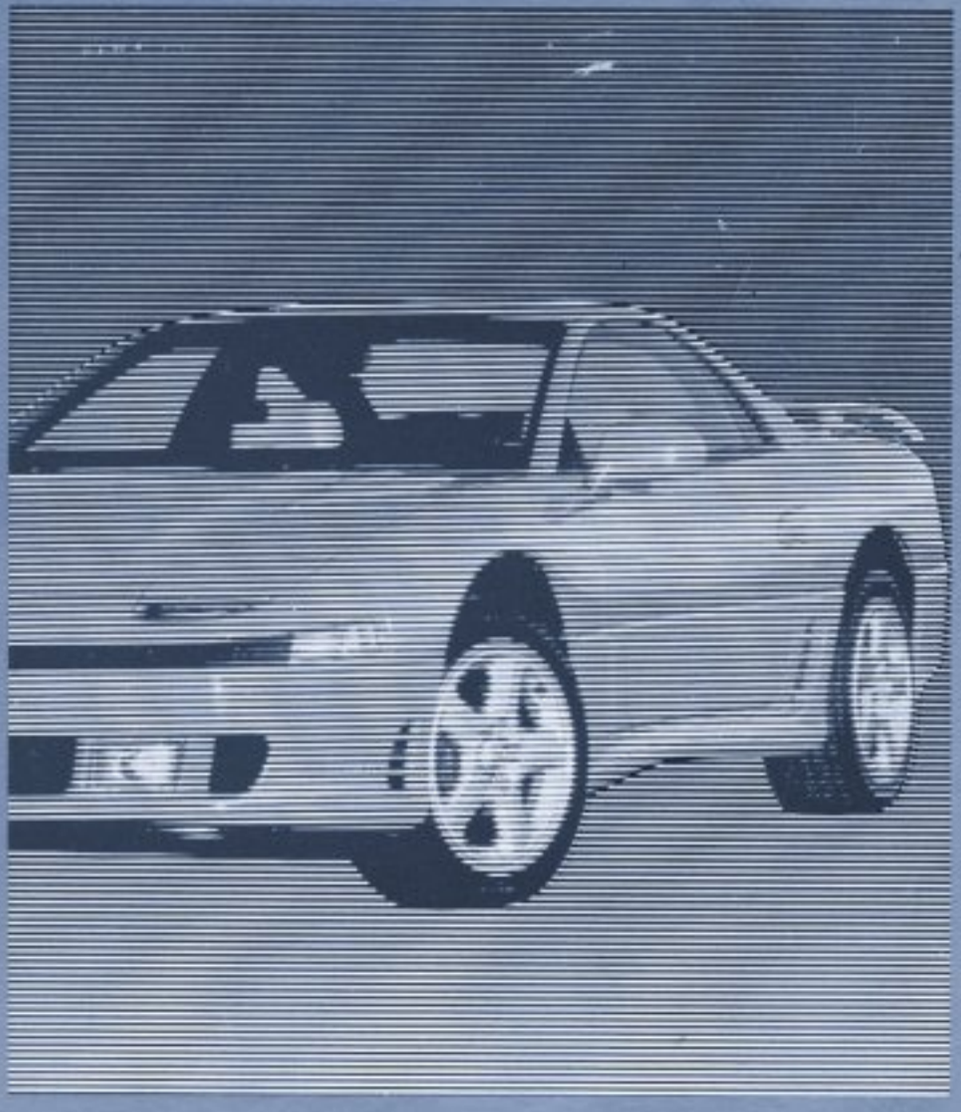
MITSUBISHI MOTORS

Service Manual

ELECTRICAL



1991-1993

3000GT

3000GT

1991-1993

Volume 2

Electrical

FOREWORD

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



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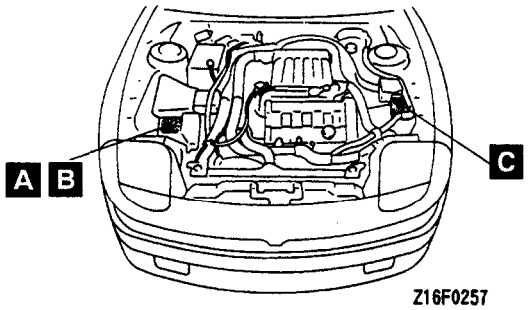
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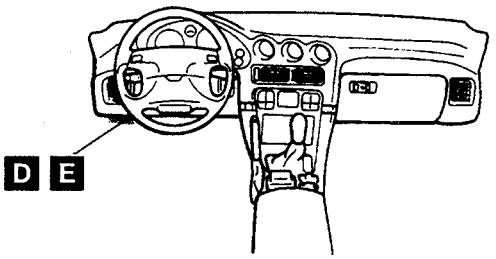
NOTE:
For information concerning all components other than the electrical system and on-vehicle service procedures for engines and transmissions, refer to Volume 1 "Chassis & Body" of this paired Service Manual.
For overhaul procedures of engines or transmission, refer to the separately issued Engine Service Manual or Manual/ Automatic Transmission Service Manual.

FUSIBLE LINK, FUSE AND IOD OR STORAGE CONNECTOR LOCATION

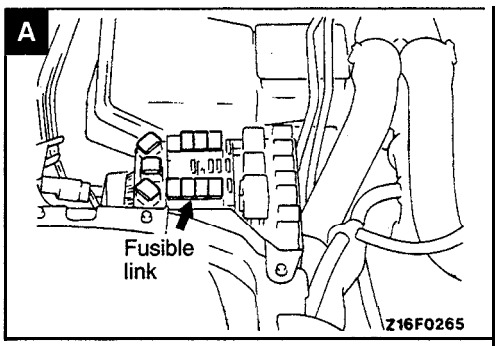
Name	Symbol	Name	Symbol
Dedicated fuse No. 1 to No. 7	B	Fusible link	A
Dedicated fuse No. 8 and No. 9	C	IOD or Storage connector	B
Dedicated fuse No. 10	E	Multi-purpose fuse	D

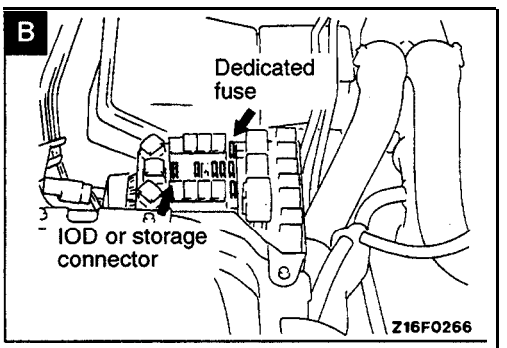


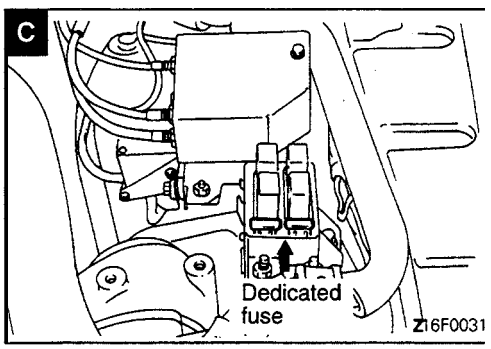
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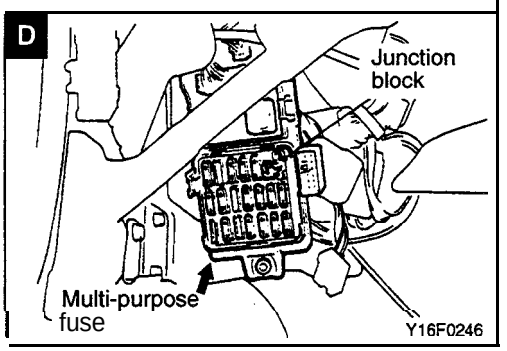


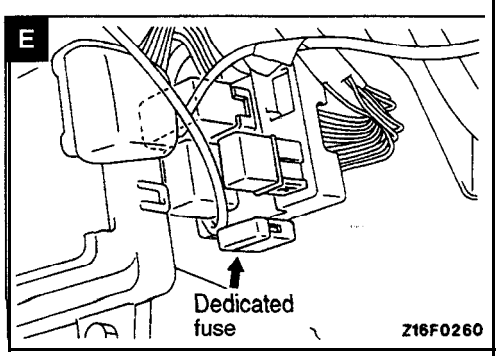
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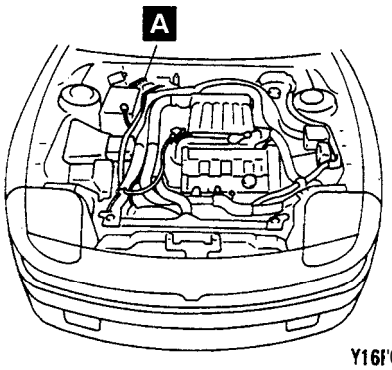




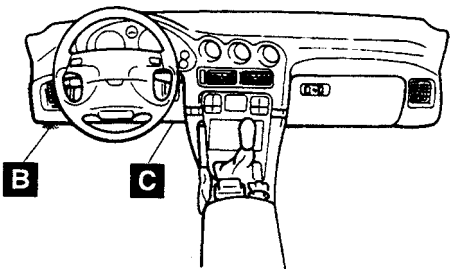
TSB Revision

INSPECTION TERMINAL LOCATION

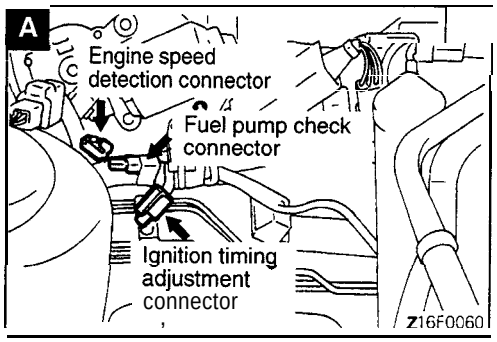
Name	Symbol	Name	Symbol
Data link connector <From 1994 models>	C	Fuel pump check connector	A
Data link connector <Up to 1993 models>	B	Ignition timing adjustment connector	A
Engine speed detection connector	A		

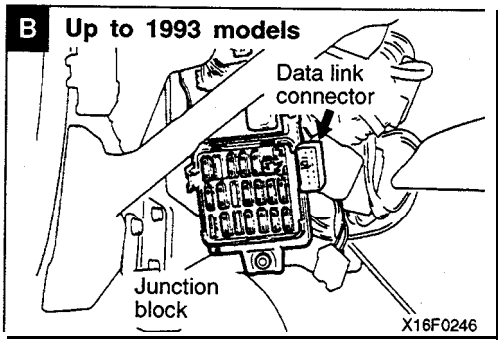


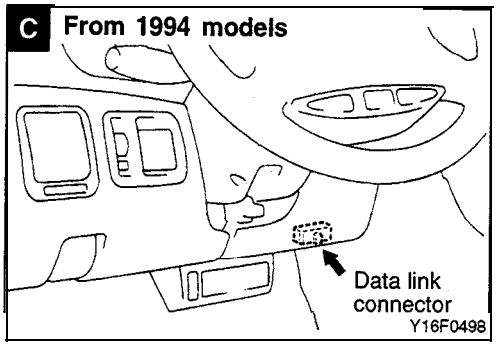
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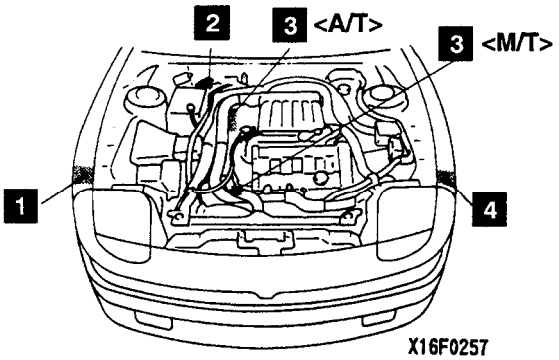


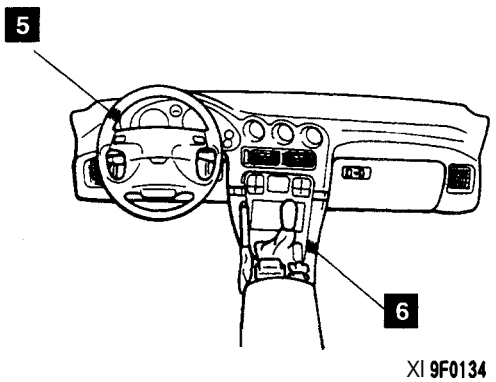


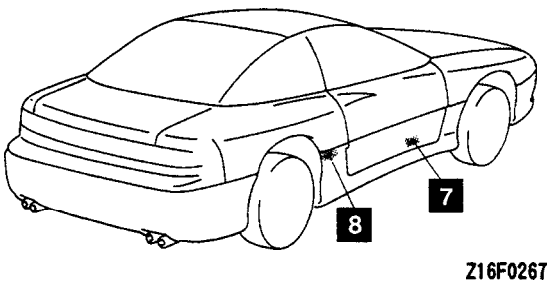


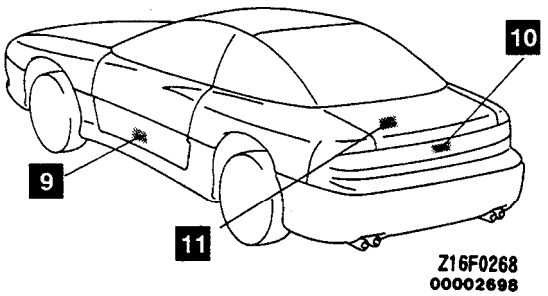
TSB Revision

GROUNDING LOCATION

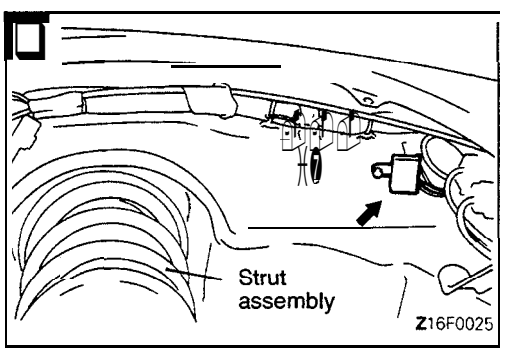


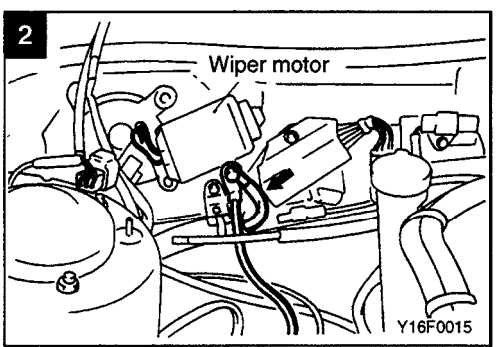


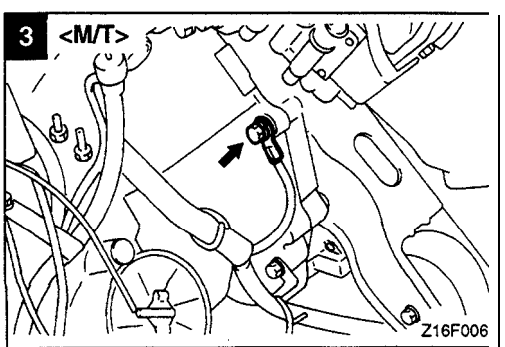


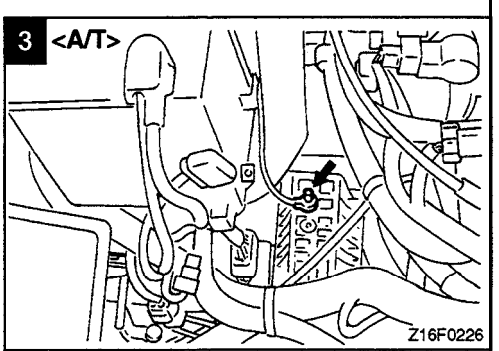


NOTE
Same ground numbers are used in the circuit diagram.

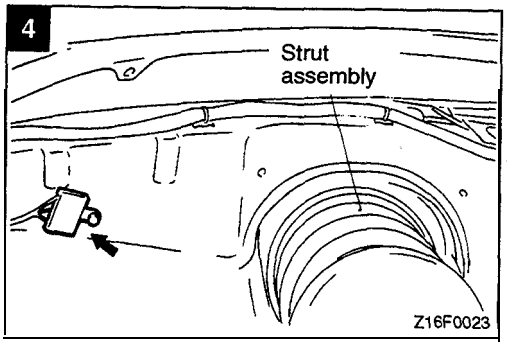




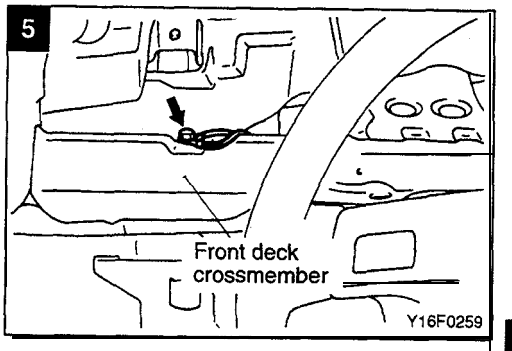




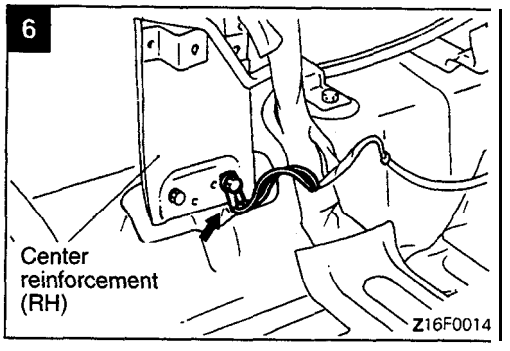
4


Strut
assembly
Z16F0023

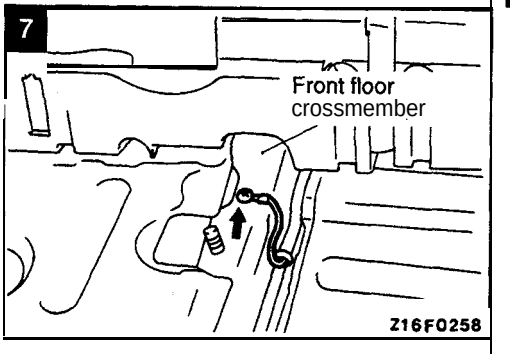
5


Front deck
crossmember
Y16F0259

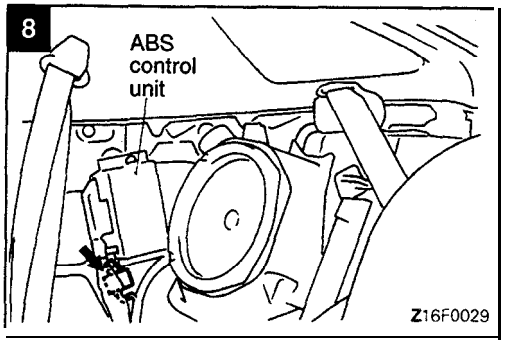
6


Center
reinforcement
(RH)
Z16F0014

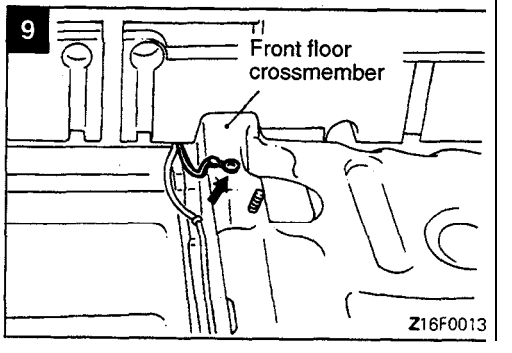
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Front floor
crossmember
Z16F0258

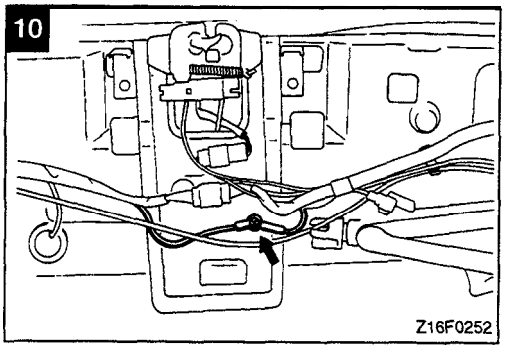
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ABS
control
unit
Z16F0029

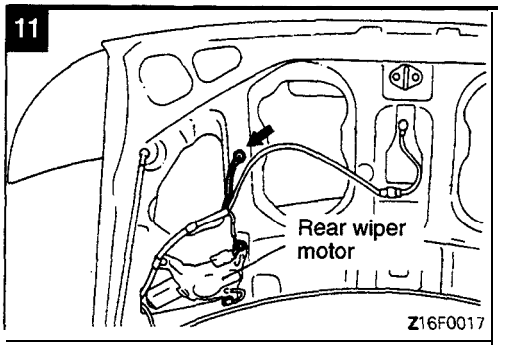
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Front floor
crossmember
Z16F0013

10


Z16F0252

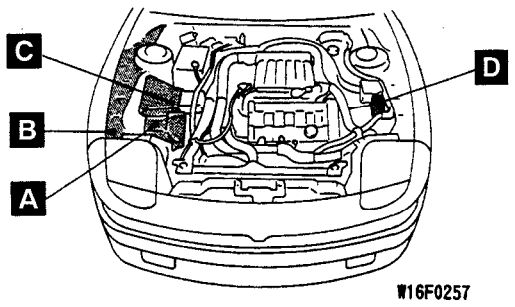
11


Rear wiper
motor
Z16F0017

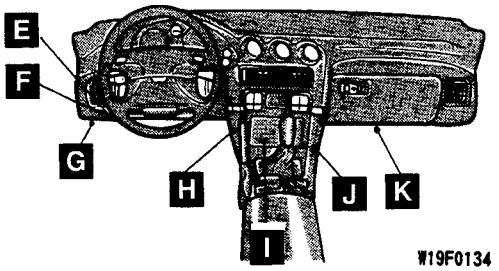
RELAY LOCATION

Name	Symbol	Name	Symbol
ABS power relay*1	A	MFI relay	J
Auto-cruise control relay	I	Motor relay (ABS hydraulic unit)	B
Blower motor relay	E	Pop-up motor relay*3	A
Blower motor relay (HI)*5	K	Power window relay	F
Condenser fan motor relay (HI)	D	Radiator fan motor control relay*3	D
Condenser fan motor relay (LO)	D	Radiator fan motor relay (HI)	A
Defogger relay	F	Radiator fan motor relay (LO)	A
Door lock power relay 1	F	Rear intermittent wiper relay	L
Door lock power relay 2 ● 2	L	Starter relay	A
Fog light relay	A	Tail light relay	A
Fuel pump relay	C	Theft-alarm horn relay*4	E
Generator relay	A	Theft-alarm starter relay*4	H
Headlight relay	A	Turn-signal and hazard flasher unit	G
Horn relay	A	Valve relay (ABS hydraulic unit)	B
Magnetic clutch relay	D		

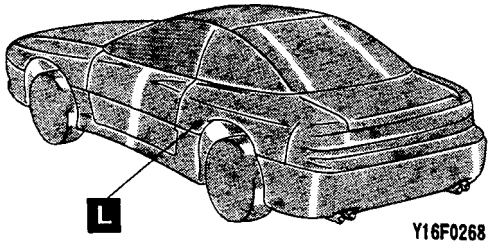
NOTE
(1) *1: Vehicles produced up to Oct. 1993.
(2) ● 2: Except 1993 and earlier models without keyless entry system.
(3) *3: Up to 1993 models
(4) *4: Vehicles with theft-alarm system.
(5) ● s: Except vehicles with manual air conditioning from 1996 models.



W16F0257



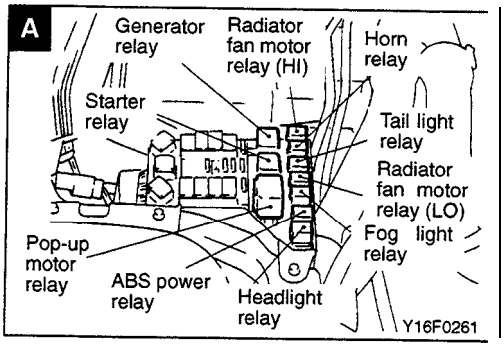
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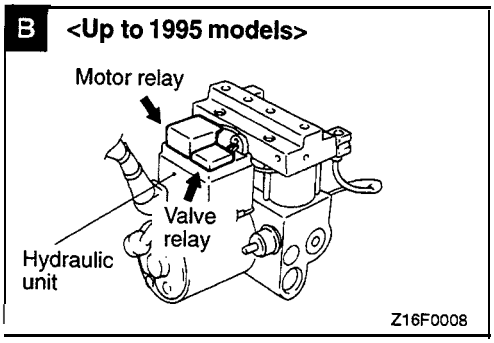
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TSB Revision

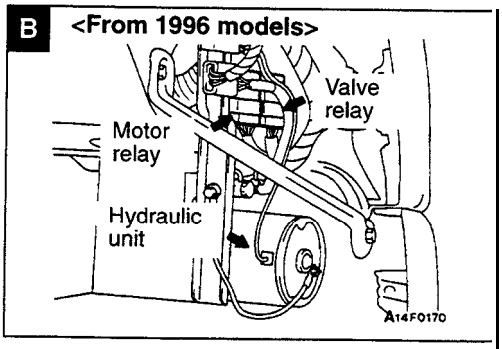
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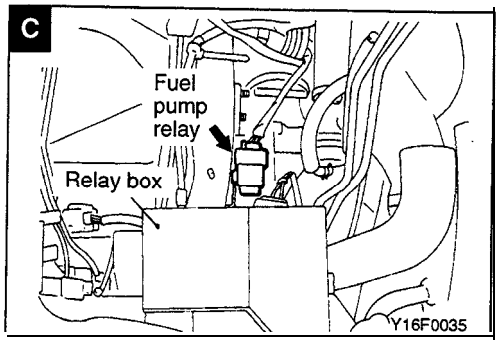
B <Up to 1995 models>



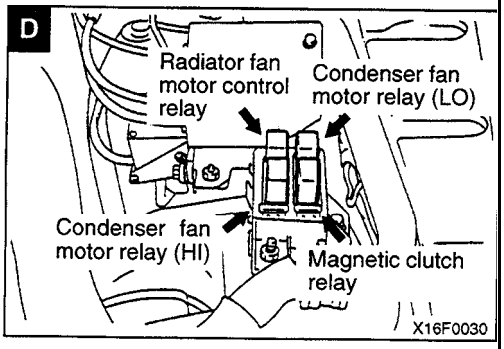
B <From 1996 models>



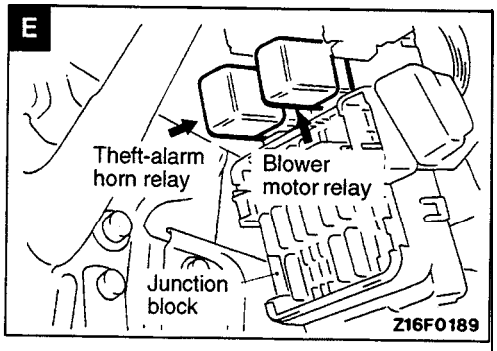
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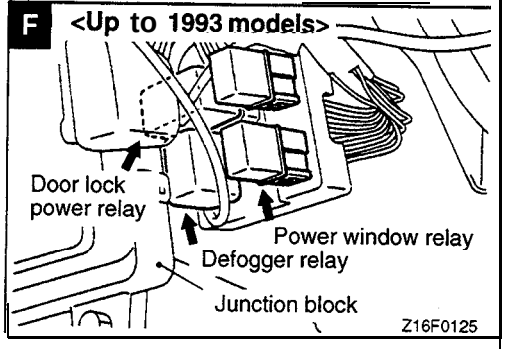
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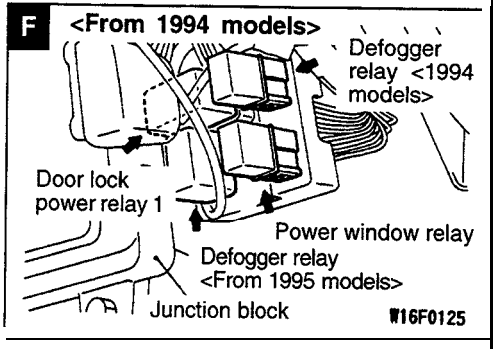
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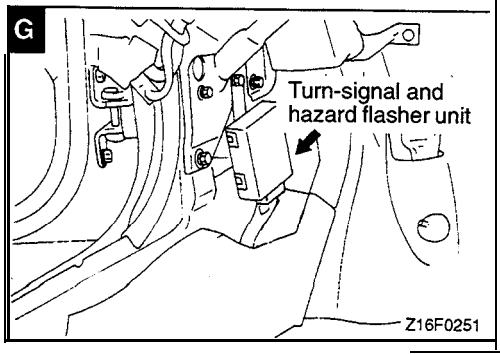
F <Up to 1993 models>



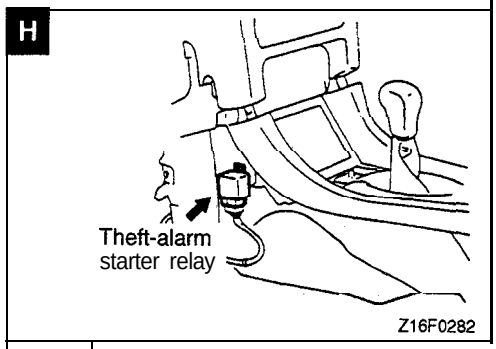
F <From 1994 models>



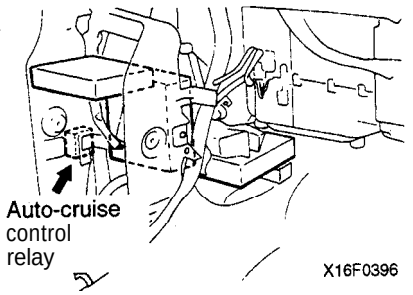
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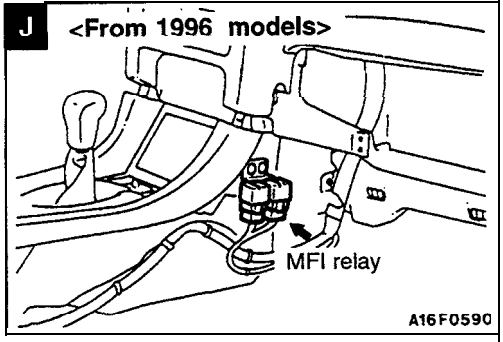
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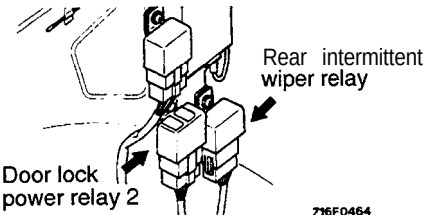
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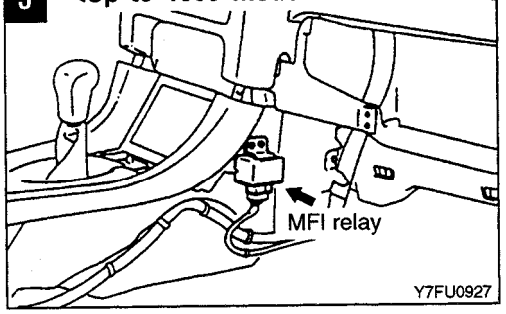
J <From 1996 models>



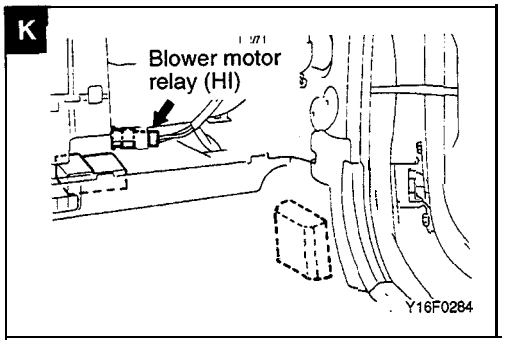
L <Vehicles with keyless entry system (Up to 1993 models and From 1994 models)>



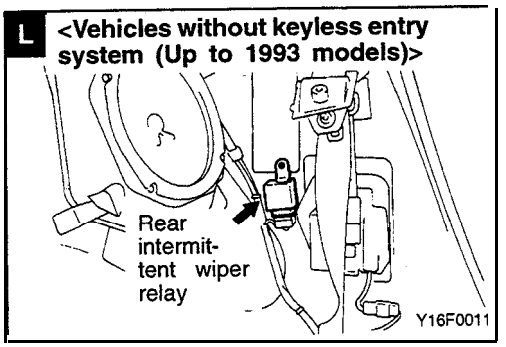
J <Up to 1995 models>



K



L <Vehicles without keyless entry system (Up to 1993 models)>

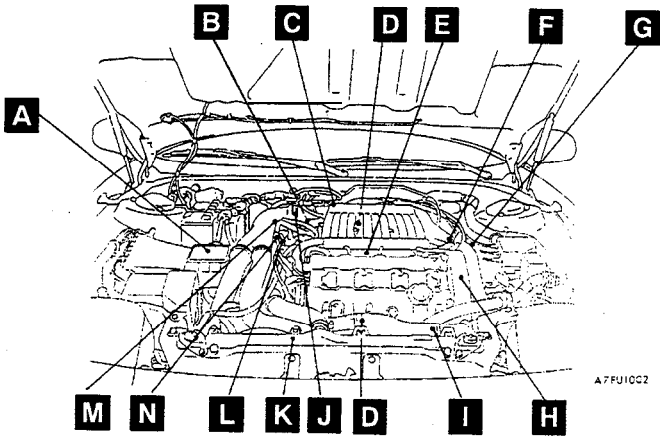


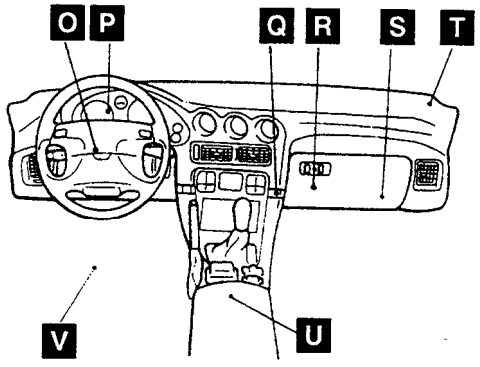
TSB Revision

SENSOR LOCATION

Name	Symbol	Name	Symbol
ABS front speed sensor	Y	Kickdown servo switch	M
ABS rear speed sensor	Z	Knock sensor	E
Air inlet sensor (for A/C)	S	Left bank heated oxygen sensor	D
Air thermo sensor (for A/C)	R	Manifold differential pressure sensor*4	C
Automatic transaxle oil temperature sensor <A/T>	M	Photo sensor	T
Camshaft position sensor and crankshaft position sensor*1	N	Power steering pressure switch	F
Camshaft position sensor (from 1993 model)	G	Pulse generator A, B <A/T>	M
Crankshaft position sensor (from 1993 model)	H	Revolution pick-up sensor	I
EGR temperature sensor*3 <Turbo, Non Turbo (for California)>	C	Right bank heated oxygen sensor	D
Engine coolant temperature sensor (for A/C)	Q	Steering wheel angle speed sensor	O
Engine coolant temperature sensor (for engine control)	L	Thermo sensor*2	K
Engine coolant temperature switch (for A/C)*2	L	Thermostat	I
Front impact sensor	X	Throttle position sensor	J
G sensor (for ABS)	U	Vehicle speed sensor (Reed switch)*1	P
G sensor(for ECS)*3	V	Vehicle speed sensor	B
Heated oxygen sensor*3	D	Volume air flow sensor	A
Interior temperature sensor	W		

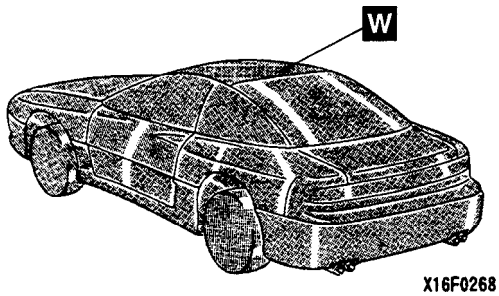
NOTE
(1) *1: Up to 1992 models
(2) *2: Up to 1993 models
(3) *3: Up to 1995 models
(4) *4: From 1996 models



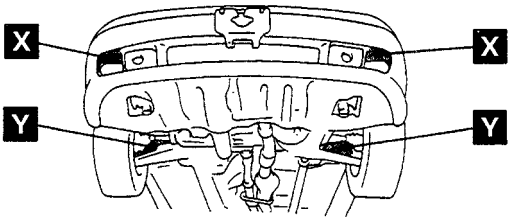


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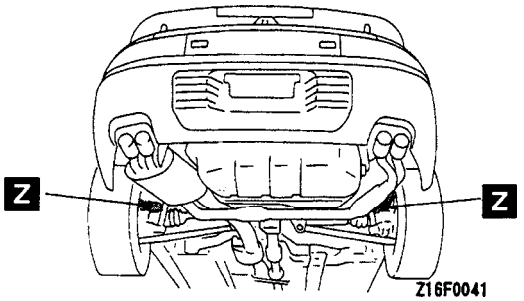
TSB Revision



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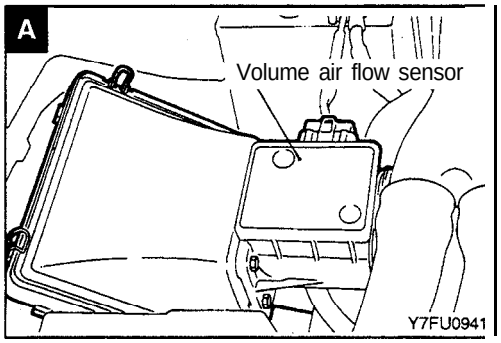


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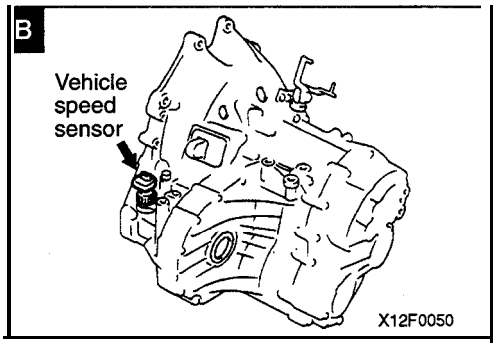
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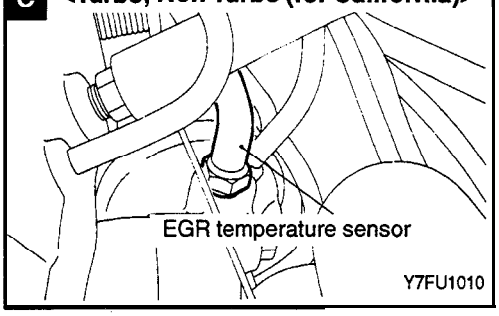
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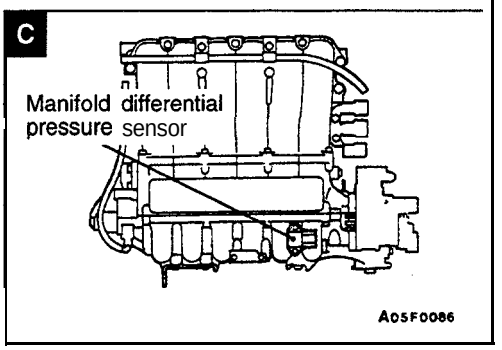
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C <Turbo, Non Turbo (for California)>



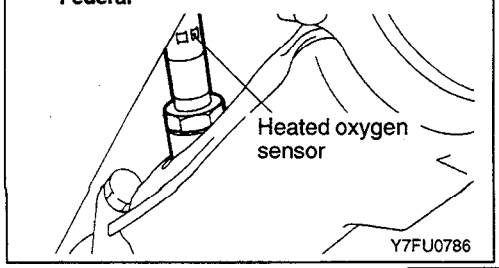
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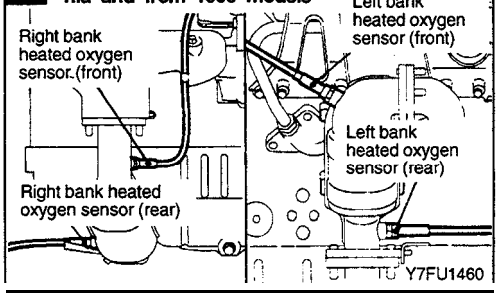
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D <Non Turbo> – up to 1993 models or <Non Turbo> – 1994, 1995 models for Federal



Y7FU0786

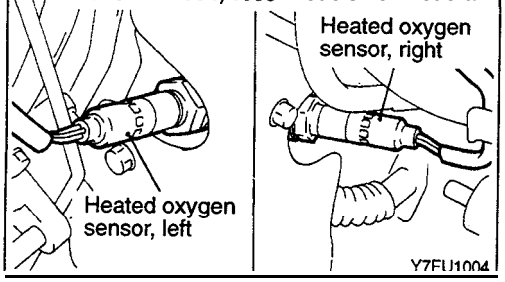
D <Non Turbo> – 1994, 1995 models for California and from 1996 models



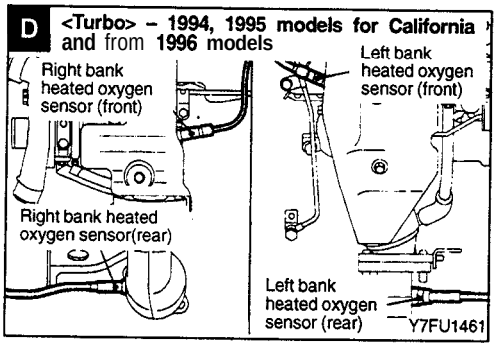
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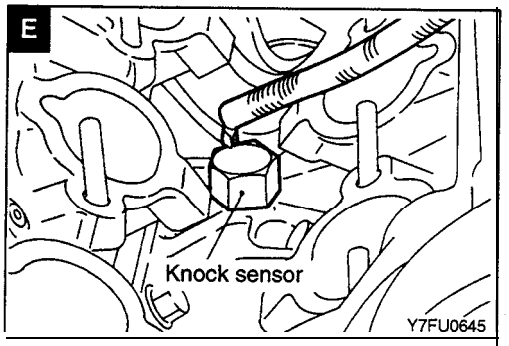
D <Turbo> – up to 1993 models, <Turbo> – 1994, 1995 models for Federal



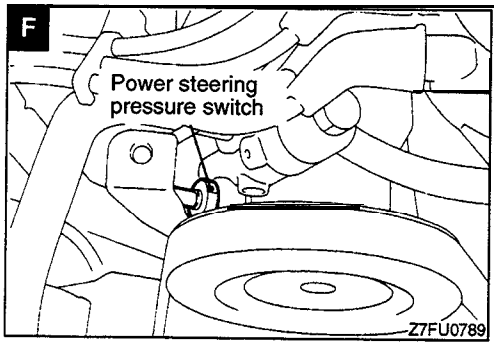
D <Turbo> – 1994, 1995 models for California and from 1996 models



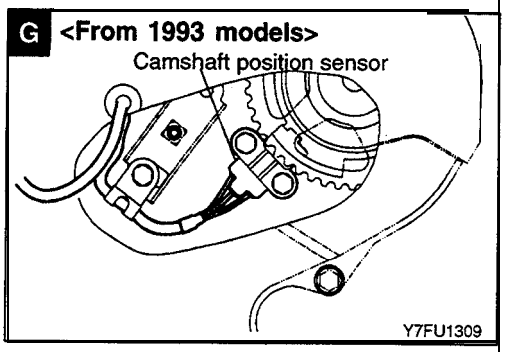
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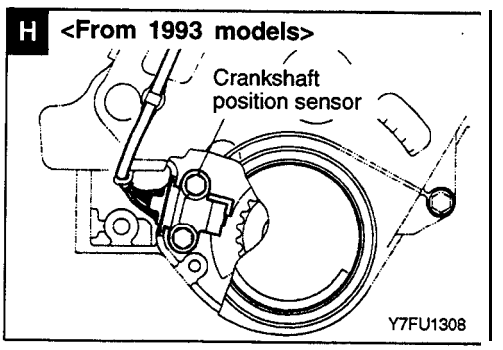
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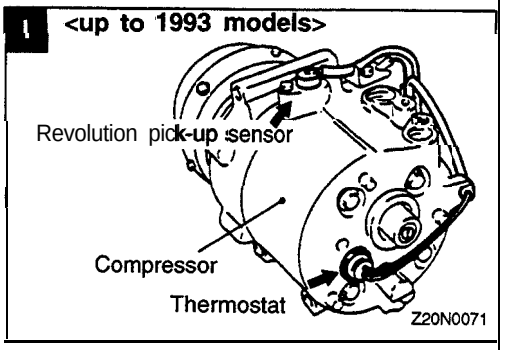
G <From 1993 models>



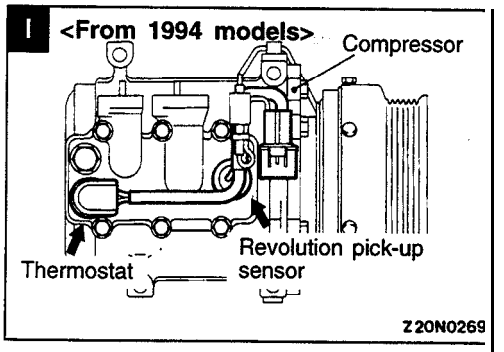
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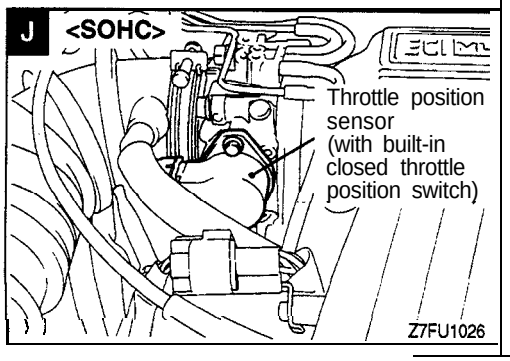
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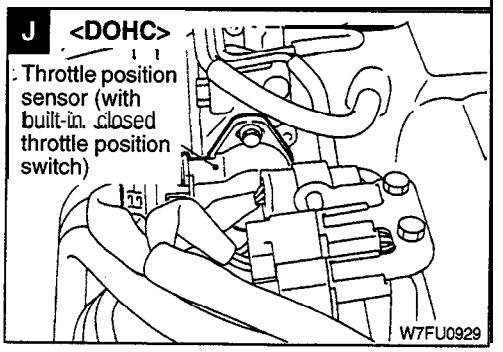
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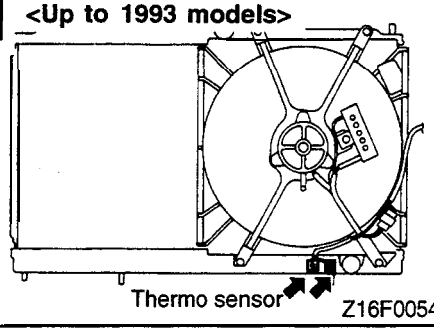


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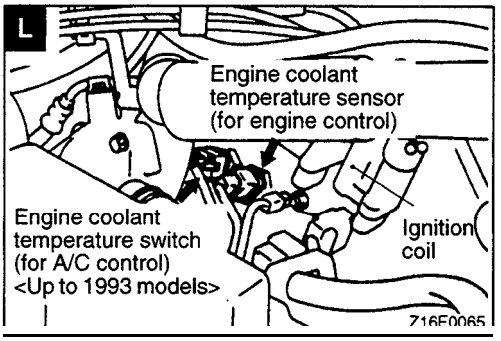


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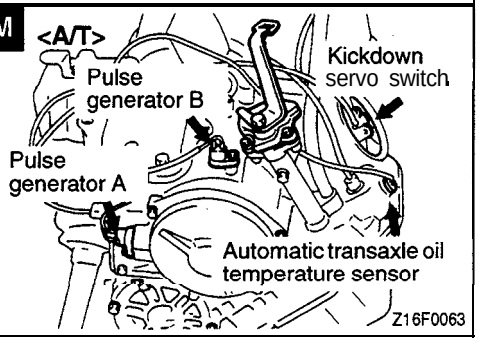
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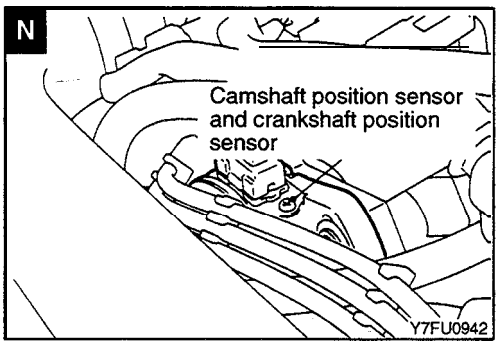
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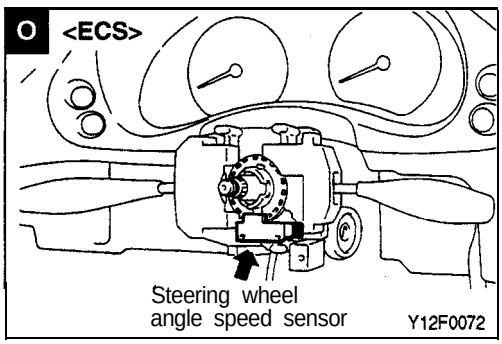
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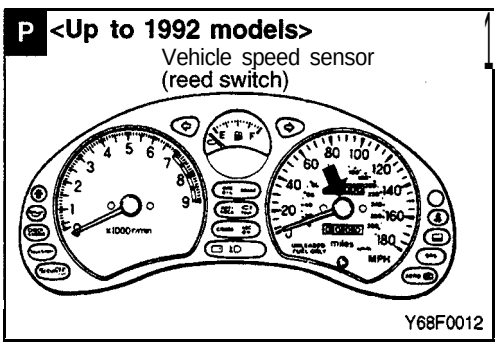
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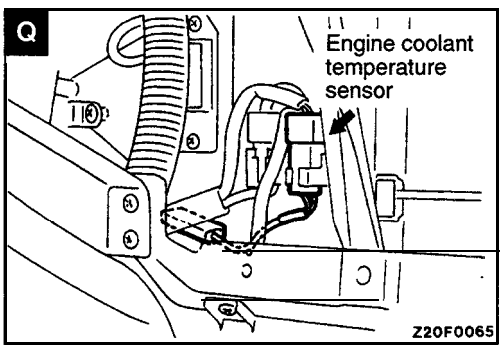
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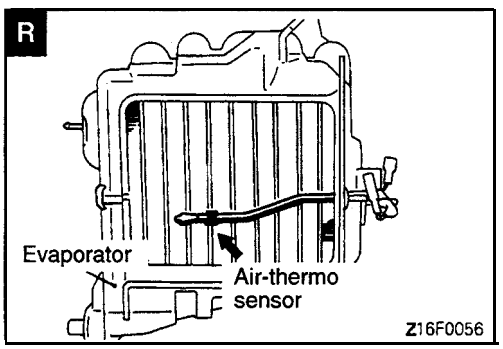
P <Up to 1992 models>



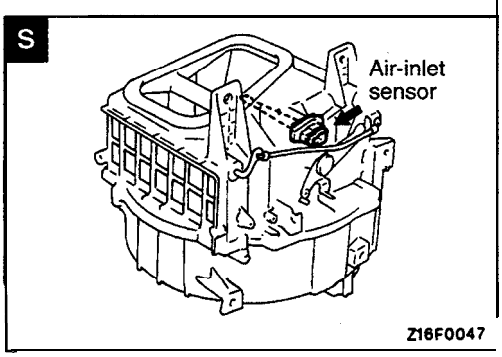
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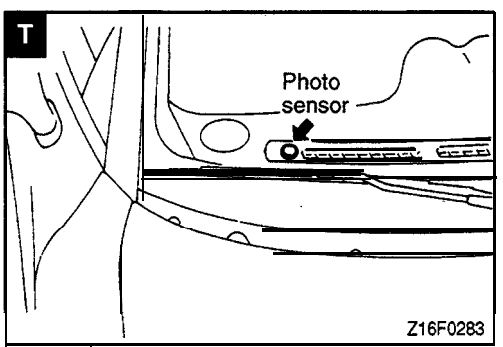
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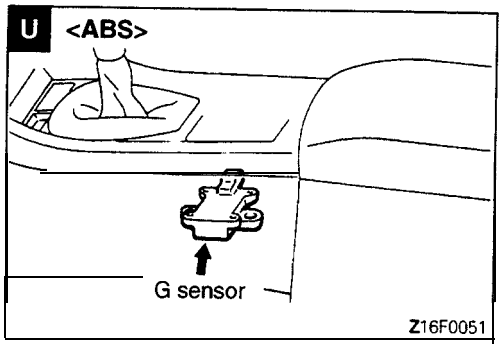
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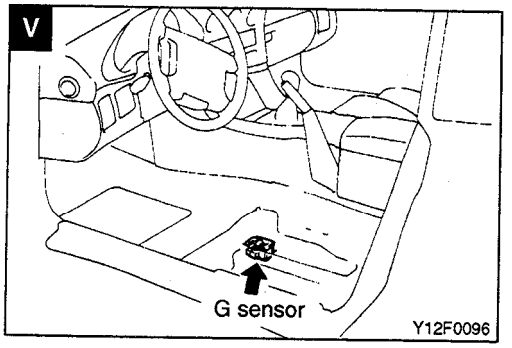
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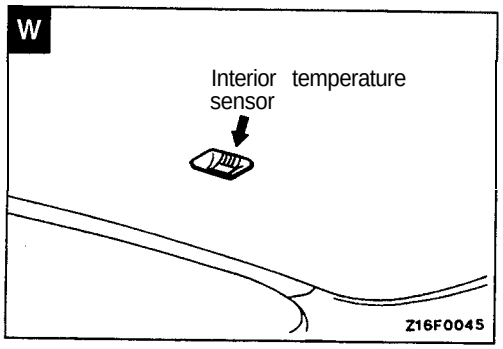
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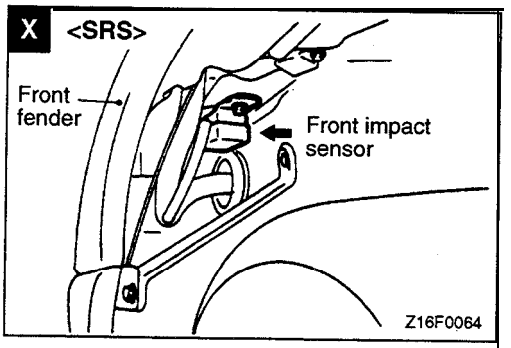
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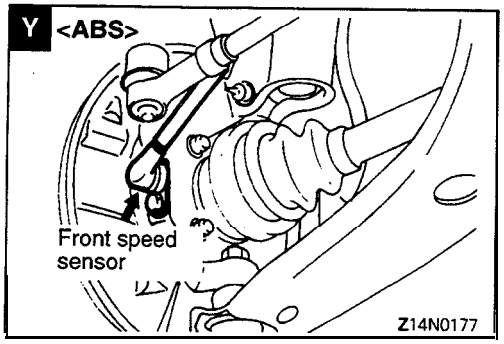
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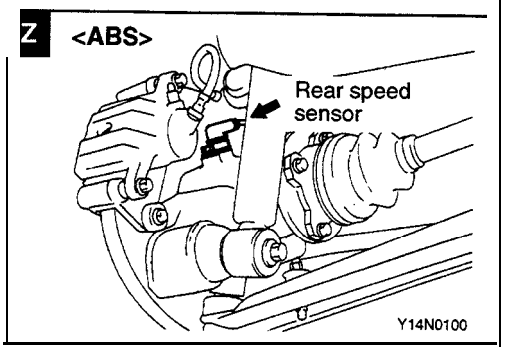
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Y <ABS>



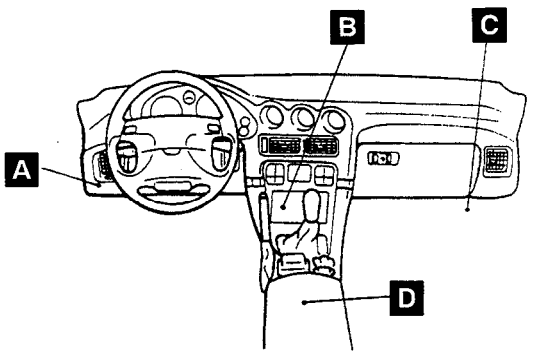
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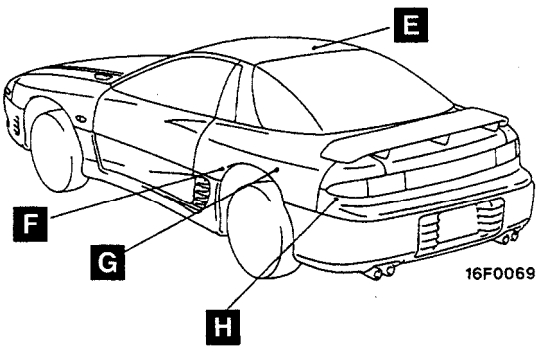
CONTROL UNIT LOCATION

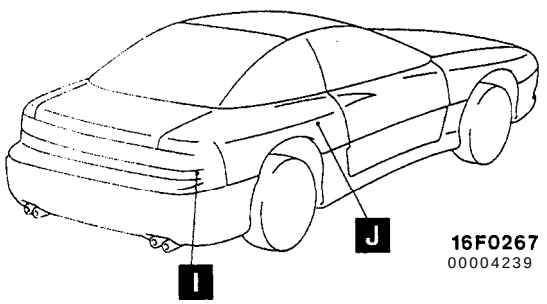
Name	Symbol
ABS control unit	J
Active exhaust control module <Up to 1994 models>	H
Air conditioning compressor lock controller	C
Air conditioning control unit	B
Auto-cruise control unit	C
ELC-4 A/T control module	B
Electronic control suspension control unit	I

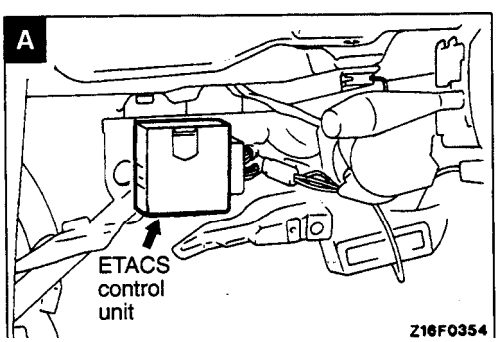
Name	Symbol
Engine control module	B
ETACS control unit	A
Keyless entry control unit	F
Light automatic shut-off unit	F
Motor antenna control unit	G
SRS diagnosis unit	D
Sunroof control unit	E

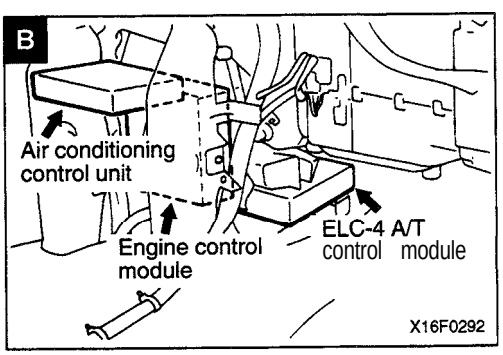


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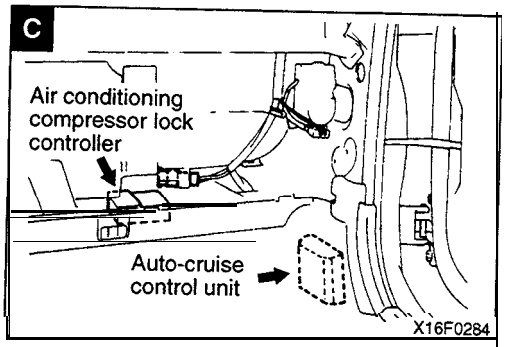




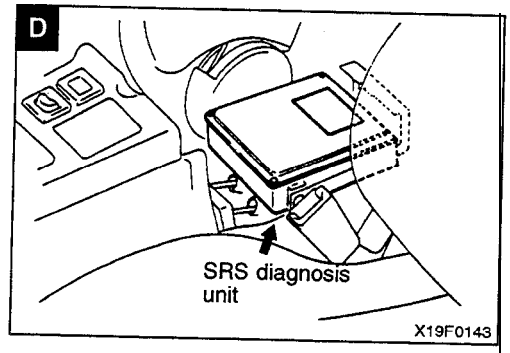


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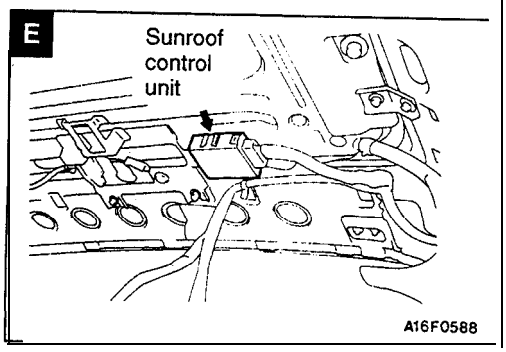
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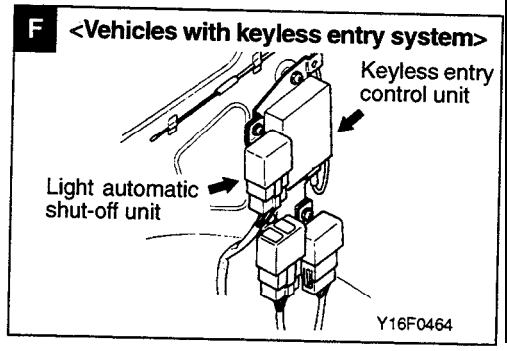
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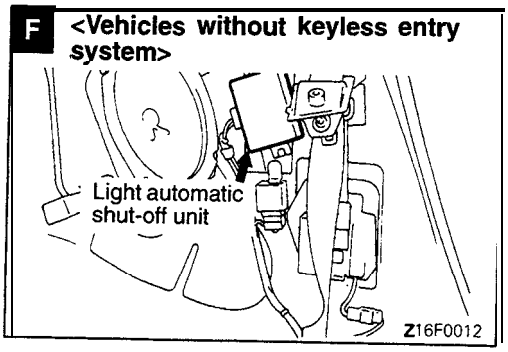
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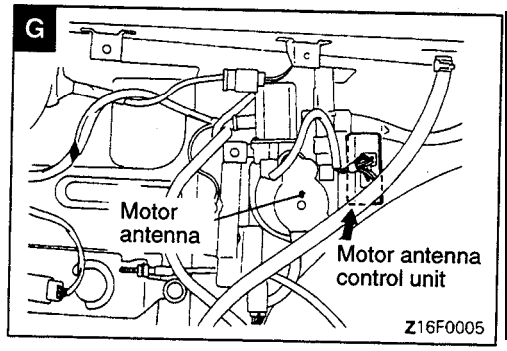
F <Vehicles with keyless entry system>



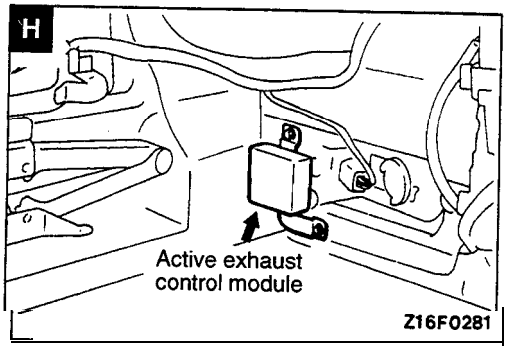
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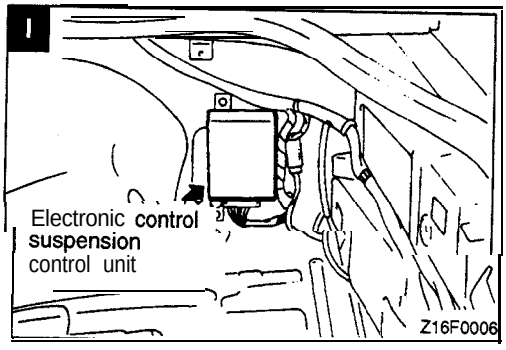
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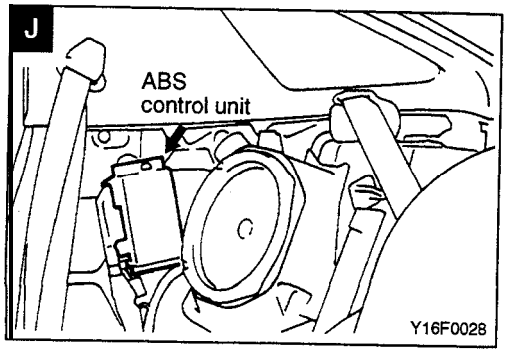
H



I



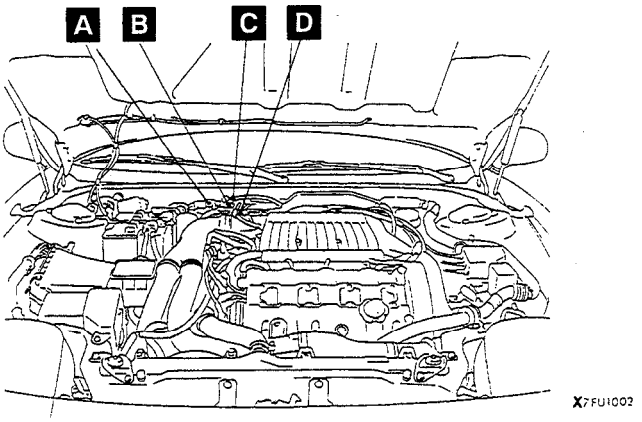
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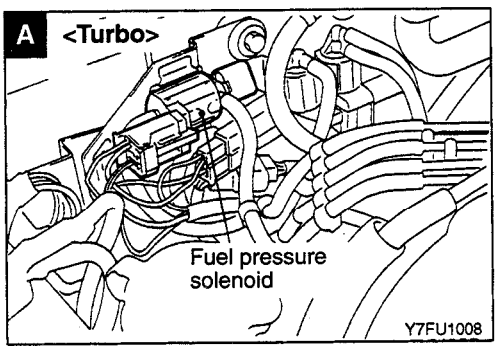


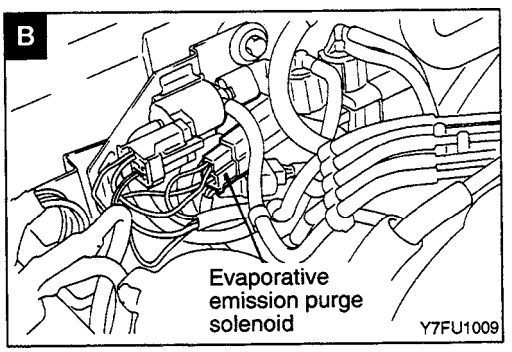
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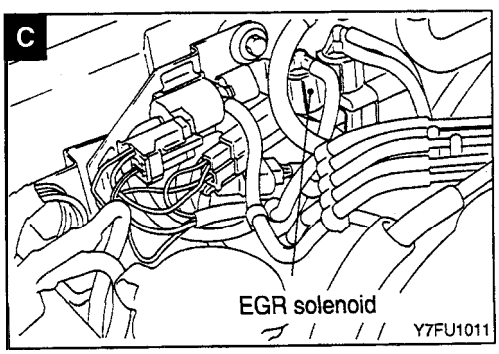
SOLENOID, SOLENOID VALVE LOCATION

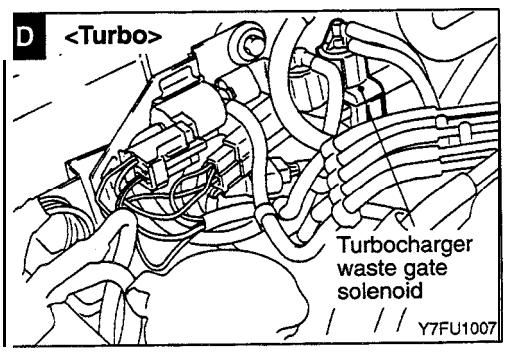
Name	Symbol	Name	Symbol
EGR solenoid <Turbo> <Non Turbo (Up to 1995 models for California and from 1996 models)>	C	Fuel pressure solenoid <Turbo>	A
Evaporative emission purge solenoid	B	Turbocharger waste gate solenoid <Turbo>	D







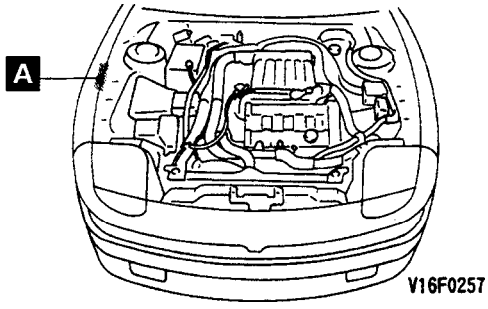


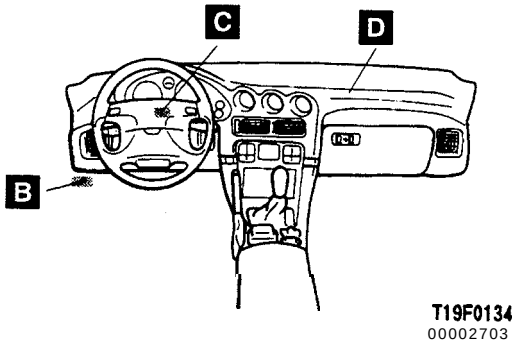


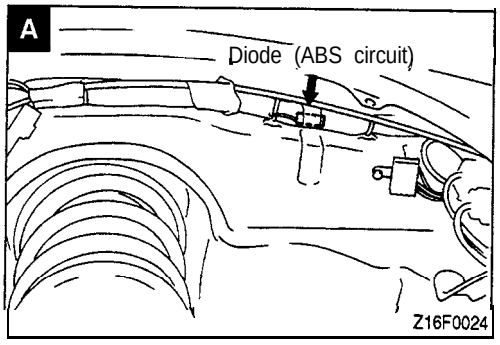
TSB Revision

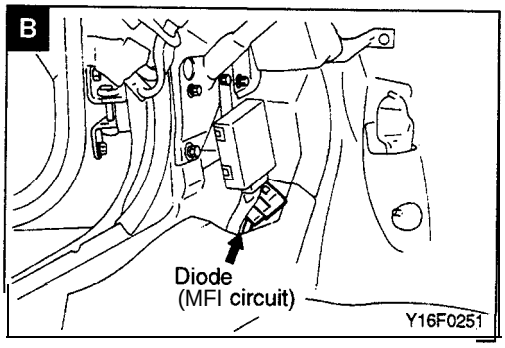
DIODE LOCATION

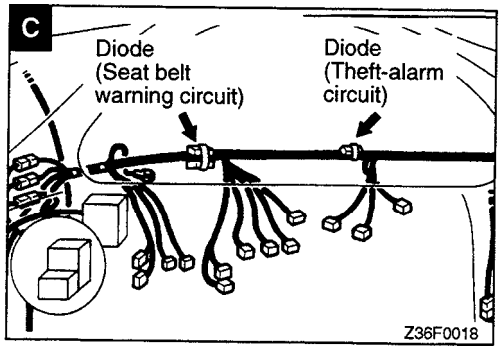
Name	Symbol	Name	Symbol
Diode (ABS circuit) <Up to 1995 models>	A	Diode (Theft-alarm circuit)	C
Diode (MFI circuit)	B	Diode (4WS fluid level warning light circuit)	D
Diode (Seat belt warning circuit)	C		

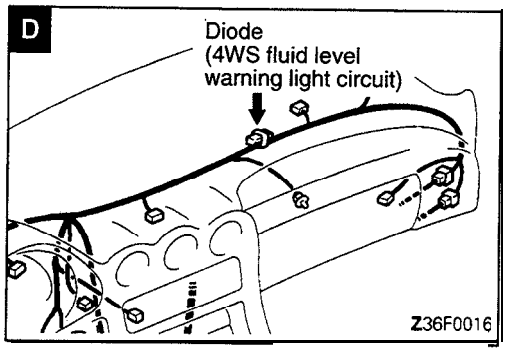






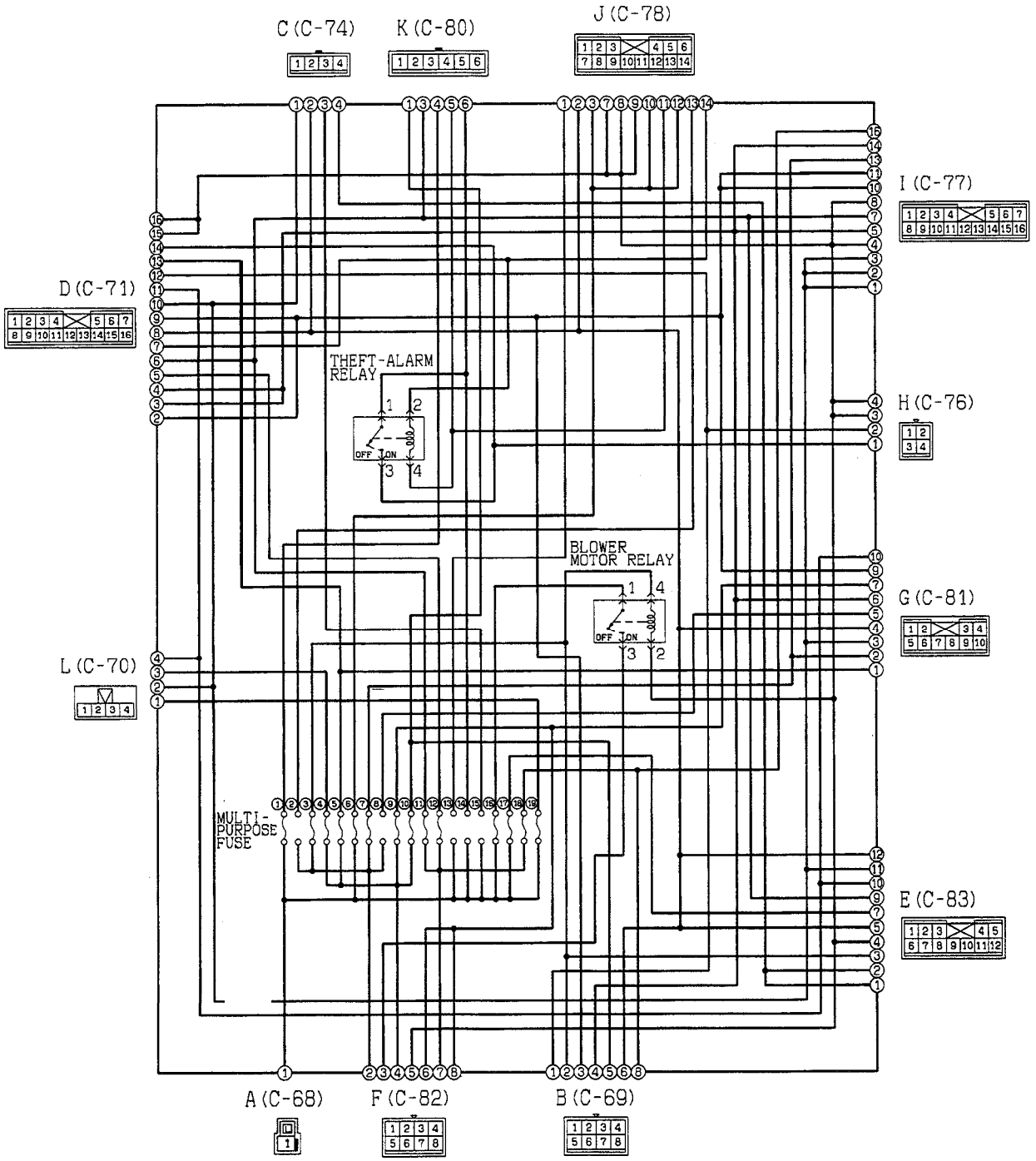






TSB Revision

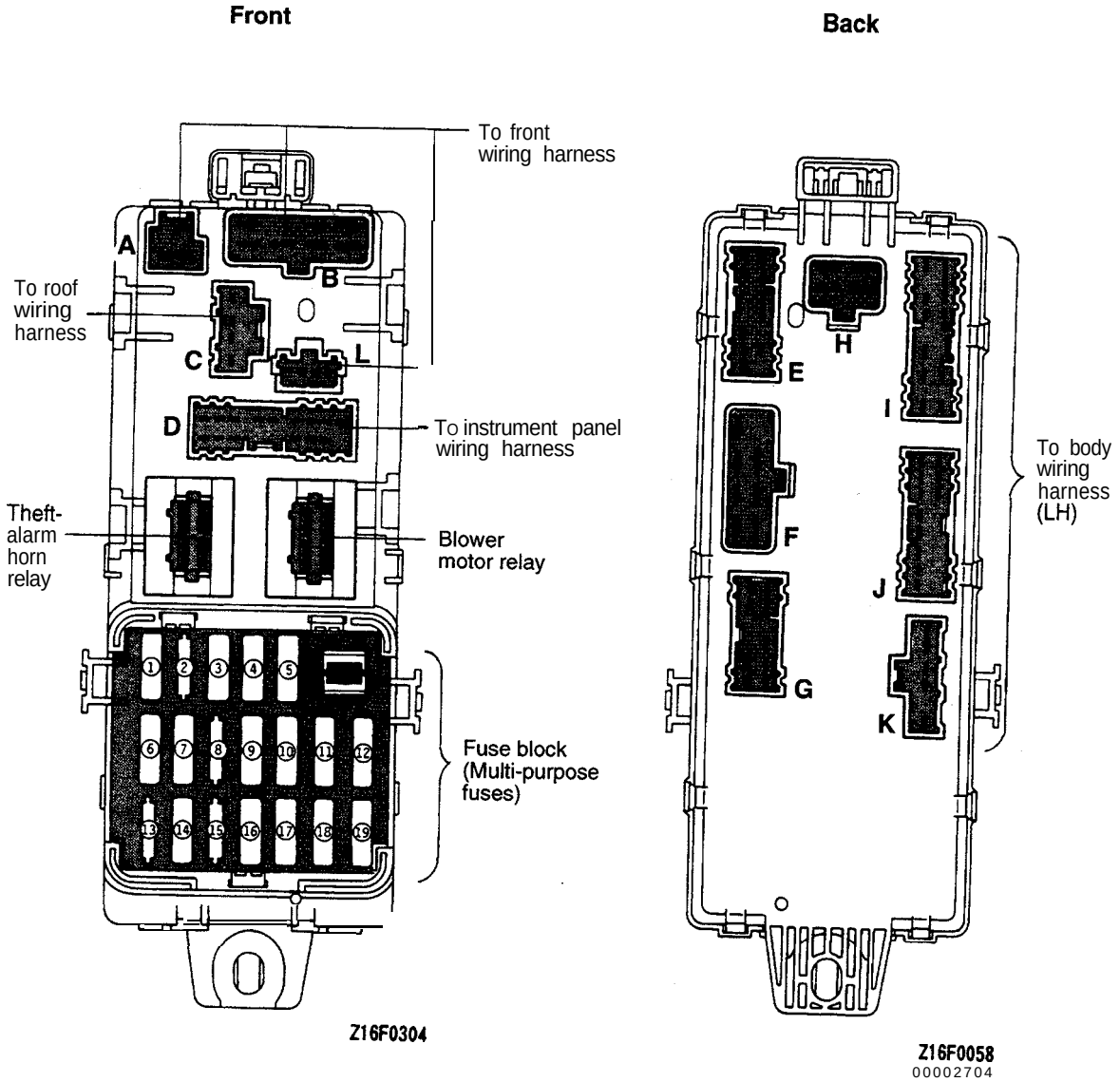
JUNCTION BLOCK



HROOMOOAA

Remarks
(1) Alphabets assigned to the connectors are keyed to those assigned to connectors on P.19
(2) Terminals of the harness side connector are indicated in parentheses ( ).

TSB Revision



Z16F0304

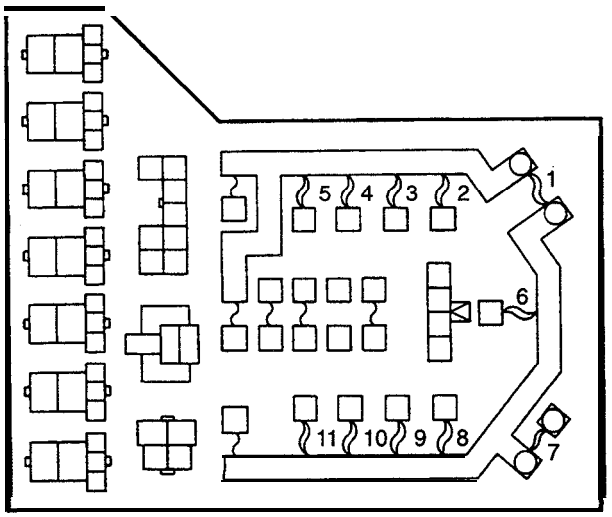
Z16F0058
00002704

TSB Revision

CENTRALIZED JUNCTION

FUSIBLE LINK (Relay box in engine compartment)

No.	Circuit	Housing color	Rated capacity (A)
1	Generator circuit	Wine red	120
2	Pop-up motor circuit (Up to 1993 models)	Pink	30
3	Lighting circuit	Green	40
4	Ignition switch circuit	Pink	30
5	Radiator fan motor and condenser fan motor circuit	Green	40
6	Junction block (Multipurpose fuse (1), (6), (14), (16), (17), (19))	Green	40
7	ABS circuit	Yellow	60
8	Top stack circuit <Convertible>	Pink	30
9	Power window circuit	Pink	30
10	Defogger circuit	Green	40
11	Active aero circuit <Hatchback>	Pink	30



W16F0256

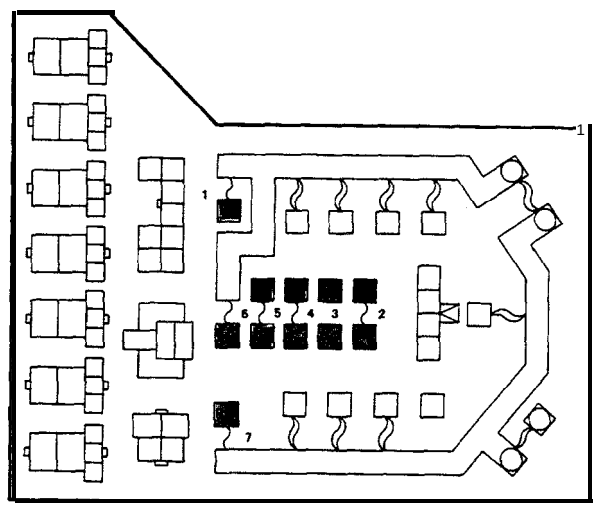
DEDICATED FUSE

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

NOTE

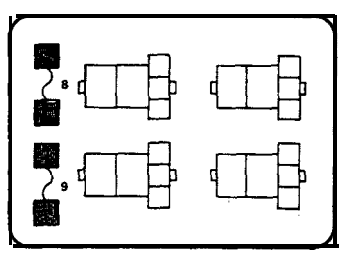
*1: Vehicles produced up to Oct. 1993.
*2: Vehicles with sunroof

<Relay box in engine compartment>



Z16F0256

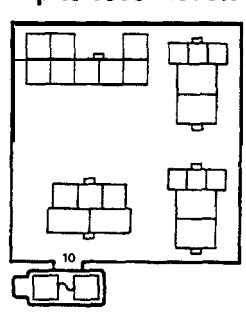
<Air conditioning relay box in engine compartment>



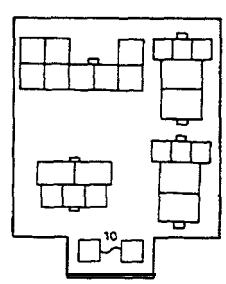
Z16F0002

<Interior relay box>

Up to 1993 models From 1994 models



Z16F0003



Z16F0431
00002705

TSB Revision

MULTI-PURPOSE FUSE (In junction block)

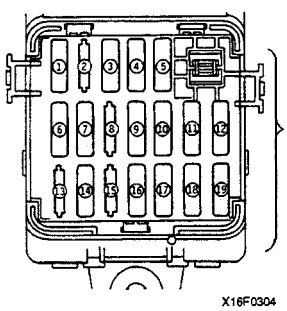
Power supply circuit		No.	Rated capacity (A)	Load circuit
Battery		1	10	Seat belt solenoid, Active aero control unit, MFI relay
–		2	–	–
Ignition switch	IG_2	3	10	Radiator fan motor relay, Air conditioning compressor lock controller, Blower motor relay, Air conditioning control unit, ABS relay*1, ECS control unit*3, Condenser fan motor relay
	ACC	4	10	Audio, Motor antenna control unit, Auto-cruise control unit, ETACS unit
		5	15	Remote controlled mirror, Cigarette lighter
Battery		6	10	Door lock power relay, Motor antenna control unit
Ignition switch IG_2		7	10	ELC-4A/T control module
–		8	–	–
Ignition switch	ACC	9	15	Wiper relay, Wiper motor, Washer motor, Rear intermittent wiper relay, keyless control unit
		10	15	Accessory socket, ETACS unit
	IG_1	11	15	Combination meter, Combination gauge, ETACS unit, Speed sensor, Motor antenna control unit, Turn signal and hazard flasher unit, Auto-cruise control main switch, Active aero control unit, SRS diagnosis unit, Auto-cruise relay
		12	15	Ignition coil, Power transistor, MFI relay, Engine control module
Battery		13*2	15	Amplifier <radio and tape player>
Battery		14	10	Theft-alarm horn, Theft-alarm horn relay
–		15	–	–
Battery		16	30	Blower motor
		17	15	Stop light, High-mounted stop light
Ignition switch IG_1		18	10	Back-up light, Light automatic shut-OFF unit, SRS diagnosis unit
Battery		19	10	Engine control module, ELC-4 A/T control module, ETACS unit, Dome light, Foot light, Door light, Luggage compartment light, Combination meter, Ignition key cylinder illumination light, Air conditioning control unit, Auto-cruise control unit, Audio, Light automatic shut-OFF unit, ECS control unit*3, Active aero control unit

NOTE

(1)*1: Vehicles produced up to Oct. 1993.

(2)*2: From 1994 models.

(3)*3: Up to 1995 models.



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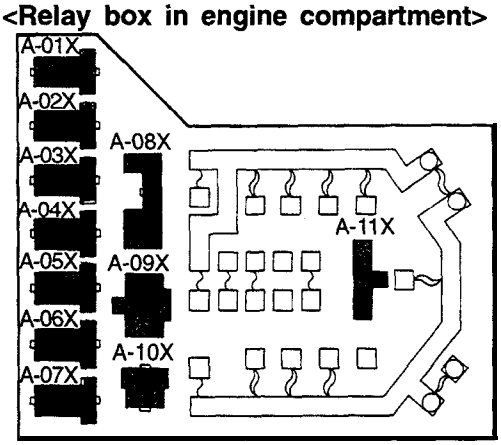
CENTRALIZED RELAY

Classification		Name	Classification		Name
Relay box in engine compartment	A-01X	Headlight relay	Air conditioning relay box in engine compartment	A-31X	Condenser fan motor relay (HI)
	A-02X	ABS power relay (vehicles produced up to Oct. 1993)		A-32X	Radiator fan motor control relay (Up to 1993 models)
	A-03X	Fog light relay		A-33X	Magnetic clutch relay
	A-04X	Radiator fan motor relay (LO)		A-34X	Condenser fan motor relay (LO)
	A-05X	Taillight relay	Interior relay box	C-04X	Door lock power relay 1
	A-06X	Horn relay		C-05X	Defogger relay (1994 models)
	A-07X	Radiator fan motor relay (HI)		C-06X	Defogger relay (Up to 1993 models, From 1995 models)
	A-08X	Pop-up motor relay (Up to 1993 models)		C-07X	Power window relay
	A-09X	Starter relay			
	A-l OX	Generator relay			
	A-11X	IOD or Storage connector			

NOTE

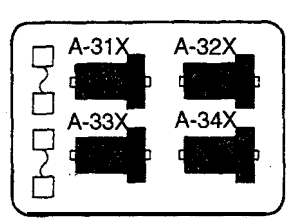
IOD: Ignition Off Draw

<Relay box in engine compartment>



Y16F0256

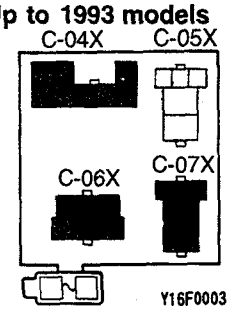
<Air conditioning relay box in engine compartment>



Y16F0002

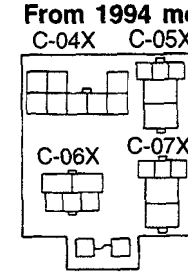
<Interior relay box>

Up to 1993 models



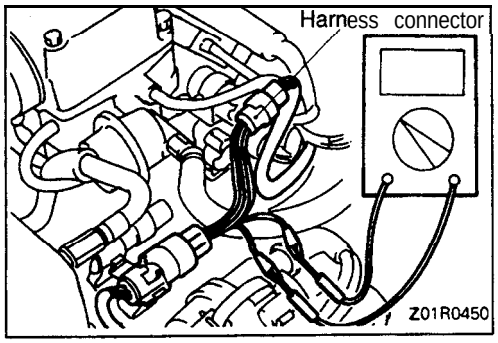
Y16F0003

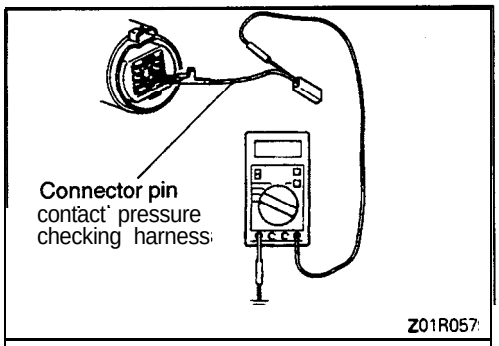
From 1994 models

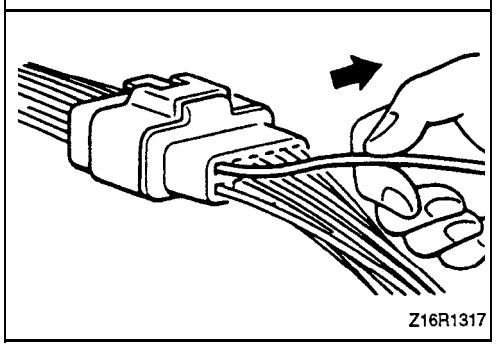


Y16F0431
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HARNESS CONNECTOR INSPECTION

CONNECTOR CONTINUITY AND VOLTAGE TEST

When checking continuity and/or voltage at the waterproof connectors, follow the steps below to avoid poor connector contact and/or reduced waterproof performance of connectors.

(1) When checking is performed with the circuit in the state of continuity, be sure to use the special tool (harness connector).
Never insert a test bar from the harness side, because to do so will reduce the waterproof performance and result in corrosion.

(2) When the connector is disconnected for checking the female pin, the harness for checking the contact pressure of connector pins should be used.
Never force the insertion of a test bar, because to do so will cause poor contact.

(3) When the male pin is to be checked, apply the test bar against the pin directly.

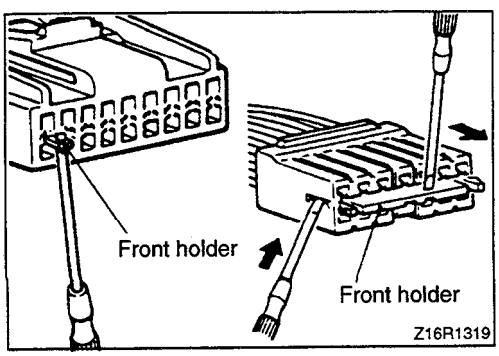
Care must be taken not to short-circuit the connector pins.

TERMINAL ENGAGEMENT CHECK

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

CONNECTOR TERMINAL ENGAGEMENT AND DISENGAGEMENT

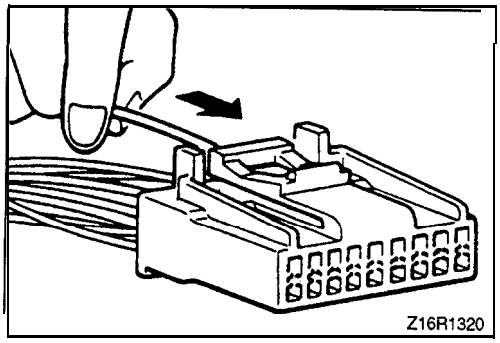
Connectors which are loose shall be rectified by removing the female terminal from connector housing and raising its lance to establish a more secure engagement. Removal of connector terminal used for MFI and 4 A/T control circuit shall be done in the following manner.



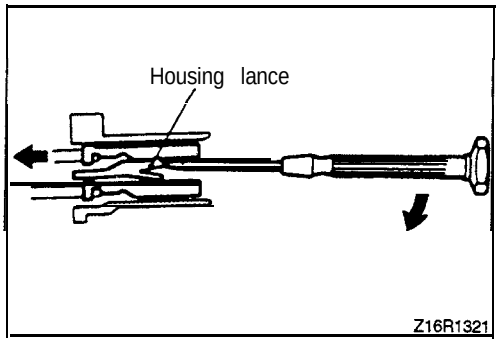
COMPUTER CONNECTOR

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

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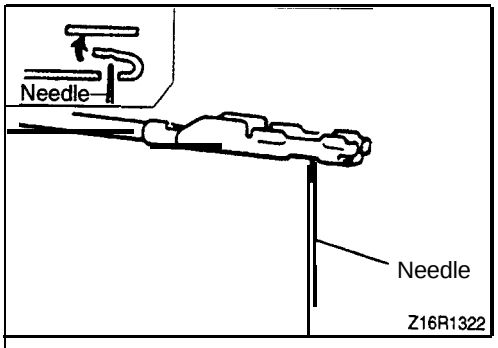


(2) Insert harness of terminal to be rectified deep into connector from harness side and hold it there.



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

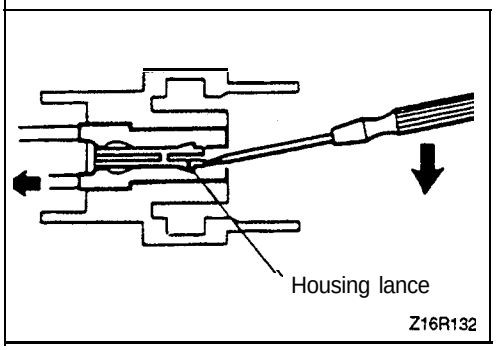
Caution
Tool No. 753787-I supplied by AMP can be used instead of screwdriver.

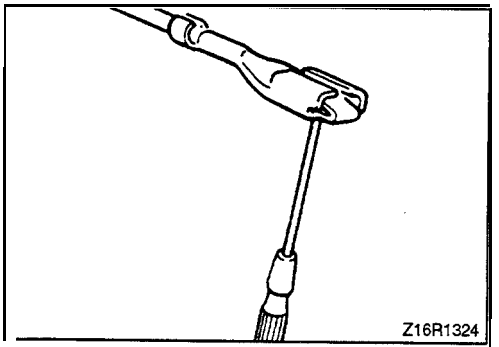


(4) Insert needle through a hole provided on terminal and raise contact point of male terminal.

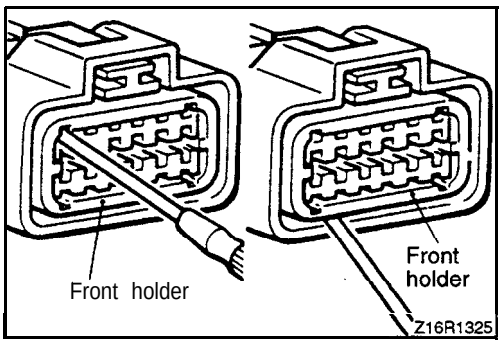
ROUND WATERPROOF CONNECTOR

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



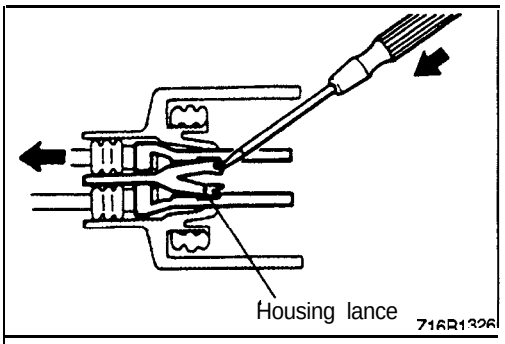


(3) Insert screwdriver through a hole provided on terminal and raise contact point of male terminal.

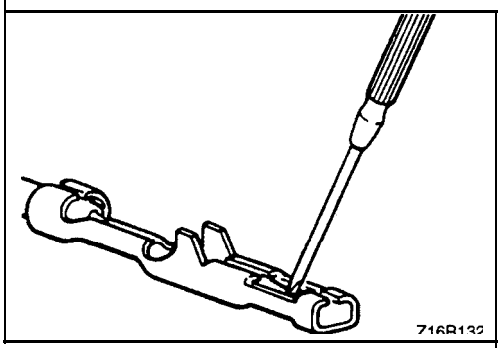


RECTANGULAR WATERPROOF CONNECTOR

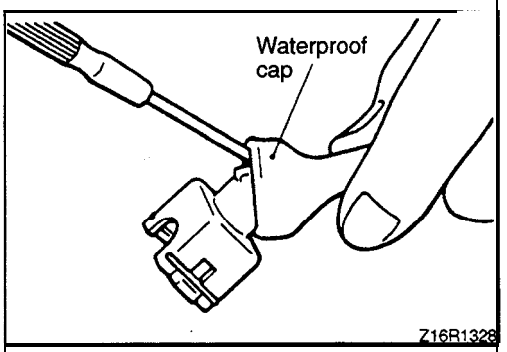
(1) Disengage front holder by using a screwdriver and remove it.



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

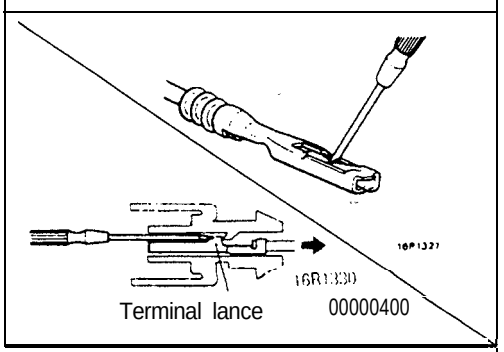


(3) Press contact point of male terminal down by holding a screwdriver [1.4 mm (.06 in.) width] in a manner as shown in the figure.



INJECTOR CONNECTOR

(1) Remove waterproof cap.



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

Caution
Make sure that lance is in proper condition before terminal is inserted into connector.

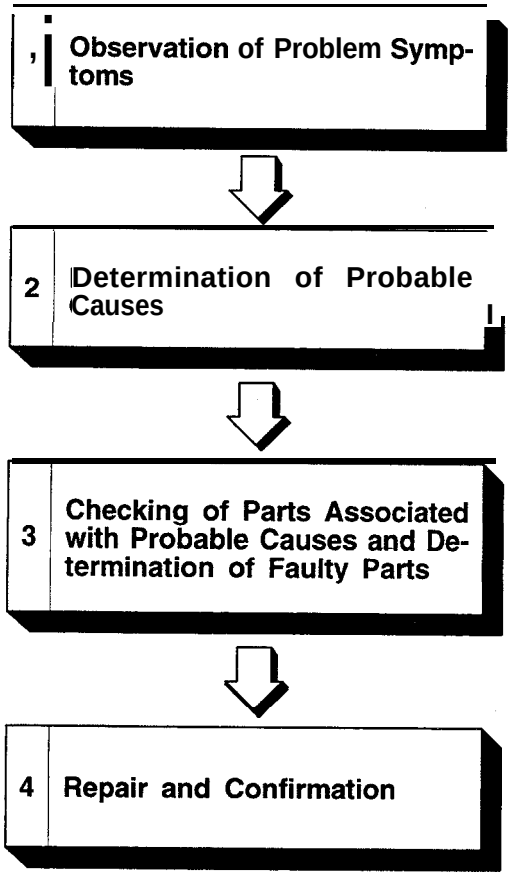
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HOW TO DIAGNOSE

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

TROUBLESHOOTING STEPS

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



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

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

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

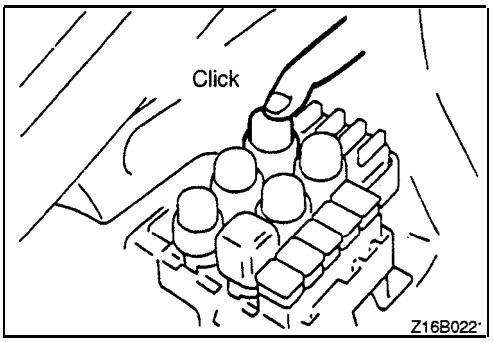
After the problems are corrected, be sure to check that the system operates correctly. Also, check that new problems have not been caused by the repair.

INFORMATION FOR DIAGNOSIS

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

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

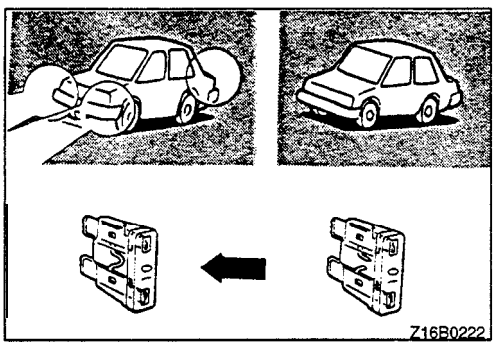
NOTE
Components of MFI, ETACS, ECS, etc. with ECU do not include 3 and 4 above. For this information, refer to a manual which includes details of these components.



INSPECTION

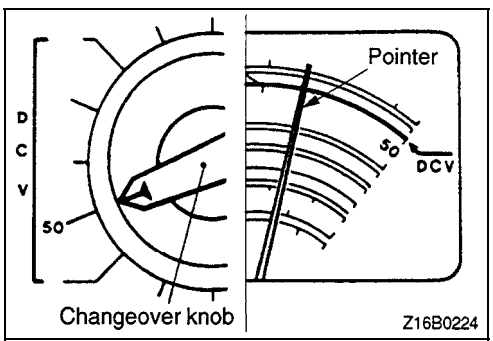
1. Visual and aural checks

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



2. Simple checks

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



3. Checking with instruments

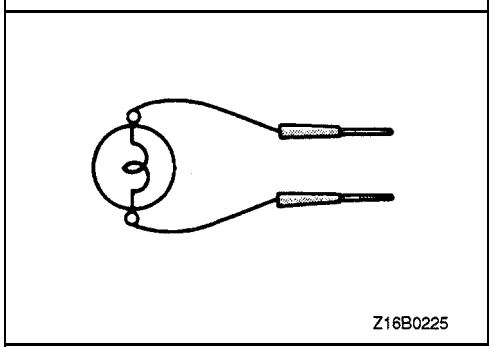
Use an appropriate instrument in an adequate range and read the indication correctly. You must have sufficient knowledge and experience to handle instruments correctly.

INSPECTION INSTRUMENTS

In inspection, make use of the following instruments.

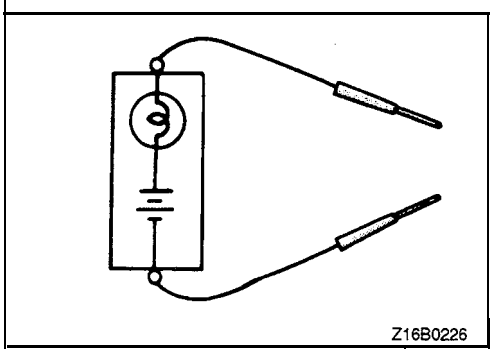
1. Test lights

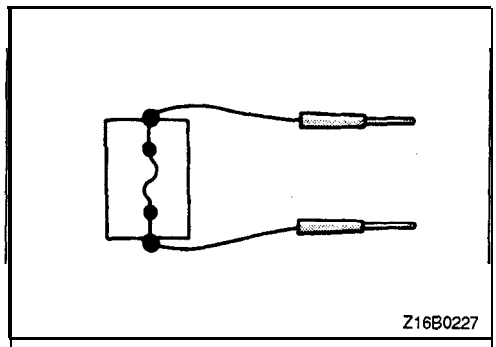
A test light consists of a 12 V bulb and lead wires. It is used to check voltages or short circuits.



2. Self-power test light

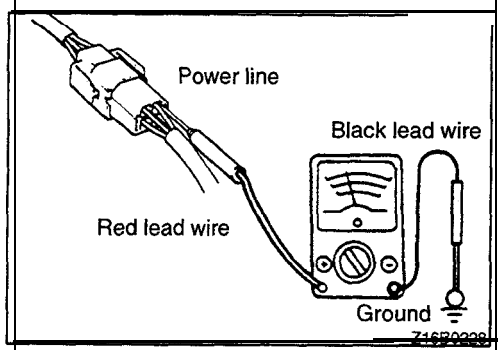
A self-power test light consists of a bulb, battery and lead wires connected in series. It is used to check continuity or grounding.





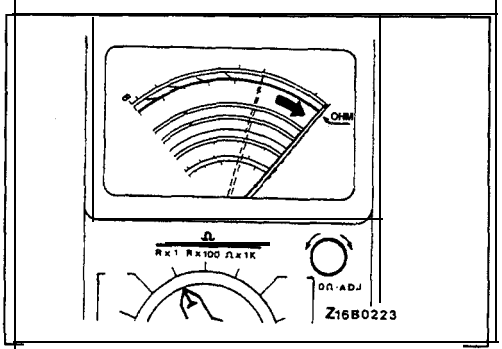
3. Jumper wire

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



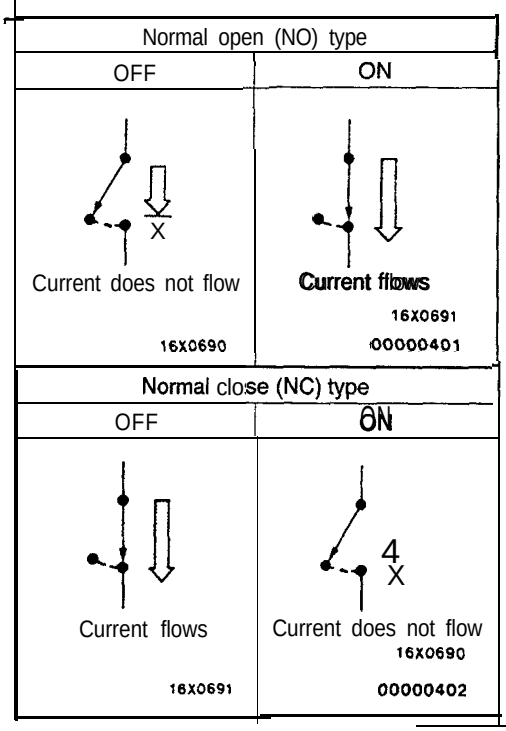
4. Voltmeter

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



5. Ohmmeter

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

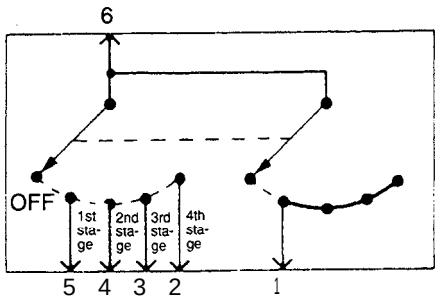


CHECKING SWITCHES

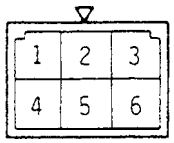
In a circuit diagram, a switch is represented by a symbol and in the idle state.

1. Normal open or normal close switch

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



16A0253

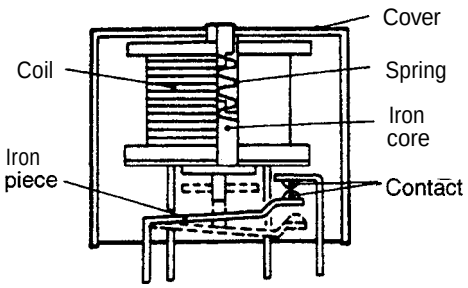


16W898
00000403

2. SWITCH CONNECTION

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

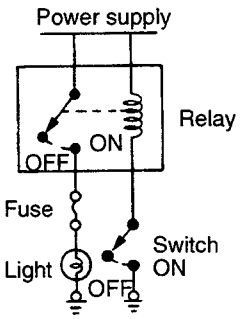
Position	Terminal No.					
	1	2	3	4	5	6
OFF						
1st stage	○				○	○
2nd stage	○			○		○
3rd stage	○		○			○
4th stage	○	○				○



Z16B0231

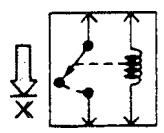
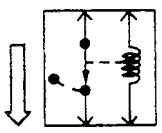
CHECKING RELAYS

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



Z16A0254

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

Normal open (NO) type	
Deenergized state	Energized state
	
Current does not flow	Current flows

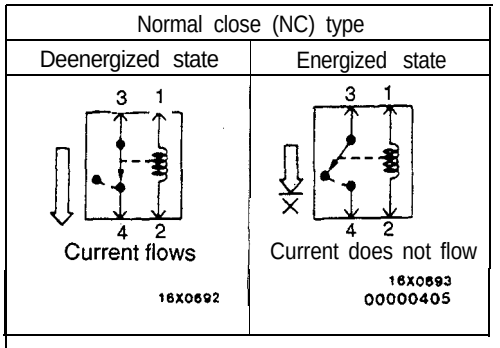
16X0694

16X0695
00000404

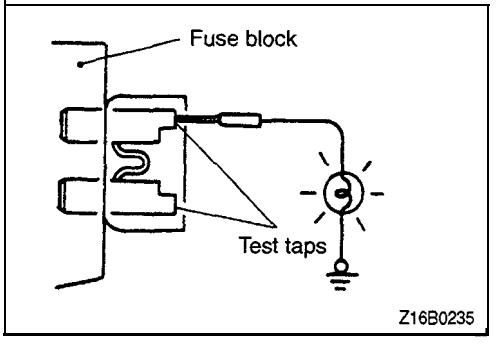
3. The relays may be classified into the normal open type and the normal close type by their contact construction.

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

TSB Revision

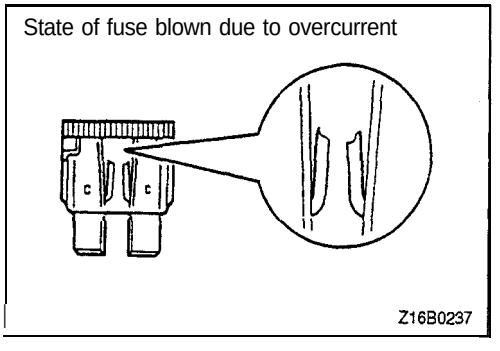


When a normal close type relay as illustrated here is checked, there should be continuity between terminals (1) and (2) and between terminals 3 and 4 when the relay is deenergized, and the continuity should be lost between terminals 3 and 4 when the battery voltage is applied to the terminals 1 and 2.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



CHECKING FUSES

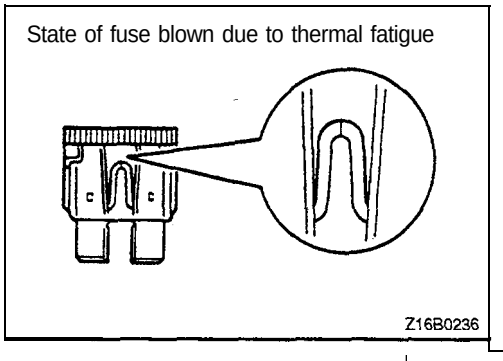
A blade type fuse has test taps provided to allow checking of the fuse itself without removing it from the fuse block. The fuse is okay if the test light comes on when its one lead is connected to the test taps (one at a time) and the other lead is grounded. (Change the ignition switch position adequately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



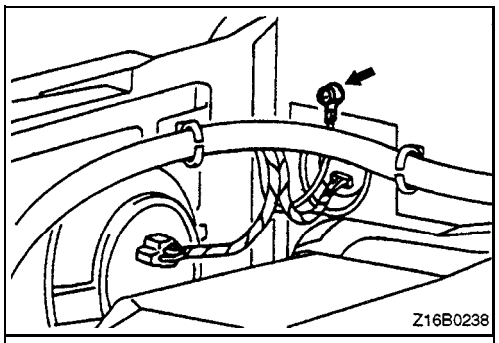
CAUTIONS IN EVENT OF BLOWN FUSE

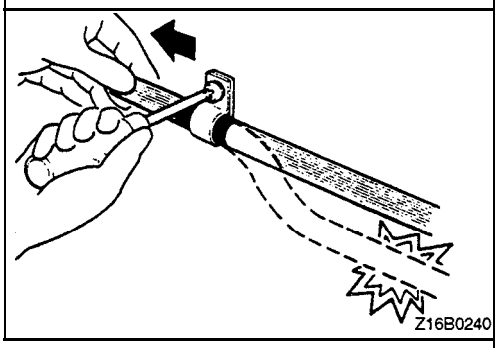
When a fuse is blown, there are two probable causes as follows: One is that it is blown due to flow of current exceeding its rating.
The other is that it is blown due to repeated on/off current flowing through it. Which of the two causes is responsible can be easily determined by visual check as described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

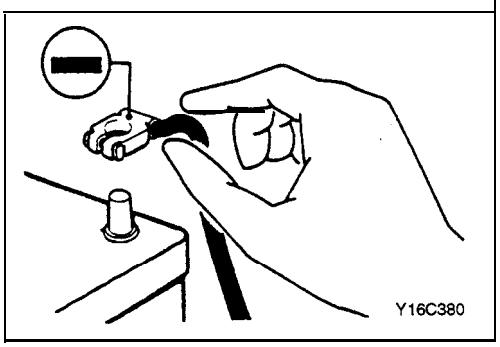
(1) Fuse blown due to current exceeding rating
The illustration shows the state of a fuse blown due to this cause. In this case, do not replace the fuse with a new one hastily since a current heavy enough to blow the fuse has flowed through it. First, check the circuit for shorting and check for abnormal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



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







CHECKING CABLES AND WIRES

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

HANDLING ON-VEHICLE BATTERY

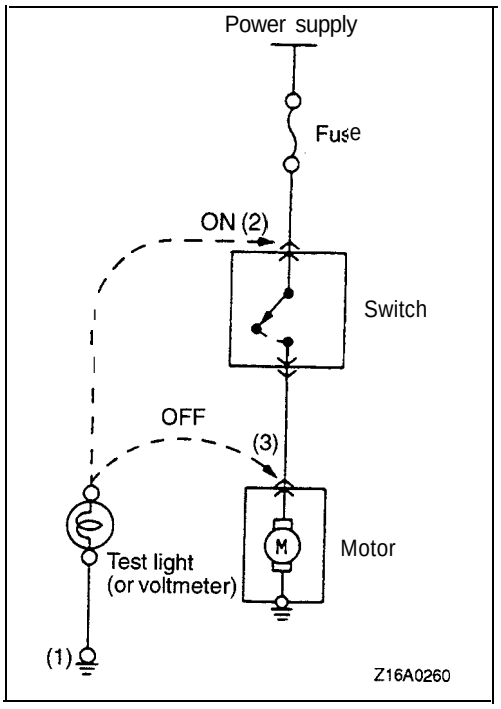
When checking or servicing does not require power from the on-vehicle battery, be sure to disconnect the cable from the battery (–) terminal. This is to prevent problems that could be caused by a short circuit. Disconnect the (–) terminal first and reconnect it last.

Caution

1. Before connecting or disconnecting the negative cable, be sure to turn off the ignition switch and the lighting switch.
(If this is not done, there is the possibility of semiconductor parts being damaged.)

2. After completion of the work steps [when the battery's negative (–) terminal is connected], warm up the engine and allow it to idle for approximately five minutes under the conditions described below, in order to stabilize the engine control conditions, and then check to be sure that the idling is satisfactory.

Engine coolant temperature: 85–95°C (185–203°F)
Lights, electric fans, accessories: OFF
Transaxle: neutral position
(A/T models: "N" or "P")
Steering wheel: neutral (center) position



GENERAL ELECTRICAL SYSTEM CHECKS

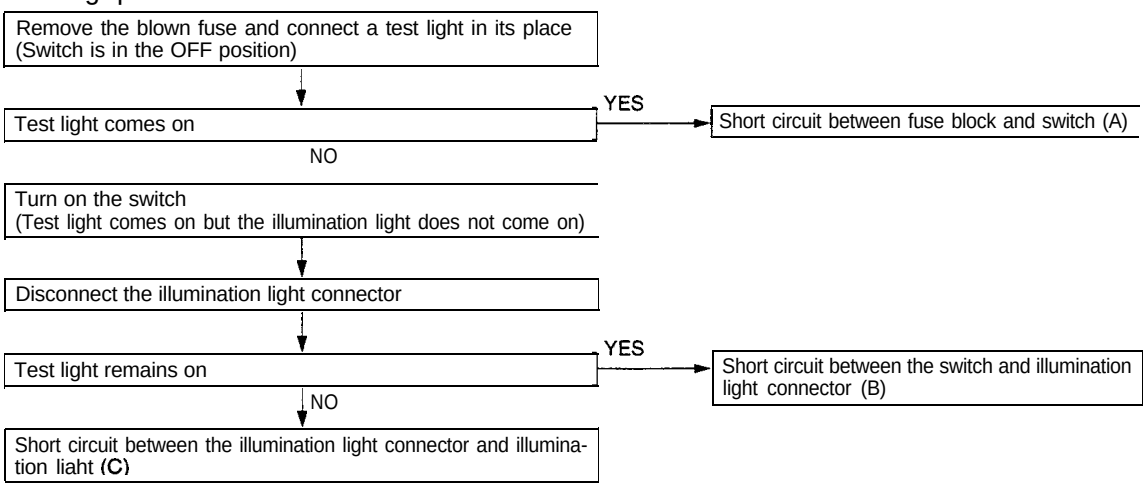
A circuit consists of the power supply, switch, relay, load, ground, etc. There are various methods to check a circuit including an overall check, voltage check, short circuit check and continuity check. Each of these methods is briefly described in the following.

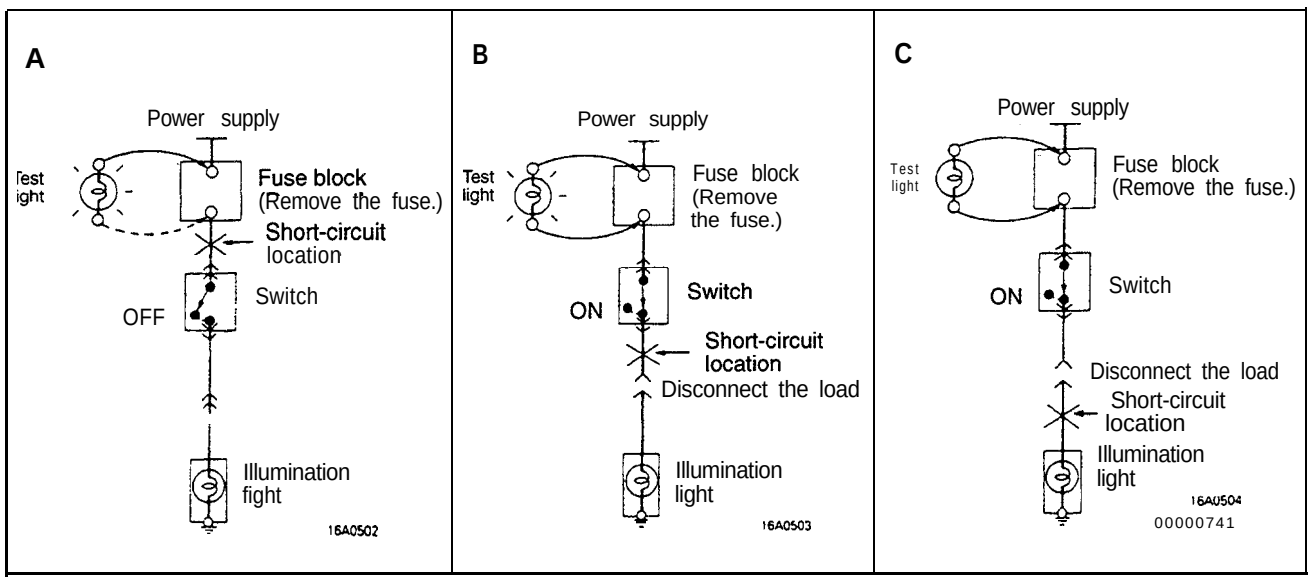
1. VOLTAGE CHECK

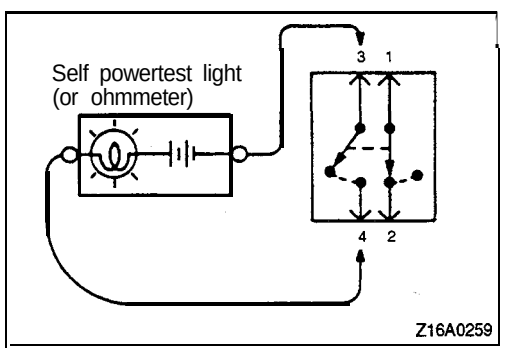
(1) Ground one lead wire of the test light. If a voltmeter is used instead of the test light, ground the grounding side lead wire.
(2) Connect the other lead wire of the test light to the power side terminal of the switch connector. The test light should come on or the voltmeter should indicate a voltage.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

2. SHORT-CIRCUITS CHECK

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







3. CONTINUITY CHECK

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

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

TSB Revision

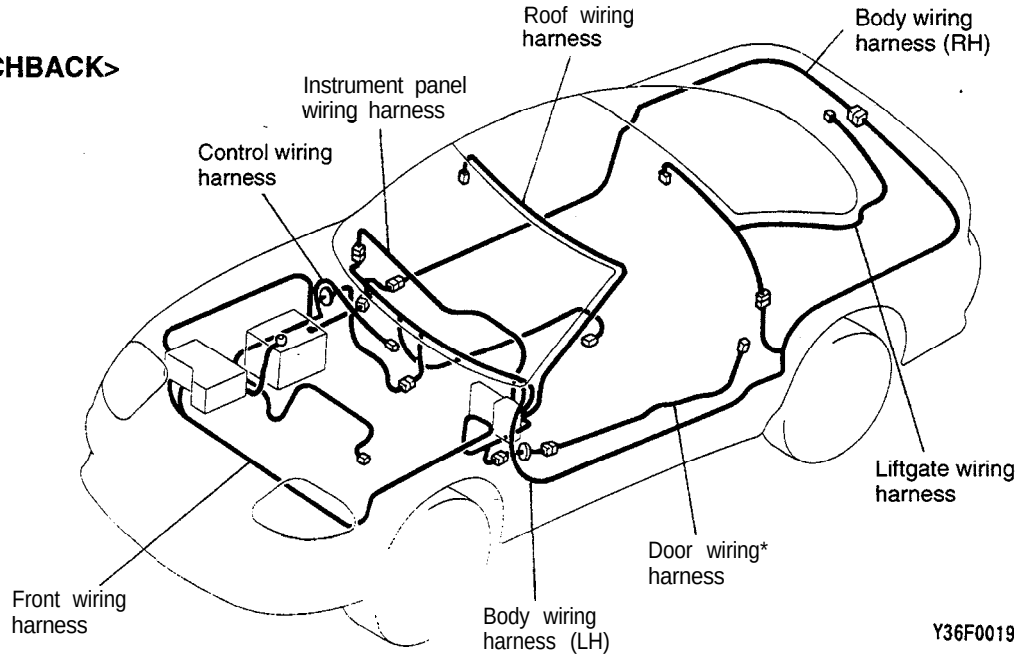
CONFIGURATION DIAGRAMS

CONTENTS

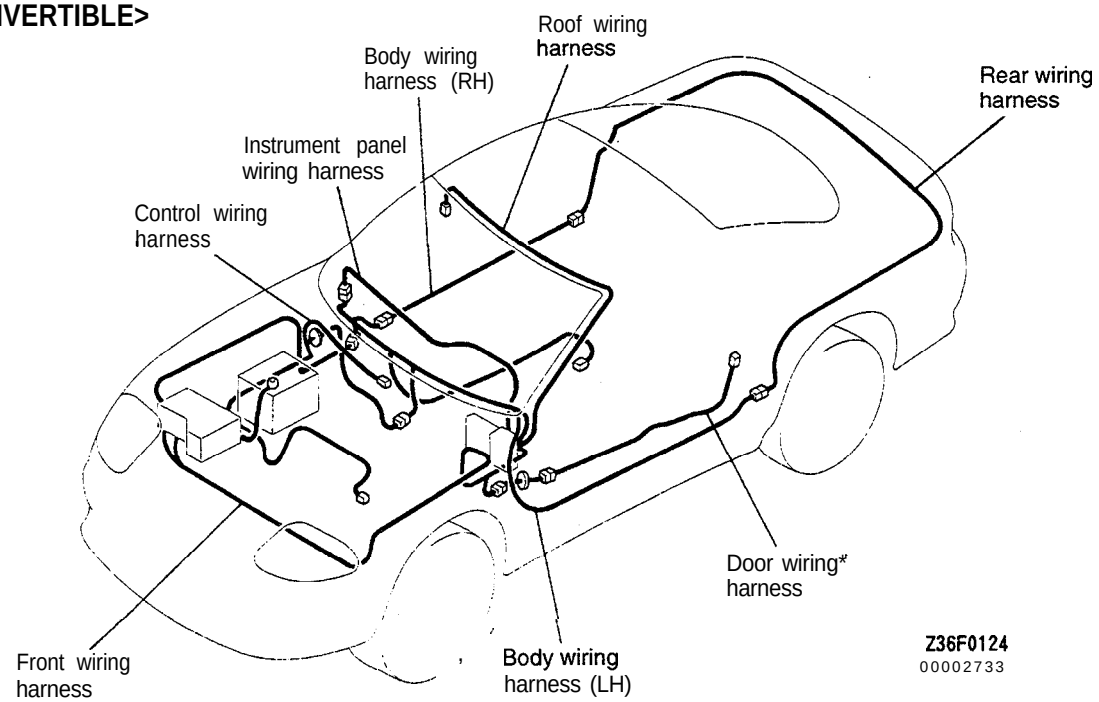
Dash Panel 50
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<M/T> 46
Engine Compartment 38
How to Read Configuration Diagram 37
Instrument Panel and Floor Console 54
Interior.. 56
Luggage Compartment 58
Overall Configuration Diagram 36

OVERALL CONFIGURATION DIAGRAM

<HATCHBACK>



<CONVERTIBLE>



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

TSB Revision

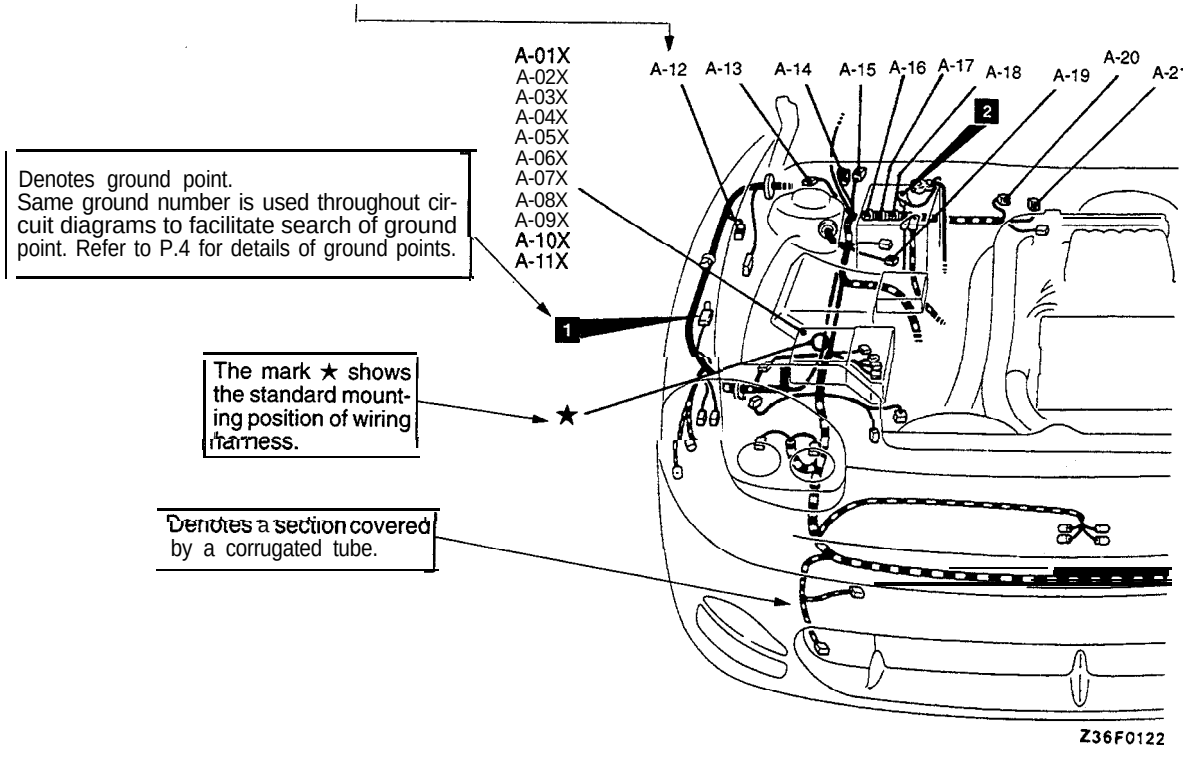
HOW TO READ CONFIGURATION DIAGRAM

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

Denotes connector No.
The same connector No. is used throughout the circuit diagrams to facilitate connector location searches. The first alphabetical symbol indicates the location site of the connector and a number that follows in the unique number. Numbers are assigned to parts in clockwise order on the diagram.

Example: A-I 2

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



A-01X Headlight relay
A-02X ABS power relay
A-03X Fog light relay
A-04X Radiator fan motor relay(LO)
A-05X Taillight relay
A-06X Horn relay
A-07X Radiator fan motor relay (HI)
A-09X Starter relay
A-I OX Generator relay
A-11X IOD or Storage connector
A-12 ABS front speed sensor (RH)
A-13 ECS front shock absorber (RH)
A-14 Washer fluid level sensor
A-18 ignition timing adjustment connector
A-I 9 Front washer motor
A-20 Evaporative emission purge solenoid
A-21 EGR solenoid (Vehicles for California)
A-22 EGR temperature sensor (Vehicles for California)
A-23 No connection <Turbo>
A-24 Brake fluid level sensor
A-25 ECS front shock absorber (LH)
A-26 Theft-alarm horn
A-27 Theft-alarm horn
A-28 Auto-cruise vacuum pump

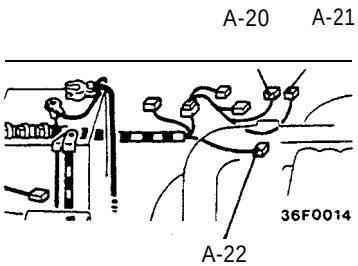
TSB Revision

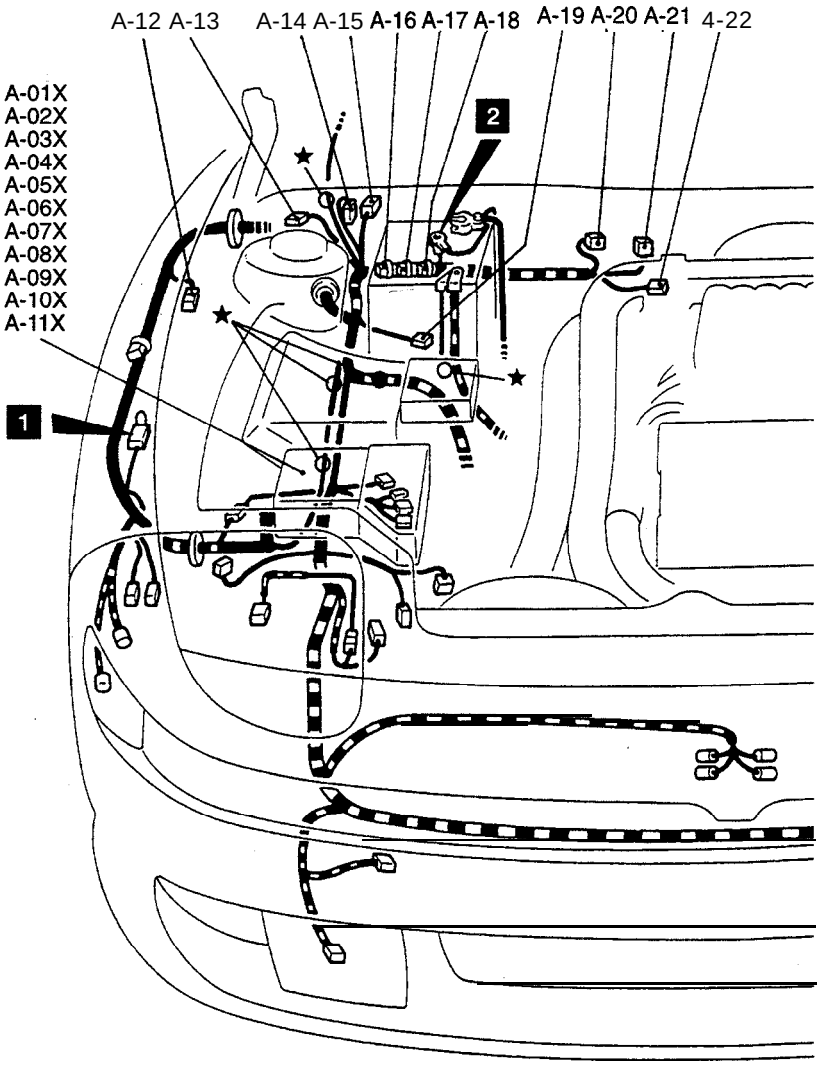
ENGINE COMPARTMENT (UP TO 1993 MODELS)

Connector symbol

A 01X thru 34X

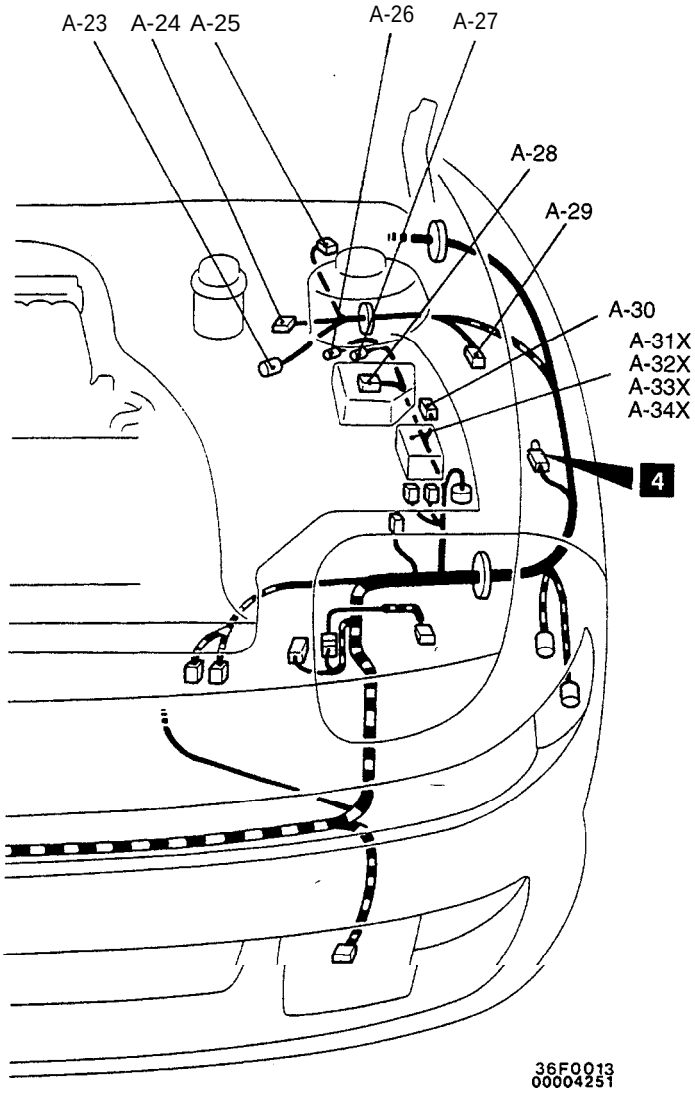
<Turbo>





A-01X	Headlight relay
A-02X	ABS power relay
A-03X	Fog light relay
A-04X	Radiator fan motor relay (LO)
A-05X	Taillight relay
A-06X	Horn relay
A-07X	Radiator fan motor relay (HI)
A-08X	Pop-up motor relay
A-09X	Starter relay
A-10X	Generator relay
A-11X	IOD or Storage connector
A-12	ABS front speed sensor (RH)
A-13	ECS front shock absorber (RH)
A-14	Washer fluid level sensor
A-l 5	Front wiper motor
A-16	Engine speed detection connector
A-17	Fuel pump check connector
A-18	Ignition timing adjustment connector

TSB Revision



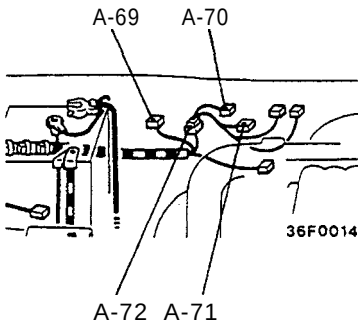
A-l 9	Front washer motor	A-27	Theft-alarm horn
A-20	Evaporative emission purge solenoid	A-26	Auto-cruise vacuum pump
A-21	EGR solenoid (Vehicles for California)	A-29	ABS front speed sensor (LH)
A-22	EGR temperature sensor (Vehicles for California)	A-30	4WS fluid level sensor <Turbo>
A - 2 3	No connection <Turbo>	A-31X	Condenser fan motor relay (HI)
A-24	Brake fluid level sensor	A-32X	Radiator fan motor control relay
A-25	ECS front shock absorber (LH)	A-33X	Magnetic clutch relay
A-26	Theft-alarm horn	A-34X	Condenser fan motor relay (LO)

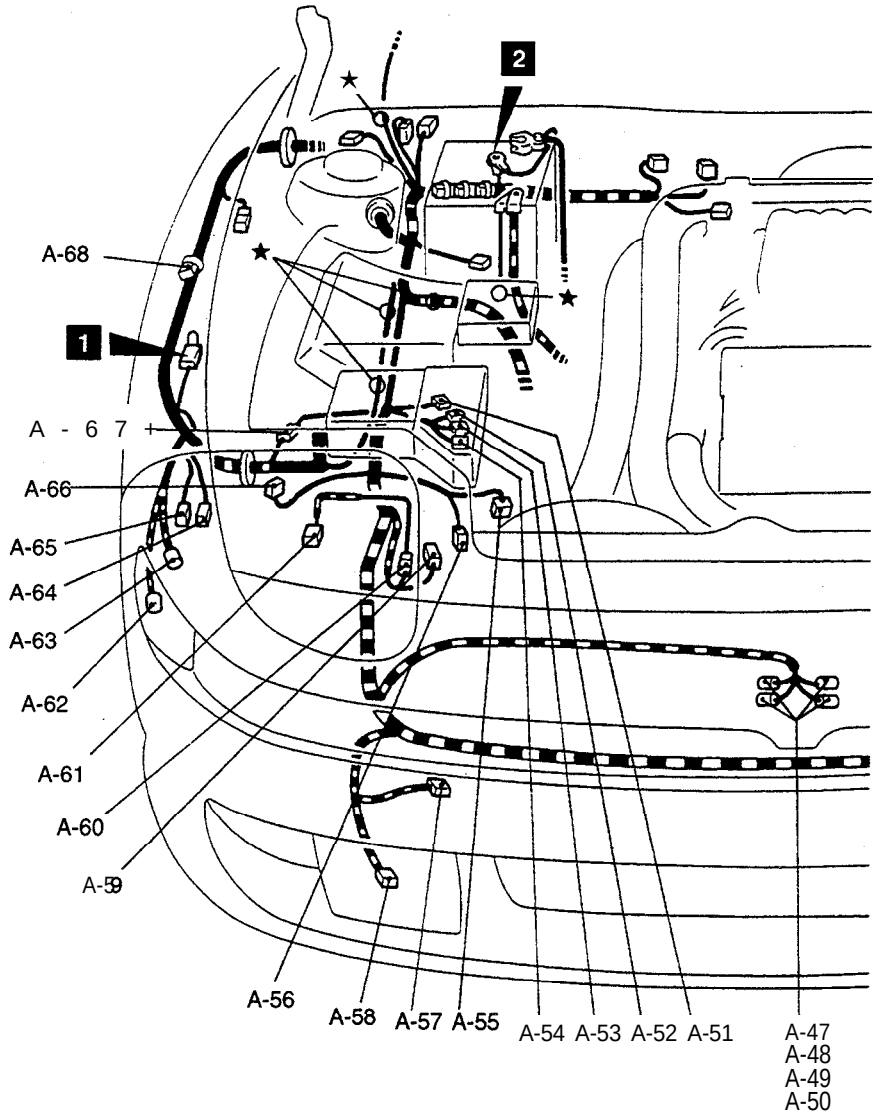
TSB Revision

Connector symbol

A 35 thru 73

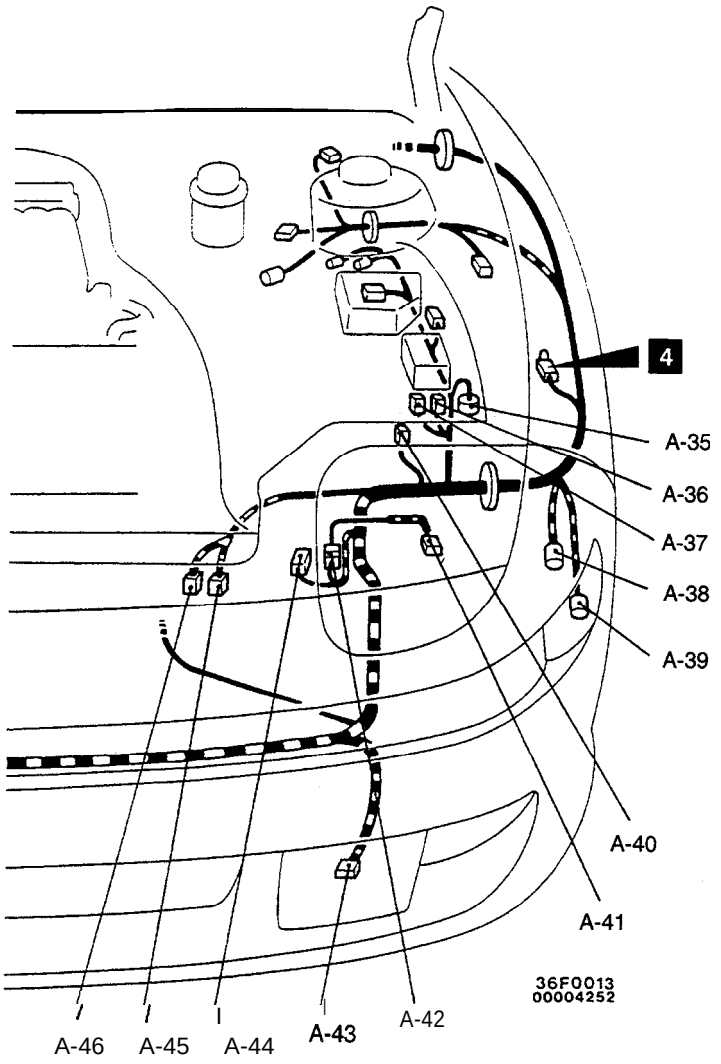
<Turbo>



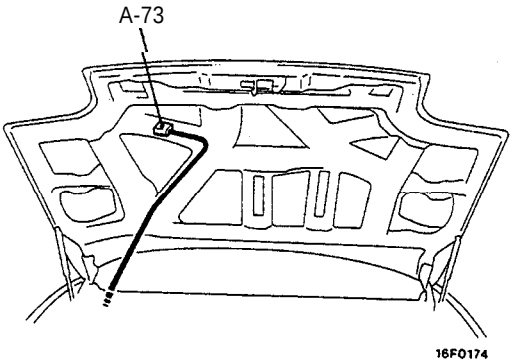


A-35	Dual pressure switch
A-36	Air conditioning relay box
A-37	Air conditioning relay box
A-38	SRS front impact sensor (LH)
A-39	Front combination light (LH)
A-40	inspection light switch
A-41	Headlight (LH)
A-42	Front wiring harness and headlight wiring harness (LH) combination
A-43	Fog light (LH)
A-44	Pop-up motor (LH)
A-45	Condenser fan motor
A-46	Condenser fan motor
A-47	Horn
A-48	Horn
A-49	Horn
A-50	Horn
A-51	Fuel pump resistor <Turbo>
A-52	A/T fluid temperature sensor
A-53	Kickdown servo switch <A/T>
A-54	Pulse generator <A/T>
A-55	Radiator fan motor

TSB Revision



ENGINE HOOD



A-56	Engine coolant level sensor
A-57	Active aero front venturi skirt
A-58	Fog light (RH)
A-59	Pop-up motor (RH)
A-60	Front wiring harness and headlight wiring harness (RH) combination
A-61	Headlight (RH)
A-62	Front combination light (RH)
A-63	SRS front impact sensor (RH)
A-64	ABS hydraulic unit
A-65	ABS hydraulic unit
A-66	Hood switch
A-67	Front wiring harness and control wiring harness combination
A-66	Diode (for ABS circuit)
A-69	Resistor <Turbo>
A-70	Turbocharger waste gate solenoid <Turbo>
A-71	Fuel pressure solenoid <Turbo>
A-72	Control wiring harness and solenoid valve harness combination
A-73	Inspection light

TSB Revision

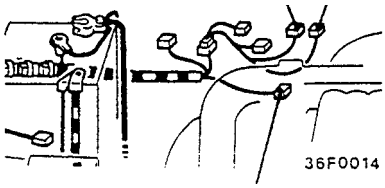
ENGINE COMPARTMENT (FROM 1994 MODELS)

Connector symbol

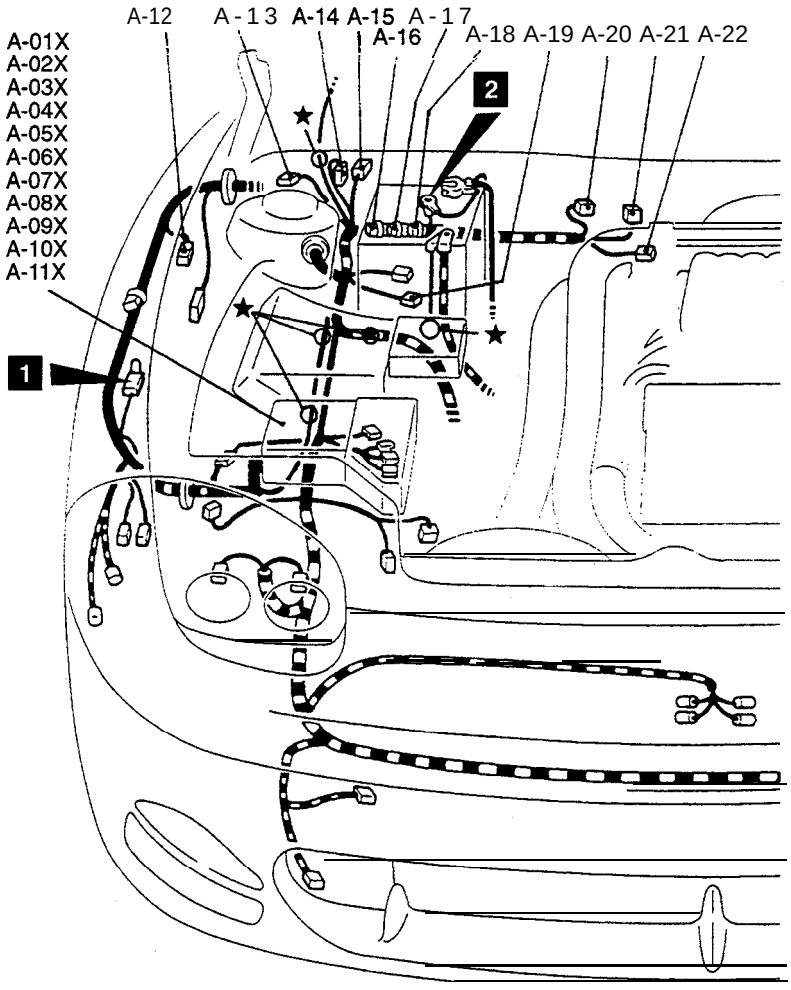
A 01X thru 34X

<Turbo>

A-20 A-21



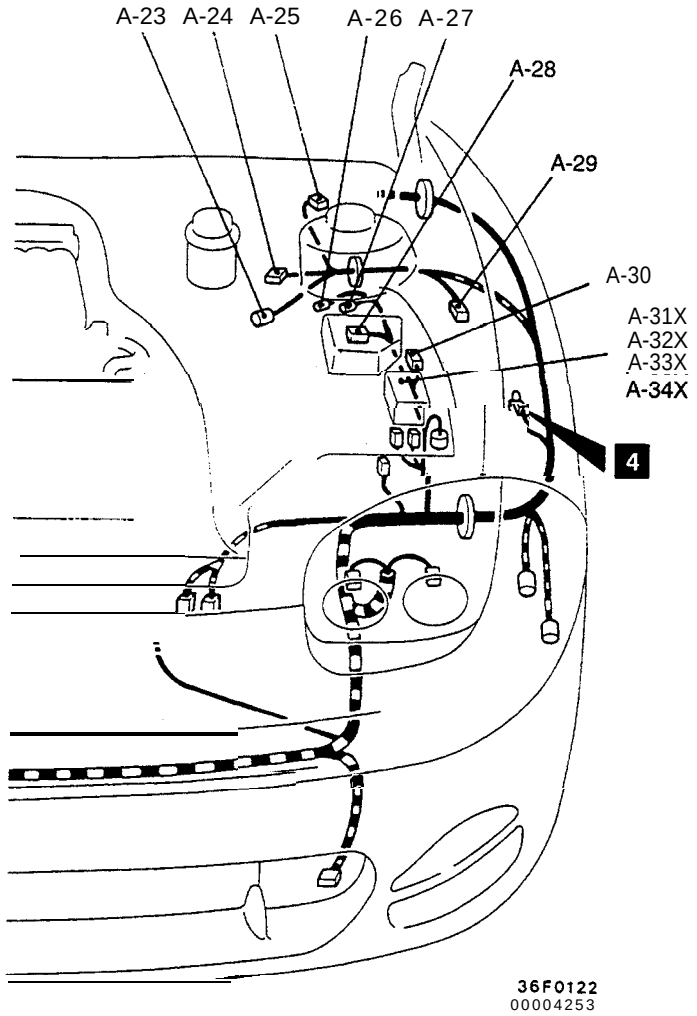
A-22



NOTE
*: Up to 1995 models

A-01X	Headlight relay
A-02X	ABS power relay
A-03X	Fog light relay
A-04X	Radiator fan motor relay (LO)
A-05X	Taillight relay
A-06X	Horn relay
A-07X	Radiator fan motor relay (HI)
A-09X	Starter relay
A-l OX	Generator relay
A-11X	IOD or Storage connector
A-12	ABS front speed sensor (RH)
A-13	ECS front shock absorber (RH)*
A-14	Washer fluid level sensor
A-15	Front wiper motor
A-16	Engine speed detection connector
A-17	Fuel pump check connector
A-18	Ignition timing adjustment connector
A-l 9	Front washer motor

TSB Revision

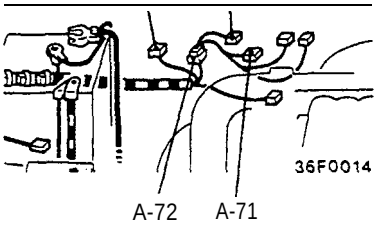


A-20	Evaporative emission purge solenoid	A-26	Theft-alarm horn
A-21	EGR solenoid <Turbo, Non Turbo (Up to 1995 models for California and from 1996 models)>	A-27	Theft-alarm horn
A-22	EGR temperature sensor* <Turbo, Non Turbo (California)>	A-28	Auto-cruise vacuum pump
A-23	No connection <Turbo>	A-29	ABS front speed sensor (LH)
A-24	Brake fluid level sensor	A-30	4WS fluid level sensor <Turbo>
A-25	ECS front shock absorber (LH)	A-31X	Condenser fan motor relay (HI)
		A-33X	Magnetic clutch relay
		A-34X	Condenser fan motor relay (LO)

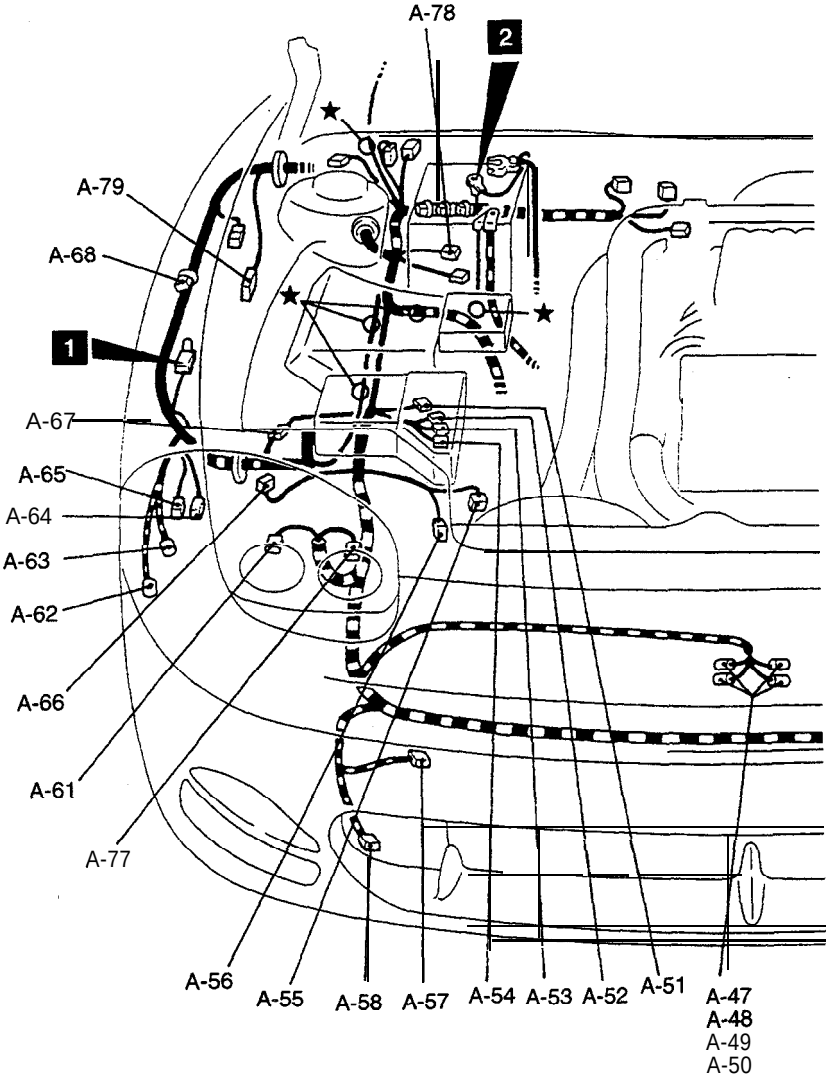
TSB Revision

Connector symbol

A 35 thru 79



<Turbo> A 69 A-70

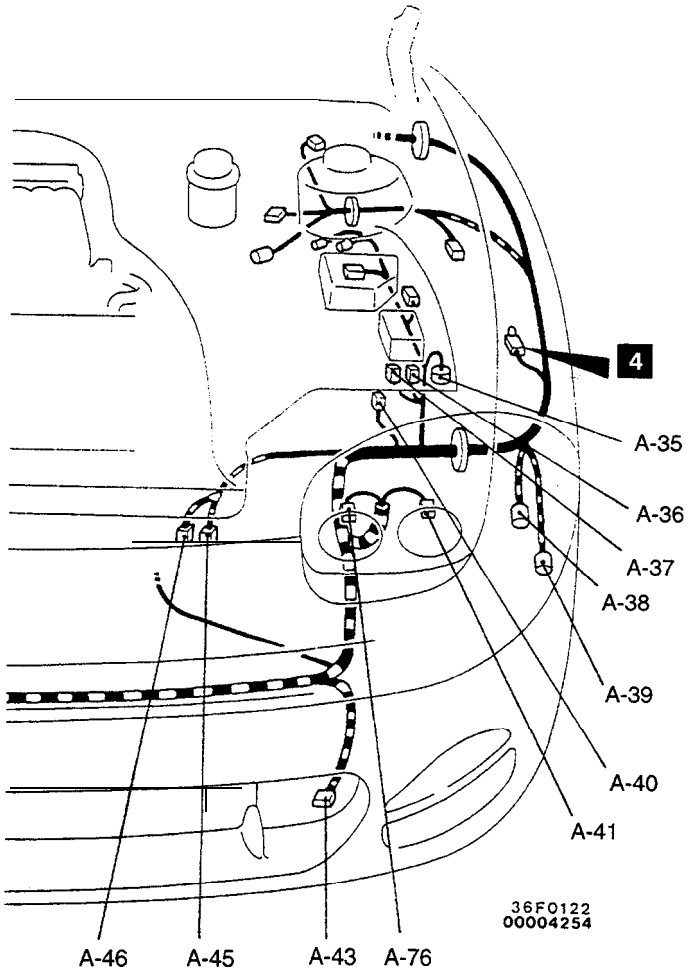


NOTE
*1: Up to 1995 models
*2: From 1996 models

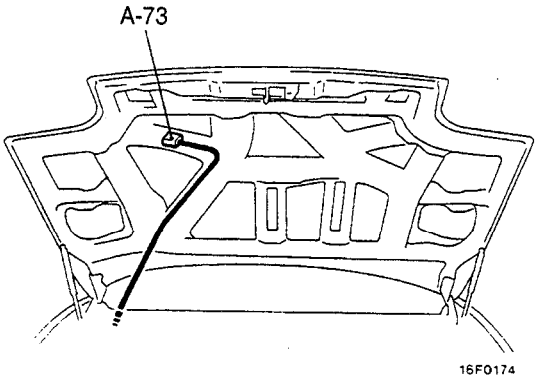
A-35 Dual pressure switch
A-36 Air conditioning relay box
A-37 Air conditioning relay box
A-38 SRS front impact sensor (LH)
A-39 Front combination light (LH)
A-40 Inspection light switch
A-41 Headlight (LO, HI)
A-43 Fog light (LH)
A-44 Pop-up motor (LH)
A-45 Condenser fan motor
A-46 Condenser fan motor

A 47 Horn
A 48 Horn
A 49 Horn
A 50 Horn
A-51 Fuel pump resistor <Turbo>
A-52 A/T fluid temperature sensor
A-53 Kickdown servo switch <A/T>
A-54 Pulse generator <A/T>
A-55 Radiator fan motor
A-56 Engine coolant level sensor
A-57 Active aero front venturi skirt

TSB Revision



ENGINE HOOD



A-58	Fog light (RH)	A-69	Resistor <Turbo>
A-61	Headlight (LO, RH)	A-70	Turbocharger waste gate solenoid <Turbo>
A-62	Front combination light (RH)	A-71	Fuel pressure solenoid <Turbo>
A-63	SRS front impact sensor (RH)	A-72	Control wiring harness and solenoid valve harness combination
A-64	ABS hydraulic unit		
A-65	ABS hydraulic unit	A-73	Inspection light
A-66	Hood switch	A-76	Headlight (Hi, LH)
A-67	Front wiring harness and control wiring harness combination	A-77	Headlight (HI, RH)
		A-78	No connection <Turbo>
A-68	Diode (for ABS circuit)*1	A-79	Motor antenna control unit <Convertible>*1 or motor antenna <Convertible>*2

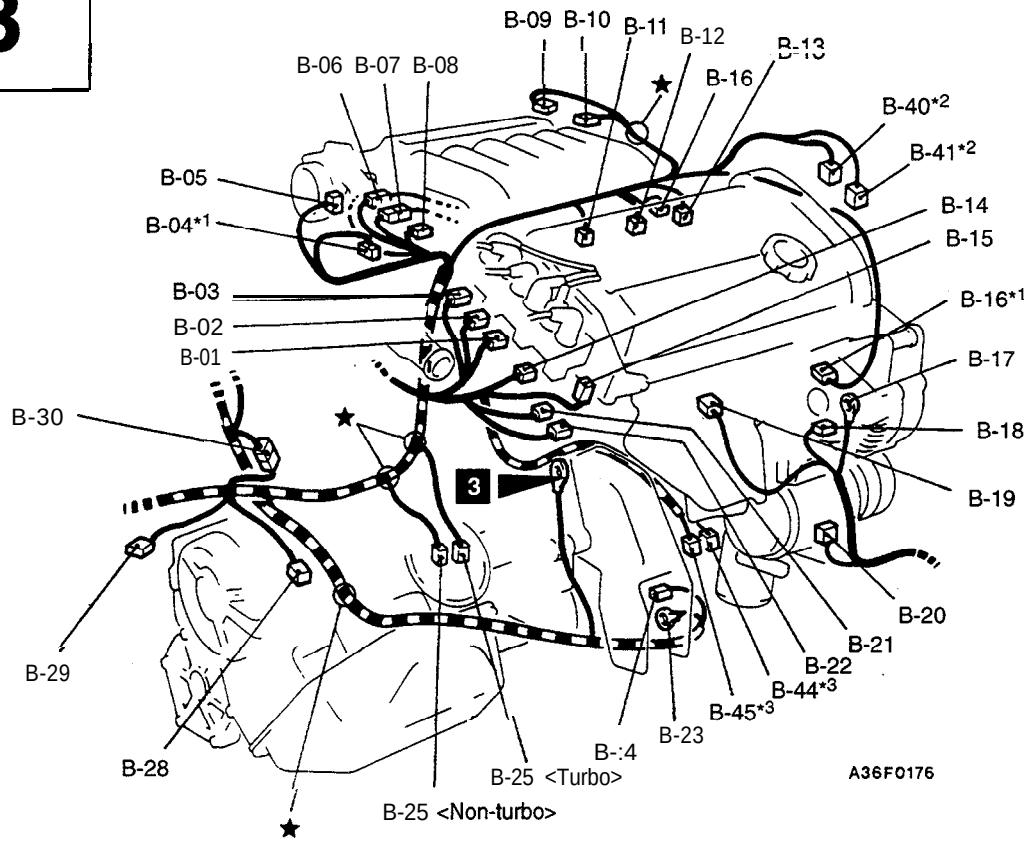
TSB Revision

ENGINE AND TRANSAXLE <M/T>

Connector symbol

B

Front View

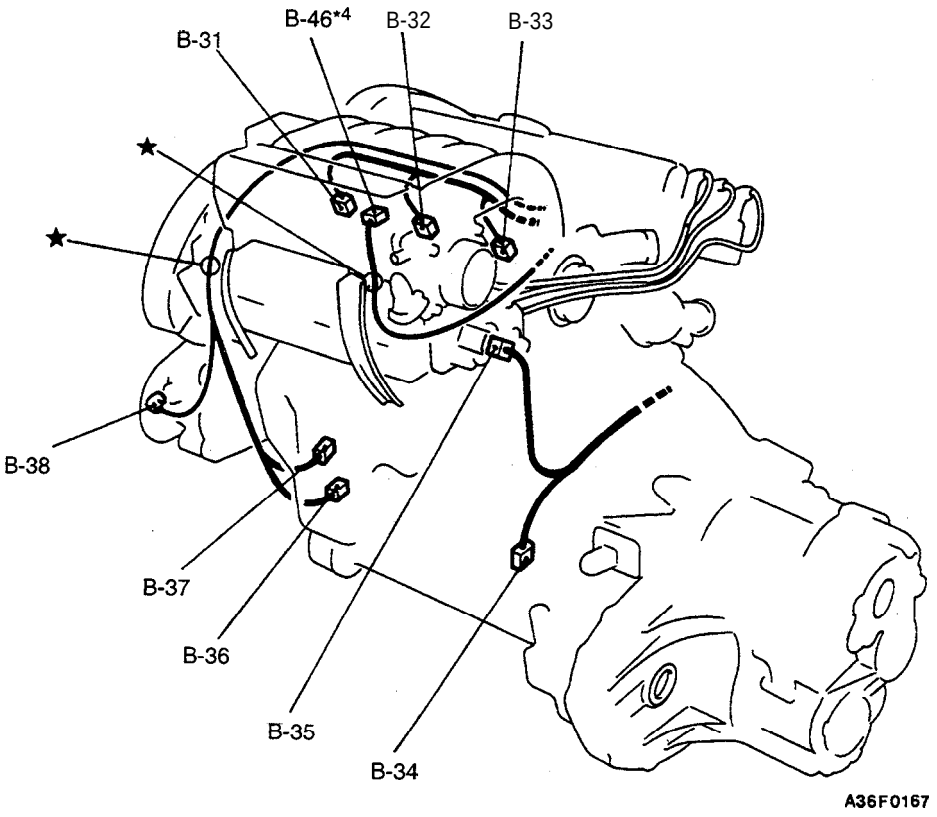


NOTE
(1) *1:1992 models
(2) *2: From 1993 models
(3) *3:1994, 1995 models for California and from 1996 models
(4) *4: From 1996 models

B-01 Engine coolant temperature gauge unit
B-02 Engine coolant temperature sensor
B-03 Engine coolant temperature switch (for air conditioning circuit)
B-04 Crankshaft position sensor and camshaft position sensor*1
B-05 Throttle position sensor
B-06 Control wiring harness and oil pressure wiring harness combination
B-07 Control wiring harness and injector wiring harness combination
B-08 Knock sensor
B-09 Variable induction servo motor (with intake control valve position sensor) <Non-Turbo>
B-10 Variable induction servo motor (with intake control valve position sensor) <Non-Turbo>
B-11 Injector No. 5
B-12 Injector No. 3
B-13 Injector No. 1
B-14 Ignition coil
B-15 Capacitor
B-16 Left bank heated oxygen sensor (front) <Turbo, Non Turbo – 1994, 1995 models for California and 1996 models>
B-17 Generator
B-18 Generator
B-19 Right bank heated oxygen sensor (front)
B-20 Magnetic clutch
B-21 Power Transistor
B-22 Power Transistor

TSB Revision

Rear View



B-23	Starter motor
B-24	Starter motor
B-25	Back-up light switch
B-28	Fuel pump relay <Turbo>
B-29	Volume air flow sensor (with intake air temperature sensor and atmospheric sensor)
B-30	Control wiring harness and battery cable combination
B-31	Injector No. 2
B-32	Injector No. 4
B-33	Injector No. 6
B-34	Speed sensor <Turbo>
B-35	Idle air control motor (stepper motor)
B-36	Oil pressure gauge unit
B-37	Oil pressure switch
B-38	Power steering pressure switch
B-40	Camshaft position sensor*2
B-41	Crankshaft position sensor*2
B-44	Right bank heated oxygen sensor (rear)*3
B-45	Left bank heated oxygen sensor (rear)*3
B-46	Manifold differential pressure sensor*4

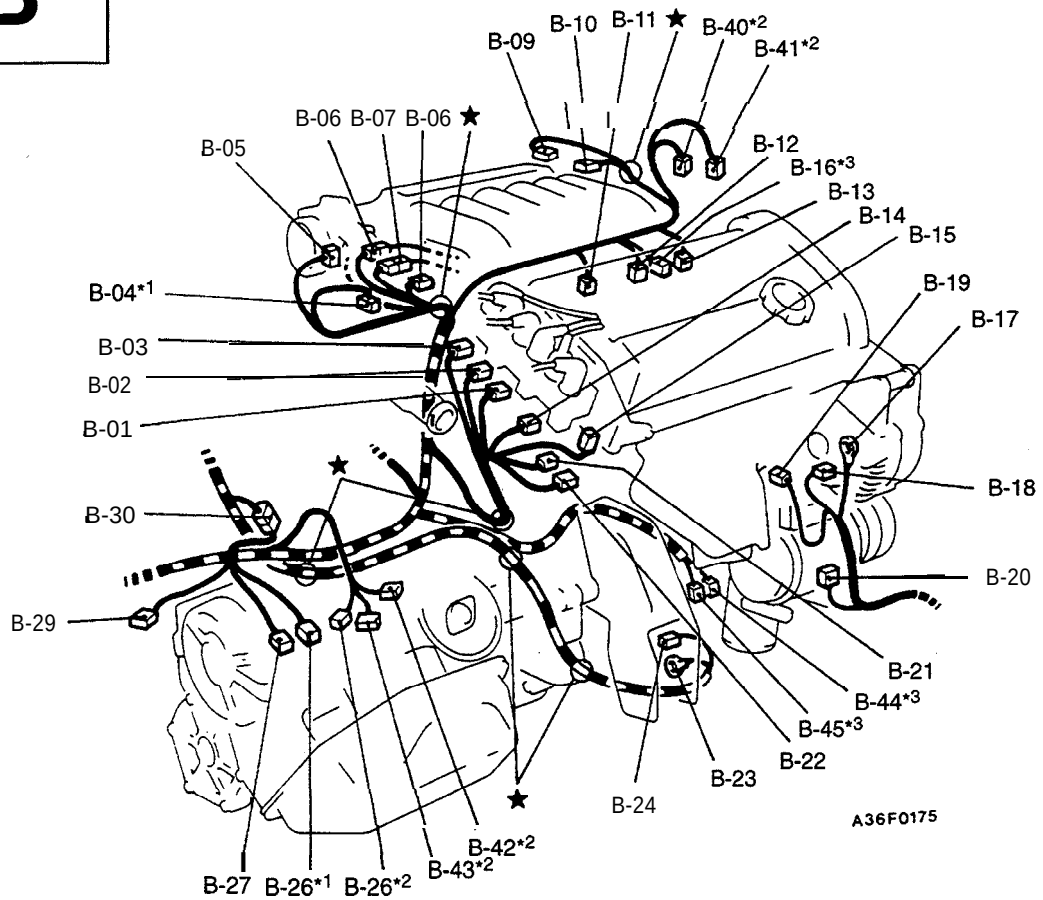
TSB Revision

ENGINE AND TRANSAXLE <A/T>

Connector symbol

B

Front View

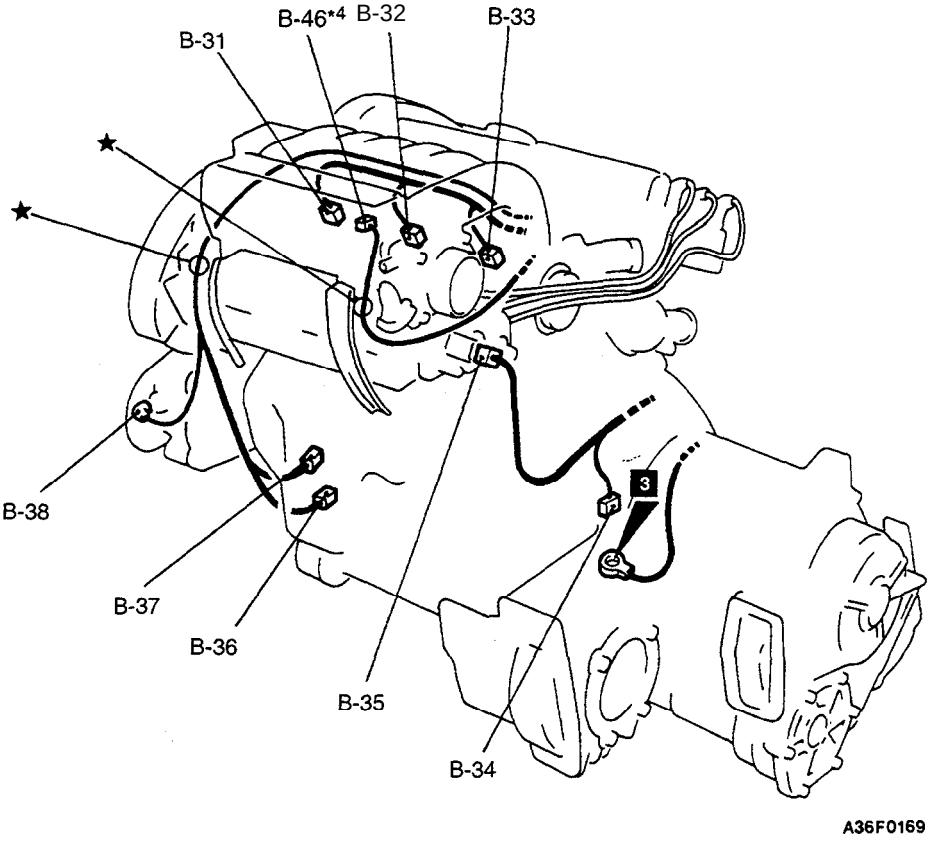


NOTE
(1) *1: 1992 models
(2) *2: From 1993 models
(3) *3: 1994, 1995 models for California and from 1996 models
(4) *4: From 1996 models

B-01	Engine coolant temperature gauge unit	B-10	Variable induction servo motor (with intake control valve position sensor)
B-02	Engine coolant temperature sensor	B-11	Injector No. 5
B-03	Air conditioning engine coolant temperature switch	B-12	Injector No. 3
B-04	Crankshaft position sensor and camshaft position sensor*1	B-13	Injector No. 1
B-05	Throttle position sensor	B-14	Ignition coil
B-06	Control wiring harness and oil pressure wiring harness combination	B-15	Capacitor
B-07	Control wiring harness and injector wiring harness combination	B-16	Left bank heated oxygen sensor (front)*3
B-08	Knock sensor	B-17	Generator
B-09	Variable induction servo motor (with intake control valve position sensor)	B-18	Generator
		B-19	Right bank heated oxygen sensor (front)
		B-20	Magnetic clutch
		B-21	Power transistor

TSB Revision

Rear View

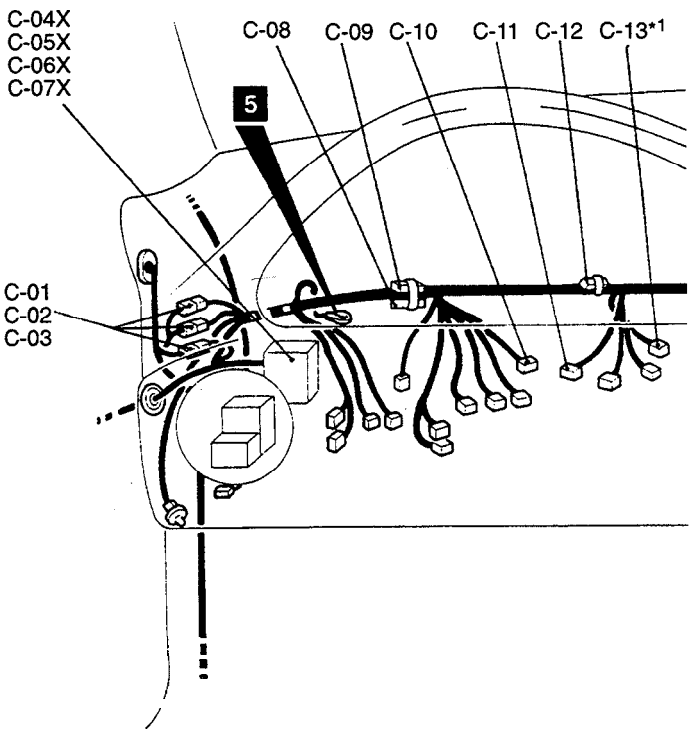


B-22	Power transistor	B-35	Idle air control motor (stepper motor)
B-23	Starter motor	B-36	Oil pressure gauge unit
B-24	Starter motor	B-37	Oil pressure switch
B-26	Inhibitor switch	B-38	Power steering pressure switch
B-27	ELC-4 A/T control solenoid valve	B-40	Camshaft position sensor*2
B-29	Volume air flow sensor (with intake air temperature sensor and atmospheric sensor)	B-41	Crankshaft position sensor*2
		B-42	Kickdown servo switch*2
B-30	Control wiring harness and battery cable combination	B-43	AA fluid temperature sensor*2
		B-44	Right bank heated oxygen sensor (rear)*3
B-31	Injector No. 2	B-45	Left bank heated oxygen sensor (rear)*3
B-32	Injector No. 4	B-46	Manifold differential pressure sensor*4
B-33	Injector No. 6		
B-34	Speed sensor		

TSB Revision

DASH PANEL

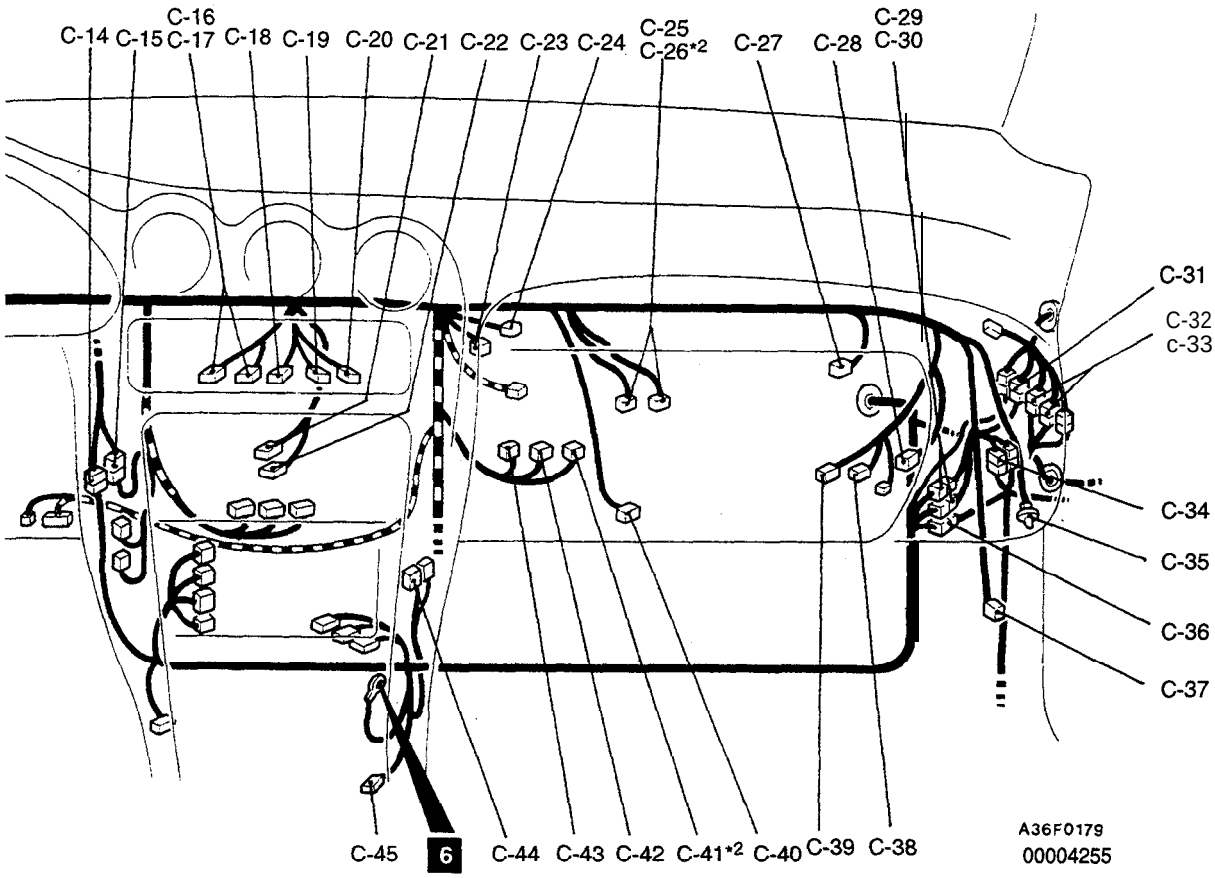
Connector symbol
C 01 thru 45



NOTE
*1: 1992 models
*2: Up to 1995 models

C-01 Body wiring harness (LH) and front wiring harness combination
C-02 Body wiring harness (LH) and front wiring harness combination
c-o.3 Body wiring harness (LH) and front wiring harness combination
C-04X Door lock power relay 1
C-06X Defogger relay
C-07X Power window relay
C-08 Diode (for seat belt warning circuit)
C-09 Diode (for seat belt warning circuit)
C-10 Column switch
C-11 Column switch
C-12 Diode (for theft-alarm circuit)
c-13 Accelerator pedal **switch***1
c-14 Control wiring harness and instrument panel wiring harness combination
C-15 Body wiring harness (LH) and instrument panel wiring harness combination
C-l 6 Air conditioning control panel
C-17 Air conditioning control panel
C-l 8 Air conditioning switch
C-19 Blower switch
C-20 Heater control panel illumination light
c-21 Blend air damper control motor
c-22 Mode selection damper control motor
C-23 Power transistor (for full-auto air conditioning circuit)
C-24 Blower resistor

TSB **Revision**

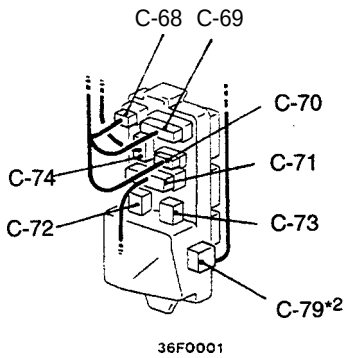


C-25	Air conditioning control unit <Manual air conditioning>
C-26	Air conditioning control unit*2 <Manual air conditioning>
C-27	Air-inlet sensor <Full-auto air conditioning>
C-28	Air selection damper control motor
c-29	Body wiring harness (LH) and control wiring harness combination
C-30	Body wiring harness (LH) and control wiring harness combination
c-31	Body wiring harness (LH) and front wiring harness combination
C-32	Body wiring harness (RH) and front wiring harness combination
c-33	Body wiring harness (RH) and front wiring harness combination
c-34	Body wiring harness (LH) and body wiring harness (RH) combination
c-35	Foot light (RH)
C-36	Body wiring harness (RH) and control wiring harness combination
c-37	Auto-cruise control unit
C-38	Blower motor
c-39	Blower motor relay (HI)
C-40	Air conditioning compressor lock controller
c-41	Air-inlet sensor <Manual air conditioning>*2
C-42	Air-thermo sensor
c-43	Engine coolant temperature sensor
C-44	MFI relay
c-45	Over drive and power / economy switch

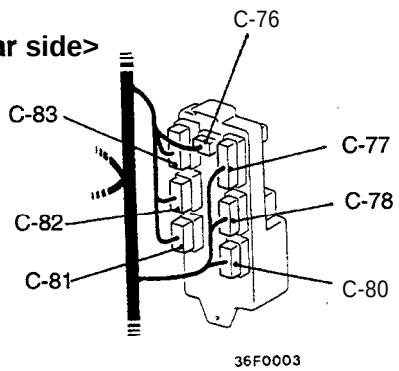
TSB Revision

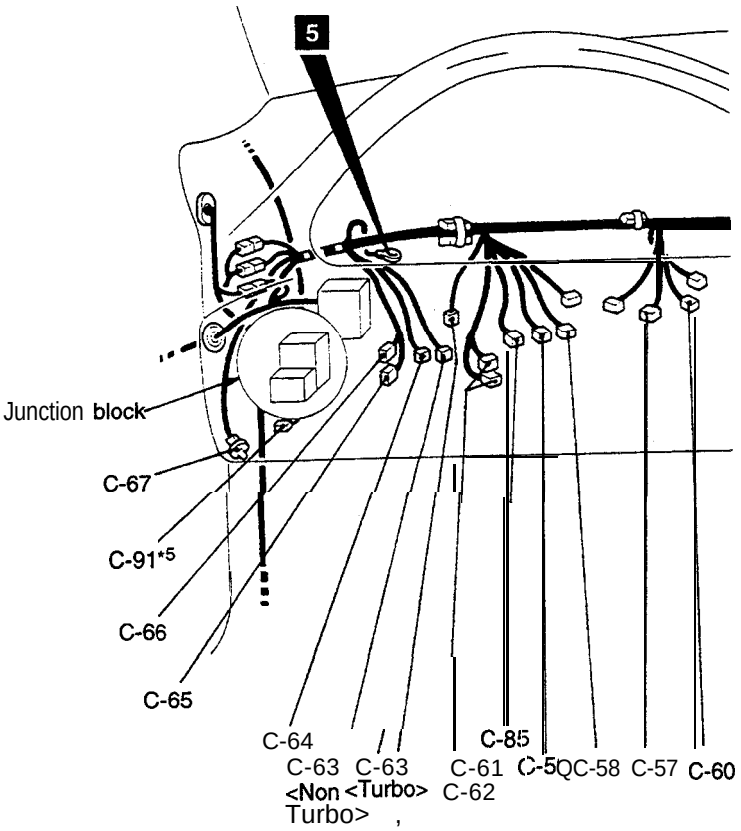
Connector symbol
C 46 thru 95

JUNCTION BLOCK
<Front side>



<Rear side>



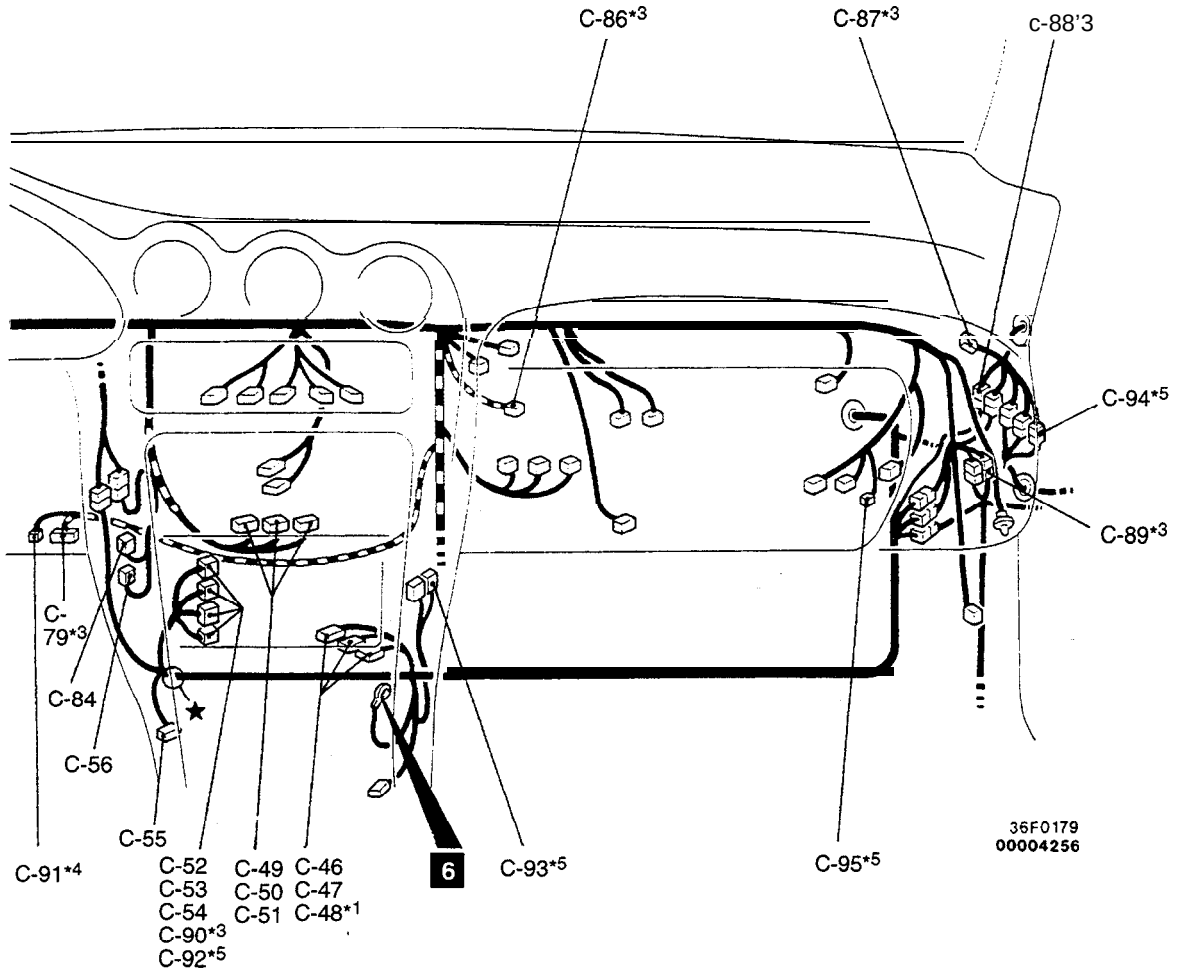


NOTE

(1) *1: 1992 Up to models 1993 models
(2) *3: From 1994 models
(4) *4: 1995 models
(5) *5: From 1996 models

C-46 ELC-4 A/T control module
c-47 ELC-4 A/T control module
C-48 ELC-4 A/T control module*1
c-49 Air conditioning control unit <Full-auto conditioning>
C-50 Air conditioning control unit <Full-auto conditioning>
c-51 Air conditioning control unit <Full-auto conditioning>
C-52 Engine control module
c-53 Engine control module
C-54 Engine control module
c-55 Left bank heated oxygen sensor (front) <Non-Turbo except for California>
C-56 Theft-alarm starter relay
c-57 Clock spring
C-58 Key reminder switch
c-59 Ignition switch
C-60 Steering wheel angle speed sensor
C-61 Stop light switch
C-62 Stop light switch
C-63 Clutch pedal position switch (for auto-cruise control circuit)
C-64 Clutch pedal position switch (for theft-alarm circuit)
C-65 ETACS unit
C-66 ETACS unit
C-67 Foot light (LH)
C-68 Front wiring harness and junction block combination
C-69 Front wiring harness and junction block combination
C-70 Front wiring harness and junction block combination

TSB Revision



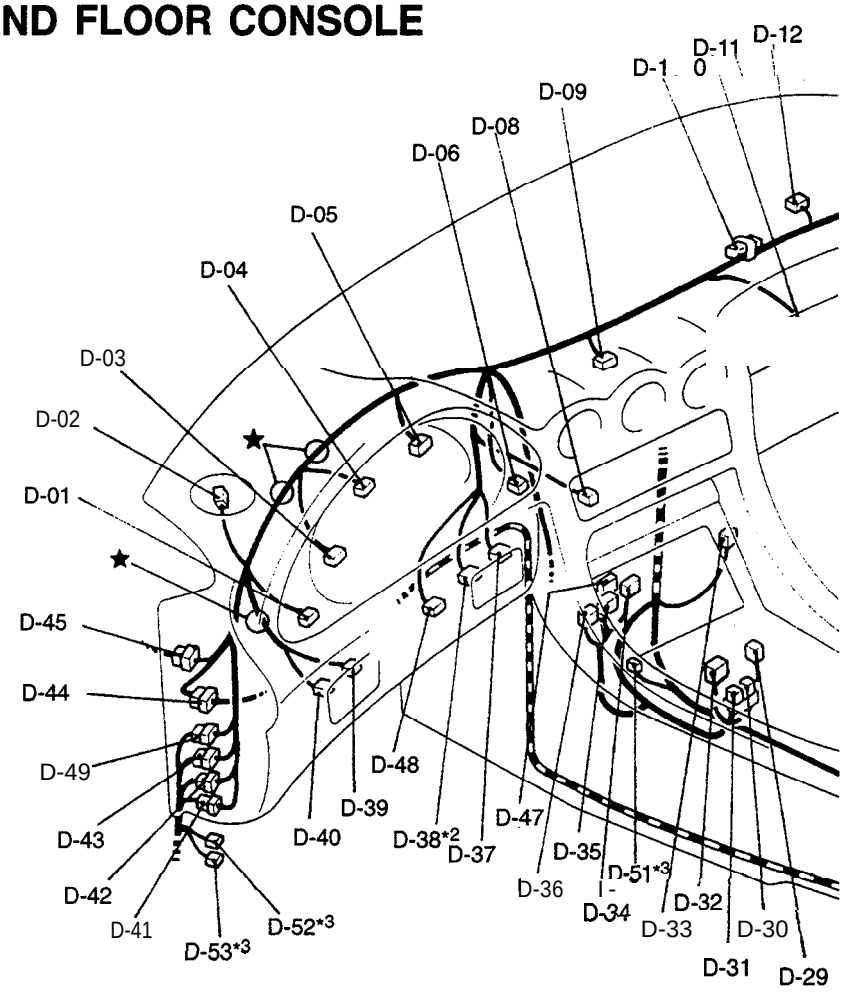
c-71	Adapter wiring harness and junction block combination	C-83	Body wiring harness (LH) and junction block combination
C-72	Theft-alarm horn relay	C-84	Auto-cruise relay
c-73	Blower motor relay	C-85	Spare connector (Hand free microphone)
c-74	Roof wiring harness and junction block combination	C-86	Passenger's air bag module*3
		C-87	No connection <Turbo>
C-76	Body wiring harness (LH) and junction block combination	C-88	Control wiring harness and front wiring harness combination*3
c-77	Body wiring harness (LH) and junction block combination	C-89	Body wiring harness (LH) and body wiring harness (RH) combination*3
C-78	Body wiring harness (LH) and junction block combination	C-90	Engine control module*3 <Turbo, Non Turbo – Up to 1995 models for California>
c-79	Data link connector*3		
C-80	Body wiring harness (LH) and junction block combination	c-91	Data link connector <Convertible>*4,*5
		c-92	Engine control module*5
C - 8 1	Body wiring harness (LH) and junction block combination	c-93	MFI relay*5
		c-94	Body wiring harness (RH) and front wiring harness combination*5
C-82	Body wiring harness (LH) and junction block combination	c-95	Motor antenna control unit*5

TSB Revision

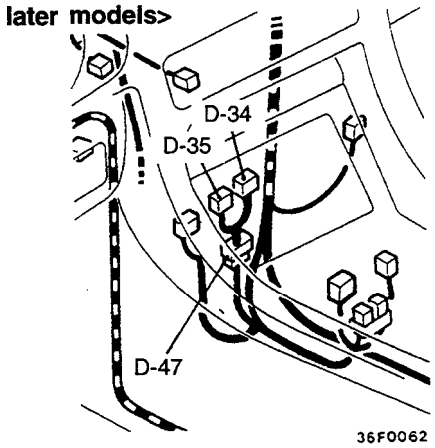
INSTRUMENT PANEL AND FLOOR CONSOLE

Connector symbol

D



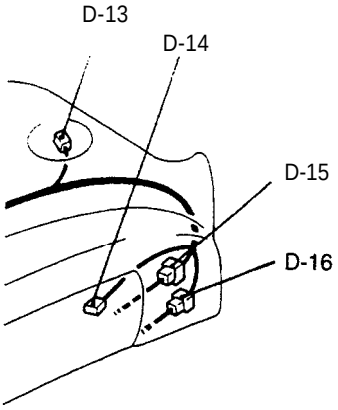
<On 1993 and later models>

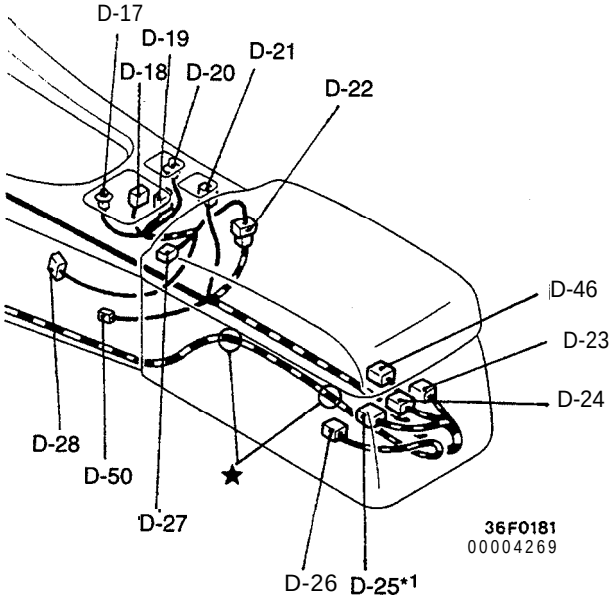


NOTE
(1) *1: Up to 1993 models
(2) *2: Up to 1994 models
(3) *3: From 1996 models

D-01	Pop-up switch and fog light switch
D-02	Front speaker (LH)
D-03	Combination meter
D-04	Combination meter
D-05	Combination meter
D-06	Defogger switch and ECS switch
D-08	Hazard switch
D-09	Combination gauge
D-l 0	Diode (for 4WS fluid level warning light circuit)
D-11	Glove box illumination light
D-12	Photo sensor
D-13	Front speaker (RH)
D-14	Glove box illumination light switch
D-15	Instrument panel wiring harness and control wiring harness combination
D-l 6	Instrument panel wiring harness and body wiring harness (RH) combination
D-17	Ashtray illumination light
D-18	Cigarette lighter
D-19	Cigarette lighter
D-20	Cigarette lighter illumination light
D-21	Power seat switch
D-22	Body wiring harness (LH) and console wiring harness combination
D-23	SRS diagnosis unit
D-24	SRS diagnosis unit
D-25	SRS diagnosis unit*1
D-26	SRS diagnosis unit
D-27	ABS G sensor
D-28	Parking brake switch

TSB Revision





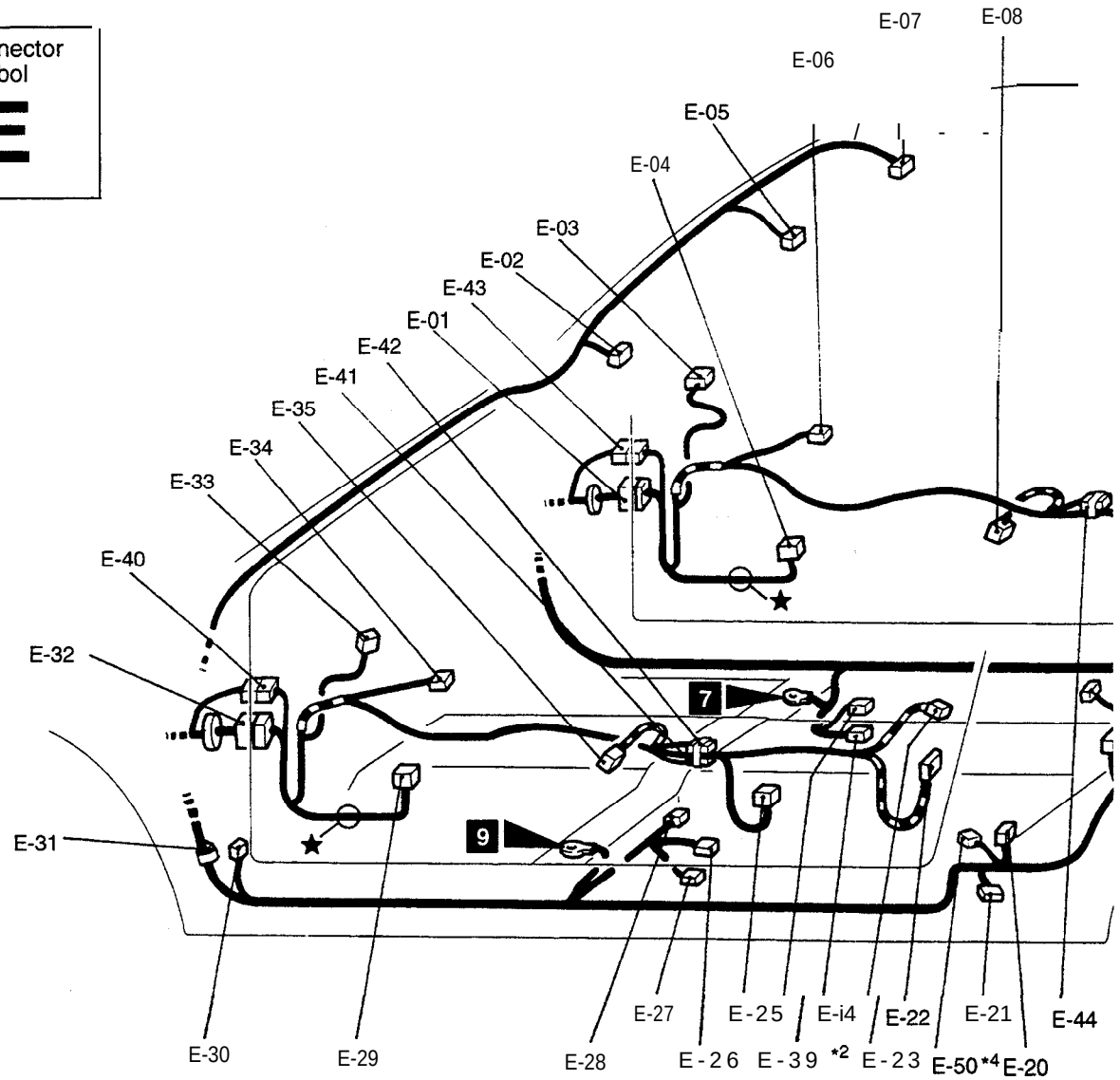
D-29 Active aero switch <Hatchback>
D-30 Accessory socket
D-31 Accessory socket
D-32 Auto-cruise main switch
D-33 Seatbelt warning buzzer
D-34 Radio
D-35 Radio
D-36 Radio
D-37 Rear wiper and washer switch <Hatchback>
D-38 Active exhaust switch*2
D-39 Remote-control mirror switch
D-40 Rheostat
D-41 Instrument panel wiring harness and body wiring harness (LH) combination
D-42 Instrument panel wiring harness and body wiring harness (LH) combination
D-43 Instrument panel wiring harness and body wiring harness (LH) combination
D-44 Instrument panel wiring harness and adapter wiring harness combination
D-45 Instrument panel wiring harness and front wiring harness combination
D-46 Telephone cable
D-47 Radio or body wiring harness and radio sub wiring harness combination
D-48 Top switch <Convertible>
D-49 Instrument panel wiring harness and body wiring harness (LH) combination <Convertible>
D-50 Parking switch <Convertible>
D-51 Chime*3
D-52 Body wiring harness (LH) and header wiring harness combination*3
D-53 Body wiring harness (LH) and header wiring harness combination*3

TSB Revision

INTERIOR

Connector symbol

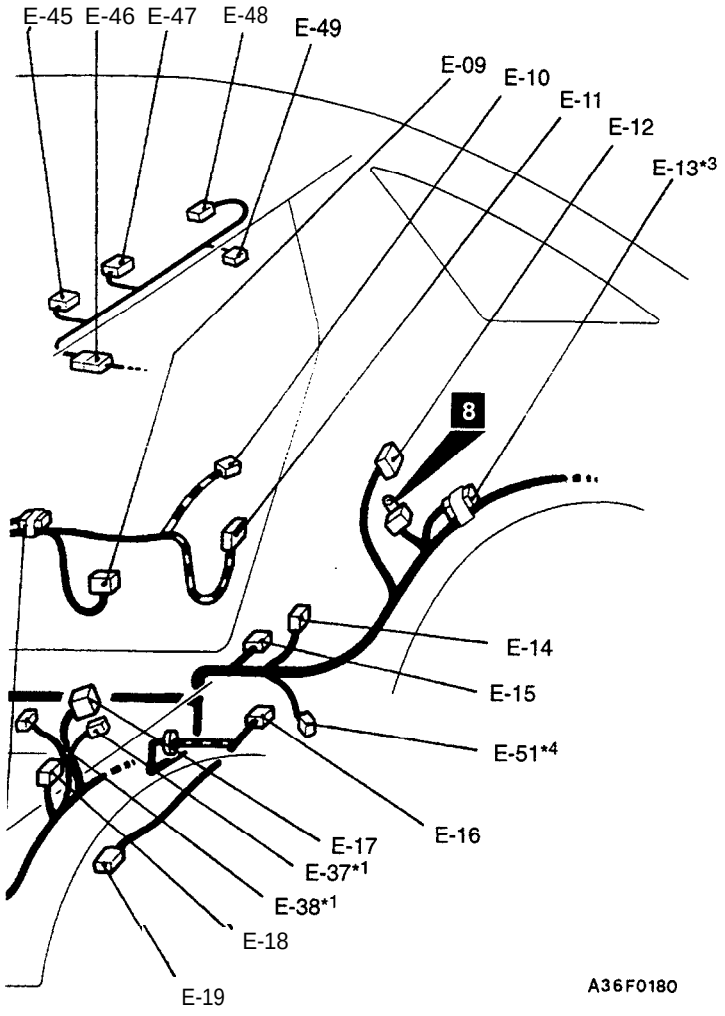
E



NOTE
(1) *1: From 1993 models
(2) *2: From 1994 models
(3) *3: Up to 1995 models
(4) *4: From 1996 models

E-01	Body wiring harness (RH) and door wiring harness (RH) combination	E-14	Front seat belt solenoid (RH)
E-02	Vanity mirror illumination light (LH)	E-15	Door switch (RH)
E-03	Door mirror (RH)	E-16	ABS rear speed sensor (RH)
E-04	Door speaker (RH)	E-17	Light automatic shut-OFF unit
E-05	Dome light	E-18	Rear intermittent wiper relay
E-06	Power window sub switch	E-19	ABS rear speed sensor (LH)
E-07	Vanity mirror illumination light (RH)	E-20	Front seat belt solenoid (LH)
E-08	Power window motor (RH)	E-21	Door switch (LH)
E-09	Door light (RH)	E-22	Door lock actuator (LH)
E-10	Door key cylinder unlock switch (RH)	E-23	Door key cylinder unlock switch (LH)
E-11	Door lock actuator (RH)	E-24	Front seat belt switch (RH)
E-l 2	ABS control unit	E-25	Door light (LH)
E-13	ABS resistor <AWD>*3	E-26	Front seat belt switch (LH)
		E-27	Power seat assembly

TSB Revision



E-28	ECS G sensor	E-41	Jumper connector A (LH) <Convertible>
E-29	Door speaker	E-42	Jumper connector B <Convertible>
E-30	Turn signal and hazard flasher unit	E-43	Body wiring harness (RH) and door wiring harness (RH) combination **<Convertible>**
E-31	Diode (for MFI circuit)		
E-32	Body wiring harness (LH) and door wiring harness (LH) combination	E-44	Jumper connector A (RH) <Convertible>
E-33	Door mirror (LH)	E-45	Sunroof control unit
E-34	Power window main switch	E-46	Liftgate wiring harness and sunroof wiring harness combination <Hatchback>
E-35	Power window motor (LH)	E-47	Sunroof switch
E-37	Keyless control Unit*1	E-48	Sunroof motor
E-38	Door lock power relay 2*1 (for keyless control system)	E-49	Interior temperature sensor <Vehicles with sunroof>
E-39	Amplifier*2	E-50	Rear courtesy light (LH) **<Convertible>***4
E-40	Body wiring harness (LH) and door wiring harness (LH) combination <Convertible>	E-51	Rear courtesy light (RH) **<Convertible>***4

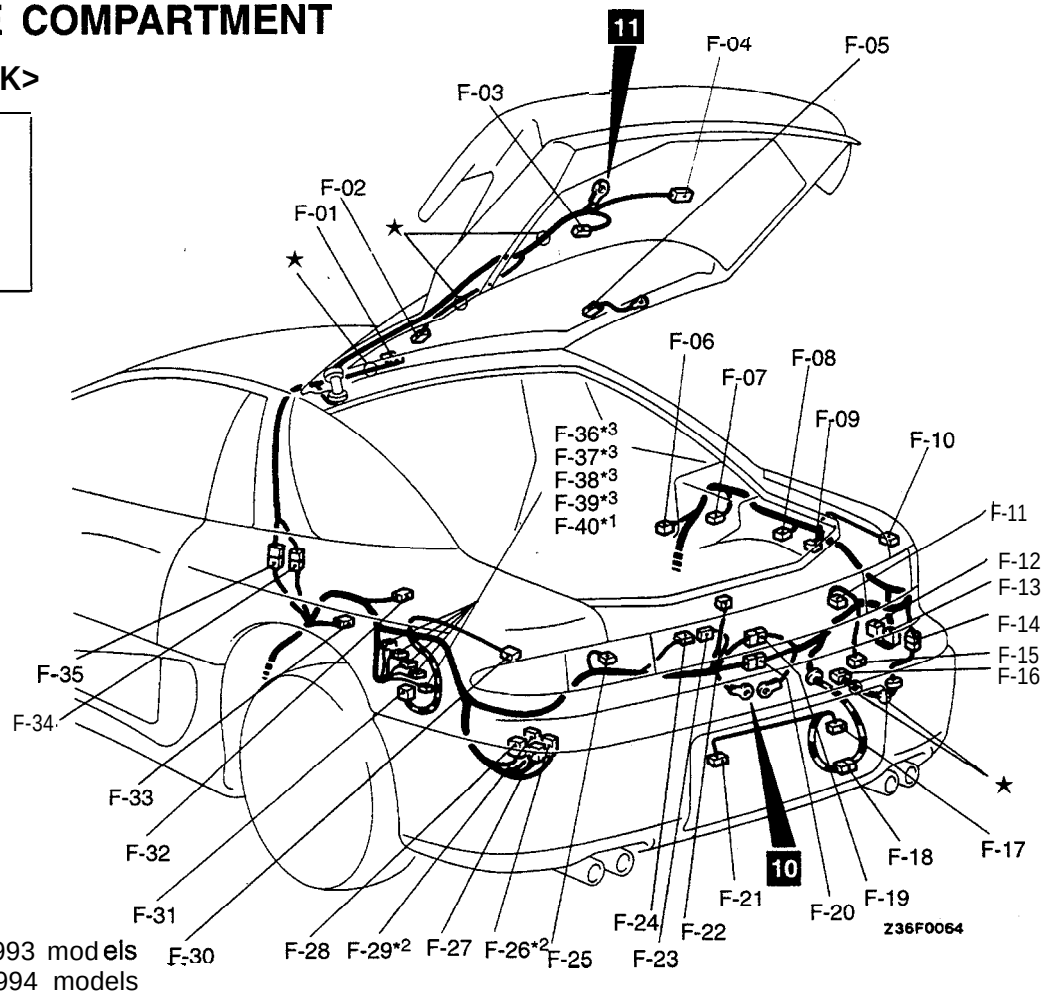
TSB Revision

LUGGAGE COMPARTMENT

<HATCHBACK>

Connector symbol

F



NOTE
(1) ●: From 1993 models
(2) *2: Up to 1994 models
(3) *3: Up to 1993 models

F-01 Interior temperature sensor
F-02 Defogger (+)
F-03 Rear wiper motor
F-04 High-mounted stop light or active aero rear spoiler
E-05 Defogger (–)
F-06 Rear speaker (RH)
F-07 ECS rear shock absorber (RH)
F-08 Luggage compartment light
F-09 ABS resistor <FWD>
F-I 0 Rear combination light (RH)
F-11 Back-up light (RH)
F-12 ECS control unit
F-I 3 ECS control unit
F-14 Body wiring harness (RH) and fuel tank wiring harness combination
F-15 Rear washer motor
F-I 6 Fuel tank
F-17 License plate light (RH)
F-I 8 Body wiring harness (RH) and rear bumper wiring harness combination
F-I 9 Body wiring harness (LH) and body wiring harness (RH) combination
F-20 Body wiring harness (LH) and body wiring harness (RH) combination
F-21 License plate light (LH)
F-22 Luggage compartment light switch
F-23 Liftgate cylinder lock switch
F-24 Liftgate switch
F-25 Back-up light (LH)
F-26 Active exhaust control unit*2
F-27 Active aero control unit
F-28 Active aero control unit
f-29 Active exhaust actuator assembly*2
F-30 Rear combination light (LH)
F-31 Motor antenna control unit
F-32 ECS rear shock absorber (LH)
F-33 Rear speaker (LH)
F-34 Body wiring harness (LH) and liftgate wiring harness combination
F-35 Body wiring harness (LH) and liftgate wiring harness combination
F-36 Telephone cable*3
F-37 Spare connector (Wireless telephone unit)*3
F-38 Spare connector (Hand free controller)*3
F-39 Jumper connector (or Hand free controller)*3
F-40 CD changer*1

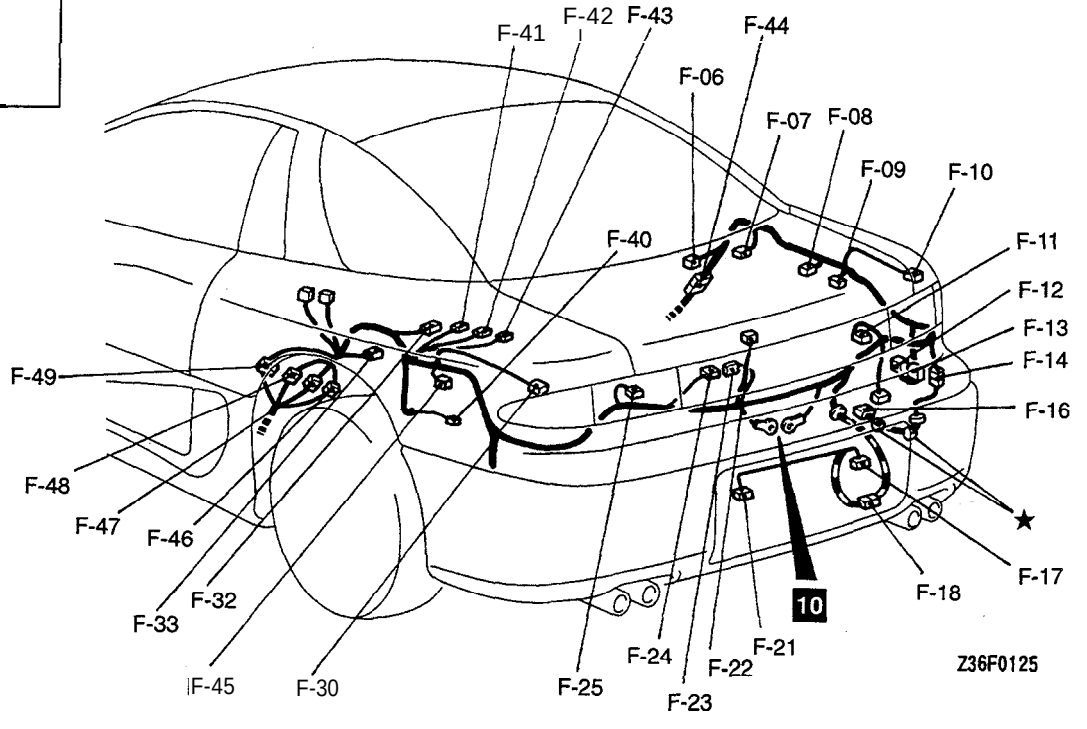
TSB Revision

<CONVERTIBLE>

1995 models

Connector symbol

F



F-05 Defogger (–)
F-06 Rear speaker (RH)
F-07 ECS rear shock absorber (RH)
F-08 Luggage compartment light
F-09 ABS resistor
F-10 Rear combination light (RH)
F-11 Back-up light (RH)
F-12 ECS control unit
F-13 ECS control unit
F-14 Rear wiring harness (RH) and fuel tank wiring harness combination
F-I 6 Fuel tank
F-17 License plate light (RH)
F-18 Rear wiring harness (RH) and rear bumper wiring harness combination
F-21 License plate light (LH)
F-22 Luggage compartment light switch
F-23 Liftgate cylinder lock switch
F-24 Liftgate switch
F-25 Back-up light (LH)
F-30 Rear combination light (LH)
F-32 ECS rear shock absorber (LH)
F-33 Rear speaker (LH)
F-40 CD changer
F-41 Top stack harness
F-42 Top stack harness
F-43 Top stack harness
F-44 Body wiring harness (RH) and rear wiring harness combination
F-45 ABS resistor
F-46 Body wiring harness (LH) and rear wiring harness combination
F-47 Body wiring harness (LH) and rear wiring harness combination
F-48 Body wiring harness (LH) and rear wiring harness combination
F-49 Body wiring harness (LH) and rear wiring harness combination

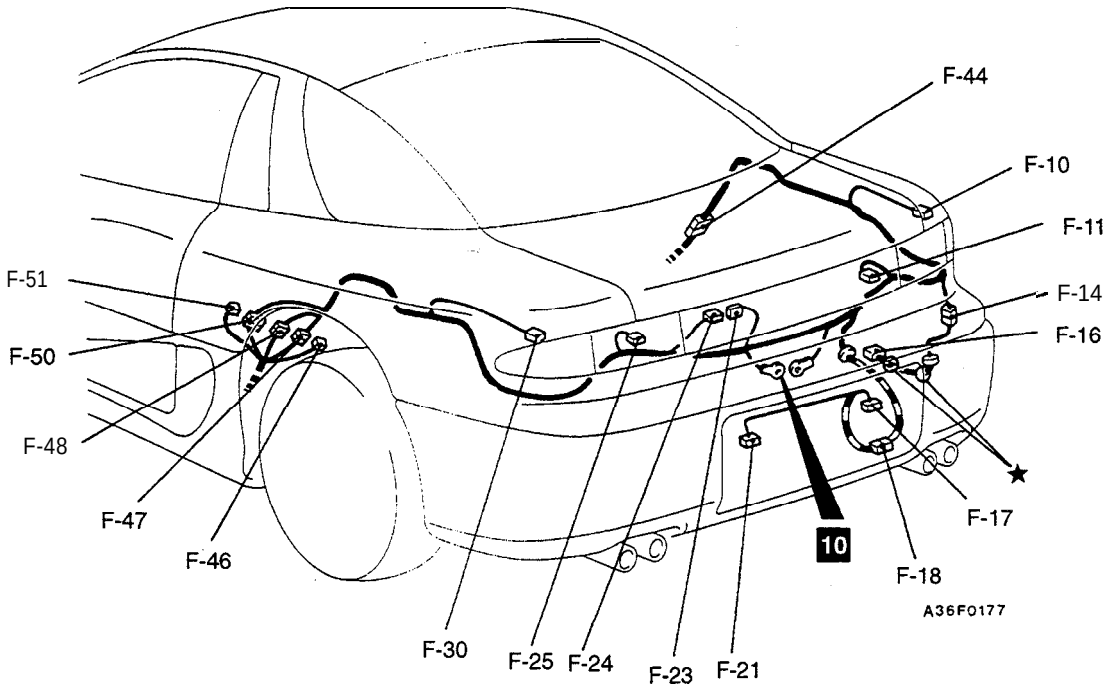
TSB Revision

<CONVERTIBLE>

From 1996 models

Connector symbol

F



F-l 0	Rear combination light (RH)	F-25	Back-up light (LH)
F-11	Back-up light (RH)	F-30	Rear combination light (LH)
F-14	Rear wiring harness (RH) and fuel tank wiring harness combination	F-44	Body wiring harness (RH) and rear wiring harness combination
F-16	Fuel tank	F-46	No connection
F-17	License plate light (RH)	F-47	Body wiring harness (LH) and rear wiring harness combination
F-18	Rear wiring harness (RH) and rear bumper wiring harness combination	F-48	Body wiring harness (LH) and rear wiring harness combination
F-21	License plate light (LH)	F-50	No connection
F-23	Liftgate cylinder lock switch	F-51	No connection
F-24	Liftgate switch		

TSB Revision

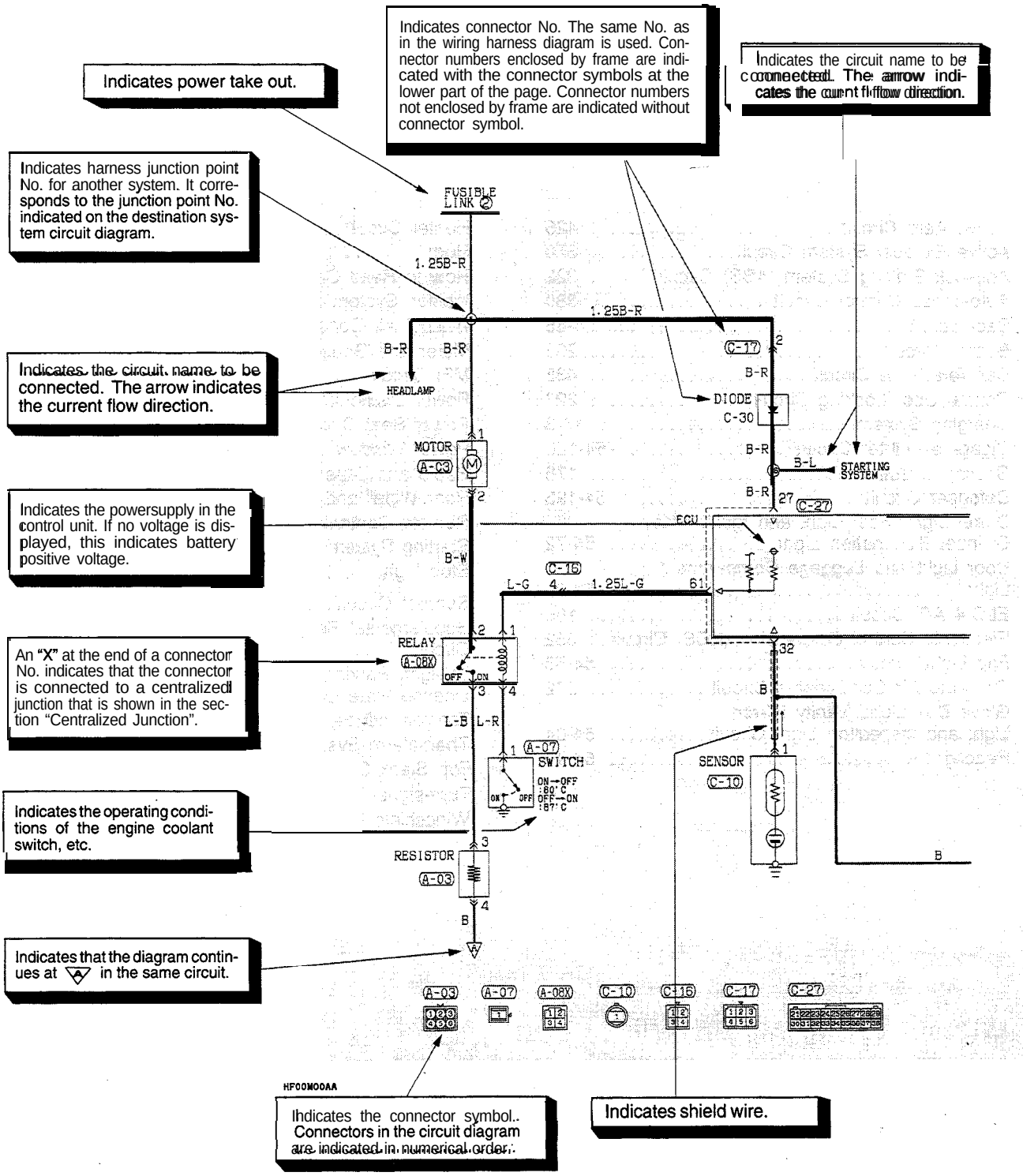
CIRCUIT DIAGRAMS

CONTENTS

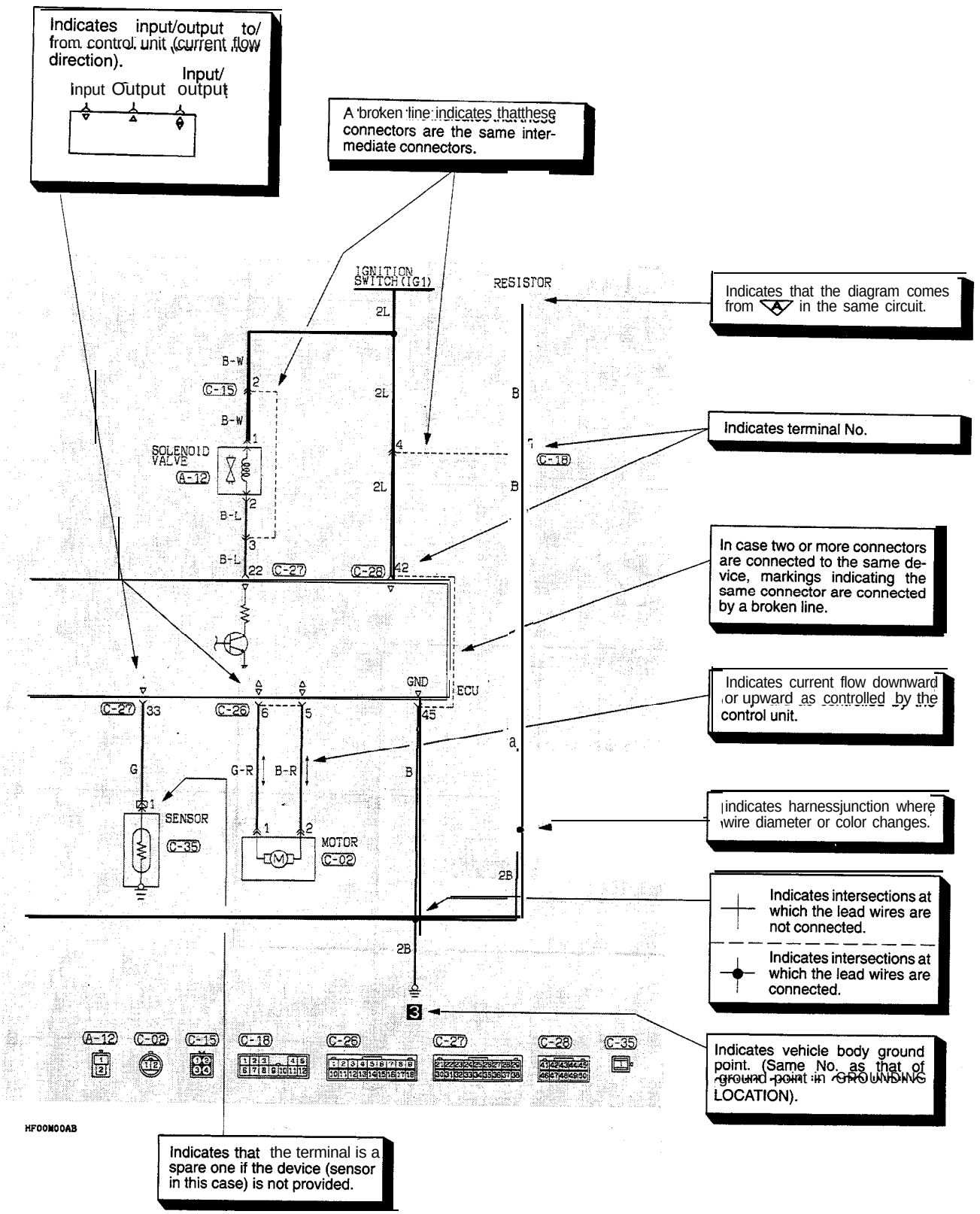
Active Aero Circuit 428
Active Exhaust System Circuit 370
Anti-lock Braking System (ABS) Circuit 322
Auto-cruise Control Circuit 380
Back-up Light 54-85
Buzzer Circuit 208
Car Telephone Circuit 435
Central Door Locking Circuit 222
Charging System 16-3
Cigarette Lighter Circuit 54-120
Cooling Circuit 176
Defogger Circuit 54-193
Dome Light, Foot Light and Ignition Key Cylinder Illumination Light 54-72
Door Light and Luggage Compartment Light 54-81
ELC-4 A/T Circuit 186
Electronic Control Suspension (ECS) Circuit . . 352
Fog Light Circuit 54-58
Full Auto Air Conditioning' Circuit 272
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Headlight 54-40
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Horn 54-116
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Manual Air Conditioning Circuit 242
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Power Distribution Circuit 68
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Power Window Circuit 212
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Supplemental Restraint System (SRS) Circuit 374
Taillight, Parking/Side Marker Light and License Plate Light Circuit 54-64
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Theft-alarm System 54-206
Top Stack Circuit 438
Turn-signal Light and Hazard Light 54-90
Windshield Wiper and Washer Circuit 316

HOW TO READ CIRCUIT DIAGRAMS

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

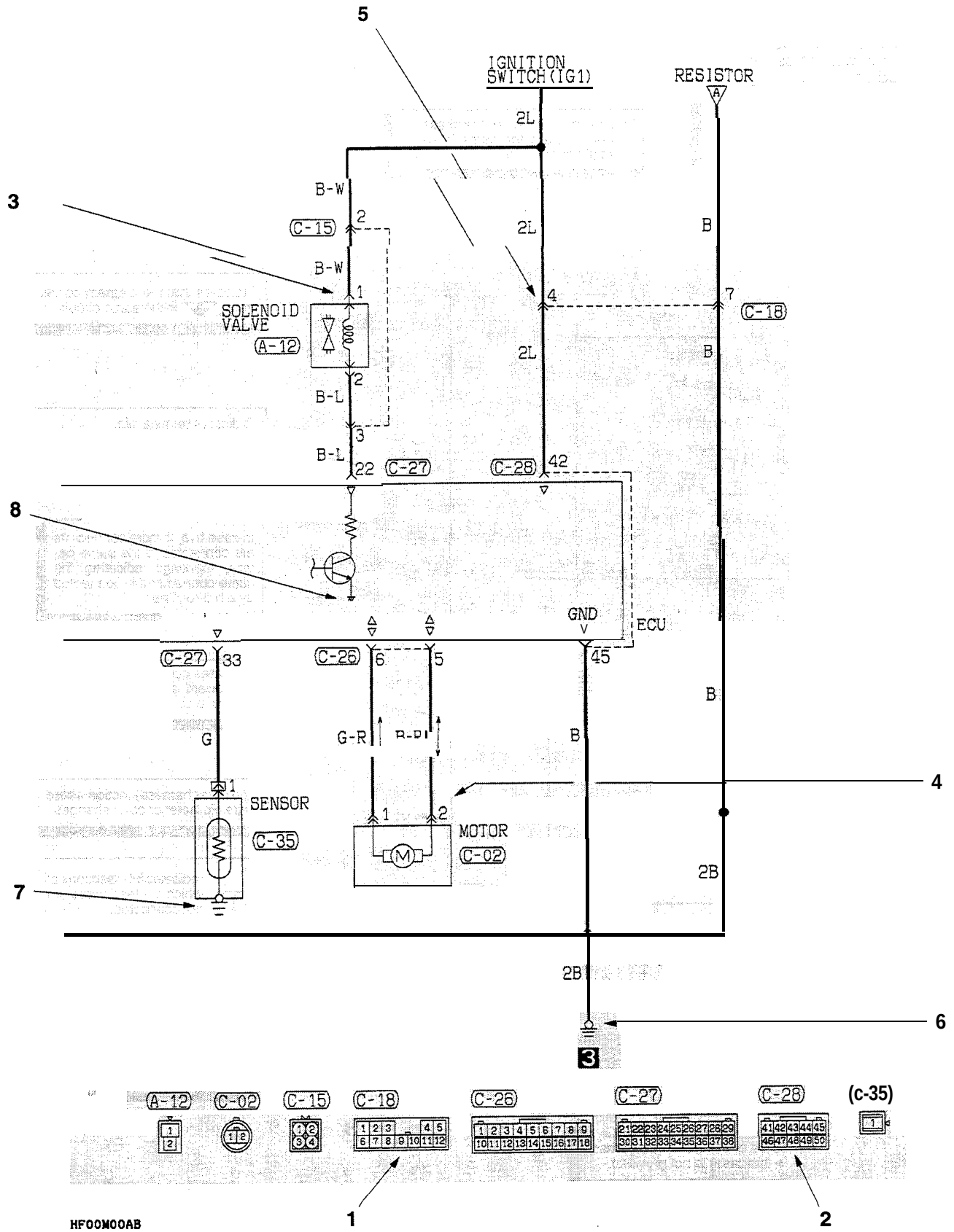


TSB Revision

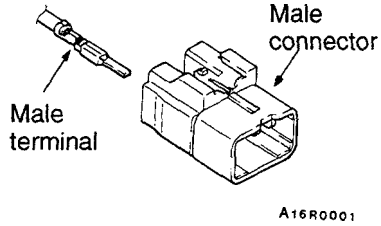
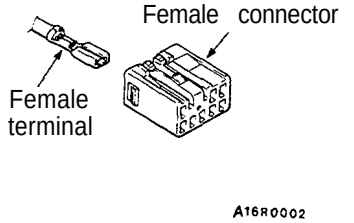
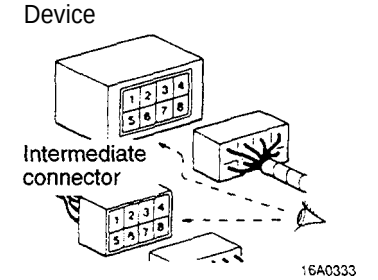
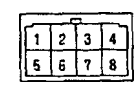
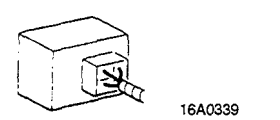
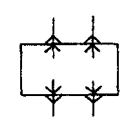
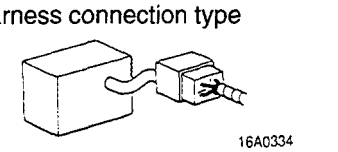
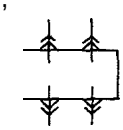
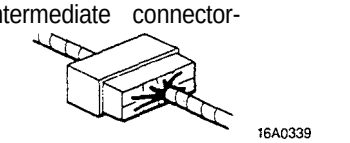


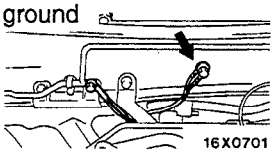
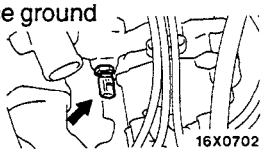
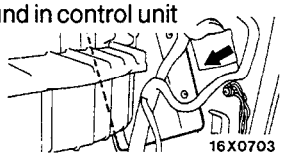
TSB Revision

CONNECTOR / GROUNDING INDICATIONS



TSB Revision

Item	No.	Connector / Grounding	Symbol	Contents
Connector and terminal marking	1		Male terminal  Male connector 	For the terminal symbols, the connected terminal is indicated as the male terminal, and the receptacle terminal is indicated as the female terminal as shown in the illustration. The connector in which the male terminal is assembles is indicated as the male connector and the connector in which the female is assembled is indicated as the female connector. The connector symbols shown the male connector with a double outer contour line and the female connector with a single outer contour line.
			Female terminal  Female connector 	
Connector symbol marking	2	Device 		The symbol indicates the connector as viewed from the illustrated direction. At the connection with a device, the connector symbol on the device side is shown, and for an intermediate connector, the male connector symbol is shown For the connectors which are not connected to any appliance (spare terminal, terminal for inspection), the connectors at the harness side are shown.
Connector connection marking	3	Direct connection type 		A connection between a device and connector on the harness side is either by direct insertion in the device (direct connection type) or by connection with a harness connector furnished on the device side (harness connection type). The two types are indicated as illustrated.
	4	Harness connection type 		
	5	Intermediate connector- 		

Item	No.	Connector / Grounding	Symbol	Contents
Grounding markings	6	Body ground  16X0701		Grounding is either by body ground, device ground or control unit interior ground. These are indicated as illustrated.
	7	Device ground  16X0702		
	8	Ground in control unit  16X0703		

WIRE COLOR CODES

Wire colors are identified by the following color codes.

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

Example: <F> 1.25 G – B
1 2 3 4



A16B0244

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

No.	Meaning
1	<F>: Flexible wire
	<T>: Twisted wire
2	Wire size (mm^2)
3	Basic color (color of the cable coating)
4	Marking color

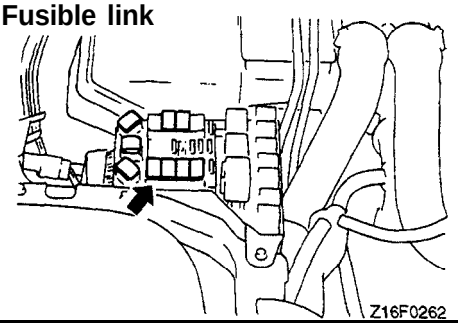
NOTE

*: No code indicates 0.5 mm^2 (.0008 $in.^2$).
Cable color code in parentheses indicates 0.3 mm^2 (.0005 $in.^2$).

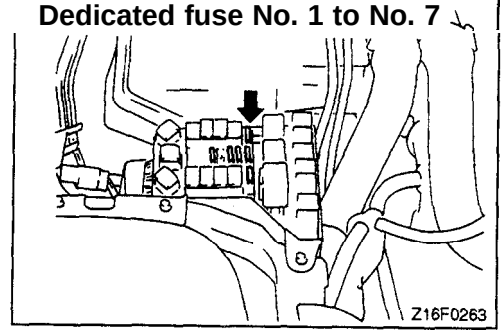
POWER DISTRIBUTION

COMPONENT LOCATION

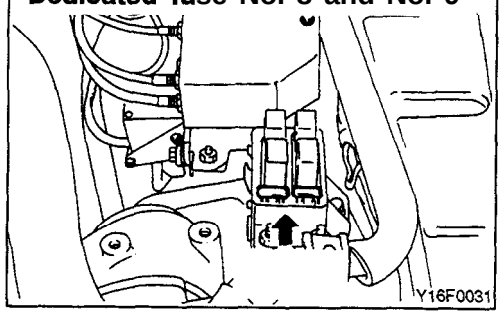
Fusible link



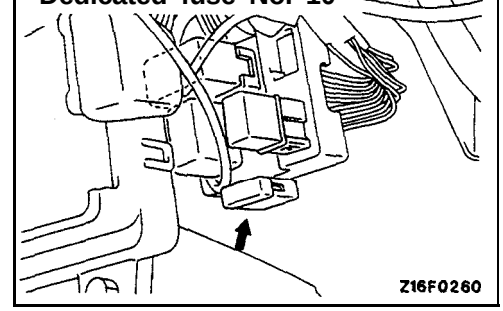
Dedicated fuse No. 1 to No. 7



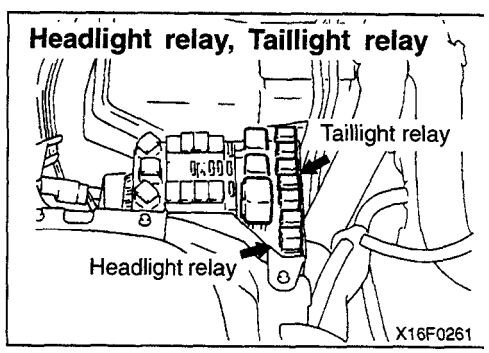
Dedicated fuse No. 8 and No. 9



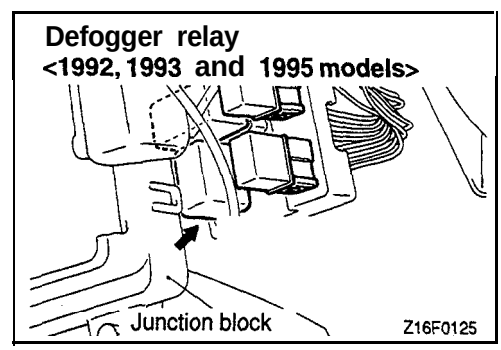
Dedicated fuse No. 10



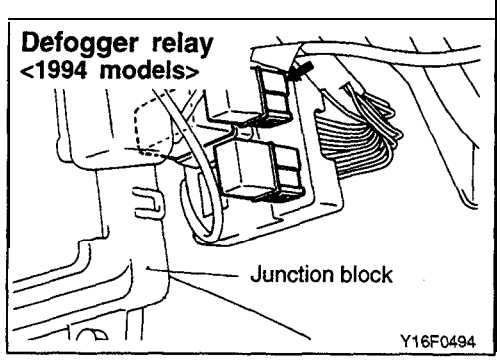
Headlight relay, Taillight relay



Defogger relay
<1992, 1993 and 1995 models>

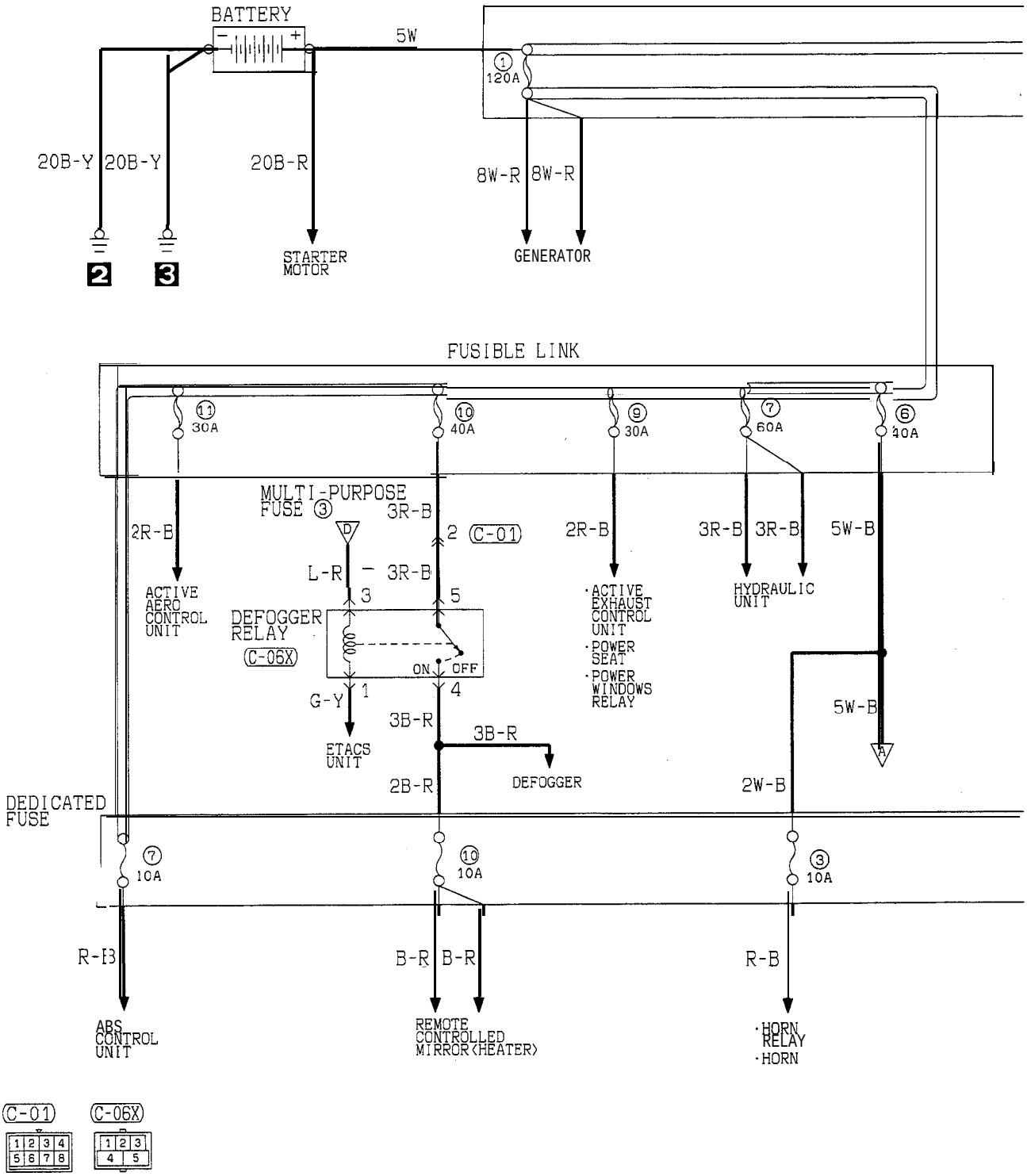


Defogger relay
<1994 models>



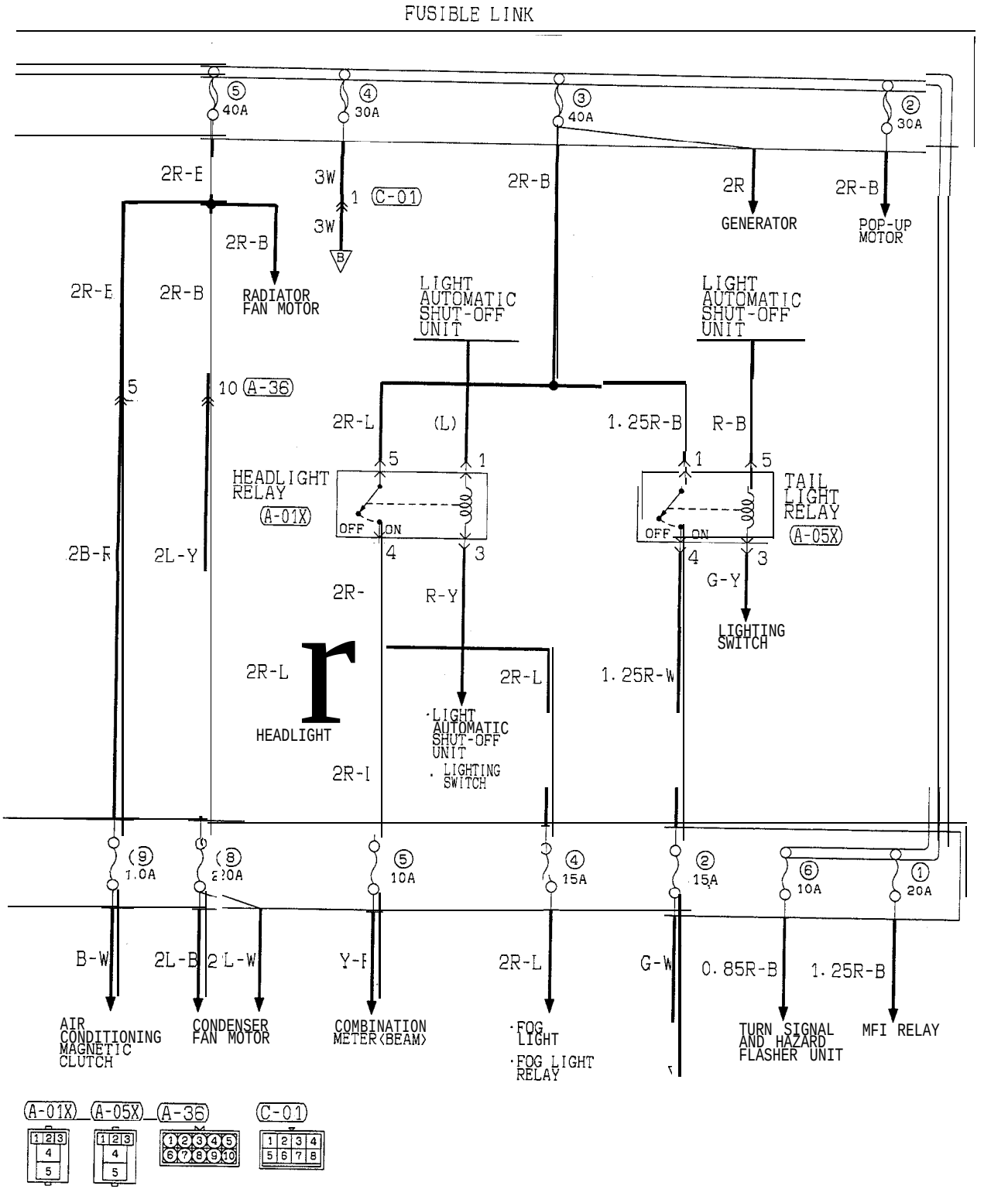
TSB Revision

POWER DISTRIBUTION CIRCUIT (UP TO 1993 MODELS)



HR01M00AA

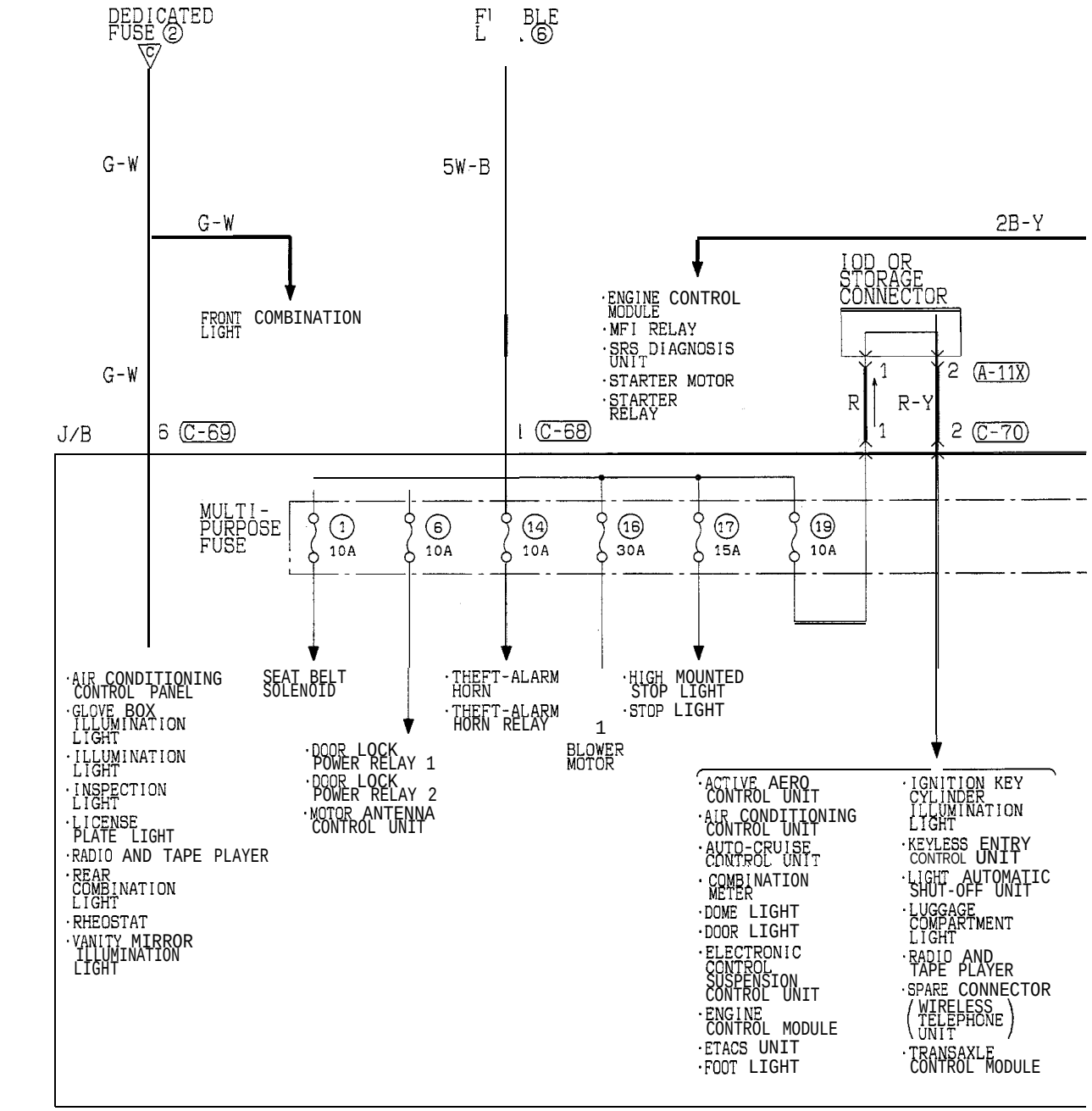
TSB Revision

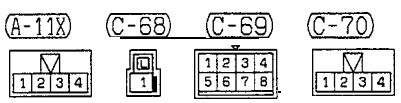


HR01M00AB

TSB Revision

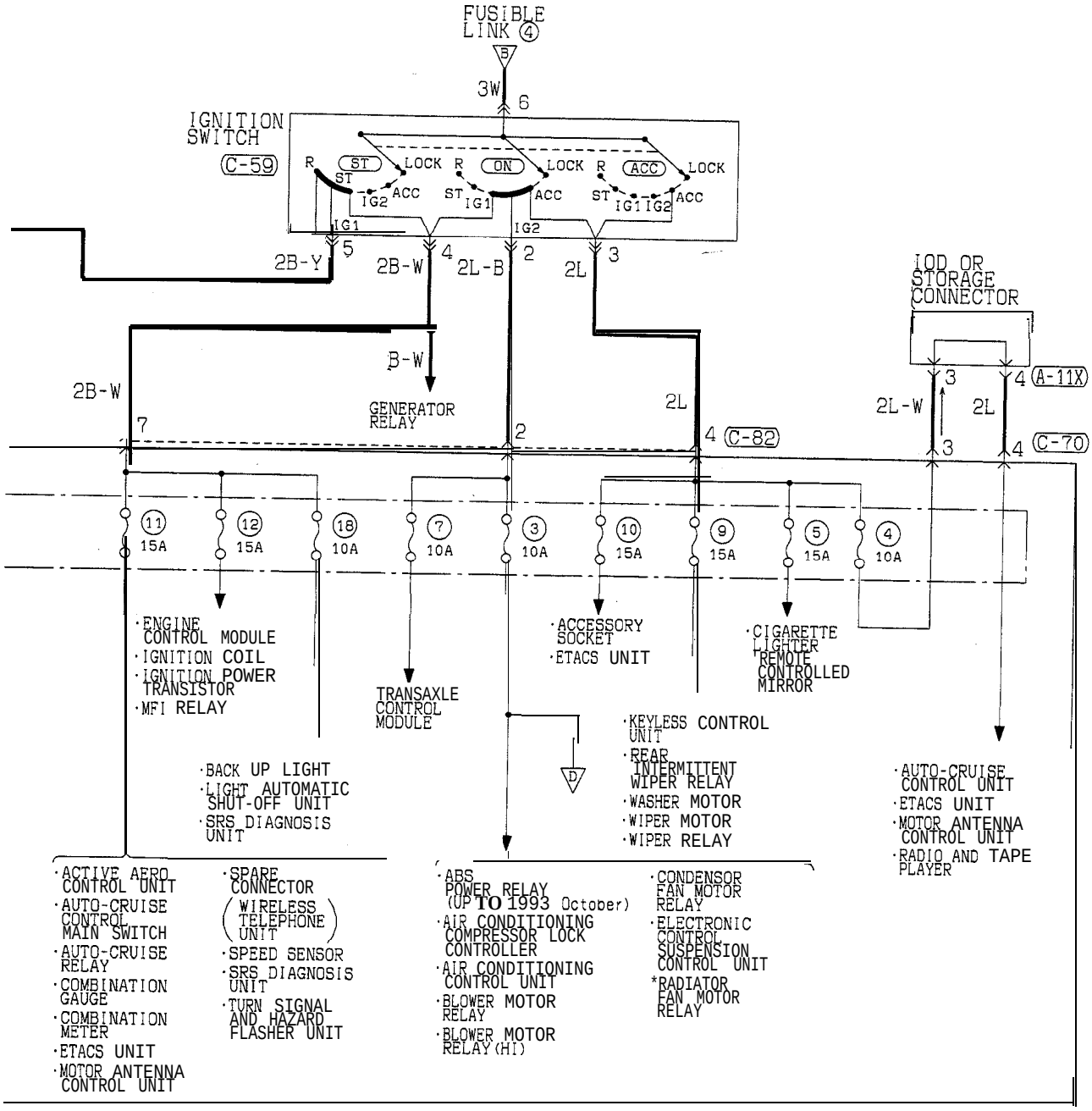
POWER DISTRIBUTION CIRCUIT (UP TO 1993 MODELS) (CONTINUED)



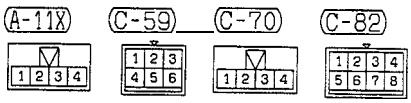


HR01M00BA

TSB Revision



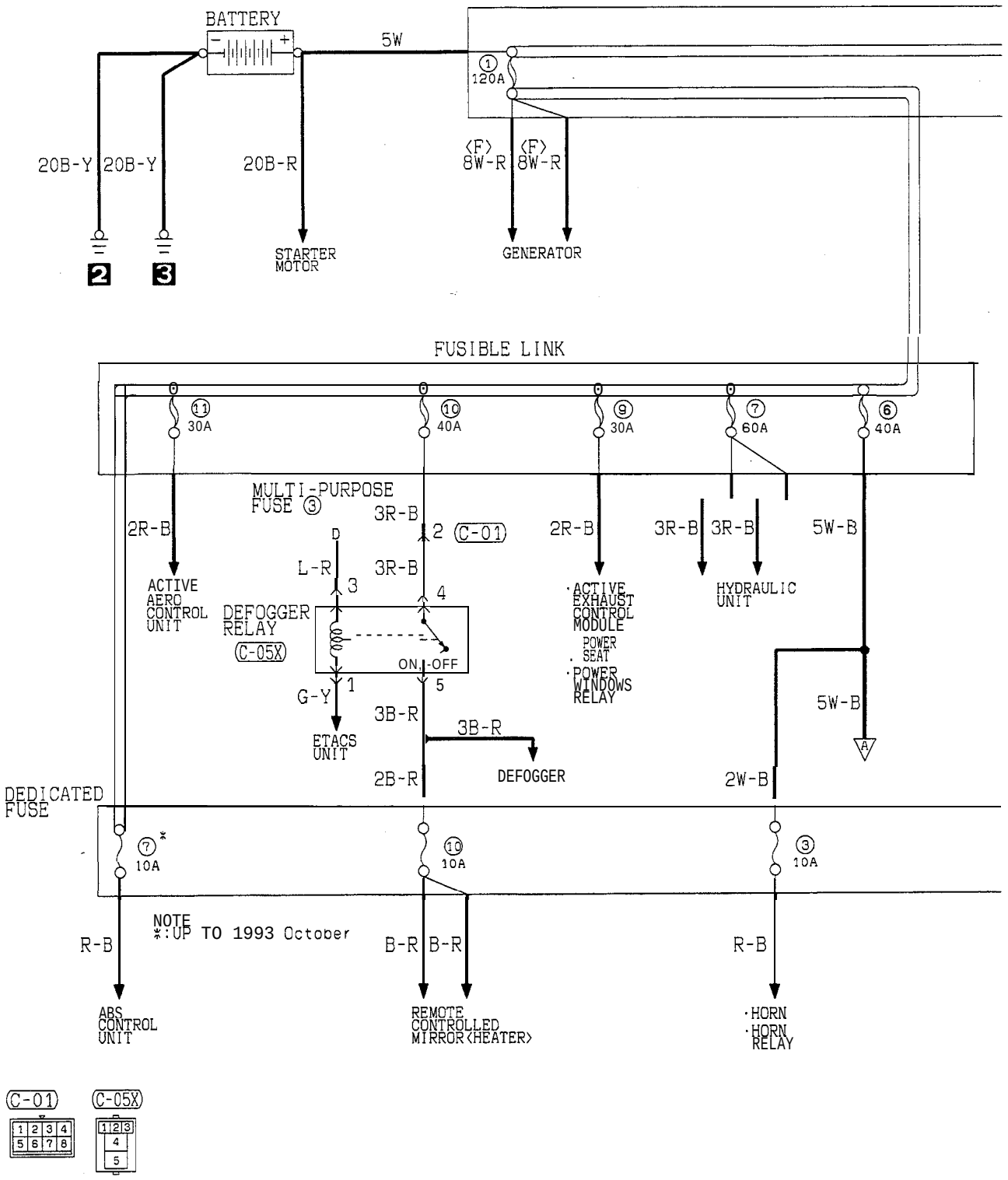
REMARK
THE ABOVE CIRCUIT DIAGRAM SHOWS THE CURRENT FLOW AT THE IGNITION KEY POSITION "ACC" "ON" AND "ST" COMBINED. BE SURE TRACE THE APPROPRIATE CIRCUIT DEPENDING ON THE IGNITION KEY POSITION.



HR01M00BB

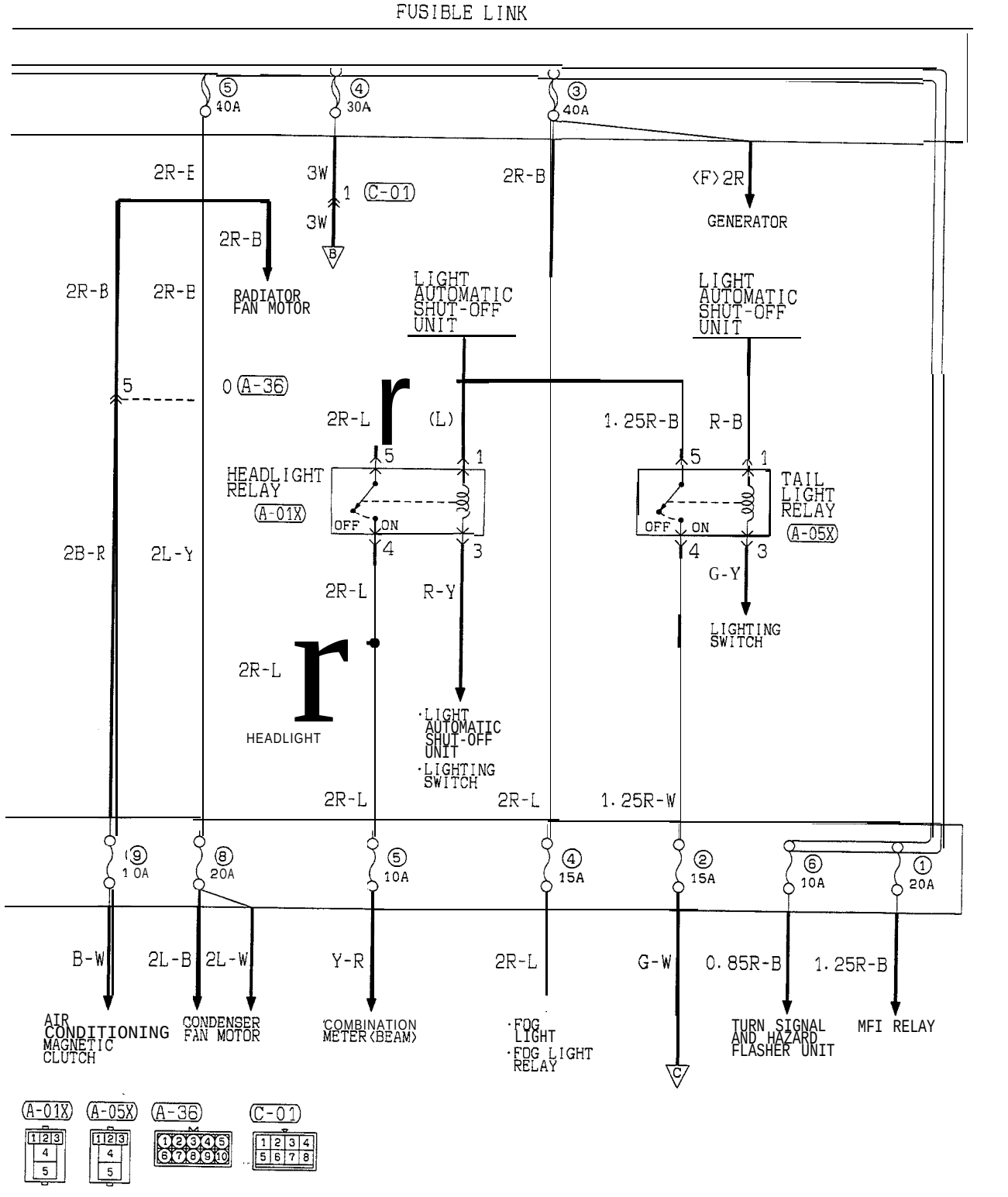
TSB Revision

POWER DISTRIBUTION CIRCUIT (1994 MODELS)



HR01M01AA

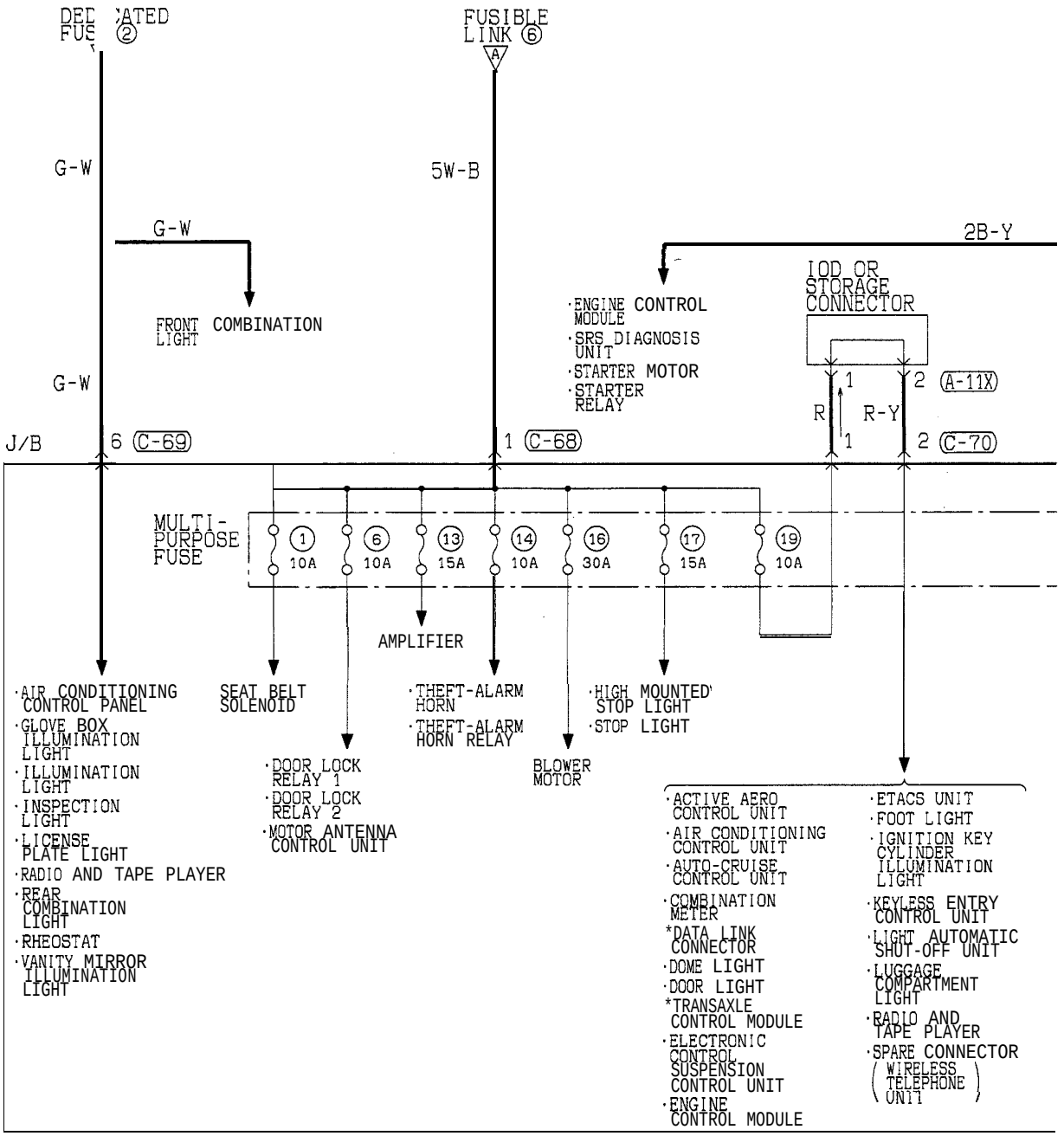
TSB Revision

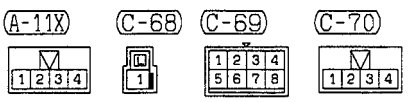


HR01M01AB

TSB Revision

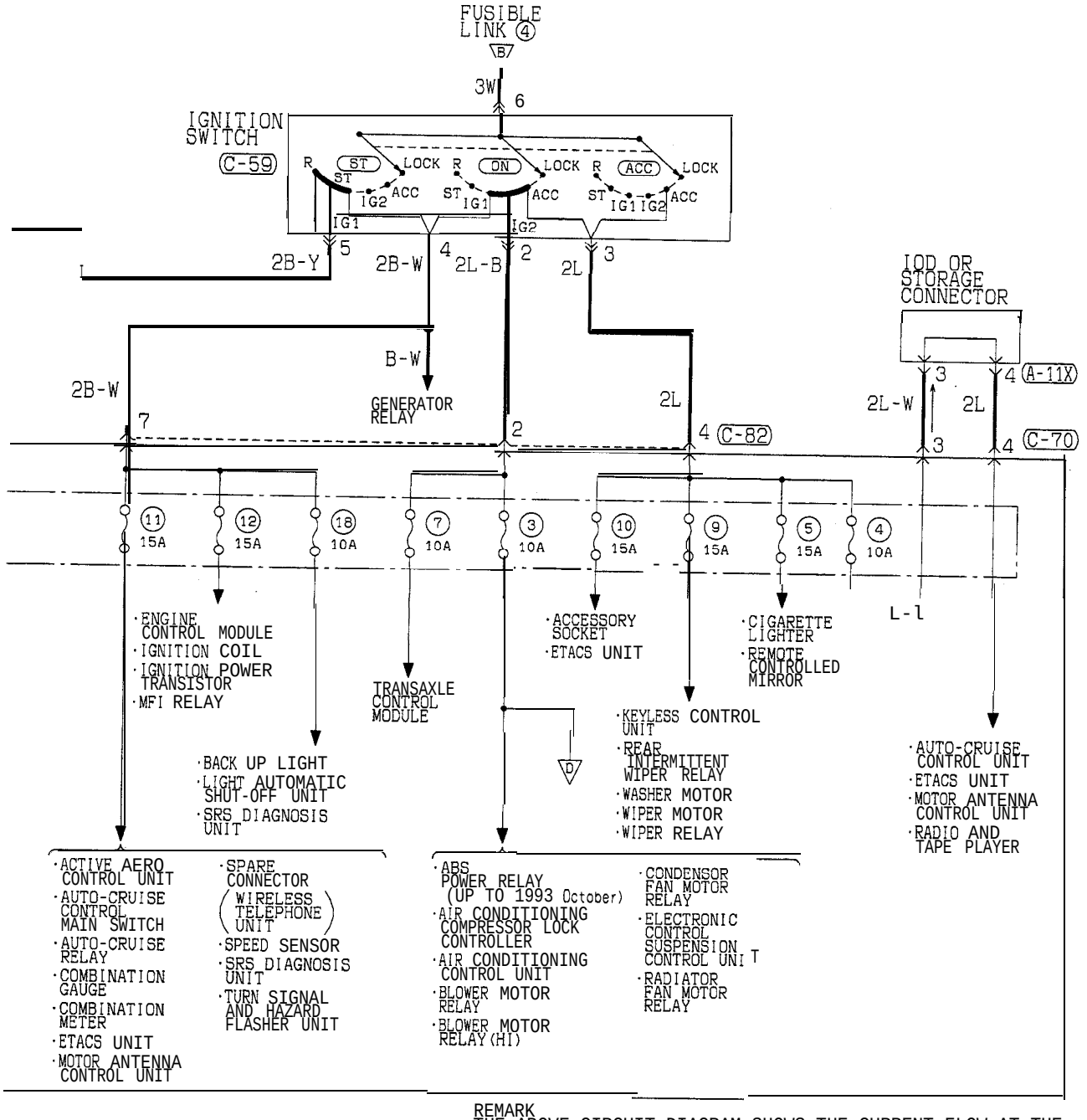
POWER DISTRIBUTION CIRCUIT (1994 MODELS) (CONTINUED)



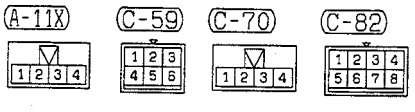


HR01M01BA

TSB Revision



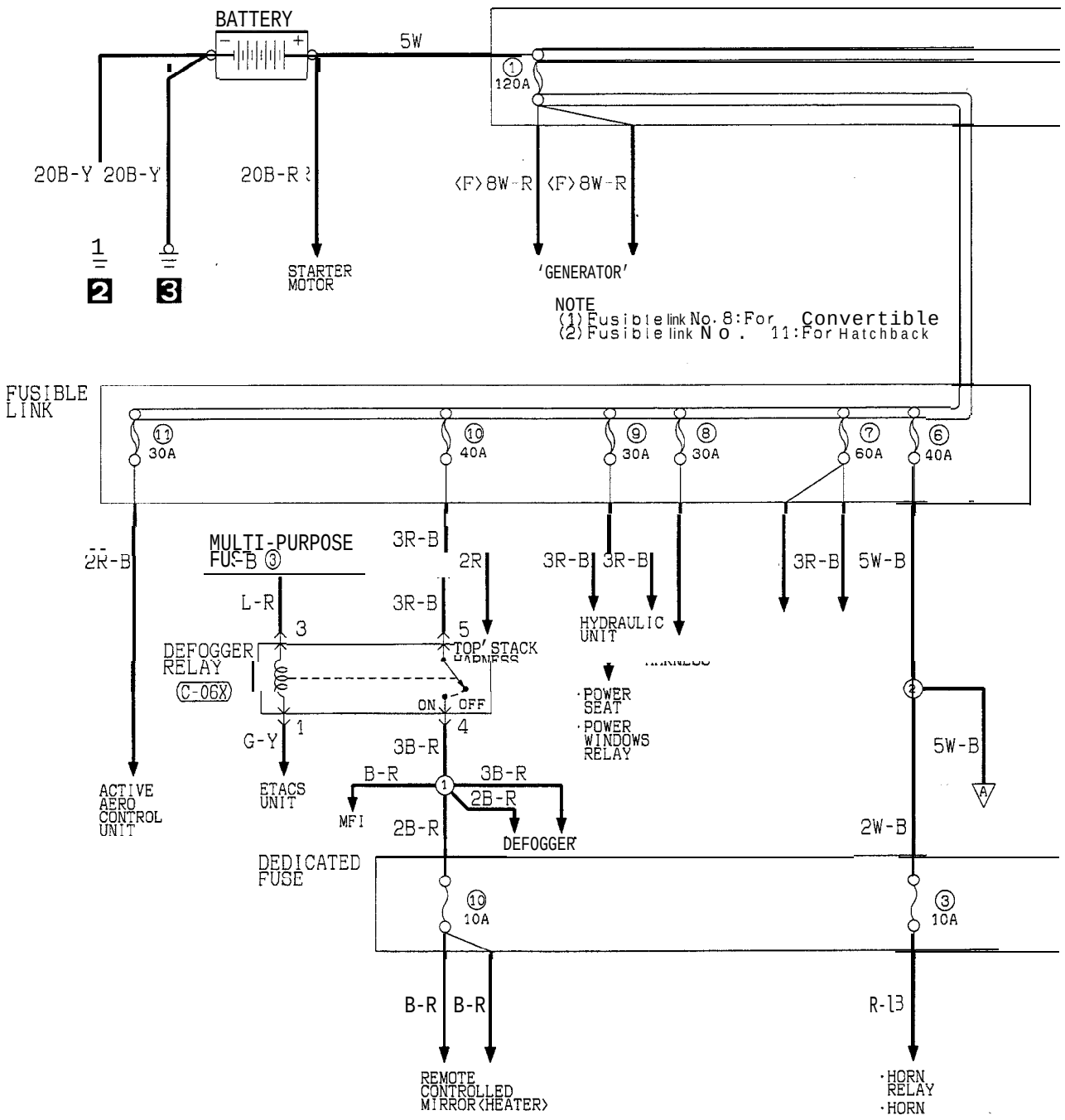
REMARK
THE ABOVE CIRCUIT DIAGRAM SHOWS THE CURRENT FLOW AT THE IGNITION KEY POSITION "ACC", "ON" AND "ST" COMBINED. BE SURE TRACE THE APPROPRIATE CIRCUIT DEPENDING ON THE IGNITION KEY POSITION.

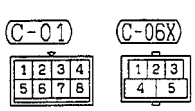


HR01M01BB

TSB Revision

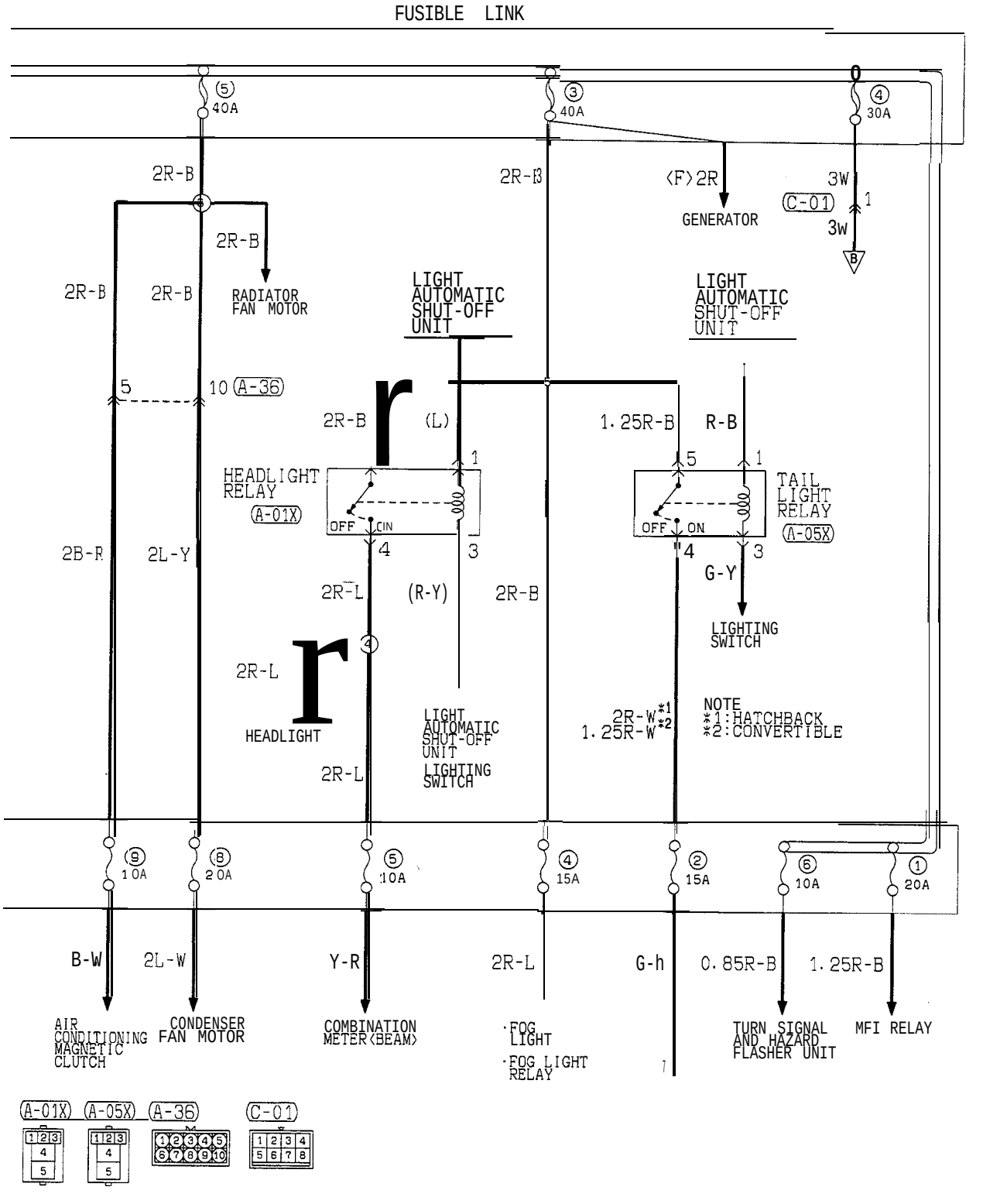
POWER DISTRIBUTION CIRCUIT (1995 MODELS)





HR01M02AA

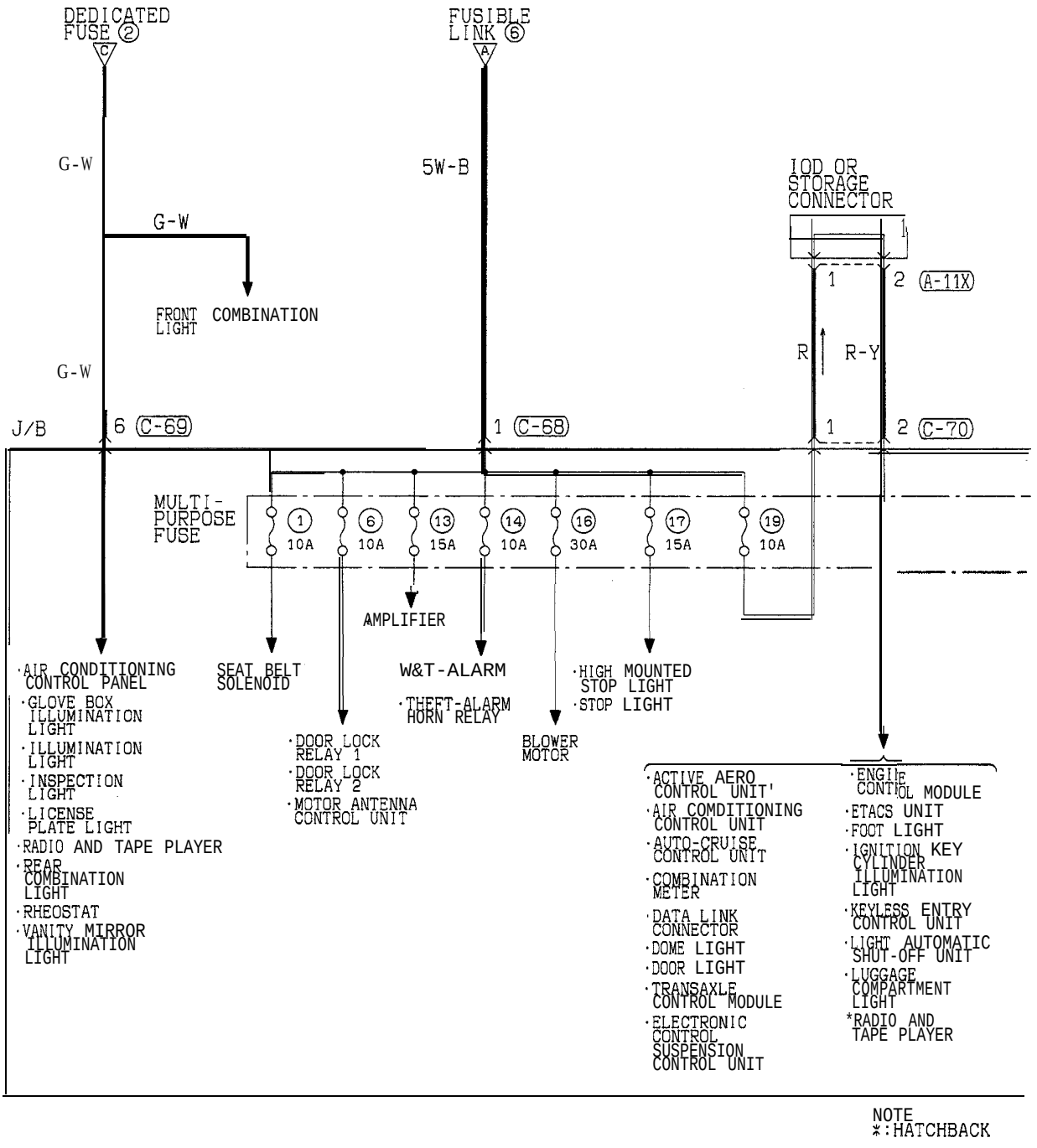
TSB Revision

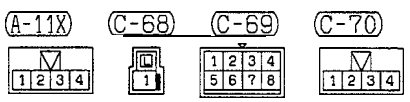


HR01M02AB

TSB Revision

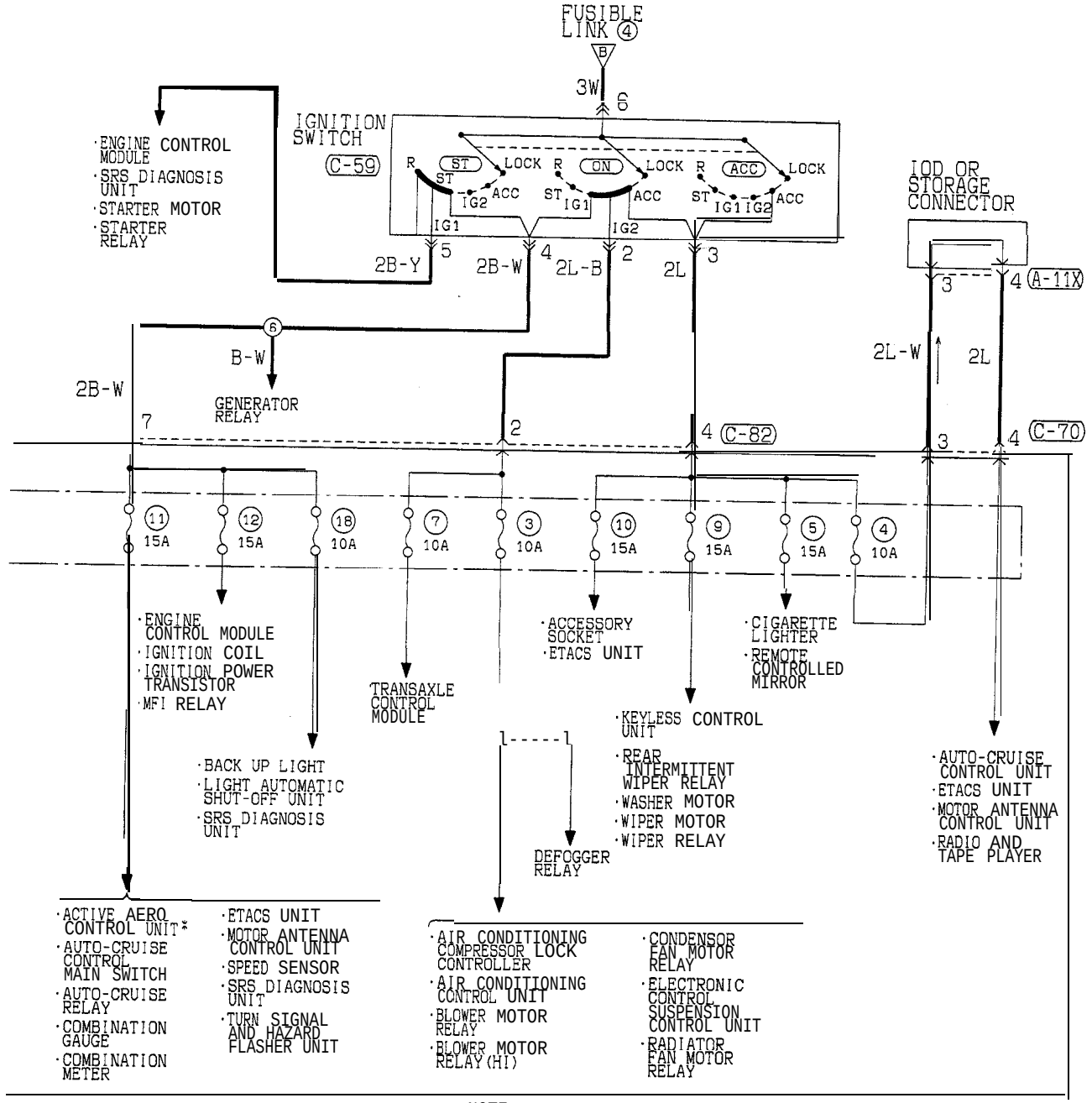
POWER DISTRIBUTION CIRCUIT (1995 MODELS) (CONTINUED)





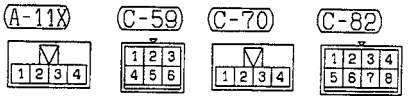
HR01M02BA

TSB Revision



NOTE
THE ABOVE CIRCUIT DIAGRAM SHOWS THE CURRENT FLOW AT THE IGNITION KEY POSITION "ACC", "ON" AND "ST" COMBINED. BE SURE TRACE THE APPROPRIATE CIRCUIT DEPENDING ON THE IGNITION KEY POSITION.

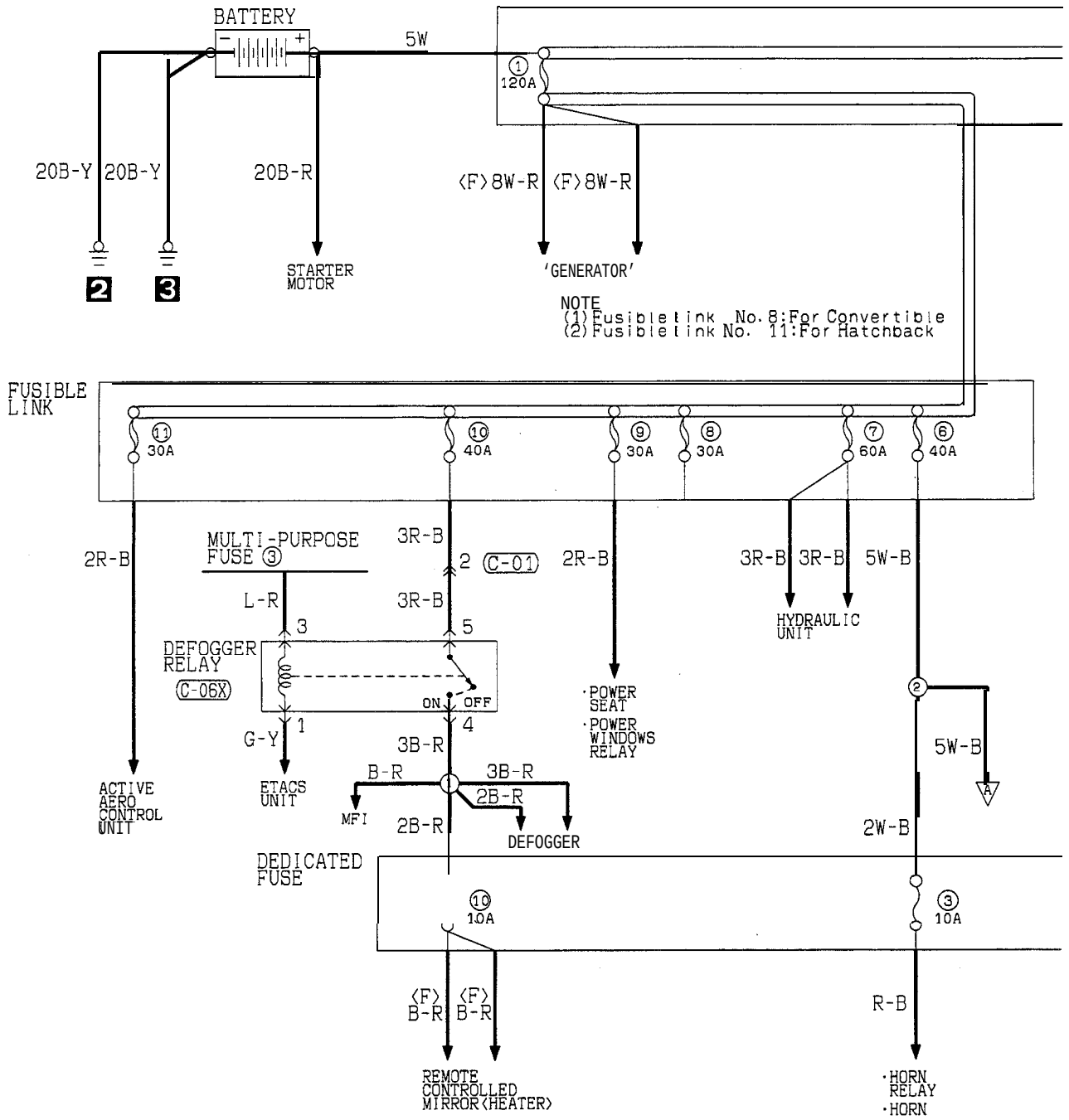
*:HATCHBACK



HR01M02BB

TSB Revision

POWER DISTRIBUTION CIRCUIT (FROM 1996 MODELS)



C-01

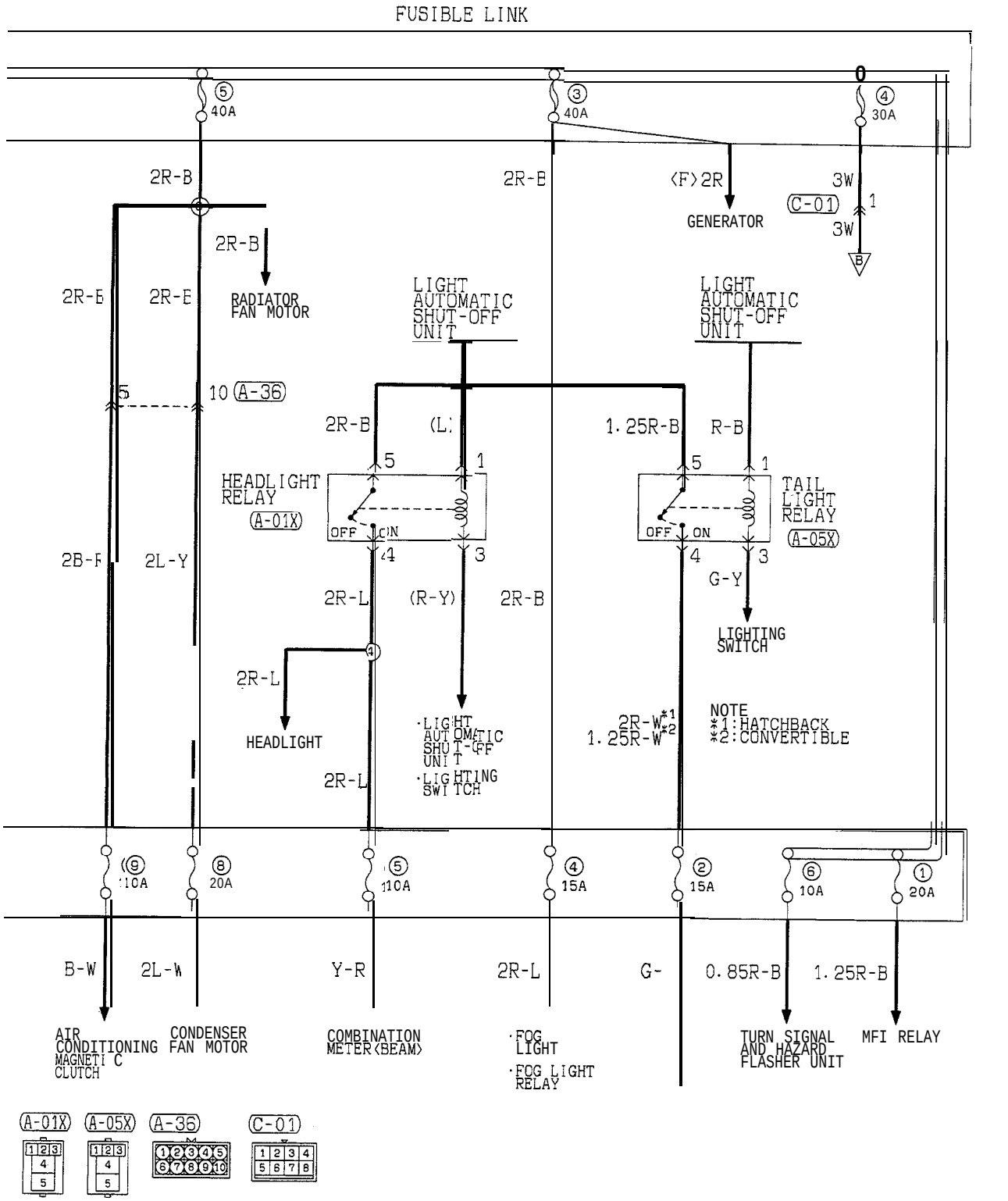


C-06X



HR01M03AA

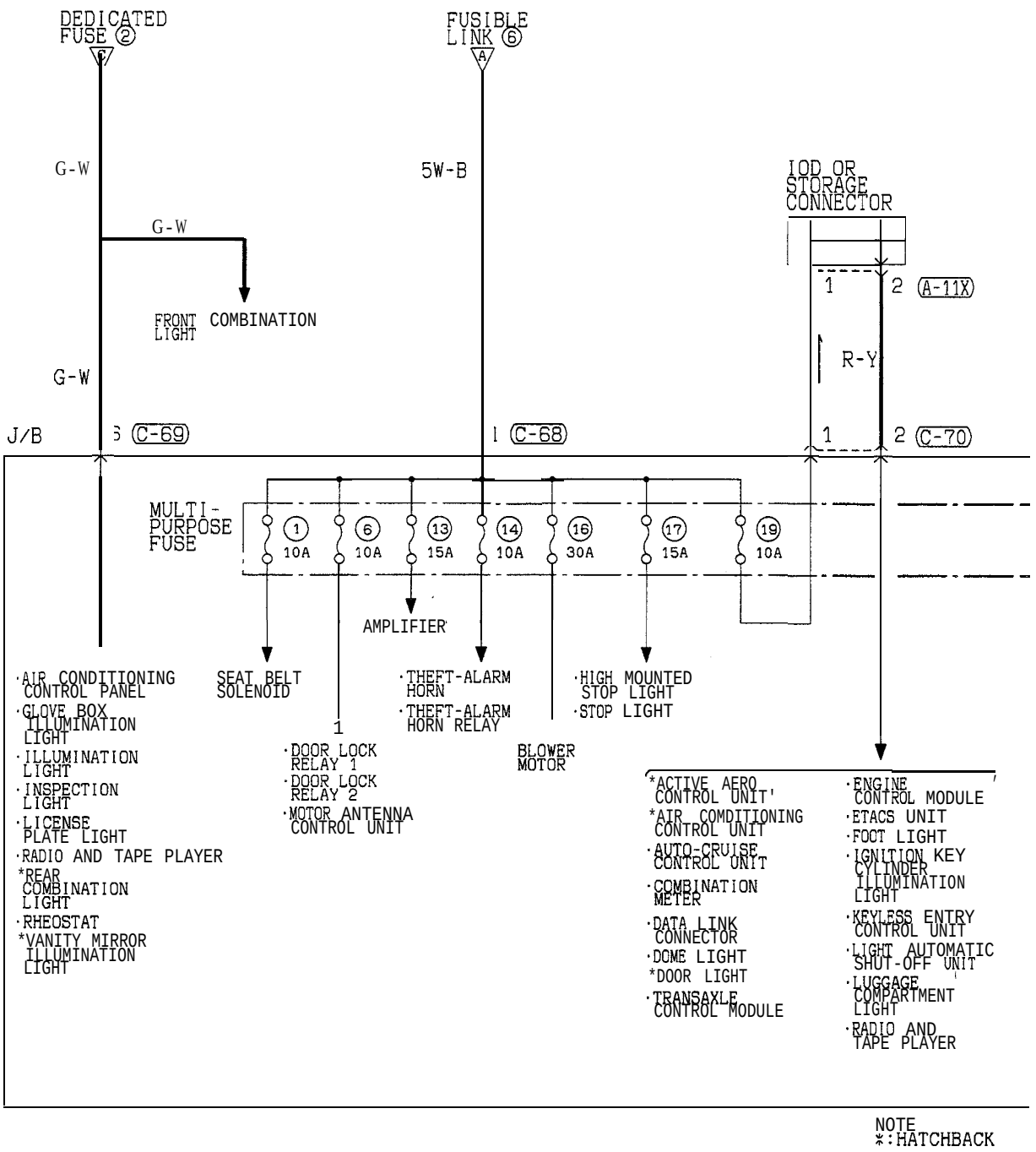
TSB Revision

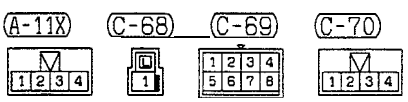


HRO 1M03AB

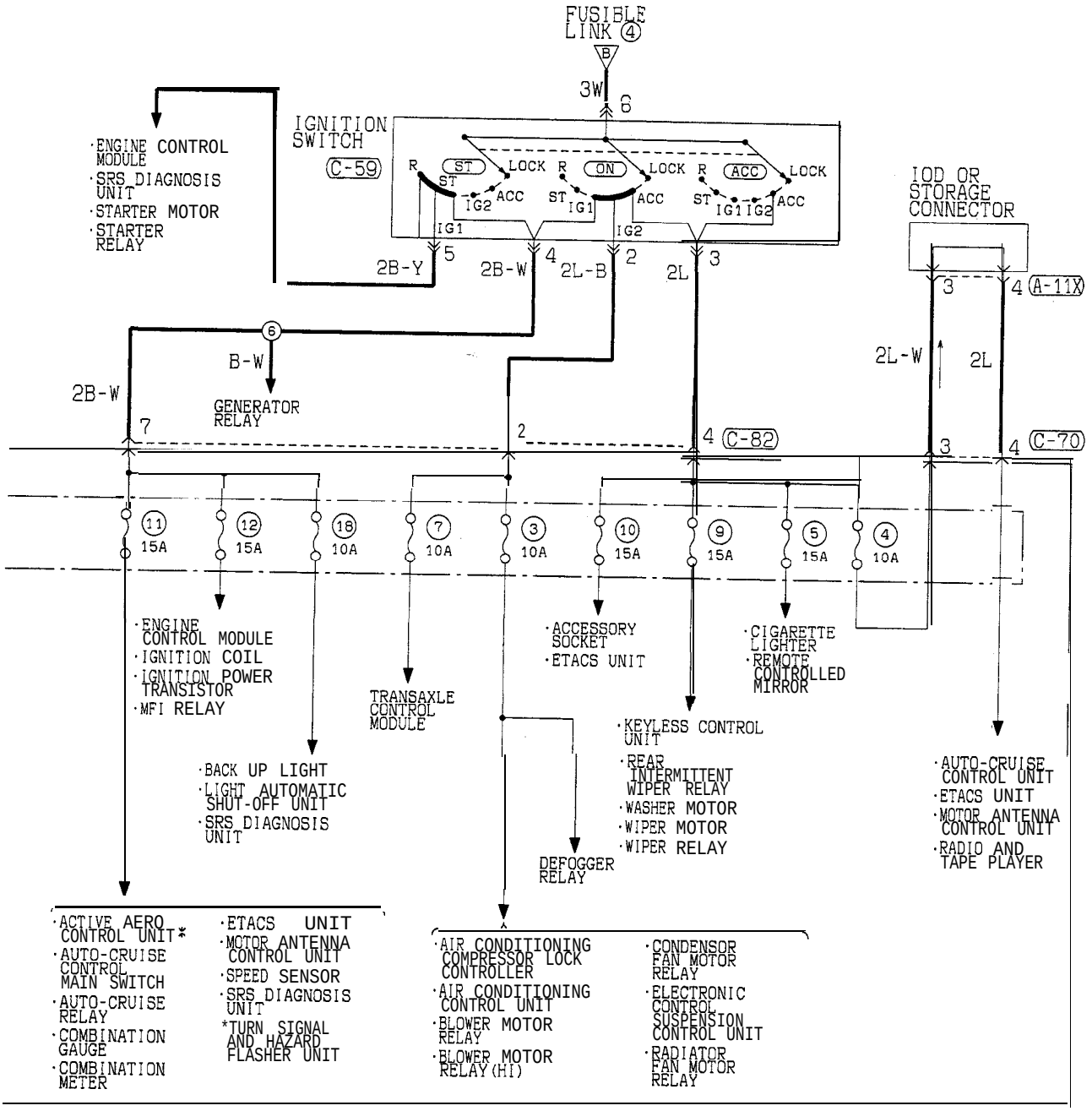
TSB Revision

POWER DISTRIBUTION CIRCUIT (FROM 1996 MODELS) (CONTINUED)



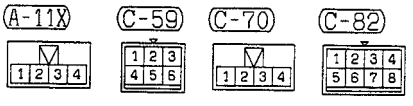


HR01M03BA



NOTE
THE ABOVE CIRCUIT DIAGRAM SHOWS THE CURRENT FLOW AT THE IGNITION KEY POSITION "ACC", "ON" AND "ST" COMBINED. BE SURE TRACE THE APPROPRIATE CIRCUIT DEPENDING ON THE IGNITION KEY POSITION.

*:HATCHBACK

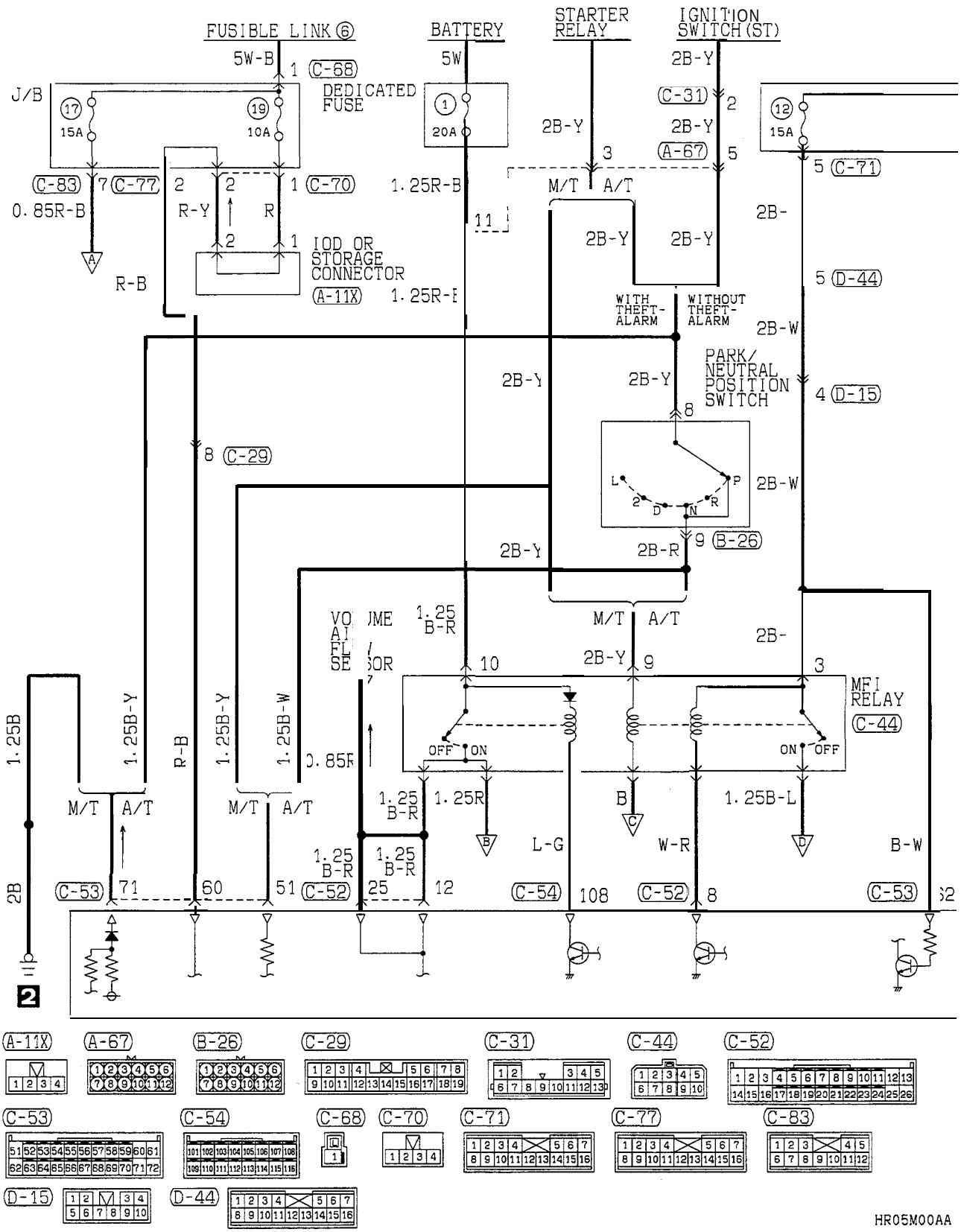


HR01M03BB

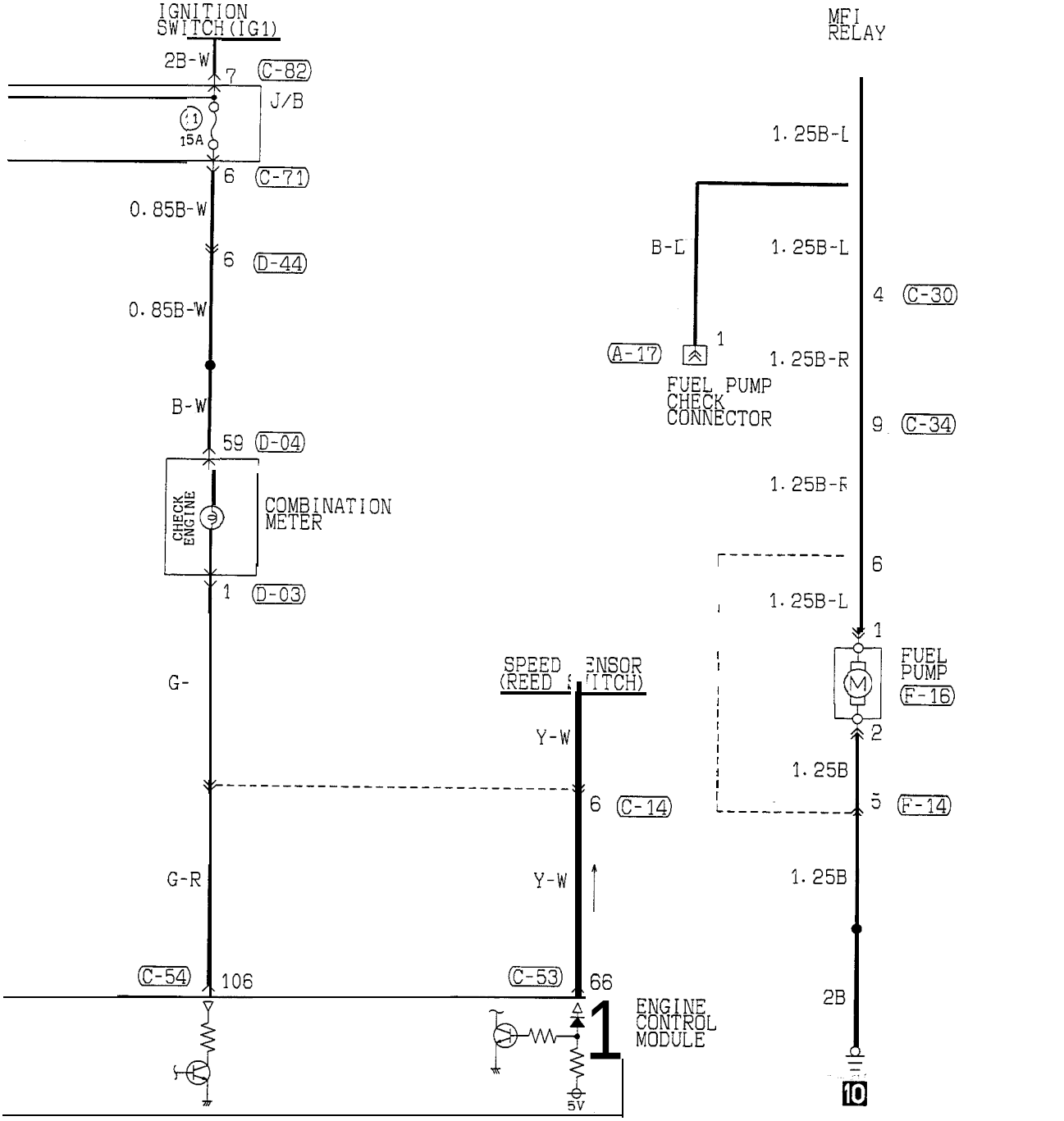
TSB Revision

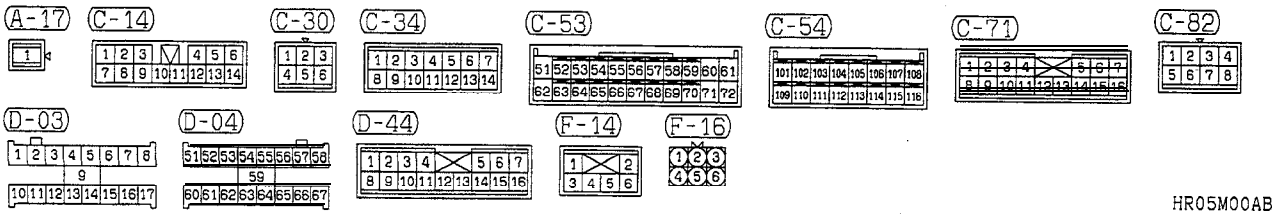
MFI CIRCUIT (1992 MODEL)

<NON TURBO>



TSB Revision

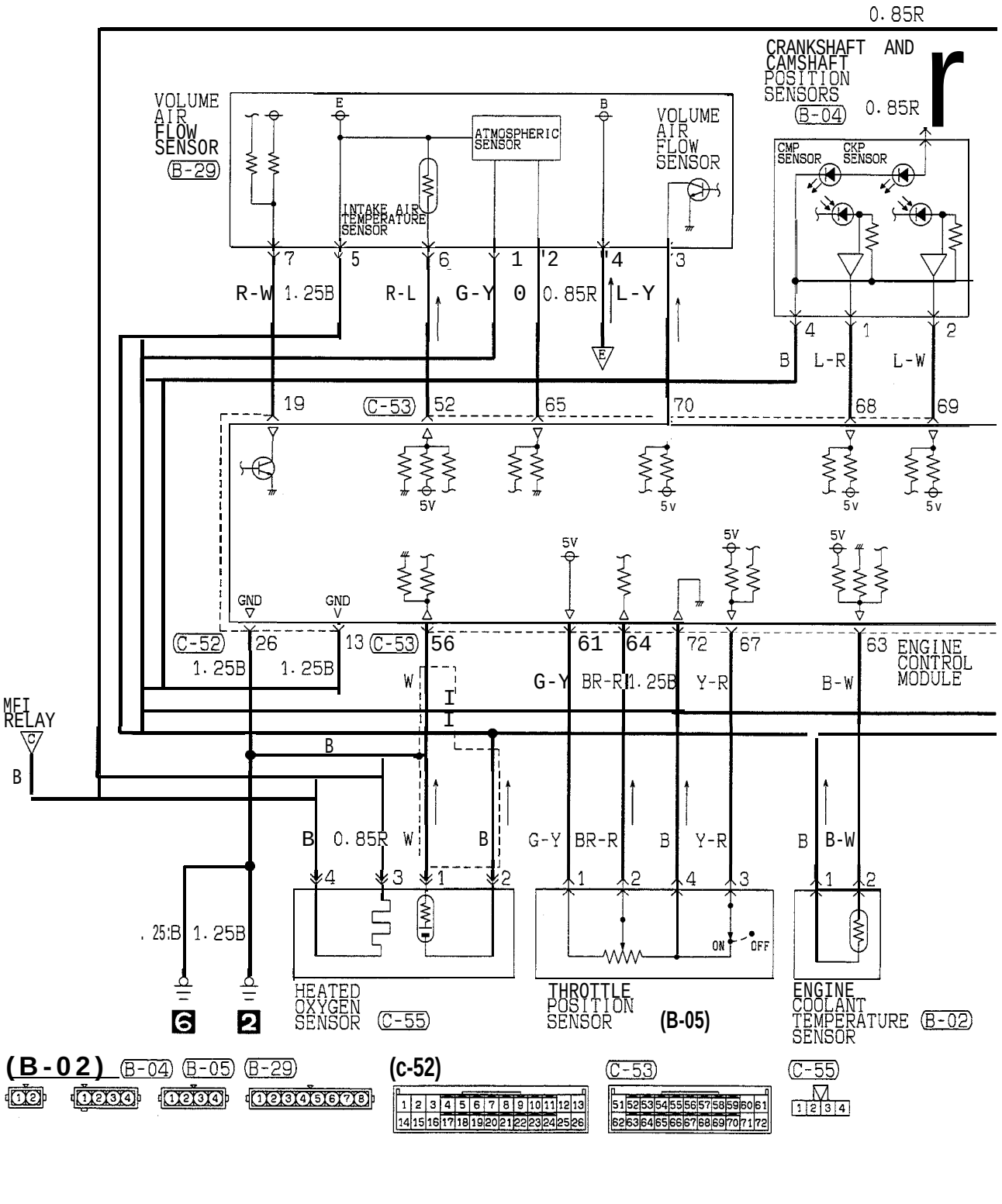




HR05M00AB

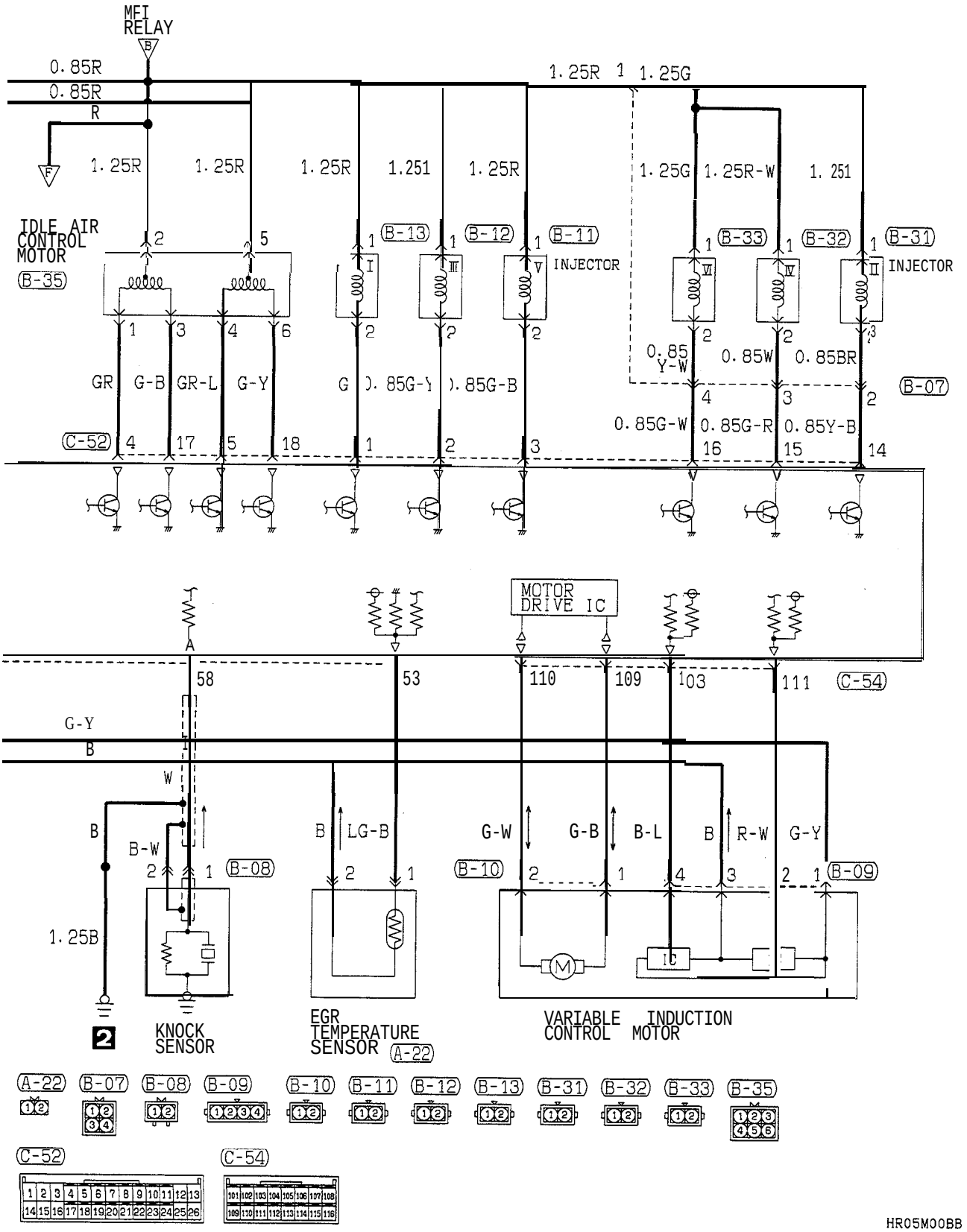
TSB Revision

MFI CIRCUIT (1992 MODEL) <NON TURBO> (CONTINUED)



HR05M00BA

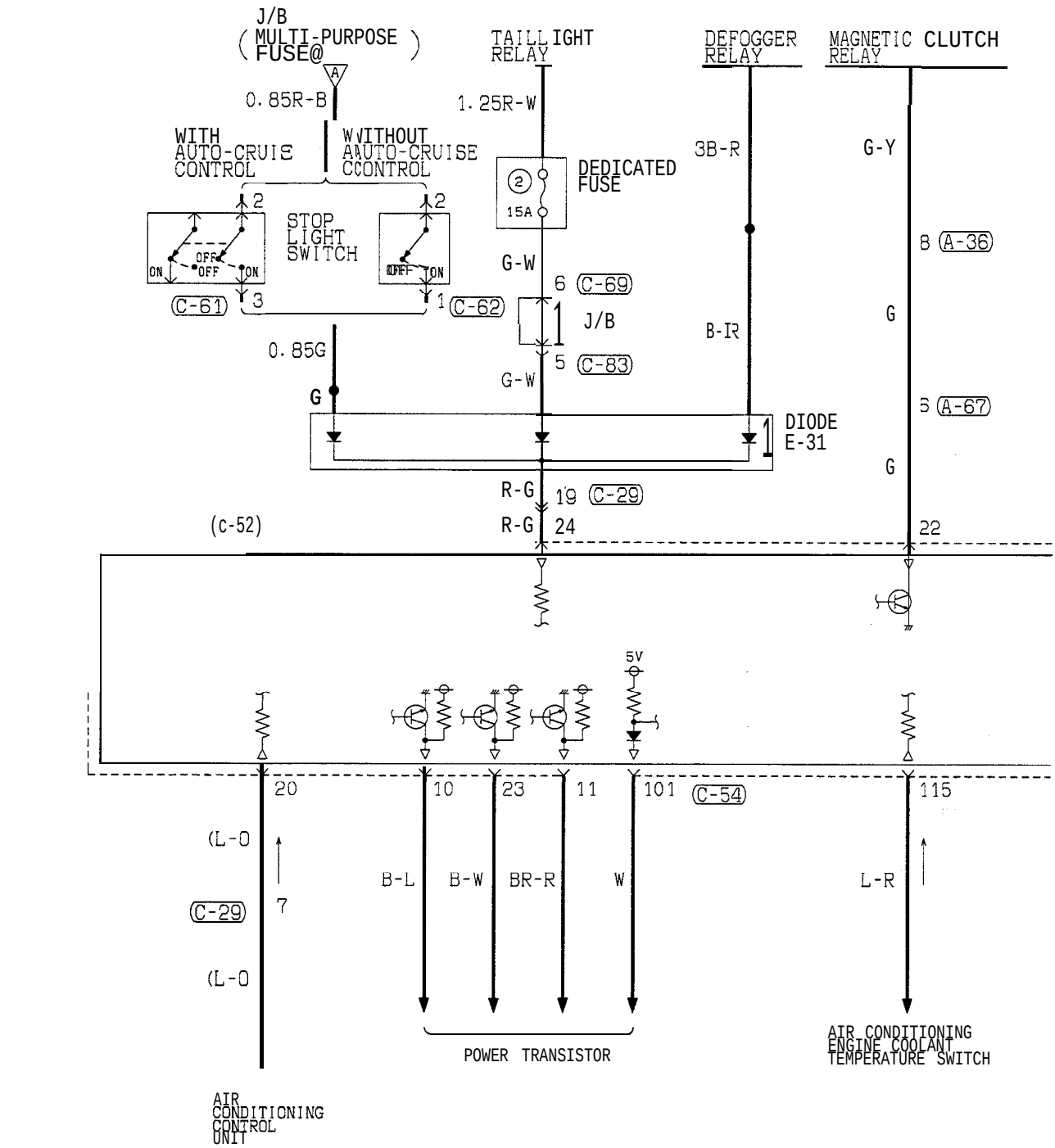
TSB Revision

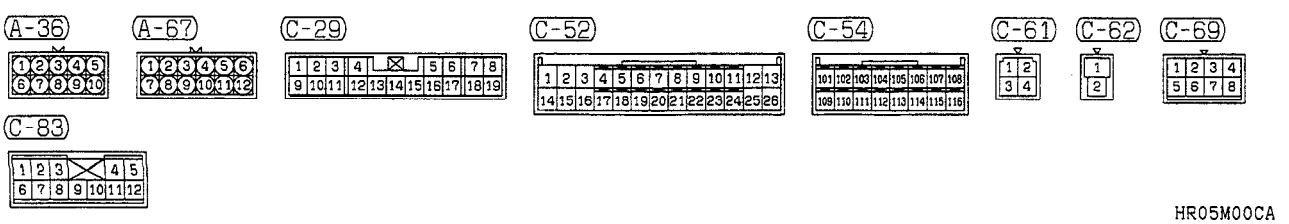


HR05M00BB

TSB Revision

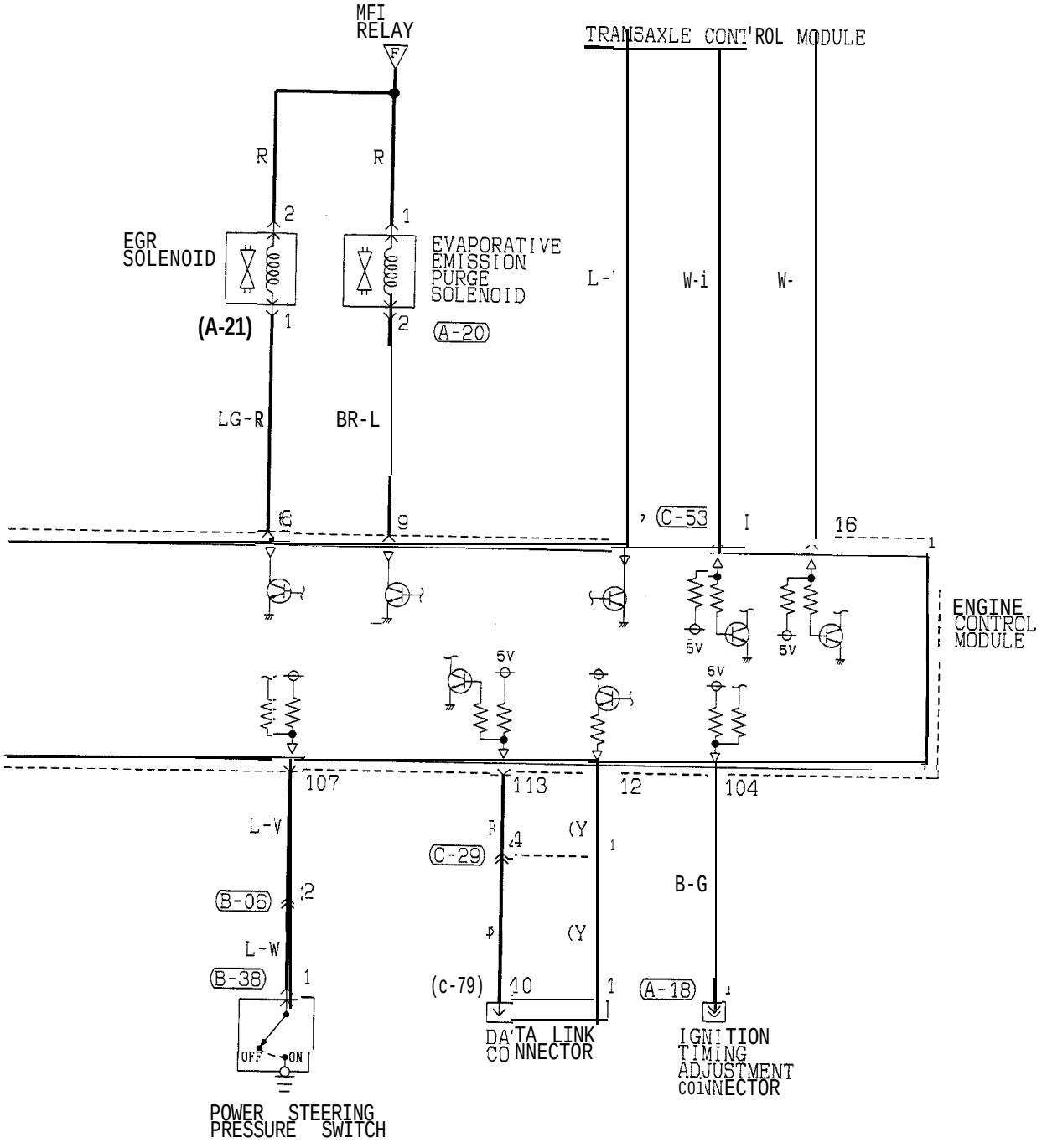
MFI CIRCUIT (1992 MODEL) <NON TURBO> (CONTINUED)





HR05M00CA

TSB Revision

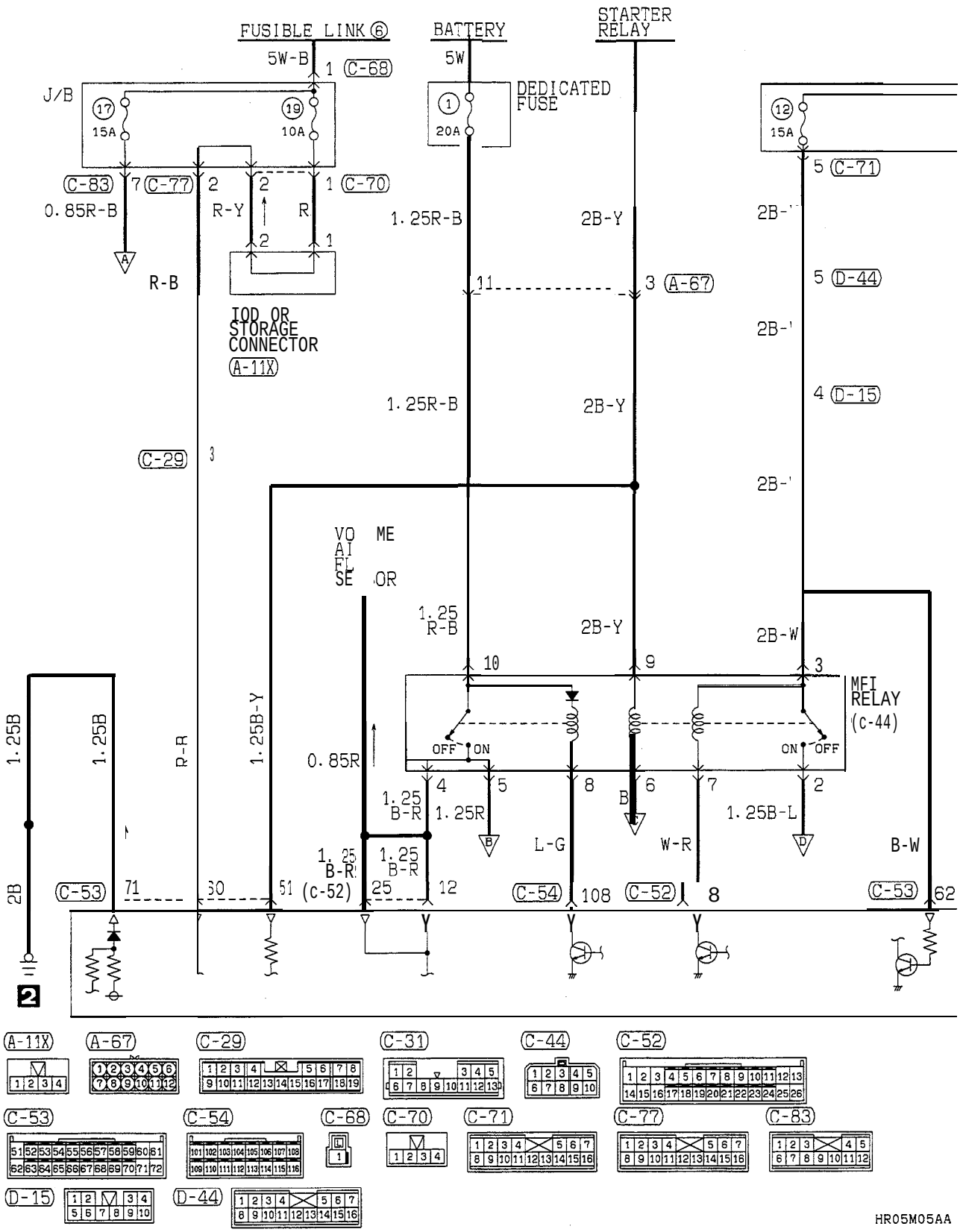


HR05M00CB

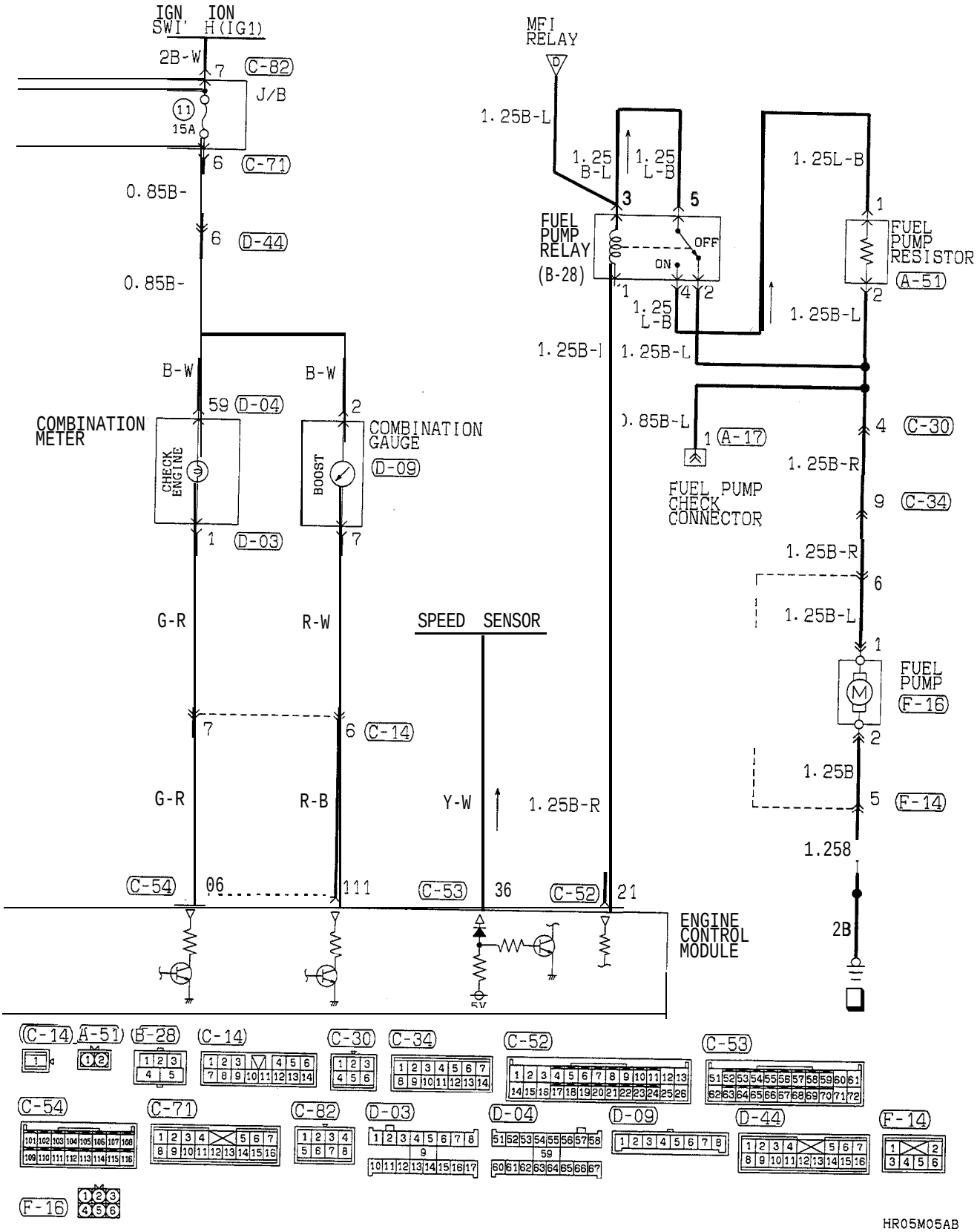
TSB Revision

MFI CIRCUIT (1992 MODEL)

<TURBO>



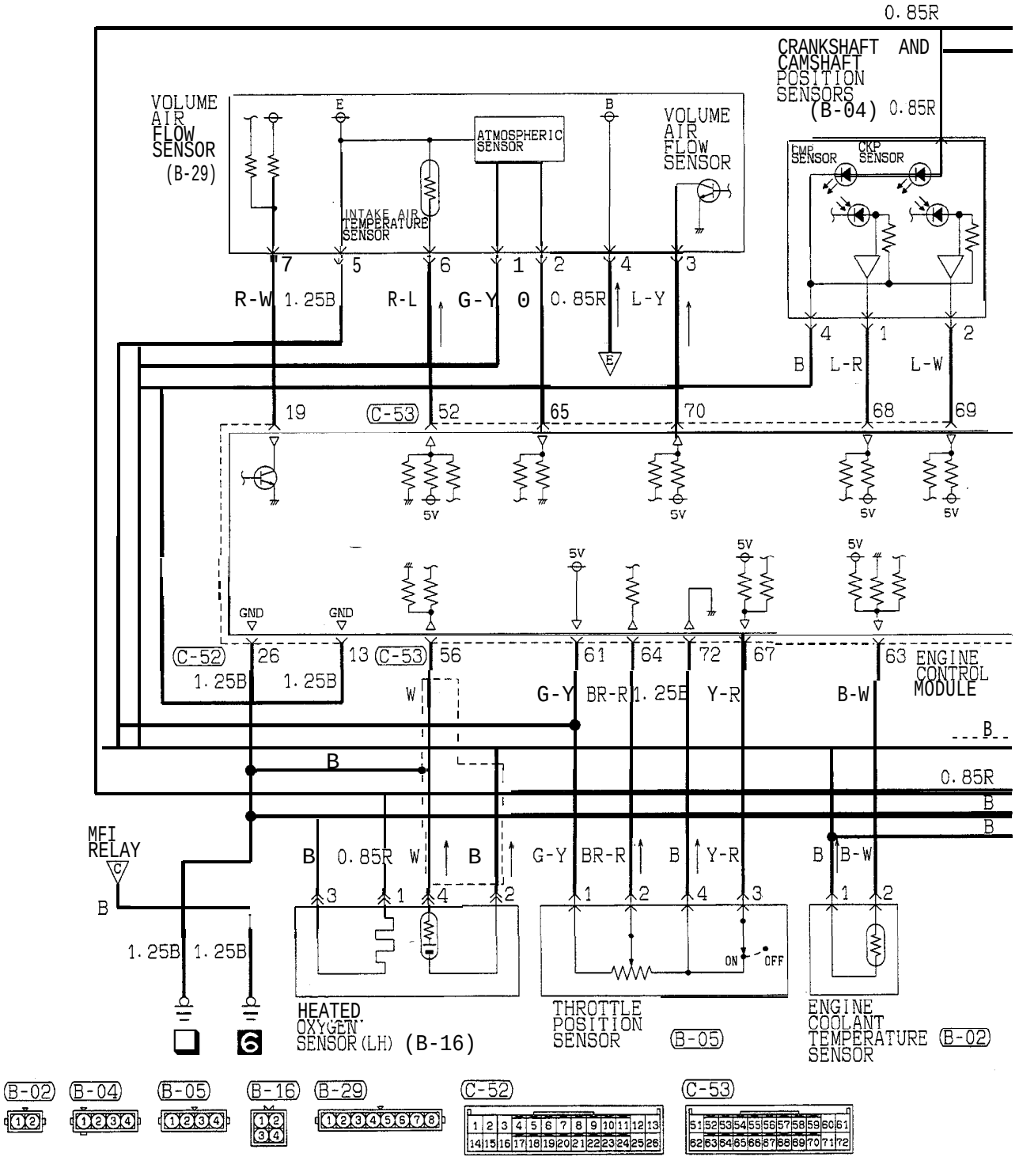
TSB Revision



HR05M05AB

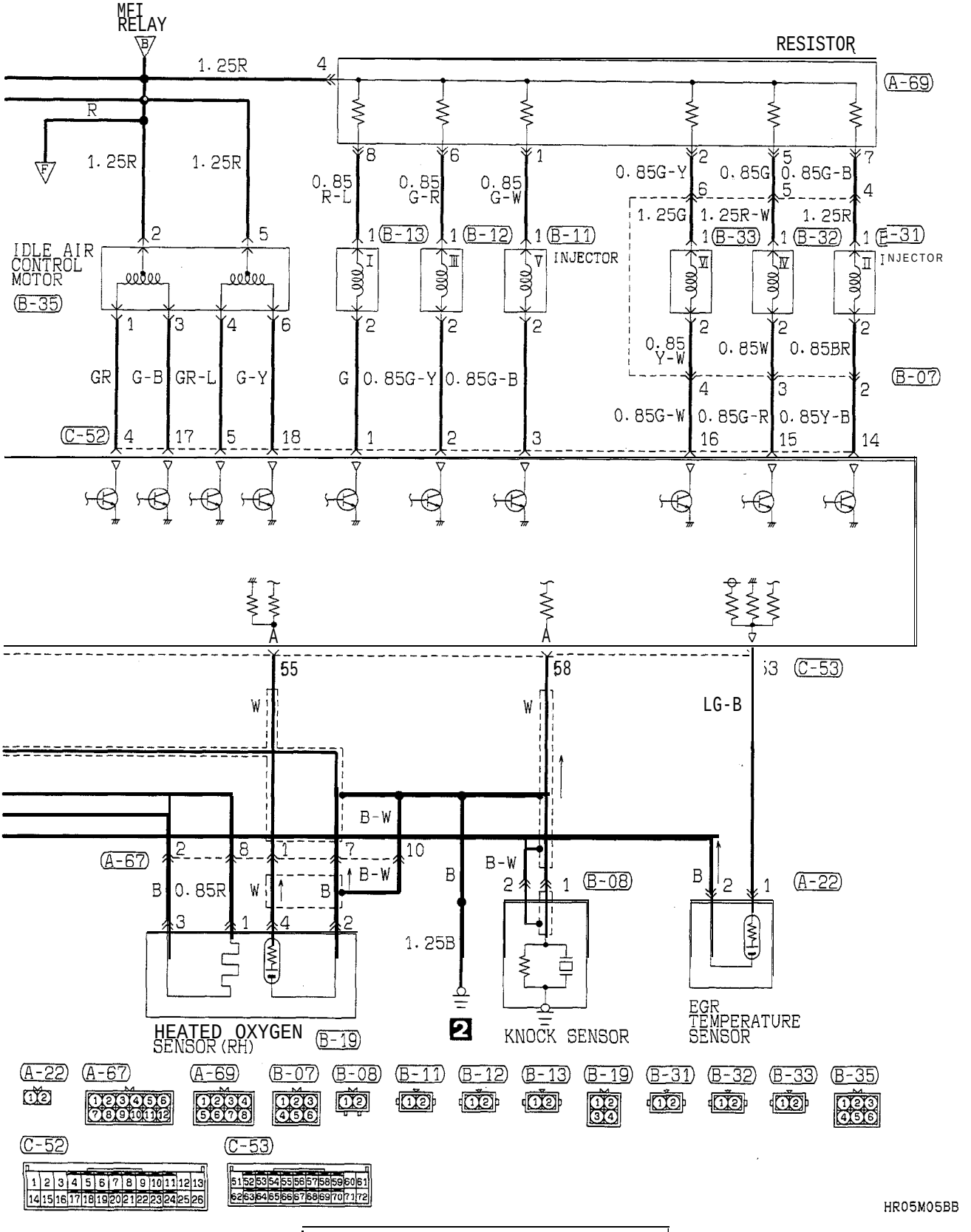
TSB Revision

MFI CIRCUIT (1992 MODEL) <TURBO> (CONTINUED)



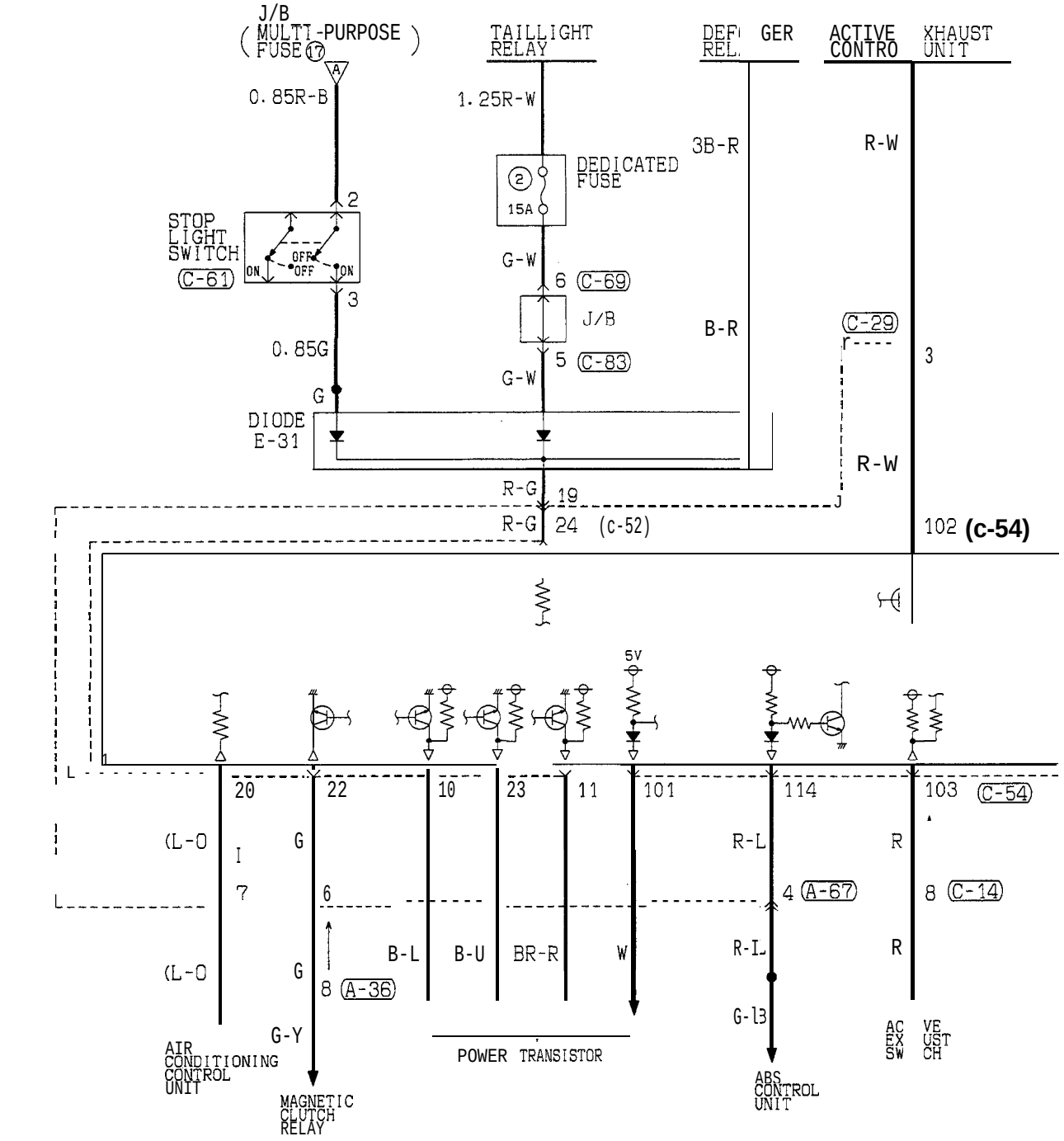
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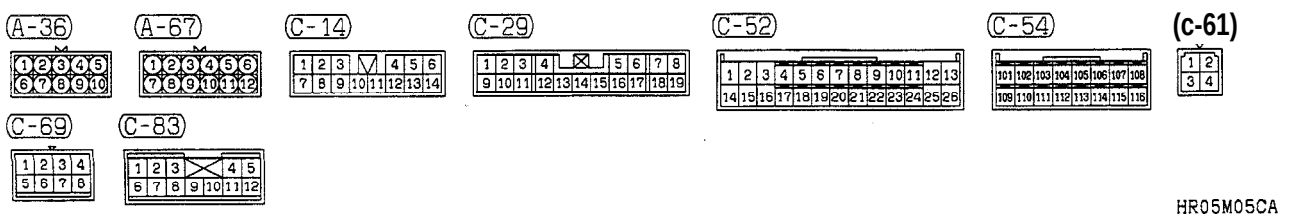
TSB Revision



TSB Revision

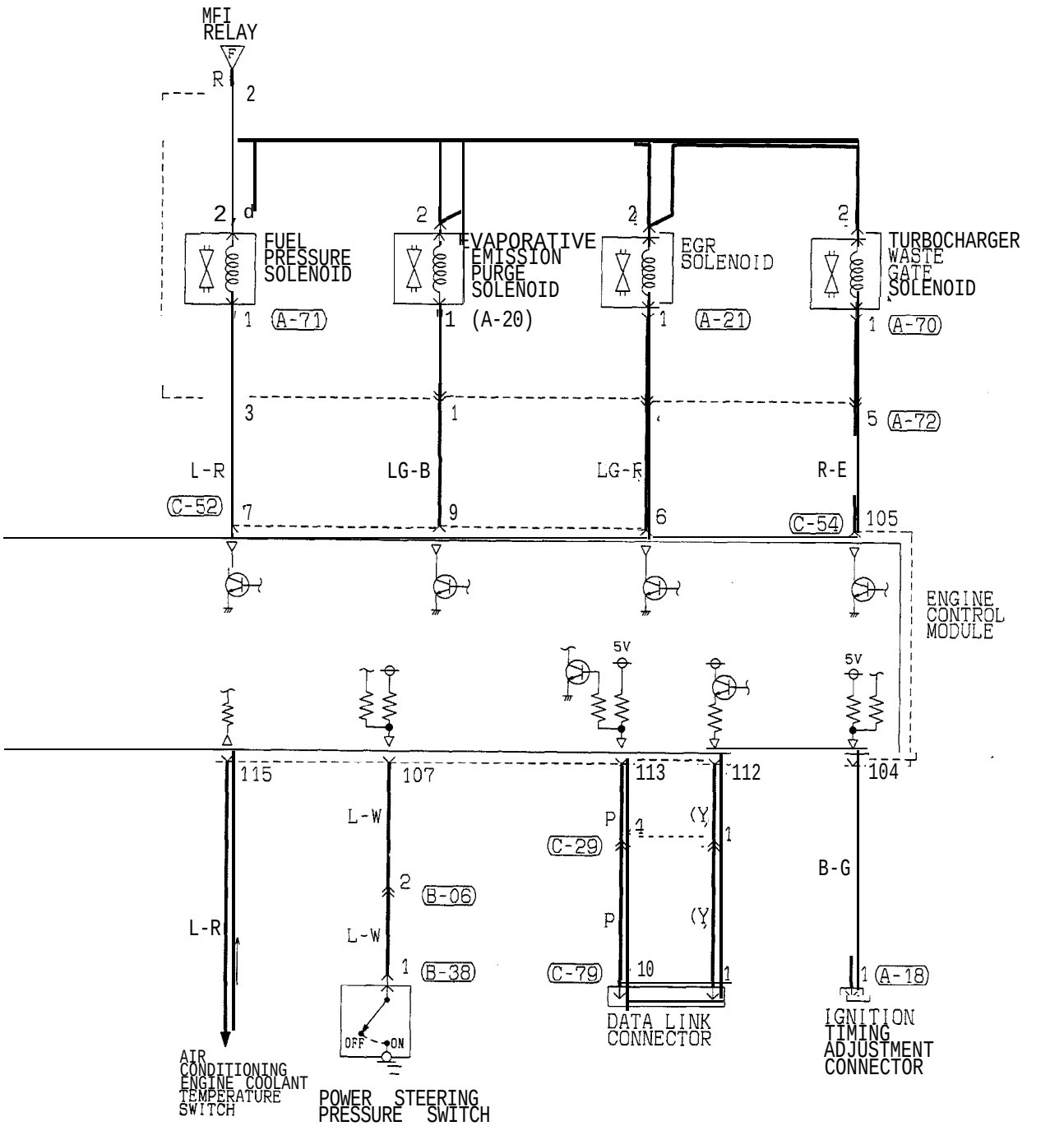
MFI CIRCUIT (1992 MODEL) <TURBO> (CONTINUED)

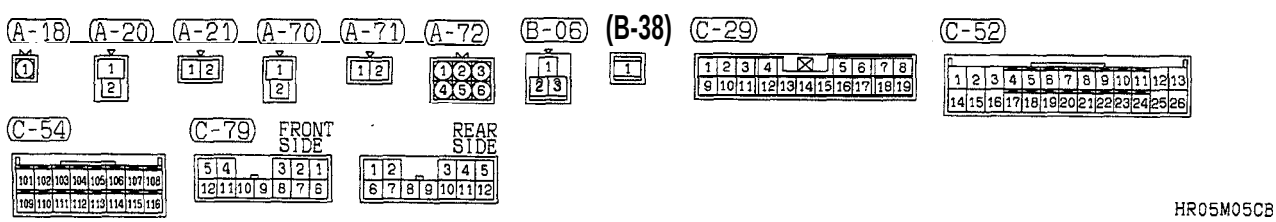




HR05M05CA

TSB Revision



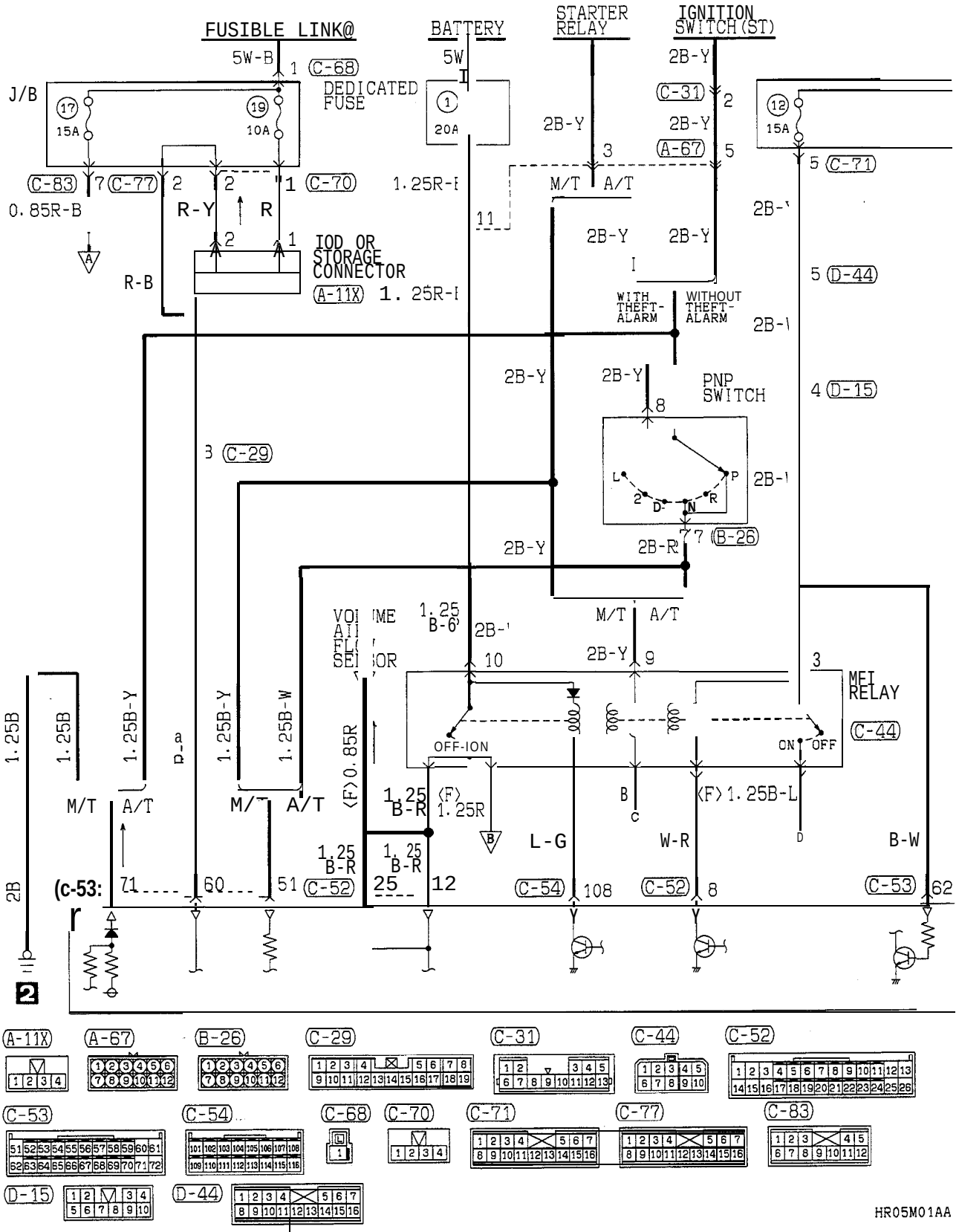


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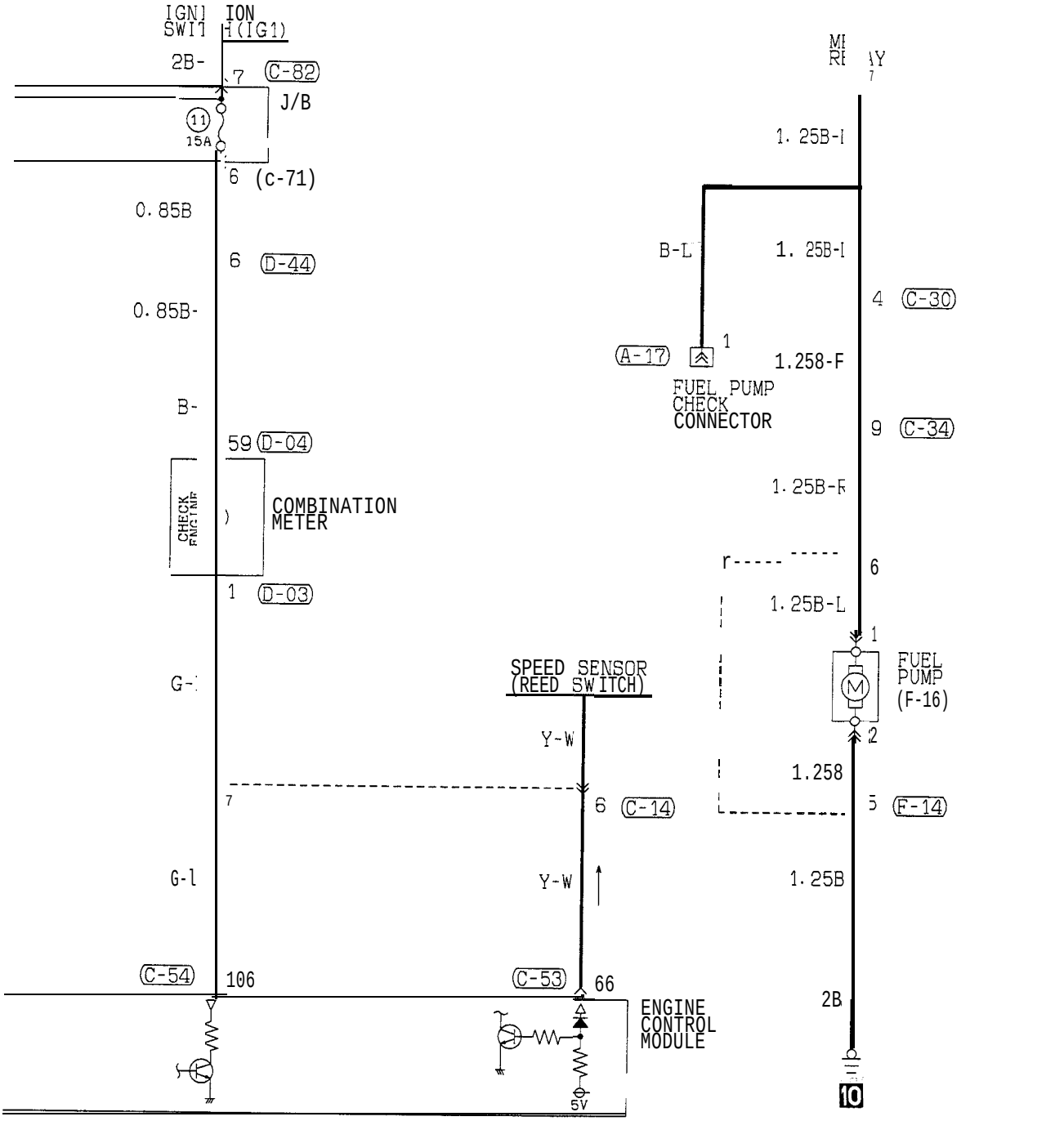
TSB Revision

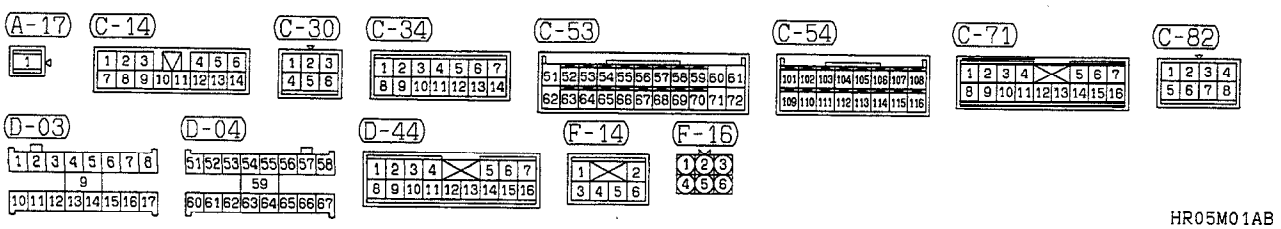
MFI CIRCUIT (1993 MODELS)

<NON TURBO>



TSB Revision

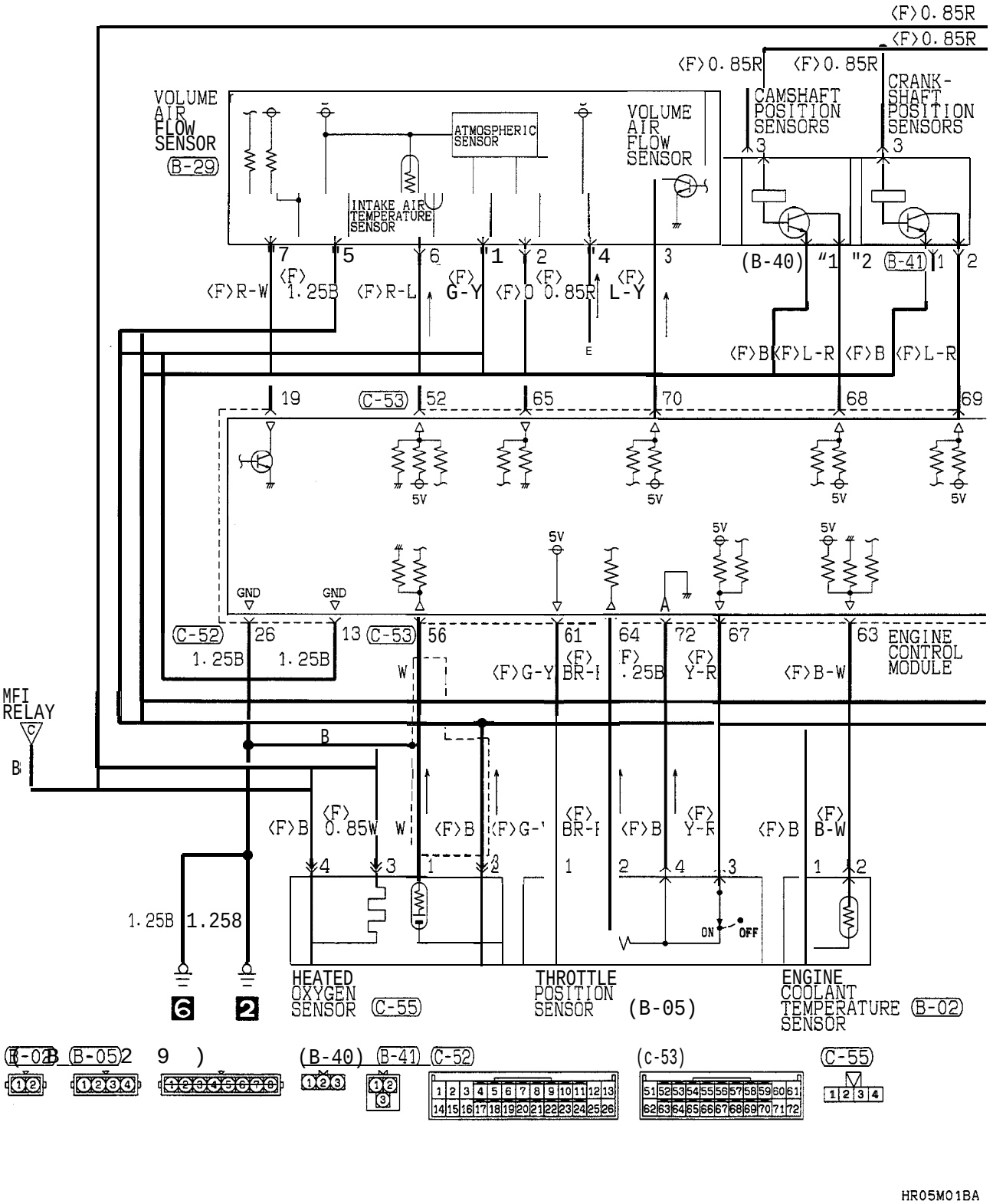




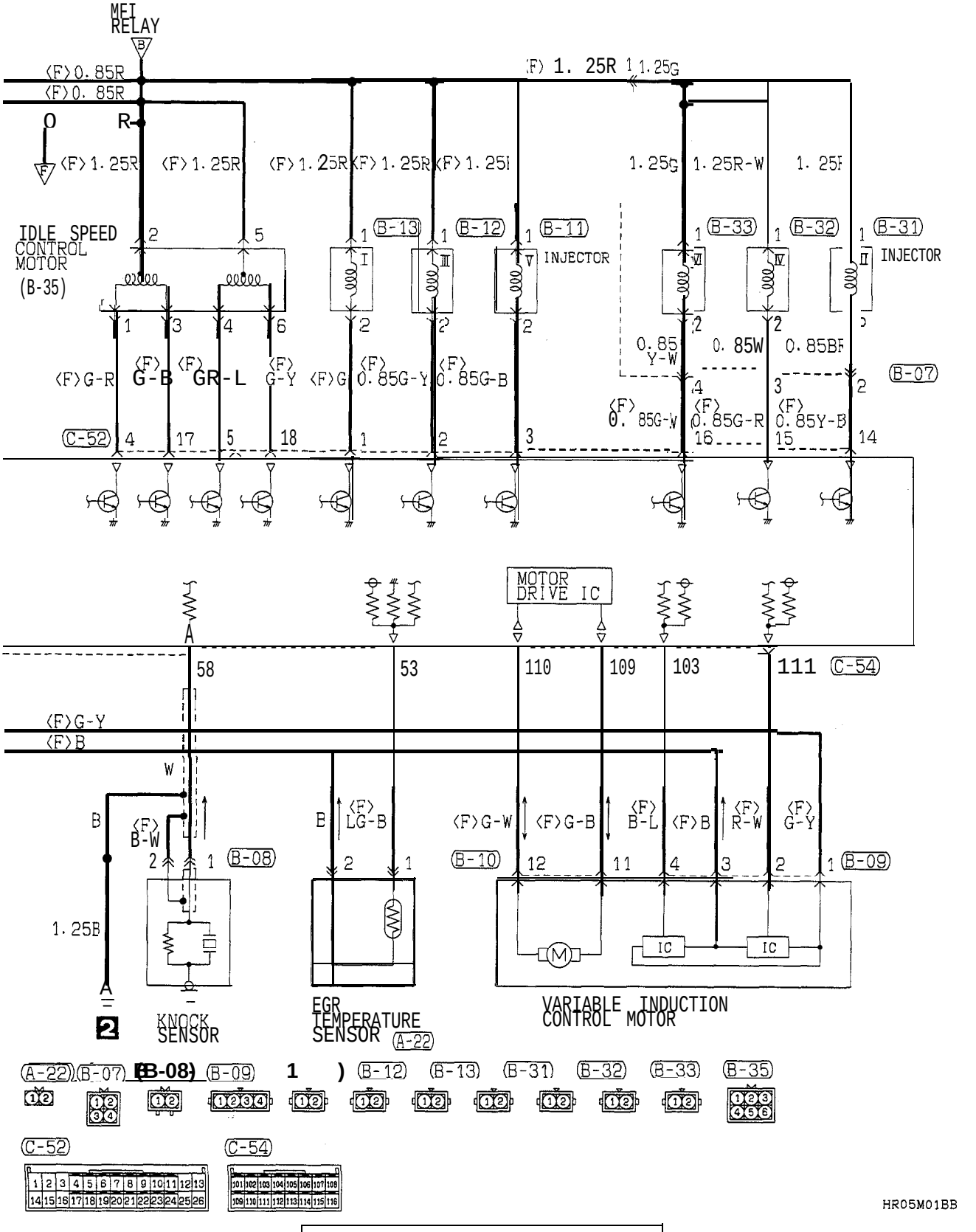
HR05M01AB

TSB Revision

MFI CIRCUIT (1993 MODELS) <NON TURBO> (CONTINUED)

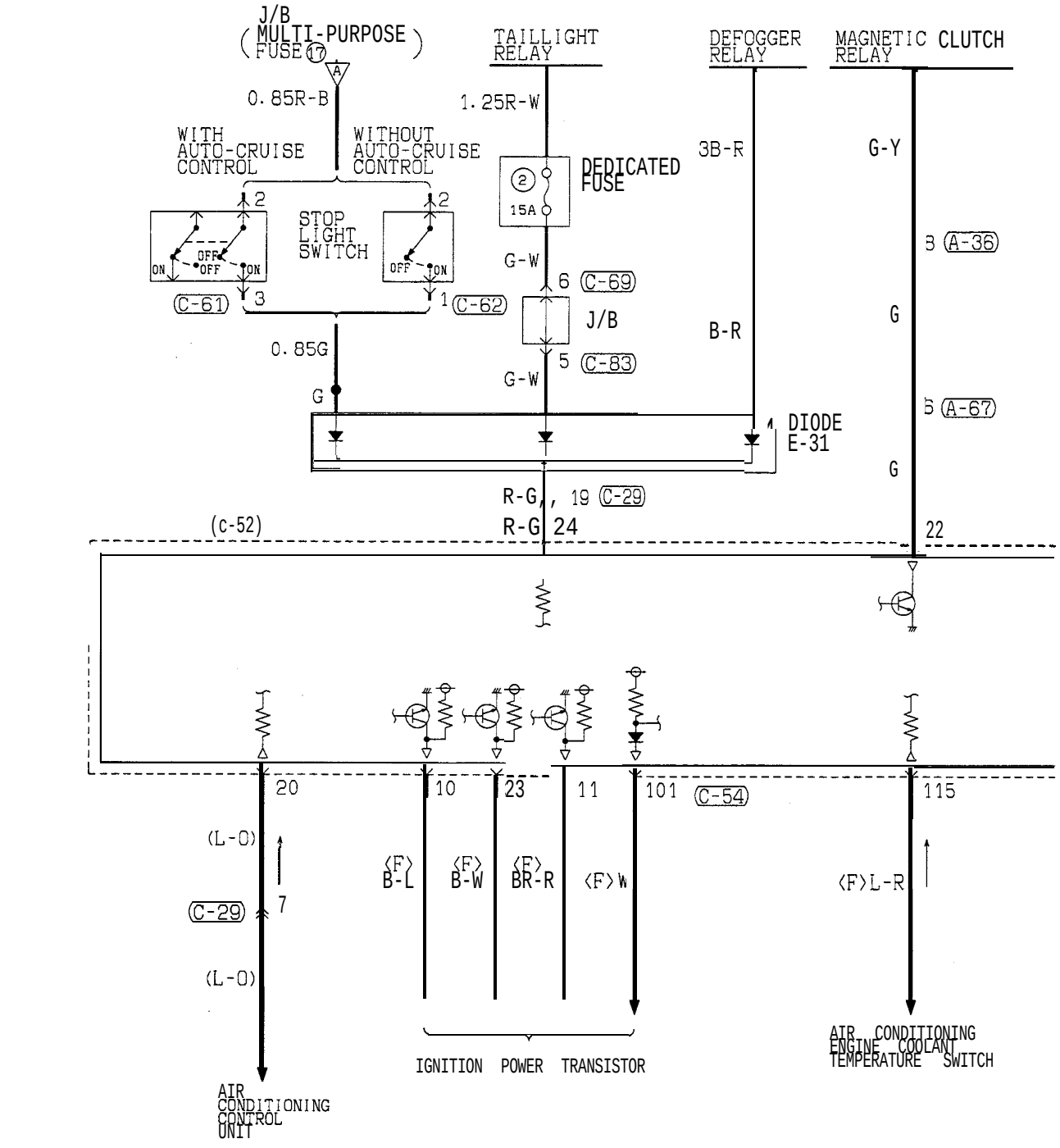


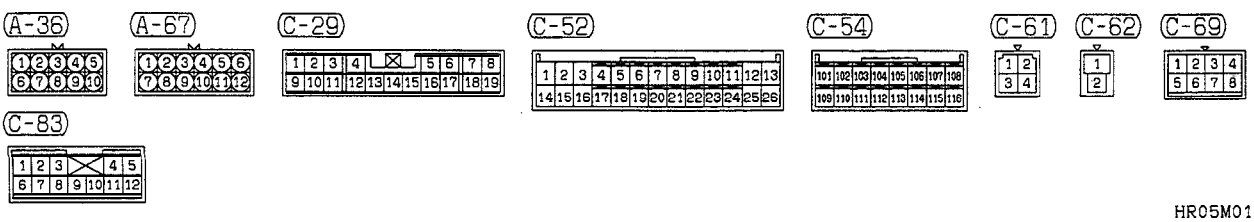
TSB Revision



TSB Revision

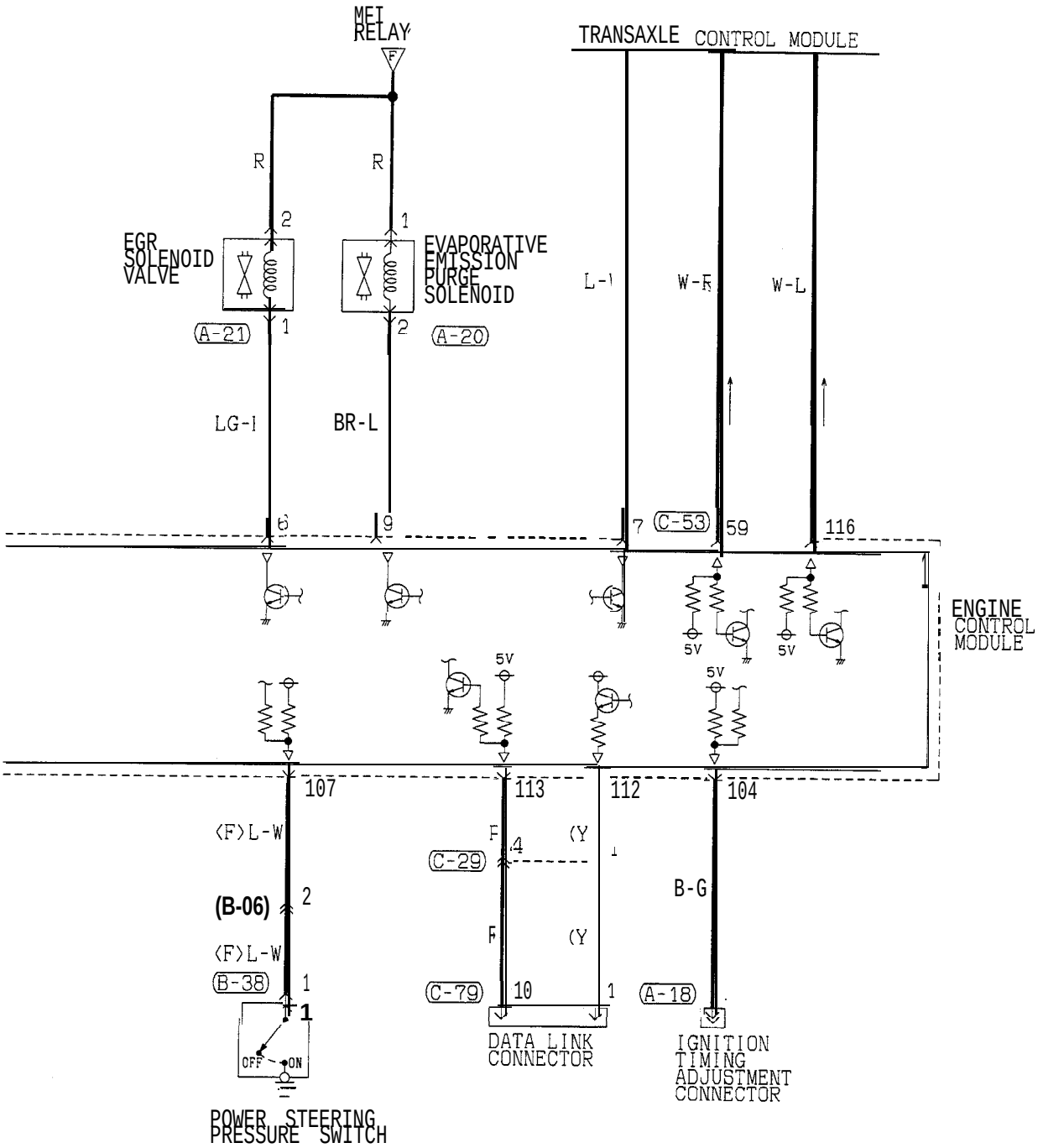
MFI CIRCUIT (1993 MODELS) <NON TURBO> (CONTINUED)

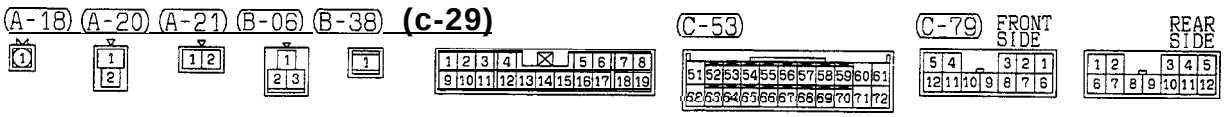




HR05M01CA

TSB Revision



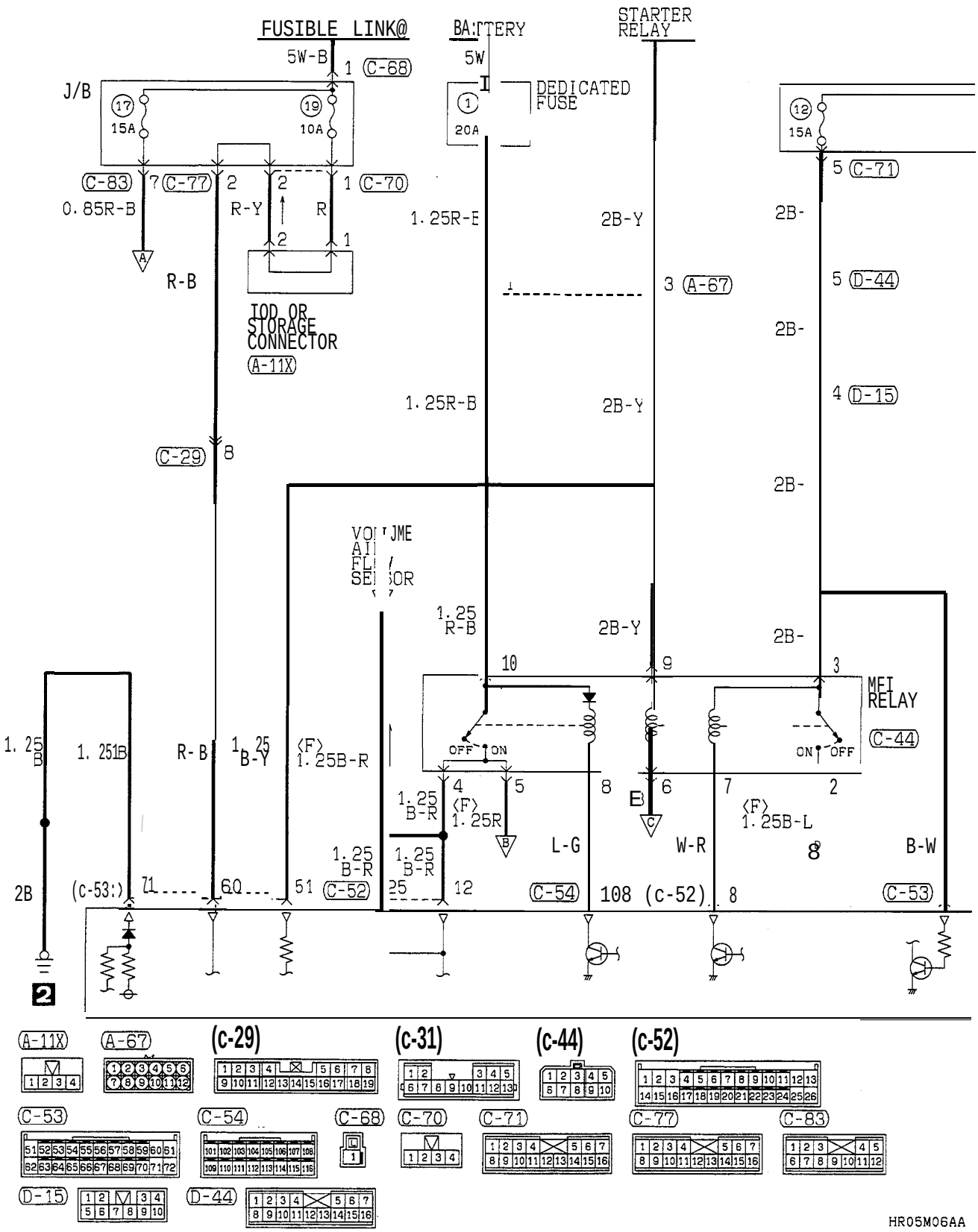


HR05M01CB

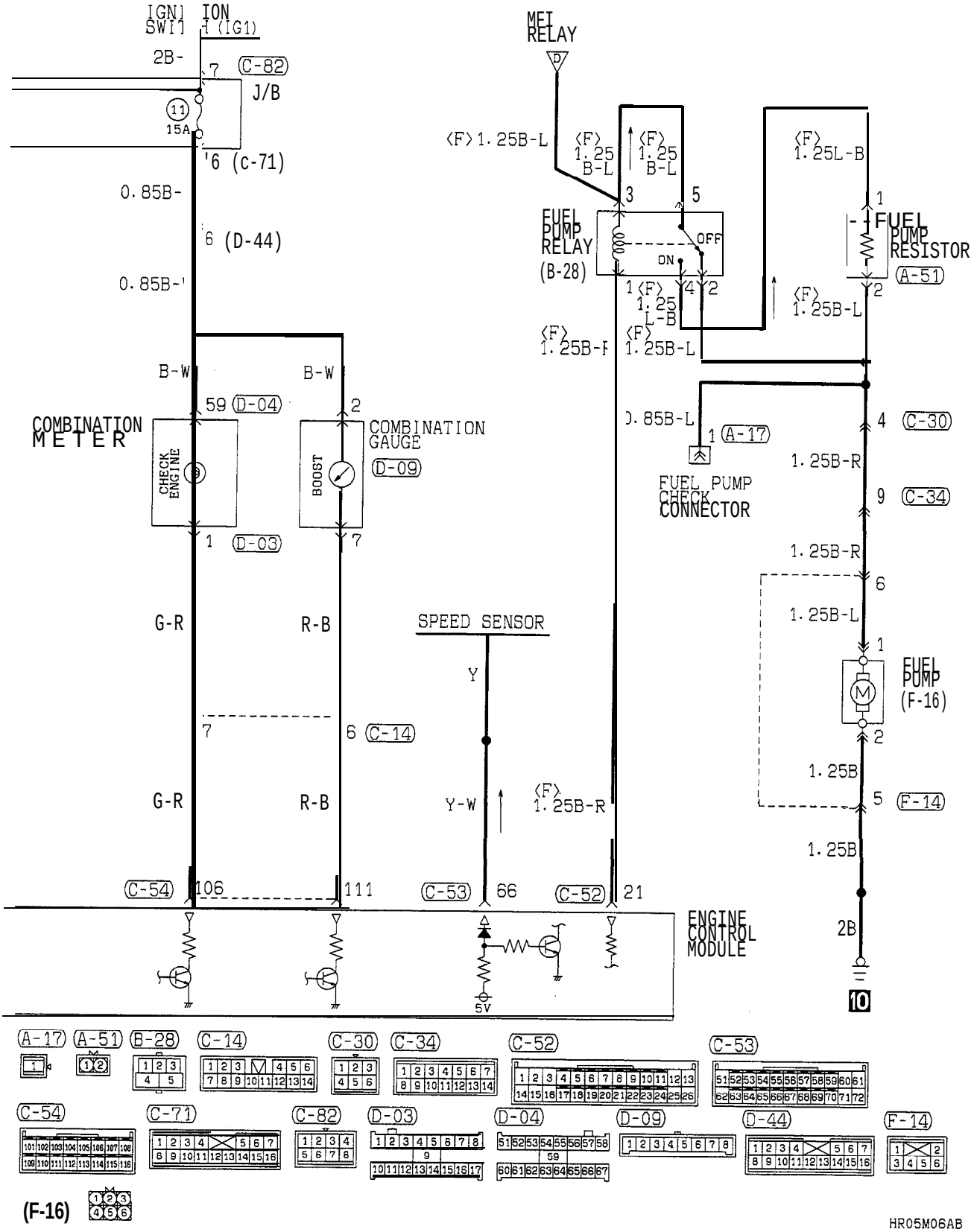
TSB Revision

MFI CIRCUIT (1993 MODELS)

<TURBO>



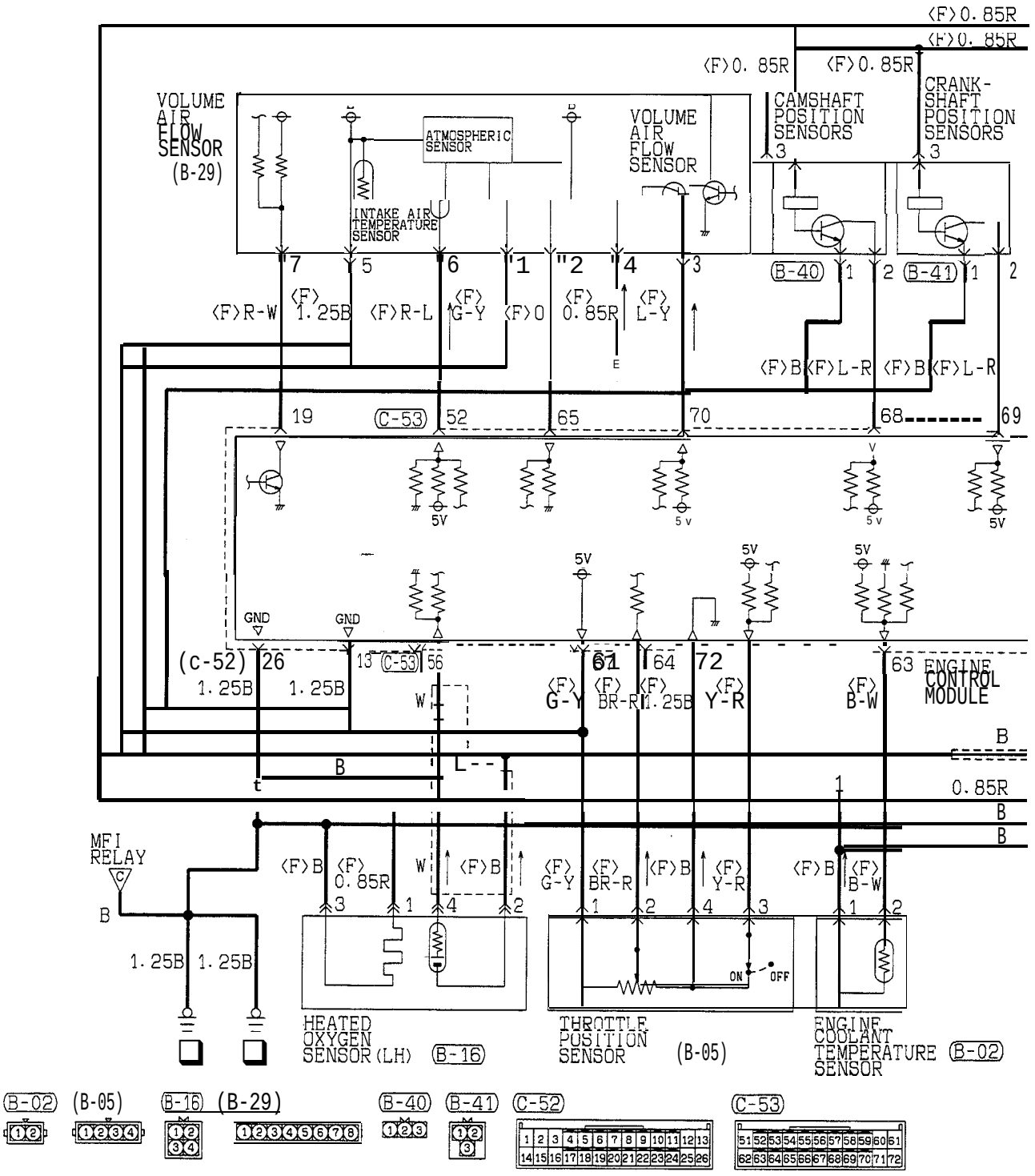
TSB Revision



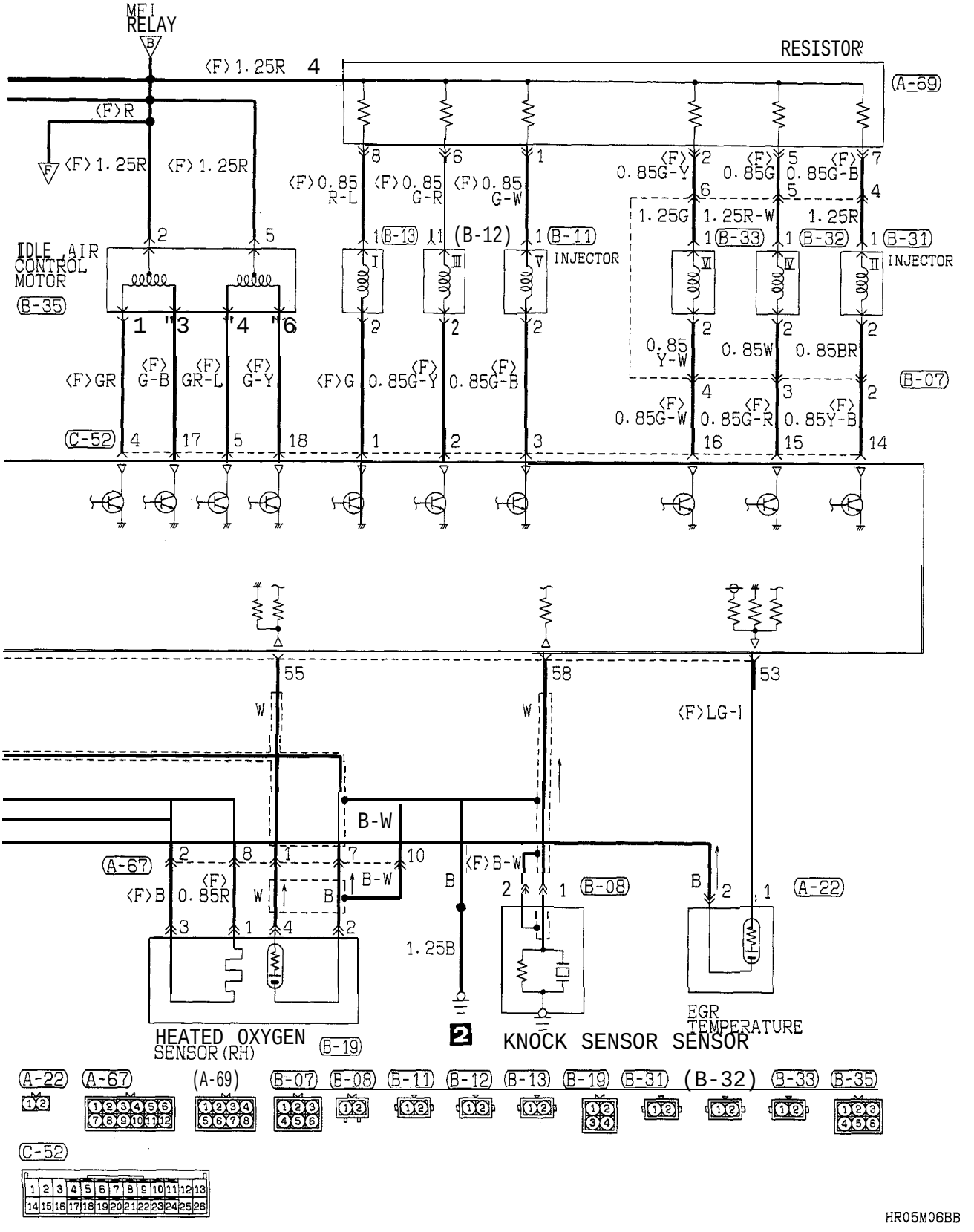
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TSB Revision

MFI CIRCUIT (1993 MODELS) <TURBO> (CONTINUED)



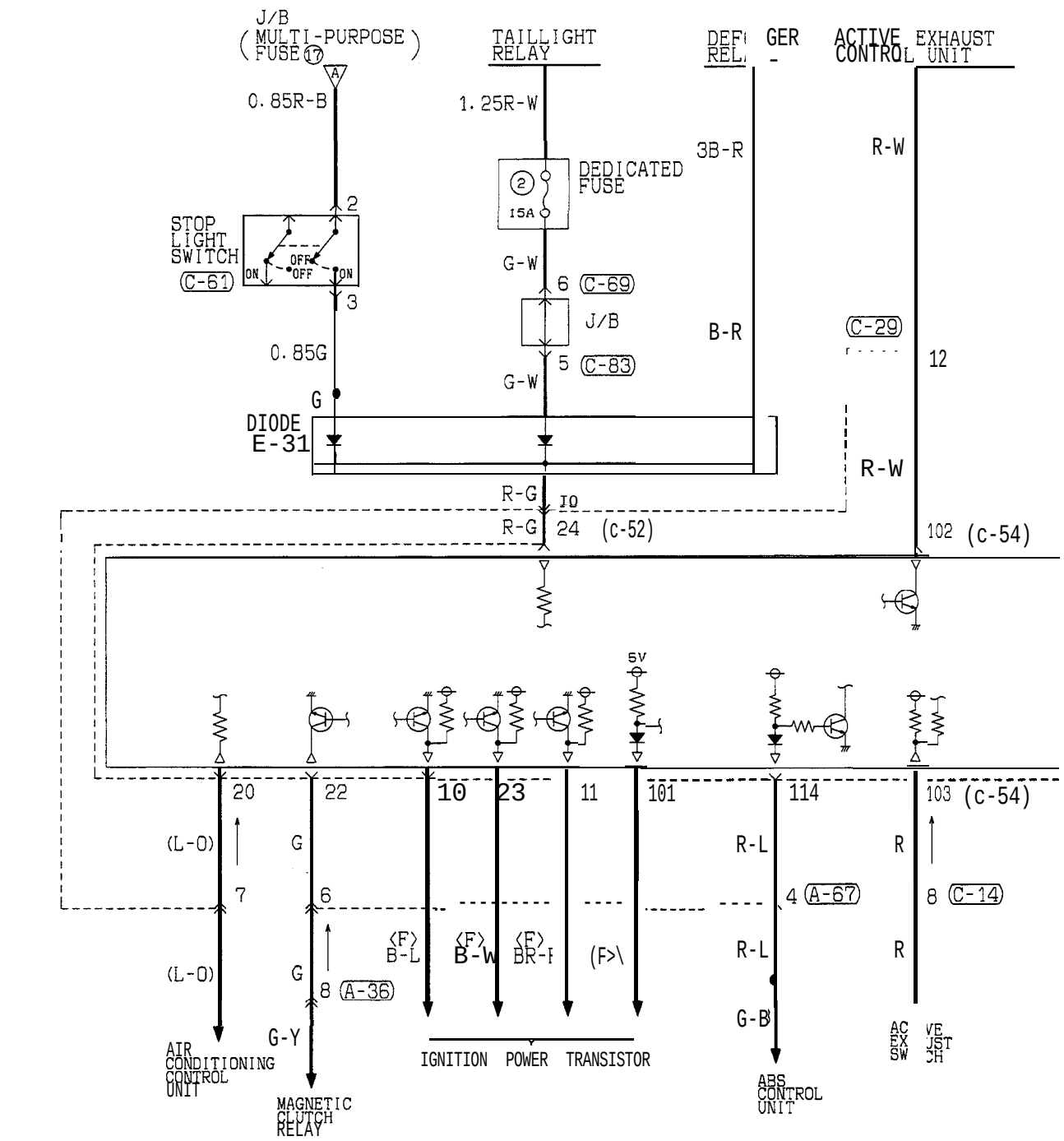
TSB Revision

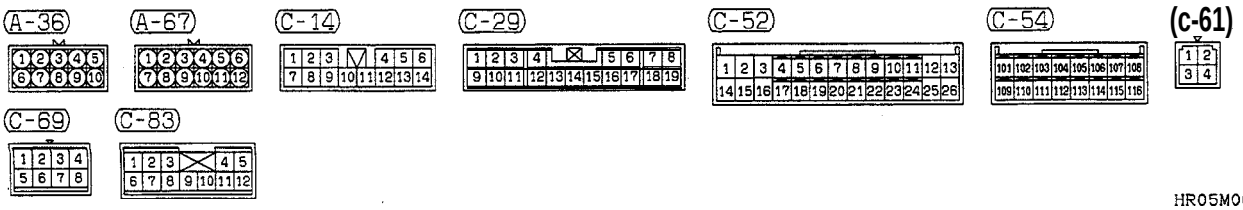


HR05M06BB

TSB Revision

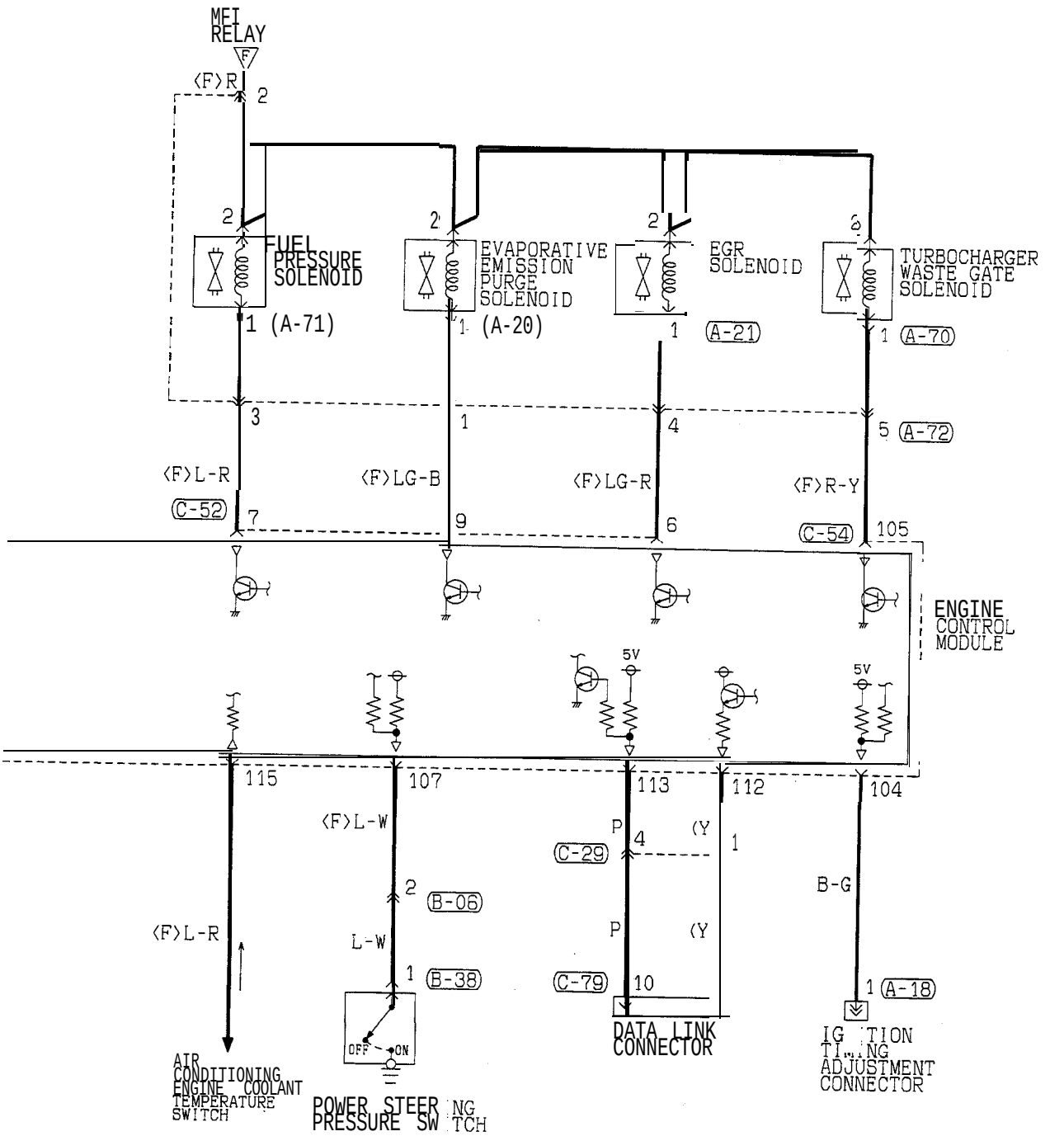
MFI CIRCUIT (1993 MODELS) <TURBO> (CONTINUED)

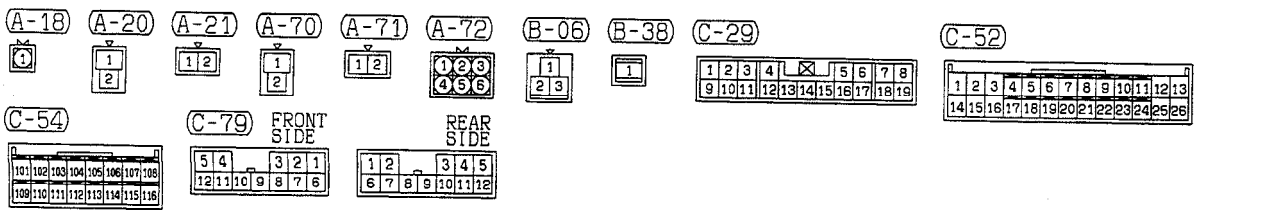




HR05M06CA

TSB Revision



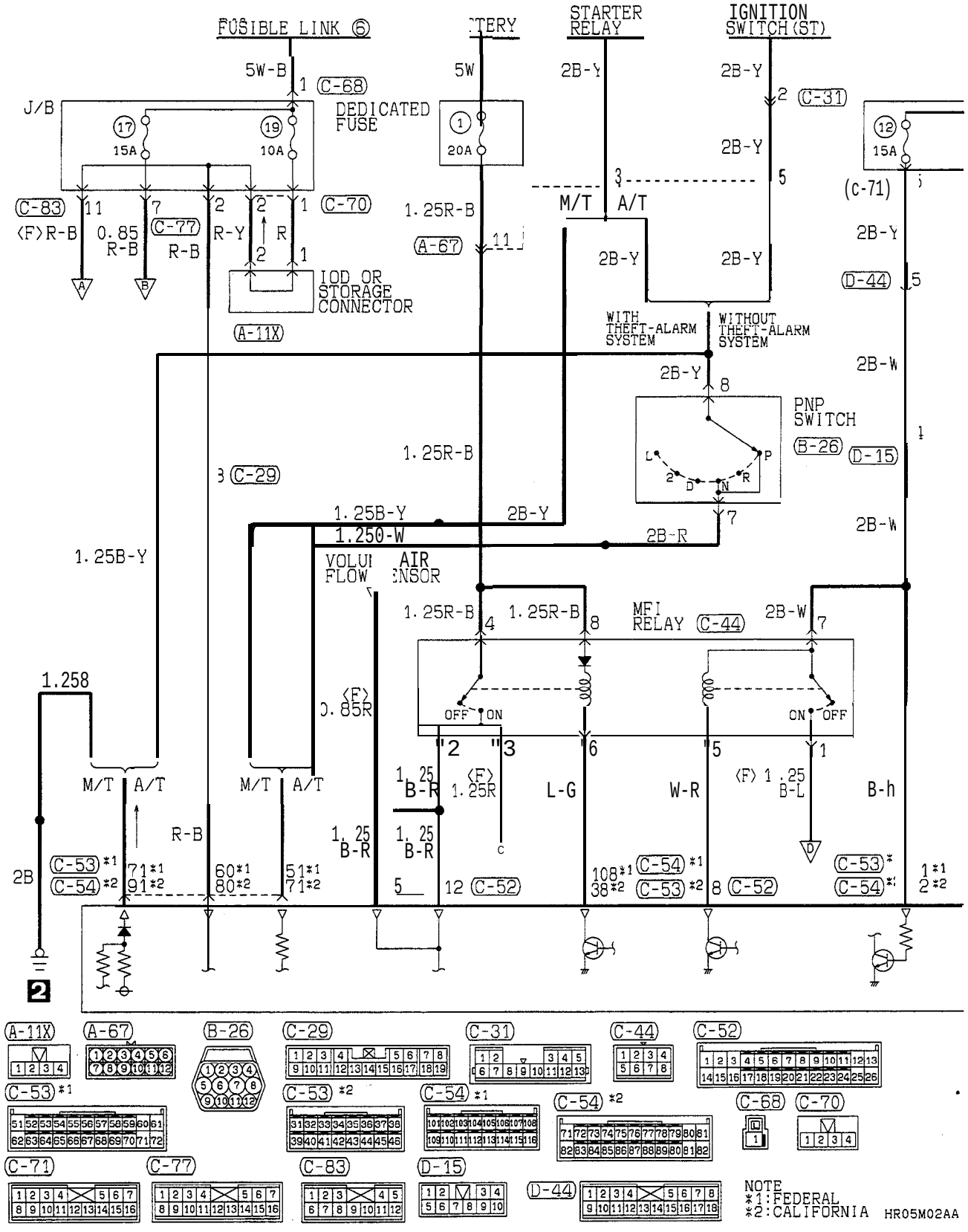


HR05M06CB

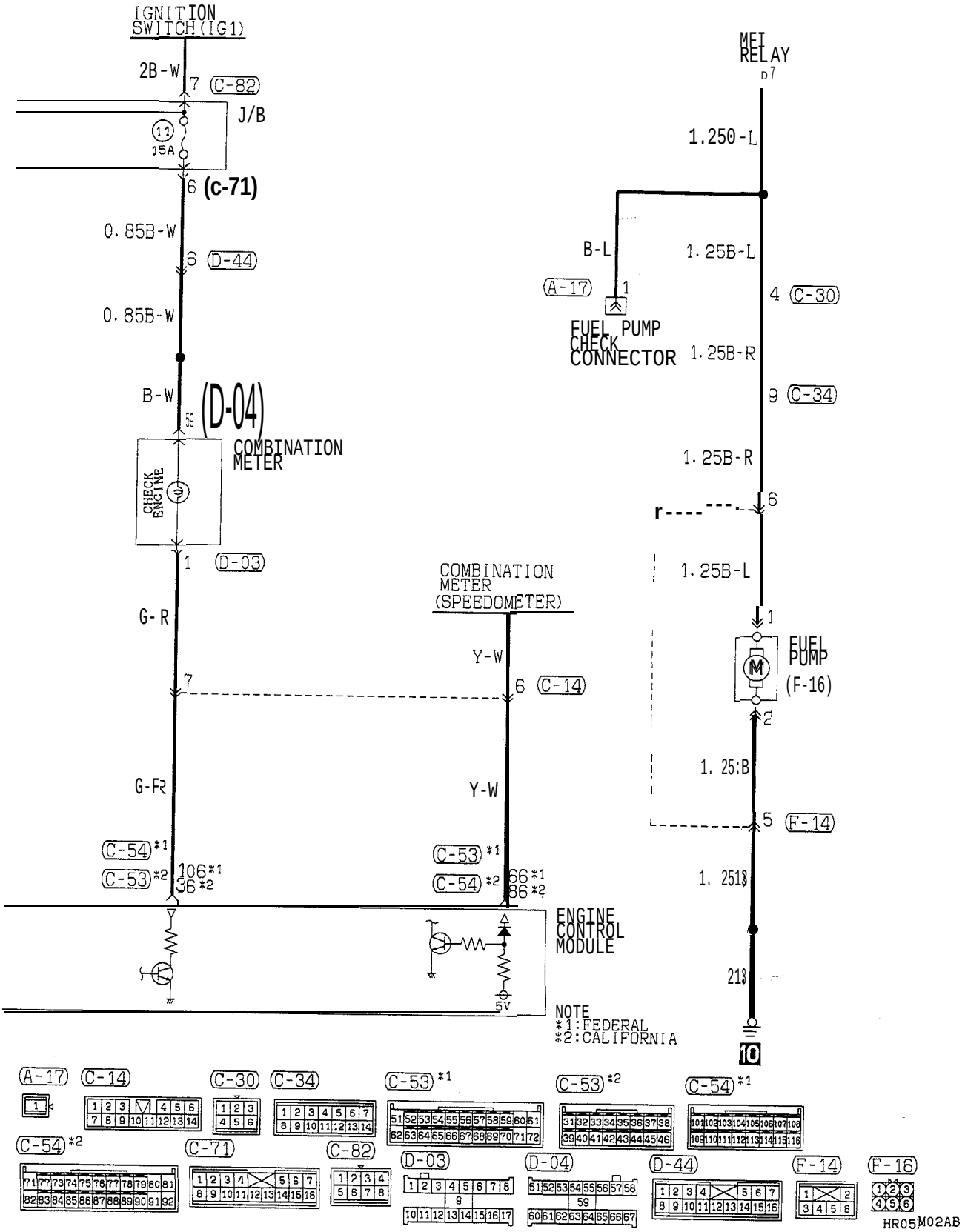
TSB Revision

MFI CIRCUIT (1994 MODELS)

<NON TURBO>

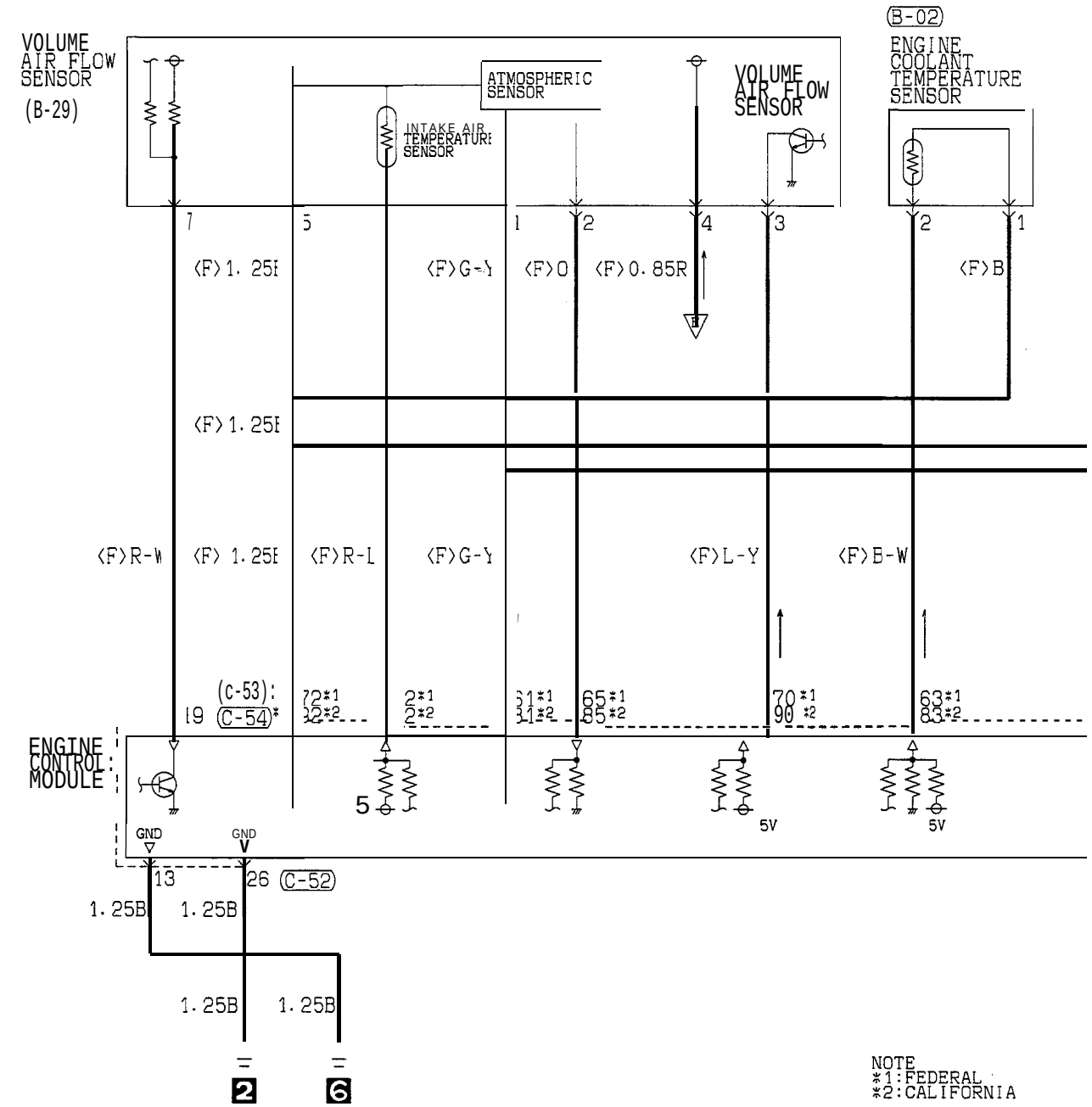


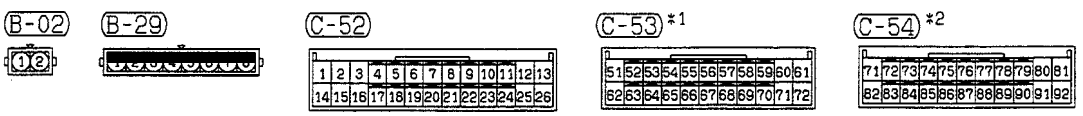
TSB Revision



TSB Revision

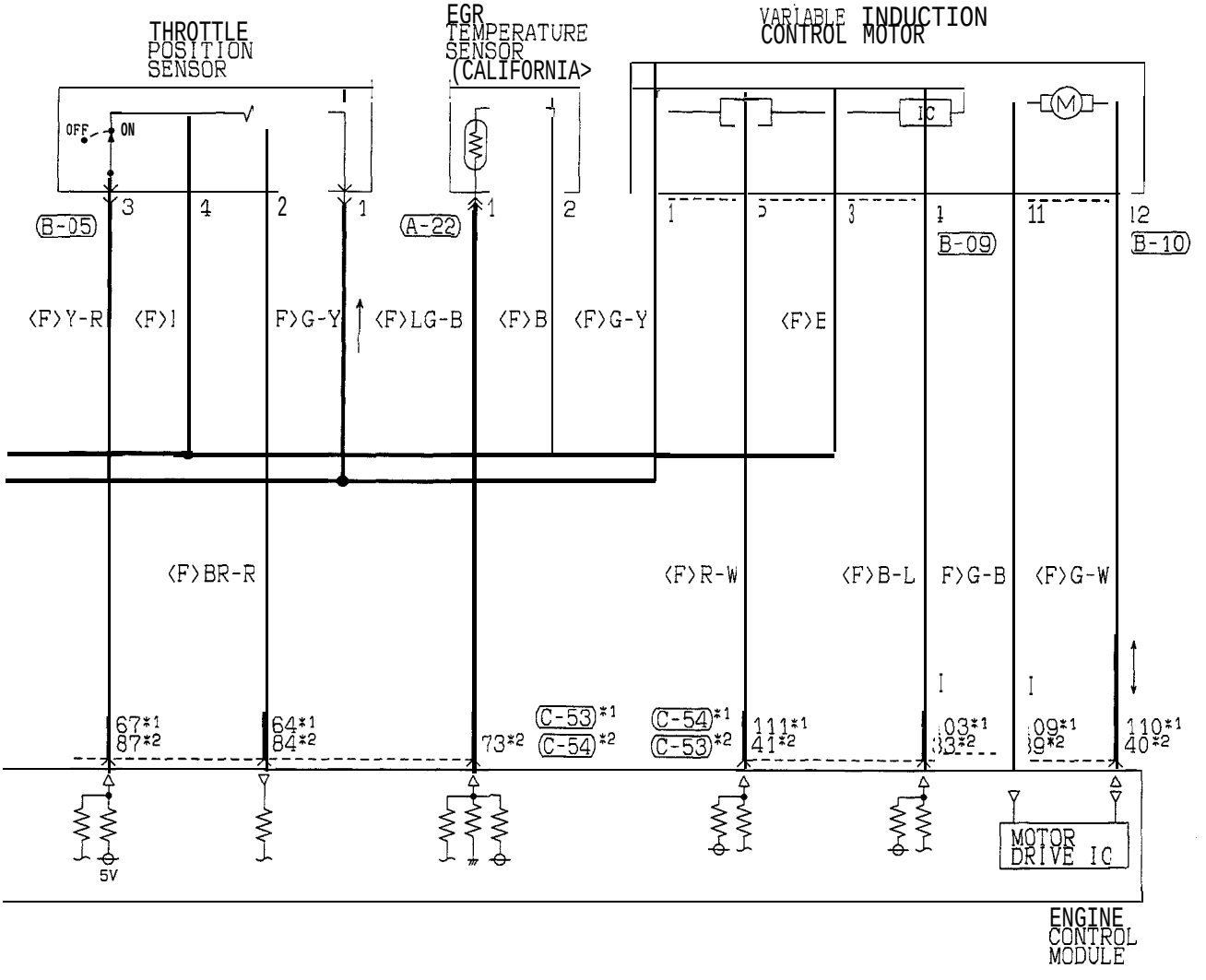
MFI CIRCUIT (1994 MODELS) <NON TURBO> (CONTINUED)



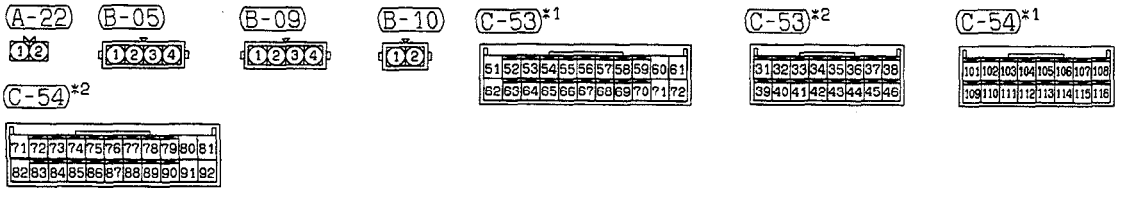


HR05M02BA

TSB Revision



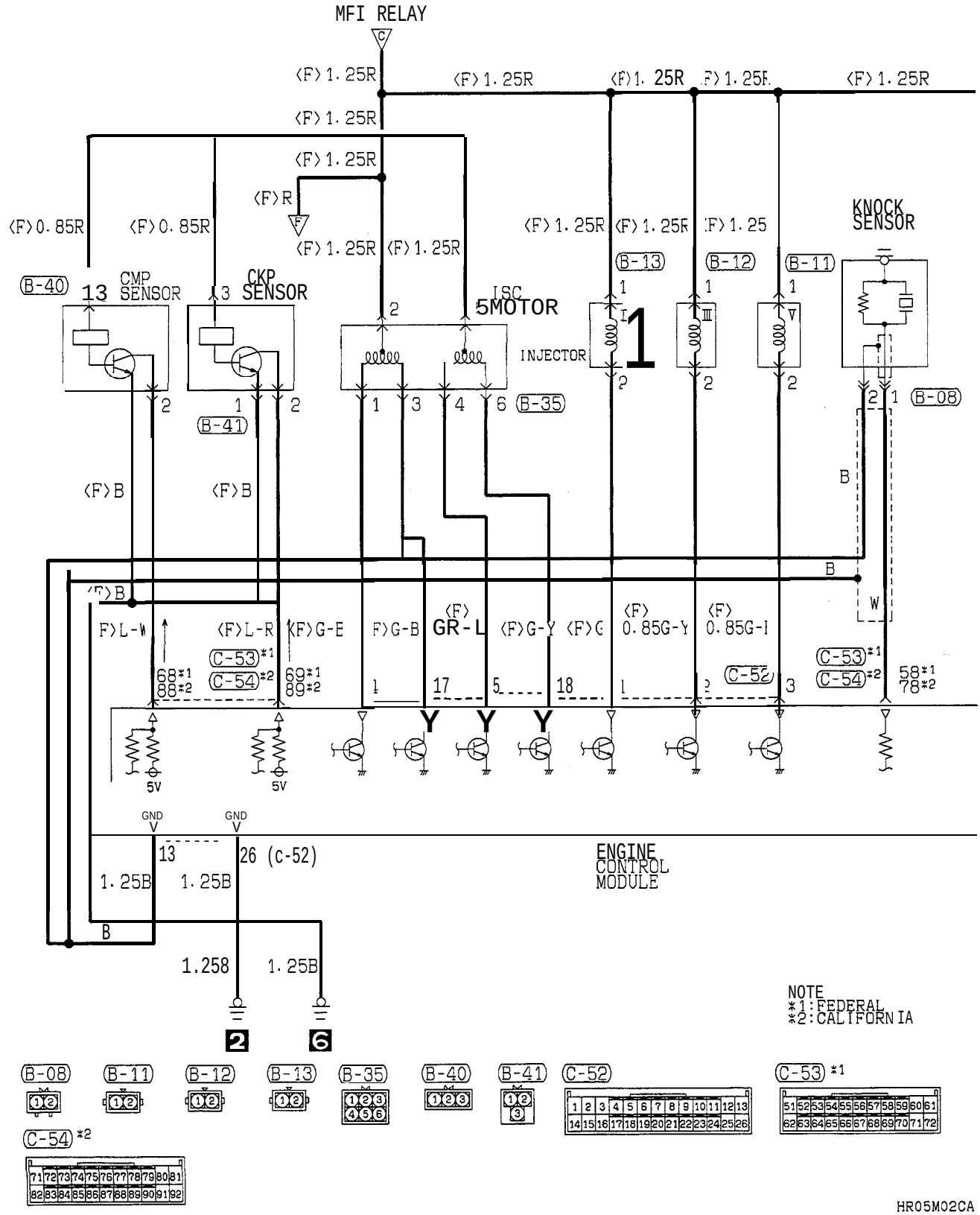
NOTE
*1: FEDERAL
*2: CALIFORNIA



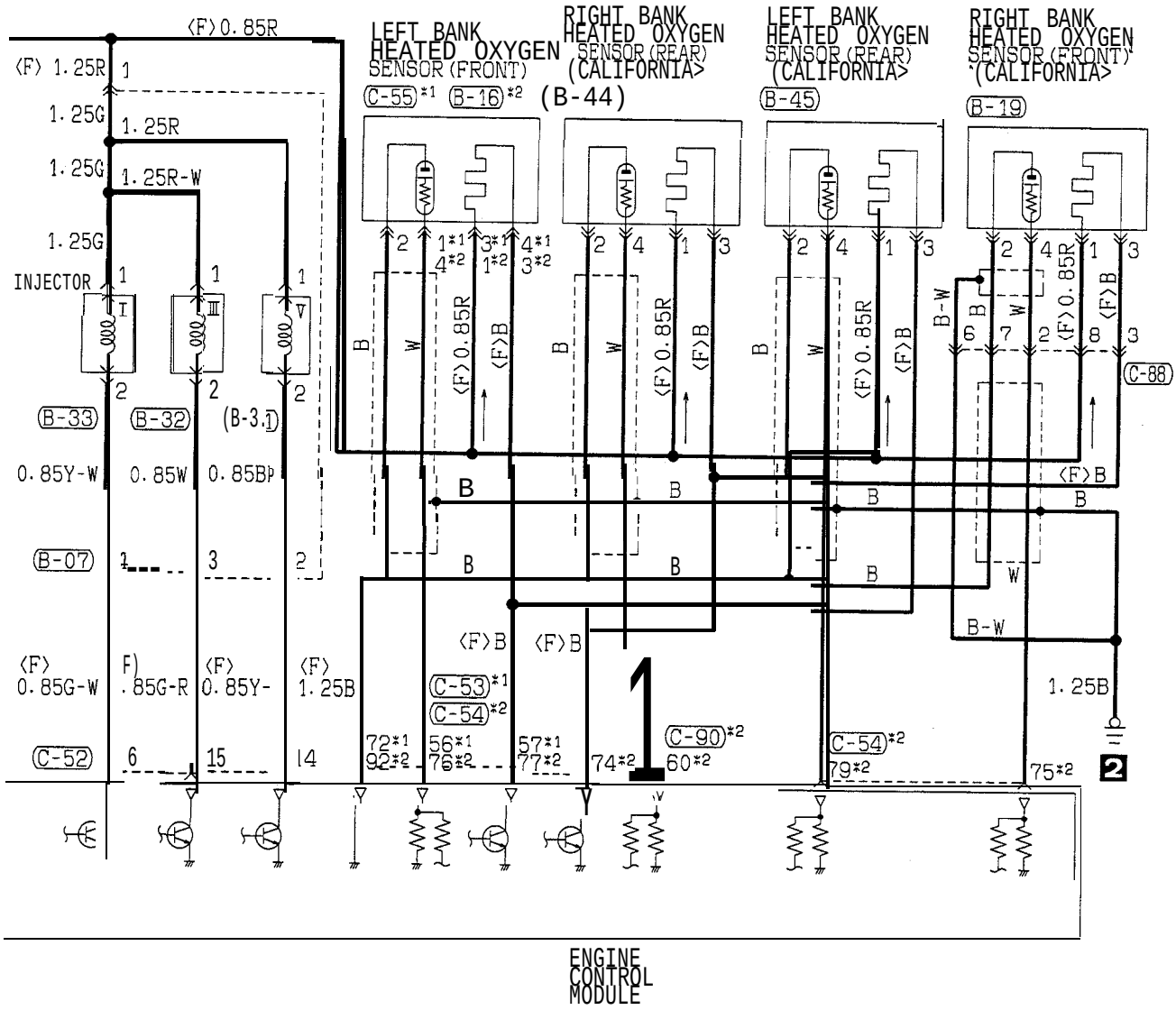
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TSB Revision

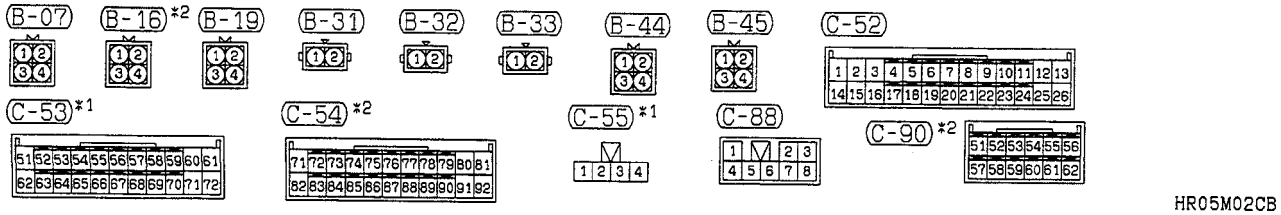
MFI CIRCUIT (1994 MODELS) <NON TURBO> (CONTINUED)



TSB Revision



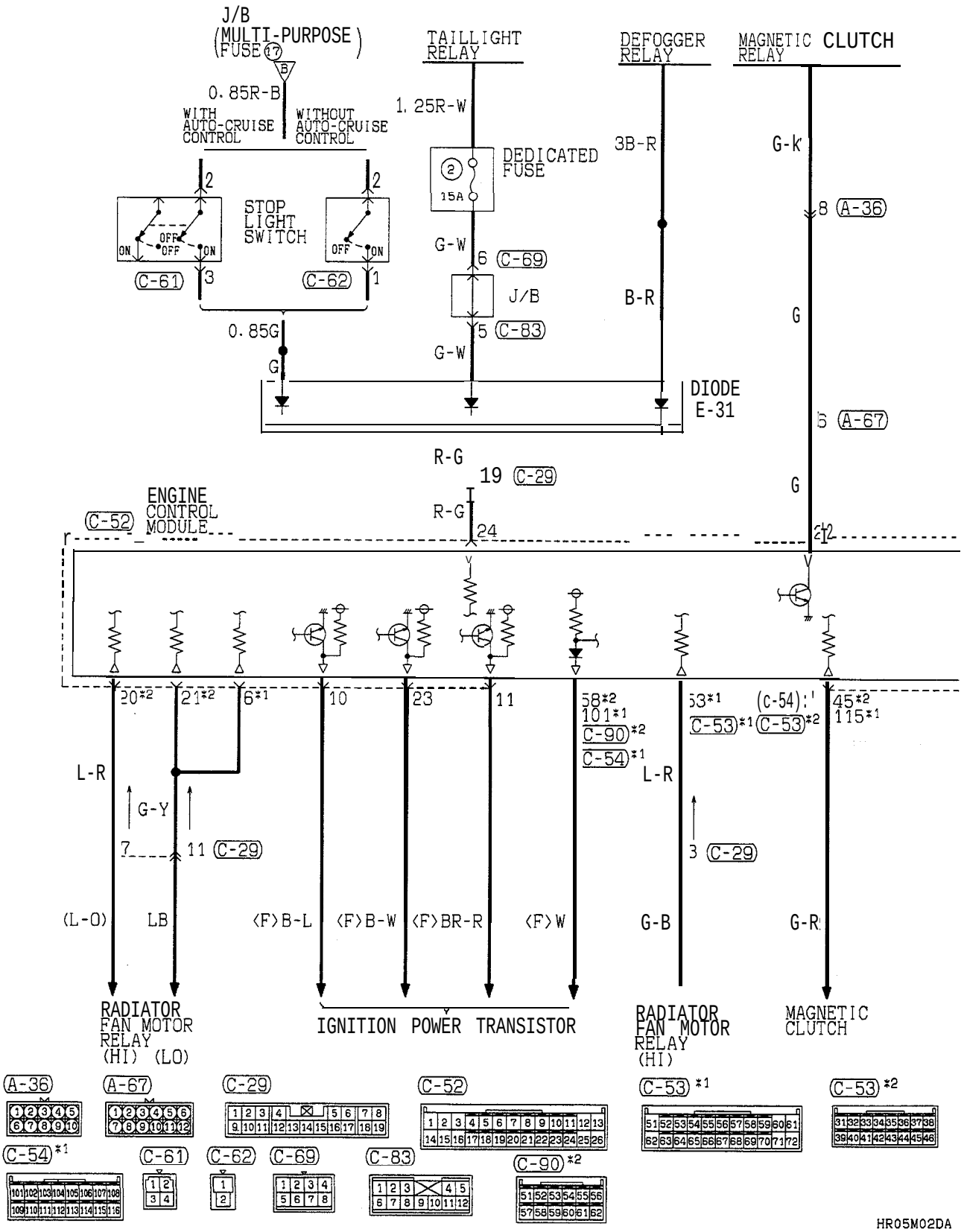
NOTE
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*2: CALIFORNIA



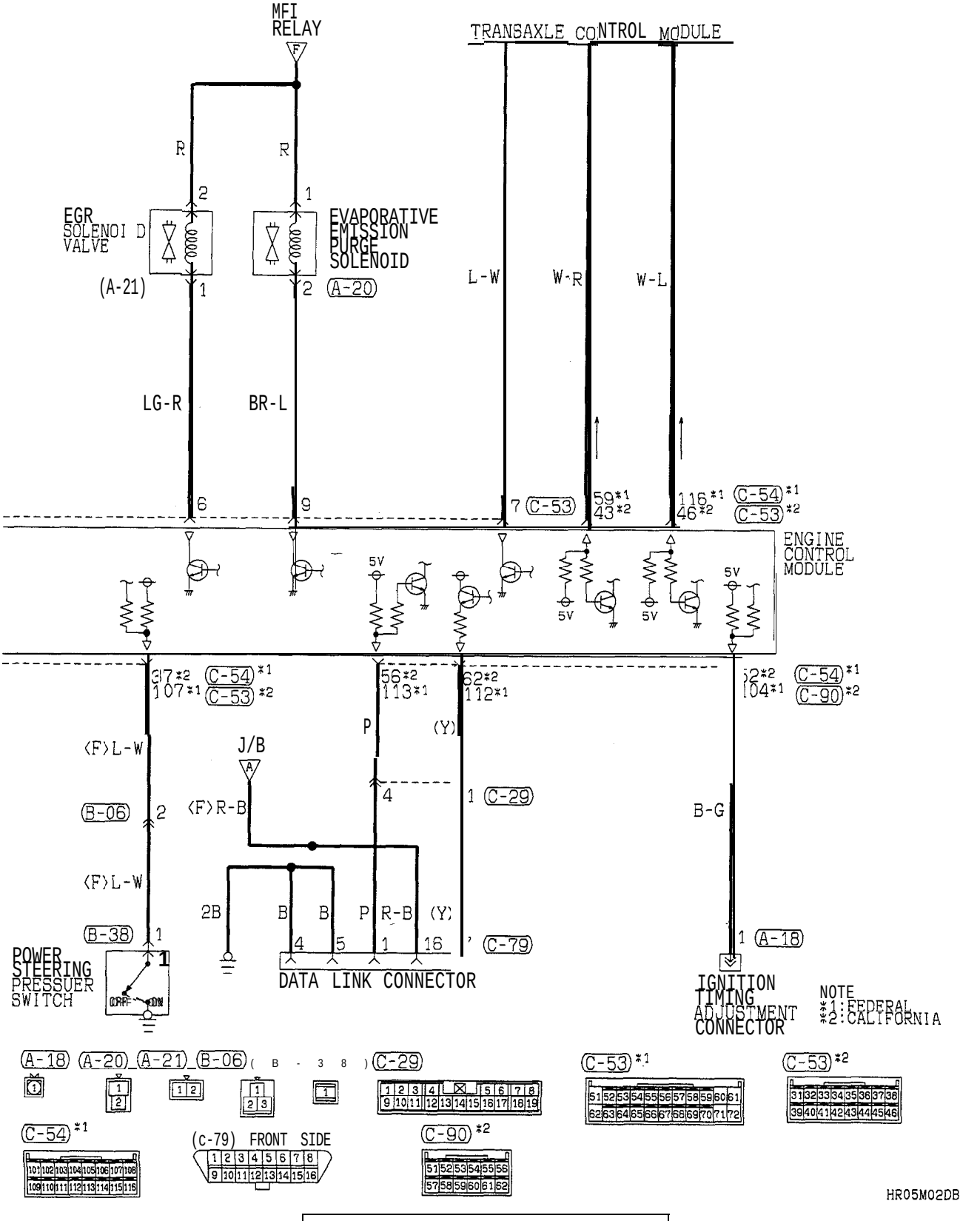
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TSB Revision

MFI CIRCUIT (1994 MODELS) <NON TURBO> (CONTINUED)



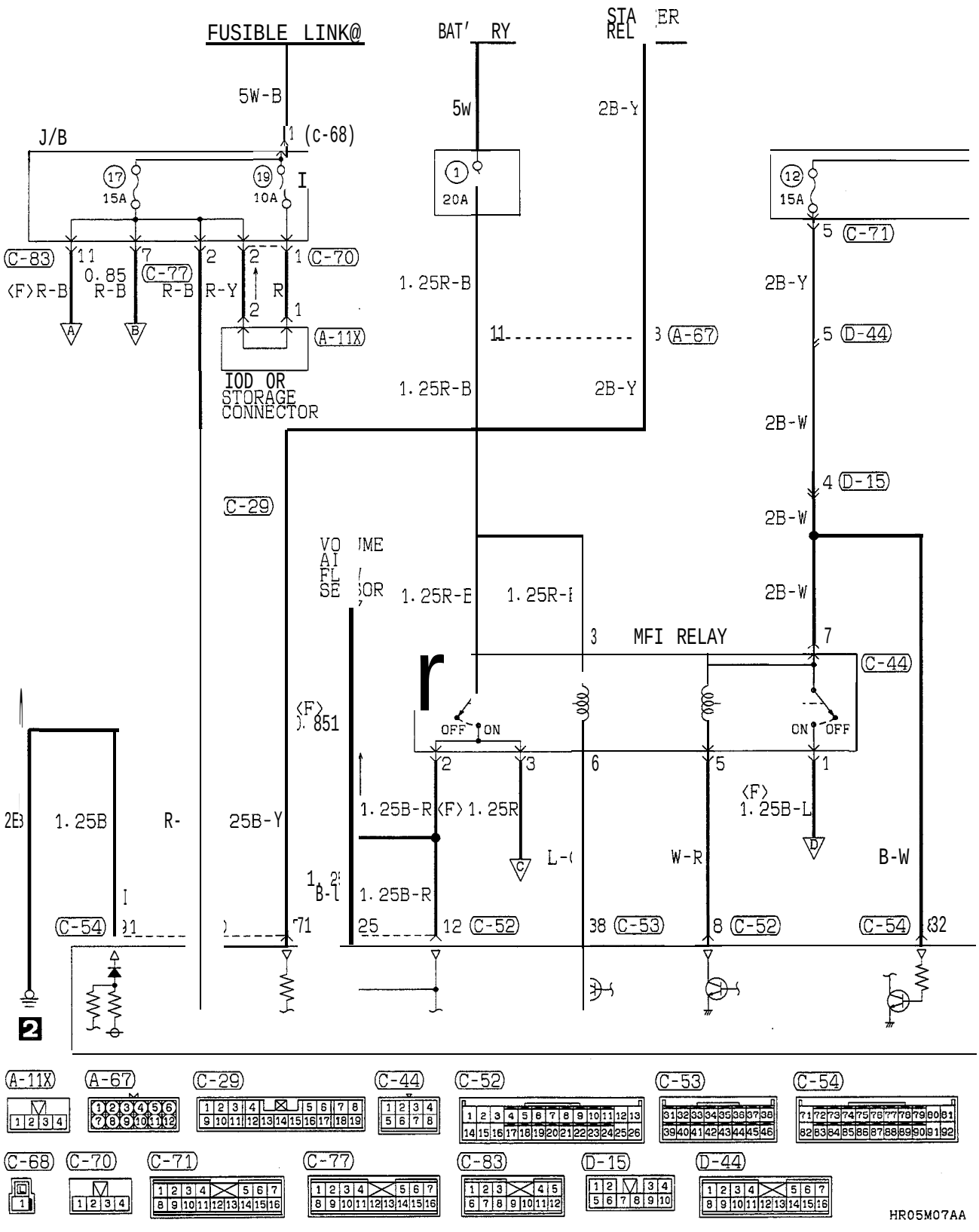
TSB Revision



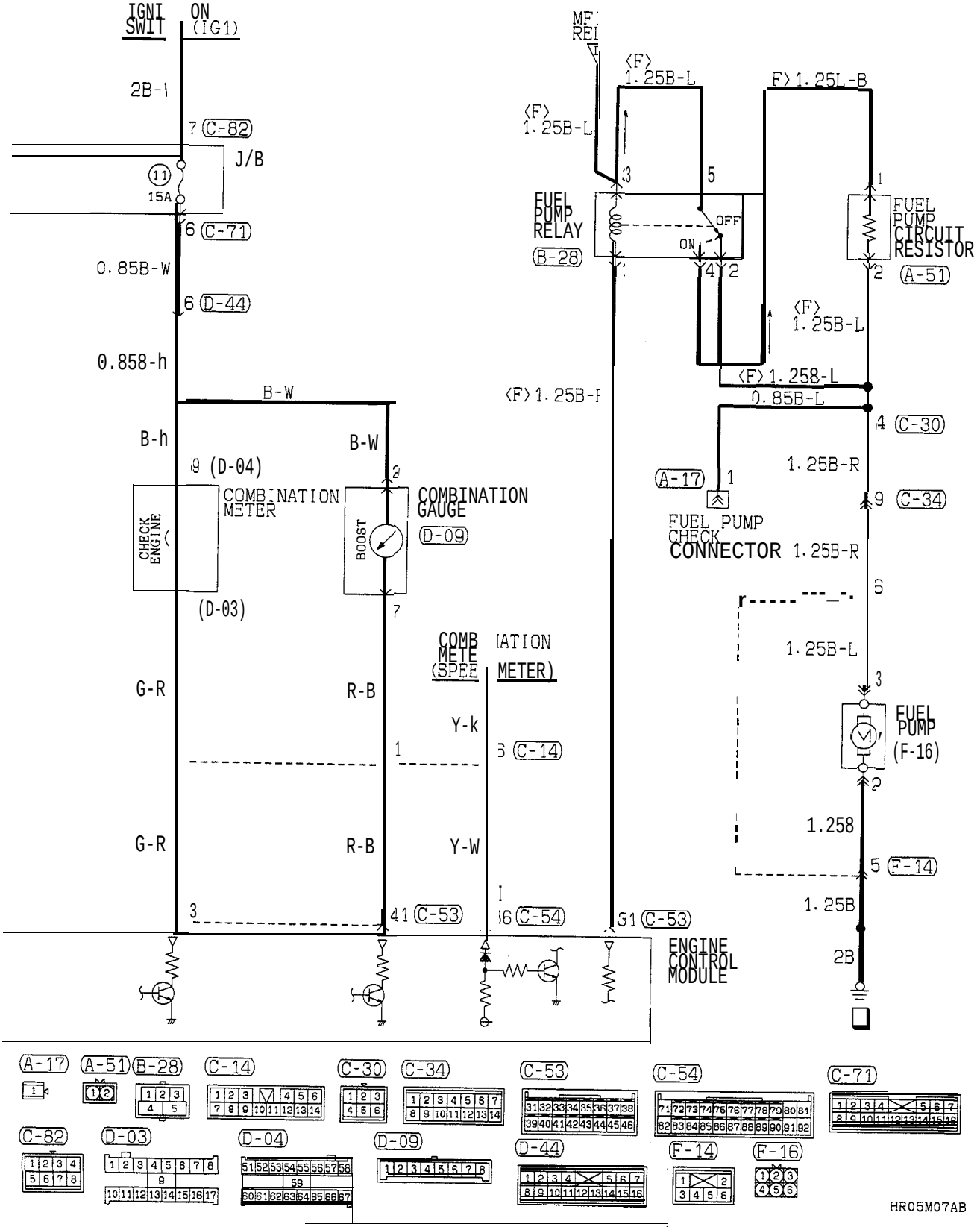
TSB Revision

MFI CIRCUIT (1994 MODELS)

<TURBO>

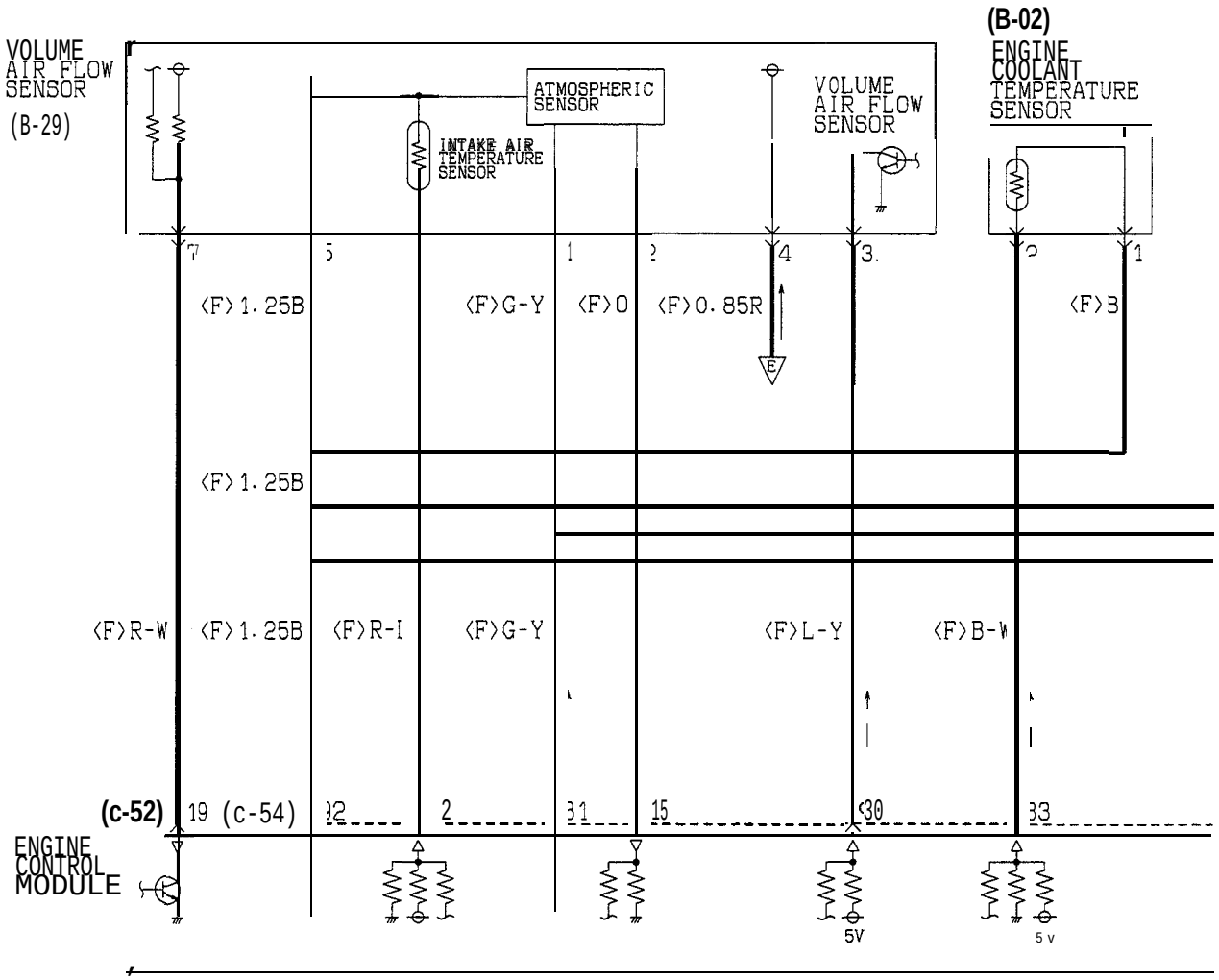


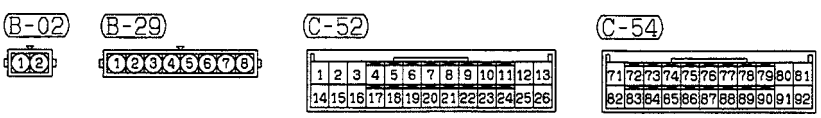
TSB Revision



TSB Revision

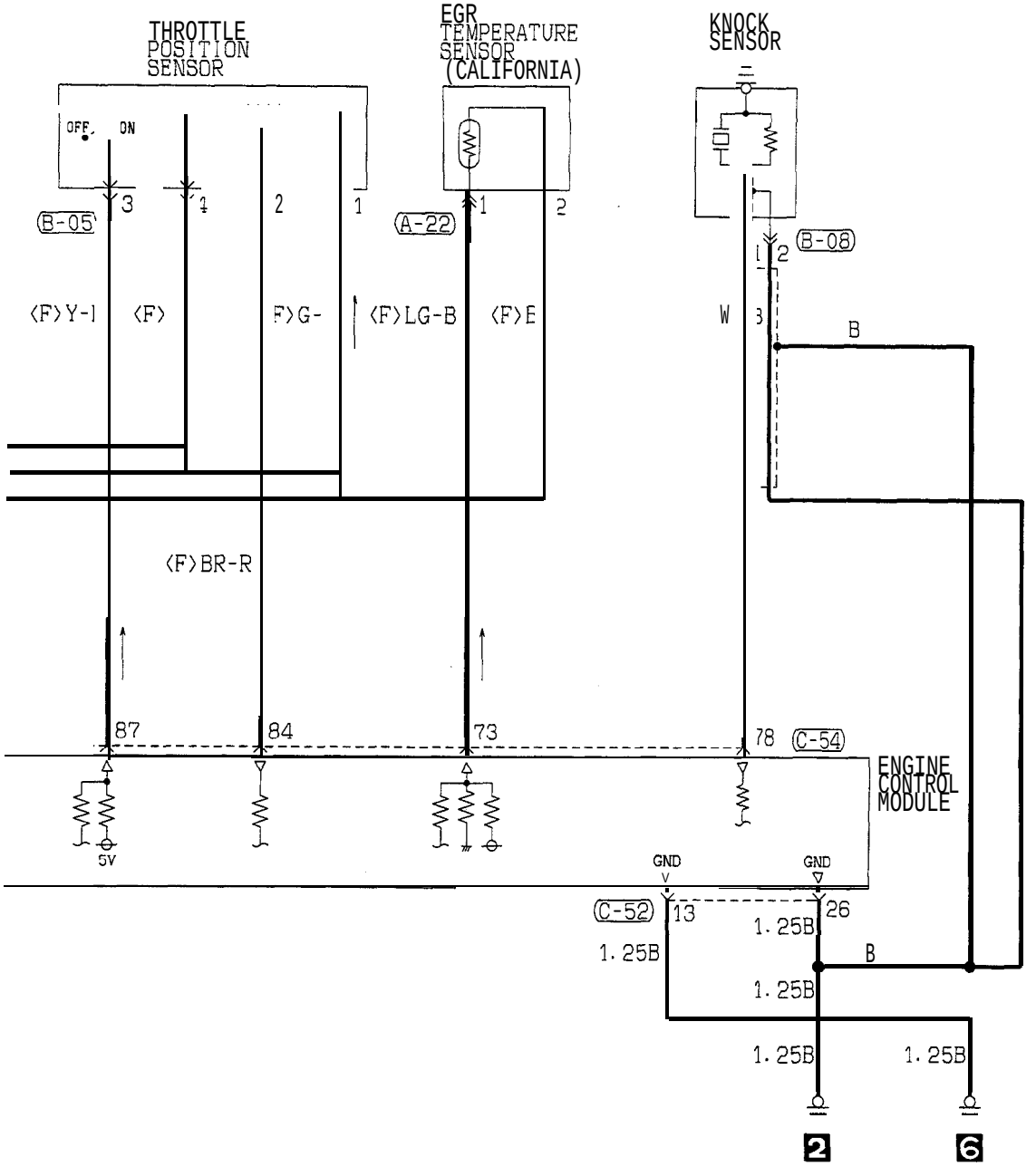
MFI CIRCUIT (1994 MODELS) <TURBO> (CONTINUED)



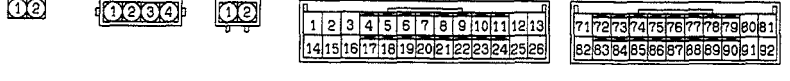


HR05M07BA

TSB Revision



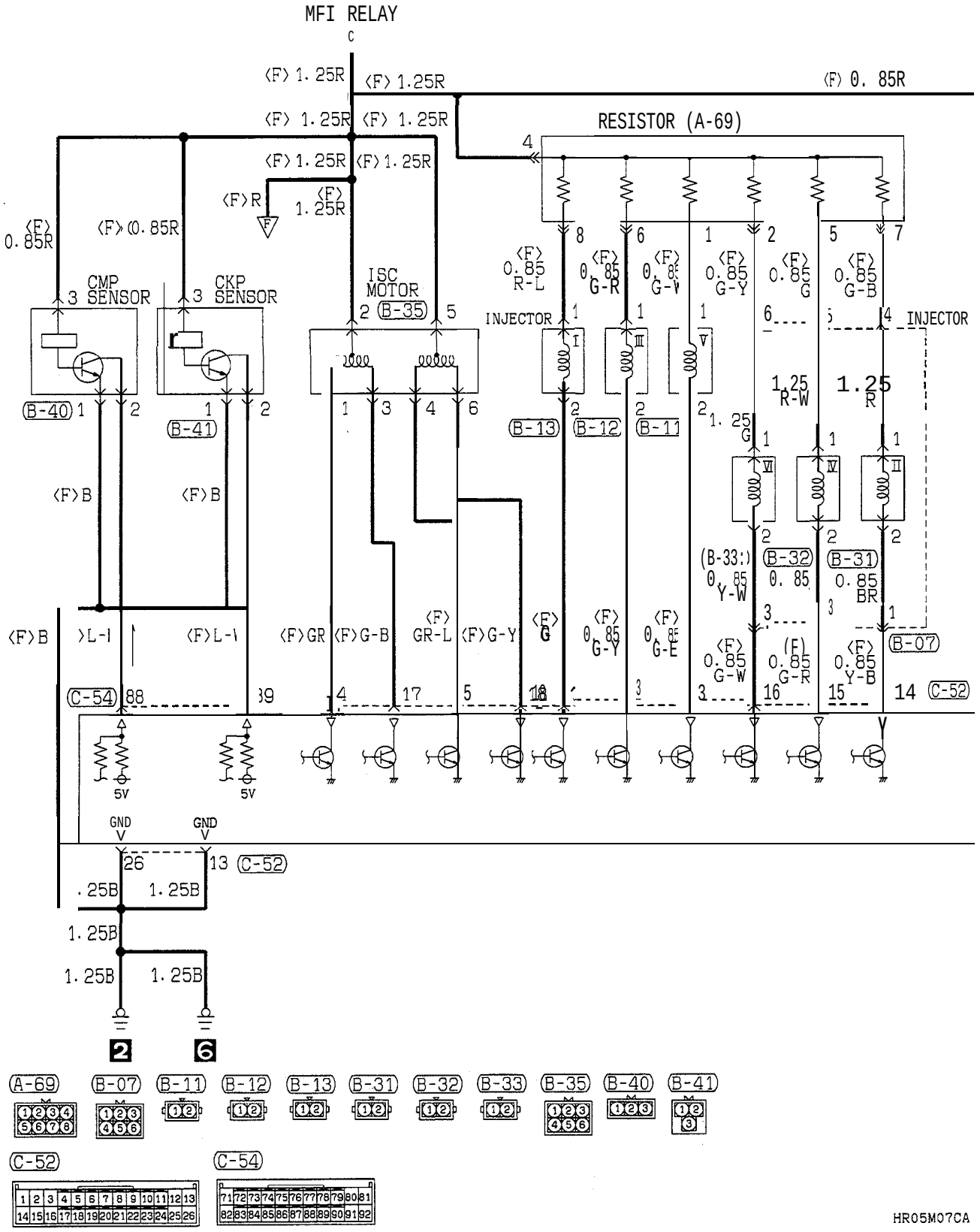
(A-22) (B-05) (B-08) (c-52) C-54



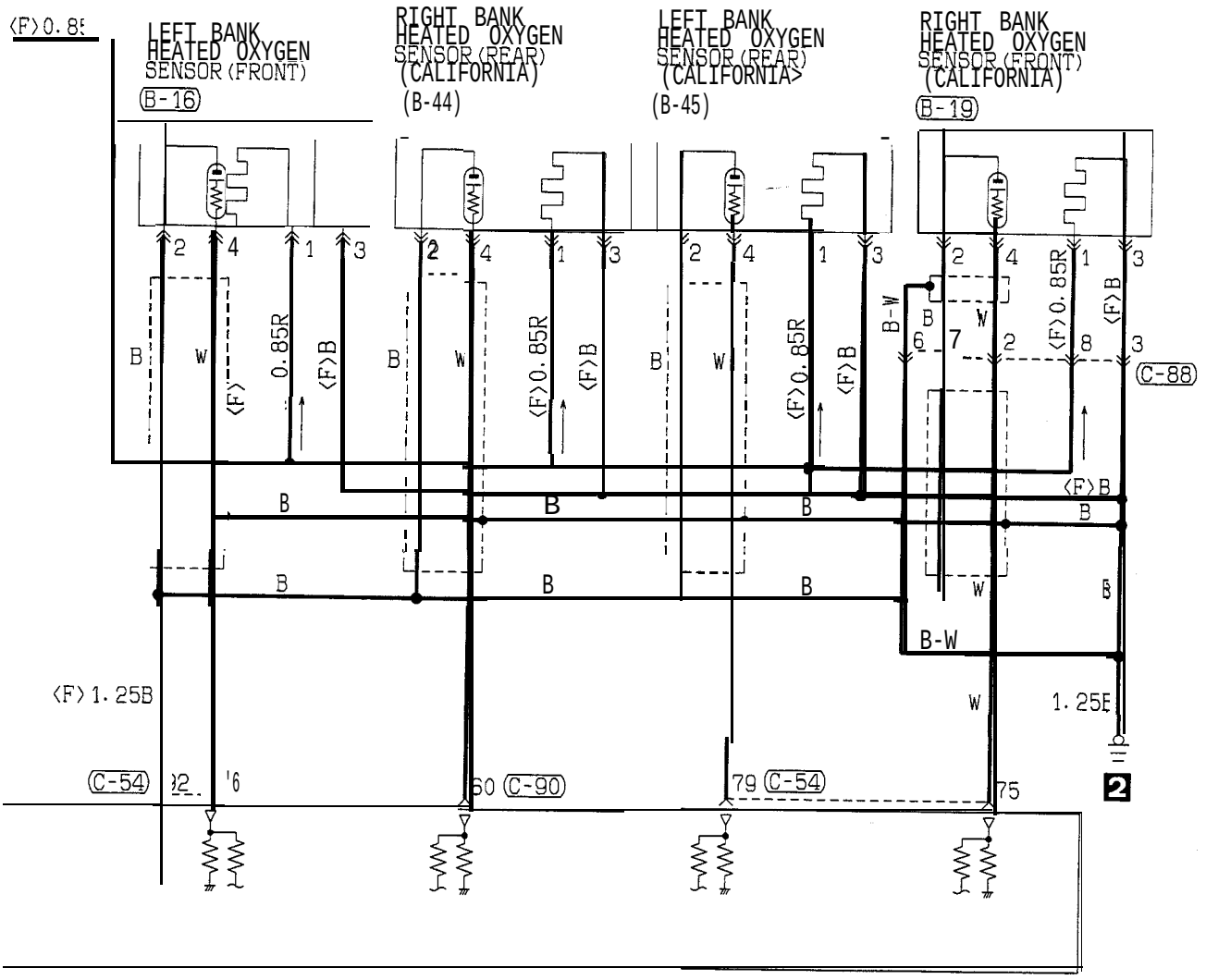
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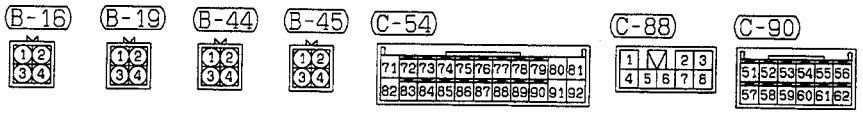
TSB Revision

MFI CIRCUIT (1994 MODELS) <TURBO> (CONTINUED)



TSB Revision

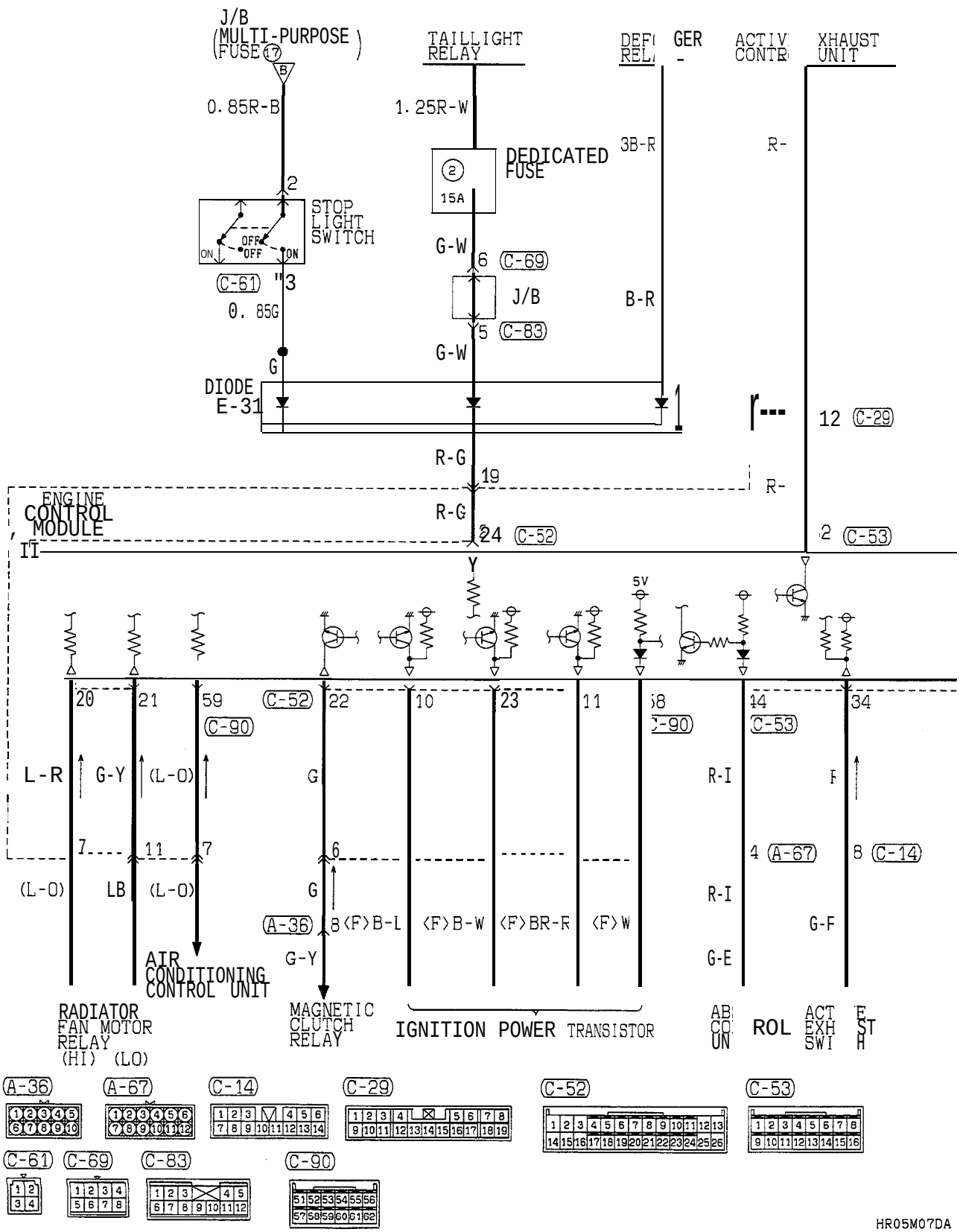




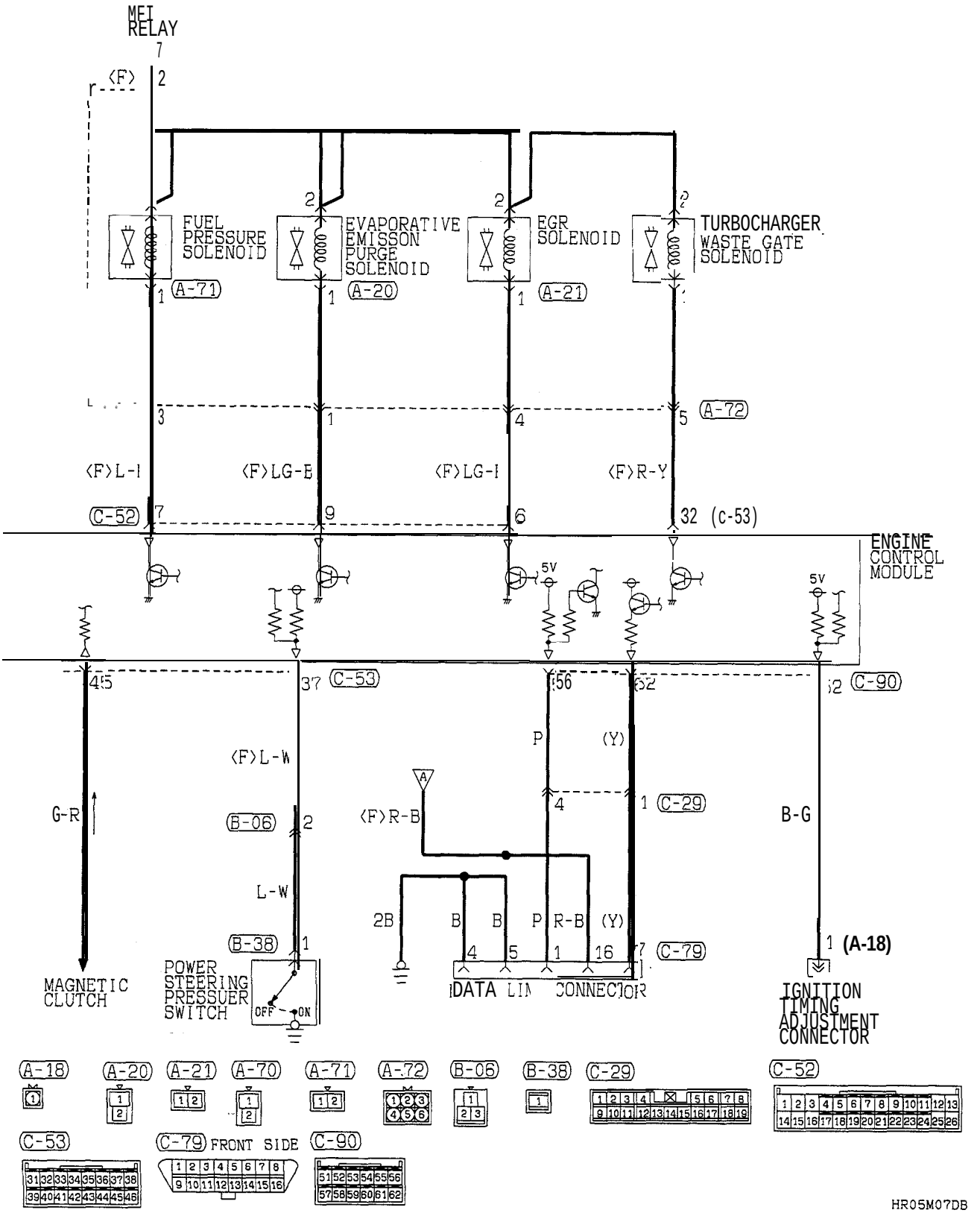
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TSB Revision

MFI CIRCUIT (1994 MODELS) <TURBO> (CONTINUED)



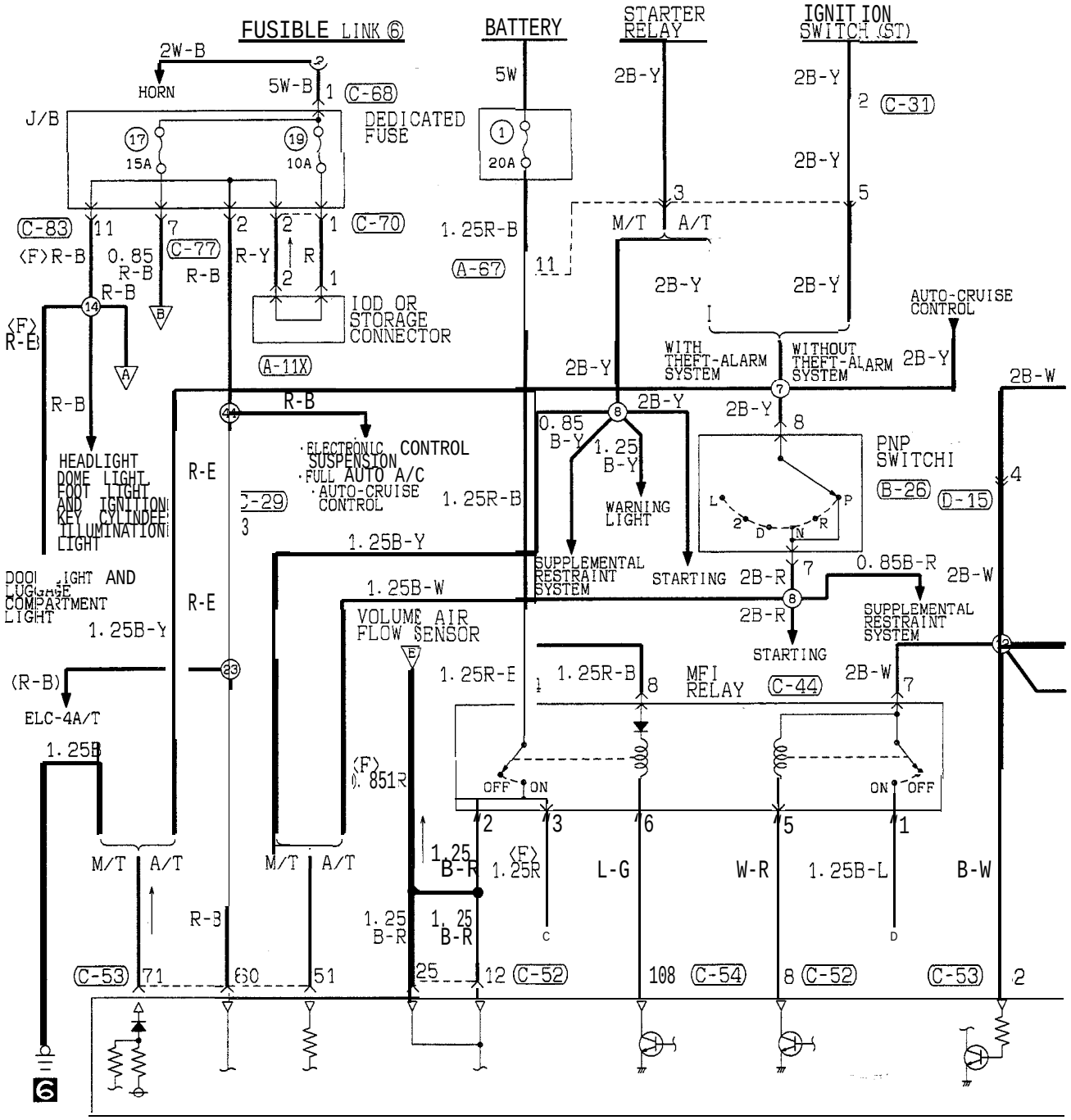
TSB Revision

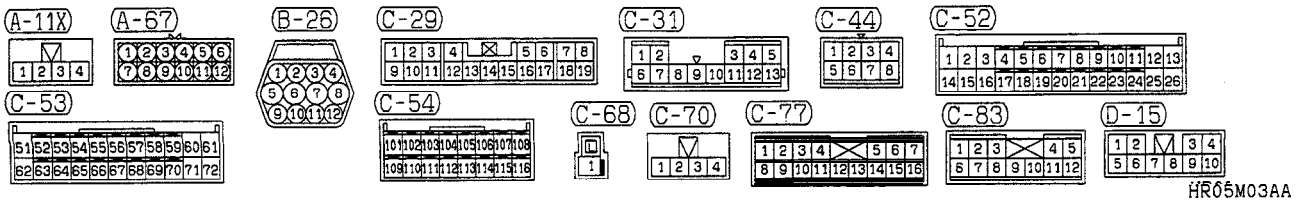


TSB Revision

MFI CIRCUIT (1995 MODELS)

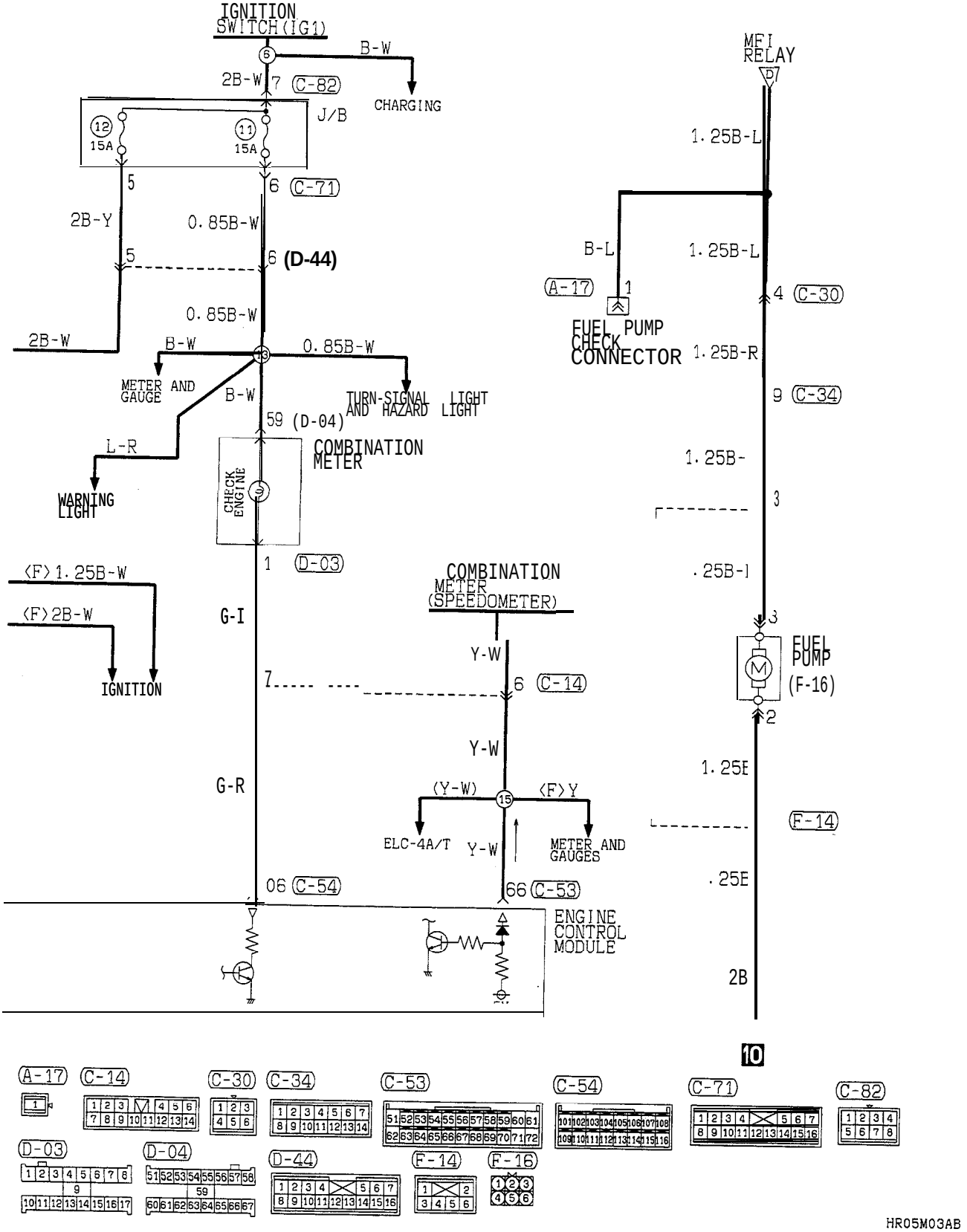
<NON TURBO> (FEDERAL)





HR05M03AA

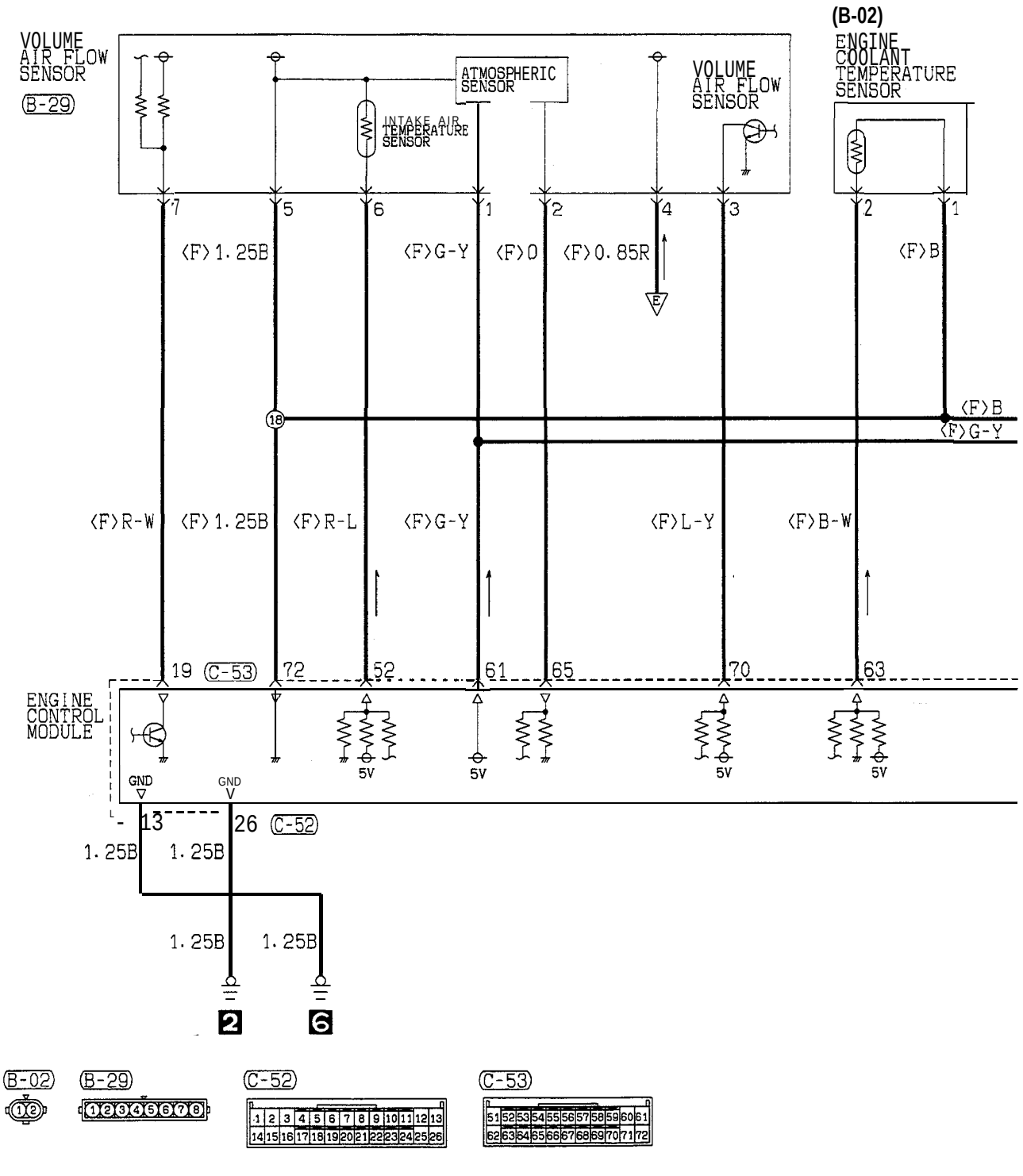
TSB Revision



HR05M03AB

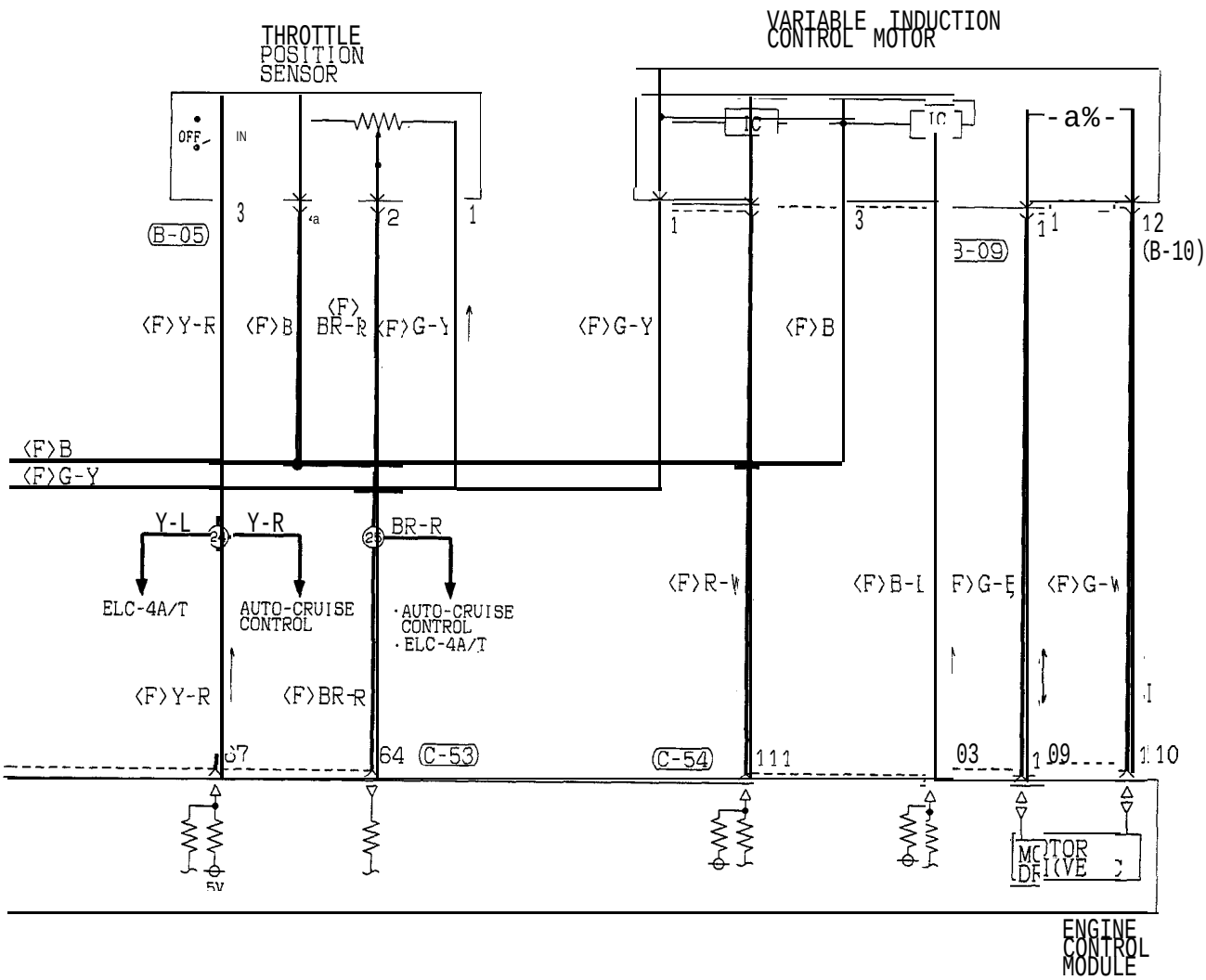
TSB Revision

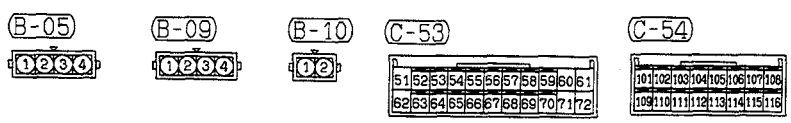
MFI CIRCUIT (1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)



HR05M03BA

TSB Revision

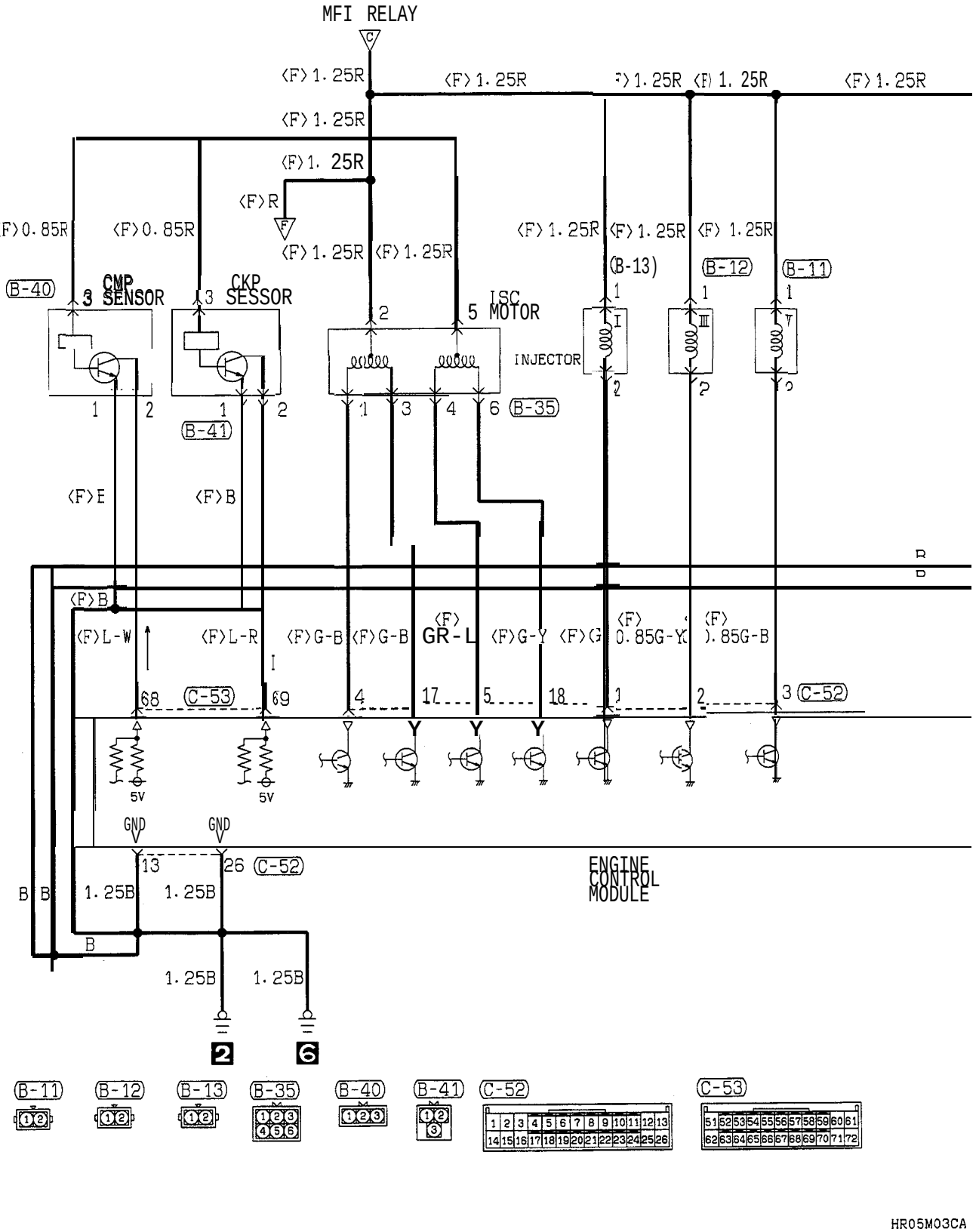




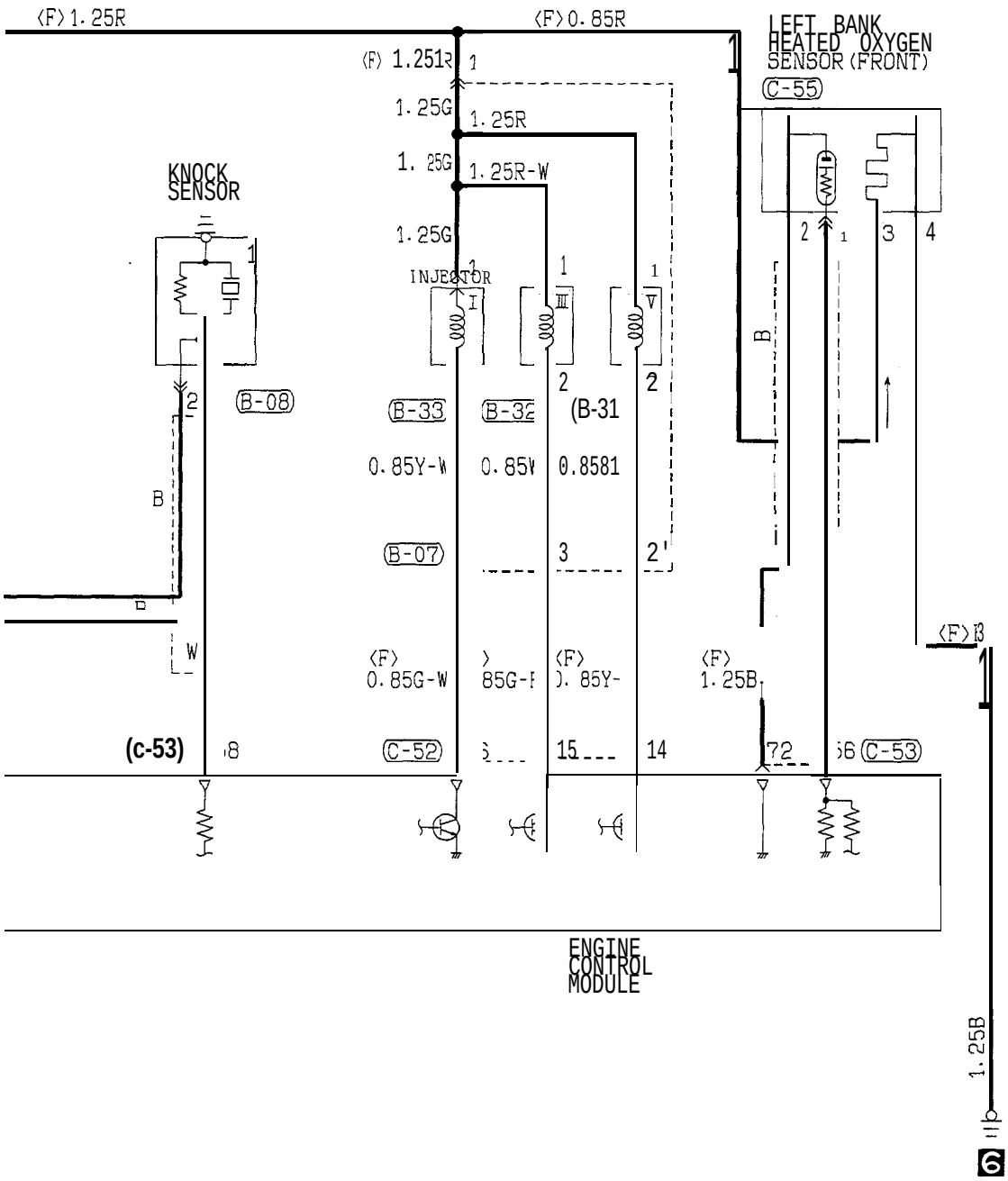
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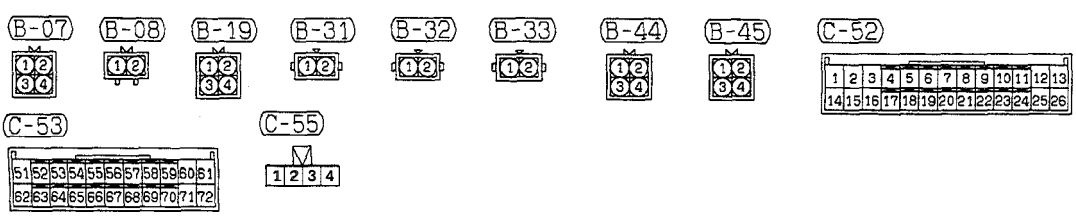
TSB Revision

MFI CIRCUIT (1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)



TSB Revision

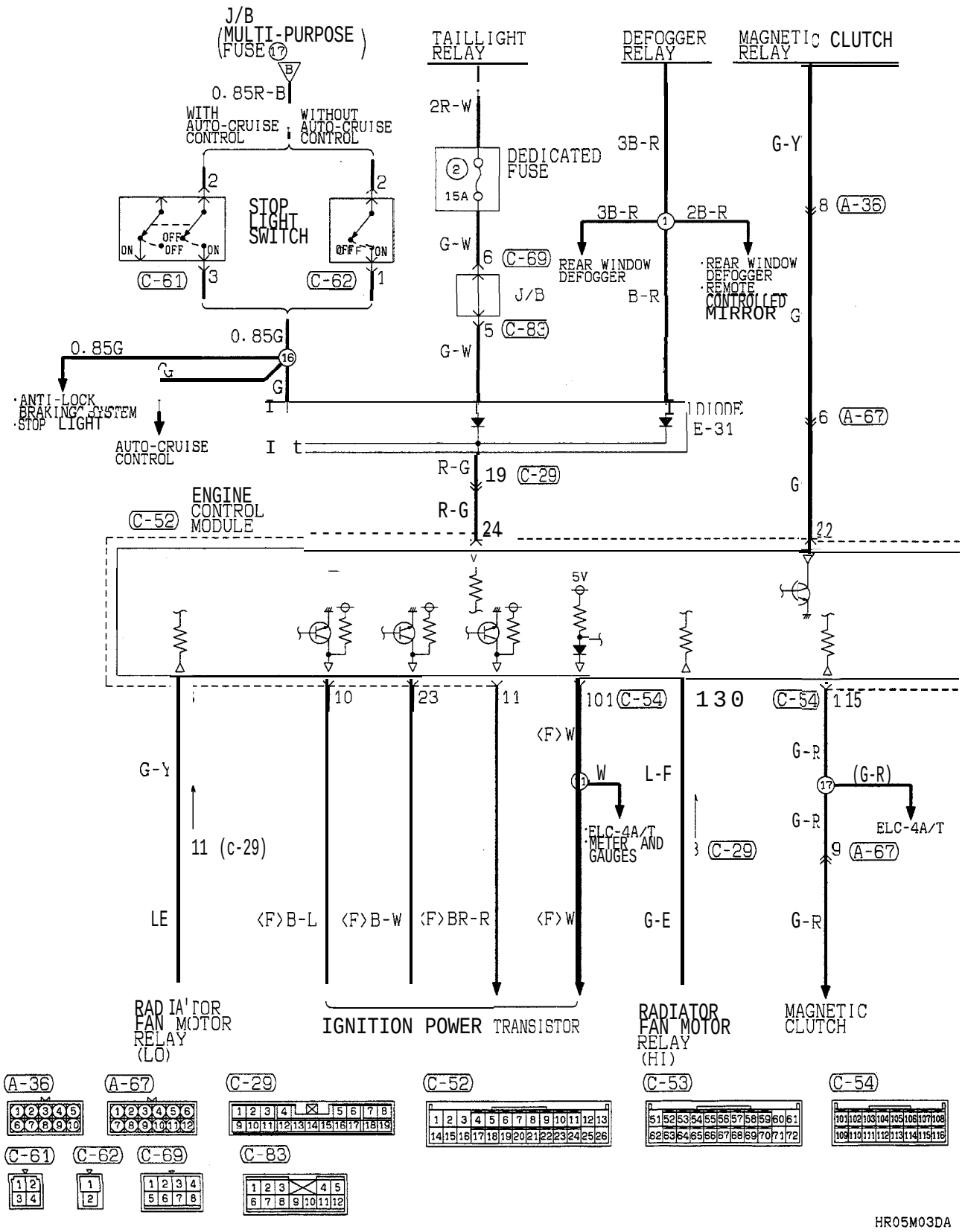




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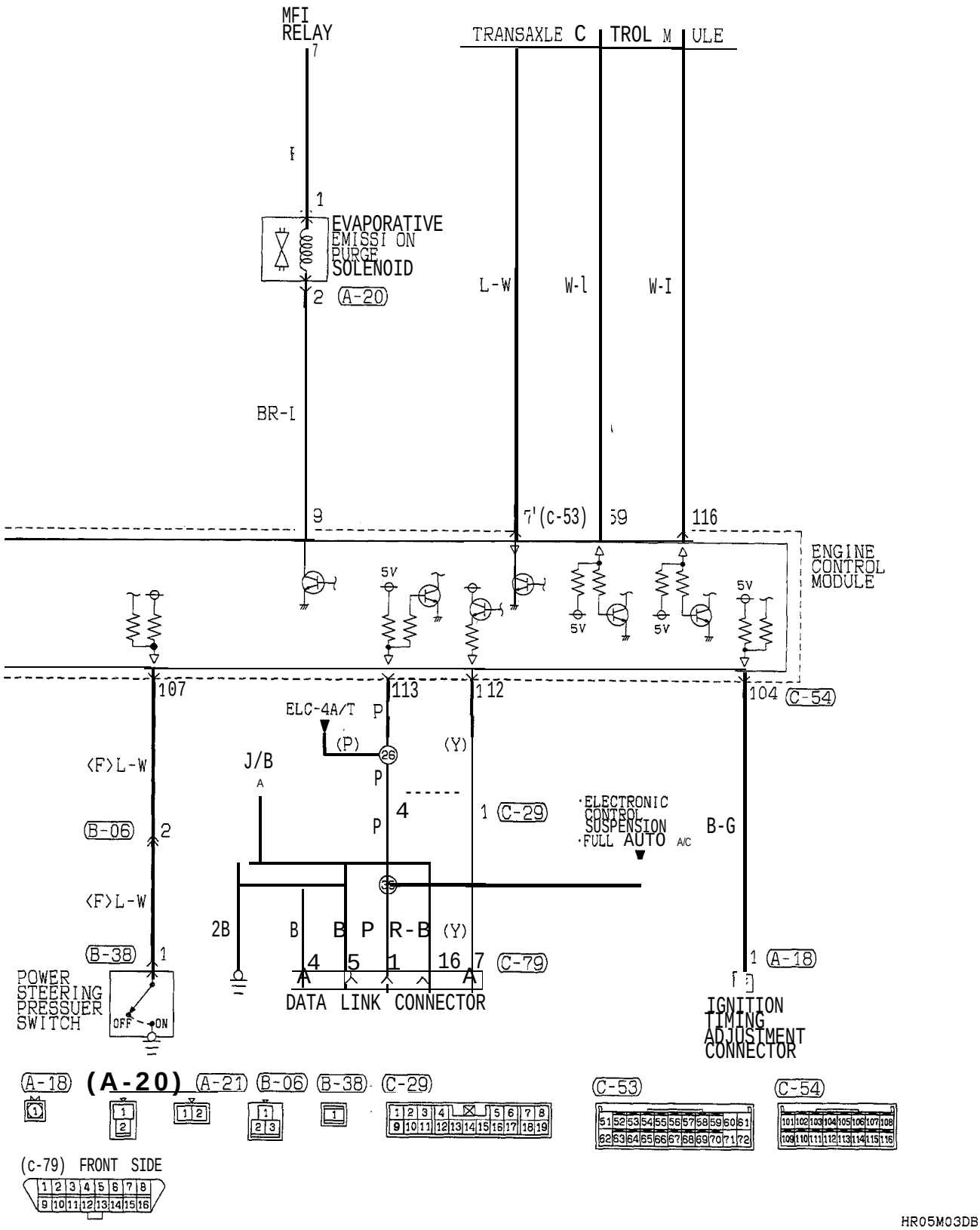
TSB Revision

MFI CIRCUIT (1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)



HR05M03DA

TSB Revision

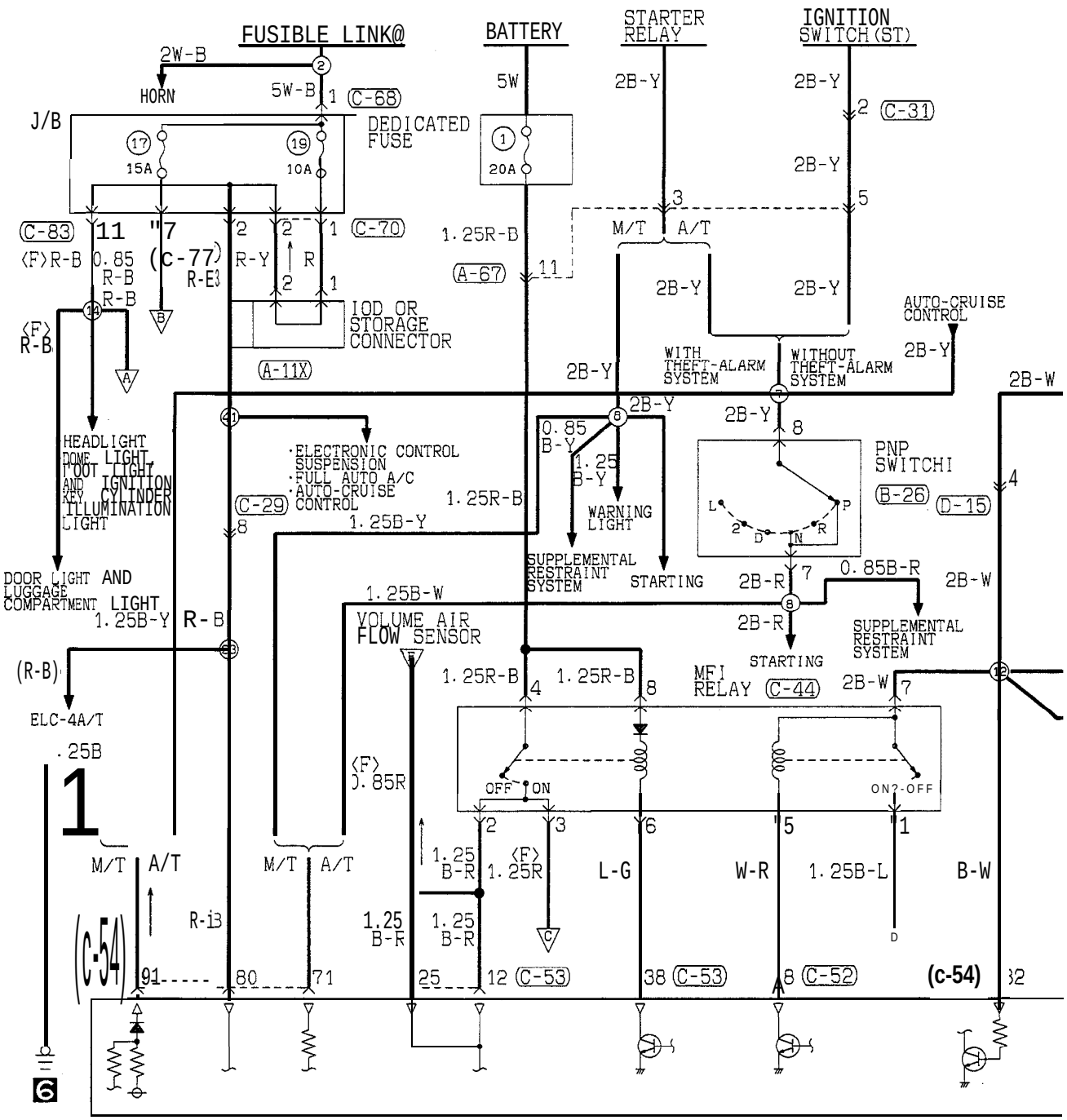


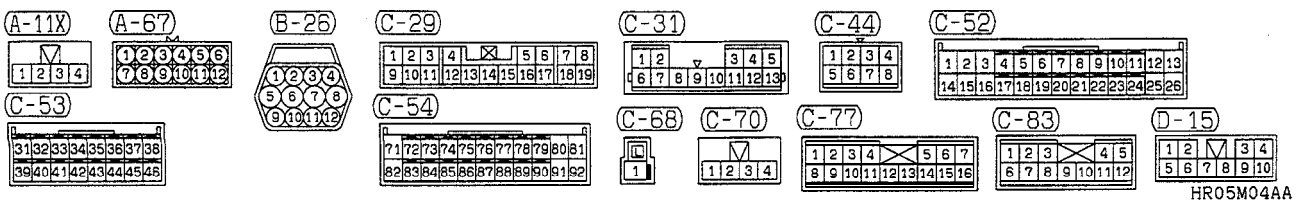
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TSB Revision

MFI CIRCUIT (1995 MODELS)

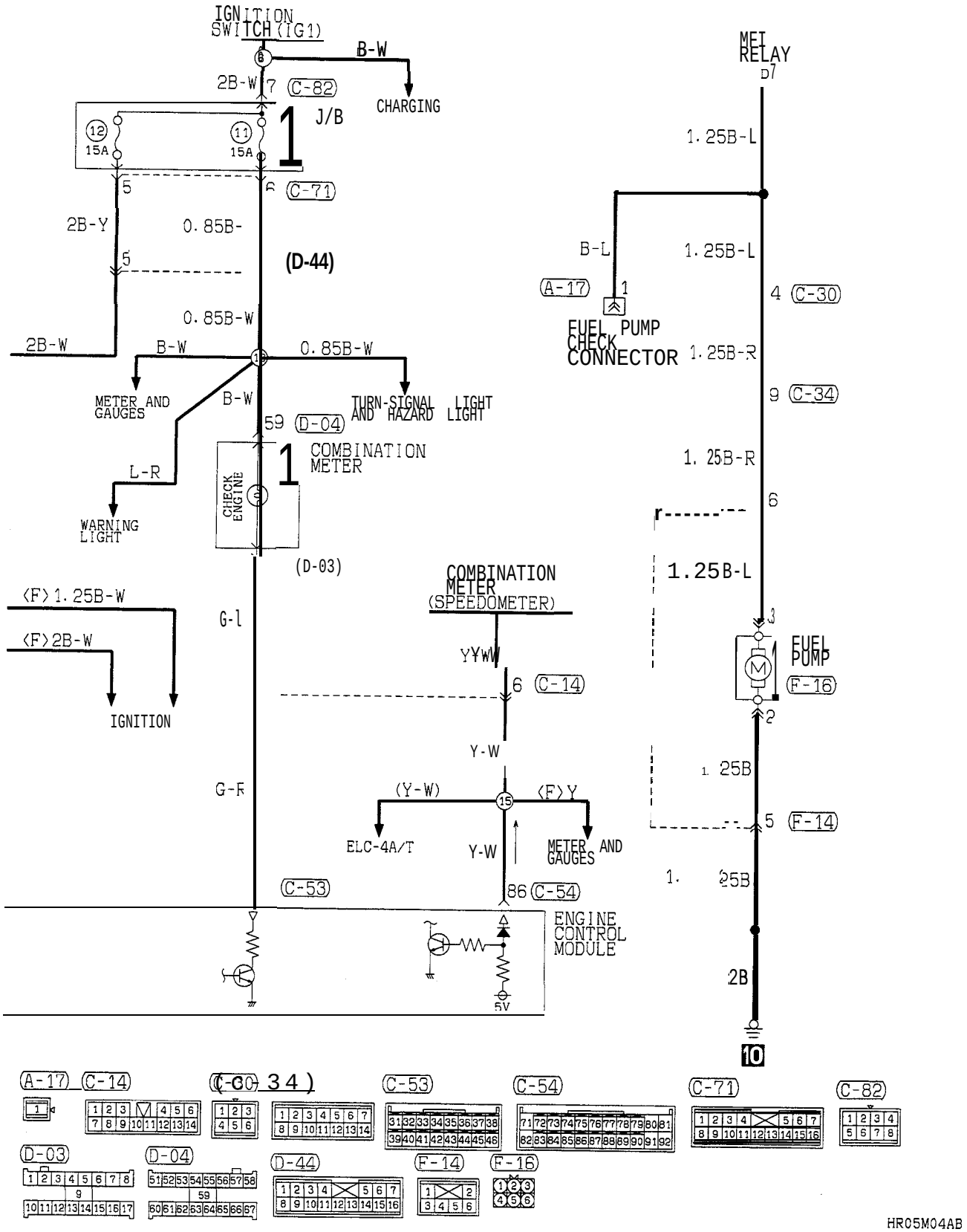
<NON TURBO> (CALIFORNIA)





HR05M04AA

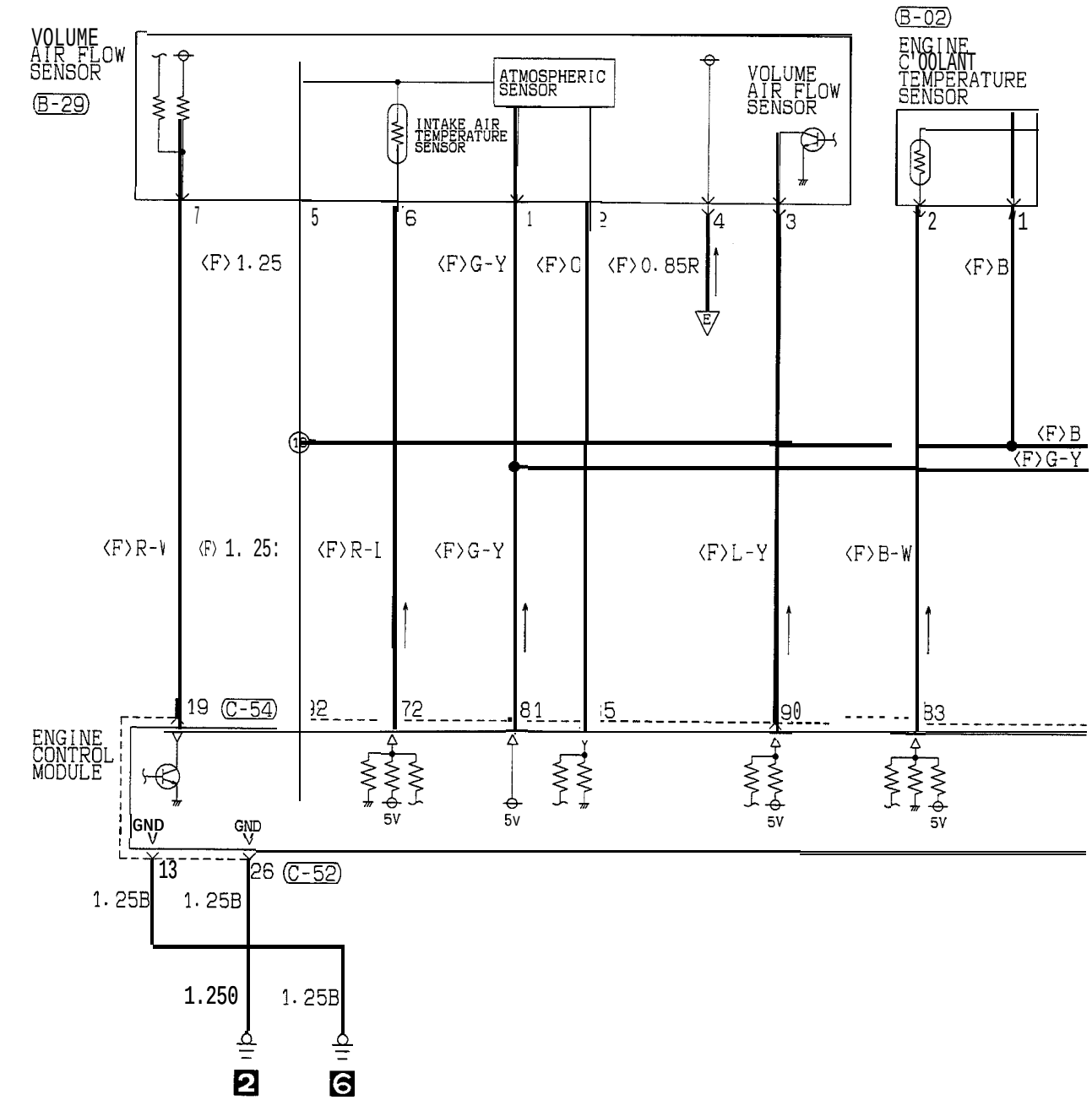
TSB Revision

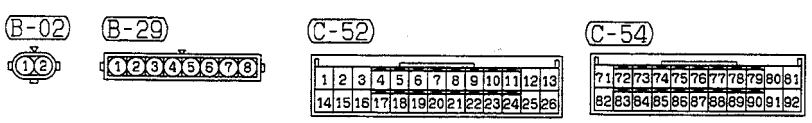


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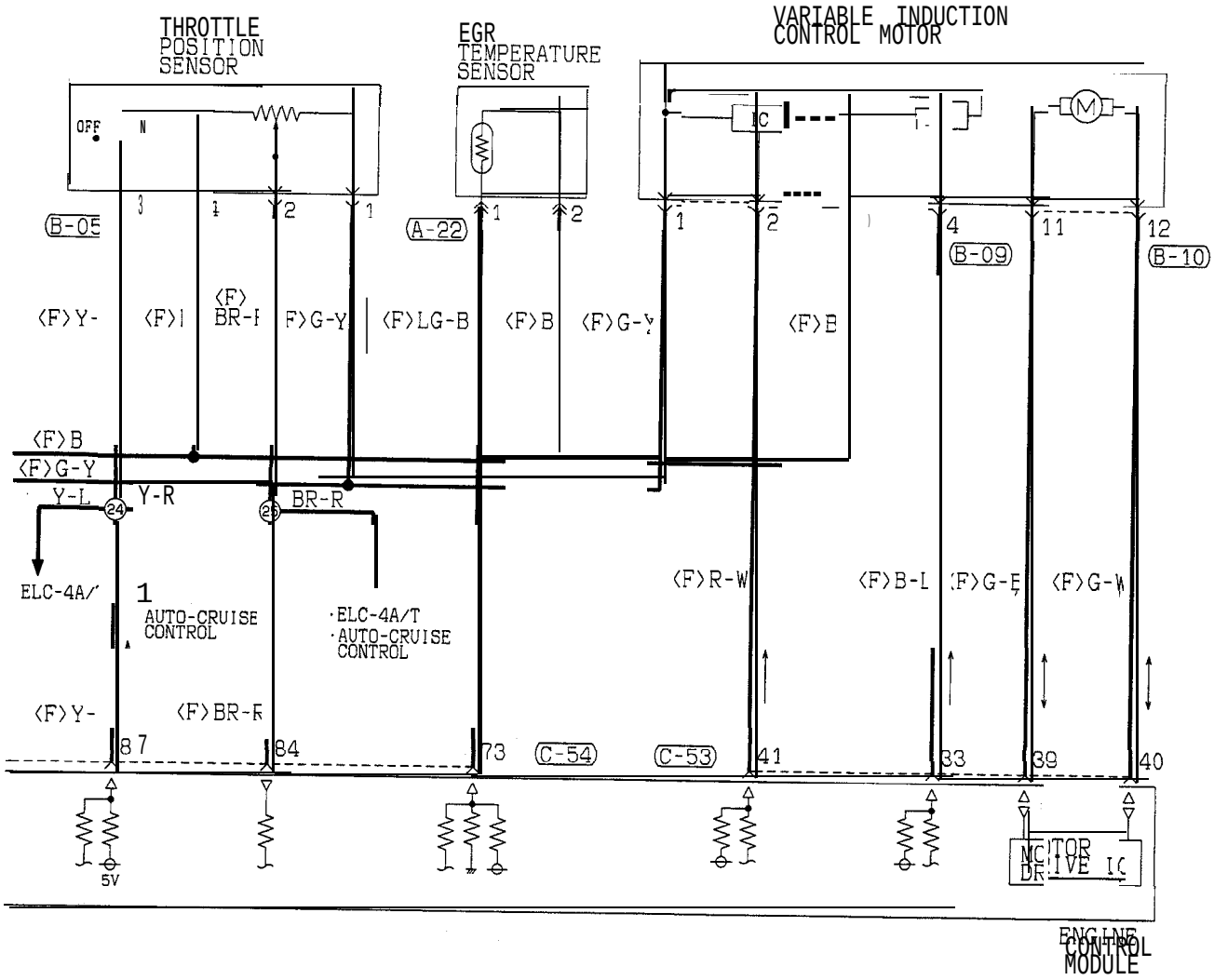
MFI CIRCUIT (1995 MODELS) <NON TURBO> (CALIFORNIA) (CONTINUED)

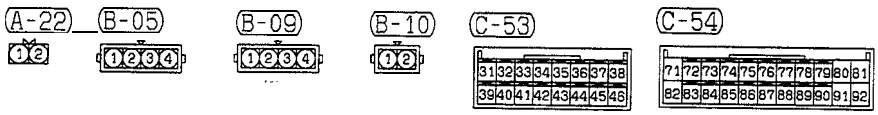




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TSB Revision

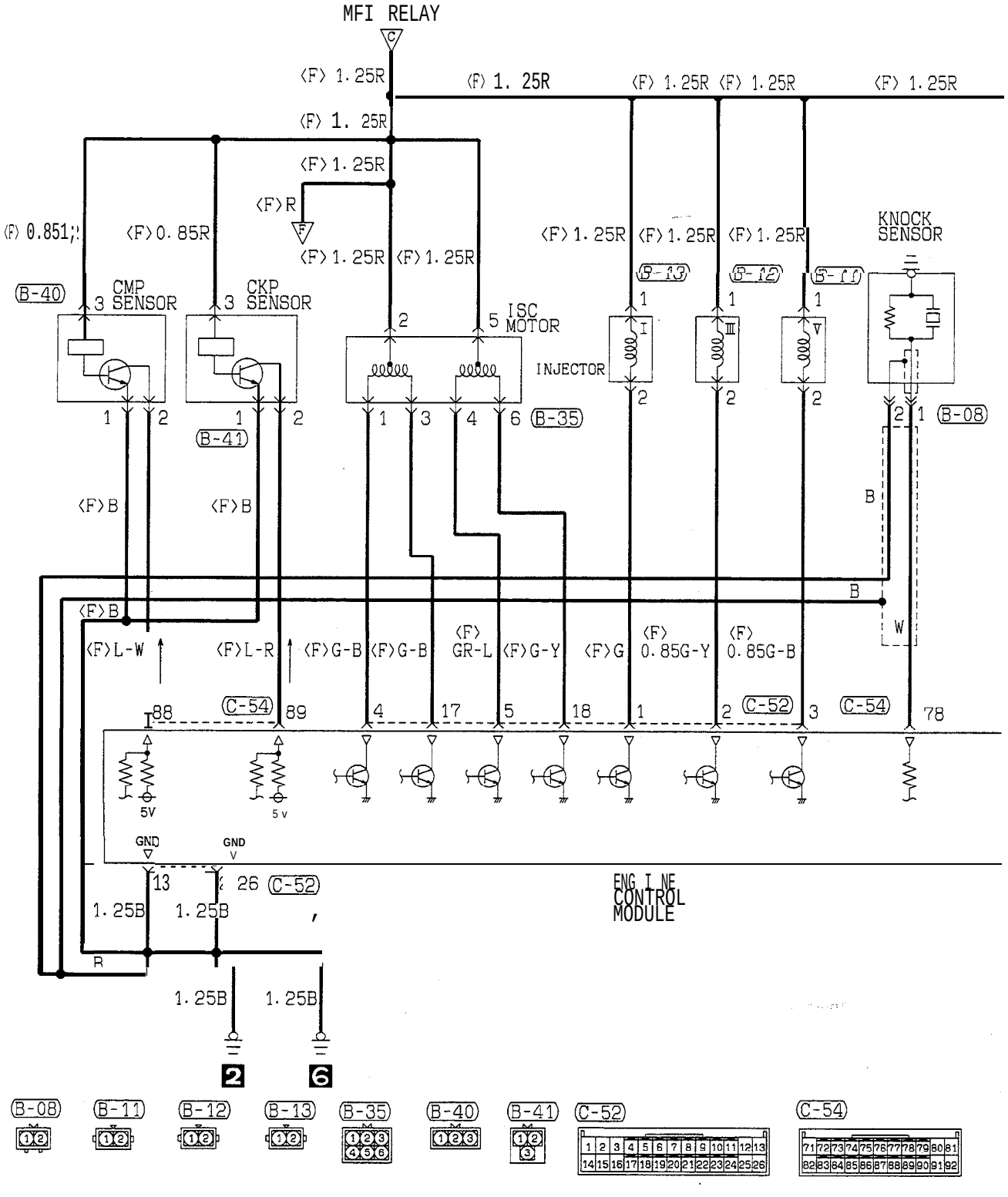




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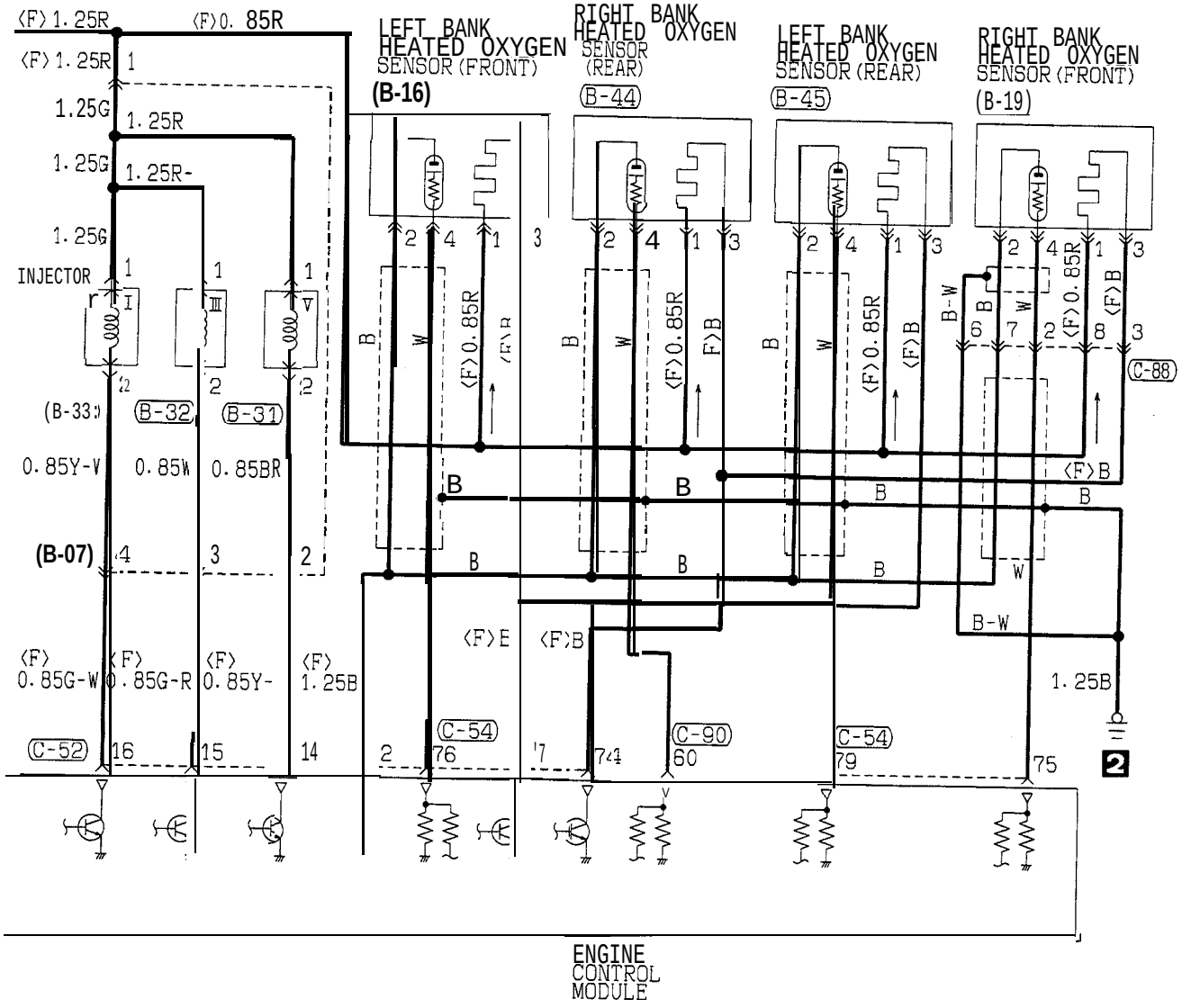
TSB Revision

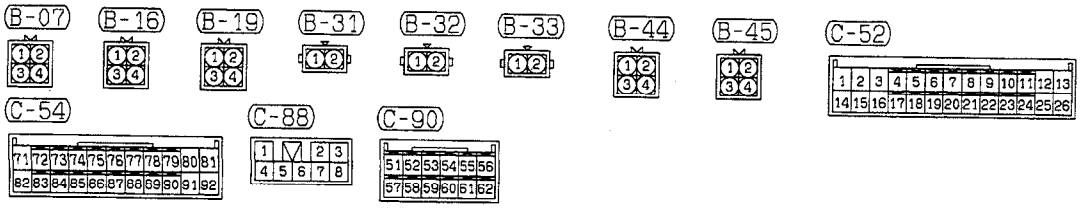
MFI CIRCUIT (1995 MODELS) <NON TURBO> (CALIFORNIA) (CONTINUED)



HR05M04CA

TSB Revision

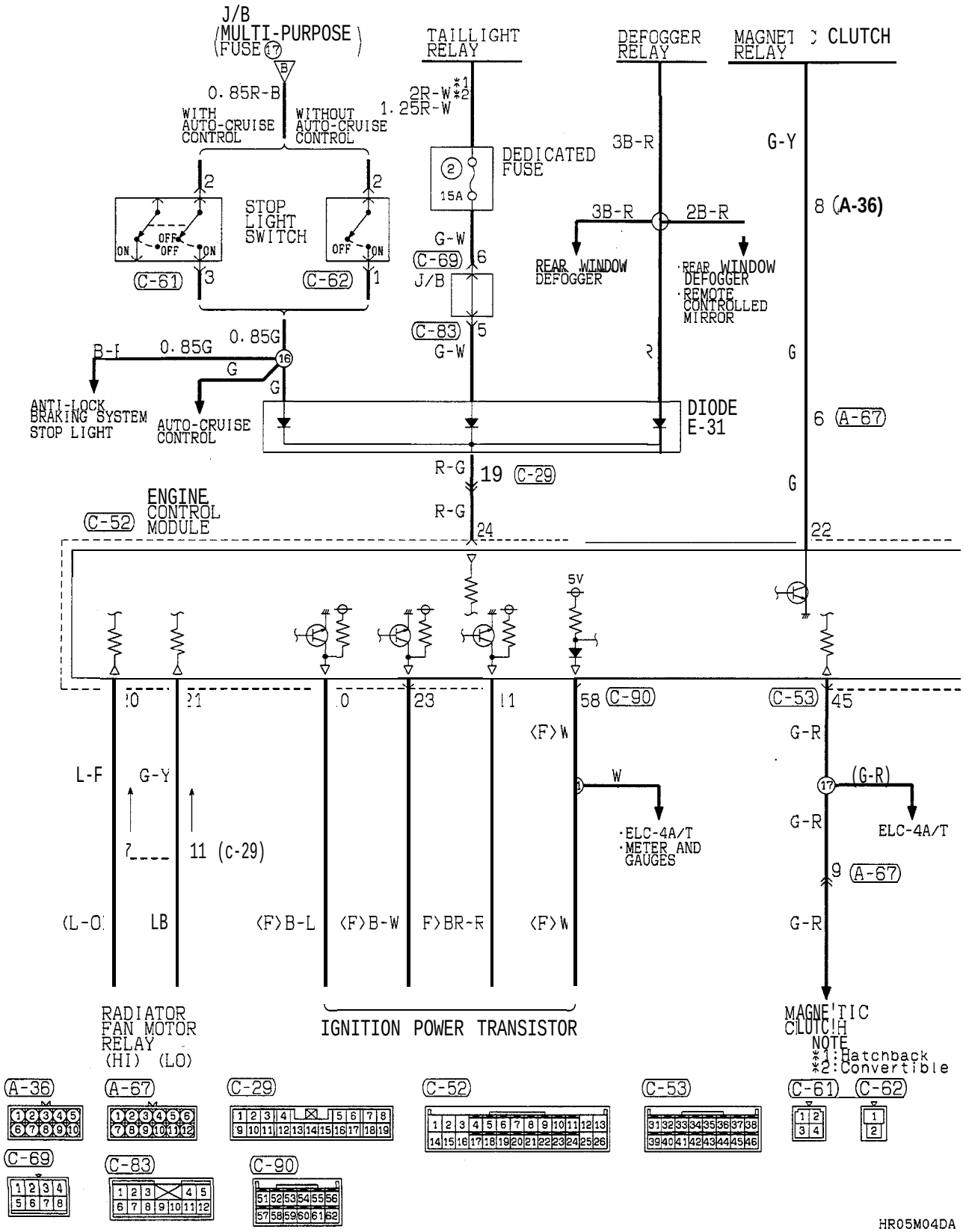




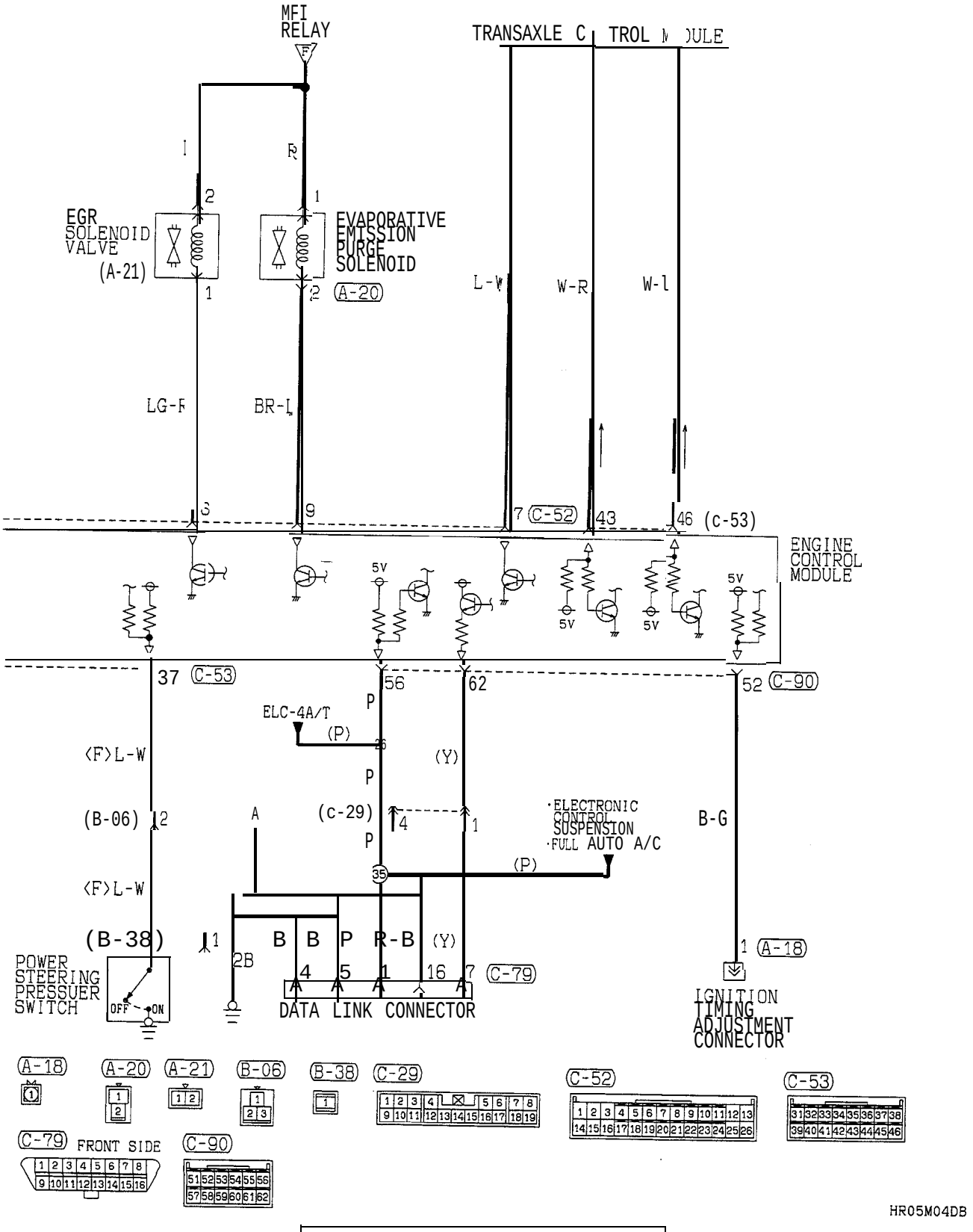
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TSB Revision.

MFI CIRCUIT (1995 MODELS) <NON TURBO> (CALIFORNIA) (CONTINUED)



TSB Revision

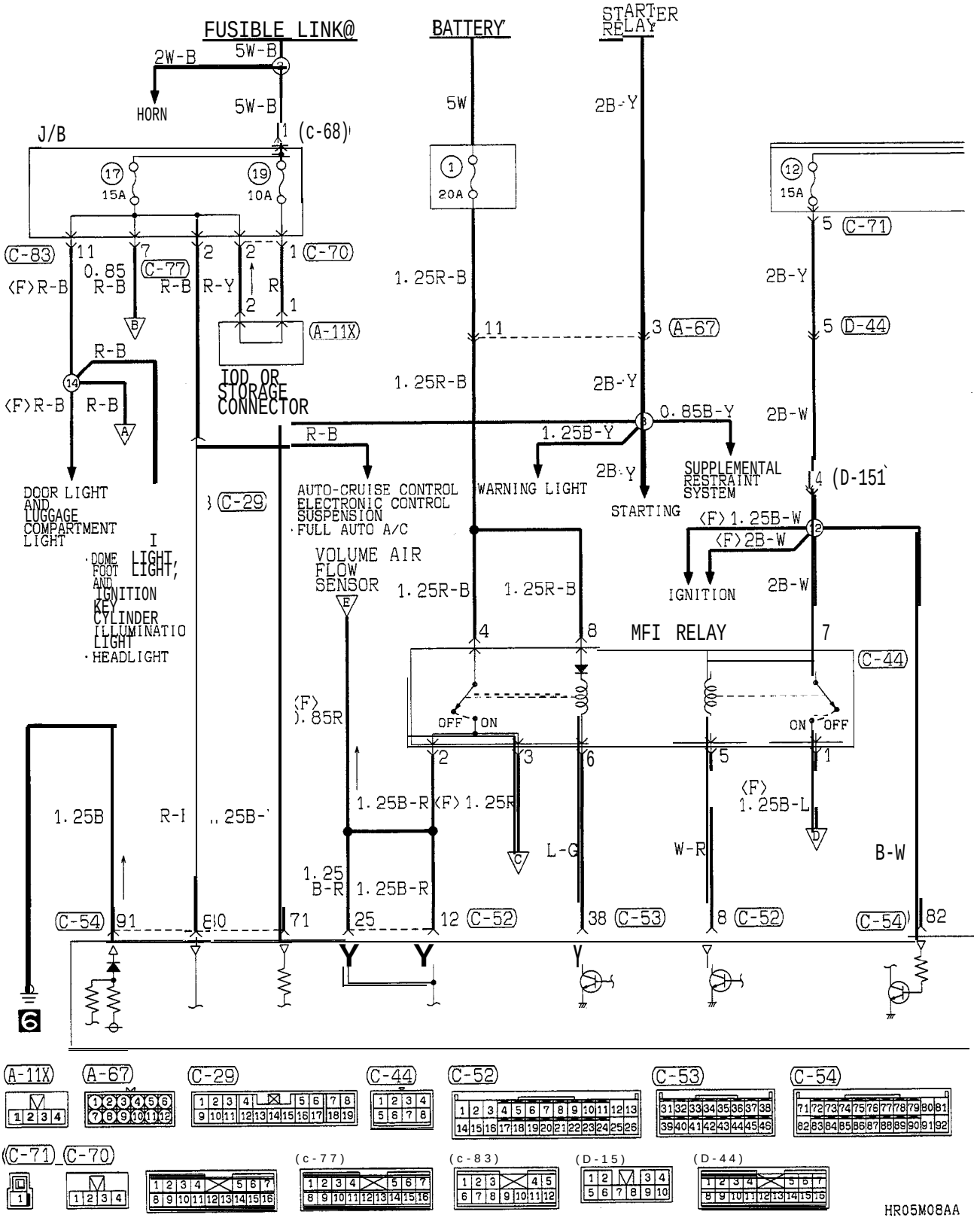


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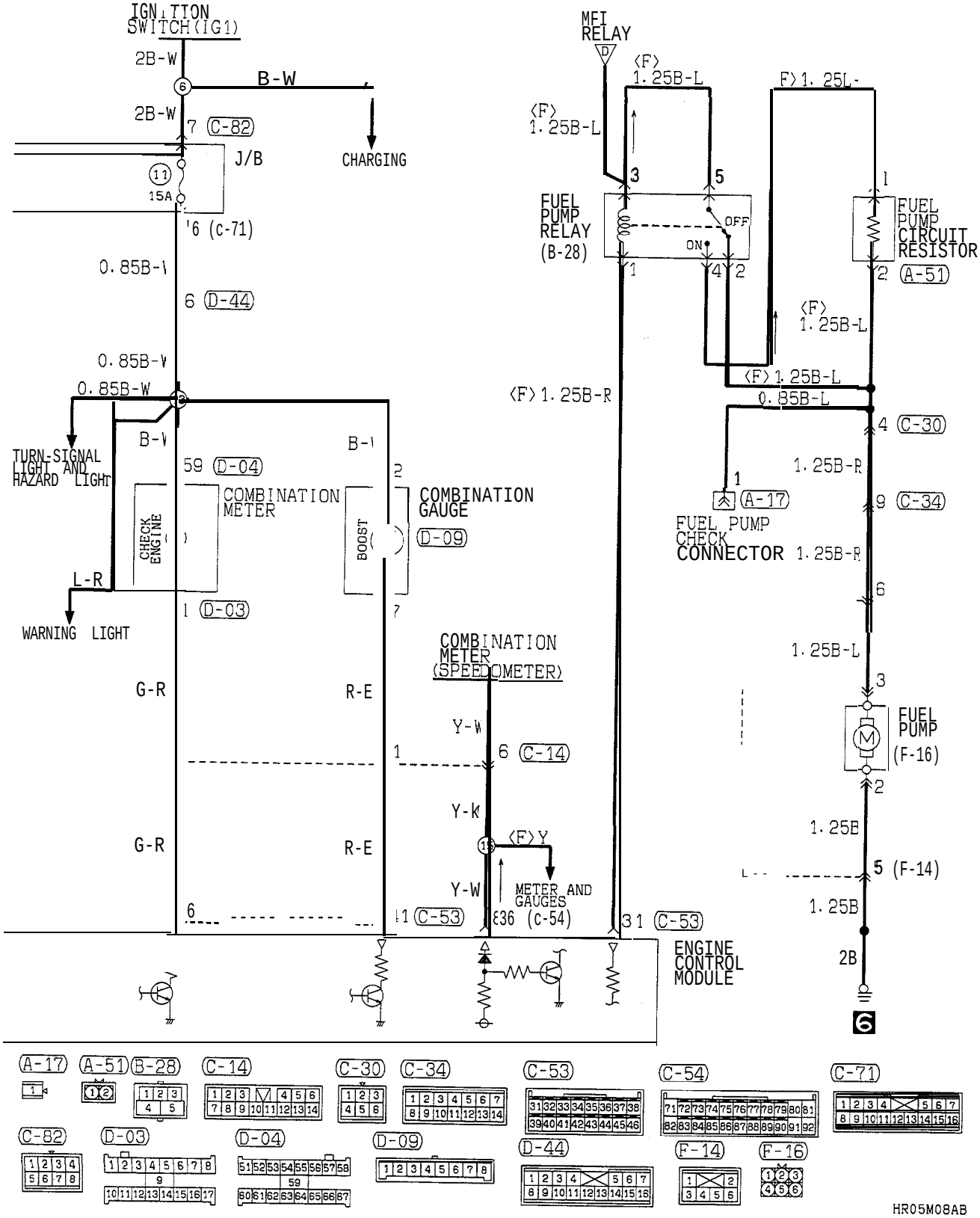
TSB Revision

MFI CIRCUIT (1995 MODELS)

<TURBO>

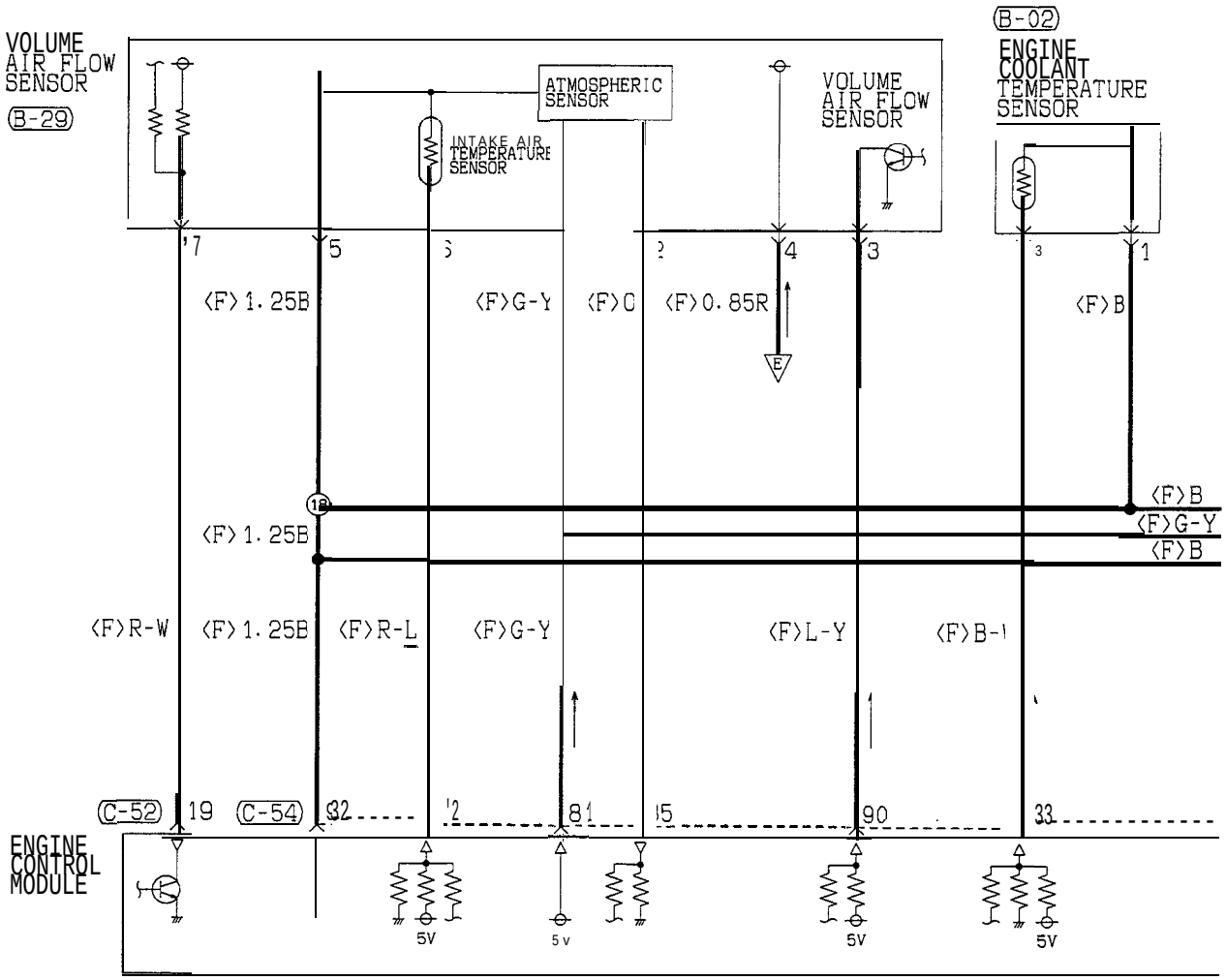


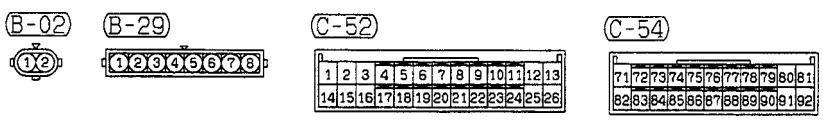
TSB Revision



TSB Revision

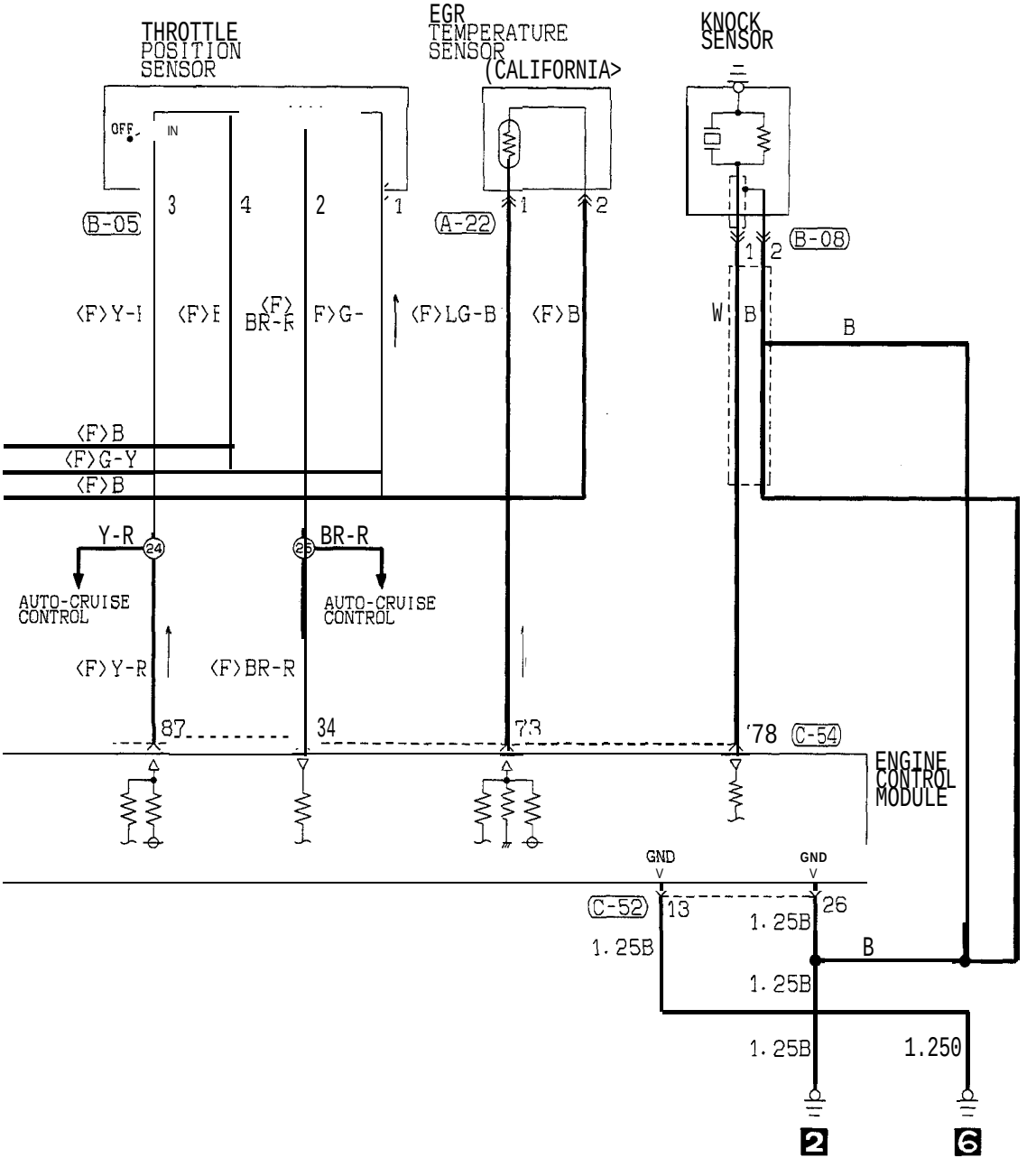
MFI CIRCUIT (1995 MODELS) <TURBO> (CONTINUED)



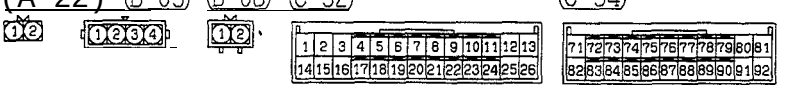


HR05M08BA

TSB Revision

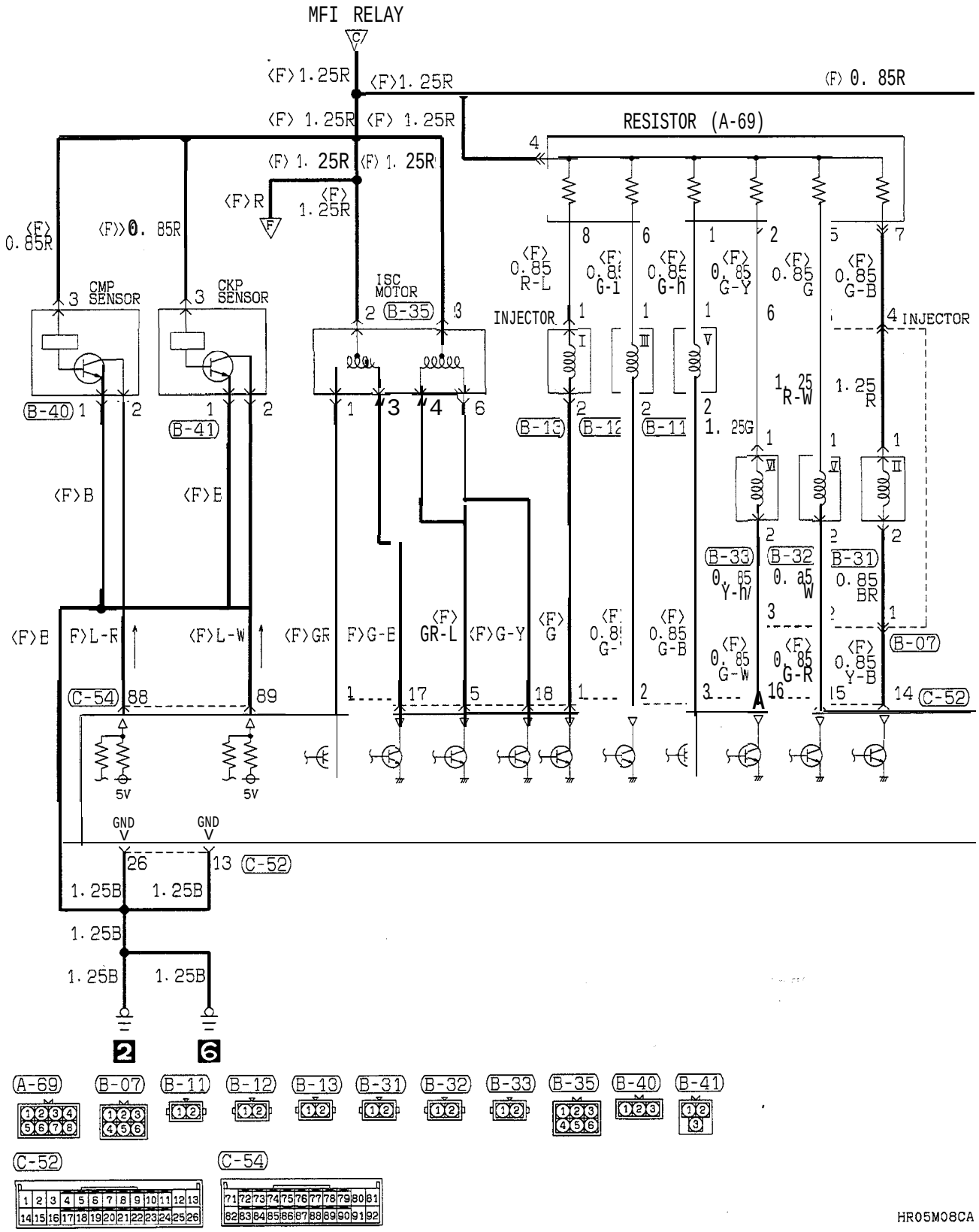


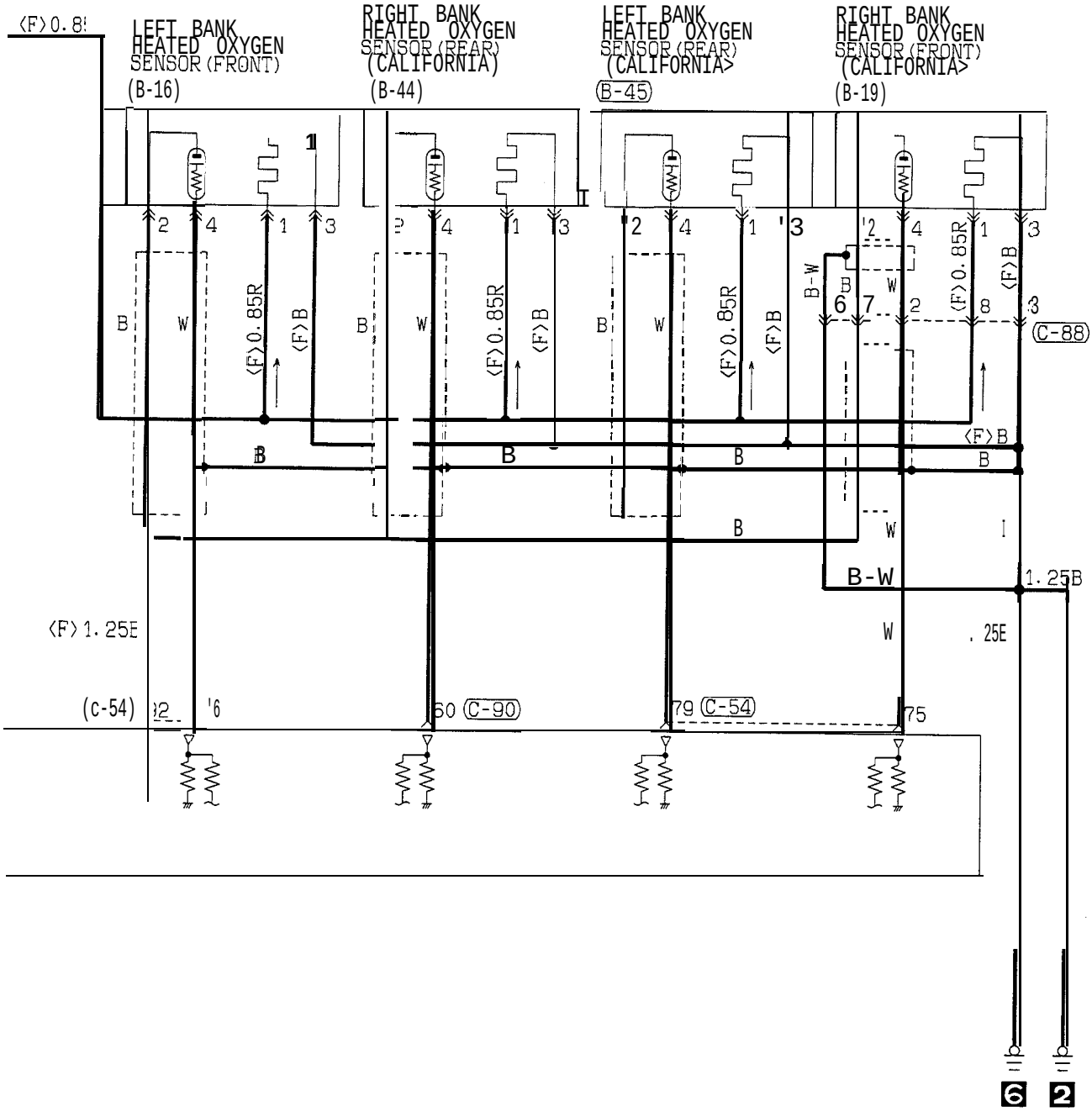
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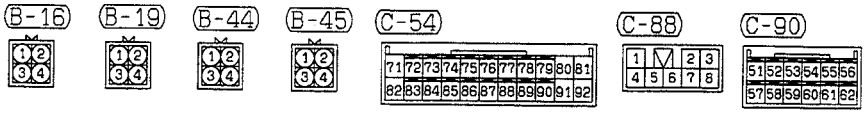


HR05M08BB

MFI CIRCUIT (1995 MODELS) <TURBO> (CONTINUED)



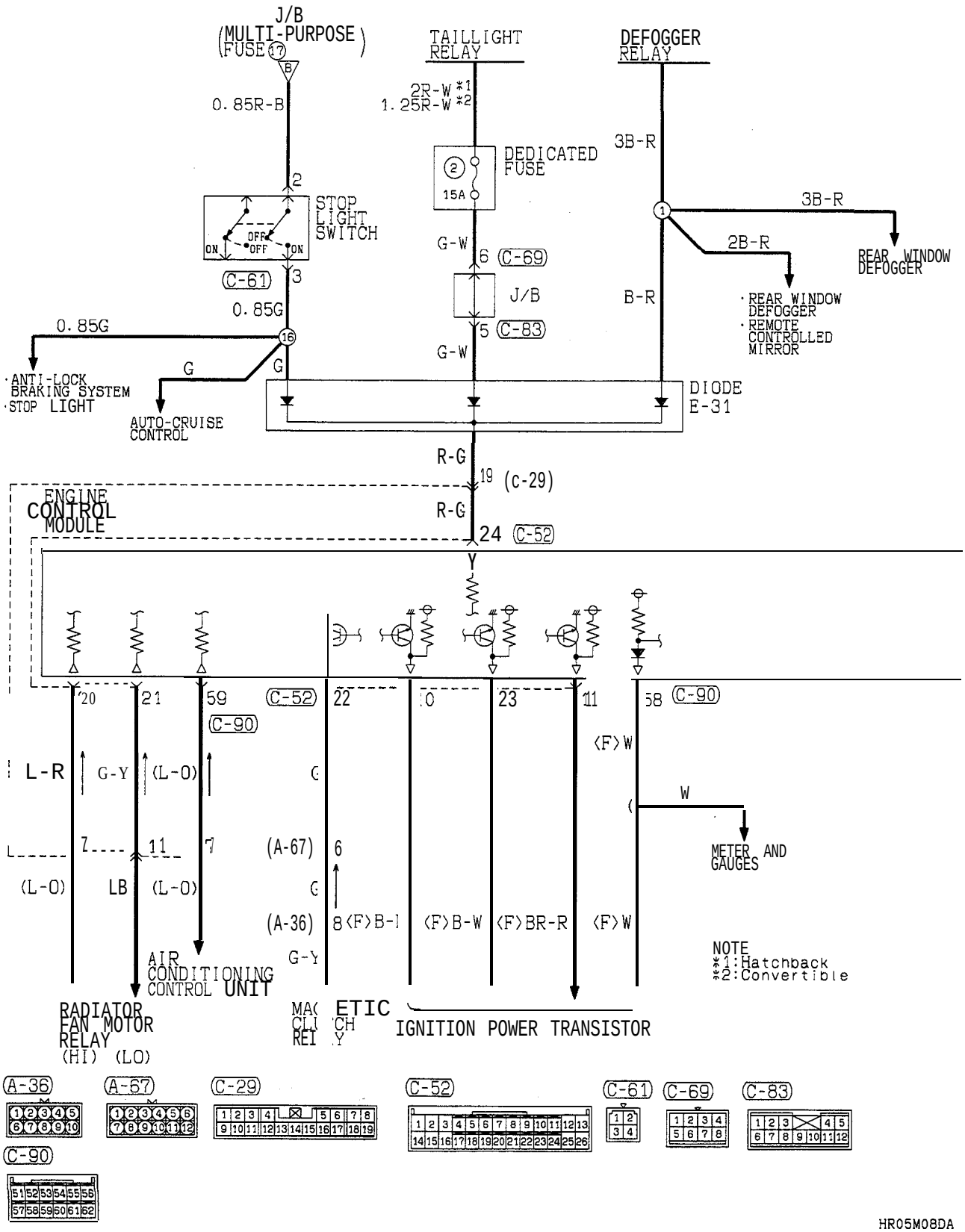




HR05M08CB

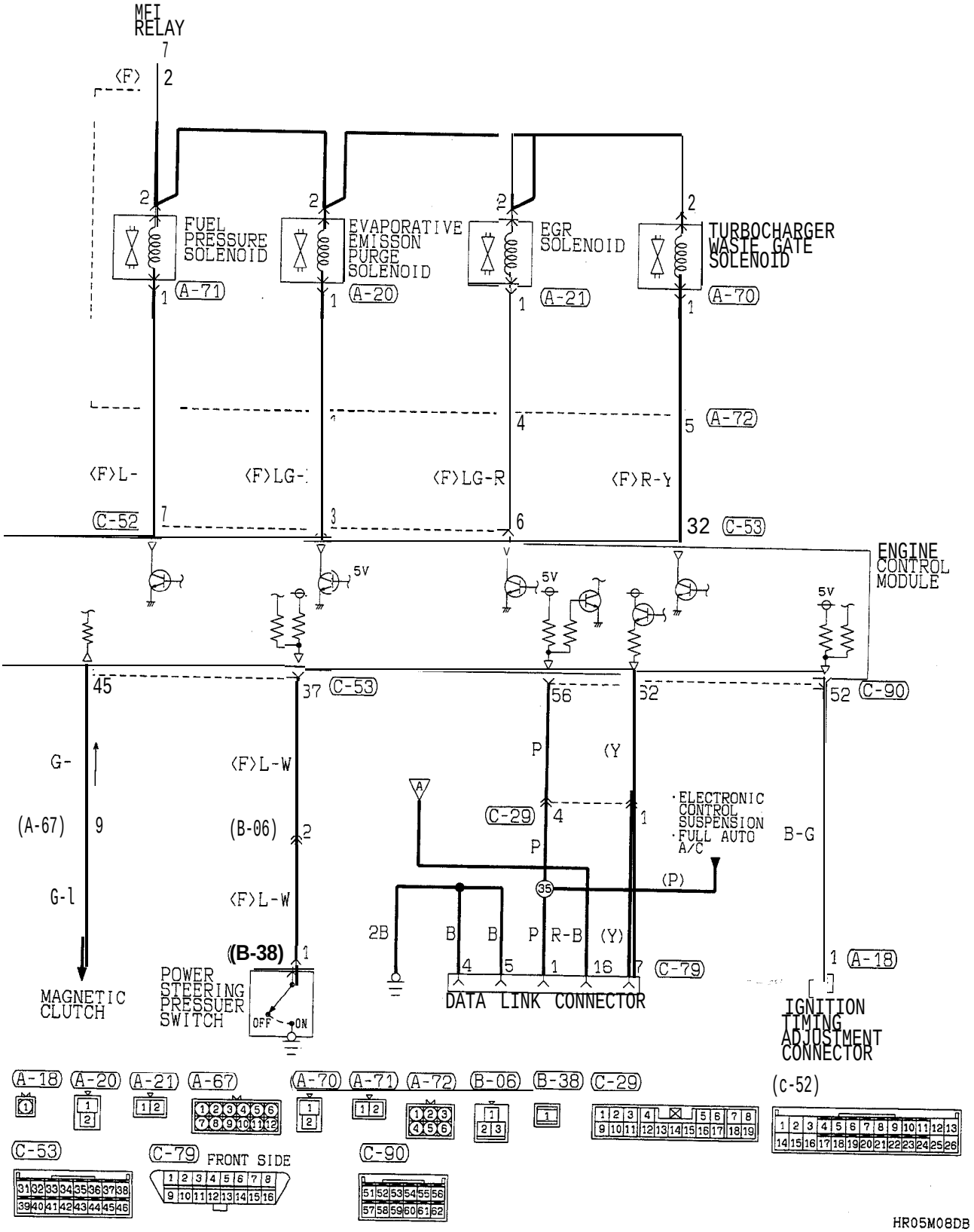
TSB Revision

MFI CIRCUIT (1995 MODELS) <TURBO> (CONTINUED)



HR05M08DA

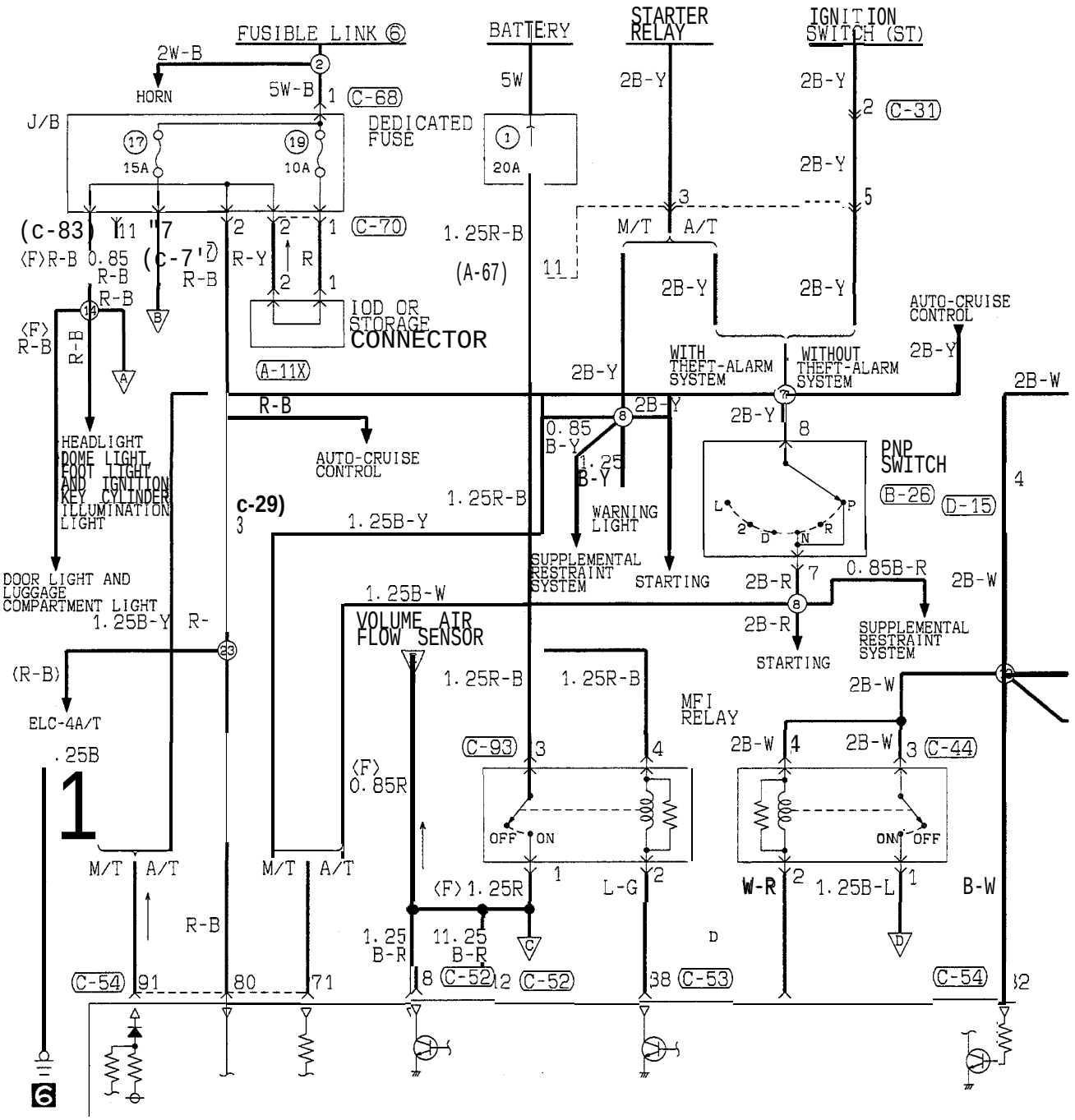
TSB Revision

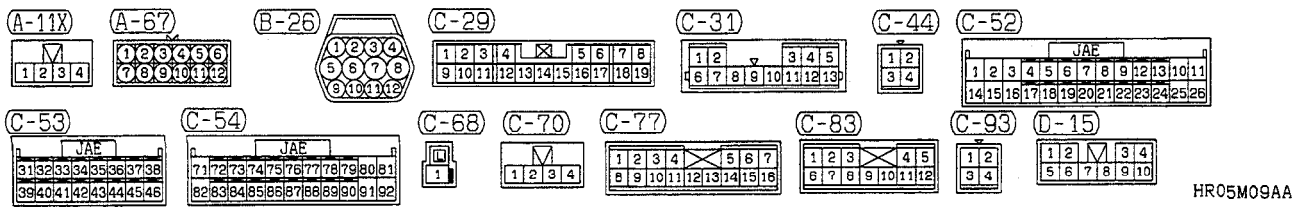


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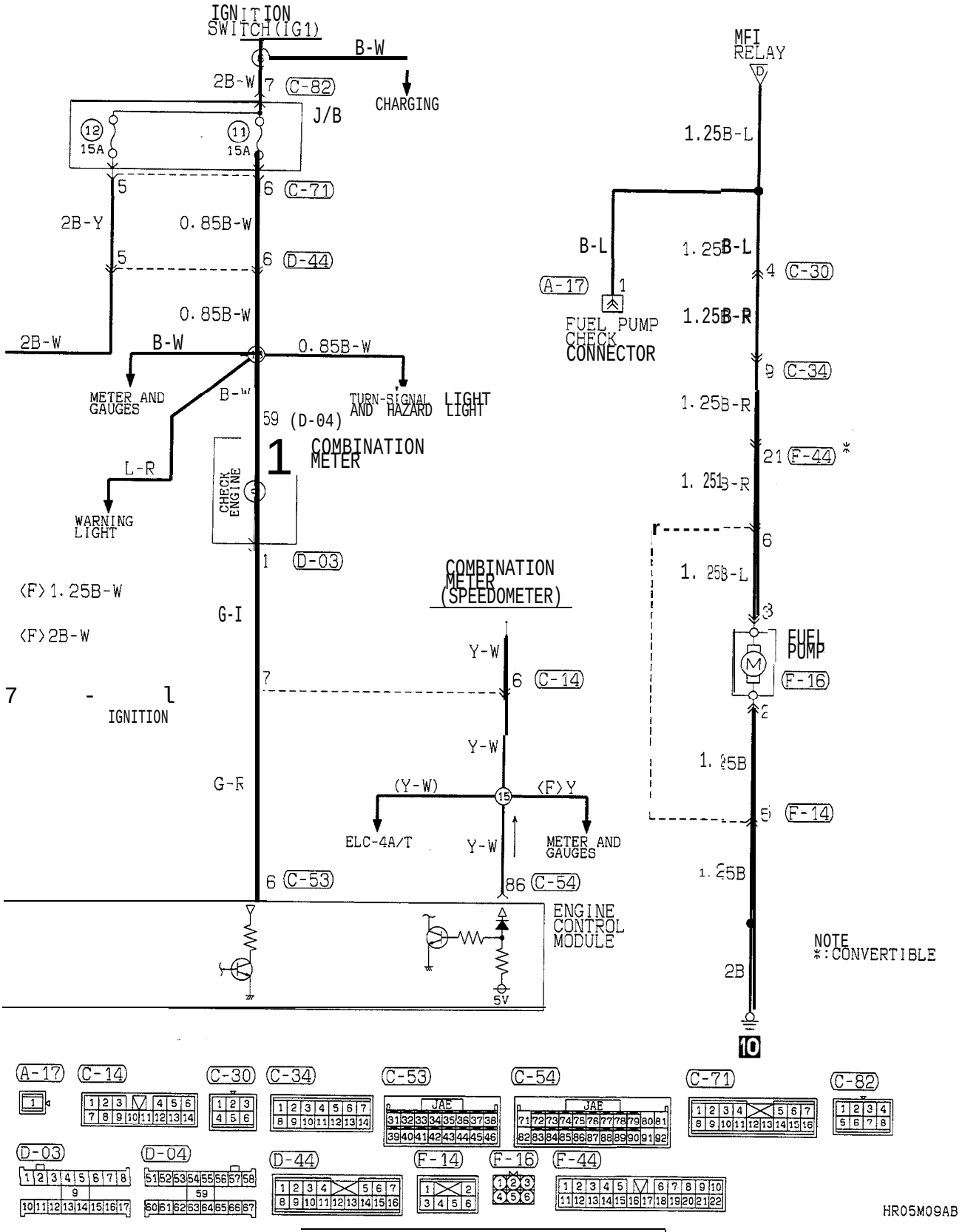
MFI CIRCUIT (FROM 1996 MODELS)

<NON TURBO>



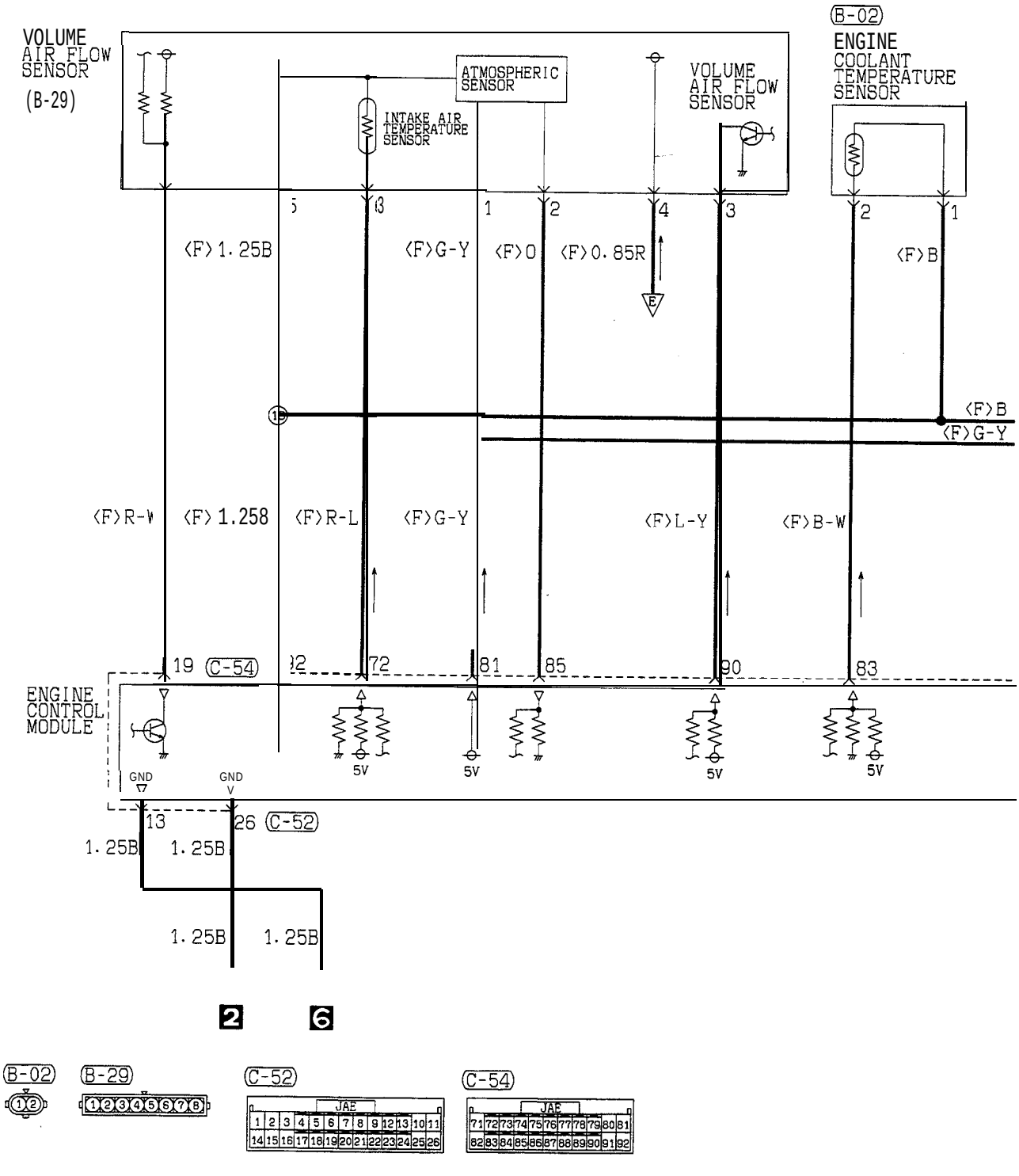


TSB Revision



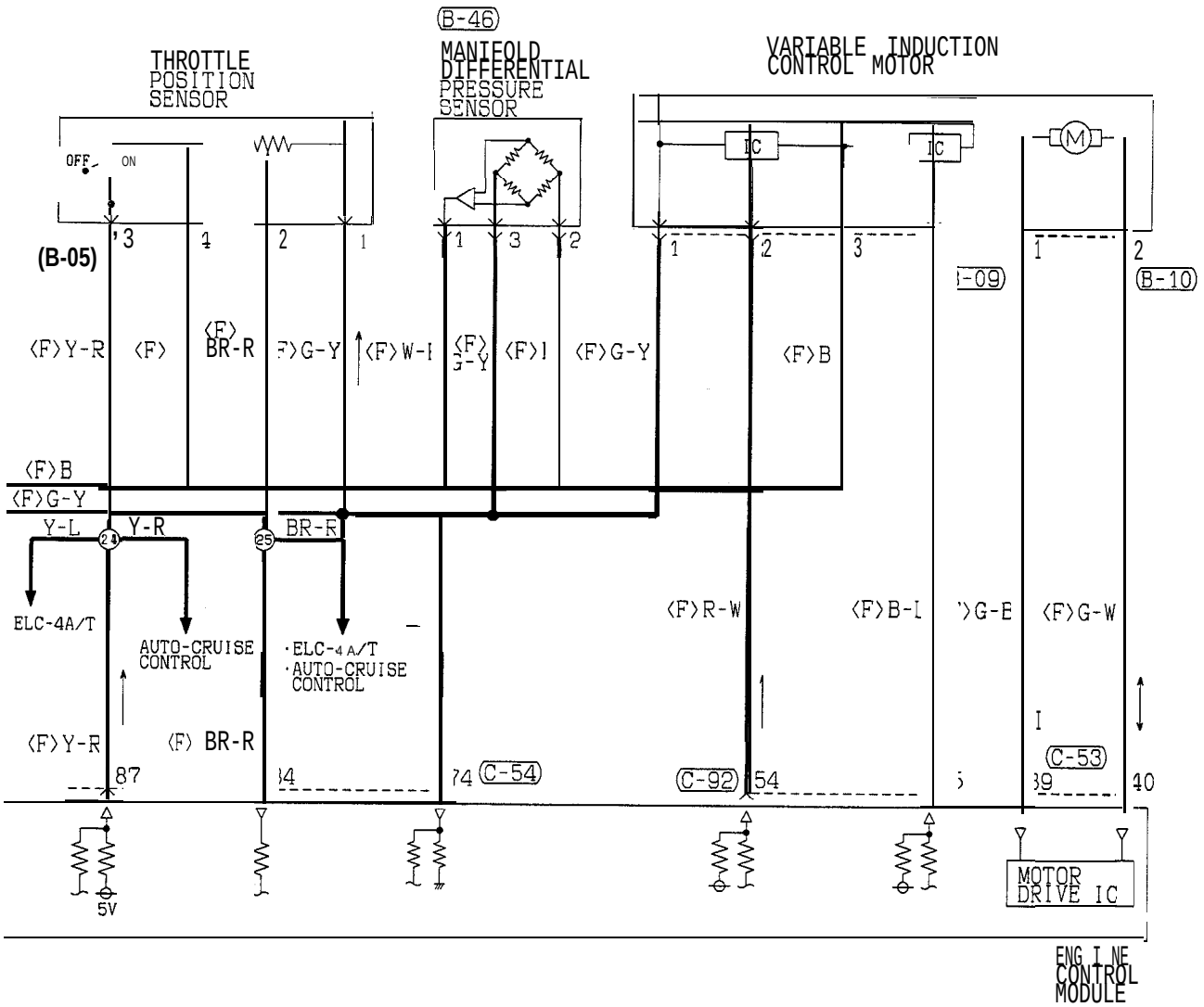
TSB Revision

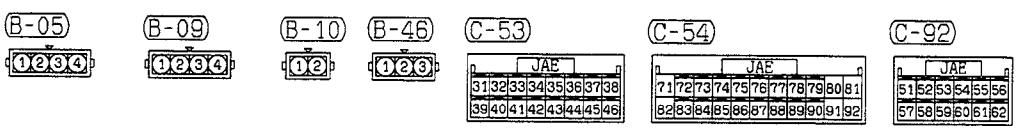
MFI CIRCUIT (FROM 1996 MODELS) <NON TURBO> (CONTINUED)



HR05M09BA

TSB Revision

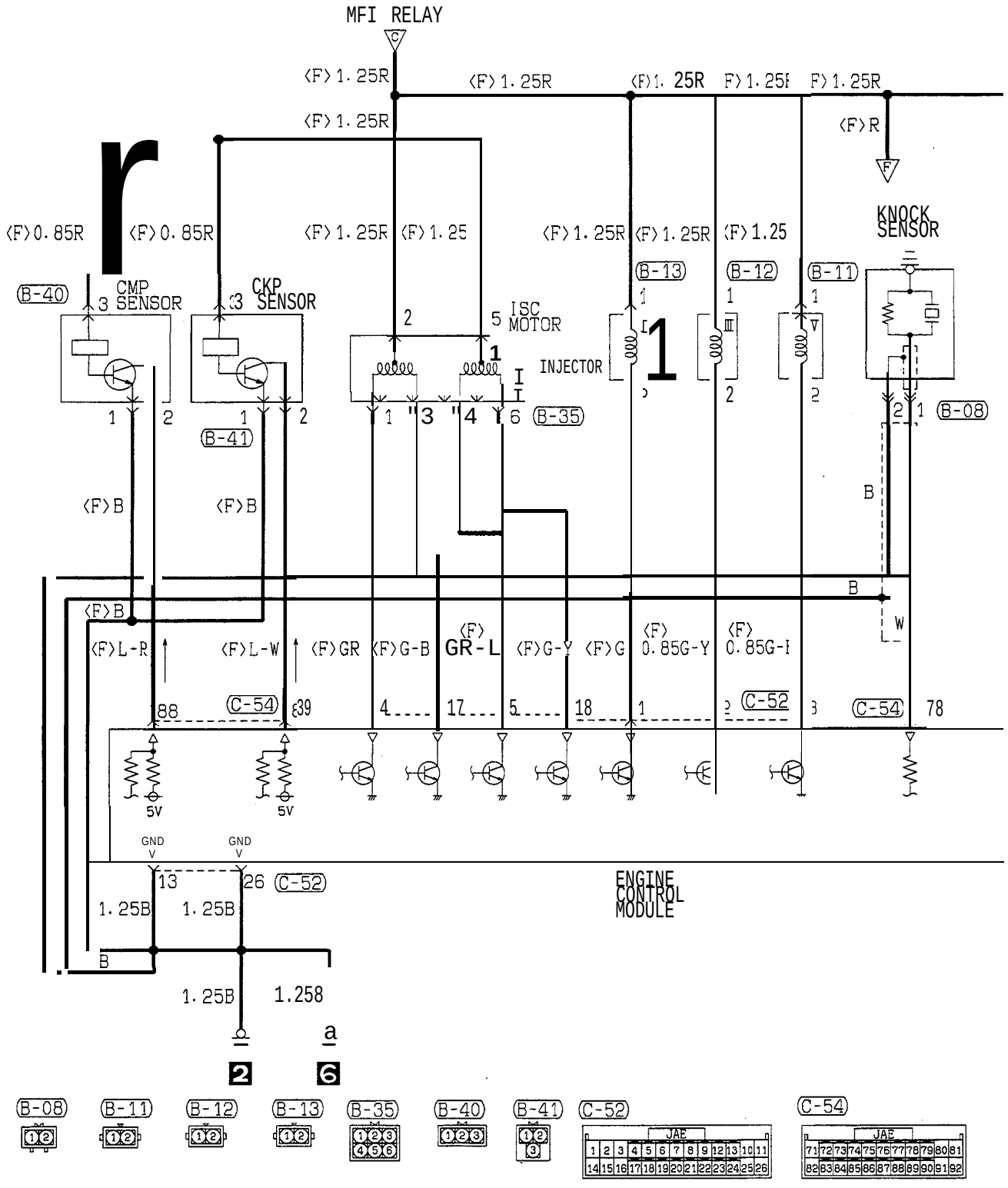




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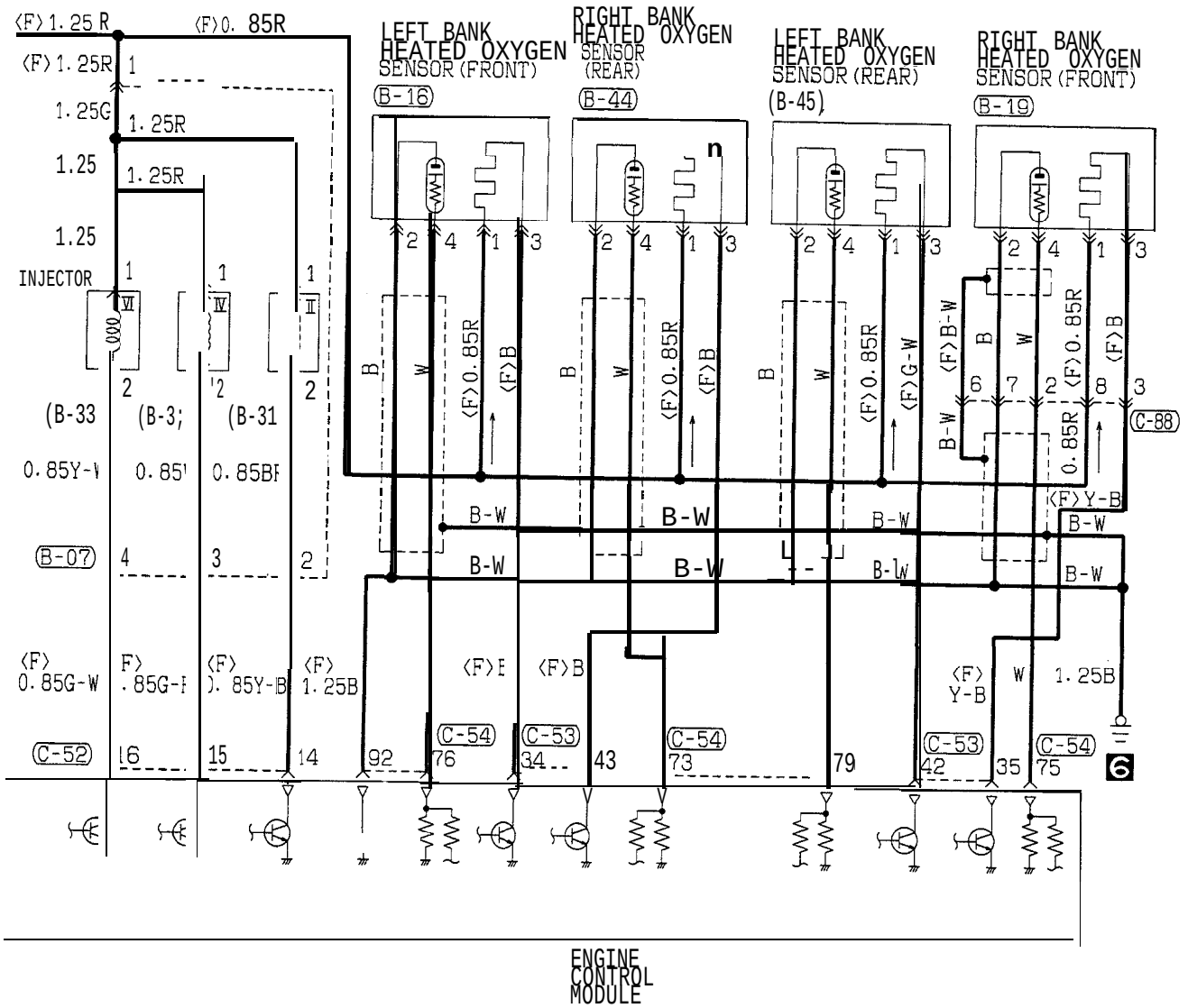
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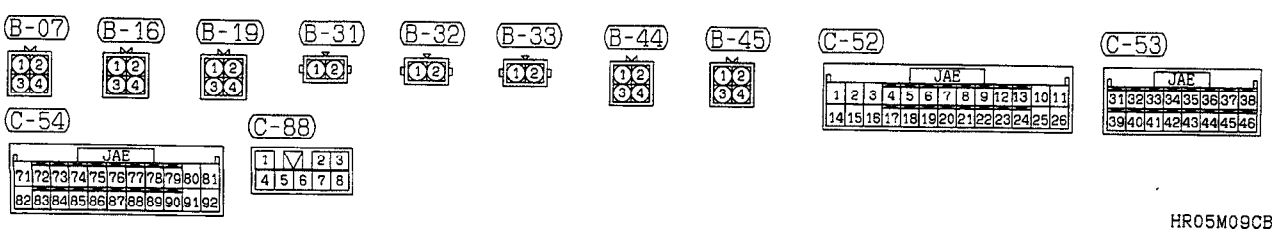
MFI CIRCUIT (FROM 1996 MODELS) <NON TURBO> (CONTINUED)



HR05M09CA

TSB Revision

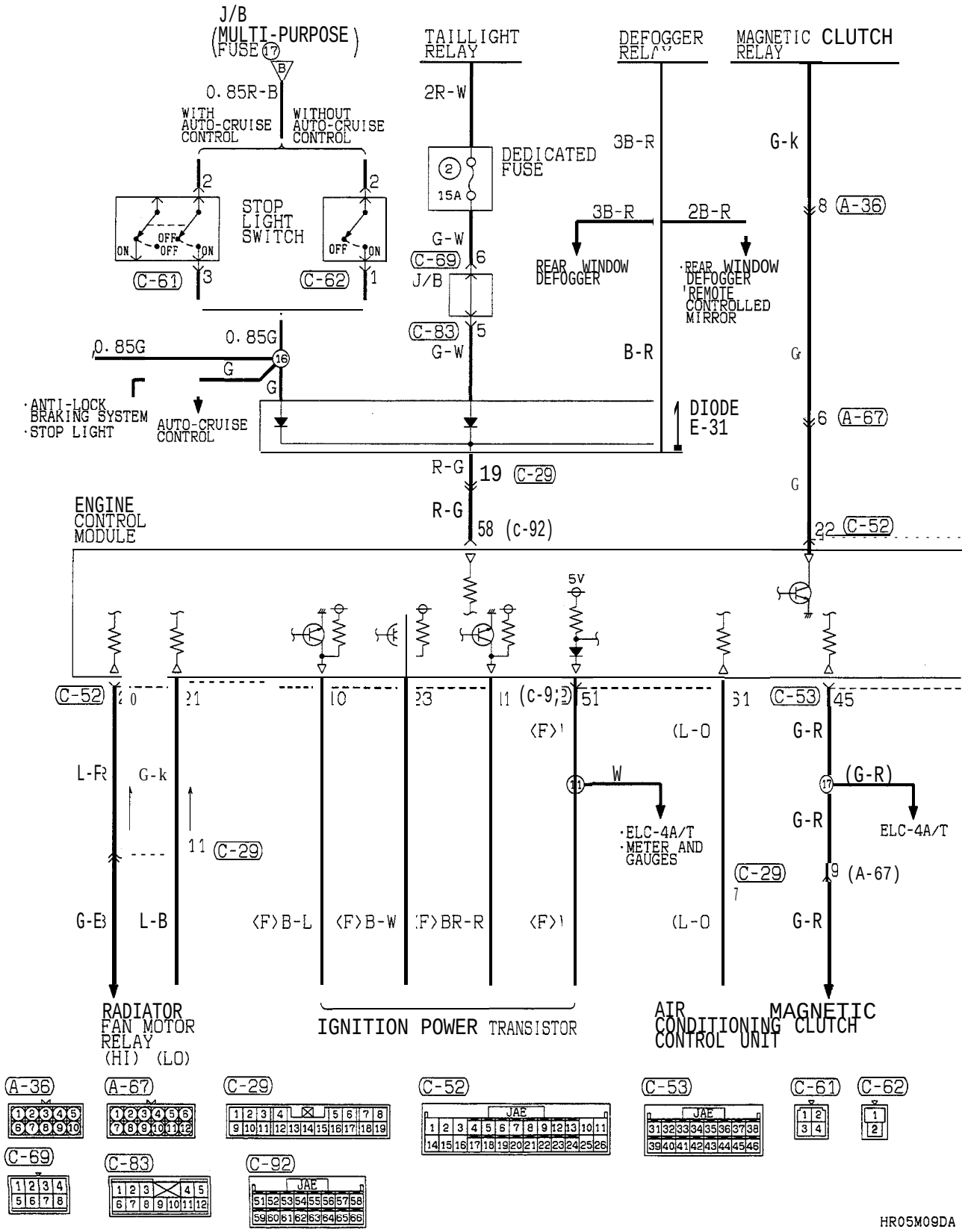




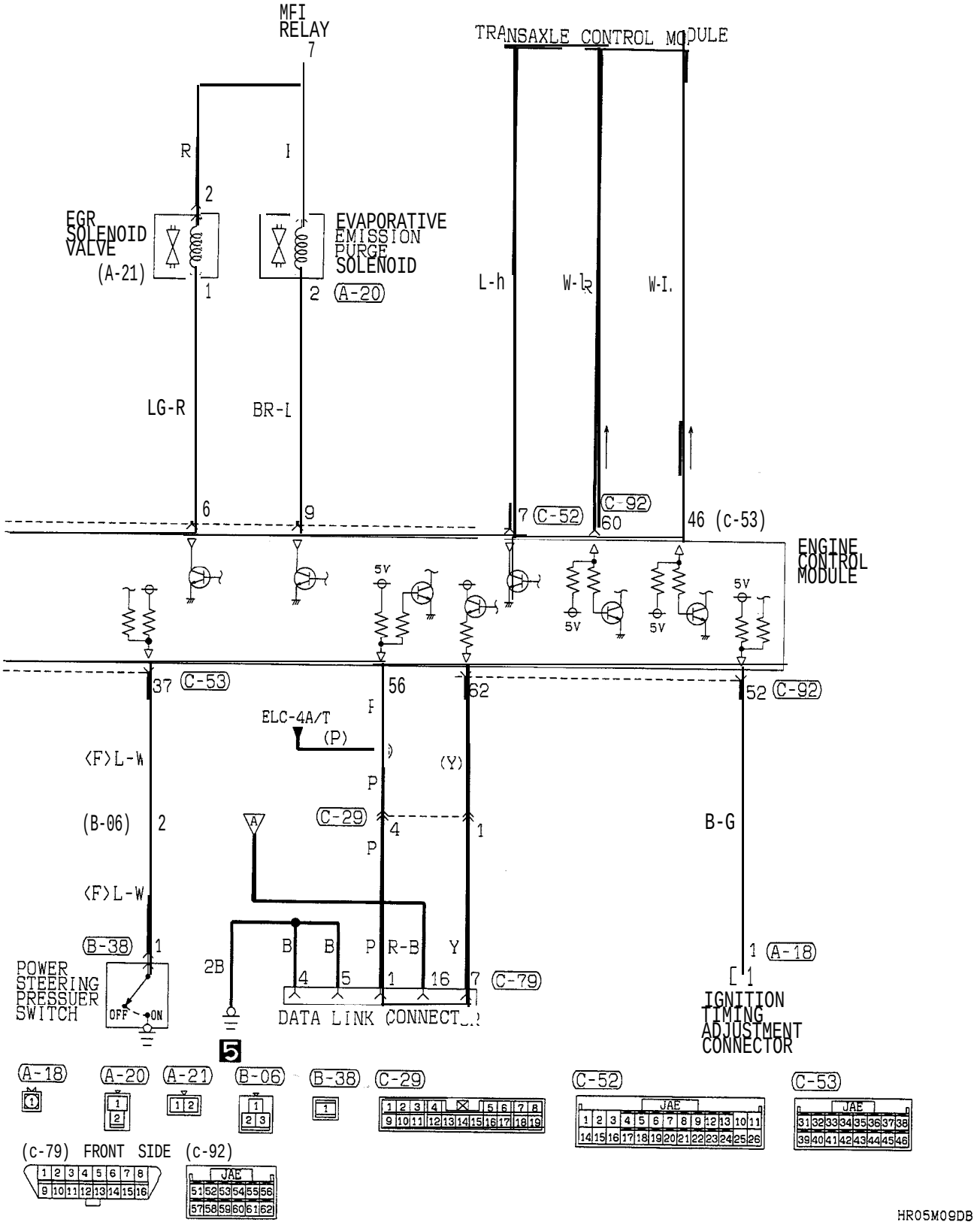
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TSB Revision

MFI CIRCUIT (FROM 1996 MODELS) <NON TURBO> (CONTINUED)



TSB Revision

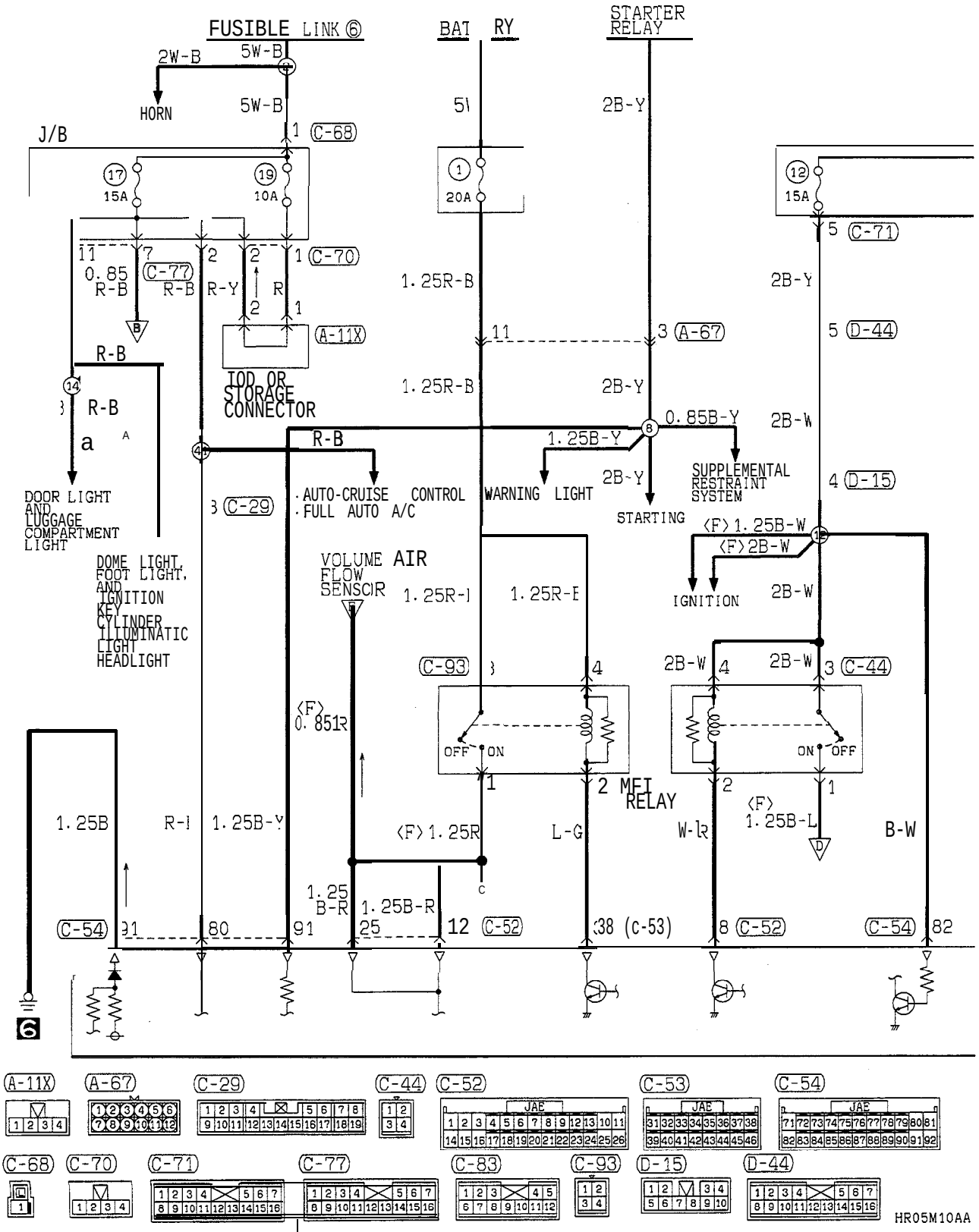


HR05M09DB

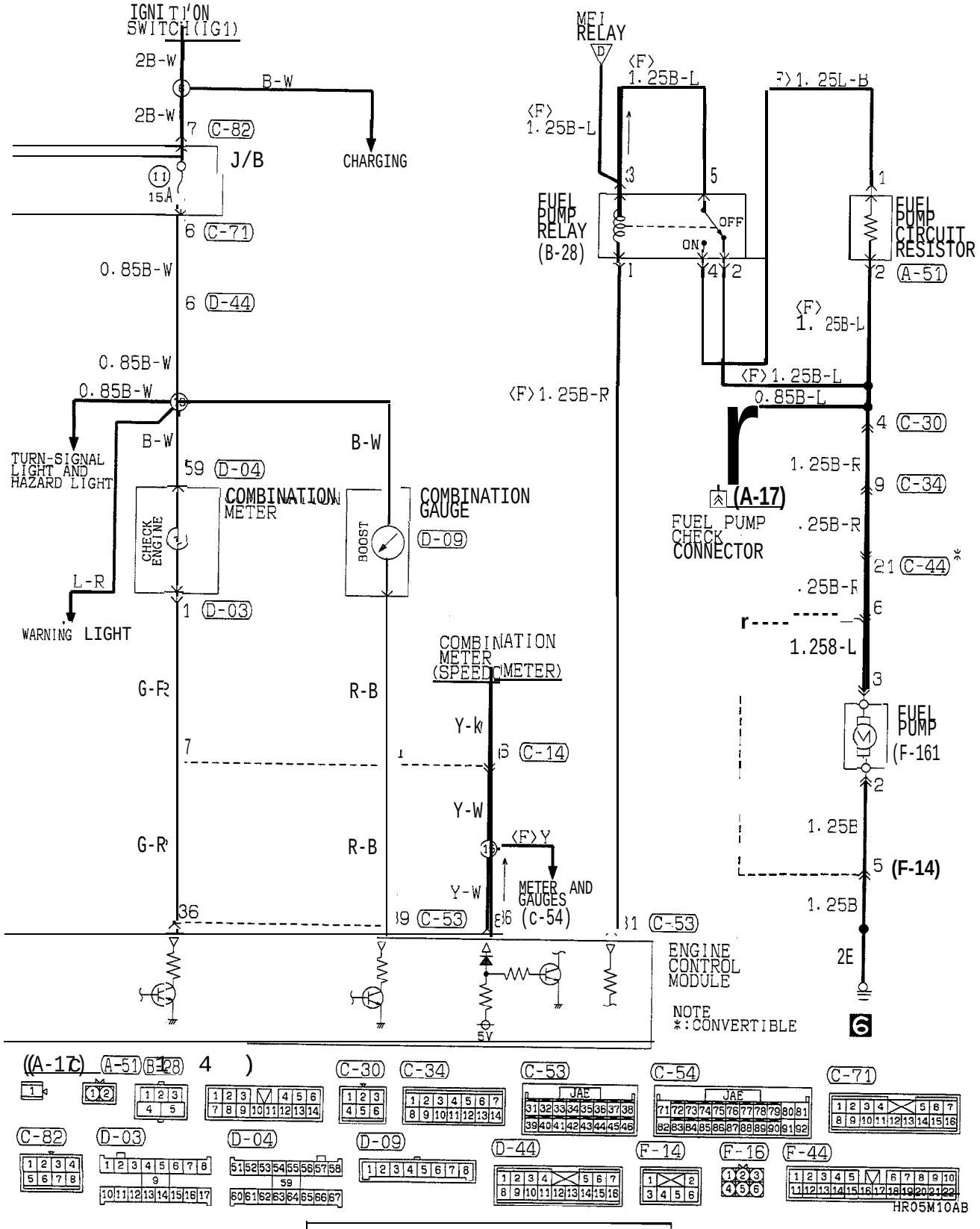
TSB Revision

MFI CIRCUIT (FROM 1996 MODELS)

<TURBO>

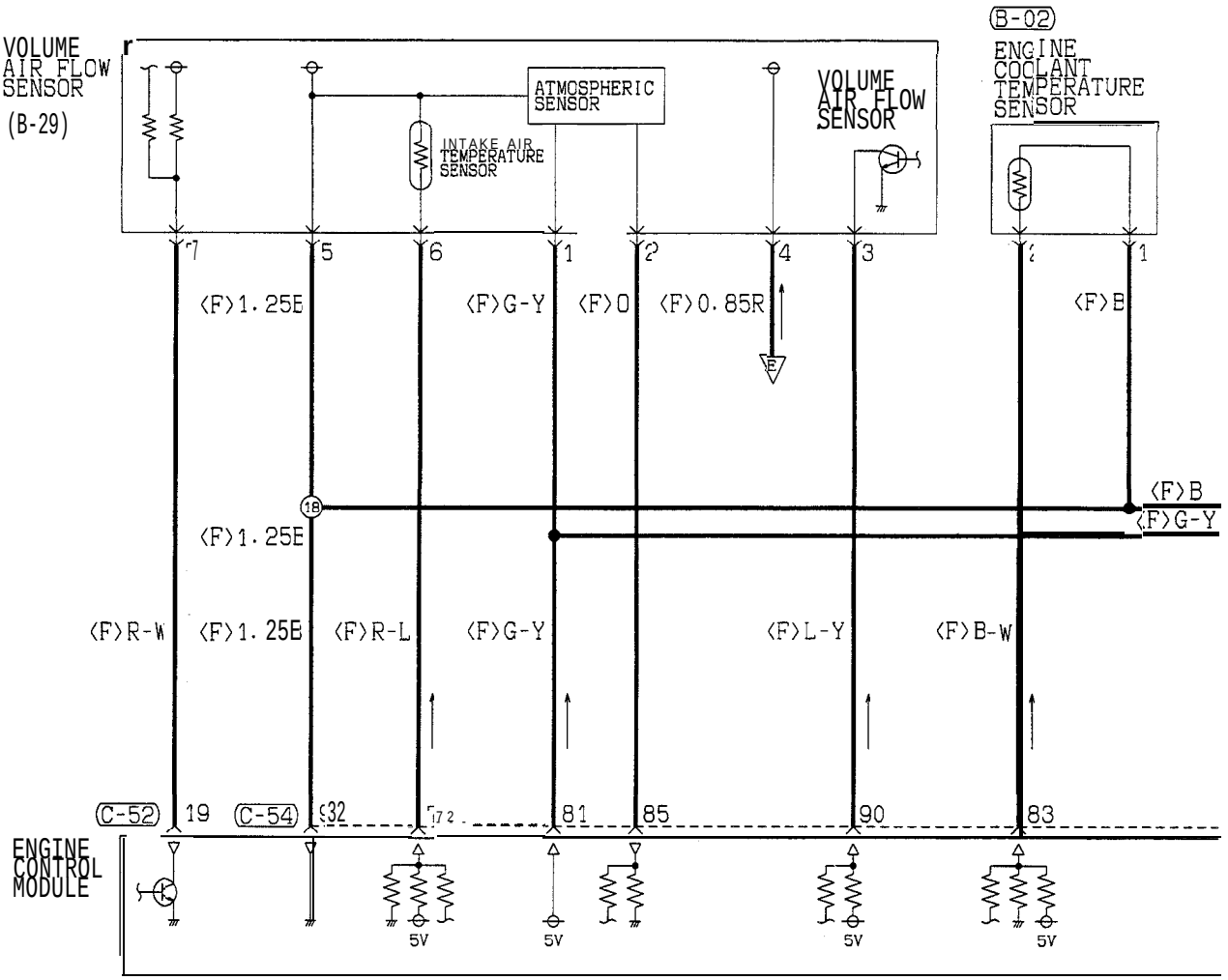


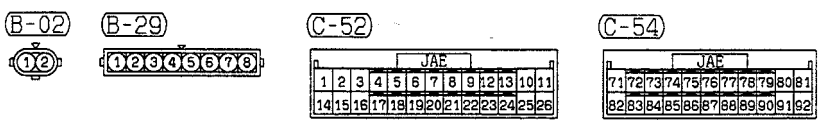
TSB Revision



TSB Revision

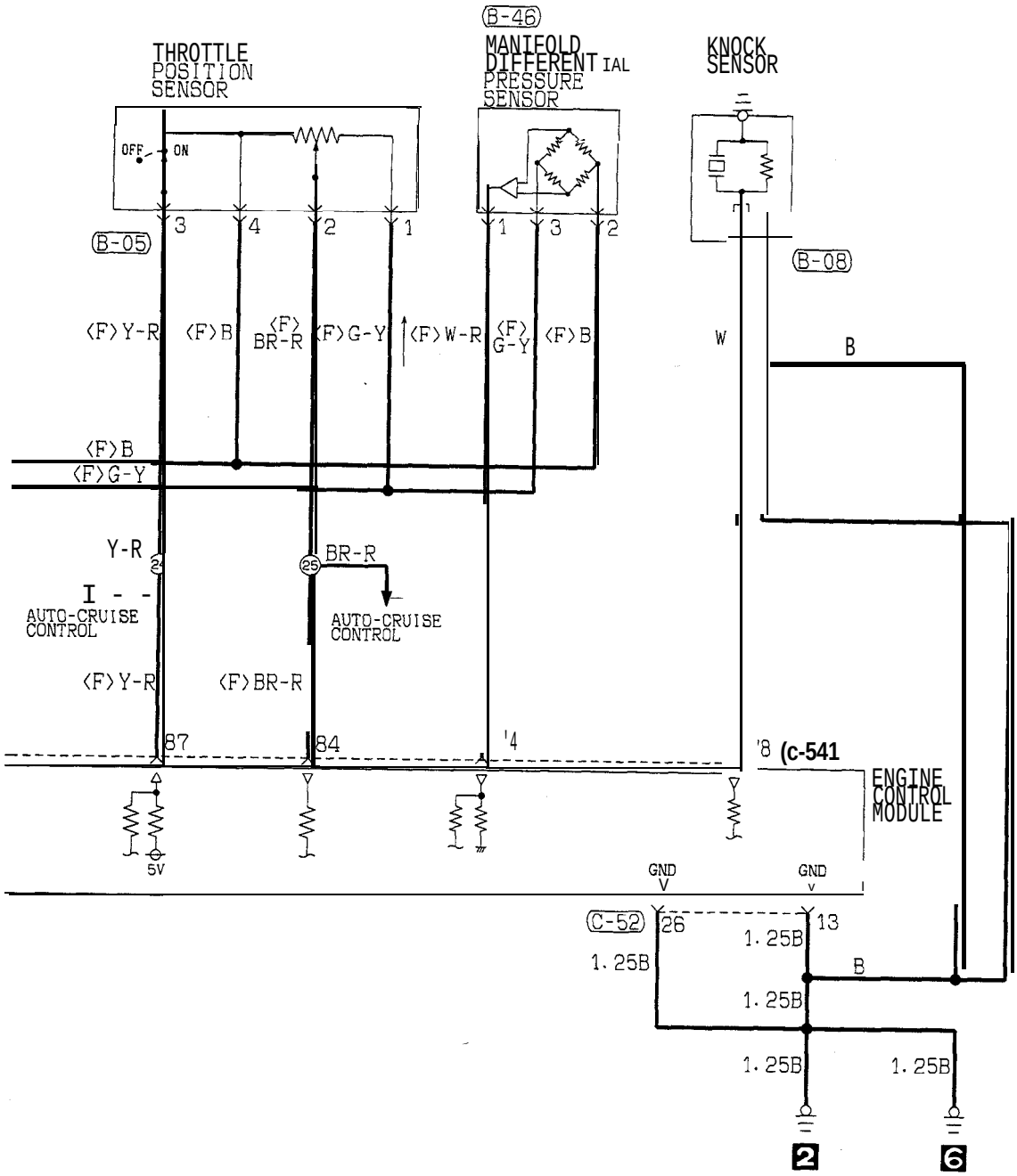
MFI CIRCUIT (FROM 1996 MODELS) <TURBO> (CONTINUED)



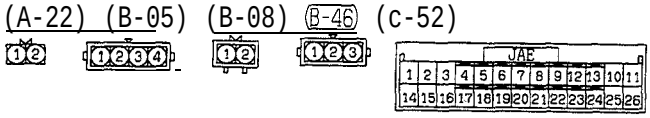


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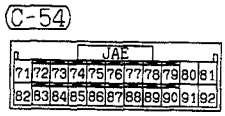
TSB Revision



(A-22) (B-05) (B-08) B-46 (c-52)

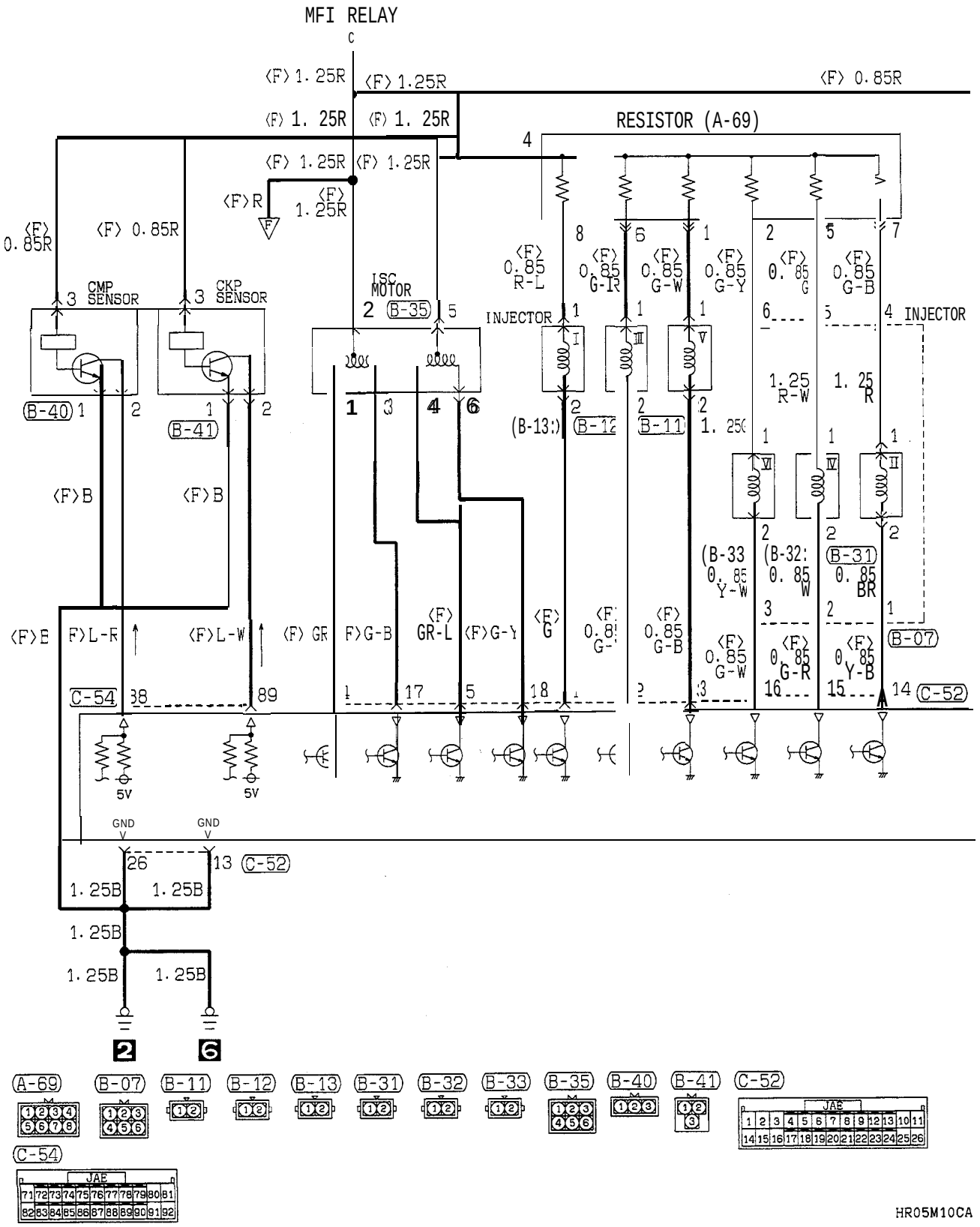


C-54

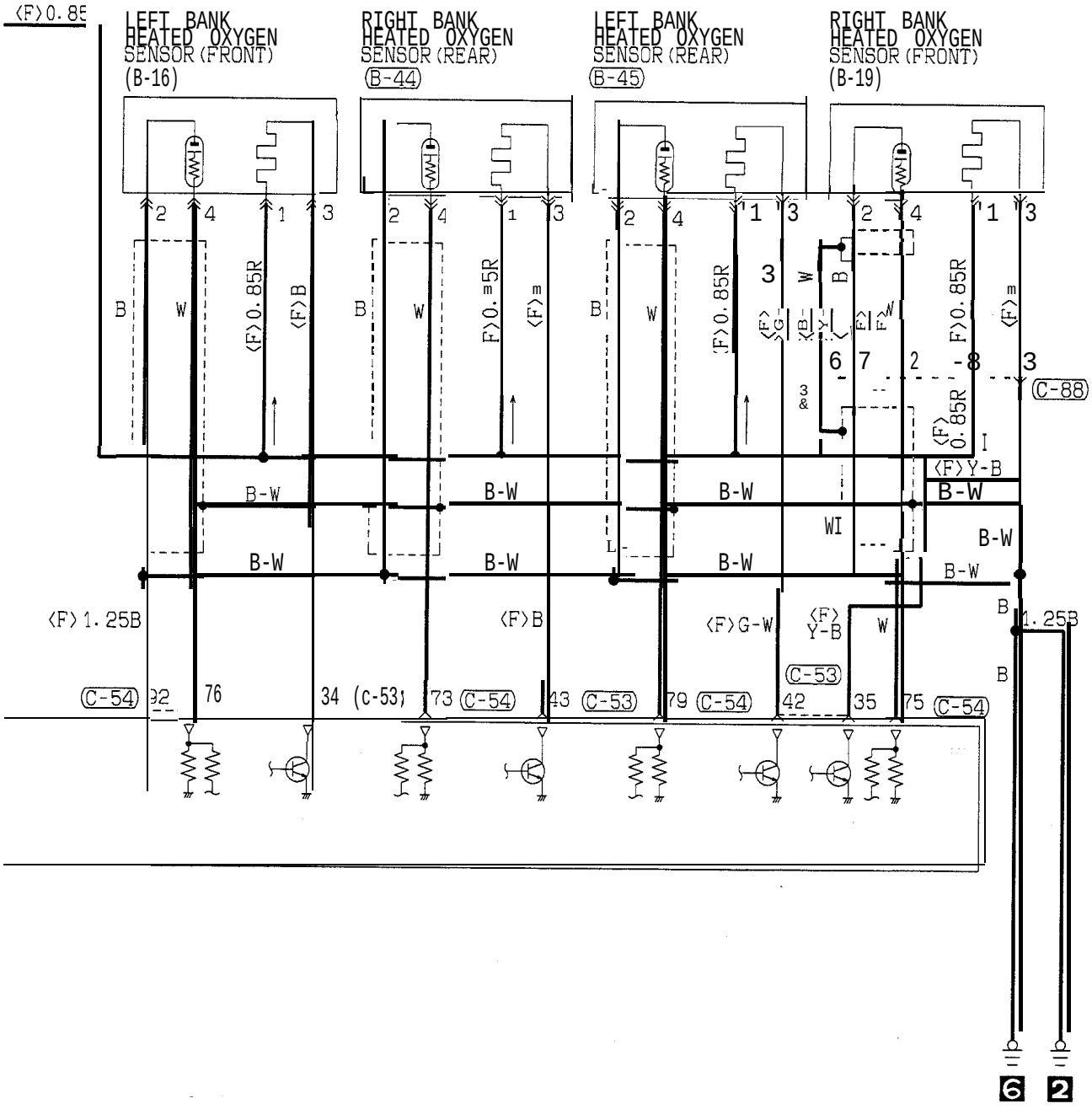


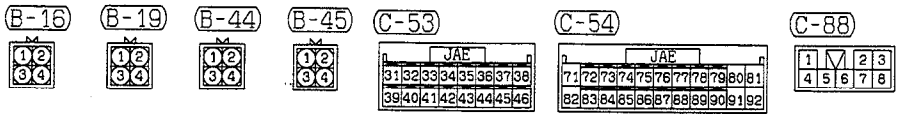
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MFI CIRCUIT (FROM 1996 MODELS) <TURBO> (CONTINUED)



TSB Revision

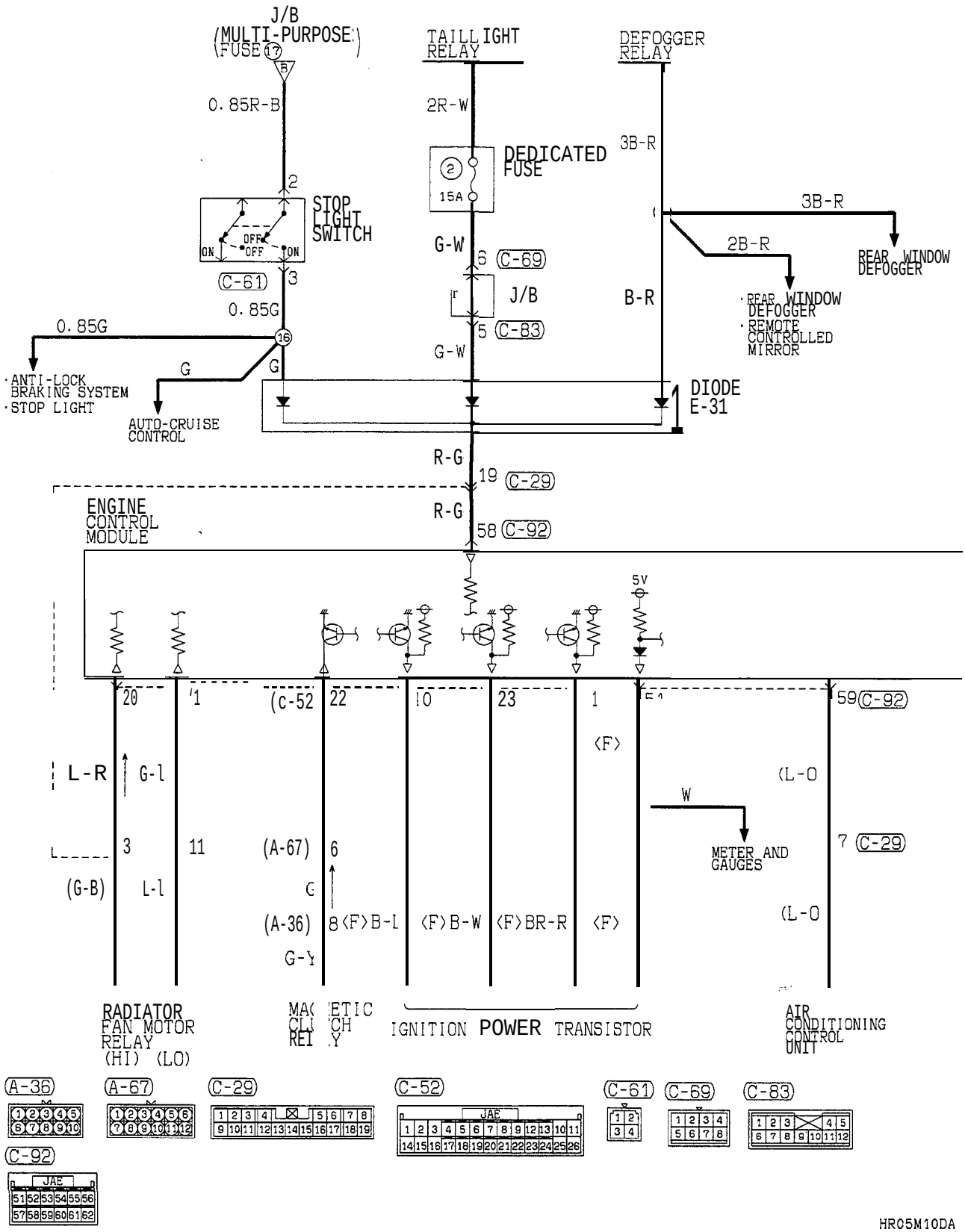




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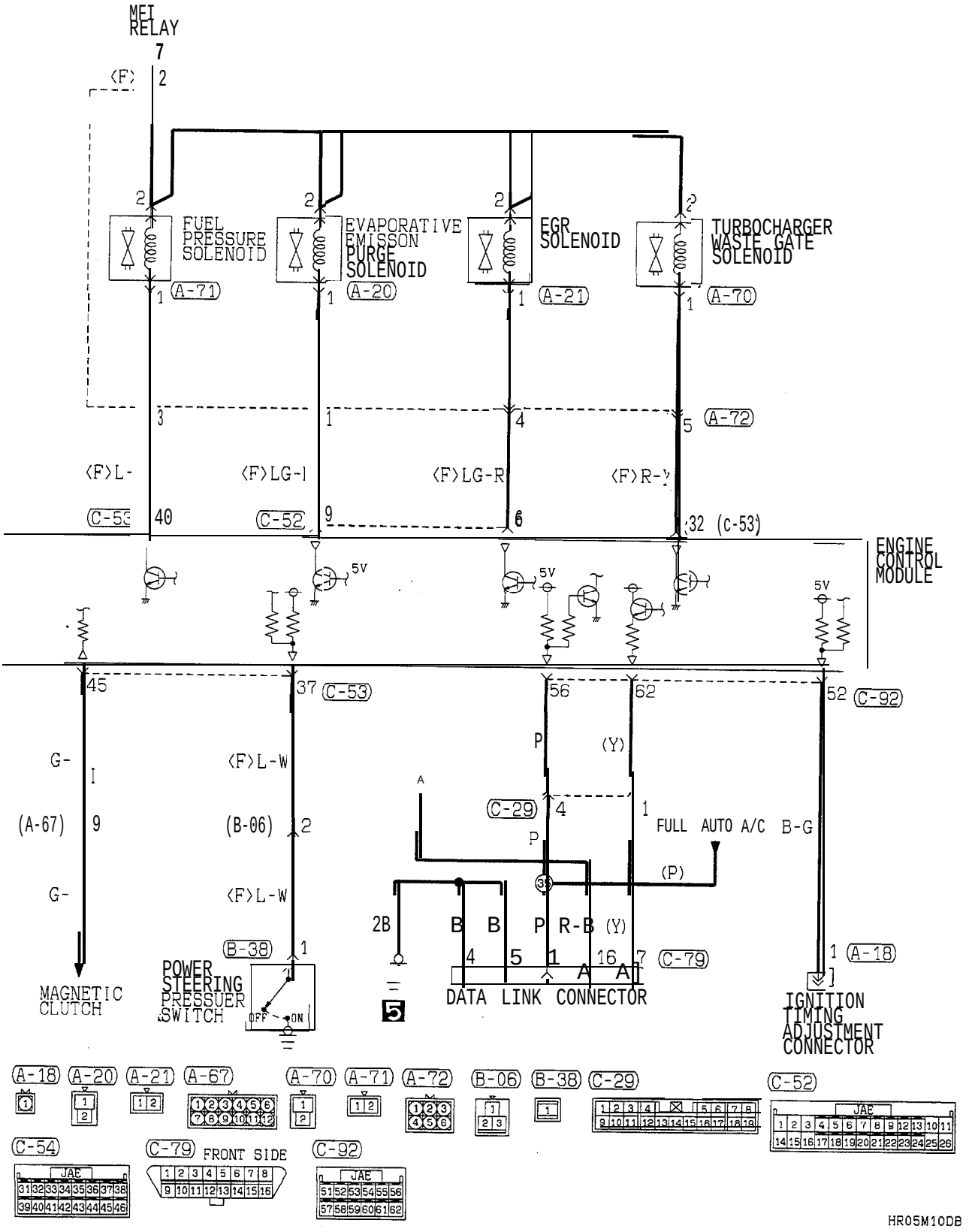
TSB Revision

MFI CIRCUIT (FROM 1996 MODELS) <TURBO> (CONTINUED)



HR05M10DA

TSB Revision

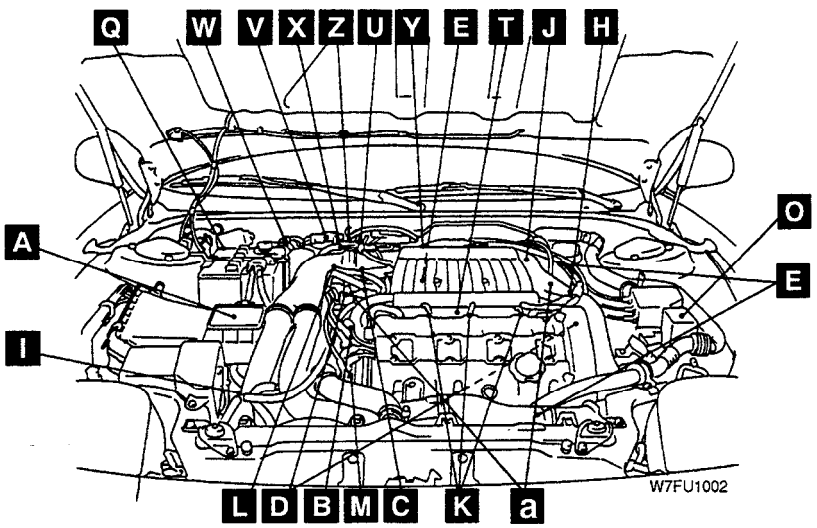


TSB Revision

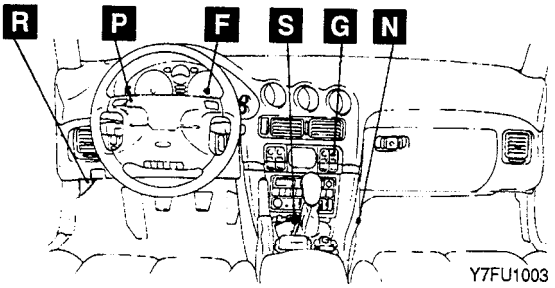
COMPONENT LOCATION

Up to 1993 models and 1994, 1995 models Non Turbo (Federal)

Name	Symbol	Name	Symbol
Air conditioning relay	0	Ignition coil (ignition power transistor)	M
Air conditioning switch	G	Ignition timing adjusting terminal	Q
Camshaft position sensor	a	Injector	K
Check engine/malfunction indicator lamp	P	Knock sensor	T
Crankshaft position sensor	D	Multiport fuel injection (MFI) relay	N
Data link connector	R	Data link connector	R
EGR solenoid <California – Non Turbo, Turbo>	Z	Park/Neutral position switch <A/T>	I
EGR temperature sensor <California – Non Turbo, Turbo>	Y	Power steering pressure switch	H
Engine control module	S	Resistor <Turbo>	W
Engine coolant temperature sensor	B	Throttle position sensor (With built-in closed throttle position switch)	C
Evaporative emission purge solenoid	X	Turbocharger waste gate solenoid <Turbo>	U
Fuel pressure solenoid <Turbo>	V	Variable induction control motor (DC motor) (with built-in induction control valve position sensor) <Non Turbo>	J
Heated oxygen sensor	E	Vehicle speed sensor	F
Idle air control motor (stepper motor)	L	Volume air flow sensor (with built-in intake air temperature sensor and barometric pressure sensor)	A



TSB Revision



A
Volume airflow sensor (with built-in intake air temperature sensor and barometric pressure sensor)
X7FU0941

B
Engine coolant temperature sensor
Y7FU0638

C
Throttle position sensor (with built-in closed throttle position switch)
V7FU0929

D <1992 models>
Crankshaft position sensor
X7FU0942

D <From 1993 models>
Crankshaft position sensor
Y7FU1308

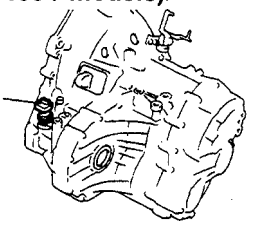
E <Non Turbo>
Heated oxygen sensor
X7FU0786

E <Turbo>
Heated oxygen sensor, left
Heated oxygen sensor, right
X7FU1004

F <Non-Turbo (Up to 1993 models)>
Vehicle speed sensor (reed switch)
V68F0011

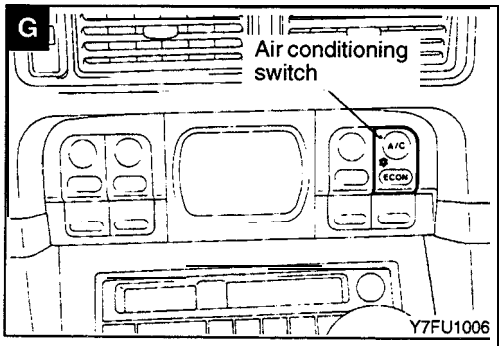
TSB Revision

F <Turbo>, <Non-Turbo (From 1994 models)>



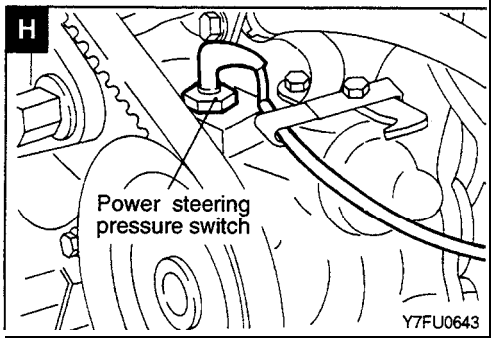
W12F0050

G



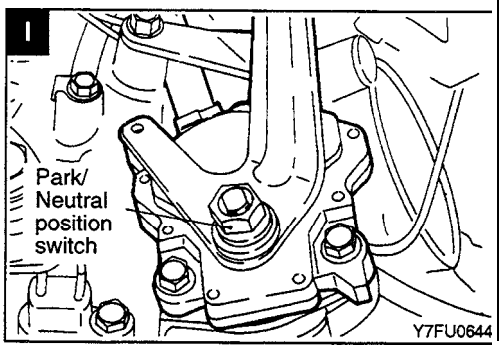
Y7FU1006

H



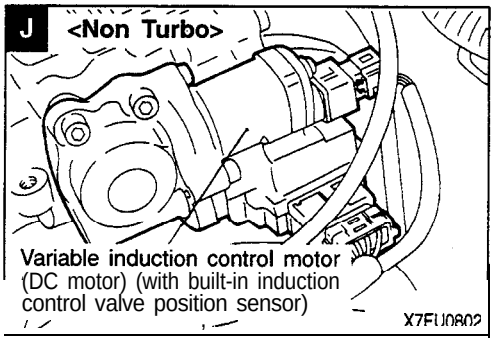
Y7FU0643

I



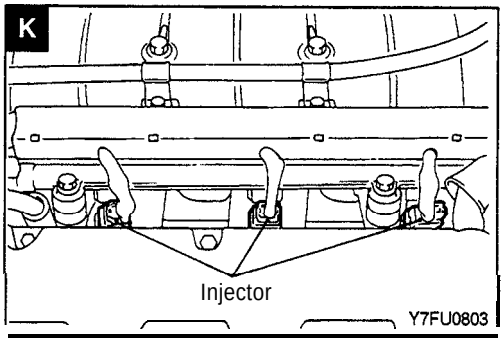
Y7FU0644

J <Non Turbo>



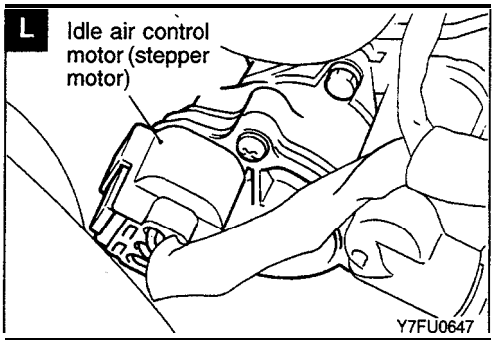
X7FU0802

K



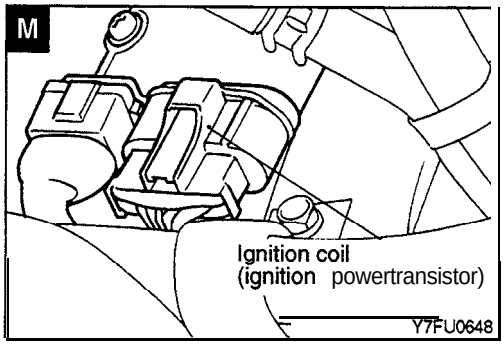
Y7FU0803

L



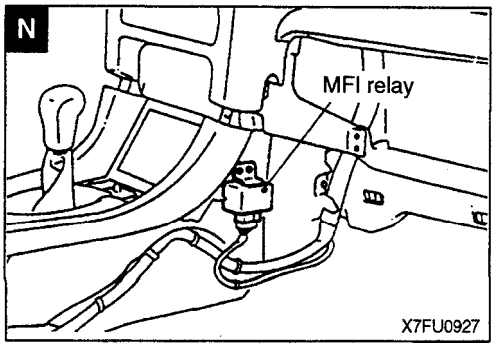
Y7FU0647

M



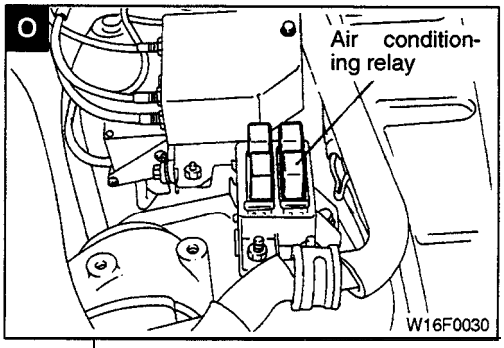
Y7FU0648

N



X7FU0927

O

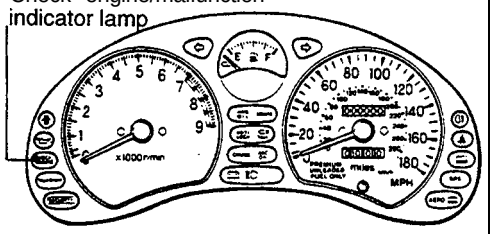


W16F0030

TSB Revision

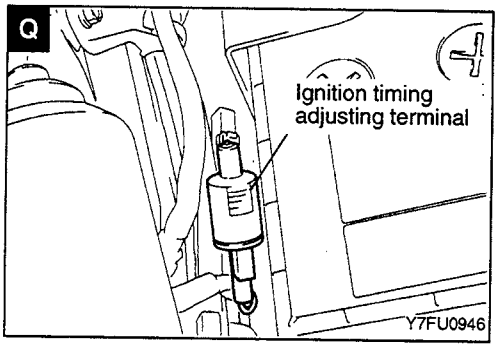
P

Check engine/malfunction indicator lamp



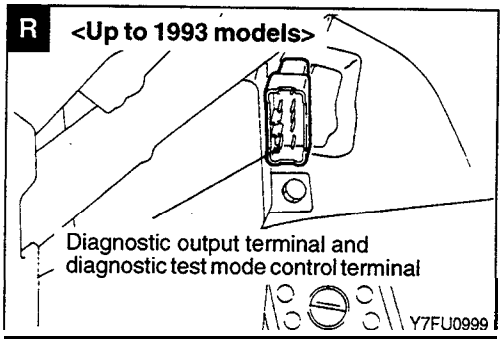
U68F0011

Q



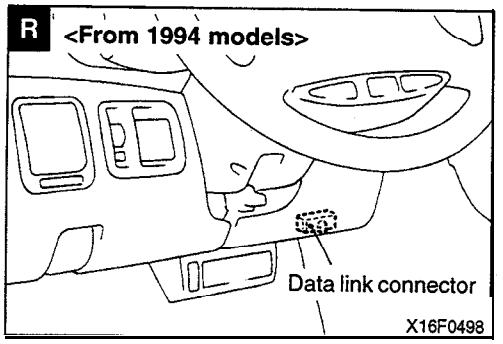
Y7FU0946

R <Up to 1993 models>



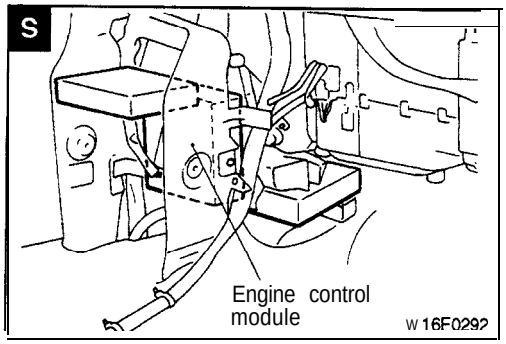
Y7FU0999

R <From 1994 models>



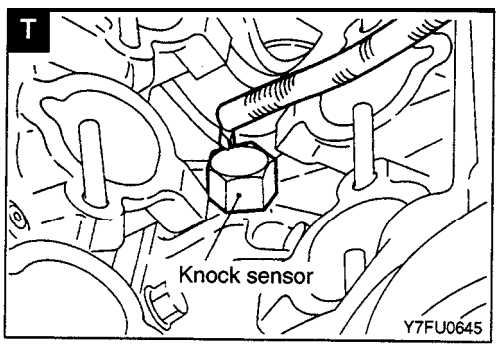
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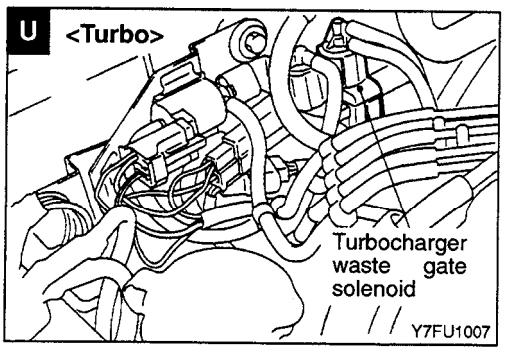
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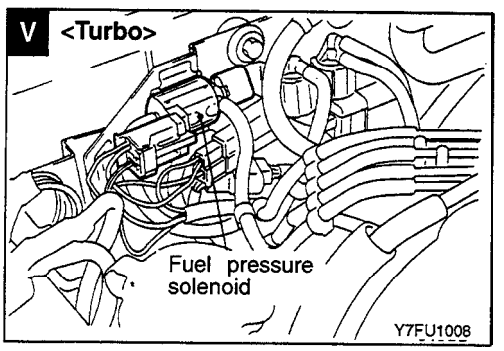
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U <Turbo>



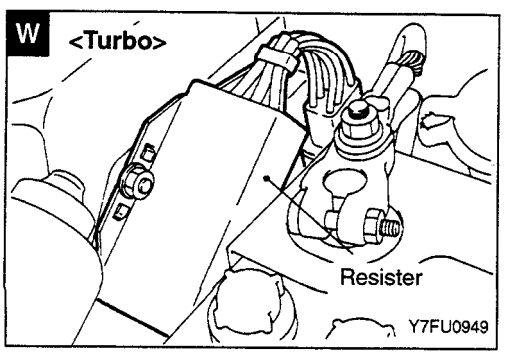
Y7FU1007

V <Turbo>



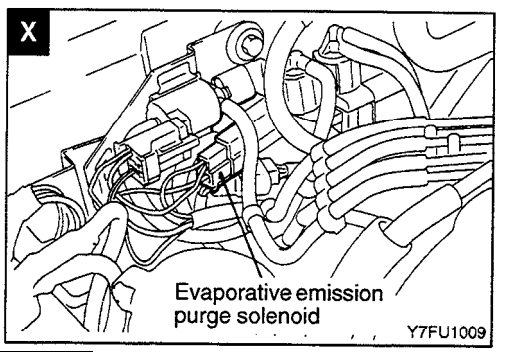
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W <Turbo>



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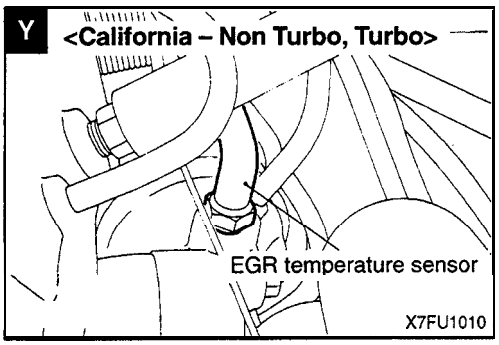
X



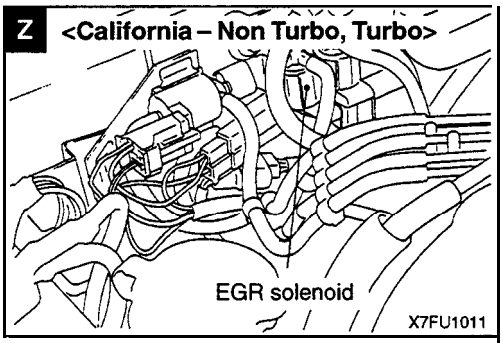
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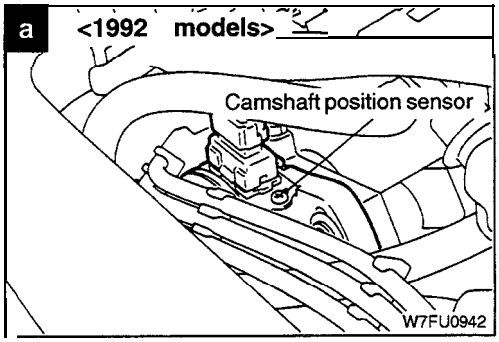
Y <California – Non Turbo, Turbo>



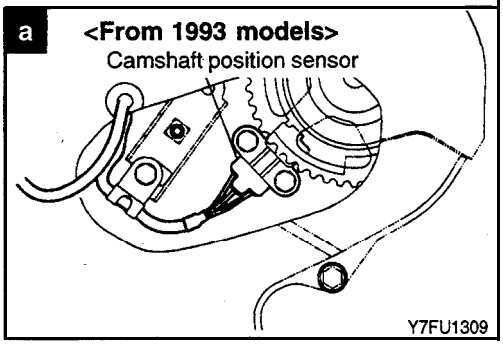
Z <California – Non Turbo, Turbo>



a <1992 models>



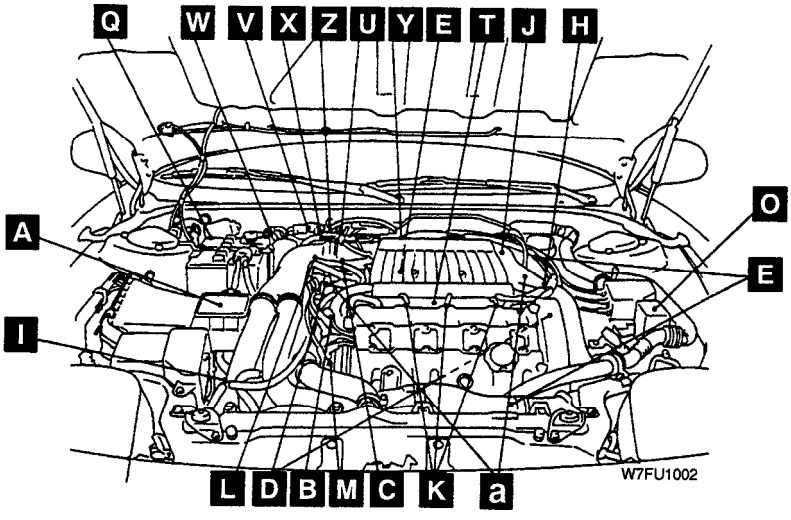
a <From 1993 models>

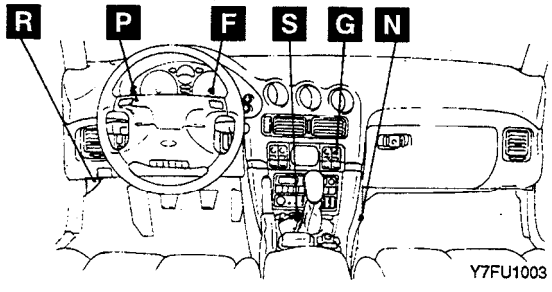


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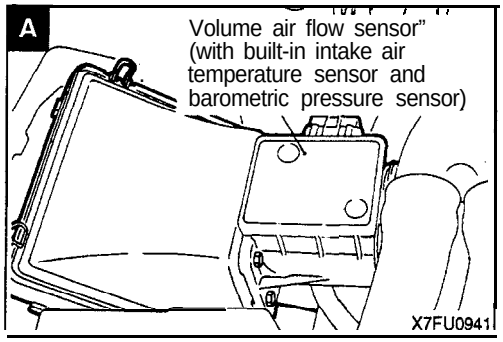
1994, 1995 models except Non Turbo (Federal) and from 1996 models

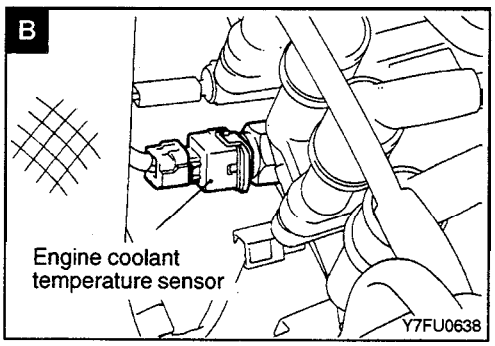
Name	Symbol	Name	Symbol
Air conditioning relay	O	Ignition timing adjusting terminal	Q
Air conditioning switch	G	Injector	K
Camshaft position sensor	a	Knock sensor	T
Check engine/malfunction indicator lamp	P	Left bank heated oxygen sensor	E
Crankshaft position sensor	D	Manifold differential pressure sensor (From 1996 models)	Y
Data link connector	R	Multiport fuel injection (MFI) relay	N
EGR solenoid <Up to 1995 models for California – Non Turbo, Turbo, 1996 models>	Z	Park/Neutral position switch <A/T>	I
EGR temperature sensor <Up to 1995 models for California, Up to 1995 models for Federal -Turbo>	Y	Power steering pressure switch	H
		Resistor <Turbo>	W
Engine control module	S	Right bank heated oxygen sensor	E
Engine coolant temperature seonsor	B	Throttle position sensor (with built-in closed throttle position switch)	C
Evaporative emission purge solenoid	X	Turbocharger waste gate solenoid <Turbo>	U
Fuel pressure solenoid <Turbo>	V	Variable induction control motor (DC motor) (with built-in induction control valve position sensor) <Non Turbo>	J
Heated oxygen sensor	E		
Idle air control motor (stepper motor)	L	Vehicle speed sensor	F
Ignition coil (ignition power transistor)	M	Volume air flow sensor (with built-in intake air temperature sensor and barometric pressure sensor)	A

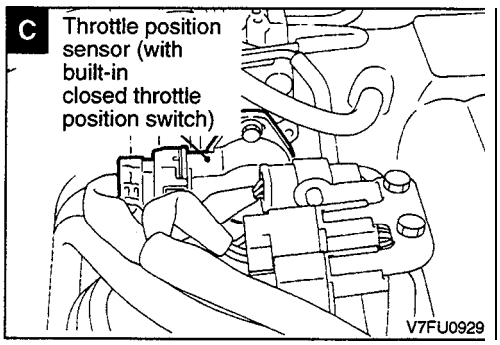


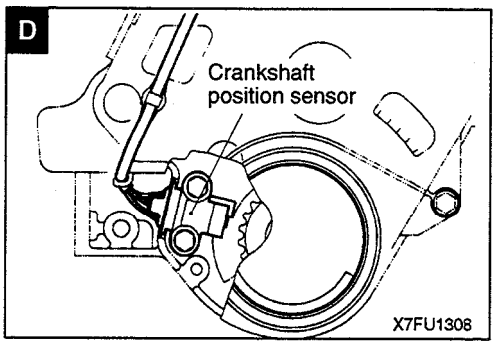


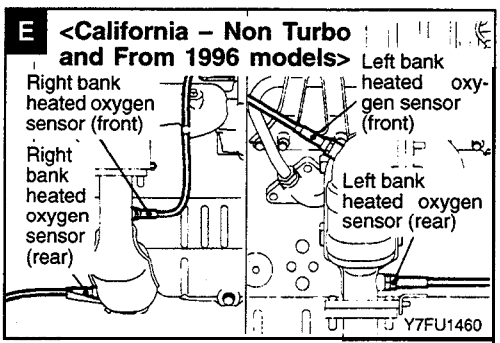
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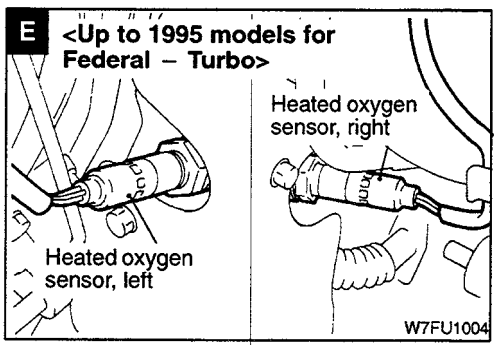
A


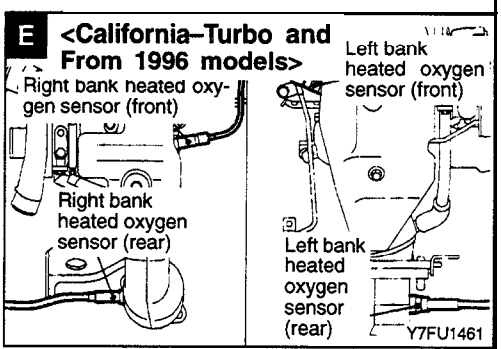
B


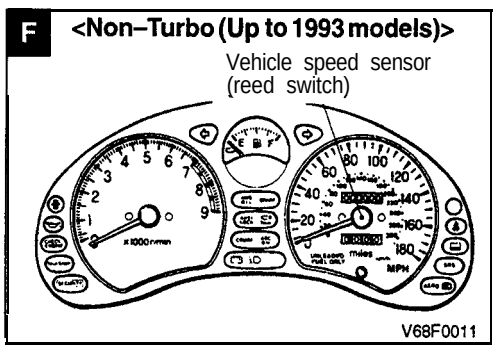
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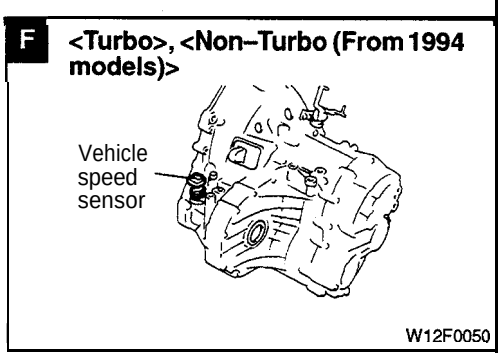
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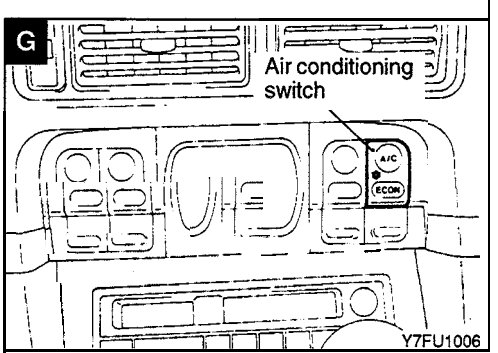
E <California – Non Turbo and From 1996 models>


E <Up to 1995 models for Federal – Turbo>


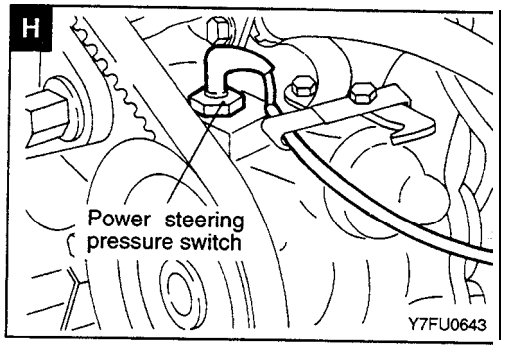
E <California–Turbo and From 1996 models>


F <Non–Turbo (Up to 1993 models)>


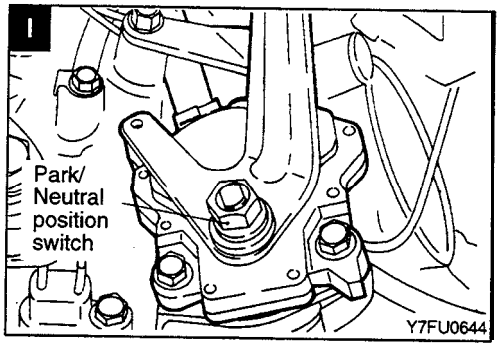
F <Turbo>, <Non–Turbo (From 1994 models)>


G


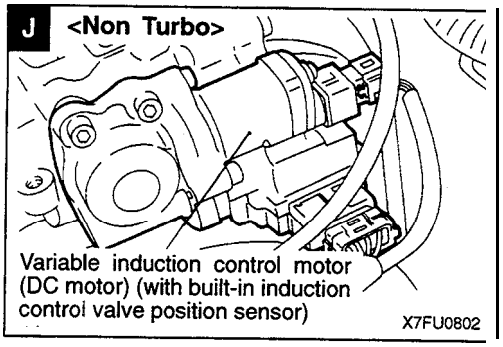
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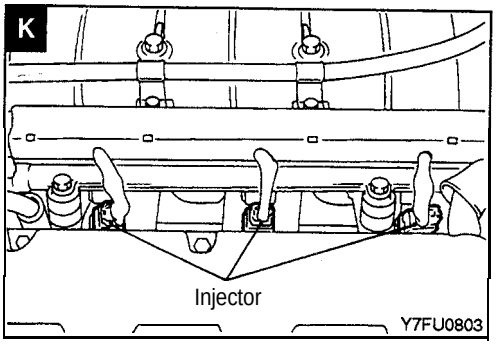
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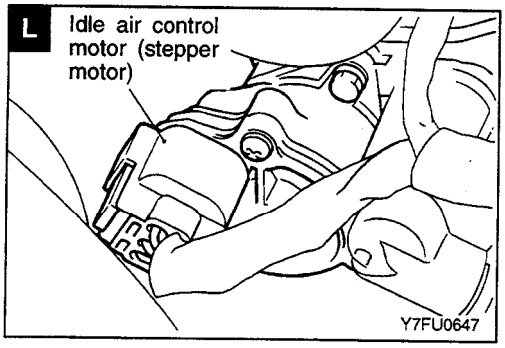
J <Non Turbo>



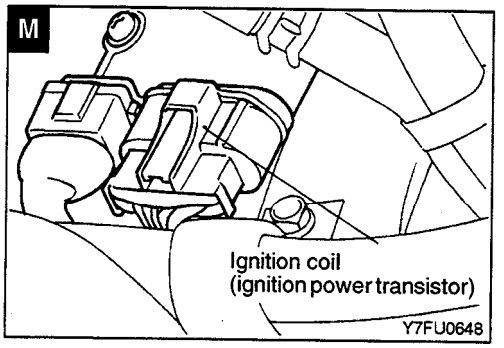
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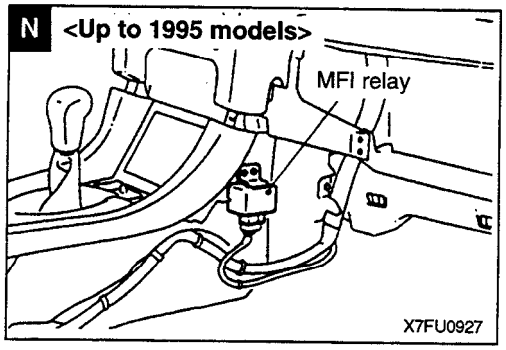
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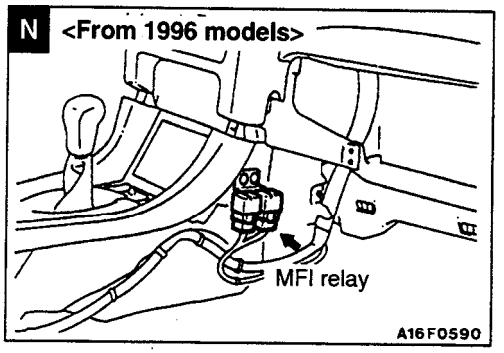
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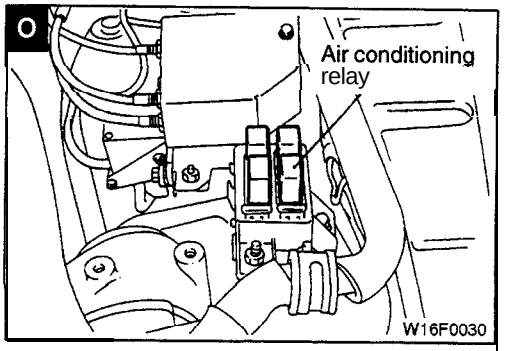
N <Up to 1995 models>



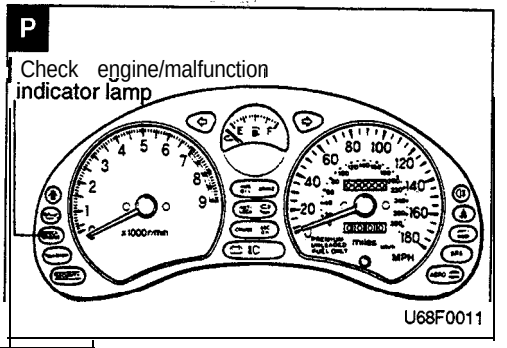
N <From 1996 models>



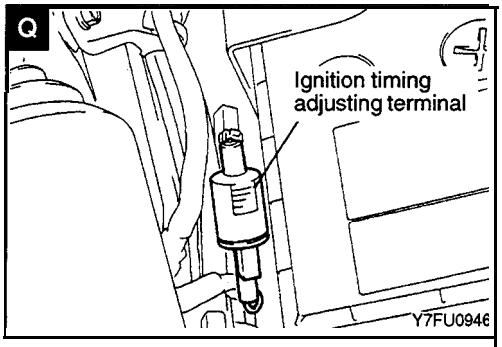
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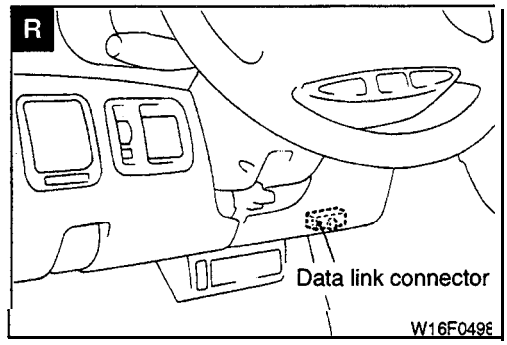
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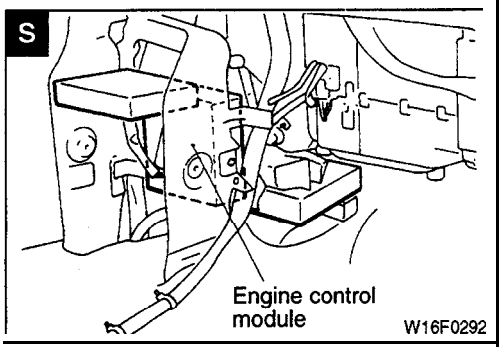
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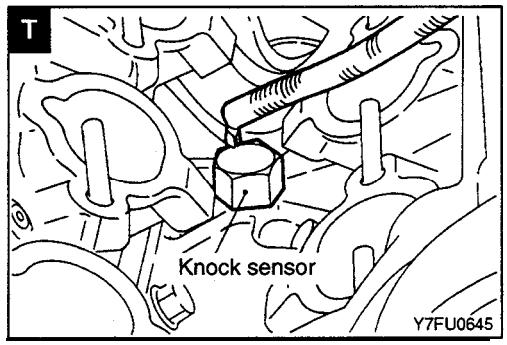
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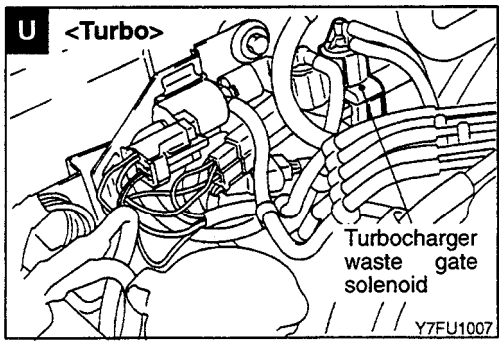
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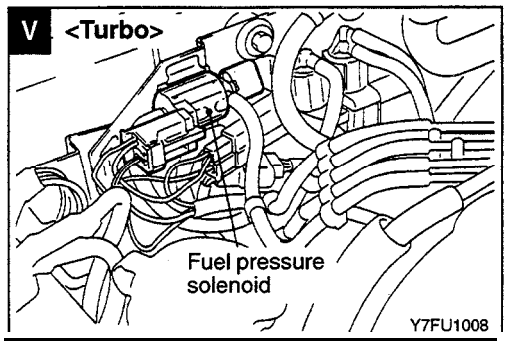
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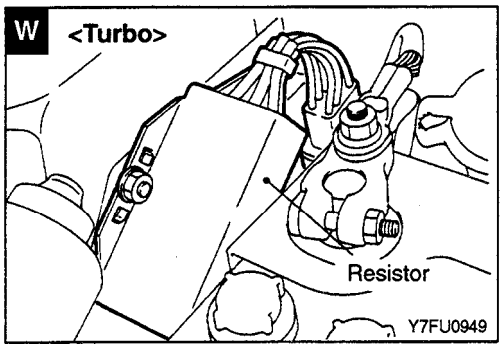
U <Turbo>



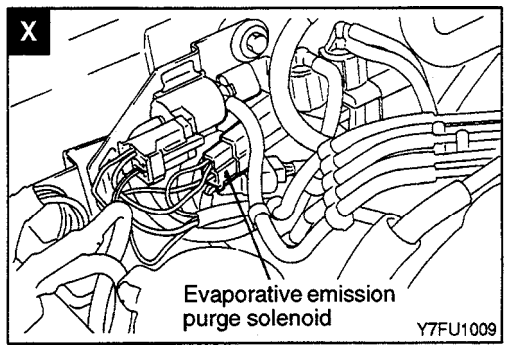
V <Turbo>



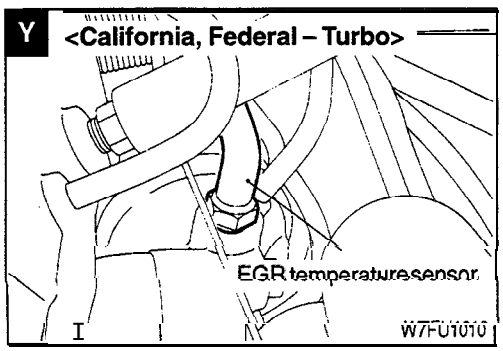
W <Turbo>



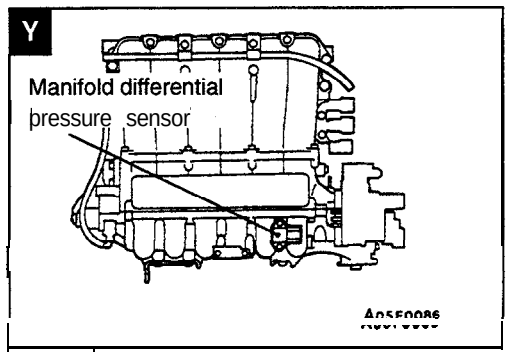
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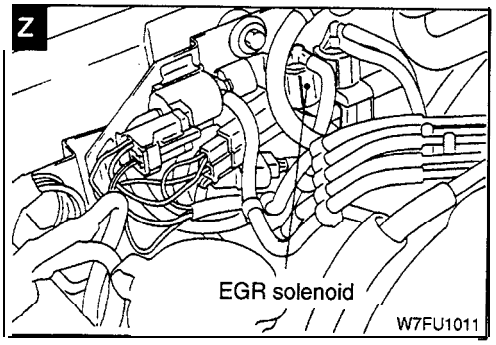
Y <California, Federal – Turbo>



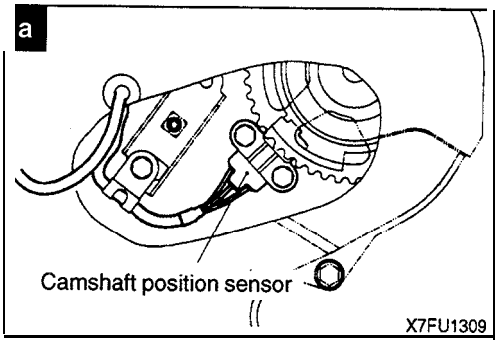
Y



z



a

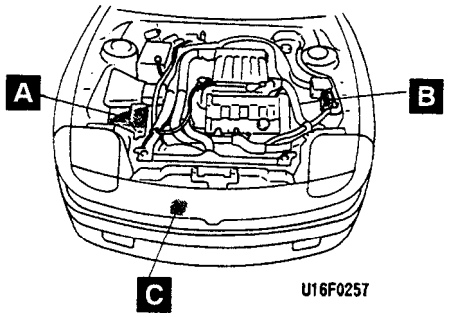


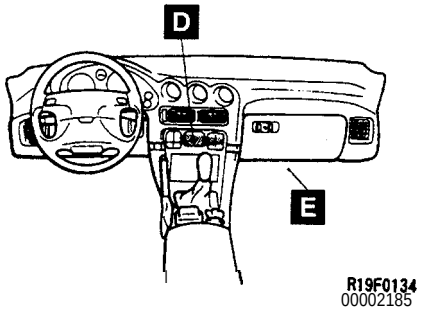
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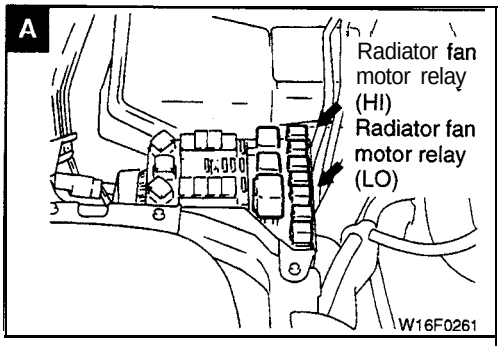
COOLING

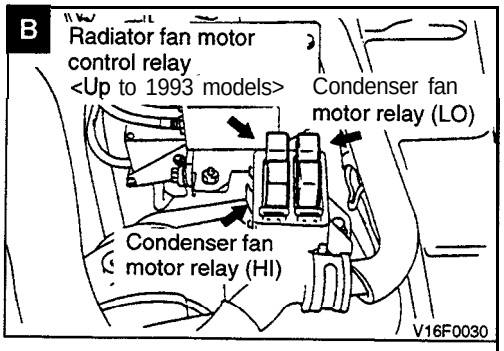
COMPONENT LOCATION

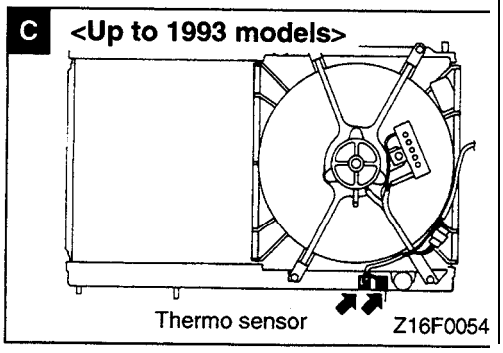
Name	Symbol	Name	Symbol
Air conditioning compressor lock controller	E	Radiator fan motor control relay (up to 1993 models)	B
Air conditioning control unit	D	Radiator fan motor relay (HI)	A
Condenser fan motor relay (Hi)	B	Radiator fan motor relay (LO)	A
Condenser fan motor relay (LO)	B	Thermo sensor	C

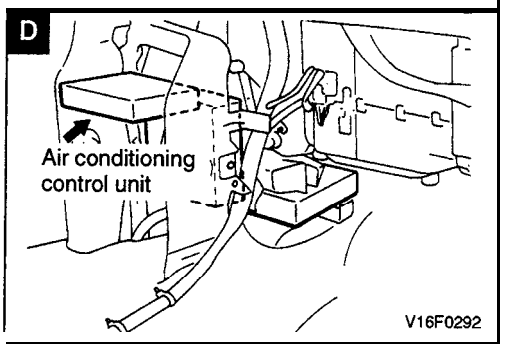


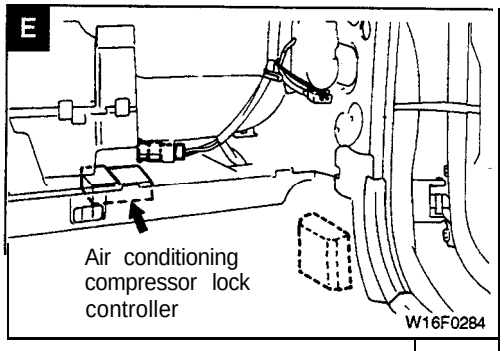






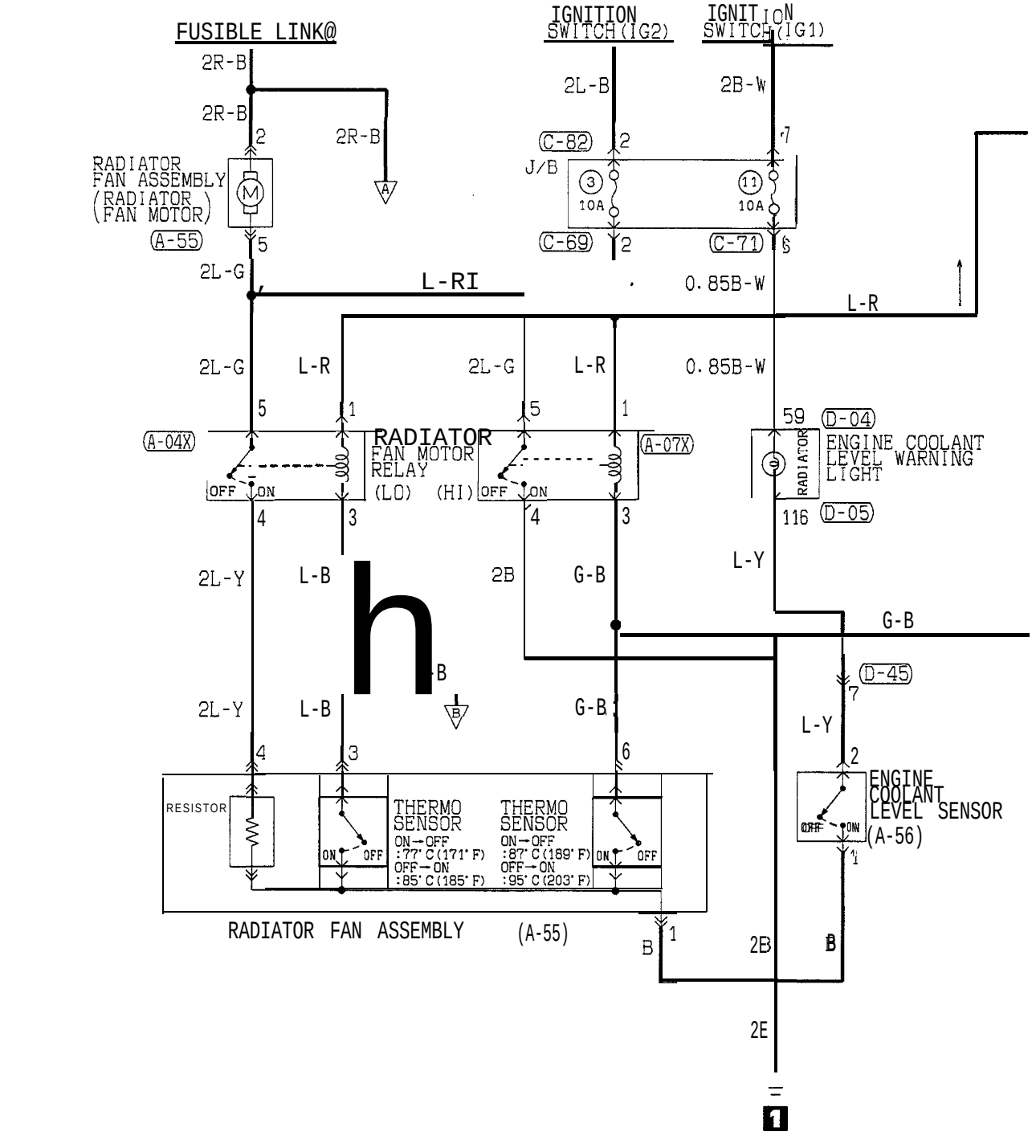


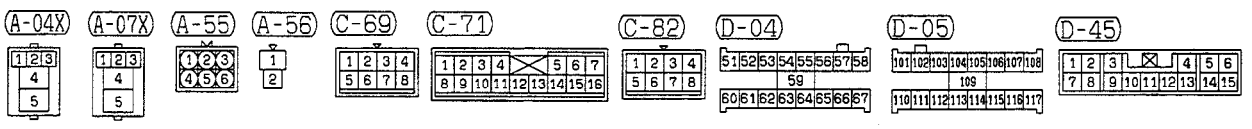




TSB Revision

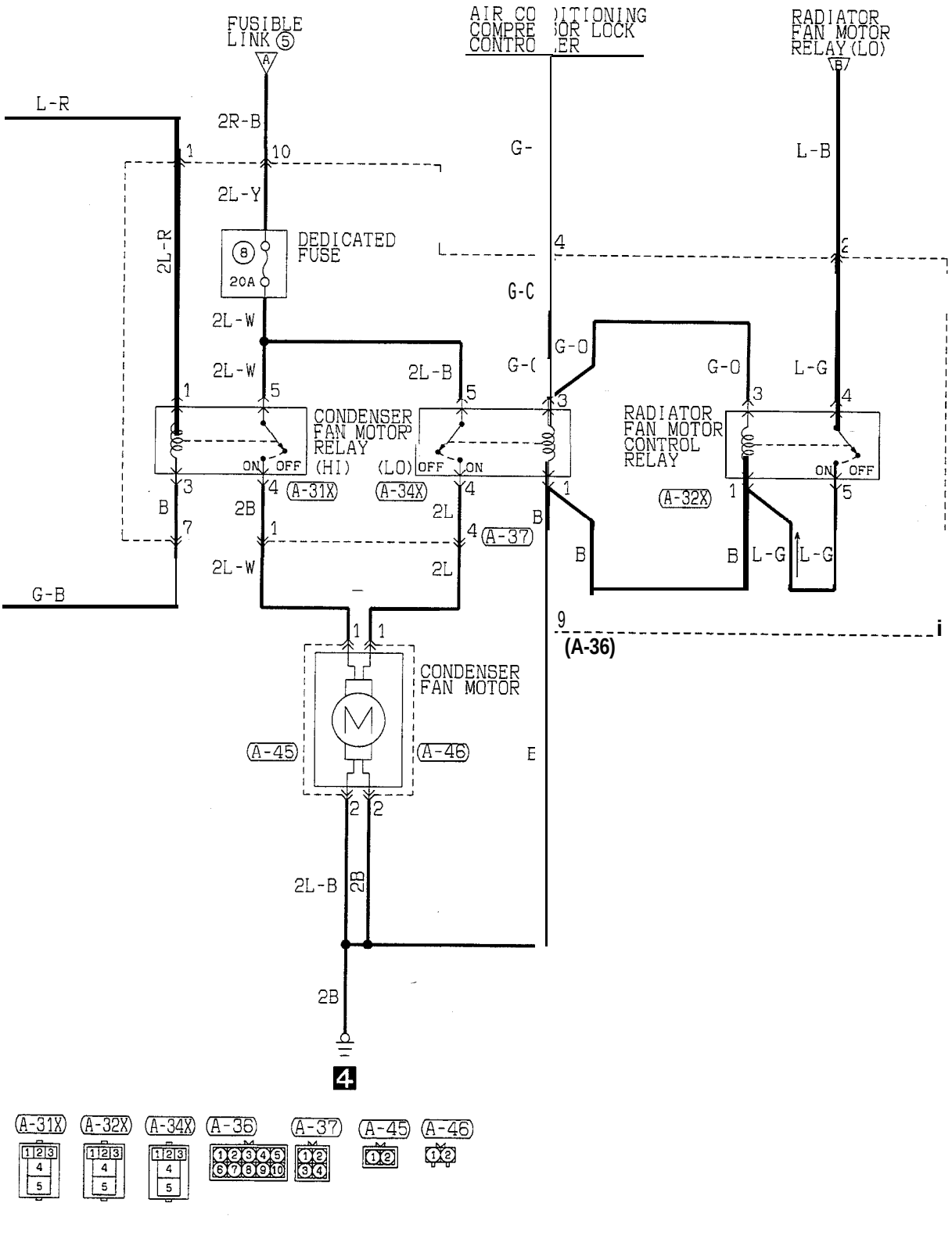
COOLING CIRCUIT (UP TO 1993 MODELS)





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TSB Revision

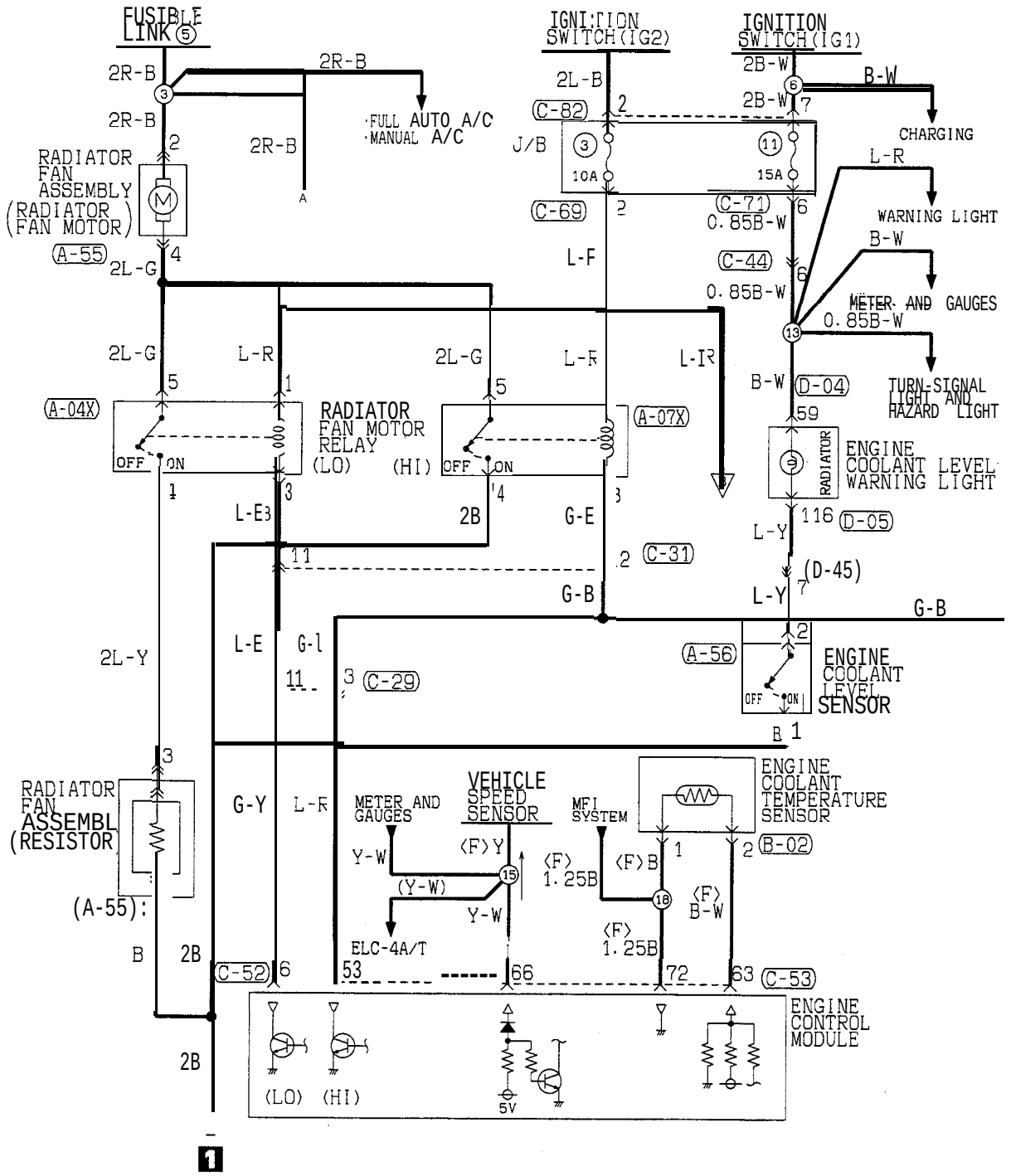


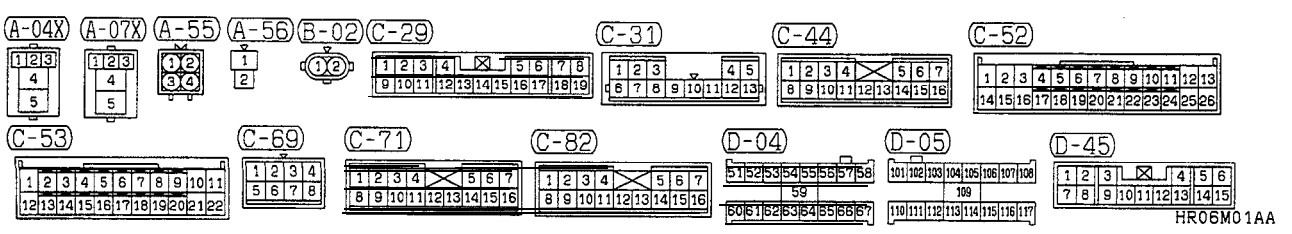
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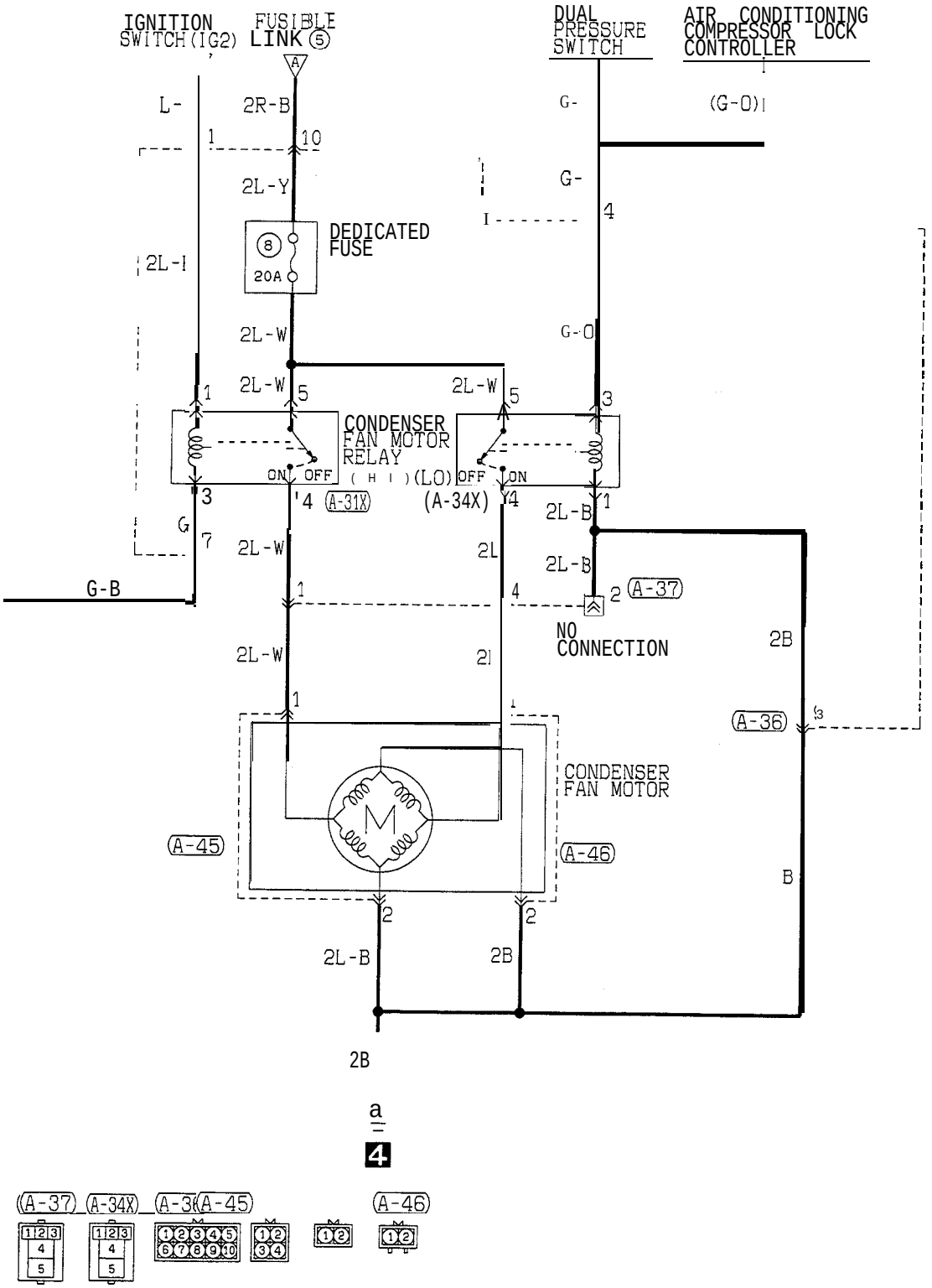
COOLING CIRCUIT (1994, 1995 MODELS)

<NON TURBO> (FEDERAL)





TSB Revision

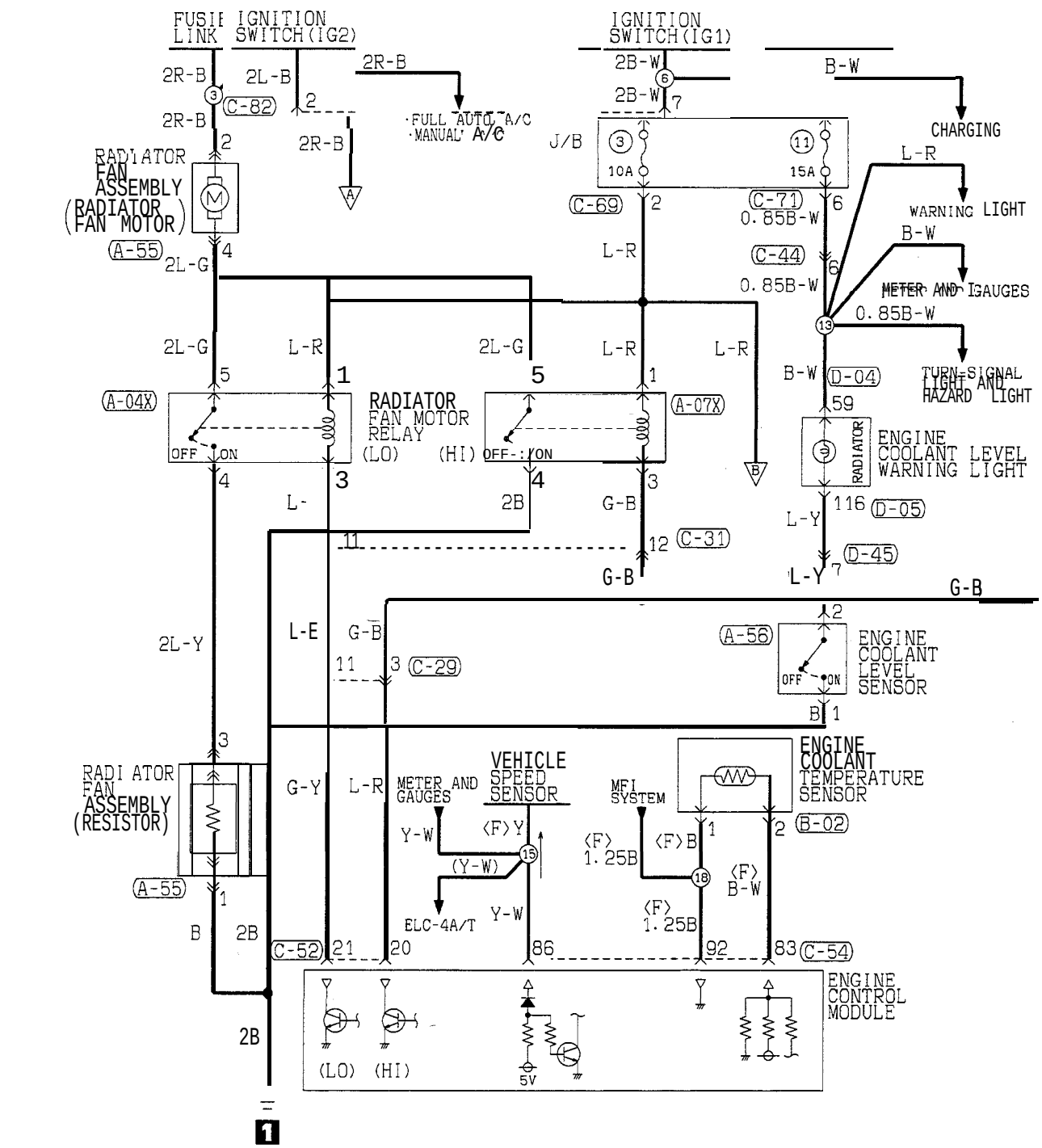


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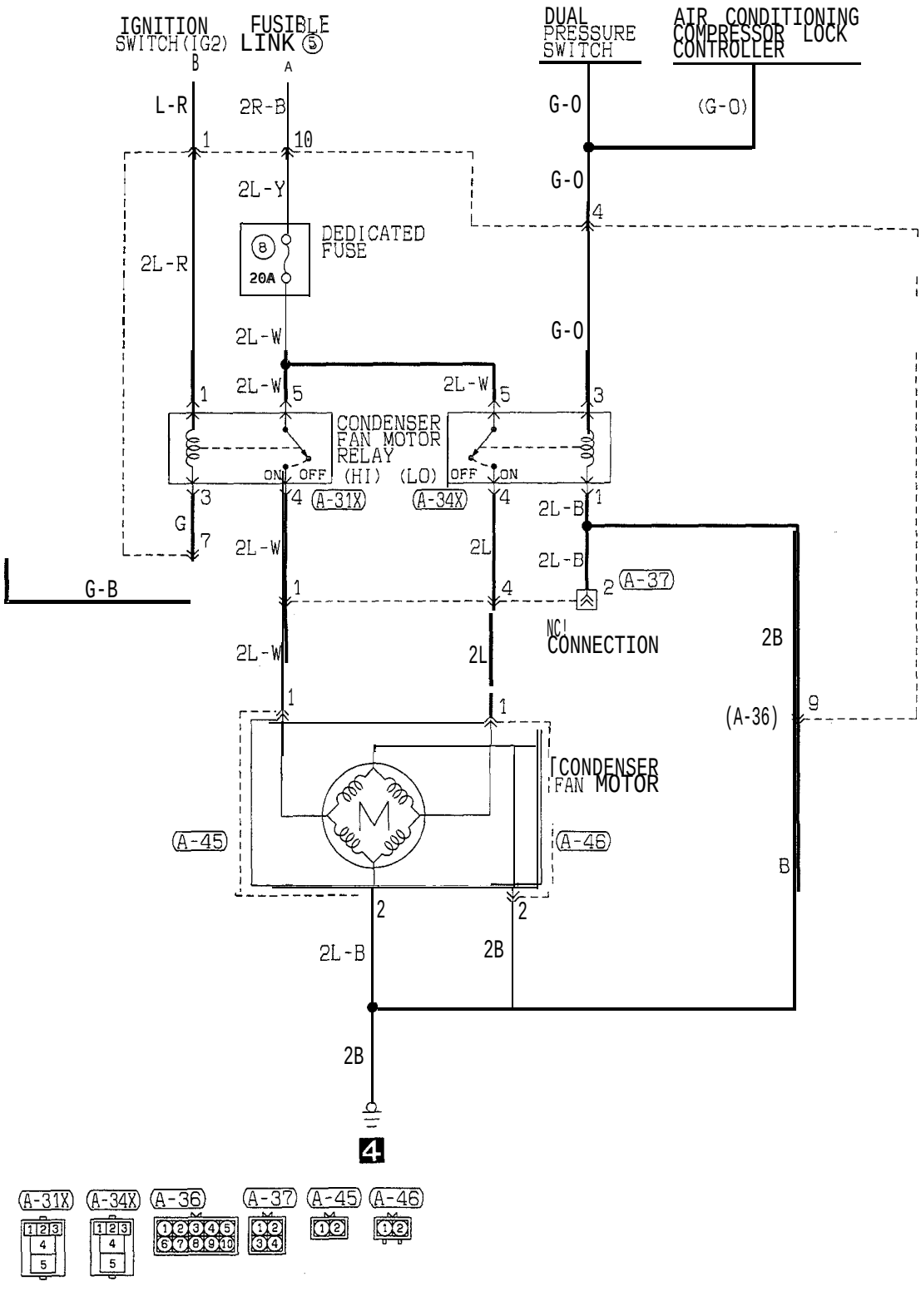
TSB Revision

COOLING CIRCUIT (1994, 1995 MODELS)

<TURBO, NON TURBO (CALIFORNIA)>



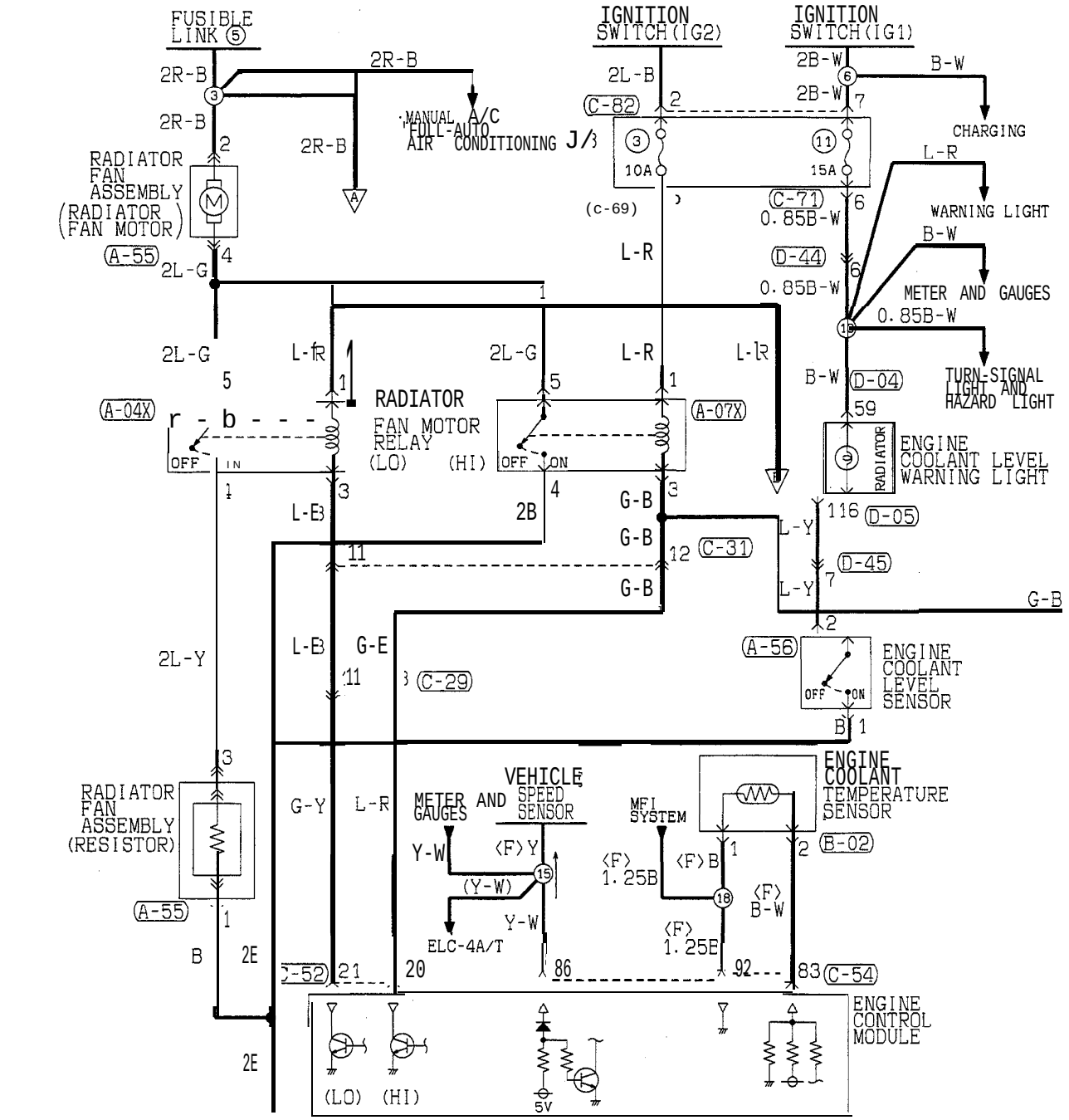
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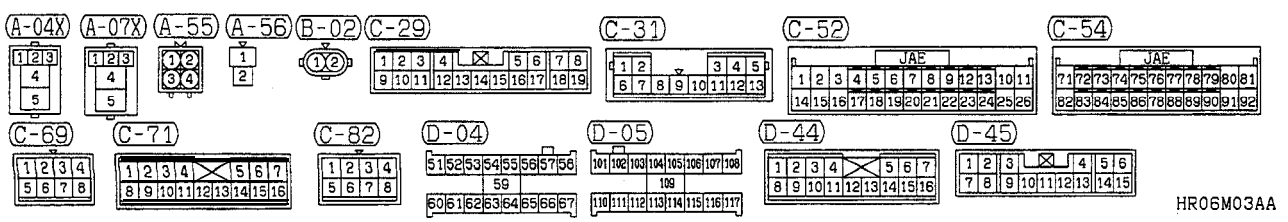
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TSB Revision

COOLING CIRCUIT (FROM 1996 MODELS)

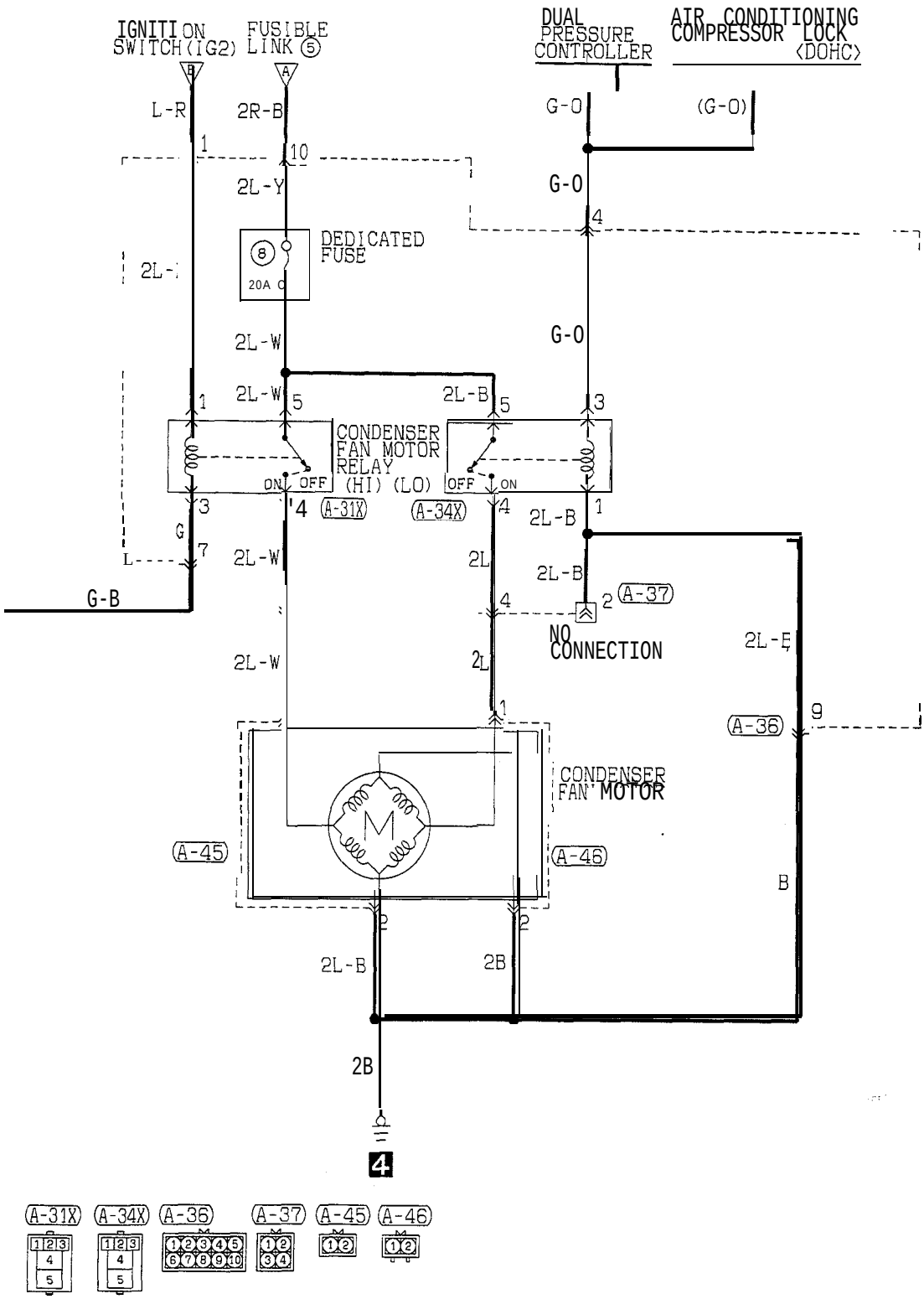


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<Up to 1993 models>
TROUBLESHOOTING HINTS

1. Neither the radiator fan nor condenser fan rotate at all.

- Check fusible link No. 5

2. Only the condenser fan does not operate.

- Check dedicated fuse No. 8.

3. The radiator fan and condenser fan do not operate in the low speed mode, but operate otherwise.

(1) The A/C compressor magnet clutch does not enter the "ON" state.
- Check whether the output of the auto compressor control unit is available.

NOTE
For troubleshooting of the air conditioning control unit, refer to GROUP 55.

(2) The A/C compressor magnet clutch enters the "ON" state.
- Check the resistor.
- Check the radiator fan motor relay (LO) and condenser fan motor relay (LO).
- Check the thermo sensor (for radiator fan).

(3) The radiator fan does not rotate when the air conditioning switch is turned ON.
- Check the radiator fan motor control relay.

4. The radiator fan and condenser fan do not operate in the high speed mode, but **operate otherwise.**

- Check the thermo sensor (for condenser fan).
- Check the radiator fan motor relay (HI) and condenser fan motor relay (HI).

Fan Operating Mode

Air conditioning switch	Thermo sensor for radiator fan ON at 85 ± 4°C (185 ± 7°F) or more OFF at 77°C (171°F) or less	Thermo sensor for condenser fan ON at 95 ± 4°C (203 ± 7°F) or more OFF at 87°C (189°F) or less	A/C engine coolant temperature switch (for air conditioning cut-off) OFF at 115 ± 3°C (239 ± 5°F) or over, ON at 108°C (226°F) or less	Radiator fan motor	Condenser fan motor Condenser fan motor operates in HIGH only when it receives input from condenser fan motor relay (HI) and (LO).
OFF	OFF	OFF	–	OFF	OFF
	ON	OFF		LOW	OFF
		ON		HIGH	LOW
ON	OFF	OFF	ON	LOW	LOW
	ON	OFF		LOW	LOW
		ON		HIGH	HIGH
			OFF	HIGH	LOW

<From 1994 models>
OPERATION

The engine control module controls the power transistors (high speed and low speed) in the module to provide radiator fan motor and condenser fan motor rotation controls in accordance with the engine coolant temperature and vehicle speed.

1. Radiator Fan (Low Speed Rotation)

- When the engine control module turns on the power transistor (low speed) in the module, the current flows from the ignition switch to the engine control module through the radiator fan motor relay (LO) coil.
  If the current flows to the fan motor relay coil, the switch of the relay turns on to supply the motor driving power (for low speed rotation). This will cause the current to flow from the battery to the ground through the radiator fan motor, relay switch and resistor, rotating the radiator fan at low speeds.

2. Condenser Fan (Low Speed Rotation)

- The power from the A/C compressor lock controller turns on the condenser fan motor relay (LO) to rotate the condenser fan at low speeds.

3. Radiator Fan, Condenser Fan (High Speed Rotation)

- When the engine control module turns on the power transistor (high speed) in the module. the radiator fan motor relay (HI) and condenser fan motor relay (HI) will operate and the motor driving power (for high speed rotation) is sent to the radiator fan motor and condenser fan motor to rotate the radiator fan and condenser fan at high speeds.

NOTE
In the event of faulty water temperature sensor, the engine control module commands the fan motors (for both radiator and condenser) to rotate at high speeds.

TROUBLESHOOTING HINTS

1. Neither the radiator fan nor condenser fan rotate at all.

- Check fusible link No. 5.

2. Only the condenser fan does not operate.

- Check dedicated fuse No. 8.

3. The condenser fan do not operate in the low speed mode, but operate otherwise.

(1) The A/C compressor magnet clutch does not enter the “ON” state.
- Check whether the output of the air conditioning compressor lock controller unit is available.

(2) The A/C compressor magnet clutch enters the “ON” state.
- Check the condenser fan motor relay (LO).

4. The radiator fan and condenser fan do not operate in the high speed mode, but operate otherwise.

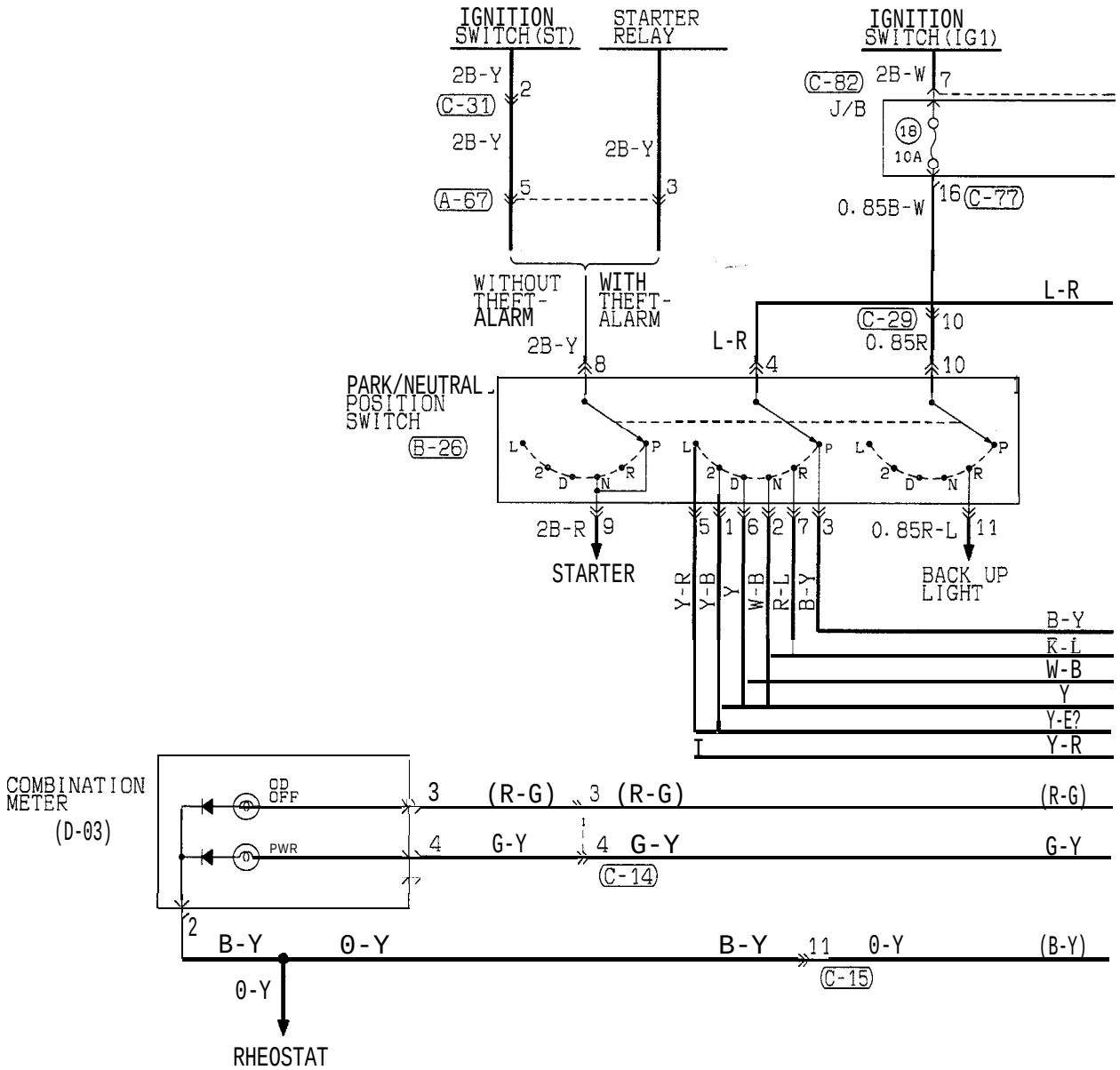
- Check the engine control unit.

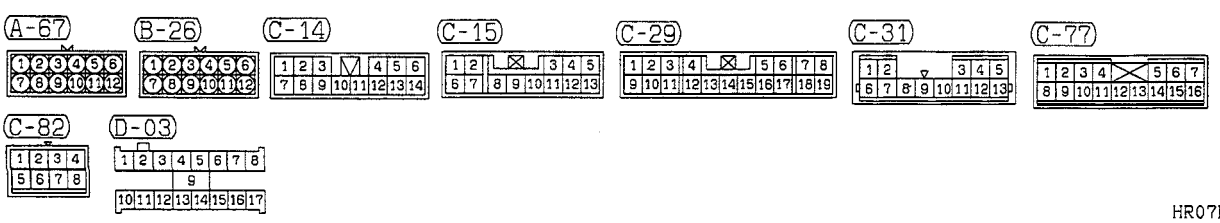
Fan Operating Mode

A/C compressor lock controller output	Vehicle speed km/h [mph]	Engine coolant temperature °C [°F]	Transistor in engine control unit Low speed	Transistor in engine control unit High speed	Radiator fan	Condenser fan
LO (0V)	80 or less [50 or less]	Approx. 95 [203] or less	OFF	OFF	OFF	OFF
		Approx. 95 [203] or more	ON	OFF	Low speed	OFF
		Approx. 105 [221] or more	ON	ON	High speed	High speed
	80 or more [50 or more]	Approx. 105 [221] or less	OFF	OFF	OFF	OFF
		Approx. 105 [221] or more	ON	ON	High speed	High speed
HI (12V)	–	Approx. 105 [221] or less	ON	OFF	Low speed	Low speed
		Approx. 105 [221] or more	ON	ON	High speed	High speed

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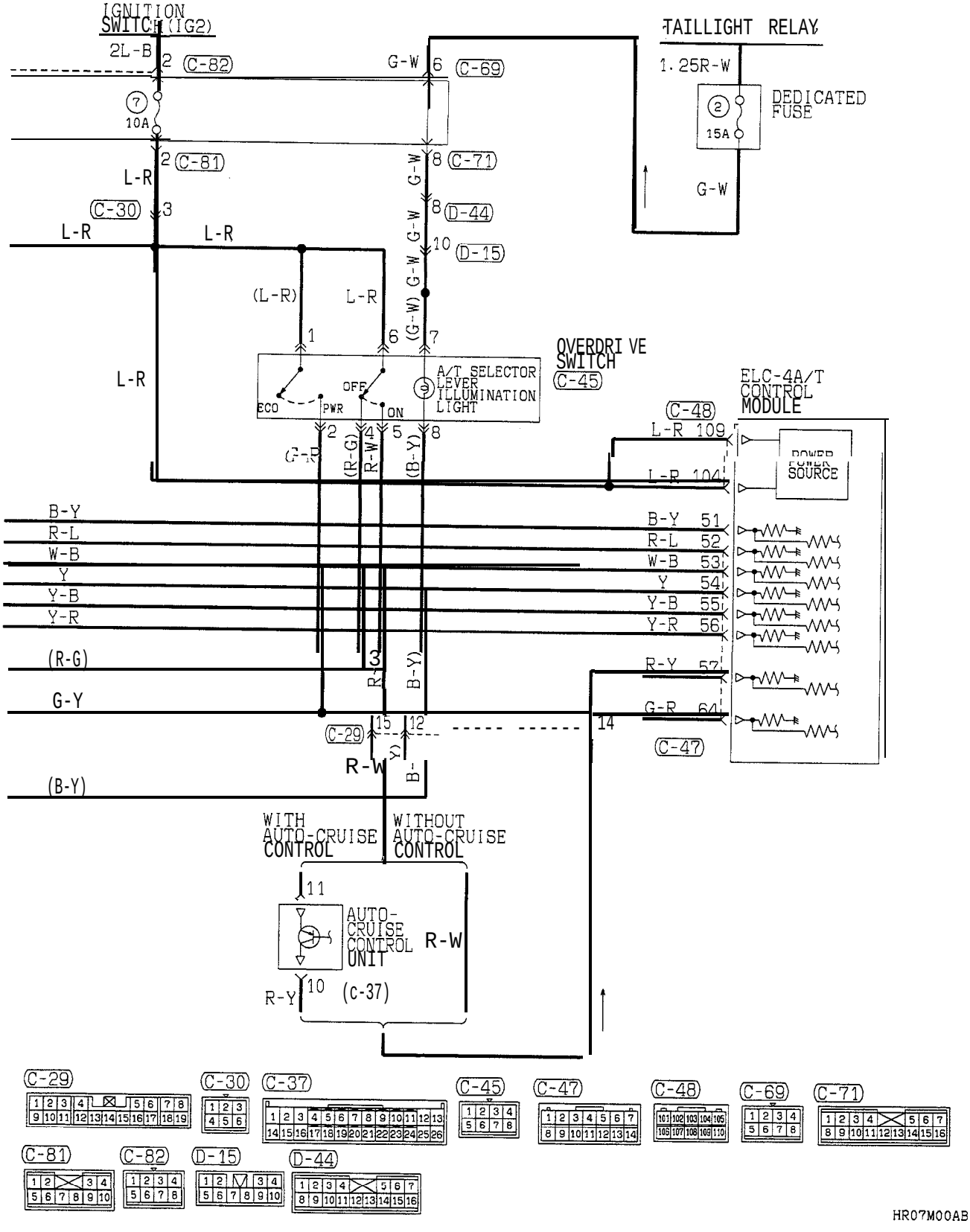
ELC-4 A/T CIRCUIT (1992 MODEL)





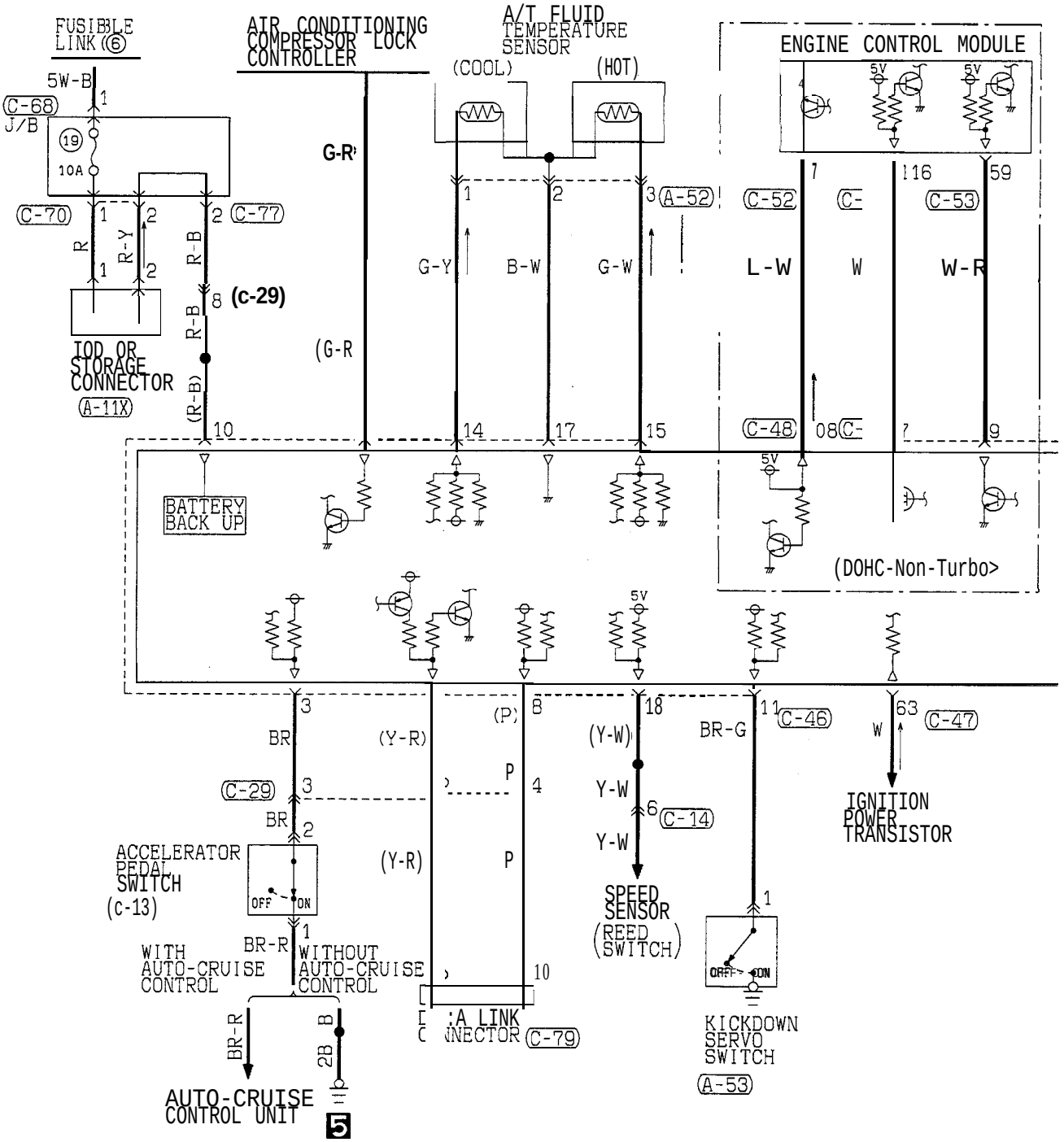
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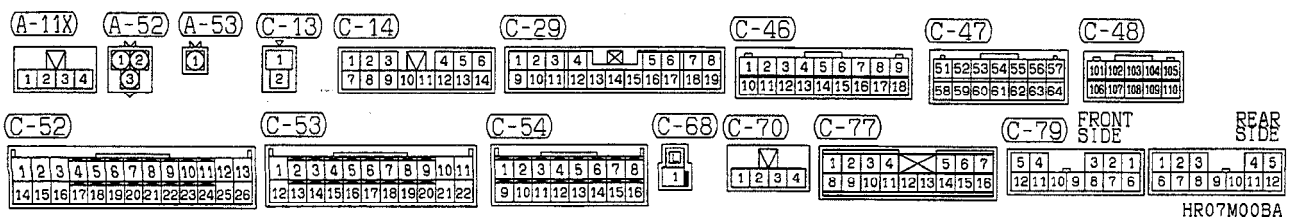
TSB Revision



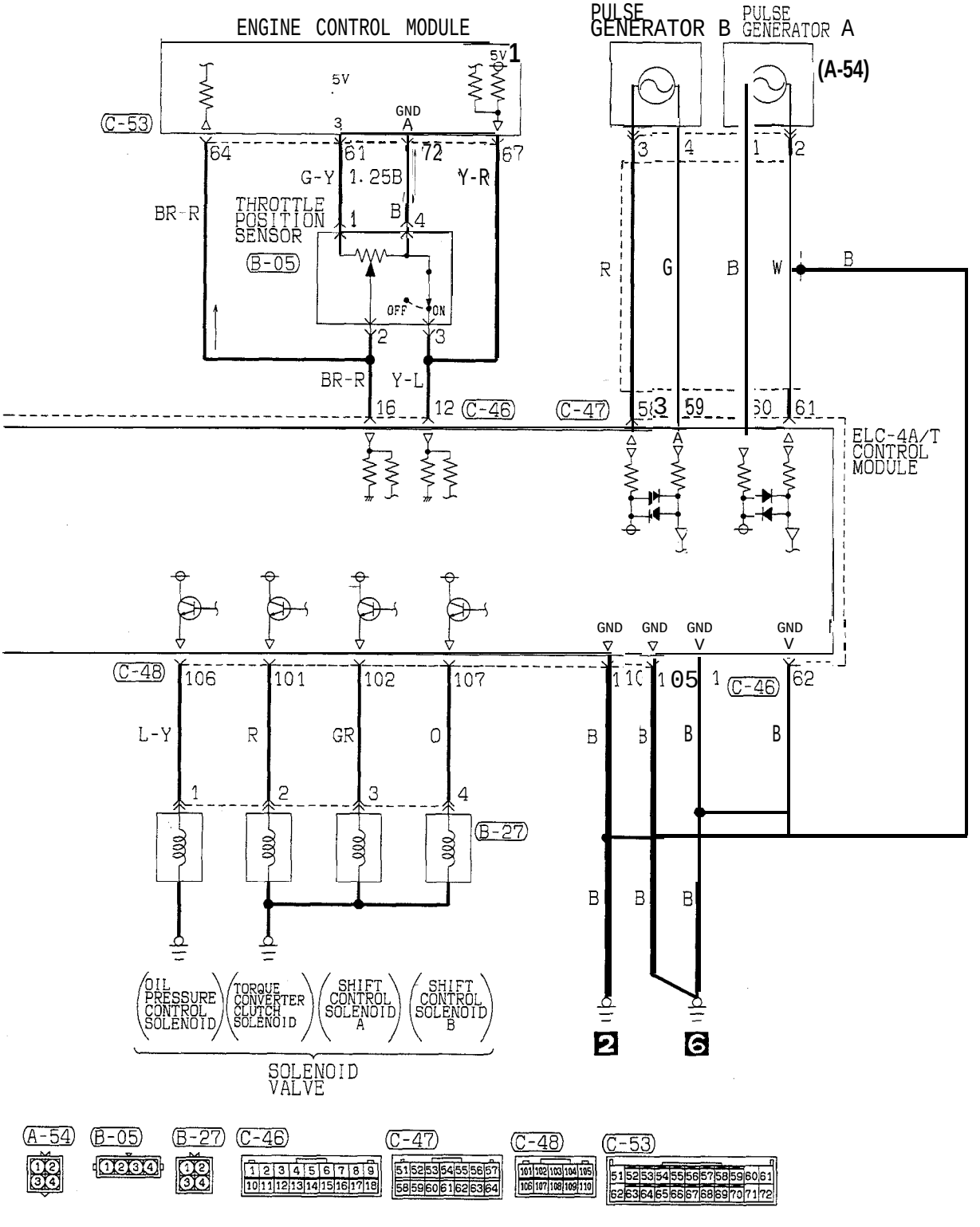
TSB Revision

ELC-4 A/T CIRCUIT (1992 MODEL) (CONTINUED)





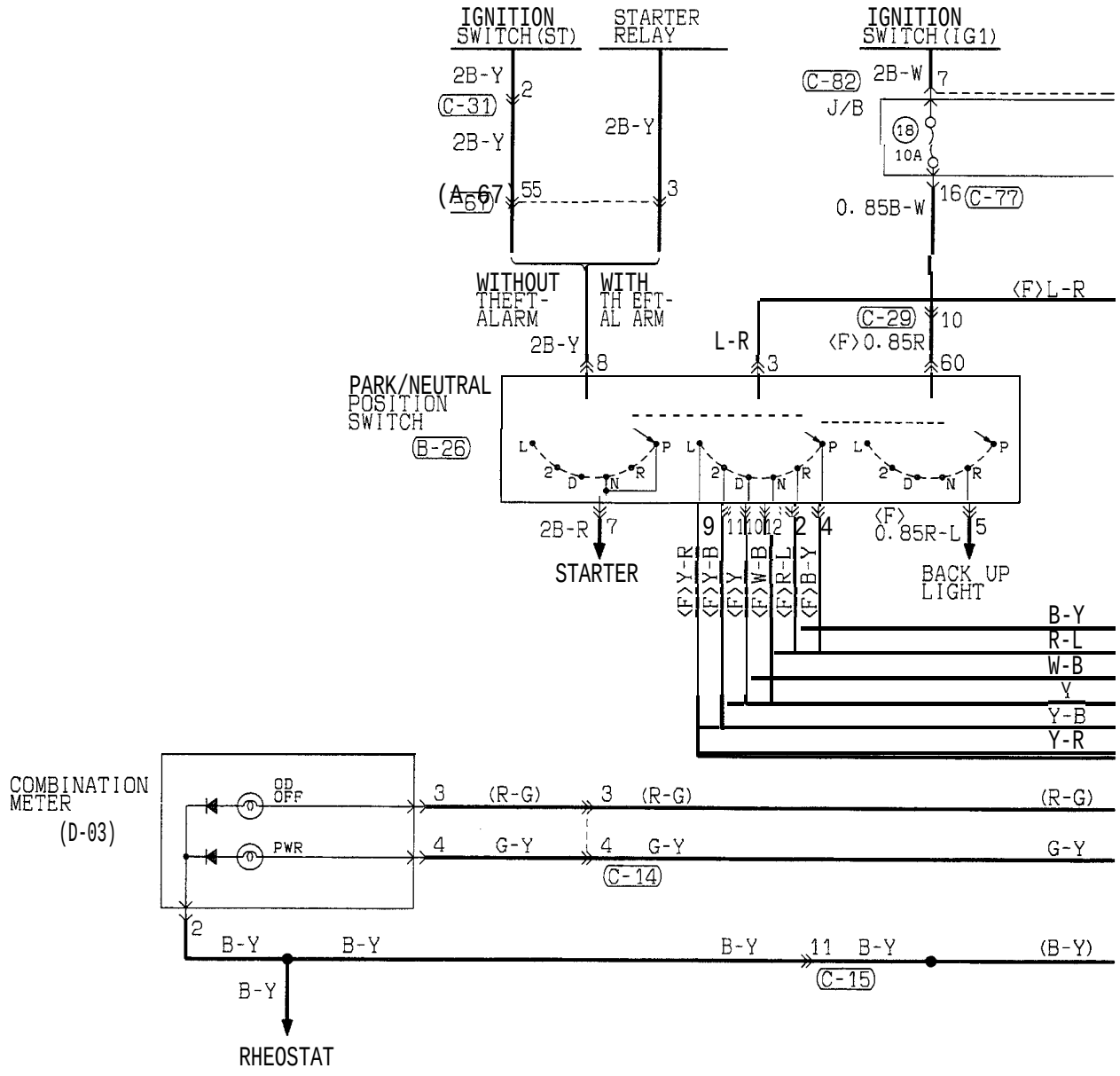
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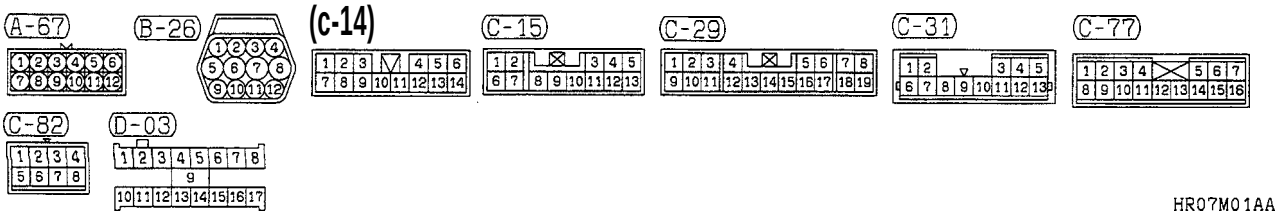


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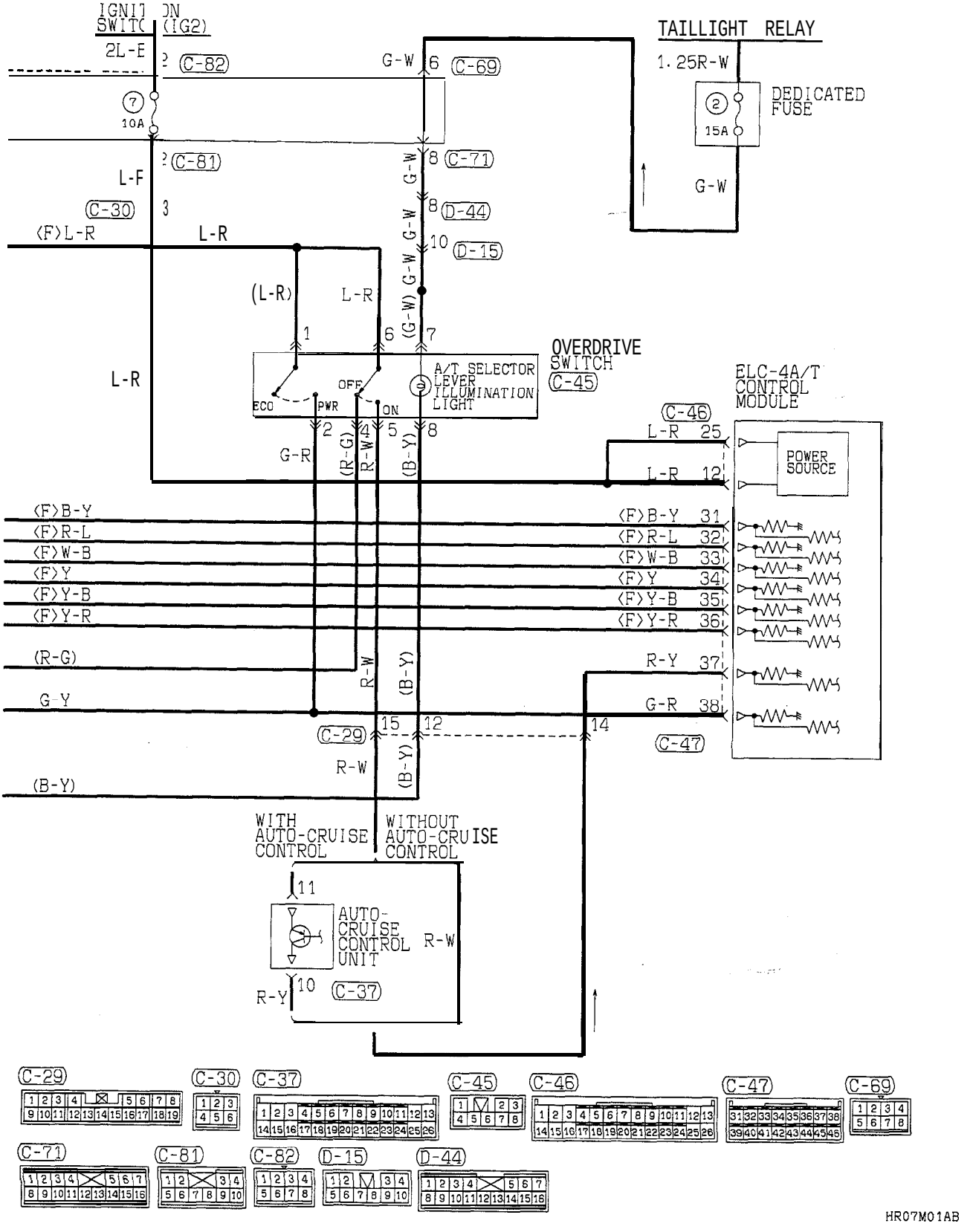
ELC-4 A/T CIRCUIT (1993 MODELS)





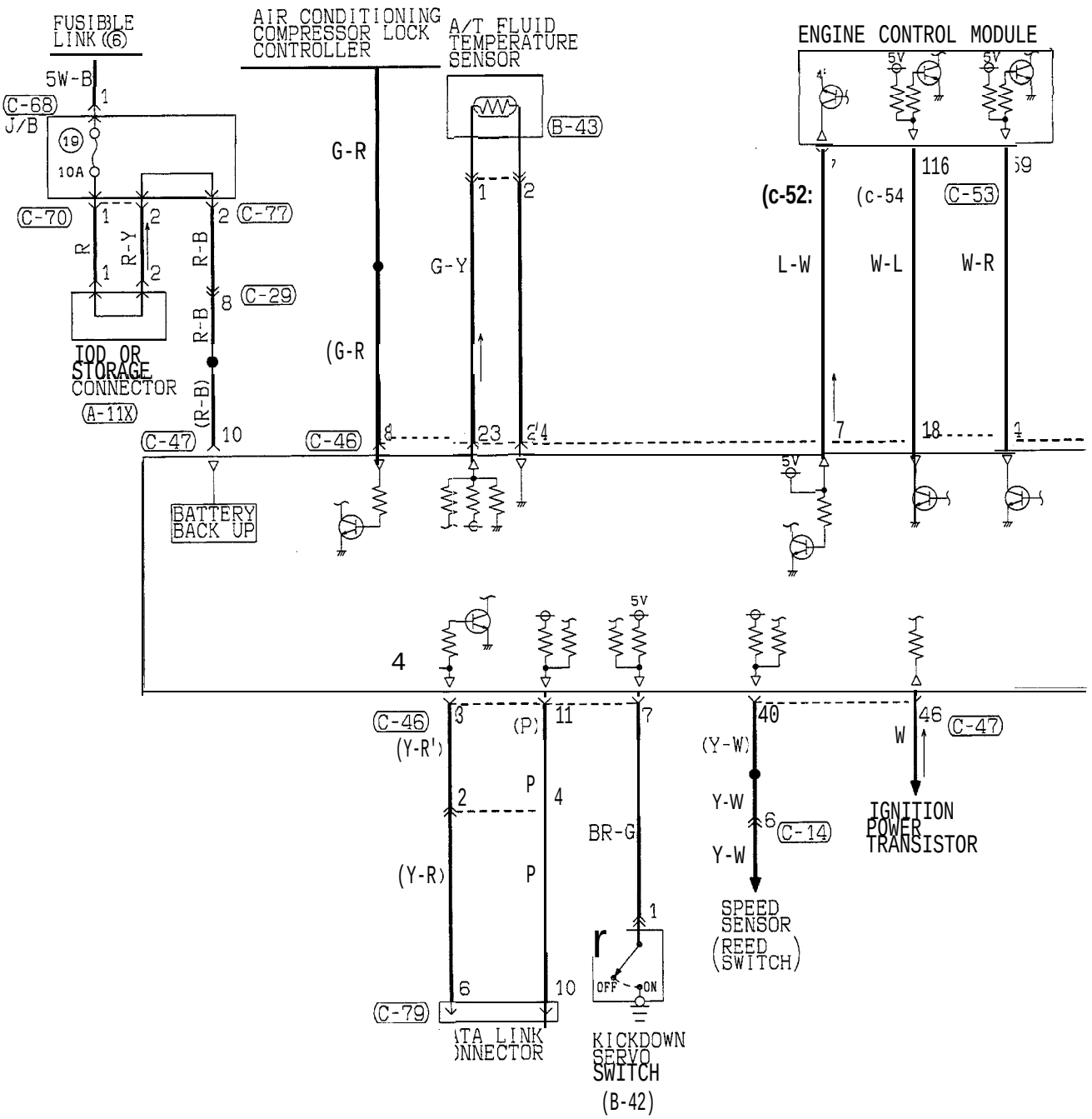
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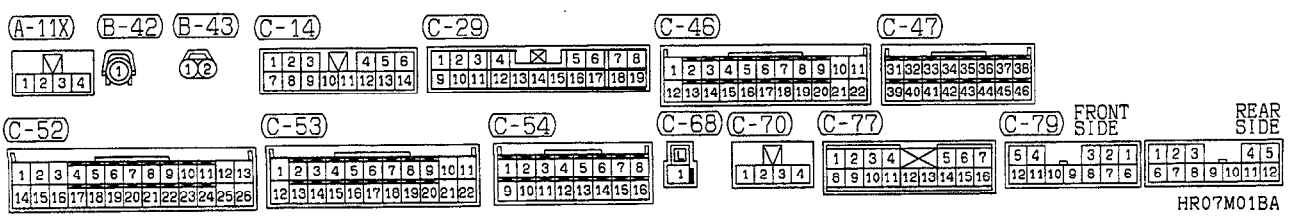
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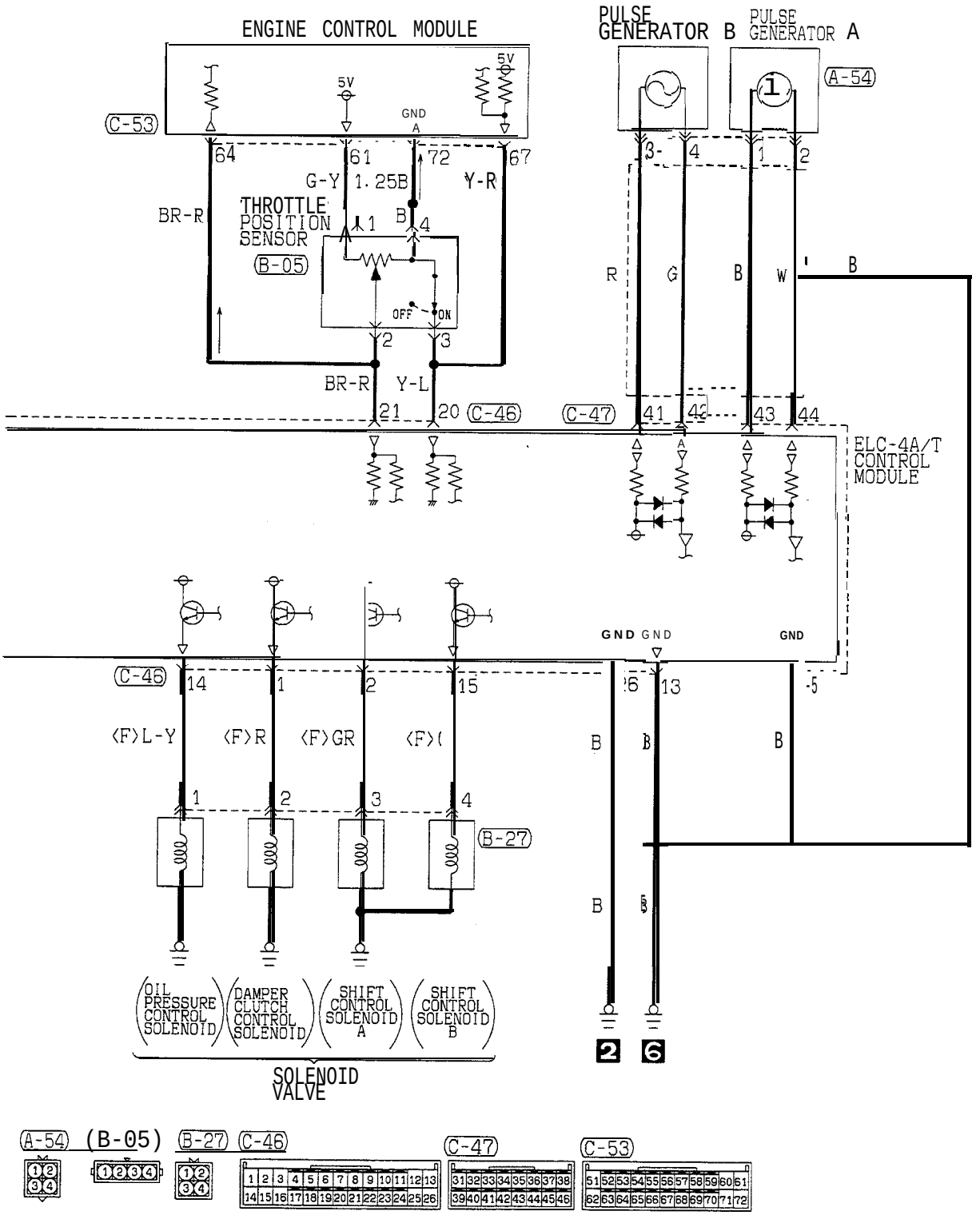
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ELC-4 A/T CIRCUIT (1993 MODELS) (CONTINUED)





TSB Revision

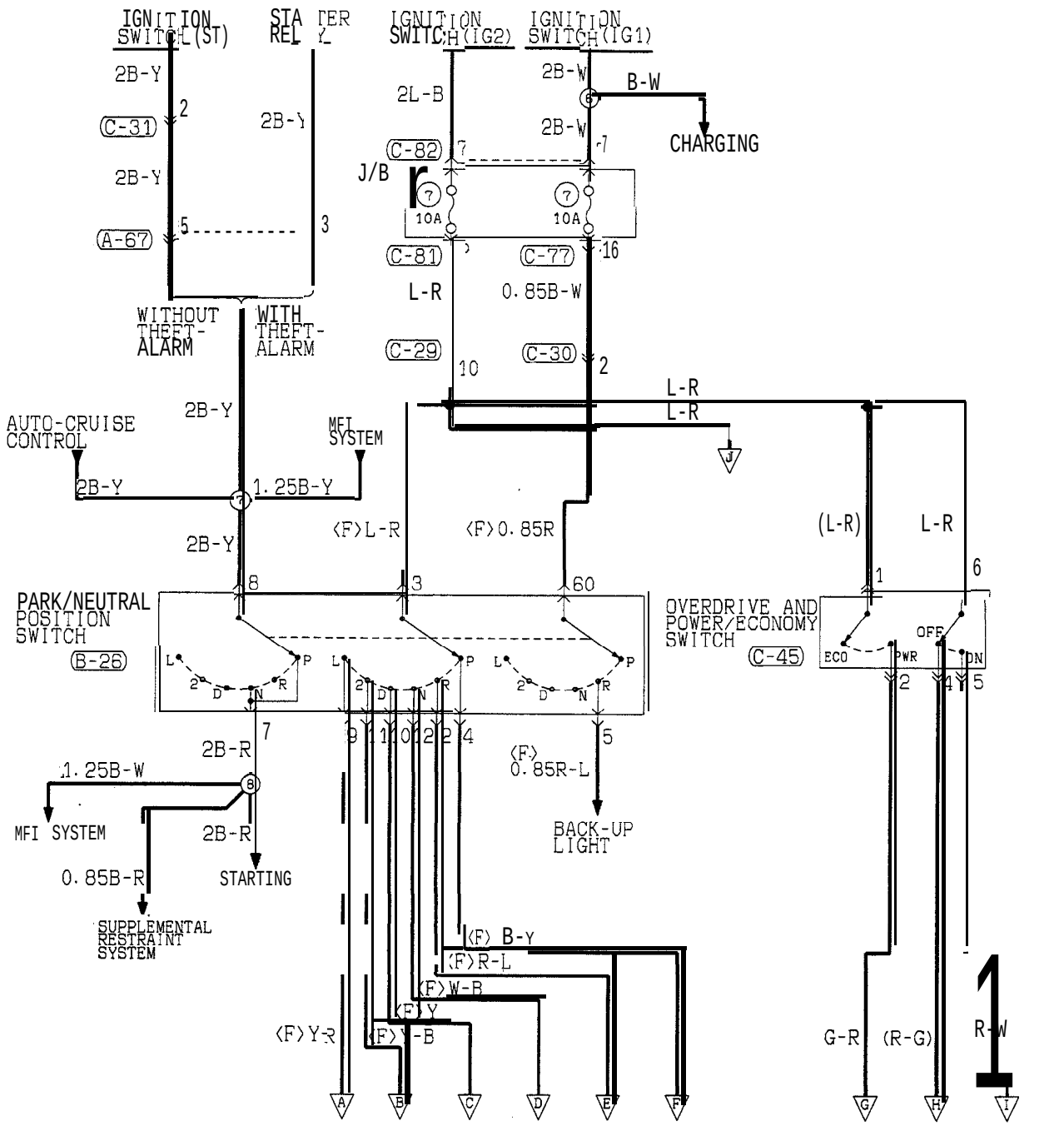


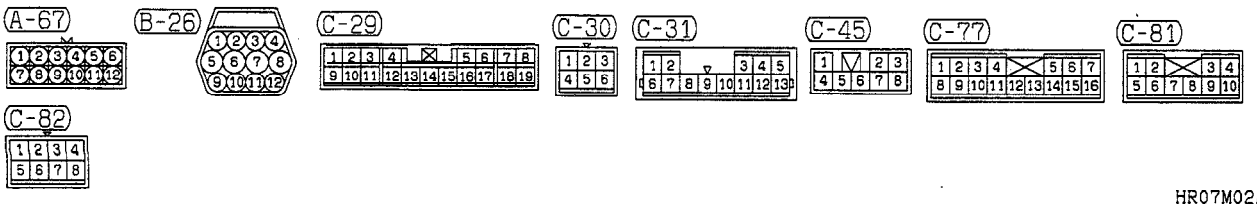
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ELC-4 A/T CIRCUIT (1994, 1995 MODELS)

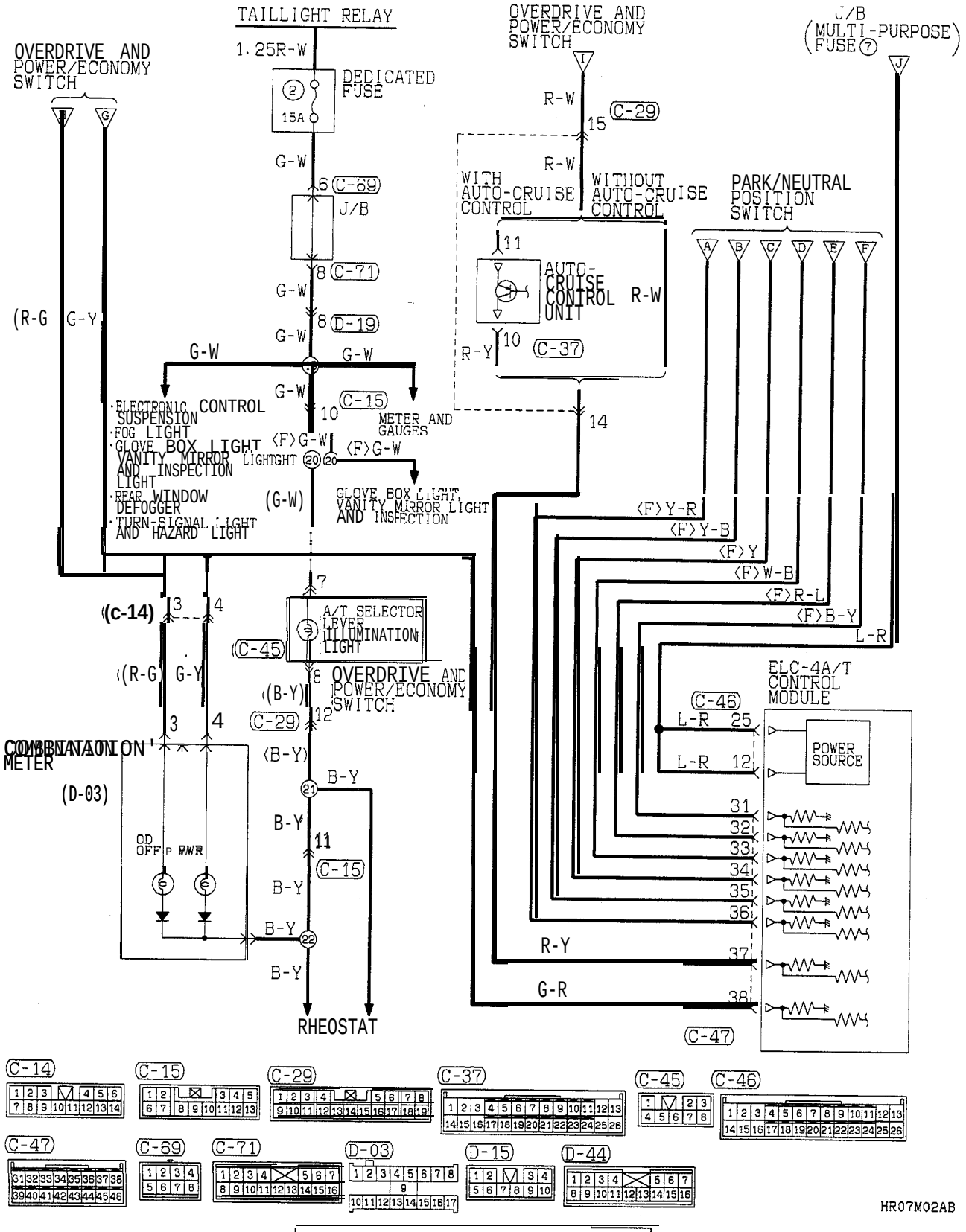
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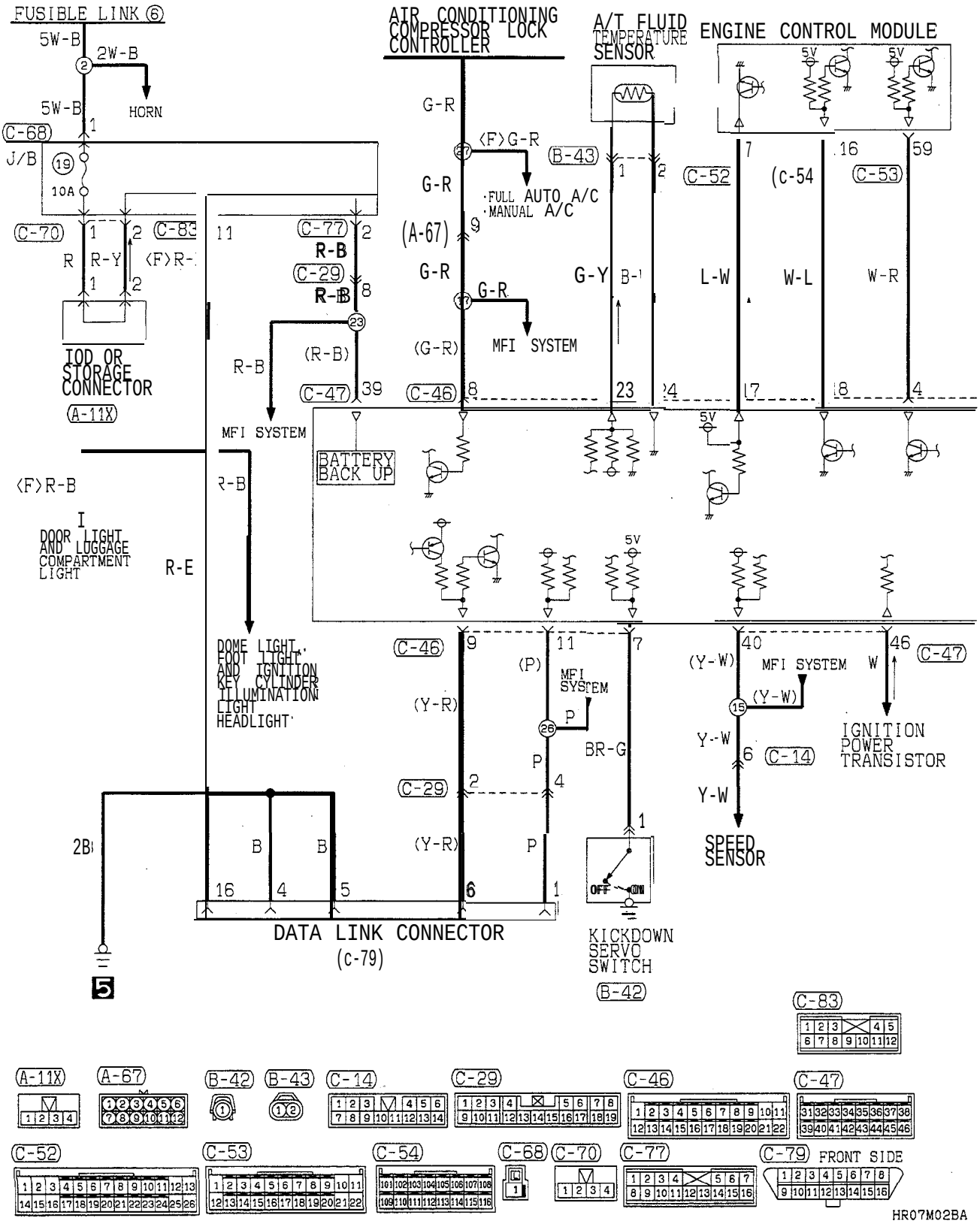
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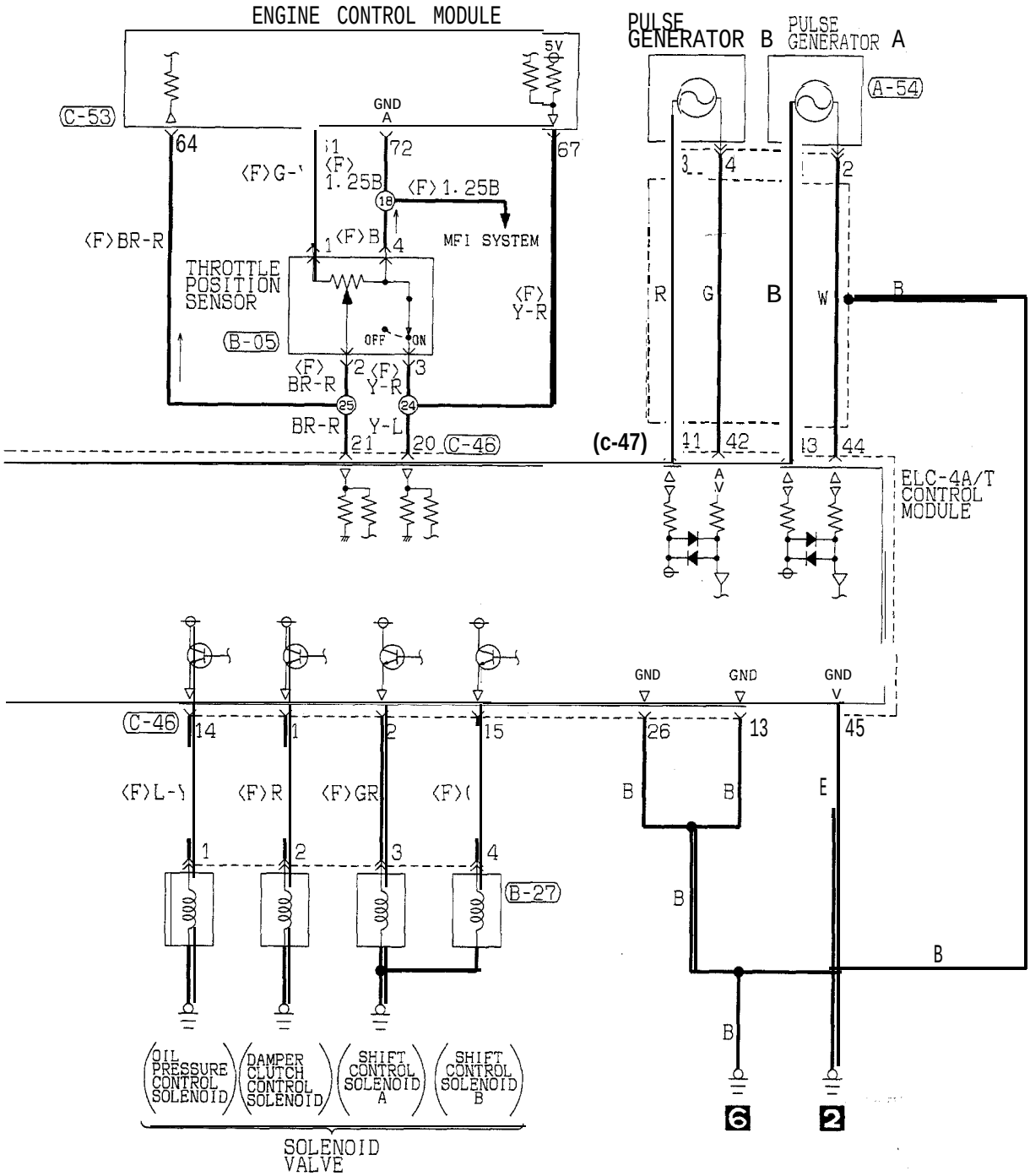
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ELC-4 A/T CIRCUIT (1994, 1995 MODELS) (FEDERAL) (CONTINUED)



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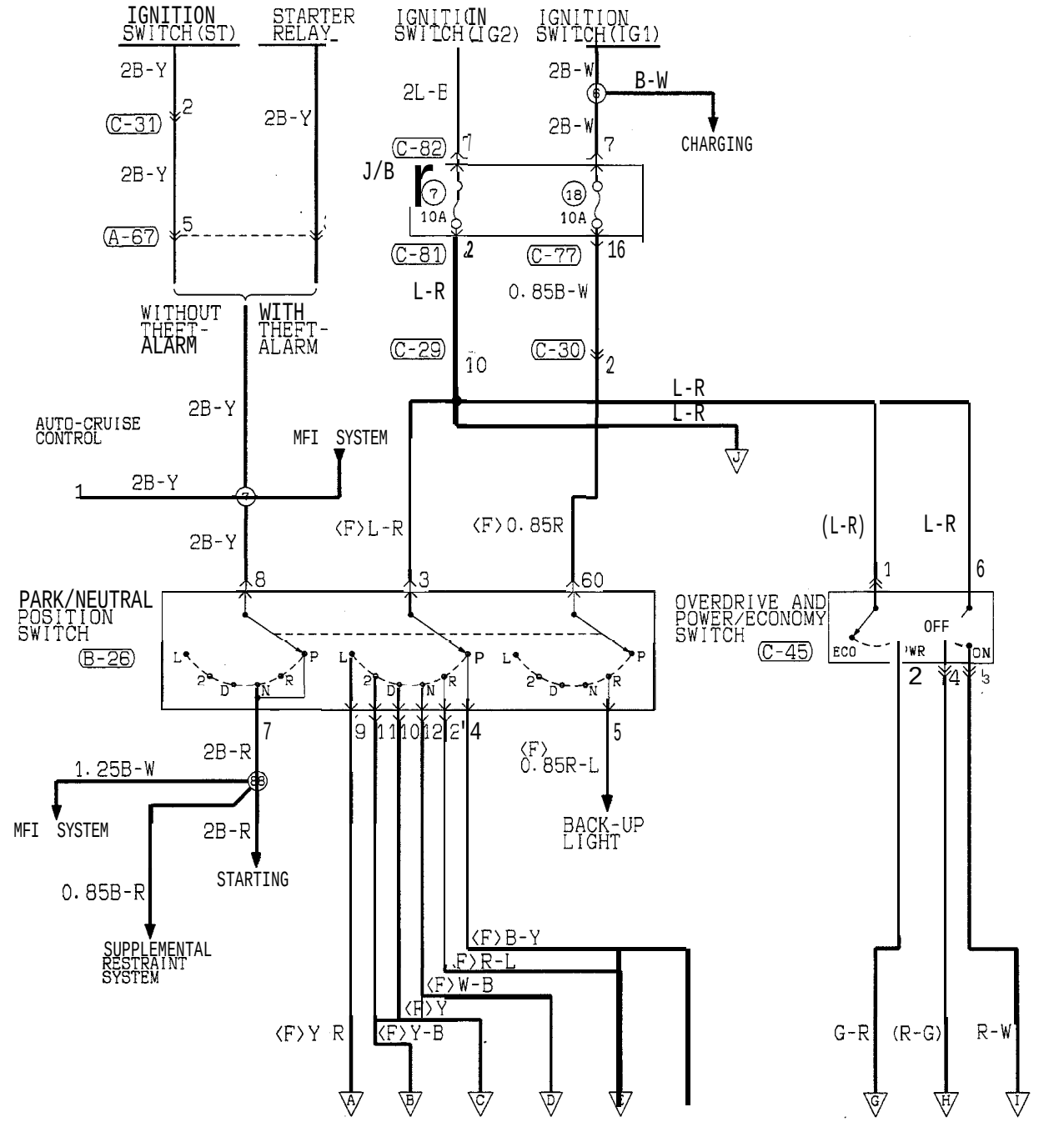
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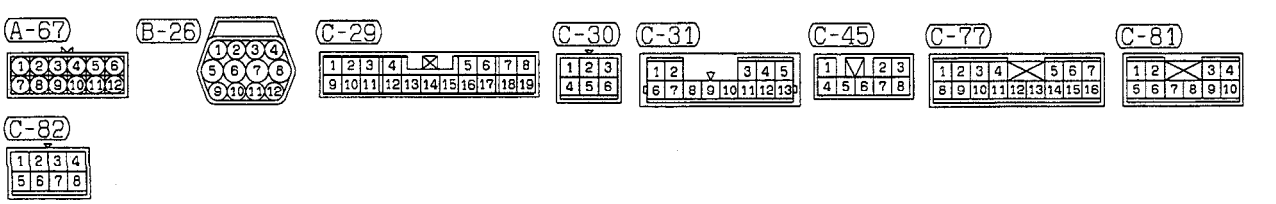
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ELC-4 A/T CIRCUIT (1994, 1995 MODELS)

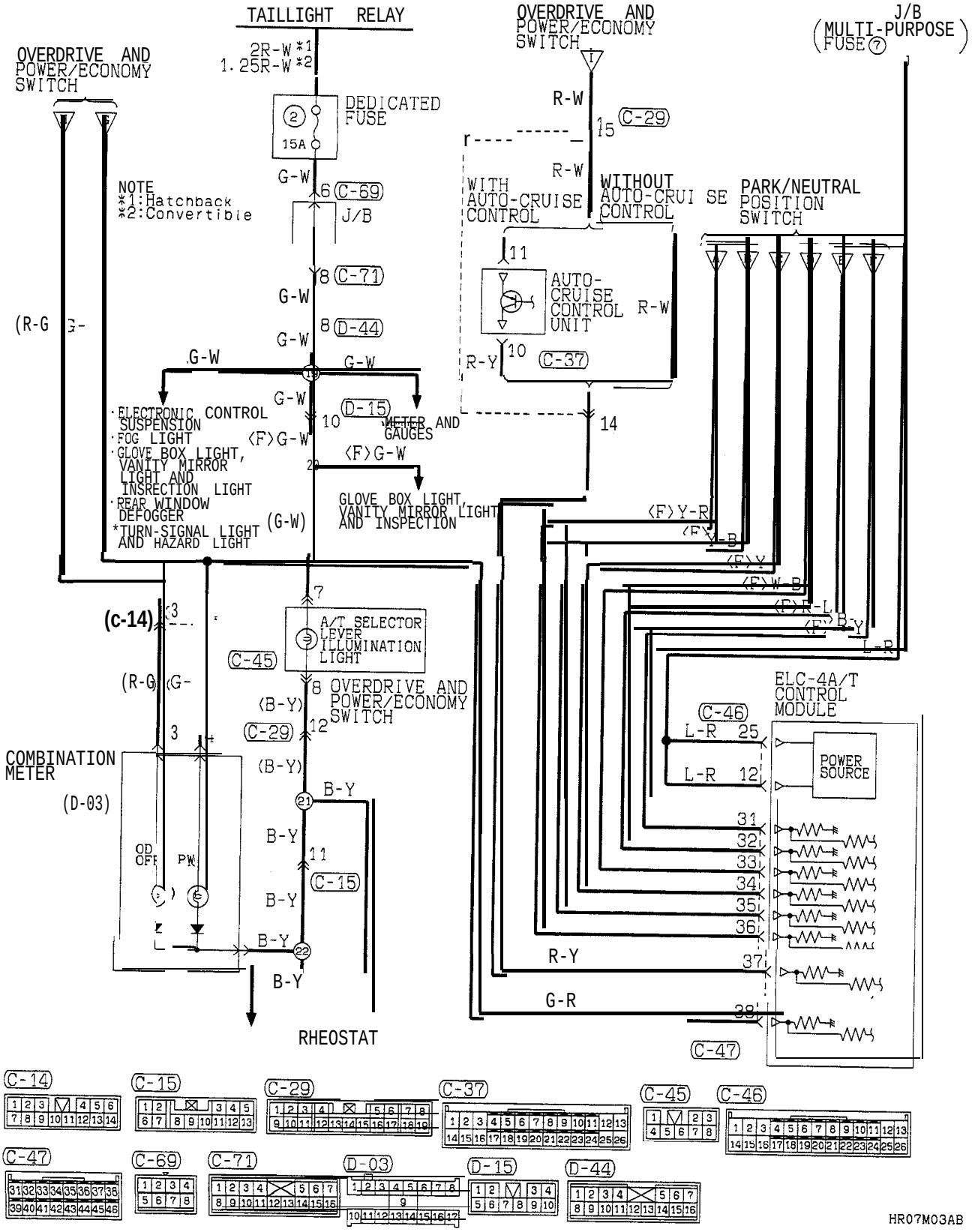
(CALIFORNIA)





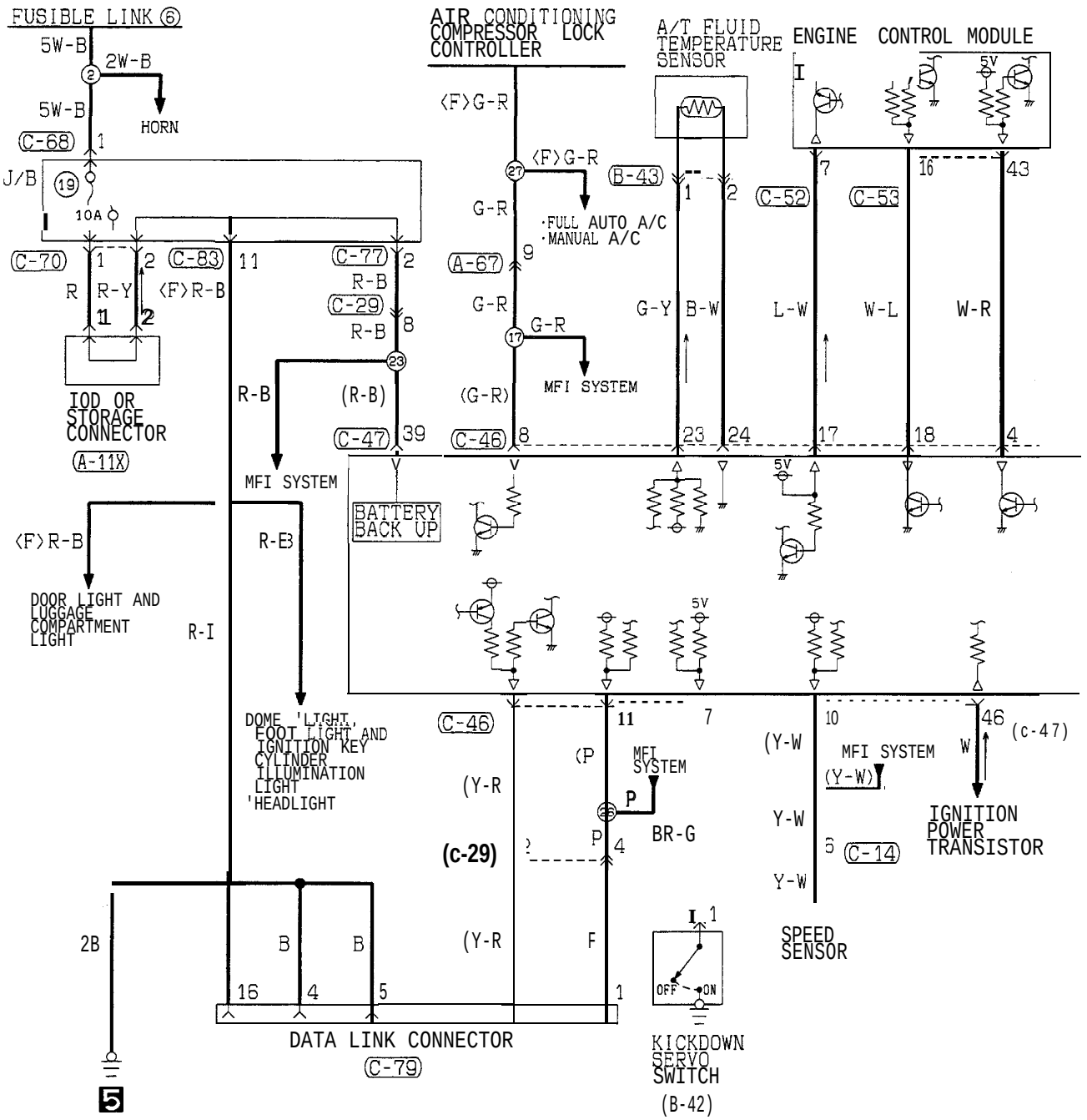
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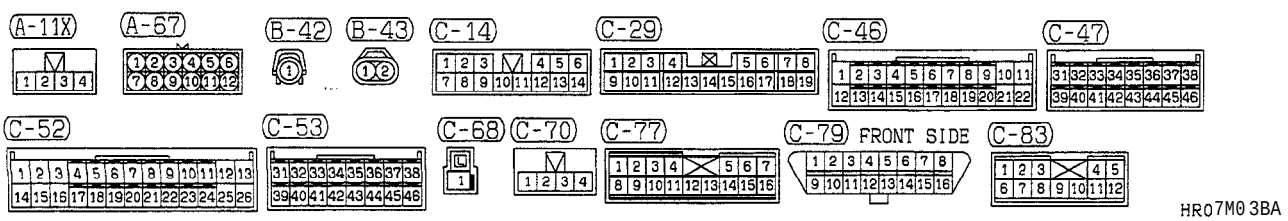
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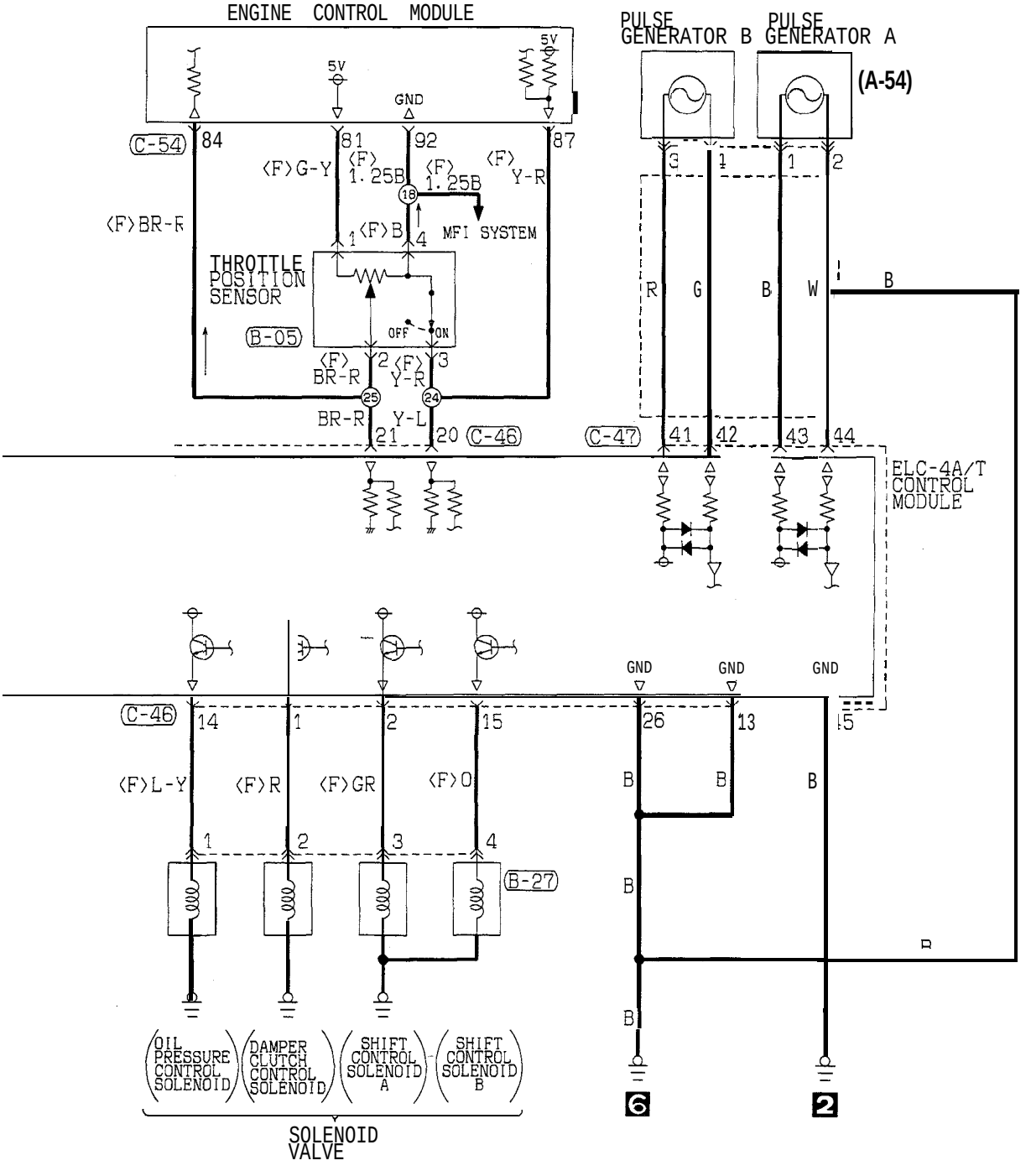
ELC-4 A/T CIRCUIT (1994, 1995 MODELS) (CALIFORNIA) (CONTINUED)

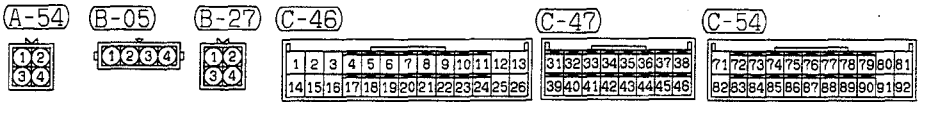




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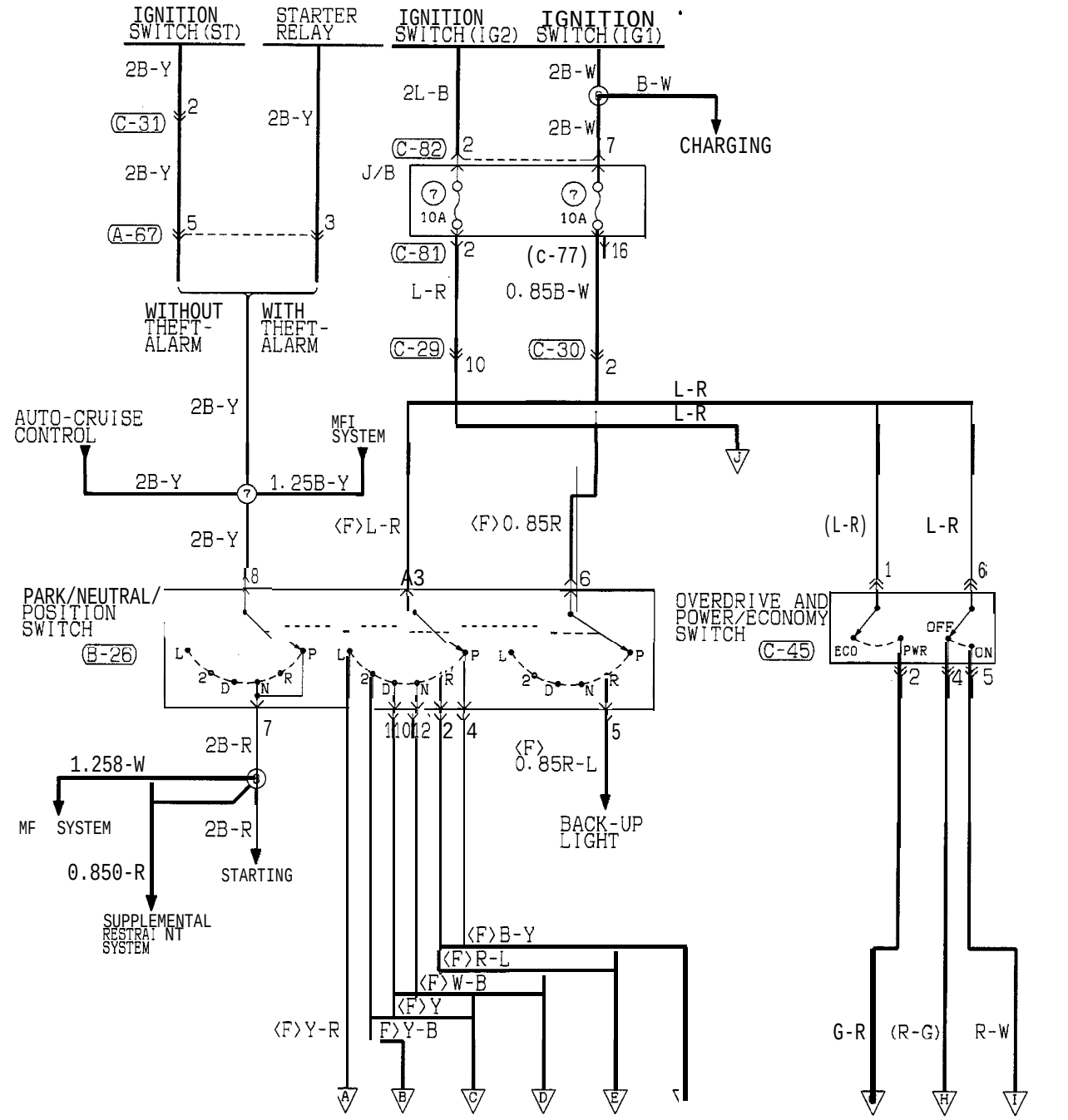


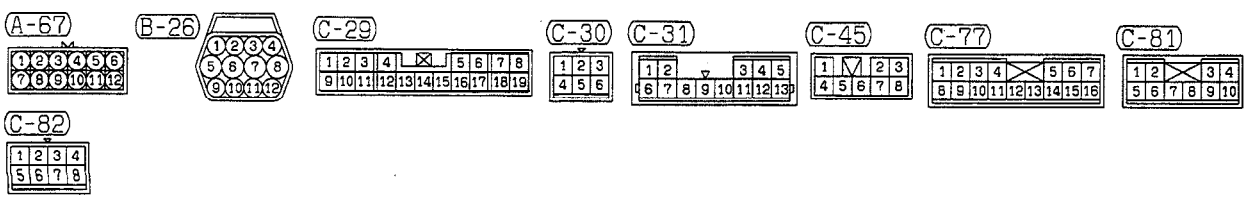


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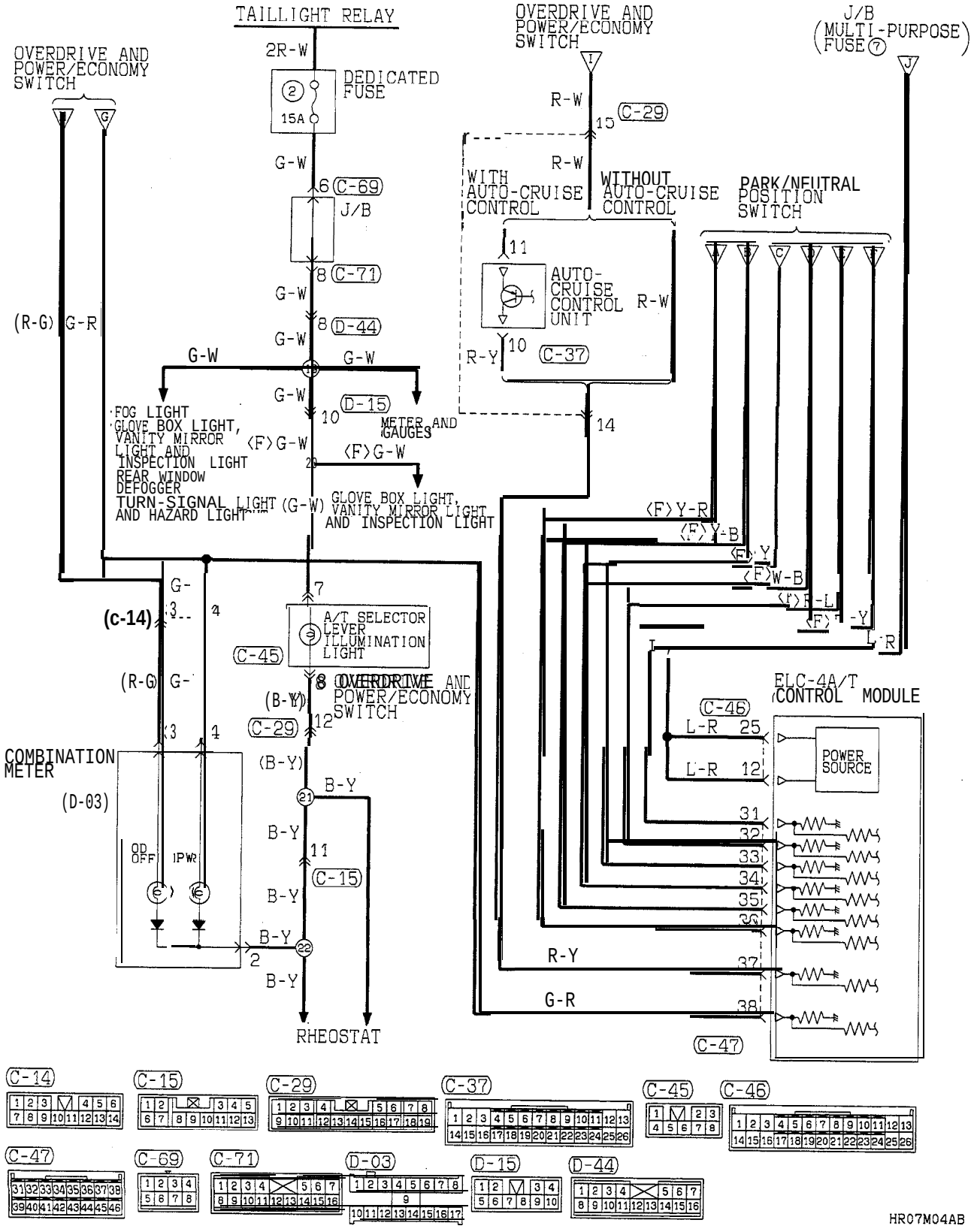
ELC-4 A/T CIRCUIT (FROM 1996 MODELS)





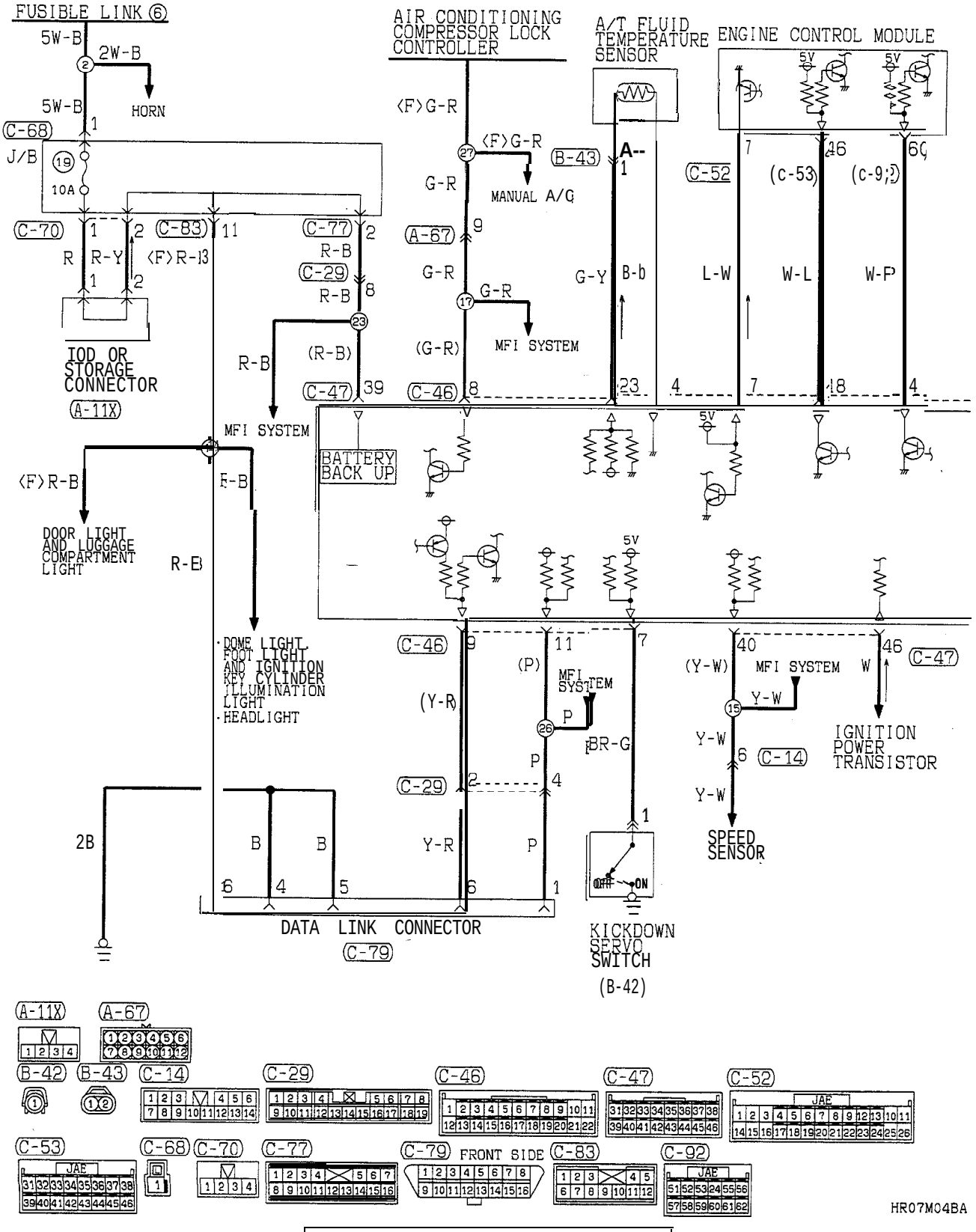
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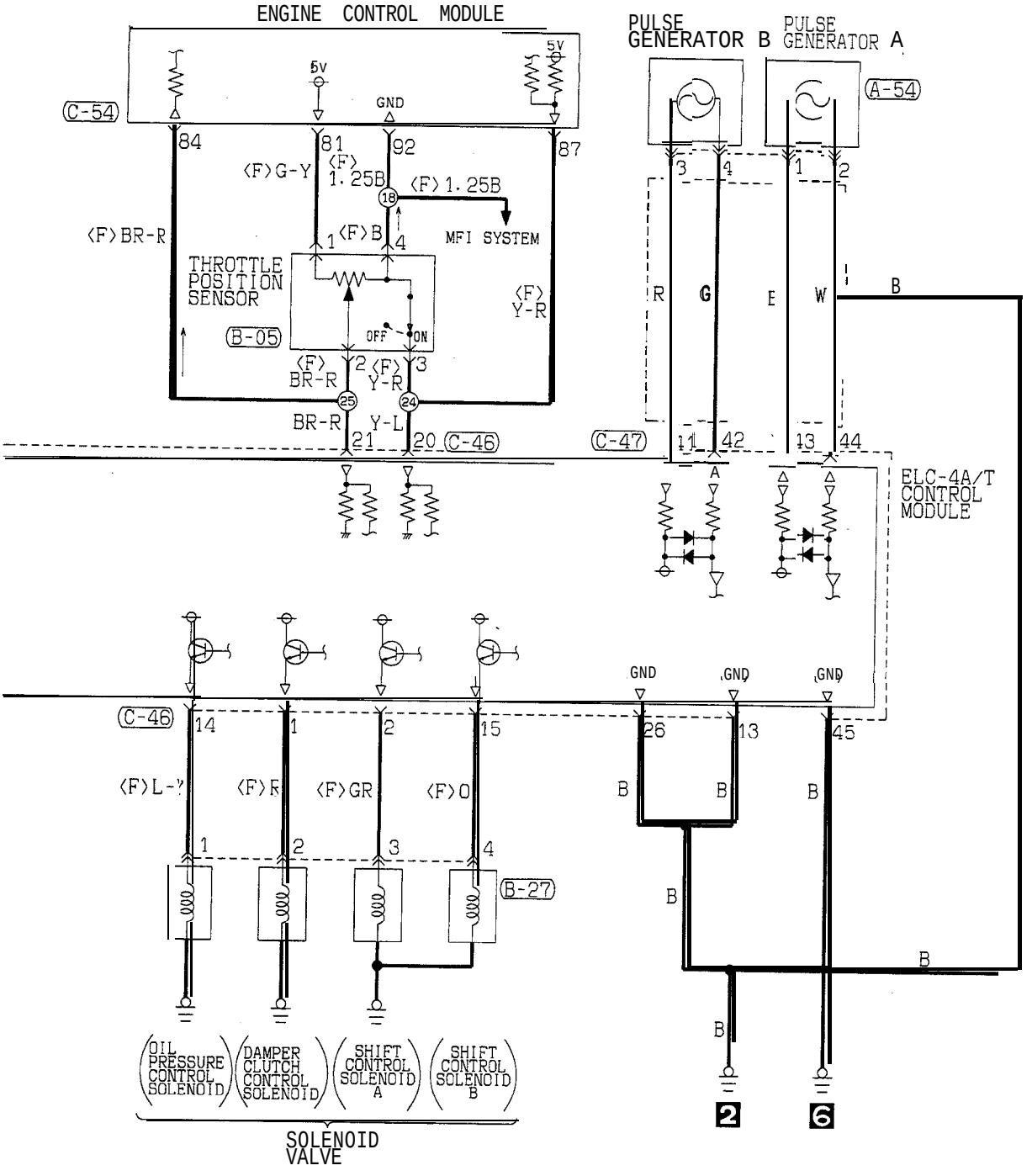


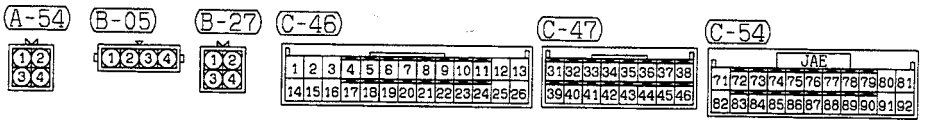
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ELC-4 A/T CIRCUIT (FROM 1996 MODELS) (CONTINUED)



TSB Revision



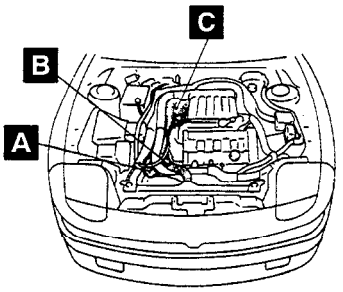


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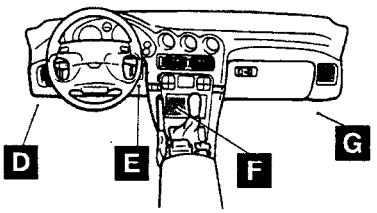
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COMPONENT LOCATION

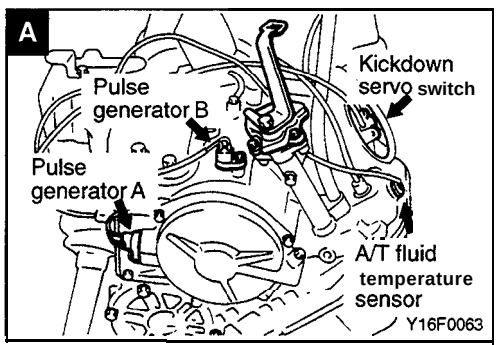
Name	Symbol	Name	Symbol
A/T fluid temperature sensor	A	ELC-4 A/T control module	F
A/T solenoid valve assembly (valve body)	B	Engine control module	D
Auto-cruise control unit	G	Kickdown servo switch	A
Data link connector (from 1994 models)	E	Pulse generator	A
Data link connector (up to 1993 models)	D	Throttle position sensor	C



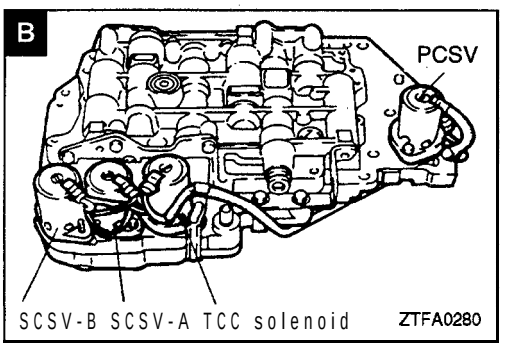
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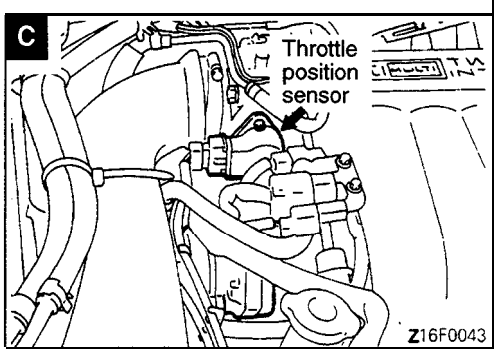
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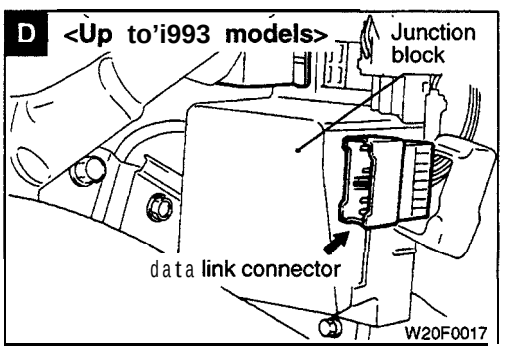
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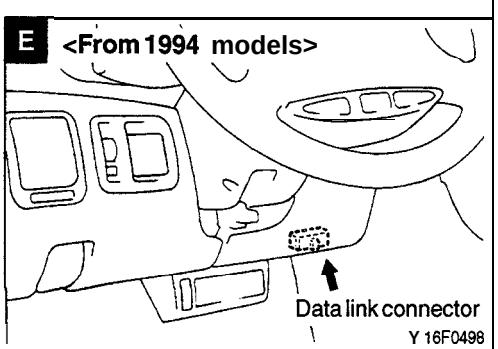
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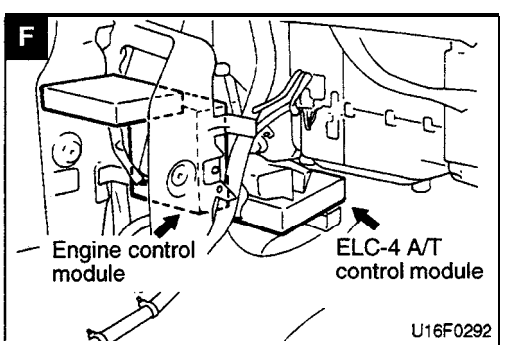
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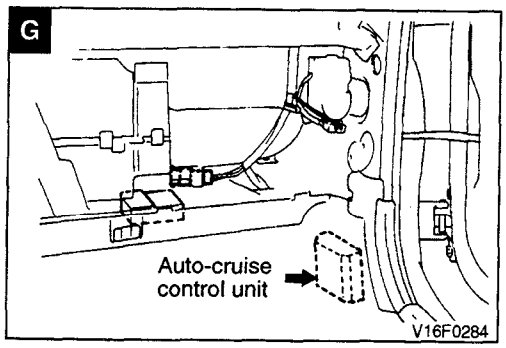


Y 16F0498

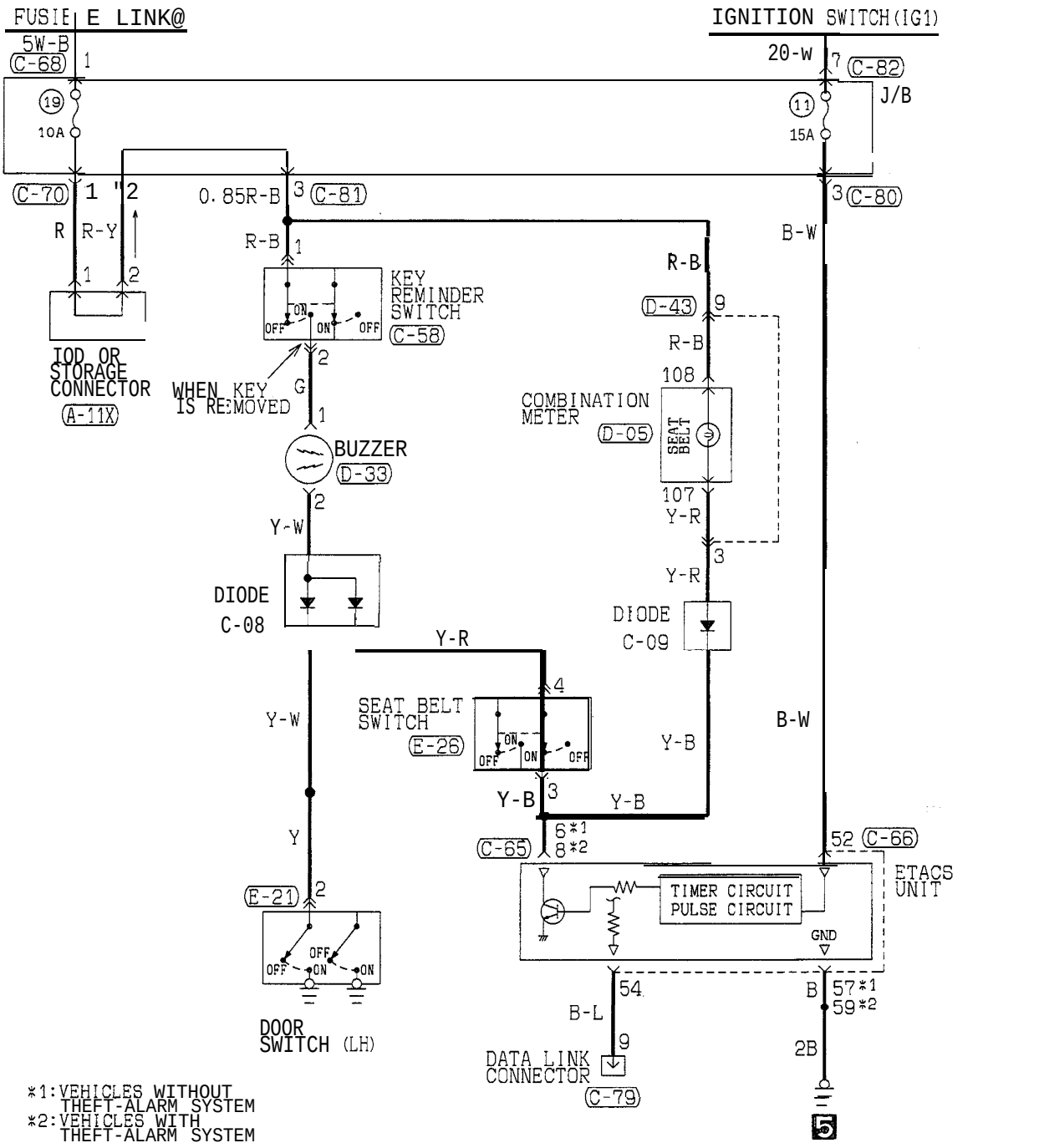


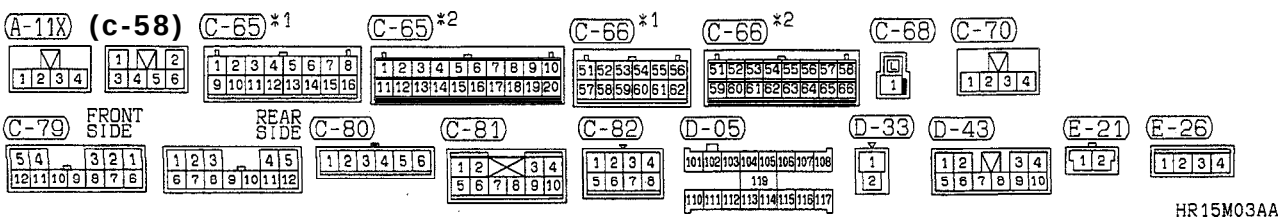
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G



BUZZER CIRCUIT (UP TO 1993 MODELS)

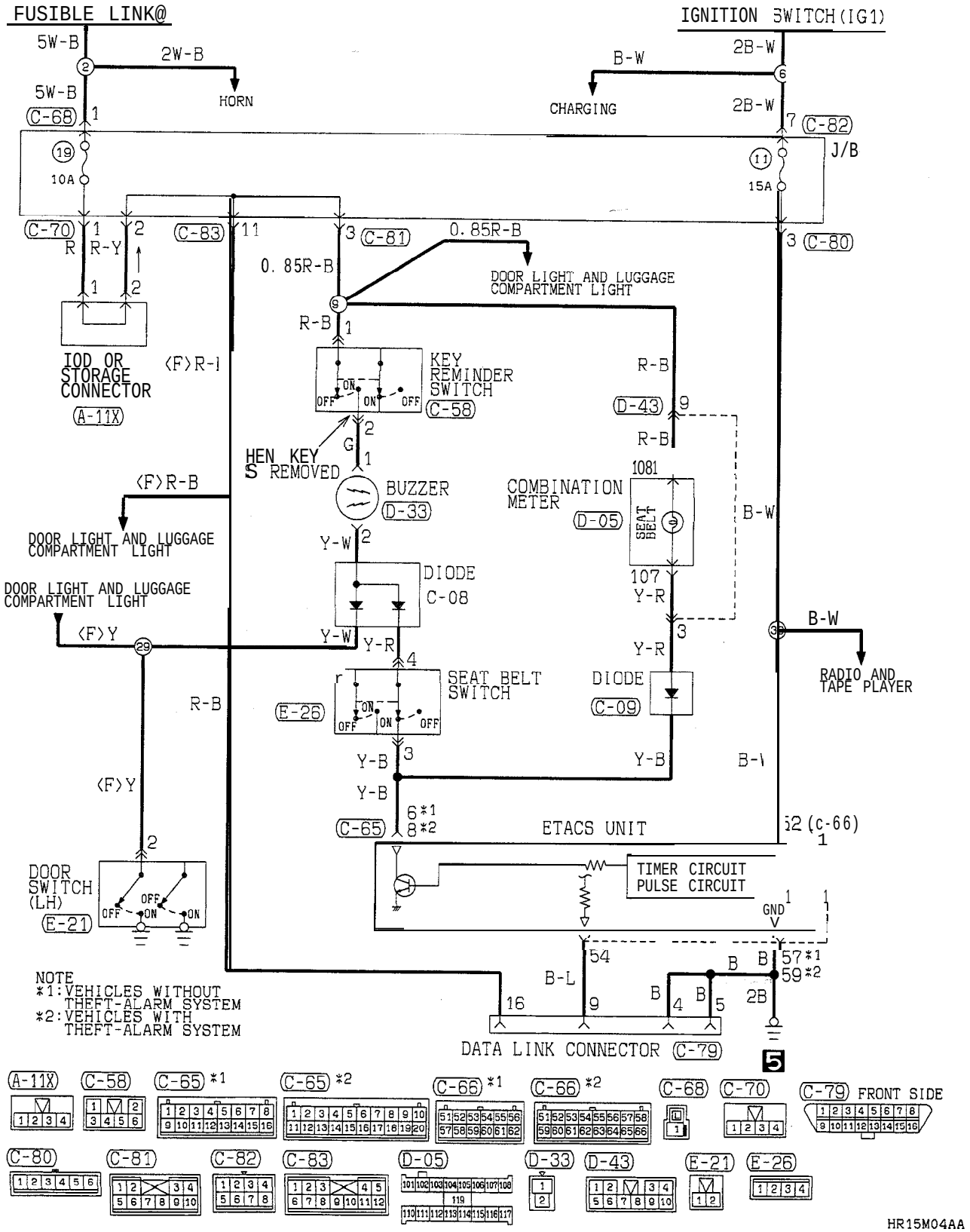




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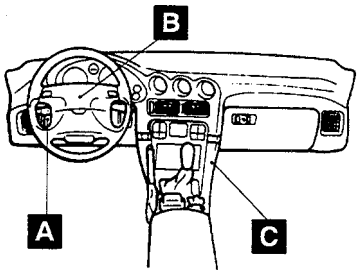
BUZZER CIRCUIT (FROM 1994 MODELS)



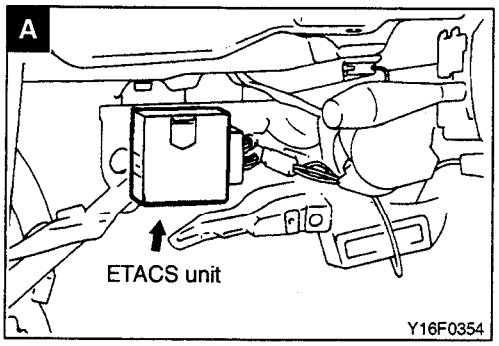
TSB Revision

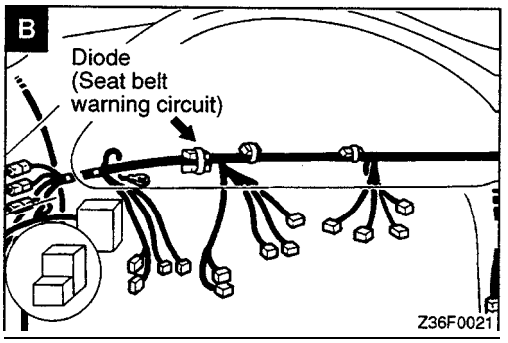
COMPONENT LOCATION

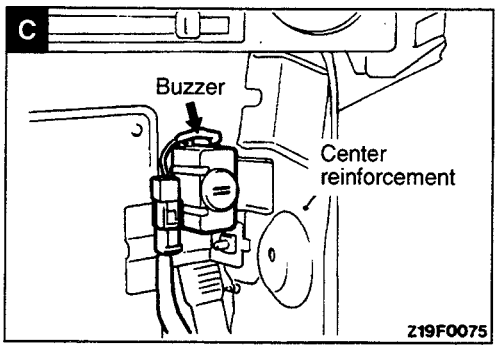
Name	Symbol	Name	Symbol
Buzzer	C	ETACS unit	A
Diode (seat belt warning)	B		



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TSB Revision

OPERATION

<Key-reminder warning>

- Battery positive voltage is continuously applied to the key-reminder switch.
- If the driver's door is opened (door switch ON) with the key inserted in the ignition switch (key-reminder switch ON), the buzzer sounds to warn that the key has been left in the switch.

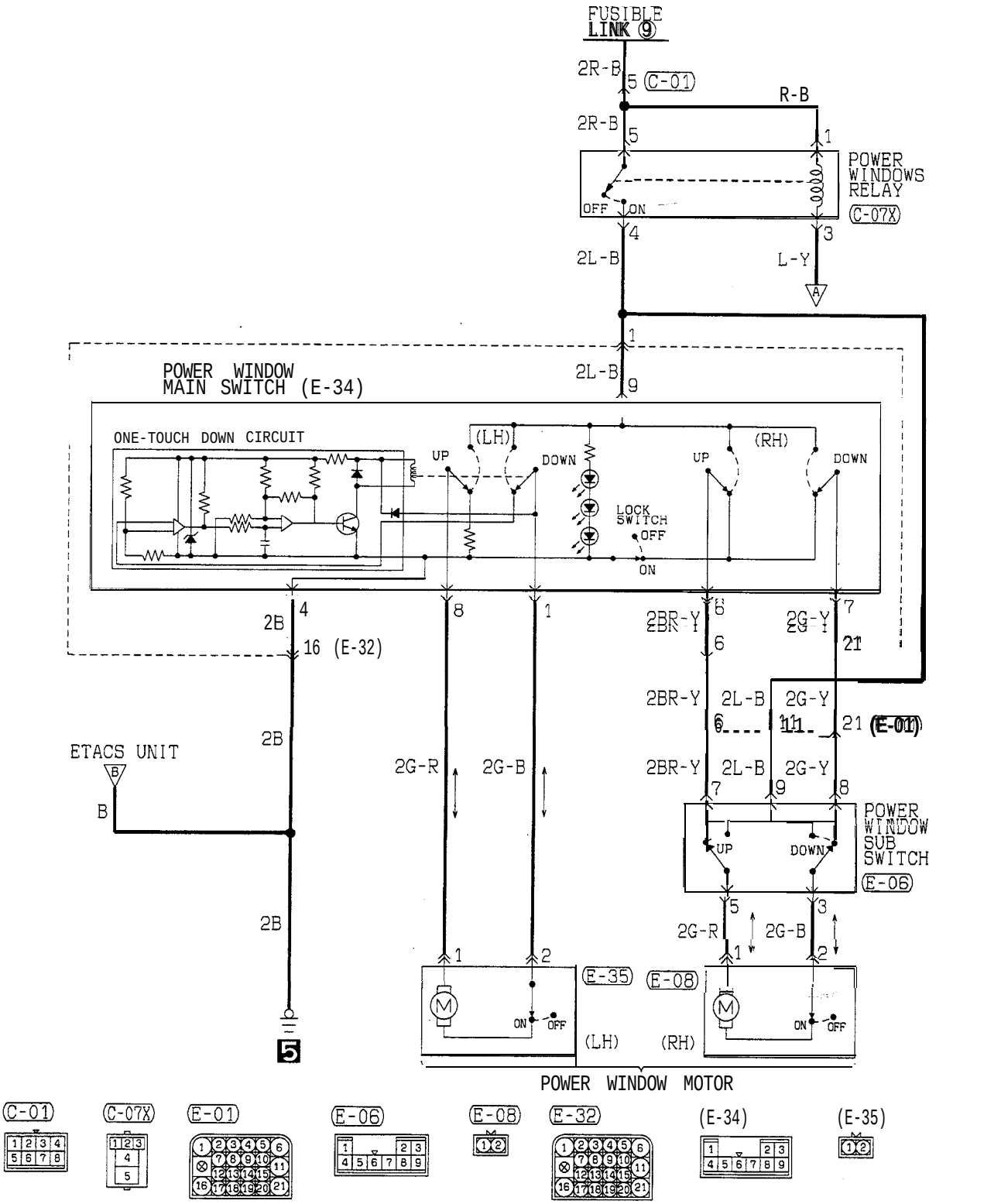
<Seat belt warning>

- When the ignition switch is turned on, the timer circuit and pulse circuit will flicker the seat belt warning light for approx. 6 seconds with the buzzer intermittently sounding.
- If the seat belt is fastened for the while, the seat belt switch will be turned off and the buzzer will stop.

TROUBLESHOOTING HINTS

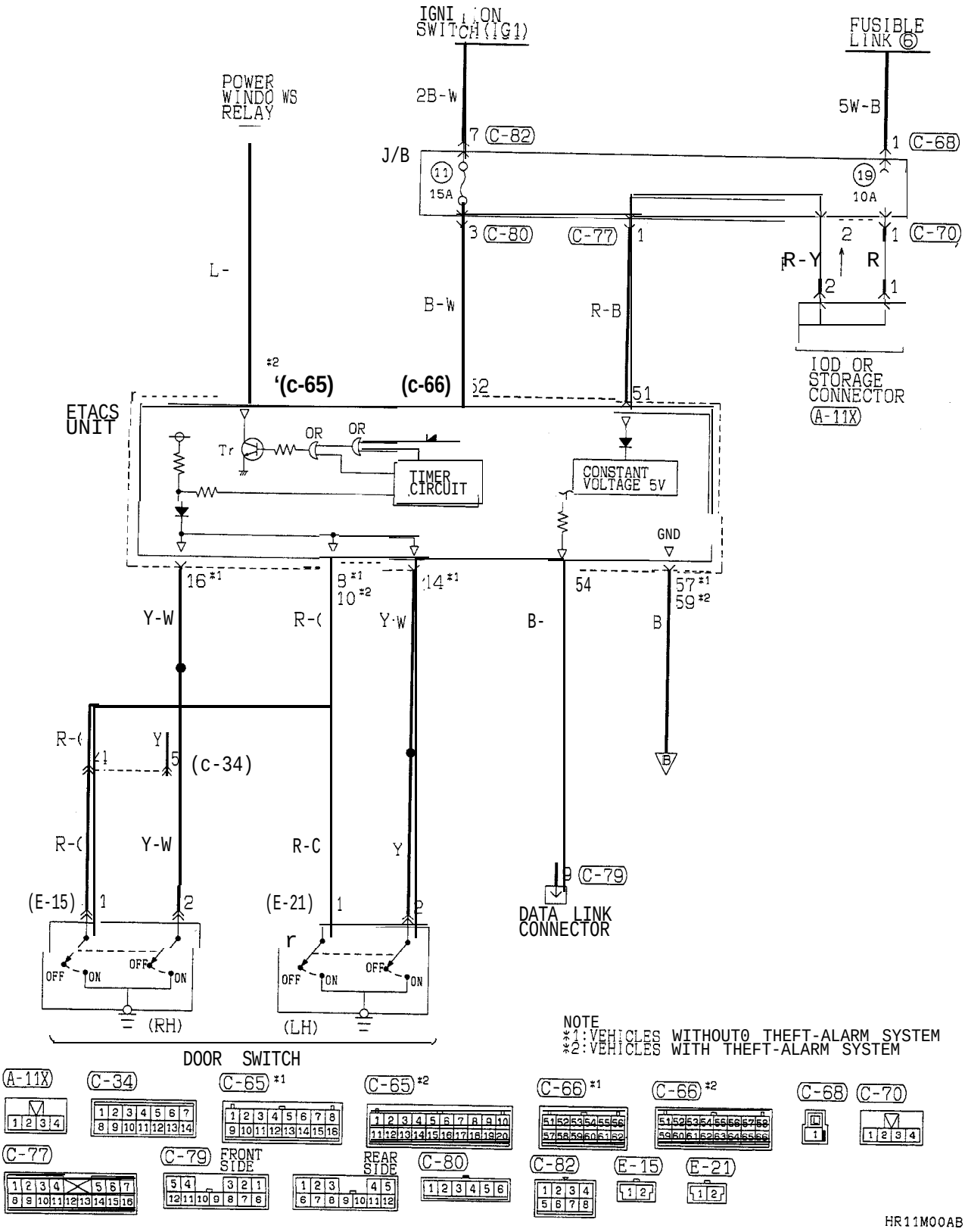
Problem		Check method
The key-reminder warning doesn't sound.	The seat belt warning function is OK.	• Check the door switch. (Refer to GROUP 42–Door Assembly.)
	The seat belt warning also doesn't function.	• Check the buzzer. (Refer to GROUP 52A–Seat Belt.)
The seat belt warning doesn't function.	The seat belt warning light flashes.	• Check the seat belt switch. (Refer to GROUP 52A–Seat Belt.)
	The seat belt warning light also does not function (and the key-reminder warning also does not function).	• Check the key-reminder switch. (Refer to GROUP M-Ignition Switch.)
The buzzer doesn't stop even through the driver's seat belt has been buckled.		• Check the seat belt switch. (Refer to GROUP 52A–Seat Belt.)
The seat belt warning light doesn't flashes (but the buzzer sounds).		• Check the light bulb. • Check the key-reminder switch. (Refer to GROUP 54–Ignition Switch.) • Check the seat belt switch. (Refer to GROUP 52A–Seat Belt.)
The warning light does not flash and the warning buzzer also does not sound.		• Check the ignition switch input signal. (Refer to GROUP 52A–Troubleshooting.) • Check the key-reminder switch. (Refer to GROUP 54–Ignition Switch.) • Check the seat belt switch. (Refer to GROUP 52A–Seat Belt.)
The warning light flashes, but the warning buzzer does not sound.		• Check the key-reminder switch. (Refer to GROUP M-Ignition Switch.) • Check the seat belt switch. (Refer to GROUP 52A–Seat Belt.)

POWER WINDOW CIRCUIT (UP TO 1993 MODELS)



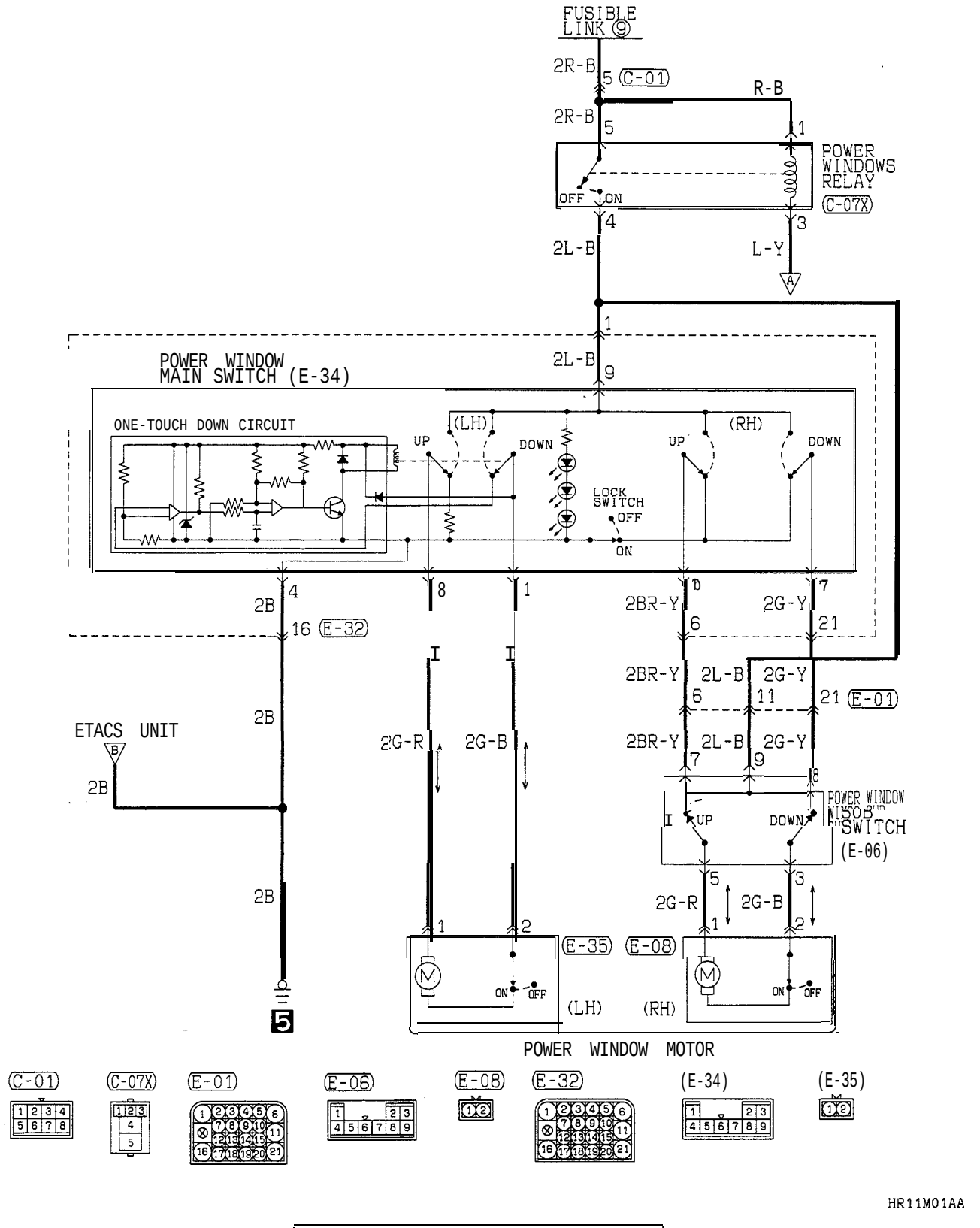
HR11M00AA

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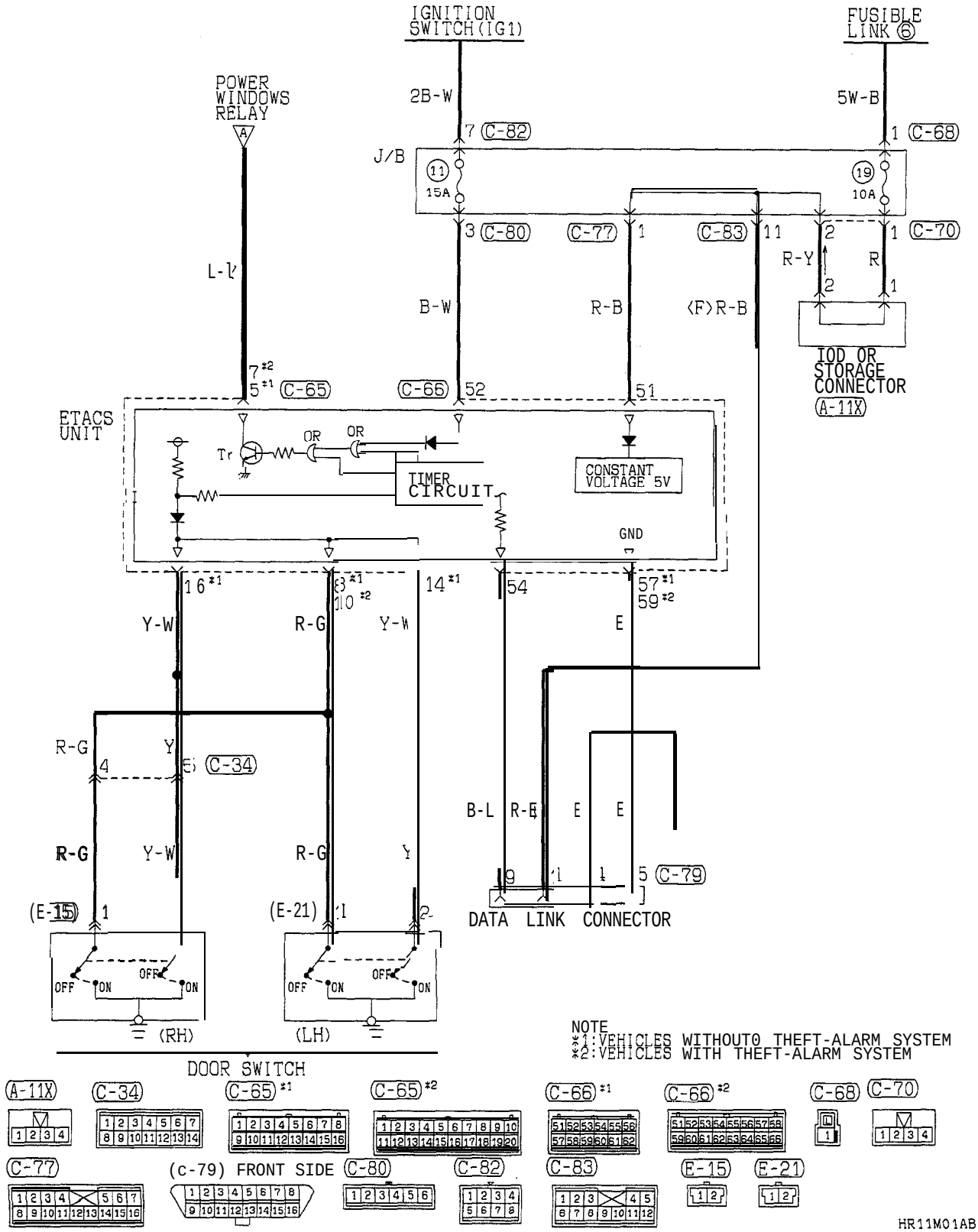
TSB Revision

POWER WINDOW CIRCUIT (1994 MODELS)



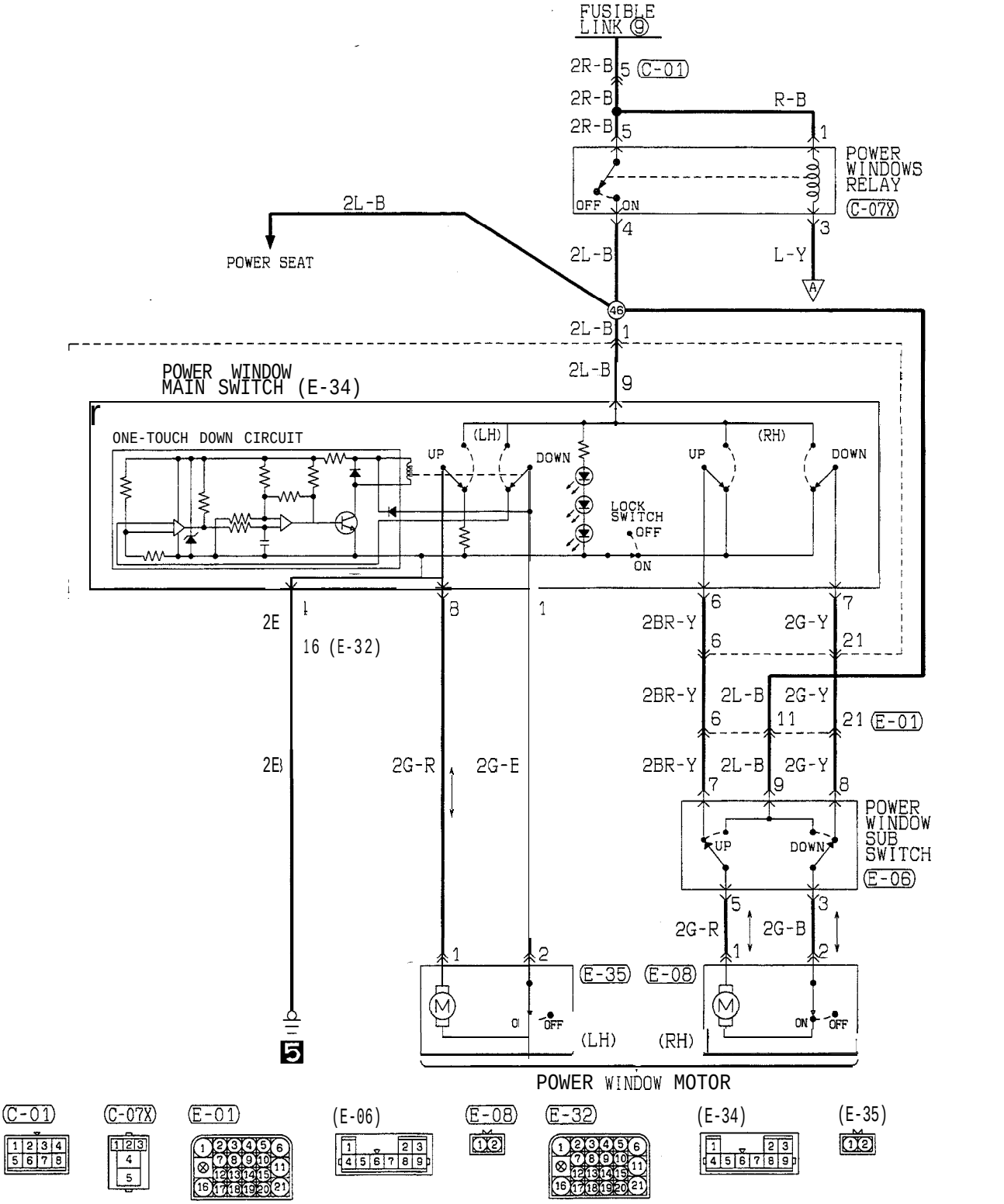
HR11M01AA

TSB Revision



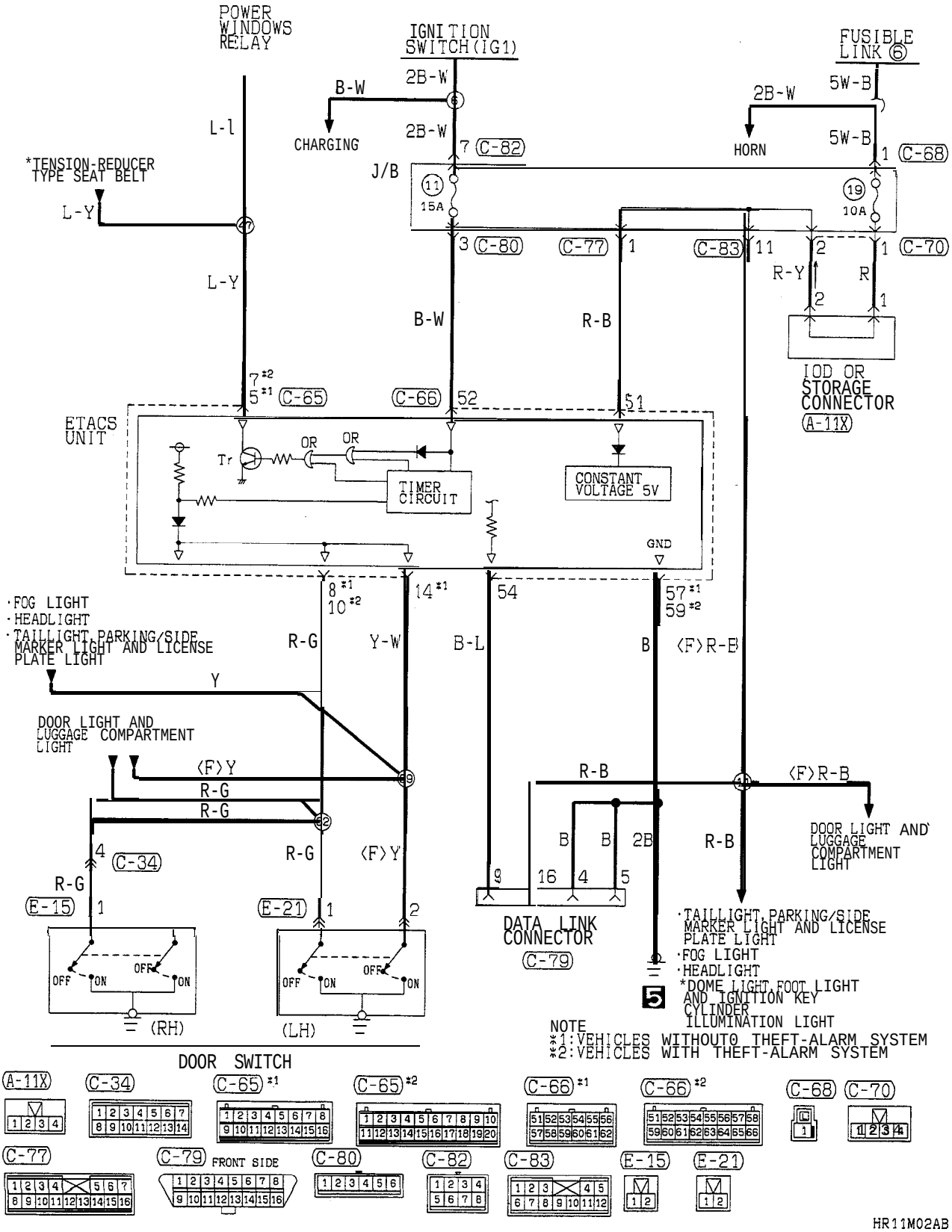
TSB Revision

POWER WINDOW- CIRCUIT (1995 MODELS)



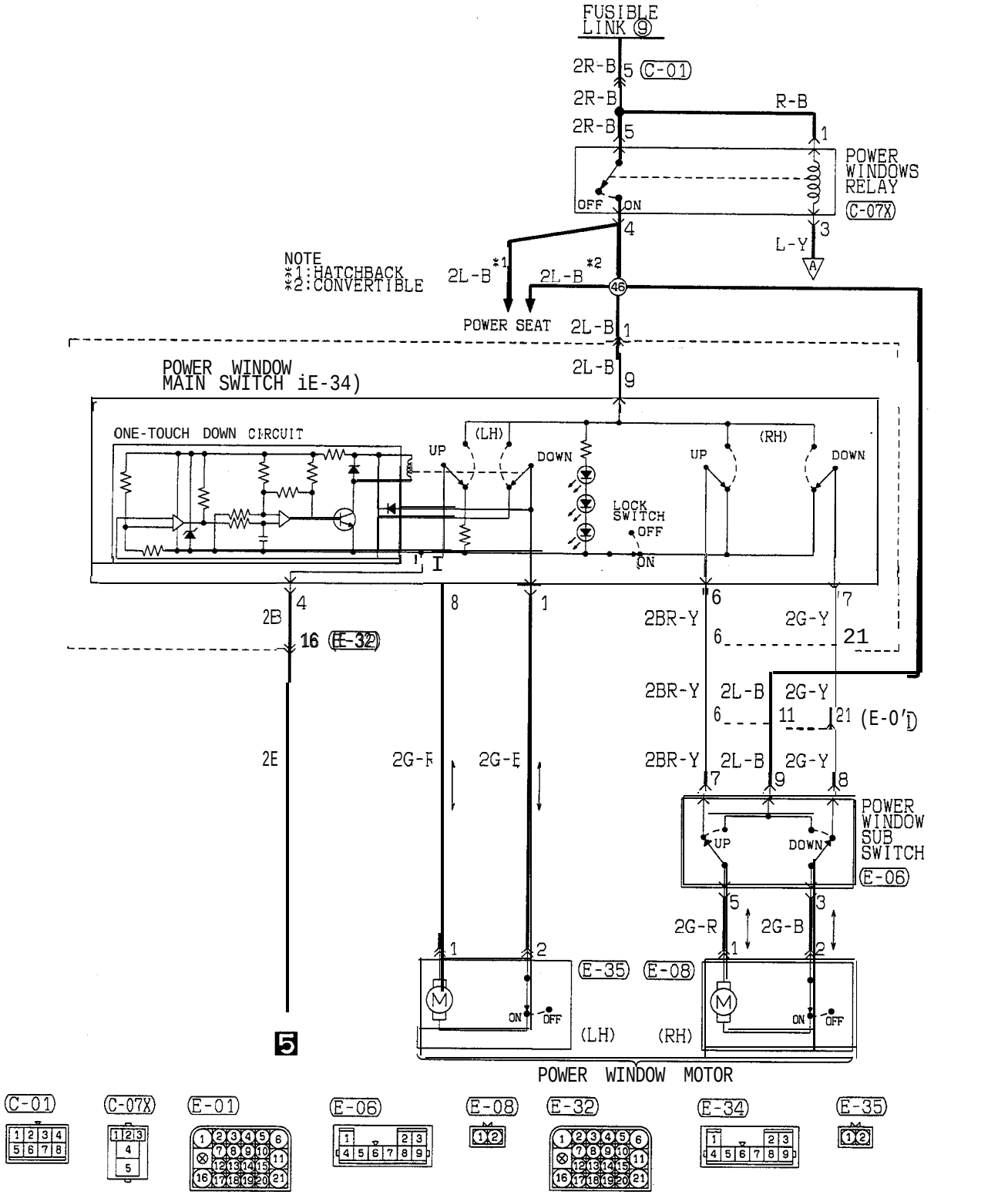
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TSB Revision



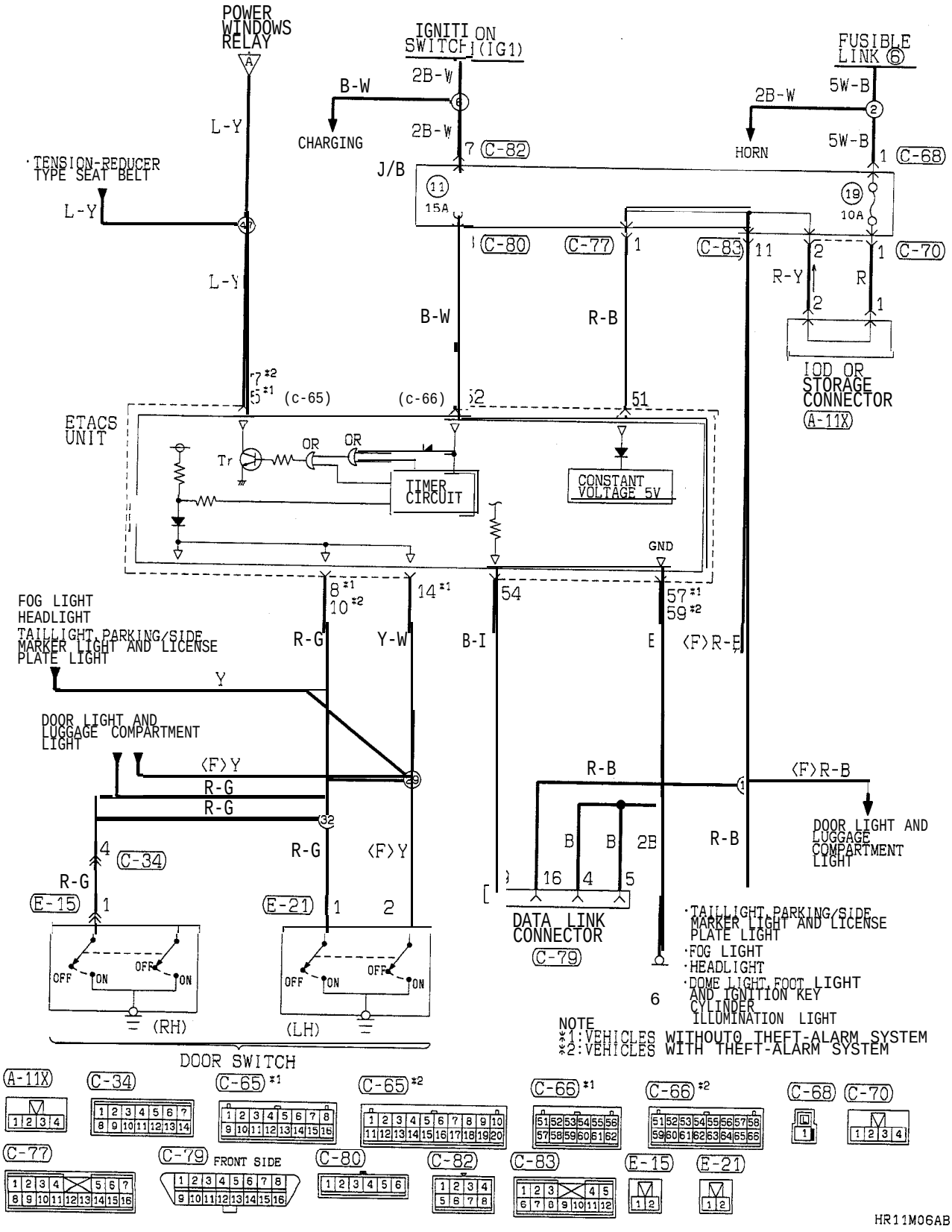
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POWER WINDOW CIRCUIT (FROM 1996 MODELS)



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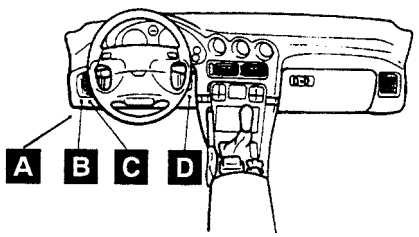
TSB Revision



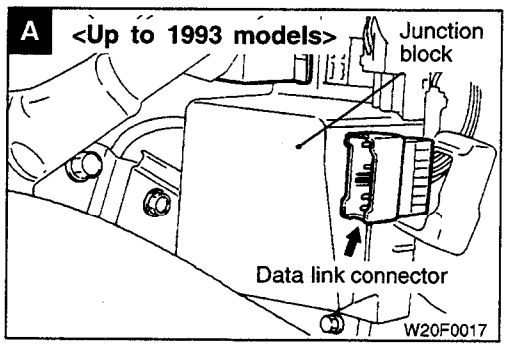
TSB Revision

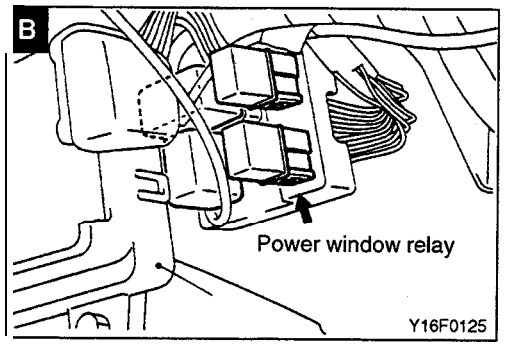
COMPONENT LOCATION

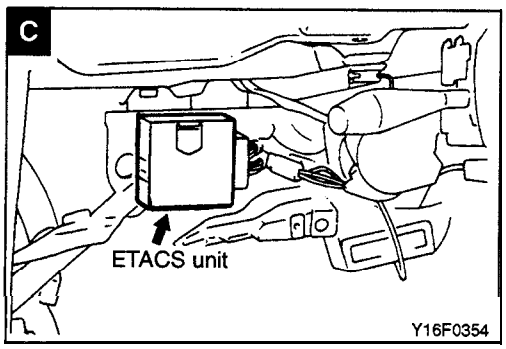
Name	Symbol	Name	Symbol
Data link connector (up to 1993 models)	A	ETACS unit	C
Data link connector (from 1994 models)	D	Power window relay	B

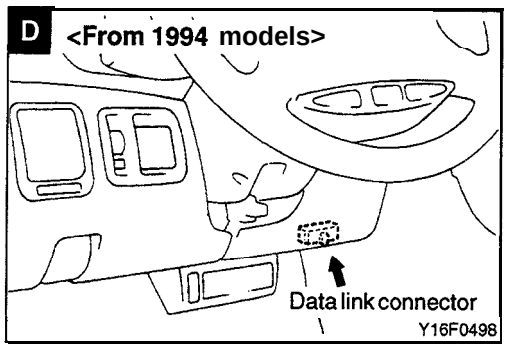


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TSB Revision

OPERATION

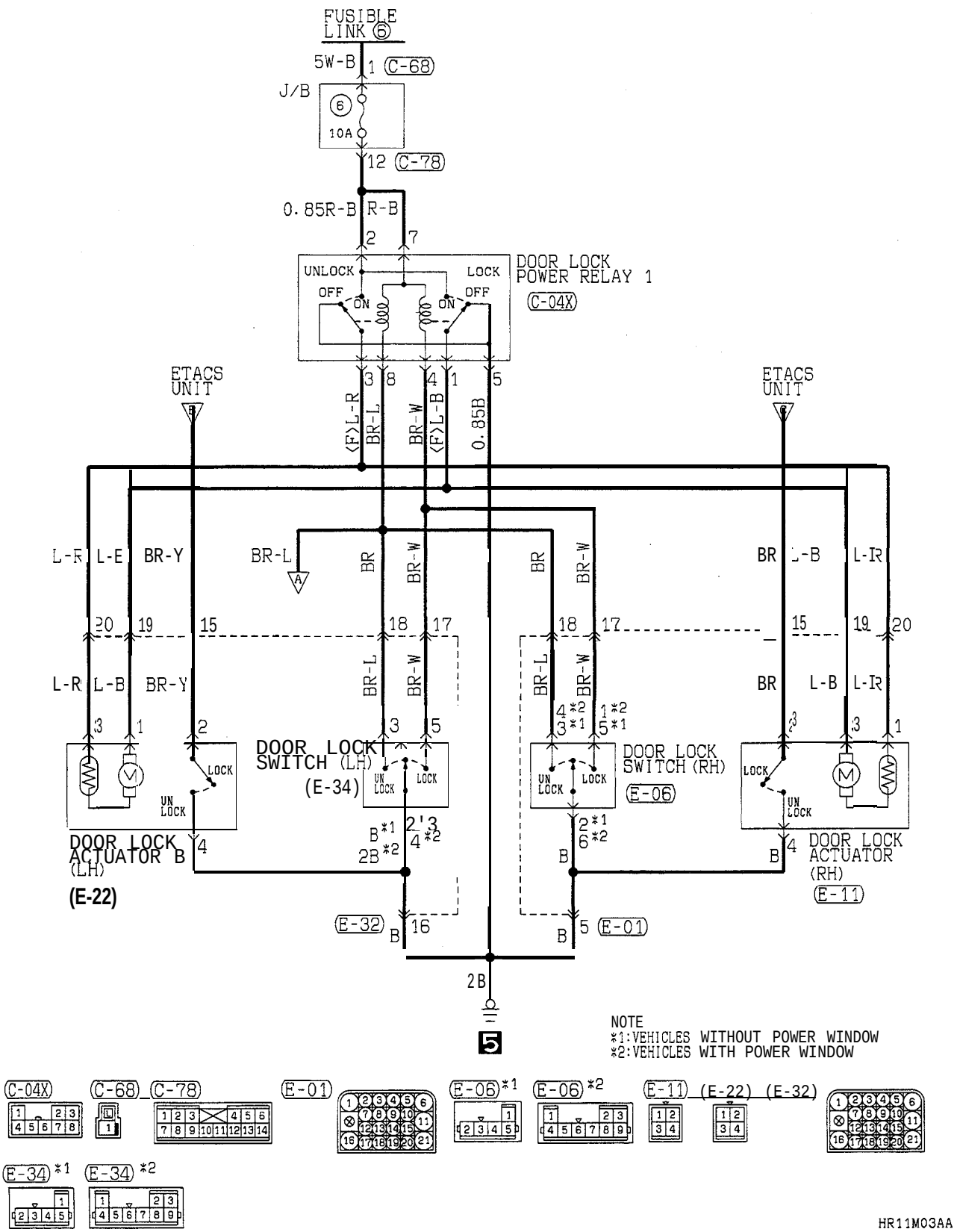
- Turn on the ignition switch, and the transistor Tr will be turned on by the timer circuit. This will turn on the power window relay allowing the power window to be opened and closed.
- Turn the ignition switch from on to off, and the timer circuit will be activated to keep transistor Tr on for 30 seconds allowing the power window to be opened and closed.
  Moreover, if the front door is opened, the timer circuit will stop to turn off the transistor Tr. This will prevent the window from being opened and closed.

TROUBLESHOOTING HINTS

Phenomenon		Inspection method
All door windows cannot be opened or closed.		• Check fusible link No. 9. • Check the power-window relay. • Check the power-window main switch.
One of the door windows cannot be opened or closed.	Neither of the power-window switches (main or sub) operates	• Check the power-window main switch. • Check the power-window motor for the power window that does not operate.
	Either the power-window main switch or sub switch does not operate.	• Check the power-window switch for the power window that does not operate.
The one-touch down switch function only does not operate.		• Replace the power-window main switch.
The power windows do not operate when the ignition switch is at the “ON” position.		• Check the ignition switch input signal. (Refer to GROUP 42–Troubleshooting.) • Check the ignition switch. (Refer to GROUP 54–Ignition Switch.) • Checkthepowerwindow relay. (Refer to GROUP 42–Power Window)
The power windows can be opened and closed immediately after ignition switch is switched “OFF”, but the power window operation does not stop if a front door is opened within 30 seconds.		• Check the front door switch input signal. (Refer to GROUP 42–Troubleshooting.) • Check the front door switch. (Refer to GROUP 42–Door Assembly.)
The opening and closing operations of the power windows are possible after the timer operation time has elapsed when the ignition switch is set to the “OFF” position.		• Check the power window relay. (Refer to GROUP 42–Power Window.)

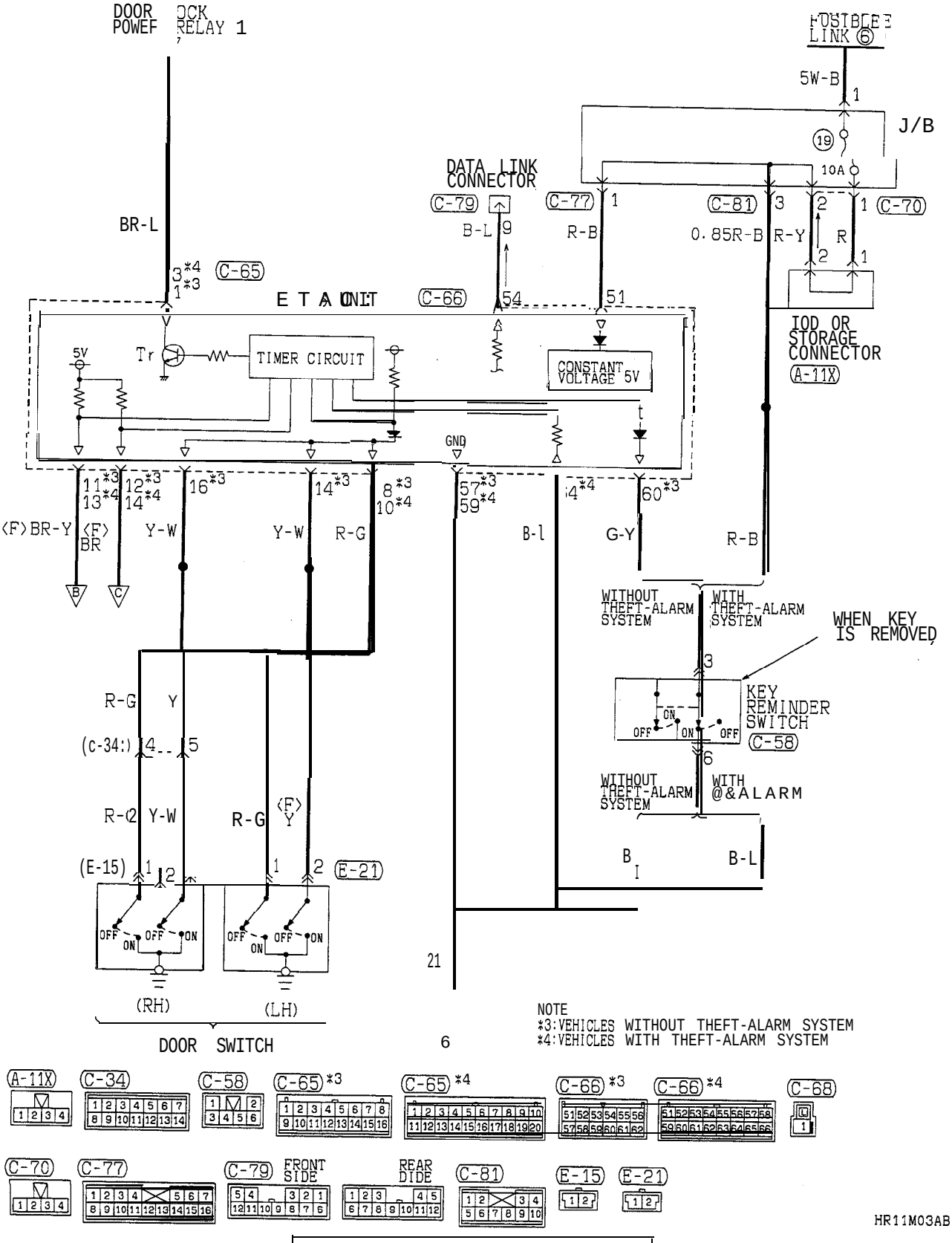
CENTRAL DOOR LOCKING CIRCUIT (UP TO 1993 MODELS)

(Vehicles without keyless entry system)



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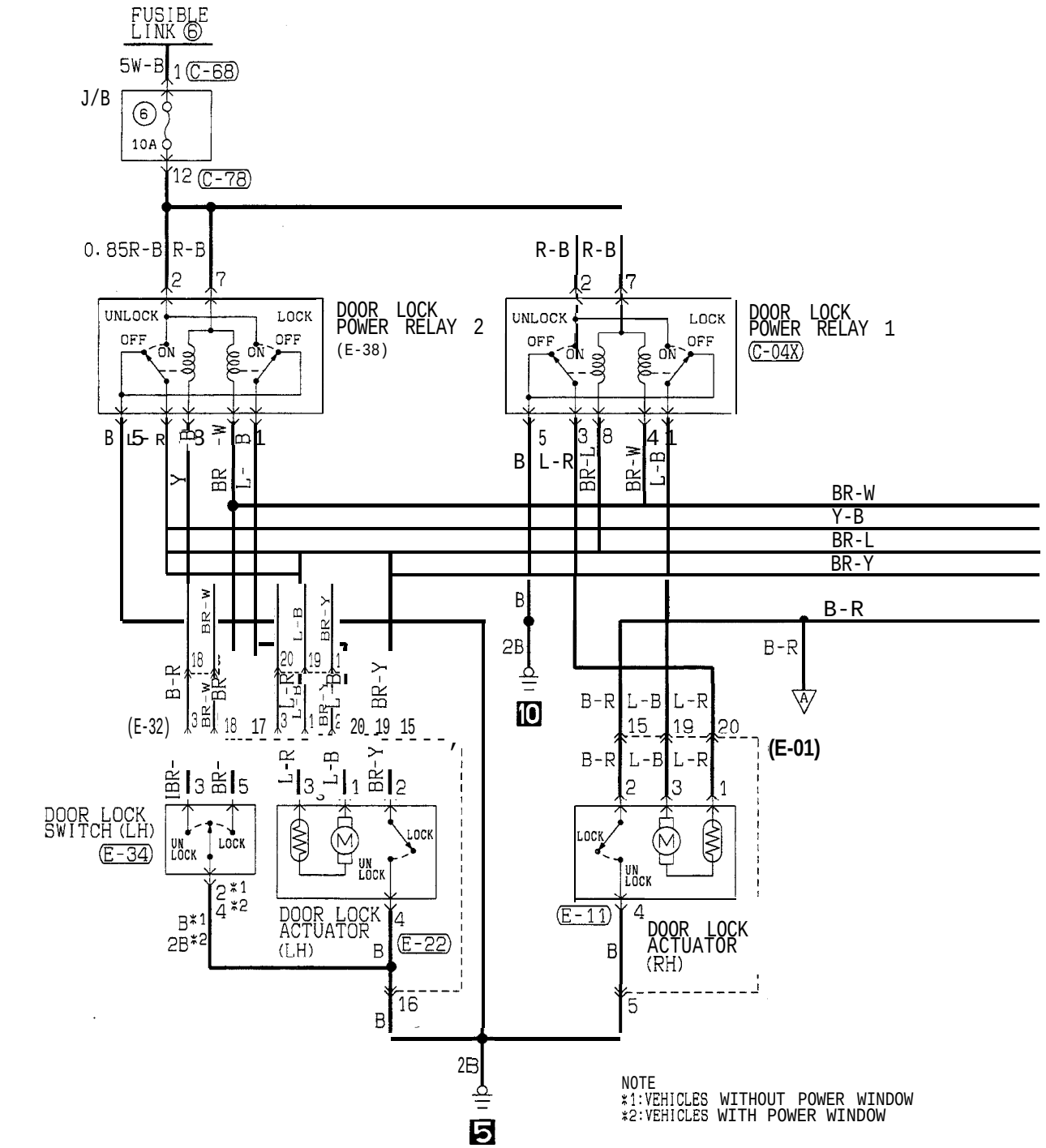
NOTE
*3:VEHICLES WITHOUT THEFT-ALARM SYSTEM
*4:VEHICLES WITH THEFT-ALARM SYSTEM

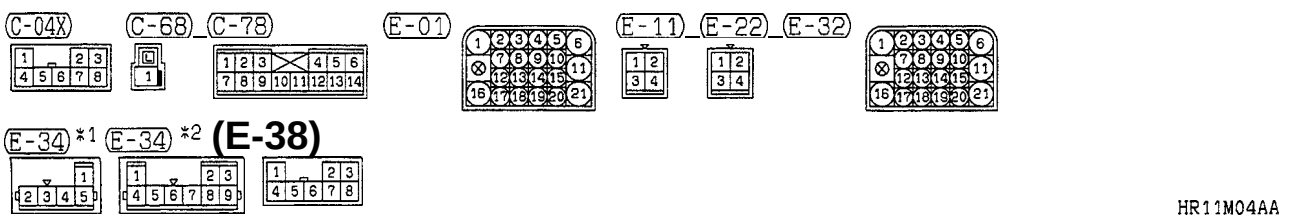
HR11M03AB

TSB Revision

CENTRAL DOOR LOCKING CIRCUIT (UP TO 1993 MODELS)

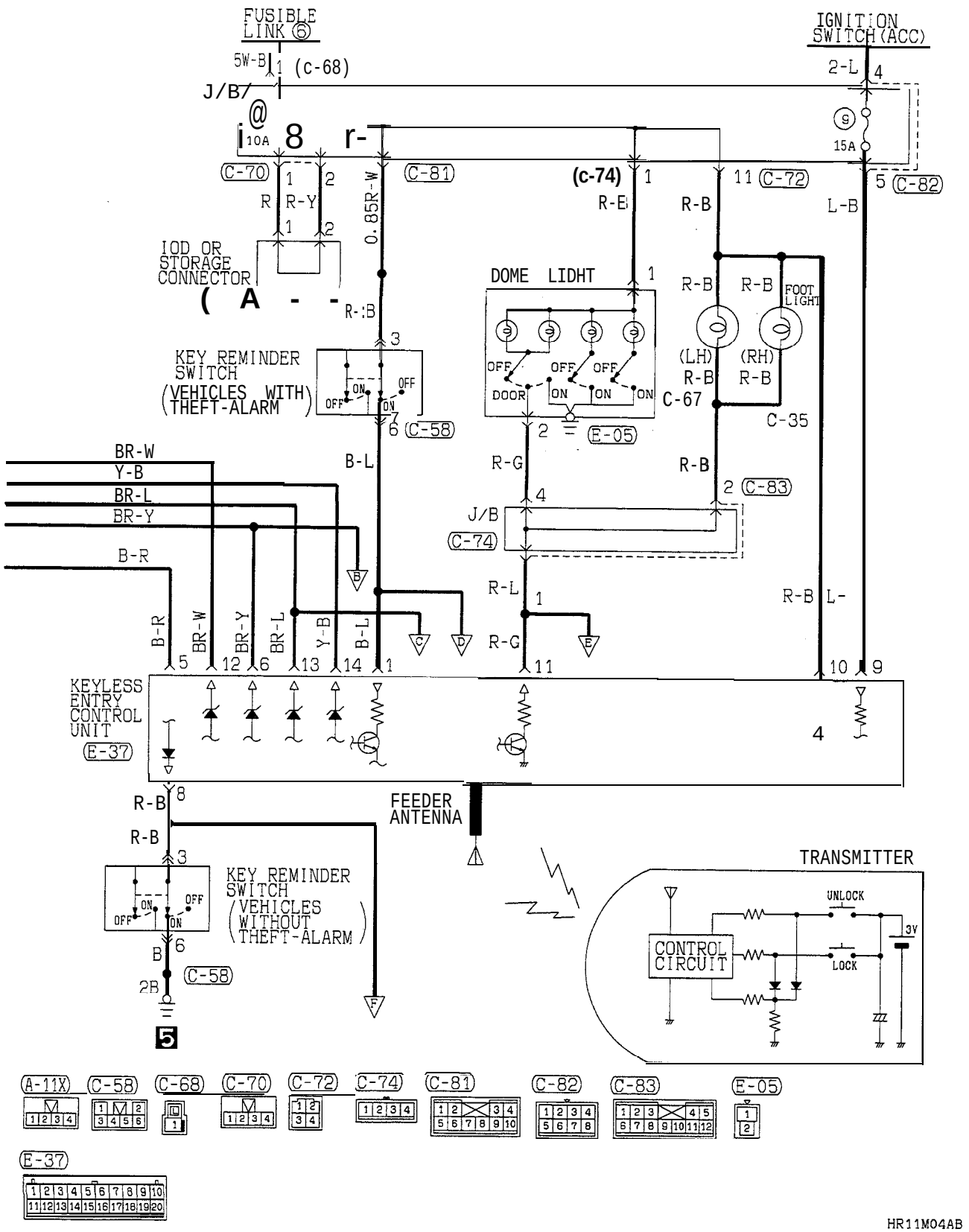
(Vehicles with keyless entry system)





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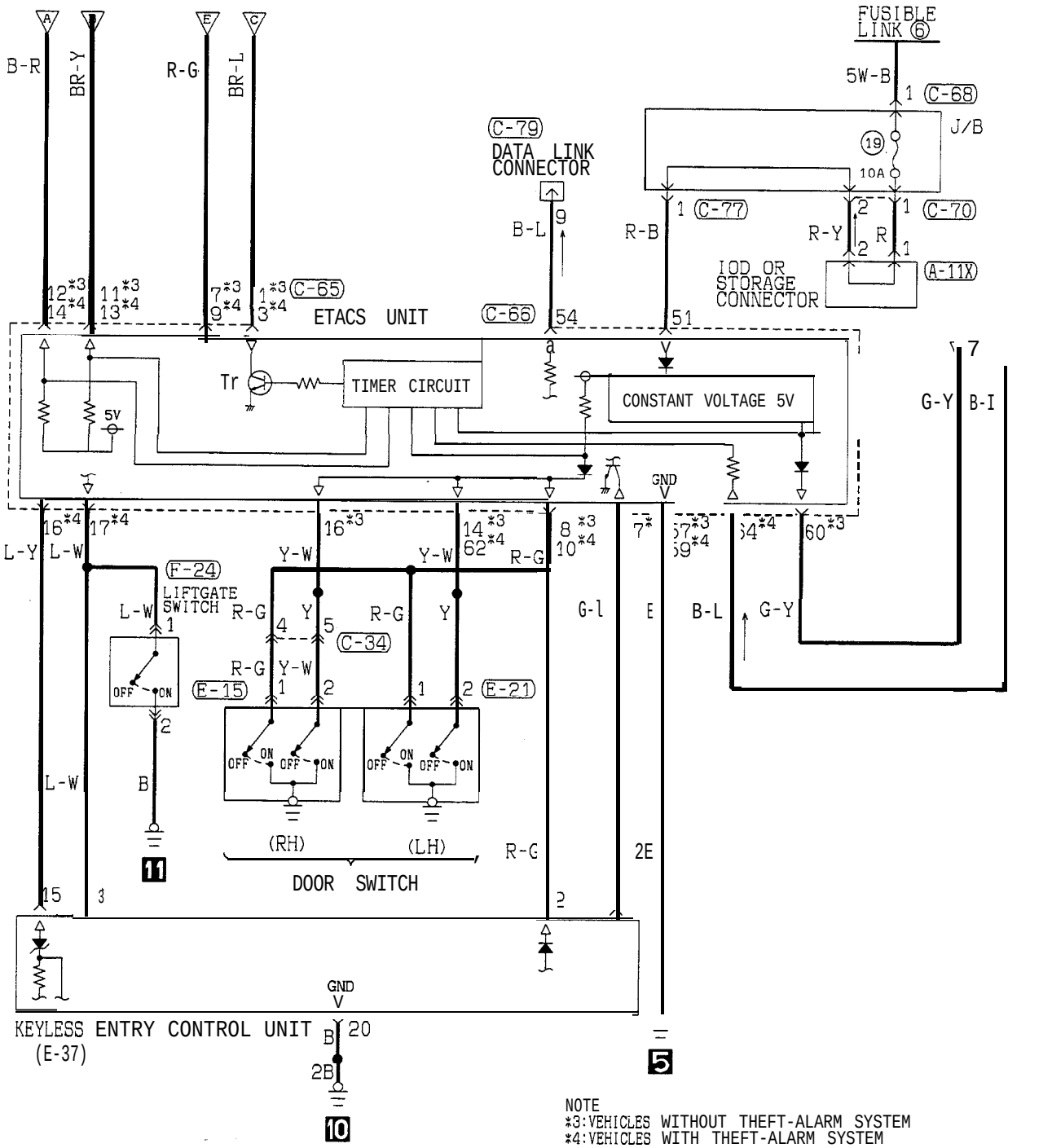
TSB Revision

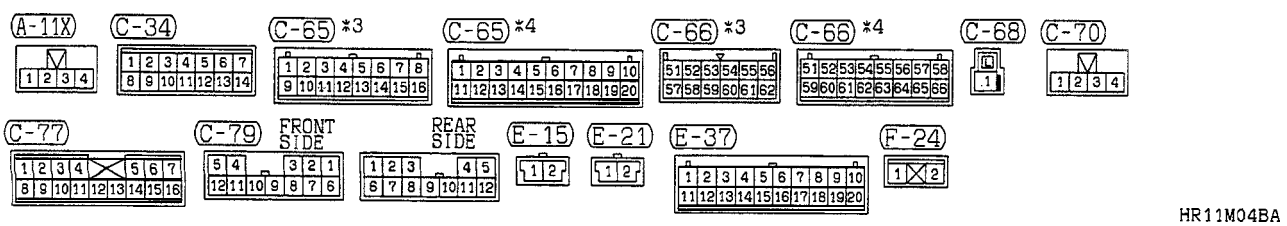


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TSB Revision

CENTRAL DOOR LOCKING CIRCUIT (UP TO 1993 models) (Vehicles with keyless entry system) (CONTINUED)



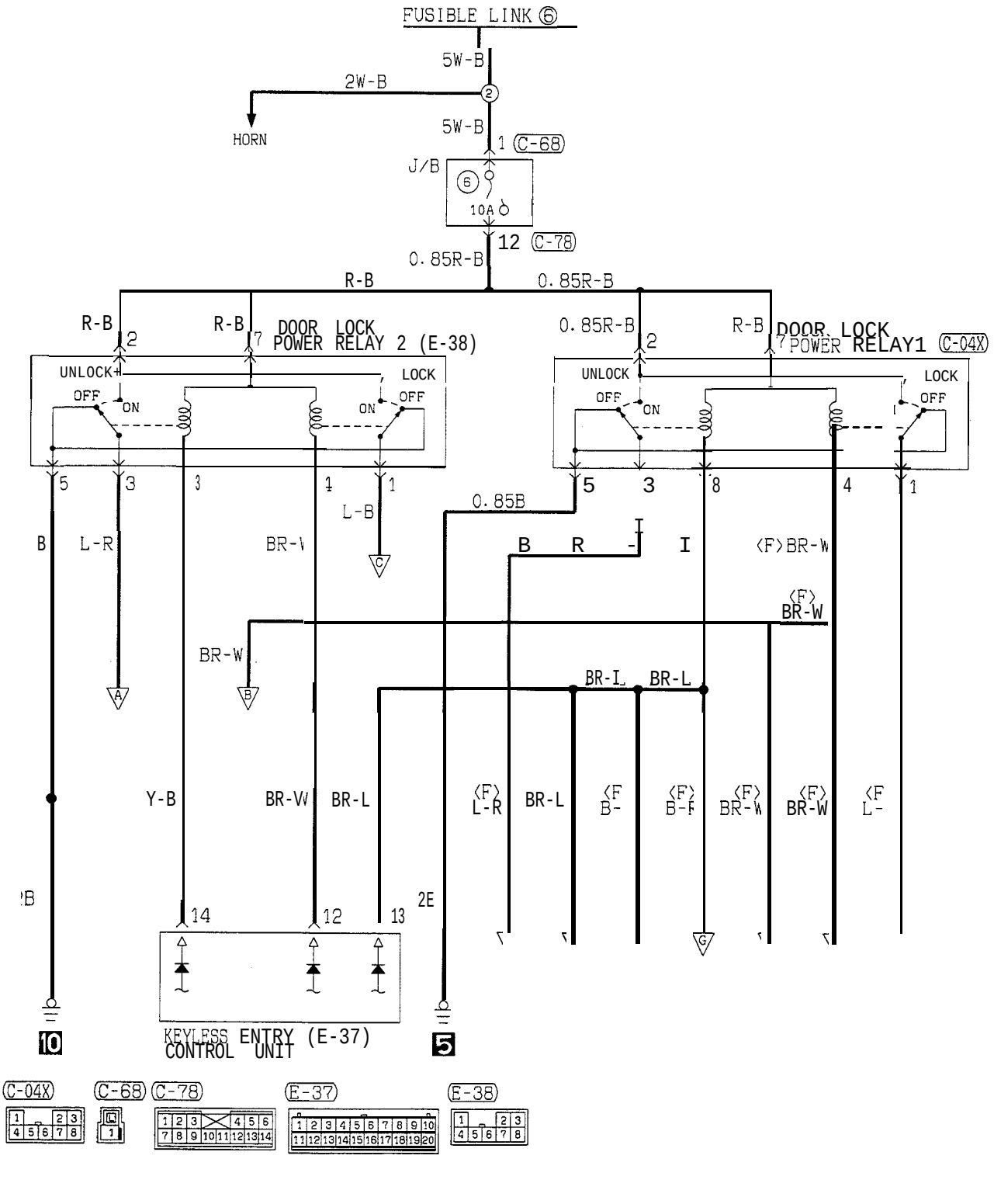


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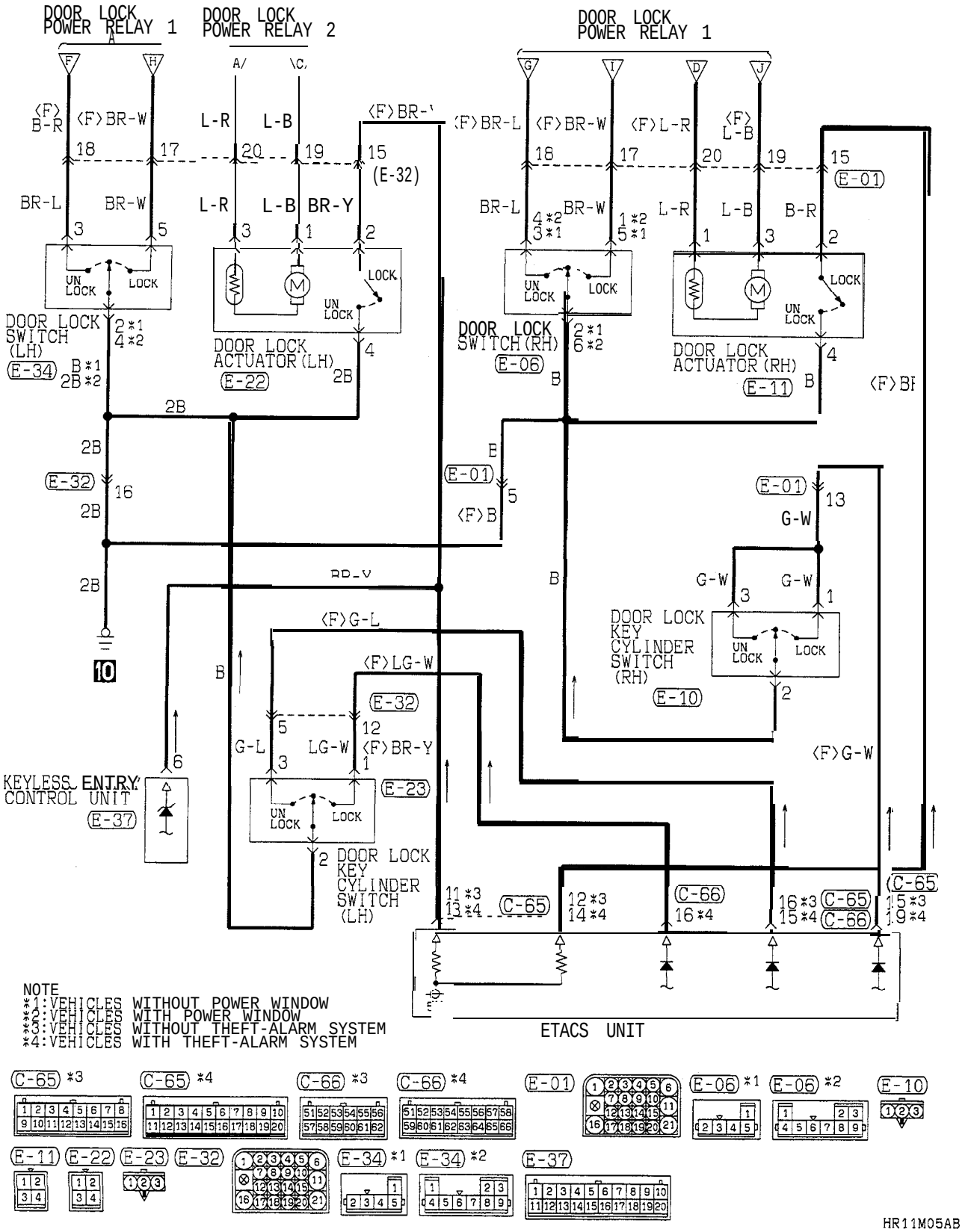
NOTES

CENTRAL DOOR LOCKING CIRCUIT (1994, 1995 MODELS)



HR11M05AA

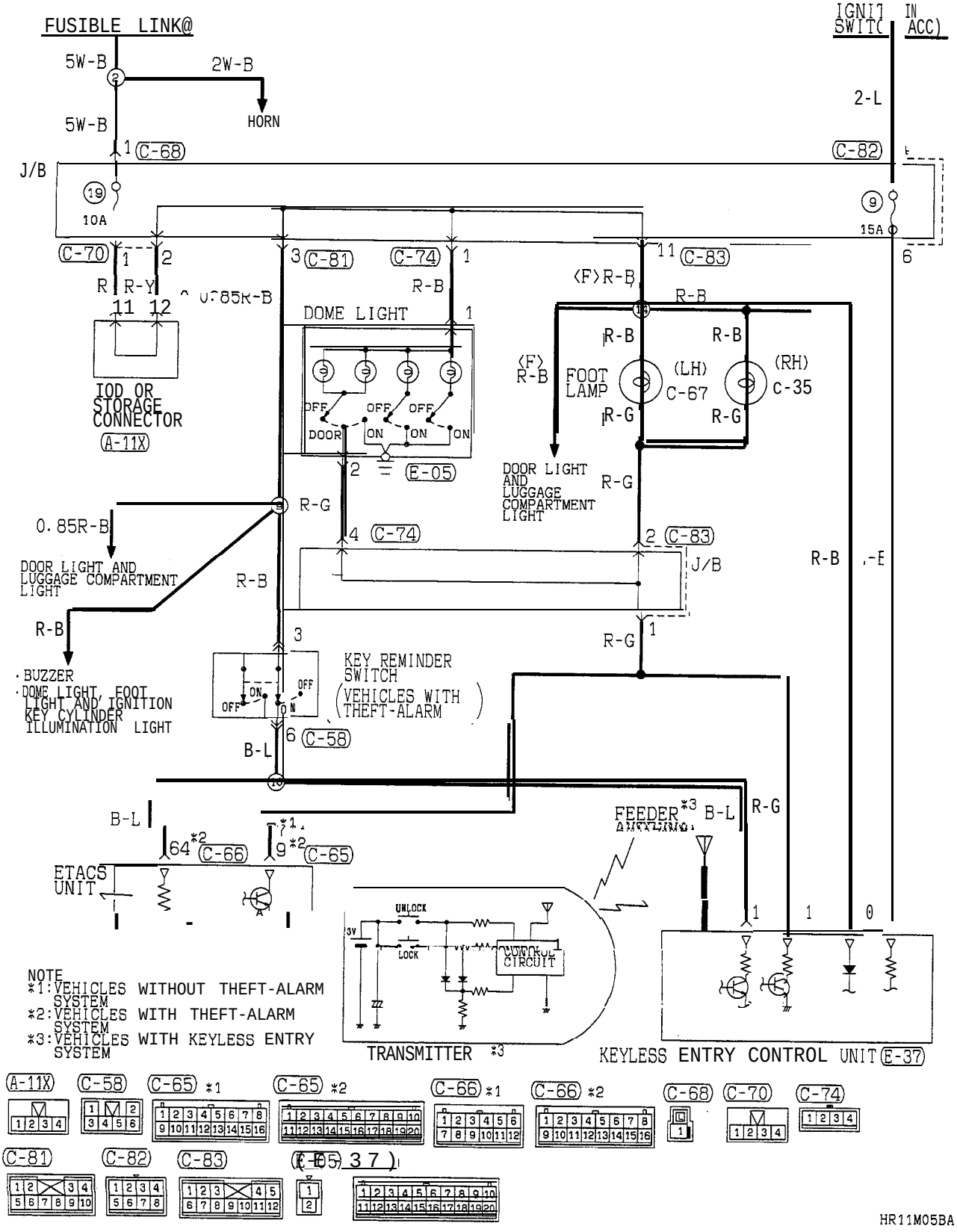
TSB Revision



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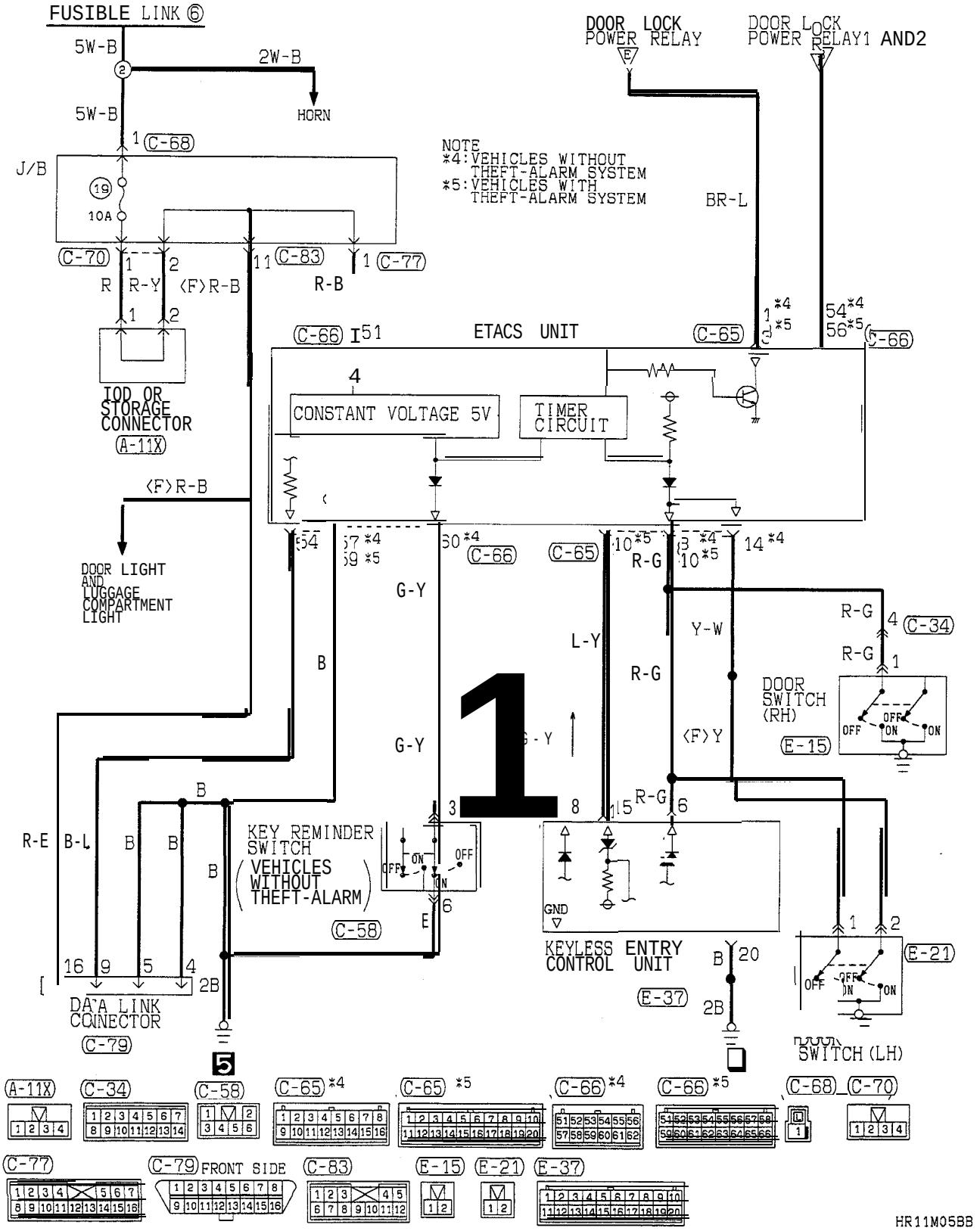
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CENTRAL DOOR LOCKING CIRCUIT (1994, 1995 MODELS) (CONTINUED)



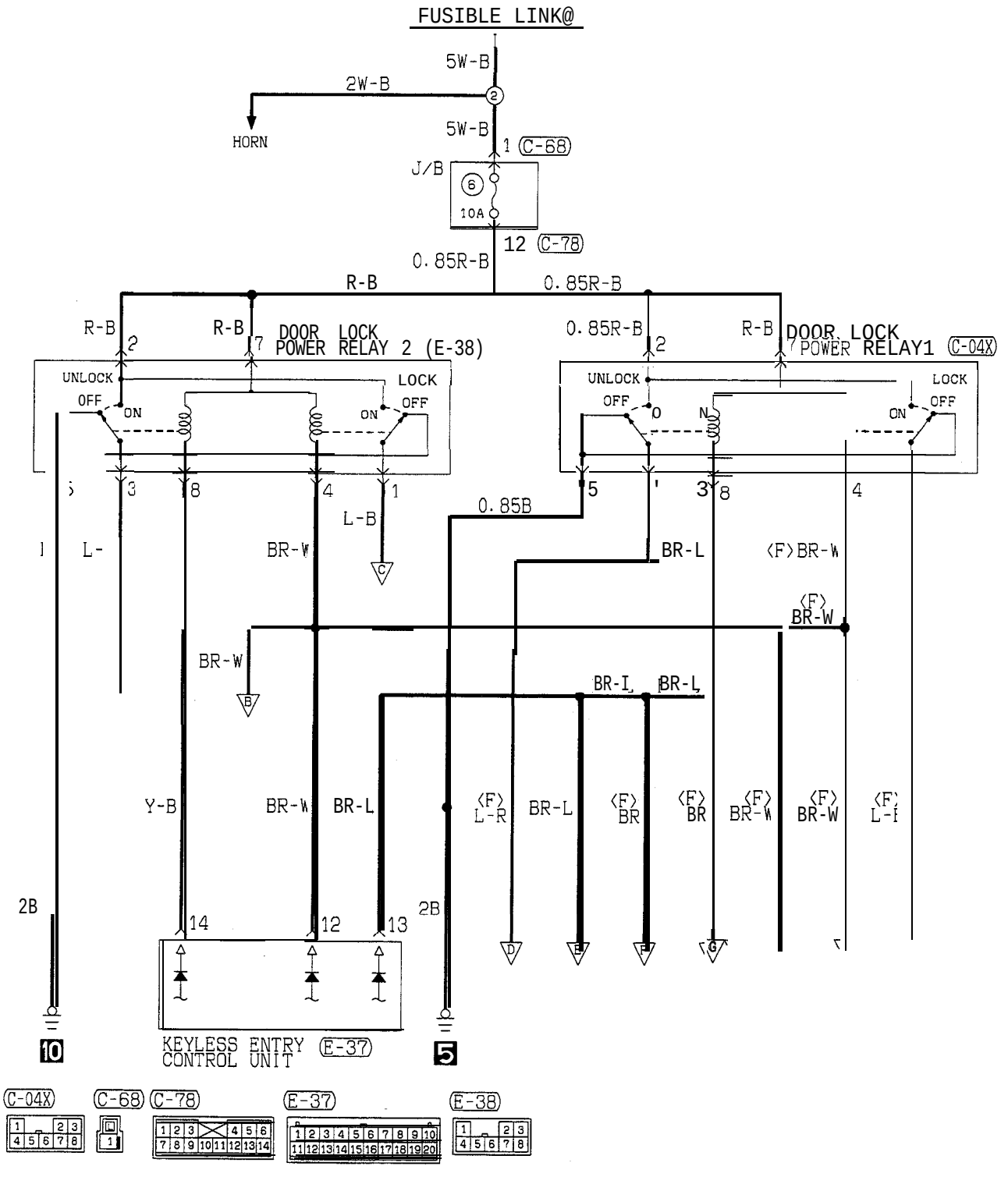
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TSB Revision



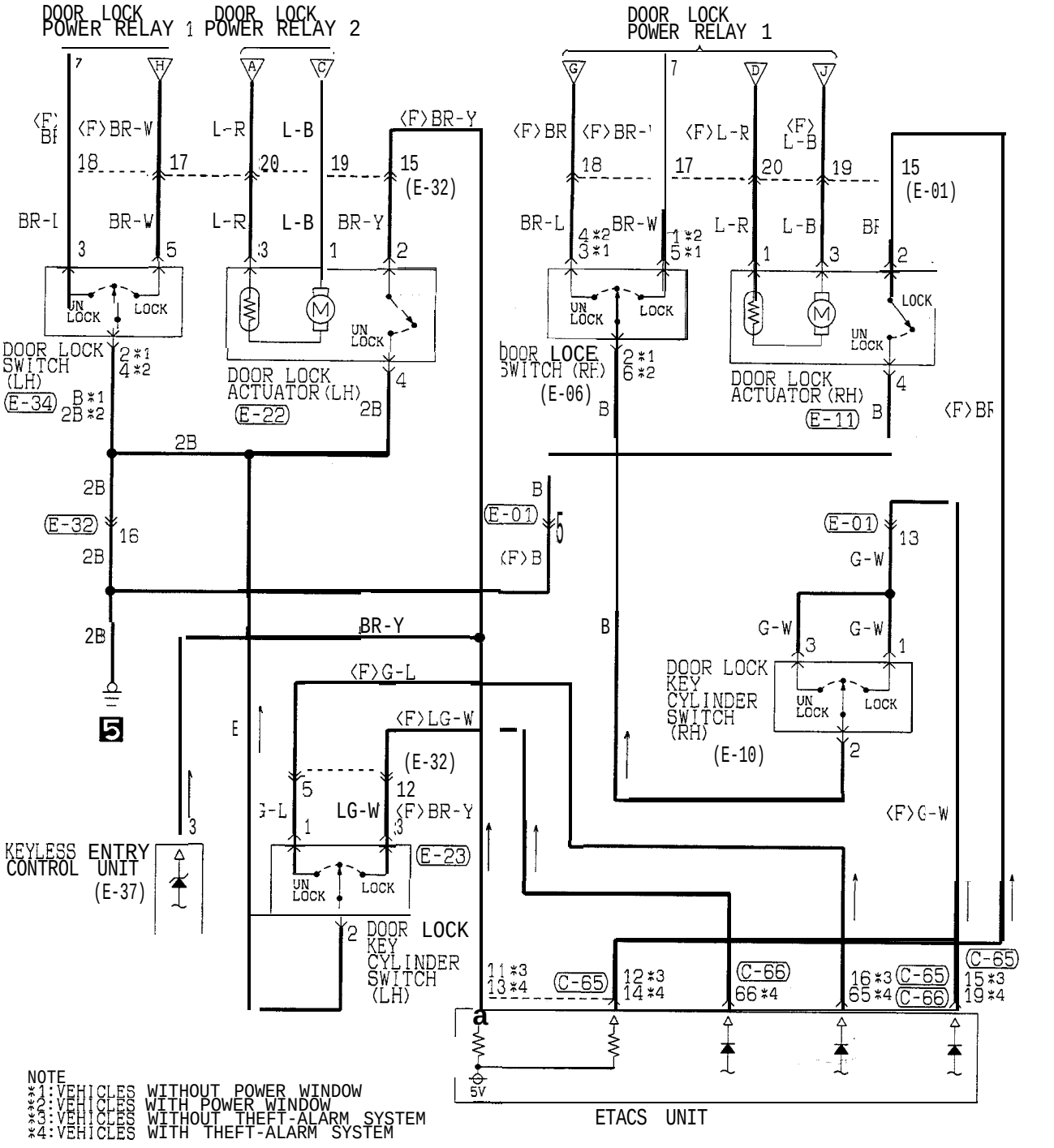
TSB Revision

CENTRAL DOOR LOCKING CIRCUIT (FROM 1996 MODELS)

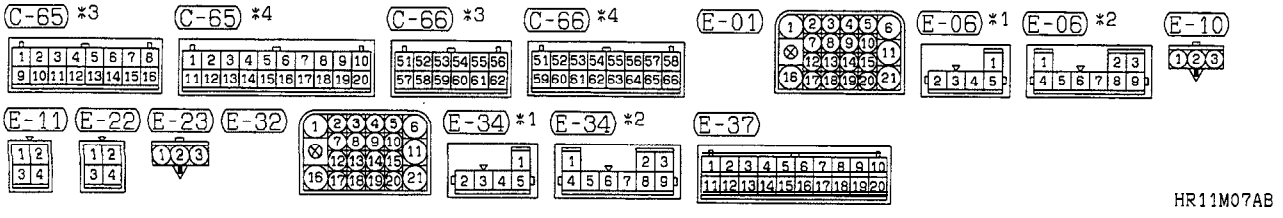


HR11M07AA

TSB Revision



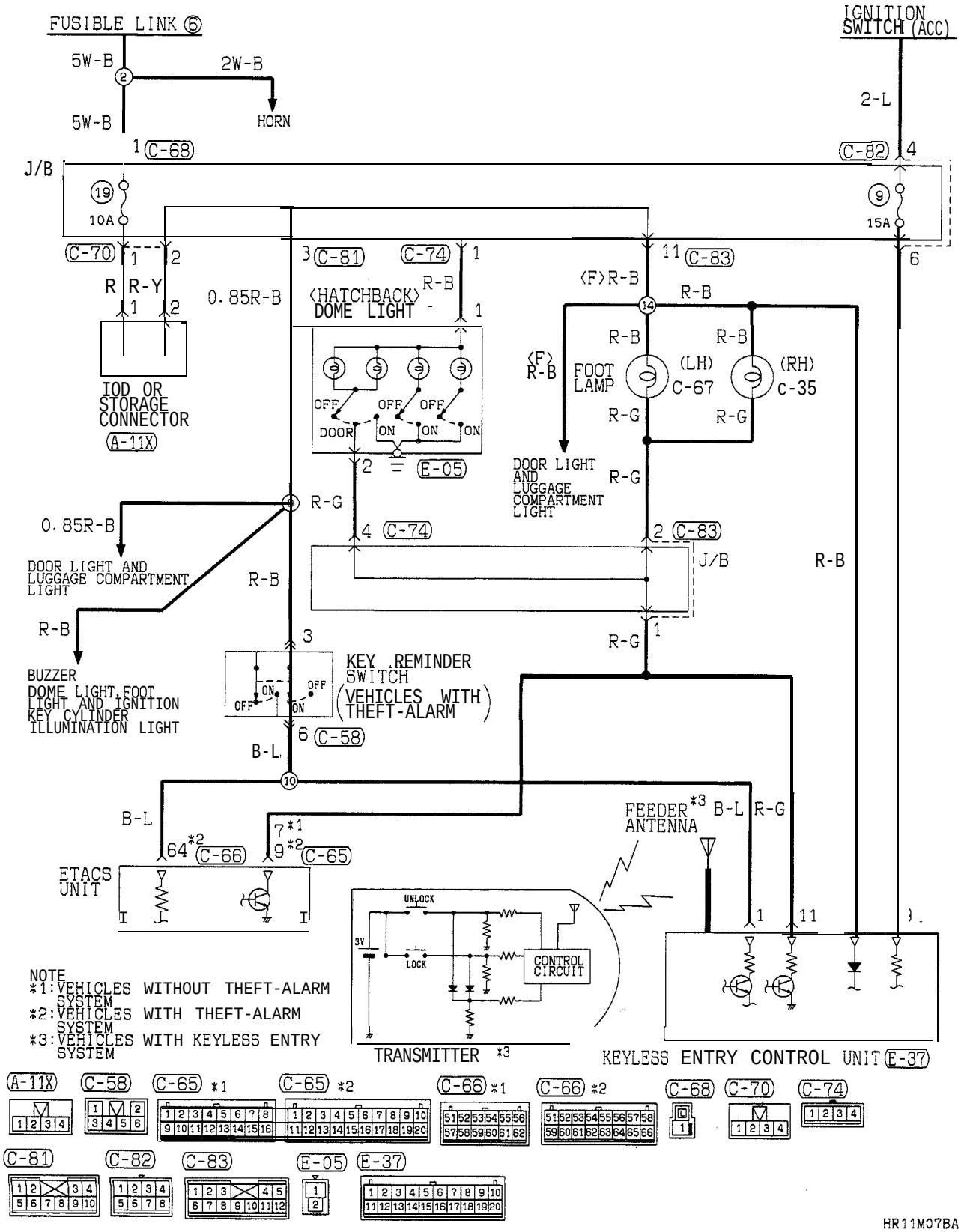
NOTE
*1:VEHICLES WITHOUT POWER WINDOW
*2:VEHICLES WITH POWER WINDOW
*3:VEHICLES WITHOUT THEFT-ALARM SYSTEM
*4:VEHICLES WITH THEFT-ALARM SYSTEM



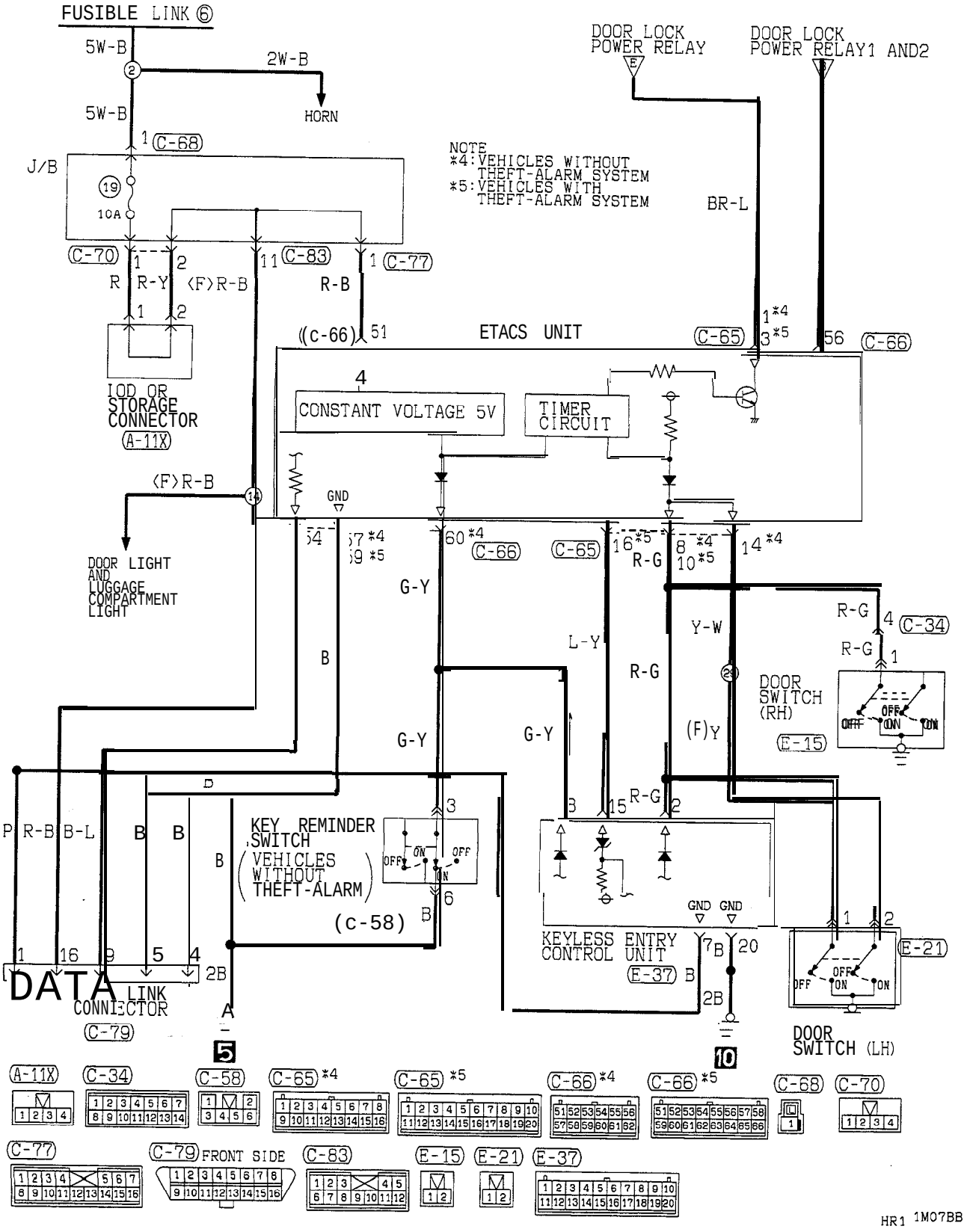
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TSB Revision

CENTRAL DOOR LOCKING CIRCUIT (FROM 1996 MODELS) (CONTINUED)



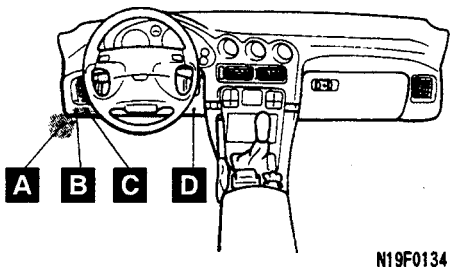
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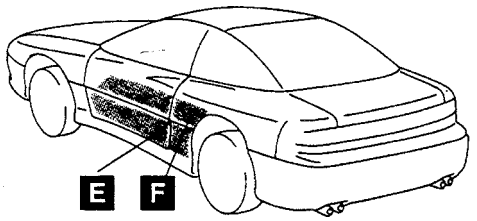
TSB Revision

COMPONENT LOCATION

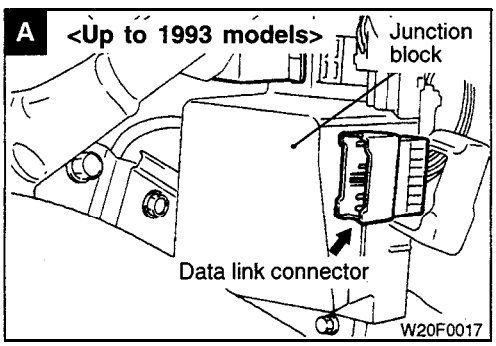
Name	Symbol	Name	Symbol
Data link connector (from 1994 models)	D	Door lock power relay 2 (Concerning the vehicles up to 1993 models, only for the vehicles equipped with keyless entry system.)	F
Data link connector (up to 1993 models)	A	ETACS unit	C
Door lock actuator	E	Keyless entry control unit	F
Door lock power relay 1	B		



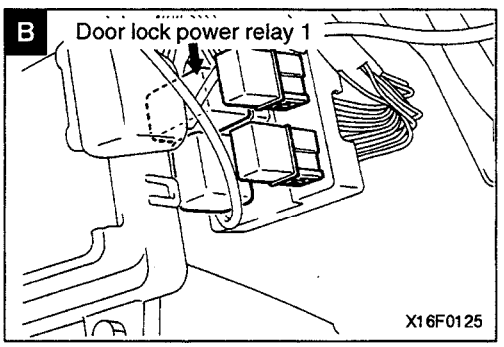
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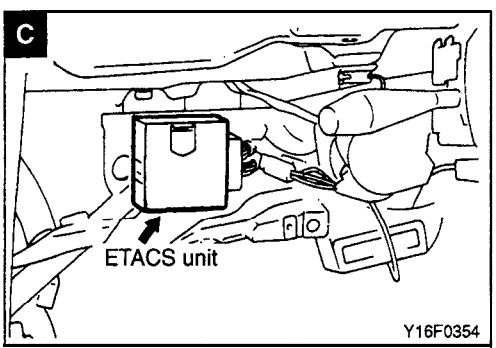
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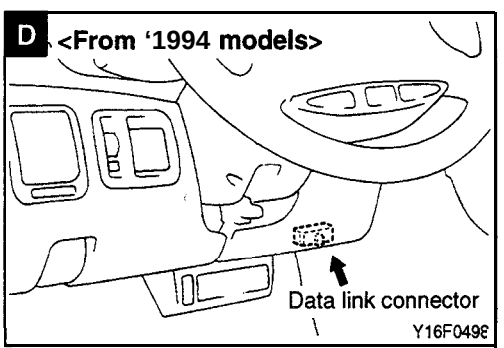
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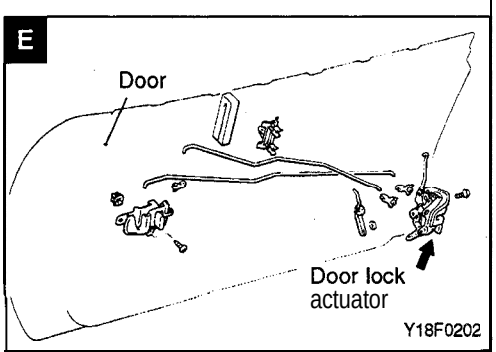
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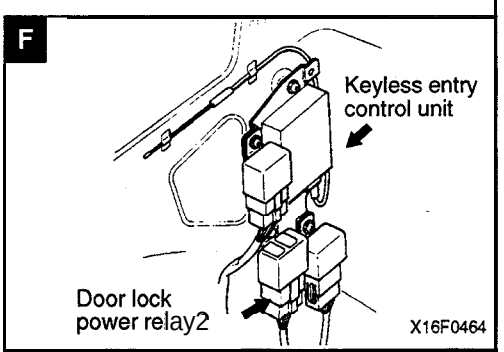
Y16F0354



Y16F0498



Y18F0202



X16F0464

OPERATION

<Vehicles without keyless entry system>

- When the door lock switch is set to the LOCK side (or UNLOCK side), the LOCK side (or UNLOCK side) of the door lock relay is turned ON and the door actuators of all doors operate.
- If the driver seat side door (or assistant seat side door) is opened and the driver seat side inside lock knob (or assistant seat side inside lock knob) is locked with the key inserted in the ignition switch, the ETACS unit grounds the unlock side circuit of the door lock relay to unlock all doors. This way, failure to remove the key is prevented.

<Vehicles with keyless entry system>

- With the driver's and front passenger's doors unlocked, press the LOCK switch of the transmitter, and the door lock signal output (0 V) will be sent from the keyless entry control unit terminal No. 12 closing the door lock power relays 1 and 2 to lock the driver's and front passenger's doors.
- While the R.H. and L.H. doors are in the locked state, press the UNLOCK switch of the transmitter once, and the DOOR UNLOCK switch signal (0 V) will be sent from the keyless entry control unit terminal No. 14 closing the door lock power relay 2 to unlock the driver's door.
- Under the above-mentioned conditions, further press the UNLOCK switch of the transmitter, and the DOOR UNLOCK signal output (0 V) will be sent from the keyless entry control unit terminal No. 13 closing the door lock power relay 1 to lock the front passenger's door.
- When the keyless entry system is operated to turn the driver's door lock switch from the UNLOCK position to the LOCK position, the dome light/foot light blinking signal output (system voltage) will be sent twice from the keyless entry control unit terminal No. 11 when the door lock switch is turned from the LOCK position to the UNLOCK position, the lighting signal output (0 V) will be provided for approx. 3 seconds.

NOTE

The dome light winks or comes on when the dome light switch is in the DOOR interlock position. However, the dome light does not wink while it is ON for 6 seconds after closing the door by ETACS function.

Besides the above-mentioned operations, the keyless entry control unit has the following functions.

- If any door is not opened or closed within 30 seconds from unlocking the door by means of the keyless entry system, the door is automatically locked. In addition, if the cryptographic code other than the code stored in the receiver memory is received 30 times in one minute continuously, operation of the unit is suspended for 10 minutes.
- Operation is also suspended if the ignition key remains inserted (key reminder switch: OFF) and either door is left open (door switch: ON).

TROUBLESHOOTING HINTS

<Vehicles without keyless entry system>

Phenomenon	Inspection method
One of the door lock actuators fails to operate.	● Check the door actuator which fails to operate.
No unlock operation can be made by pressing door lock knob after fulfilment of following conditions. ● Insertion of key in ignition switch (key reminder switch OFF) ● Opening of door (door switch ON)	● Check the key reminder switch input signal. ● Check the key reminder switch. (Refer to GROUP 54–Ignition Switch.) ● Check the front door switch input signal. ● Check the front door switch. (Refer to GROUP 42–Door Assembly)

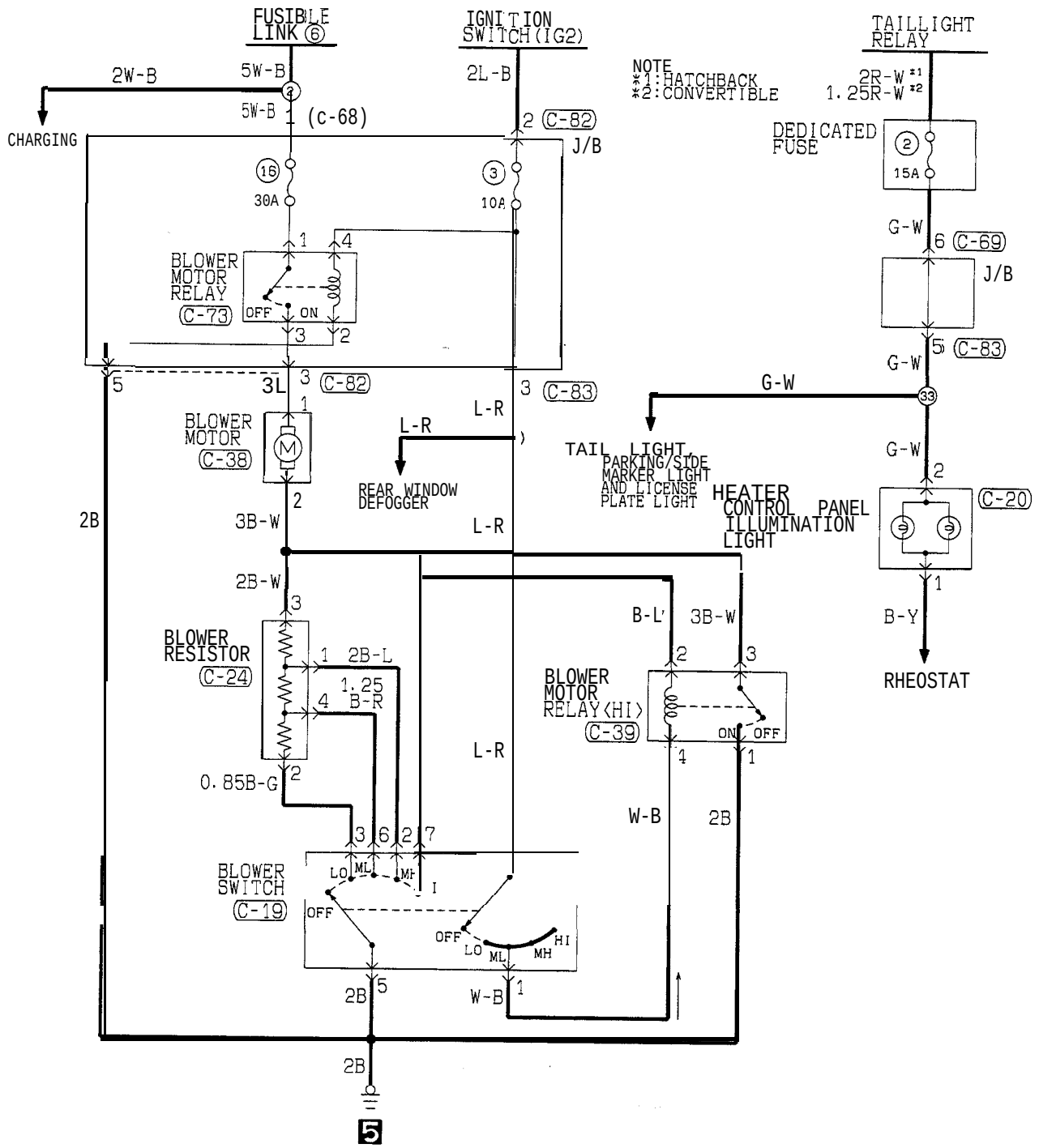
<Vehicles with keyless entry system>

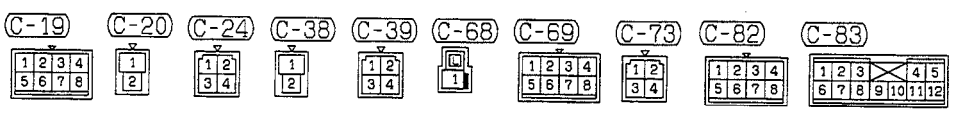
- The indicator does not blink after pressing the transmission switch of the transmitter.
  1) Check or replace the battery. (Refer to GROUP 42–Keyless Entry System.)
  2) Replace the transmitter.
- Transmitted wave is being sent from the transmitter (indicator is blinking), but the system does not operate.
  1) Check the cryptographic code registering method. (Refer to GROUP 42–Keyless Entry System.)
  2) Check the keyless entry control unit terminal voltage. (Refer to GROUP 42–Troubleshooting.)
  3) Check the coaxial cable of antenna and the ground wire for connection.
- Only R.H. or L.H. door can be locked or unlocked.
  1) Check the door lock power relay 1 (for front passenger's door) or door lock power relay 2 (for driver's door). (Refer to GROUP 42–Central Door Locking System.)
  2) Check the keyless entry control unit terminal voltage. (Refer to GROUP 42–Troubleshooting.)
- R.H. and L.H. doors can be locked and unlocked by the transmitter but the dome light and foot light do not blink or come on. (Interlocked lighting of the dome light and foot light by means of the dome light switch or door opening and closing is normal).
  1) Check the keyless entry control unit terminal voltage (Refer to GROUP 42–Troubleshooting.)
  2) Check the harness.

NOTE

Perform this check when replacement of the transmitter and/or keyless entry control unit or faulty storage of cryptographic code has been made.

HEATER CIRCUIT (UP TO 1995 MODELS)

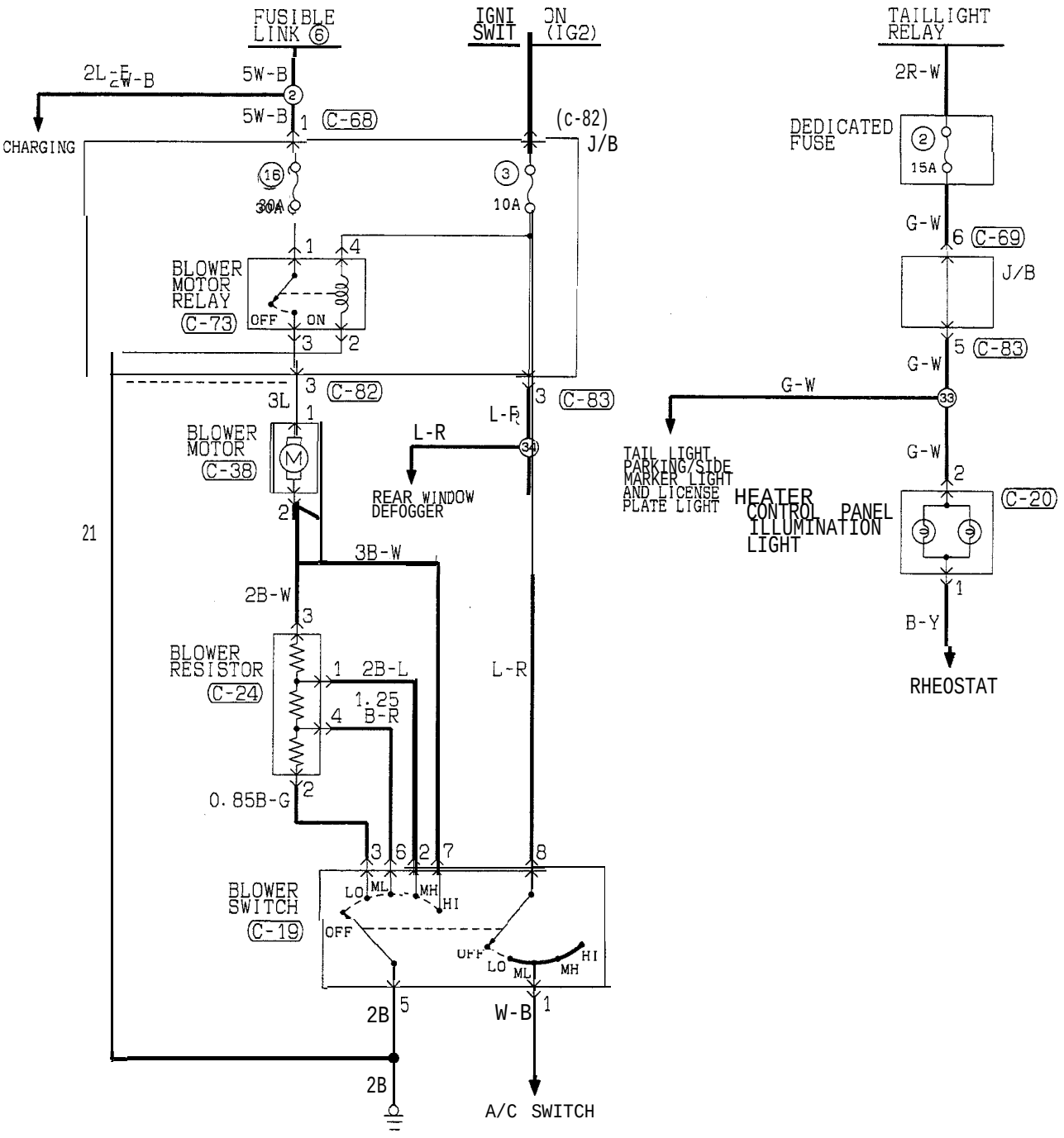




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HEATER CIRCUIT (FROM 1996 MODELS)



(c-19) (C-20) (C-24) (C-38) (C-68) (C-69) (C-73) (C-82) (C-83)

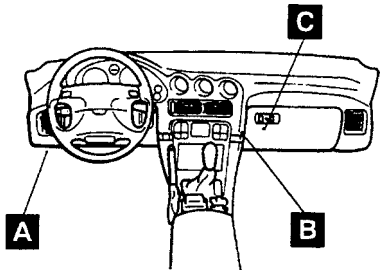


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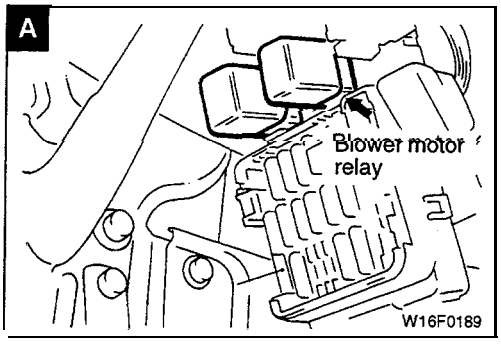
TSB Revision

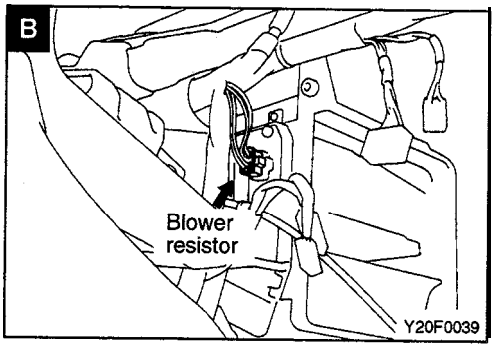
COMPONENT LOCATION

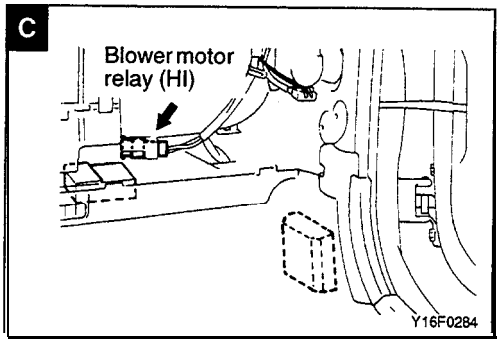
Name	Symbol	Name	Symbol
Blower motor relay	A	Blower resistor	B
Blower motor relay (HI) (Up to 1995 models)	C		



M19F0134

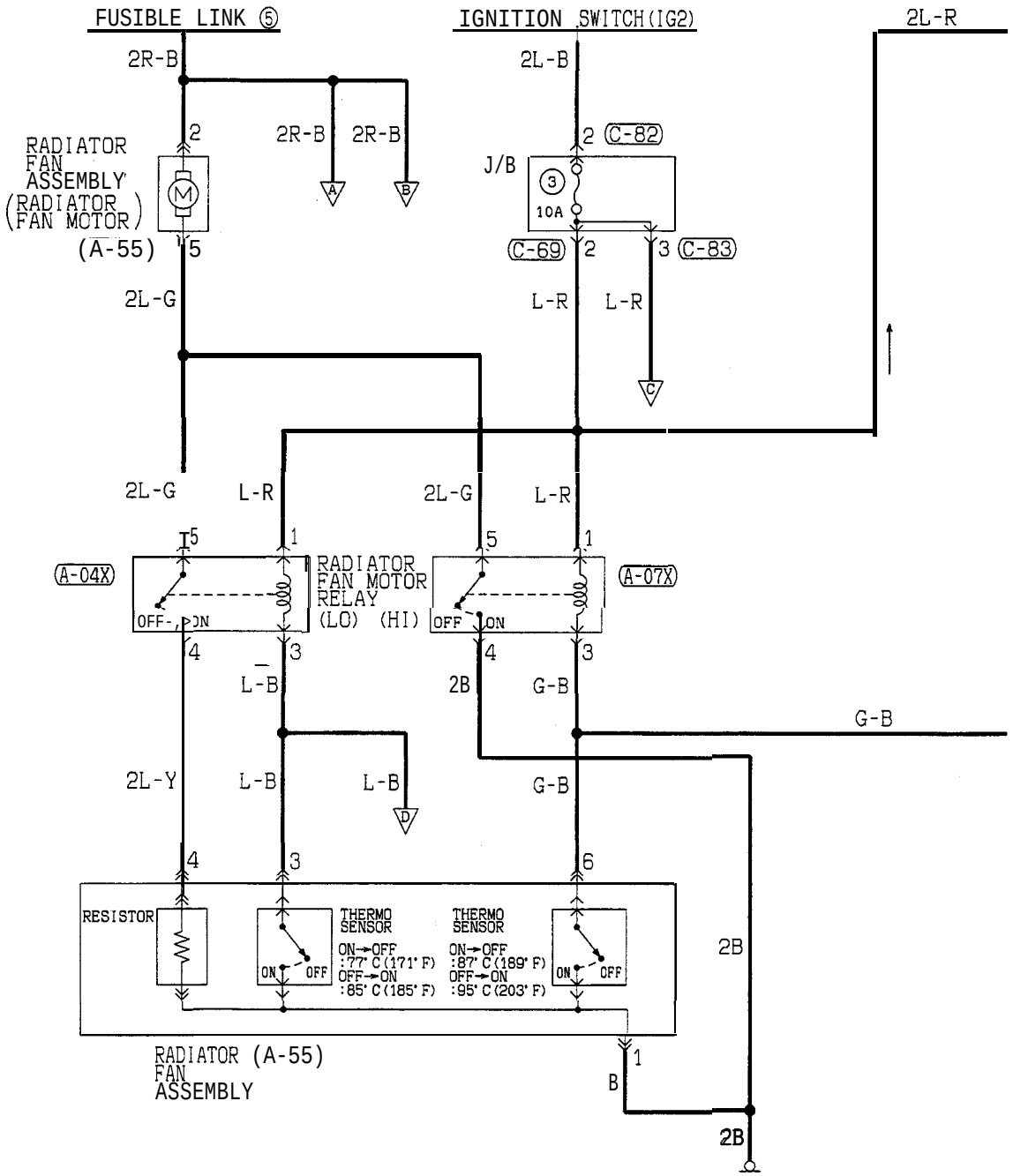






TSB Revision

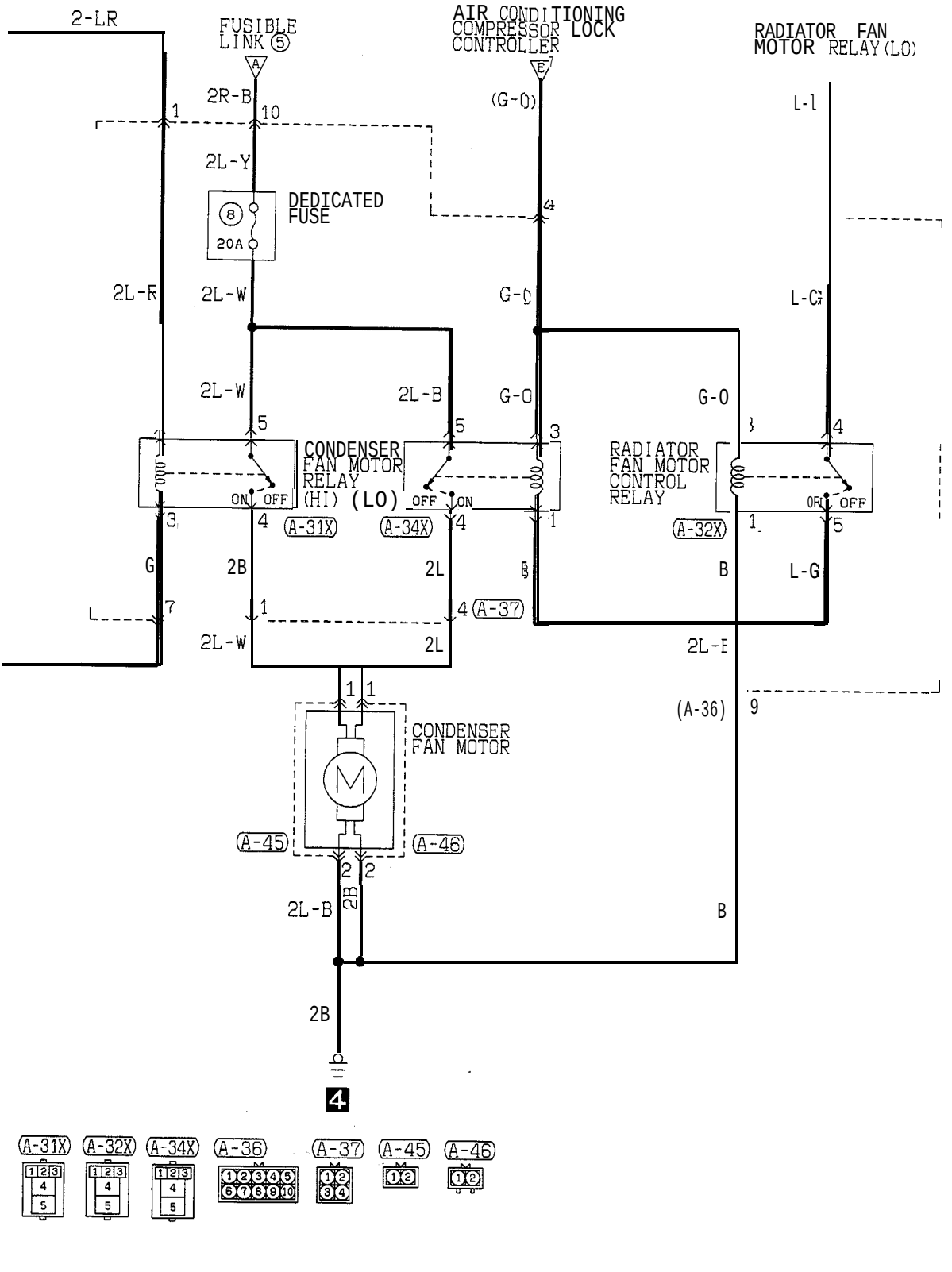
MANUAL AIR CONDITIONING CIRCUIT (1992 MODEL)



A-04X A-07X A-55 C-69 C-82 C-83

HR12M01AA

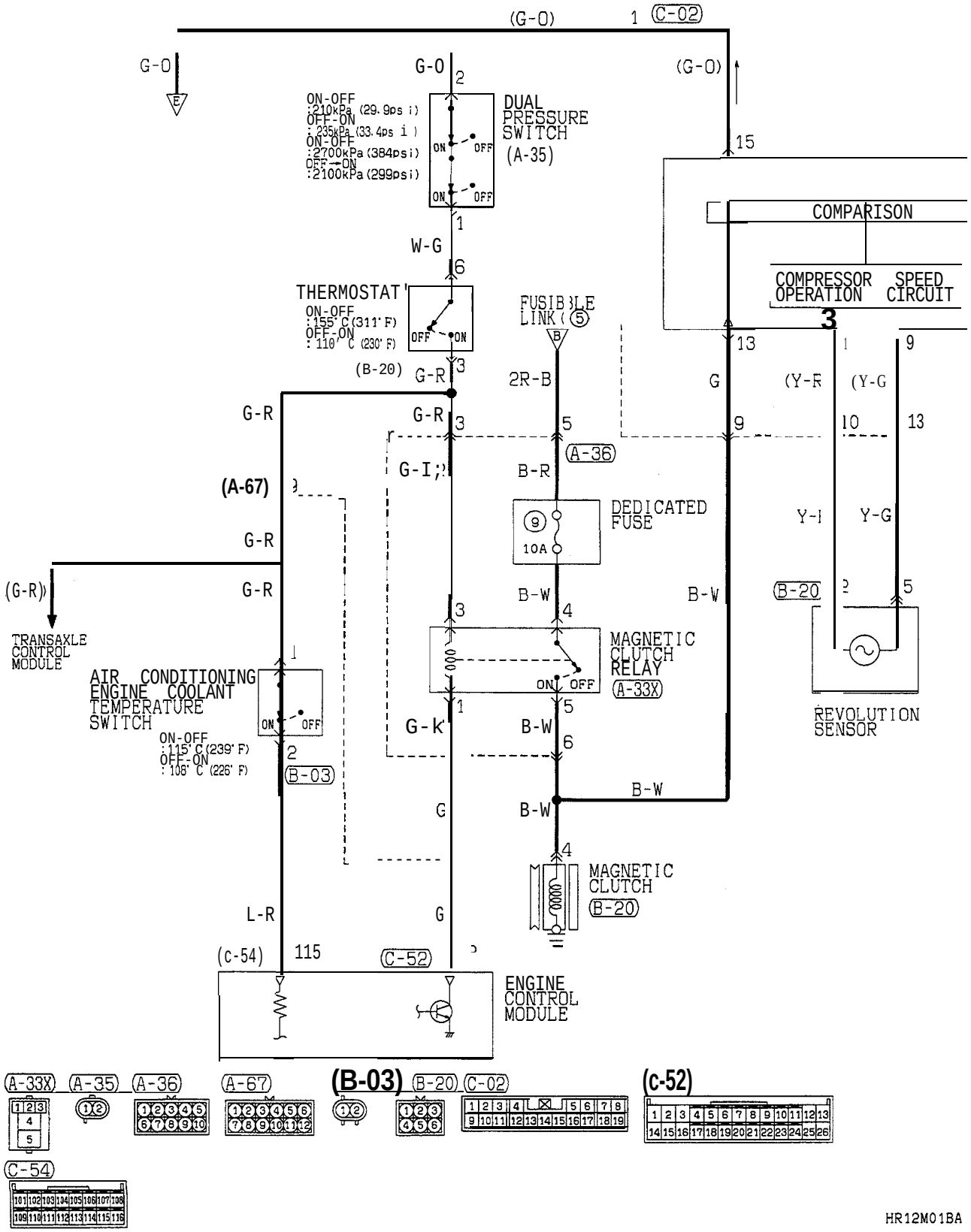
TSB Revision



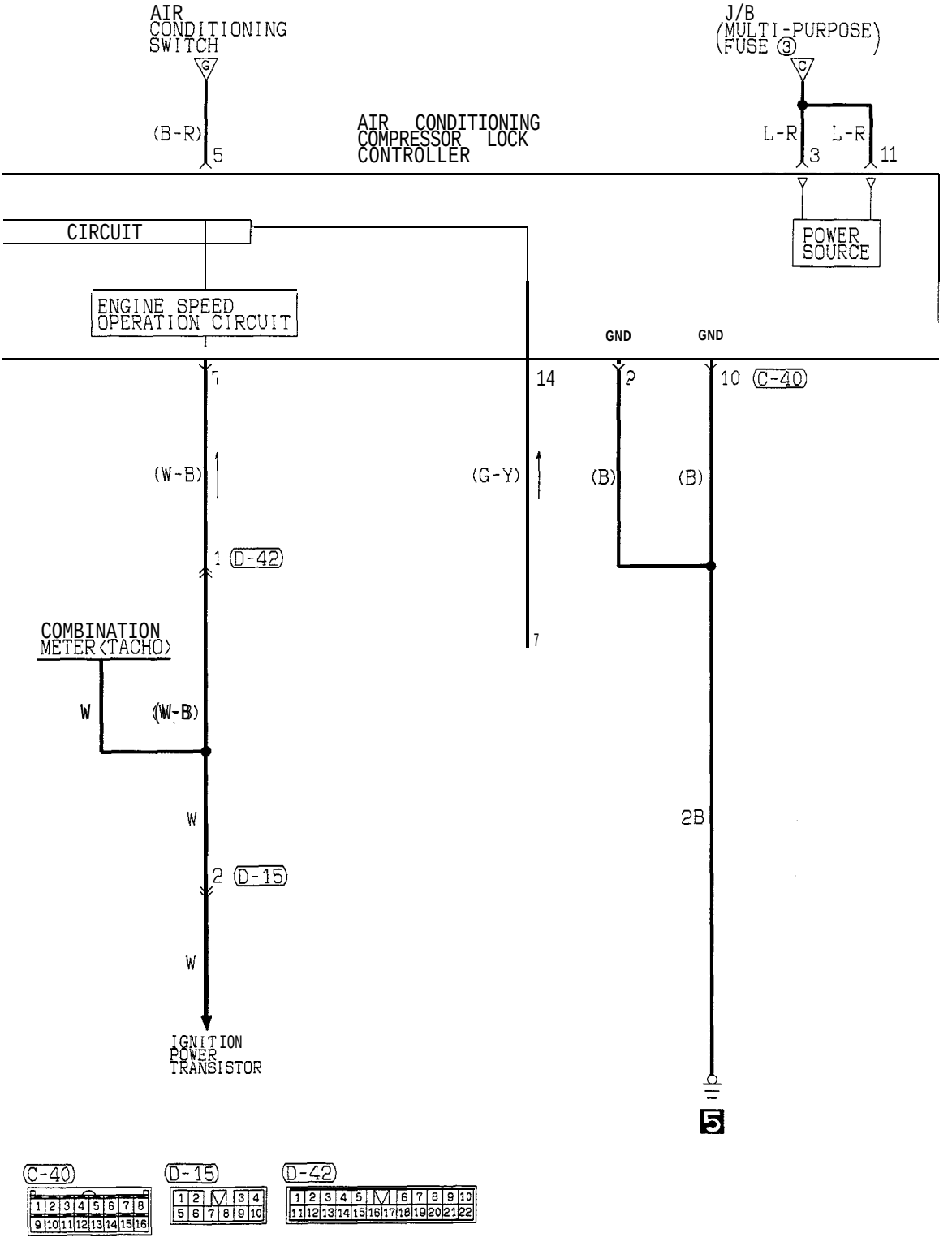
HR12M01AB

TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (1992 MODEL) (CONTINUED)



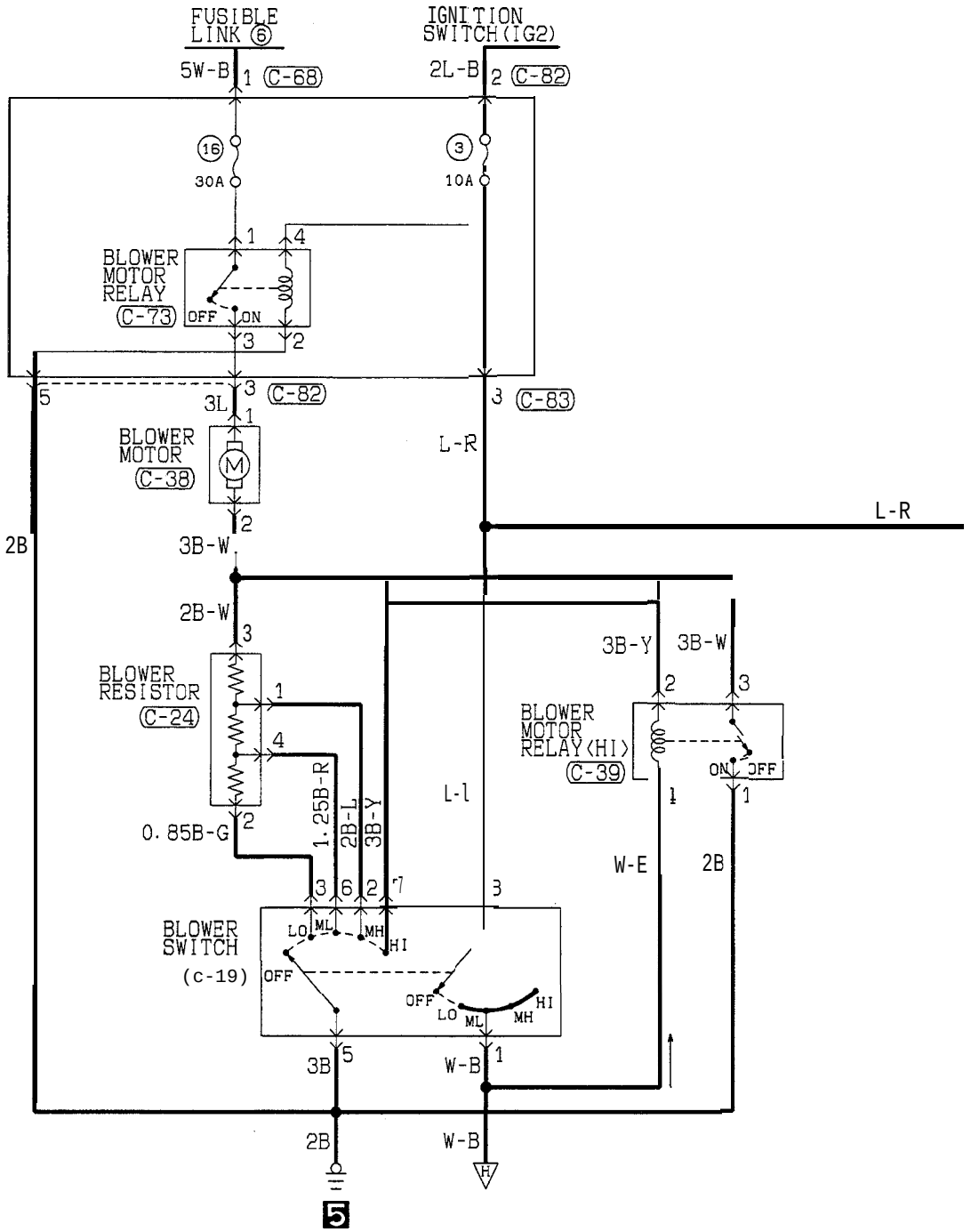
TSB Revision



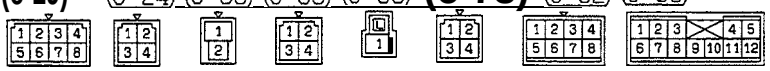
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TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (1992 MODEL) (CONTINUED)

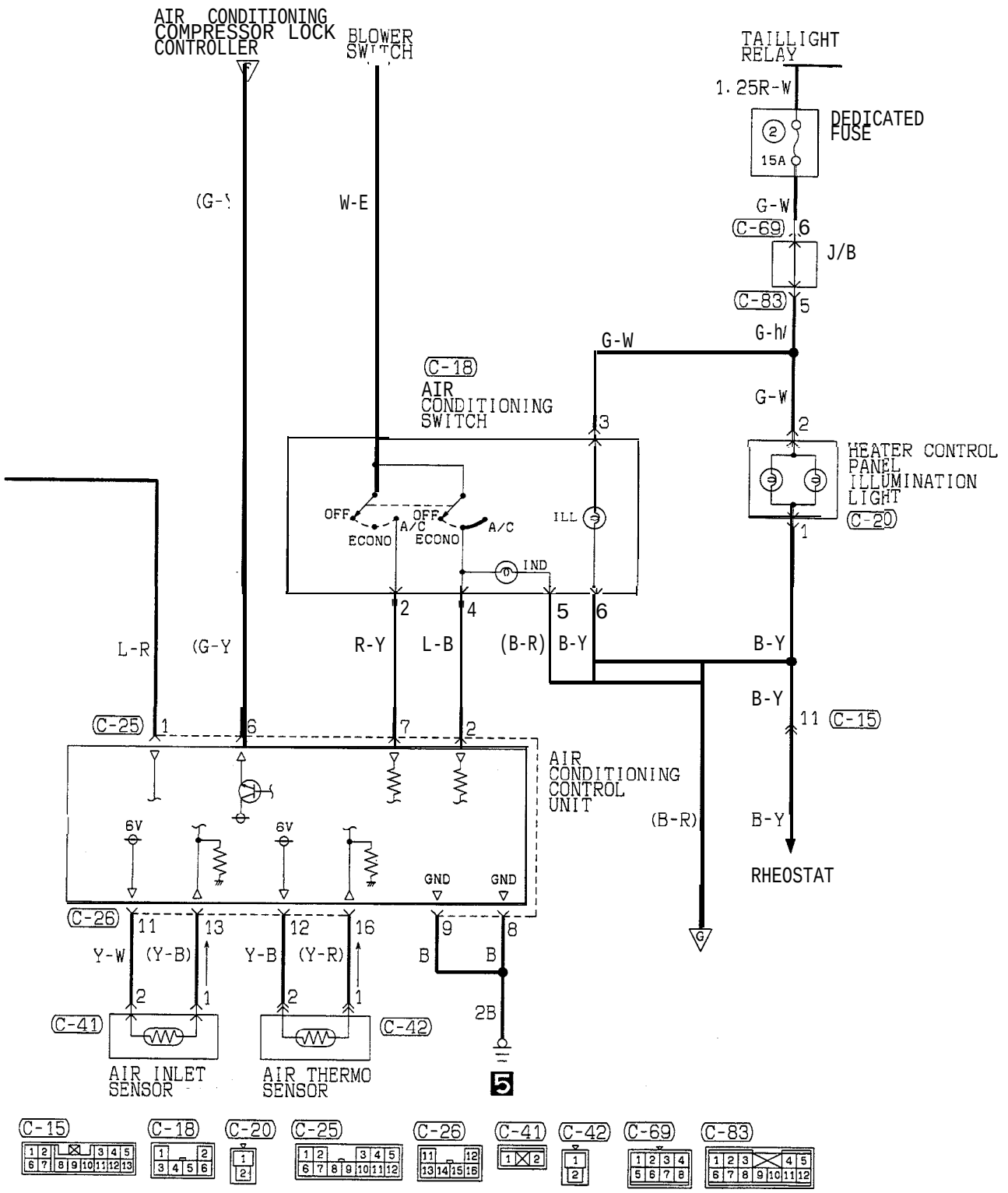


(c-19) (C-24) (C-38) (C-39) (C-68) (c-73) (C-82) (C-83)



HR12M01CA

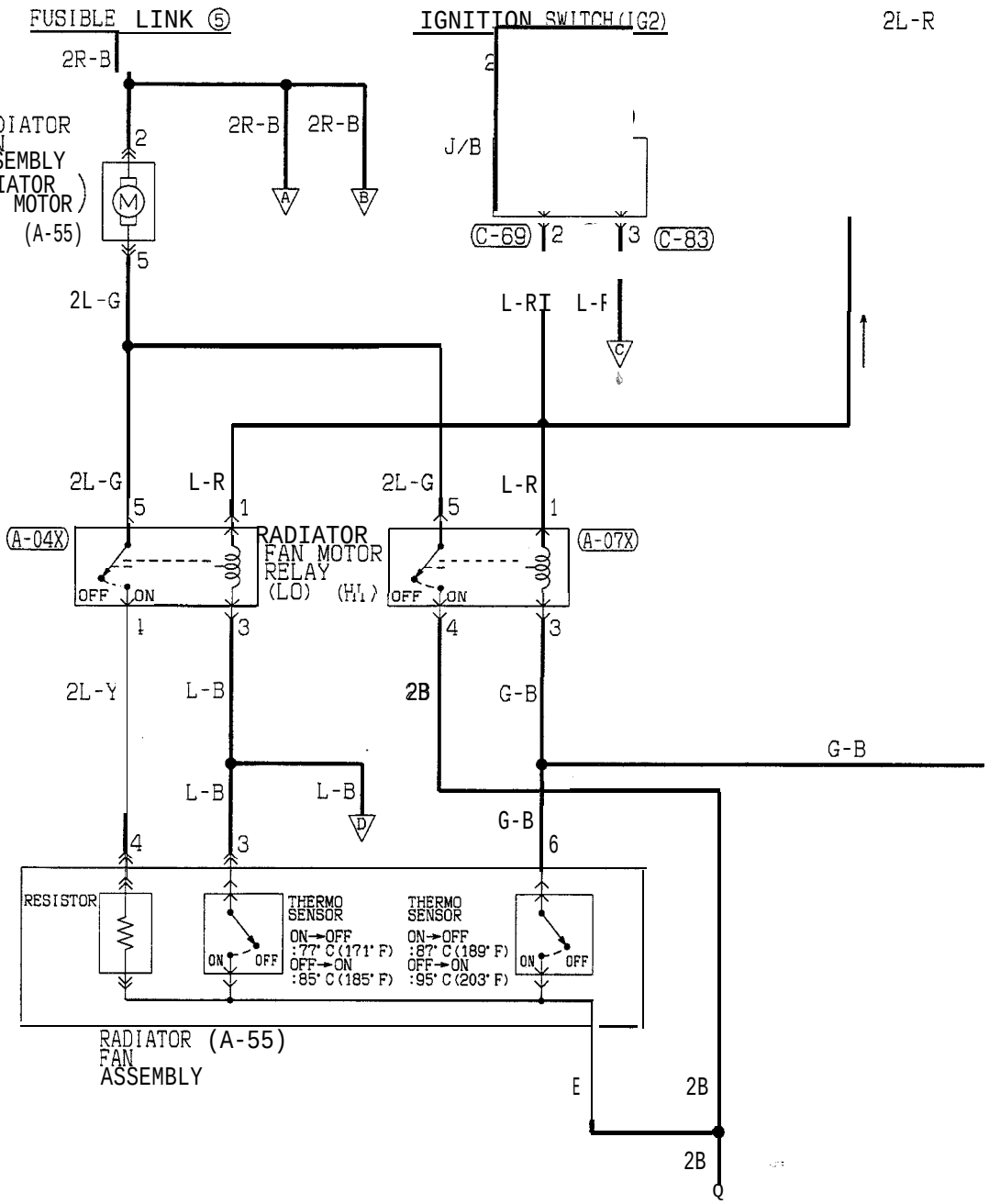
TSB Revision



HR12M01CB

TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (1993 MODELS)

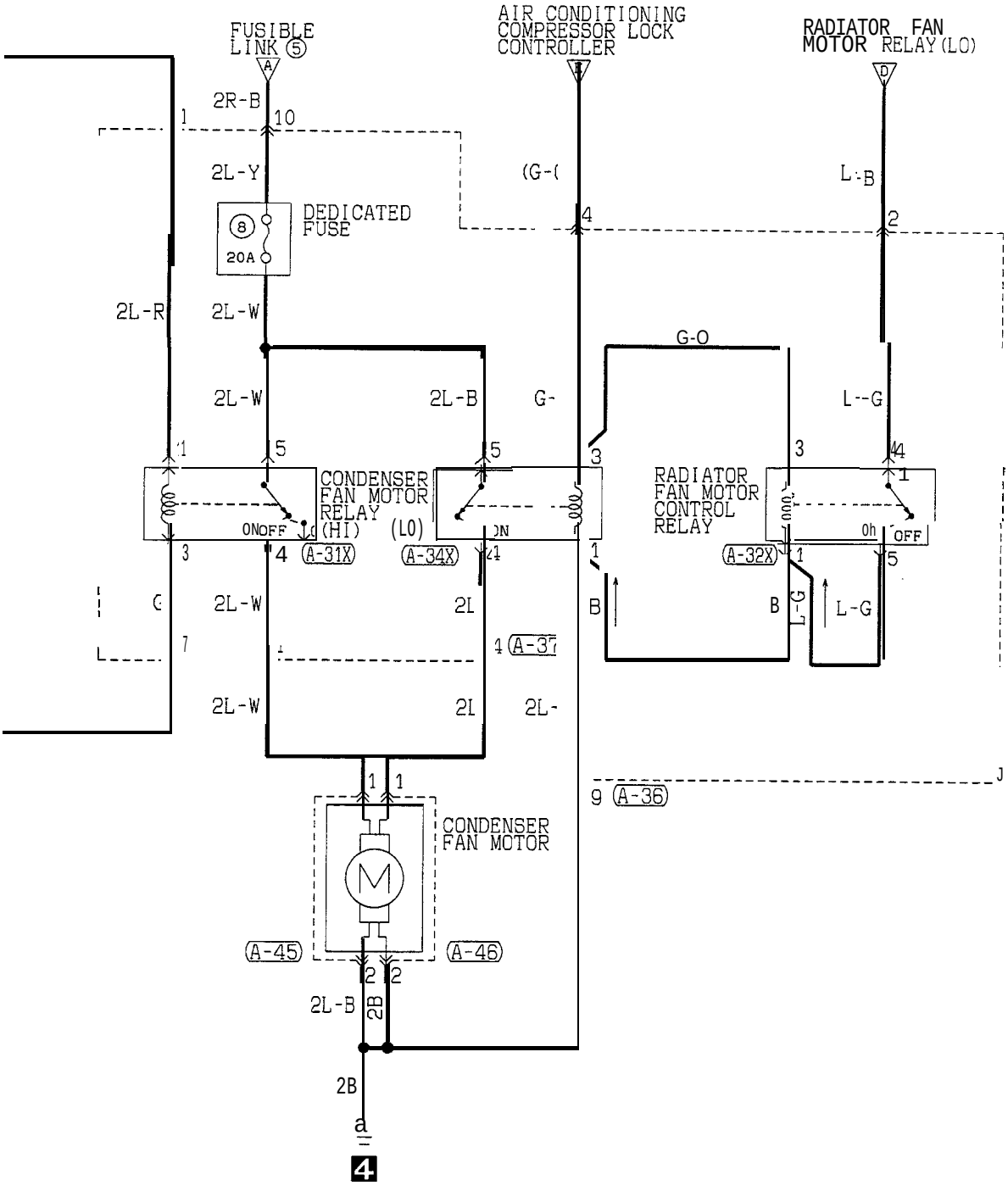


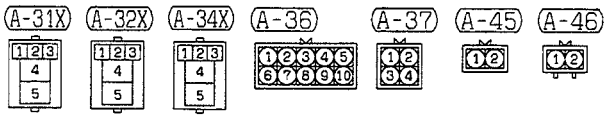
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A-04X A-07X A-55 C-69 (c-82) (c-83)

HR12M02AA

TSB Revision

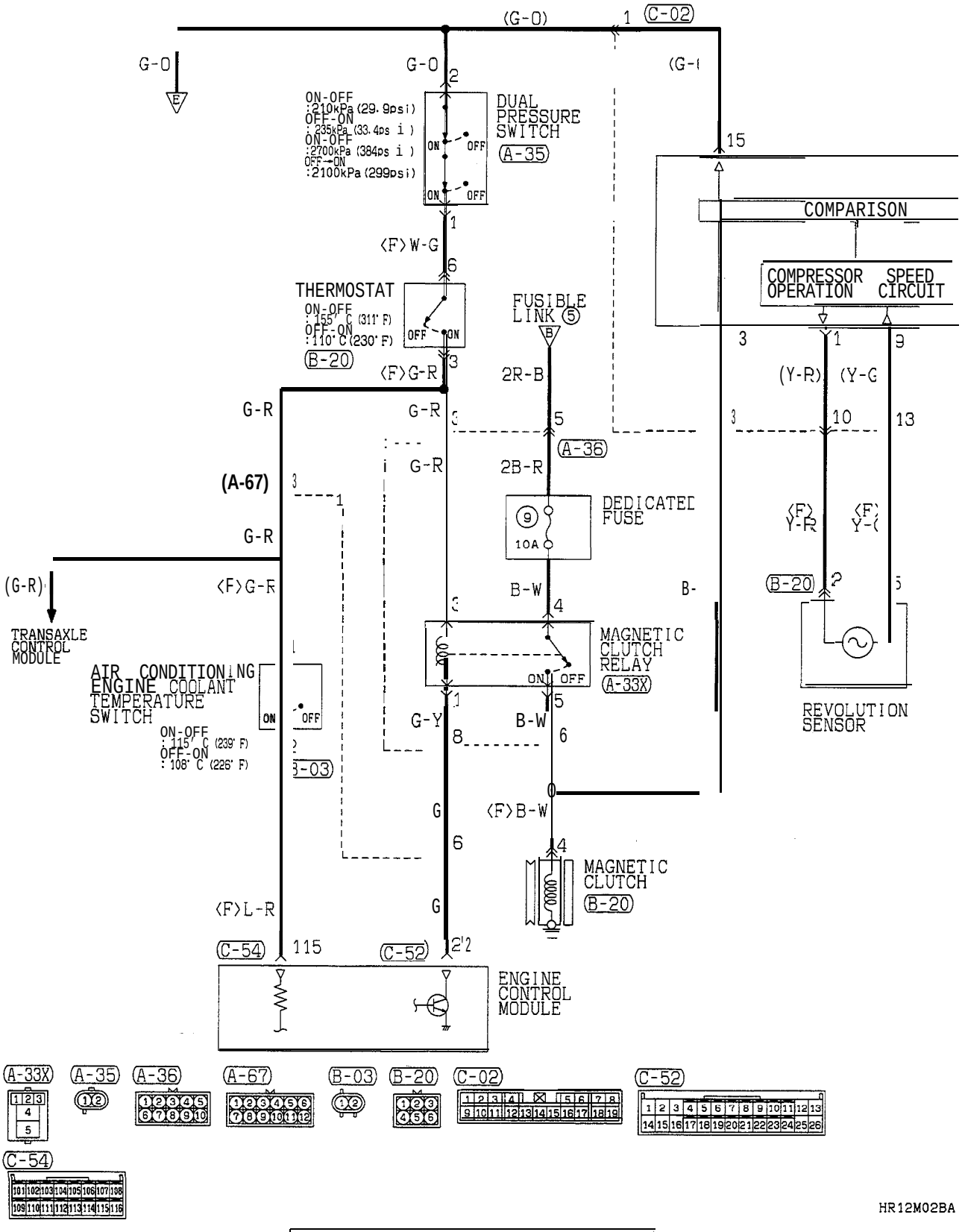




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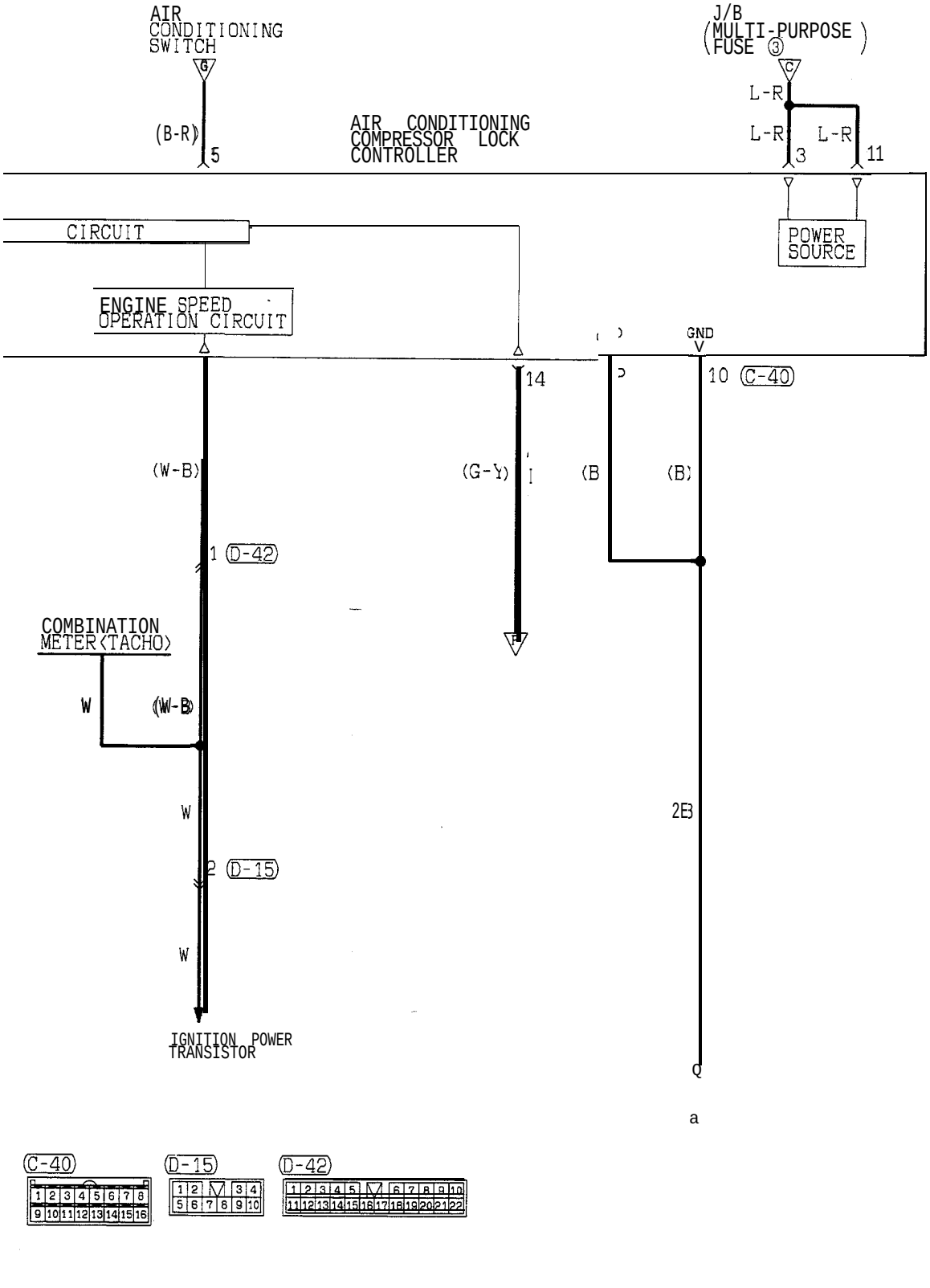
TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (1993 MODELS) (CONTINUED)



HR12M02BA

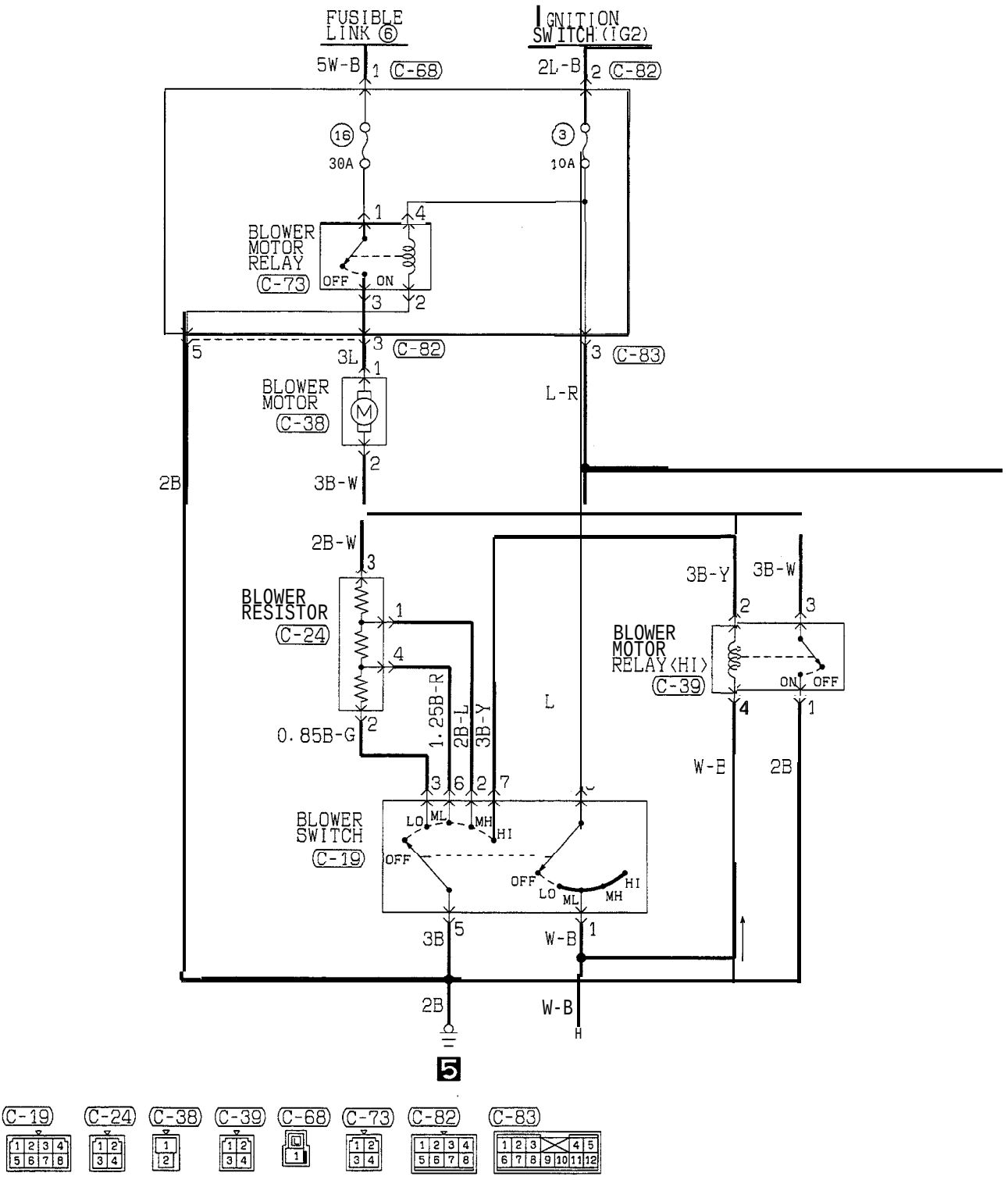
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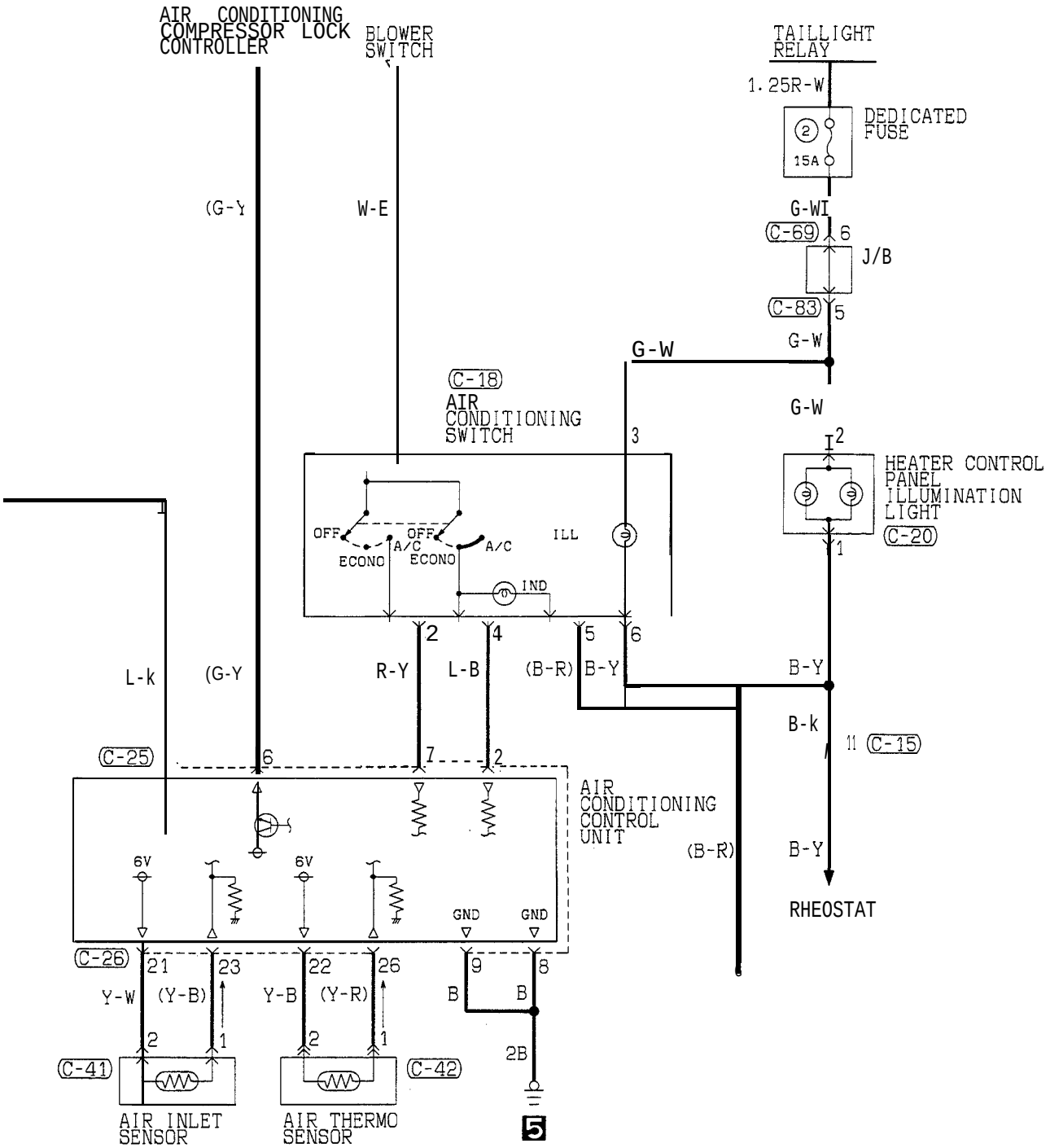
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MANUAL AIR CONDITIONING CIRCUIT (1993 MODELS) (CONTINUED)



HR12M02CA

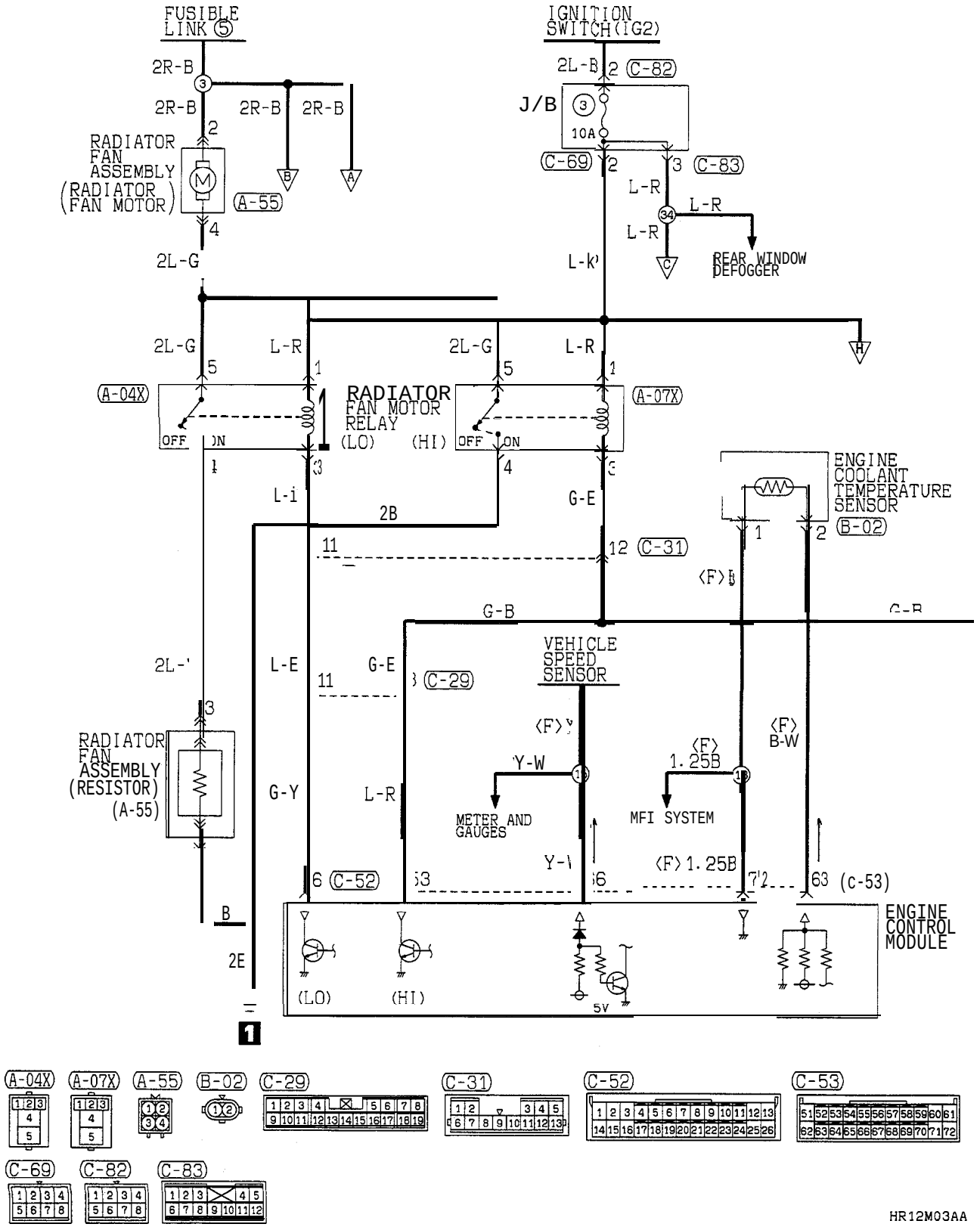


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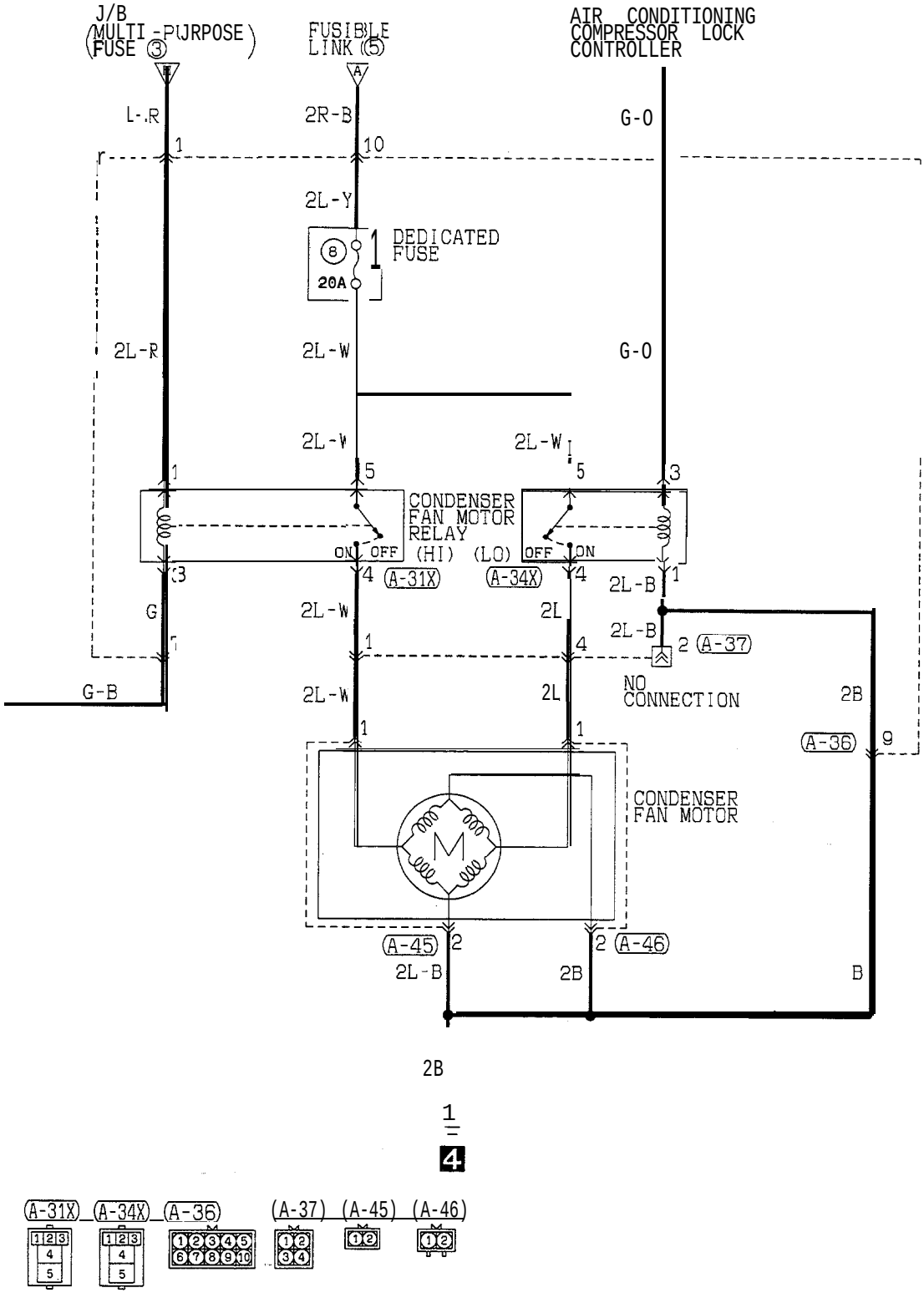
MANUAL AIR CONDITIONING CIRCUIT (1994, 1995 MODELS)

<NON TURBO> (FEDERAL)



HR12M03AA

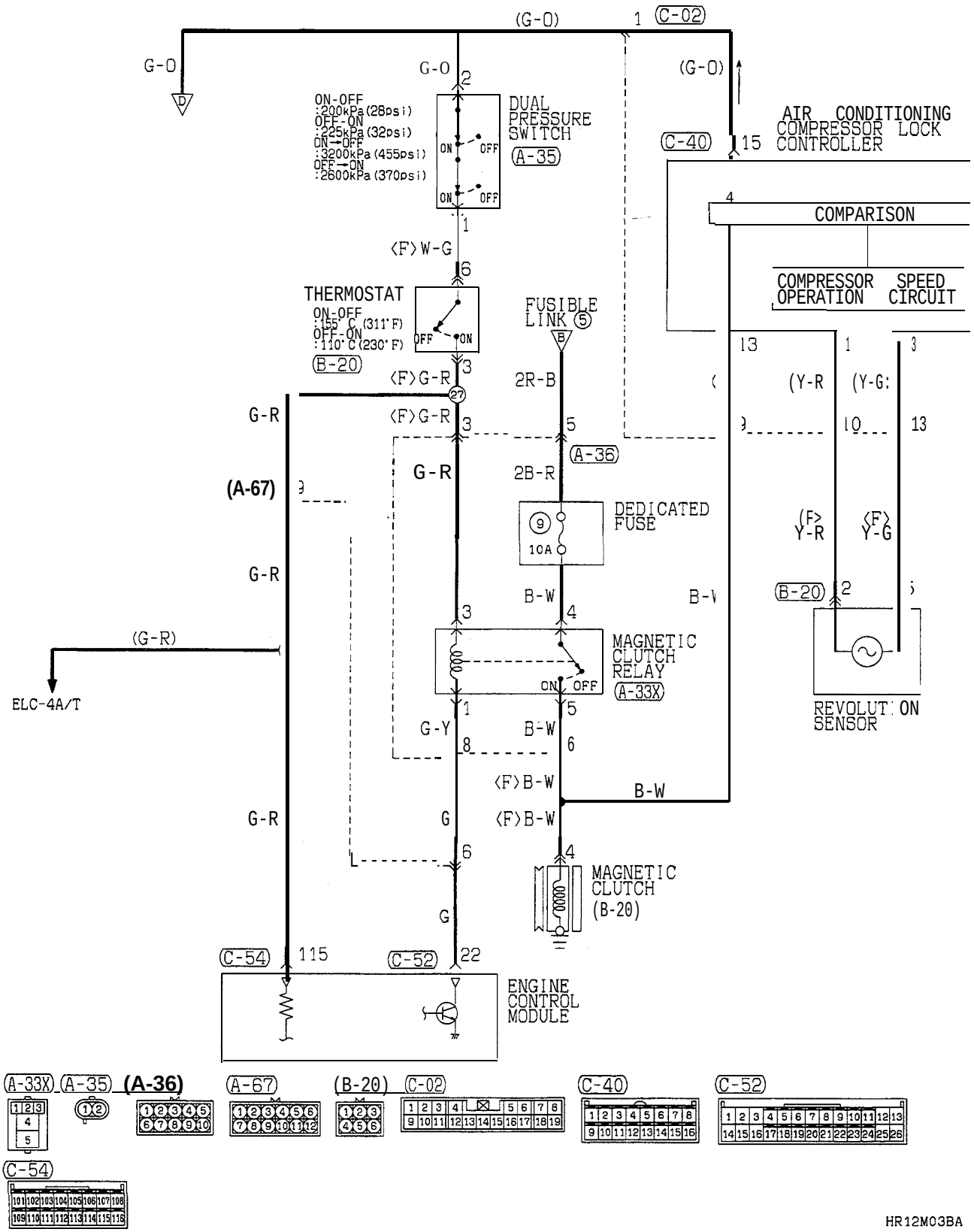
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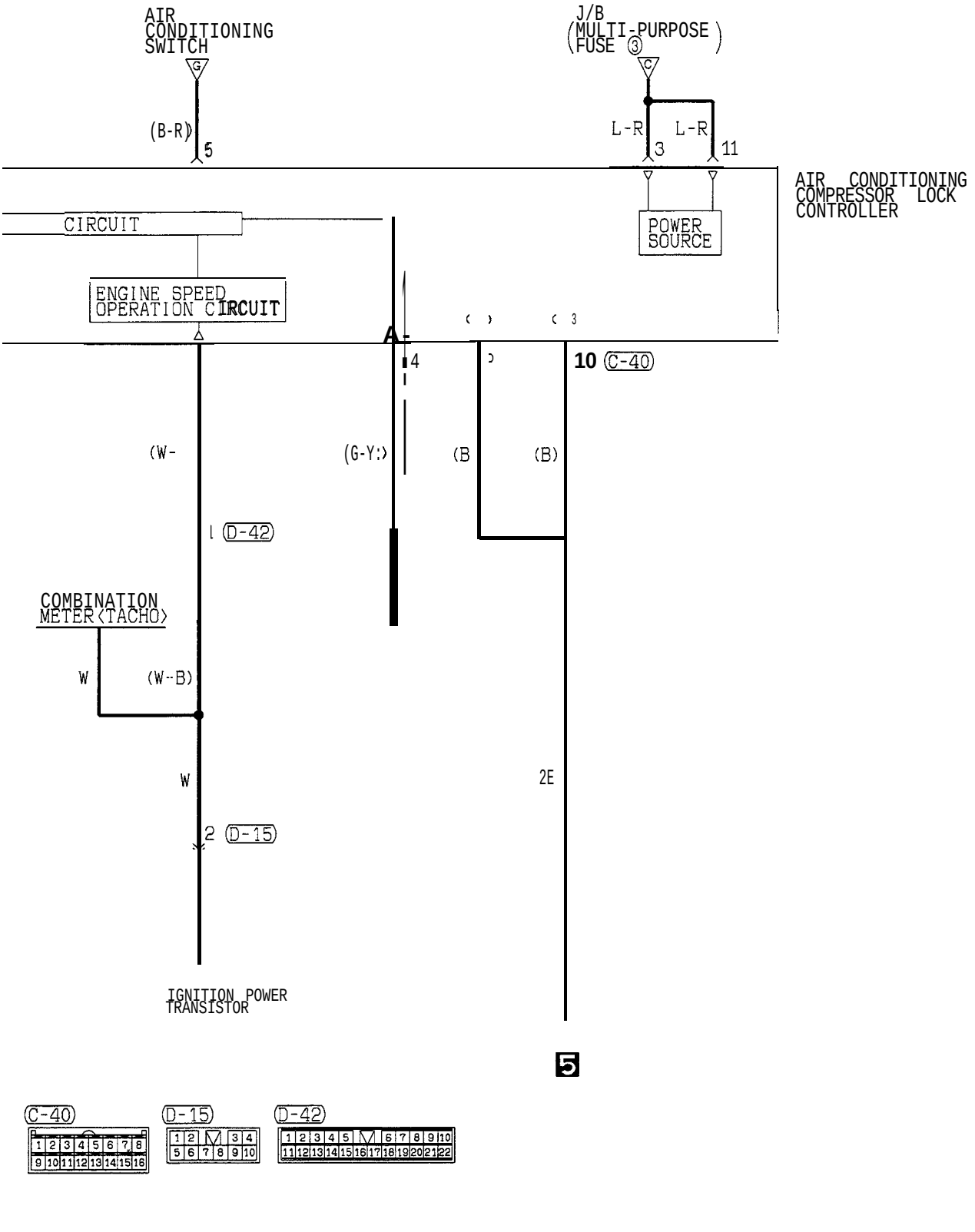
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MANUAL AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)



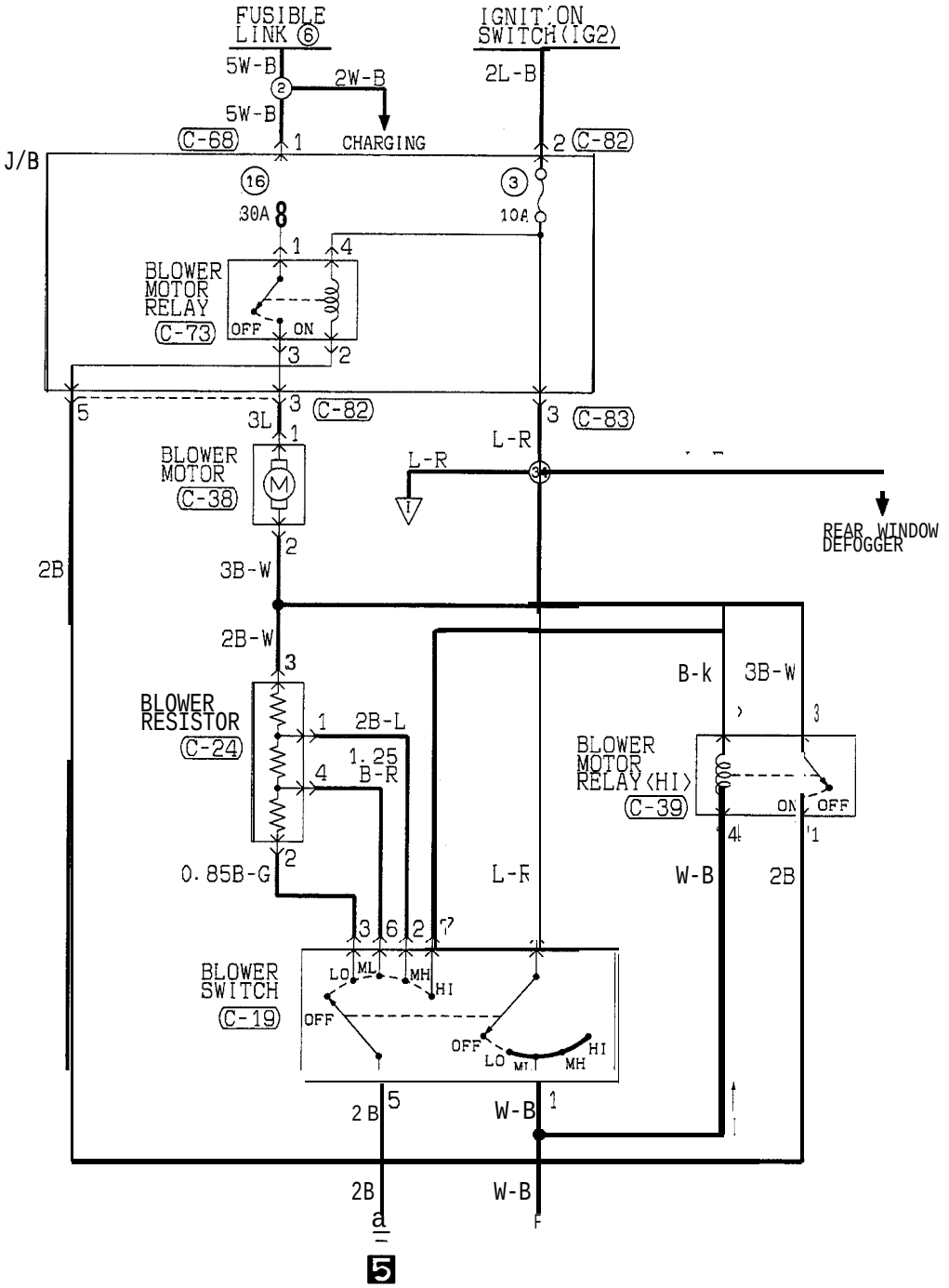
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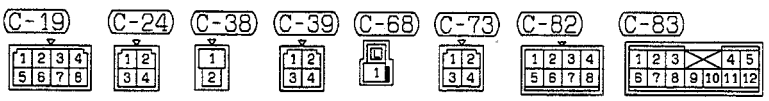


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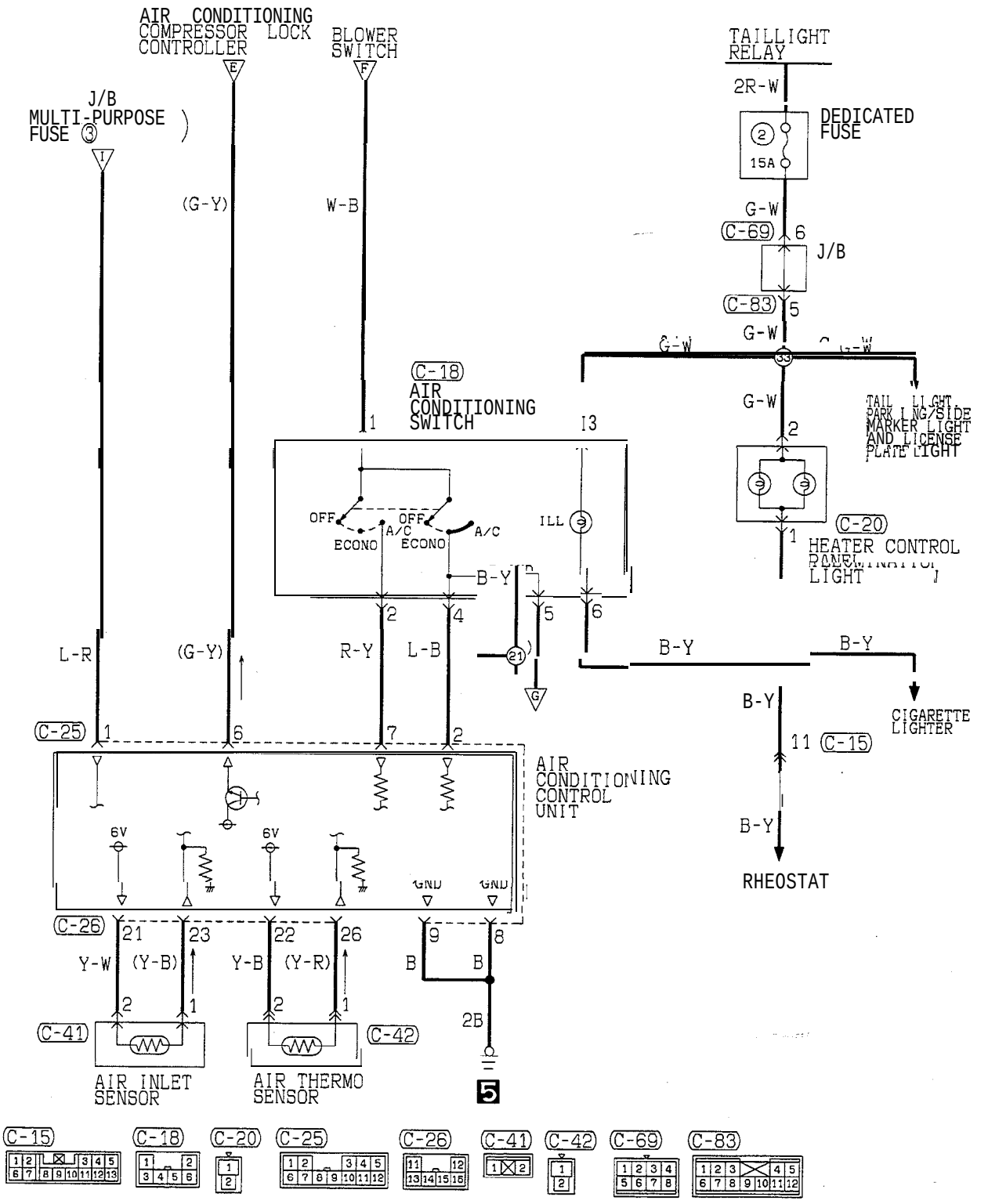
MANUAL AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)





HR12M03CA

TSB Revision

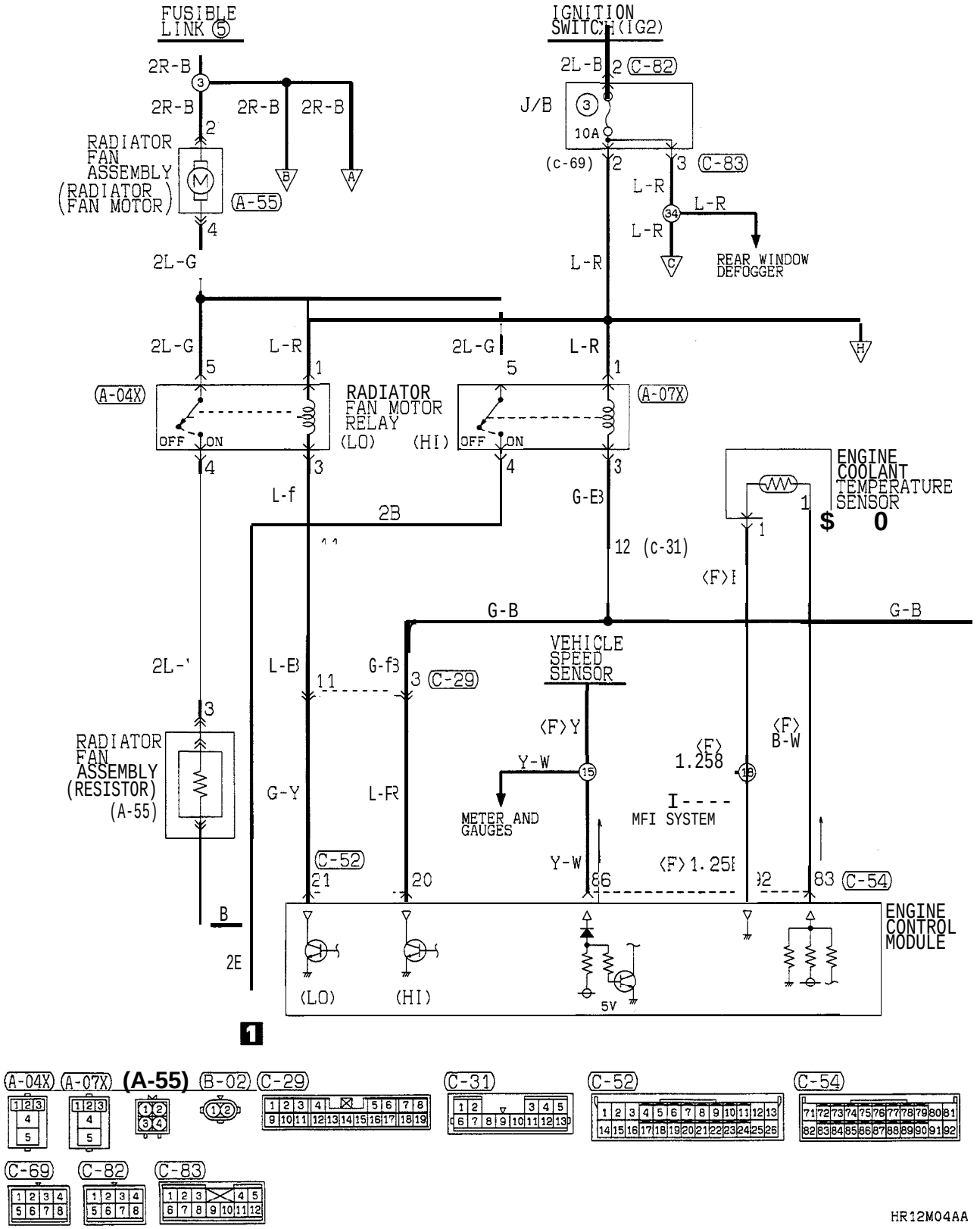


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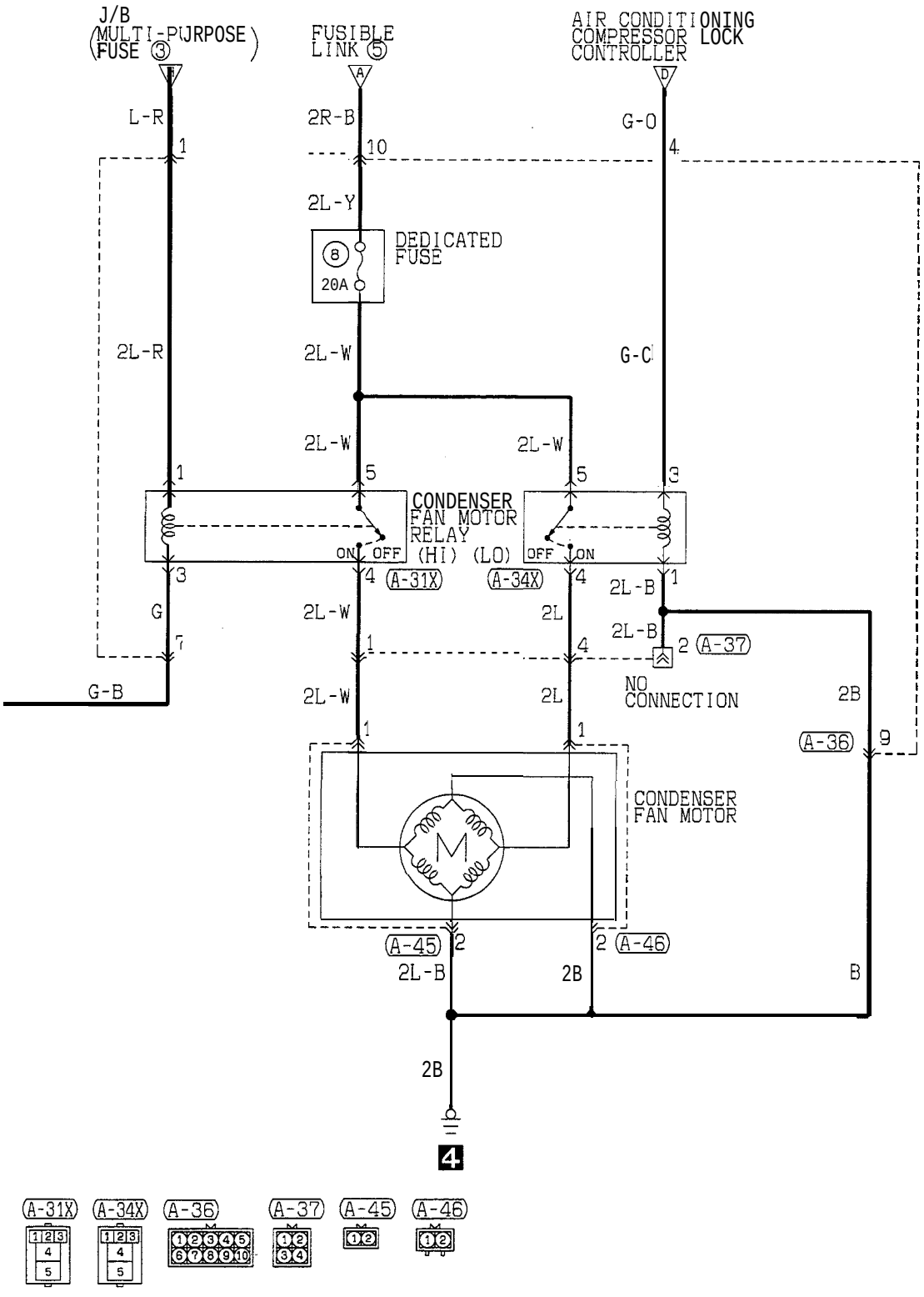
MANUAL AIR CONDITIONING CIRCUIT (1994, 1995 MODELS)

<TURBO, NON TURBO (CALIFORNIA)>



HR12M04AA

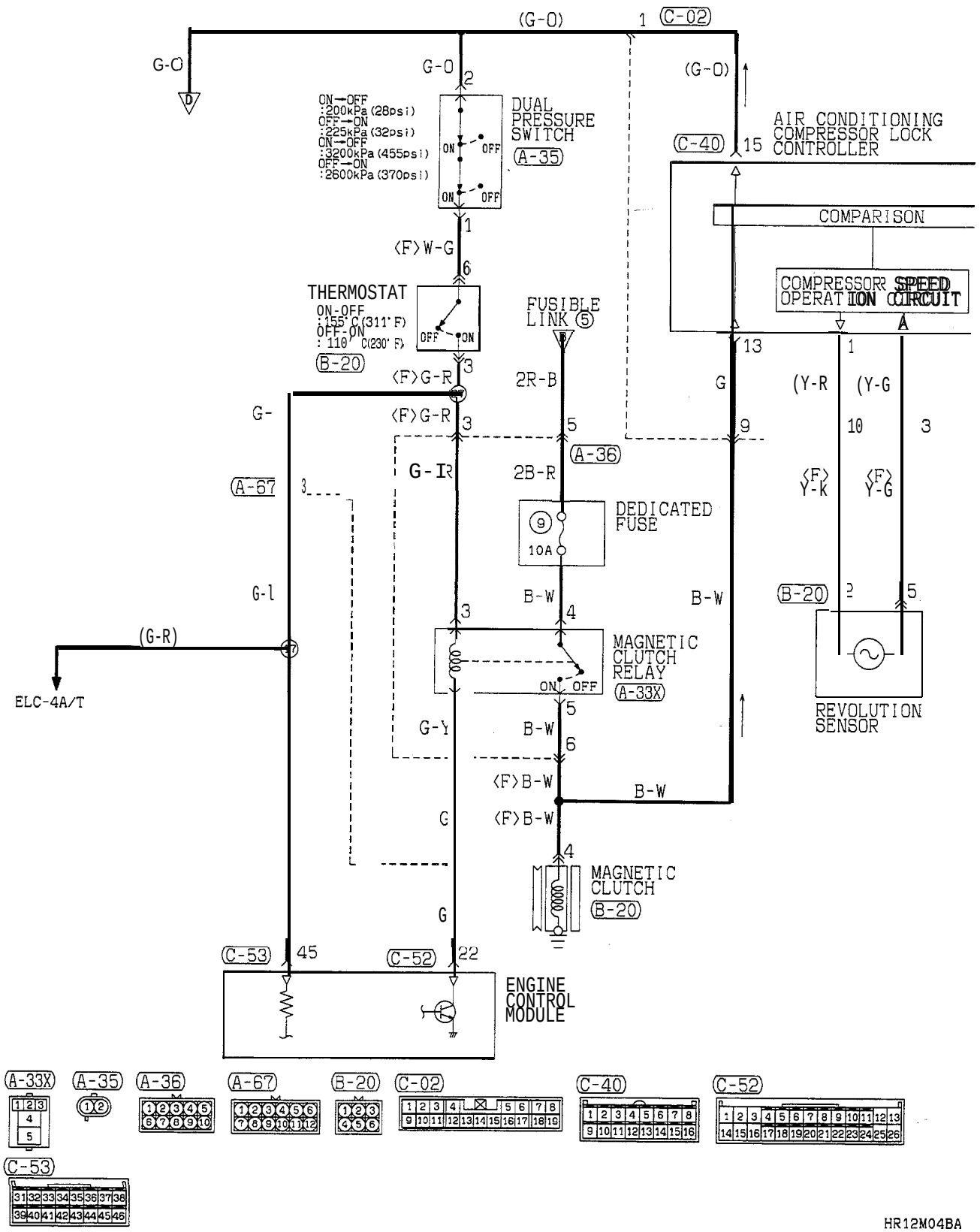
TSB Revision



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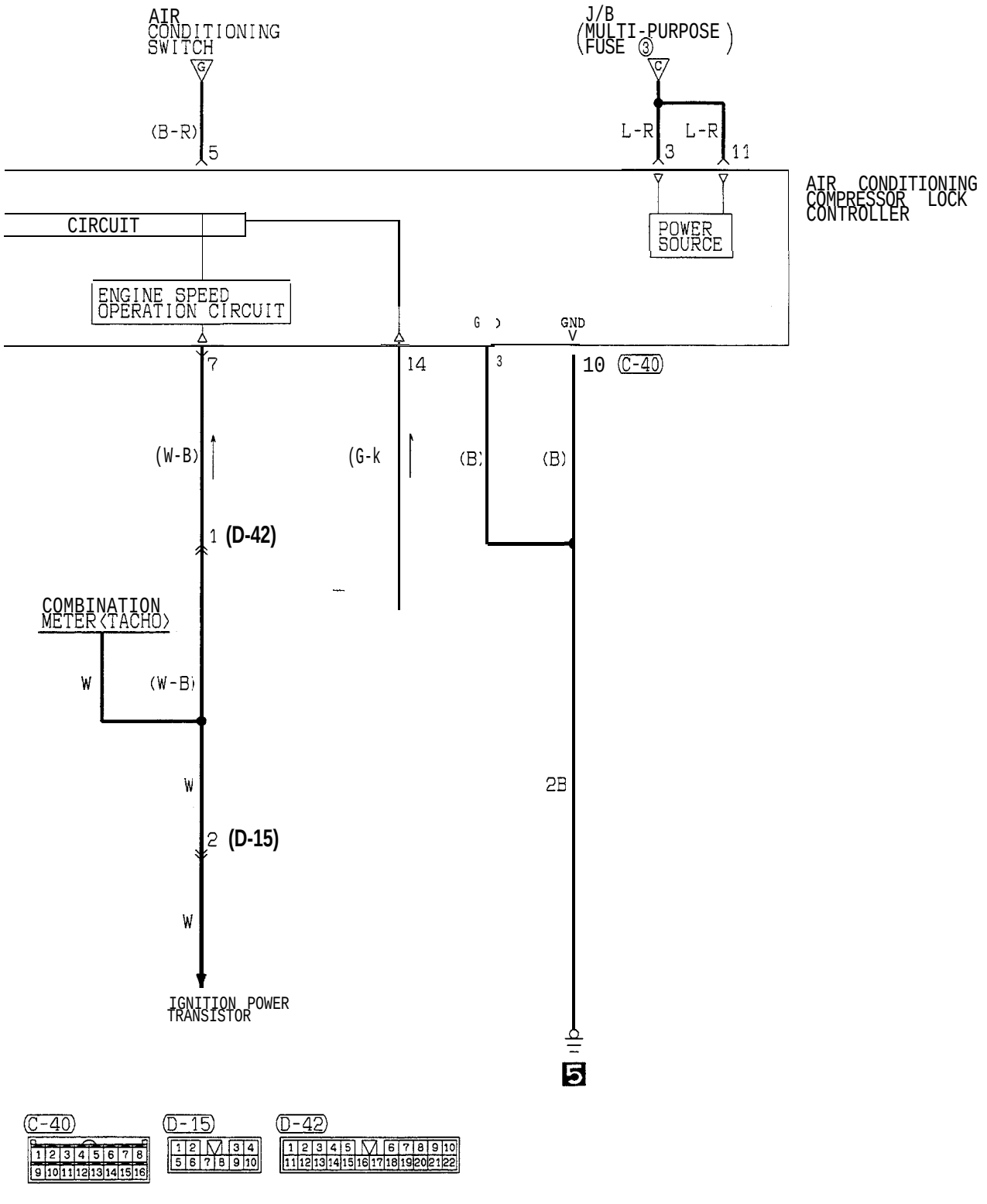
TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <TURBO, NON TURBO (CALIFORNIA)> (CONTINUED)



HR12M04BA

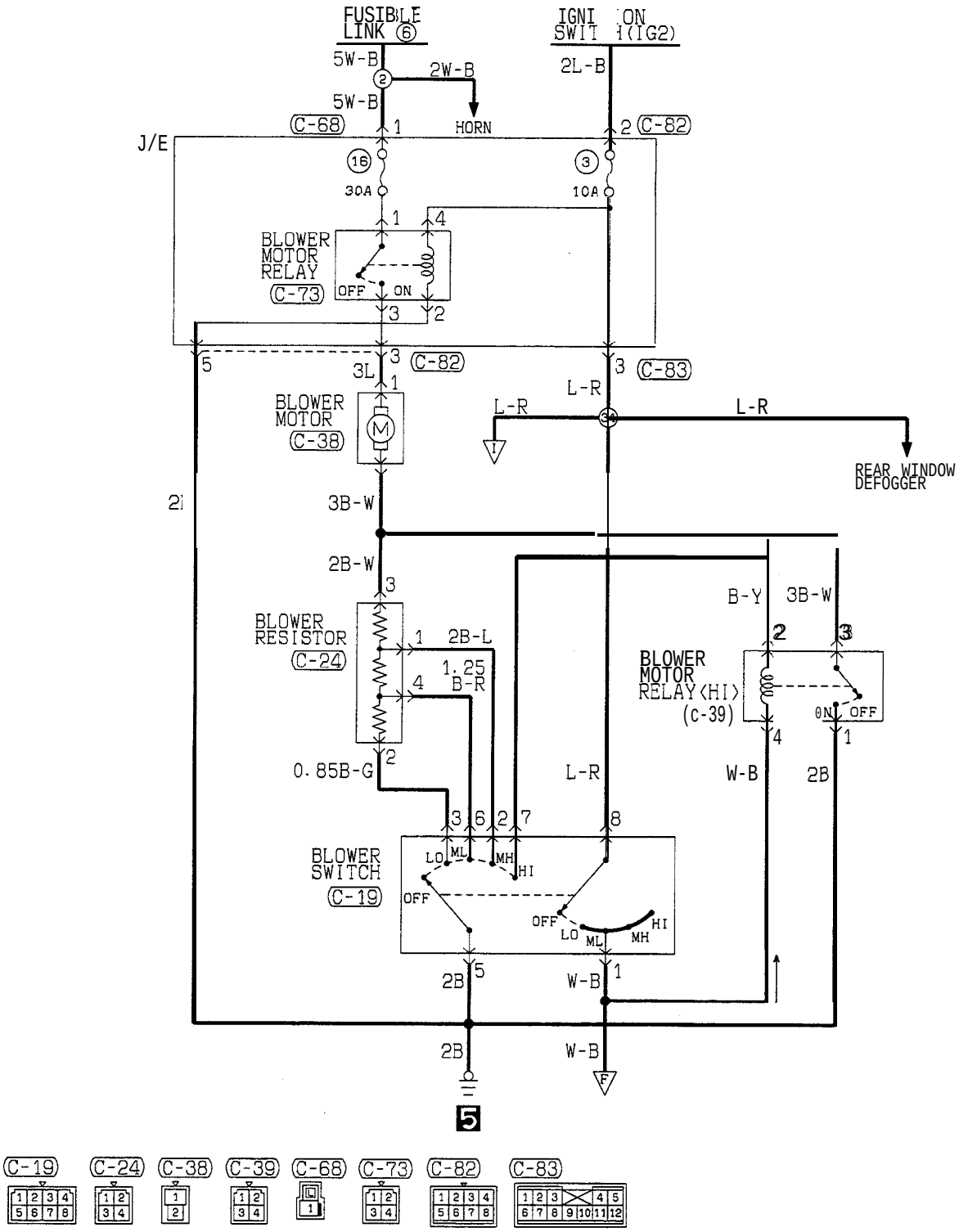
TSB Revision



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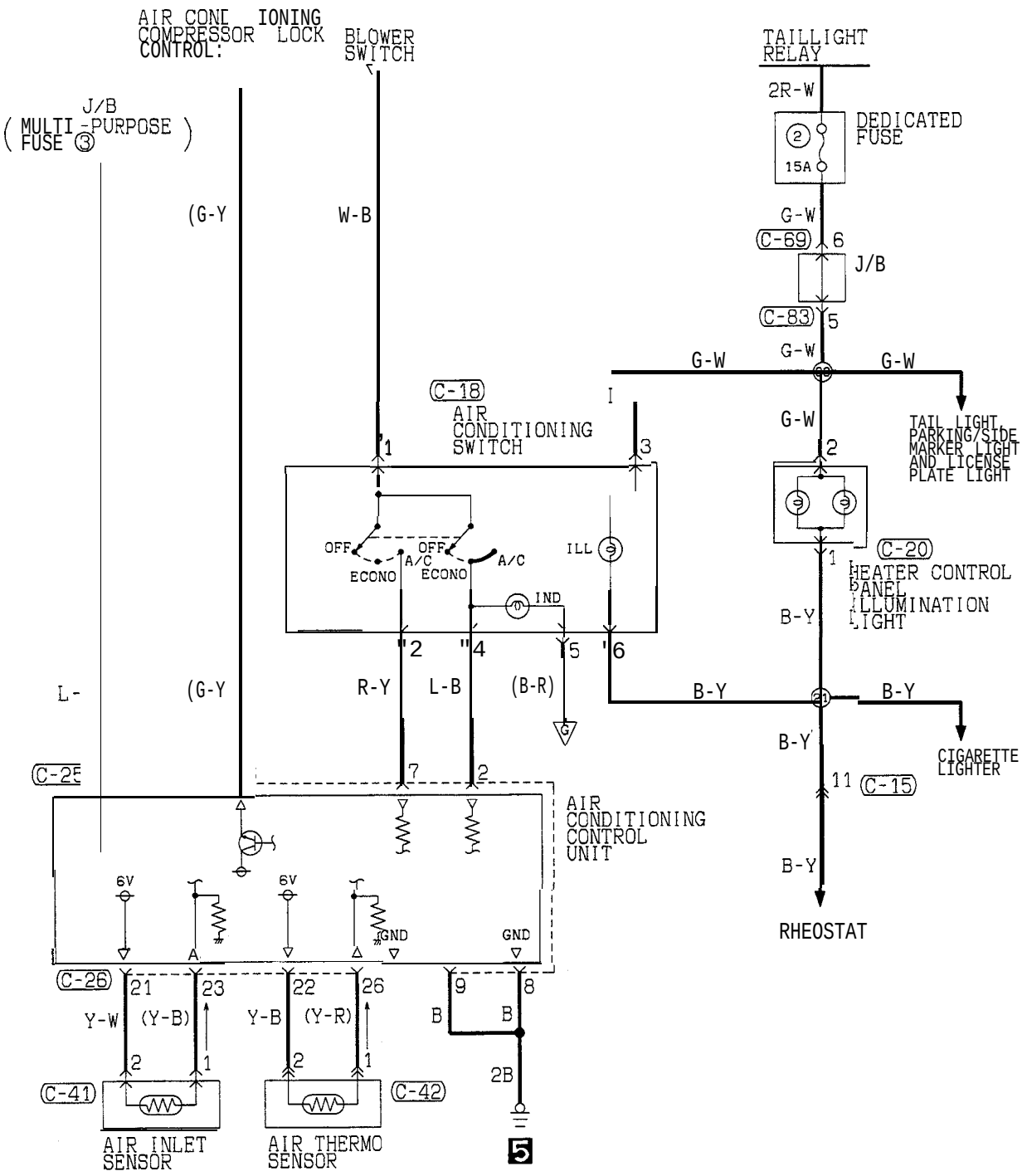
TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <TURBO, NON TURBO (CALIFORNIA)> (CONTINUED)



HR12M04CA

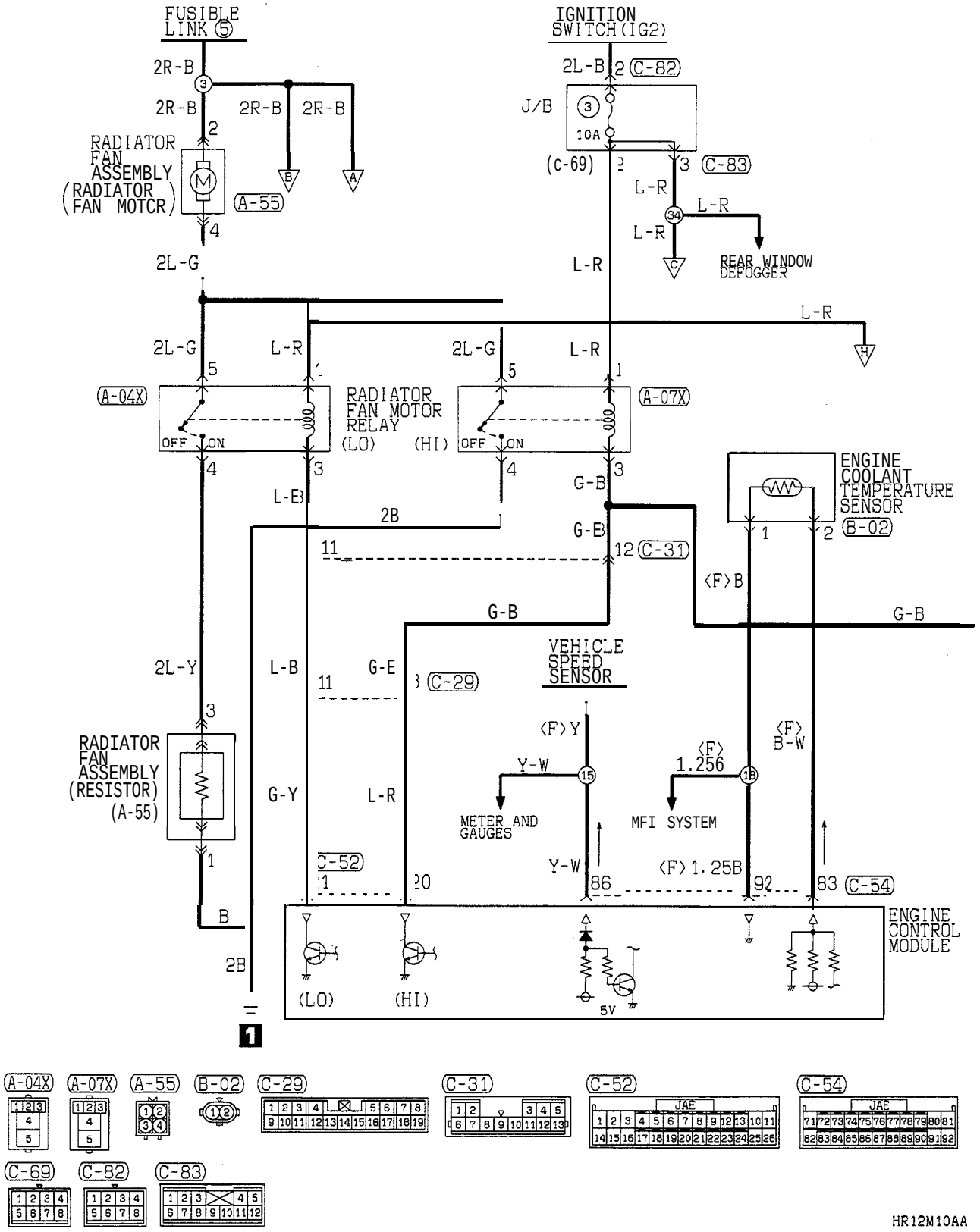
TSB Revision



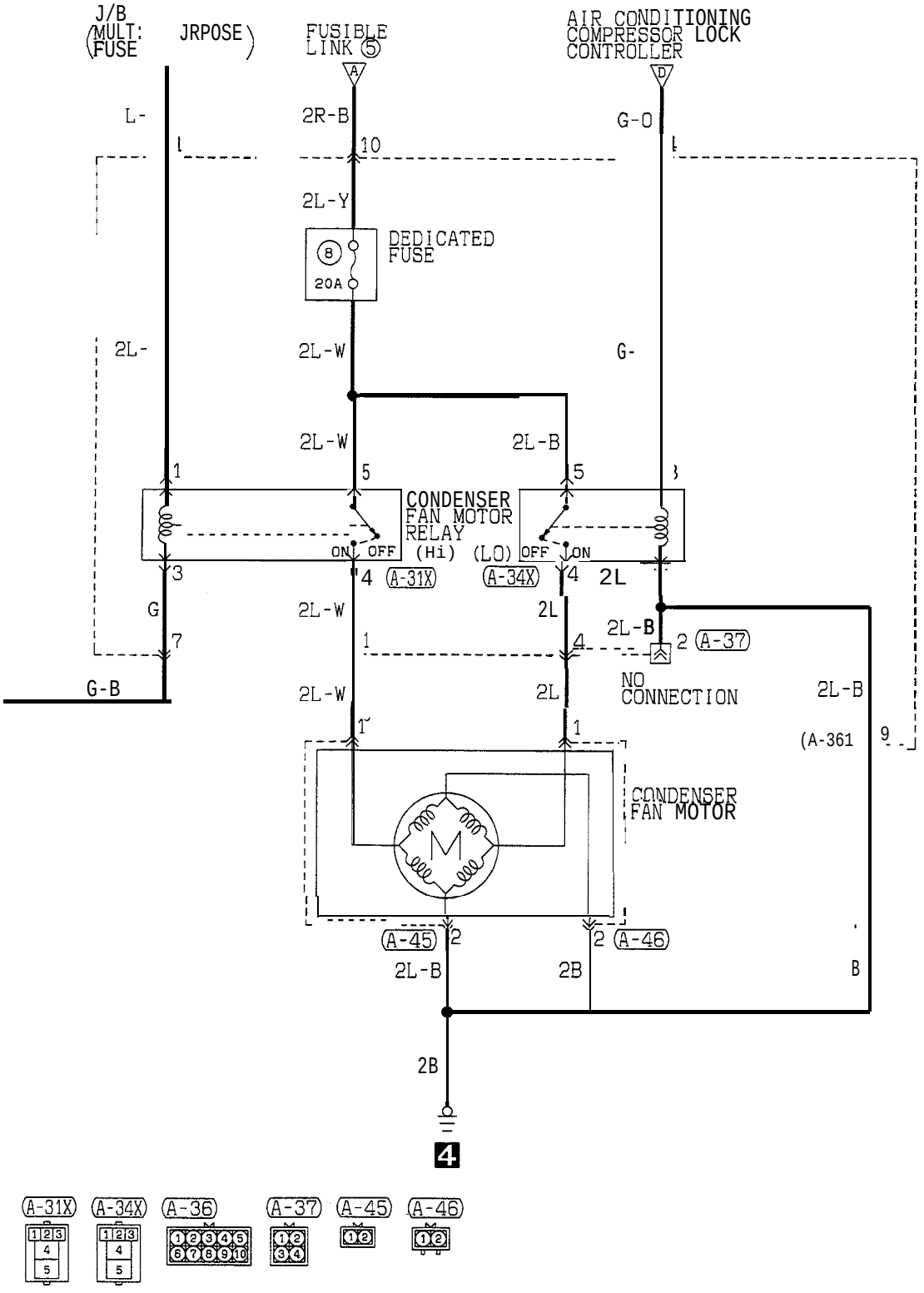
HR12M04CB

TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (FROM 1996 MODELS)



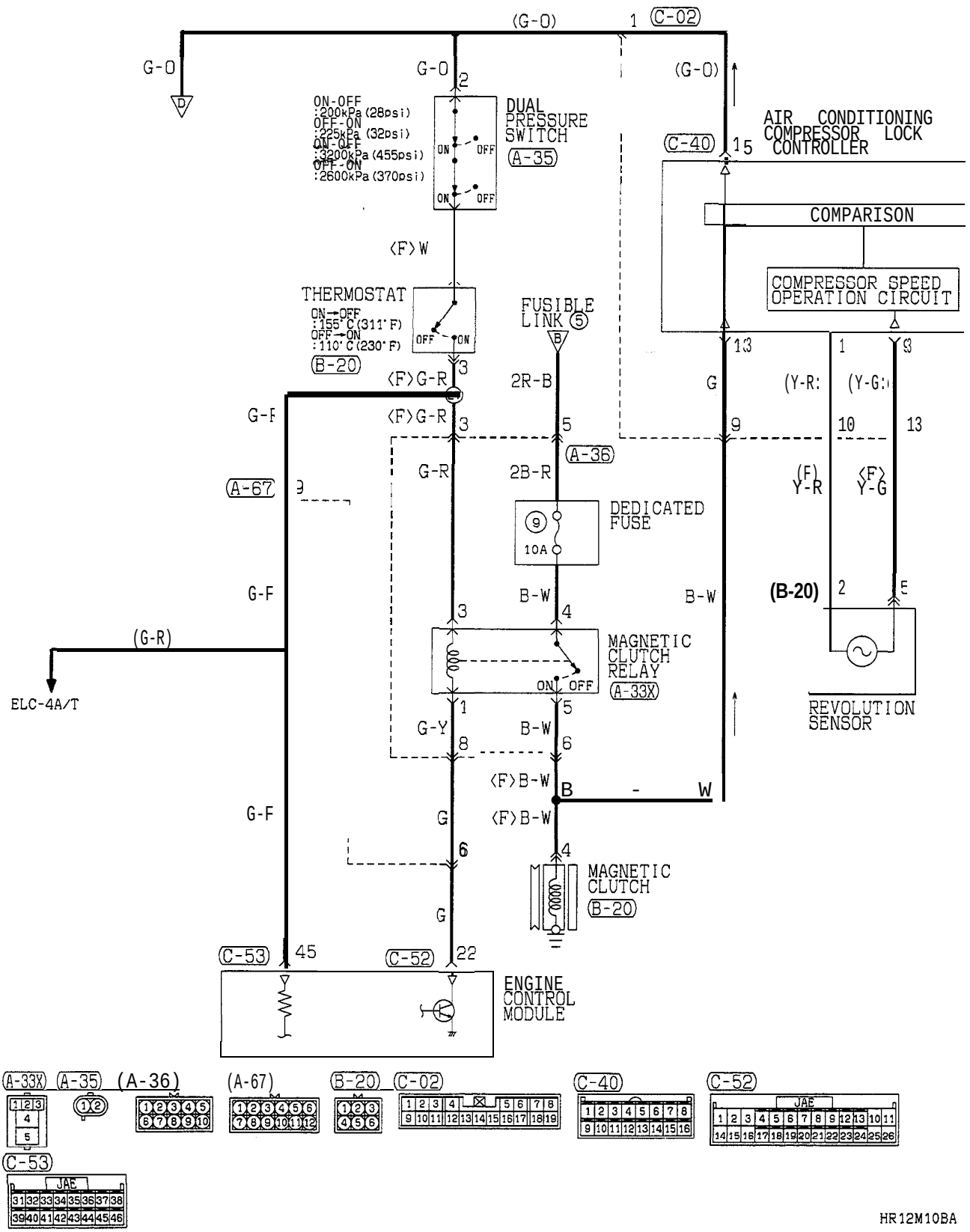
TSB Revision



HR12M10AB

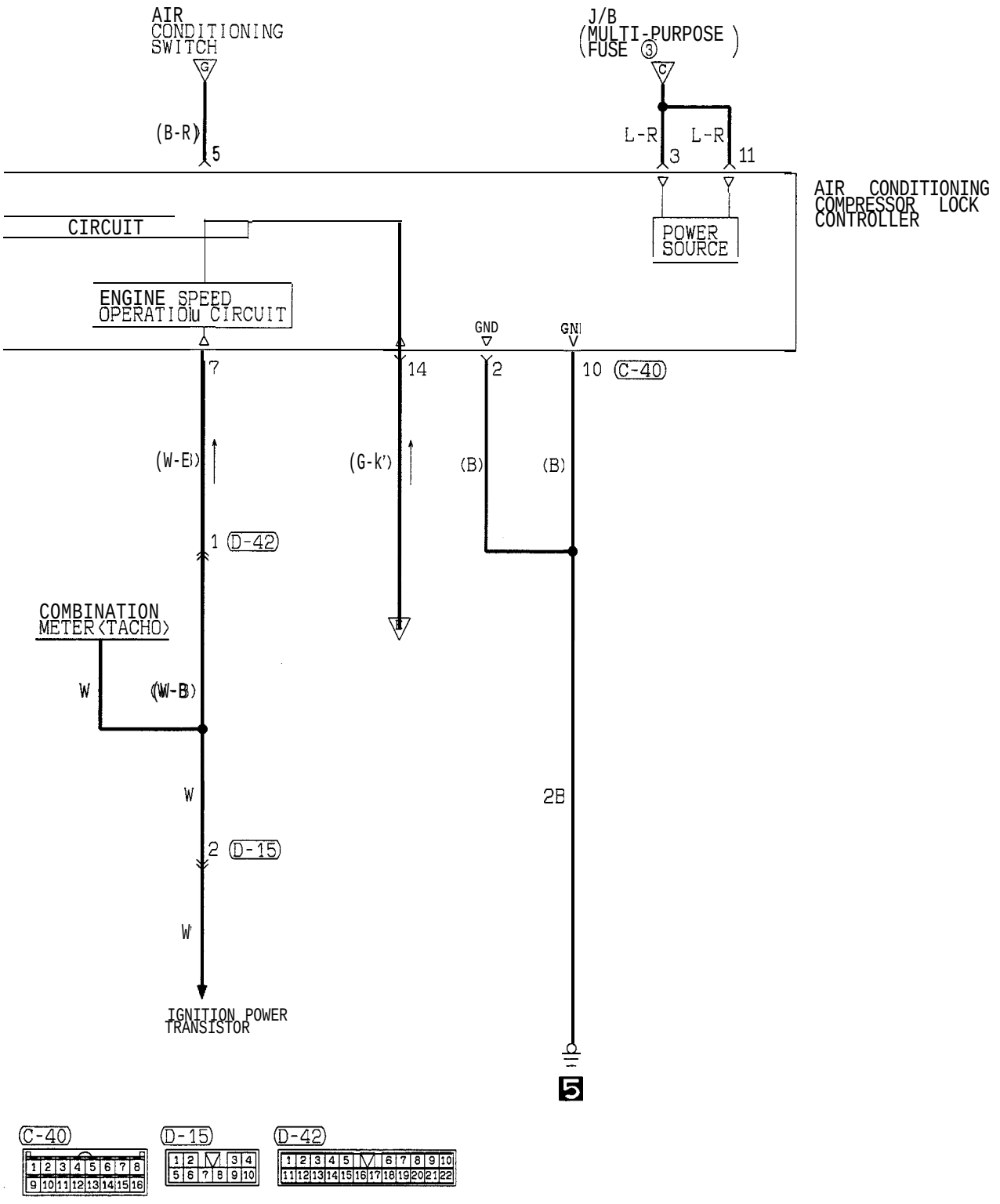
TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (FROM 1996 MODELS) (CONTINUED)



HR12M10BA

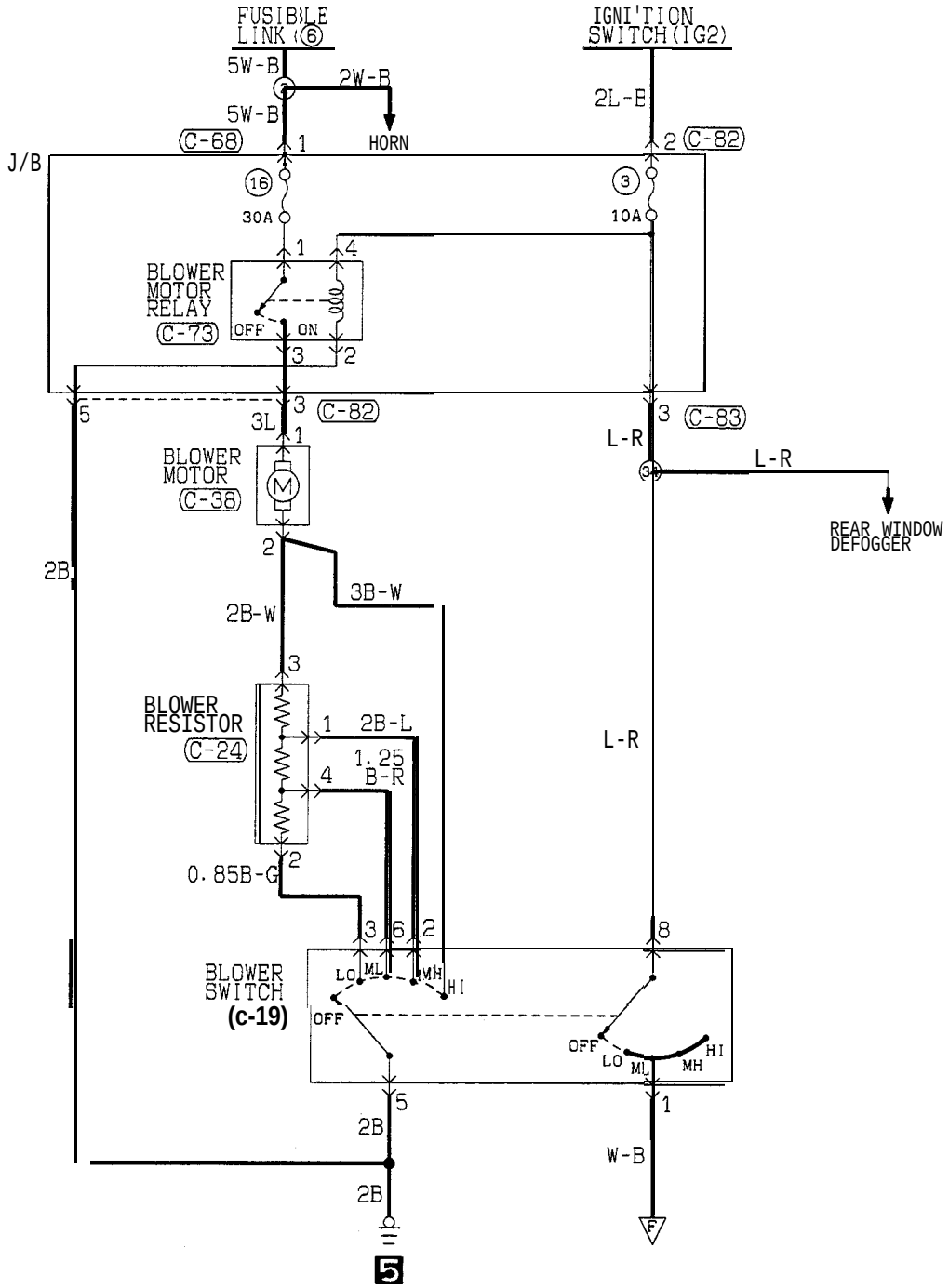
TSB Revision



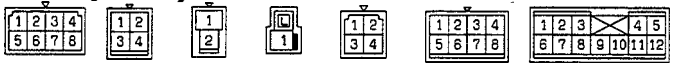
HR12M10BB

TSB Revision

MANUAL AIR CONDITIONING CIRCUIT (FROM 1996 MODELS) (CONTINUED)

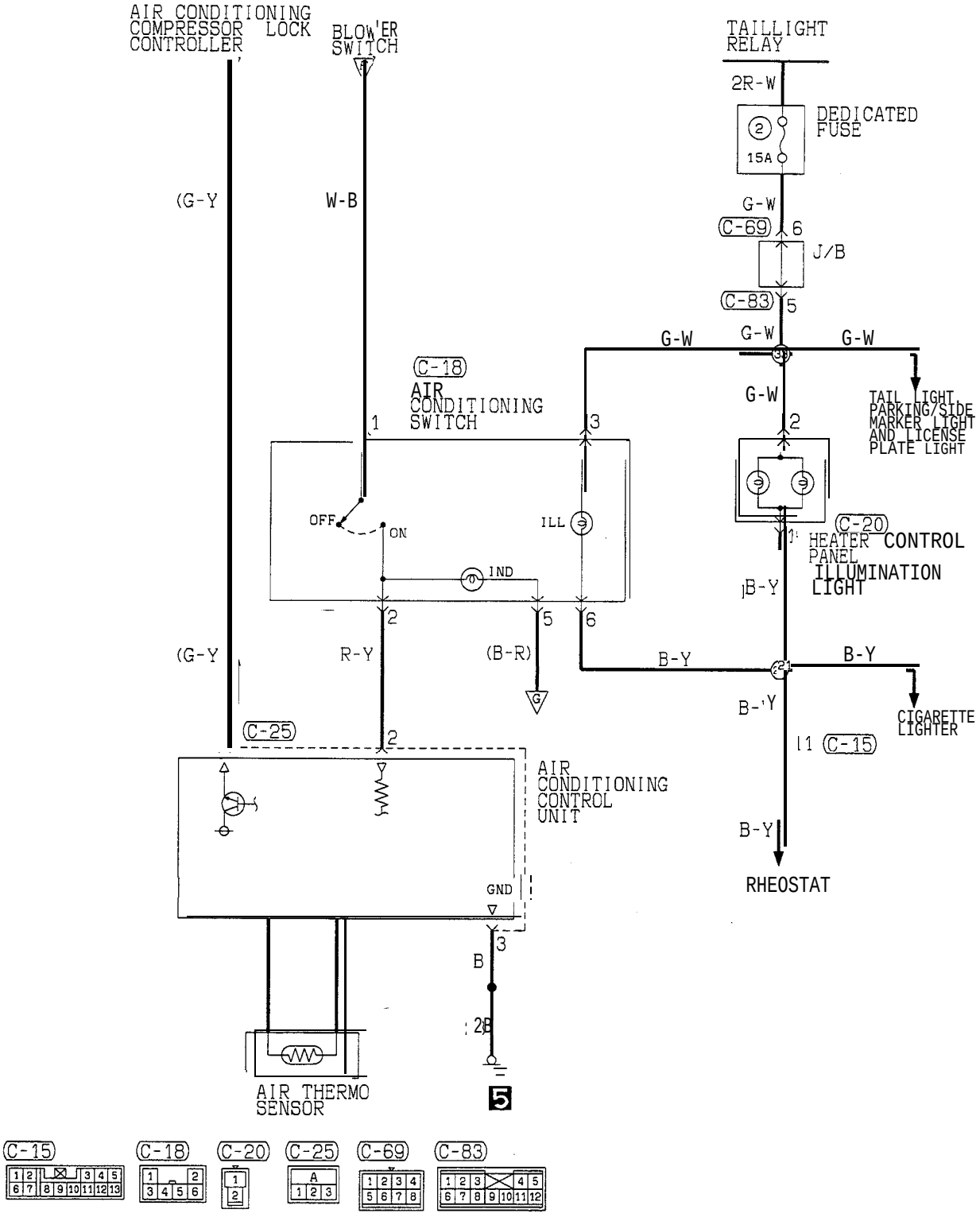


C-19 **(c-24)** C-38 C-68 C-73 C-82 C-83



HR12M10CA

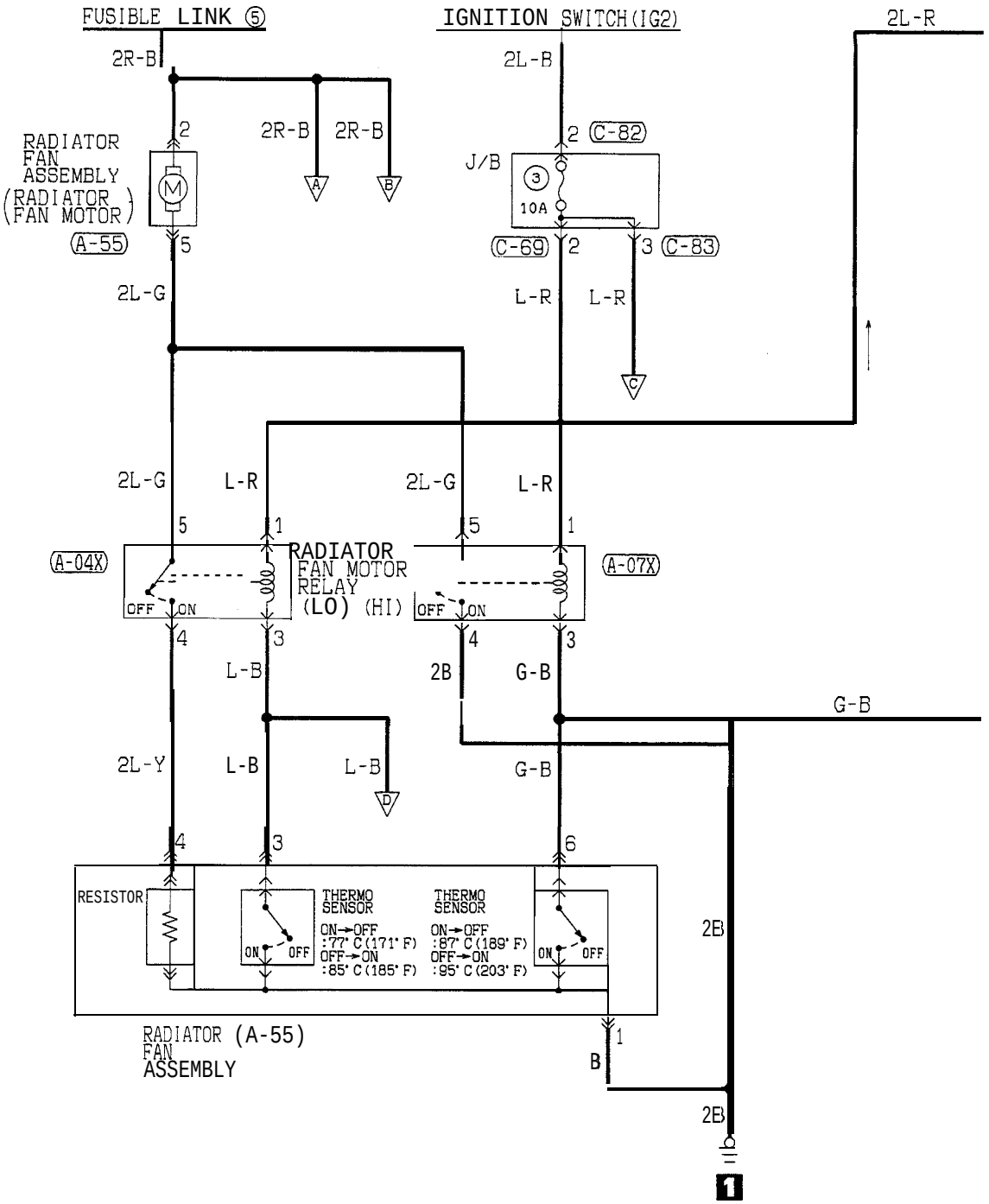
TSB Revision

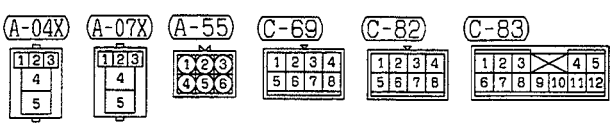


HR12M10CB

TSB Revision

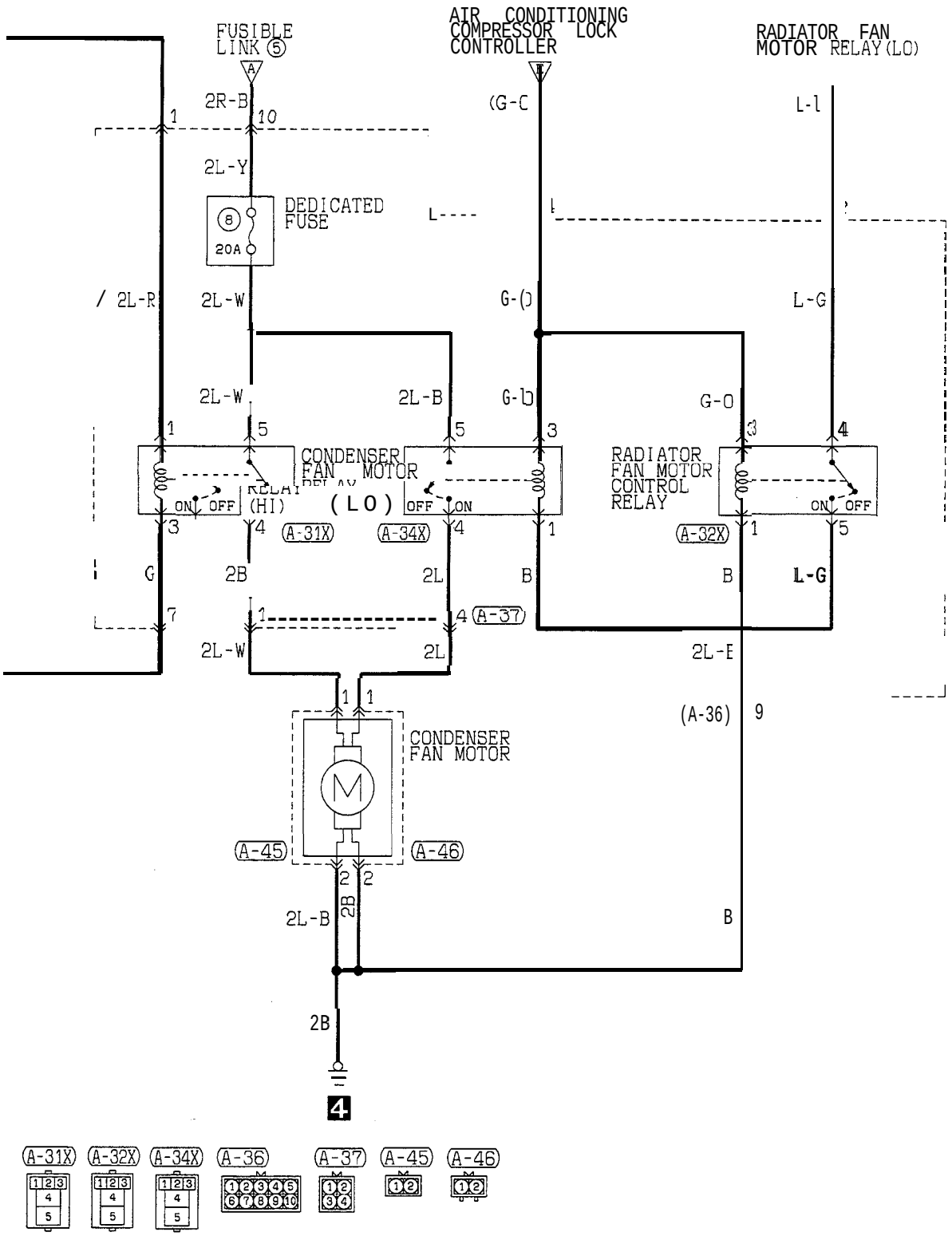
FULL AUTO AIR CONDITIONING CIRCUIT (1992 MODEL)





HR12M05AA

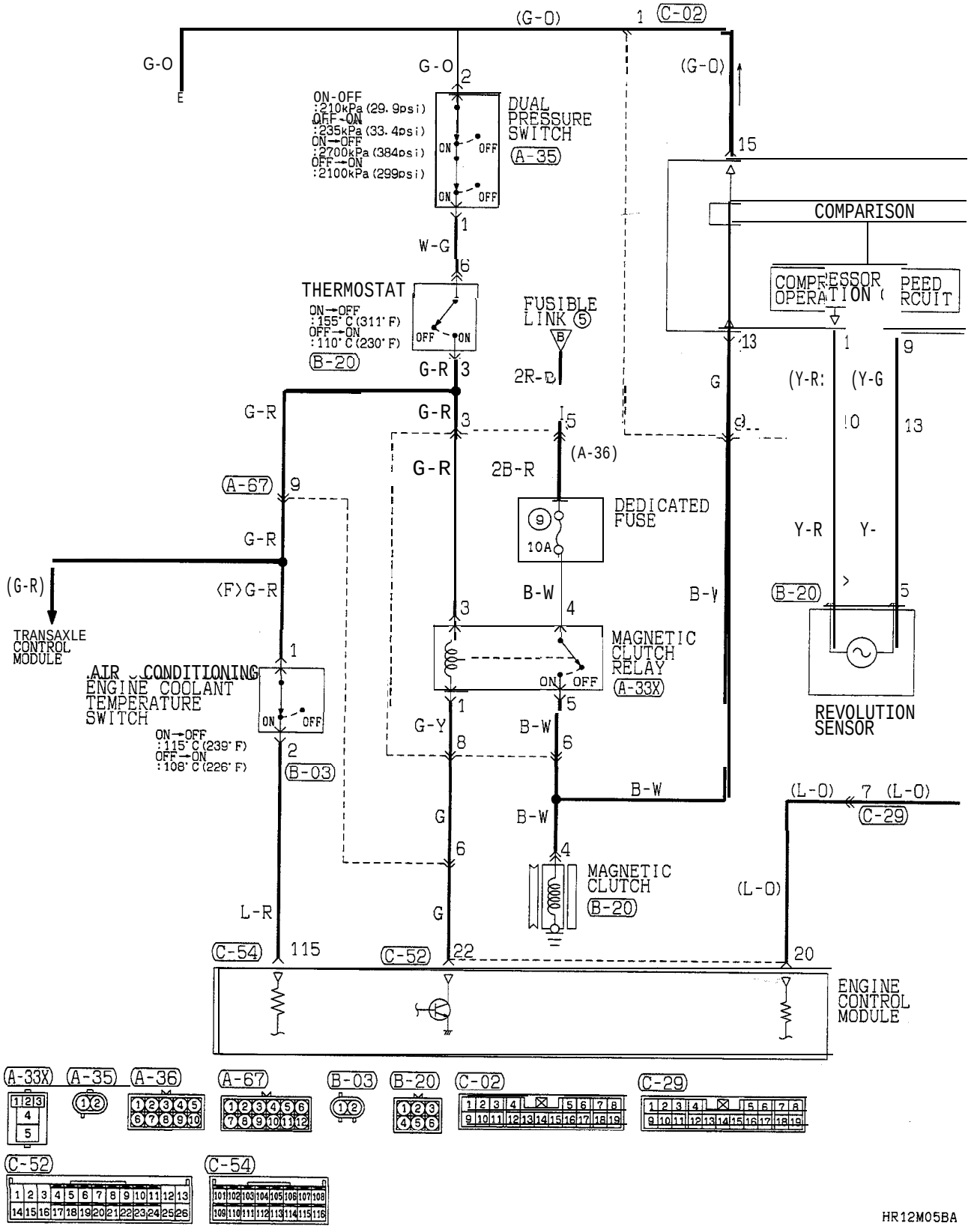
TSB Revision



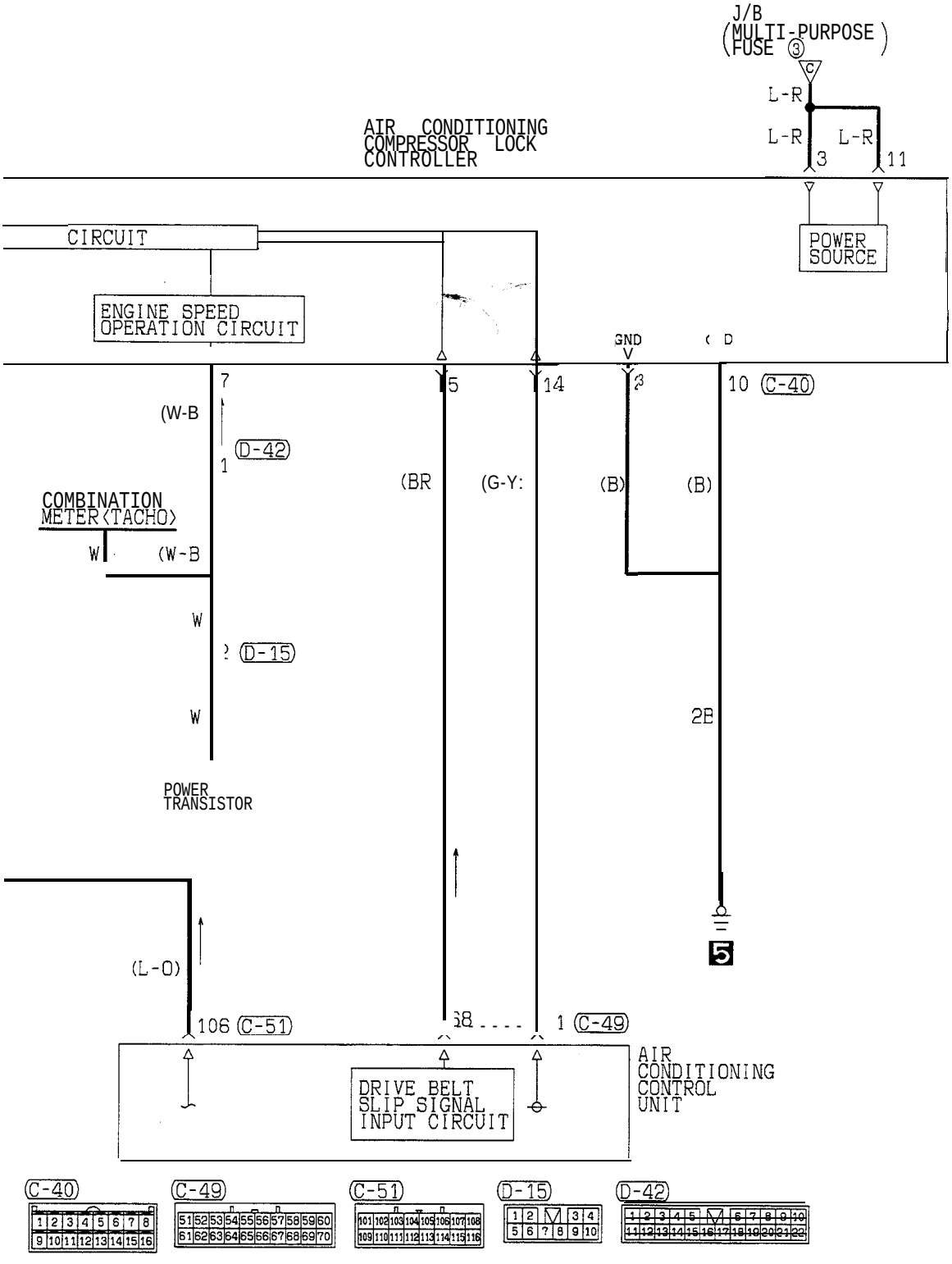
HR12M05AB

TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1992 MODEL) (CONTINUED)



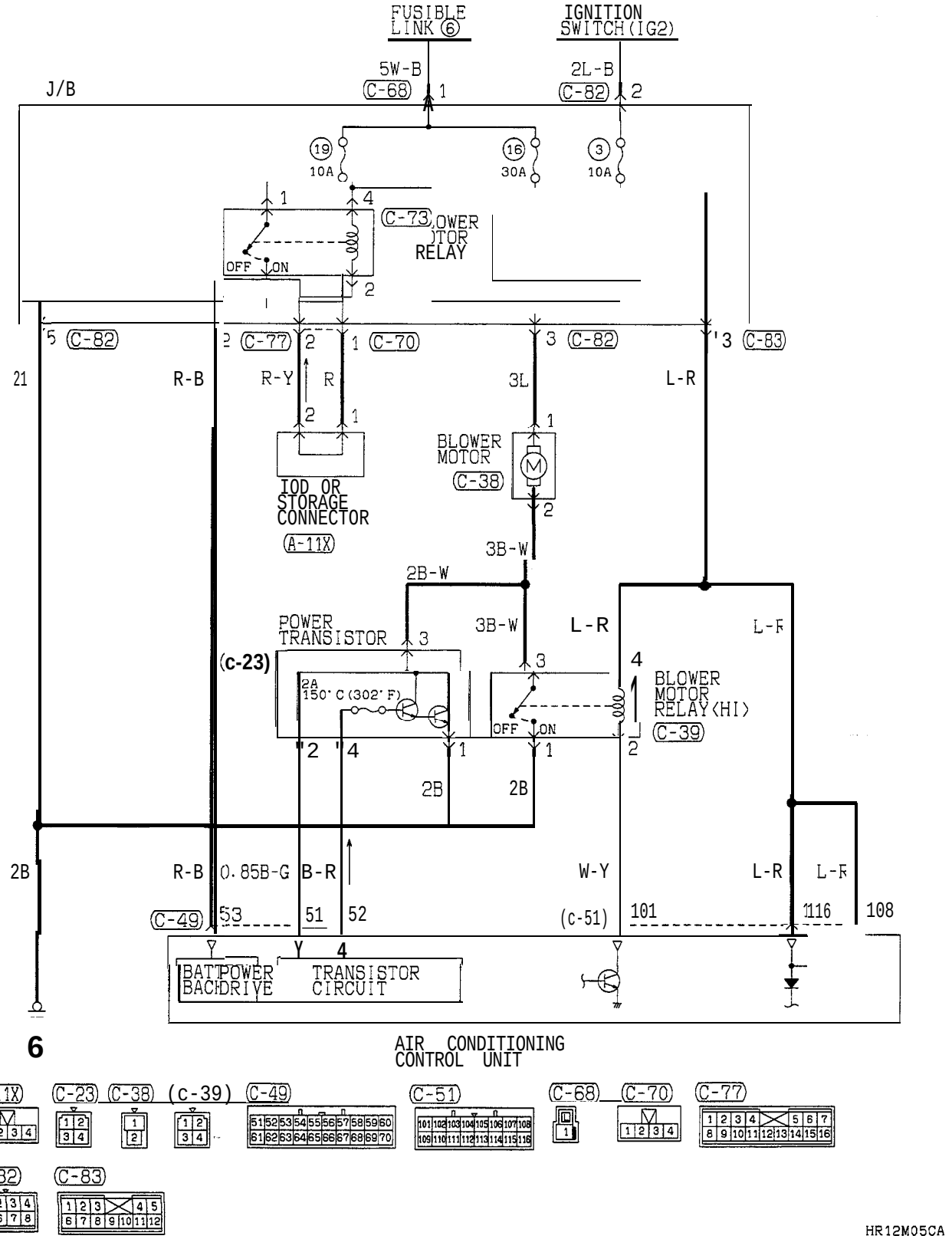
TSB Revision



HR12M05BB

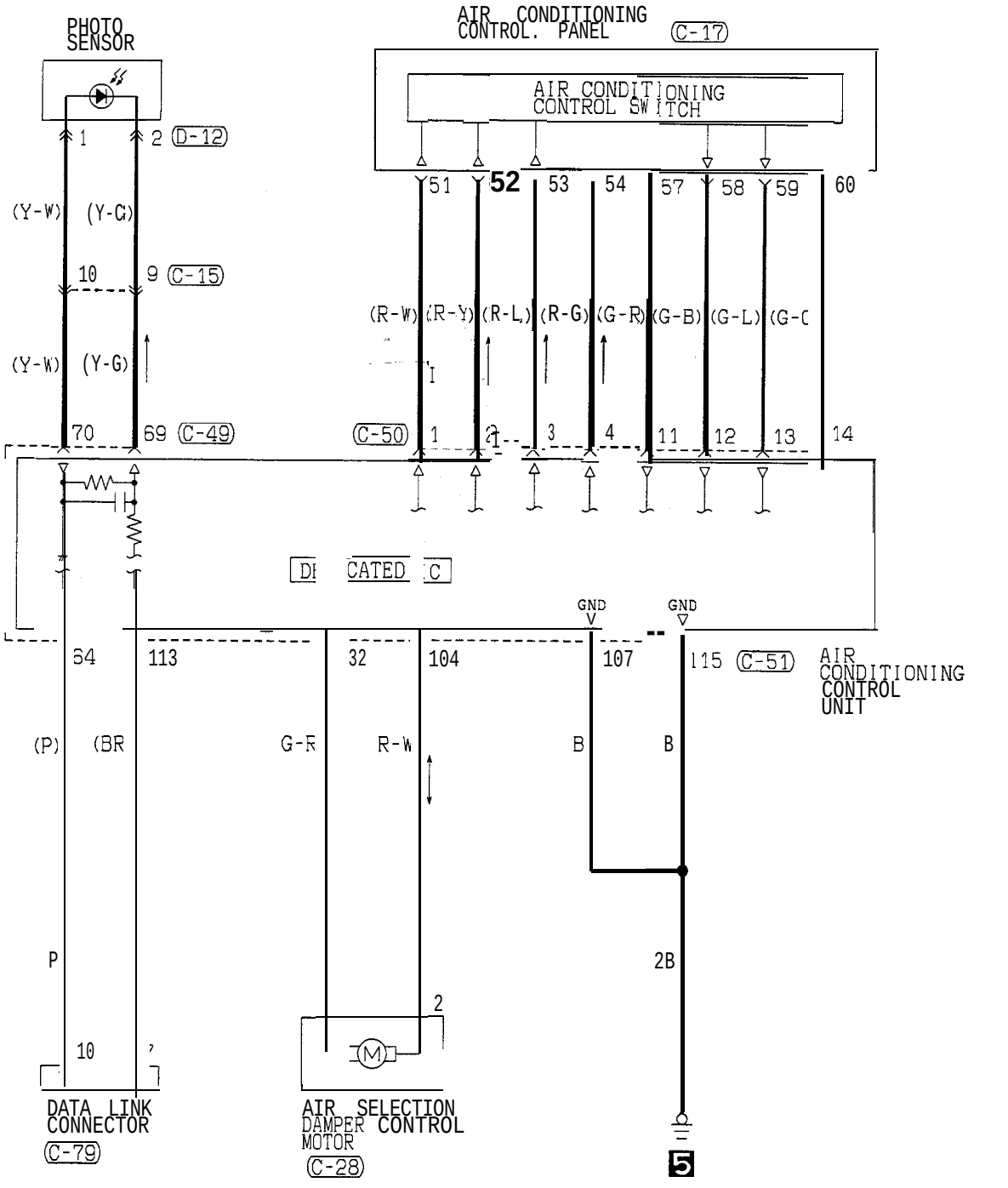
TSB Revision

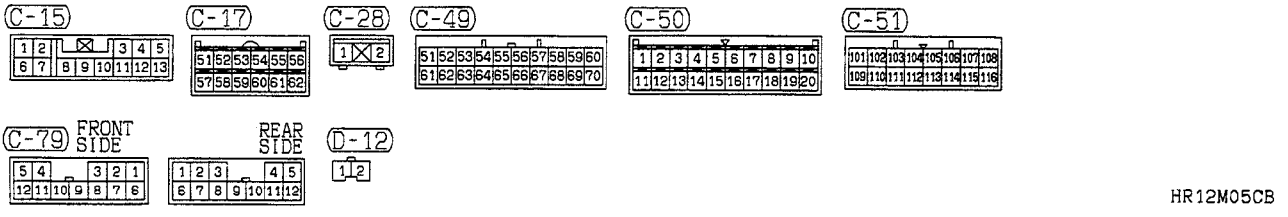
FULL AUTO AIR CONDITIONING CIRCUIT (1992 MODEL) (CONTINUED)



HR12M05CA

TSB Revision

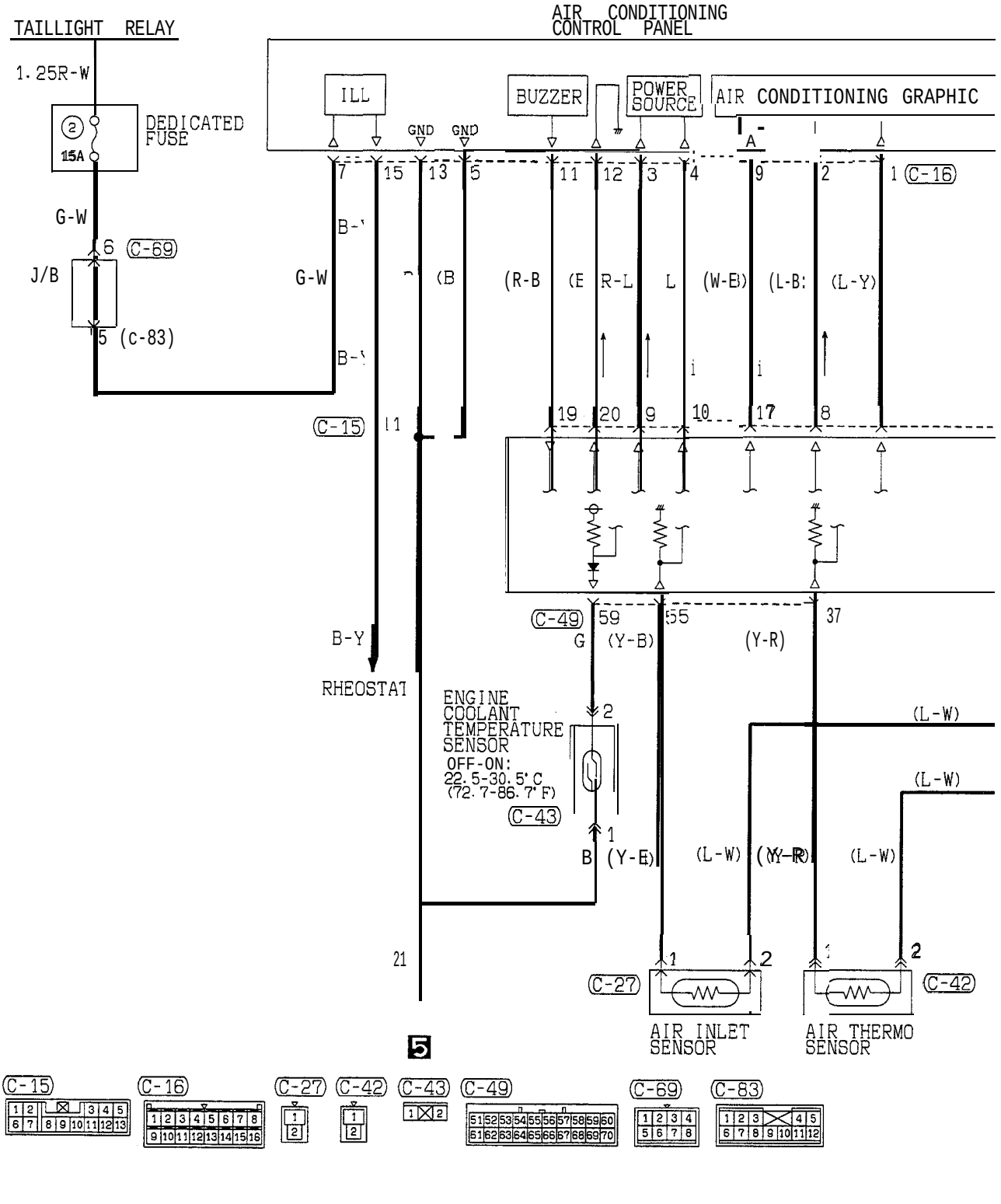




HR12M05CB

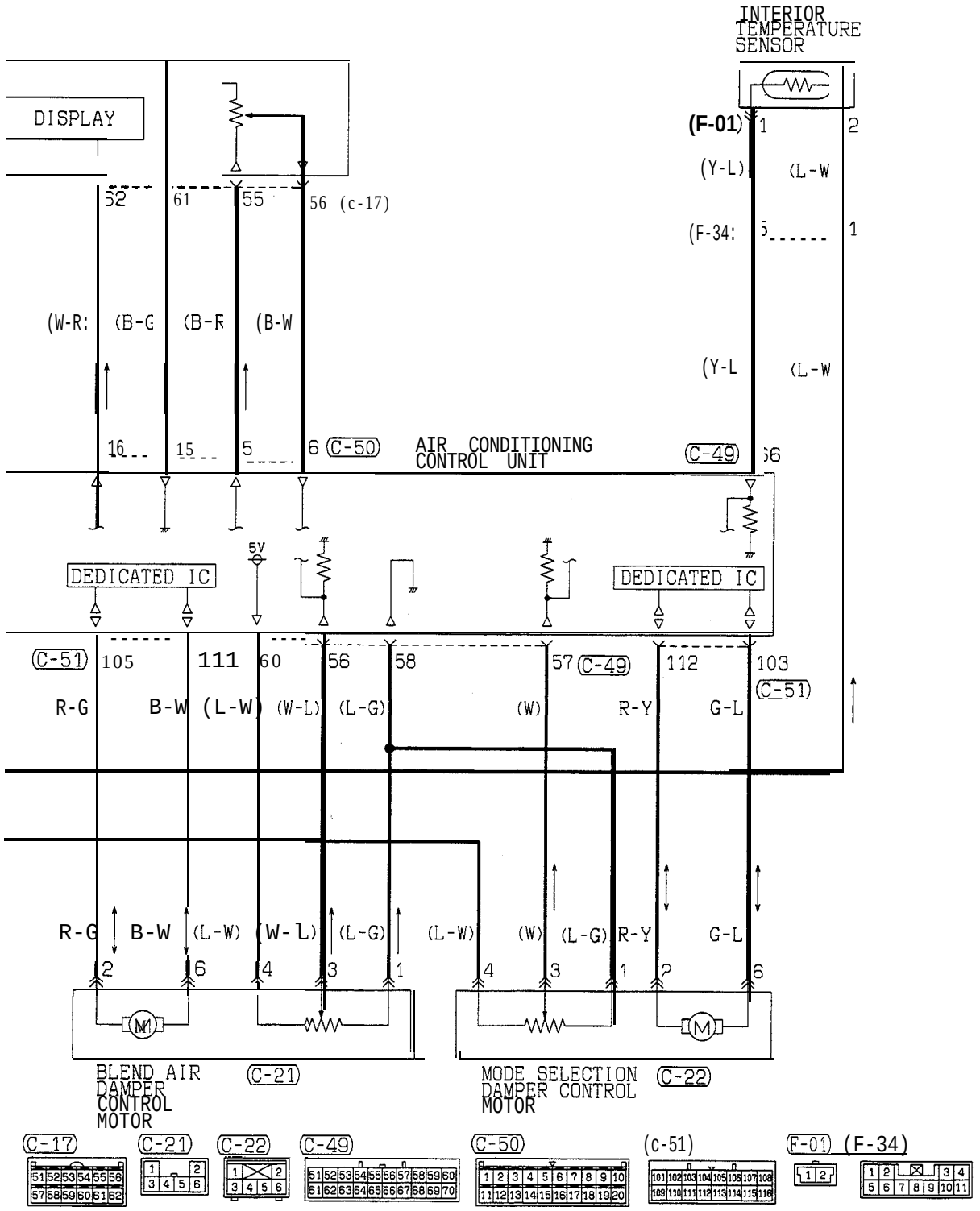
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1992 MODEL) (CONTINUED)



HR12M05DA

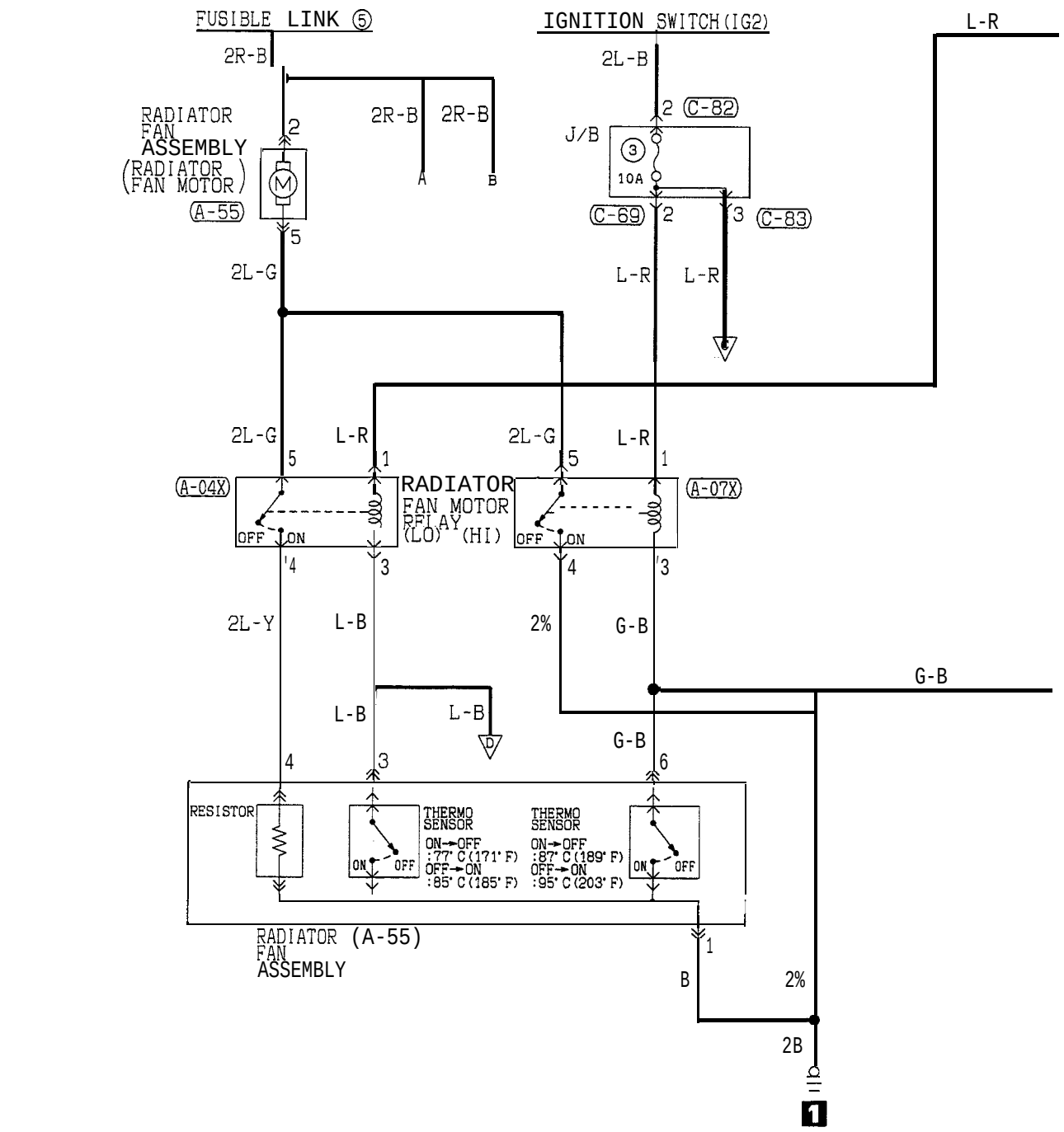
TSB Revision

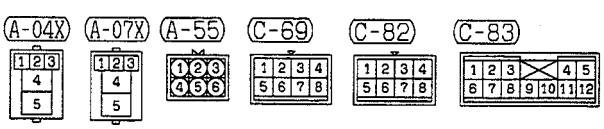


HR12M05DB

TSB Revision

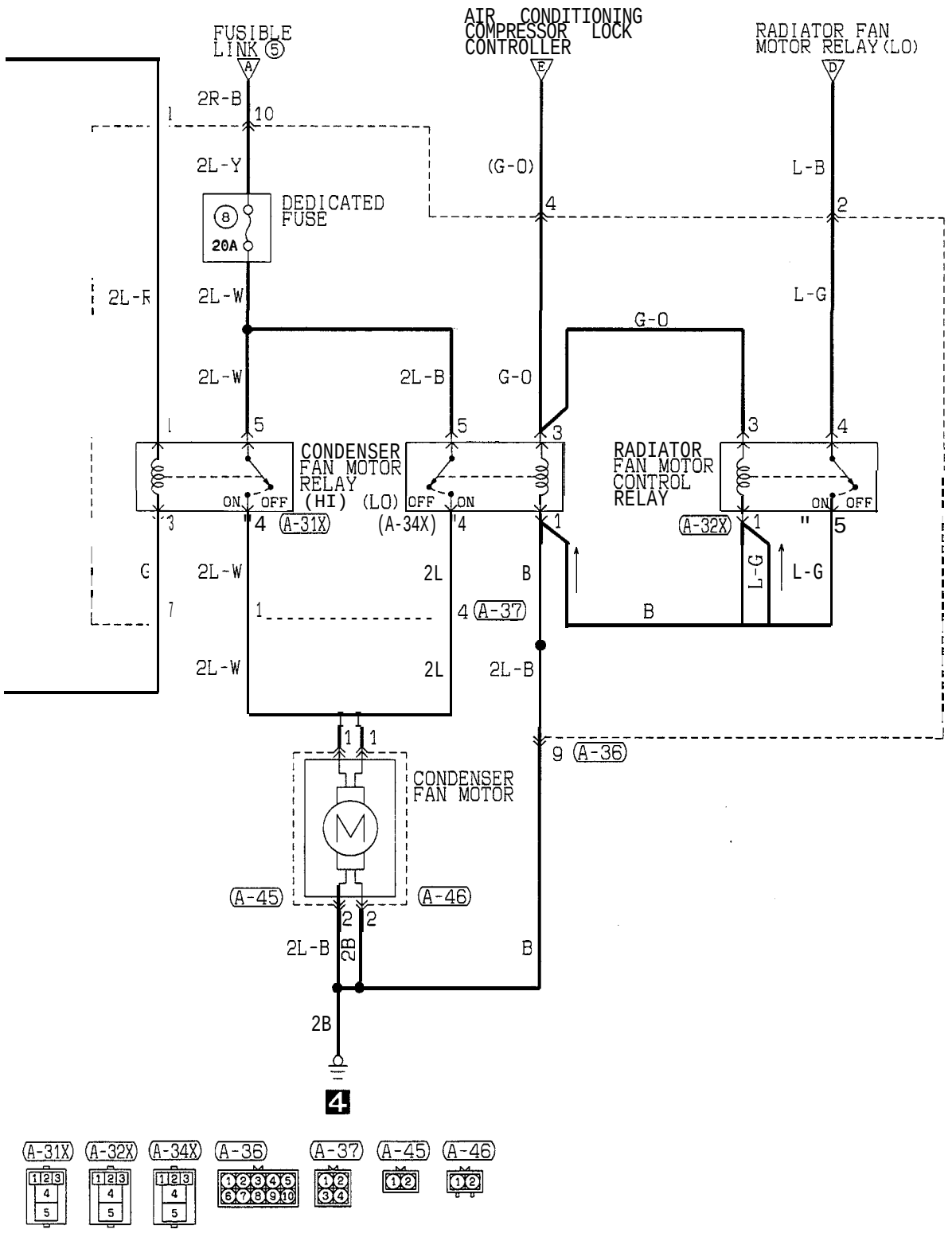
FULL AUTO AIR CONDITIONING CIRCUIT (1993 MODELS)





HR12M06AA

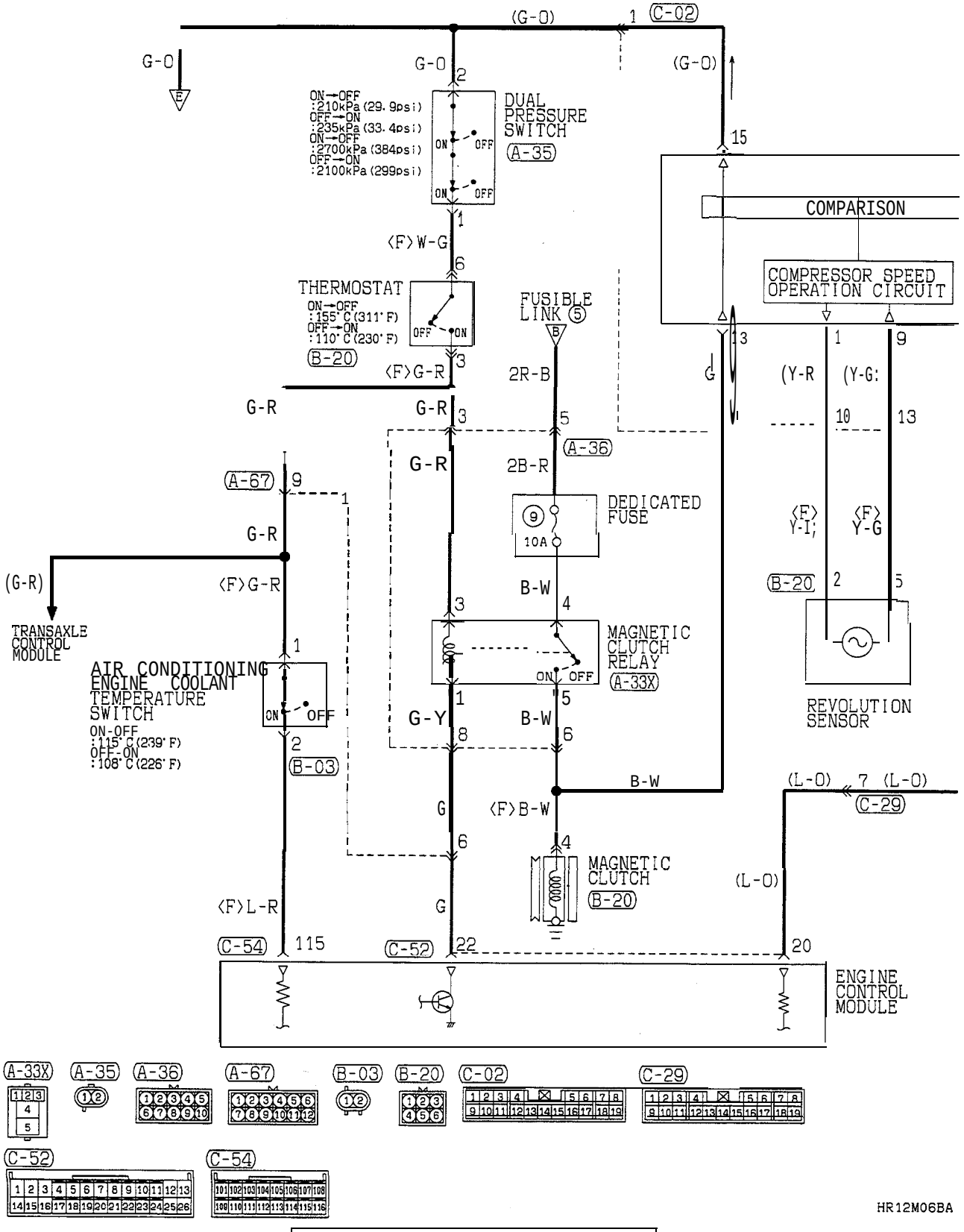
TSB Revision



HR12M06AB

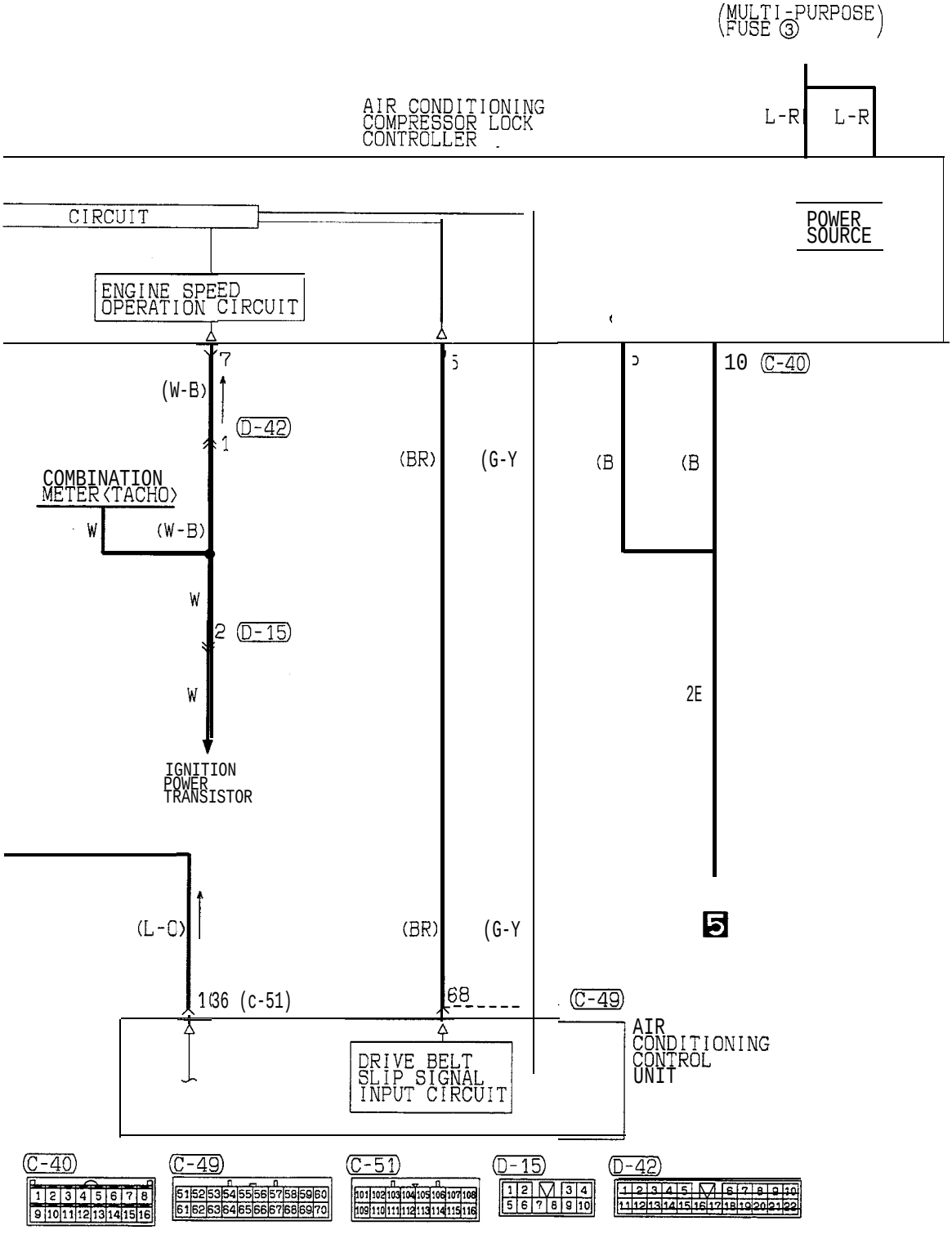
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1993 MODELS) (CONTINUED)



HR12M06BA

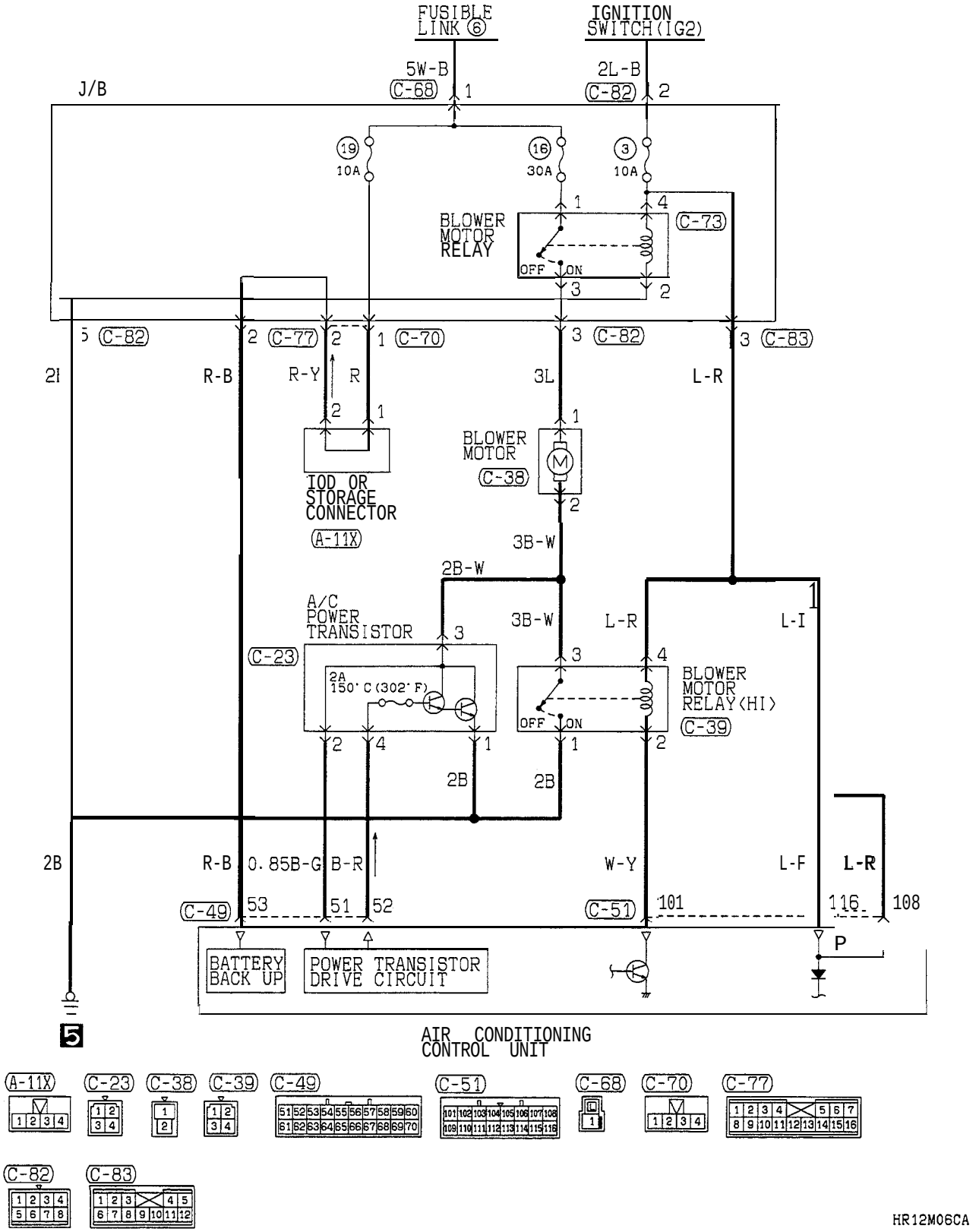
TSB Revision



HR12M06BB

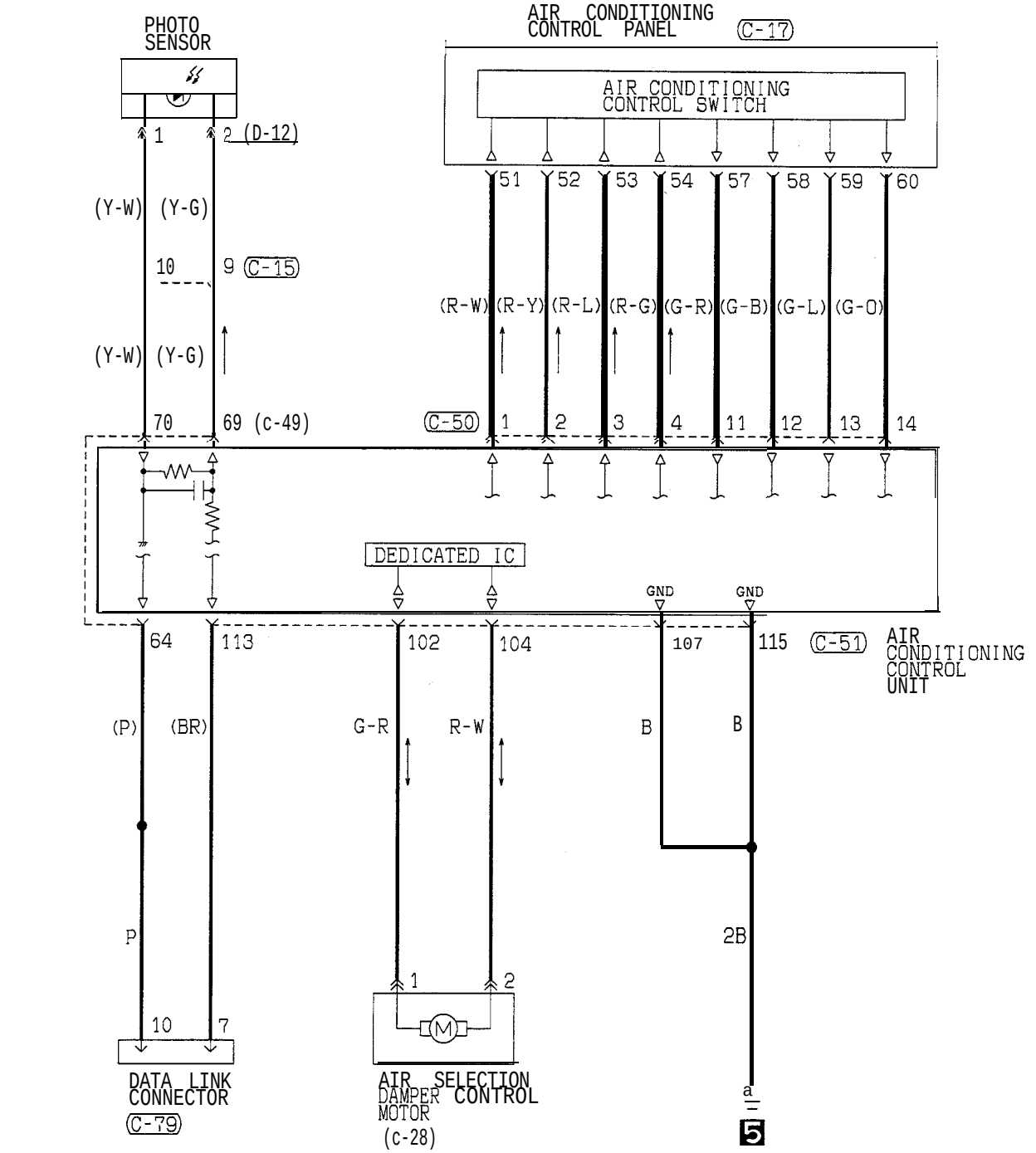
TSB Revision

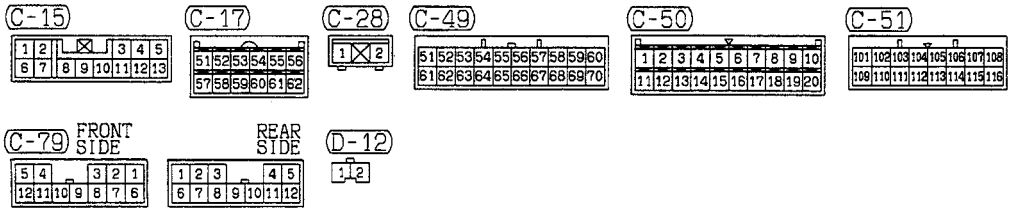
FULL AUTO AIR CONDITIONING CIRCUIT (1993 MODELS) (CONTINUED)



HR12M06CA

TSB Revision

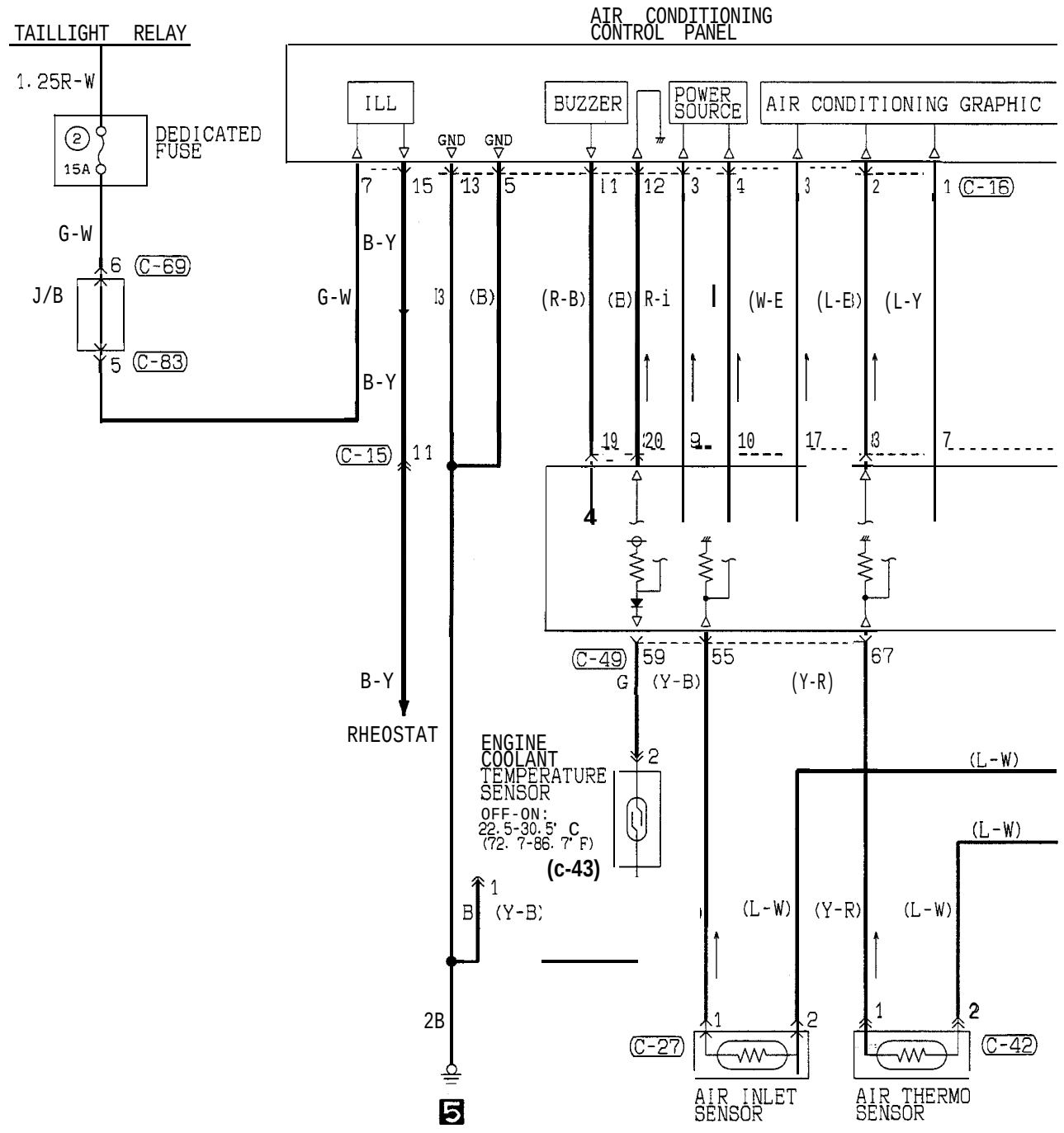




HR12M06CB

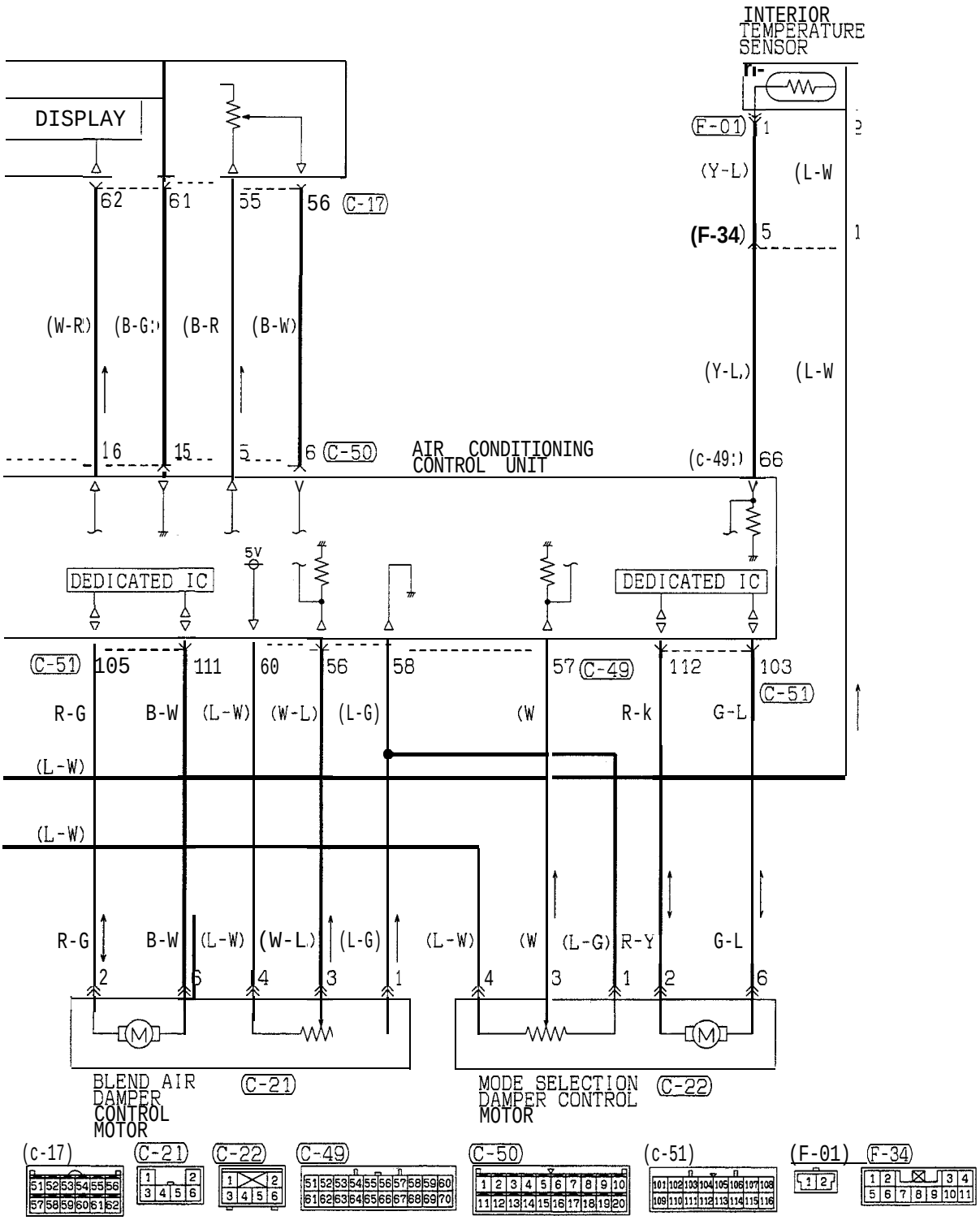
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1993 MODELS) (CONTINUED)



HR12M06DA

TSB Revision

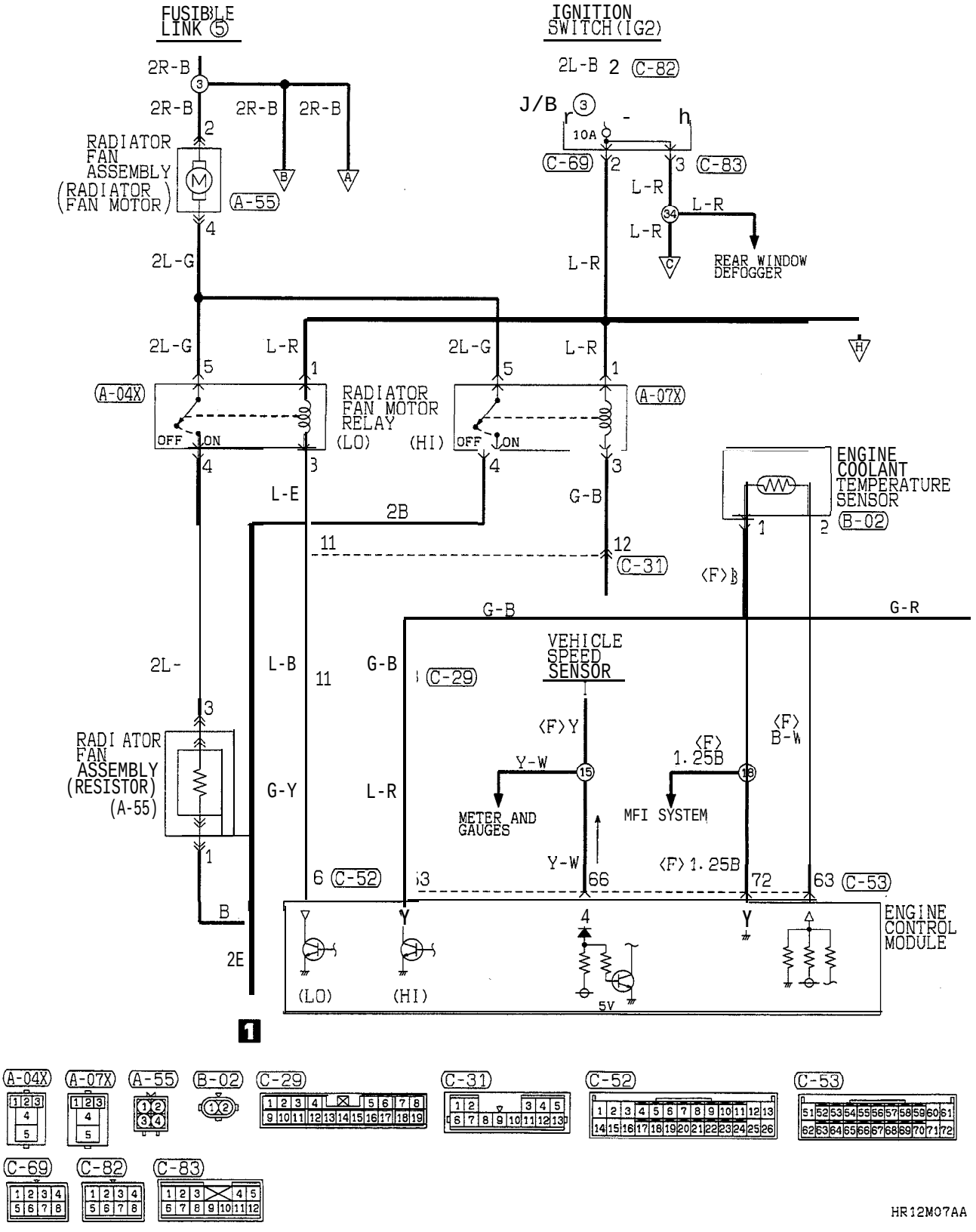


HR12M06DB

TSB Revision

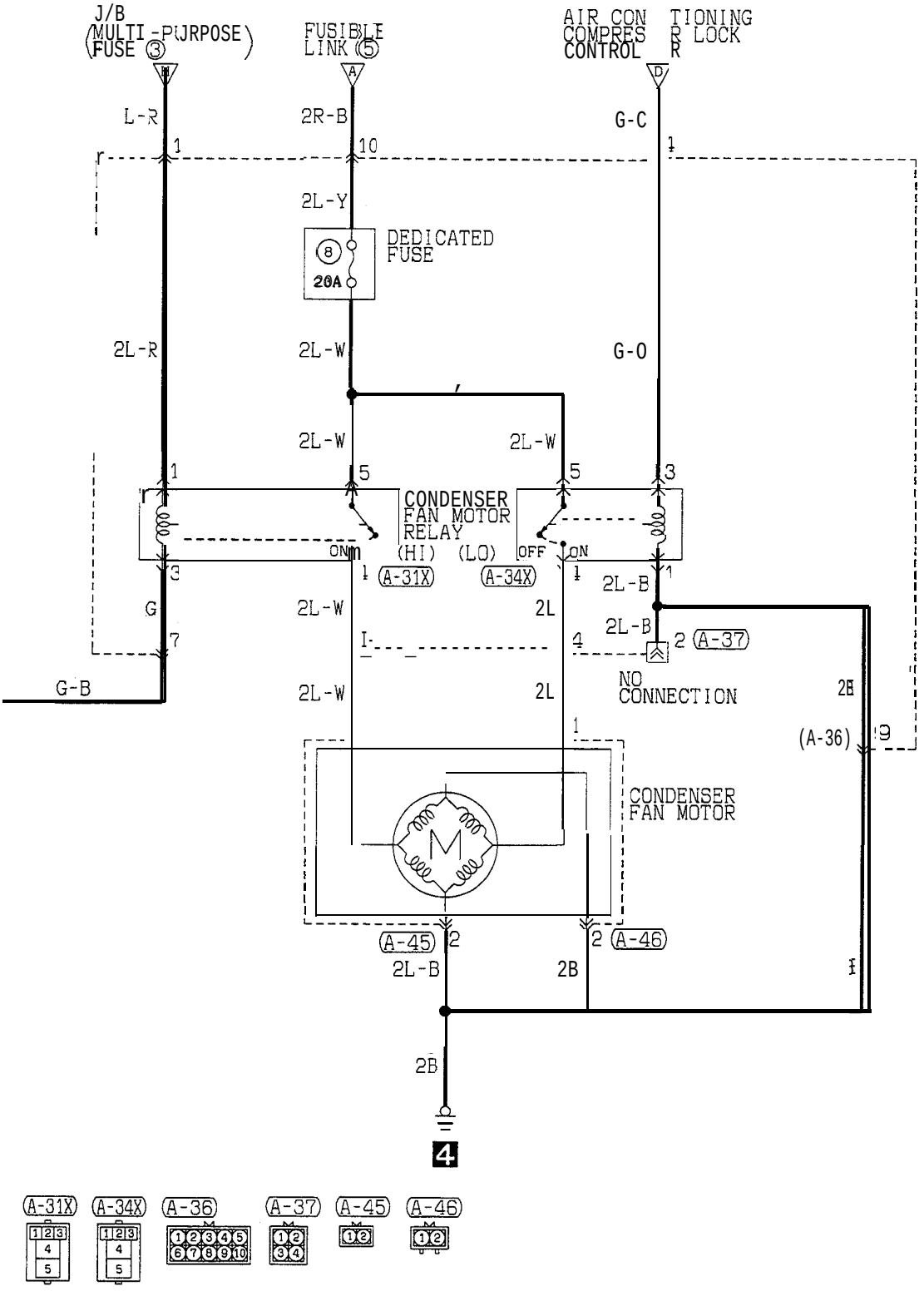
FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS)

<NON TURBO> (FEDERAL)



HR12M07AA

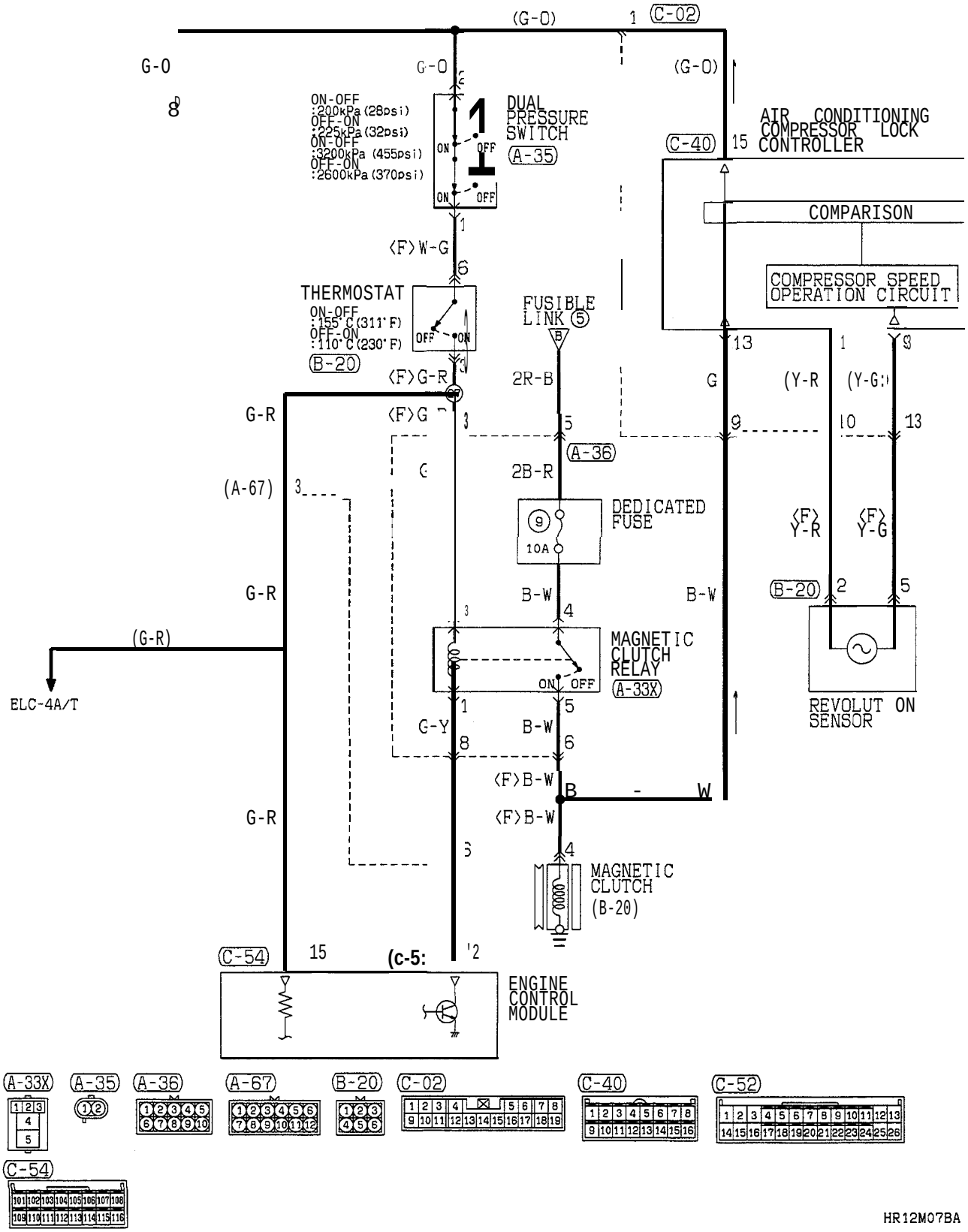
TSB Revision



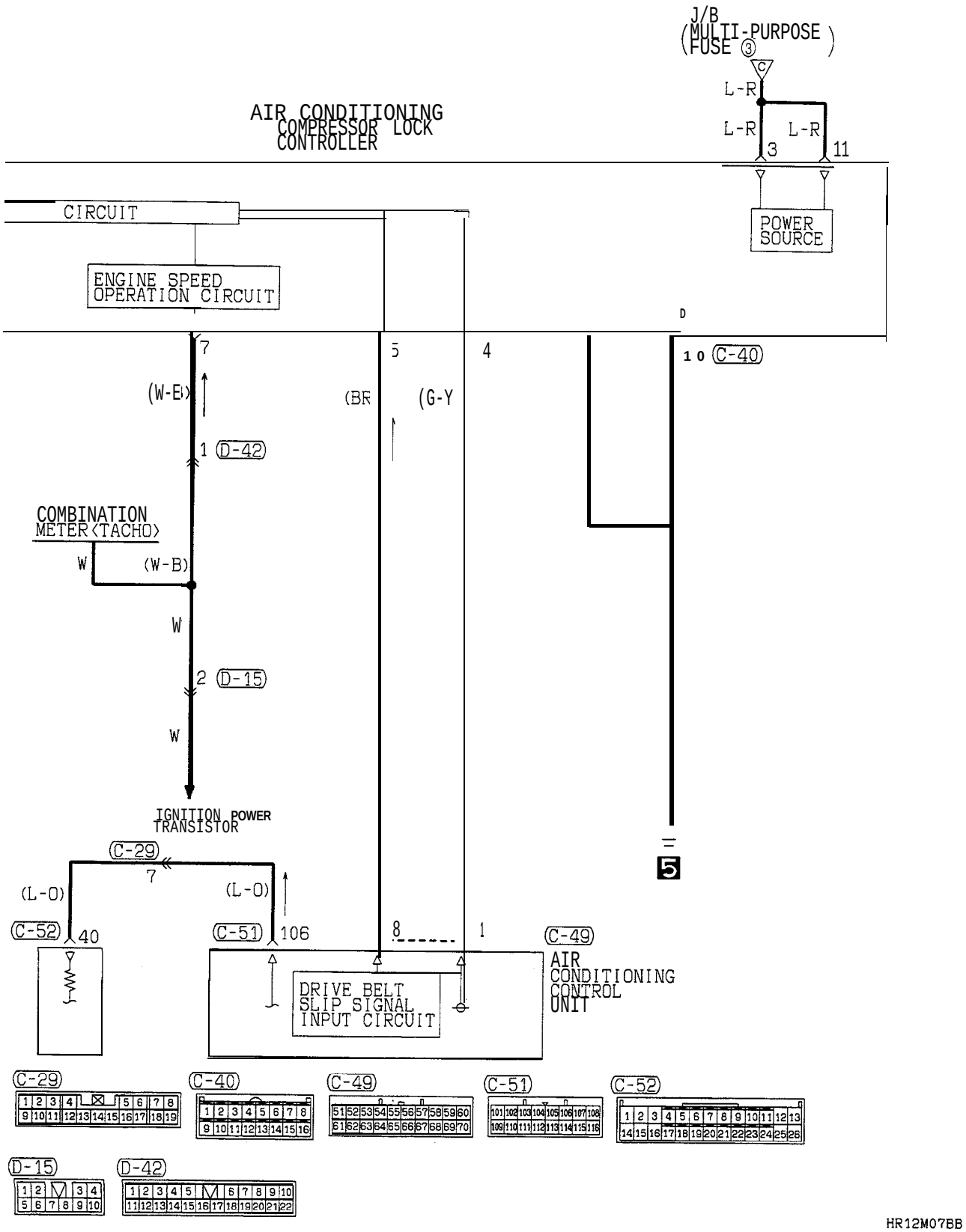
HR12M07AB

I TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)

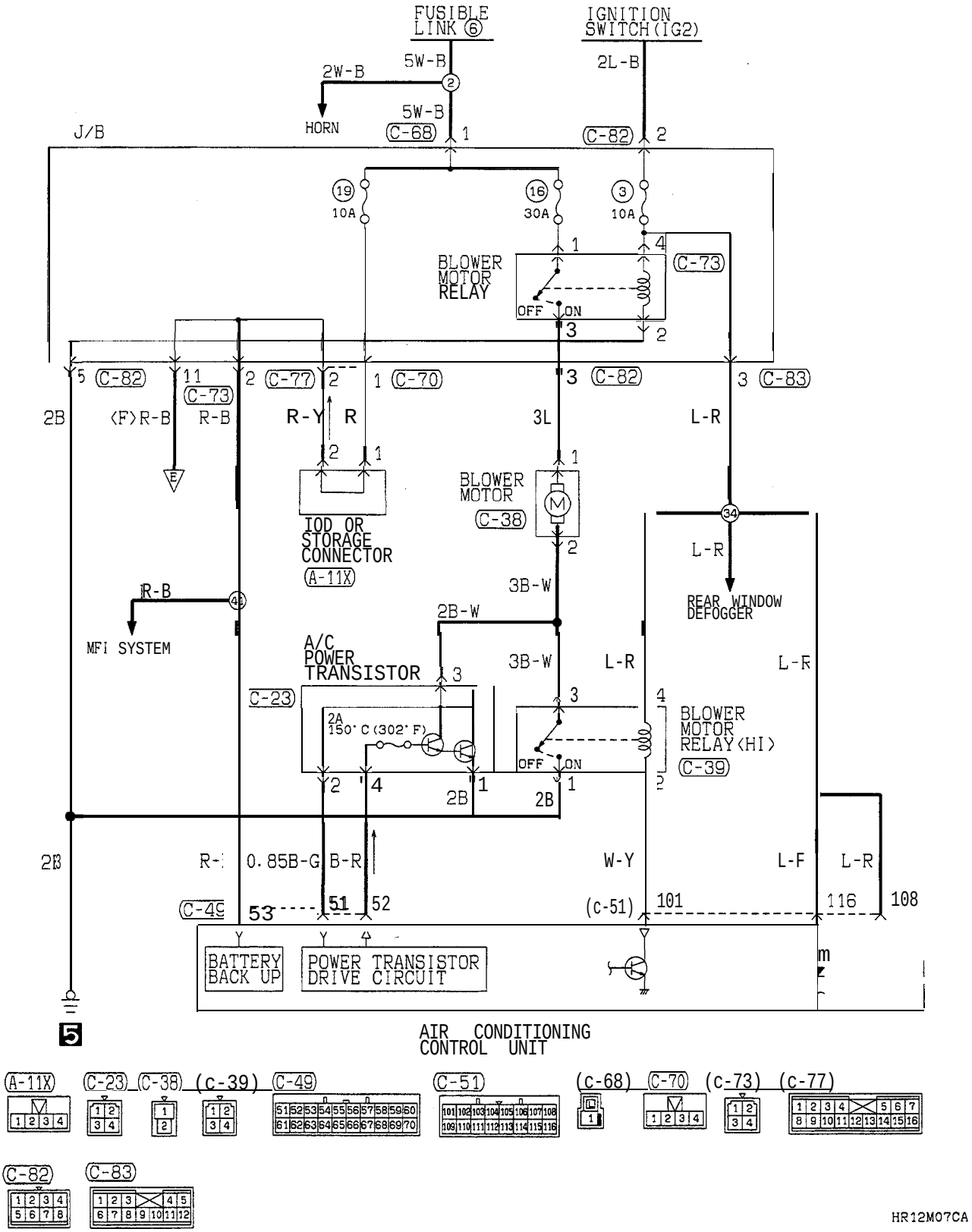


TSB Revision



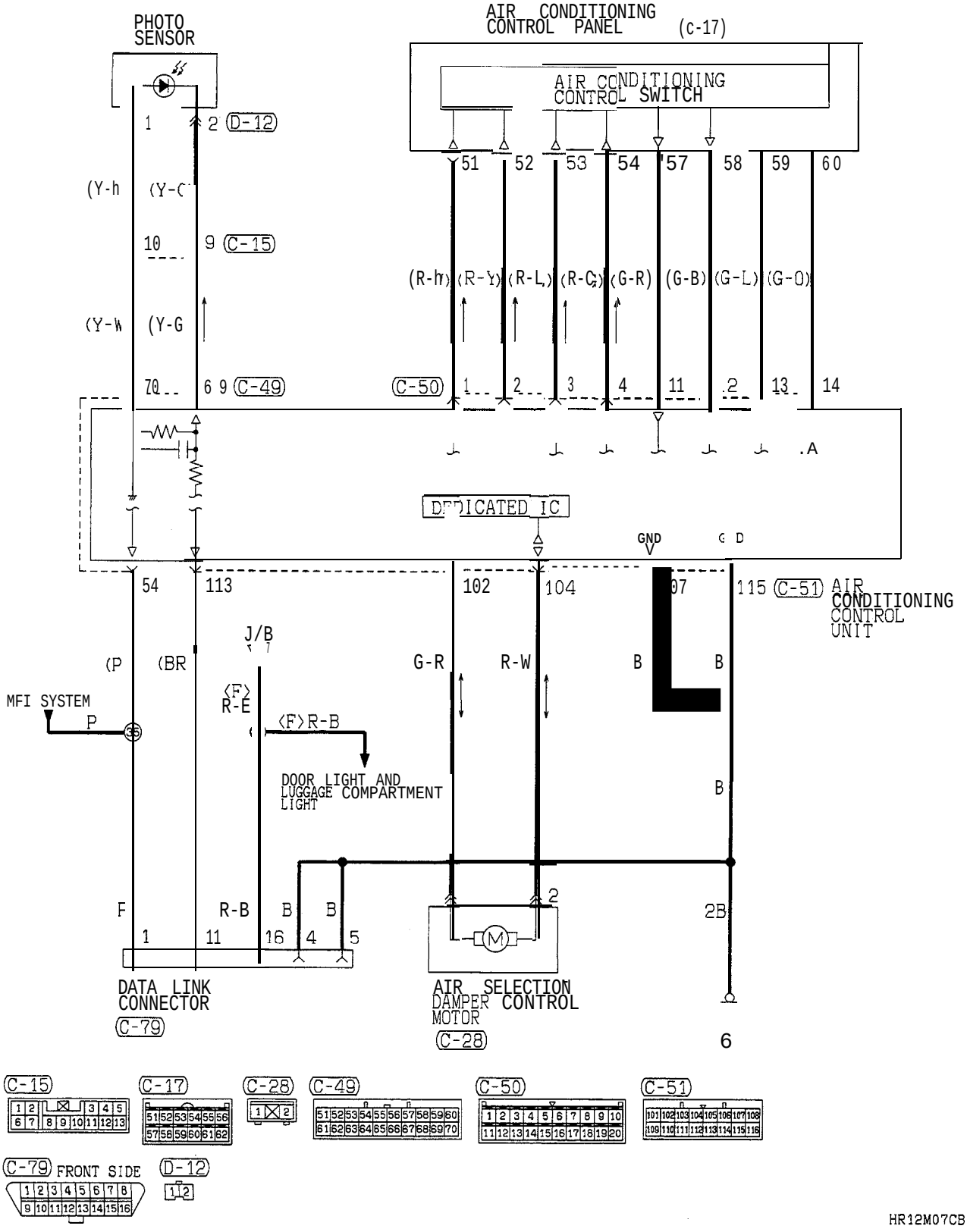
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)



HR12M07CA

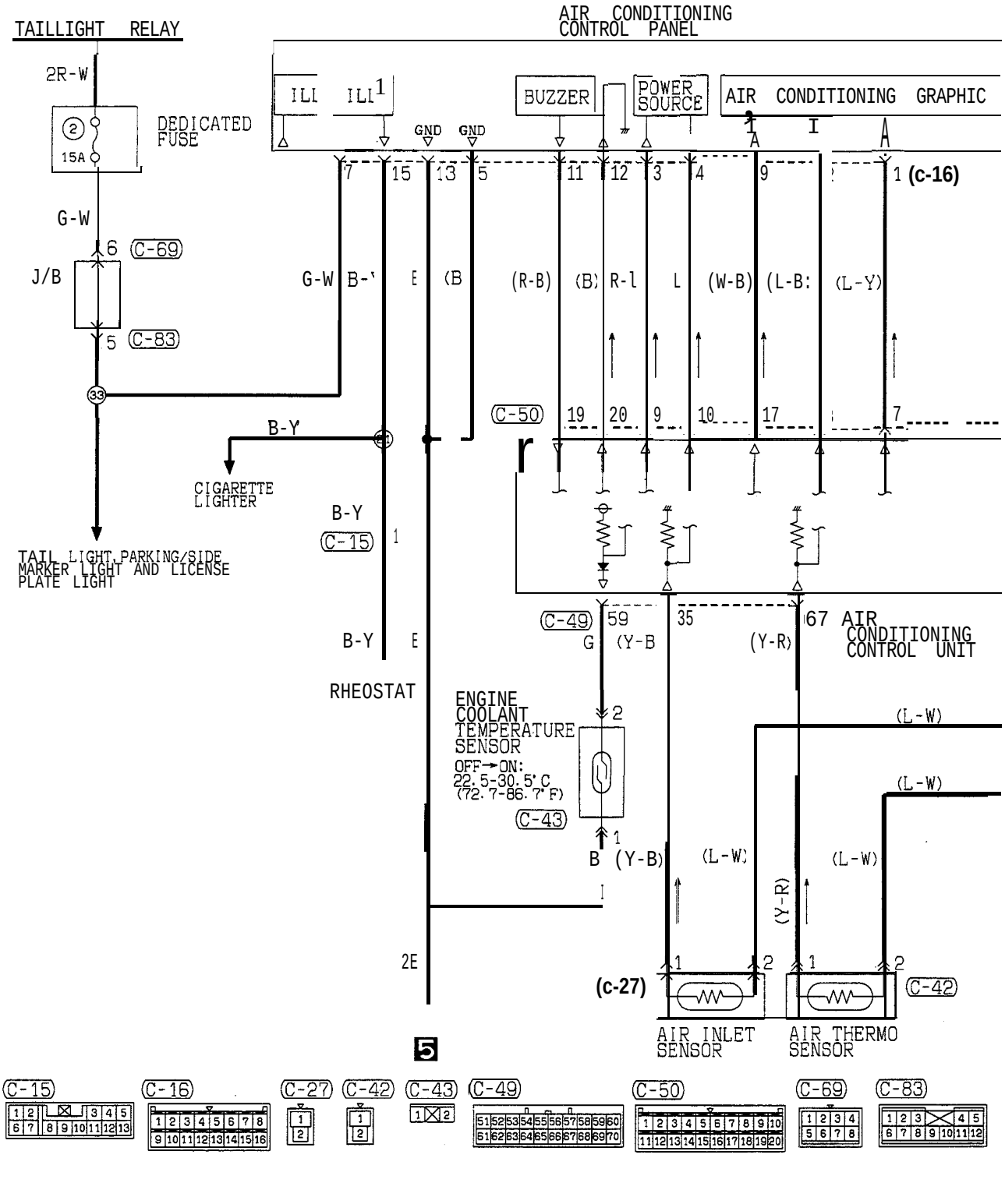
TSB Revision



HR12M07CB

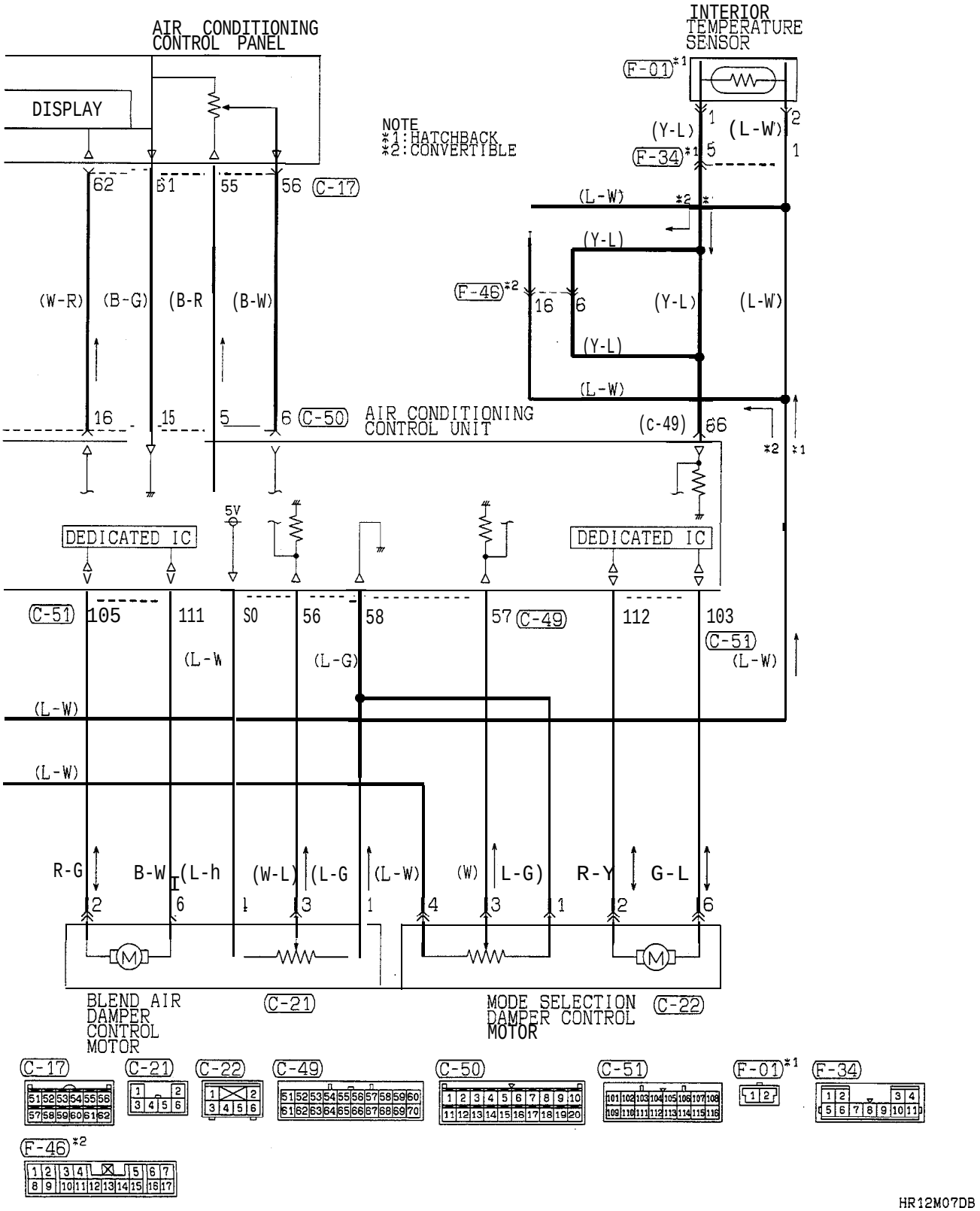
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <NON TURBO> (FEDERAL) (CONTINUED)



HR12M07DA

TSB Revision

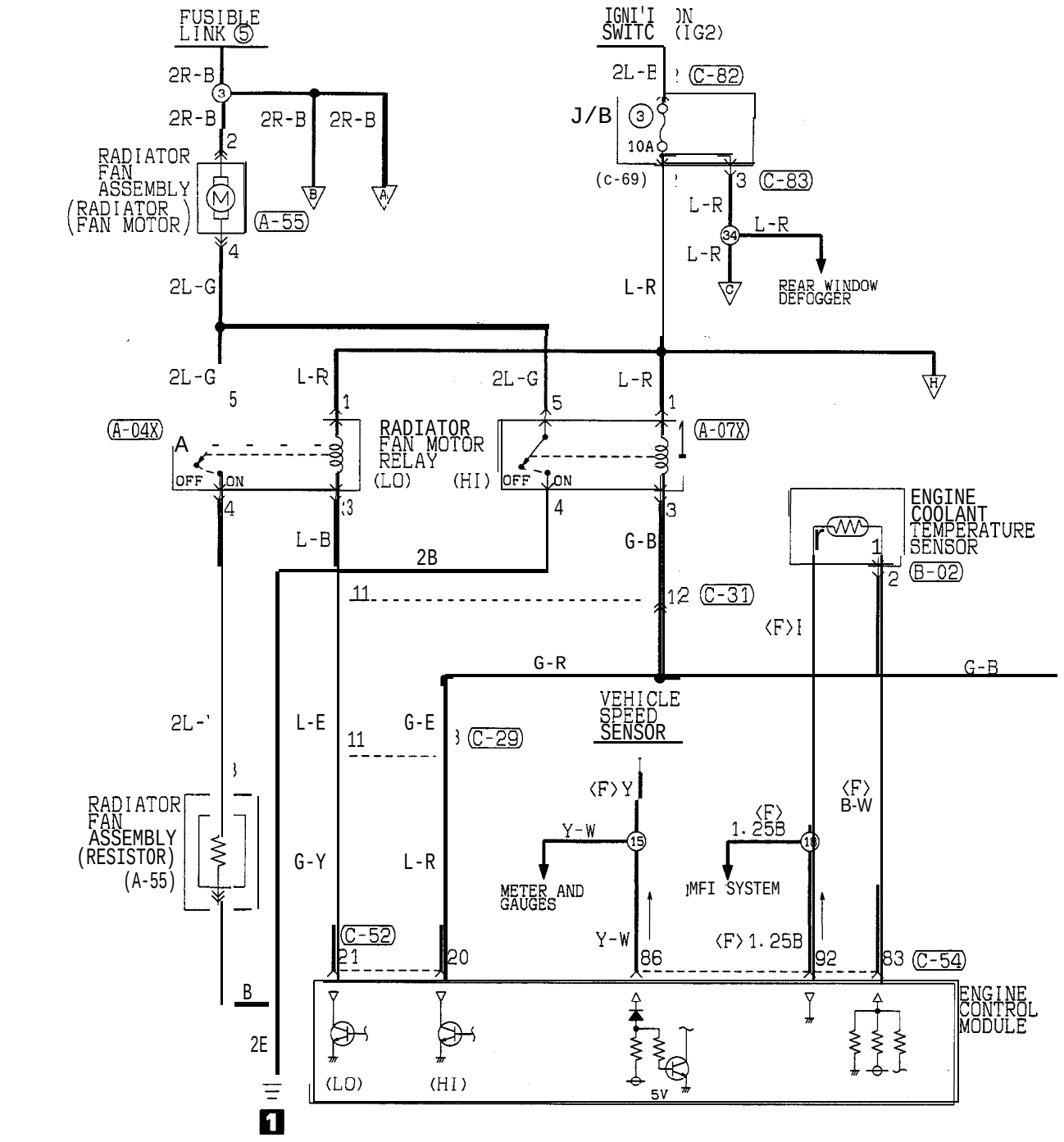


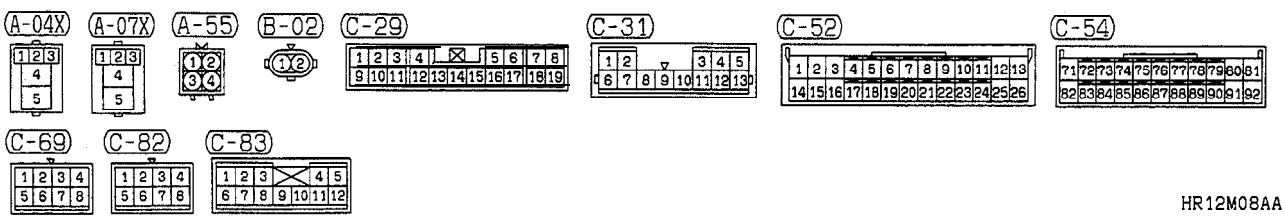
HR12M07DB

TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS)

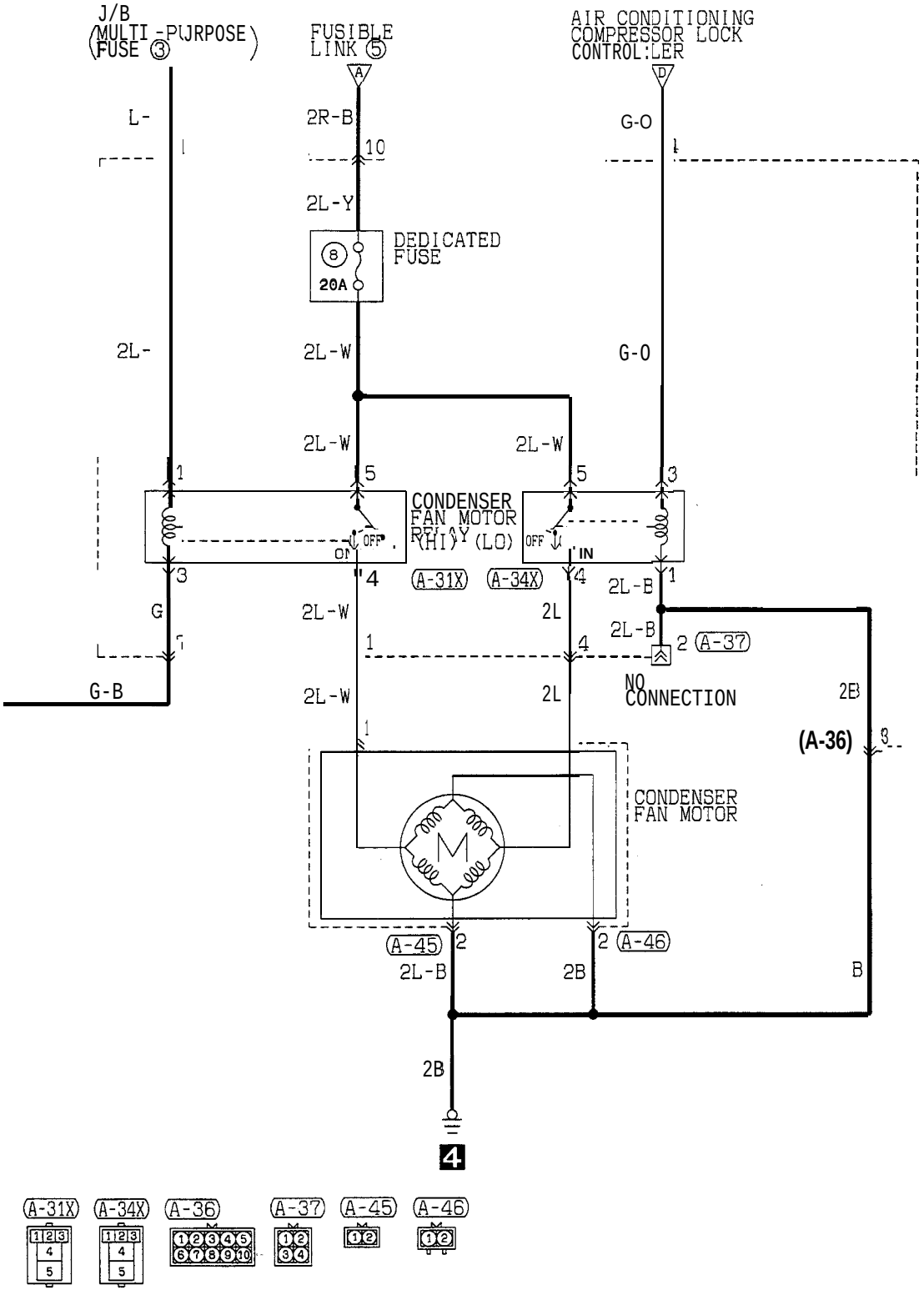
<TURBO, NON TURBO (CALIFORNIA)>





HR12M08AA

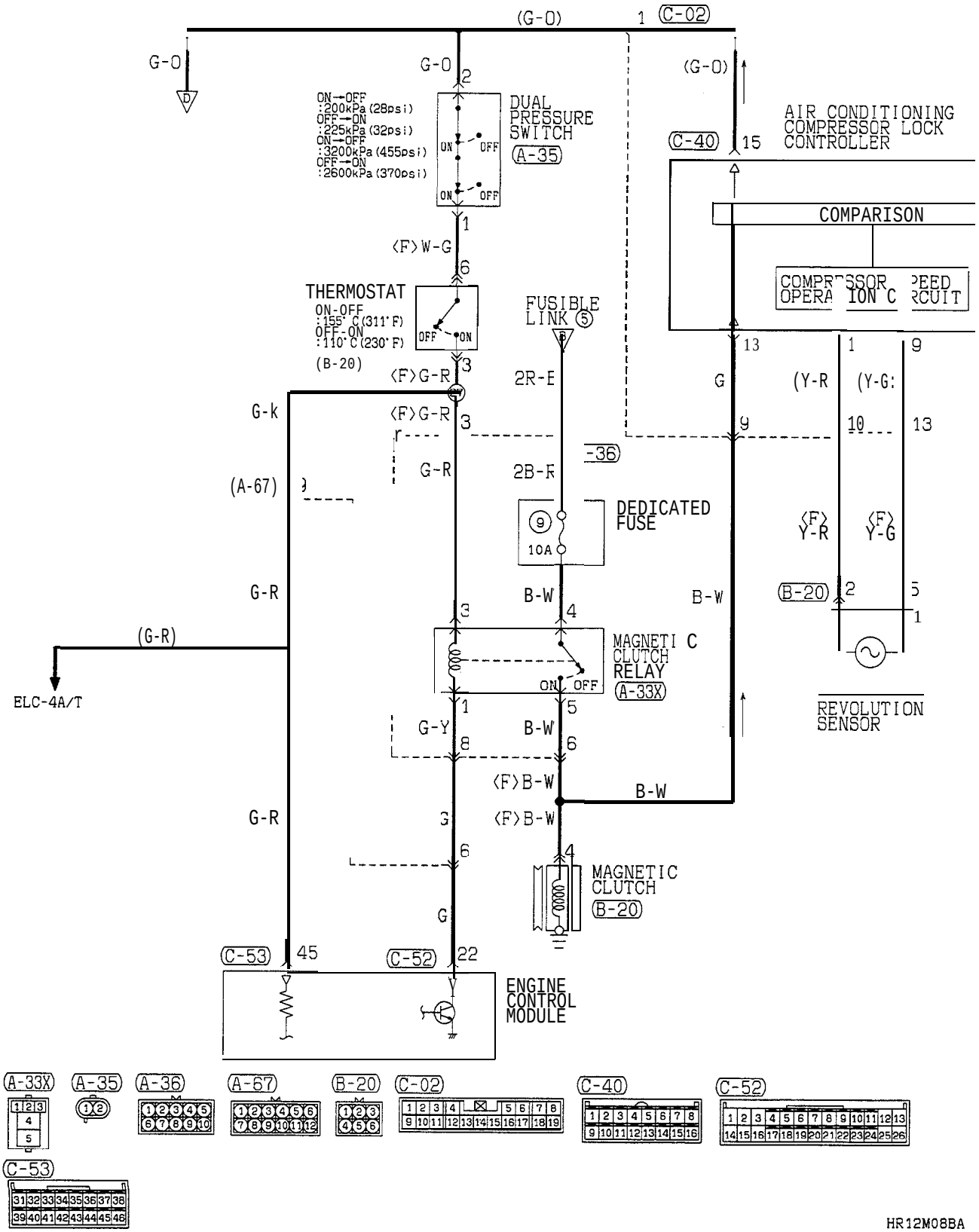
TSB Revision



HR12M08AB

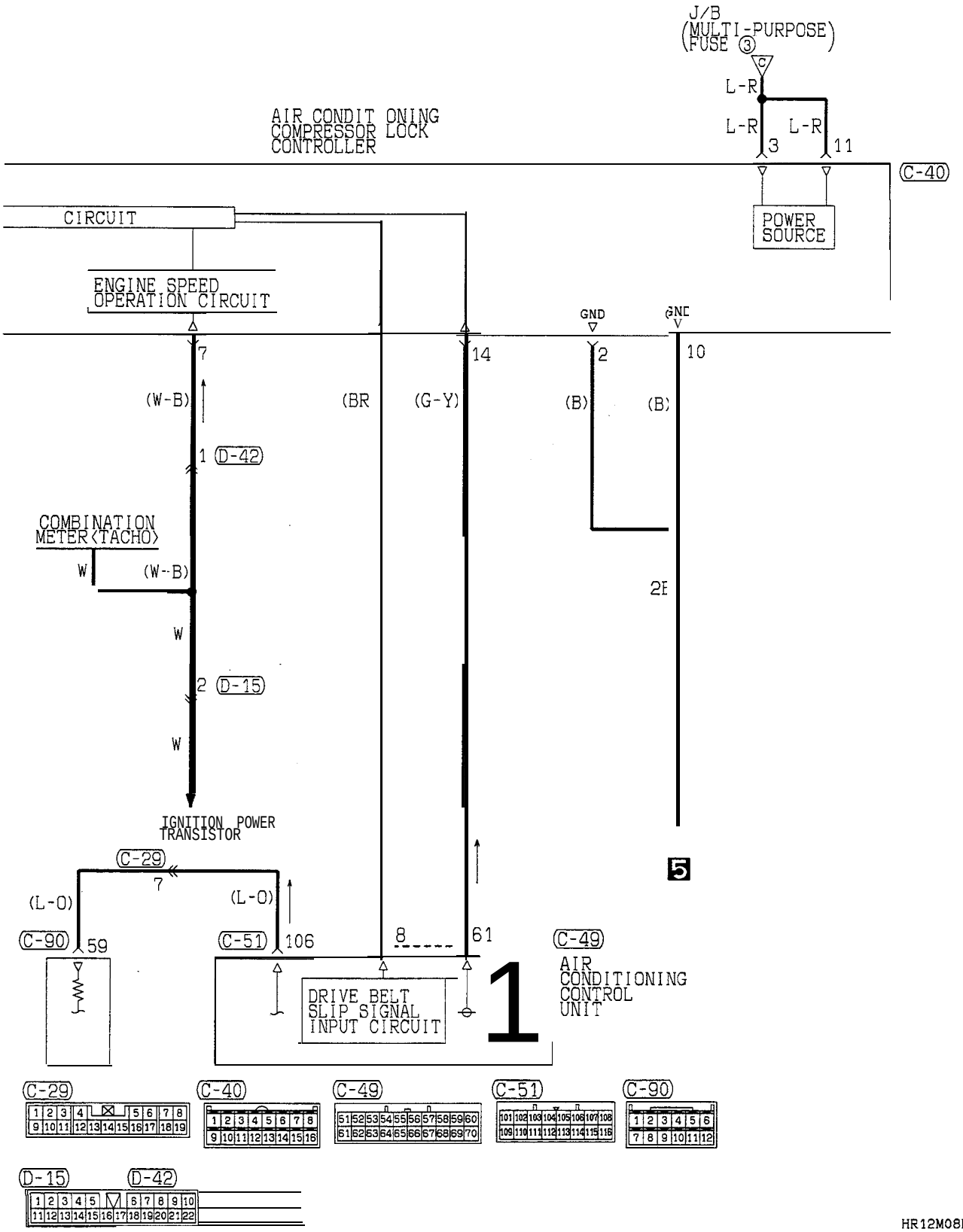
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <TURBO, NON TURBO (CALIFORNIA)> (CONTINUED)



HR12M08BA

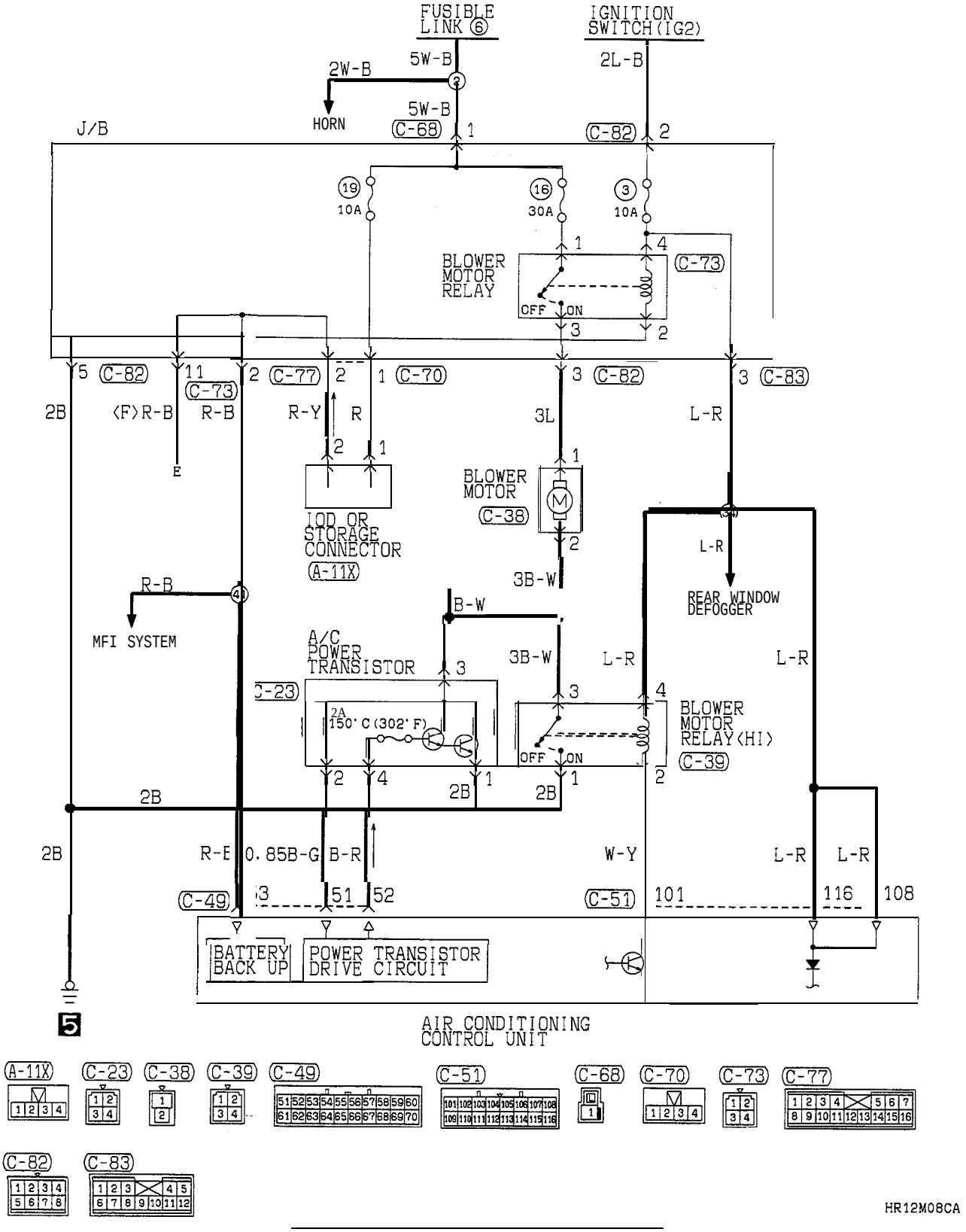
TSB Revision



HR12M08BB

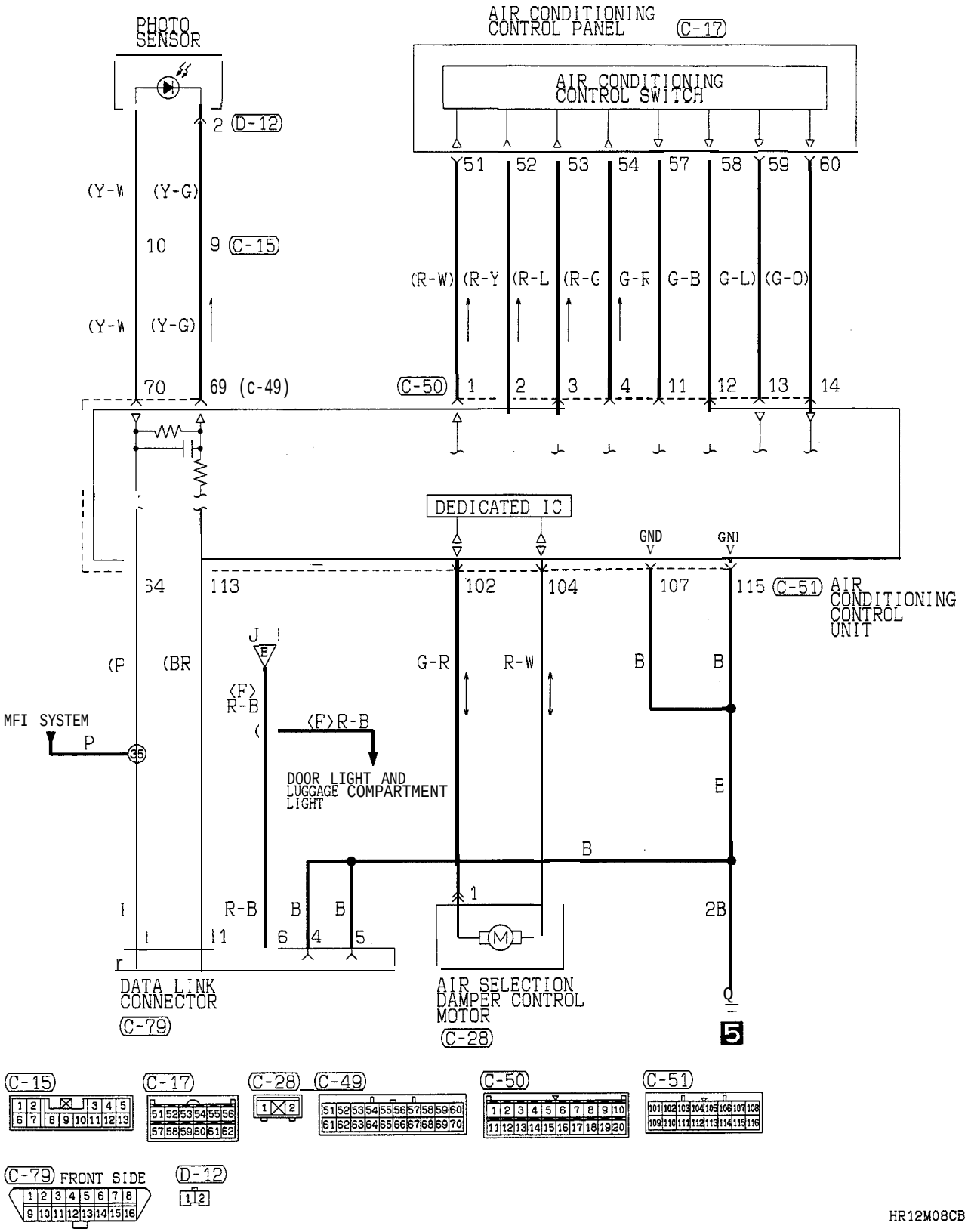
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <TURBO, NON TURBO (CALIFORNIA)> (CONTINUED)



HR12M08CA

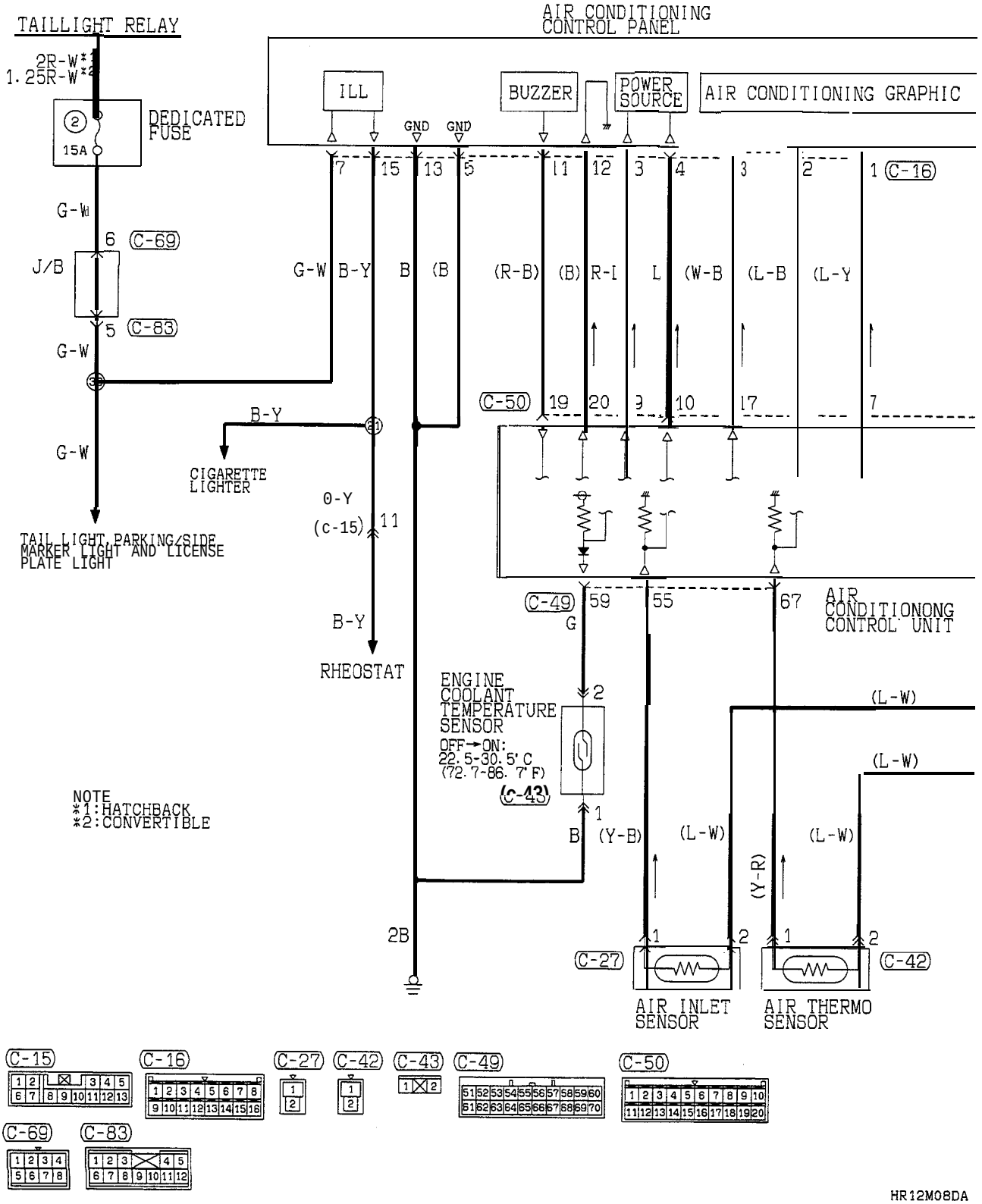
TSB Revision



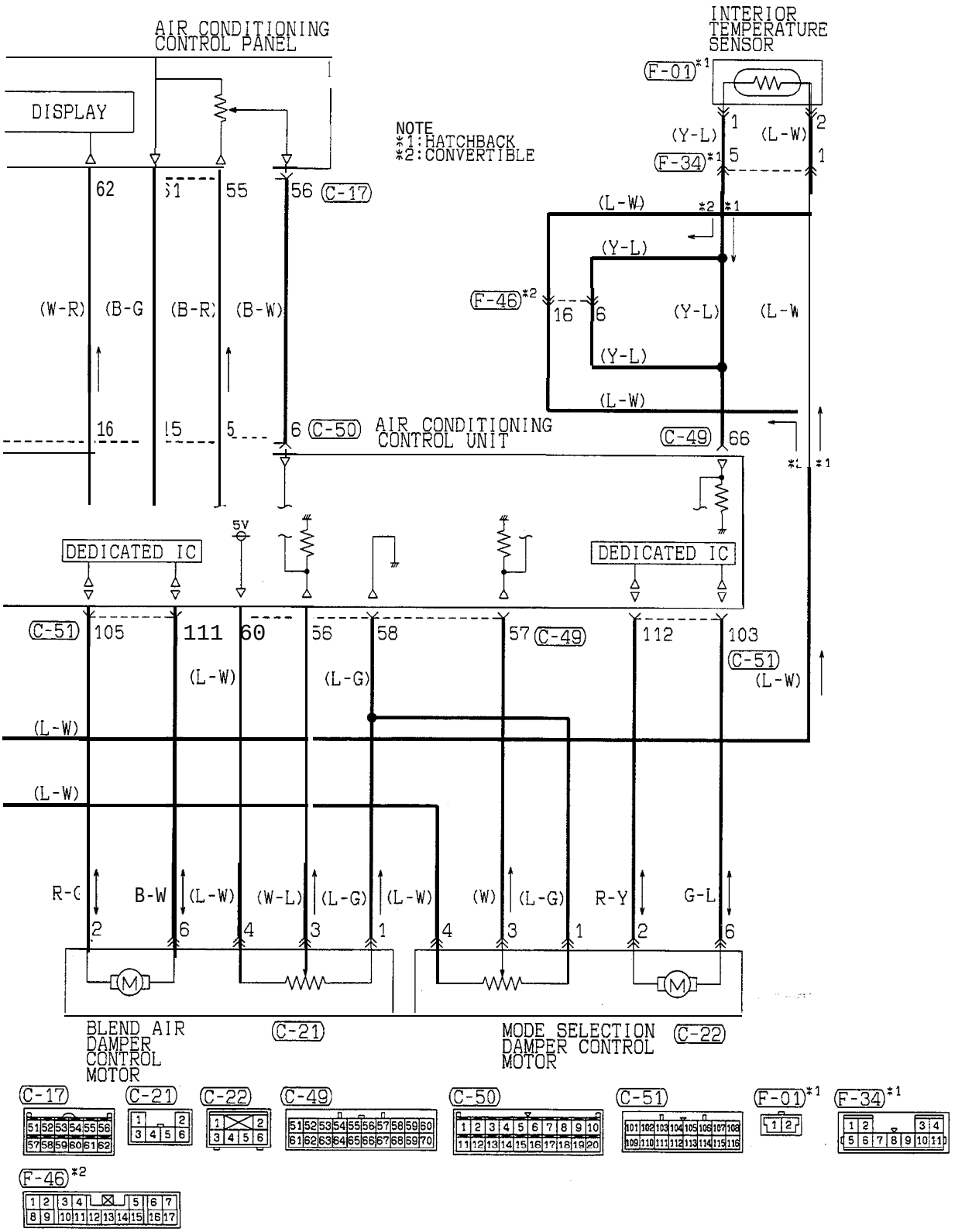
HR12M08CB

TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (1994, 1995 MODELS) <TURBO, NON TURBO (CALIFORNIA)> (CONTINUED)



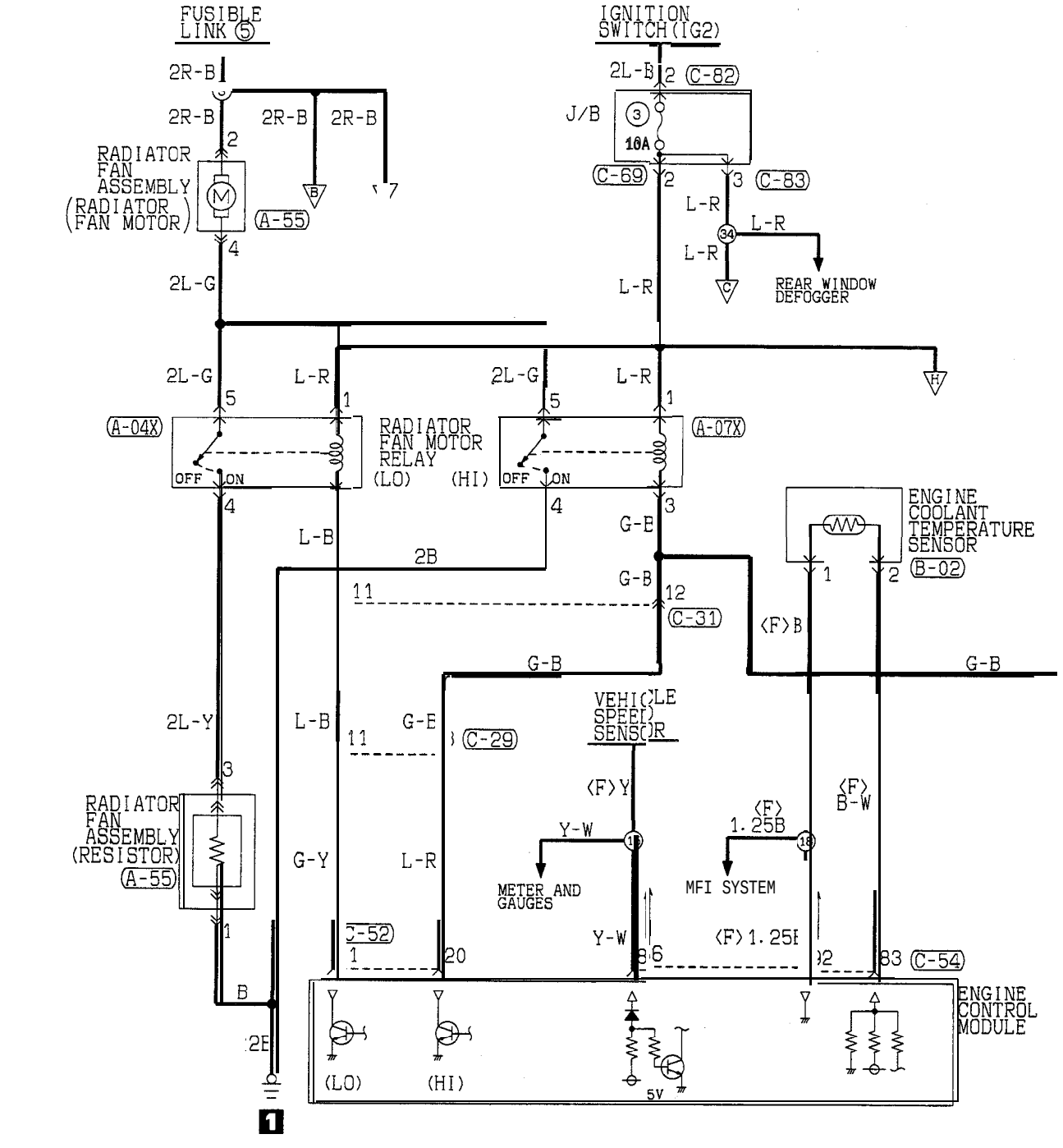
TSB Revision

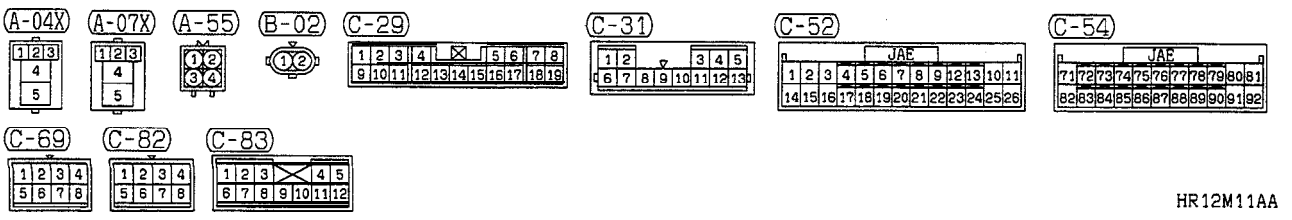


HR12M08DB

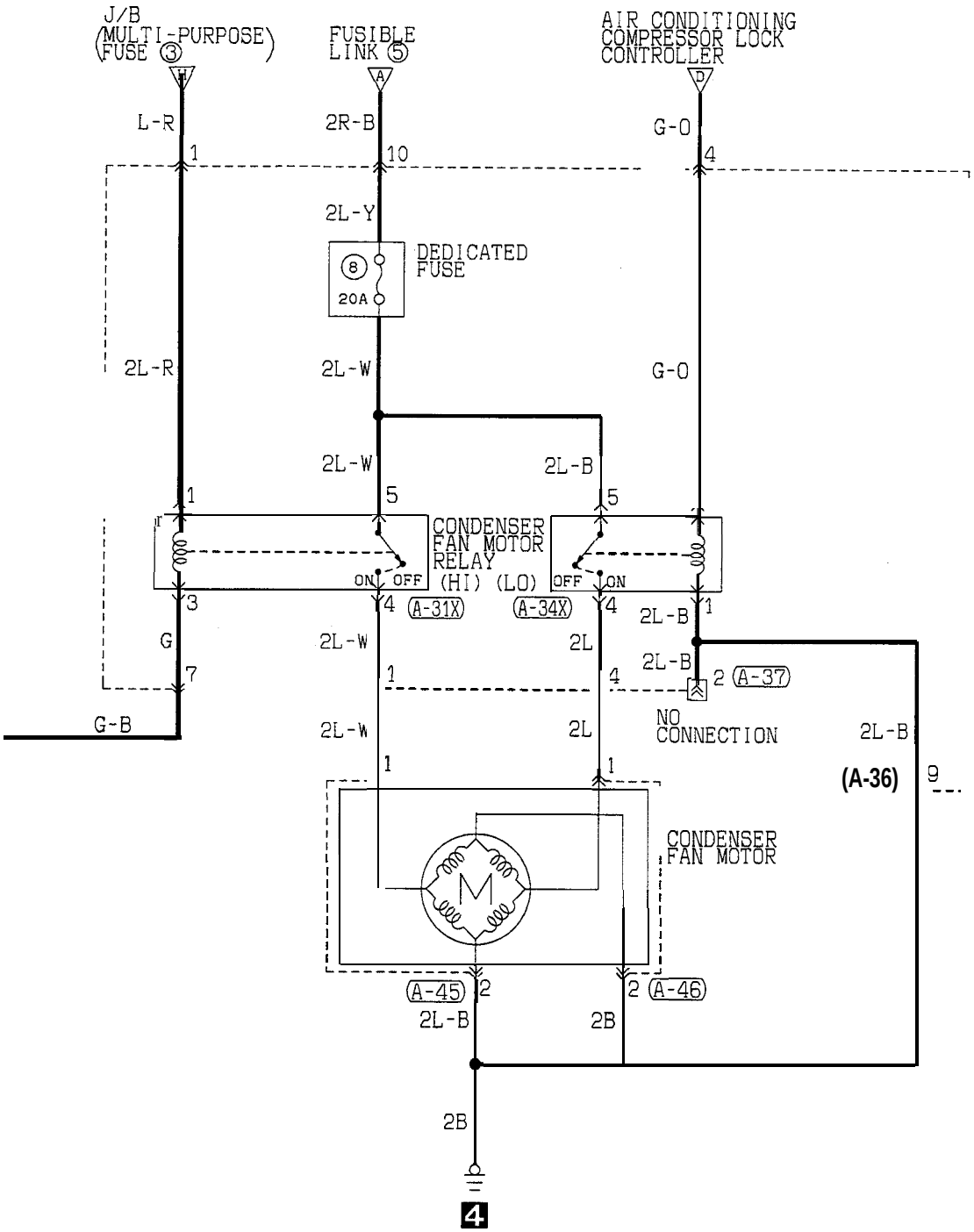
TSB Revision

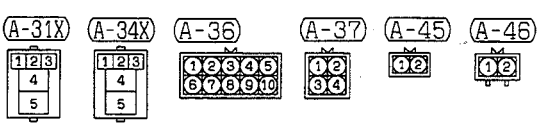
FULL AUTO AIR CONDITIONING CIRCUIT (FROM 1996 MODELS)





HR12M11AA

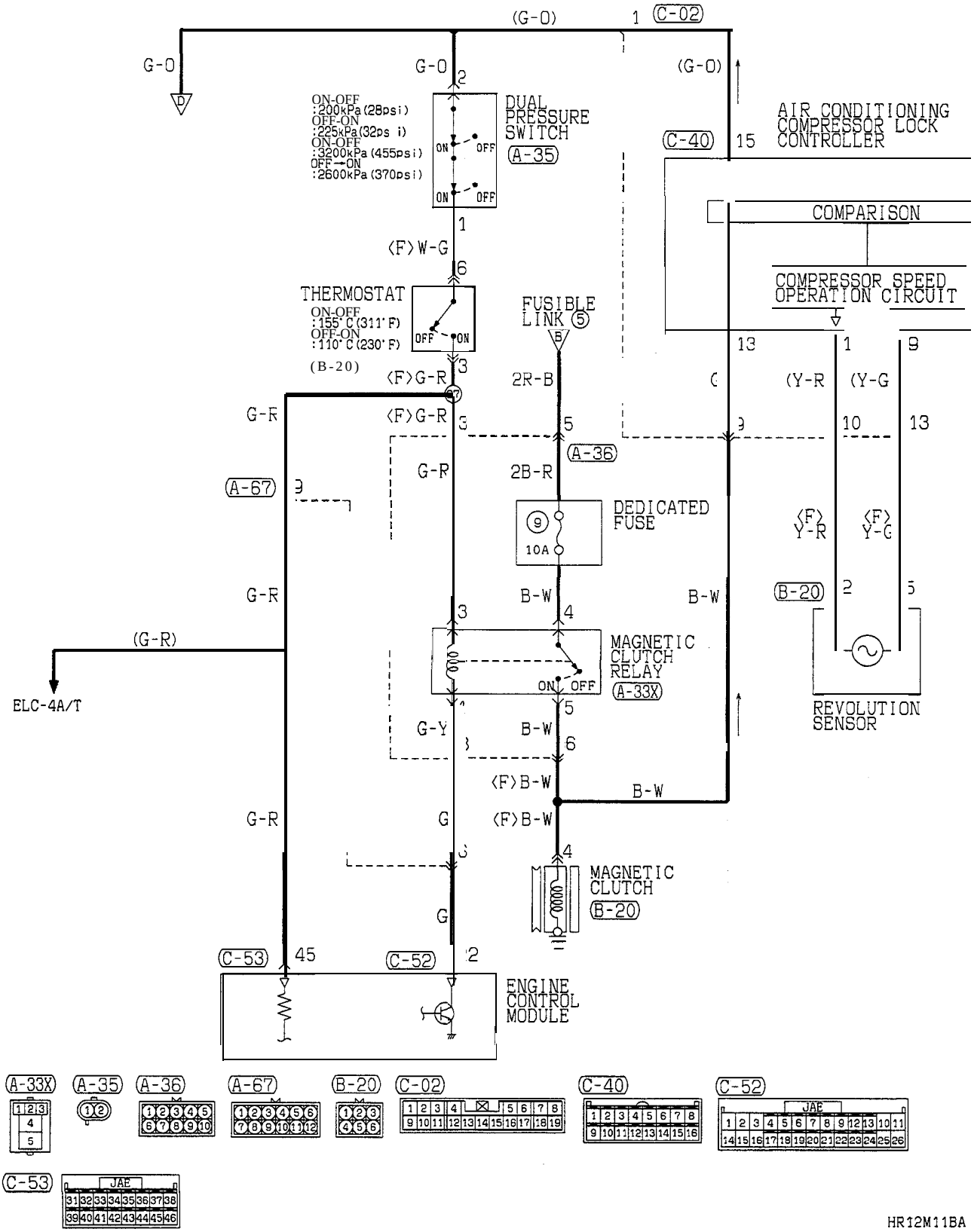




HR12M11AB

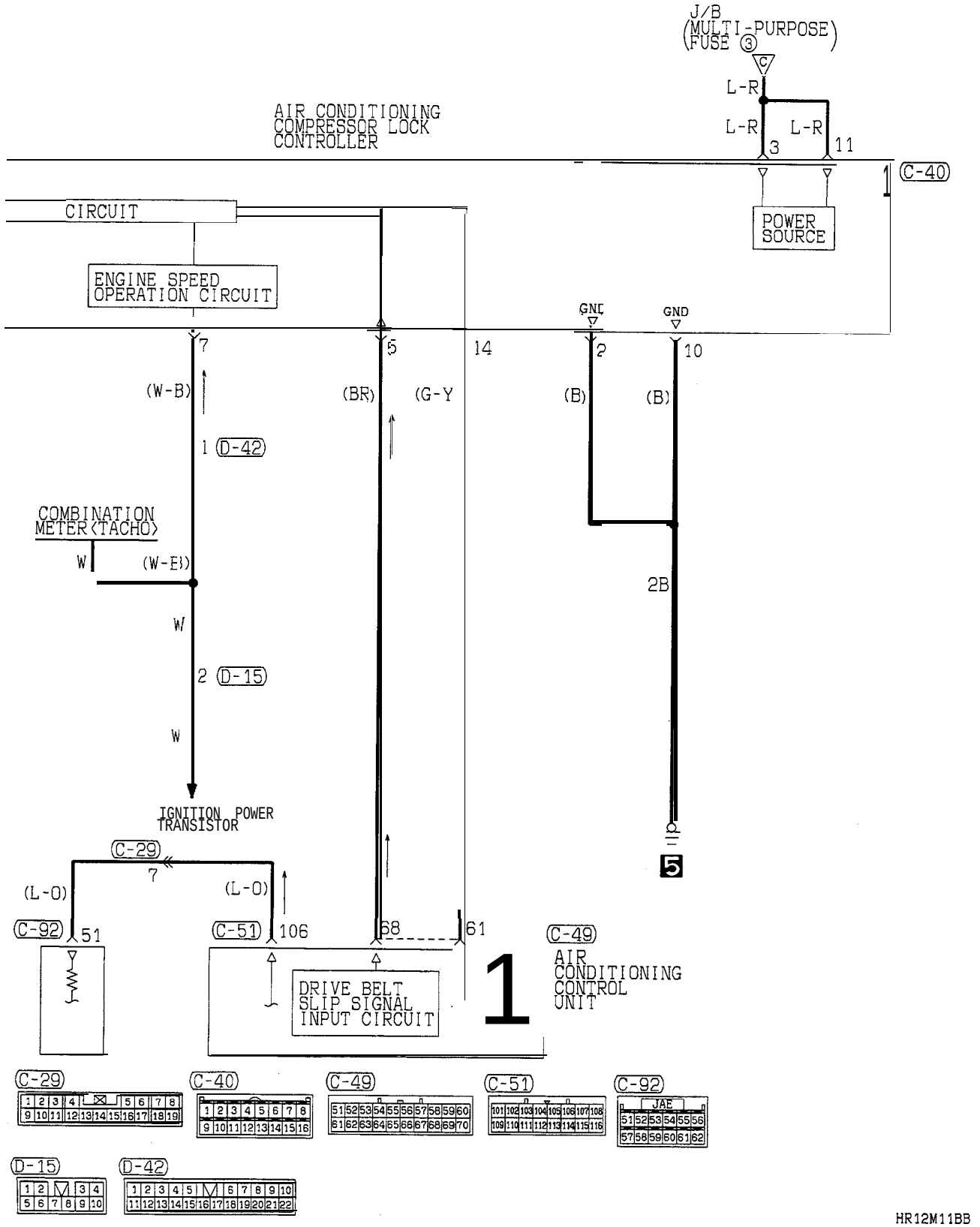
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (FROM 1996 MODELS) (CONTINUED)



HR12M11BA

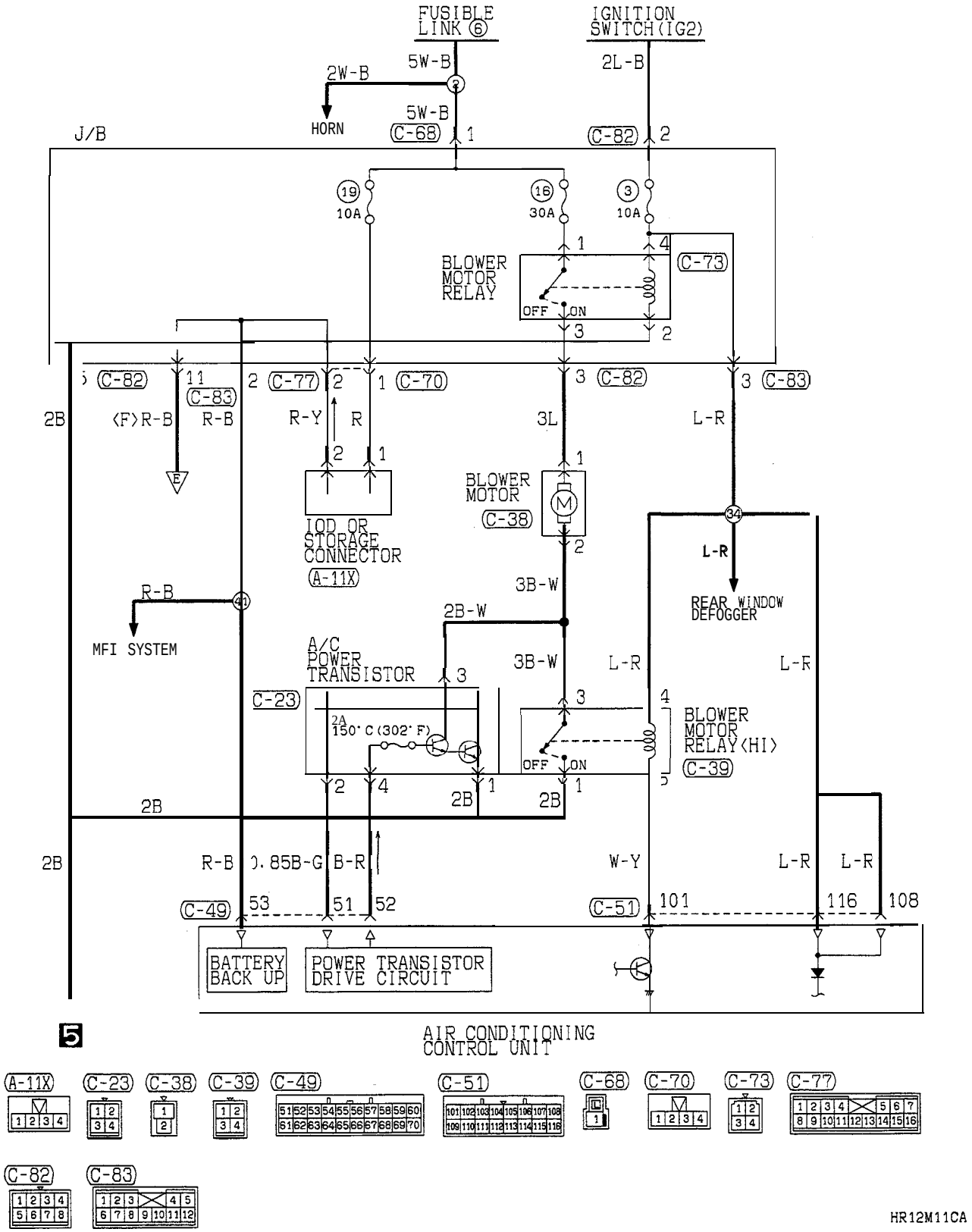
TSB Revision



HR12M11BB

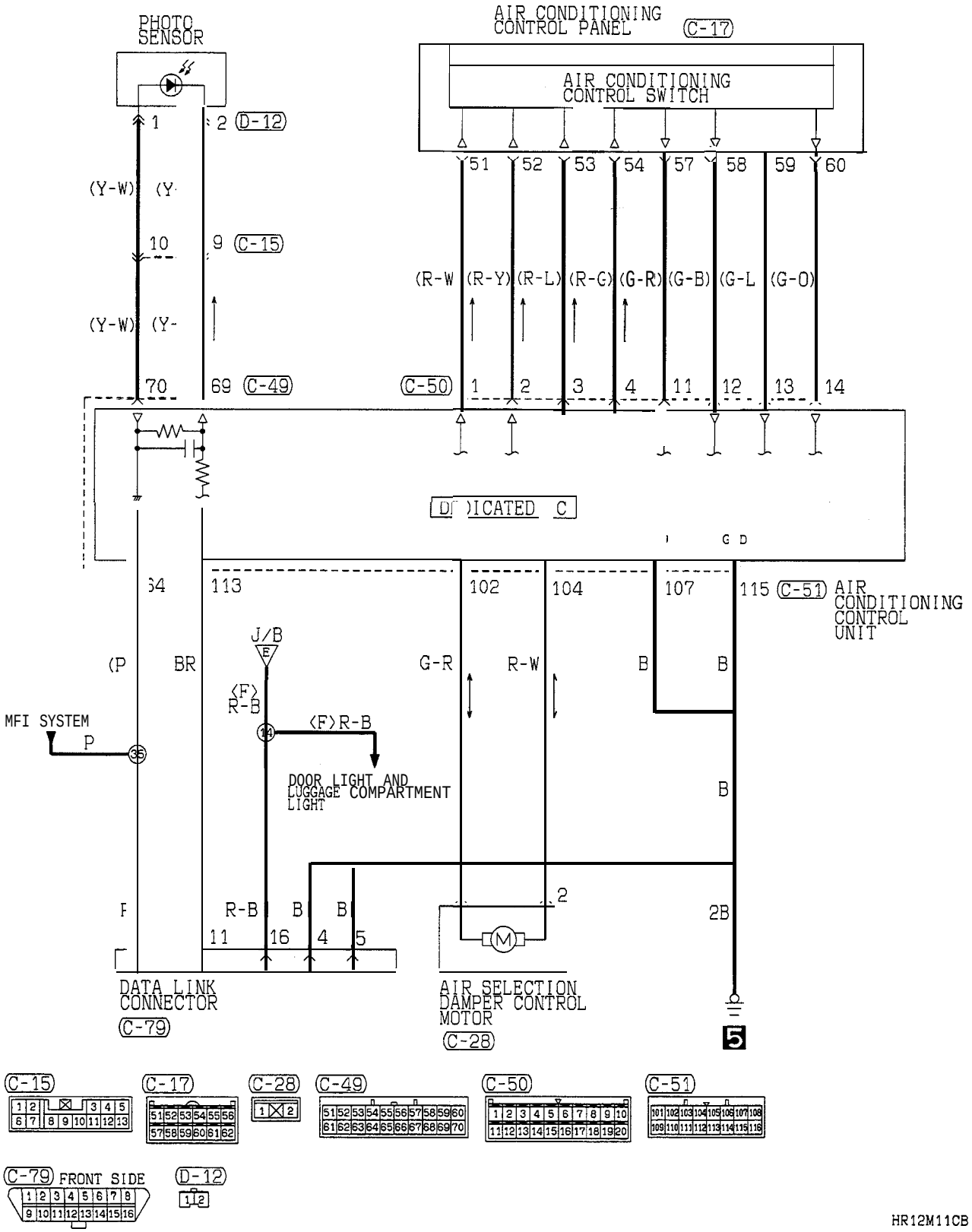
TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (FROM 1996 MODELS) (CONTINUED)



HR12M11CA

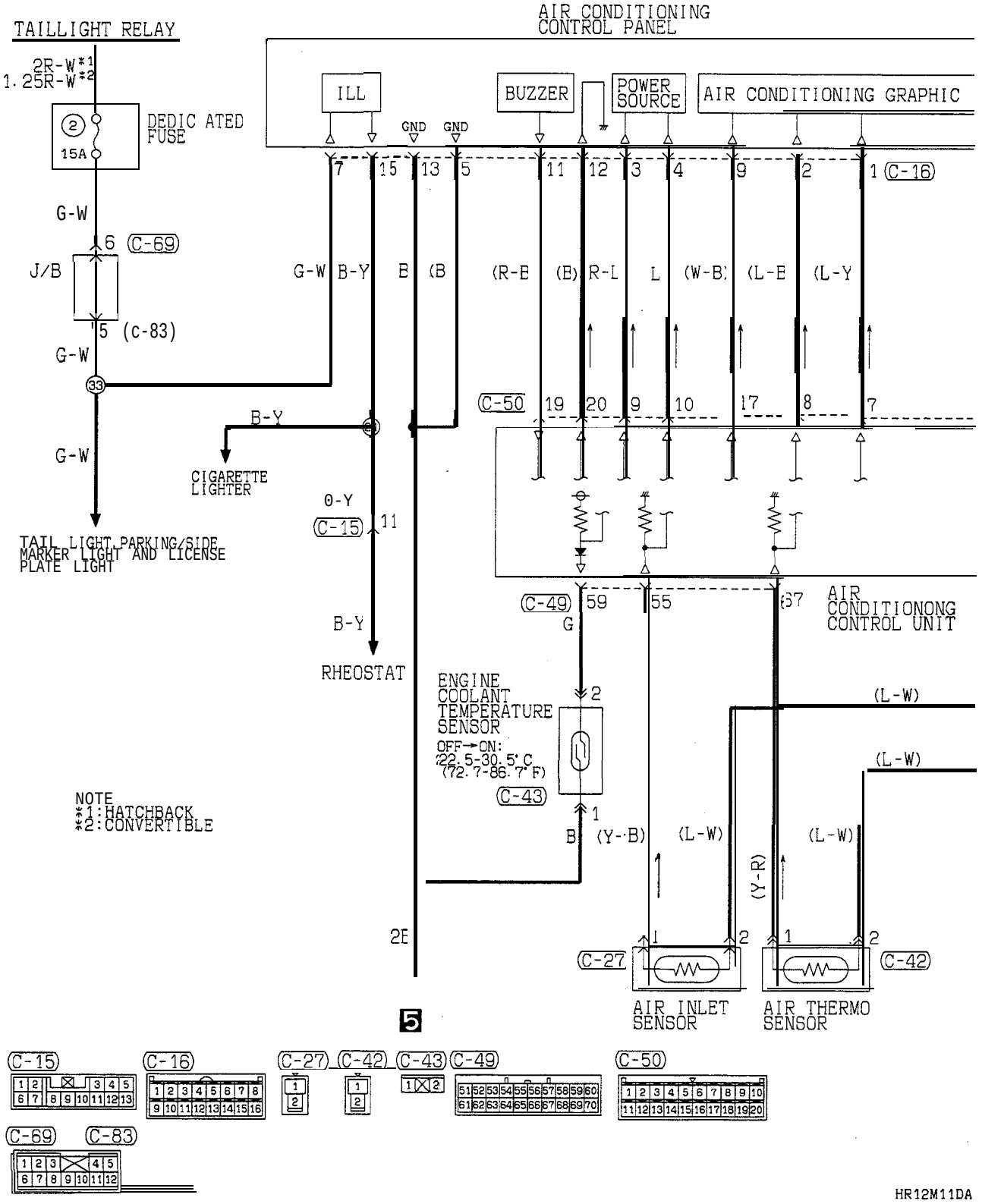
TSB Revision



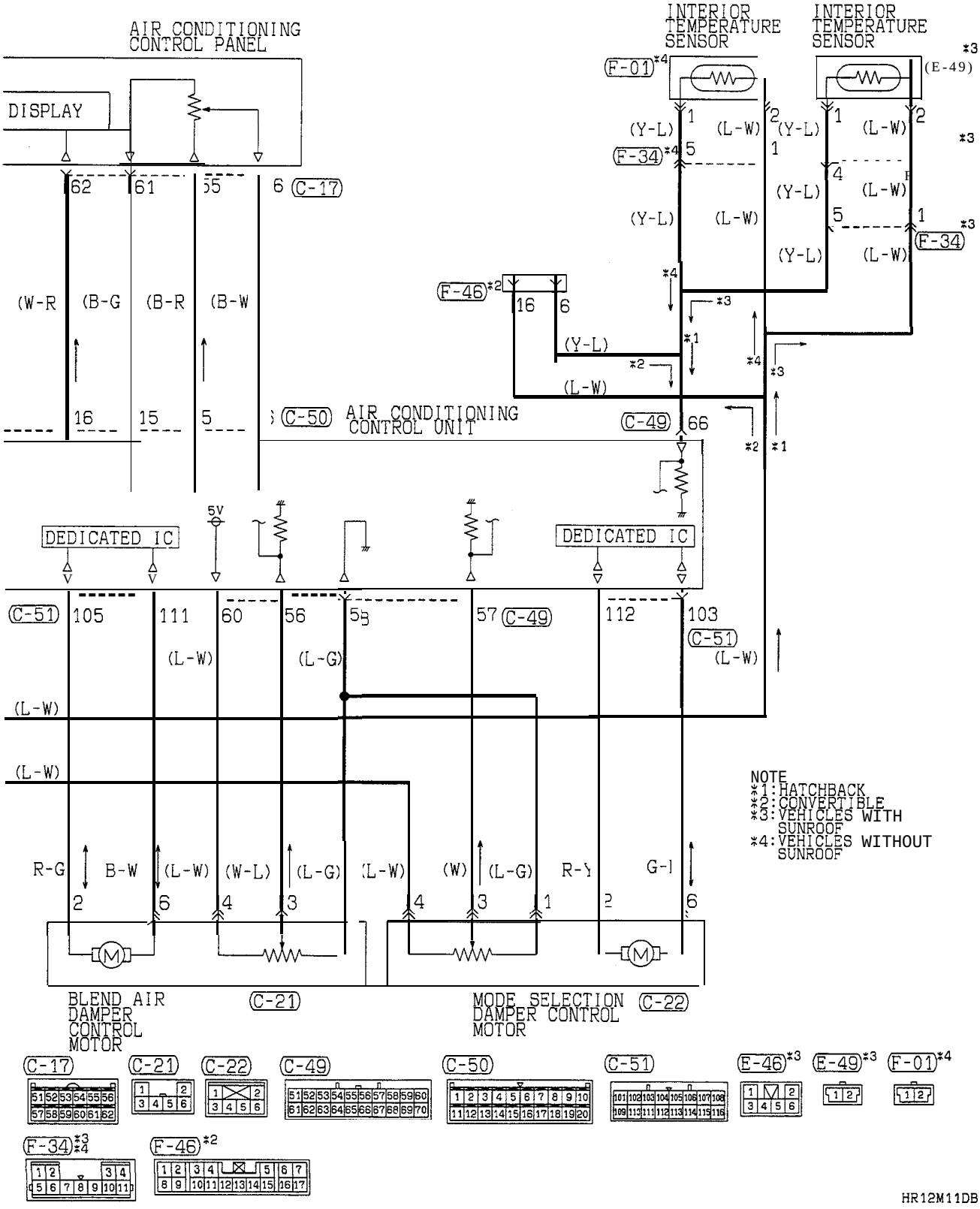
HR12M11CB

TSB Revision

FULL AUTO AIR CONDITIONING CIRCUIT (FROM 1996 MODELS) (CONTINUED)



TSB Revision



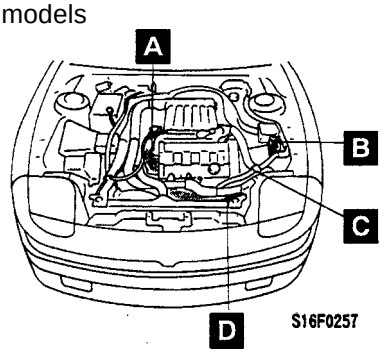
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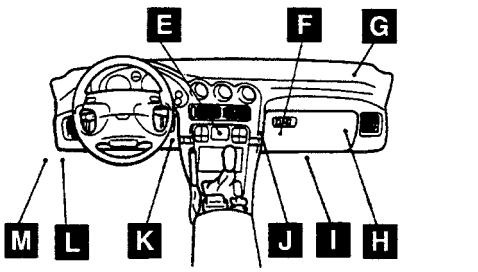
COMPONENT LOCATION

Name	Symbol	Name	Symbol
Air conditioning compressor lock controller	I	Dual pressure switch	C
Air conditioning control unit	E	Engine control module	E
Air-inlet sensor	H	Engine coolant temperature sensor	J
Air-thermo sensor	F	Engine coolant temperature switch*	A
Blower motor relay	L	Interior temperature sensor	N
Blower motor relay (HI)	I	Magnetic clutch relay	B
Condenser fan motor relay (HI)	B	Photo sensor	G
Condenser fan motor relay (LO)	B	Radiator fan motor control relay*	B
Data link connector (From 1994 models)		Revolution sensor	D
Data link connector (Up to 1993 models)		Thermostat*	D

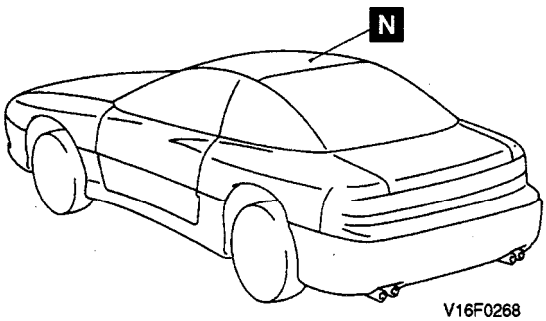
NOTE
• Up to 1993 models



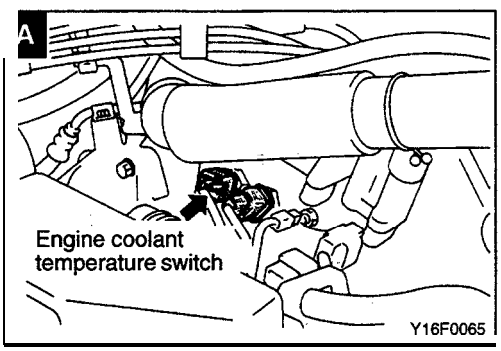
S16F0257



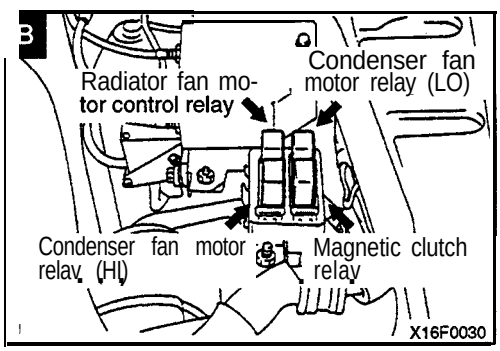
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V16F0268



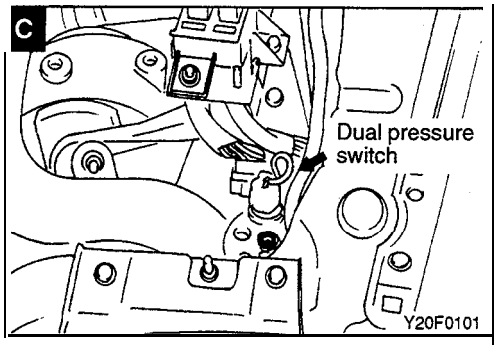
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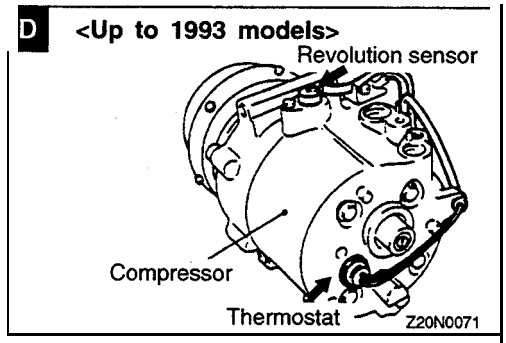
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TSB Revision

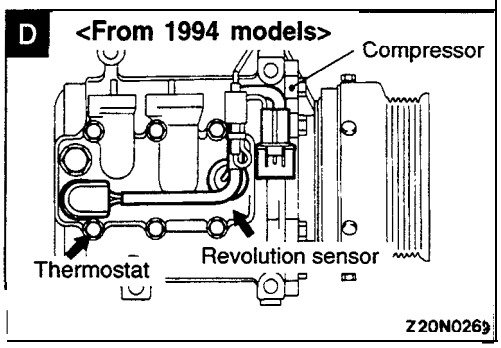
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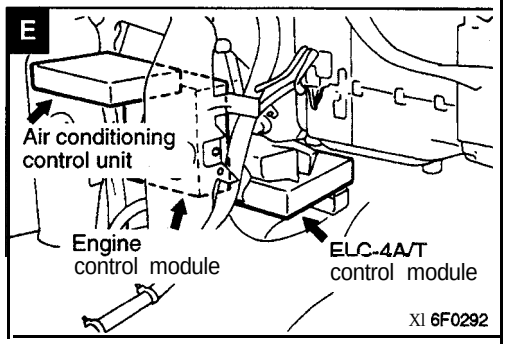
D <Up to 1993 models>



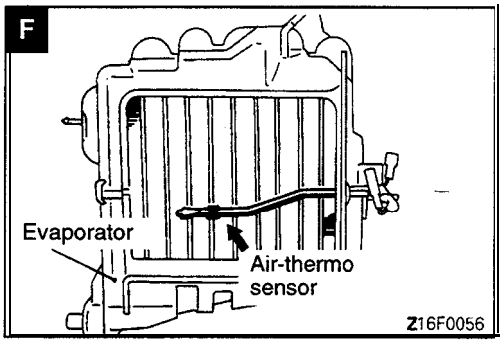
D <From 1994 models>



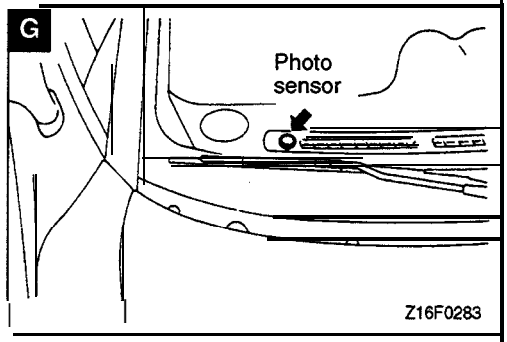
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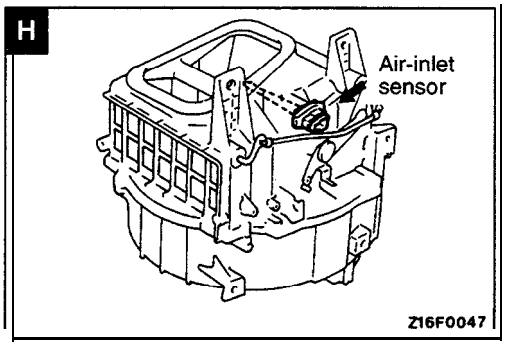
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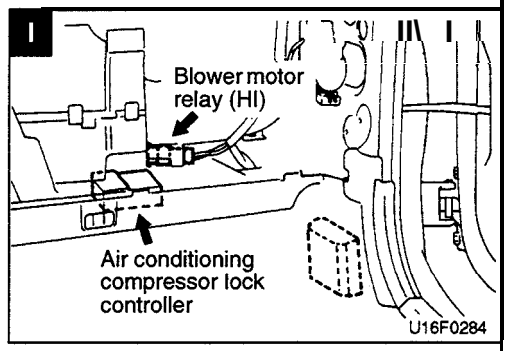
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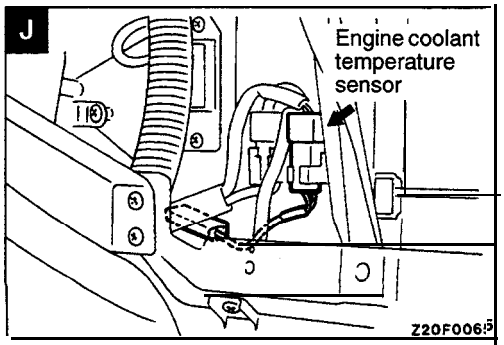
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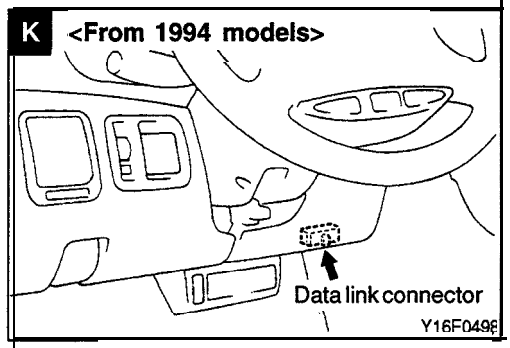
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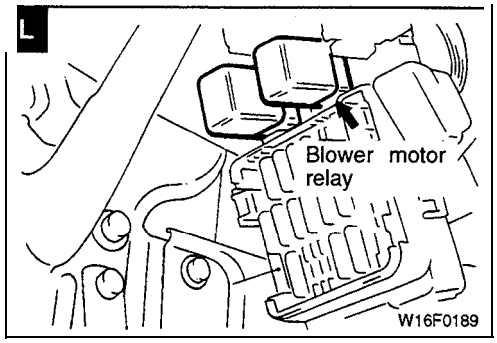
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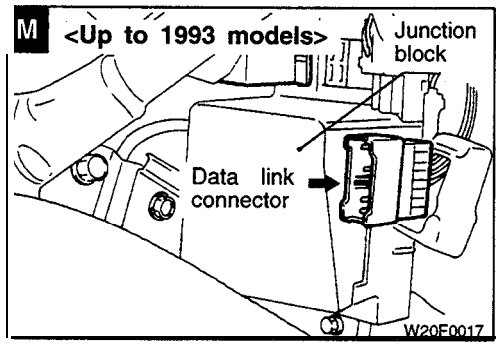


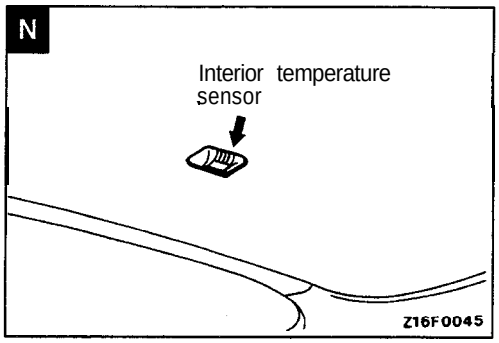
K <From 1994 models>



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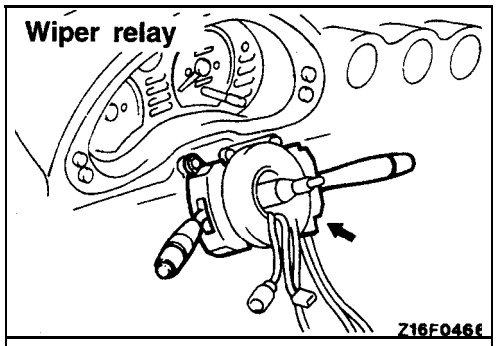


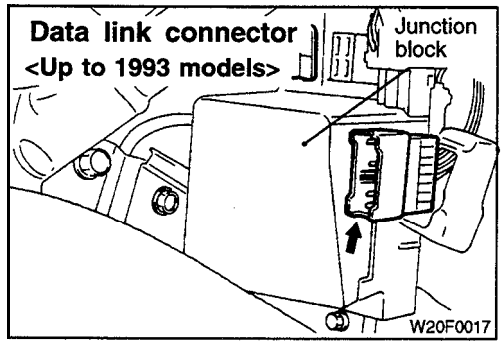


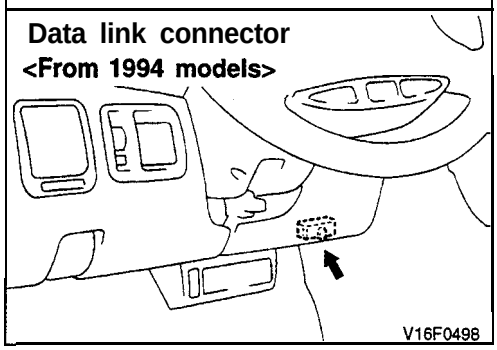


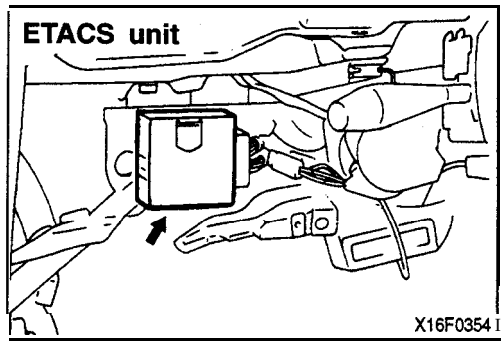
WINDSHIELD WIPER AND WASHER

COMPONENT LOCATION









TSB Revision

OPERATION

<Low-speed (and high-speed) wiper>

- When the wiper switch is placed in the LO position with the ignition switch in the ACC or ON position, wipers operate continuously at low speed.
- Placing the wiper switch in the HI position causes the wipers to operate at high speed.

<Intermittent wiper>

- If the wiper switch is turned to the INT position when the ignition switch is in the ON or ACC position, the voltage value from the intermittent variable volume switch is input to intermittent time detection circuit.
- The intermittent time detection circuit outputs an H signal at the intermittent time according to the set value of the intermittent variable volume switch and, via OR, turns the Tr on and off to operate the wiper.

<Auto wiper stop>

- When the wipe: switch is placed in the OFF position, the cam contacts of wiper motor causes current to flow through the auto wiper stop circuit, allowing the wiper blades to cycle before they reach to the stop position.

<Mist wiper>

- If the washer switch is on for 0.6 second or less when the ignition switch is at ON or ACC with the wiper switch turned off, the washer liquid will not be poured but transistor will be turned on to operate the wipers one time.

<Wiper linked with washer>

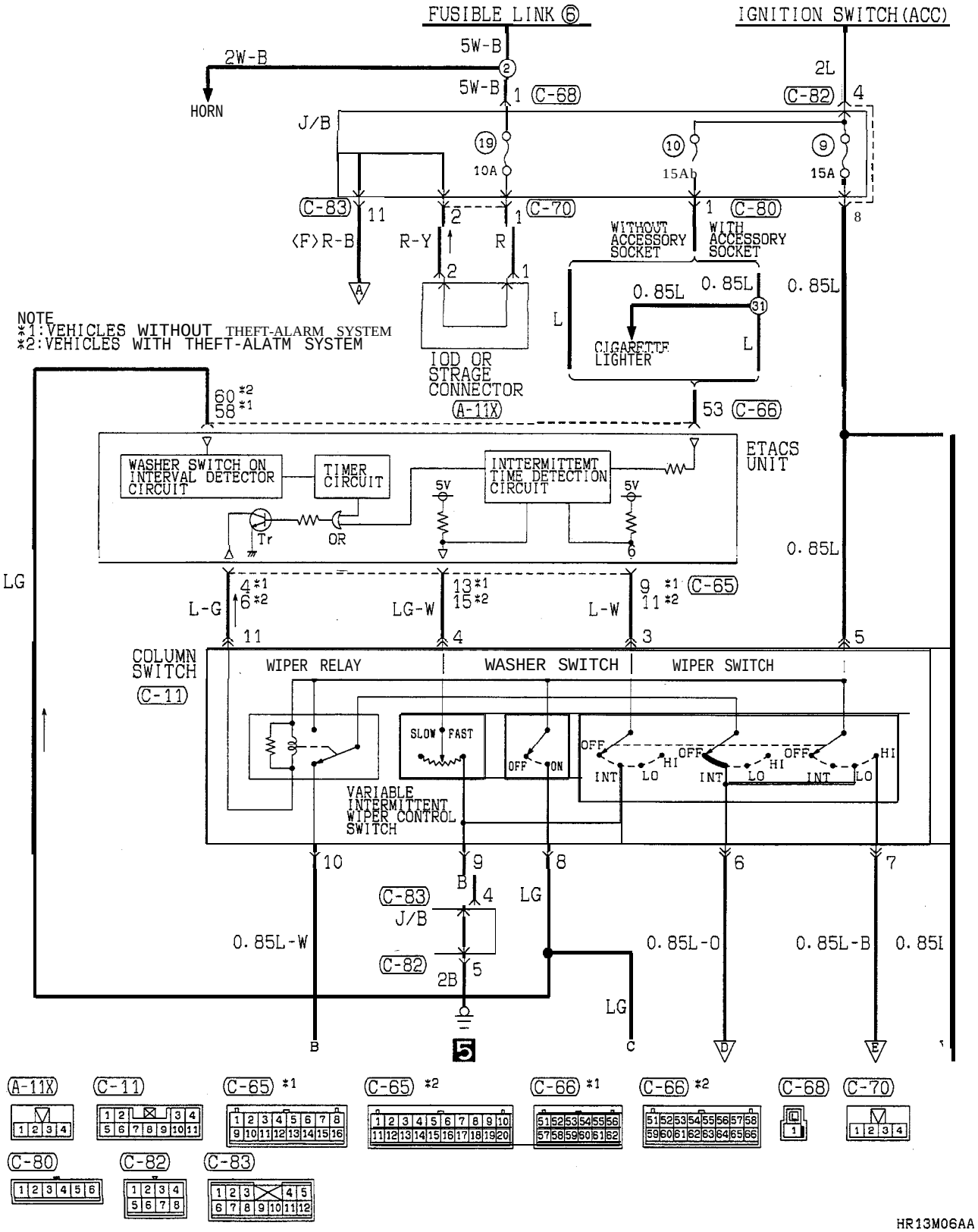
- If the washer switch is on for 0.6 second or more when the ignition switch is at ON or ACC with the wiper switch turned off, the washer liquid will be poured and the transistor will be turned on 0.6 second later to operate the wipers two or three times.

TROUBLESHOOTING HINTS

Phenomenon		Inspecting method
Wipers do not operate continuously	Washer does not operate.	• Check the multi-purpose fuse No. 9
	Washer operates.	• Check the wiper motor. (Refer to GROUP 51–Windshield Wiper and Washer.) • Check the column switch. (Refer to GROUP 51–Windshield Wiper and Washer.)
Low-speed (or high-speed) wiper operation only is inoperative.		• Check the column switch. (Refer to GROUP 51–Windshield Wiper and Washer.)
Wipers do not operate intermittently. (They operate continuously.)		• Check the wiper switch "INT" input signal. (Refer to GROUP 51–Troubleshooting.) • Check the column switch. (Refer to GROUP 51–Windshield Wiper and Washer.)
Wipers do not stop.		• Check the wiper switch "INT" input signal. (Refer to GROUP 51–Troubleshooting.) • Check the column switch. (Refer to GROUP 51–Windshield Wiper and Washer.) • Check the wiper motor. (Refer to GROUP 51–Windshield Wiper and Washer.)
The intermittent time will not vary even if the variable intermittent wiper control switch is operated.		• Check the variable intermittent wiper control switch input signal. (Refer to GROUP S-Troubleshooting.) • Check the column switch. (Refer to GROUP 51–Windshield Wiper and Washer.)
Even if the washer switch is on for 0.6 second or more,. the washer will not operate.	The wipers linked with the washer operate.	• Check the washer motor. (Refer to GROUP 51–Windshield Wiper and Washer.) • Check the washer nozzle and washer tube.
	The wipers linked with the washer do not operate.	• Check the washer switch input signal. • Check the washer switch. (Refer to GROUP 51–Windshield Wiper and Washer.)

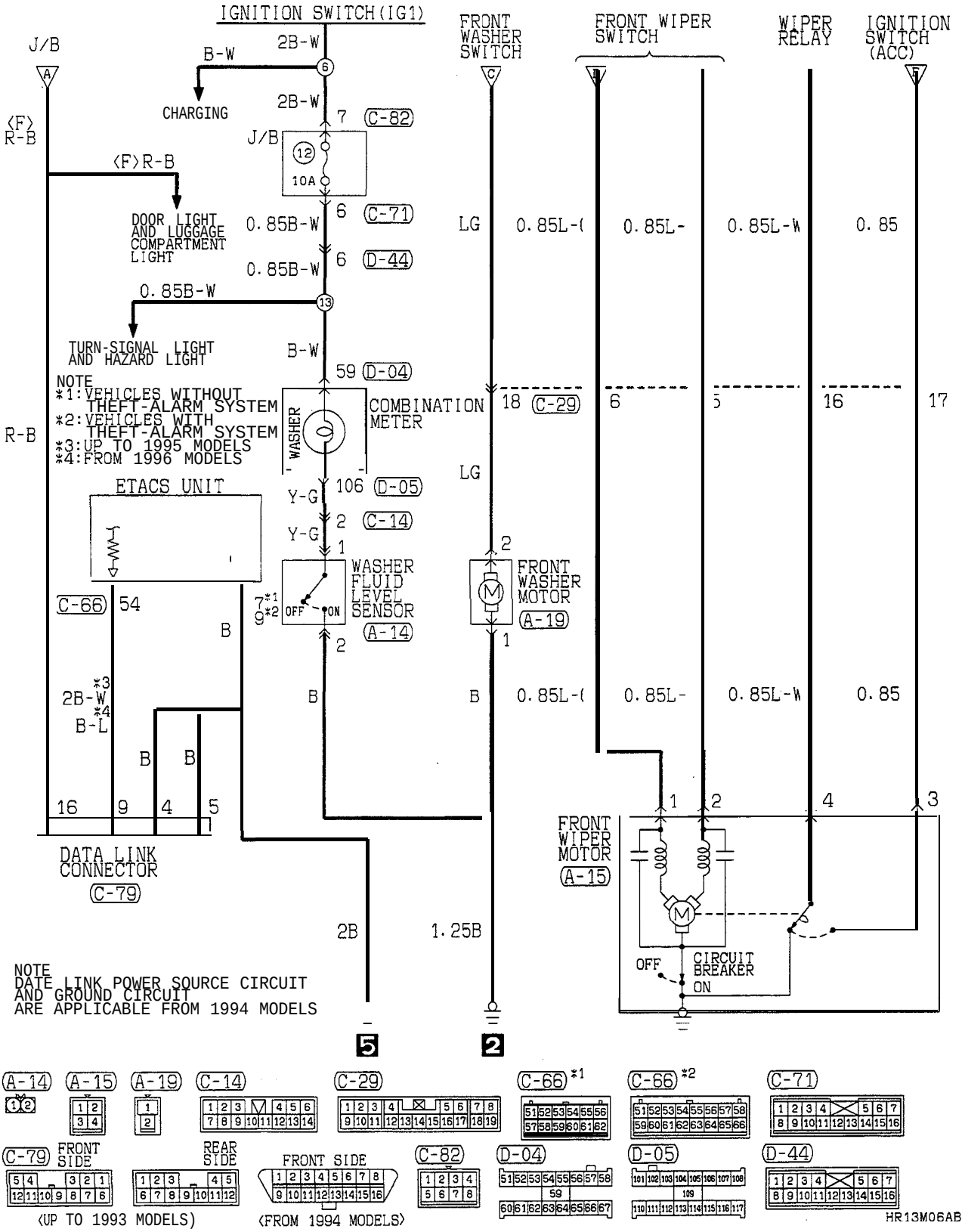
TSB Revision

WINDSHIELD WIPER AND WASHER CIRCUIT



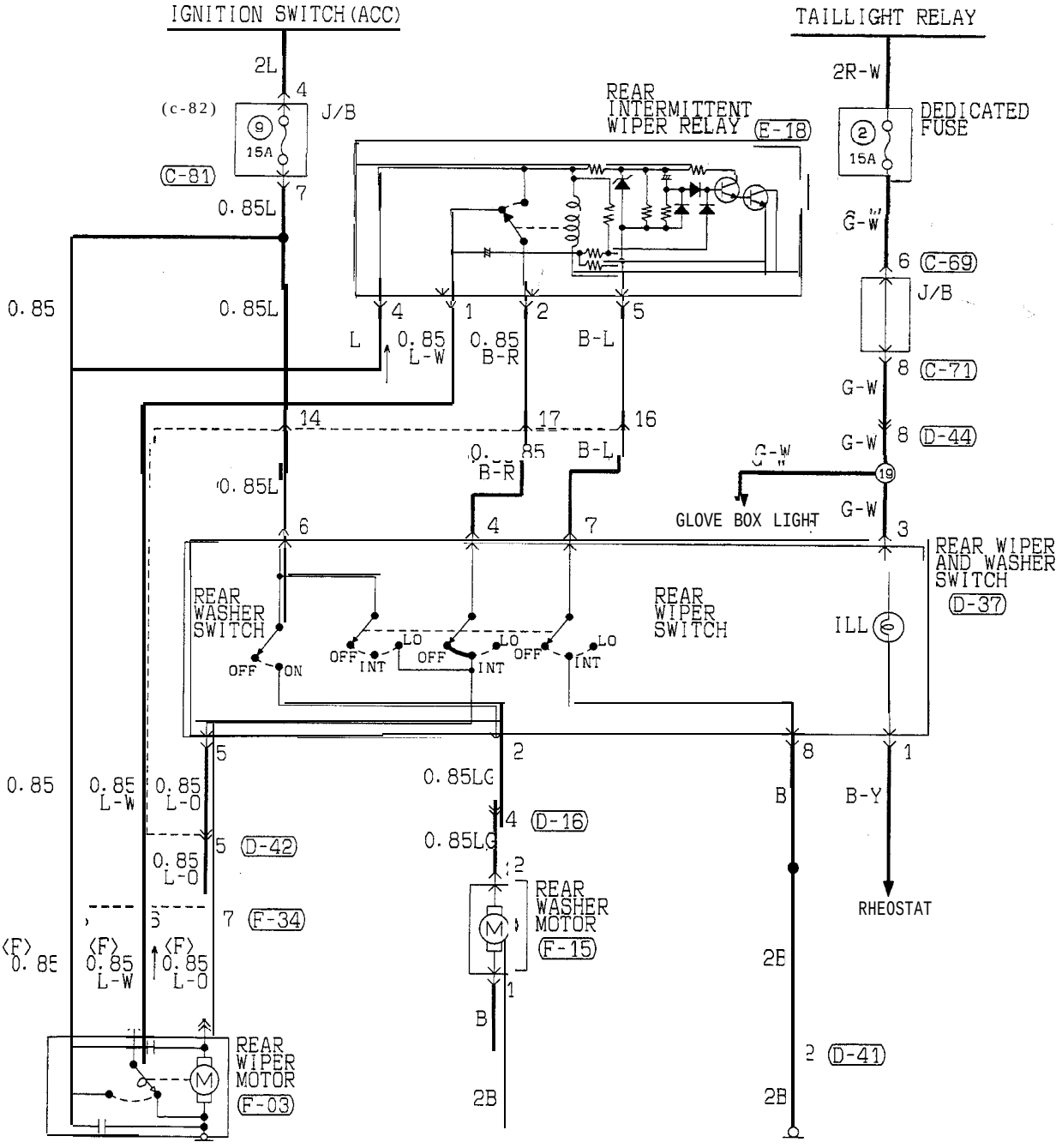
HR13M06AA

TSB Revision

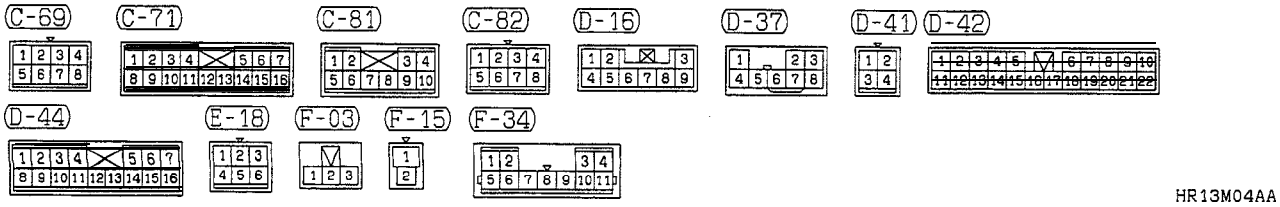


TSB Revision

REAR WIPER AND WASHER CIRCUIT



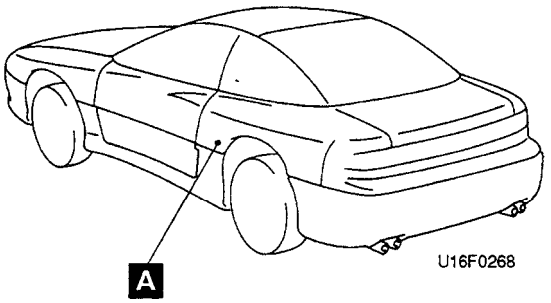
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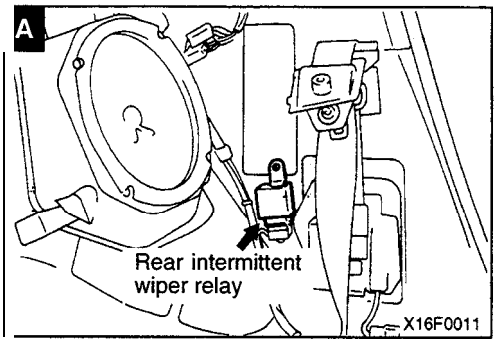


HR13M04AA

TSB Revision

COMPONENT LOCATION





OPERATION

<Low-speed wiper>

- When the rear wiper switch is placed in the ON position with the ignition switch in the ACC or ON position, wipers operate continuously at low speed.

<Auto wiper stop>

- When the rear wiper switch is placed in the OFF position, the cam contains of wiper motor causes current to flow through the auto wiper stop circuit, allowing the wiper blades to cycle before they reach to the stop positions.

<Intermittent wiper>

- When the rear wiper switch is placed in the INT position with the ignition switch in ACC or ON position, the rear intermittent wiper relay is energized causing the rear intermittent wiper relay contacts to close and open repeatedly.
- When the contacts are closed, the wiper motor is energized.
- When the rear wiper motor is energized, the rear intermittent wiper relay contacts open; however, the cam contacts keep the rear wiper motor energized until the wiper blades return to their stop position.

TROUBLESHOOTING HINTS

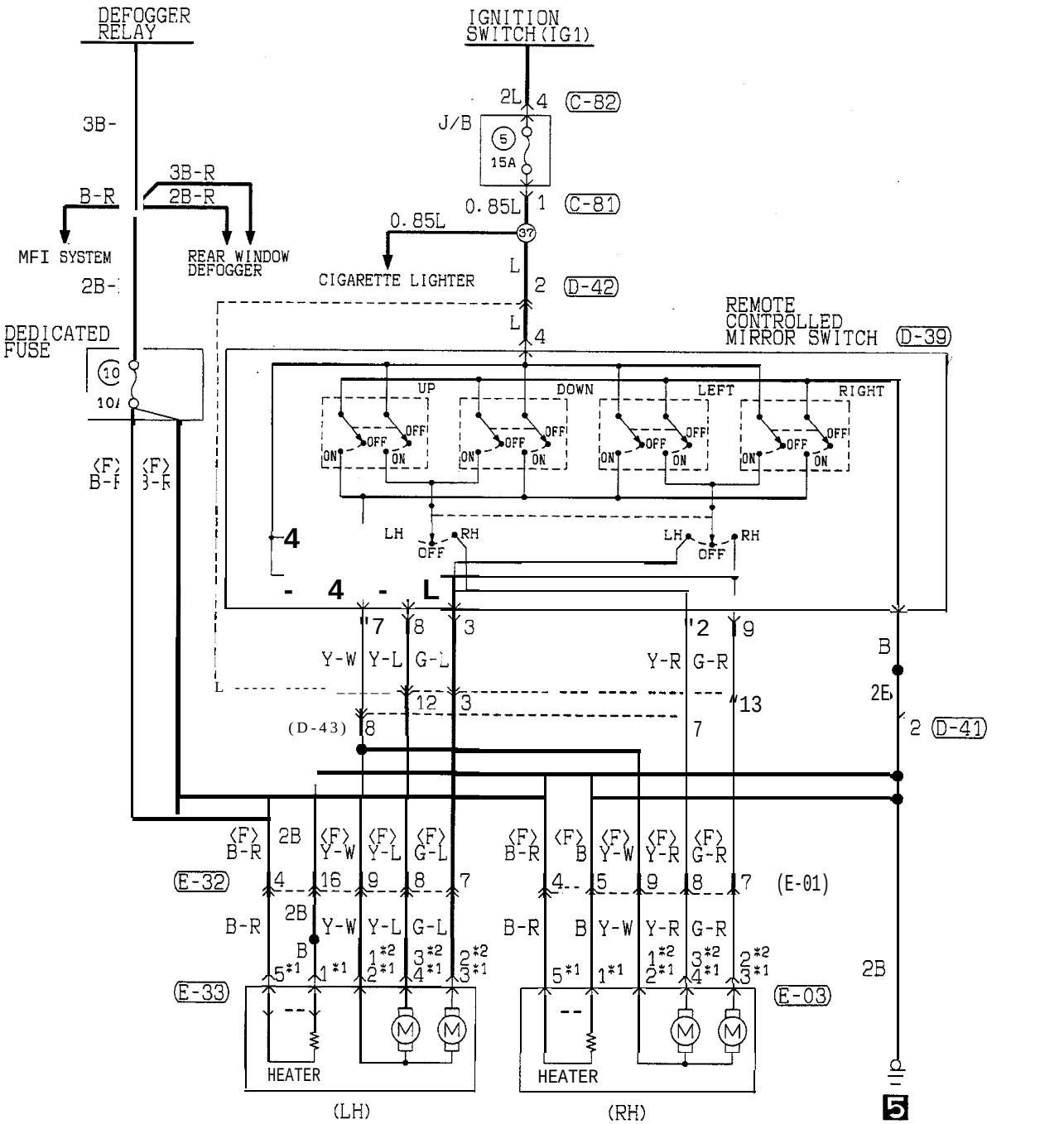
1. Wipers do not operate.
   (1) Washer is not operative, either.
   - Check multi-purpose fuse No. 9.
   - Check ground.
2. Low-speed wiper operation only is inoperative.
   - Check wiper switch.
3. Wipers do not stop.
   - Check wiper motor.
   - Check rear intermittent wiper relay.
   - Check rear wiper switch.
4. Intermittent wiper operation is inoperative.
   - Check terminal voltage of the rear intermittent wiper relay energized. (Refer to GROUP 51–Windshield Wiper and Washer for information concerning the installation position of the intermittent wiper relay.)

Terminal No.	Voltage	Check
2	0V	Rear intermittent wiper relay or rear wiper switch
	12V	Rear intermittent wiper relay
	0 ↔ 12V (alternating)	–(Normal)

5. Washer is inoperative.
   - Check washer motor.
   - Check washer switch.

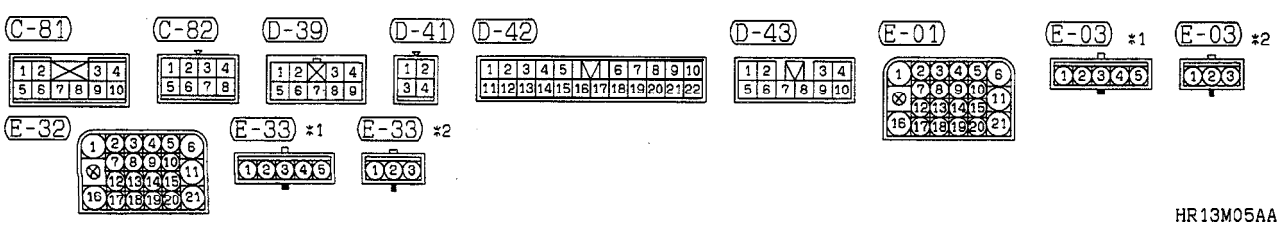
TSB Revision

REMOTE CONTROLLED MIRROR CIRCUIT



REMOTE CONTROLLED MIRROR

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



HR13M05AA

TSB Revision

OPERATION

- When teh remote controlled mirror switch is operated while the ignition key is in "ACC" or "ON" position, current flows through fuse No. 5 remote controlled mirror switch, remote controlled mirror, remote controlled mirror switch, and ground, causing the mirror to move.

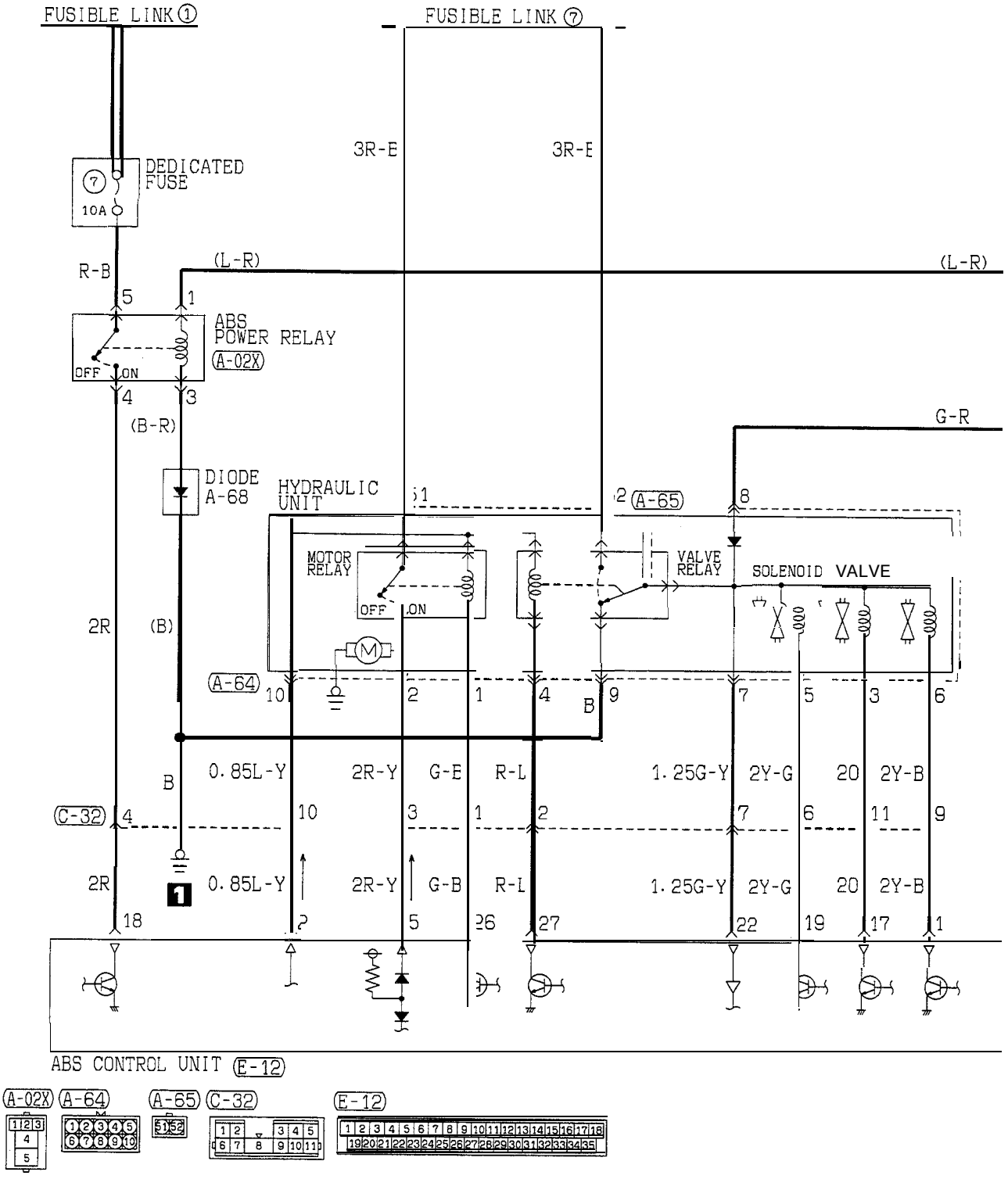
TROUBLESHOOTING HINTS

Neither right nor left mirror operates

1) Also cigarette lighter does not operate
   - Check multi-prpose fuse No. 5.
2) Cigarette lighter operates
   - Check remote controlled mirror switch.

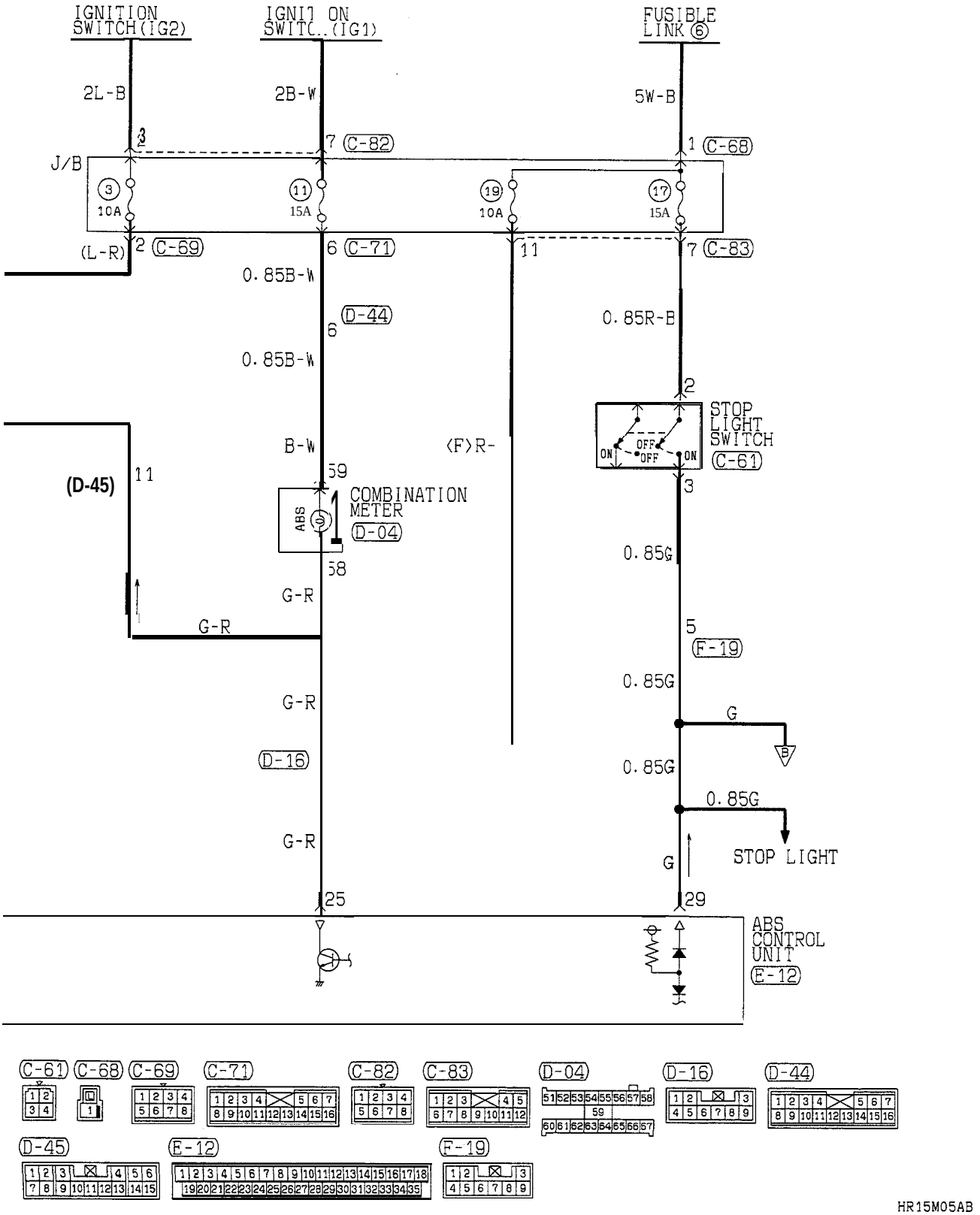
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (UP TO OCTOBER, 1993)

<FWD>



HR15M05AA

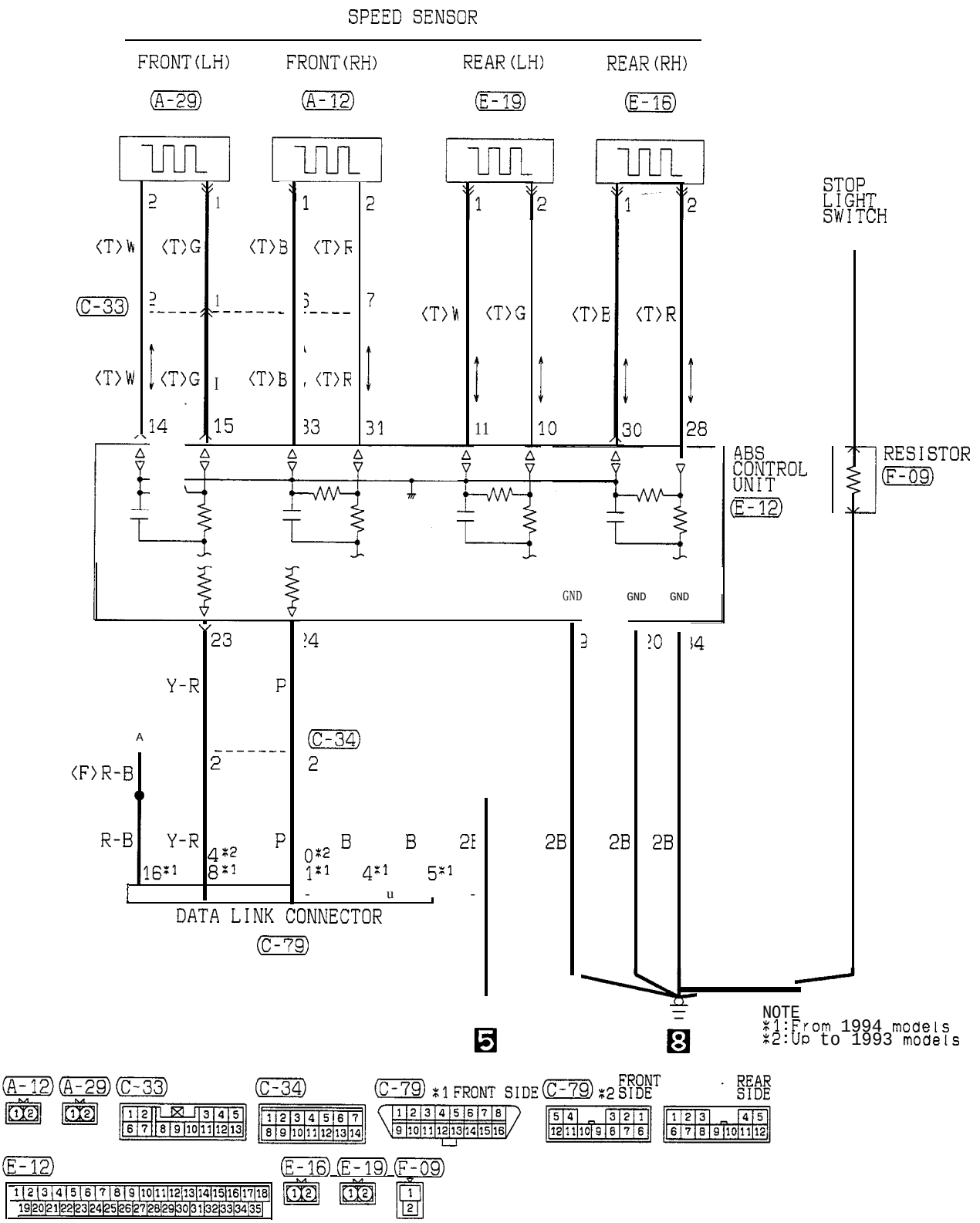
TSB Revision



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TSB Revision

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (UP TO OCTOBER, 1993) <FWD> (CONTINUED)



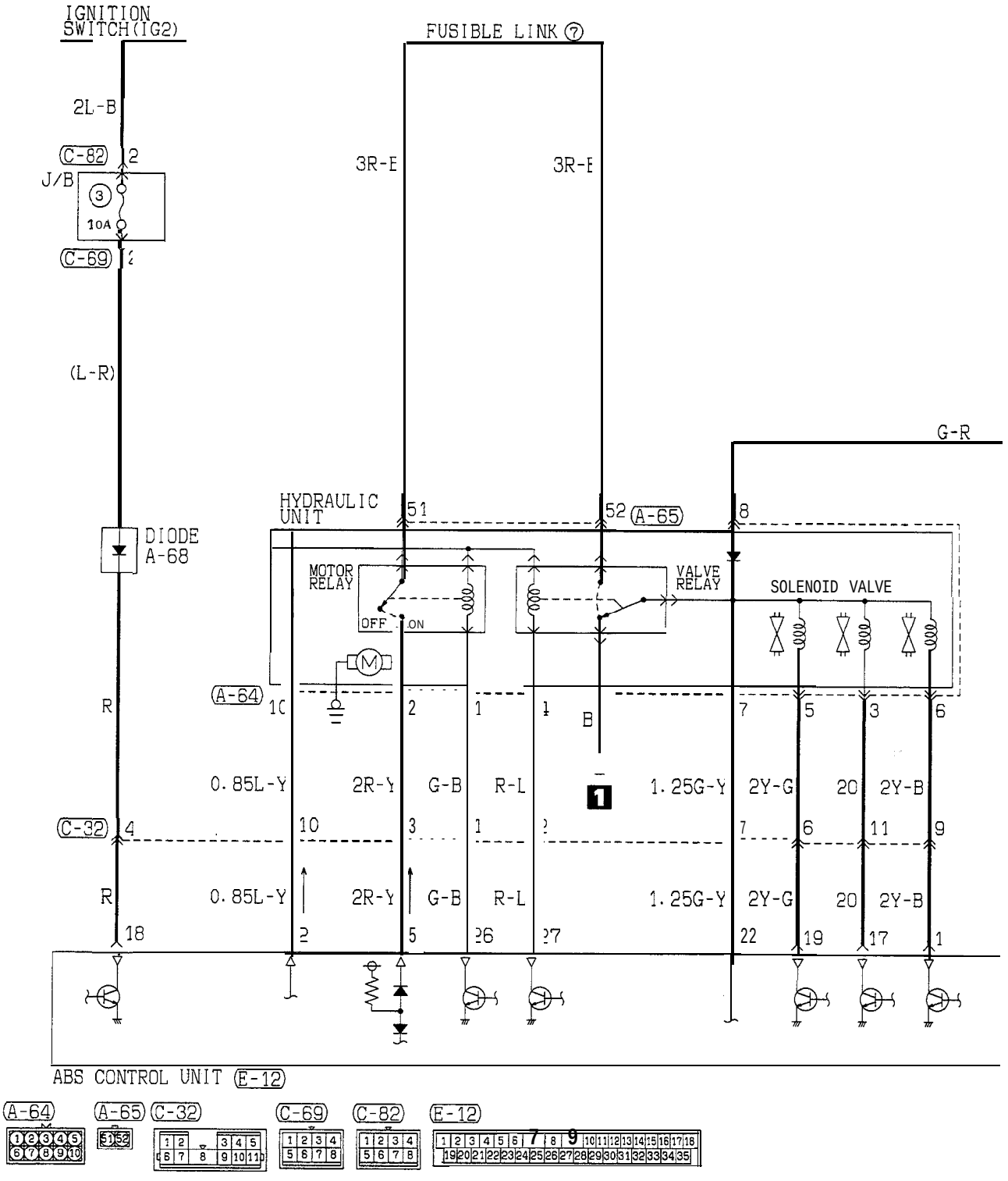
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TSB Revision

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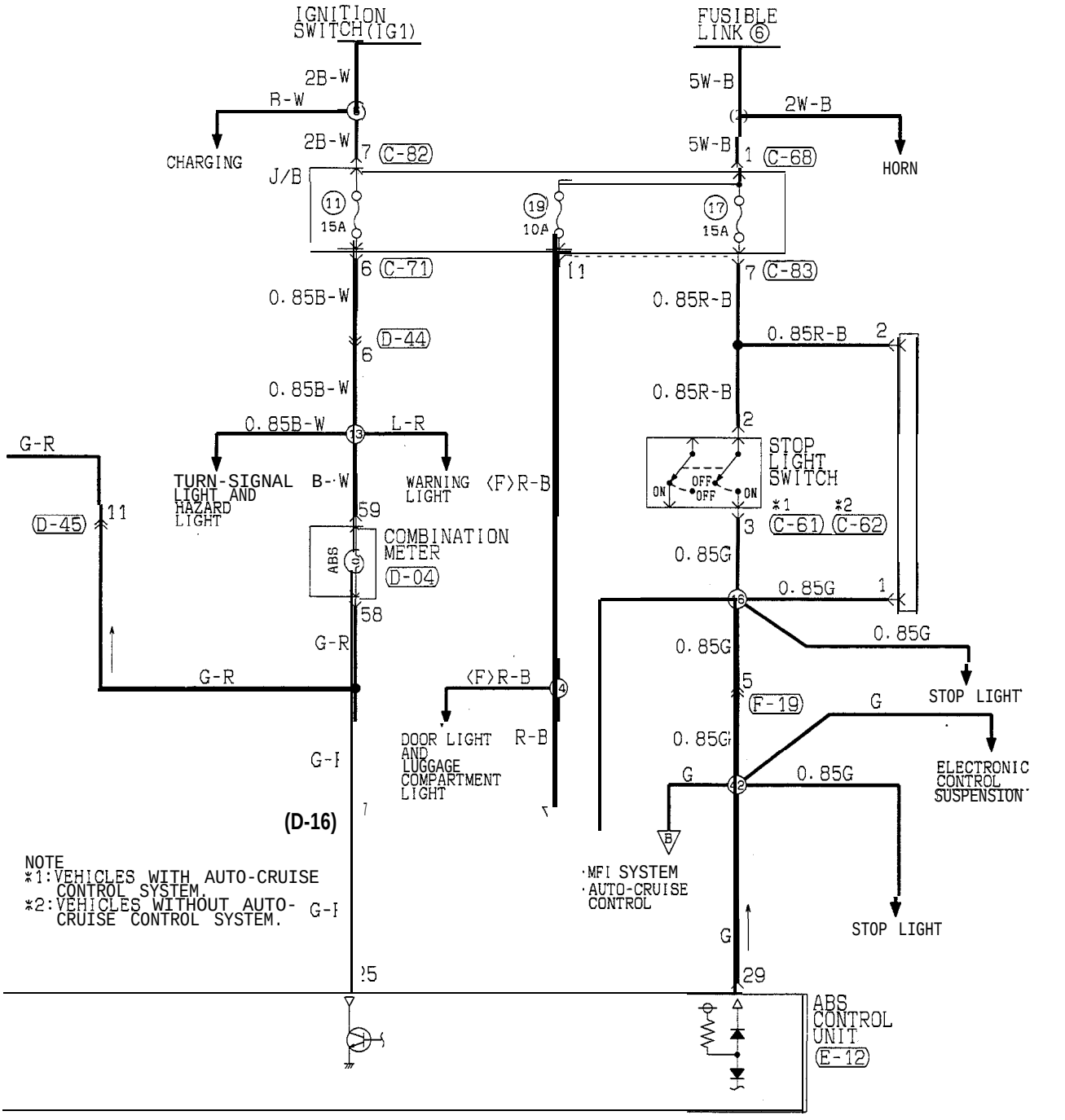
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (FROM NOVEMBER, 1993)

<FWD> (HATCHBACK)



HR15M06AA

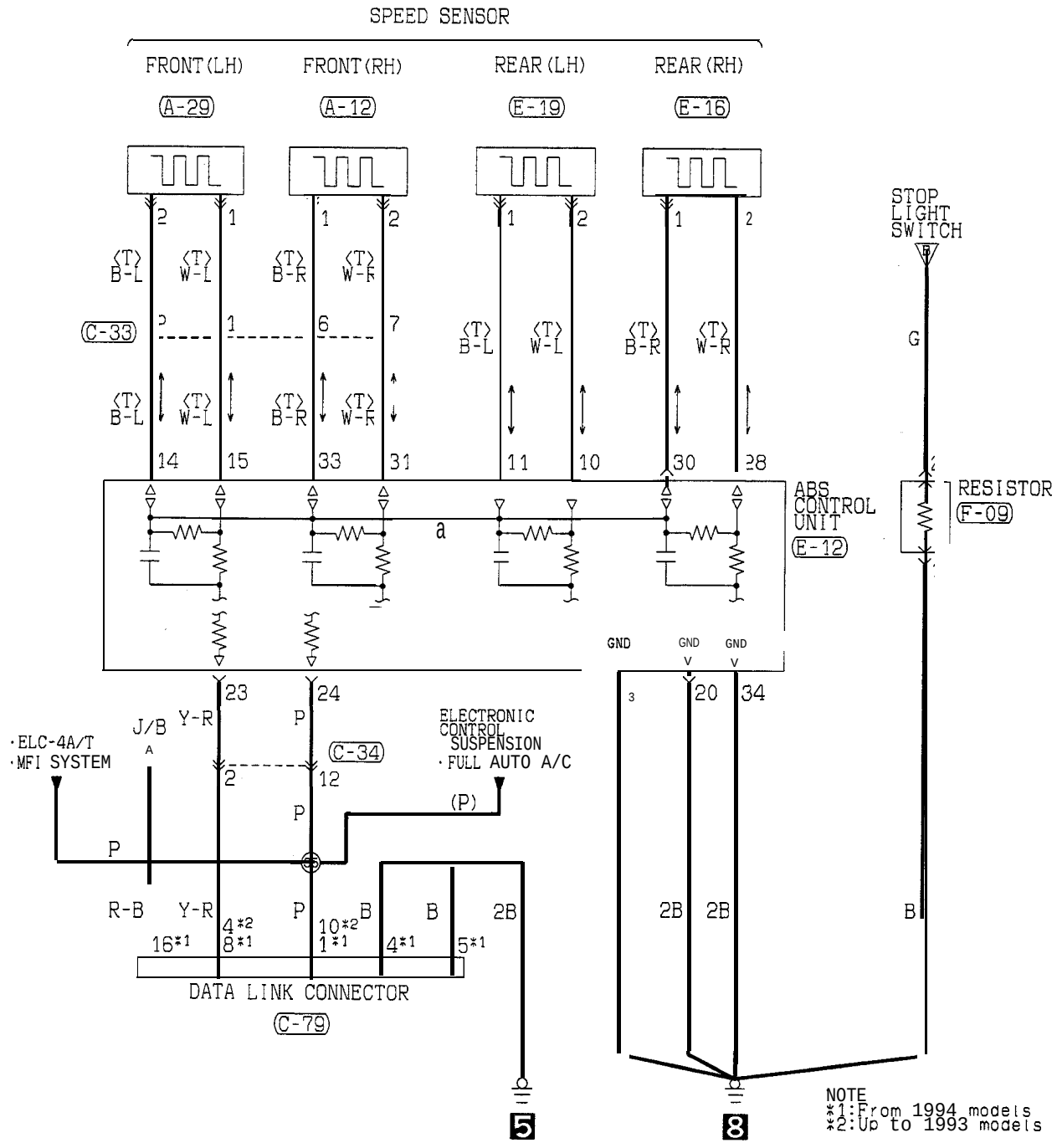
TSB Revision

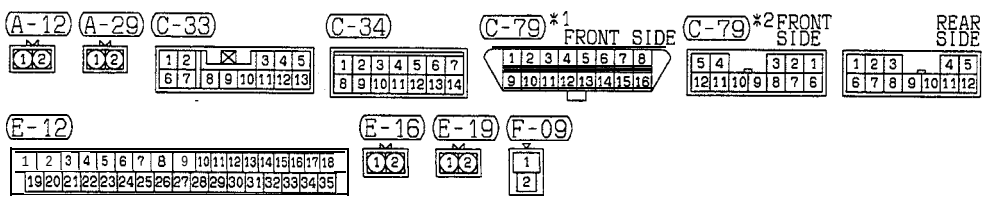


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TSB Revision

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (FROM NOVEMBER, 1993) <FWD> (HATCHBACK) (CONTINUED)





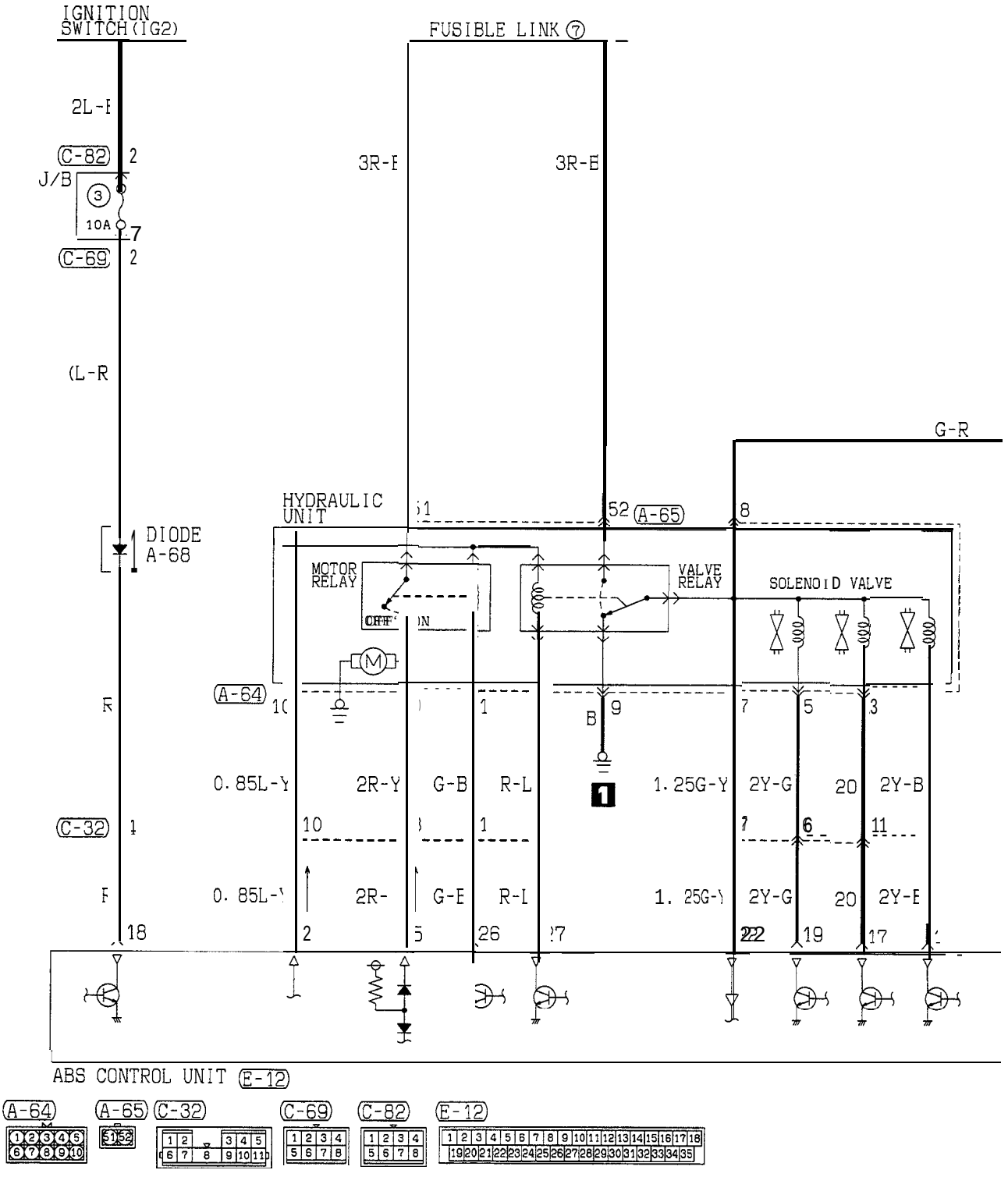
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TSB Revision

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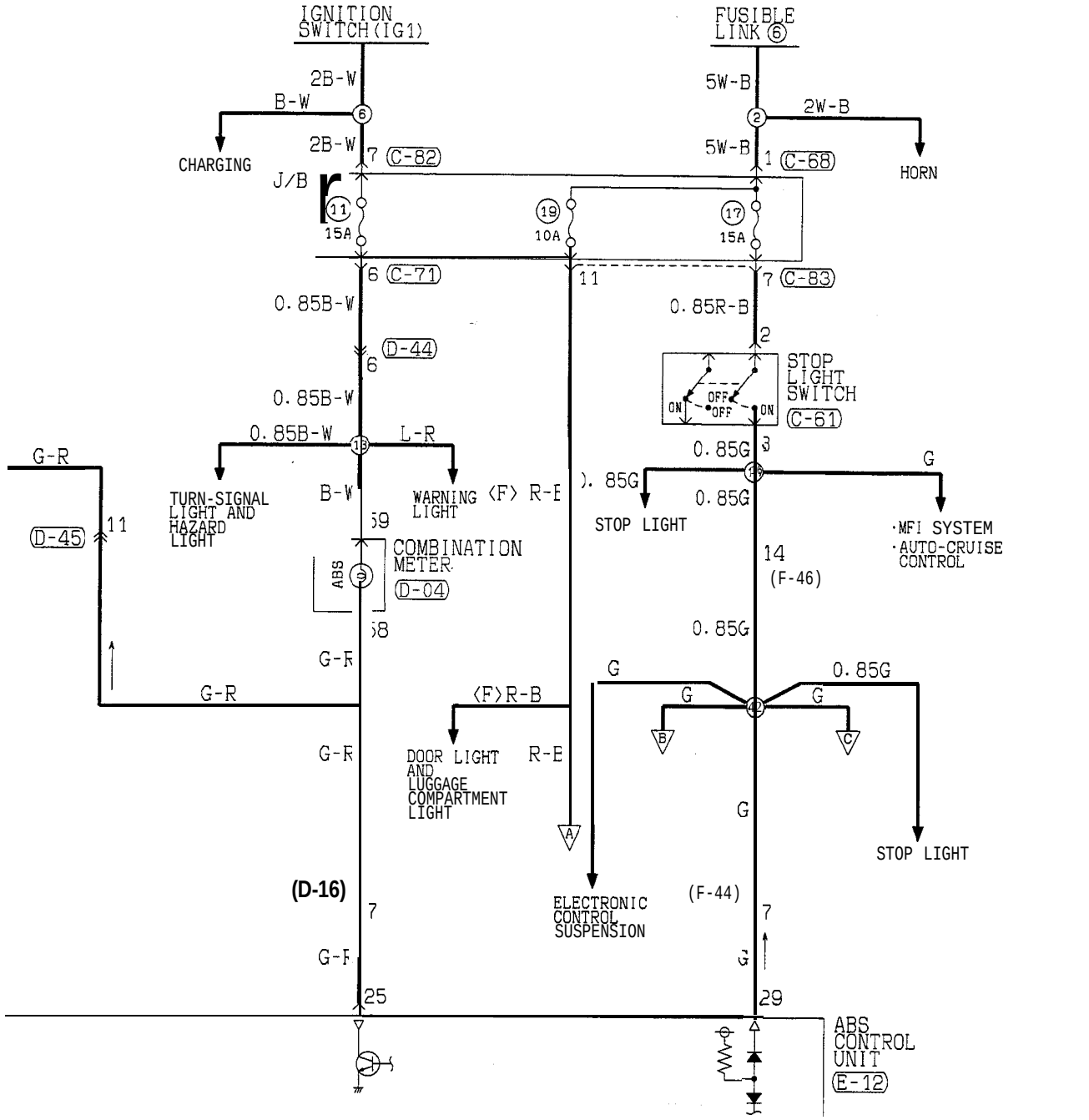
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (1995 MODELS)

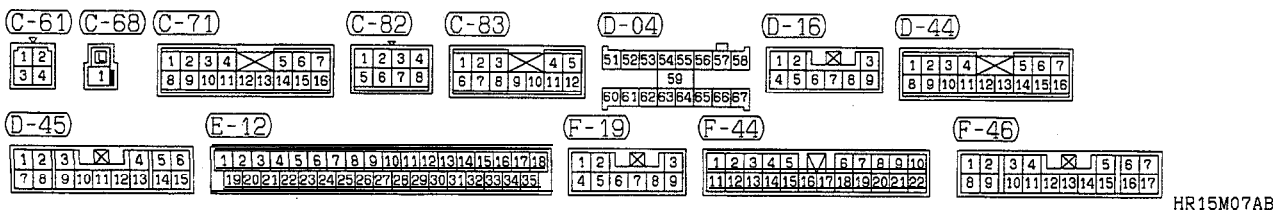
<FWD> (CONVERTIBLE)



HR15M07AA

TSB Revision

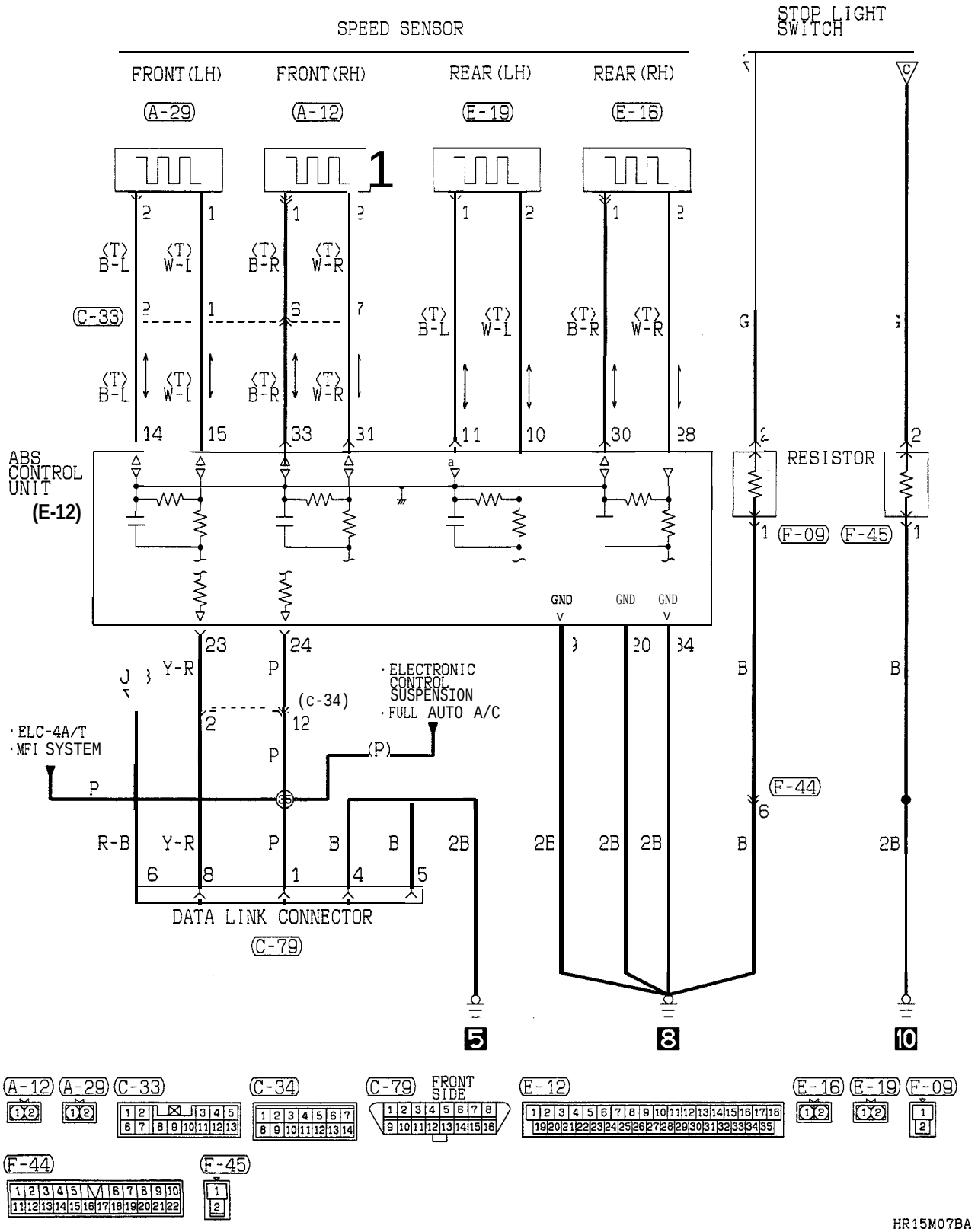




HR15M07AB

TSB Revision

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (1995 MODELS) <FWD> (CONVERTIBLE) (CONTINUED)



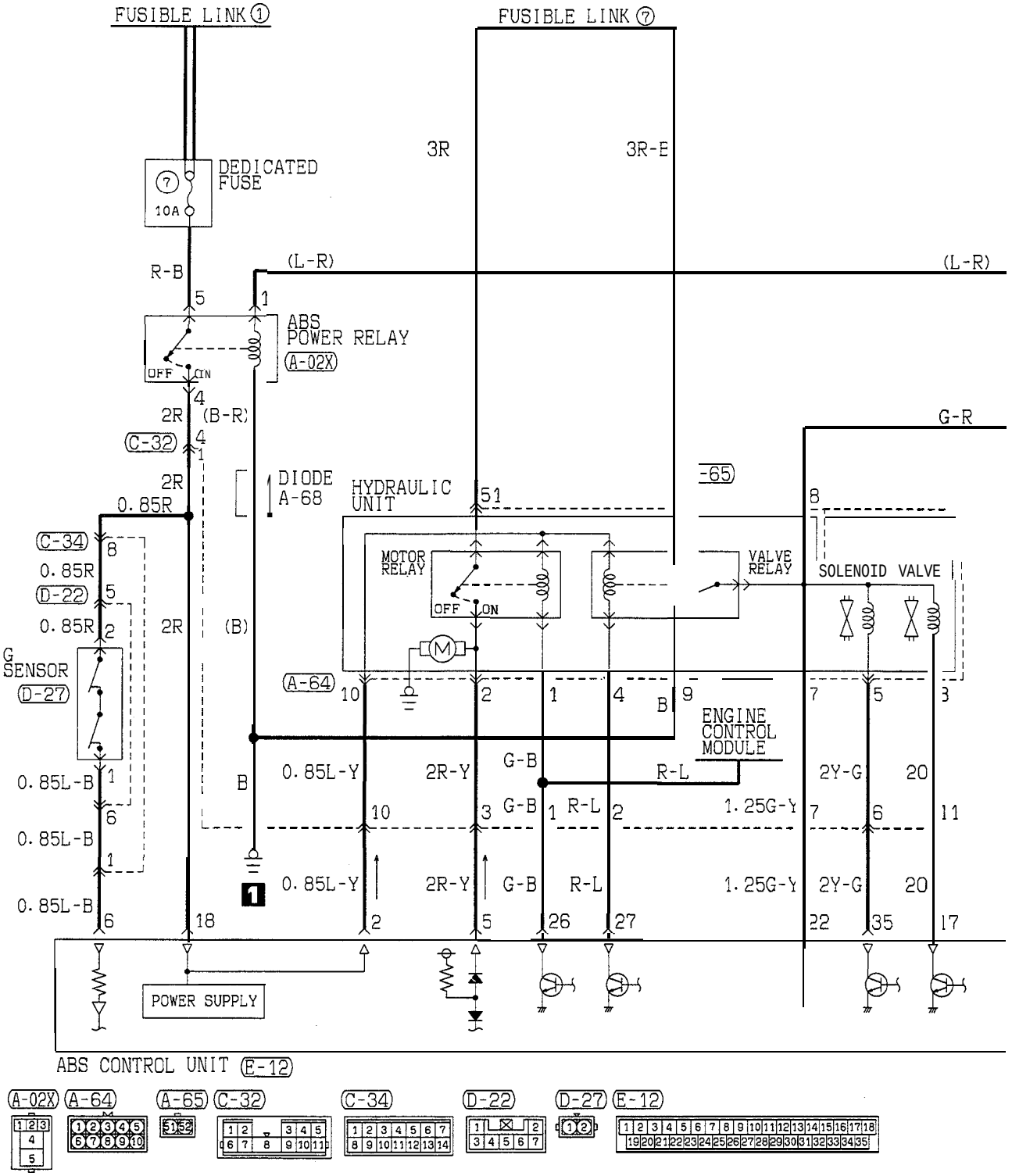
HR15M07BA

TSB Revision

NOTES

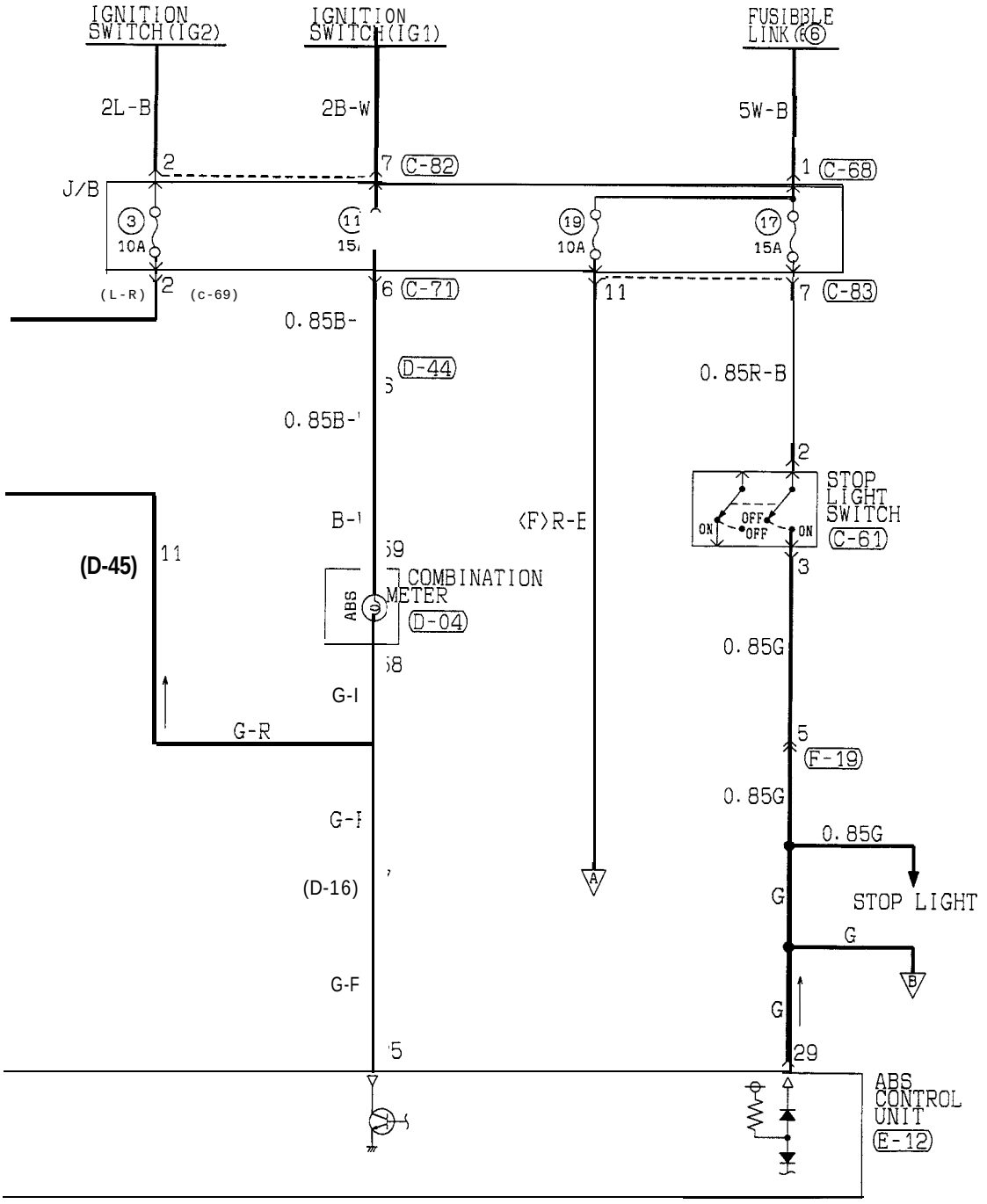
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (UP TO OCTOBER, 1993)

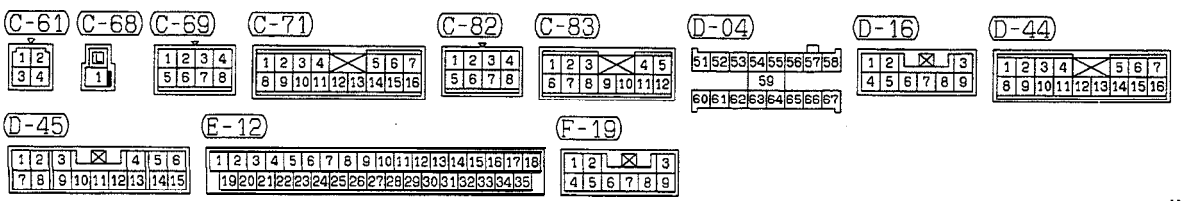
<AWD>



HR15M08AA

TSB Revision

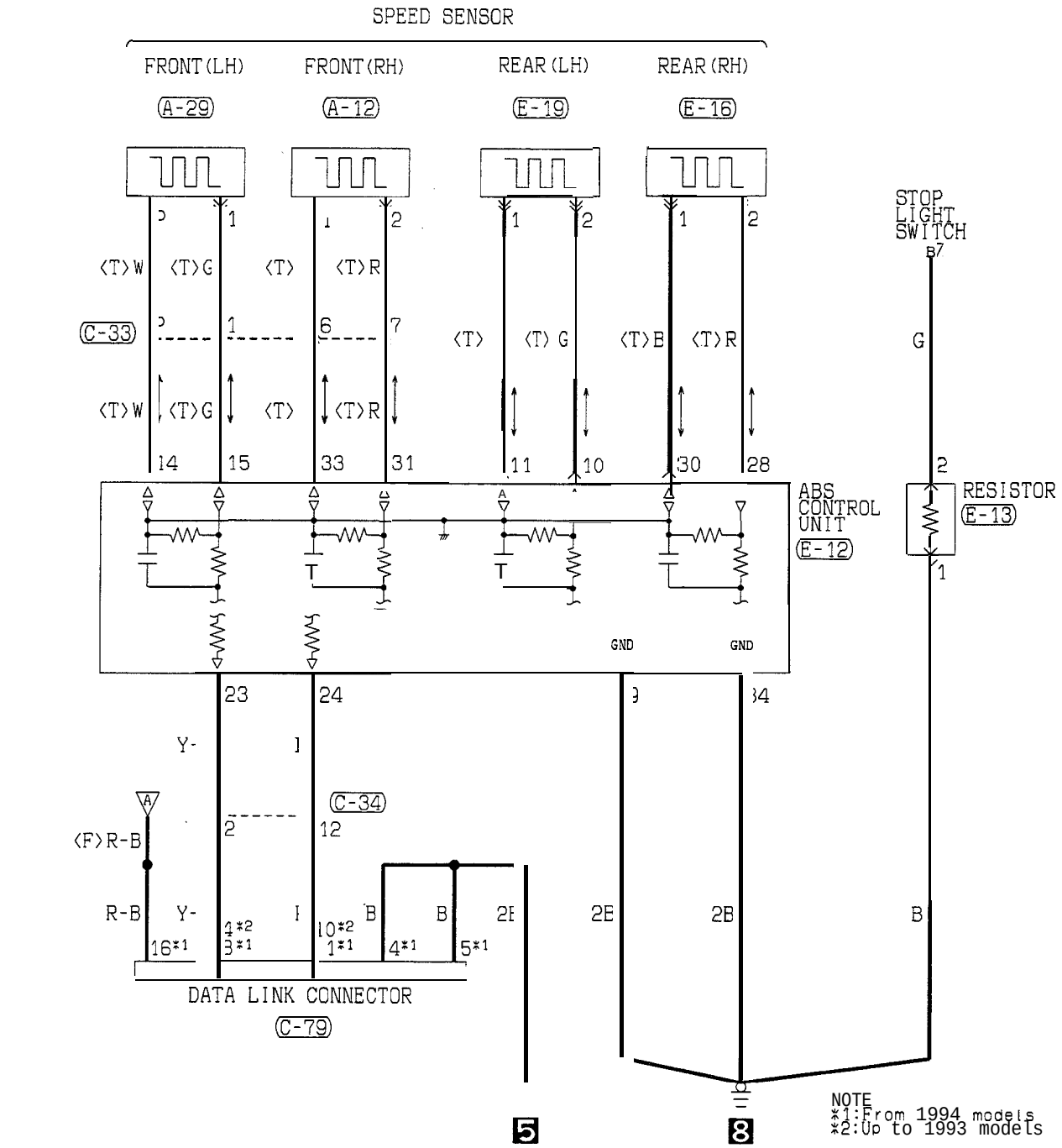


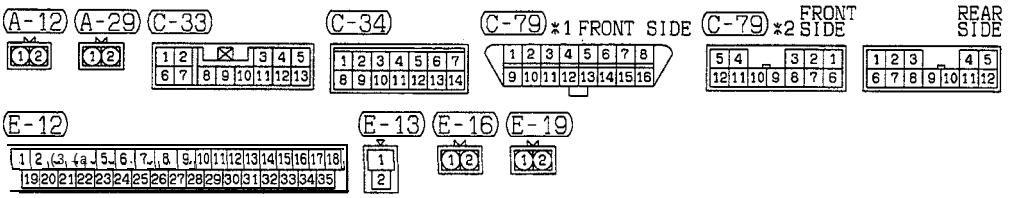


HR15M08AB

TSB Revision

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (UP TO OCTOBER, 1993) <AWD> (CONTINUED)





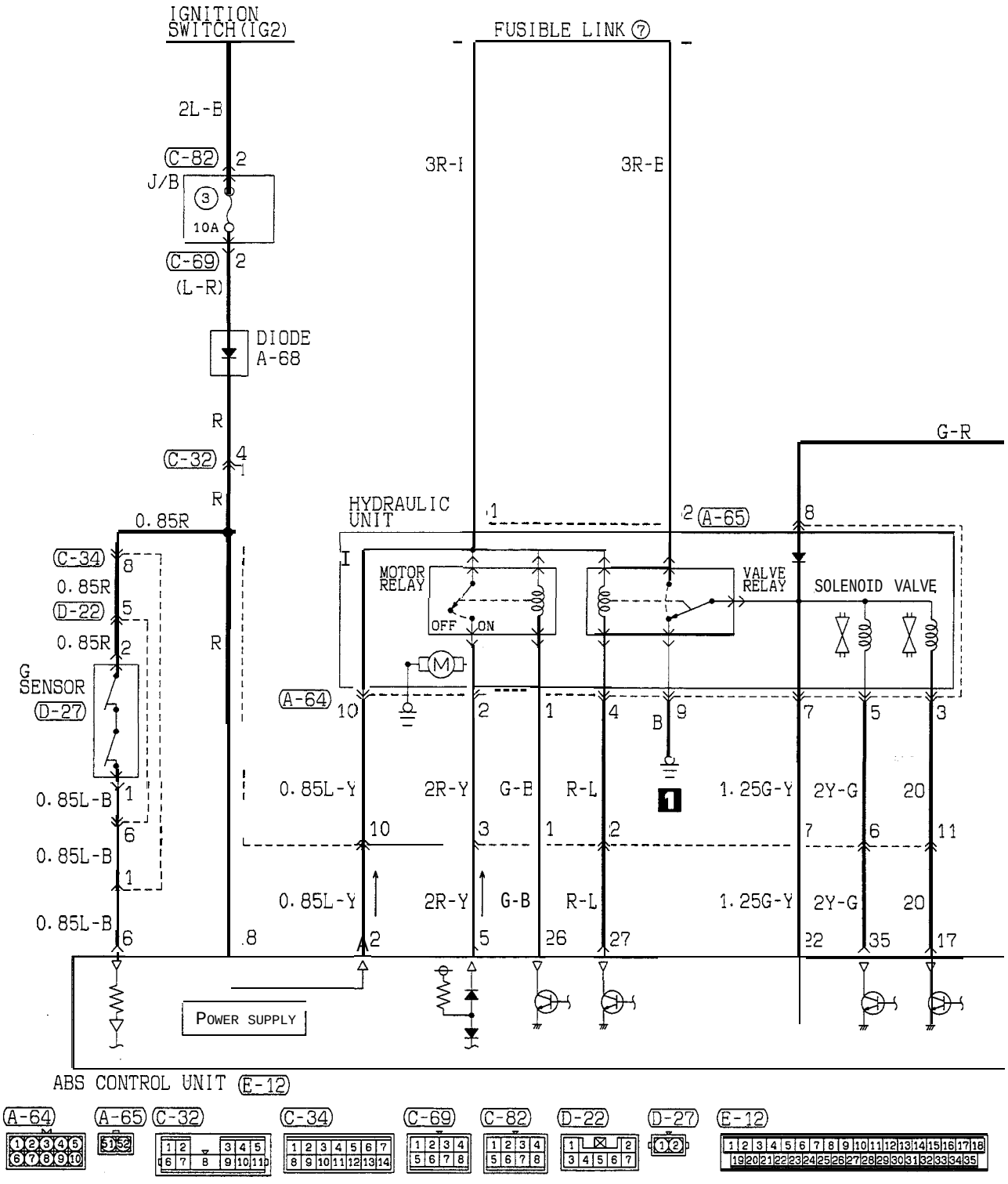
HR15M08BA

TSB Revision

NOTES

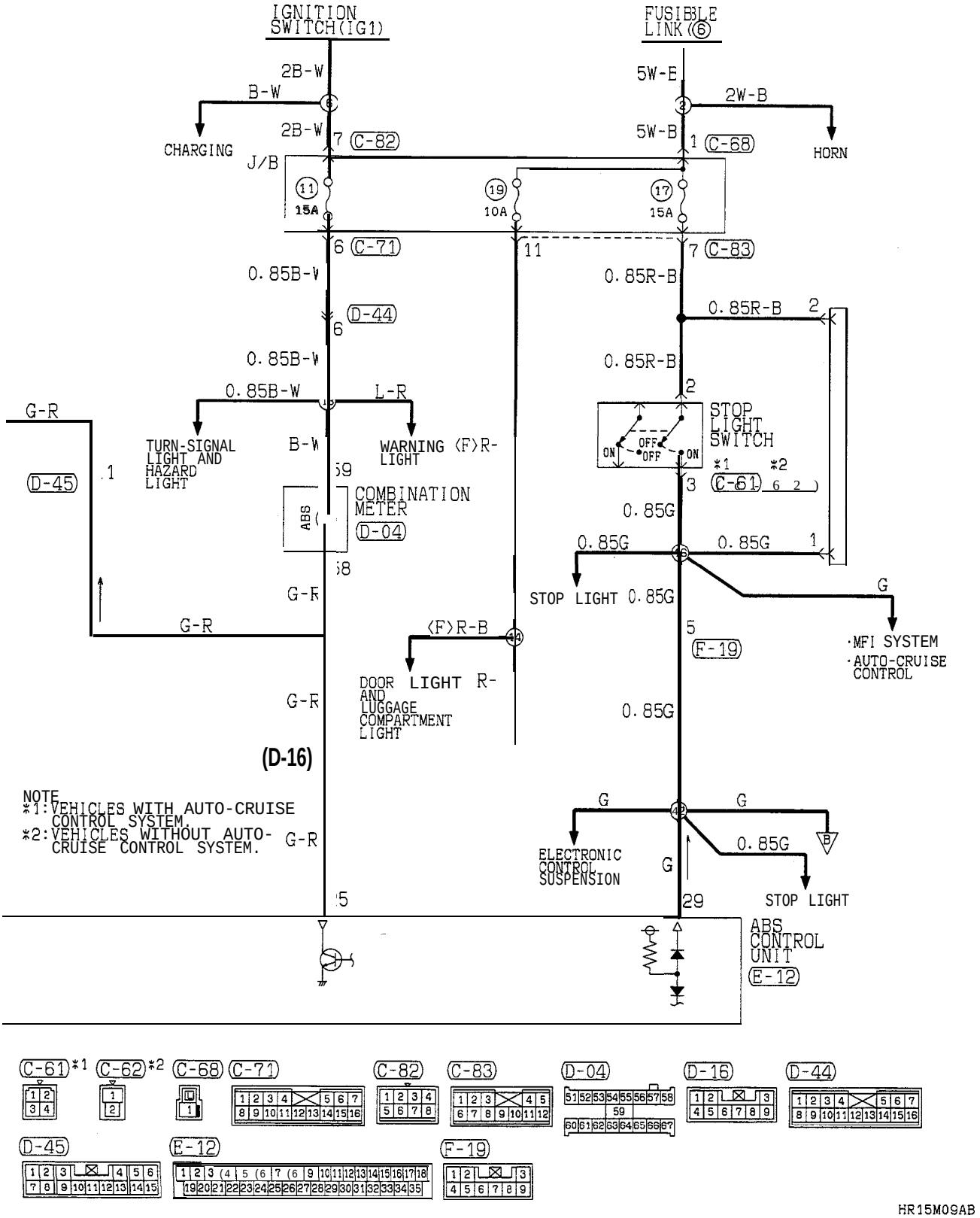
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (FROM NOVEMBER, 1993)

<AWD> (HATCHBACK)



HR15M09AA

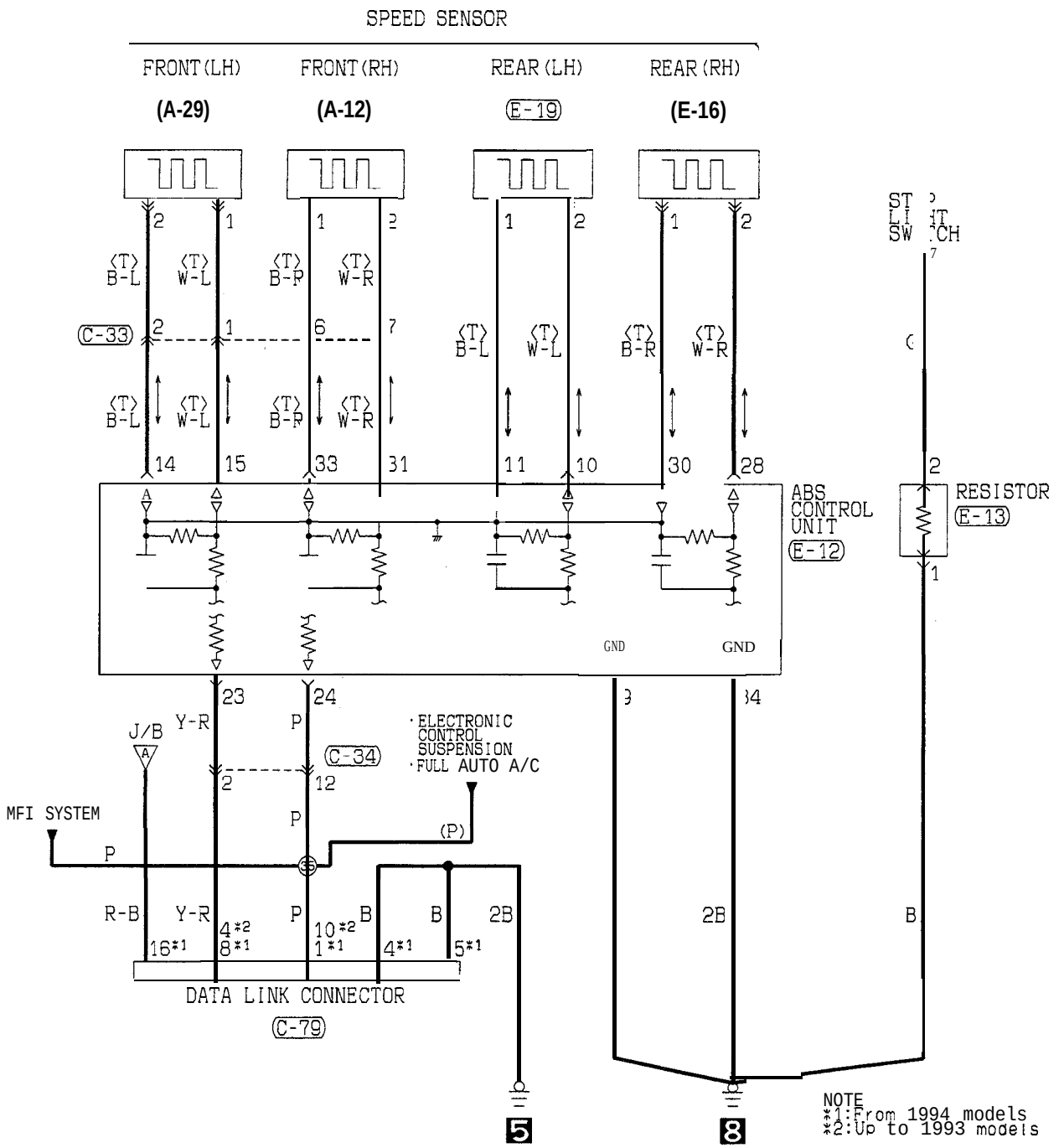
TSB Revision

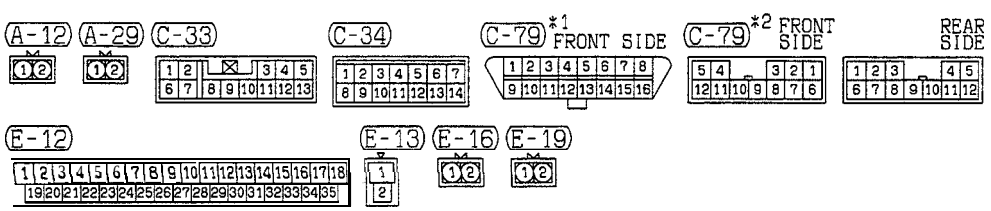


HR15M09AB

TSB Revision

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (FROM NOVEMBER, 1993) <AWD> (HATCHBACK) (CONTINUED)





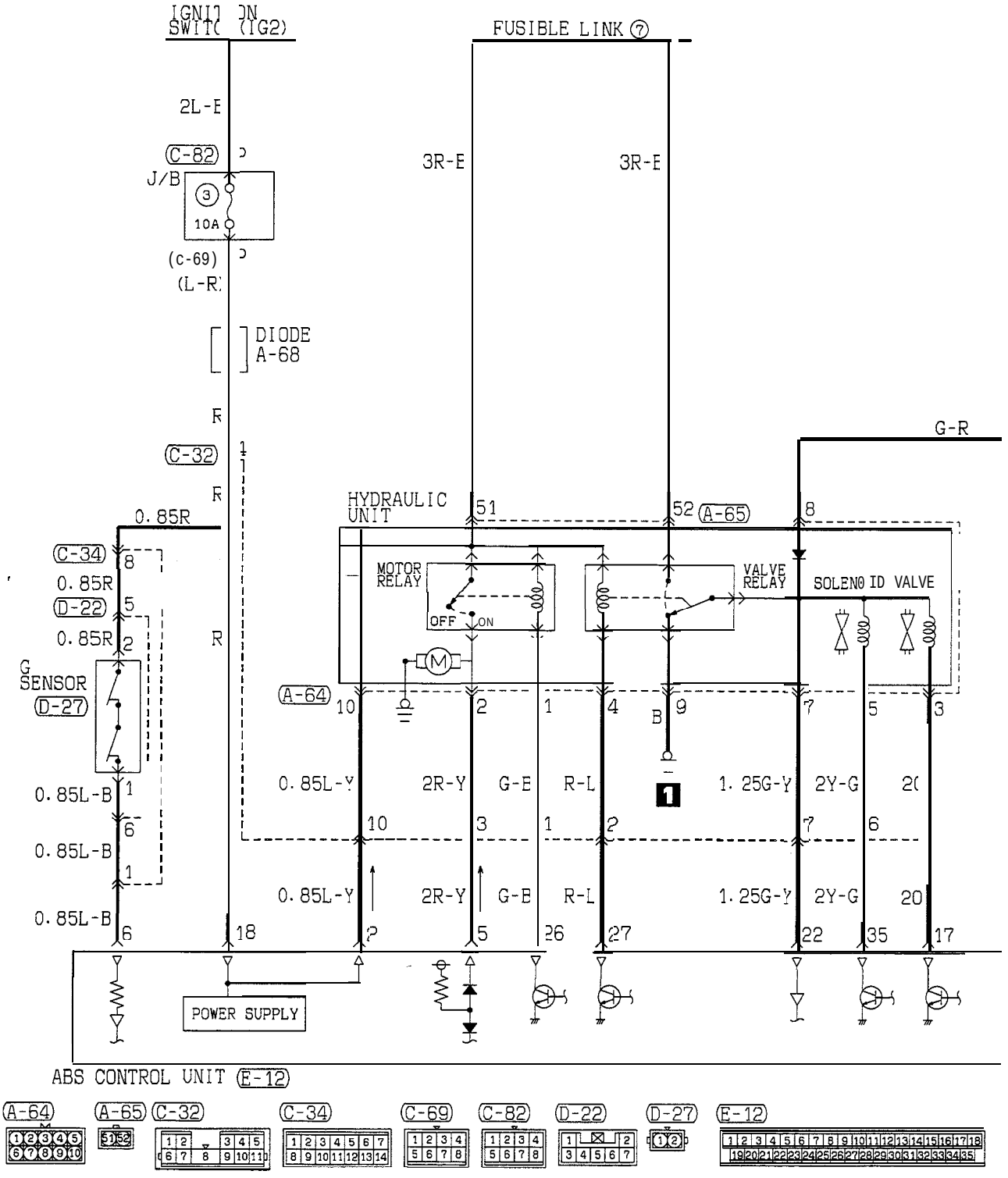
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TSB Revision

NOTES

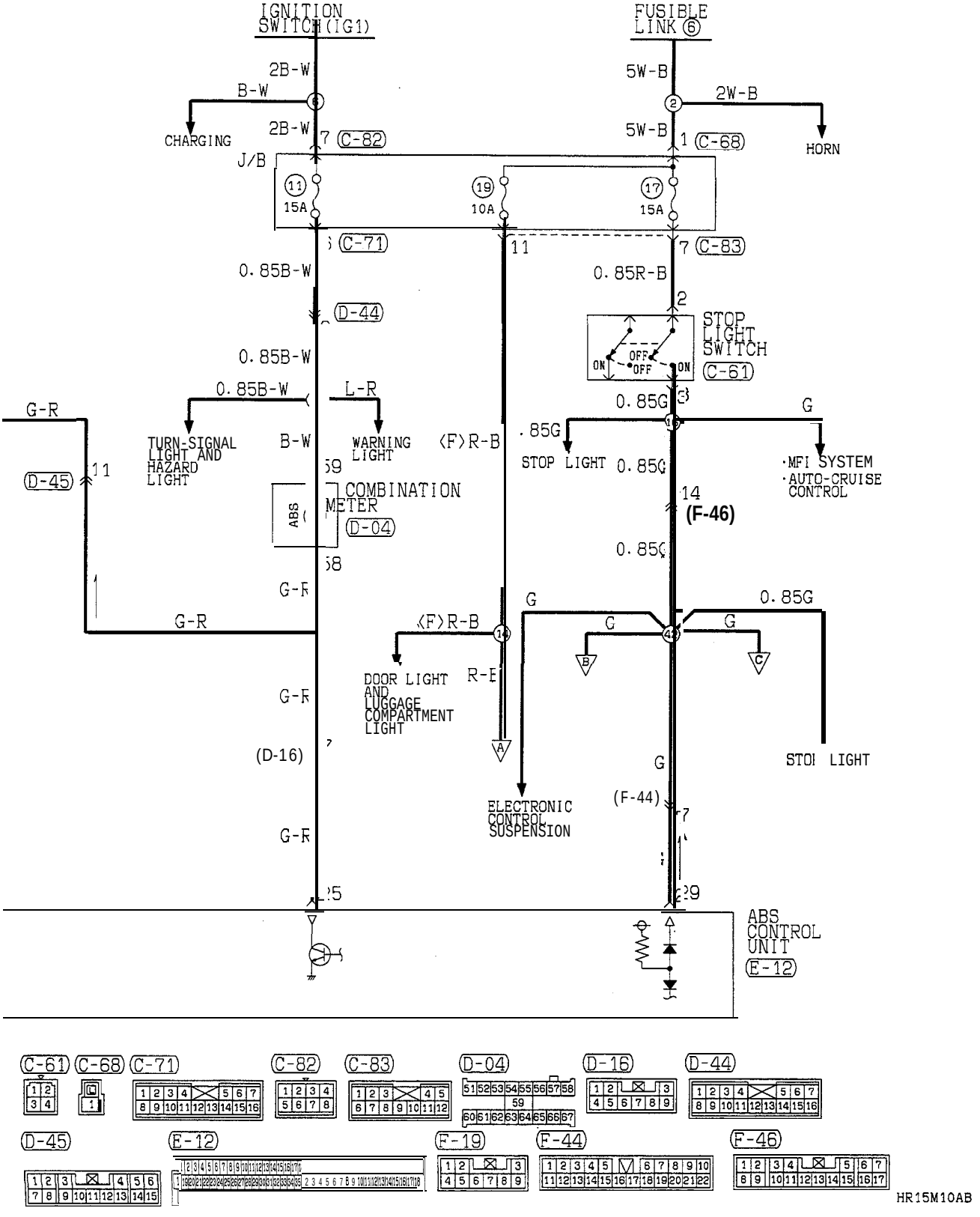
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (1995 MODELS)

<AWD> (CONVERTIBLE)



HR15M10AA

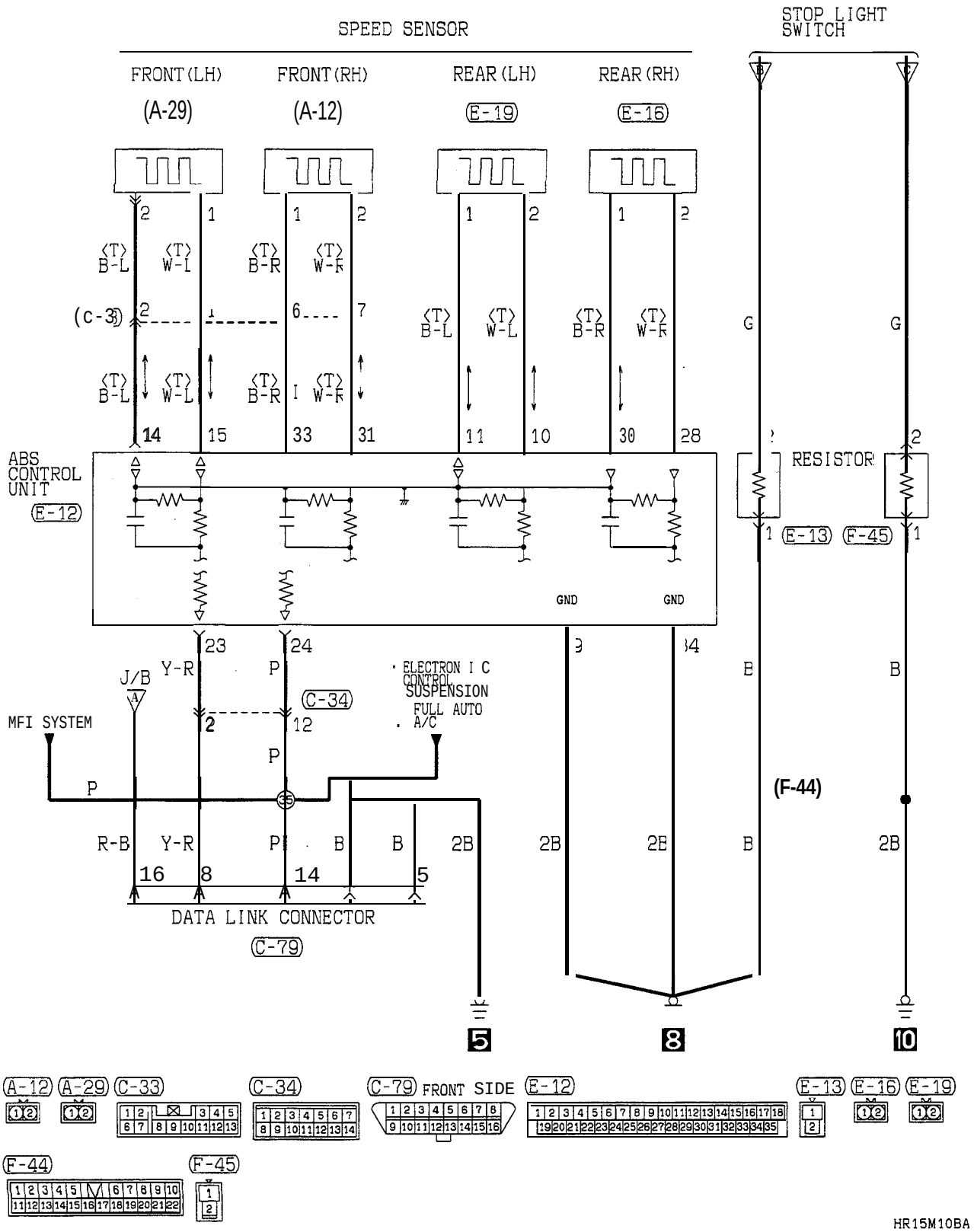
TSB Revision



HR15M10AB

TSB Revision

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (1995 MODELS) <AWD> (CONVERTIBLE) (CONTINUED)

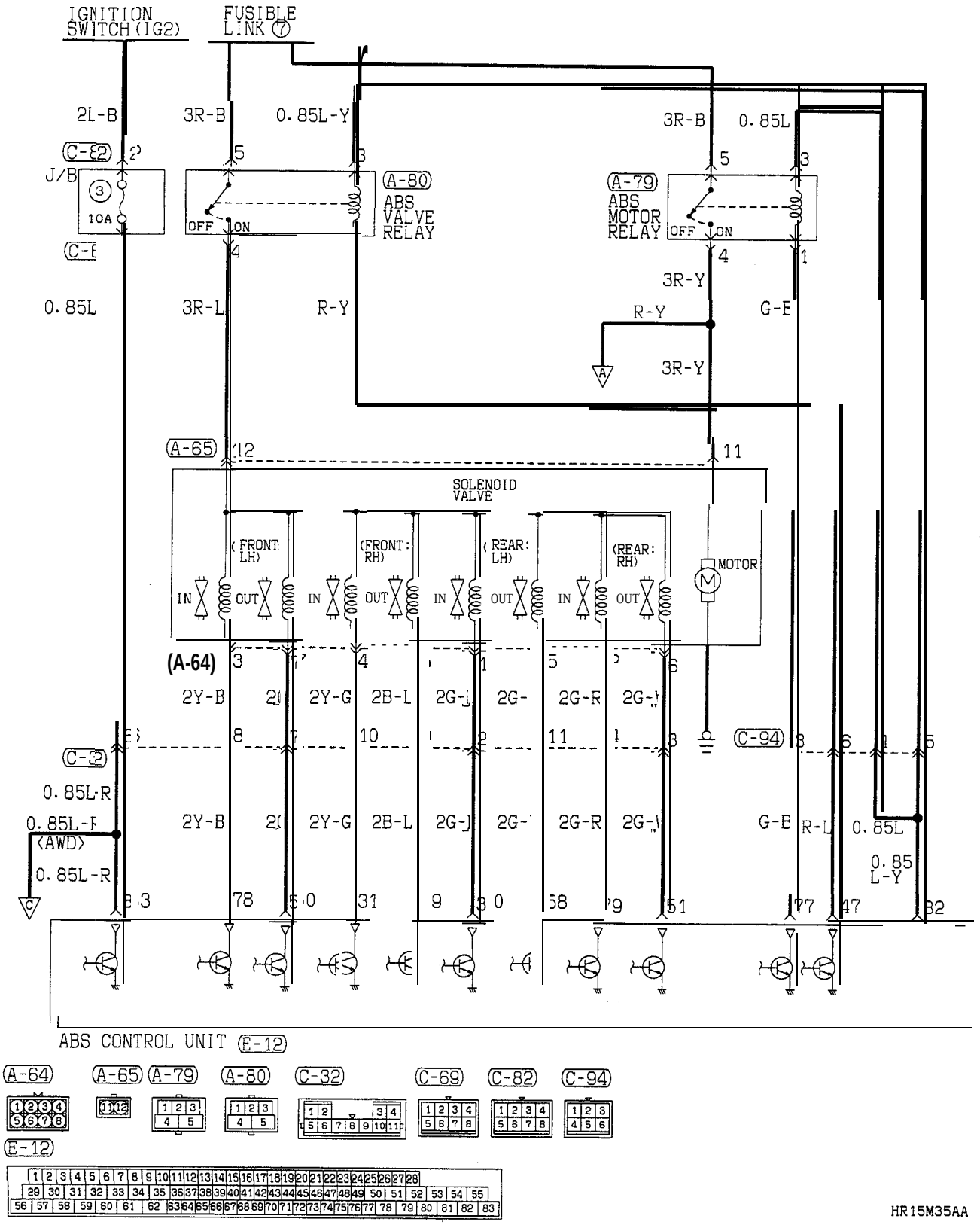


HR15M10BA

TSB Revision

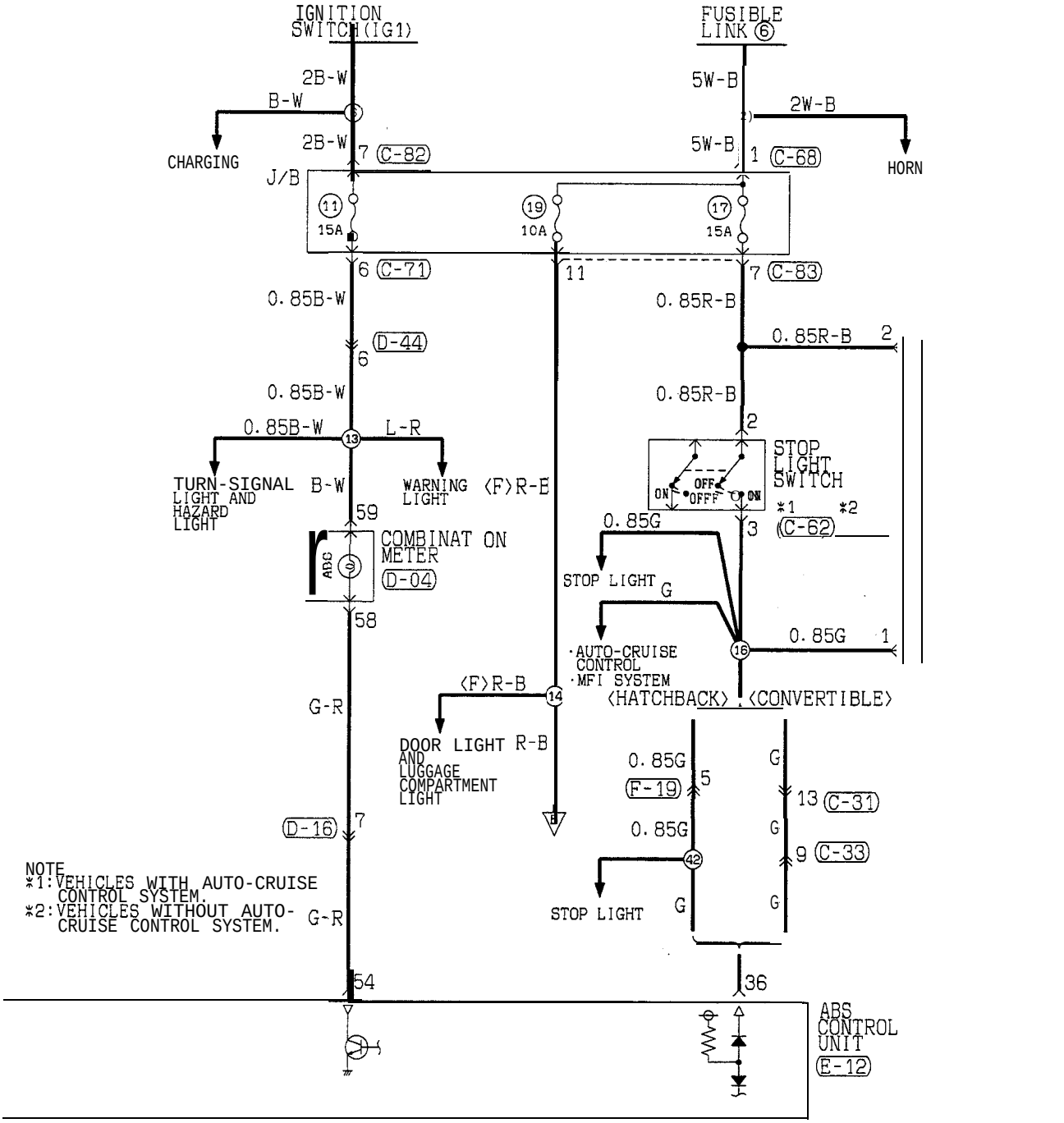
NOTES

ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (FROM 1996 MODELS)



HR15M35AA

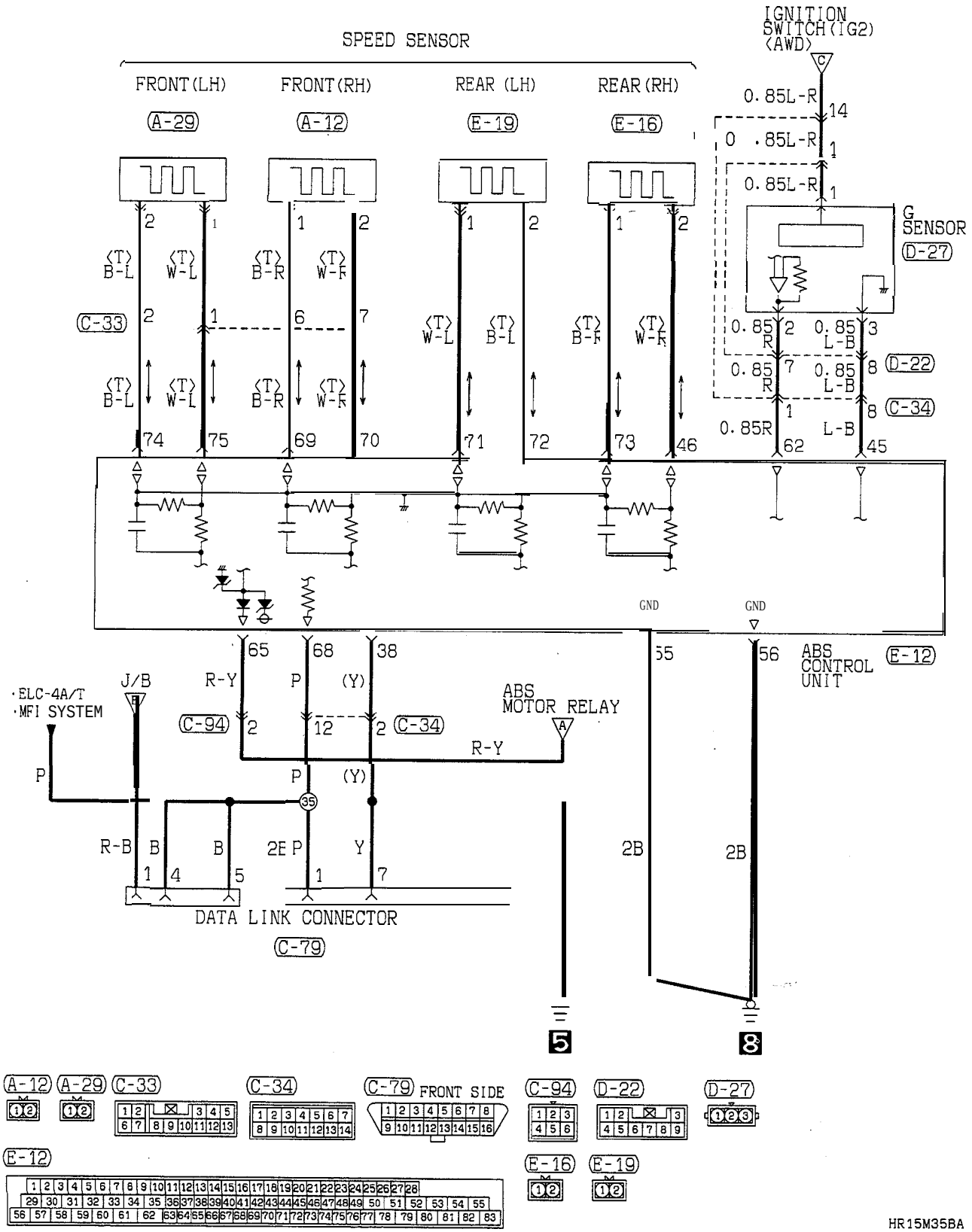
TSB Revision



HR15M35AB

TSB Revision

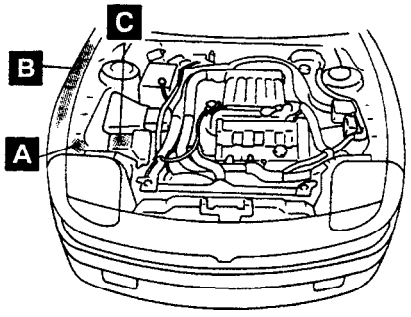
ANTI-LOCK BRAKING SYSTEM (ABS) CIRCUIT (FROM 1996 MODELS) (CONTINUED)



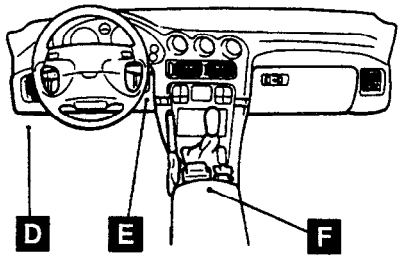
TSB Revision

COMPONENT LOCATION

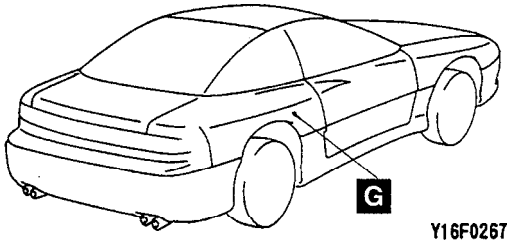
Name	Symbol	Name	Symbol
ABS control unit	G	G sensor	F
ABS power relay (Up to 1993–October models)	C	Hydraulic unit	A
Data link connector (from 1994 models)	E	Motor relay	A
Data link connector (up to 1993 models)	D	Rear speed sensor	I
Diode (Up to 1995 models)	B	Valve relay	A
Front speed sensor	H		



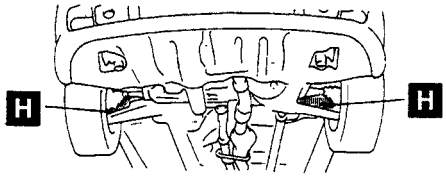
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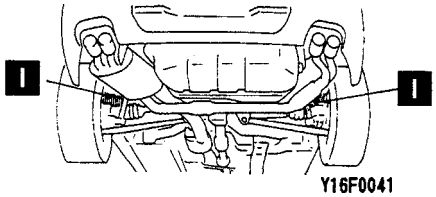
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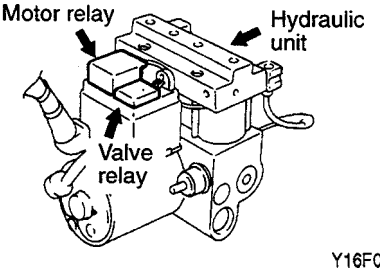


Y16F0040



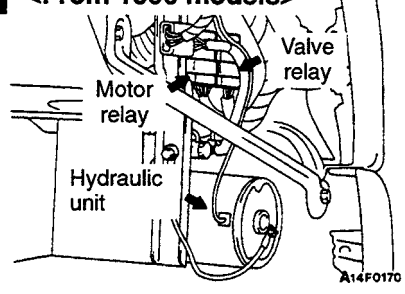
Y16F0041
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A <Up to 1995 models>



Y16F000

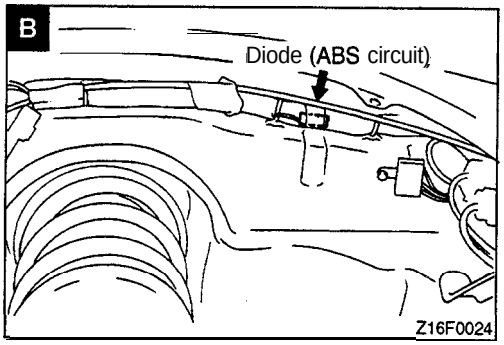
A <From 1996 models>



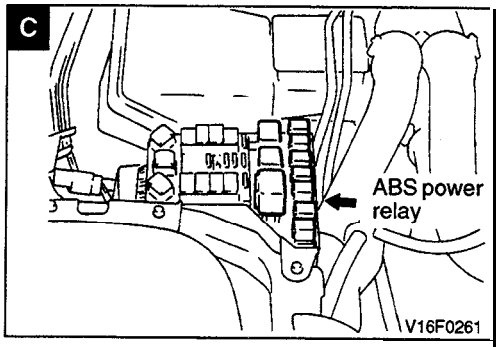
A14F0170

TSB Revision

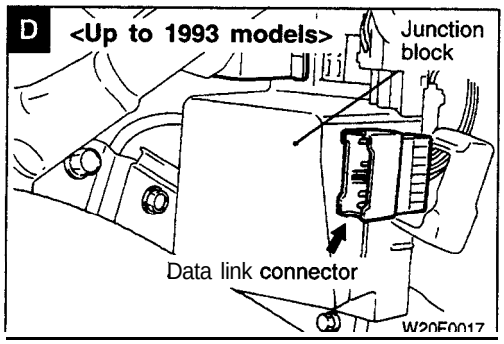
B



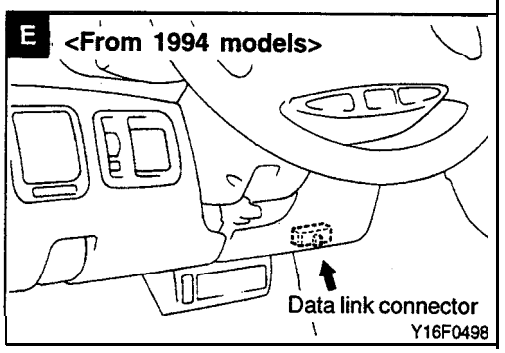
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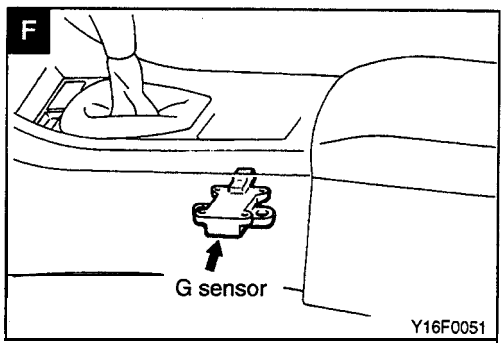
D



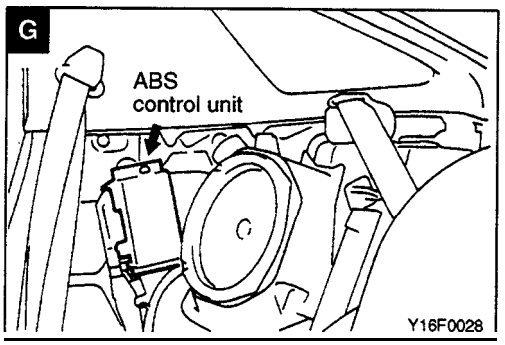
E



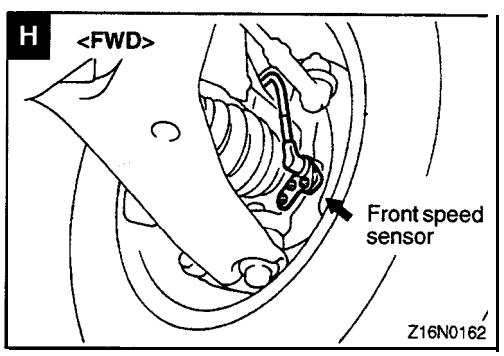
F



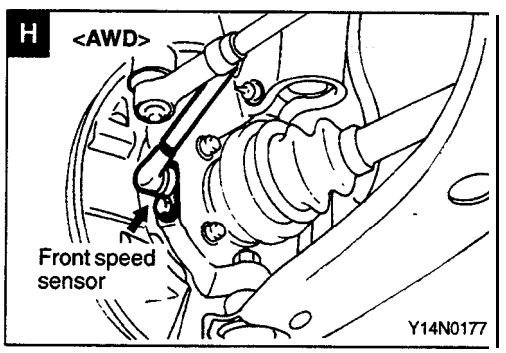
G



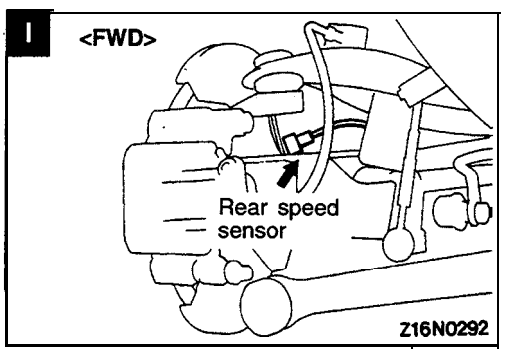
H



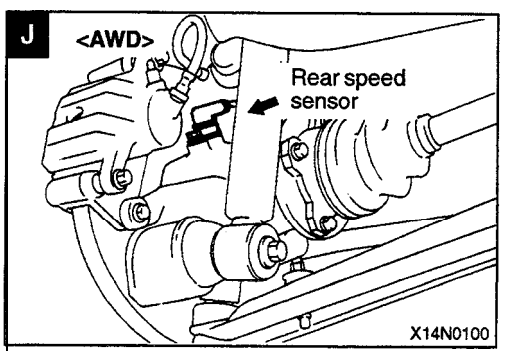
H



I



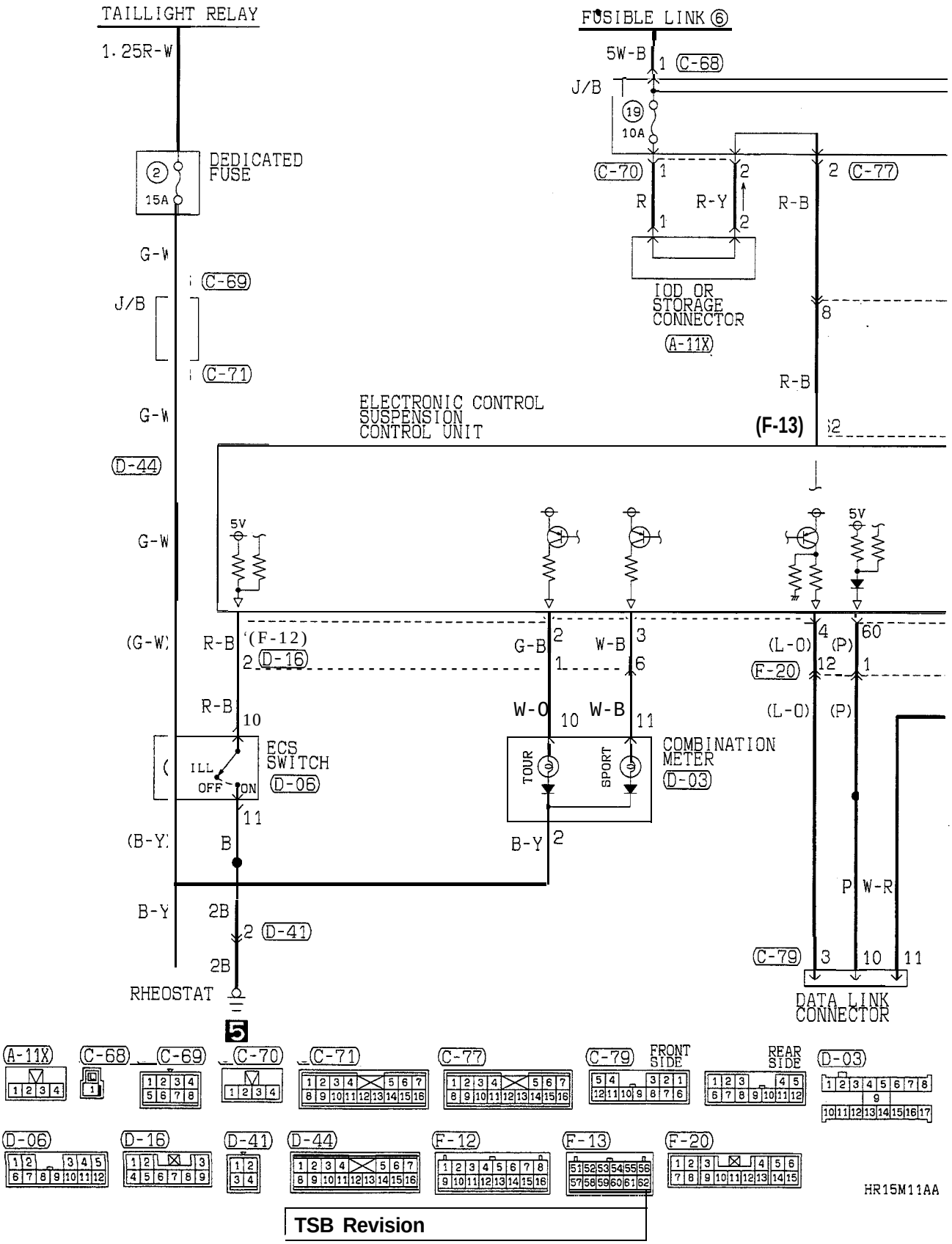
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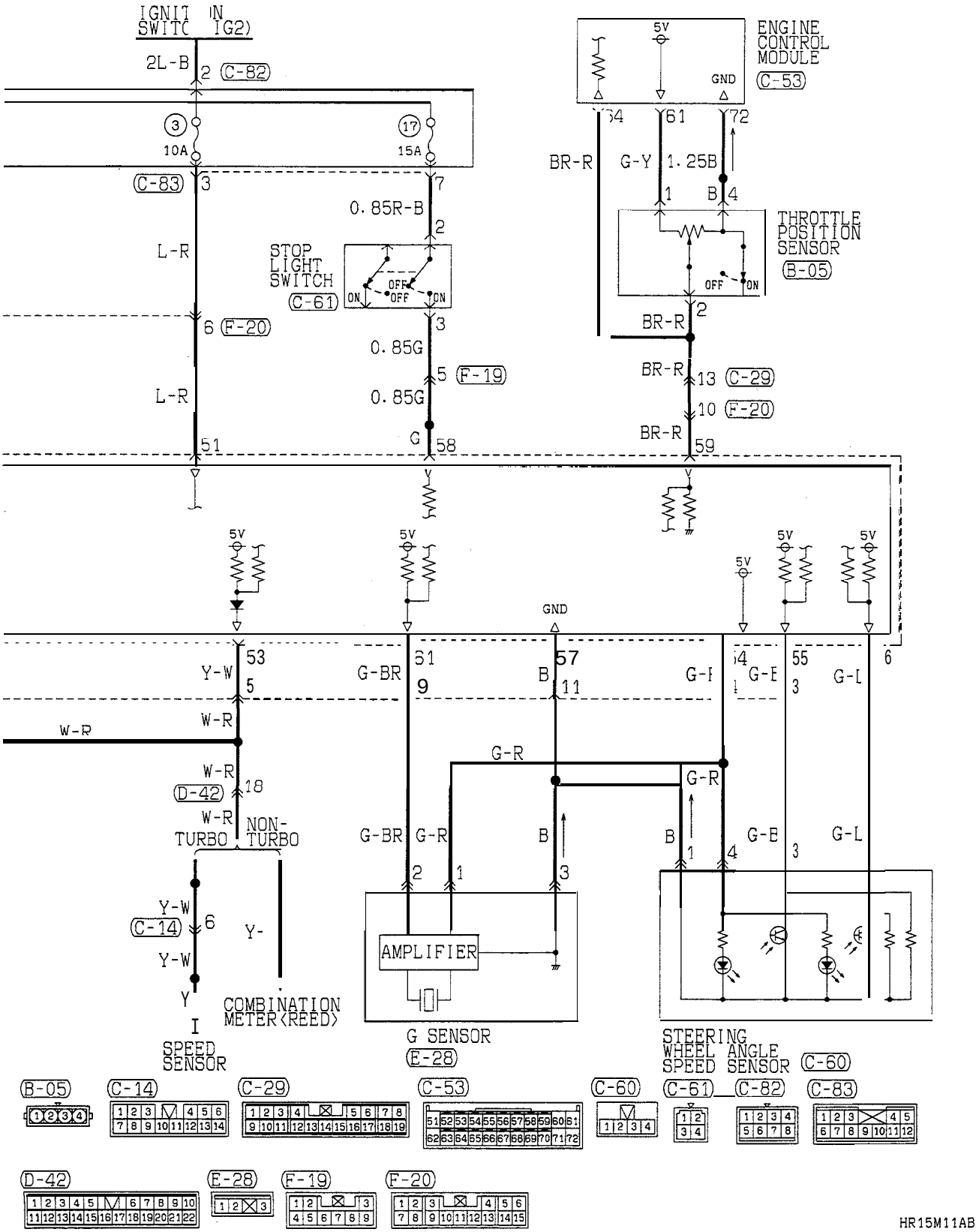
TSB Revision

NOTES

ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT (UP TO 1993 MODELS)



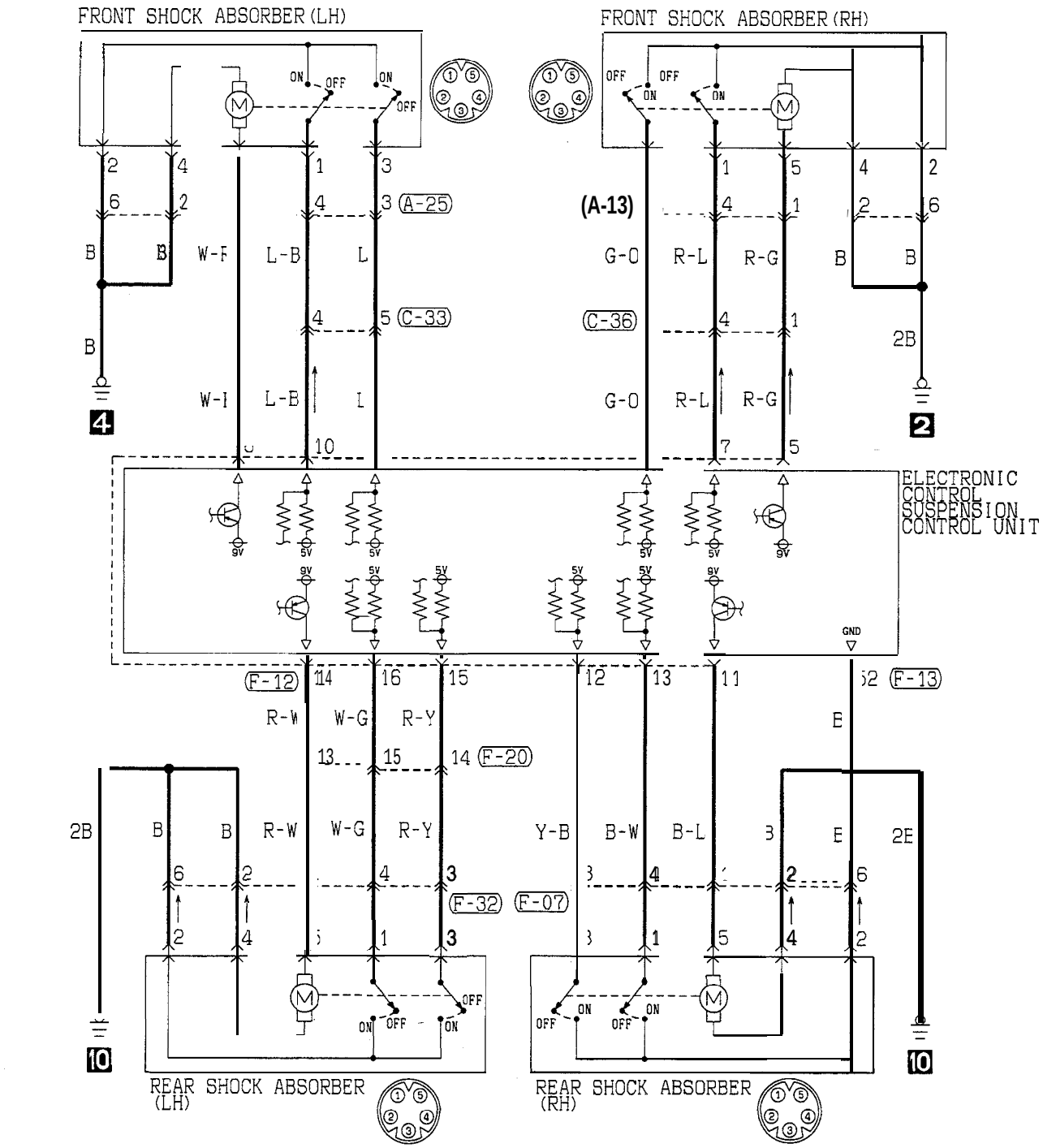
TSB Revision



HR15M11AB

TSB Revision

ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT (UP TO 1993 MODELS) (CONTINUED)



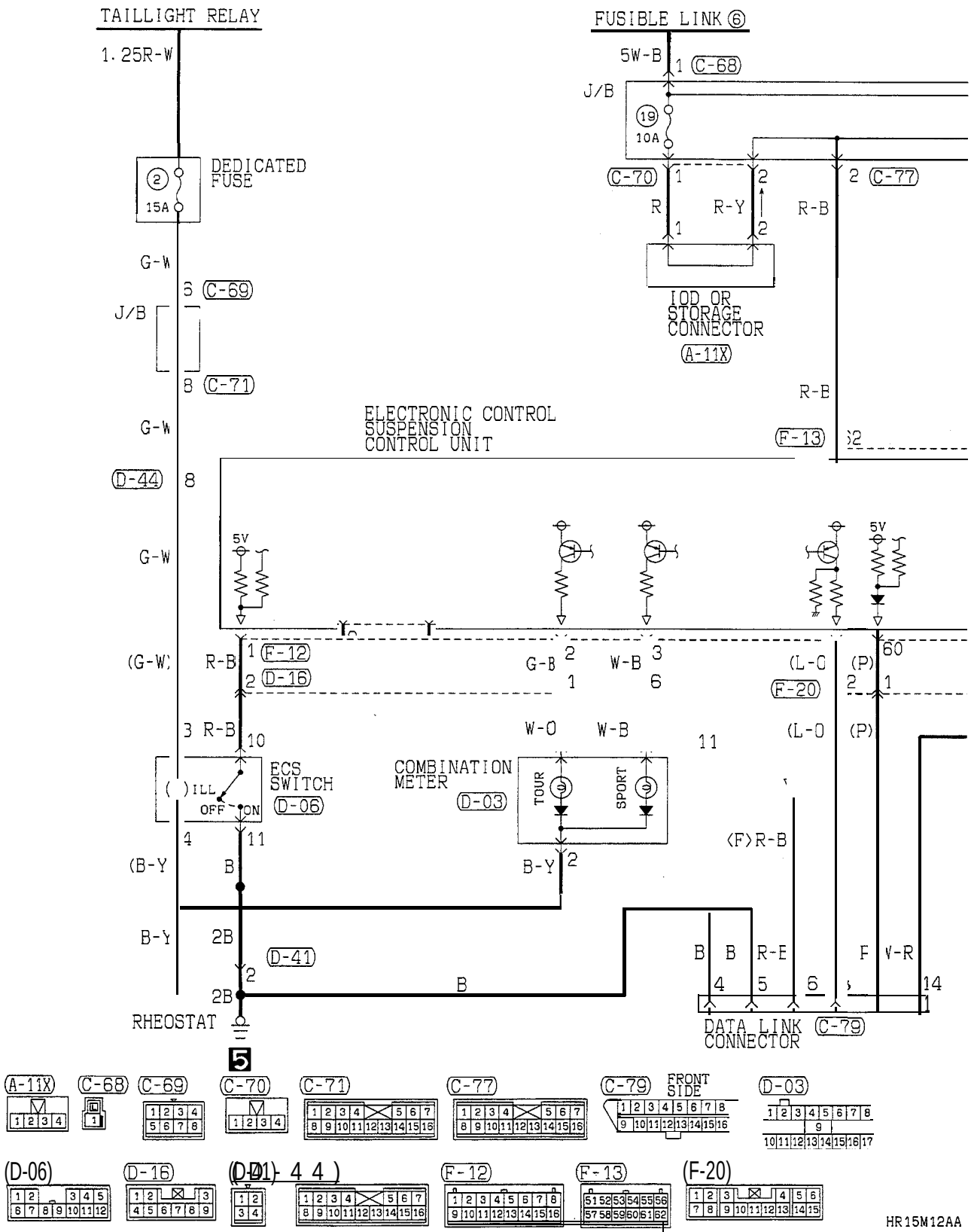
HR15M11BA

TSB Revision

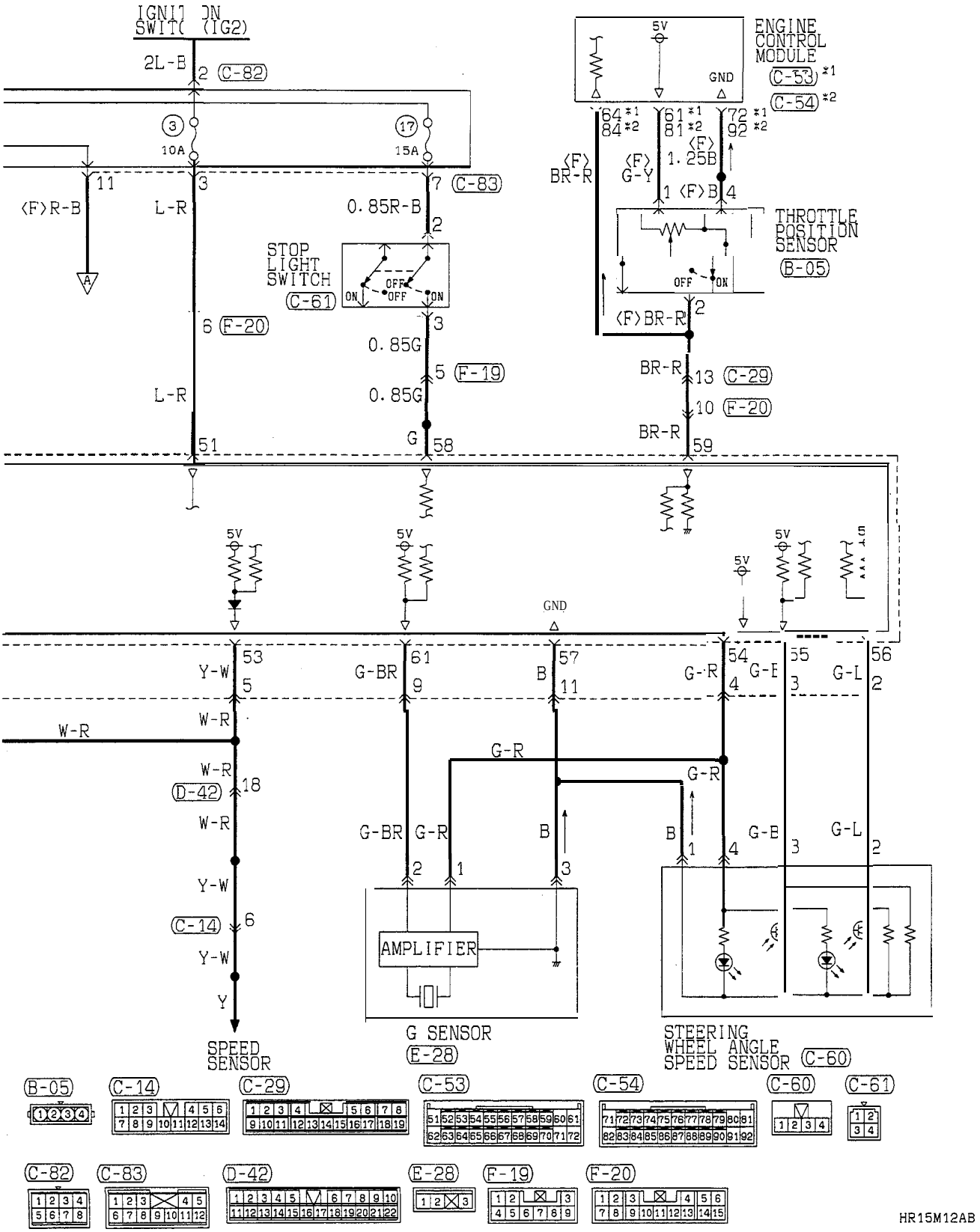
NOTES

ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT

(1994 MODELS)



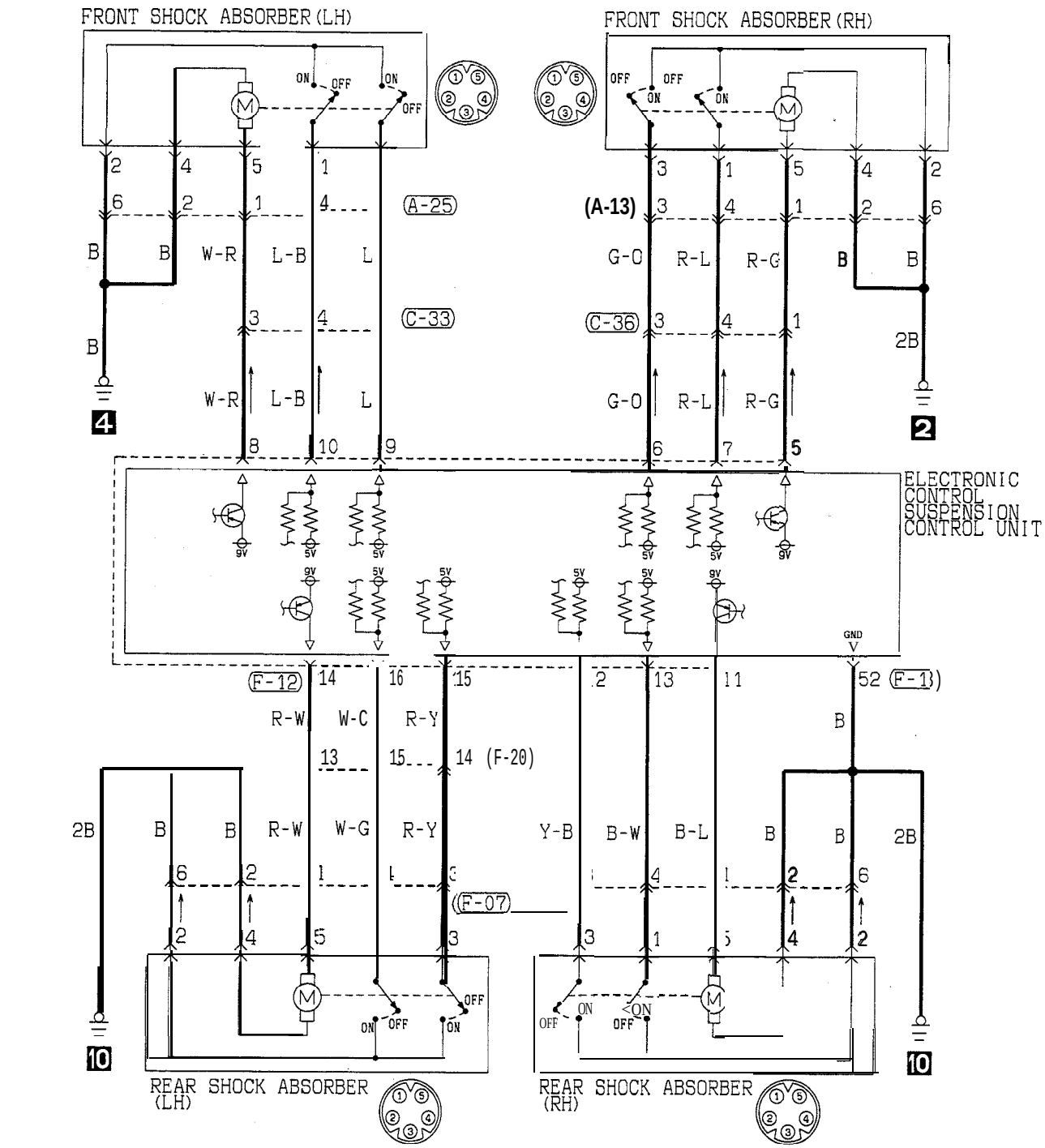
TSB Revision



HR15M12AB

TSB Revision

ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT (1994 MODELS) (CONTINUED)

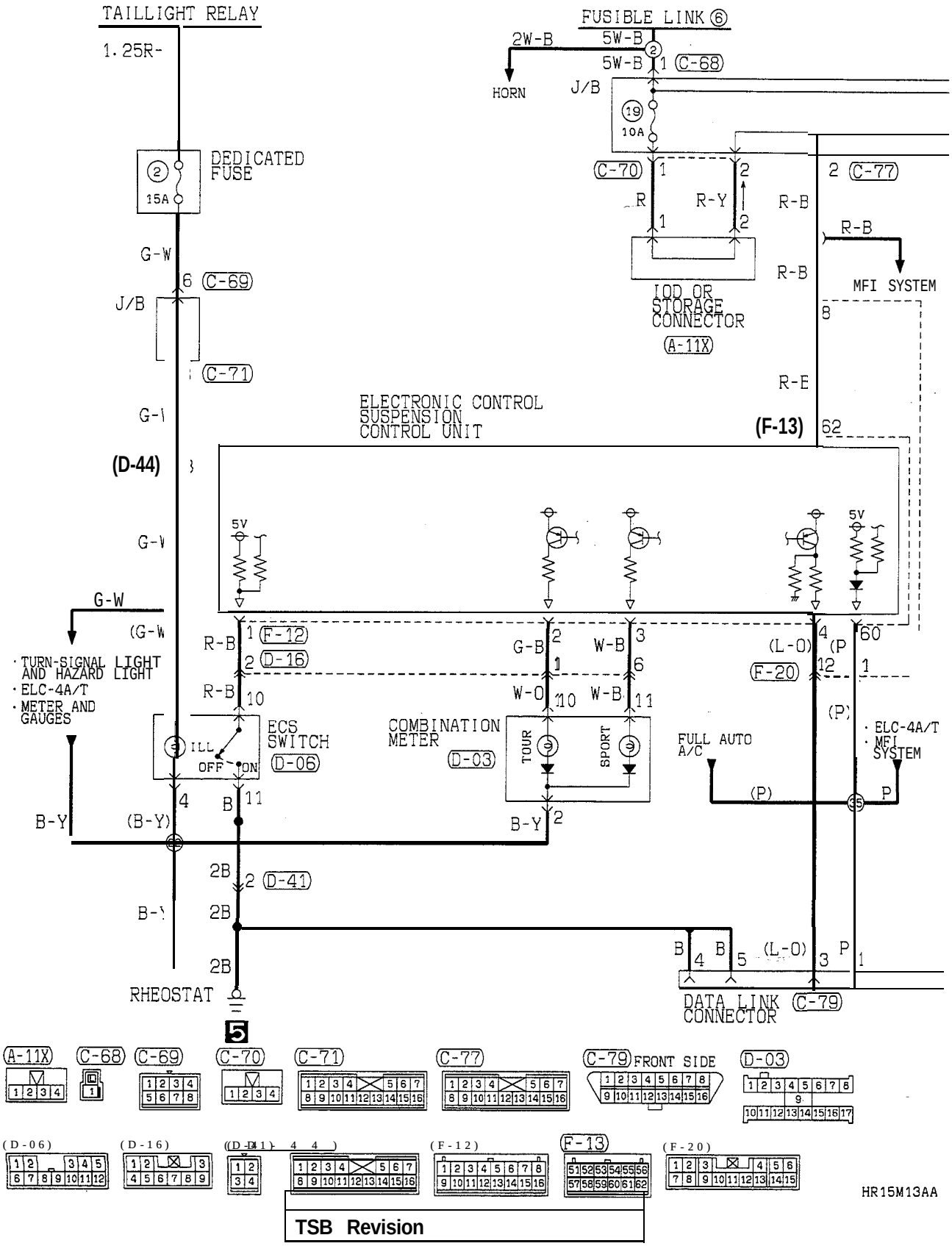


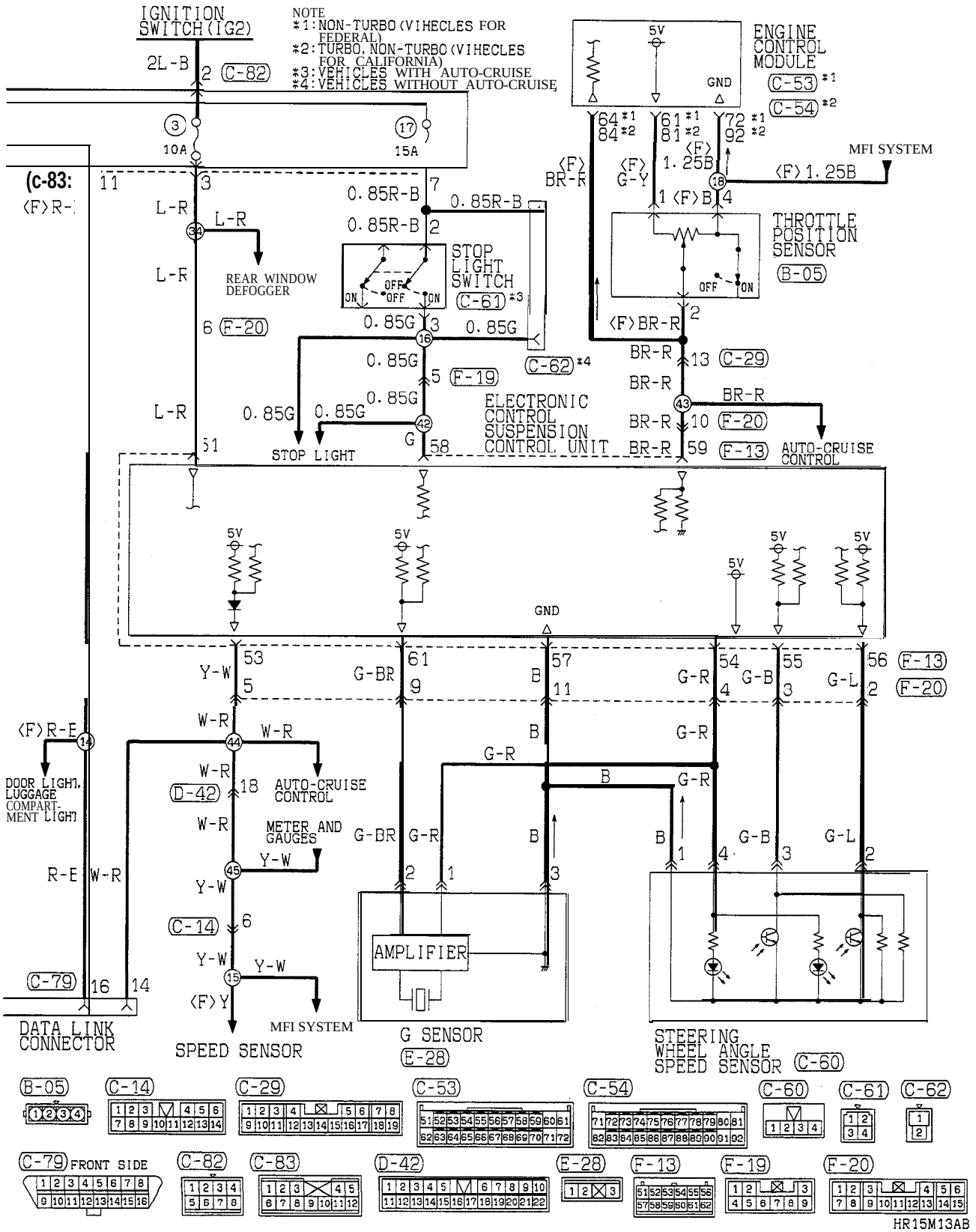
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TSB Revision

NOTES

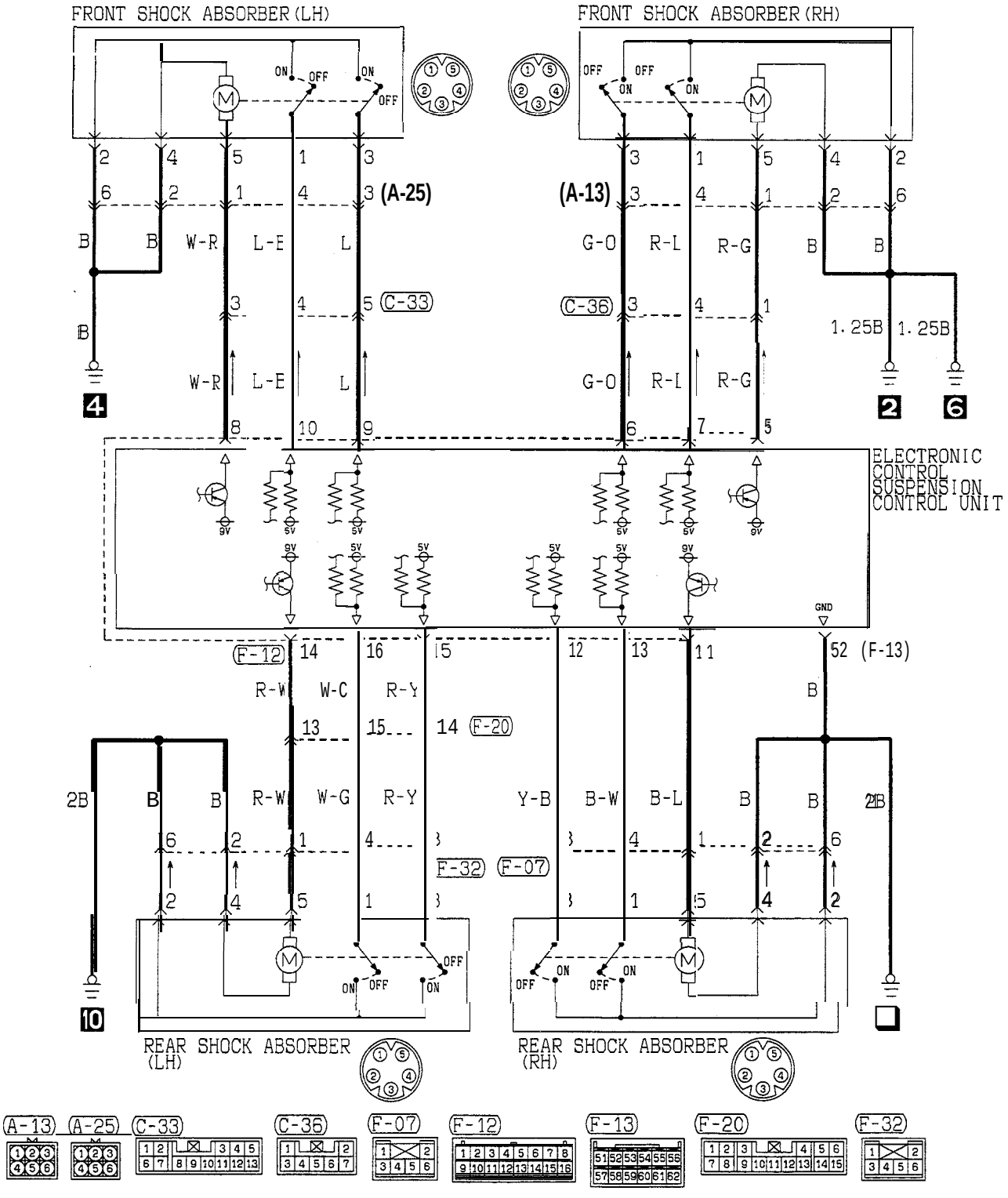
ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT (1995 MODELS) <HATCHBACK>





TSB Revision

ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT (1995 MODELS) <HATCHBACK> (CONTINUED)



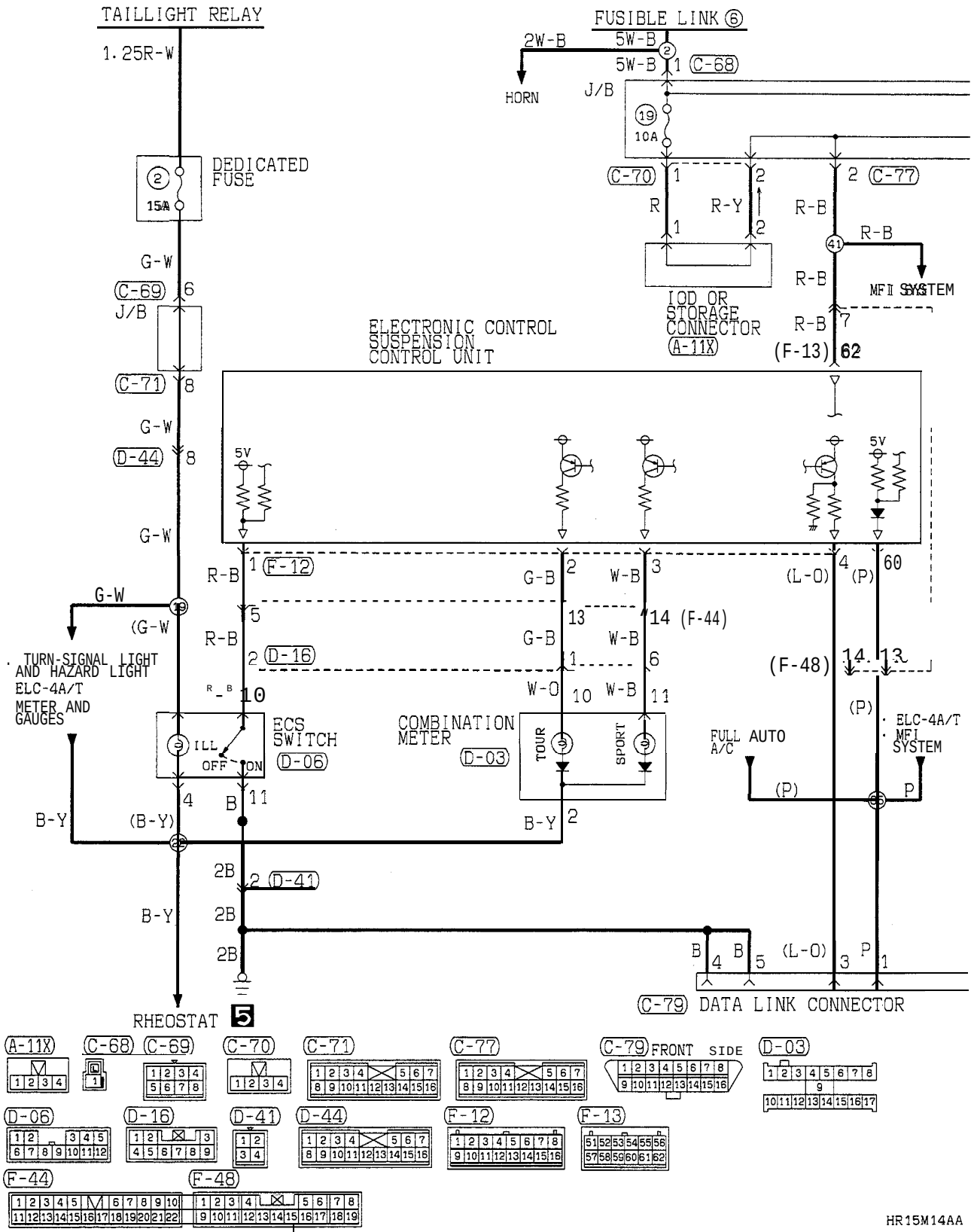
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TSB Revision

NOTES

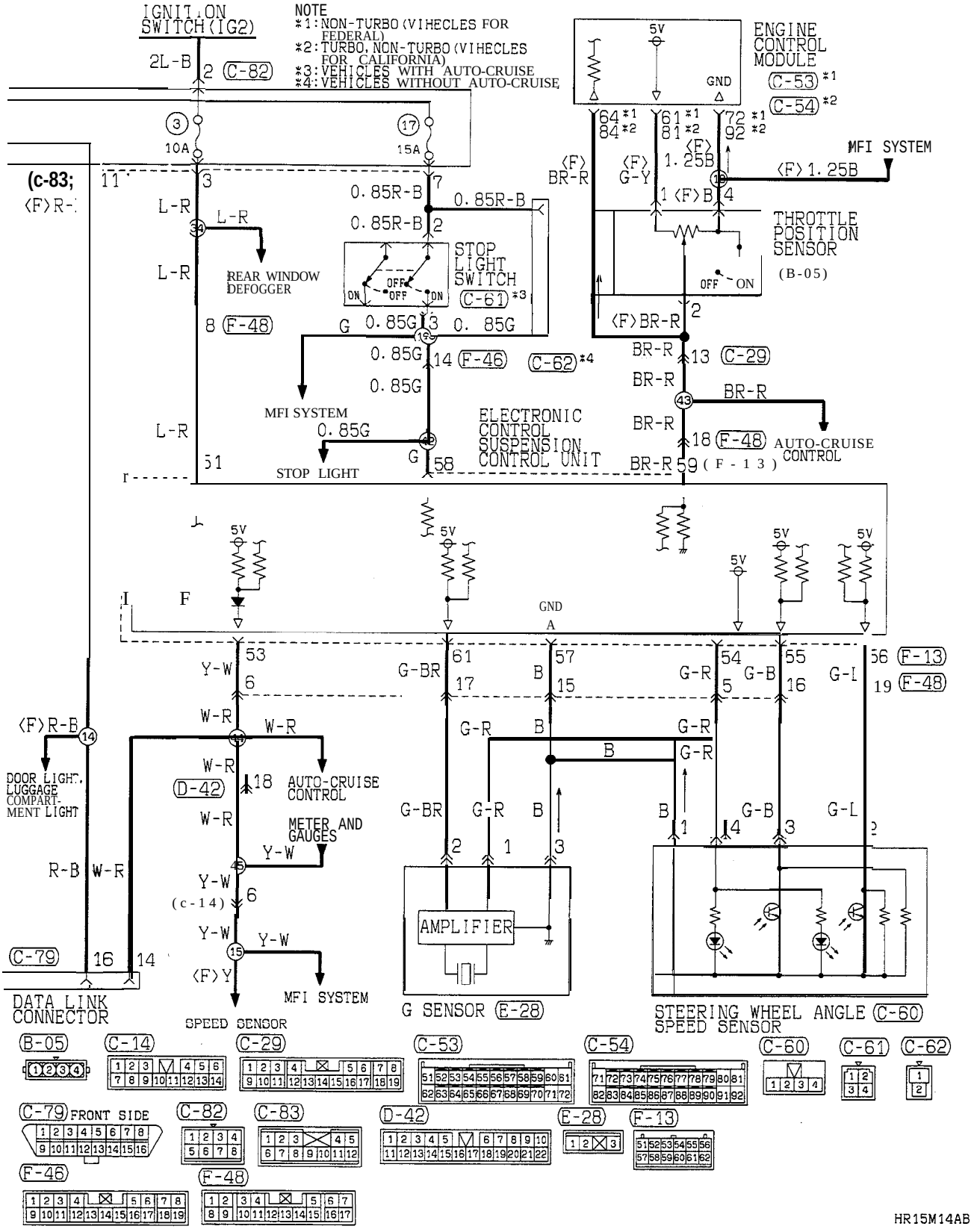
ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT (1995 MODELS)

<CONVERTIBLE>



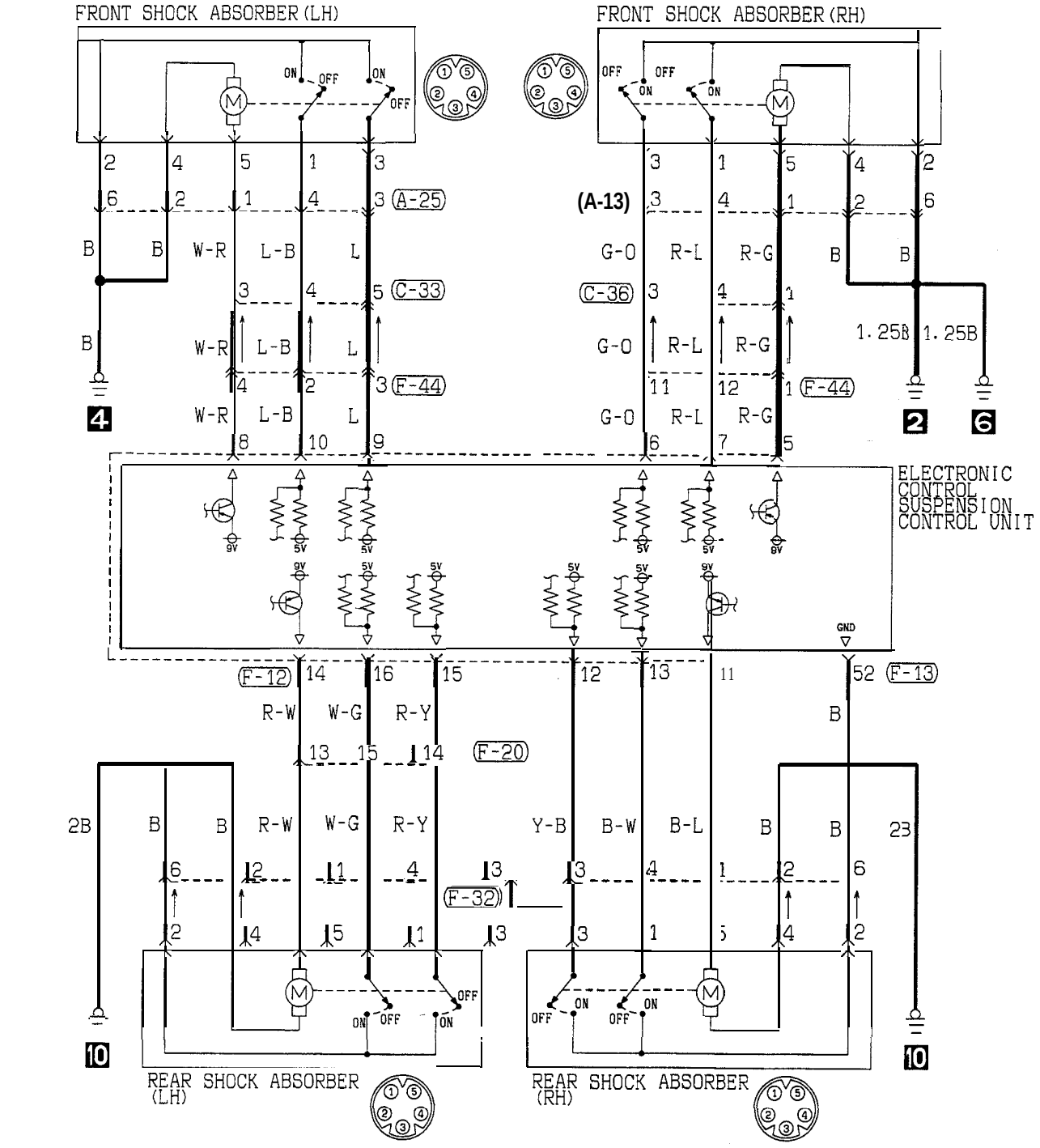
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TSB Revision



TSB Revision

ELECTRONIC CONTROL SUSPENSION (ECS) CIRCUIT (1995 MODELS) <CONVERTIBLE> (CONTINUED)

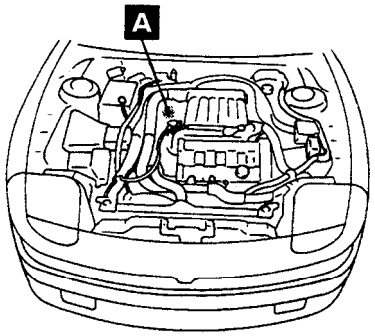


HR15M14BA

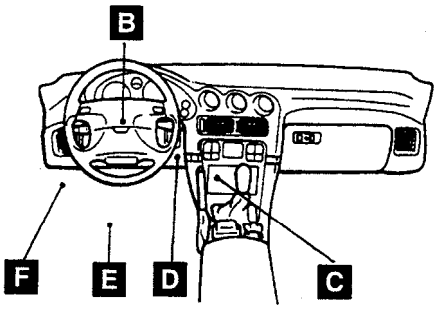
TSB Revision

COMPONENT LOCATION

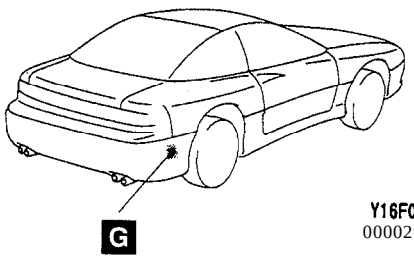
Name	Symbol	Name	Symbol
Data link connector (from 1994 models)	D	G sensor	E
Data link connector (up to 1993 models)	F	Steering wheel angle speed sensor	B
ECS control unit	G	Throttle position sensor	A
Engine control module	C		



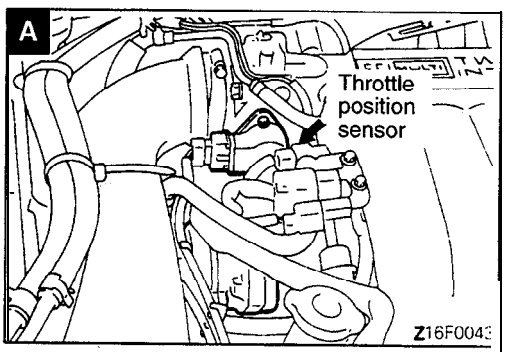
Q16F0257



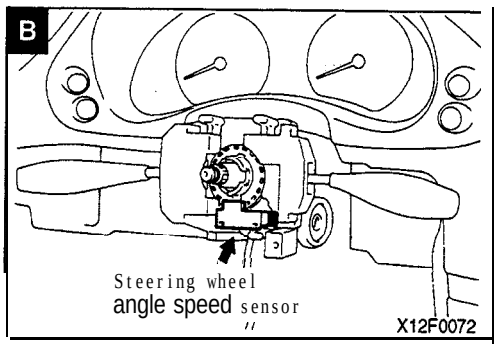
K19F0134



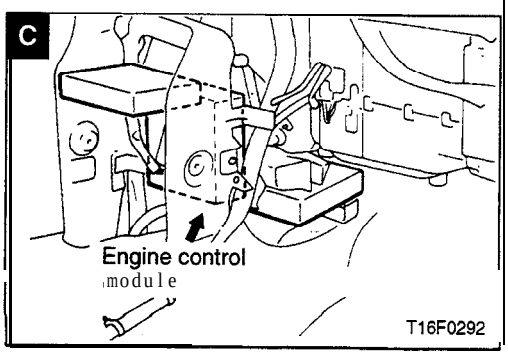
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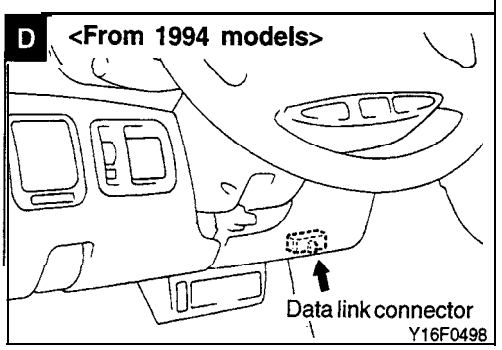
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X12F0072



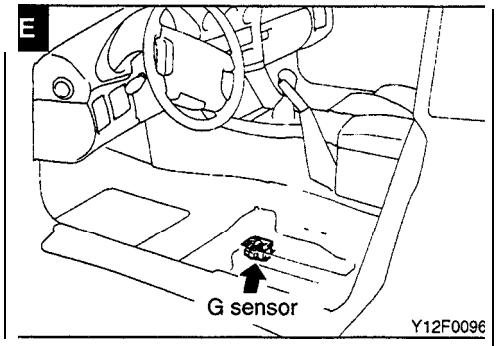
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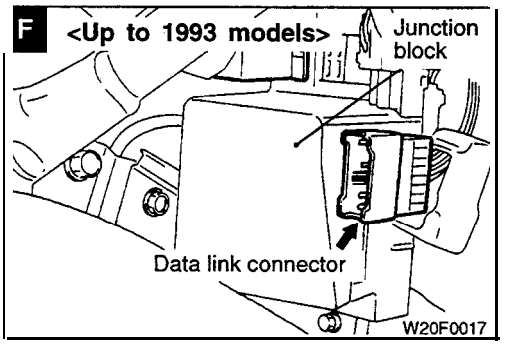
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TSB Revision

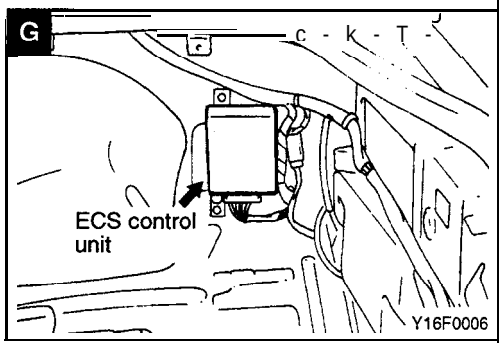
E



F <Up to 1993 models>



G

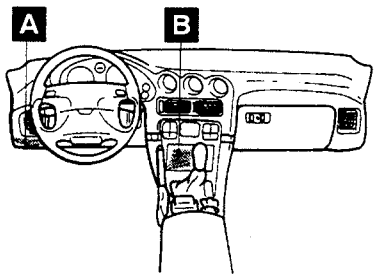


TSB Revision

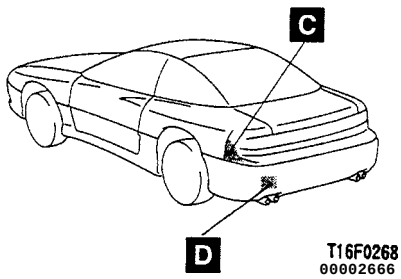
ACTIVE EXHAUST SYSTEM

COMPONENT LOCATION

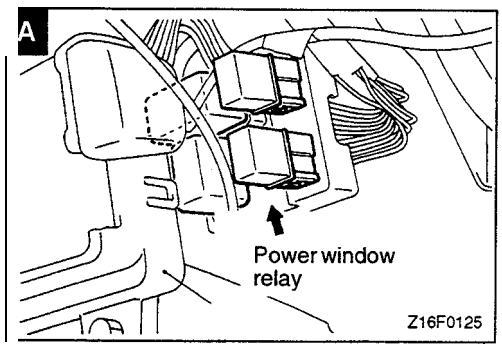
Name	Symbol	Name	Symbol
Active exhaust control unit	C	Engine control module	B
Actuator assembly	D	Power window relay	A

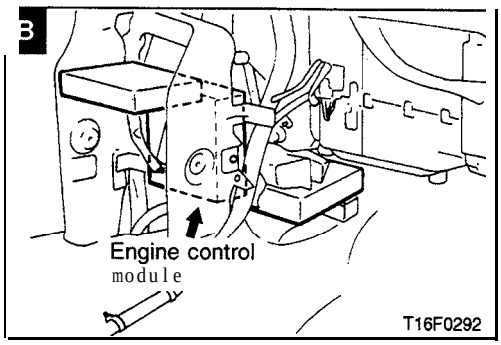


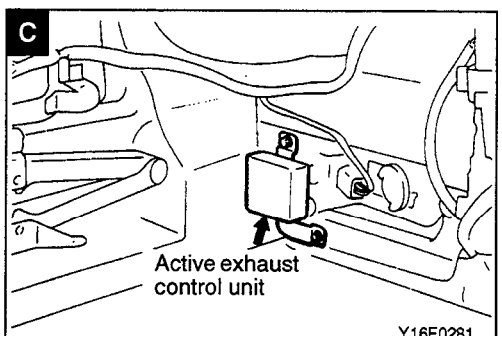
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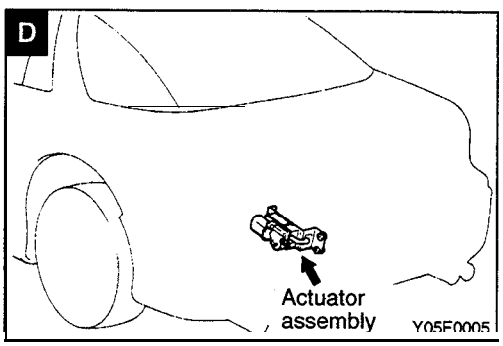


T16F0268
00002666

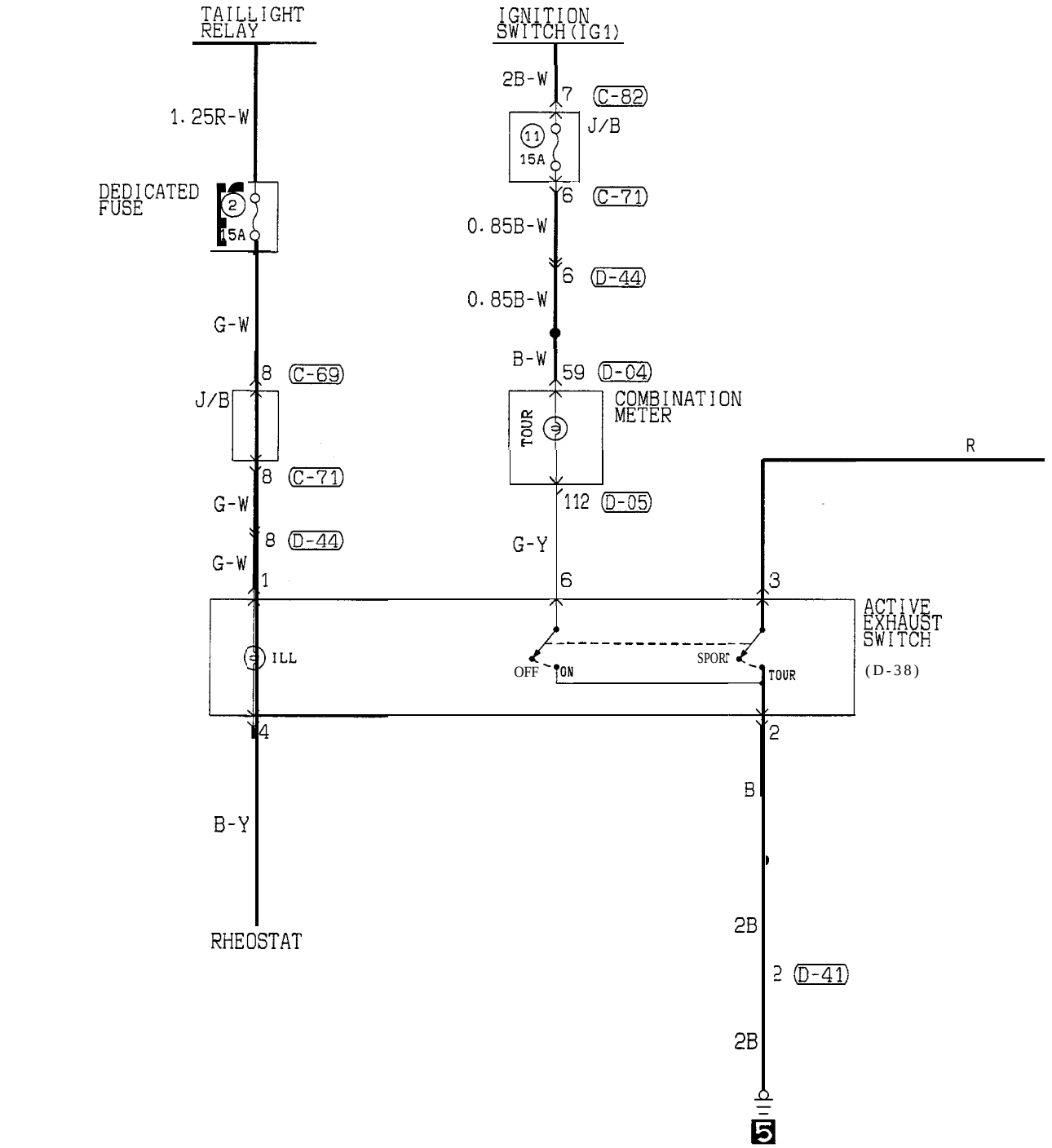


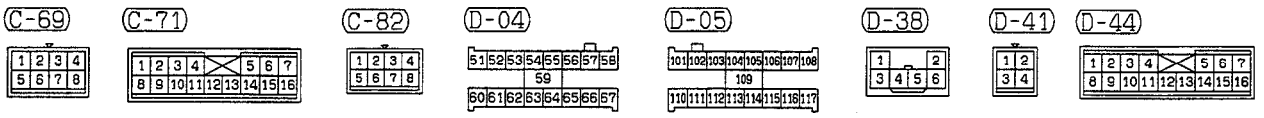






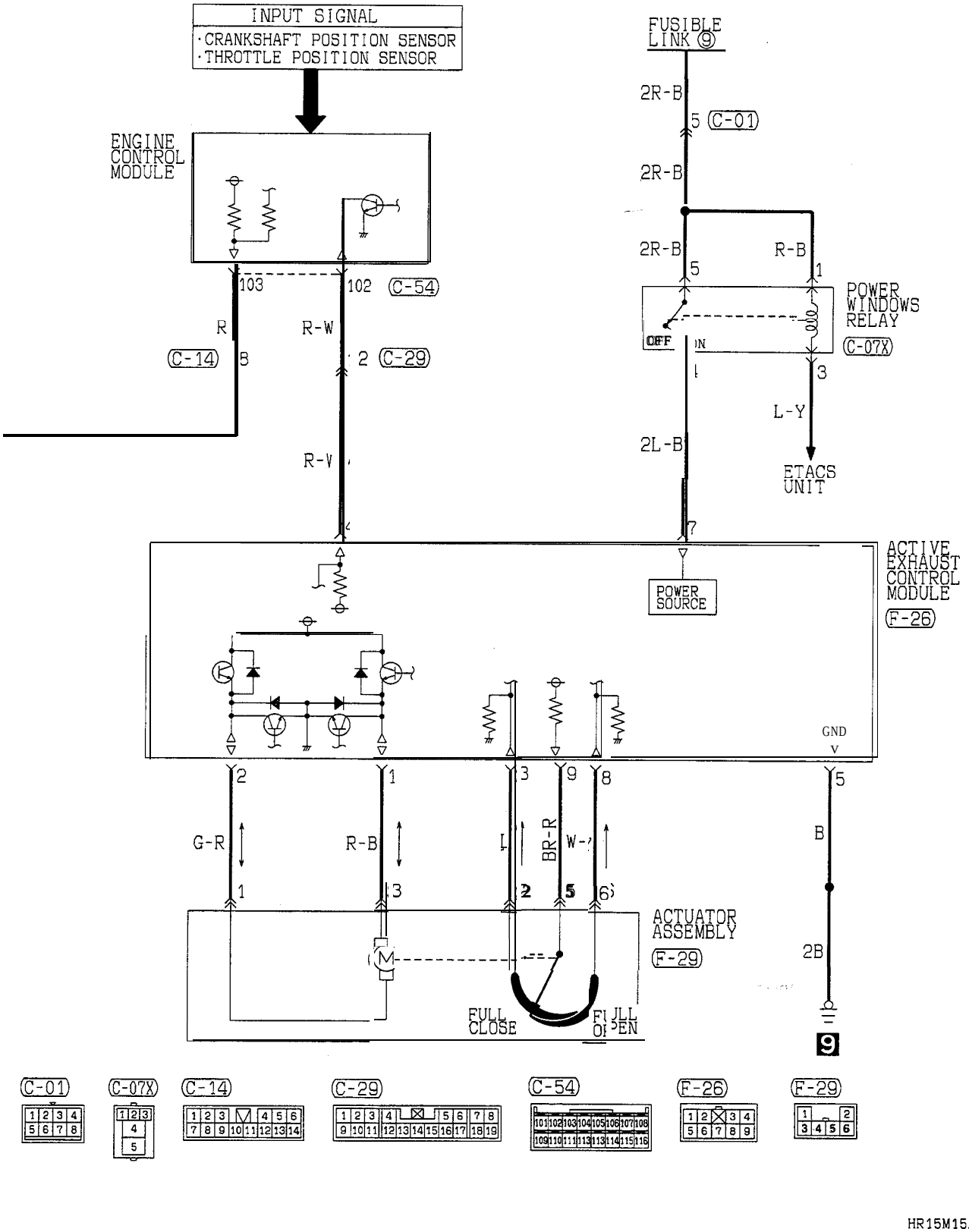
ACTIVE EXHAUST SYSTEM CIRCUIT (UP TO 1993 MODELS)





HR15M15AA

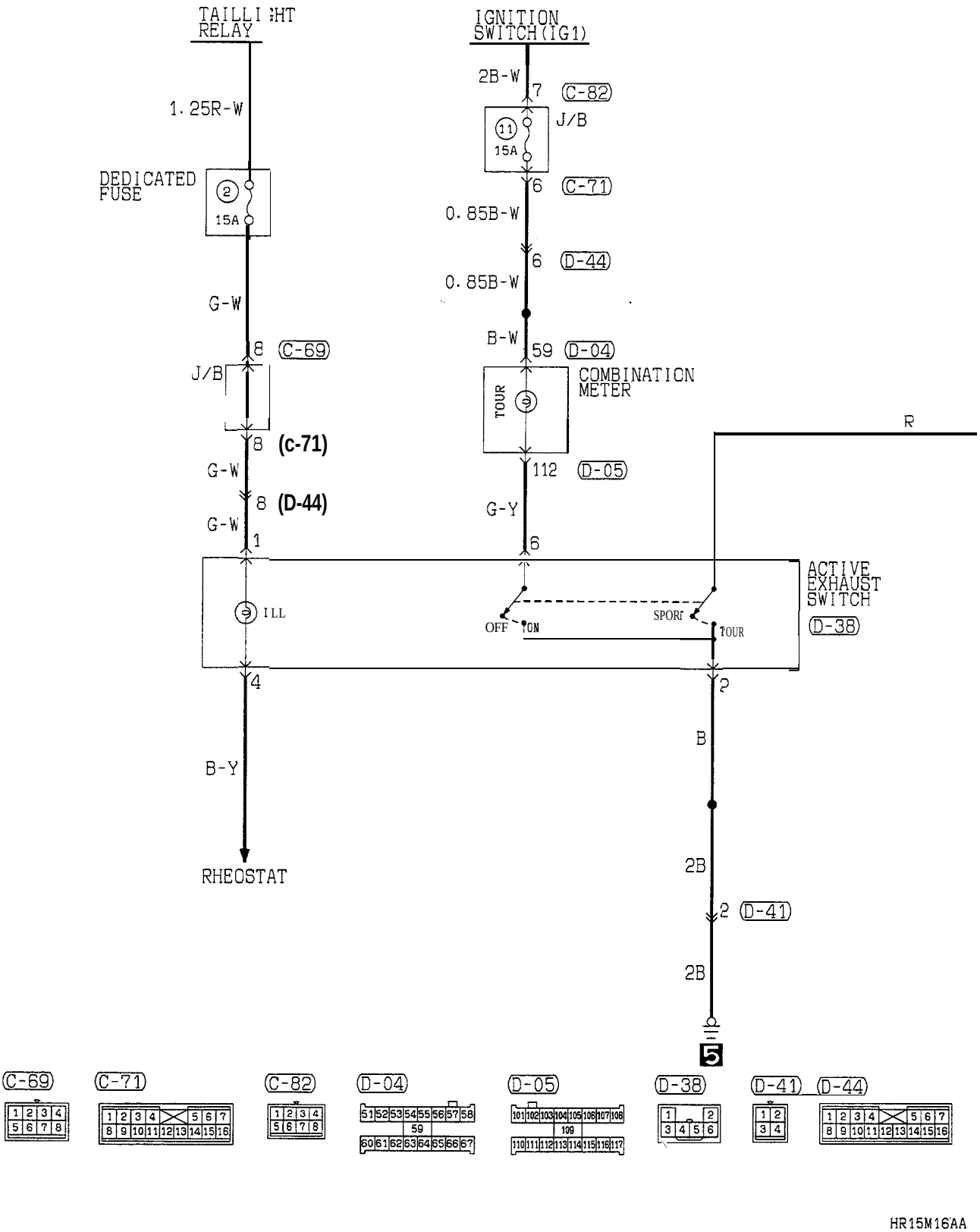
TSB Revision



HR15M15AB

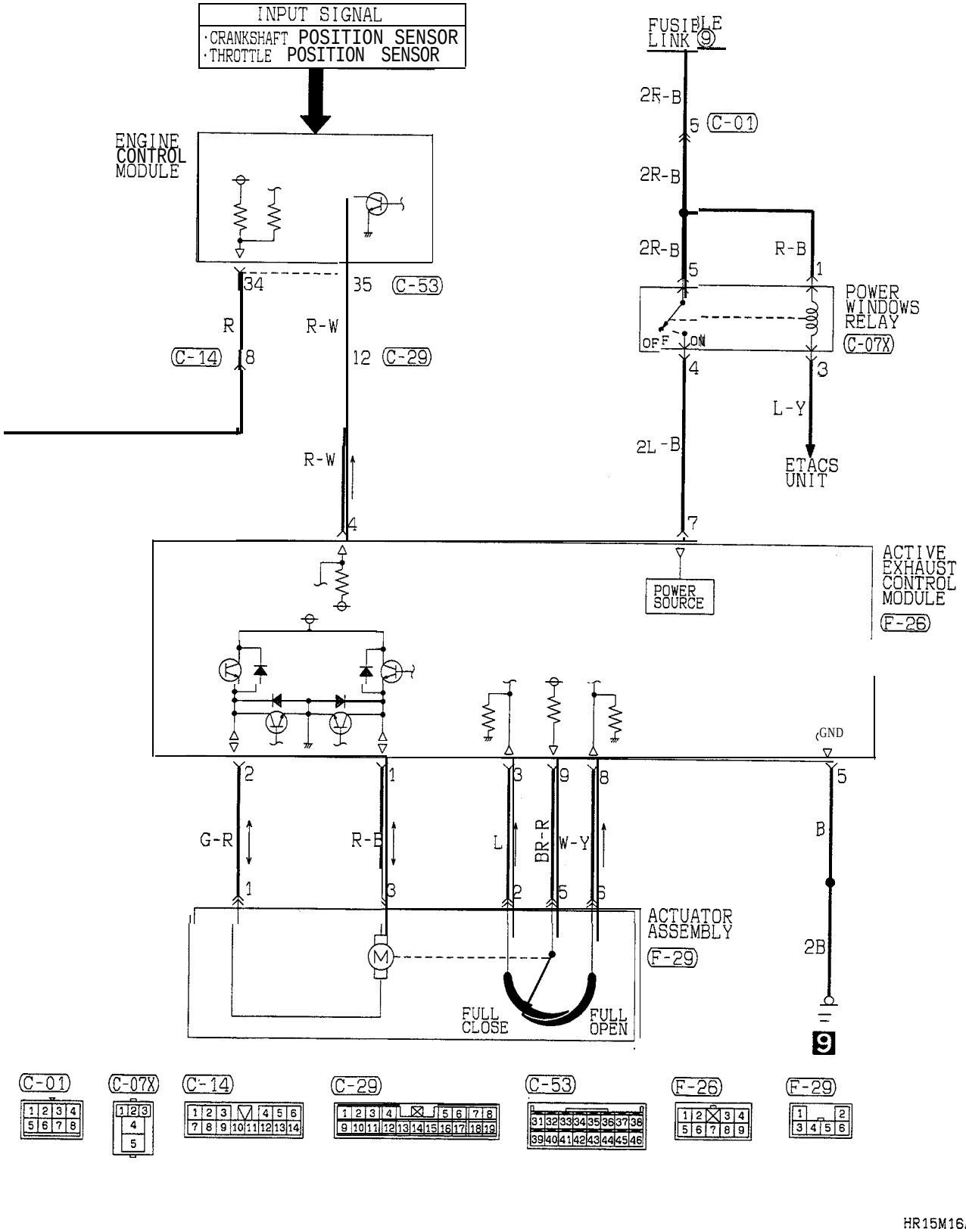
TSB Revision

ACTIVE EXHAUST SYSTEM CIRCUIT (1994 MODELS)



HR15M16AA

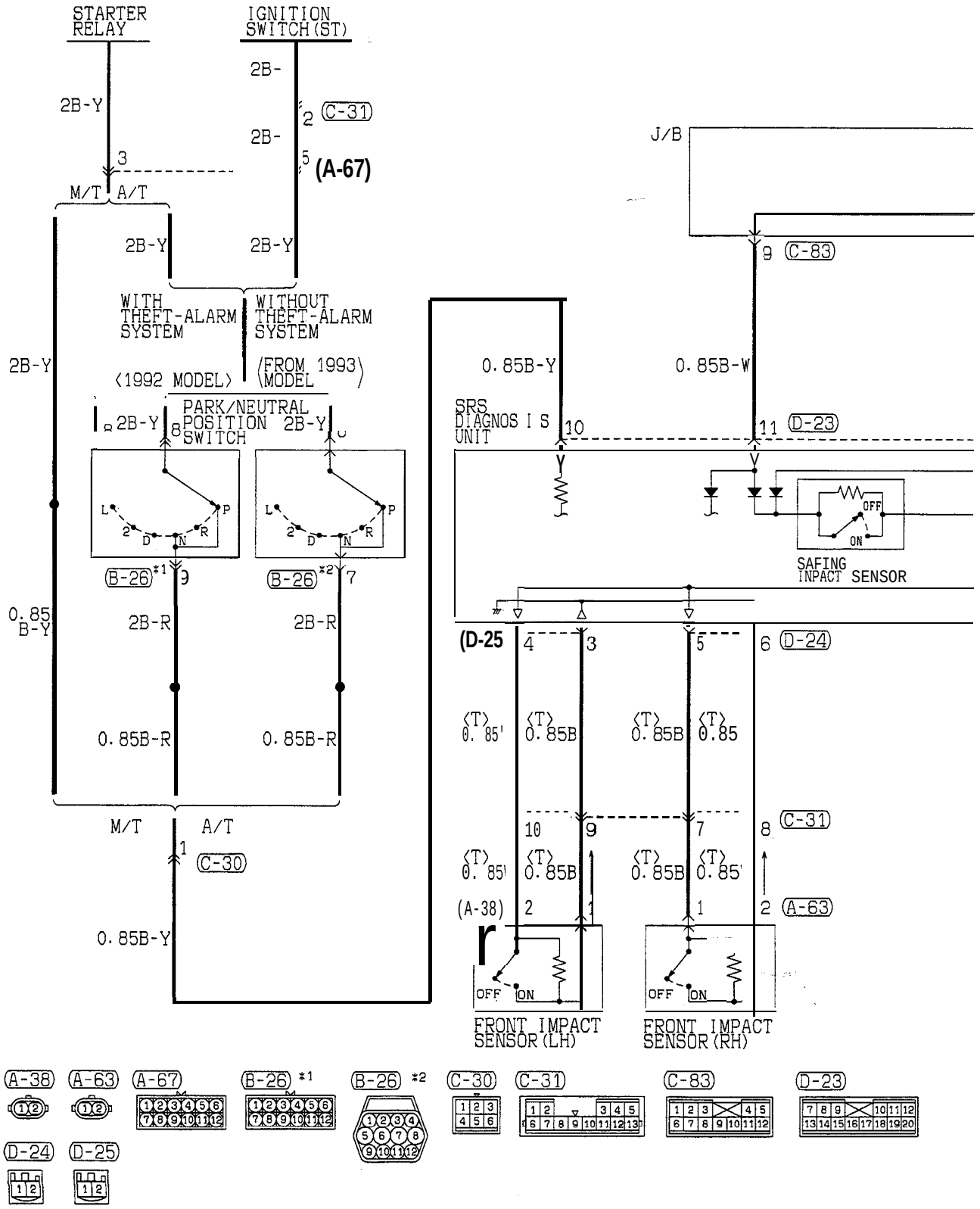
TSB Revision



HR15M16AB

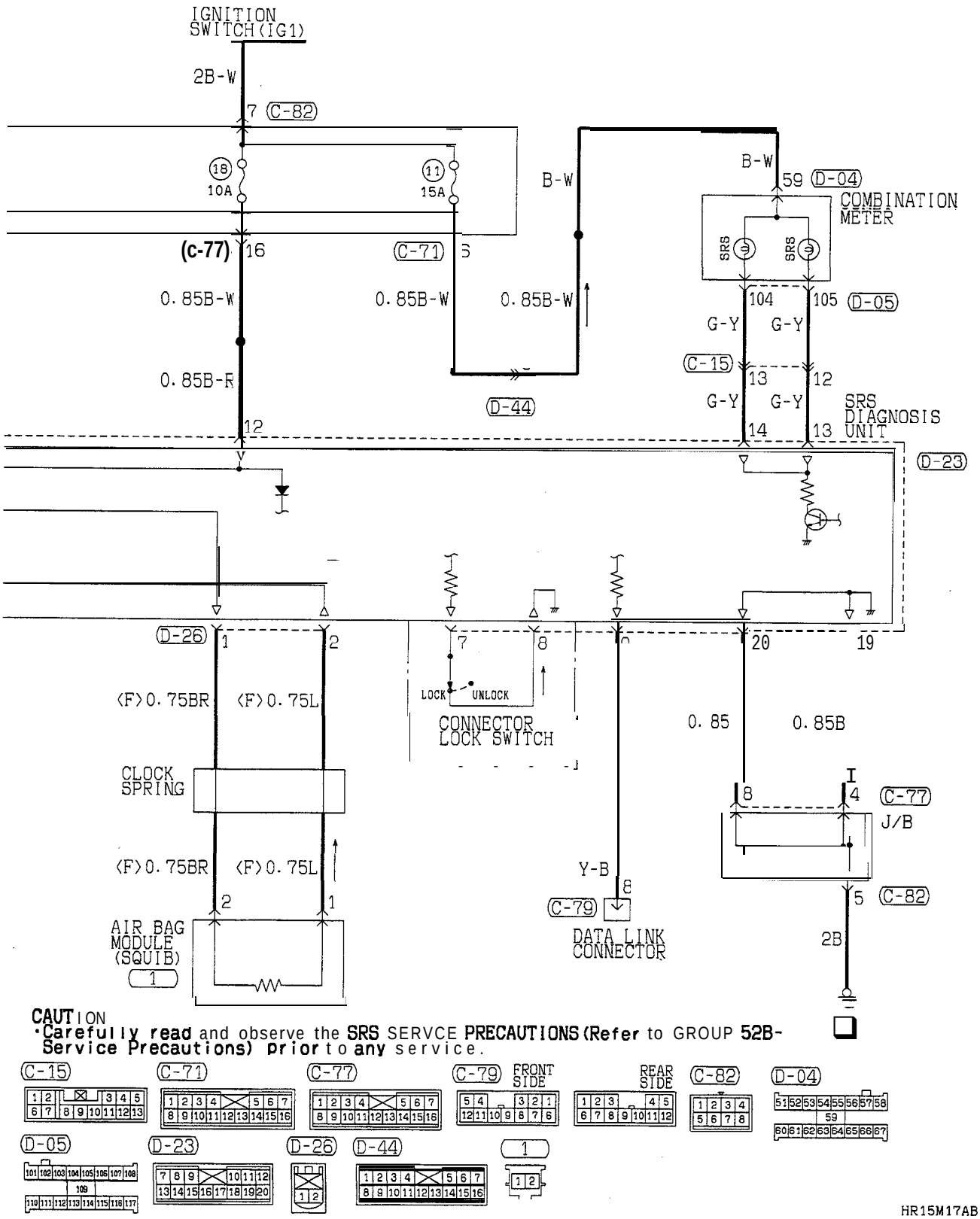
TSB Revision

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) CIRCUIT (UP TO 1993 MODEL)



HR15M17AA

TSB Revision

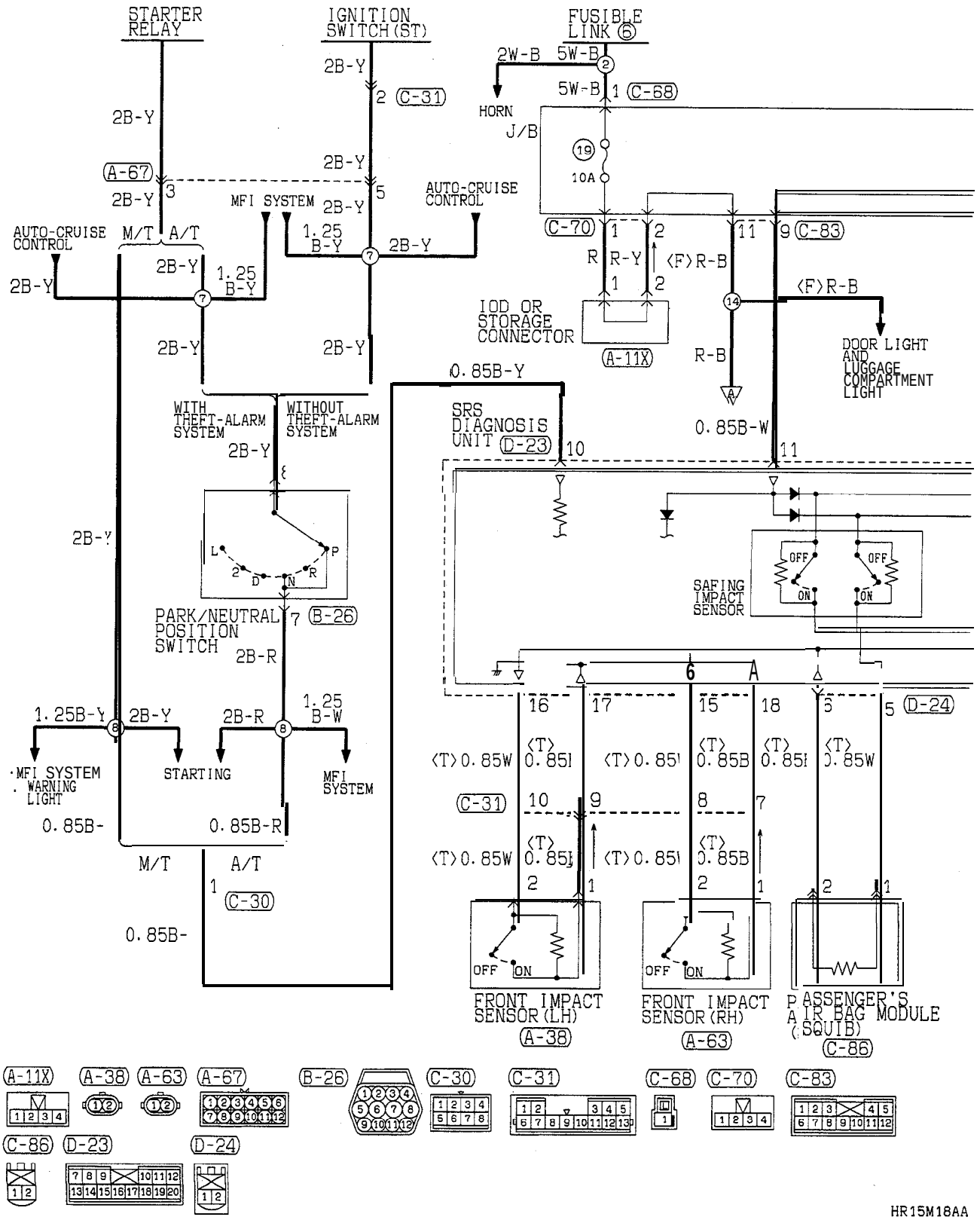


CAUTION
- **Carefully read** and observe the **SRS** SERVCE **PRECAUTIONS (Refer** to GROUP **52B- Service Precautions) Prior** to **any** service.

HR15M17AB

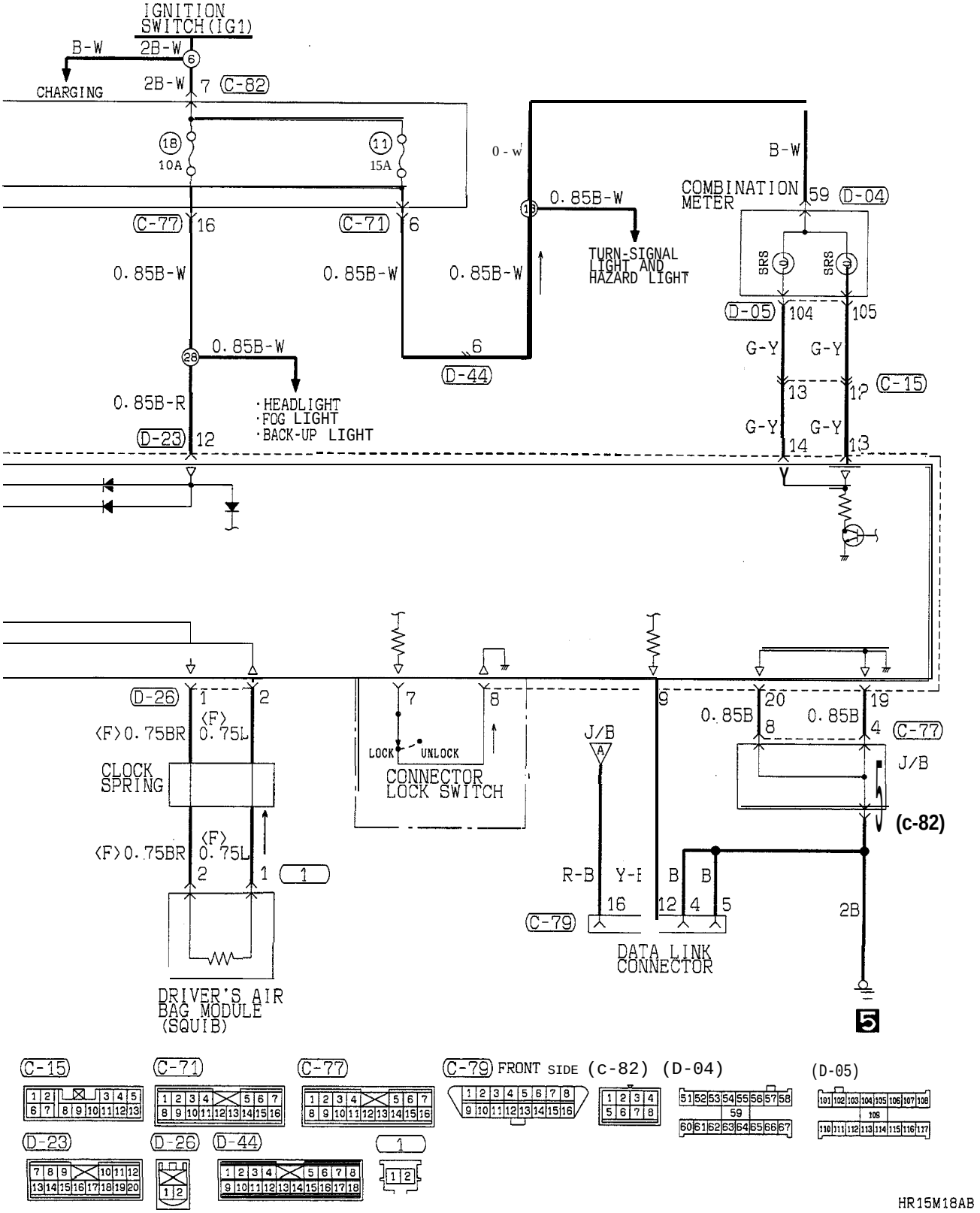
TSB Revision

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) CIRCUIT (FROM 1994 MODELS)



HR15M18AA

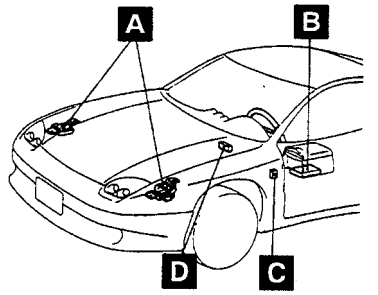
TSB Revision



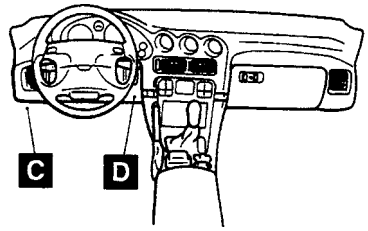
TSB Revision

COMPONENT LOCATION

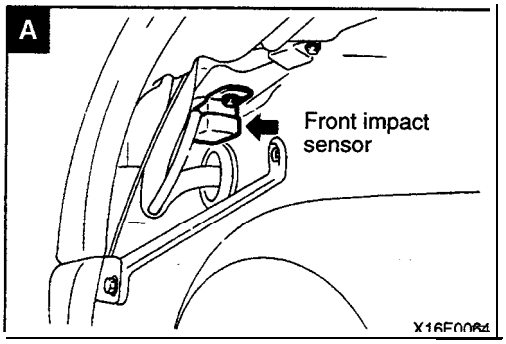
Name	Symbol	Name	Symbol
Data link connector (from 1994 models)	D	Front impact sensor	A
Data link connector (up to 1993 models)	C	SRS diagnosis unit	B

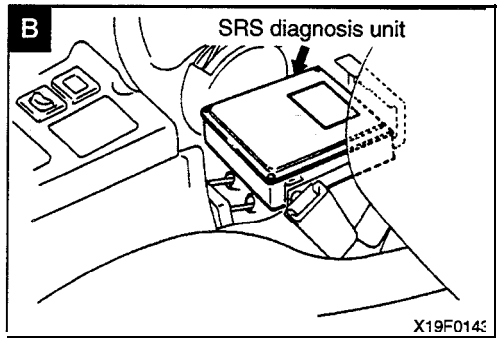


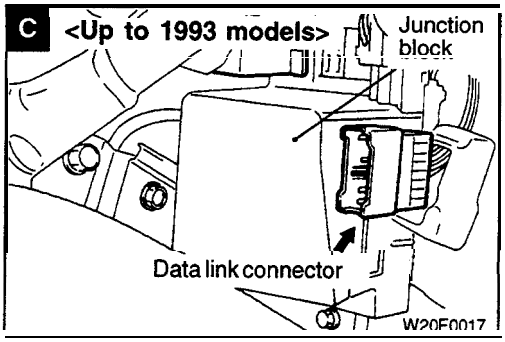
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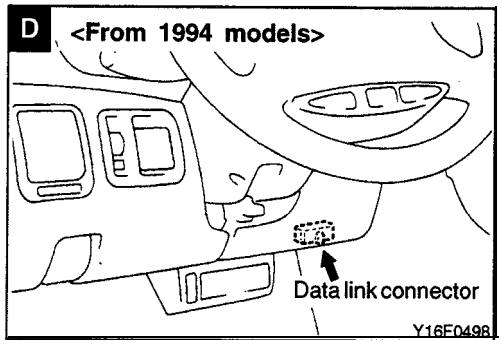


H19F0134
00002691







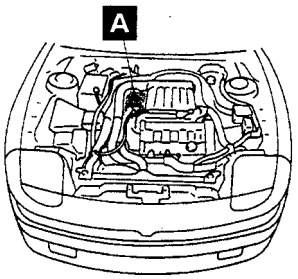


TSB Revision

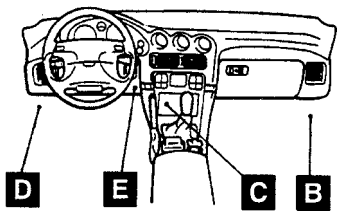
AUTO-CRUISE CONTROL

COMPONENT LOCATION

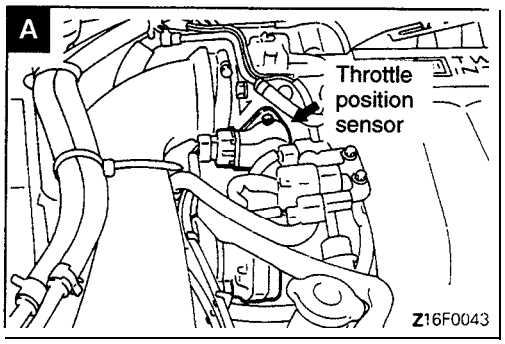
Name	Symbol	Name	Symbol
Auto-cruise control unit	B	Data link connector (up to 1993 models)	D
Auto-cruise relay	C	Engine control module	C
Data link connector (from 1994 models)	E	Throttle position sensor	A



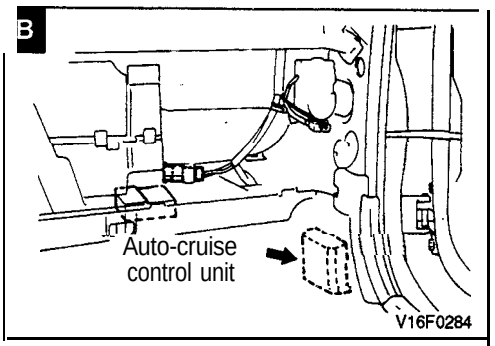
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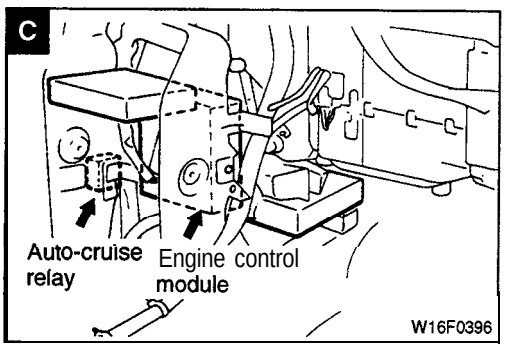
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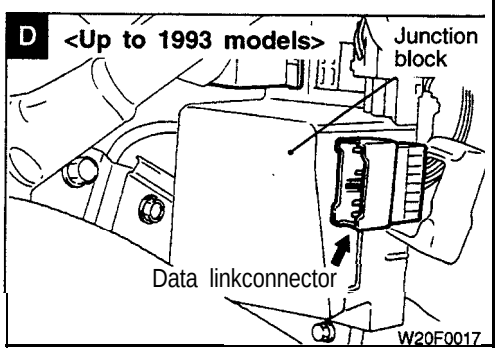
Z16F0043



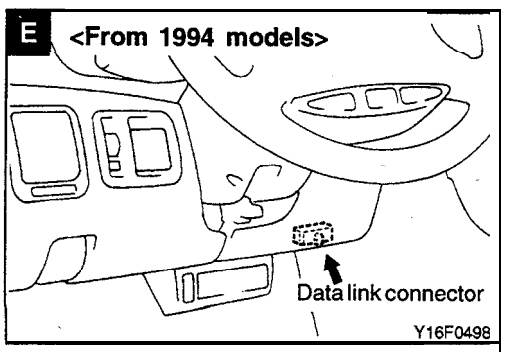
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W16F0396



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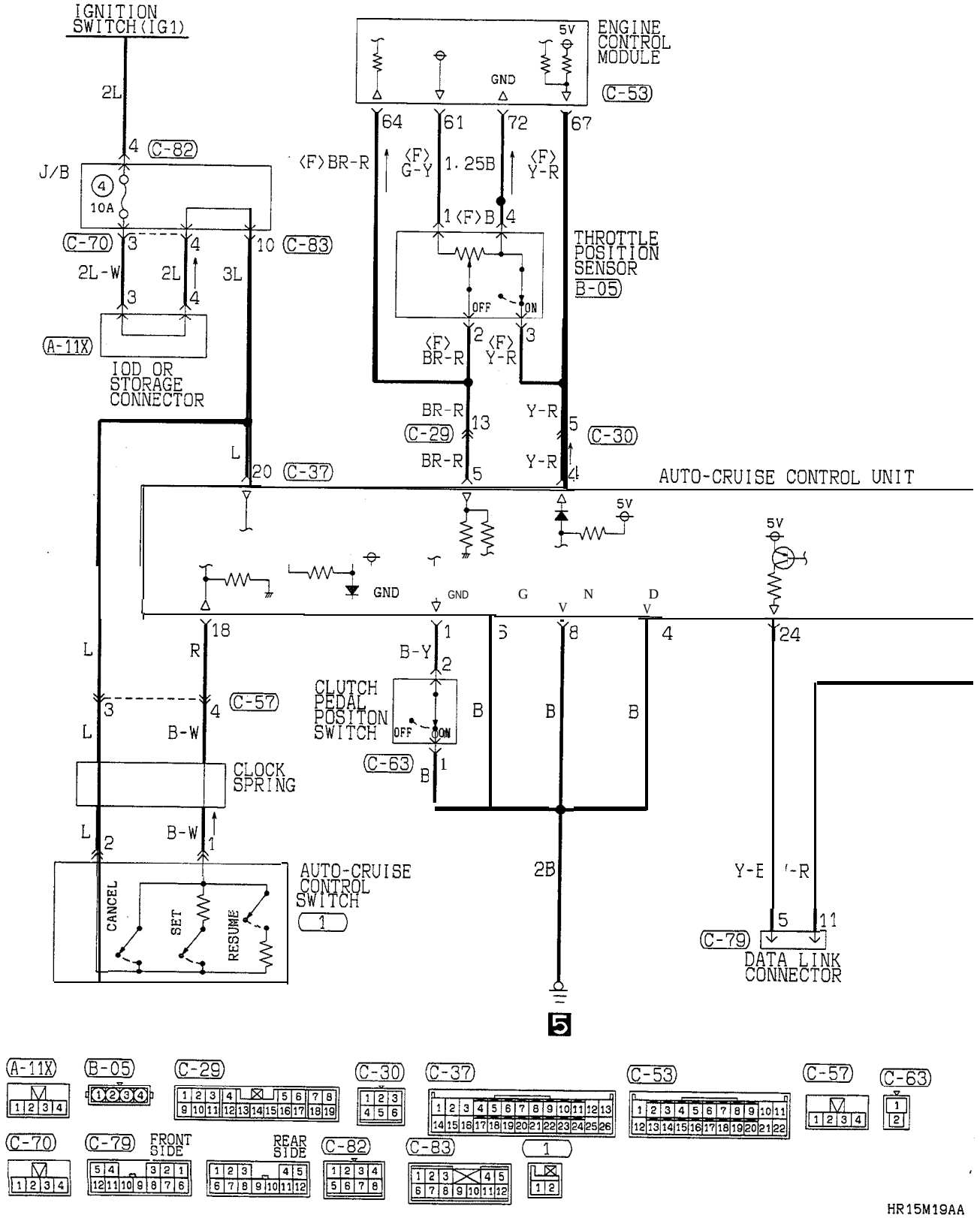


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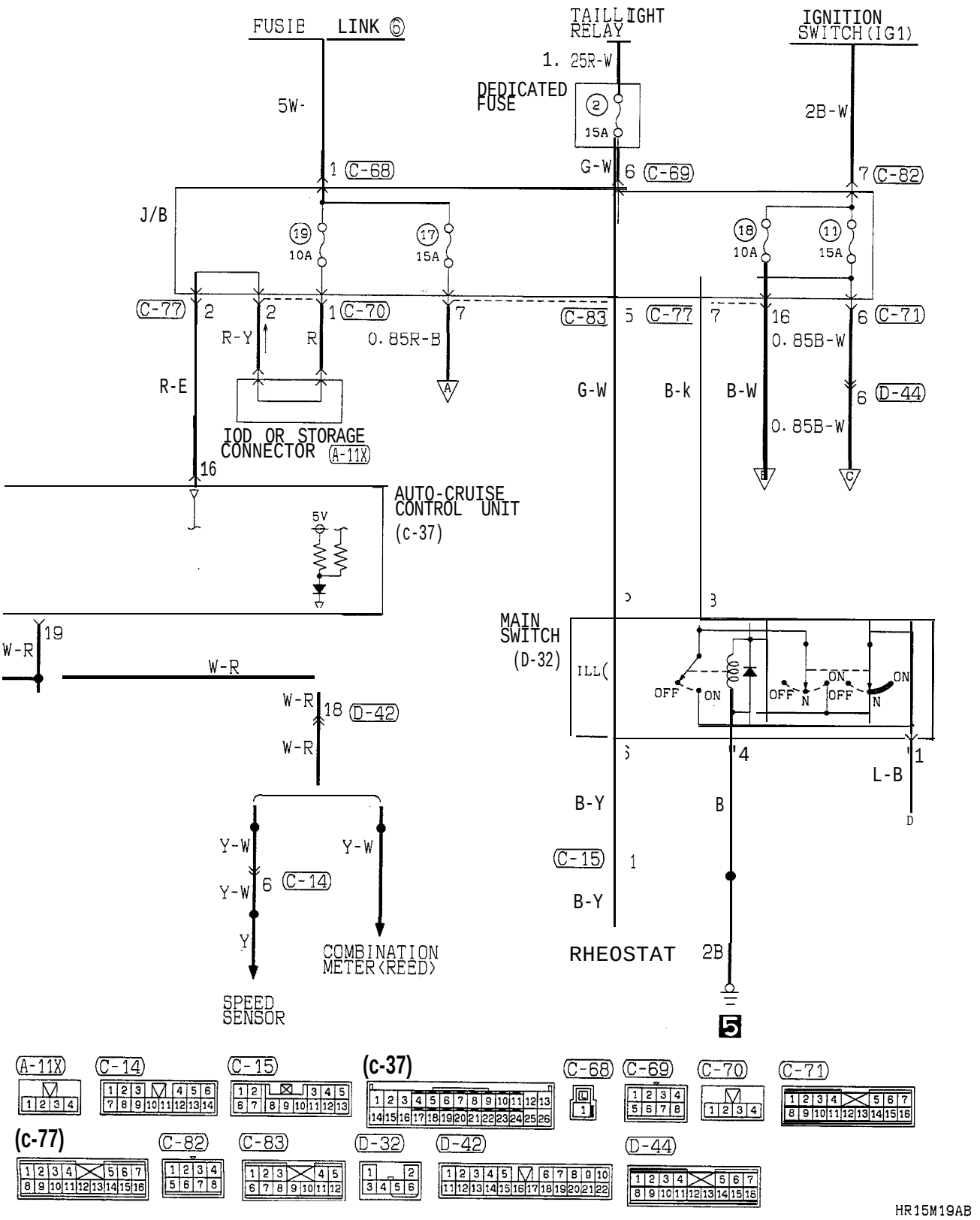
TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (UP TO 1993 MODELS)

<M/T>



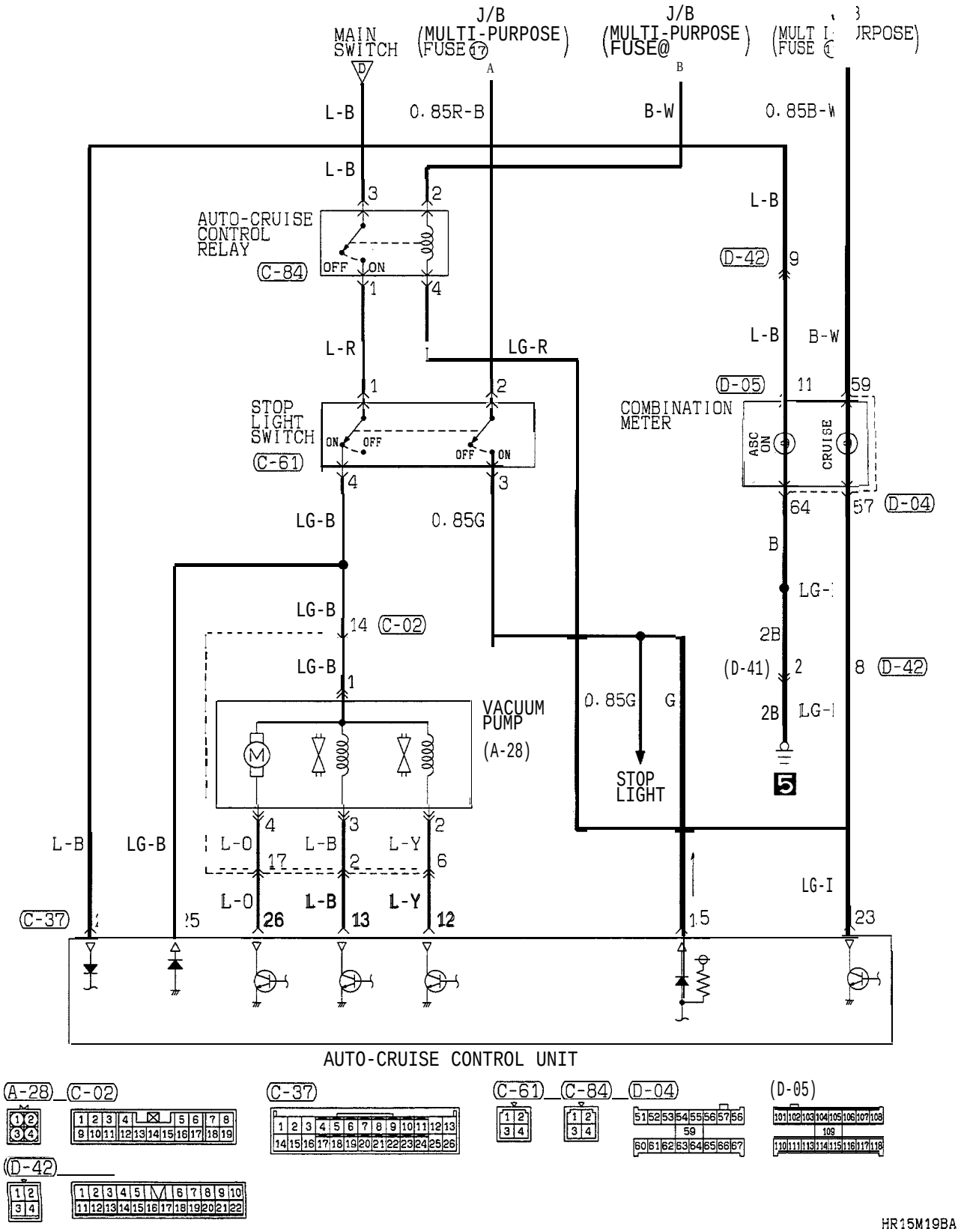
TSB Revision



HR15M19AB

TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (UP TO 1993 MODELS) <M/T> (CONTINUED)



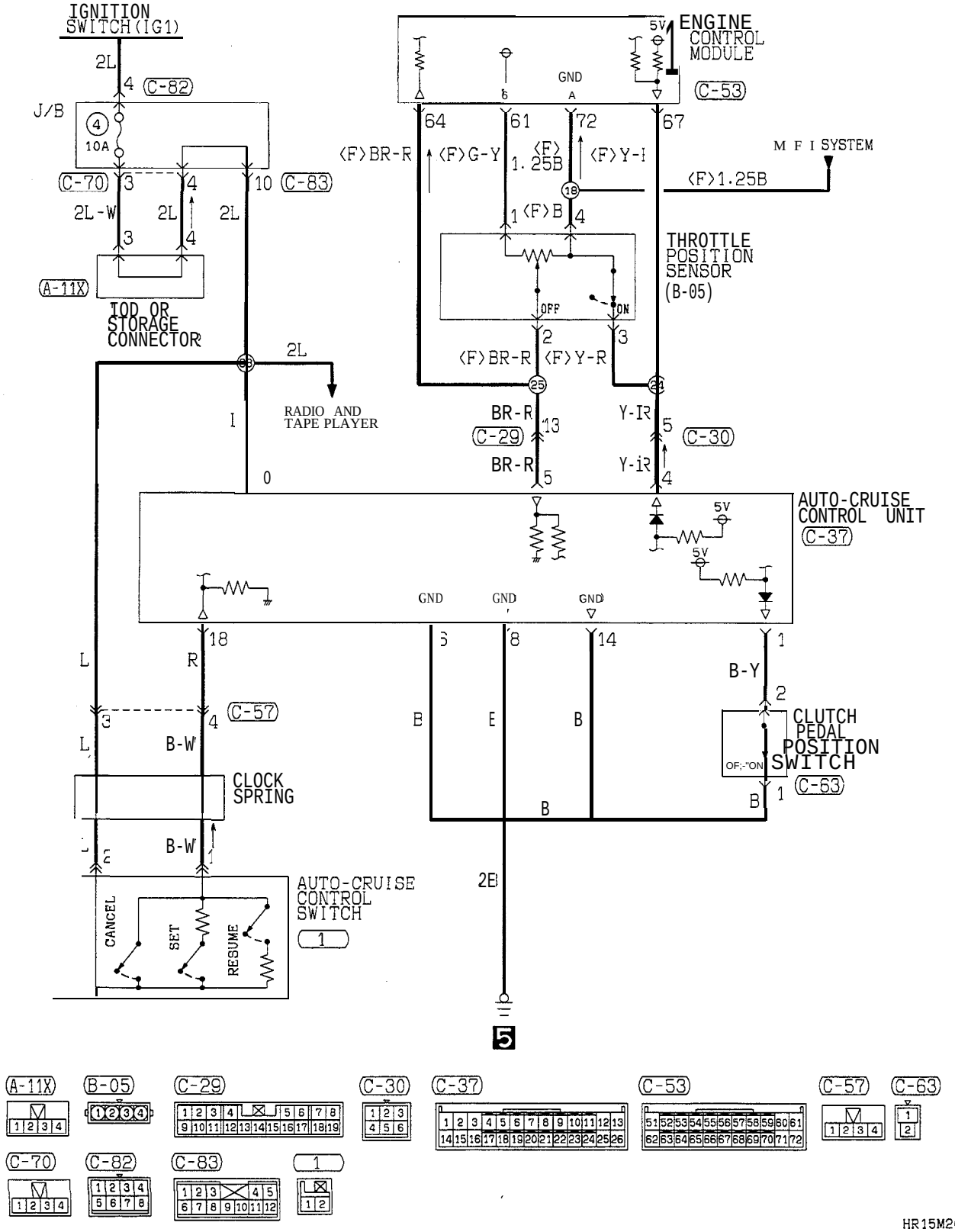
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TSB Revision

NOTES

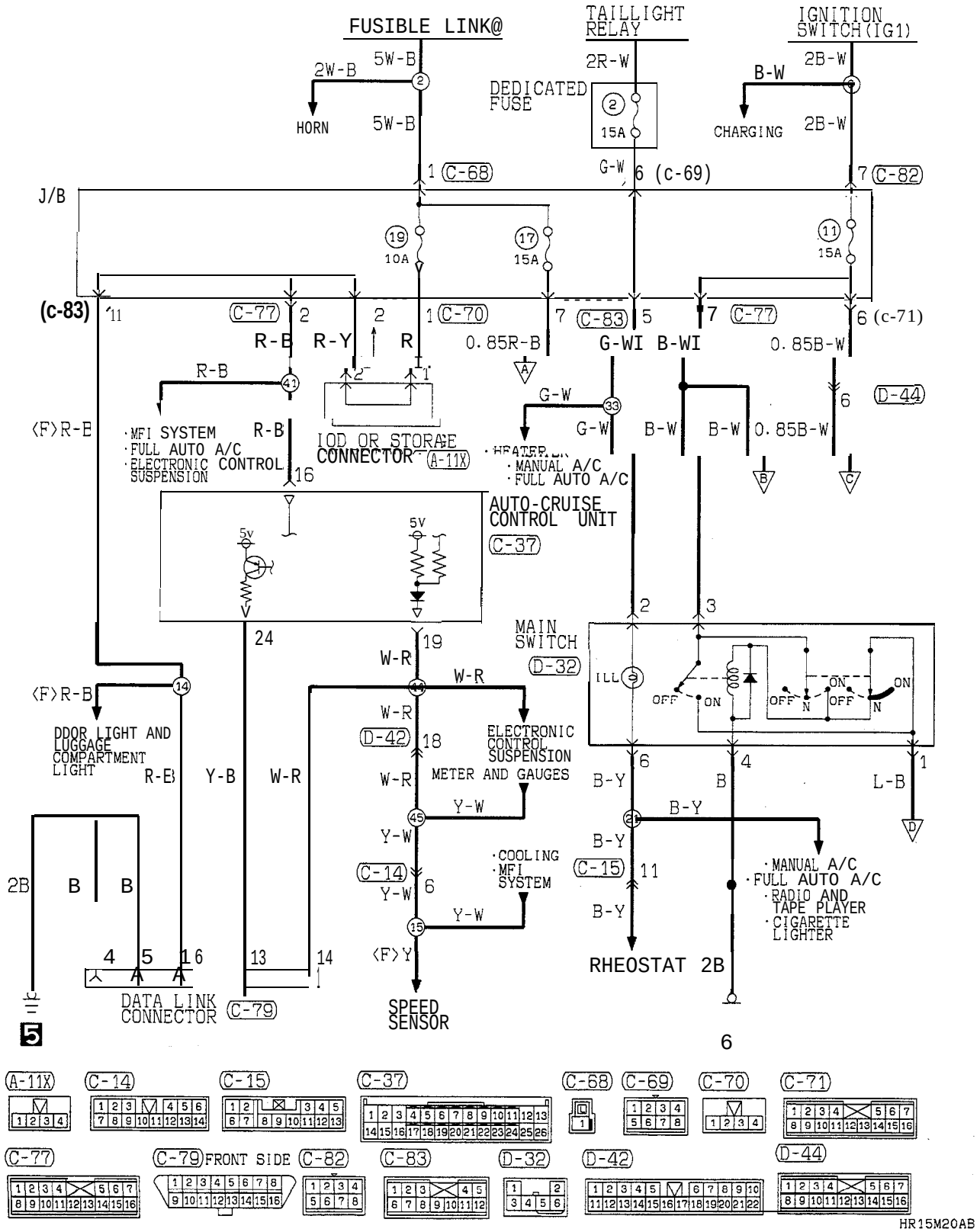
AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS)

<M/T> NON TURBO (FEDERAL)



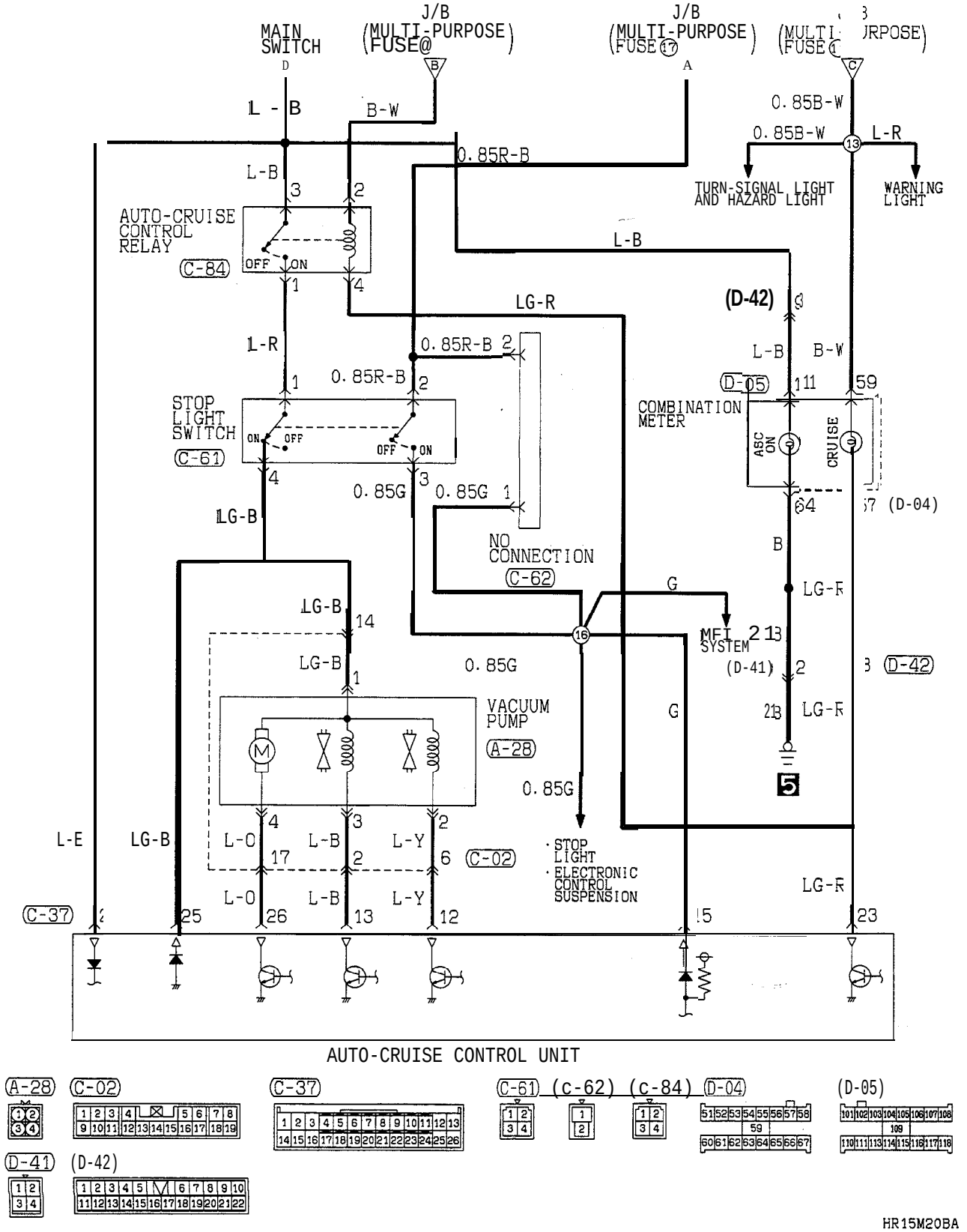
HR15M20AA

TSB Revision



TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS) <M/T> NON TURBO (FEDERAL) (CONTINUED)



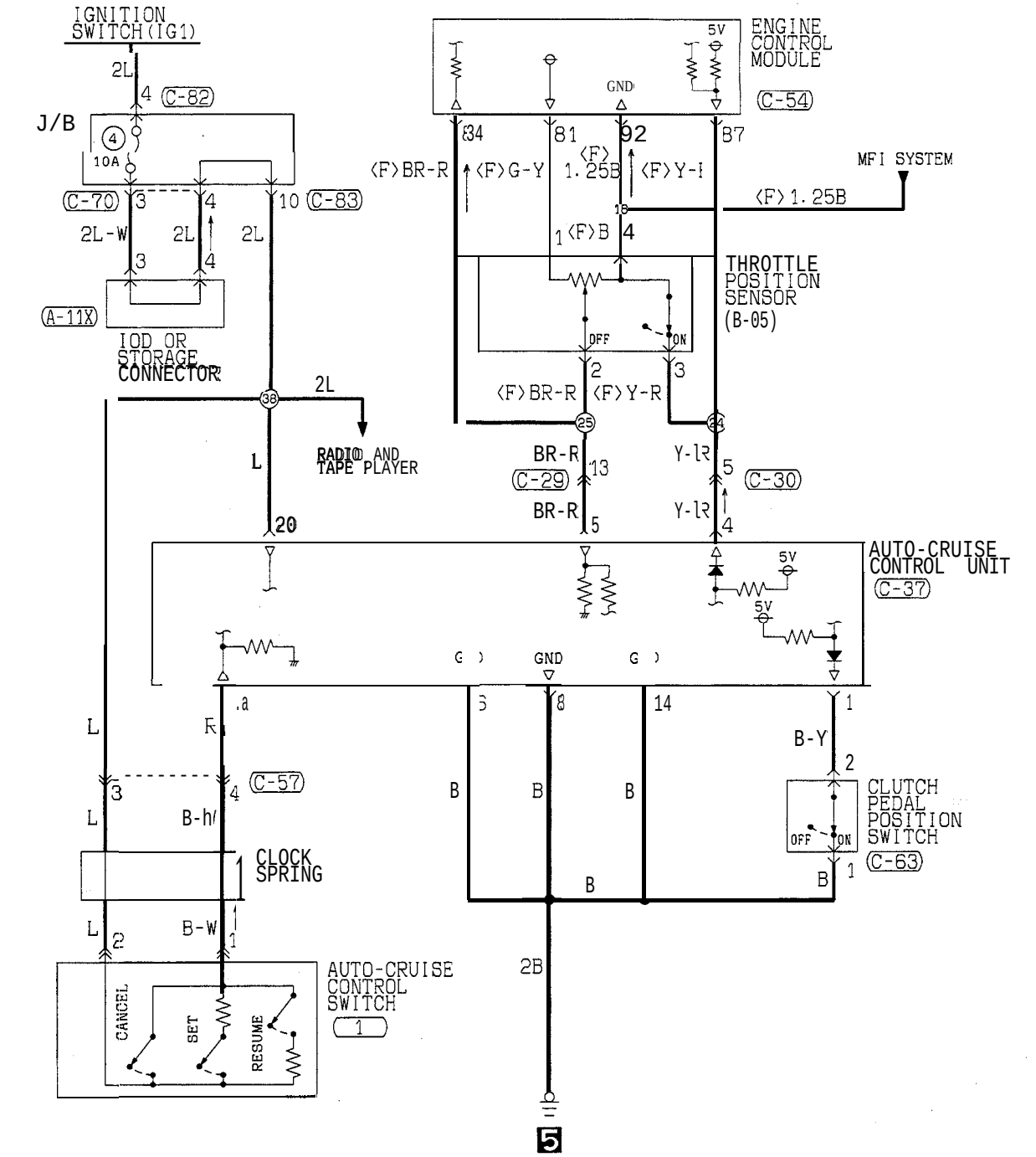
HR15M20BA

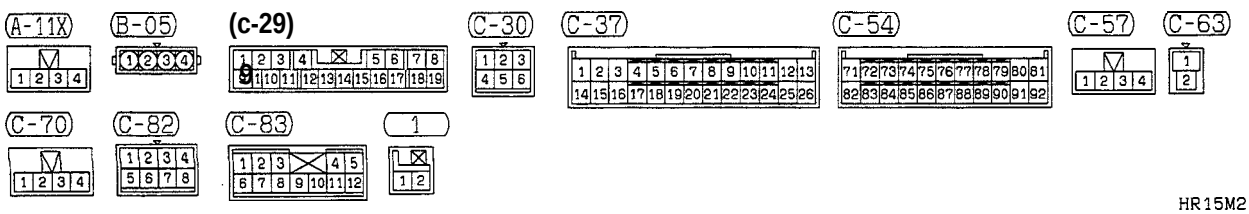
TSB Revision

NOTES

AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS)

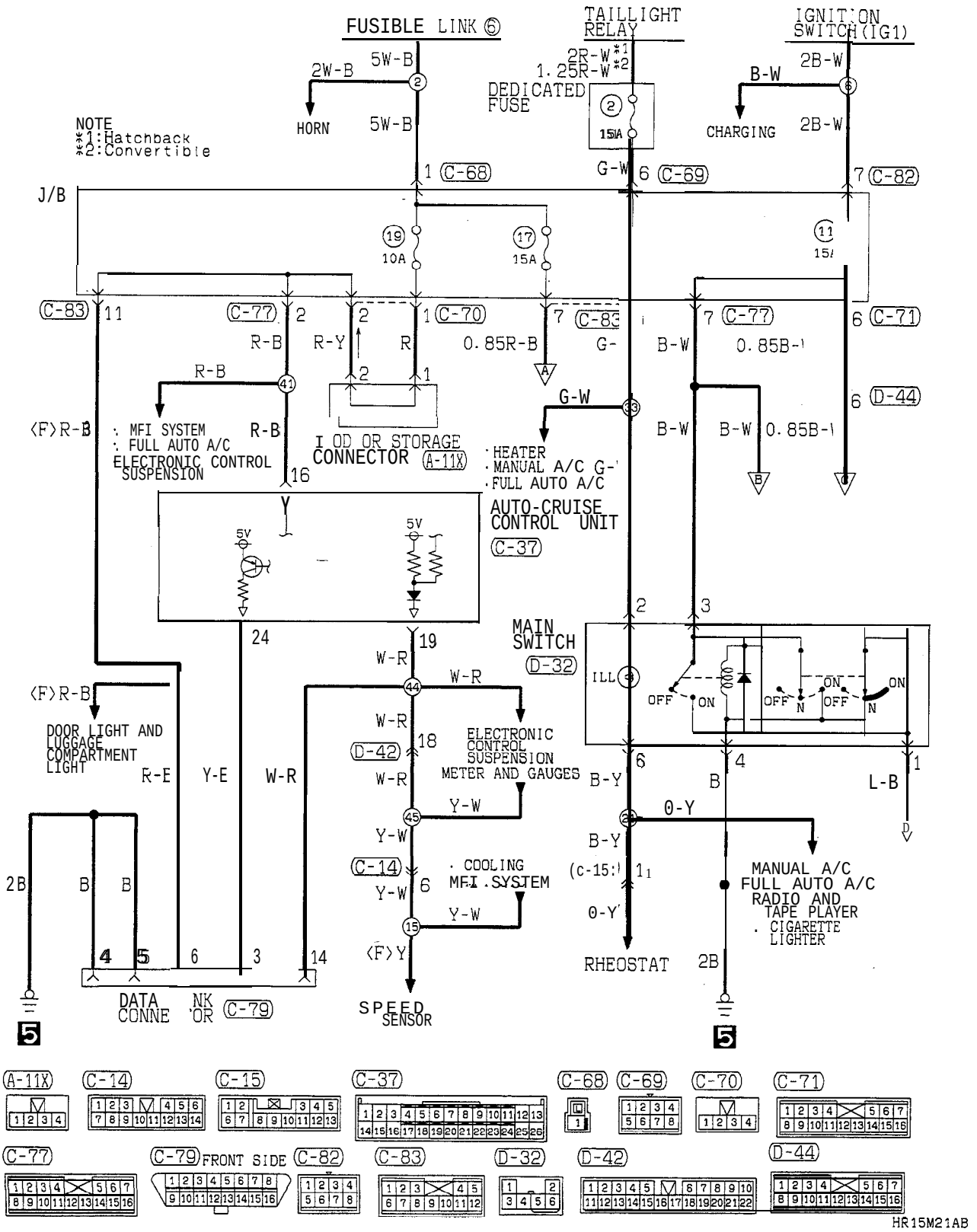
<M/T> TURBO, NON TURBO (CALIFORNIA)





HR15M21AA

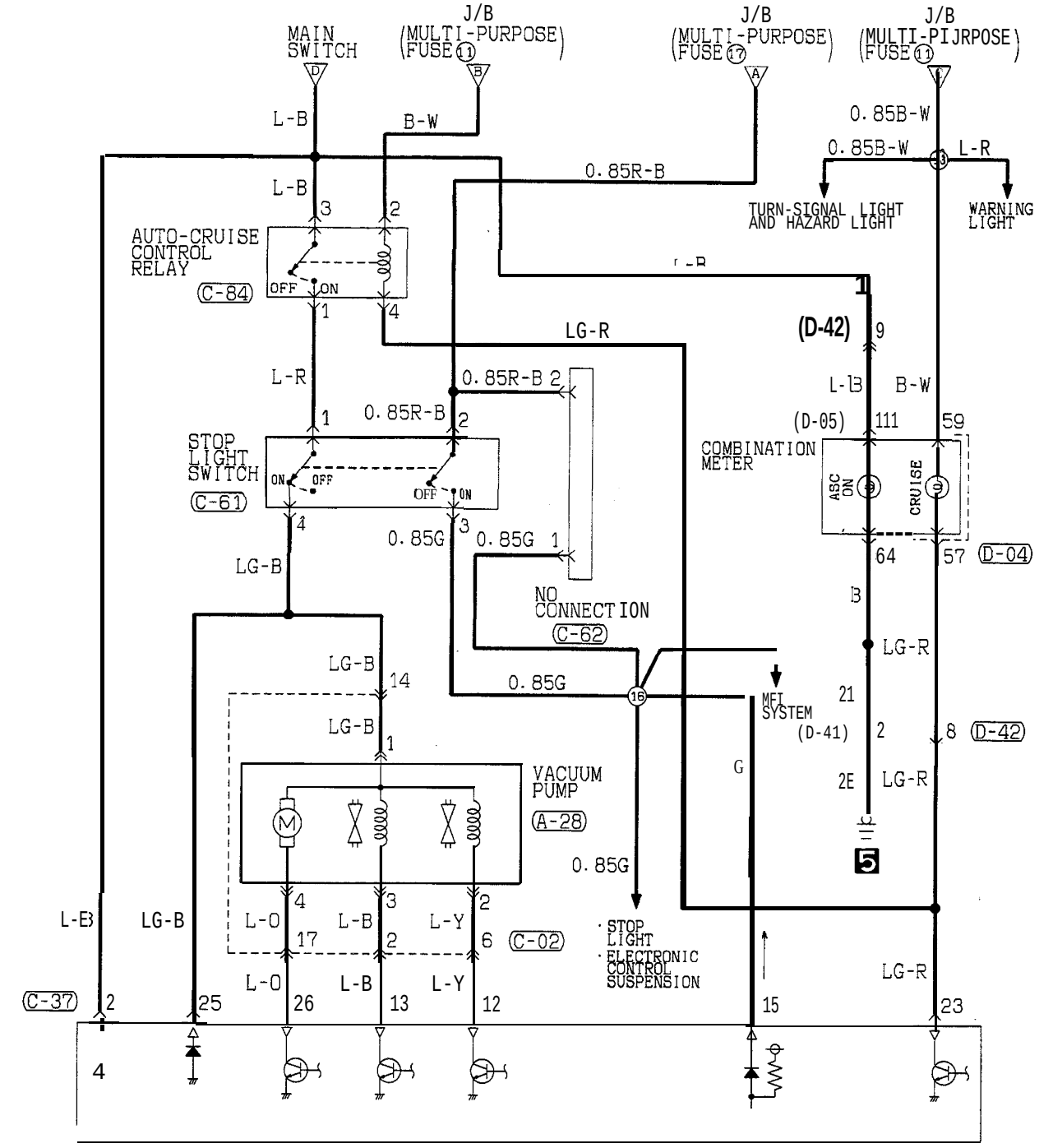
TSB Revision

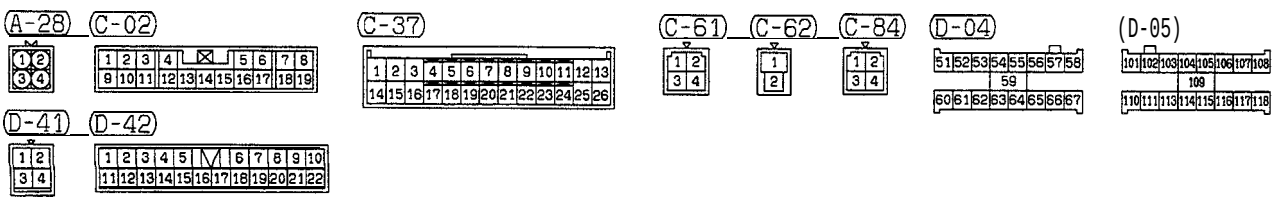


HR15M21AB

TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS) <M/T> TURBO, NON TURBO (CALIFORNIA) (CONTINUED)





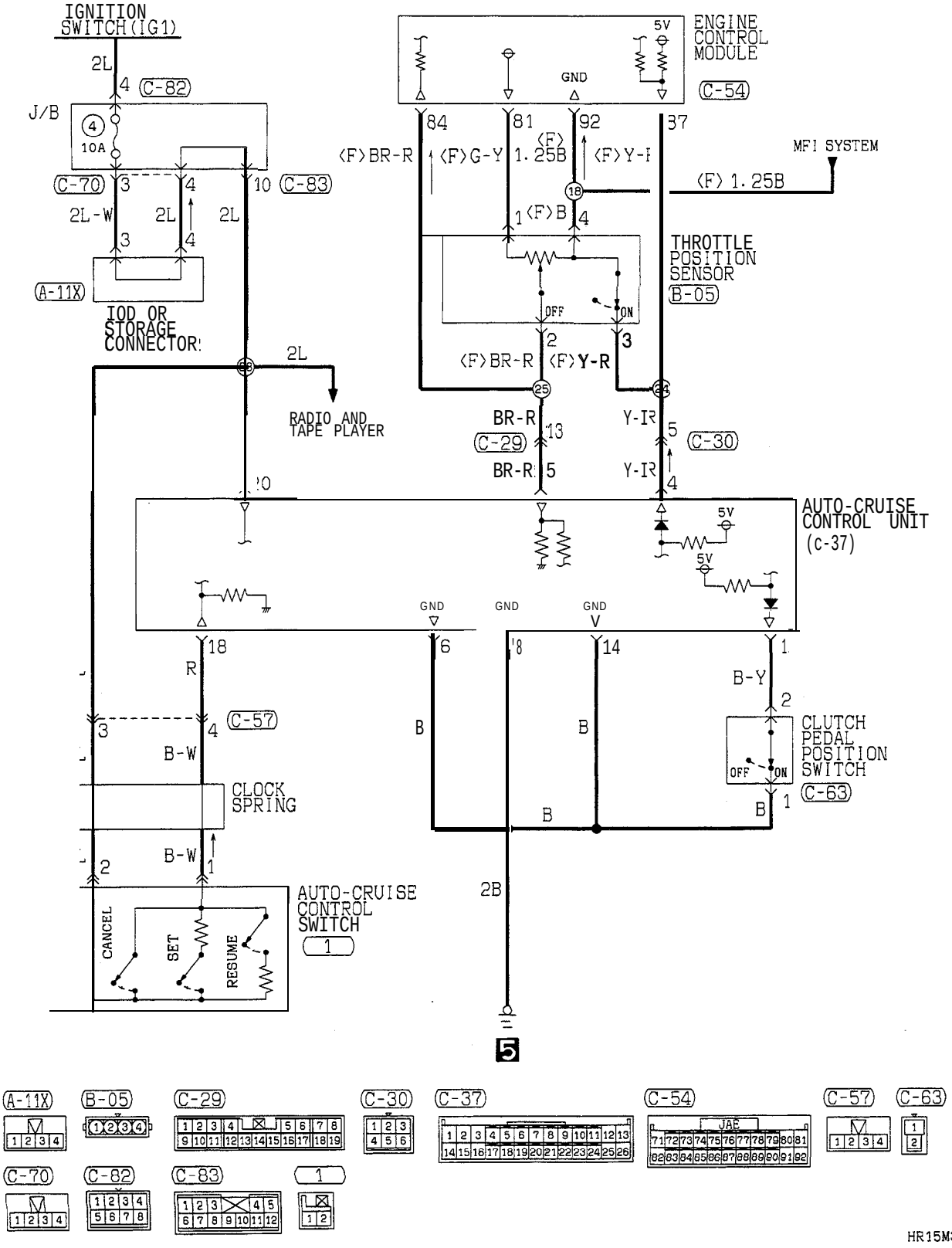
HR15M21BA

TSB Revision

NOTES

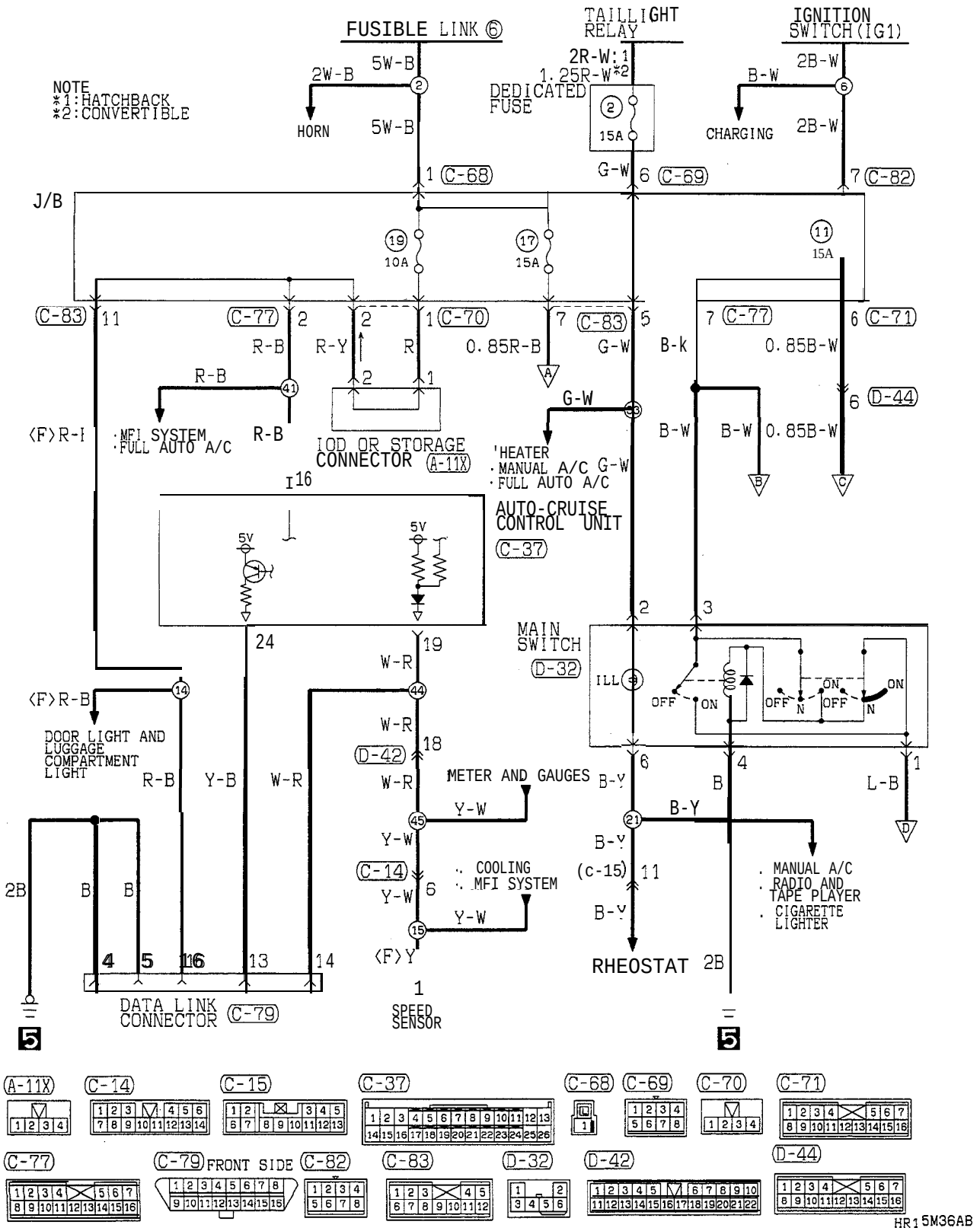
AUTO-CRUISE CONTROL CIRCUIT (FROM 1996 MODELS)

<M/T>



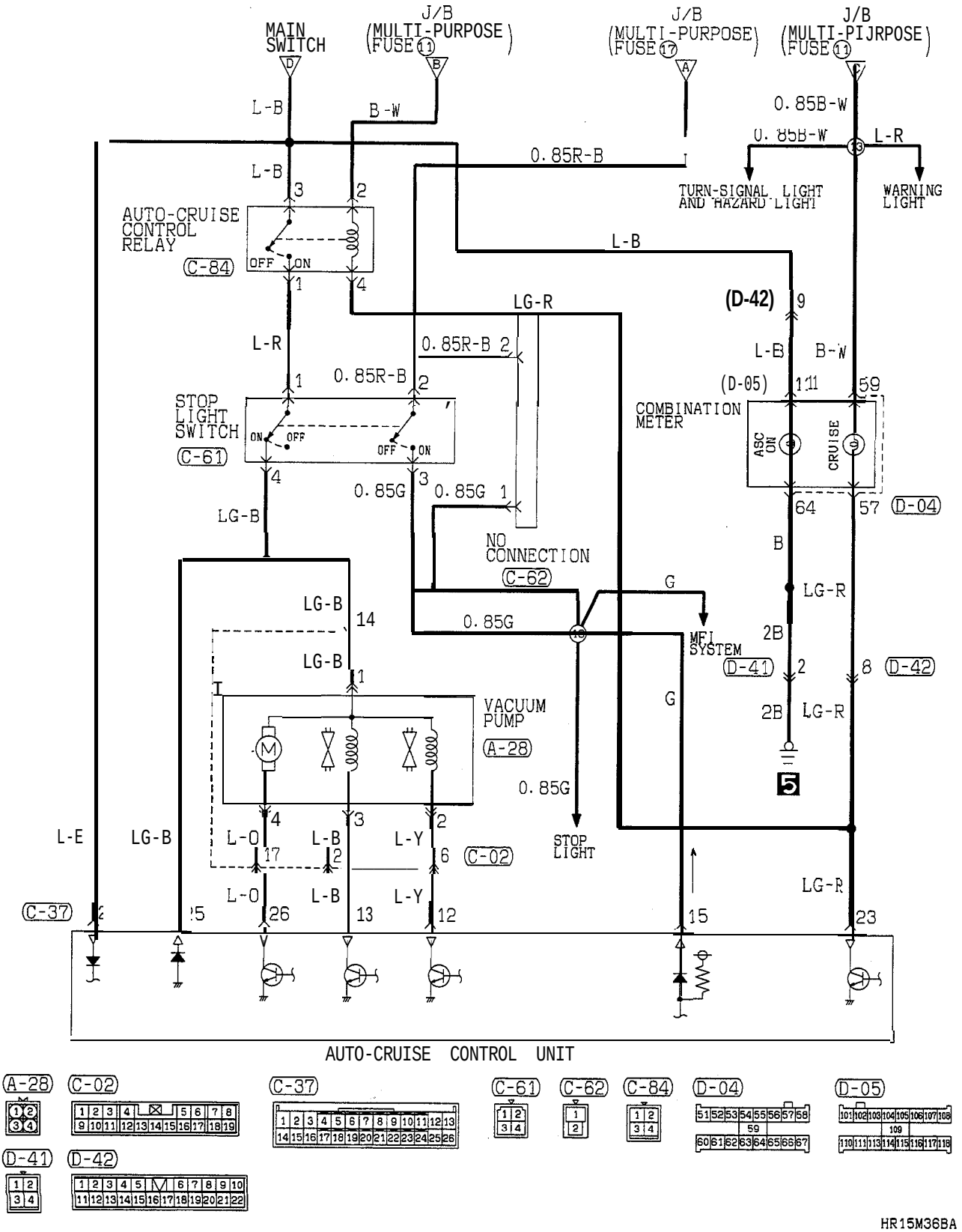
HR15M36AA

TSB Revision



TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (FROM 1996 MODELS) <M/T> (CONTINUED)



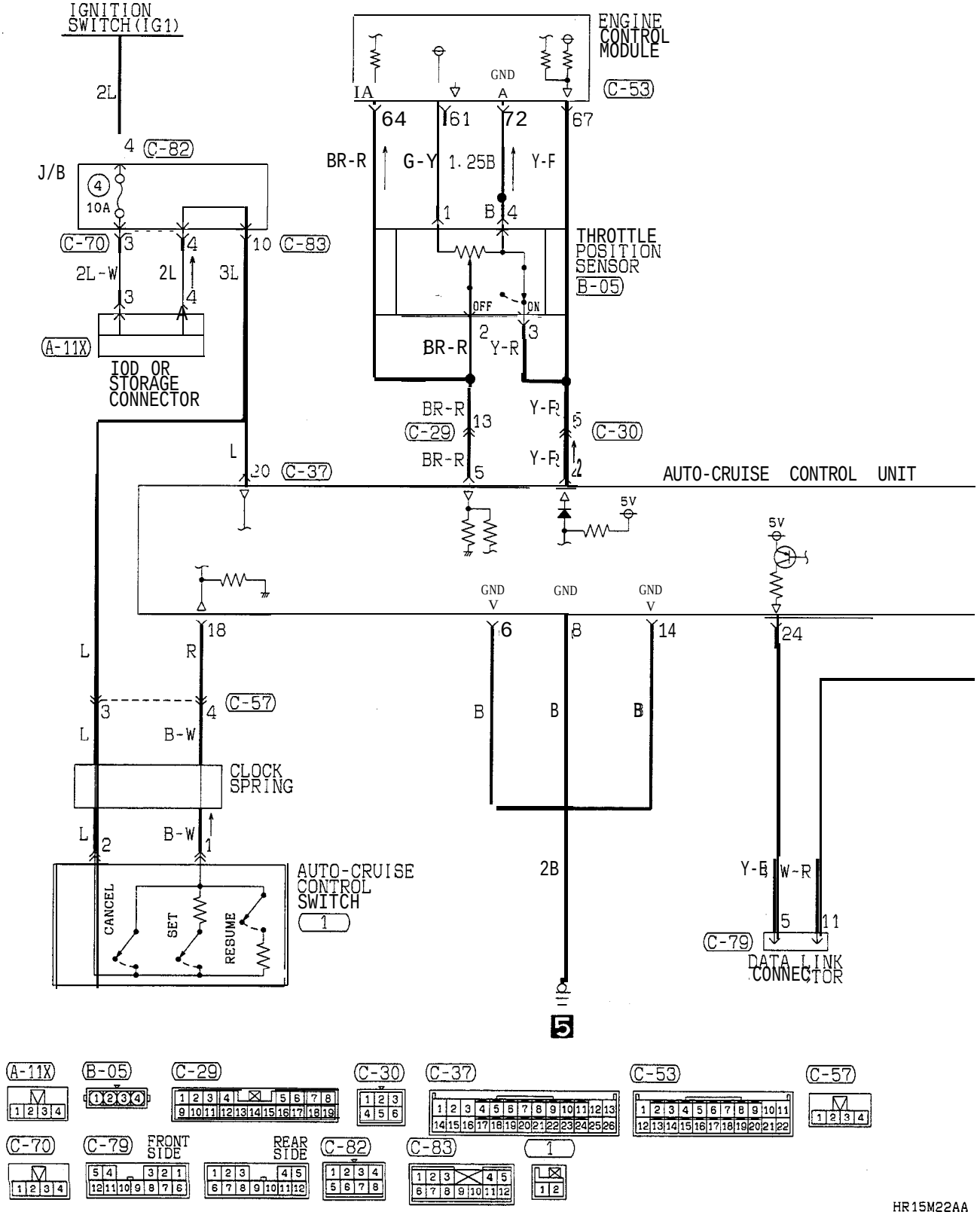
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TSB Revision

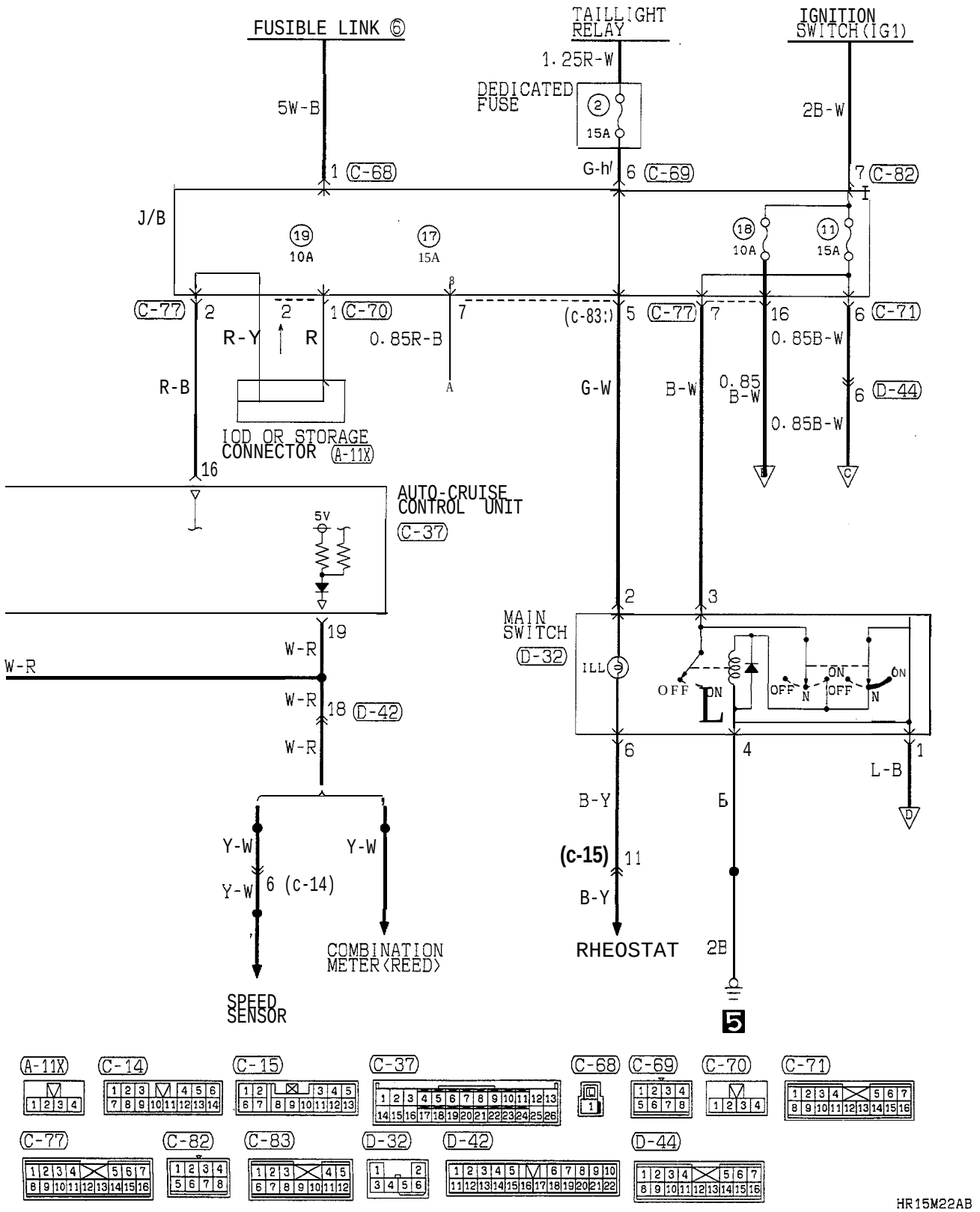
NOTES

AUTO-CRUISE CONTROL CIRCUIT (1992 MODEL)

<A/T>

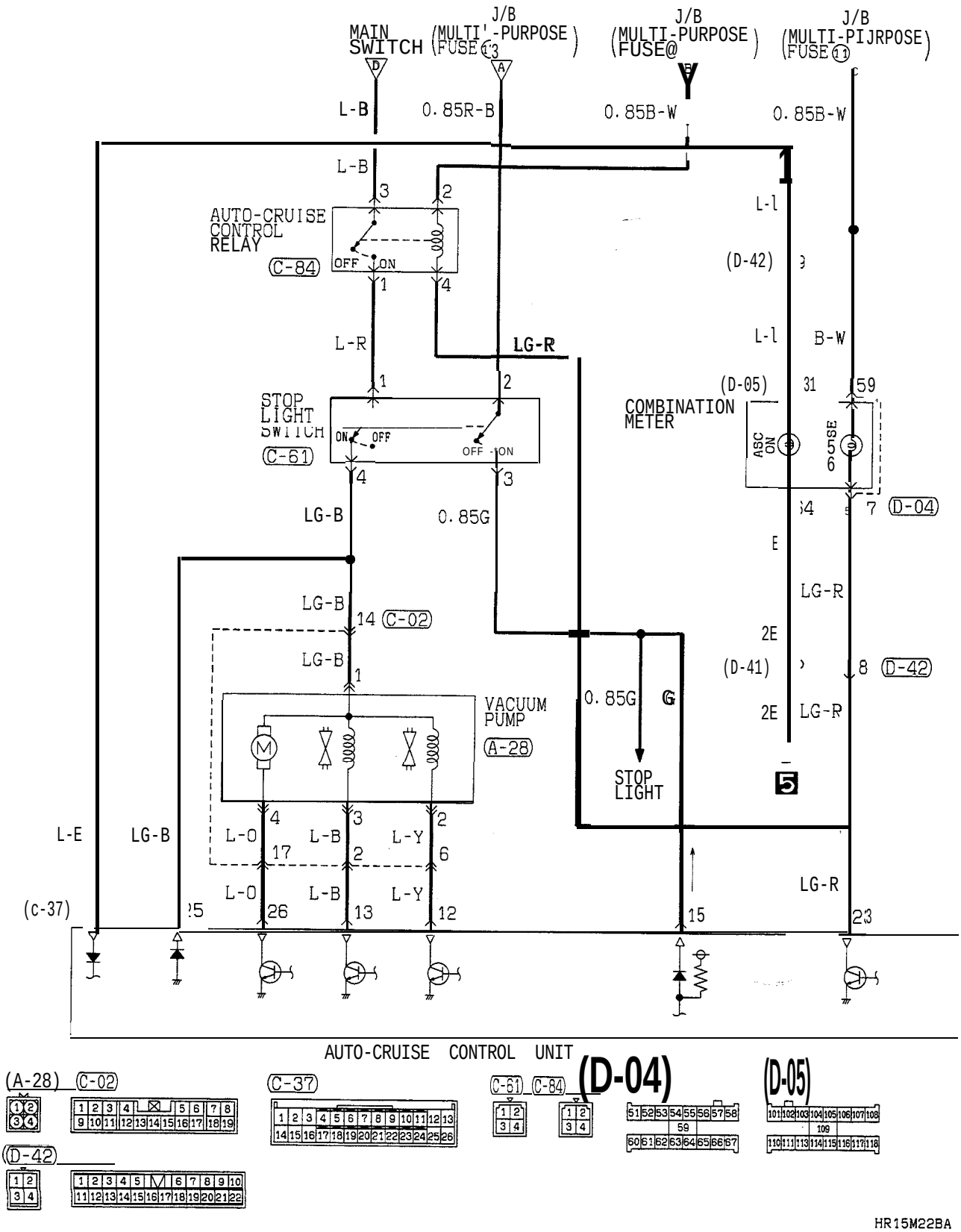


TSB Revision



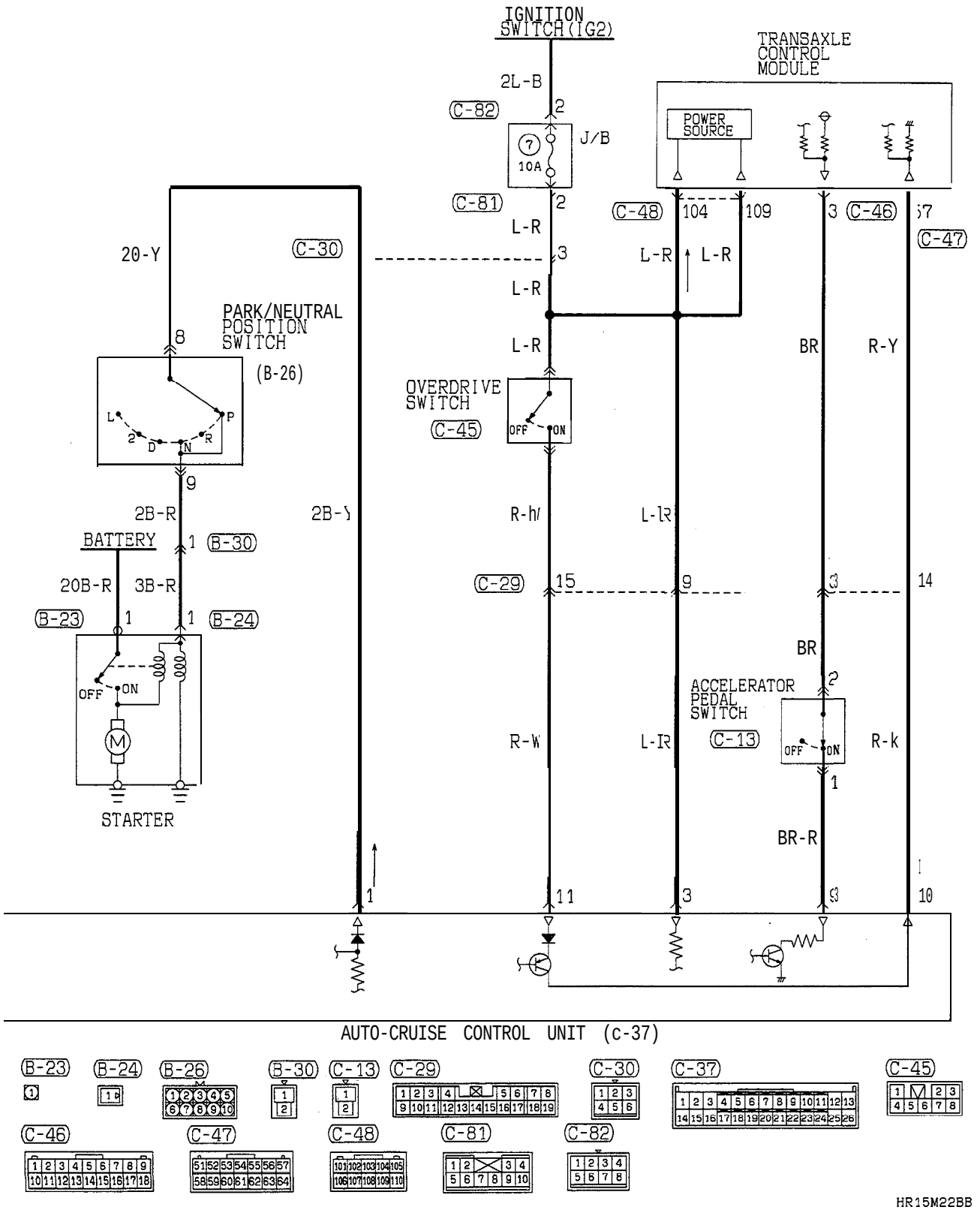
TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1992 MODEL) <A/T> (CONTINUED)



HR15M22BA

TSB Revision

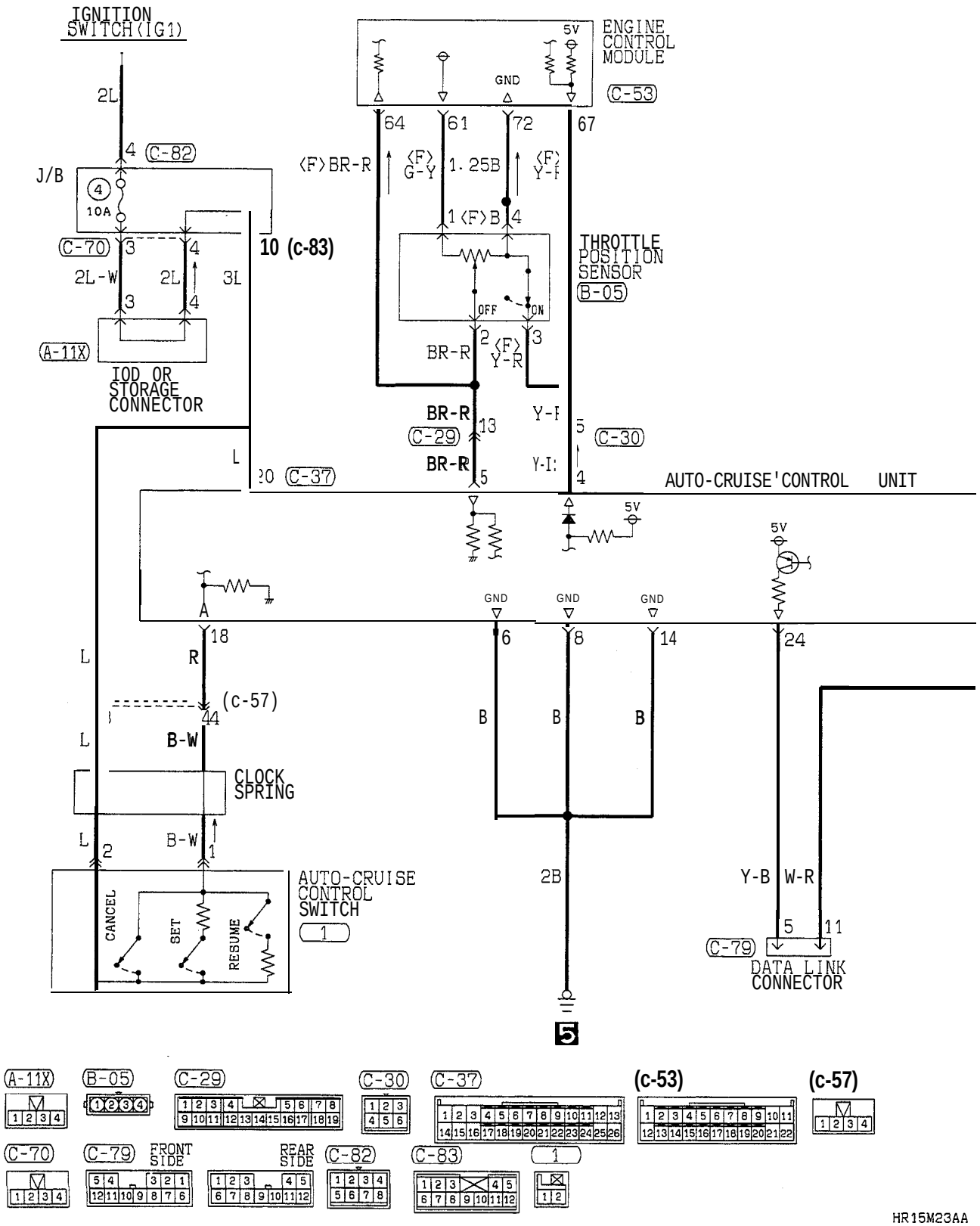


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TSB Revision

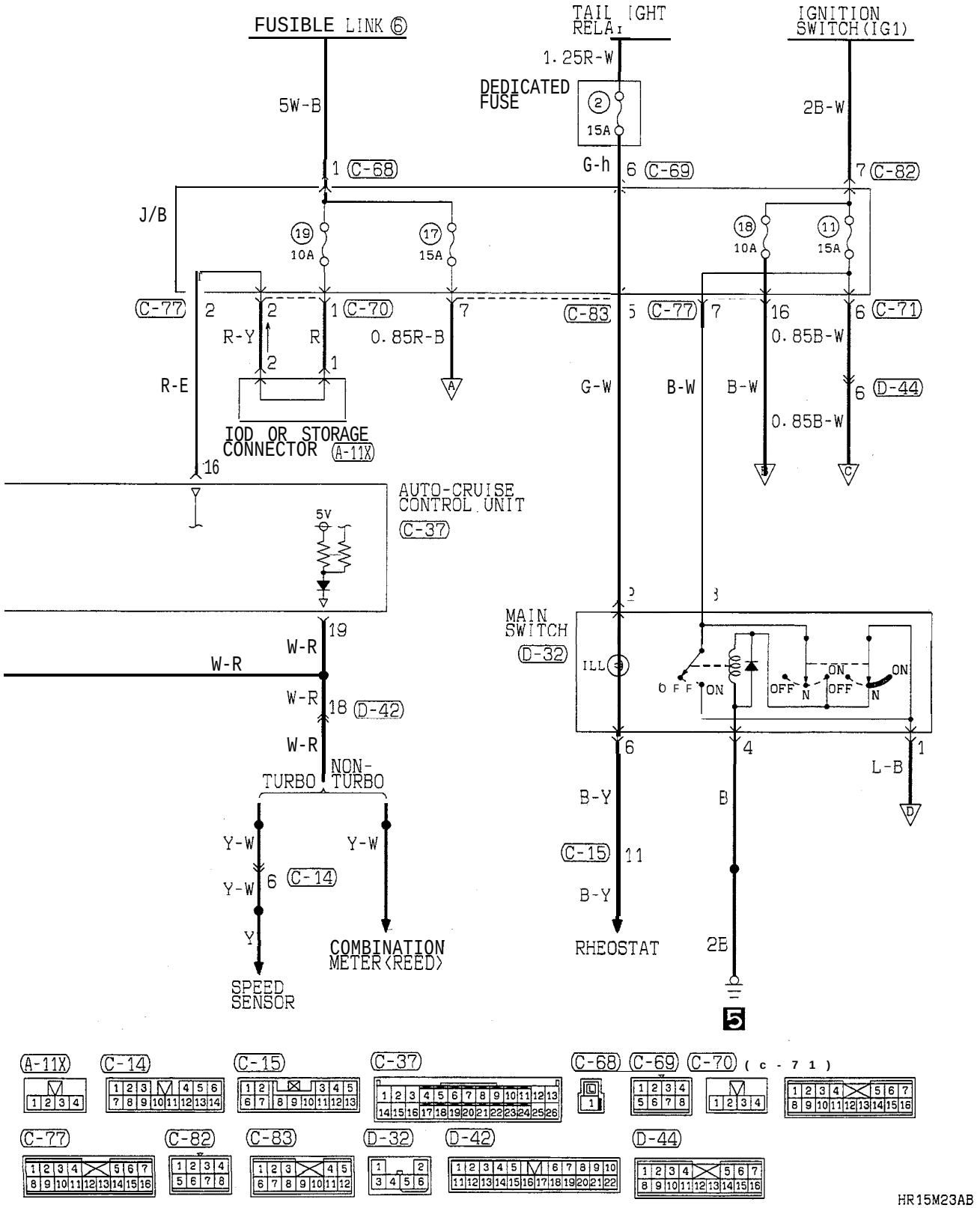
AUTO-CRUISE CONTROL CIRCUIT (1993 MODELS)

<A/T>



HR15M23AA

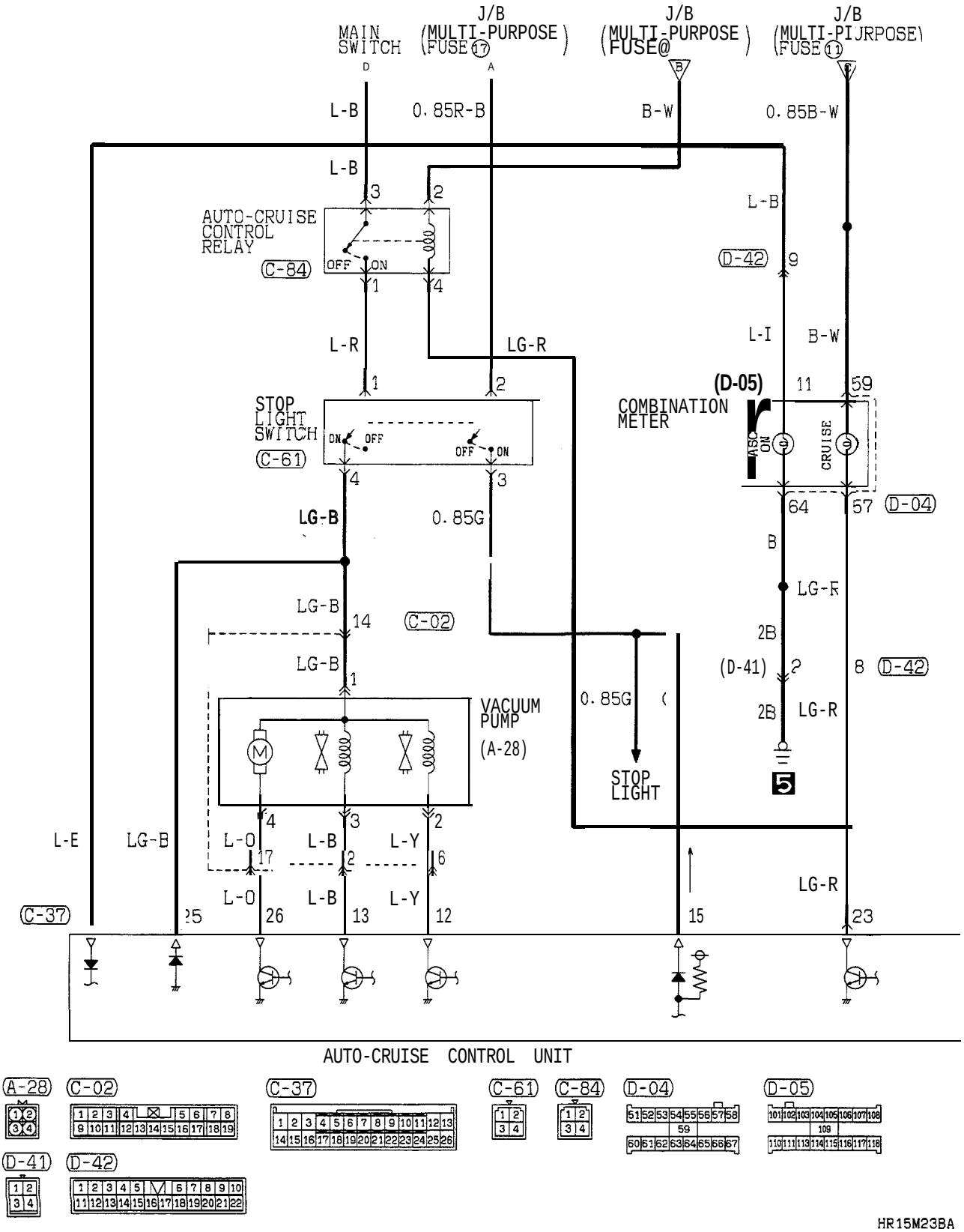
TSB Revision



HR15M23AB

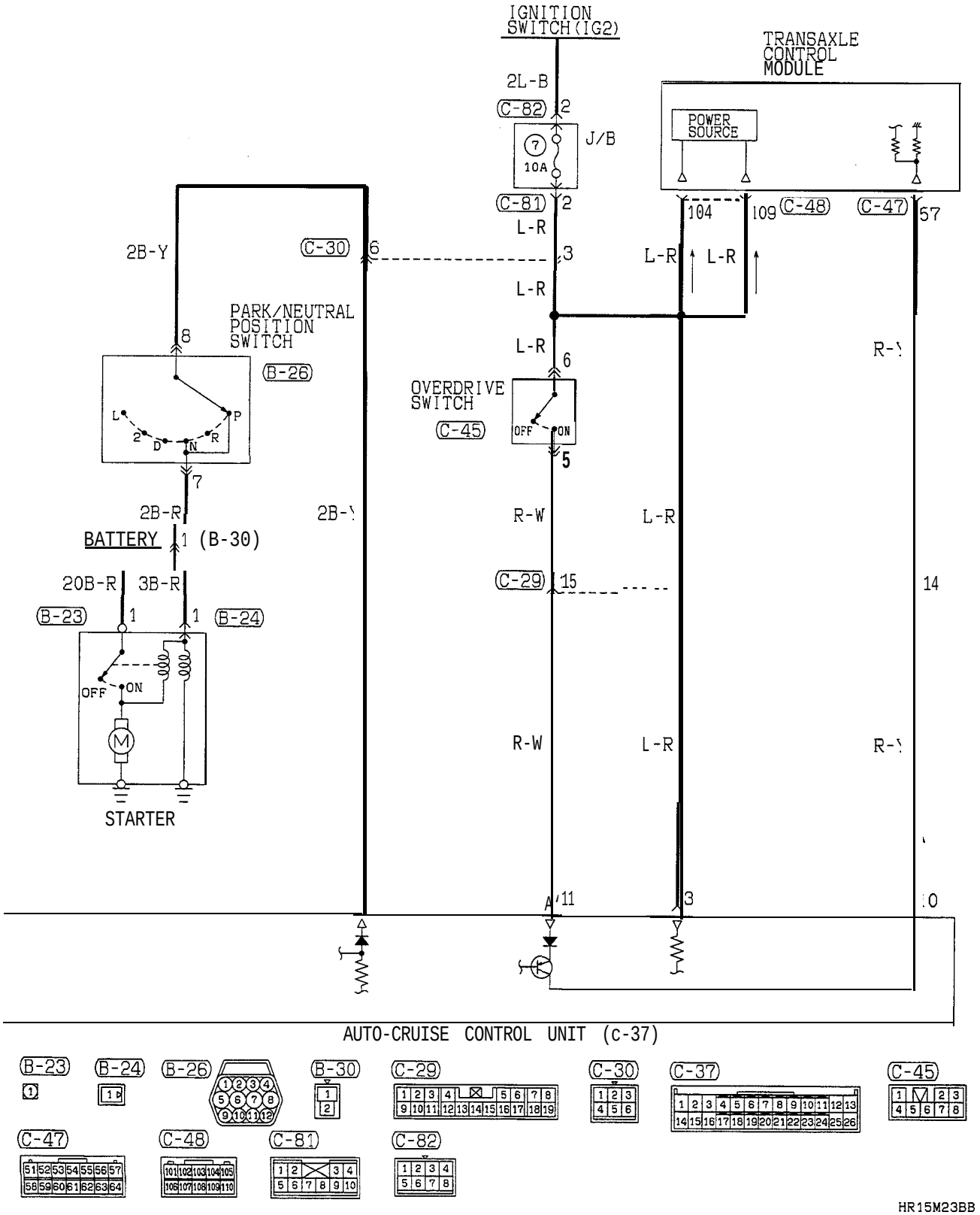
TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1993 MODELS) <A/T> (CONTINUED)



HR15M23BA

TSB Revision

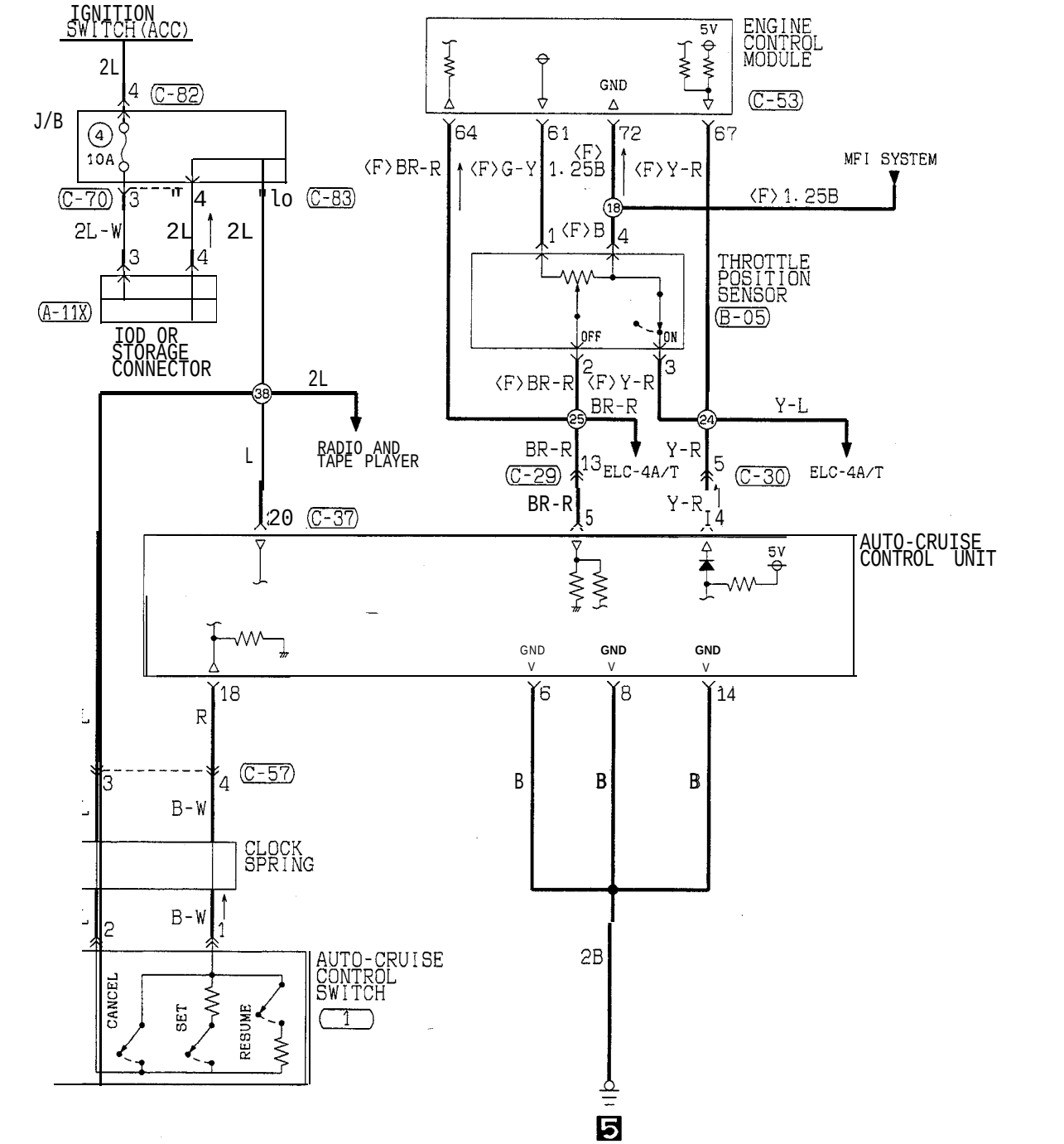


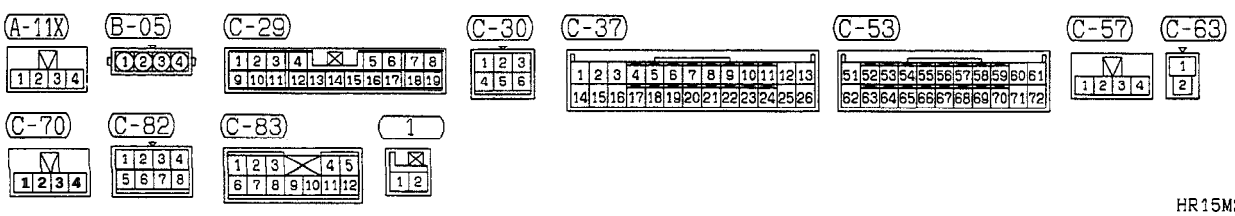
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TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS)

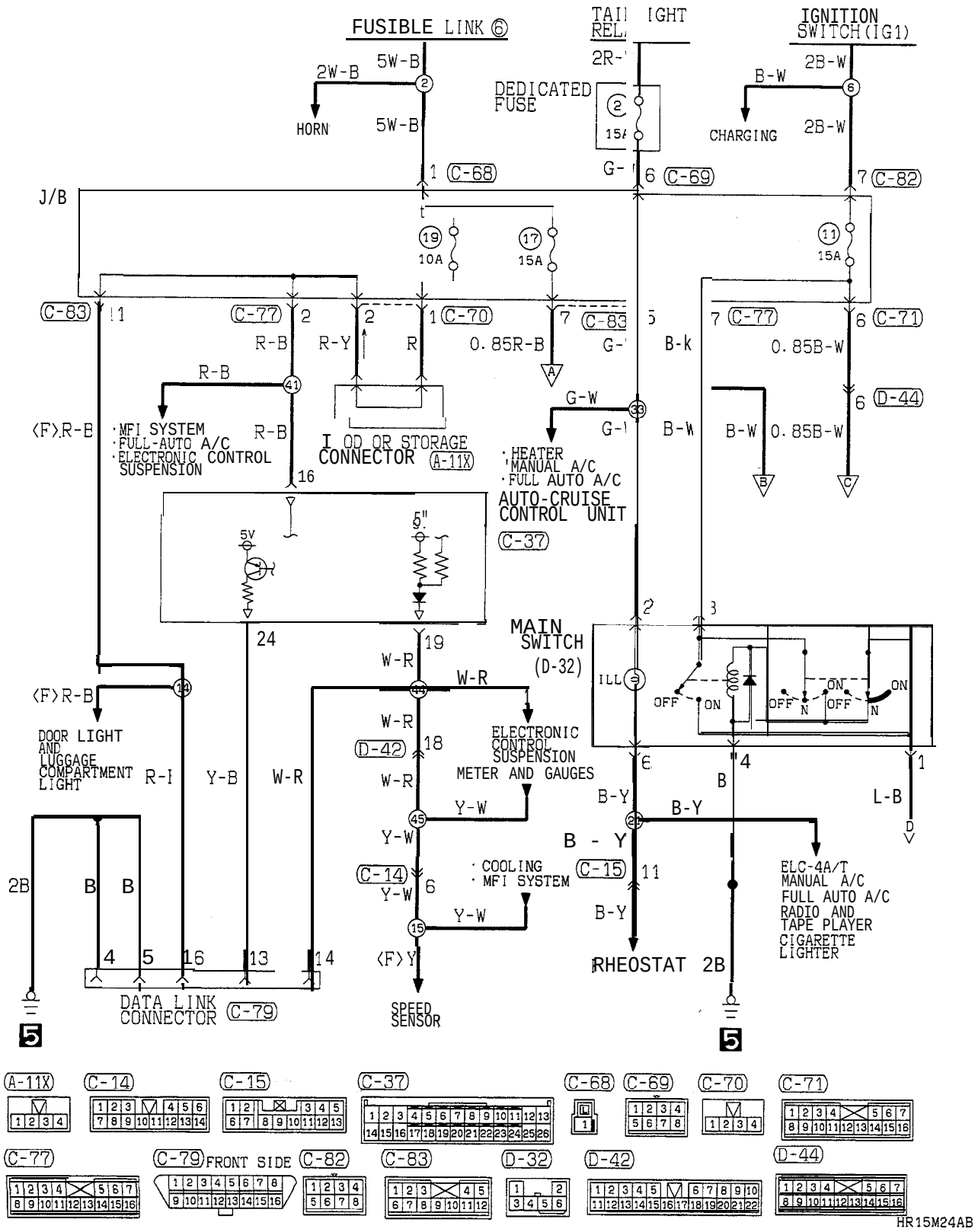
<A/T> (FEDERAL)





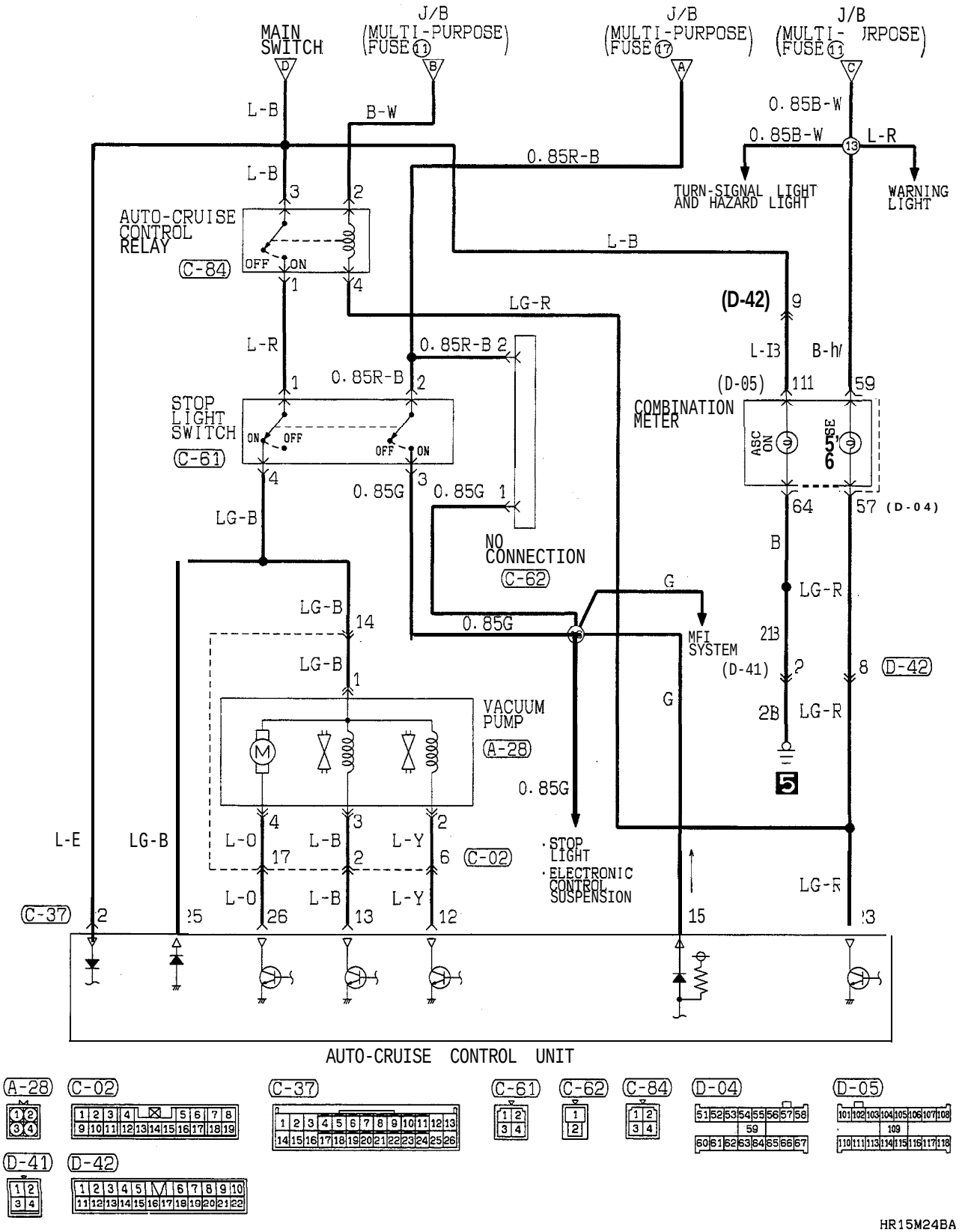
HR15M24AA

TSB Revision



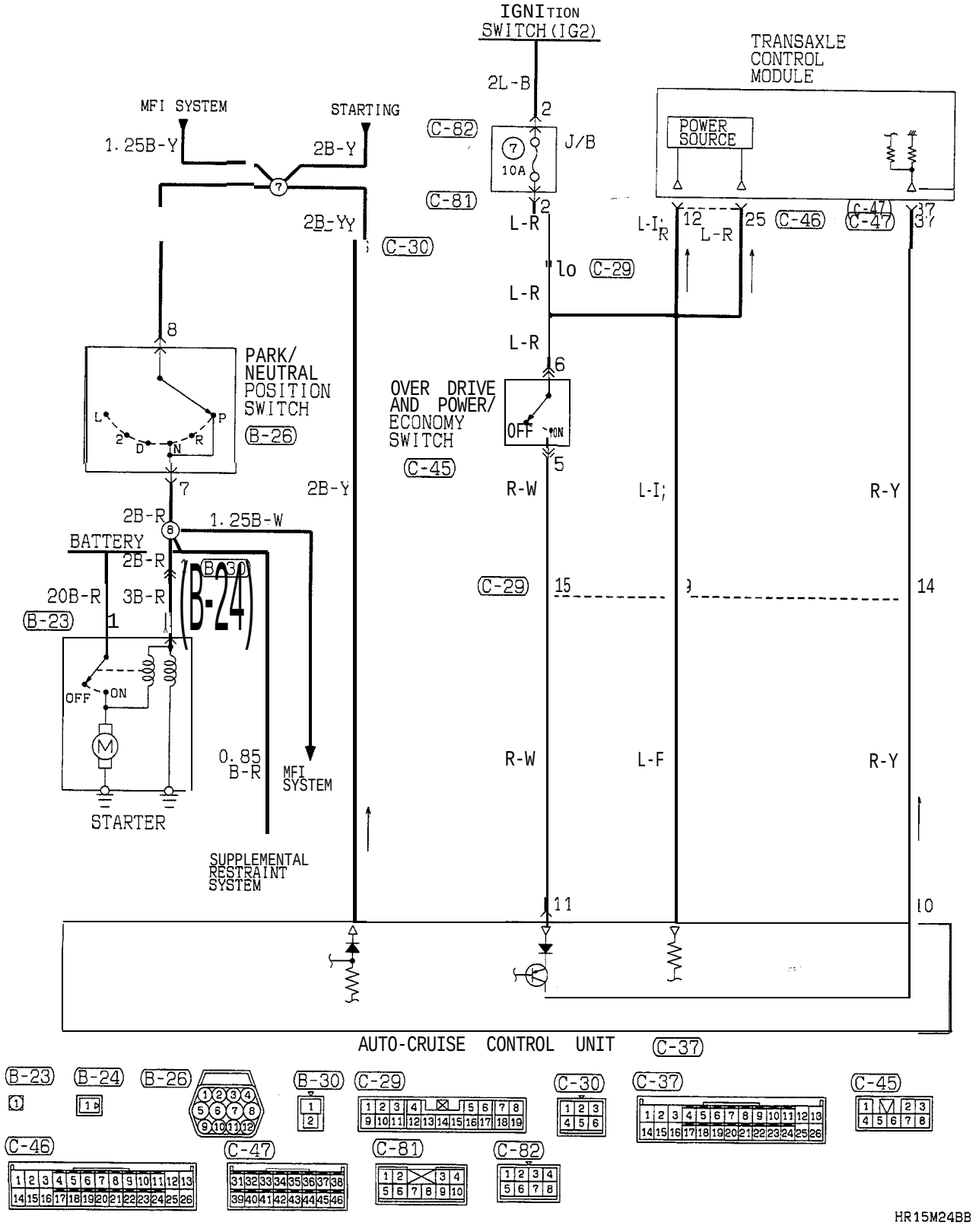
TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS) <A/T> (FEDERAL) (CONTINUED)



HR15M24BA

TSB Revision

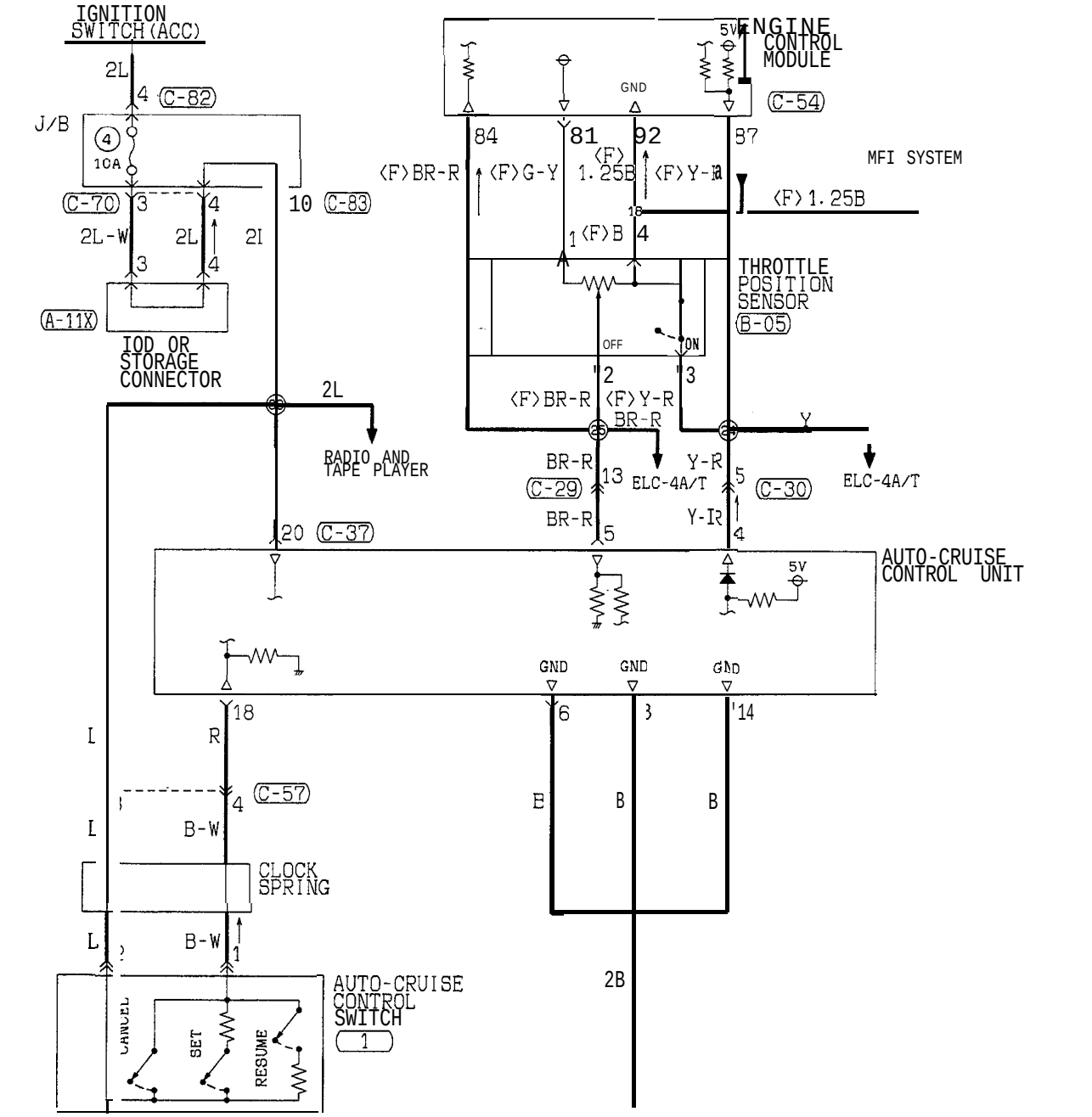


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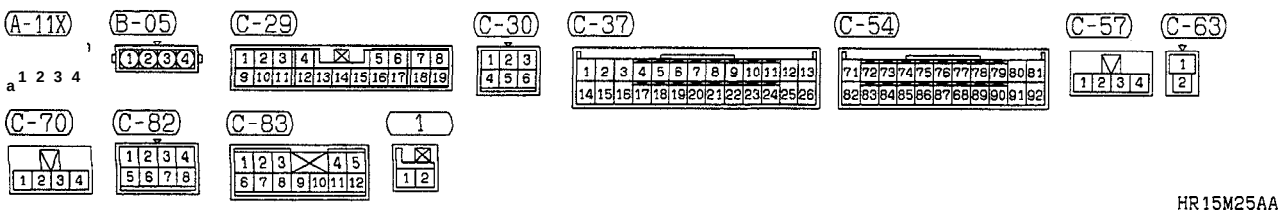
TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS)

<A/T> (CALIFORNIA)

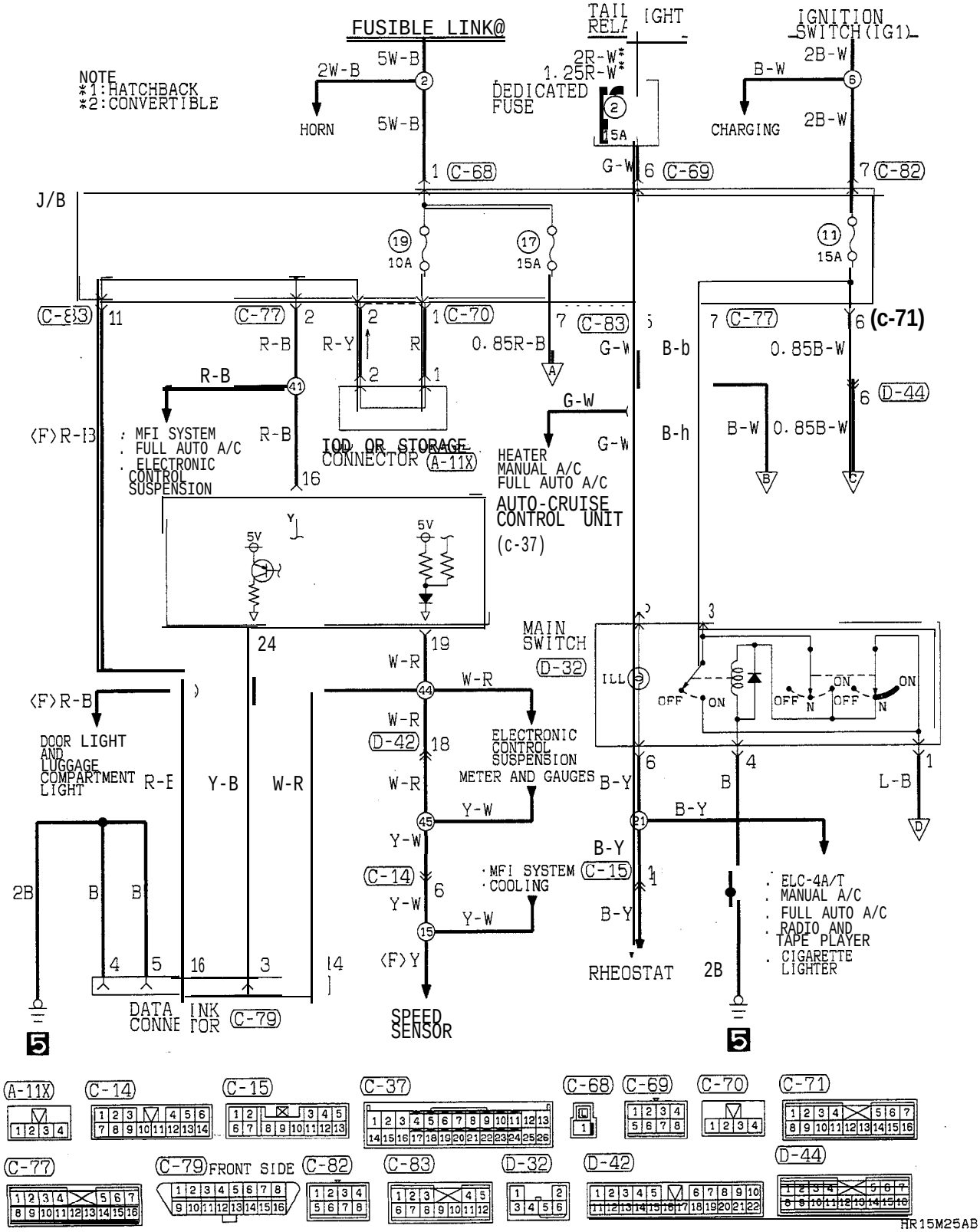


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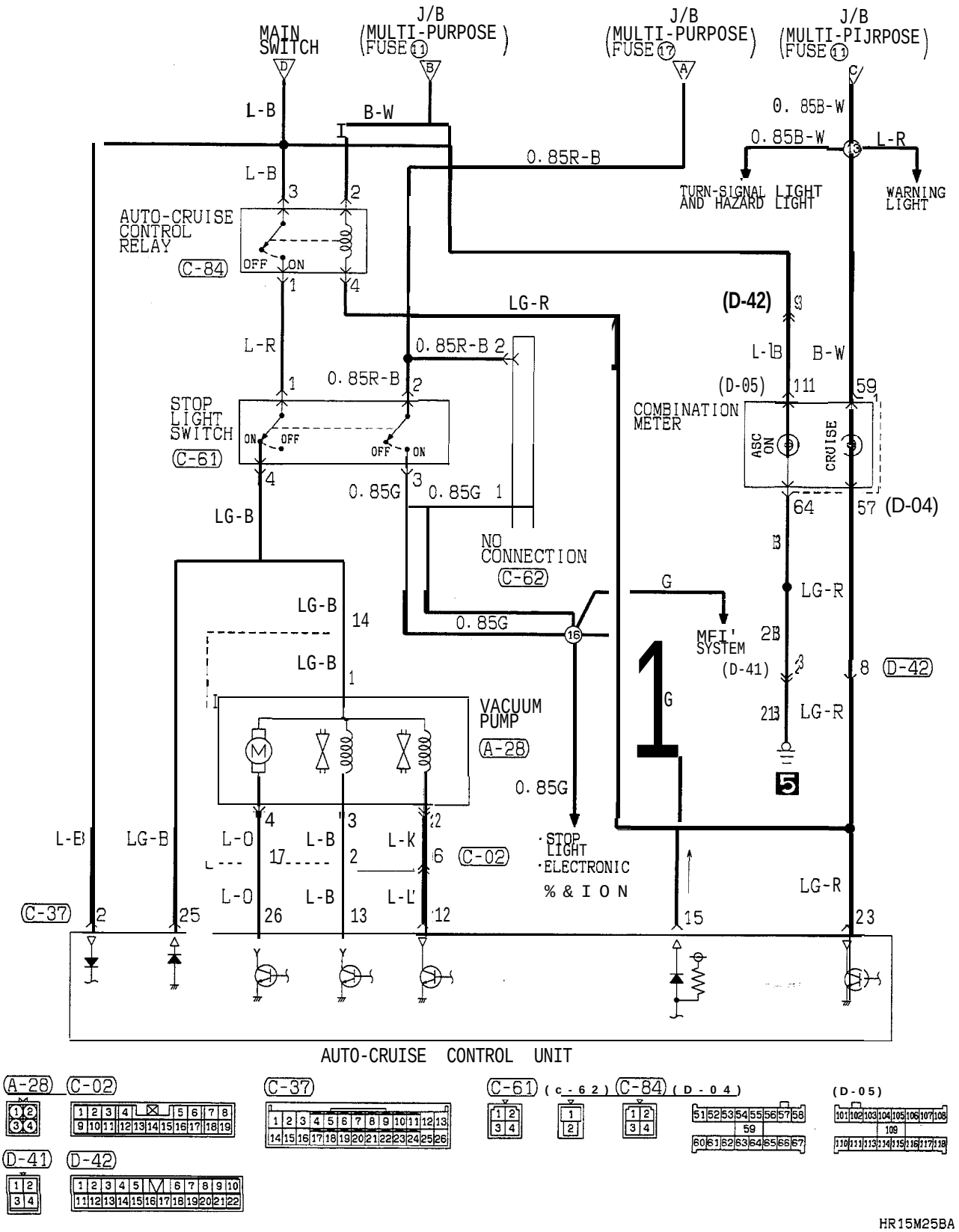
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TSB Revision

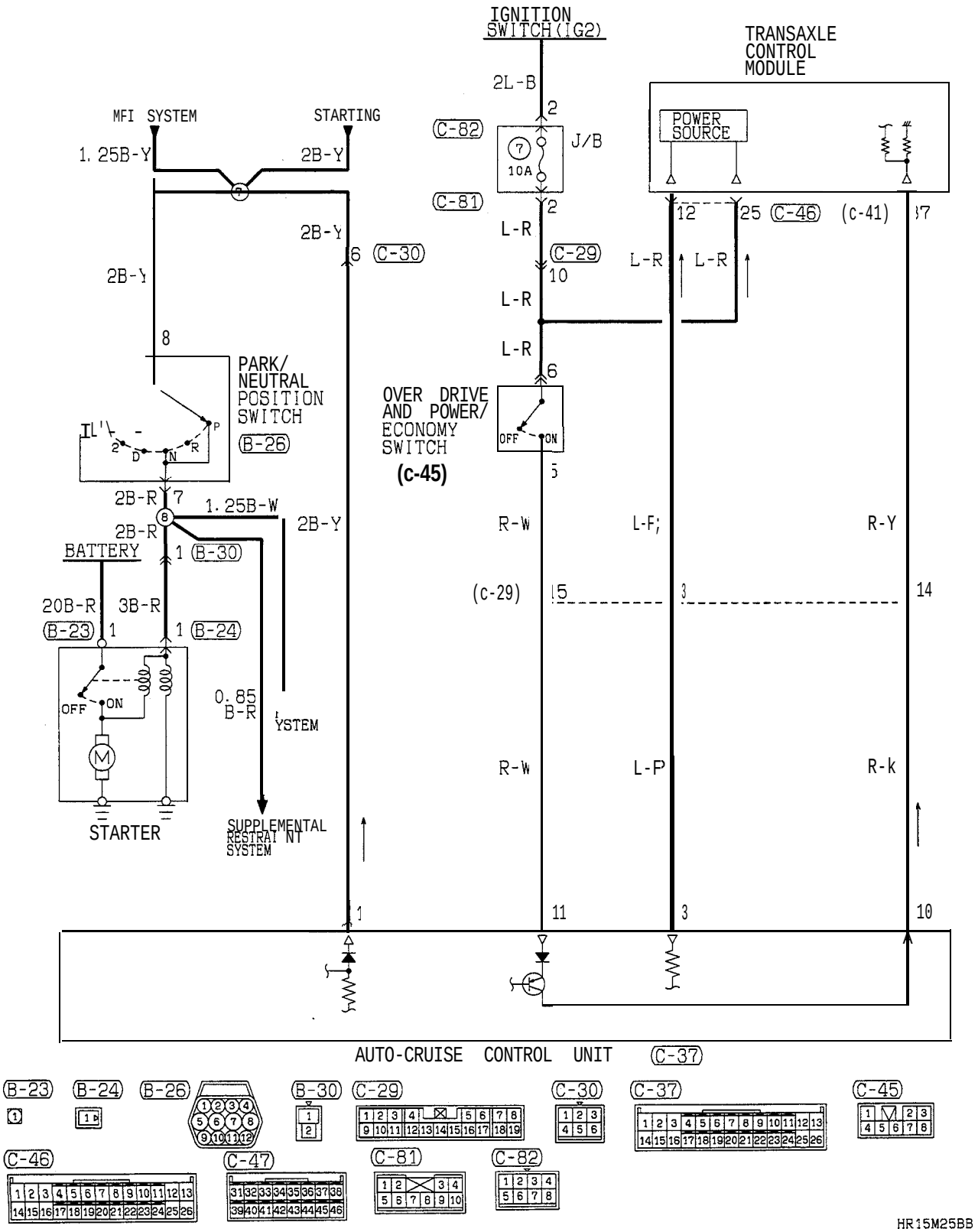


TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (1994, 1995 MODELS) <A/T> (CALIFORNIA) (CONTINUED)



TSB Revision

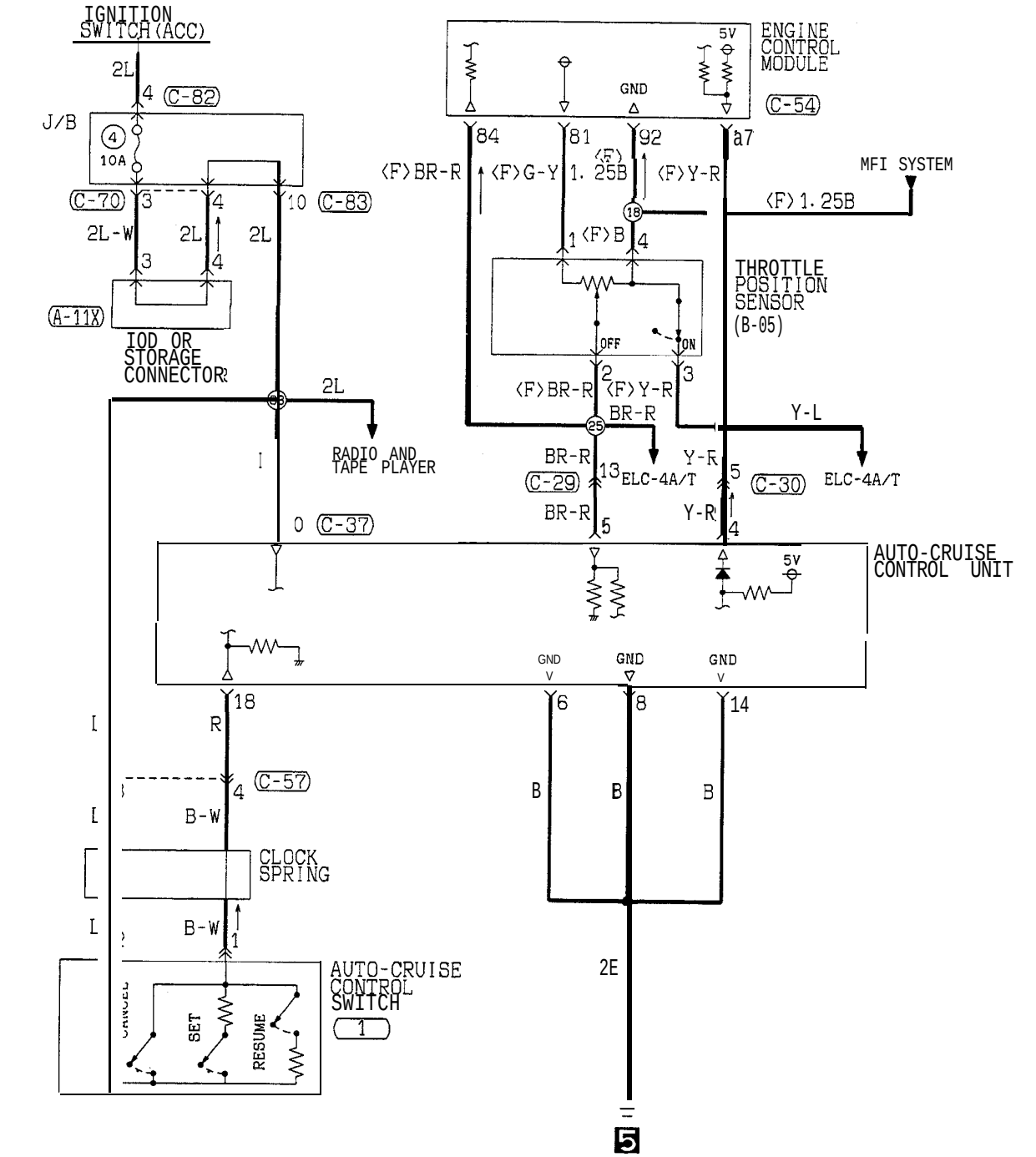


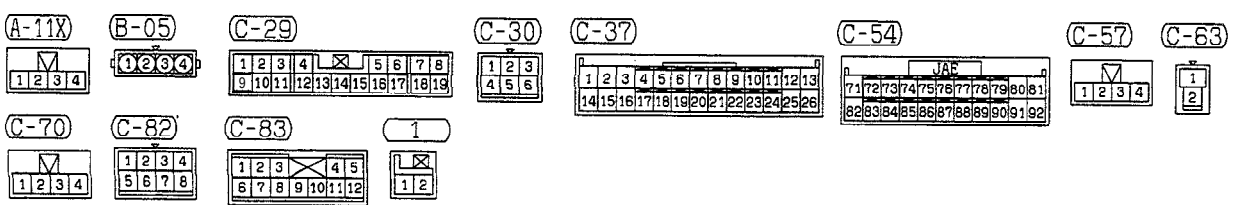
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TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (FROM 1996 MODELS)

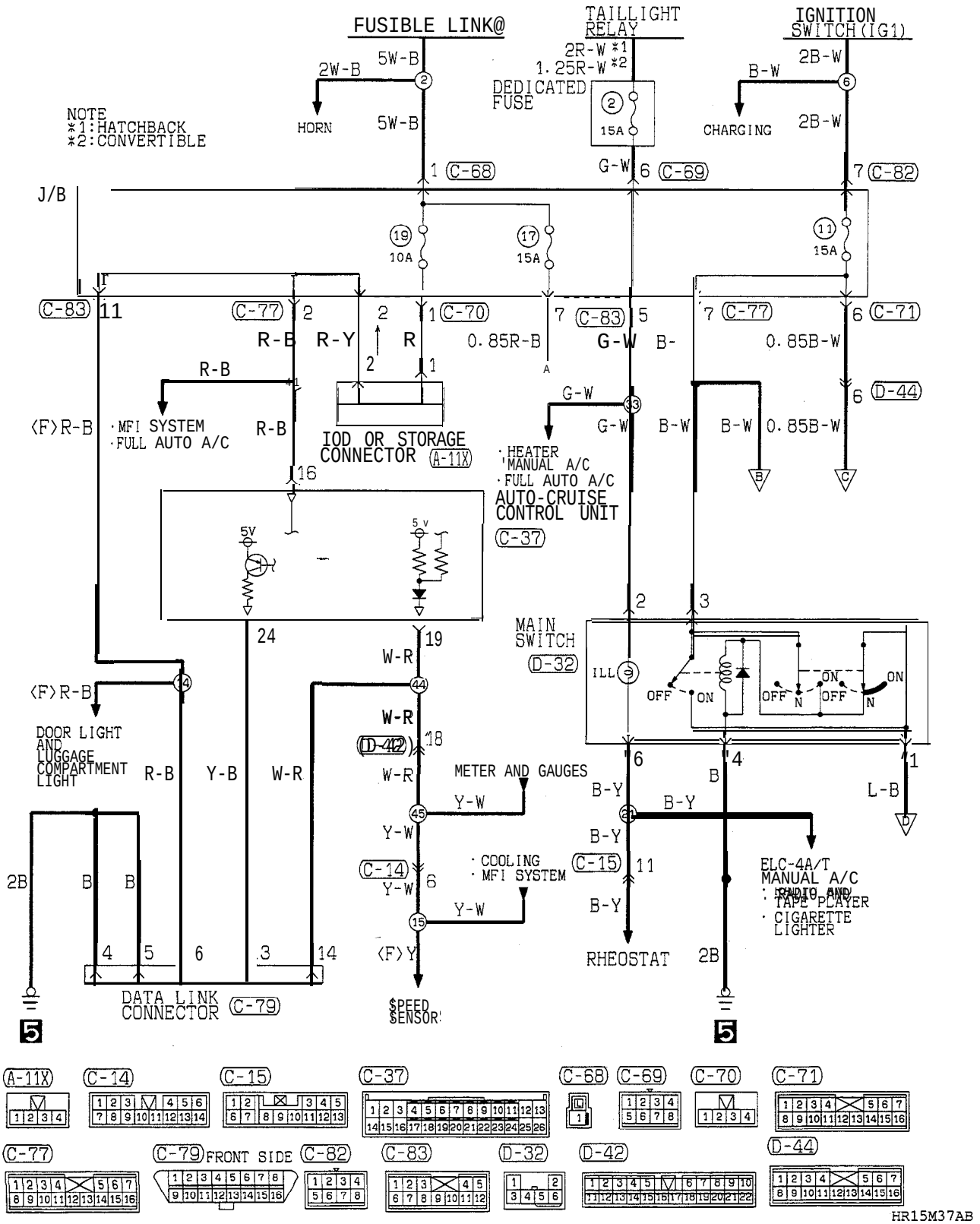
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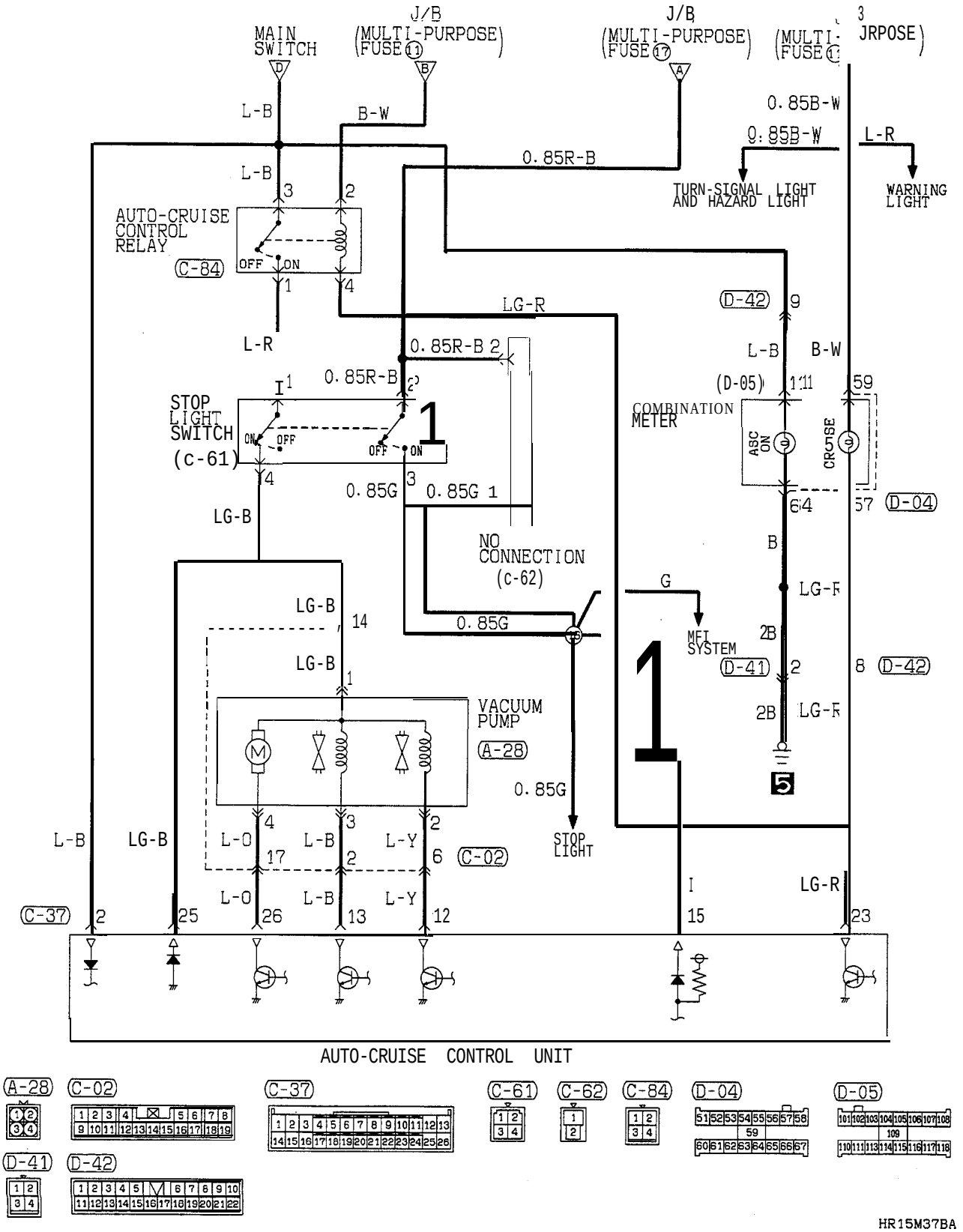
TSB Revision



HR15M37AB

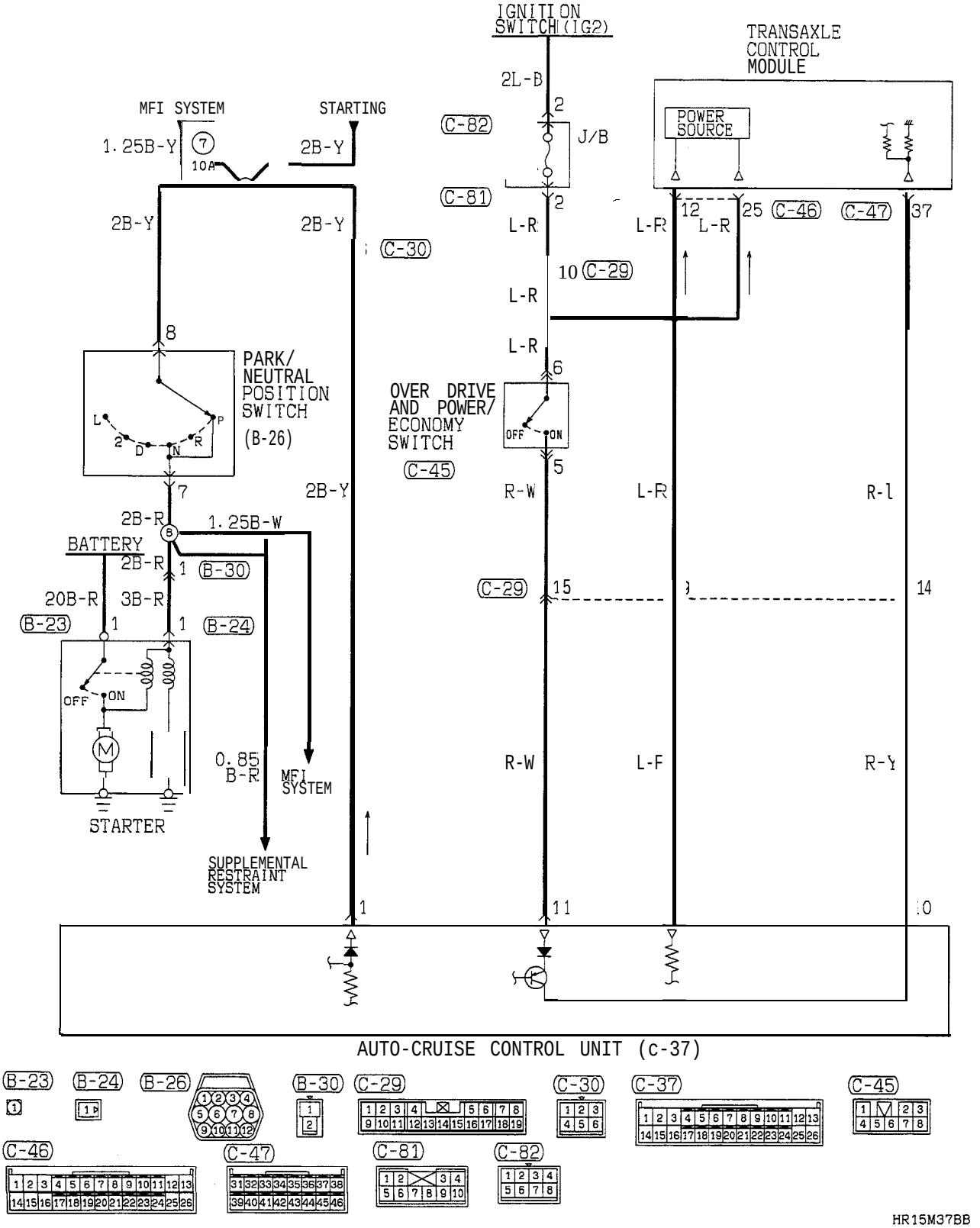
TSB Revision

AUTO-CRUISE CONTROL CIRCUIT (FROM 1996 MODELS) <A/T> (CONTINUED)



HR15M37BA

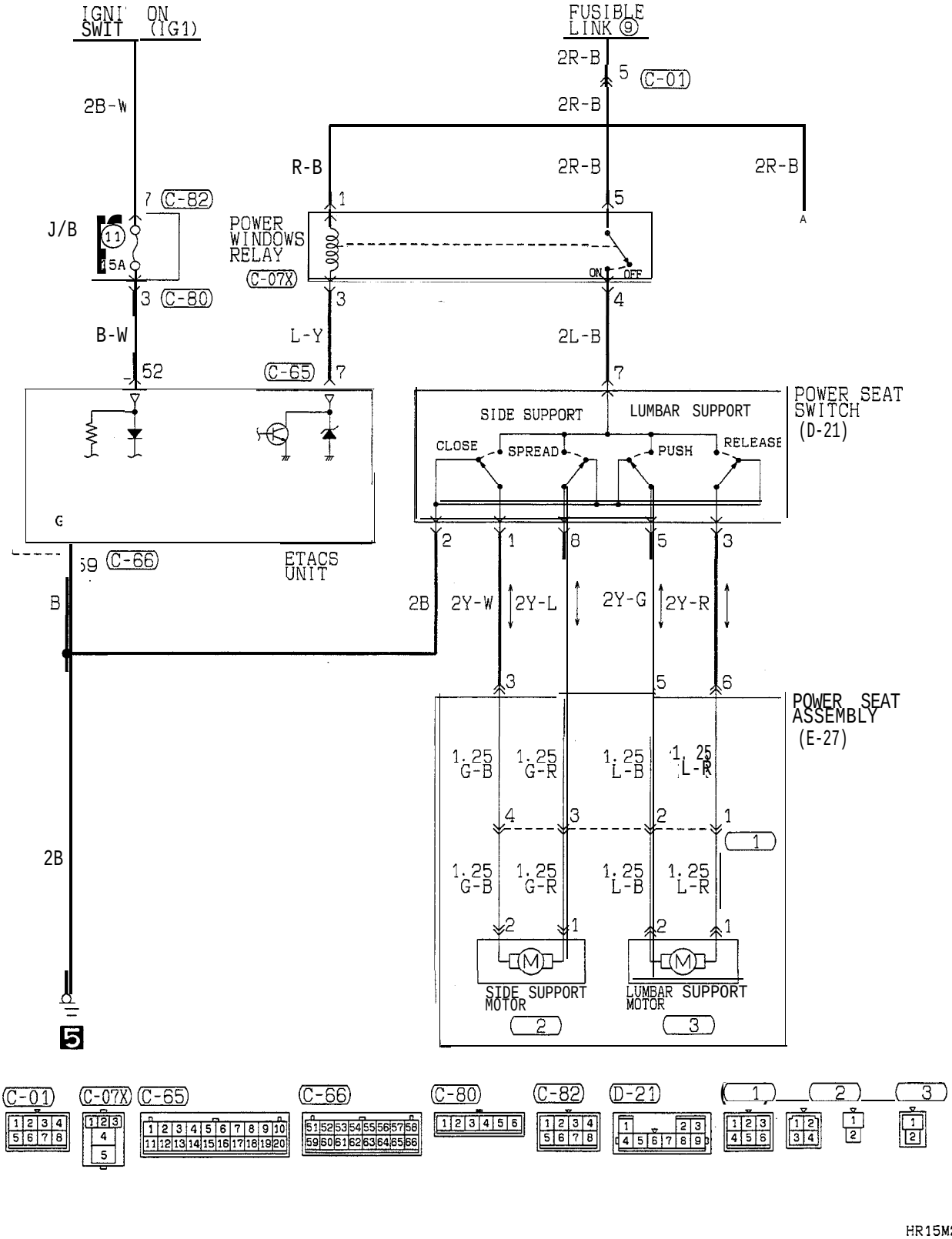
TSB Revision



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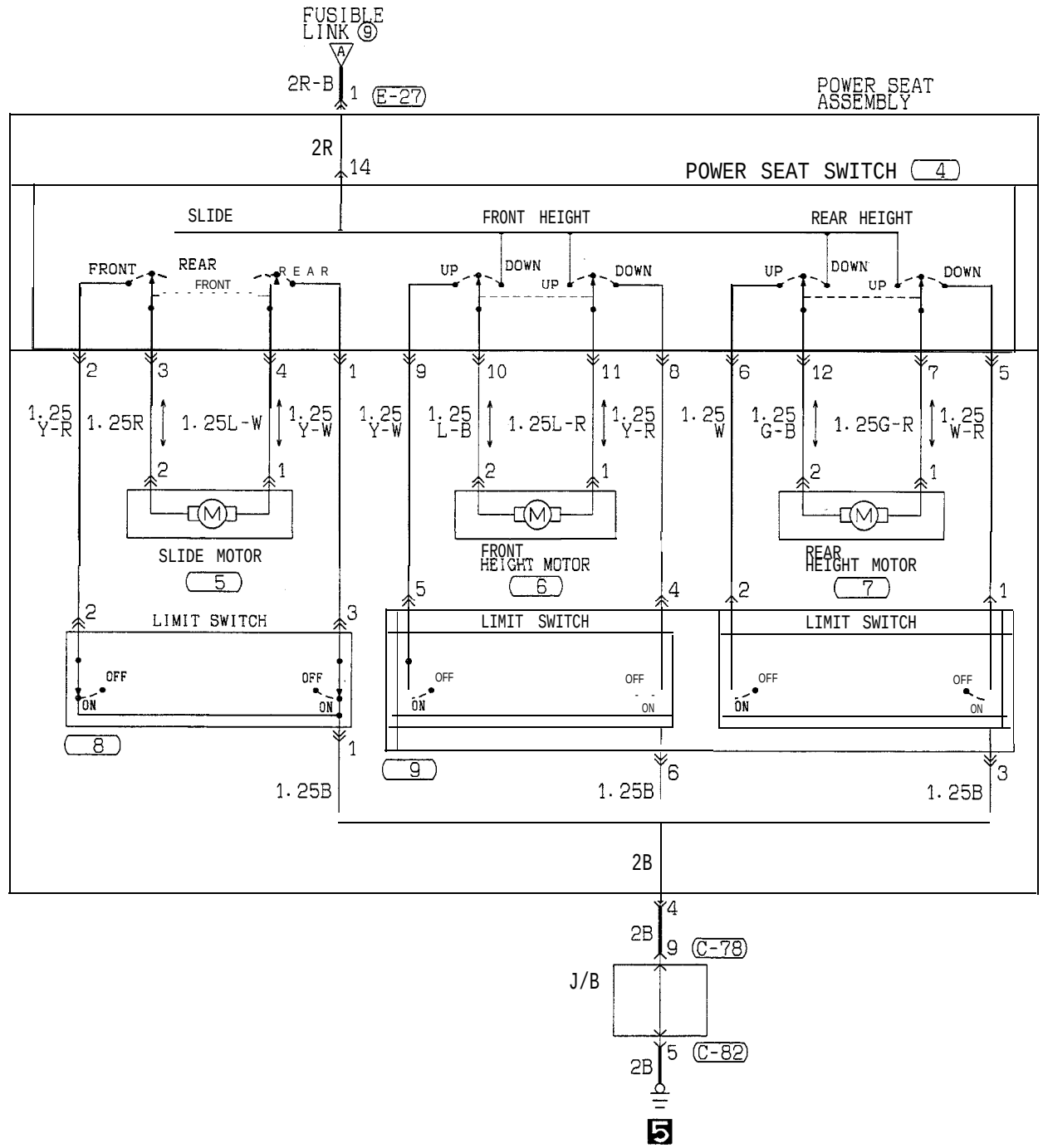
TSB Revision

POWER SEAT CIRCUIT (UP TO 1993 MODELS)



HR15M26AA

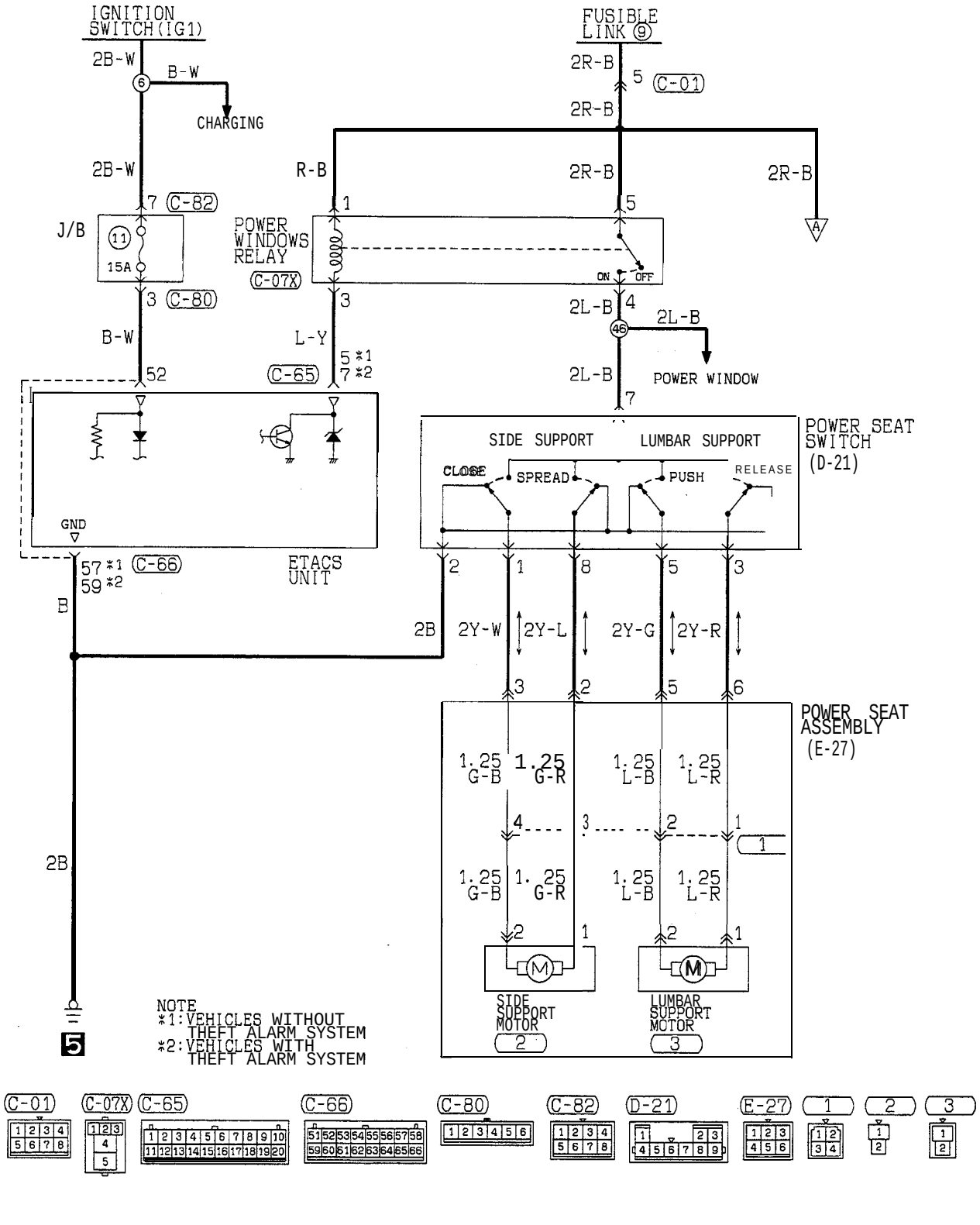
TSB Revision



HR15M26AB

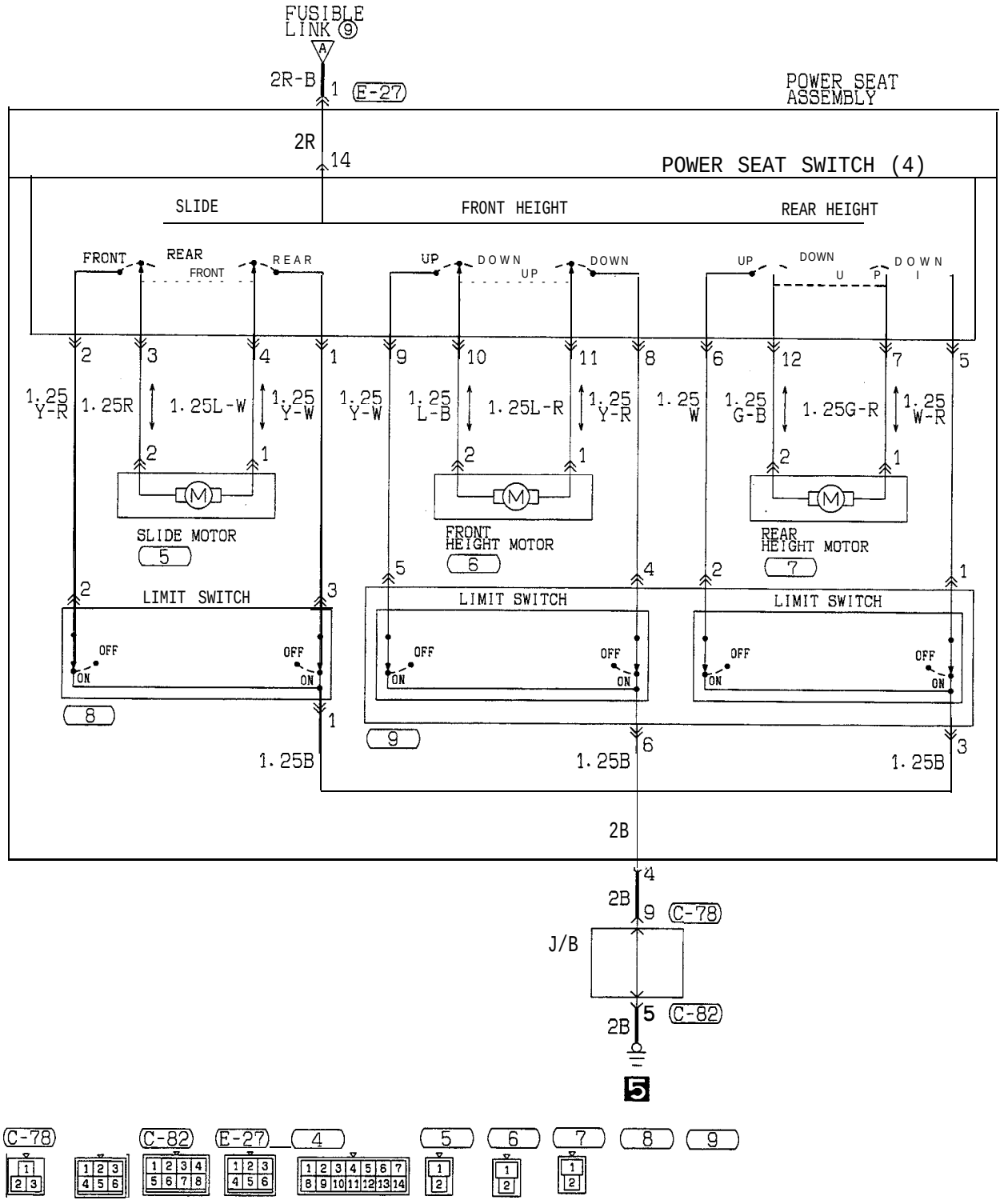
TSB Revision

POWER SEAT CIRCUIT (1994, 1995 MODELS)



HR15M27AA

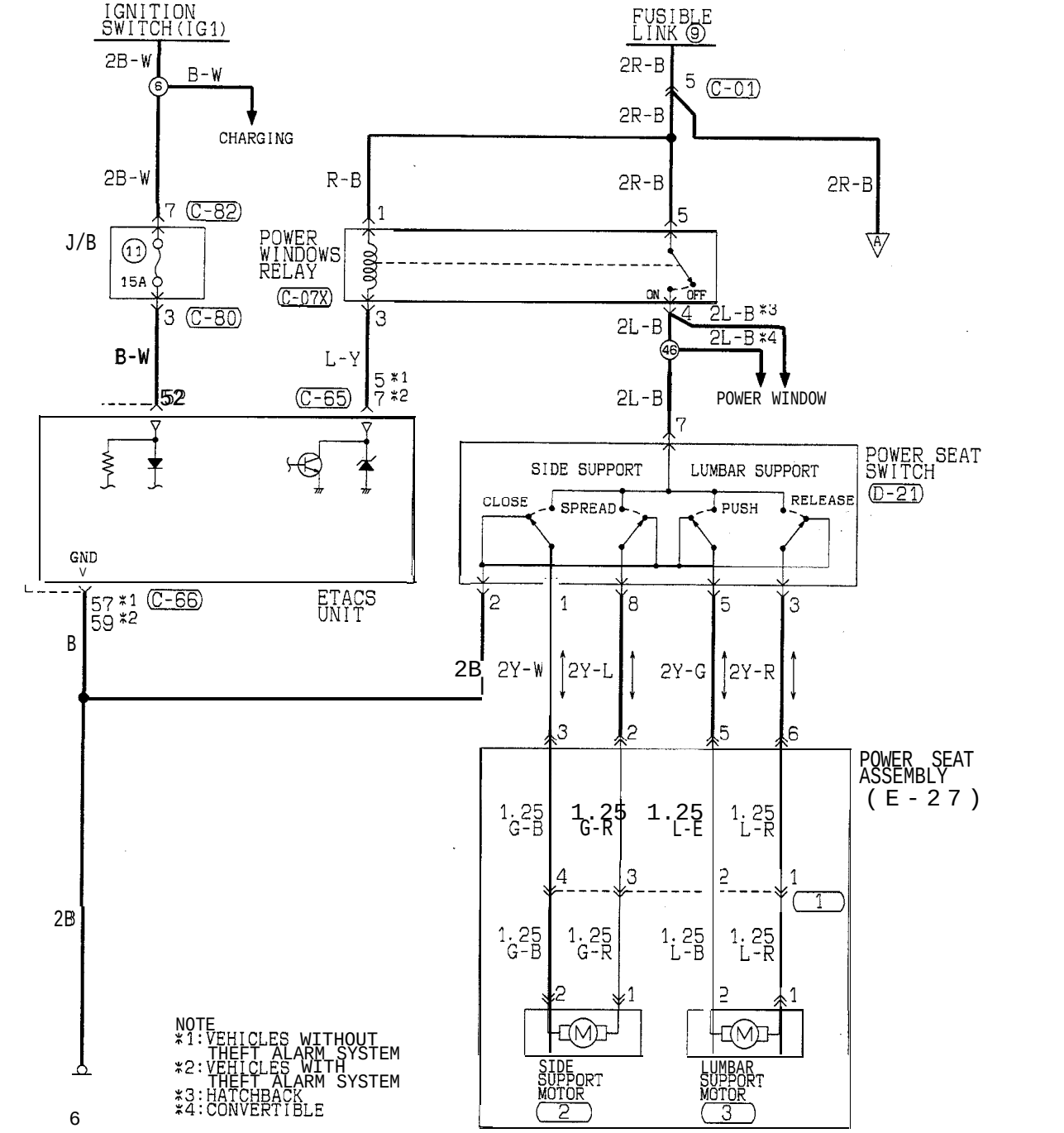
TSB Revision

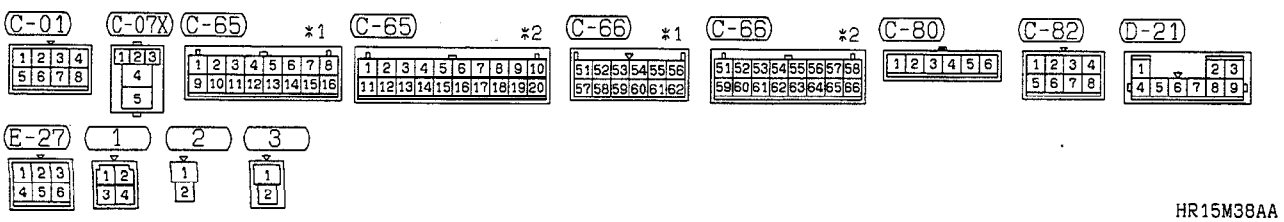


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TSB Revision

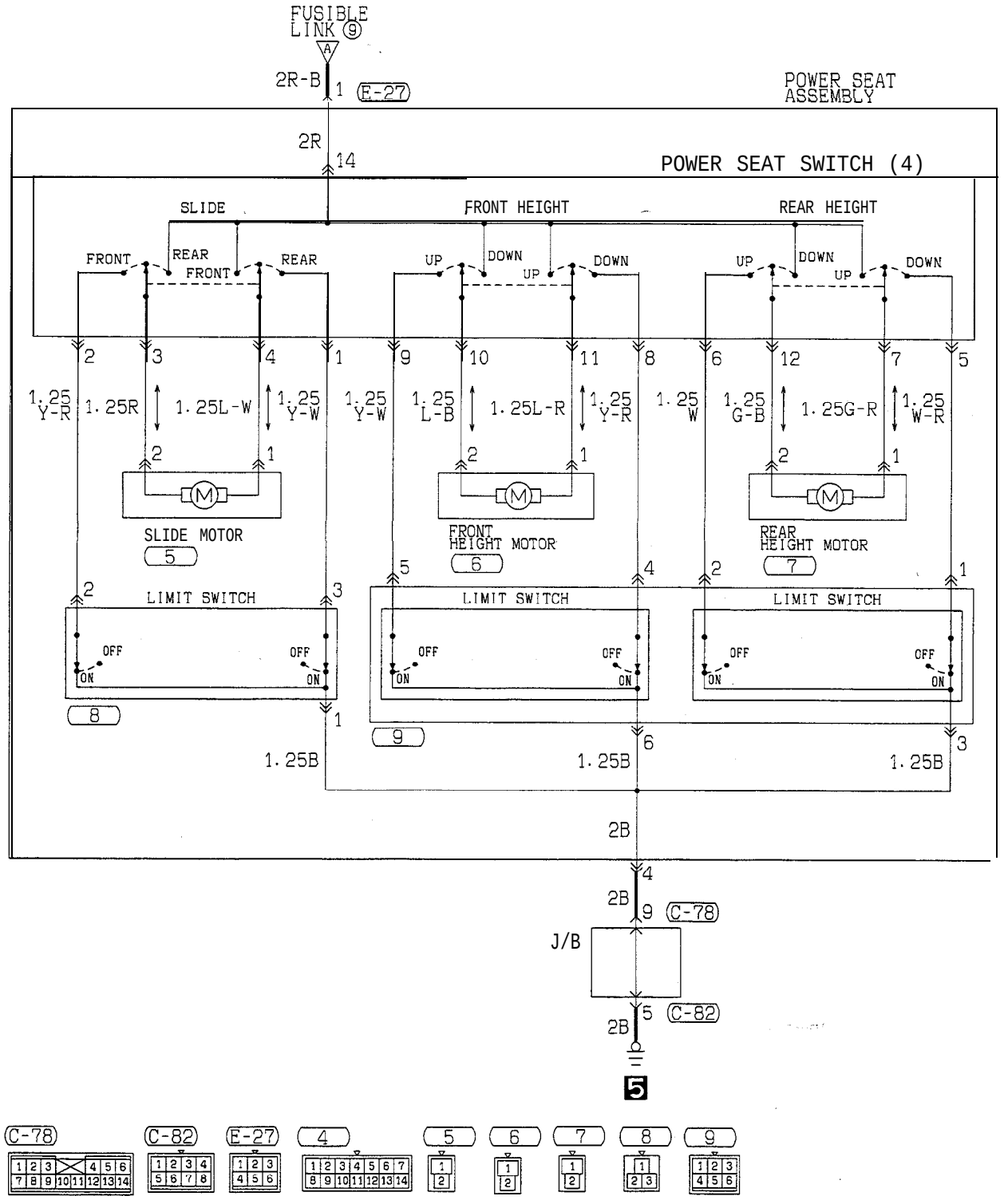
POWER SEAT CIRCUIT (FROM 1996 MODELS)





HR15M38AA

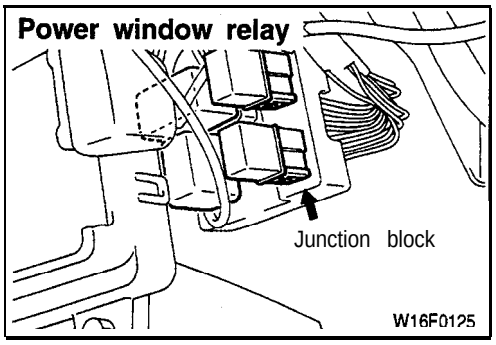
TSB Revision



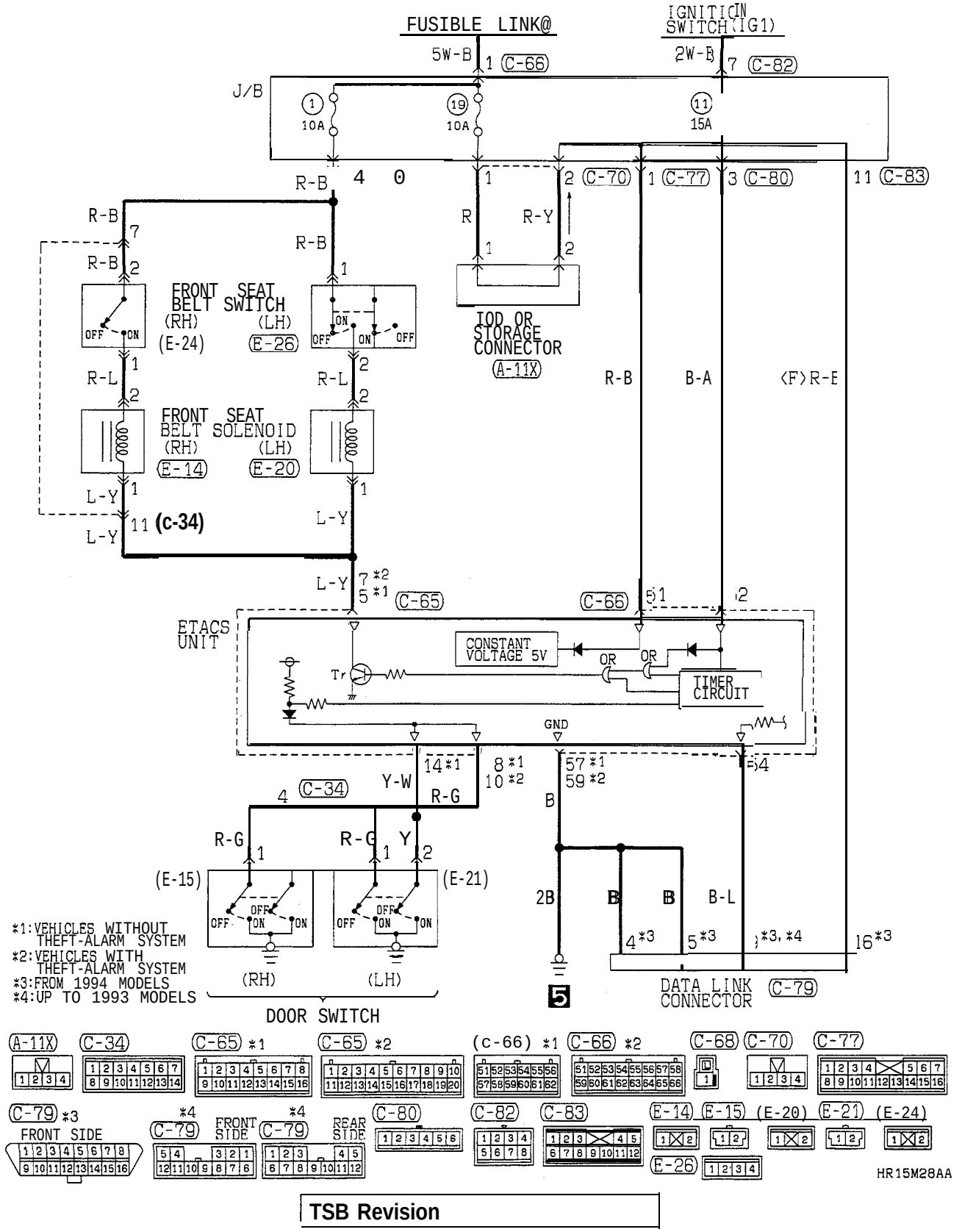
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TSB Revision

COMPONENT LOCATION

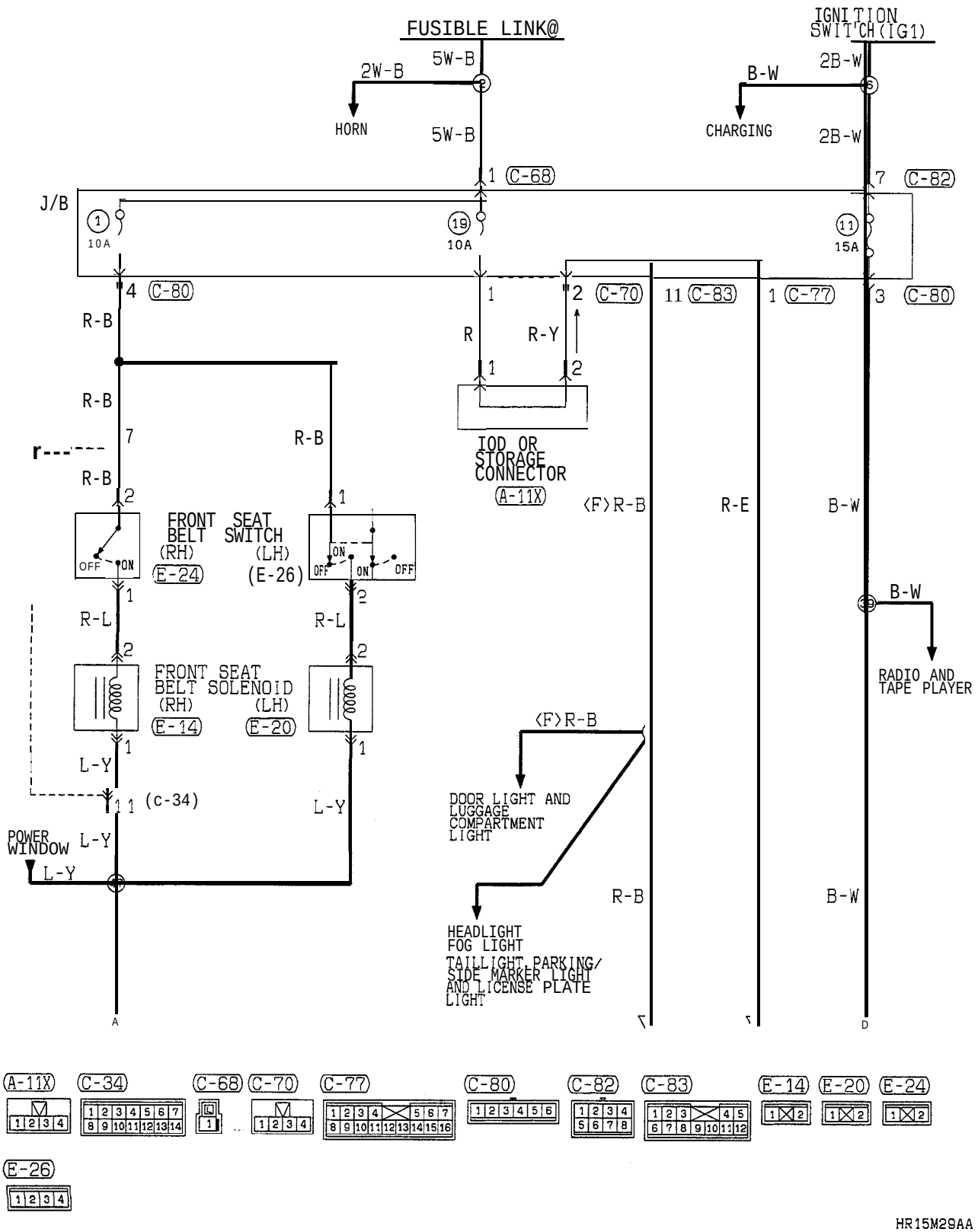


TENSION-REDUCER TYPE SEAT BELT CIRCUIT (UP TO 1994 MODELS)



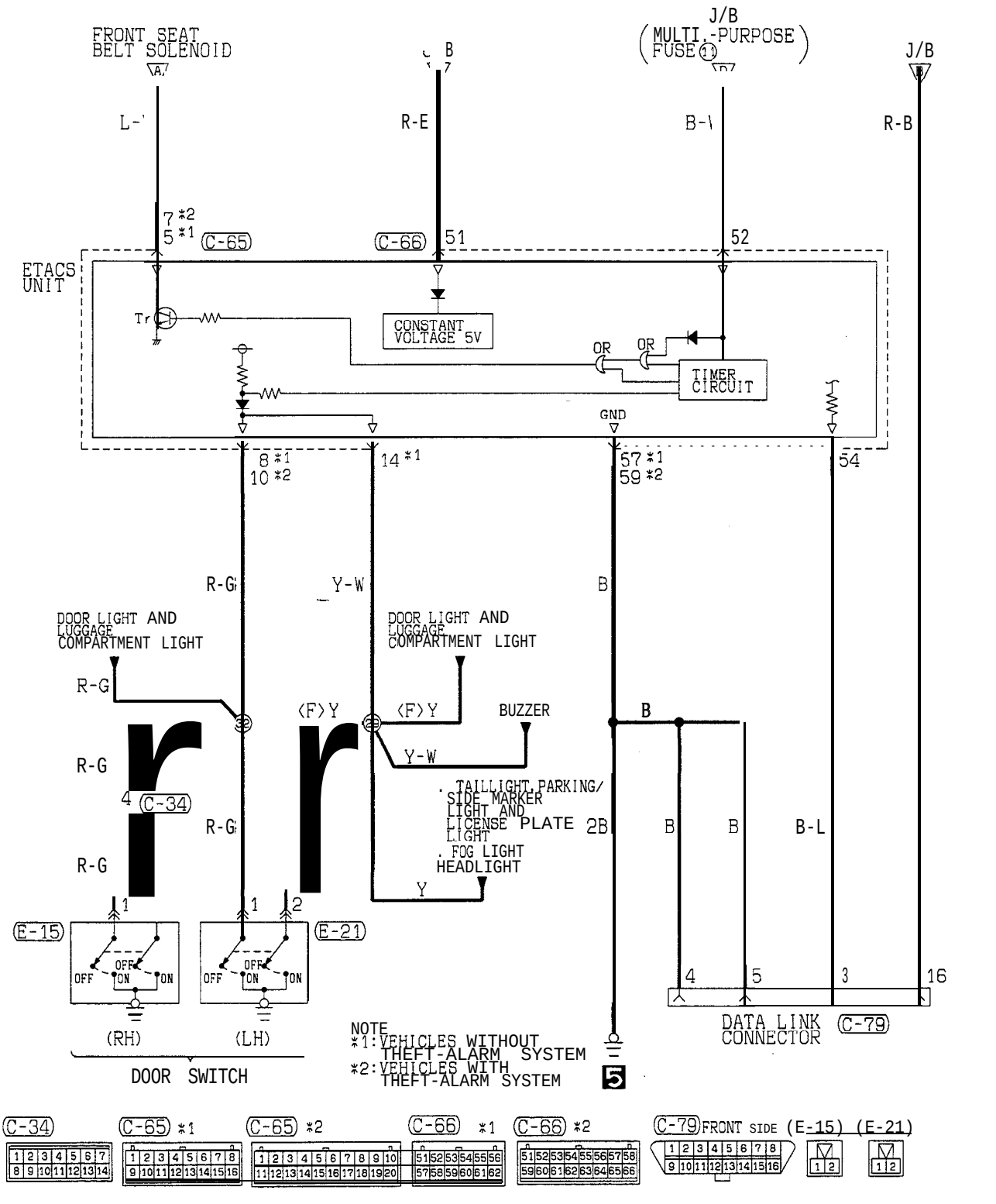
TSB Revision

TENSION-REDUCER TYPE SEAT BELT CIRCUIT (FROM 1995 MODELS)



HR15M29AA

TSB Revision

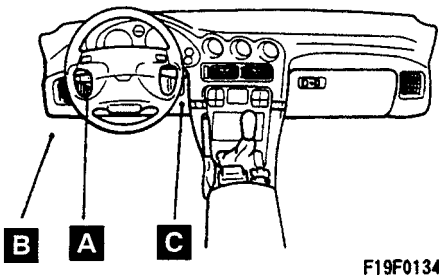


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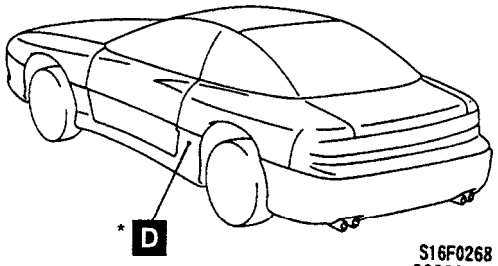
TSB Revision

COMPONENT LOCATION

Name	Symbol	Name	Symbol
Data link connector (from 1994 models)	C	ETACS unit	A
Data link connector (up to 1993 models)	B	Front seat belt solenoid	D

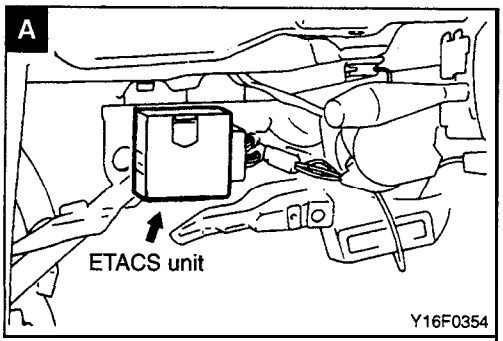


F19F0134

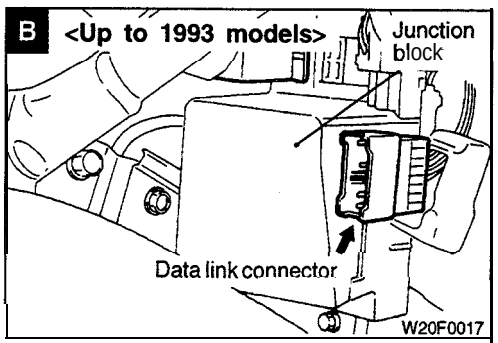


S16F0268
00002693

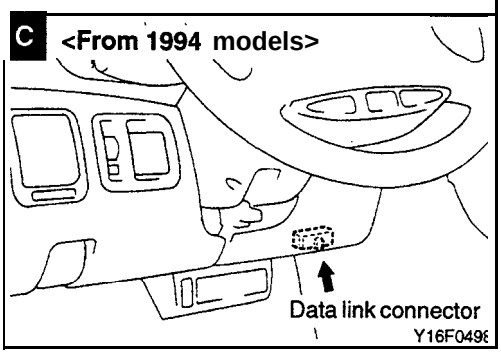
Note: * indicates that this component is used on the right side as well.



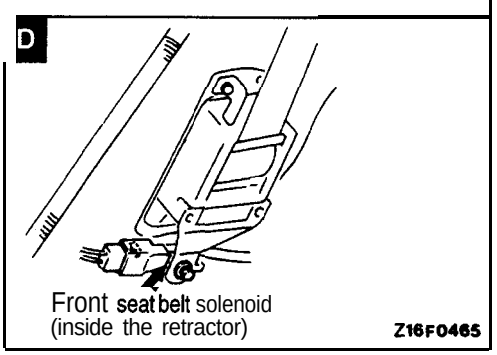
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W20F0017



Y16F049



Z16F0465

TSB Revision

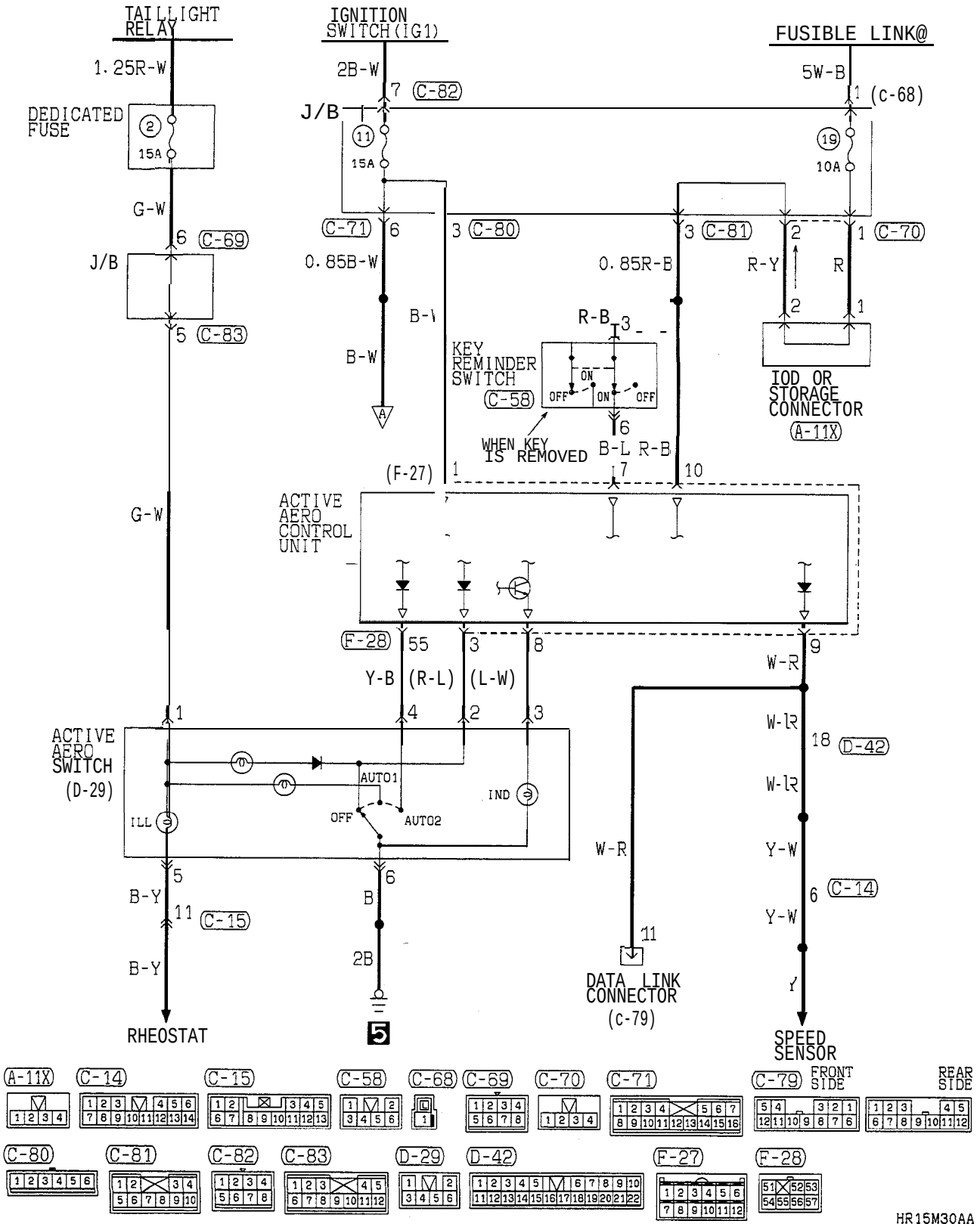
OPERATION

- If the driver fastens the seat belt with the ignition switch placed in the "ON" position, the seat belt switch in the seat belt buckle is turned "ON" to operate the seat belt solenoid in the retractor.
- This will reduce the seat belt rewinding torqe to minimize a sense of oppression given by the belt.
- Owing to the timer function of the ETACS unit, the seat belt solenoid is kept in operation for 30 seconds after turning off the ignition switch, with due consideration to elimination of the sudden rise in a sense of oppression caused by the belt immediately after the ignition switch is turned off.

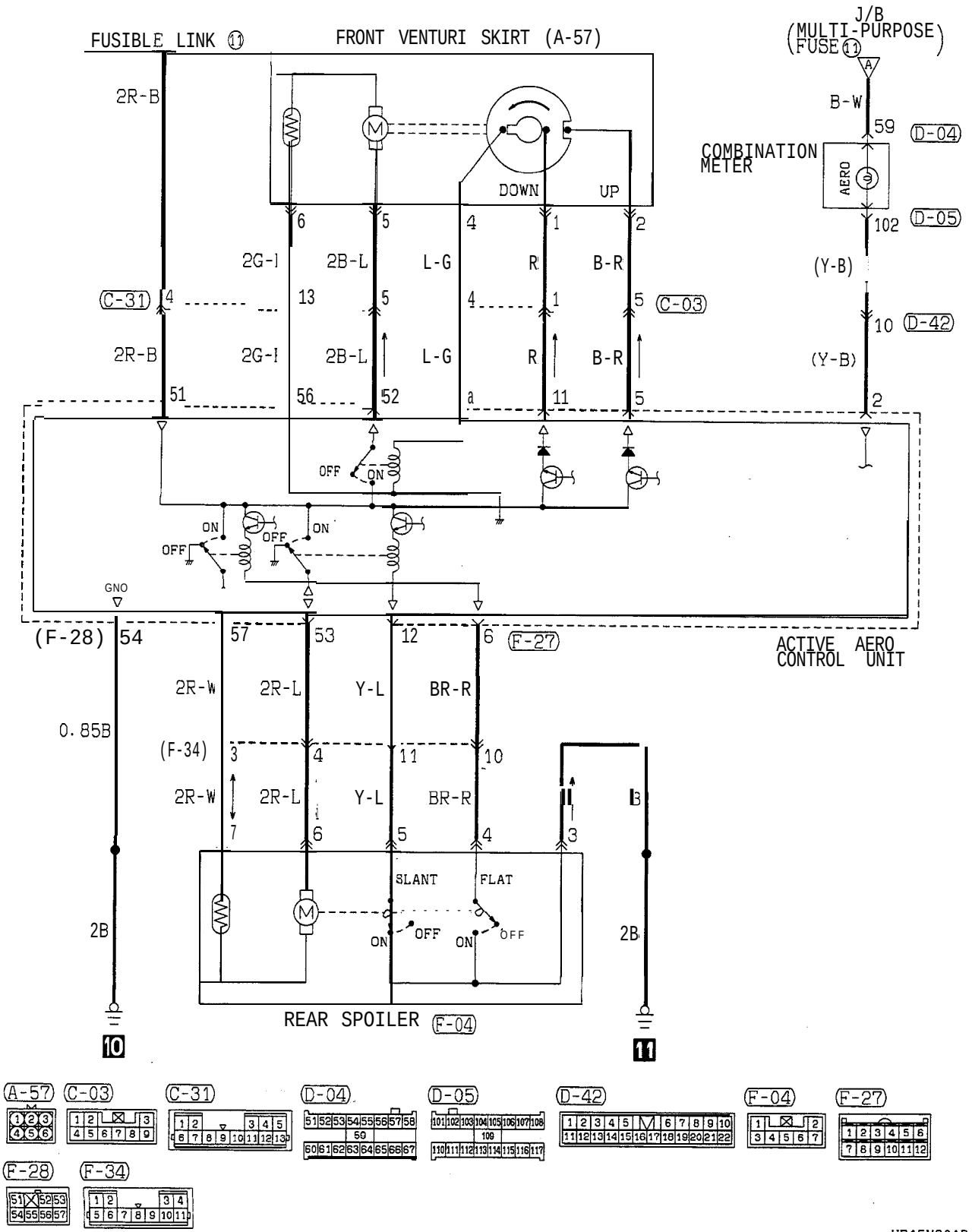
TROUBLESHOOTING HINTS

Phenomenon	Inspection method
Some of the tension-reducers do not operates.	• Check dedicated fuse No. 1 and 19. • Check the inoperative seat belt switch. • Check the inoperative seat belt solenoid.
The tension-reducer does not operate with the ignition switch placed in the ON position.	• Check the ignition switch input signal. • Check the ignition switch. (Refer to GROUP 54–Ignition switch.)
The tension-reducer is in operation immediately after the ignition switch is turned off, but it does not stop operation even if the door is opened within 30 seconds from the turning-off the ignition switch.	• Check the door switch input signal. • Check the door switch. (Refer to GROUP 42–Door Assembly.)

ACTIVE AERO CIRCUIT (UP TO 1993 MODELS)



TSB Revision

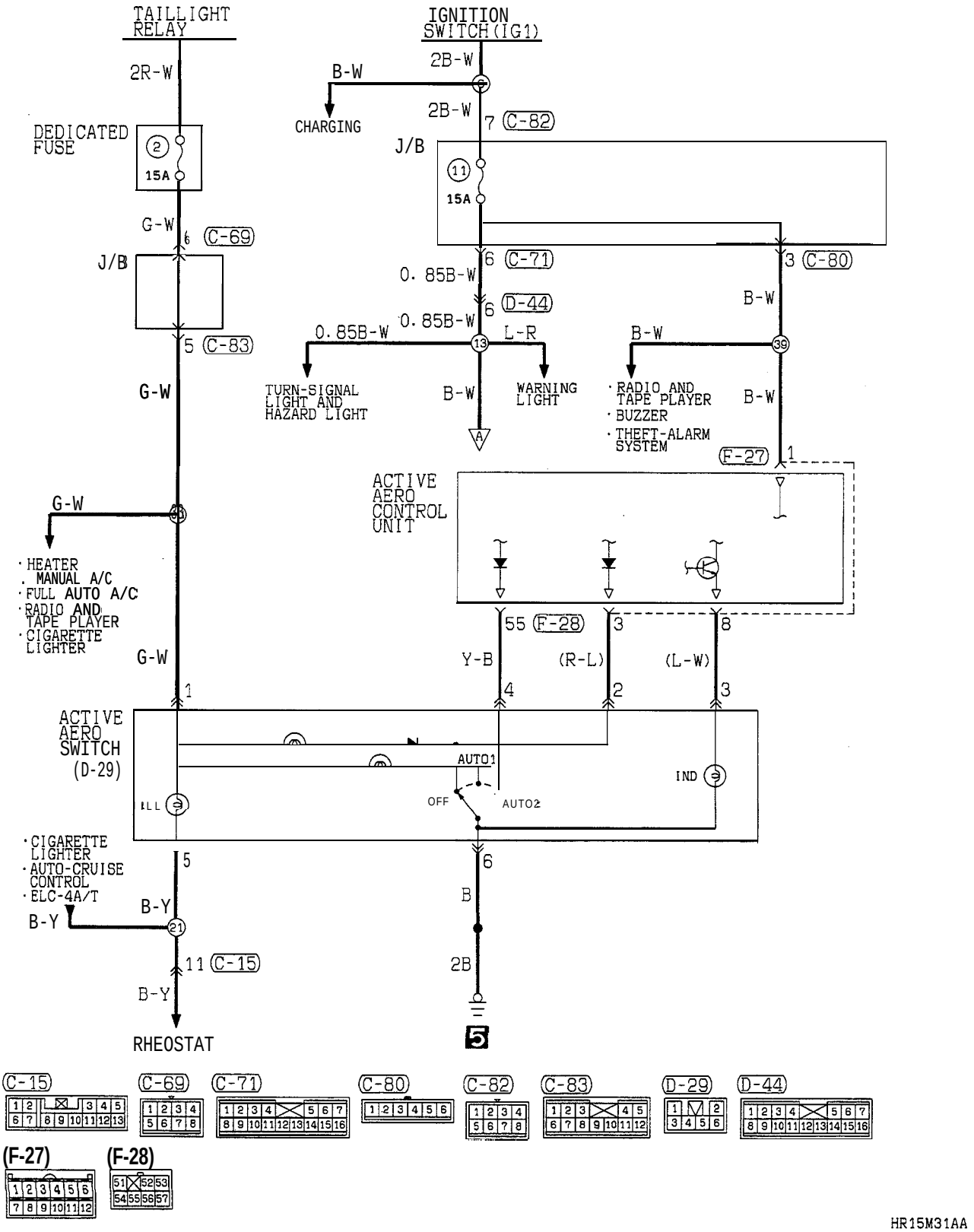


HR15M30AB

TSB Revision

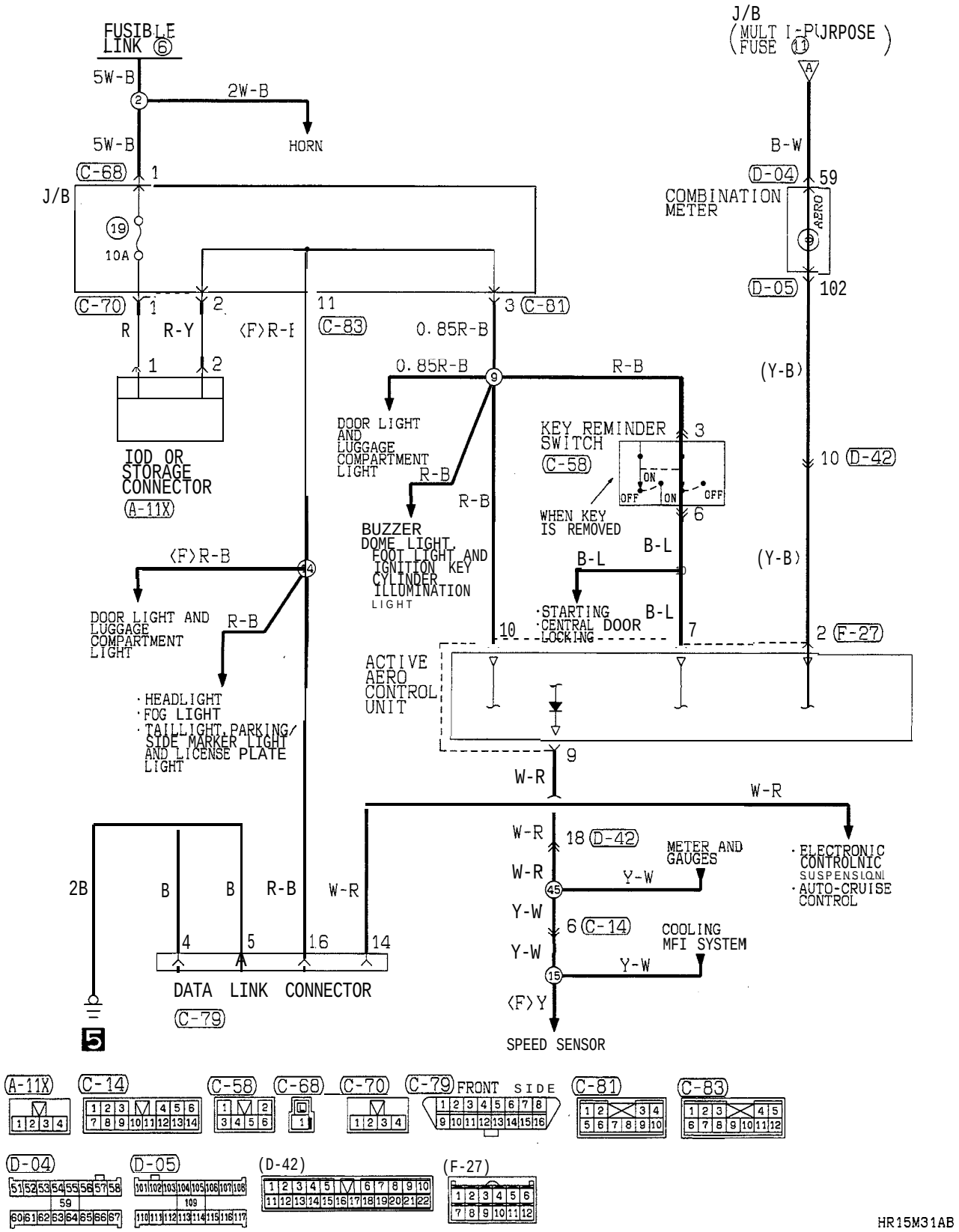
ACTIVE AERO CIRCUIT (FROM 1994 MODELS)

<HATCHBACK>



HR15M31AA

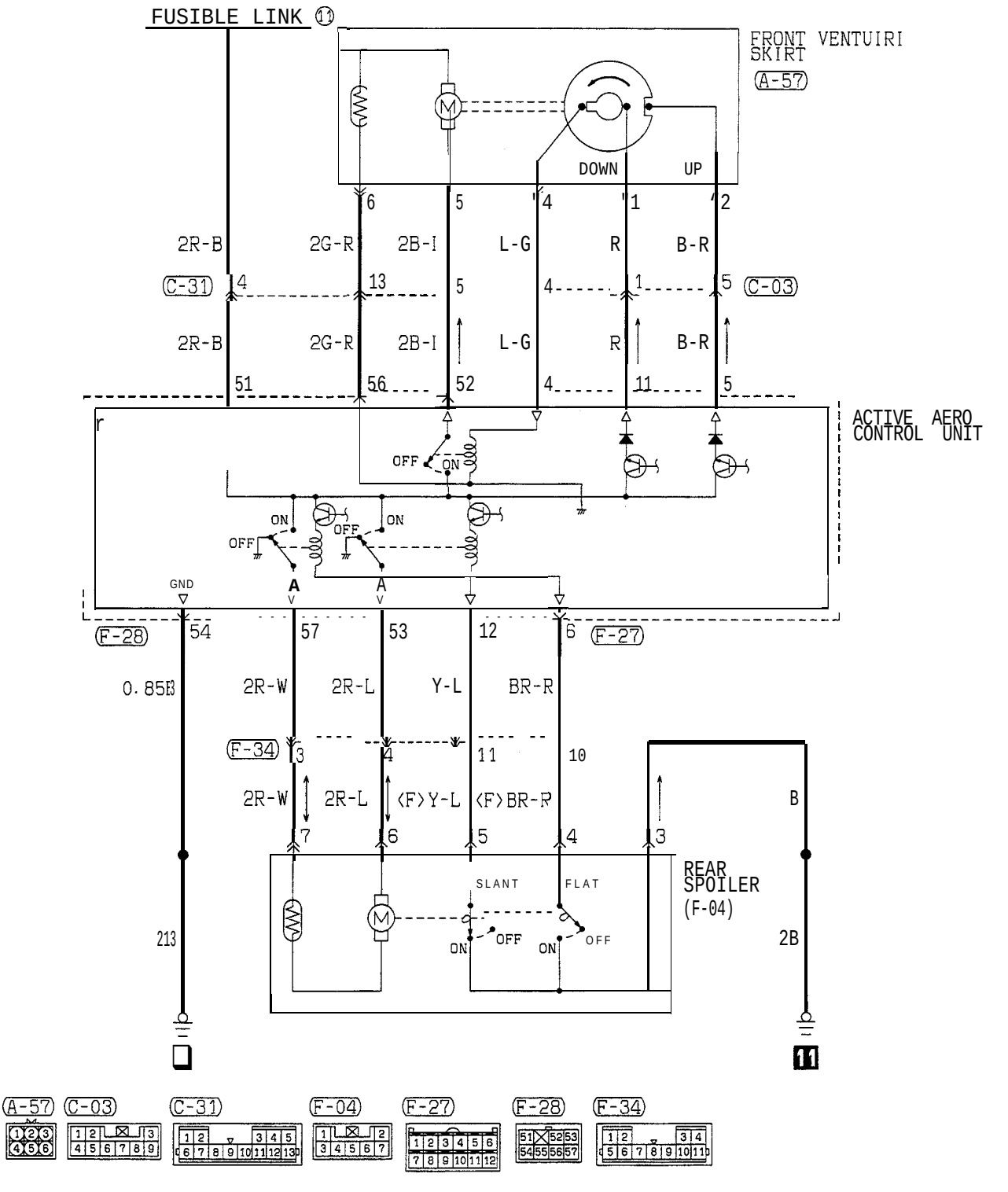
TSB Revision



HR15M31AB

TSB Revision

ACTIVE AERO CIRCUIT (FROM 1994 MODELS) (CONTINUED)

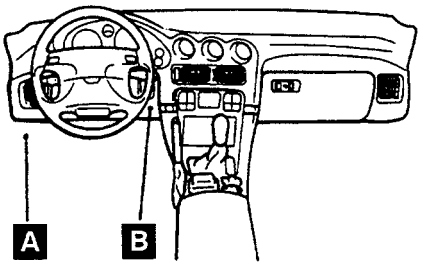


HR15M31BA

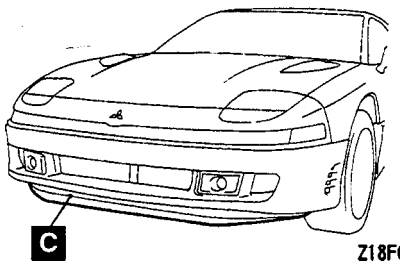
TSB Revision

COMPONENT LOCATION

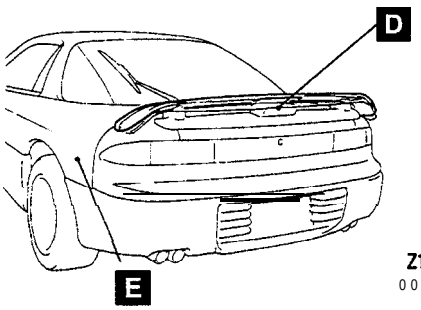
Name	Symbol	Name	Symbol
Active aero control unit	E	Data link connector (from 1994 models)	B
Active aero front venturi skirt	C	Data link connector (up to 1993 models)	A
Active aero rear spoiler	D		



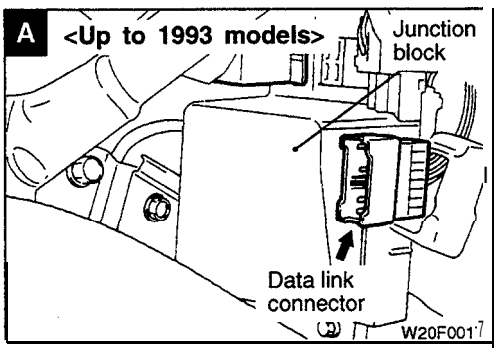
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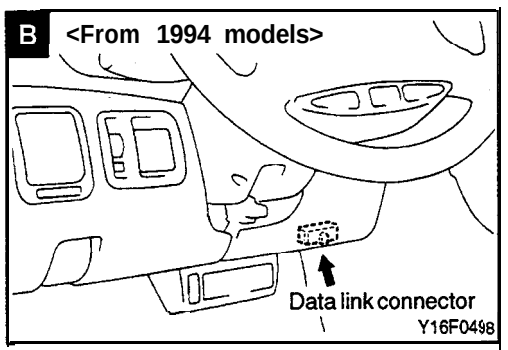


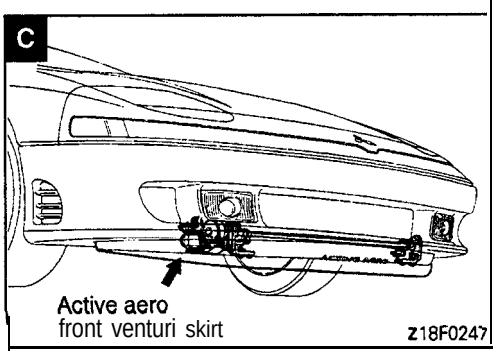
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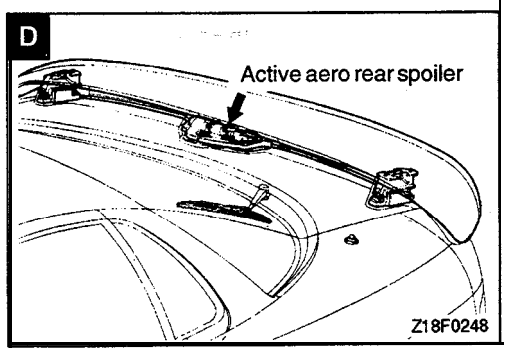


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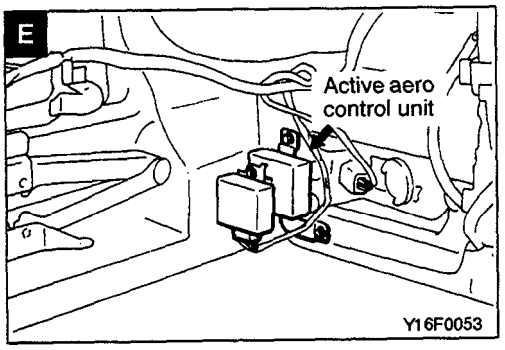






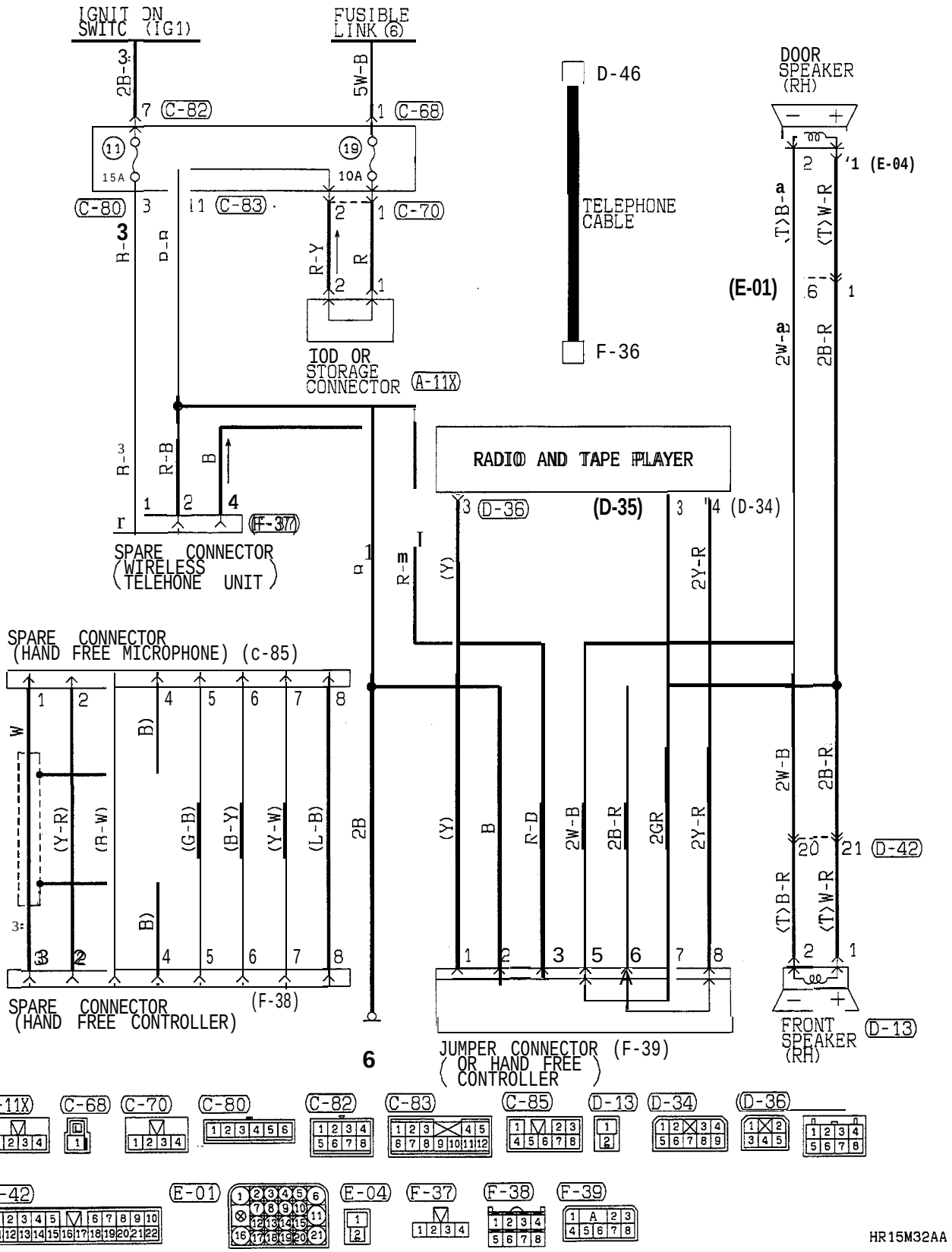


TSB Revision


E
Active aero
control unit
Y16F0053

CAR TELEPHONE CIRCUIT (1992 MODEL)

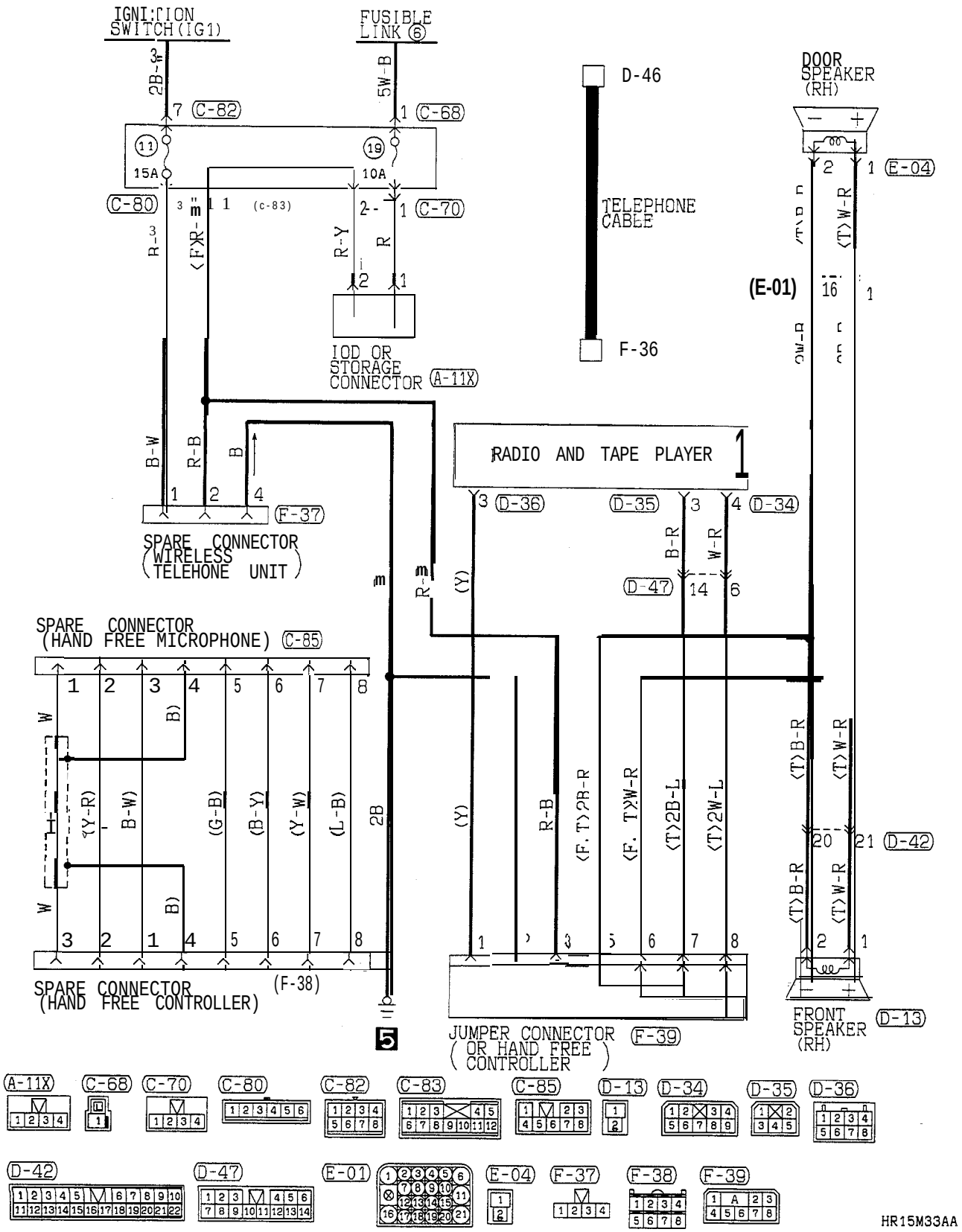
(VEHICLES HARNESS WITHOUT TELEPHONE COMPONENT)



TSB Revision

CAR TELEPHONE CIRCUIT (1993 Models)

(VEHICLES HARNESS WITHOUT TELEPHONE COMPONENT)

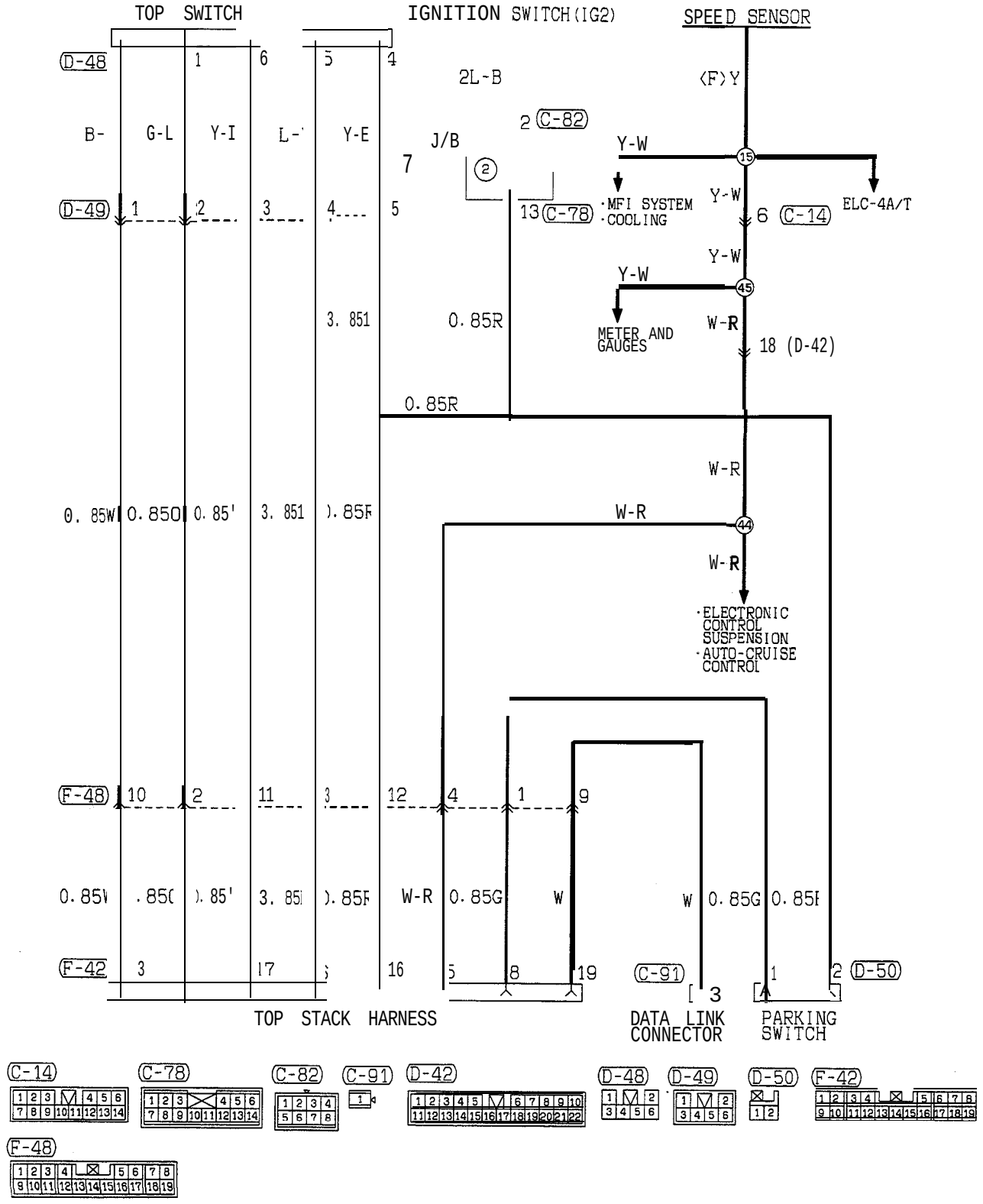


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NOTES

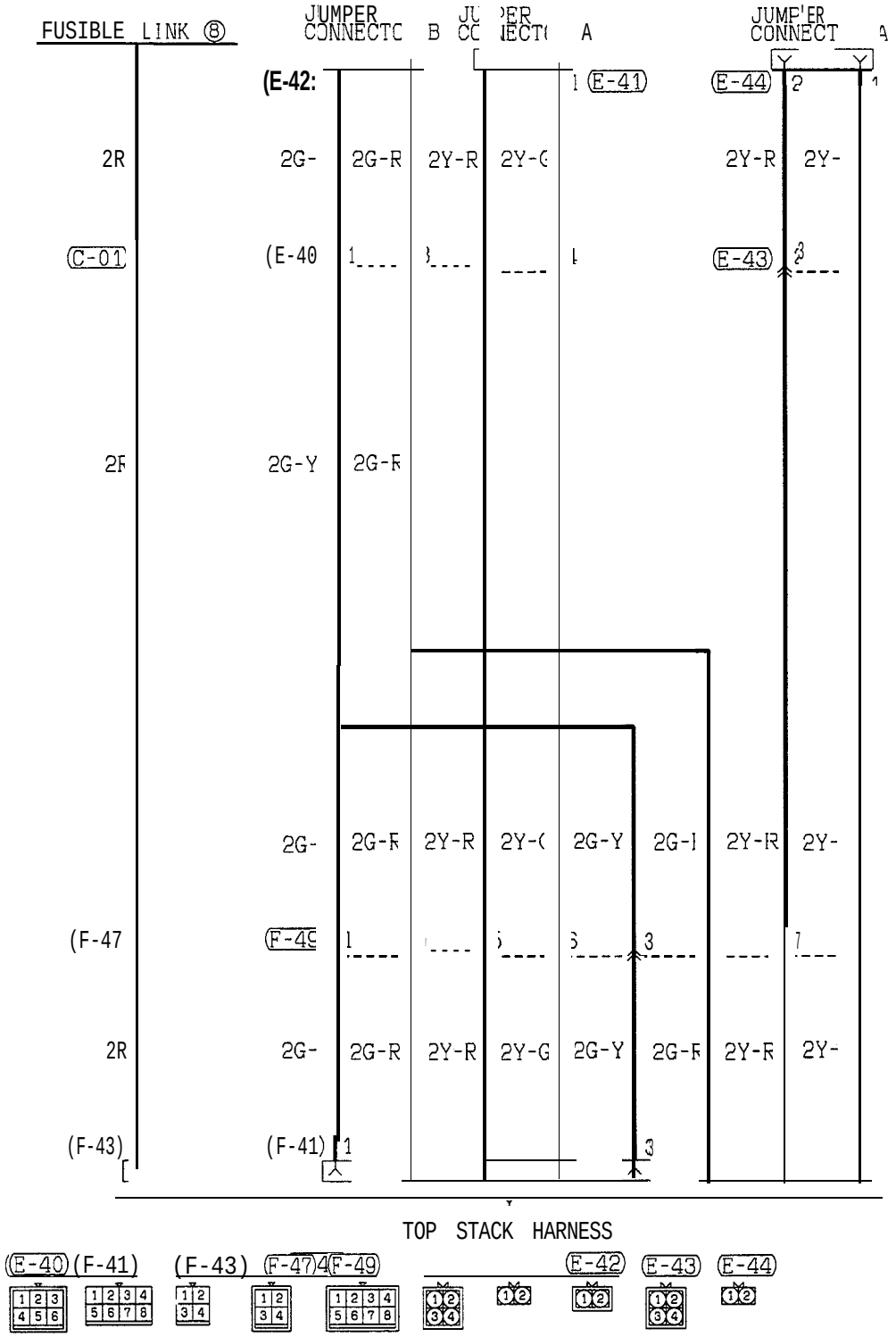
TOP STACK CIRCUIT (1995 MODELS)

<CONVERTIBLE>



HR15M34AA

TSB Revision

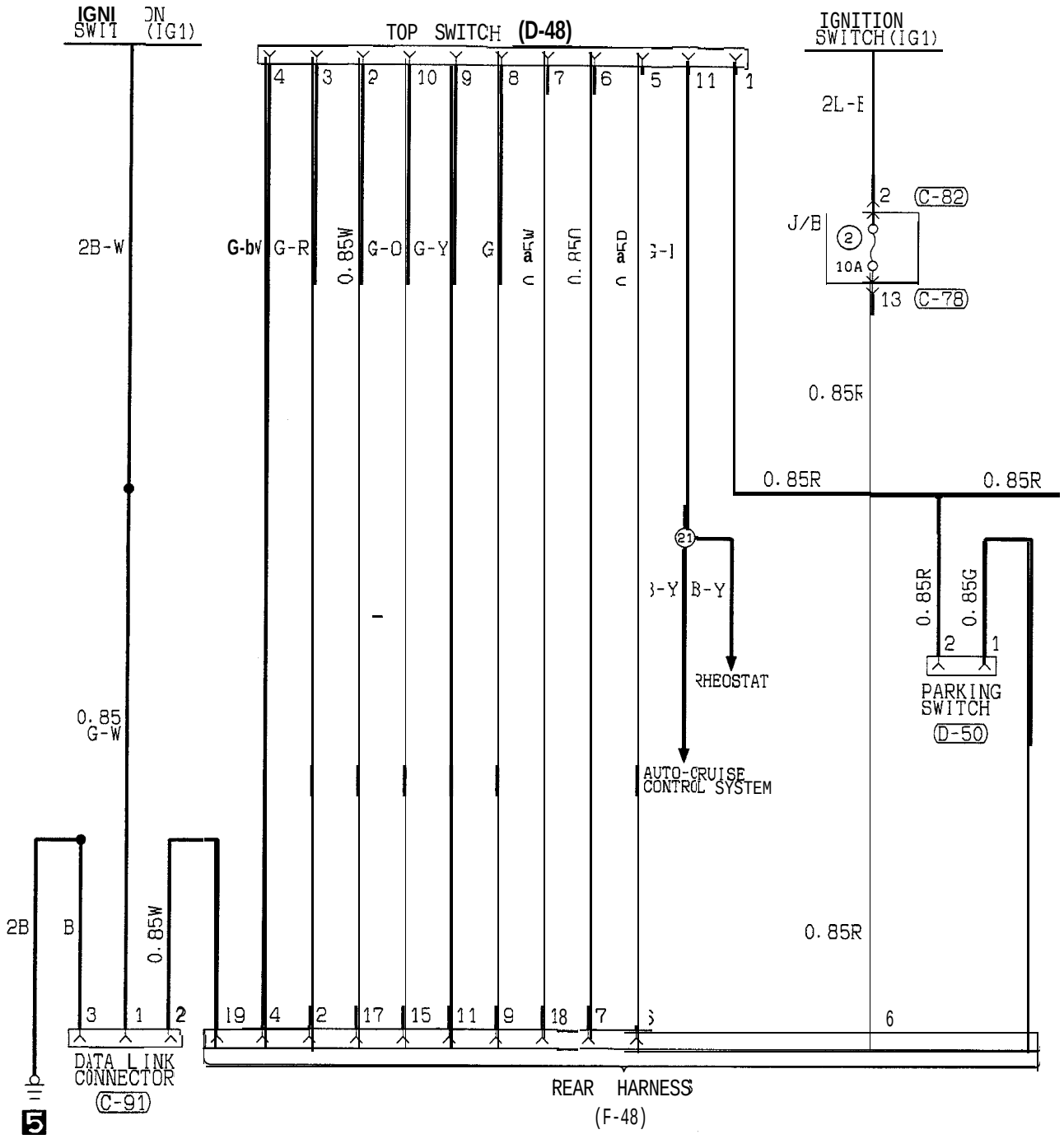


HR15M34AB

TSB Revision

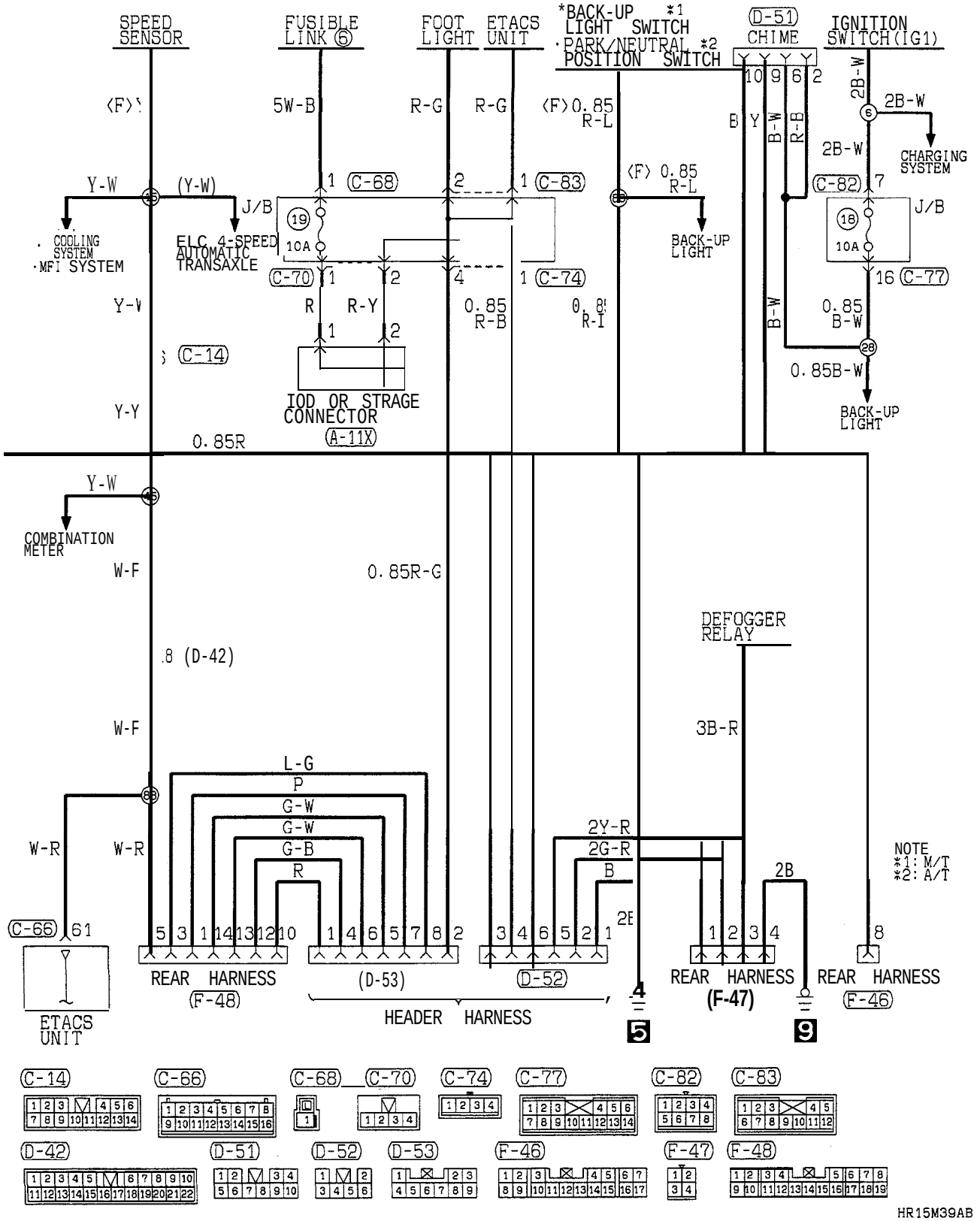
TOP STACK CIRCUIT (FROM 1996 MODELS)

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HR15M39AA

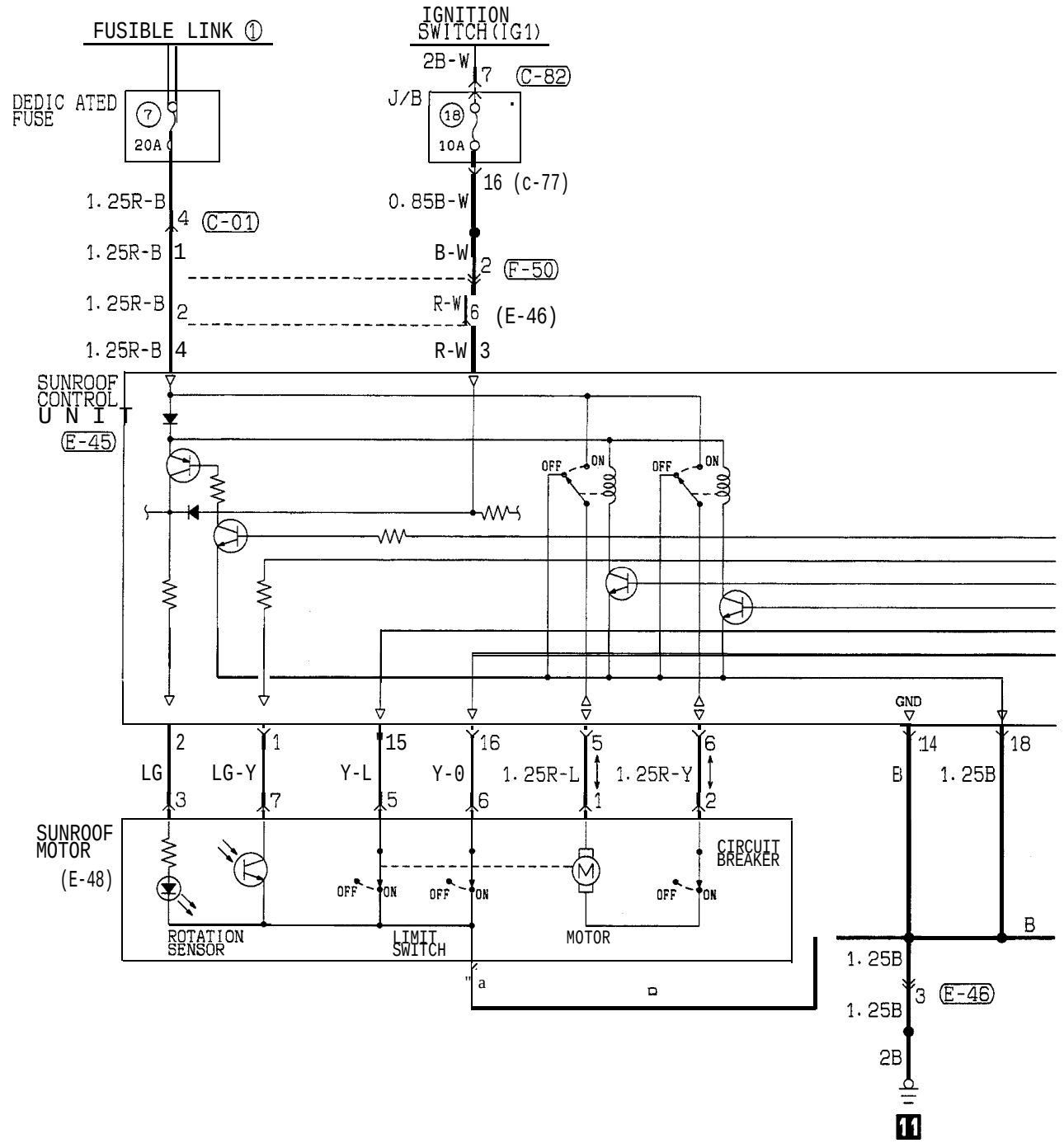
TSB Revision

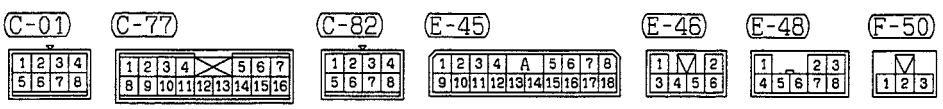


TSB Revision

SUNROOF CIRCUIT (FROM 1995 MODELS)

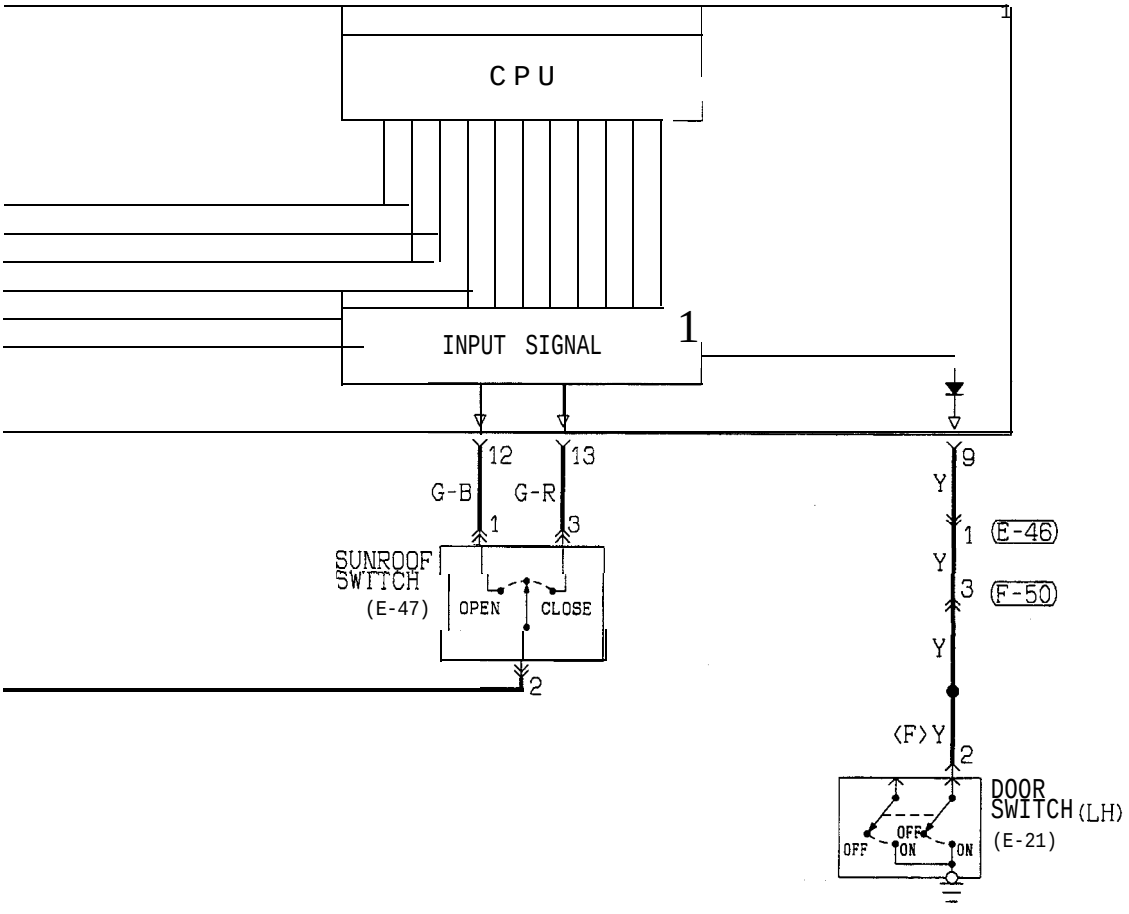
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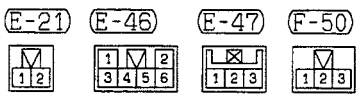




HR15M40AA

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HR15M40AB

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CHARGING SYSTEM

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GENERAL SPECIFICATIONS

GENERATOR

Items	Up to 1995 models	From 1996 models
Type	Battery voltage sensing	Battery voltage sensing
Rated output VIA	12/110	12/95
Voltage regulator	Electronic type	Electronic type

SERVICE SPECIFICATIONS

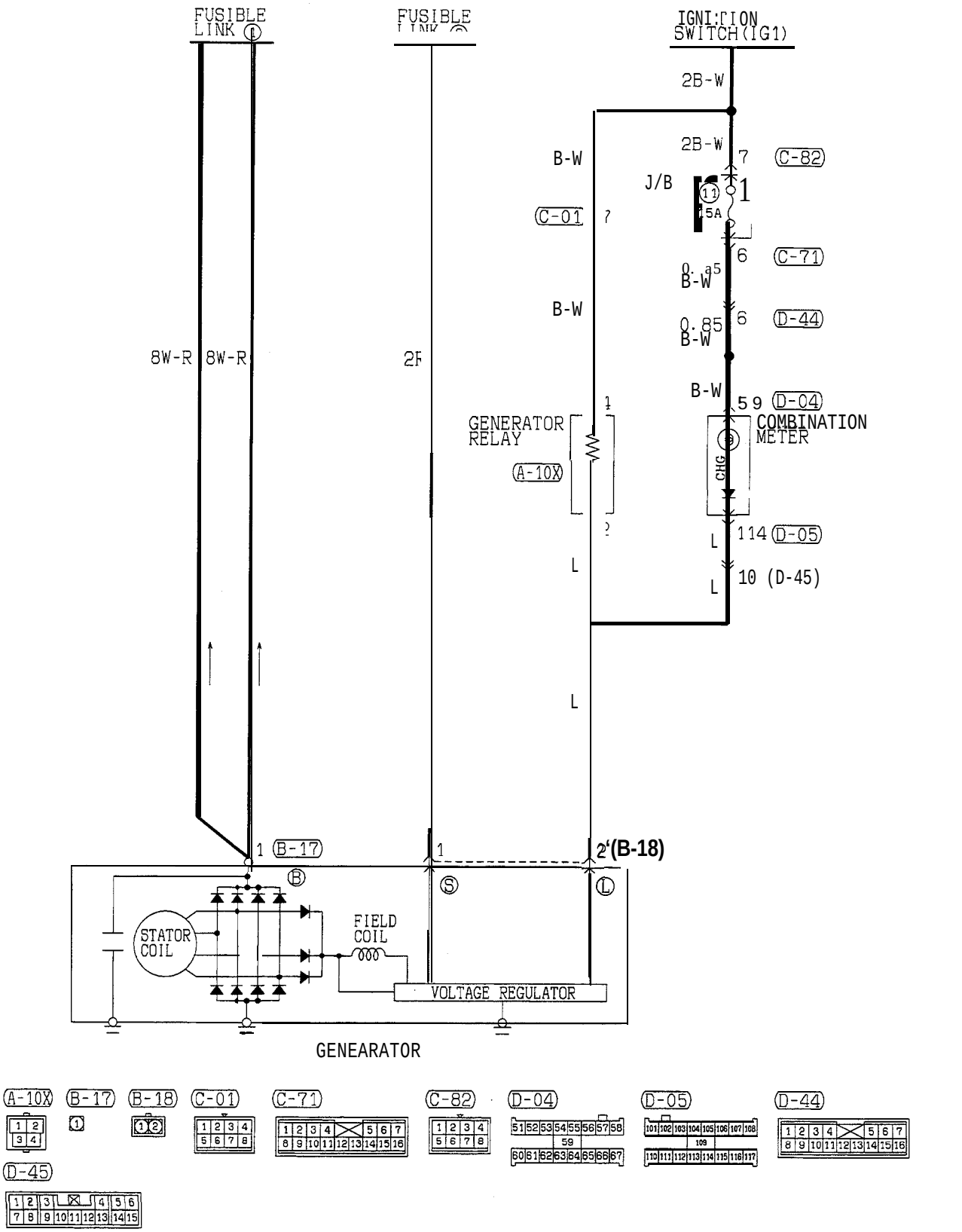
GENERATOR

Items		Standard value	Limit
Regulated voltage Ambient temp. at voltage regulator V	–20°C (- 4 ° F)	14.2–15.4	–
	20°C (68°F)	13.9–1 4.9	–
	60°C (140°F)	13.4-14.6	–
	80°C (176°F)	13.1-14.5	–
Slip ring O.D. mm (in.)		26.7 (1.05)	26.1 (1.03)
Field coil resistance Ω		Approx. 3-5	-
Output current		–	/ 70% of nominal output current

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TROUBLESHOOTING (UP TO 1993 MODELS)

CIRCUIT DIAGRAM

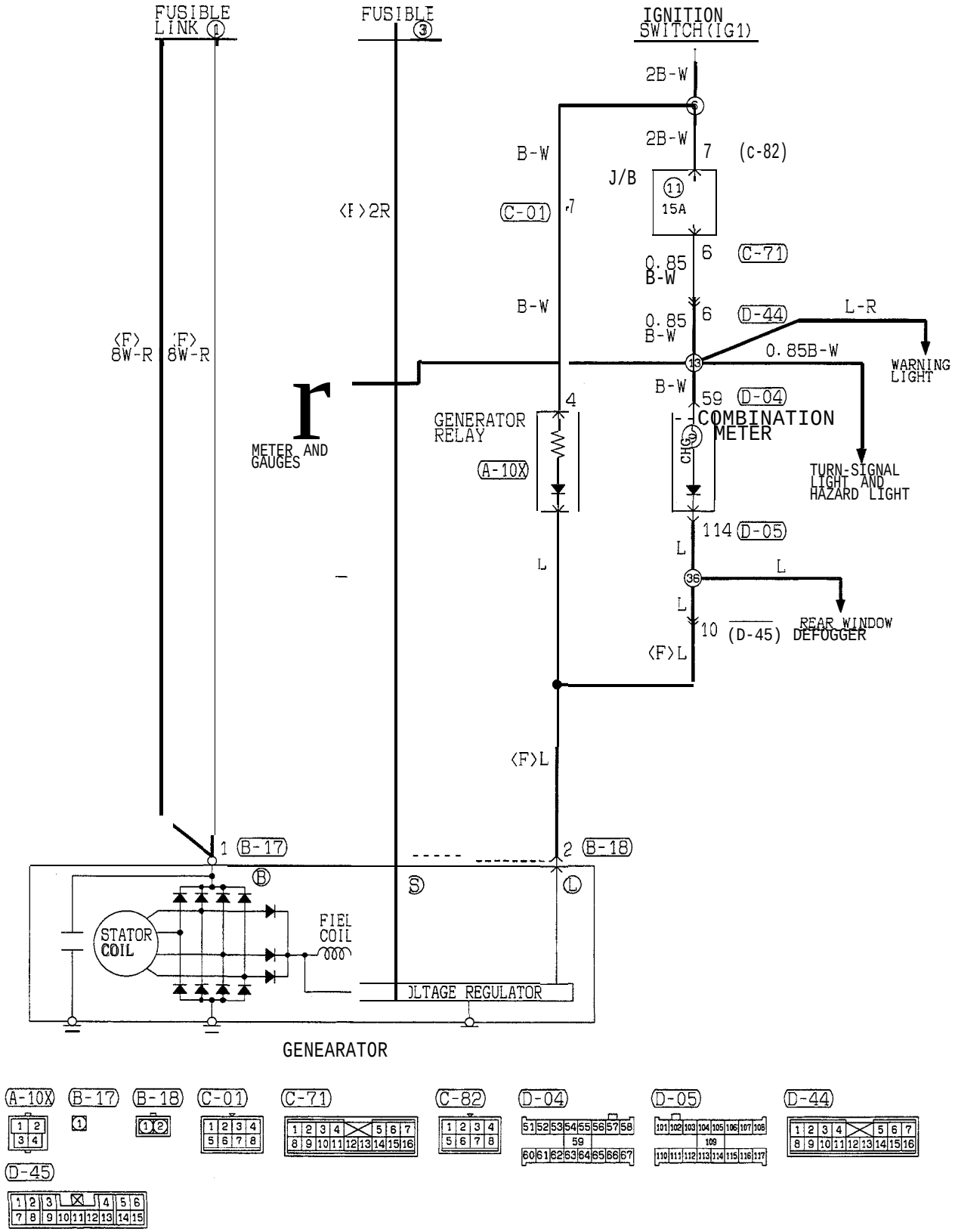


HR04M00AA

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(FROM 1994 MODELS)

CIRCUIT DIAGRAM



HR04M01AA

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OPERATION

When engine is stopped

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

When engine is being started/has started

When the engine is started, charging voltage is applied to the "L" terminal of the generator, with the result that the charging warning light is extinguished. In addition, because battery voltage is applied to the "S" terminal of the generator, this battery voltage is monitored at the IC voltage regulator, thus switching ON and OFF the current to the field coil and thereby controlling the output voltage of the generator.

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

NOTE

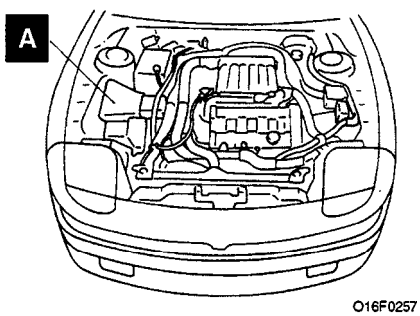
The generator relay functions as a back-up for the flow of electricity to the field coil if there is a disconnection or damaged wiring of the charging warning light.

TROUBLESHOOTING HINTS

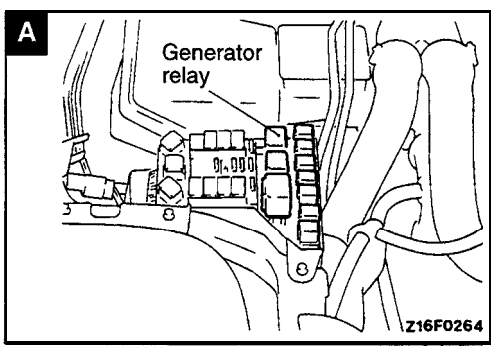
1. Charging warning light does not go on when the ignition switch is turned to "ON", before the engine starts.
   - Check the bulb.
2. Charging warning light fails to go off once the engine starts.
   - Check the IC voltage regulator (located within the generator).
3. Discharged or overcharged battery.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

COMPONENT LOCATION

Name	Symbol
Generator relay	A



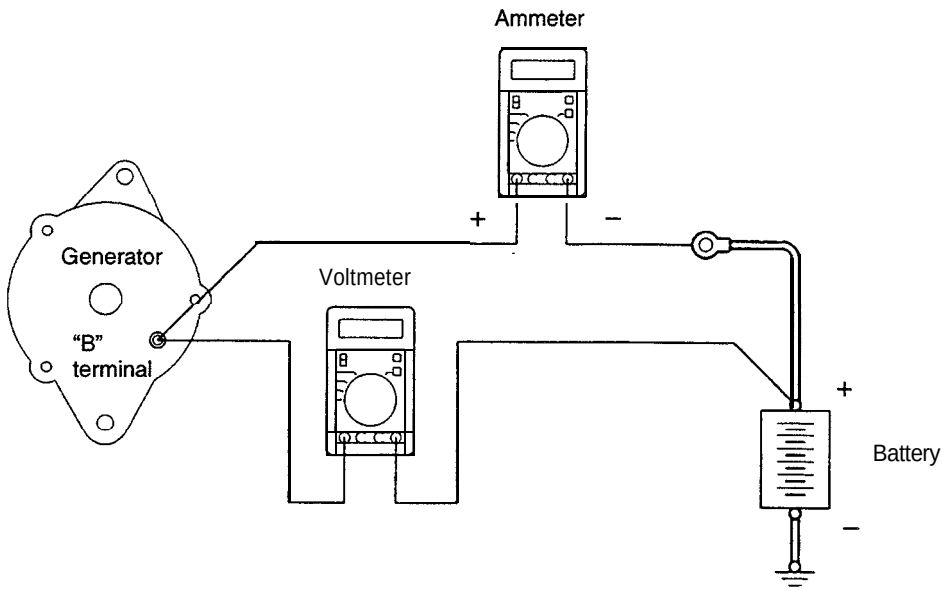
O16F0257



Z16F0264

ON-VEHICLE SERVICE

GENERATOR OUTPUT LINE VOLTAGE DROP TEST



This test determines whether the wiring from the generator "B" terminal to the battery (+) terminal (including the fusible link) is in a good condition or not.

(1) Always be sure to check the following before the test.
- Generator installation
- Generator drive belt tension (Refer to GROUP 00 – Maintenance Service.)
- Fusible link
- Abnormal noise from the generator while the engine is running

(2) Turn the ignition switch to the OFF position.
(3) Disconnect the negative battery cable.
(4) Disconnect the generator output wire from the generator "B" terminal and connect a DC test ammeter with a range of 0 – 100 A in series between the "B" terminal and the disconnected output wire. (Connect the (+) lead of the ammeter to the "B" terminal, and then connect the (–) lead of the ammeter to the disconnected output wire.)

NOTE
A clamp-type ammeter which enables measurements to be taken without disconnecting the generator output wire is recommended. The reason for this is if a vehicle in which the voltage may have dropped due to an imperfect connection at the generator "B" terminal is being inspected, and the generator "B" terminal is loosened when the test ammeter is connected, the connection will be completed at this time and the possibility of finding problems will be reduced.

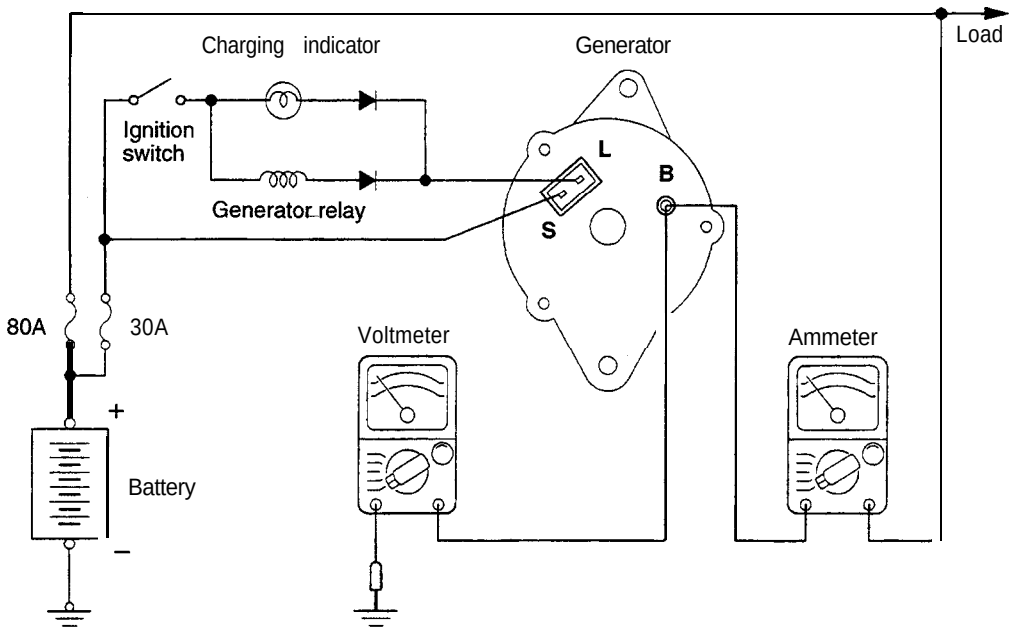
(5) Connect a digital-type voltmeter between the generator "B" terminal and the battery (+) terminal. (Connect the (+) lead of the voltmeter to the "B" terminal, and then connect the (–) lead of the voltmeter to the battery (+) cable.)

(6) Connect a tachometer. (For the procedure for connecting the tachometer, refer to GROUP 11 – On-vehicle Service.)
(7) Reconnect the negative battery cable.
(8) Leave the hood open.
(9) Start the engine.
(lO)With the engine running at 2500 rpm, turn the headlights and other lights on and off to adjust the generator load so that the value displayed on the ammeter is slightly above 30A.
Limit value: Max. 0.3 V

NOTE
When the generator output is high and the value displayed on the ammeter does not decrease to 30A, set the value to 40A. Read the value displayed on the voltmeter at this time.
In this case the limit value becomes max. 0.4V. Adjust the engine speed by gradually decreasing it until the value displayed on the ammeter is 30A. Take a reading of the value displayed on the voltmeter at this time.

(11) If the value displayed on the voltmeter is above the limit value, there is probably a malfunction in the generator output wire, so check the wiring between the generator "B" terminal and the battery (+) terminal (including fusible link).
If a terminal is not sufficiently tight or if the harness has become discolored due to overheating, repair and then test again.
(12)After the test, run the engine at idle.
(13)Turn off all lights and turn the ignition switch to the OFF position.
(14)Disconnect the negative battery cable.
(15)Disconnect the ammeter, voltmeter and tachometer.
(16)Connect the generator output wire to the generator "B" terminal.
(17)Connect the negative battery cable.

OUTPUT CURRENT TEST



This test determines whether the generator outputs normal current.

(1) Before the test, always be sure to check the following.
- Generator installation
- Battery (Refer to GROUP 54 – Battery.)

NOTE
The battery to be used should be slightly discharged. The load in a fully-charged battery will be insufficient and the test may not be able to be carried out correctly.
- Generator drive belt tension (Refer to GROUP 11 – On-vehicle Service.)
- Fusible link
- Abnormal noise from the generator while the engine is running

(2) Turn the ignition switch to the OFF position.
(3) Disconnect the negative battery cable.
(4) Disconnect the generator output wire from the generator "B" terminal and connect a DC test ammeter with a range of 0–100 A in series between the "B" terminal and the disconnected output wire. (Connect the (+) lead of the ammeter to the "B" terminal, and then connect the (–) lead of the ammeter to the disconnected output wire.)

Caution
Never use clips but tighten bolts and nuts to connect the line. Otherwise loose connections (e.g. using clips) will lead to a serious accident because of high current.

NOTE
A clamp-type ammeter which enables measurements to be taken without disconnecting the generator output wire is recommended.

(5) Connect a voltmeter with a range of 0 – 20 V between the generator "B" terminal and the ground. (Connect the (+) lead of the voltmeter to the "B" terminal, and then connect the (–) lead of the voltmeter to the ground.)
(6) Connect a tachometer. (For the procedure for connecting the tachometer, refer to GROUP 11 – On-vehicle Service.)
(7) Connect the negative battery cable.
(8) Leave the hood open.
(9) Check to be sure that the reading on the voltmeter is equal to the battery voltage.

NOTE
If the voltage is 0 V, the cause is probably an open circuit in the wire or fusible link between the generator "B" terminal and the battery (+) terminal.

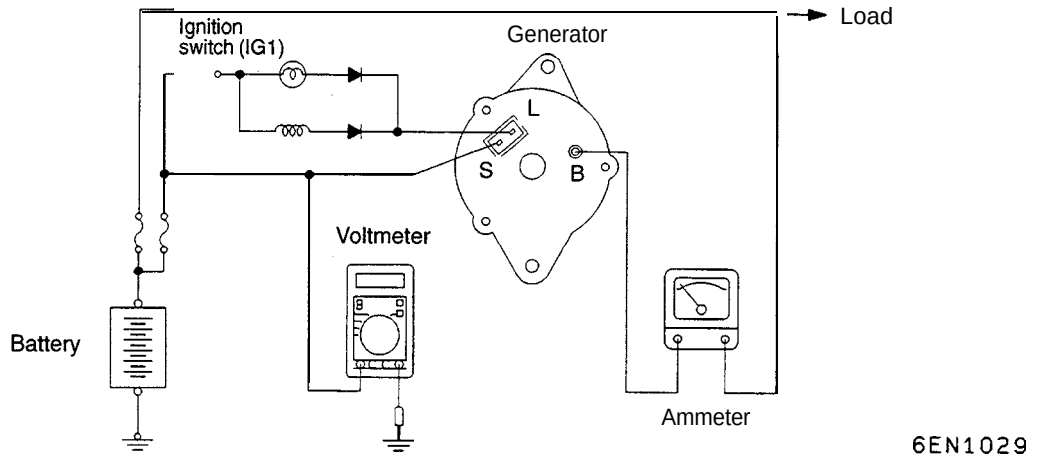
(10) After turning the light switch on and turning on the headlights, start the engine.
(11) Immediately after setting the headlights to high beam and turning the heater blower switch to the high revolution position, increase the engine speed to 2,500 r/min and read the maximum current output value displayed on the ammeter.

Limit value: 70% of nominal current output

NOTE
- For the nominal current output, refer to the Generator Specifications.
- Because the current from the battery will soon drop after the engine is started, the above step should be carried out as quickly as possible in order to obtain the maximum current output value.
- The current output value will depend on the electrical load and the temperature of the generator body.
- If the electrical load is small while testing, the specified level of current may not be output even though the generator is normal. In such cases, increase the electrical load by leaving the headlights turned on for some time to discharge the battery or by using the lighting system in another vehicle, and then test again.
- The specified level of current also may not be output if the temperature of the generator body or the ambient temperature is too high. In such cases, cool the generator and then test again.

(12) The reading on the ammeter should be above the limit value. If the reading is below the limit value and the generator output wire is normal, remove the generator from the engine and check the generator.
(13) Run the engine at idle speed after the test.
(14) Turn the ignition switch to the OFF position.
(15) Disconnect the negative battery cable.
(16) Disconnect the ammeter, voltmeter and tachometer.
(17) Connect the generator output wire to the generator "B" terminal.
(18) Connect the negative battery cable.

REGULATED VOLTAGE TEST



This test determines whether the voltage regulator is correctly controlling the generator output voltage.

(1) Always be sure to check the following before the test.
- Generator installation
- Check to be sure that the battery installed in the vehicle is fully charged. (Refer to GROUP 54 – Battery.)
- Generator drive belt tension (Refer to GROUP 00 – Maintenance Service.)
- Fusible link
- Abnormal noise from the generator while the engine is running

(2) Turn the ignition switch to the OFF position.
(3) Disconnect the negative battery cable.
(4) Connect a digital-type voltmeter between the generator "S" terminal and the ground. (Connect the (+) lead of the voltmeter to the "S" terminal, and then connect the (–) lead of the voltmeter to a secure ground or to the battery (–) terminal.)
(5) Disconnect the generator output wire from the generator "B" terminal.
(6) Connect a DC test ammeter with a range of 0–100A in series between the "B" terminal and the disconnected output wire. (Connect the (+) lead of the ammeter to the "B" terminal, and then connect the (–) lead of the ammeter to the disconnected output wire.)
(7) Connect a tachometer. (Refer to GROUP 11 – On-vehicle Service.)
(8) Reconnect the negative battery cable.
(9) Turn the ignition switch to the ON position and check that the reading on the voltmeter is equal to the battery voltage.

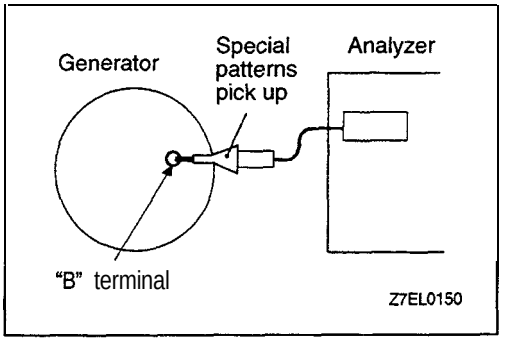
NOTE
If the voltage is 0 V, the cause is probably an open circuit in the wire or fusible link between the generator "S" terminal and the battery (+) terminal.

(10) Check to be sure that all lights and accessories are off.
(11) Start the engine.
(12) Increase the engine speed to 2,500 r/min.
(13) Read the value displayed on the voltmeter when the current output by the generator becomes 10A or less.
(14) If the voltage reading conforms to the value in the voltage regulation table, then the voltage regulator is operating normally.
If the voltage is outside the standard value, there is a malfunction of the voltage regulator or of the generator.
(15) After the test, lower the engine speed to the idle speed.
(16) Turn the ignition switch to the "OFF" position.
(17) Disconnect the negative battery cable.
(18) Disconnect the ammeter, voltmeter and tachometer.
(19) Connect the generator output wire to the generator "B" terminal.
(20) Connect the negative battery cable.

VOLTAGE REGULATION TABLE

Inspection terminal	Voltage regulator ambient temperature (°C [°F])	Standard value (V)	Inspection terminal	Voltage regulator ambient temperature (°C [°F])	Standard value (V)
Terminal "S"	-20 (-4)	14.2-15.4	Terminal "S"	60 (140)	13.4-14.5
	20 (68)	13.9-14.9		80 (176)	13.1–14.5

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WAVE-FORM CHECK USING AN ANALYZER

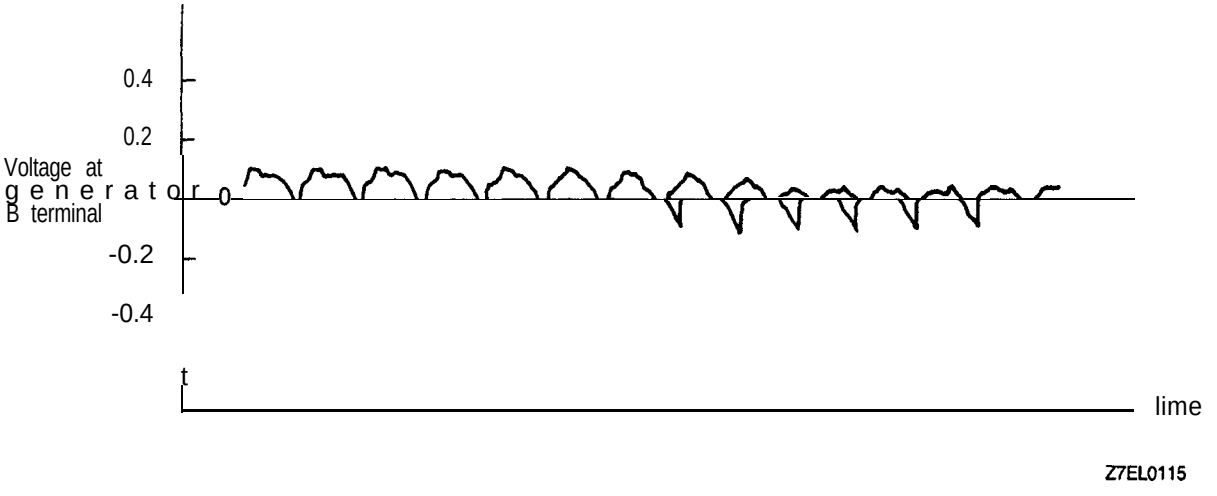
MEASUREMENT METHOD

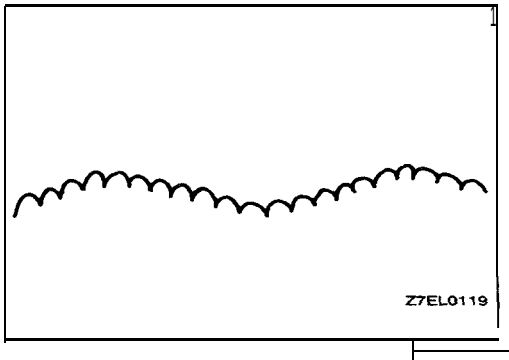
Connect the analyzer special patterns pick-up to the generator B terminal.

STANDARD WAVE-FORM

Observation Conditions

FUNCTION	SPECIAL PATTERNS
PATTERN HEIGHT	VARIABLE
VARIABLE Knob	Adjust while viewing the wave-form
PATTERN SELECTOR	RASTER
Engine speed	Curb idle speed



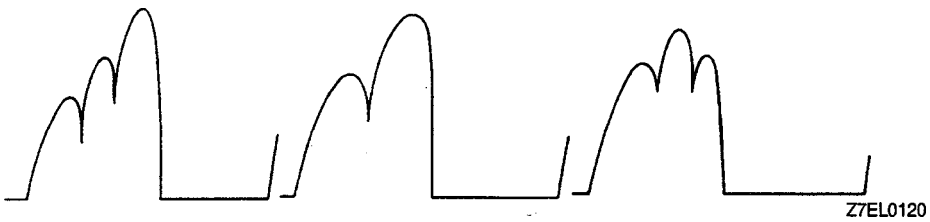
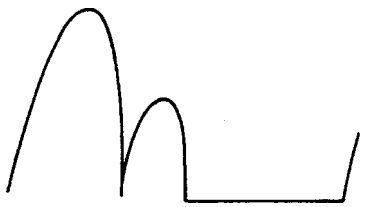
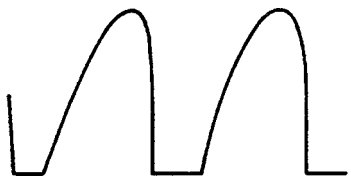


NOTE
Furthermore, the voltage wave-form of the generator B terminal can undulate as shown at left. This wave-form is produced when the regulator operates according to fluctuations in the generator load (current), and is normal for the generator.

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ABNORMAL WAVE-FORMS EXAMPLES

NOTE
1. The size of the wave-form patterns differs largely depending on the adjustment of the variable knob on the analyzer.
2. Identification of abnormal wave-forms is easier when there is a large output current (regulator is not operating). (Wave-forms can be observed when the headlights are illuminated.)
3. Check the conditions of the charge light (illuminated/not illuminated) also, and carry out a total check.

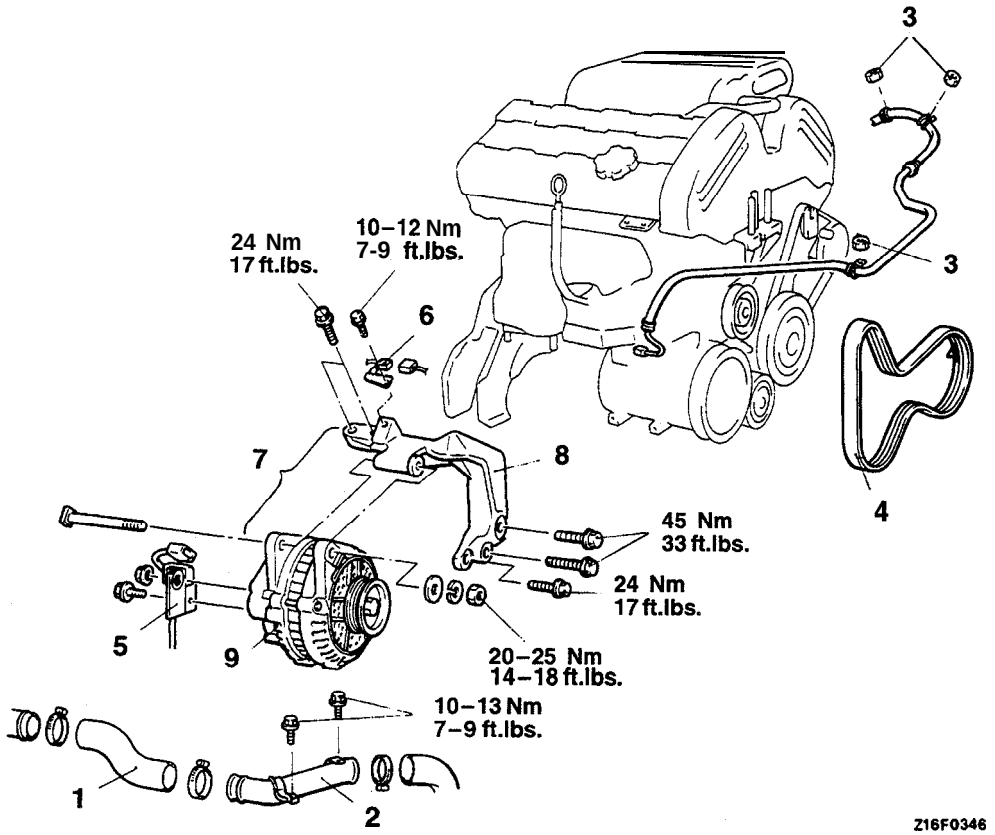
Abnormal wave-forms	Problem cause
Example 1  Z7EL0120	• Open diode
Example 2  Z7EL0121	• Short in diode
Example 3  Z7EL0122	• Broken wire in statorcoil
Example 4  Z7EL0123	• Short in stator coil
Example 5  Z7EL0124 At this time, the charge light is illuminated.	• Open supplementary diode

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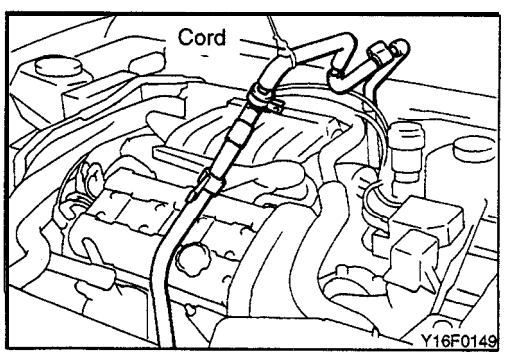
GENERATOR

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Removal and Installation of Right Bank Warm Up Three-Way Catalytic Converter
  (Refer to GROUP 15–Exhaust Pipe, Main Muffler and Catalytic Converter.)



Removal steps
1. Air hose E <Turbo>
2. Air hose C <Turbo>
3. ● Suction hose clamp nuts <Vehicles with air conditioning>
4. Drive belt
   (Refer to GROUP 11 – Engine Adjustment.)
5. Generator connector
6. Heated oxygen sensor connector
7. Generator and generator bracket assembly
8. Generator bracket
9. Generator



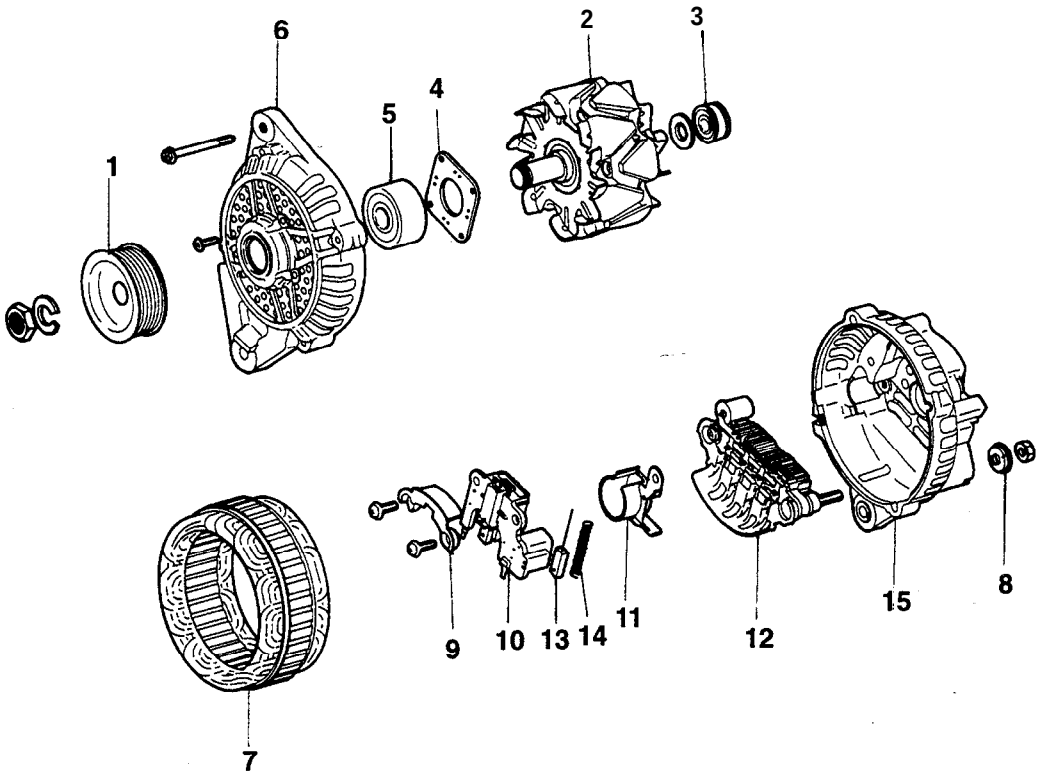
REMOVAL SERVICE POINT

◀A▶ CLAMP NUT REMOVAL

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

TSB Revision

DISASSEMBLY AND REASSEMBLY (Up to 1995 models)



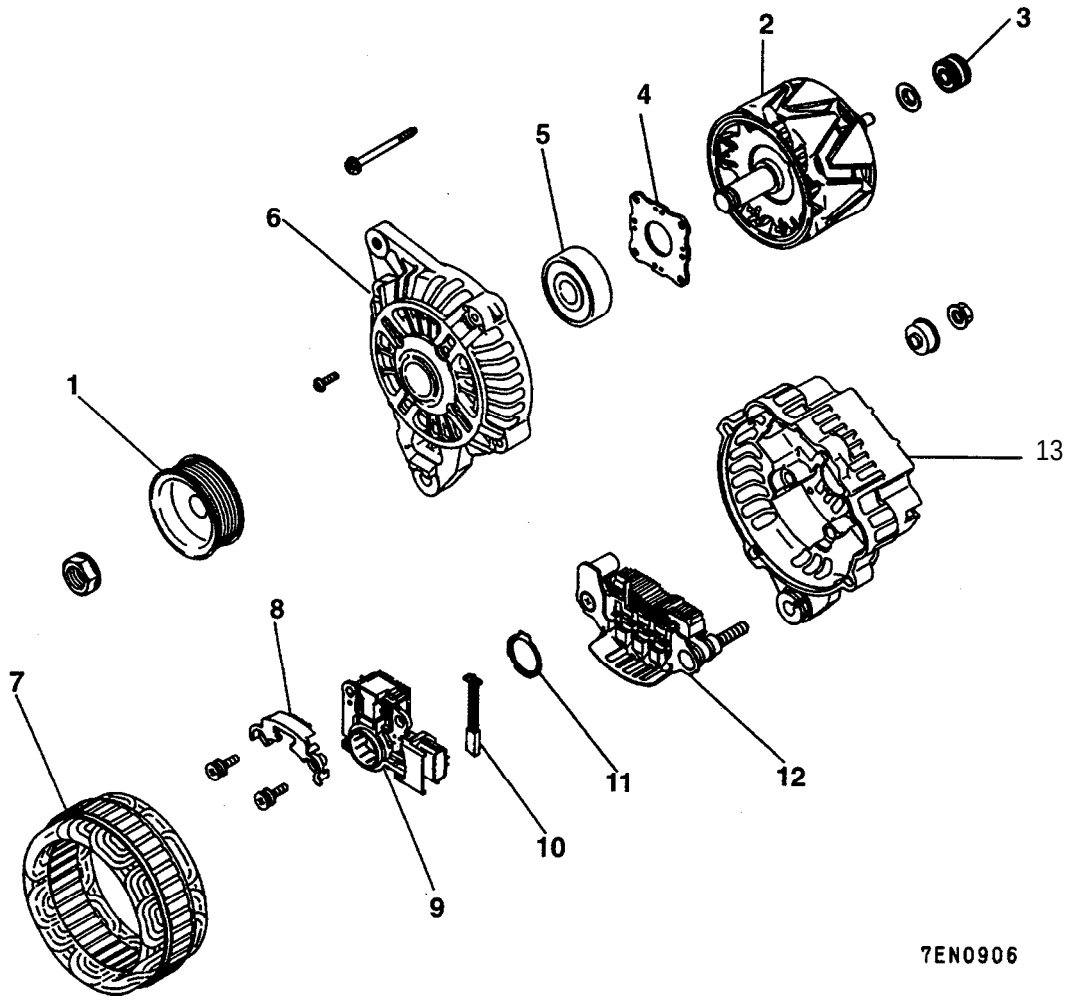
Disassembly steps

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

Z7EL0104

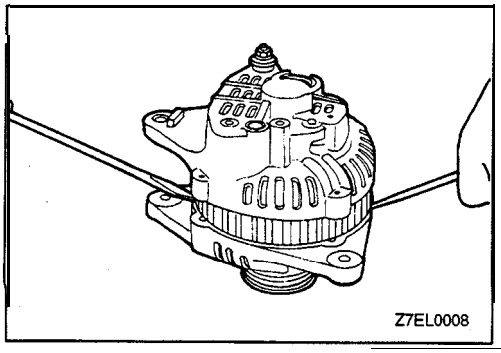
TSB Revision

(From 1996 models)



Disassembly steps

◀A▶ 1. Pulley
▶A◀ 2. Rotor assembly
3. Rear bearing
4. Bearing retainer
5. Front bearing
6. Front bracket
◀B▶ 7. Stator assembly
8. Plate
◀B▶ 9. Regulator and brush holder
10. Brush
11. Slinger
12. Rectifier assembly
13. Rear bracket



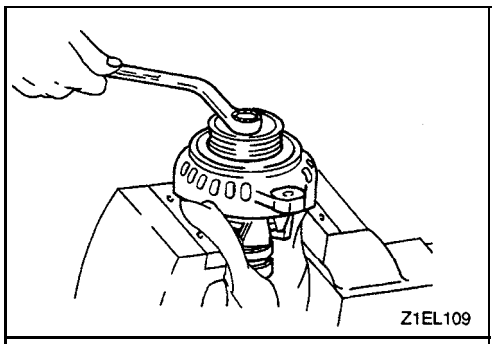
DISASSEMBLY SERVICE POINT

◀A▶GENERATOR PULLEY REMOVAL

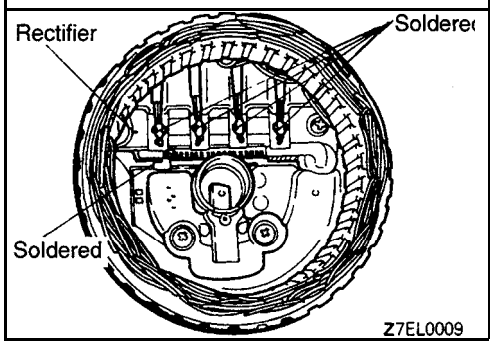
(1) Remove the bolts.
(2) Insert plain screwdriver between front bracket and stator core and pry downward.

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

TSB Revision



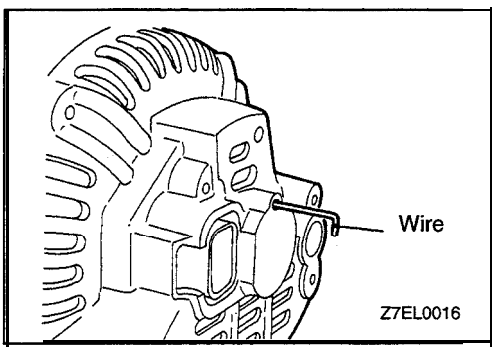
(3) Clamp the rotor in a vise with soft jaws.
(4) After removing the nut, remove the pulley and front bracket from the rotor.

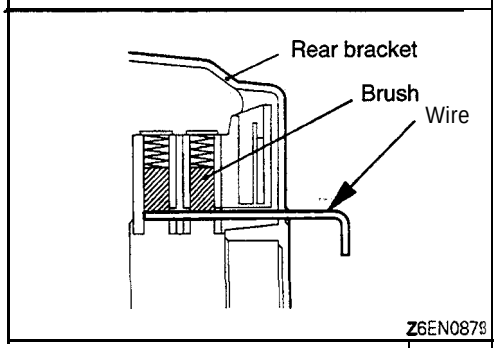


◀B▶STATOR / REGULATOR AND BRUSH HOLDER REMOVAL

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

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

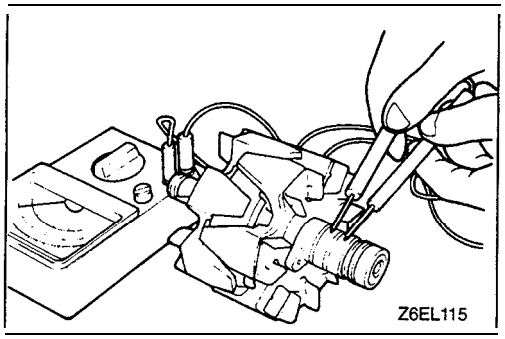


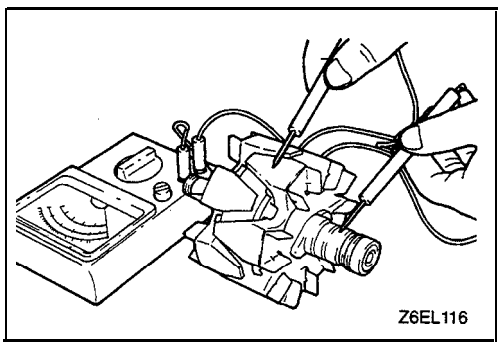


REASSEMBLY SERVICE POINT

▶A◀ROTOR ASSEMBLY INSTALLATION

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


Z6EL115


Z6EL116

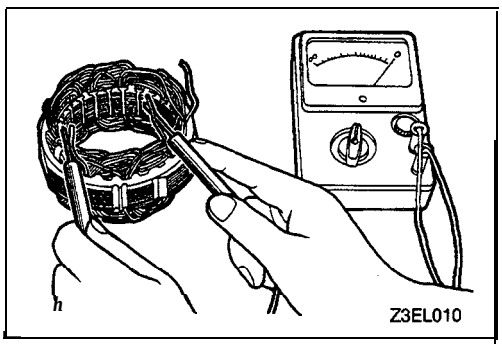
INSPECTION

ROTOR

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

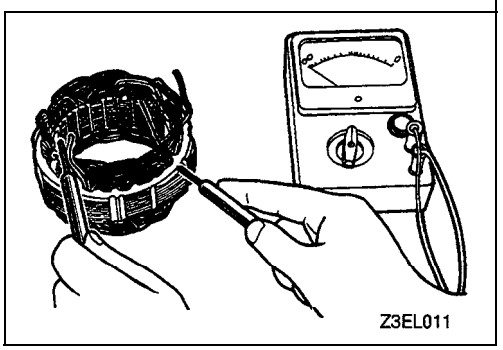
Resistance value : Approx. 3–5 Ω

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

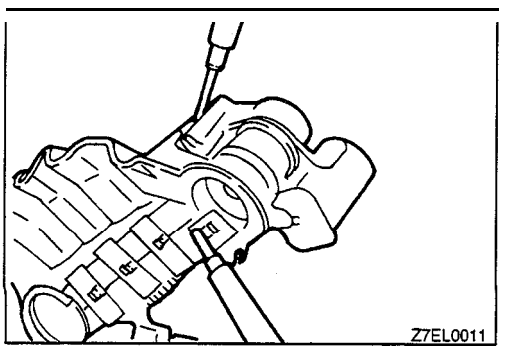

Z3EL010

STATOR

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


Z3EL011

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

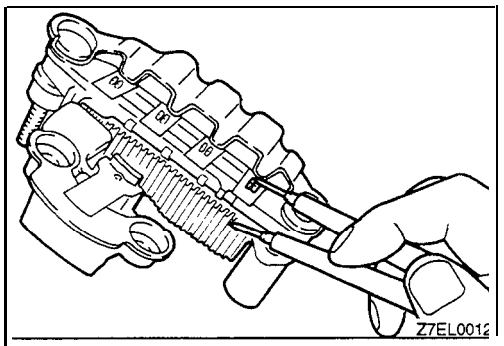

Z7EL0011

RECTIFIERS

(1) Positive Rectifier Test

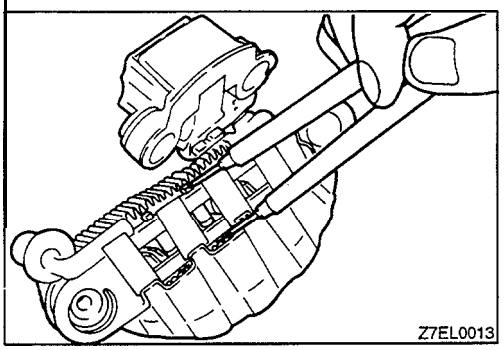
Check for continuity between positive rectifier and stator coil lead connection terminal with a circuit tester. If there is continuity in both directions, diode is shorted. Replace rectifier assembly.

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(2) Negative Rectifier Test

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

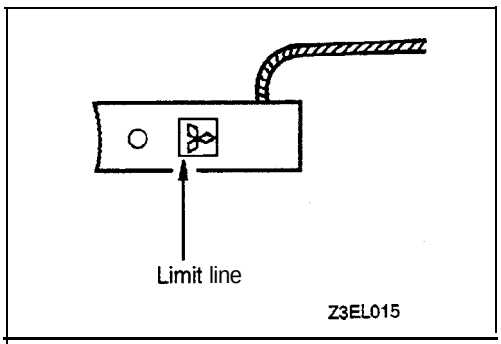


(3) Diode Trio Test

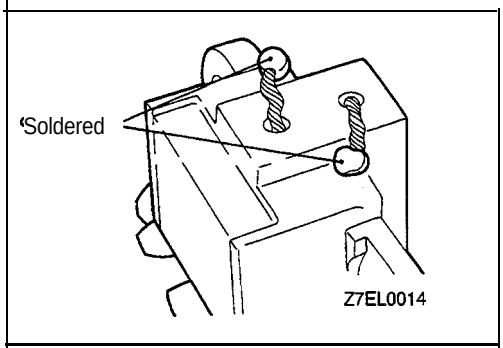
Check three diodes for continuity by connecting an ammeter to both ends of each diode. If there is no continuity in both directions, diode is faulty and heatsink assembly must be replaced.

BRUSH REPLACEMENT <Up to 1995 models>

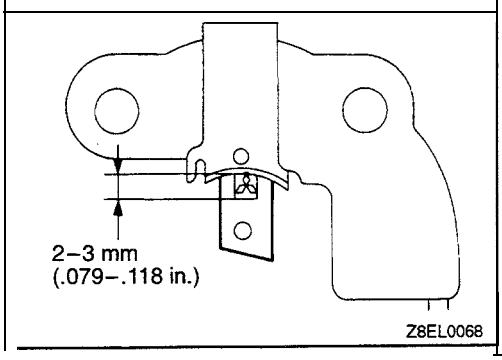
(1) Replace brush by the following procedures if it has been worn to limit line.

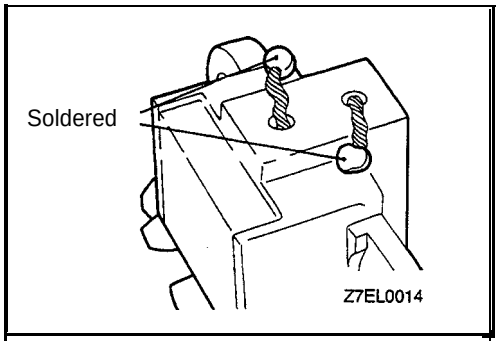


(2) Unsolder pigtail and remove old brush and spring.



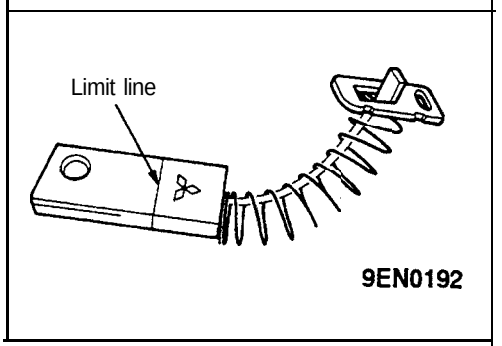
(3) Install brush spring and new brush in brush holder.
(4) Insert the brush to where there is a space 2 to 3 mm (.079 to .118 in.) between the limit line and the end of the brush holder.



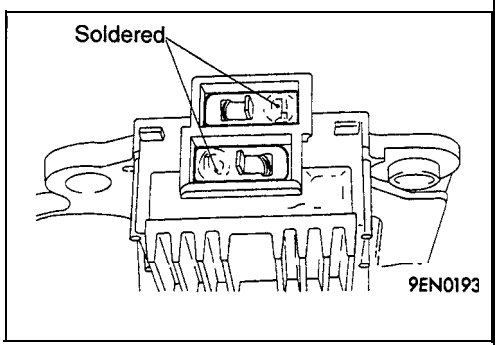


(5) Solder pigtail to brush holder as shown in the illustration.

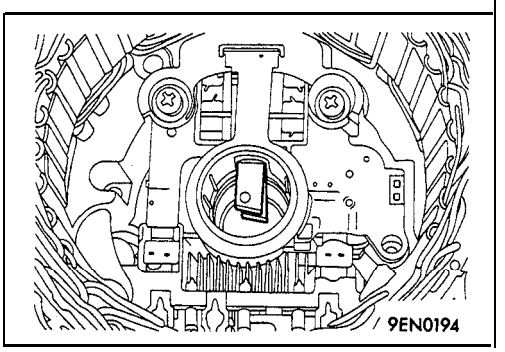
BRUSH REPLACEMENT <From 1996 models>



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



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



(3) When installing a new brush, push the brush in the brush holder as shown in the illustration, and solder the lead wire.

TSB Revision

STARTING SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS

STARTER MOTOR

Items	Specifications
Type	Reduction drive (with planetary gear)
Rated output kW/V	1.2/12
No. of pinion teeth	8

SERVICE SPECIFICATIONS

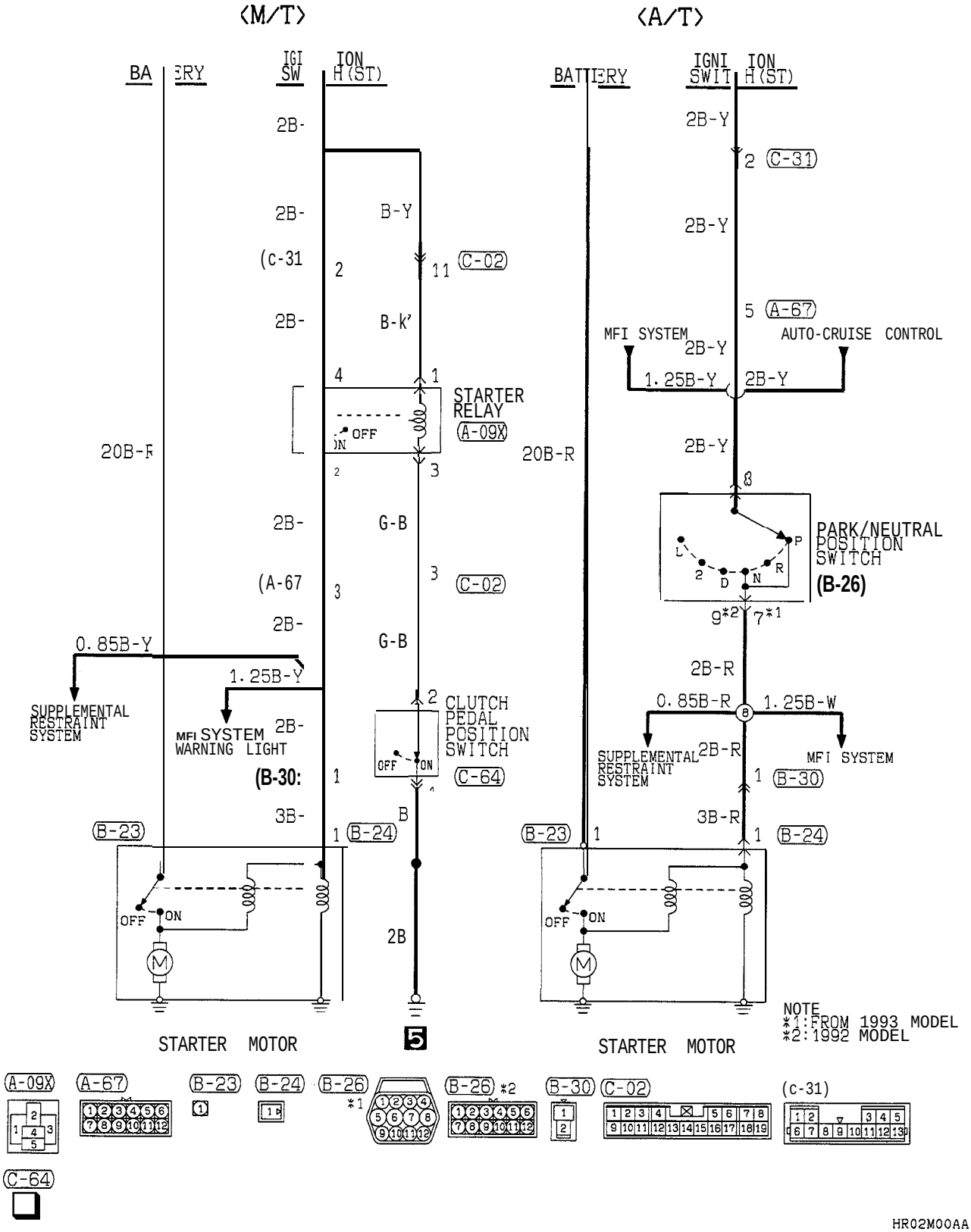
STARTER MOTOR

Items		Standard value	Limit
Free running characteristics	Terminal voltage V	11	
	Current A	90 or less	
	Speed r/min	3,000 or more	
Pinion gap mm (in.)		0.5–2.0 (.020–.079)	
Commutator runout mm (in.)		0.05 (.0020)	0.1 (.004)
Commutator diameter mm (in.)		29.4 (1.158)	28.4 (1.118)
Undercut depth mm (in.)		0.5 (.020)	

TROUBLESHOOTING

CIRCUIT DIAGRAM

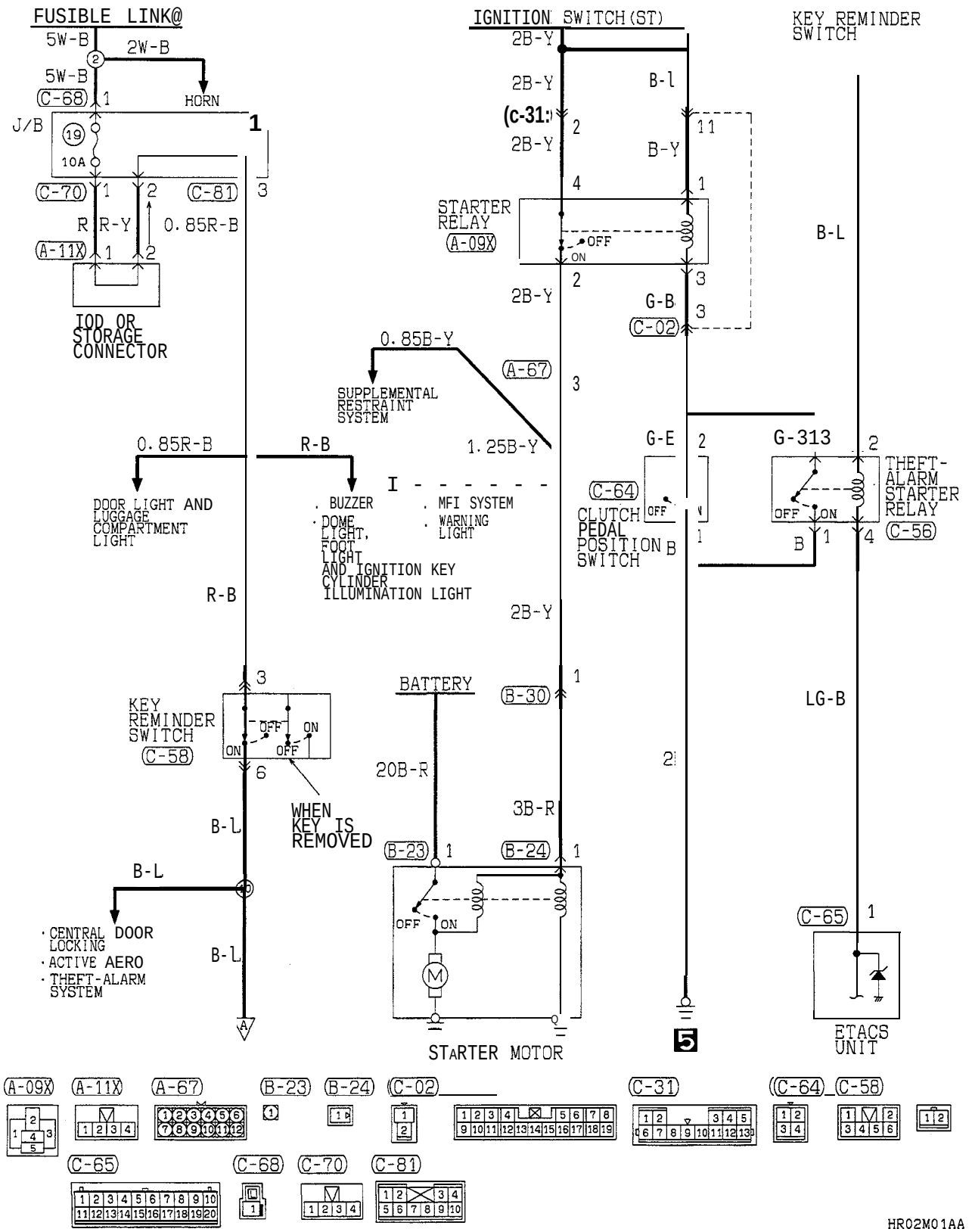
<VEHICLES WITHOUT THEFT-ALARM SYSTEM>



HR02M00AA

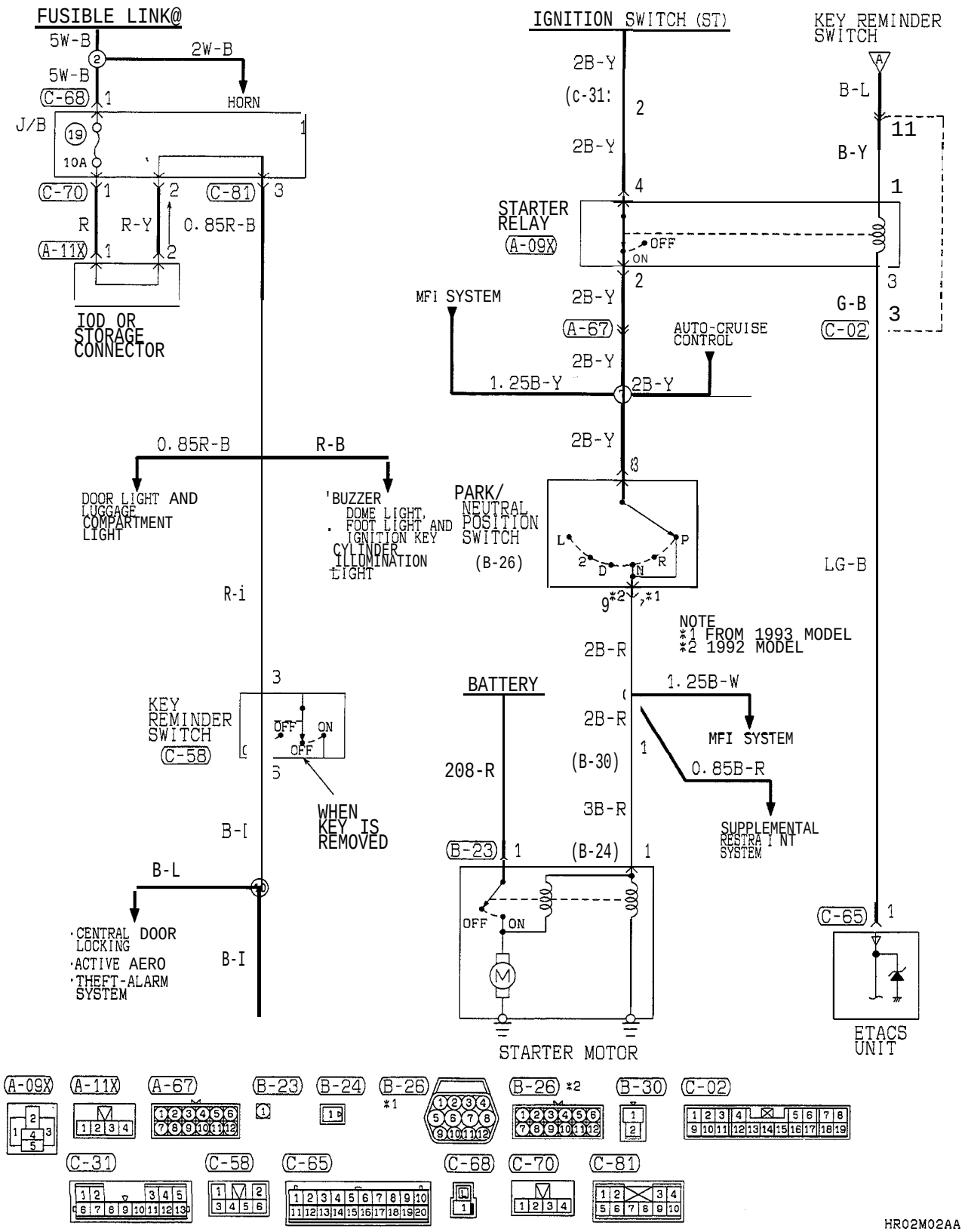
TSB Revision

<VEHICLES 'WITH THEFT-ALARM SYSTEM (M/T)>



TSB Revision

<VEHICLES WITH THEFT-ALARM SYSTEM (AK)>



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OPERATION

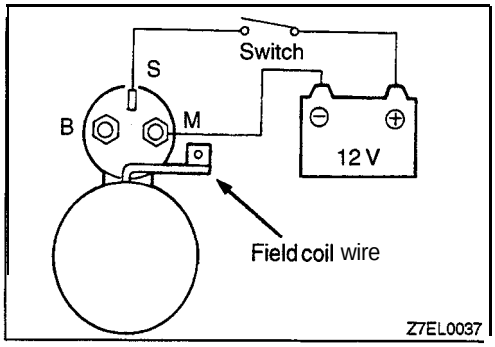
- For models equipped with the M/T, the clutch pedal position switch contact is switched OFF when the clutch pedal is depressed; when the ignition switch is then switched to the "ST" position, electricity flows to the starter relay and the starter motor, the contact (magnetic switch) of the starter is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

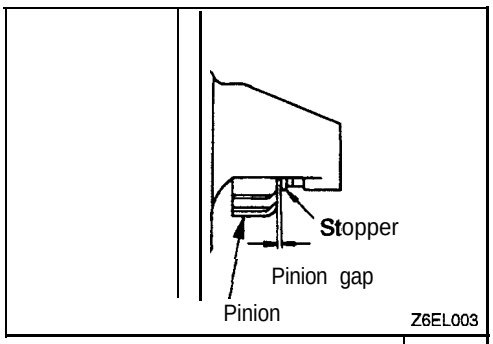
  NOTE
  If the ignition switch is switched to the "ST position without the clutch pedal being depressed, electricity flows to the starter relay (coil), the clutch pedal position switch (contacts) and to ground, with the result that the contacts of the starter relay are switched OFF, and, because the power to the starter motor is thereby interrupted, the starter motor is not activated.
- For models equipped with the A/T, when the ignition switch is switched to the "ST' position while the selector lever is at the "P" or "N" position, the contact (magnetic switch) of the starter is switched ON and the starter motor is activated.

TROUBLESHOOTING HINTS

The starter motor does not operate at all.

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





STARTER MOTOR

REMOVAL AND INSTALLATION

Refer to GROUP 22 – Manual Transaxle, or GROUP 23 – Automatic Transaxle.

INSPECTION

PINION GAP ADJUSTMENT

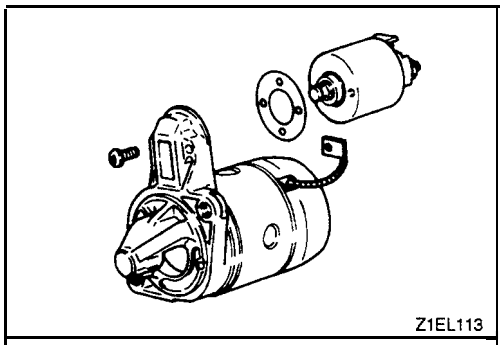
(1) Disconnect field coil wire from M-terminal of magnetic switch.
(2) Connect a 12 V battery between S-terminal and M-terminal.
(3) Set switch to "ON", and pinion will move out.

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

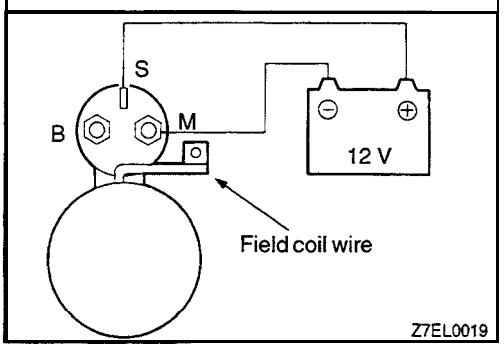
(4) Check pinion to stopper clearance (pinion gap) with a feeler gauge.

Standard value: 0.5-2.0 mm (.020–.079 in.)

TSB Revision


Z1EL113

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



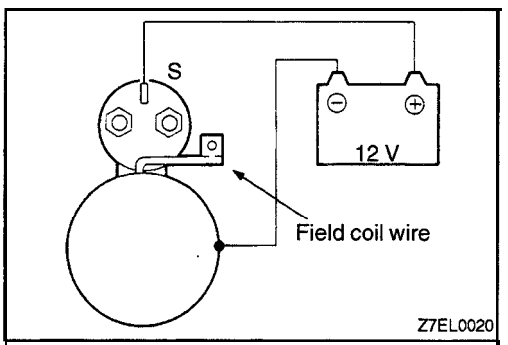
Z7EL0019

MAGNETIC SWITCH PULL-IN TEST

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

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

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



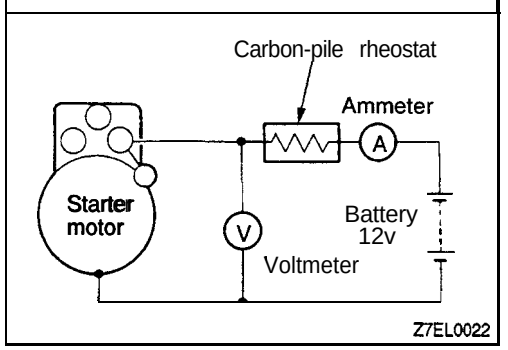
Z7EL0020

MAGNETIC SWITCH HOLD-IN TEST

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

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

(3) Pull out the pinion by hand until it comes into contact with the pinion stopper.
(4) If pinion remains out, everything is in order. If pinion moves in, hold-in circuit is open. Replace magnetic switch.

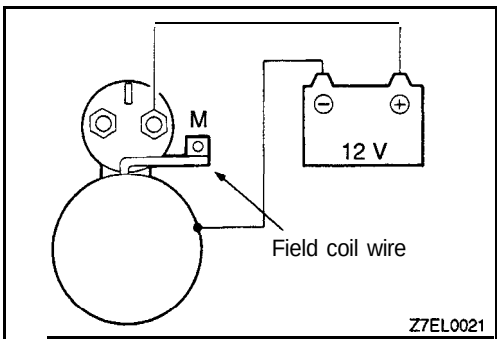


Z7EL0022

FREE RUNNING TEST

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

Current: Max. 90 Amps



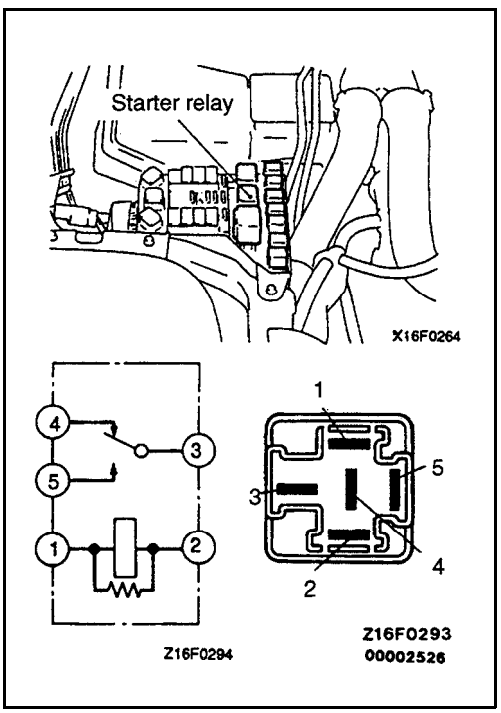
MAGNETIC SWITCH RETURN TEST

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

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

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

Caution
When pulling out the pinion, be careful not to have your finger pinched.



STARTER RELAY

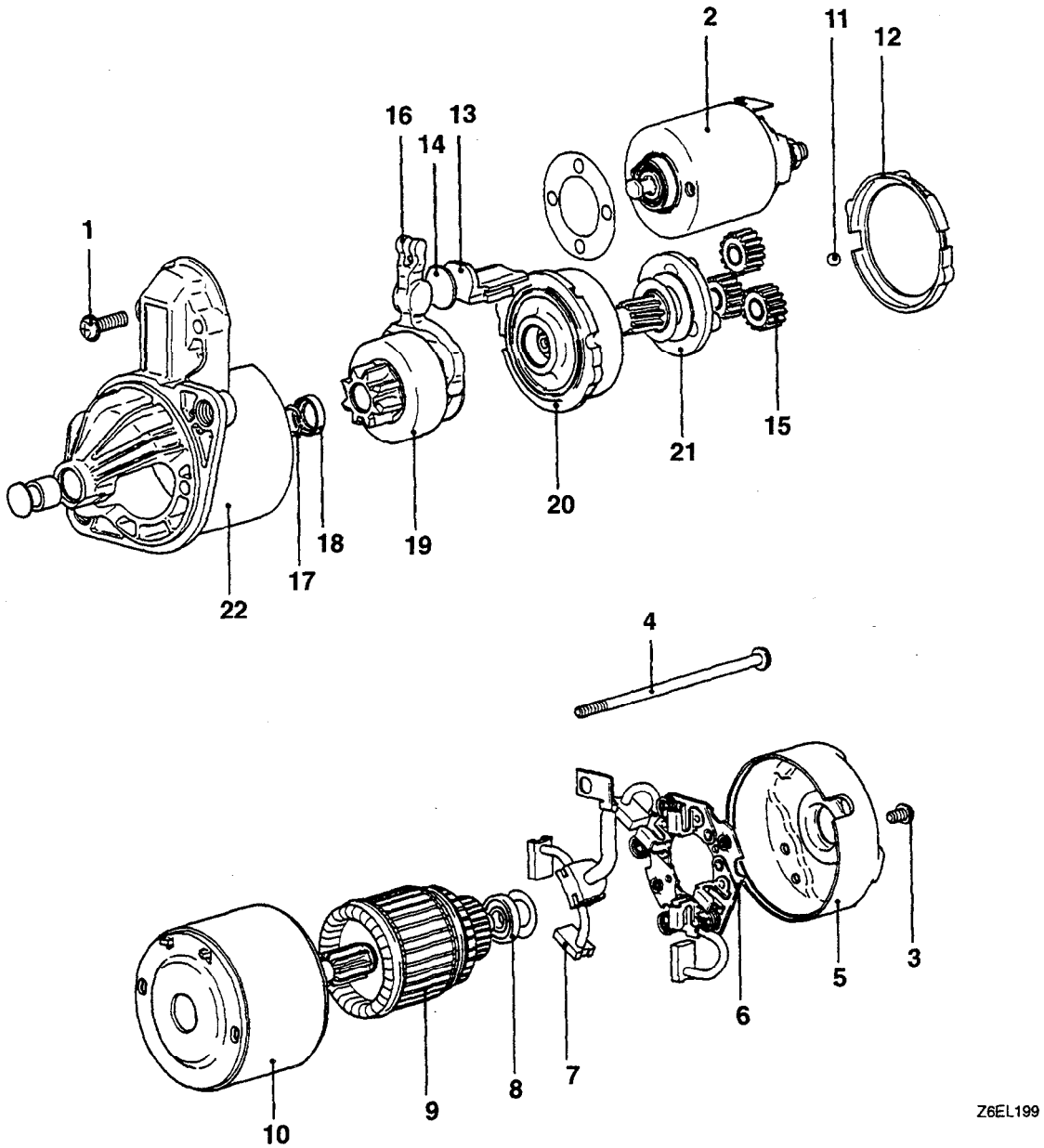
(1) Remove the starter relay from the relay box.
(2) Connect battery to terminal 2 and check continuity between terminals with terminal 4 grounded.

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

TSB Revision

DISASSEMBLY AND REASSEMBLY

<EXCEPT FROM 1994 CALIFORNIA VERSION>

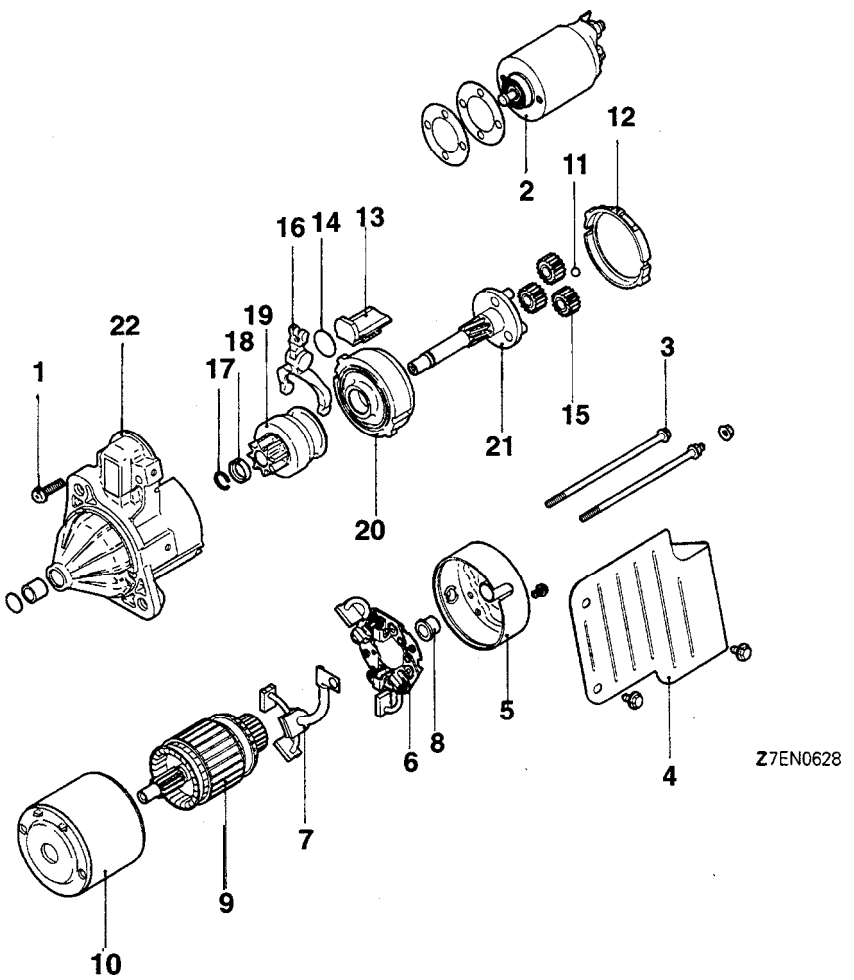


Disassembly steps

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

TSB Revision

<FROM 1994 CALIFORNIA VERSION>



Disassembly steps

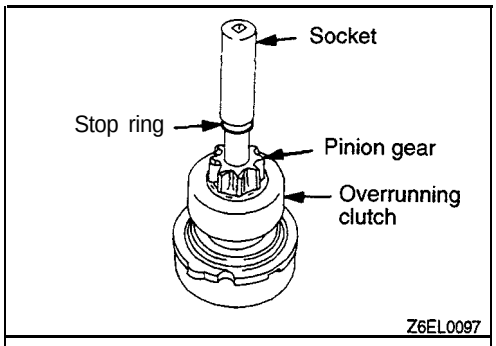
1. Screw
2. Magnetic switch
3. Screw
4. Starter cover
5. Rear bracket
6. Brush holder
7. Brush
8. Bush
◀A▶ 9. Armature
10. Yoke assembly
◀A▶ 11. Ball
12. Packing A
13. Packing B
14. Plate
15. Planetary gear
16. Lever
◀B▶ ▶A◀ 17. Snap ring
◀B▶ ▶A◀ 18. Stop ring
19. Overrunning clutch
20. Internal gear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

DISASSEMBLY SERVICE POINTS

◀A▶ARMATURE / BALL REMOVAL

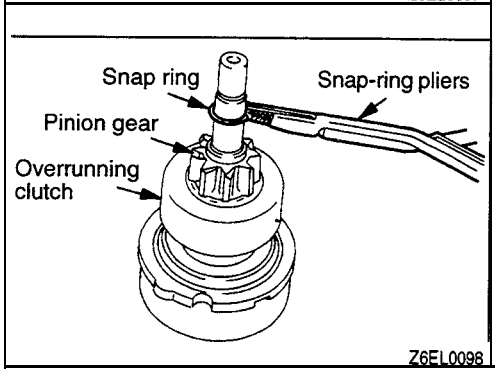
Caution
When removing the armature, be careful not to lose the ball (which is used as a bearing) in the armature end.

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◀B▶SNAP RING / STOP RING REMOVAL

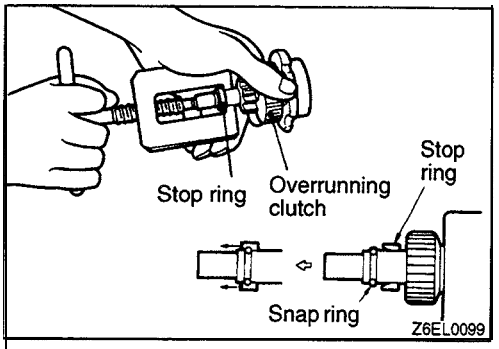
(1) Press the stop ring, by using an appropriate socket, wrench, to the snap ring side.



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

STARTER MOTOR PARTS CLEANING

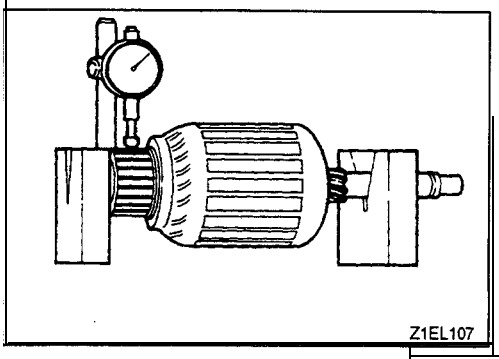
1. Do not immerse parts in cleaning solvent. Immersing the yoke and field coil assembly and/or armature will damage insulation. Wipe these parts with a cloth only.
2. Do not immerse drive unit in cleaning solvent. Overrunning clutch is pre-lubricated at the factory and solvent will wash lubrication from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



REASSEMBLY SERVICE POINT

▶A◀STOP RING / SNAP RING INSTALLATION

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



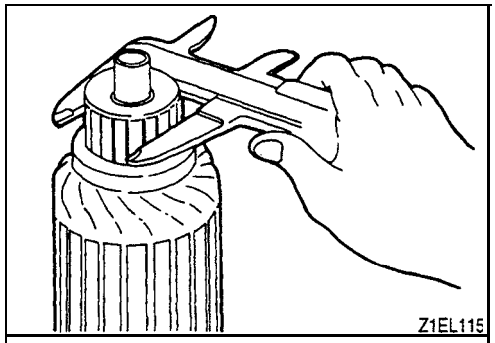
INSPECTION

COMMUTATOR INSPECTION

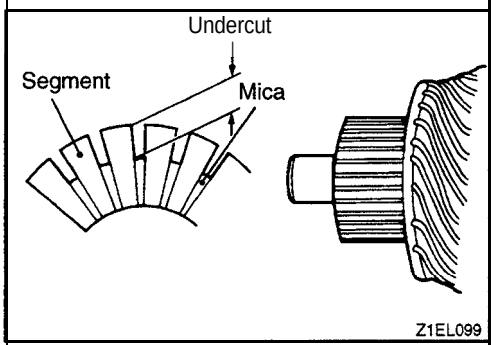
(1) Place the armature on a pair of V-blocks, and check the deflection by using a dial gauge.

Standard value: 0.05 mm (.0020 in.)
Limit: 0.1 mm (.004 in.)

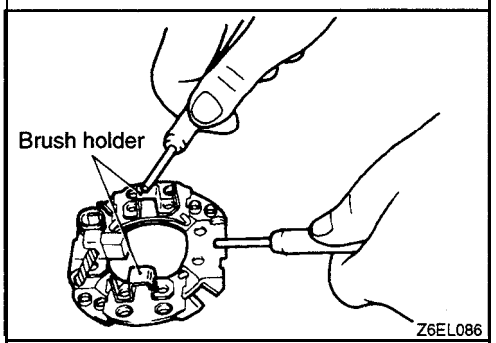
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(2) Check the outer diameter of the commutator.
Standard value: 29.4 mm (1.158 in.)
Limit: 28.4 mm (1.118 in.)

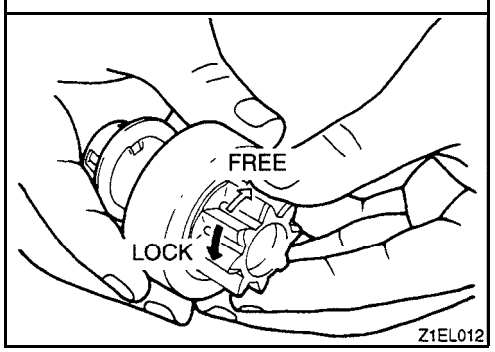


(3) Check the depth of the undercut between segments.
Standard value: 0.5 mm (.020 in.)



BRUSH HOLDER

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

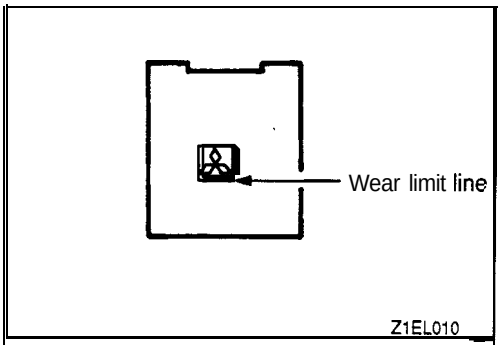


OVERRUNNING CLUTCH

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

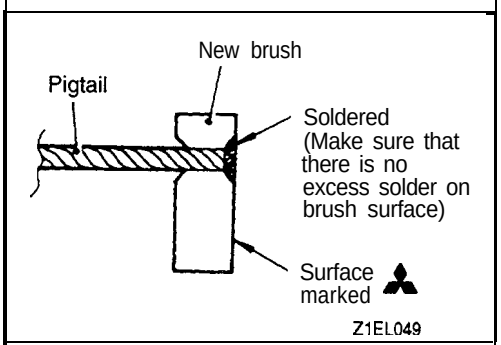
FRONT AND REAR BRACKET BUSHING

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



BRUSHES AND SPRINGS REPLACEMENT

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

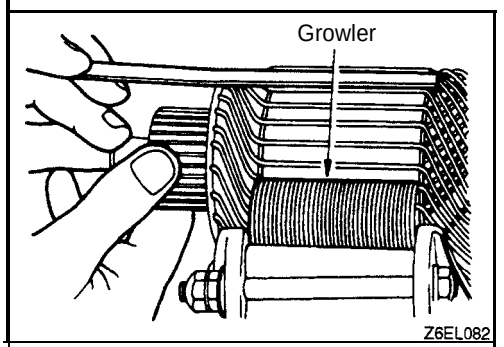


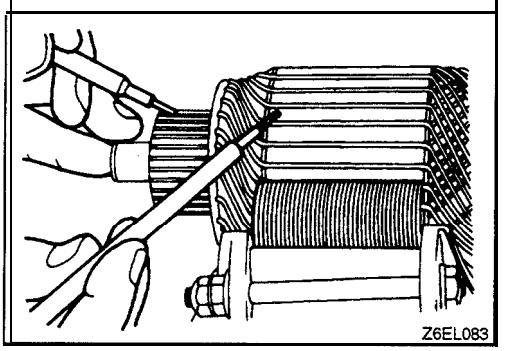
3. Sand pigtail end with sandpaper to ensure good soldering.
4. Insert pigtail into hole provided in new brush and solder it.
   Make sure that pigtail and excess solder do not come out onto brush surface.
5. When replacing ground brush, slide the brush from brush holder by prying retaining spring back.

ARMATURE TEST

ARMATURE SHORT-CIRCUIT TEST

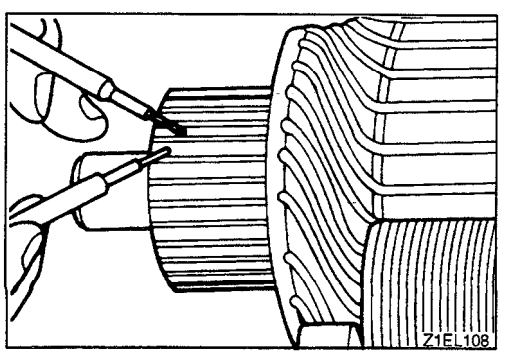
1. Place armature in a growler.
2. Hold a thin steel blade parallel and just above while rotating armature slowly in growler. A shorted armature will cause blade to vibrate and be attracted to the core. Replace shorted armature.





ARMATURE GROUNDING TEST

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



ARMATURE COIL OPEN-CIRCUIT CHECK

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

IGNITION SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS

CRANK ANGLE SENSOR <Up to 1992 model>

Items	Specifications
Type	Contact pointless type
Identification No.	T1 T49371
Part No.	MD1 53464
Advance mechanism	Controlled by engine control unit
Firing order	1-2-3-4-5-6

IGNITION COIL

Items	Specifications
Type	Mold 3-coil
Identification No.	F-536
Part No.	MD152648

SPARK PLUG

Items	Specifications
NGK	PFR6J-11
NIPPON DENS0	PK20PR-P11

SERVICE SPECIFICATIONS

Items		Standard value	Limit
Ignition coil	Primary coil resistance at 20°C (68°F) Ω	0.67–0.81	
	Secondary coil resistance at 20°C (68°F) kΩ	11.3–15.3	
Spark plug gap mm (in.)		1.0–1.1 (0.39-0.43)	1.3 (.051)
Spark plug cable kΩ			Max. 22

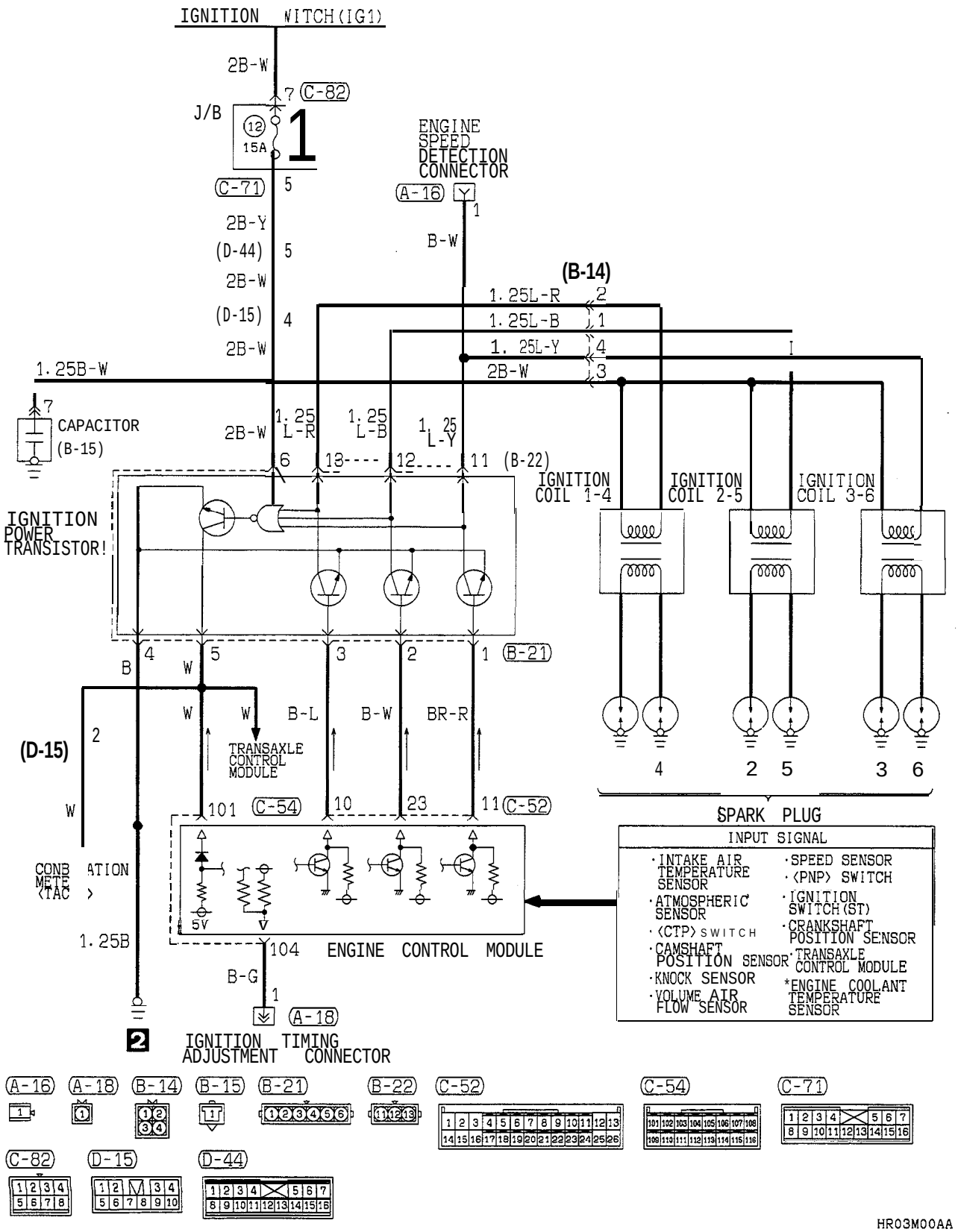
SPECIAL TOOLS

Tool number and name	Supersession	Application
 MD998464 Harness connector (4 pin, square)		Check of ignition primary voltage (connection of ignition coil connector)

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TROUBLESHOOTING (UP TO 1993 MODELS)

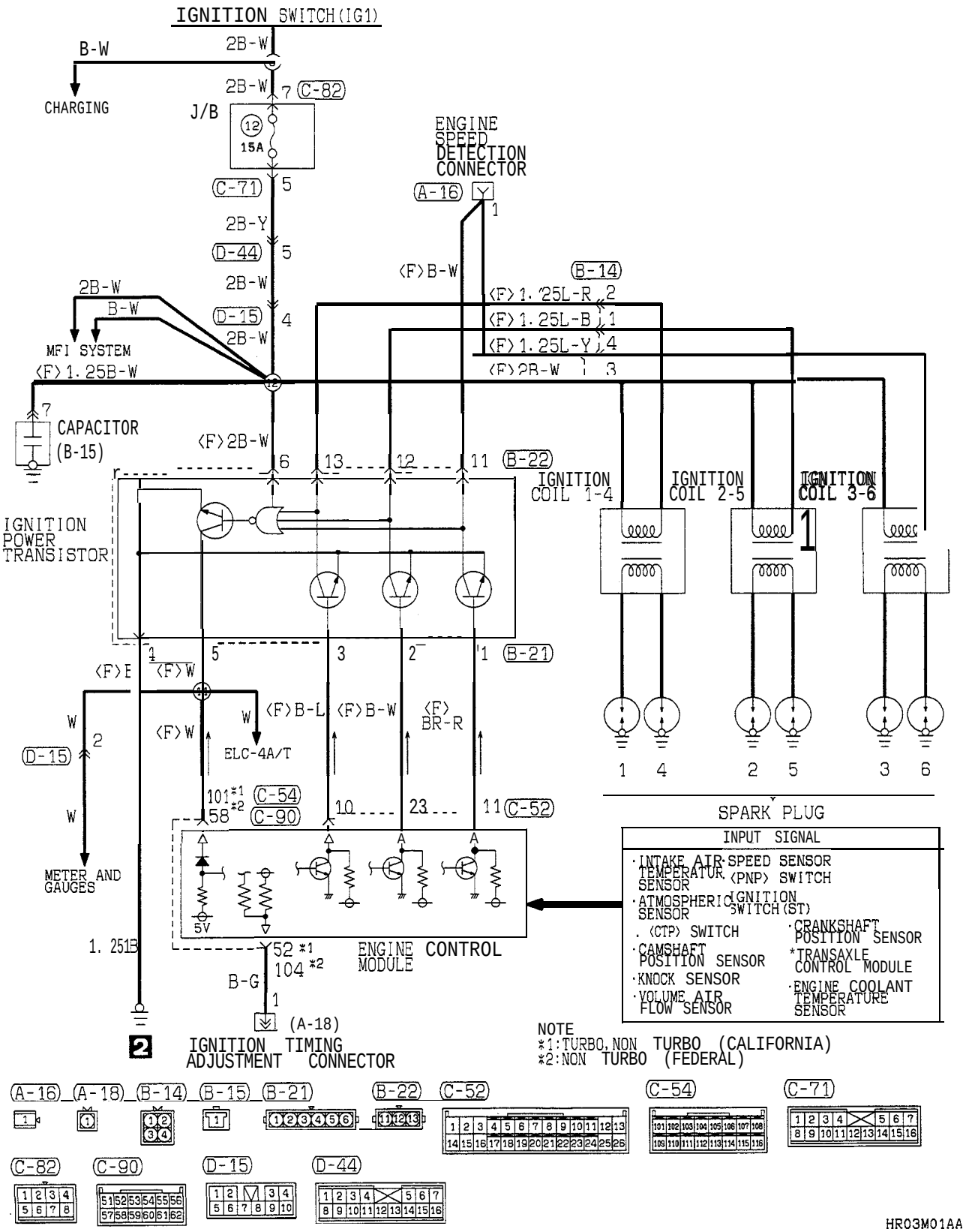
CIRCUIT DIAGRAM



TSB Revision

(UP TO 1995 MODELS)

CIRCUIT DIAGRAM

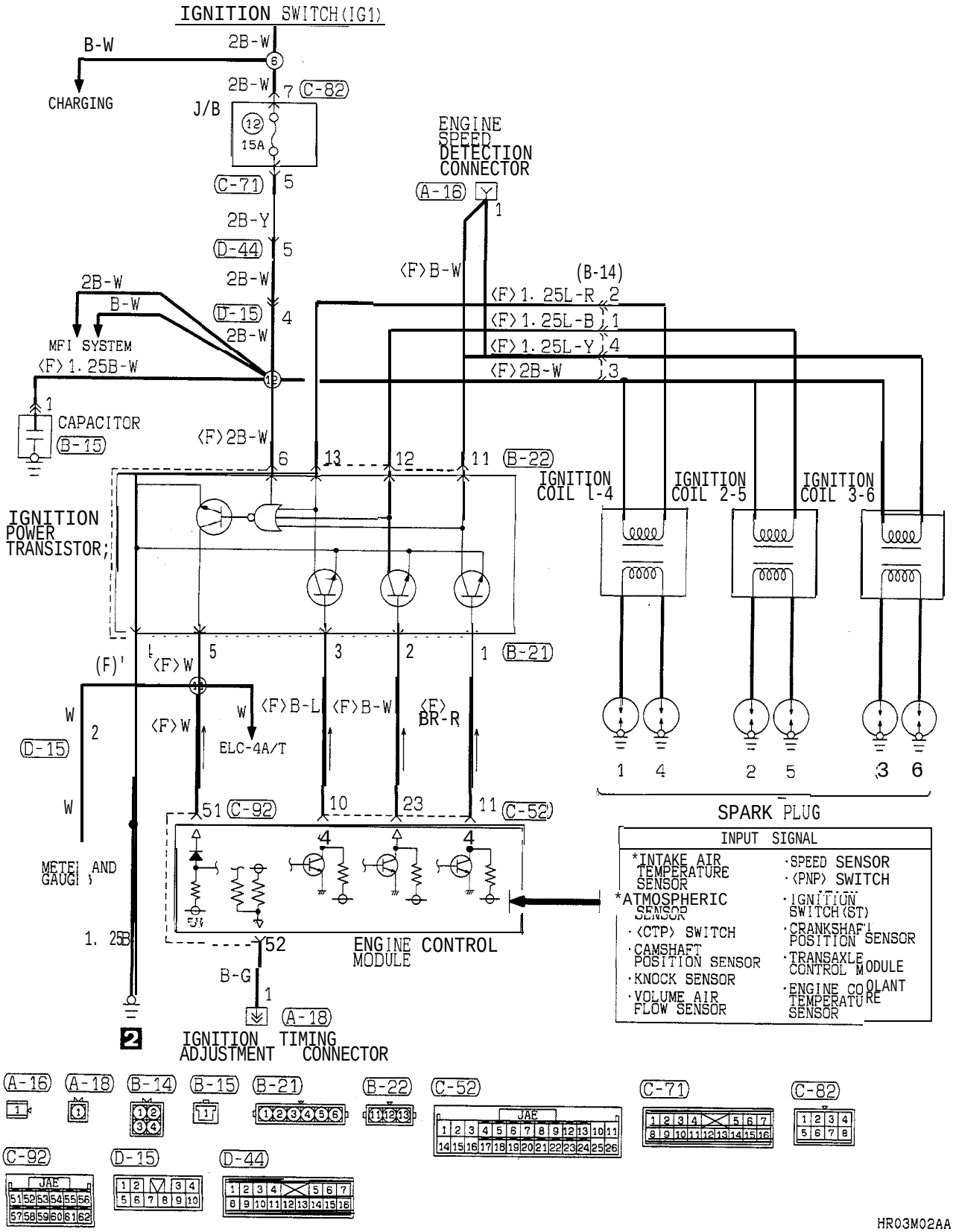


HR03M01AA

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(FROM 1996 MODELS)

CIRCUIT DIAGRAM



HR03M02AA

TSB Revision

OPERATION

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

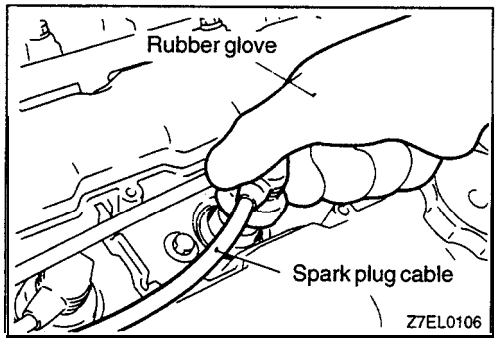
TROUBLESHOOTING HINTS

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

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

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

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



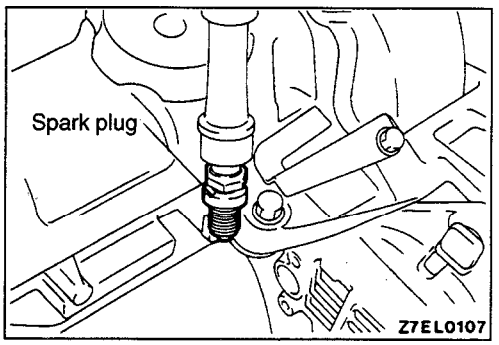
ON-VEHICLE SERVICE

SPARK PLUG CABLE TEST

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

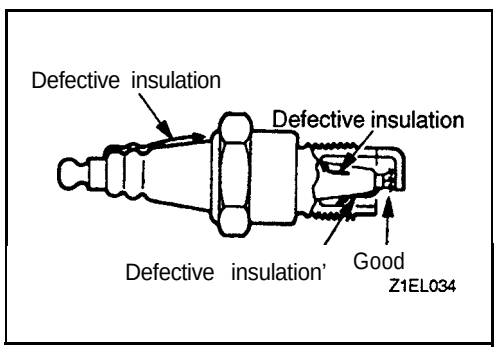
Caution
Wear rubber gloves while doing so.

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

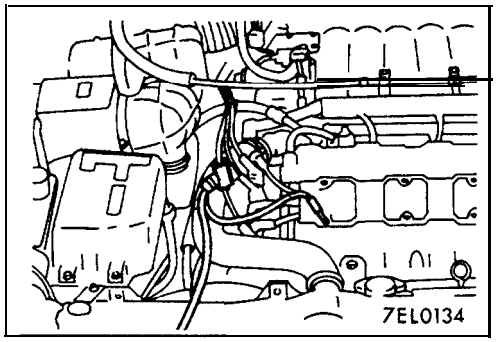


SPARK PLUG TEST

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



TSB Revision



IGNITION SECONDARY VOLTAGE WAVE-FORM CHECK

MEASUREMENT METHOD

(1) Clamp SECONDARY PICKUP around spark plug cable.

NOTE
1. The ignition voltage peak appears reversely between when the spark plug cables of the cylinders No.4, No. 5 and No. 6 are clamped and when those of the cylinders No. 1, No. 2 and No. 3 are clamped.
2. Since the 2-cylinder simultaneous ignition system is employed, the wave-form for two cylinder appears group by group when the wave-form is observed. (Cylinder No. 1 – cylinder No. 4, cylinder No. 2 – cylinder No. 5 and cylinder No. 3 – cylinder No. 6 as the respective groups) Here, the wave-form is observed for the cylinder whose spark plug cable is clamped with the secondary pickup.

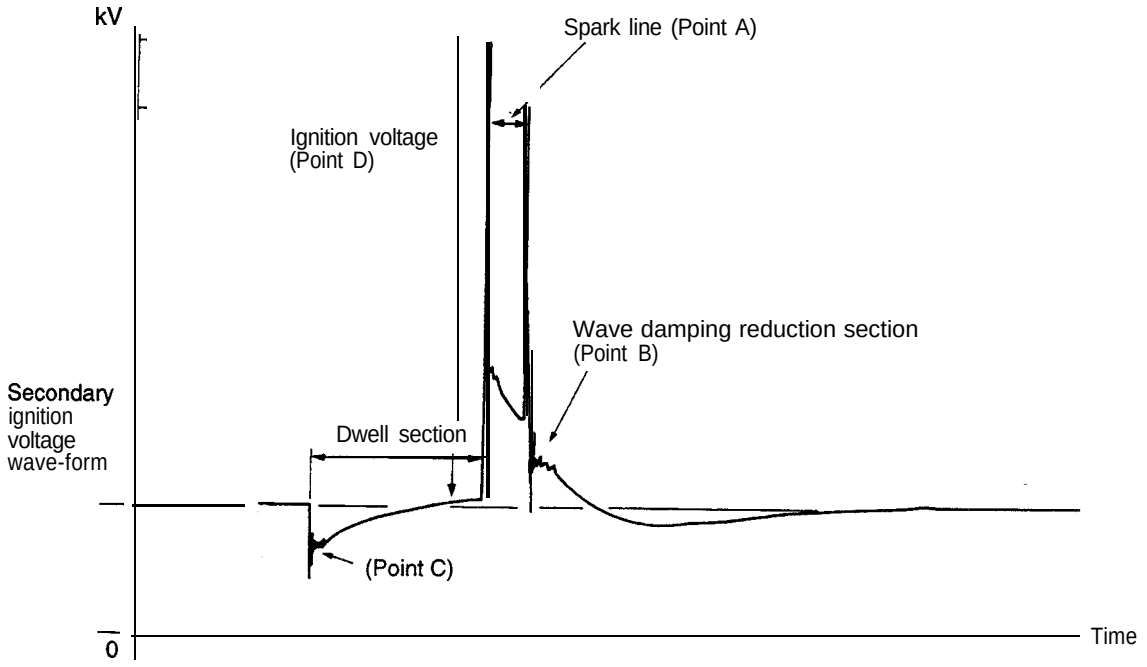
(2) Clamp the spark plug cable with the trigger pickup.

NOTE
1. Clamp the spark plug cable of the cylinders No.1, No. 2 or No. 3 which belongs to the same group of the cylinders clamped with the secondary pickup.
2. Though it is difficult to isolate the cylinder of the wave-form, the wave-form of the cylinders clamped with the secondary pickup is stable. Use this as a reference for isolation.

STANDARD WAVE-FORM

Observation Conditions

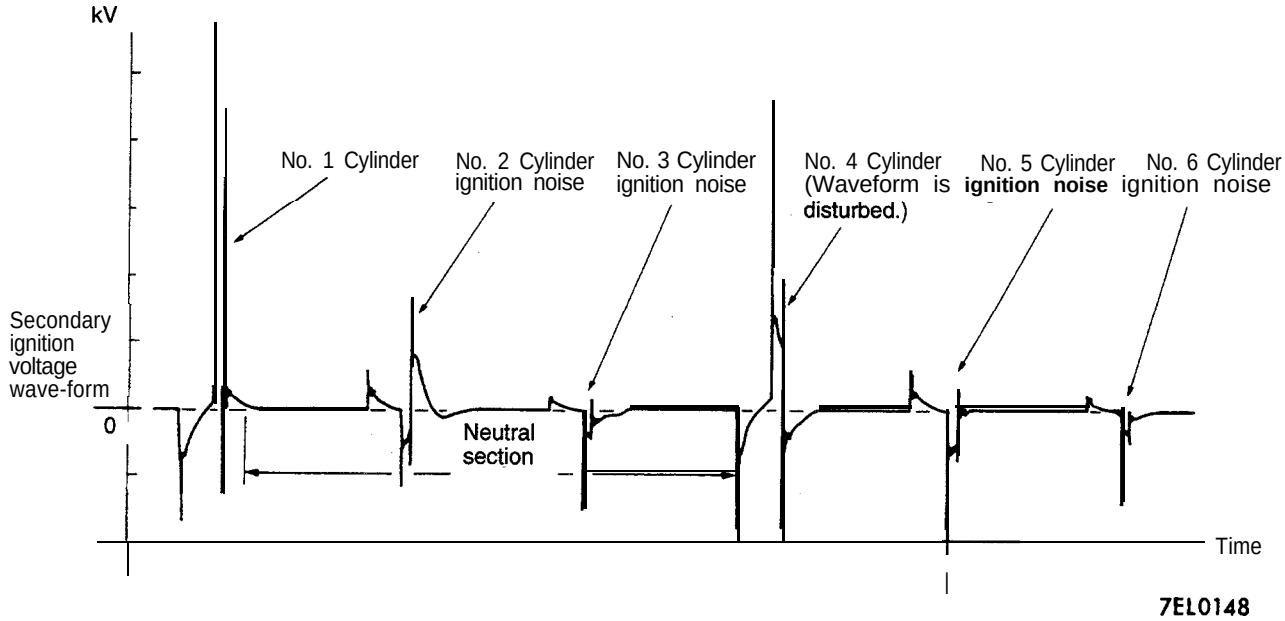
FUNCTION	SECONDARY
PATTERN HEIGHT	HIGH (or LOW)
PATTERN SELECTOR	RASTER
Engine revolutions	Curb idle speed



7EL0147

Observation conditions (Only PATTERN SELECTOR below changes from the above conditions)

PATTERN SELECTOR	DISPLAY



7EL0148

TSB Revision

Wave-form Observation Points

Point A: The height, length and slope of the spark line (refer to abnormal wave-form examples 1, 2, 3 and 4) show the following 'trends.

Spark line		Plug gap	Condition of electrode	Compression force	Concentration of air mixture	Ignition timing	Spark plug cable
Length	Long	Small	Normal.	Low	Rich	Advanced	Leak
	Short	Large	Large wear	High	Lean	Retarded	High resistance
Height	High	Large	Large wear	High	Lean	Retarded	High resistance
	Low	Small	Normal	Low	Rich	Advanced	Leak
Slope		Large	Plug is fouled	–			

Point B: Number of vibrations in reduction vibration section (Refer to abnormal wave-form example 5)

Number of vibrations	Coil and condenser
Three or more	Normal
Except above	Abnormal

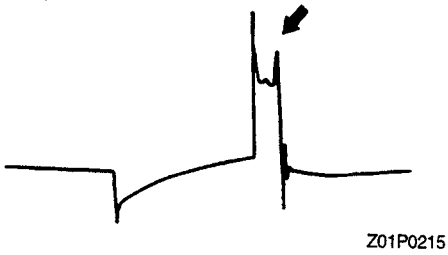
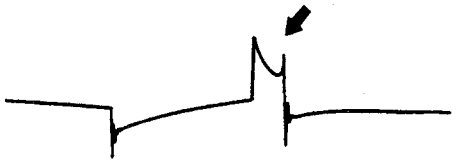
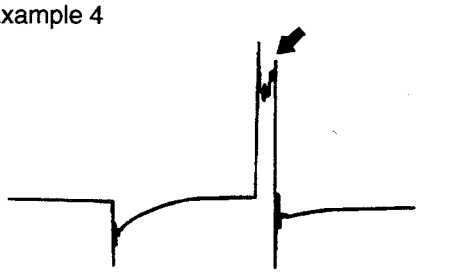
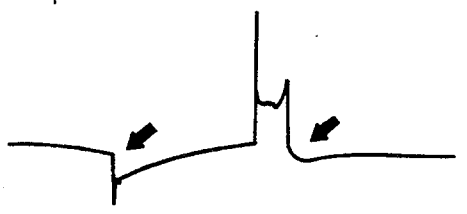
Point C: Number of vibrations at beginning of dwell section (Refer to abnormal wave-form example 5)

Number of vibrations	Coil
5 – 6 or higher	Normal
Except above	Abnormal

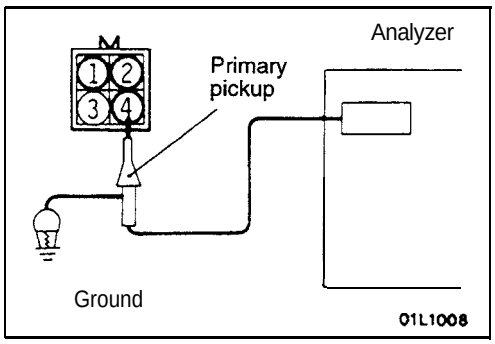
Point D: Ignition voltage height (distribution per each cylinder) shows the following trends.

Ignition voltage	Plug gap	Condition of electrode	Compression force	Concentration of air mixture	Ignition timing	Spark plug cable
High	Large	Large wear	High	Lean	Retarded	High resistance
Low	Small	Normal	Low	Rich	Advanced	Leak

EXAMPLES OF ABNORMAL WAVE-FORMS

Abnormal wave-form	Wave characteristics	Cause of problem
Example 1  Z01P0215	Spark line is high and short.	Spark plug gap is too large.
Example 2  Z01P0216	Spark line is low and long, and is sloping. Also, the second half of the spark line is distorted. This could be a result of misfiring.	Spark plug gap is too small.
Example 3  Z01P0217	Spark line is low and long, and is sloping. However, there is almost no spark line distortion.	Spark plug gap is fouled.
Example 4  Z01P0218	Spark line is high and short. Difficult to distinguish between this and abnormal wave-form example 1.	Spark plug cable is nearly falling off. (Causing a dual ignition)
Example 5  Z01P0219	No waves in wave damping section.	Rare short in ignition coil.

TSB Revision



IGNITION PRIMARY VOLTAGE WAVE-FORM CHECK

MEASUREMENT METHOD

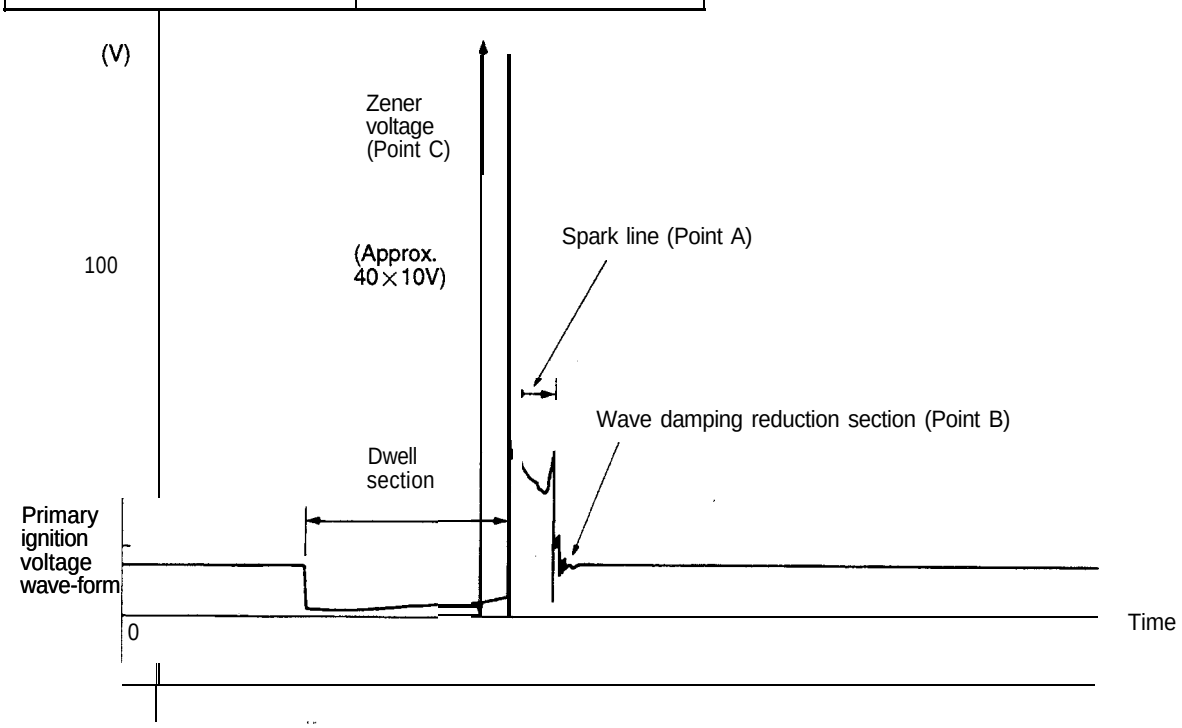
(1) Remove the ignition coil connector and connect the special tool (harness connector: MD998464) in between.
(2) When observing the No. 1 – No. 4 cylinder group, connect the primary pickup of the analyzer probe to the ignition coil side connector terminal No. 2 (black clip on the special tool).
For the No. 2 – No. 5 cylinder group, connect to terminal No. 1 (red clip), and for the No. 3 – No. 6 cylinder group, connect to terminal No. 4 (white clip).
(3) Ground the primary pickup ground terminal.
(4) Clamp the spark plug cable with the trigger pickup.

NOTE
(1) Clamp the spark plug cable of cylinder No. 1, No. 2 or No. 3 which belongs to the same group of the cylinder to which the primary pickup is connected.
(2) The wave-form of any cylinder in the same group is displayed on the left side of the screen.

STANDARD WAVE-FORM

Observation Conditions

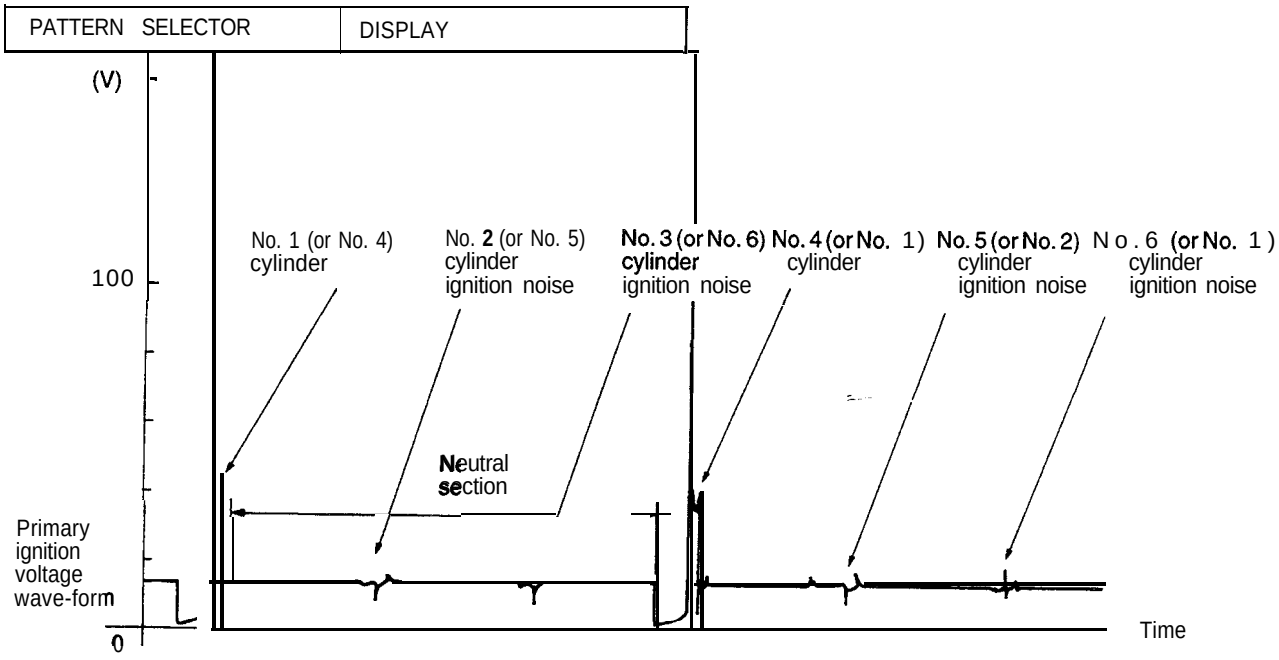
FUNCTION	PRIMARY
PATTERN HEIGHT	HIGH (or LOW)
PATTERN SELECTOR	RASTER
Engine revolutions	Curb idle speed



7EL0149

TSB Revision

Observation conditions (Only PATTERN SELECTOR below changes from the above conditions.)



7EL0151

TSB Revision

Wave-form Observation Points

Point A: The height, length and slope of the spark line (refer to abnormal wave-form examples 1, 2, 3 and 4) show the following trends.

Spark line		Plug gap	Condition of electrode	Compression force	Concentration of air mixture	Ignition timing	High tension cable
Length	Long	Small	Normal	Low	Rich	Advanced	Leak
	Short	Large	Large wear	High	Lean	Retarded	High resistance
Height	High	Large	Large wear	High	Lean	Retarded	High resistance
	Low	Small	Normal	Low	Rich	Advanced	Leak
Slope		Large	Plug is fouled	–			

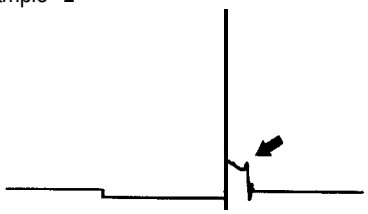
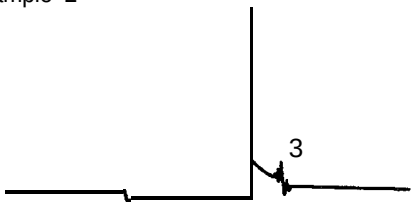
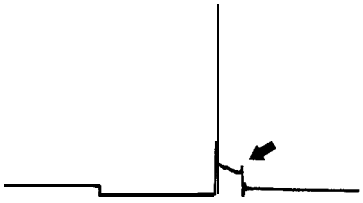
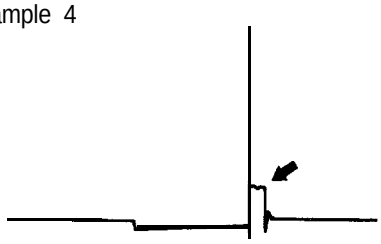
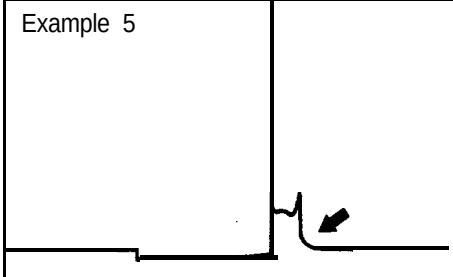
Point B: Number of vibrations in reduction vibration section (Refer to abnormal wave-form example 5)

Number of vibrations	Coil and condenser
3 or higher	Normal
Except above	Abnormal

Point C: Height of Zener voltage

Height of Zener voltage	Probable cause
Higher	Problem in Zener diode
Lower	Abnormal resistance in primary coil circuit

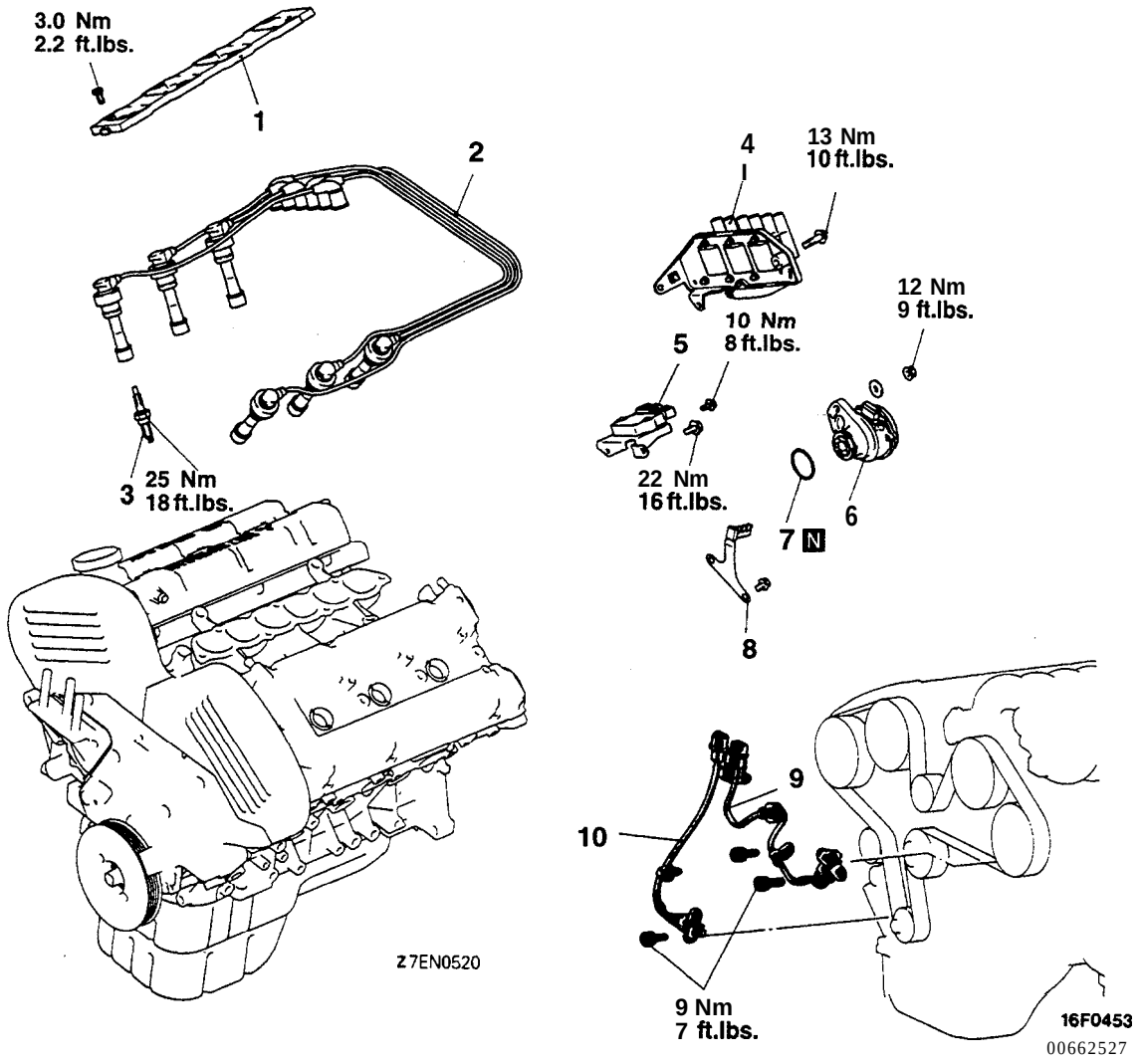
EXAMPLES OF ABNORMAL WAVE-FORMS

Abnormal wave-form	Wave characteristics	Cause of problem
Example 1  Z01P0210	Spark line is high and short.	Spark plug gap is too large.
Example 2  Z01P0211	Spark line is low and long, and is sloping. Also, the second half of the spark line is distorted. This could be a result of misfiring.	Spark plug gap is too small.
Example 3  Z01P0212	Spark line is low and long, and is sloping. However, there is almost no spark line distortion.	Spark plug gap is fouled.
Example 4  Z01P0213	Spark line is high and short.	Spark plug cable is nearly falling off. (Causing a dual ignition)
Example 5  Z01P0214	No waves in wave damping section.	Rare short in ignition coil.

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IGNITION SYSTEM

REMOVAL AND INSTALLATION



Removal steps

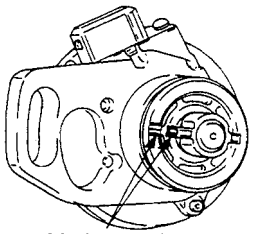
- Intake manifold plenum (Refer to GROUP 15 – Intake Manifold.)

1. Center cover
▶B◀ 2. Spark plug cable
3. Spark plug
4. Ignition coil
5. Ignition power transistor
▶A◀ 6. Crankshaft position sensor <1 992 models>
7. O-ring <1992 models>
8. Clamp <From 1993 models>
   Camshaft position sensor, Crankshaft position
   sensor removal steps <From 1993 models>

- Timing belt cover (Refer to GROUP 11 – Timing Belt)

9. Camshaft position sensor
10. Crankshaft position sensor

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INSTALLATION SERVICE POINTS

▶A◀CRANKSHAFT POSITION SENSOR INSTALLATION <Up to 1992 model>

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

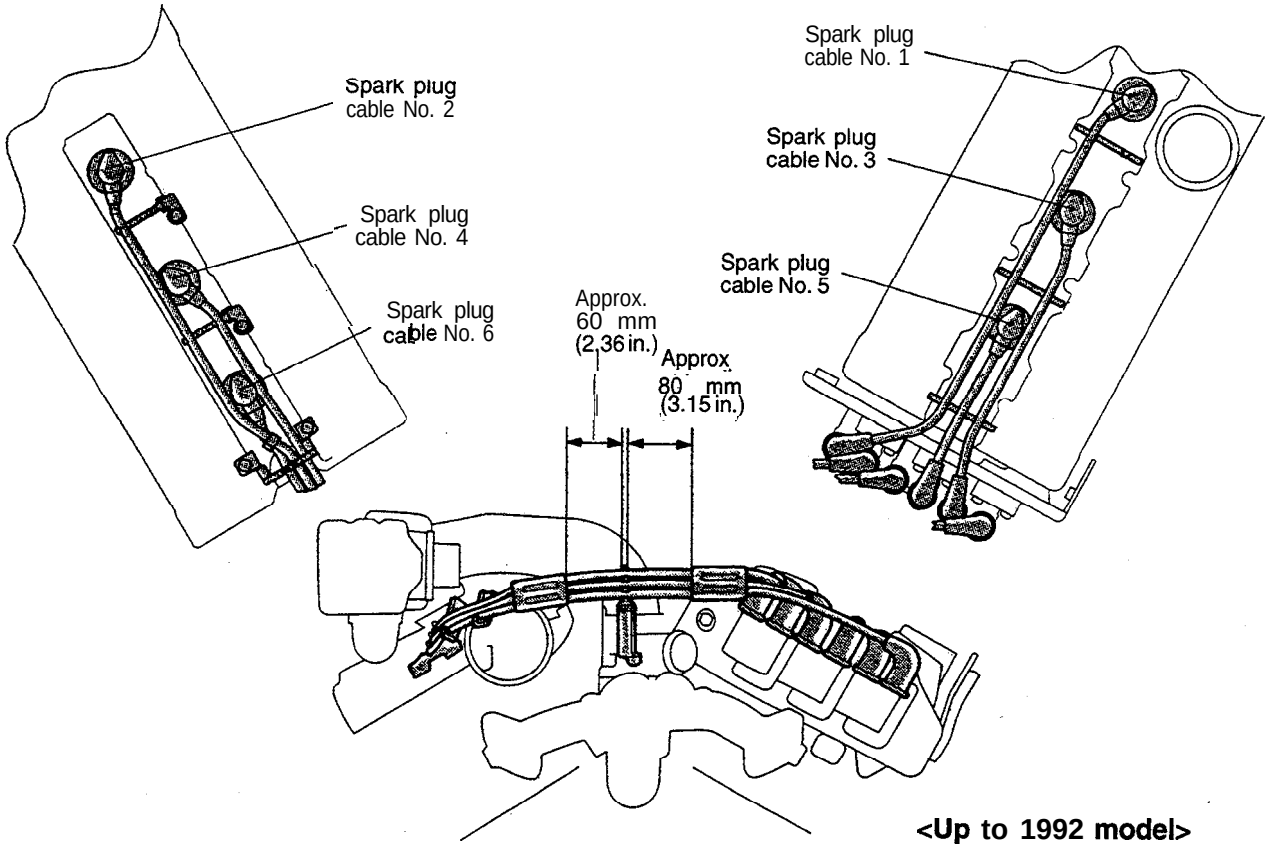
Caution
Be careful not to turn it to the No. 4 cylinder compression top dead center by mistake.

(2) Install, lining up the matchmarks on the crankshaft position sensor housing and the coupling.

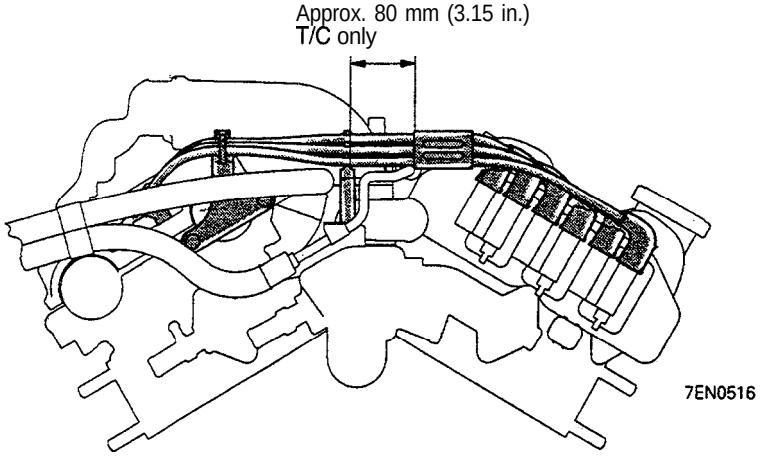
▶B◀SPARK PLUG CABLE INSTALLATION

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

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

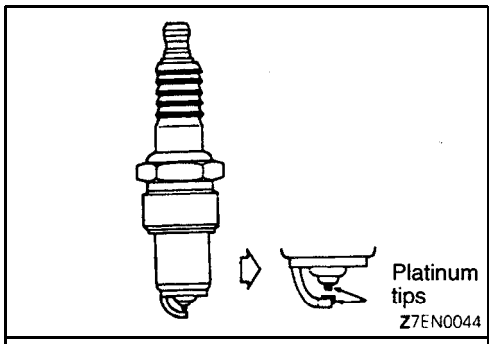


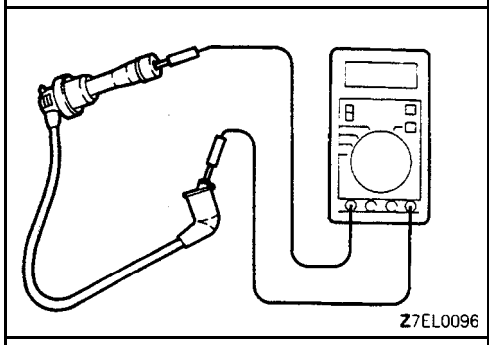
<Up to 1992 model>

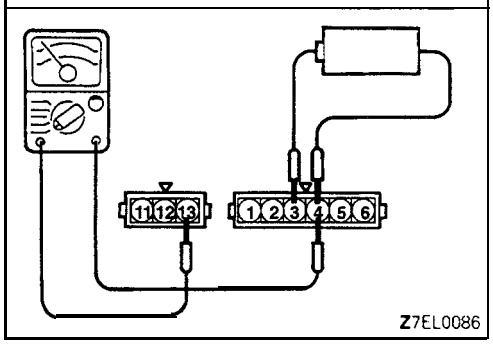


<From 1993 model>

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INSPECTION

SPARK PLUG

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

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

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

SPARK PLUG CABLE

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

Limit: Max. 22 kΩ

IGNITION POWER TRANSISTOR

NOTE
An analog-type circuit tester should be used.

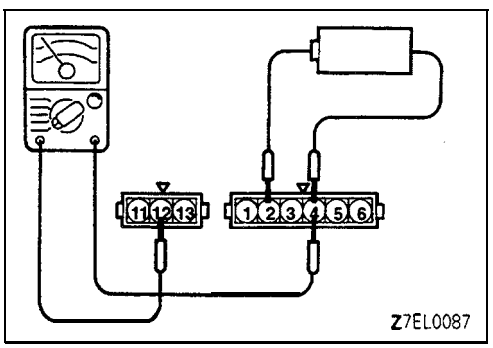
No. l-No. 4 coil side

(1) Connect the negative (–) terminal of the 1.5 V power supply to terminal (4) of the ignition power transistor; then check whether there is continuity between terminal (13) and terminal (4) when terminal (3) and the positive (+) terminal are connected and disconnected.

N O T E
Connect the (–) probe of the circuit tester to terminal (13).

Terminal 3 and (+) terminal	Terminal 13 and terminal 4
Connected	Continuity
Unconnected	No continuity

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



No. **2–No. 5 coil side**

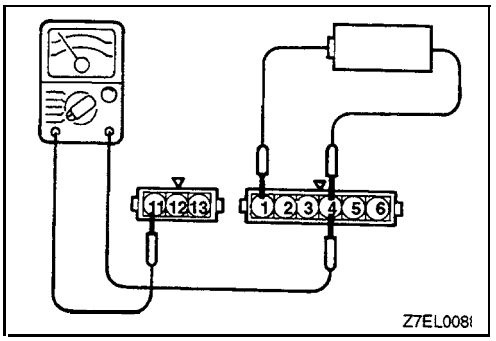
(1) Connect the negative (–) terminal of the 1.5 V power supply to terminal (4) of the ignition power transistor; then check whether there is continuity between terminal (12) and terminal (4) when terminal (2) and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (–) probe of the circuit tester to terminal (12).

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Terminal 2 and (+) terminal	Terminal 12 and terminal 4
Connected	Continuitv
Unconnected	No continuitv

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



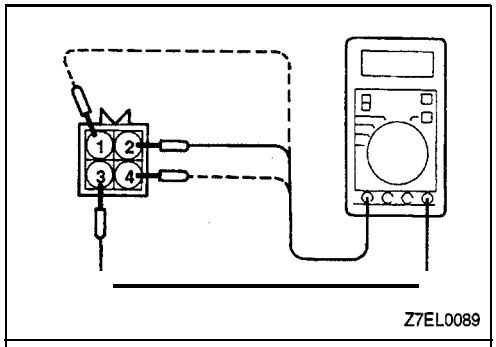
No. **3–No.** 6 **coil side**

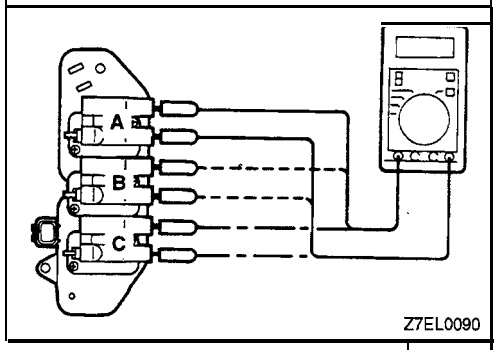
(1) Connect the negative (–) terminal of the 1.5 V power supply to terminal (4) of the ignition power transistor; then check whether there is continuity between terminal (11) and terminal (4) when terminal (1) and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (–) probe of the circuit tester to terminal 11.

Terminal 1 and (+) terminal	Terminal 11 and terminal 4
Connected	Continuity
Unconnected	No continuity

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





IGNITION COIL

Primary Coil Resistance

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

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

Standard value: 0.67-0.81 Ω

Secondary Coil Resistance

Measure the resistance between each coil high voltage terminals.

Measuring point:
Coil A (No. l-No. 4 cylinder side coil)
Coil B (No. 2–No. 5 cylinder side coil)
Coil C (No. 3–No. 6 cylinder side coil)

Standard value: 11.3-15.3 kΩ

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CHASSIS ELECTRICAL

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WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING!

(1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).

(2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.

(3) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B – Supplemental Restraint System (SRS) and GROUP 00 -Maintenance Service before beginning any service or maintenance of any component of the SRS or any SRS-related component.

NOTE
The SRS includes the following components: impact sensors, SRS diagnosis unit, SRS warning light, air bag module, clock spring and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

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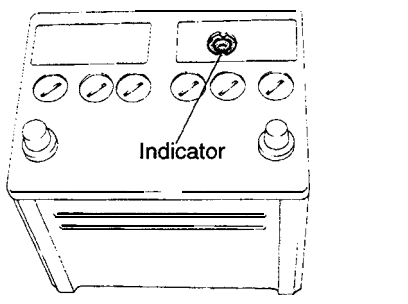
BATTERY

SPECIFICATIONS

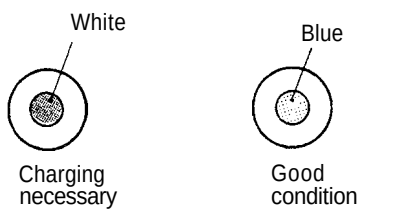
GENERAL SPECIFICATIONS

Items	Up to 1993 models	From 1994 models
Type	75D26R-MF	75D23R-MF
Ampere hours (5HR) Ah	52	52
Cranking rating [at –18°C (0°F)] A	490	520
Reserve capacity min.	123	118

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



16F0123



16Y1814
00002295

ON-VEHICLE SERVICE

BATTERY INSPECTION

BATTERY VISUAL CHECK (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 CHECK (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.

BATTERY CHARGING

Caution

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

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

CHARGE RATE

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

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

NOTE

When the charging is performed at 5 amps, charging is virtually 100% three hours after the indicator's indication changes from white to green.

Use fast charging only in an emergency.

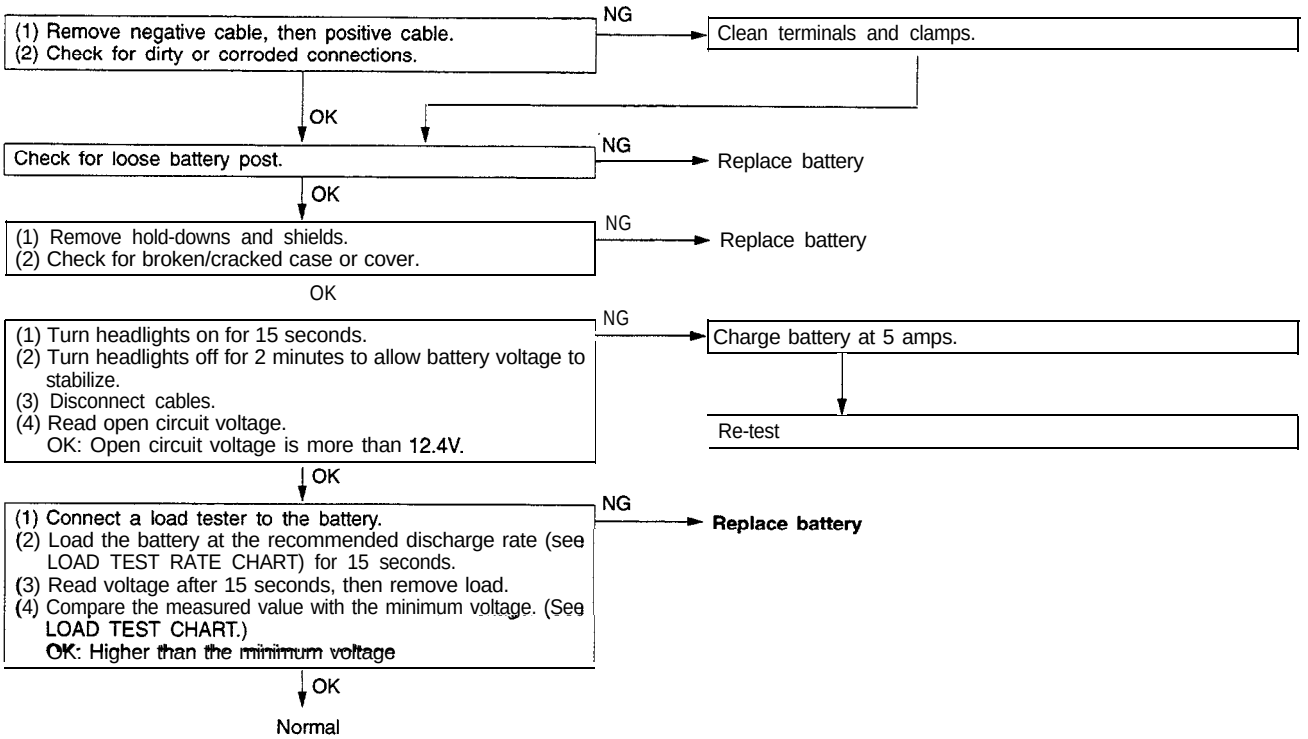
If the indicator does not turn to green even after the battery is charged, the battery should be replaced; do not overcharge.

Charge Rate Chart

Battery	Slow Charging		Fast Charging	
75D26R-MF (490 amps)	5 amps 15 hrs.	10 amps 7.5 hrs	20 amps 3.75 hrs	30 amps 2.5 hrs.
75D23R-MF (520 amps)				

BATTERY TESTING PROCEDURE

TEST STEP



LOAD TEST CHART

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

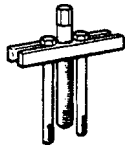
LOAD TEST RATE CHART

Load test (Amps)	Cranking rating (0°F)	Reserve capacity	Application
240 amps	490 amps	123 minutes	75D26R-MF
240 amps	520 amps	123 minutes	75D23R-MF

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IGNITION SWITCH

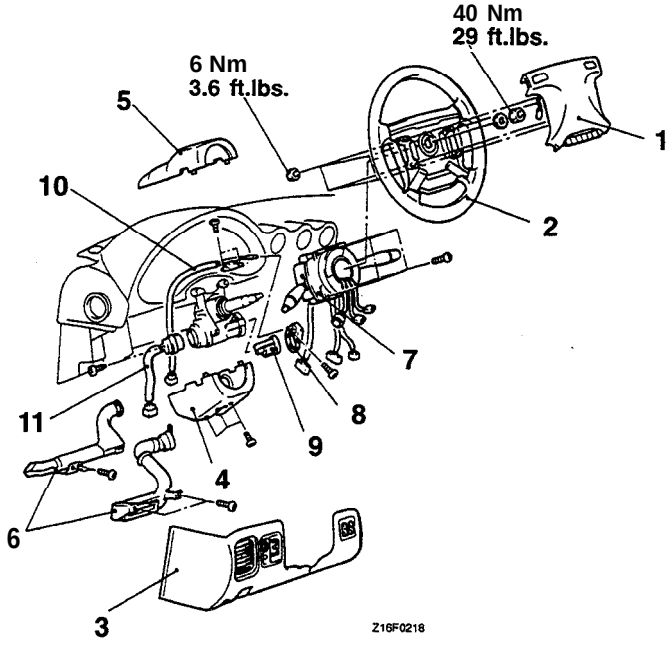
SPECIAL TOOL

Tool	Tool number and name	Supersession	Application
	MB990803 Steering wheel puller	General service tool	Removal of steering wheel

IGNITION SWITCH

REMOVAL AND INSTALLATION

CAUTION: SRS
Before removal of air bag module, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.



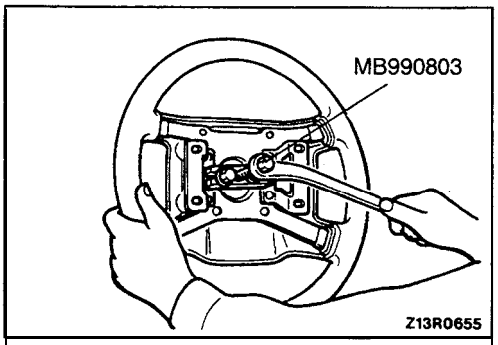
Steering lock cylinder removal steps

1. Air bag module (Refer to GROUP 52B – Air Bag Module and Clock Spring.)
◀A▶ 2. Steering wheel
3. Knee protector (Refer to GROUP 52A – Instrument Panel.)
◀B▶ 4. Column cover, lower
◀B▶ 5. Column cover, upper
6. Lap cooler duct and foot shower duct
▶A◀ 7. Column switch and clock spring assembly
8. Ignition key illumination ring
◀C▶ 9. Steering lock cylinder

Ignition switch segment removal steps

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

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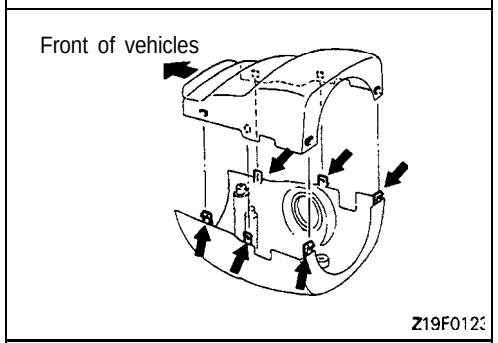


REMOVAL SERVICE POINTS

◀A▶ STEERING WHEEL REMOVAL

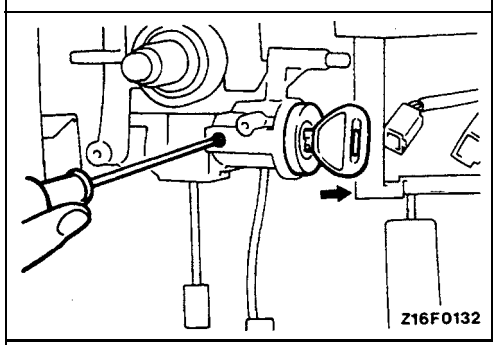
Remove the steering wheel by using the special tool.

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



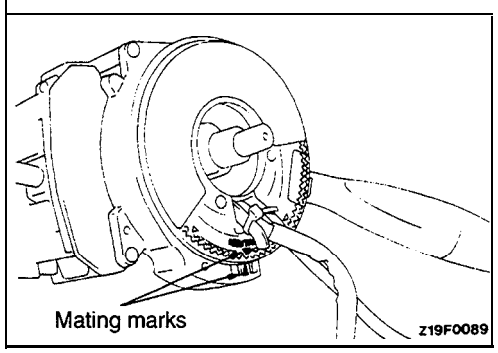
◀B▶ COLUMN COVER LOWER / COLUMN COVER UPPER REMOVAL

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



◀C▶ STEERING LOCK CYLINDER REMOVAL

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

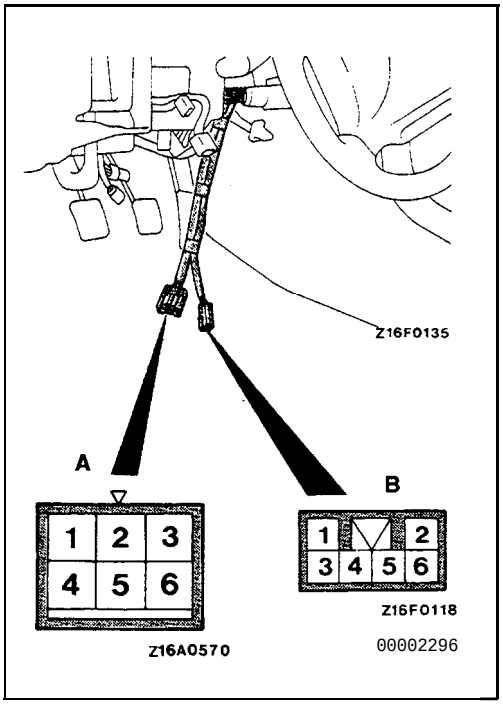


INSTALLATION SERVICE POINT

▶A◀ COLUMN SWITCH AND CLOCK SPRING ASSEMBLY INSTALLATION

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

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



INSPECTION

IGNITION SWITCH CHECK

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

Position	Key	Connector A						Connector B				Connector B	
		Ignition switch terminal No.						Key reminder switch terminal No.				ignition key illumination light terminal No.	
		1	2	3	4	5	6	1	2	3	6	4	5
LOCK	Removed									○–○			
ACC	Installed			○			○	○	○				
ON			○	○	○		○						
START		○			○	○	○						

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METERS AND GAUGES

SPECIFICATIONS

GENERAL SPECIFICATIONS

METERS AND GAUGES

Items		Specifications
Speedometer	Type	Mechanical type*1 Electrical type*2
Tachometer	Type	Pulse type
Fuel gauge	Type	Coil type
Fuel gauge unit	Type	Variable resistance type
Engine coolant temperature gauge	Type	Coil type
Engine coolant temperature gauge unit	Type	Thermistor type
Oil pressure gauge	Type	Bi-metal type
Oil pressure gauge unit	Type	Bi-metal type
Pressure gauge <Turbo>	Type	Moving coil type
Voltage gauge <Non-turbo>	Type	Moving iron type

NOTE
*1 1992 models
*2 1992 models <Turbo>, and from 1993 models

INDICATORS AND WARNING LIGHTS

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

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

SERVICE SPECIFICATIONS

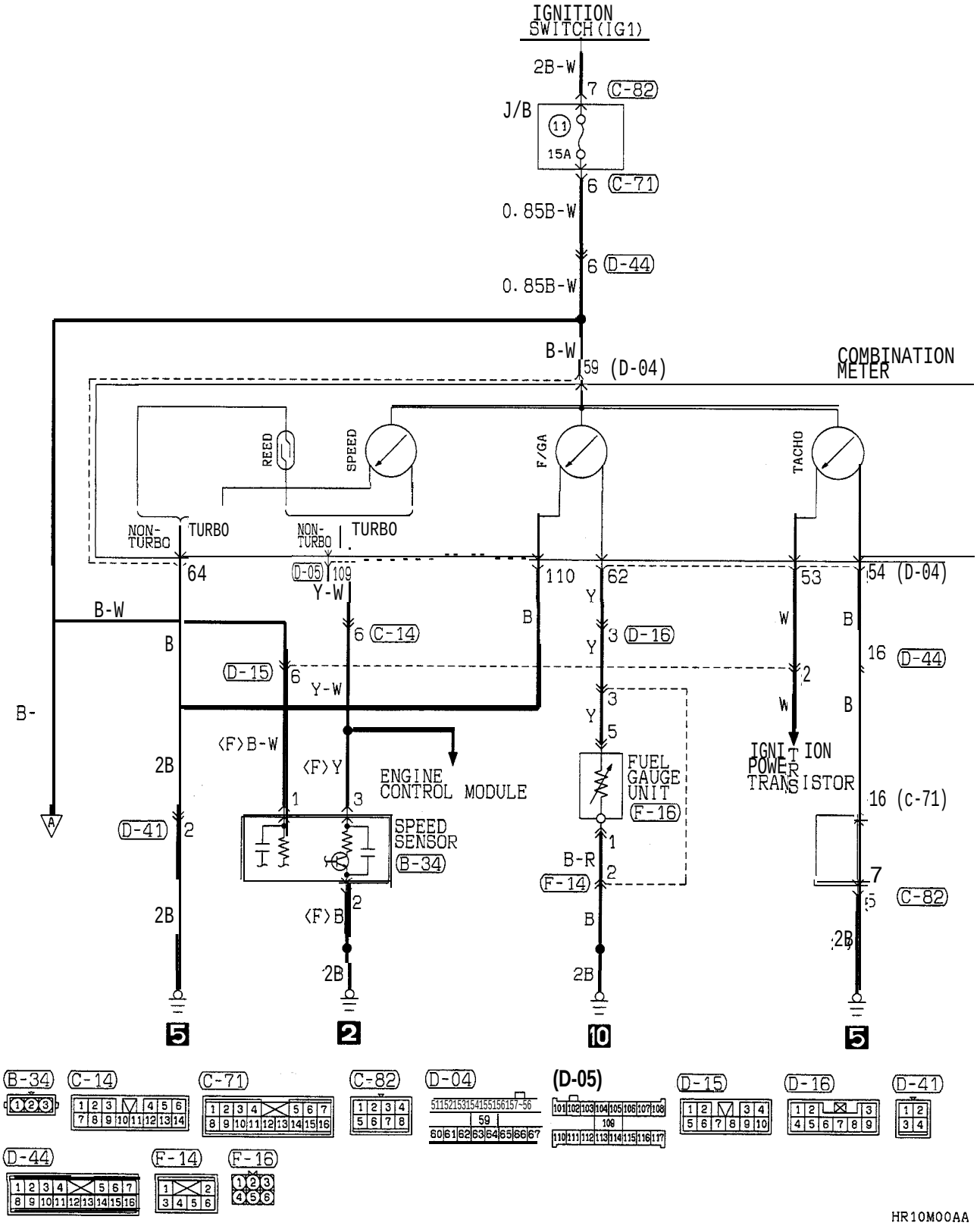
Items		Standard values
Speedometer indicationerror mph	20	19-22
	40	38-44
	60	57-66
	80	76-88
	100	94-110
Tachometer indication error rpm	1,000	± 100
	3,000	± 150
	5,000	± 250
	6,000	± 300
Fuel gauge unit resistance Ω	Point F	3 ± 2
	Point E	110 ± 7
Fuel gauge unit float height mm (in.)	Point F	18.6-21.6 (.73–.85)
	Point E	193.4–1 96.4 (7.61-7.73)
Engine coolant temperature gauge unit resistance [at 70°C (158°F)] Ω		104 ± 13.5
Fuel gauge resistance Ω	Between A – B	Approx. 254
	Between A – C	Approx. 101
	Between B – C	Approx. 153
Engine coolant temperature gauge resistance Ω	Between A – B	Approx. 51
	Between A – C	Approx. 139
	Between B – C	Approx. 190
Oil pressure gauge resistance Ω		Approx. 42
Pressure gauge resistance <Turbo> Ω		Approx. 72

SEALANT

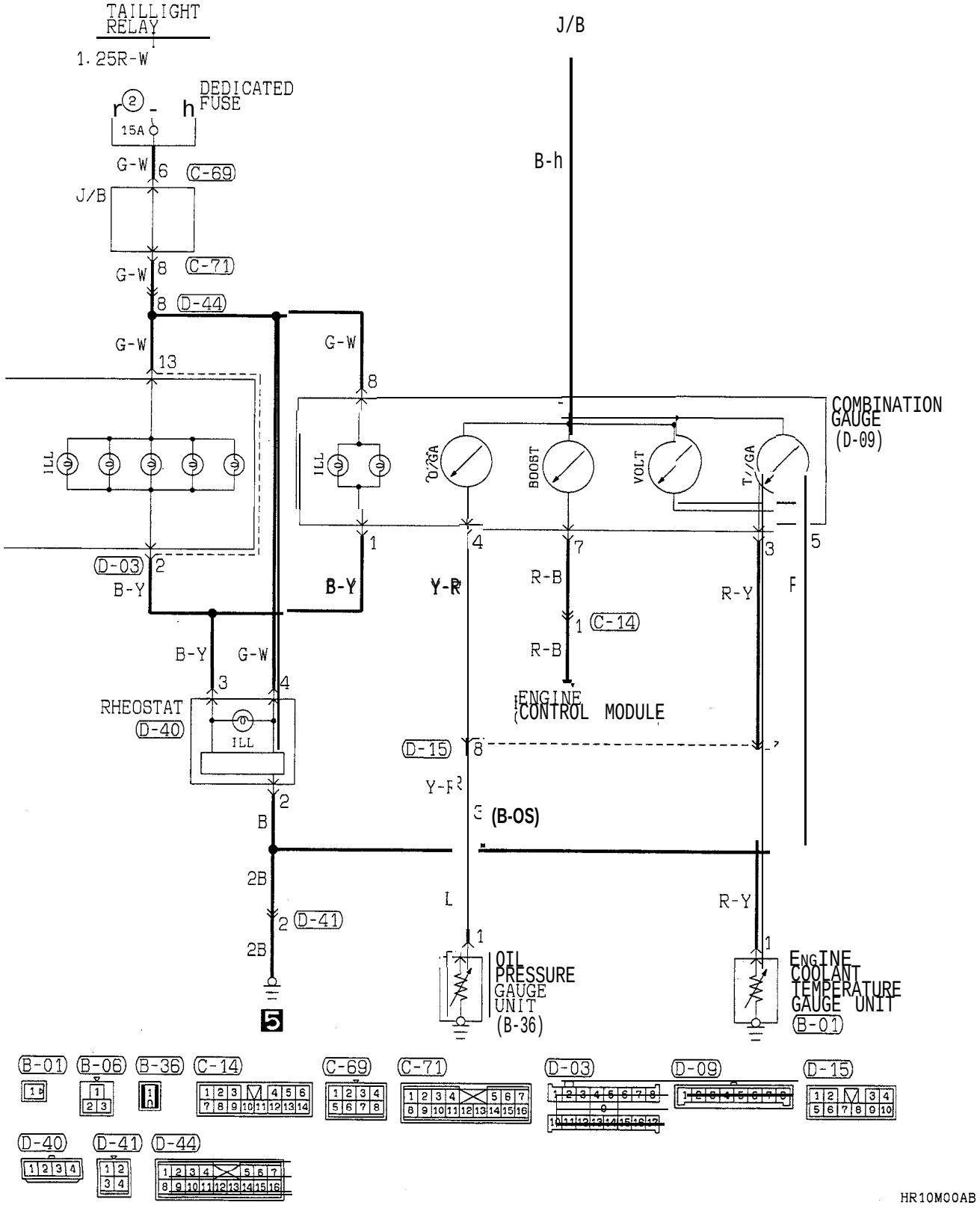
Items	Specified sealant	Type
Engine coolant temperature gauge unit	3M Nut Locking Part No. 4171 or equivalent	Semi-drying sealant

TROUBLESHOOTING

METERS AND GAUGES CIRCUIT DIAGRAM <UP TO 1993 MODELS>

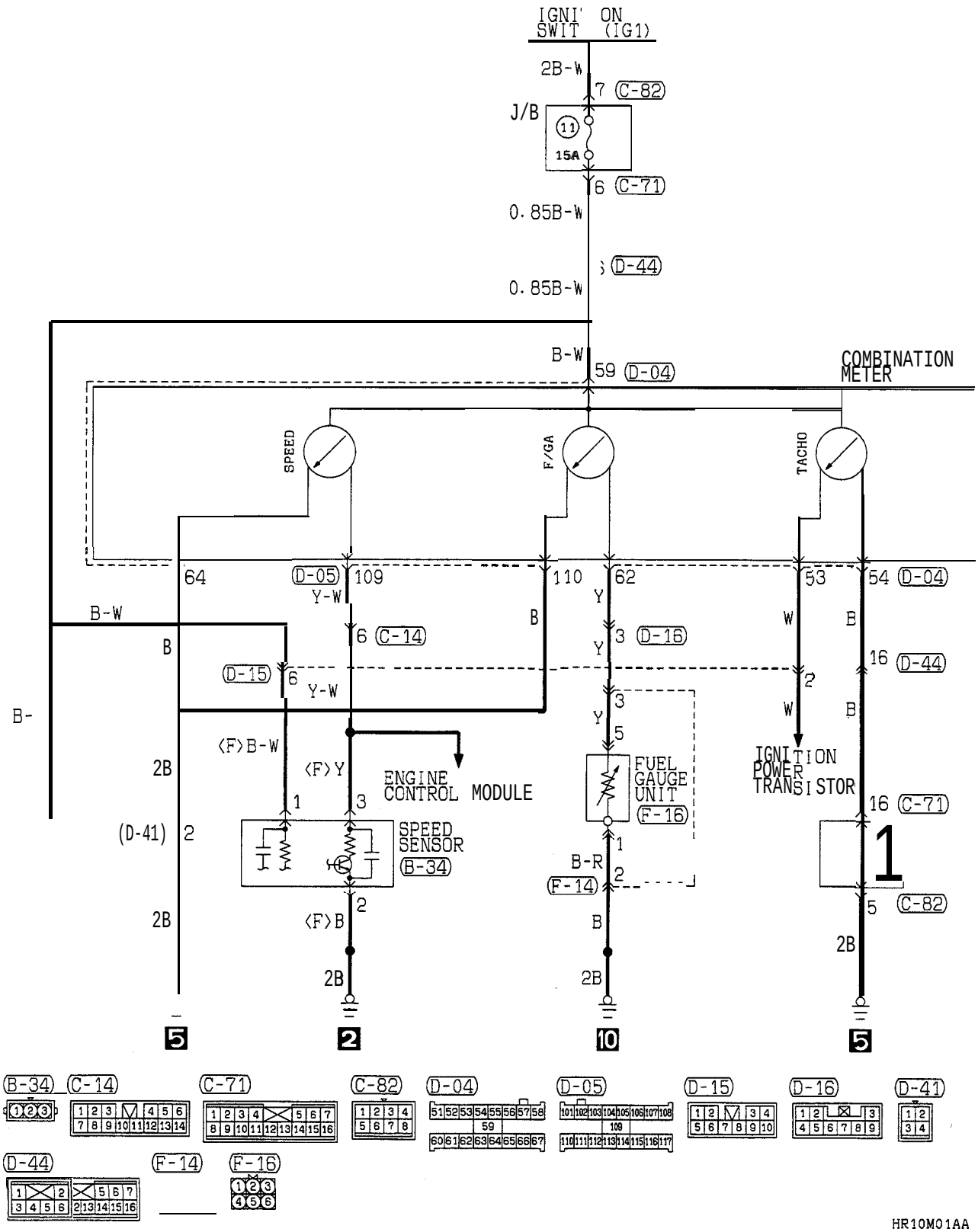


TSB Revision

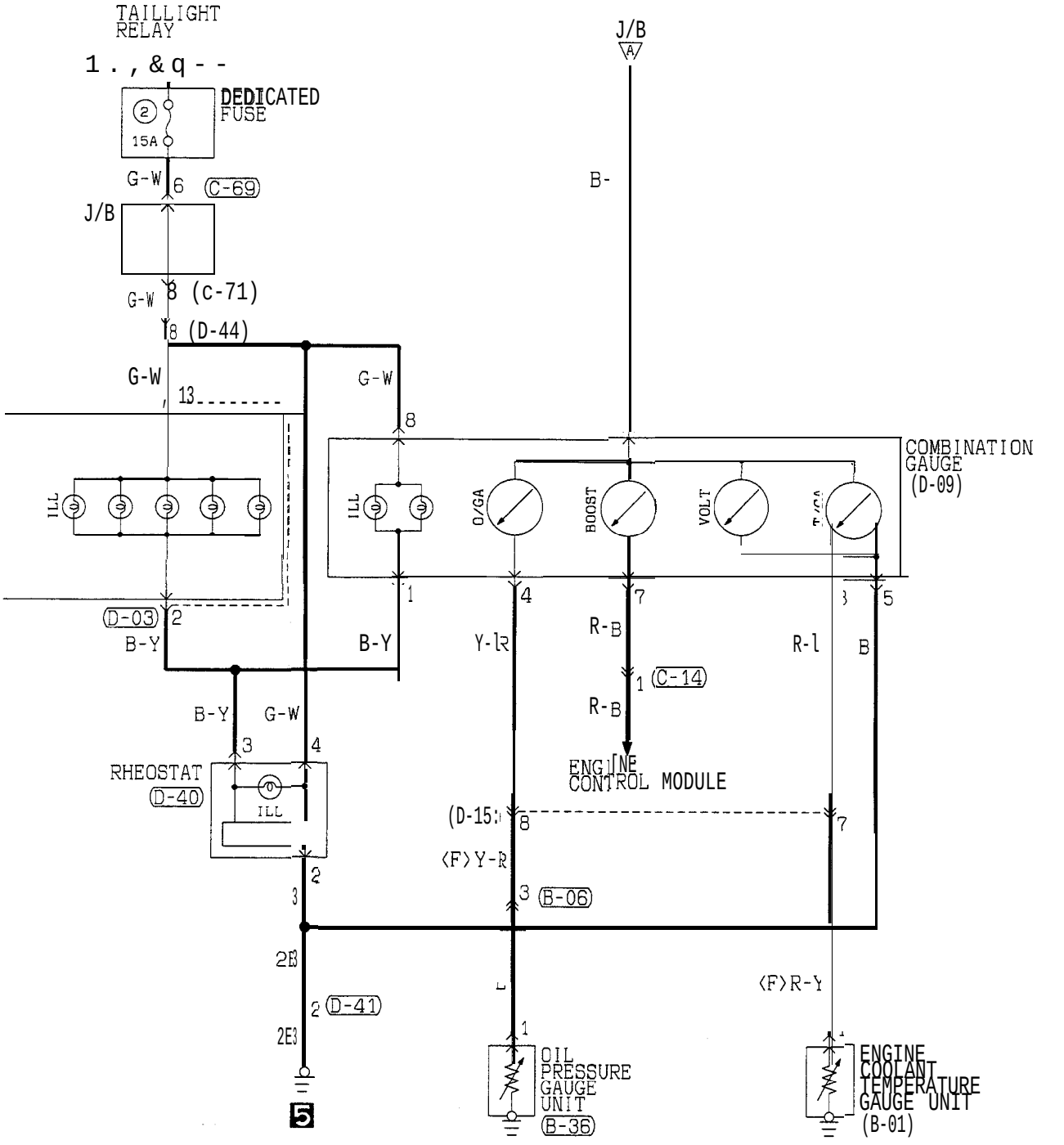


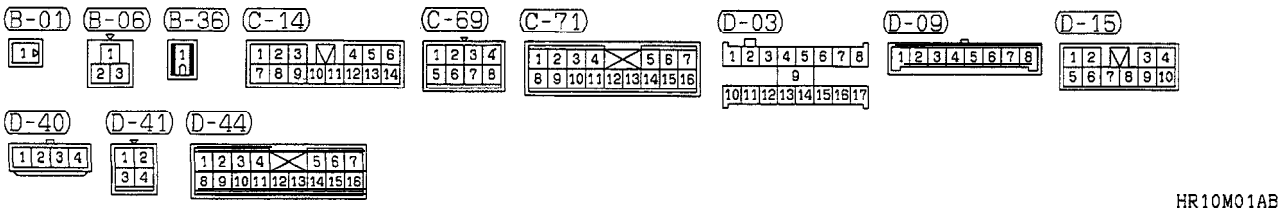
TSB Revision

METERS AND GAUGES CIRCUIT DIAGRAM <1994 MODELS>



TSB Revision

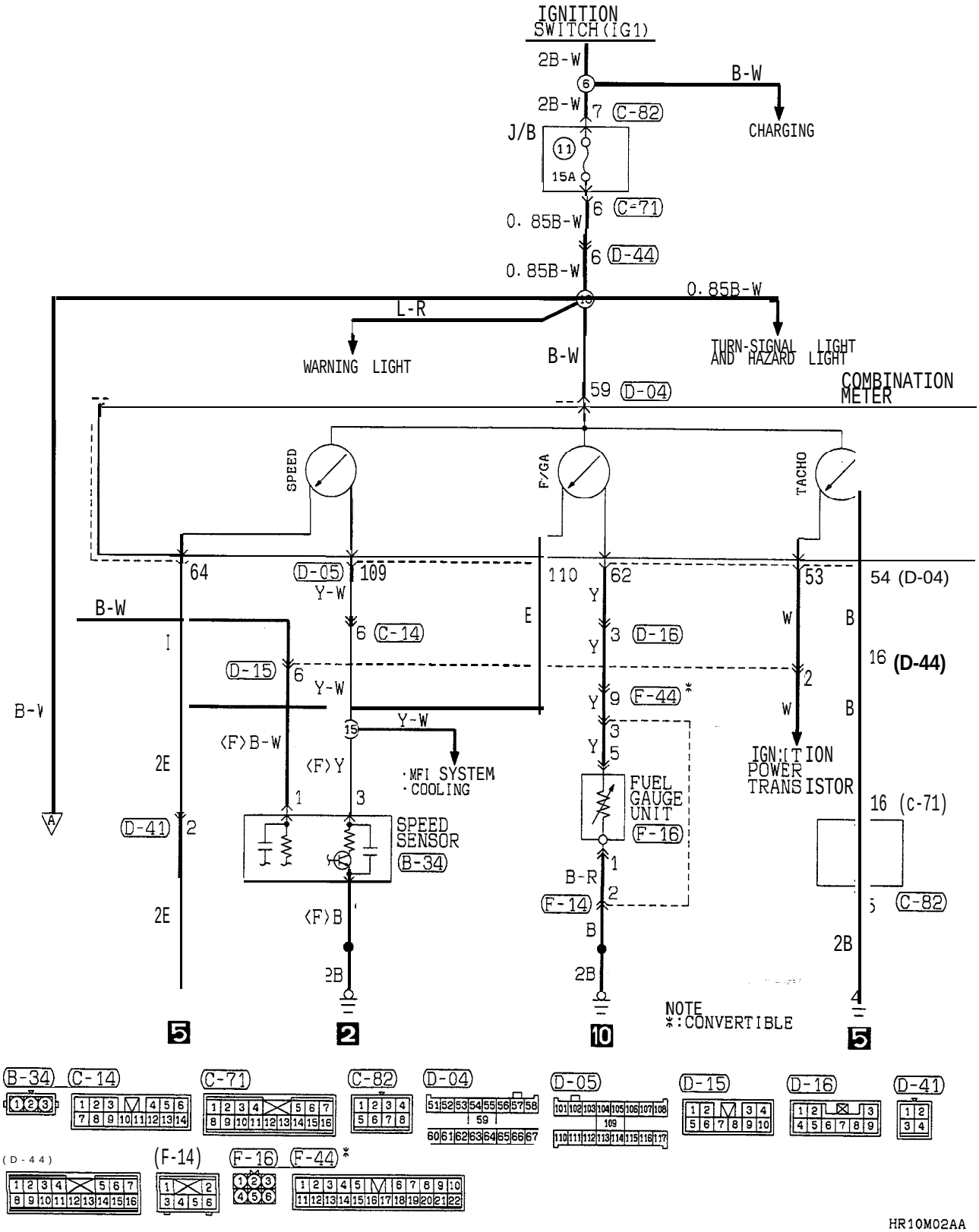




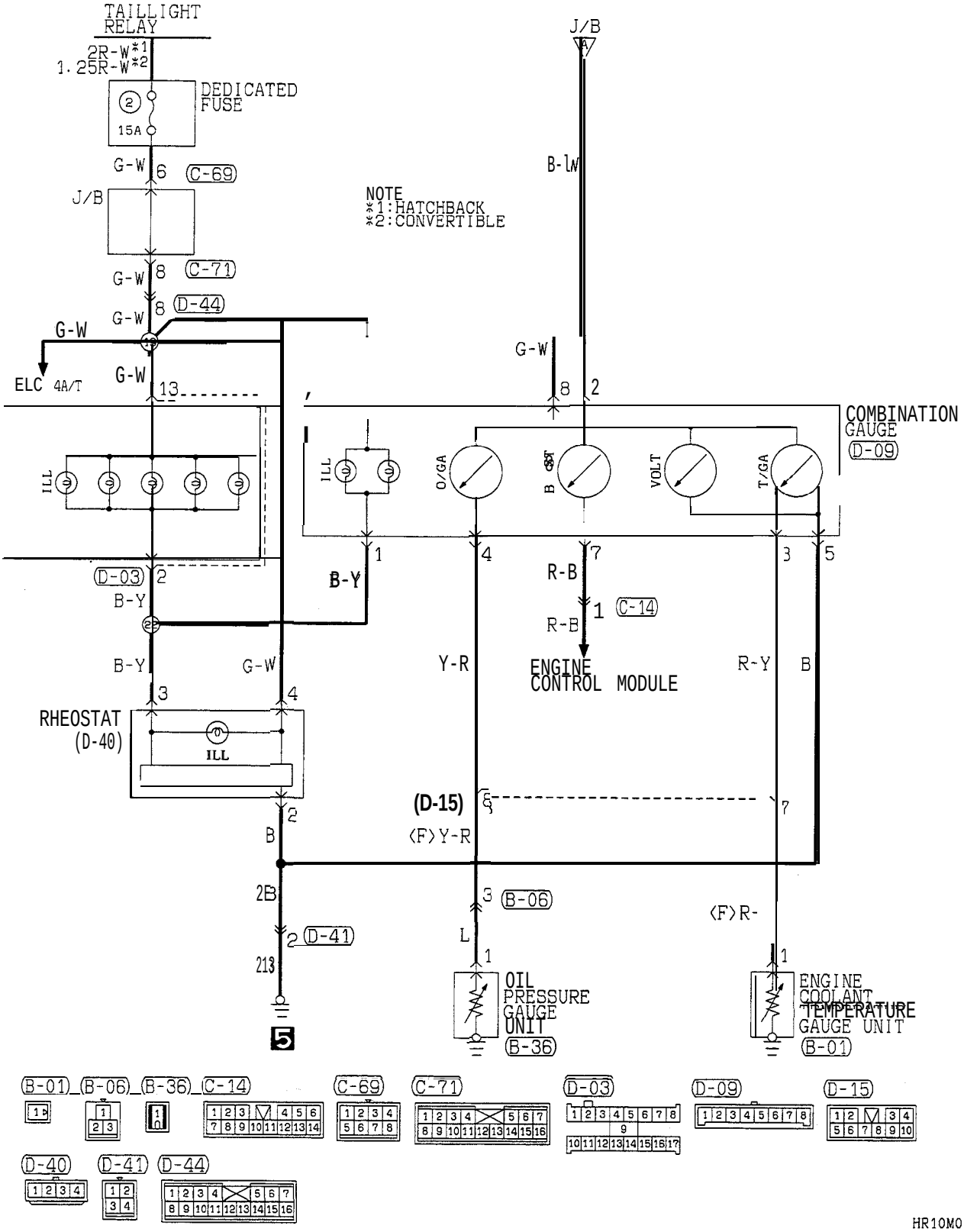
HR10M01AB

TSB Revision

METERS AND GAUGES CIRCUIT DIAGRAM <FROM 1995 MODELS>



TSB Revision



HR10M02AB

TSB Revision

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 (mechanical speedometer type) /Speed sensor (electrical speedometer type)>

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

<Oil pressure gauge>

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

<Pressure gauge (TURBO)>

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

<Voltage gauge (NON-TURBO)>

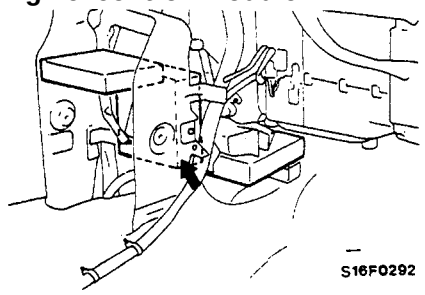
- When the ignition key is placed in the "ON" position, the voltage gauge operates and indicates a battery voltage of approximately 12 V.
- When the engine is started, the voltage gauge indicates a battery voltage of 12 to 16 V, indicating that the battery is on charge.

TROUBLESHOOTING HINTS

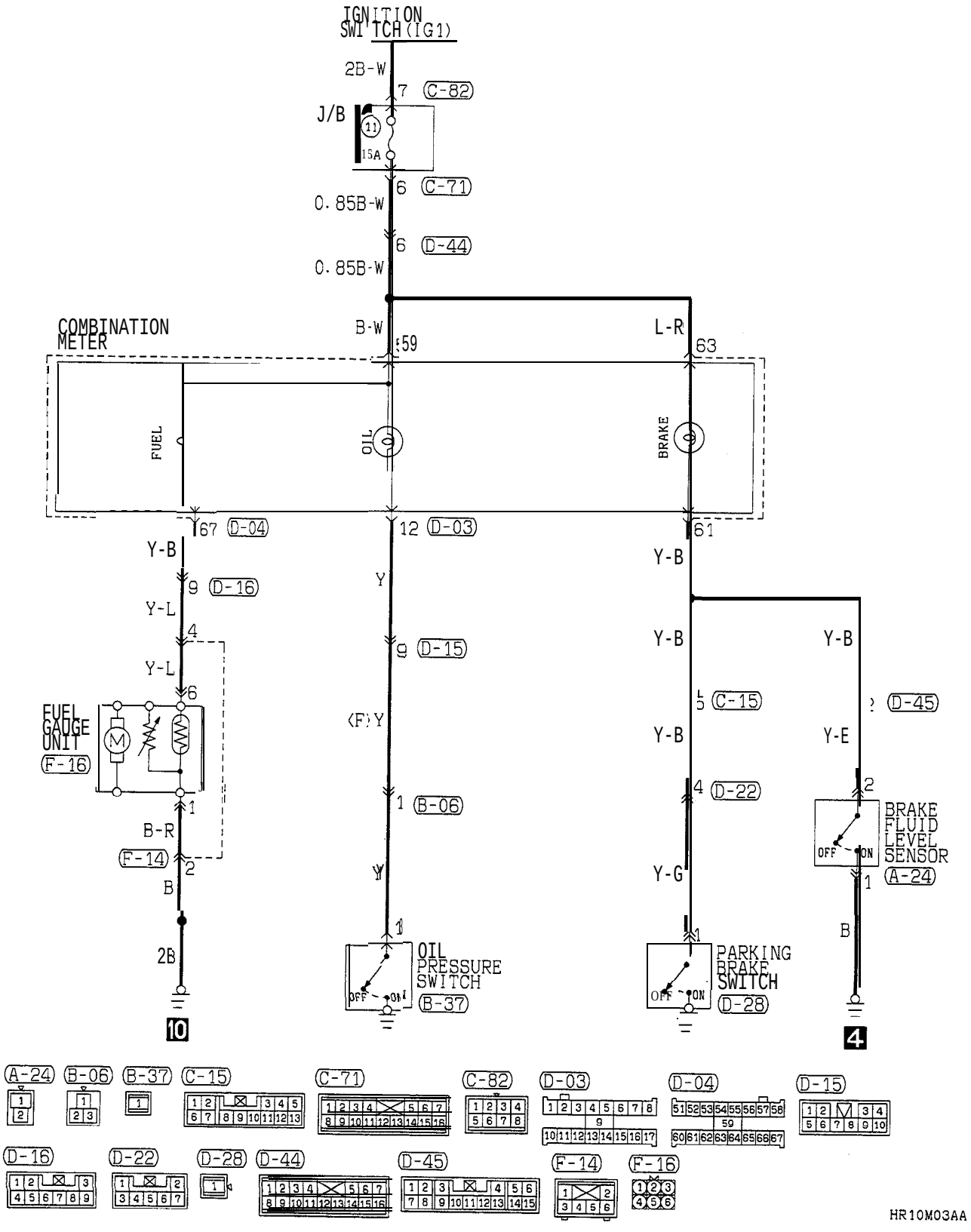
1. The fuel gauge doesn't function, or shows the incorrect indication.
   (1) Disconnect the connector of the fuel pump and gauge unit assembly; the "F" side is indicated when terminal (5) is then grounded.
   - Check the fuel gauge.
2. The engine coolant temperature gauge doesn't function, or shows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

COMPONENT LOCATION

Engine control module

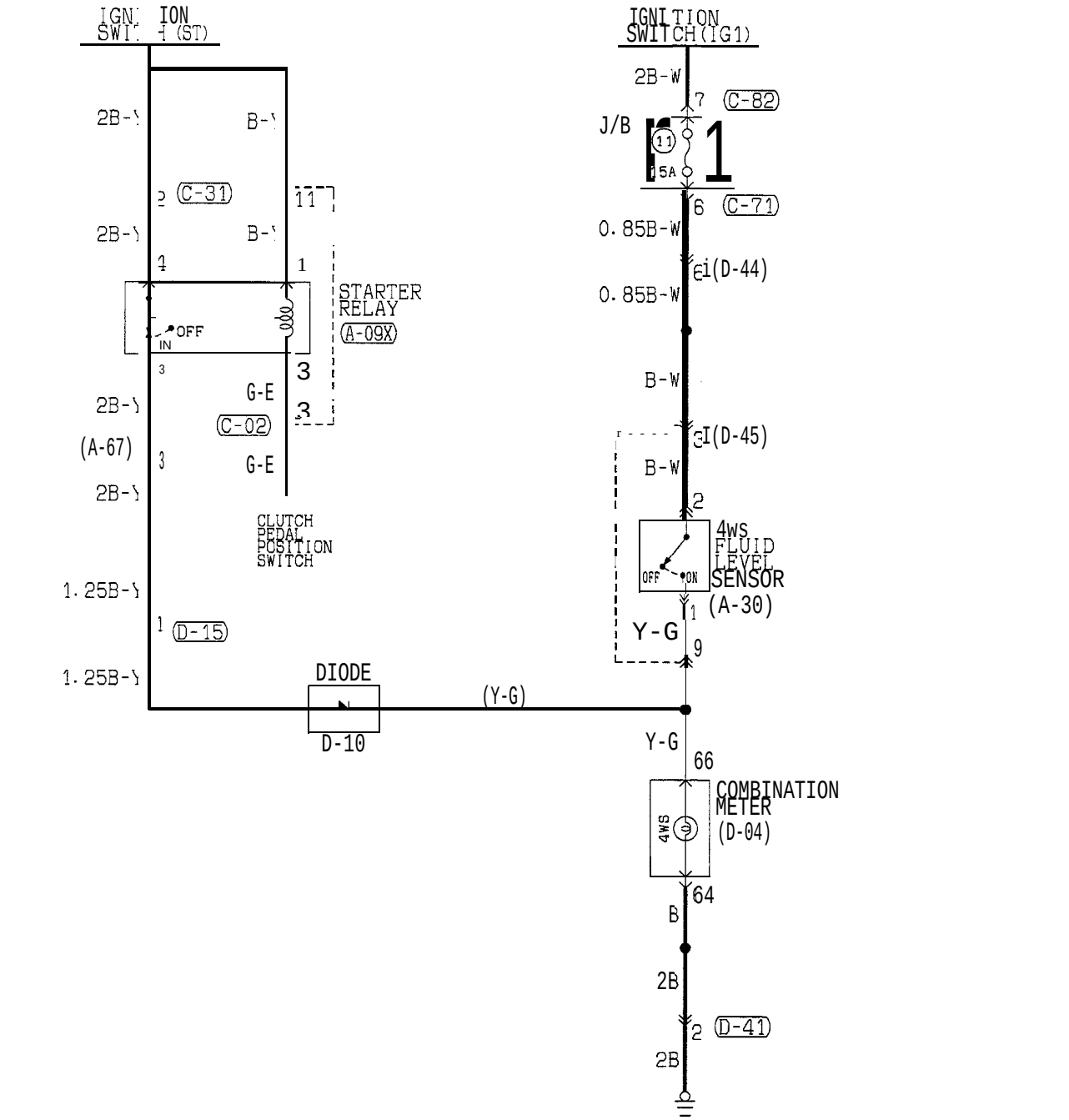


WARNING LIGHT CIRCUIT DIAGRAM <UP TO 1994 MODELS>



HR10M03AA

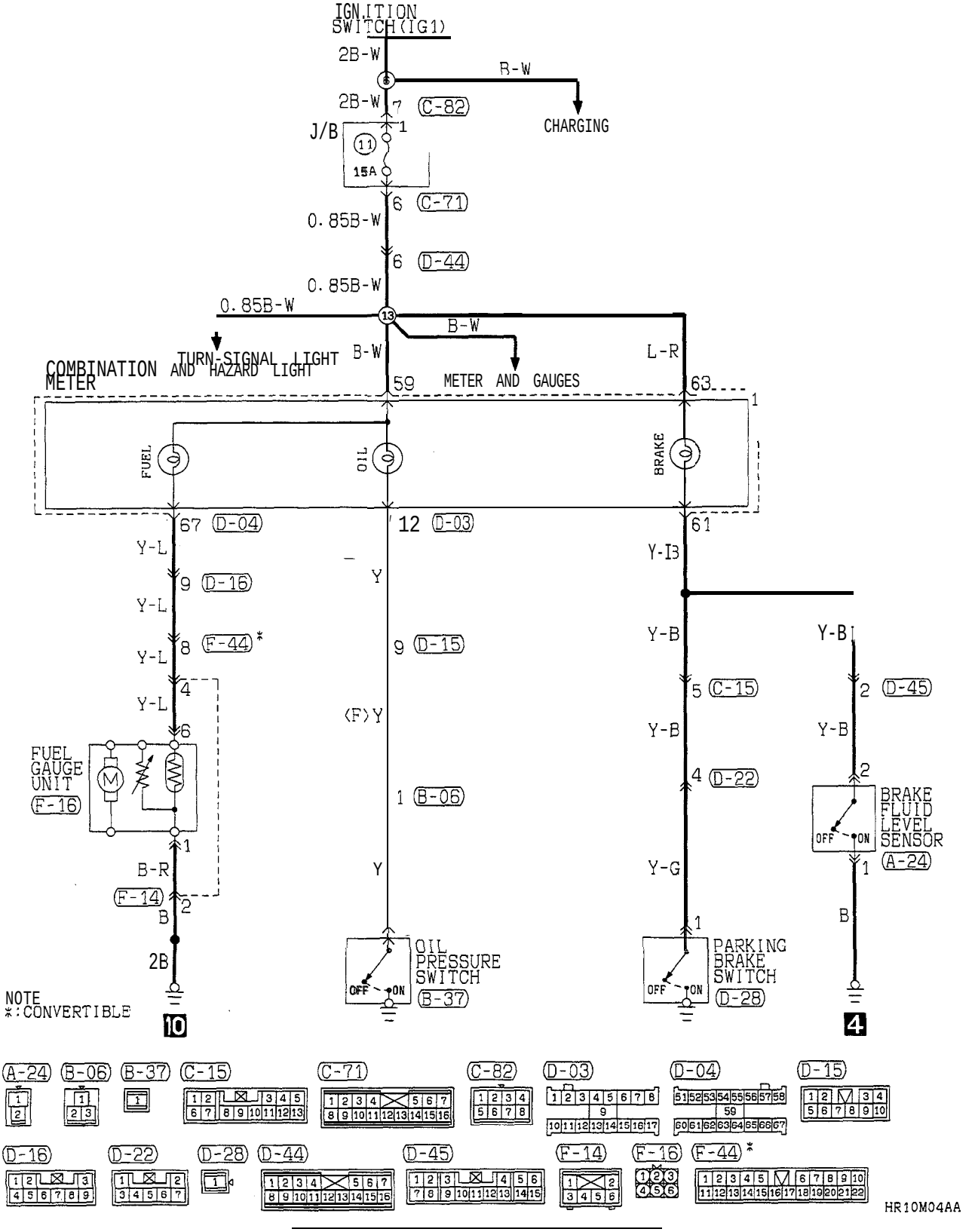
TSB Revision



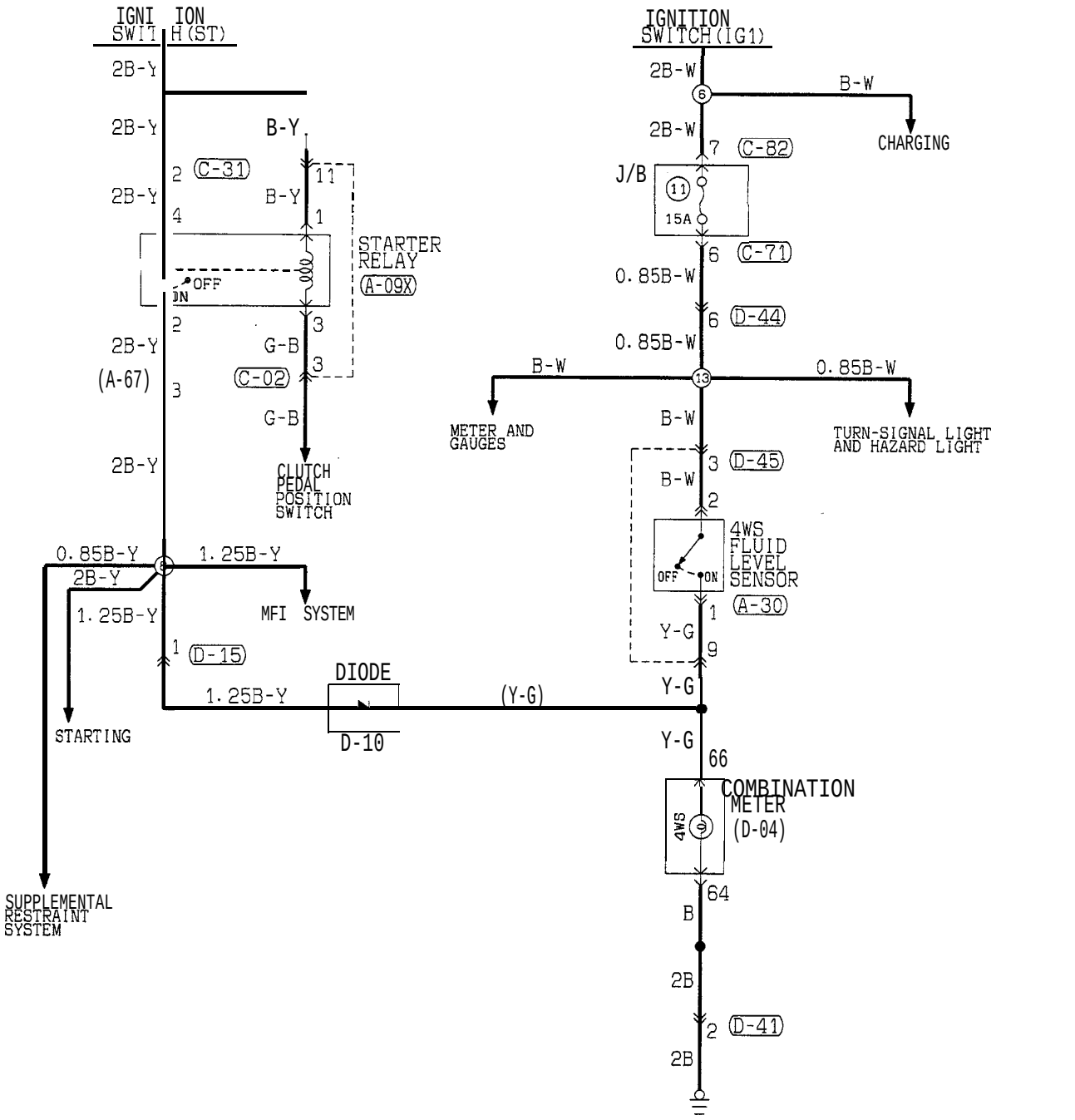
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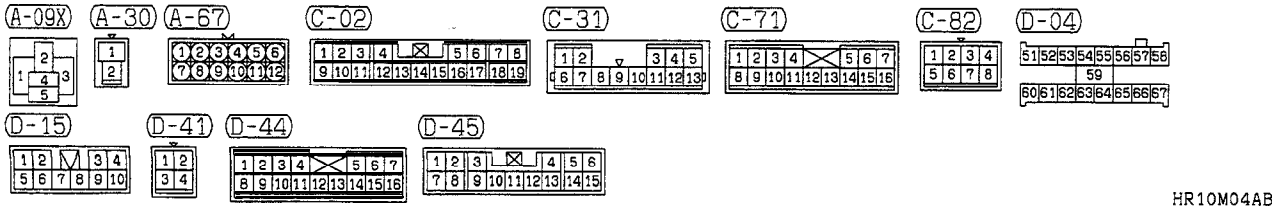
TSB Revision

WARNING LIGHT CIRCUIT DIAGRAM <1995 MODELS>



TSB Revision

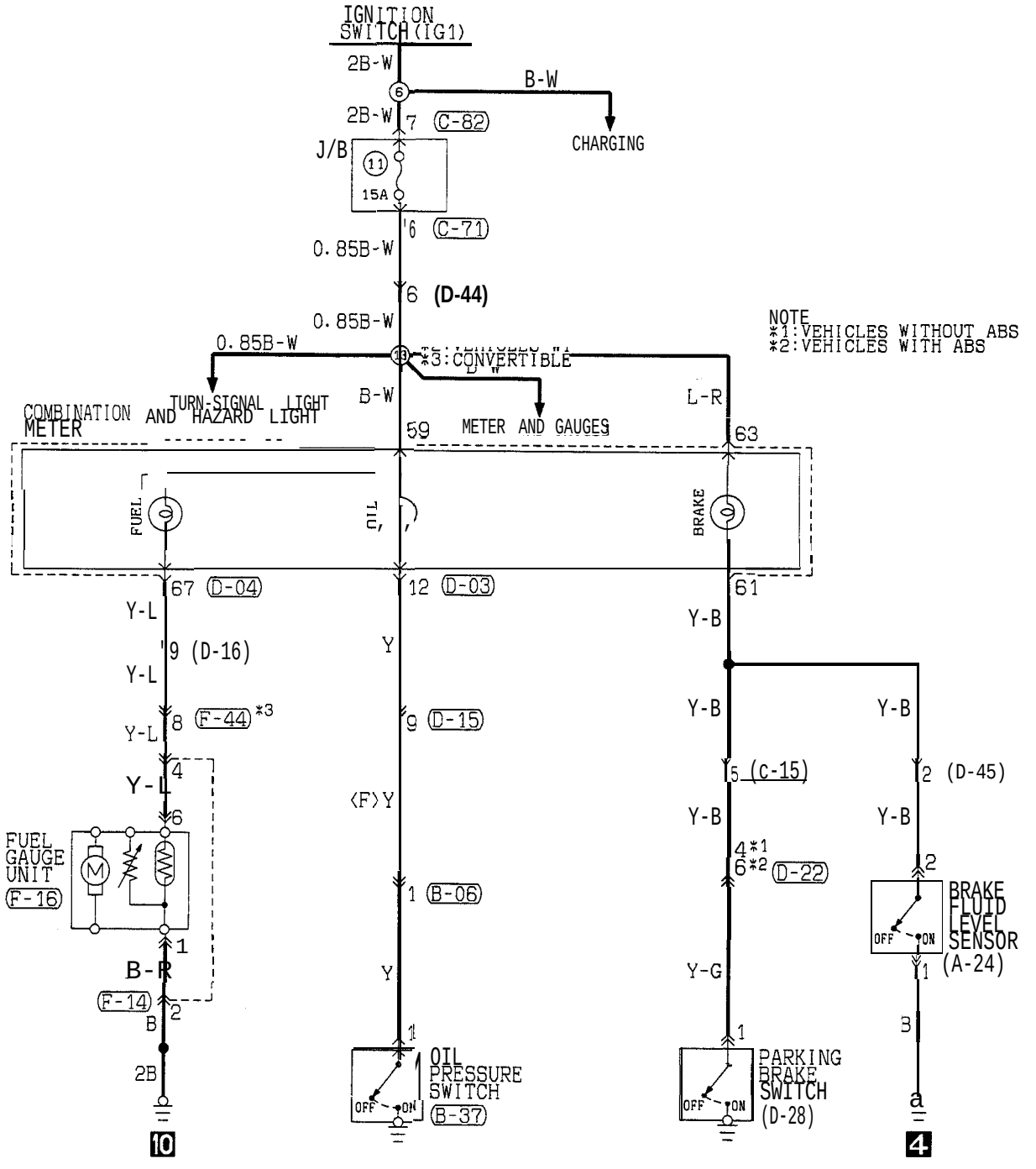


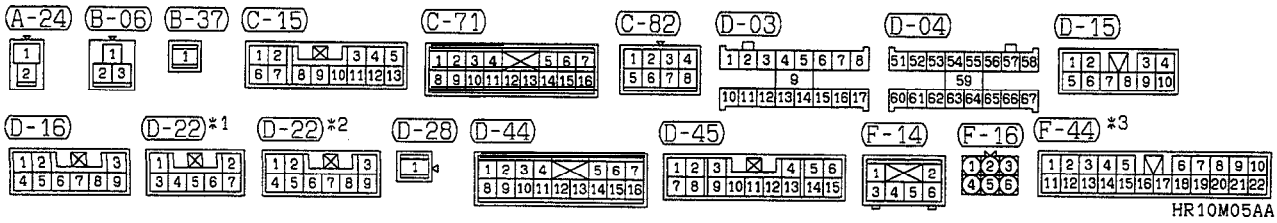


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TSB Revision

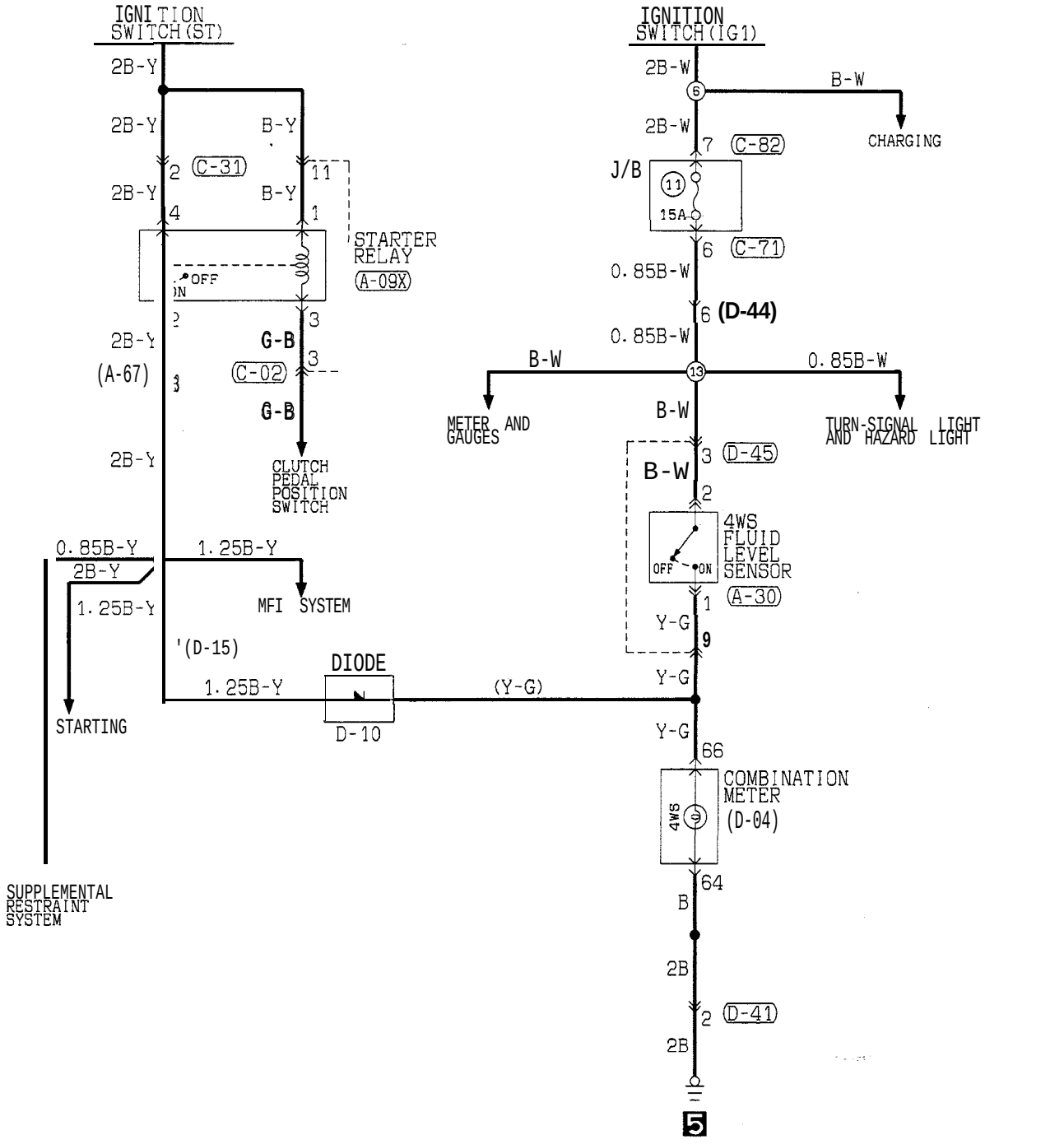
WARNING LIGHT CIRCUIT DIAGRAM <FROM 1996 MODELS>

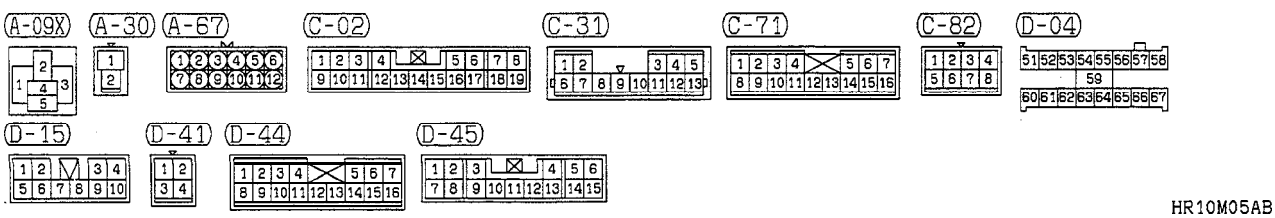




HR10M05AA

TSB Revision

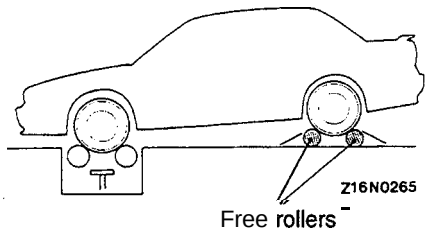




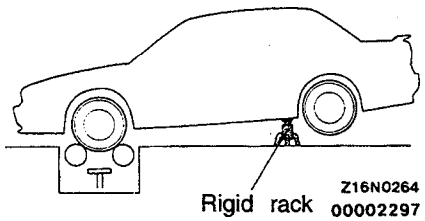
HR10M05AB

TSB Revision

<Rear wheels on free rollers>



<Rear wheels raised on jack>

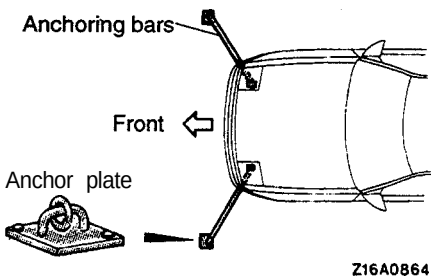


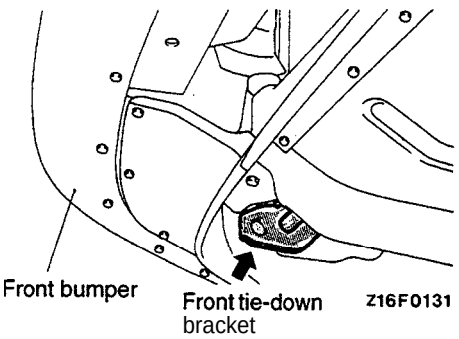
ON-VEHICLE SERVICE

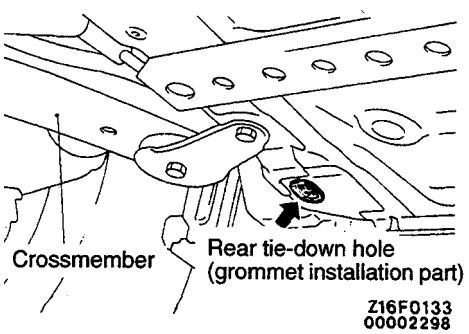
INSPECTION

SPEEDOMETER CHECK

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





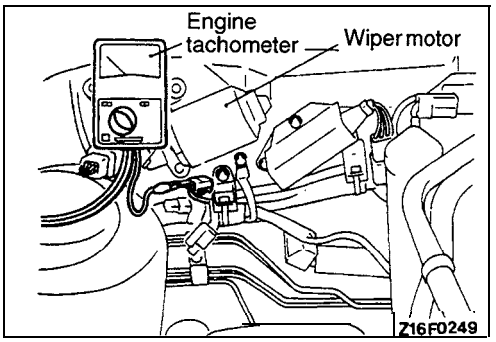


(6) Attach anchoring bars on the tie-down brackets and secure their ends to the anchor plates.
(7) Make sure the tension on the right and left bars is the same. Also be sure there is enough tension on each bar.
(8) Attach a chain or wire to the rear tie-down hole. Make sure the end of the wire or chain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

Standard value:

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

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



TACHOMETER CHECK

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

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

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

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

Standard value:
1,000 ± 100 rpm
3,000 ± 150 rpm
5,000 ± 250 rpm
6,000 ± 300 rpm

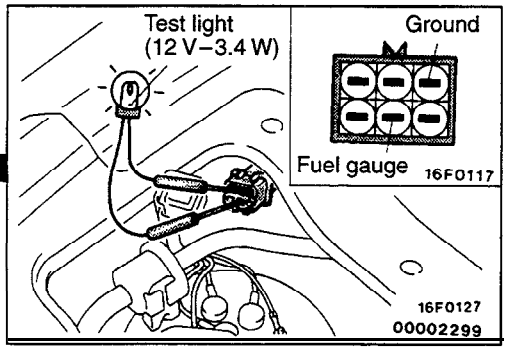
Caution
The engine speed signal output from the engine is one-third of the actual speed. When the engine speed is measured, make sure that the engine tachometer is placed in the 2-cylinder range. (The real speed is indicated.)

FUEL GAUGE SIMPLE CHECK

Remove the fuel gauge unit coupling connector.

Connect a test light to the harness connector.

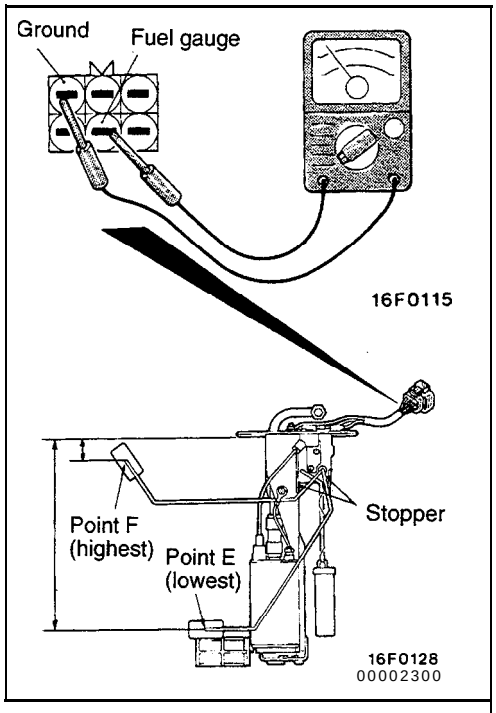
Place the ignition switch in the ON position.

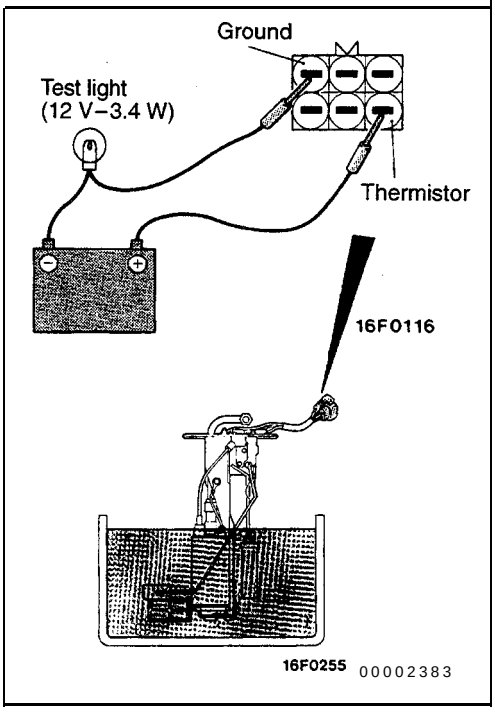


Check the test light and gauge conditions.

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

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FUEL GAUGE UNIT CHECK

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

Fuel Gauge Unit Resistance

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

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

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

Fuel Gauge Unit Float Height

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

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

FUEL SENSOR CHECK

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

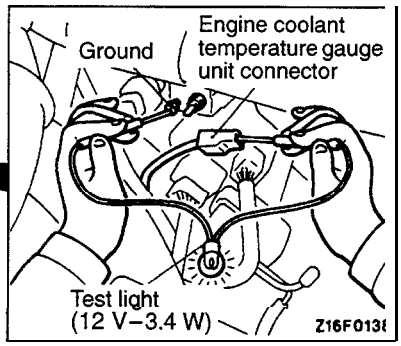
Caution
After completing this test, wipe the unit dry and install it in the fuel tank.

ENGINE COOLANT TEMPERATURE GAUGE SIMPLE CHECK

Remove the water temperature gauge unit coupling connector.

↓

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



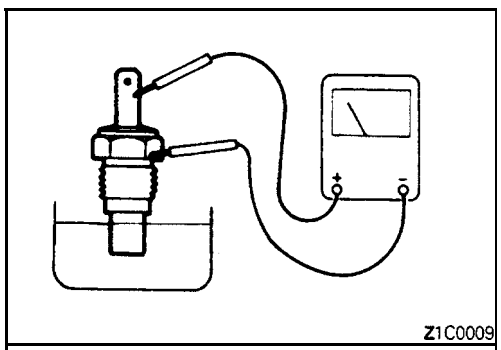
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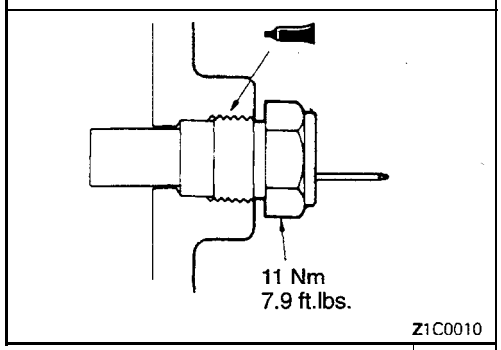
Place the ignition switch in the ON position.

↓

Check the test light and gauge conditions.

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





ENGINE COOLANT TEMPERATURE GAUGE UNIT CHECK

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

Engine Coolant Temperature Gauge Unit Resistance

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

Standard value: 104 ± 13.5 Ω

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

Specified sealant:
3M Nut Locking Part No. 4171 or equivalent

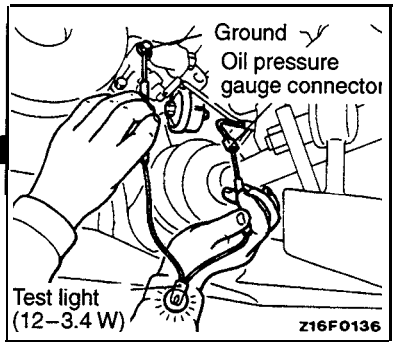
TSB Revision

OIL PRESSURE GAUGE SIMPLE CHECK

Remove the oil pressure gauge unit coupling connector.

↓

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



↓

Place the ignition switch in the ON position.

↓

Check the test light and gauge conditions.

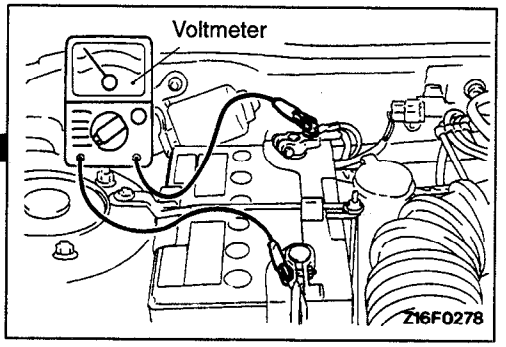
(1) Test light lights. (Pointer of gauge does not swing.)	→ Replace oil pressure gauge.
(2) Test light lights. (Pointer of gauge swings.)	→ Replace oil pressure gauge unit.
(2) Test light does not light. (Pointer of gauge does not swing.)	→ Correct harness.

VOLTAGE GAUGE SIMPLE CHECK

Start engine and let it idle.

↓

Connect voltmeter to battery.



↓

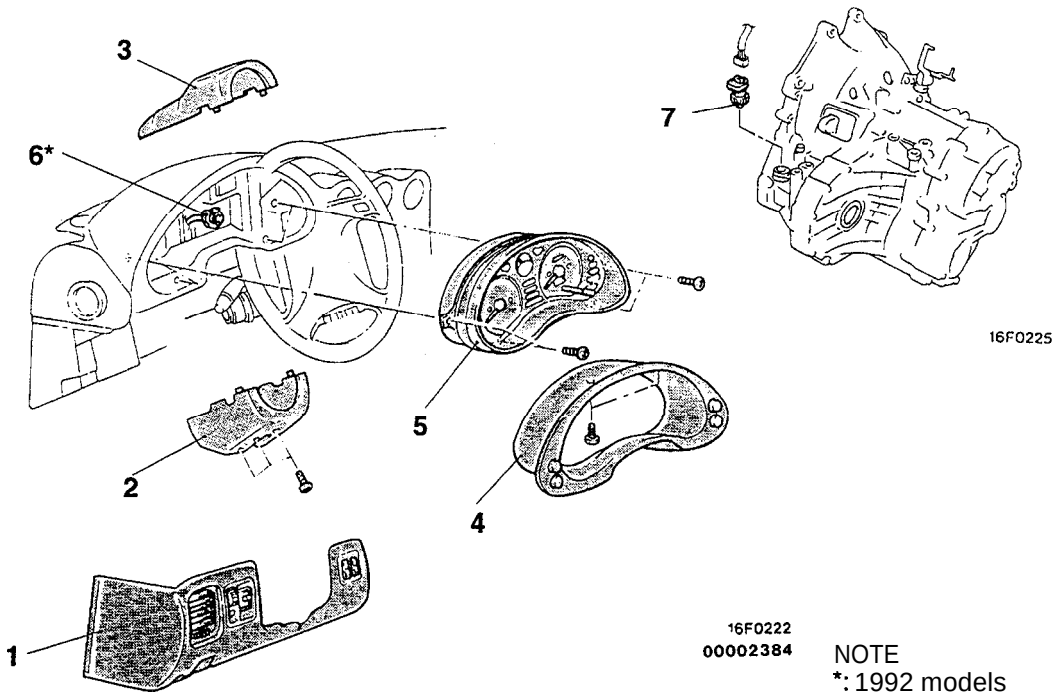
Check voltage gauge for conditions.

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

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COMBINATION METERS

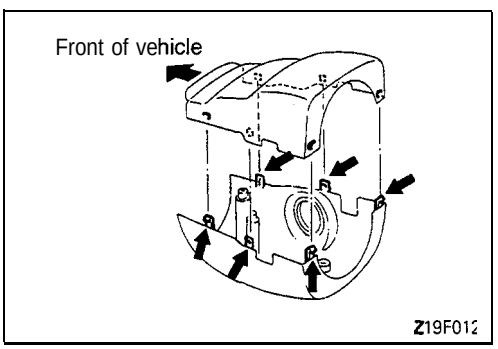
REMOVAL AND INSTALLATION



NOTE
*: 1992 models

Removal steps

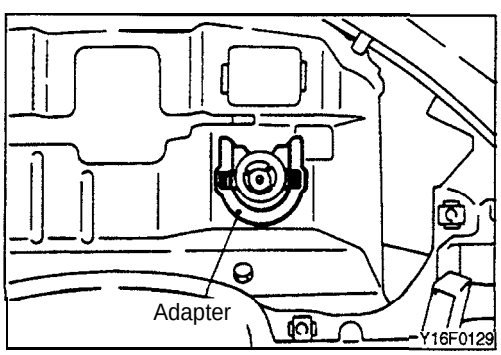
1. Knee protector (Refer to GROUP 52A – Instrument Panel.)
◀A▶ ◀A▶ 2. Column cover, lower
3. Column cover, upper
4. Meter bezel
5. Combination meter
◀B▶ 6. Adapter* (Mechanical speedometer type) /Washer tank (Refer to GROUP 51 – Windshield Wiper and Washer.)
7. Vehicles speed sensor (Electrical speedometer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



REMOVAL SERVICE POINTS

◀A▶ COLUMN COVER LOWER / COLUMN COVER UPPER REMOVAL

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

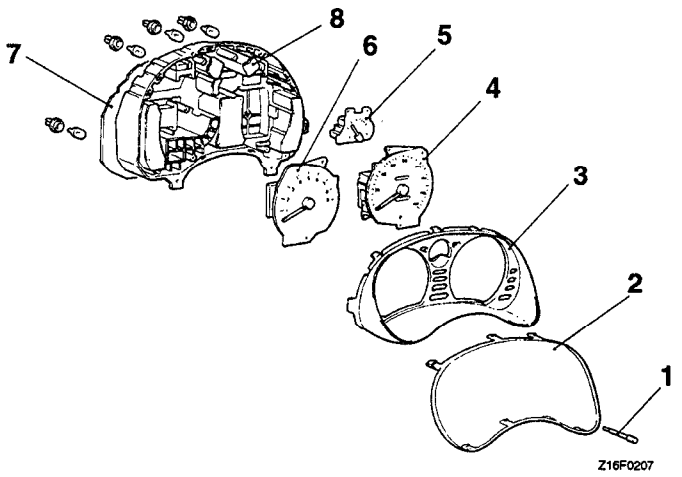


◀B▶ ADAPTER REMOVAL <Mechanical Speedometer Type>

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

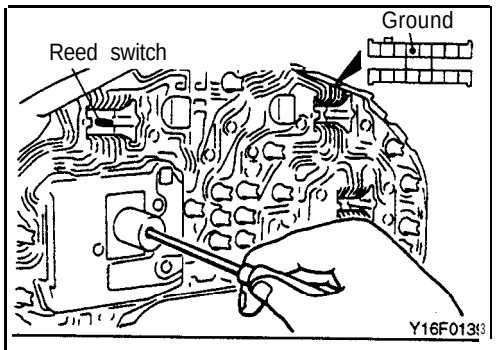
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DISASSEMBLY AND REASSEMBLY



Disassembly steps

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

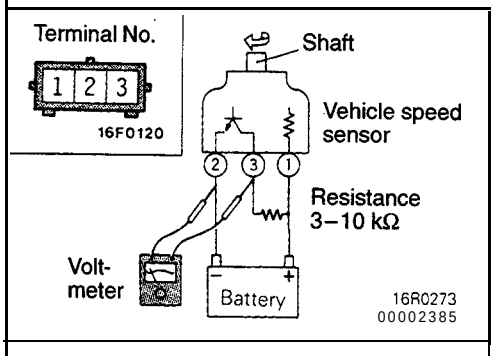


INSPECTION

REED SWITCH CHECK

<Mechanical Speedometer Type>

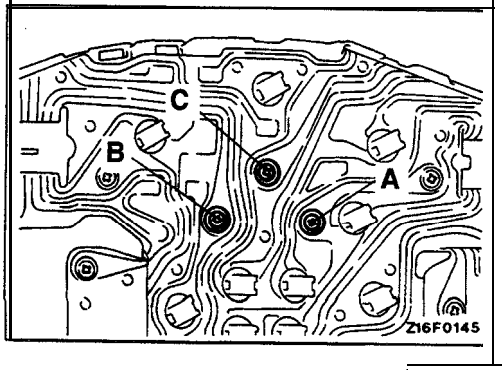
Use circuit tester to check circuit repeats off/on between terminals when speedometer shaft turned several times.



VEHICLES SPEED SENSOR CHECK

<Electrical Speedometer Type>

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



FUEL GAUGE CHECK

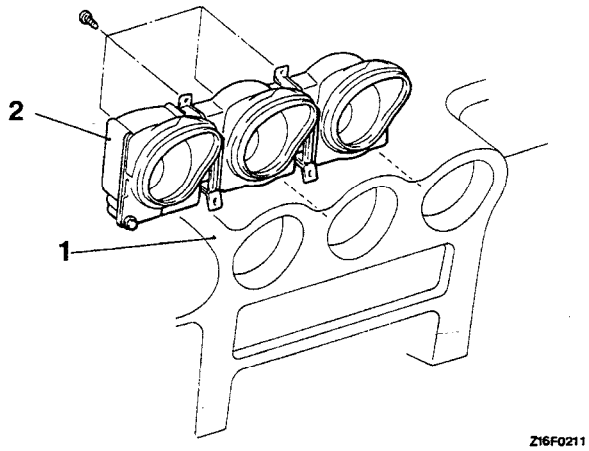
Measure resistance between terminals with circuit tester.

Standard value:

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

COMBINATION GAUGES

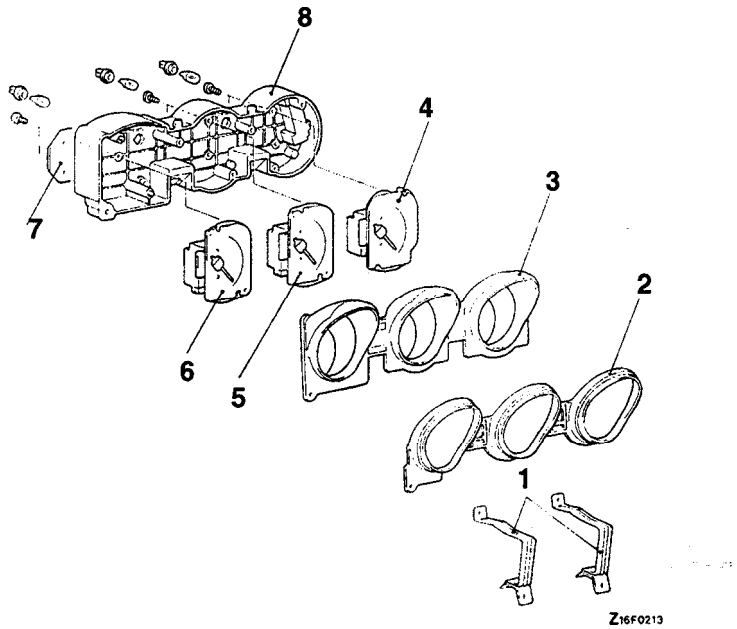
REMOVAL AND INSTALLATION



Removal steps

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

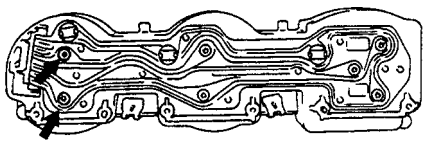
DISASSEMBLY AND REASSEMBLY



Disassembly steps

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

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Z16F0143

INSPECTION

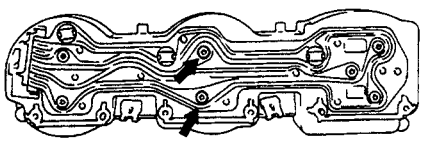
PRESSURE GAUGE CHECK <Turbo>

Measure resistance between terminals with circuit tester.

Standard value: Approx. 72 Ω

VOLTAGE GAUGE CHECK <Non-Turbo>

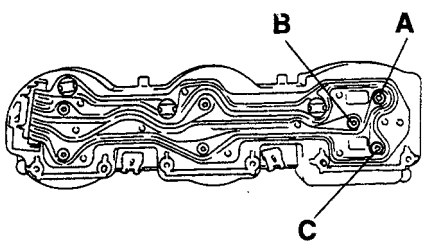
Refer to P.54-30


Z16F0142

OIL PRESSURE GAUGE CHECK

Measure resistance between terminals with circuit tester.

Standard value: Approx. 42 Ω



Z16F0141

ENGINE COOLANT TEMPERATURE GAUGE CHECK

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

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

Standard value:

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

LIGHTING SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS

Exterior lights

Items		Specifications
Headlight W		65/45*1, 60/51 *2
Fog light W		55
Front combination light	Turn-signal light / side marker light CP	27/8 (1157)*1 or 27 (1156)*2
Rear combination light	Turn-signal light / side marker and tail light CP	32/2 (2057)
	Stop light / side maker and tail light CP	32/2 (2057)
Back-up light CP		32 (1156)
License plate light CP		3 (168)
High-mounted stop light	Vehicles without rear spoiler CP	32 (1156)
	Vehicles with fixed rear spoiler W	4
	Vehicles with active rear spoiler	LED (Light Emitting Diode)
Engine compartment inspection light W		3.8 (194)

Interior lights

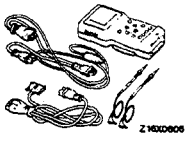
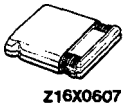
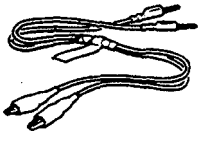
Items	Specifications
Foot light W	3.4 (158)
Dome light W	8
Spot light W	8
Door light W	5
Glove compartment light W	3.4 (158)
Luggage compartment light W	5

NOTE
The values in parentheses denote SAE trade number.
*1 Up to 1993 models
*2 From 1994 models

SERVICE SPECIFICATIONS

Items	Limit
Headlight intensity	20,000 cd or more

SPECIAL TOOLS

Tool	Tool number and name	Supersession	Application
	MB991341 Scan tool (Multi-use tester <MUT>)	MB991 341 C	Up to 1993 models Checking the lighting system
	ROM Pack (For the number, refer to GROUP 00 – Precautions Before Service)		
	MB991502 Scan tool (MUT-II)	MB991 502	All models Checking the lighting system
 Z16X0607	ROM Pack		
	MB991 529 Diagnostic trouble code check harness	MB991 529	From 1994 models Checking the lighting system using a voltmeter

TROUBLESHOOTING

HEADLIGHT

OPERATION

<Headlights ON operation>

- Turn the lighting switch to "HEAD", and the contact point of the headlight relay will be closed to turn "ON" the headlight relay.
- When the dimmer switch is placed in the LO position, the headlight low-beams go on. On vehicles up to 1993 model, when the switch is placed in the HI position, the headlight high-beams go on. On vehicles from 1994 model, when the switch is placed in the HI position, the headlight high-beams and low-beams go on.

<High-beam indicator light>

- When the high-beam is lit or when the passing switch is activated, the high-beam indicator light will be lit.

<Light automatic shut-OFF system>

- If the driver's door is opened after the ignition switch is turned to "OFF" or the ignition switch is turned to "OFF" after the driver's door is opened when the headlights are lit, the current which flows to the coil side of the headlight relay will be cut off by the light automatic shut-OFF unit opening the contact point, and the headlight relay will be turned "OFF" to automatically shut off the headlights.
- To turn the headlights on again after they are automatically shut off, turn the lighting switch to "OFF" once and then back to "HEAD", or turn the ignition switch to "ACC" or "ON", and the automatic shut-OFF will be cancelled and the current will flow from the light automatic shut-OFF unit to the coil side of the headlight relay again to close the contact point. Thus, the headlight relay will be turned "ON" to turn on the headlights.

NOTE
When the lighting switch is at "HEAD", the light automatic shut-OFF system is valid for tail lights, parking and side marker lights, license plate light, illumination light, etc.
(Refer to P.54-70.)

<Pop-up operation–Operation by lighting switch> (Up to 1993 models)

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

<Pop-up operation–Operation by pop-up switch> (Up to 1993 models)

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

TROUBLESHOOTING HINTS

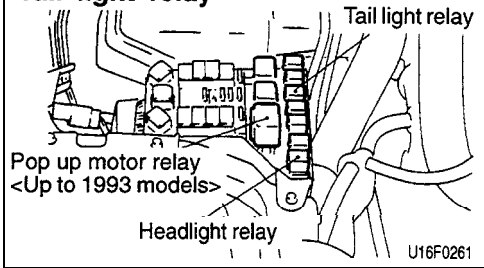
Phenomenon		Checking method
Headlights don't come on.	But the tail lights do illuminate.	Check the headlight relay. (Refer to P.54-108.)
		Check the lighting switch. (Refer to P.54-113.)
		Check the light automatic shut-OFF unit. (Refer to P.54-108.)
	The tail lights also don't illuminate.	Check the fusible link (3).
The low beam at both sides doesn't illuminate.		Check the "LO" contacts of the dimmer switch.
The upper beam at both sides doesn't illuminate.	The passing signal functions OK.	Check the "HI" contacts of the dimmer switch.
	The passing signal doesn't function.	Check the dimmer switch. (Refer to P.54-114.)
One headlight doesn't illuminate.		Check the bulb.
Can't switch from low to high beam or vice versa.		Check the dimmer switch. (Refer to P.54-114.)
The high beam indicator light doesn't illuminate.	The high beam of the headlights is normal.	Check dedicated fuse No. (5).
		Check the bulb.
Headlights are not automatically shut off.	Tail lights are automatically shut off.	Check the light automatic shut-OFF unit. (Refer to P.54-108.)
	Tail lights are not automatically shut off either.	Check the driver's side door switch. (Refer to GROUP 52B – Door Assembly.)
		Check the light automatic shut-OFF unit. (Refer to P.54-108.)
Headlights do not rise*.	They rise only when the lighting switch is operated.	Check the pop-up switch input signal. (Refer to P.54-109.)
		Check the pop-up switch. (Refer to P.54-109.)
	They rise only when the pop-up switch is operated.	Check the lighting switch. (Refer to P.54-113.)
Headlights do not retract*.		Check the pop-up switch input signal. (Refer to P.54-109.)
		Check the pop-up switch. (Refer to P.54-109.)
One headlight does not move*.		Check the pop-up motor relay. (Refer to P.54-109.)
		Check the pop-up motor. (Refer to P.54-104.)

NOTE
(1) *Up to 1993 models
(2) For information concerning the theft-alarm system, refer to P.54-222.

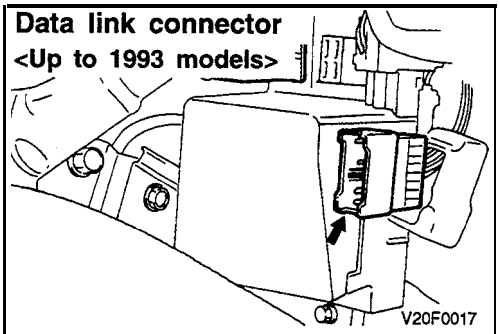
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COMPONENT LOCATION

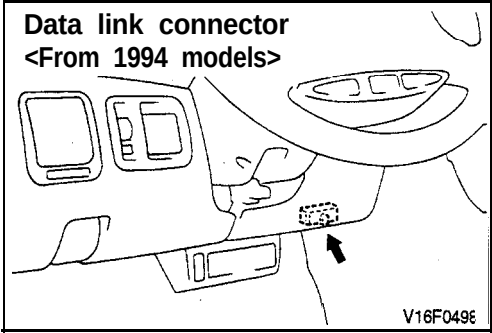
Headlight relay/Pop-up motor relay/ Tail light relay



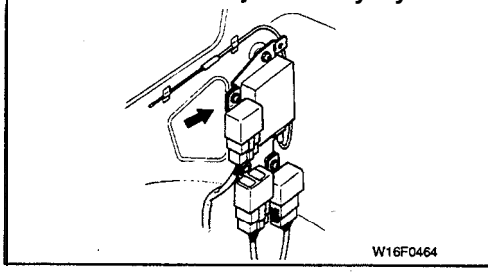
Data link connector
<Up to 1993 models>



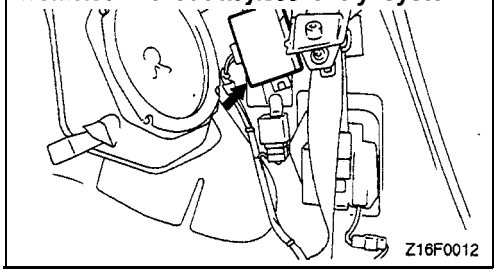
Data link connector
<From 1994 models>



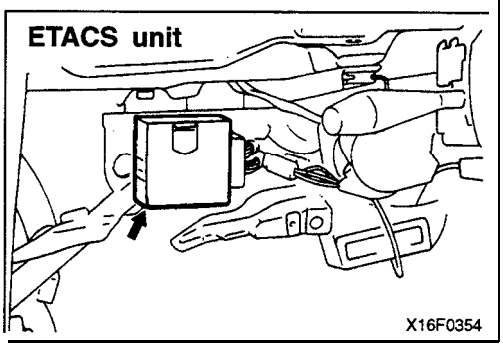
Light automatic shut-off unit
<Vehicles with keyless entry system>



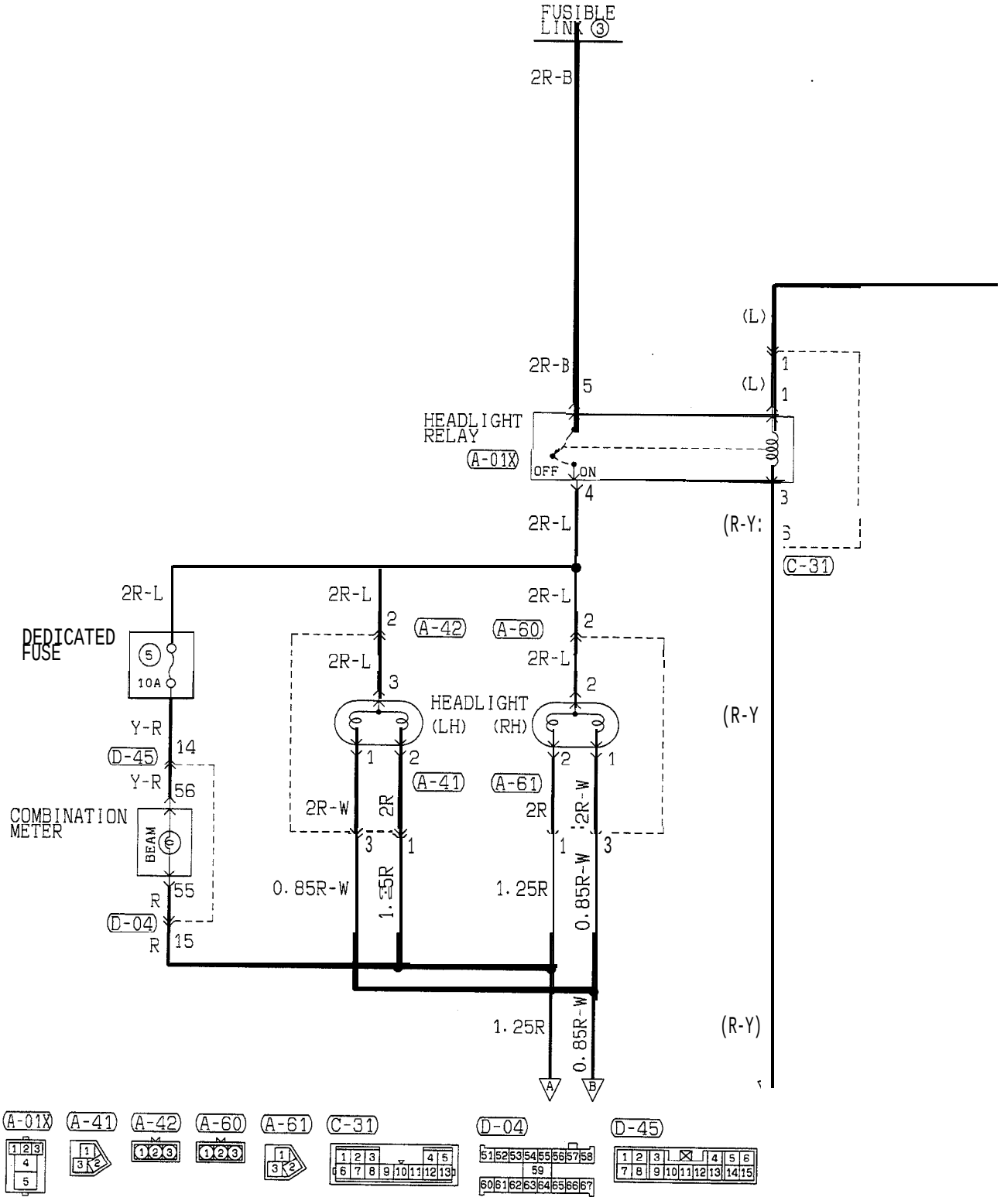
Light automatic shut-off unit
<Vehicles without keyless entry system>



ETACS unit

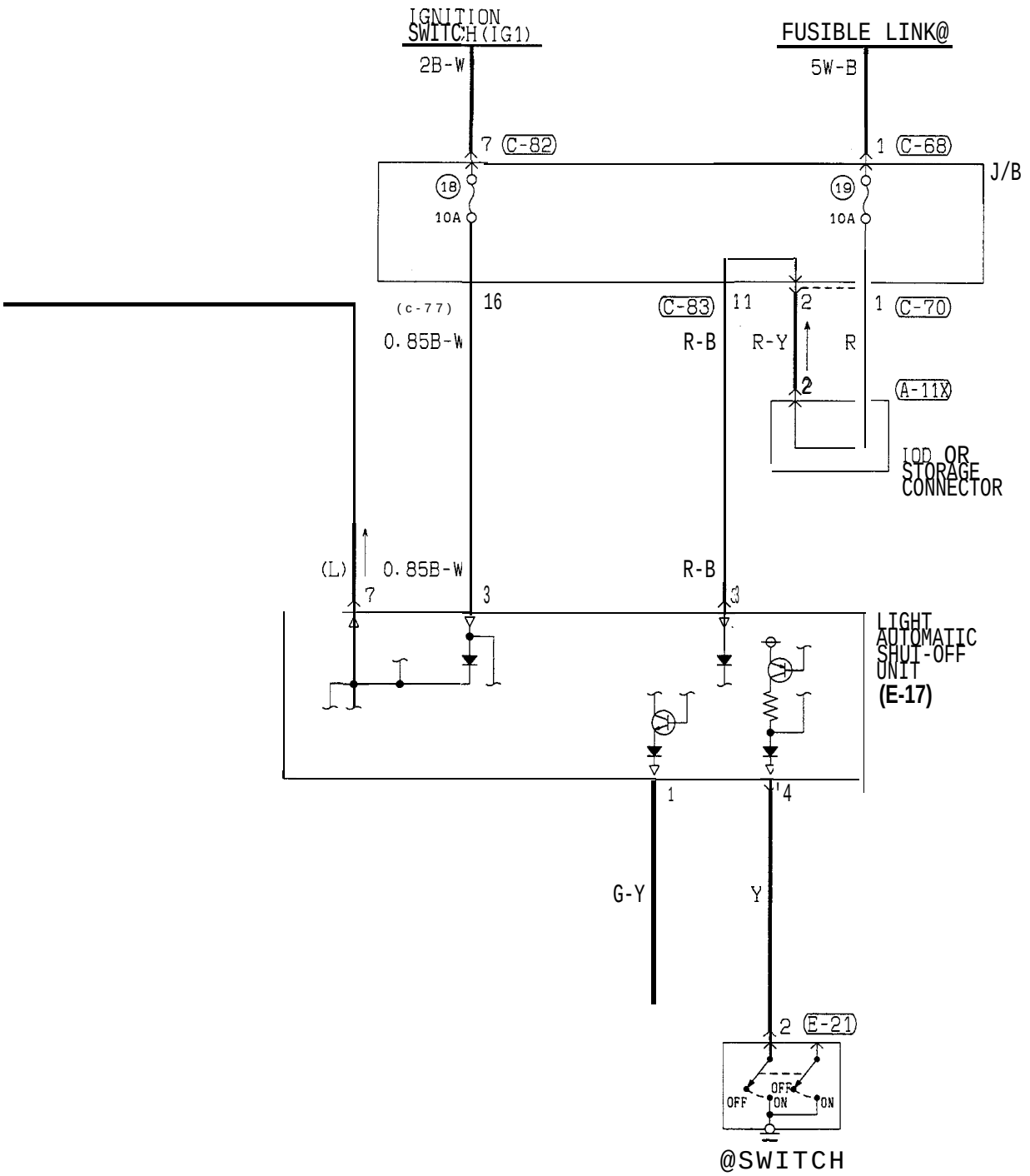


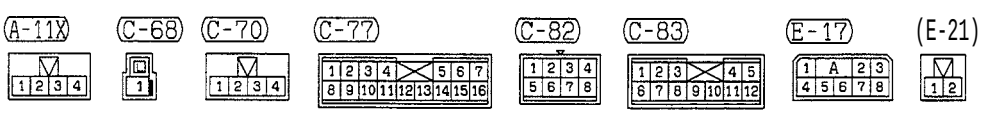
CIRCUIT DIAGRAM <VEHICLES WITHOUT THEFT-ALARM SYSTEM (UP TO 1993 MODELS)>



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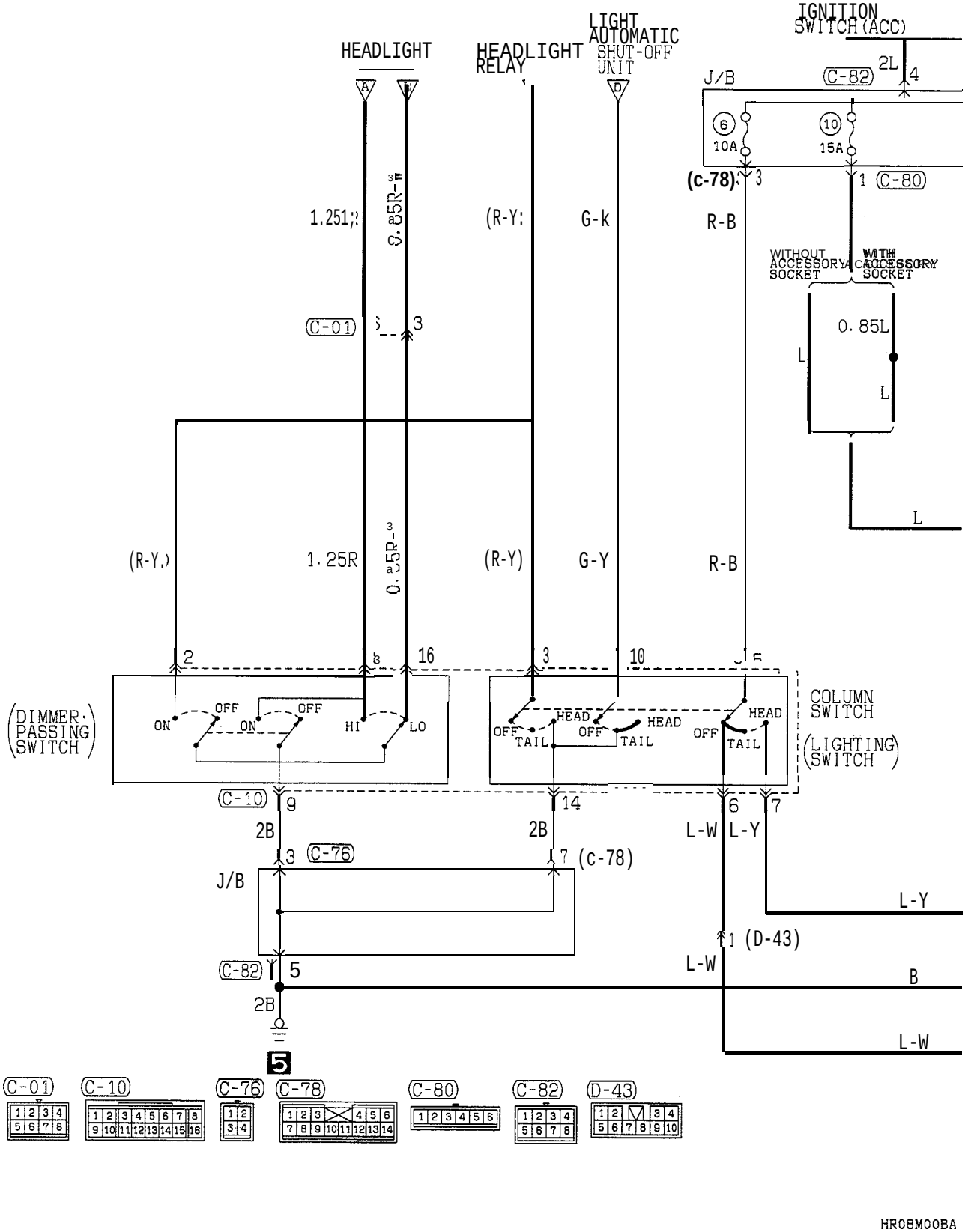
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IGNITION SWITCH(IG1)
2B-W
FUSIBLE LINK@
5W-B
7 C-82
1 C-68
J/B
18
10A
19
10A
(c-77)
16
0.85B-W
C-83
11
R-B
2
R-Y
1 C-70
R
2
A-11X
IOD OR STORAGE CONNECTOR
(L)
0.85B-W
7
3
R-B
3
LIGHT AUTOMATIC SHUT-OFF UNIT
(E-17)
1
4
G-Y
Y
2 E-21
OFF
OFF
ON
ON
@SWITCH


A-11X
C-68
C-70
C-77
C-82
C-83
E-17
E-21

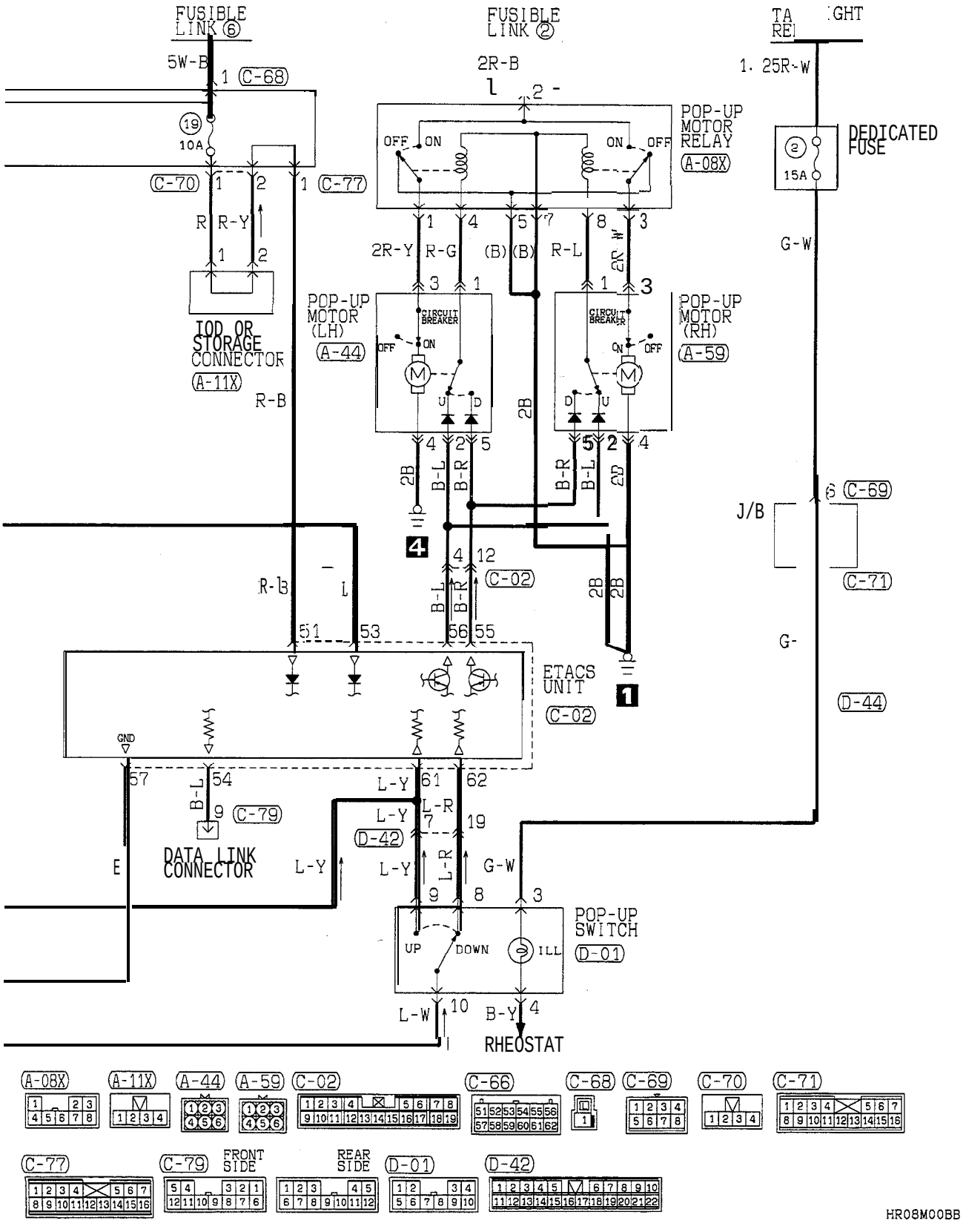
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CIRCUIT DIAGRAM <VEHICLES WITHOUT THEFT-ALARM SYSTEM (UP TO 1993 MODELS)> (CONTINUED)



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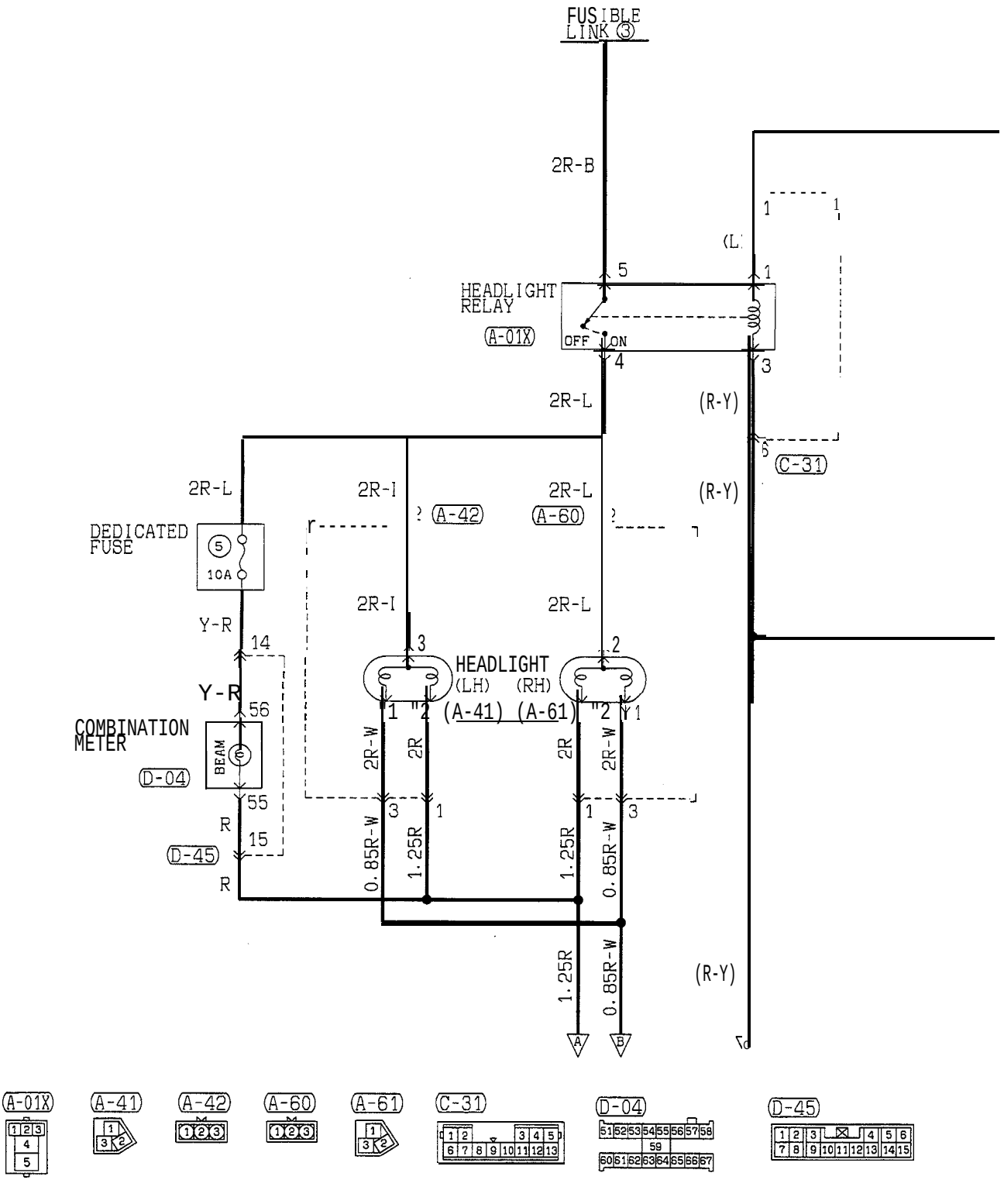
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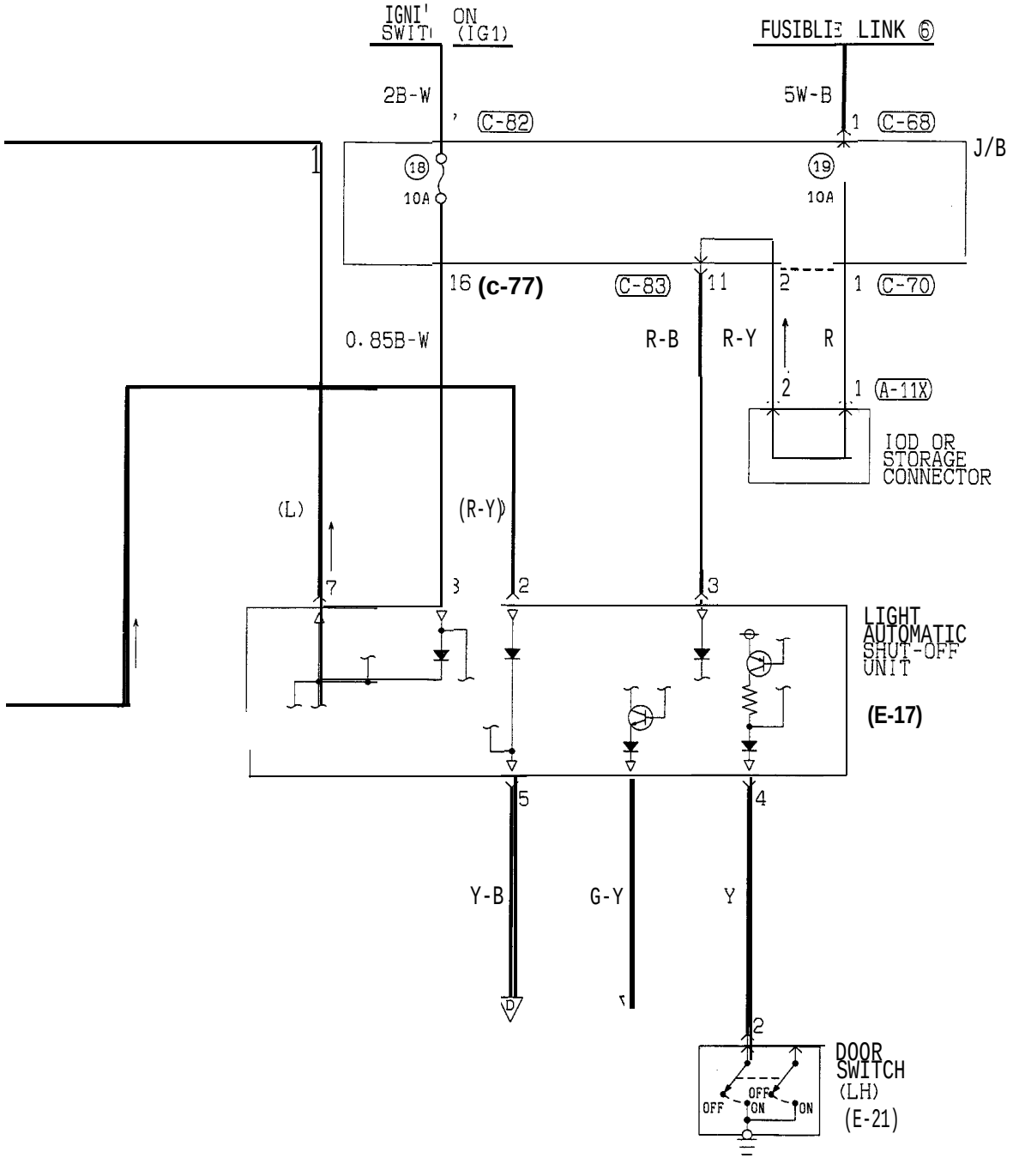
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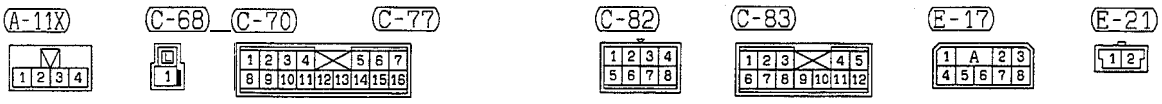
CIRCUIT DIAGRAM <VEHICLES WITH THEFT-ALARM SYSTEM (UP TO 1993 MODELS)>



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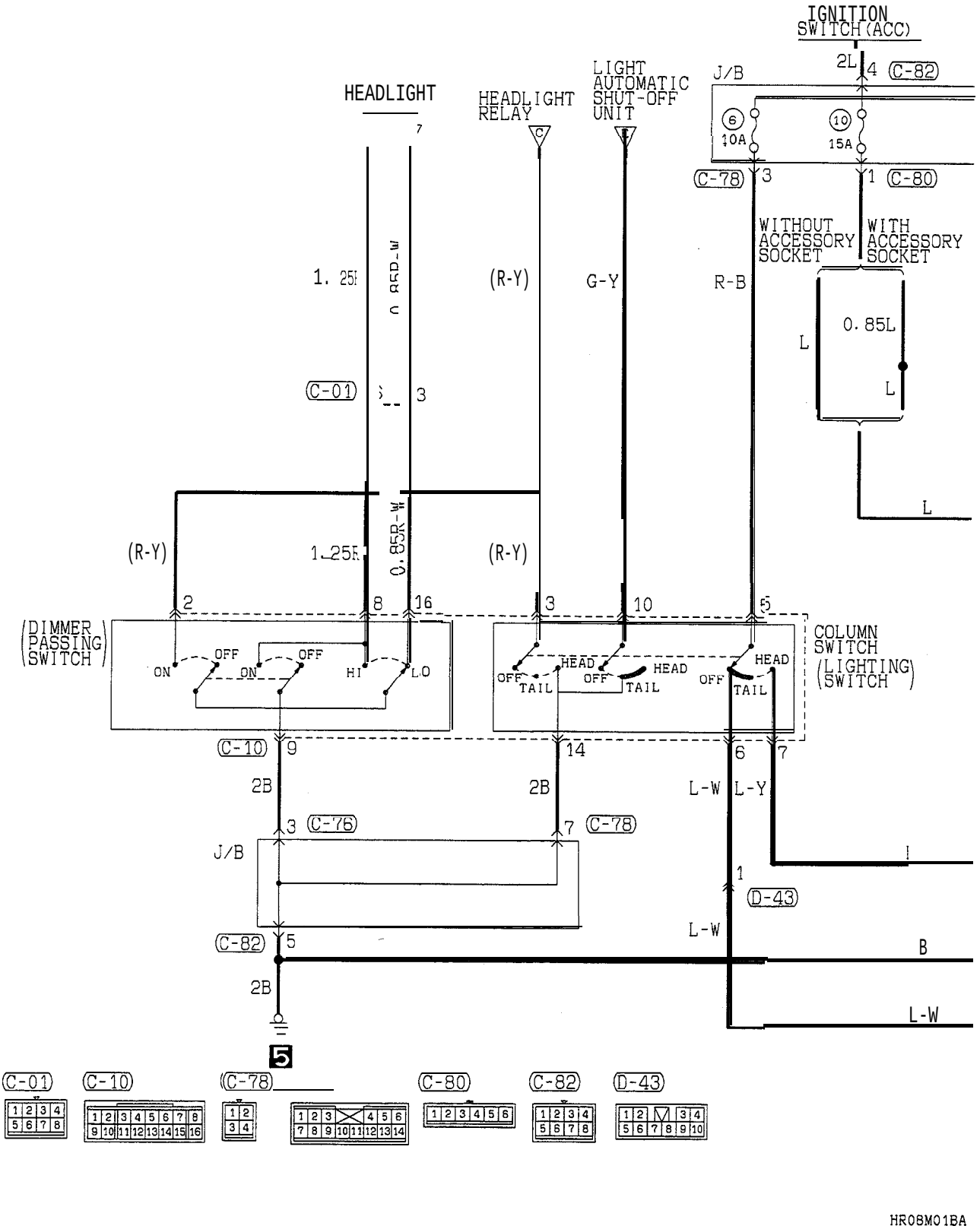




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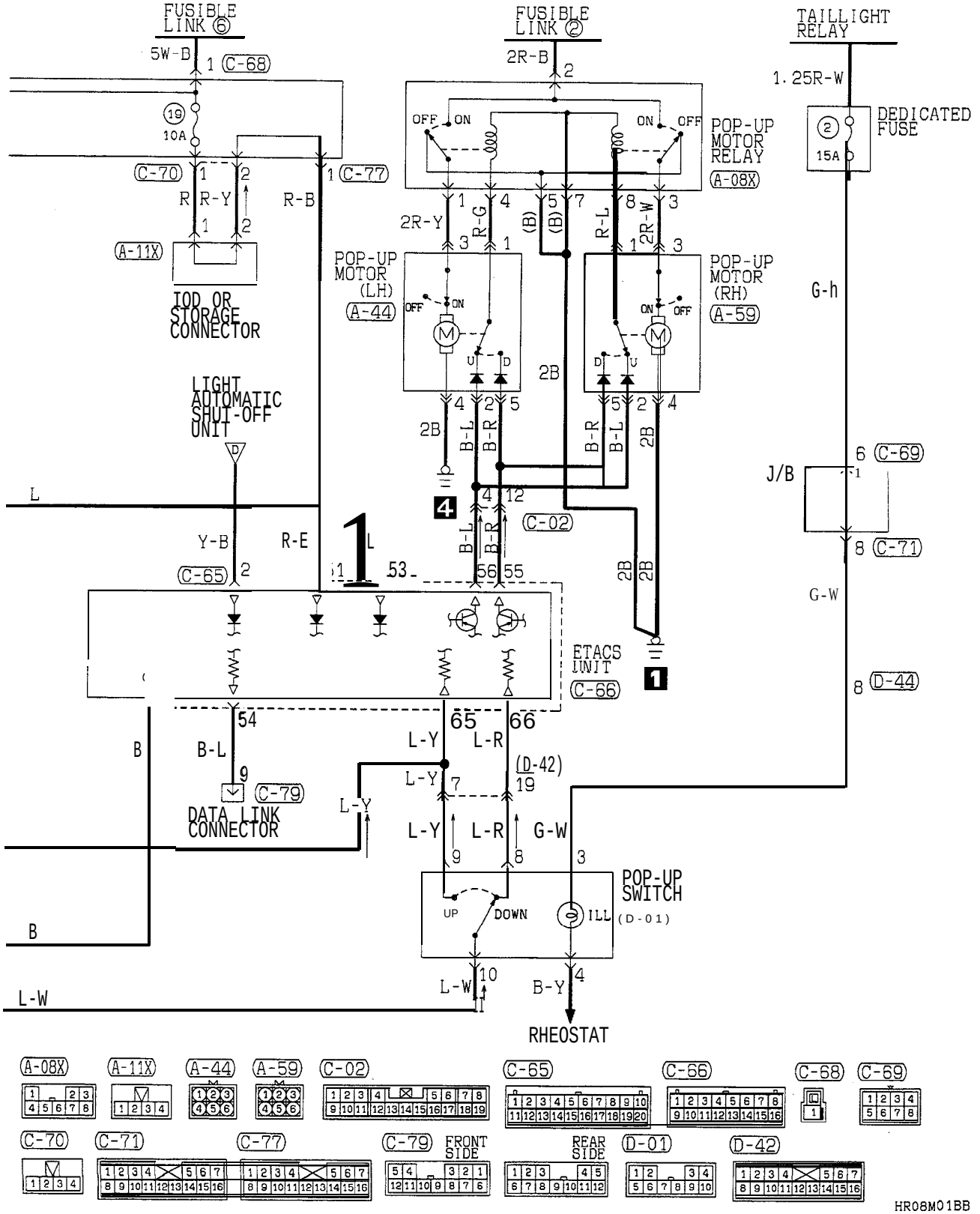
TSB Revision

CIRCUIT DIAGRAM <VEHICLES WITH THEFT-ALARM SYSTEM (UP TO 1993 MODELS)> (CONTINUED)



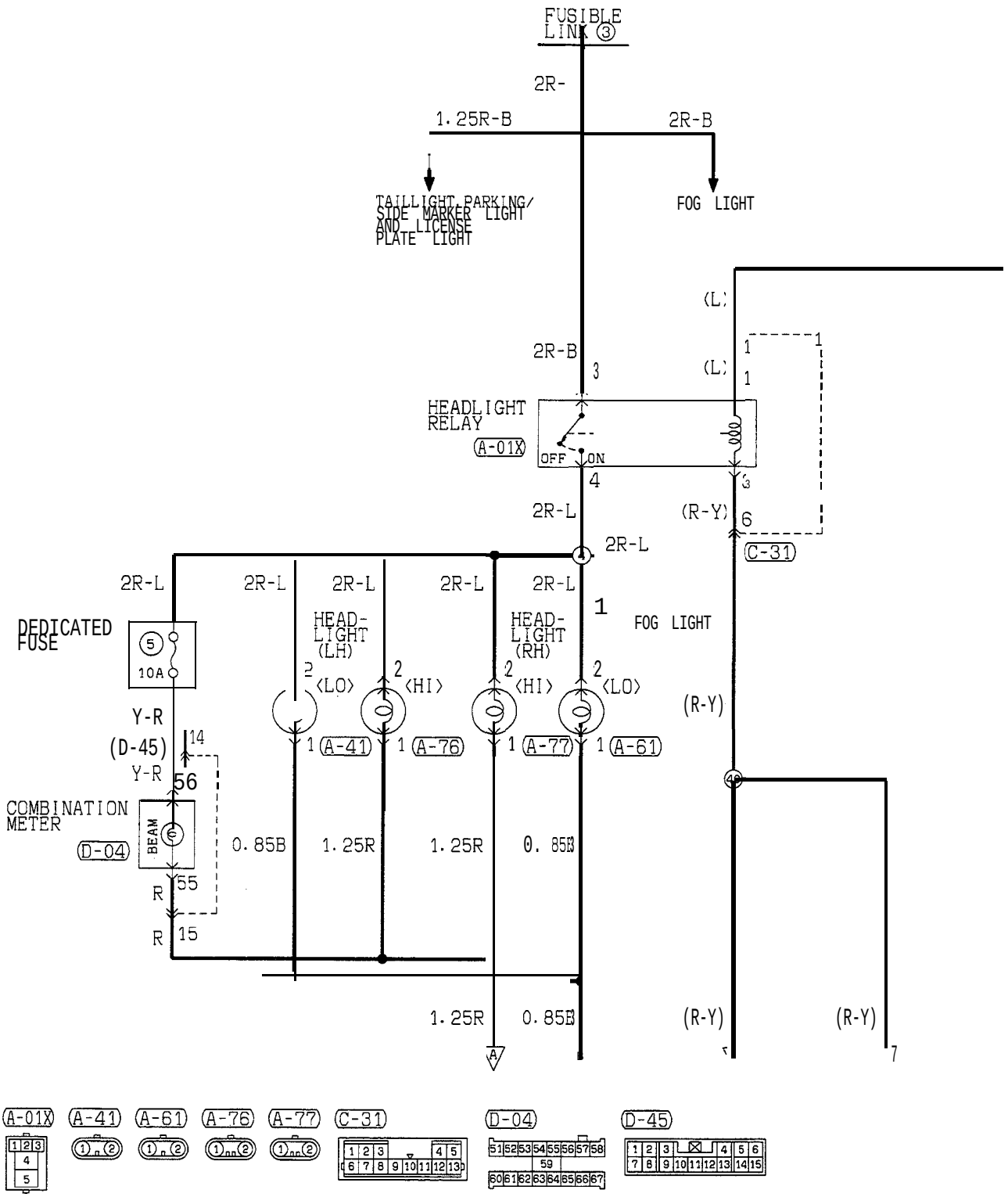
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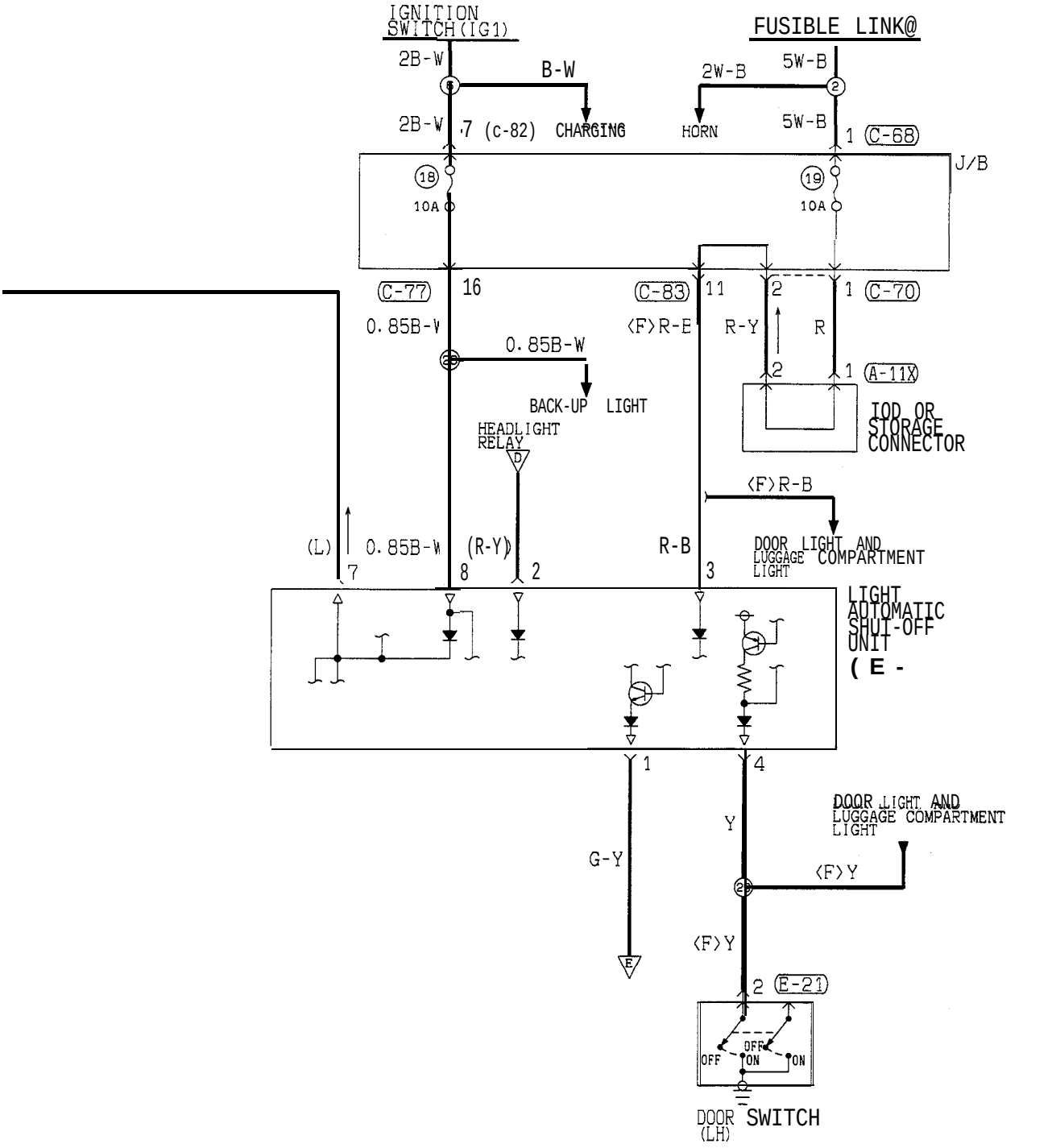
CIRCUIT DIAGRAM <VEHICLES WITHOUT THEFT-ALARM SYSTEM (FROM 1994 MODELS)>



A-01X A-41 A-61 A-76 A-77 C-31 D-04 D-45

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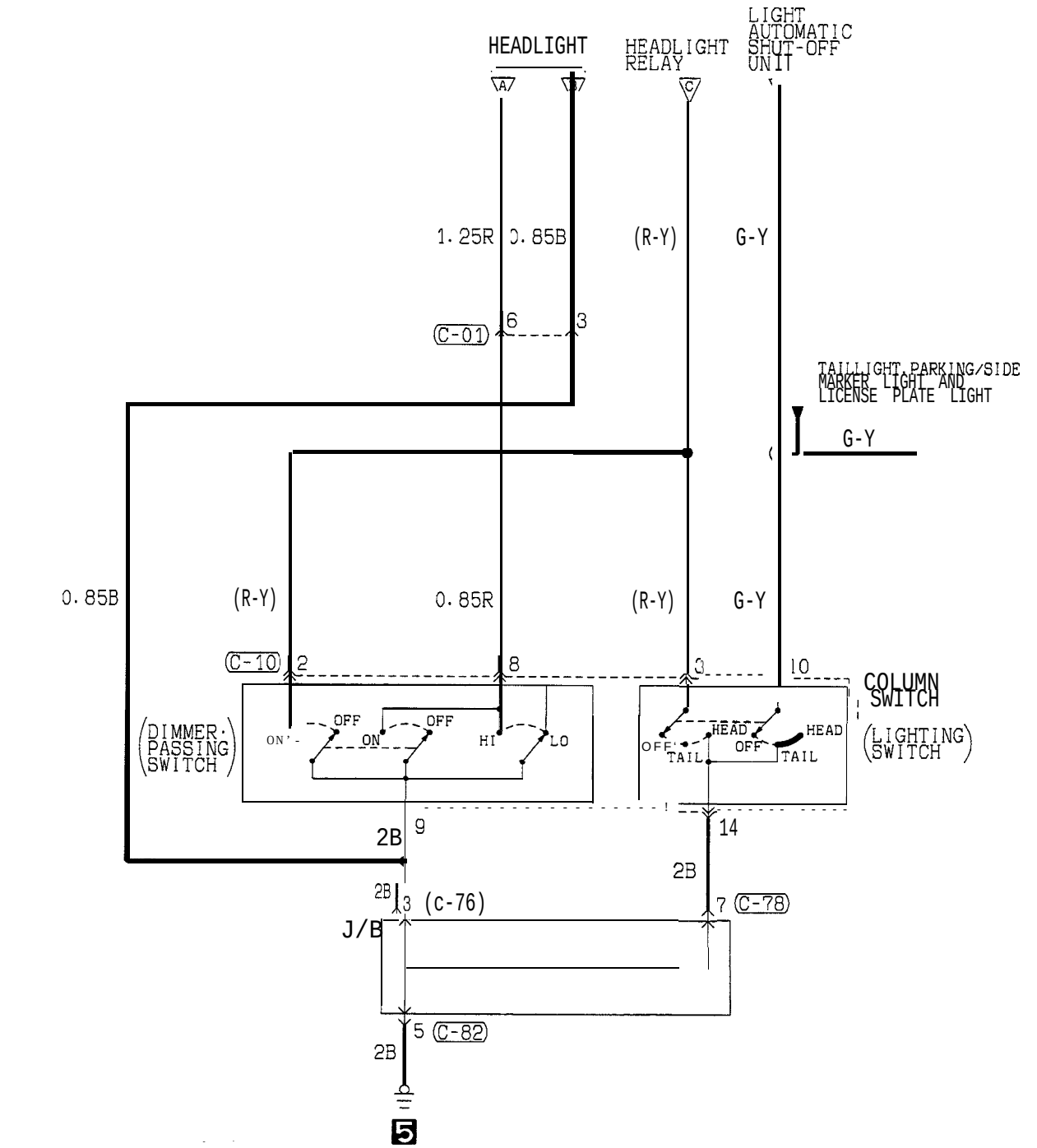
TSB Revision

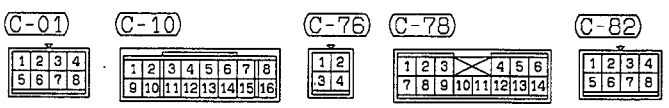


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TSB Revision

CIRCUIT DIAGRAM <VEHICLES WITHOUT THEFT-ALARM SYSTEM (FROM 1994 MODELS)> (CONTINUED)



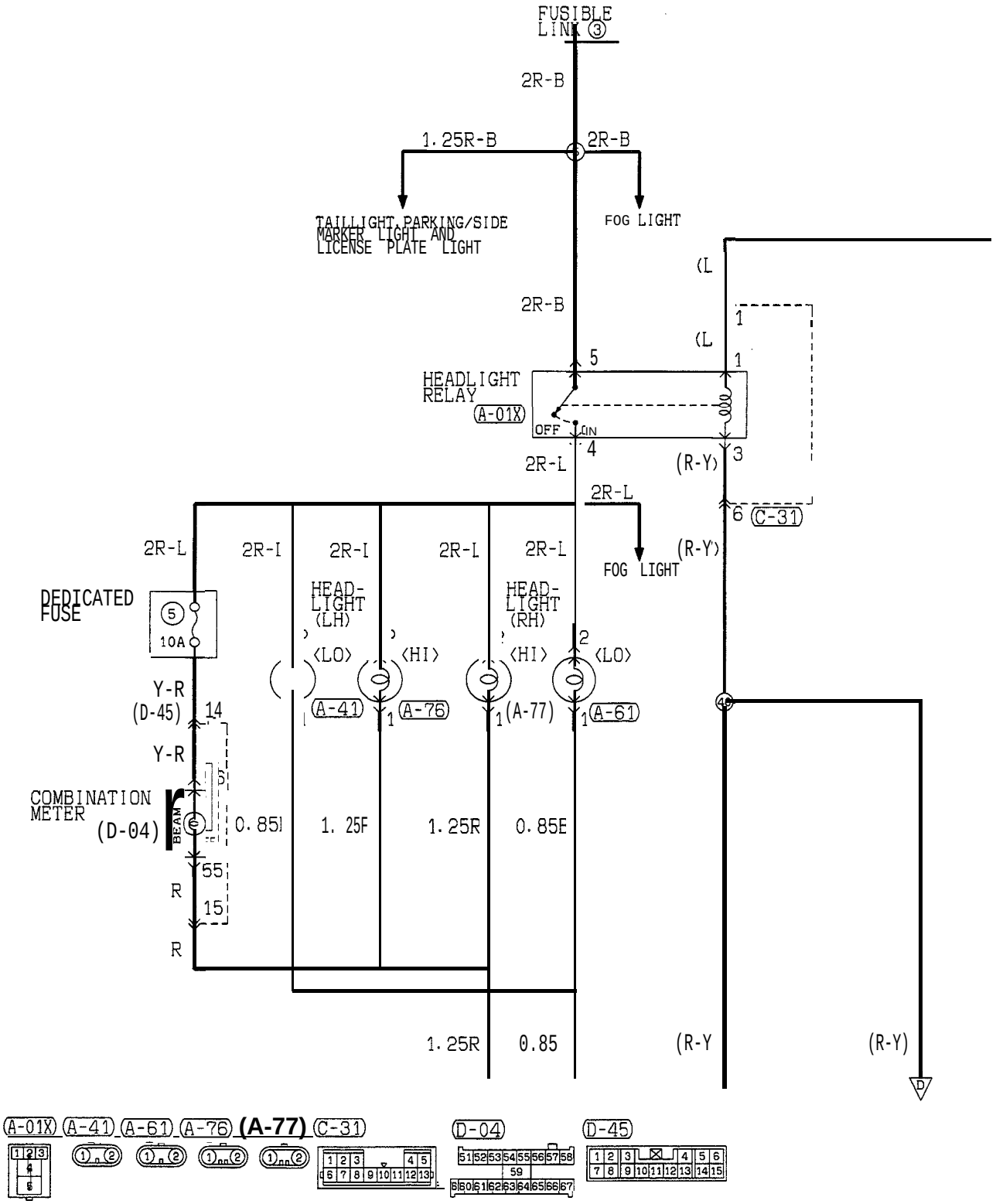


HR08M02BA

TSB Revision

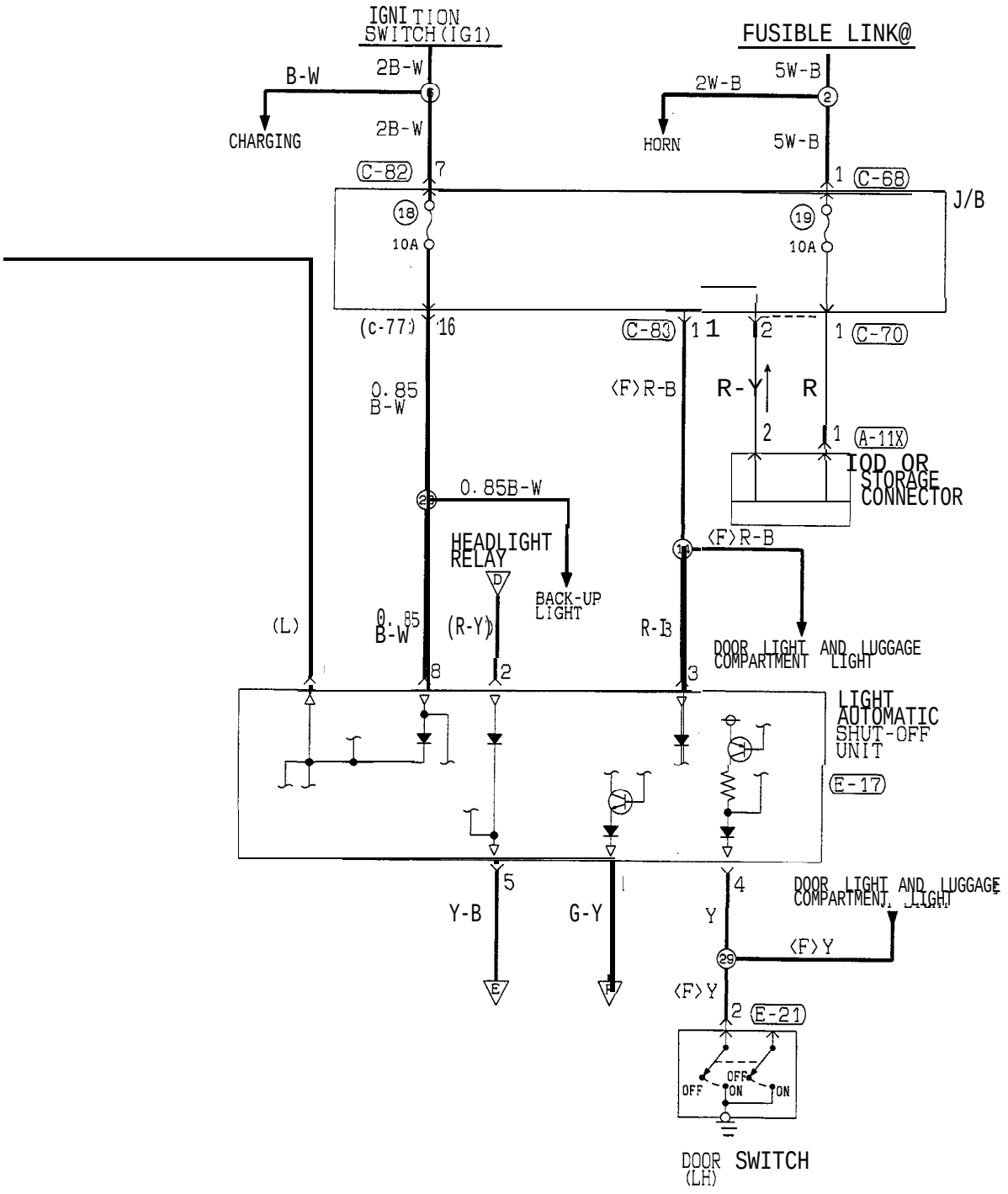
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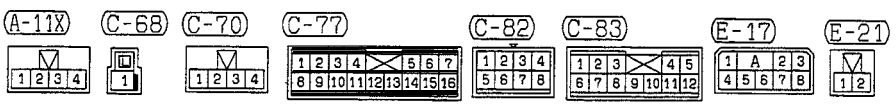
CIRCUIT DIAGRAM <VEHICLES WITH THEFT-ALARM SYSTEM (FROM 1994 MODELS)>



HR08M03AA

TSB Revision

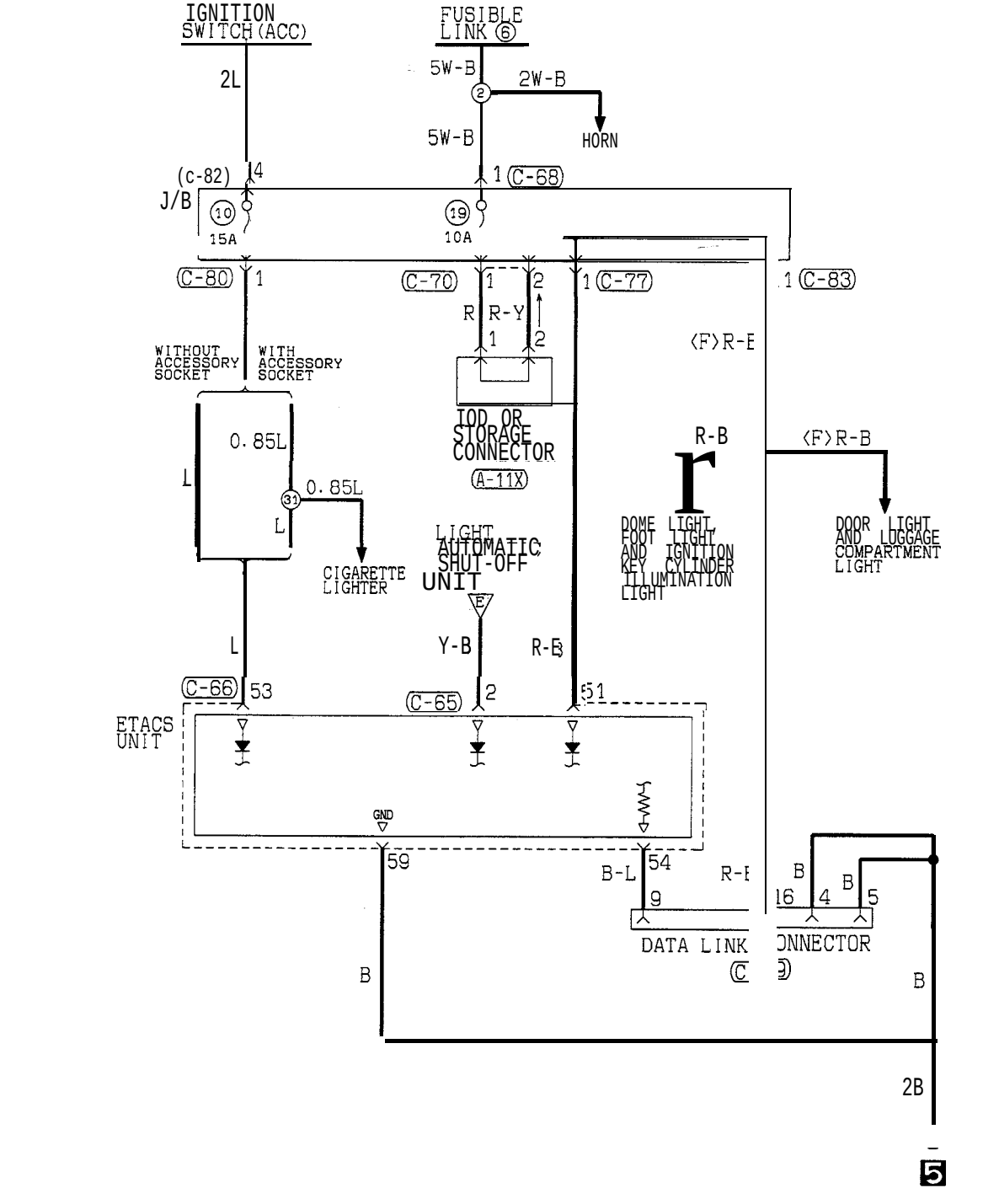


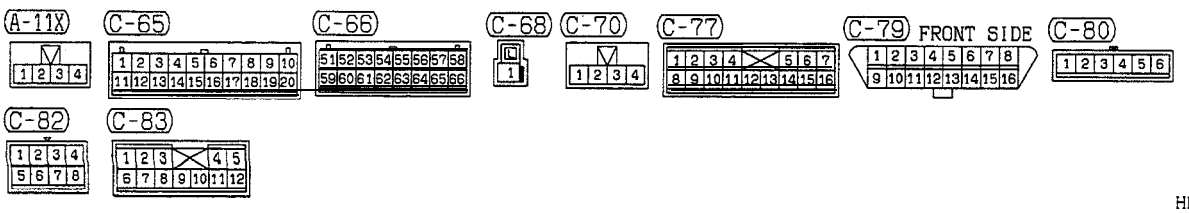


HR08M03AB

TSB Revision

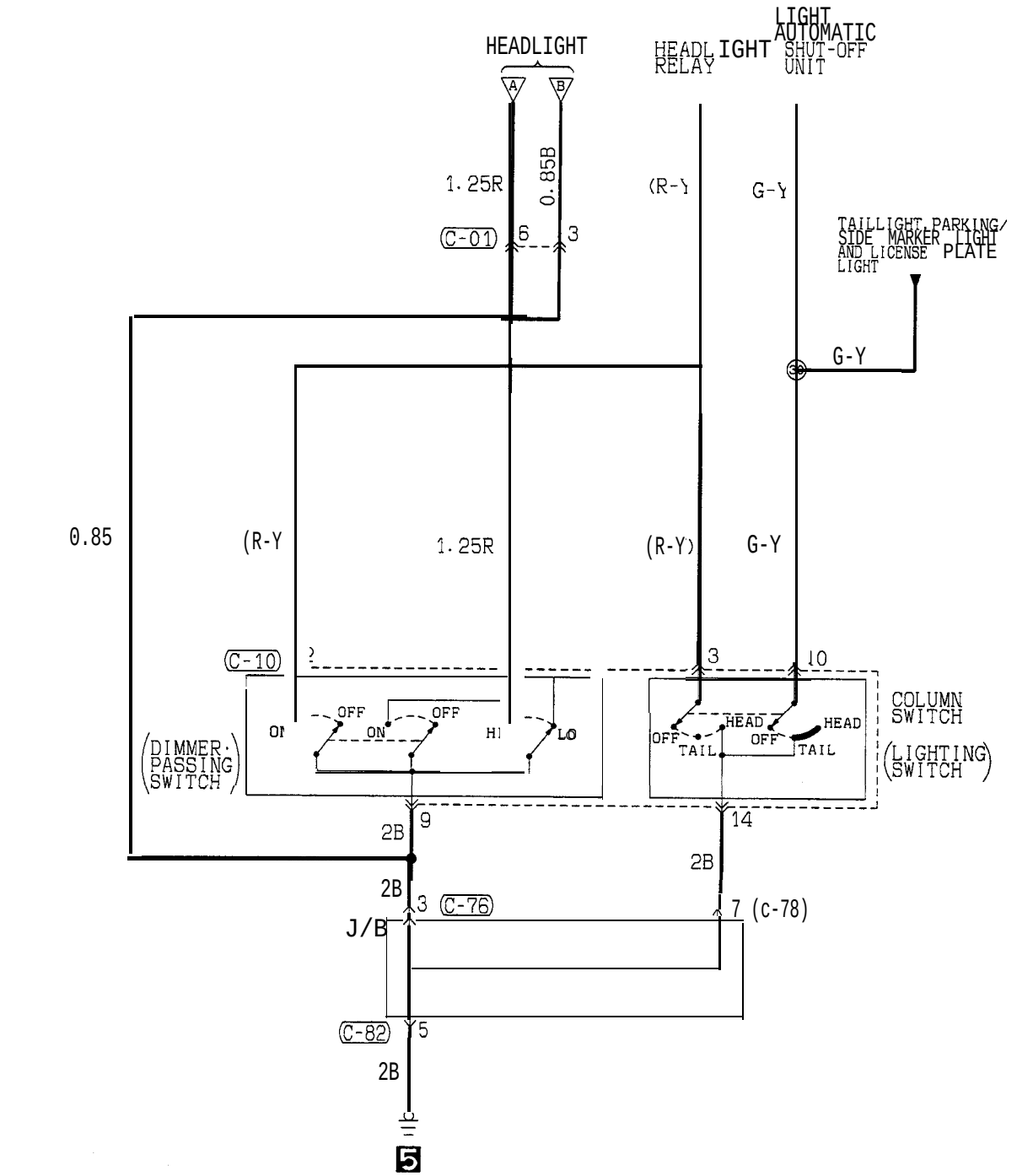
CIRCUIT DIAGRAM <VEHICLES WITH THEFT-ALARM SYSTEM (FROM 1994 MODELS)> (CONTINUED)





HR08M03BA

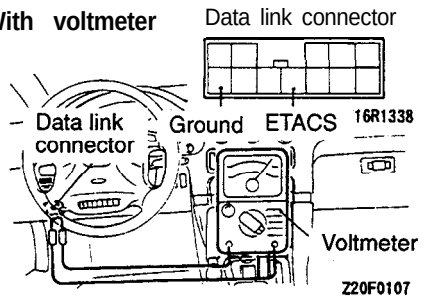
TSB Revision



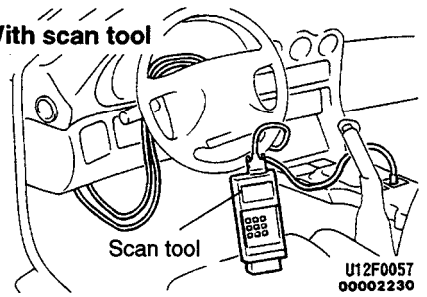
HR08M03BB

TSB Revision 1

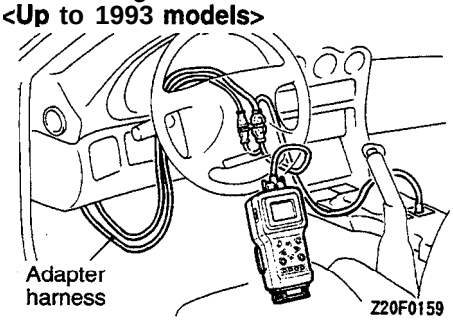
With voltmeter



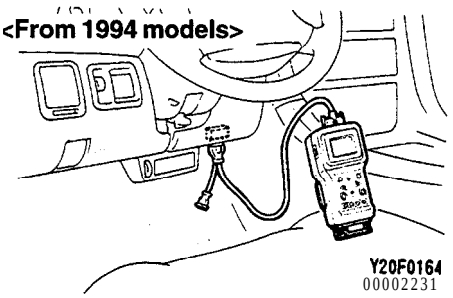
With scan tool

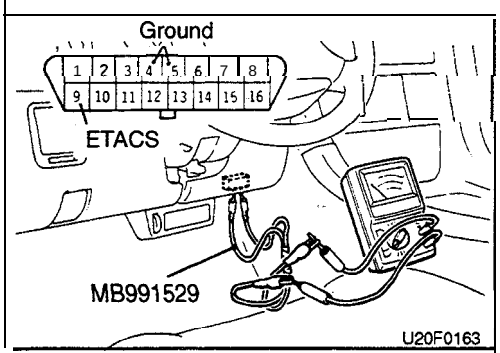


When using the MUT-II
<Up to 1993 models>



<From 1994 models>





INPUT SIGNAL

<Up to 1993 models>

When using the scan tool (MUT) or voltmeter

Using the scan tool or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

(1) Connect the scan tool to the data link connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

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

<All models>

When using the scan tool (MUT-II)

(1) Connect the scan tool to the data link connector. When connecting the scan tool to a vehicle up to 1993 models, use the adapter harness supplied together.

Caution
Turn off the ignition switch beforehand whenever the scan tool is connected or disconnected.

(2) If the scan tool makes a peep sound when each switch is operated (turned ON/OFF), the input signal to ECU is normally sent from the switch circuit system.

<From 1994 models>

When using the voltmeter

(1) Connect a voltmeter to the ETACS terminal and the ground terminal of the data link connector using the special tool.

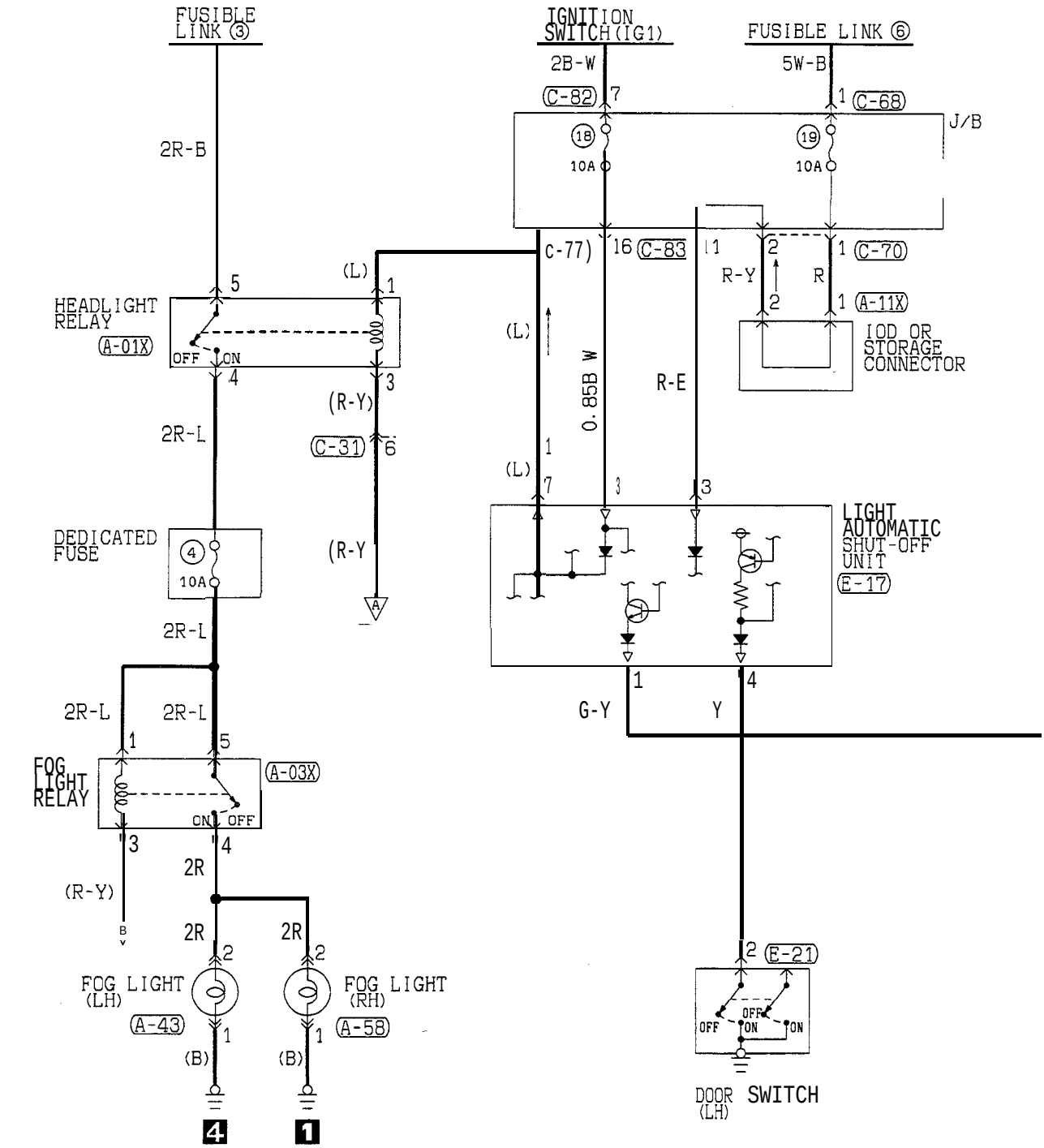
(2) If the voltmeter pointer deflects once when each switch is operated (turned ON/OFF), the input signal to ECU is normally sent from the switch circuit system.

TSB Revision

NOTES

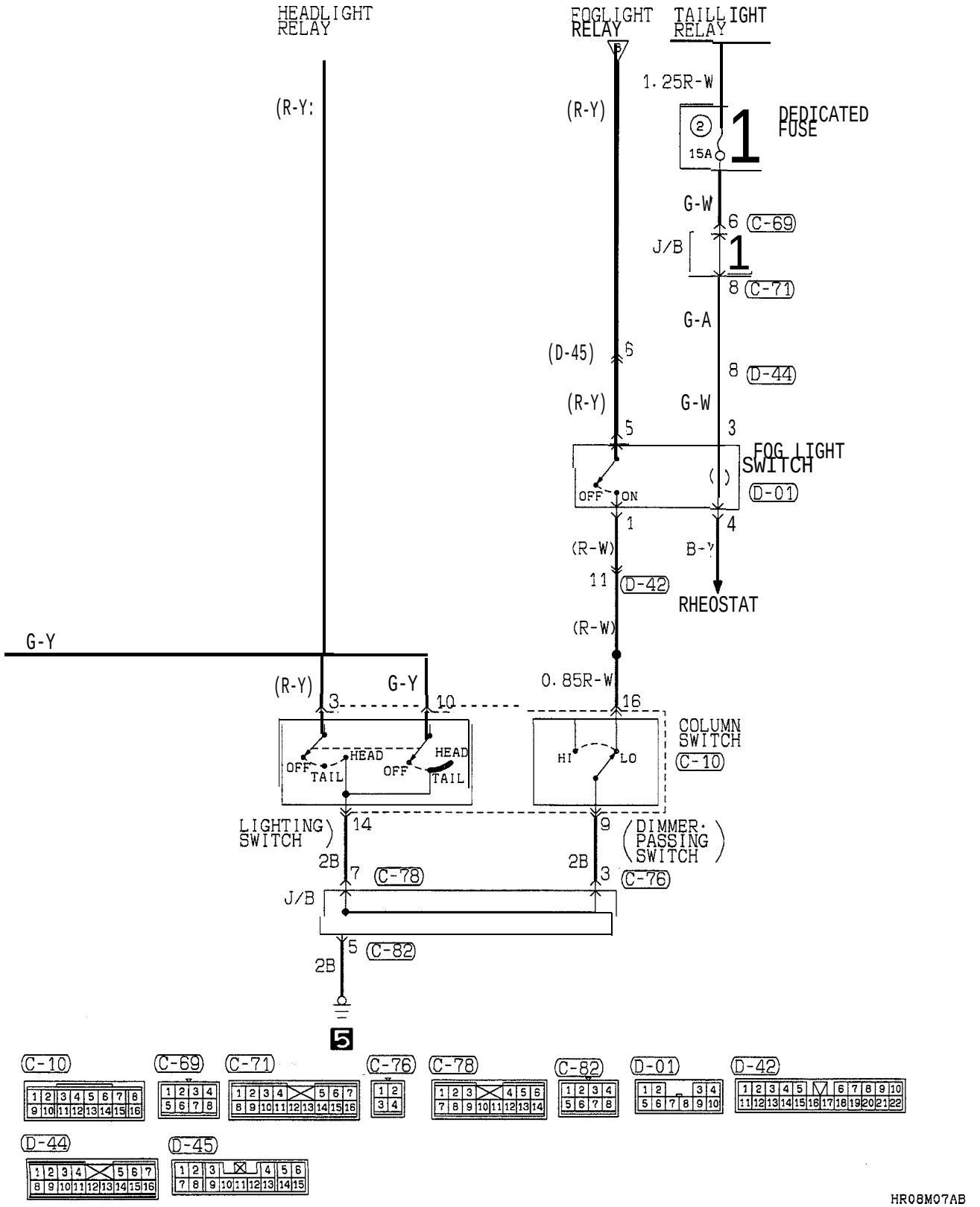
FOG LIGHT CIRCUIT

CIRCUIT DIAGRAM (UP TO 1993 MODELS)



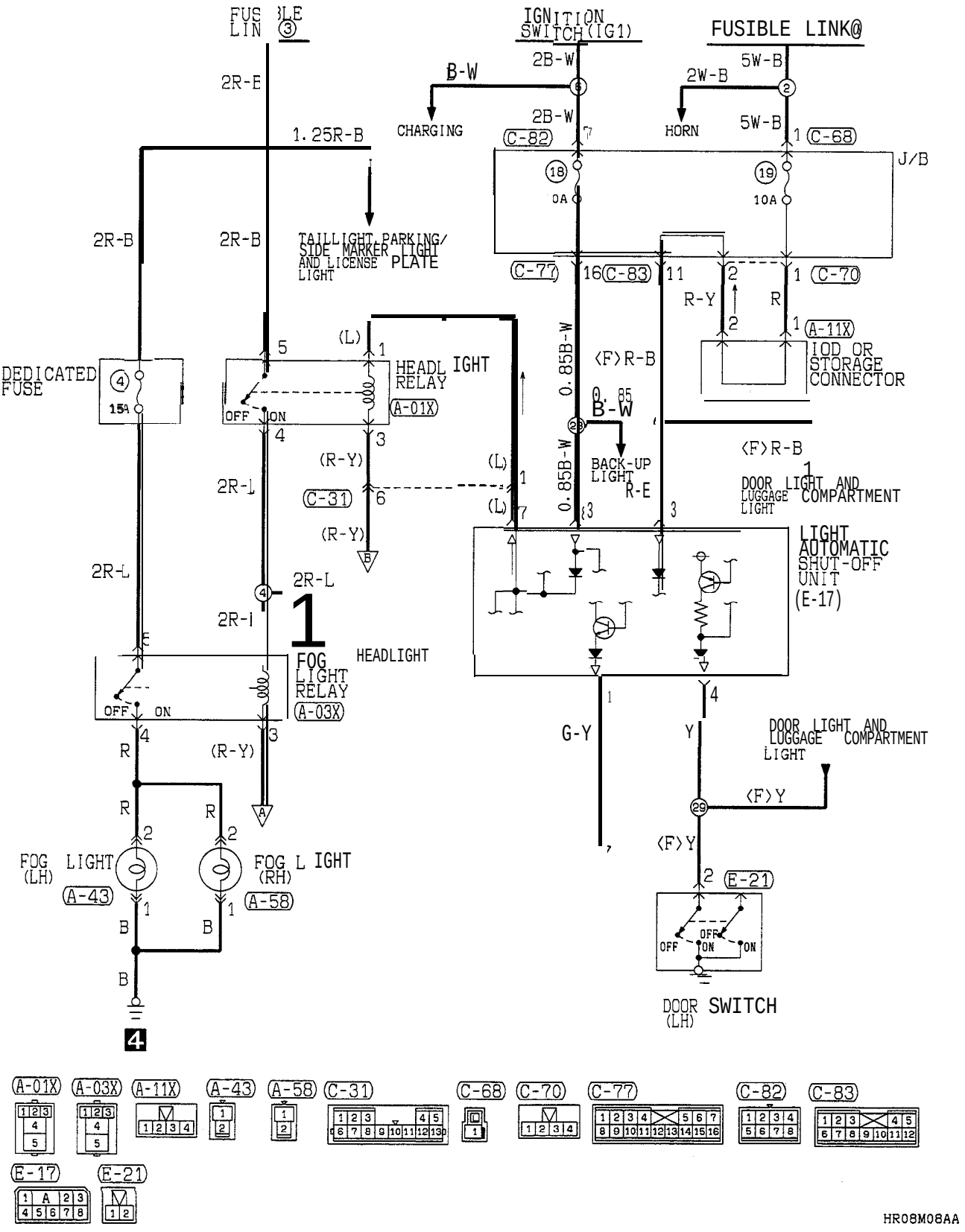
HR08M07AA

TSB Revision



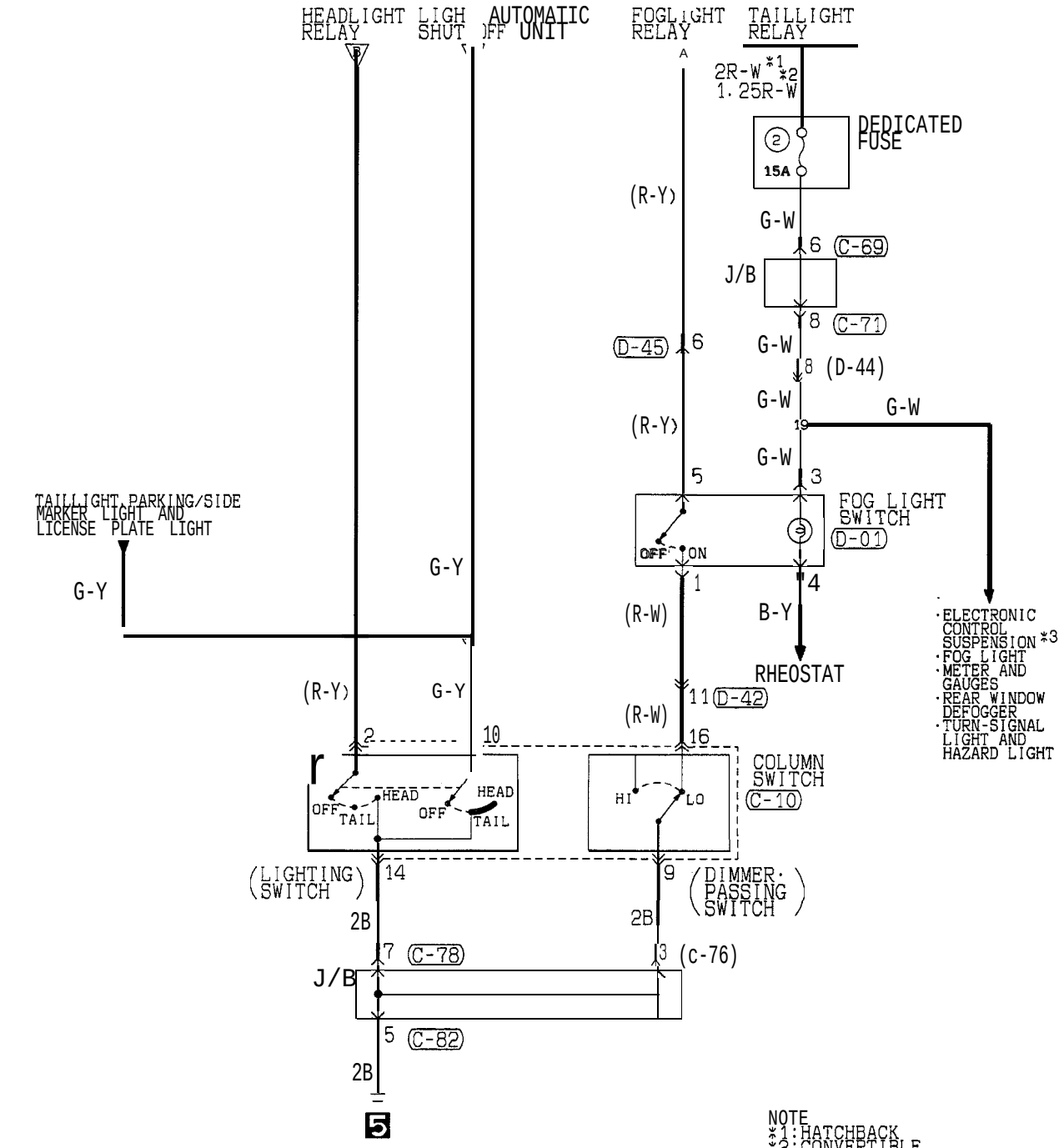
TSB Revision

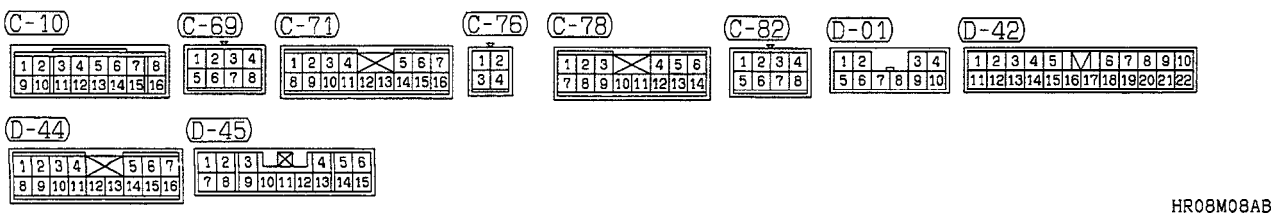
CIRCUIT DIAGRAM (FROM 1994 MODELS)



HR08M08AA

TSB Revision





HR08M08AB

TSB Revision

OPERATION

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

NOTE
The fog lights are included in the light automatic shut-OFF system. (Refer to P.54-37). The indicator lights are also included in the same system.

Fog Lights Operation Conditions

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

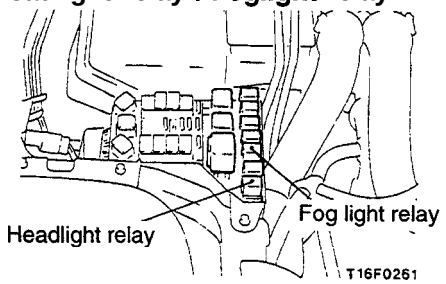
TROUBLESHOOTING HINTS

1. The right or left fog lights only go on.
   - Check the bulb.
2. Fog lights do not go on when the fog light switch is set at ON.
   - Check the dedicated fuse (4).
   - Check the fog light relay. (Refer to P.54-108).
   - Check the fog light switch.

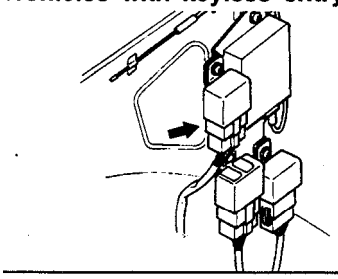
NOTE
For the light automatic shut-OFF system troubleshooting hints, refer to P.54-38.

COMPONENT LOCATION

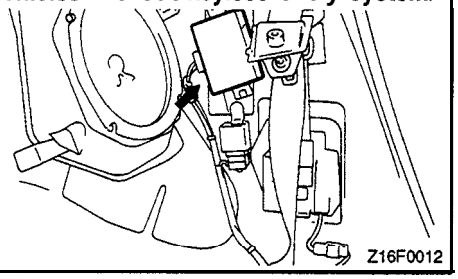
Headlight relay / Foglight relay



Light automatic shut-off unit
<Vehicles with keyless entry system>

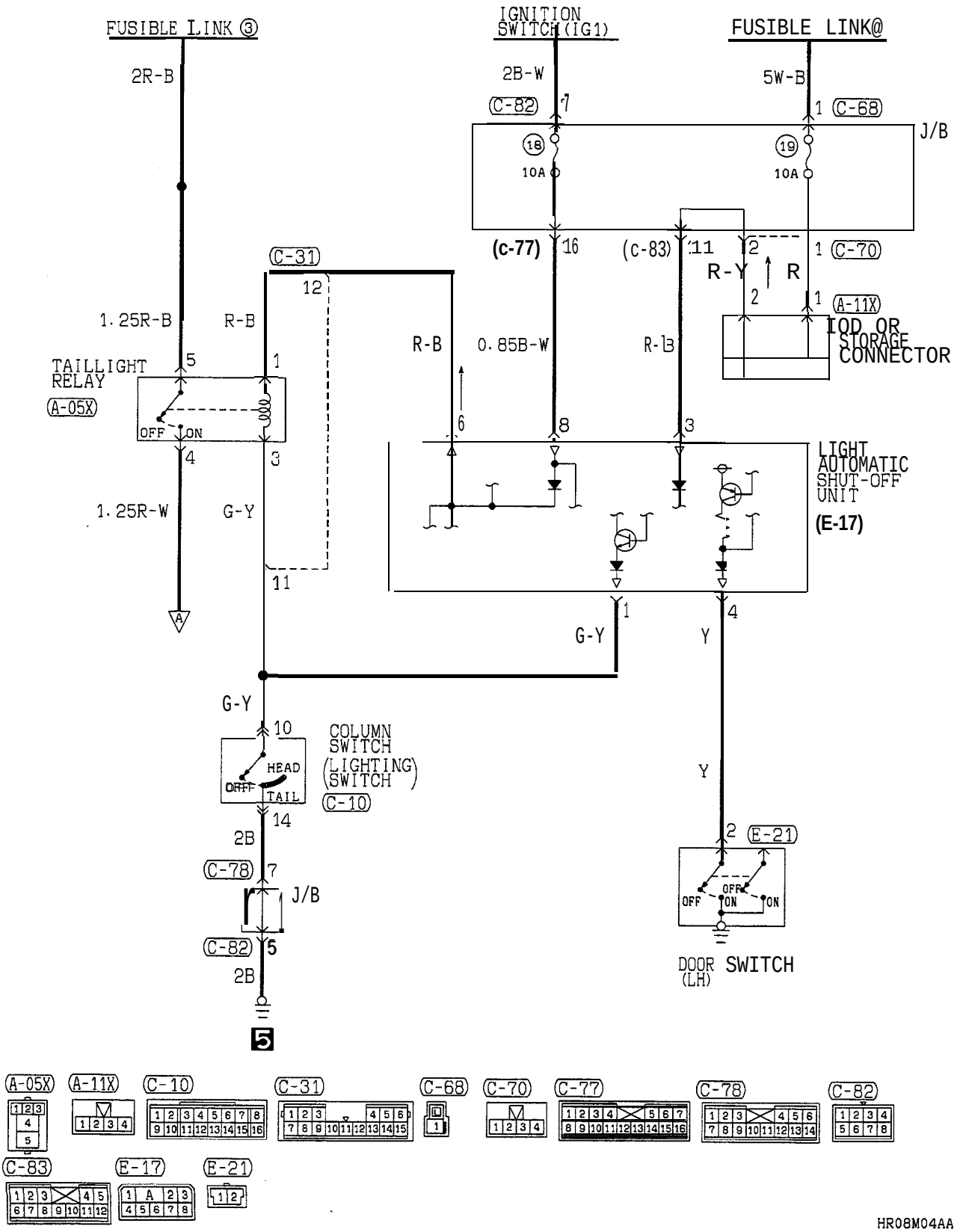


Light automatic shut-off unit
<Vehicles without keyless entry system>



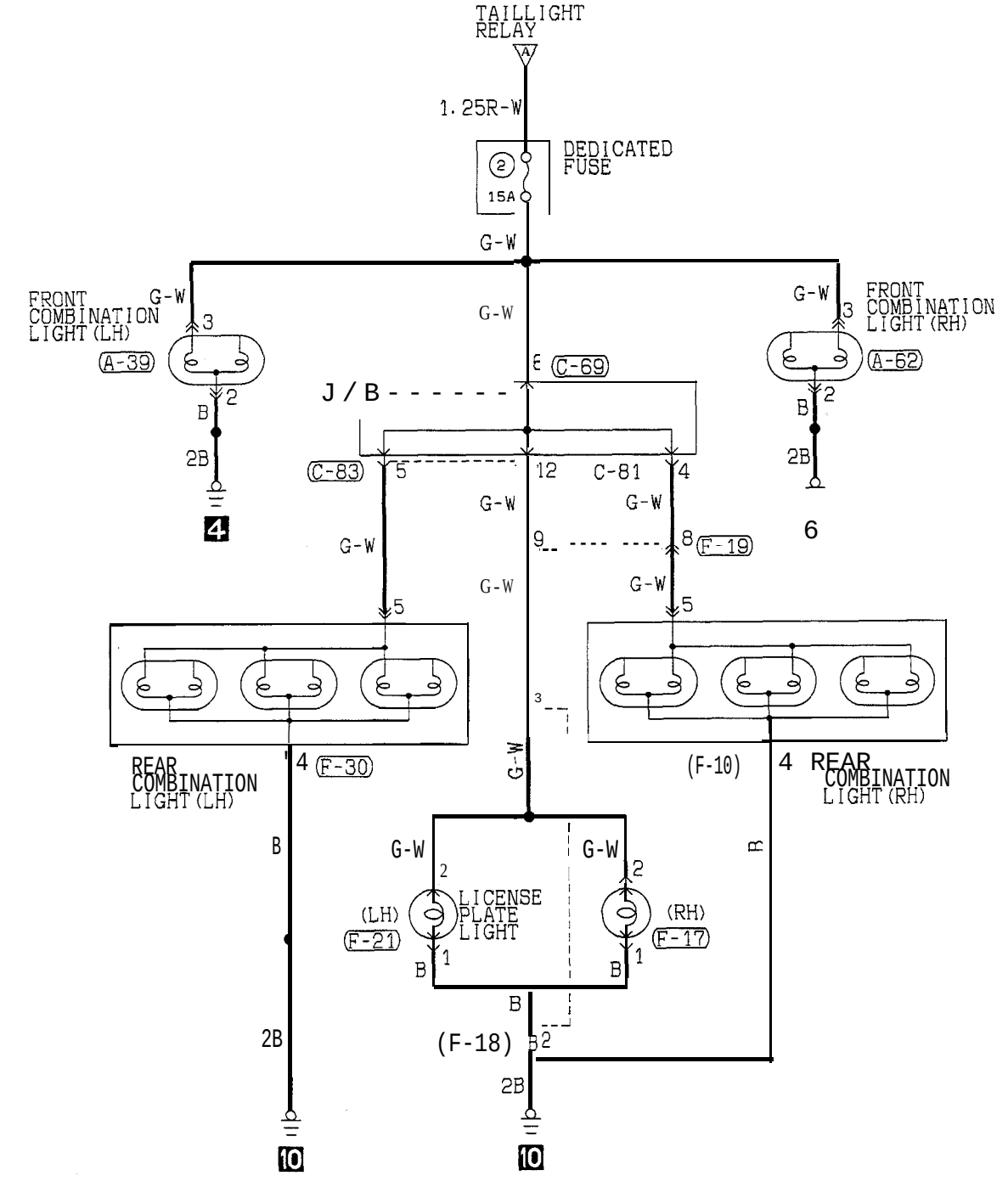
TAIL LIGHT, PARKING/SIDE MARKER LIGHT AND LICENSE PLATE LIGHT

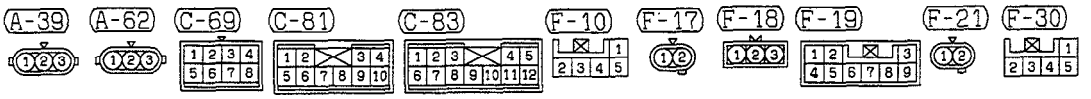
CIRCUIT DIAGRAM (UP TO 1993 MODELS)



HR08M04AA

TSB Revision

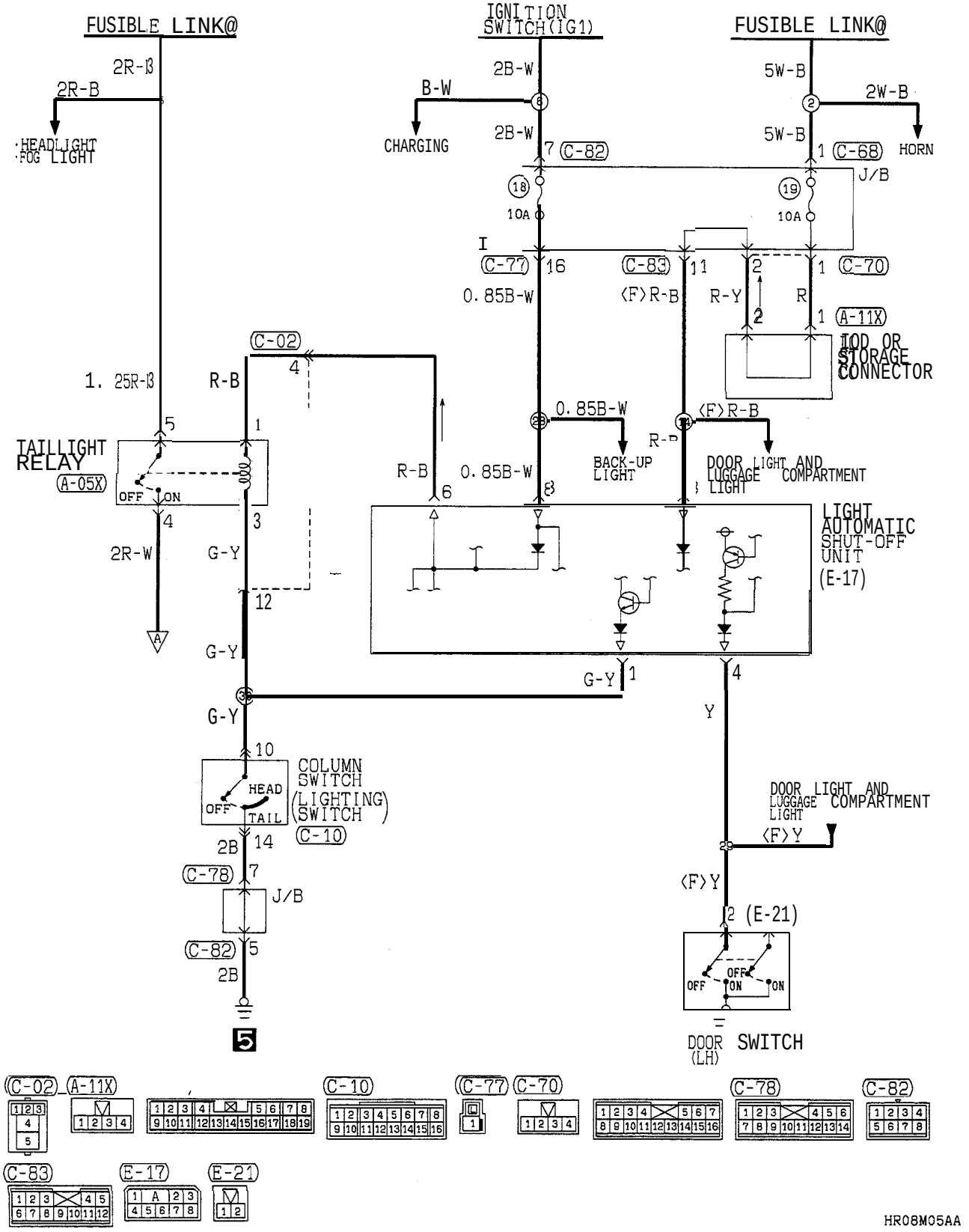




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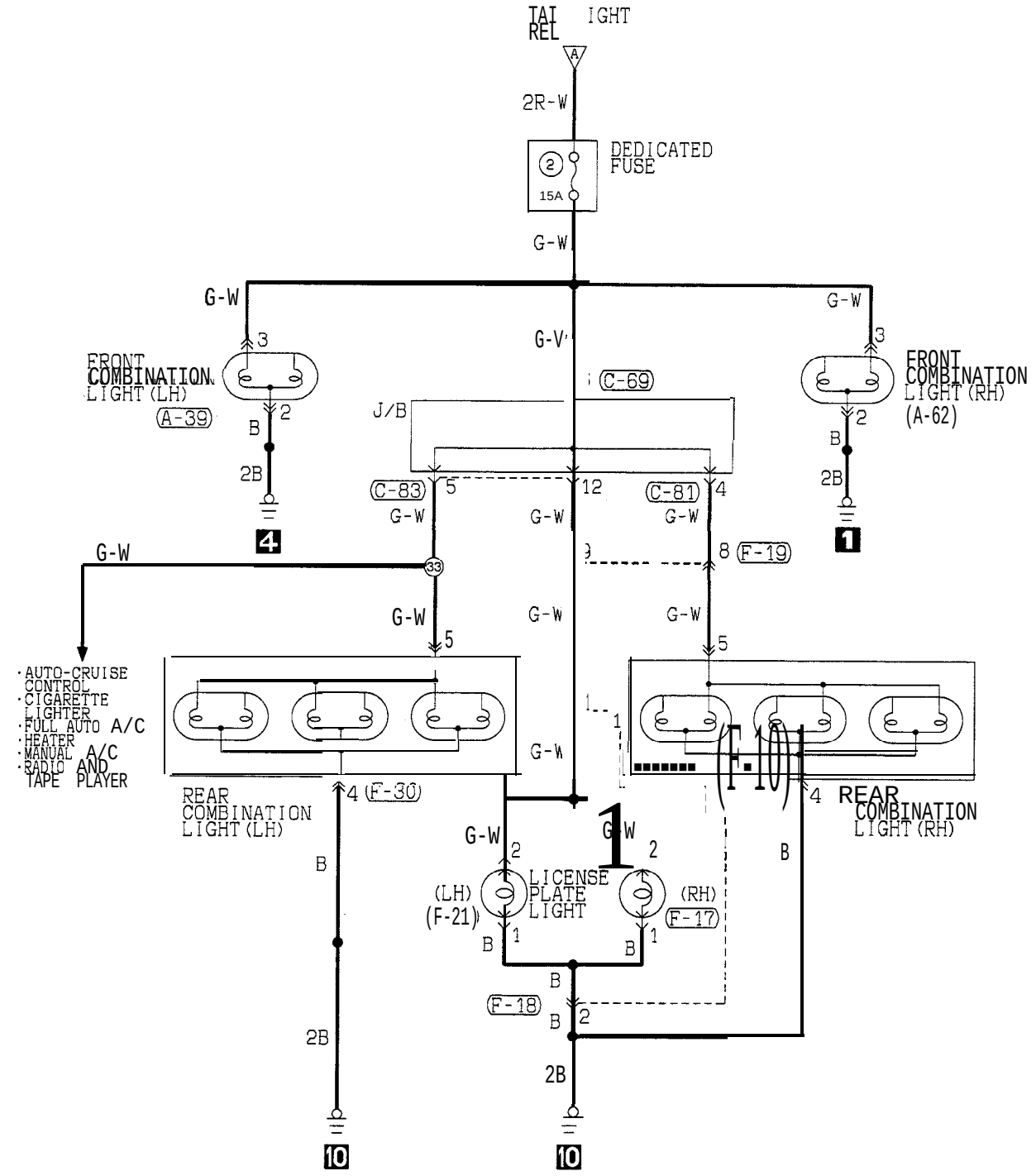
TSB Revision

CIRCUIT DIAGRAM <HATCHBACK> (FROM 1994 MODELS)



HR08M05AA

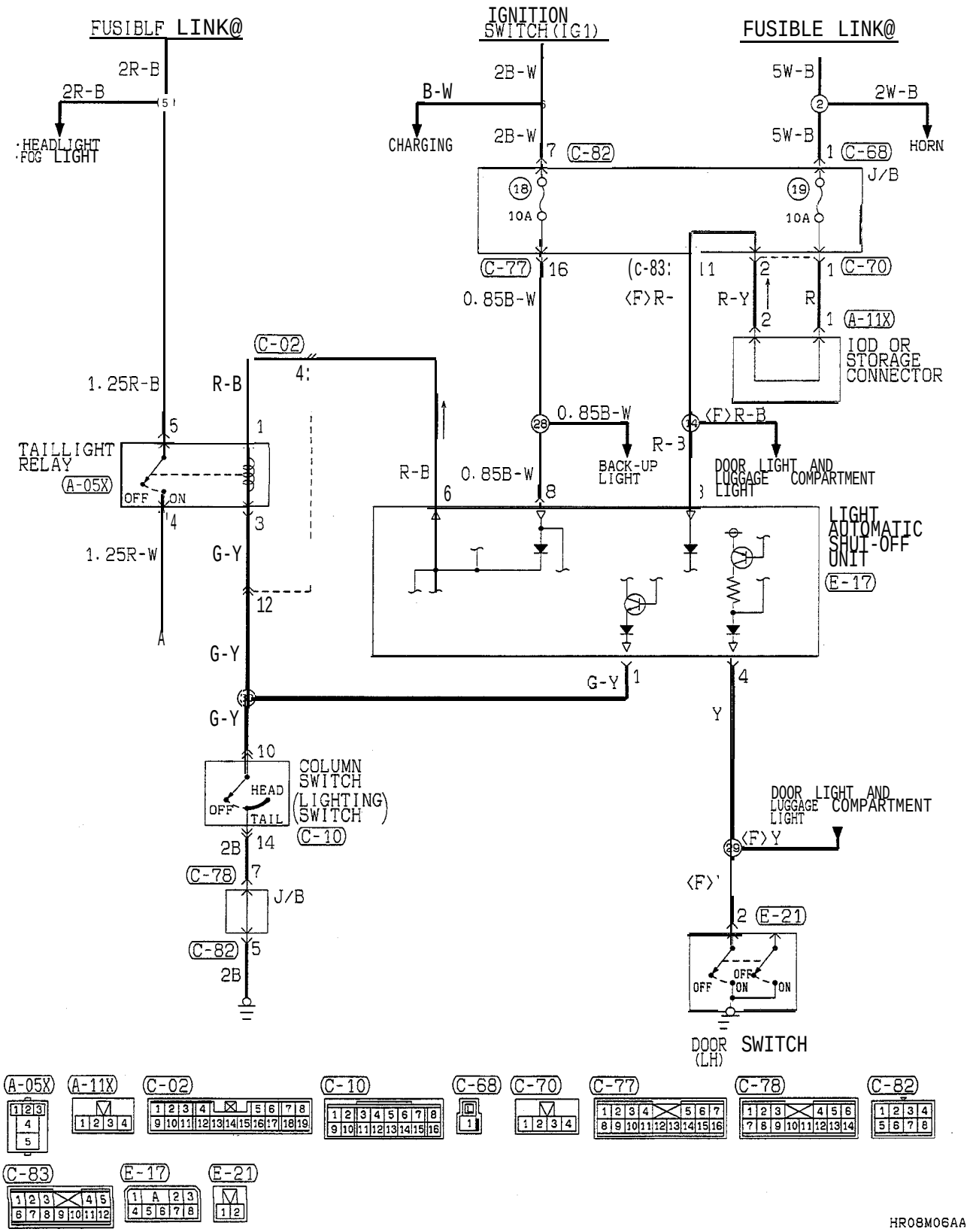
TSB Revision



HR08M05AB

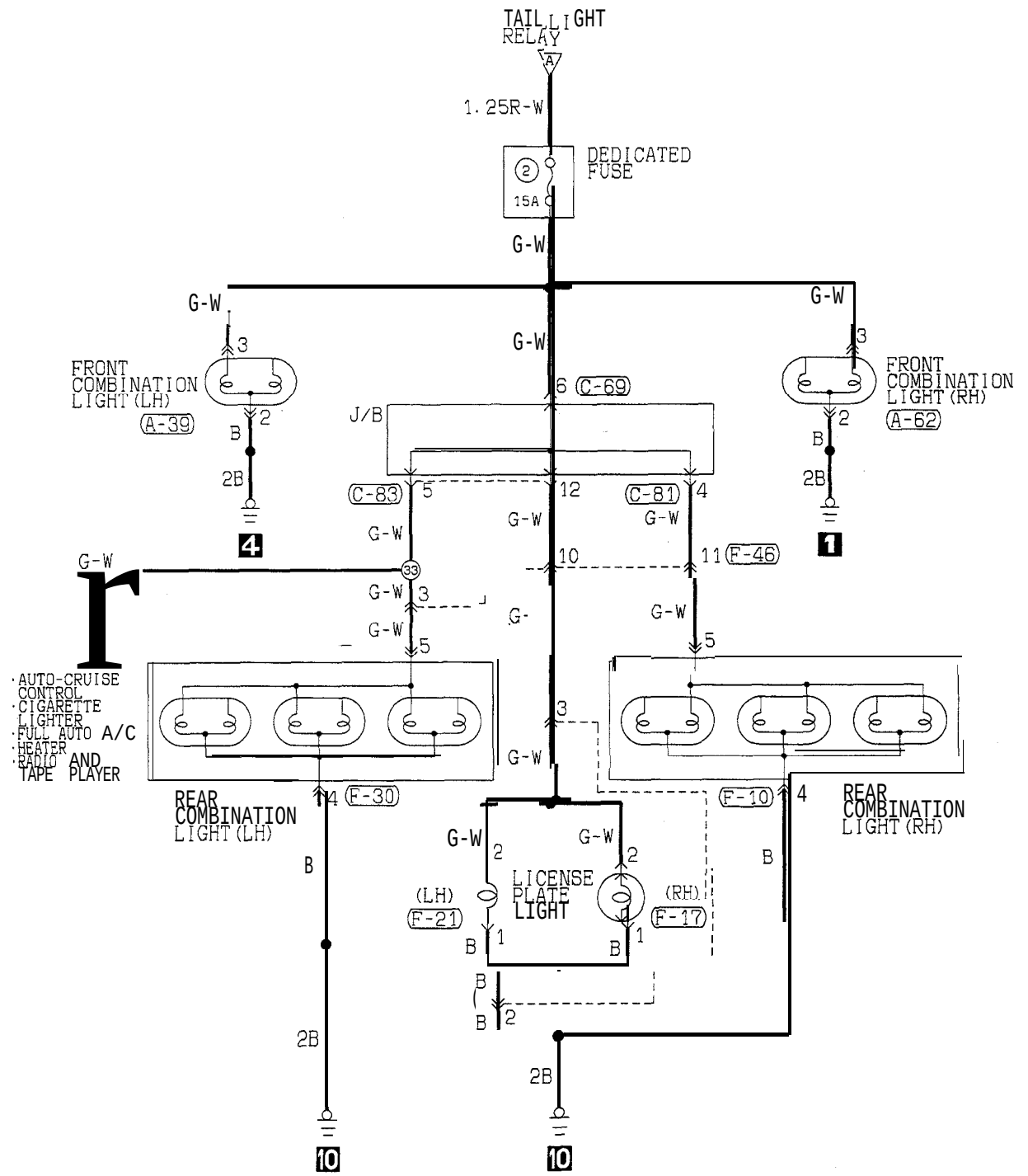
TSB Revision

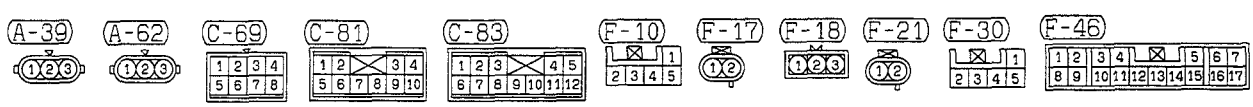
CIRCUIT DIAGRAM <CONVERTIBLE> (FROM 1995 MODELS)



HR08M06AA

TSB Revision





HR08M06AB

TSB Revision

OPERATION

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

<Light automatic shut-OFF system>

- If the driver's door is opened after the ignition switch is turned to "OFF" or the ignition switch is turned to "OFF" after the driver's door is opened when the tail lights are lit, the current which flows to the coil side of the tail light relay will be cut off by the light automatic shut-off unit opening the contact point, and the tail light relay will be turned "OFF' to automatically shut off the tail lights, parking and front side marker lights and license plate light.
- To turn on the tail lights, parking and front side marker lights and license plate light again after they are automatically shut off, turn the lighting switch to "OFF" once and to "HEAD" again, or turn the ignition switch to "ACC" or "ON", and the automatic shut-OFF will be cancelled and the current will flow from the light automatic shut-OFF unit to the coil side of the tail light relay to close the contact point. Thus, the tail light relay will be turned "ON" to turn on the tail lights, parking and front marker lights and license plate light.

NOTE
When the lighting switch is at the "HEAD" position, the light automatic shut-OFF system will be also activated for the headlights. (Refer to P.54-37.) The same system will also be activated for the illumination lights, etc.

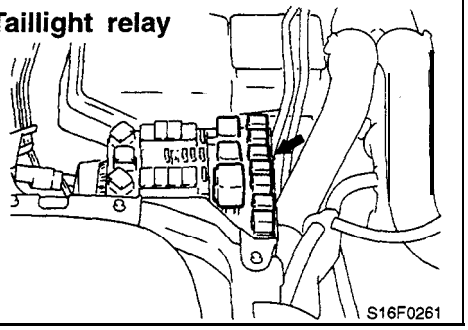
TROUBLESHOOTING HINTS

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

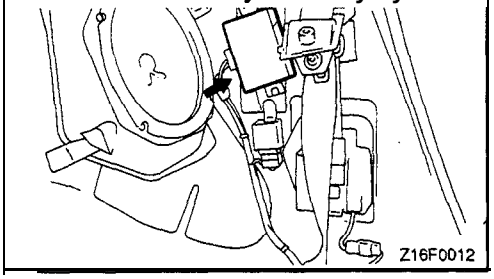
   (2) The headlights illuminate.
   - Check the tail light relay. (Refer to P.54-108.)
   - Check the dedicated fuse (2).
   - Check the lighting switch. (Refer to P.54-113.)
   - Check the light automatic shut-OFF unit. (Refer to P.54-108.)
2. Some light does not come on.
   - Check the bulb.
   - Check the grounding circuit.
3. Some light is not automatically shut off.
   - Check the driver's side door switch. (Refer to GROUP 42– Door Assembly.)
   - Check the automatic shut-OFF unit. (Refer to P.54-108.)

COMPONENT LOCATION

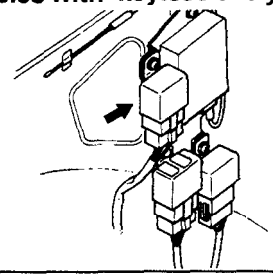
Taillight relay



Light automatic shut-off unit
<Vehicles without keyless entry system>



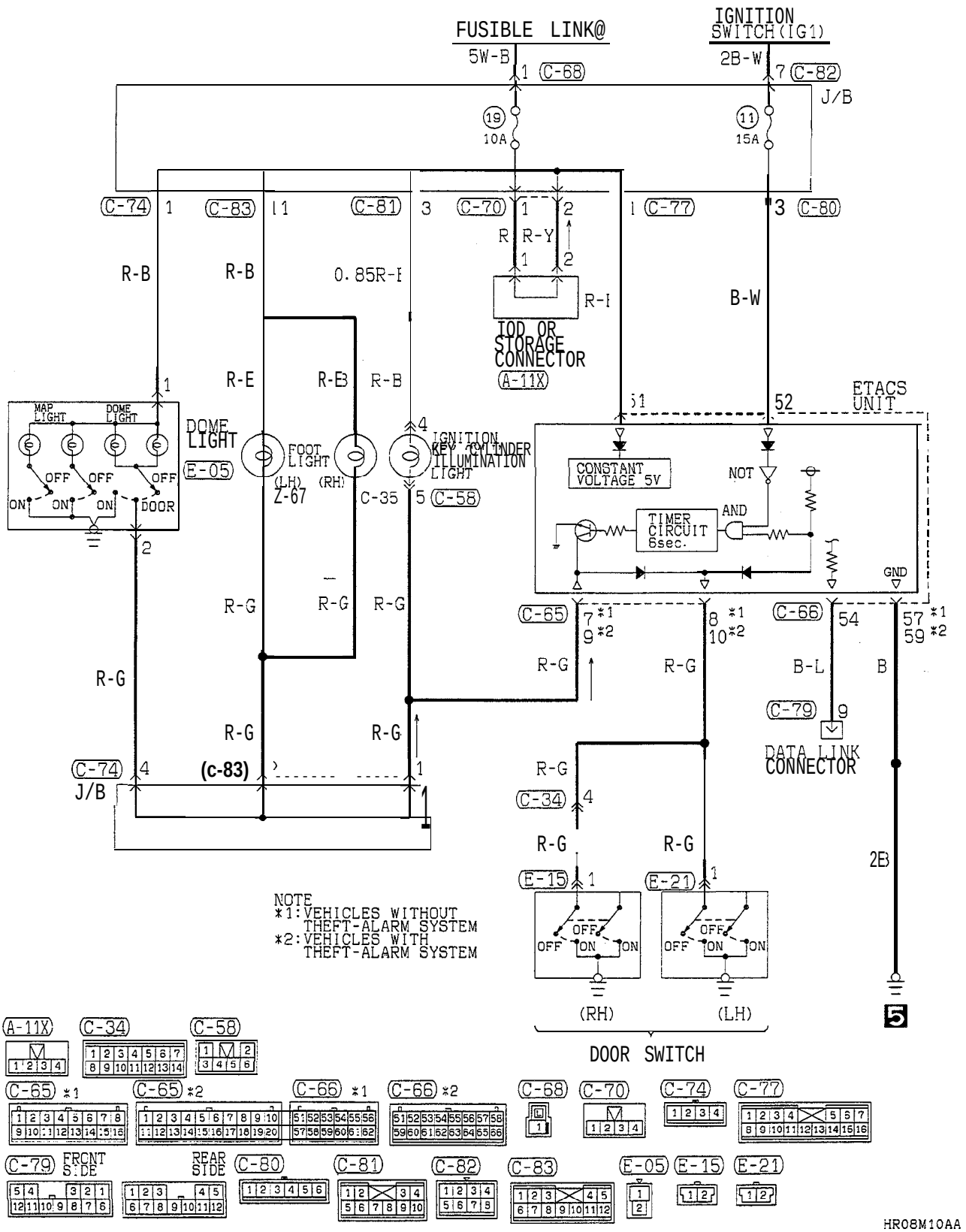
Light automatic shut-off unit
<Vehicles with keyless entry system>



TSB Revision

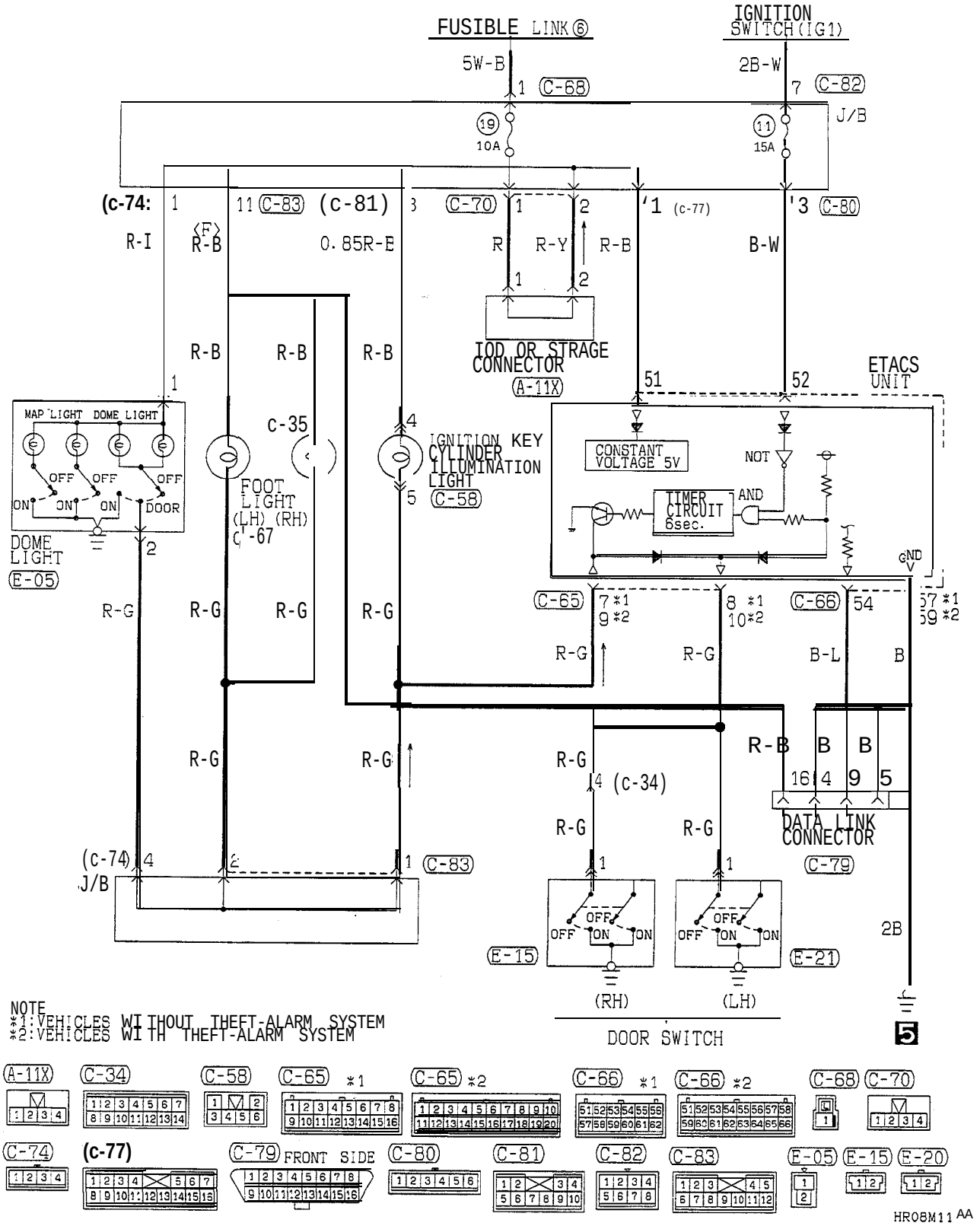
DOME LIGHT, FOOT LIGHT AND IGNITION KEY CYLINDER ILLUMINATION LIGHT

CIRCUIT DIAGRAM (UP TO 1993 MODELS)



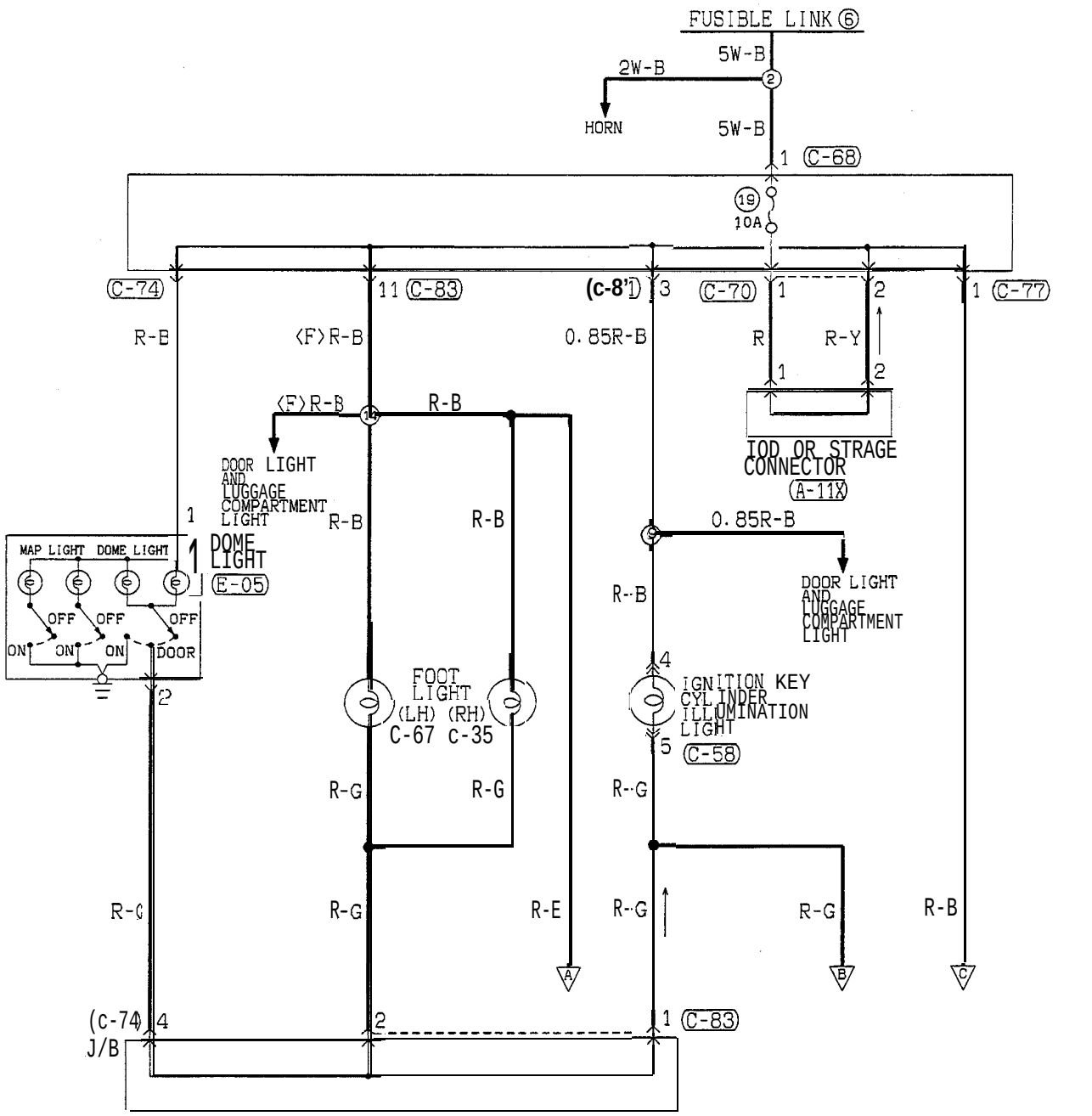
TSB Revision

CIRCUIT DIAGRAM (1994 MODELS)



TSB Revision

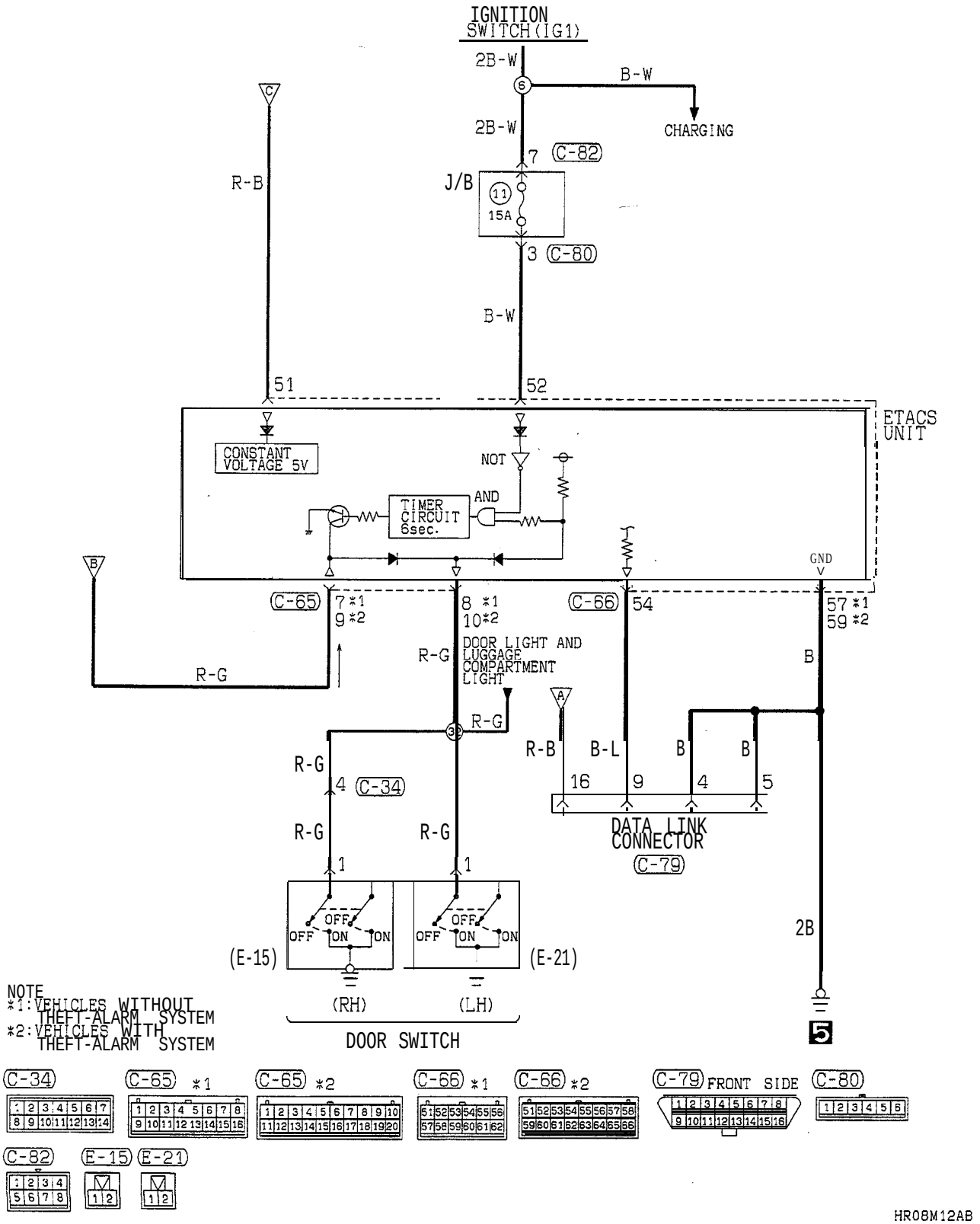
CIRCUIT DIAGRAM <HATCHBACK> (FROM 1995 MODELS) AND <CONVERTIBLE> (1995 MODELS)



A-11X (c-58) C-68 C-70 C-74 C-77 C-81 C-83 (E-05)

HR08M12AA

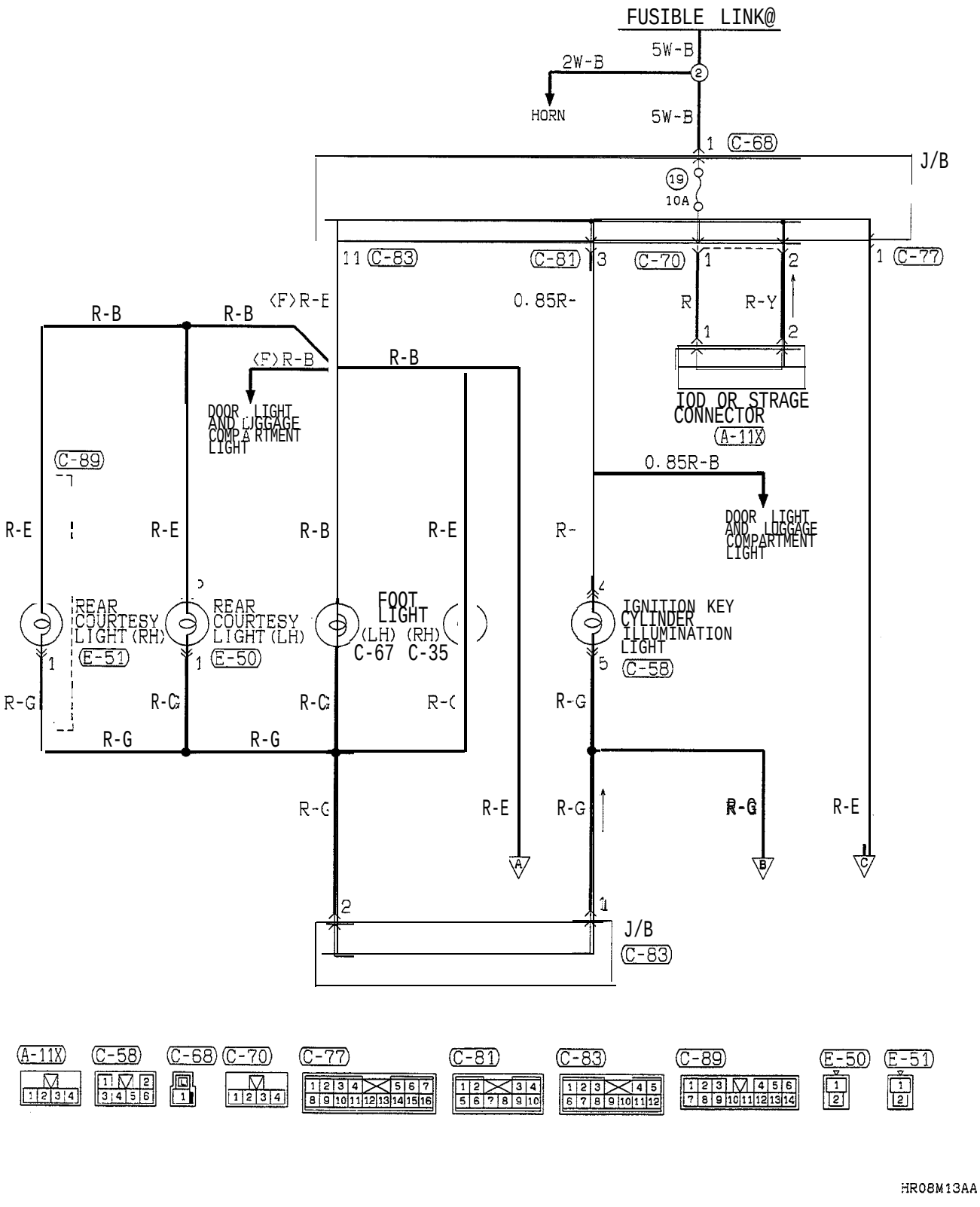
TSB Revision



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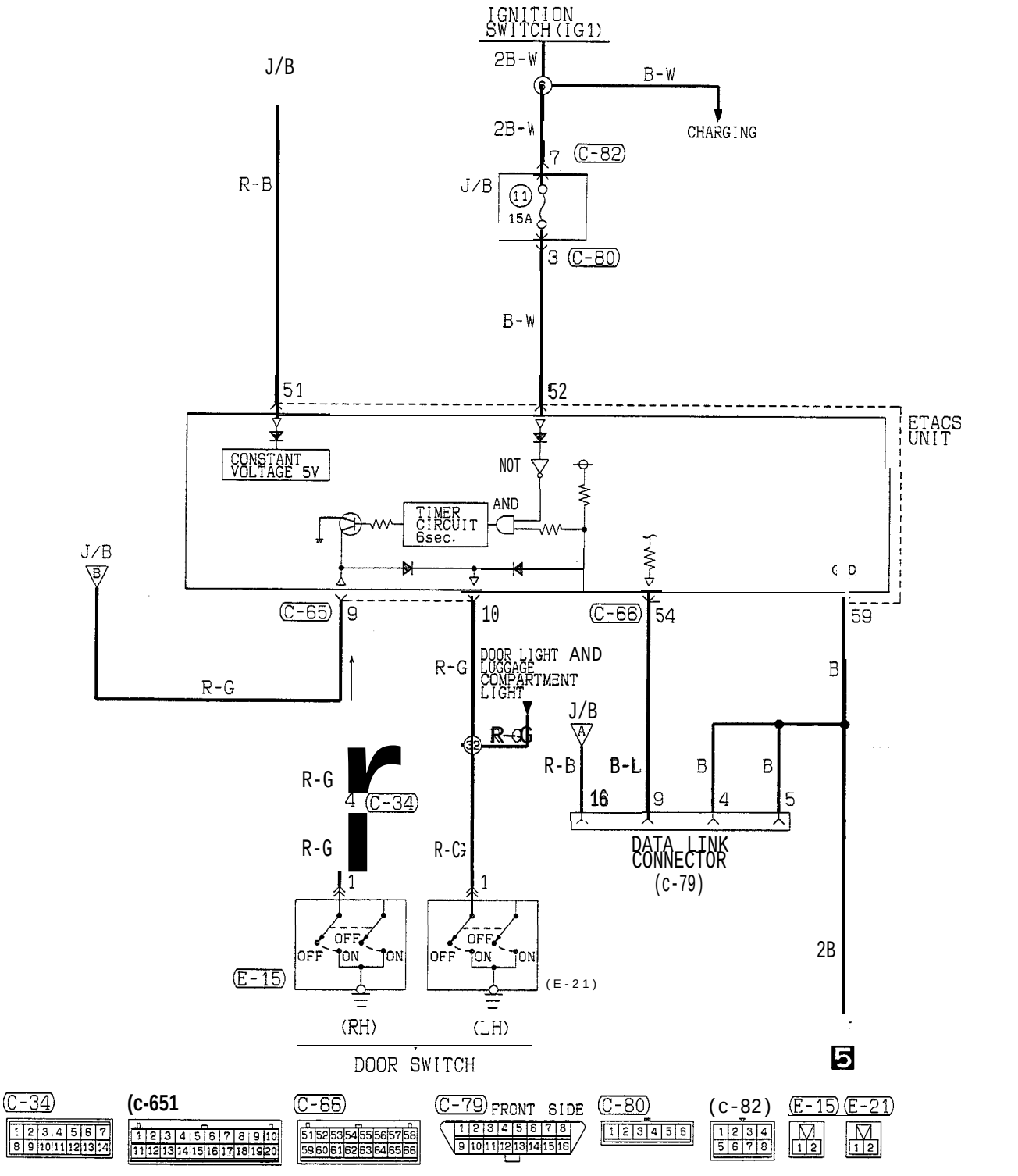
TSB Revision

CIRCUIT DIAGRAM <CONVERTIBLE> (FROM 1996 MODELS)



HR08M13AA

TSB Revision



HR08M13AB

TSB Revision

OPERATION

<Dome light>

- Battery voltage is always applied to the dome light. When the dome light switch is turned to "ON", the dome light will remain lit. After either door is opened if the dome light switch is at "DOOR" position, the dome light will come on.
- With the dome light turned on (with the ignition switch in the OFF position and with the dome light switch in the DOOR position), close all doors, and the timer circuit in the ETACS unit will be activated to gradually vary the voltage for approx. 6 seconds owing to the duty control, and the voltage will be output to transistor Tr. Since the voltage applied to the dome light gradually decreases, the dome light will be dimmed.
- If the ignition switch is turned to "ON" while the dome light is lit (while the timer is activated), the timer circuit will be opened to turn "OFF" transistor Tr. This will immediately turn off the dome light without dimming.

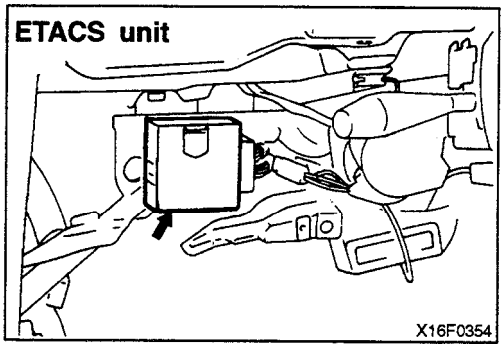
<Foot lights and ignition key illumination light>

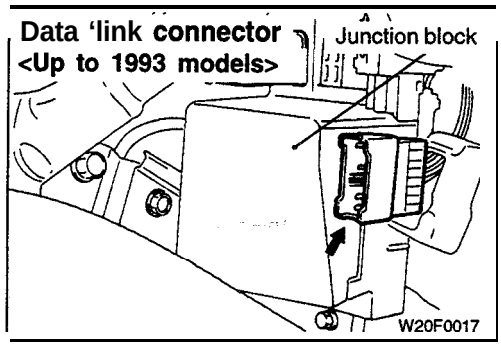
- Battery voltage is always applied to the foot lights and ignition key illumination light. With the ignition switch in the OFF position, open any door, and all lights will come on.
- With all lights turned on (with the ignition switch in the OFF position), close all doors, and the timer circuit inside the ETACS unit will operate in the same manner as the dome light to dim all lights. When the ignition switch is placed in the ON position with all lights turned on (with the timer in operation), the same operation as the dome light will take place.

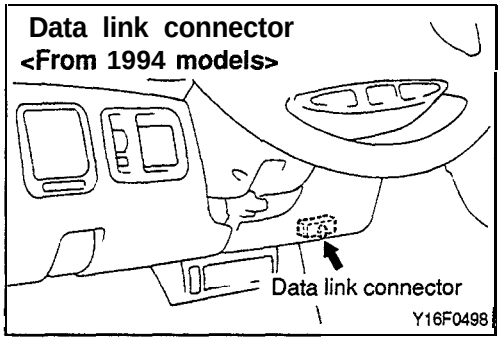
TROUBLESHOOTING HINTS

Phenomenon		Checking method
Dome light does not come on when a door is opened with the dome light switch in the DOOR position.	The foot lights and ignition key cylinder illumination light don't illuminate, either.	• Check the door switch input signal. (Refer to P.54-80.)
		• Check the door switch. (Refer to GROUP 42 – Door Assembly.)
	The foot lights and ignition key cylinder illumination light illuminate.	• Check the dome light switch.
		• Check the dome light bulb.
Dome light, foot lights and ignition key illumination light go out at once when doors are closed.		• Check the door switch input signal. (Refer to P.54-80.)
Even if ignition switch is turned on while lights are being dimmed, lights do not go out at the same time.		• Check the ignition switch input signal. (Refer to P.54-80.)

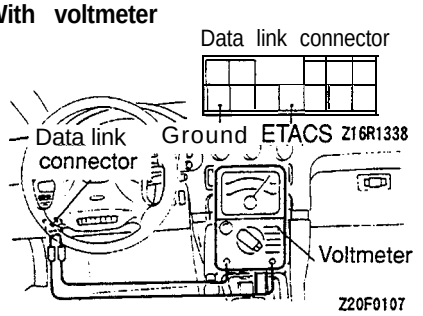
COMPONENT LOCATION



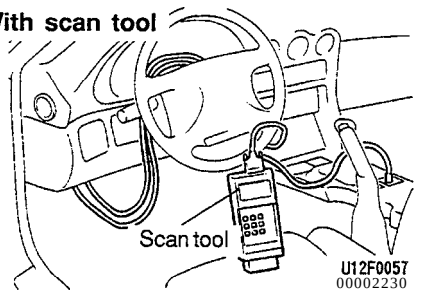



Data link connector
<From 1994 models>
Data link connector
Y16F0498

With voltmeter



With scan tool



INPUT SIGNAL

<Up to 1993 models>

When using the scan tool (MUT) or voltmeter

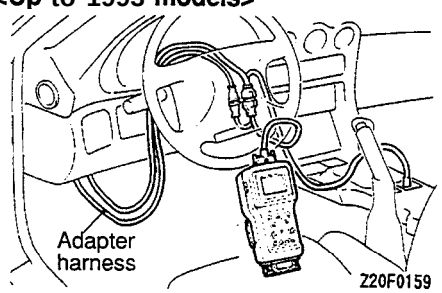
Using the scan tool or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

(1) Connect the scan tool to the data link connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

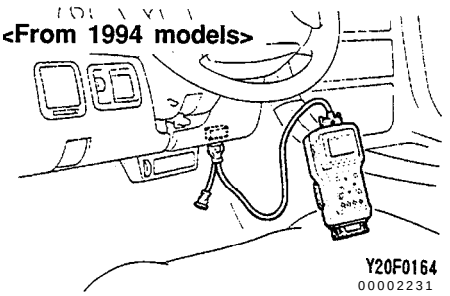
(2) Check if the buzzer of the scan tool sounds or the needle of the voltmeter moves when each switch is operated. If the buzzer sounds or the needle moves, the input signals are being input to the ETACS unit, so that switch can be considered to be functioning normally. If not, the switch or switch input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

When using the MUT-II

<Up to 1993 models>



<From 1994 models>



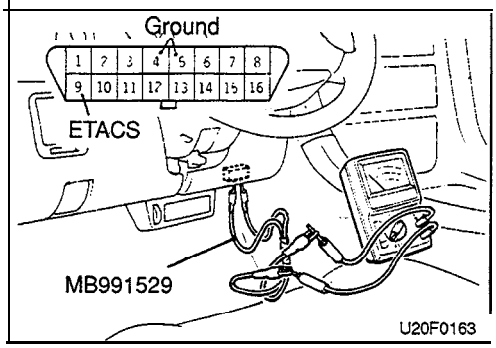
<All models>

When using the scan tool (MUT-II)

(1) Connect the scan tool to the data link connector. When connecting the scan tool to a vehicle up to 1993 models, use the adapter harness supplied together.

Caution
Turn off the ignition switch beforehand whenever the scan tool is connected or disconnected.

(2) If the scan tool makes a peep sound when each switch is operation (turned ON/OFF), the input signal to ECU is normally sent from the switch circuit system.



<From 1994 models>

When using the voltmeter

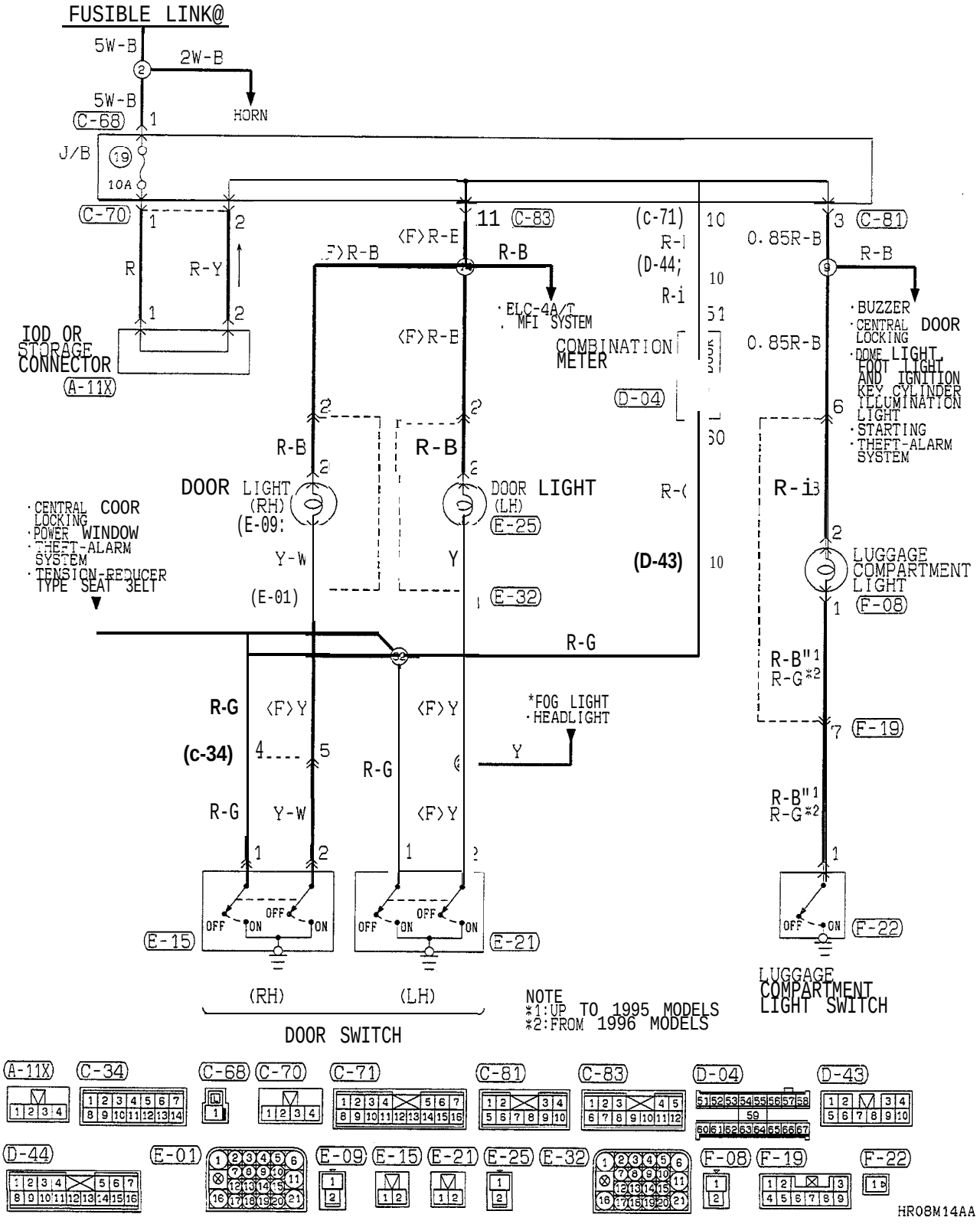
(1) Connect a voltmeter to the ETACS terminal and the ground terminal of the data link connector using the special tool.

(2) If the voltmeter pointer deflects once when each switch is operated (turned ON/OFF), the input signal to ECU is normally sent from the switch circuit system.

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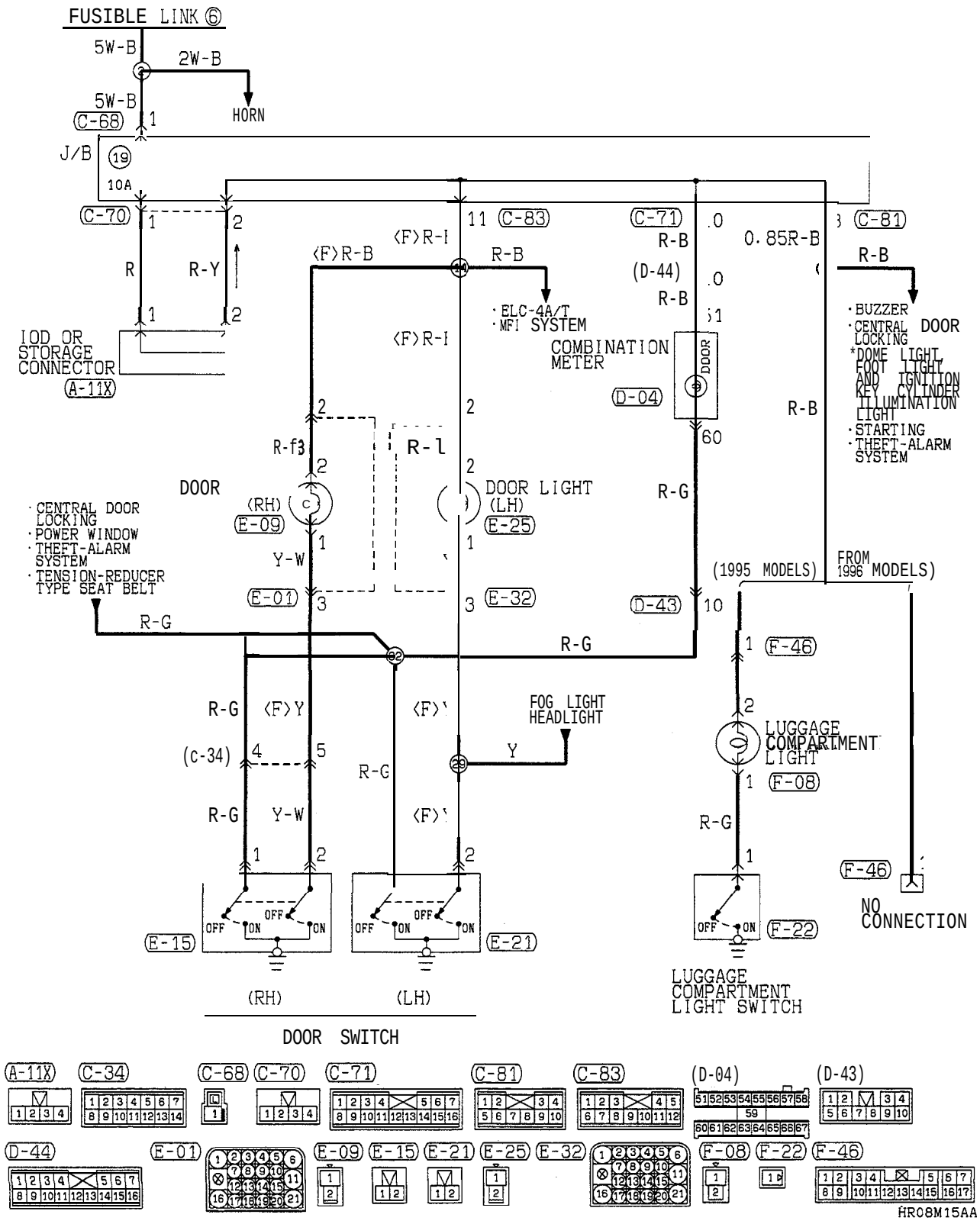
DOOR LIGHT AND LUGGAGE COMPARTMENT LIGHT

CIRCUIT DIAGRAM <HATCHBACK>



TSB Revision

CIRCUIT DIAGRAM <CONVERTIBLE>



TSB Revision

OPERATION

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

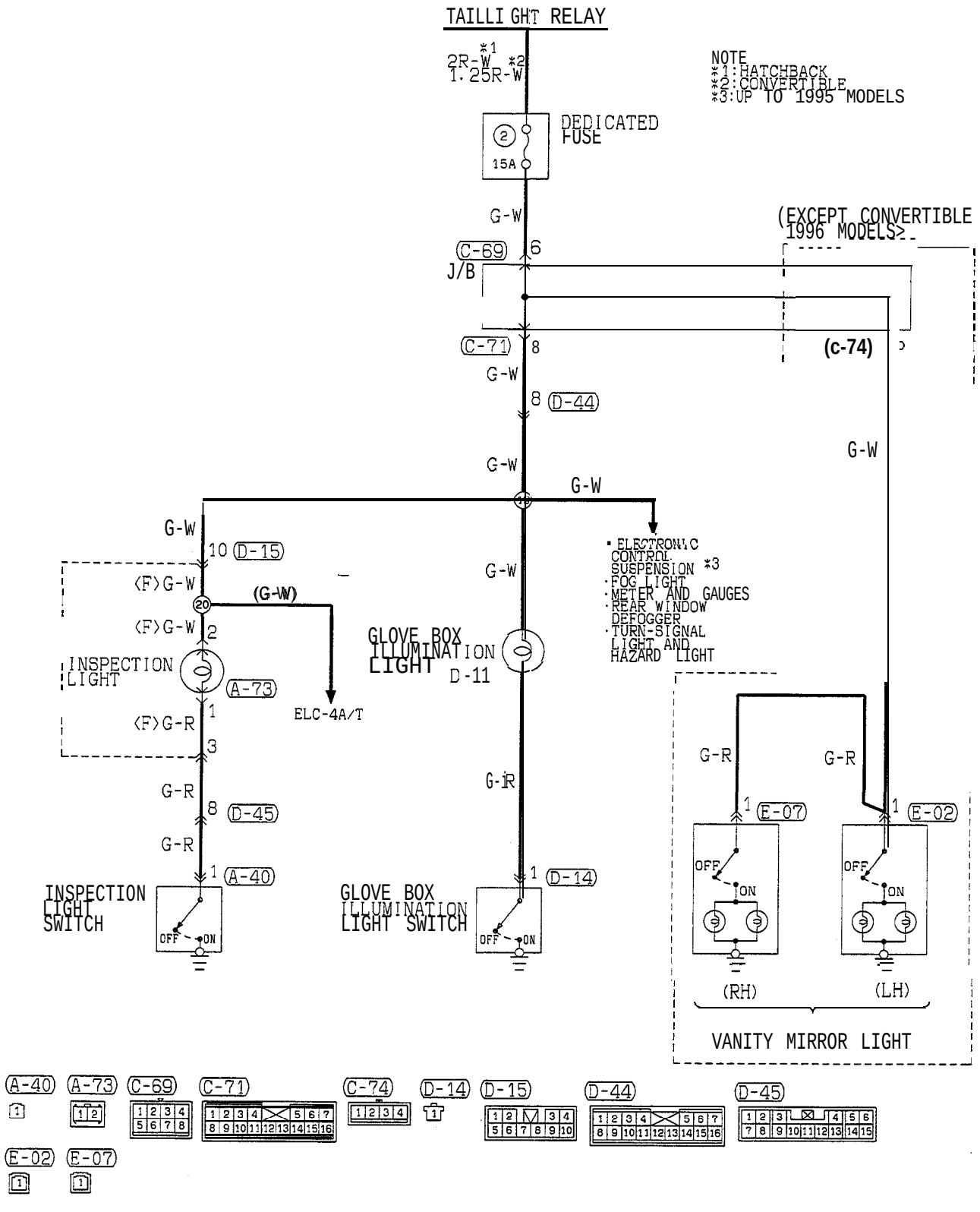
GLOVE BOX LIGHT, VANITY MIRROR LIGHT AND INSPECTION LIGHT

OPERATION

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

NOTE
The light automatic shut-off system is valid for the glove box light, vanity mirror light and inspection light. (Refer to P.54-37.)

CIRCUIT DIAGRAM

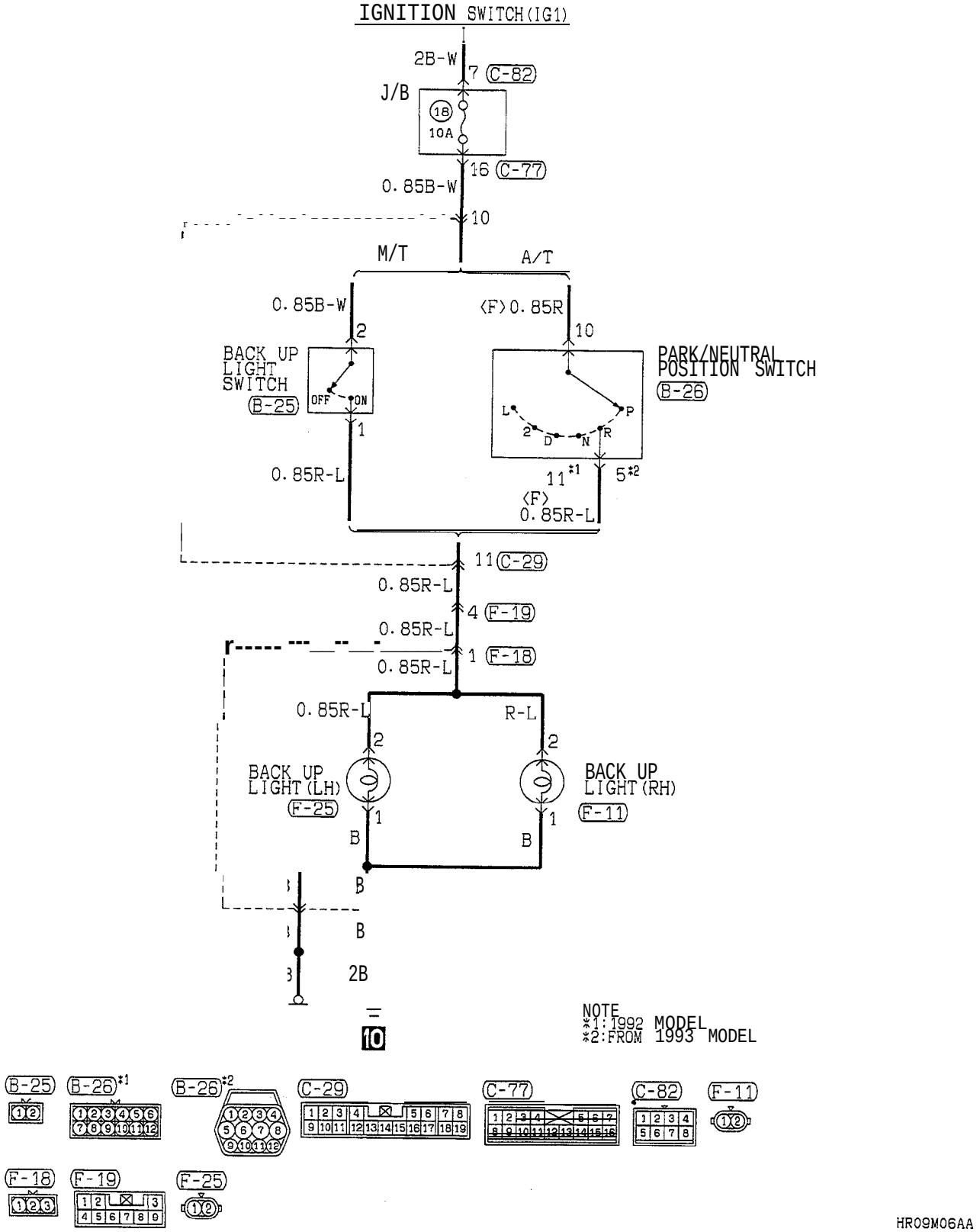


HR08M09AA

TSB Revision

BACK-UP LIGHT

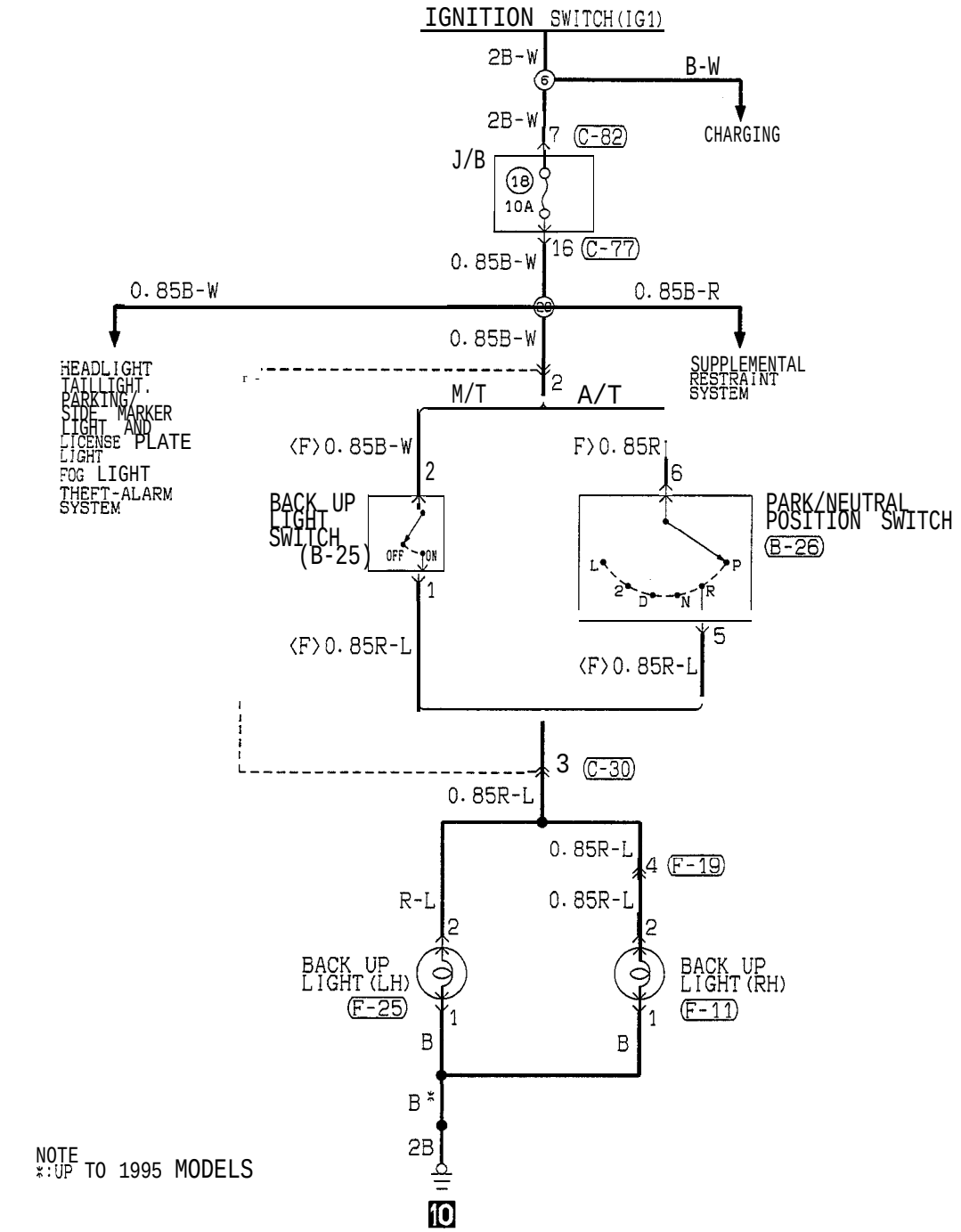
CIRCUIT DIAGRAM <UP TO 1993 MODELS>

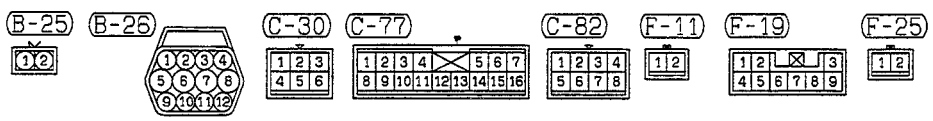


HR09M06AA

TSB Revision

CIRCUIT DIAGRAM <HATCHBACK> (FROM 1994 MODELS)

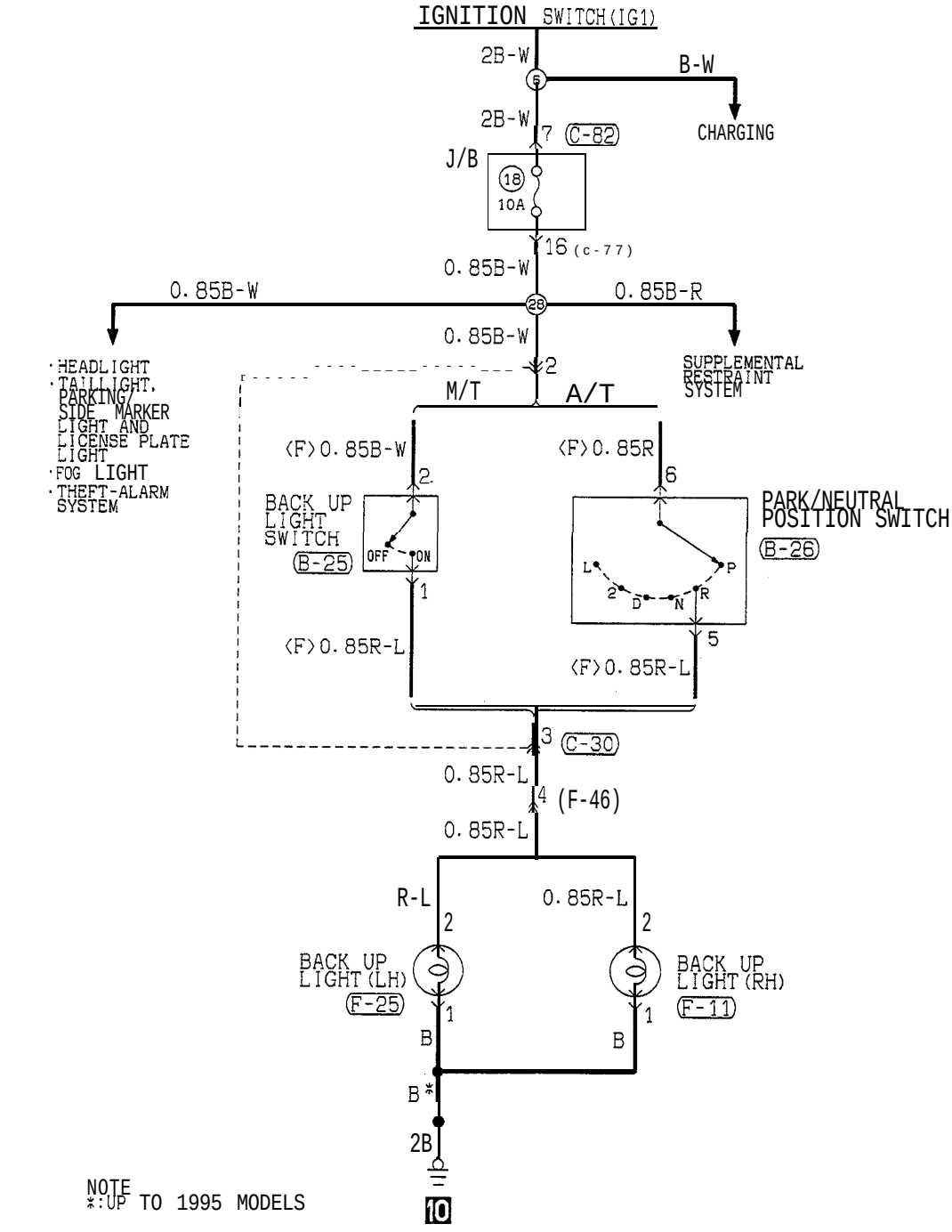


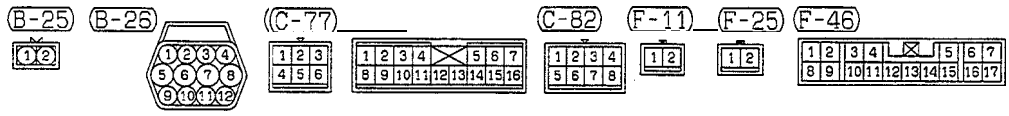


HR09M07AA

TSB Revision

CIRCUIT DIAGRAM <CONVERTIBLE> (FROM 1995 MODELS)

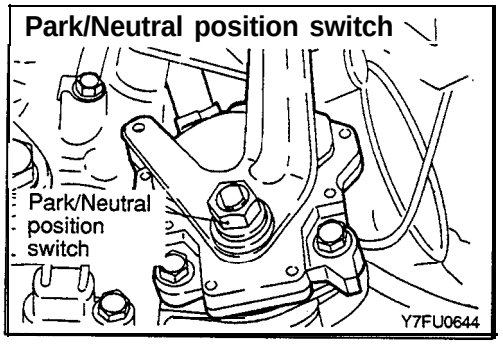




HR09M08AA

TSB Revision

COMPONENT LOCATION



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.

TURN-SIGNAL LIGHT AND HAZARD LIGHT

OPERATION

1. When operation is normal
   - When the ignition switch is switched to the ON position, battery voltage is applied (via the multipurpose fuse (11) and hazard switch) to the turn-signal and hazard flasher unit.
   - When the turn-signal switch is switched to the LH position, Tr1 (within the flasher unit) is switched ON and OFF repeatedly. Then the contacts of the relay 1 (also within the flasher unit) repeatedly switch from ON to OFF, causing the turn-signal lights and turn-signal indicator light LH to flash.
   - When the turn-signal switch is switched to the RH position, Tr2 (within the flasher unit) is switched ON and OFF repeatedly. Then the contacts of relay 2 (also within the flasher unit) repeatedly switch from ON to OFF, causing the turn-signal lights and turn-signal indicator light RH to flash.
2. If one of the bulbs is burned out
   - If the LH (or RH) turn-signal light bulb is burned-out, the resistance of the turn-signal circuit as a whole increases, resulting in shorter ON and OFF intervals of the LH Tr1 (or RH Tr2) and a higher flashing rate of the LH lights (or RH lights).

<Hazard-warning lights,

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

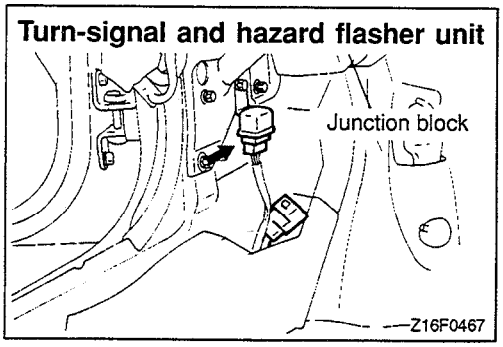
NOTE
(1) The number of flashes of the hazard-warning lights does not change if there is damaged or disconnected wiring of one light.
(2) The light automatic shut-OFF system is valid for the illumination light of the hazard switch. (Refer to P.54-37.)

TROUBLESHOOTING HINTS

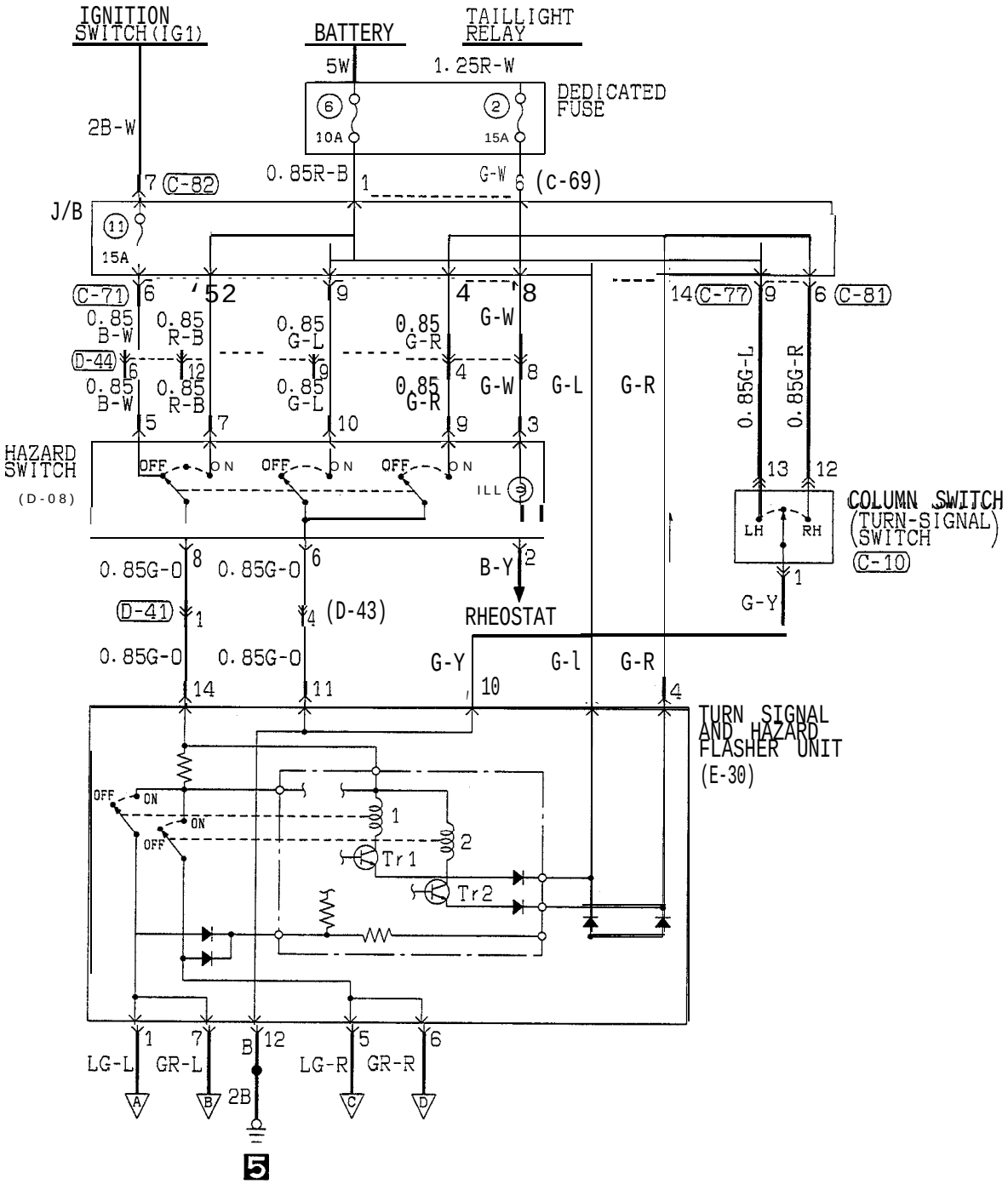
1. The turn-signal lights and hazard-warning lights do not operate at all.
   - Check the hazard switch contact (power supply side).
   - Check the turn-signal and hazard flasher unit.
2. All turn-signal lights at the left (or right) side do not function.
   (1) The hazard-warning lights function normally.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

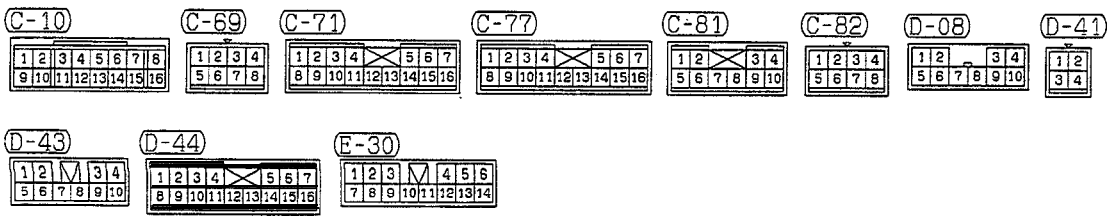
NOTE
For the troubleshooting hints of the automatic light shut-OFF system, refer to P.54-37.

COMPONENT LOCATION



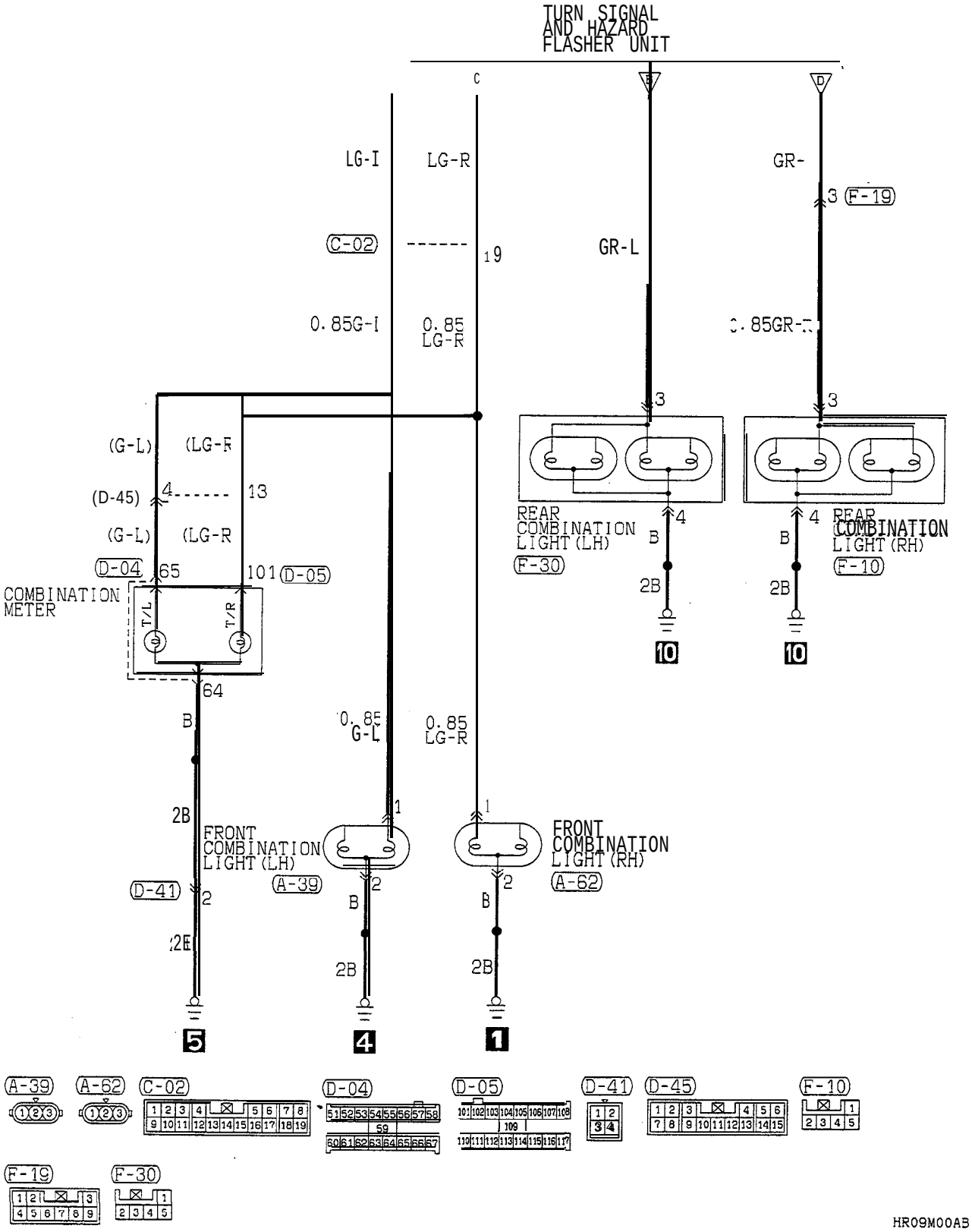
CIRCUIT DIAGRAM <TYPE 1> (UP TO 1994 MODELS)





HR09M00AA

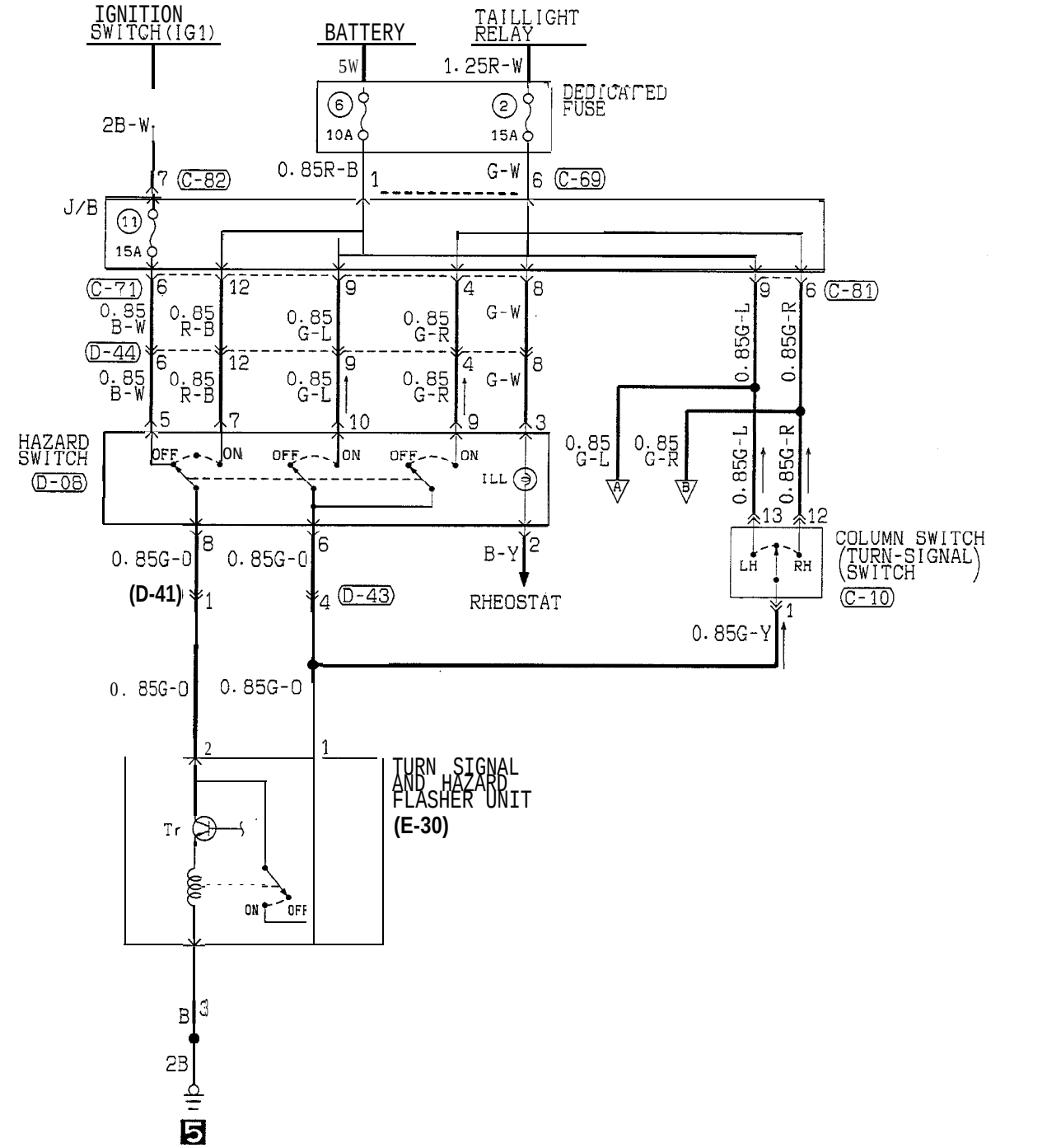
TSB Revision

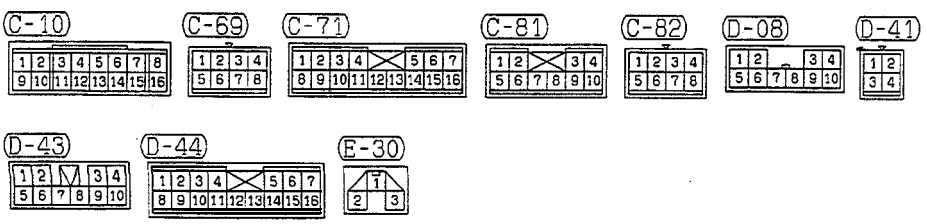


HR09M00AB

TSB Revision

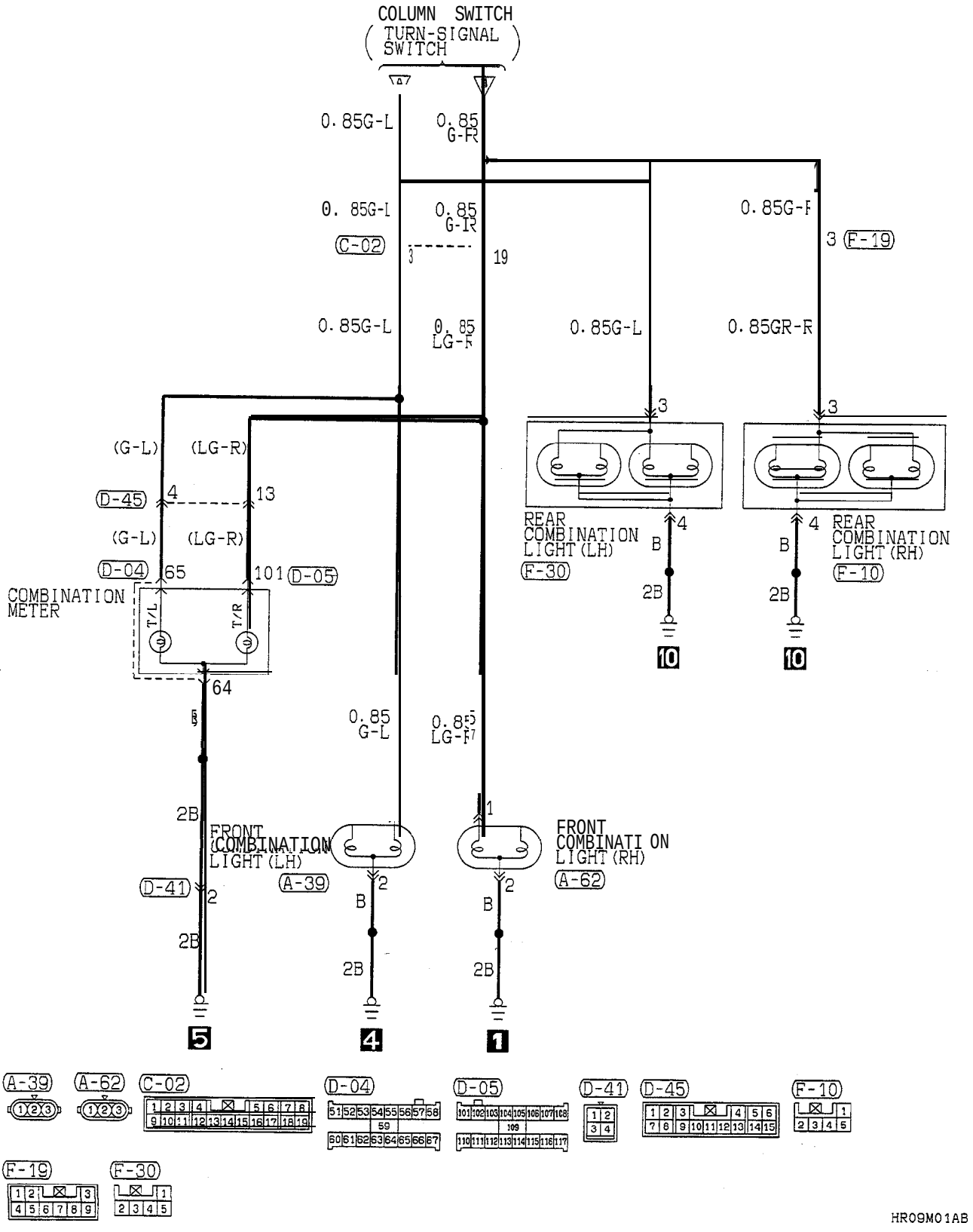
CIRCUIT DIAGRAM <TYPE 2> (UP TO 1993 MODELS)





HR09M01AA

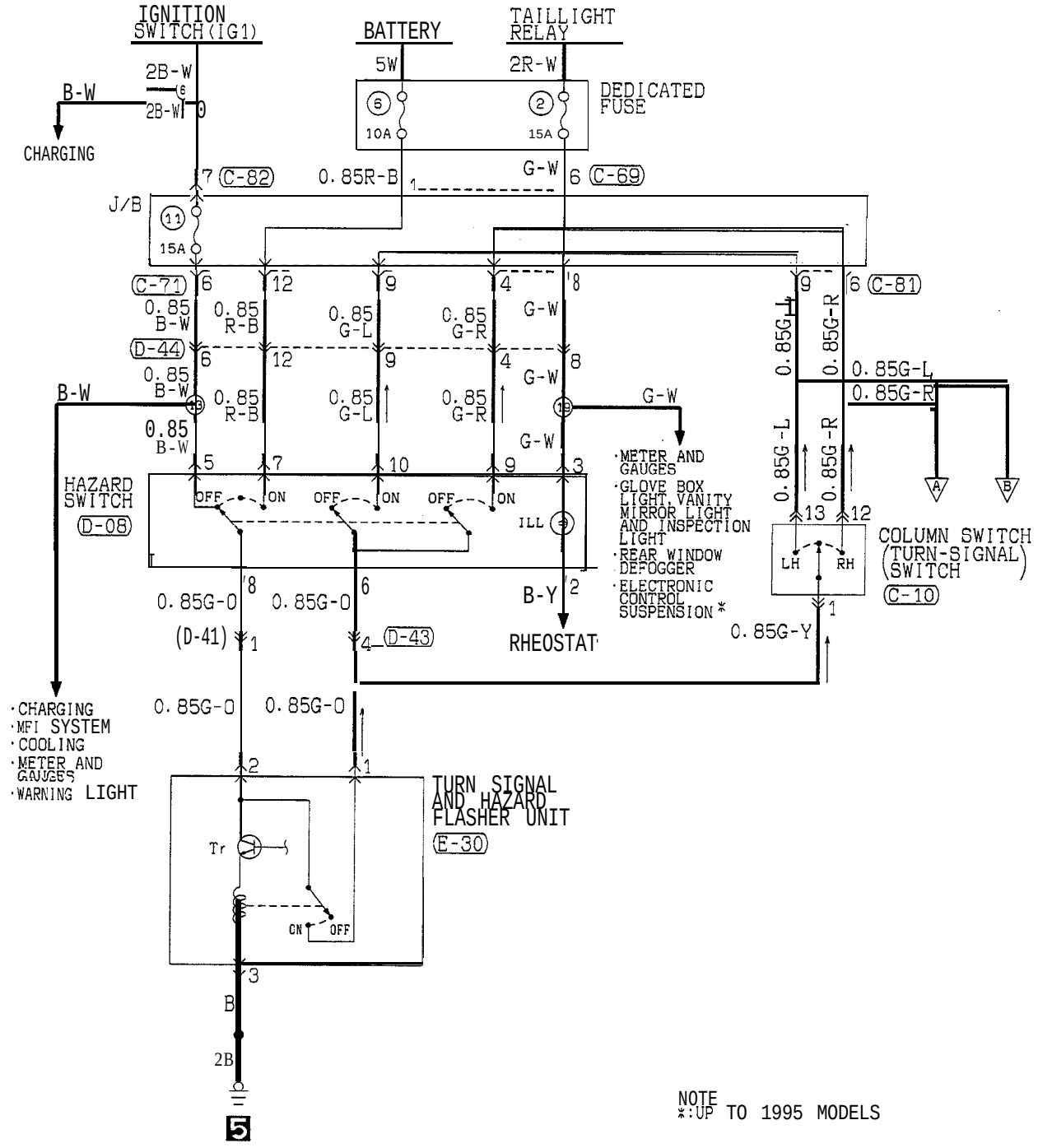
TSB Revision

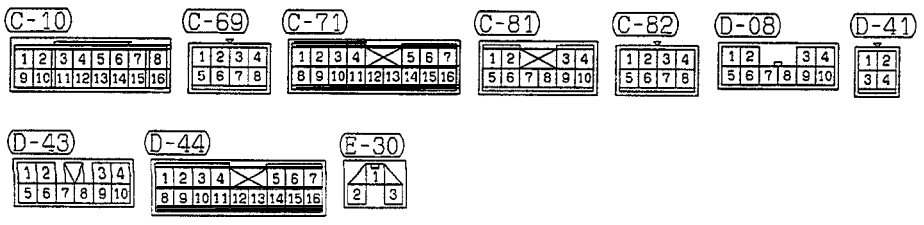


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TSB Revision

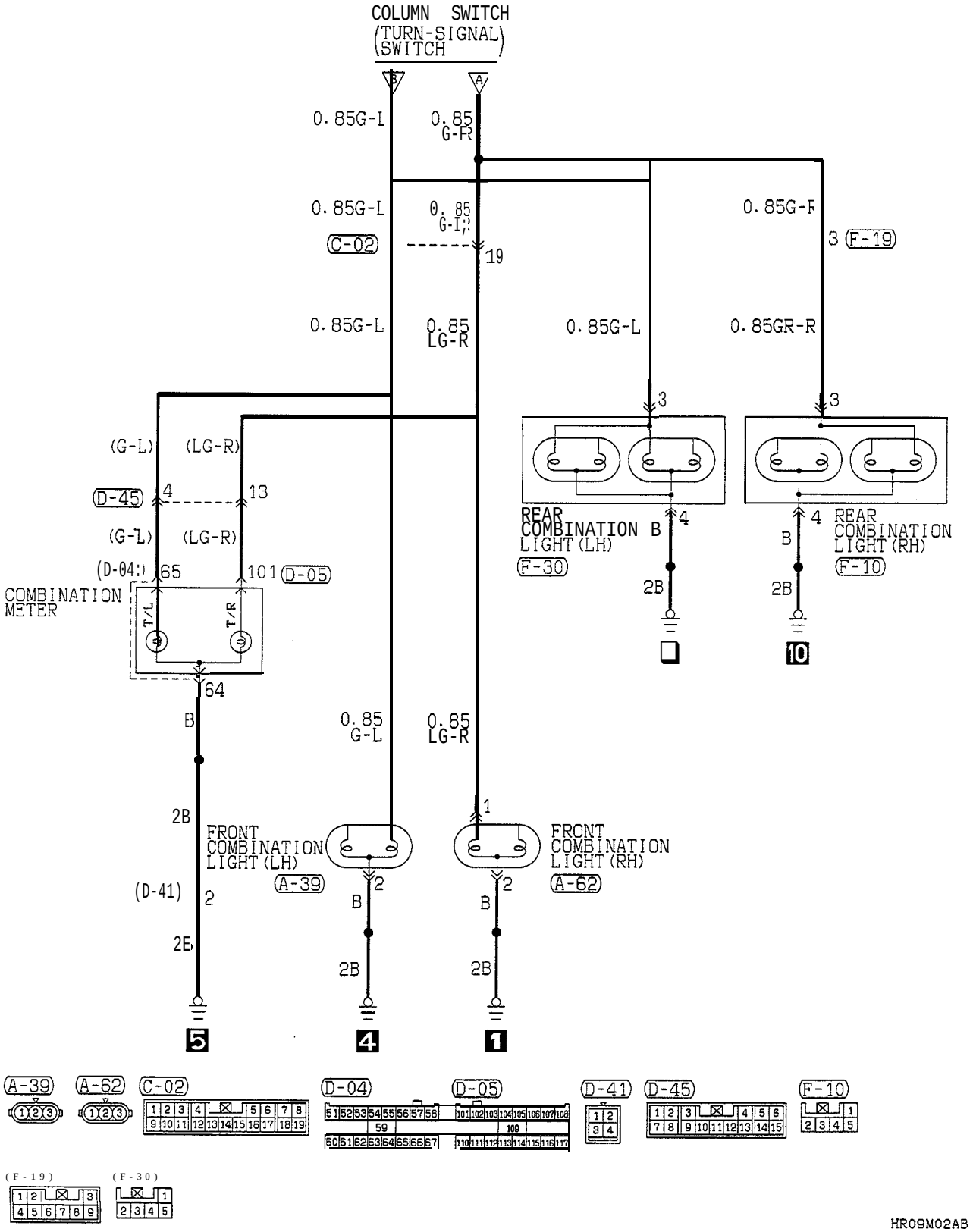
CIRCUIT DIAGRAM <HATCHBACK> (FROM 1995 MODELS)





HR09M02AA

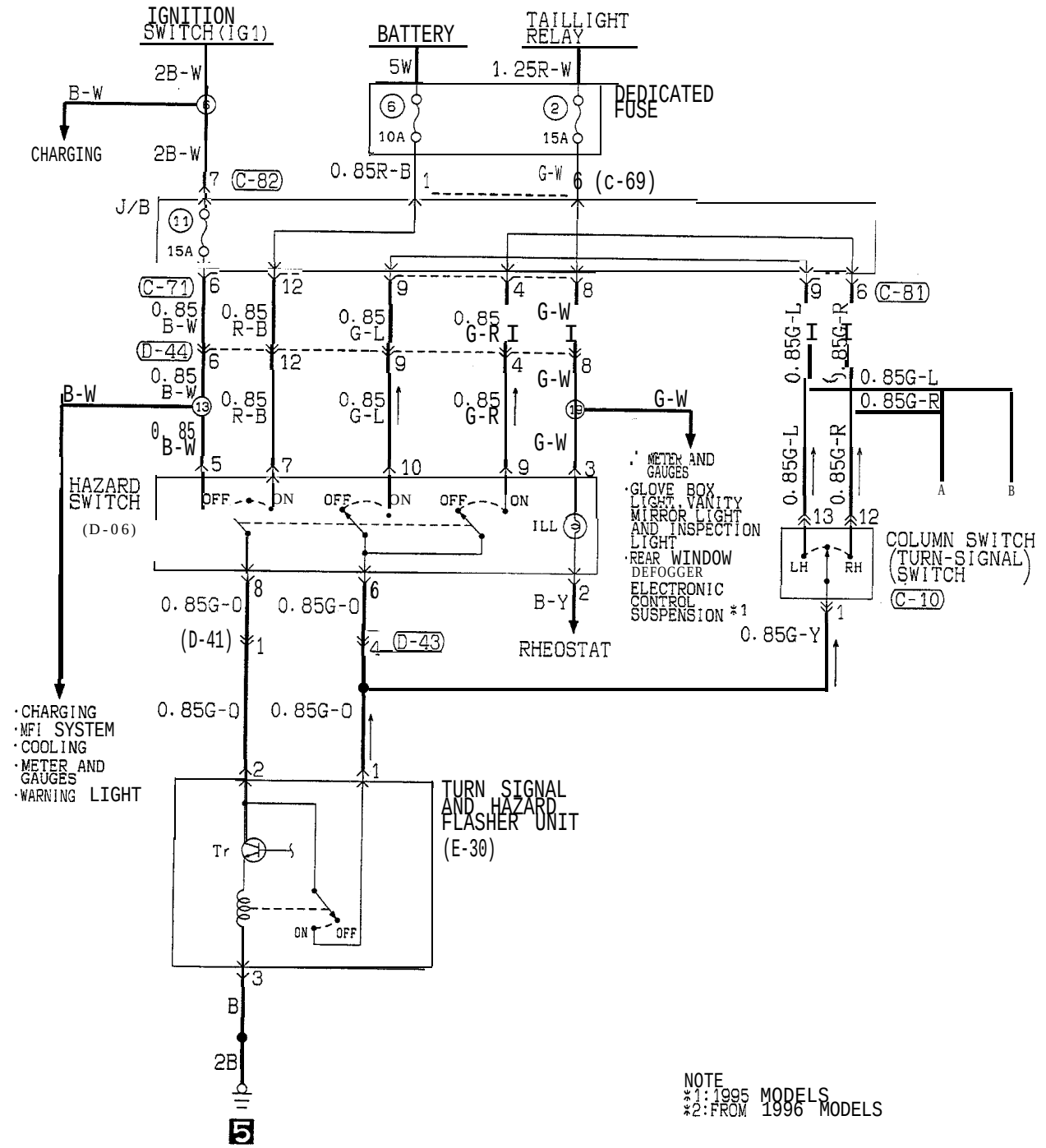
TSB Revision



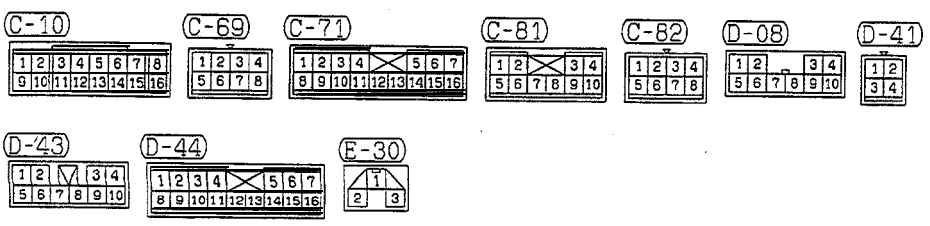
HR09M02AB

TSB Revision

CIRCUIT DIAGRAM <CONVERTIBLE> (FROM 1995 MODELS)

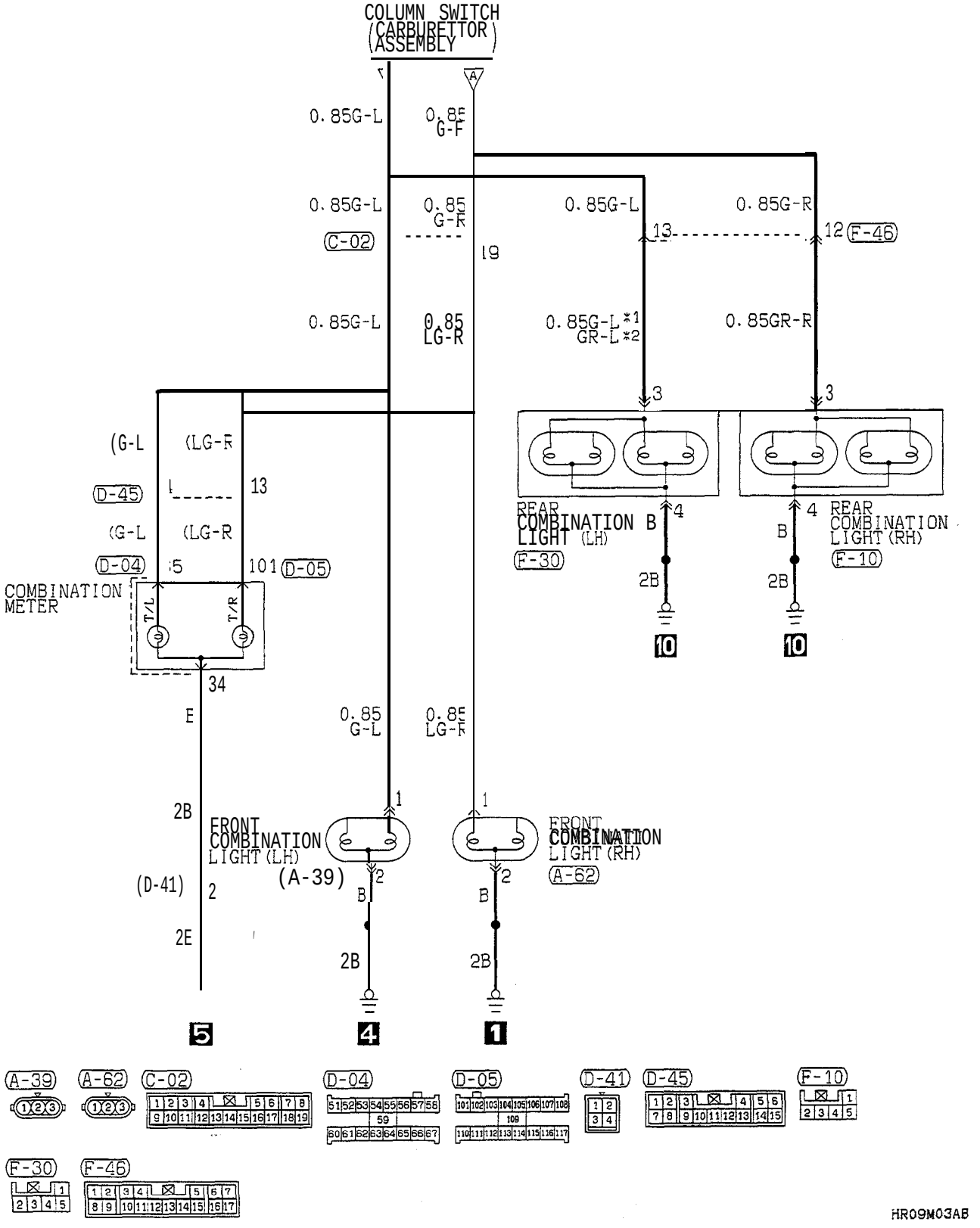


NOTE
*1:1995 MODELS
*2:FROM 1996 MODELS



HR09M03AA

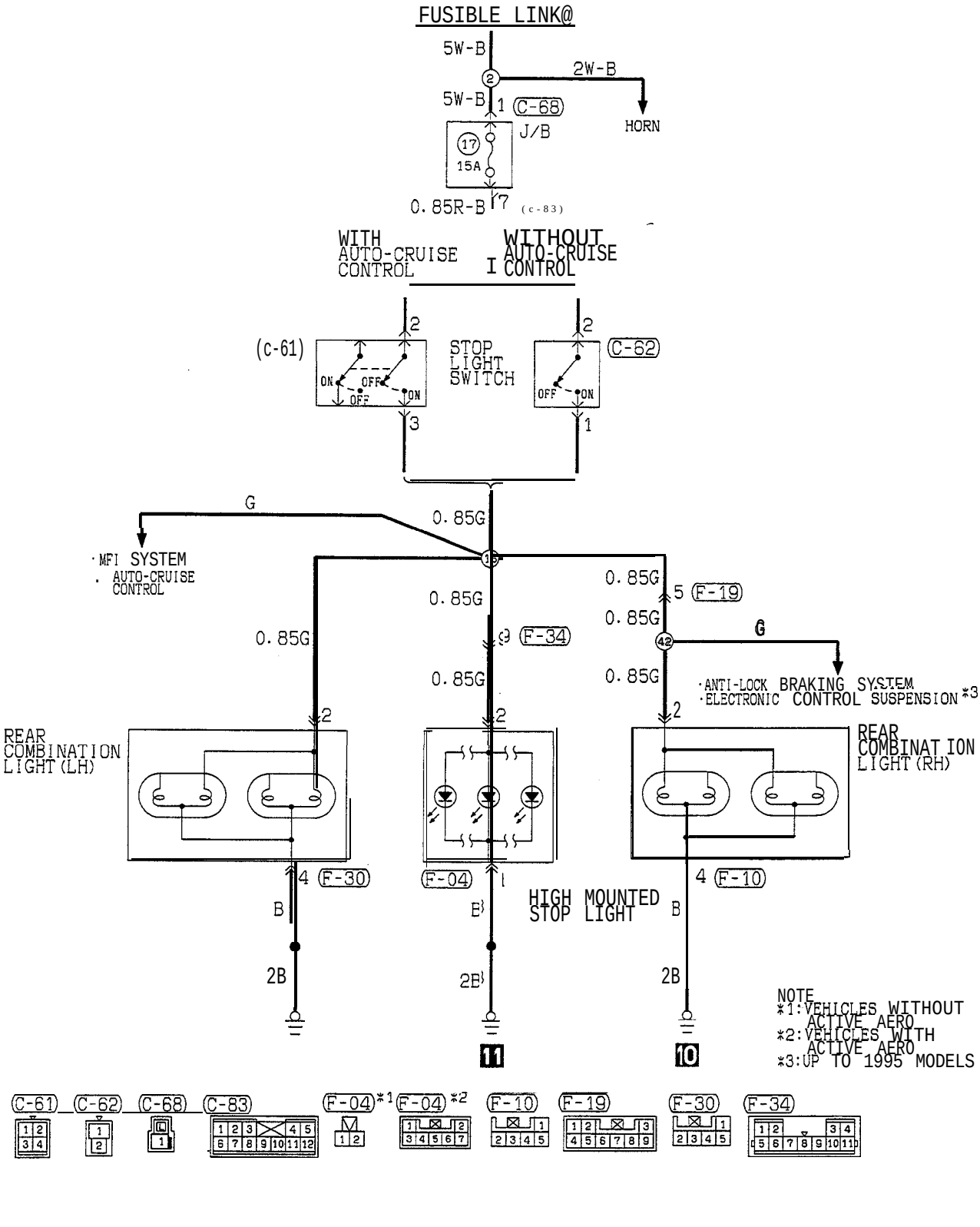
TSB Revision



TSB Revision

STOP LIGHT

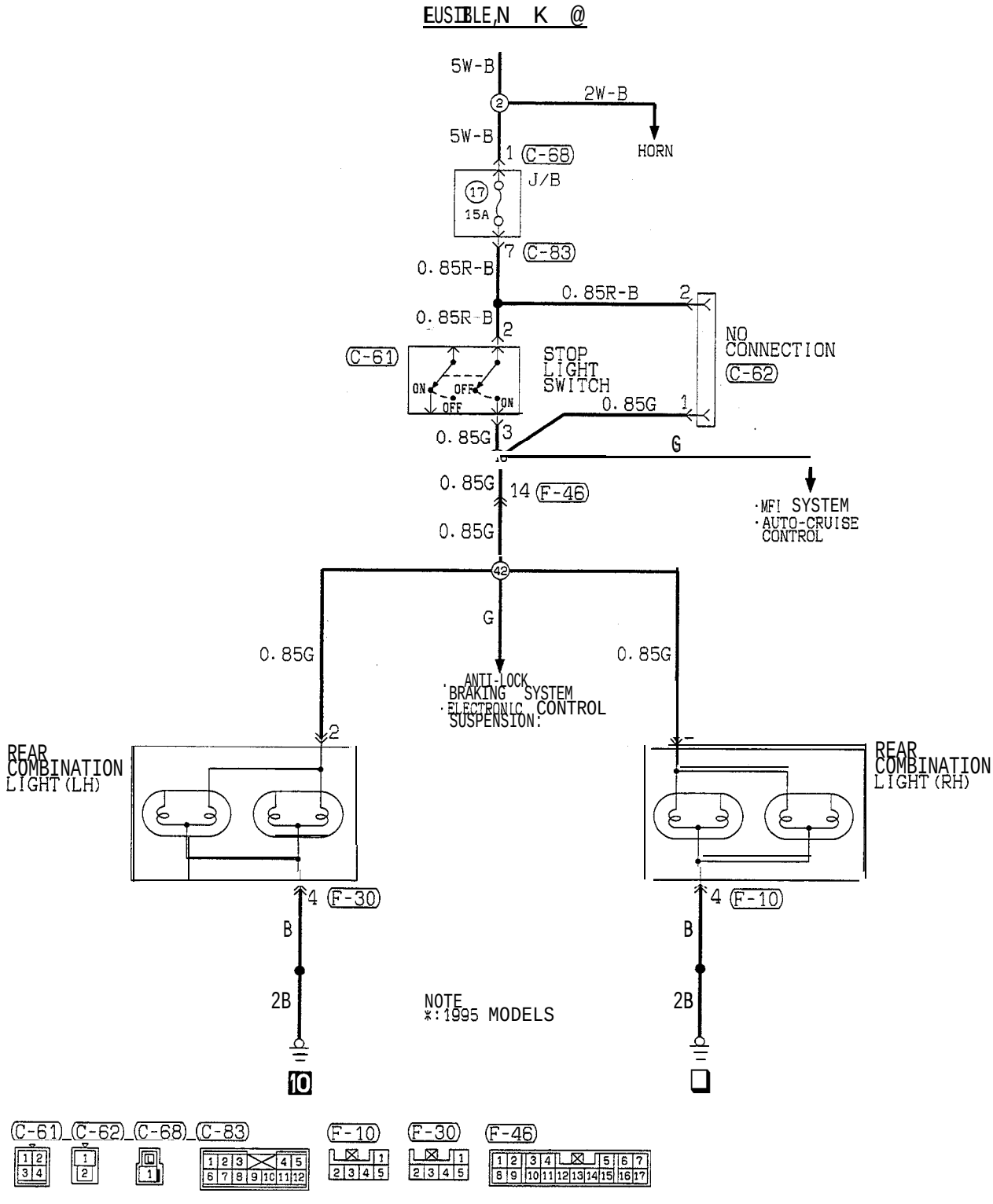
CIRCUIT DIAGRAM <HATCHBACK>



HR09M04AA

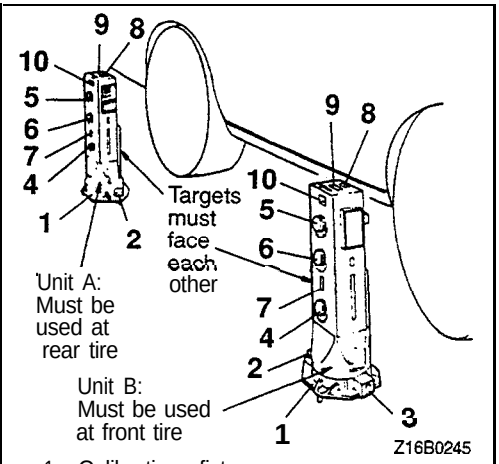
TSB Revision

CIRCUIT DIAGRAM <CONVERTIBLE>



HR09M05AA

TSB Revision



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

ON-VEHICLE SERVICE

HEADLIGHT AIMING

PRE-AIMING INSTRUCTIONS

(Up to 1993 models)

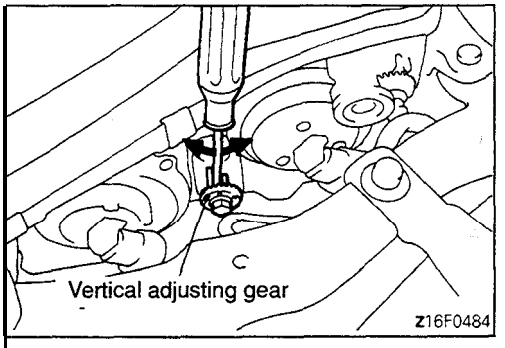
1. Test dimmer switch operation.
2. Observe operation of high beam light mounted in instrument cluster.
3. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
4. Place vehicle on a level floor.
5. Bounce front suspension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

(From 1994 models)

1. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
2. Place vehicle on a level floor.
3. Bounce front suspension through three (3) oscillations by applying body weight to hood or bumper.
4. Inspect tire inflation.
5. Rock vehicle sideways to allow vehicle to assume its normal position.
6. 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].
7. 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.
8. Thoroughly clean headlight lenses.
9. When performing the visual headlight adjustment on vehicles with resin lens headlights, be sure to observe the following precautions.

Caution
When adjusting one headlight, the other headlight should be turned off if possible. If this is not possible, do not cover the other headlight for more than three minutes while it is turned on. Otherwise, heat from the bulb may warp the headlight lens.

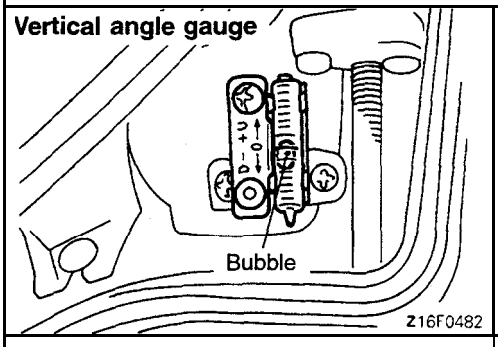
NOTE
If the visual headlight adjustment at low beam is made, the adjustment at high beam is not necessary.

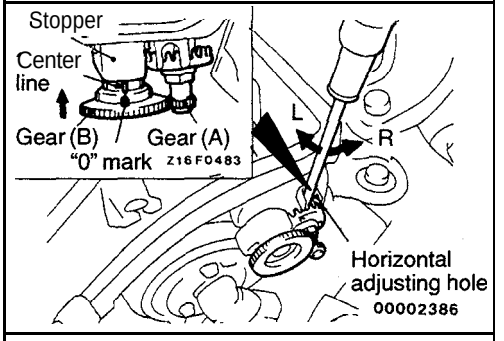


VERTICAL ADJUSTING

Adjust the vertical angle with the vertical adjusting gear so that the bubble of the vertical angle gauge is aligned with the "0" mark position.

NOTE
The beam angle will change about 0°12' with on mark.

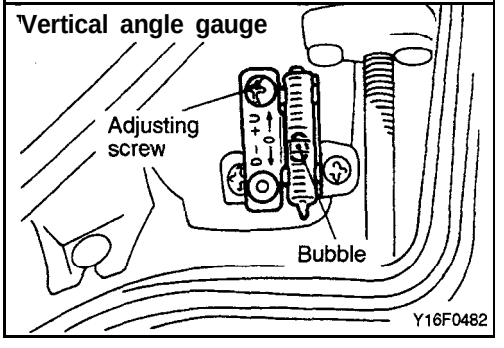




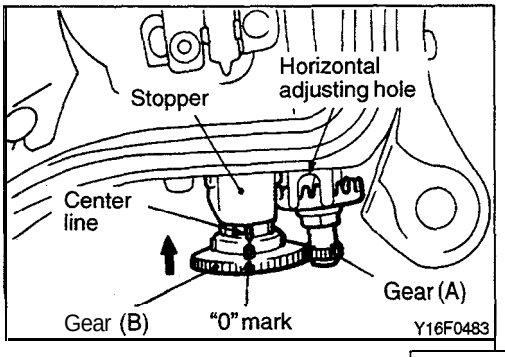
HORIZONTAL ADJUSTING

Insert a screwdriver in the horizontal adjusting hole and turn until the "0" mark and the center line are in alignment.

NOTE
The beam angle will change about 0°23' with on mark.



3. Check to see that the bubble in the headlight vertical angle gauge is in the illustrated position.
4. If the bubble is out of position, adjust by turning the adjusting screw.
5. Confirm that the "0" mark on the headlight horizontal angle adjusting gear (B) is in alignment with the center line.
6. If not, perform the adjustment as follows.
   (1) Pull up the stopper.
   (2) Push the gear (B) in the arrow direction to disengage it from the gear (A).
   (3) Align the "0" mark on the gear (B) with the center line.
   (4) Push down the stopper to engage the gear (B) with the gear (A).



LUMINOUS INTENSITY MEASUREMENT

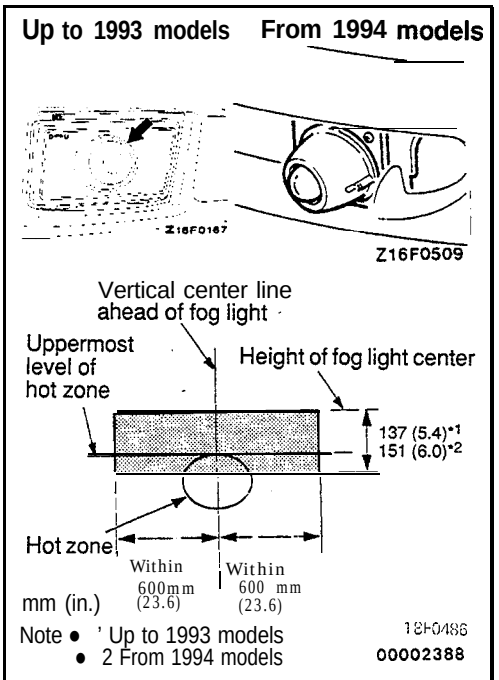
Measure the luminous intensity of headlights with a photo-meter in accordance with the instruction manual prepared by the manufacturer of the photometer and make sure that the luminous intensity is within the following limit.

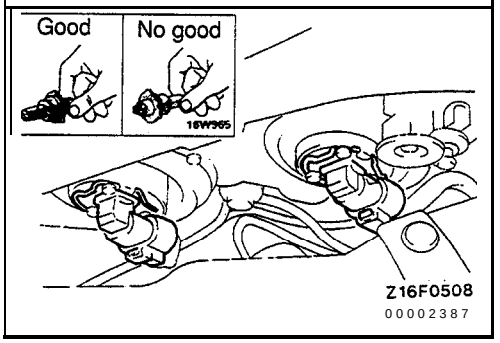
Limit: 20,000 cd or more

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

FOG LIGHT AIMING

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





BULB REPLACEMENT

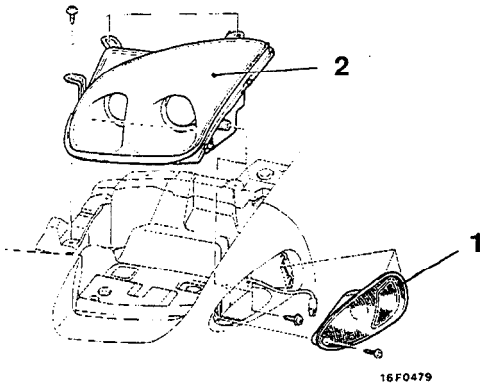
1. Disconnect the connector.
2. Turn the bulb socket counterclockwise to pull it out.

Caution
Do not touch the surface of the headlight bulb with hands or dirty gloves. If the surface dies become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing.

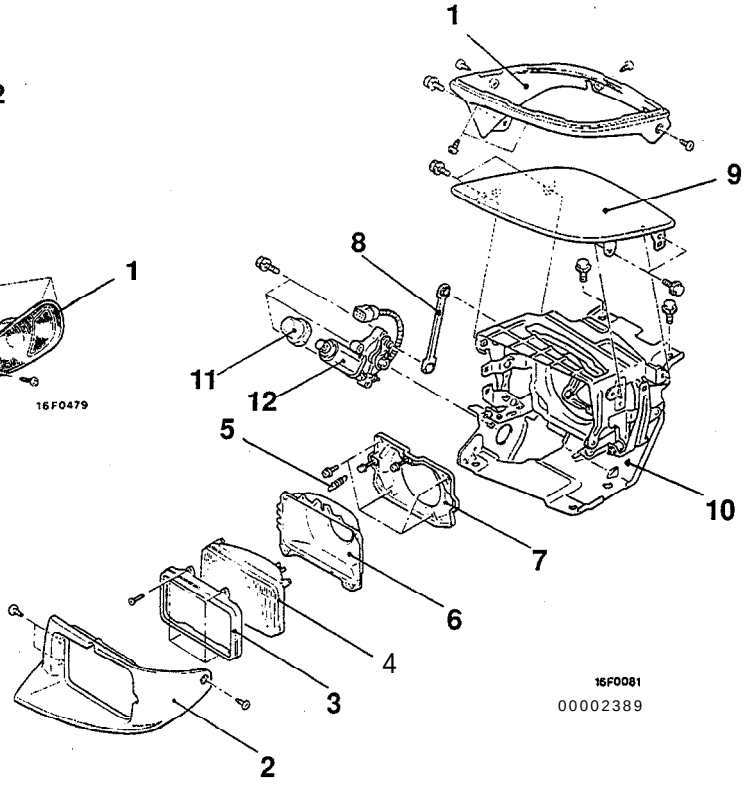
HEADLIGHT

REMOVAL AND INSTALLATION

(From 1994 models)



(Up to 1993 models)



Removal steps (From 1994 models)

1. Front combination light
2. Headlight

Removal steps (Up to 1993 models)

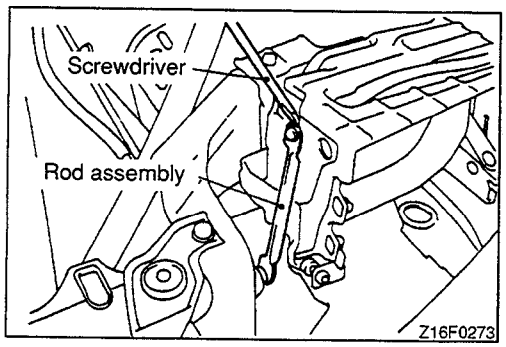
◀A▶
1. Headlight bezel, upper
2. Headlight bezel, lower
3. Retaining ring
4. Headlight
5. Spring
6. Mounting ring
7. Housing

◀B▶
8. Rod assembly
9. Headlight hood
10. Link assembly
11. Boot
12. Pop-up motor

REMOVAL SERVICE POINTS

◀A▶ HEADLIGHT BEZEL, UPPER REMOVAL

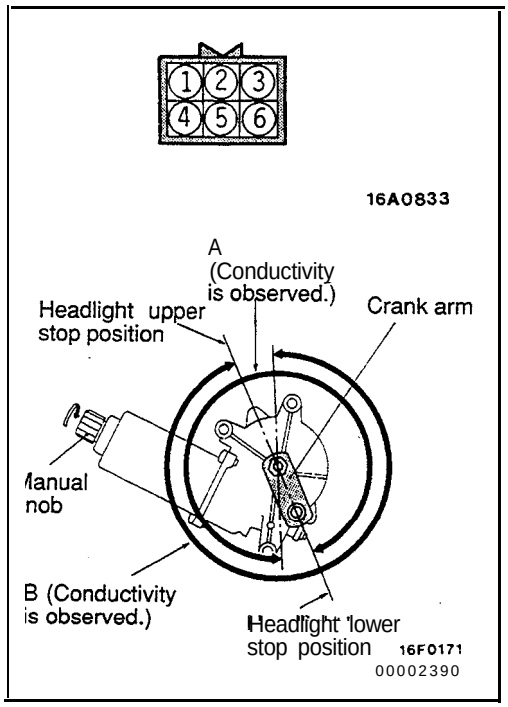
(1) Raise the headlights by using the pop-up switch. Disconnect the negative (–) battery terminal.
(2) Remove the headlight bezel, upper.



◀B▶ ROD ASSEMBLY REMOVAL

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

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



INSPECTION

POP-UP MOTOR (Up to 1993 models) CHECK

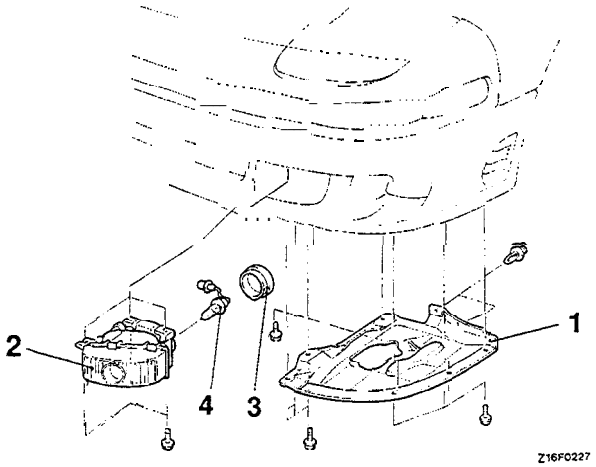
Rotate the manual knob of the pop-up motor clockwise by hand to check continuity between terminals.

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

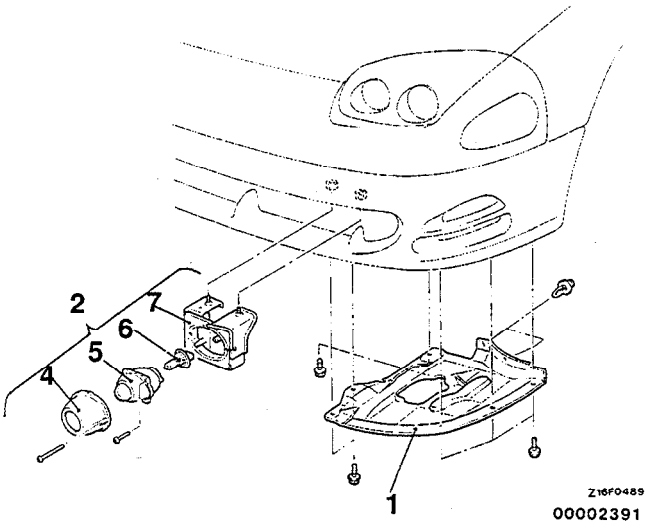
FOG LIGHT

REMOVAL AND INSTALLATION

(Up to 1993 models)



(From 1994 models)

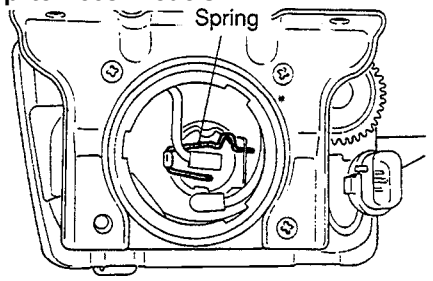


Removal steps
(Up to 1993 models)
1. Front air side spoiler
2. Fog light assembly
3. Socket cover
◀A▶ 4. Bulb

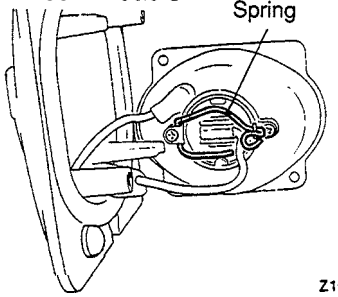
(From 1994 models)
1. Front air side spoiler
2. Fog light assembly

Bulb replacement removal steps
4. Lens
5. Projector unit
◀A▶ 6. Bulb
7. Bracket

Up to 1993 models



From 1994 models



REMOVAL SERVICE POINT

◀A▶ BULB REMOVAL

(1) Remove the socket cover (Up to 1993 models).
(2) Remove the bulb mounting spring and remove the bulb.

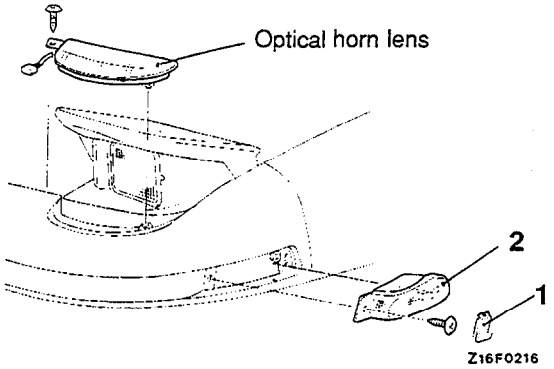
Caution
Do not touch the surface of the headlight bulb with bare hands or dirty gloves.
If there are deposits on the surface, loosen and remove the deposits with a cloth dipped in alcohol or thinner, and let the surface dry before mounting the bulb.

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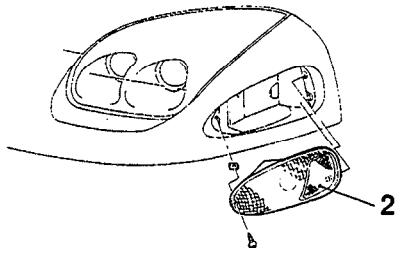
FRONT COMBINATION LIGHT AND OPTICAL HORN LENS

REMOVAL AND INSTALLATION

(Up to 1993 models)



(From 1994 models)



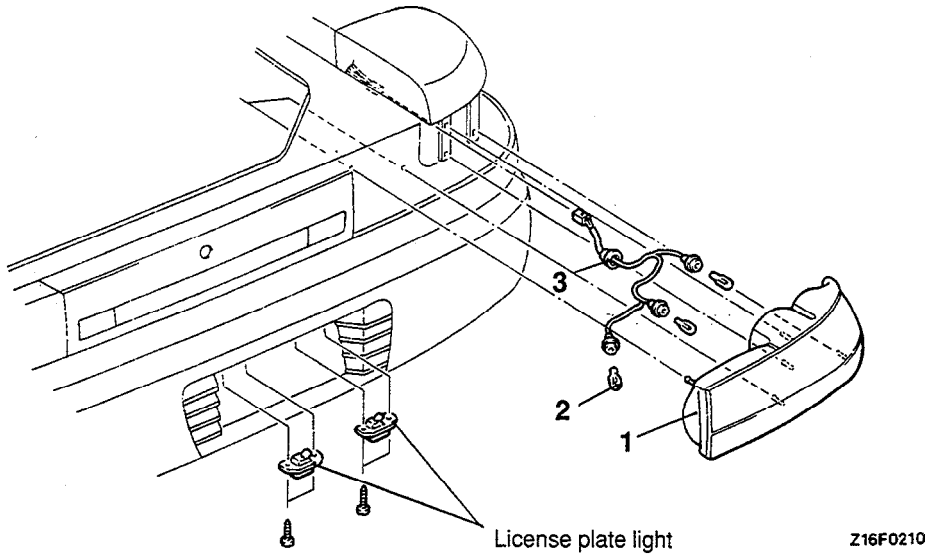
00002392

Removal steps

1. Light cover
2. Front combination light

REAR COMBINATION LIGHT AND LICENSE PLATE LIGHT

REMOVAL AND INSTALLATION



Removal steps

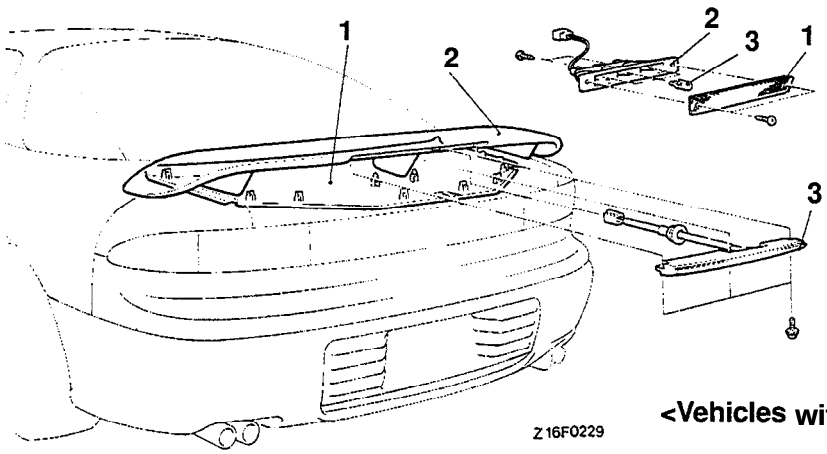
1. Rear combination light unit
2. Bulb
   Rear side trim (Refer to GROUP 52A – Trims.)
3. Socket assembly

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HIGH MOUNTED STOP LIGHT

REMOVAL AND INSTALLATION

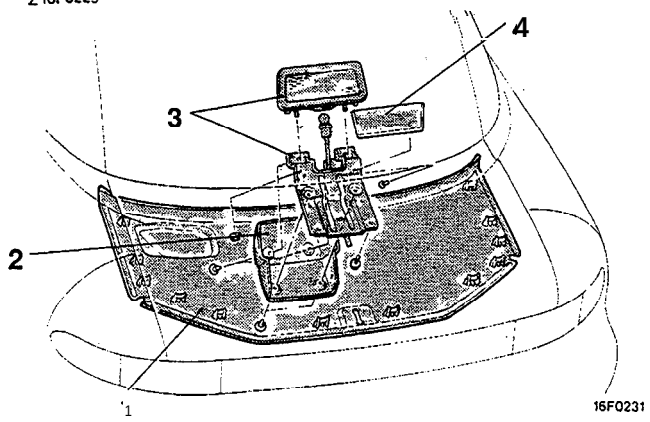
<Vehicles with rear spoiler>



<Vehicles with active rear spoiler>

<Vehicles with fixed rear spoiler>

<Vehicles without rear spoiler>



00002393

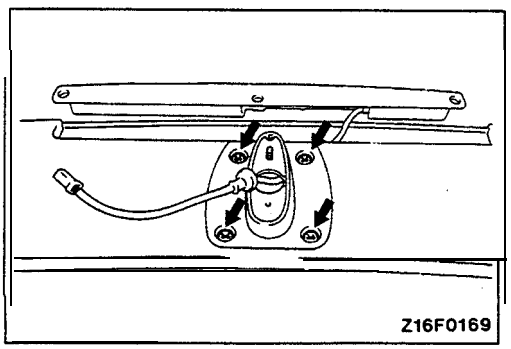
Removal steps

<Vehicles with fixed rear spoiler>
1. Liftgate lower trim (Refer to GROUP 52A – Trims.)
2. Rear spoiler (Refer to GROUP 51 – Aero Parts.)
◀A▶ 3. High mounted stop light

<Vehicles with active rear spoiler>
1. Light unit
2. Socket assembly
3. Bulb

Removal steps

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

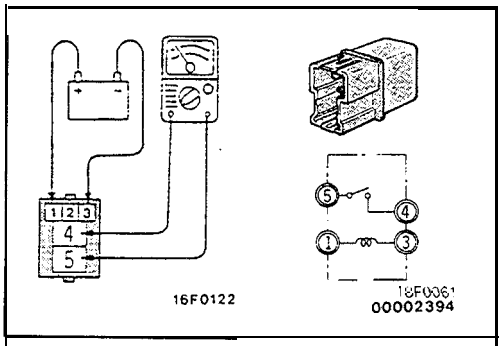


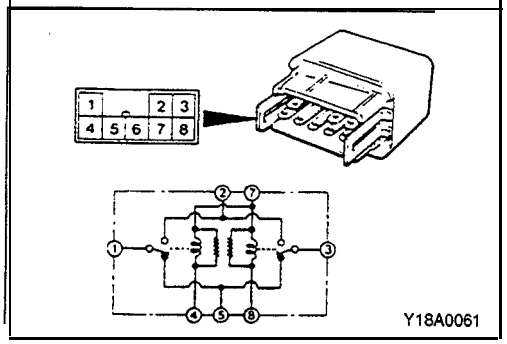
REMOVAL SERVICE POINT

4A, HIGH-MOUNTED STOP LIGHT REMOVAL (Vehicles with fixed rear spoiler)

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

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RELAY

INSPECTION

HEADLIGHT RELAY / TAILLIGHT RELAY / FOG LIGHT RELAY CHECK

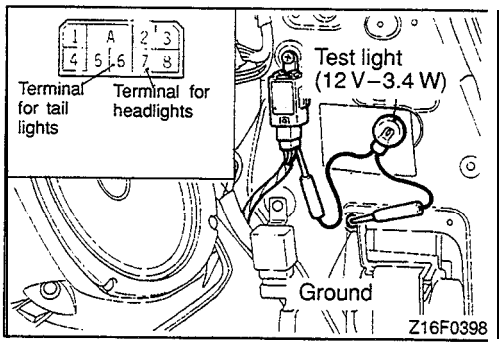
Connect battery to terminal 1 and check continuity between terminals with terminal 3 grounded.

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

POP-UP MOTOR RELAY (Up to 1993 models) CHECK

Check for continuity between terminals under the conditions described below.

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



LIGHT AUTOMATIC SHUT-OFF UNIT CHECK

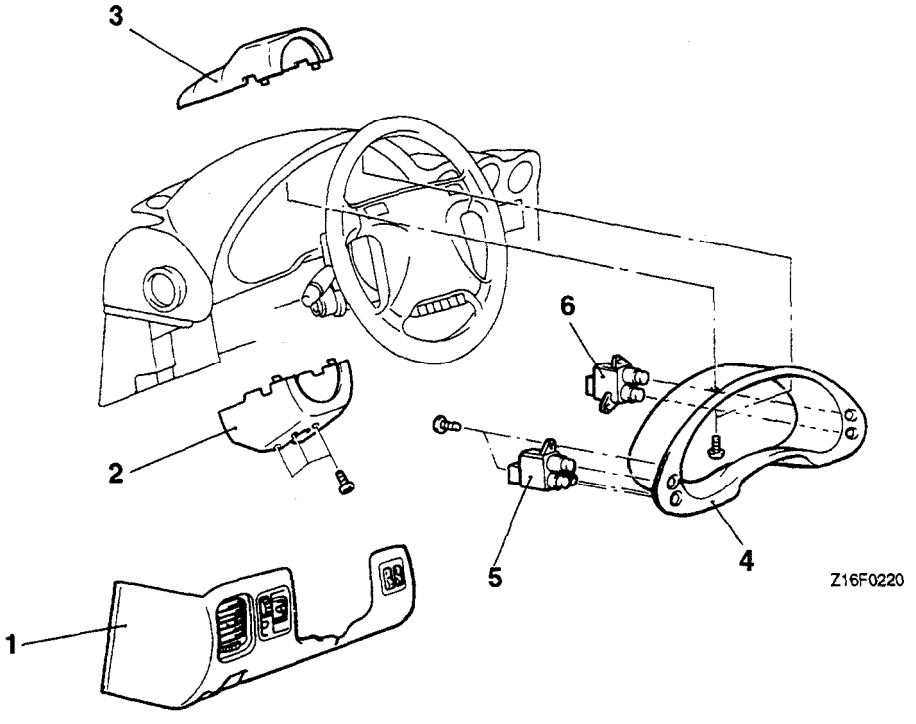
(1) Remove the quarter trim. (Refer to GROUP 52A – Trim.)
(2) Keeping the connector connected to the light automatic shut-OFF unit, connect the test light (12 V-3.4 W) from the harness side to terminal No. 6 (for tail lights) or No. 7 (for headlights). Under the following conditions, check the operation of the test light.

	Conditions	Test light
(1)	Ignition switch and lighting switch are at "OFF" position.	Illuminated
(2)	Lighting switch is at "TAIL" or "HEAD" with ignition switch at "ACC" or "ON" position.	Illuminated
(3)	Driver's door is opened after ignition switch is turned from state (2) to "OFF" position. (Reverse procedure is also allowable.)	Illuminated
(4)	Ignition switch is once turned from state (3) "OFF", then turned to "TAIL" or "HEAD".	Extinguished
(5)	Ignition switch is turned from state (3) to "ACC" or "ON" position.	Illuminated

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POP-UP SWITCH* AND FOG LIGHT SWITCH

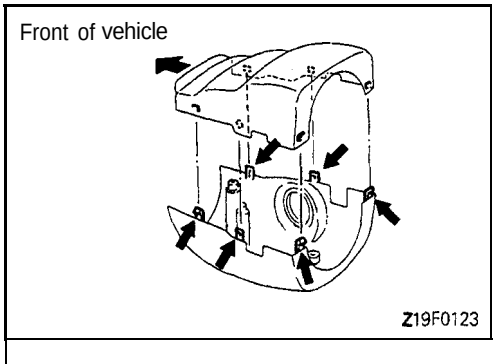
REMOVAL AND INSTALLATION

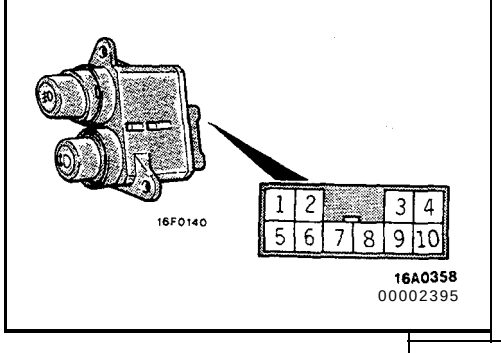


Removal steps

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

NOTE
● : Up to 1993 models





REMOVAL SERVICE POINTS

◀A▶ COLUMN COVER, LOWER / COLUMN COVER, UPPER REMOVAL

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

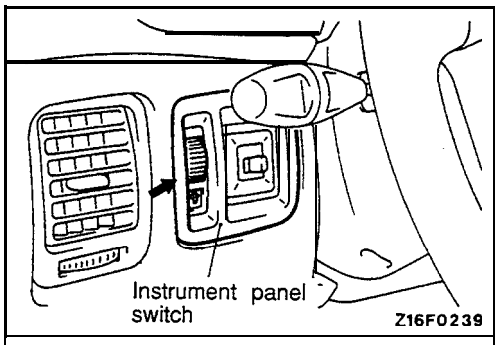
INSPECTION

Operate the switch to check for continuity between terminals.

Switch position		Terminal No.						
		1	5	8	9	10	3	4
Pop-up switch (Up to 1993 models)	UP				○—○		Illumination light	
	DOWN			○—	—○			
Fog light switch	ON	○—○						
	OFF							

NOTE
Refer to P.54-203. Check the rear window defogger switch.

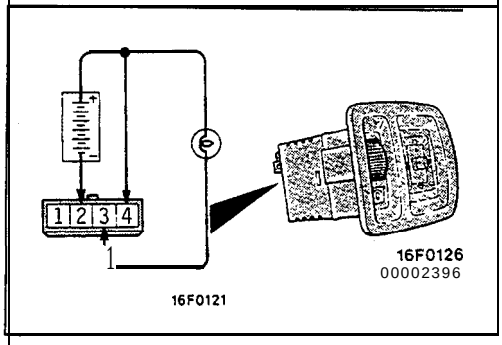
TSB Revision



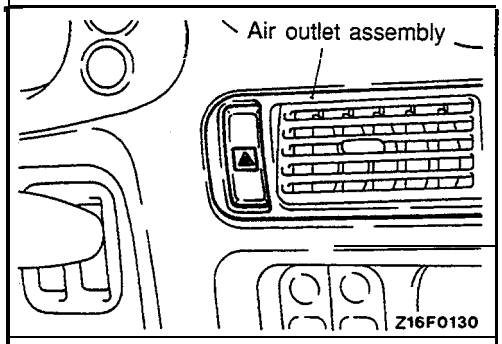
RHEOSTAT

INSPECTION

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



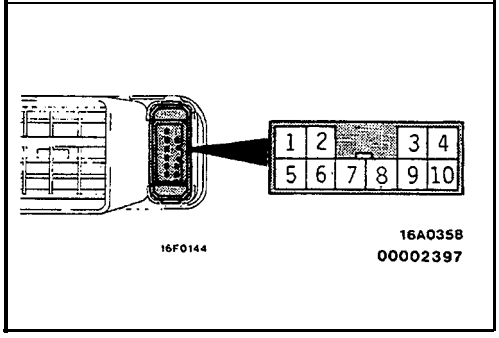
(2) Connect the battery and a test bulb (40 W) as shown in the figure.
(3) The function of the rheostat is normal if the intensity of illumination changes smoothly, without flashing or flickering, when the rheostat is operated.



HAZARD SWITCH

INSPECTION

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



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

Switch position	Terminal No.								
	1	5	6	7	8	9	10	2	3
ON			○	○	○	○	○		
OFF		○			○			Illumination light	

COLUMN SWITCH

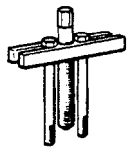
SPECIFICATIONS

GENERAL SPECIFICATIONS

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

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

SPECIAL TOOL

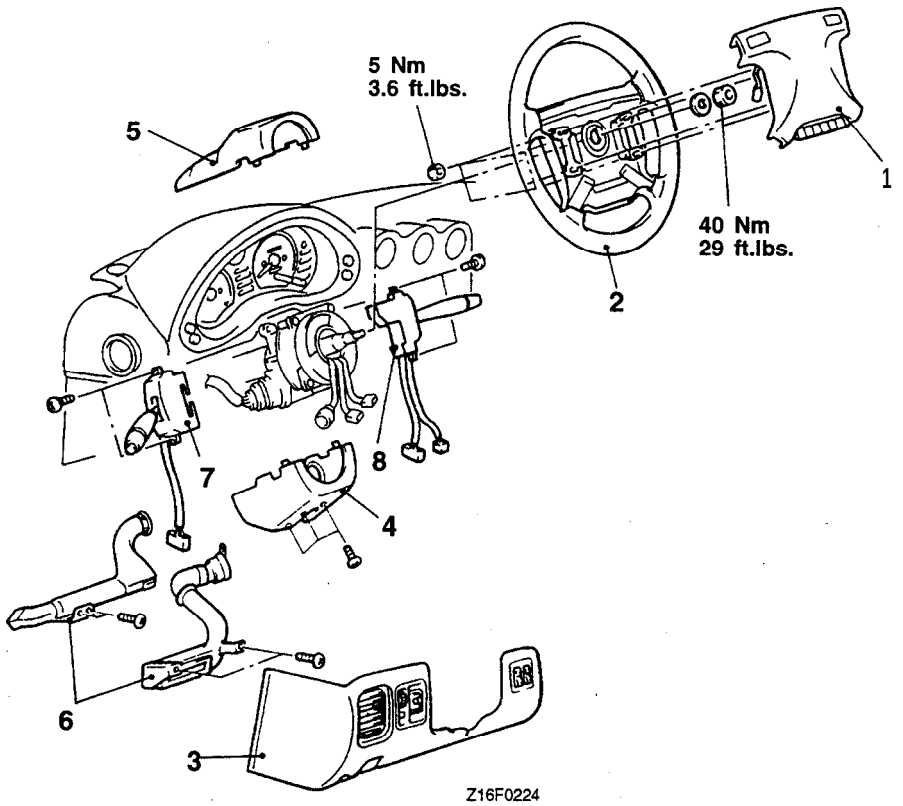
Tool	Tool number and name	Supersession	Application
	MB990803 Steering wheel puller	General service tool	Removal of steering wheel

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COLUMN SWITCH

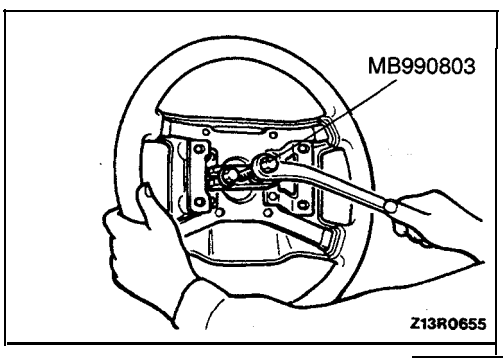
REMOVAL AND INSTALLATION

CAUTION: SRS
Before removal of air bag module, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.



Removal steps

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



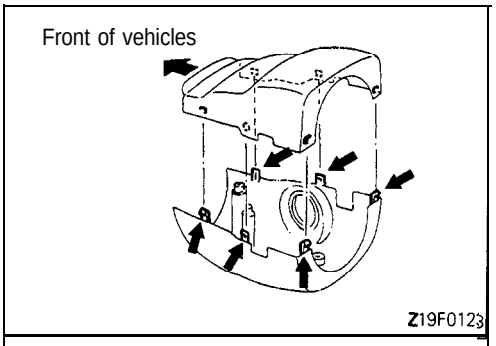
REMOVAL SERVICE POINTS

◀A▶STEERING WHEEL REMOVAL

Remove the steering wheel by the special tool.

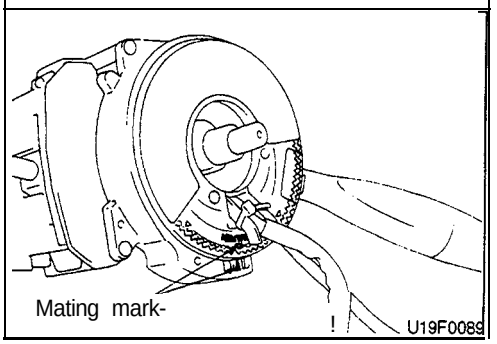
Caution
Do not hammer on the steering wheel. Doing so may damage the collapsible column mechanism.

TSB Revision



◀B▶COLUMN COVER, LOWER / COLUMN COVER, UPPER REMOVAL

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



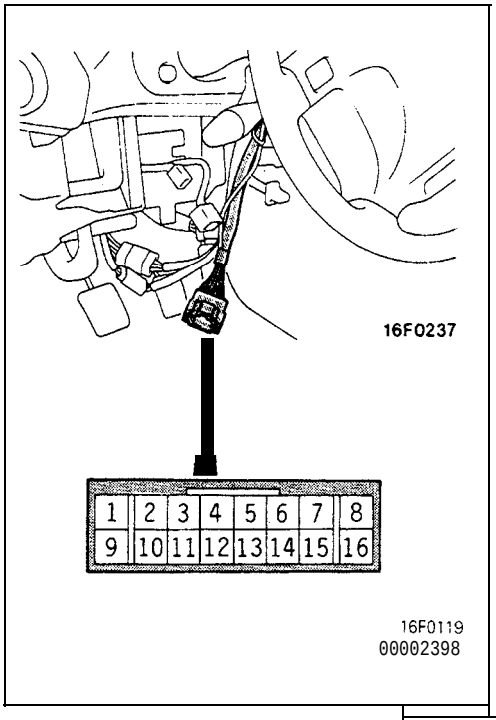
INSTALLATION SERVICE POINT

▶A◀STEERING WHEEL INSTALLATION

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

Caution

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



INSPECTION

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

LIGHTING SWITCH CHECK

Operate the switch and check the continuity between the terminals.

Switch position	Terminal No.					
	3	5	6	7	10	14
OFF		○—○				
≡D≡		○—○			○—○	
≡D	○				○—○	
		○		○		

TSB Revision

TURN SIGNAL SWITCH CHECK

Operate the switch and check the continuity between the terminals.

Switch position	Terminal No.		
	1	12	13
Left	○		○
Neutral			
Right	○	○	

DIMMER/PASSING SWITCH CHECK

Operate the switch and check the continuity between the terminals.

Switch position		Terminal No.			
		2	8	9	16
Dimmer switch	LOW			○	○
	HIGH		○	○	
Passing switch		○	○	○	

WIPER AND WASHER SWITCH

Refer to GROUP 51 – Windshield Wiper and Washer.

HORN

SPECIFICATIONS

GENERAL SPECIFICATIONS

Horn (Except for theft-alarm horn)

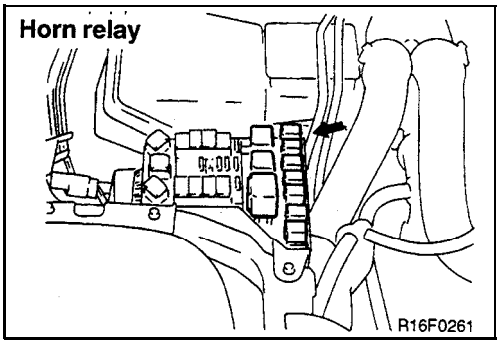
Items		Specifications
Type		Flat type
Effective sounding voltage V		11.5–15
Power consumption A		3.0
Sound level dB	"low" sound	100–112
	"high" sound	100–112
Fundamental frequency Hz	"low" sound	350–390
	"high" sound	395–435

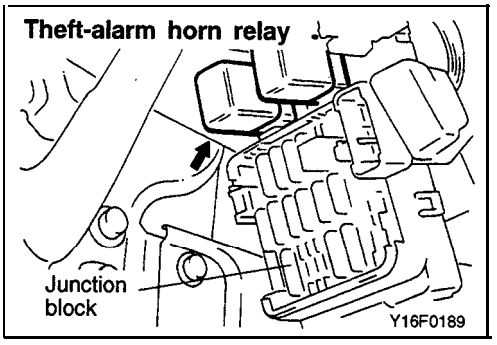
Theft-alarm horn

Items	Specifications
Type	Flat type
Effective sounding voltage V	11–14.5
Power consumption A	Max. 3.5
Sound level dB	105–120
Fundamental frequency Hz	405–435

TROUBLESHOOTING

COMPONENT LOCATION





OPERATION

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

TROUBLESHOOTING HINTS

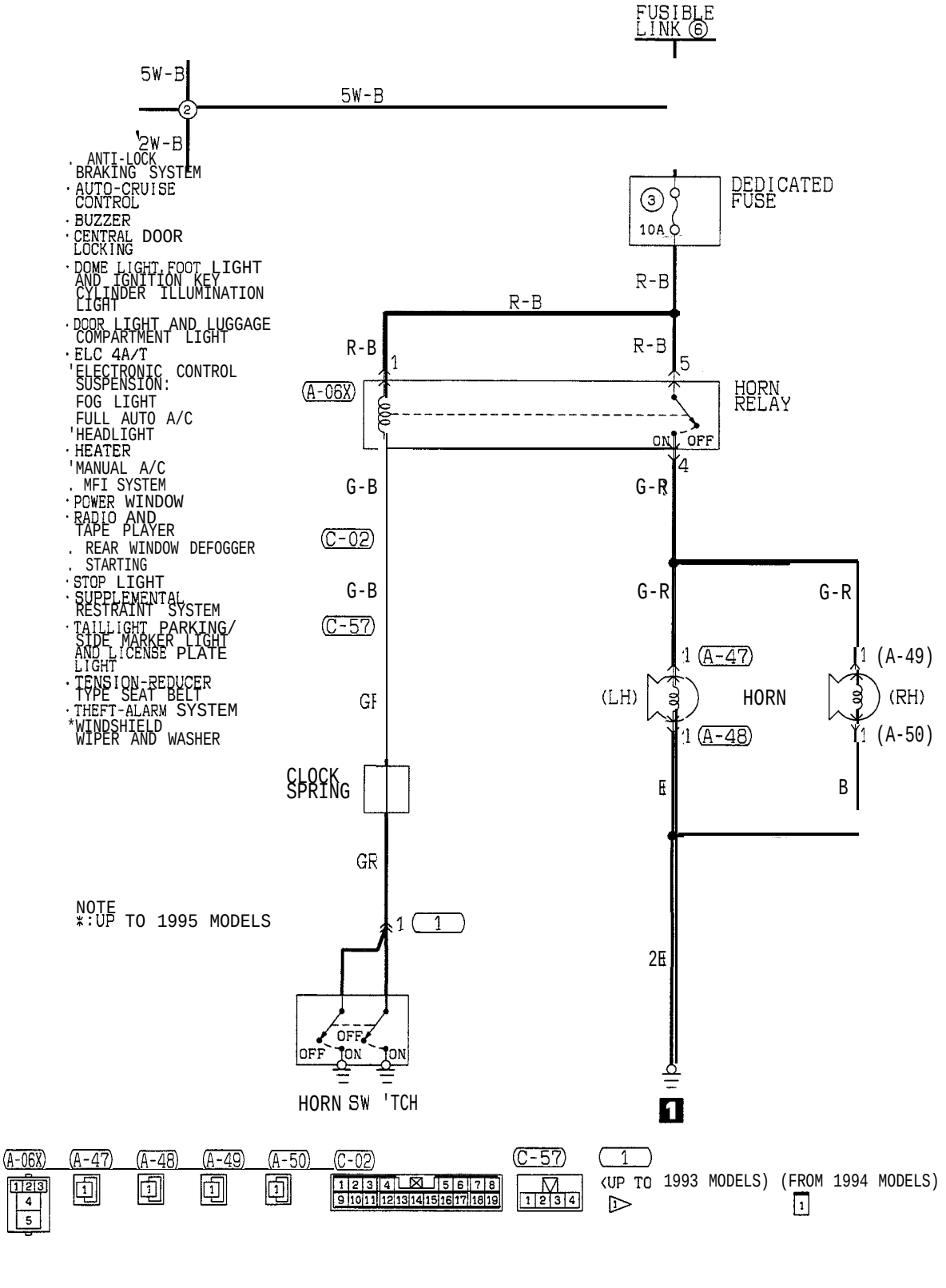
1. One of the horn does not sound.
   - Check the horn.
2. Horns do not sound.
   - Check the horn switch.
   - Check the dedicated fuse (6).

NOTE
(1) For vehicles equipped with the theft-alarm system, refer to P.54-205.
(2) For information concerning the horn relay and theft-alarm horn relay, refer to P.54-118.

TSB Revision

CIRCUIT DIAGRAM

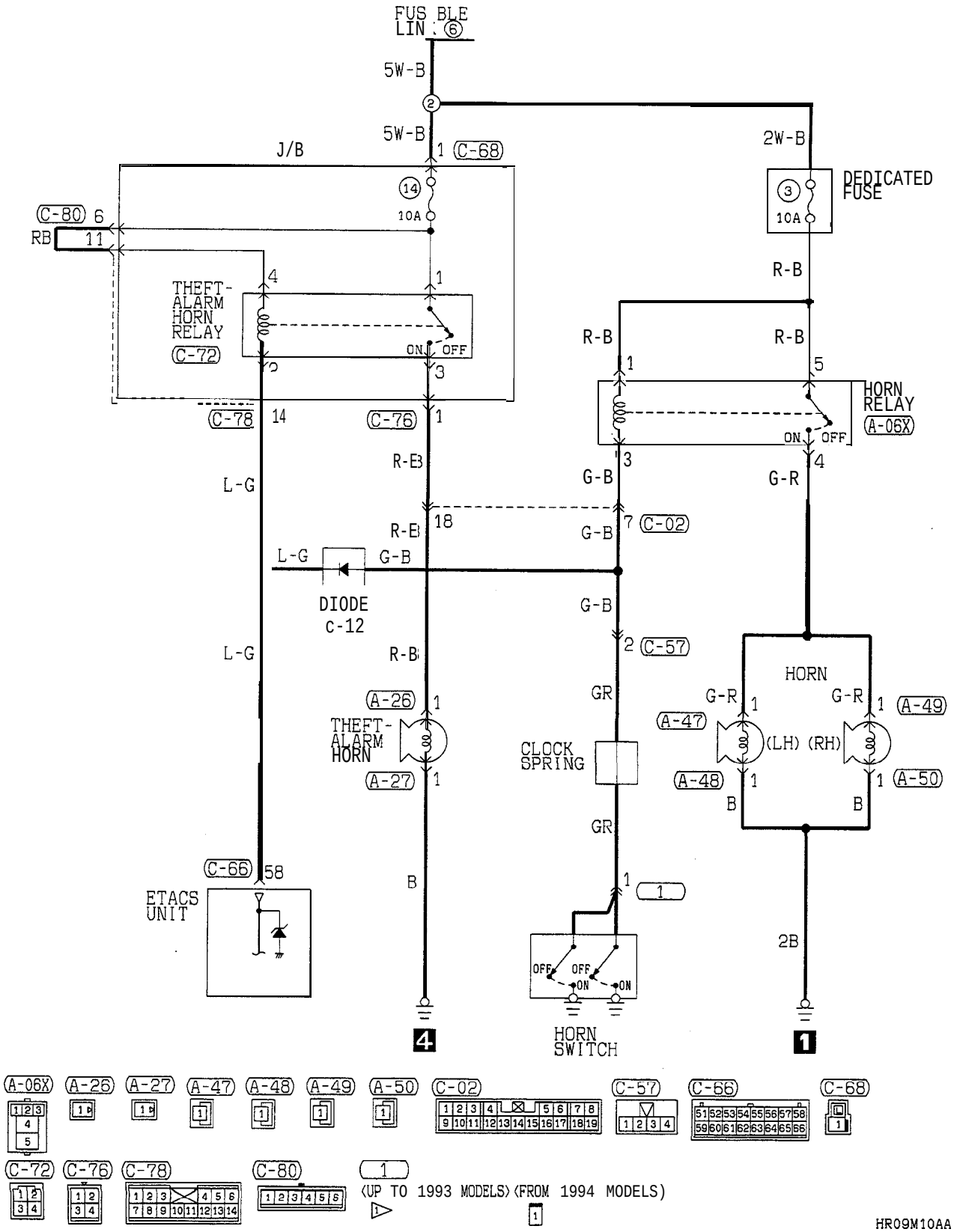
<VEHICLES WITHOUT THEFT-ALARM SYSTEM>



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<VEHICLES WITH THEFT-ALARM SYSTEM>



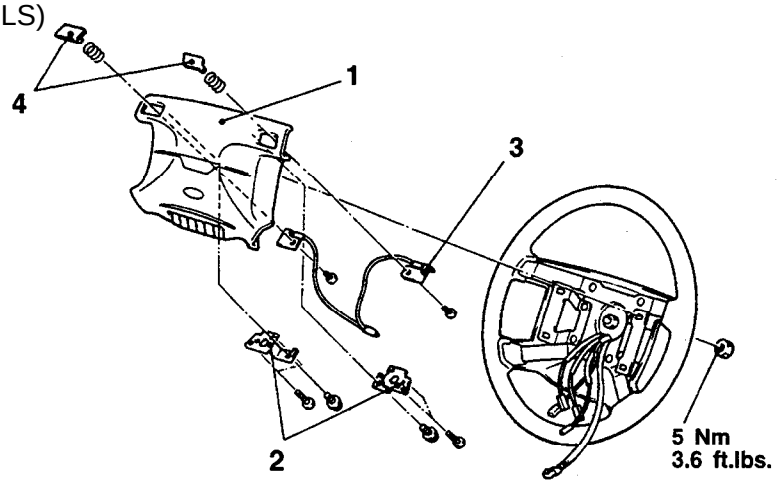
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HORN SWITCH

REMOVAL AND INSTALLATION

CAUTION: SRS
Before removal of air bag module, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.

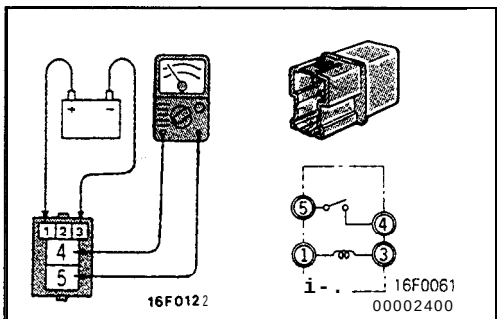
(UP TO 1993 MODELS)

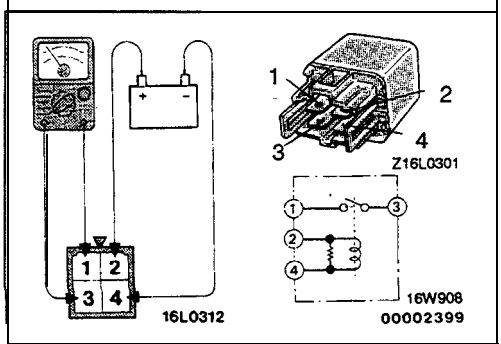


Removal steps
1. Air bag module (Refer to GROUP 52B – Air Bag Module and Clock Spring.)
2. Horn contact switch
3. Horn contact plate and wire
4. Horn switch

(FROM 1994 MODELS)

The horn switch is not supplied by itself.
If it is faulty, replace the steering wheel assembly.





RELAY

INSPECTION

HORN RELAY CHECK

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

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

THEFT-ALARM HORN RELAY CHECK

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

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CIGARETTE LIGHTER

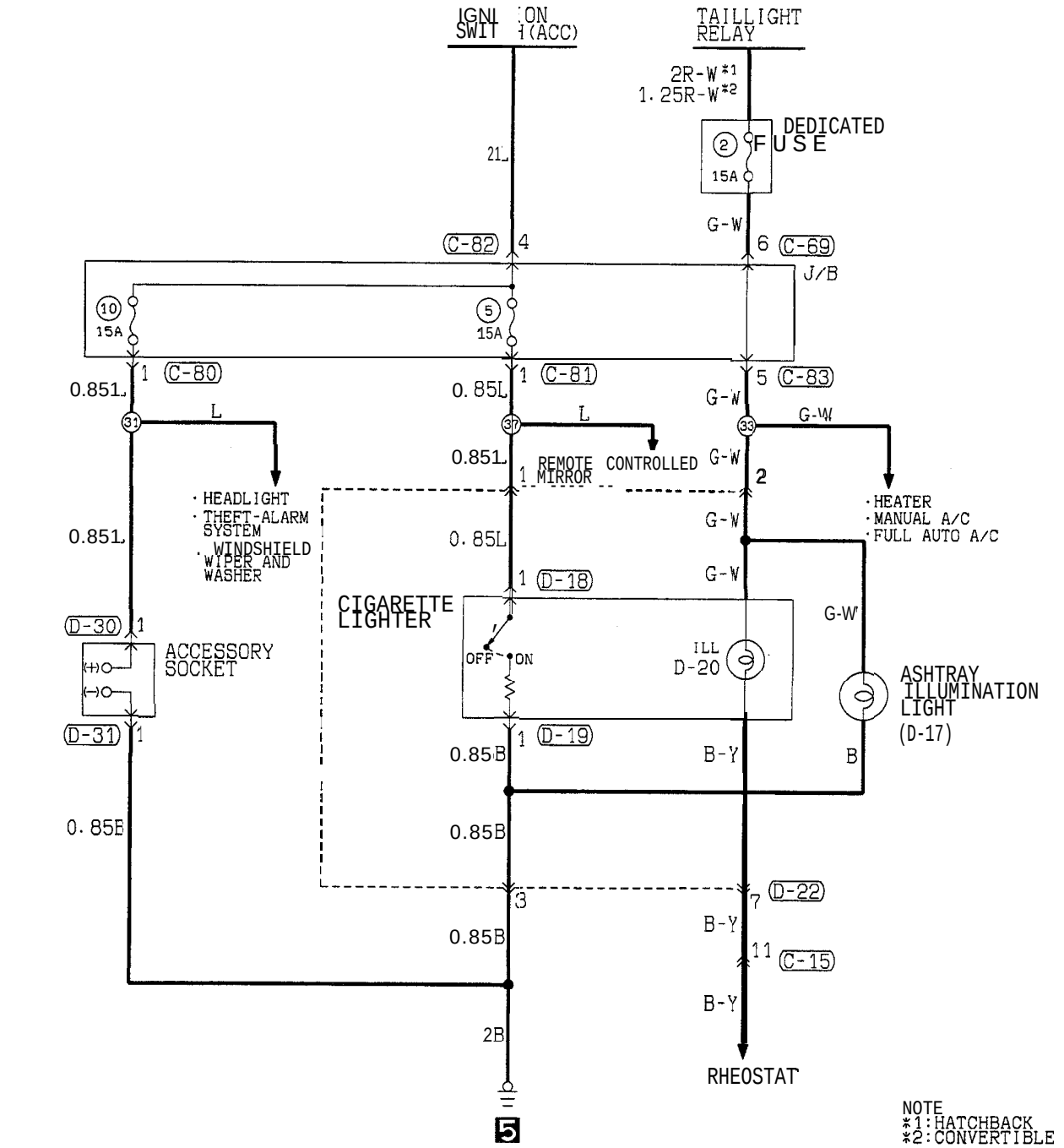
SPECIFICATIONS

GENERAL SPECIFICATIONS

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

TROUBLESHOOTING

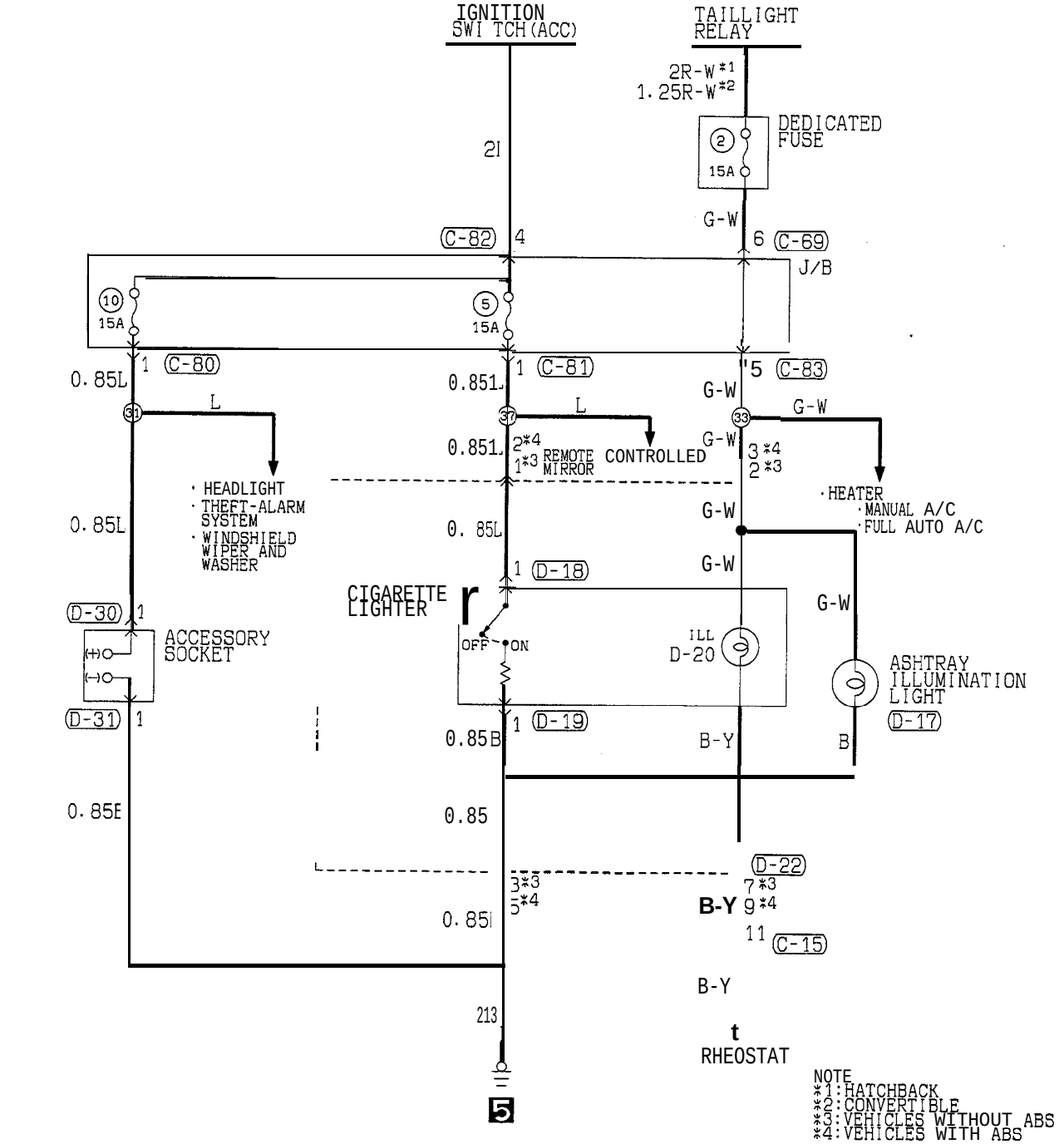
CIRCUIT DIAGRAM <UP TO 1995 MODELS>



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CIRCUIT DIAGRAM <FROM 1996 MODELS>



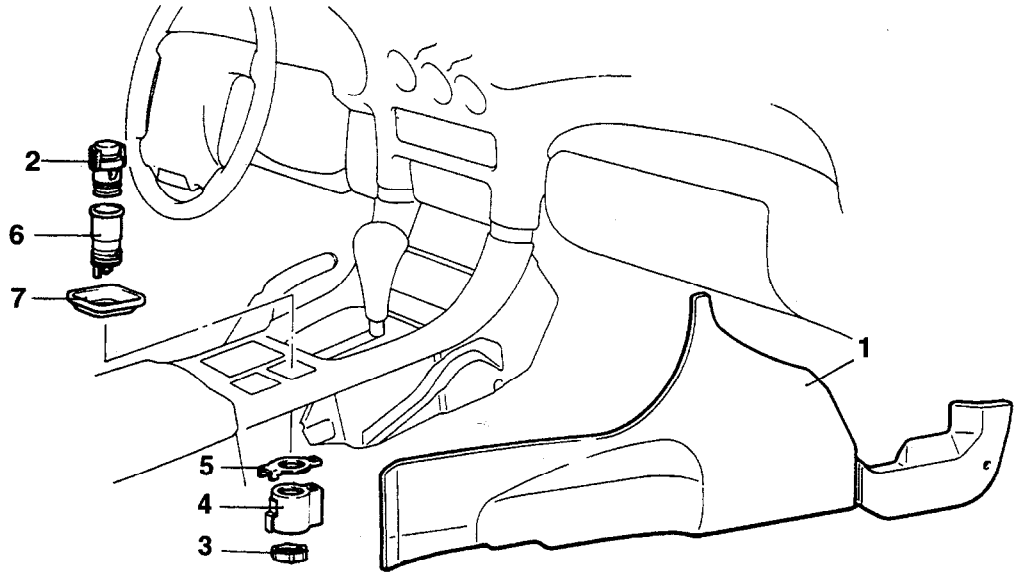
HR14M09AA

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NOTES

CIGARETTE LIGHTER

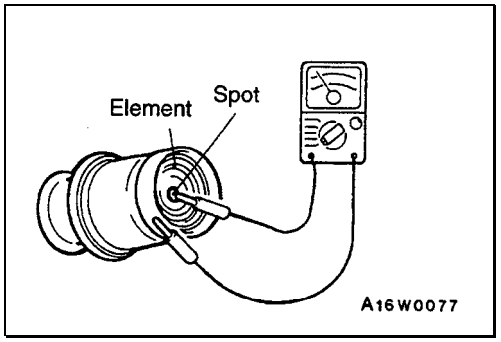
REMOVAL AND INSTALLATION



Z16F0274

Removal steps

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



INSPECTION

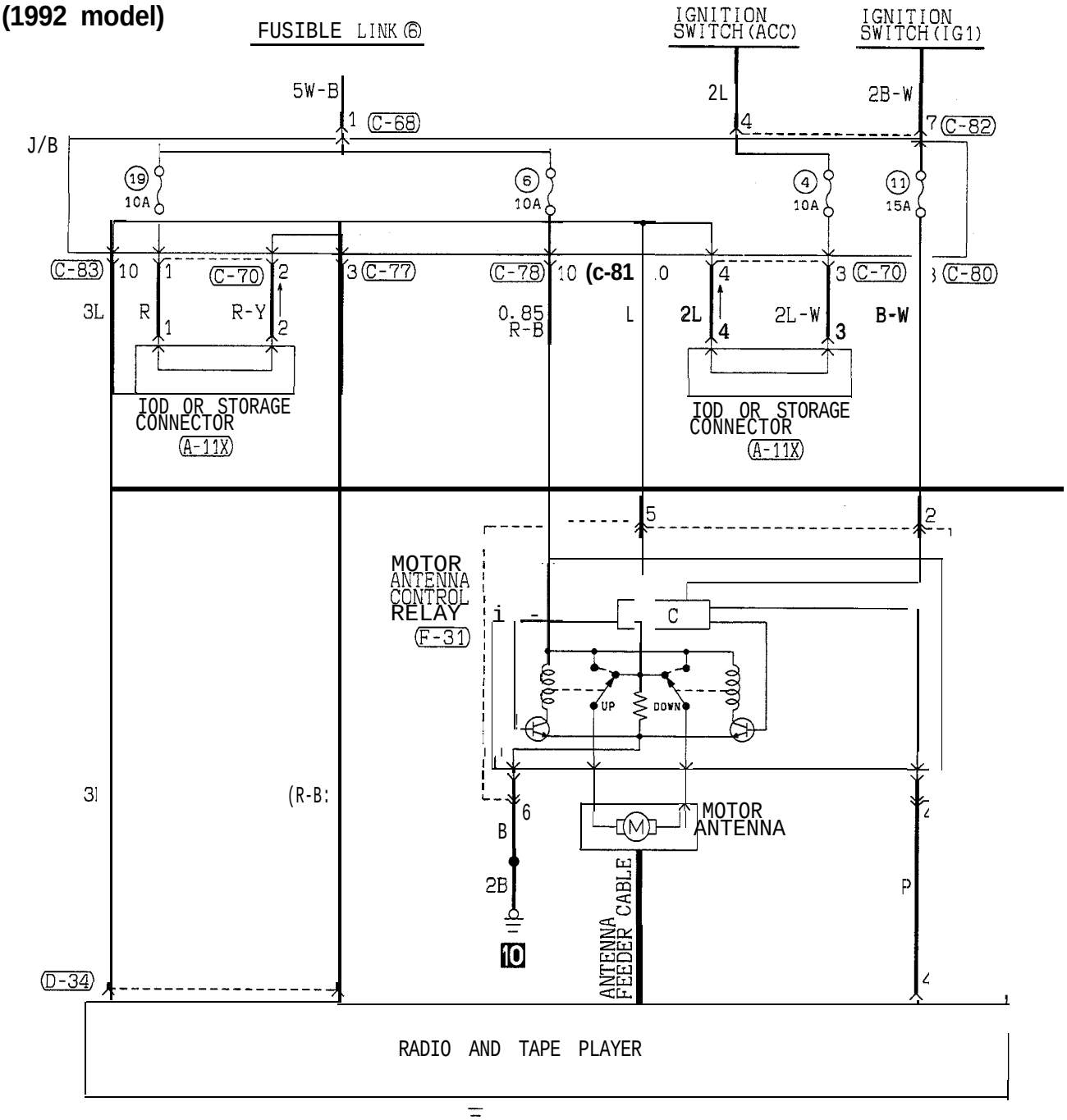
- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using an ohmmeter, check the continuity of the element.

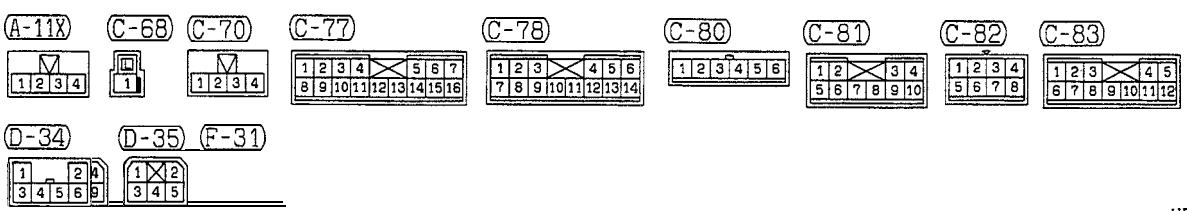
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RADIO AND TAPE PLAYER

TROUBLESHOOTING

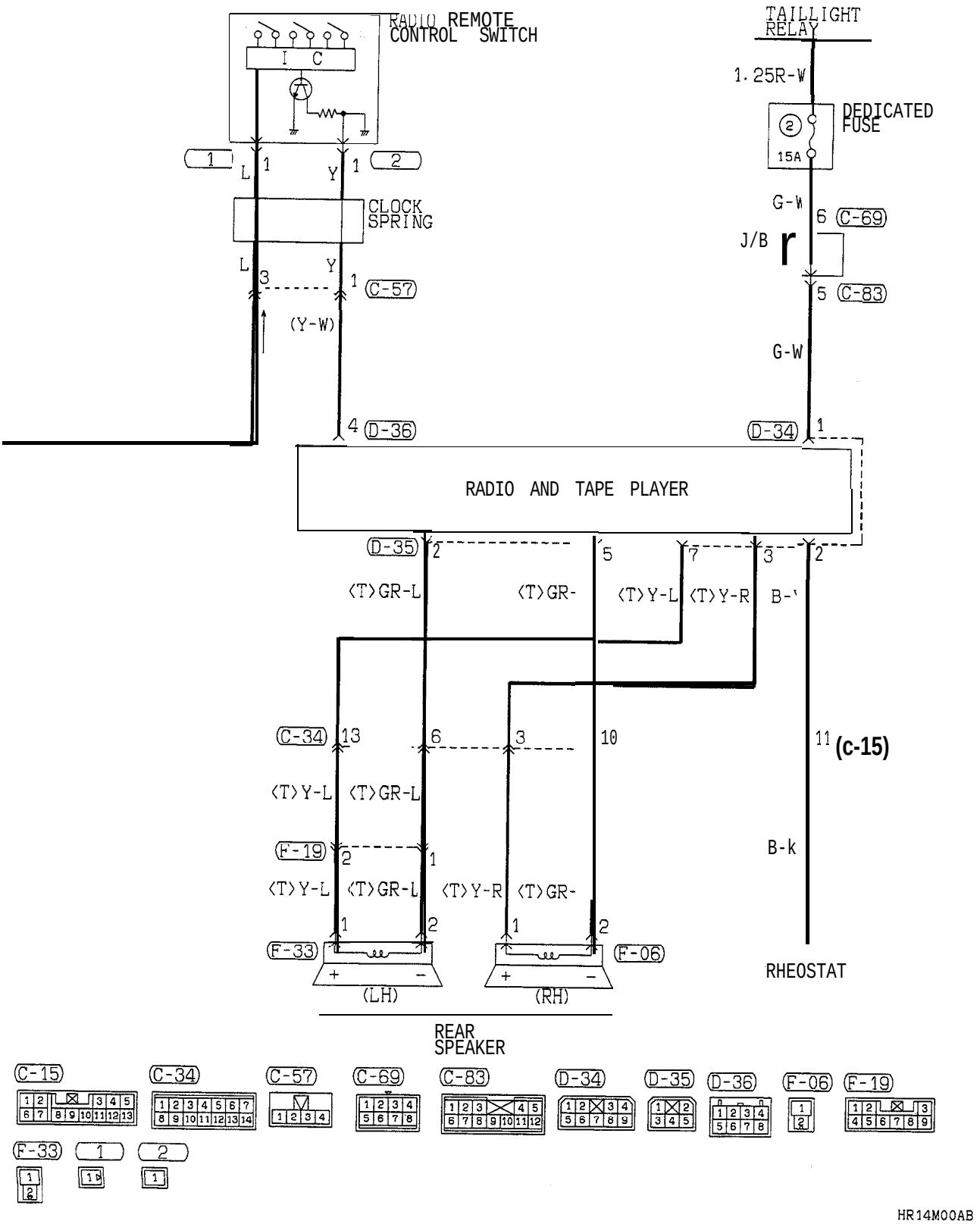
CIRCUIT DIAGRAM (1992 model)





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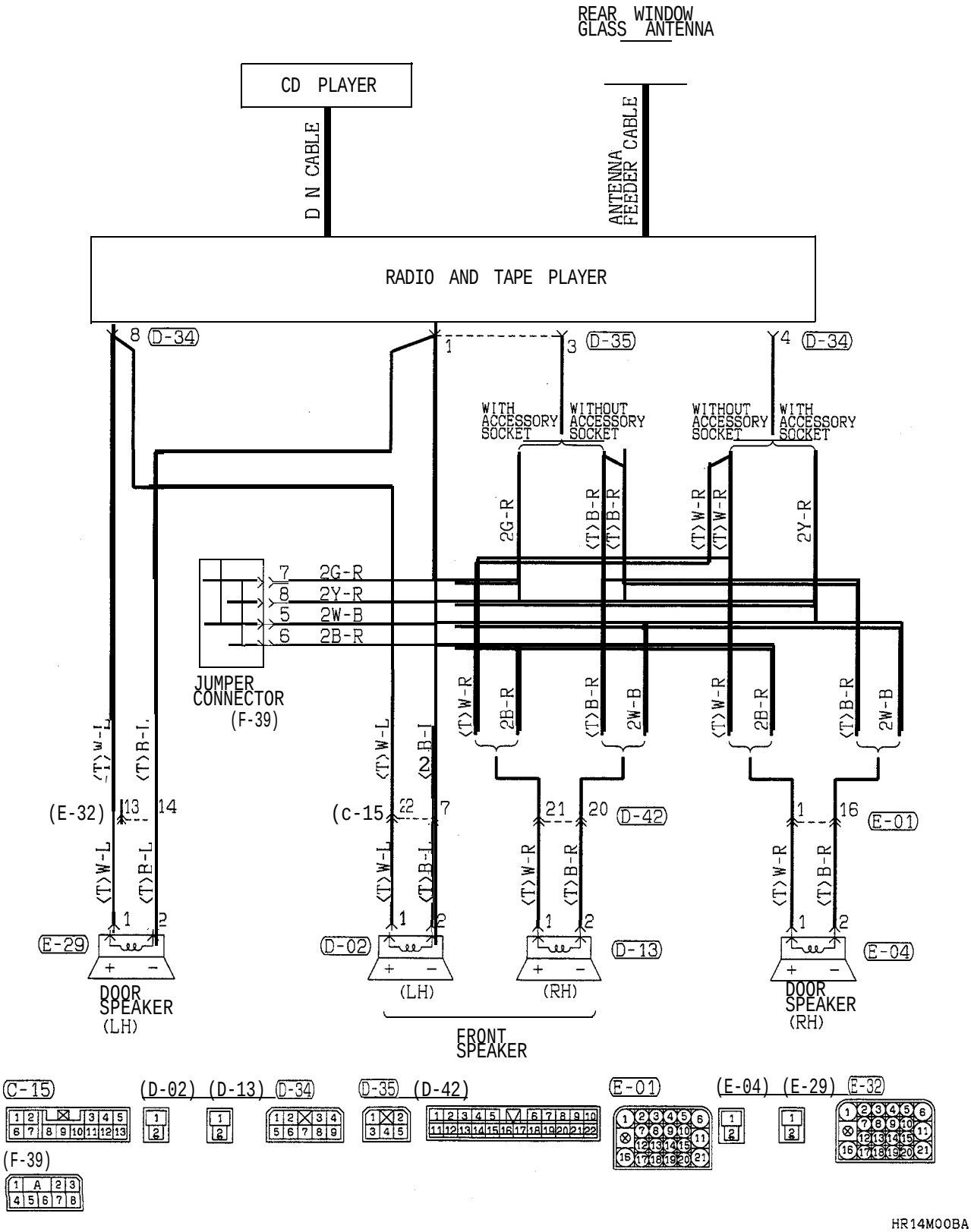
TSB Revision



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TSB Revision

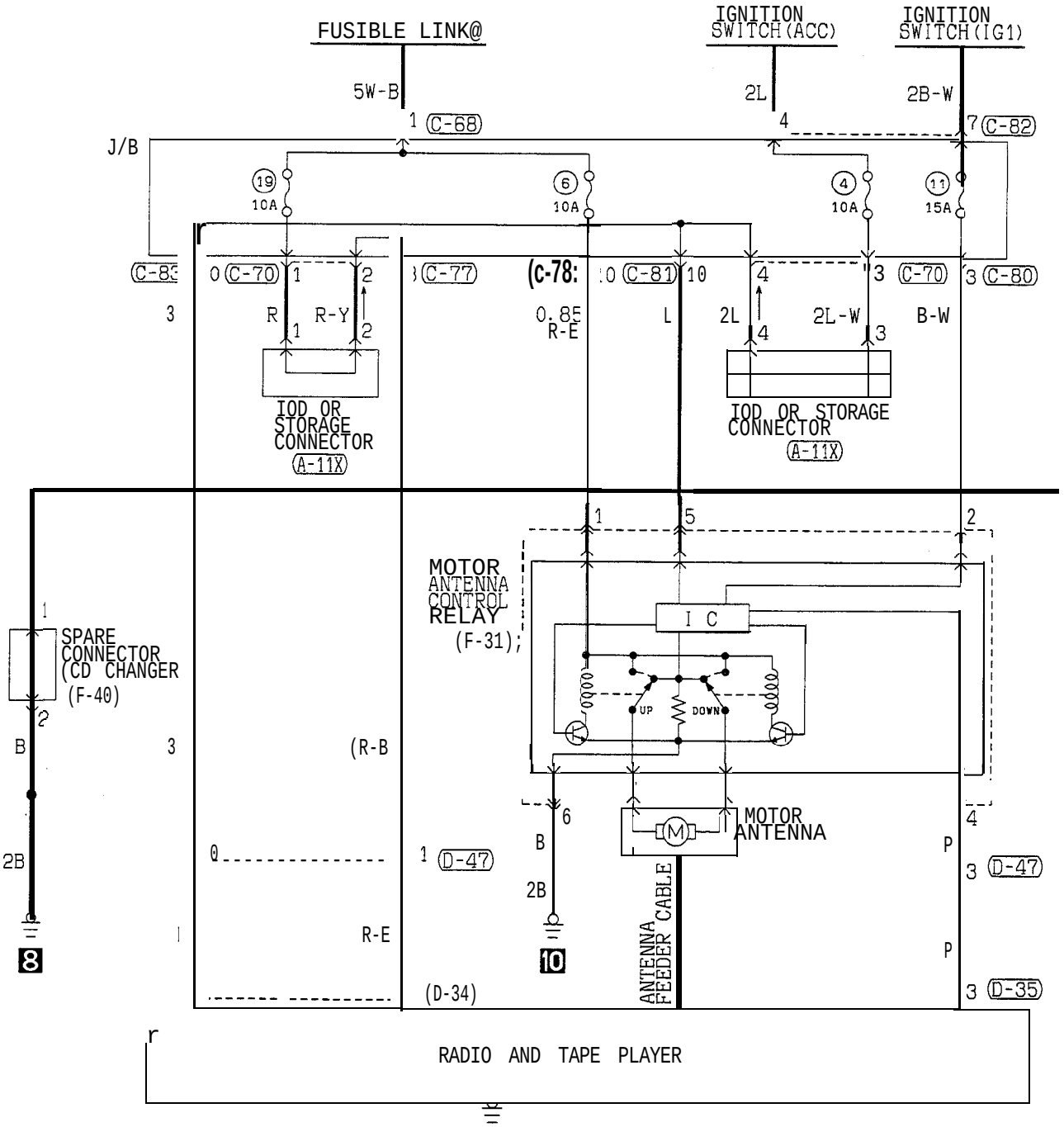
CIRCUIT DIAGRAM (1992 model) (CONTINUED)

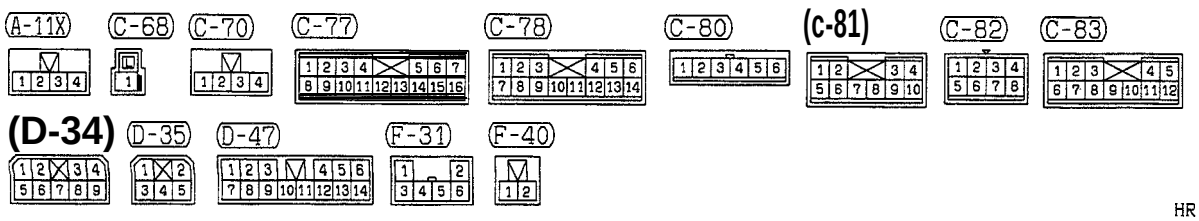


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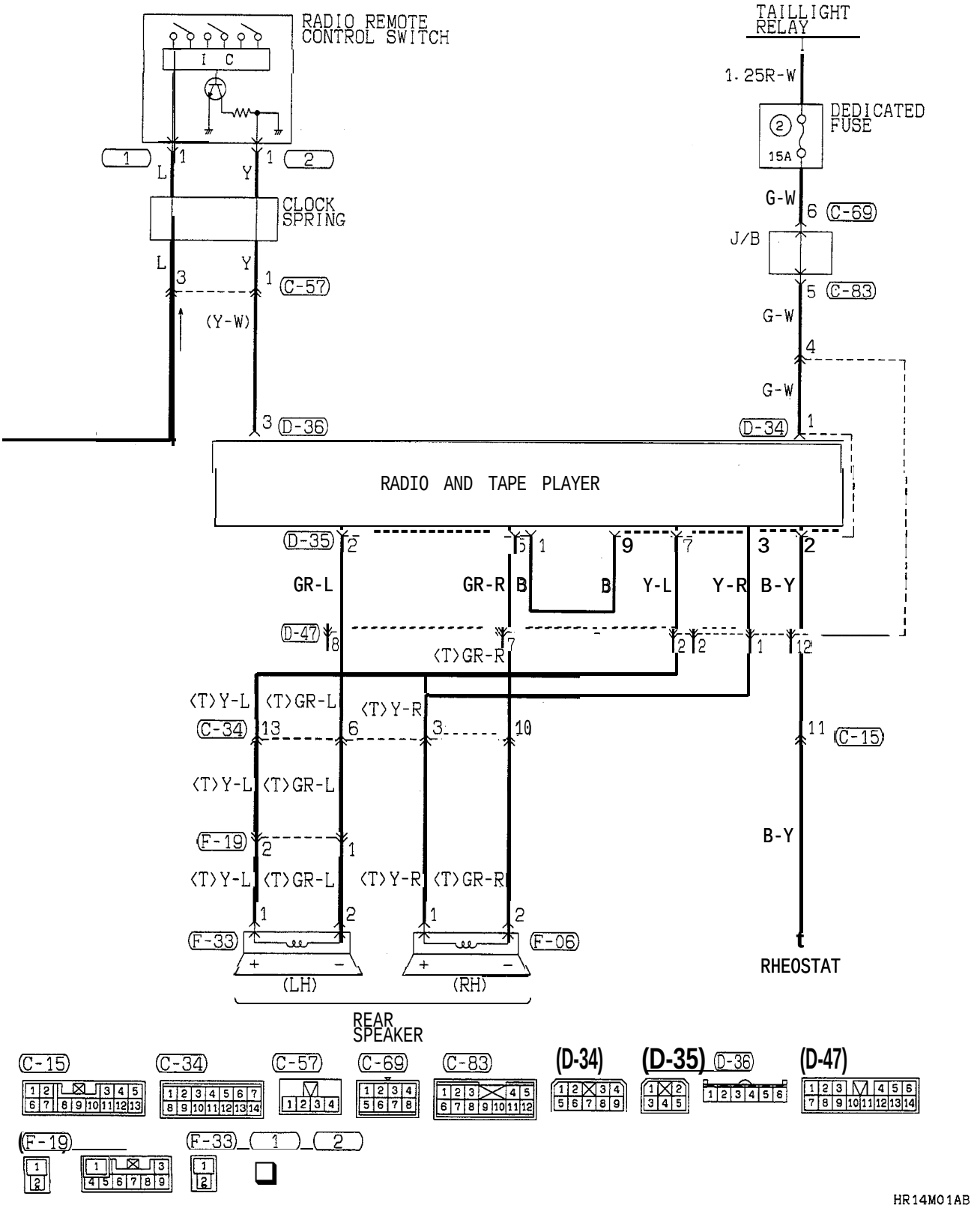
CIRCUIT DIAGRAM (1993 models)





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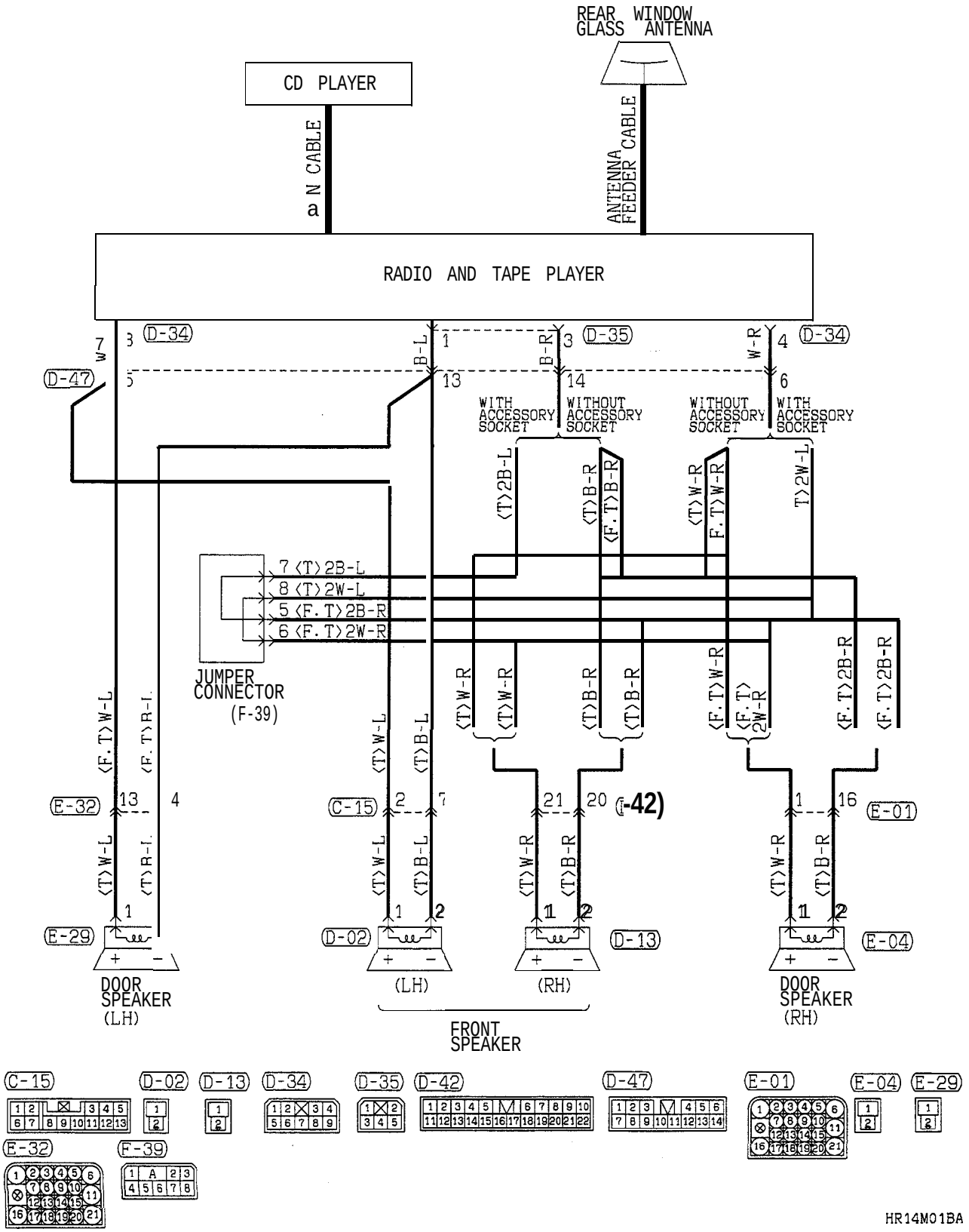
TSB Revision



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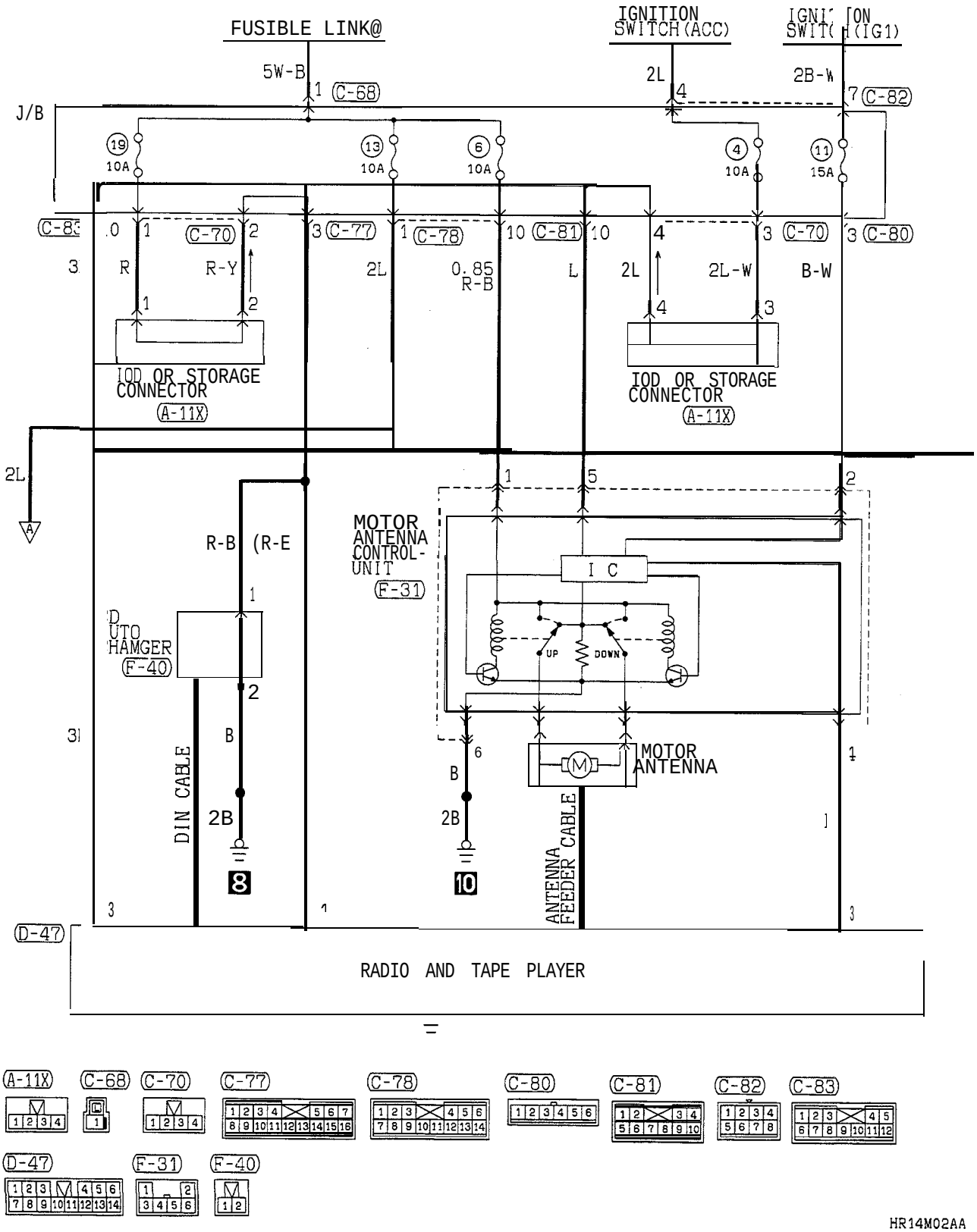
CIRCUIT DIAGRAM (1993 models) (CONTINUED)



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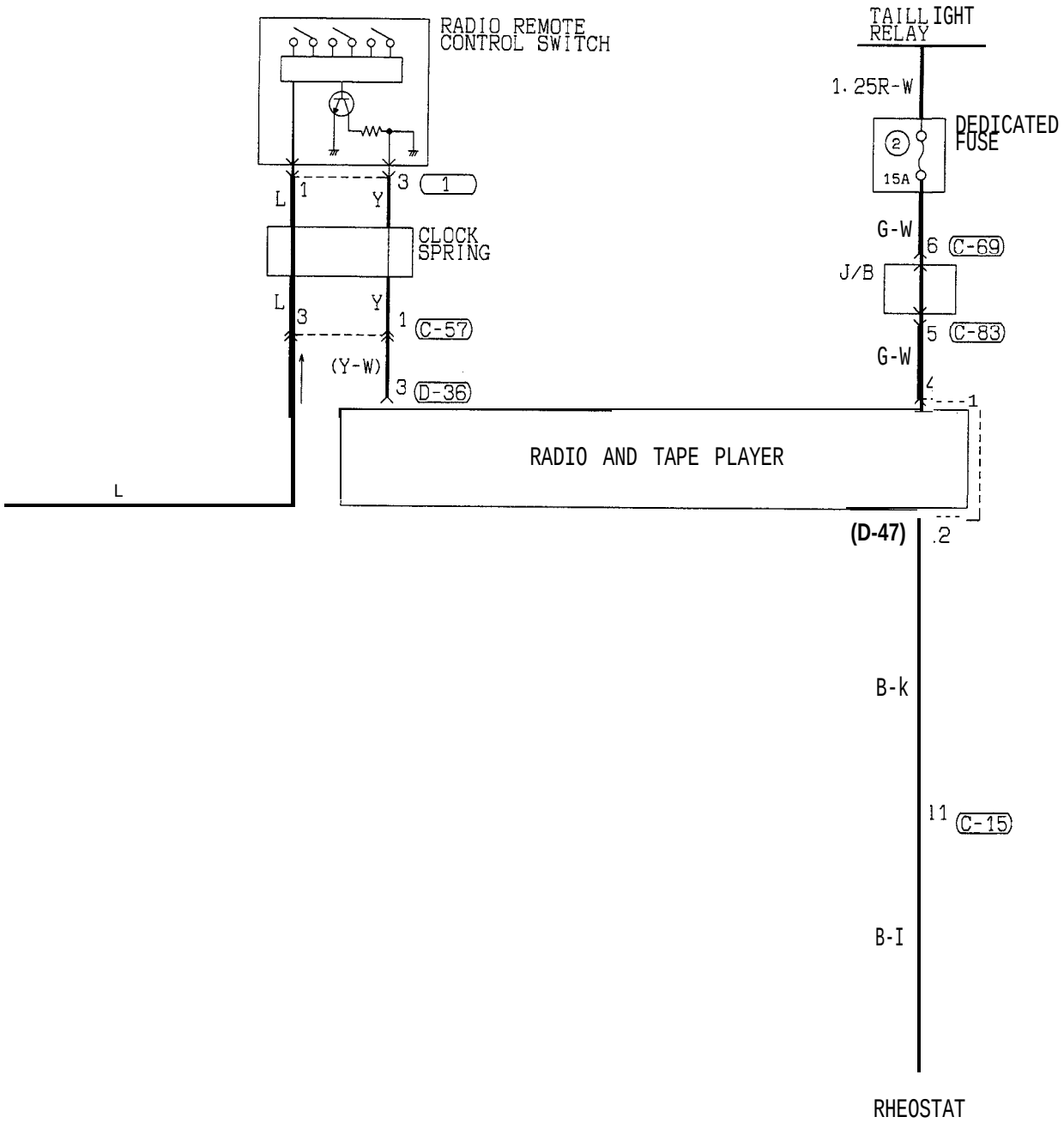
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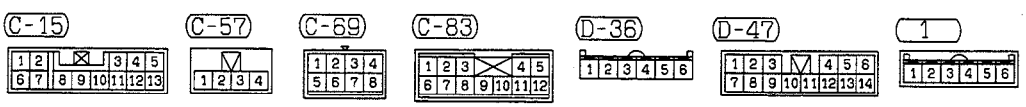
CIRCUIT DIAGRAM
(1994 models-Radio and Tape Player with Amplifier)



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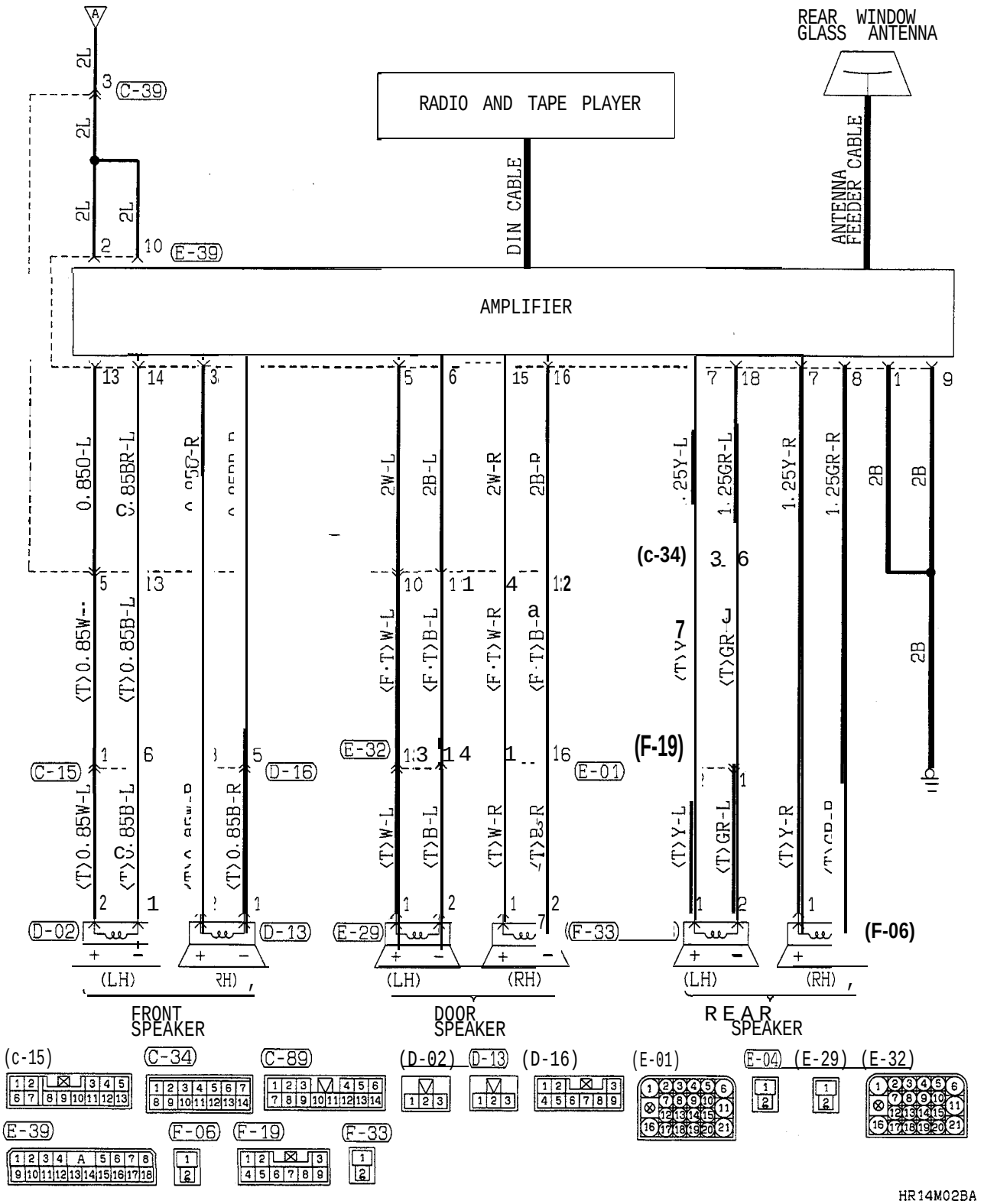
TSB Revision


RADIO REMOTE CONTROL SWITCH
TAILLIGHT RELAY
1.25R-W
DEDICATED FUSE
15A
G-W
6 C-69
J/B
5 C-83
G-W
4
1
L
1
Y
3
1
CLOCK SPRING
L
3
Y
1
C-57
(Y-W)
3 D-36
RADIO AND TAPE PLAYER
L
(D-47)
2
B-k
11 C-15
B-I
RHEOSTAT


C-15
C-57
C-69
C-83
D-36
D-47
1

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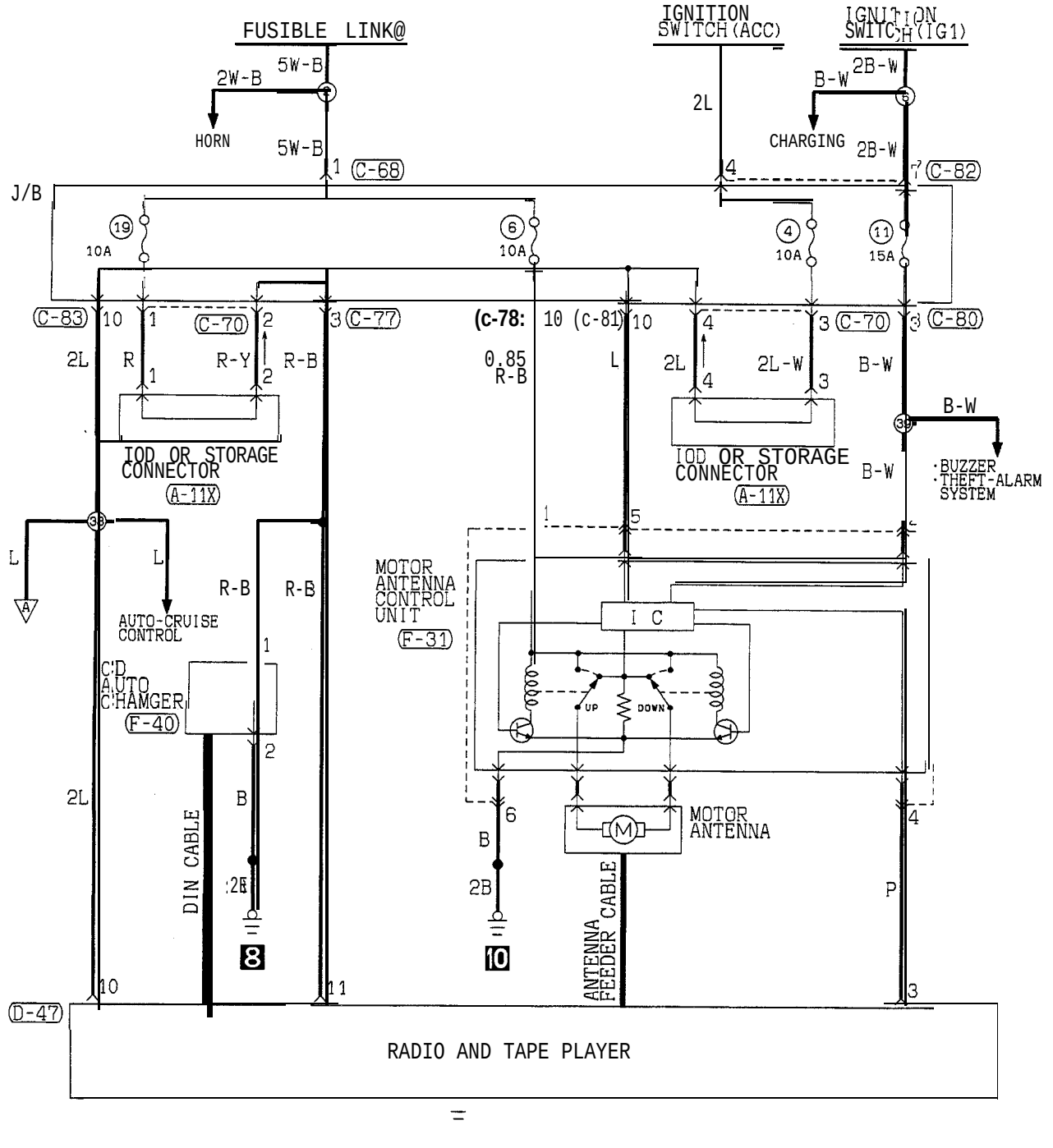
CIRCUIT DIAGRAM (From 1994 models-Radio and Tape Player with Amplifier) (CONTINUED)

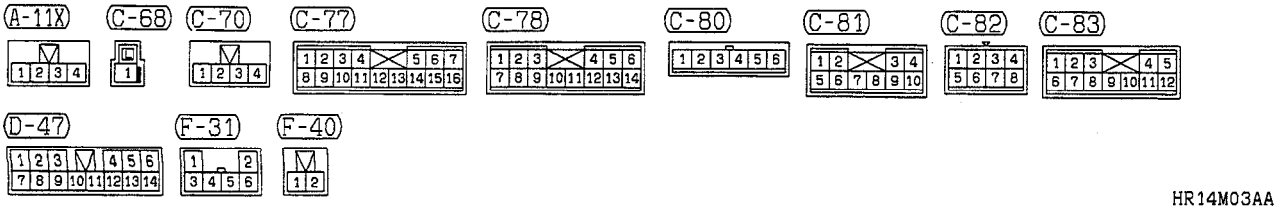


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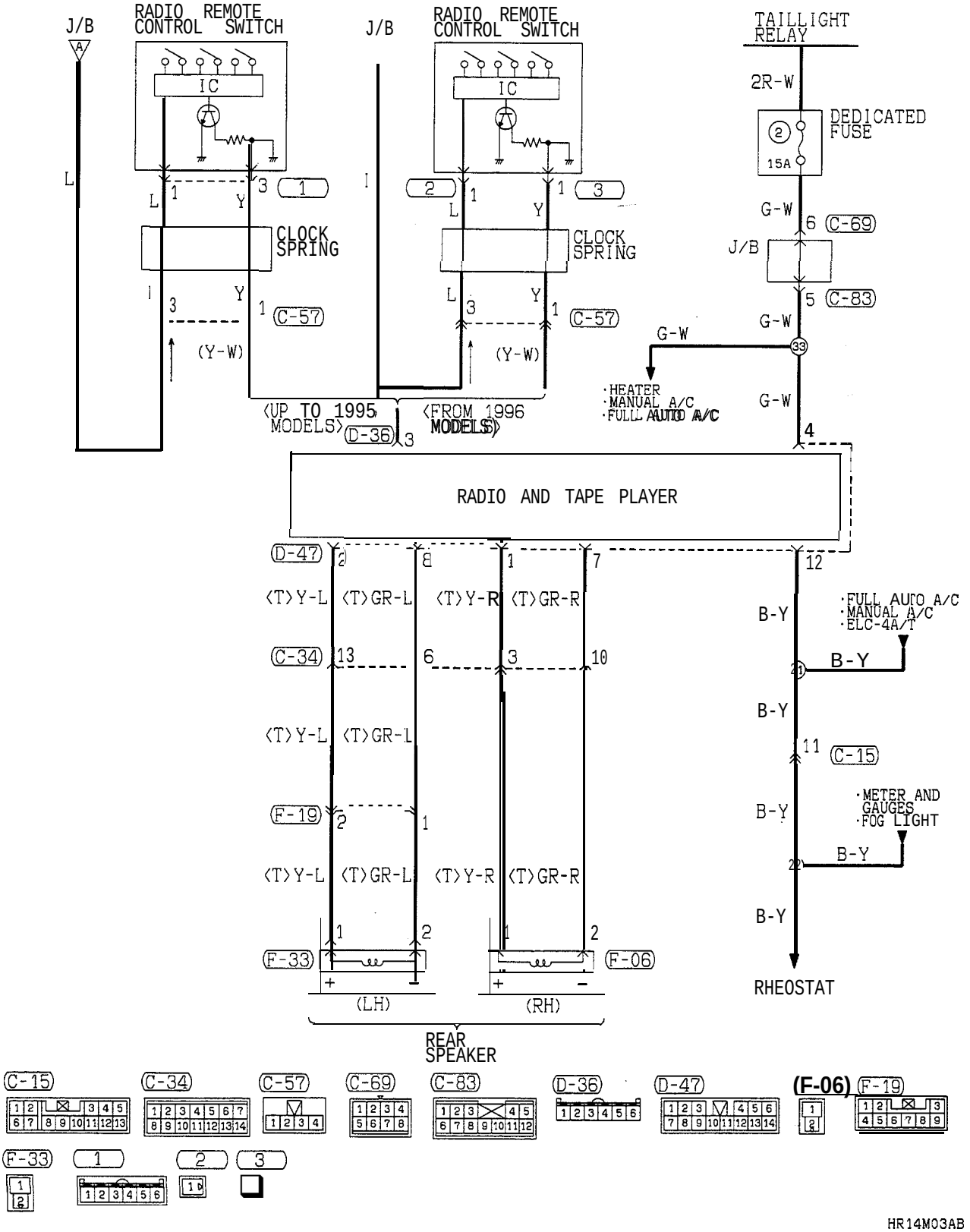
CIRCUIT DIAGRAM
<Hatchback (From 1994 models-Radio and Tape Player without Amplifier)>





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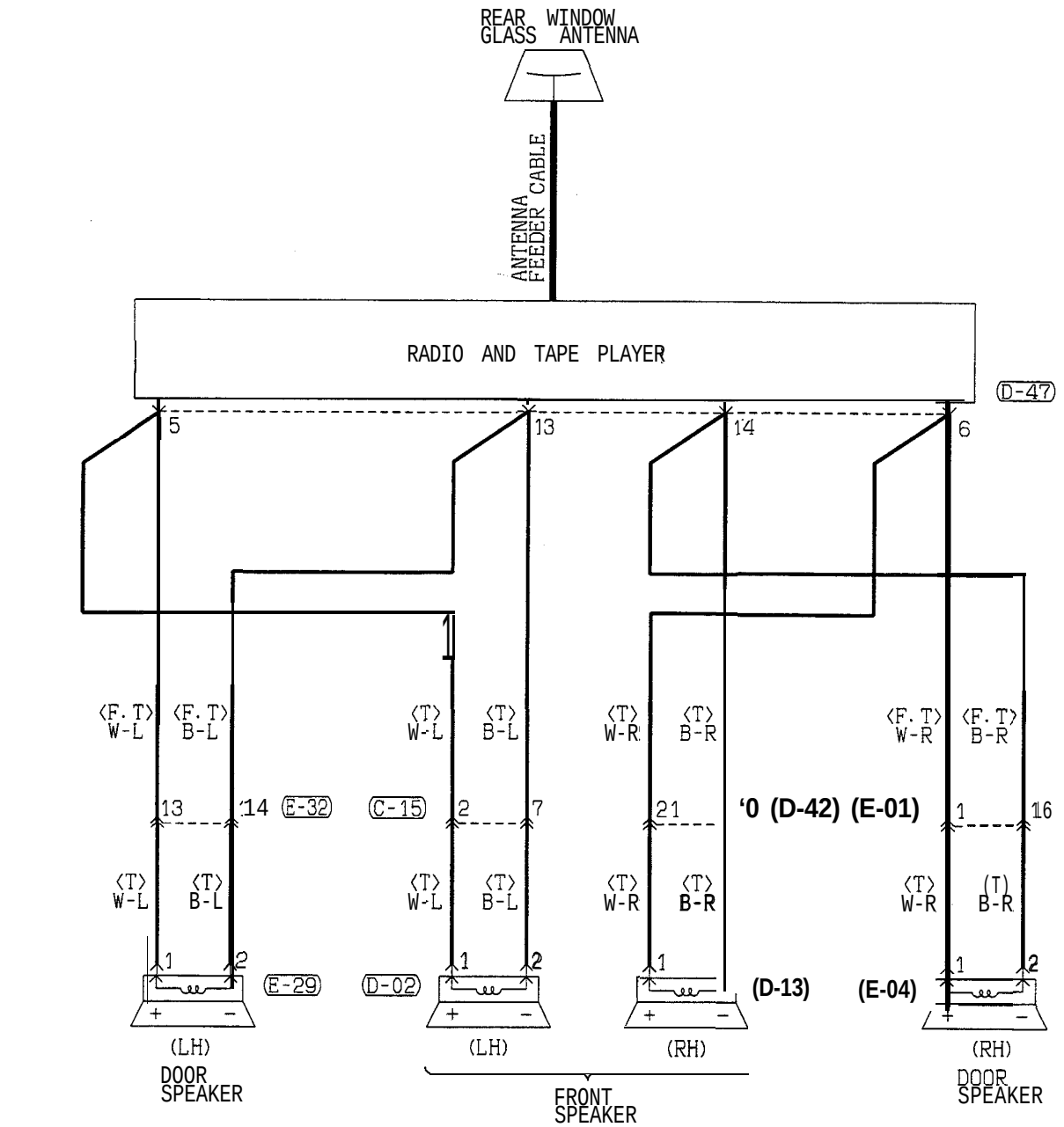
TSB Revision

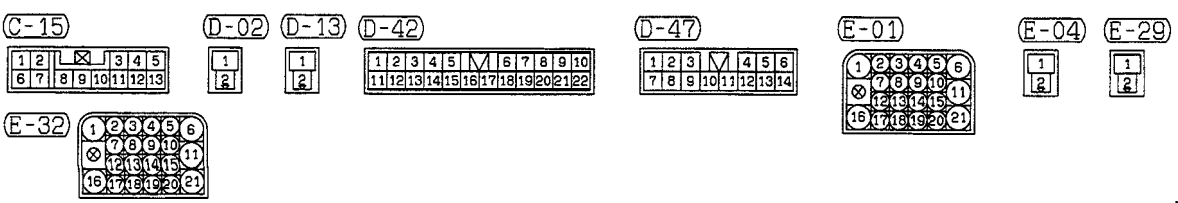


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TSB Revision

CIRCUIT DIAGRAM <Hatchback (From 1994 models-Radio and Tape Player without Amplifier)> (CONTINUED)



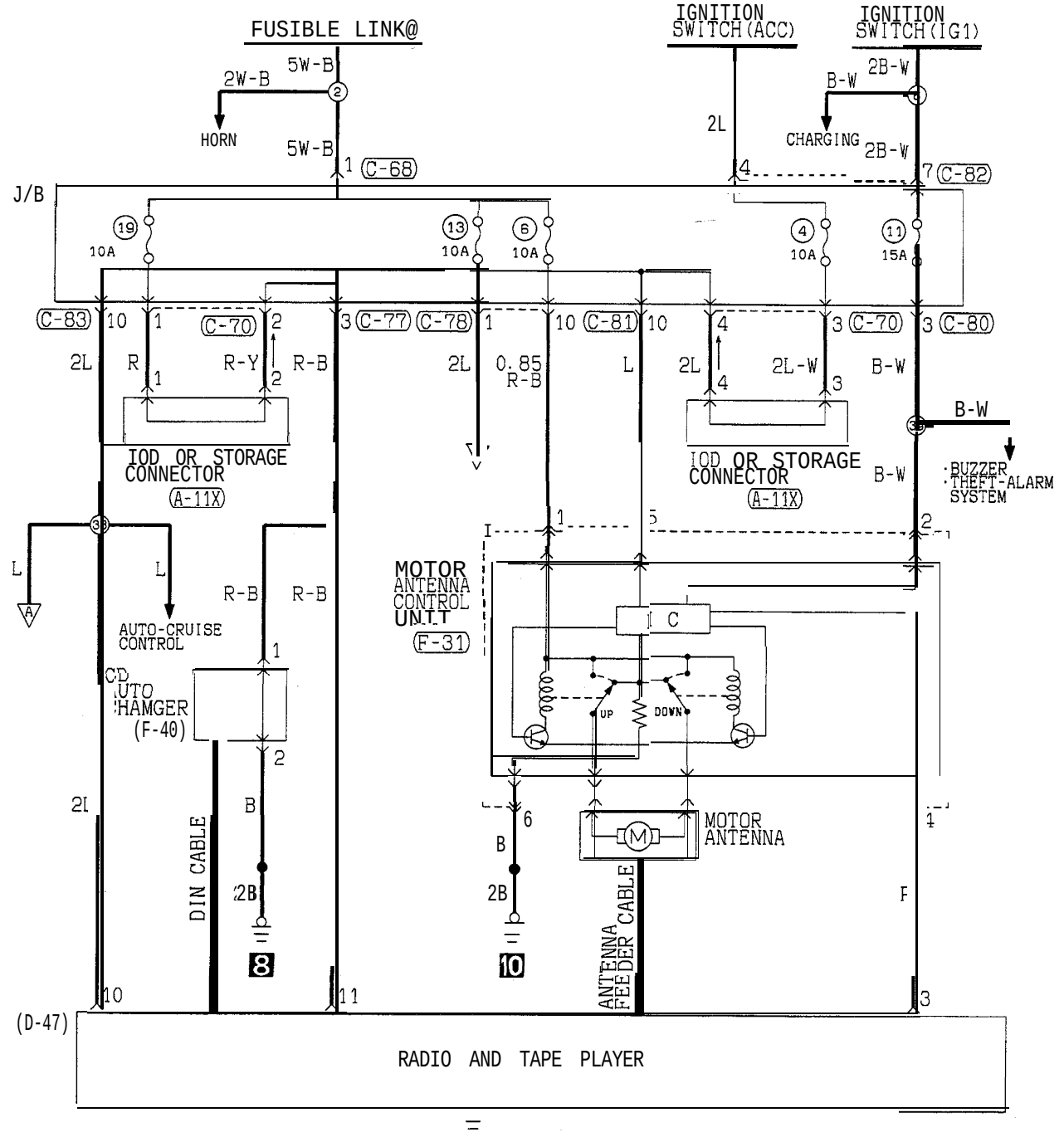


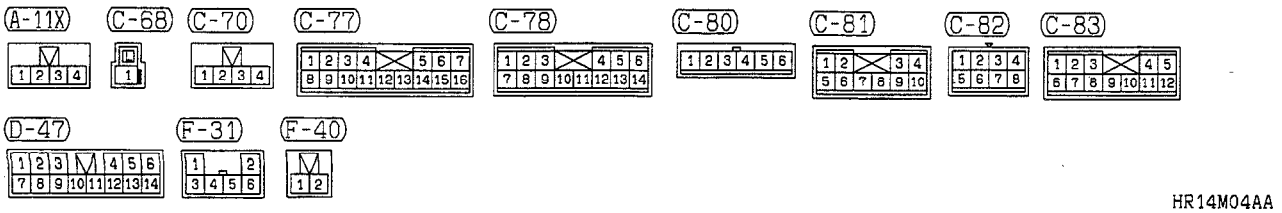
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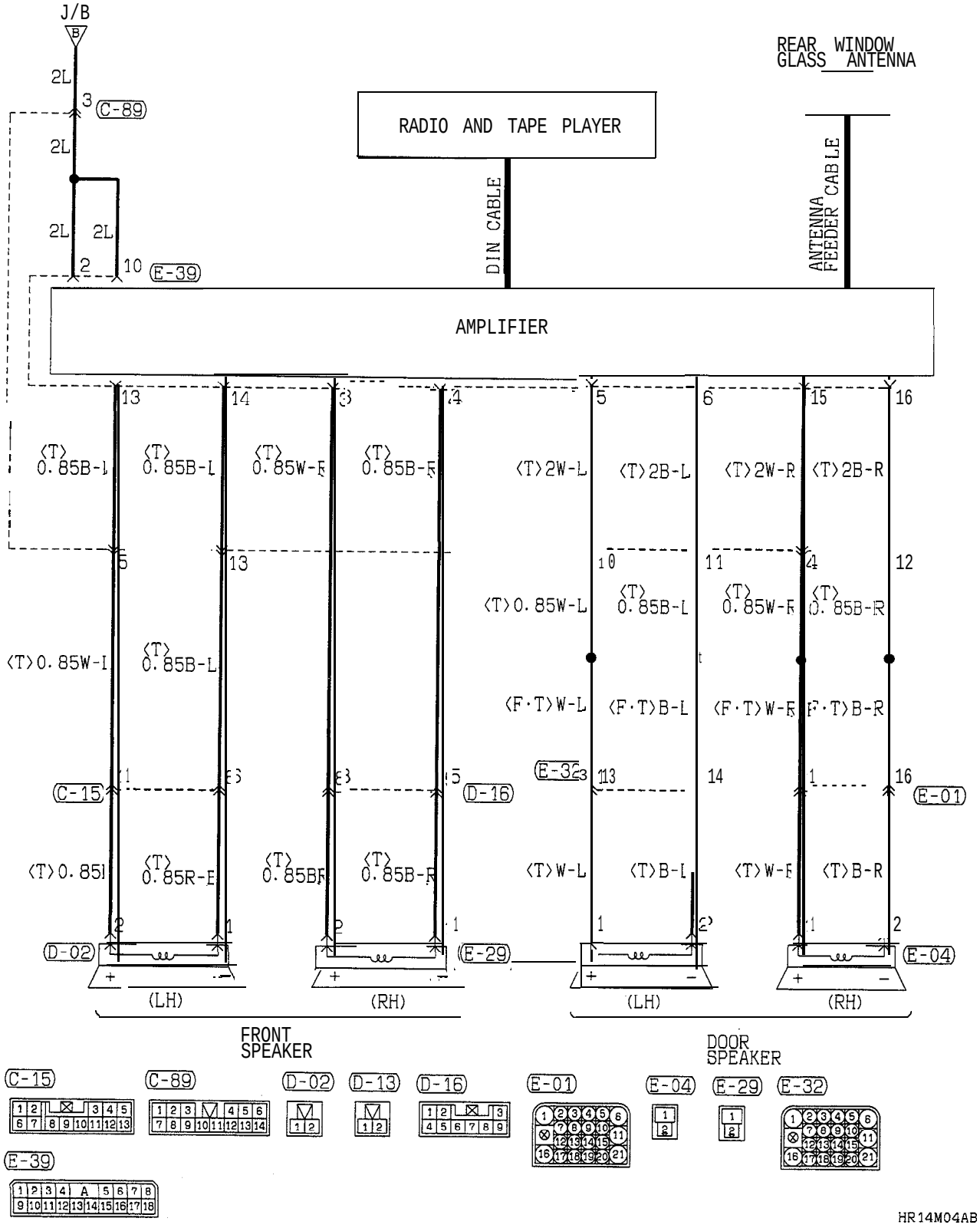
CIRCUIT DIAGRAM
<Hatchback (From 1995 models-Radio and Tape Player with Amplifier)>





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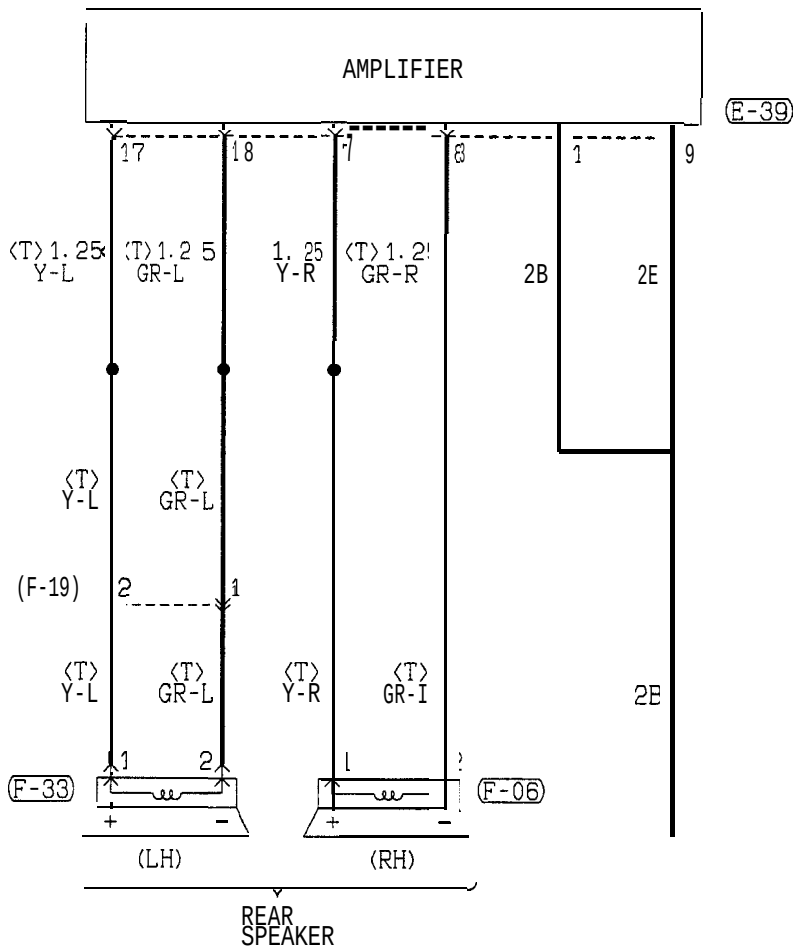
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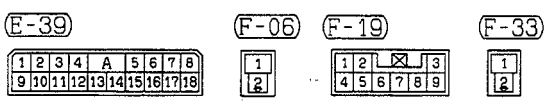


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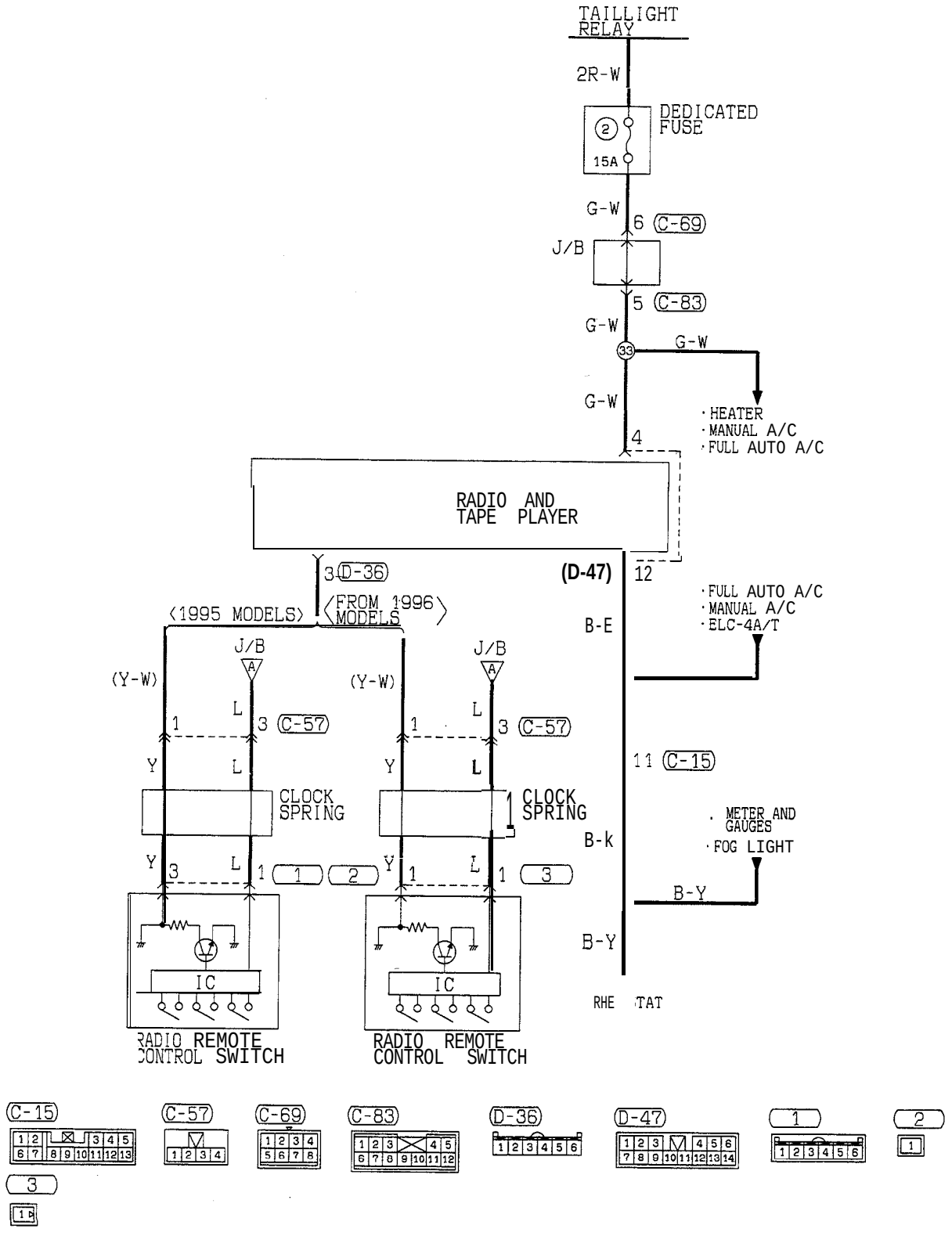
CIRCUIT DIAGRAM <Hatchback (From 1995 models-Radio and Tape Player with Amplifier)> (CONTINUED)





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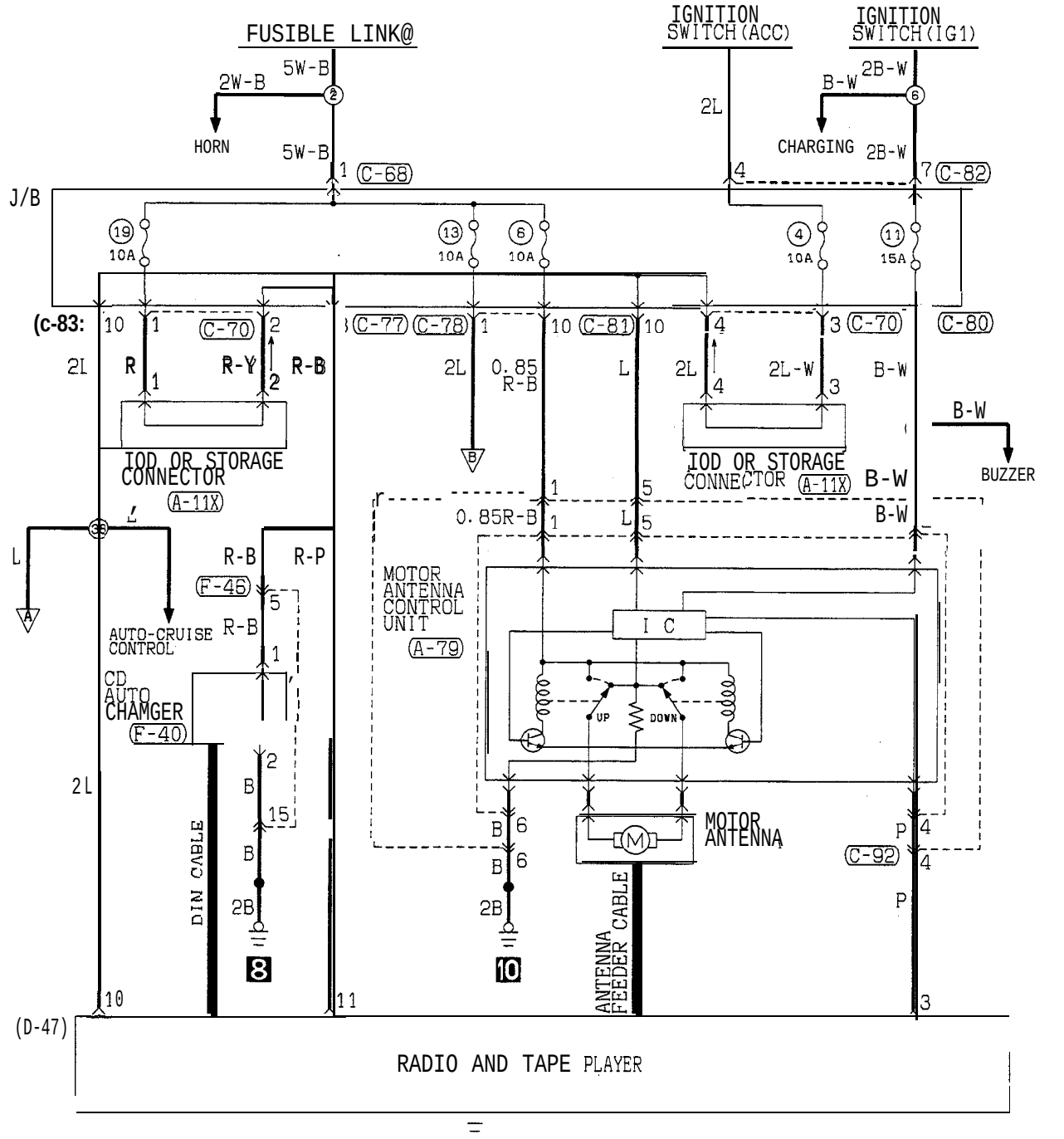
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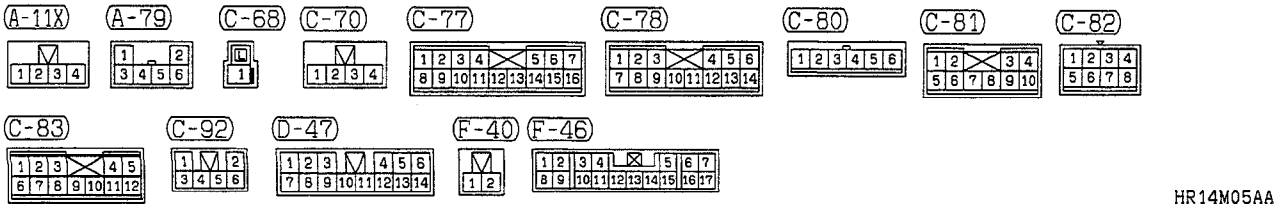


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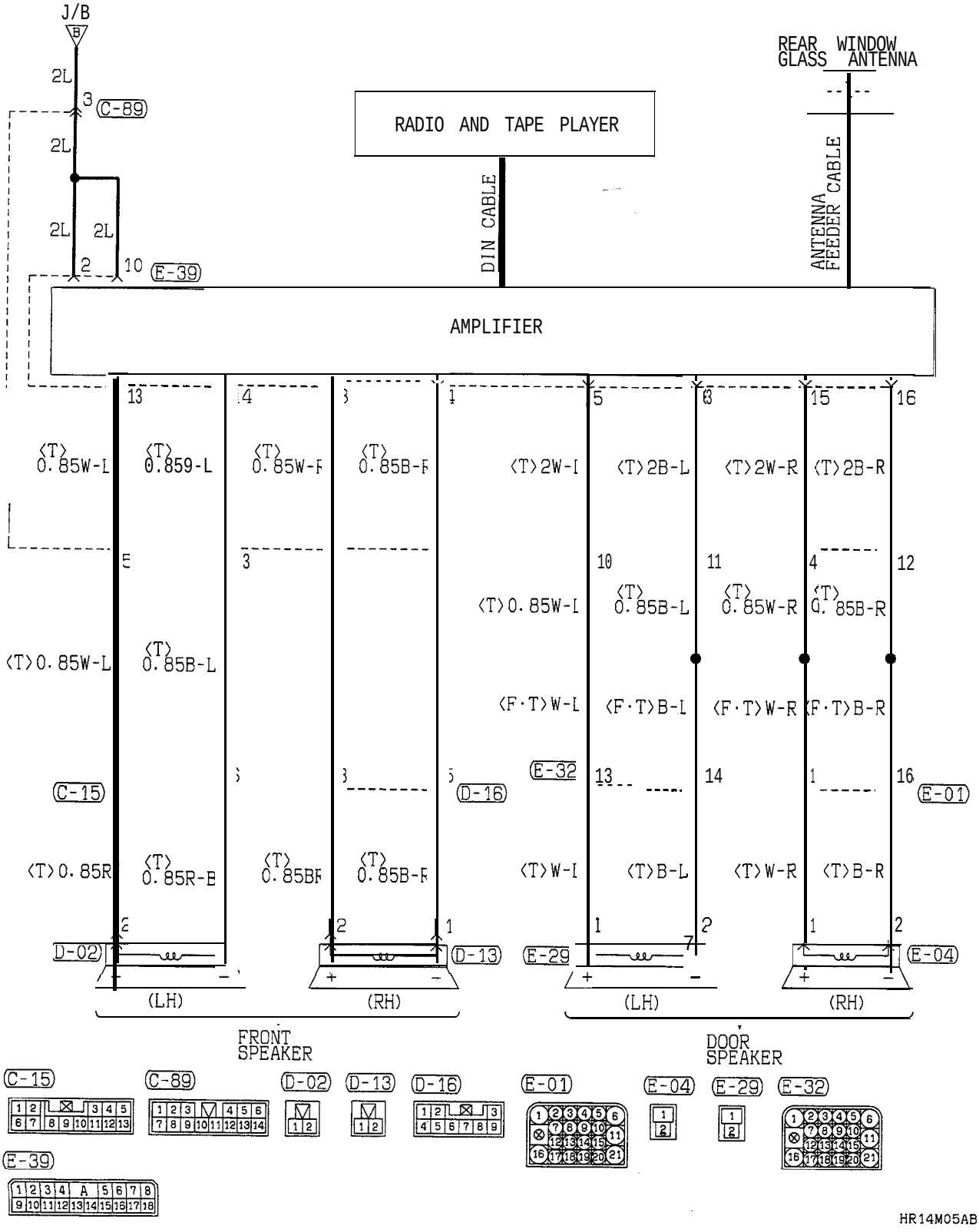
CIRCUIT DIAGRAM
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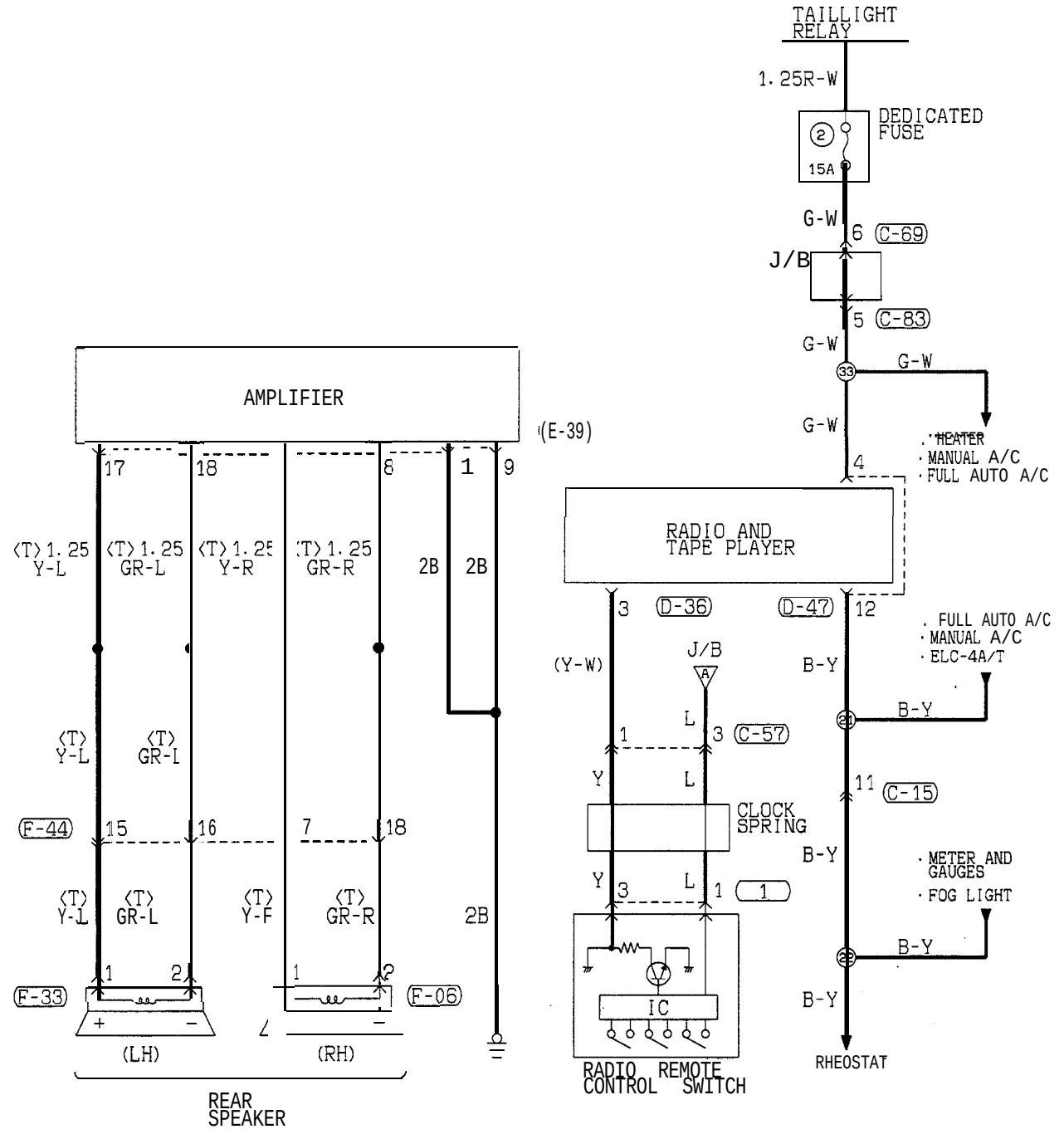
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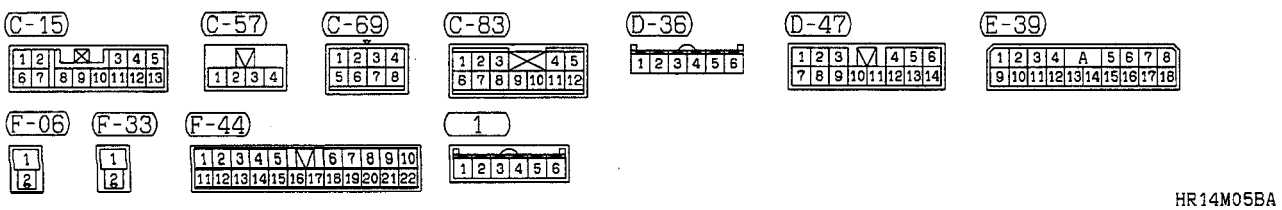


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TSB Revision

CIRCUIT DIAGRAM <Convertible (1995 models-Radio and Tape Player with Amplifier)> (CONTINUED)



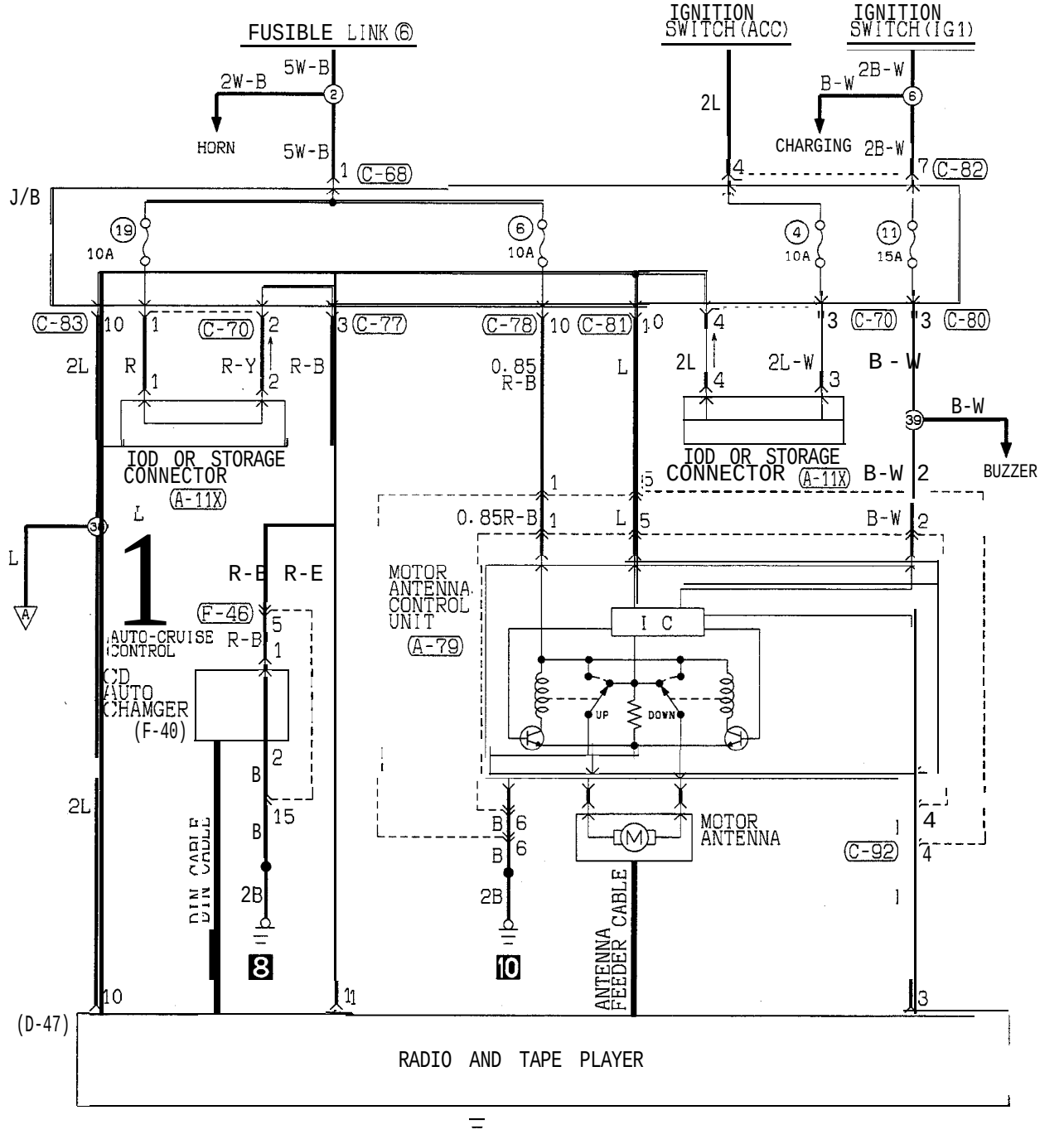


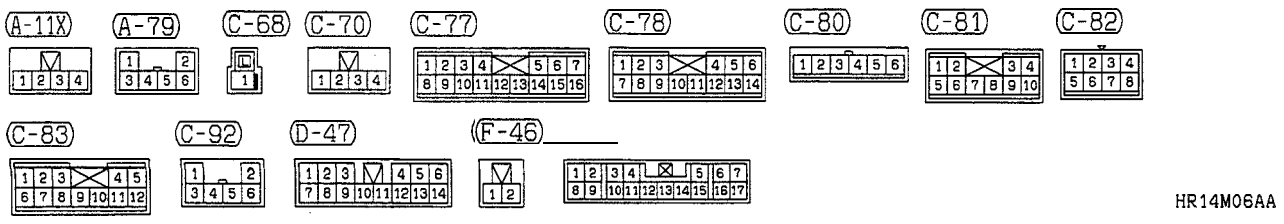
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TSB Revision

NOTES

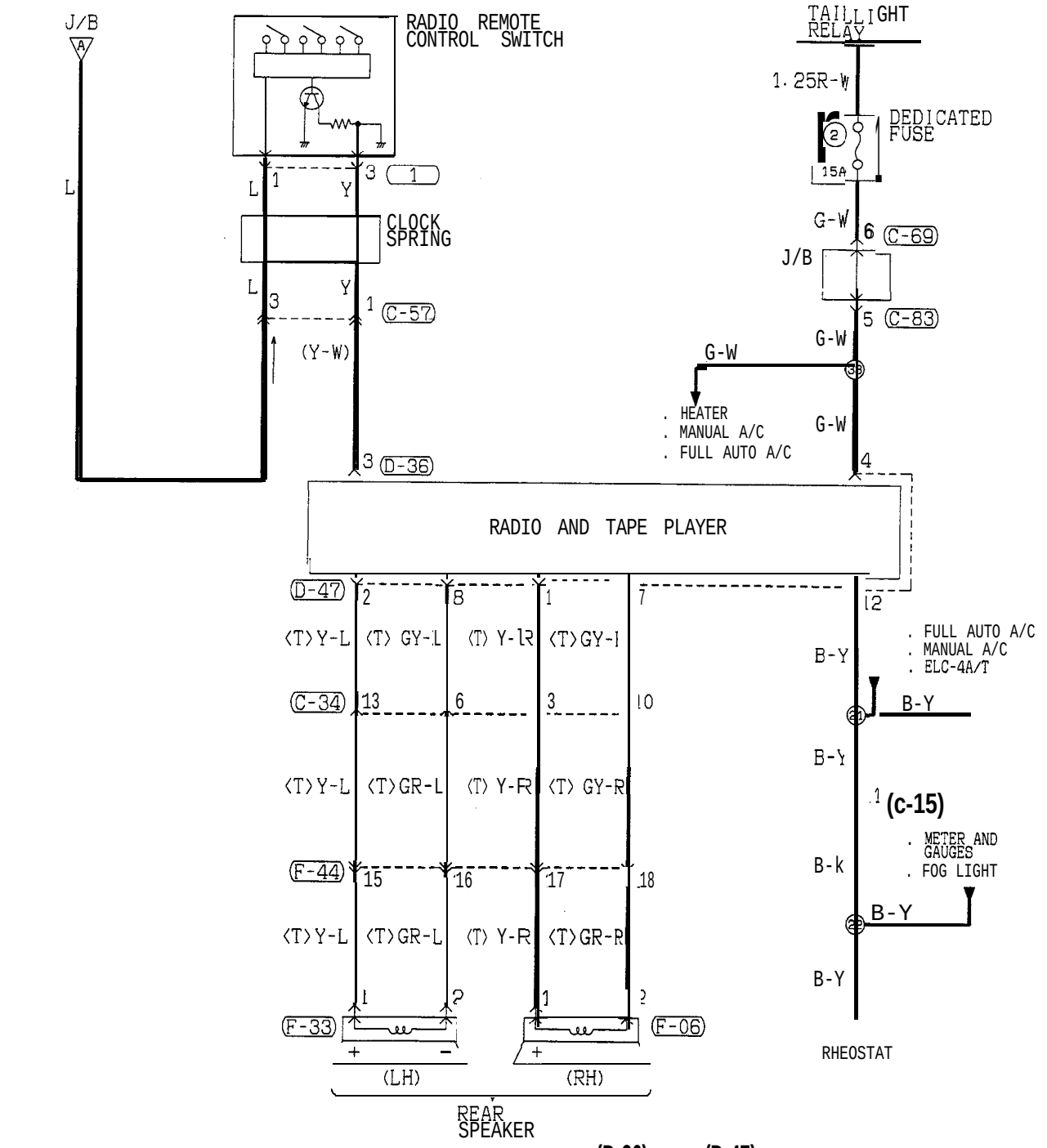
CIRCUIT DIAGRAM
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TSB Revision



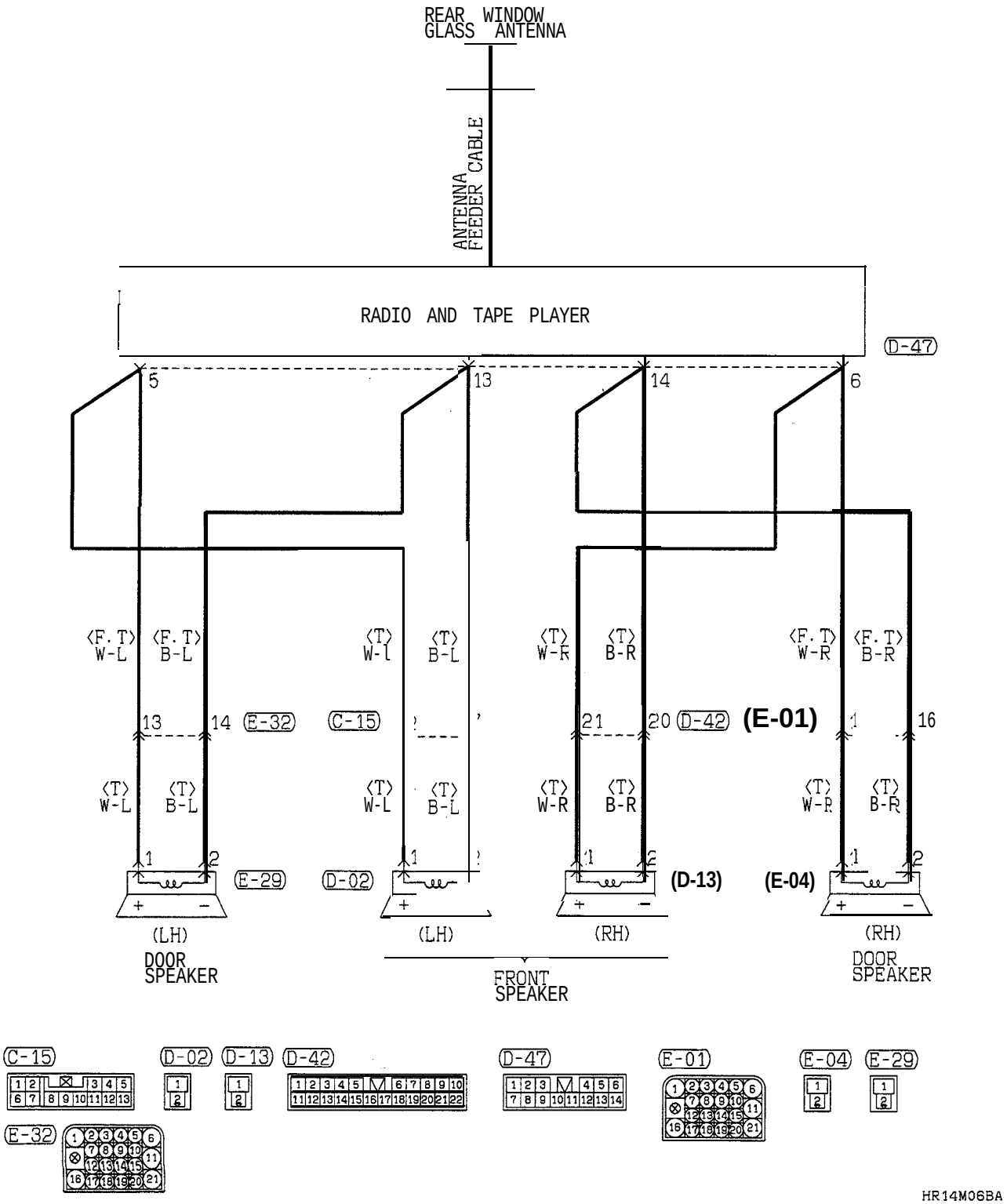
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(F-44) F-44

HR14M06AB

TSB Revision

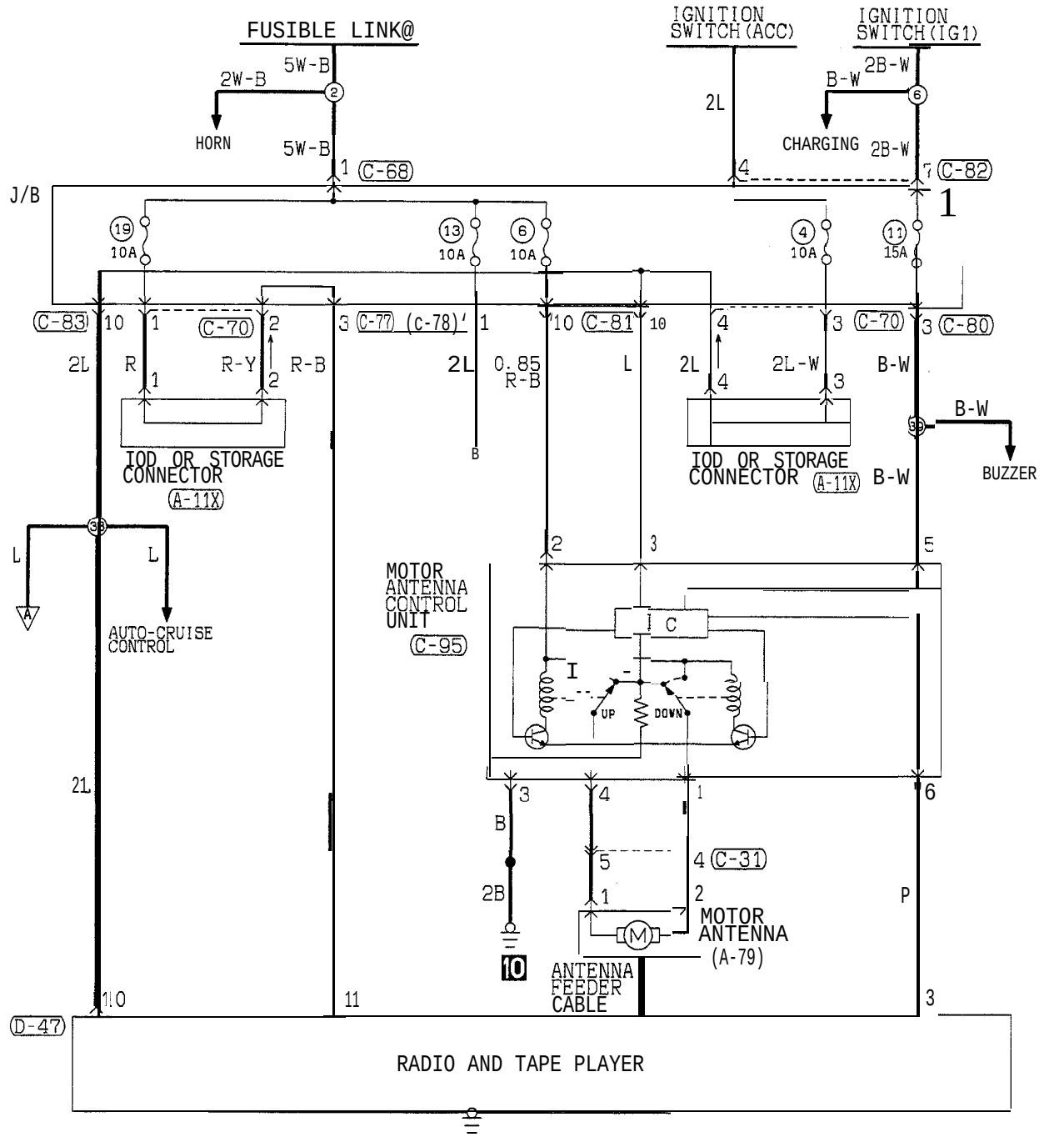
CIRCUIT DIAGRAM <Convertible (1995 models-Radio and Tape Player without Amplifier)> (CONTINUED)

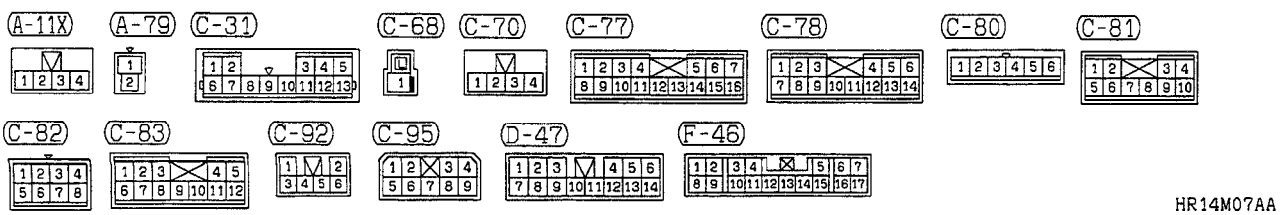


TSB Revision

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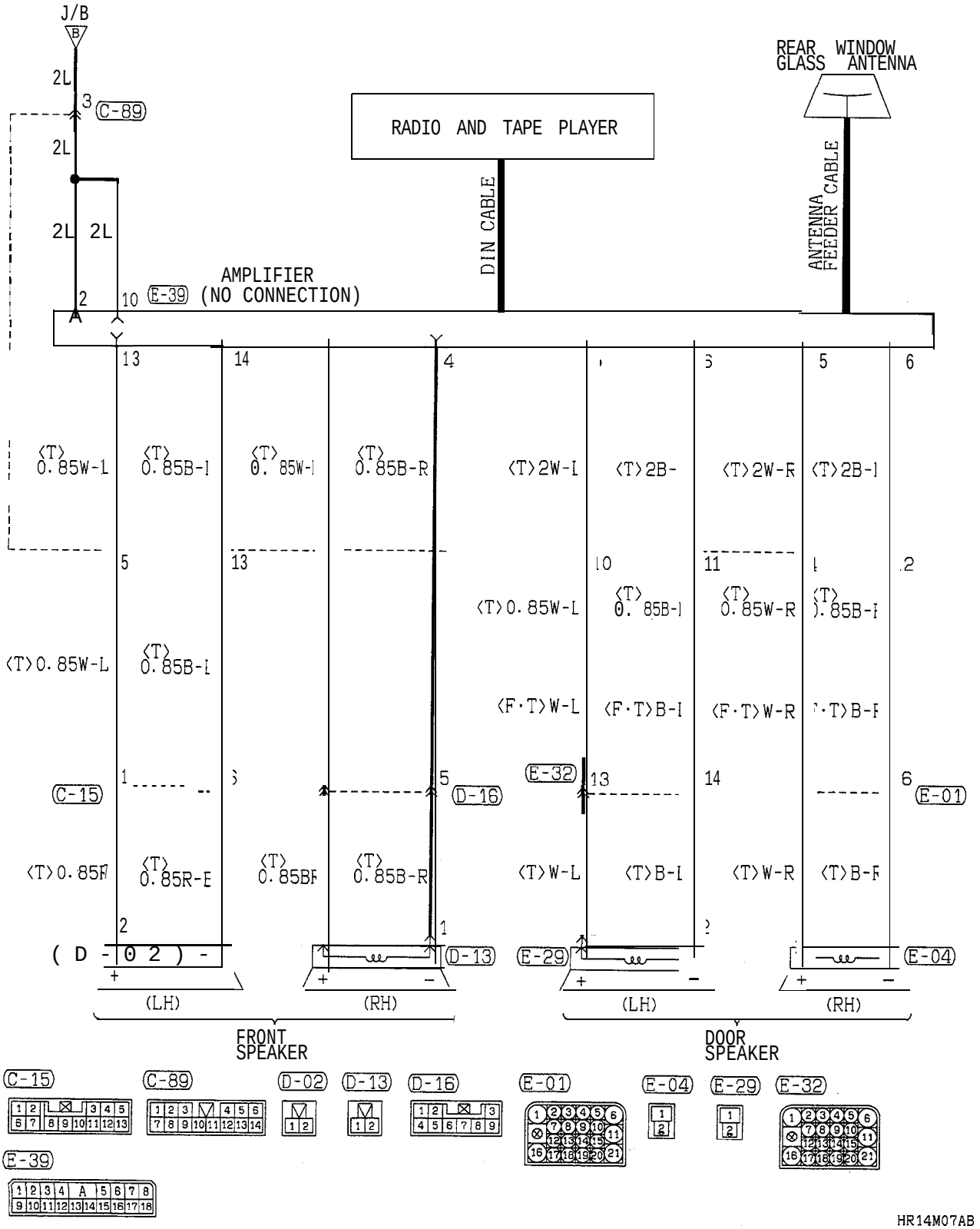
CIRCUIT DIAGRAM
<Convertible (From 1996 models)>





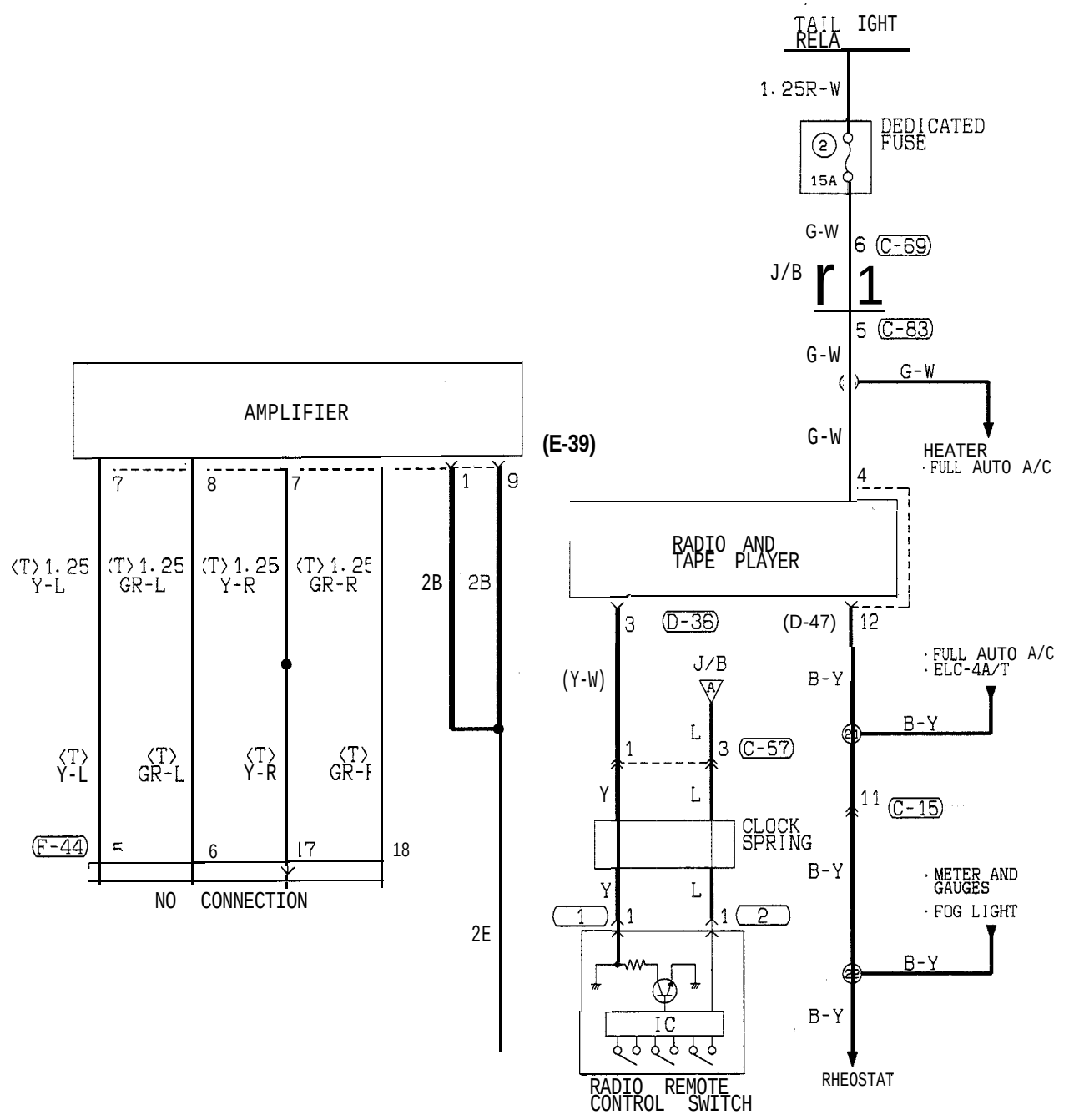
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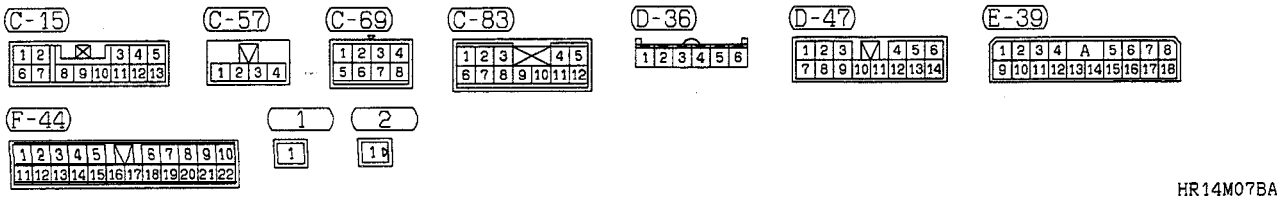
TSB Revision



TSB Revision

CIRCUIT DIAGRAM <Convertible (From 1996 models)> (CONTINUED)

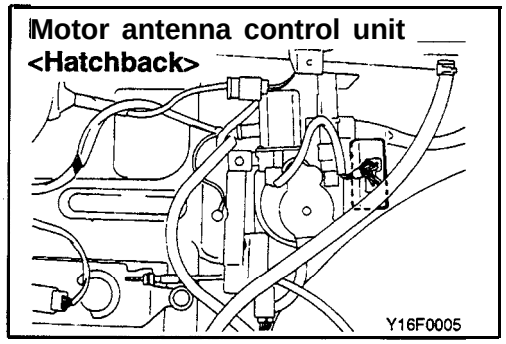




HR14M07BA

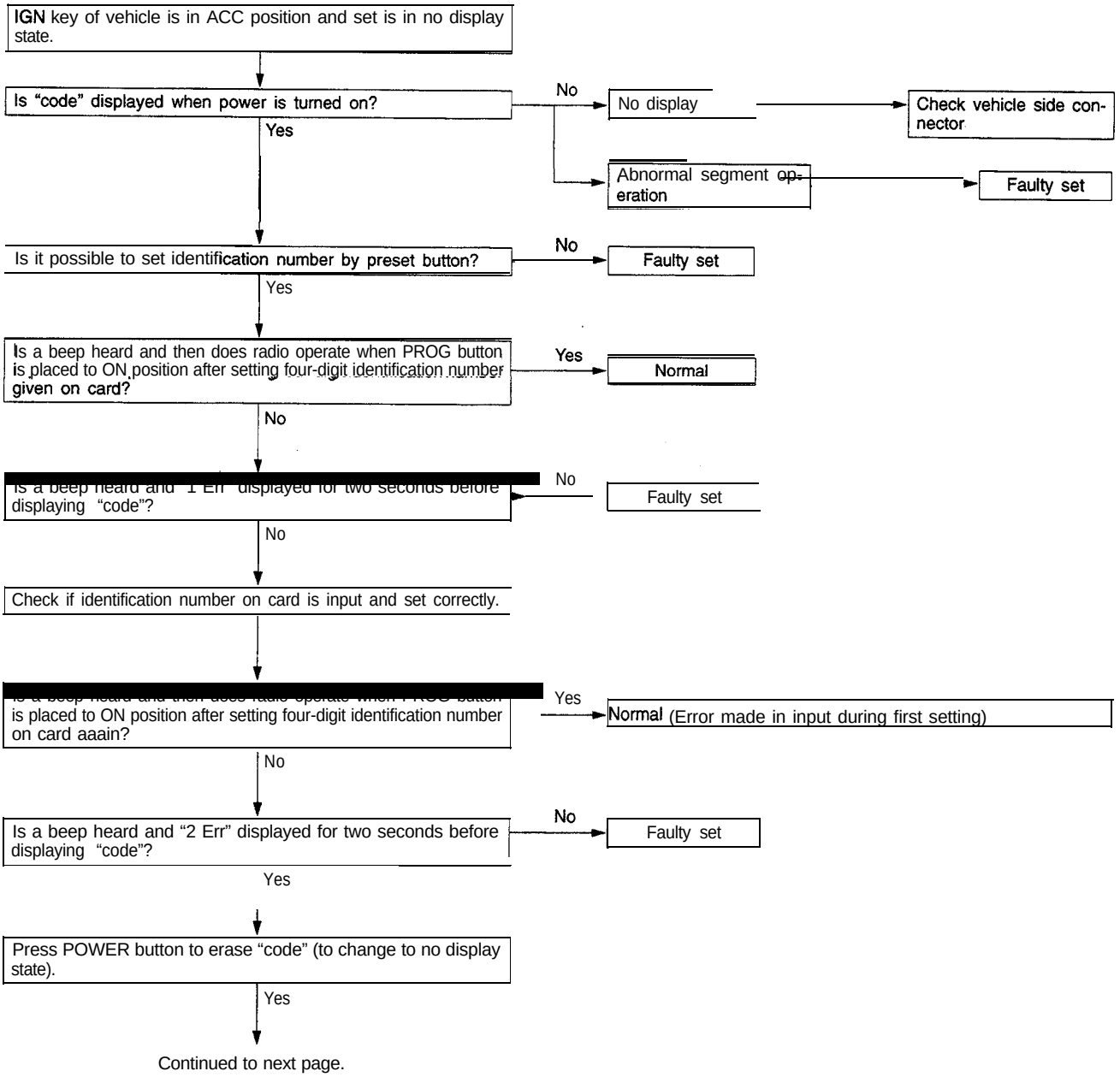
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COMPONENT LOCATION



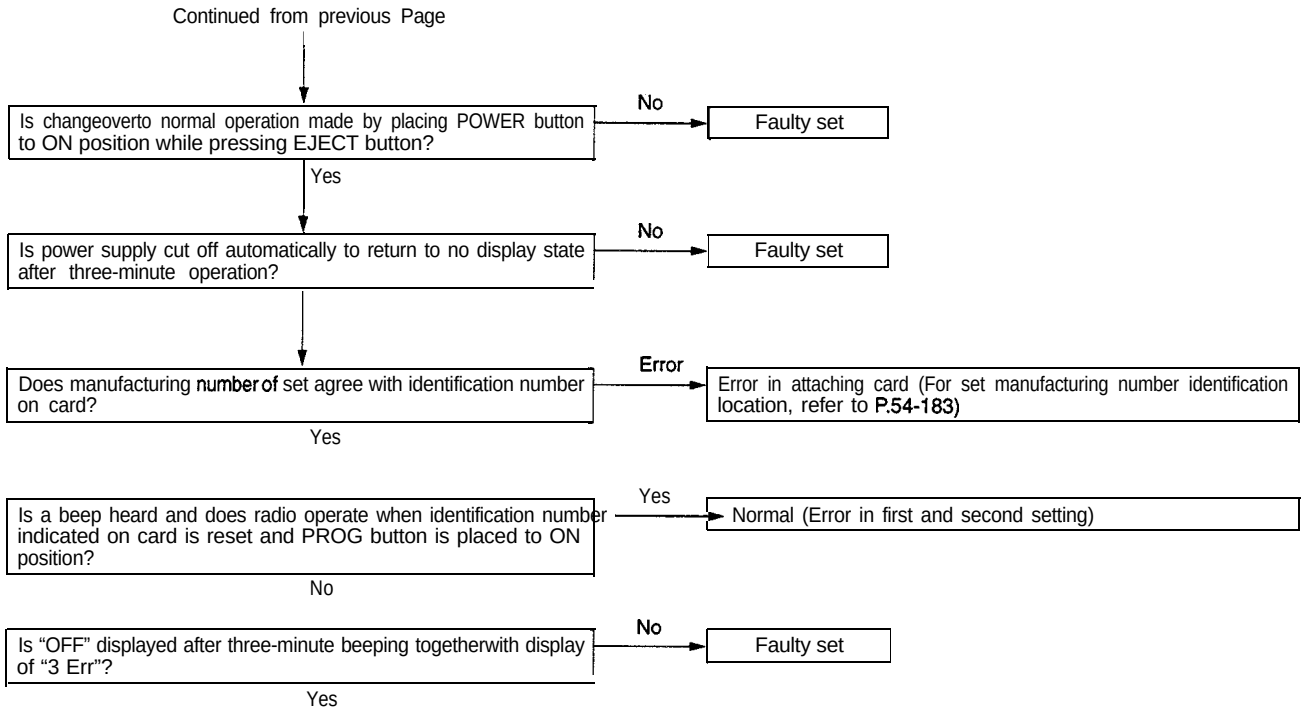
RADIO AND TAPE PLAYER WITH ANTI-THEFT SYSTEM

- When power supply is reconnected after set has been removed from vehicle (after BATT line of set has been disconnected for more than one hour), what can be effectively performed is only supply of power made by POWER button operation. (If power supply is connected within an hour, operating state before disconnection of power supply is resumed.)



Continued to next page.

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- In this state, only POWER button operation is accepted ("OFF" is displayed) and no other button operation can be made effectively.
- In the "OFF" state, continuation of the BATT, ACC line ON state for more than one hour will allow identification number checking operation again and placing the POWER button to ON position will display "code" and wait for input.

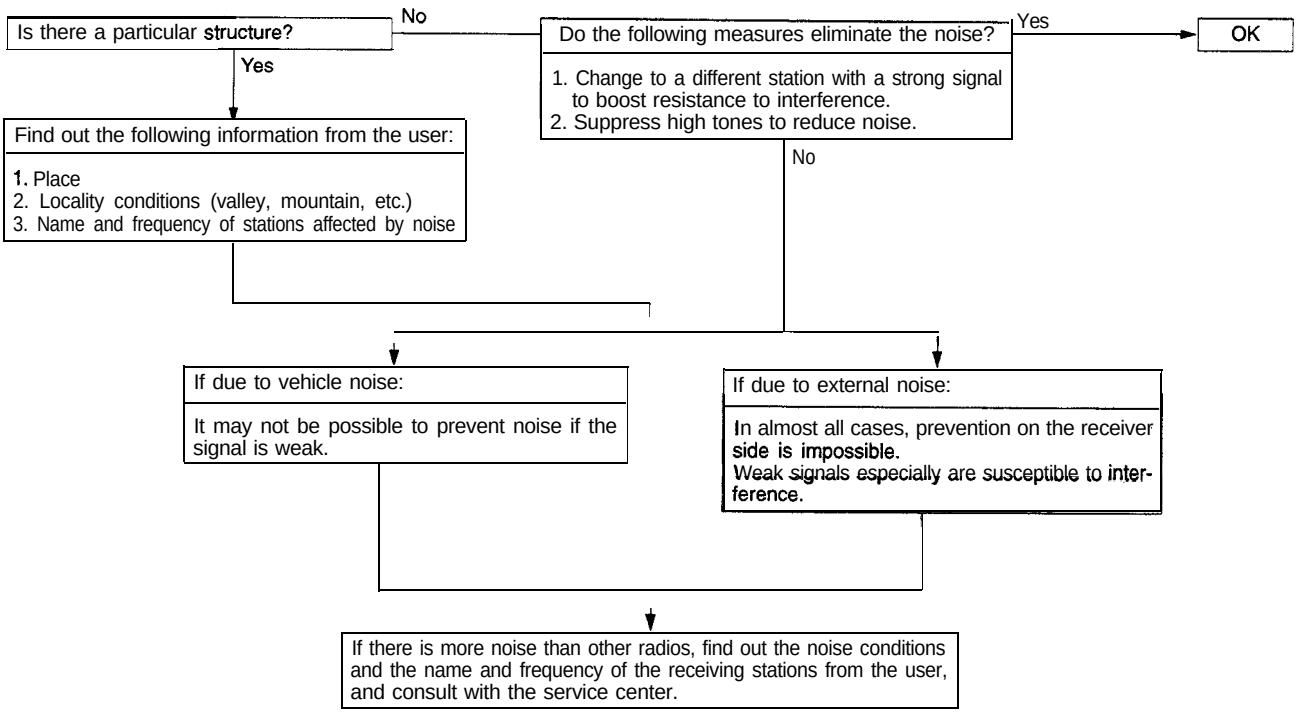
TROUBLESHOOTING CHART

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

CHART

A. NOISE

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



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

Do the following measures eliminate the noise?

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

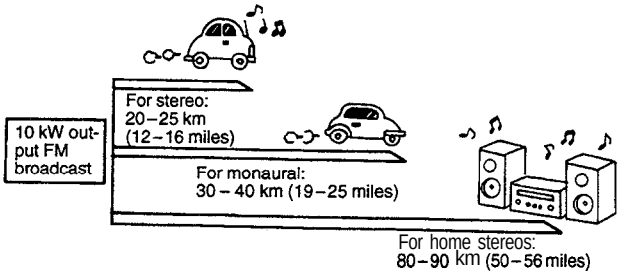
Yes → OK

No → If there is more noise than other radios, find out the noise conditions and the name and frequency of the receiving stations from the user, and consult with the service center.

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

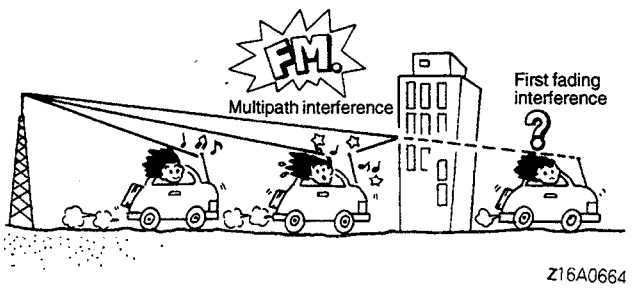
1. The signal becomes weak as the distance from the station's transmission antenna increases. Although this may vary according to the signal strength of the transmitting station and intervening geographical formations or buildings, the area of good reception is approx. 20–25 km (12–16 miles) for stereo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

FM Broadcast Good Reception Areas



Z16A0663

FM Signal Characteristics and Signal Interference



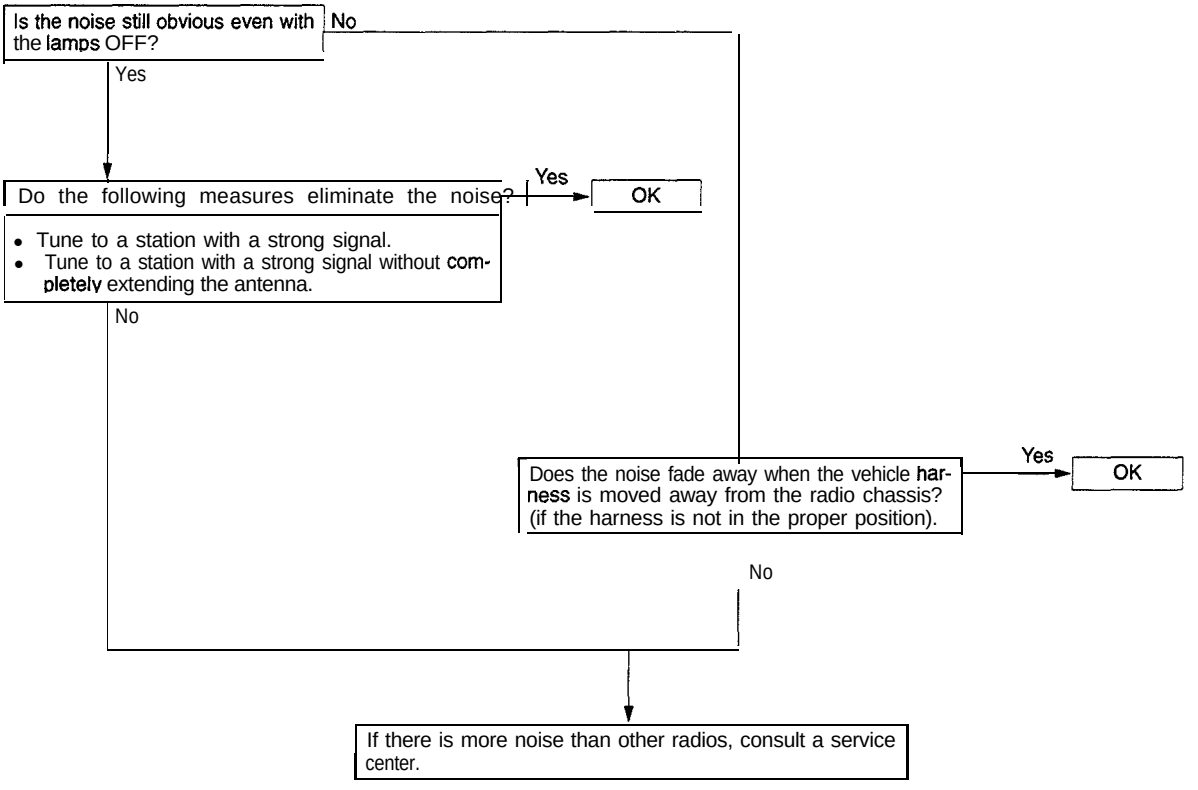
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A-3 Mixed with noise, only at night (AM).

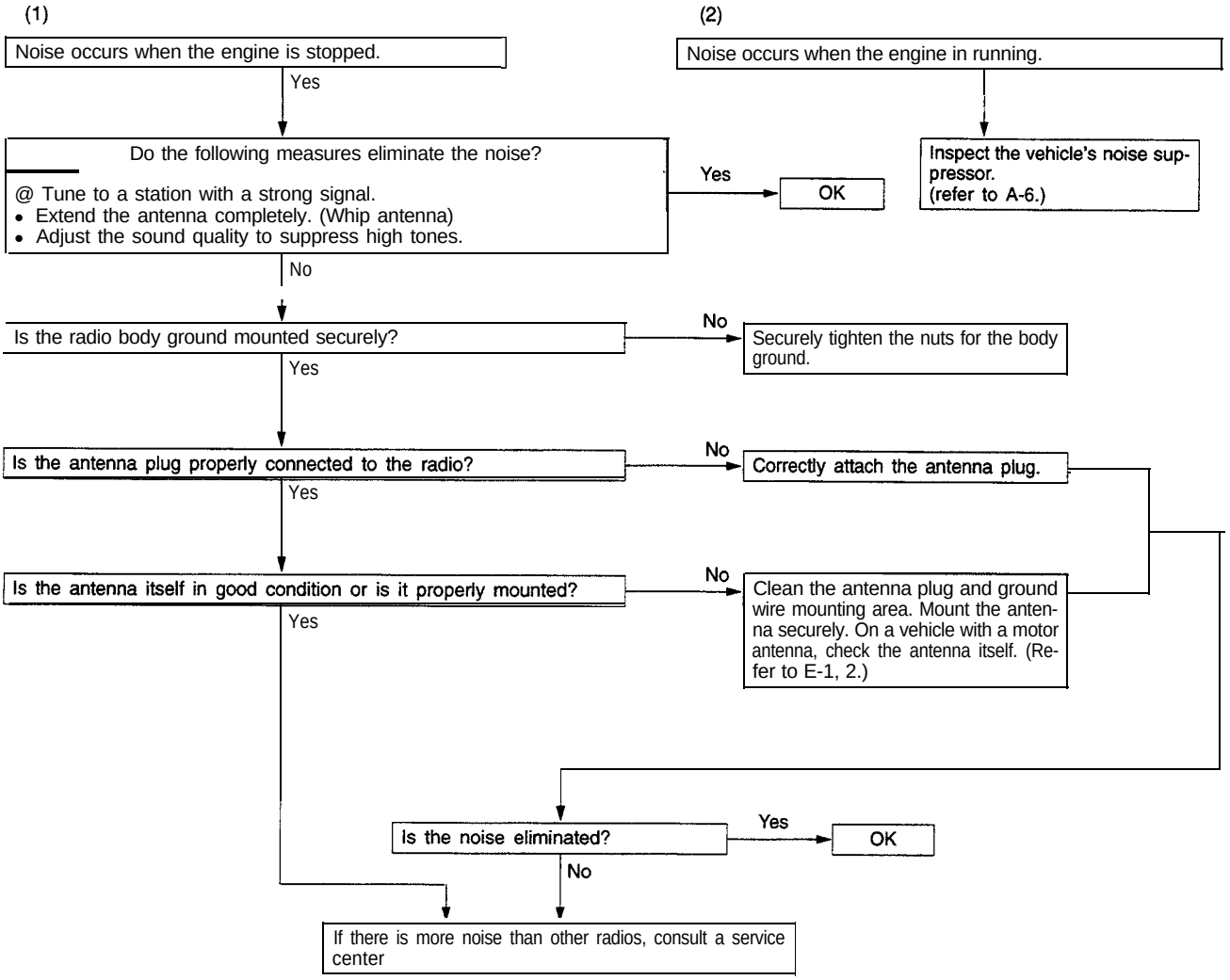
The following factors can be considered as possible causes of noise appearing at night.

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



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



NOTE

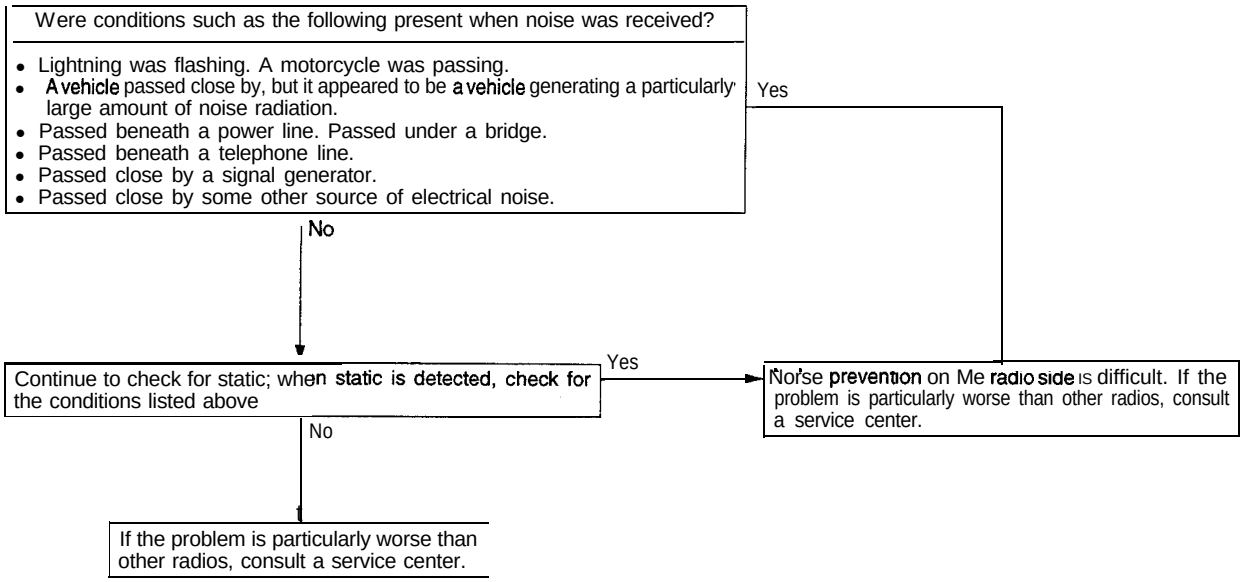
About noise encountered during FM reception only. Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise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

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

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

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



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

A-6 There is noise when starting the engine.

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

Caution

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

NOTE

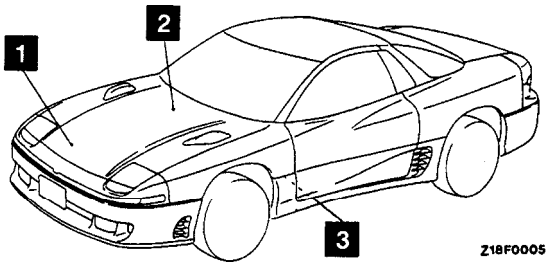
1. Condenser

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

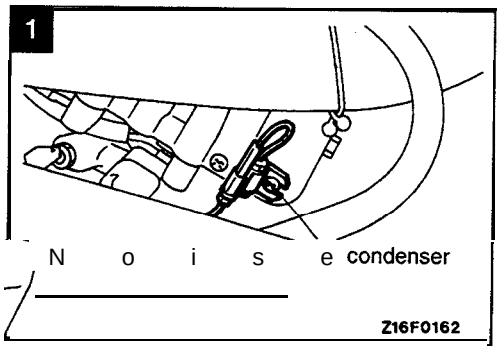
2. Coil

   The coil passes D.C. current, but impedance rises as the number of waves increases relative to the A.C. current. A noise suppressing coil which takes advantage of this property is inserted into the power line for the noise source, and works by preventing the noise component from flowing or radiating out of the line.

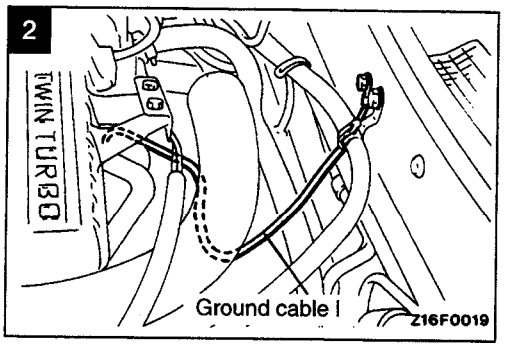
NOISE SUPPRESSION PARTS MOUNTING POSITIONS



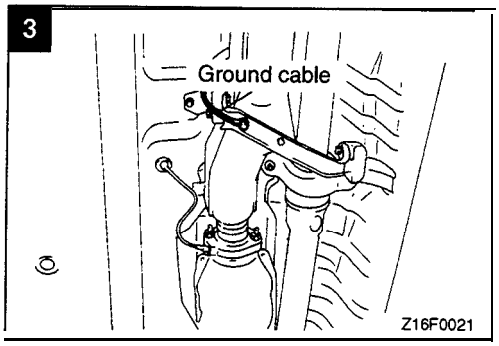
1



2

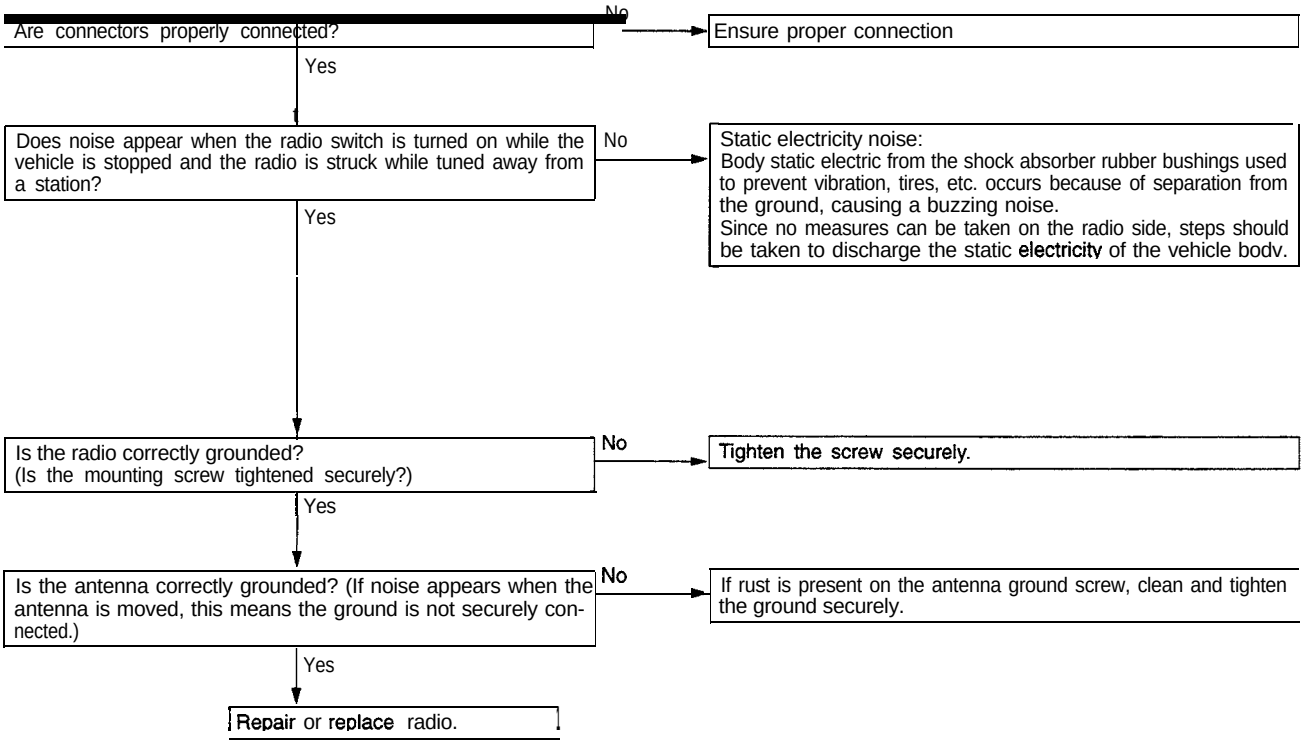


3

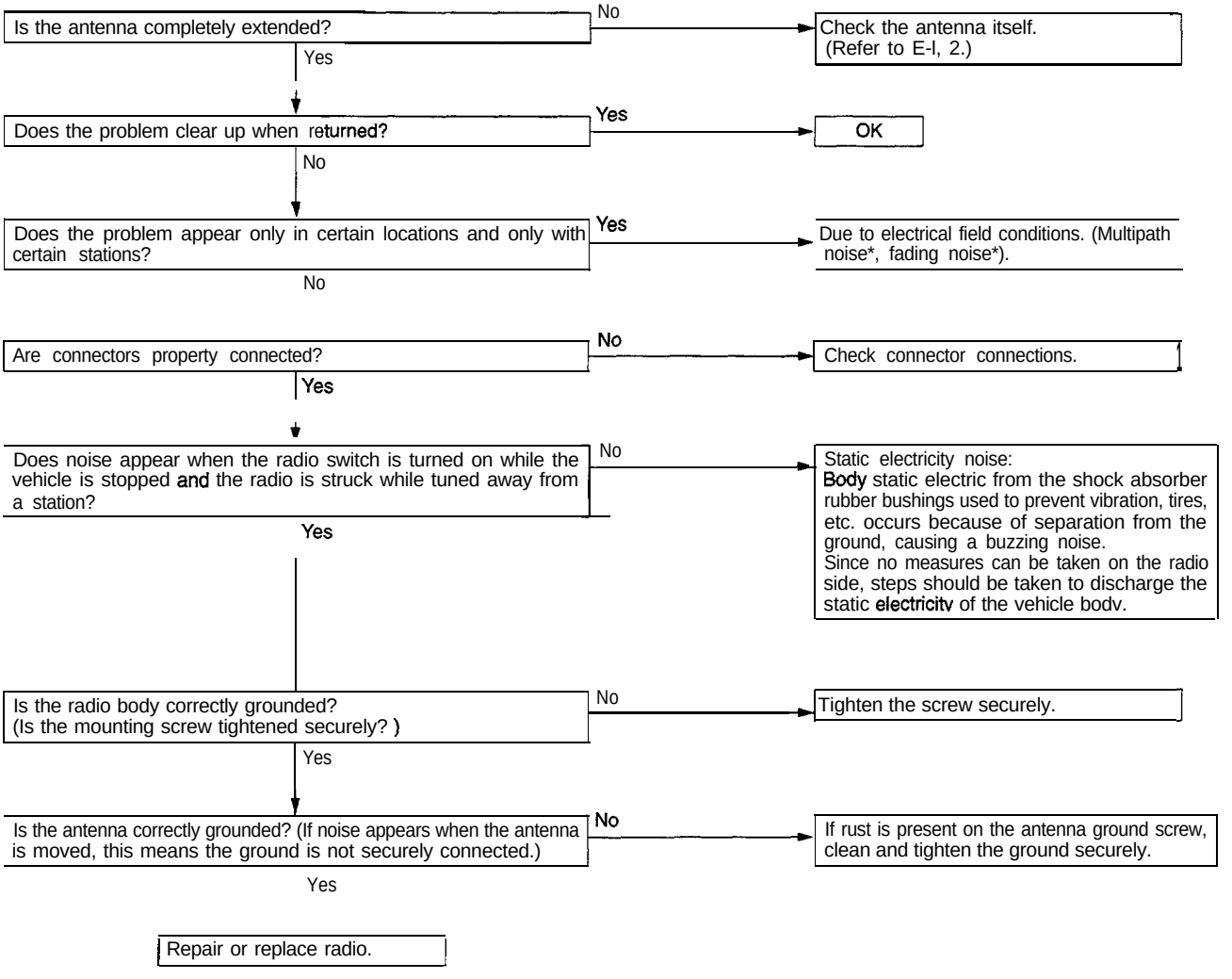


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A-7 Some noise appears when there is vibration or shocks during traveling.



A-8 Noise sometimes appears on FM during traveling.



* About multipath noise and fading noise

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

- Multipath noise

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

- Fading noise

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

A-9 Ever-present noise.

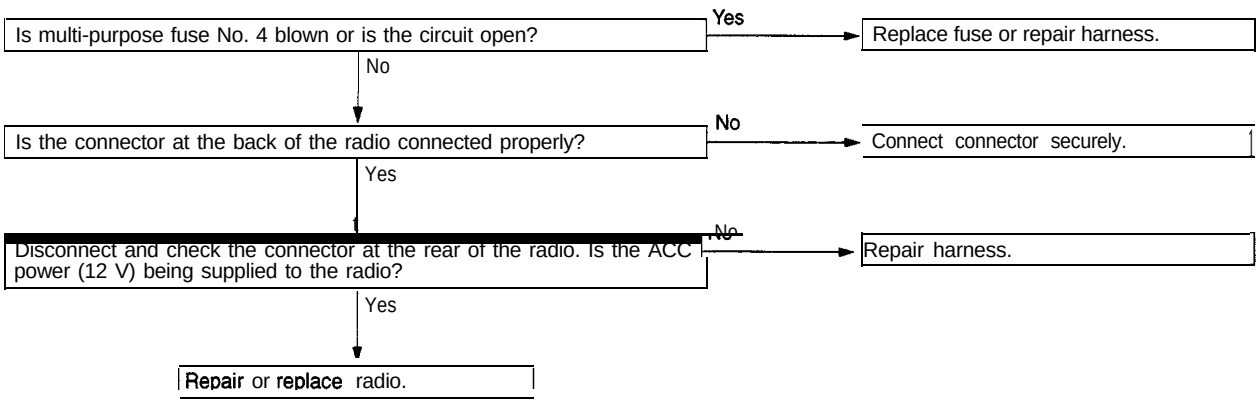
Noise is often created by the following factors, and often the radio is OK when it is checked individually.

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

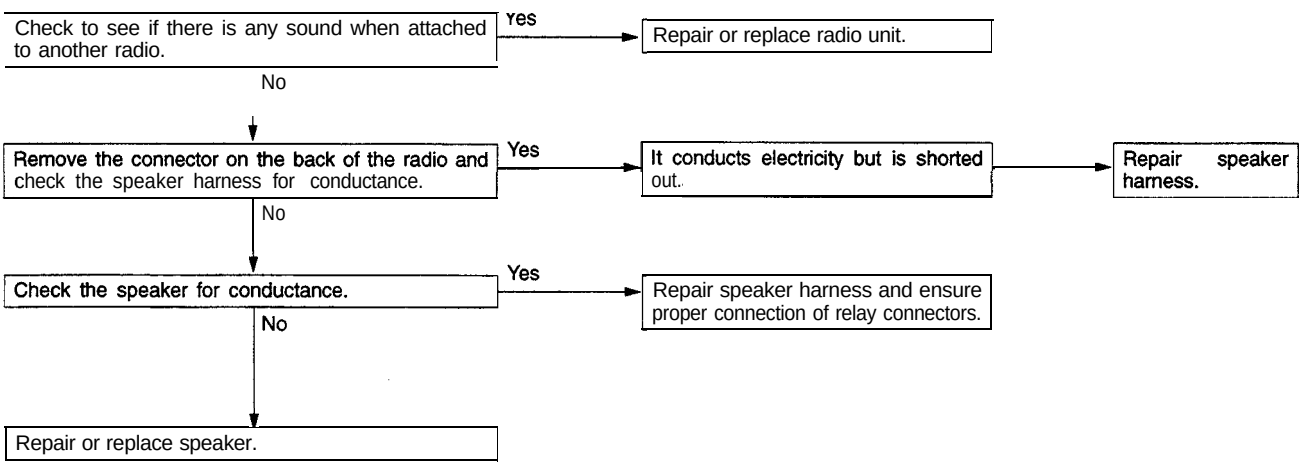
For this reason, if there are still problems with noise even after the measures described in steps A-I to A-8 have been taken, get information on the factors listed above as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc., and contact a service center.

B. RADIO

B-I No power is supplied when the switch is set to ON.

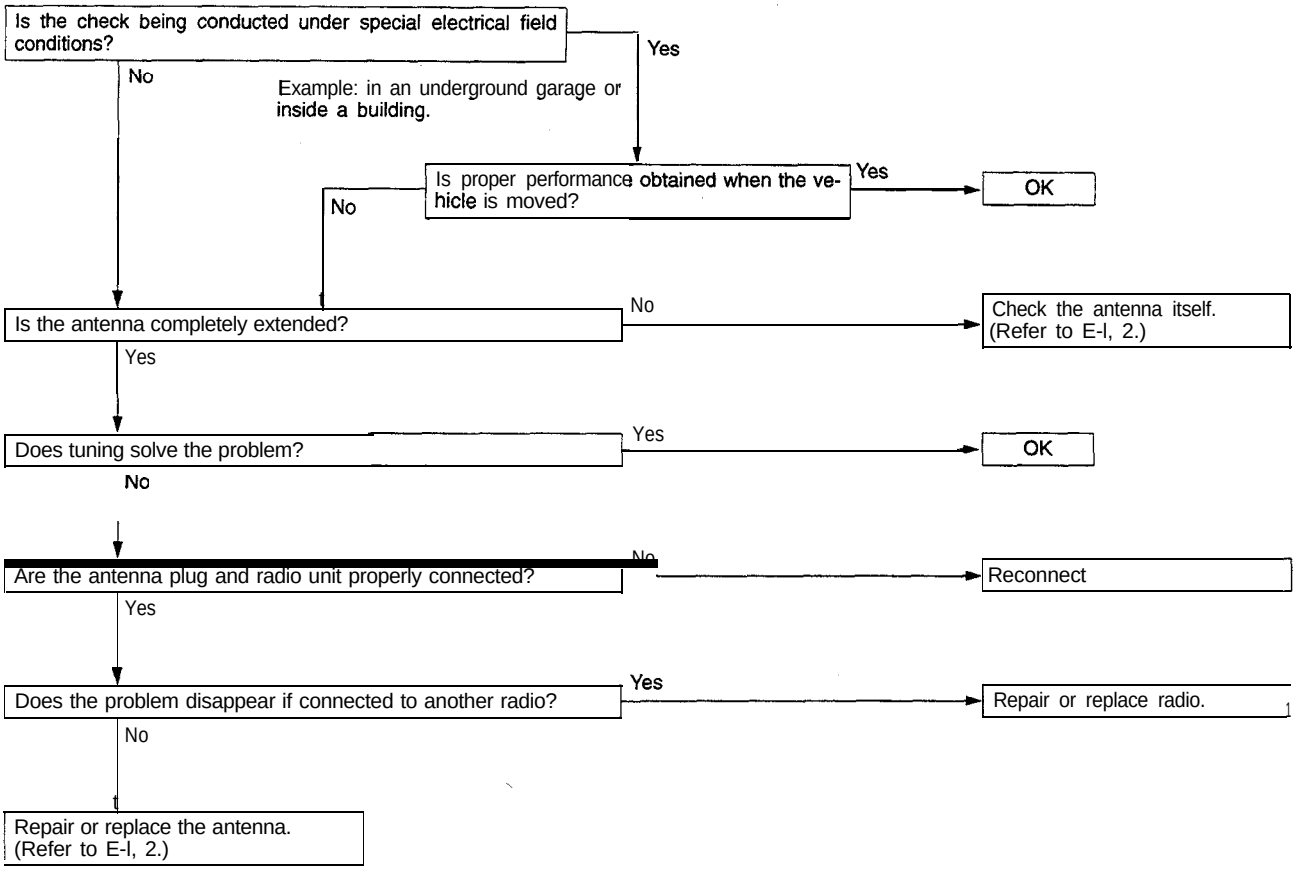


B-2 No sound from one speaker.

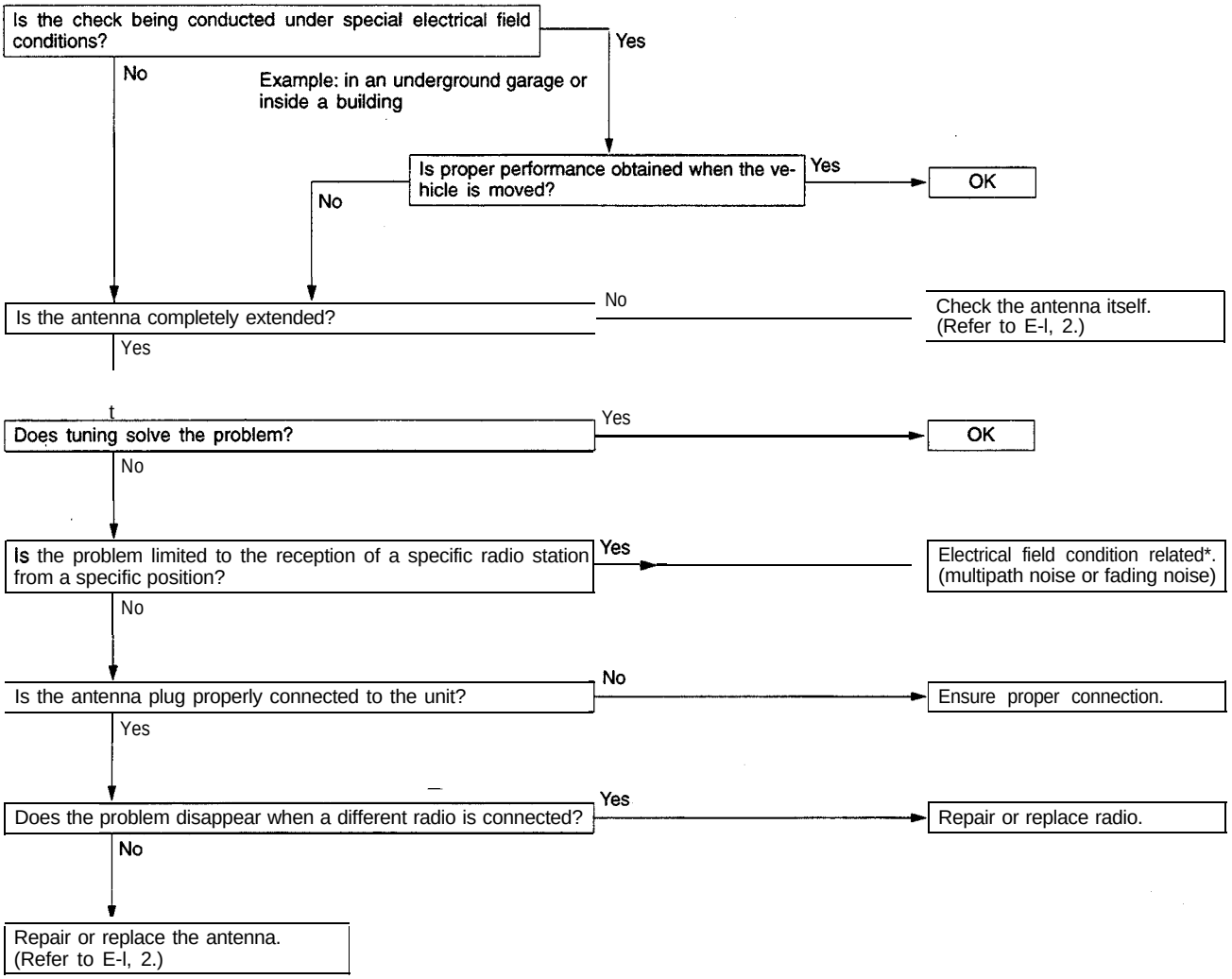


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B-3 There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.



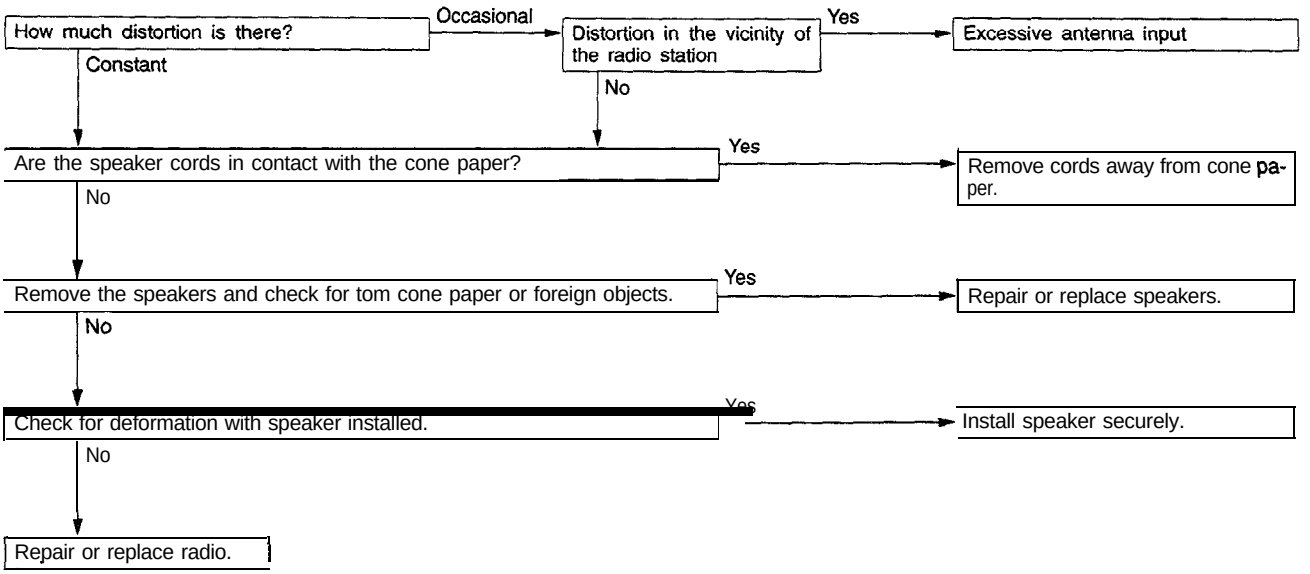
B-4 Insufficient sensitivity.



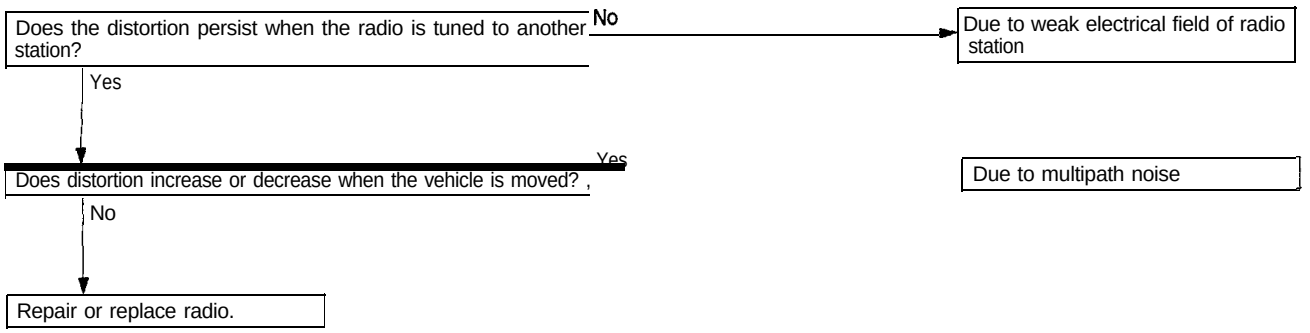
* For multipath noise and fading noise problems, refer to P.54-167.

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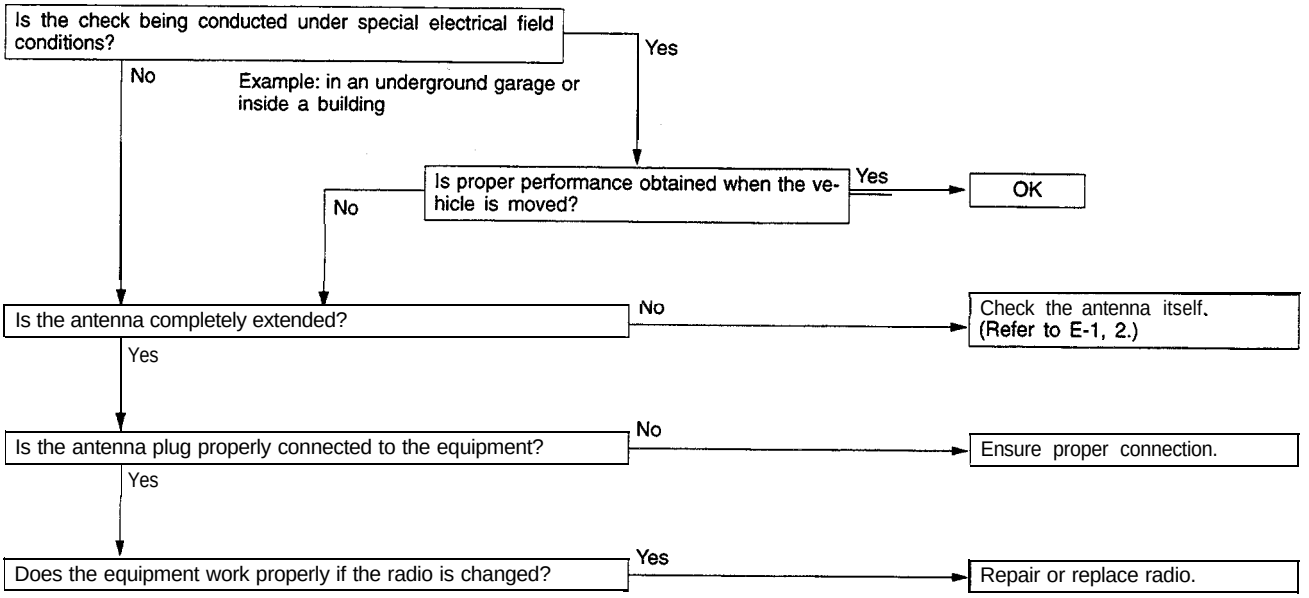
B-5 Distortion on AM or on both AM and FM.



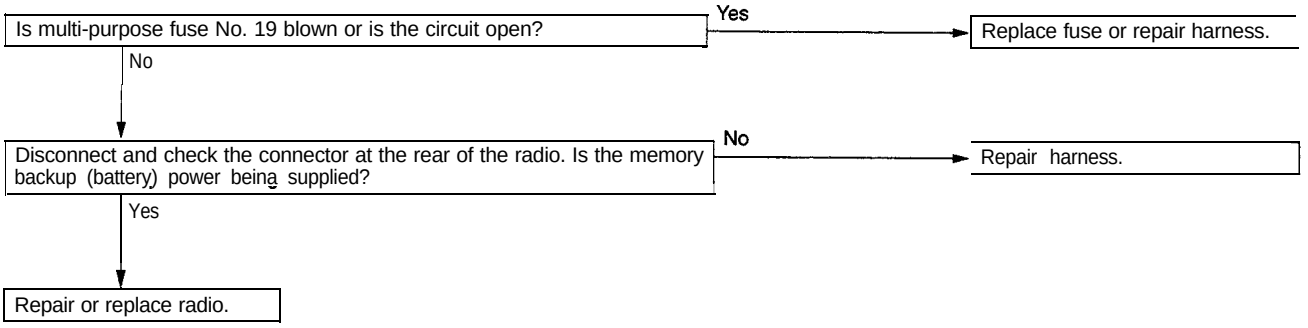
B-6 Distortion on FM only



B-7 Too few automatic select stations.

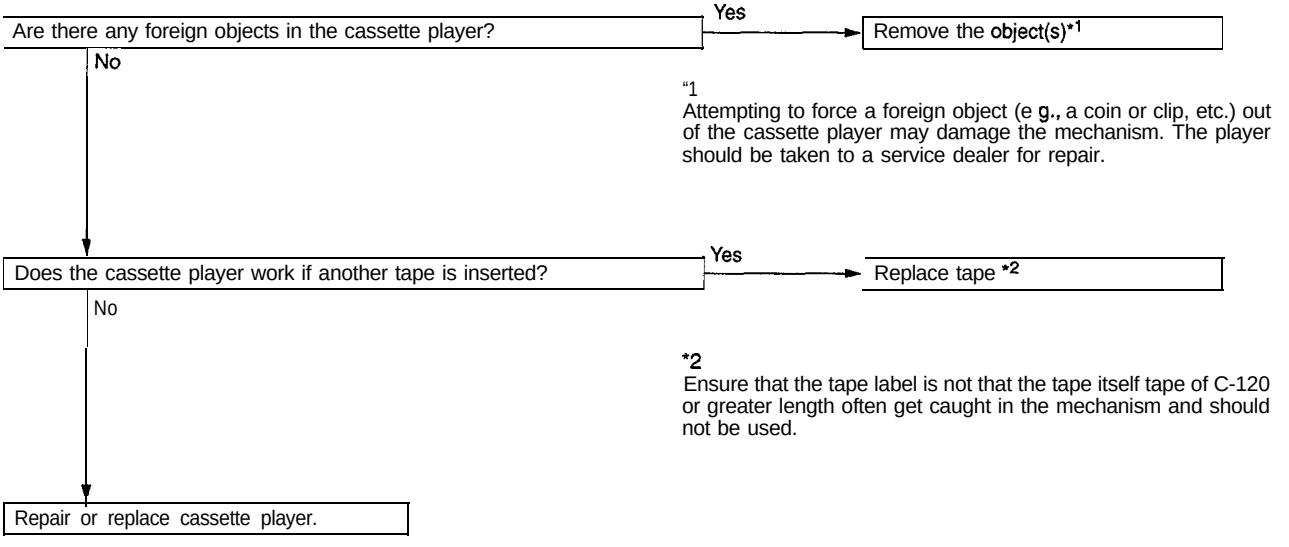


B-8 Insuff icient memory (preset stations are erased).



C. CASSETTE PLAYER

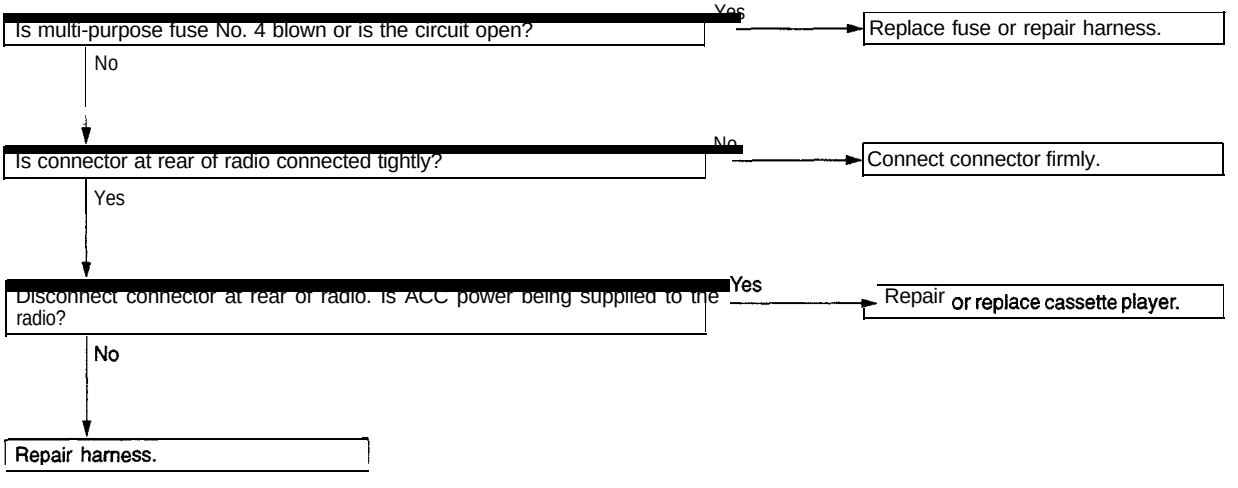
C-1 Cassette tape will not be inserted.



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

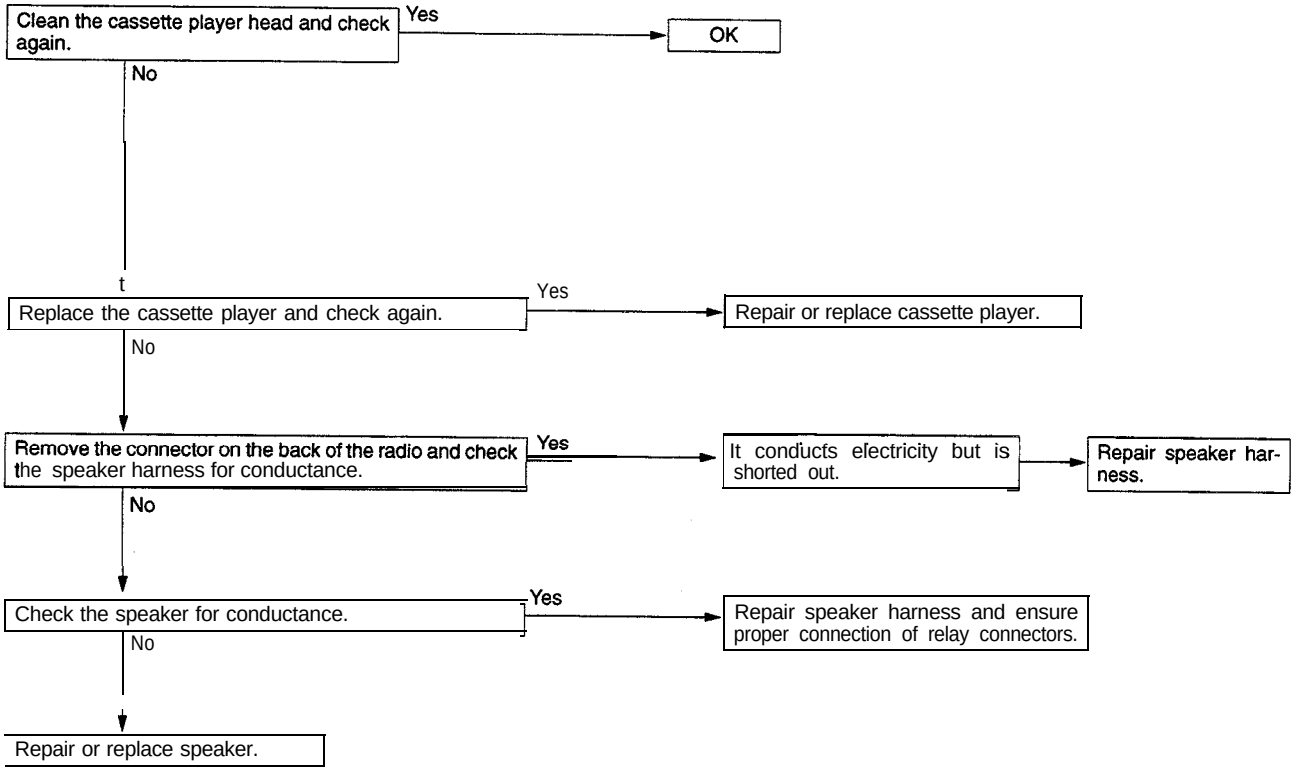
*2
Ensure that the tape label is not that the tape itself tape of C-120 or greater length often get caught in the mechanism and should not be used.

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



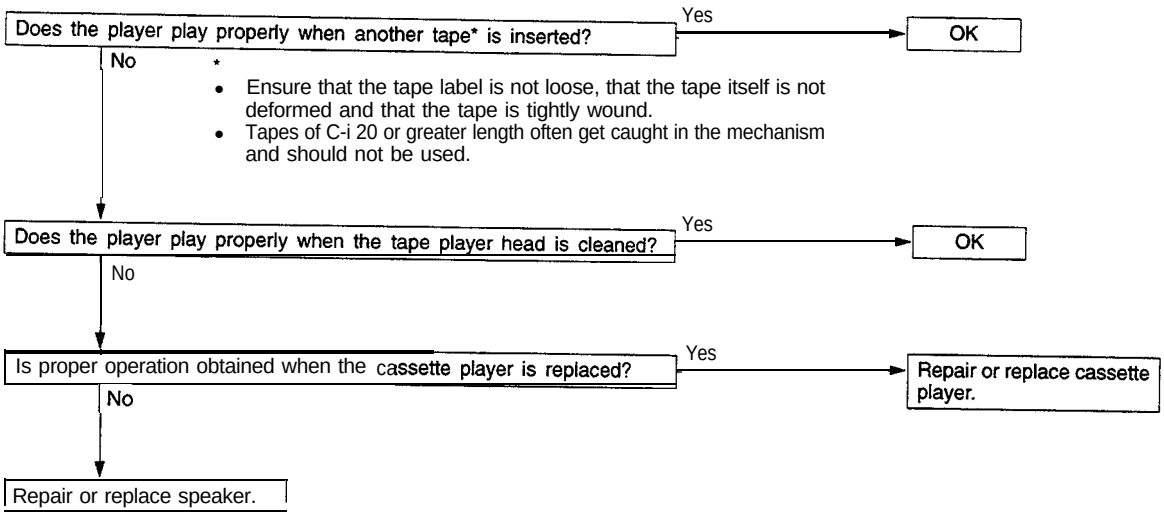
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C-3 No sound from one speaker.



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



C-5 Cassette tape will not be ejected.

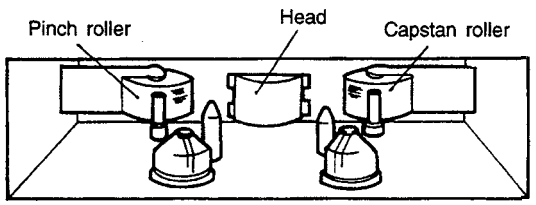
The problems covered here are all the result of the use of **a** bad tape (deformed or not properly tightened) or of a malfunction of the cassette player itself. Malfunctions involving the tape becoming caught in the mechanism and ruining the case are also possible, and attempting to force the tape out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

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

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

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

Is the head or capstan roller dirty?



- Yes → Clean.
- No →

Repair or replace cassette player.

C-7 Automatic search does not work.

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

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

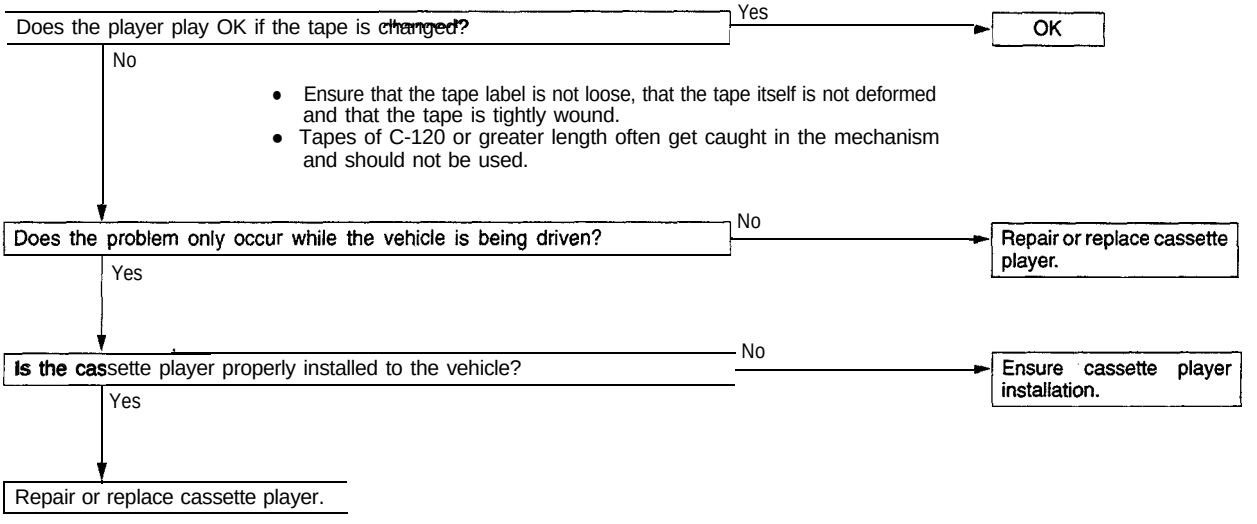
*1
- When the time between songs on a tape is less than three seconds, or when there is a three second period in the middle of a song in which the volume level is extremely low, the automatic search function may not work properly.

*2
- 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-120 or greater length often get caught in the mechanism and should not be used.

Repair or replace the cassette player.

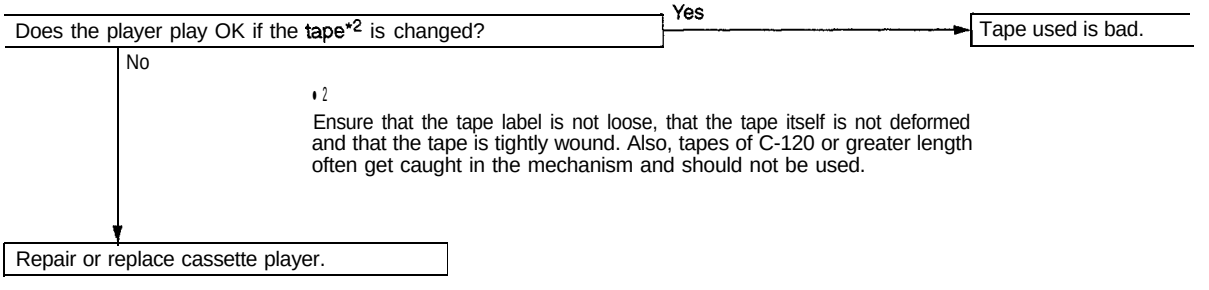
TSB Revision

C-8 Faulty auto reverse.



C-9 Tape gets caught in mechanism*1.

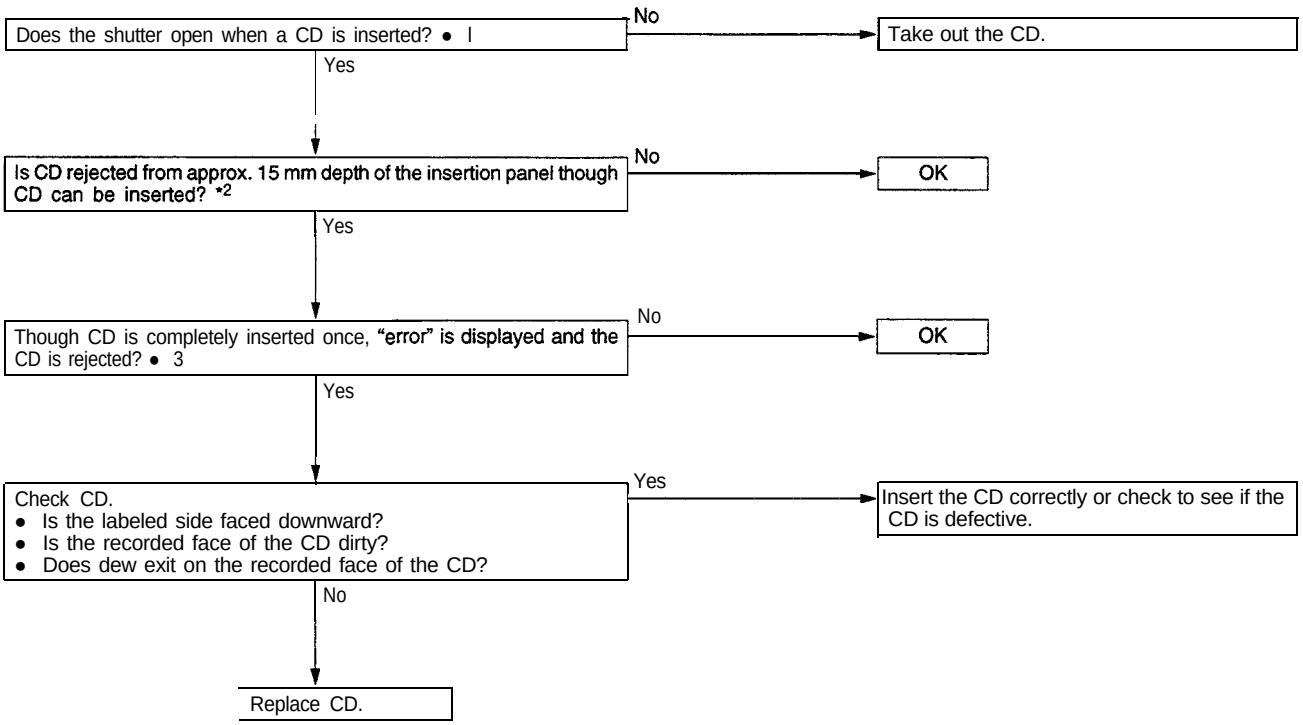
*1
When the tape is caught in the mechanism, the case may not eject. When this occurs, do not try to force the tape out as this may damage the tape player mechanism. Take the cassette to a service dealer for repair.



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D. CD PLAYER

D-l CD will not be accepted.



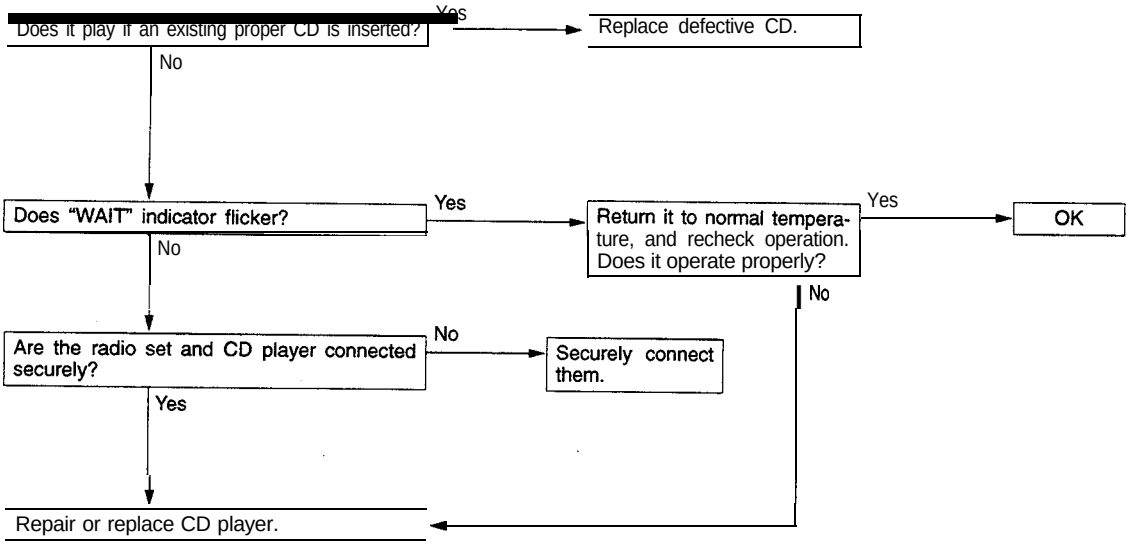
l ‘ If the CD is already loaded, doesn't the shutter open to allow insertion when another CD is inserted?

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

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

TSB Revision

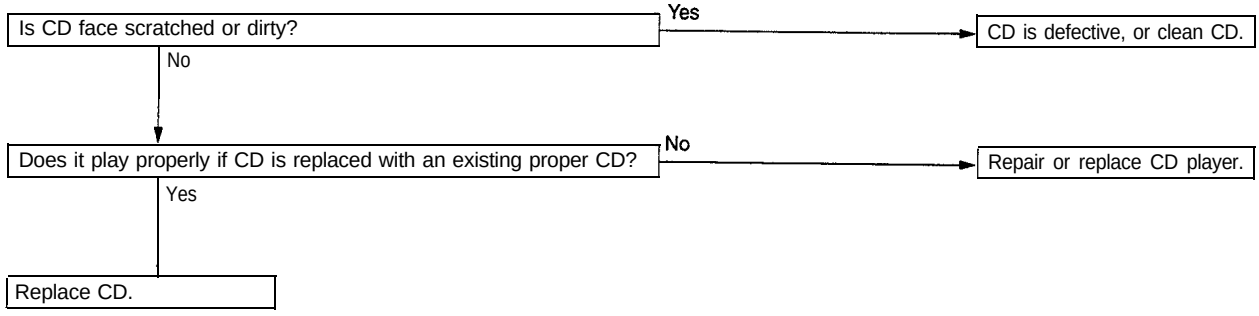
D-2 No sound.



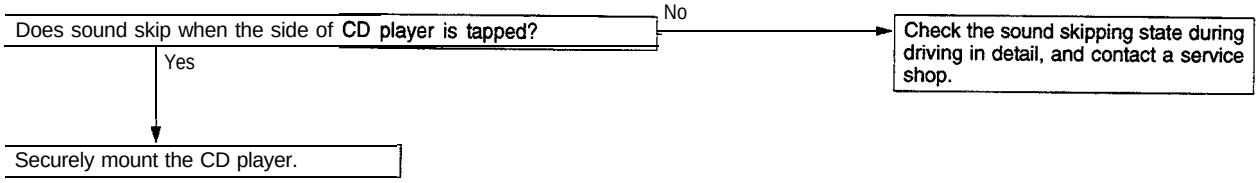
(The combined radio cassette must operate properly.)

D-3 CD sound skips.

1. Sound sometimes skips during parking.

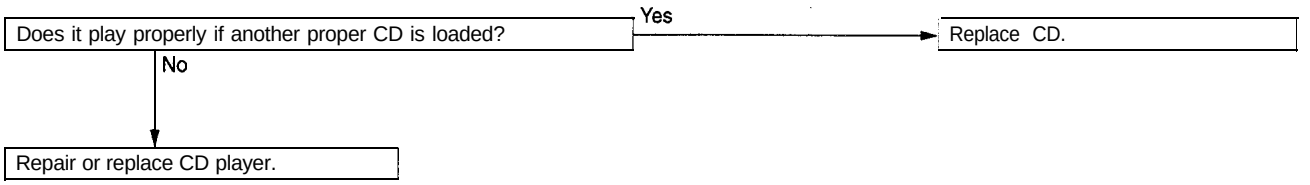


2. Sound sometimes skips during driving.
(Stop vehicle, and check it.)
(Check it by using a proper CD which is free of scratch, dirt or other abnormality.)

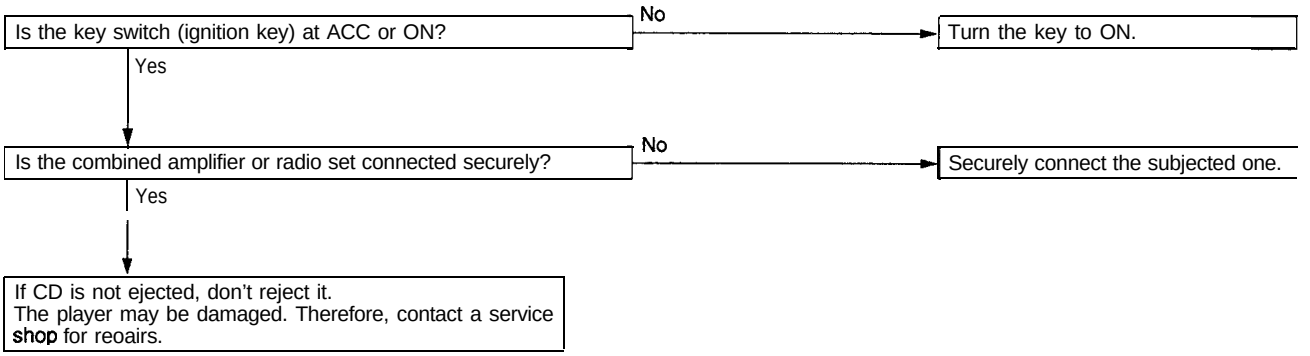


TSB Revision

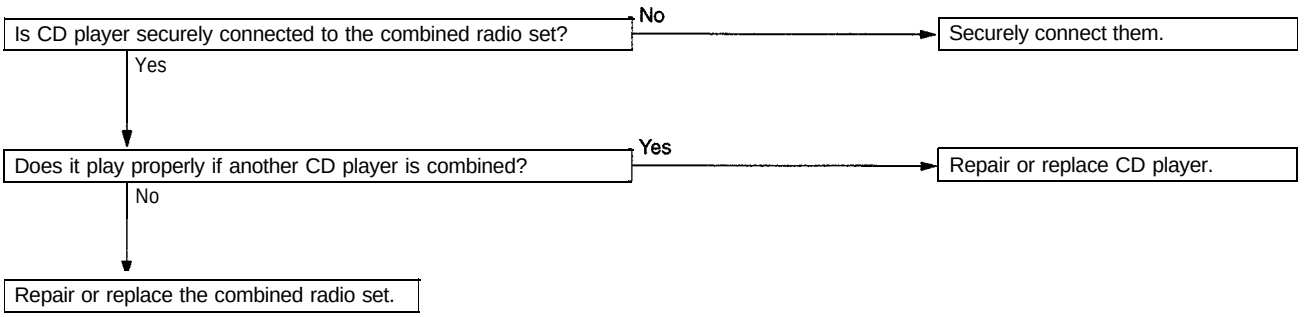
D-4 Sound quality is poor.



D-5 CD will not be ejected.



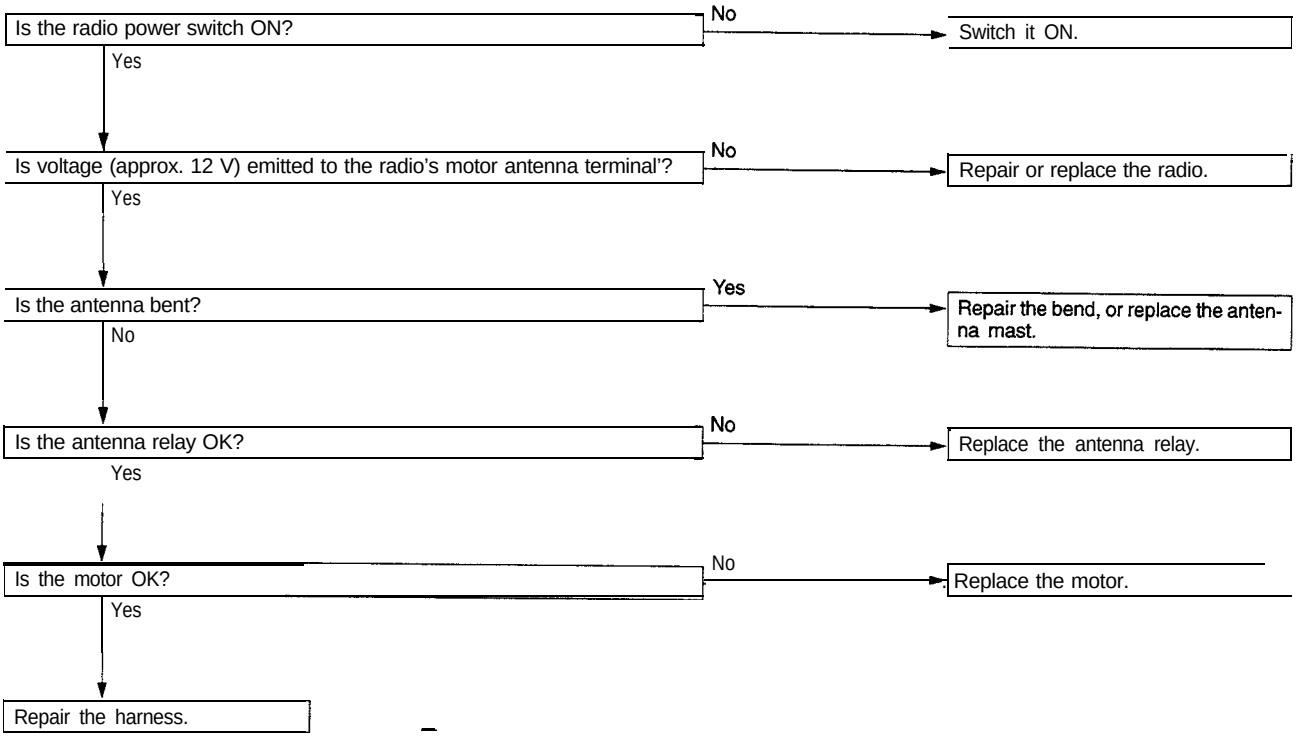
D-6 No sound from one speaker.



E. MOTOR ANTENNA

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

Clean and polish the surface of the antenna rod.

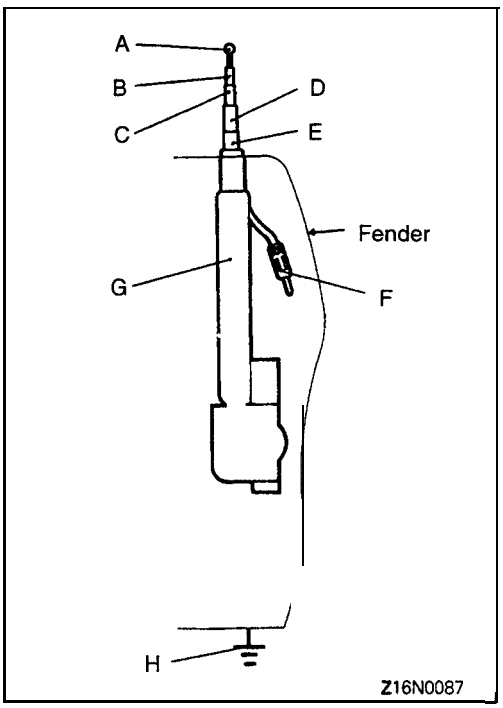


E-2 Motor antenna extends and retracts but does not receive.

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

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

Replace the feeder cable.



Checking the antenna *

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

TSB Revision

PROCEDURE FOR INPUT OF SECURITY CODE FOR RADIO AND TAPE PLAYER WITH ANTI-THEFT SYSTEM

The radio and tape player does not operate in the following states.

(1) Power supply to the radio and tape player has been suspended for more than one hour continuously by removing the cable from the battery terminal or disconnecting the harness connectors.
(2) The power supply to the radio and tape player has been suspended for more than one hour owing to blown fuse or discharged battery.
(3) The radio and tape player has been replaced.

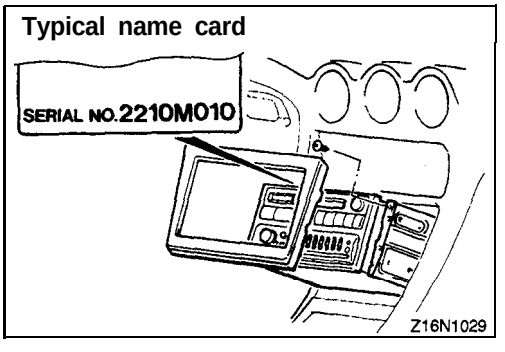
If the radio and tape player does not operate for these causes, input the security code by the following procedure to operate it.

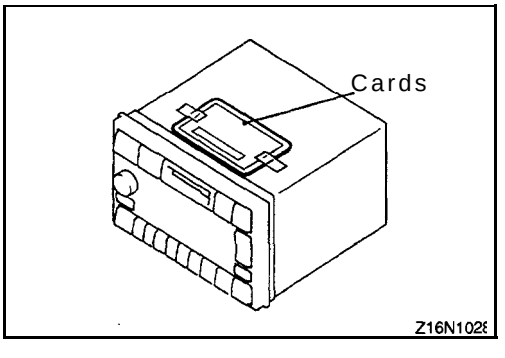
1. Using any of the following methods, confirm the security code.
   (1) Read the security code indicated on the cards retained by the user.
   (2) If the security code is unknown owing to the user's loss of the cards,
      a. Remove the audio panel and then pull out the radio and tape player partially.
      b. Read the serial No. shown on the name card of the radio and tape player.
      c. Look up the anti-theft code corresponding to the serial number in the serial number-anti-theft code table; or, make inquiries to Mitsubishi Motor Sales of America, Inc.

Card



Typical name card



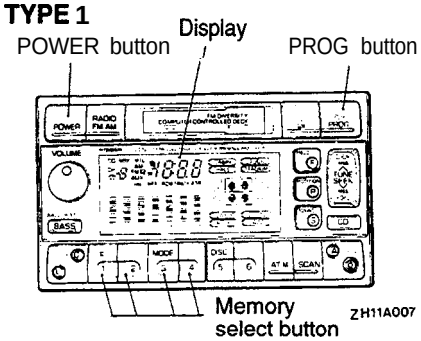


(3) When the radio and tape player is replaced
Read the security code on the cards attached to the upper surface of the replacement radio and tape player.

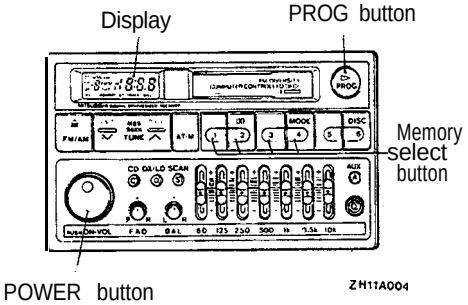
NOTE
Deliver the cards (two) to the user.

TSB Revision

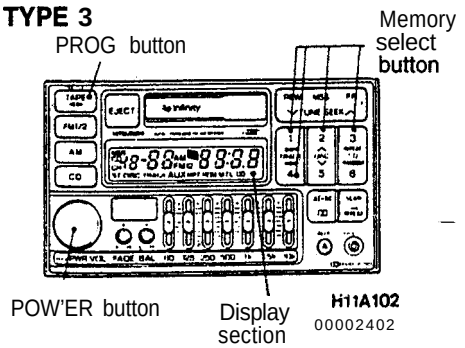
TYPE 1



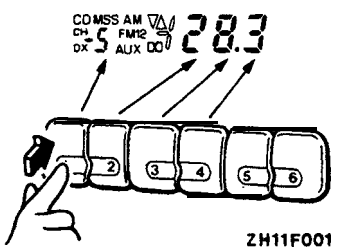
TYPE 2



TYPE 3



Typical security code "5283"



2. Return power supply for the radio and player to the normal state.
3. Turn the ignition key to the "ACC" position.
4. Press the POWER button, and "code" will be displayed on the display.

5. Press No.1 through No.4 memory select buttons and set the 4-digit security code indicated on the card.

   Every time each digit key is pressed, the number changes as follows:

   → 0 → 1 → 2 ··· 9 → 0 ···

6. Press the PROG button. After a beep is heard, the radio and tape player will be in the operating state.
7. If the input security code does not agree with that in memory, "1 Err" is displayed on the display. In a few seconds, it will change to "code". So, repeat steps 4 and **5.**

   NOTE
   (1) The security code can be set three times at the most.
   (2) The second error is displayed as "2 Err". If the third error is made, "3 Err" is displayed and then it changes to "OFF".
   (3) When setting is attempted four or more times, keeping the ignition key in the "ACC" or "ON" position for about one hour will automatically erase the "OFF" display.

TSB Revision

After the erasing, therefore, repeat step 3 and up. If the ignition key is turned to the “OFF” position during one-hour period of keeping it in “ACC” or “ON” position, the “OFF” display will be erased.

With the ignition key placed in the “ACC” position again, press the POWER button, and the “OFF” display will be resumed. Therefore, keep this state for another one hour or so.

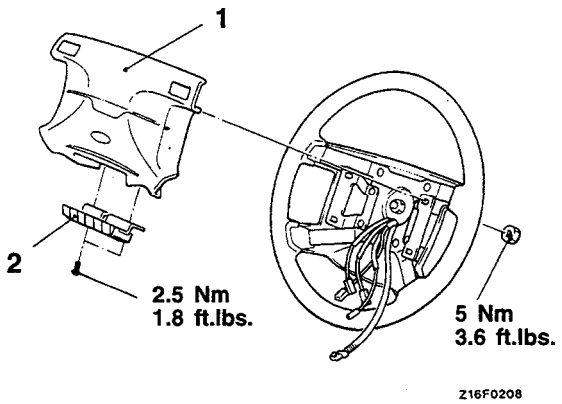
RADIO REMOTE-CONTROL

REMOVAL AND INSTALLATION

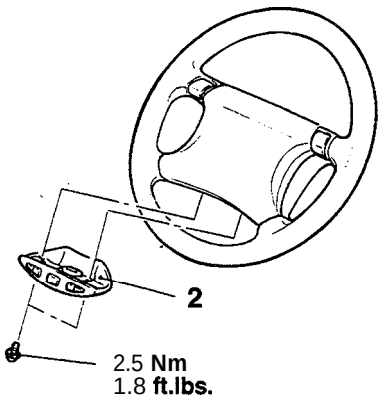
CAUTION: SRS
<Up to 1993 models>
Before removal of air bag module, refer to GROUP 52B – Service Precautions and Air Bag Module and Clock Spring.

<From 1994 models>
When removing and installing the remote control switch, don't allow any impact or shock to the air bag module.

<Up to 1993 models>



<From 1994 models>



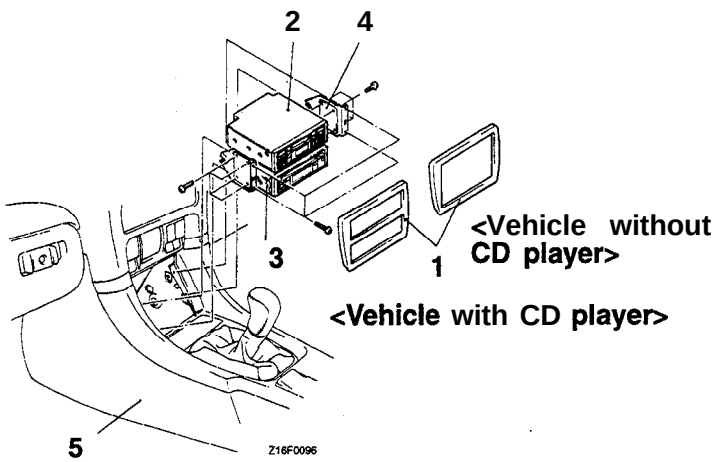
00002403

Removal steps

1. Air bag module (Refer to GROUP 52B – Air Bag Module and Clock Spring.)
2. Radio remote control switch

RADIO AND TAPE PLAYER

REMOVAL AND INSTALLATION



Removal steps

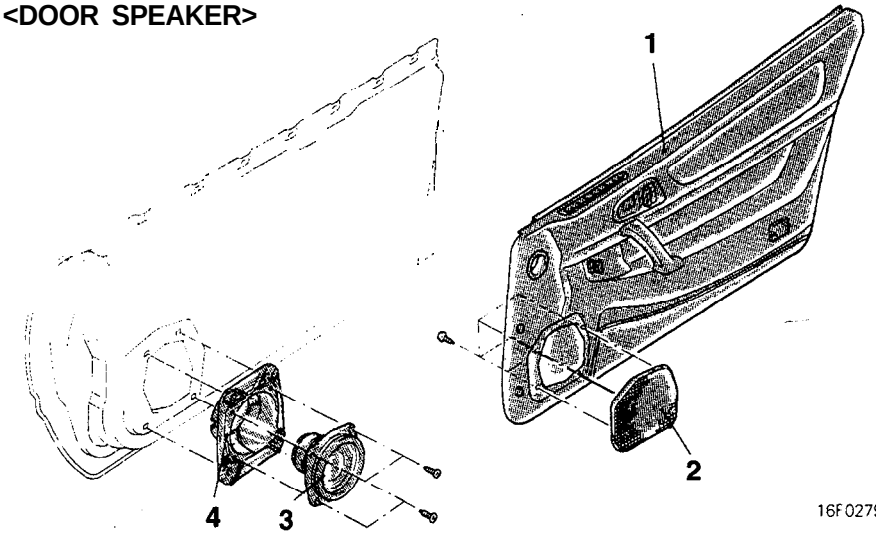
1. Radio panel
2. Radio and tape player
3. CD player
4. Radio bracket
5. Front console assembly (Refer to GROUP 52A – **Console** Box.)

TSB Revision

SPEAKER

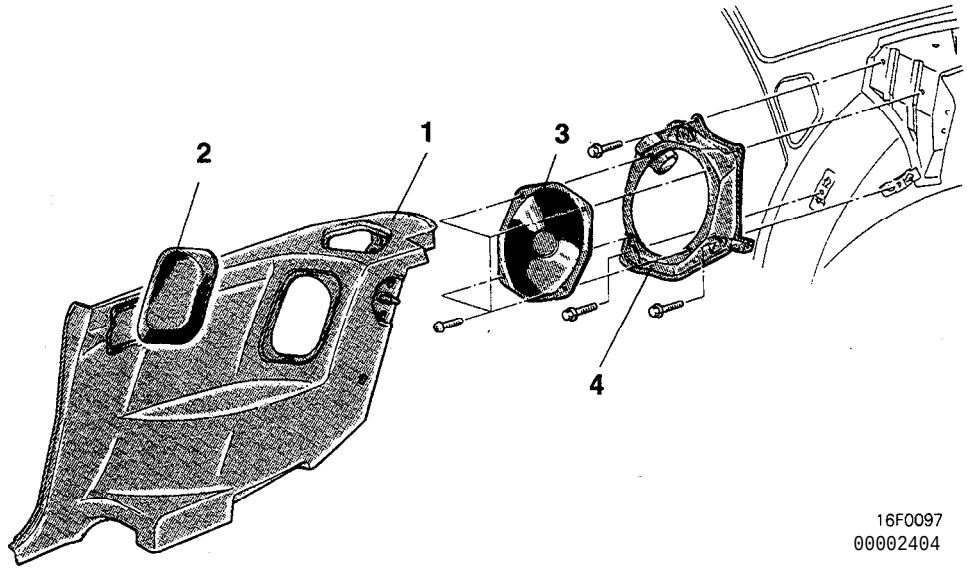
REMOVAL AND INSTALLATION

<DOOR SPEAKER>



16F0279

<REAR SPEAKER>



16F0097
00002404

Door speaker removal steps

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

Rear speaker removal steps

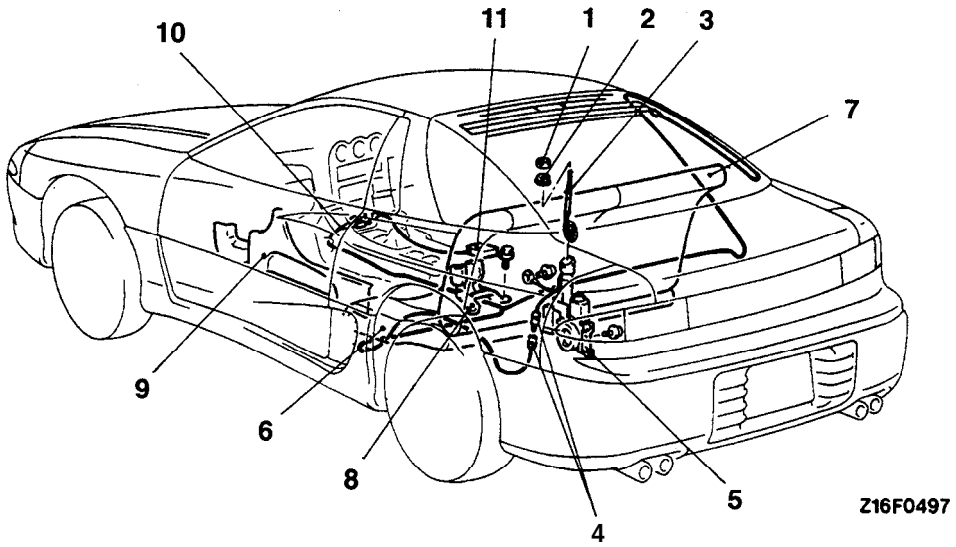
1. Quarter trim (Refer to GROUP 52A – Trims.)
2. Speaker garnish
3. Speaker
4. Speaker box

TSB Revision

MOTOR ANTENNA / ANTENNA FEEDER CABLE / AMPLIFIER

REMOVAL AND INSTALLATION

<Hatchback>



Motor antenna removal steps

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

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

Amplifier removal

11. Amplifier (under passenger's seat)

NOTE

● ': Refer to GROUP 52A – Trims
*2: Vehicels with glass mounted antenna

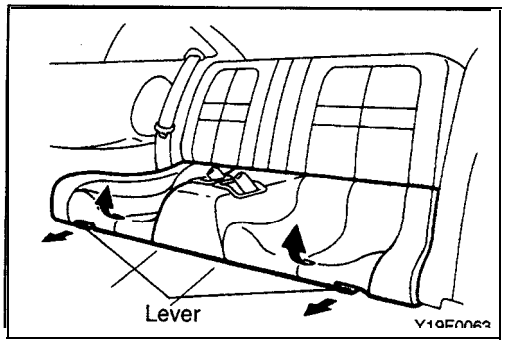
◀A▶ ▶A◀

Antenna feeder cable removal steps

- Rear side trim (LH)*1
- Quarter trim (LH)*1
- Rear side trim*1, *2
- Quarter trim (LH)*1, *2
- Quarter upper trim*1, ● *
- ● Liftgate upper trim*1, *2
- Liftgate side trim (RH)*1, ● *
- Rear console assembly (Refer to GOUP 52A – Console Box.)
- Radio and tape player (Refer to P.54-176)

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

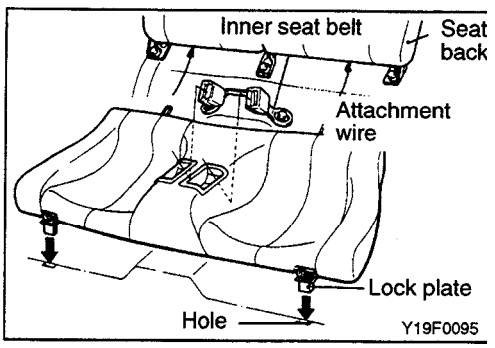
TSB Revision



REMOVAL SERVICE POINT

◀A▶ REAR SEAT CUSHION REMOVAL

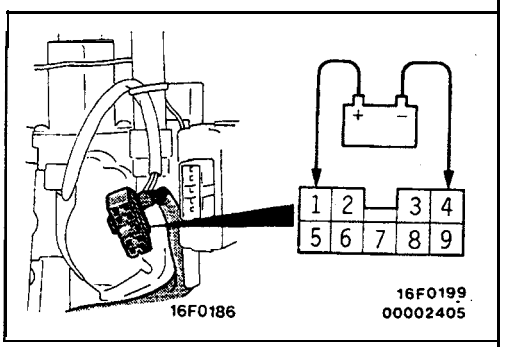
Raise and remove the seat cushion with the lever pulled.



INSTALLATION SERVICE POINT

▶A◀ REAR SEAT CUSHION INSTALLATION

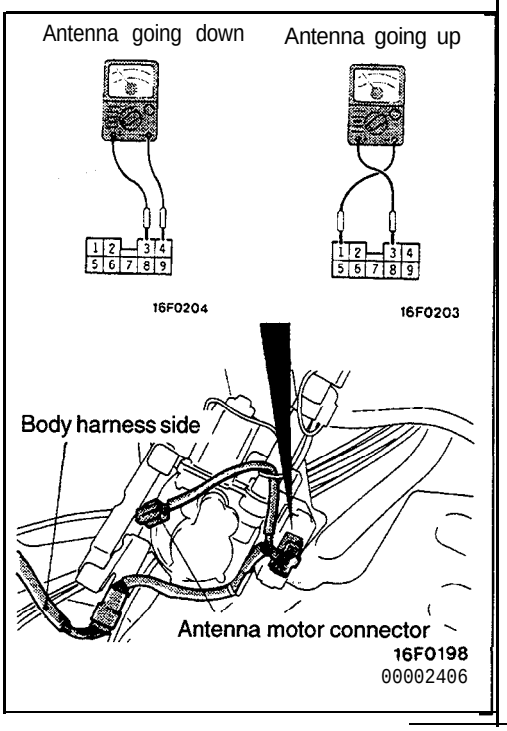
(1) Securely fit the attachment wire of the seat cushion under the seatback.
(2) Pass the inner seat belt buckles through the cushion.
(3) Securely fit the lock plates of the seat cushion into the holes in the floor.



INSPECTION

ANTENNA MOTOR INSPECTION

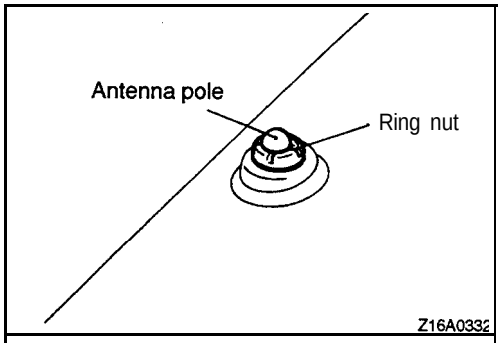
Disconnect the motor antenna control unit connector, connect the positive terminal of the power supply to terminal (1) and connect the negative terminal to terminal (4) to check that the antenna goes up, and that when the connections are reversed, the antenna goes down.



MOTOR ANTENNA CONTROL UNIT INSPECTION

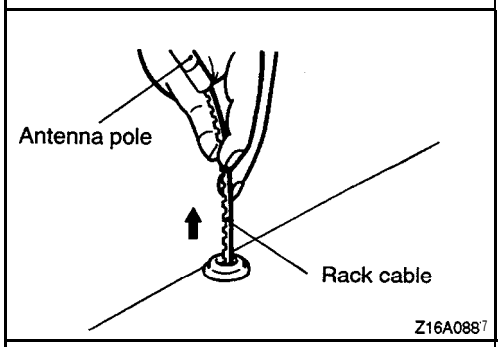
(1) Connect the harness connector to the motor antenna. (Body harness)
(2) Disconnect the antenna motor connector.
(3) With the ignition switch in the ACC or ON position, operate the radio switch and check the voltage between the terminals during the period when the antenna is going up or going down.

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

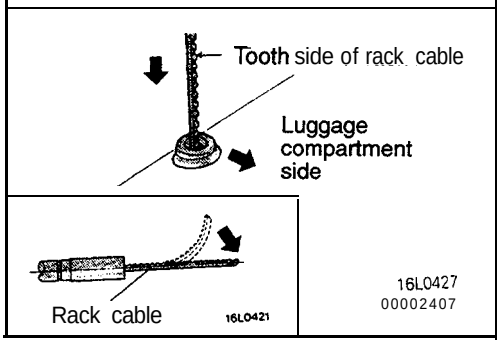


ANTENNA POLE REPLACEMENT

(1) Remove the ring nut.



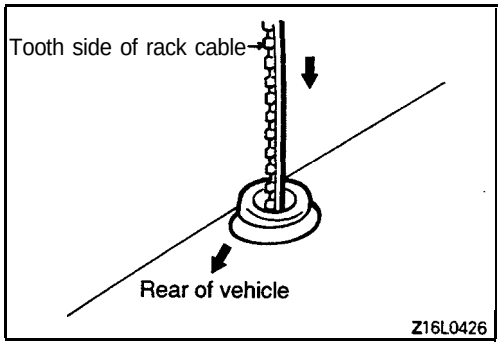
(2) Set the radio switch to ON. After the antenna pole has extended, remove the antenna pole and rack cable as an assembly.



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

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

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



(5) Turn the tooth side of the rack cable toward the rear of the vehicle (90° clockwise) to bring the rack cable into mesh with the motor gear.

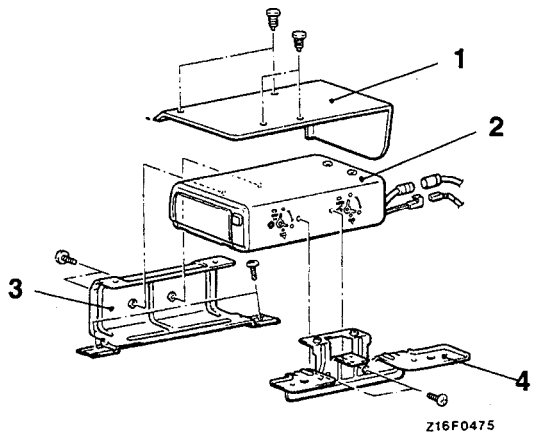
(6) Lightly pull the rack cable. If it comes out without resistance, it means that the rack cable is not in mesh with the motor gear. Recheck that the rack cable end is not bent before repeating the above-mentioned steps (2) and (3).

(7) With the antenna pole upright and the radio switch at OFF, take up the rack cable. As the rack cable is taken up, insert the antenna pole toward the motor antenna.

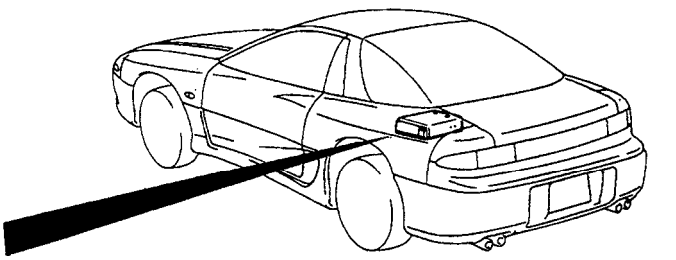
(8) After the ring nut has been tightened, set the radio switch to ON and OFF to check the operation of the antenna pole.

CD AUTO CHANGER

REMOVAL AND INSTALLATION



Z16F0475


Z16F0495
00002408

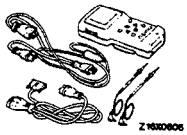
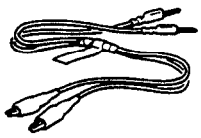
Removal steps

1. CD changer cover
- Luggage compartment floor carpet, high floor center board.
2. CD auto changer
3. CD changer bracket (front)
4. CD changer bracket (rear)

TSB Revision

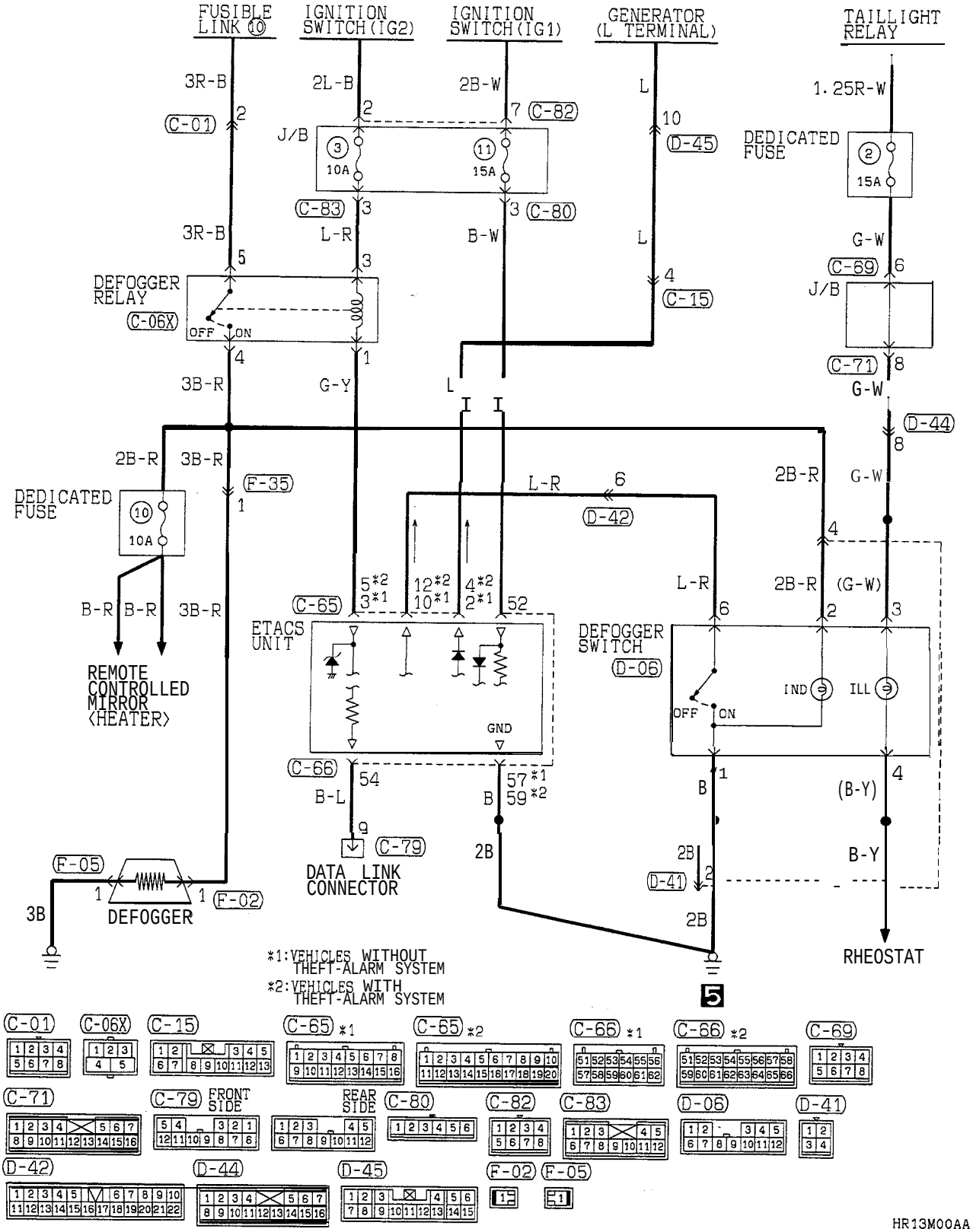
REAR WINDOW DEFOGGER

SPECIAL TOOLS

Tool	Tool number and name	Supersession	Application
	MB991341 Scan tool (Multi-use tester <MUT>)	MB991341C	Up to 1993 models Checking the rear window defogger system
	ROM Pack (For the number, refer to GROUP 00 – Precautions Before Service.)		
	MB991502 Scan tool (MUT-II)	MB991502	All models Checking the rear window defogger system
 Z16X0607	ROM pack		
	MB991529 Diagnostic trouble code check harness	MB991529	From 1994 models Checking the rear window defogger system using a voltmeter

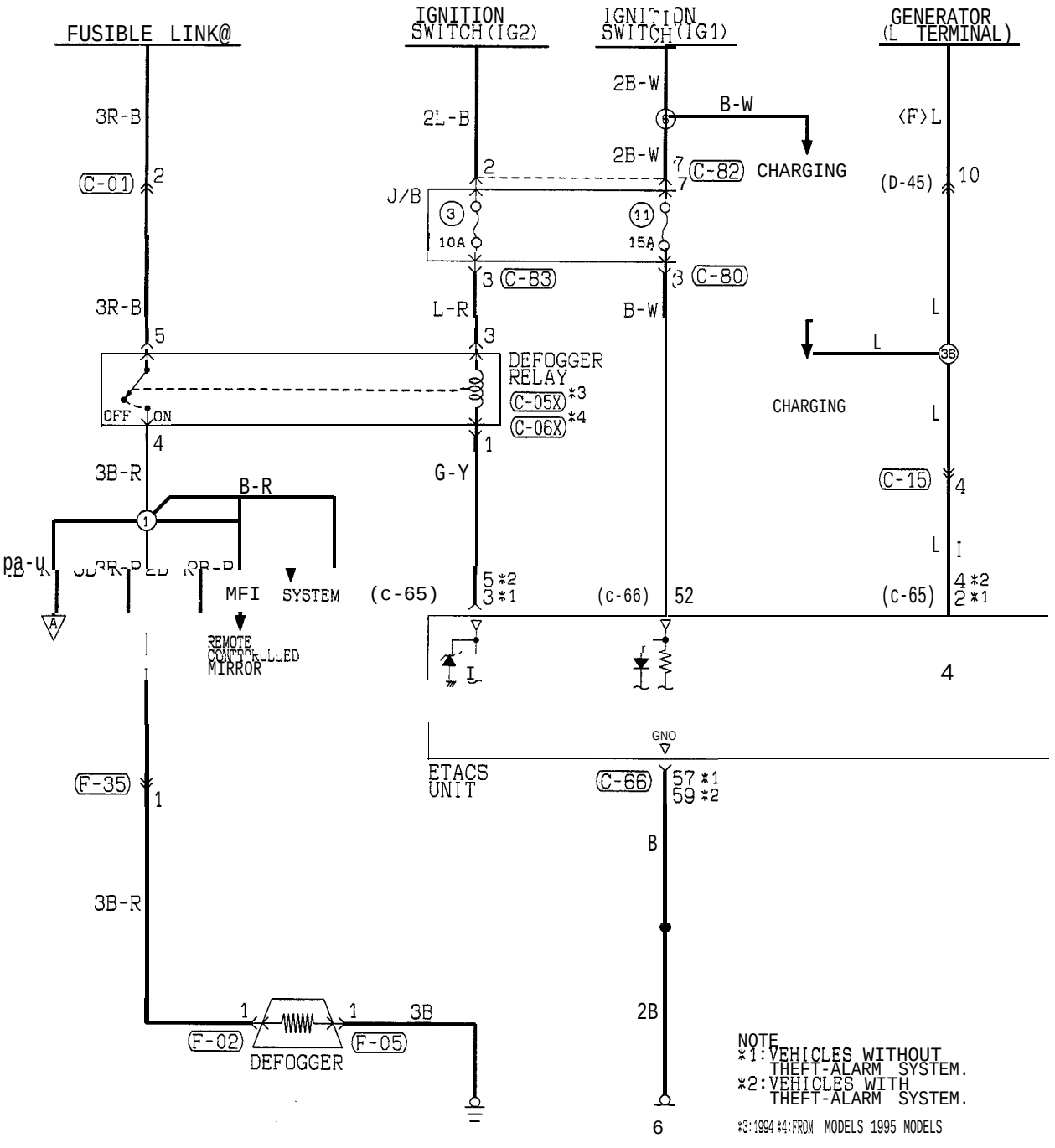
TROUBLESHOOTING

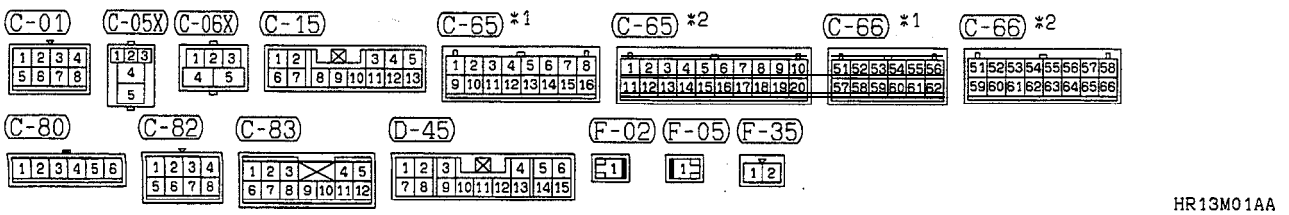
CIRCUIT DIAGRAM (UP TO 1993 MODELS)



TSB Revision

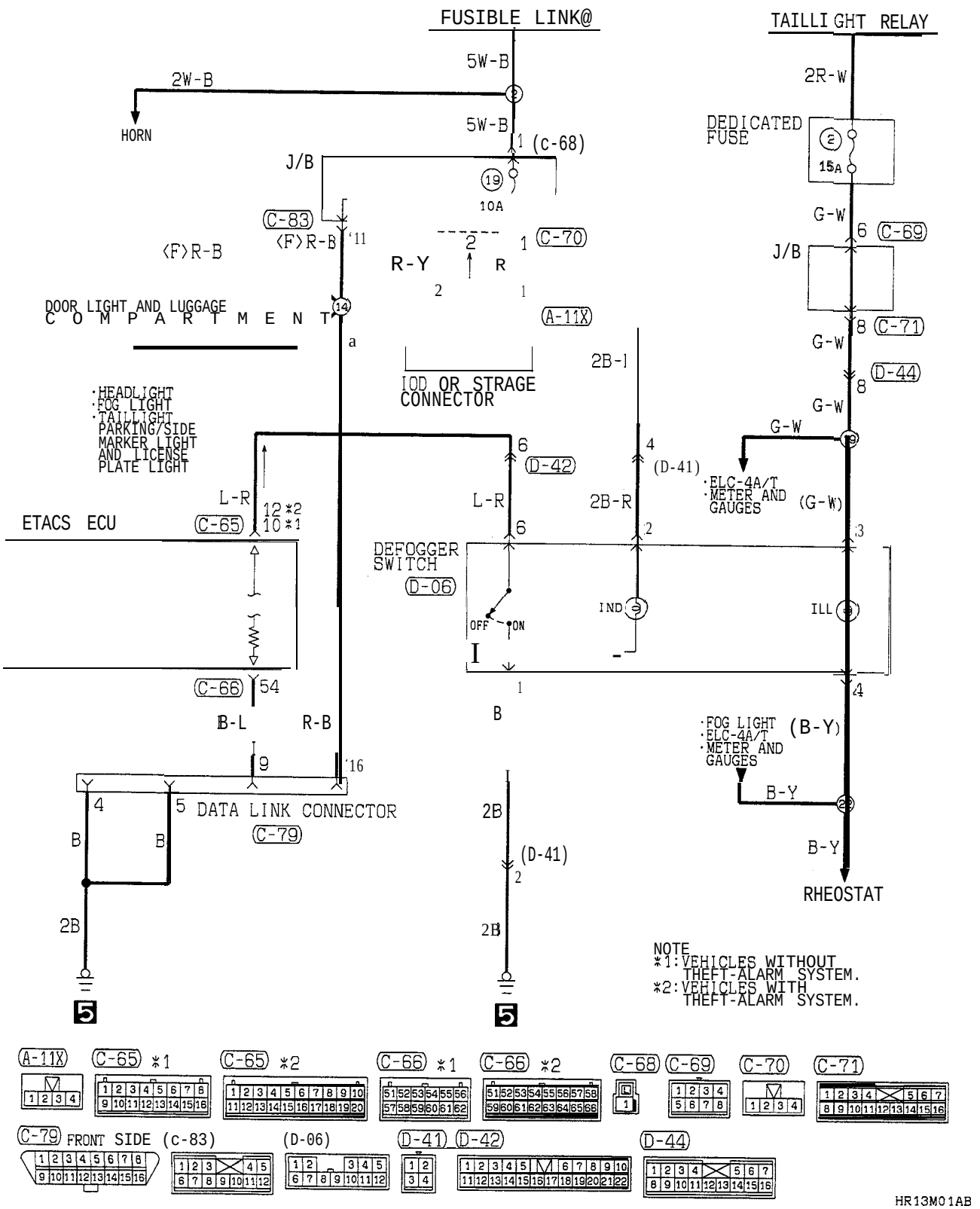
CIRCUIT DIAGRAM <HATCHBACK (FROM 1994 MODELS)>





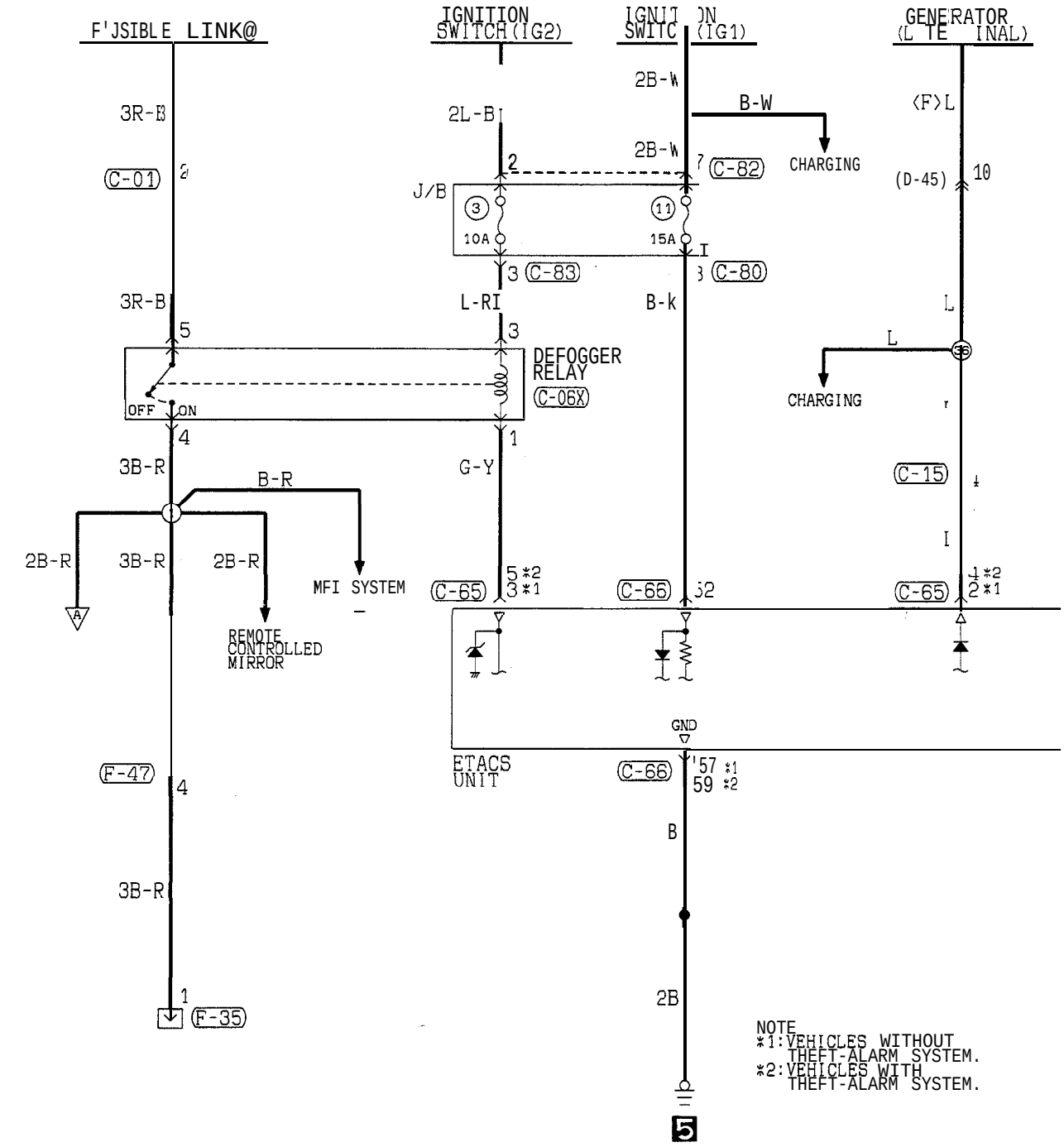
HR13M01AA

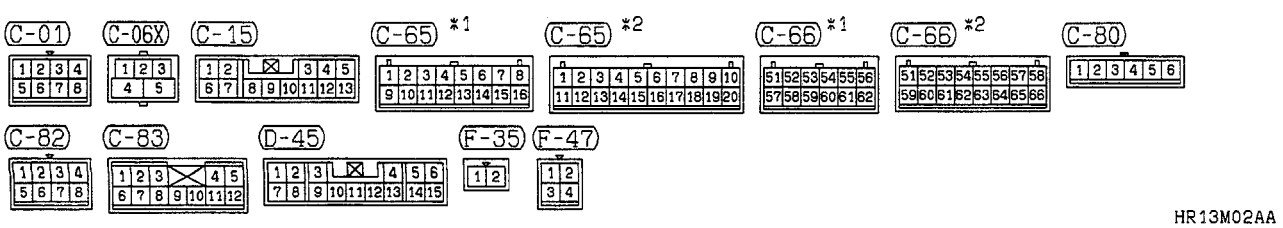
TSB Revision



TSB Revision

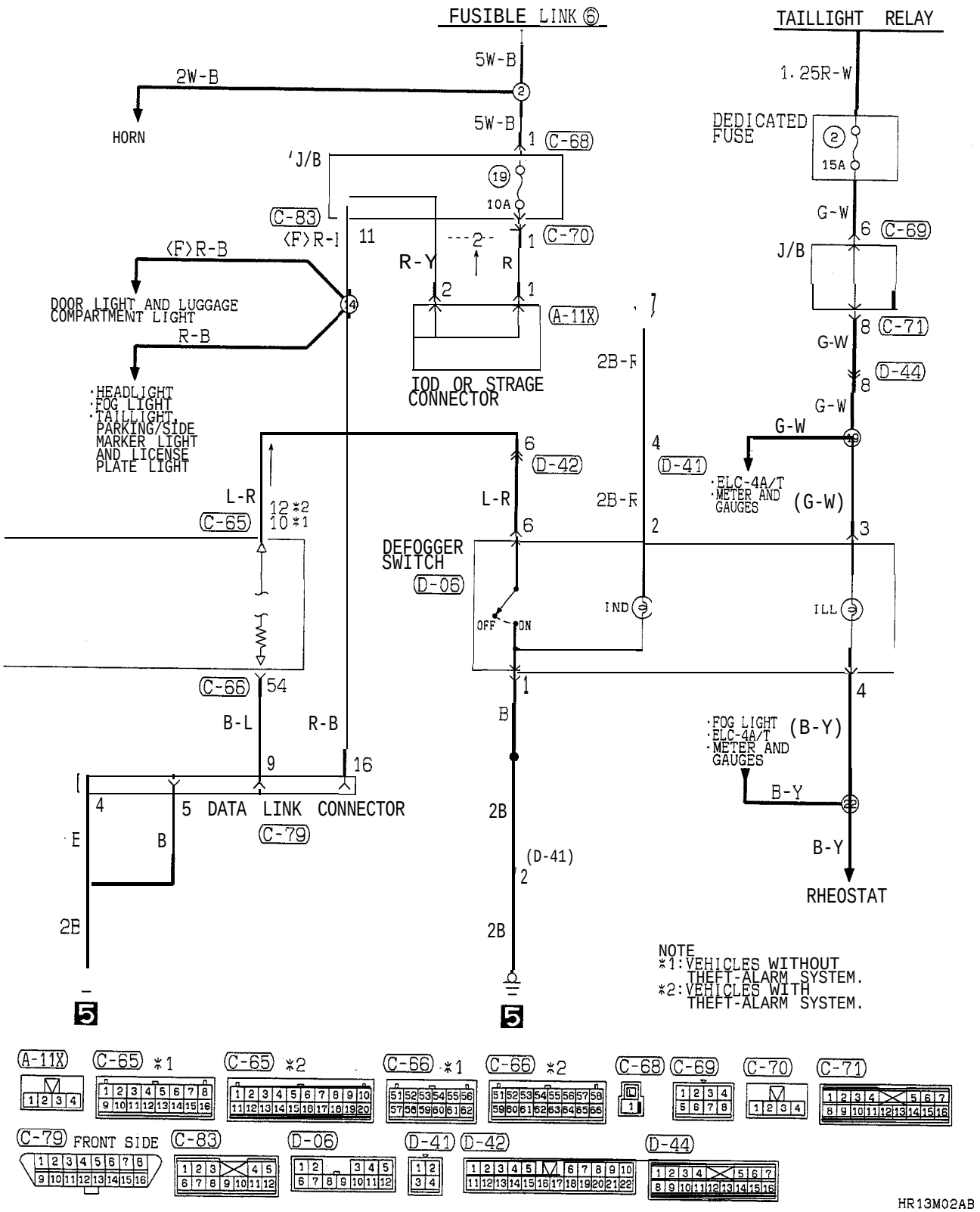
CIRCUIT DIAGRAM <CONVERTIBLE (1995 MODELS)>





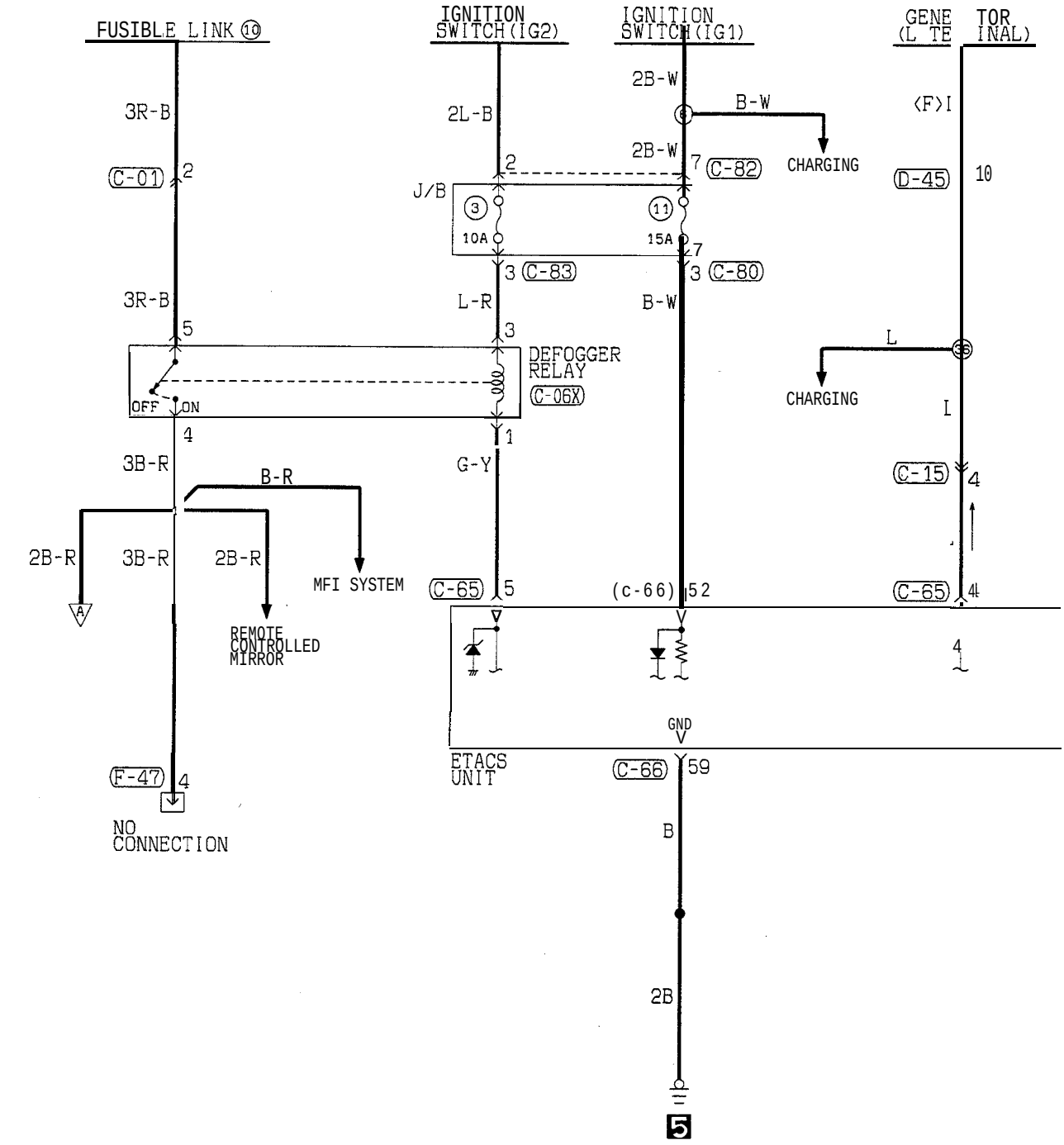
HR13M02AA

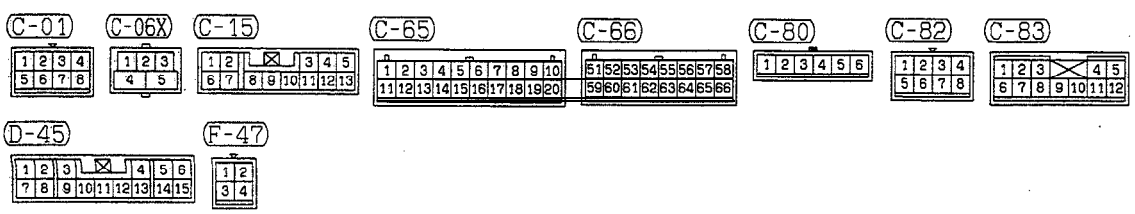
TSB Revision



TSB Revision

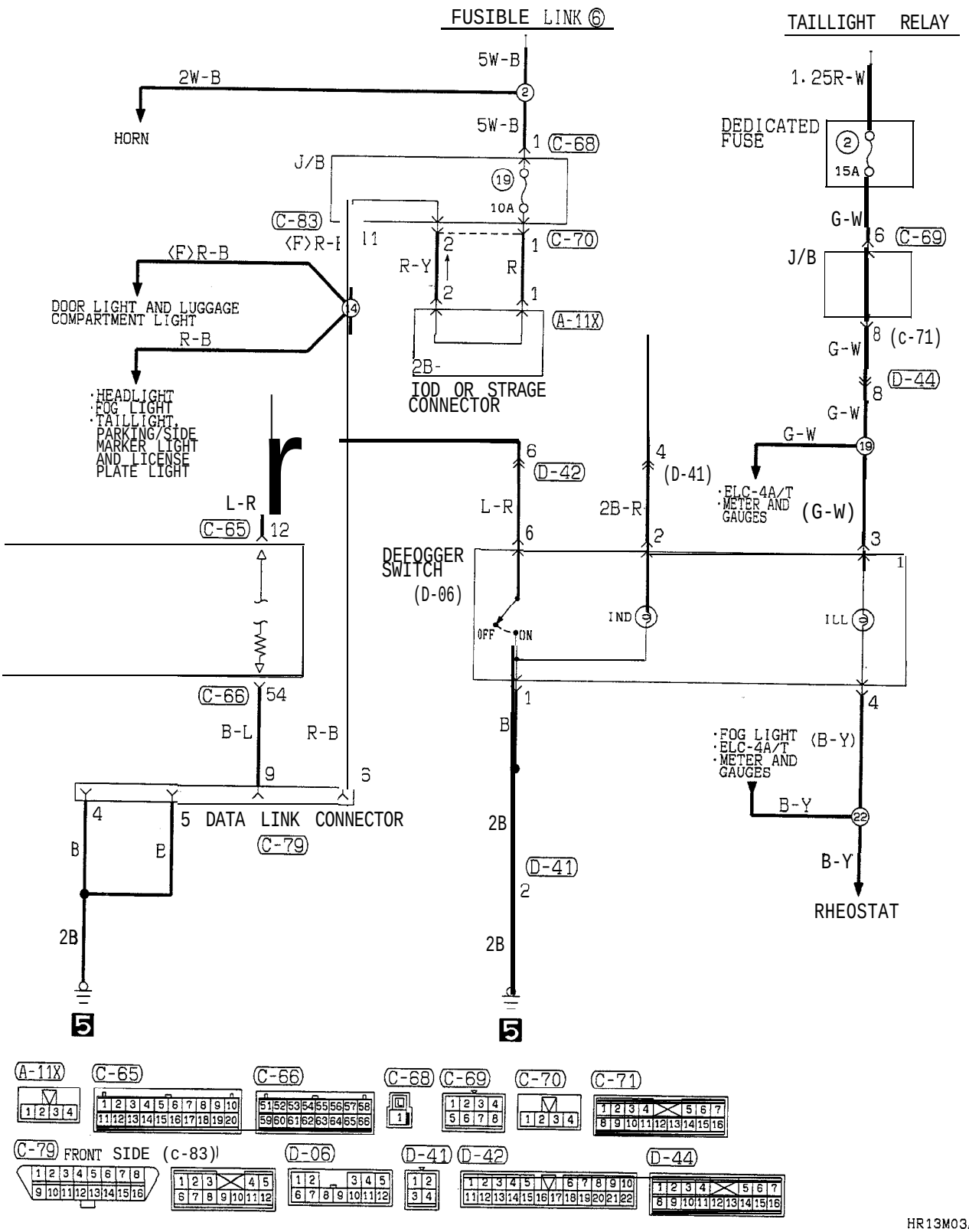
CIRCUIT DIAGRAM <CONVERTIBLE (FROM 1996 MODELS)>





HR13M03AA

TSB Revision



HR13M03AB

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OPERATION

- If the defogger switch is turned to "ON" when the generator is generating electricity (L terminal exceeds 10 V.) with the ignition switch at the "ON" position, the timer circuit in the ETACS unit will be operated to keep the transistor "on" for 11 minutes to close the contact point of the defogger relay. When the defogger relay is "on", the defogger and mirror heater will be activated. Moreover, the indicator light of the defogger switch is lit to inform that the defogger and mirror heater are activated.
- When 11 minutes have passed, the defogger and mirror heater will stop activating even if the defogger switch is at "ON". When the defogger and mirror heater are activated (the timer is activated), they will also stop activating even if the defogger switch is set at "ON" again or if the generator stops generating electricity (the terminal is 3.5 V or less.)

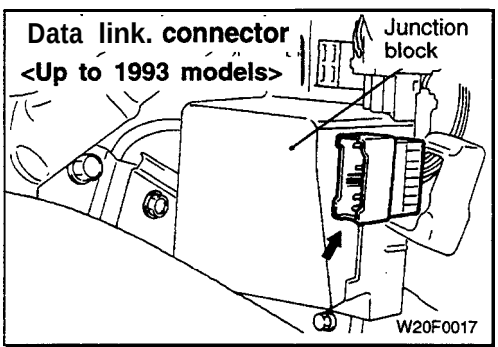
NOTE
The light automatic shut-off system is valid for the illumination light of the defogger switch. (Refer to P.54-37.)

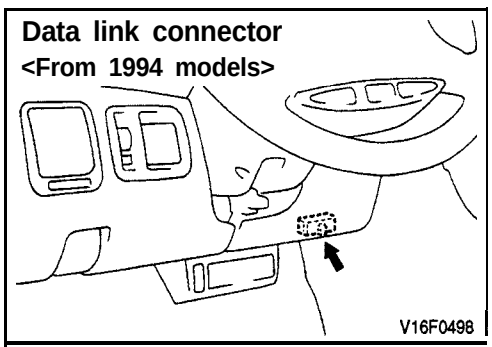
TROUBLESHOOTING HINTS

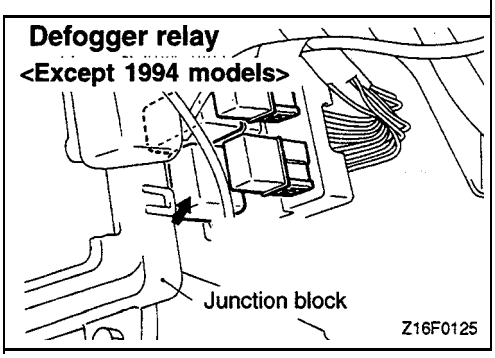
Phenomenon	Checking method
Mirror heater operates but defogger does not operate.	Check the defogger (Refer to P.54-203.)
Defogger operates but mirror heater does not operate.	Check the dedicated fuse No. (10).
	Check the mirror heater. (Refer to GROUP 51 – Door Mirror.)
Neither defogger nor mirror heater operates.	Check the multi-purpose fuse No. (3).
	Check the defogger relay. (Refer to P.54-204.)
	Check the defogger switch. (Refer to P.54-203.)
	Check the defogger switch input signal. (Refer to P.54-202.)
	Check the ignition switch input signal. (Refer to P.54-202.)
	Check the generator. (Refer to GROUP 16 – On-vehicle Service.)
Illumination light of defogger switch does not come on or is dim.	Check the illumination light bulb.
	Check the rheostat. (Refer to P.54-110.)

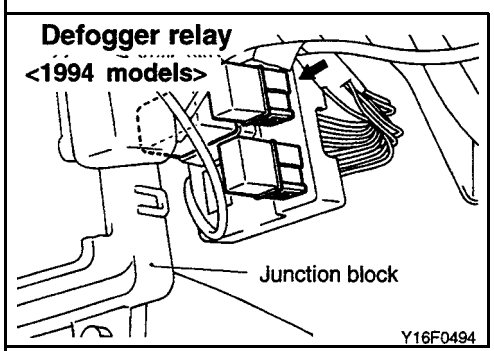
NOTE
For the troubleshooting hints of the automatic light shut-OFF system, refer to P.54-38.

COMPONENT LOCATION

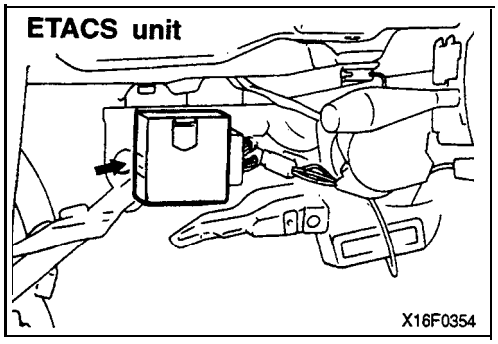




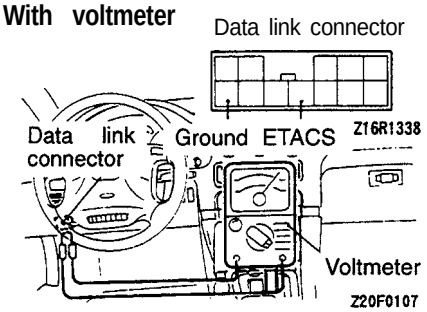




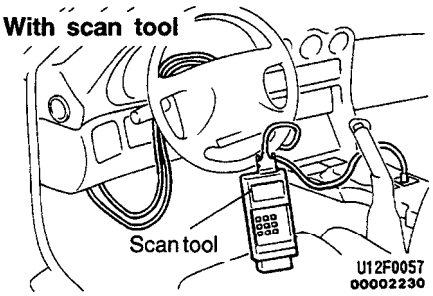
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ETACS unit
X16F0354

With voltmeter



With scan tool



INPUT SIGNAL

<Up to 1993 models>

When using the scan tool (MUT) or voltmeter

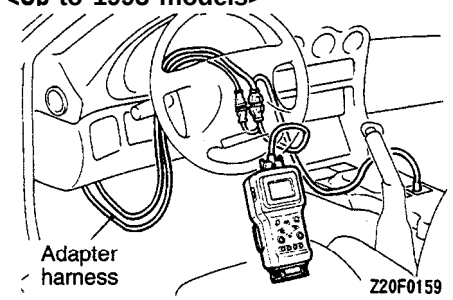
Using the scan tool or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

(1) Connect the scan tool to the data link connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

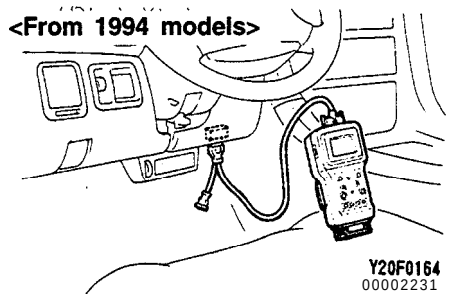
(2) Check if the buzzer of the scan tool sounds or the needle of the voltmeter moves when each switch is operated. If the buzzer sounds or the needle moves, the input signals are being input to the ETACS unit, so that switch can be considered to be functioning normally. If not, the switch or switch input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

When using the MUT-II

<Up to 1993 models>



<From 1994 models>



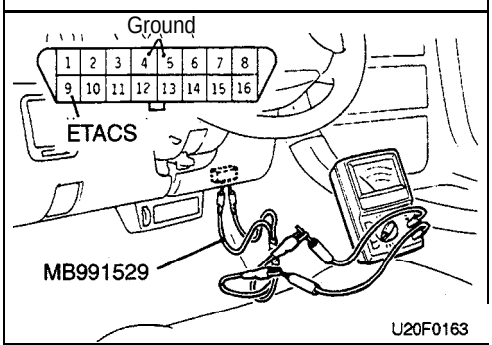
<All models>

When using the scan tool (MUT-II)

(1) Connect the scan tool to the data link connector. When connecting the scan tool to a vehicle up to 1993 models, use the adapter harness supplied together.

Caution
Turn off the ignition switch beforehand whenever the scan tool is connected or disconnected.

(2) If the scan tool makes a peep sound when each switch is operated (turned ON/OFF), the input signal to ECU is normally sent from the switch circuit system.



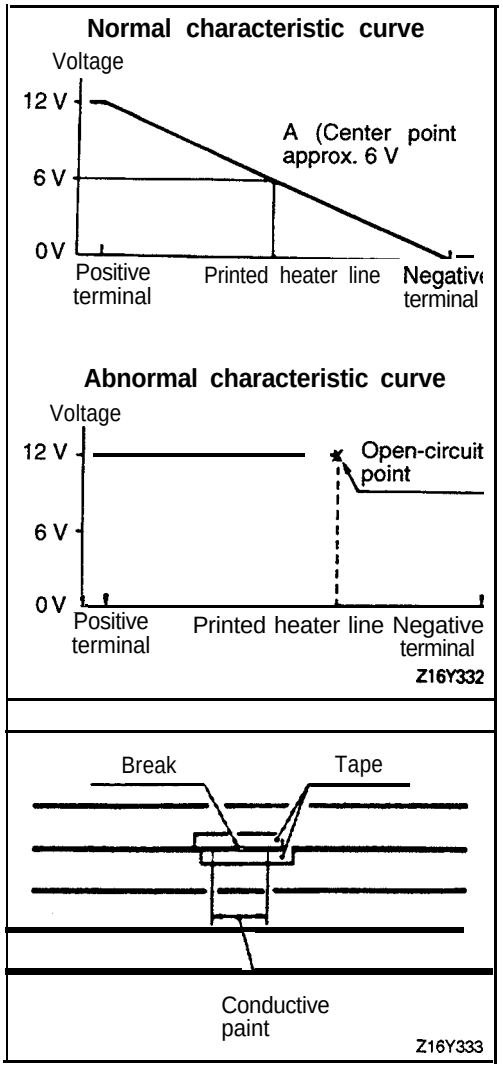
<From 1994 models>

When using the voltmeter

(1) Connect a voltmeter to the ETACS terminal and the ground terminal of the data link connector using the special tool.

(2) If the voltmeter pointer deflects once when each switch is operated (turned ON/OFF), the input signal to ECU is normally sent from the switch circuit system.

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ON-VEHICLE SERVICE

THE PRINTED-HEATER LINES CHECK

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

THE PRINTED-HEATER LINES REPAIR

REQUIRED MATERIALS

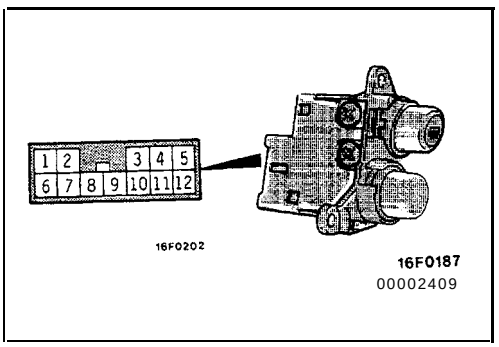
- Thinner
- Tape
- Conductive paint
- Lead-free gasoline
- Fine brush

(1) Clean disconnected area with lead-free gasoline. Tape along both sides of heater element.
(2) Mix conductive paint thoroughly. Thin the required amount of paint in a separate container with a small amount of thinner and paint break three times at 15 minute intervals.
(3) 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.

REAR WINDOW DEFOGGER SWITCH

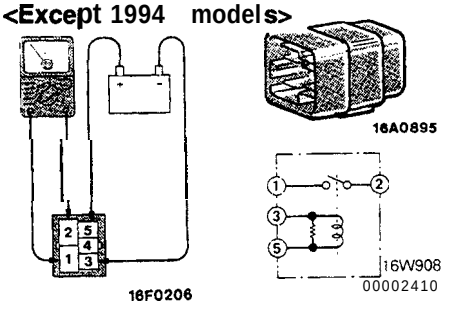
(1) Remove rear window defogger switch from the meter bezel. (Refer to P.54-109.)
(2) Operate the switch and check the continuity between the terminals.



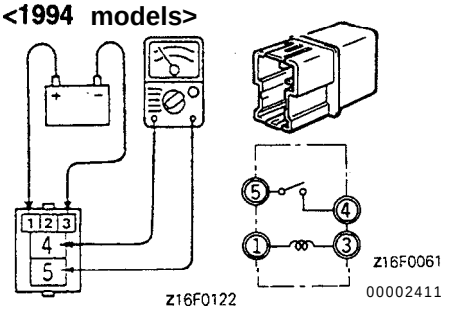
Switch position	Terminal No.						
	1		2	3	4	5	6
OFF							
ON		IND			ILL		

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<Except 1994 models>



<1994 models>



DEFOGGER RELAY

INSPECTION

<Except 1994 models>

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

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

<1994 models>

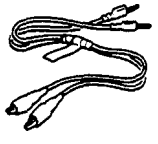
Connect battery power source to terminal 1. Check circuit between terminals with terminal 3 grounded.

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

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THEFT-ALARM SYSTEM

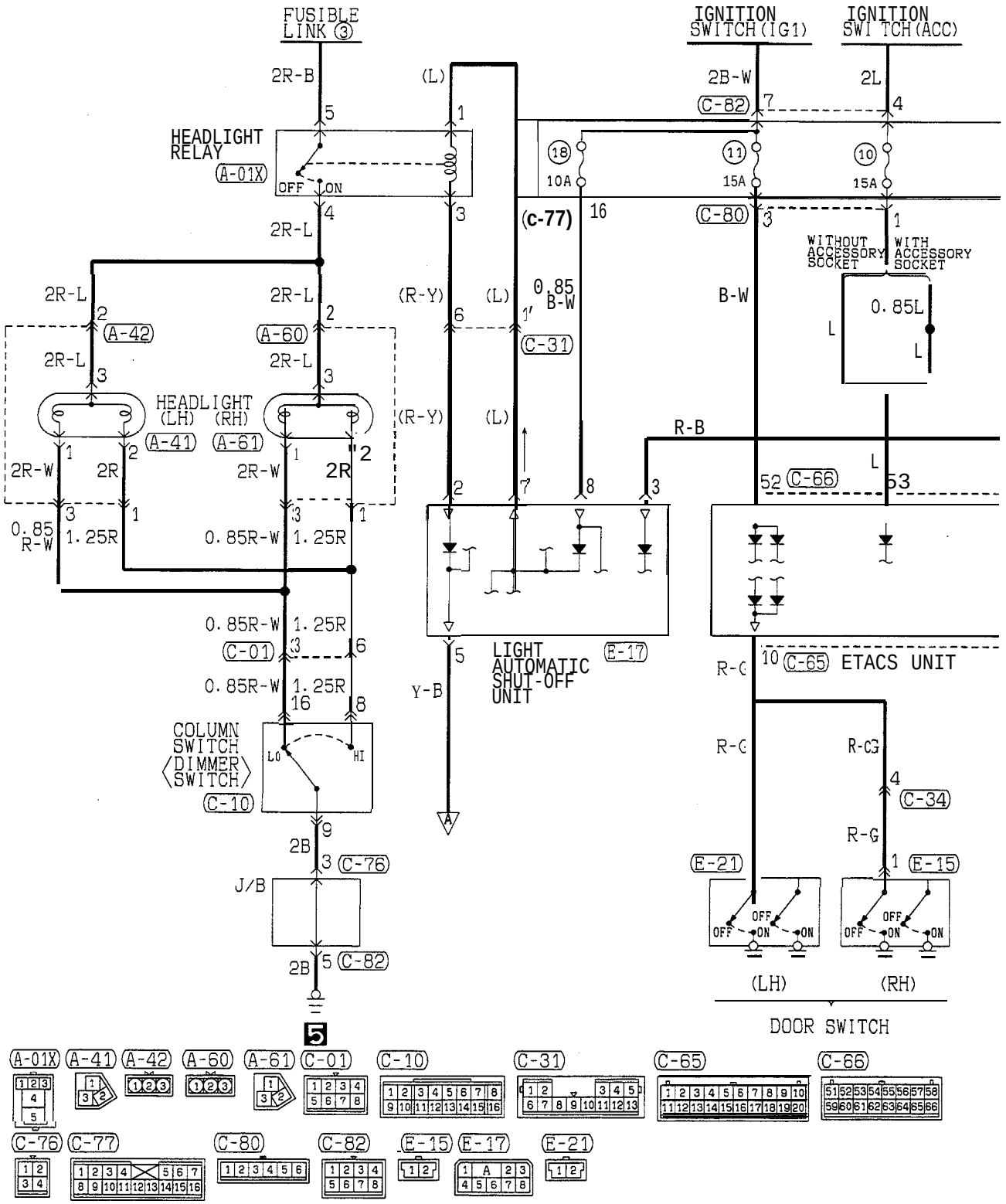
SPECIAL TOOLS

Tool	Tool number and name	Supersession	Application
	MB991 341 Scan tool (Multi-use tester <MUT>)	MB991 341 C	Up to 1993 models Checking the theft-alarm system
	ROM Pack (For the number, refer to GROUP 00 – Precautions Before Service.)		
	MB991 502 Scan tool (MUT-II)	MB991 502	All models Checking the theft-alarm system
 Z16X0607	ROM pack		
	MB991 529 Diagnostic trouble code check harness	MB991 529	From 1994 models Checking the theft-alarm system using a voltmeter

TROUBLESHOOTING

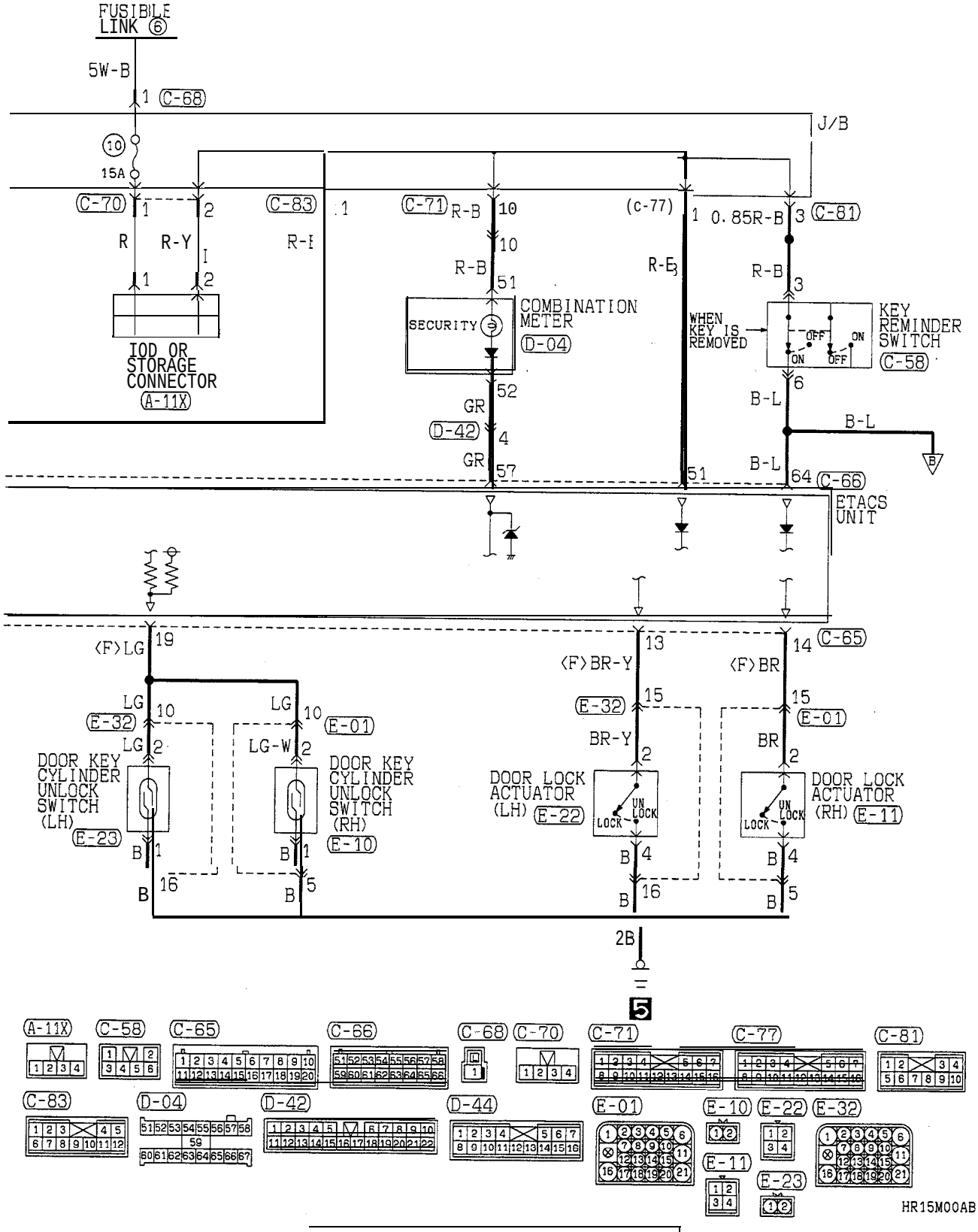
(UP TO 1993 MODELS)

CIRCUIT DIAGRAM



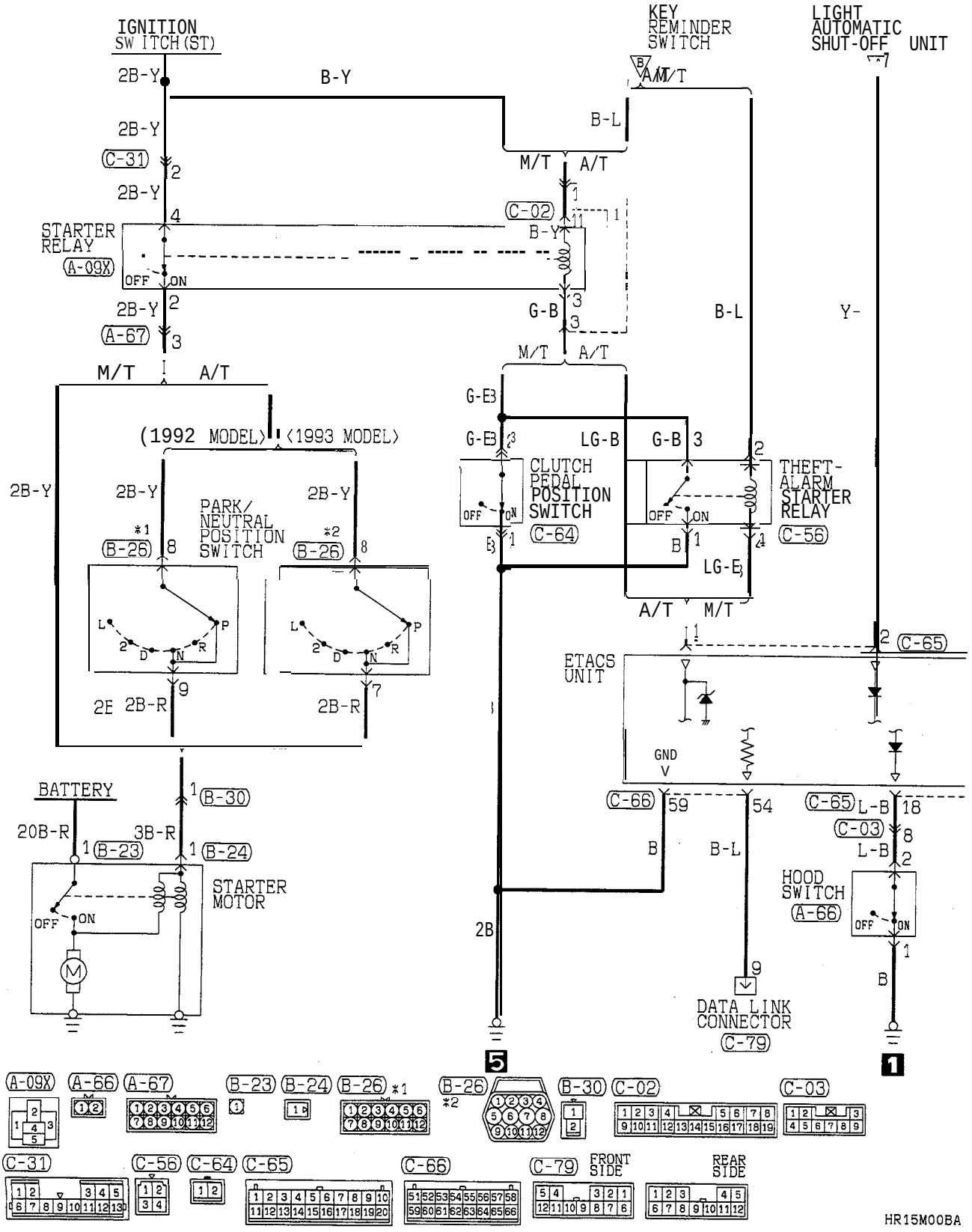
HR15M00AA

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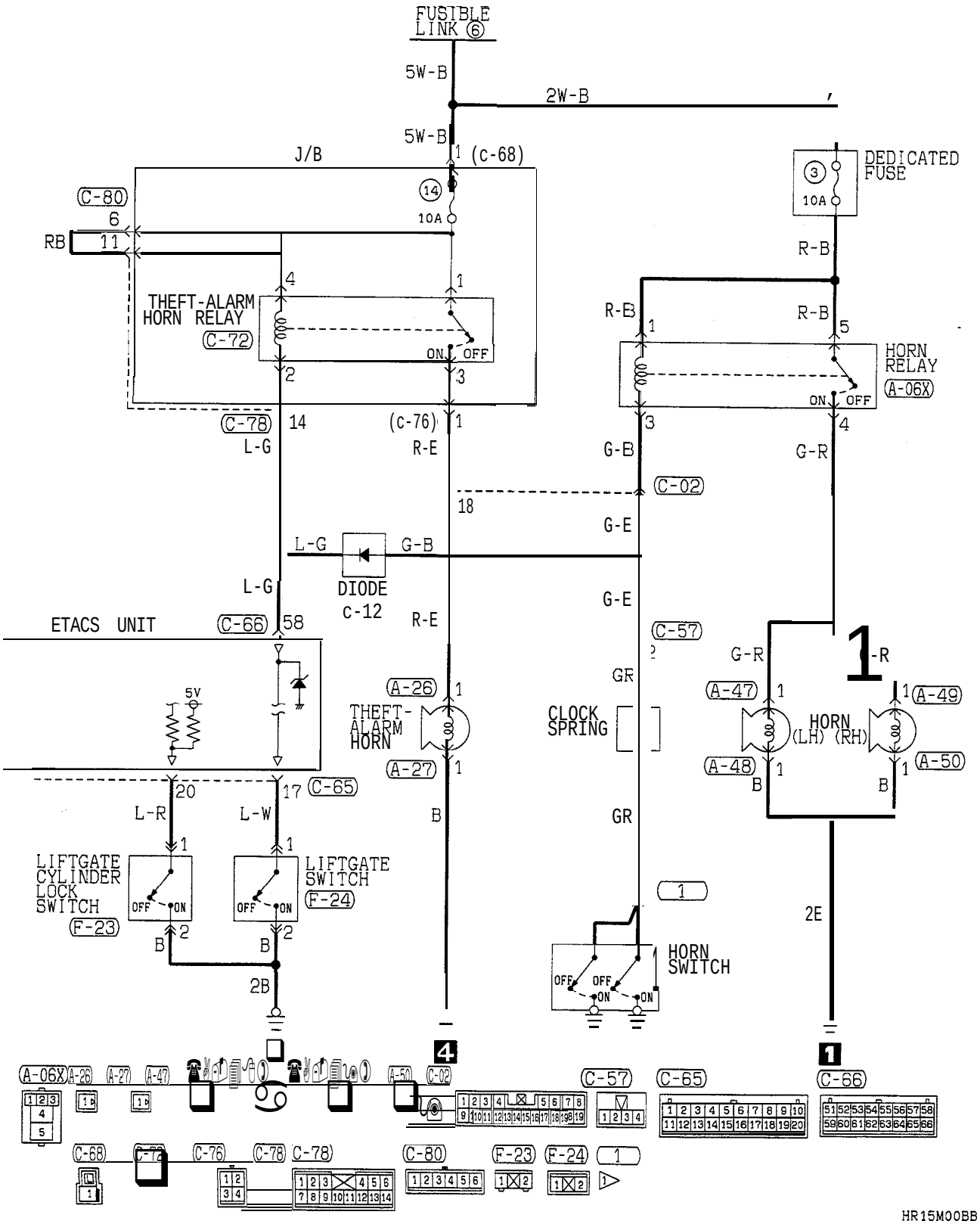


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CIRCUIT DIAGRAM (CONTINUED)



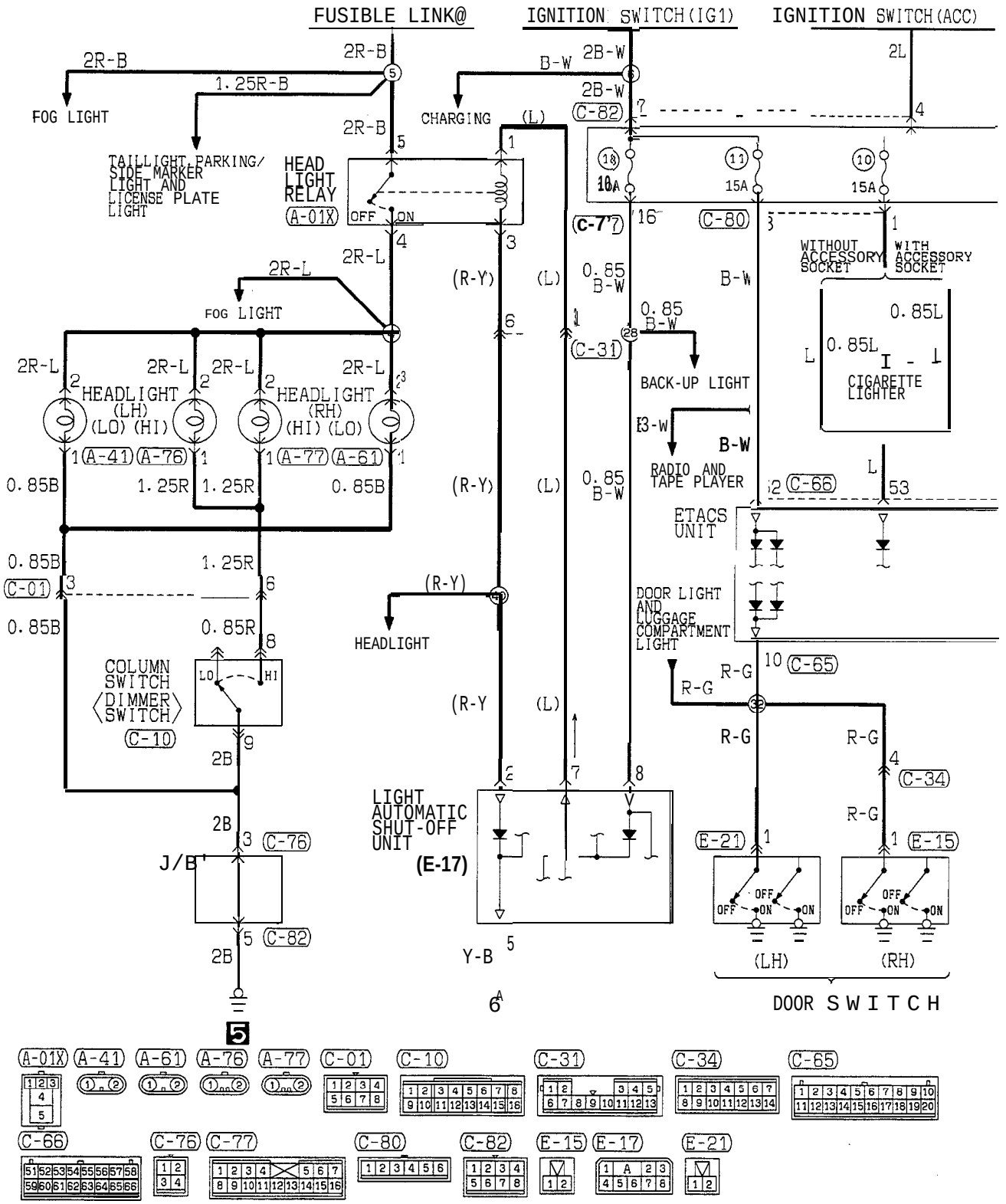
TSB Revision



HR15M00BB

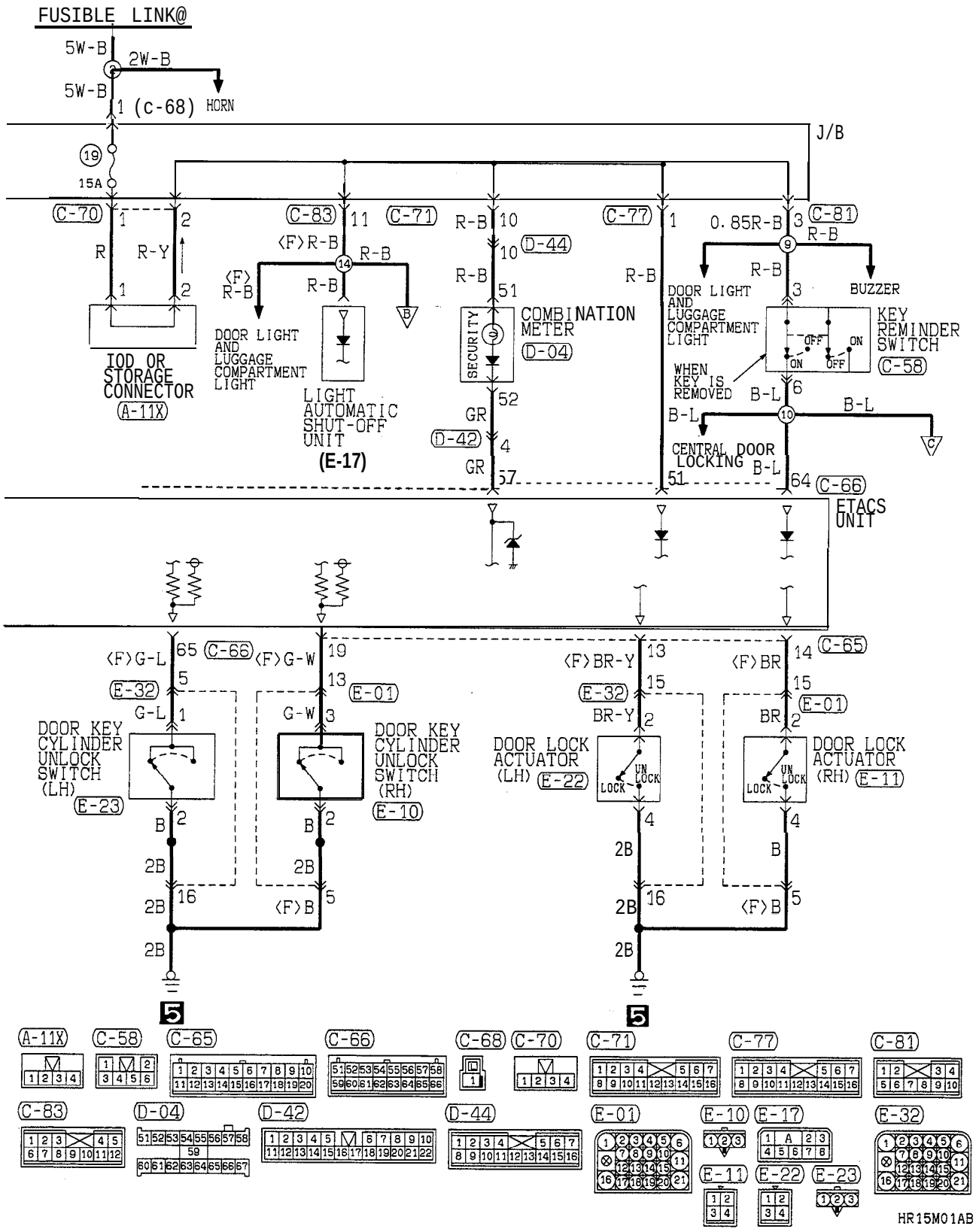
TSB Revision

CIRCUIT DIAGRAM <HATCHBACK (FROM 1994 MODELS)>



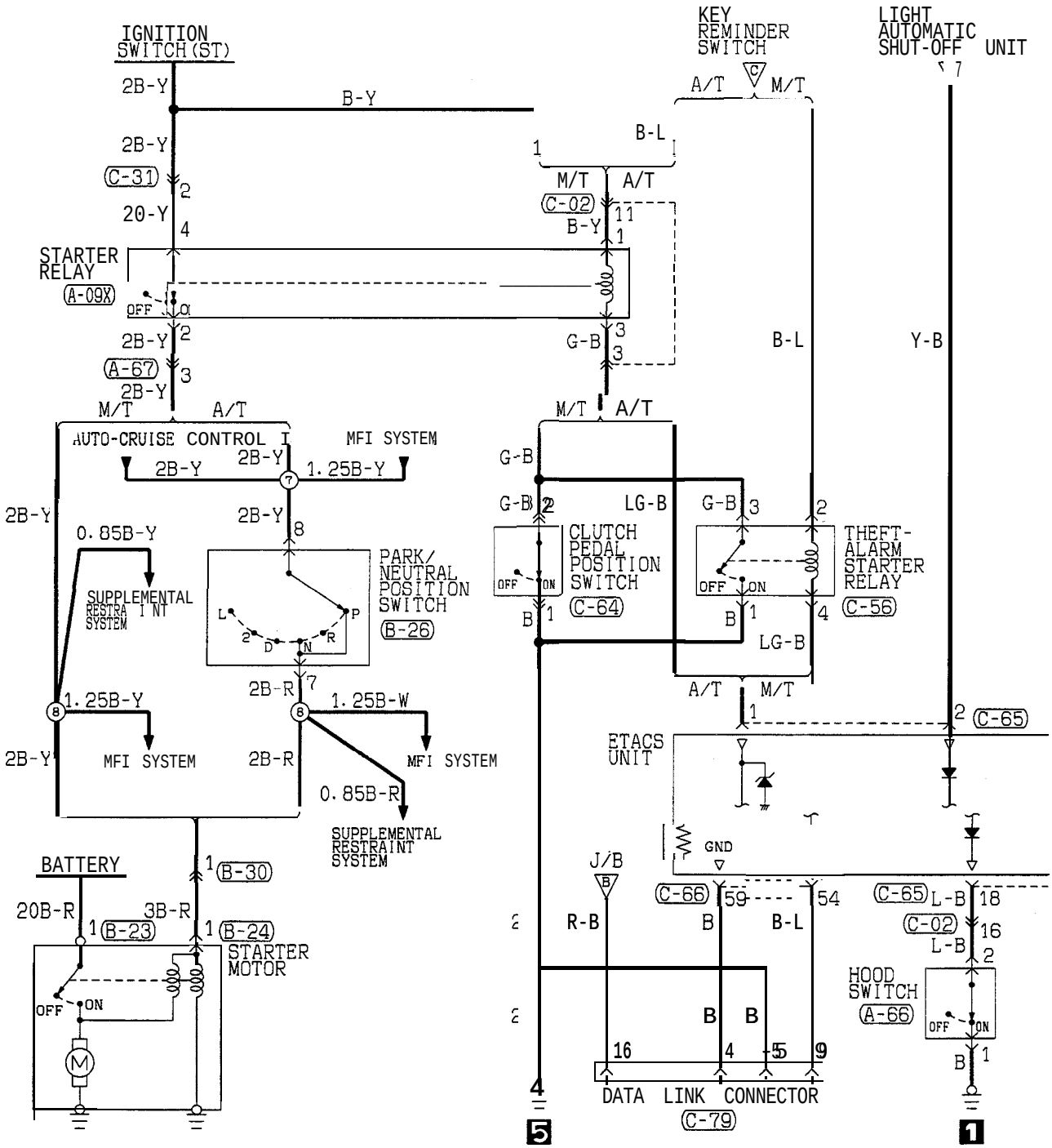
HR15M01AA

TSB Revision

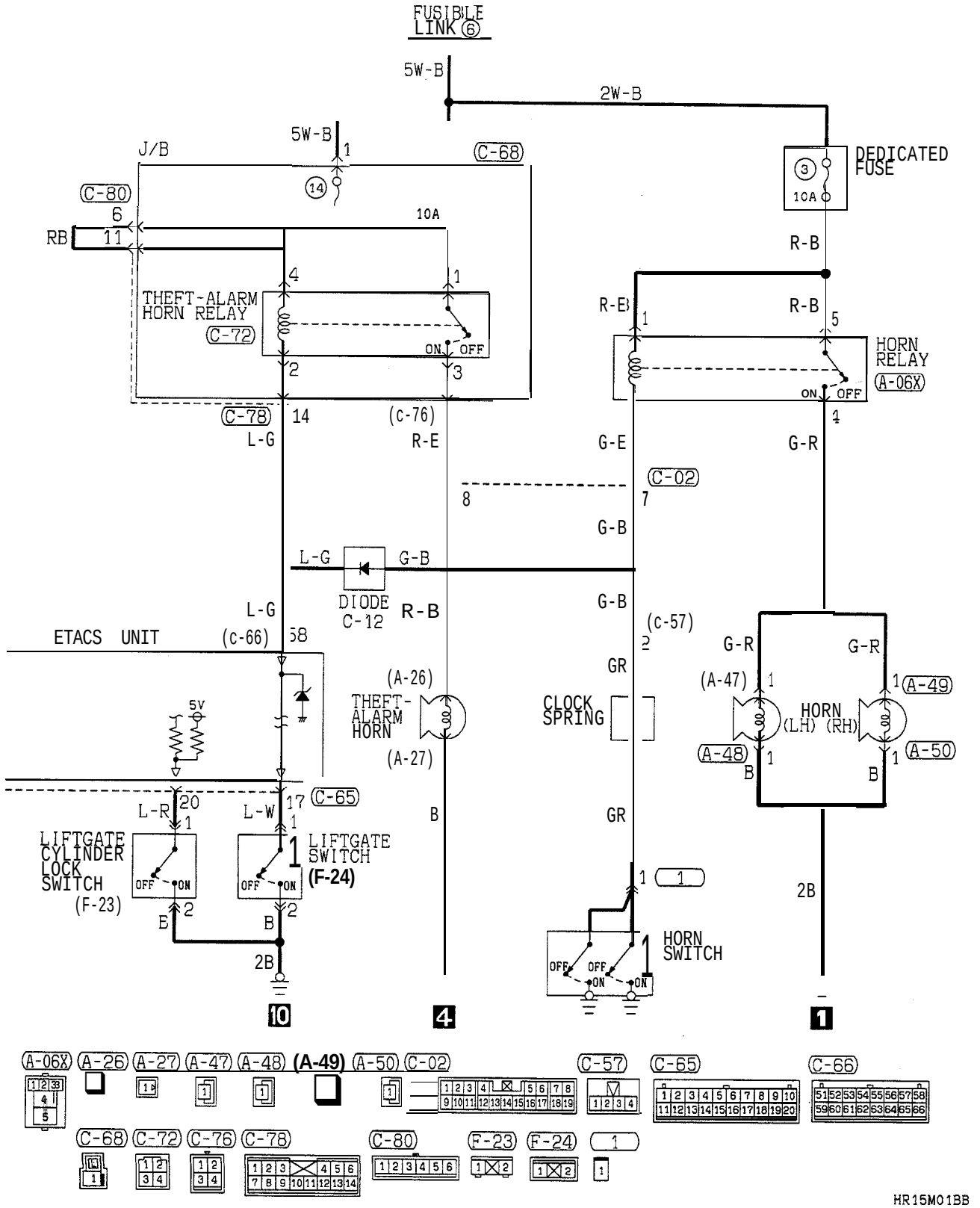


TSB Revision

CIRCUIT DIAGRAM (CONTINUED)



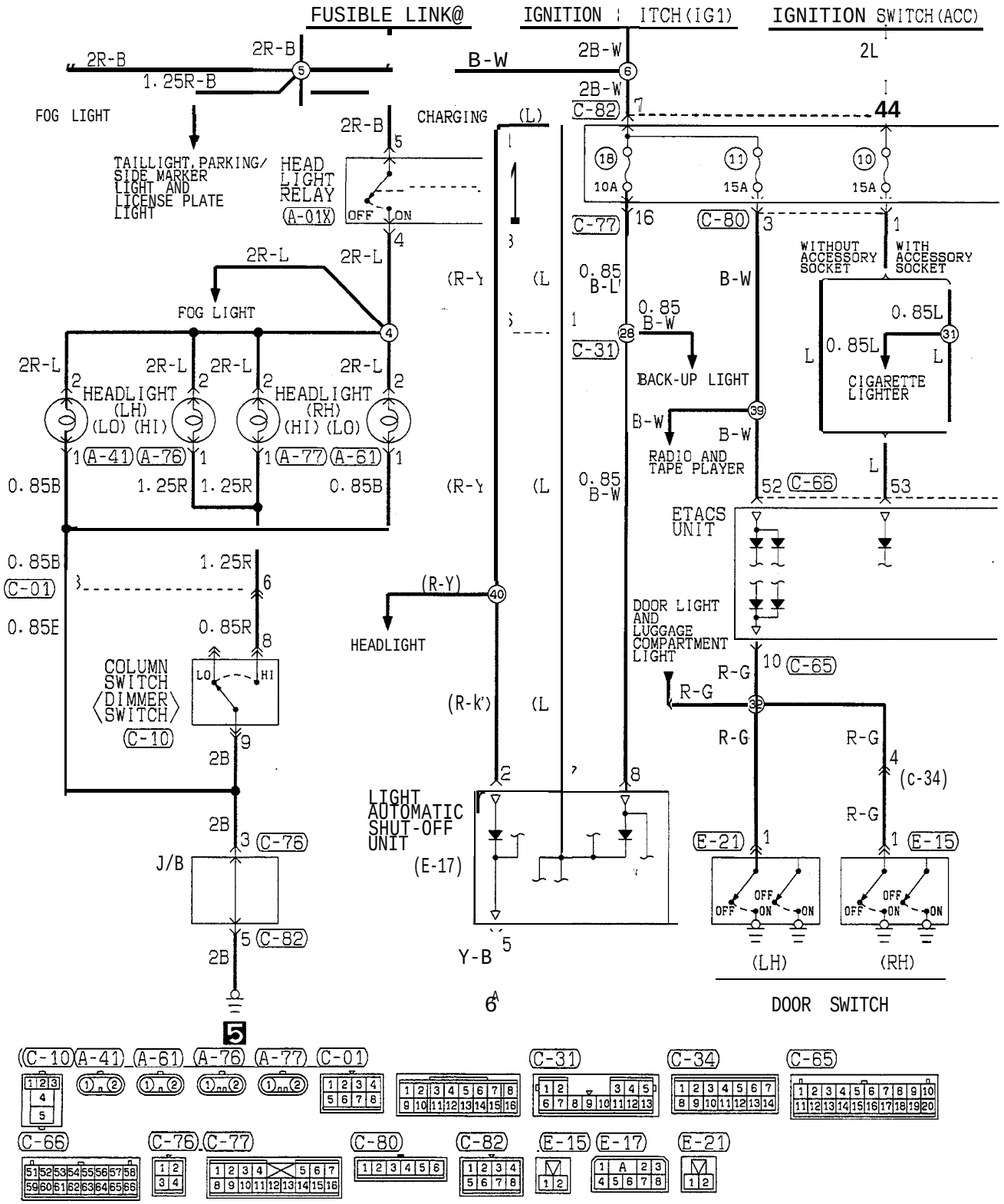
TSB Revision



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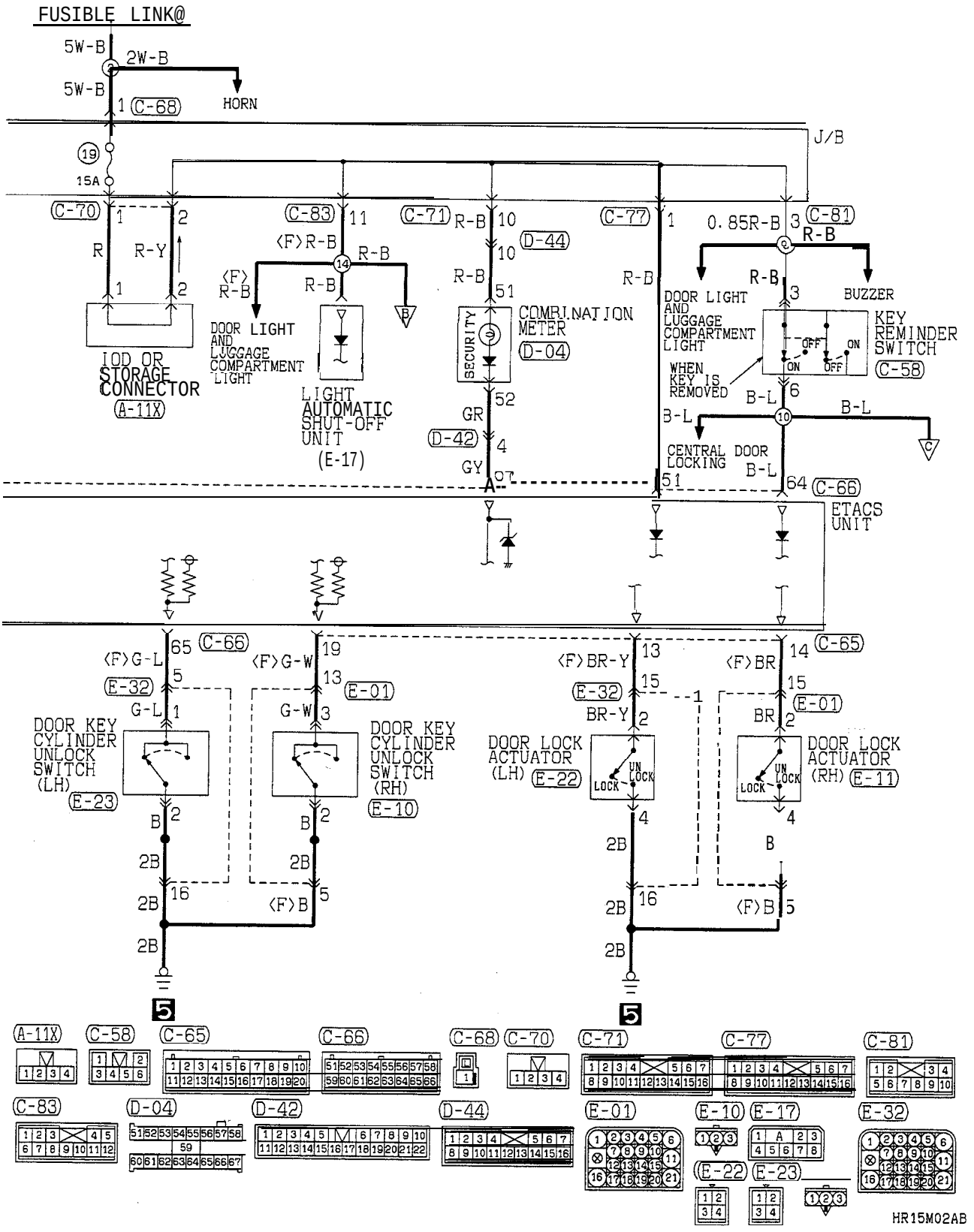
TSB Revision

CIRCUIT DIAGRAM <CONVERTIBLE (FROM 1995 MODELS)>



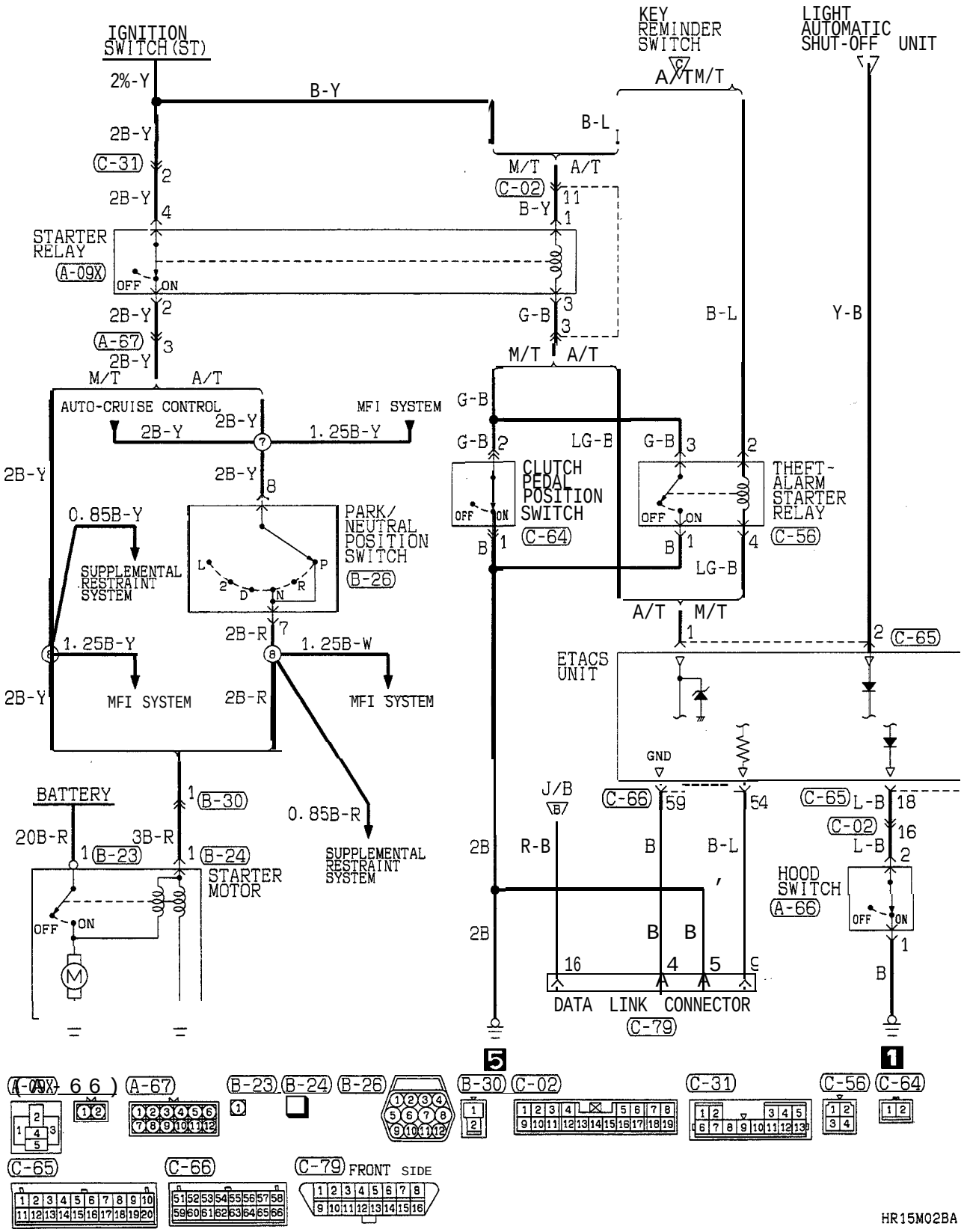
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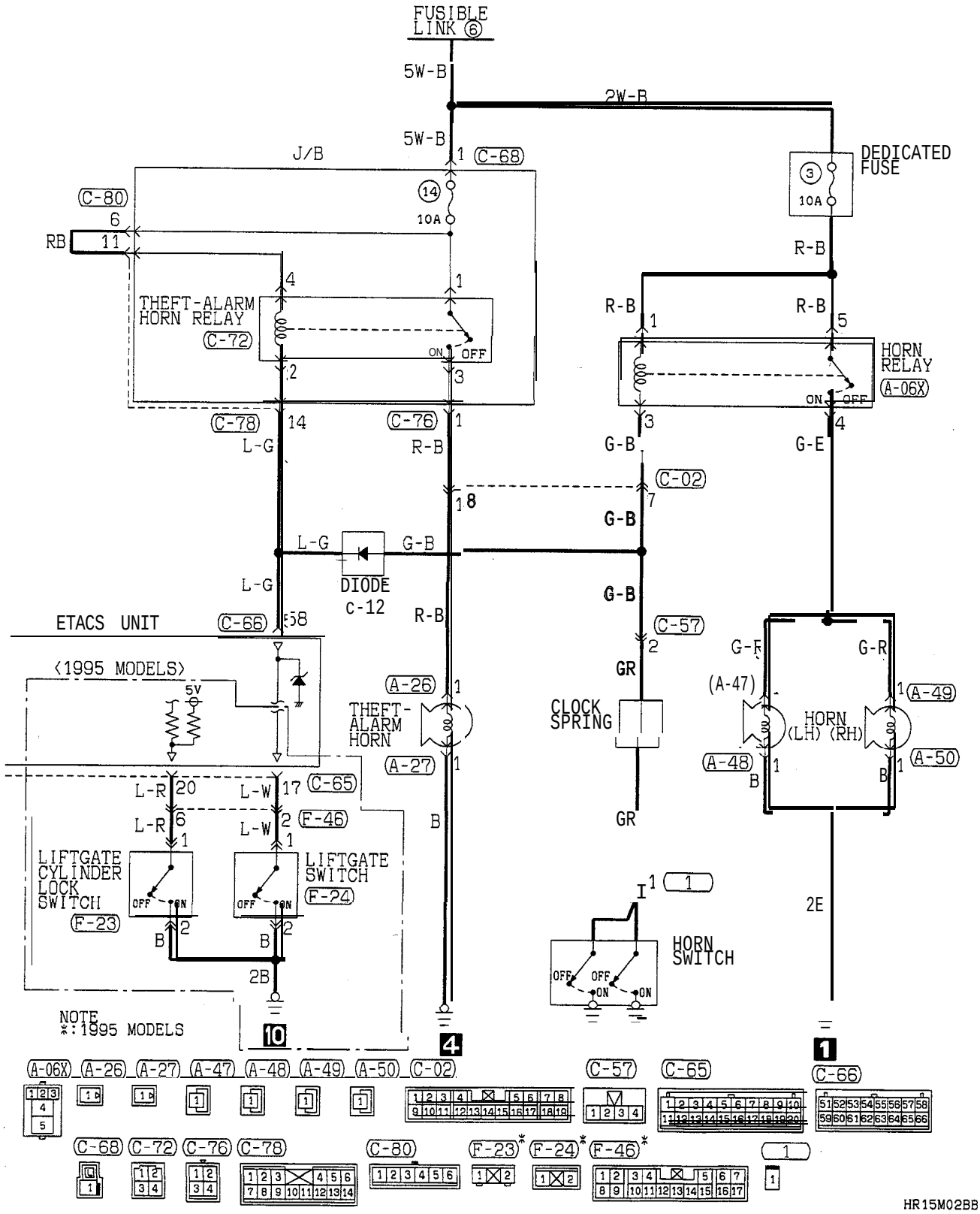


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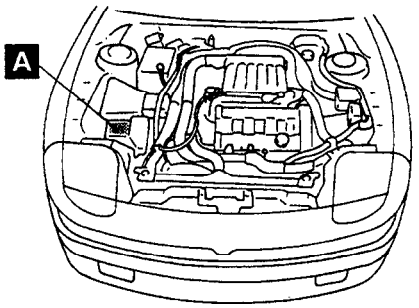
TSB Revision



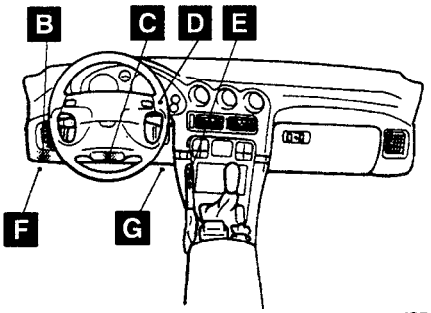
TSB Revision

COMPONENT LOCATION

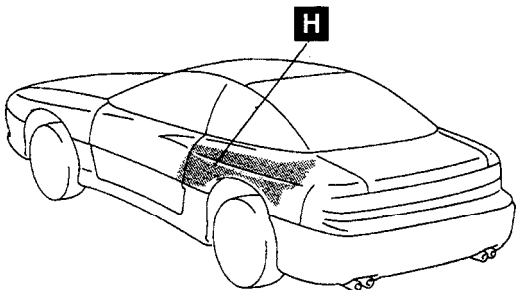
Name	Symbol	Name	Symbol
Data link connector <From 1994 models>	G	Horn relay	A
Data link connector <Up to 1993 models>	F	Light automatic shut-off unit	H
Diode	D	Starter relay	A
ETACS unit	C	Theft-alarm horn relay	B
Headlight relay	A	Theft-alarm starter relay	E



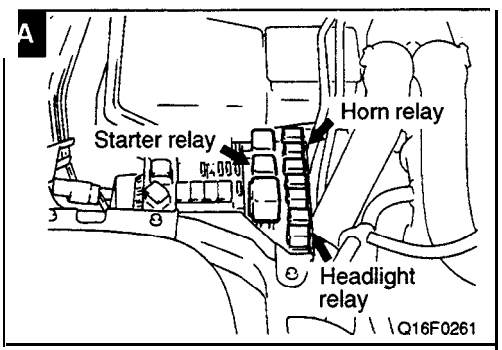
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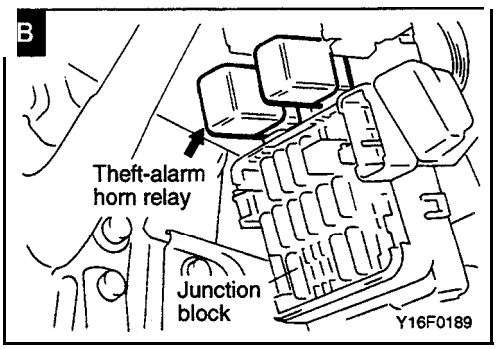


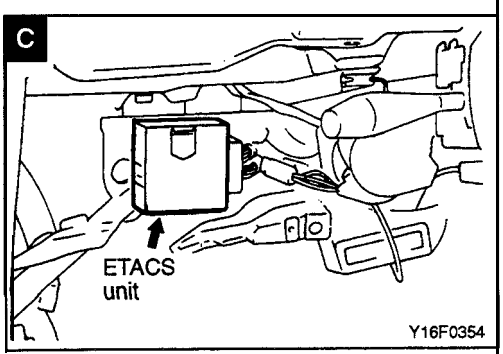
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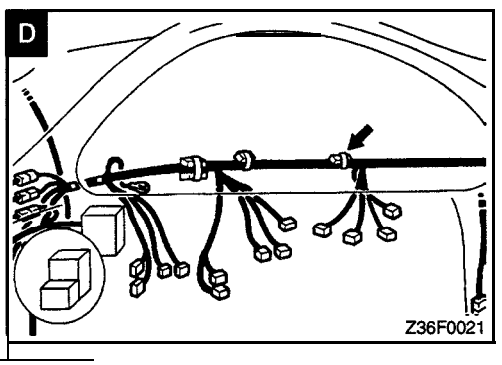


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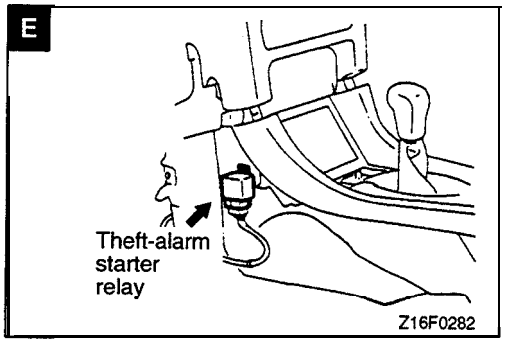




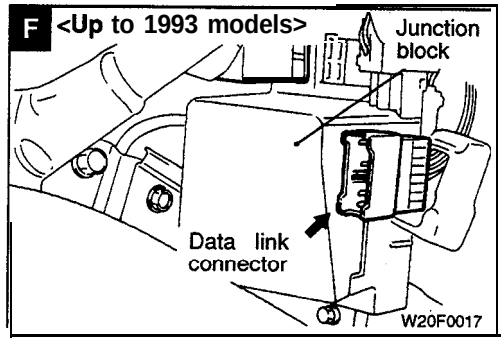


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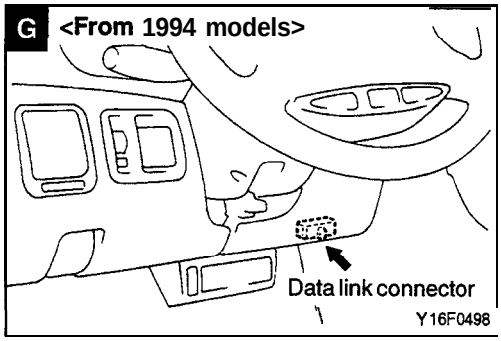
E



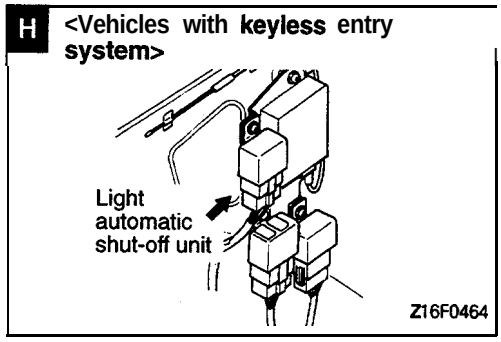
F <Up to 1993 models>



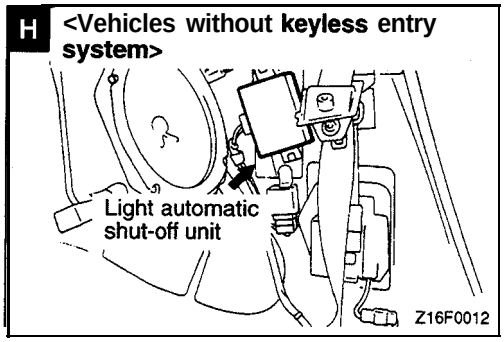
G <From 1994 models>



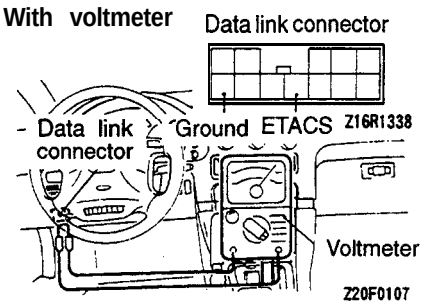
H <Vehicles with **keyless** entry **system**>



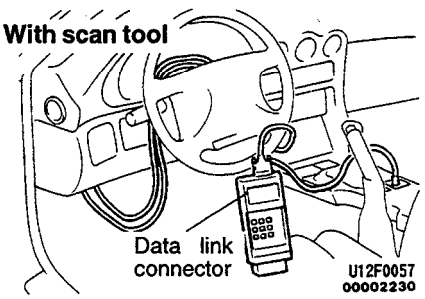
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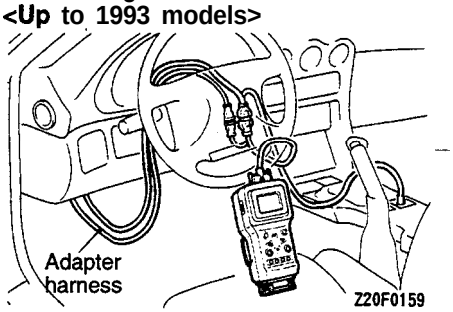
With voltmeter



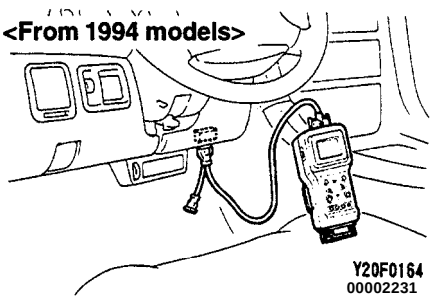
With scan tool

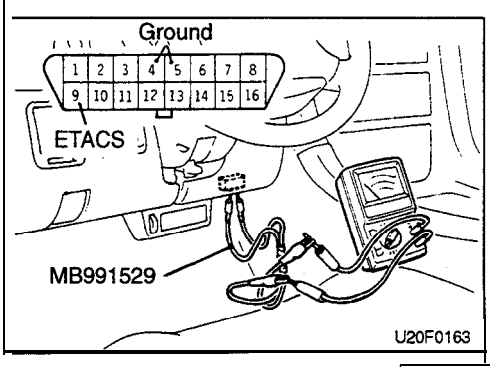


When using the MUT-II
<Up to 1993 models>



<From 1994 models>





TROUBLESHOOTING GUIDE

CHECKING THE INPUT

<Up to 1993 models>

When using the scan tool (MUT) or voltmeter

1. Connect a voltmeter between terminal for ETACS and terminal for ground, or connect the scan tool to the data link connector.

<All models>

When using the scan tool (MUT-II)

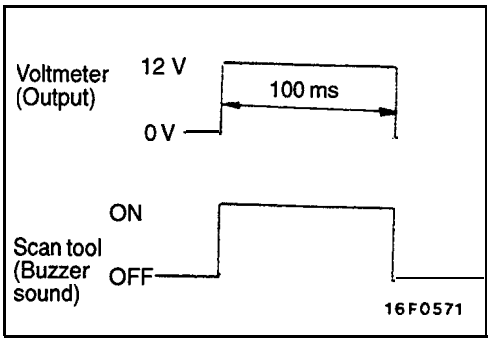
1. Connect the scan tool to the data link connector. When connecting the scan tool to a vehicle up to 1993 models, use the adapter harness supplied together.

   Caution
   Turn off the ignition switch beforehand whenever the scan tool is connected or disconnected.

<From 1994 models>

When using the voltmeter

1. Connect a voltmeter to the ETACS terminal and the ground terminal of the data link connector using the special tool.



2. Make sure that when the following switches are turned on, the output shown in the illustration is delivered. (Only those switches which are related to the theft-alarm system are listed here.)
   - Driver and front passenger door switches
   - Headlight switch
   - Driver and front passenger door lock switches
   - Passing light switch
   - Pop-up switch (up to 1993 models)
   - Hood switch
   - Liftgate switch
   - Door key cylinder switch
   - Liftgate switch

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

TROUBLESHOOTING QUICK-REFERENCE TABLE

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

1. ARMING / DISARMING RELATIONSHIP

Trouble symptom	Cause	Check method	Remedy
The system is not armed (The SECURITY light doesn't illuminate, and the alarm doesn't function.) (The central door locking system functions normally. If the central locking system does not function normally, refer to GROUP 42.)	Damaged or disconnected wiring of ECU power supply circuit	Check by using check chart P.54-224.	Replace the fusible link No. (6) or the fuse No. (19). Repair the harness.
	Damaged or disconnected wiring of door switch input circuit	Check by using check chart P.54-225.	Repair the harness or replace the door switch.
The arming procedures are followed, but the SECURITY light does not illuminate. (There is an alarm, however, when an alarm test is conducted after about 20 seconds have passed.)	Damaged or disconnected wiring of SECURITY light activation circuit.	Check by using check chart P.54-229.	Replace the fusible link No. (6) or the fuse No. (19). Repair the harness.
	Blown SECURITY light bulb		Replace the bulb.
	Malfunction of the ECU.	–	Replace the ECU.
The alarm sounds in error when, while the system is armed, a door or the liftgate is unlocked by using the key.	Damaged or disconnected wiring of a door key cylinder and the liftgate unlock switch input circuit.	If input checks (P.54-220) indicate a malfunction, check by using check chart P.54-227.	Repair the harness or replace a door key cylinder and the liftgate unlock switch.
	Malfunction of a door key cylinder and the liftgate unlock switch.		
	Malfunction of the ECU.		Replace the ECU.

2. ACTIVATION / DEACTIVATION RELATIONSHIP

Trouble symptom	Cause	Check method	Remedy
There is no alarm when, as an alarm test, a door is opened without using the key. (The arming and disarming are normal, and the alarm is activated when the liftgate or hood is opened.)	Damaged or disconnected wiring of door switch (all doors) input circuit	If input checks (P.54-220) indicate a malfunction, check by using check chart P.54-225.	Repairthe harness or replace the door switch.
	Malfunction of the door switch		
	Malfunction of the ECU		Replace the ECU.
There is no alarm when, as an alarm test, the liftgate is opened without using the key. (The alarm is activated, however, by opening a door or the hood.)	Damaged or disconnected wiring of liftgate switch input circuit	If input checks (P.54-220) indicate a malfunction, check by using check chart P.54-228.	Repair the harness or replace the liftgate switch.
	Malfunction of the liftgate switch.		
	Malfunction of the ECU.	–	Replace the ECU.

Trouble symptom	Cause	Check method	Remedy
There is no alarm when, as an alarm test, the hood is opened from within the vehicle. (The alarm is activated, however, by opening a door or the liftgate.)	Damaged or disconnected wiring of hood switch input circuit.	If input checks (P.54-220) indicate a malfunction, check by using check chart P.54-225.	Repairthe harness or replace the hood switch.
	Malfunction of the hood switch.		
	Malfunction of the ECU.	–	Replace the ECU.
Engine would not start [Engine starting is possible when the the starter relay is in the switched-off (normally closed) condition, with the clutch switch in the switch-off and the ECU harness connector disconnected.]	There is a short-circuit of starter relay activation circuit	Check by using check chart P.54-234.	Repair the harness.
When, as a test of the alarm, a door or the liftgate is opened without using the key, or the hood is opened from within the vehicle, the horn and the theft-alarm horn sound but the headlights don't flash. (The headlights can, however, be switched. ON by using the passing switch.)	Damaged or disconnected wiring of headlight power supply circuit or headlight activation circuit	Check by using check chart P.54-231, 232.	Repairthe harness or replace the diode D_2. Replace the headlight relay or the headlight.
	Malfunction of the ECU		Replace the ECU.
The headlights flash during an alarm test but the horn or the theft alarm horn does not sound.	Damaged or disconnected wiring of horn relay power supply circuit or horn activation circuit Damaged or disconnected wiring of the theft-alarm horn relay power supply circuit or the theft-alarm horn activation circuit.	Check by using check chart P.54-229, 230, 231.	Repair the harness. Replace the horn. Replace dedicated fuse No. (6) or the fusible link No. (6).
	Malfunction of the ECU.		Replace the ECU.
The system is not deactivated nhen, during an alarm test in which the alarm is intentionally activated, the door or liftgate is unlocked by using the key. (The system also cannot be disarmed.)	Damaged or disconnected wiring of door key cylinder and liftgate unlock switch input circuit	If input checks (P.54-220) indicate a malfunction, check by using check chart P.54-227, 228.	Repair the harness. Replace the key cylinder switch or the liftgate switch.
	Malfunction of door key cylinder and liftgate unlock switch.		
	Malfunction of the ECU		Replace the ECU.

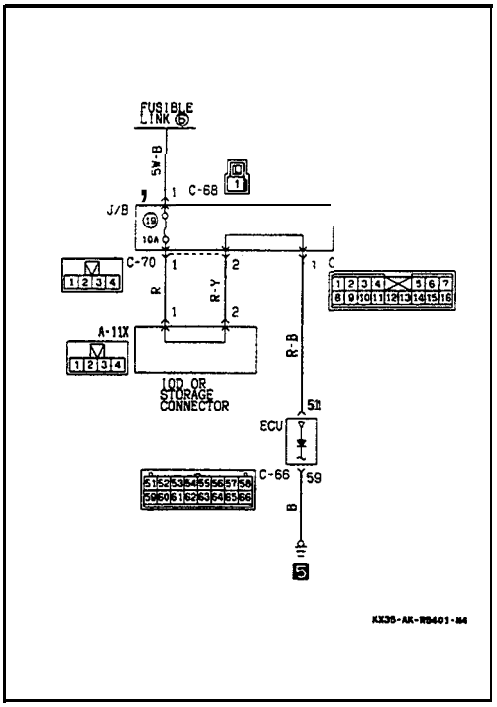
ECU: Electronic Control Unit

NOTE

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

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

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CHECKING THE CIRCUIT AND INDIVIDUAL PART

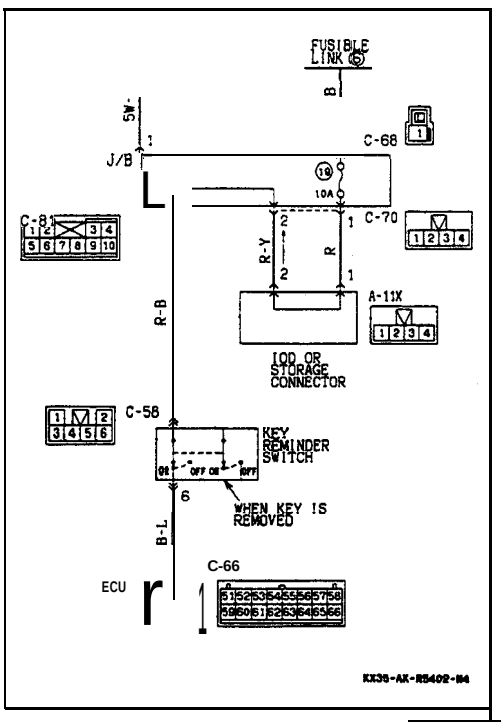
1. ETACS POWER-SUPPLY AND GROUND CIRCUITS

Description of operation

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

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

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



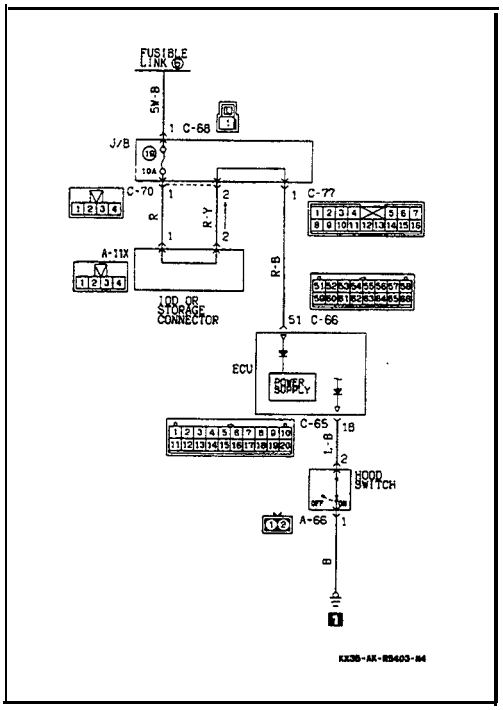
2. KEY-REMINDER SWITCH INPUT CIRCUIT

Description of operation

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

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

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



3. HOOD SWITCH INPUT CIRCUIT

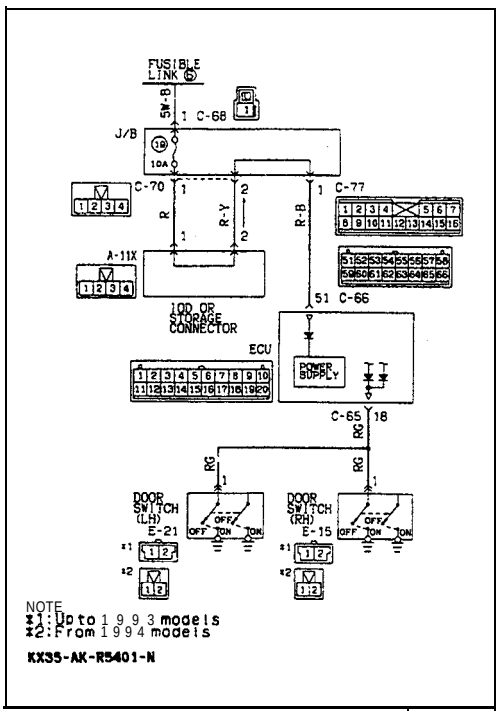
Description of operation

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

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

ECU terminal No.	Signal	condition		Terminal voltage
18	Hood switch	Hood	Open	OV
			Closed	5 V*

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



4. DOOR SWITCH INPUT CIRCUIT

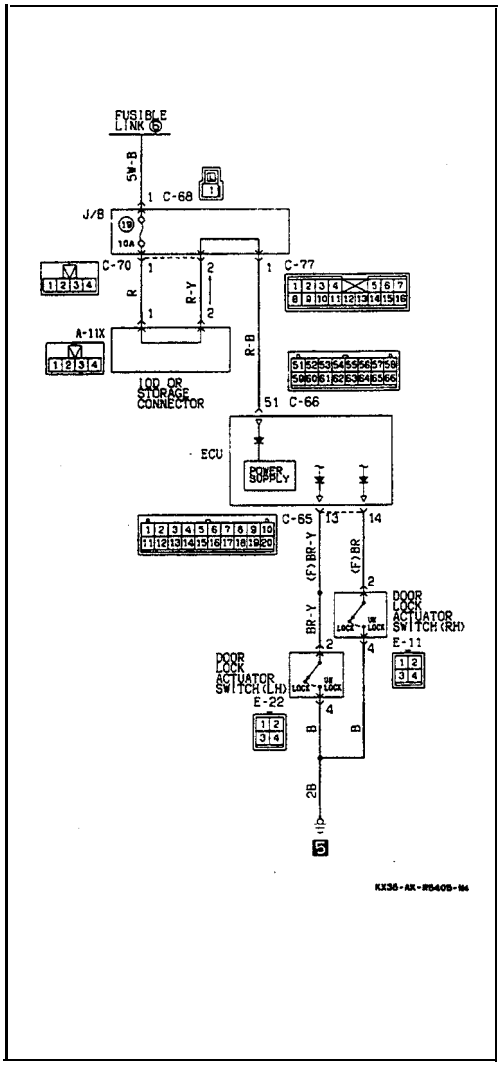
Description of operation

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

ECU terminal voltage (Connection condition of the ECU).

ECU terminal No.	Signal	Condition		Terminal voltage
10	Driver door switch	Driver door	Open	OV
			Closed	5 V*
	Passenger door switch	Passenger door	Open	0 V
			Closed	5 V*

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



5. DOOR LOCK ACTUATOR SWITCH INPUT CIRCUIT

Description of operation

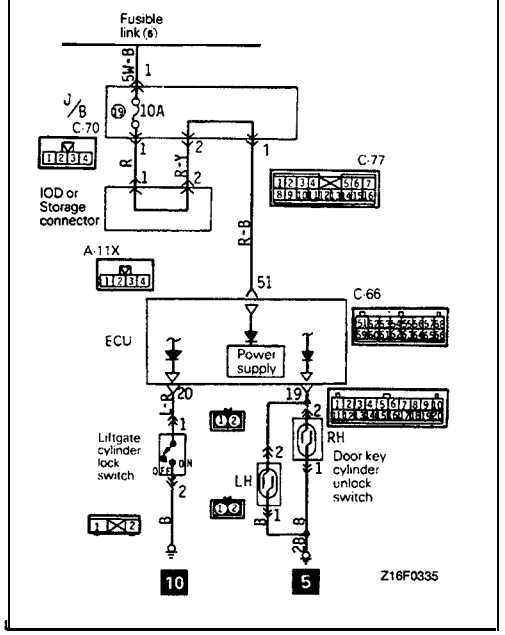
When a door is locked by the lock knob or the key, the door lock actuator switch is switched OFF, and HIGH-level signals are sent to the ECU. These signals activate the timer circuit of the R ECU, thereby causing the activation circuit to function, thus R activating the door lock actuator of all doors.

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

ECU terminal No.	Signal	Condition		Terminal voltage
13	Door lock actuator switch (driver door)	Door lock actuator switch	Lock: OFF	5 V*
			Unlock: ON	0 V
14	Door lock actuator switch (passenger door)	Door lock actuator switch	Lock: OFF	5 V*
			Unlock: ON	0 V

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

<Up to 1993 models>



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

Description of operation

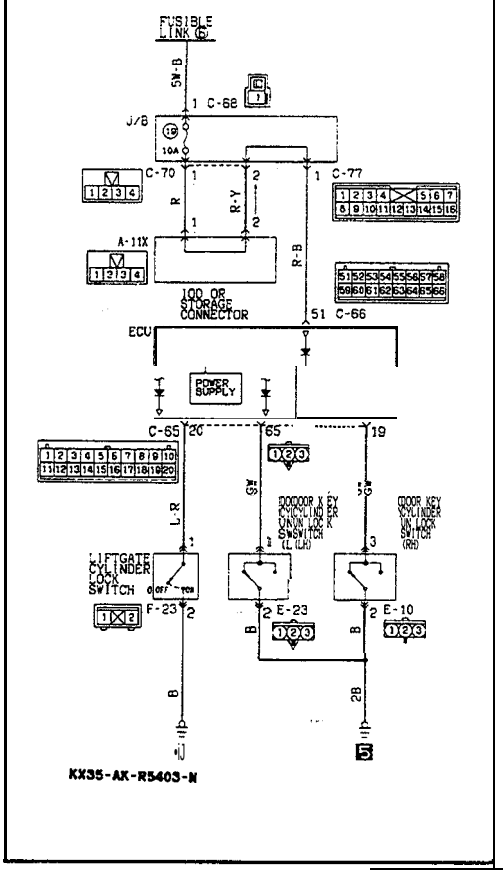
When the door key is rotated or the liftgate key is unlocked, R LOW-level signals are sent to the ECU.

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

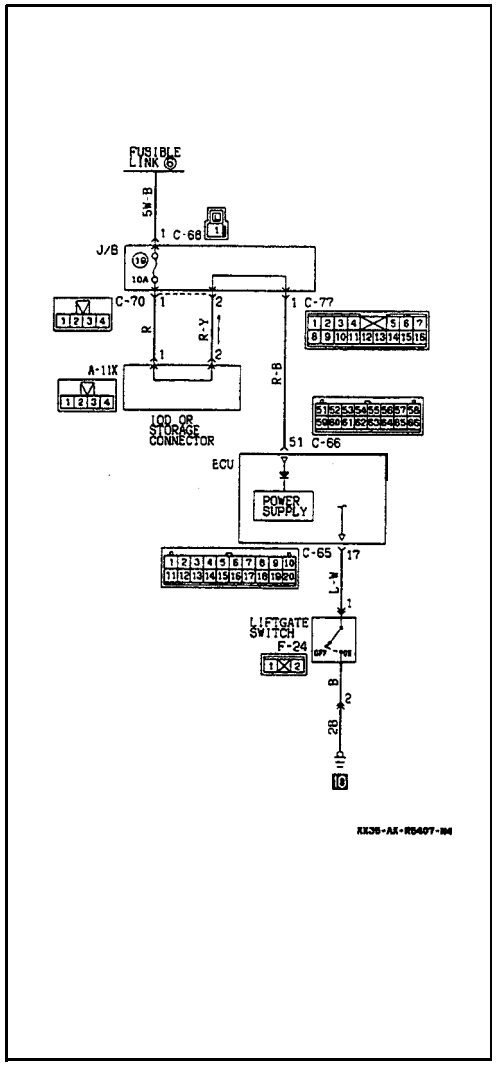
<Up to 1993 models>

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

<From 1994 models>



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



7. LIFTGATE SWITCH INPUT CIRCUIT

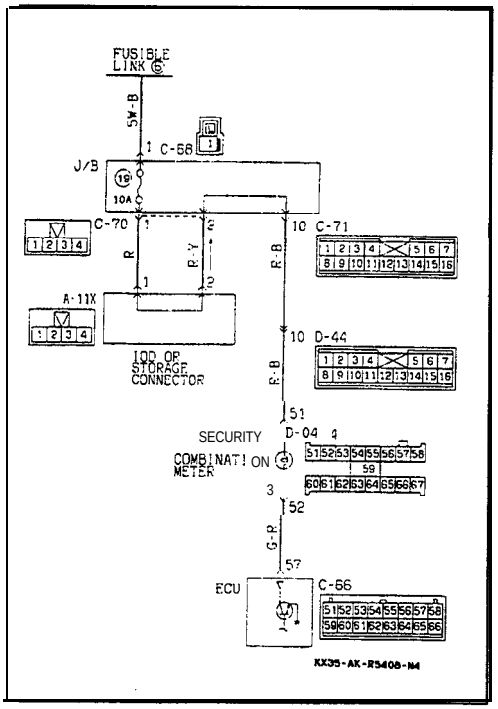
Description of operation

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

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

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

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



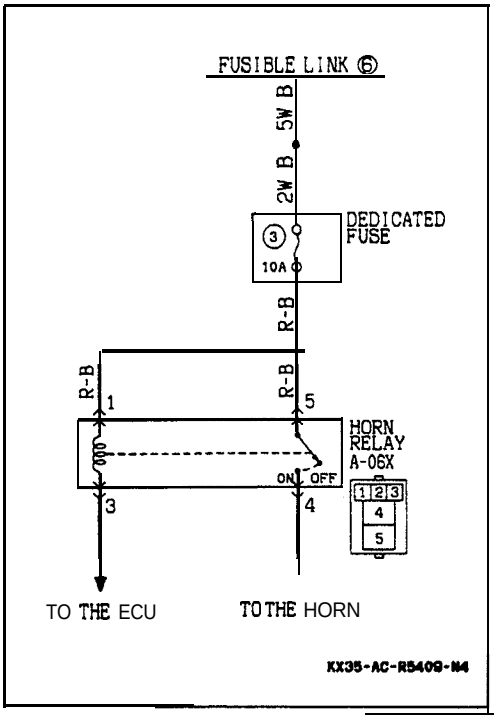
8. SECURITY LIGHT ACTIVATION CIRCUIT

Description of operation

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

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

Step	Check object	Normal condition	Malfunction	Cause	Remedy
1	D-04 connector terminal voltage 51	12v	ov	Fuse (19) damaged or disconnected	Replace the fuse
				Harness damaged or disconnected, or short-circuit	Repair the harness
2	D-04 connector terminal voltage 52	12v	ov	Damaged or disconnected wiring of SECURITY light bulb	Replace the bulb
				Harness damaged or disconnected	Repair the harness
3	ECU terminal voltage 57	12v	ov	Harness damaged or disconnected, or short-circuit	Repair the harness



9. HORN RELAY POWER-SUPPLY CIRCUIT

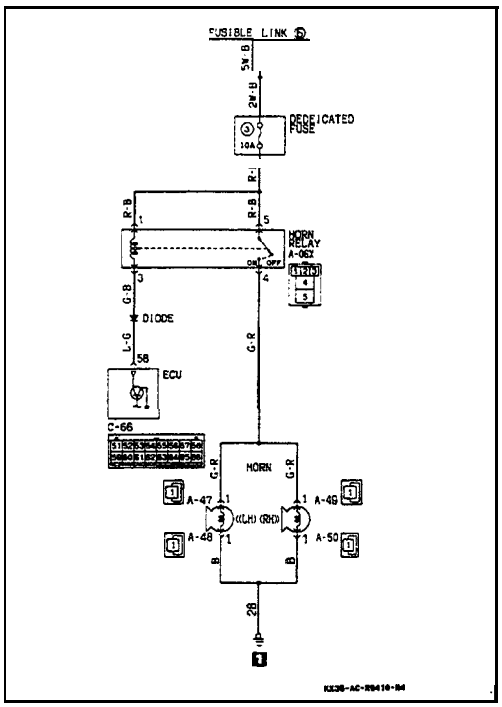
Description of operation

Power voltage is always supplied to the horn relay.

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

Check object	Normal condition	Malfunction	Cause	Remedy
HORN RELAY connector terminal voltage 5	12 V	0 V	Fuse (3) damaged or disconnected	Replace the fuse
			Damaged or disconnected harness	Repair the harness

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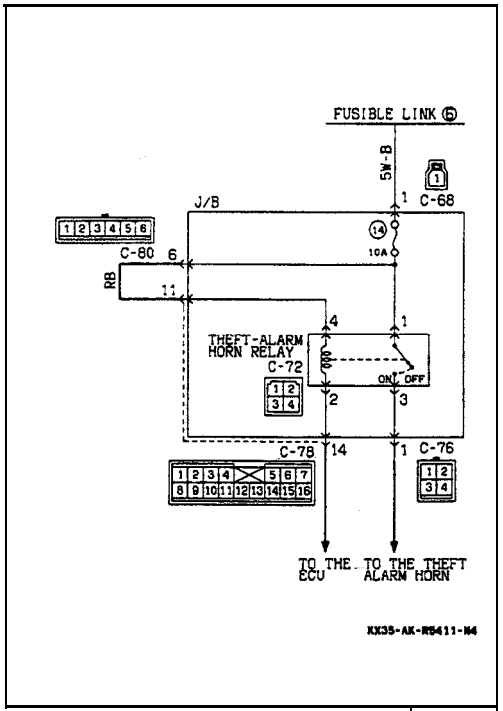
10. HORN ACTIVATION CIRCUIT

Description of operation

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

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

Step	Check object	Normal condition	Malfunction	Cause	Remedy
1	Horn relay terminal voltage (4-Ground)	12v	ov	Malfunction of the horn relay	Check the horn relay (Refer to P.54-118.)
2	Horn terminal voltage (LH & RH) (1 -Ground)	12v	ov	Harness damaged or disconnected	Repair the harness
3	Horn terminal voltage (LH & RH) (1 -Ground)	Horn sounds (0 V)	Horn doesn't sound (0 V)	Malfunction of the horn	Replace the horn
			Battery voltage	Damaged or disconnected wiring of ground circuit	Repair the harness



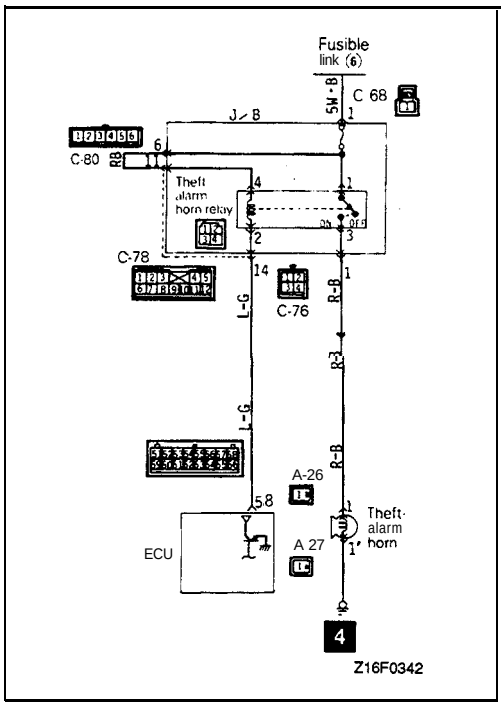
11. THEFT ALARM HORN RELAY POWER-SUPPLY CIRCUIT

Description of operation

Power voltage is always supplied to theft alarm horn relay.

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

Check object	Normal condition	Malfunction	Cause	Remedy
THEFT ALARM HORN RELAY connector terminal voltage 1	12v	o v	Fuse (14) damaged or disconnected	Replace the fuse
			Damaged or disconnected harness	Repair the harness



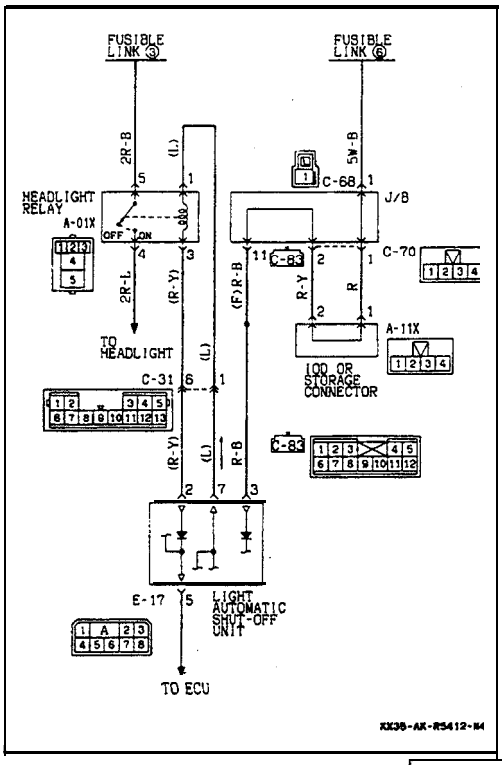
12. THEFT ALARM HORN ACTIVATION CIRCUIT

Description of operation

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

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

Step	Check object	Normal condition	Malfunction	Cause	Remedy
1	Horn relay terminal voltage (1-Ground)	12 V	0 V	Malfunction of the horn relay	Check the horn relay (Refer to P.54-118.)
2	Horn terminal voltage (1-Ground)	12 V	0 V	Harness damaged or disconnected	Repair the harness
3	Horn terminal voltage (1-Ground)	Horn sounds (0 V)	Horn doesn't sound (0 V)	Malfunction of the horn	Replace the horn
			Battery voltage	Damaged or disconnected wiring of ground circuit	Repair the harness



13. HEADLIGHT POWER-SUPPLY CIRCUIT

Description of operation

Power voltage is always supplied to the headlight relay.

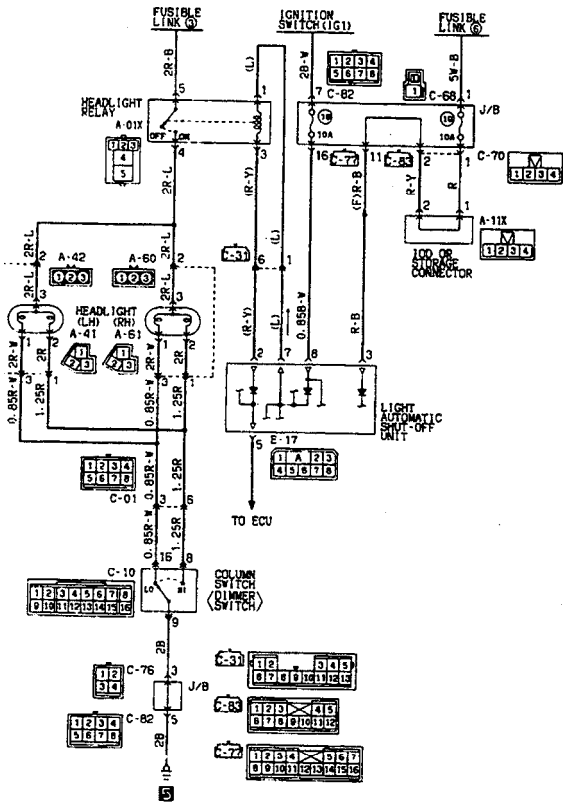
Checking the headlight power-supply circuit (Disconnect the headlight relay)

Check object	Normal condition	Malfunction	Cause	Remedy
(Wiring harness side) terminal voltage (5-Ground)	12 v	o v	Fusible link (3) blown	Replace the fusible link
			Damaged or disconnected harness	Repair the harness

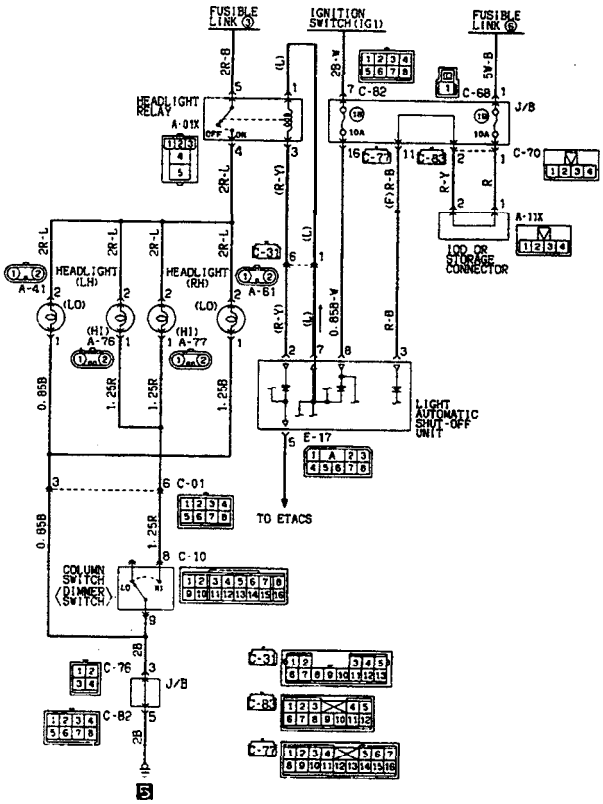
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14. HEADLIGHT ACTIVATION CIRCUIT

<Up to 1993 models>



<From 1994 models>



Description of operation

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

Checking the headlight activation circuit (Disconnect the connector of the ECU, then short-circuit terminal connector 2, and activate the headlight relay.)

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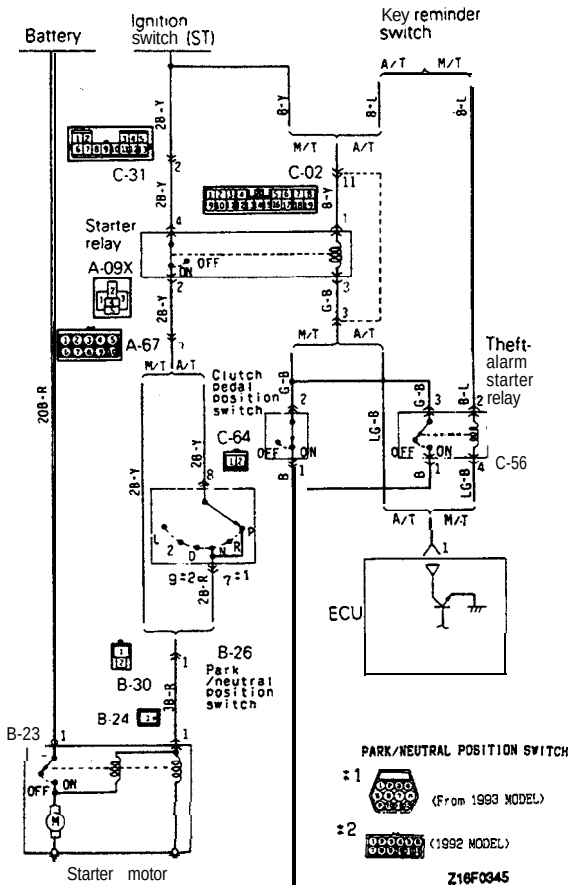
<Up to 1993 models>

Step	Check object		Normal condition	Malfunction	Cause	Remedy
1	Headlight relay terminal voltage (4-Ground)		12V	OV	Malfunction of the headlight relay	Check the headlight relay (Refer to P.54-108.)
2	Headlight terminal voltage (3-Ground)		12v	OV	Harness damaged or disconnected	Repair the harness
3	Headlight terminal voltage (1 -Ground)	Column switch: Low	OV	The headlight isn't turned on.	Malfunction of the headlight. Harness damaged or disconnected. Malfunction of column switch.	Replace the headlight or column switch. Repair the harness.
		Column switch: Hi	12V			
	Headlight terminal voltage (2-Ground)	Column switch: Low	12V			
		Column switch: Hi	OV			

<From 1994 models>

Step	Check object		Normal condition	Malfunction	Cause	Remedy
1	Headlight relay terminal voltage (4-Ground)		12v	ov	Malfunction of the headlight relay	Check the headlight relay (Refer to P.54-108.)
2	Headlight terminal voltage (2-Ground)		12v	ov	Harness damaged or disconnected	Repair the harness
3	Headlight (HI) terminal voltage (1 -Ground)	Column switch: Low	12v	The headlight isn't turned on.	Malfunction of the headlight. Harness damaged or disconnected. Malfunction of column switch.	Replace the headlight or column switch. Repair the harness.
		Column switch: Hi	OV			
	Headlight (LO) terminal voltage (2-Ground)	Column switch: Low	OV			
		Column switch: Hi	OV			

15. STARTER RELAY ACTIVATION CIRCUIT



Description of operation

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

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

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

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3000GT Specs-At-A-Glance

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00 General					
	Engine code			6G72	6G72
	Engine size		cm^3 (cu.in.)	2,972 (181.4)	2,972 (181.4)
	Engine oil capacity (total)	<Non-Turbo>	dm^3 (qts.)	4.3 (4.5)	4.3 (4.5)
		<Turbo>	dm^3 (qts.)	4.6 (4.9)	4.6 (4.9)
	Cooling system capacity		dm^3 (qts.)	8.0 (8.5)	8.0 (8.5)
	A/T capacity		dm^3 (qts.)	7.5 (7.9)	7.5 (7.9)
	Power steering capacity	<2WS>	dm^3 (qts.)	0.9 (.95)	0.9 (.95)
		<4WS>	dm^3 (qts.)	1.5 (1.59)	1.5 (1.59)
	Rear axle gear oil capacity <AWD>		dm^3 (qts.)	1.1 (1.2)	1.1 (1.2)
11 Engine					
	Firing order			1-2-3-4-5-6	1-2-3-4-5-6
	Compression pressure	<Non-Turbo>	kPa (psi)	min. 980 (139)	min. 980 (139)
		<Turbo>	kPa (psi)	min. 810 (115)	min. 810 (111.5)
	Difference between cylinders		kPa (psi)	100 (14)	100 (14)
13 Fuel					
	Fuel tank capacity		dm^3 (gals.)	75 (19.8)	75 (19.8)
	Fuel pressure				
	(When vacuum hose disconnected)	<Non-Turbo>	kPa (psi)	330 – 350 (47 – 50)	330 – 350 (47 – 50)
		<Turbo>	kPa (psi)	295 – 315 (43 – 45)	295 – 315 (43 – 45)
	(When vacuum hose connected)	<Non-Turbo>	kPa (psi)	Approx. 270 (38)	Approx. 270 (38)
		<Turbo>	kPa (psi)	Approx. 235 (34)	Approx. 235 (34)
	Basic ignition timing			5° BTDC ± 2°	5° BTDC ± 3°
	Curb idle speed		rpm	700 ± 100	700 ± 100
	TPS voltage		mV	400 – 1000	400 – 1000
	TPS resistance		kΩ	3.5 – 6.5	3.5 – 6.5
	Intake air temperature sensor resistance		kΩ [at 20°C (68°F)]	2.7	2.7
	Engine coolant temperature sensor resistance		kΩ <20°C (68°F)>	2.4	2.4
			kΩ <80°C (176°F)>	0.3	0.3
14 Cooling					
	Radiator pressure cap opens		kPa (psi)	65 (9.2)	65 (9.2)
23 A/T					
	Fluid capacity		dm^3 (qts.)	7.5 (7.9)	7.5 (7.9)
26 Front Axle					
	Drive shaft nut torque		Nm (ft.lbs.)	200 – 260 (145 – 188)	200 – 260 (145 – 188)
	Caliper assembly mounting bolt torque		Nm (ft.lbs.)	90 (65)	90 (65)
27 Rear Axle					
	Wheel bearing nut torque <FWD>		Nm (ft.lbs.)	200 – 260 (145 – 188)	200 – 260 (145 – 188)
31 Wheel and Tire					
	Tire inflation pressure	<Front>	kPa (psi)	220 (32)	220 (32)
		<Rear>	kPa (psi)	200 (29)	200 (29)
33A Front Suspension					
	Front wheel alignment	<Camber>		0° ± 30'	0° ± 30'
		<Caster>		3°55' ± 30'	3°55' ± 30'
		<Toe-in>	mm (in.)	0 ± 3 (0 ± .12)	0 ± 3 (0 ± .12)
34 Rear Suspension					
	Wheel bearing nut torque <FWD>		Nm (ft.lbs.)	200 – 260 (145 – 188)	200 – 260 (145 – 188)
35 Brakes					
	Front disc runout	<FWD>	mm (in.)	0.07 (.0028) or less	0.07 (.0028) or less
		<AWD>	mm (in.)	0.10 (.004) or less	0.10 (.004) or less
	Front disc minimum thickness	<FWD>	mm (in.)	22.4 (.881)	22.4 (.881)
		<AWD>	mm (in.)	28.4 (1.118)	28.4 (1.118)
	Rear disc runout		mm (in.)	0.08 (.0031) or less	0.08 (.0031) or less
	Rear disc minimum thickness	<FWD>	mm (in.)	16.4 (.645)	16.4 (.645)
		<AWD>	mm (in.)	18.4 (.724)	18.4 (.724)
	Rear drum inside diameter, max.		mm (in.)	169 (6.653)	169 (6.653)
36 Parking Brakes					
	Parking brake lever stroke			3 – 5 notches	3 – 5 notches
51 Exterior					
	Wiper blade length	<Driver's side>	mm (in.)	525 (20.7)	525 (20.7)
		<Passenger's side>	mm (in.)	500 (19.7)	500 (19.7)
55 Heater, A/C, Ventilation					
	Refrigerant quantity				
	<Vehicles using R-12 refrigerant>		g (oz.)	960 (34)*1 or Approx. 800 (29)*2	Approx. 800 (29)
	<Vehicles using R-134a refrigerant>		g (oz.)	—	740 – 790 (26 – 28)

NOTE
*1: Up to Sept. 1992 models
*2: From Oct. 1992 models

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