CHASSIS ELECTRICAL

CONTENTS

M54AA--

BATTERY

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54EB--

BATTERY

Items	Specifications
Type	55B24R(S)-MF
Ampere hours (5HR) Ah	40
Cranking rating [at −17.8°C (0°F)] A	433
Reserve capacity min.	79

NOTES
1. CRANKING RATING is the current a battery can deliver for 30 seconds and maintain a terminal voltage of 7.2 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 26.7°C (80°F).

TROUBLESHOOTING

M54EHAT

BATTERY TESTING PROCEDURE

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.
A1 LOOSE BATTERY POST • Check for loose battery post.	(OK) ▶ (OK) ▶	REPLACE battery. GO to A2.
A2 CRACKED BATTERY 'COVER • Remove holddowns and shields. • Check for broken/cracked case or cover.	(OK) ▶ (OK) ▶	REPLACE battery. GO to A3.
A3 TEST INDICATOR/OPEN CIRCUIT VOLTAGE 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) ▶ Blue dot invisible and' open circuit voltage under 12.4 volts (OK) ▶	CHARGE battery at 5 amps then GO to A3. GO to A4.
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.

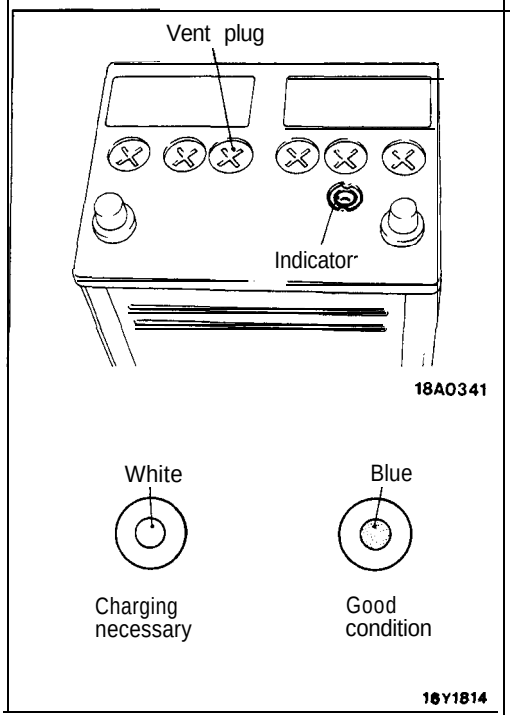
LOAD TEST CHART

Minimum Voltage	Temperature °F	Temperature °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
210 amps	433 amps	79 minutes	55B24R(S)-MF

TSB Revision



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.
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
210 amps	433 amps	79 minutes	55B24R(S)-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	- 1 2
8.5	0	- 1 8

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 M54EICL

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 blue. Use fast charging only in an emergency.
If the indicator does not turn to blue even after the battery is charged, the battery should be replaced; do not overcharge.

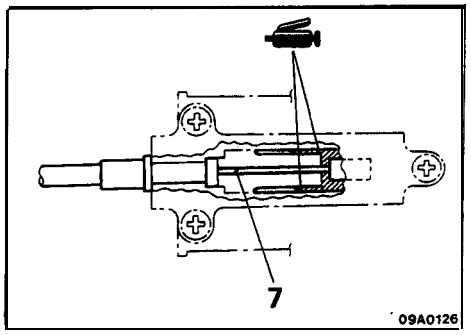
Charge Rate Chart

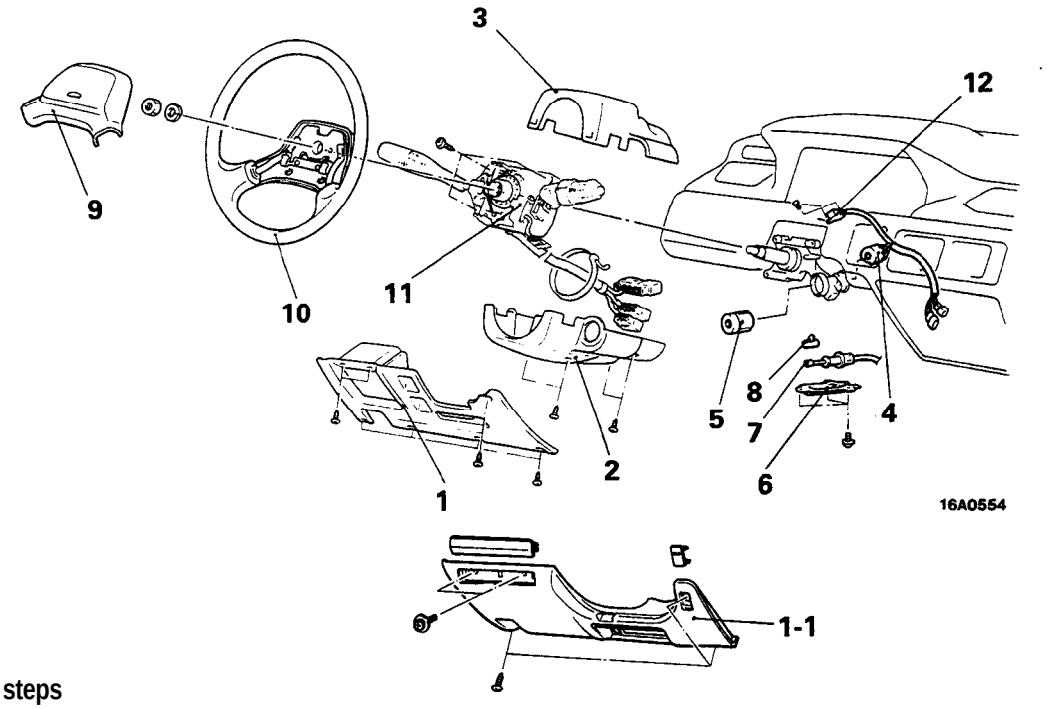
Battery	Slow Charging		Fast Charging	
55B24R (S)-MF (433 amps)	5 amps 10 hrs.	10 amps 5 hrs.	20 amps 2.5 hrs.	30 amps 1.5 hrs.

IGNITION SWITCH

M54GLAT

REMOVAL AND INSTALLATION

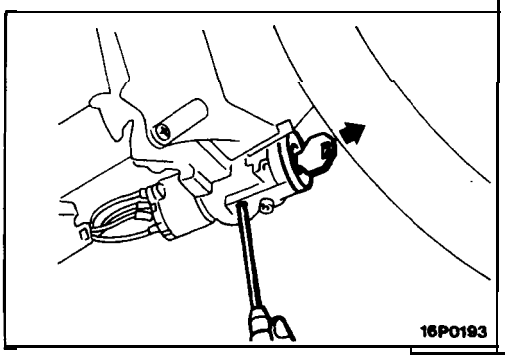




Removal steps

1. Instrument panel under cover (1989 models] (Refer to GROUP 52- Instrument Panel.)
1-1 Knee protector [From 1990 models] (Refer to GROUP 52–Instrument Panel.)
2. Column cover lower
3. Column cover upper
4. ignition switch segment
◆◆ Steering lock cylinder
:: Cover*
● 4 7. Key interlock cable*
● 4 8. Slide lever*
9. Horn pad (Refer to P.54-101.)
10. Steering wheel (Refer to P.54-101.)
11. Column switch
12. Key reminder switch segment

NOTE
* indicates vehicles with A/T safety-lock system.



SERVICE POINTS OF REMOVAL

5. REMOVAL OF THE STEERING LOCK CYLINDER

(1) Insert the key in the steering lock cylinder and turn it to the "ACC" position.
(2) Using a cross-tip (+) screwdriver (small) or a similar tool, push the lock pin of the steering lock cylinder inward and then pull the steering lock cylinder toward you.

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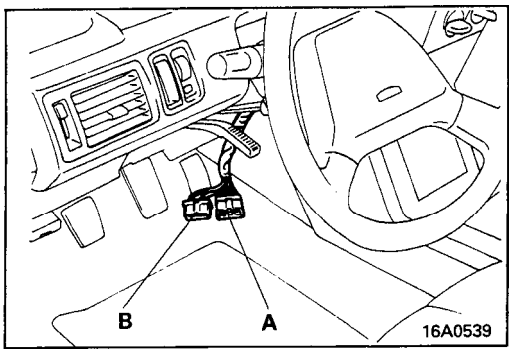
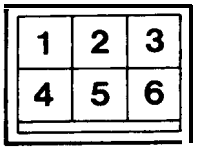


INSPECTION

IGNITION SWITCH INSPECTION

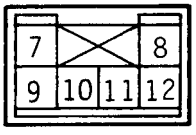
(1) Remove the instrument panel under cover (or knee protector), the column cover (lower), and the column cover (upper).
(Refer to GROUP 52–Instrument Panel).
(2) Disconnect the wiring connector from the ignition switch and key reminder switch, and connect an ohmmeter to the switch side connector.
(3) Operate the switch, and check the continuity between the terminals.

Connector A



16A0570

Connector B



16A0542

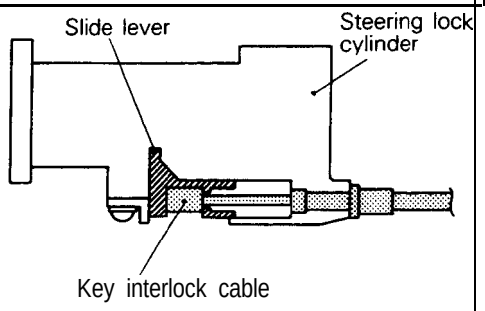
Position	Key	Terminal: 6	3	4	2	5	1	Key reminder switch: 7	8	9	12
LOCK	Removed									O	O
ACC	Inserted	O	O								
ON	Inserted	O		O		O		O	O		
START	Inserted	O		O		O					

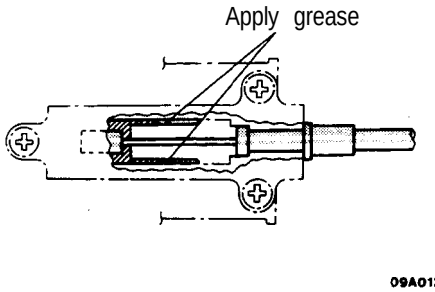
NOTE
(1) O—O indicates that there is continuity between the terminals.
(2) O---O indicates vehicles with ETACS.

SERVICE POINTS OF INSTALLATION

8. INSTALLATON OF THE SLIDE LEVER/7. KEY INTERLOCK CABLE (STEERING LOCK ASSEMBLY SIDE)

(1) With the ignition key either at the “LOCK” position or removed, install the slide lever to the steering lock cylinder.
(2) Connect, as shown in the figure, the key interlock cable to the slide lever and the steering lock cylinder.
(3) Apply a light coating of multi-purpose grease where shown in the figure.
(4) Check whether or not the key interlock system is functioning normally.
(Refer to GROUP 23–Service Adjustment Procedures.)





METERS AND GAUGES

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54HB--

Meters and Gauges

Items	Specifications
Speedometer	
Type	Rotary magnet type
Tachometer	
Type	Pulse type
Fuel gauge	
Type	Cross coil type fixed needle gauge
Fuel gauge unit	
Type	Variable resistance type (with fuel level warning sensor)
Engine coolant temperature gauge	
Type	Cross coil type
Engine coolant temperature gauge unit	
Type	Thermistor type

Indicators and Warning Lights

Items	Specifications
Indicator lights	
Turn signal indicator light W	3.4 (158)
High beam indicator light W	3.4 (158)
Charging warning light W	1.4 (74)
Oil pressure warning light W	1.4 (74)
Door ajar indicator light W	1.4 (74)
Brake warning light W	1.4 (74)
Fuel level warning light W	3.4 (158)
Seat belt indicator light W	1.4 (74)
Auto-cruise control indicator light W	1.4 (74)
*1Anti-lock brake warning light W	1.4 (74)
Check engine/malfunction indicator lamp W	1.4 (74)
*2Power indicator light W	1.4 (74)
**Economy indicator light W	1.4 (74)
*2Overdrive OFF indicator light W	1.4 (74)
*2A/T shift position indicator light W	
Park	1.4 (74)
Reverse	1.4 (74)
Neutral	1.4 (74)
Drive	1.4 (74)
Second	1.4 (74)
Low	1.4 (74)

NOTE
1. The values in parentheses denote SAE trade numbers.
2. The *1 symbol indicates vehicles with anti-lock braking system.
3. The *2 symbol indicates vehicles with AA.

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Items	Specifications
*1 A/T fluid temperature warning light W	1.4 (74)
*2 SECURITY light W	1.4 (74)
4WS (4-wheel steering system) warning light W	1.4 (74)

NOTE
1. The value in parentheses denote SAE trade numbers
2. The *1 symbol indicates AWD-AK.
3. The *2 symbol indicates vehicles with theft-alarm system.

SERVICE SPECIFICATIONS

M54HC–

Items	Specifications
Standard value	
Speedometer indication error mph	
20	19-22
40	38-44
60	57-66
80	76-88
100	94–110
Tachometer indication error rpm	
Type 1 (8,000 rpm indication)	
700	±100
3,000	±150
6,000	±300
Type 2 (9,000 rpm indication)*	
700	±100
3,000	+225 -100
7,000	+400 -100
Operation range of fuel gauge unit mm (in.)	
<FWD>	
Point F	45.6±2.5 (1.79±.1)
Point E	177.5±2 (6.98±.08)
<AWD>	
Point F	43 (1.69)
Point E	174 (6.85)
Fuel gauge unit resistance Ω	
Point F	3±2
Point E	110±7
Engine coolant temperature gauge unit resistance [at 70°C (158°F)] Ω	104±13.5
Fuel gauge resistance Ω	
Between A-B	Approx. 203
Between A-C	Approx. 102
Between B-C	Approx. 102

NOTE
The * symbol indicates DOHC models.

Items	Specifications
Engine coolant temperature gauge resistance Ω	
<Vehicles built up to Dec. 1988>	
Between A-B	Approx. 130
Between A-C	Approx. 53
Between B-C	Approx. 162
<Vehicles built from Jan. 1989>	
Between A–B	Approx. 146
Between A-C	Approx. 60
Between B-C	Approx. 206

TORQUE SPECIFICATIONS

M54HD--

Items	Nm	ft.lbs.
Engine coolant temperature gauge unit	10–12	7-8

SEALANTS AND ADHESIVES

M54HF--

Items	Specified sealant and Adhesive
Engine coolant temperature gauge unit	3M ATD Part No. 8660 or equivalent

NOTES

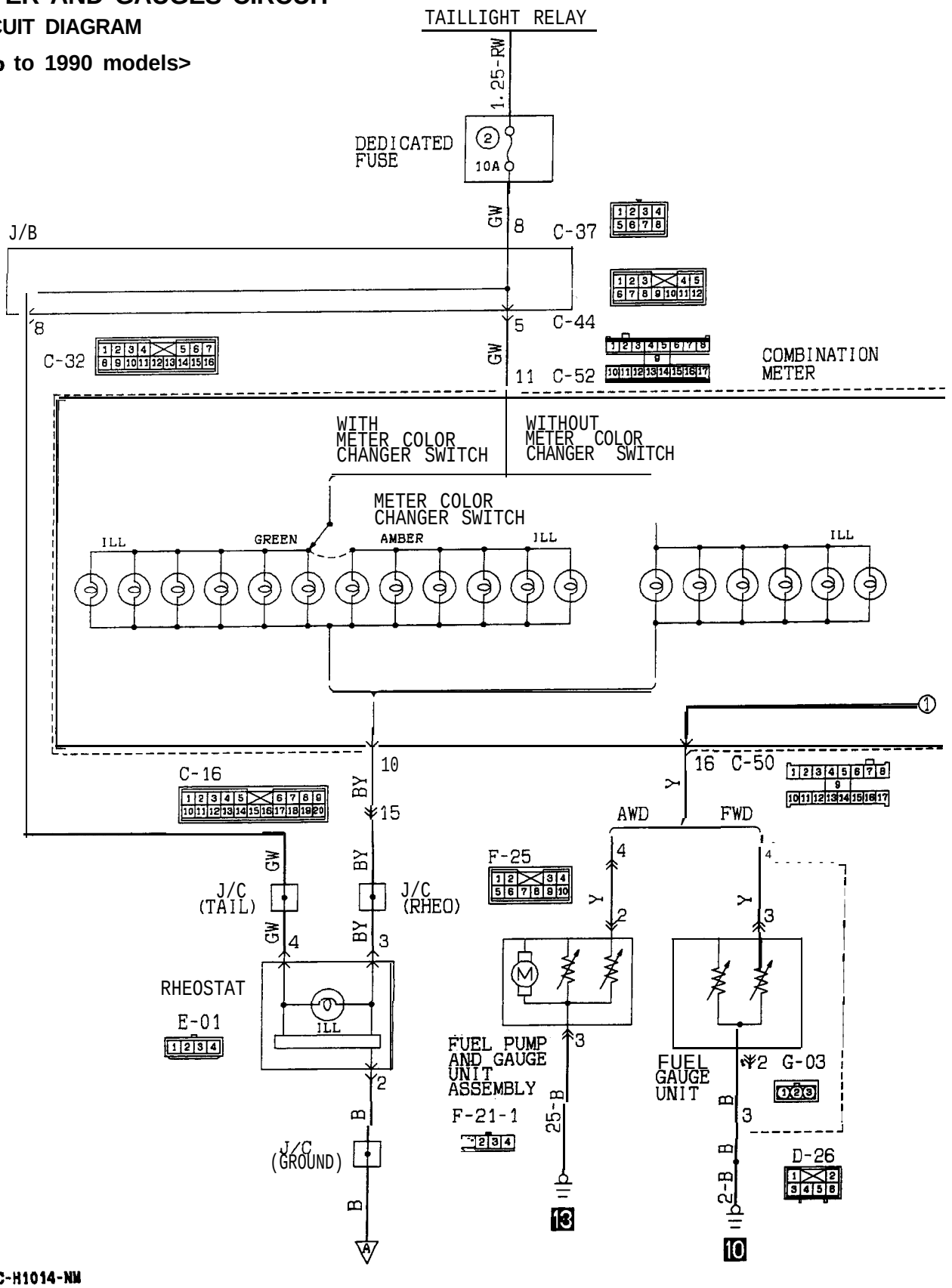
TROUBLESHOOTING

M54HHAQb

METER AND GAUGES CIRCUIT

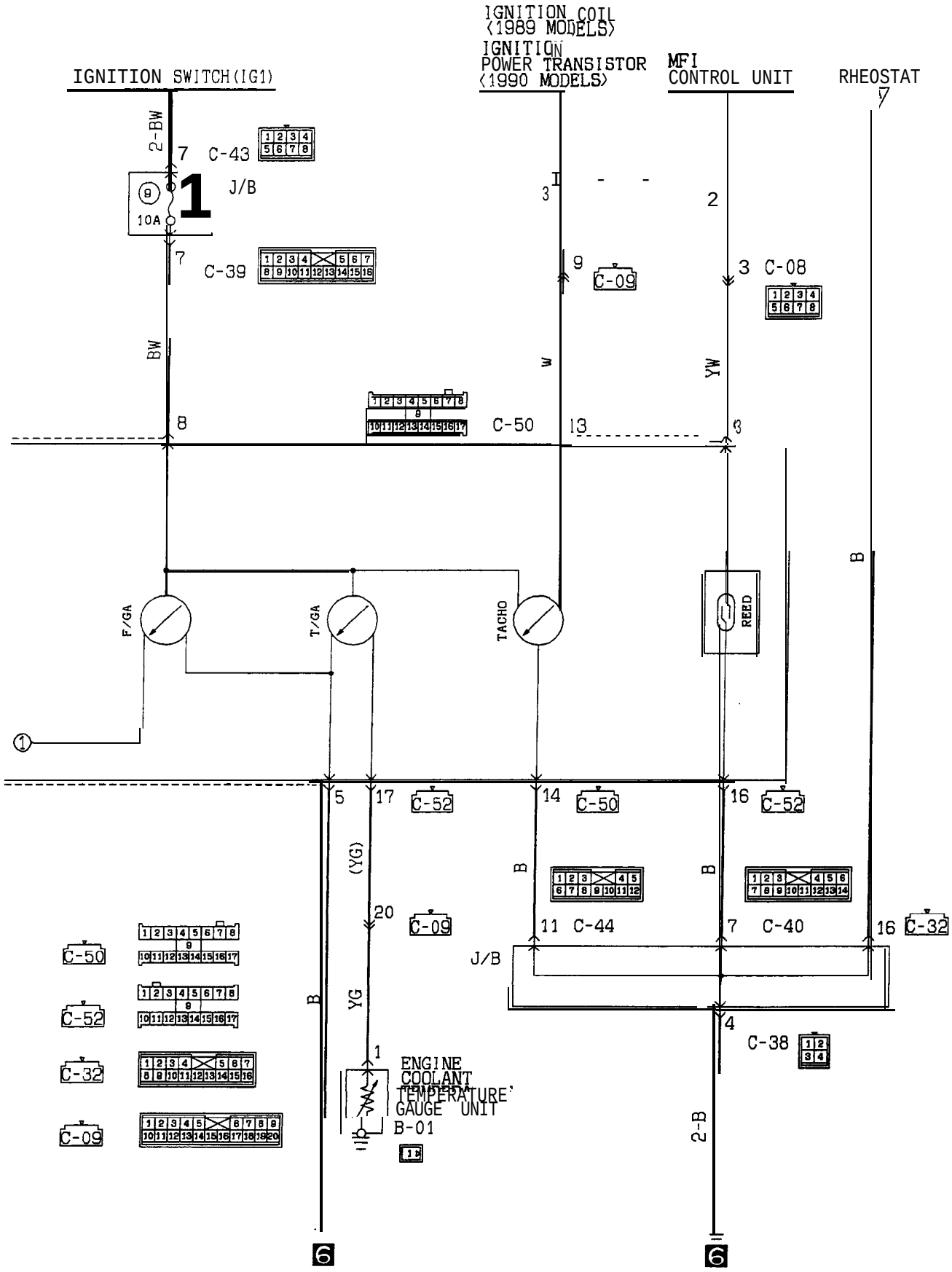
CIRCUIT DIAGRAM

<Up to 1990 models>



KX35-AC-H1014-NM

TSB Revision

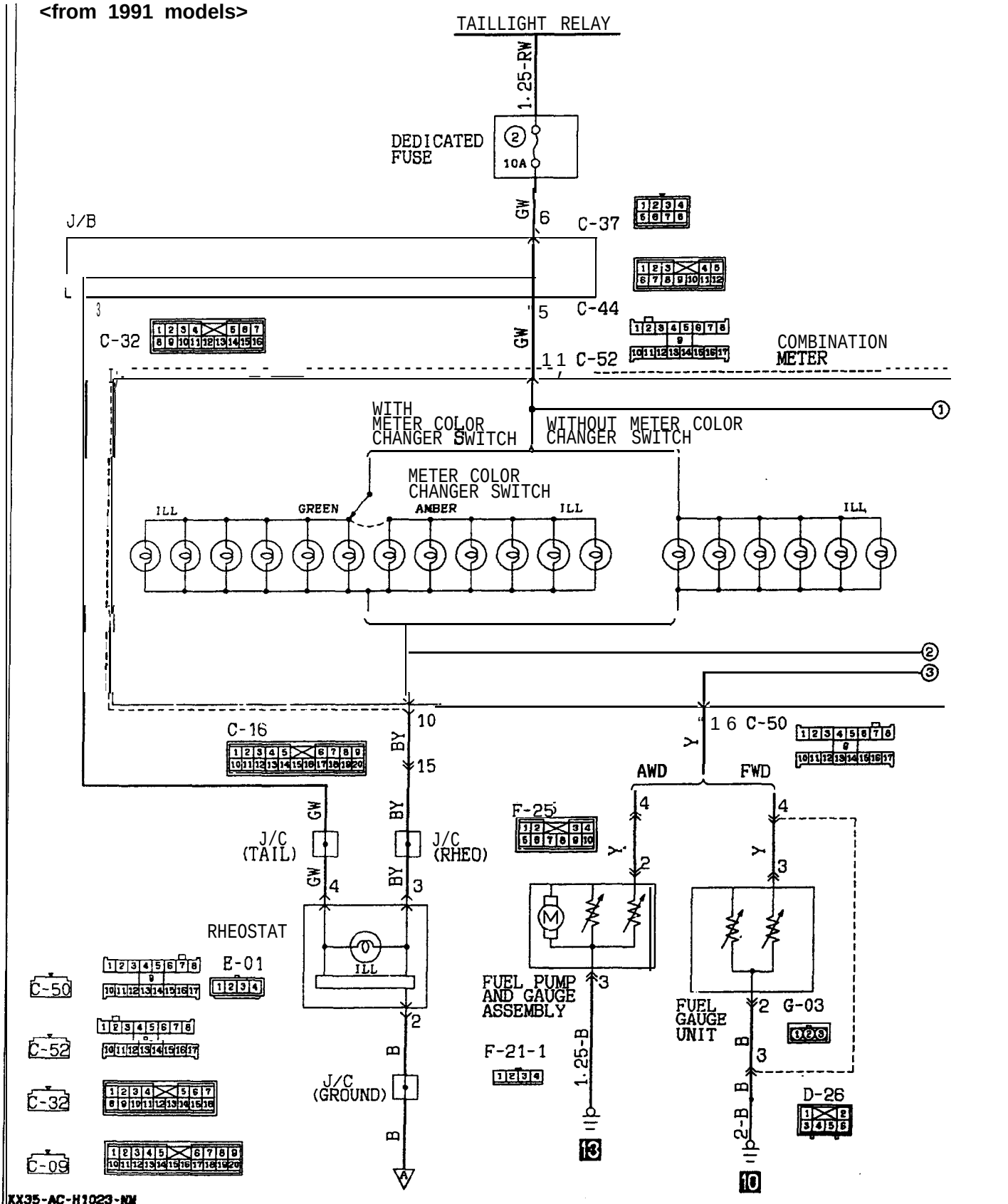


TSB Revision

METER AND GAUGES CIRCUIT

CIRCUIT DIAGRAM

<from 1991 models>



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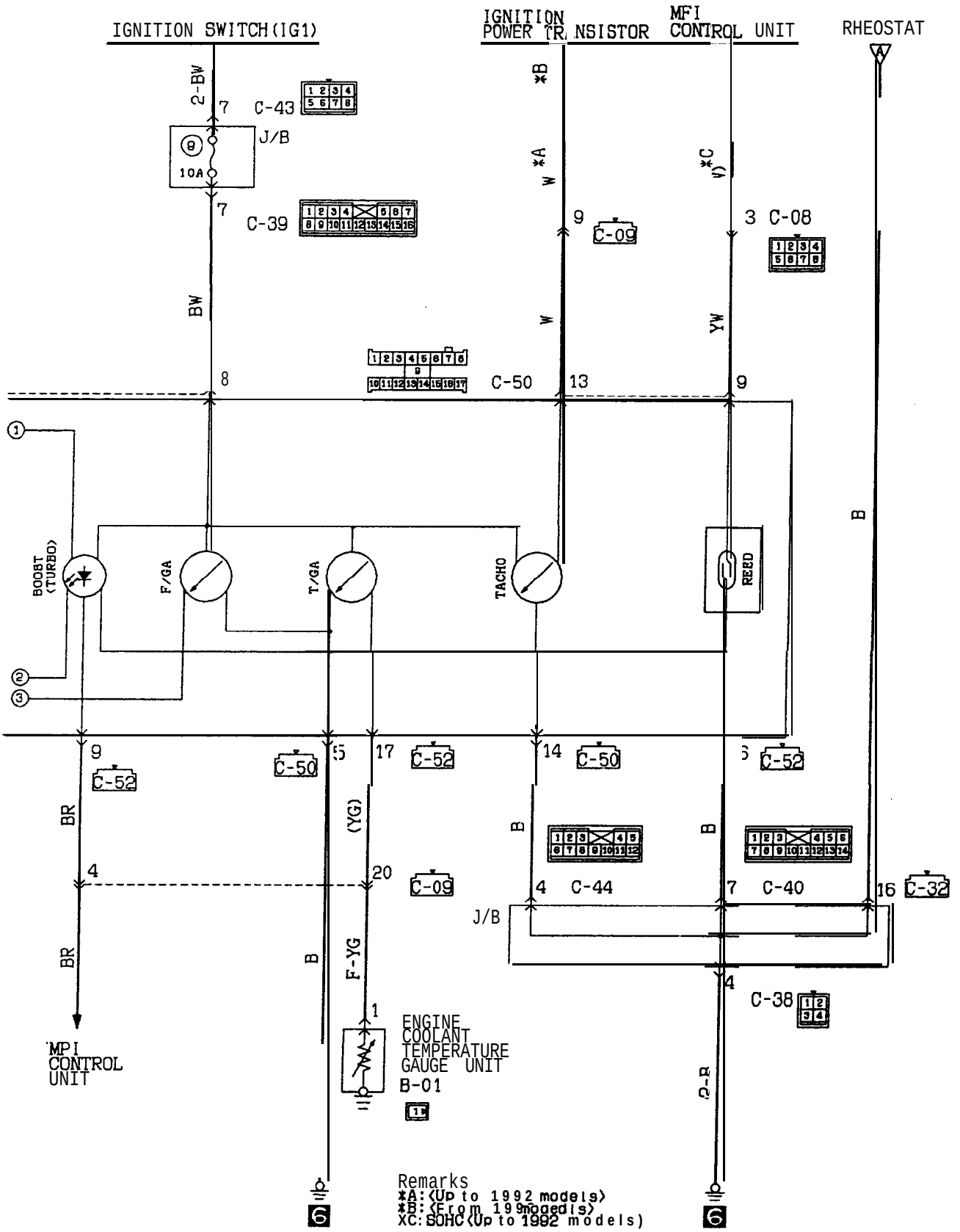
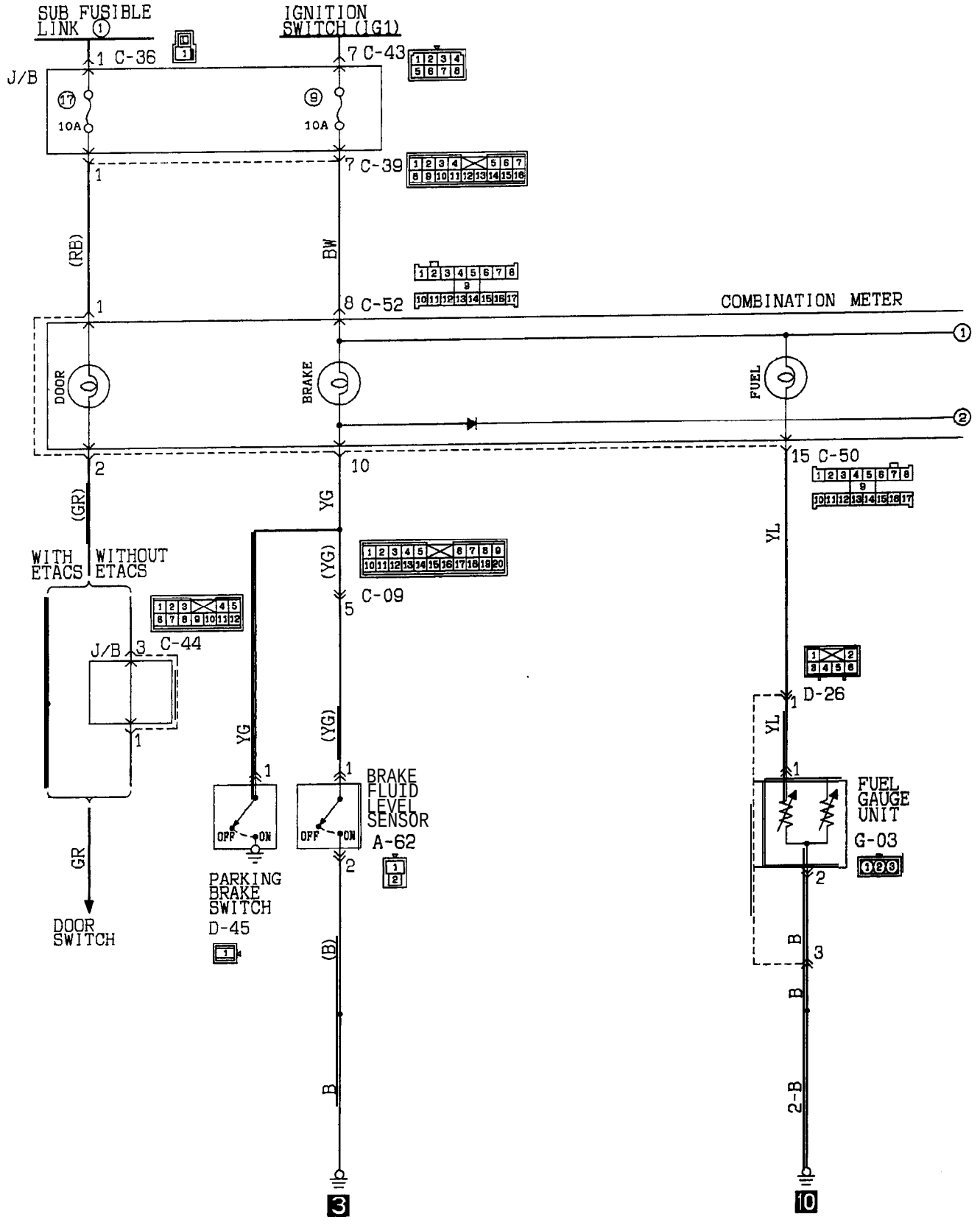


TSB Revision

WARNING LIGHT CIRCUIT

CIRCUIT DIAGRAM

<1989 models>



K35-AC-H1002-N

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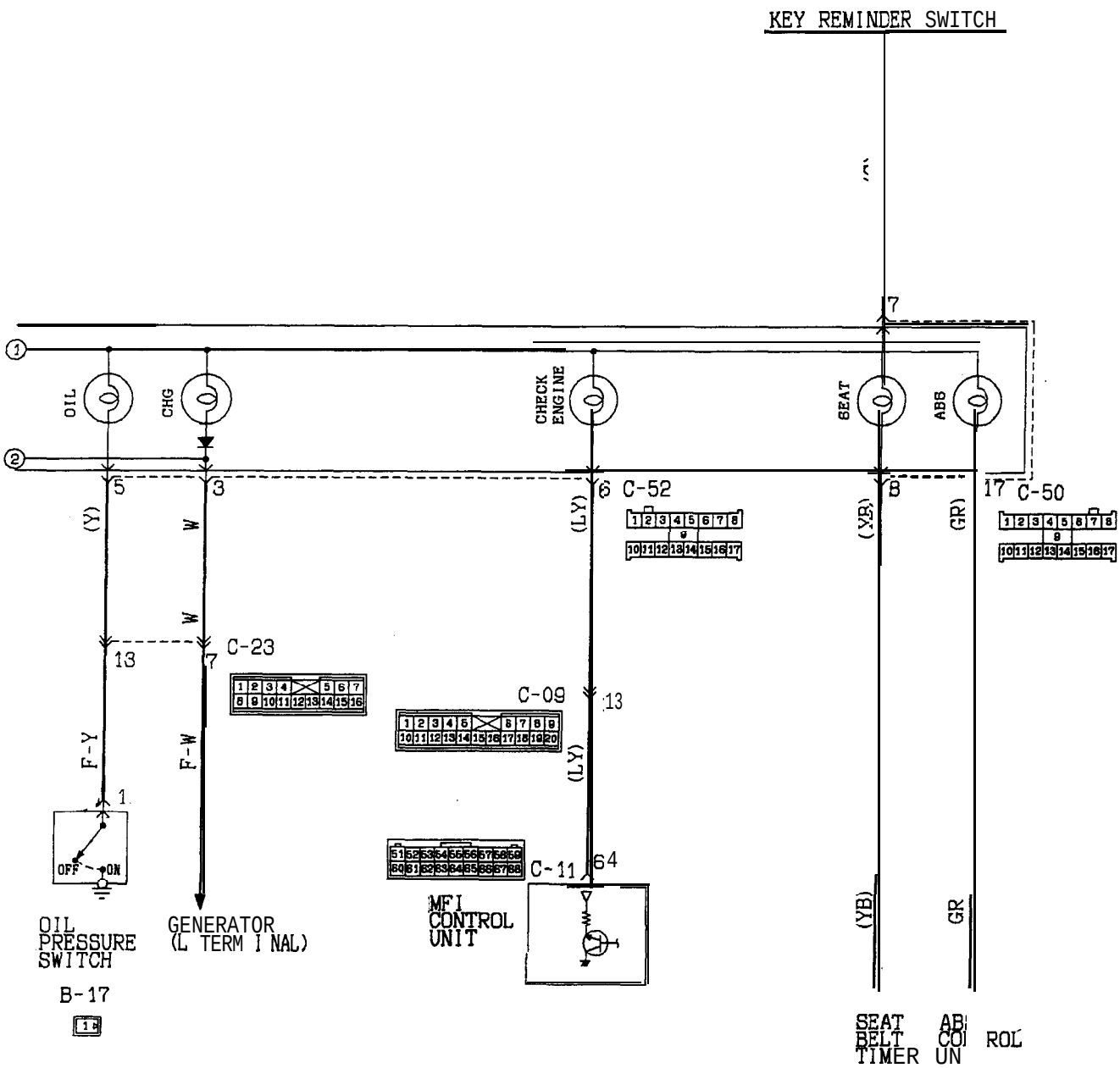
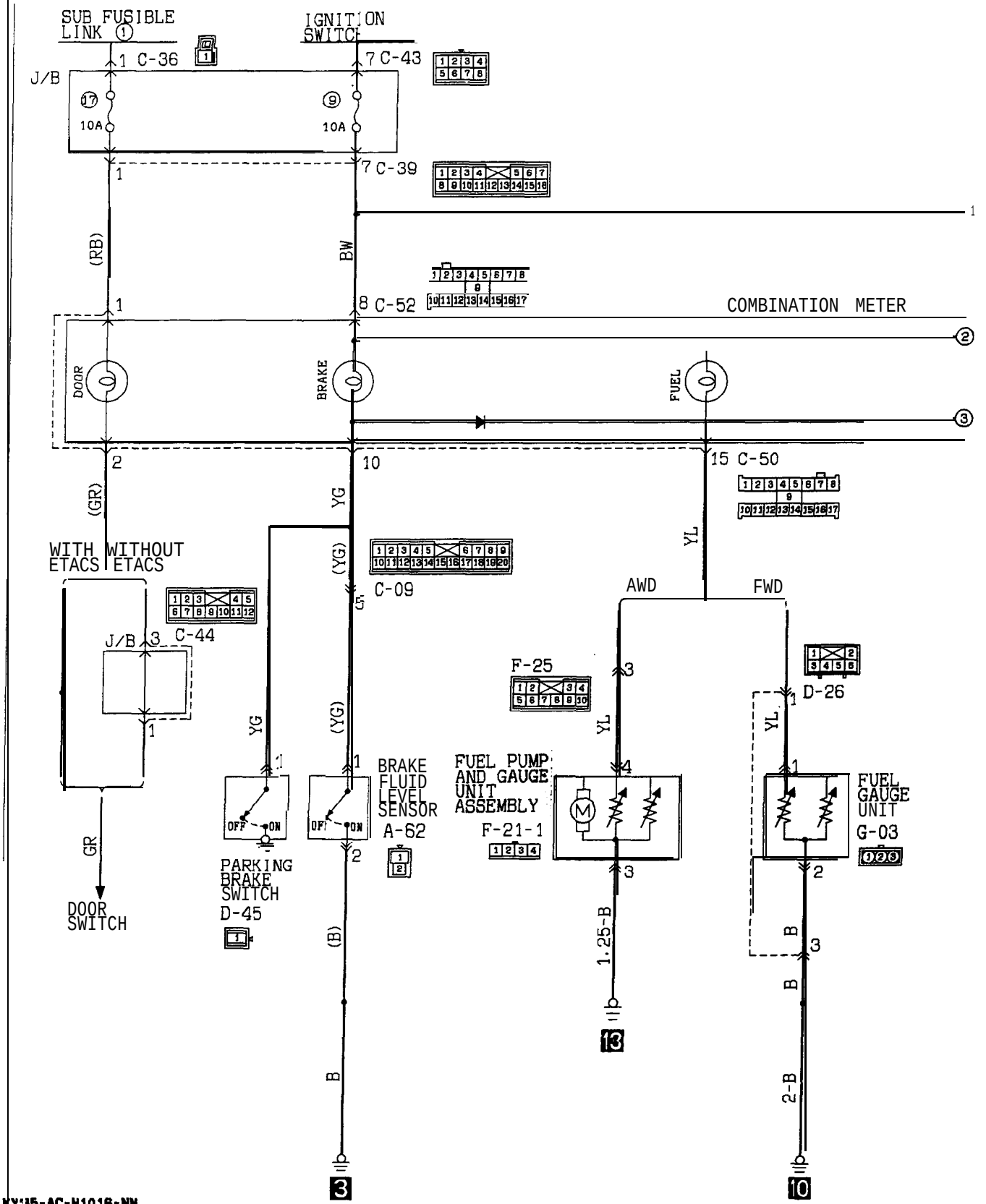

KEY REMINDER SWITCH
OIL
CHG
CHECK ENGINE
SEAT
ABB
(Y)
W
W
(LY)
(YB)
(GR)
5
3
6
C-52
8
17
C-50
13
7
C-23
C-09
13
F-Y
F-W
(LY)
1
OFF
ON
C-11
64
OIL PRESSURE SWITCH
B-17
GENERATOR (L TERM I NAL)
MFI CONTROL UNIT
(YB)
GR
SEAT BELT TIMER UN
ROL

WARNING LIGHT CIRCUIT

CIRCUIT DIAGRAM

< 1990 models>



KX35-AC-H1016-NM

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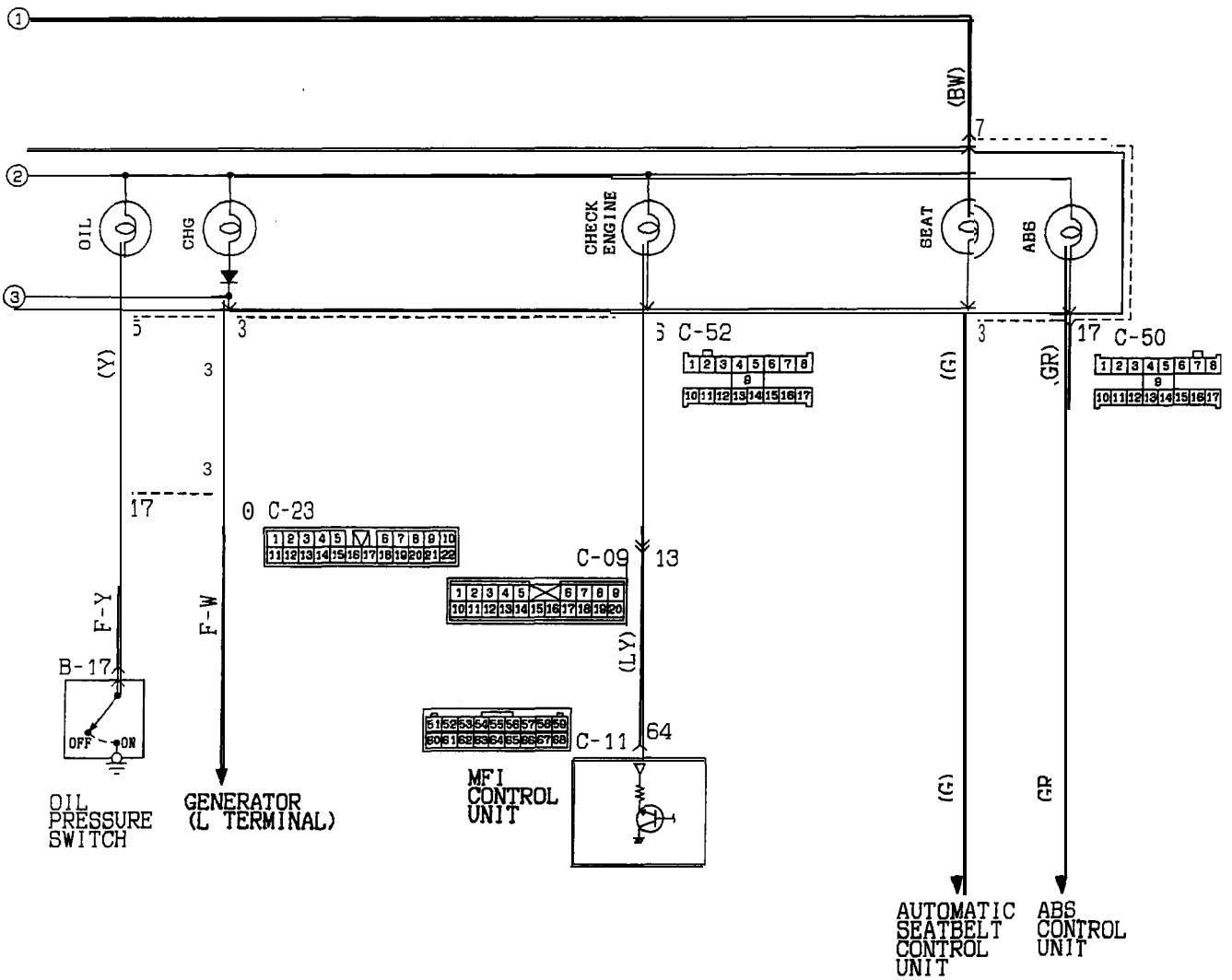
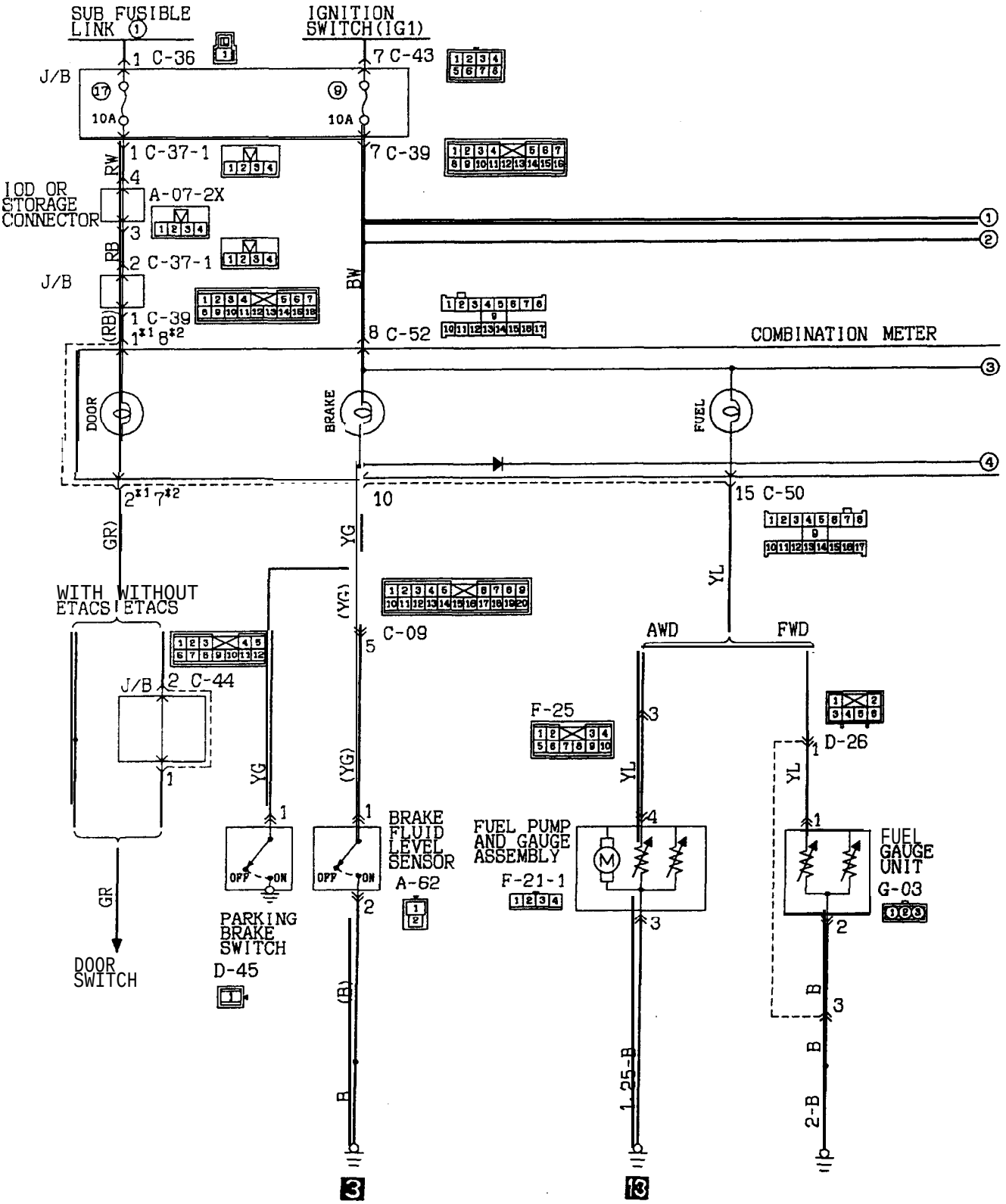

①
②
③
(BW)
7
OIL
CHG
CHECK ENGINE
SEAT
ABS
5
3
3
C-52
3
17
C-50
(Y)
(G)
(GR)
3
3
17
0 C-23
C-09
13
F-Y
F-W
(LY)
B-17
OFF
ON
C-11
64
OIL PRESSURE SWITCH
GENERATOR (L TERMINAL)
MFI CONTROL UNIT
(G)
GR
AUTOMATIC SEATBELT CONTROL UNIT
ABS CONTROL UNIT

WARNING LIGHT CIRCUIT

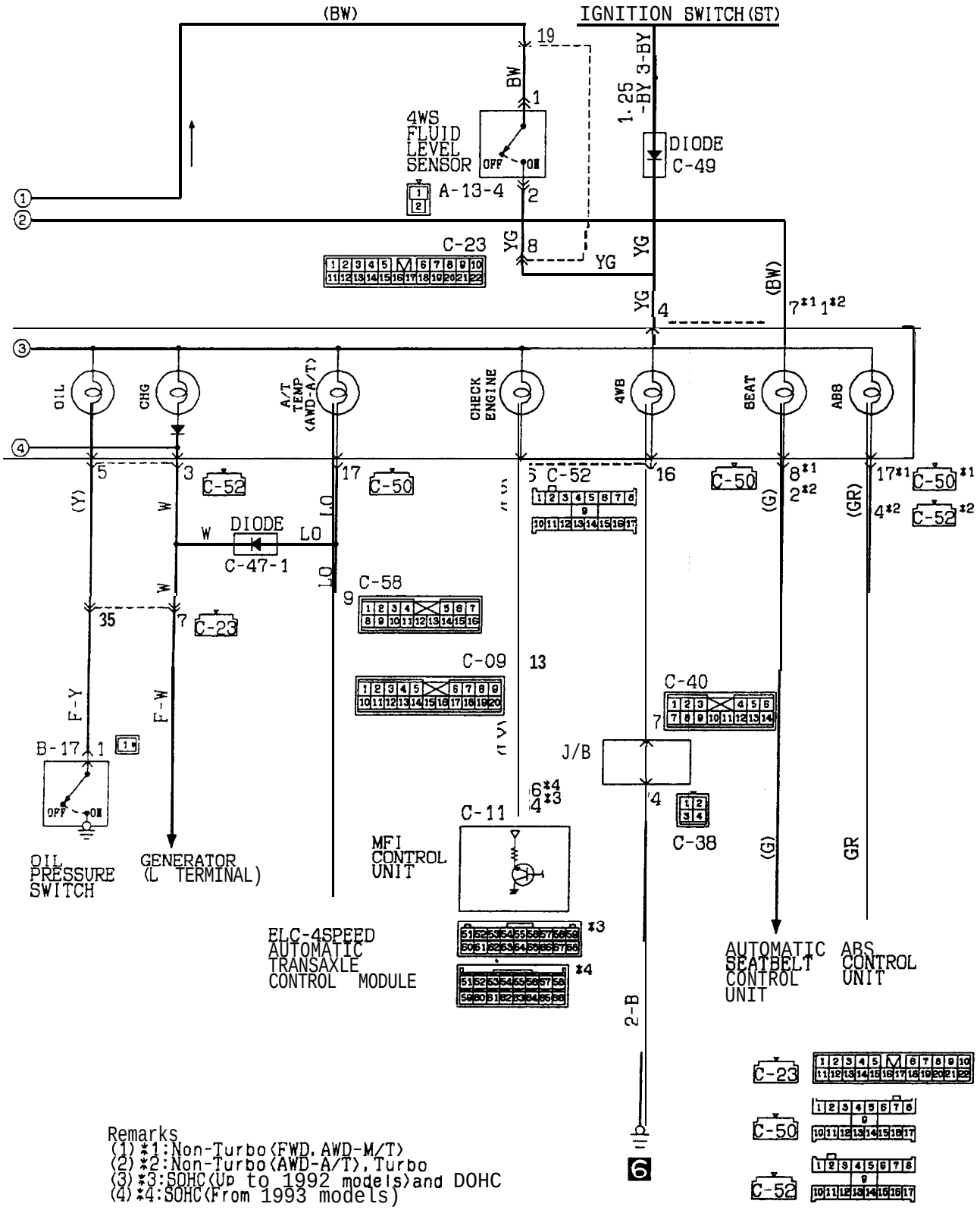
CIRCUIT DIAGRAM

<From 1991 models>



XX35-AC-H1024-NM

TSB Revision

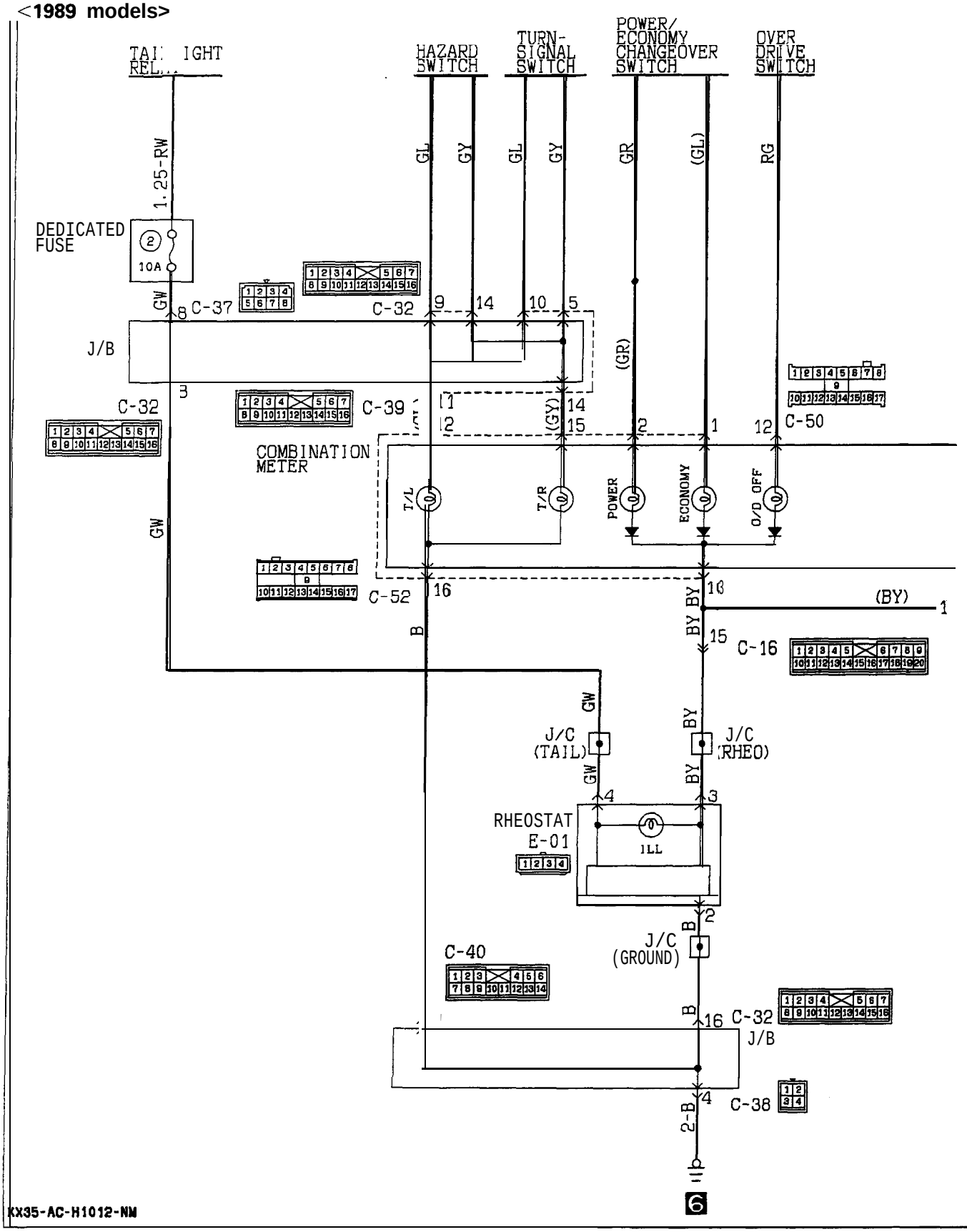


Remarks
(1) *1:Non-Turbo(FWD, AWD-M/T)
(2) *2:Non-Turbo(AWD-A/T), Turbo
(3) *3:SOHC(Up to 1992 models)and DOHC
(4) *4:SOHC(From 1993 models)

TSB Revision

INDICATOR LIGHT CIRCUIT

CIRCUIT DIAGRAM
<1989 models>



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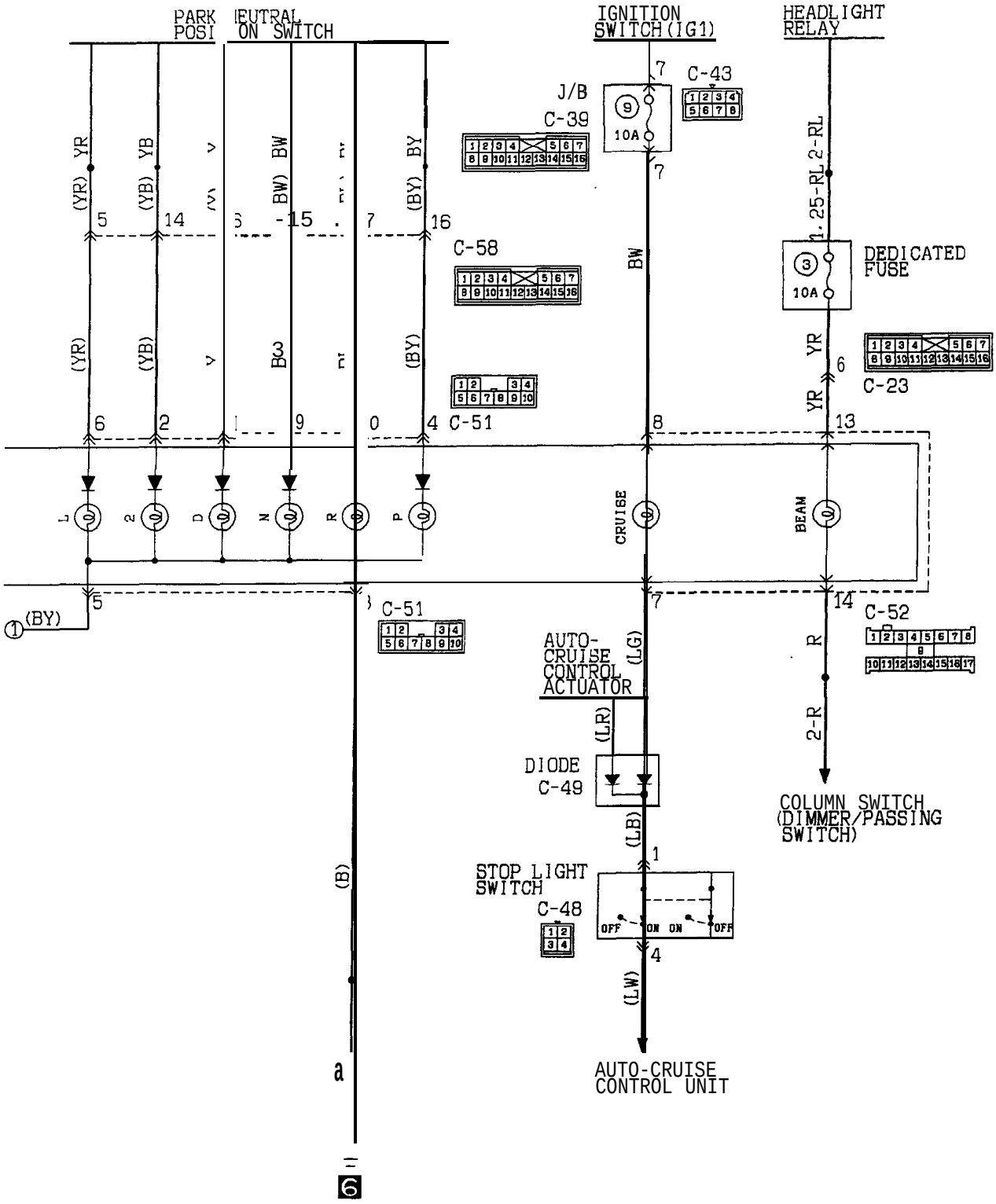
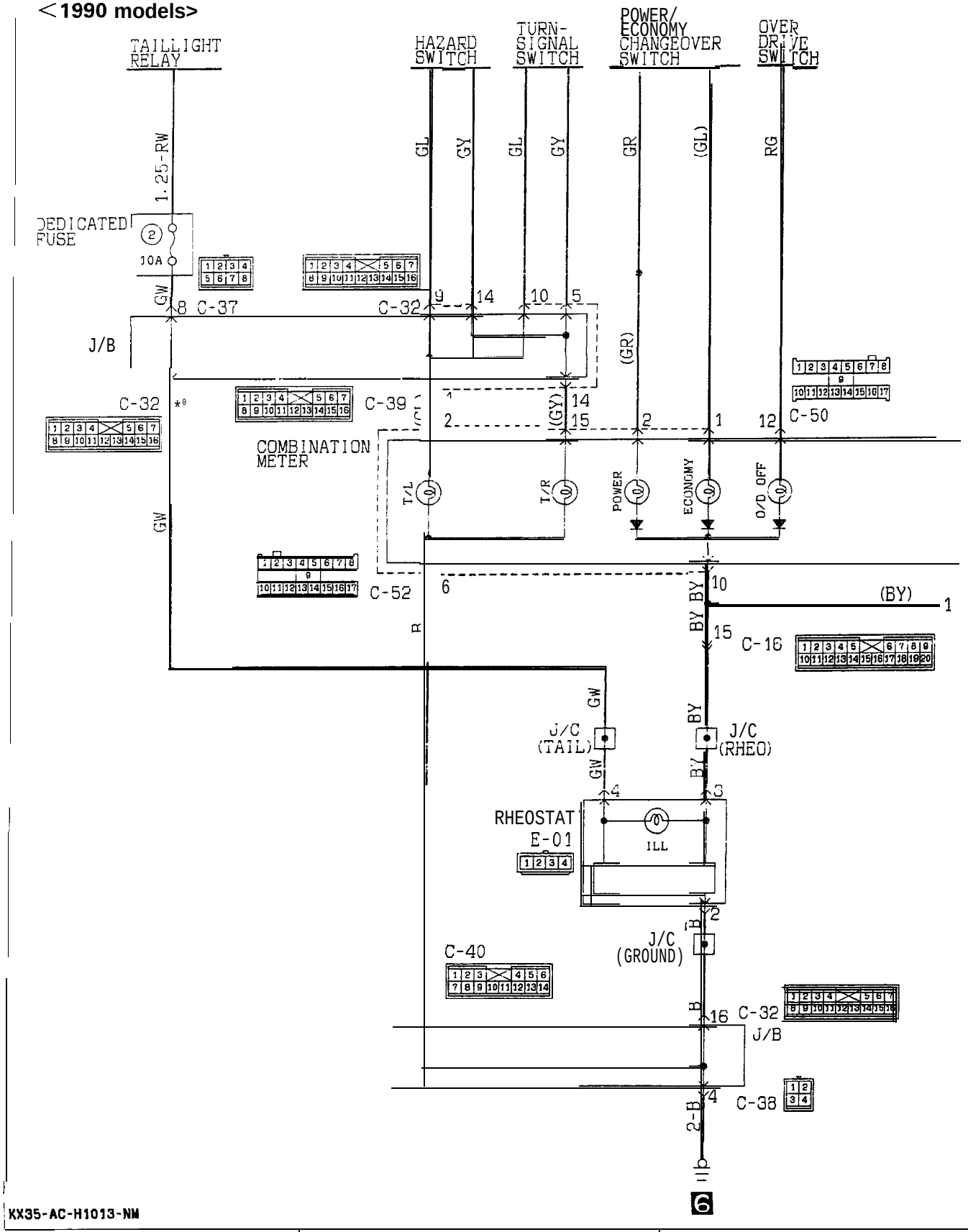

PARK NEUTRAL POSITION SWITCH
IGNITION SWITCH (IG1)
HEADLIGHT RELAY
J/B C-39
C-43
10A
DEDICATED FUSE
C-58
C-23
C-51
C-52
CRUISE
BEAM
AUTO-CRUISE CONTROL ACTUATOR
DIODE C-49
COLUMN SWITCH (DIMMER/PASSING SWITCH)
STOP LIGHT SWITCH C-48
OFF ON ON OFF
AUTO-CRUISE CONTROL UNIT
(YR)
(YB)
(BW)
(BY)
(LG)
(LR)
(LB)
(LW)
(B)
1.25-RL
2-RL
2-R
BW
YR
R
L
2
D
N
R
P

INDICATOR LIGHT CIRCUIT

CIRCUIT DIAGRAM

<1990 models>



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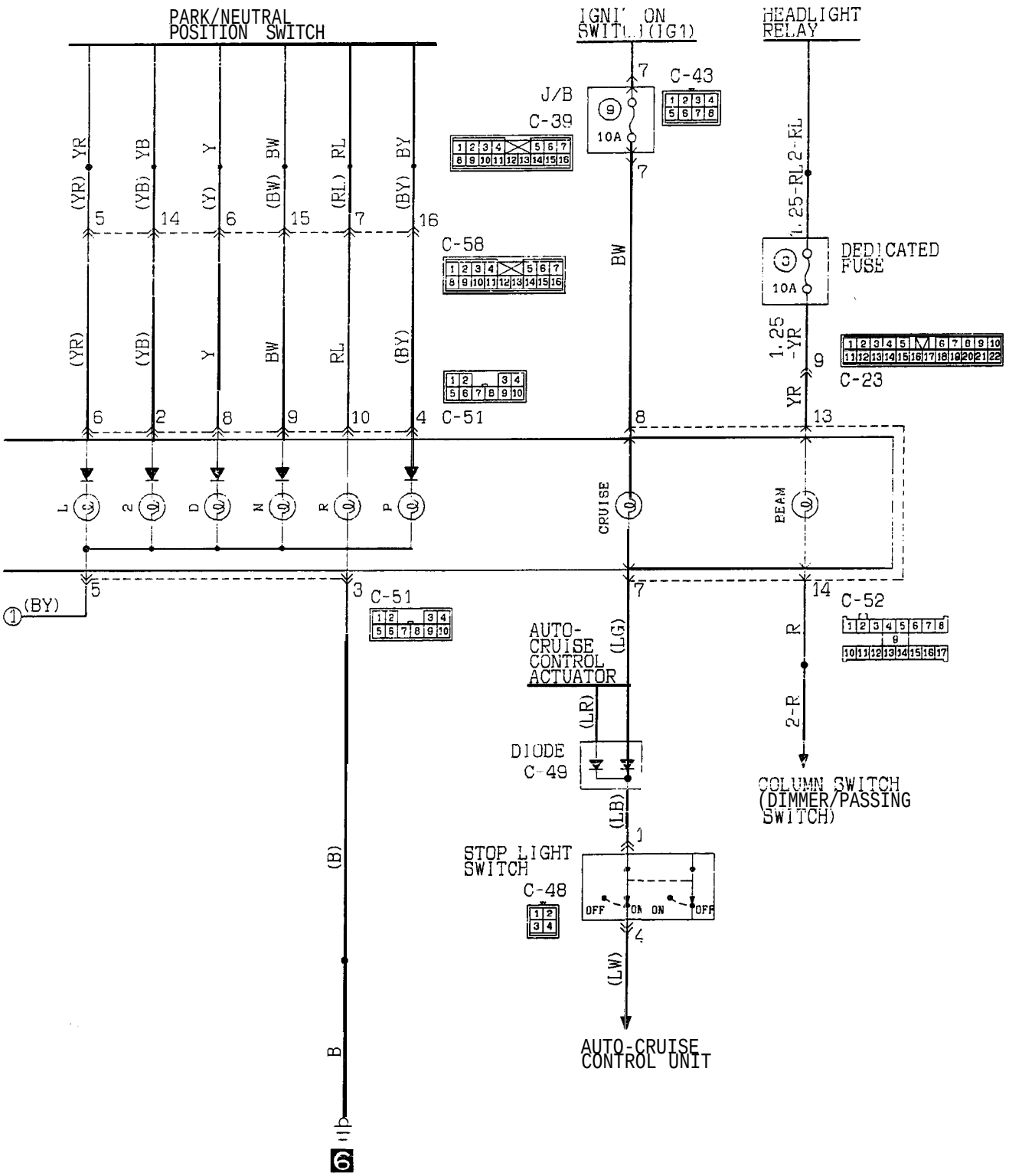
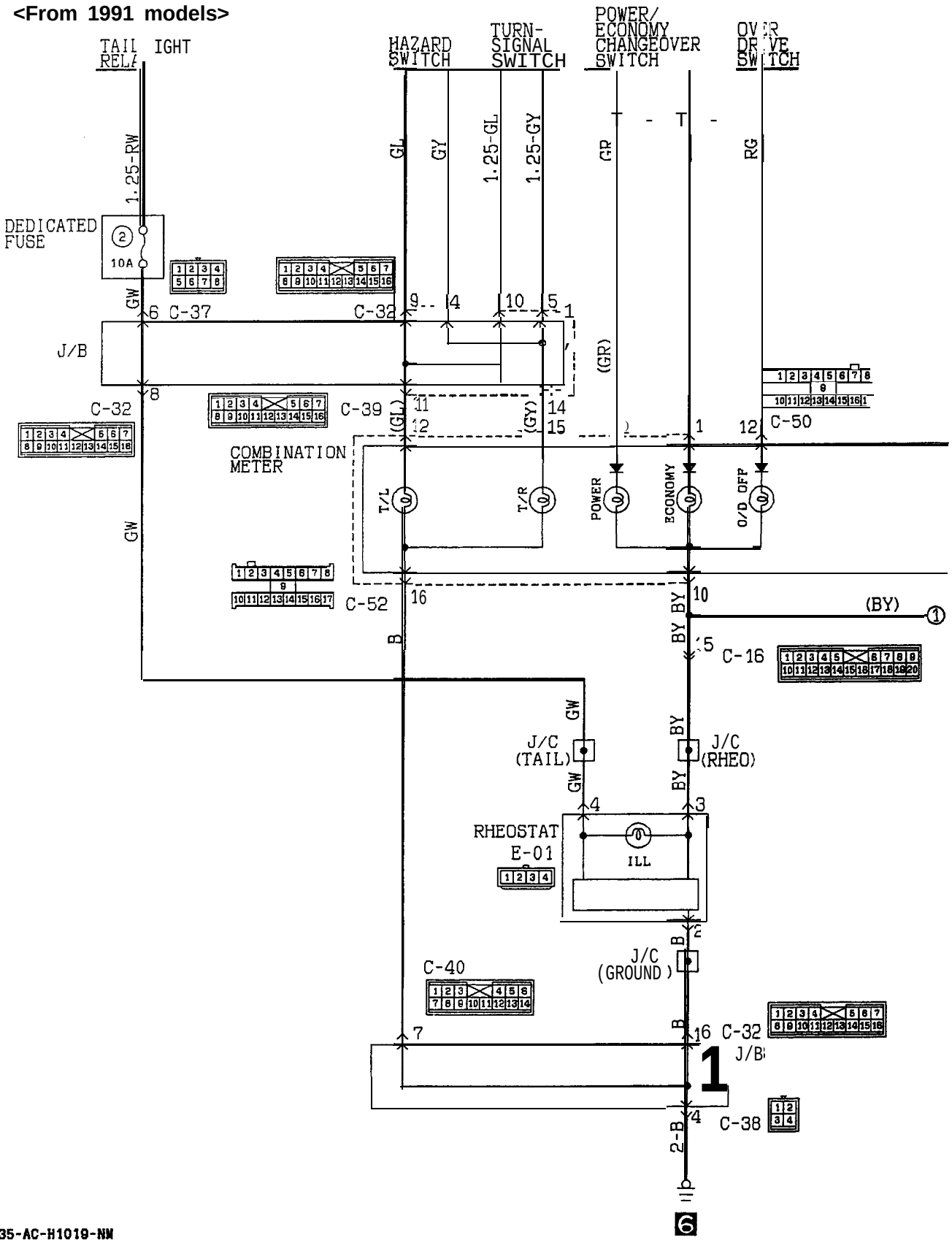

PARK/NEUTRAL POSITION SWITCH
IGNITION SWITCH (IG1)
HEADLIGHT RELAY
J/B C-39
C-43
10A
DEDICATED FUSE
C-58
C-51
C-23
C-52
CRUISE
BEAM
AUTO-CRUISE CONTROL ACTUATOR
DIODE C-49
STOP LIGHT SWITCH C-48
COLUMN SWITCH (DIMMER/PASSING SWITCH)
AUTO-CRUISE CONTROL UNIT
OFF
ON
ON
OFF

INDICATOR LIGHT CIRCUIT

CIRCUIT DIAGRAM

<From 1991 models>



KX35-AC-H1010-NW

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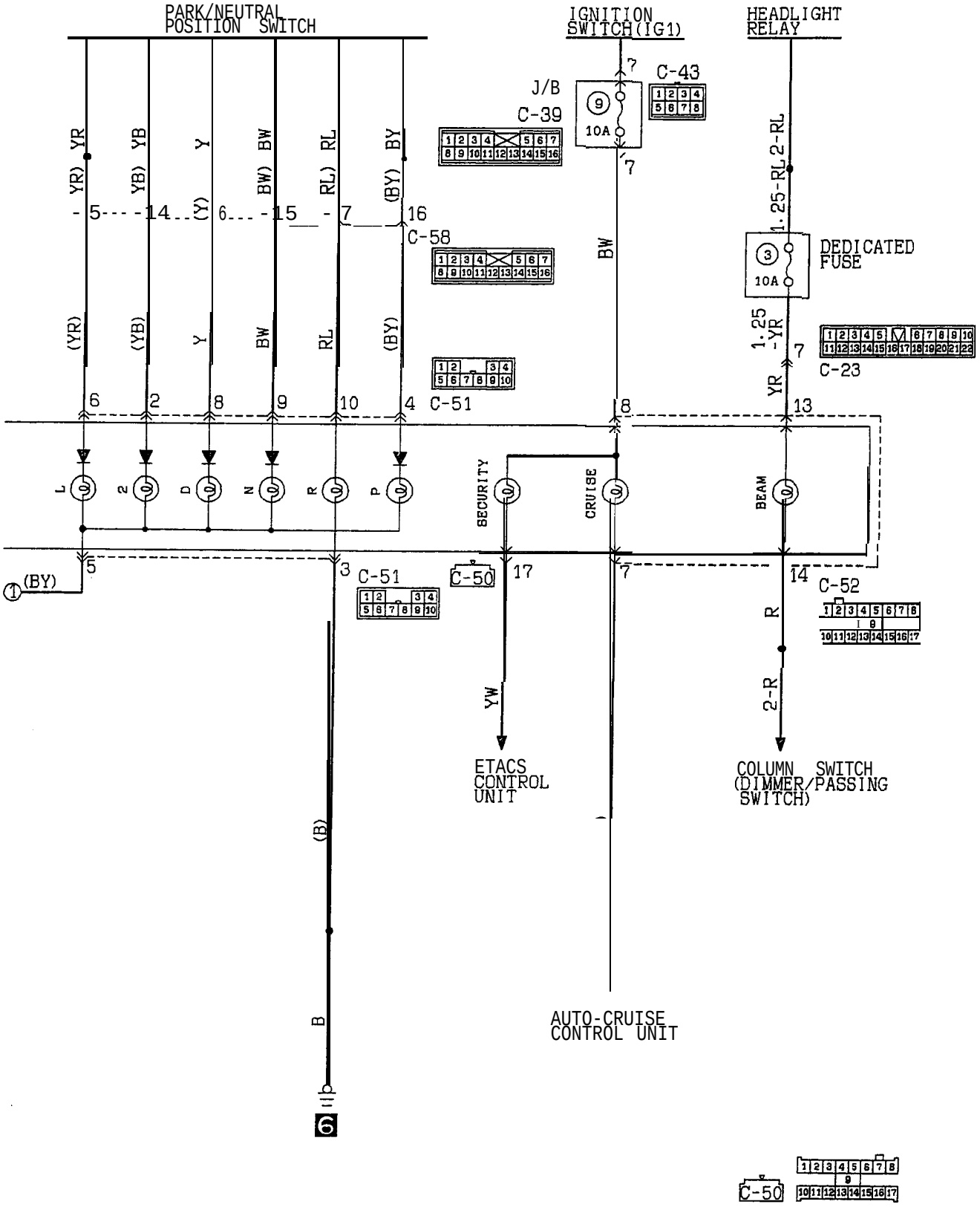

PARK/NEUTRAL POSITION SWITCH
IGNITION SWITCH(IG1)
HEADLIGHT RELAY
J/B
C-39
C-43
10A
C-58
C-51
C-23
DEDICATED FUSE
C-50
C-52
BECURITY
CRUISE
BEAM
ETACS CONTROL UNIT
COLUMN SWITCH (DIMMER/PASSING SWITCH)
AUTO-CRUISE CONTROL UNIT
(YR)
(YB)
Y
BW
RL
(BY)
(B)
B
YW
R
2-R
1.25-RL
1.25-YR

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.

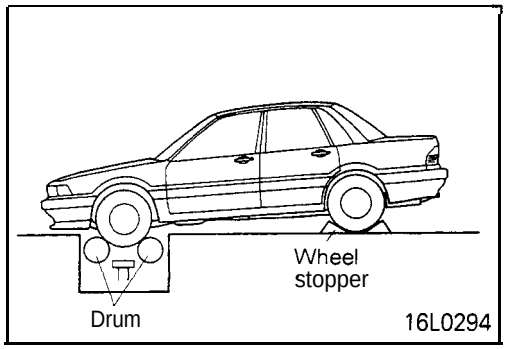
<Reed switch>

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

NOTE
For operation of warning light and indicator light, refer to P.54-36.

TROUBLESHOOTING HINTS

1. The fuel gauge doesn't function, or shows the incorrect indication.
   (1) Disconnect the connector of the fuel gauge unit; the "F" side is indicated when terminal 3 (FWD) or 2 (AWD) 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 (located within the speedometer).
4. The meter illumination light does not illuminate.
   (1) The tail lights illuminate.
   - Check the rheostat.



SERVICE ADJUSTMENT PROCEDURES

INSPECTION

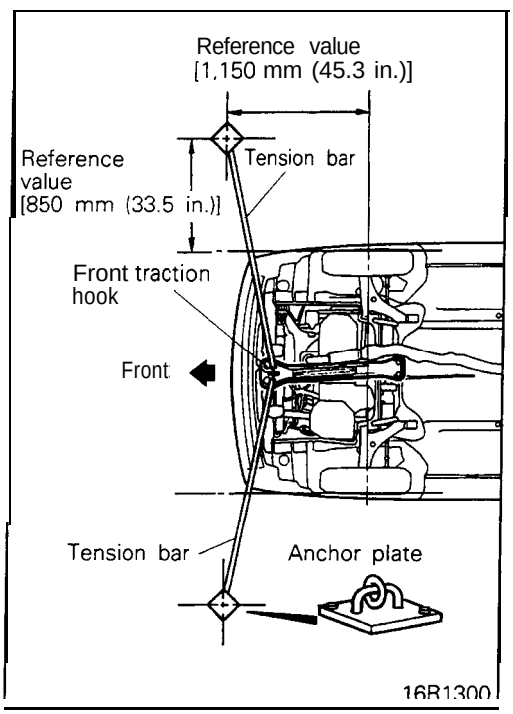
SPEEDOMETER INSPECTION M54HIAX

NOTE
For AWD models, refer to the section concerning special handling instructions for AWD models in GROUP 00.

Take note of the following before inspection:
(1) Assure tire pressure at standard value.
(Refer to GROUP 31 -Specifications.)
(2) When placing the vehicle on a speedometer tester drum, make sure the center line of the vehicle is at right angles to the center line of the drum. Also, make sure the drum is positioned so as to center between the front tires.

Rear wheel safety procedures

(1) Be sure to chock both rear wheels to prevent the vehicle from moving. Secure the stoppers to the floor, or take measures to prevent the stoppers from slipping.
(2) Make sure the parking brake has been set.



Front wheel away prevention procedure

(1) Attach tension bars to the front traction hook. Secure the ends of both bars to anchor plates.
(2) Make sure the tension on the right and left bars is the same. Also be sure there is enough tension on each bar.

Accident prevention procedures

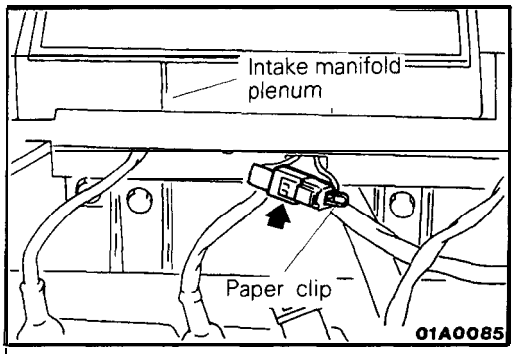
(1) Attach a chain or wire to the rear traction hook. Make sure the end of the wire or chain is secured firmly.
(2) Take all other necessary precautions.

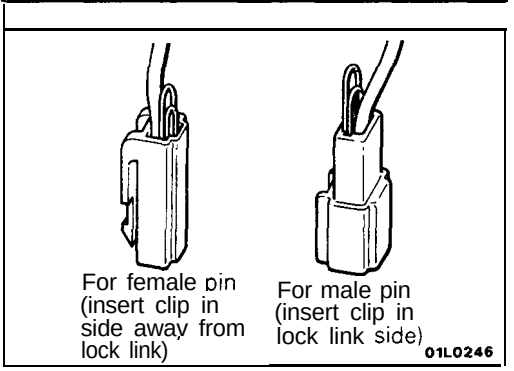
Use a speedometer tester to measure the speedometer's indication error.

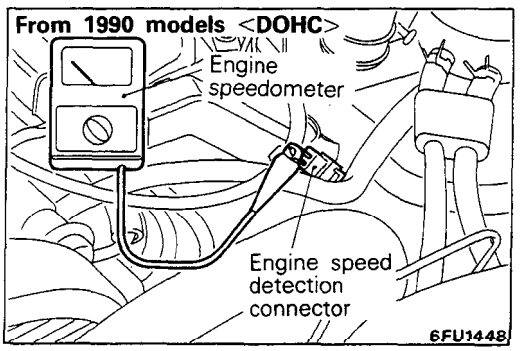
Standard value:

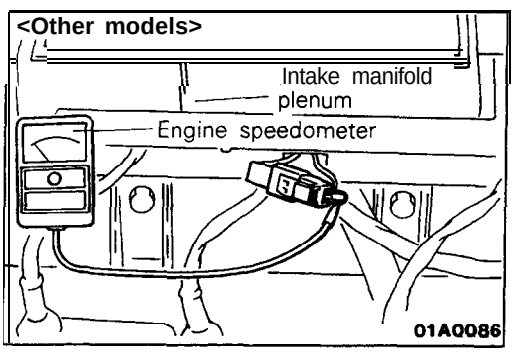
Standard indication mph	Allowable range mph
20	19–22
40	38-44
60	57-66
80	76-88
100	94–110

TSB Revision









TACHOMETER INSPECTION

M54HIBN

Connect engine speedometer and compare the engine speedometer and tachometer readings. Replace tachometer if difference is excessive.

Standard value:

Type 1 (8,000 rpm indication)	
700 rpm	**±100 rpm**
3,000 rpm	**±150 rpm**
6,000 rpm	**±300 rpm**
Type 2 (9,000 rpm indication)	
700 rpm	**±100 rpm**
3,000 rpm	**$^{+225}_{-100}$ rpm**
7,000 rpm	**$^{+400}_{-100}$ rpm**

Caution

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

Connect the engine speedometer.

(1) Insert the paper clip from behind the connector.

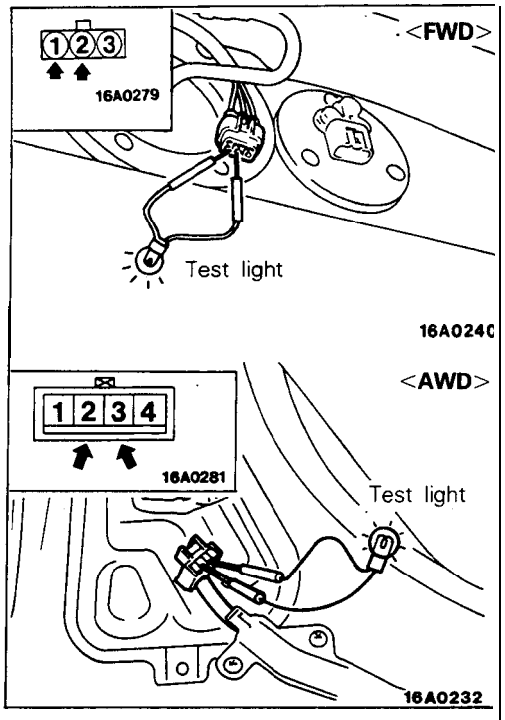
Caution

Insert the paper clip parallel to the terminal surface as shown in the figure at left.

(2) Connect the engine speedometer to the inserted clip.

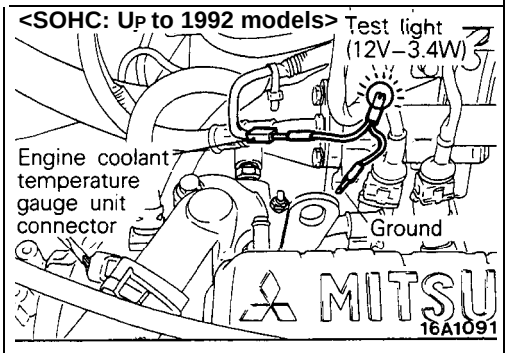
NOTE (From 1990 models <DOHC>)

For rpm, one-half of the actual engine rpm is indicated, so the actual engine rpm is two times the indicated value shown by the tachometer.



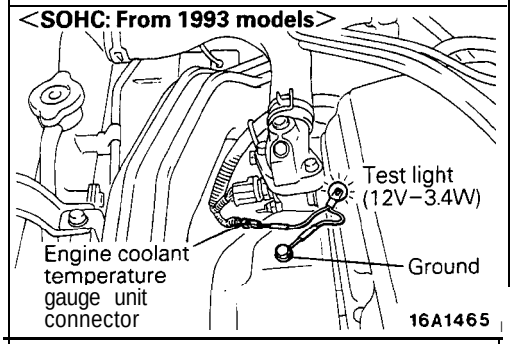
FUEL GAUGE SIMPLE INSPECTION M54HICI

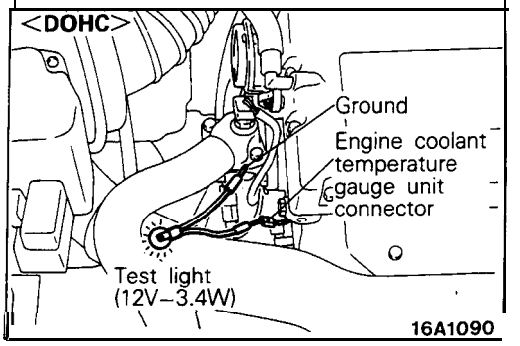
(1) Remove connector from fuel gauge unit in fuel tank.
(2) Ground the harness side connector via a test light (12V–3.4W).
(3) Turn ON ignition key.
(4) Assure test light goes on and gauge needle moves.
(5) If test light goes on but gauge needle does not move, replace fuel gauge.
If test light does not go on (and gauge needle does not move), check fuse for broken wire, or resistance between gauge terminals (refer to P.54-34), or break in harness. Replace or repair defective parts.



ENGINE COOLANT TEMPERATURE GAUGE SIMPLE INSPECTION M54HIDK

(1) Remove connector from engine coolant temperature gauge unit in engine compartment.
(2) Ground harness side connector via test light (12V–3.4W).
(3) Turn ON ignition key.
(4) Check that test light goes on and gauge needle moves.
(5) If test light goes on but the gauge needle does not move, replace engine coolant temperature gauge.
If test light does not go on (and gauge needle does not move), check fuse for broken wire, or resistance between gauge terminals (refer to P.54-34), or break in harness. Replace or repair defective part.





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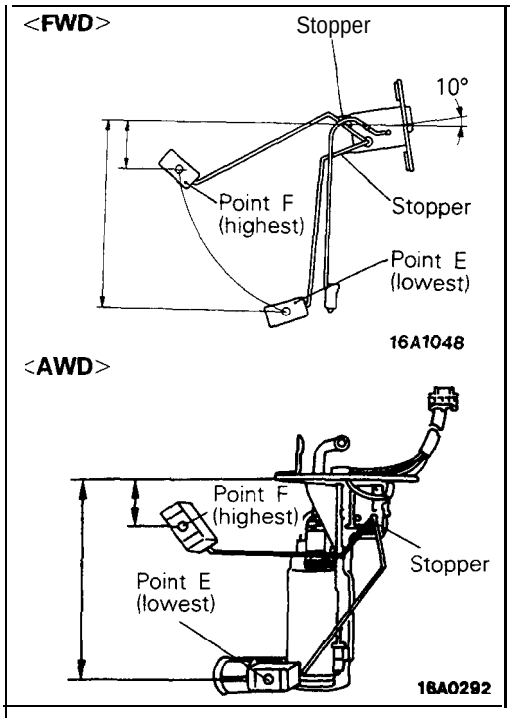


FUEL GAUGE UNIT INSPECTION

M54HIIQ

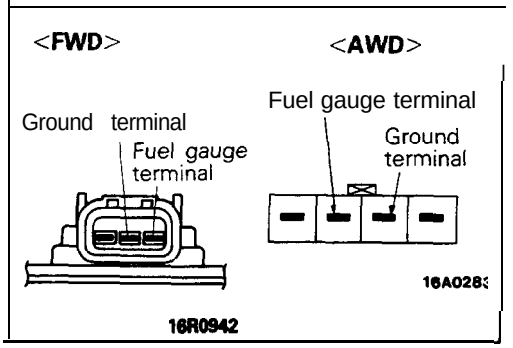
To check, remove fuel gauge unit from fuel tank (Refer to GROUP 13–Fuel Tank.)

Float Height of Fuel Gauge Unit

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

Standard value:

<FWD>	**Point F**	**45.6±2.5 mm (1.79±.1 in.)**
	Point E	**177.5±2 mm (6.98±.08 in.)**
<AWD>	**Point F**	43 **mm (1.69 in.)**
	Point E	**174 mm (6.85 in.)**

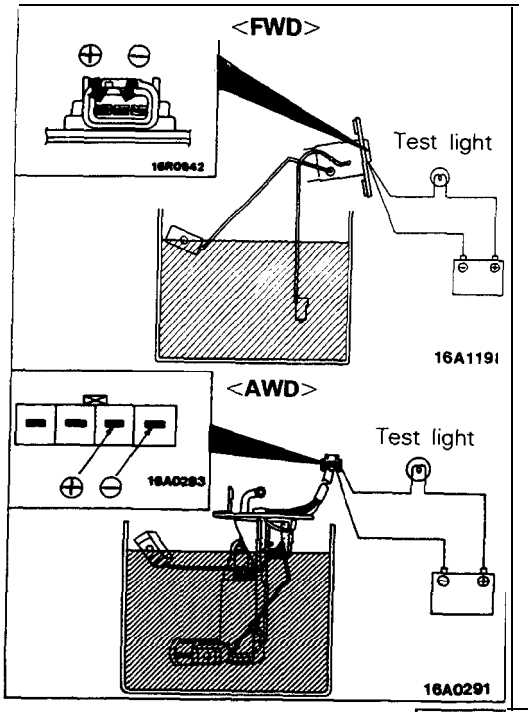


Standard Resistance of Fuel Gauge Unit

(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±7 Ω

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



FUEL SENSOR INSPECTION

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.

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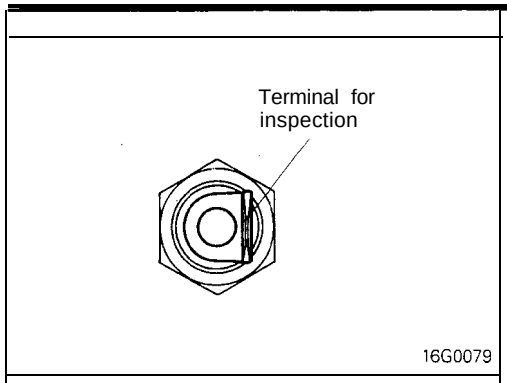
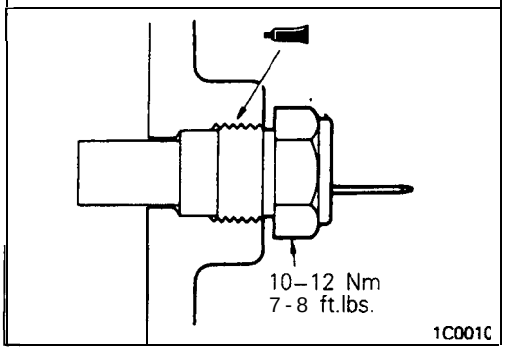




ENGINE COOLANT TEMPERATURE GAUGE UNIT INSPECTION

M54HIITa

To check, remove engine coolant temperature gauge unit from intake manifold. ,

Standard Resistance of Engine Coolant Temperature Gauge Unit

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

Standard value: 104 ± 13.5 Ω

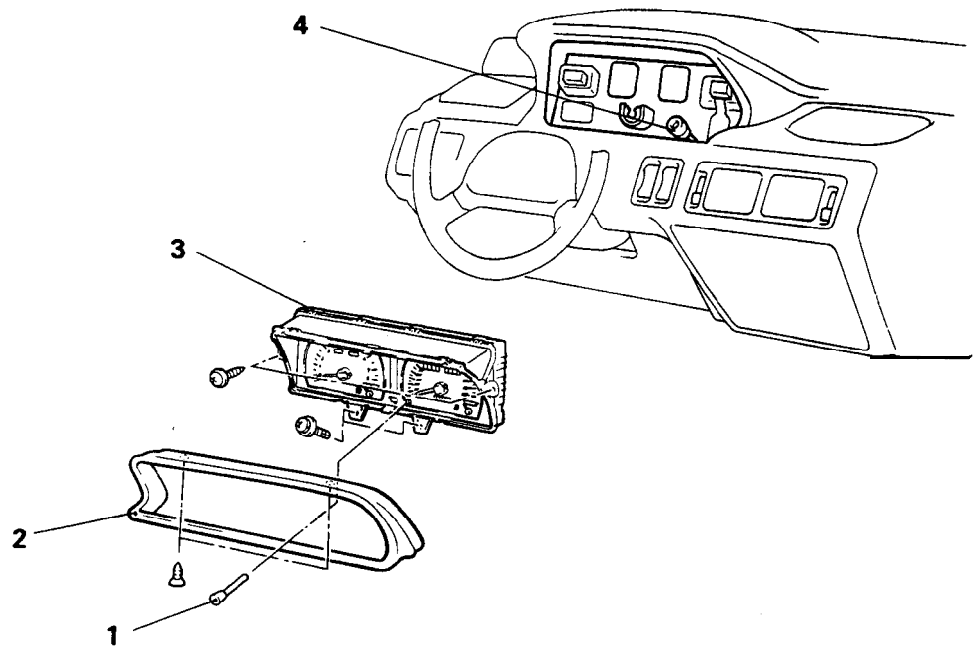
(2) After checking, apply the specified sealant around the thread of engine coolant temperature gauge unit and install on the intake manifold.

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

METERS AND GAUGES

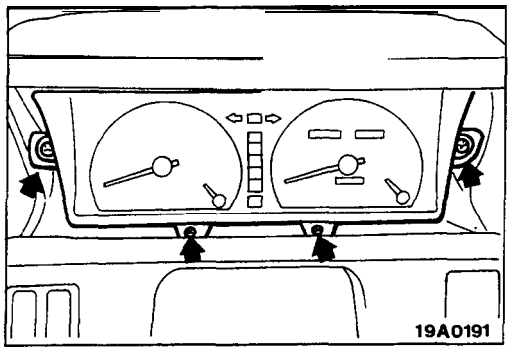
M54HJAR

REMOVAL AND INSTALLATION



Removal steps

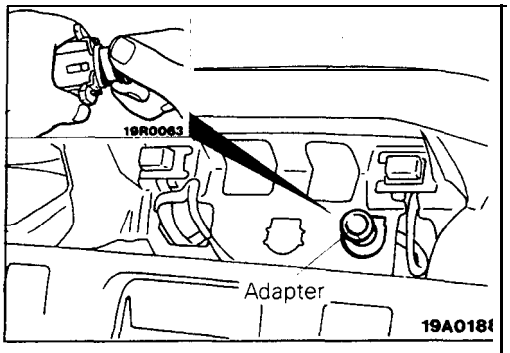
1. Trip counter reset knob
2. Meter bezel
3. Combination meter
4. Adapter



SERVICE POINTS OF REMOVAL

3. REMOVAL OF THE COMBINATION METER

(1) Remove the mounting screws; then remove the combination meter by turning the upper part of it toward the front.
(2) For models equipped with the automatic position indicator, disconnect the harness connector before removing the combination meter.



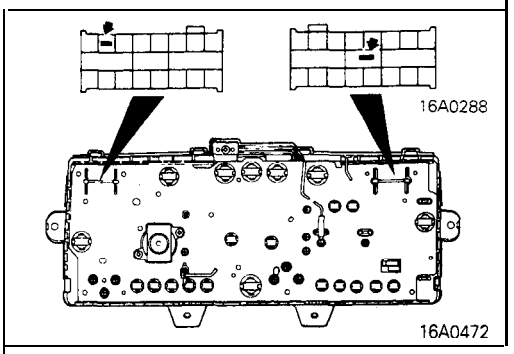
4. REMOVAL OF ADAPTER

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

INSPECTION

REED SWITCH INSPECTION

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

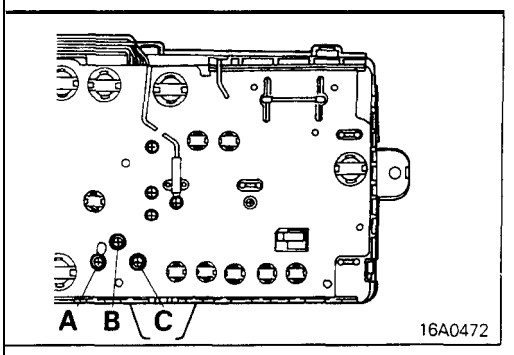


FUEL GAUGE CIRCUIT INSPECTION

Measure resistance between terminals with circuit tester.

Standard value:

A-B	**Approx. 203 Ω**
A-C	**Approx. 102 Ω**
B-C	**Approx. 102 Ω**



ENGINE COOLANT TEMPERATURE GAUGE CIRCUIT INSPECTION

Measure resistance between terminals with circuit tester.

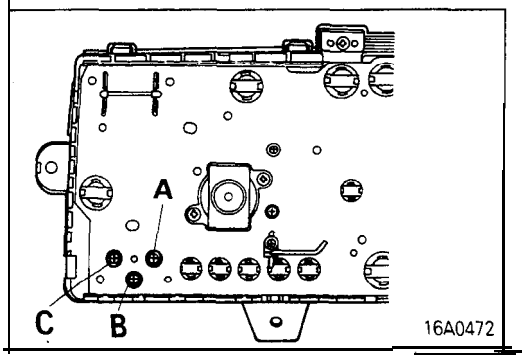
Standard value:

Vehicles built up to Dec. 1988

A-B	**Approx. 130 Ω**
A-C	**Approx. 53 Ω**
B-C	**Approx. 162 Ω**

Vehicles built from Jan. 1989

A-B	**Approx. 146 Ω**
A-C	**Approx. 60 Ω**
B-C	**Approx. 206 Ω**



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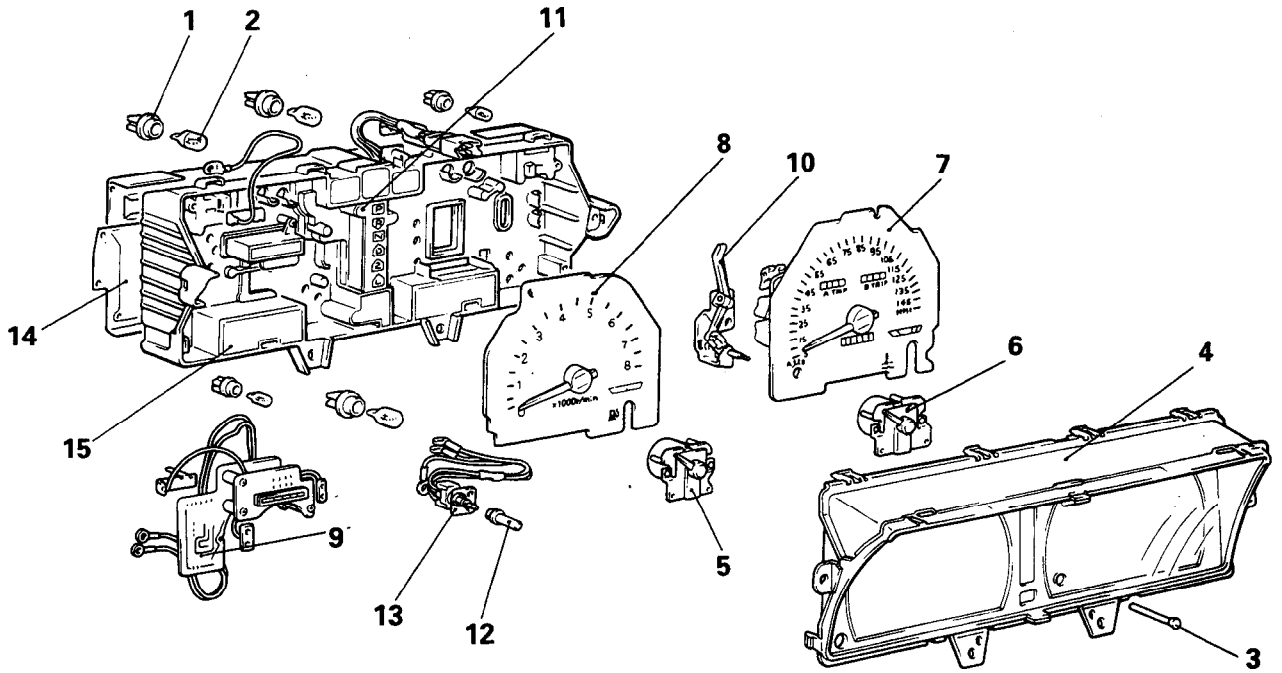
DISASSEMBLY AND REASSEMBLY



Disassembly steps

1. Bulb socket
2. Bulb
3. Twin trip counter reset knob
4. Meter panel
5. Fuel gauge
6. Engine coolant temperature gauge
7. Speedometer
8. Tachometer
9. Turbo boost gauge <DOHC-Turbo>
10. Twin trip holder
11. A/T indicator lens
12. Meter color changer switch knob <DOHC>
13. Meter color changer switch <DOHC>
14. Printed-circuit board
15. Meter case

INDICATORS

M54HKAXa

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.
≡D	High beam indicator	This indicator illuminates when the headlights are on high beam.
	Door-ajar warning	This indicator comes on when the door is either open or not completely closed.

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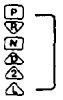
Symbol		Operation
	Seat belt warning	<Vehicles with automatic seatbelt> This warning light warns the driver and front passenger to fasten their seat belts. If one or more seat belts are not fastened, the automatic seat belt control unit detects that fact and causes the warning light to be illuminated or flash. How long the light is illuminated or how many times it flashes depends on whether only one, or both of the belts remain unfastened. <Vehicles without automatic seatbelt> The seat belt warning light will flash for about six seconds when the ignition key is turned to the ON position. If at this time the driver's seat belt is not buckled, the alarm buzzer will sound four times in synchronism with the flashing of the warning light.
BRAKE	Brake warning	This indicator comes on 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.
	Fuel warning	This indicator comes on when the fuel in the fuel tank falls less than approx. 8 liters (2.1 gals.).
	Charging warning	This indicator comes on 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	This indicator comes on 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.
OD OFF	Overdrive OFF indicator	The light will light up when the overdrive switch is off.
	Automatic transaxle-position indicator	This indicator light illuminates to indicate the position at which the selector lever is set.
ANTI LOCK	Anti-lock brake warning light	This light illuminates when the ignition switch is switched ON; then, when the ignition key is returned from the "ST" position to the "ON" position, it extinguishes about 0.6 second later, thus providing a check of the anti-lock brake warning light circuit. This light illuminates when a malfunction is discovered in the anti-lock braking system.
CHECK ENGINE	Check engine/malfunction indicator lamp	This lamp illuminates when the ignition key is turned to the "ON" position, but should go out in a few seconds. If the lamp illuminates while the vehicle is moving, there is a malfunction of a component related to exhaust gases.
CRUISE	Auto-cruise control indicator light	The light illuminates when the auto-cruise control switch is switched ON, and the auto-cruise control system is activated.

Symbol		Operation
A/T TEMP 68W068	AA fluid temperature warning light <AWD-A/T>	This A/T fluid temperature warning light comes on when automatic transmission fluid temperature becomes abnormally high.
SECU RITY	SECURITY light (Vehicles with theft-alarm system)	Illuminates for about 20 seconds when the theft-alarm system can be set, and then the illumination stops.
4WS 68A0012	4WS (4-wheel steering system) fluid level warning light	With the ignition switch in the "ON" position the warning light is illuminated if the 4WS fluid level falls less than the specific level.

LIGHTING SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS <Up to 1990 models>

M54IB--

items	Specifications
Exterior lights	
Headlight	
Type I W	65
Type II W	55
Front turn-signal light W	27
Front combination light	
Side marker light CP	3.8
Position light CP	5
Rear side marker light CP	3
Rear combination light	
Turn-signal light CP	32
Stop and tail light CP	32/2
Back-up light CP	32
License plate light CP	3
High-mounted stop light CP	*1 4 or *2 21
Interior lights	
Front dome light	
Dome light W	*3 10
Spot light W	8
*4 Rear dome light	
Dome light W	8
Spot light W	8
Door light W	5
Luggage compartment light W	5

NOTE
*1 : DOHC
*2 : SOHC
*3 : Vehicles with sunroof.
*4 : Vehicles without sunroof

GENERAL SPECIFICATIONS <From 1991 models>

Items		Specifications
Exterior light		
Headlight		
Type I	W	65
Type II	W	55
Front turn-signal light	W	
<Non-turbo>		27*3 27/8*4
<Turbo>		27/8
Front combination light		
Side marker light	W	3.8
Position light	W	5
Fog light	W	55
Rear side marker light	CP	3
Rear combination light		
Turn signal light	CP	32
Stop and tail light	C P	32/2
Back-up light	CP	32
Rear lid light		
Stop and tail light	C P	32/2
License plate light	CP	3
High-mounted stop light		
Non-turbo (Vehicles without air spoiler)	CP	21
Non-turbo (Vehicles with air spoiler)	CP	4*3 60 pieces (Light Emitting Diode)*4
Turbo		60 pieces (Light Emitting Diode)
nterior lights		
Front dome light		
Dome light	W	10*1
Spot light	W	8
Rear dome light*2		
Dome light	W	8
Spot light	W	8
Door light	W	5
Luggage compartment light	W	5

NOTE
*1: Vehicles with sunroof.
*2: Vehicles without sunroof.
*3: Vehicles built up to 1992 models.
*4: Vehicles built from 1993 models.

TSB Revision

SERVICE SPECIFICATIONS

M54IC--

Items		Specifications
Limit		
Headlight intensity		
Type I	cd	18,000 or more
Type II	cd	7,000 or more

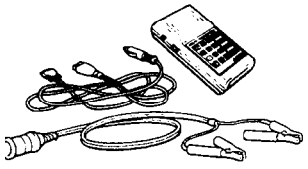
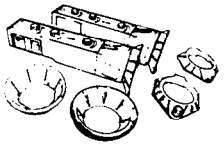
SEALANTS AND ADHESIVES

M54IH--

Item	Specified sealant
Connection of rear combination light and body	3M ATD Part No. 8625 or equivalent

SPECIAL TOOLS

M54IG--

Tool	Number	Name	Use
	MB991269 <1989 models> MB991341 <From 1990 models>	Scan tool (Multi-use tester <MUT>)	ETACS input check
	(For the number, refer to GROUP 00–Precautions Before Service)	ROM pack	ETACS input check
	C-4466	Headlight aimer	Aiming of headlight

TSB Revision

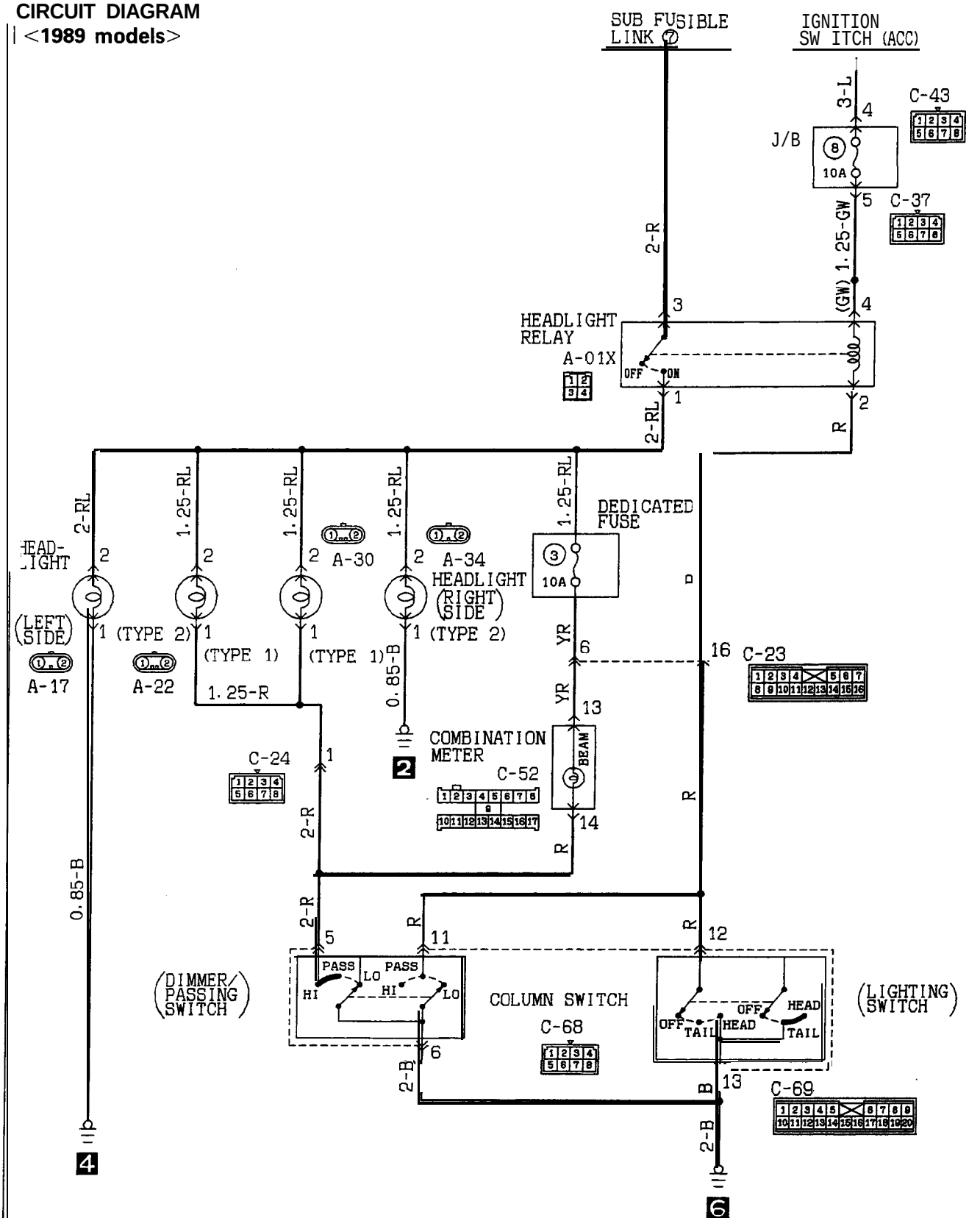
TROUBLESHOOTING

M541HB0b

HEADLIGHT CIRCUIT

CIRCUIT DIAGRAM

<1989 models>

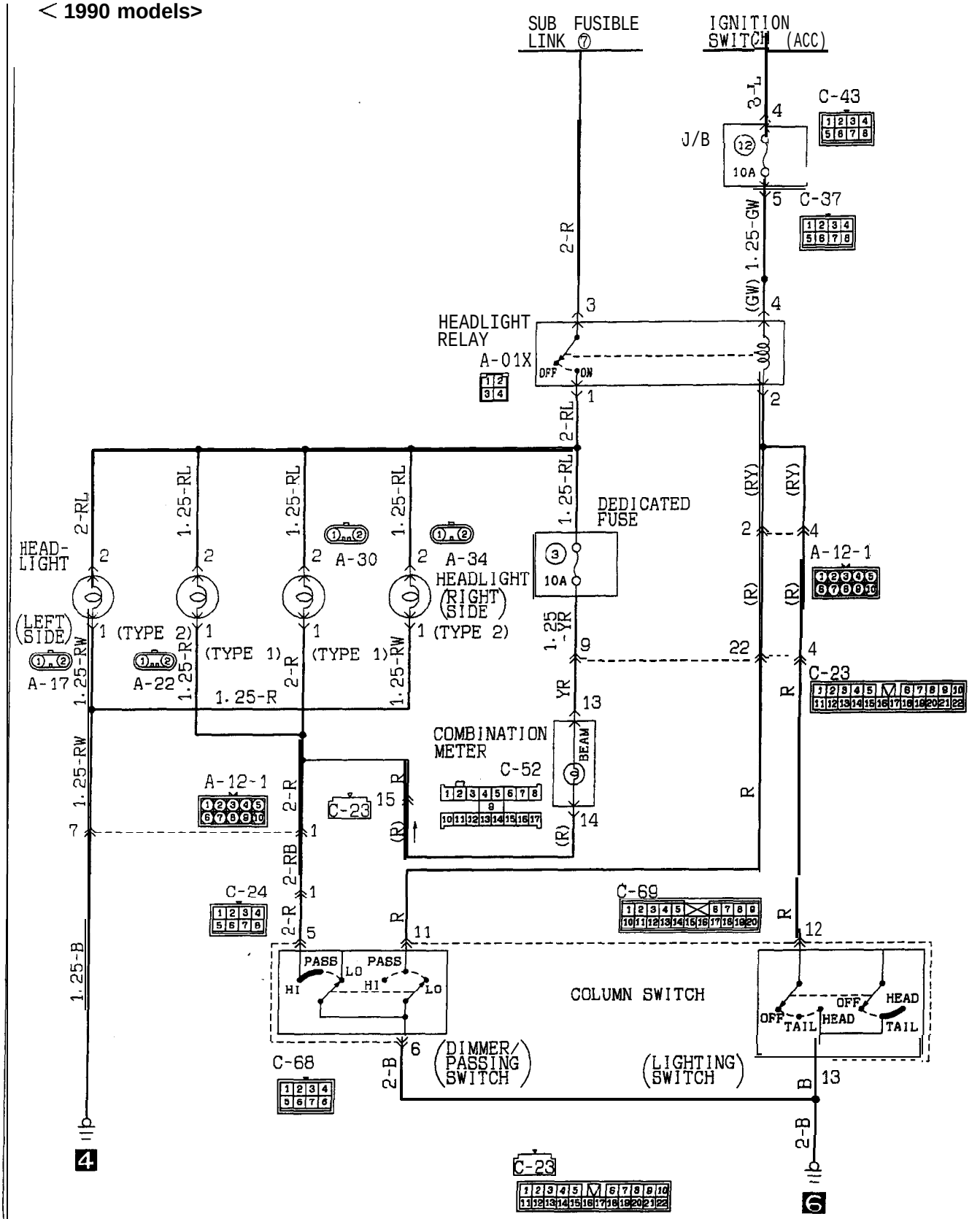


TSB Revision

HEADLIGHT CIRCUIT

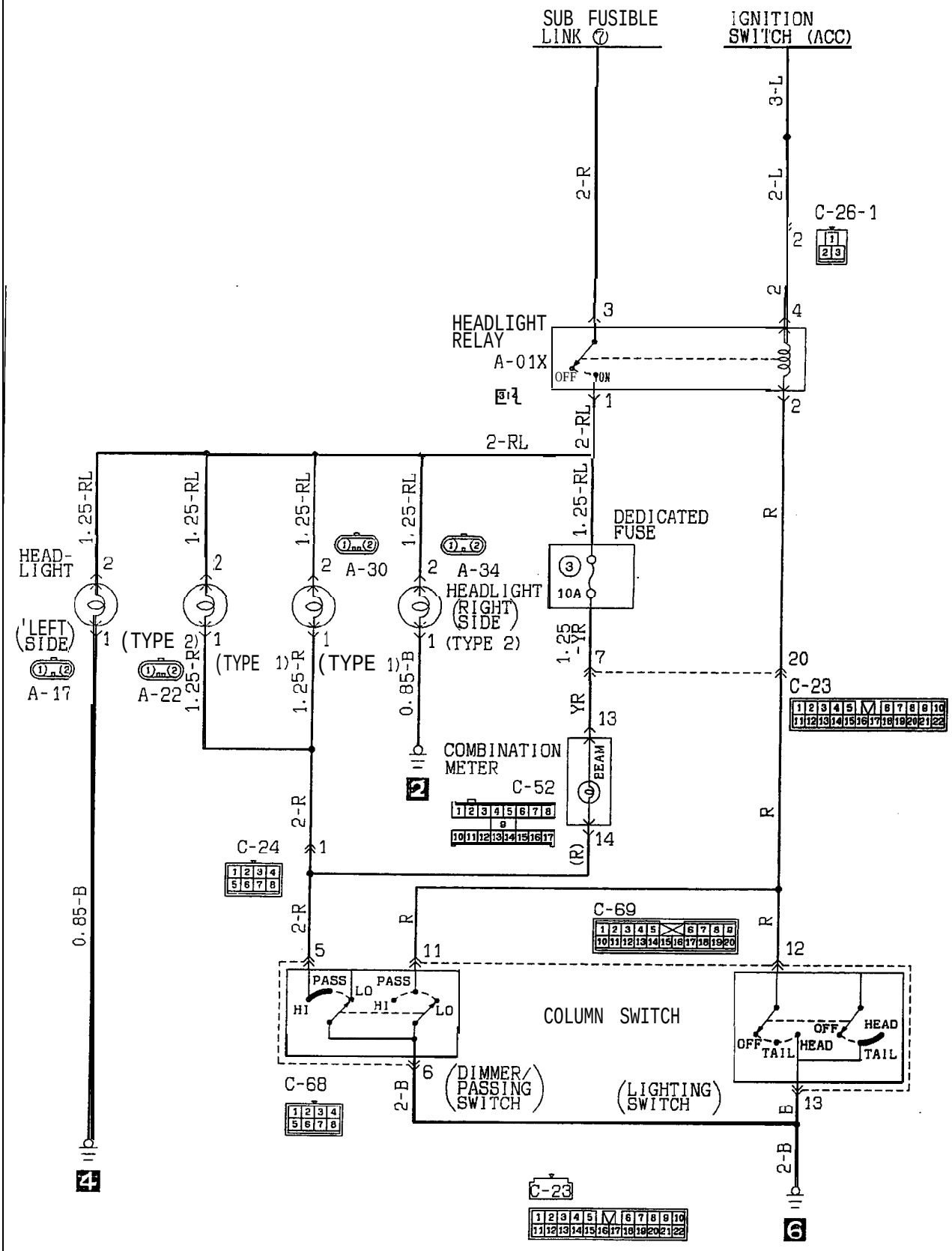
CIRCUIT DIAGRAM

< 1990 models>



TSB Revision

<From 1991 models>
Vehicles without theft-alarm system



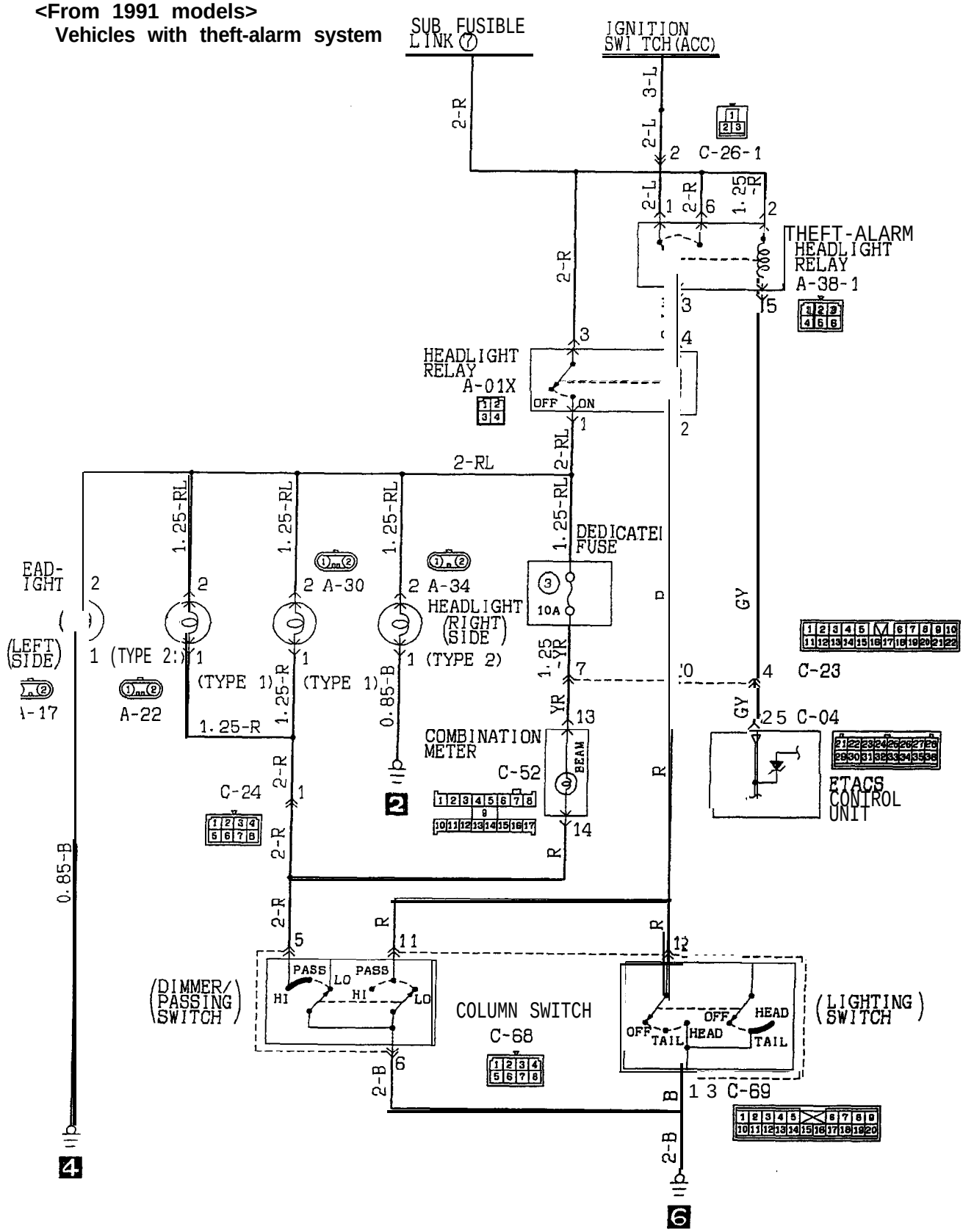
TSB Revision

HEADLIGHT CIRCUIT

CIRCUIT DIAGRAM

<From 1991 models>

Vehicles with theft-alarm system



MX35-AC-H0863-NM

OPERATION

Conditions for switch-ON of headlight relay

Ignition switch	Lighting switch	Dimmer-passing switch	Headlight relay
"ACC" or "ON"	"HEAD"	—	ON
"ACC" or "ON"	—	"PASS"	ON

<Low-beam operation>
- The headlight relay is switched ON when the lighting switch is set to the "HEAD" position.
- The low beam of the headlights will illuminate when, in this condition, the dimmer/passing switch is set to the "LO" position.

<High-beam operation>
- The headlight relay is switched ON when the lighting switch is set to the "HEAD" position.
- The high beam of the headlights will illuminate when, in this condition, the dimmer/passing switch is set to the "HI" position.

<High-beam indicator light>
- This indicator illuminates during use of the high beam of the headlights, and when the passing signal (high beam) is activated, thus indicating that the headlights' high beam is illuminated.

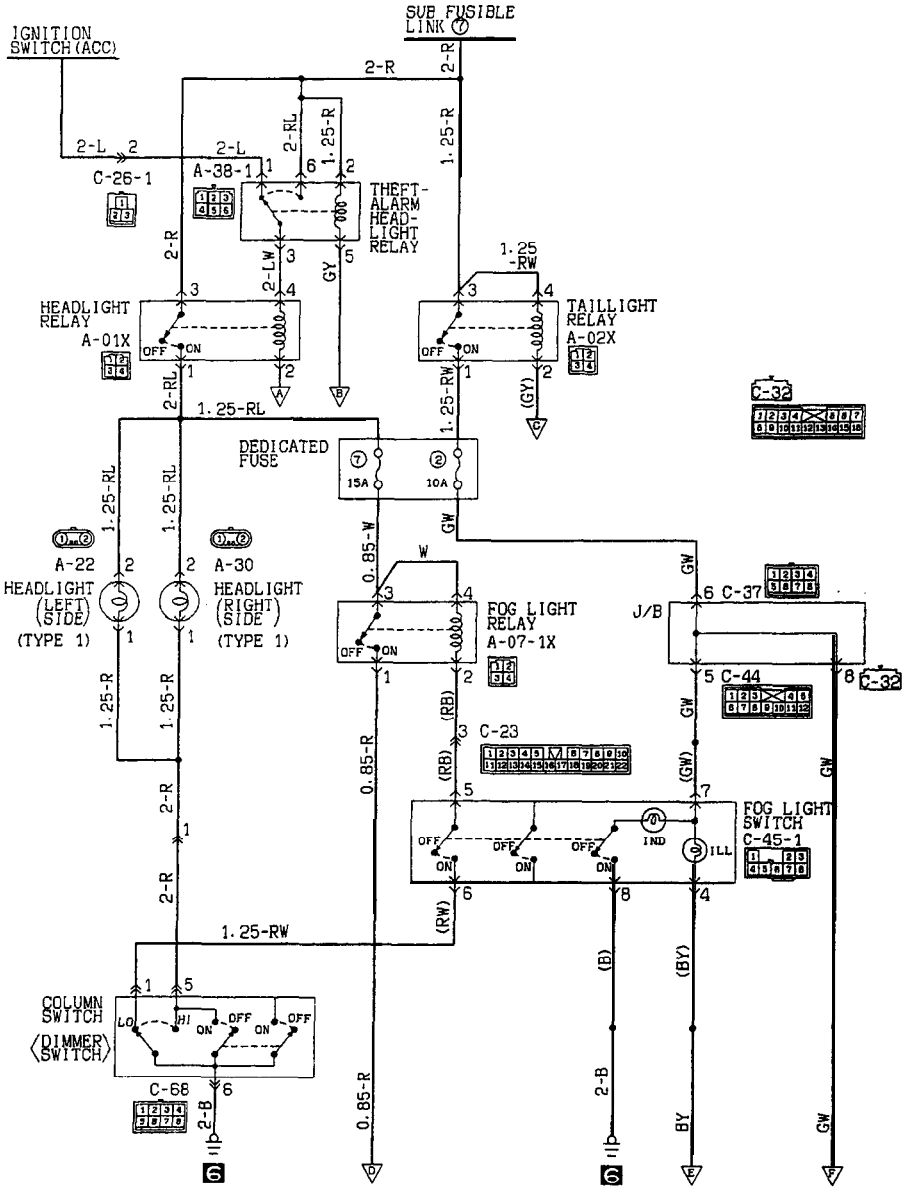
TROUBLESHOOTING HINTS

1. Headlights don't come on.
   1) But the tail lights do illuminate.
      - Check the headlight relay.
      - Check the lighting switch.
   2) The tail lights also don't illuminate.
      - Check the sub-fusible link No.⑦.
2. The low beam at both sides doesn't illuminate.
   - Check the ground.
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.③.
      - Check the bulb.

NOTE
(1) For information concerning the headlight relay and theft-alarm headlight relay, refer to P.54-97, 98.
(2) For vehicles equipped with the theft-alarm system, refer to P.54-165.

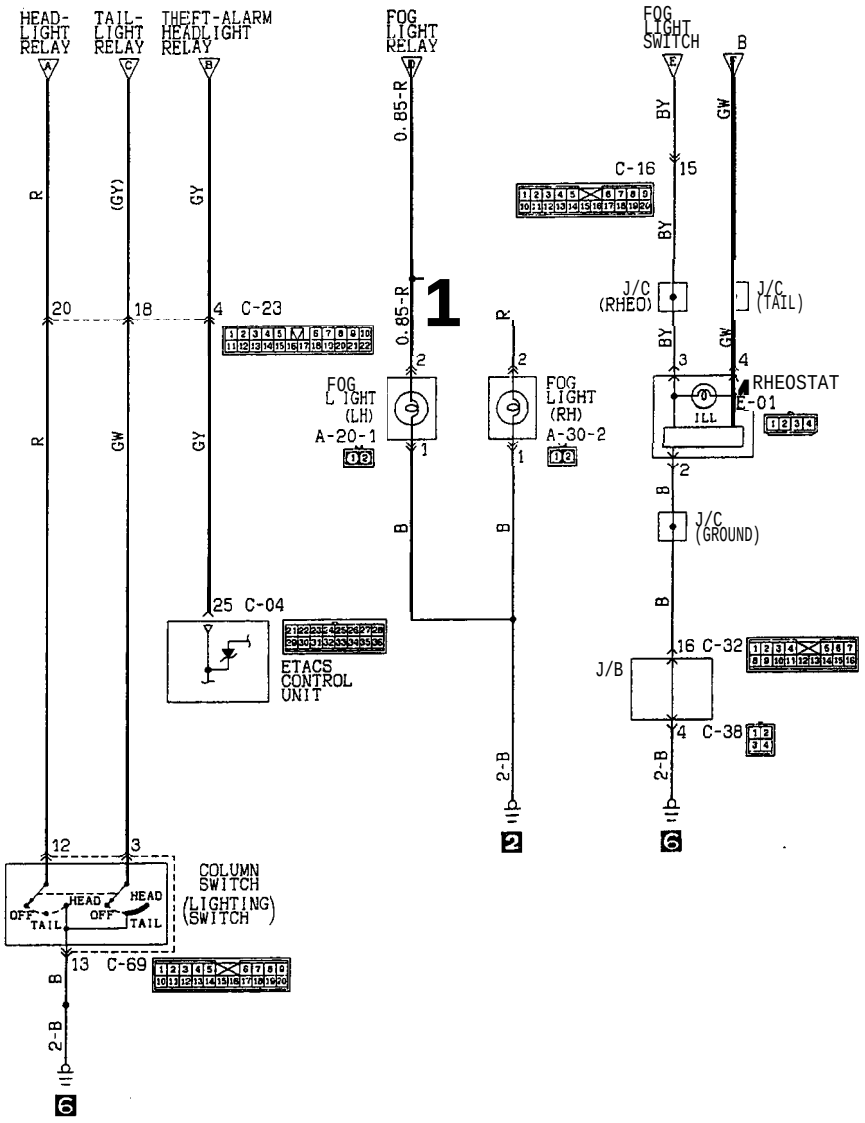
FOG LIGHT

CIRCUIT DIAGRAM



35-AC-H0862-NN

TSB Revision



OPERATION

- Set the lighting switch to the “HEAD” position.
- If the fog light switch is set at the “ON” position when the dimmer switch is at the “low” position, current flows through the dedicated fuse, fog light relay, fog light switch, dimmer switch and ground, causing the fog light relay contacts to close.
- Once the fog light relay contacts have closed, current flows through the dedicated fuse, fog **light relay (contacts), fog lights, and ground,** causing the fog lights to go on.

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 ⑦.

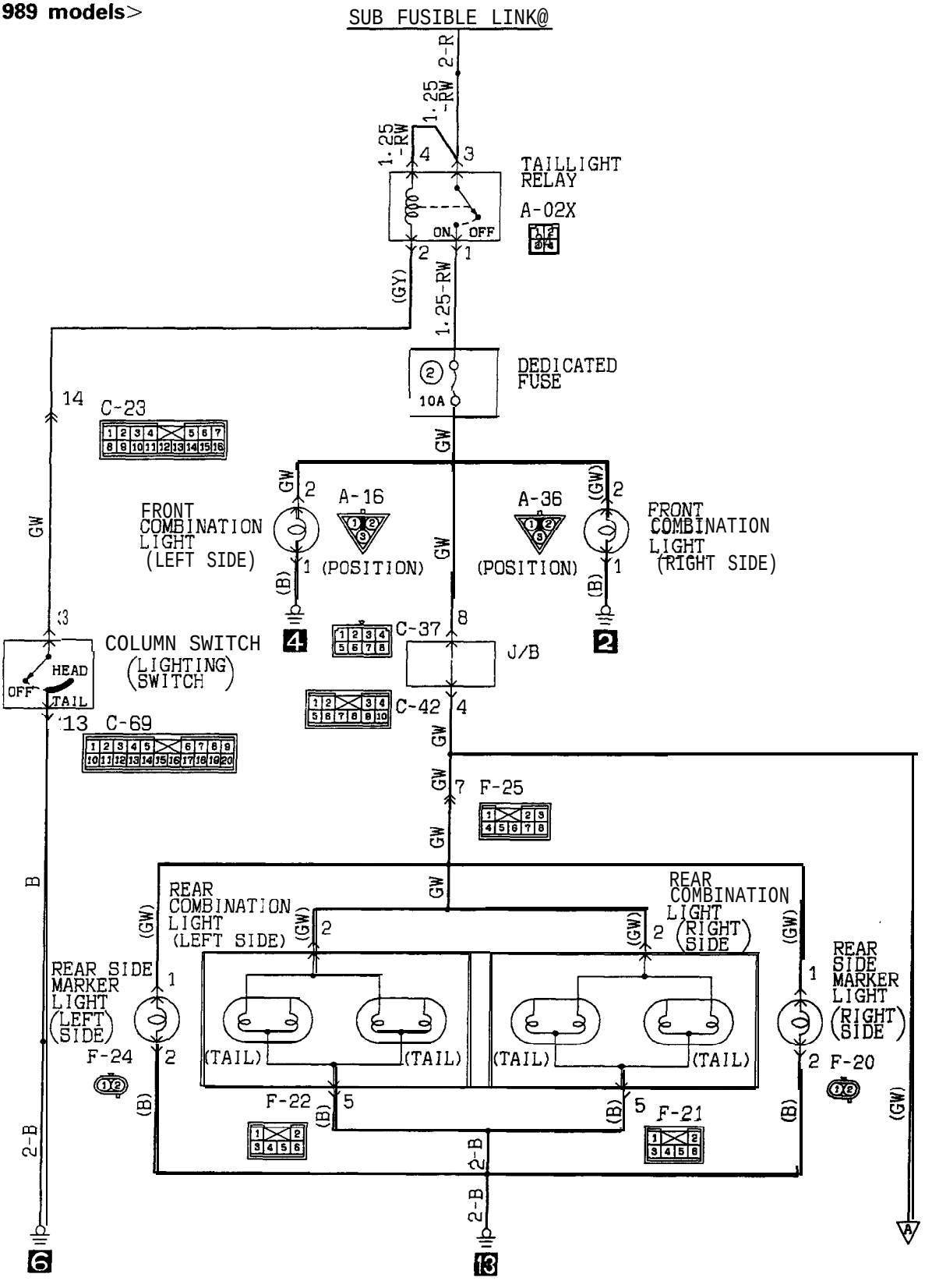
NOTE
For information concerning the fog light relay, refer to P.54-97.

TSB Revision

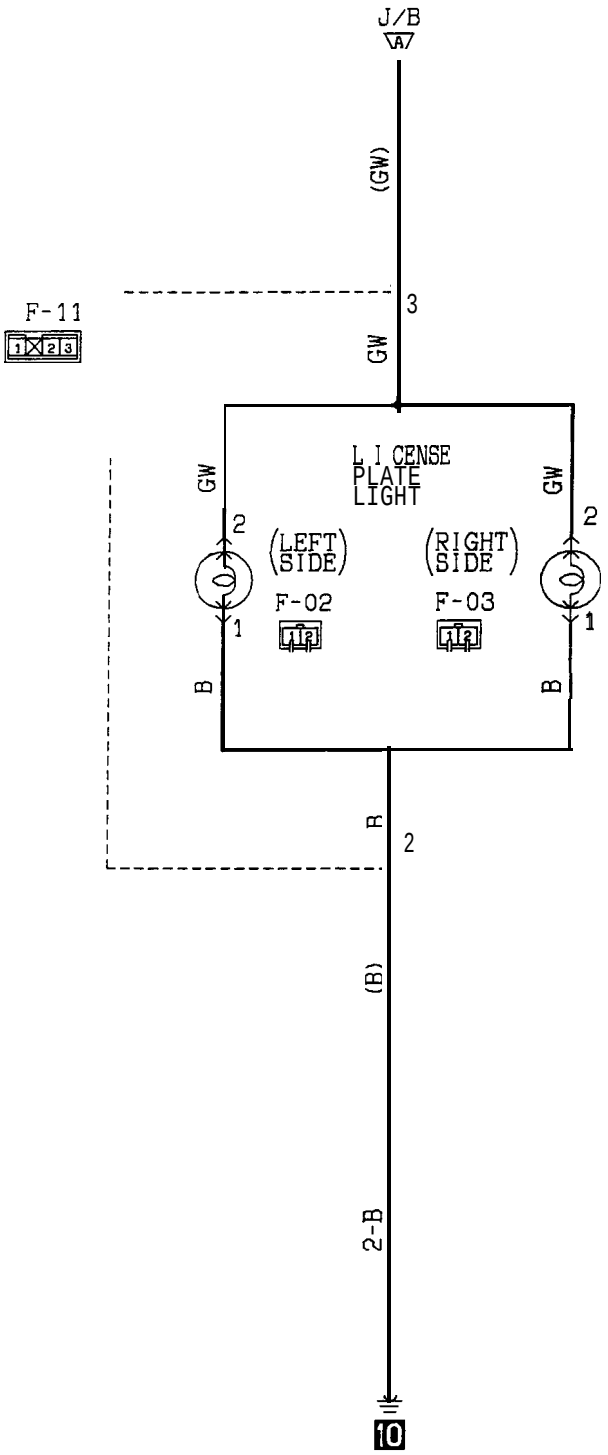
TAIL LIGHT, POSITION LIGHT, SIDE MARKER. LIGHT AND LICENCE PLATE LIGHT CIRCUIT

CIRCUIT DIAGRAM

<1989 models>



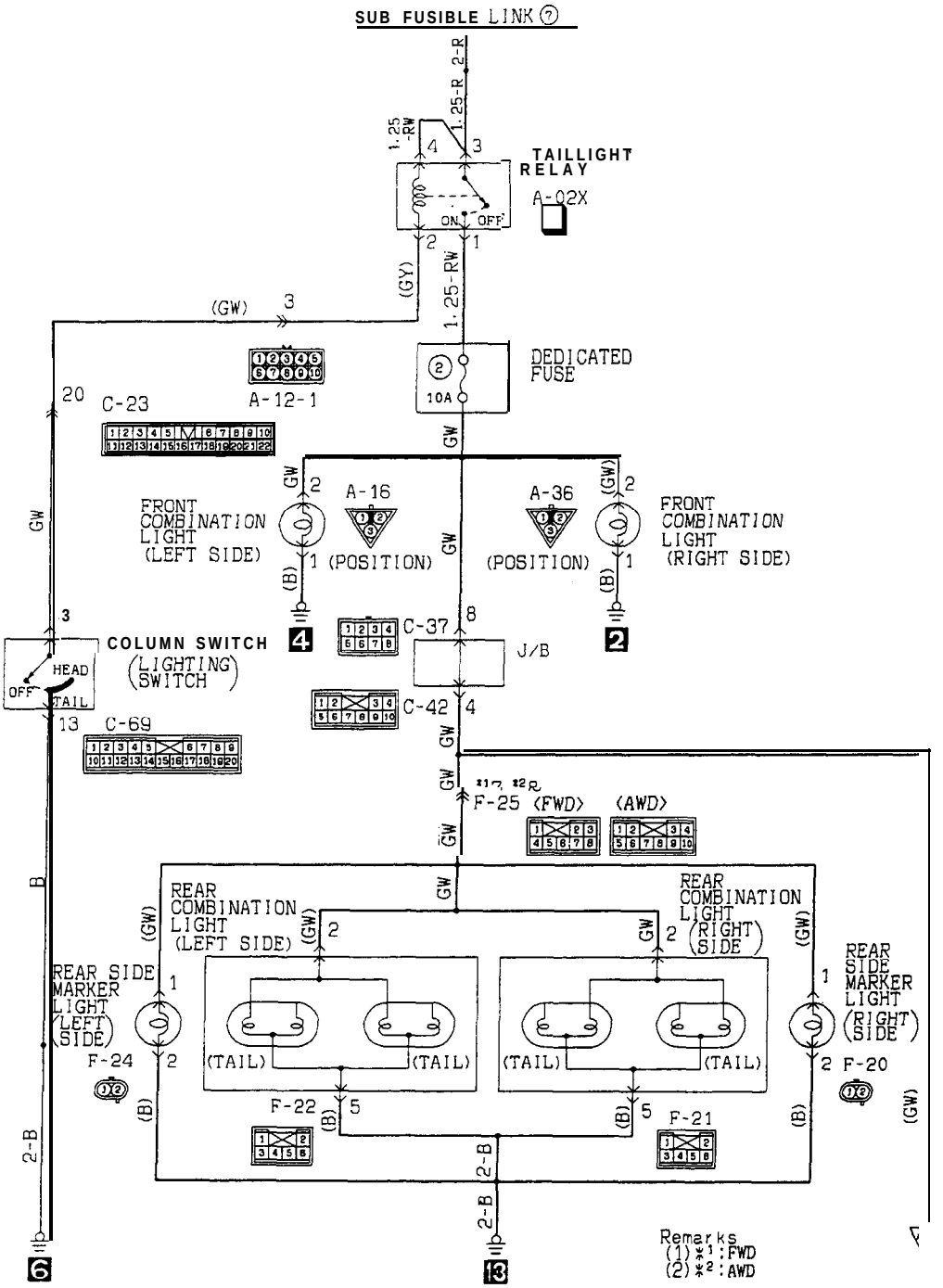
TSB Revision


J/B
A
(GW)
3
F-11
1 2 3
GW
LICENSE PLATE LIGHT
GW
GW
2
2
(LEFT SIDE)
(RIGHT SIDE)
F-02
F-03
1 2
1 2
1
1
B
B
R
2
(B)
2-B
10

TAIL LIGHT, POSITION LIGHT, SIDE MARKER LIGHT AND LICENSE PLATE LIGHT CIRCUIT

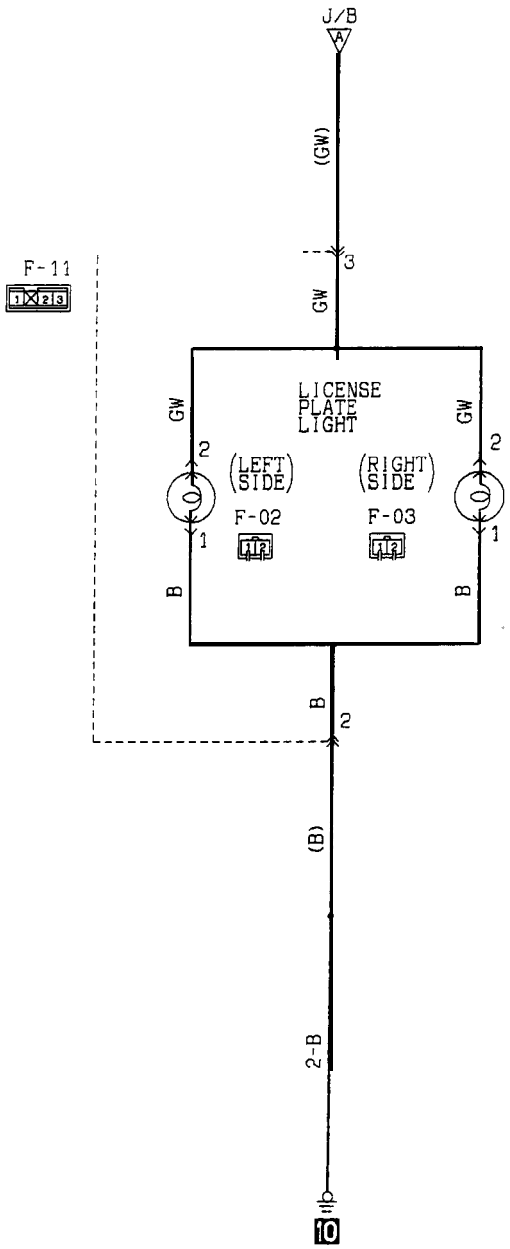
CIRCUIT DIAGRAM

< 1990 models>



35-AC-H0847-NM

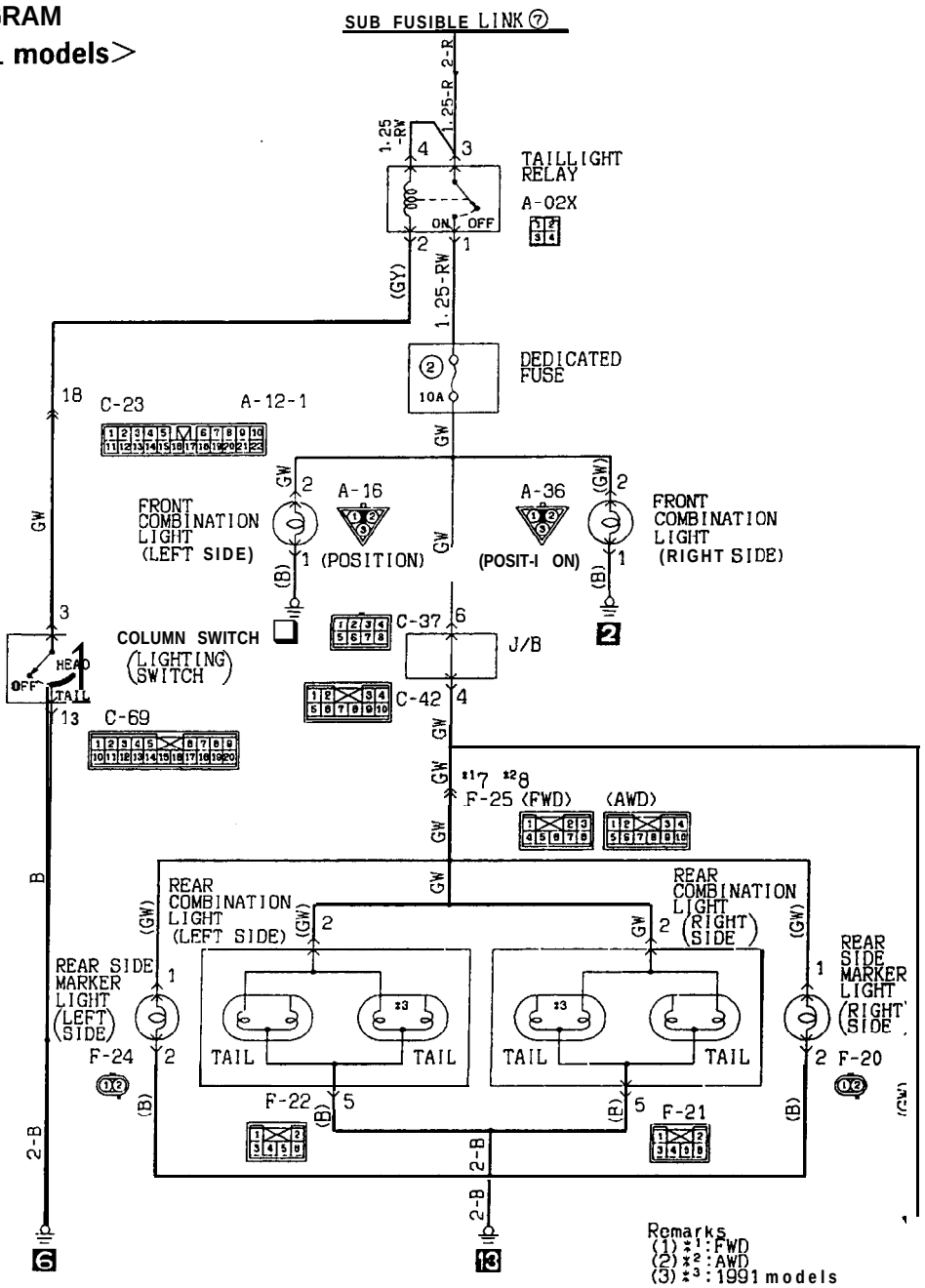
TSB Revision


J/B
A
(GW)
3
F-11
1 2 3
GW
LICENSE
PLATE
LIGHT
GW
GW
2
2
(LEFT
SIDE)
(RIGHT
SIDE)
F-02
F-03
1
1
B
B
B
2
(B)
2-B
10

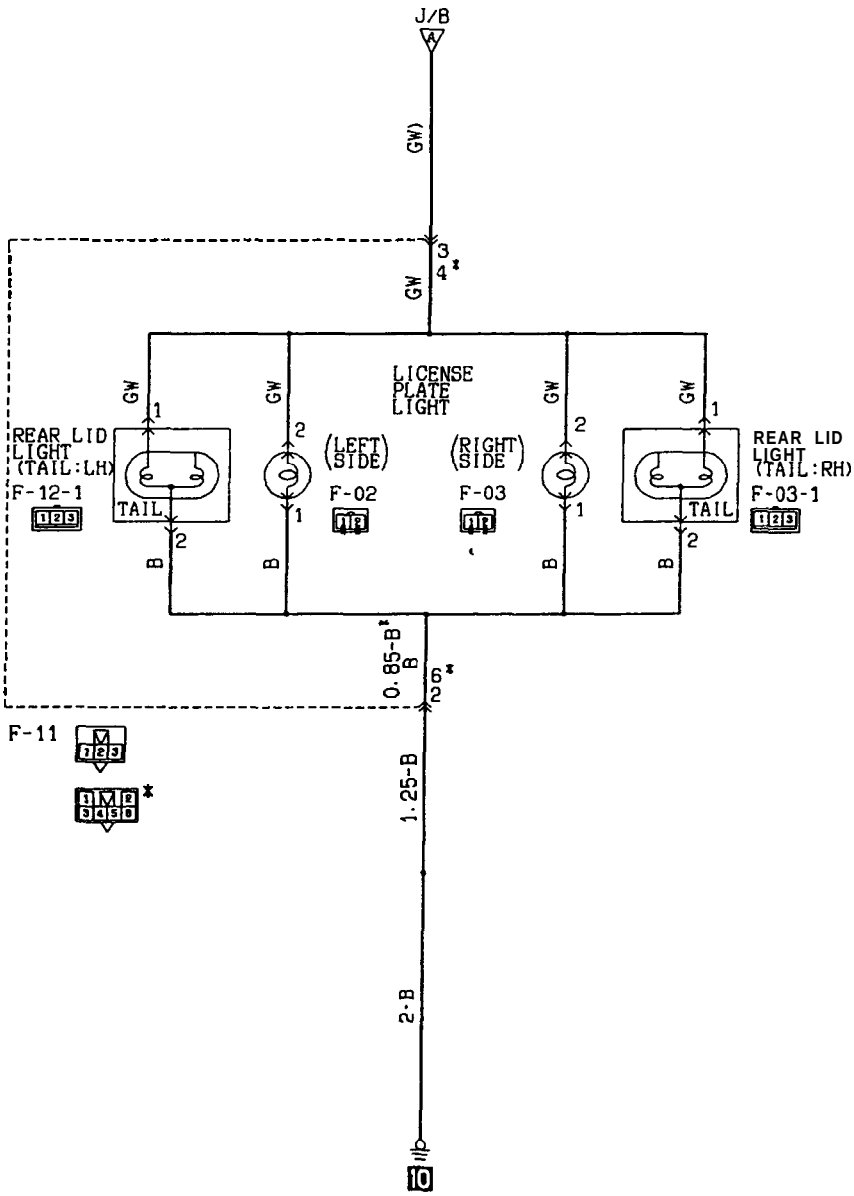
TAIL LIGHT, POSITION LIGHT, SIDE MARKER LIGHT AND LICENSE PLATE LIGHT CIRCUIT

CIRCUIT DIAGRAM

<From 1991 models>



TSB Revision



Remark
* mark indicates Vehicles with THEFT-ALARM SYSTEM

OPERATION

- The tail light relay is switched ON when the lighting switch is set to the "TAIL" or "HEAD" position.
- As a result, electricity flows via dedicated fuse No.② to each light, and *each* light illuminates.

TROUBLESHOOTING HINTS

1. All lights do not illuminate.
   (1) The headlights also do not illuminate.
   - Check sub-fusible link No.⑦.

   (2) The headlights illuminate.
   - Check the tail light relay.
   - Check dedicated fuse No.②.

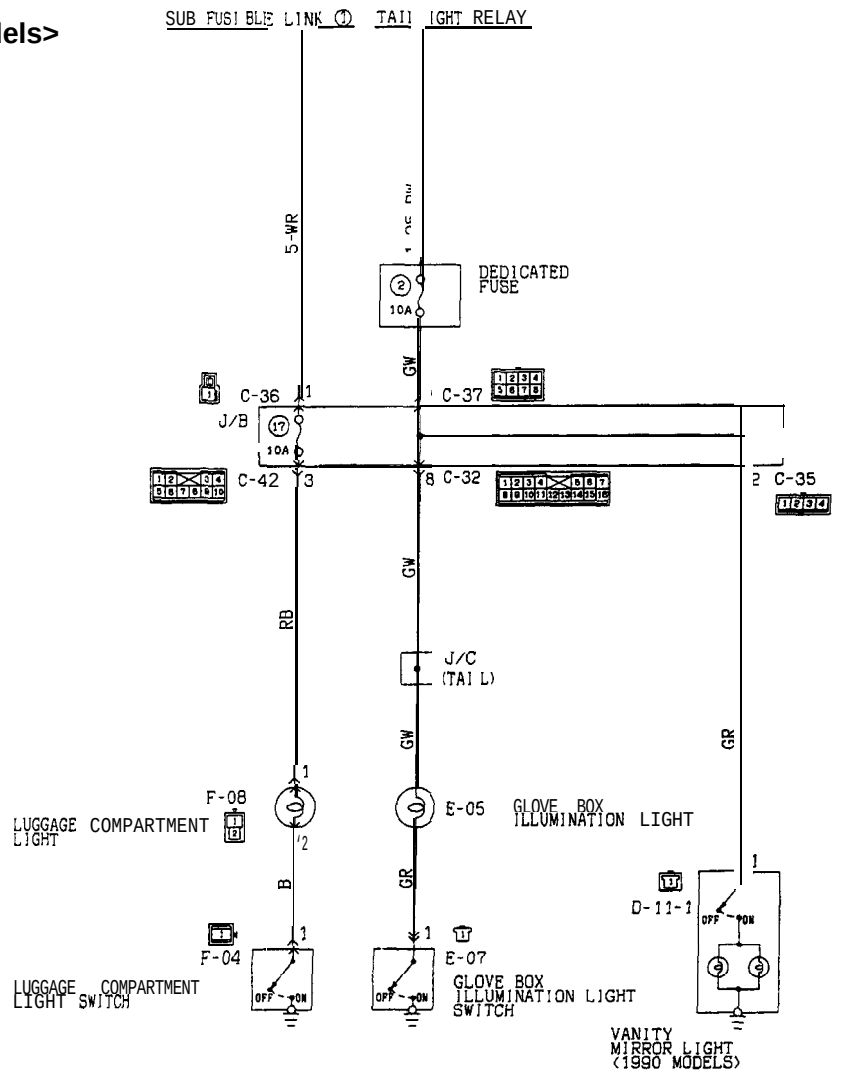
TSB Revision

LIGHT AND VANITY

MIRROR LIGHT CIRCUIT

CIRCUIT DIAGRAM

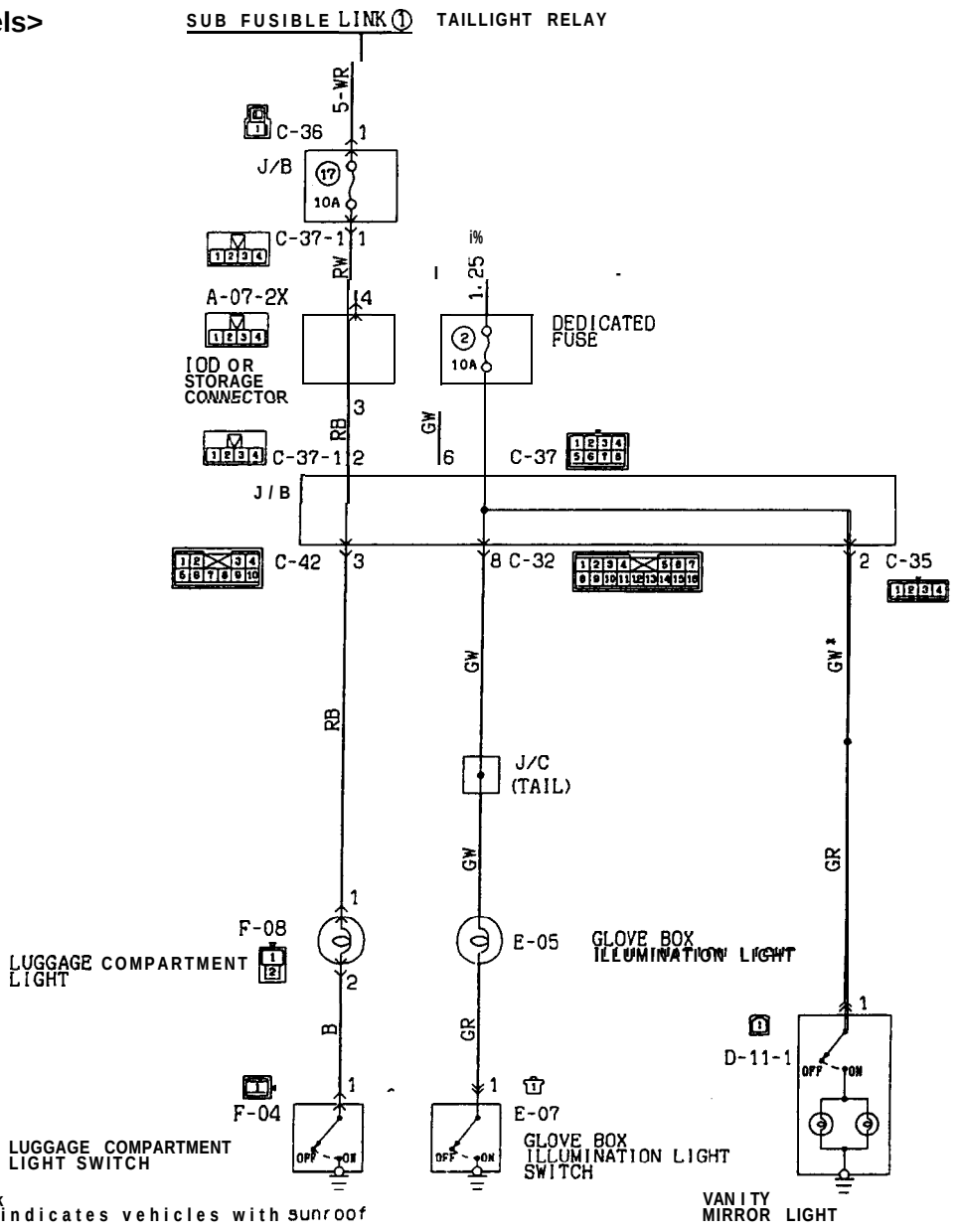
<Up to 1990 models>



I35-AC-H0845-NN

TSB Revision

<From 1991 models>



OPERATION

<Luggage compartment light>

- Battery voltage is always applied (via sub-fusible link No.① and multipurpose fuse No.⑰ to the luggage compartment light.
- When the trunk lid is opened, the luggage compartment light switch is switched ON and the luggage compartment light illuminates.

<Glove compartment light>

- The tail light relay is switched ON when the lighting switch is set to the "TAIL" or "HEAD" position.
- When, with the lighting switch at the "TAIL" or "HEAD" position, the glove compartment is opened, the glove compartment light switch is switched ON, and the glove compartment light is illuminated.

TROUBLESHOOTING HINTS

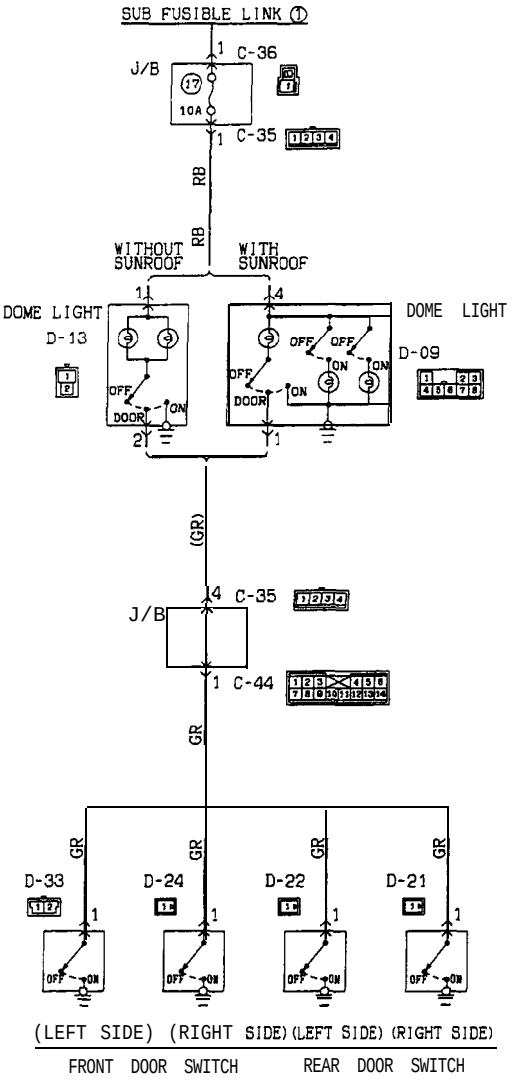
1. The luggage compartment light does not illuminate.
   (1) The dome light also does not illuminate.
   - Check multipurpose fuse No.⑰.

TSB Revision

DOME LIGHT CIRCUIT

CIRCUIT DIAGRAM

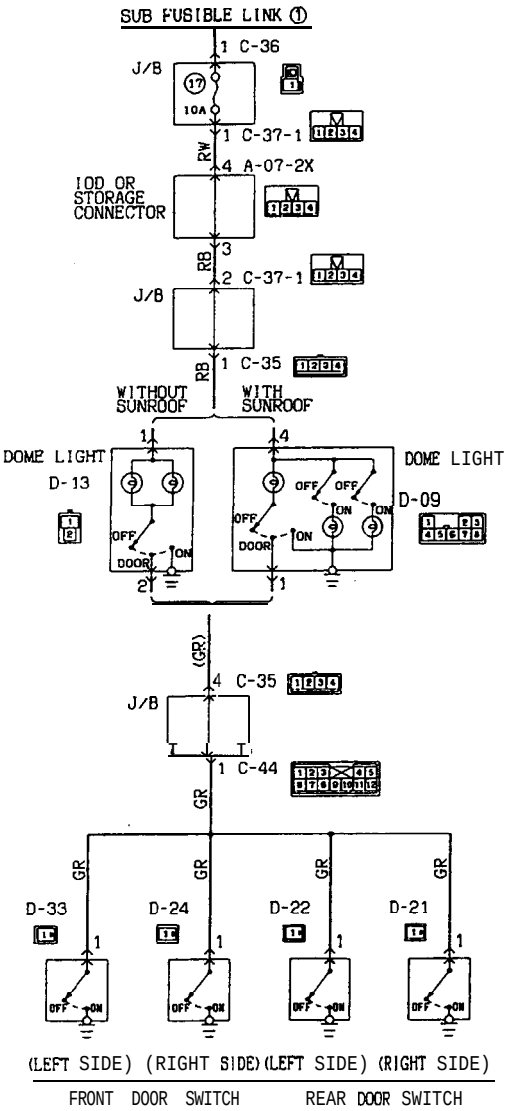
<Vehicles without ETACS and door light (Up to 1990 models)>



KX35-AC-H0840-NM

TSB Revision

<Vehicles without ETACS and door light (From 1991 models)>



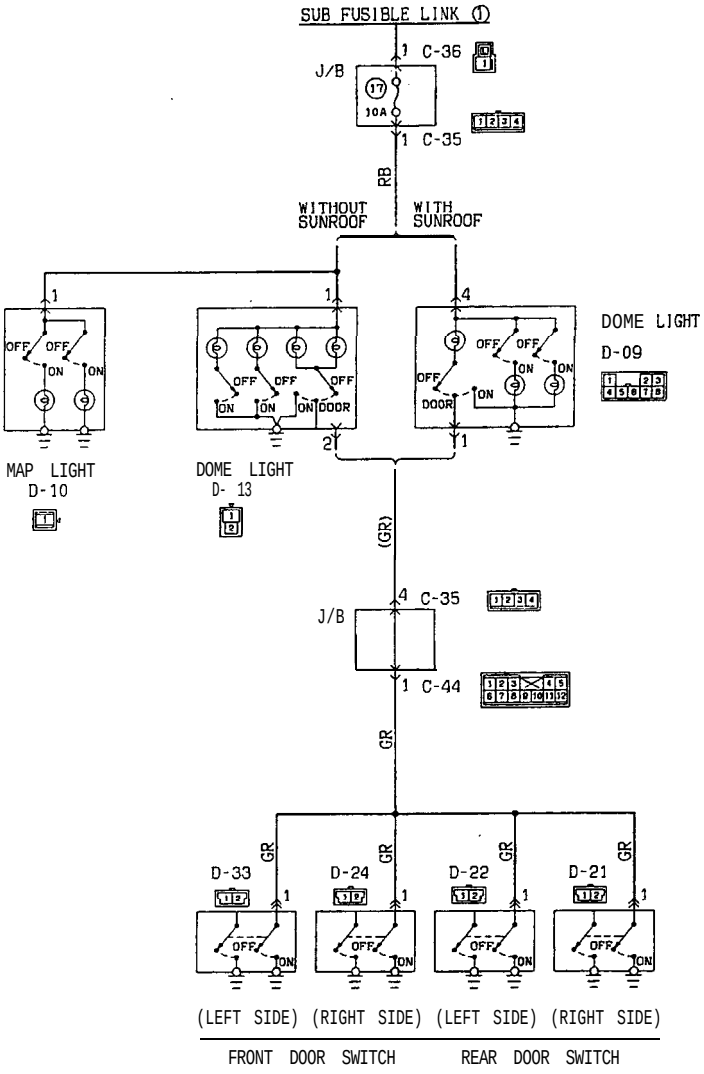
KX35-AC-H0867-KM

TSB Revision

DOME LIGHT CIRCUIT

CIRCUIT DIAGRAM

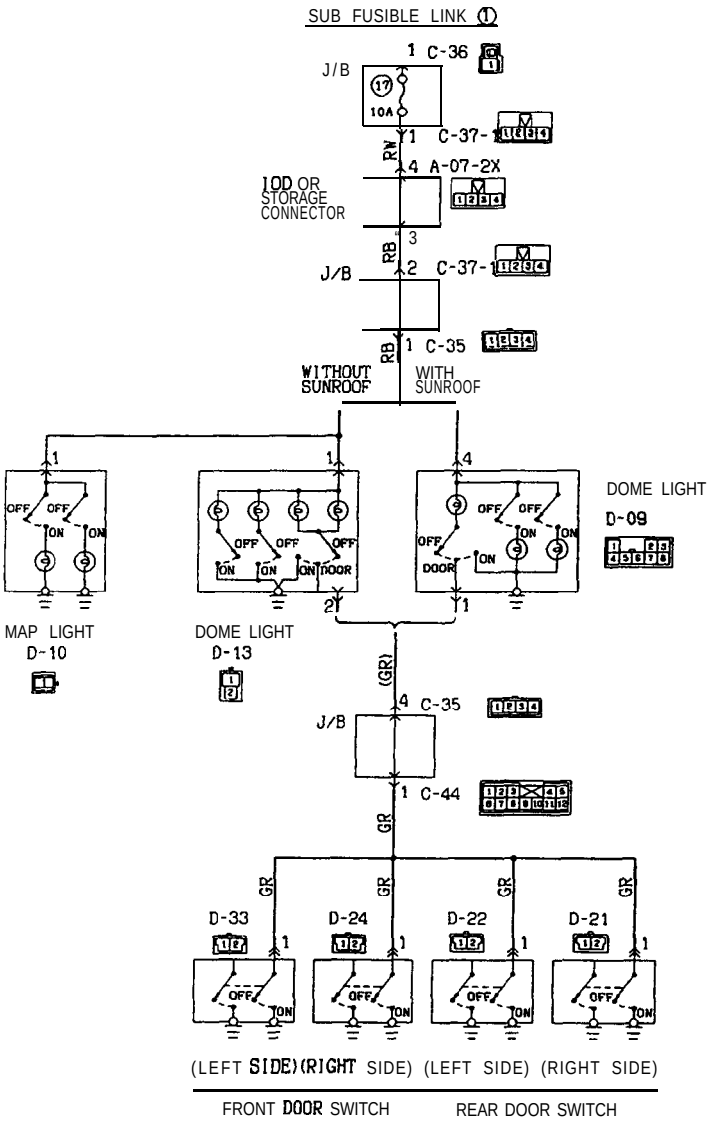
<VEHICLES WITHOUT ETACS (WITH DOOR LIGHT) (Up to 1990 models)>



KX35-AC-H0854-NM

TSB Revision

<VEHICLES WITHOUT ETACS (WITH DOOR LIGHT) (From 1991 models)>



35-AC-H0858-RM

OPERATION

- The dome light is always illuminated when the dome light switch is at the "ON" position.
- The dome light illuminates when any door is opened while the dome light switch is at the "DOOR" position.

TROUBLESHOOTING HINTS

1. The dome light does not illuminate.
   (1) The clock is stopped also.
   - Check multipurpose fuse No.⑰.

   (2) The dome light does not illuminate when, with the dome' light switch at the "DOOR" position, any door is opened.
   - Check the bulb.
   - Check the dome light switch.
   - The dome light switches OFF when all doors are closed.

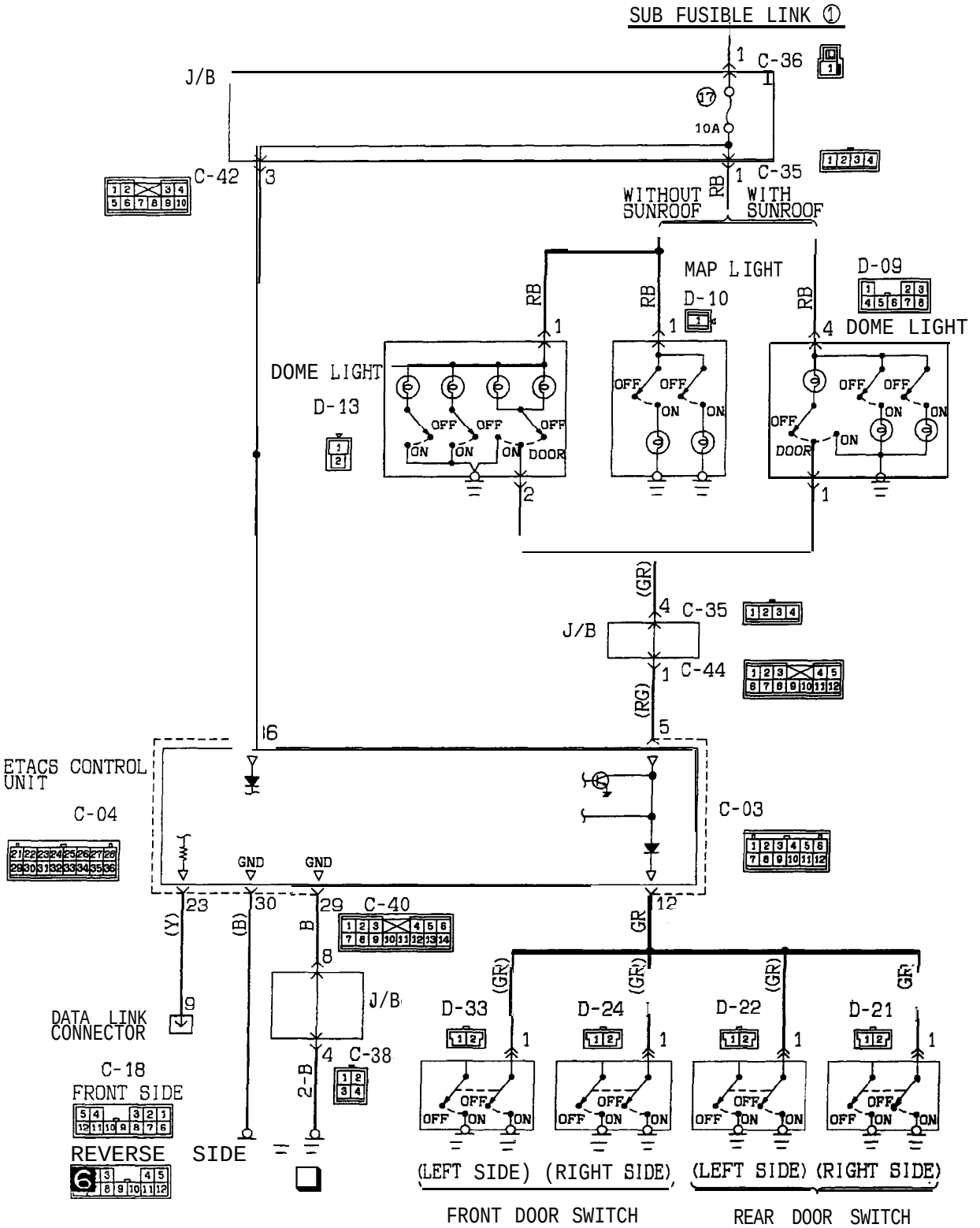
   (3) The dome light does not illuminate when, with the dome light switch at the "DOOR" position, a certain door or doors is/are opened.
   - Check the door switch [the door switch(es) for the door(s) that does not activate the dome light when opened].

TSB Revision

DOME LIGHT CIRCUIT

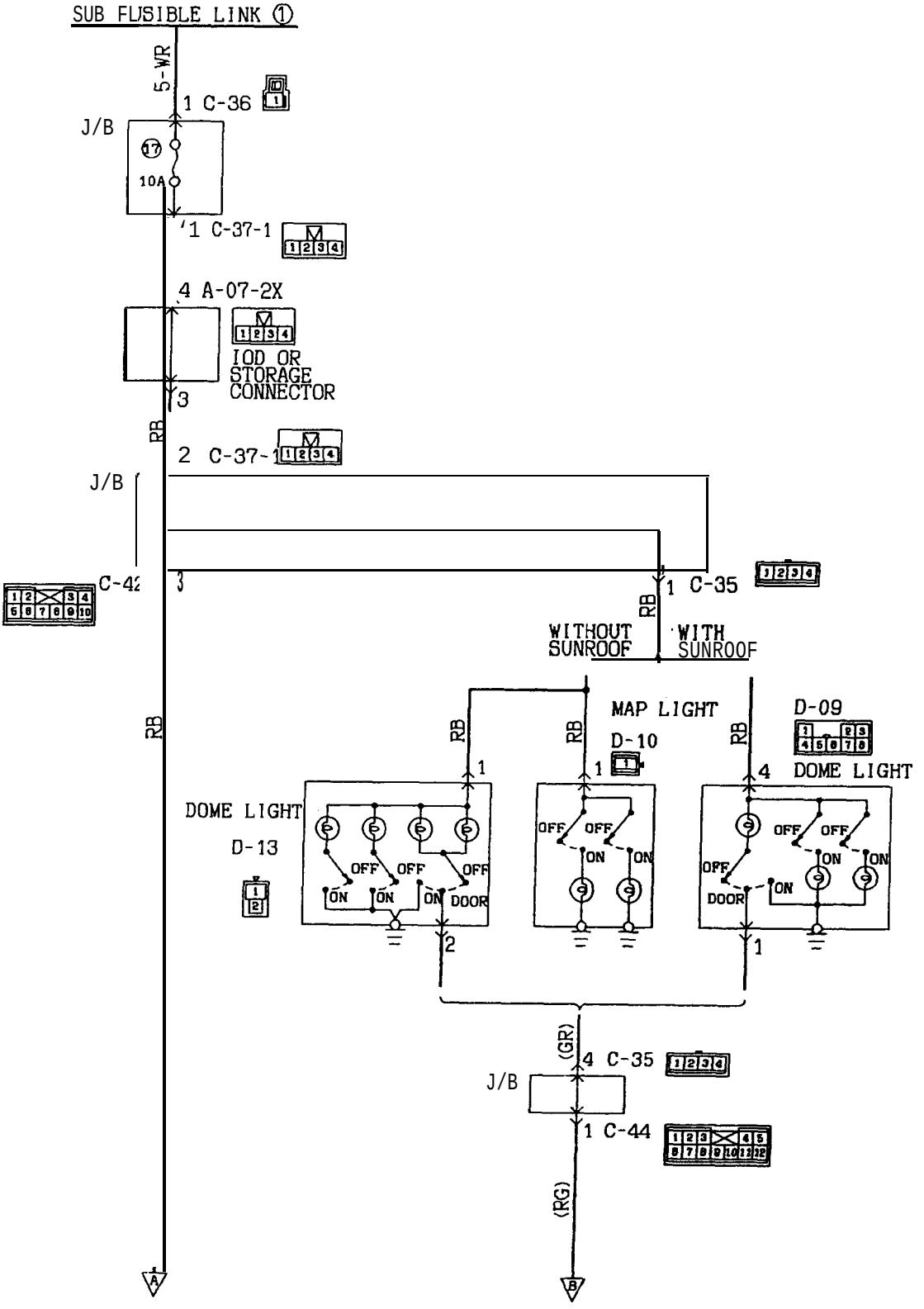
CIRCUIT DIAGRAM

<VEHICLES WITH ETACS (Up to 1990 models)>



MX35-AC-H0841-NM

<VEHICLES WITH ETACS (Non-Turbo) (From 1991 models)>

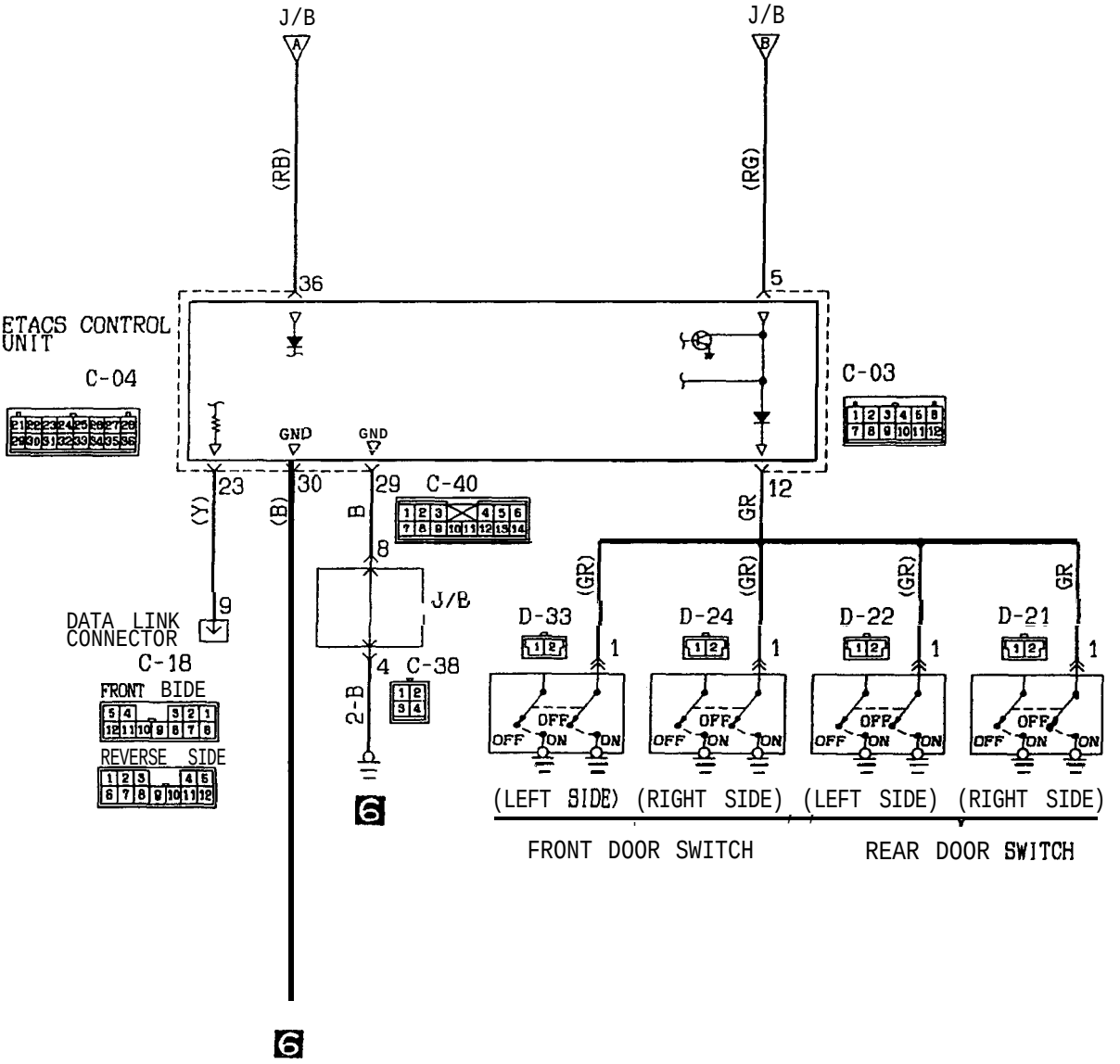


KX35-AC-H0869-NM

TSB Revision

DOME LIGHT CIRCUIT

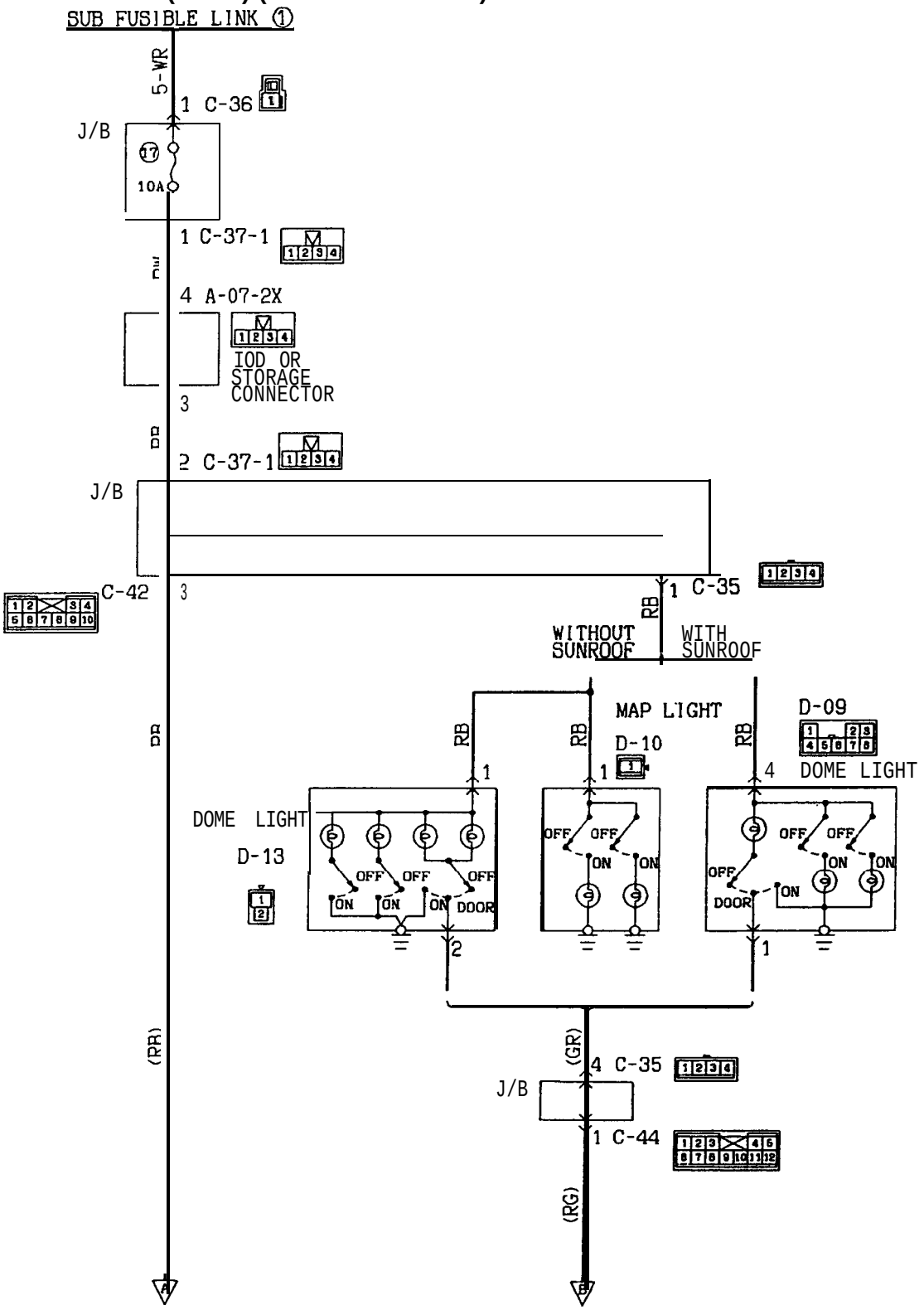
<VEHICLES WITH ETACS (Non-Turbo) (From 1991 models)> (CONTINUED)



DOME LIGHT CIRCUIT

CIRCUIT DIAGRAM

<VEHICLES WITH ETACS (Turbo) (From 1991 models)>

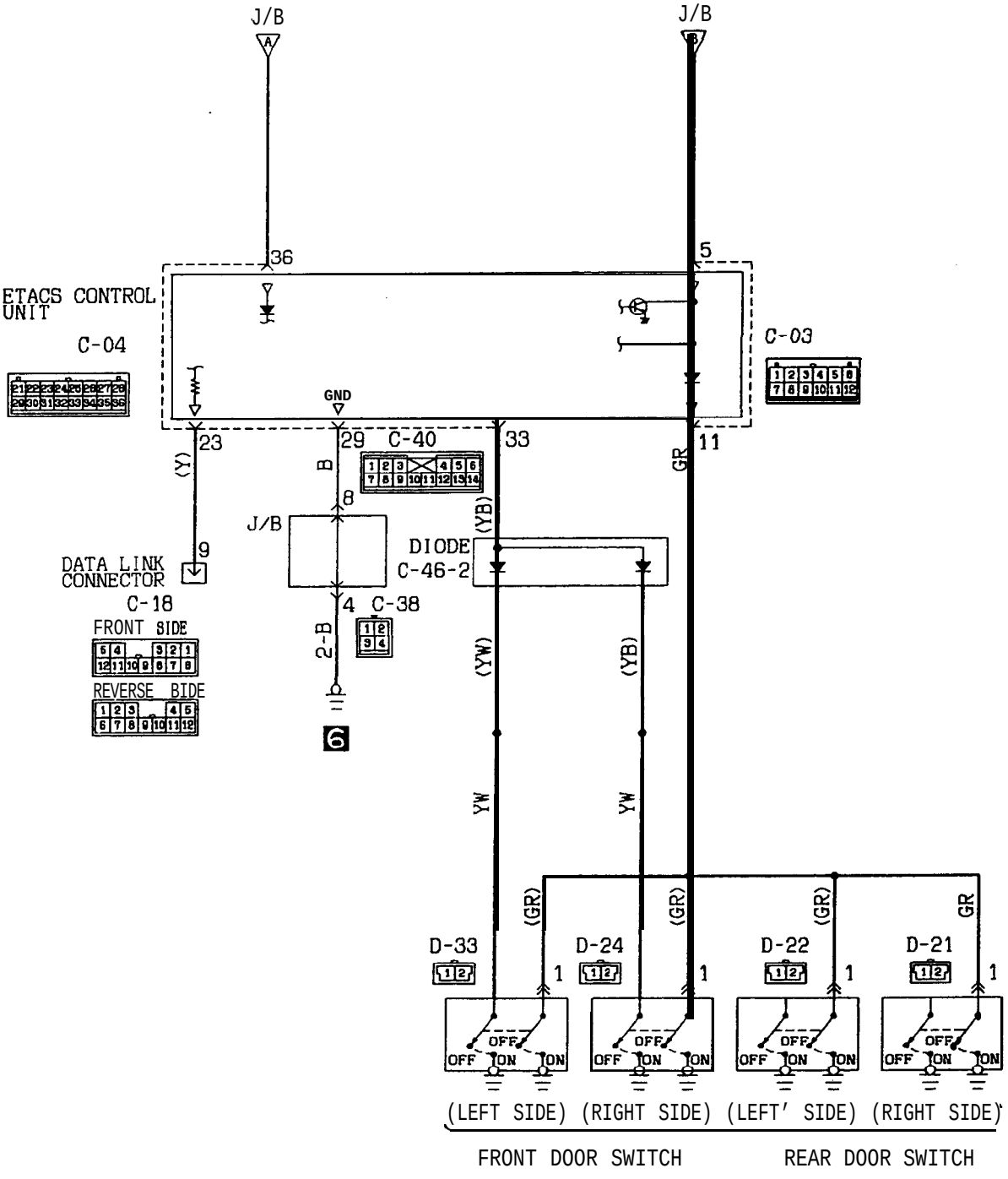


X35-AC-H0870-KM

TSB Revision

DOME LIGHT CIRCUIT

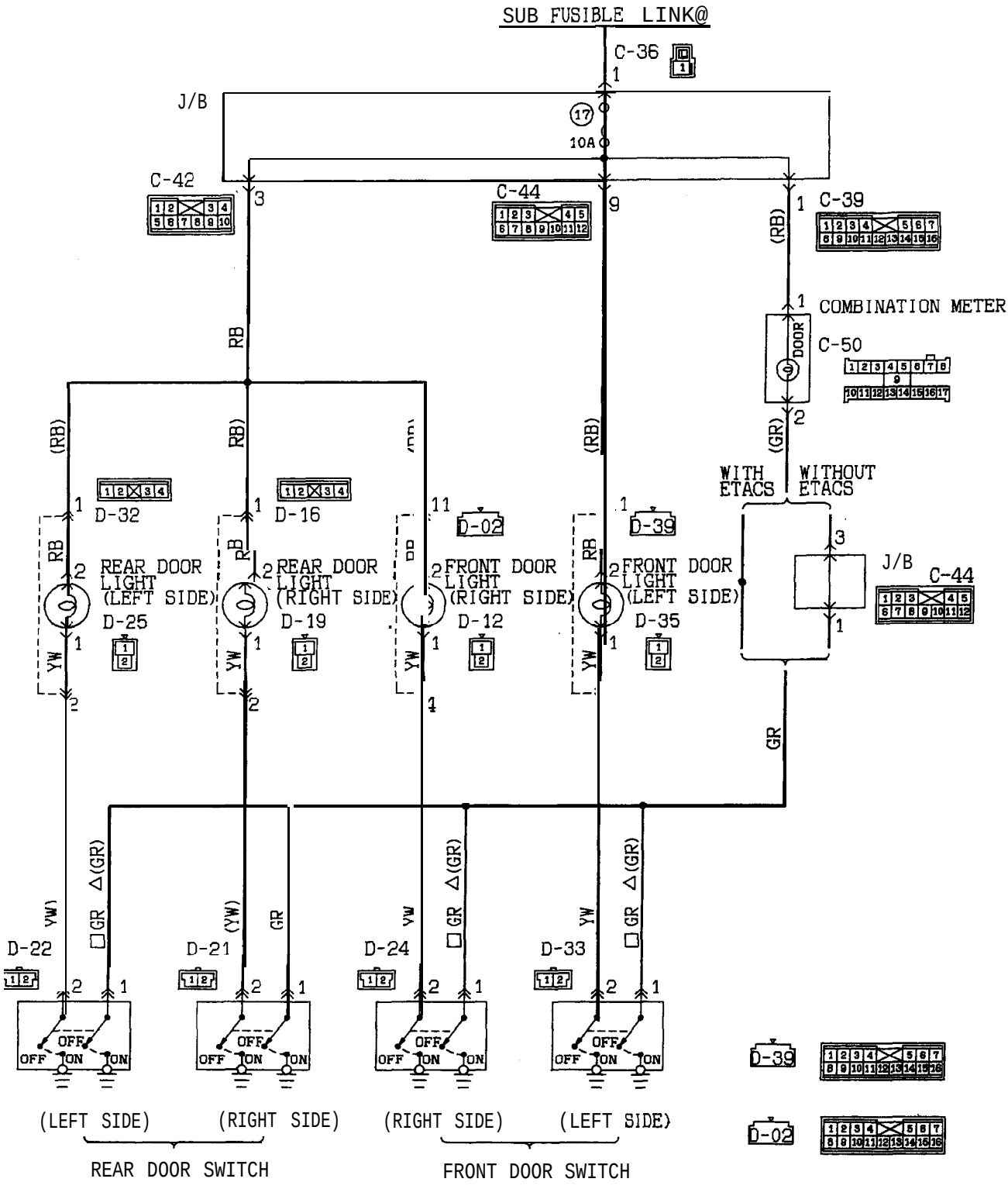
<VEHICLES WITH ETACS (Turbo) (From 1991 models)> (CONTINUED)



DOOR LIGHT CIRCUIT

CIRCUIT DIAGRAM

<1989 models>



Remarks
(1) The wire cross-section area and colors indicated by the ❑ sYmbol are Vehicles without ETACS.
(2) The wire cross-section area and colors indicated by the △symbol are Vehicles with ETACS.

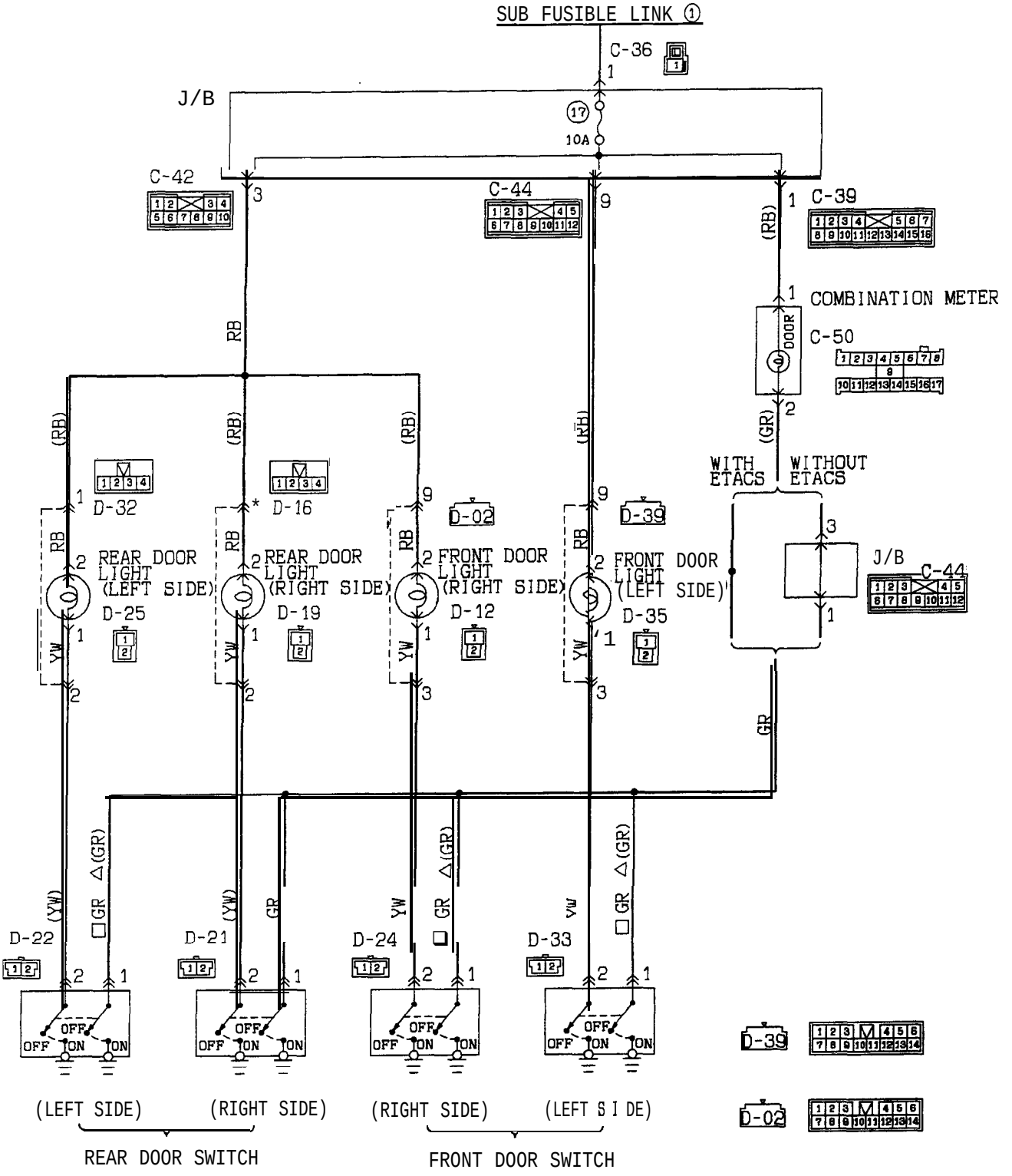
KX35-AC-H0813-N

TSB Revision

DOOR LIGHT CIRCUIT

CIRCUIT DIAGRAM

< 1990 models>

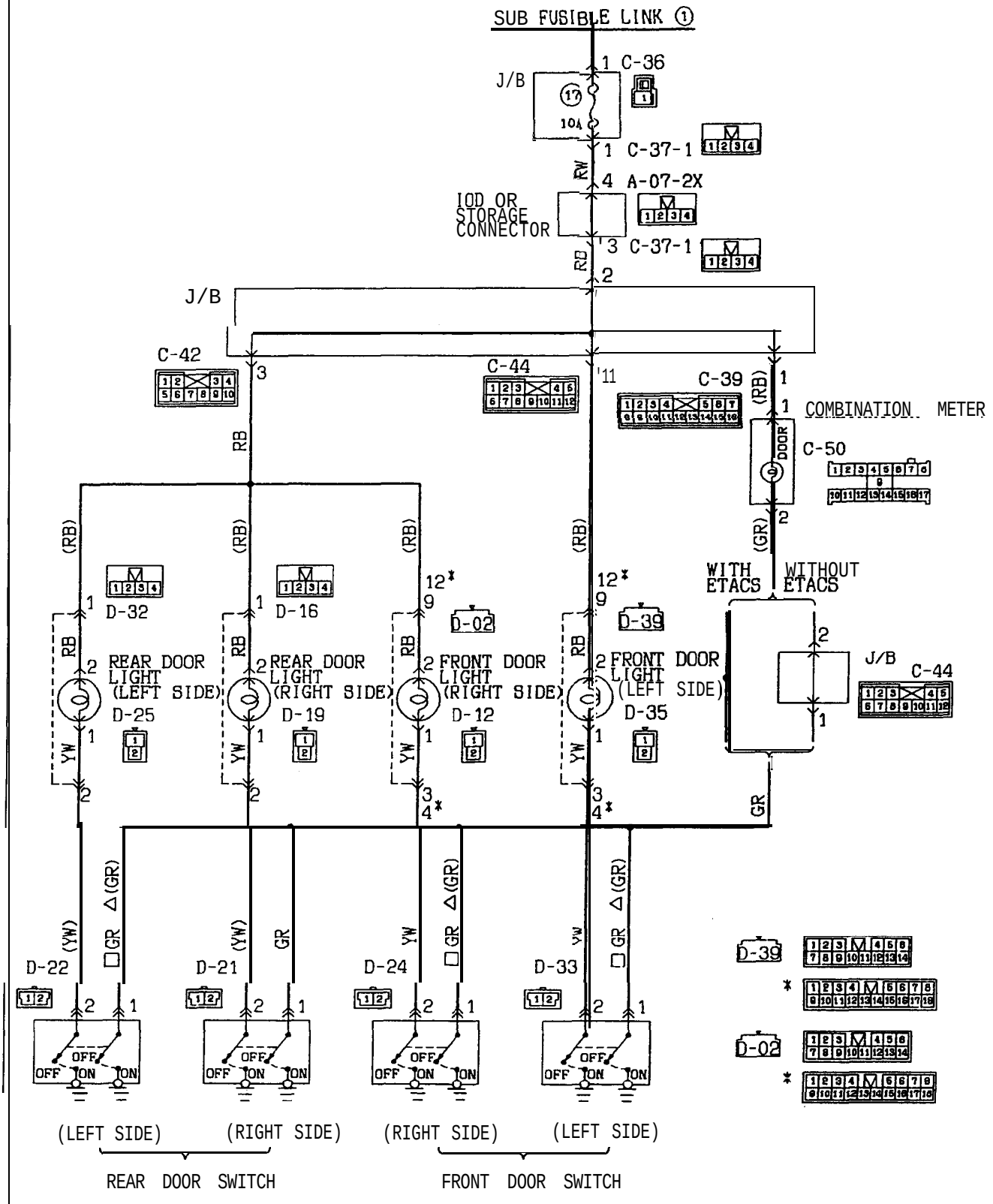


Remarks
(1) The wire cross-section area and colors indicated by the □ symbol are Vehicles without ETACS.
(2) The wire cross-section area and colors indicated by the △ symbol are Vehicles with ETACS.

KX35-AC-H0842-NN

TSB Revision

<From 1991 models>



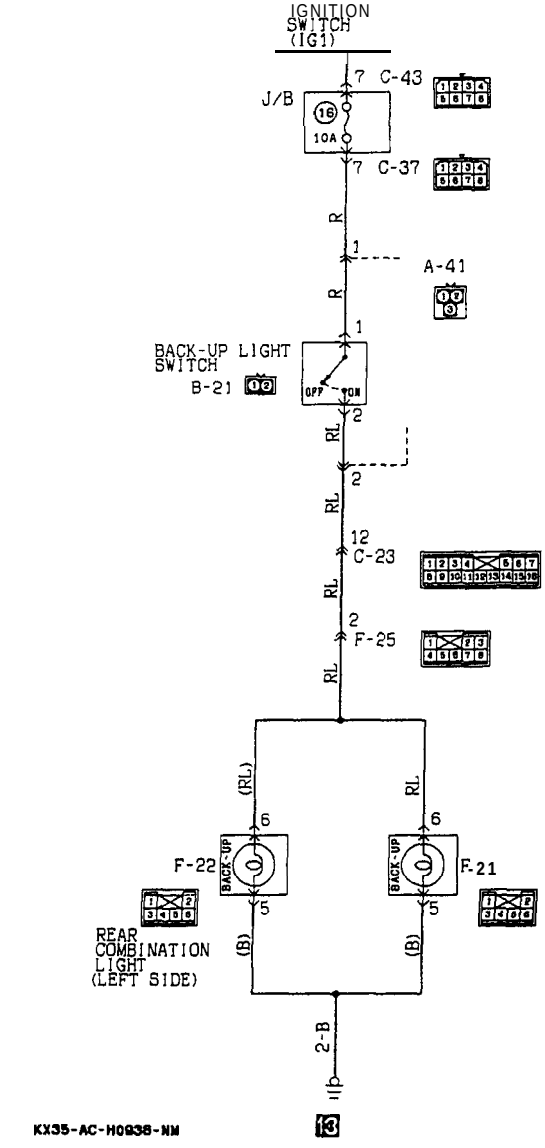
Remarks
(1) The wire cross-section area and colors indicated by the □ symbol are Vehicles without ETACS.
(2) The wire cross-section area and colors indicated by the △symbol are Vehicles with ETACS.
(3) * mark indicates Vehicles with THEFT-ALARM SYSTEM.

KX135-AC-H0871-NM

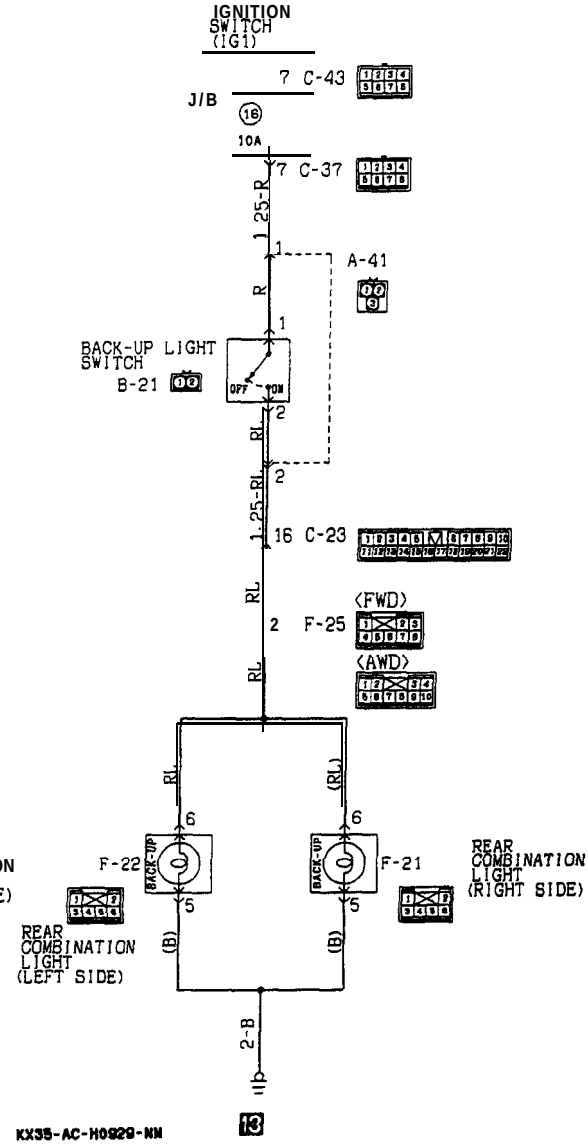
BACK-UP LIGHT CIRCUIT

CIRCUIT DIAGRAM

<M/T (1989 models)>

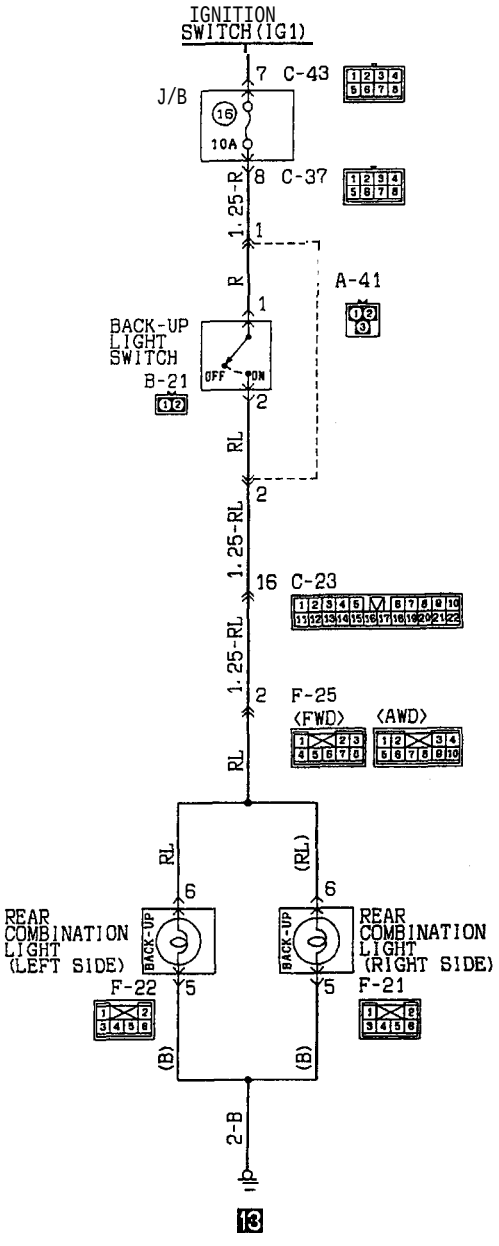


<M/T (1990 models)>



TSB Revision

<M/T (From 1991 models)>



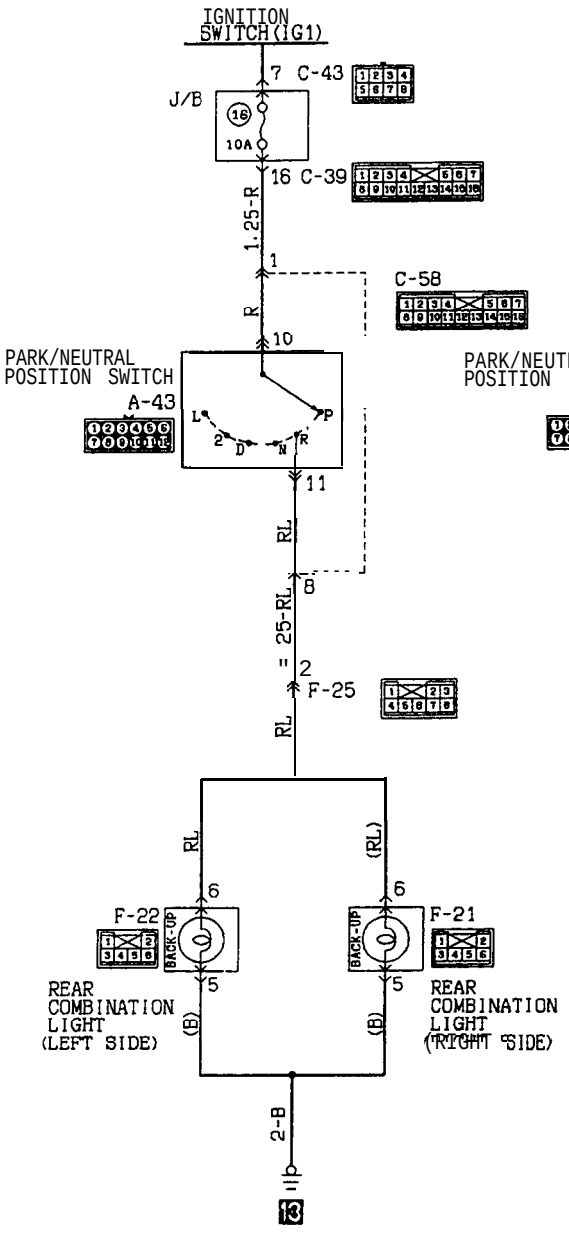
K35-AC-H0845-NM

TSB Revision

BACK-UP LIGHT CIRCUIT

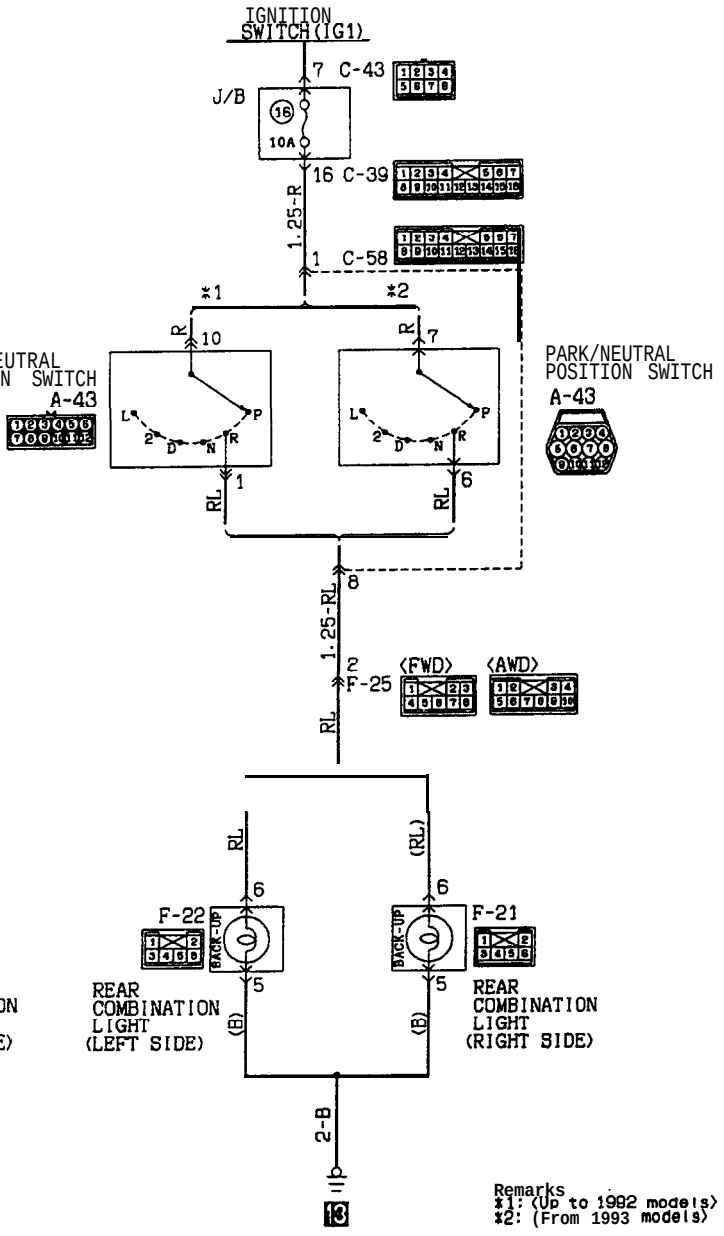
CIRCUIT DIAGRAM

<A/T (Up to 1990 models)>



35-AC-H0954-NN

<A/T (From 1991 models)>



XX35-AC-H0955-NN

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 park/neutral position switch (A/T) is switched to the “R” position), and the backup light illuminates.

TSB Revision

TURN-SIGNAL LIGHT AND HAZARD LIGHT CIRCUIT

OPERATION

<Turn-signal lights>

1 When operation is normal

- When the ignition switch is switched to the "ON" position, battery voltage is applied (via the hazard-flasher switch) to the turn-signal and hazard-flasher unit.
- When the turn-signal switch is switched to the "LH" (or "RH") position, Trl (within the flasher unit) is switched ON and the relay contact (also within the flasher unit) is switched ON. As a result, the "LH" (or "RH") turn-signal lights and turn-signal indicator light illuminate.
- At the same time, charging to the capacitor (via R2) begins, and charging continues until the lower-limit potential (set by COM3) is reached.
- When the capacitor becomes fully charged, the COM3 output reverses and Trl is switched OFF; the relay contact is also switched OFF, and, as a result, the "LH" (or "RH") turn-signal lights and turn-signal indicator light are switched OFF.
- At the same time that Trl is switched OFF, the capacitor begins discharging, and, when discharging finishes, the output of COM3 once again reverses and Trl is switched ON, after which the "LH" (or "RH") turn-signal lights and turn-signal indicator light illuminate.
- As a result of the continued repetition of the steps described above, the "LH" (or "RH") turn-signal lights and turn-signal indicator light flash ON and OFF repeatedly.

2. If one light's wiring is damaged or disconnected

- If the bulb for one turn-signal light is damaged on disconnected, the result is an overall increase of the resistance for the entire light circuitry, resulting is a decrease of the voltage at the R1 part within the flasher unit.
- As a result of this being detected, the lower-limit potential set by COM3 is increased, with the result that the time required for charging of the capacitor becomes shorter.
- As a result, the ON and OFF cycles of Tr1 also become shorter, and thus the number of flashes of the lights becomes greater.

<Hazard-warning lights>

- When the hazard-warning switch is switched to the "ON" position, the relay contact of the 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

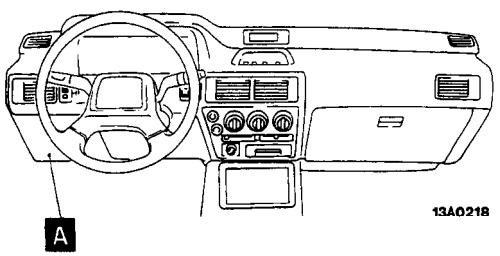
- The number of flashes of the hazard-warning lights does not change if there is damaged or disconnected wiring of one light.

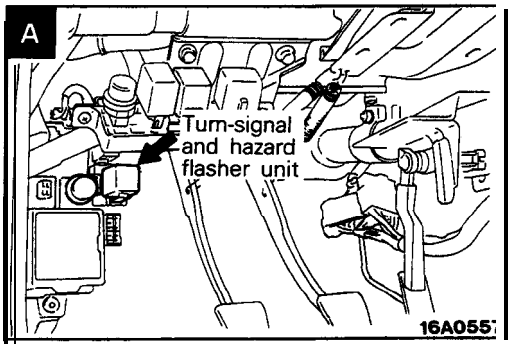
TROUBLESHOOTING HINTS

1. The turn-signal lights and hazard-warning lights do not operate at all.
   - Check the hazard-warning switch contact (power supply side).
   - Check the 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-warning 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-warning switch contact (hazard-warning light side).

COMPONENT LOCATION

Name	Symbol
Turn signal and hazard flasher unit	A



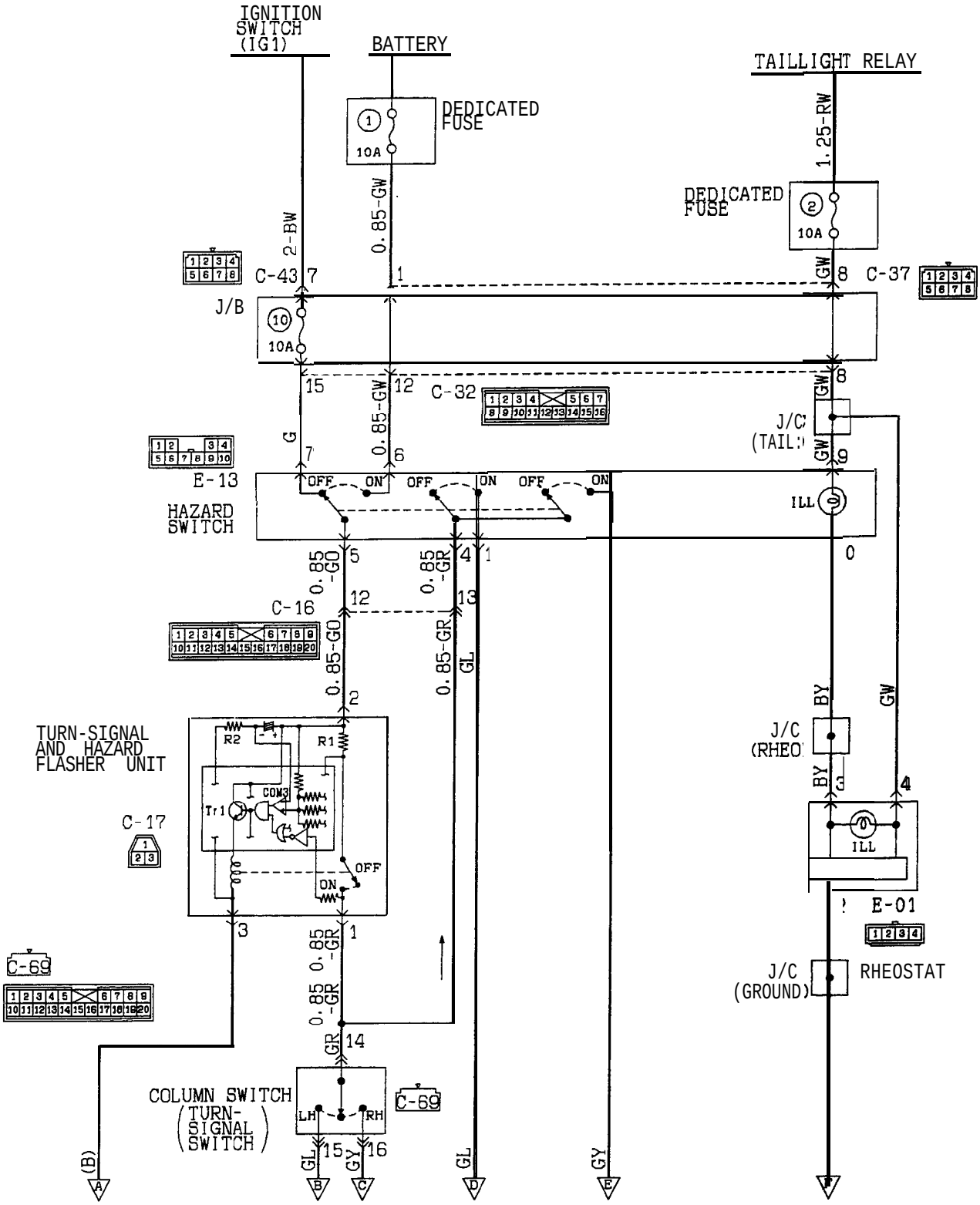


TSB Revision

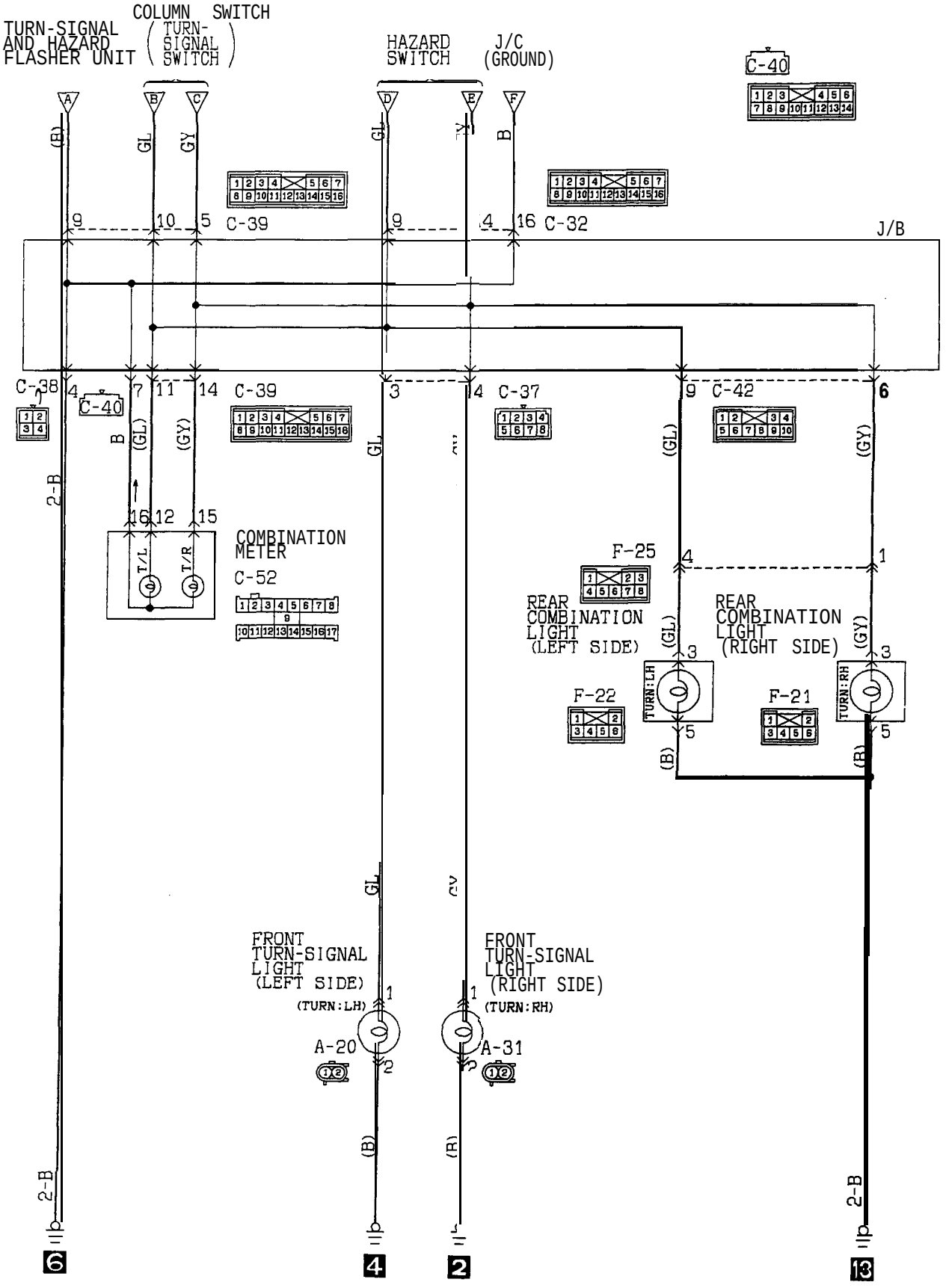
TURN SIGNAL LIGHT AND HAZARD LIGHT CIRCUIT

CIRCUIT DIAGRAM

＜1989 models>



TSB Revision

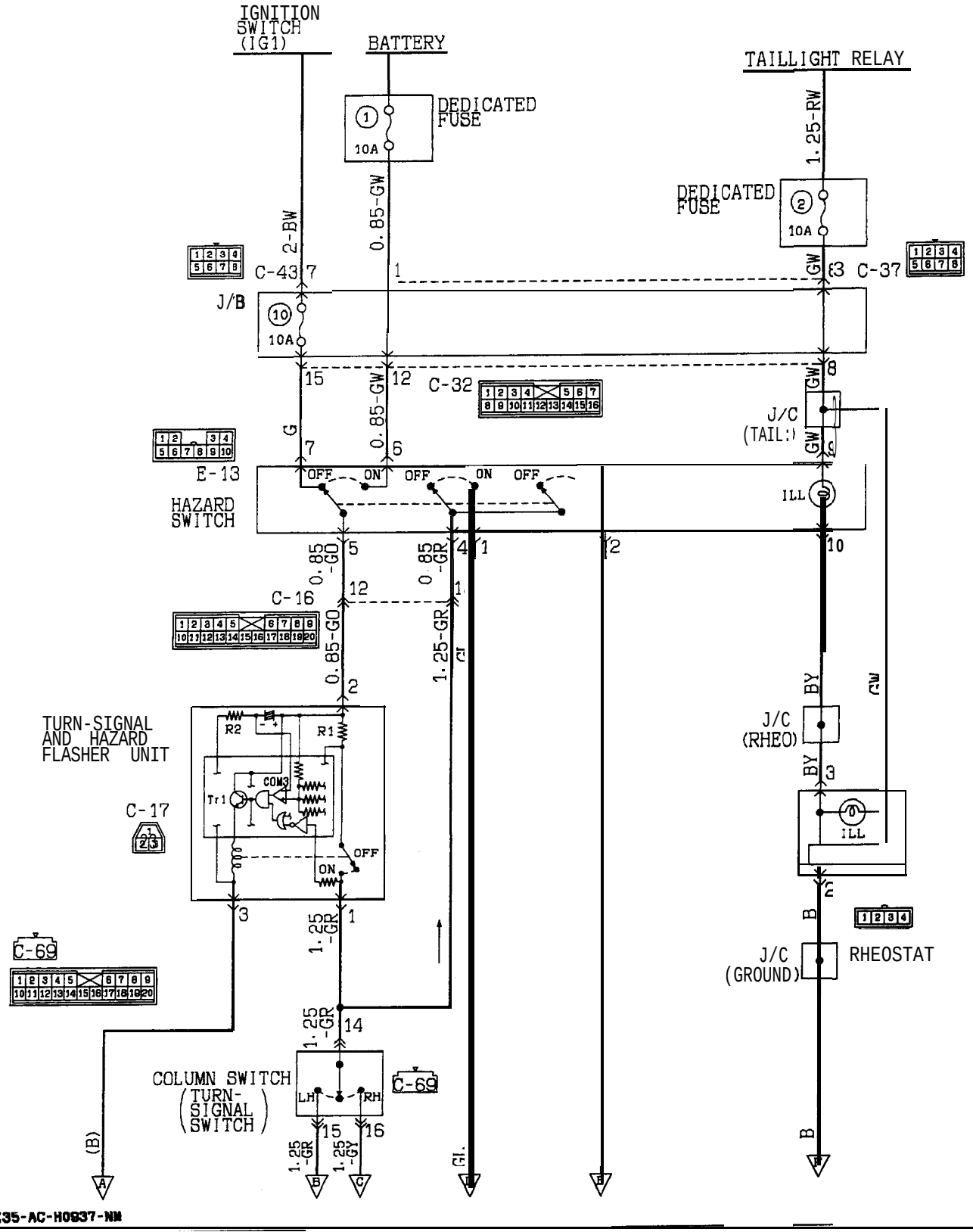


TSB Revision

TURN SIGNAL LIGHT AND HAZARD LIGHT CIRCUIT

CIRCUIT DIAGRAM

< 1990 models>



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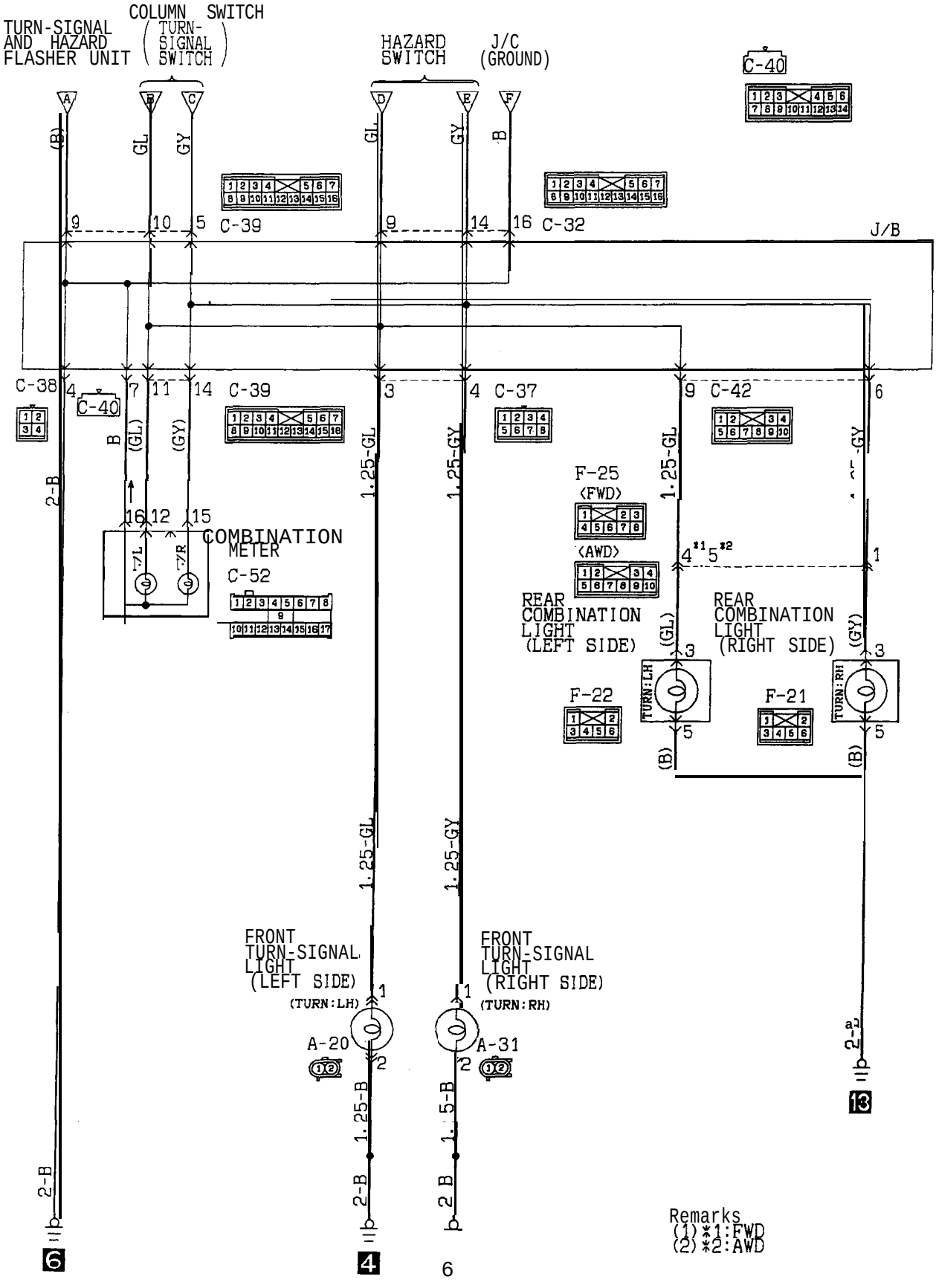
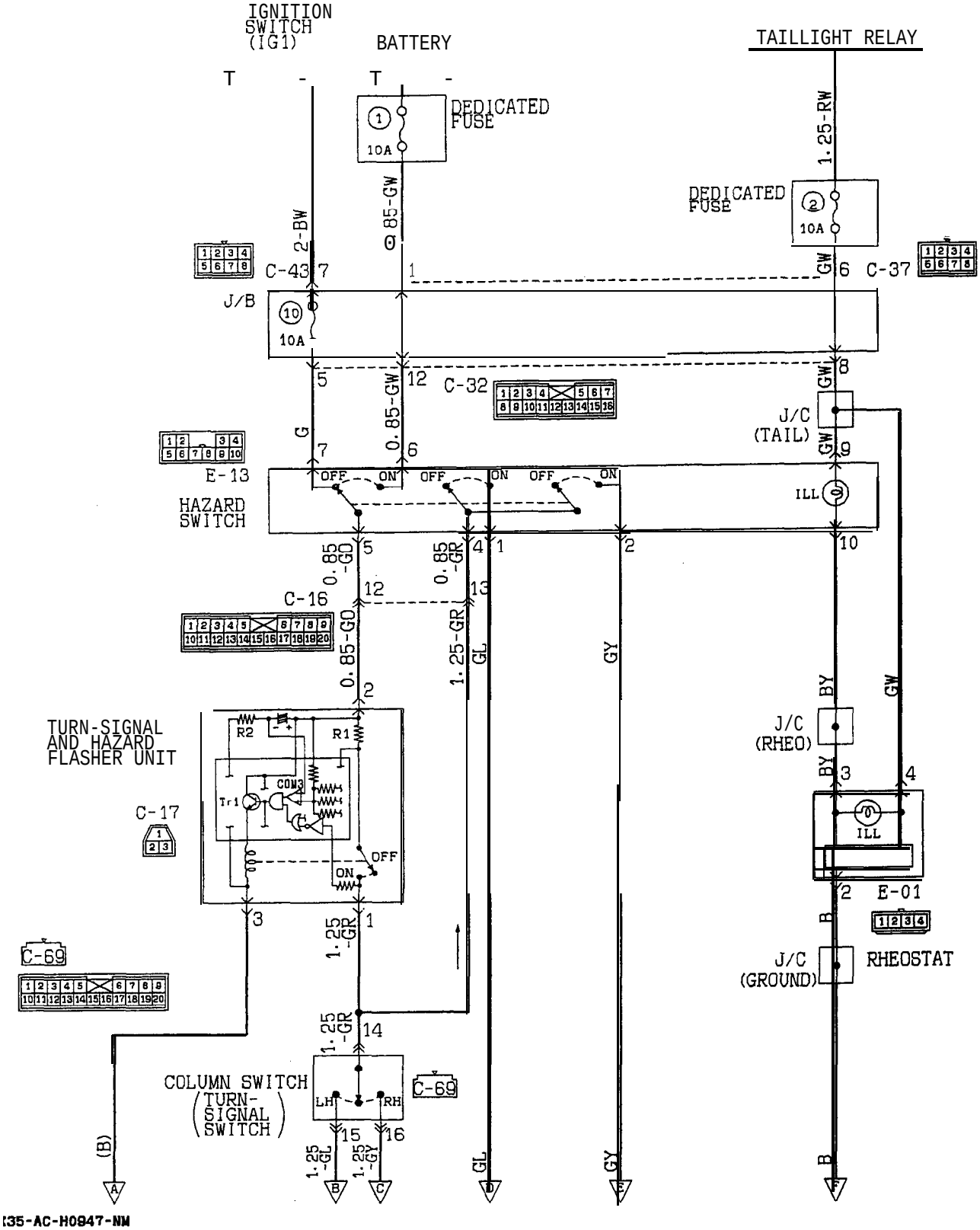

TURN-SIGNAL AND HAZARD FLASHER UNIT
COLUMN SWITCH (TURN-SIGNAL SWITCH)
HAZARD SWITCH
J/C (GROUND)
C-40
C-39
C-32
J/B
C-38
C-37
C-42
COMBINATION METER
C-52
F-25 (FWD)
(AWD)
REAR COMBINATION LIGHT (LEFT SIDE)
REAR COMBINATION LIGHT (RIGHT SIDE)
F-22
F-21
FRONT TURN-SIGNAL LIGHT (LEFT SIDE)
FRONT TURN-SIGNAL LIGHT (RIGHT SIDE)
(TURN:LH)
(TURN:RH)
A-20
A-31
2-B
1.25-GL
1.25-GY
1.5-B
Remarks
(1) *1:FWD
(2) *2:AWD

TURN SIGNAL LIGHT AND HAZARD LIGHT CIRCUIT

CIRCUIT DIAGRAM

<From 1991 models>



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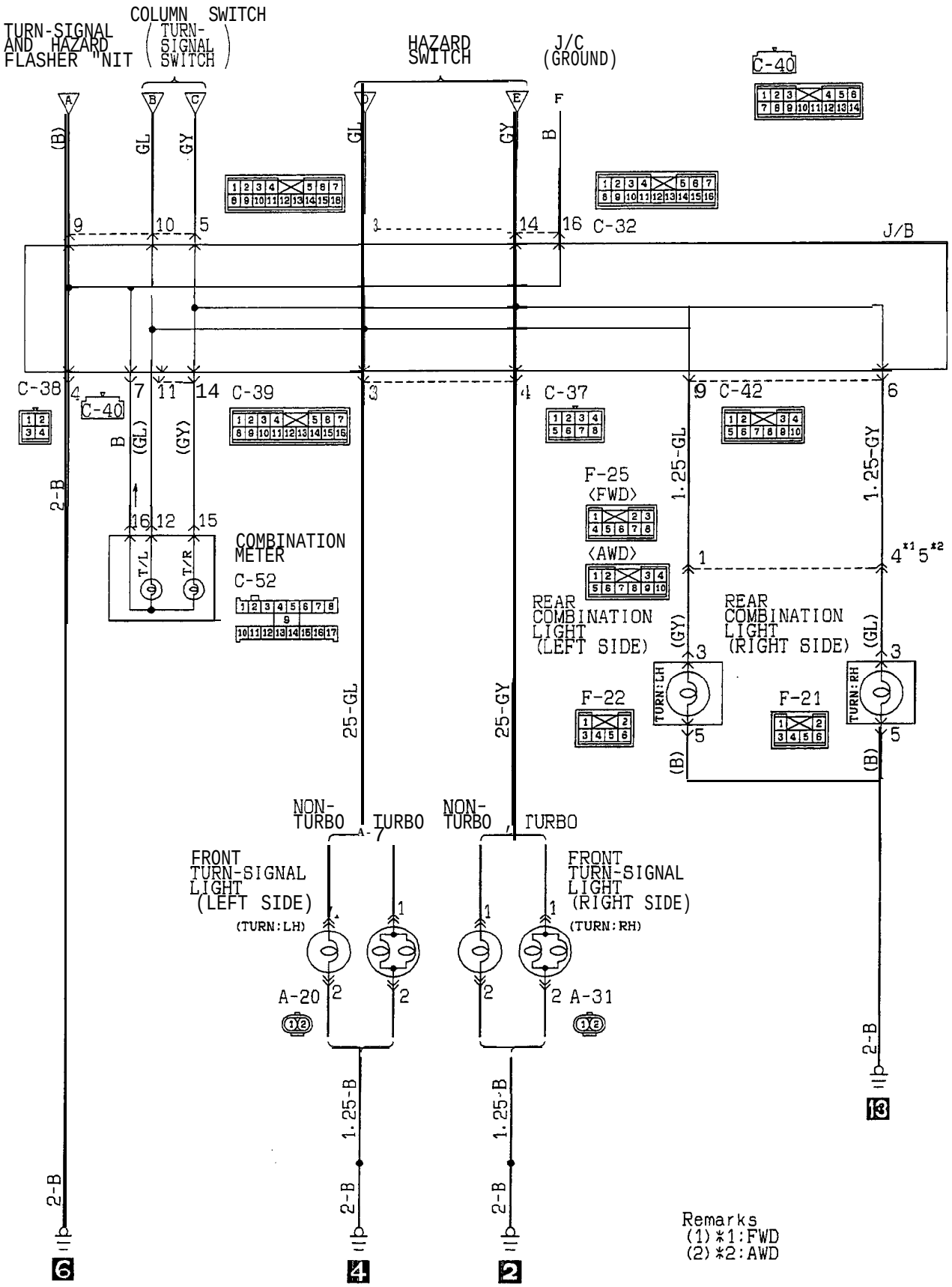

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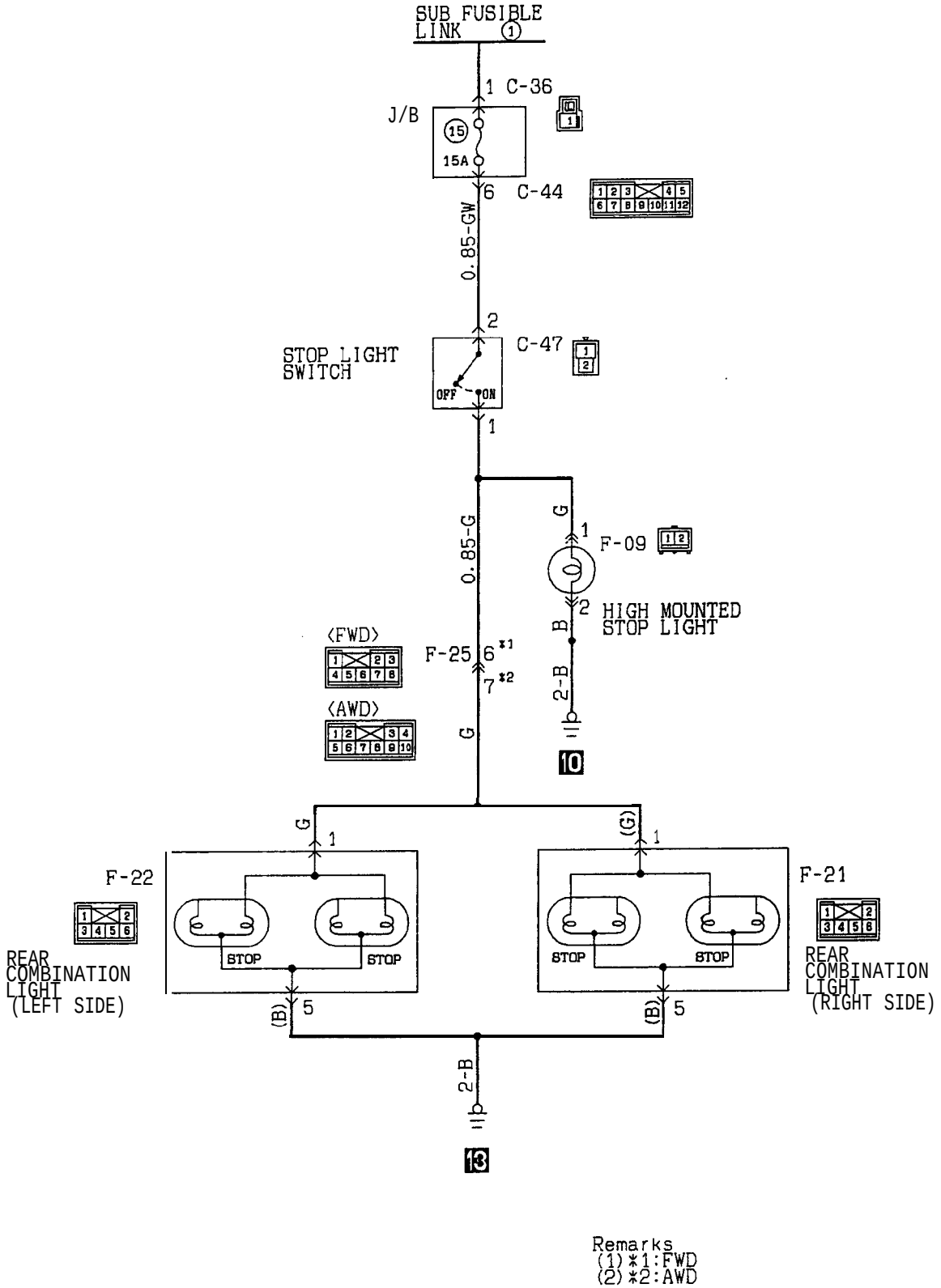
STOP LIGHT CIRCUIT

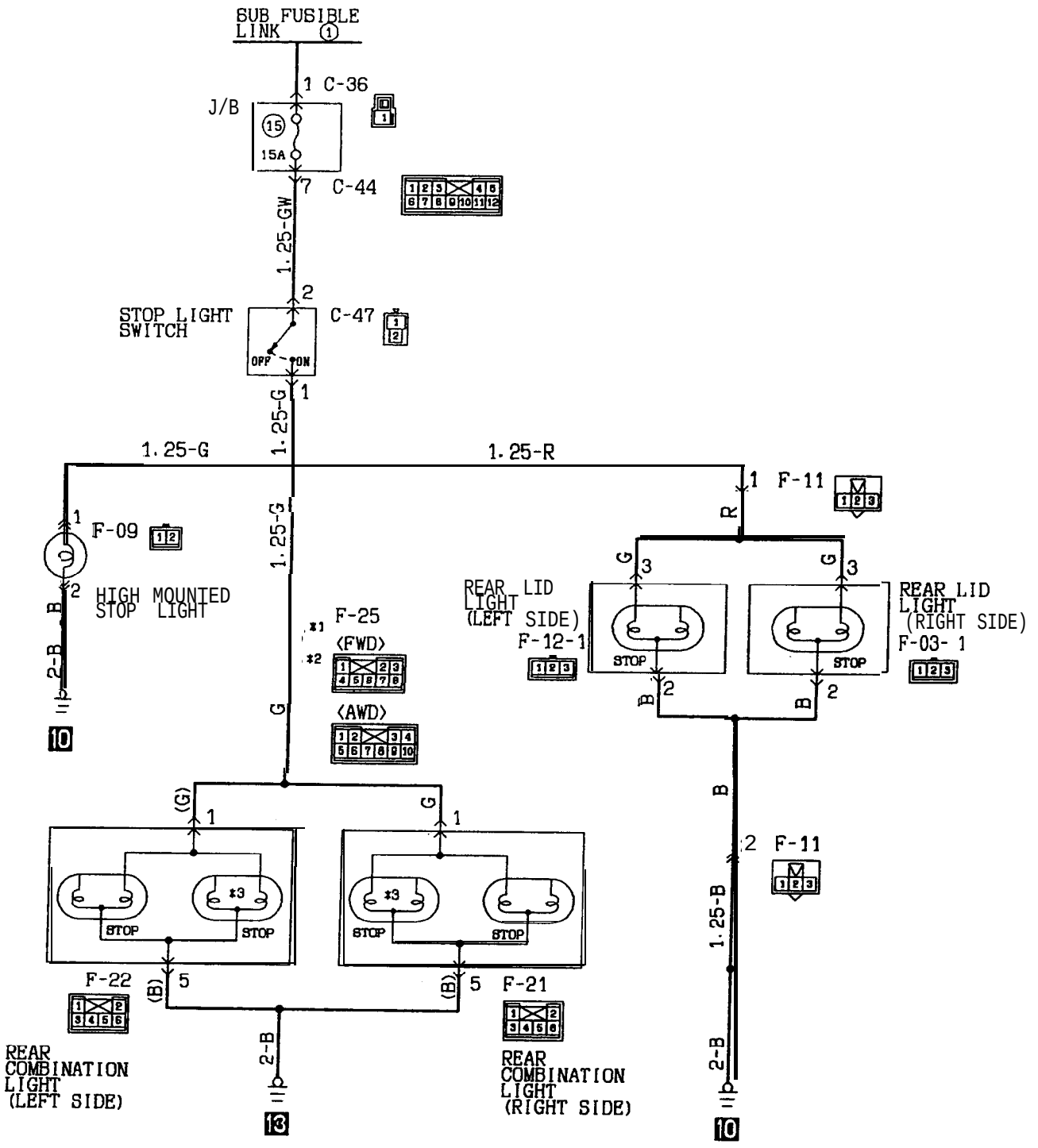
IRCUIT DIAGRAM

<VEHICLES WITHOUT AUTO-CRUISE CONTROL (Up to 1990 models)>



K35-AC-H0934-NM

<VEHICLES WITHOUT AUTO-CRUISE CONTROL (From 1991 models)>



Remarks
(1) *1: FWD
(2) *2: AWD
(3) *3: 1991 models

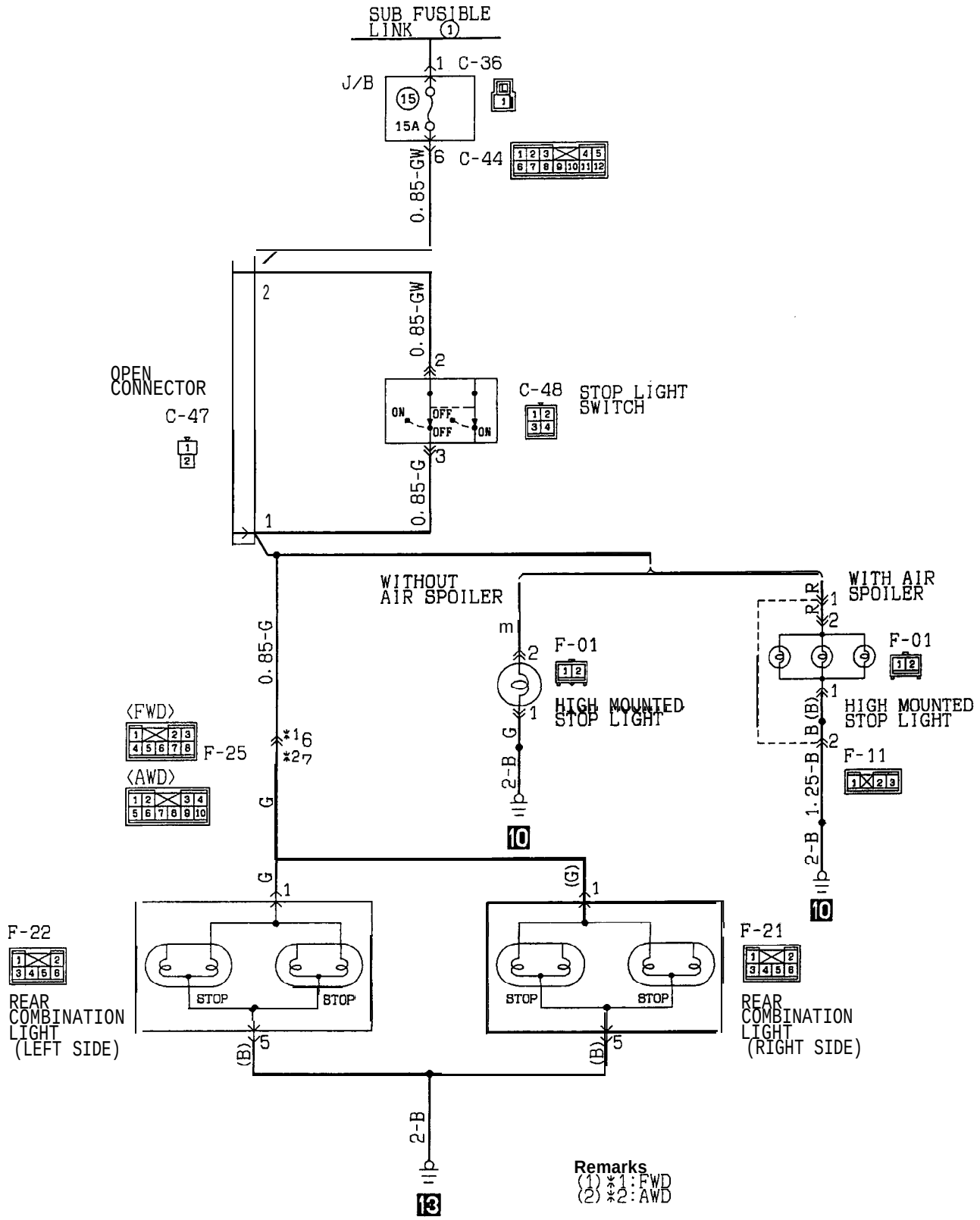
MX35-AC-H0952-N

TSB Revision

STOP LIGHT CIRCUIT

CIRCUIT DIAGRAM

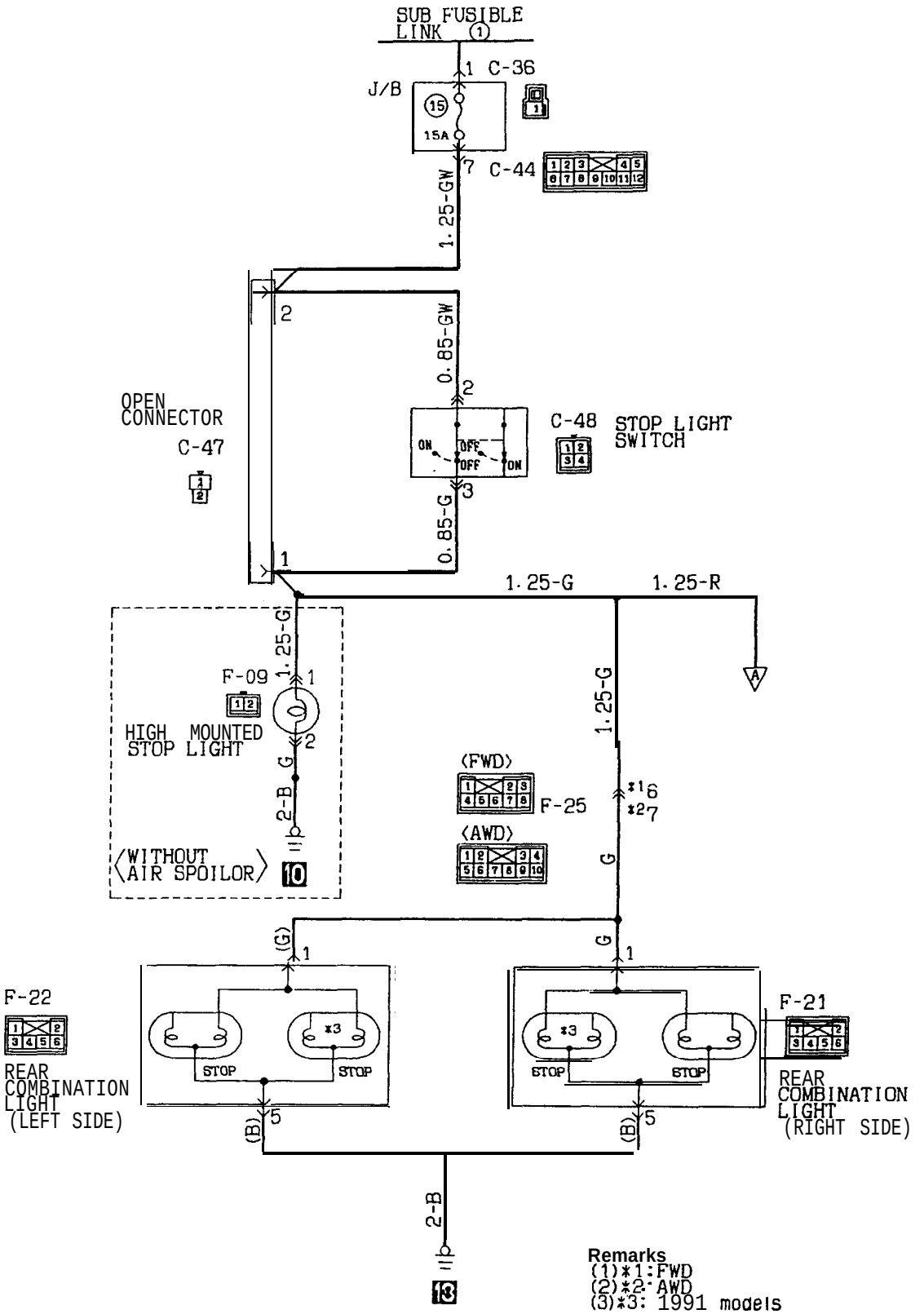
<VEHICLES WITH AUTO-CRUISE CONTROL (Up to 1990 models)>



X35-AC-H0935-NM

TSB Revision

<VEHICLES WITH AUTO-CRUISE CONTROL (From 1991 models)>



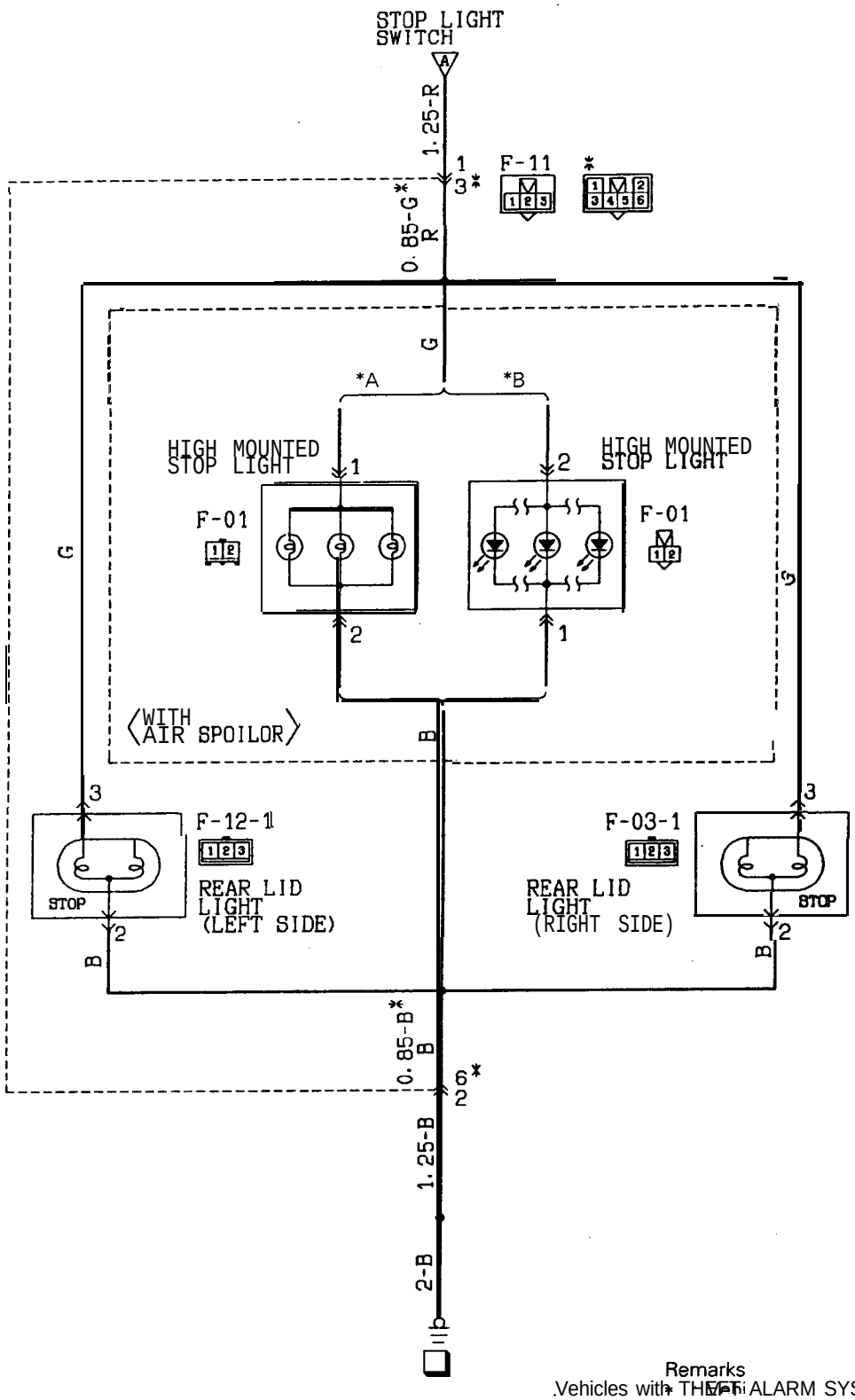
Remarks
(1)*1: FWD
(2)*2: AWD
(3)*3: 1991 models

(X35-AC-H0953-NN

TSB Revision

STOP LIGHT CIRCUIT

<VEHICLES WITH AUTO-CRUISE CONTROL (From 1991 models)> (CONTINUED)



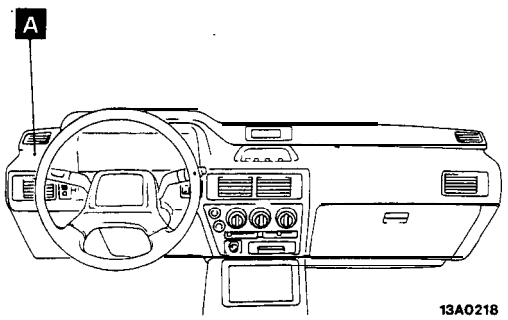
Remarks
.Vehicles with * THEFT ALARM SYSTEM
*A: NON-TURBO <Up to 1992 models>
*B: TURBO and NON-TURBO <From 1993 models>

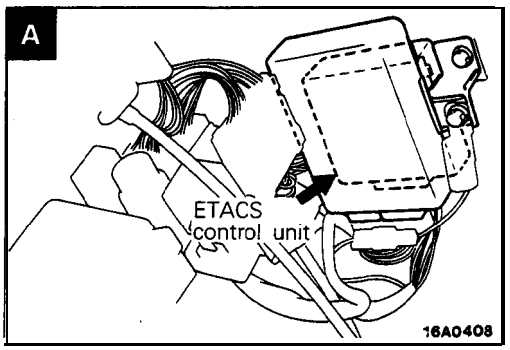
DELAYED SWITCH-OFF DOME LIGHT <ETACS-EQUIPPED MODELS>

M541HICb

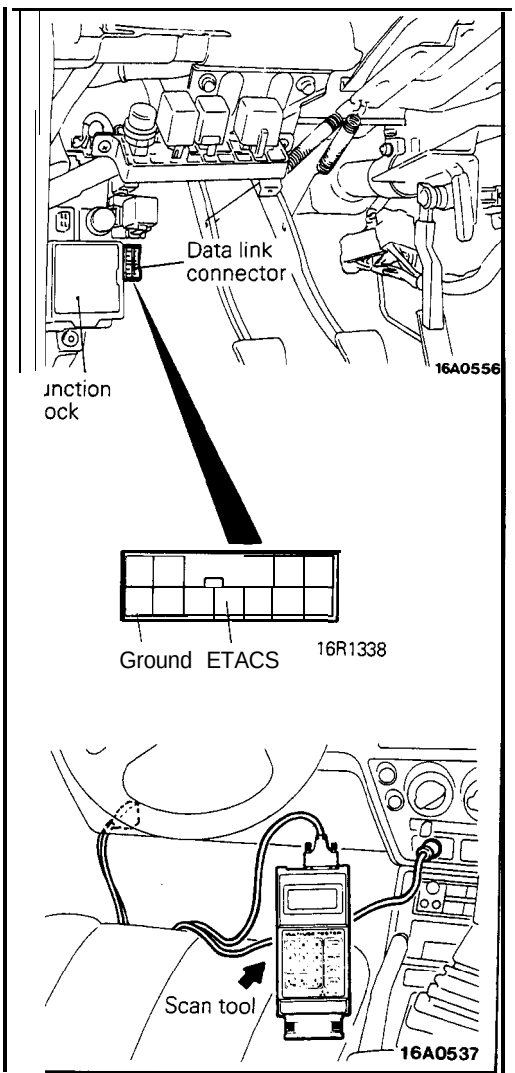
COMPONENT LOCATION

Name	Symbol
ETACS control unit	A





INPUT CHECK



Using a scan tool, check whether or not input signals are being input from each switch to the electronic control unit.

(1) Connect the scan tool to the data link connector (located at the right side of the junction block).
(2) With the ignition switch at the "ACC" position, set the scan tool to the special test setting.
(3) Check whether the buzzer of the scan tool sounds one time when each of the switches noted below is operated.
Input signals are being input to the electronic control unit if the buzzer sounds, so the operation of that switch can be considered satisfactory; if the buzzer does not sound, check that switch or the wiring for an abnormal condition.

- Ignition switch
- Door switches for all doors

TSB Revision

TROUBLESHOOTING GUIDE-REFERENCE TABLE

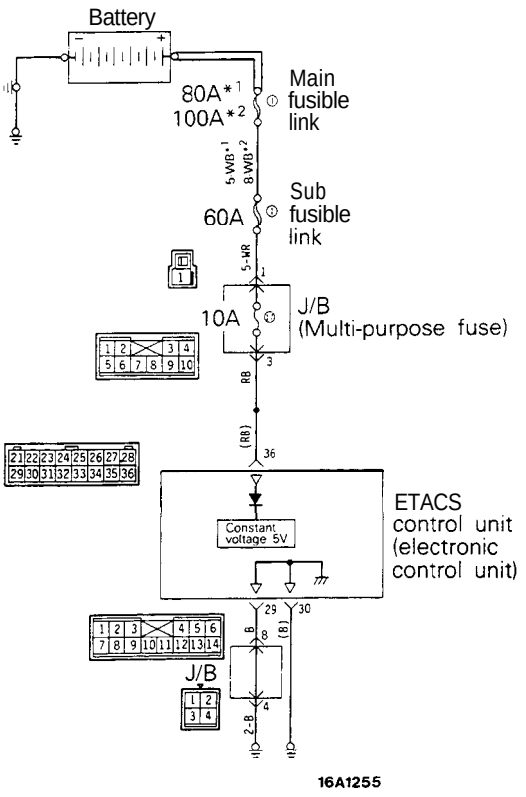
Problem	Probable cause	Check method	Remedy
With the dome light switch at the door-interlocked position, the dome light does not illuminate when any door is opened. (The dome light does illuminate, however, when the dome light switch is set to the "ON" position.)	Damage or disconnection of the door switch (all doors) input circuit.	If a malfunction is indicated as a result of the input check (P.54-83), make the circuit and individual part check No.3 (P.54-87).	Replace the door switch, or repair the wiring harness.
	Damage or disconnection of the dome light activation circuit.	Make the circuit and individual part check No.4 (P.54-88).	Replace the dome light, or repair the wiring harness.
	Malfunction of the electronic control unit.	–	Replace the electronic control unit.
When the ignition switch is switched to the "ON" position while the dome light illumination is at the dimmed setting, the dome light does not switch OFF.	Damage or disconnection of the ignition switch input circuit.	If a malfunction is indicated as a result of the input check (P.54-83), make the circuit and individual part check No.2 (P.54-86).	Repair the wiring harness.
	Malfunction of the electronic control unit.	–	Replace the electronic control unit.

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

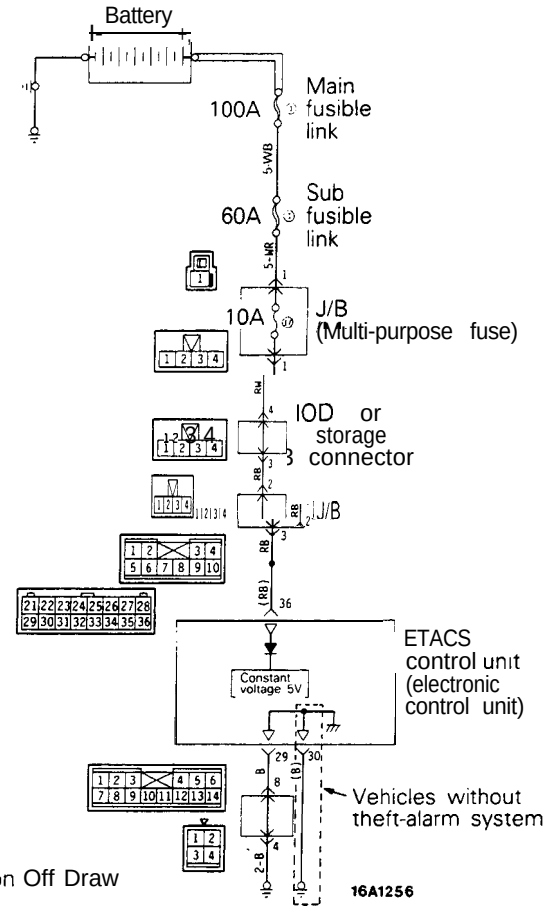
CHECKING THE CIRCUIT AND INDIVIDUAL COMPONENT

1. ETACS POWER-SUPPLY AND GROUND CIRCUITS

<Up to 1990 models>



<From 1991 models>



NOTE
*1: < 989 models>
*2: < 990 models>

IOD: Ignition Off Draw

Description of operation

The battery supplies a stabilized 5V power supply to the electronic control unit, via the constant-voltage circuit and terminal (36) directly connected to the battery.

If there is an abnormal condition of the power-supply circuit, the other ETACS systems also will not function.

Electronic control unit terminal voltage (status of the electronic control unit connector)

ECU terminal No.	Signal	Conditions	Terminal voltage
36	Electronic control unit power supply	At all times	Battery positive voltage

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

Terminal	Connected to/measured component	Measurement	Tester connection	Check conditions	Standard
29	Electronic control unit ground	Resistance	29-ground	At all times	Continuity
30"	Electronic control unit ground	Resistance	30-ground	At all times	Continuity

NOTE
*: Vehicles without theft-alarm system

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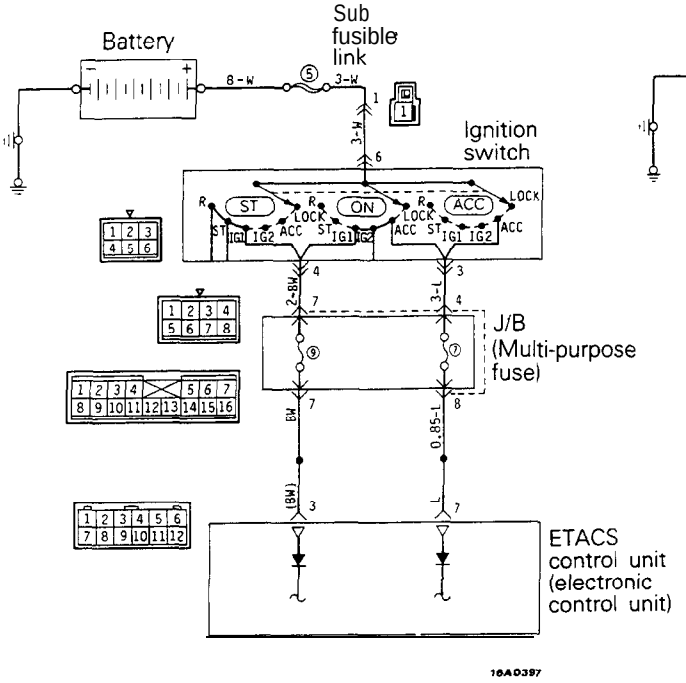
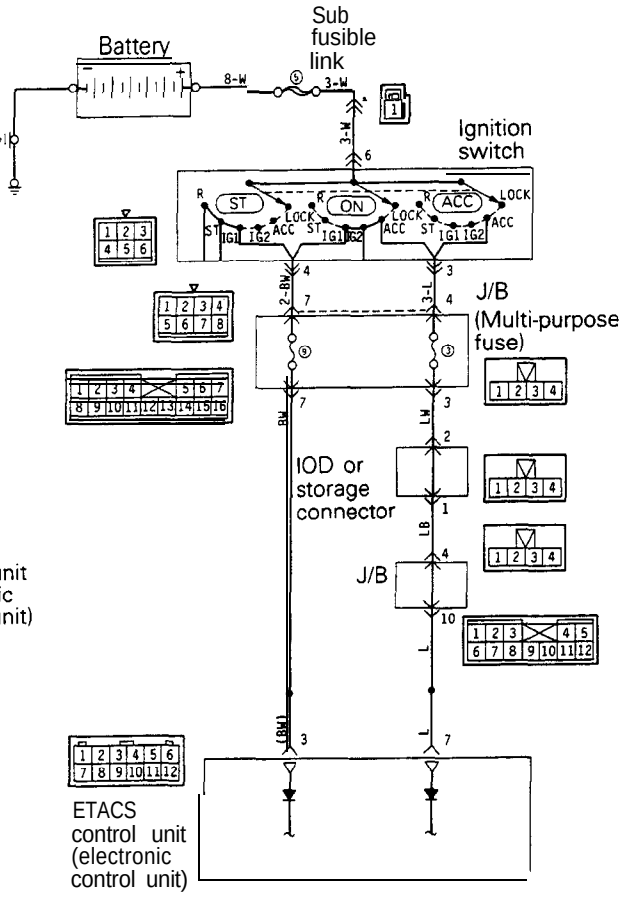
2. **IGNITION SWITCH INPUT CIRCUIT**

<Up to 1990 models>



<From 1991 models>



IOD: Ignition Off Draw

Description of operation

With the ignition switch at the "ON" position, send HIGH-level signals to the electronic control unit to switch OFF the timer circuit and interrupt the dimmed-light condition.

Electronic control unit terminal voltage

(Disconnect the electronic control unit connector and check the wiring harness side.)

ECU terminal No.	Signal	Conditions		Terminal voltage
3	Ignition switch: "ON"	Ignition switch	OFF	0 V
			ON	Battery positive voltage

Individual part check

Ignition switch . . . Refer to P.54-6.

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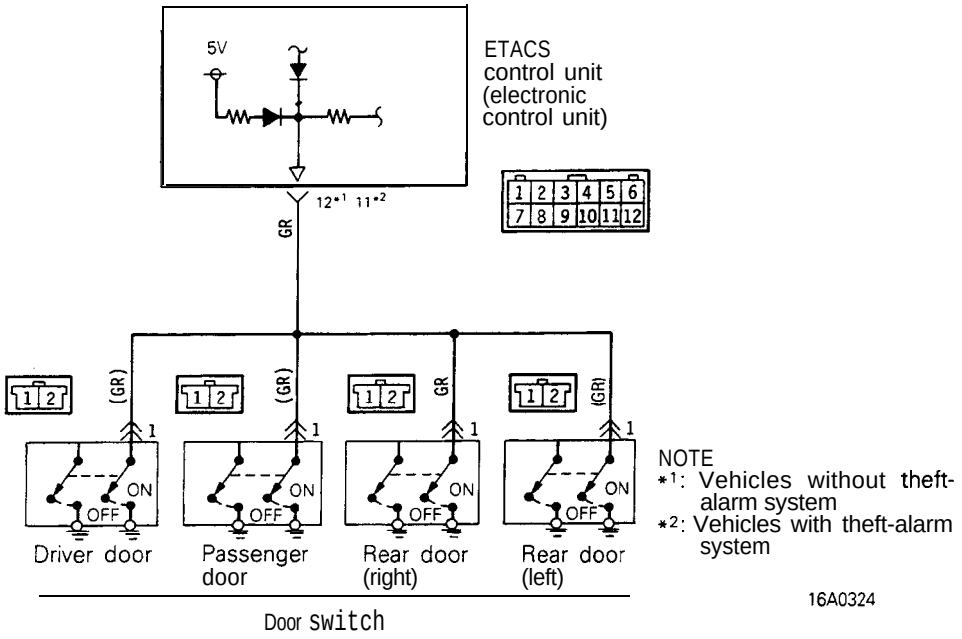
3. DOOR SWITCH (ALL DOORS) INPUT CIRCUIT



Description of operation

When, with the dome light illuminated (with the ignition switch at the "ACC" or "OFF" position), HIGH-level signals are sent to the electronic control unit, the timer circuit is activated and the dimmed-light function of the dome light is started.

If there is an abnormal condition of the door switch system, the dome light will not function normally at the door-interlocked setting of its switch.

Electronic control unit terminal voltage (status of the electronic control unit connector)

ECU terminal No.	Signal	Conditions	Terminal voltage
12*1 11*2	Door switch signal	*Door is opened (door switch: **ON**).	ov
		All doors are closed (door switch: OFF).	5V

Checking the door switch circuit (Disconnect the electronic control unit connector and check the wiring harness side.)

Terminal	Connected to/measured component	Measurement	Tester connection	Check conditions	Standard
12*1 11*2	Door switch	Resistance	12-ground*1 11 -ground*2	All doors are closed	No continuity
				*Door is opened.	Continuity

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

Individual part check

Door switch . . . Refer to GROUP 42–Front and Rear Doors.

NOTE
When making the checks indicated by the * symbol, conduct the check for each individual door, checking to be sure that only the door being checked is open.

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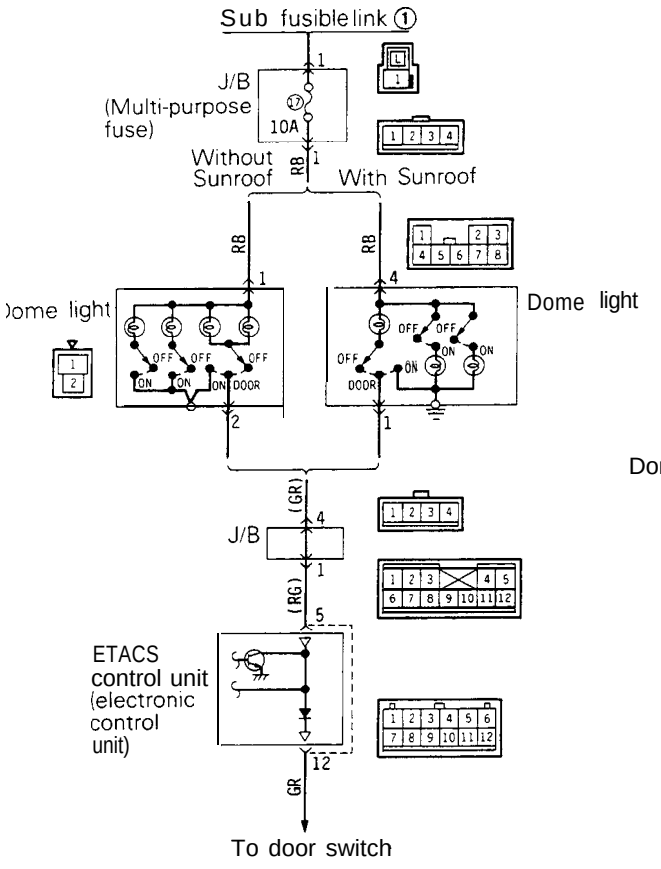
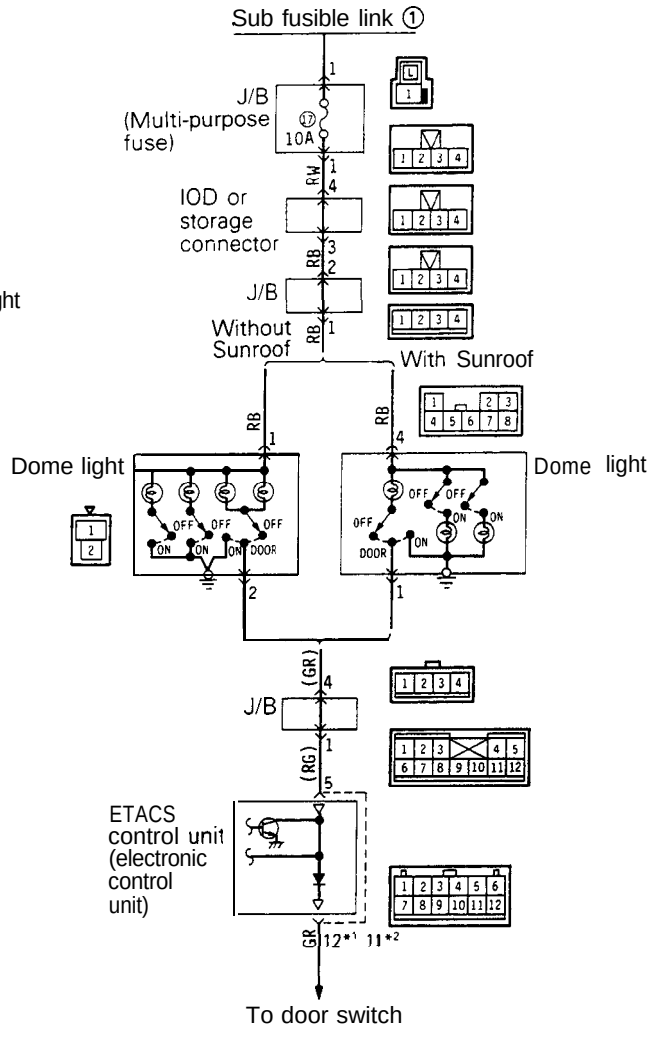
4. DOME LIGHT ACTIVATION CIRCUIT

<Up to 1990 models>



<From 1991 models>



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

IOD: Ignition Off Draw

Description of operation

When a door is opened while the dome light switch is at the door-interlocked setting, the door switch is grounded via the electronic control unit. When, in that condition, the door is then closed, the electronic control unit causes grounding, and the dimmed-light function is activated.

Electronic control unit terminal voltage (status of the electronic control unit connector)

ECU terminal No.	Signal	Conditions			Terminal voltage
5	Dome light signal	All doors closed	Dome light switch position	Any position except "DOOR"	0V
				DOOR	Battery positive voltage

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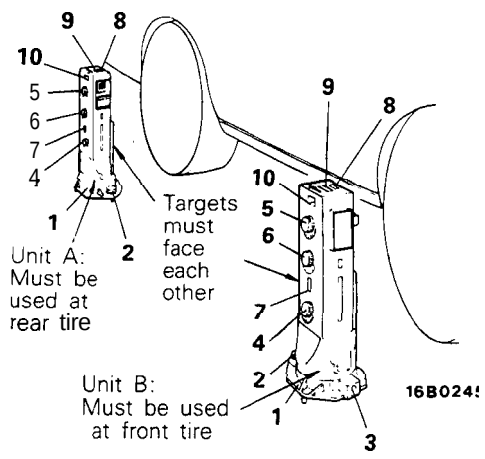
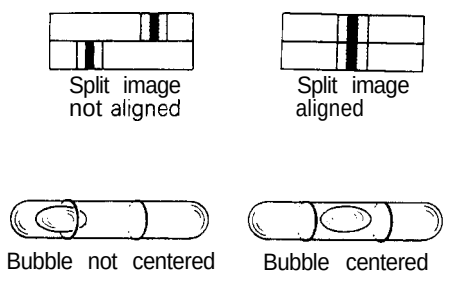


1. Calibration fixture
2. Thumb adjusting screws
3. Level vial
4. Floor level offset dial
5. Horizontal dial knob
6. Vertical dial knob
7. Aimer level vial
8. Level vial bubble
9. Top port hole
10. Viewing port



SERVICE ADJUSTMENT PROCEDURES M54IIBE

HEADLIGHTS AIMING

PRE-AIMING INSTRUCTIONS

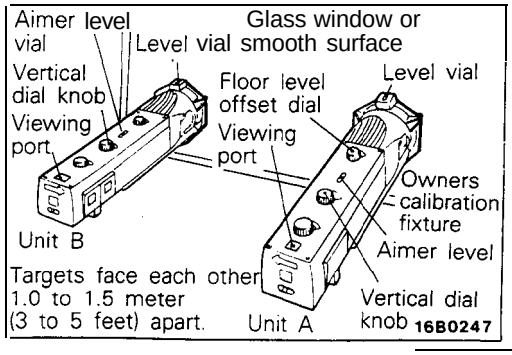
1. Test dimmer switch operation.
2. Observe operation of high beam light mounted in instrument cluster.
3. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
4. Place vehicle on a level floor.
5. Bounce front suspension 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.

COMPENSATING THE AIMERS (C-4466) FOR FLOOR SLOPE

The floor level offset dial must coincide with the floor slope for accurate aiming. Calibration fixtures are included with the aimers.

1. Attach one calibration fixture to each aimer. Fixtures will easily snap into position on aimer when properly positioned.
2. Place aimers at **center line** of each wheel on one side of vehicle. Unit A must be placed at rear wheel with target facing forward. Unit B must be placed at front wheel with target facing rearward.
3. Adjust thumb adjusting screw on each calibration fixture by turning either clockwise or counterclockwise until level vial bubble registers in a centered, level position.
4. Look into top port hole of Unit A. Turn horizontal knob until split image is aligned.
5. Transfer plus or minus reading indicated on horizontal dial **to floor level offset dial on each aimer. Press floor level dial** inward to set reading.
6. Remove calibration fixtures from both units.

TESTING AIMER CALIBRATION



The aimer calibration may be off due to extended use. Calibration fixtures used in conjunction with aimers can be used to check and adjust aimers.

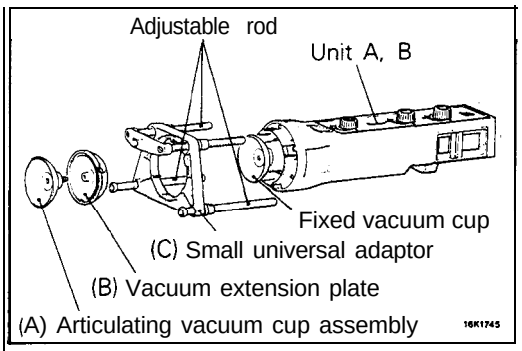
1. Turn thumb adjusting screw on each calibration fixture until it is approximately the same distance as the supporting posts.
2. Attach calibration fixtures to each unit with level vials on top.
3. Locate a true vertical plate glass window or smooth surface and secure aimers three to five feet apart so split image targets can be located in viewing ports

4. Set floor level dial at zero.
5. Rotate thumb adjusting screws on **each calibration fixture** until level vials on fixtures are centered.
6. With both calibration level vials centered, turn vertical dial knobs on each aimer until aimer level vials are centered. If aimer vertical dial pointers read between 1/2 up and 1/2 down, aimers are within allowable vertical tolerance. Recalibrate units if beyond these limits.

   Vertical dial pointer reading (on each aimer): 1/2 up to 1/2 down

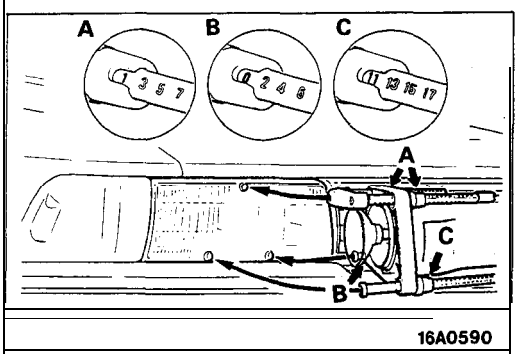
7. Adjust horizontal dial knob on each aimer until split image targets align. If aimer horizontal dial pointers read between 1 left and 1 right, the aimers are within allowable tolerance limits. Recalibrate units if beyond these limits.

   Horizontal dial pointer reading (on each aimer): 1 left to 1 right

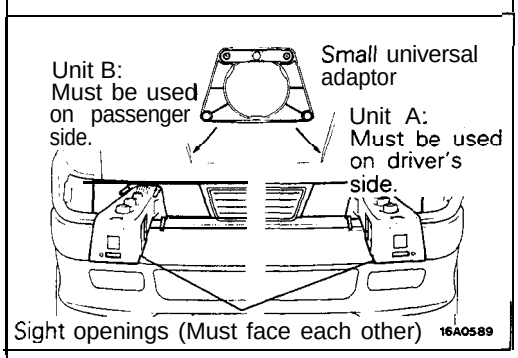


MOUNTING AIMERS

1. Remove the calibration fixture from each unit.
2. As shown in the figure, install the articulating vacuum cup assembly (A), vacuum extension plate (B) and small universal adaptor (C) to each unit.

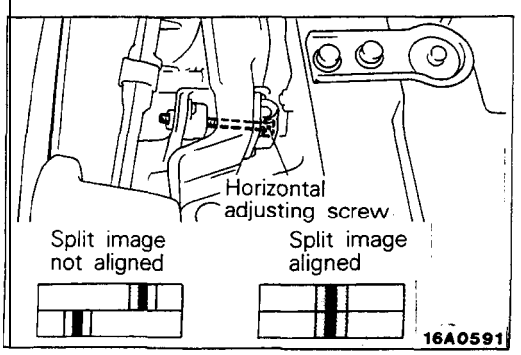


3. Make the length of the adjustable rod as shown in the figure.



4. Position aimers on headlights by pushing piston handle forward, engaging rubber suction cup. Immediately pull back piston handle until it locks in place.

   NOTE
   Steel inserts are molded into position on the adaptor to insure accuracy. These inserts must be in contact with the three guide **points** on the lights when the aimers are properly positioned.



HORIZONTAL ADJUSTMENT

1. Set horizontal dial to zero.
2. Check to see that the split image target lines are visible in the viewing port. If necessary, rotate each aimer slightly to locate the target.
3. Turn horizontal screw on side of headlight until split image of target line appears in mirrors as one solid line. To remove "backlash", make final adjustment by turning adjusting screw in a clockwise direction.
4. Repeat the last three steps on opposite headlight.

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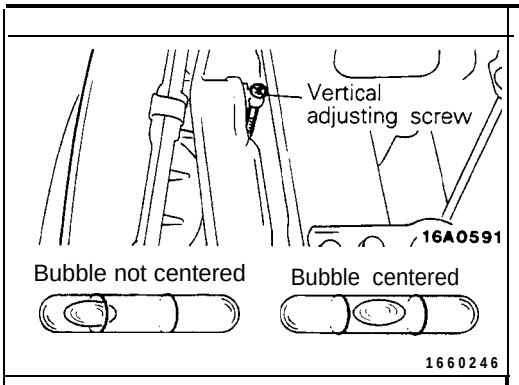
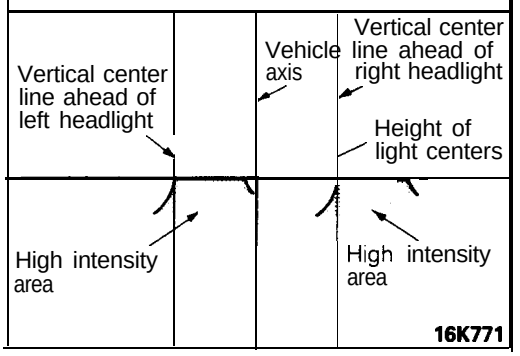




VERTICAL ADJUSTMENT

1. The vertical dial should be set at zero. (For passenger vehicles an "0" setting is generally required. For special settings, consult local state laws).
2. Turn vertical adjusting screw until the level bubble is centered between the lines.
3. Repeat the last two steps on the opposite headlight.
4. Re-check target alignment on both aimers and readjust horizontal aim if necessary.
5. Remove aimers by pressing "vacuum release" button located on piston handle.

AIMING WITH SCREEN

HEADLIGHT AIM PREPARATION

Place vehicle on a known level floor 7.6 m (25 feet) from aiming screen or light colored wall. Four lines of adhesive tape or like are required on screen or wall:

1. Position a vertical tape so that it is aligned with the vehicle center line.
2. Position a horizontal tape with reference to center line of headlight.
3. Position a vertical tape on the screen with reference to the center line of each of headlights.

VISUAL HEADLIGHT ADJUSTMENT

1. A properly aimed lower beam will appear on the aiming screen 7.6 m (25 feet) in front of the vehicle. The shaded area as shown in the illustration indicates high intensity zone.
2. Adjust low beam of headlights to match the low beam pattern of the right and left headlights.

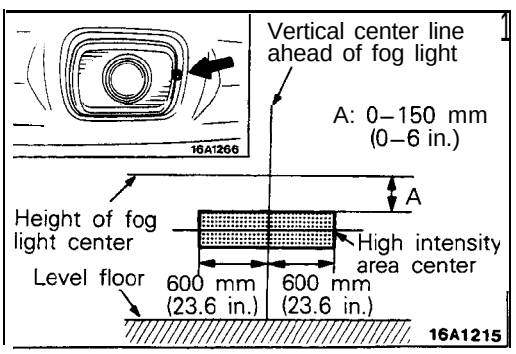
NOTE
If the visual headlight adjustment at low beam is made, the adjustment at high beam is not necessary.

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: Type I 18,000 cd or more
Type II 7,000 **cd or more**

NOTES
(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 M54IIEA

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.

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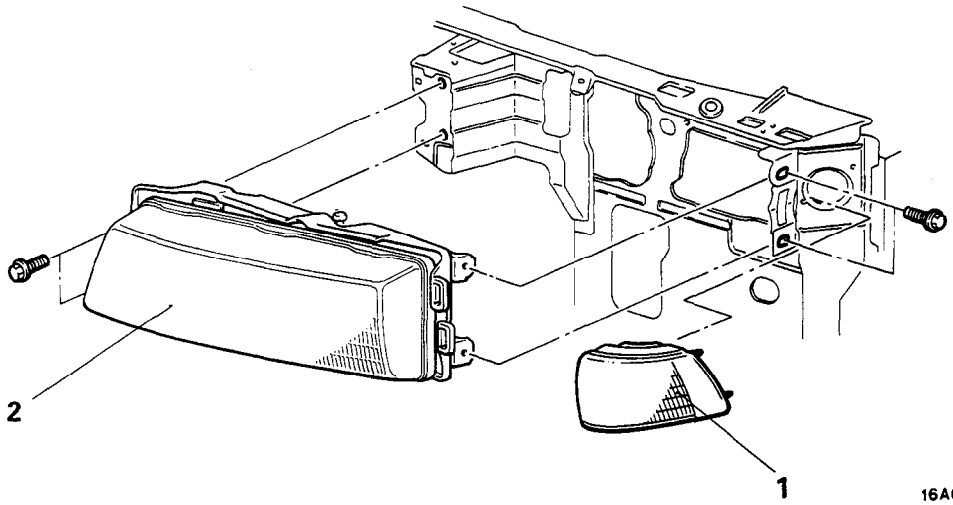
HEADLIGHTS

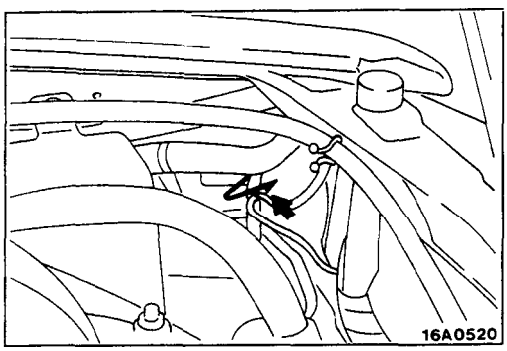
M54IJAK

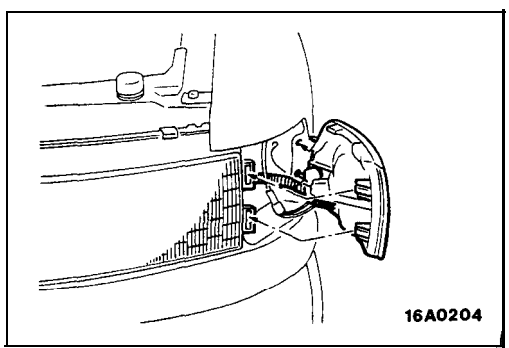
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Removal and Installation of Front Grilles (Refer to GROUP 51–Grille.)

Removal steps
1. Front combination light
2. Headlight







SERVICE POINTS OF REMOVAL

1. REMOVAL OF FRONT COMBINATION LIGHT

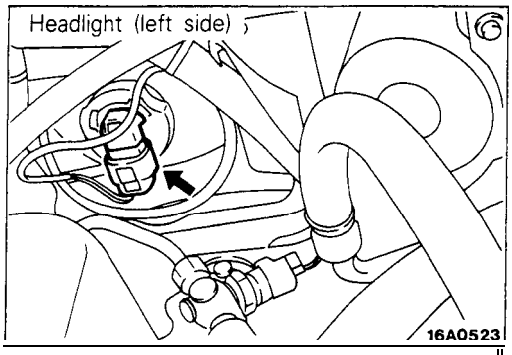
(1) Disconnect the front combination light setting spring in the engine compartment.
(2) Pull forward and remove the front combination light.

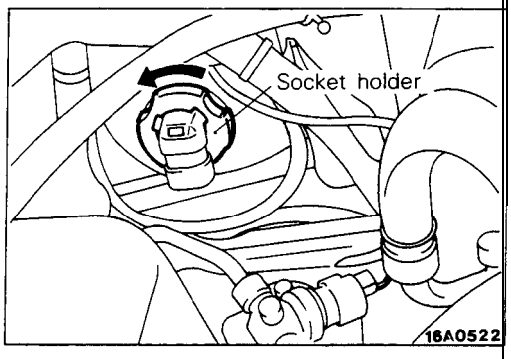
SERVICE POINTS OF INSTALLATION

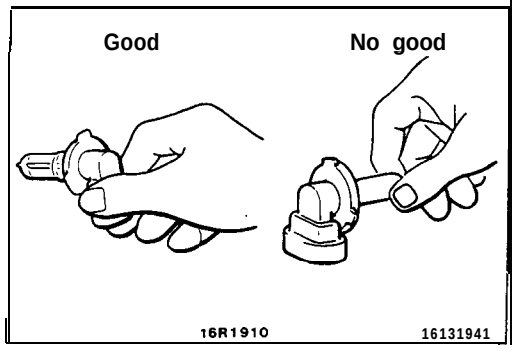
1. INSTALLATION OF FRONT COMBINATION LIGHT

(1) Align the projection part of the front combination light with the hole, and then install by pushing toward the rear.
(2) Pull the setting spring into the engine compartment, twist it 90°, and secure it to the body.

TSB Revision







REPLACEABLE BULB REPLACEMENT

(1) Disconnect the headlight harness connector.
(2) Detach the socket holder by turning it anticlockwise, and then take out the bulb and socket assembly.

Caution

1. **Never hold the halogen light bulb with a bare hand, dirty glove, etc.**
2. **If the glass surface is dirty, be sure to clean it with alcohol, paint thinner, etc., and install it after drying it thoroughly.**
   Be sure to attach the socket cover.

NOTE

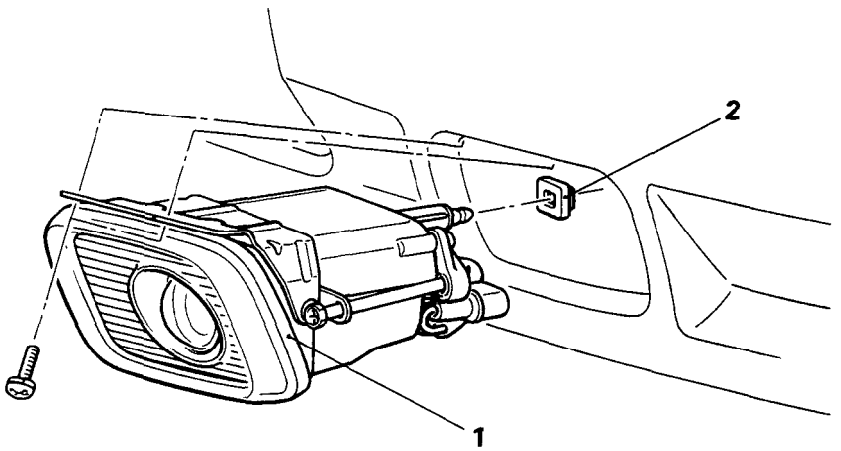
Be sure to install the socket cover securely because, if it is not, an insecure installation could cause such problems as clouding of the lens, or intrusion of moisture to inside the light unit.

TSB Revision

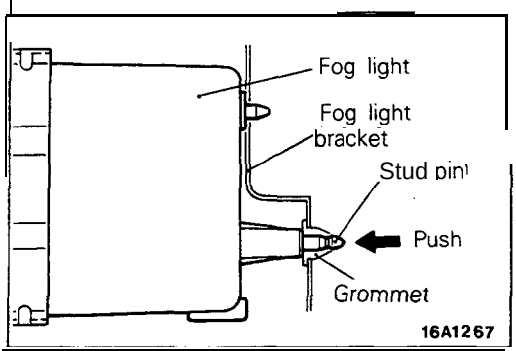
FOG LIGHT

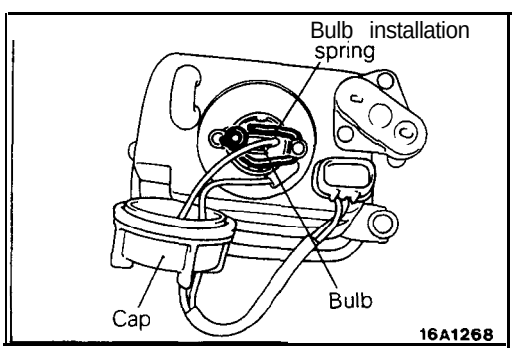
M54INAA

REMOVAL AND INSTALLATION



Removal steps
1. Fog light
2. Grommet





SERVICE POINTS OF REMOVAL

1. REMOVAL OF FOG LIGHT

The fog light assembly can be removed by pressing the stud pin from the reverse side of the bumper.

REPLACEABLE BULB REPLACEMENT

(1) Remove the fog light assembly, and then remove the cap.
(2) Remove the bulb installation spring, and pull out the bulb.

Caution
1. **Never hold the halogen light bulb with a bare hand, dirty glove, etc.**
2. **If the glass surface is dirty, be sure to clean it with alcohol, paint thinner, etc., and install it after drying it thoroughly.**
   Be sure to attach the socket cover.

NOTE
Be sure to install the socket cover securely because, if it is not, an insecure installation could cause such problems as clouding of the lens, or intrusion of moisture to inside the light unit.

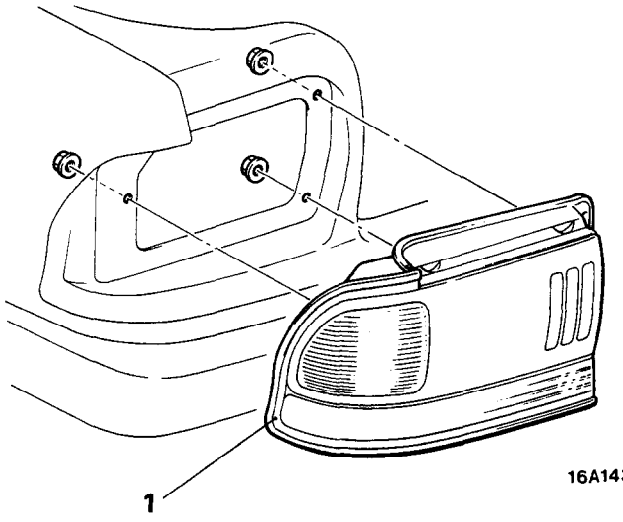
TSB Revision

REAR COMBINATION LIGHT

M54IMAJa

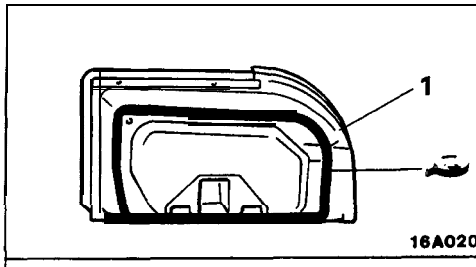
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
@Removal and Installation of Trunk Room Trim (Refer to GROUP 52–Trim.)



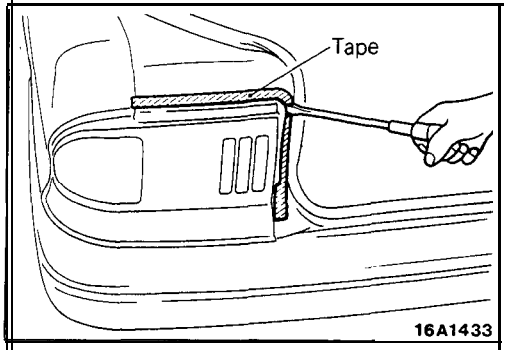
16A1432

◆■▶▶◆1. **Rear combination light**

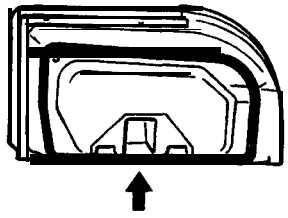


16A0206

Sealant:
3M ATD Part No.8625 or equivalent



16A1433



16A0206

SERVICE POINTS OF REMOVAL

1. REMOVAL OF REAR COMBINATION LIGHT

(1) Attach tape (cloth adhesive tape) or similar material around the rear combination light.
(2) Using a flat-tip (–) screwdriver, slowly pry the rear combination light part while pulling the rear combination light toward you in order to remove it.

Caution
Take particular care when prying the rear combination light because excessive force or careless prying might cause scarring of the rear combination light or of the body surface.

SERVICE POINTS OF INSTALLATION

1. INSTALLATION OF REAR COMBINATION LIGHT

(1) Remove any remaining adhesive material from the body surface and the rear combination light, and then use unleaded petrol to remove any grease or oil from the body side adhesive area.
(2) Apply sealant to the area indicated in the illustration.

Specified sealant: 3M ATD Part No.8625 or equivalent

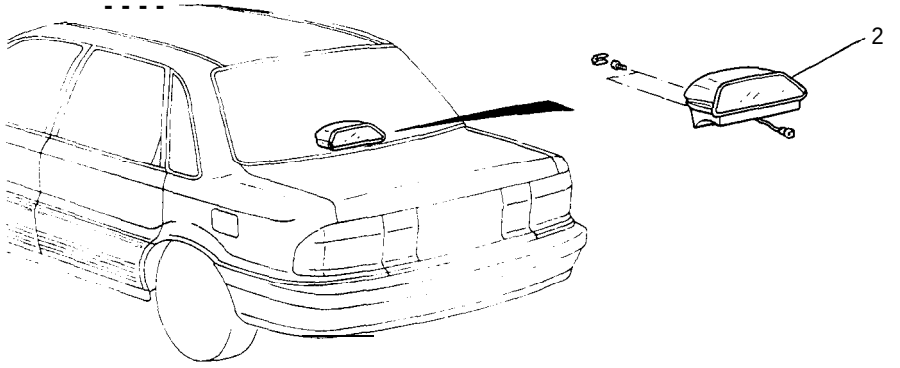
(3) Install the rear combination light.

TSB Revision

HIGH MOUNTED STOP LIGHT

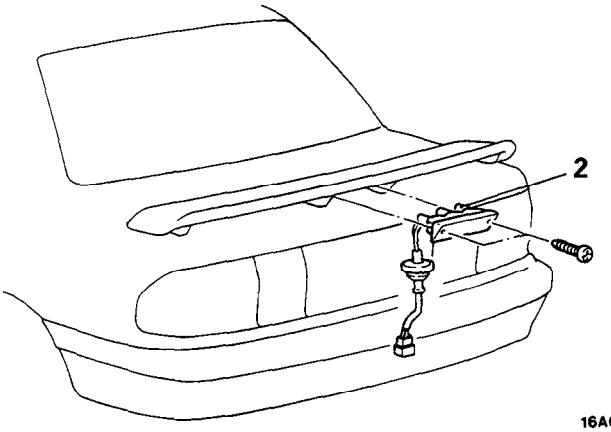
M54IKAMa

<Non-turbo (Vehicles without air spoiler)>



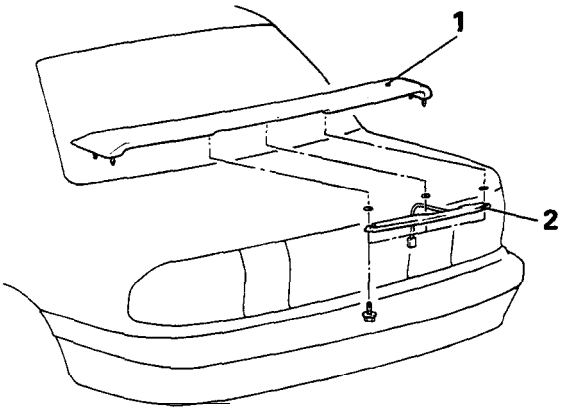
16A1278

<Non-turbo (Vehicles with air spoiler-Up to 1992 models)>



16A0533

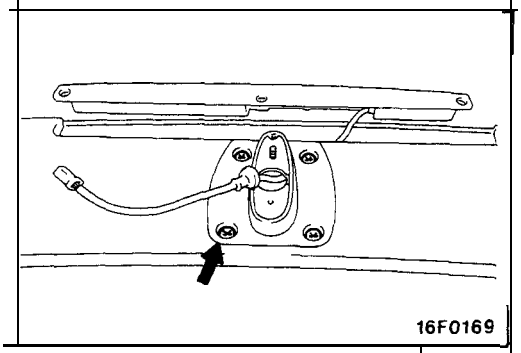
<Turbo and Non-turbo (Vehicles with air spoiler-From 1993 models]>



Removal steps

1. Air spoiler
   (Refer to GROUP 51 – Aero Parts.)
- ☒ 2. High mounted stop light

16A1277



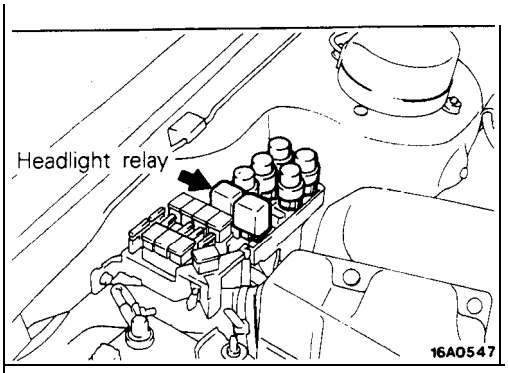
16F0169

SERVICE POINTS OF REMOVAL

2. HIGH MOUNTED STOP LIGHT <Turbo and Non-turbo (Vehicles with air spoiler-From 1993 models)>

To remove the high mounted stop light, first remove the air spoiler center stay installation screws.

TSB Revision



RELAY

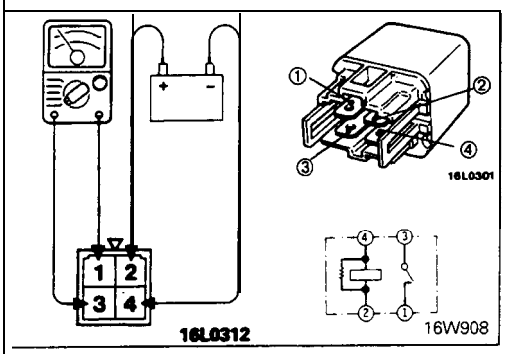
M541SAG

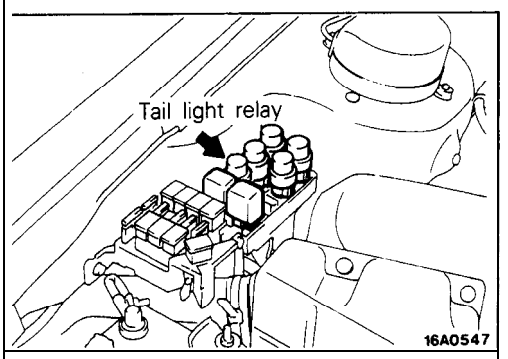
INSPECTION

HEADLIGHT RELAY

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

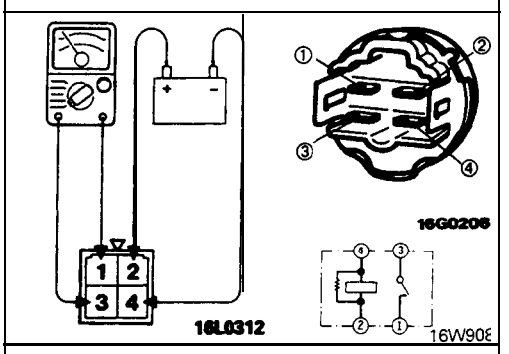


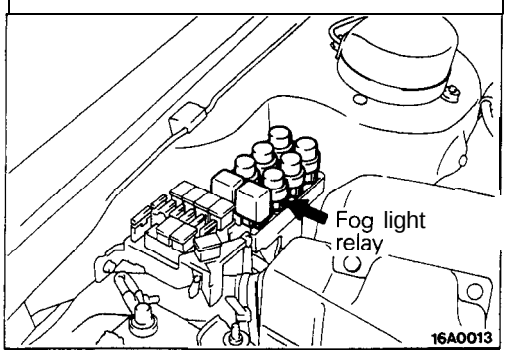


TAILLIGHT RELAY

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

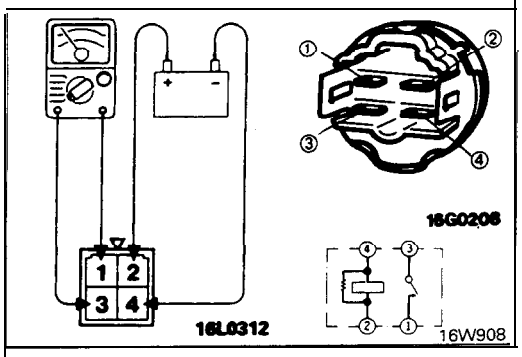




FOG LIGHT RELAY

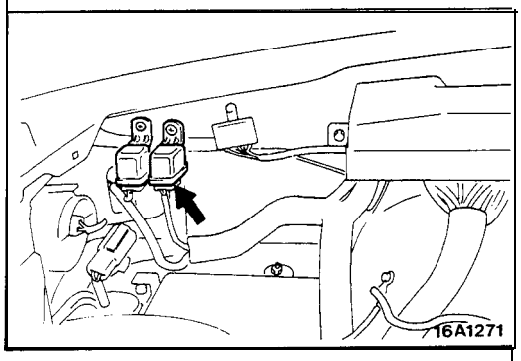
(1) Take out the fog light relay from the engine compartment relay box.

TSB Revision



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

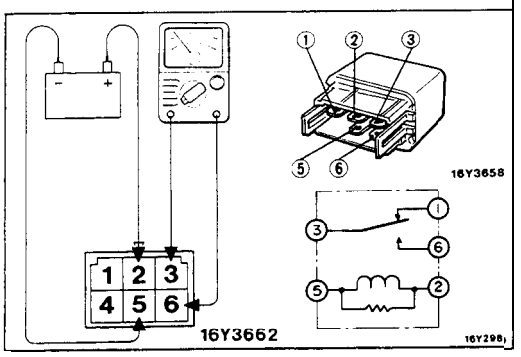
Power is supplied	1–3 terminals	Continuity
Power is not supplied	1–3 terminals	No continuity
	2–4 terminals	Continuity



THEFT-ALARM HEADLIGHT RELAY

(1) Remove theft-alarm headlight relay.
(2) Connect battery to terminal 2 and check continuity between terminals with terminal 5 grounded.

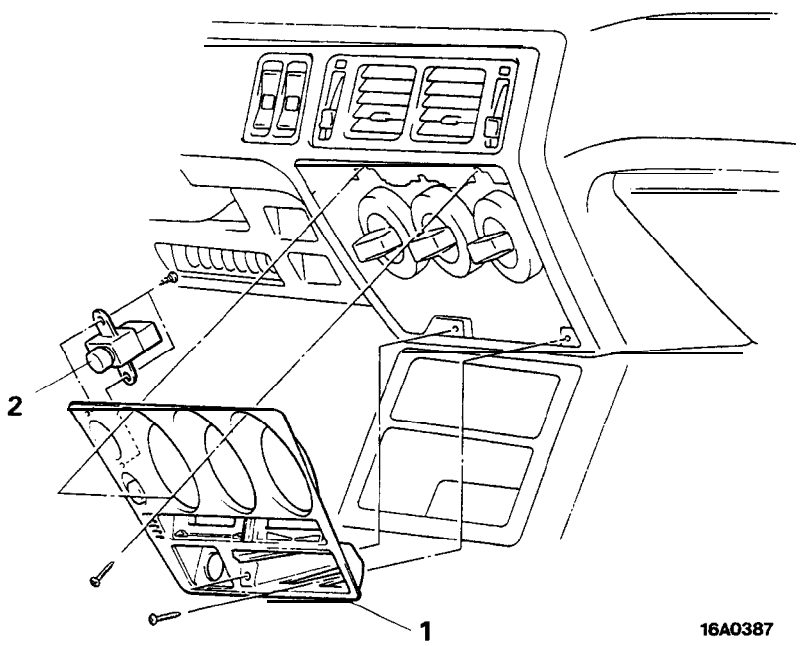
Power is supplied	3-6 terminals	Continuity
Power is not supplied	3-6 terminals	No continuity
	1–3 terminals	Continuity
	2-5 terminals	



HAZARD SWITCH

REMOVAL AND INSTALLATION

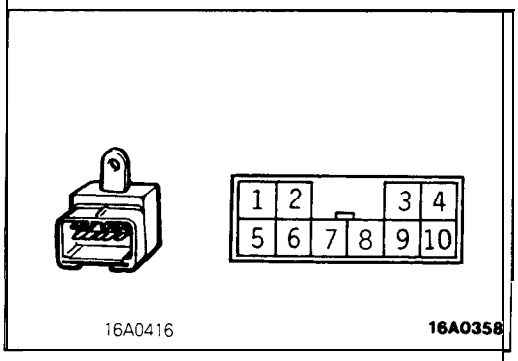
M5410AI



Removal steps

1. Heater control panel assembly (Refer to P.54-108.)
2. Hazard switch

TSB Revision



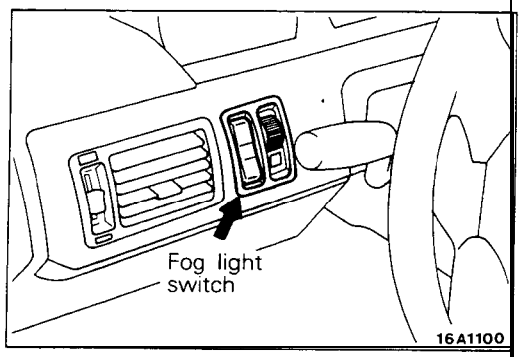
16A0416 16A0358

INSPECTION

Operate the switch to check for continuity between terminals.

Switch position \ Terminal	1	2	3	4	5	6	7	9	10
OFF					o	o		Illumination	
ON	o	o	o	o	o	o			

NOTE
o-o indicates that there is continuity between the terminals



16A1100

FOG LIGHT SWITCH

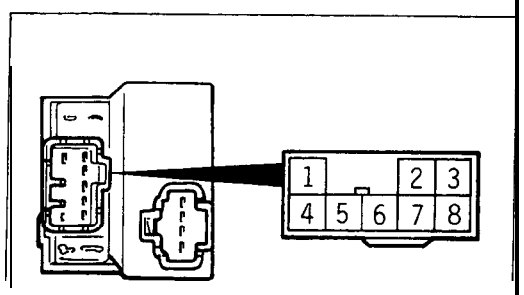
M54IYAA

INSPECTION

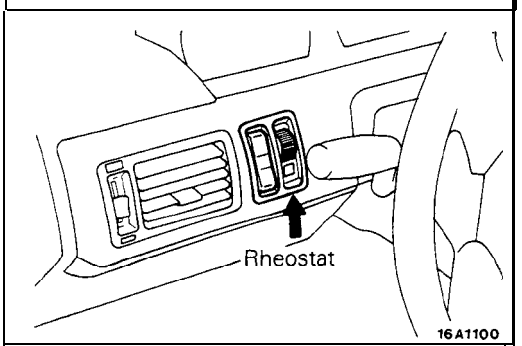
Operate the switch to check for continuity between terminals.

Switch Position \ Terminal	1	3	4	5	Illumination	6	7	Indication	8
OFF			o		o		o		
ON	o	o	o	o	o	o	o	o	o

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



16A0235 16A0195



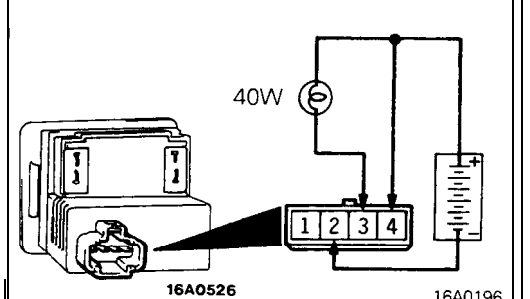
16A1100

RHEOSTAT

M54IRAK

INSPECTION

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



16A0526 16A0196

TSB Revision

COLUMN SWITCH

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54JBAC

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
Voltage drop V	0.2 or less
Windshield wipers and washer switch	
Rated load A	
Wiper switch	4
Washer switch	Max. 4
Intermittent wiper switch	
Operation mode	
Type 1	Fixed-timing intermittent wipers
Type 2	Adjustable-timing intermittent wipers
Type 3 <Vehicles with ETACS>	Vehicle speed-sensing intermittent wipers with interval varying function
Intermittent interval sec	
Type 1	4
Type 2	Approx. 3– 12
Type 3	2-21
Auto cruise control switch	
Rated load A	
SET	0.1–0.3
RESUME	0.1–0.3
Voltage drop V	0.2 or less
Horn switch	
Rated load A	Max. 6

TORQUE SPECIFICATIONS

M54JC--

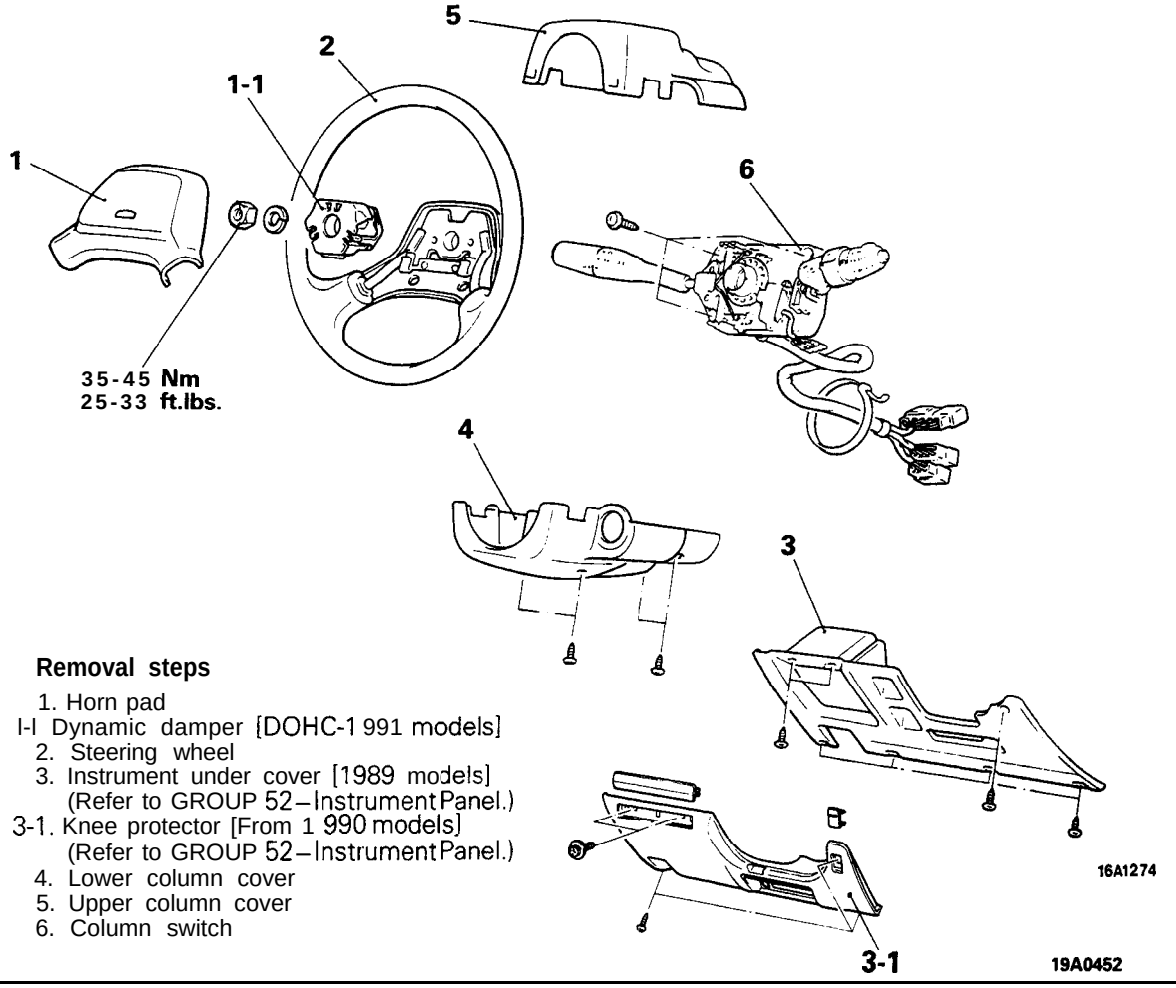
Items	Nm	ft.lbs.
Steering wheel lock nut	35-45	25-33

TSB Revision

COLUMN SWITCH

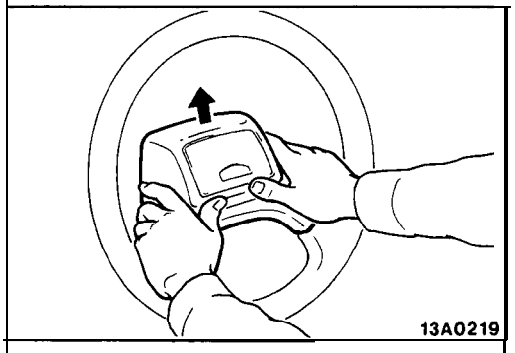
M54JJAK

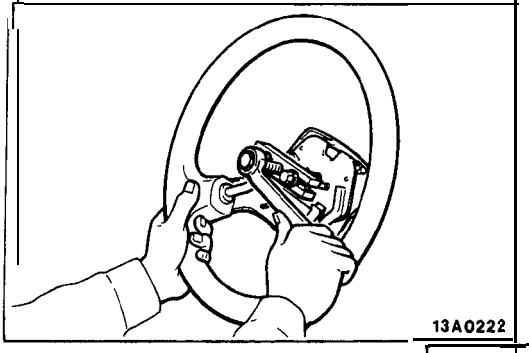
REMOVAL AND INSTALLATION



Removal steps

◆◆ 1. Horn pad
I-I Dynamic damper [DOHC-1 991 models]
◆◆ 2. Steering wheel
3. Instrument under cover [1989 models]
(Refer to GROUP 52–Instrument Panel.)
3-1. Knee protector [From 1 990 models]
(Refer to GROUP 52–Instrument Panel.)
4. Lower column cover
5. Upper column cover
6. Column switch





SERVICE POINTS OF REMOVAL

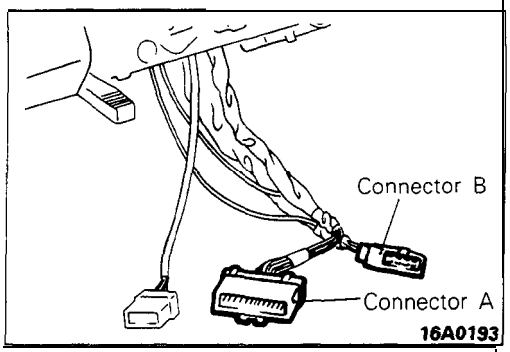
1. REMOVAL OF HORN PAD

The horn pad can be removed by pressing upward.

2. REMOVAL OF STEERING WHEEL

Use a steering wheel puller to remove the steering wheel

TSB Revision

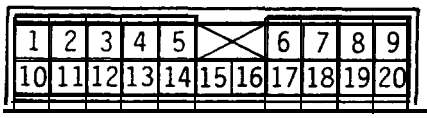


INSPECTION

(1) Remove the knee protector or instrument under cover and the lower column cover.
(2) Disconnect the column switch connector and check the continuity between the terminals for each switch.

LIGHTING SWITCH

Operate the switch and check the continuity between the terminals



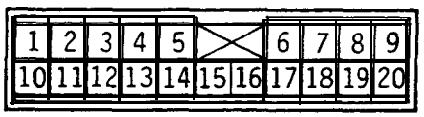
Connector A
16A0192

Switch position \ Terminal	3	12	13
OFF			
≡DO≡	o		o
≡D	o		o

NOTE
c-o indicates that there is continuity between the terminals.

TURN SIGNAL SWITCH

Operate the switch and check the continuity between the terminals.



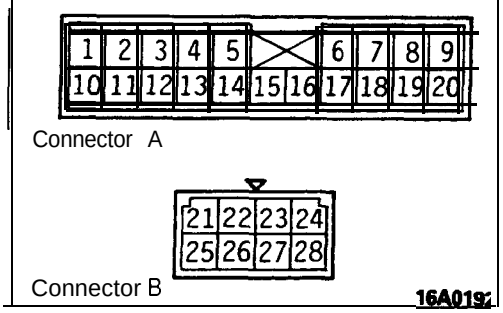
Connector A
16A0192

Switch position \ Terminal	14	15	16
Left	o	o	
Neutral			
Right	o		o

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

DIMMER/PASSING SWITCH

Operate the switch and check the continuity between the terminals.



Switch position \ Terminal		11	21	25	26
Dimmer switch	High			o	o
	Low		o		o
Passing switch		o		o	o

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

WIPER/WASHER SWITCH

Refer to GROUP 51–Wiper and Washer System.

AUTO-CRUISE CONTROL SWITCH

Refer to GROUP 13–Auto-cruise Control System.

TSB Revision

HORN

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54LB--

Items		Specifications
Type		Flat type
Effective sounding voltage	V	11.5-15
Power consumption	A	
Horn		3.0
Theft-alarm horn		3.5
Sound level	dB	
Horn		
"low" sound		100–112
"High" sound		100–112
Theft-alarm horn		105–115
Fundamental frequency	HZ	
Horn		
"low" sound		370
"High" sound		415
Theft-alarm horn		430

TSB Revision

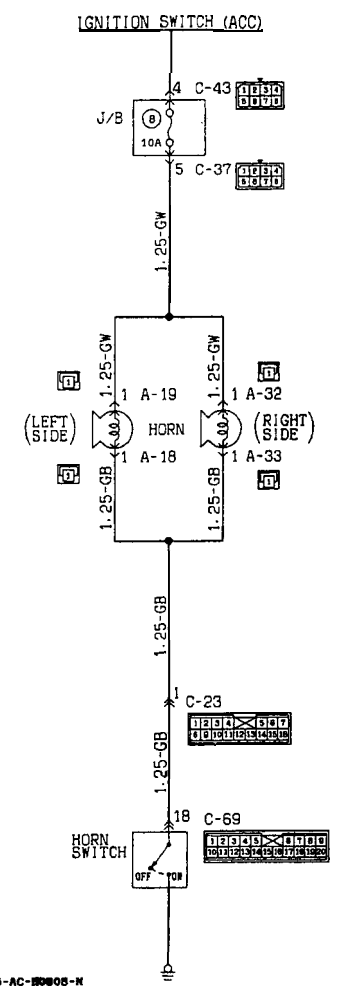
TROUBLESHOOTING

M54LHAH

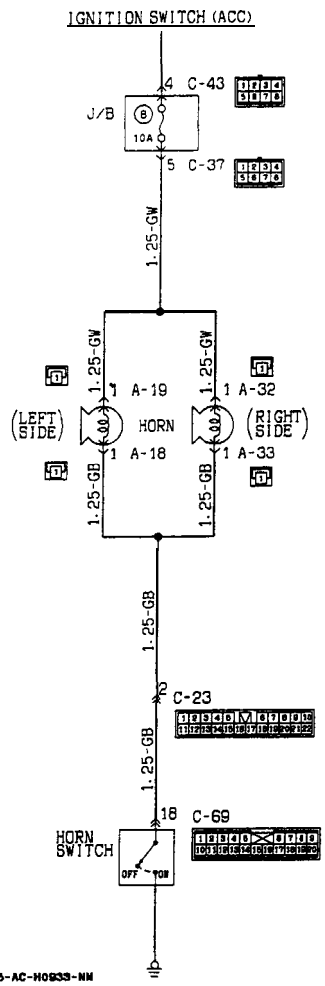
HORN CIRCUIT

CIRCUIT DIAGRAM

<1989 models>



<From 1990 models>



OPERATION

- When the ignition key is turned to the "ACC" or the "ON" position, battery voltage is constantly applied to the horn.
- When the horn switch is switched ON, electricity flows to multi-purpose fuse ⑧, the horn, the horn switch and ground.
- In this condition, electricity flows to multi-purpose fuse ⑧, the horn, the horn switch and ground, and horn sounds.

TROUBLESHOOTING HINTS

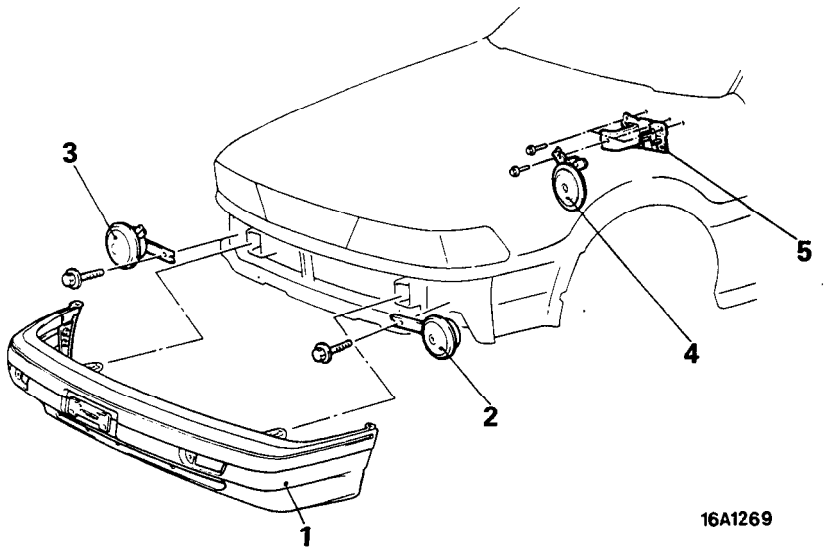
1. One of the horns does not sound.
   - Check the horn.
2. Horns do not sound.
   - Check the horn switch.
   - Check the multi-purpsoe fuse ⑧.

TSB Revision

HORN

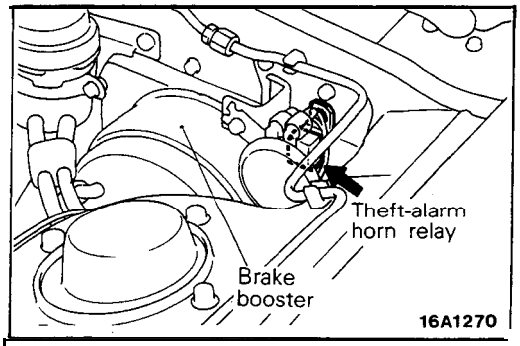
M54LJAN

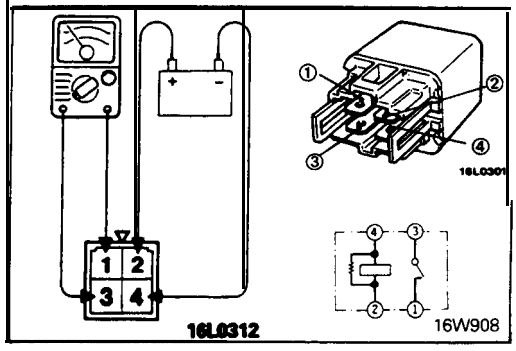
REMOVAL AND INSTALLATION



Removal steps

1. Front bumper
   (Refer to GROUP 51 -Bumper.)
2. Horn (high sound)
3. Horn (low sound)
4. Theft-alarm horn
5. Theft-alarm horn bracket





RELAY

INSPECTION

THEFT-ALARM HORN RELAY

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

TSB Revision

CIGARETTE LIGHTER

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54MB-A

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

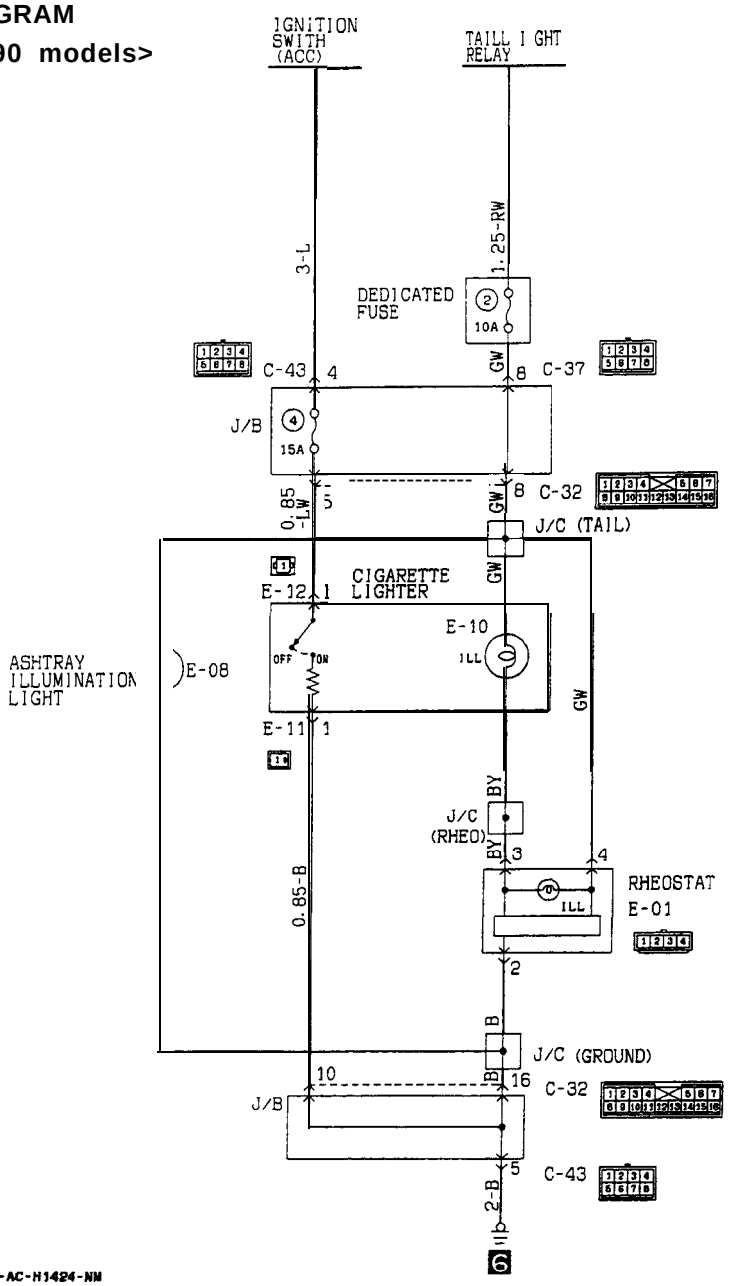
TROUBLESHOOTING

M54MHCB

CIGARETTE LIGHTER CIRCUIT

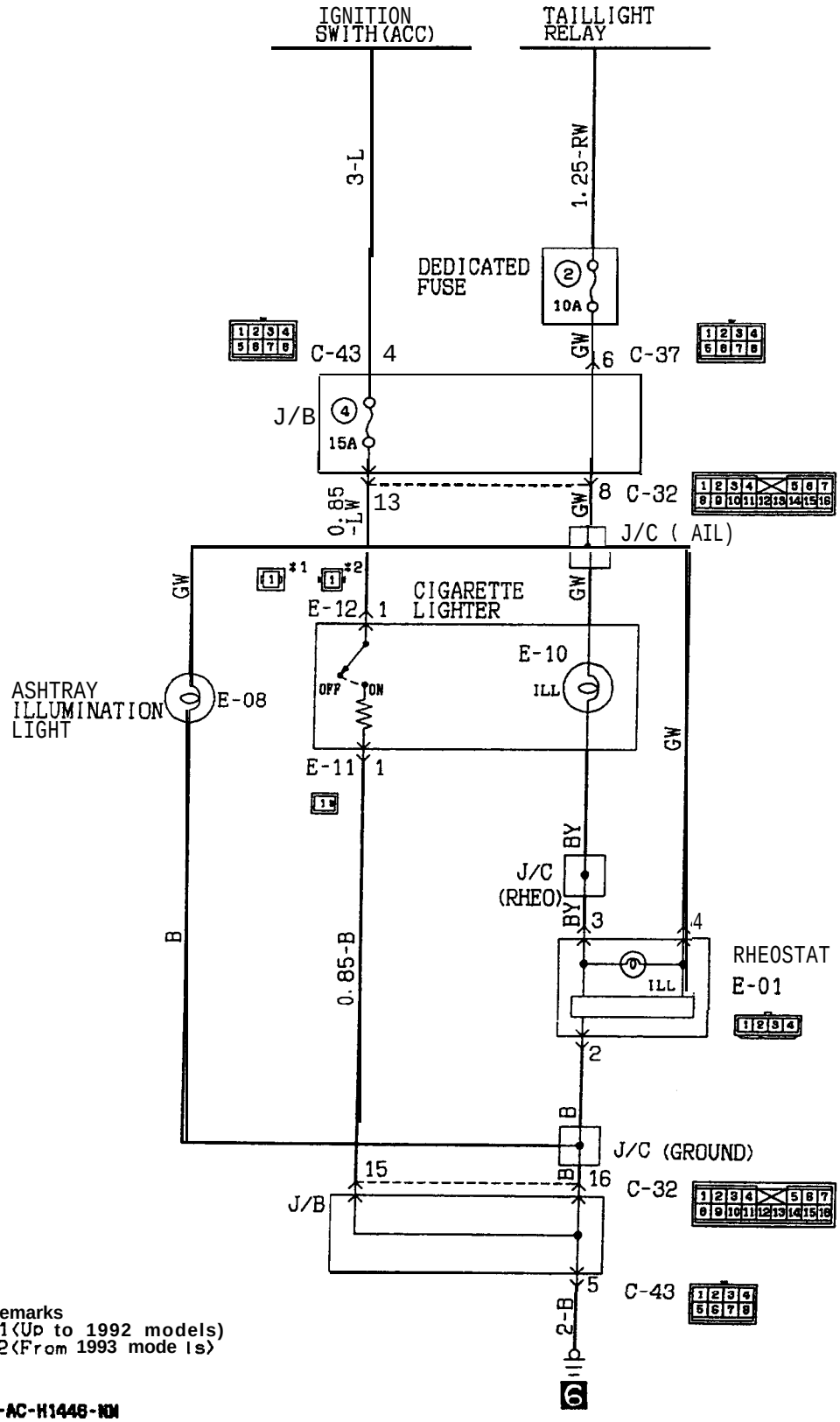
CIRCUIT DIAGRAM

<Up to 1990 models>



TSB Revision

<From 1.991 models>



Remarks
*1(Up to 1992 models)
*2(From 1993 models)

KX35-AC-H1446-KM

TSB Revision

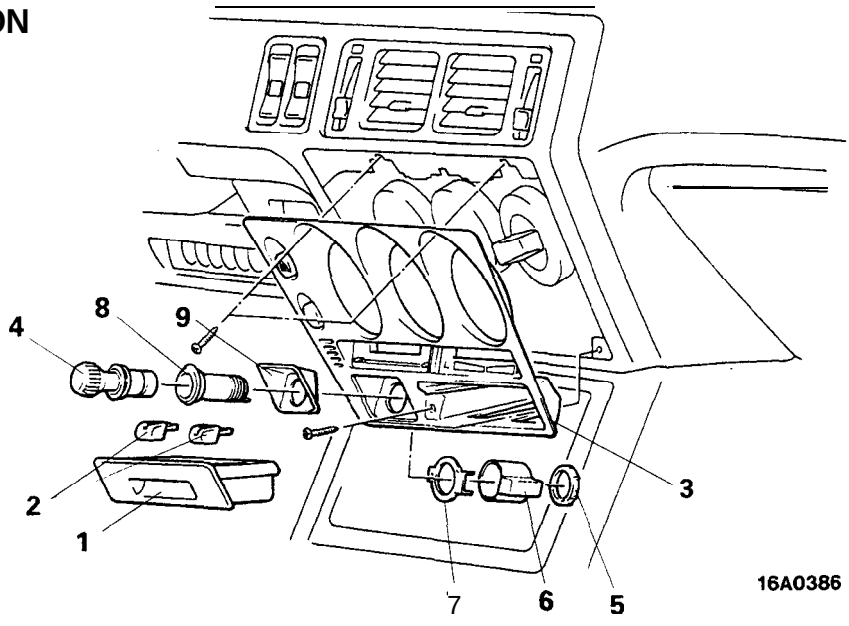
CIGARETTE LIGHTER

M54MJAI

REMOVAL AND INSTALLATION

Removal steps

1. Ashtray
2. Heater control knob
3. Heater panel
4. Plug
5. Fixing ring
6. Socket case
7. Plate
8. Socket
9. Protector



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 accesories 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

CLOCK

SPECIFICATIONS

GENERAL SPECIFICATIONS

M54MB--

Item	Specification
Type	Crystal oscillator
Display method	Fluorescent digital display
Standard error (seconds/day)	±2 [at 20°C (68°F)]

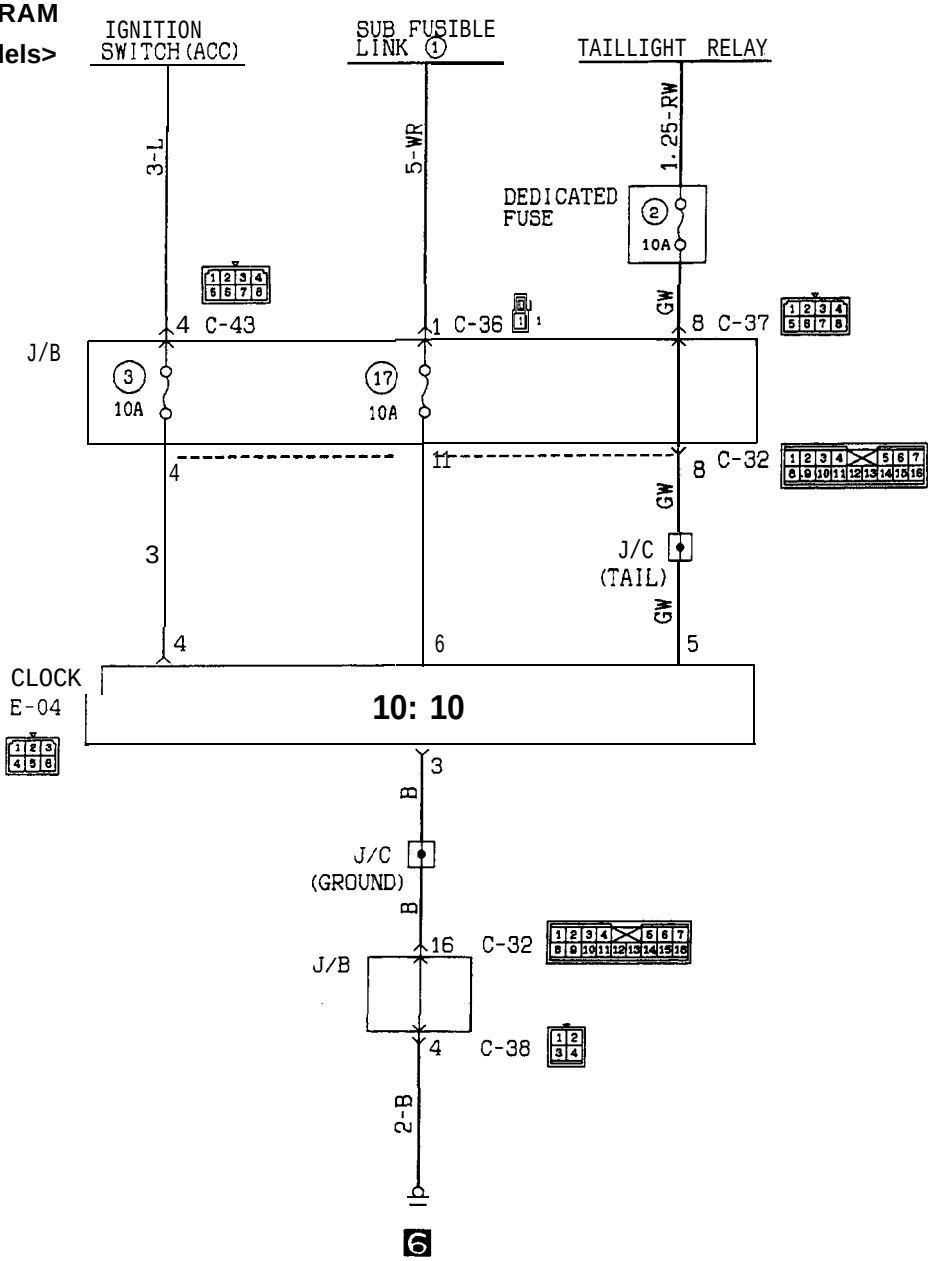
TROUBLESHOOTING

M54MHAEa

CLOCK CIRCUIT

CIRCUIT DIAGRAM

< 1989 models>



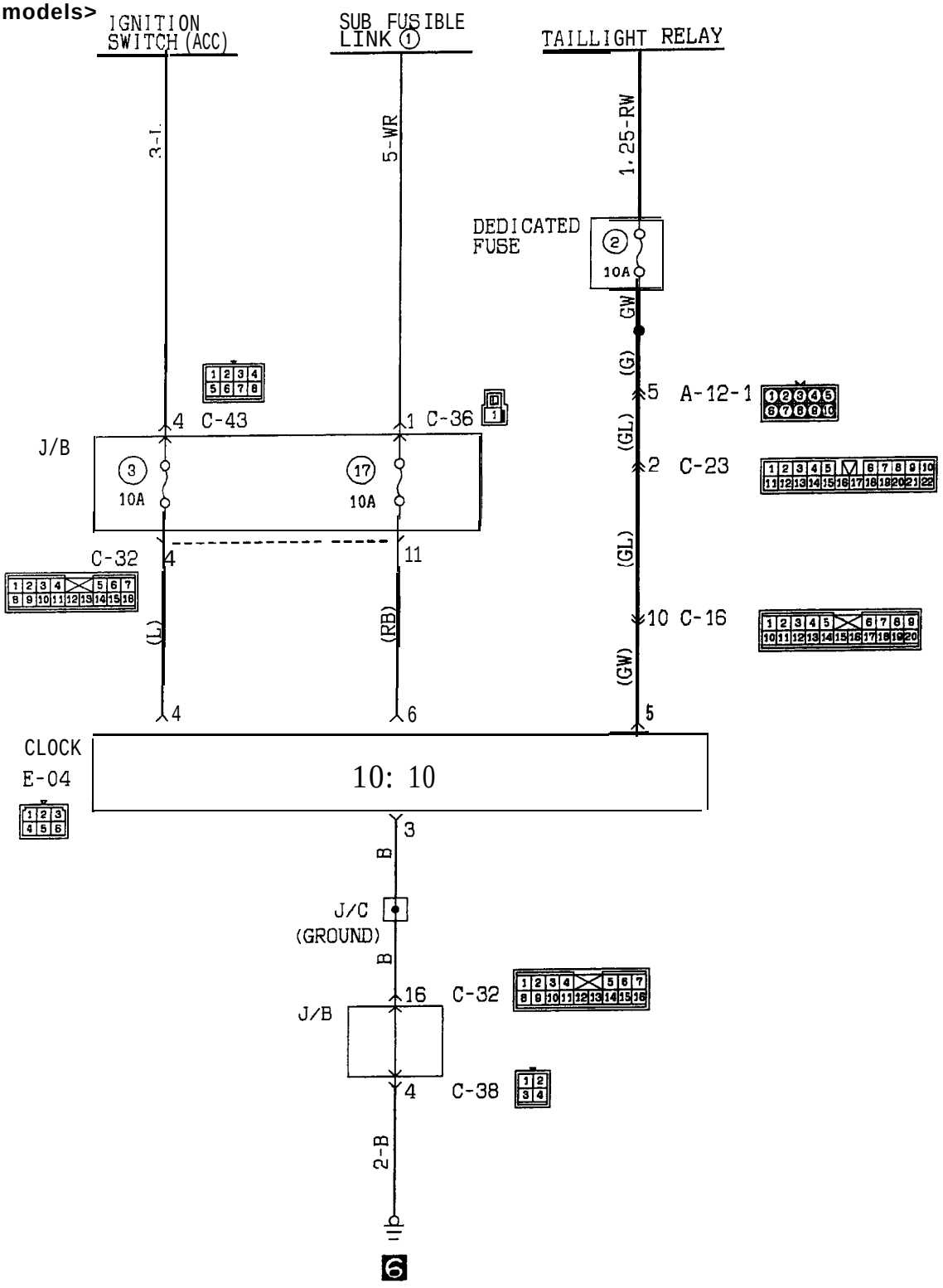
KX35-AC-H1406-N

TSB Revision

CLOCK CIRCUIT

CIRCUIT DIAGRAM

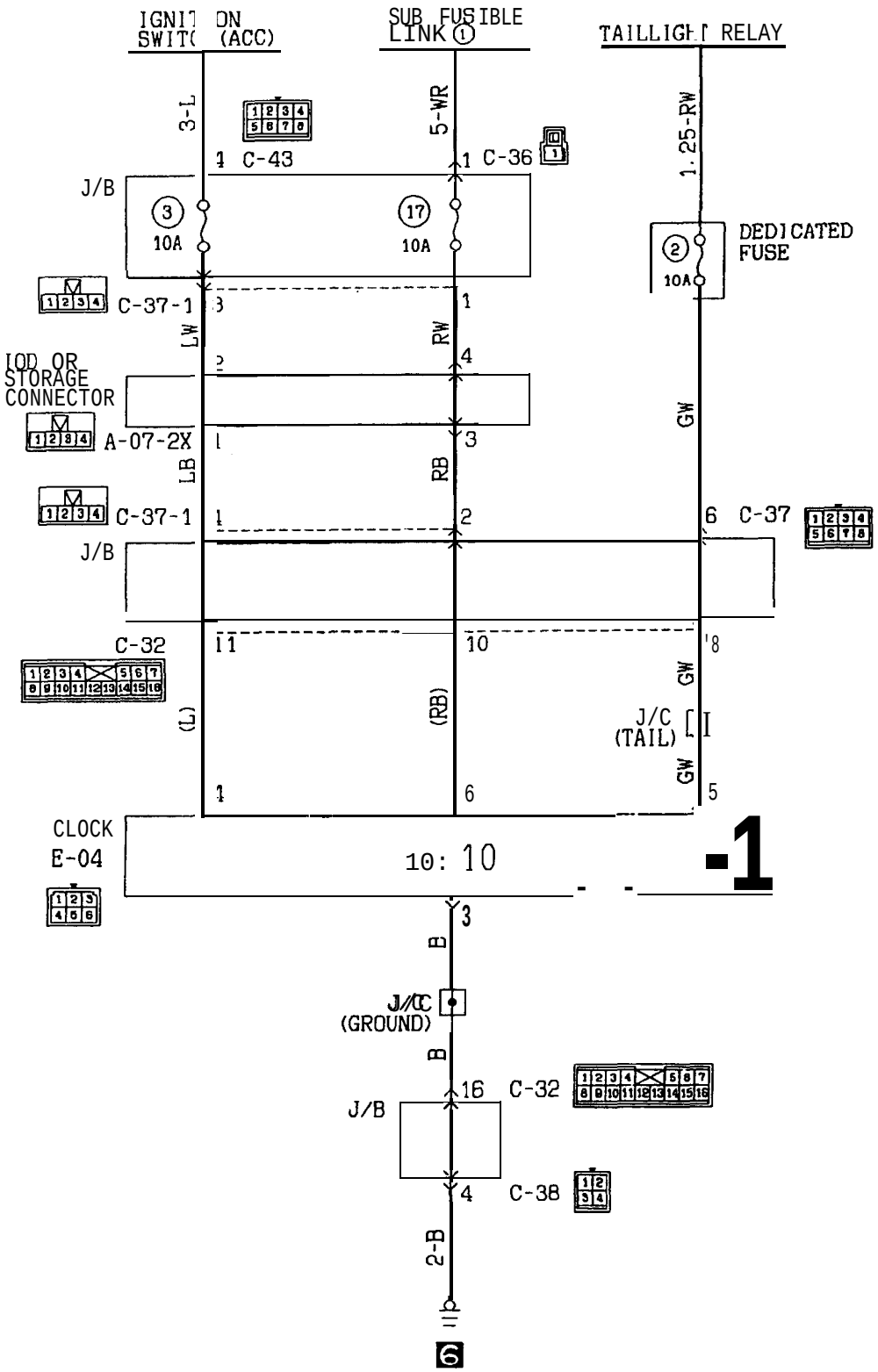
<1990 models>



KX35-AC-H1425-NN

TSB Revision

<From 1991 models>



KX35-AC-H1443-NN

AUDIO SYSTEM

SPECIFICATIONS

TORQUE SPECIFICATIONS

M54ND--

items	Nm	ft.lbs.
Motor antenna ring nut	1.5-2.5	1.1-1.8
Pole antenna mast	5-6	3.7-4.3

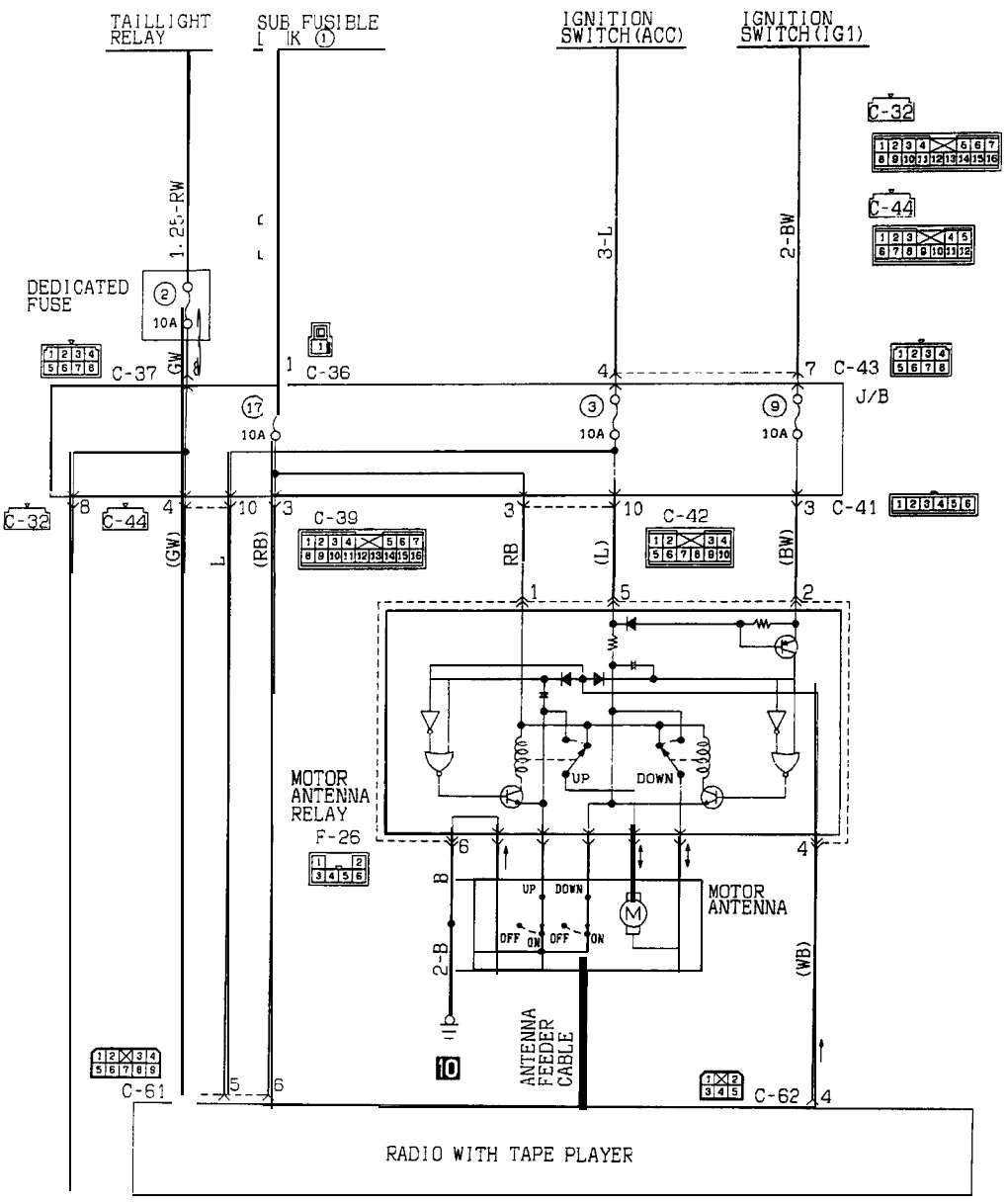
TROUBLESHOOTING

M54NHAQb

AUDIO SYSTEM

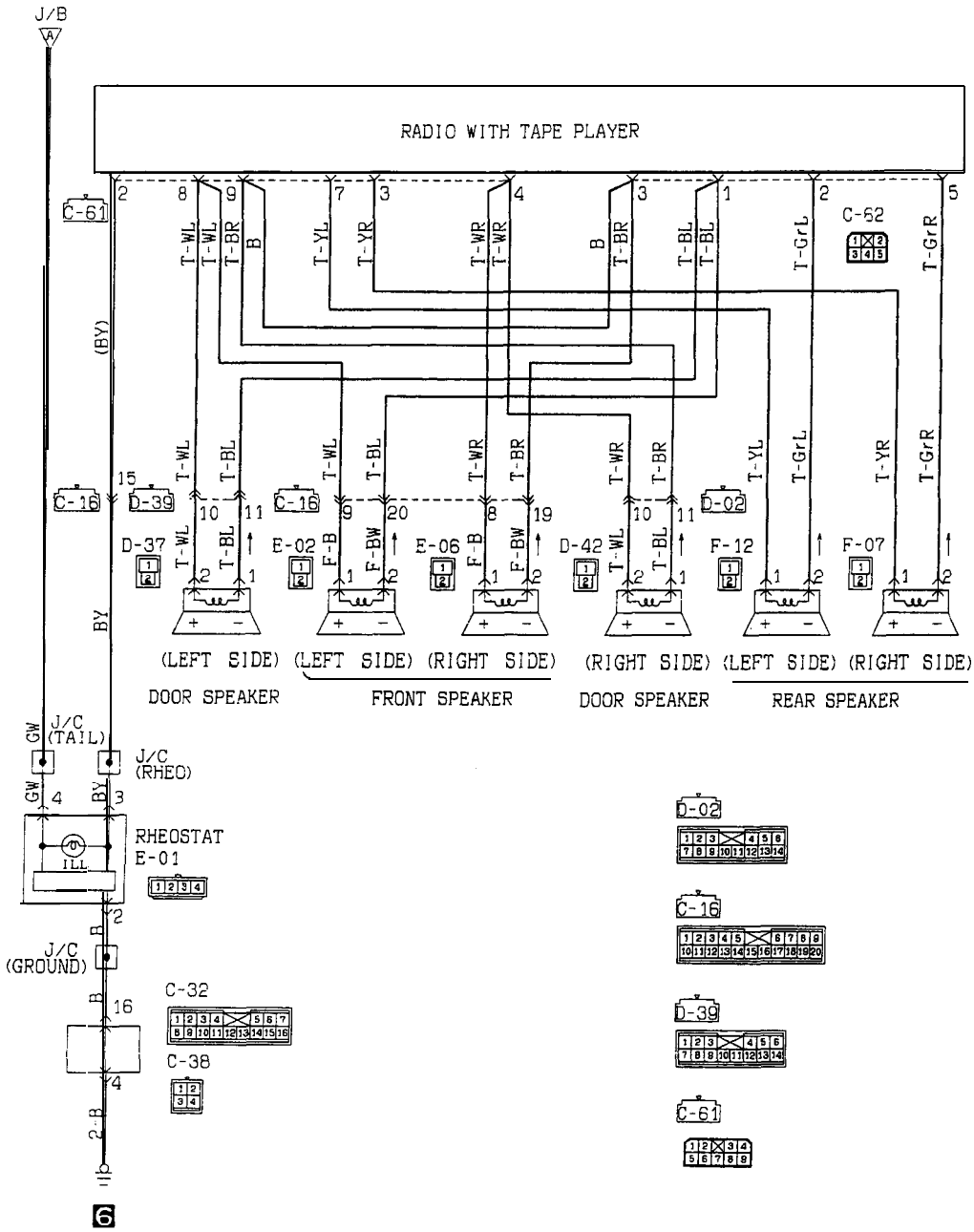
CIRCUIT DIAGRAM

<Vehicles without CD player (1989 models)>



35-AC-H1422-NM

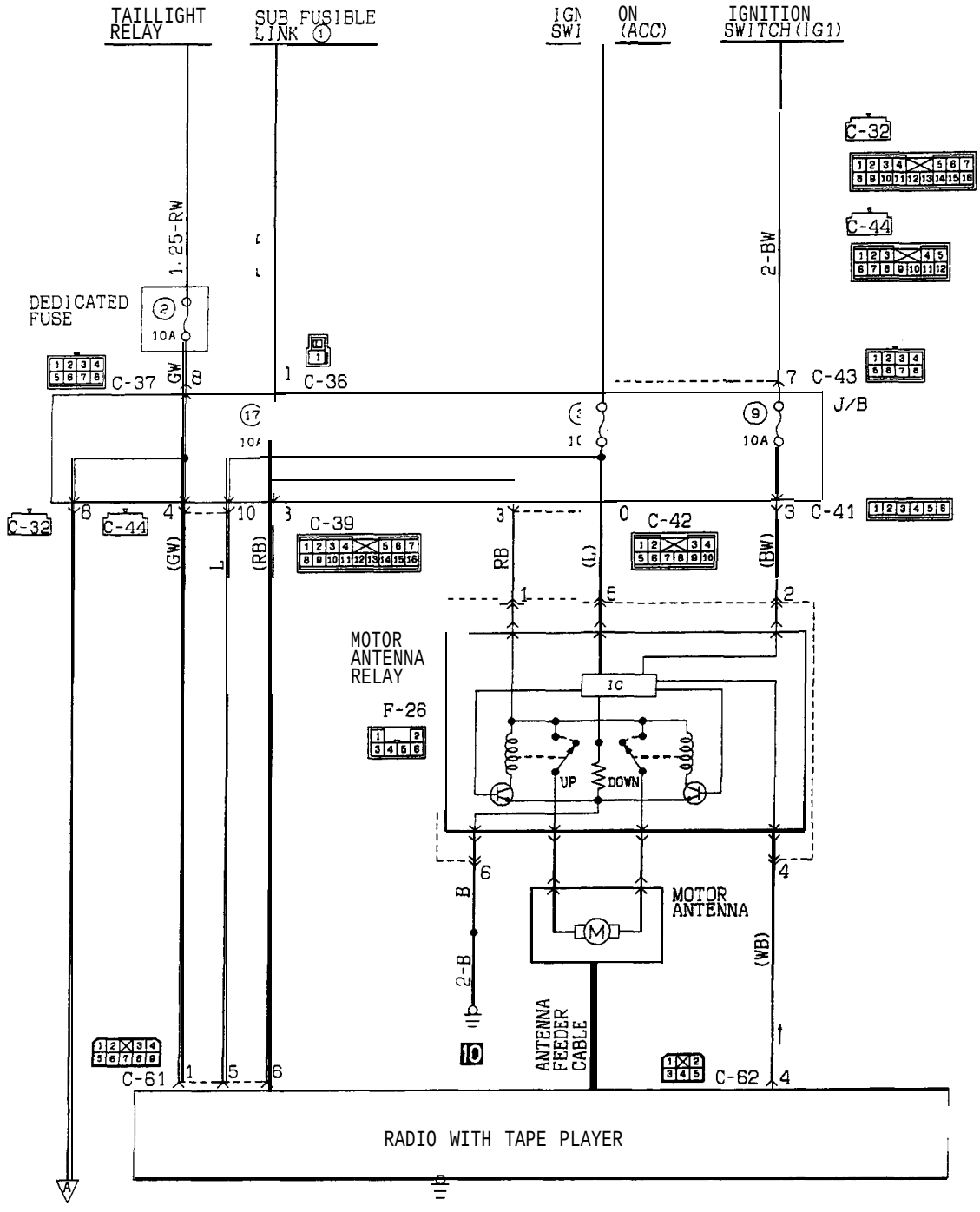
TSB Revision


J/B
RADIO WITH TAPE PLAYER
C-61
C-62
C-16
D-39
D-37
E-02
E-06
D-42
D-02
F-12
F-07
(LEFT SIDE) (LEFT SIDE) (RIGHT SIDE) (RIGHT SIDE) (LEFT SIDE) (RIGHT SIDE)
DOOR SPEAKER
FRONT SPEAKER
DOOR SPEAKER
REAR SPEAKER
J/C (TAIL)
J/C (RHEO)
RHEOSTAT E-01
ILL
J/C (GROUND)
C-32
C-38
6

AUDIO SYSTEM

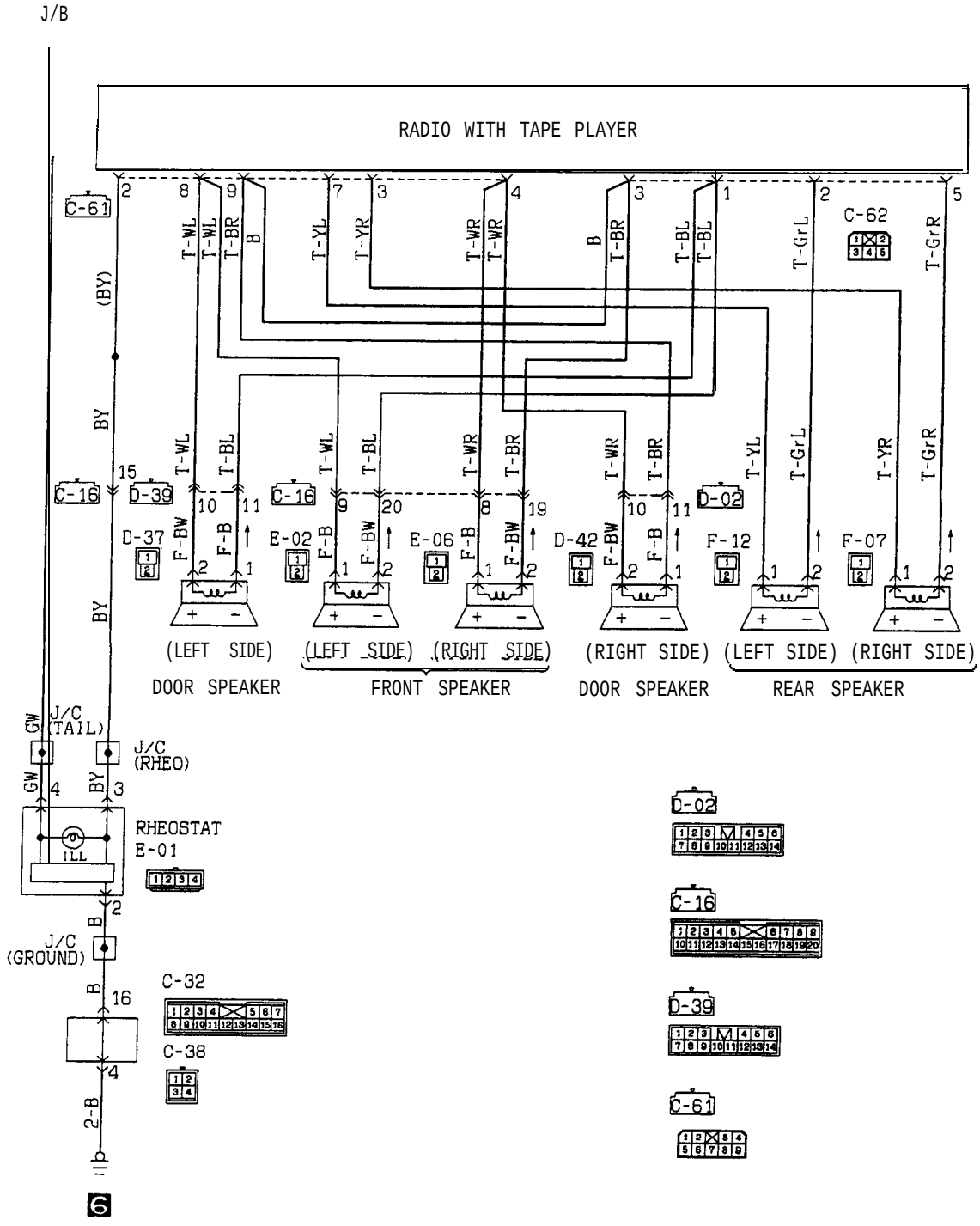
CIRCUIT DIAGRAM

<Vehicles without CD player (1990 models)>



KX35-AC-H1423-NM

TSB Revision

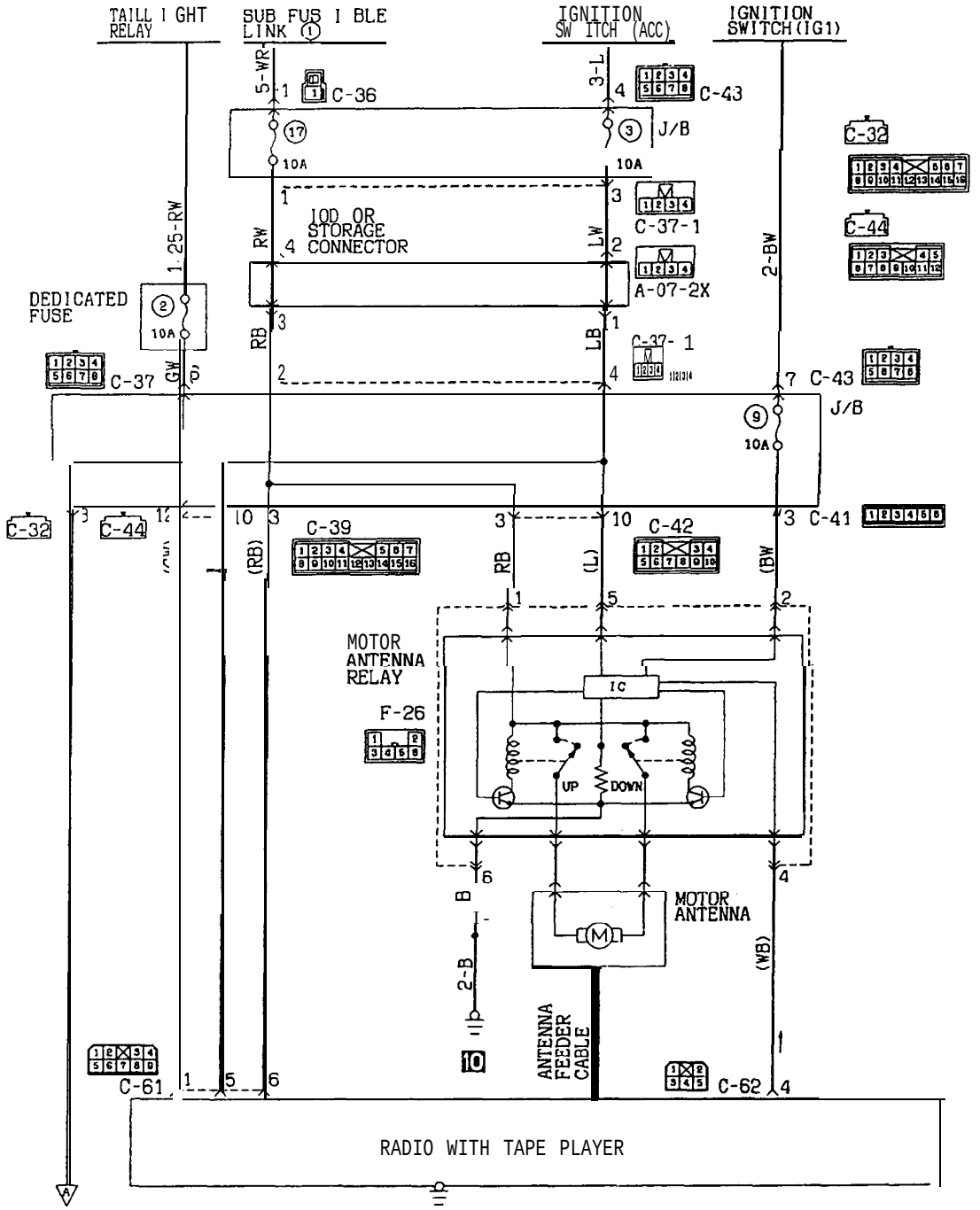


TSB Revision

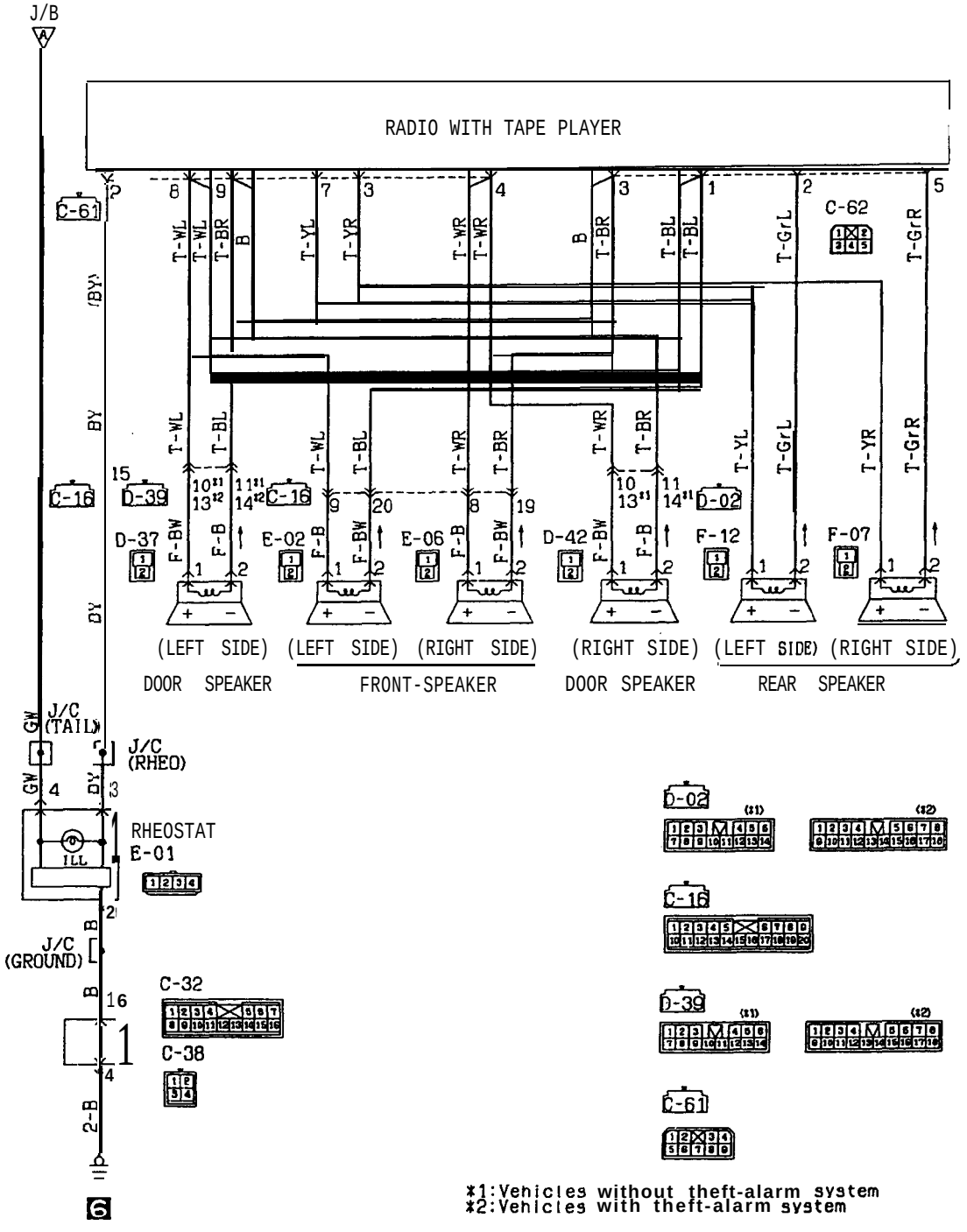
AUDIO SYSTEM

CIRCUIT DIAGRAM

<Vehicles without CD player (1991 and 1992 models)>



TSB Revision

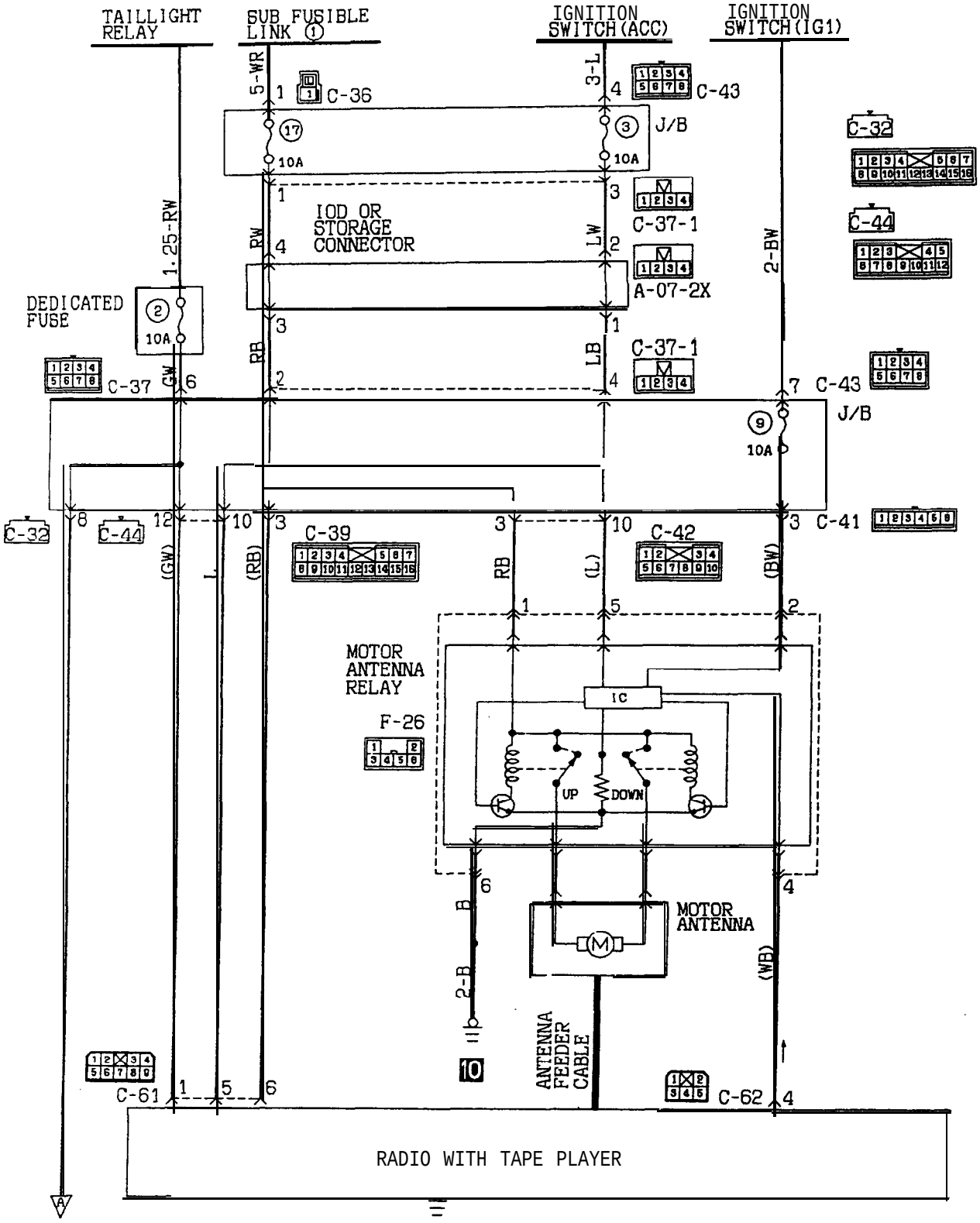


TSB Revision

AUDIO SYSTEM

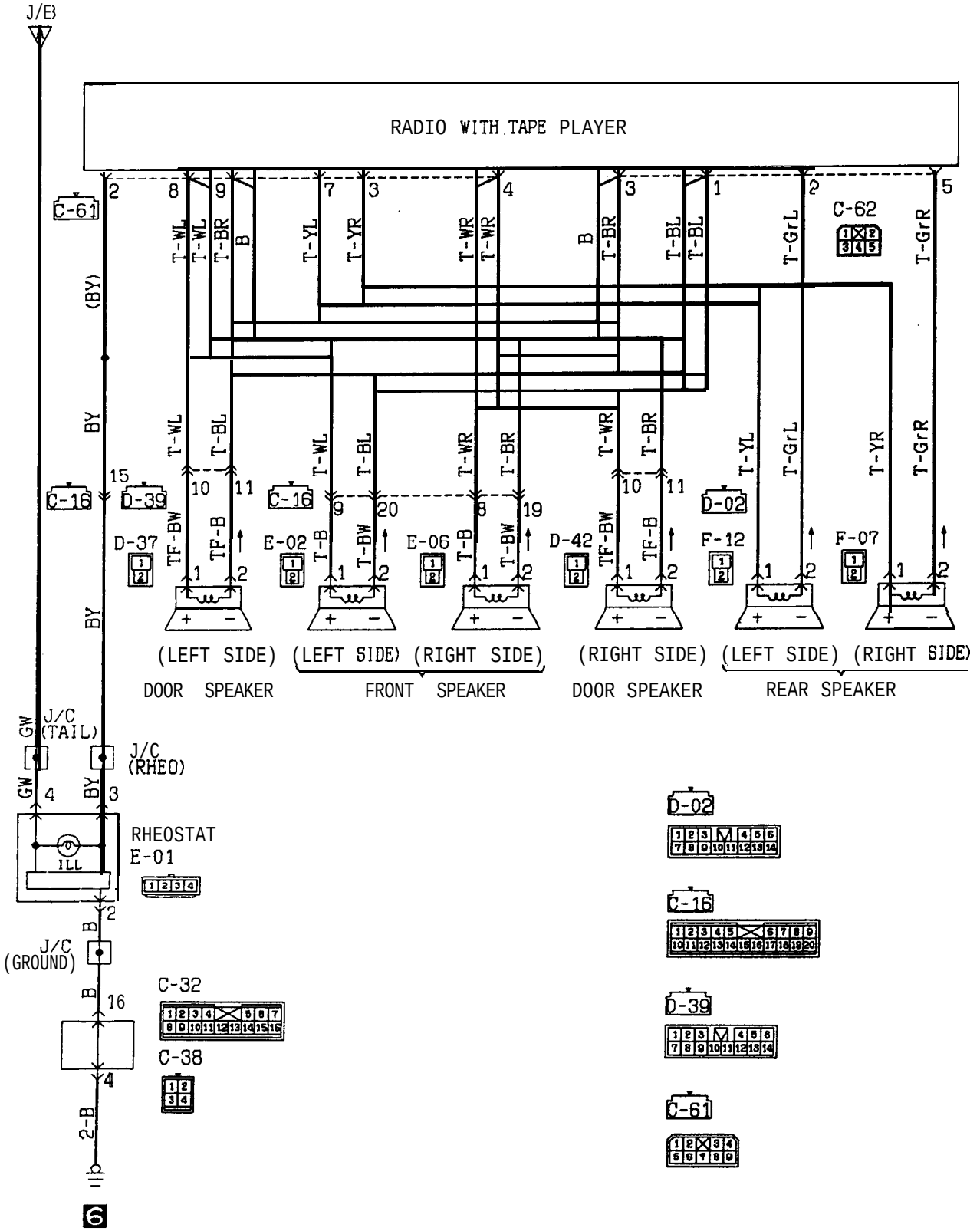
CIRCUIT DIAGRAM

<Vehicles without CD player (From 1993 models)>



KX35-AC-H1447-NN

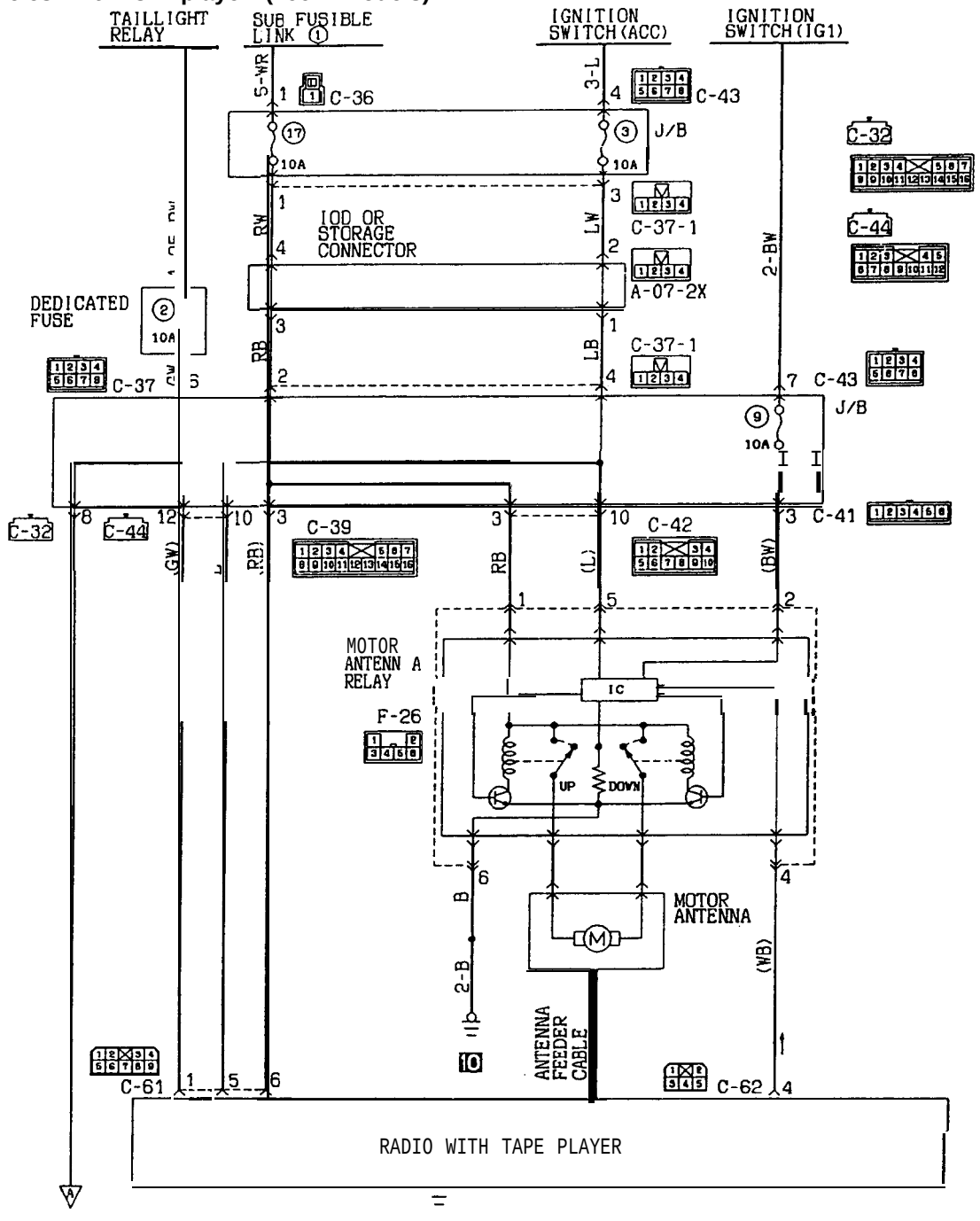
TSB Revision


J/B
RADIO WITH TAPE PLAYER
C-61
C-62
C-16
D-39
D-37
E-02
E-06
D-42
D-02
F-12
F-07
(BY)
BY
T-WL
T-BL
T-BR
B
T-YL
T-YR
T-WR
T-GrL
T-GrR
TF-BW
TF-B
T-B
T-BW
(LEFT SIDE) DOOR SPEAKER
(LEFT SIDE) (RIGHT SIDE) FRONT SPEAKER
(RIGHT SIDE) DOOR SPEAKER
(LEFT SIDE) (RIGHT SIDE) REAR SPEAKER
J/C (TAIL)
J/C (RHEO)
GW
RHEOSTAT E-01
ILL
J/C (GROUND)
C-32
C-38
2-B
6

AUDIO SYSTEM

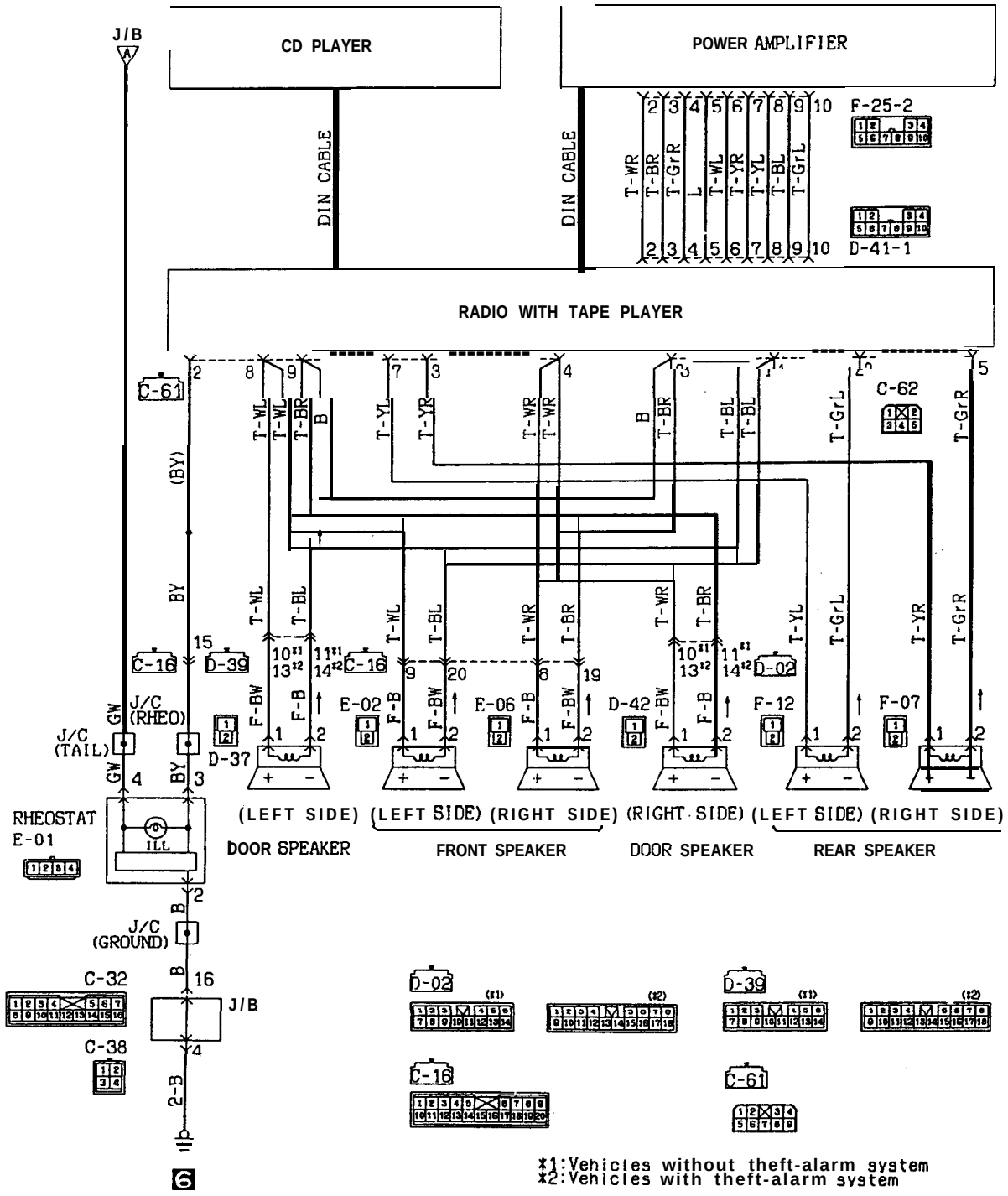
CIRCUIT DIAGRAM

<Vehicles with CD player (1991 models)>



KX35-AC-H1444-NX

TSB Revision

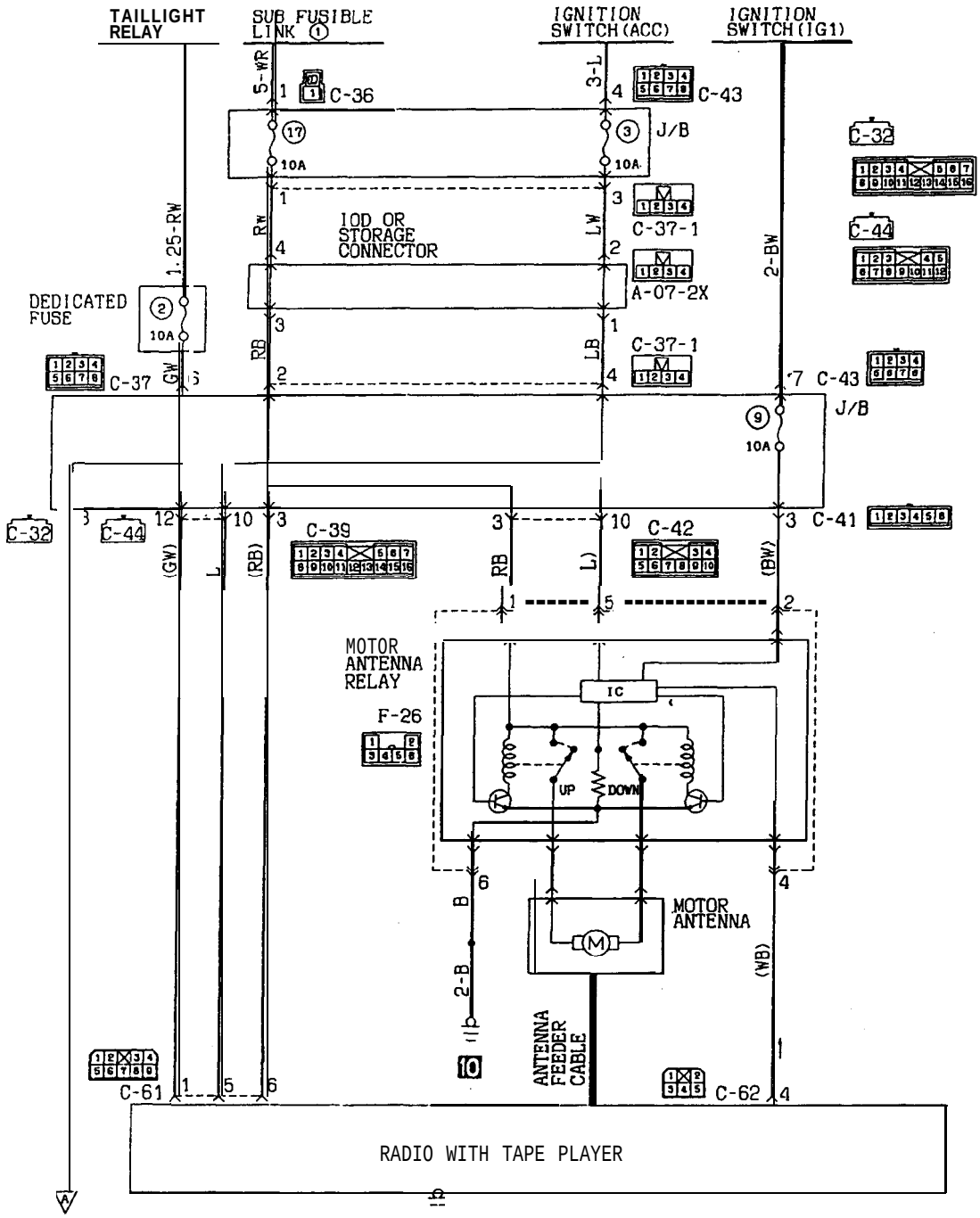


TSB Revision

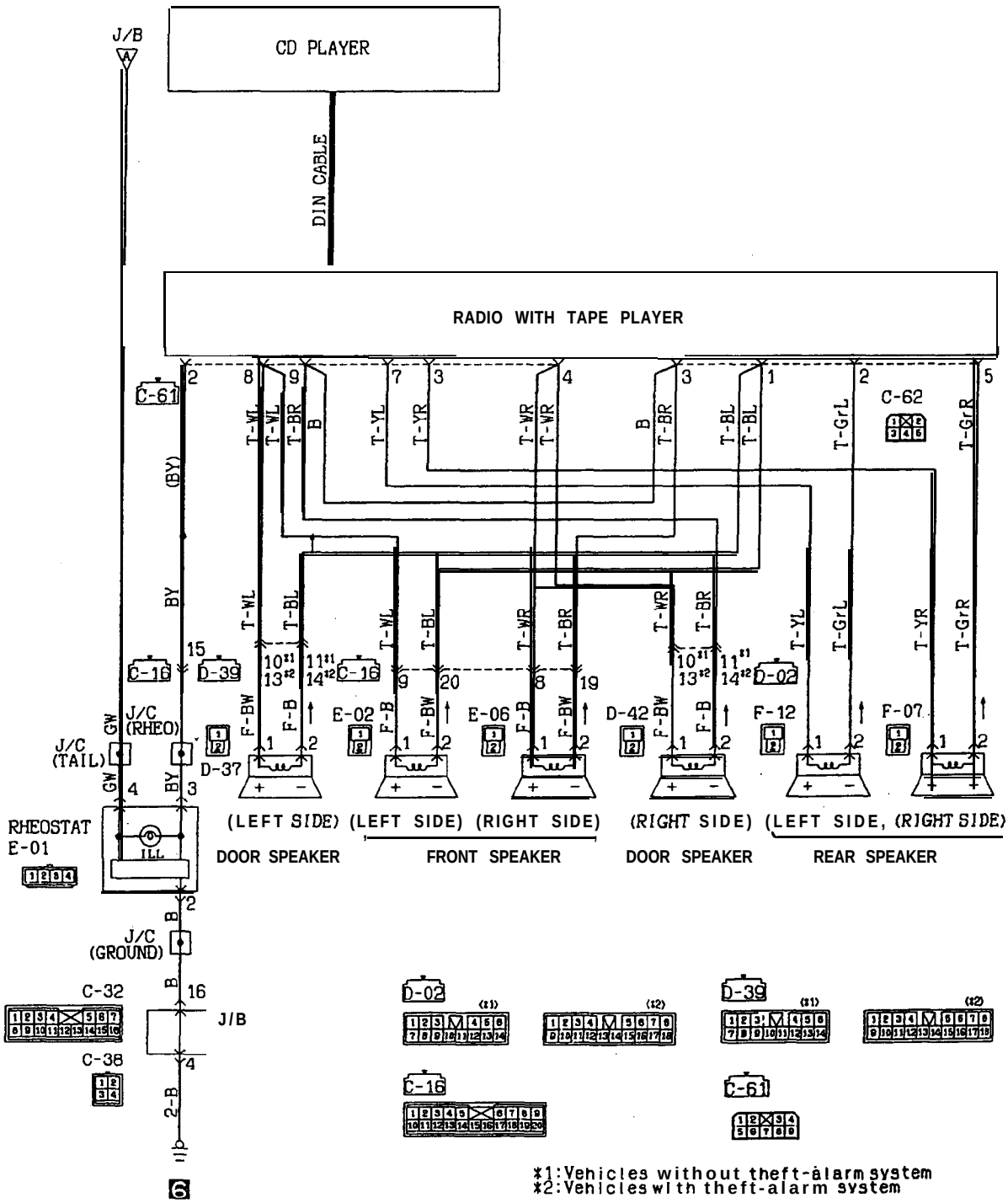
AUDIO SYSTEM

CIRCUIT DIAGRAM

<Vehicles with CD player (1992 models)>



TSB Revision



OPERATION

- When the radio power switch. is turned on with the ignition switch at “ACC” or “ON”, current flows through fuse No.3 radio, and ground, causing the radio to operate.
- For an electronically tuned radio, battery voltage is always supplied for use of the memory and other functions in the radio.

TSB Revision

TROUBLESHOOTING CHART

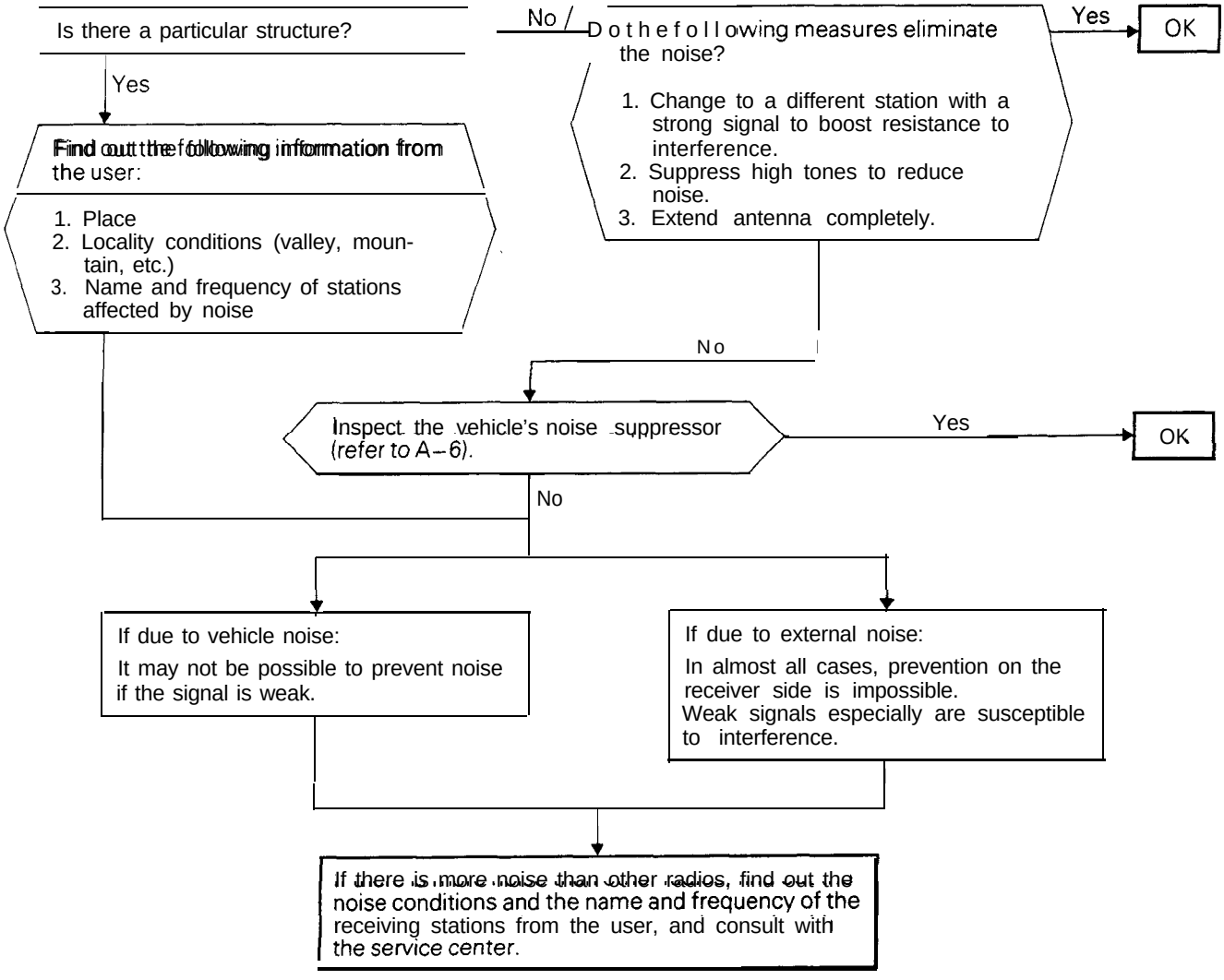
Item	Problem symptom	Relevant chart
A. Noise	1. Noise appears at certain places when traveling (AM).	A - I
	2. Noise appears at certain places when traveling (FM).	A–2
	3. Mixed with noise, only at night (AM).	A–3
	4. Broadcasts can be heard but both AM and FM have a lot of noise.	A–4
	5. There is more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

TSB Revision

CHART

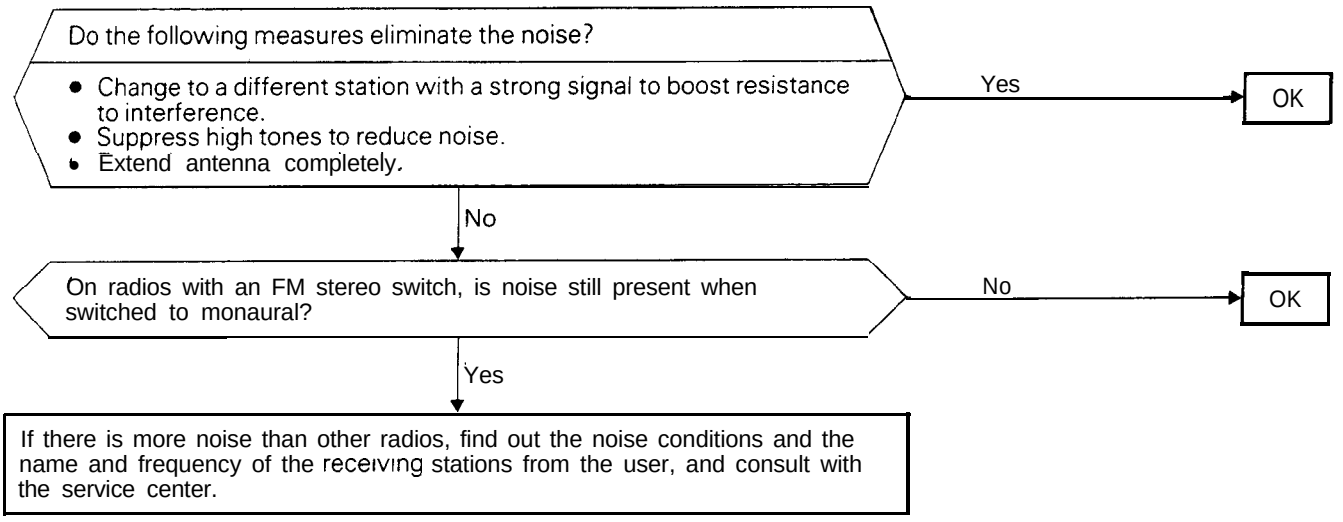
A. NOISE

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



TSB Revision

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



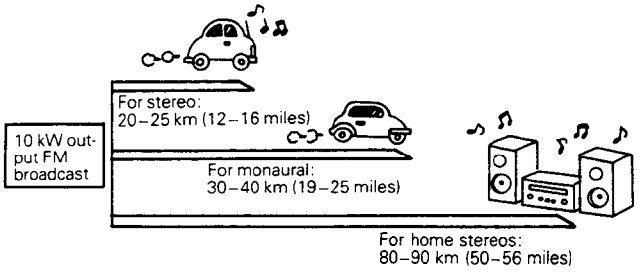
NOTE

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



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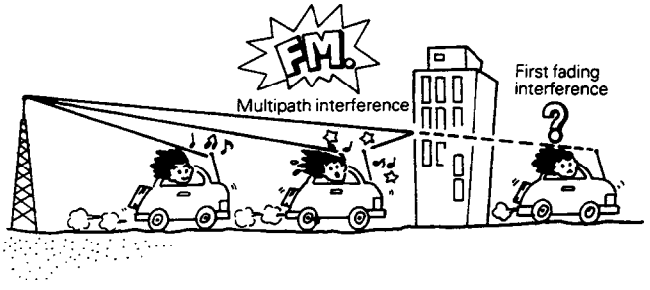
FM Signal Characteristics and Signal Interference



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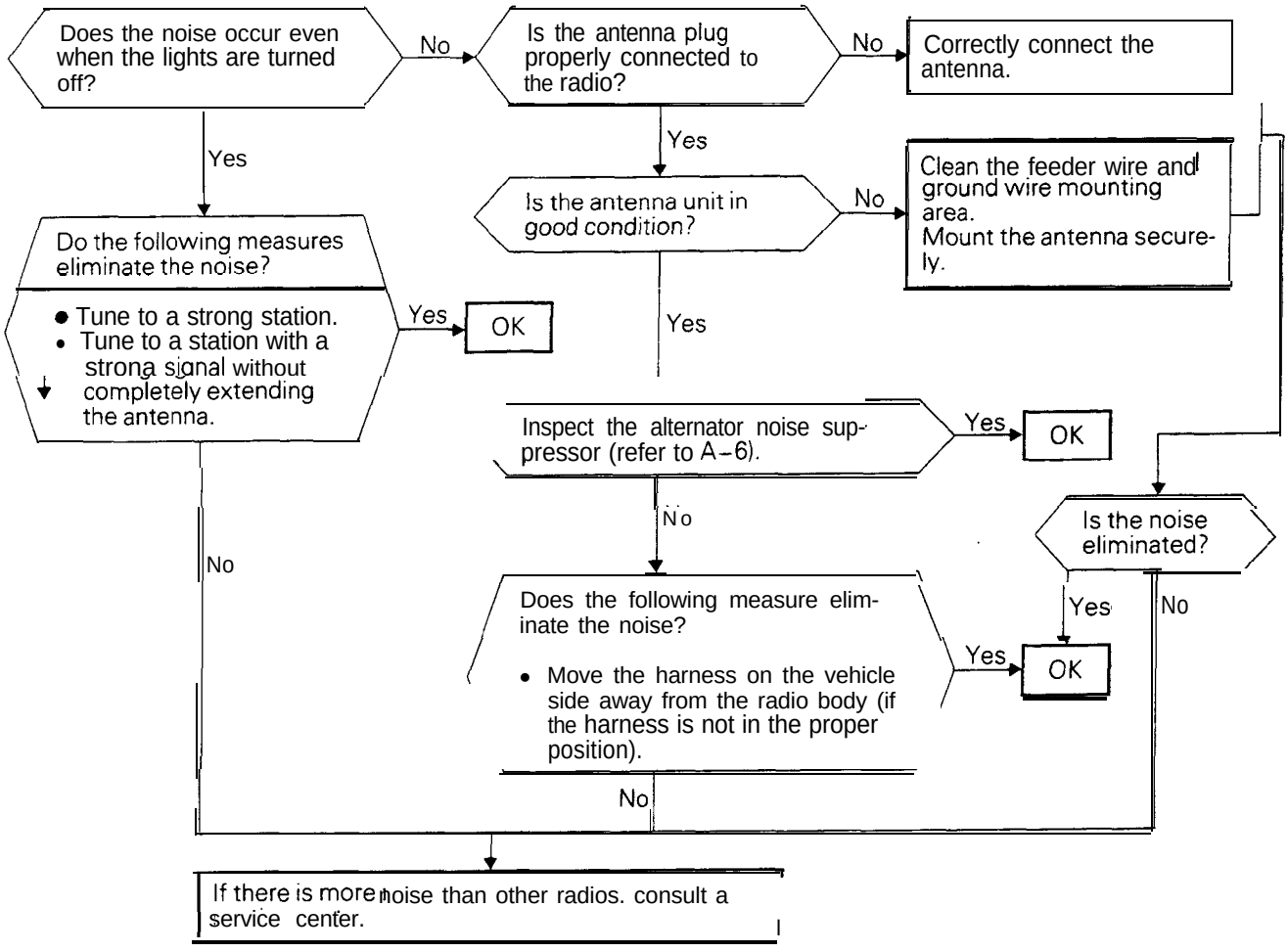
TSB Revision

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

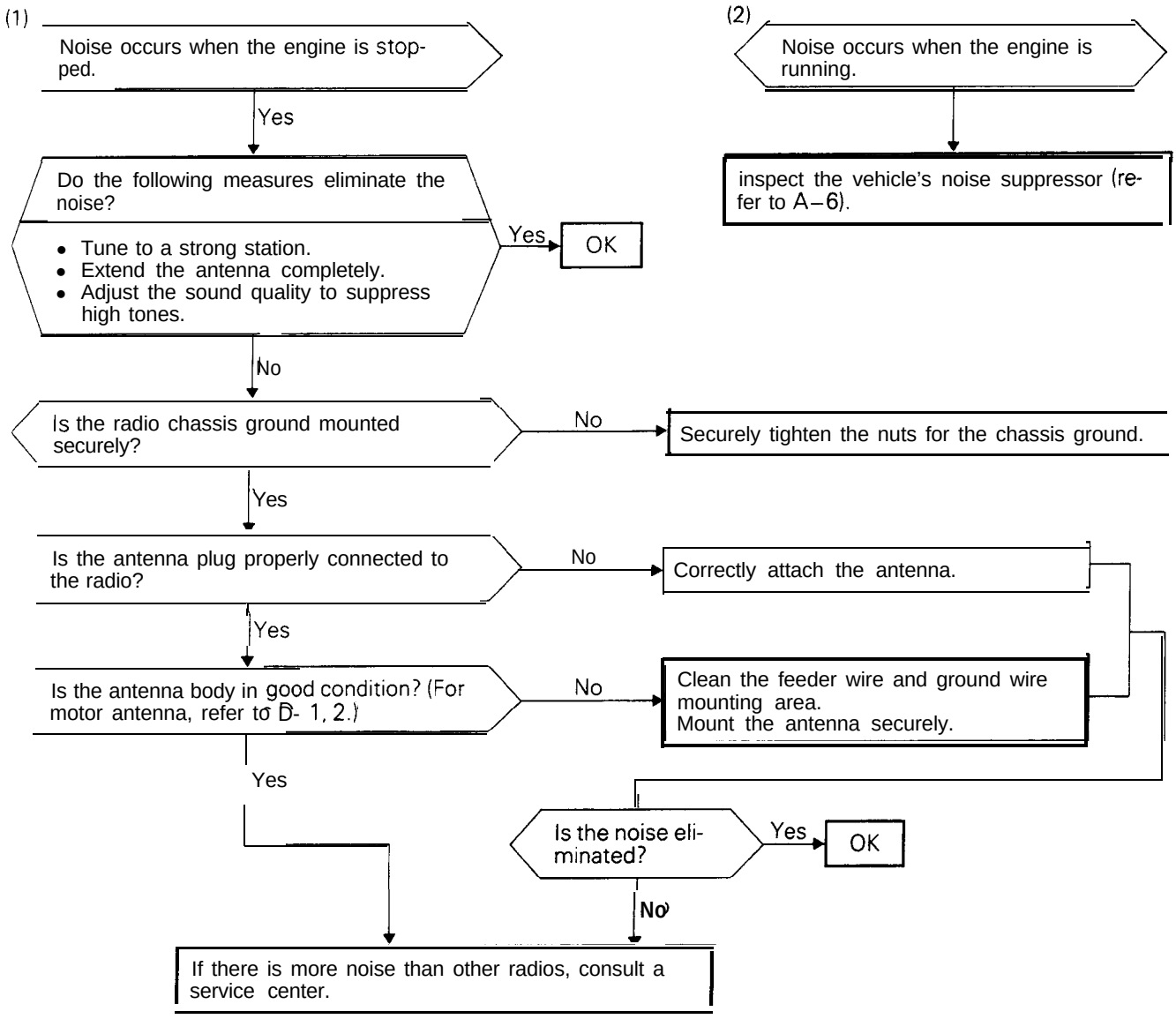
The following factors can be considered as possible causes of noise appearing at night.

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 intereference 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.



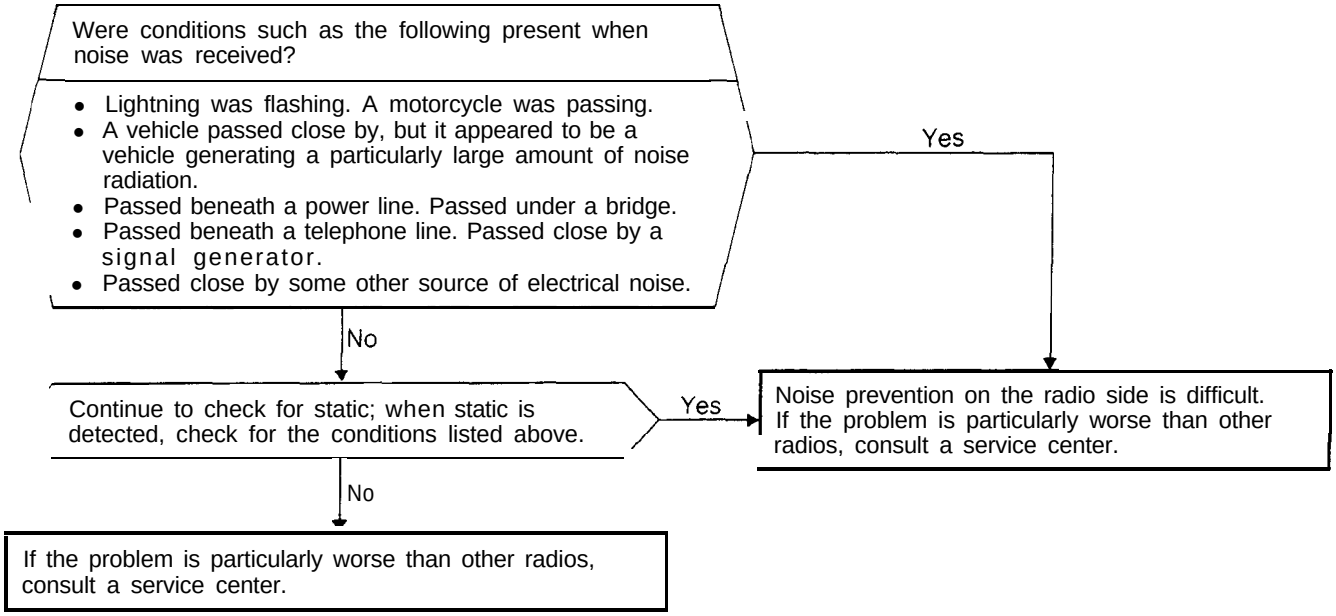
TSB Revision

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



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.>

TSB Revision

A–6 There is noise when starting the engine.

Noise type Sounds are in parenthese [ ].	Conditions	Cause	Response
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 filter • Noise condenser • Ground cable
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

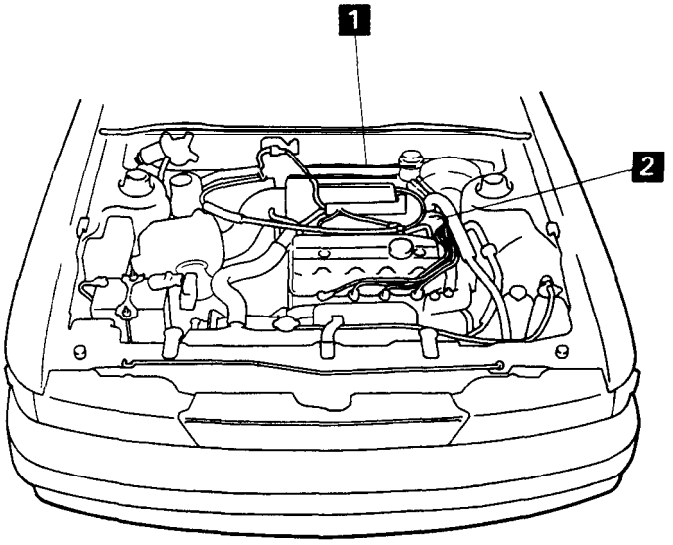
1. **Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.**
2. **Check that there is no external noise. Since failure due this may result in misdiagnosis due to inability to identify the noise source, this operation must be performed.**
3. **Noise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

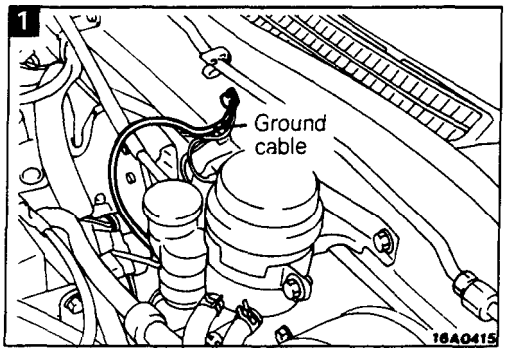
NOTE

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.

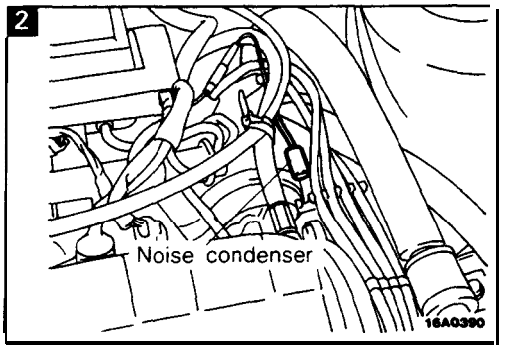
NOISE SUPPRESSOR LOCATION

<SOHC>

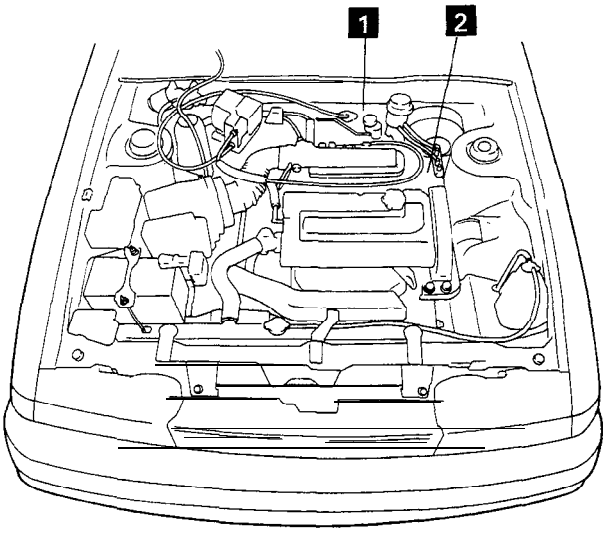


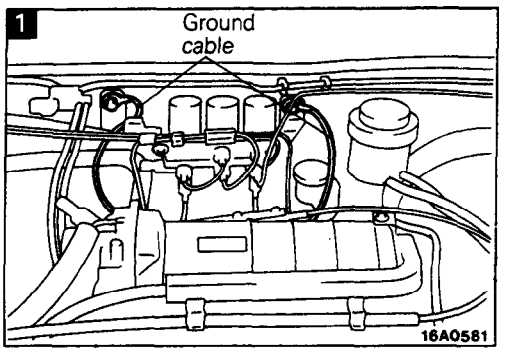


Models equipped with the AM/FM radio

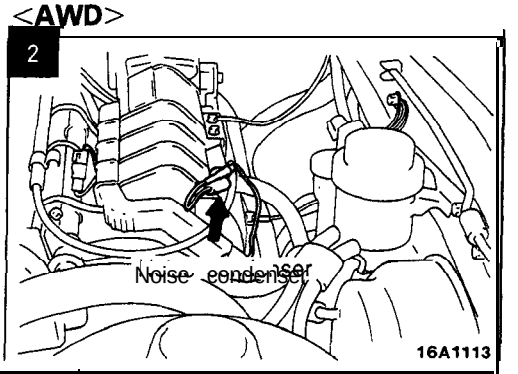


<DOHC>



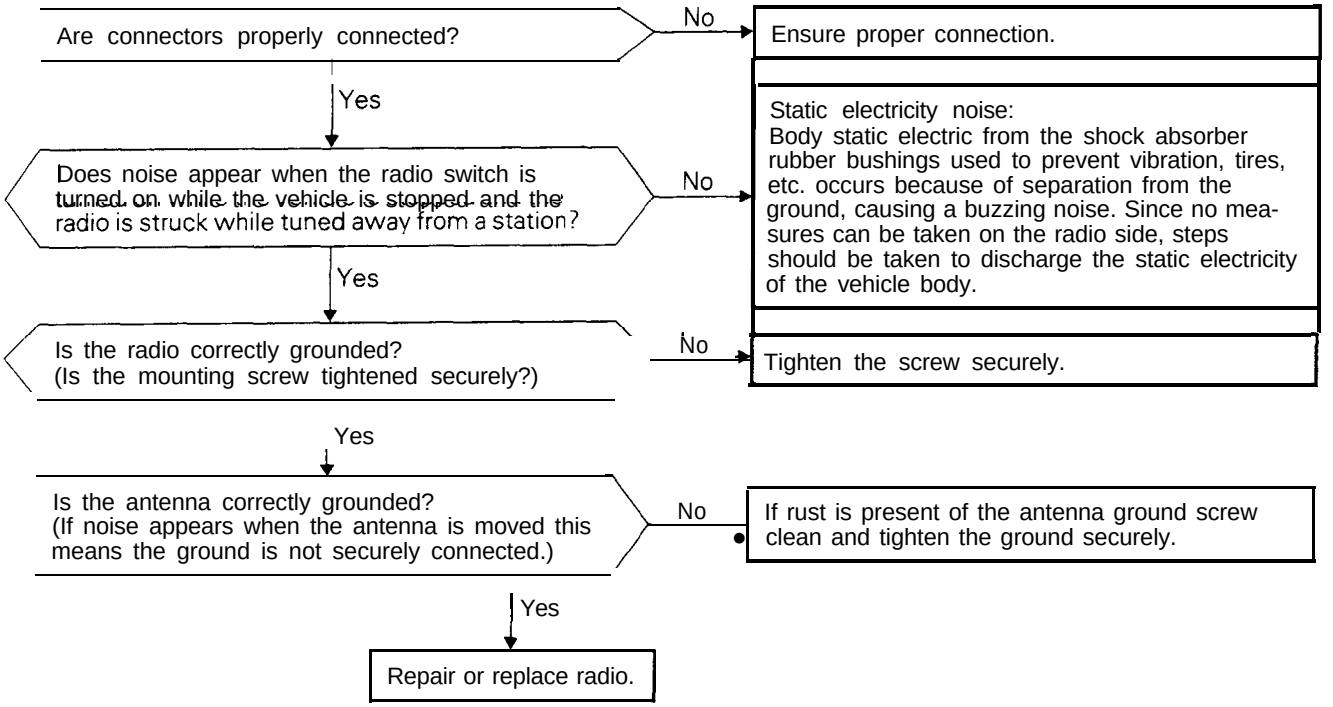


<AWD>



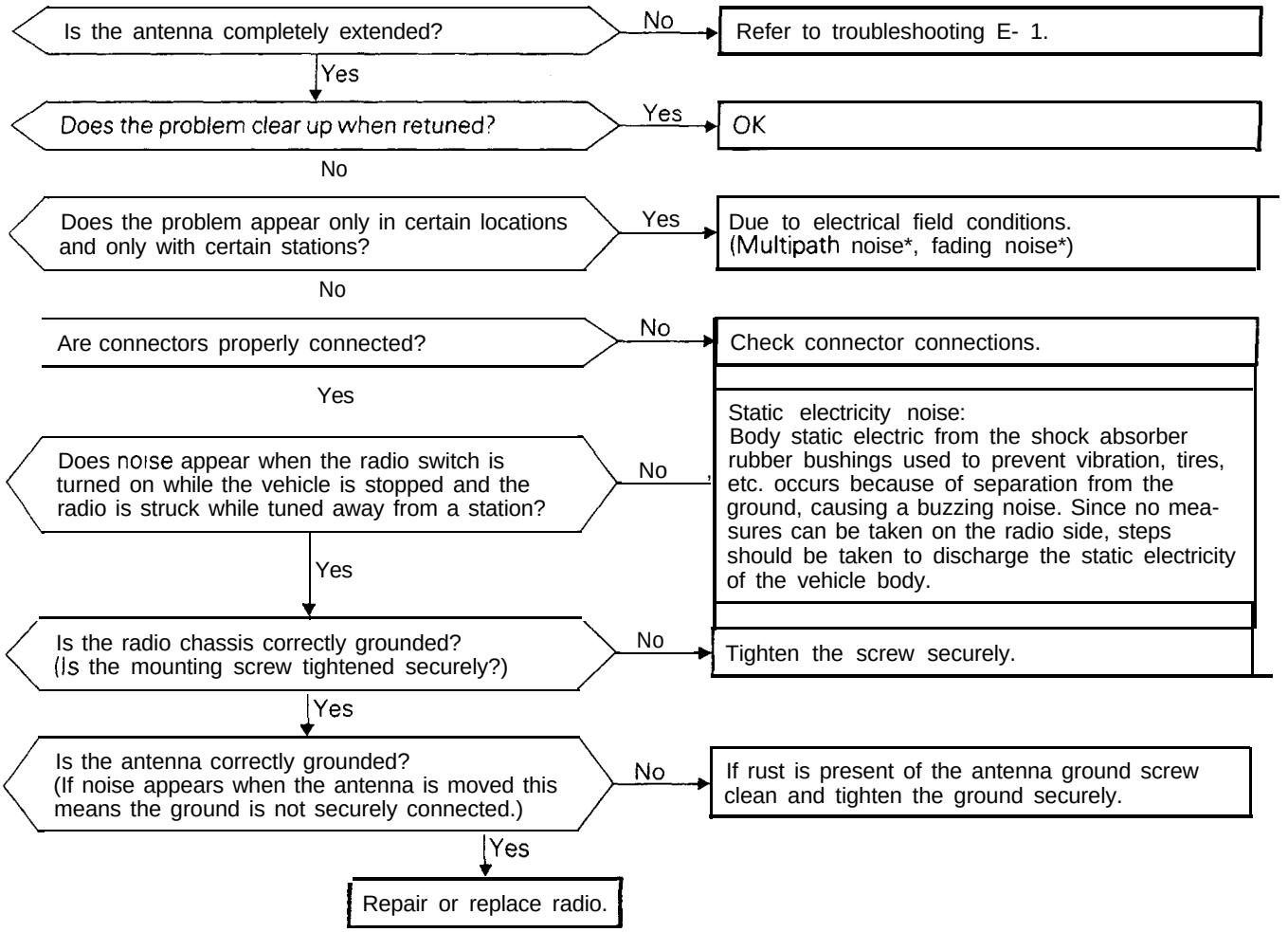
TSB Revision

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 dierct 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.

TSB Revision

A–9 Ever-present noise.

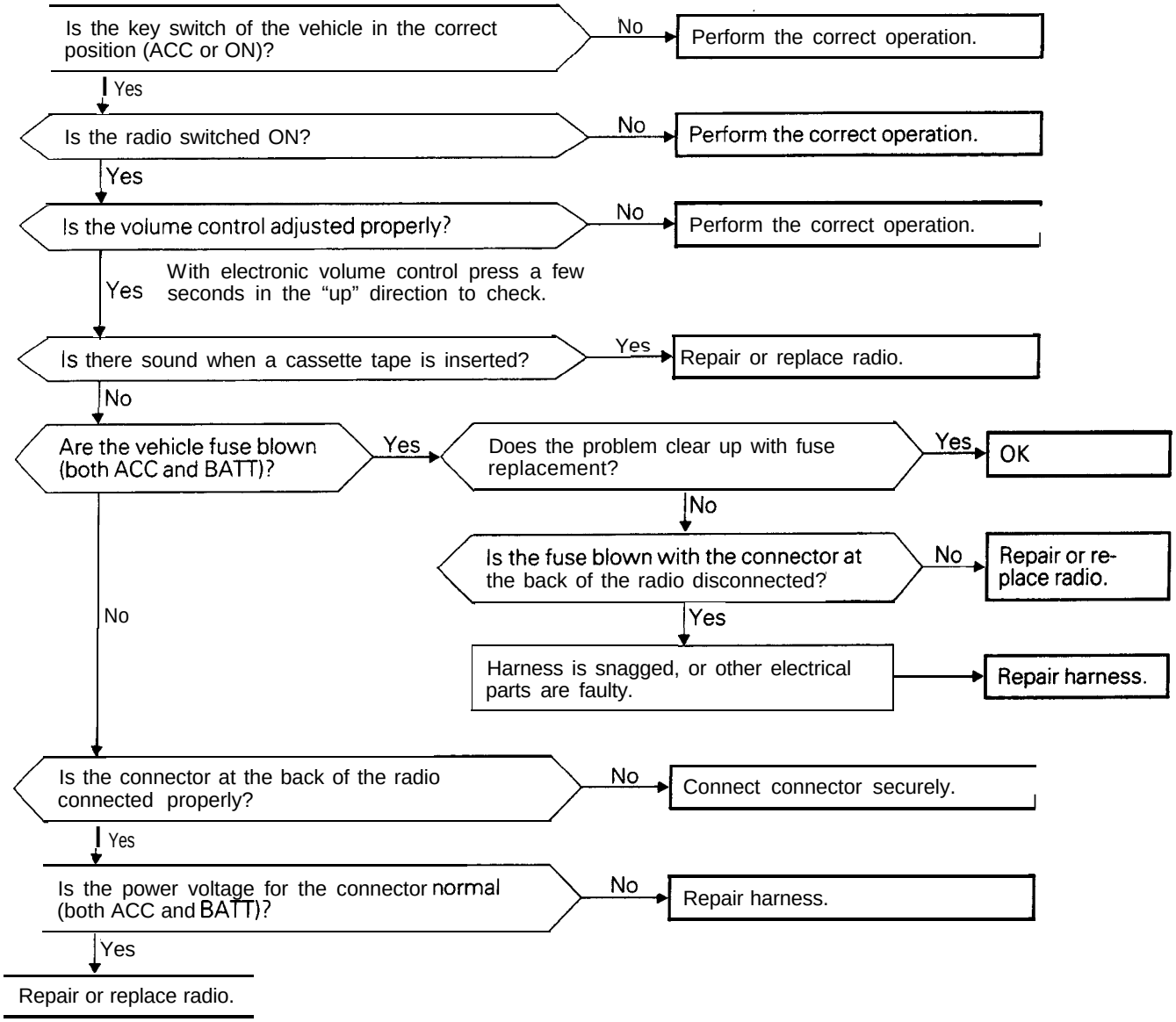
Noise is often created by the following factors, and often the radio is OK when it is checked individually.

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

For this reason, if there are still problem with noise even after the measures described in steps A-I 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.

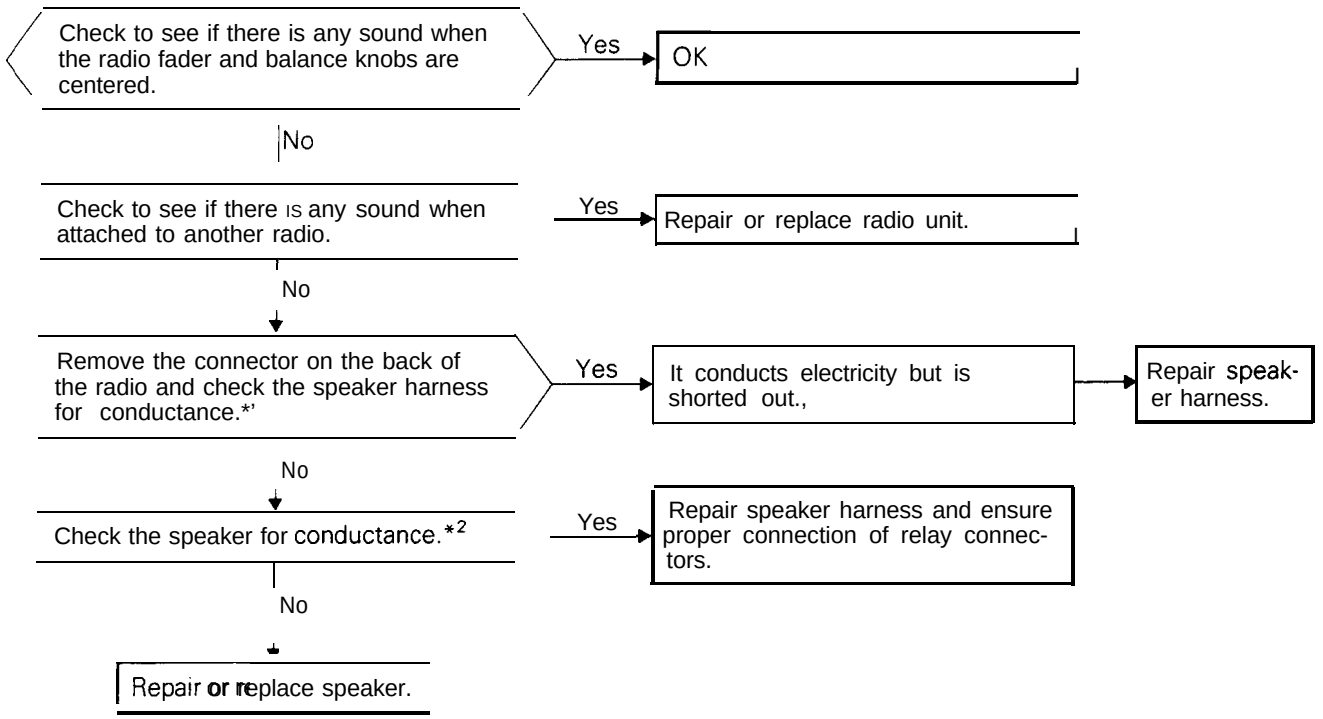
B. RADIO

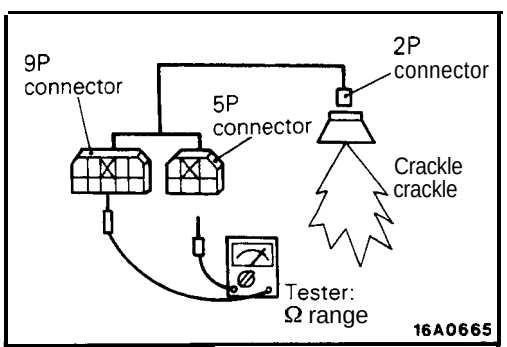
B-I No sound.

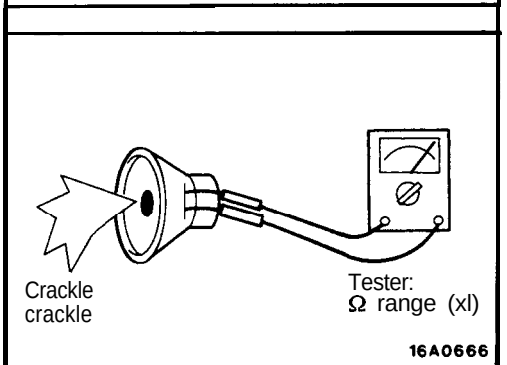


TSB Revision

B–2 No sound from one speaker.







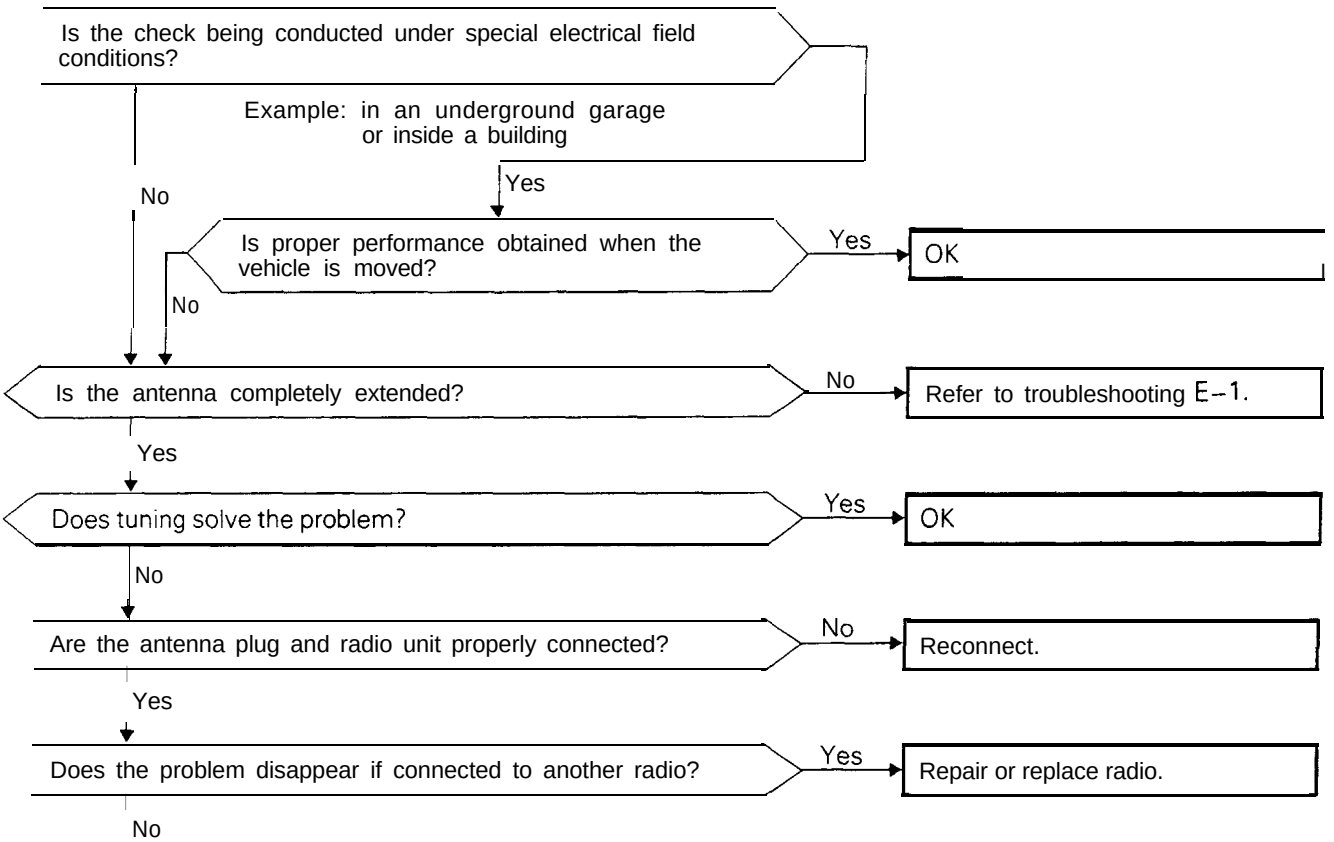
*1 Conductance check method 1
(1) Remove 9P and 5P connectors from radio.
(2) Insert test probe into connector terminal.
(Concerning speaker connector, refer to P.54-113, 115, 117, 119, 121 and 123.)

	Check result		
Determination	Normal	Malfunction	Malfunction
Resistance (Ω)	4	Near 0	Test needle doesn't move.
Condition	Speaker crackles.	When there is no sound from the speaker, it is shorted out.	No sound from speaker, burns out.

*2 Conductance check method 2
(1) Remove the speaker 2P connector.
(2) Insert the test probe into the connector terminal.
(3) Refer the results to the above chart.

TSB Revision

B–3 There is noise but no reception for both AM and FM.



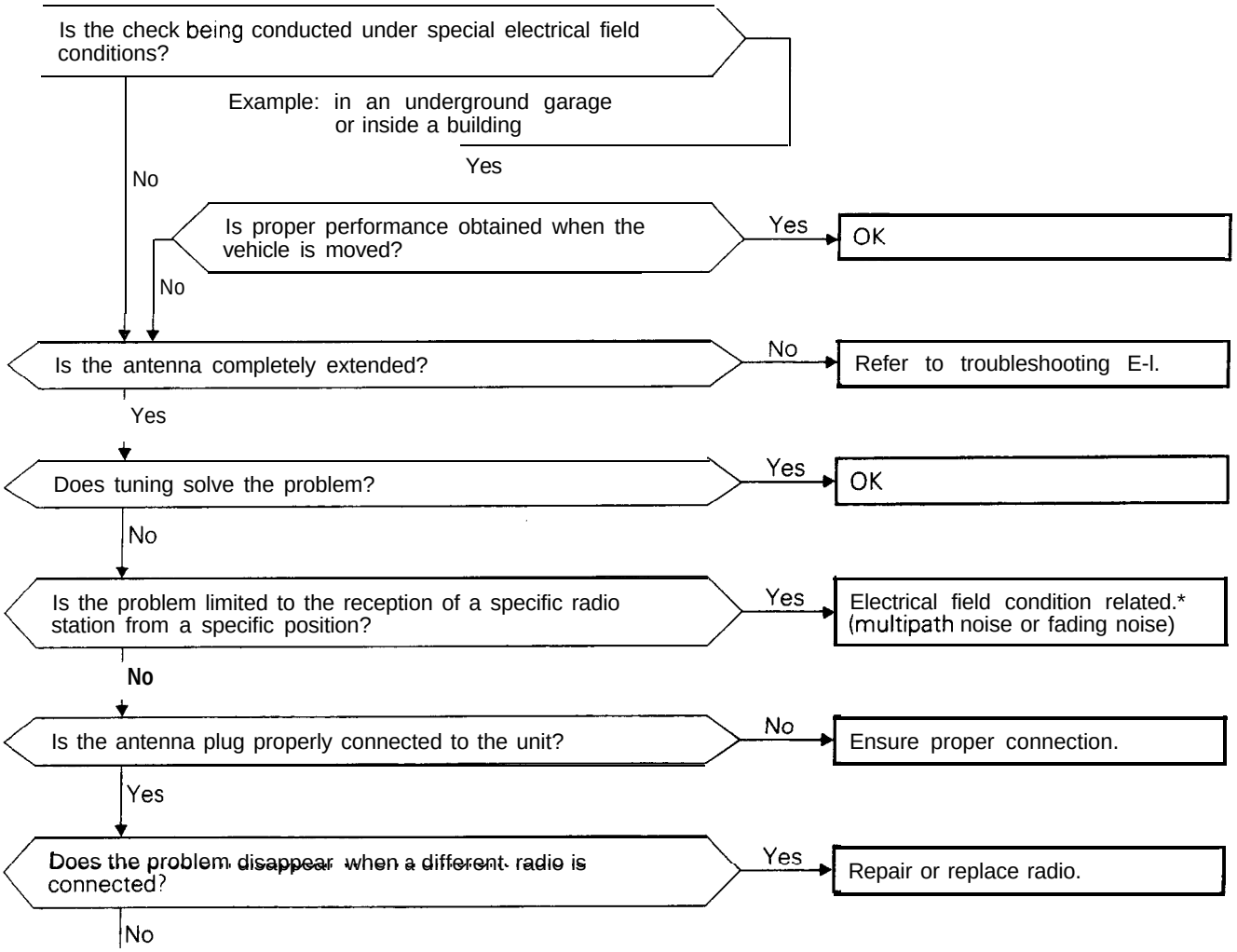
Antenna malfunction
(For motor antenna, refer to E-l, 2.)

B–4 No sound from AM, or no sound from FM.

Refer to B–3.

TSB Revision

B–5 Insufficient sensitivity.

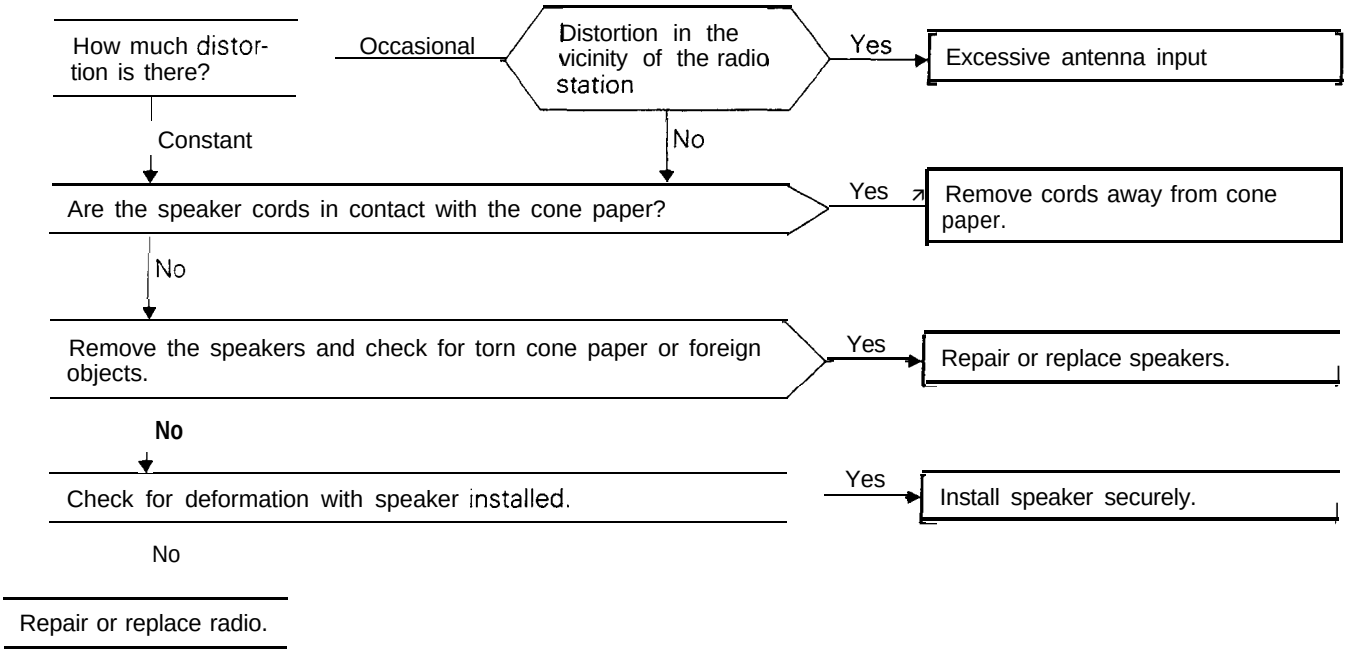


Antenna malfunction
(For motor antenna, refer to E- 1, 2.)

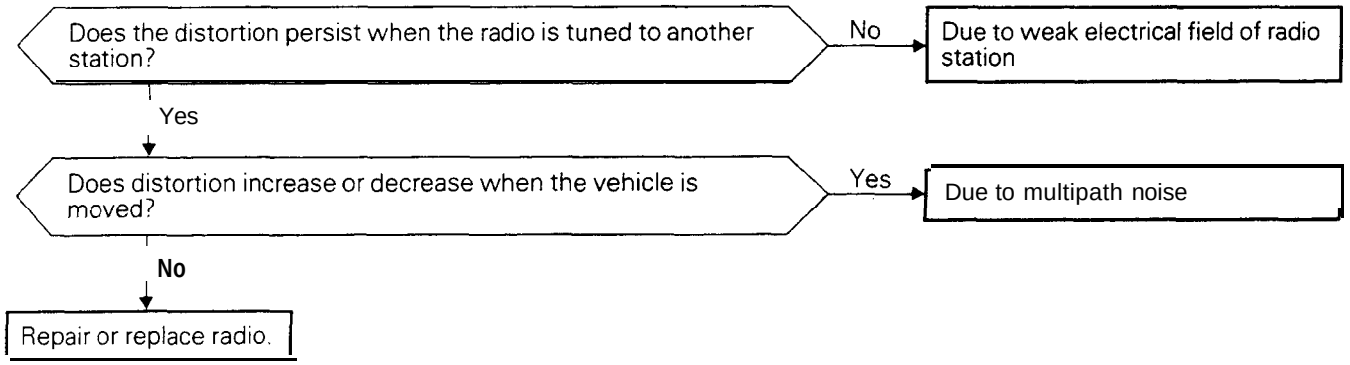
*For multipath noise and fading noise problems, refer P.54-133.

TSB Revision

B–6 Distortion on AM or on both AM and FM.

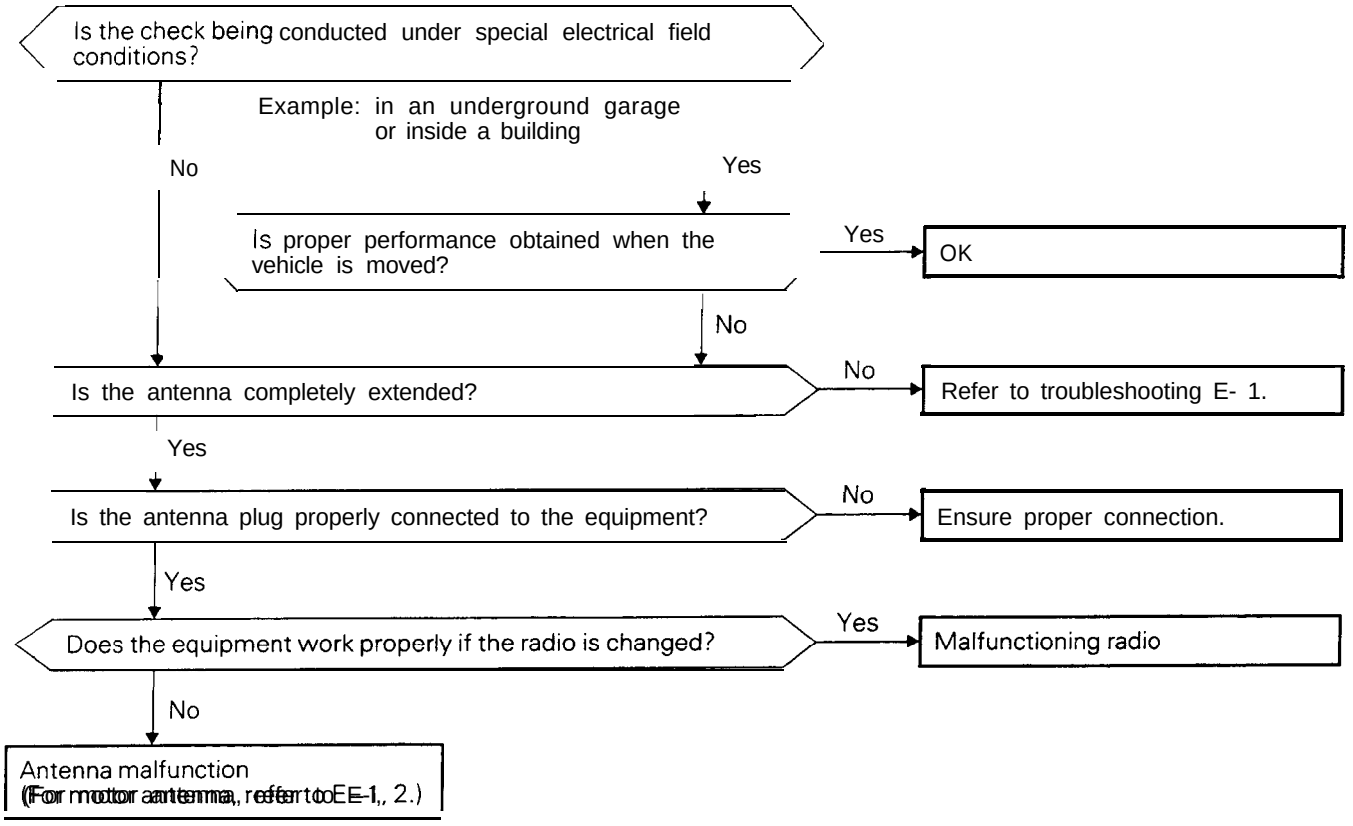


B–7 Distortion on FM only.



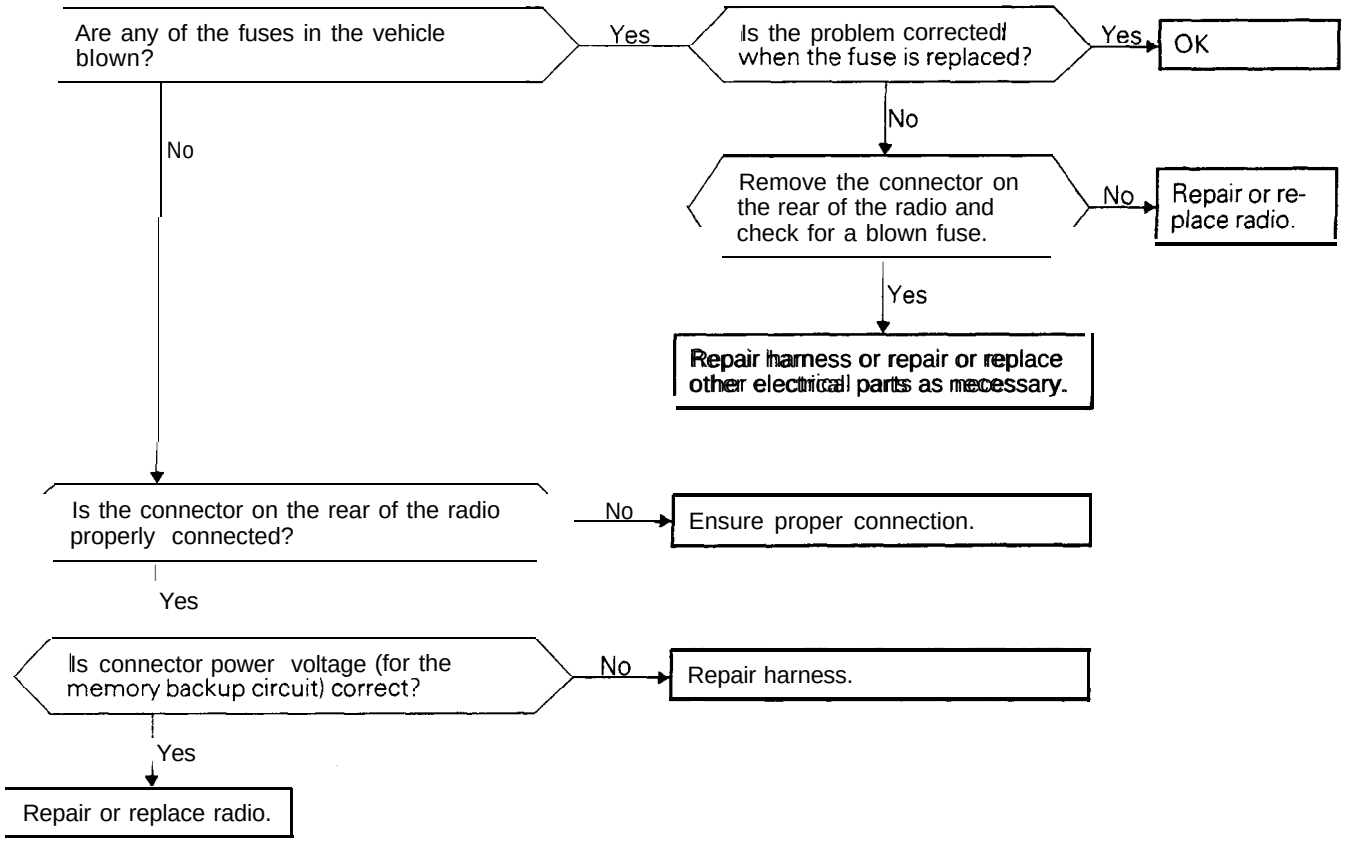
TSB Revision

B–8 Too few automatic select stations.



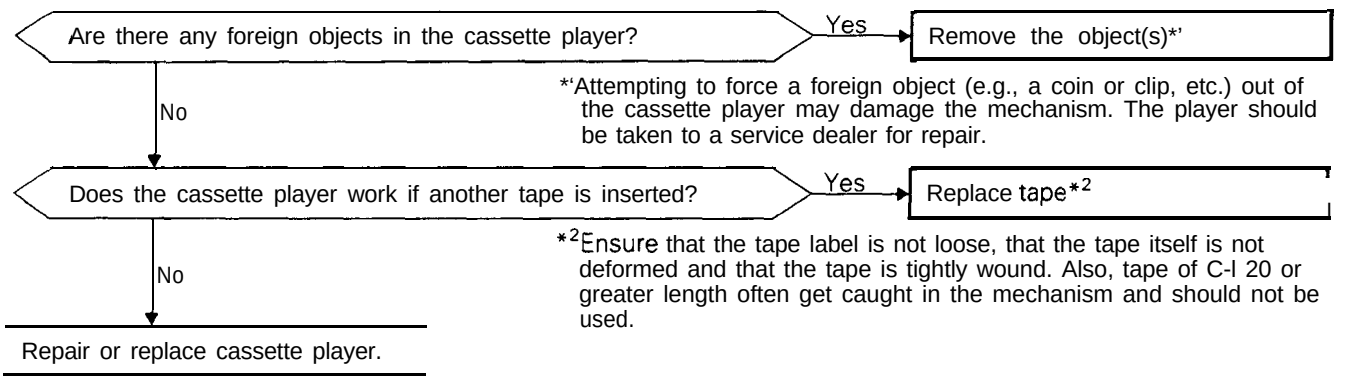
TSB Revision

B–9 Insufficient memory (preset stations are erased).



C. CASSETTE PLAYER

C-I Cassette tape will not insert.



*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-I 20 or greater length often get caught in the mechanism and should not be used.

TSB Revision

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

Check the position of the ignition switch, ensuring that it is at ACC or ON.
- No → Try again after correcting.
- Yes

Is the unit power switch ON?
- No → Try again after correcting.
- Yes

Is the volume switch in the proper position?
- No → Try again after correcting.
- Yes

Check the electronic volume by pushing the volume up button for a few seconds.

Is sound coming from the radio?
- Yes → Repair or replace cassette player.
- No

See the inspection items following B- 1 vehicle fuses.

C–3 No sound from one speaker.

Is there any sound when the balance or fader buttons are centered?
- Yes → OK
- No

Does the radio produce any sound?
- Yes

When sound comes from only left or rrght channel of the deck.

Change the tape and check for sound.*
- Yes → OK

*● A prerecorded tape should be used on both channels.
- 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-l 20 or greater length often get caught in the mechanism and should not be used.

Clean the cassette player head and check again.
- Yes → OK
- No

Replace the cassette player and check again.
- Yes → Repair or replace cassette player.
- No

See the inspection items following B–2 connector.

TSB Revision

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

Does the player play properly when another tape* is inserted?
- 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-l 20 or greater length often get caught in the mechanism and should not be used.

Does the player play properly when the tape player head is cleaned?
- Yes → OK
- No

Is proper operation obtained when the cassette player is replaced?
- Yes → Repair or replace cassette player.
- No

Repair or replace speaker.

C–5 Cassette tape will not eject.

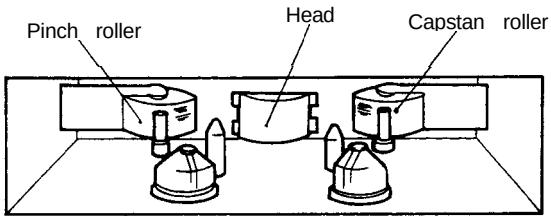
The problems covered here are all the result of the use of a bad tape (deformed or not properly tightened) or of a malfunction of the cassette player itself. Malfunctions involving the tape becoming caught in the mechanism and ruining the case are also possible, and attempting to force the tape out of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

TSB Revision

C–7 Automatic search does not work (only for models with the automatic search function).

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

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

*● 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.
• 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.

Malfunction of the cassette player unit

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]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.

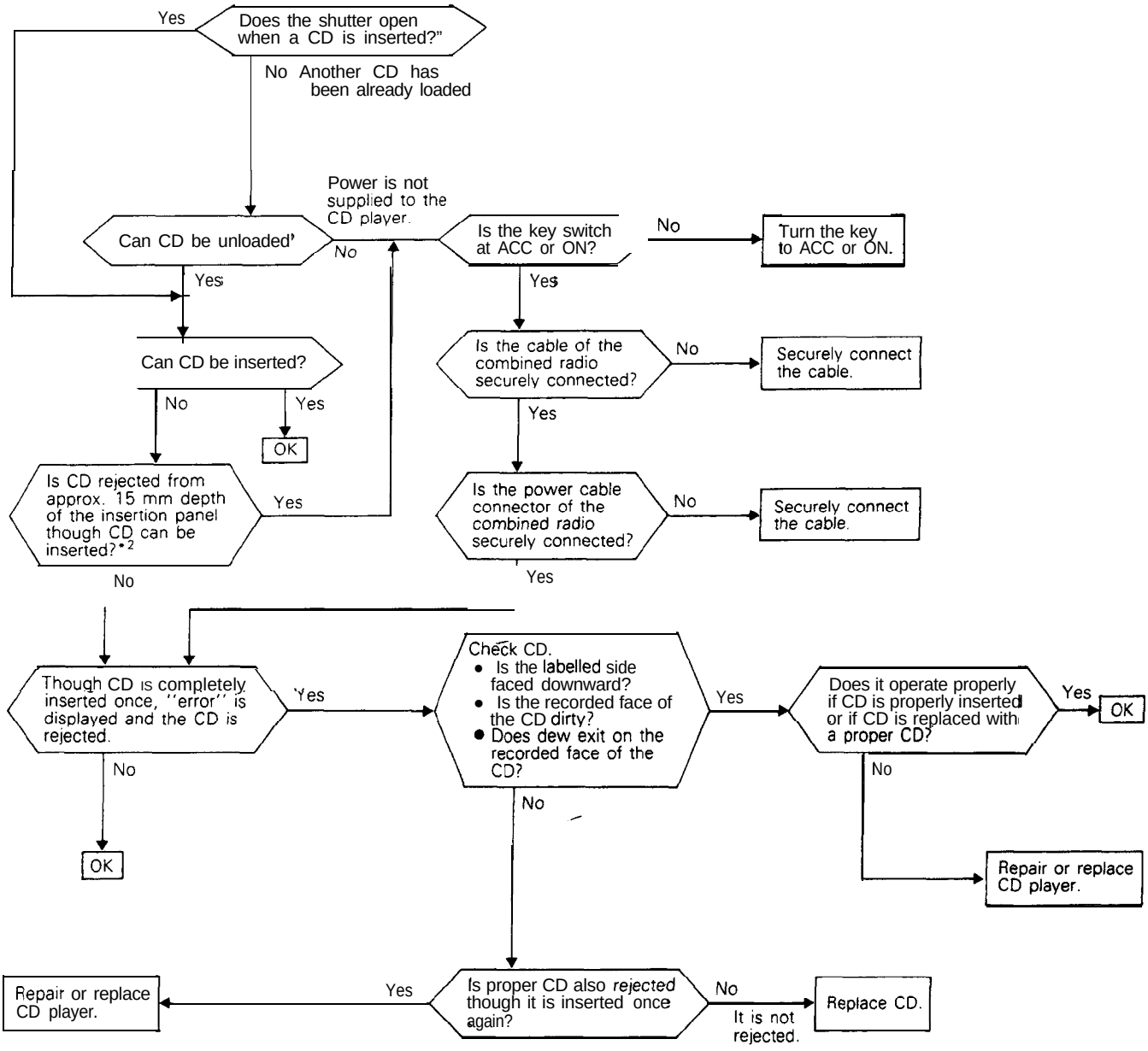
Does the player play OK if the tape*[2] is changed?
- Yes → Tape used is bad.
- No ↓

*[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.

TSB Revision

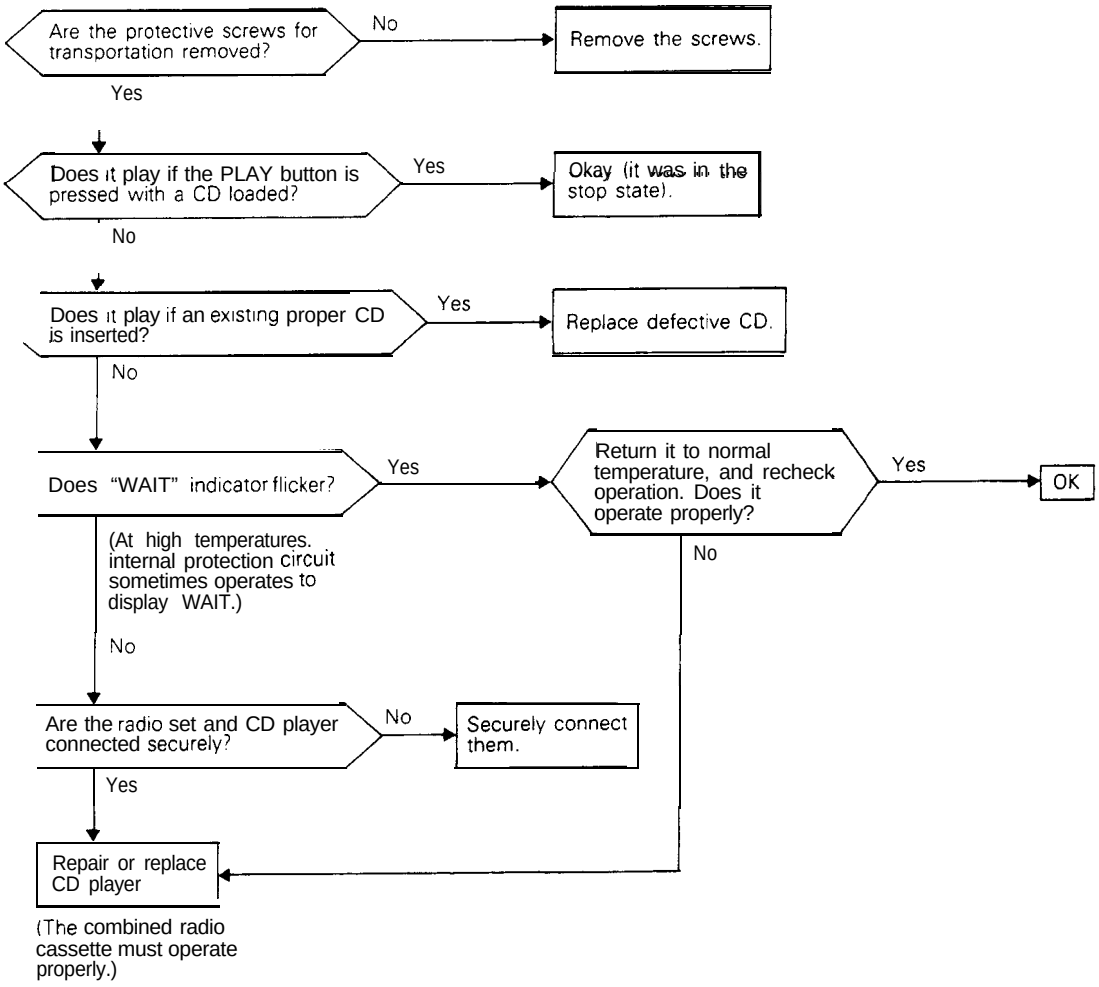
D - I | CD will not be accepted.



*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 terror) is sometimes displayed with the CD rejected because of vibration/shock or dew on the CD face or optical lens.

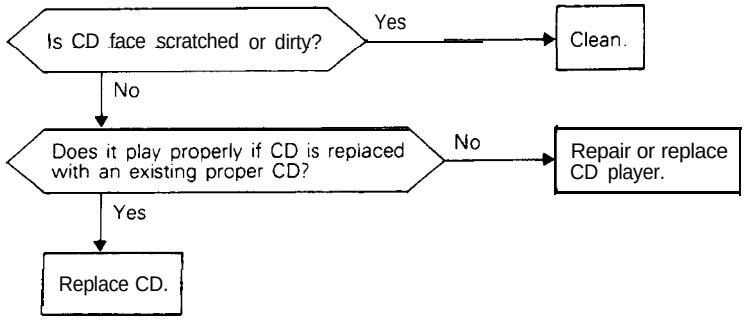
TSB Revision

D–2 No sound.

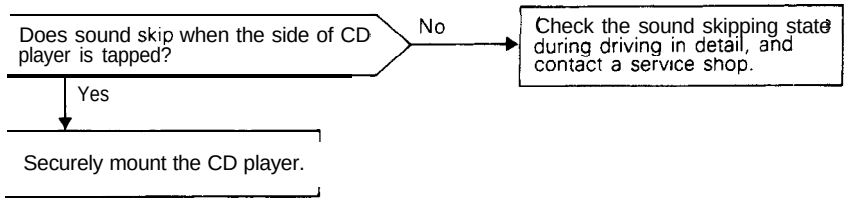


D–3 CD sound skips.

1 Sound sometimes skips during parking

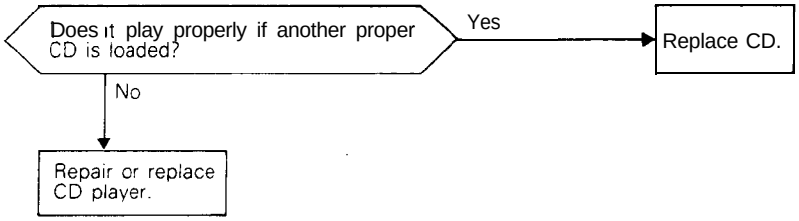


2. Sound sometimes skips during driving.
(Stop vehicle, and check it.)
(Check it by using a proper CD which is free of scratch, dirt or other abnormality.)

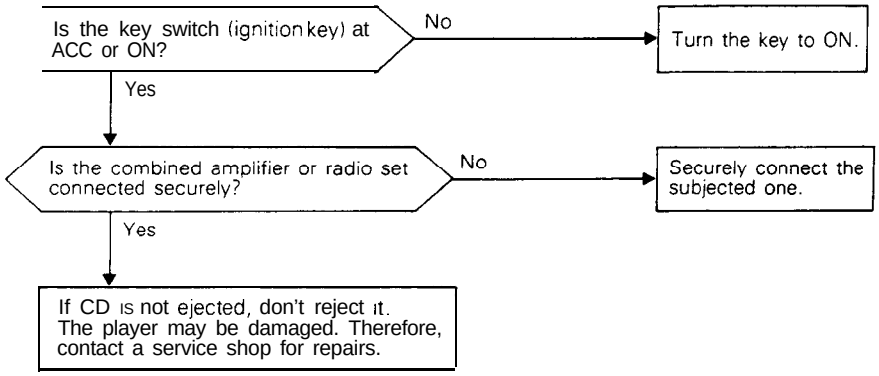


TSB Revision

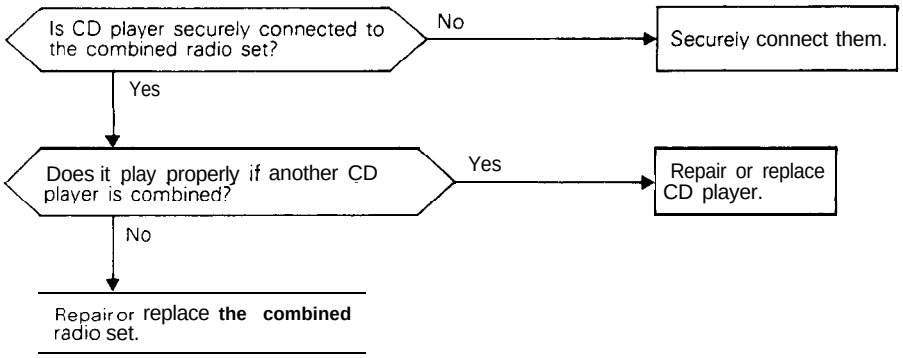
D–4 Sound quality is poor.



D–5 CD will not be ejected.



D–6 No sound from one speaker.



TSB Revision

E. MOTOR ANTENNA

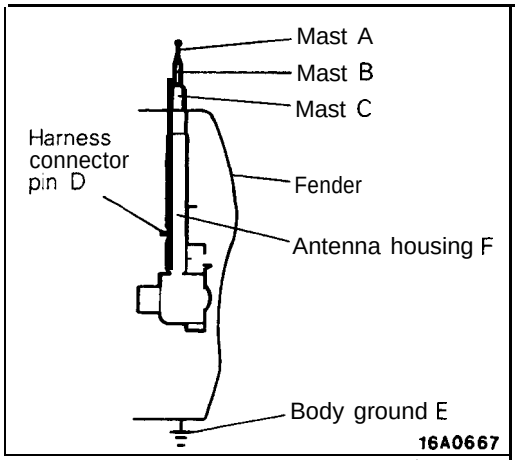
E-1 Motor antenna won't extend or retract.

Clean and polish the surface of the antenna rod.

- Is the radio power switch ON?
  - No → Switch it ON.
  - Yes ↓
- Is voltage (approx. 12V) emitted to the radio's motor antenna terminal?
  - No → Repair or replace the radio.
  - Yes ↓
- Is the antenna bent?
  - Yes → Repair the bend, or replace the antenna mast.
  - No ↓
- Is the antenna relay OK?
  - No → Replace the antenna relay.
  - Yes ↓
- Is the motor OK?
  - No → Replace the motor.
  - Yes ↓
- Repair the harness.

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

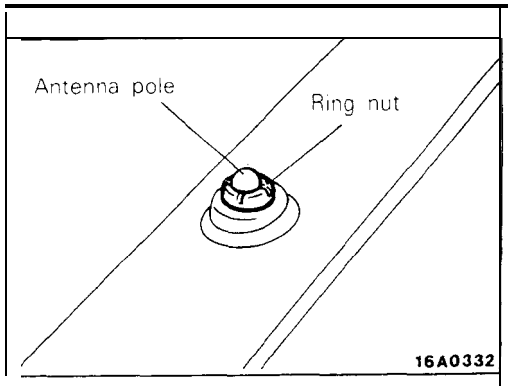
- Is the antenna itself OK?
  - No → Repair or replace it.
  - Yes ↓
- Is operation normal when a new antenna assembly is directly installed to the radio?
  - No → Refer to B. "Radio troubleshooting".
  - Yes ↓
- Replace the feeder cable.



Checking the antenna*

Ohmmeter measurement locations	Result
A and D	Continuity
B and D	Continuity
C and D	Continuity
E and F	Continuity
A and E	No continuity
B and E	No continuity
C and E	No continuity

TSB Revision

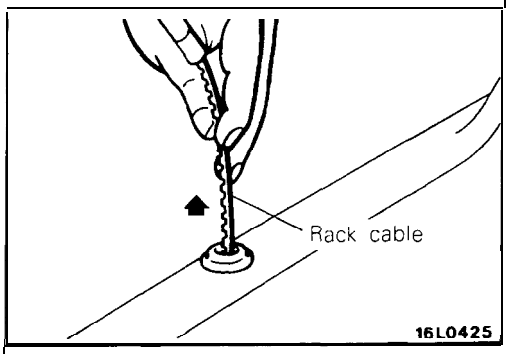


SERVICE ADJUSTMENT PROCEDURES

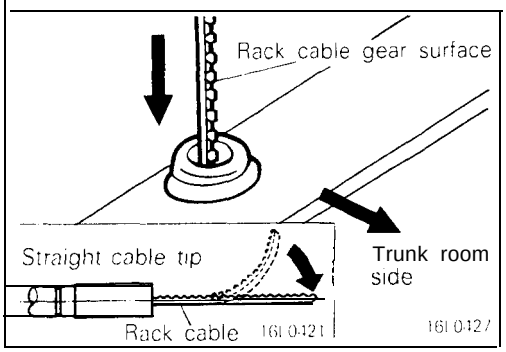
M54NIBB

MAST ASSEMBLY WITH CABLE REPLACEMENT (Motor antenna)

(1) Remove the ring nut.

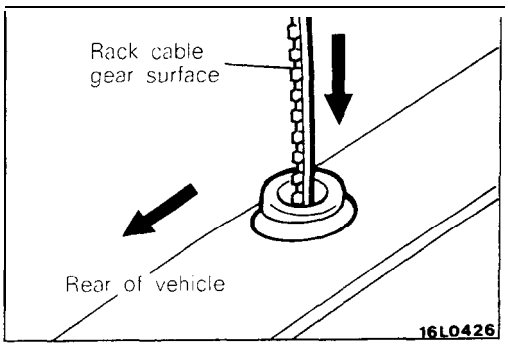


(2) Switch ON the radio and operate the power antenna.
(3) Pull it out with the mast assembly fully extended.



(4) With the antenna fully extended, turn the rack cable gears toward the trunk room as shown at left. Next, insert the rack cable into the motor assembly.

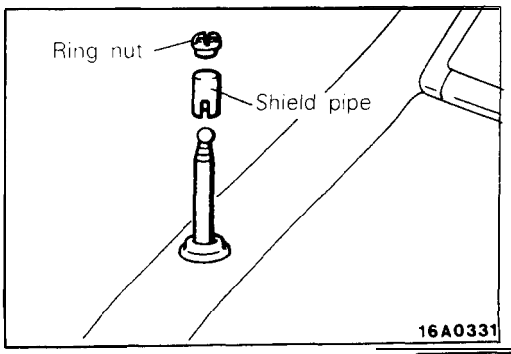
NOTE
Be sure the rack cable tip is straight before inserting it into the motor assembly, If the tip is not straight, correct as shown.



(5) Turn the rack cable gears toward the rear of the vehicle (90° to the right) and engage the cable with the motor gears.

NOTE
Pull the rack cable up gently. The rack cable gears are not engaged with the motor gears if the cable comes out smoothly. If the gears are not engaged, check the cable tip again to be sure it is straight, then repeat (4) and (5).

(6) Raise the antenna pole vertically. Switch OFF the radio switch and wind in the rack cable. Insert the antenna pole to the motor side as the cable is being wound in.



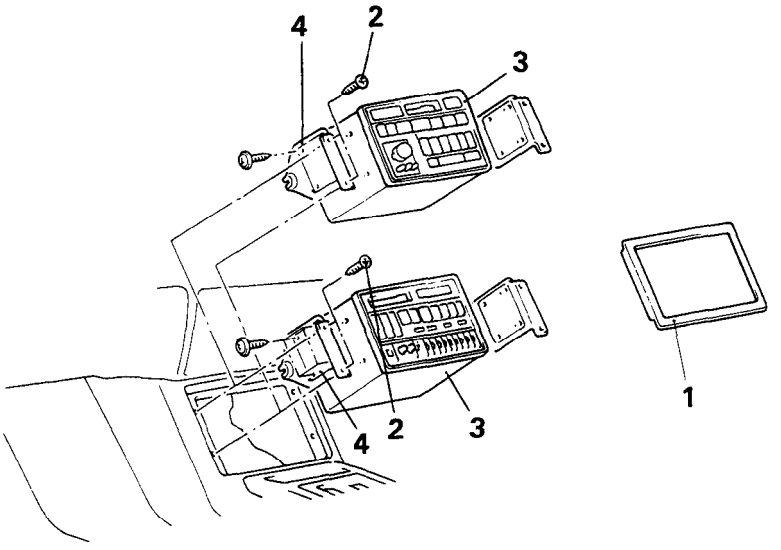
(7) Mount the shield pipe onto the antenna pole.
(8) Insert and mount the ring nut onto the shield pipe. Then, after tightening the ring nut at the specified torque (refer to P.54-153), switch the radio switch ON and OFF to house the antenna pole.

TSB Revision

RADIO AND TAPE PLAYER <Up to 1990 models>

M54NJAQb

REMOVAL AND INSTALLATION

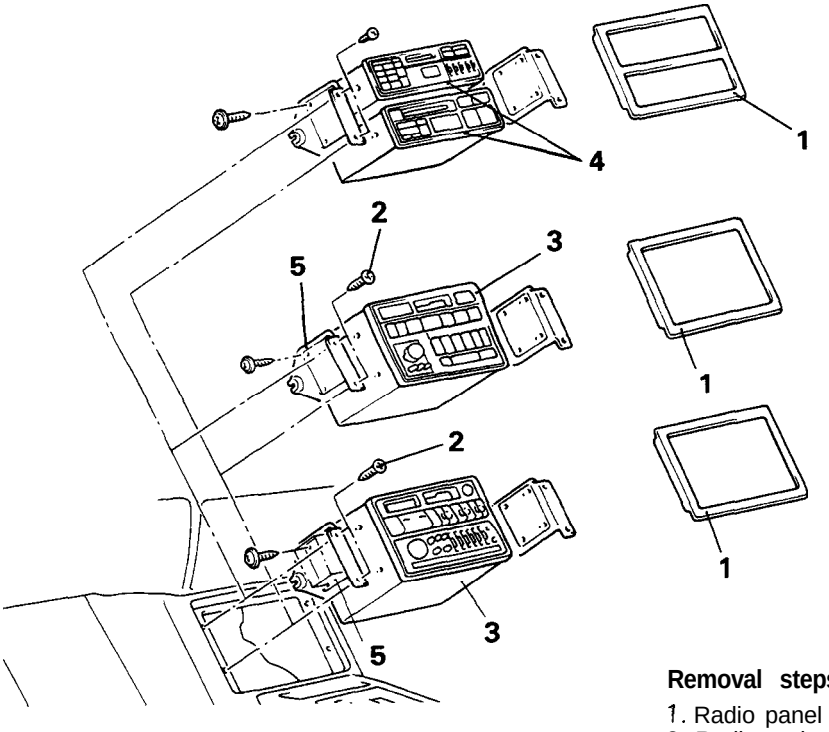


Removal steps

1. Radio panel
2. Radio and tape player mounting screw
3. Radio with tape player
4. Radio bracket

RADIO AND TAPE PLAYER <1991 models>

REMOVAL AND INSTALLATION



16A1275

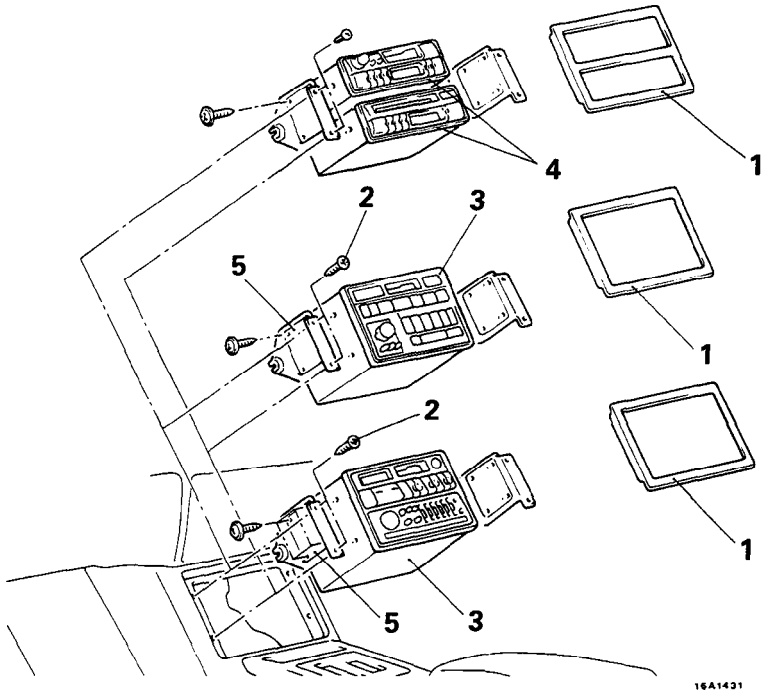
Removal steps

1. Radio panel
2. Radio and tape player mounting screw
3. Radio with tape player
4. Radio with tape player and CD player
5. Radio bracket

TSB Revision

RADIO AND TAPE PLAYER <1992 models>

REMOVAL AND INSTALLATION

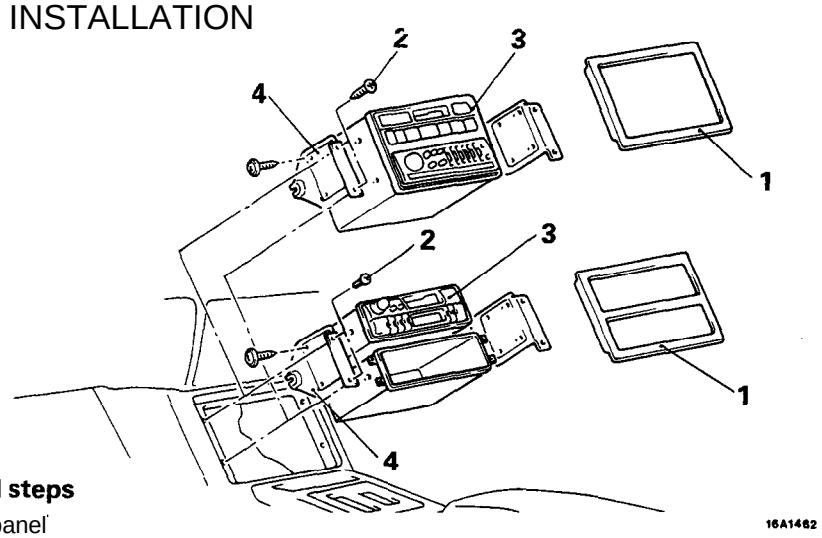


Removal steps

1. Radio panel
2. Radio and tape player mounting screw
3. Radio with tape player
4. Radio with tape player and CD player
5. Radio bracket

RADIO AND TAPE PLAYER <1993 models>

REMOVAL AND INSTALLATION



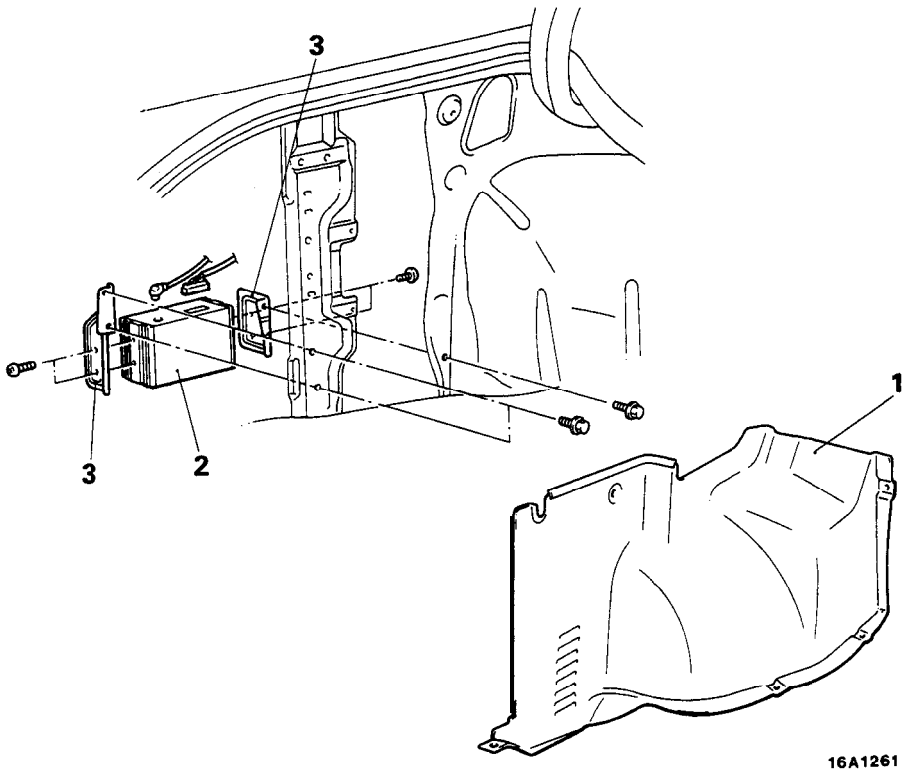
Removal steps

1. Radio panel
2. Radio and tape player mounting screw
3. Radio with tape player
4. Radio bracket

TSB Revision

POWER AMPLIFIER <1991 models (Vehicles with CD player)> M54NUAAa

REMOVAL AND INSTALLATION



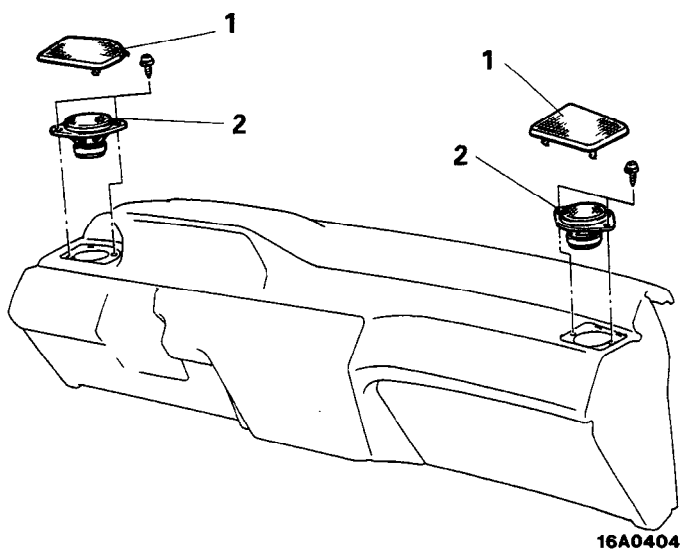
Removal steps

1. Trunk room side trim (Refer to GROUP 52–Trim.)
2. Power amplifier
3. Bracket

SPEAKER M54NMAH

<Front speaker>

REMOVAL AND INSTALLATION



Removal steps

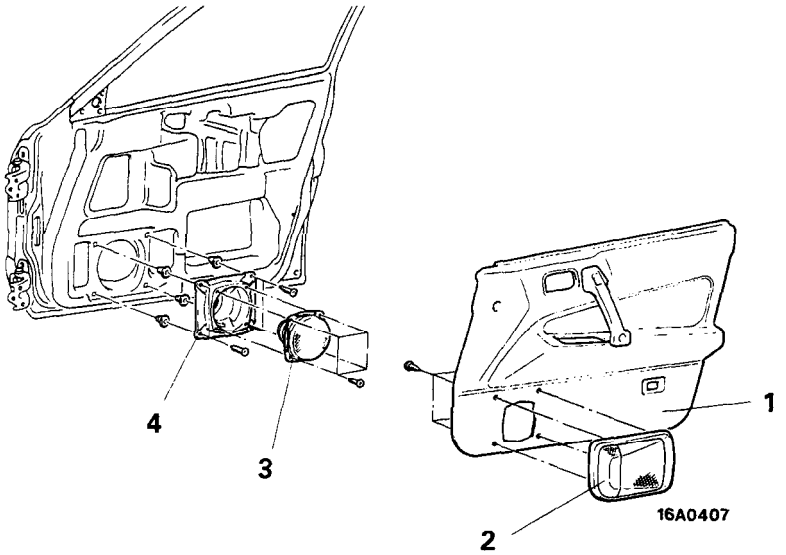
1. Front speaker garnish
2. Front speakers

TSB Revision

<Door speaker>

M54NNAE

REMOVAL AND INSTALLATION



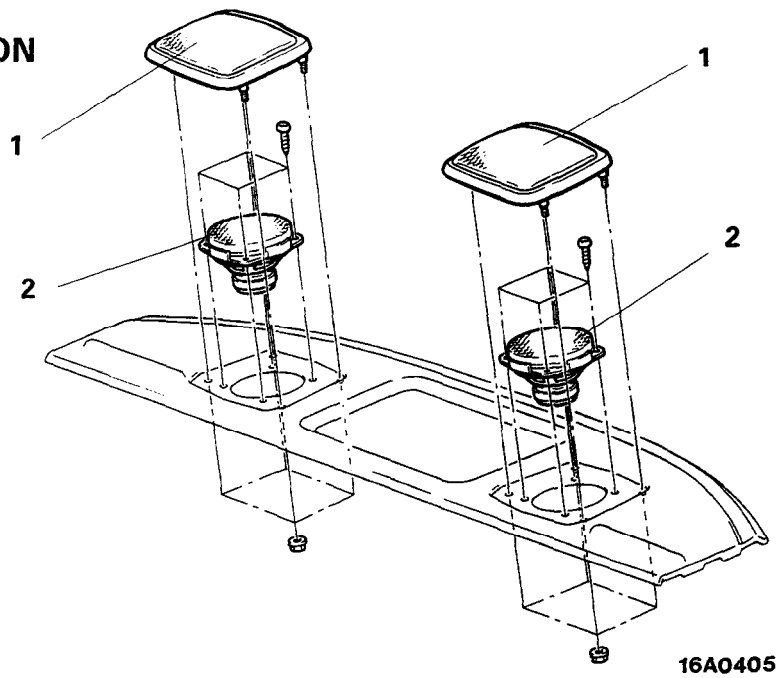
Removal steps

1. Door trim
   (Refer to GROUP 52–Trim.)
2. Speaker garnish
3. Door speaker
4. Speaker cover

<Rear speaker>

M54NOAH

REMOVAL AND INSTALLATION



Removal steps

◆◆ 1. Speaker garnish
2. Rear speaker

SERVICE POINTS OF REMOVAL

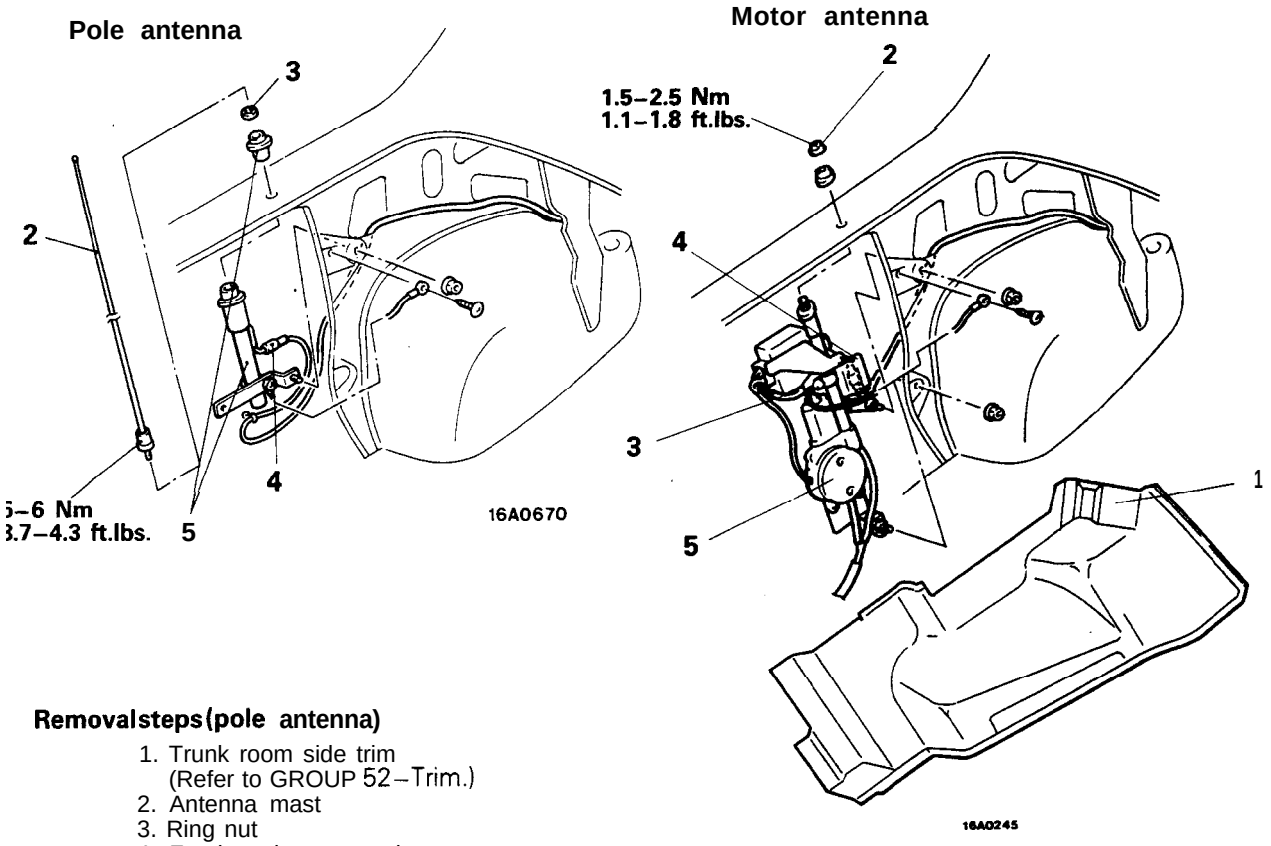
1. REMOVAL OF SPEAKER GARNISH

Remove (from the luggage compartment side) the garnish installation nut.

TSB Revision

ANTENNA ASSEMBLY

M54NPBG

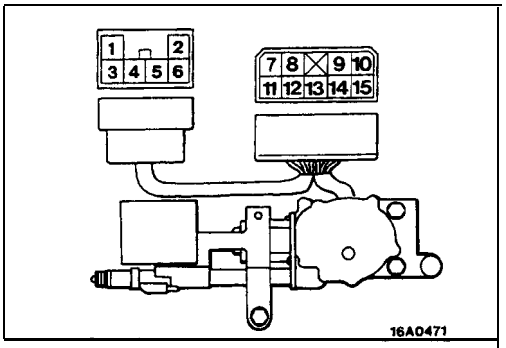


Removal steps (pole antenna)

1. Trunk room side trim (Refer to GROUP 52–Trim.)
2. Antenna mast
3. Ring nut
4. Feeder wire connection
5. Antenna base

Removal steps (motor antenna)

1. Trunk room side trim (Refer to GROUP 52–Trim.)
2. Ring nut
3. Harness connection
4. Feeder wire connection
5. Motor antenna assembly



INSPECTION

<Vehicles built up to June 1988>

MOTOR ANTENNA ASSEMBLY

Following inspections should be made with the harness connector disconnected from the power antenna relay.

(1) With the (+) power connected to the terminal (10) and the (–) power to the terminal (7), check that the antenna mast extends. With the connection reversed, check that the antenna mast retracts.

(2) Check for continuity between the terminals.

When the antenna mast is retracted
Between 6–9 .....continuity
When the antenna mast is extended
Between 6–8 .....continuity

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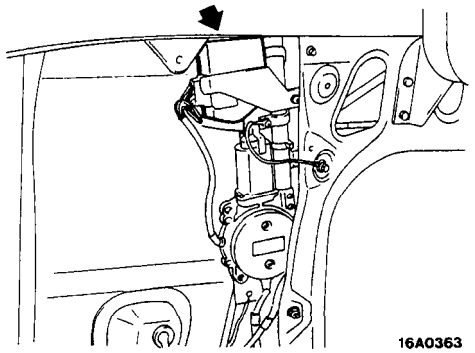
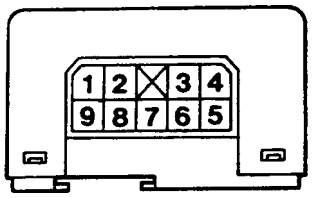

16A0363

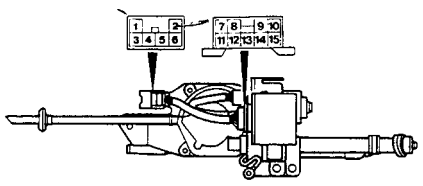


16R0443

ANTENNA RELAY

With the harness connector connected and the antenna mast extending/ retracting, check the antenna relay voltage.

Antenna mast extending
Terminal (1) ..... -1 to +1V
Terminal (4) ..... 10 to 13V
Antenna mast retracting
Terminal (1) ..... 10 to 13V
Terminal (4) ..... -1 to +1V



16A0885

<Vehicles built from July 1988>

MOTOR ANTENNA ASSEMBLY

Following inspections should be made with the harness connector disconnected from the power antenna relay.
With the (+) power connected to the terminal (10) and the (–) power to the terminal (7), check that the antenna mast extends. With the connection reversed, check that the antenna mast retracts.

ANTENNA RELAY

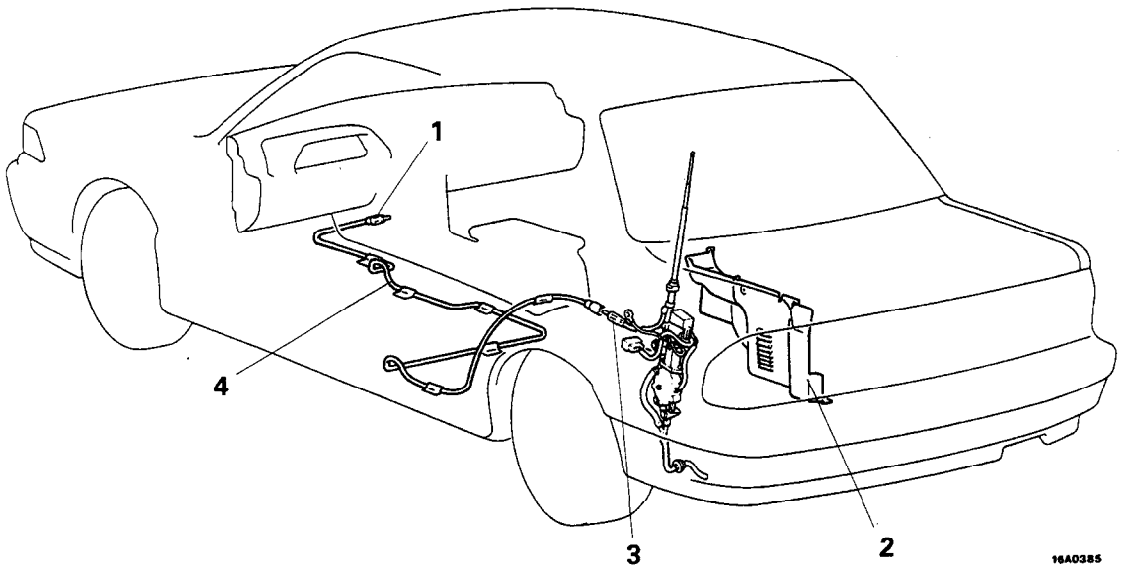
With the harness connector connected and the antenna mast extending/retracting, check the antenna relay voltage.

Measurement terminals	Measurement conditions	Voltage (V)
Between 1 and 6 Between 2 and 6 Between 5 and 6 Between 8 and 6	Ignition key at "ON" Radio switch at "ON"	10 – 13
Between 1 and 7 Between 1 and 9	When antenna extended	10 – 13
Between 1 and 10 Between 1 and 9	When antenna retracted	10 – 13
Between 7 and 10	During antenna operation → stop	10 – 13 → 0

TSB Revision

FEEDER CABLE

REMOVAL AND INSTALLATION



Removal steps

1. Feeder cable and radio connections
2. Trunk room side trim
3. Motor antenna (or whip antenna) and feeder cable connections
4. Feeder cable

Pre-removal and Post-installation Operation

- Removal and Installation of Front Seat, Rear Seat, and Floor Console (Refer to GROUP 52–Seat and Floor Console.)

TSB Revision

REAR WINDOW DEFOGGER

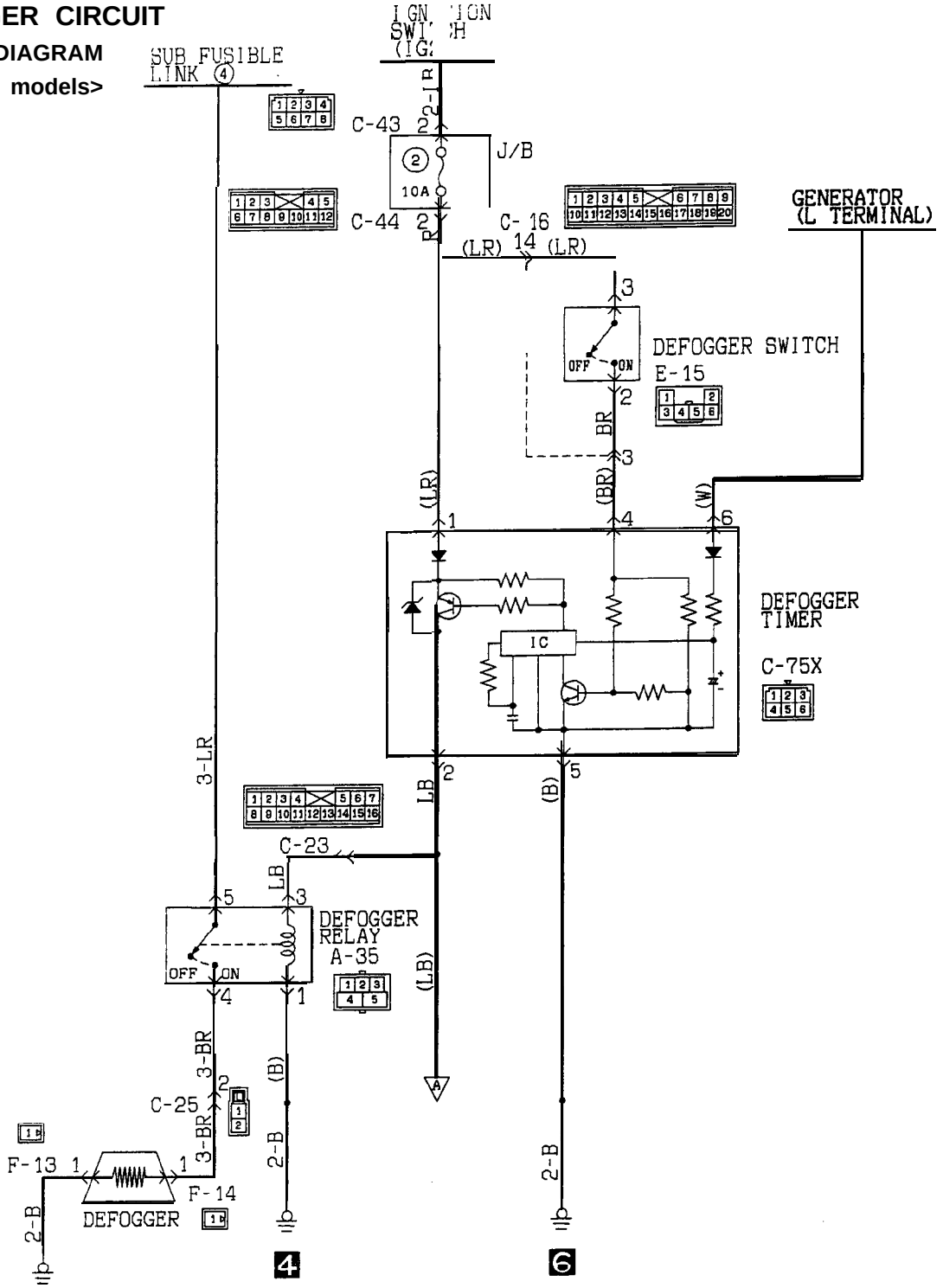
TROUBLESHOOTING

M54PHBDb

DEFOGGER CIRCUIT

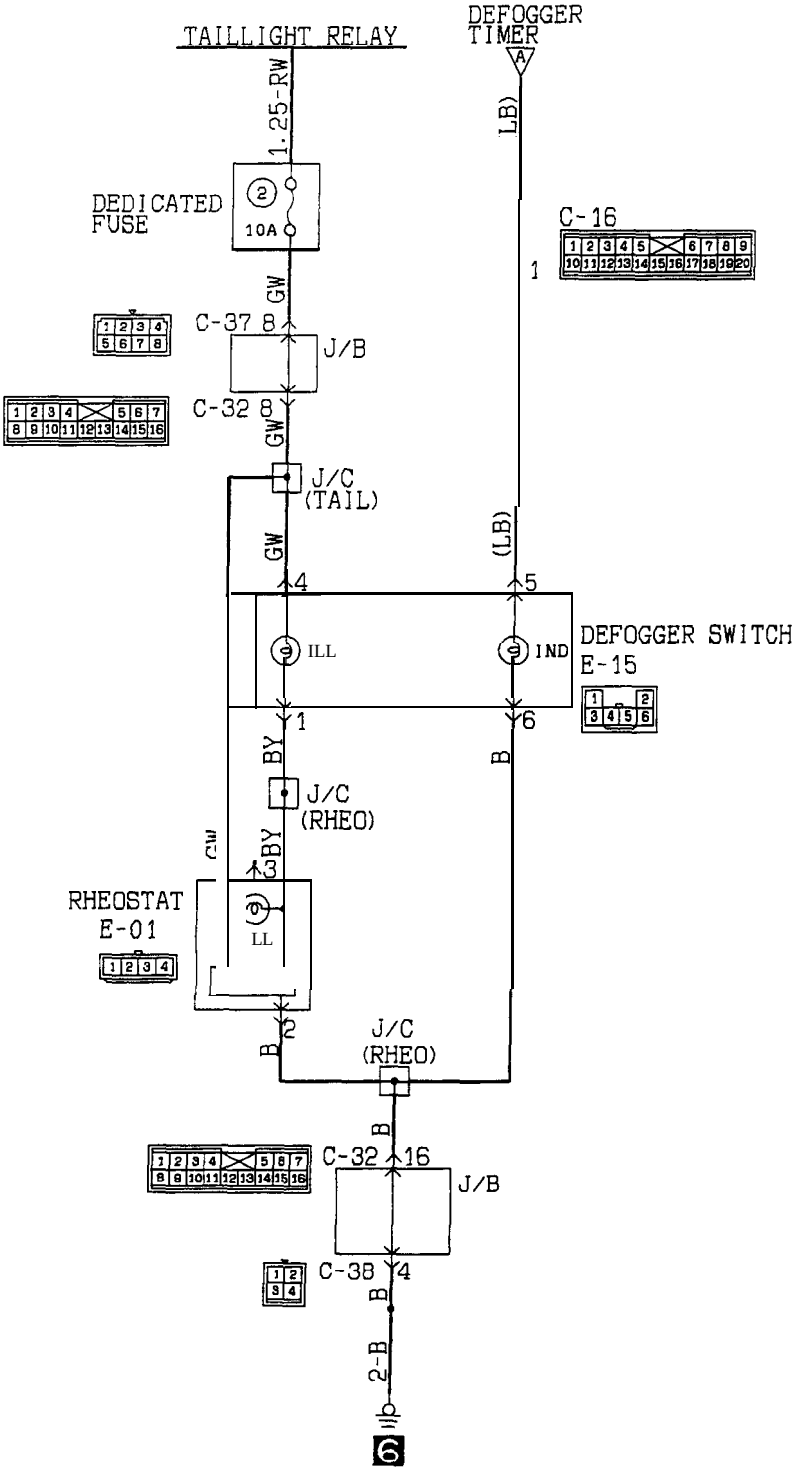
CIRCUIT DIAGRAM

< 1989 models>



XX35-AC-H1321-NM

TSB Revision

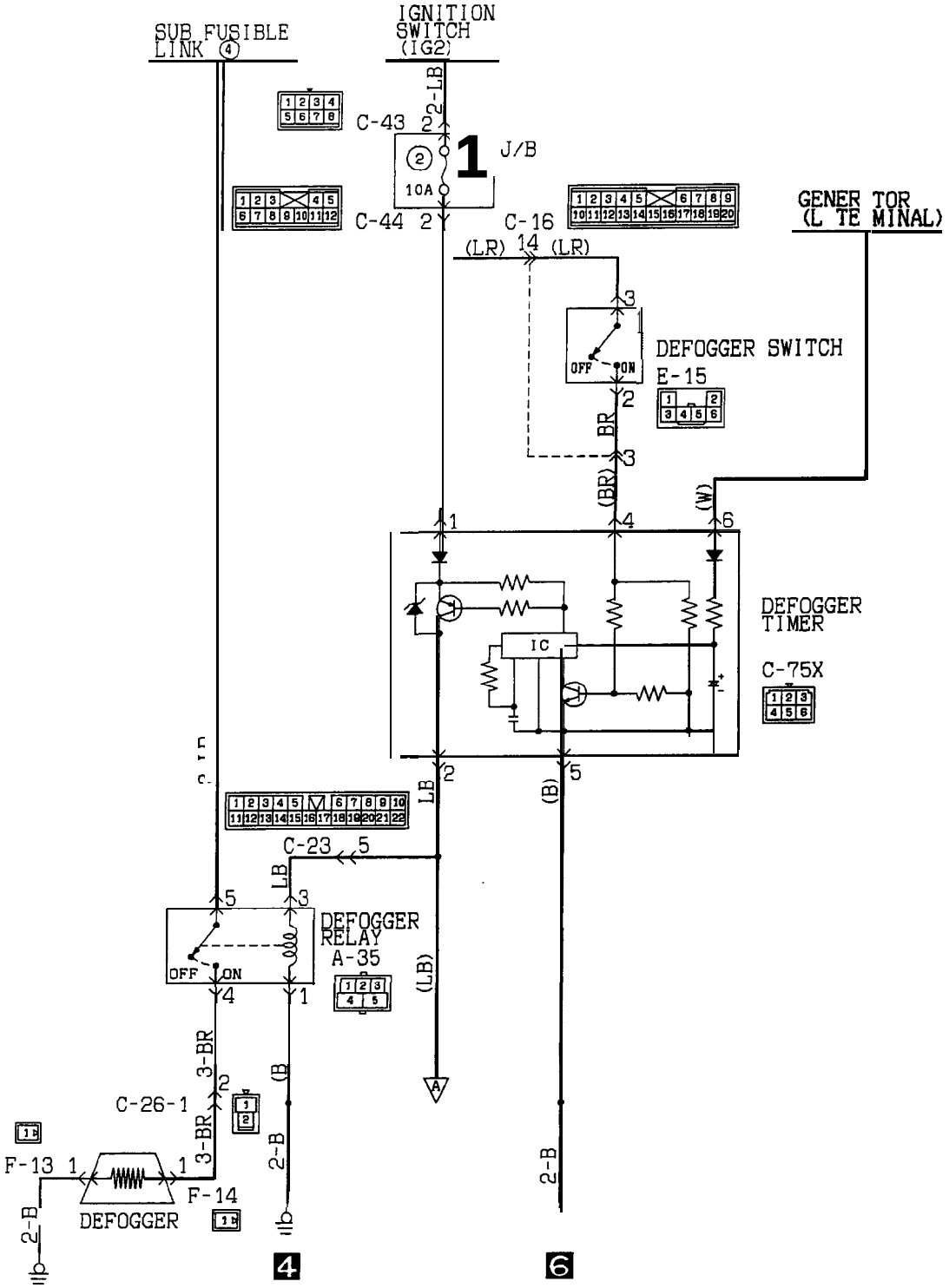


TSB Revision

DEFOGGER CIRCUIT

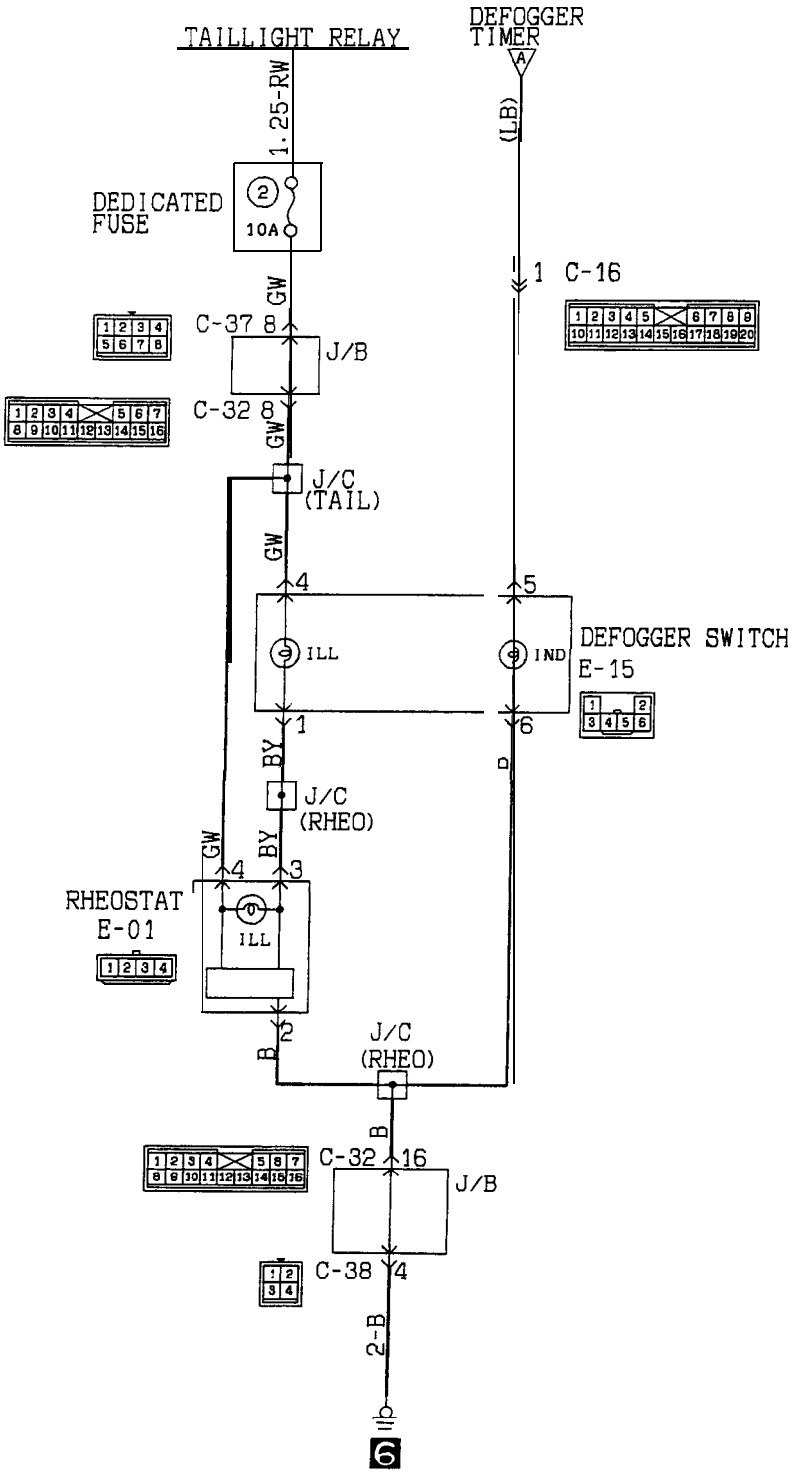
CIRCUIT DIAGRAM

< 1990 models>



KX35-AC-H1322-NM

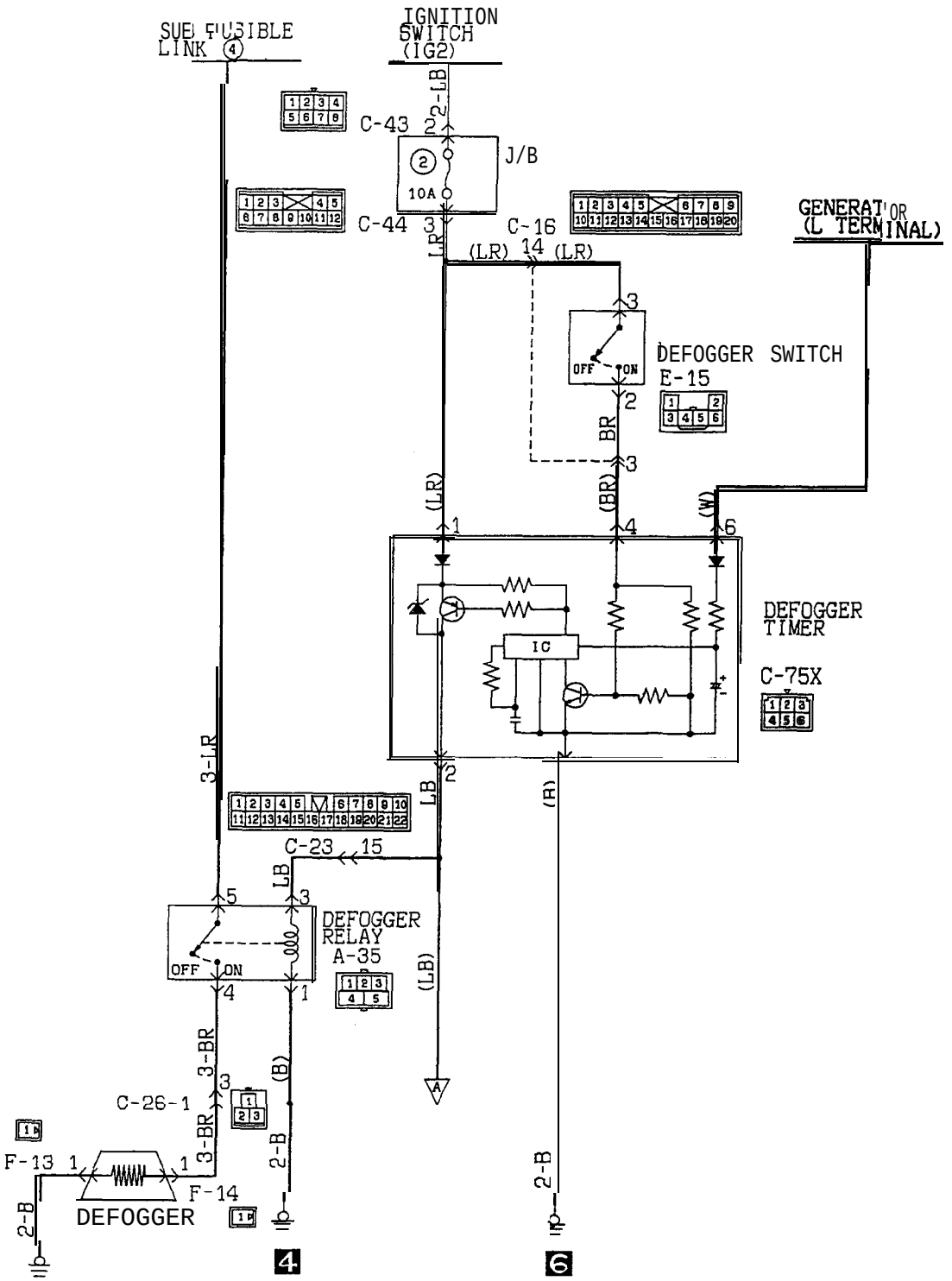
TSB Revision


TAILLIGHT RELAY
DEFOGGER TIMER
1.25-RW
(LB)
DEDICATED FUSE
10A
1 C-16
GW
C-37 8
J/B
C-32 8
GW
J/C (TAIL)
GW
4
5
ILL
IND
DEFOGGER SWITCH E-15
1
6
BY
B
J/C (RHEO)
GW
BY
4
3
RHEOSTAT E-01
ILL
B
2
J/C (RHEO)
B
C-32 16
J/B
C-38 4
2-B
6

DEFOGGER CIRCUIT

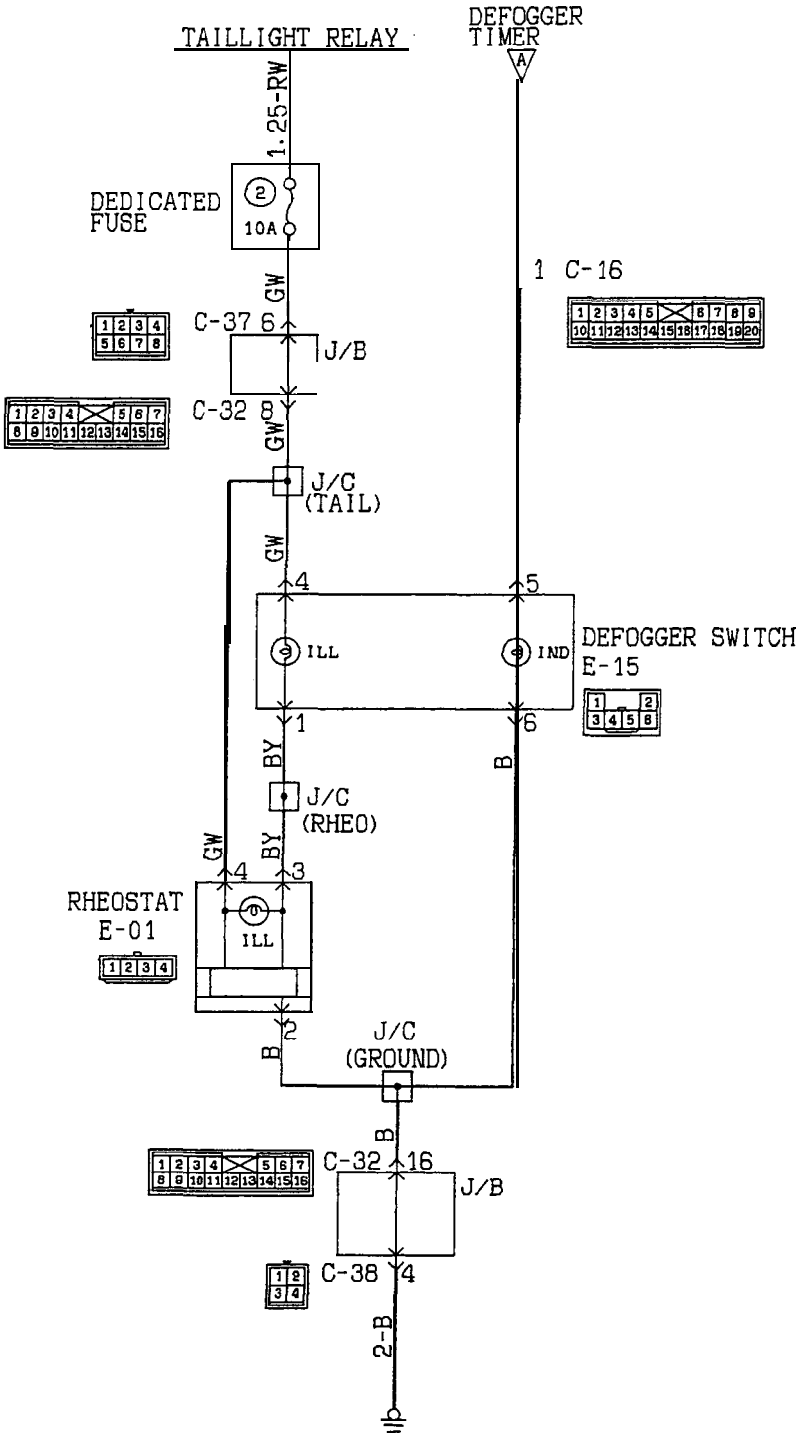
CIRCUIT DIAGRAM

<From 1991 models>



KX35-AC-H1332-NM

TSB Revision


TAILLIGHT RELAY
DEFOGGER TIMER
A
1.25-RW
DEDICATED FUSE
2
10A
GW
C-37 6
J/B
C-32 8
GW
J/C (TAIL)
GW
4
5
ILL
IND
DEFOGGER SWITCH E-15
1
6
BY
B
J/C (RHEO)
GW
BY
4
3
RHEOSTAT E-01
ILL
2
B
J/C (GROUND)
B
C-32 16
J/B
C-38 4
2-B
1 C-16

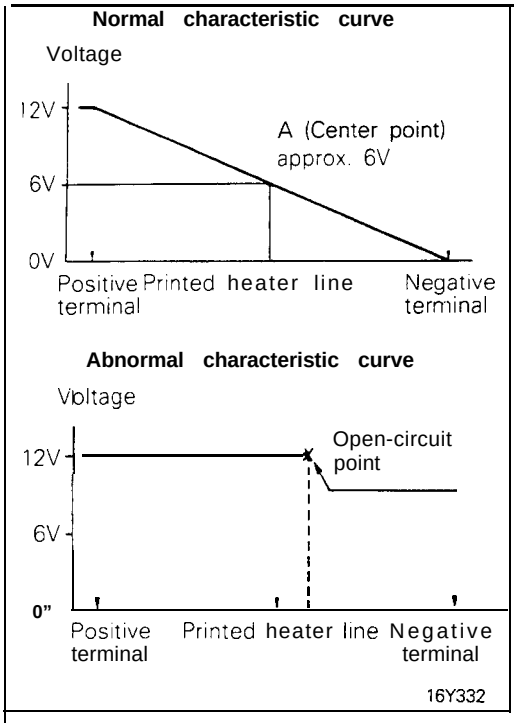
OPERATION

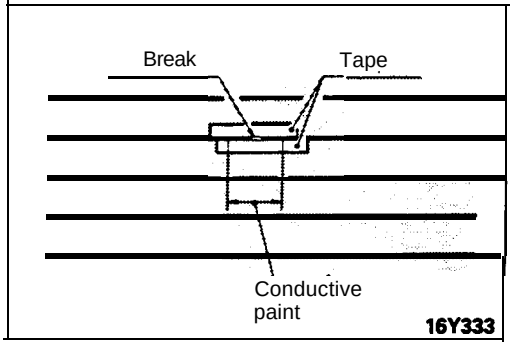
- When the defogger switch is turned ON with the ignition switch in ON position, the defogger relay is energized causing defogger to operate.
- At the same time, the defogger indicator light lights up indicating that the defogger is in operation.
- The defogger timer keeps the defogger relay remaining energized for 10 minutes after the defoaaer switch has been turned ON. If the defogger switch is pushed a second time during this 10-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.②.
      - Check defogger relay.
   2) Indicator comes on.
      - Check defogger.
2. Defogger timer is inoperative.
   - Check defogger timer.

NOTE
For information concerning the defogger relay and defogger timer, refer to P.54-163 and 54-164. --





SERVICE ADJUSTMENT PROCEDURES

M54POAA

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 6V.
(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) Remove 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.

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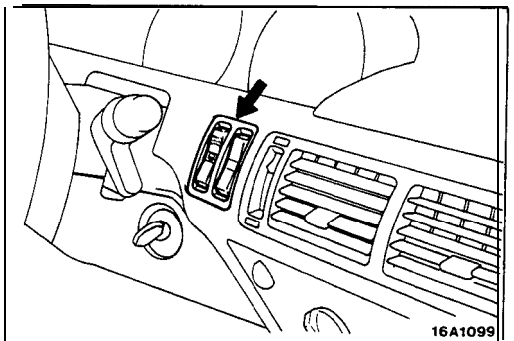
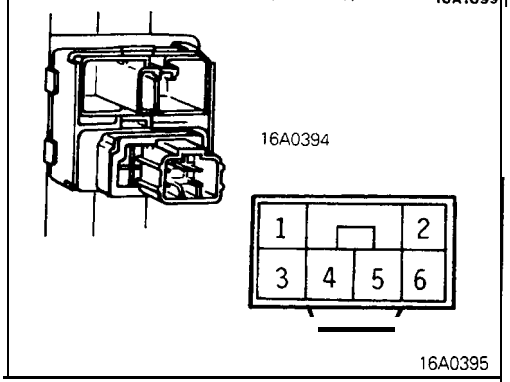




REAR WINDOW DEFOGGER SWITCH

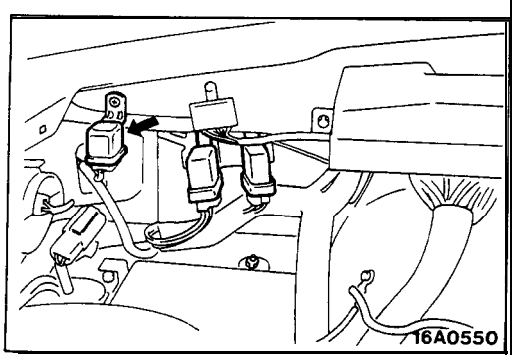
M54PJBH

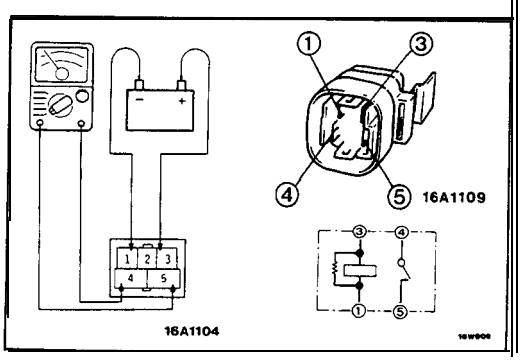
INSPECTION

Operate the switch and check the continuity between the terminals.

Switch position \ Terminal	3	2	1	4	5	6
OFF						
ON	O—O		Illumination light		Indicator light	

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





DEFOGGER RELAY

M54PLAB

INSPECTION

(1) Remove defogger relay.
(2) Connect battery power source to terminal 3. Check circuit between terminals with terminal 1 grounded.

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

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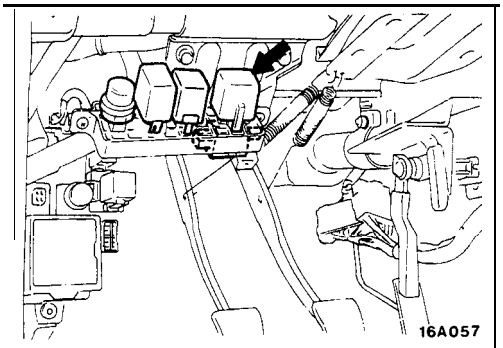
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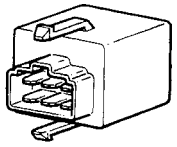
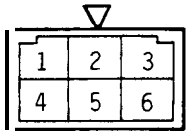
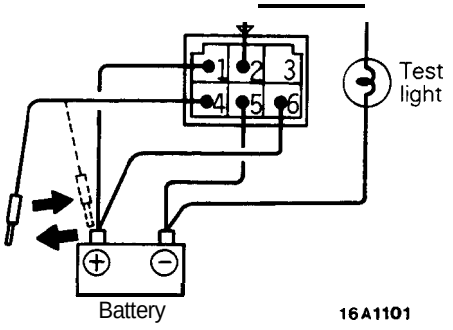

16A0406



1611102



16A1101

DEFOGGER TIMER

M54PPAD

INSPECTION

(1) Remove the defogger timer from indoor relay box.
(2) Connect the battery and the test light to the timer as shown in the figure.
(3) Check to be sure that the test lamp illuminates for approximately eleven seconds when battery voltage is applied to terminal ④ for a few seconds.
(4) Check to be sure that the test light switches OFF when battery voltage is again applied, during the test described above, to terminal ④.

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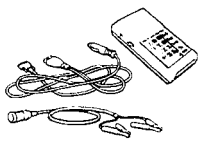
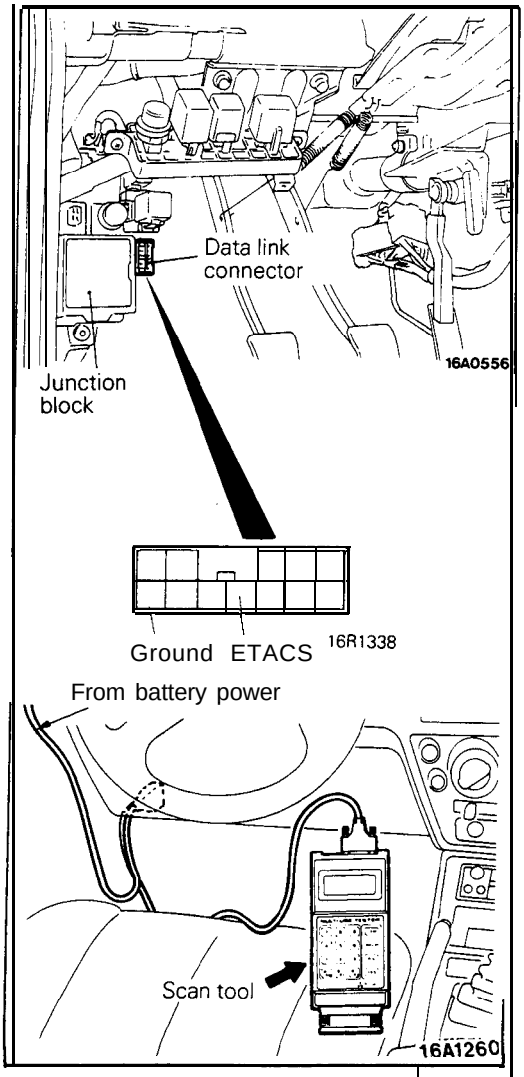
THEFT-ALARM SYSTEM

M54CPACb

SPECIAL TOOLS

Tool	Number	Name	Use
	MB991341	Scan tool (Multi-use tester <MUT>)	To check the input of the theft-alarm system
		ROM pack {For the number, refer to GROUP 00–Precautions Before Service}	



TROUBLESHOOTING

M54CNAGa

INPUT CHECK

Using a scan tool, check whether or not input signals are being input from each switch to the electronic control unit.

1. Connect the scan tool to the data link connector (located at the right side of the junction block).
2. Check to be sure that voltage should be output with the ignition key "OFF", door switch "ON" (door opening) **and** the following switch "ON".
   - Key-reminder switch
   - Hood switch
   - Door switch
   - Door lock actuator switch
   - Door and liftgate key cylinder switch
   - Trunk lid switch

   If the buzzer does not sound, check for a malfunction of that switch or for damaged or disconnected wiring.

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TROUBLESHOOTING QUICK-REFERENCE TABLE (ETACS-RELATED PROBLEMS ONLY)

For information concerning the locations of electrical components, refer to GENERAL.

1. ARMING/DISARMING RELATIONSHIP

Problem	Probable cause	Check method	Remedy
The system is not armed even though the arming procedures are followed. (The SECURITY light doesn't illuminate, and the alarm doesn't function.) [The central door locking system, however, should function normally. If the central locking system does not function normally, refer to GROUP 42 – Troubleshooting.]	Damaged or disconnected wiring of ECU power supply circuit	Check by the circuit check No. 1 procedures. (P.54-169)	Replace the fuse No. 17 or repair the harness.
	Malfunction of the door lock actuator switch	Check by following individual part and the circuit check No. 6 procedures. (P.54-174)	Replace the door lock actuator or repair the harness.
	Short-circuit of door lock actuator switch input circuit		
	Damaged or disconnected wiring of left-front and right-front door switch input circuit	Check by following individual part and circuit check No. 5 procedures. (P.54-173)	Repair the harness or replace the door switch.
	Malfunction of the ECU	–	Replace the ECU.
The arming procedures are followed, but the SECURITY light doesn't 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 power supply or drive circuit.	Check by following individual part and circuit check No. 9 procedures. (P.54-176)	Replace the fuse No. 9 or repair the harness.
	Damaged or disconnected wiring of SECURITY light bulb		Replace the light bulb.
	Malfunction of the ECU	–	Replace the ECU.
The armed condition is not maintained when a door is unlocked while the SECURITY light is illuminated (after the arming procedures are completed).	Damaged or disconnected wiring of door lock actuator input circuit	Check by following individual part and the circuit check No. 6 procedures. (P.54-174)	Repair the harness or replace the door lock actuator.
	Malfunction of the door lock actuator switch		
	Malfunction of the ECU	–	Replace the ECU.
The alarm sounds in error when, while the system is armed, the trunk lock is unlocked by using the key.	Damaged or disconnected wiring of trunk lid key cylinder unlock switch input circuit	If a malfunction is indicated as a result of checking the input signals, check by following individual part and the circuit check No. 7 procedures. (P.54-175)	Repair the harness or replace the trunk lid key cylinder.
	Malfunction of the trunk lid key cylinder unlock switch		
	Malfunction of the ECU	–	Replace the ECU.

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

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Problem	Probable cause	Check method	Remedy
The system is not disarmed when, while armed, a left and/or right door is opened by using the key. (Alarm sounds in error.)	Damaged or disconnected wiring of key cylinder switch input circuit	If a malfunction is indicated as a result of checking the input signals, check by following individual part and the circuit check No. 7 procedures. (P.54-175)	Repair the harness or replace the key cylinder.
	Malfunction of the key cylinder switch		
	Malfunction of the ECU	–	Replace the ECU.

2. ACTIVATION/DEACTIVATION RELATIONSHIP

Problem	Probable 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, however, and the alarm is activated when the trunk lid or hood is opened.)	Damaged or disconnected wiring of door switch (all doors) input circuit	If a malfunction is indicated as a result of checking the input signals, check by following individual part and the circuit check No. 4. (P.54-172)	Repair the harness or replace the door switch.
	Malfunction of the door switch		
	Malfunction of the electronic control unit	–	Replace the electronic control unit.
There is no alarm when, as an alarm test, the trunk lid is opened without using the key. (The alarm is activated, however, by the opening of a door.)	Damaged or disconnected wiring of trunk lid switch input circuit	If a malfunction is indicated as a result of checking the input signals, check by following individual part and the circuit check No. 8 procedures. (P.54-176)	Repair the harness or replace the trunk lid switch.
	Malfunction of the trunk lid switch		
	Malfunction of the ECU	–	Replace the ECU.
There is no alarm when, as an alarm test, the hood is opened from within the vehicle. (The alarm is activated, however, by the opening of a door.)	Damaged or disconnected wiring of hood switch input circuit	If a malfunction is indicated as a result of checking the input signals, check by following individual part and the circuit check No. 3 procedures. (P.54-171)	Repair the harness or replace the hood switch.
	Malfunction of the hood switch		
	Malfunction of the ECU	–	Replace the ECU.
Engine can't be started. Engine starting should be possible, however, when the starter relay is in the switched-off (normally closed) condition, with the ECU harness connector disconnected, etc.)	There is a short-circuit of the starter relay drive circuit and a short-circuit of the key-reminder switch at the same time.	Check by following individual part and the circuit check No. 14 procedures. (P.54-180)	Repair the harness and replace the key-reminder switch.
There is no alarm when, as an alarm test, all doors and the deck lid are opened without using the key and the hood is opened from within the vehicle. The headlights can, however, be switched ON in the usual way by using the lighting switch.)	Damaged or disconnected wiring of headlight relay or horn relay drive circuit	Check by following individual part and the circuit check No. 10, 12 procedures. (P.54-177, 178)	Repair the harness or replace the diode.
	Damaged or disconnected wiring of diode		
	Malfunction of the ECU	–	Replace the ECU.

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Problem	Probable cause	Check method	Remedy
The headlights flash during an alarm test, but the theft-alarm horn does not sound.	Damaged or disconnected wiring of horn relay drive circuit	Check by following individual part and the circuit check No. 10,11 procedures. (P.54-177)	Repair the harness or replace the diode or the horn relay.
	Damaged or disconnected wiring of diode		
	Malfunction of the theft-alarm horn relay		
The system is not deactivated when, during an alarm test in which the alarm is intentionally activated, the door or trunk is unlocked by using the key. (The system also cannot be disarmed.)	Damaged or disconnected wiring of key cylinder switch input circuit	If a malfunction is indicated as a result of checking the input signals, check by following individual part and the circuit check No. 7 procedures. (P.54-175)	Repair the harness or replace the key cylinder.
	Malfunction of the key cylinder switch		
	Malfunction of the ECU	–	Replace the ECU.

NOTE

1. If there is abnormally excessive play in the installation of the key cylinder switch of the trunk and for doors, or if there is improper installation, or if there is a malfunction of the switch itself, the signals to disarm the system and to deactivate the alarm won't be sent to the ECU.
   In this instance, after the system has been armed, the alarm will be activated even if the door is opened by using the key.
   If, however, there is a short-circuit malfunction of key cylinder switch of door, the electronic control unit will judge that there is a malfunction of the detection switch if the ignition switch is switched ON, and the alarm will not be set thereafter until the short-circuit malfunction is reset.
2. If there is a malfunction of the key cylinder switch system (damaged or disconnected wiring, or short-circuit), thus making it necessary to prevent an incorrect (accidental) alarm, the system should not be armed by using the key to lock when all the doors are closed.

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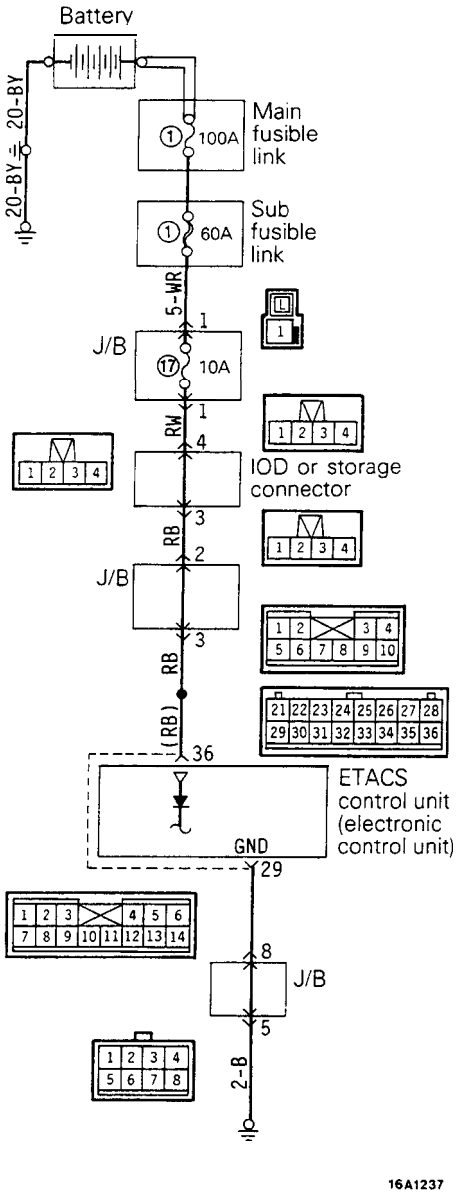
CHECKING THE CIRCUIT AND INDIVIDUAL PART

1 ETACS POWER-SUPPLY AND GROUND CIRCUITS



IOD:Ignition Off Draw

Description of operation

The battery supplies a stabilized 5V power supply to the ECU, via the constant-voltage circuit and terminal ㊱ (which is directly connected to the battery).

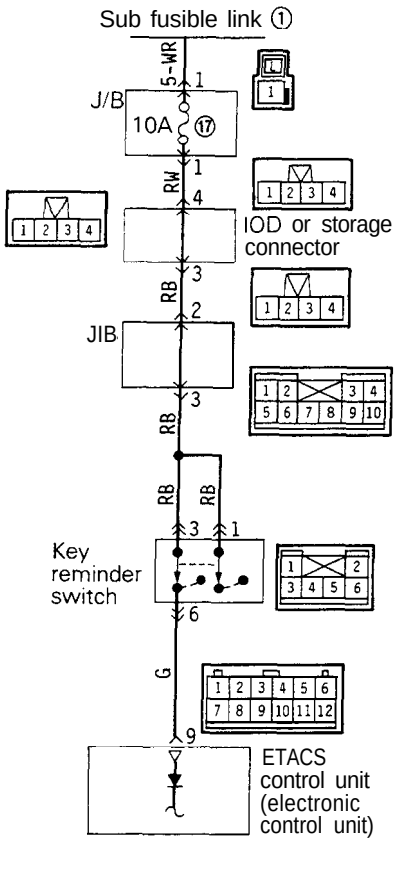
ECU terminal voltage (Connection condition of the ECU connector)

ECU terminal No.	Signal	Condition	Terminal voltage
㊱	ECU power supply	At all times	Battery positive voltage

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
㉙	ECU ground	Resistance	㉙–ground	At all times	Continuity

2. KEY-REMINDER SWITCH INPUT CIRCUIT



IOD: Ignition Off Draw

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)

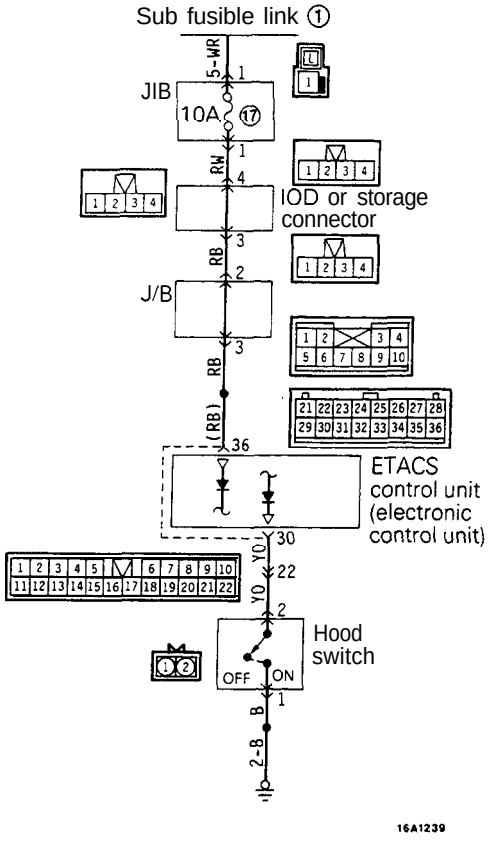
ECU terminal No.	Signal	Condition	Terminal voltage
⑨	Key-reminder switch	Key removed	Battery positive voltage
		Key inserted	ov

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
⑨	Key-reminder switch	Resistance	⑨–ground	Key removed	Continuity
				Key inserted	No continuity

Checking individual part:
Key-reminder switch – Refer to P.54-6.
Ignition switch – Refer to P.54-6.

3. HOOD SWITCH INPUT CIRCUIT



IOD: Ignition Off Draw

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 voltage
㉚	Hood switch	Hood	Open	0V
			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 component	Measurement	Tester connection	Check condition		Standard
㉚	Hood switch	Resistance	㉚–ground	Hood	Closed	No continuity
					Open	Continuity

Checking individual part:
Hood switch – Refer to GROUP 42–Hood.

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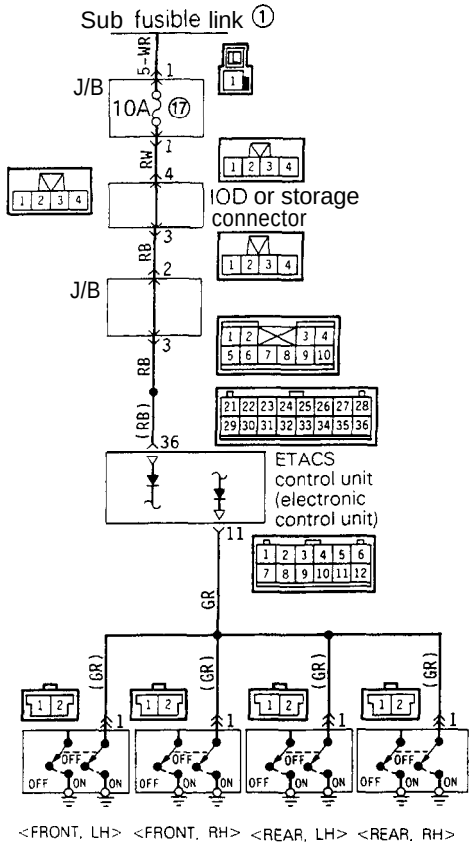
4. DOOR SWITCH (ALL DOORS) INPUT CIRCUIT



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.	Signal	Condition		Terminal voltage
⑪	All door switches	All doors	Open	0V
			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 component	Measurement	Tester connection	Check condition		Standard
⑪	All door switches	Resistance	⑪-ground	All doors	Closed	No continuity
					Open	Continuity

Checking individual part:
Door switch – Refer to GROUP 42–Door Assembly.

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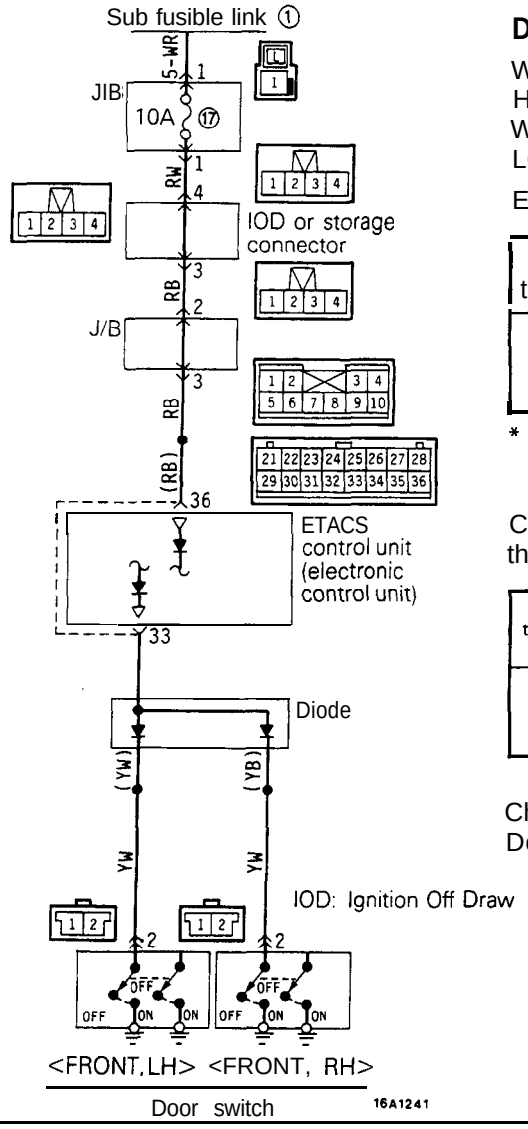
5. DOOR SWITCH (LEFT-FRONT DOOR AND RIGHT-FRONT DOOR) INPUT CIRCUIT



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.	Signal	Condition		Terminal voltage
㉝	Front door switch	Front door	Open	0V
			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 component	Measurement	Tester connection	Check condition		Standard
㉝	Front door switch	Resistance	㉝–ground	Front door	Closed	No continuity
					Open	Continuity

Checking individual part:
Door switch – Refer to GROUP 42–Door Assembly.

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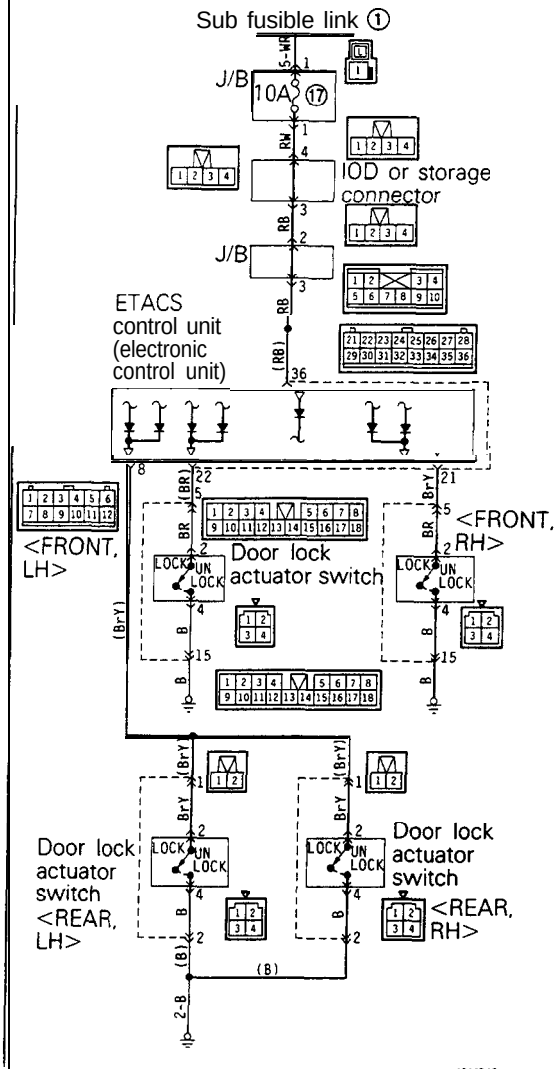
6. DOOR LOCK ACTUATOR SWITCH INPUT CIRCUIT



IOD: Ignition Off Draw

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 activate 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
㉒	Door lock actuator switch (front, LH)	Door lock actuator switch	Lock: OFF	5V*
			Unlock: ON	0V
㉑	Door lock actuator switch (front, RH)	Door lock actuator switch	Lock: OFF	5V*
			Unlock: ON	0V
⑧	Door lock actuator switch (rear door)	Door lock actuator switch	Lock: OFF	5V*
			Unlock: ON	ov

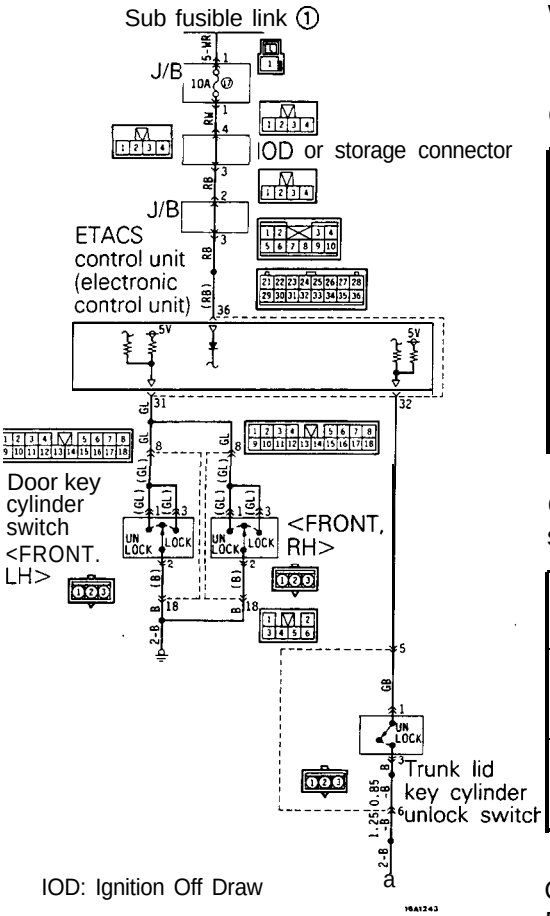
* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the door 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
㉒	Door lock actuator switch	Resistance	@-ground	Door lock actuator switch	Lock: OFF	No continuity
					Unlock: ON	Continuity
㉑	Door lock actuator switch	Resistance	@-ground	Door lock actuator switch	Lock: OFF	No continuity
					Unlock: ON	Continuity
⑧	Door lock actuator switch	Resistance	@-ground	Door lock actuator switch	Lock: OFF	No continuity
					Unlock: ON	Continuity

Checking individual part:
Door lock actuator switch – Refer to GROUP 42–Central door locking system.

7. DOOR KEY CYLINDER AND TRUNK LID UNLOCK SWITCH INPUT CIRCUIT



Description of operation

When the door key is rotated or the trunk lid 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
㉛	Door key cylinder switch (front, LH)	Door key cylinder	Not rotate	5V
			Rotate	ov
㉜	Trunk lid key cylinder unlock switch	Trunk lid key cylinder	Lock	5V
			Unlock	ov

Checking the door key cylinder and trunk lid key cylinder unlock switch circuit

ECU terminal No.	Connected to measured component	Measurement	Tester connection	Check condition		Standard
㉛	Door key cylinder switch	Resistance	@-ground	Door key cylinder	Not rotate	No continuity
					Rotate	Continuity
㉜	Trunk lid key cylinder unlock switch	Resistance	㉜–ground	Trunk lid key cylinder	Lock	No continuity
					Unlock	Continuity

Checking individual part:
Door key cylinder switch – Refer to GROUP 42–Door Handle and Latch.

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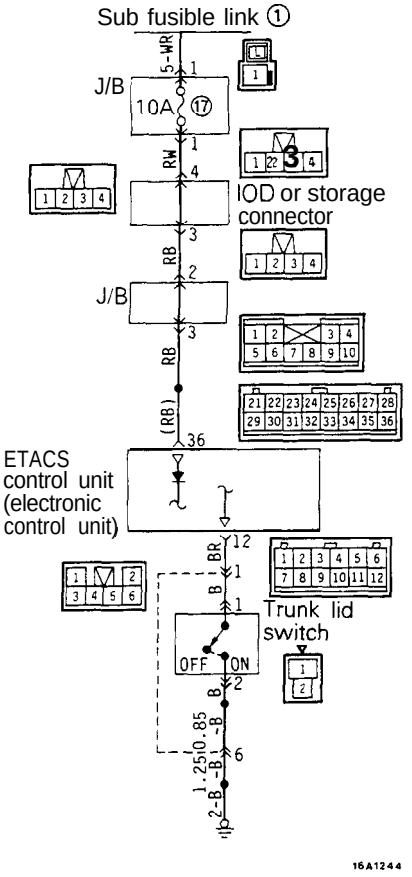
8. TRUNK LID SWITCH INPUT CIRCUIT



IOD: Ignition Off Draw

Description of operation

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

ECU terminal voltage (Connection condition of the ECU connector)

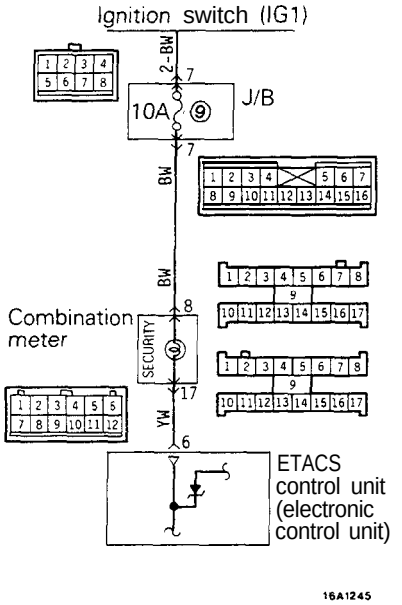
ECU terminal No.	Signal	Condition		Terminal voltage
⑫	Trunk lid switch	Trunk lid	Open	ov
			Closed	5V*

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

Checking the trunk lid 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
⑫	Trunk lid switch	Resistance	⑫–ground	Trunk lid	Closed	No continuity
					Open	Continuity

9. SECURITY LIGHT ACTIVATION CIRCUIT



Description of operation

If all doors are in locked state after key locking or 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: Malfunction	Cause	Remedy
1	Combination meter connector terminal voltage (terminal No. 8)	Battery positive voltage	0V	Fuse ⑨ damaged or disconnected	Replace the fuse
				Harness damaged or disconnected, or short-circuit	Repair the harness
2	Combination meter connector terminal voltage (terminal No. 17)	Battery positive voltage	OV	Damaged or disconnected wiring of SECURITY light bulb	Replace the bulb
				Harness damaged or disconnected	Repair the harness
3	ECU terminal voltage	Battery positive voltage	OV	Harness damaged or disconnected. or short-circuit	Repair the harness

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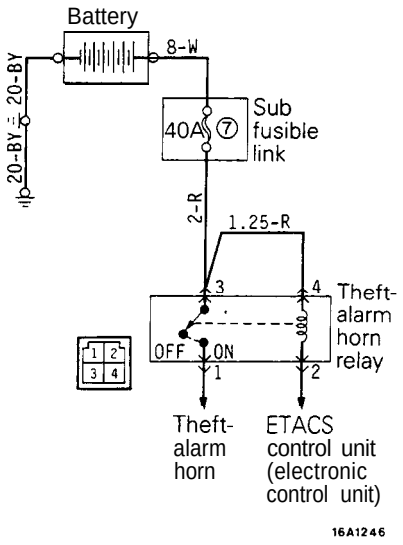
10. THEFT-ALARM HORN RELAY POWER-SUPPLY CIRCUIT



Description of operation

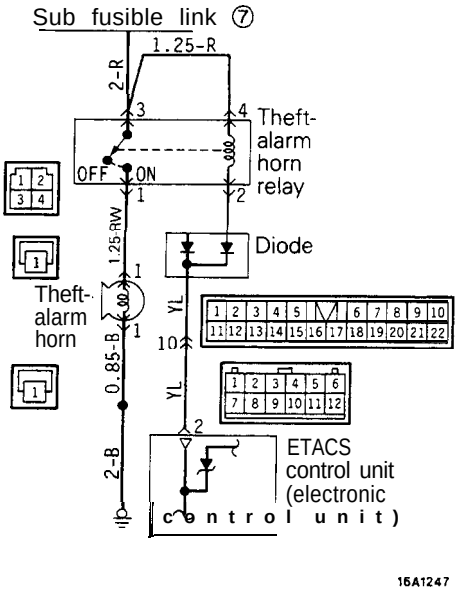
Power voltage is always supplied to the theft-alarm horn relay.

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

Check object	Judgement		Cause	Remedy
	Normal	Malfunction		
(Wiring harness side) terminal voltage (4–Ground)	Battery positive voltage	ov	Sub fusible link ⑦ blown	Replace the sub fusible link
			Damaged or disconnected harness	Repair the harness

Checking individual part:
Theft-alarm horn relay – Refer to P.54-105.

11. 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 theft-alarm horn.

Checking the theft-alarm horn activation circuit (Disconnect the connector of the ECU, then short-circuit terminal No. 2 (YL line), and activate the theft-alarm horn relay)

Step	Check object	Judgement		Cause	Remedy
		Normal	Malfunction		
1	Theft-alarm horn relay terminal voltage (I-Ground)	Battery positive voltage	ov	Malfunction of the theft-alarm horn relay	Check the theft-alarm horn relay (Refer to P.54-105.)
2	Theft-alarm horn terminal voltage (Battery side terminal–ground)	Battery positive voltage	OV	Harness damaged or disconnected	Repair the harness
3	Theft-alarm horn terminal voltage (Ground side terminal–Ground)	Theft-alarm horn sounds (0V)	Theft-alarm horn doesn't sound (0V)	Malfunction of the theft-alarm horn	Replace the theft-alarm horn
			Battery positive voltage	Damaged or disconnected wiring of ground circuit	Repair the harness

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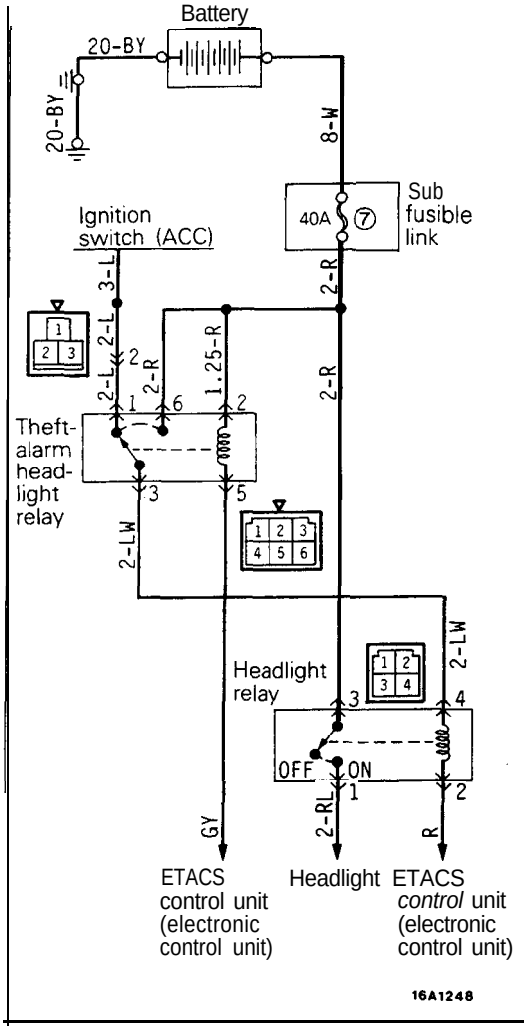
12. HEADLIGHT POWER-SUPPLY CIRCUIT



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 (3–Ground)	Battery positive voltage	0 V	Sub fusible link ⑦ blown	Replace the sub fusible link
			Damaged or disconnected harness	Repair the harness

Checking individual part:
Headlight relay – Refer to P.54-97.

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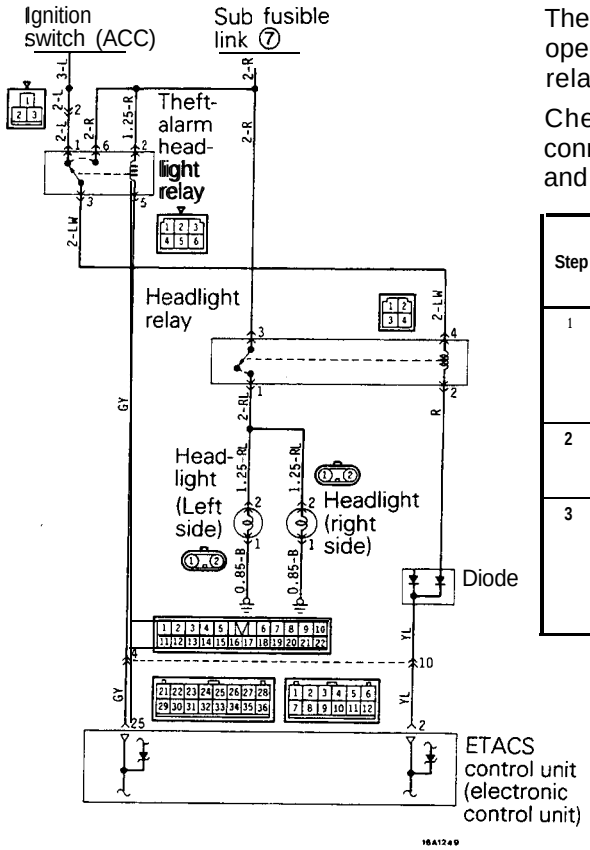
13. HEADLIGHT ACTIVATION CIRCUIT



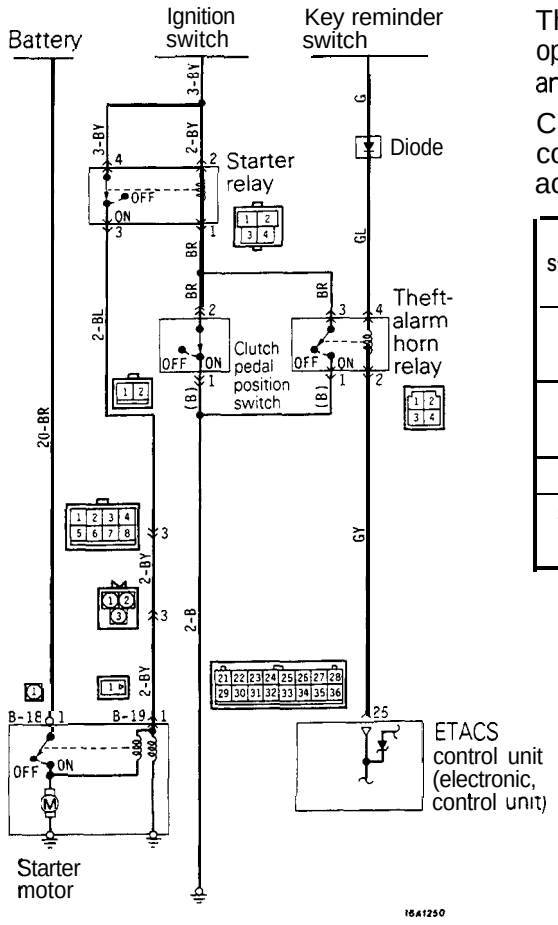
Description of operation

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 No. 2 (YL line) and activate the headlight relay)

Step	Check object	Judgement		Cause	Remedy
		Normal	Mal-function		
1	**Headlight relay terminal voltage (1 -Ground)**	Battery positive voltage	0V	Malfunction of the headlight relay	Check the headlight relay (Refer to P.54-97.)
2	**Headlight terminal voltage (2–Ground)**	**Battery positive voltage**	**ov**	**Harness damaged or disconnected**	**Repair the harness**
3	**Headlight terminal voltage (1 -Ground)**	Battery positive voltage	The head-light isn't turned on.	**Malfunction of the headlight. Harness damaged or disconnected. Malfunction of Dimmer switch**	**Replace the headlight or dimmer switch Repair the harness**

14. 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 (3–Ground)	Battery positive voltage	ov	Malfunction of the starter relay	Check the starter relay
2	Starter motor terminal (1 -Ground)	Battery positive voltage	0V	Harness damaged or disconnected	Repair the harness
	(Starter motor connector B-19:Separation)				
3	Continuity between "B-19" connector and ground	0Ω	∞Ω	Damaged magnet switch	Replace magnet switch

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