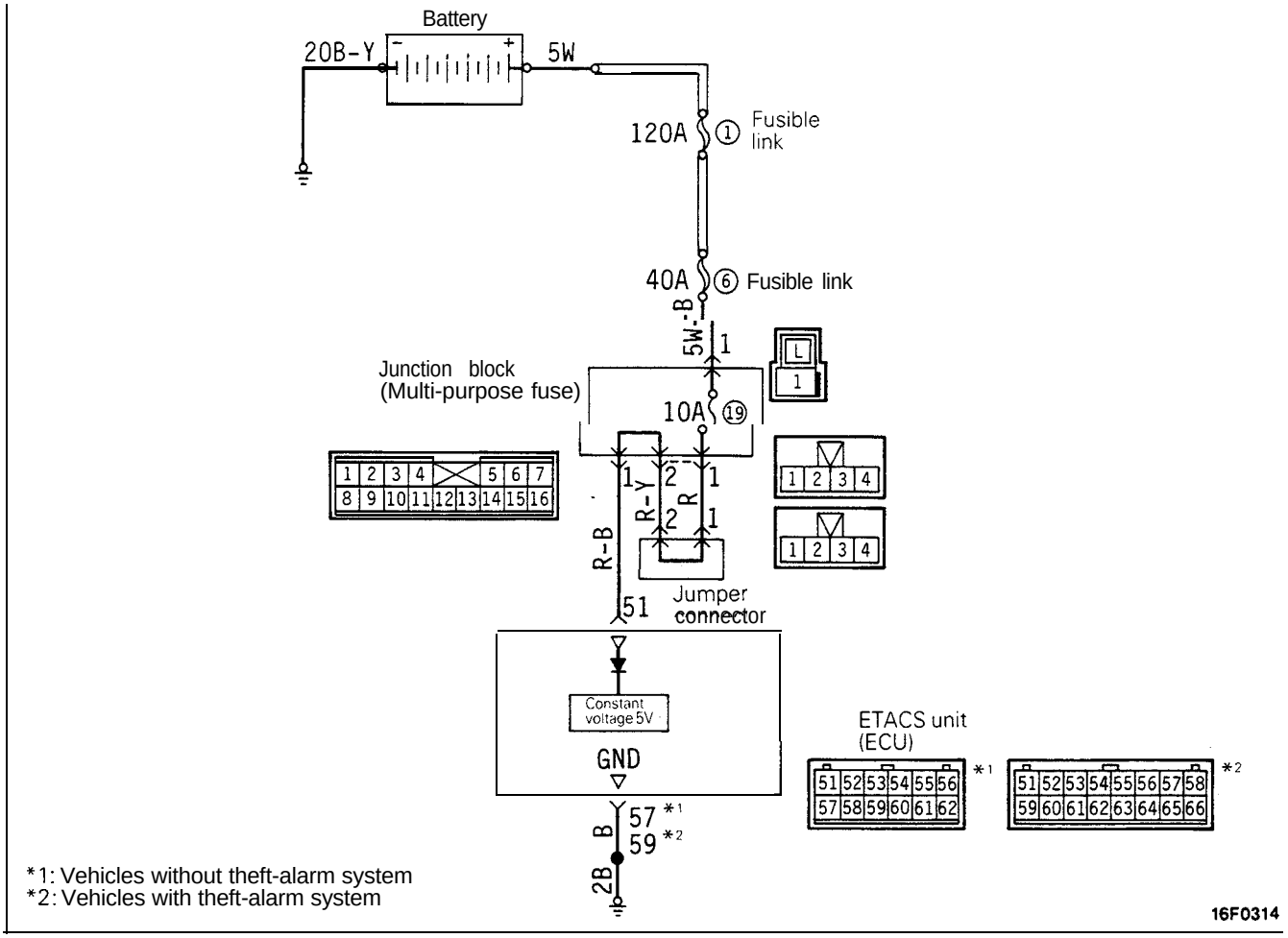
Problem	Probable cause	Check method	Remedy
Lights do not come on after opening every door. NOTE (1) Dome light switch must be interlocked with door operation. (2) When dome light switch is turned on, dome light must come on.	Door switch input circuit broken.	If input test results are not satisfactory, perform off-vehicle circuit check No. 3 (P.54-61).	Replace door switch or correct harness.
	Driving circuit broken.	Perform off-vehicle circuit check No. 4 (P.54-62).	Correct lights or harness.
	Faulty ECU.		Replace ECU.
Even if ignition switch is turned on while lights are being dirnmed, lights do not go out at the same time.	Ignition switch input circuit broken.	If input check results are not satisfactory, perform off-vehicle circuit check No. 2 (P.54-60).	Correct harness.
	Faulty ECU.		Replace ECU.

NOTE
(1) ECU (Electronic control unit) indicates the ETACS unit.
(2) The lights include the dome light, foot light and ignition key cylinder illumination light.

TSB Revision

CHECKING INDIVIDUAL PART AND CIRCUIT

1. ETACS Power-supply and Ground Circuit



Description of operation

A stabilized 5V power is supplied from No. 51 terminal directly connected to the battery to ECU through the constant voltage circuit.
If the power circuit is not in normal condition, other ETACS systems do not operate either.

ECU terminal voltage (with ECU connector connected)

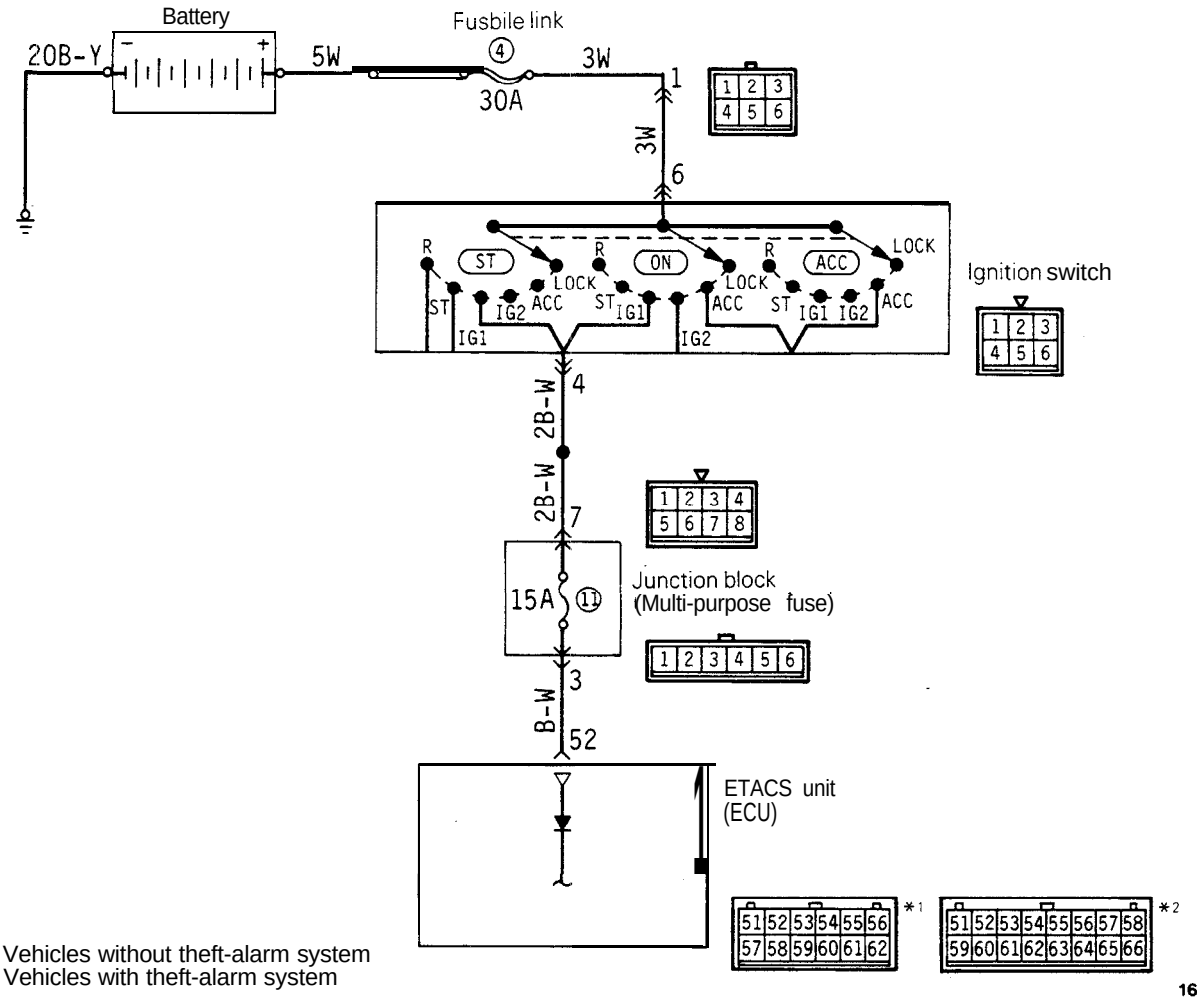
ECU terminal No.	Signal	Condition	Terminal voltage
51	ECU power supply	At all times	System voltage

Checking of grounded circuit (Disconnect ECU connector and check harness side)

Terminal No.	Connected to/measured part	Measurement item	Tester connection	Check conditions	Standard
57"' 59"'	ECU ground	Resistance	57*1-ground 59*2-ground	At all times	Continuity present

NOTE
*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

2. Ignition Switch Input Circuit



*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

Description of operation

When the ignition switch is in the ON position, H signal is sent to ECU and the timer circuit is turned off to suspend dimming operation.

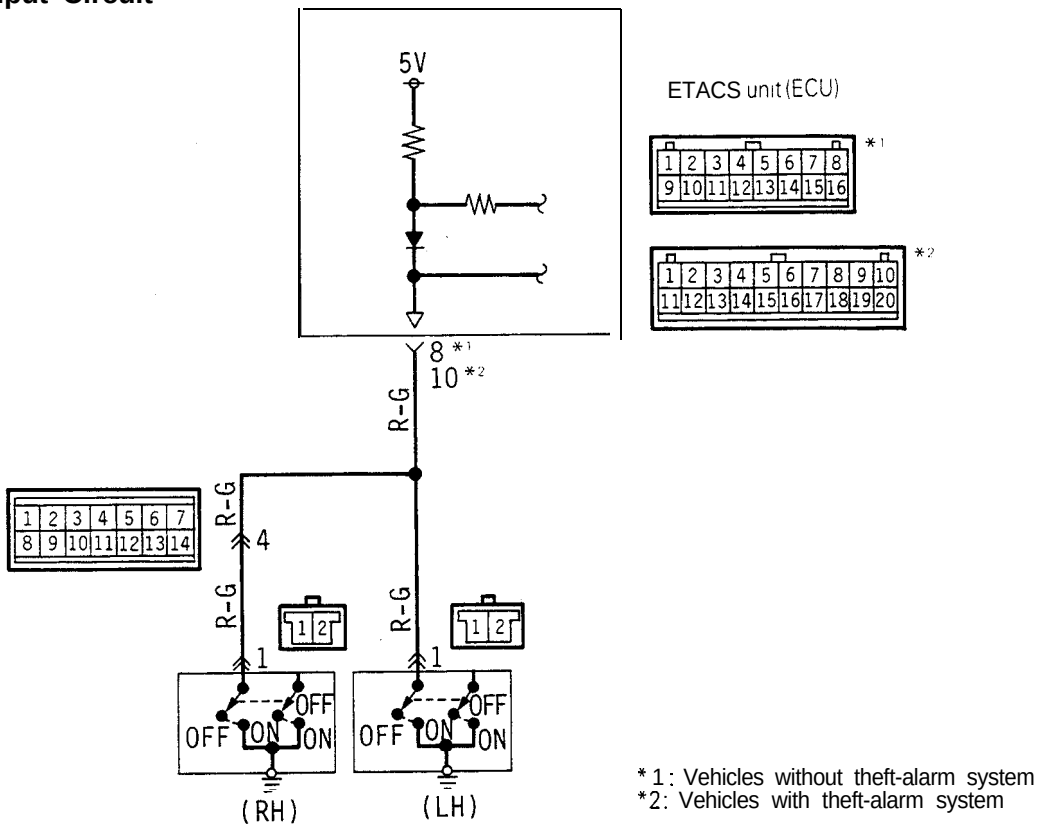
ECU terminal voltage (Disconnect ECU connector and check harness side)

ECU terminal No.	Signal	Condition		Standard
52	Ignition switch (ON)	Ignition switch	OFF	0V
			ON	System voltage

Checking individual part

Ignition switch: Refer to P.54-7.

3. Door Switch Input Circuit



Description of operation

When all doors are closed, H signal is sent to ECU. When the ignition switch is turned off, the timer circuit operates to start dimming of the lights (dome light, foot light and ignition key cylinder illumination light). When the door switch system is not in normal condition, the lights do not operate normally in interlocked relationship with the doors.

ECU terminal voltage (with ECU connector connected)

ECU terminal No.	Signal	Condition	Terminal voltage
8*1 10*2	Door switch signal	A door is opened.*3 (Door switch is ON)	0V
		All door are closed. (Door switch is OFF)	5V

Door switch circuit check (Disconnect ECU 'connector and check harness side)

ECU terminal No.	Connected to/measured part	Measurement item	Tester connection	Check conditions	Standard
8*1 10*2	Door switch	Resistance	8*1-ground 10*2-ground	All doors are closed	No continuity
				A door is opened.*3	Continuity

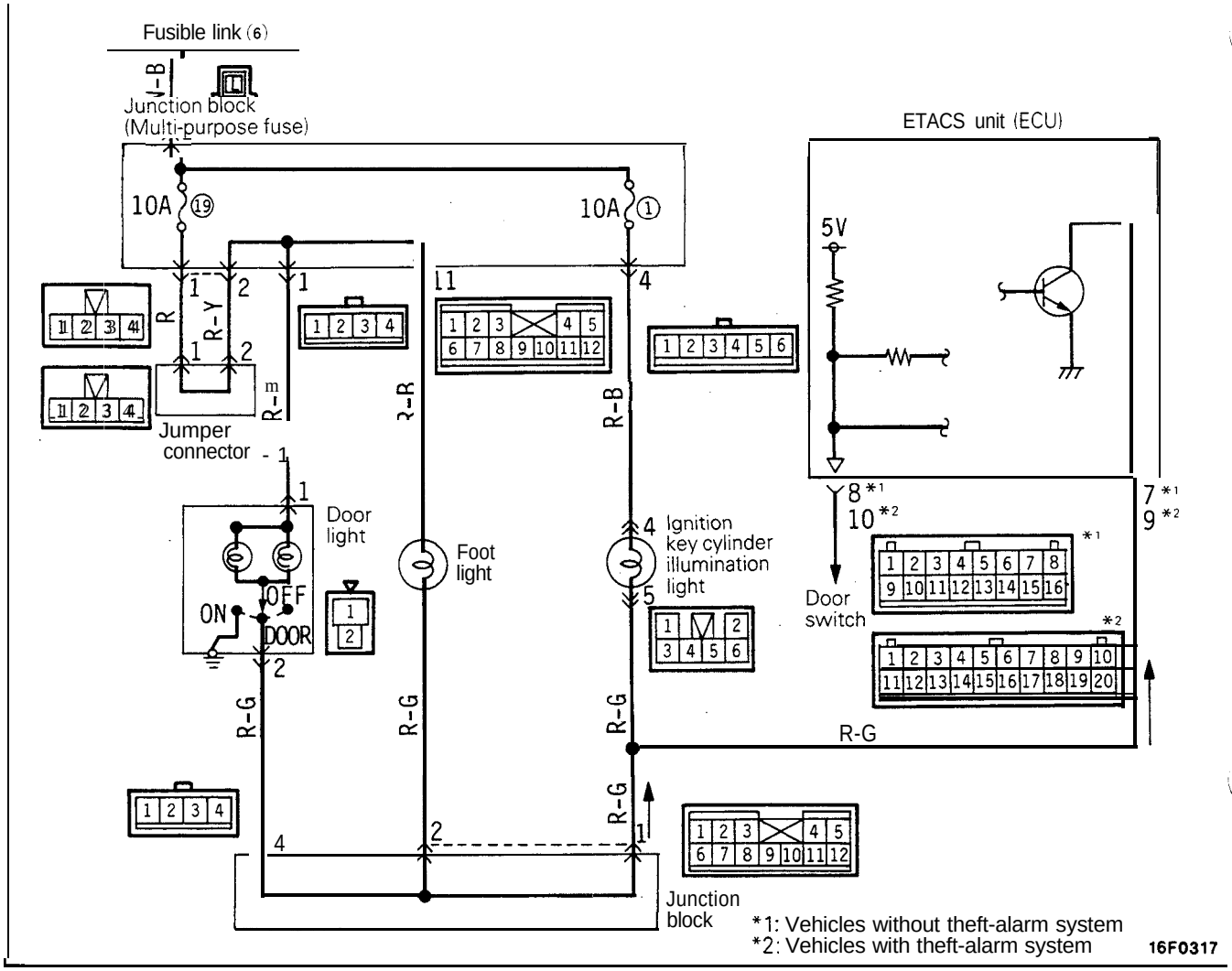
Checking individual part

Door switch: Refer to GROUP 42 – Door Assembly.

NOTE
*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system
*3: Check which is marked with *3 is performed on each door after making sure that all doors except the checked door are closed.

TSB Revision

4. Lights Driving Circuit



Description of operation

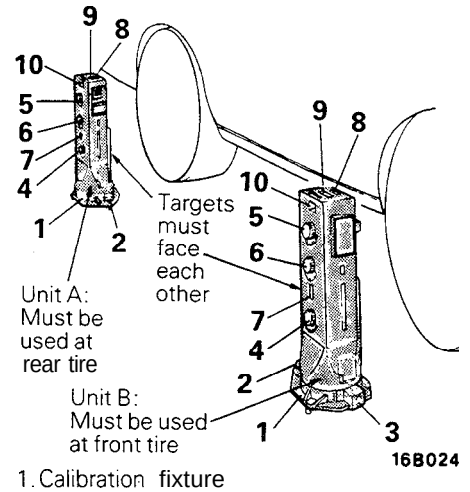
When a door is opened, the circuit is grounded at the door switch through ECU. If the door is closed from the above state, the circuit is grounded by ECU to dim the light.

NOTE
The dome light switch must be interlocked with the door operation.

ECU terminal voltage (with ECU connector connected)

ECU terminal No.	Signal	Condition	Terminal voltage
7*1 9*2	Light signal	All doors are closed.	System voltage

TSB Revision



1. Calibration fixture
2. Thumb adjusting screws
3. Level vial
4. Floor level offset dial
5. Horizontal dial knob
6. Vertical dial knob
7. Aimer level vial
8. Level vial bubble
9. Top port hole
10. Viewing port

SERVICE ADJUSTMENT PROCEDURES

M54IIAE

HEADLIGHT AIMING

PRE-AIMING INSTRUCTIONS

1. Test dimmer switch operation.
2. Observe operation of high beam light mounted in instrument cluster.
3. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
4. Place vehicle on a level floor.
5. Bounce front suspension through three (3) oscillations by applying body weight to hood or bumper.
6. Inspect tire inflation.
7. Rock vehicle sideways to allow vehicle to assume its normal position.
8. If fuel tank is not full, place a weight in trunk of vehicle to simulate weight of a full tank [3 kg (6.5 lbs.) per gallon].
9. There should be no other load in the vehicle other than driver or substituted weight of approximately 70 kg (150 lbs.) placed in driver's position.
10. Thoroughly clean headlight lenses.
11. Adjust headlights following the instructions of the headlight tester manufacturer.

LUMINOUS INTENSITY MEASUREMENT

Measure the luminous intensity of headlights with a photometer in accordance with the instruction manual prepared by the manufacturer of the photometer and make sure that the luminous intensity is within the following limit.

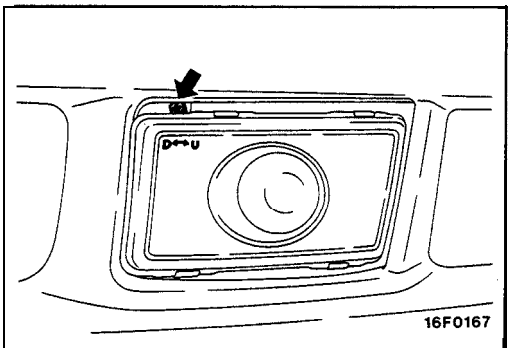
Limit: 20,000 cd or more

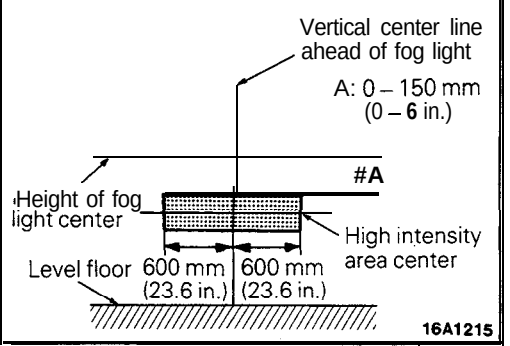
NOTE

(1) When measuring the luminous intensity of headlight, keep the engine at 2,000 rpm and have the battery charged.
(2) If there are specific regulations for luminous intensity of headlights in the region where the vehicle is operated, make sure that the intensity conforms to the requirements of such regulations.

FOG LIGHT AIMING

1. Place vehicle on a known level floor **7.6** m **(25** feet) from aiming screen or light colored wall.
2. Use adjusting screw to adjust the top end of high intensity zone to dimension A.





TSB Revision

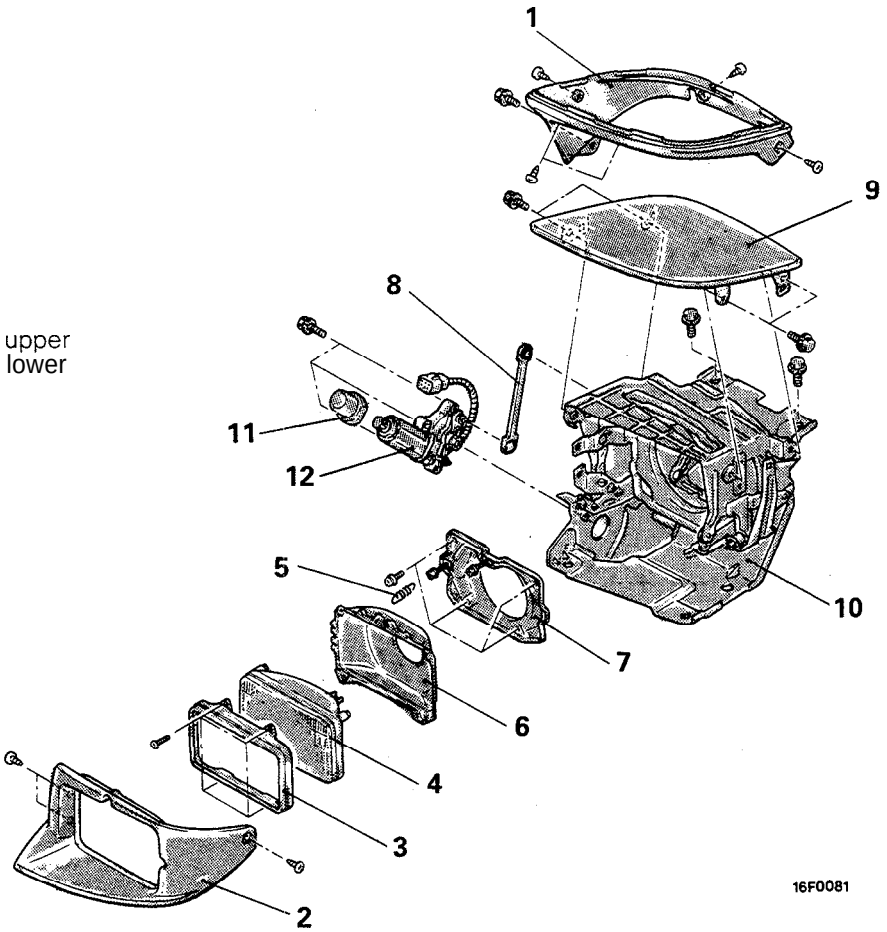
HEADLIGHT

M54IJAP

REMOVAL AND INSTALLATION

Removal steps

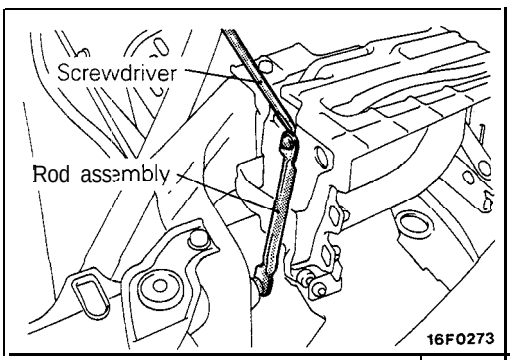
◆◆ 1. Headlight bezel, upper
2. Headlight bezel, lower
3. Retaining ring
4. Headlight
5. Spring
6. Mounting ring
7. Housing
◆◆ 8. Rod assembly
9. Headlight hood
10. Link assembly
11. Boot
12. Pop-up motor



SERVICE POINTS OF REMOVAL

1. REMOVAL OF HEADLIGHT BEZEL, UPPER

(1) Raise the headlights by using the pop-up switch. Disconnect the negative (–) battery terminal.
(2) Remove the headlight bezel, upper.

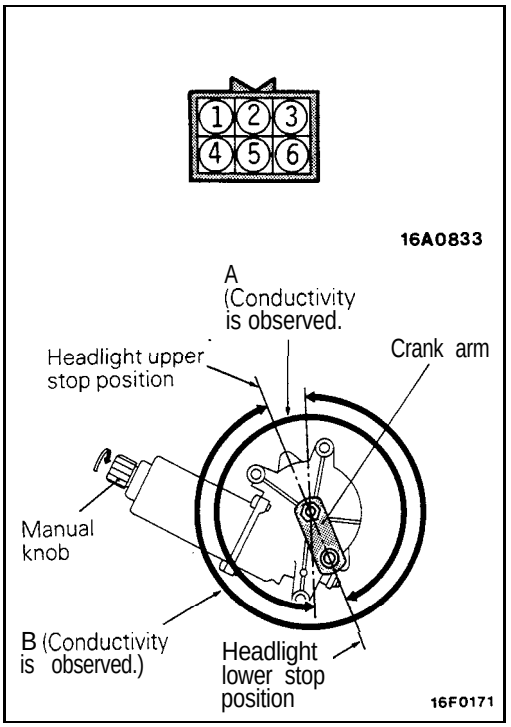


8. REMOVAL OF ROD ASSEMBLY

Using a flat head screwdriver (wrap cloth or similar on the ball joint area to prevent injury), disconnect the connector.

NOTE
When disconnecting the rod assembly from the link, hold the 'link by hand.

TSB Revision



INSPECTION

POP-UP MOTOR

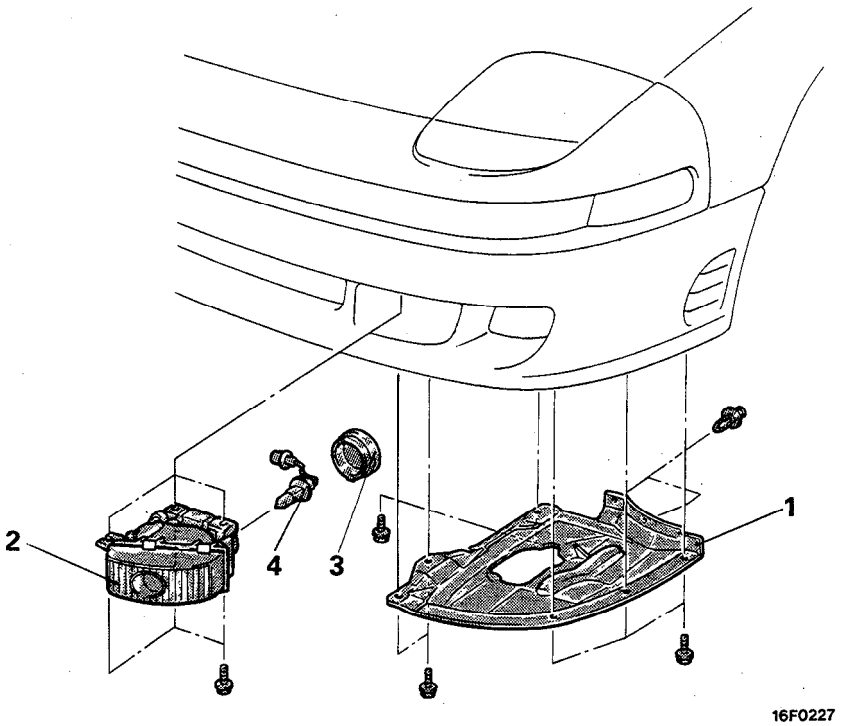
Rotate the manual knob of the pop-up motor clockwise by hand to check continuity between terminals.

Terminal	Continuity range
When the (+) terminal of the ohmmeter is connected to ① and the (–) terminal is connected to ②	B
When the (+) terminal of the ohmmeter is connected to ① and the (–) terminal is connected to ⑤	A

FOG LIGHT

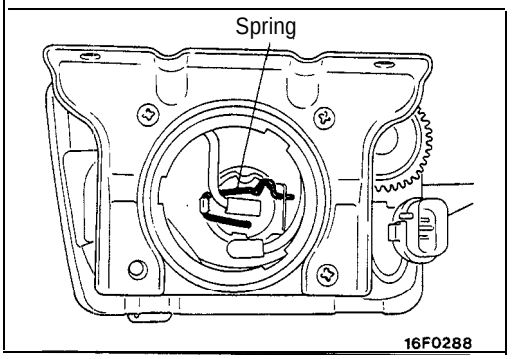
M54IYAA

REMOVAL AND INSTALLATION



Removal steps

1. Front air side spoiler
2. Fog light
3. Socket cover
4. Bulb



SERVICE POINT OF REMOVAL

4. REMOVAL OF BULB

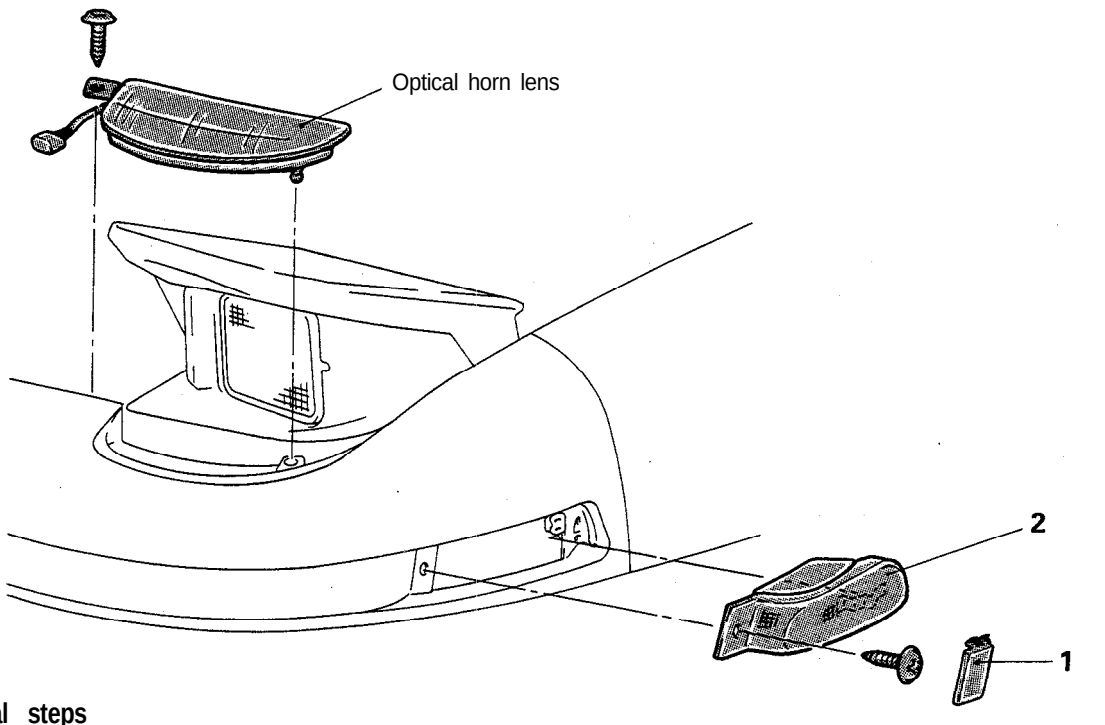
(1) Remove the socket cover.
(2) Remove the bulb mounting spring and remove the bulb.

Caution
Do not touch the surface of the headlight bulb with bare hands or dirty gloves.
If there are deposits on the surface, loosen and remove the deposits with a cloth dipped in alcohol or thinner, and let the surface dry before mounting the bulb.

FRONT COMBINATION LIGHT AND OPTICAL HORN LENS

M54ILAE

REMOVAL AND INSTALLATION



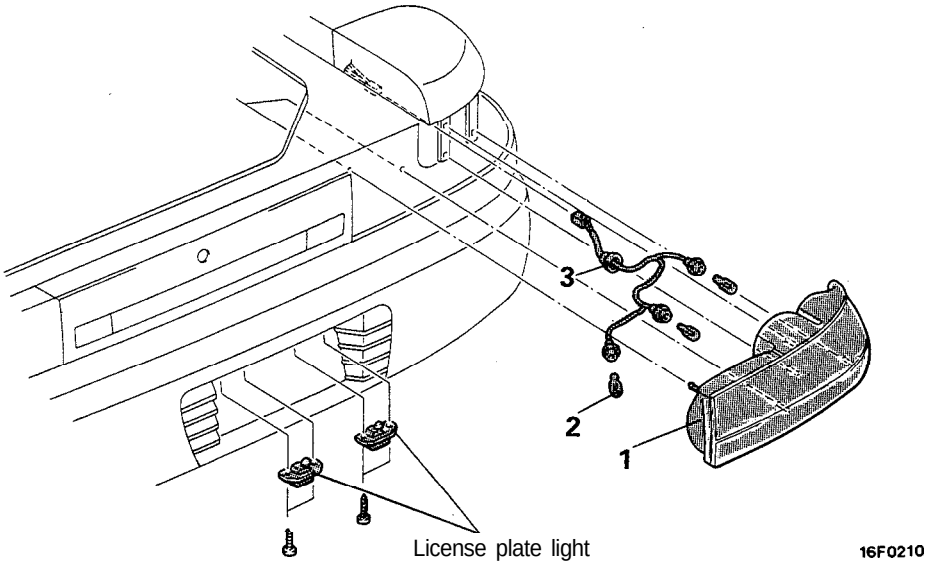
Removal steps
1. Light cover
2. Front combination light

TSB Revision

REAR COMBINATION LIGHT AND LICENSE PLATE LIGHT

M54IMAJ

REMOVAL AND INSTALLATION



Removal steps

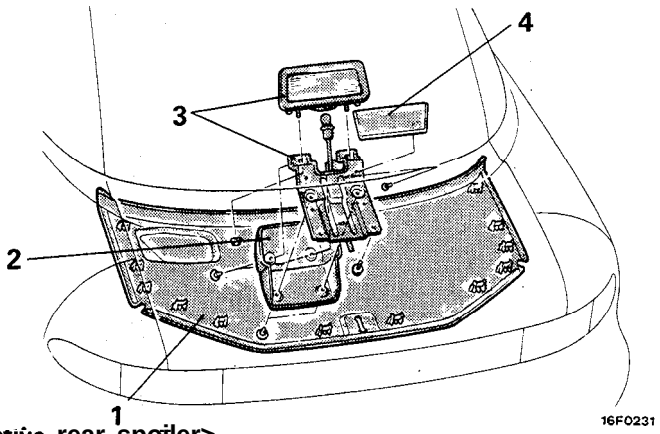
1. Rear combination light unit
2. Bulb
   Rear side trim (Refer to GROUP 52A – Trims.)
3. Socket assembly

HIGH MOUNTED STOP LIGHT

M541KAL

REMOVAL AND INSTALLATION

<Vehicles without rear spoiler>



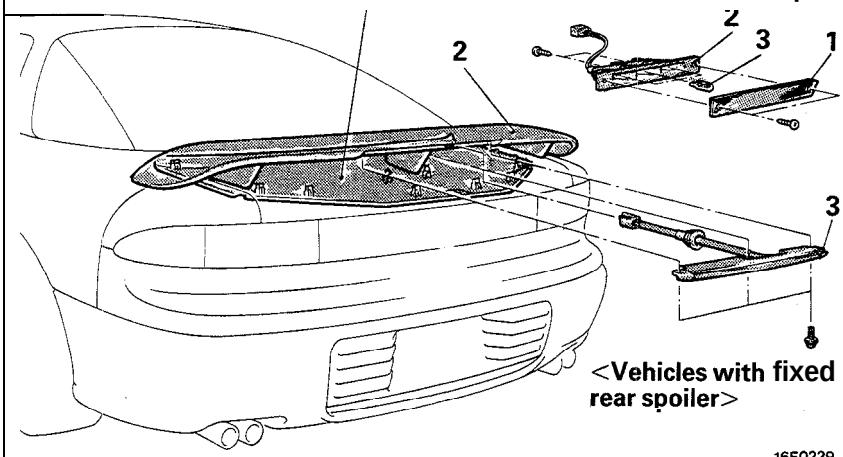
16F0231

Removal steps

1. Liftgate lower trim (Refer to GROUP 52A – Trims.)
2. High mounted stop light cover
3. High mounted stop light lens and bracket
4. Gasket

<Vehicles with rear spoiler>

<Vehicles with active rear spoiler>



<Vehicles with fixed rear spoiler>

16F0229

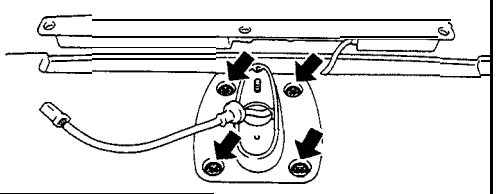
Removal steps

<Vehicles with fixed rear spoiler>

1. Liftgate lower trim (Refer to GROUP 52A – Trims.)
2. Rear spoiler (Refer to GROUP 51 – Aero Parts.)
3. High mounted stop light

<Vehicles with active rear spoiler>

1. Light unit
2. Socket assembly
3. Bulb

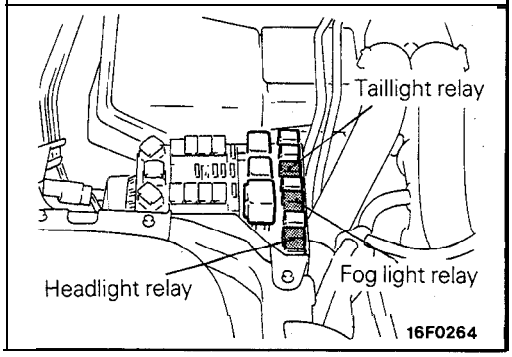


16F0169

SERVICE POINT OF REMOVAL

3. REMOVAL OF HIGH-MOUNTED STOP LIGHT (Vehicles with fixed rear spoiler)

Remove the air spoiler center stay mounting screws before rernoving the high-mounted stop light.



16F0264

RELAY

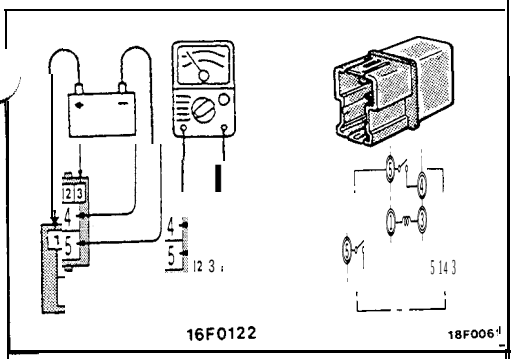
M541SAH

INSPECTION

HEADLIGHT RELAY / TAILLIGHT RELAY / FOG LIGHT RELAY

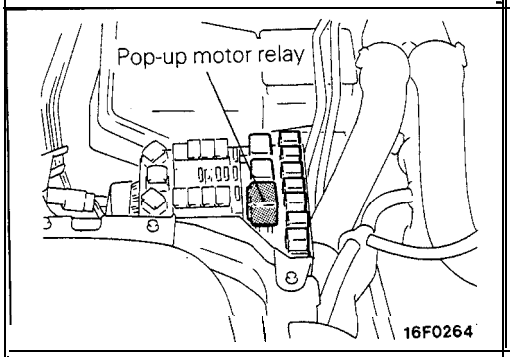
(1) Take out the headlight relay, taillight relay or fog light relay from the engine compartment relay box.

TSB Revision



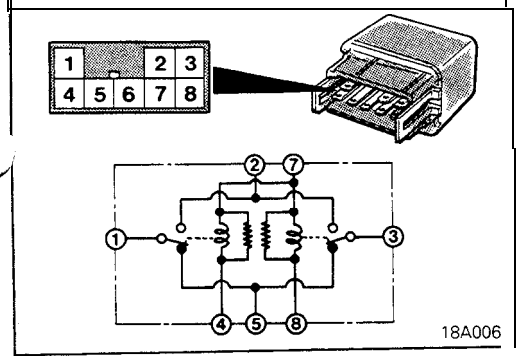
(2) Connect battery to terminal 1 and check continuity between terminals with terminal 3 grounded.

Power is supplied	4 – 5 terminals	Continuity
Power is not supplied	4 – 5 terminals	No continuity
	1 – 3 terminals	Continuity



POP-UP MOTOR RELAY

(1) Take out the pop-up motor relay from the engine compartment relay box.



(2) Check for continuity between terminals under the conditions described below.

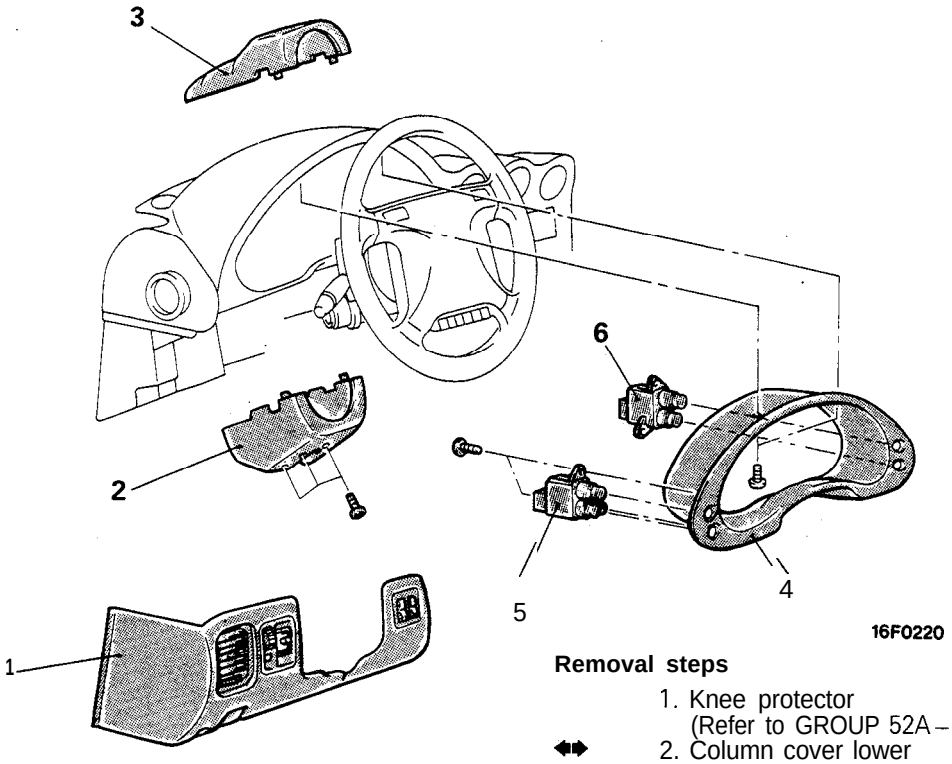
Terminal / Battery voltage	1	2	3	4	5	7	8
Continuity no voltage	○		○	○	○	○	○
Continuity with voltage	○	○		⊖		⊕	
		○	○			⊕	⊖

NOTE
(1) ○–○ indicates that there is continuity between the terminals.
(2) ⊕---⊖ indicates terminals to which battery voltage is applied.

POP-UP SWITCH AND FOG LIGHT SWITCH

M54INAB

REMOVAL AND INSTALLATION

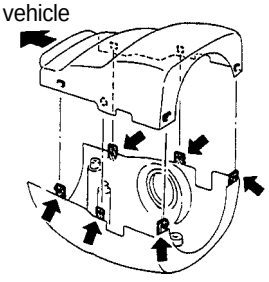


16F0220

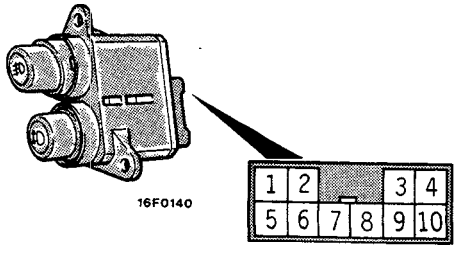
Removal steps

1. Knee protector
   (Refer to GROUP 52A – Instrument Panel.)
2. ◆◆ Column cover lower
3. ◆◆ Column cover upper
4. Meter bezel
5. Pop-up switch and fog light switch
6. Rear window defogger switch

Front of vehicle



19F0123



16F0140

16A0358

SERVICE POINTS OF REMOVAL

2. REMOVAL OF COLUMN COVER LOWER / 3. COLUMN COVER UPPER

After the screws have been removed, remove the covers, while making sure not to break the grippers.

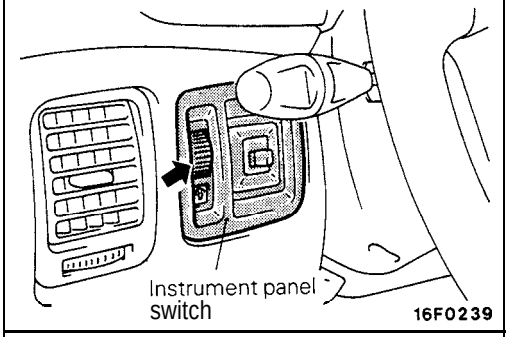
INSPECTION

Operate the switch to check for continuity between terminals.

Switch position		Terminal 1	5	8	9	10	3	4
Pop-up switch	UP				○—○			
	DOWN					○		
Fog light switch	ON	○—○					Illumination light	
	OFF							

NOTE
(1) ○–○ indicates that there is continuity between the terminals.
(2) Refer to P.54-122. Check the rear window defogger switch.

TSB Revision

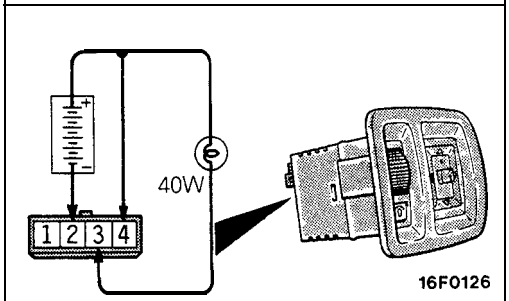


RHEOSTAT

M54IRAK

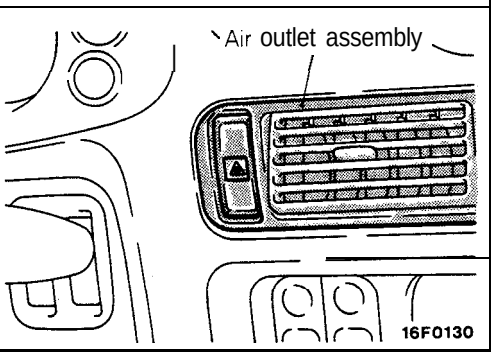
INSPECTION

(1) Remove the instrument panel switch from the knee protector.



16F0121

(2) Connect the battery and a test bulb (40W) as shown in the figure.
(3) The function of the rheostat is normal if the intensity of illumination changes smoothly, without flashing or flickering, when the rheostat is operated.

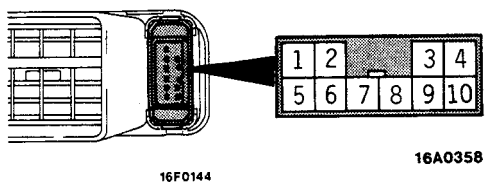


HAZARD SWITCH

M54IQAJ

INSPECTION

(1) Remove the center air outlet assembly from instrument panel. [Refer to GROUP 55 – Ventilators (Instrument Panel).]



16F0144

(2) Operate the switch to check for continuity between terminals.

Switch position \ Terminal	1	5	6	7	8	9	10	2	3
ON			○	○	○				
OFF		○			○			Illumination light	

NOTE
○–○ indicates that there is continuity between the terminals.

COLUMN SWITCH

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54JB- -

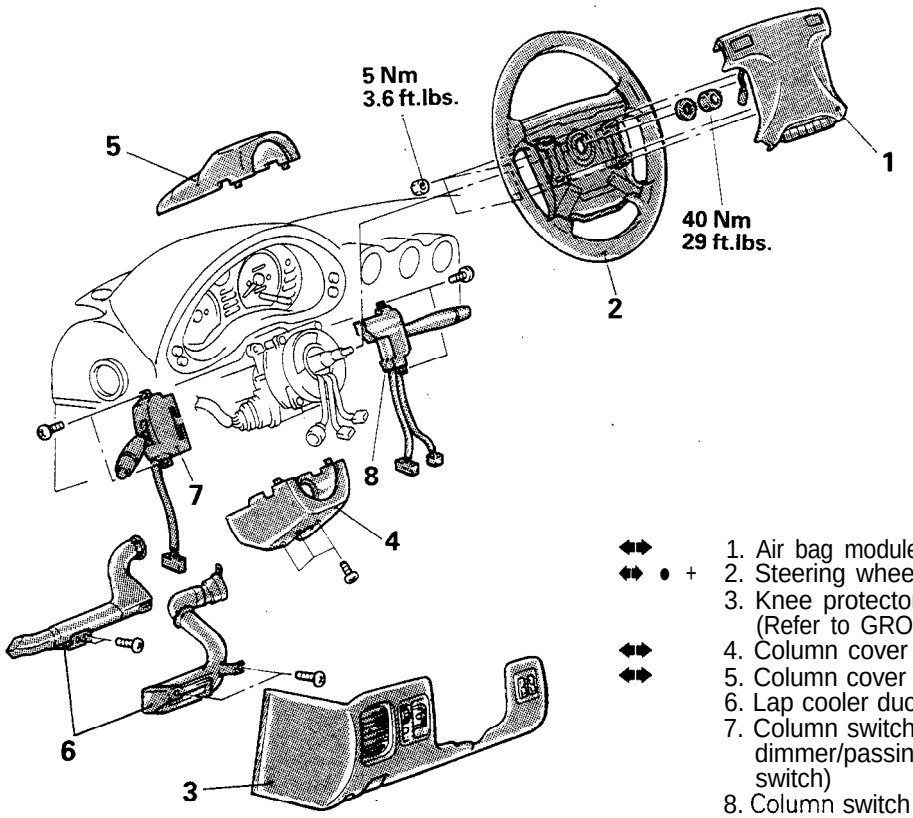
Items	Specifications
Column switch	
Lighting switch	
Rated load A	0.22 ± 0.05
Voltage drop V	0.2 or less
Turn-signal switch	
Rated load A	6.6 ± 0.5
Voltage drop V	0.2 or less
Dimmer/passing switch	
Rated load A	
High beam	10.7 ± 0.8
Low beam	9.8 ± 0.7
Passing	20.5 ± 1.5
Voltage drop V	0.2 or less

NOTE
For the wiper and washer switch, refer to GROUP 51 -Windshield Wiper and Washer

COLUMN SWITCH

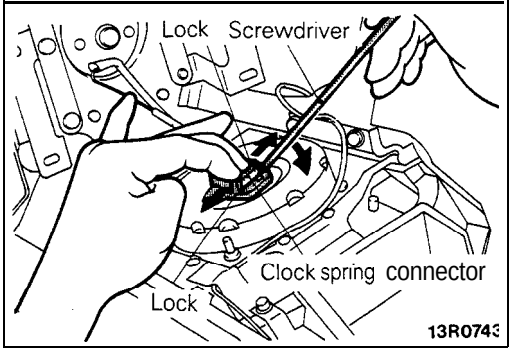
M54JJAL

REMOVAL AND INSTALLATION



◆◆ 1. Air bag module
◆◆ ● + 2. Steering wheel
3. Knee protector
(Refer to GROUP 52A – Instrument Panel.)
◆◆ 4. Column cover lower
◆◆ 5. Column cover upper
6. Lap cooler duct and foot shower duct
7. Column switch left (For lighting switch, dimmer/passing switch and turn signal switch)
8. Column switch right (For wiper and washer switch)

16F0224



SERVICE POINTS OF REMOVAL

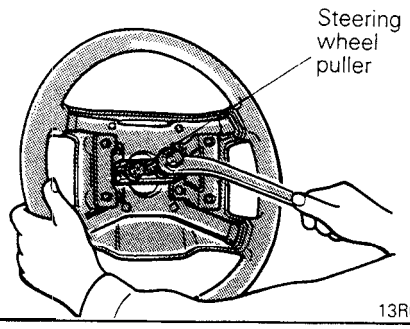
1. REMOVAL OF AIR BAG MODULE

(1) Remove the air bag module mounting nut using a socket wrench from the back side.

(2) To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

Caution
Wait at least 30 seconds after disconnecting the battery cable before doing any further work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.

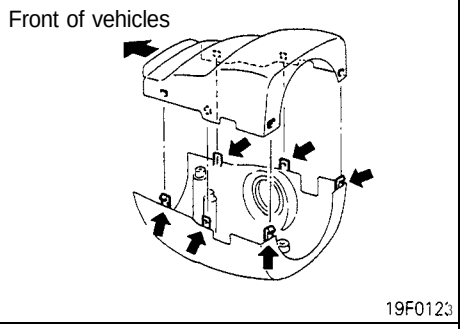
(3) The removed air bag module should be stored in a clean, dry place with the pad cover face up.



2. REMOVAL OF STEERING WHEEL

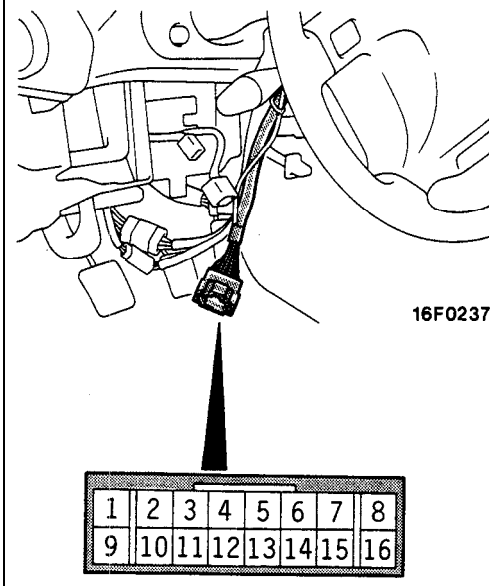
Remove the steering wheel by using a steering wheel puller.

Caution
Do not hammer on the steering wheel. Doing so may damage the collapsible column mechanism.



4. REMOVAL OF COLUMN COVER LOWER / 5. COLUMN COVER UPPER

After the screws have been removed, remove the covers, while making sure not to break the grippers.



INSPECTION

(1) Remove the knee protector and the column cover. (Refer to GROUP 52A – Instrument Panel.)
(2) Disconnect the column switch left connector (16 terminals) and check the continuity between the terminals for each switch.

LIGHTING SWITCH

Operate the switch and check the continuity between the terminals.

Switch position \ Terminal	3	5	6	7	10	14
OFF		O—O				
≡D		O—O			O—O	
≡D	O	O	——	O	O	O

NOTE
O-O indicates that there is continuity between the terminals.

TURN SIGNAL SWITCH

Operate the switch and check the continuity between the terminals

Switch position \ Terminal	1	12	13
Left	O	——	O
Neutral			
Right	O	——	O

NOTE
O-C indicates that there is continuity between the terminals.

TSB Revision

DIMMER/PASSING SWITCH

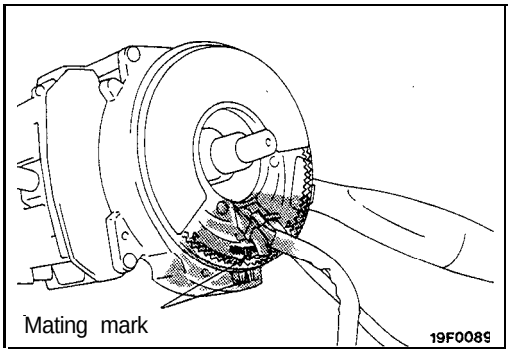
Operate the switch and check the continuity, between the terminals.

Switch position \ Terminal		2	8	9	16
Dimmer switch	LOW			0——0	
	HIGH		0——0		
Passing switch		0——0——○			

NOTE
O-O indicates that there is continuity between the terminals.

WIPER AND WASHER SWITCH

Refer to GROUP 51 – Windshield Wiper and Washer



SERVICE POINT OF INSTALLATION

2. INSTALLATION OF STEERING WHEEL

To center the clock spring, line up the "NEUTRAL" mark of the clock spring with the mating mark.

Caution
If the clock spring's mating mark is not properly aligned, the steering wheel may not be completely rotational during a turn, or the flat cable within the clock spring may be severed, obstructing normal operation of the SRS and possibly leading to serious injury to the vehicle's driver.

HORN

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54LB--

Items	Specifications	
Type	Flat type	Flat type*
Effective sounding voltage V	11.5-15	11 – 14.5*
Power consumption A	3.0	Max. 3.5"
Sound level dB		
"low" sound	100-112	–
"high" sound	100-112	105 – 120*
Fundamental frequency Hz		
"low" sound	350 – 390	–
"high" sound	395 – 435	405 – 435*

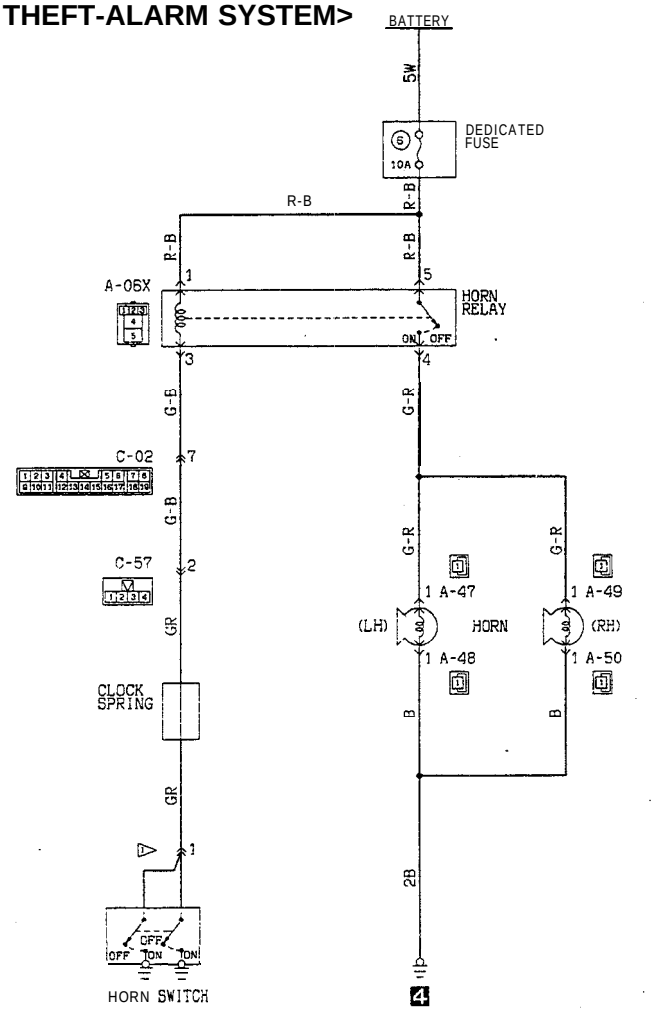
NOTE: The * symbol is applicable to vehicles equipped with the theft-alarm horn

TROUBLESHOOTING

MMLHAH

<VEHICLES WITHOUT THEFT-ALARM SYSTEM>

CIRCUIT DIAGRAM

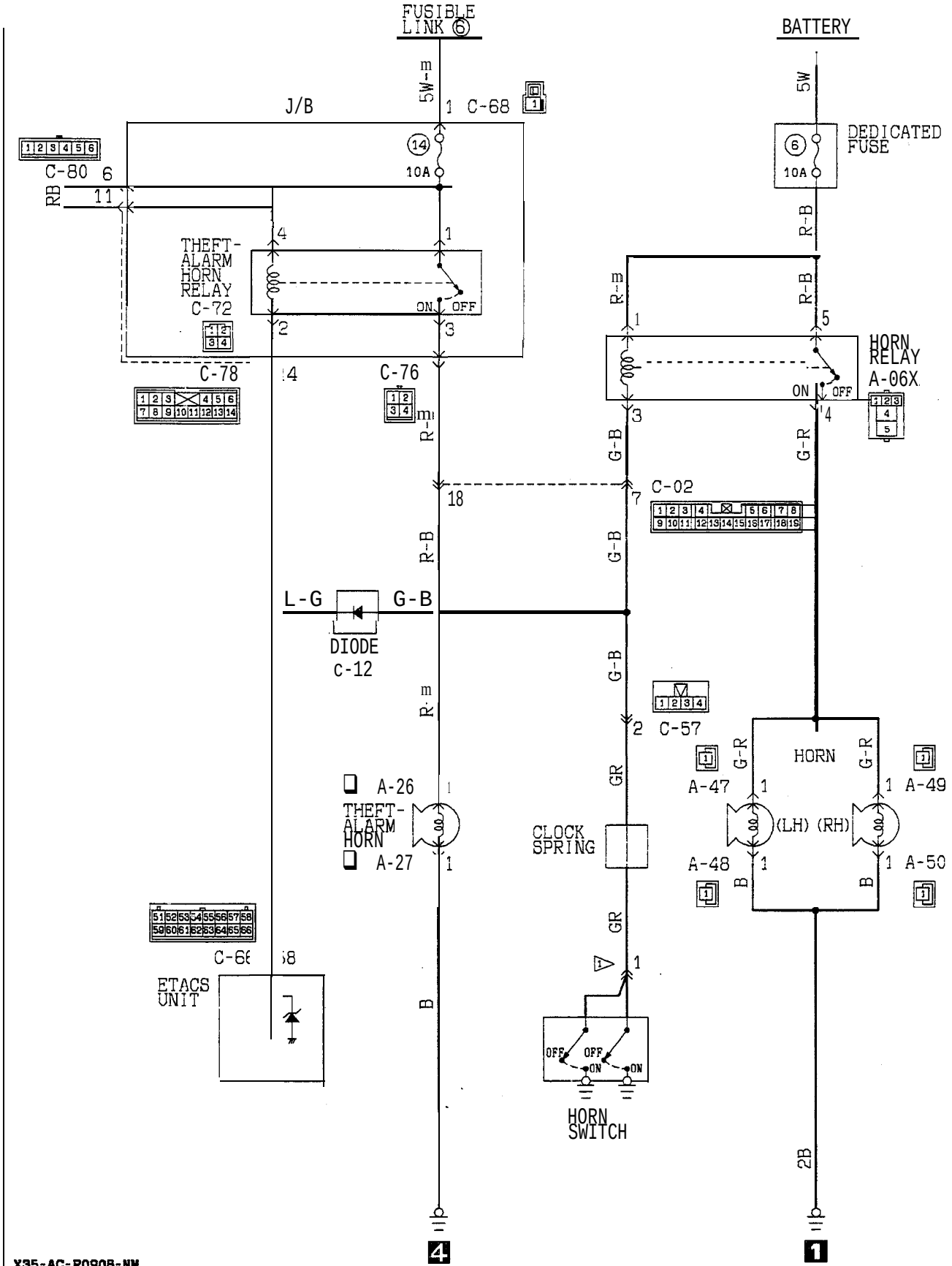


(35-AC-R08O7-NM

TSB Revision

<VEHICLES WITH THEFT-ALARM SYSTEM>

CIRCUIT DIAGRAM



TSB Revision

OPERATION

- The horn switch always receives battery voltage via the dedicated fuse (6) and the coil of the horn relay.
- When the horn switch is set to ON, the contacts of the horn relay close.
  Then current flows through the dedicated fuse (6) to the contacts of the horn relay, the horn and ground, causing the horn to sound.

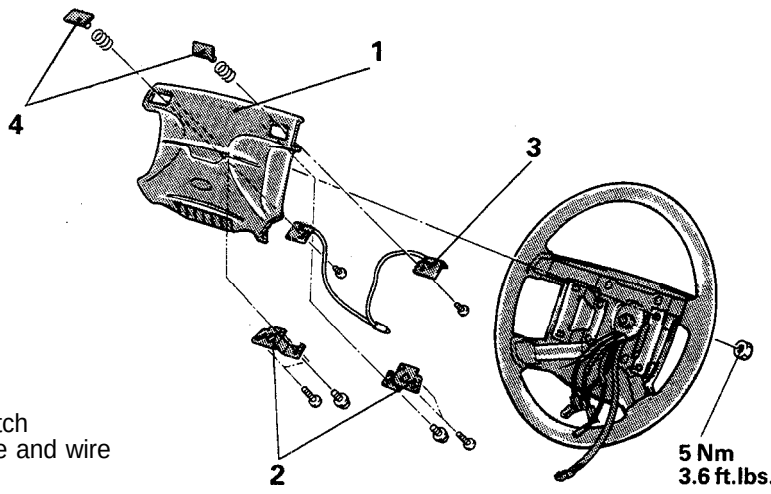
TROUBLESHOOTING HINTS

1. One of the horn does not sound.
   - Check the horn.
2. Horns do not sound.
   - Check the horn switch.
   - Check the dedicated fuse (6).

NOTE
(1) For vehicles equipped with the theft-alarm system, refer to P.54-124.
(2) For information concerning the horn relay and theft-alarm horn relay, refer to P.54-79.

M54LKAR

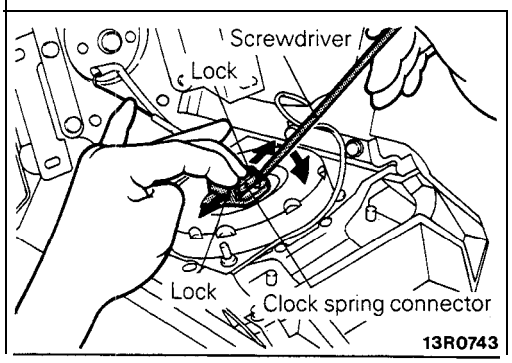
REMOVAL AND INSTALLATION



16F 0207

Removal steps

- ⊠ 1. Air bag module
  2. Horn contact switch
  3. Horn contact plate and wire
  4. Horn switch



SERVICE POINT OF REMOVAL

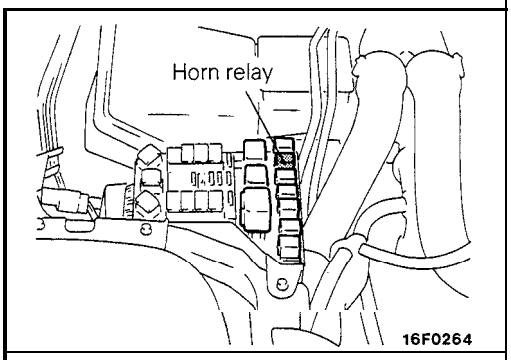
1. REMOVAL OF AIR BAG MODULE

(1) Remove the air bag module mounting nut using a socket wrench from the back side.
(2) To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

Caution
Wait at least 30 seconds after disconnecting the battery cable before doing any further work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.

(3) The removed air bag module should be stored in a clean, dry place with the pad cover face up.

TSB Revision



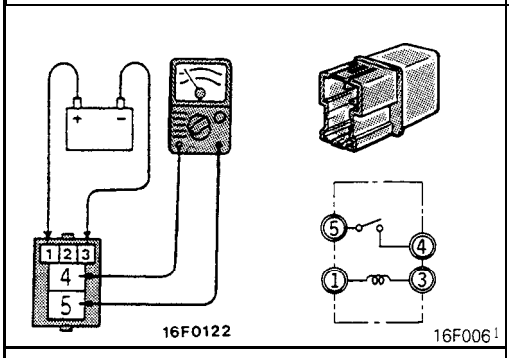
RELAY

M54LLAA

INSPECTION

HORN RELAY

(1) Take out the horn relay from the engine compartment relay box.

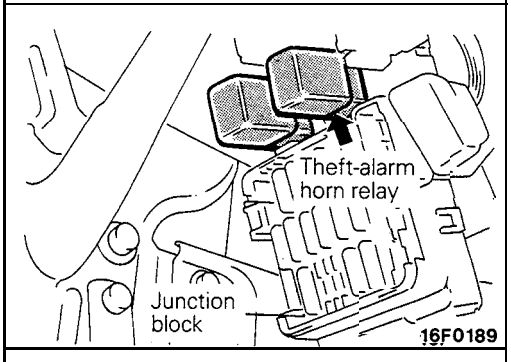


(2) Connect battery to terminal 1 and check continuity between terminals with terminal 3 grounded.

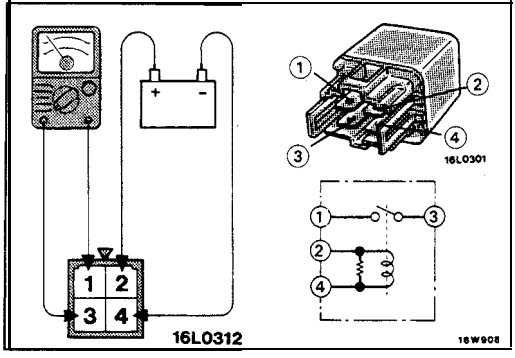
Power is supplied	4 – 5 terminals	Continuity
Power is not supplied	4 – 5 terminals	No continuity
	1 – 3 terminals	Continuity

THEFT-ALARM HORN RELAY

(1) Take out the theft-alarm horn relay from junction block.



(2) Connect battery to terminal 2 and check continuity between terminals with terminal 4 grounded.



Power is supplied	1 – 3 terminals	Continuity
Power is not supplied	1 – 3 terminals	No continuity
	2 – 4 terminals	Continuity

CIGARETTE LIGHTER

SPECIFICATIONS

GENERAL SPECIFICATIONS

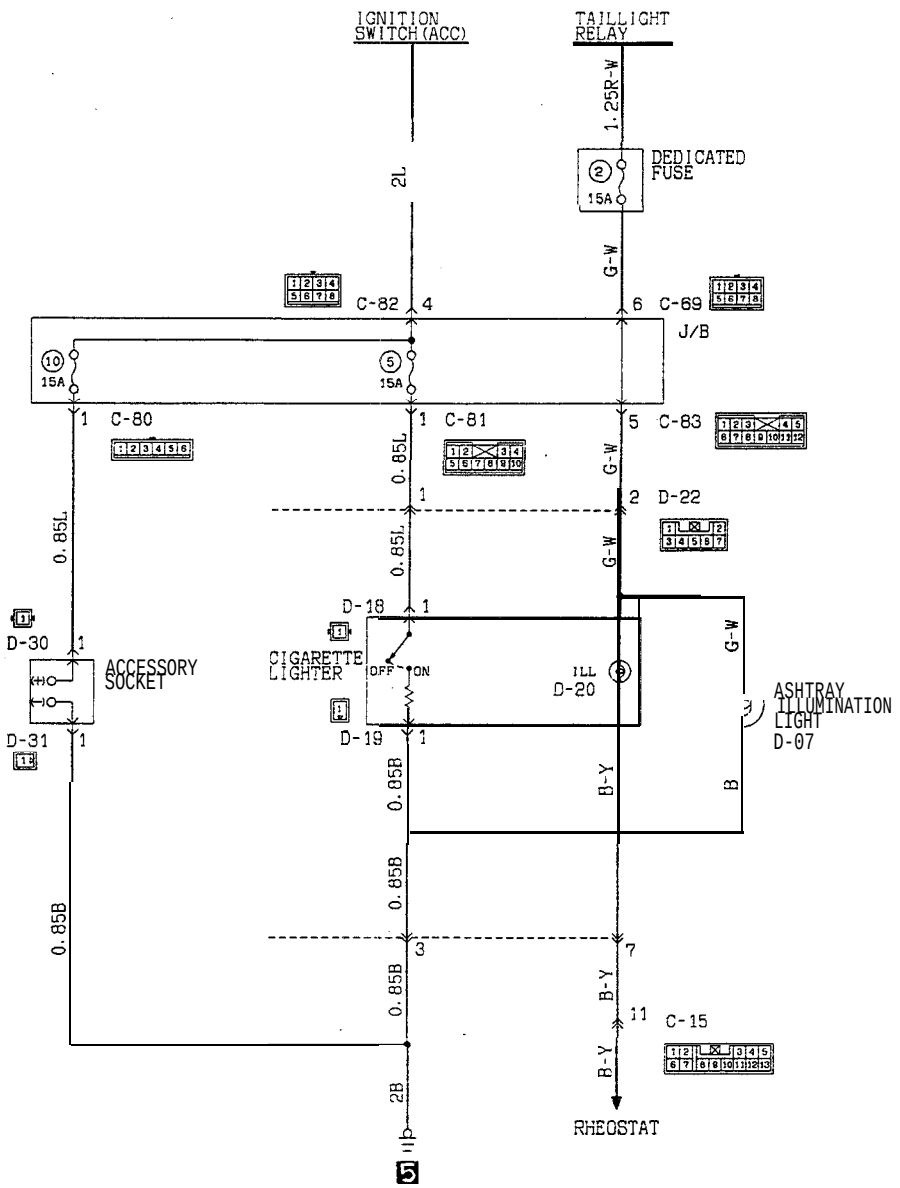
M54MB--

Items	Specifications
Max. input W	120
Reset tirne second	Within 18
Thermal fuse fusion temperature °C (°F)	180 – 250 (356 – 482)

TROUBLESHOOTING

M54MHCC

CIRCUIT DIAGRAM



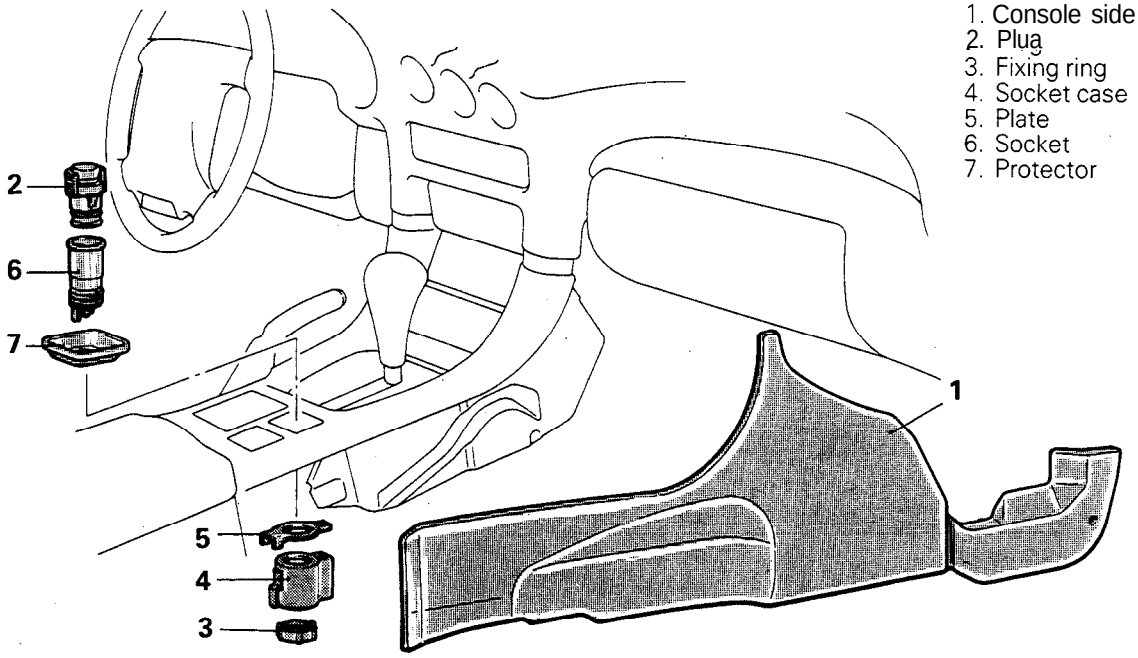
X35-AC-R1402-NN

TSB Revision

CIGARETTE LIGHTER

M54MJAN

REMOVAL AND INSTALLATION



Removal steps

1. Console side cover (RH)
2. Plug
3. Fixing ring
4. Socket case
5. Plate
6. Socket
7. Protector

16F0274

INSPECTION

- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using an ohmmeter, check the continuity of the element.

CAUTIONS FOR USE OF THE CIGARETTE LIGHTER SOCKET AS AUXILIARY POWER SOURCE

1. When using a "plug-in" type of accessory, do not use anything with a load of more than 120W.

2. It is recommended that only the lighter be inserted in the receptacle.
Use of "plug-in" type accessories may damage the receptacle and result in poor retention of the lighter.

NOTE
The specified load should be strictly observed, because overloaded cord burns the ignition switch and harness.

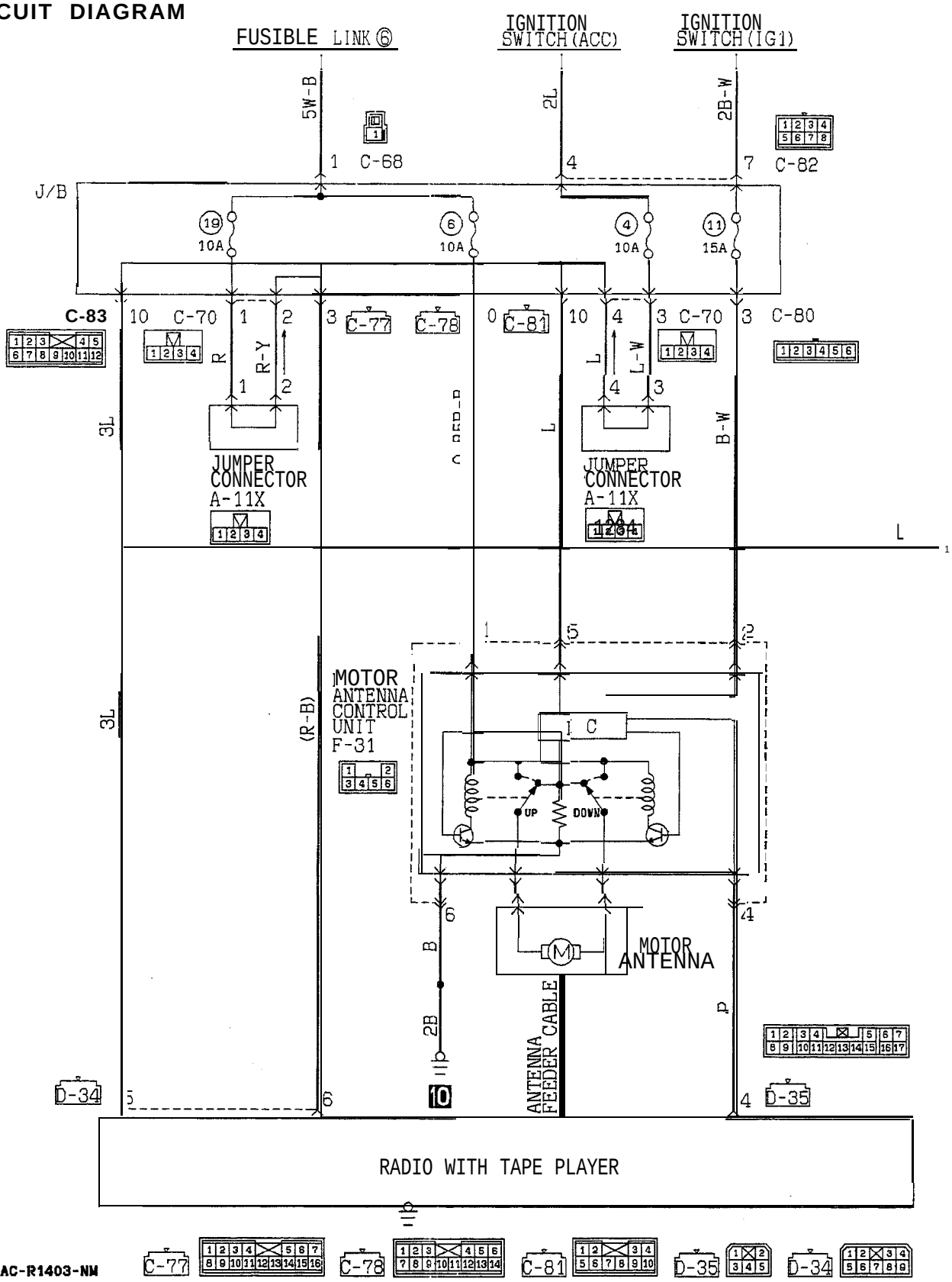
TSB Revision

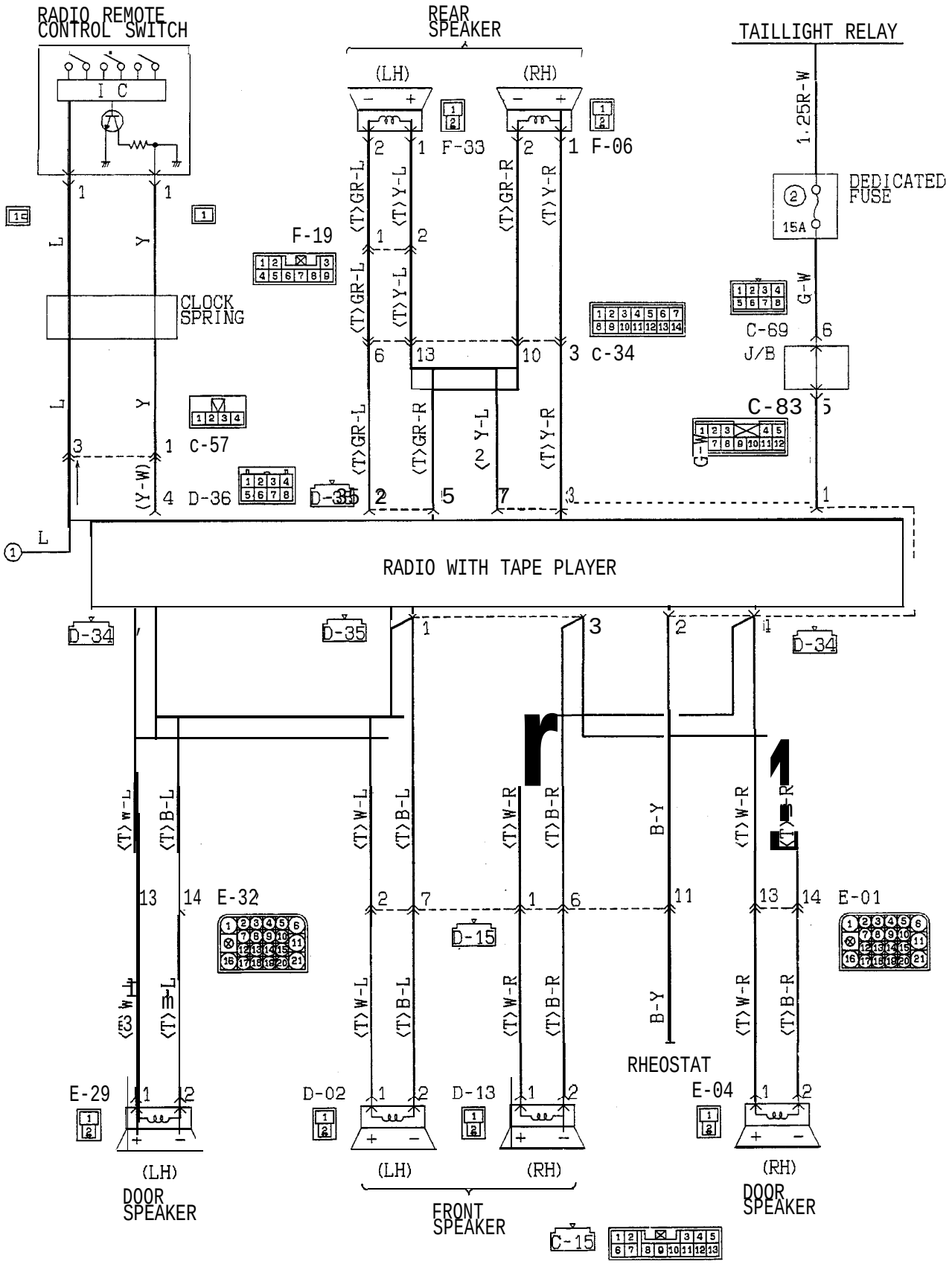
AUDIO SYSTEM

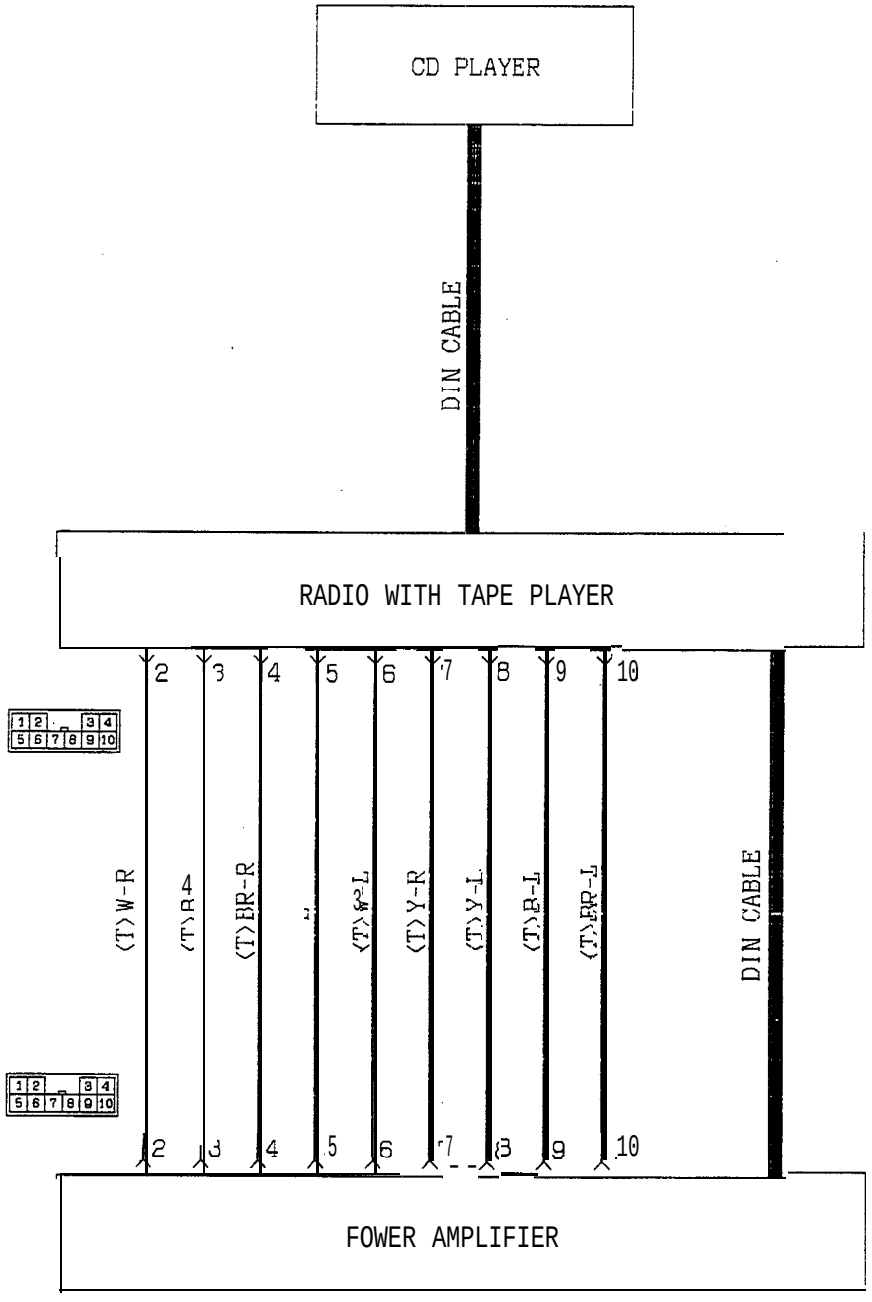
M54NHAQ

TROUBLESHOOTING

CIRCUIT DIAGRAM




RADIO REMOTE CONTROL SWITCH
IC
REAR SPEAKER
(LH)
(RH)
F-33
F-06
TAILLIGHT RELAY
1.25R-W
DEDICATED FUSE
15A
F-19
CLOCK SPRING
C-57
D-36
D-35
C-34
C-69
J/B
C-83
RADIO WITH TAPE PLAYER
D-34
D-35
D-34
E-32
E-01
D-15
E-29
D-02
D-13
E-04
RHEOSTAT
(LH) DOOR SPEAKER
(LH) (RH) FRONT SPEAKER
(RH) DOOR SPEAKER
C-15



TSB Revision

TROUBLESHOOTING CHART

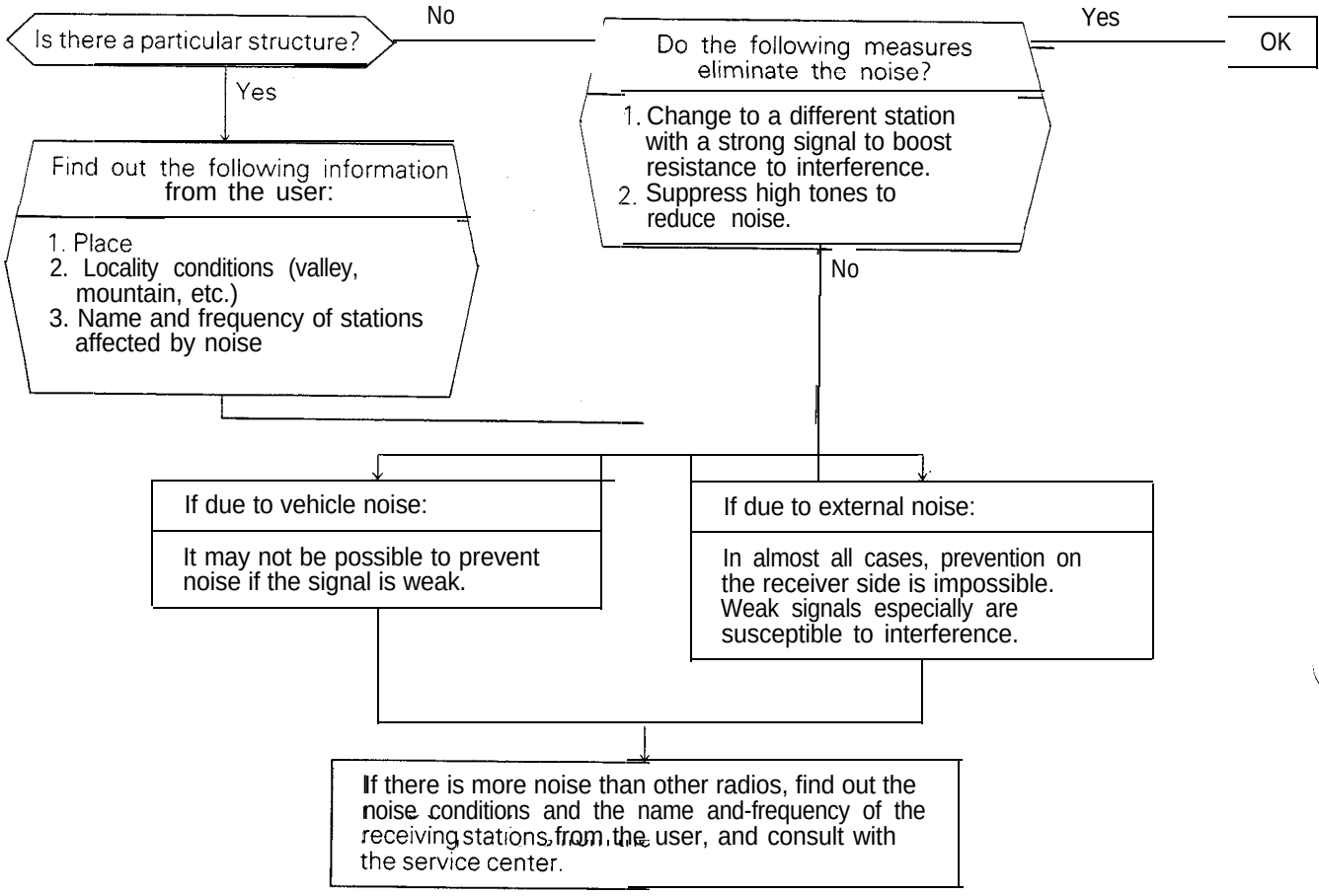
Item	Problem symptom	Relevant chart
Noise	Noise appears at certain places when traveling (AM).	A-I
	Noise appears at certain places when traveling (FM).	A-2
	Mixed with noise, only at night (AM).	A-3
	Broadcasts can be heard but both AM and FM have a lot of noise.	A-4
	There is more noise either on AM or on FM.	A-5
	There is noise when starting the engine.	A-6
	Some noise appears when there is vibration or shocks during traveling.	A-7
	Noise sometimes appears on FM during traveling.	A-8
	Ever-present noise.	A-9
Radio	When switch is set to ON, no power is available.	B-I
	No sound from one speaker.	B-2
	There is noise but no reception for both AM and FM or no sound from AM, or no sound from PM.	B-3
	Insufficient sensitivity.	B–4
	Distortion on AM or on both AM and FM.	B-5
	Distortion on FM only.	B-6
	Too few automatic select stations.	'B-7
	Insufficient memory (preset stations are erased).	B-8
Cassette player	Cassette tape will not insert.	C–1
	No sound.	c-2
	No sound from one speaker.	c-3
	Sound quality is poor, or sound is weak.	C-4
	Cassette tape will not eject.	c-5
	Uneven revolution. Tape speed is fast or slow.	C-6
	Automatic search does not work	c-7
	Faulty auto reverse.	C-8
	Tape gets caught in mechanism.	c-9
CD player	CD will not be accepted.	D-I
	No sound.	D-2
	CD sound skips.	D-3
	Sound quality is poor.	D-4
	CD will not be ejected.	D-5
	No sound from one speaker.	D-6
Motor antenna	Motor antenna won't extend or retract.	E-I
	Motor antenna extends and retracts but does not receive.	E-2

TSB Revision

CHART

A. NOISE

A-l | Noise appears at certain places when traveling (AM).



TSB Revision

A-2 Noise appears at certain places when traveling (FM).

Do the following measures eliminate the noise?

- Change to a different station with a strong signal to boost resistance to interference.
- Suppress high tones to reduce noise.
- Extend antenna completely. (Whip antenna)

Yes → OK

No ↓

If there is more noise than other radios, find out the noise conditions and the name and frequency of the receiving stations from the user, and consult with the service center.

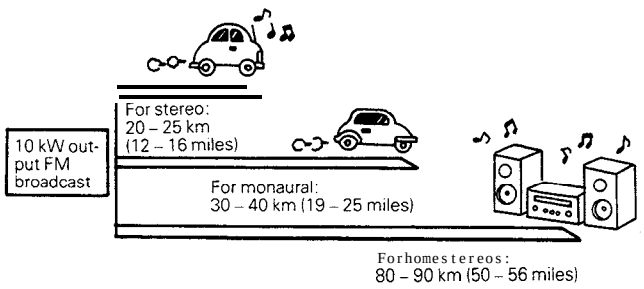
NOTE

About FM waves:

FM waves have the same properties as light, and can be deflected and blocked. Wave reception is not possible in the shadow of obstructions such as buildings or mountains.

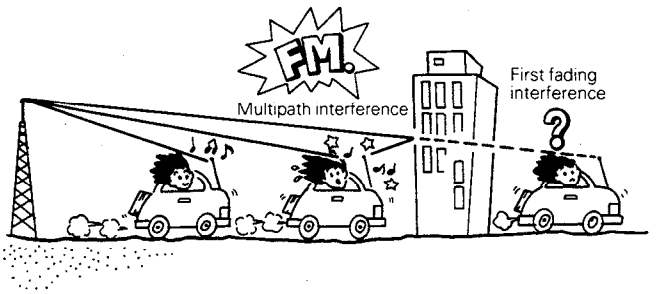
1. The signal becomes weak as the distance from the station's transmission antenna increases. Although this may vary according to the signal strength of the transmitting station and intervening geographical formations or buildings, the area of good reception is approx, 20 – 25 km (12 – 16 miles) for stereo reception, and 30 – 40 km (19 – 25 miles) for monaural reception.
2. The signal becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the antenna and the car), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>
3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise.During traveling, noise will appear each time the vehicle's antenna passes through this kind of obstructed area. The strength and interval of the noise varies according to the signal strength and the conditions of deflection. <This is called multipath noise, and is a repetitious buzzing.>
4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.

FM Broadcast Good Reception Areas



16A0663

FM Signal Characteristics and Signal Interference



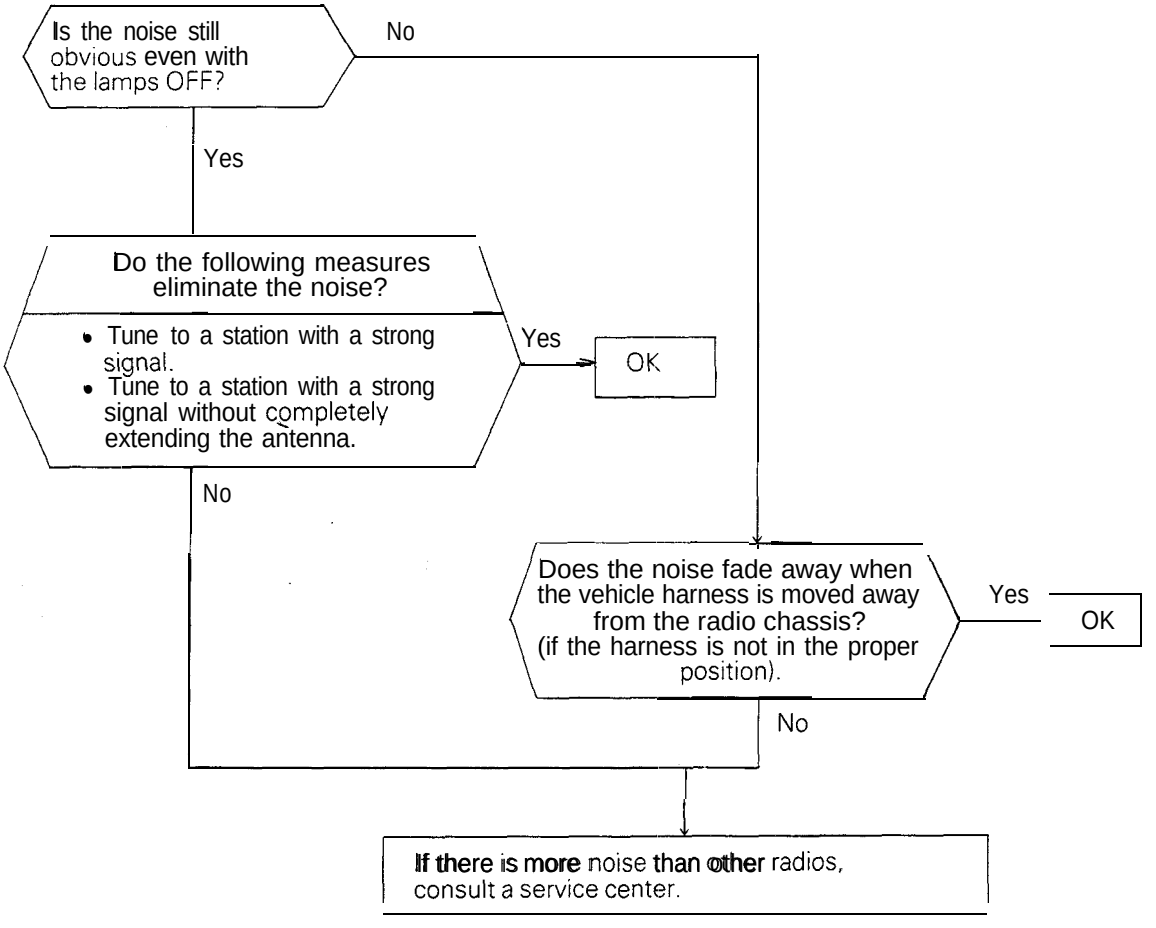
16A0664

TSB Revision

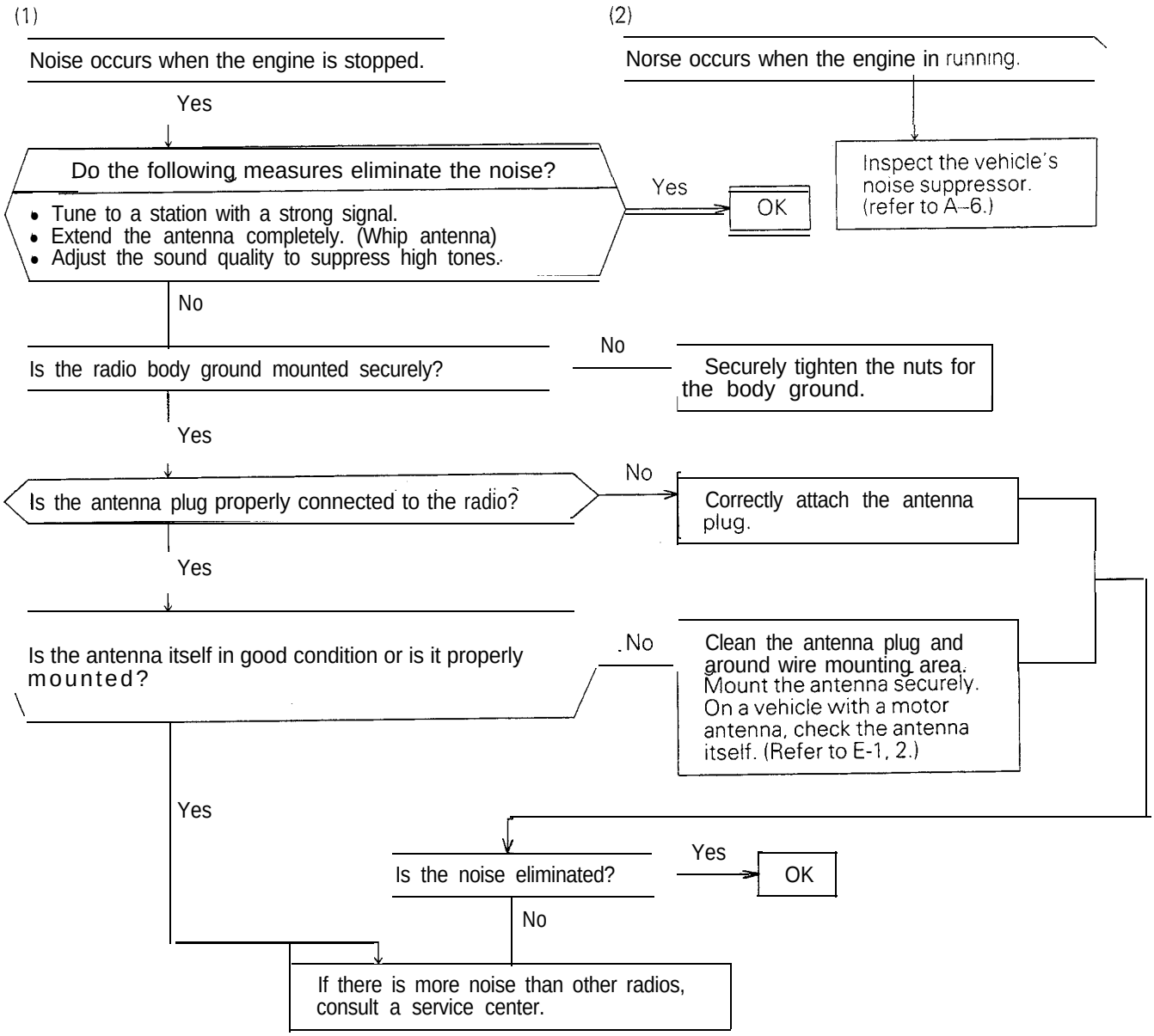
A-3 Mixed with noise,' only at night (AM).

The following factors can be considered as possible causes of noise appearing at night.

1. Factors due to signal conditions: Due to the fact that long-distance signals are more easily received at night, even stations that are received without problem during the day may experience interference in a general worsening of reception conditions. The weaker a station is the more susceptible it is to interference, and a change to a different station or the appearance of a beating sound* may occur.
   Beat sound*: Two signals close in frequency interfere with each other, creating a repetitious high-pitched sound. This sound is generated not only by sound signals but by electrical waves as well.
2. Factors due to vehicle noise: Alternator noise may be a cause.



A–4 Broadcasts can be heard but both AM and FM have a lot of noise.



NOTE

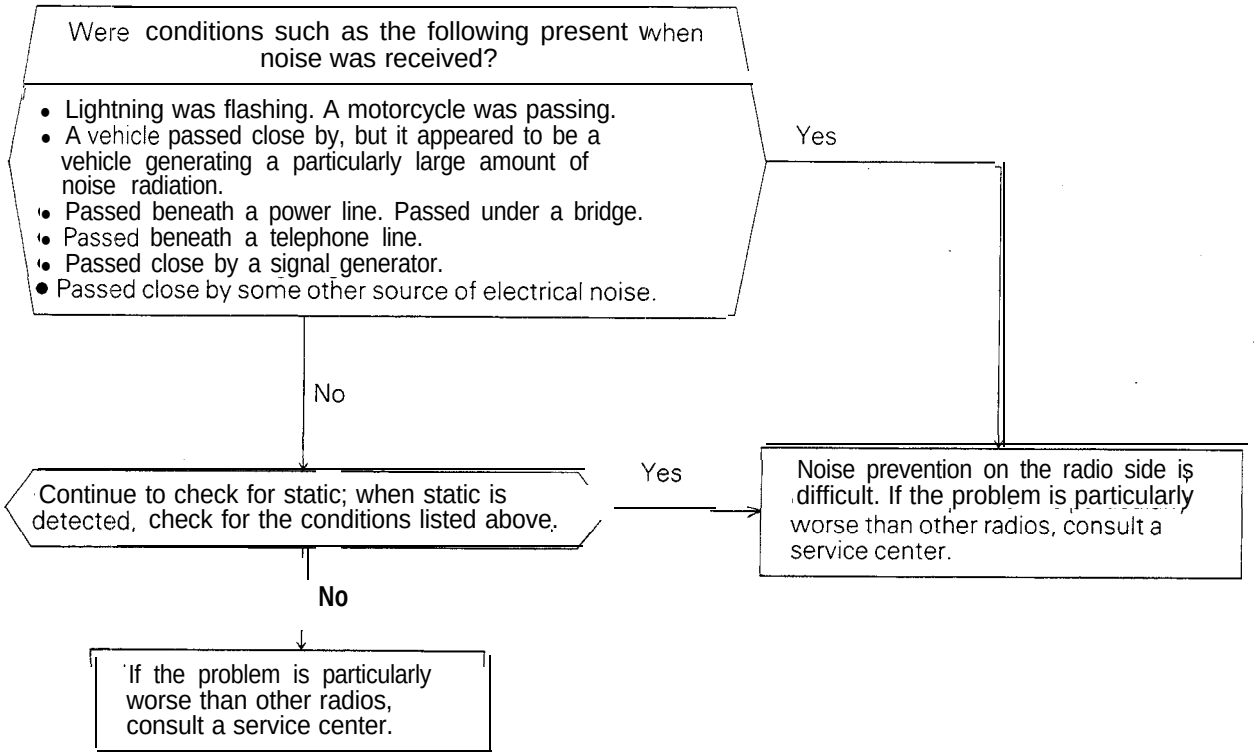
About noise encountered during FM reception only. Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise interference (first fading and multipath). (Refer to A-2.)

<Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>

TSB Revision

A-5 There is more noise either on AM or on FM.

1. There is much noise only on AM
   Due to differences in AM and FM systems, AM is more susceptible to noise interference.



2. There is much noise only on FM
   Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise interference (first fading and multipath). (Refer to A-2) <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>

A-6 There is noise when starting the engine.

Noise type Sounds are in parentheses ( ).	Conditions	Cause	Inspection or replacement	
			Noise-preventive part	Mounting place (next page)
AM, FM: Ignition noise (Popping, Snapping, Cracking, Buzzing)	• Increasing the engine speed causing the popping sound to speed up, and volume decreases. • Disappears when the ignition switch is turned to ACC.	• Mainly due to the spark plugs. • Due to the engine noise.	• Noise condenser • Ground cable	1 2, 3
Other electrical components	–	Noise may appear as electrical components become older.	Repair or replace electrical components.	
Static electricity (Cracking, Crinkling)	• Disappears when the vehicle is completely stopped. • Severe when the clutch is engaged.	Occurs when parts or wiring move for some reason and contact metal parts of the body.	Return parts or wiring to their proper position.	
	• Various noises are produced depending on the body part of the vehicle.	Due to detachment from the body of the front hood, bumpers, exhaust pipe and muffler, suspension, etc.	Ground parts by bonding. Cases where the problem is not eliminated by a single response to one area are common, due to several body parts being imperfectly grounded.	

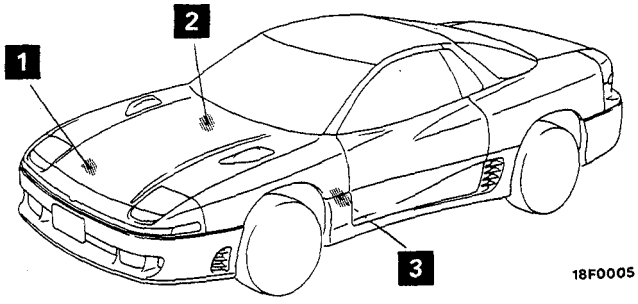
Caution

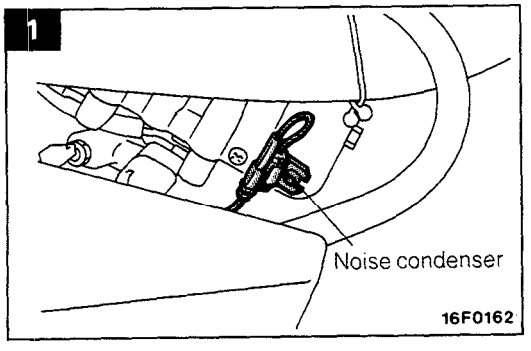
1. **Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.**
2. **Check that there is no external noise. Since failure due this may result in misdiagnosis due to inability to identify the noise source, this operation must be performed.**
3. **Noise prevention should be performed by suppressing strong sources of noise step by step.**

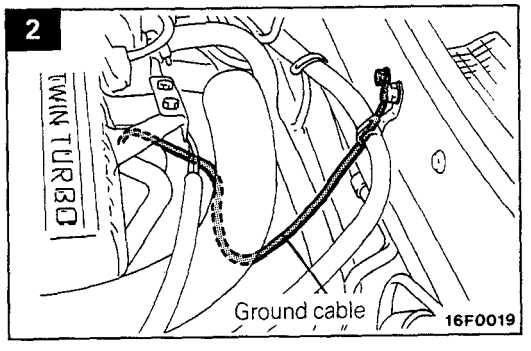
NOTE

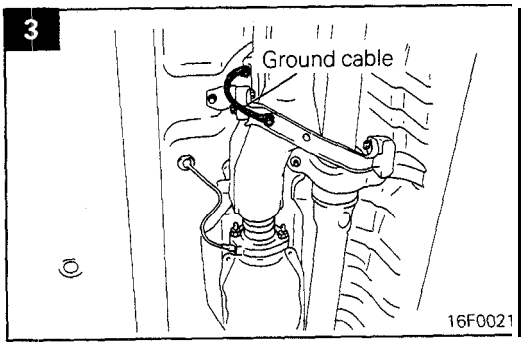
1. Condenser
   The condenser does not pass D.C. current, but as the number of waves increases when it passes A.C. current, impedance (resistance against A.C.) decreases, and current flow is facilitated. A noise suppressing condenser which takes advantage of this property is inserted between the power line for the noise source and the ground. This suppresses noise by grounding the noise component (A.C. or pulse signal) to the body of the vehicle.
2. Coil
   The coil passes D.C. current, but impedance rises as the number of waves increases relative to the A.C. current. A noise suppressing coil which takes advantage of this property is inserted into the power line for the noise source, and works by preventing the noise component from flowing or radiating out of the line.

NOISE SUPPRESSION PARTS MOUNTING POSITIONS

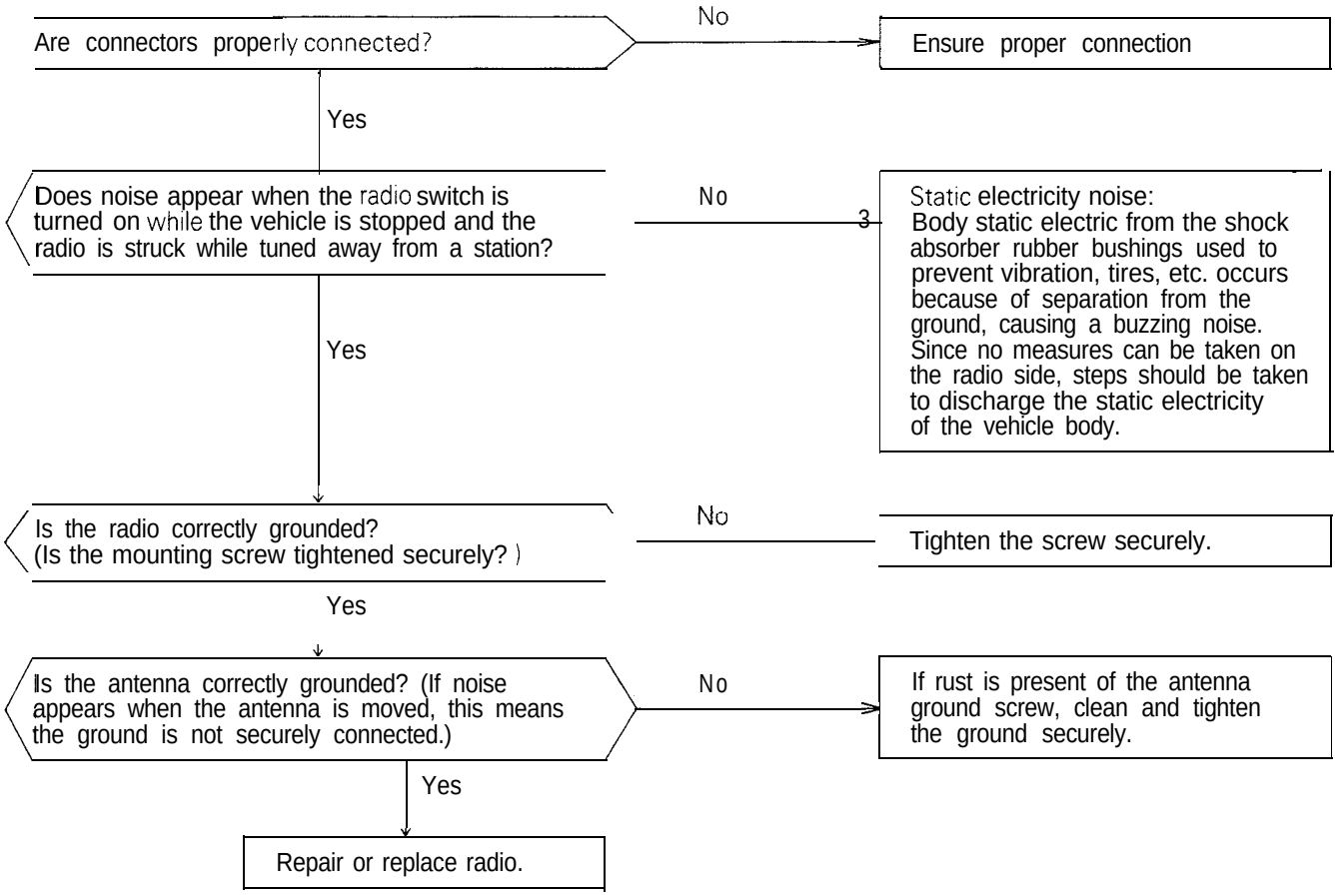






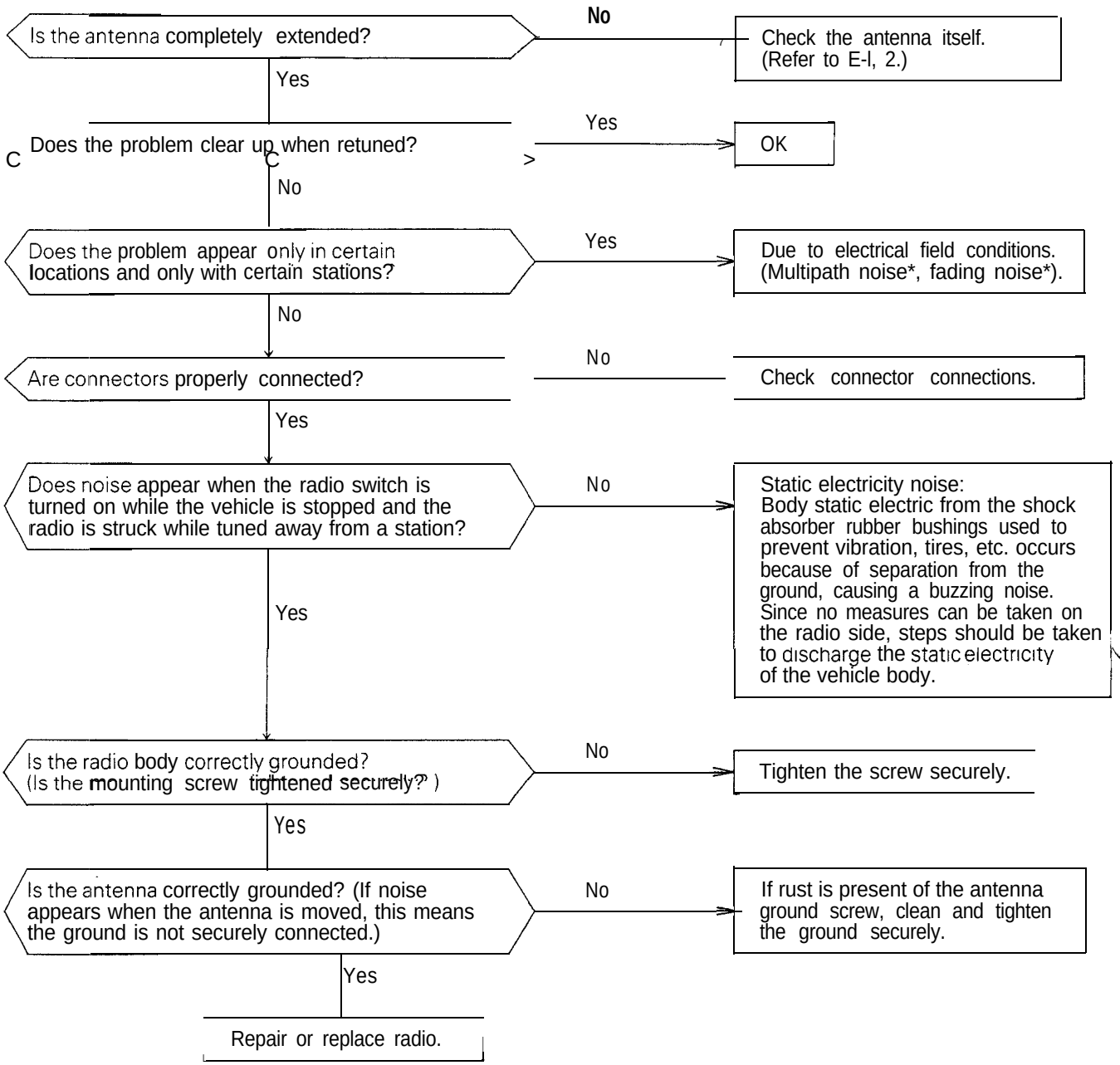


A-7 Some noise appears when there is vibration or shocks during traveling.



TSB Revision

A–8 Noise sometimes appears on FM during traveling.



* About multipath noise and fading noise

Because the frequency of FM waves is extremely high, it is highly susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in several ways.

- Multipath noise

  This 'describes the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).

- Fading noise

  This is a buzzing noise that occurs when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.

A–9 Ever-present noise.

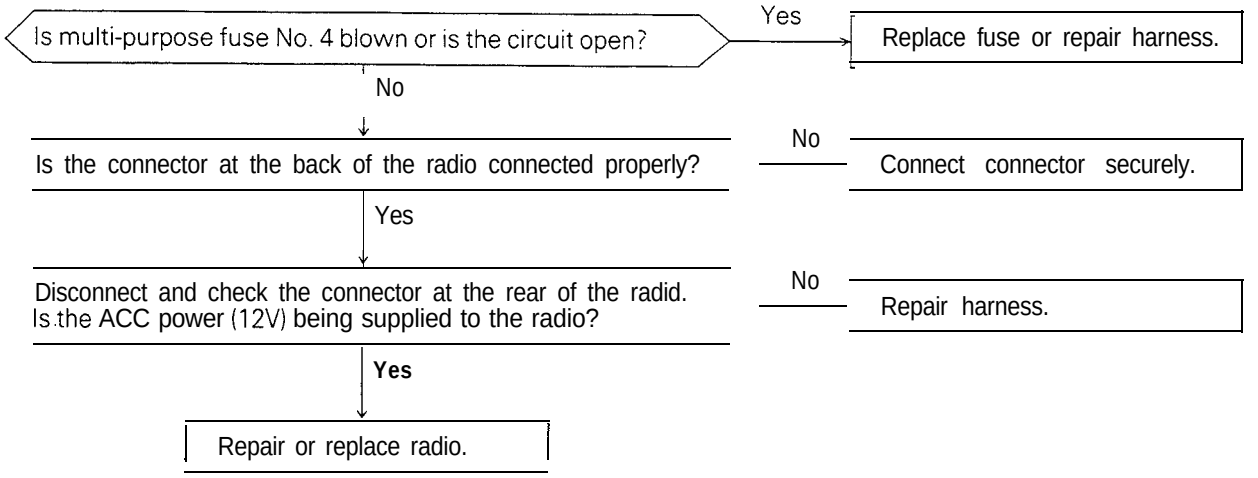
Noise is often created by the following factors, and often the radio is OK when it is checked individually.

- Traveling conditions of the vehicle
- Terrain of area traveled through
- Surrounding buildings
- Signal conditions
- Time period

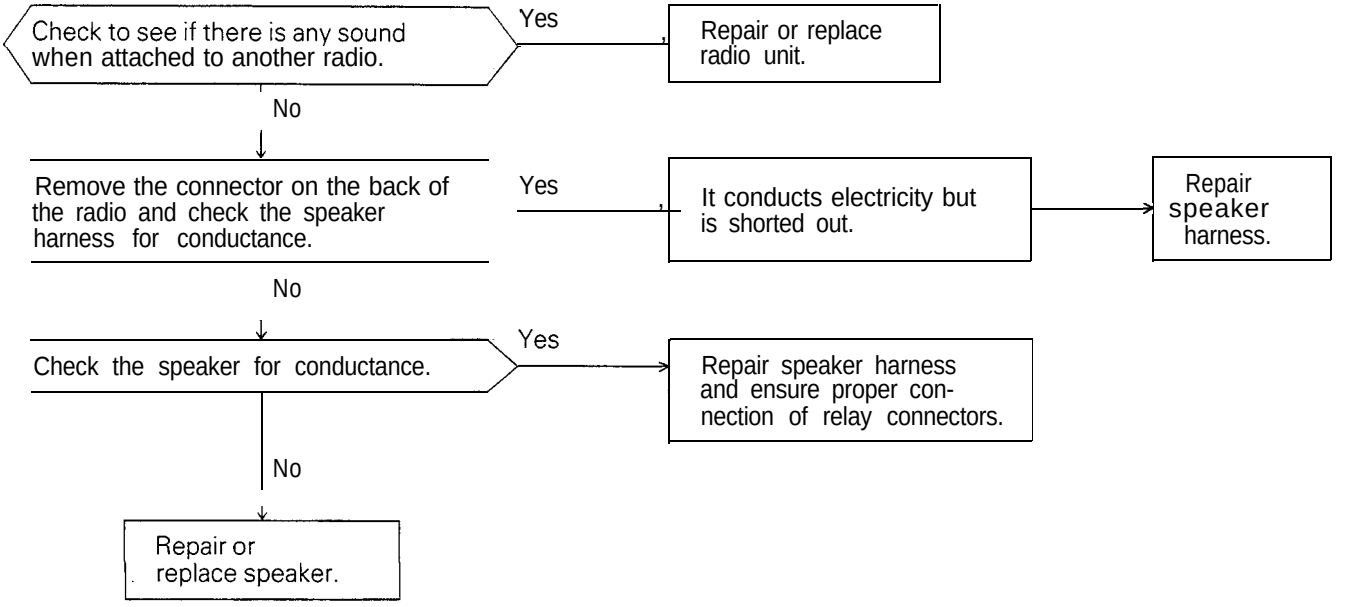
For this reason, if there are still problems with noise even after the measures described in steps A-l to A-8 have been taken, get information on the factors listed above as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc., and contact a service center.

B. RADIO

B–1 No power is supplied when the switch is set to ON.

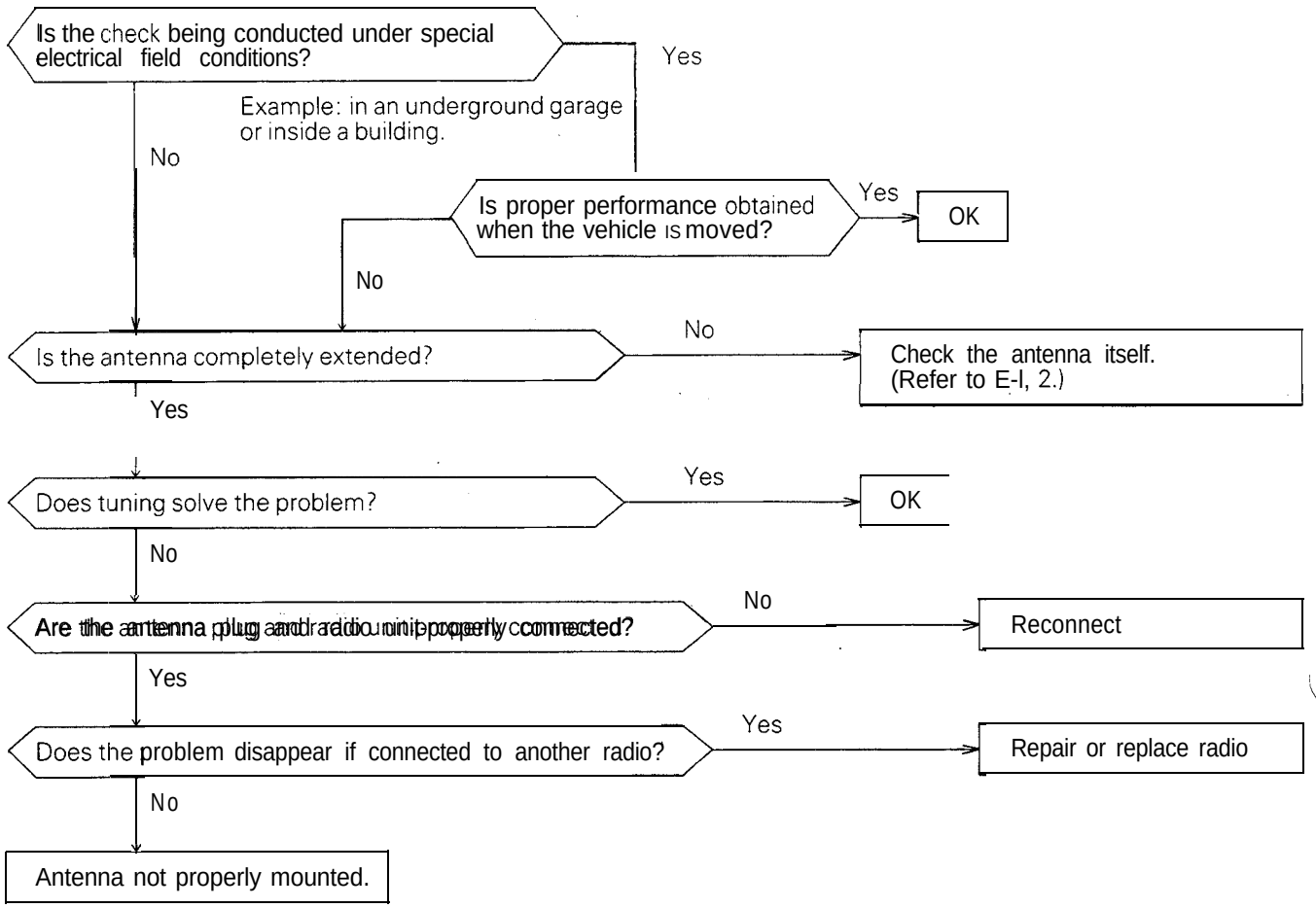


B–2 No sound from one speaker.

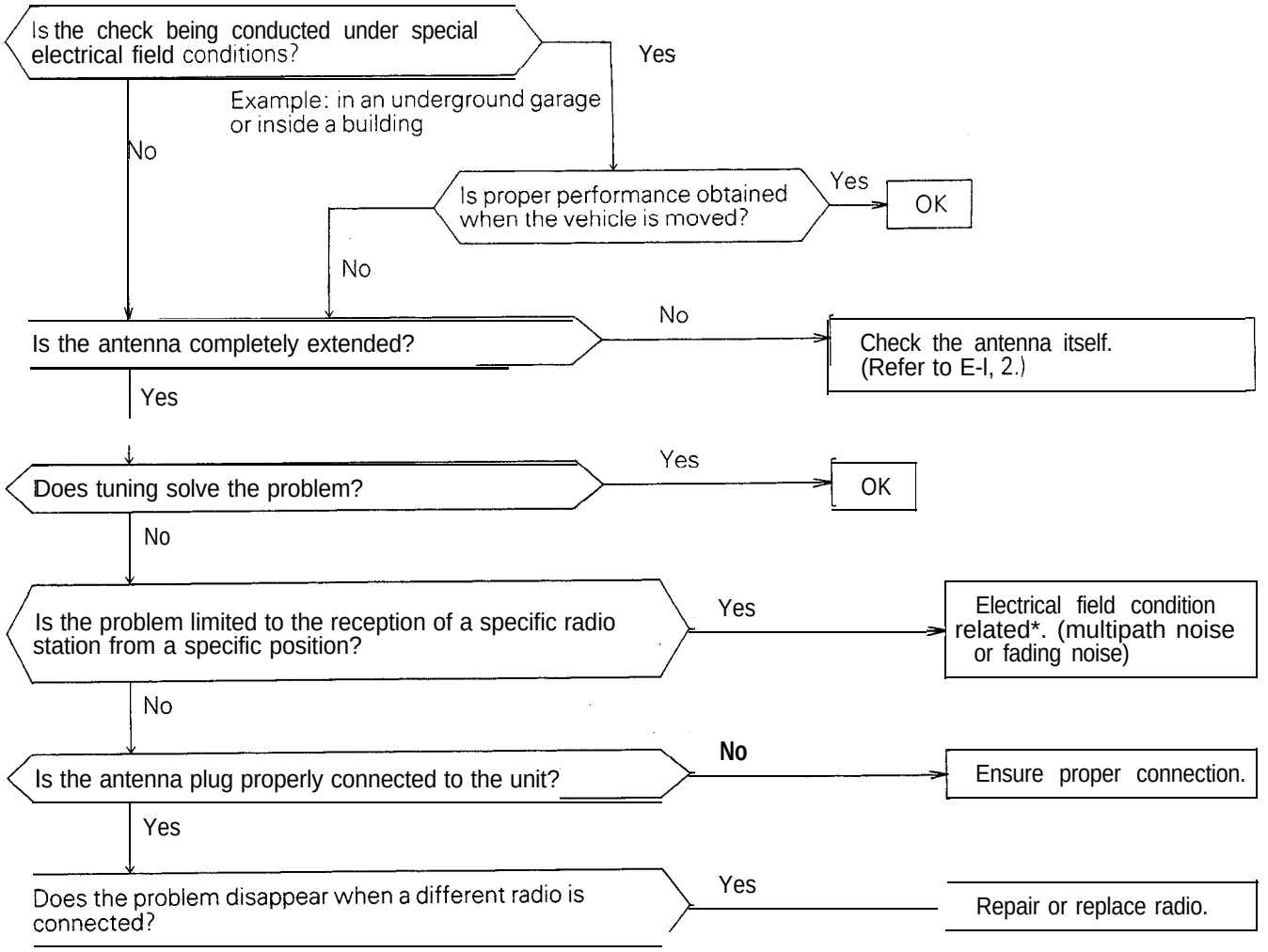


TSB Revision

B-3	There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.

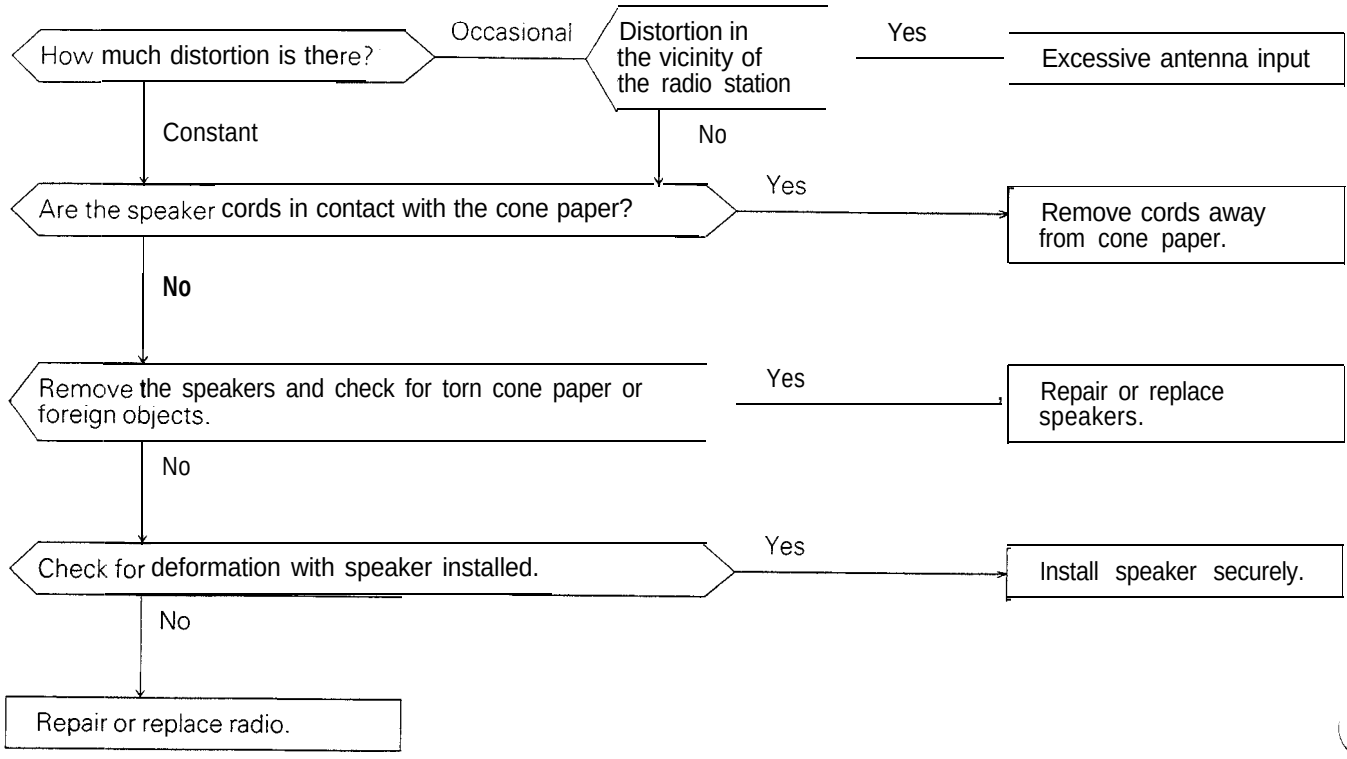


B-4 Insufficient sensitivity.

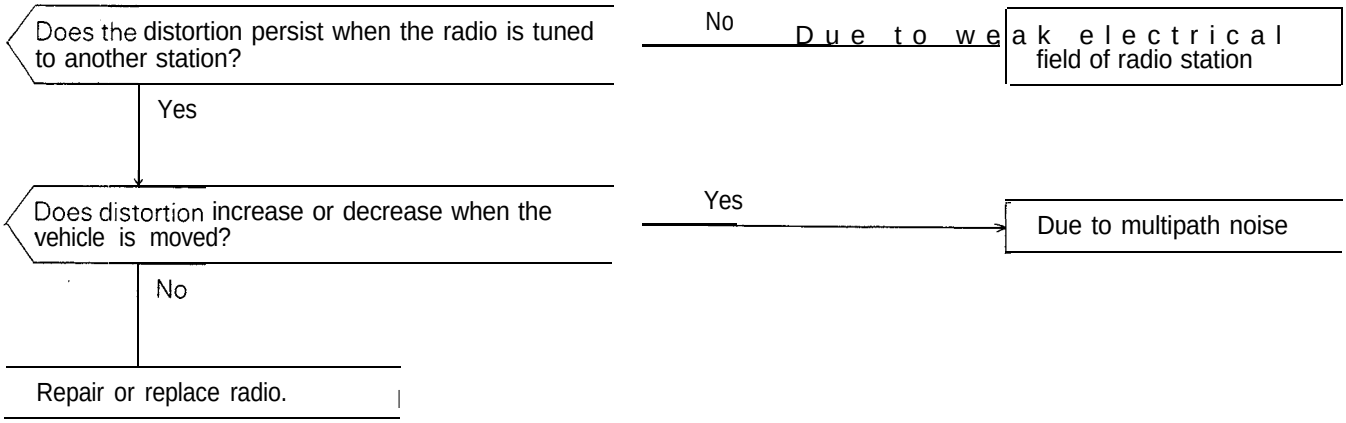


* For multipath noise and fading noise problems, refer to P.54-94.

B–5 Distortion on AM or on both AM and FM.

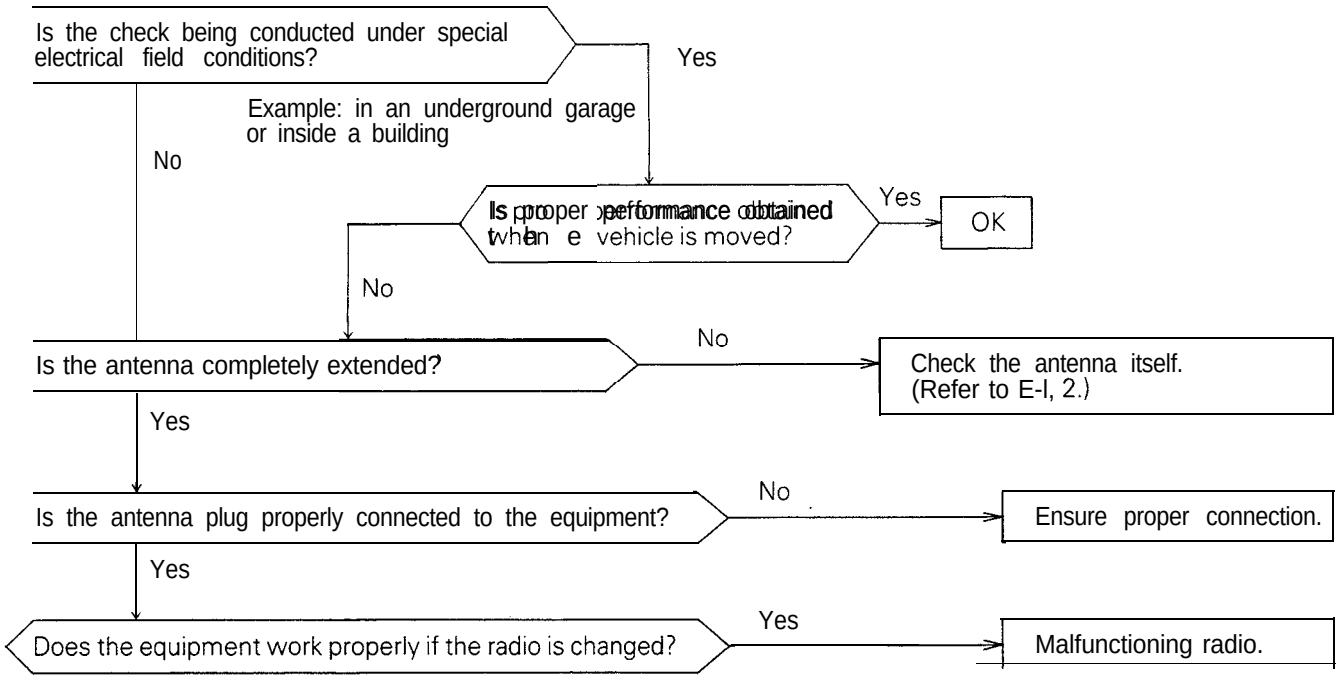


B-6 Distortion on FM only

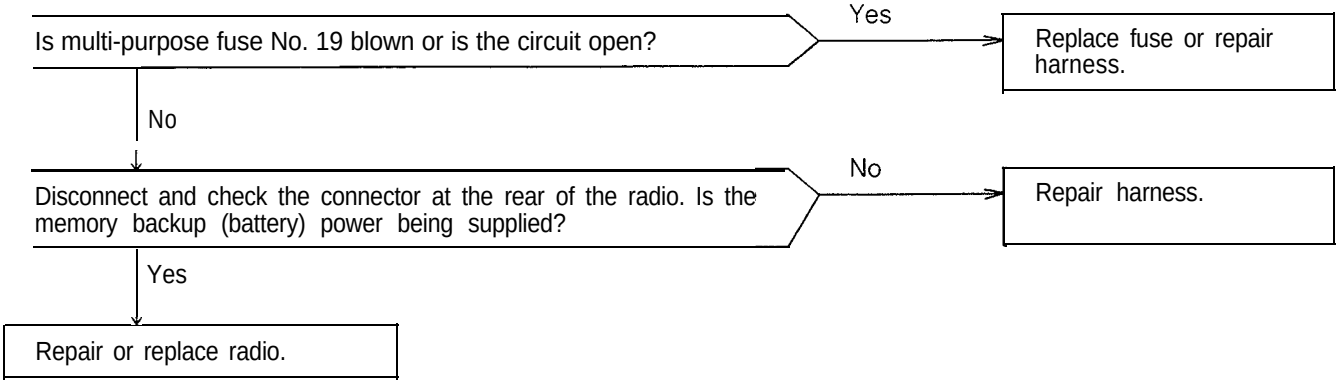


TSB Revision

B-7 Too few automatic select stations.

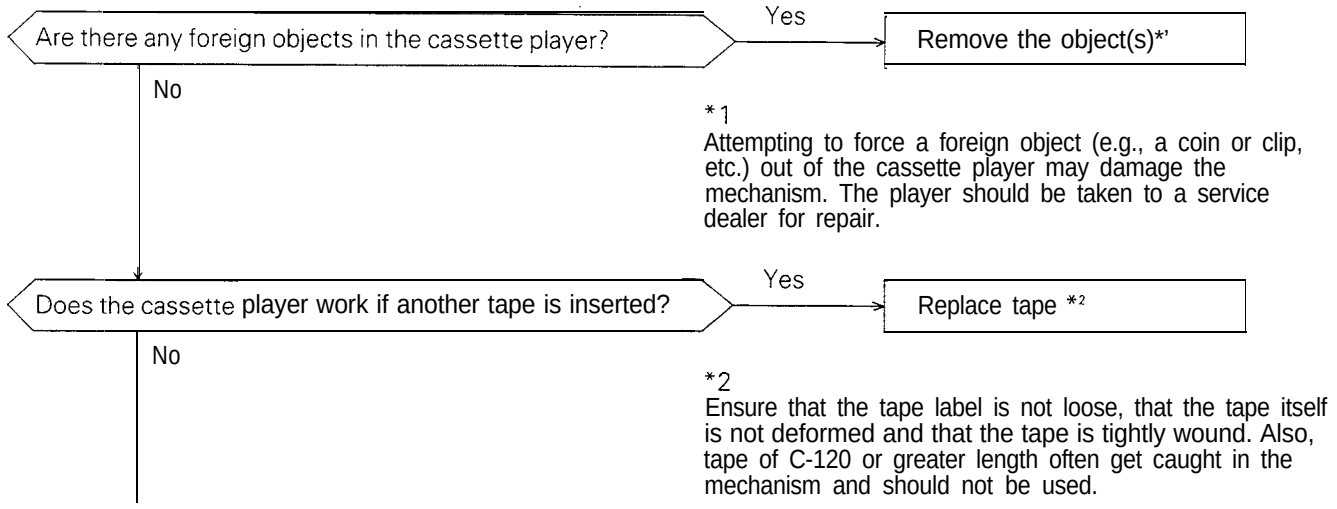


B-8 Insufficient memory (preset stations are erased).



C. CASSETTE PLAYER

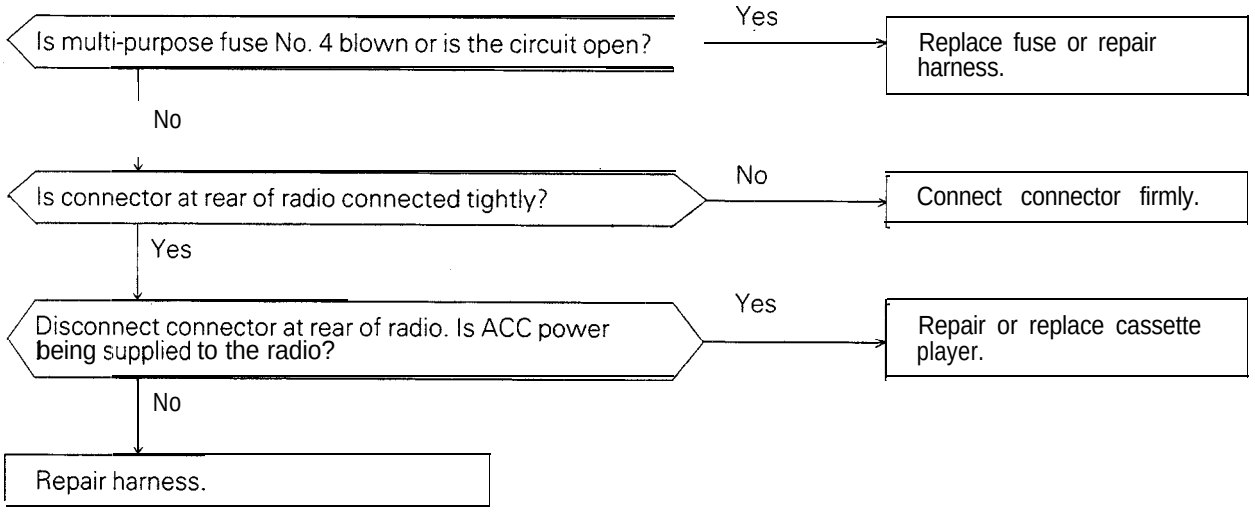
C-1 Cassette tape will not be inserted.



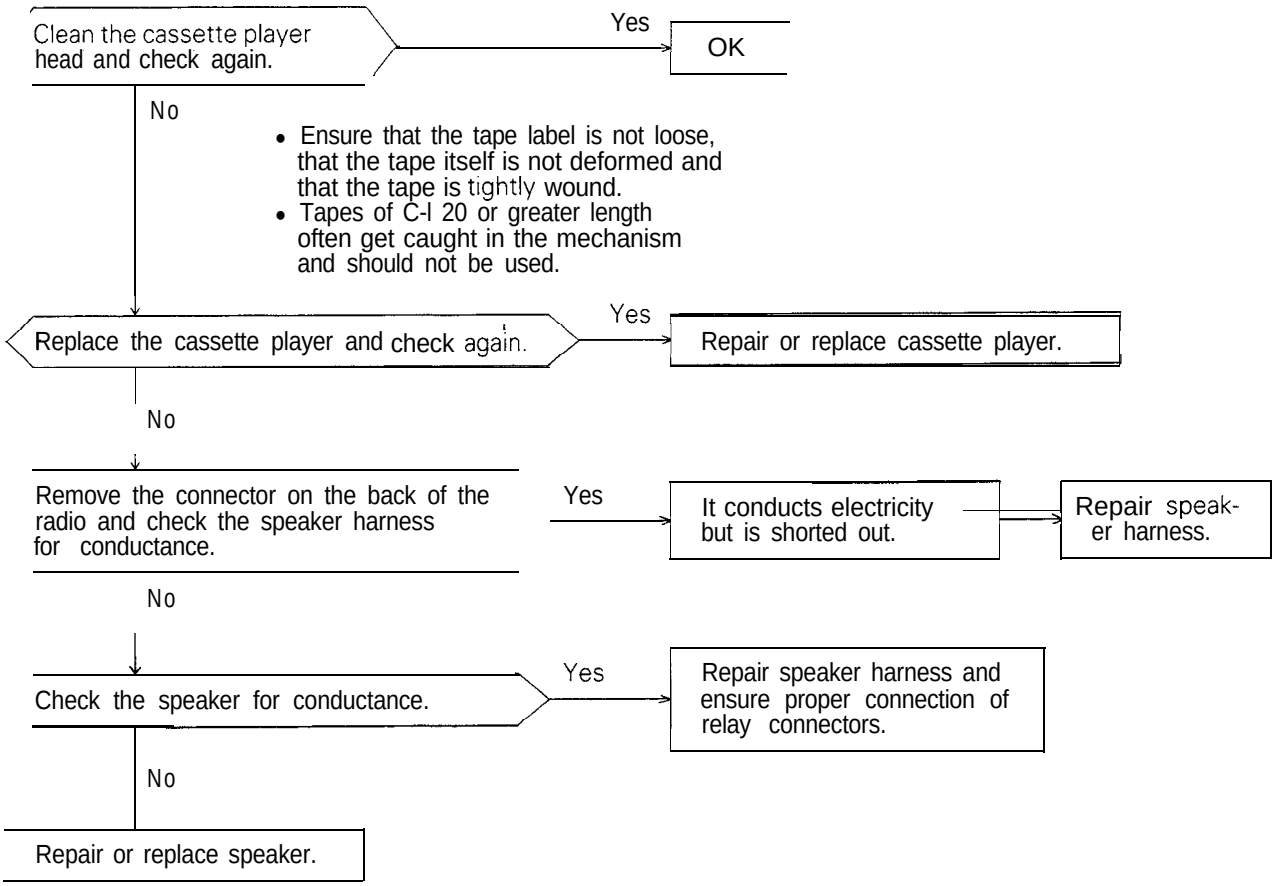
*1
Attempting to force a foreign object (e.g., a coin or clip, etc.) out of the cassette player may damage the mechanism. The player should be taken to a service dealer for repair.

*2
Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tape of C-120 or greater length often get caught in the mechanism and should not be used.

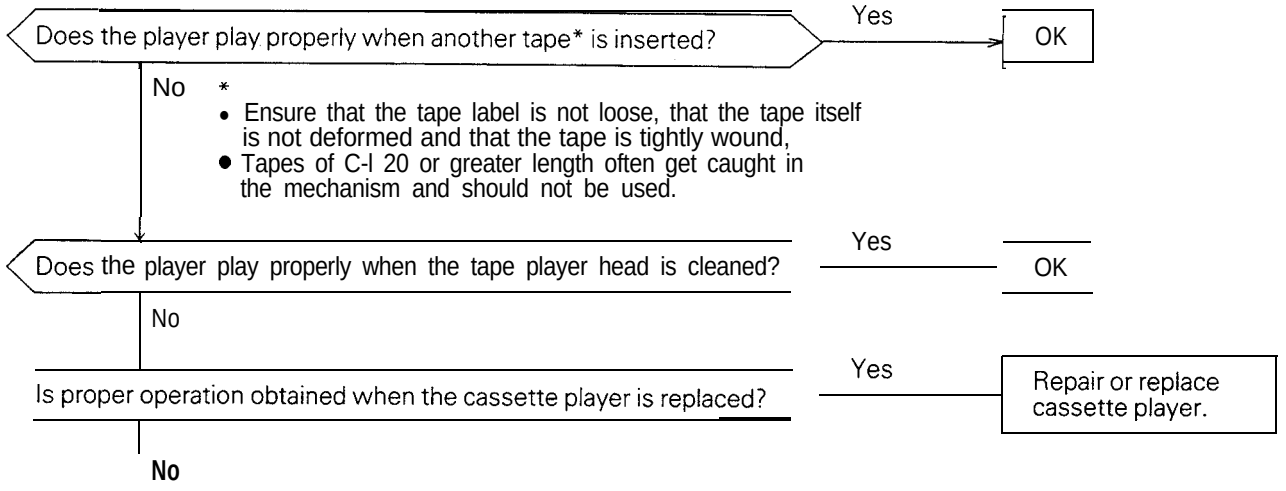
C-2 No sound (even after a tape has been inserted).



C-3 No sound from one speaker.



C–4 Sound quality is poor, or sound is weak.



C–5 Cassette tape will not eject.

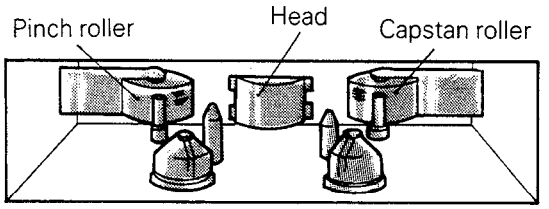
The problems covered here are all the result of the use of a bad tape (deformed or not properly tightened) or of a malfunction of the cassette player itself. Malfunctions involving the tape becoming caught in the mechanism and ruining the case are also possible, and attempting to force the tape out of the player can cause damage to the mechanism. The player should be taken to a service dealer for repair.

C-6 Uneven revolution. Tape speed is fast or slow.

Does the player play OK if the tape is changed?
- Yes → OK
- No

Are there any foreign objects inside the cassette player?
- Yes → Remove foreign object(s).
- No

Is the head or capstan roller dirty?



- Yes → Clean.
- No

Repair or replace cassette player.

C-7 Automatic search does not work.

Does the MSS (automatic search) button*1 depress properly?
- No → Button improperly operated.
- Yes

Does the player play OK if the tape*2 is changed?
- No → Tape used is bad.
- Yes

Malfunction of the cassette player unit

*1
- When the time between songs on a tape is less than three seconds, or when there is a three second period in the middle of a song in which the volume level is extremely low, the automatic search function may not work properly.

*2
- LEnsure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-l 20 or greater length often get caught in the mechanism and should not be used.

TSB Revision

C-8 Faulty auto reverse.

Does the player play OK if the tape is changed?
- Yes → OK
- No →
  - Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound.
  - Tapes of C-I 20 or greater length often get caught in the mechanism and should not be used.

Does the problem only occur while the vehicle is being driven?
- No → Repair or replace cassette player.
- Yes ↓

Is the cassette player properly installed to the vehicle?
- No → Ensure cassette player installation.
- Yes ↓

Repair or replace cassette player.

C-9 Tape gets caught in mechanism*1.

*1
When the tape is caught in the mechanism, the case may not eject. When this occurs, do not try to force the tape out as this may damage the tape player mechanism. Take the cassette to a service dealer for repair.

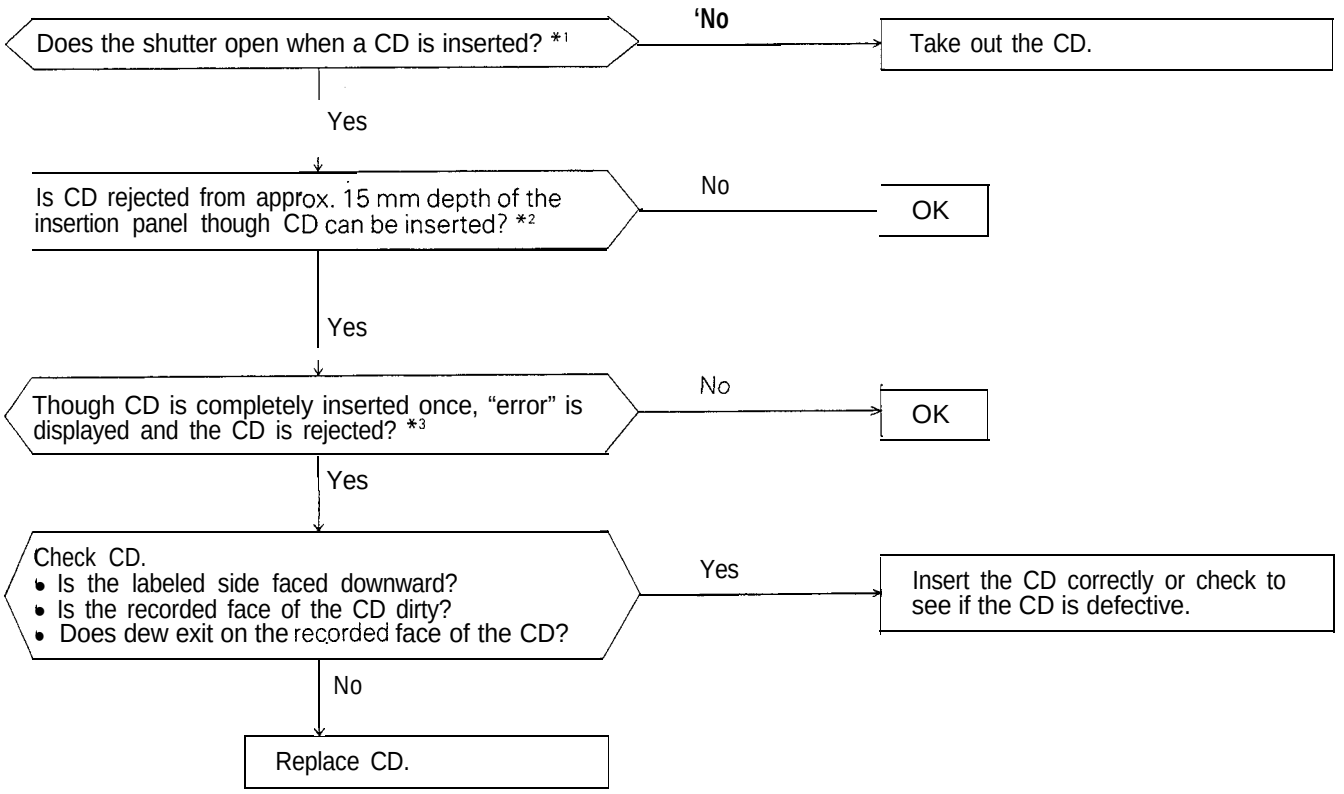
Does the player play OK if the tape*2 is changed?
- Yes → Tape used is bad.
- No ↓

*2
Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-I 20 or greater length often get caught in the mechanism and should not be used.

Repair or replace cassette player.

D. CD PLAYER

D-l CD will not be accepted.

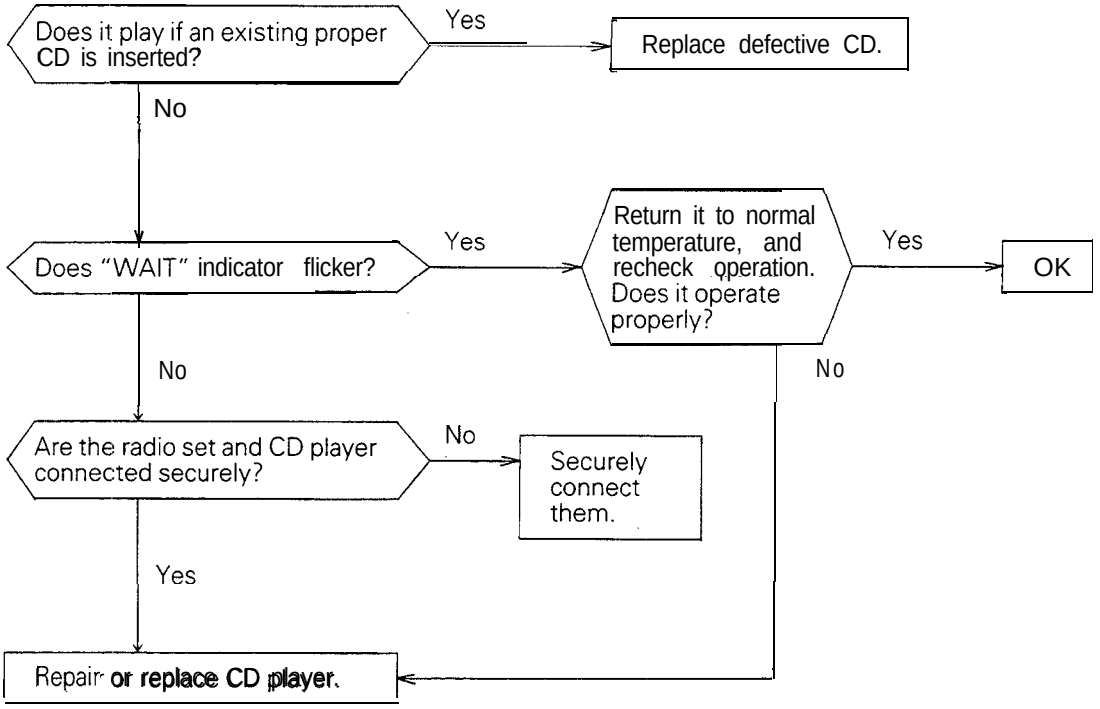


*1 If the CD is already loaded, doesn't the shutter open to allow Insertion when another CD is inserted?

*2 If the key switch is not at ACC or ON, the CD stops at depth of 15 mm below the panel surface even when it is inserted, and it will be rejected when pushed farther?

*3 Even though the CD is loaded, E (error) is sometimes displayed with the CD rejected because of vibration/ shock or dew on the CD face or optical lens.

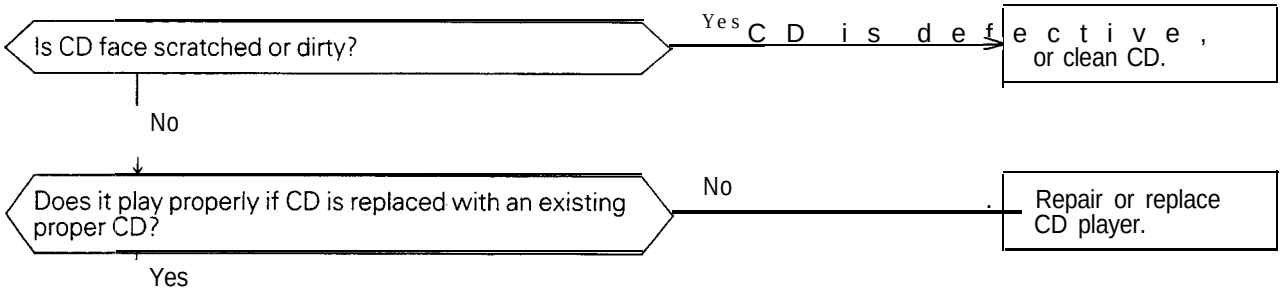
D–2 No sound.



(The combined radio cassette must operate properly.)

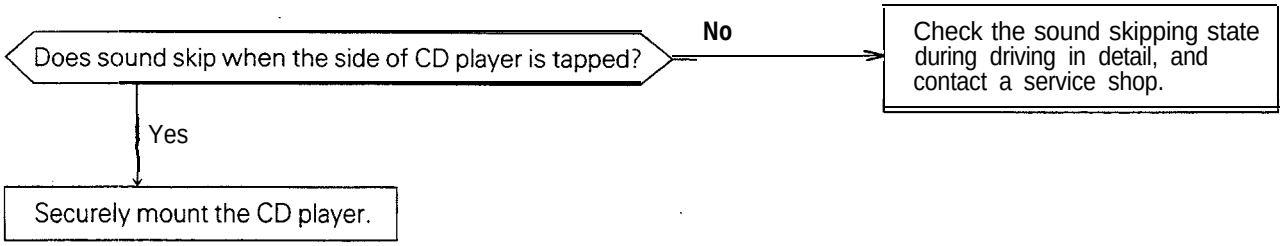
D–3 CD sound skips.

1. Sound sometimes skips during parking.



Replace CD.

2. Sound sometimes skips during driving.
   (Stop vehicle, and check it.)
   (Check it by using a proper CD which is free of scratch, dirt or other abnormality.)



TSB Revision

D-4 Sound quality is poor.

Does it play properly if another proper CD is loaded?
- Yes → Replace CD.
- No → Repair or replace CD player.

D-5 CD will not be ejected.

Is the key switch (ignition key) at ACC or ON?
- No → Turn the key to ON.
- Yes →

Is the combined amplifier or radio set connected securely?
- No → Securely connect the subjected one.
- Yes →

If CD is not ejected, don't reject it.
The player may be damaged. Therefore, contact a service shop for repairs.

D-6 No sound from one speaker.

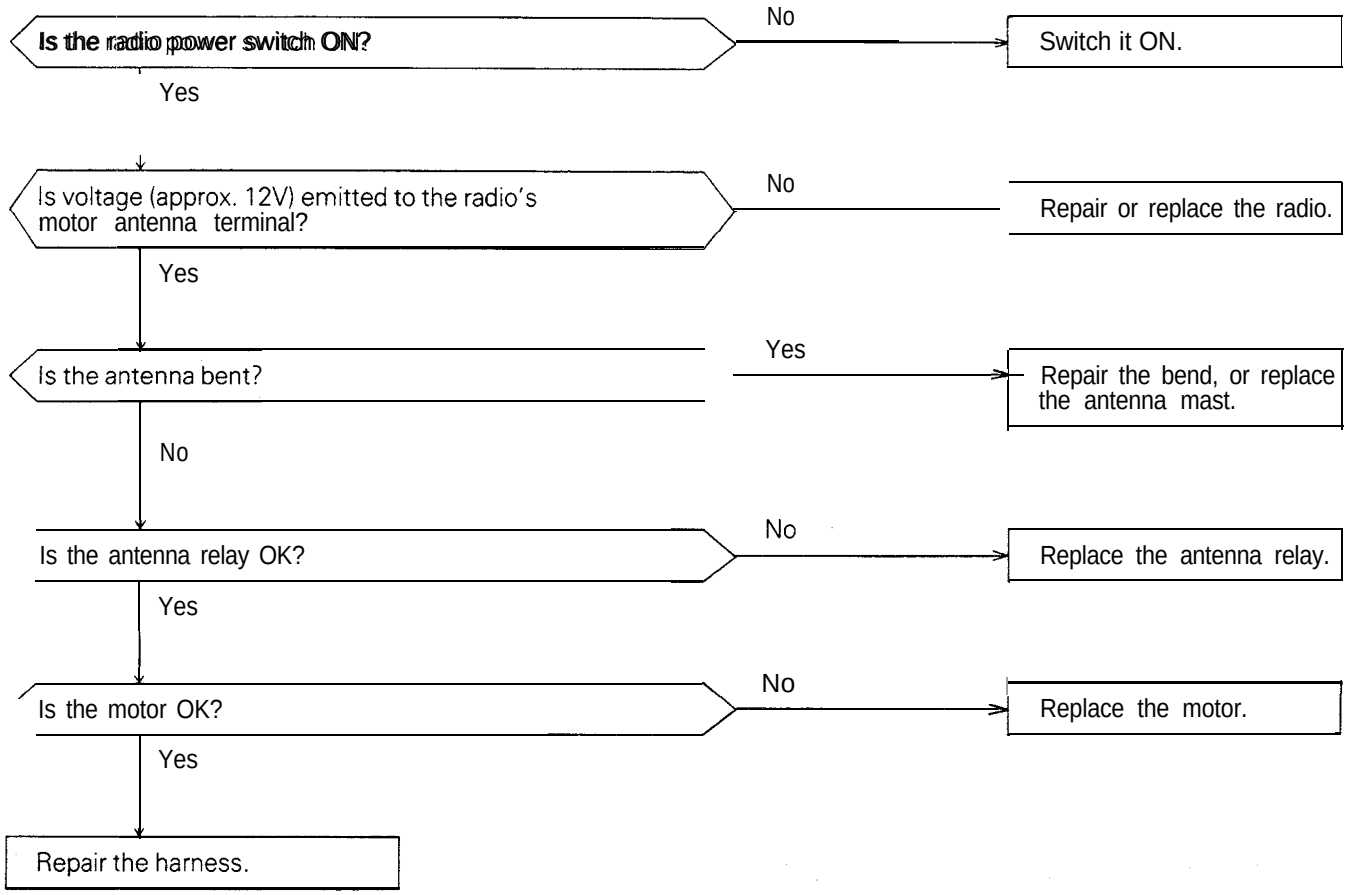
Is CD player securely connected to the combined radio set?
- No → Securely connect them.
- Yes →

Does it play properly if another CD player is combined?
- Yes → Repair or replace CD player.
- No → Repair or replace the combined radio set.

E. MOTOR ANTENNA

E-I | Motor antenna won't extend or retract.

Clean and polish the surface of the antenna rod.

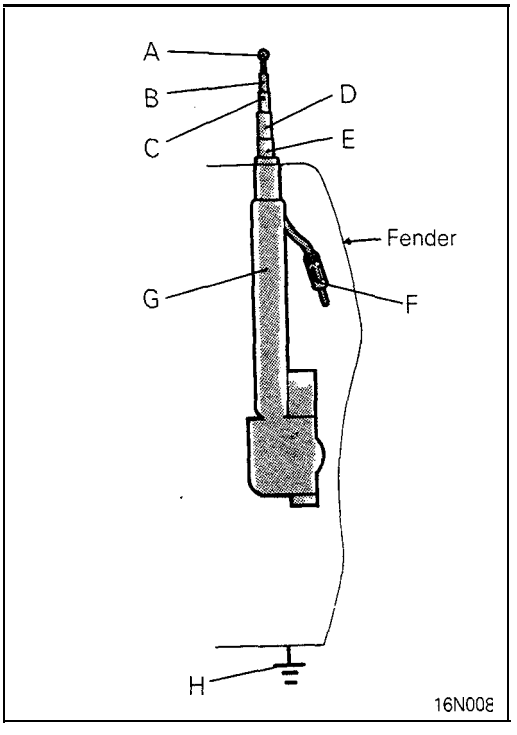


E-2 Motor antenna extends and retracts but does not receive.

Is the antenna* itself OK?
- No → Repair or replace it.
- Yes ↓

Is operation normal when a new antenna assembly is directly installed to the radio?
- No → Refer to B. "Radio trouble shooting".
- Yes ↓

Replace the feeder cable.



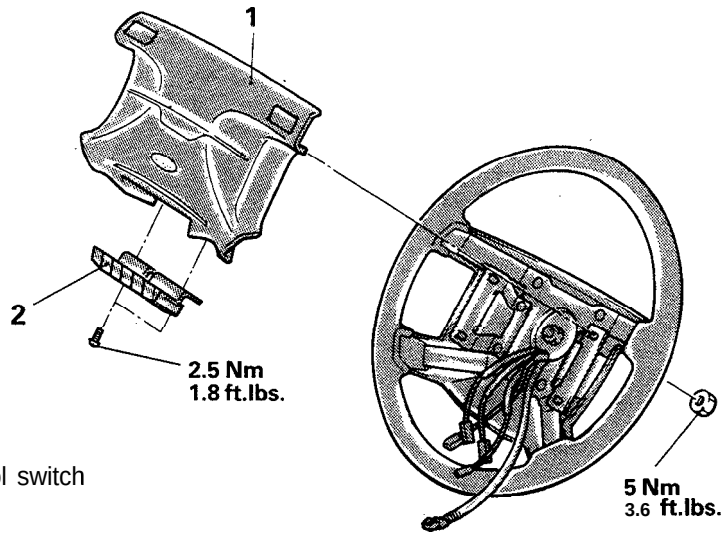
Checking the antenna*

Ohmmeter measurement locations	Result
Circuits from F to A, B, C, D and E	Continuity
Circuit between G and H	Continuity
Circuits from H to A, B, C, D and E	No continuity

RADIO REMOTE-CONTROL

M54NRAC

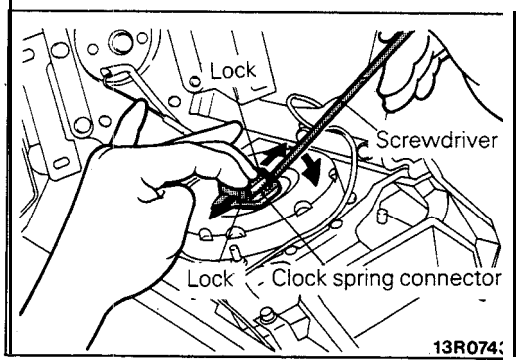
REMOVAL AND INSTALLATION



Removal steps

◆◆ 1. Air bag module
2. Radio remote control switch

16F0208



SERVICE POINT OF REMOVAL

1. REMOVAL OF AIR BAG MODULE

(1) Remove the air bag module mounting nut using a socket wrench from the back side.

(2) To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

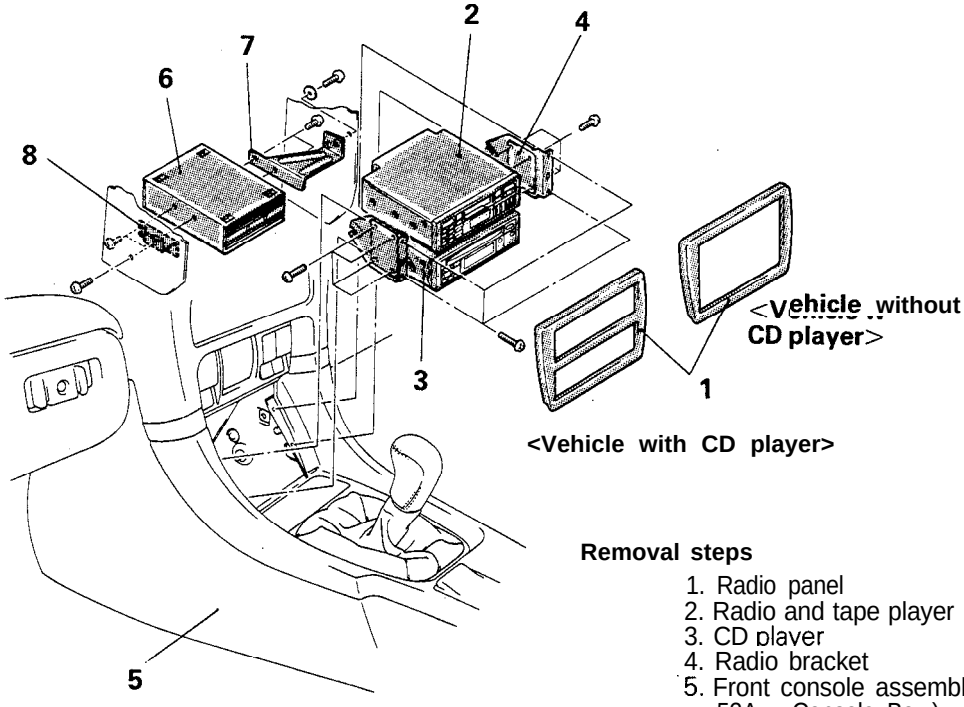
Caution
Wait at least 30 seconds after disconnecting the battery cable before doing any further work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.

(3) The removed air bag module should be stored in a clean, dry place with the pad cover face up.

RADIO AND TAPE PLAYER

M54NJAR

REMOVAL AND INSTALLATION



<Vehicle with CD player>

Removal steps

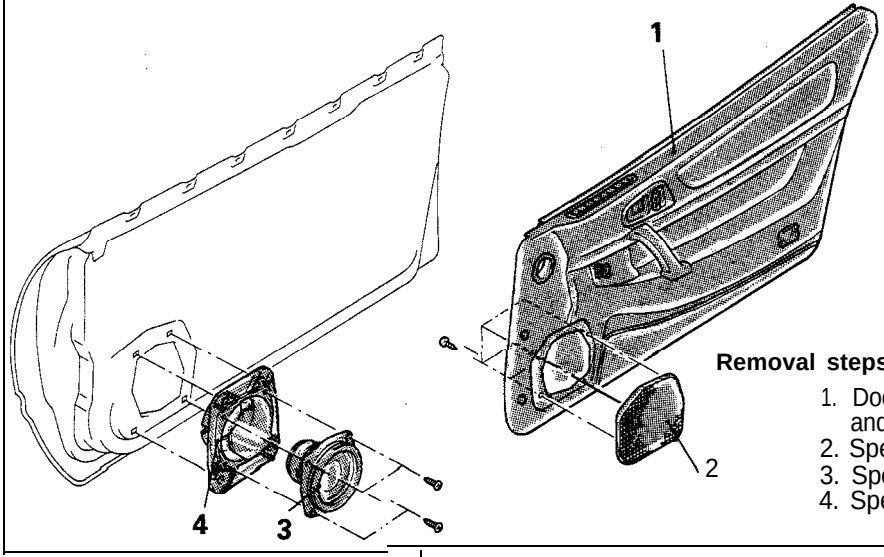
1. Radio panel
2. Radio and tape player
3. CD player
4. Radio bracket
5. Front console assembly (Refer to GROUP 52A – Console Box.)
6. CD amplifier
7. CD amplifier bracket A
8. CD amplifier bracket B

16F0096

SPEAKER
<DOOR SPEAKER>

M54NNAF

REMOVAL AND INSTALLATION



Removal steps

1. Door trim (Refer to GROUP 42 – Door Trim and Waterproof Film.)
2. Speaker garnish
3. Speaker
4. Speaker cover

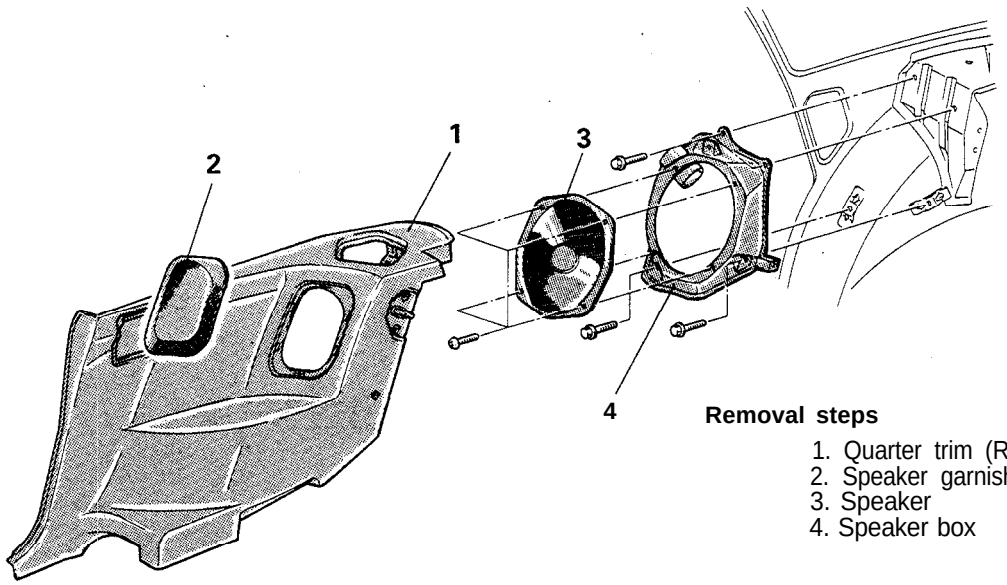
16F0279

TSB Revision

<REAR SPEAKER>

M54NOAK

REMOVAL AND INSTALLATION



Removal steps

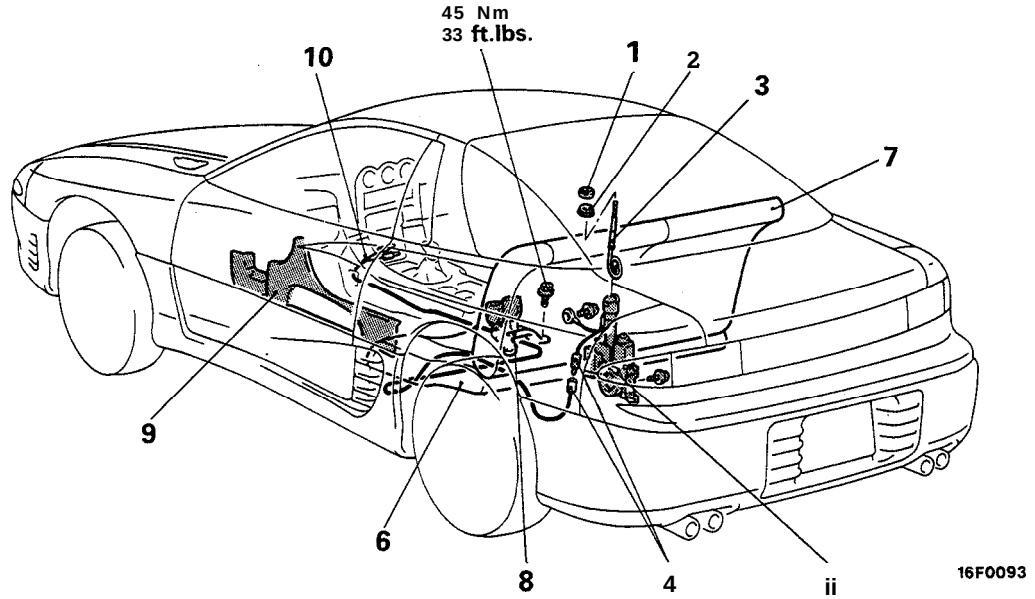
1. Quarter trim (Refer to GROUP 52A – Trims.)
2. Speaker garnish
3. Speaker
4. Speaker box

16F0097

MOTOR ANTENNA · ANTENNA FEEDER CABLE

M54NPBI

REMOVAL AND INSTALLATION



16F0093

Removal steps of motor antenna

Rear side trim (LH)
(Refer to GROUP 52A – Trims.)

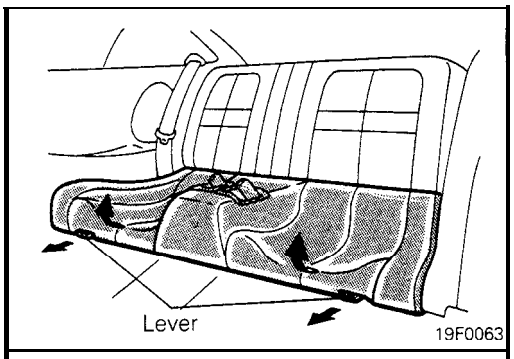
1. Ring nut
2. Base
3. Antenna pole
4. Antenna feeder cable and motor antenna connection
5. Motor antenna

Removal steps of antenna feeder cable

Rear side trim (LH) } (Refer to GROUP
Quarter trim (LH) } 52A – Trims.)
Rear console assembly
(Refer to GROUP 52A – Console Box.)
Radio and tape player
(Refer to P.54-111.)

4. Antenna feeder cable and motor antenna connection
- ◆◆ ● * 6. Rear seat cushion
7. Rear seatback
8. Inner seat belt
9. Console side cover (LH)
10. Antenna feeder cable

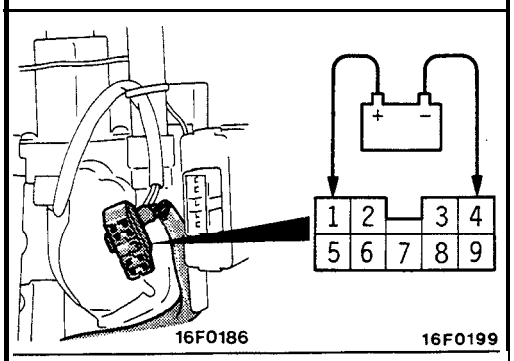
TSB Revision



SERVICE POINT OF REMOVAL

6. REMOVAL OF REAR SEAT CUSHION

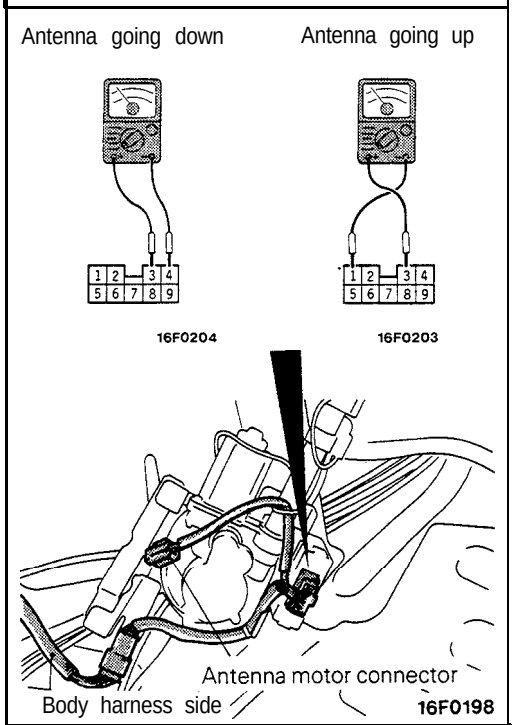
Raise and remove the seat cushion with the lever pulled.



INSPECTION

INSPECTION OF ANTENNA MOTOR

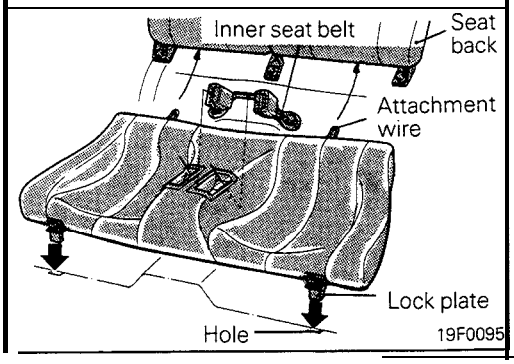
Disconnect the motor antenna control unit connector, connect the positive terminal of the power supply to terminal ① and connect the negative terminal to terminal ④ to check that the antenna goes up, and that when the connections are reversed, the antenna goes down.



INSPECTION OF MOTOR ANTENNA CONTROL UNIT

(1) Connect the harness connector to the motor antenna. (Body harness).
(2) Disconnect the antenna motor connector.
(3) With the ignition switch in the ACC or ON position, operate the radio switch and check the voltage between the terminals during the period when the antenna is going up or going down.

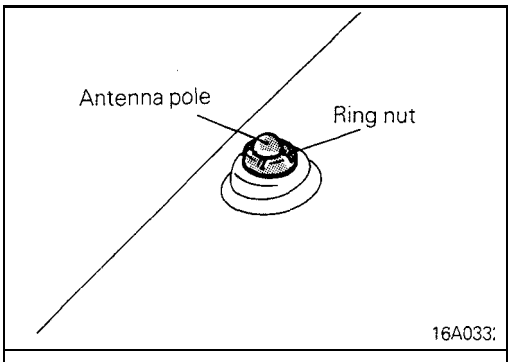
Antenna operating direction	Terminals to check	Voltage (V)
Down	1 – 3	10 – 13
Up	3 – 4	10 – 13



SERVICE POINT OF INSTALLATION

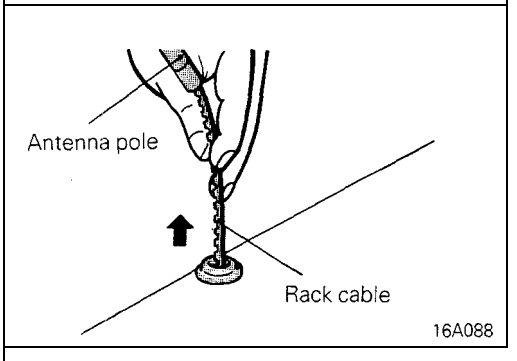
6. INSTALLATION OF REAR SEAT CUSHION

(1) Securely fit the attachment wire of the seat cushion under the seatback.
(2) Pass the inner seat belt buckles through the cushion.
(3) Securely fit the lock plates of the seat cushion into the holes in the floor.

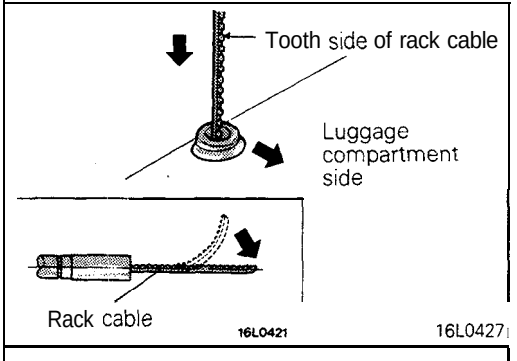


REPLACEMENT OF ANTENNA POLE

(1) Remove the ring nut.



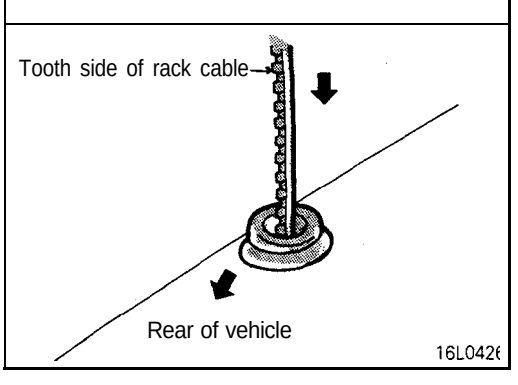
(2) Set the radio switch to ON. After the antenna pole has extended, remove the antenna pole and rack cable as an assembly.



(3) Extend the antenna pole up to its farthest point.

NOTE
If the motor end of the rack cable is bent, straighten it.

(4) Force the rack cable into the motor assembly with the tooth side of the rack cable toward the luggage compartment.



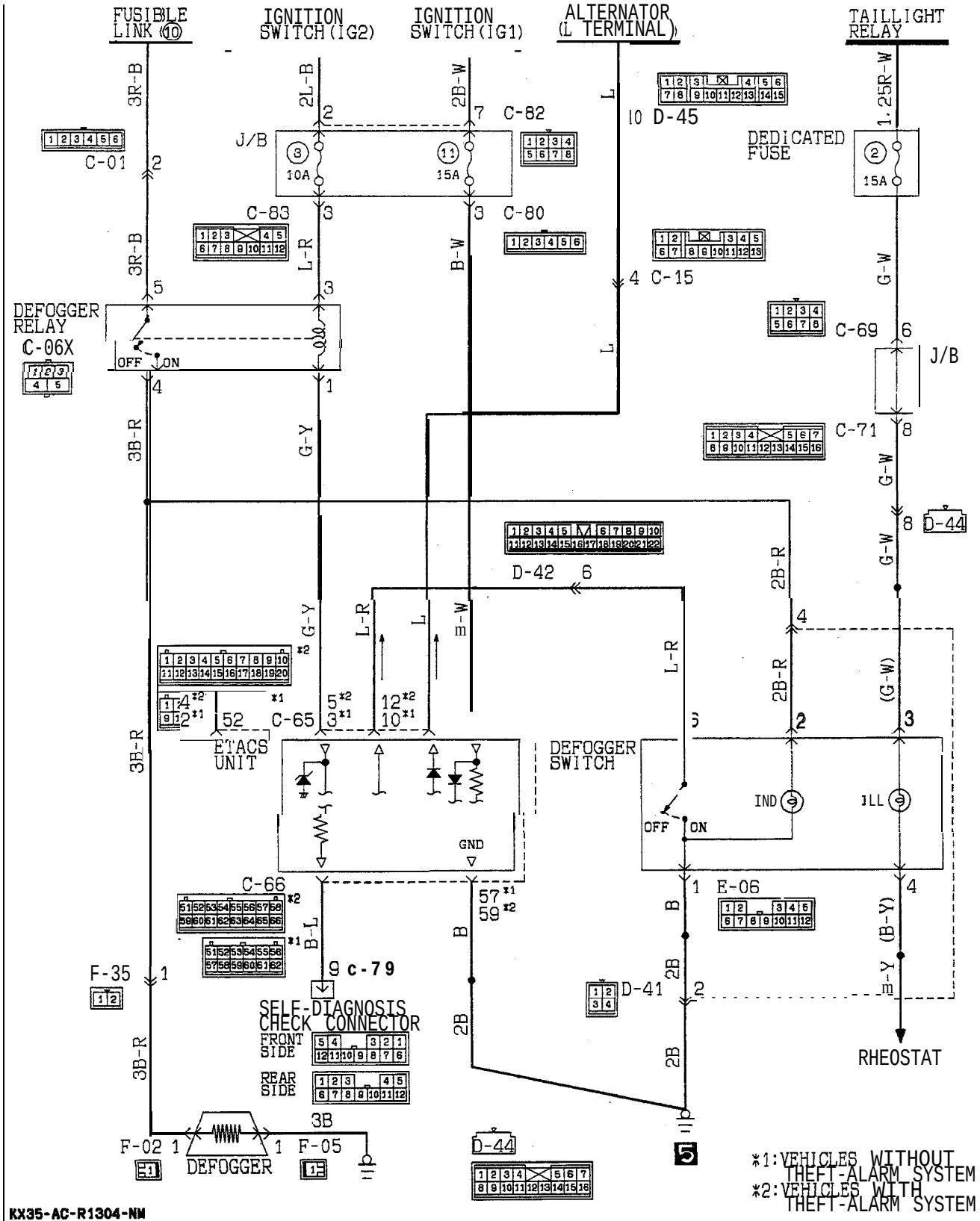
(5) Turn the tooth side of the rack cable toward the rear of the vehicle (90“ clockwise) to bring the rack cable into mesh with the motor gear.
(6) Lightly pull the rack cable. If it comes out without resistance, it means that the rack cable is not in mesh with the motor gear. Recheck that the rack cable end is not bent before repeating the above-mentioned steps (2) and (3).
(7) With the antenna pole upright and the radio switch at OFF, take up the rack cable. As the rack cable is taken up, insert the antenna pole toward the motor antenna.
(8) After the ring nut has been tightened, set the radio switch to ON and OFF to check the operation of the antenna pole.

REAR WINDOW DEFOGGER

TROUBLESHOOTING

M54PHBK

CIRCUIT DIAGRAM



KX35-AC-R1304-NM

TSB Revision

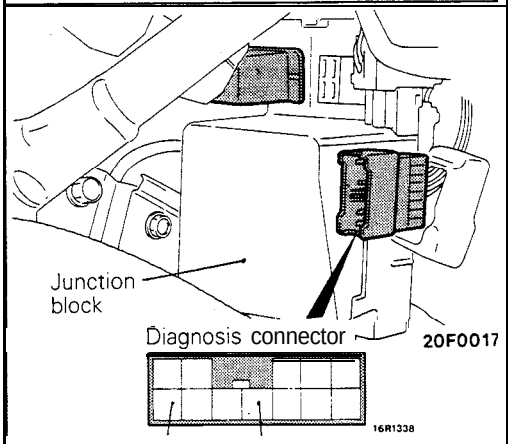
OPERATION

- When the defogger switch is turned ON with the ignition switch in ON position, the defogger relay is energized causing defogger to operate.
- At the same time, the defogger indicator light lights up indicating that the defogger is in operation.
- The defogger timer keeps the defogger relay remaining energized for 11 minutes after the defogger switch has been turned ON. If the defogger switch is pushed a second time during this 1 I-min. period, timer is cancelled and the defogger is turned off.

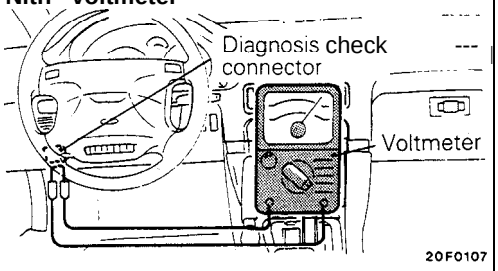
TROUBLESHOOTING HINTS

1. Defogger is inoperative.
   1) Indicator does not come on, either.
      - Check multi-purpose fuse No. ③.
      - Check defogger relay.
   2) Indicator comes on.
      - Check defogger.
2. Once the defogger is operating it cannot be stopped by operating the defogger switch again.
   - Check defogger switch.
   - Check the defogger relay.

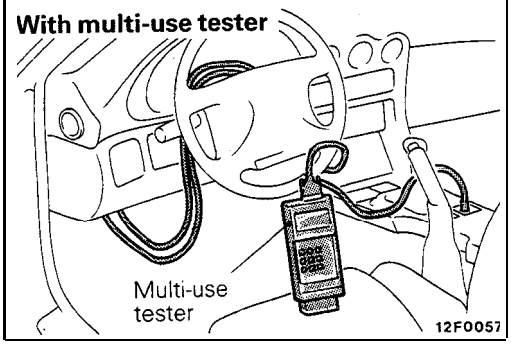
NOTE
For information concerning the defogger relay and ETACS control unit, refer to P.54-117, 123.



Nith voltmeter



With multi-use tester



TROUBLESHOOTING GUIDE

INPUT CHECK

Using the multi-use tester or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

(1) Connect the multi-use tester to the diagnosis check connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

(2) Check if the buzzer of the multi-use tester sounds or the needle of the voltmeter moves when each switch noted below is operated.
If the buzzer sounds or the needle moves, the input signals are being input to the ETACS unit, so that switch can be considered to be functioning normally. If not, the switch or switch input circuit is faulty. Check the switch and the switch input circuit.

- Ignition switch
- Defogger switch

TROUBLESHOOTING QUICK-REFERENCE TABLE

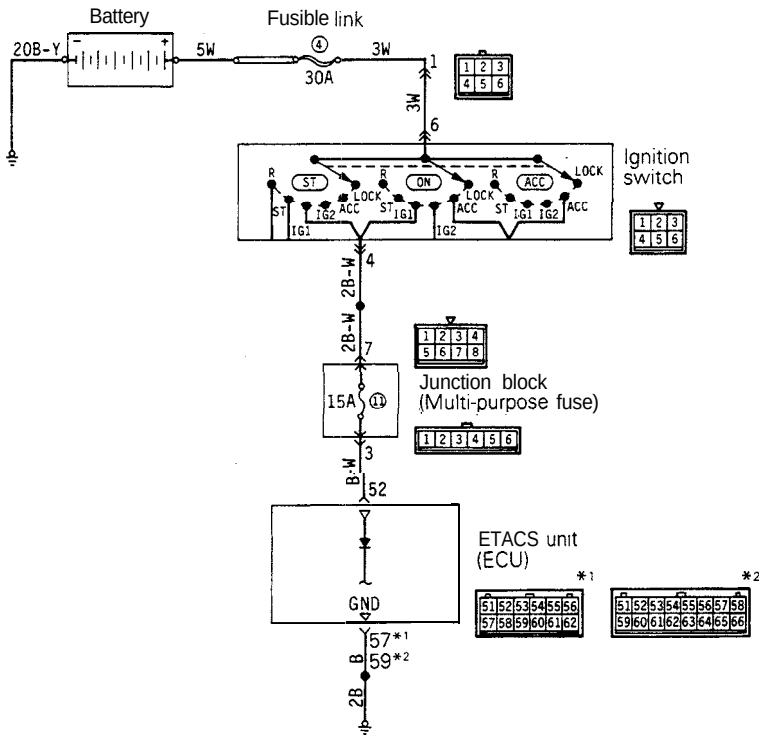
Problem	Probable cause	Checking method	Remedy
Defogger does not operate when defogger switch is turned on with Ignition switch placed in 'ON" position.	Ignition switch input circuit broken.	If input check results are not satisfactory, checking individual part and circuit No, 1 (P.54-118) is checked.	Correct harness.
	Defogger switch input circuit broken.	If input check results are not satisfactory, checking individual part and circuit No. 2 (P.54-119) is checked.	Correct harness or replace defogger switch.
	Alternator input circuit broken.	Checking individual part and circuit No. 3 (P.54-120) is checked.	Correct harness or replace alternator.
	Defogger relay activation circuit broken.	Checking individual part and circuit No. 4 (P.54-121) is checked.	Correct harness or replace defogger relay.
	Faulty ECU.	–	Replace ECU.
Defogger operates but goes off soon. Or it does not go off after timer operating time is exceeded.	Faulty ECU.	–	Replace ECU.

NOTE
"ECU" (electronic control unit) indicates the ETACS unit.

TSB Revision

CHECKING INDIVIDUAL PART AND CIRCUIT

1. IGNITION SWITCH INPUT CIRCUIT



*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

16F0353

Operation Description

As the condition for operation of the system, HIGH-level signals are sent to the electronic control unit when the ignition switch is set to the "ON" position.

Electronic Control Unit Terminal Voltage (Disconnect the ECU Connector and Check at the Wiring Harness; Side.)

ECU terminal No.	Signal	Status		Standard
52	Ignition switch "ON"	Ignition switch	OFF	o v
			ACC	System voltage

Checking the Ground Circuit (Disconnect the Connector and Check the Wiring Harness Side.)

Terminal No.	Connected to/measured part	Measurement	Tester connection	Check conditions	Standard
57*1 59*2	Electronic control unit ground	Resistance	57*1-ground 59*2-ground	At all times	Continuity

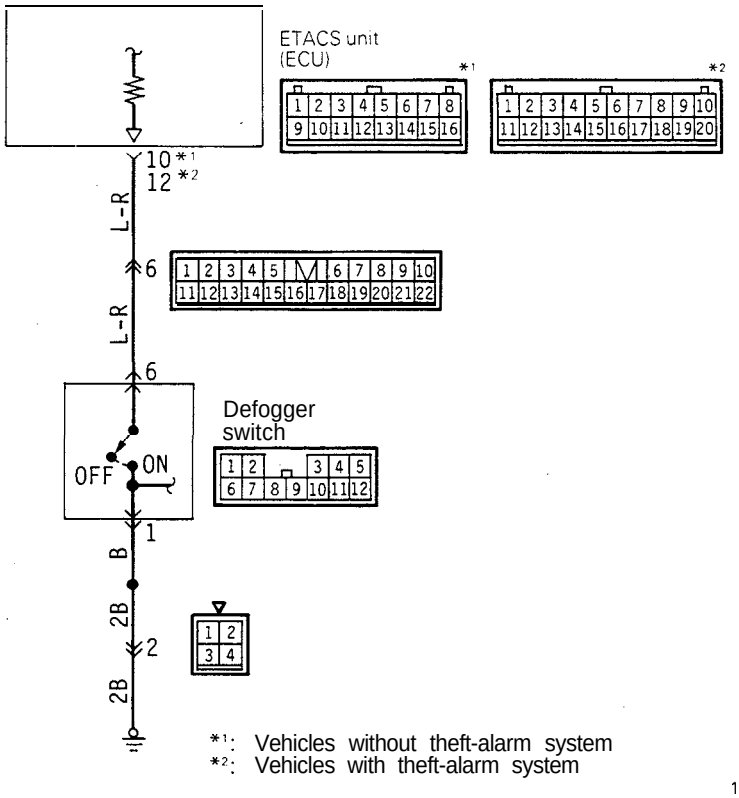
NOTE
*1: Vehicles without theft-alarm system
"2: Vehicles with theft-alarm system

Checking Individual Part

Ignition switch: Refer to P.54-7

TSB Revision

2. DEFOGGER SWITCH INPUT CIRCUIT



Operation Description

When the defogger switch is turned on with the ignition placed in the "ON" position and the alternator generating current (L terminal is not lower than 10V), the timer circuit of ECU operates.

Electronic Control Unit Terminal Voltage (Connection Status of Electronic Control Unit Connector)

ECU terminal No.	Signal	Status	Terminal voltage
10*1 12*2	Defogger switch "ON" signal	Defogger switch "OFF"	5V
		Defogger switch "ON"	ov

Checking the Defogger Switch ("ON" Position) Circuit (Disconnect the ECU Connector and Check at the Wiring Harness Side.)

ECU terminal No.	Connected to/measured component	Measure-ment	Tester connection	Check condition	Standard
10*1 12*2	Defogger switch "ON"	Resistance	10*1-ground 12*2-ground	Defogger switch "OFF"	No continuity
				Defogger switch "ON"	Continuity

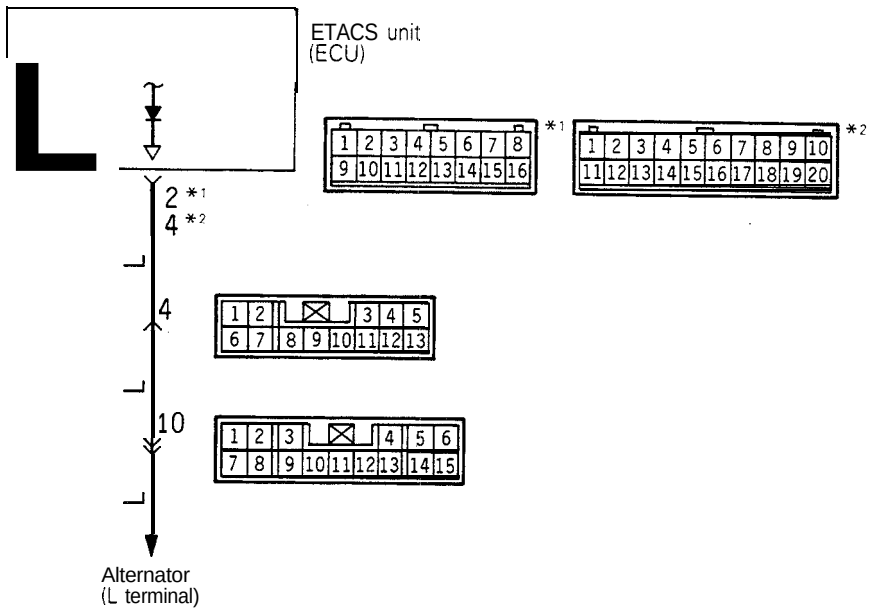
NOTE
*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

Checking Individual Part

Defogger switch: Refer to P.54-122.

TSB Revision

3. ALTERNATOR INPUT CIRCUIT



*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

16F0315

Operation Description

When the alternator is producing current (L terminal is not lower than 10V), H signal is input to ECU. Therefore, the defogger relay can be turned on by means of the defogger switch.

NOTE
When the alternator no more produces current (L terminal is not higher than 3.5V), the defogger relay is turned off even if the defogger is in operation.

Electronic Control Unit Terminal Voltage (Connection Status of Electronic Control Unit Connector)

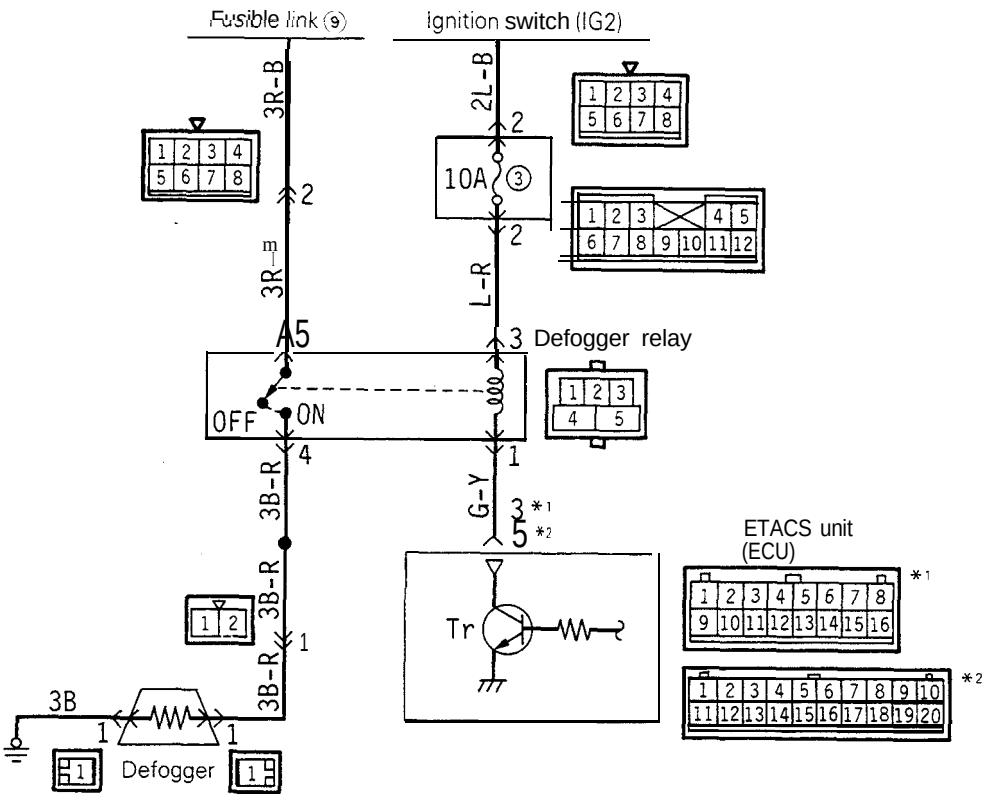
ECU terminal No.	Signal	Status		Terminal voltage
2*1 4*2	Alternator signal	ignition switch "ON"	When alternator is producing current	ov
			When alternator is not producing current	**5v**

NOTE
*1: Vehicles without theft-alarm system
"2: Vehicles with theft-alarm system

Checking Individual Part

Alternator: Refer to GROUP 16 – Alternator.

4. DEFOGGER RELAY ACTIVATION CIRCUIT



Operation Description

When the defogger switch is turned on with the ignition switch placed in the ON position and with the alternator producing current (L terminal is not lower than 10V), the transistor of ECU is turned on for 11 minutes to turn on the defogger relay. Therefore, the current supplied from the battery flows to the defogger through fusible link No. 9.

NOTE

If the defogger switch is turned on again or the alternator no more produces current (L terminal is not higher than 3.5V) while the defogger is in operation, the defogger relay is turned off and the current stops flowing to the defogger.

Electronic Control Unit Terminal Voltage (Disconnect the ECU Connector and Check at the Wiring Harness Side.)

ECU terminal No.	Signal	Status		Standard
3*1 5*2	Defogger relay	Ignition switch	OFF	ov
			ACC	System voltage

NOTE

*1: Vehicles without theft-alarm system

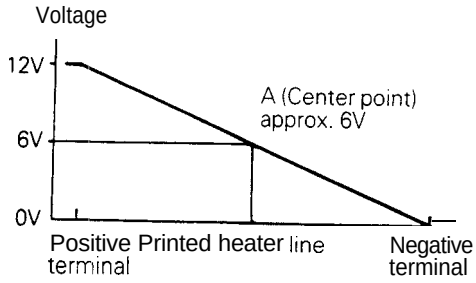
*2: Vehicles with theft-alarm system

Checking Indiyidual Part

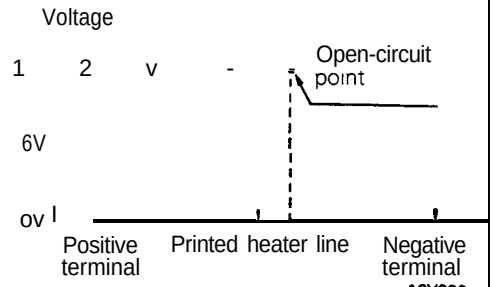
Defogger relay: Refer to P.54-123.

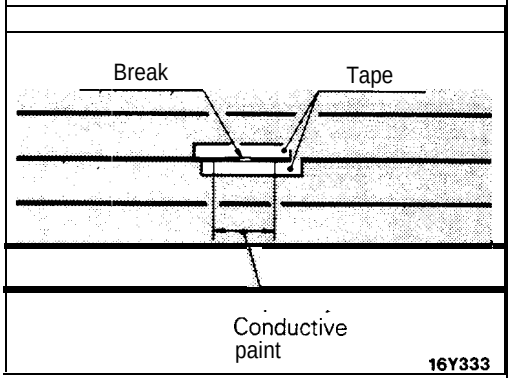
TSB Revision

Normal characteristic curve



Abnormal characteristic curve





SERVICE ADJUSTMENT PROCEDURES

M54POAD

THE PRINTED-HEATER LINES CHECK

(1) Run engine at 2,000 rpm. Check heater element with battery at full.
(2) Turn ON rear window defogger switch. Measure heater element voltage with circuit tester at rear window glass center A.
Condition good if indicating about 6 V.
(3) If 12 V is indicated at A, there is a break in the negative terminals from A.
Move test bar slowly to negative terminal to detect where voltage changes suddenly (0 V).
(4) If 0 V is indicated at A, there is a break in the positive terminals from A. Detect where the voltage changes suddenly (12 V) with the same method described.

THE PRINTED-HEATER LINES REPAIR

REQUIRED MATERIALS

- Thinner
- Tape
- Conductive paint
- Lead-free gasoline
- Fine brush

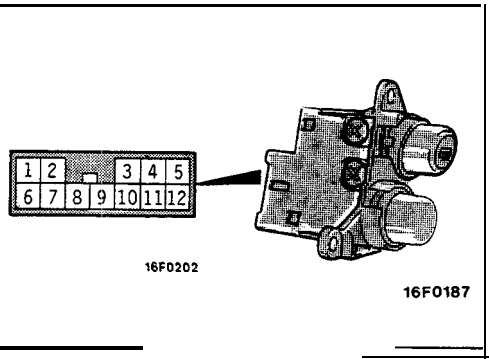
(1) Clean disconnected area with lead-free gasoline. Tape along both sides of heater element.
(2) Mix conductive paint thoroughly. Thin the required amount of paint in a separate container with a small amount of thinner and paint break three times at 15 minute intervals.
(3) Rernove tape and leave for a while before use (circuit complete).
(4) When completely dry (after 24 hours) finish exterior with a knife.

Caution
Clean glass with a soft cloth (dry or damp) along defogger heater element.

REAR WINDOW DEFOGGER SWITCH

M54PJBO

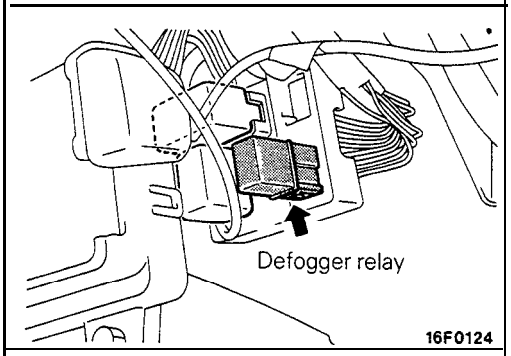
(1) Remove rear window defogger switch from the meter bezel. (Refer to P.54-70.)
(2) Operate the switch and check the continuity between the terminals..

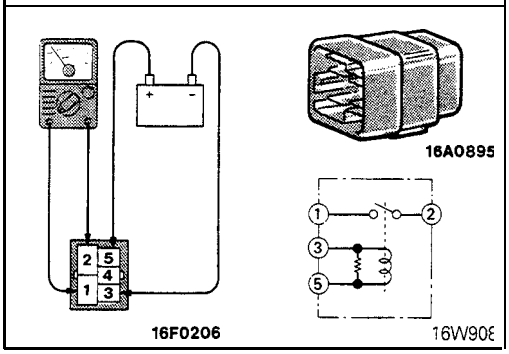


Switch position \ Terminal	1		2	3	4	5	6
OFF							
ON		IND			ILL		

NOTE
O-O indicates that there is continuity between the terminals.

TSB Revision





DEFOGGER RELAY

M54PLAF

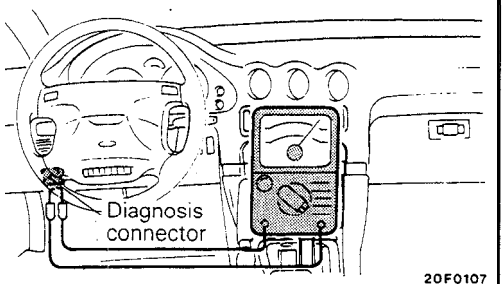
INSPECTION

(1) Remove defogger relay from the instrument panel relay box.

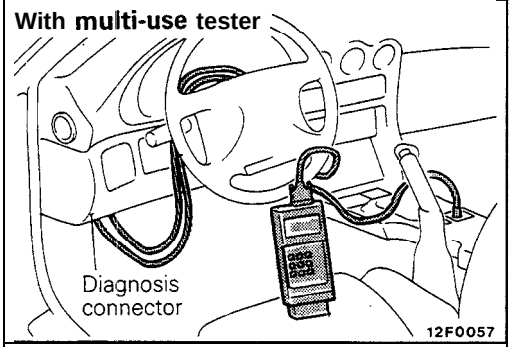
(2) Connect battery power source to terminal 5. Check circuit between terminals with terminal 3 grounded.

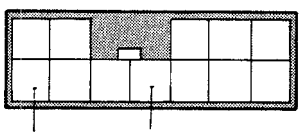
Power is supplied	1 – 2 terminals	Continuity
Power is not supplied	1 – 2 terminals	No continuity
	3 – 5 terminals	Continuity

With voltmeter



With multi-use tester





THEFT-ALARM SYSTEM

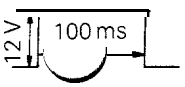
M54CNAH

TROUBLESHOOTING

TROUBLESHOOTING GUIDE

CHECKING THE INPUT

1. Connect a voltmeter between terminal for "A" and terminal for ground, or connect the multi-use tester to the diagnosis connector.
2. Make sure that when the following switches are turned on, the output shown in the illustration is delivered. (Only those switches which are related to the theft-alarm system are listed here.)
   - Driver and front passenger door switches
   - Headlight switch
   - Driver and front passenger door lock switches
   - Passing light switch
   - Pop-up switch
   - Hood switch
   - Liftgate switch
   - Door key cylinder switch
   - Liftgate switch

'Tester	output
Voltmeter	Rectangular wave  is output

If there is no output of a voltage pattern at all, check for a malfunction of that switch or for damaged or disconnected wiring.

TROUBLESHOOTING QUICK-REFERENCE TABLE

For information concerning the locations of electrical components, refer to GENERAL – Theft-alarm System Circuit

1. ARMING / DISARMING RELATIONSHIP

Trouble symptom	Cause	Check method	Remedy
The system is not armed (The SECURITY light doesn't illuminate, and the alarm doesn't function.) (The central door locking system functions normally. If the central locking system does not function normally, refer to P.54-129.	Damaged or disconnected wiring of ECU power supply circuit	Check by using check chart P.54-127.	Replace the fusible link No. ⑥ or the fuse No. ⑲. Repair the harness.
	Damaged or disconnected wiring of door switch input circuit	Check by using check chart P.54-128.	Repair the harness or replace the door switch.
The arming procedures are followed, but the SECURITY light does not illuminate. (There is an alarm, however, when an alarm test is conducted after about 20 seconds have passed.)	Damaged or disconnected wiring of SECURITY light activation circuit	Check by using check chart P.54-132.	Replace the fusible link No. 6 or the fuse No. ⑲. Repair the harness.
	Blown SECURITY light bulb		Replace the bulb
	Malfunction of the ECU.	–	Replace the ECU
The alarm sounds in error when, while the system is armed, a door or the liftgate is unlocked by using the key.	Damaged or disconnected wiring of a door key cylinder and the liftgate unlock switch input circuit.	If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-129.	Repair the harness or replace a door key cylinder and the liftgate unlock switch.
	Malfunction of a door key cylinder and the liftgate unlock switch.		
	Malfunction of the ECU.		Replace the ECU.

2. ACTIVATION / DEACTIVATION RELATIONSHIP

Trouble symptom	Cause	Check method	Remedy
There is no alarm when, as an alarm test, a door is opened without using the key. (The arming and disarming are normal, and the alarm is activated when the liftgate or hood is opened.)	Damaged or disconnected wiring of door switch (all doors) input circuit	If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-128.	Repair the harness or replace the door switch.
	Malfunction of the door switch		
	Malfunction of the ECU	–	Replace the ECU.
There is no alarm when, as an alarm test, the liftgate is opened without using the key. (The alarm is activated, however, by opening a door or the hood.)	Damaged or disconnected wiring of liftgate switch input circuit	If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-131.	Repair the harness or replace the liftgate switch.
	Malfunction of the liftgate switch.		
	Malfunction of the ECU.	–	Replace the ECU.

Trouble symptom	Cause	Check method	Remedy
There is no alarm when, as an alarm test the hood is opened from within the vehicle. (The alarm is activated, however, by opening a door or the liftgate.)	Damaged or disconnected wiring of hood switch input circuit.	If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-128.	Repair the harness or replace the hood switch.
	Malfunction of the hood switch.		
	Malfunction of the ECU.	–	Replace the ECU.
Engine would not start [Engine starting is possible when the starter relay is in the switched-off (normally closed) condition, with the clutch switch is in the switch-off and the ECU harness connector disconnected.]	There is a short-circuit of the starter relay activation circuit	Check by using check chart P.54-135.	Repair the harness.
When, as a test of the alarm, a door or the liftgate is opened without using the key, or the hood is opened from within the vehicle, the horn and the theft-alarm horn sound but the headlights don't flash. (The headlights can, however, be switched ON by using the passing switch.)	Damaged or disconnected wiring of headlight power supply circuit or headlight activation circuit	Check by using check chart P.54-134, 135.	Repair the harness or replace the diode D_2. Replace the headlight relay or the headlight.
	Malfunction of the ECU.		Replace the ECU.
The headlights flash during an alarm test but the horn or the theft alarrn horn does not sound.	Damaged or disconnected wiring of horn relay power supply circuit or horn activation circuit Damaged or disconnected wiring of the theft-alarm horn relay power supply circuit or the theft-alarm horn activation circuit.	Check by using check chart P.54-132, 133, 134.	Repair the harness. Replace the horn. Replace dedicated fuse No. ⑥ or the fusible link No. ⑥.
	Malfunction of the ECIJ.		Replace the ECU.
The system is not deactivated when, during an alarm test in which the alarm is intentionally activated, the door or liftgate is unlocked by using the key. (The system also cannot be disarmed.)	Damaged or disconnected wiring of door key cylinder and liftgate unlock switch input circuit	If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-130,131.	Repair the harness. Replace the key cylinder switch or the liftgate switch.
	Malfunction of door key cylinder and liftgate unlock switch.		
	Malfunction of the ECU		Replace the ECU.

ECU: Electronic Control Unit

NOTE

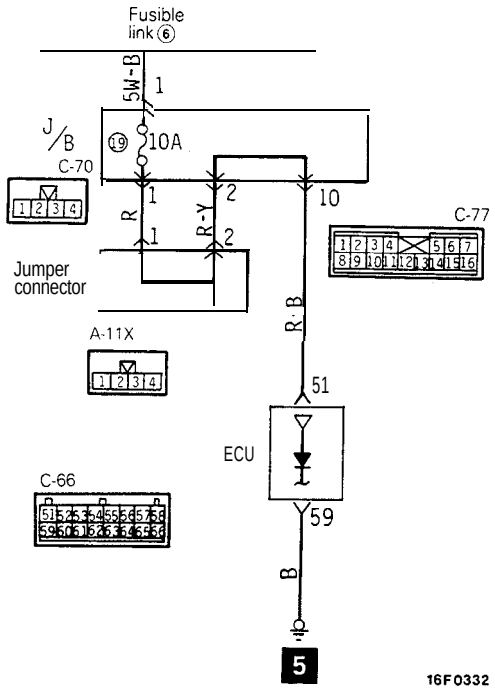
(1) If the liftgate unlock switch or door key cylinder unlock switch is operated roughly, or if these switches have been installed incorrectly or switches themselves are defective the ECU may not accept the warning or alarm cancelling signal. In such case, the alarm operation will take place when the door is opened using a key.
[When the door key cylinder switch has been shorted, however, if the ignition switch is turned ON, the ECU judges the detection switch as faulty and thereafter, it will prevent setting of (warning) alarm until the shorting is corrected.]

(2) If the liftgate is opened using a key and is left as opened when the door key cylinder switch system has a trouble (wiring harness damage, open circuit, etc.), the ECU judges it as the liftgate holding mode and does not produce alarm even when the door is opened.

TSB Revision

CHECKING THE CIRCUIT AND INDIVIDUAL PART

1. ETACS POWER-SUPPLY AND GROUND CIRCUITS



Description of operation

The battery supplies a stabilized 5V power supply to the ECU, via the constant-voltage circuit and terminal 51 (which is directly connected to the battery).

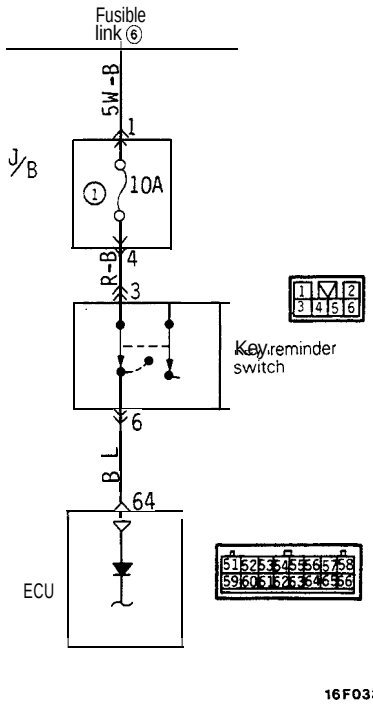
ECU terminal voltage (Connection condition of the ECU connector).

ECU terminal No.	Signal	Condition	Terminal voltage
51	ECU power supply	At all times	12V

Checking the ground circuit (Disconnect the connector and check at the wiring harness side.)

ECU terminal No.	Connected to/measured component	Measurement	Tester connection	Check condition	Standard
59	ECU ground	Resistance	59 - ground	At all times	Continuity

2. KEY-REMINDER SWITCH INPUT CIRCUIT



Description of operation

The key-reminder switch is switched OFF and HIGH-level signals are sent to the ECU when the key is inserted into the ignition key cylinder: when the key is' removed, the key-reminder switch is switched ON and LOW-level signals are sent to the ECU.

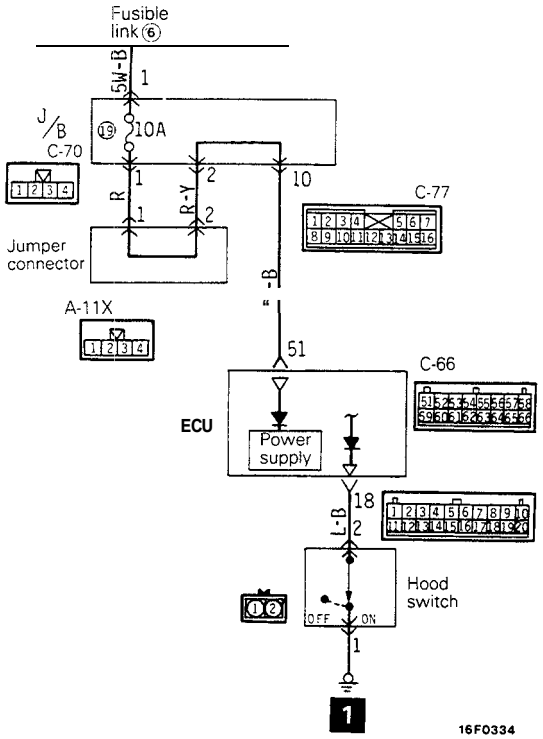
ECU terminal voltage (Connection condition of the ECU connector).

ECU terminal No.	Signal	Condition	Terminal voltage
64	Key-reminder switch	Key removed	12V
		Key inserted	0V

Checking the key-reminder switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

ECU terminal No.	Connected to/measured component	Measurement	Tester connection	Check condition	Standard
64	Key-reminder switch	Resistance	64 - ground	Key removed	Continuity
				Key inserted	No continuity

3. HOOD SWITCH INPUT CIRCUIT



Description of operation

When the hood is closed (the hood switch is switched OFF), HIGH-level signals are sent to the ECU:
When the hood is opened (the hood switch is switched ON), LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

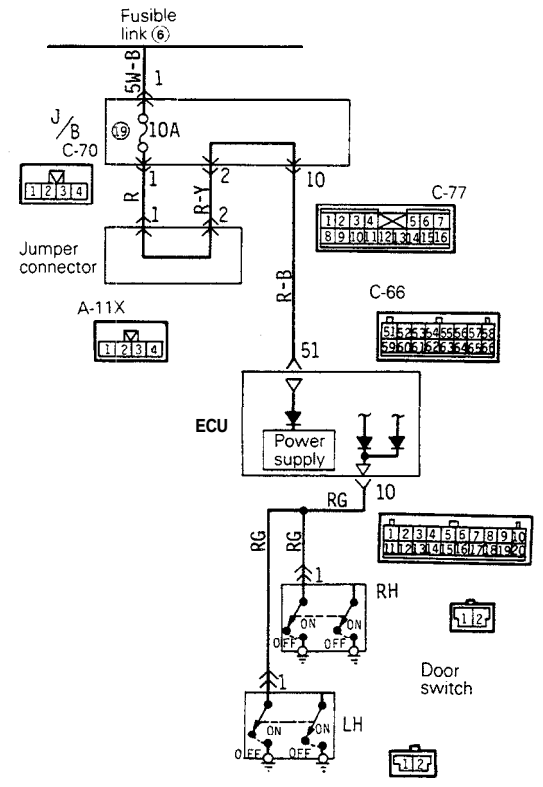
ECU terminal No.	Signal	Condition		Terminal voltaae
18	Hood switch	Hood	Open	ov
			Closed	5V*

* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the hood switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

ECU terminal No.	Connected to/measured part	Measurement	Tester connection	Check condition		Standard
18	Hood switch	Resistance	18 - ground	Hood	Closed	No continuity
					Open	Continuity

4. DOOR SWITCH INPUT CIRCUIT



Description of operation

When the door is closed (the door switch is switched OFF), HIGH-level signals are sent to the ECU:
When the door is opened (the door switch is switched ON), LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU).

ECU terminal No.	Signa	Condition		Terminal voltage
10	Driver door switch	Driver door	Open	ov
			Closed	5V*
	Passenger door switch	Passenger door	Open	ov
			Closed	5V*

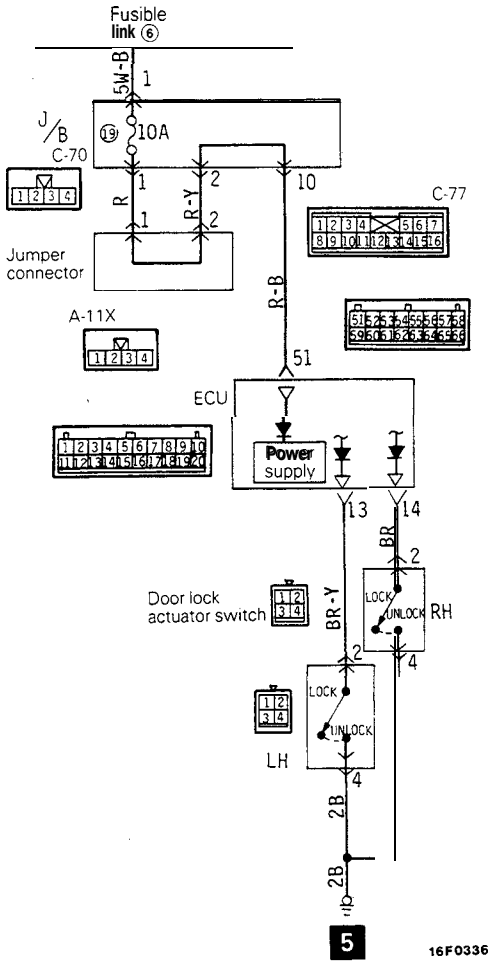
* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the door switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

ECU terminal No.	Connected to/measured part	Measurement	Tester connection	Check condition		Standard
10	Driver door switch	Resistance	10 - ground	Driver door	Closed	No continuity
					Open	Continuity
	Passenger door switch	Resistance	10 - ground	Passenger door	Closed	No continuity
					Open	Continuity

TSB Revision

5. DOOR LOCK ACTUATOR SWITCH INPUT CIRCUIT



Description of operation

When a door is locked by the lock knob or the key, the door lock actuator switch is switched OFF, and HIGH-level signals are sent to the ECU. These signals active the timer circuit of the ECU, there by causing the activation circuit to function, thus activating the door lock actuator of all doors.

ECU terminal voltage (Connection condition of the ECU connector).

ECU terminal No.	Signal	Condition		Terminal voltage
13	Door lock actuator switch (driver door)	Door lock actuator switch	Lock: OFF	5V*
			Unlock: ON	ov
14	Door lock actuator switch (passenger door)	Door lock actuator switch	Lock: OFF	5V*
			Unlock: ON	ov

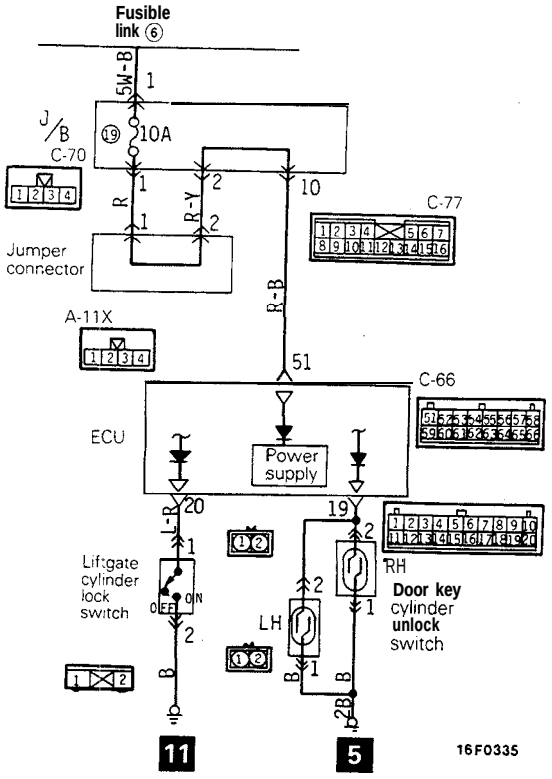
* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the door lock switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

ECU terminal No.	Connected to/measured part	Measurement	Tester connection	Check conditions		Standard
13	Door lock actuator switch (LH)	Resistance	13 - ground	Door lock actuator switch	Lock: OFF	No continuity
					Unlock: ON	Continuity
14	Door lock actuator switch (RH)	Resistance	14 - ground	Door lock actuator switch	Lock: OFF	No continuity
					Unlock: ON	Continuity

TSB Revision

6. DOOR KEY CYLINDER UNLOCK AND LIFTGATE CYLINDER LOCK SWITCH INPUT CIRCUIT



Description of operation

When the door key is rotated or the liftgate key is unlocked, LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

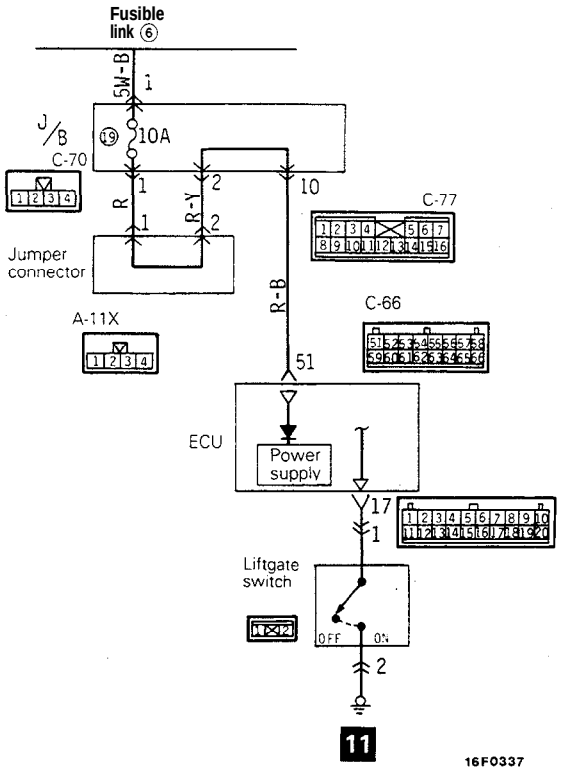
ECU terminal No	Signal	Condition		Terminal voltage
19	Door key cylinder unlock switch	Door key cylinder (LH)	Not rotate	5V
			Rotate	0V
		Door key cylinder (RH)	Not rotate	5V
			Rotate	0V
20	Liftgate unlock switch	Liftgate	Lock	5V
			Unlock	0V

Checking the door key cylinder and liftgate unlock switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

ECU terminal No.	Connected to/measured part	Measurement	Tester connection	Check conditions		Standard
19	Door key cylinder unlock switch	Resistance	19 ground	Door key cylinder (LH)	Not rotate	No continuity
					Rotate	Continuity
				Door key cylinder (RH)	Not rotate	No continuity
					Rotate	Continuity
20	Liftgate unlock switch	Resistance	20 - ground	Liftgate	Lock	No continuity
					Unlock	Continuity

TSB Revision

7. LIFTGATE SWITCH INPUT CIRCUIT



Description of operation

When the liftgate is closed (the liftgate switch is switched OFF), HIGH-level signals are sent to the ECU.
When the liftgate is opened (the liftgate switch is switched ON), LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

ECU terminal No.	Signal	Condition		Terminal voltage
17	Liftgate switch	Liftgate	Open	0V
			Closed	5V*

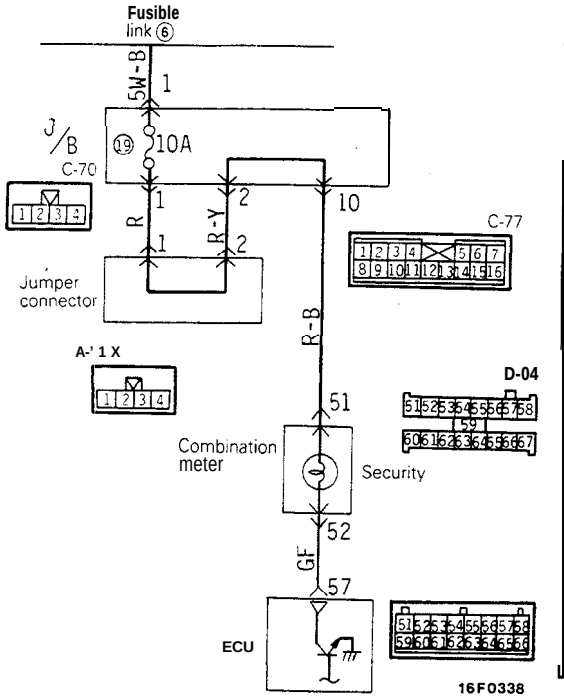
* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the liftgate switch circuit (Disconnect the connector of the ECU and Check at the wiring harness side.)

ECU terminal No.	Connected to/measured part	Measurement	Tester connection	Check conditions		Standard
17	Liftgate switch	Resistance	17 - ground	Liftgate	Closed	No continuity
					Open	Continuity

TSB Revision

8. SECURITY LIGHT ACTIVATION CIRCUIT



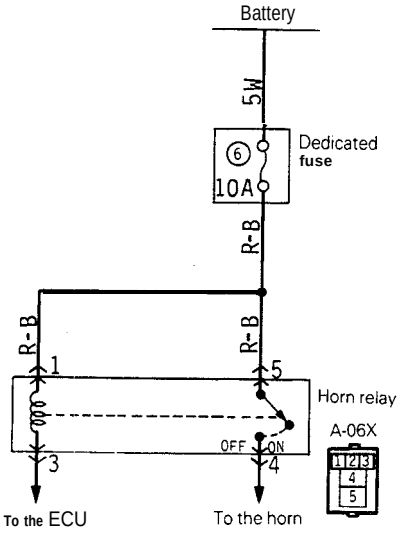
Description of operation

If all doors are in locked state after key-less locking, the ECU transistor is turned ON and the security light comes on.

Checking the security light activation circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

Step	Check object	Judgement: Normal	Judgement: Mal-function	Cause	Remedy
1	D4 connector terminal voltage 51	12V	ov	Fuse ⑲ damaged or disconnected	Replace the fuse
				Harness damaged or disconnected, or short-circuit	Repair the harness
2	C-04 connector terminal voltage 52	12v	ov	Damaged or drsconnected wiring of SECURITY light bulb	Replace the bulb
				Harness damaged or disconnected	Repair the harness
3	ECU terminal voltage 57	12v	ov	Harness damaged or disconnected, or short-circuit	Repair the harness

9. HORN RELAY POWER-SUPPLY CIRCUIT



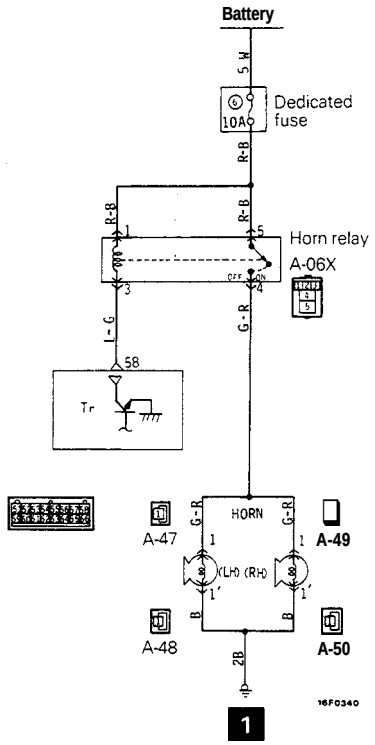
Description of operation

Power voltage is always supplied to the horn relay.

Checking the horn relay power-supply circuit (Disconnect the horn relay)

Check object	Judgement: Normal	Judgement: Mal-function	Cause	Remedy
HORN RELAY connector terminal voltage 5	12V	0V	Fuse ⑥ damaged or disconnected	Replace the fuse
			Damaged or disconnected harness	Repair the harness

10. HORN ACTIVATION CIRCUIT



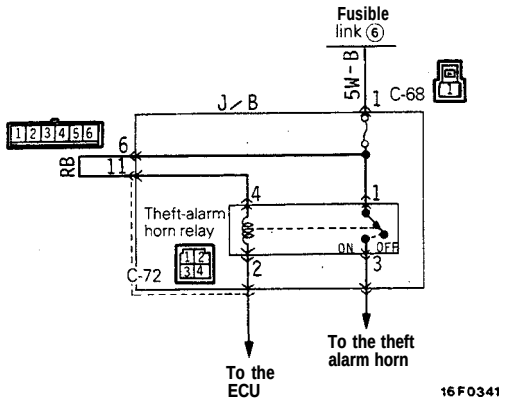
Description of operation

The ECU transistor is turned ON if the vehicle door, etc. are opened without use of the key.
This energizes the horn relay to activate the horn.

Checking the horn activation circuit (Disconnect the connector of the ECU, then short-circuit terminal connector No. 58, and activate the horn relay.)

Step	Check object	Judgement: Normal	Judgement: Malfunction	Cause	Remedy
1	**Horn relay** terminal voltage (4-Ground)	12V	0V	Malfunction of the horn relay	Check the horn relay (Refer to P.54-79.)
2	Horn terminal voltage (LH&RH) (I-Ground)	12V	ov	Harness damaged or disconnected	Repair the harness
3	Horn terminal voltage (LH&RH) (1 '-Ground)	Horn sounds (0V)	Horn doesn't sound (0V)	Malfunction of the horn	Replace the horn
			Battery voltage	Damaged or disconnected wiring of ground circuit	Repair the harness

11. THEFT ALARM HORN RELAY POWER-SUPPLY CIRCUIT



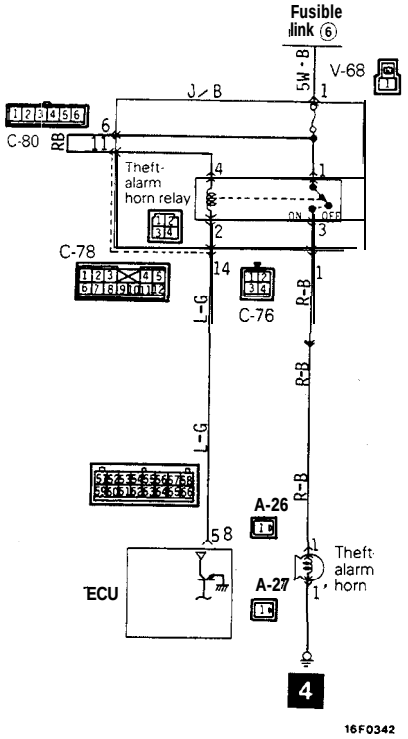
Description of operation

Power voltage is always supplied to the theft alarm horn relay.

Checking the horn relay power-supply circuit (Disconnect the theft alarm horn relay)

Check object	Judgement: Normal	Judgement: Malfunction	Cause	Remedy
THEFT ALARM HORN RELAY connector terminal voltage 1	12V	ov	Fuse ⑭ damaged or disconnected	Replace the fuse
			Damaged or disconnected harness	Repair the harness

12. THEFT ALARM HORN ACTIVATION CIRCUIT



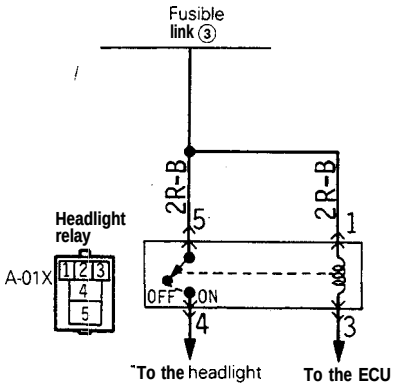
Description of operation

The ECU transistor is turned ON if the vehicle door, etc. are opened without use of the key.
This energizes the theft alarm horn relay to activate the horn.

Checking the horn activation circuit (Disconnect the connector of the ECU, then short-circuit terminal connector No. 58, and activate the theft alarm horn relay.)

Step	Check object	Judgement		Cause	Remedy
		Normal	Mal-function		
1	Horn relay terminal voltage (1 -Ground)	12V	0V	Malfunction of the horn relay	Check the horn relay (Refer to P.54-79.)
2	Horn terminal voltage (1-Ground)	12V	0V	Harness damaged or disconnected	Repair the harness
3	Horn terminal voltage (1'-Ground)	Horn sounds (0V)	Horn doesn't sound (0V)	Malfunction of the horn	Replace the horn
			Battery voltage	Damaged or disconnected wiring of ground circuit	Repair the harness

13. HEADLIGHT POWER-SUPPLY CIRCUIT



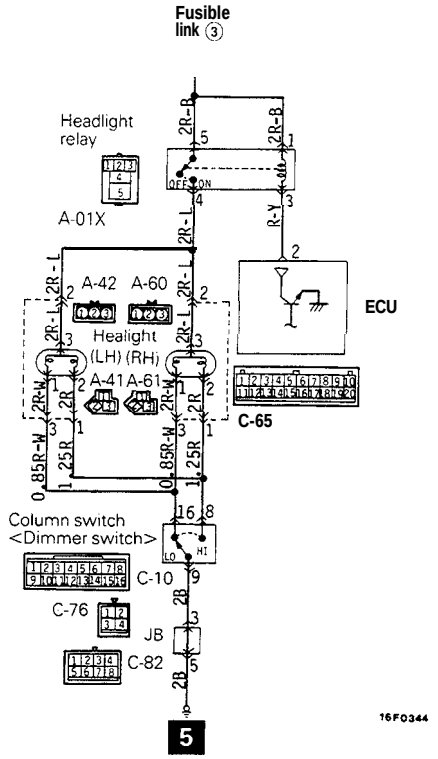
Description of operation

Power voltage is always supplied to the headlight relay.

Checking the headlight power-supply circuit (Disconnect the headlight relay)

Check object	Judgement		Cause	Remedy
	Normal	Mal-function		
(Wiring harness side) terminal voltage (5-Ground)	12V	0V	Fusible link ③ blown	Replace the fusible link
			Damaged or disconnected harness	Repair the harness

14. HEADLIGHT ACTIVATION CIRCUIT



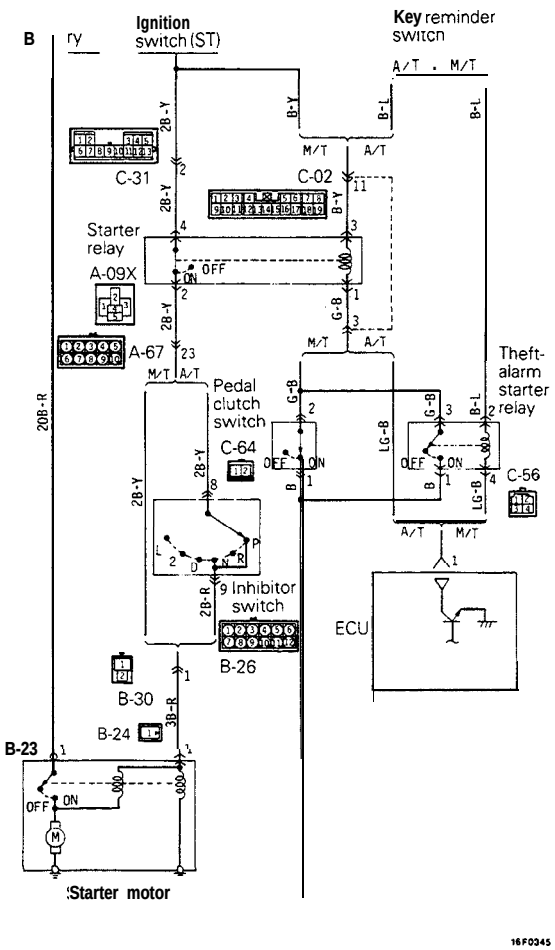
Description of operation

The ECU transistor is turned ON if the vehicle door, etc. are opened without use of the key.
This energizes the headlight relay to activate the headlight.

Checking the headlight activation circuit (Disconnect the connector of the ECU, then short-circuit terminal connector No. 2, and activate the headlight relay.)

Step	Check object	Judgement		Cause	Remedy
		Normal	Mal-function		
1	Headlight relay terminal voltage (4-Ground)	12V	ov	Malfunction of the headlight relay	Check the headlight relay (Refer to P.54-68.)
2	Headlight terminal voltage (3-Ground)	**12v**	**ov**	Harness damaged or disconnected	Repair the harness
3	Headlight terminal voltage	Column switch		The head-light isn't turned on.	Malfunction of the headlight. Harness damaged or disconnected. Malfunction of column switch	Replace the headlight or column switch. Repair the harness.
		Low	Hı			
	(I-Ground)	ov	12v			
	(2-Ground)	12V	o v			

15. STARTER RELAY ACTIVATION CIRCUIT



Description of operation

The ECU transistor is turned ON if the vehicle door etc. are opened without use of the key. This turns OFF the starter relay and power ceases to be supplied to the starter magnet switch.

Checking the starter relay activation circuit (Disconnect the connector of the ECU, depress fully the clutch pedal and activate the starter relay)

Step	Check object	Judgement		Cause	Remedy
		Normal	Mal-function		
1	Starter relay terminal voltage (2-Ground)	12v	ov	Malfunction of the starter relay	Check the starter relay
2	Starter motor **terminal** (1-Ground)	12V	**ov**	Harness damaged or disconnected	Repair the harness
(Starter motor connector B-24: Separation)					
3	Continuity between "B-24" connector and ground	0 Ω	∞Ω	Damagedmagnet switch	Replace magnet switch

MSSP-001 B-91 (2/2)

Printed in U.S.A.