GROUP-8

ELECTRICAL SYSTEM

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GENERAL SPECIFICATIONS

Starter Motor

	Engine with M/T	Engine with A/T
Model No.	M3T25882	M2T53083
Type	Direct drive	Reduction drive
Output (nominal) kW/V	0.9/12	1.2/12
Turning direction (as viewed from pinion side)	Clockwise	Clockwise
No. of teeth of pinion	8	9
No-load characteristics		
Terminal voltage V	11.5	11.5
Current A	60 or less	100 or less
Speed rpm	6,500 or more	3,000 or more
Under-cut depth mm (in.)	0.5-1 (.020-.039)	0.5-1 (.020-.039)
Service limit	0.2 (.008) or less	0.2 (.008) or less
Commutator diameter mm (in.)	38.7 (1.524)	32 (1.260)
Service limit	37.7 (1.484)	31 (1.220)
Pinion gap mm (in.)	0.5-2.0 (.020-.079)	0.5-2.0 (.020-.079)

Distributor

	Federal	California
Model No.	T3T61971 (MD073074)	T3T61972 (MD073075)
Type	Contact-pointless type	Contact-pointless type
Igniter	Built-in type	Built-in type
Turning direction	Clockwise	Clockwise
Firing order	1-3-4-2	1-3-4-2
Centrifugal advance (distributor angle at distributor rpm)		
Initial	0° at 750	0° at 750
Middle	7° at 1,900	7° at 1,900
Final	8.5° at 2,500	8.5° at 2,500
Vacuum advance (distributor angle at mm (in.) of mercury)		
Initial	0° at 130 (5.12)	0° at 130 (5.12)
Middle	6.5° at 180 (7.09)	5.3° at 180 (7.09)
Final	15° at 300 (11.81)	11.5° at 280 (11.02)

Ignition Coil

Identification model No.	E-089
Primary resistance Ω	1.2
Secondary resistance kΩ	13.7
External resistor resistance Ω	1.35

Spark Plugs

Model No. NGK	BP5ES-11
NIPPONDENSO	W16EPR-U10
Plug gap mm (in.)	1.0-1.1 (.039-.043)

Alternator

Model No.	A5T21077 (MD064068)	A2T41377 (MD074645)
Output (nominal) V/A	12/50	12/55
Regulated voltage V	14.4 ± 0.5 at 20°C (68°F)	14.4 ± 0.5 at 20°C (68°F)
Polarity	Minus (–) ground	Minus (–) ground
Turning direction (as viewed from pulley)	Clockwise	Clockwise
Voltage regulator	Electronic, built-in type	Electronic, built-in type

Battery

Type	NX100-S6 (S)-MF (Maintenance free battery)	NX120-7-MF (Maintenance free battery)
Capacity (20HR) Ah	45	80
Voltage V	12	12
Electrolyte specific gravity [20°C (60°F)]	1.280	1.280

NOTE
If the specific gravity of the battery electrolyte falls 0.06 or more, recharge the battery.

Fuses

Fusible links	For Federal (not available in California)	For California (can also be sold in Federal states)	
Main			
Cable color	Red	Red	Green
Fusible link size mm² (in.²)	0.85 (.0013)	0.85 (.0013)	0.5 (.0008)
Permissible continuous current A	34	34	27
Fusing current A	150	150	100

Sub	Ignition circuit	Power window circuit	Headlight, headlight washer circuit
Cable color	Green	Green	Brown
Fusible link size mm² (in.²)	0.5 (.0008)	0.5 (.0008)	0.3 (.0005)
Permissible continuous current A	27	27	19
Fusing current A	100	100	65
Fuse capacity A	10	15	20
Color	Red	Light blue	Yellow

Ignition Switch

Ignition switch	
Type	Rotary switch with steering wheel lock and key-reminder switch
Load capacity A	
AM-ACC	15
AM-IG	30
AM-ST	15
AM-R	15
Key-reminder switch	
Load capacity W	1

Meters and Gauges

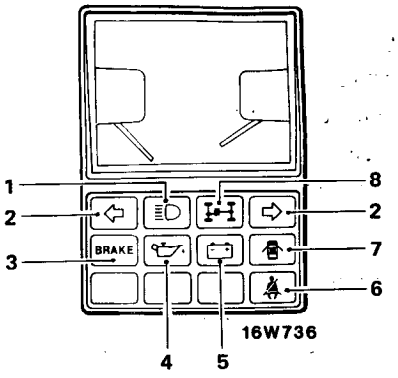
Speedometer	
Speed indication range mph (km/h)	0-85 (0-137)
Indication ratings (range of allowable error)	
Meter with "mph" indication mph	
25 mph	+2.5 0
50 mph	+3.5 +0.3
75 mph	+5 +1
Tachometer	
Type	Pulse type
Detection source	Ignition coil
Red zone rpm	6,000-8,000
Indication ratings (range of allowable error) rpm	
1,000 rpm	± 100
2,000 rpm	± 100
3,000 rpm	± 150
4,000 rpm	± 200
5,000 rpm	± 250
Fuel gauge	
Type	Bi-metal type (built-in constant voltage relay)
Constant voltage relay resistance value Ω	68-72
Fuel gauge unit	
Type	7-V resistance type
Standard resistance value Ω	
Float position "F" point	14.9-19.1
Float position "E" point	113.5-126.5
Float vertical movement range mm (in.)	222-220 (8.81-8.97)
Water temperature gauge	
Type	Bi-metal type
Water temperature gauge unit	
Type	Thermistor type
Standard resistance value Ω	
70°C (158°F)	90.5-117.5
115°C (239°F)	21.3-26.3

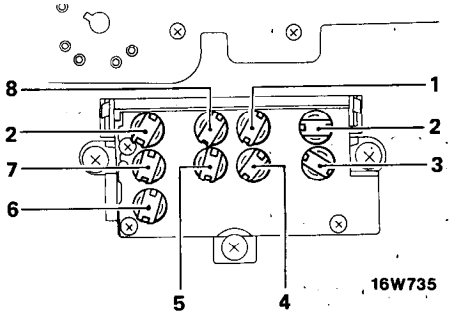
Oil pressure gauge	
Type	Bi-metal type
Oil pressure gauge unit	
Type	Bi-metal type
Standard resistance value Ω	
0 kPa (0 psi)	0
588 kPa (85 psi)	136
Inclinometer	
Type	Gravity type
Damping system	Oil-filled system
Indication angle	
Forward, backward	45° max.
Right, left	45° max.
Voltage meter	
Type	Bimetal type
Indication ratings (range of allowable error) V	
10 V	± 0.5
14 V	± 0.5

Indicator and Warning Lights

W (SAE trade numbers)

1. Upper-beam and passing indicator light	1.4 (74)
2. Turn-signal indicator lights	1.4 (74)
3. Brake warning light	1.4 (74)
4. Oil pressure warning light	1.4 (74)
5. Charging warning light	1.4 (74)
6. Fasten-seat-belt warning light	1.4 (74)
7. Door-ajar warning light	1.4 (74)
8. 4WD indicator light	1.4 (74)





Sensor and Switches

Parking brake switch	
Rated load W	5
Voltage drop (at 12 V, rated load) V	0.1 or less
Brake fluid lever sensor	
Rated load W	3.6
Voltage drop (at 12 V, rated load) V	0.1 or less
Door switch	
Rated load W	15
Voltage drop (at 12 V, rated load) V	0.2 or less
Belt switch	
Type	Normally closed type

Seat Belt Warning Timer

Rated load	3.4 W (light) and 24 $^{+10}_{-0}$ Ω (buzzer)
Operating voltage V	8.0-16.0

Buzzer

Rated voltage V	13.5
Operating voltage range V	11-15
While buzzing (Terminal voltage at 13 V)	
Sound pressure dB	70 ± 5
Fundamental frequency Hz	700

Lighting System

Main lights W (SAE trade numbers)	
Headlights	60/50
Front combination lights	
Turn-signal lights	27 (1156)
Front side marker and position lights	3.8 (194)
Rear combination lights	
Turn-signal, stop and tail lights	27/8 (1157)
Rear side marker lights	3.8 (194)
Back-up lights	27 (1156)
License plate lights	6
Sub lights W (SAE trade number)	
Dome light	10
Combination meter illumination light	3.4 (158)
Cigarette lighter illumination light	1.4 (74)
Heater panel illumination light	1.4 (74)
Rear window defogger switch illumination light	0.9
Ashtray illumination light	1.4 (74)
Turn-signal flasher unit	
Type	Condenser type
Rated load W	82.9-84.2
Blinking frequency cycle/min [12.8 V, 20°C (68°F)]	85 ± 10
Hazard warning flasher unit	
Type	Heat-band type
Rated load W	49.4-168.8
Blinking frequency cycle/min [12.8 V, 20°C (68°F)]	90 ± 10

Column switch	
Turn-signal switch	
Rated load A	6.1-7.1
Voltage drop (at 12 V and the rated load) V	0.2 or less
Dimmer switch	
Rated load A	
High beam	16.1-18.7
Low beam	9.4-10.8
Voltage drop (at 12 V and the rated load) V	0.2 or less
Passing switch	
Rated load A	
High beam	16.1-18.7
Low beam	9.4-10.8
Voltage drop (at 12 V and the rated load) V	0.2 or less
Lighting switch	
Rated load A	0.17-0.27
Voltage drop (at 12 V and the rated load) V	0.2 or less
Headlight washer switch	
Rated load A	0.5
Voltage drop (at 12 V and the rated load) V	0.2 or less
Hazard warning switch	
Voltage drop (at 12 V and the rated load) V	0.2 or less
Light control relay	
Rated load W	200
Range of voltage used V	10-16
Voltage drop between terminals V	0.2 or less
Dimmer control switch	
Type	Variable-resistance type
Rated load W	15 (Min.)-26.6 (Max.)
Stop light switch	
Rated load W	150
Voltage drop (at 12 V and the rated load) V	0.15 or less

Windshield Wipers and Washer

Wiper motor	
Type	Permanent-magnet type
Speed control system	3-brush system
Braking system	Dynamic brake system
Revolution under load rpm	
Low speed [1.9 Nm (1.4 ft.lbs.)]	35 ± 4
High speed [1.3 Nm (0.9 ft.lbs.)]	45 ± 8
Nominal torque Nm (ft.lbs.)	13 (9)
Wiper blades	
Wiping angle	
Driver's side	85.5°
Passenger's side	114°
Blade length mm (in.)	401 (16)
Washer motor and pump	
Motor type	Direct current ferrite magnet type
Pump type	Centrifugal type
Power consumption A	3.5 or less
Time of continuous use sec.	
With washer fluid	Max. 60
Empty operation	Max. 20
Nozzle jet pressure kPa (psi)	69 (10.0) or more
Tank capacity lit. (U.S.qts., Imp.qts.)	1.5 (1.6, 1.3)
Intermittent wiper relay	
Intermittent cycle sec.	1.5 ± 0.7-10.5 ± 3
Delay time in combined intermittent wiper and washer operation sec.	0.4-1.2
Load current A	5 (motor load)
Wiper switch	
Rated load A	0.5
Intermittent	0.22 ± 0.05
Low speed	3.5
High speed	4.5
Lock	18
Voltage drop (at 12 V and the rated load) V	0.2 or less
Washer switch	
Rated load A	3
Voltage drop (at 12 V and the rated load) V	0.5 or less

Rear Window Wiper and Washer

Wiper motor	
Motor type	Ferrite magnet type
Braking system	Dynamic braking system
Revolution under no-load rpm	50 ± 5
Nominal torque Nm (ft.lbs.)	6 (4) or more
No-load current A	2 or less
Wiper blade	
Wiping angle	108°
Blade length mm (in.)	334 (13)
Window washer motor and pump	
Motor type	Direct current ferrite magnet type
Pump type	Centrifugal type
Power consumption A	3.5 or less
Allowable period of continuous use sec.	
With washer fluid	Max. 60
Empty operation	Max. 20
Nozzle jet-spray pressure kPa (psi)	78 (11.4) or more
Tank capacity lit. (U.S.qts., Imp.qt.)	1.1 (1.2, 1.0) or more
Wiper and washer switch	
Rated load A	
Wiper switch	3
Washer switch	5
Voltage drop (at 12 V and the rated load) V	0.2 or less

Headlight washer

Headlight washer motor	
Motor type	Ferrite magnet type
Pump type	Centrifugal type
Power consumption A	21 or less
Nozzle injection pressure kPa (psi)	177 (25.6) or more
Tank capacity lit. (U.S.qts., Imp.qts.)	3.0 (3.2, 26)
Headlight washer control relay	
Timer setting sec.	0.52 ± 0.1
Check valve	
Valve opening and closing pressure kPa (psi)	49-108 (7.1-15.6)

Horn

Type	Flat type
Effective sounding voltage V	11-14.5
Power consumption A	3.5 or less
Sound level dB	100-110
Fundamental frequency Hz	
"low" sound	340-380
"high" sound	400-440

Clock

Type	Crystal oscillating type
Display type	Fluorescent digital display (12 hour display)
Daily variation seconds/day [at a power supply of 9 to 16V, 20°C(68°F) ambient temperature]	± 2

Cigarette Lighter

Rated input W	120
Timing of plug pop-up	Within 18 seconds
Cigarette lighter light bulb capacity W	1.4 x 1
Ashtray light bulb capacity W	1.4 x 1

Rear Window Defogger

Rear window defogger switch	
Type	Seesaw type
Rated current A	12
Indicator light W	0.9
Rear window glass with defogger	
No. of printed heater lines	11
Power consumption [20°C (68°F)] W	102-138

Radio and Stereo

Radio			
Model			AR-8729 SEKR-Y
Receiving bands			AM/FM-MPX
Circuitry AM			High frequency: 1 step; mid frequency: 1 step, superheterodyne amplification
FM			High frequency: 1 step; mid frequency: 1 step, superheterodyne amplification Ratio detection, PLL, FM stereo demodulation, and noise killer circuits
Reception frequencies	AM	kHz	525-1,615
	FM	MHz	88-108
Tape player			
Model			RX-750 SY-RY
Playback system			4-track auto-reverse stereo playback
Adaptable tape			Normal, C-90 or shorter tape
Output W			4
Tape speed cm/sec.			4.76
Tuning system			Manual search tuning, Mechanical memory tuning
Frequency coverage	AM	kHz	525-1,615
	FM	MHz	88-108

Speakers			
Model		SG-28A8	SG-3K4-4-G, SG-3K4-4-R
Rated input power W		5 (Max. 7)	5 (Max. 7)
Output sound pressure level	dB	88-92	88-92
Mounting position		Instrument panel, driver's side	Left and right center pillars

Antenna	
Type	Whip antenna (Fender-mounted)

Power Windows

Power window motor	
Type	Permanent magnet type (built-in circuit breaker)
Revolutions under load rpm	
At 1 Nm (.72 ft. lbs.)	60-90
At 2 Nm (1.45 ft. lbs.)	50-80
Bound current A	34 or less
Direction of rotation	Clockwise and counterclockwise
Power window main switch	
Type	Automatic reset type
Rated load current A	
Lock switch	30
L.H. switch	11
R.H. switch	11
Power window sub switch	
Type	Automatic reset type
Rated load current A	11
Power window relay	
Maximum contact current A	20
Rated coil current A	0.13-0.19
Voltage drop between terminals V (at 12 V and the rated load current)	0.2 or less

3-Point ELR seat belts with tension reliefers

Belt switches	Normally open type
Seat belt solenoids	
Operating voltage V	8-16
Continuous rating (50 Ω, 240 mA)	2.88 W
Insulation resistance (measured with 500-VDC megger)	100 MΩ

SERVICE SPECIFICATIONS

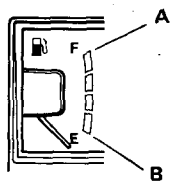
Engine

General	
Basic ignition timing	7 ± 2° BTDC

Meters and Gauges

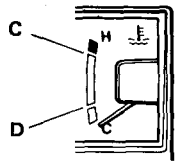
Fuel gauge indication test	
When resistance is 17 Ω	Scale indication A
When resistance is 120 Ω	Scale indication B
Fuel gauge continuity test	
Resistance value Ω	Approx. 25
Water temperature gauge indication test	
When resistance is 23.8 Ω	Scale indication C
When resistance is 104 Ω	Scale indication D
Water temperature gauge continuity test	
Resistance value Ω	Approx. 55
Water temperature gauge unit operation check	
When water temperature is 70°C (158°F) Ω	104
Oil pressure gague indication test	
When resistance is 120 Ω	Scale indication E
Oil pressure gauge continuity test	
Resistance value Ω	Approx. 42
Voltage meter continuity test	
Resistance value Ω	420

Fuel gauge



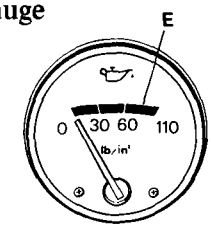
68W003

Water temperature gauge



W68003

Oil pressure gauge



16W784

Lighting System

Standard value	
Headlight intensity	20,000 cd or more

Windshield Wipers and Washer

Standard value	
Wiper blade stopping position mm (in.) (distance between blade tip and front deck garnish)	37-47 (1.5-1.9)

Rear Window Wiper and Washer

Standard value	
Wiper blade stopping position mm (in.) (distance between blade tip and back door window weatherstrip)	20 (.8)

TORQUE SPECIFICATIONS

Fuel Gauge Unit

	Nm (ft.lbs.)
Fuel gauge unit	1 (0.7)

Windshield Wipers and Washer

	Nm (ft.lbs.)
Wiper pivot shaft mounting nut	7 (5)
Wiper arm locking nut	10-16 (7-12)
Wiper motor	3 (2)

Rear Window Wiper and Washer

	Nm (ft.lbs.)
Rear wiper pivot shaft mounting nut	8-12 (6-9)
Rear wiper arm locking nut	7-10 (5-7)
Rear wiper motor	7-10 (5-7)

BATTERY

Run-down battery

TEST 1
With the engine at curb idle, measure the voltage at the "B" terminal of the alternator. Next, measure the voltage at the "B" terminal when the engine speed is increased to about 2,000 rpm, and compare that measurement with the measurement during idling.
Is voltage higher at 2,000 rpm?

- Not higher, or no change
- Higher → Go to TEST 6.

TEST 2
With the engine stopped and the ignition switch in the "ON" position, measure the voltage at the "L" terminal of the alternator. In other words, check whether or not field current flows.

- 0 to 1 V
- 1 to 3 V → Go to TEST 6.
- High (nearly the same as battery voltage) → Go to TEST 5.

TEST 3
Short-circuit the "B" terminal and the "R" terminal of the alternator with a jumper wire, and then repeat TEST 2.

- 0 to 1 V
- 1 to 3 V → Poor ignition switch ground

TEST 4
Remove the connector from the alternator, and then check for continuity between the "L" and "R" terminals of the alternator.

- Continuity (35 to 100 Ω) → Malfunction of the regulator, or (+) side brush is grounded
- No continuity → Malfunction of the regulator

CAUTION
While engine is running (alternator generating power), make sure that L-terminal is not grounded. If L-terminal is grounded, auxiliary diode will be short-circuited and no voltage will be available at L-terminal, so no power will be generated. Therefore, CHARGE lamp will remain lit.

TEST 5
With the engine stopped and the ignition switch in the "ON" position, measure the voltage at the "F" terminal (for testing the alternator).

- High (nearly the same as battery voltage) → Malfunction of the regulator (power transistor open)
- 0 to 0.5 V → Field coil wiring damaged, or poor brush contact
- 0.5 to 2 V → ⊕ diode short → With the ignition switch in the "OFF" position, pull the connector from the alternator. Then, measure the voltage at the "L" terminal. If the voltage is close to battery voltage, the (+) diode is short-circuitd.

CAUTION
When measuring the voltage of the "F" terminal (for testing), be careful not to let the voltmeter probe contact the rear bracket. If by chance it does contact it, there's no problem if it's immediately pulled away.

TEST 6
Output current test
Disconnect the wiring from the "B" terminal of the alternator, and connect an ammeter (60 A or higher) between the wires and the terminal. Start the engine. Then immediately increase the engine speed to 2,500 to 3,000 rpm and quickly read the maximum value shown by the ammeter. Note that all loads on the electrical system should be "ON" when this test is made.

- 70% or less of nominal output → Normal function of alternator
- 70% to 90% of nominal output → **TEST 7**
- 90% or more of nominal output → Alternator is normal

TEST 7
Output current test (re-check)
Check for poor contact of the wiring between the "B" terminal of the alternator and the positive (+) terminal of the battery. After slightly discharging the battery make TEST 6 once again.

- Less than 90% of nominal output → Remove the alternator from the engine and check it.
- More than 90% of nominal output → Alternator is normal

NOTE
Make TEST 8 if it is necessary after finishing TESTS 6 and 7.

TEST 8
Regulated voltage test
(See p.8-76.)

- 14.4 ± 0.5 V at 20°C → Electronic voltage regulator is normal
- There is an abnormal condition → Malfunction of alternator

Overcharge

TEST 1
While measuring the voltage at the "B" terminal of the alternator, slowly increase the engine rpm from idle speed.
Is the "B" terminal voltage 15.5 V or more?

- Not 15.5 V or more
- 15.5 V or less
  - Malfunction of alternator (malfunction of electronic voltage regulator, or negative (–) brush is grounded)

TEST 2
Measure and compare the voltage of the "F" terminal (for checking the alternator) at idle speed and at approx. 3,000 rpm.
Is the voltage higher at 3,000 rpm?

- Higher
- Not higher, or no change
  - Malfunction of alternator (malfunction of electronic voltage regulator, or negative (–) brush is grounded)

NOTE
The voltage of the "F" terminal may not increase if the battery is discharged.

TEST 3
Regulated voltage test.
(See p.8-76.)

- 14.4 ± 0.5 V at 20°C
  - Alternator normal
- There is an abnormal condition
  - Malfunction of alternator

ENGINE

Engine fails to start

- Insufficient battery capacity
  - Starter motor faulty
    - Faulty switch contacts
    - Burnt or defective magnetic switch contact plate
    - Magnetic switch pull-in coil broken
    - Magnetic switch holding coil broken
    - Magnetic switch plunger is released at improper position
    - Faulty brush contact
    - Brush spring tension insufficient
    - Burnt commutator
    - Large amount of mica on commutator
    - Field coil grounded
    - Armature grounded
    - Clutch pinion tip worn
    - Clutch races
    - Clutch drive spring weakened
    - Motor does not rotate in overrun direction
    - Spline section does not slide smoothly
    - Bearing worn
    - Improper soldering of field coil
      - Wiring broken between starter switch and magnetic switch terminal
        - Faulty contact between battery and ground strap
- Distributor cap cracked, wire plug hole burnt and stained
  - Spark plug gap incorrect
    - Loose or defective spark plug cable
      - Defective ignition coil
        - Primary wiring connections faulty

Unsmooth idling

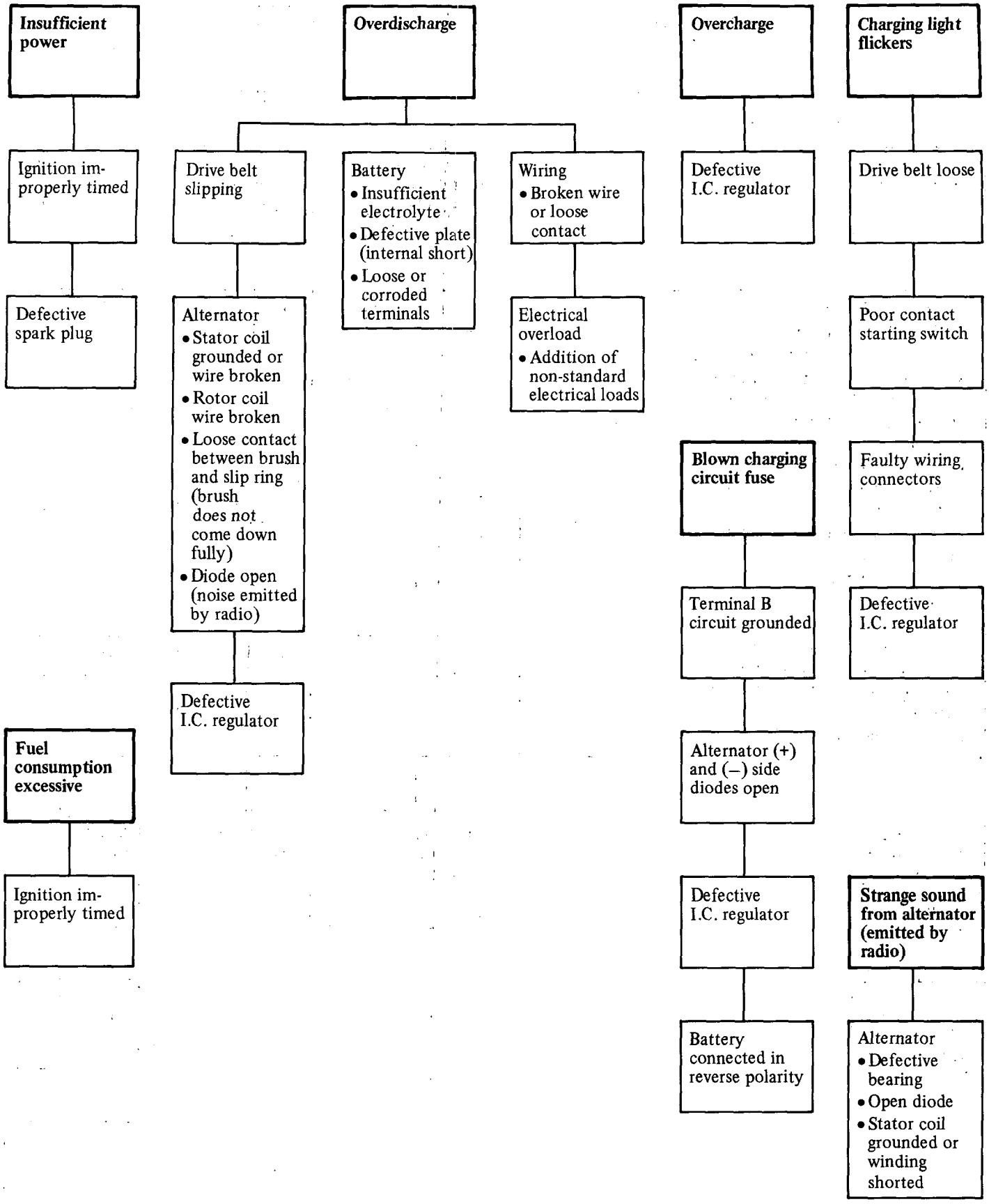
- Distributor cap cracked, or wire plug hole burnt or stained
  - Spark plug gap incorrect
    - Loose or defective spark plug cable
      - Defective ignition coil
        - Primary wiring connections faulty

Faulty combustion

- Ignition system wiring connections loose
  - Defective spark plug

Insufficient acceleration

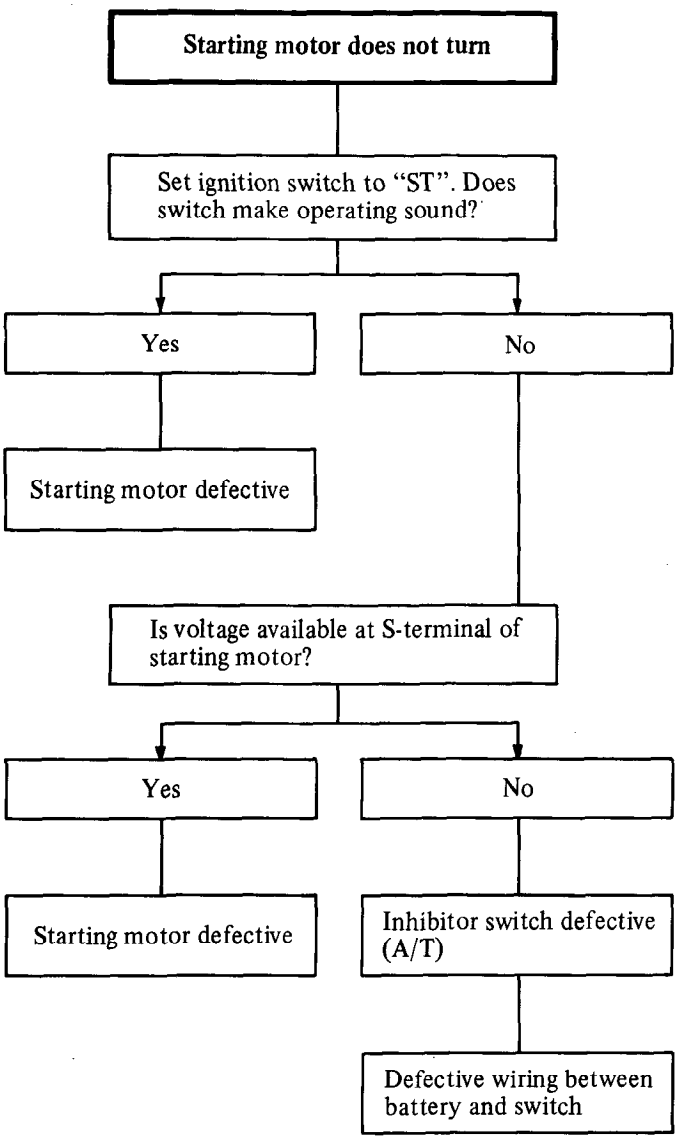
- Defective spark plug
  - Defective coil wire
    - Faulty ignition coil

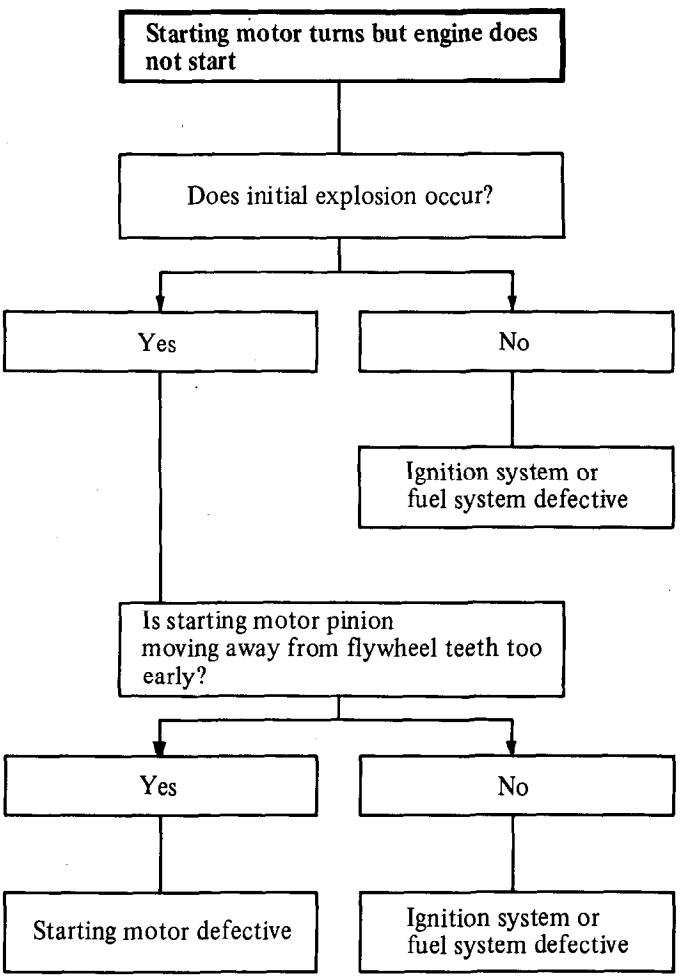

Insufficient power
Ignition improperly timed
Defective spark plug
Overdischarge
Drive belt slipping
Alternator
• Stator coil grounded or wire broken
• Rotor coil wire broken
• Loose contact between brush and slip ring (brush does not come down fully)
• Diode open (noise emitted by radio)
Defective I.C. regulator
Battery
• Insufficient electrolyte
• Defective plate (internal short)
• Loose or corroded terminals
Wiring
• Broken wire or loose contact
Electrical overload
• Addition of non-standard electrical loads
Overcharge
Defective I.C. regulator
Blown charging circuit fuse
Terminal B circuit grounded
Alternator (+) and (–) side diodes open
Defective I.C. regulator
Battery connected in reverse polarity
Charging light flickers
Drive belt loose
Poor contact starting switch
Faulty wiring connectors
Defective I.C. regulator
Fuel consumption excessive
Ignition improperly timed
Strange sound from alternator (emitted by radio)
Alternator
• Defective bearing
• Open diode
• Stator coil grounded or winding shorted

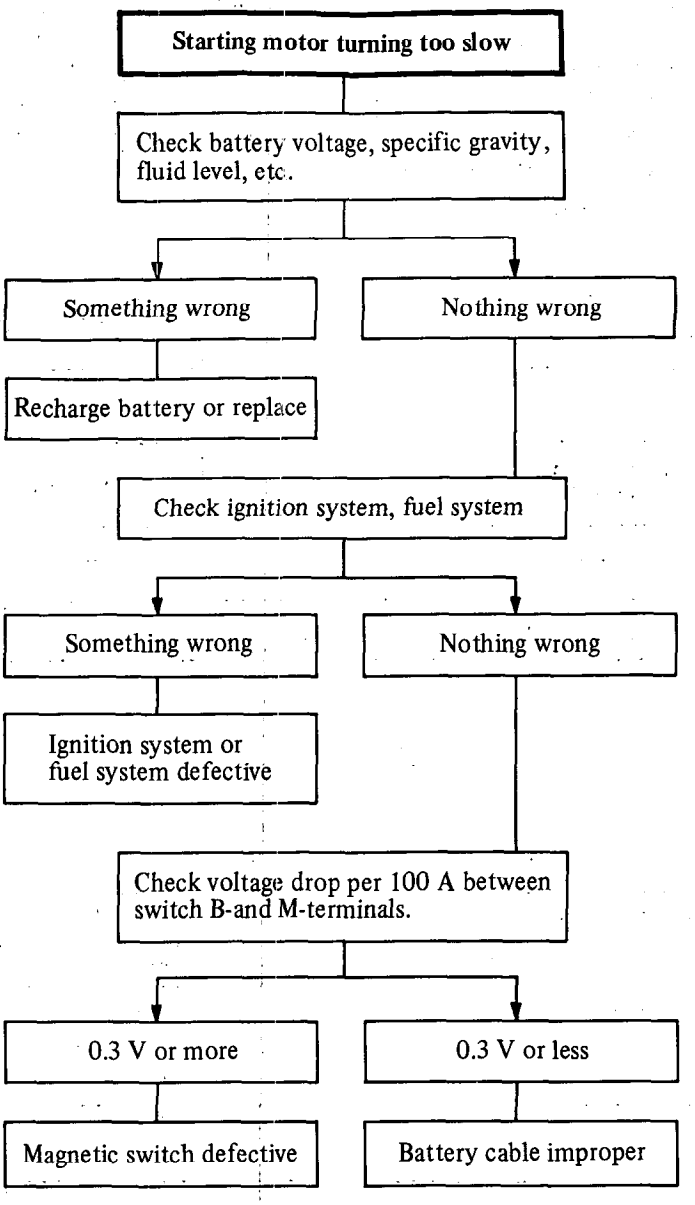
STARTING SYSTEM

The troubles of starting system may be divided into "Starting motor does not turn", "Starting motor turns but engine does not start" and "It takes some time before engine starts". When there is something wrong with starting system, therefore, it is important to determine which part of starting system is defective with starting motor attached to engine.

Generally, starting difficulty, aside from inoperative starting motor, is often attributable to defective ignition system, fuel system, battery, electrical wiring, etc. If makeshift corrective steps are taken without locating the cause, same trouble will develop again.

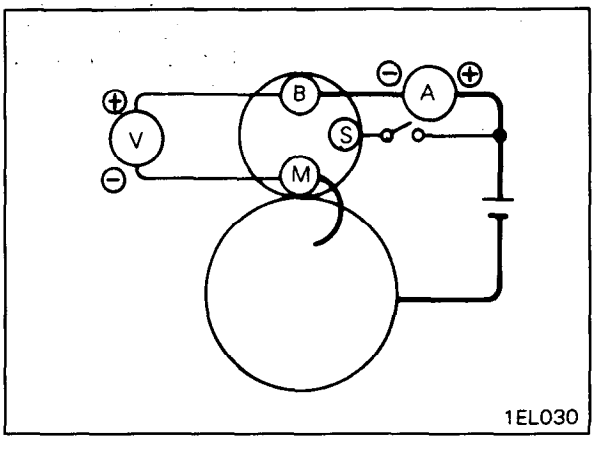






Point to Note when Checking

1. To measure a voltage drop across contacts B and M, make connections as shown. (1EL030)
   If there is a voltage drop of more than 0.3 V per 100 A, hard starting could result, when engine resistance increases as in very cold weather. In such a case, replace switch assembly.

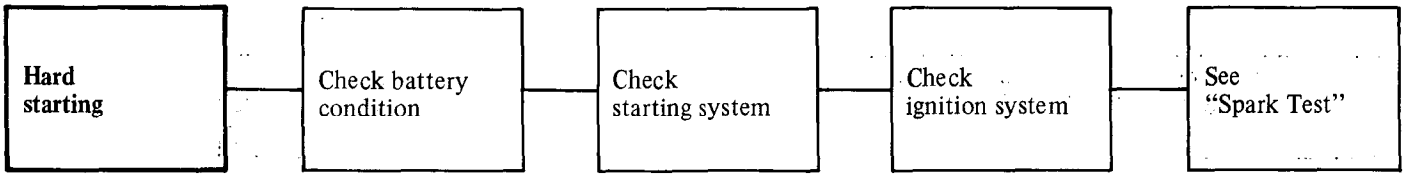


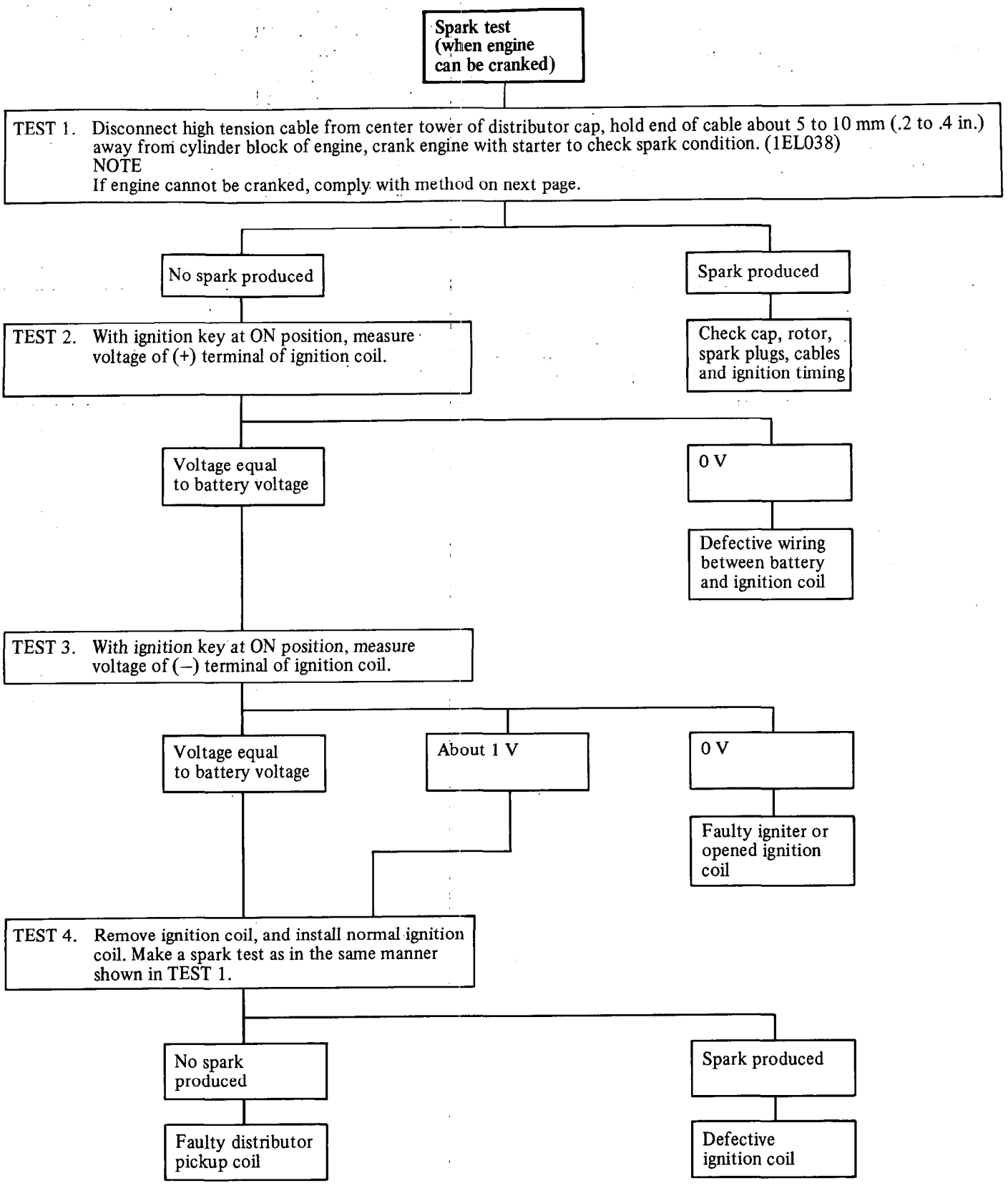
IGNITION SYSTEM

The cause of hard engine starting is not always in the ignition system. Defective parts may exist in the fuel system, exhaust emission control system, starting system or the engine itself.

The role of the ignition system is to generate sufficient electric sparks at the proper time. To check the ignition system, therefore, it is necessary that the spark check and timing measurement are carefully performed.

For on-vehicle troubleshooting of the ignition system, the short cut is to determine on the basis of symptoms which is defective: the power supply, primary low-tension circuit or high-tension circuit. For example, when all spark plugs fail to produce sparks, the probable cause is in power supply or primary circuit. If misfiring occurs only at a specific spark plug, the high tension circuit is likely to be defective. If misfiring occurs occasionally, loose leads or spark plugs may be suspected.




Spark test (when engine can be cranked)
TEST 1. Disconnect high tension cable from center tower of distributor cap, hold end of cable about 5 to 10 mm (.2 to .4 in.) away from cylinder block of engine, crank engine with starter to check spark condition. (1EL038)
NOTE
If engine cannot be cranked, comply with method on next page.
No spark produced
Spark produced
TEST 2. With ignition key at ON position, measure voltage of (+) terminal of ignition coil.
Check cap, rotor, spark plugs, cables and ignition timing
Voltage equal to battery voltage
0 V
Defective wiring between battery and ignition coil
TEST 3. With ignition key at ON position, measure voltage of (–) terminal of ignition coil.
Voltage equal to battery voltage
About 1 V
0 V
Faulty igniter or opened ignition coil
TEST 4. Remove ignition coil, and install normal ignition coil. Make a spark test as in the same manner shown in TEST 1.
No spark produced
Spark produced
Faulty distributor pickup coil
Defective ignition coil

Poor low speed performance (Backfiring or hard starting)

- Distributor improperly installed
- Improper ignition timing
- Faulty distributor or igniter

Engine stalls or misfires occasionally

- Faulty insulation of high-tension cables, cap, rotor and/or spark plugs
- Faulty primary circuit (Damaged primary wire or ignition coil, or overheated ignition coil)

Poor acceleration (Poor high speed performance, insufficient output, Engine stalls during acceleration)

- Incorrect spark plug heat value
- Incorrect spark plug gap
- Defective governor advance mechanism
- Defective vacuum advance mechanism
- Faulty ignition coil

Knocking

- Incorrect fuel octane value
- Incorrect spark plug heat value
- Faulty advance mechanism

SPEEDOMETER

Symptom	Probable cause	Remedy
The speedometer pointer and/or the odometer do not function	Flexible shaft improperly connected Damaged flexible shaft	Repair the routing of the speedometer cable or replace the cable
	Drive gear is broken	Replace the speedometer
The speedometer pointer moves off the scale	Oil inside meter Damaged hair spring	
The speedometer pointer will not return to "0" or will not move above a certain speed	Oil inside meter Deformed hair spring Foreign matter caught on the magnet	
The speedometer pointer moves erratically	Flexible shaft improperly routed	Repair the routing of the speedometer cable or replace the cable
	Worn induction panel end or bearing	Replace the speedometer
The speedometer functions but the odometer does not	Gear malfunction inside the speedometer	

NOTE
If oil is inside the meter, replace the speedometer cable as well. Check the transmission fluid quantity and check for clogged breather plug, too.

GAUGES

Fuel Gauge and Unit

No indicator movement
Incorrect indication

Is the fuel gauge indicator below the lowest marking on the scale while the ignition key is in the "LOCK" or "ACC" position?
- No → Fuel gauge malfunction → Check or replace the fuel gauge
- Yes ↓

Set the ignition key to the "ON" position

Is the No. 4 fuse OK?
- No → Short-circuited wiring harness (damaged wiring harness, burnt cover, etc.) → Repair the harness and replace the fuse
- Yes ↓

Disconnect the wiring connector from the fuel gauge unit beneath the floor of the luggage compartment

Does the tester needle remain with in the area between 2 V and 7 V when the voltage between the Y wire on the fuel gauge side and ground is measured?
- No → Constant voltage relay malfunction → Replace the fuel gauge (Constant voltage relay is built into the fuel gauge)
- Yes ↓

Does the fuel gauge needle go above the scale's highest marking when a 17-Ω resistance is connected between the Y wire on the fuel gauge side and ground?
- No → Fuel gauge malfunction → Replace the fuel gauge
- Yes → Fuel gauge unit malfunction → Correct the grounding of the fuel gauge unit, or replace it

Water Temperature Gauge and Unit

No indicator movement
Incorrect indication

Is the water temperature gauge indicator below the lowest marking while the ignition key is in the "LOCK" or "ACC" position?
- No → Water temperature gauge malfunciton → Check or replace the water temperature gauge
- Yes ↓

Set the ignition key to the "ON" position

Is the No. 4 fuse OK?
- No → Short-circuited wiring harness (damaged wiring harness, burnt cover, etc.) → Repair the harness and replace the fuse
- Yes ↓

Is the fuel gauge functioning correctly?
- No → Constant voltage relay malfunction → Replace the fuel gauge (Constant voltage relay is built into the fuel gauge)
- Yes ↓

Disconnect the wiring connector from the water temperature gauge unit inside the engine compartment

Does the water temperature gauge indicator move to approximately the second marking from the bottom of the scale when a 100-Ω resistance is connected between the water temperature gauge unit and ground?
- No → Water temperature gauge malfunction → Replace the water temperature gauge
- Yes ↓

Water temperature gauge unit malfunction → Replace the water temperature gauge unit

INCLINOMETER

Symptom	Probable cause	Remedy
When vehicle inclines forward or backward, pointer does not move up or down	Internal parts such as pointer and pendulum defective	Replace inclinometer assembly
When vehicle inclines to right or left, spherical dial does not perform follow-up operation.	Internal parts such as dial and pendulum defective	
Oil-like fluid flows out from bottom of case	Seal of oil case broken	
Pointer and spherical dial frequently swing during vehicle operation	Oil case broken and oil leaking	

INDICATORS AND WARNING LIGHTS

Oil Pressure Warning Light

The warning light does not illuminate when ignition switch is turned on.

Set ignition key to "ON" position

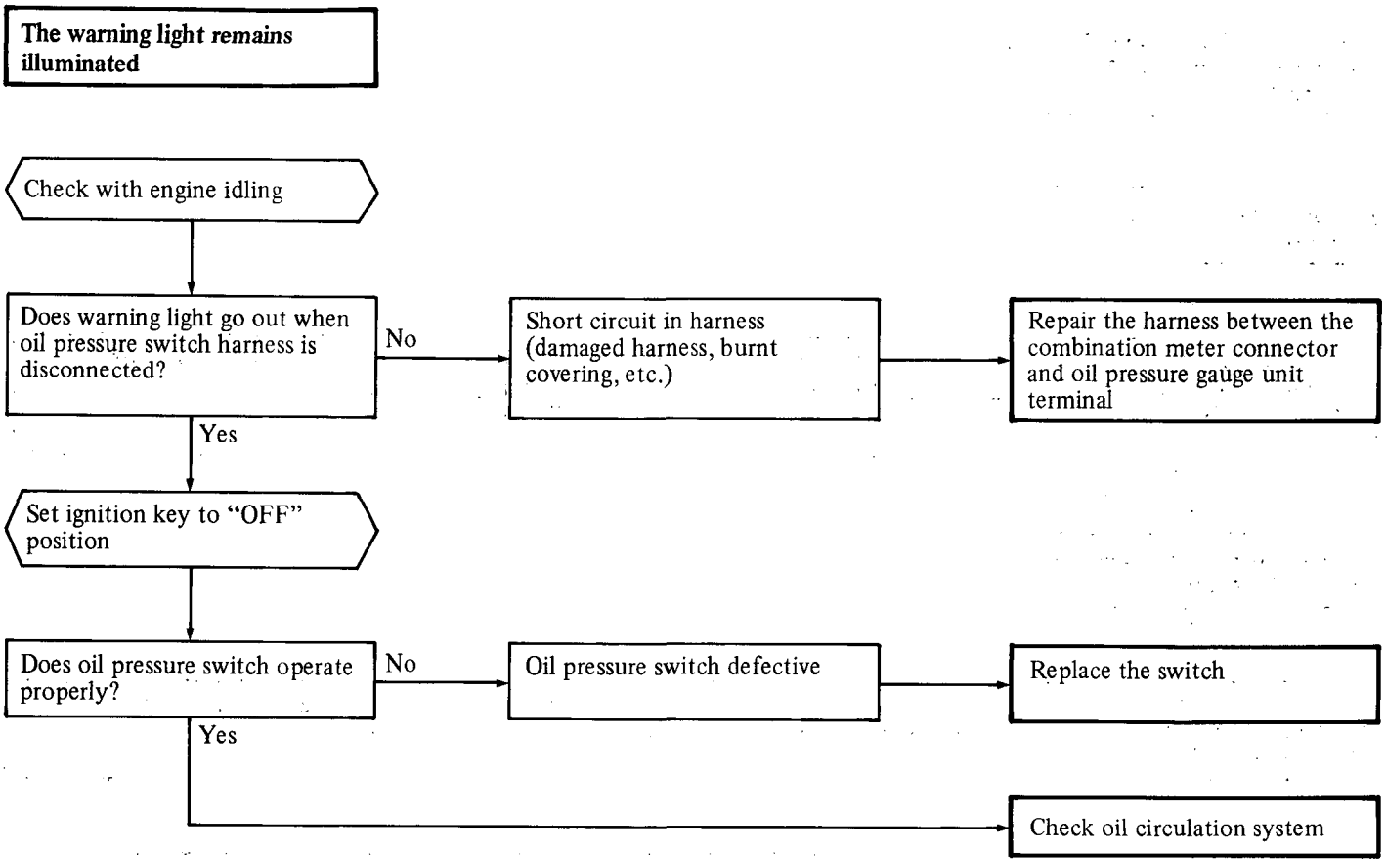
Is fuse No. 4?
- No → Short circuit in harness (damaged harness, burnt covering, etc.) → Repair harness and replace fuse
- Yes ↓

Is there 12 V between RL wire at back of connector of combination meter and ground?
- No → Open circuit in harness between fuse block and combination meter → Repair the harness
- Yes ↓

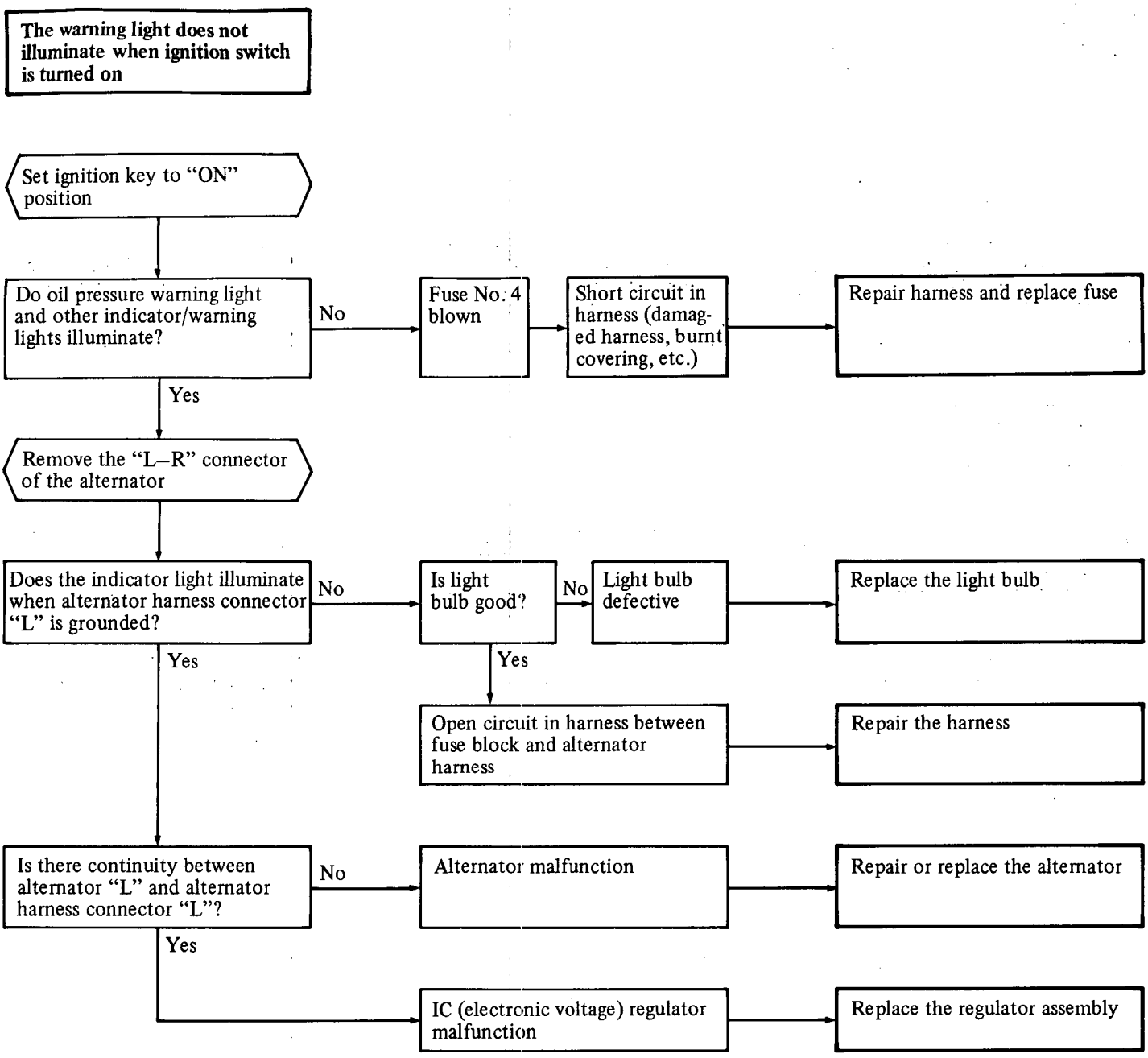
When YB wire at back of connector of combination meter is grounded, does the indicator light illuminate?
- No → Open circuit in light bulb → Replace light bulb
- Yes ↓

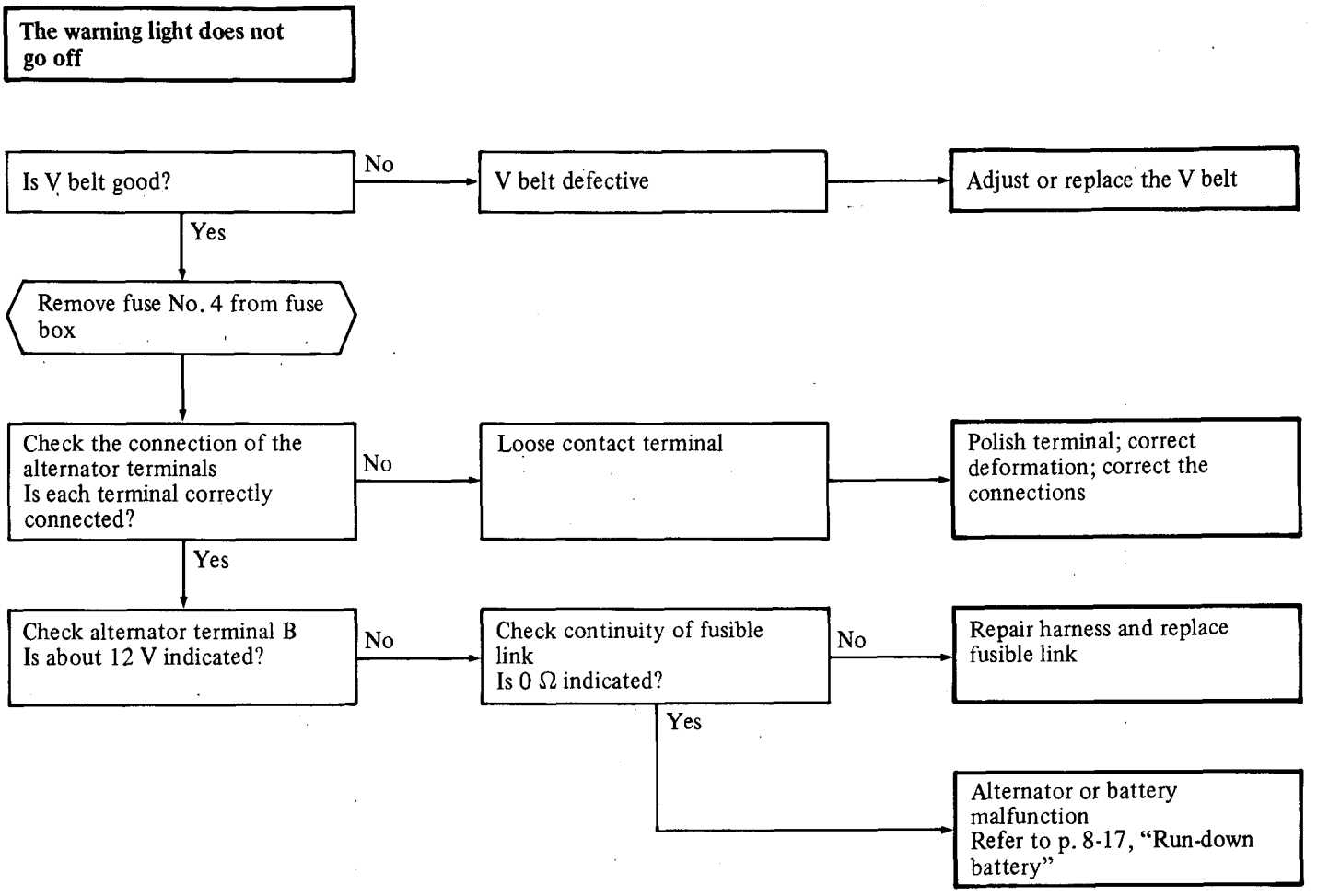
Does the indicator light illuminate when oil pressure switch harness is grounded?
- No → Open circuit in harness between combination meter and oil pressure switch → Repair the harness
- Yes ↓

- Oil pressure switch defective → Replace the oil pressure switch
- Oil circulation system defective → Correct the oil circulation system


The warning light remains illuminated
Check with engine idling
Does warning light go out when oil pressure switch harness is disconnected?
No
Short circuit in harness (damaged harness, burnt covering, etc.)
Repair the harness between the combination meter connector and oil pressure gauge unit terminal
Yes
Set ignition key to "OFF" position
Does oil pressure switch operate properly?
No
Oil pressure switch defective
Replace the switch
Yes
Check oil circulation system

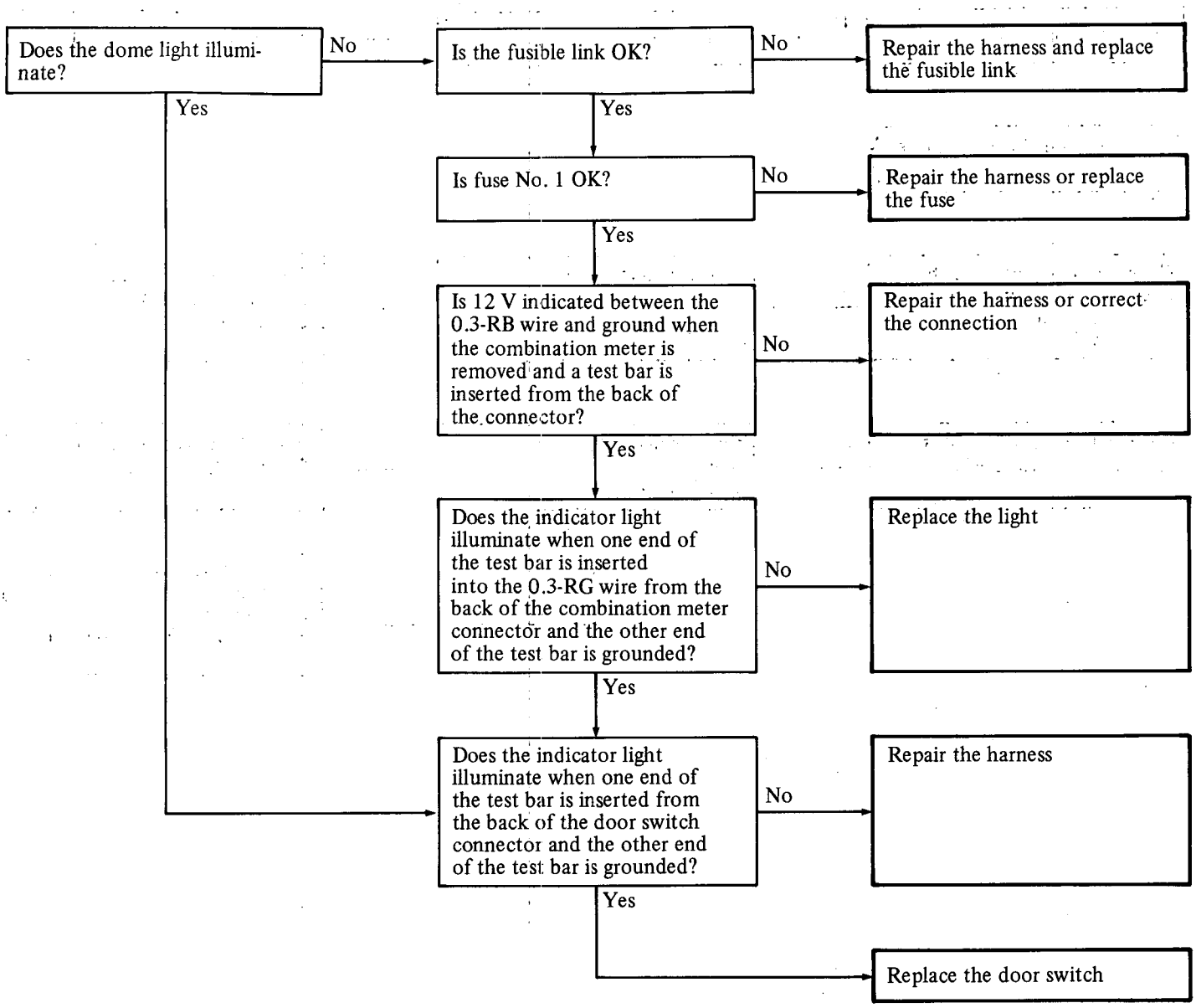
Charging Warning Light




The warning light does not go off
Is V belt good?
No
V belt defective
Adjust or replace the V belt
Yes
Remove fuse No. 4 from fuse box
Check the connection of the alternator terminals
Is each terminal correctly connected?
No
Loose contact terminal
Polish terminal; correct deformation; correct the connections
Yes
Check alternator terminal B
Is about 12 V indicated?
No
Check continuity of fusible link
Is 0 Ω indicated?
No
Repair harness and replace fusible link
Yes
Alternator or battery malfunction
Refer to p. 8-17, "Run-down battery"

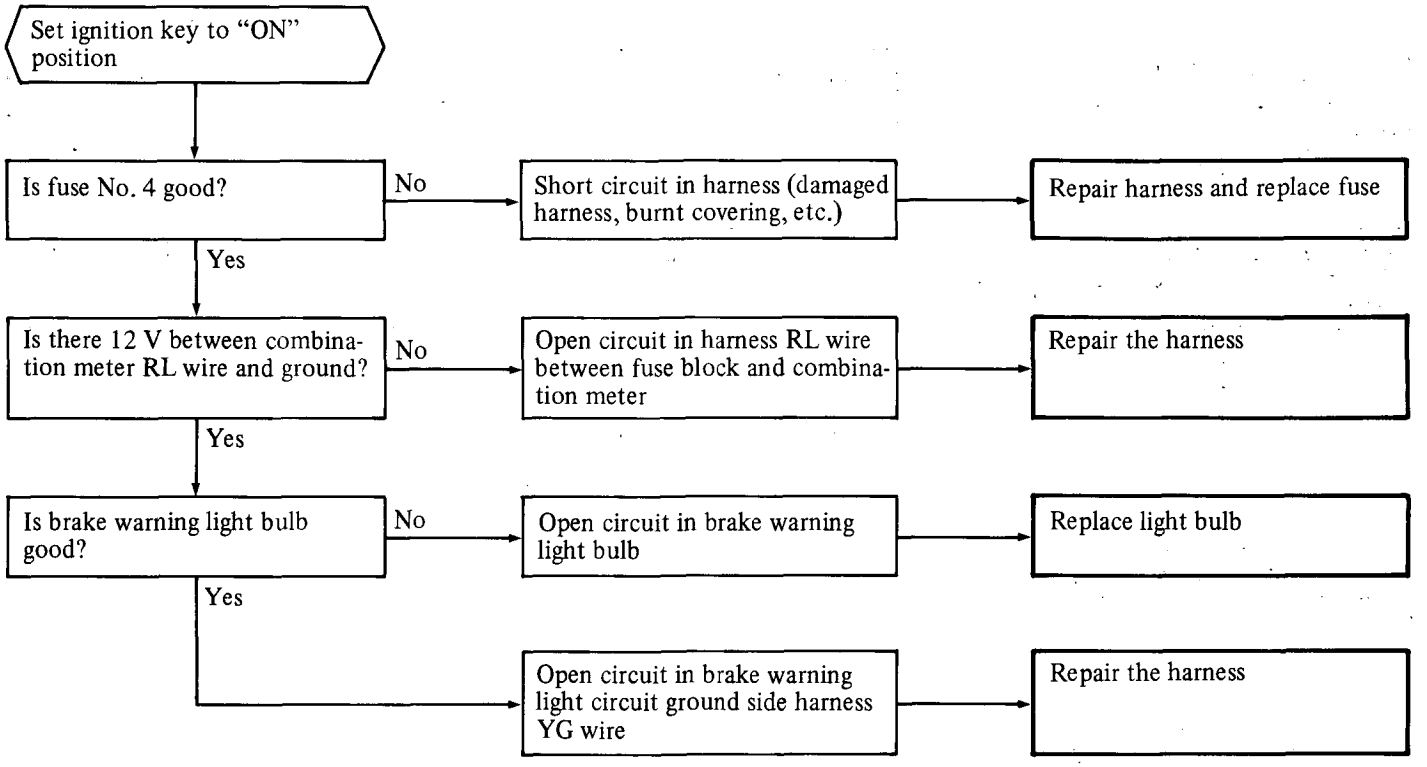
Door-Ajar Warning Light

The indicator light does not illuminate when the door is open



Brake System Warning Light

Brake warning light does not light under following conditions.
(1) When parking brake switch is ON
(2) When brake fluid level sensor switch is ON



Brake warning light remains lit

NOTE
Check the brake fluid level and make sure it is correct.

Inspect with parking brake lever released and ignition key at "ON"

Caution
Make sure that vehicle is maintained in level position and wheels chocked.

Does light remain lit after disconnection of parking brake switch connector?
- No → Parking brake switch defective → Replace the parking brake switch
- Yes → Does light remain lit after disconnection of brake fluid level sensor connector?
  - No → Brake fluid level sensor defective → Replace the brake fluid sensor
  - Yes → Ground side of brake warning light circuit short circuited → Repair the harness

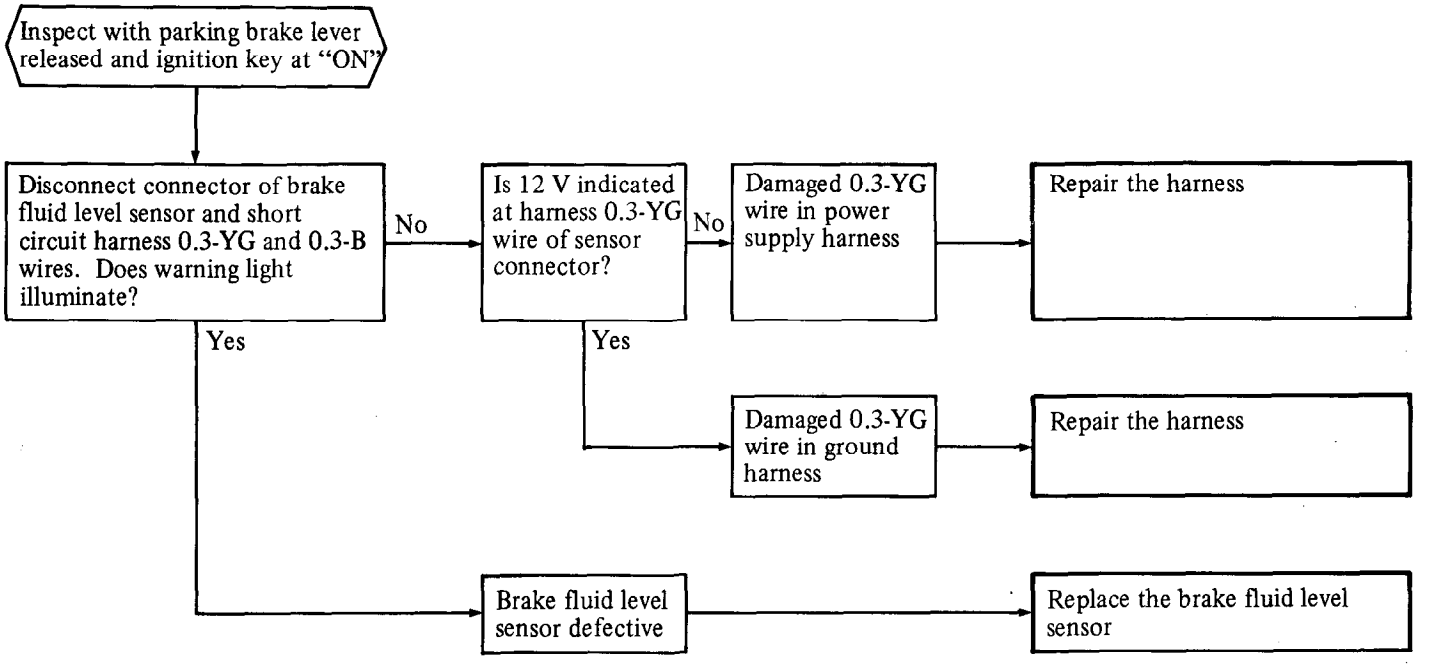
Brake warning light does not light when parking brake lever is pulled

With ignition key in "ON" position, check by pulling parking brake lever

Does the indicator light illuminate when parking brake switch connector is disconneted and YG wire grounded?
- No → Open circuit in harness between brake warning light and parking brake switch → Repair the harness
- Yes → Parking brake switch defective → Replace the parking brake switch

Brake warning light does not illuminate when brake fluid level is low.

Caution
Be sure the vehicle is level and the wheels are chocked.



Fasten Seat Belt Warning Light and Buzzer

Fasten seat belt warning light does not illuminate when ignition key is turned to "ON" with driver's seat belt not buckled.

Check with ignition key in "OFF" position

Is fuse No. 7 good?
- No → Short circuit in harness (damaged harness, burnt cover, etc.) → Repair harness and replace fuse
- Yes ↓

Is there continuity between GR wire of key-reminder switch connector and ground?
- No → Open circuit in harness between fuse block and key-reminder switch → Repair the harness
- Yes ↓

Is there continuity between G wire of key-reminder switch connector and ground?
- No → Key-reminder switch defective → Replace the key-reminder switch
- Yes ↓

Is there 12 V between G wire at back of connector of combination meter and ground?
- No → Open circuit in harness between key-reminder switch and combination meter → Repair the harness
- Yes ↓

When 0.3-YB wire at back of connector of combination meter is grounded, does the warning light illuminate?
- No → Open circuit in light bulb → Repair the light bulb
- Yes ↓

Is there 12 V between 0.3-YB wire at back of connector of seat belt warning timer and ground
- No → Open circuit in harness between combination meter and seat belt warning timer → Repair the harness
- Yes ↓

Set ignition key to "ON"

NOTE
If the malfunction is in the following circuits, in addition to the warning light not illuminating, the buzzer will not sound.

Is fuse No. 3 good?
- No → Short circuit in harness (damaged harness, burnt covering, etc.) → Repair harness and replace fuse
- Yes ↓

Is there 12 V between 0.3-RL wire at back of connector of seat belt warning timer and ground?
- No → Open circuit in harness between fuse block and seat belt warning timer → Repair the harness
- Yes ↓

Belt warning timer defective → Replace the belt warning timer

Seat belt warning buzzer does not sound when ignition key is turned to "ON" with driver's seat belt not buckled.

Check with ignition key in "OFF" position

Is fuse No. 7 good?
- No → Short circuit in harness (damaged harness, burnt cover, etc.) → Repair harness and replace fuse
- Yes ↓

Does buzzer sound when driver's door is opened?
- No → Faulty key-reminder switch or buzzer → Refer to "Key-reminder buzzer does not sound" on p. 8-63
- Yes ↓

Is there 12 V between 0.3-Y wire at back of seat belt switch connector and ground?
- No → Open circuit in harness between buzzer and seat belt switch → Repair the harness
- Yes ↓

Ground 0.3-RB wire from back of belt switch connector (with buckle unlocked). Does buzzer sound?
- No → Seat belt switch defective → Replace the buckle
- Yes ↓

Is there 12 V between 0.3-RB wire at back of seat belt warning timer connector and ground (with buckle unlocked)?
- No → Open circuit in harness between seat belt switch and seat belt warning timer → Repair the harness
- Yes ↓

Set ignition key to "ON"

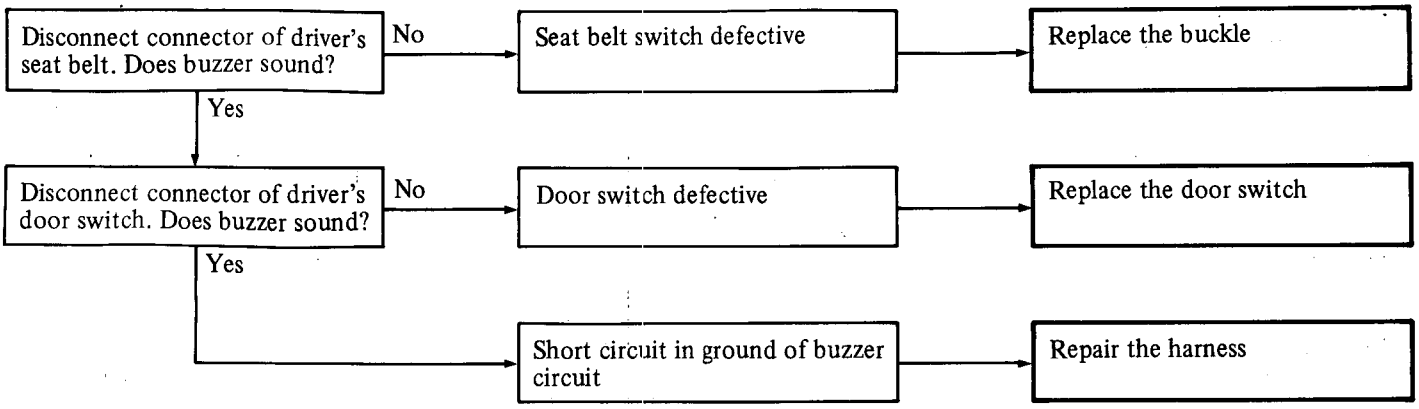
NOTE
If the malfunction is in the following circuits, in addition to warning buzzer not sounding, the warning light will not illuminate.

Is fuse No. 3 good?
- No → Short circuit in harness (damaged harness, burnt covering, etc.) → Repair harness and replace fuse
- Yes ↓

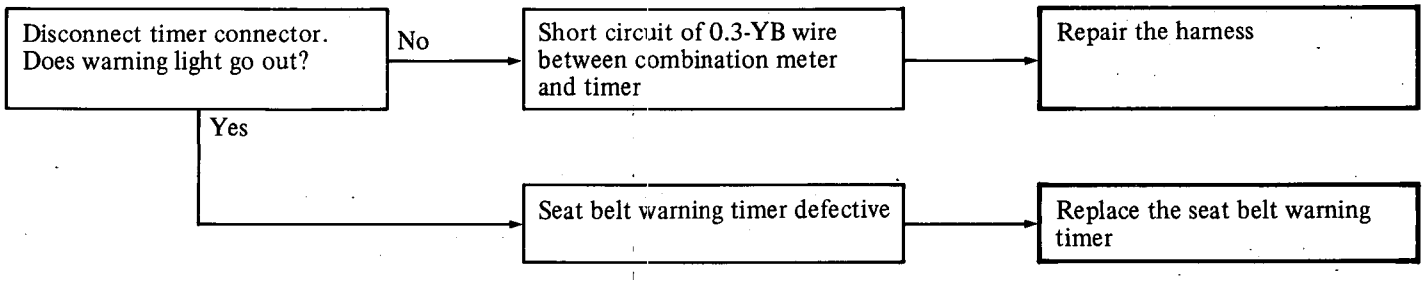
Is there 12 V between 0.3-RL wire at back of connector of seat belt warning timer and ground?
- No → Open circuit in harness between fuse block and seat belt warning timer → Repair the harness
- Yes ↓

Seat belt warning timer defective → Replace the seat belt warning timer

Fasten seat belt warning buzzer continues to after driver's seat belt is fastened.



Fasten seat belt warning light remains illuminated for 8 seconds after ignition key is set to "ON"



Lighting System

Check the illumination of all lights; if there are any problems, use the following chart to check the appropriate location. (For trouble symptom Nos. 3, 4, and 7, refer to the corresponding yes/no troubleshooting chart.)

Location	Trouble symptoms						
	1	2	3	4	5	6	7
Headlights [Both left and right lights should illuminate in both high and low beams]	×	○	×	○	△	○	△
Passing lights [Both left and right lights should illuminate in high beams when the passing switch is at "ON" position]	○	×	×	○	○	△	△
Position, tail, rear side marker and license plate lights [All of these lights should illuminate when the lighting switch is at the first stage]	○	○	○	×	○	○	△
Probable cause	⬇	⬇	⬇	⬇	⬇	⬇	⬇
Light control relay	–	–	●	●	–	–	●
Column switch Dimmer switch segment	●	–	●	–	●	–	●
Passing switch segment	–	●	●	–	–	●	●
Lighting switch segment	●	–	●	●	–	–	●
Body ground points Front pillar, inner	–	–	●	–	–	–	●
Left side of engine compartment	–	–	–	●	–	–	●
Between battery and body	–	–	–	●	–	–	●
Fuse block (No. 2 fuse)	–	–	–	●	–	–	–
Light bulb	●	–	●	●	●	–	●

Remarks
The symbols used in the table indicate the following:
- ○ : Normal illumination
- △ : Dim illumination
- × : No illumination
- ● : Parts requiring check

Trouble Symptom 3

Headlights do not illuminate in either upper or lower beams (Passing lights do not illuminate either)

Turn the lighting switch to 2nd stage. The dimmer switch may be set to either upper or lower position

Do the headlights illuminate when 0.5-R wire located on back of light control relay connector is grounded?
Caution
Be sure not to ground 2-R, 1.25-R and 0.5-GW wires.

No → Light relay defective → Replace the light control relay

Yes

Do the headlights illuminate when 0.5-R wire located on back of lighting switch connector is grounded?

No → Broken wire in the wiring harness between the light control relay and the column switch → Repair the harness or replace the column switch

Yes

Do headlights light illuminate when 0.3-B wire at back of column switch connector is grounded?

No → Column switch defective → Replace the column switch

Yes → Improperly grounded → Correct the ground connection

Trouble symptom 4

Position, tail, rear side marker and license plate lights do not illuminate on either side

Turn the lighting switch to 1st stage

Are main and sub fusible links good?
- No → Short circuit in harness (damaged harness, burnt covering, etc.) → Repair the harness and replace the fusible link
- Yes ↓

Is fuse No. 2 good?
- No → Short circuit in harness (damaged harness, burnt covering, etc.) → Repair the harness and replace the fuse
- Yes ↓

Do tail and rear side marker lights illuminate when 0.5-GW wire at back of light control relay connector is grounded?
- No → Open circuit in coil of light control relay and poor relay contacts → Replace the light control relay
- Yes ↓

Caution
Be sure not to ground the other wires.

Do tail and rear side marker lights illuminate when 0.5-GW wire at back of column switch connector is grounded?
- No → Open circuit in 0.5-GW wire between relay and switch → Repair the harness
- Yes ↓

Caution
Be sure not to ground the other wires.

Do position, tail, rear side marker and license plate lights illuminate when 0.3-B wire at back of column switch connector is grounded?
- No → Column switch defective → Replace the column switch
- Yes ↓

Improperly grounded → Correct the ground point

Trouble Symptom 7

Both R.H. and L.H. headlights upper and lower beams dark at all times (including when passing)

Check with lighting switch at/ 2nd stage, and dimmer switch at beam position

Is there 12 V between 2-R wire and ground when test probe which contacts the 2-R wire is inserted from back of light control relay connector?

No → Poor contact of fusible link connector or battery defective → Check battery voltage, correct connector connection or replace

Yes

Is 0.5 V or less indicated on voltmeter (about 20-V range) when (+) and (–) test probes are connected to 2-R (B) and 1.25-RL wires respectively at back of light control relay connector?

No → Poor light control relay contact → Replace the light control relay

Yes

Is there 0.5 V or less between test probe and ground when test probe is inserted into 2-B wire from back of column switch connector?

No → Improperly grounded → Correct the ground connection

Yes

Column switch defective → Replace the column switch

Stop Light

Stop light does not illuminate

Is fuse No. 7 good?
- No → Short circuit in harness (damaged harness, burnt covering, etc.) → Repair harness and replace fuse
- Yes ↓

Is there 12 V between 0.85-GR wire of stop light switch and ground?
- No → Open circuit in harness between fuse block and stop light switch → Repair the harness
- Yes ↓

Is there 12 V between 0.85 wire of stop light switch and ground when brake pedal is depressed?
- No → Stop light switch defective / Stop light switch mounted at incorrect position → Replace stop light switch / Adjust stop light switch mounting position
- Yes ↓

Check with stop light switch ON

Is there 12 V between 0.85-G wire of hazard warning switch and ground?
- No → Open circuit in harness between stop light switch and hazard warning switch → Repair the harness
- Yes ↓

Is there 12 V between 0.85-WG wire of hazard warning switch and ground?
- No → Hazard warning switch defective → Replace the hazard warning switch
- Yes ↓

Is there 12 V between 0.85-WG wire of column switch and ground?
- No → Open circuit in harness between hazard warning switch and column switch → Repair the harness
- Yes ↓

Is 12 V indicated between column switch connector's WL wire and ground and VR wire and ground?
- No → Column switch defective → Replace the column switch
- Yes ↓

Left stop light:
Is 12 V indicated between 0.3-GY wire of rear combination light (left) and ground?
Right stop light
Is 12 V indicated between 0.3-GL wire of rear combination light (right) and ground?
- No → Open circuit in harness between column switch and stop light bulb → Repair the harness
- Yes ↓

Is there 12 V in B wire of stop light bulb connector?
- No → Open circuit in stop light bulb → Replace the light bulb
- Yes ↓

Ground circuit defective → Correct ground circuit harness or correct ground connection

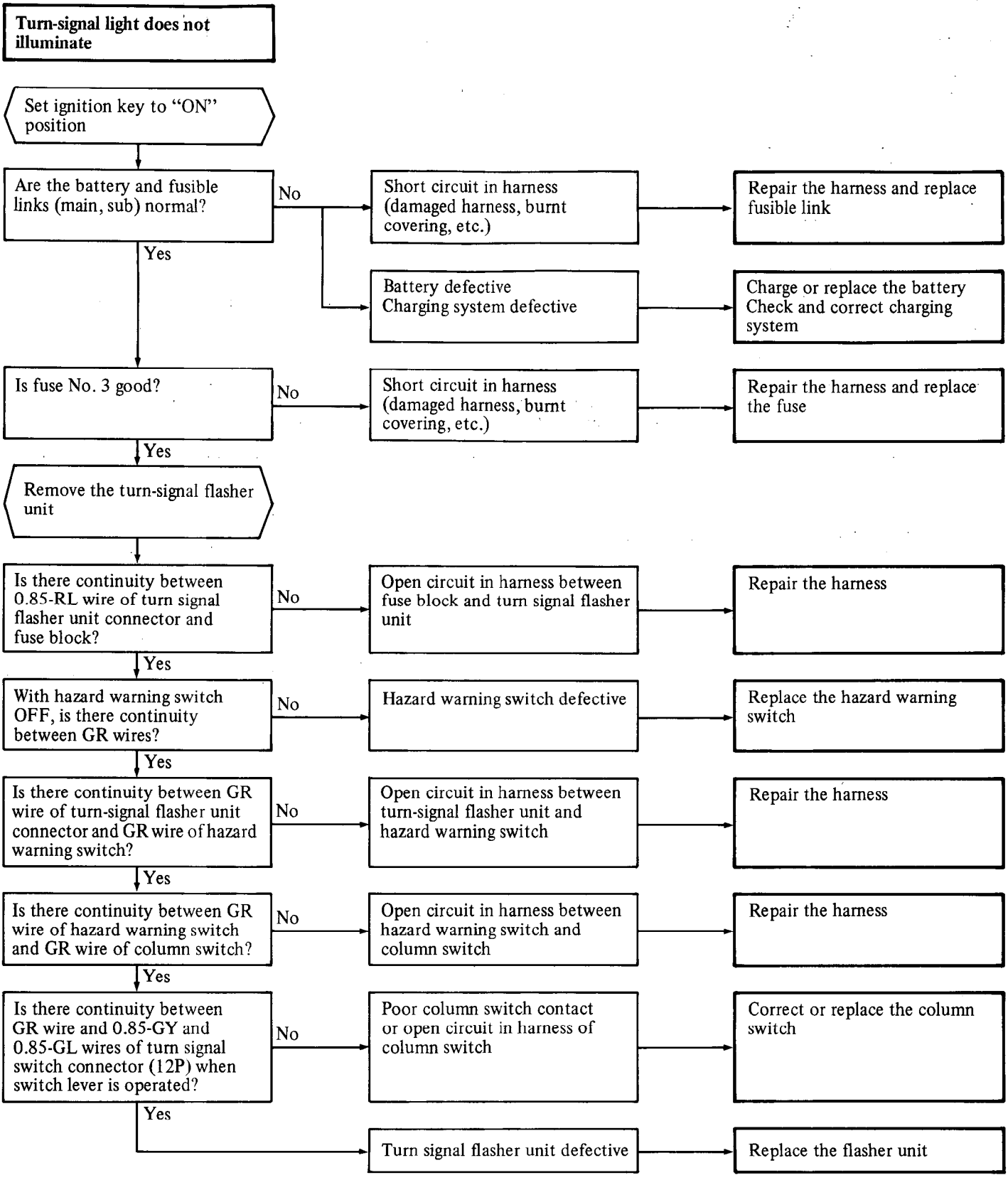
Stop light does not go out

Stop light switch improperly adjusted or defective	Adjust stop light switch position Replace stop light switch

Turn-signal and hazard lights

One of the turn-signal lights or indicator lights does not illuminate

Incorrect connector connection	Correct the connector
Improper ground connection	Correct the ground connection
Light bulb malfunction	Replace the light bulb


Turn-signal light does not illuminate
Set ignition key to "ON" position
Are the battery and fusible links (main, sub) normal?
No
Short circuit in harness (damaged harness, burnt covering, etc.)
Repair the harness and replace fusible link
Yes
Battery defective
Charging system defective
Charge or replace the battery
Check and correct charging system
Is fuse No. 3 good?
No
Short circuit in harness (damaged harness, burnt covering, etc.)
Repair the harness and replace the fuse
Yes
Remove the turn-signal flasher unit
Is there continuity between 0.85-RL wire of turn signal flasher unit connector and fuse block?
No
Open circuit in harness between fuse block and turn signal flasher unit
Repair the harness
Yes
With hazard warning switch OFF, is there continuity between GR wires?
No
Hazard warning switch defective
Replace the hazard warning switch
Yes
Is there continuity between GR wire of turn-signal flasher unit connector and GR wire of hazard warning switch?
No
Open circuit in harness between turn-signal flasher unit and hazard warning switch
Repair the harness
Yes
Is there continuity between GR wire of hazard warning switch and GR wire of column switch?
No
Open circuit in harness between hazard warning switch and column switch
Repair the harness
Yes
Is there continuity between GR wire and 0.85-GY and 0.85-GL wires of turn signal switch connector (12P) when switch lever is operated?
No
Poor column switch contact or open circuit in harness of column switch
Correct or replace the column switch
Yes
Turn signal flasher unit defective
Replace the flasher unit

All lights illuminate, but flashing is irregular
All lights illuminate without flashing

Set ignition key to "ON"
Position turn-signal switch to the L or R position

Is each bulb the specified type?
- No → Replace the light bulb
- Yes ↓

Is 12 V indicated as battery terminal voltage?
- No → Battery defective
  Charging system defective
  → Charge or replace the battery
  Check and correct charging system
- Yes ↓

Are lights properly grounded and bulbs properly mounted?
- No → Properly ground light and properly mount light bulb
- Yes ↓

Turn signal flasher unit defective
→ Replace turn signal flasher unit

Hazard lights and indicator lights do not illuminate

Do both the left and right turn-signal lights function properly?

No → Are the battery, charging system and fusible links (main, sub) normal?

No → Charge the battery or replace the fusible link
Repair charging system

Yes → Refer to the troubleshooting guide for turn-signal lights

Yes → Set the ignition key to "LOCK" and turn on the hazard warning switch

Is fuse No. 1 good?

No → Short circuit in harness (damaged harness, burnt covering, etc.) → Repair the harness and replace the fuse

Yes → Pull out the hazard warning flasher unit

Is there continuity between 1.25-GB wire and fuse block?

No → Open circuit in harness between fuse block and hazard warning flasher unit → Repair the harness

Yes → Is there continuity between 1.25-GO wire of hazard warning flasher unit connector and 1.25-GO wire of hazard warning switch?

No → Open circuit in harness between hazard warning flasher unit and hazard warning switch → Repair the harness

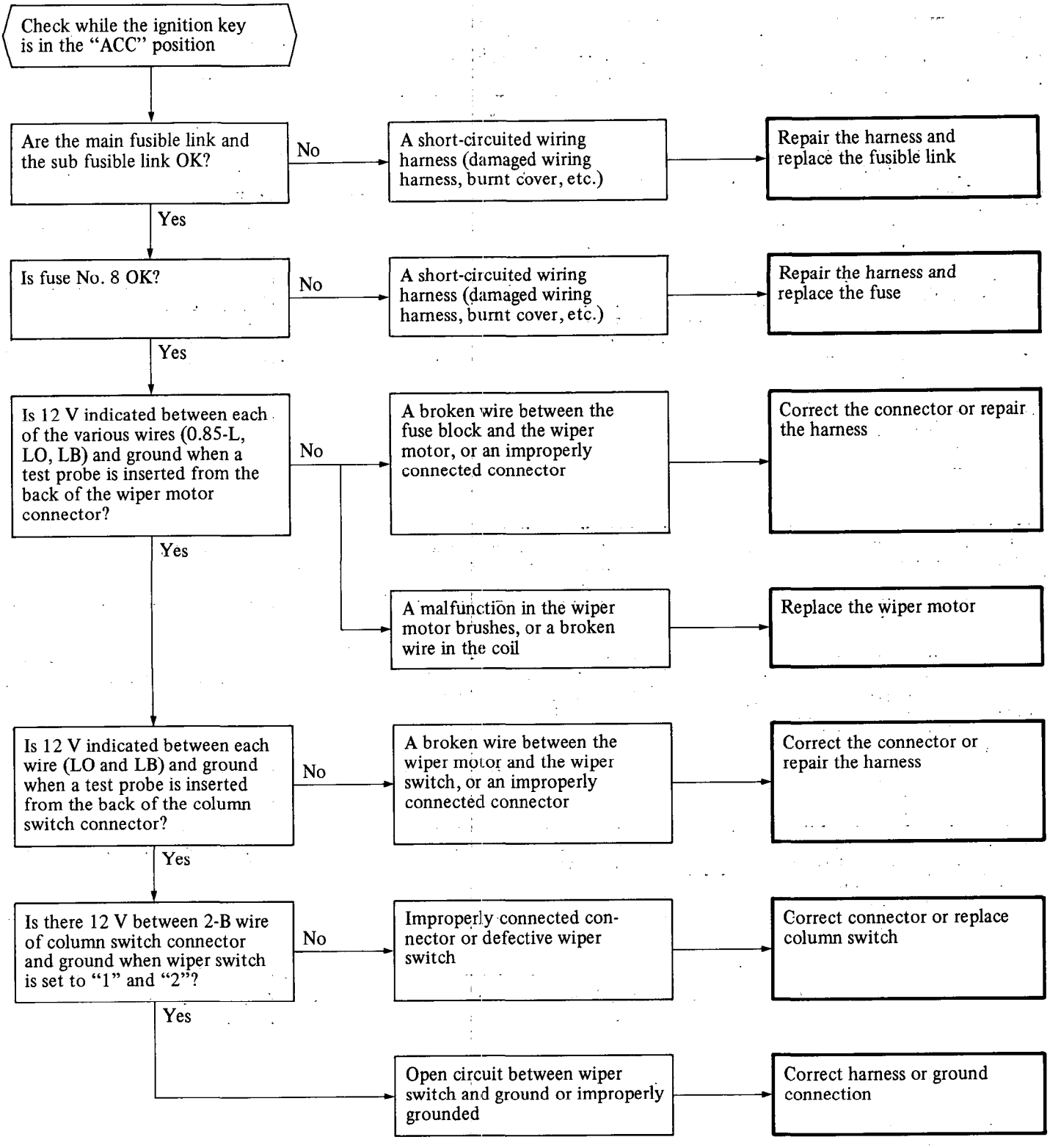
Yes → With the hazard warning switch ON, is there continuity between the 1.25-GO wire and the WL, GL, GY, WR wires?

No → Poor contact of the hazard warning switch → Replace the hazard warning switch

Yes → Hazard flasher unit defective → Replace the flasher unit

WINDSHIELD WIPERS AND WASHER

Wipers do not operate



Washer does not operate

Check while the ignition key is in the "ACC" position

Are the main fusible link and the sub fusible link OK?
- No → A short-circuited wiring harness (damaged wiring harness, burnt cover, etc.) → Repair the harness and replace the fusible link
- Yes ↓

Is fuse No. 8 OK?
- No → A short-circuited wiring harness (damaged wiring harness, burnt cover, etc.) → Repair the harness and replace the fuse
- Yes ↓

Is 12 V indicated between the L wire and ground when a test probe is inserted from the back of the washer motor connector?
- No → A broken harness between the fuse block and washer motor, or an improperly connected connector → Correct the connector or repair the harness
- Yes ↓

Does the washer function when the YL wire of the washer motor connector is grounded?
- No → Malfunction in the washer motor → Replace the washer motor
- Yes ↓

Does the washer function when the YL wire of the column switch connector is grounded?
- No → A broken harness between the washer motor and the column switch or an improperly connected connector → Correct the connector or repair the harness
- Yes ↓

Does the washer operate when the washer switch is turned on while the 2B wire of the column switch connector is grounded?
- No → A poor connection in the column switch → Replace the column switch
- Yes ↓

Open circuit between washer switch and ground or improperly grounded → Repair harness or correct the ground connection

The wipers do not operate when the washer switch is turned on, but washer operates properly

Check while the ignition key is in the "ACC" position

Do the wipers operate when the wiper switch is set to the star mark?

No → Refer to the troubleshooting section, "The wipers do not operate at all when the wiper switch is set to the star mark"

Yes → A malfunction in the intermittent wiper control unit → Replace the wiper control unit

The wipers do not operate at all when the wiper switch is set to the star mark

Check while the ignition key is in the "ACC" position

Do the wipers operate when the wiper switch is set to the "1" postion?

No → Refer to the troubleshooting section, "Wipers do not operate"

Yes

Set wiper switch to the star mark

Is there 12 V between LW wire and ground when test probe is inserted from back of intermittent wiper control unit connector?

No → Open circuit in harness between intermittent wiper control unit and wiper motor → Correct harness

Yes

Does wiper perform intermittent operation when test probe is inserted from back of intermittent wiper control unit and grounds:
1. 0.3-BY wire?
2. B wire?

No → Malfunction in intermittent wiper control unit → Replace intermittent wiper control unit

2. Yes

1. Yes → Open circuit in harness between intermittent wiper control unit and wiper switch, or loose connector → Correct harness or correct connector

2. Yes → Improperly grounded → Correct ground connection

Wipers operate continuously even after wiper switch is set to the star mark

Check with ignition key at "ACC" position.

Do wipers operate continuously when intermittent wiper control unit connector is disconnected and wiper switch is set to the star mark?

No → Intermittent wiper control unit defective → Replace intermittent wiper control unit

Yes → Short circuit in wiper switch → Replace column switch

Intermittent time cannot be adjusted

Inspect with ignition key at "OFF"

Disconnect wiper switch connector and operate time adjustment switch. Does resistance between 0.3-Y wire and 2-B wire vary between 0 and 50 ohms?

No → Faulty wiper switch variable resistor → Faulty column switch

Yes → Is there continuity between intermittent wiper relay and wiper switch?

No → Damaged harness between intermittent wiper relay and wiper switch → Repair harness

Yes → Faulty intermittent wiper relay → Replace intermittent wiper relay

REAR WINDOW WIPER AND WASHER

Rear wiper does not operate

Check while the ignition key is in the "ACC" position

Is fuse No. 9 OK?
- No → A short-circuited wiring harness (damaged wiring harness, burnt cover, etc.) → Repair the harness and replace the fuse
- Yes ↓

Is 12 V indicated between the L wire and ground when a test probe is inserted from the back of the rear wiper motor connector?
- No → A broken wire between fuse No. 9 and the wiper motor connector, or a poor connector connection → Correct the connector or repair the harness
- Yes ↓

Is 12 V indicated between the BrW wire and ground when a test probe is inserted from the back of the rear wiper motor connector?
- No → A malfunction in the wiper motor brush, or a broken wire in the coil → Replace the wiper motor
- Yes ↓

Does the wiper motor function when a test probe is inserted from the back of the rear wiper and washer switch connector and the BrW wire is grounded?
- No → A broken wire between the wiper motor and the rear wiper and washer switch, or a poor connector connection → Correct the connector or repair the harness
- Yes ↓

Set the igniton key to the "OFF" position

Does continuity exist between the 0.3-B wire and ground when the rear wiper switch is turned on?
- No → A poor connection of the rear wiper and washer switch connector, or a malfunction in the rear wiper and washer switch → Repair the connector or replace the wiper and washer switch
- Yes ↓

Improperly grounded → Correct the ground connection

Rear window washer does not operate

Check while the ignition key is in the "ACC" position

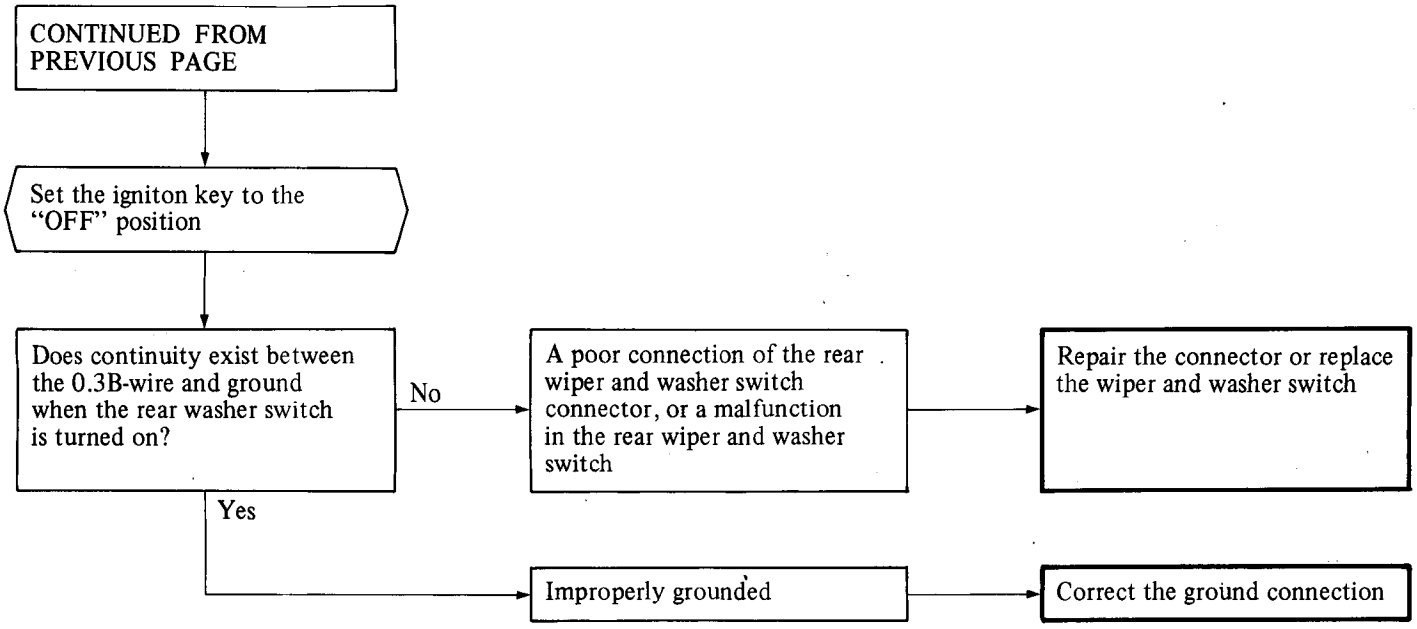
Is fuse No. 9 OK?
- No → A short-circuited wiring harness (damaged wiring harness, burnt cover, etc.) → Repair the harness and replace the fuse
- Yes ↓

Is 12 V indicated between the 0.3-L wire and ground when a test probe is inserted from the back of the rear window washer motor?
- No → A broken harness between the fuse block and the rear window washer motor, or a poor connector connection → Correct the connector or repair the harness
- Yes ↓

Does the washer function when a test probe is inserted from the back of the rear window washer motor and the 0.3-WB wire is grounded?
- No → Malfunction in the rear window washer motor → Replace the rear washer motor
- Yes ↓

Does the washer motor function when a test probe is inserted from the back of the rear window wiper and washer switch connector and the 0.3-WB wire is grounded?
- No → A broken harness between the rear window washer motor and the rear wiper and washer switch, or a poor connector connection → Correct the connector or repair the harness
- Yes ↓

SEE NEXT PAGE


CONTINUED FROM PREVIOUS PAGE
Set the igniton key to the "OFF" position
Does continuity exist between the 0.3B-wire and ground when the rear washer switch is turned on?
No
A poor connection of the rear wiper and washer switch connector, or a malfunction in the rear wiper and washer switch
Repair the connector or replace the wiper and washer switch
Yes
Improperly grounded
Correct the ground connection

HEADLIGHT WASHER

The headlight washer motor does not operate when the headlight washer switch is pressed

Disconnect the headlight washer control relay connector, and check with ignition key at "ACC"

NOTE
The headlight washer should operate when all of the following conditions are fulfilled:
(1) The ignition key is at either the ACC position or the ON position.
(2) The lighting switch is at the ON position.
(3) The headlight washer switch is at the ON position.

Does continuity exist between the 1.25-B wire and ground when a test probe is inserted from the back of the headlight washer control relay connector?
- No → An improper ground connection between the headlight washer control relay and ground, or a broken harness → Repair the harness or correct the ground connection
- Yes ↓

Is 12 V indicated between the 0.3-LW wire and ground when a test probe is inserted from the back of the headlight washer control relay connector?
- No → Is fuse No. 8 OK?
  - No → Repair the harness and replace the fuse
  - Yes → Repair the harness between the fuse block and the headlight washer control relay connector
- Yes ↓

Does the headlight washer motor operate when the 1.25-L wire of the headlight washer control relay connector is grounded?
- No → A malfunction in the headlight washer motor → Replace the headlight washer motor
- Yes ↓

Does continuity exist between the terminals when a test probe is inserted between the 0.3-LB wire and ground from the back of the headlight washer control relay connector and the headlight washer switch is pressed?
- No → A malfunction or poor connection in the headlight washer switch or a broken harness between the ground branch points of the headlight washer switch → Correct connector, replace column switch, or correct harness or ground connection
- Yes ↓

Check with the lighting switch ON

SEE NEXT PAGE

CONTINUED FROM PREVIOUS PAGE

Is 12 V indicated between GW wire and ground when a test probe is inserted from the back of the headlight washer control relay connector?

No → Do the tail lights, position lights, meter illumination lights, etc., illuminate

No → Refer to p. 8-45, "Position, tail, rear side marker and license plate lights do not illuminate on either side"

Yes → Inspect the harness between the fuse block and the headlight washer control relay connector, and repair if necessary

Yes → A malfunction in the headlight washer control relay → Replace the headlight washer control relay

The headlight washer motor operates, but the washer fluid does not spray

Disconnect the main hose from the check valve

NOTE
Have a receptacle prepared in order to avoid spilling the washer fluid.

Does the washer fluid spray when the headlight washer switch is pressed?

No → Are the hoses free from clogging, twisting, leakage, etc.?

No → Correct the hose installation, remove the clogging, or replace the hose

Yes → Inspect the washer motor (for pump blockage), and repair or replace it

Connect the main hose to the check valve, and then disconnect the hoses which are connected to the left and right nozzles from the check valve

Does the washer fluid spray from both the left and right discharge ports when the headlight washer switch is pressed?

No → Blockage inside the check valve, or a malfunction in the stopper valve → Replace the check valve

Yes → Are the hoses between the left and right nozzles and the check valve free from cracks, clogging, and/or leakage?

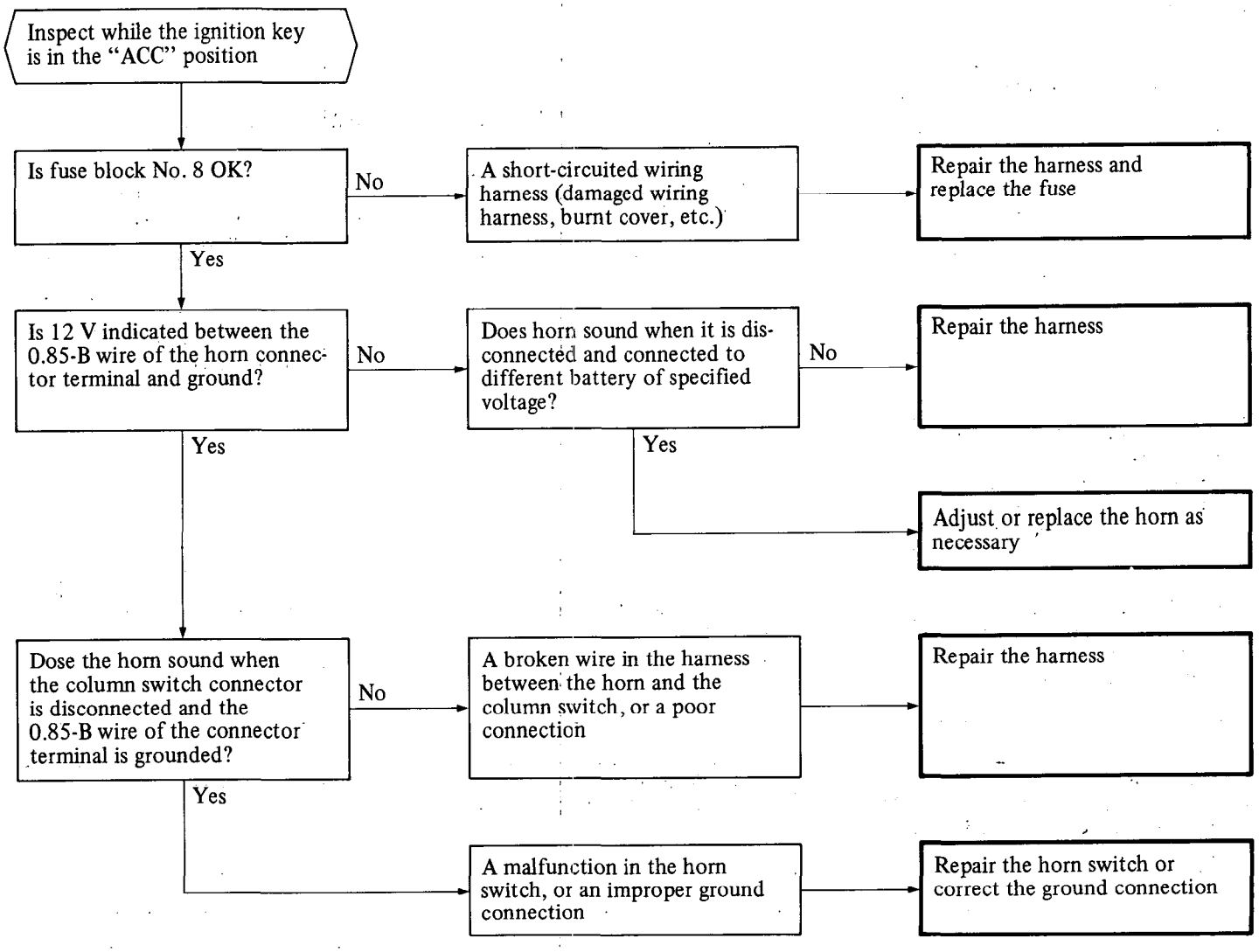
No → Fluid leakage or pressure loss due to a cracked or clogged hose → Repair or replace the hose

Yes → Clogged nozzle → Repair or replace the nozzle

HORN

Symptom	Probable cause	Remedy
Sound volume of horn is low or fluctuates	A loose or bent adjustment screw	Adjust the horn
	Water, dirt, or other foreign matter lodged inside	Replace the horn
	A loose horn or bracket mounting bolt	Tighten the bolt
	A drop in battery voltage	Check the battery
	A poor connection of the horn switch	Repair or replace the horn switch
	A poor connection of the horn ground terminal	Repair

Horn does not sound



Key-Reminder Switch

Key-reminder buzzer does not sound.

Check with ignition key in "OFF" position

Is fuse No. 7 good?
- No → Short circuit in harness (damaged harness, burnt cover, etc.) → Repair the harness and replace fuse
- Yes ↓

Is there continuity between GR wire of key-reminder switch connector and ground?
- No → Open circuit in harness between fuse block and key-reminder switch → Repair the harness
- Yes ↓

Is there continuity between G wire of key-reminder switch connector and ground?
- No → Key-reminder switch defective → Replace the key-reminder switch
- Yes ↓

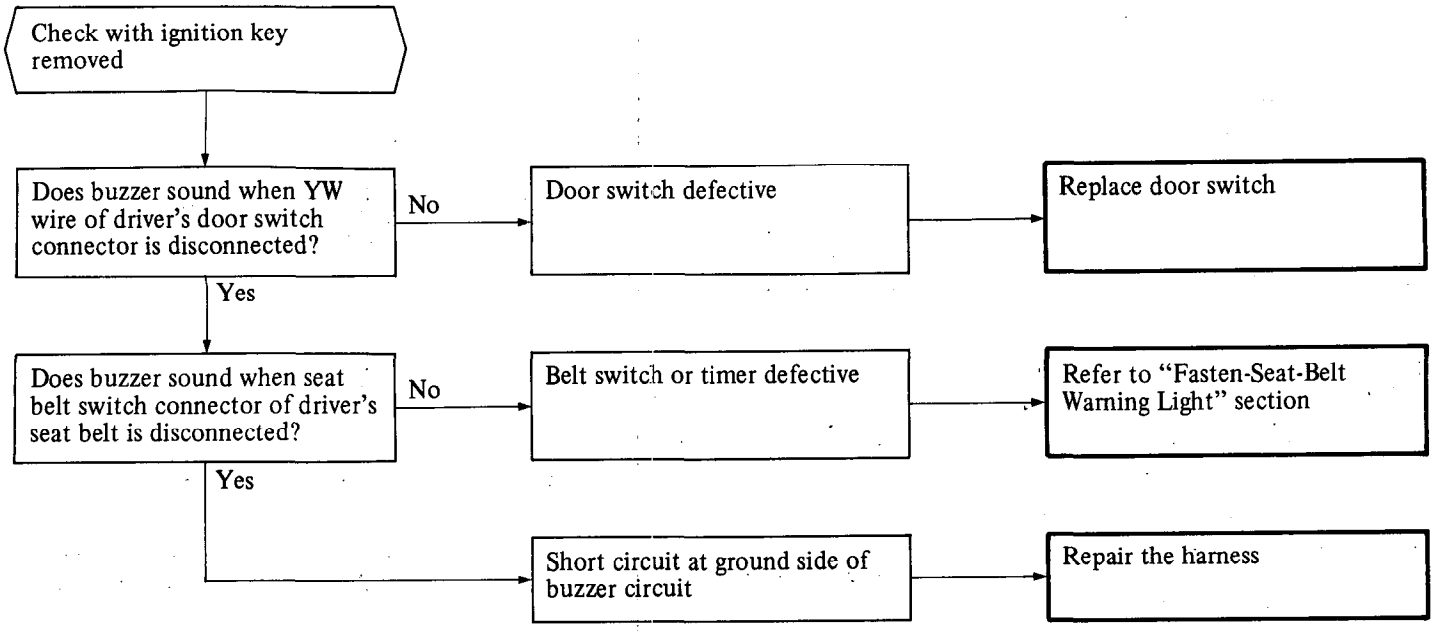
Is there continuity between G wire of buzzer connector and ground?
- No → Open circuit in harness between key-reminder switch and buzzer → Repair the harness
- Yes ↓

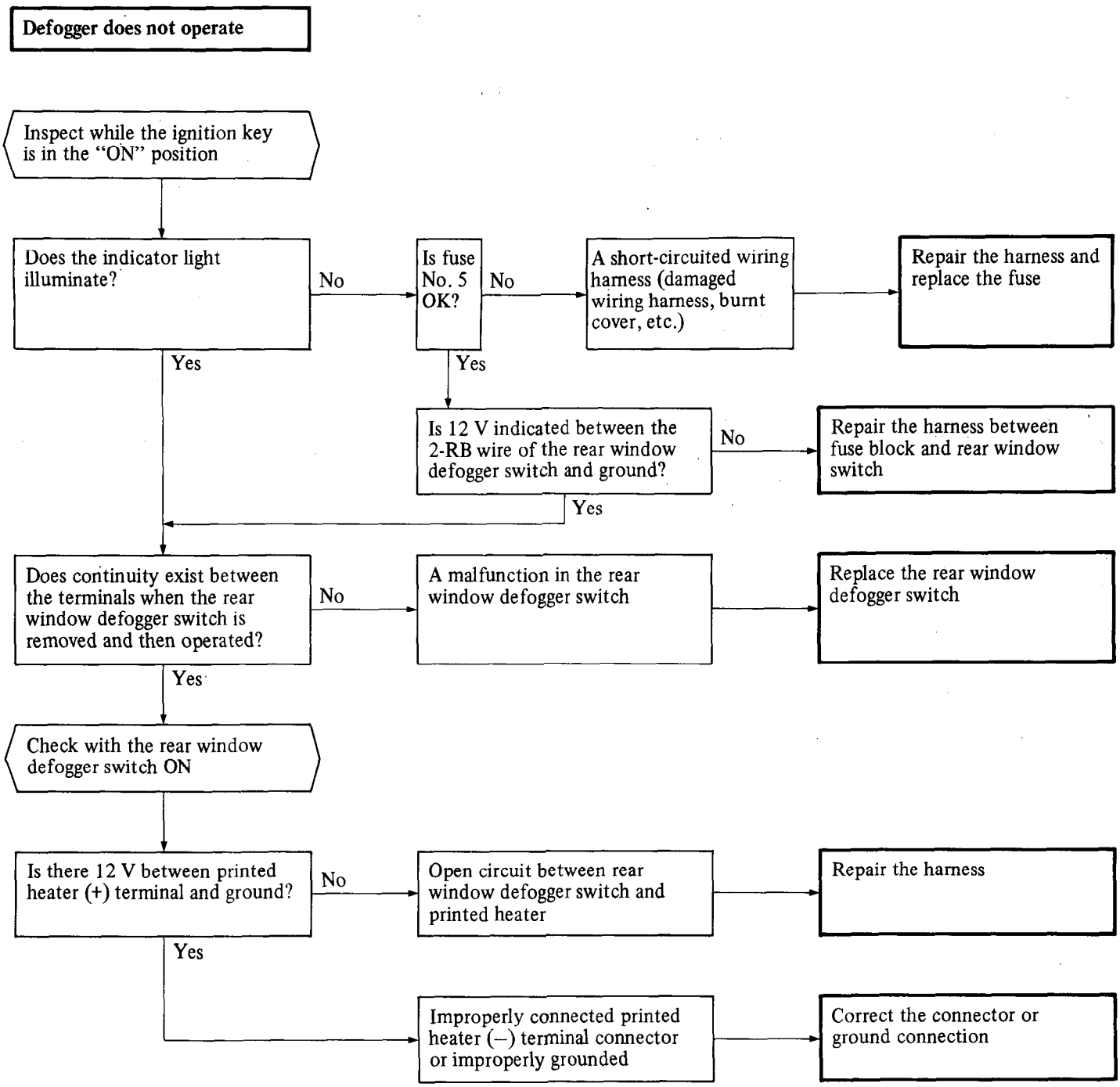
Does buzzer sound when 0.3-Y wire of buzzer connector is grounded?
- No → Buzzer defective → Replace the buzzer
- Yes ↓

Does buzzer sound when YW wire of driver's door switch connector is grounded?
- No → Open circuit in harness between buzzer and door switch → Repair the harness
- Yes ↓

Door switch defective → Replace the door switch

Key-reminder buzzer won't stop sounding.



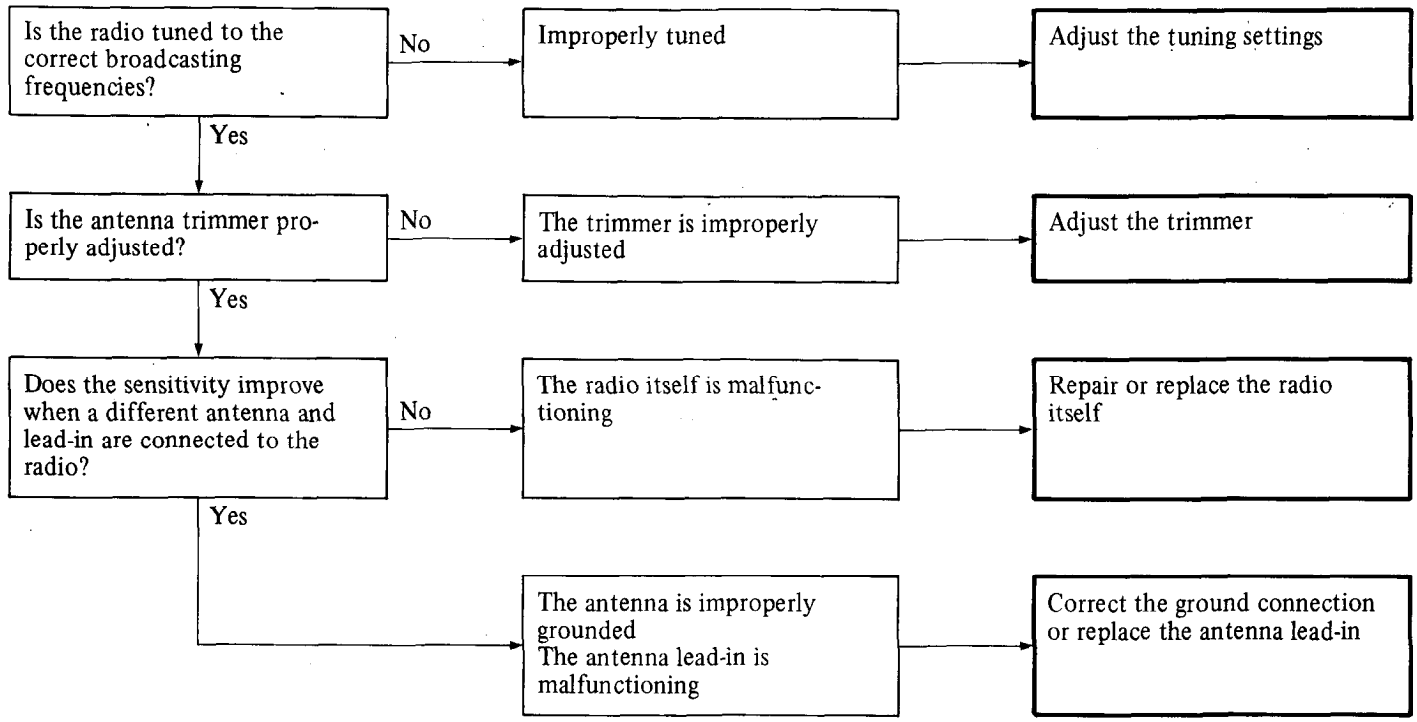

Defogger does not operate
Inspect while the ignition key is in the "ON" position
Does the indicator light illuminate?
No
Is fuse No. 5 OK?
No
A short-circuited wiring harness (damaged wiring harness, burnt cover, etc.)
Repair the harness and replace the fuse
Yes
Yes
Is 12 V indicated between the 2-RB wire of the rear window defogger switch and ground?
No
Repair the harness between fuse block and rear window switch
Yes
Does continuity exist between the terminals when the rear window defogger switch is removed and then operated?
No
A malfunction in the rear window defogger switch
Replace the rear window defogger switch
Yes
Check with the rear window defogger switch ON
Is there 12 V between printed heater (+) terminal and ground?
No
Open circuit between rear window defogger switch and printed heater
Repair the harness
Yes
Improperly connected printed heater (–) terminal connector or improperly grounded
Correct the connector or ground connection

POWER WINDOWS

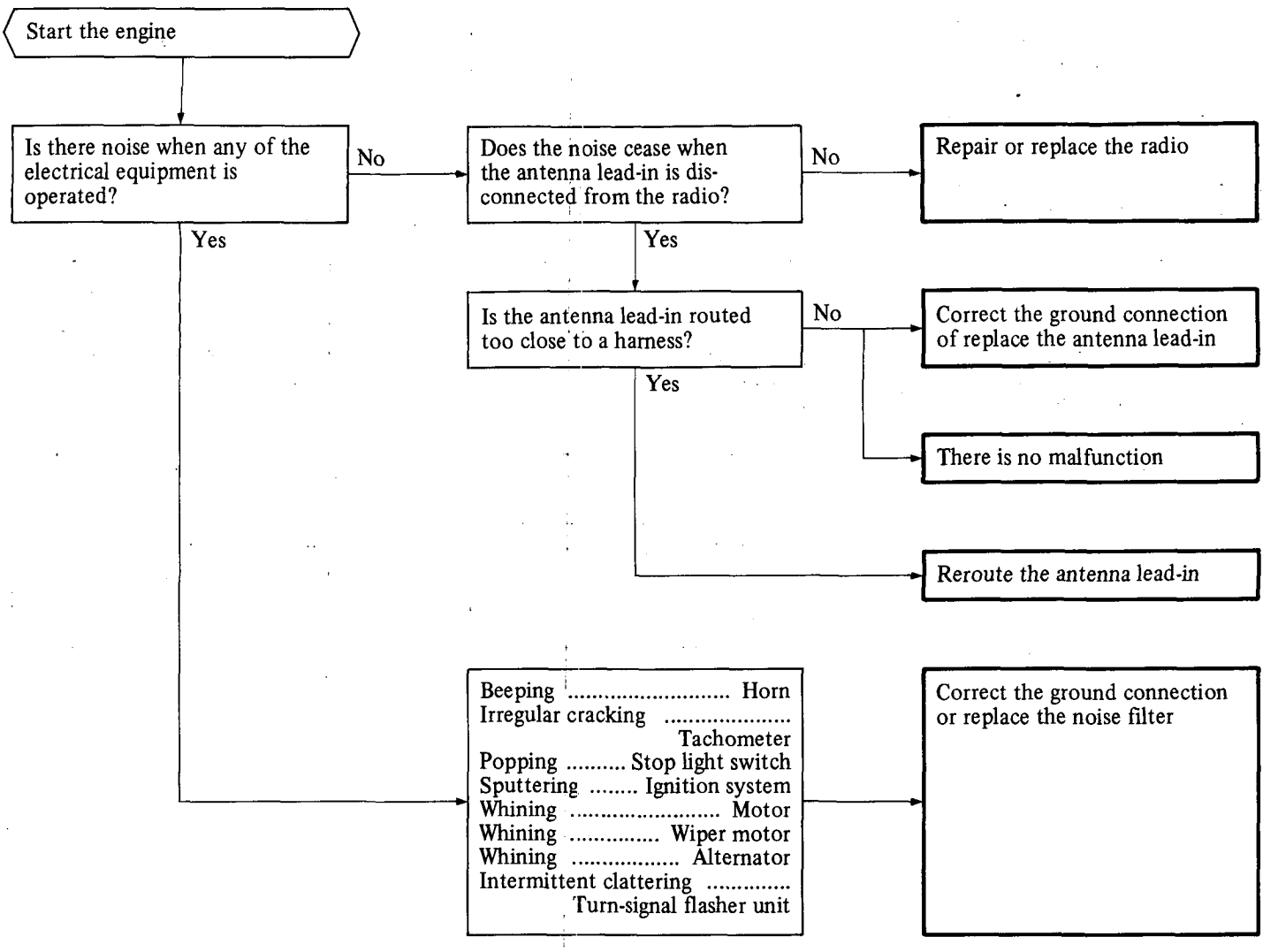
Symptom	Probable cause	Remedy
None of the door windows will operate	Burnt-out main fusible link	Replace the main fusible link and isolate cause
	Burnt-out sub fusible link	Replace the sub fusible link and isolate cause
	Burnt-out fuse	Replace the fuse and isolate cause
	Poor grounding power window relay	Correct grounding
	Malfunctioning power window relay	Replace the relay
	Malfunctioning main switch	Replace the main switch
	Break in harness, or poor connection	Correct or replace the harness
The front door windows cannot be operated by using the main switches	Malfunctioning main switch	Replace the main switch
	Break in harness, or poor connection	Correct or replace the harness
	Malfunctioning motor	Replace motor
The door windows can be operated by using the main switches, but cannot be operated by using the sub switches	Malfunctioning main switch	Replace the main switch
	Malfunctioning sub switch	Replace the sub switch
	Break in harness, or poor connection	Correct or replace the harness
The door windows can be operated even though the lock switch is at "ON"	Malfunctioning main switch	Replace the main switch

RADIO AND STEREO

Poor sensitivity



Noise is produced



Car stereo
Insufficient volume
Poor sound quality

Does the problem disappear when switched from the stereo to the radio?

No → Improperly connected harness or connector → Correct the connection of the harness or the connector

Yes ↓

Is the tape player head OK?

No → Dirty, worn or damaged tape player head
Improperly installed tape player head → Clean or replace the tape player head

Yes →

Improperly connected tape player head lead wire, or a malfunction in either a capacitor or in the tape player itself → Correct the connection or replace the malfunctioning parts

The tape being used was recorded monaurally → Use tapes which have been recorded in stereo

The auto reverse does not function

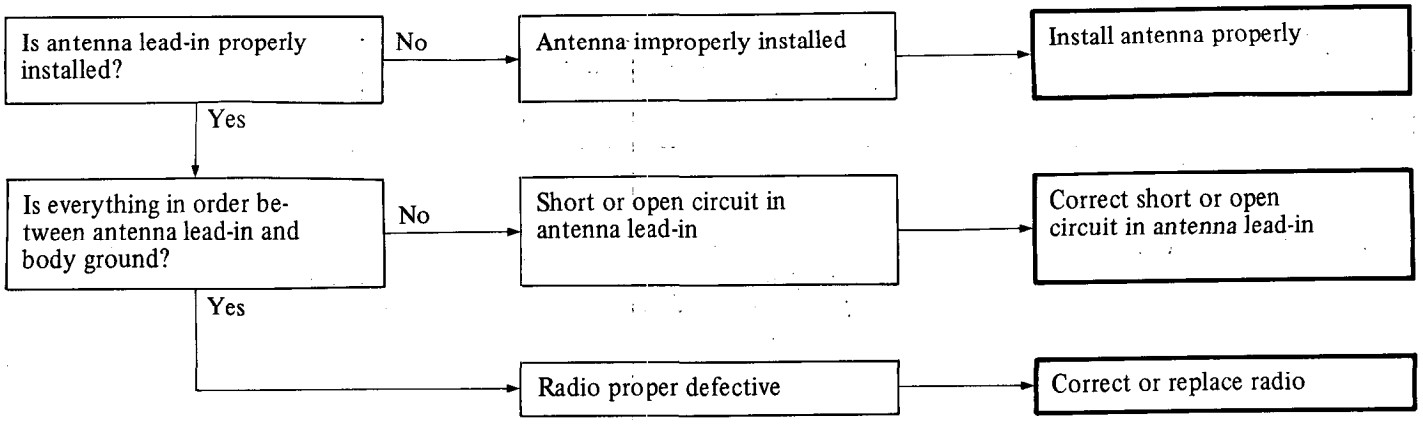
The program changes when the direction selector button is pressed

No → A malfunction in the reverse circuit → Repair or replace

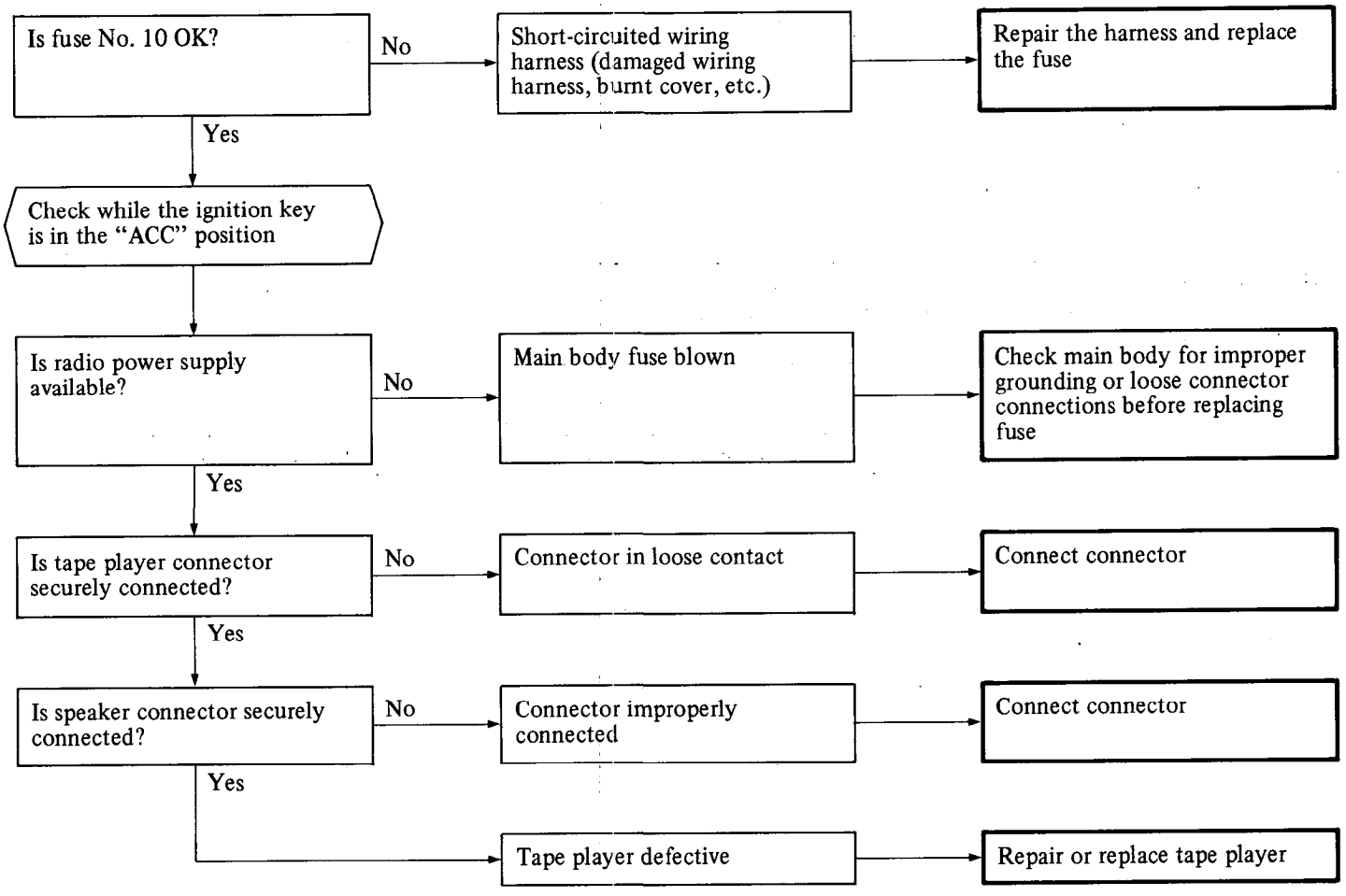
Yes →

A malfunction in the auto-reverse circuit → Repair or replace the radio itself

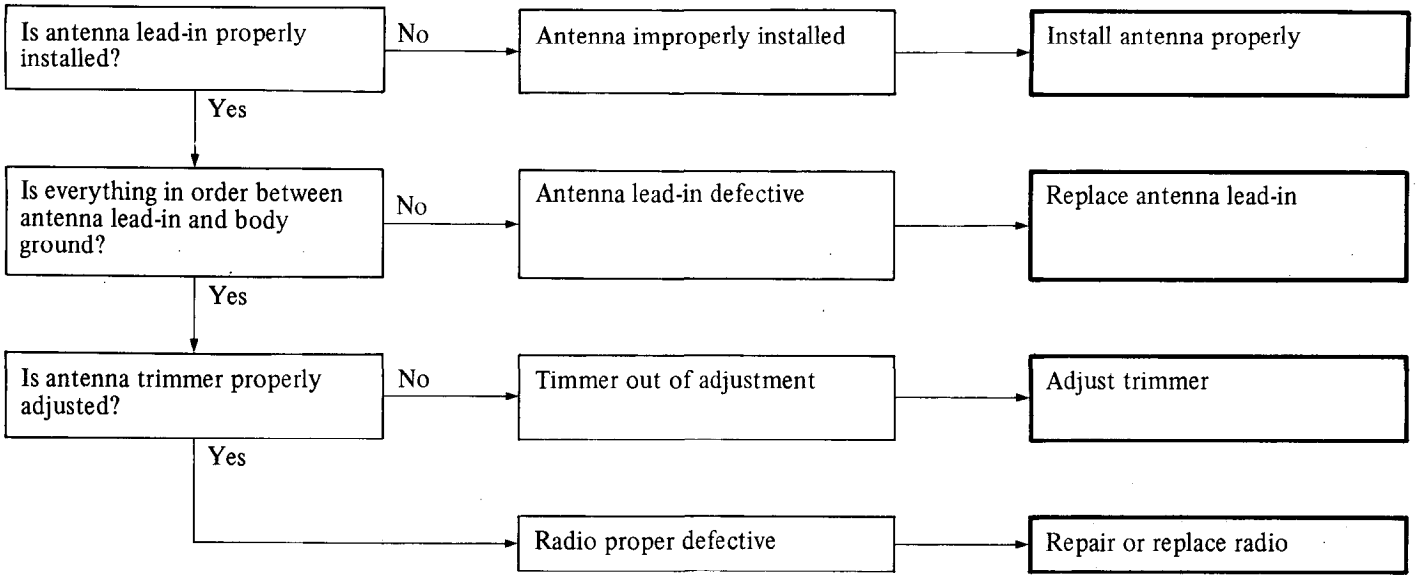
No automatic tuning, excessive noise



No sound



Poor radio sensitivity, excessive noise



3-POINT ELR SEAT BELTS WITH TENSION RELIEFERS

Seat belt tension reliefer system does not function when ignition key is at "ON"

Check while the ignition key is in the "ON" position

Is fuse No. 3 OK?
- No → Short-circuited wiring harness (damaged wiring harness, burnt cover, etc.) → Repair the harness and replace the fuse
- Yes ↓

Is 12 V indicated between the 0.3-RL wire (L.H.) or RL wire (R.H.) and ground when the seat belt solenoid is removed and a test probe is inserted from the back of the connector?
- No → A broken harness between the fuse block and the seat belt solenoid, or a poor connection → Repair the harness or correct the connection
- Yes ↓

Does tension reliefer system operate when one end of test probe is inserted into the 0.3-YB wire from the back of the seat belt solenoid connector and the other end of the test probe is grounded?
- No → Seat belt solenoid defective → Replace the seat belt assembly
- Yes ↓

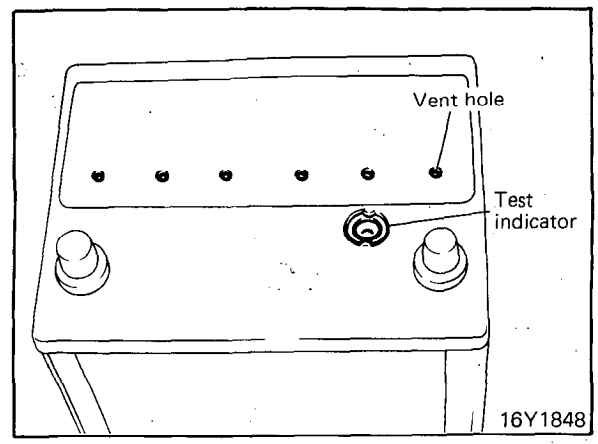
Does tension reliefer system operate when the belt switch is disconnected and the 0.3-YB wire is grounded?
- No → A broken harness between the seat belt solenoid and the belt switch, or a poor connection → Repair the harness or correct the connection
- Yes ↓

A poor connection of the belt switch connector, or belt switch malfunction → Correct the connection or replace the belt switch

BATTERY

General Information

The maintenace-free battery is, as the name implies, totally maintenance free and has no removable battery cell caps. Water never needs to be added to the maintenace-free battery. The battery is completely sealed, except for small vent holes in the cover. These vent holes allow what small amount of gasses are produced in the battery to escape. The special chemical composition inside the battery reduces the production of gas to an extremely small amount at normal charging voltages. The battery contains a visual test indicator which indicates the condition of the battery.



Battery Visual Inspection

1. Make sure ignition switch is in OFF position and all battery feed accessories are OFF.
2. Disconnect battery cables from battery (negative first).
3. Remove battery from vehicle.

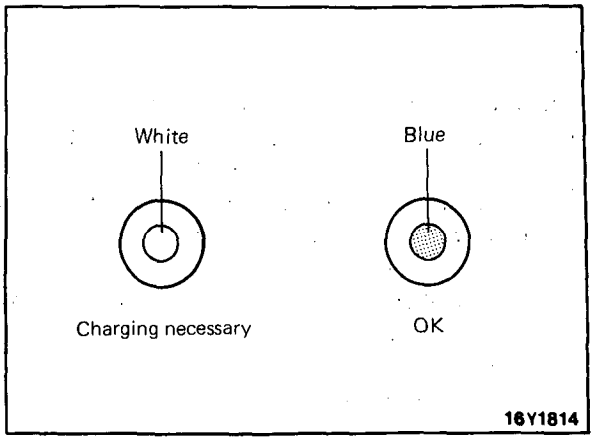
Caution

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.

4. 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 shop towel moistened with ammonia or baking soda in water.
5. Clean top of battery with same solution as described in Step 4.
6. Inspect battery case and cover for cracks. If cracks are present battery must be replaced.
7. Clean the battery posts with a suitable battery post cleaning tool.
8. Clean the inside surfaces of the terminal clamps with a suitable battery terminal cleaning tool. Replace damaged or frayed cables and broken terminal clamps.
9. Reinstall the battery in vehicle.
10. Connect cable clamps to battery post making sure top of clamp is flush with top of post.
11. Tighten the clamp nut securely.
12. Coat all connections with light mineral grease after tightening.

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.



Charge Rate Chart

Battery	NX100-S6 (S)-MF (420 amps)		NX120-7-MF (600 amps)	
Slow charging	5 amps 10 hrs.	10 amps 5 hrs.	5 amps 12 hrs.	10 amps 6 hrs.
Fast charging	20 amps 2.5 hrs.	30 amps 1.5 hrs.	20 amps 3 hrs.	30 amps 2 hrs.

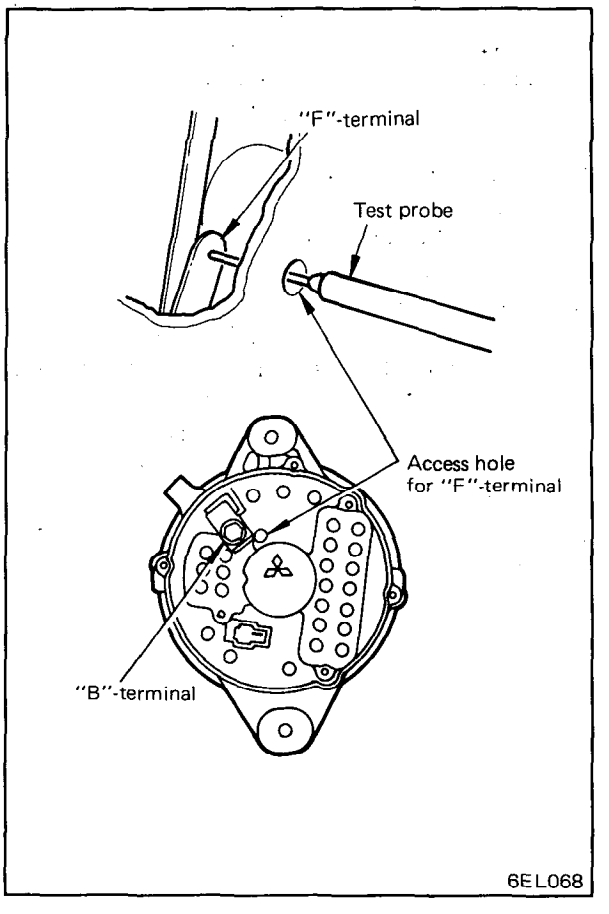
CHARGING SYSTEM

Problems in charging system could be due to improper fan belt deflection, faulty wiring or connector, or a discharged battery. A defective electronic voltage regulator is not always the cause. What is important in troubleshooting of charging system, therefore, is to determine whether the problem is due to a run-down or overcharged battery. Then check previously mentioned items before checking alternator. In this manner a fault in a circuit other than alternator might also be detected.

This alternator has an "F" terminal for checking, as shown in the illustration (6EL068), which is provided in order to make troubleshooting easier. The (F) in the circuit in the illustration (1EL042) is the "F" terminal for checking. The voltage of this terminal can be checked from outside the alternator through the access hole provided in the rear bracket.

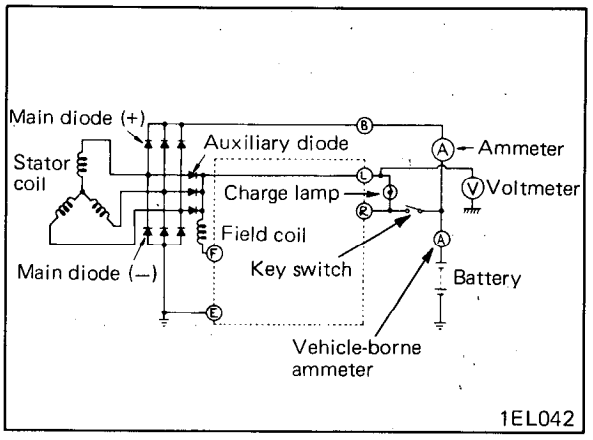
The voltage readings of the "F" terminal indicate as follows:

1. Ignition switch at "OFF"
   Normal if voltage is 0 V. If voltage is close to battery voltage, the (+) diode is short-circuited, and, moreover, there is a malfunction of the electronic voltage regulator. If the voltage is 0.5 to 2.0 V, the (+) diode is short-circuited.
2. Ignition switch "ON"
   Under normal conditions, only voltage equivalent to the voltage drop (0.5 to 2.0 V) of the power transistor within the electronic voltage regulator will appear.
   If a voltage close to battery voltage is noted, current is not flowing to the field coil, which means that there is a malfunction of the electronic voltage regulator. In this instance, there should be no voltage generation, so start the engine and confirm that there is none. Also check to be sure that field current flows and there is voltage generation at the instant when, with the engine running, the "F" terminal for checking is grounded to the rear bracket.



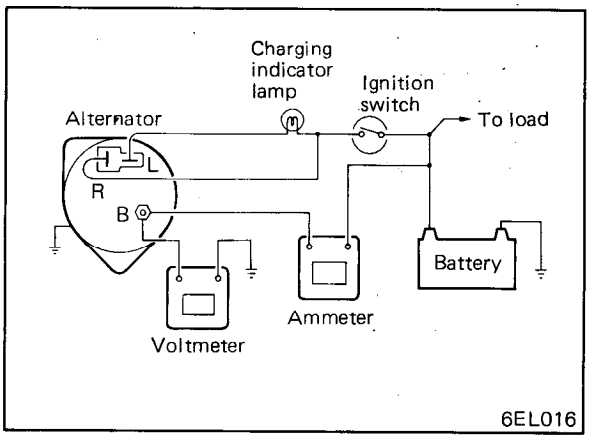
If the voltage reading is 0 V, the possible causes could be wiring damage of the field coil, poor contact of the brushes, a malfunction of the electronic voltage regulator, poor contact of the connector, and/or poor contact in the ignition switch. In any case, the alternator will not generate. In addition, if the negative (−) brush is grounded, or if there is a short-circuit inside the electronic voltage regulator, the voltage of the "F" terminal will be 0 V, which means that there is an overcharge.

3. While engine is running
   Under normal conditions, the voltage will increase as the engine rpm is increased. If, with the battery fully charged, there is no load on the alternator, voltage will be close to output voltage.
   If the voltage remains low even though the engine rpm is increased, the regulator has not yet reached the operating voltage, or current is continuing to flow to the regulator. If the latter, an overcharge will result.



CURRENT OUTPUT TEST

1. Place the ignition switch at OFF.
2. Disconnect the battery ground cable.
3. Disconnect the cable from terminal "B" of the alternator and connect a 60 A ammeter between the terminal "B" and cable.
4. Connect a voltmeter between terminal "B" (+) and ground (−).
5. Set the engine tachometer.
6. Reconnect battery ground cable to the battery. The voltmeter should indicate the battery voltage.
7. Start the engine.
8. Turn on all electrical loads, accelerate the engine speed to 2,500 to 3,000 rpm and read the output current.



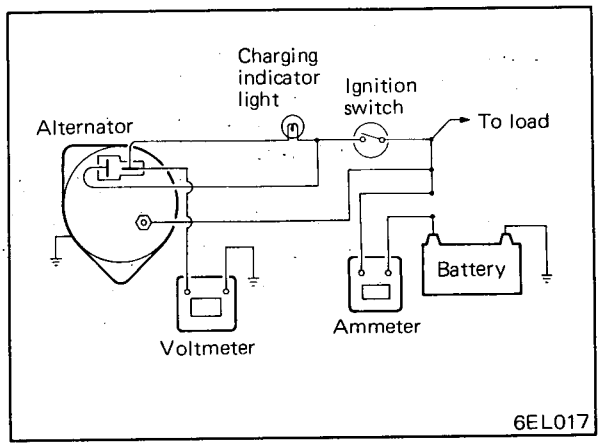
Output current:
Over 90% of nominal output: Alternator is good.
70 to 90% of nominal output: Recheck output current.
Less than 70% of nominal output: Alternator defective.

NOTES
1. After the engine has been started, the ammeter indication will drop as the battery reaches the fully charged condition.
   Read the indication at its maximum value while increasing the engine revolution.
2. If the battery is in the fully charged condition, current will not flow, resulting in a no-flow condition of the nominal output current. In this case, measure the output current after the battery has been discharged by cranking the engine or increase the electrical load by adding new parallel circuits.

REGULATED VOLTAGE TEST

1. Turn ignition switch OFF.
2. Disconnect the battery ground cable.
3. Disconnect the battery positive cable and connect a 60 A ammeter between the battery positive terminal and cable.
4. Connect a voltmeter between terminal "L" of alternator and ground.
5. Set the engine tachometer.
6. Reconnect the battery ground cable to the battery. The voltmeter should indicate 0 V; if it is not, the alternator or wiring is defective.
7. Short circuit the ammeter terminals and start the engine.
   NOTE
   Make sure that the starter current does not flow through the ammeter while starting the engine.
8. Increase the engine speed to 2,000 to 3,000 rpm and check the ammeter reading. If the reading is 5 A or less, check the voltmeter reading. This reading is the regulated voltage. If the ammeter reading is more than 5 A, either continue charging until the reading drops below 5 A or replace the battery with one that is fully charged and then repeat the test.

Regulated voltage . . . . . 14.4 V ± 0.5 at 20°C (68°F)



HANDLING PRECAUTIONS

1. Make sure that alternator, battery, etc., are connected properly. If battery polarity is reversed, excessive current will flow from battery to alternator, and damage to diodes or wiring harness could result.
2. Do not disconnect battery terminals while engine is running. Surge voltage will be produced which could cause deterioration of diodes or transistors.
3. When battery is to be quick-charged, be sure to disconnect battery terminals first. If terminals are not disconnected, damage to diodes could result.
4. When a steam cleaner is used, make sure that alternator is not directly exposed to steam.

IGNITION SYSTEM

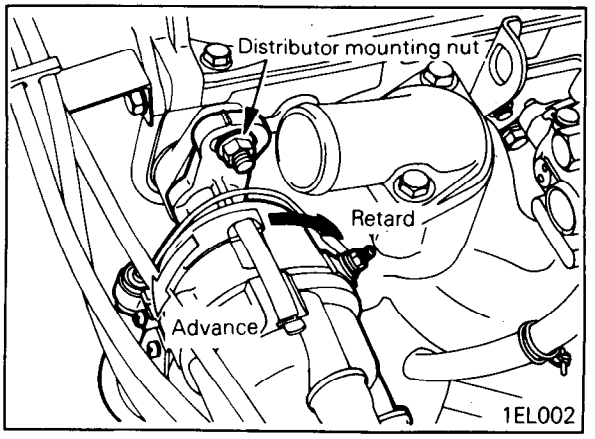
Ignition Timing Adjustment

Adjustment condition
Coolant temperature: 80 to 90°C (170 to 190°F)
Lights and all accessories: OFF
Transmission: N (Neutral)

1. Start engine and run at curb idle speed.
2. Connect tachometer and timing light.
3. Check basic ignition timing and adjust if necessary.

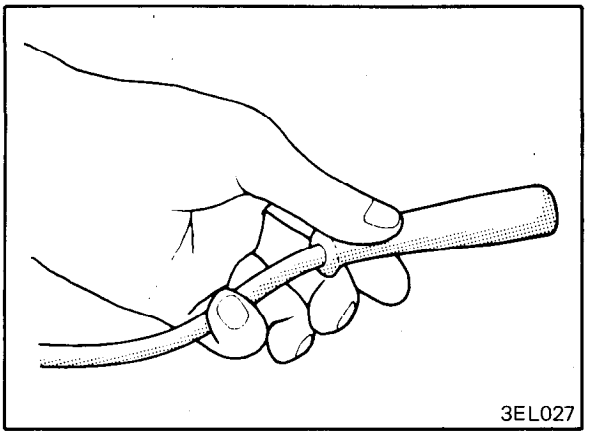
Basic ignition timing	7 ± 2° BTDC

4. To adjust ignition timing, loosen distributor mounting nut and turn distributor housing. (1EL002)
5. After adjustment, securely tighten mounting nut.

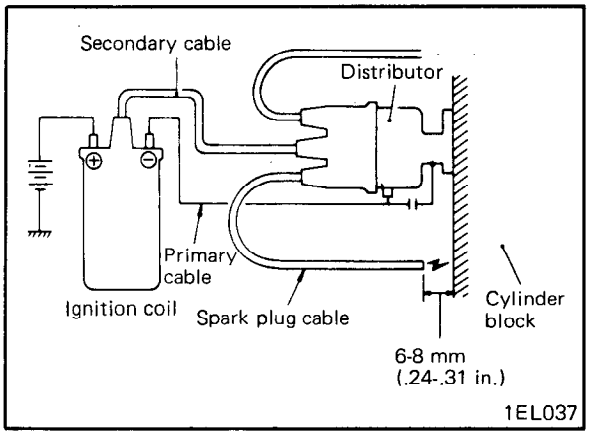


SPARK PLUG CABLE TEST

1. Disconnect spark plug cable from spark plug.
   When spark plug cable is pulled out, be sure to pull by the cable cap. If spark plug is removed by pulling on cable only open circuit might result.



2. Hold the spark plug cable about 6-8 mm (.24-.31 in.) away from engine proper (grounding portion such as cylinder block) and crank engine to verify that sparks are produced.



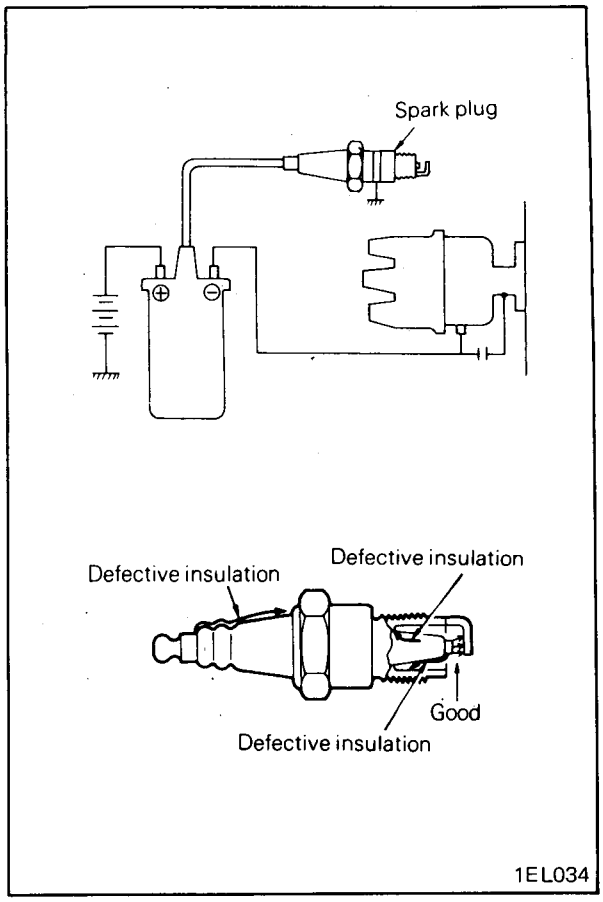
SPARK PLUG INSPECTION AND TEST

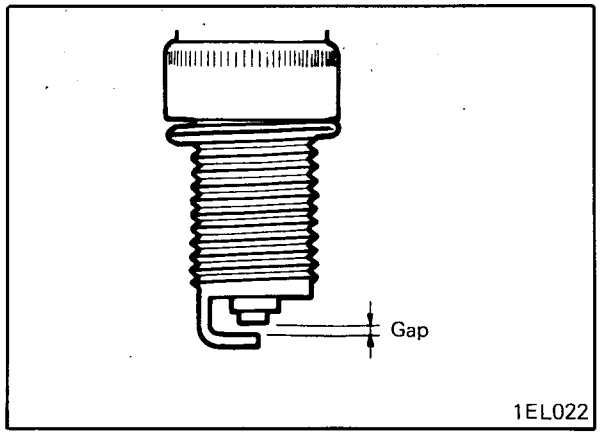
1. Remove the spark plugs from the engine.
2. Visually check the spark plugs for the following and replace if defective.
   - Broken insulator.
   - Worn electrode.
   - Deposited carbon. Use a plug cleaner for cleaning. Clean porcelain insulator above shell as well.
   - Damaged or broken gasket.
   - Burnt condition of porcelain insulator at spark gap. If black carbon deposit is evident, probable cause is too rich a fuel mixture or extremely low air intake. Misfiring due to excessive spark gap is also suspected. If insulator is burnt white, too lean a fuel mixture, excessively advanced ignition timing, improperly tightened plug, etc. are suspected.
3. Connect the spark plug to the high tension cable, ground outer electrode (main body), and crank engine. In the atmosphere, only short sparks are produced because of small discharge gap. If the spark plug is good, however, sparks will occur in discharge gap (between electrodes). In a defective spark plug, no sparks will occur because of leak of insulation puncture.
4. Check plug gap with plug gap gauge. If it is not within specified limit, adjust by bending ground electrode. Make sure that the gap of even a new spark plug is checked before spark plug is mounted to engine.

Spark plug gap	1.0-1.1 mm (.039-.043 in.)

5. Install the spark plug and tighten to specified torque. If it is overtorqued, damage to threaded portion of cylinder head might result.

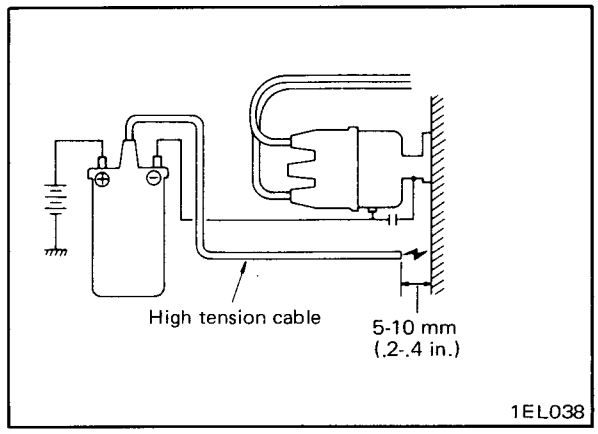
Spark plug	20-29 Nm (15-21 ft.lbs.)



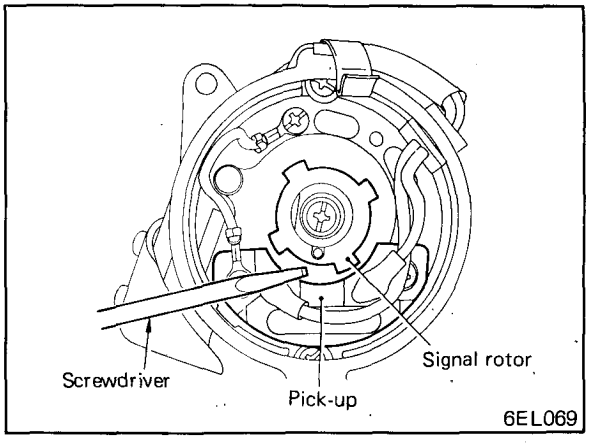


Spark Test Without Cranking

If spark test is performed by cranking while the catalyst is hot, unburned gas will be supplied to the catalyst, and this is not desirable to the catalyst.
For this reason, use the following methods which allow spark test to be performed without cranking.



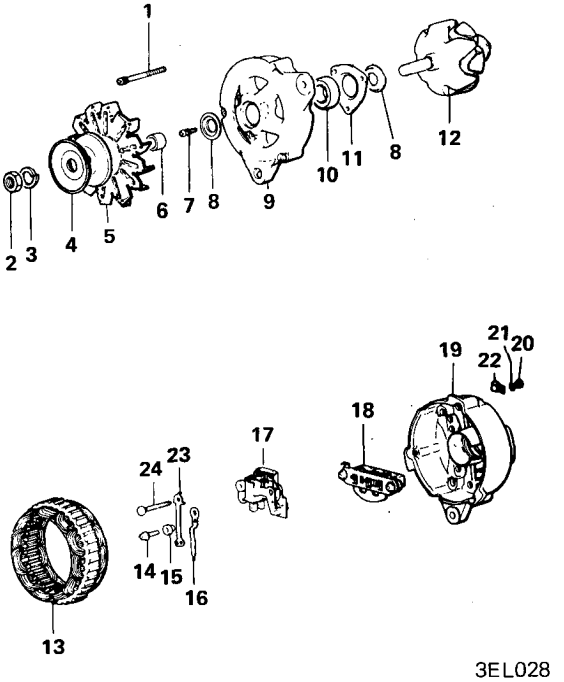
1. Remove the distributor cap.
2. Check signal rotor position in relation to the pick-up. If it is not the position shown in the illustration (6EL069), turn the crankshaft manually so that the projection of the signal rotor is moved away from the center part of the pick-up. In other words, the signal rotor should be positioned so that current can flow to the ignition coil.
3. Disconnect the high-tension cable from the center tower of the distributor cap, and hold the end of the cable about 5 to 10 mm (.2 to .4 in.) away from the cylinder block of the engine. (1EL038)
4. Turn the ignition switch to "ON". Then, when a piece of metal (the tip of a screwdriver for instance) is inserted into the detection coil of the pick-up and then moved away, a spark can be generated. (6EL069)



CHARGING SYSTEM

COMPONENTS

1. Through bolt (3)
2. Nut
3. Spring washer
4. Pulley
5. Fan
6. Collar
7. Screw (3)
8. Seal (2)
9. Front bracket
10. Bearing
11. Retainer
12. Rotor
13. Stator
14. Screw
15. Insulator
16. Plate "L"
17. Brush holder and regulator
18. Rectifier
19. Rear bracket
20. Nut
21. Washer
22. Condenser
23. Plate "B"
24. Screw ("B"-terminal)



REMOVAL

1. Disconnect battery ground cable.
2. Remove the drive belt. See "Cooling system", Group 7, for detailed procedure.
3. Disconnect wiring and connector from the alternator.
4. Remove the brace bolt and support bolt and remove alternator from engine.

DISASSEMBLY

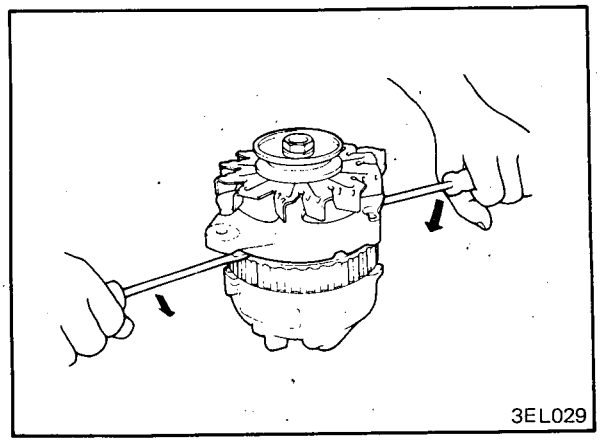
1. Remove the three through bolts.
2. Insert plain screwdriver between front bracket and stator core and pry downward. (3EL029)

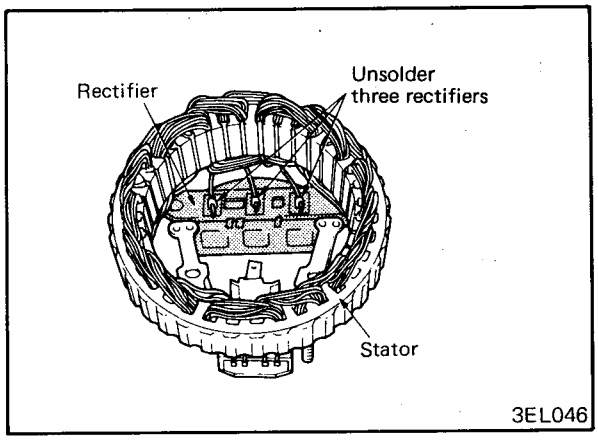
Caution
Do not insert screwdriver too deep, as there is danger of damage to stator coil.

3. Clamp the rotor in a vise with pulley side up (protect rotor from vise jaws).
4. Remove pulley nut. Then remove spring washer, pulley, fan and collar.
5. Remove front bracket and two seals.
6. Remove the rotor from vise.
7. Remove the nut from "B" terminal and remove the washer and condenser.
8. Remove the brush holder screw and rectifier screws.
9. Remove the stator assembly from the rear bracket.
10. When stator is to be removed, unsolder three stator leads soldered to main diodes on rectifier. (3EL046)

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

11. When separate the rectifier from brush holder, unsolder two plates soldered to rectifier.


3EL029



3EL046

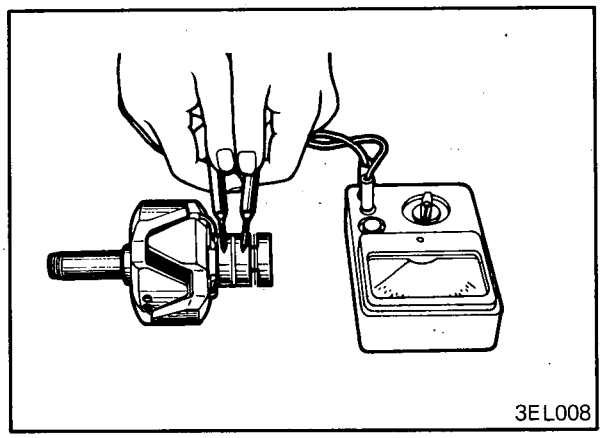
INSPECTION

Rotor

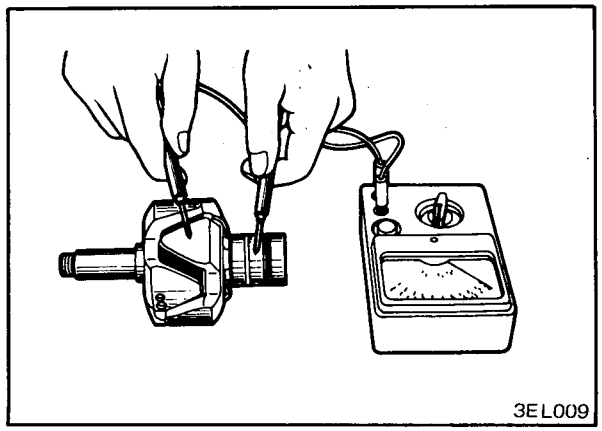
1. Check rotor coil for continuity. Check to ensure that there is continuity between slip rings.

Resistance value	2.5-4Ω

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.

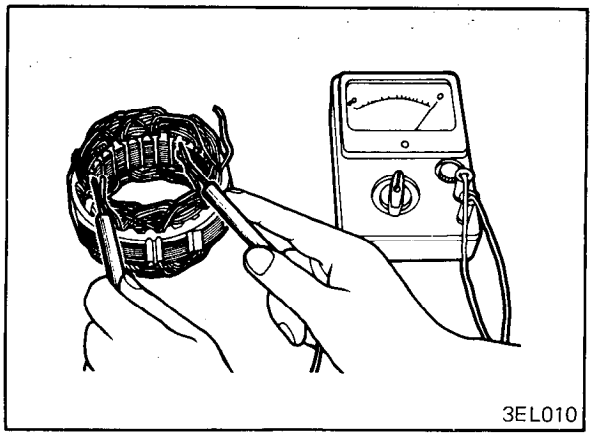

3EL008

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

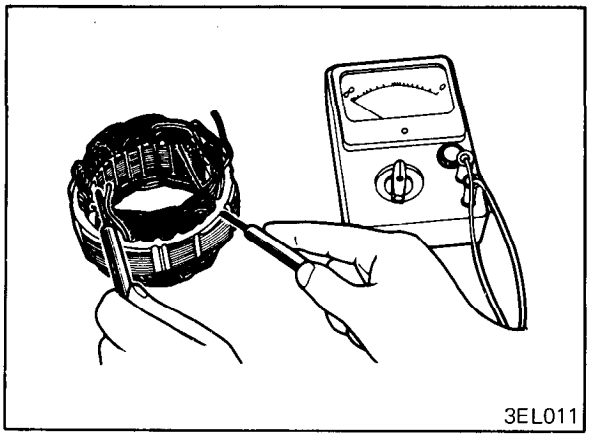

3EL009

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.



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



Rectifier

1. (+) HEATSINK ASSEMBLY TEST

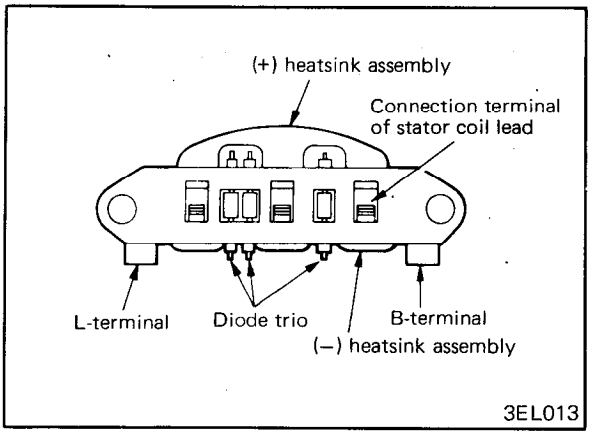
   Check for continuity between (+) heatsink and stator coil lead connection terminal with a circuit tester. If there is continuity in both directions, diode is shorted. Replace rectifier assembly.

2. (–) HEATSINK ASSEMBLY TEST

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

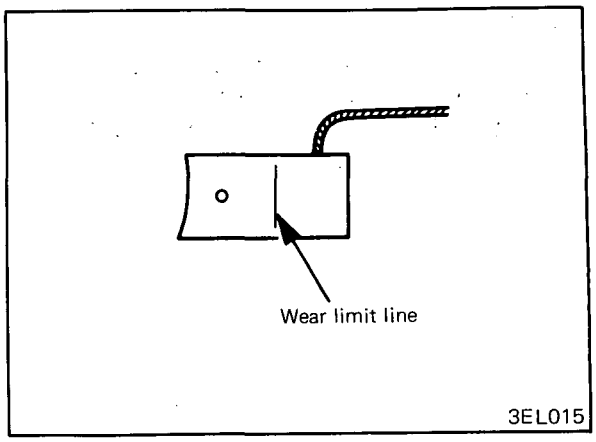
3. DIODE TRIO TEST

   Check three diodes for continuity by connecting a circuit tester to both ends of each diode. If there is no continuity or no continuity in both directions, diode is defective and heatsink assembly must be replaced.

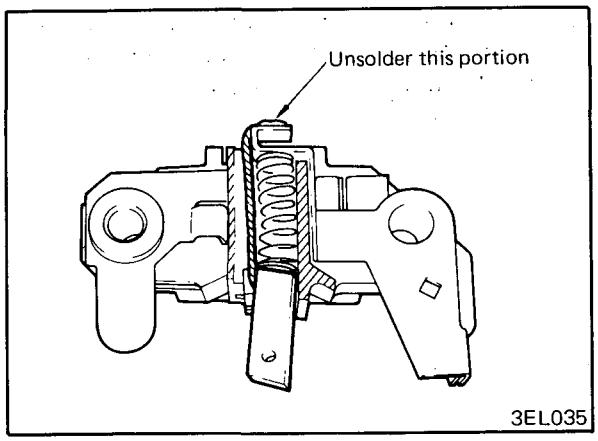


BRUSH REPLACEMENT

1. Brush worn down to wear limit line should be replaced.

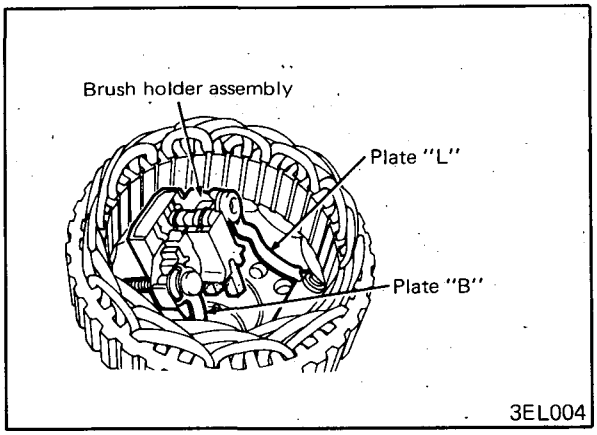


2. If pigtail is unsoldered, brush and spring will come off.

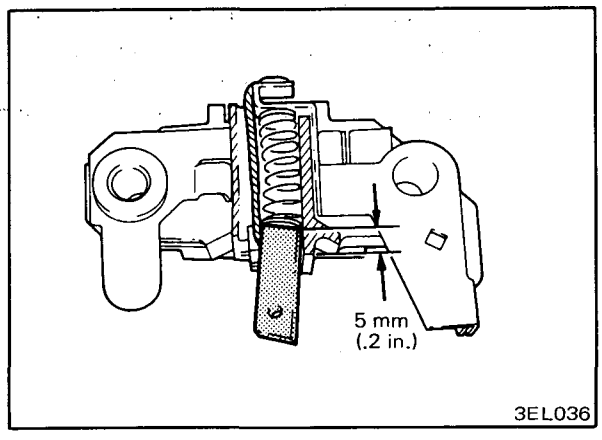


3. When only brush or brush spring is to be replaced, it can be replaced without removing stator, etc. With brush holder assembly raised as illustrated, unsolder pigtail of brush.

NOTE
If L- and B-terminals of rectifier assembly are bent, damage to rectifier moulding might result. Therefore, plates "B" and "L" should be gently bent at center.



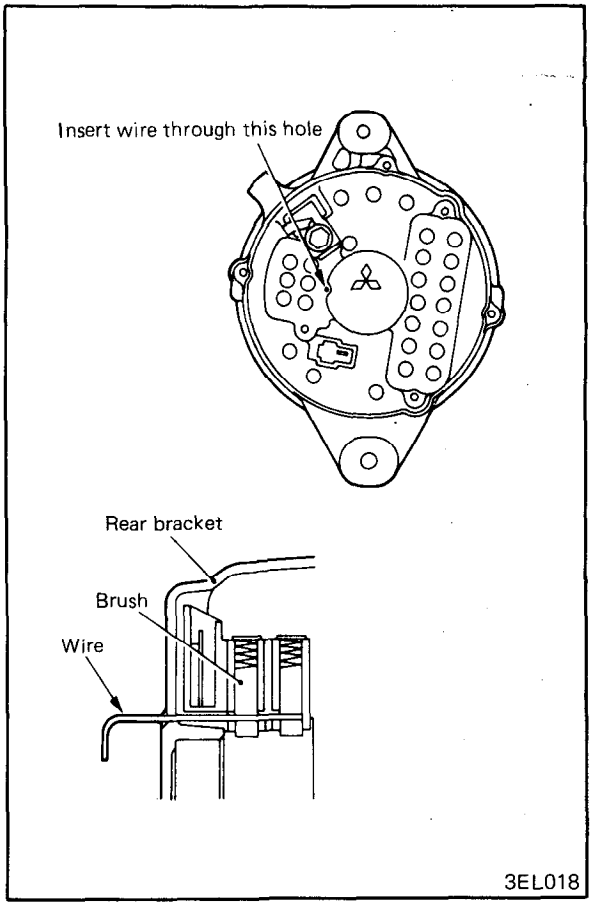
4. When installing new brush, solder pigtail so that brush will be pressed into holder about 5 mm (.2 in.).



REASSEMBLY

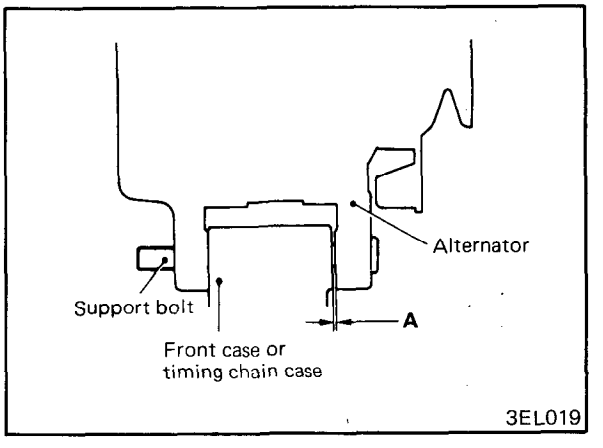
Perform reassembly in reverse procedure of disassembly, pay attention to the following item:

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



INSTALLATION

1. Install the alternator to the engine front case and insert the support bolt through the alternator leg into front case. Do not install the nut.
2. Install the brace bolt but do not tighten the bolt.
3. Push alternator toward front of engine and check clearance "A" between alternator leg and front case or timing chain case. If clearance is more than 0.2 mm (.008 in.), insert spacers [0.198 mm (.0078 in.) thick] as required. If support bolt is tightened without reducing clearance "A", alternator leg might be broken.
4. Install the washer and nut to the support bolt.
5. Install drive belt and adjust the drive belt tension.
6. Tighten first the brace bolt and then tighten the support bolt nut to the specified torque.



Tightening torque:
Alternator brace bolt ..... 12-14 Nm (9-10 ft.lbs.)
Alternator support bolt nut .....
20-24 Nm (15-18 ft.lbs.)

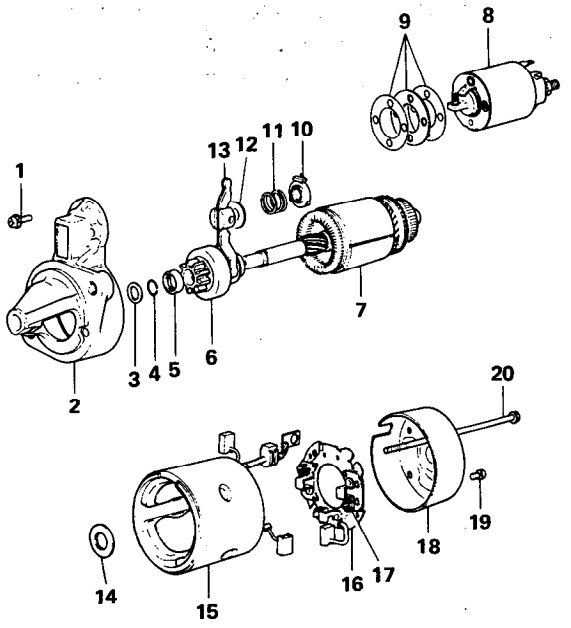
7. Connect wiring and connector to the alternator.
8. Connect the battery ground cable.

COMPONENTS

Direct drive type

1. Screw (2)
2. Front bracket
3. Washer
4. Snap ring
5. Stop ring
6. Overrunning clutch
7. Armature
8. Magnetic switch
9. Packing
10. Spring retainer
11. Lever spring
12. Spring seat
13. Lever
14. Washer
15. Yoke assembly
16. Brush holder
17. Brush spring
18. Rear bracket
19. Screw (2)
20. Through bolt (2)

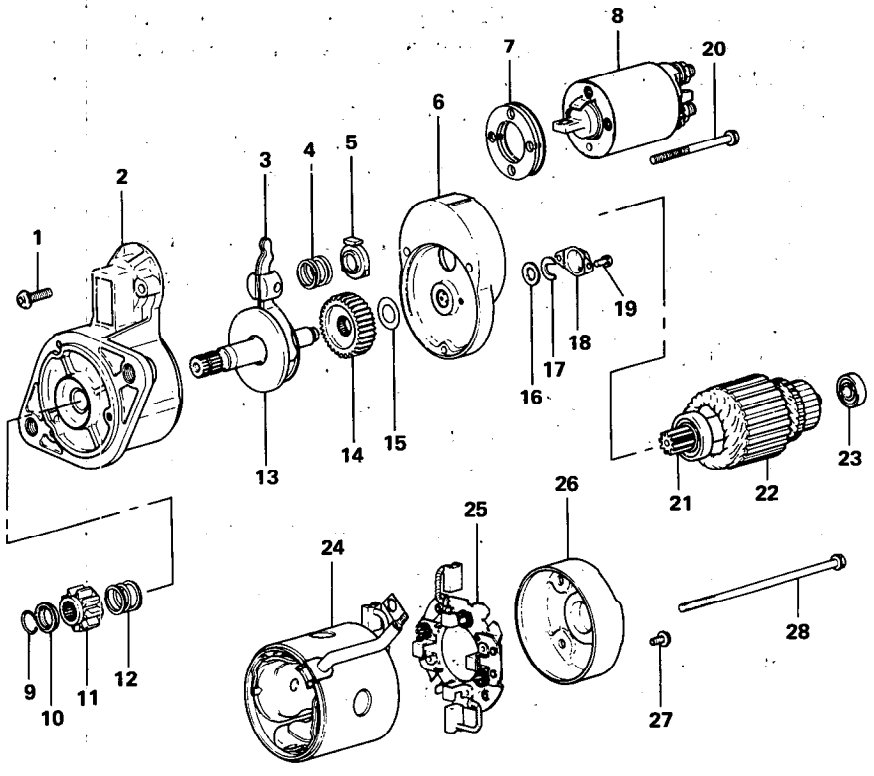
NOTE
Numbers show order of disassembly.
For reassembly, reverse order of disassembly.



6EL070

Reduction drive type

1. Screw (2)
2. Front bracket
3. Lever
4. Spring
5. Spring retainer
6. Center bracket
7. Packing
8. Magnetic switch
9. Snap ring
10. Stop ring
11. Pinion gear
12. Spring
13. Pinion shaft and overrunning clutch
14. Reduction gear
15. Adjusting washer
16. Washer
17. Retaining ring
18. Cover
19. Screw (2)
20. Bolt
21. Front ball bearing
22. Armature
23. Rear ball bearing
24. Yoke assembly
25. Brush holder
26. Rear bracket
27. Screw (2)
28. Through bolt (2)



6EL002

REMOVAL

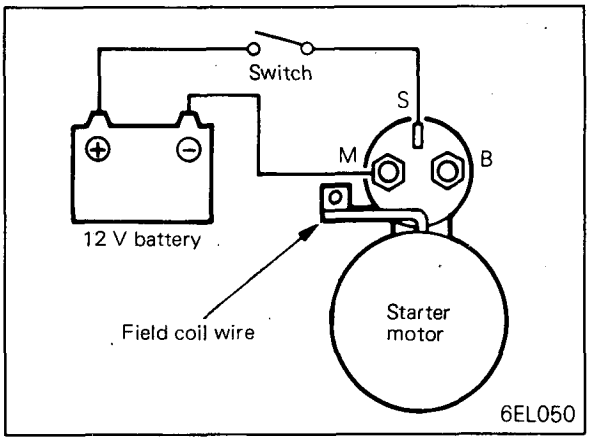
1. Disconnect battery ground cable.
2. Disconnect starting motor harness from the starter motor.
3. Remove the two starting motor mounting bolts and remove starter motor.

INSPECTION (after removal)

Pinion Gap Adjustment

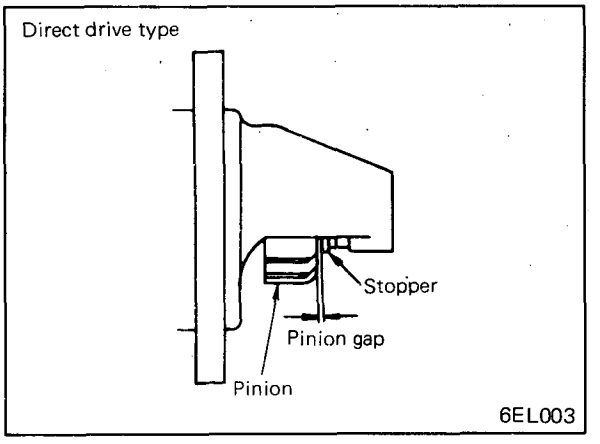
1. Disconnect field coil wire from M-terminal of magnetic switch.
2. Connect a 12 V battery between S-terminal and M-terminal. (6EL050)
3. Set switch to "ON", and pinion will move out.

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

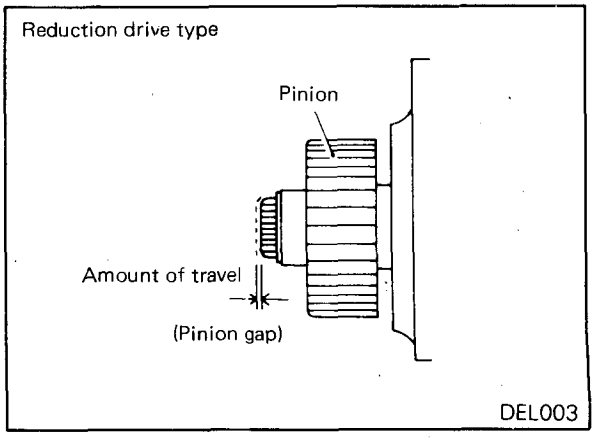


4. Check pinion to stopper clearance (pinion gap) with a feeler gauge. (6EL003)
   If pinion gap is out of specification, adjust by adding or removing washers between magnetic switch and front bracket.

Pinion gap	0.5-2.0 mm (.020-.079 in.)



5. Lightly push back the pinion, and measure the amount of travel, which represents the pinion gap. Adjust the thickness (number) of washers at switch area so that the gap becomes 0.5 to 2.0 mm (.020 to .079 in.).

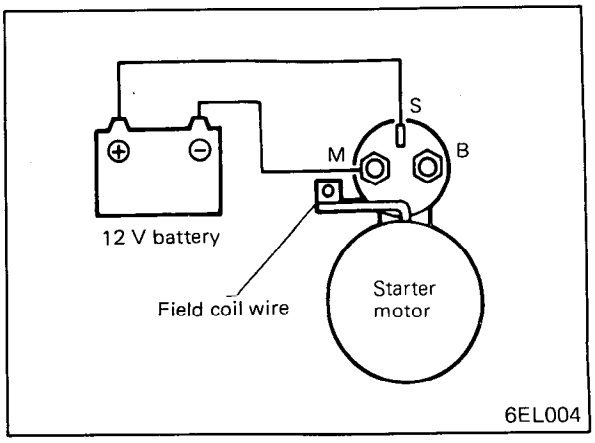


Pull-in Test of Magnetic Switch

1. Disconnect field coil wire from M-terminal of magnetic switch.
2. Connect a 12 V battery between S-terminal and M-terminal. (6EL004)

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

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

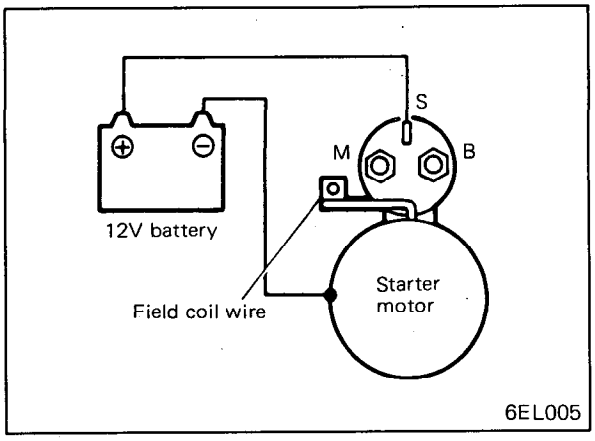


Hold-in Test of Magnetic Switch

1. Disconnect field coil wire from M-terminal of magnetic switch.
2. Connect a 12 V battery between S-terminal and body. (6EL005)

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

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

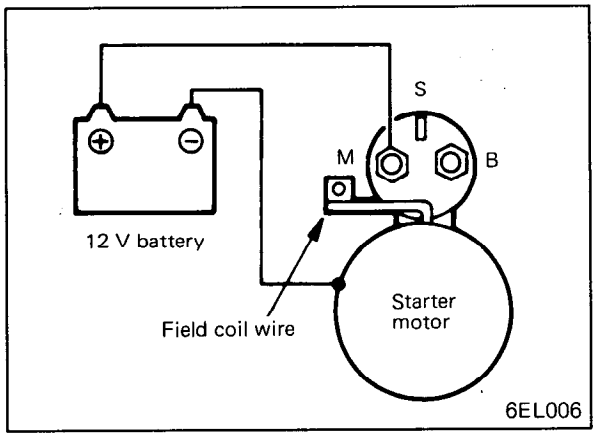


Return Test of Magnetic Switch

1. Disconnect field coil wire from "M" terminal of magnetic switch.
2. Connect a 12 V battery between M-terminal and body. (6EL006)

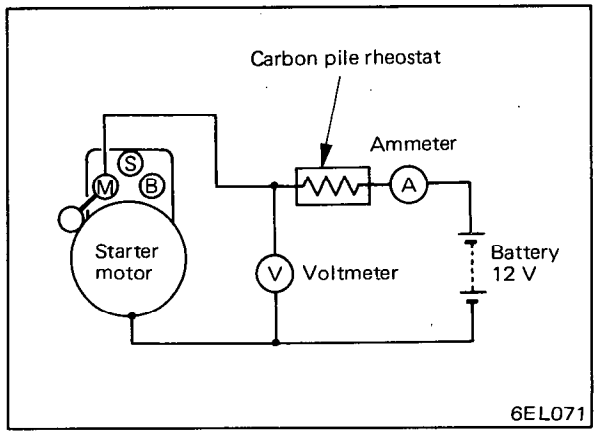
Caution
This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

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.



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 (100 amperes 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. (6EL071)

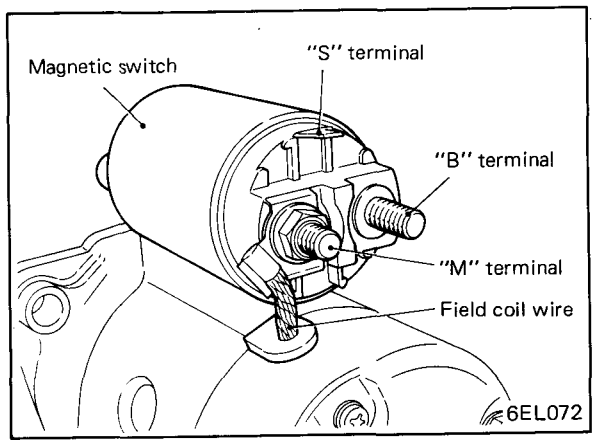


5. Connect battery cable from battery negative post to starter motor body.
6. Adjust rheostat until battery voltage shown on voltmeter reads 11.5 volts.
7. Check specifications for maximum amperage draw and minimum rpm.

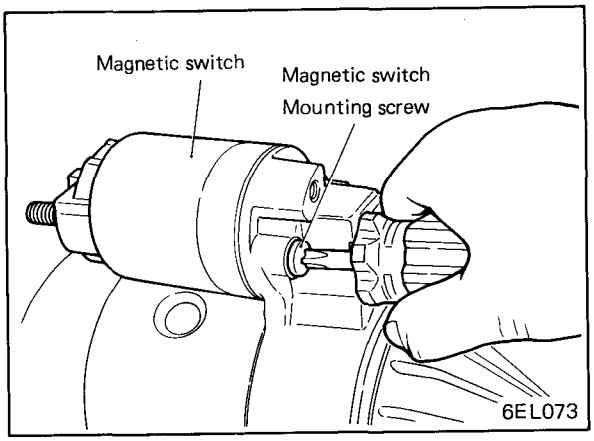
Voltage	11.5 Volts
Amperage draw	60 Amps
Minimum rpm	6,800 rpm

DISASSEMBLY-DIRECT DRIVE TYPE

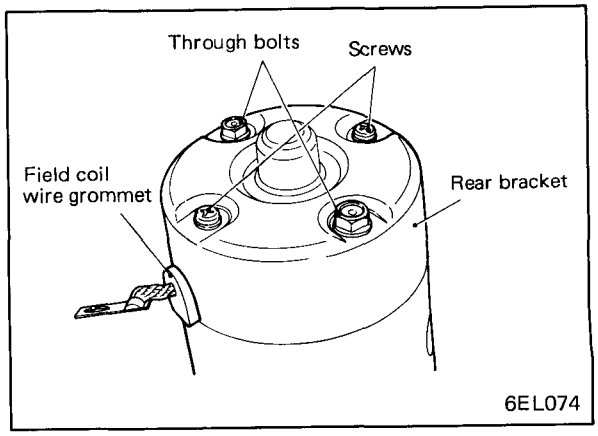
1. Disconnect field coil wire from "M" terminal of magnetic switch.



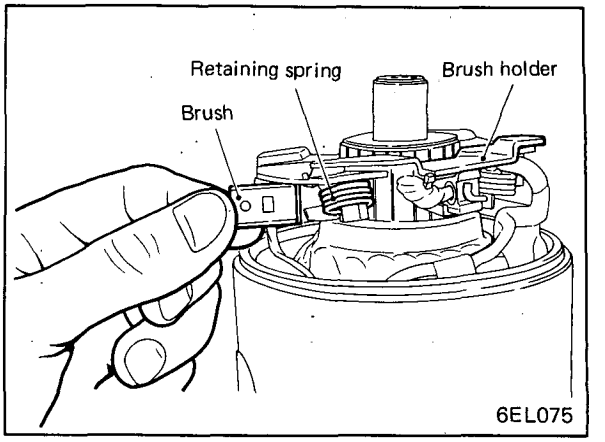
2. Remove two magnetic switch mounting screws and remove magnetic switch.



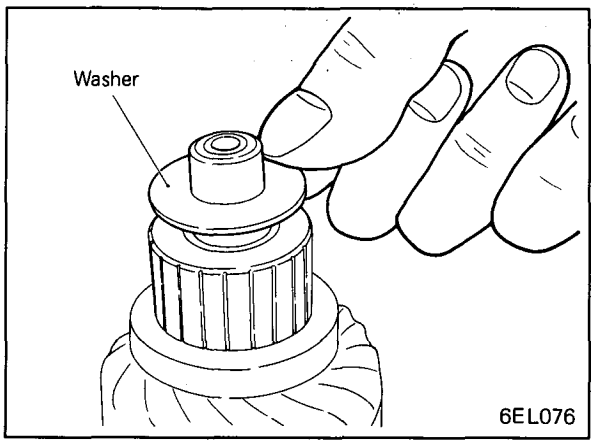
3. Remove two through bolts and two screws.
4. Remove rear bracket.



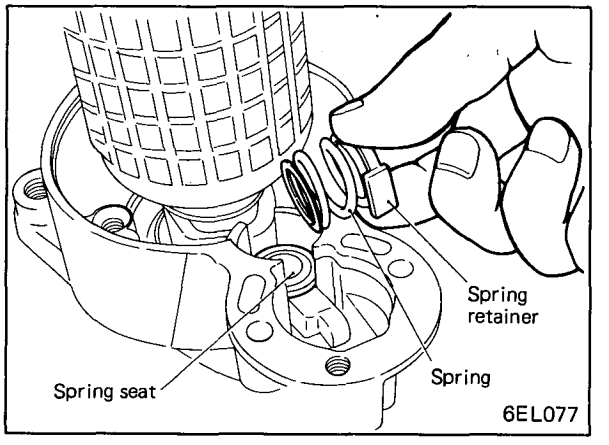
5. Slide the two brushes from brush holder by prying retaining springs back.
6. Remove brush holder.
7. Remove yoke assembly.



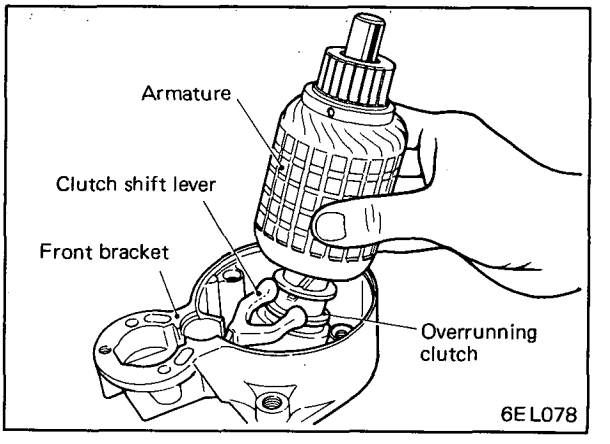
8. Remove washer from rear end of armature.



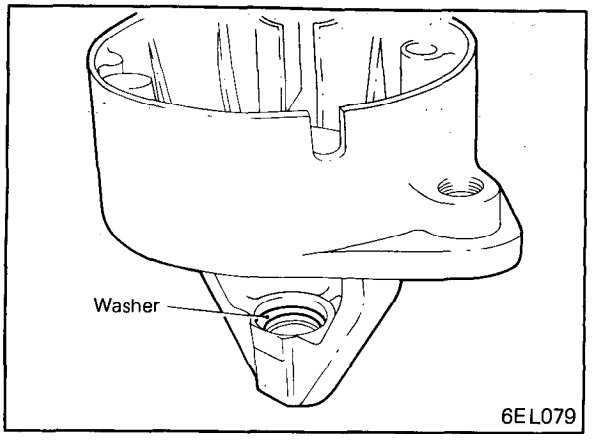
9. Remove spring retainer, spring and spring seat from front bracket.



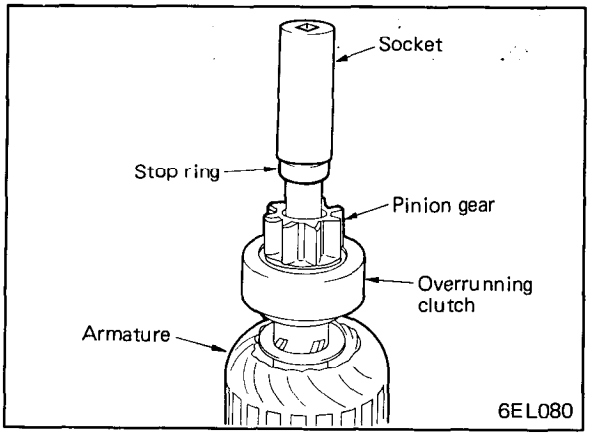
10. Remove armature assembly and lever from front bracket.



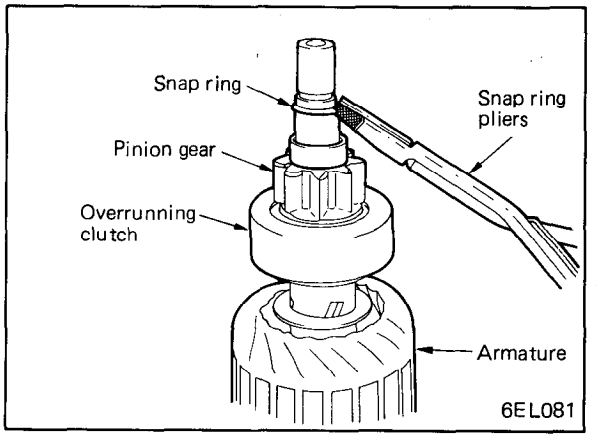
11. Remove washer from front bracket.



12. Press stop ring off snap ring with suitable socket.



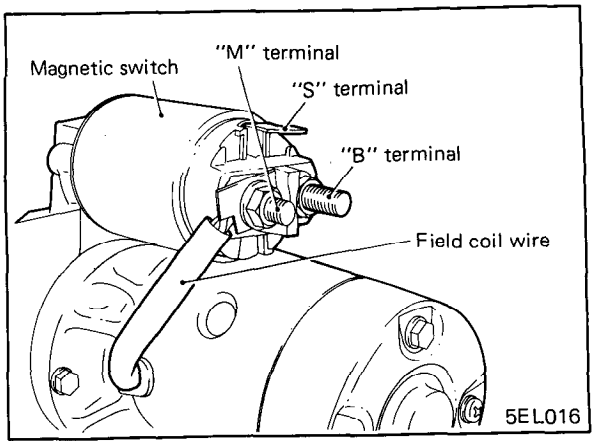
13. Remove snap ring with snap ring pliers and then remove stop ring and overrunning clutch.



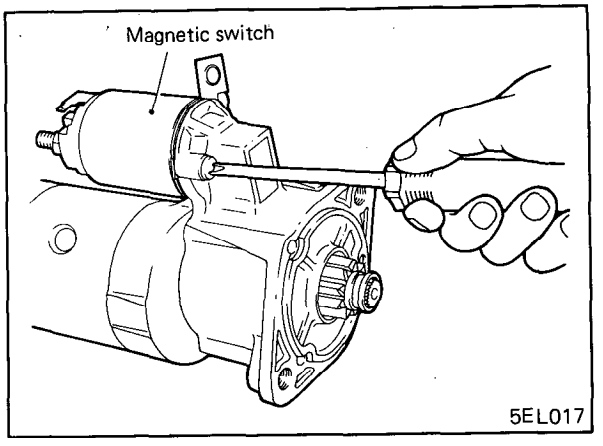
DISASSEMBLY-REDUCTION

Drive Type

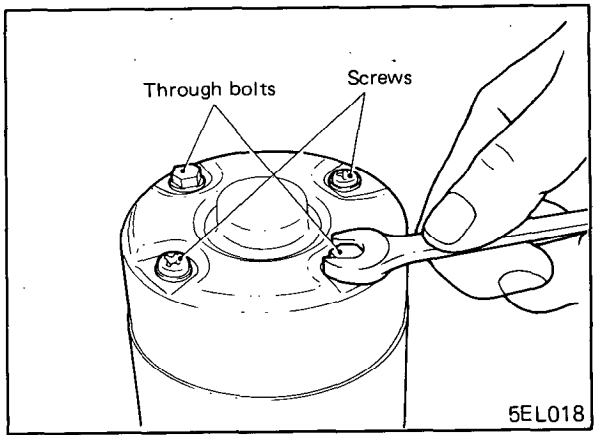
1. Disconnect the field coil wire from "M" terminal of magnetic switch.



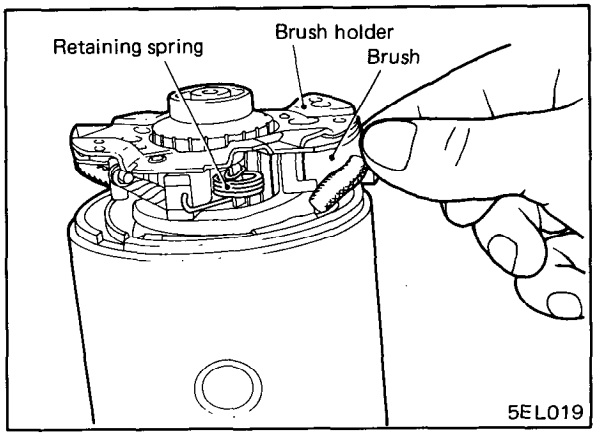
2. Remove the two magnetic switch mounting screws and remove the magnetic switch.



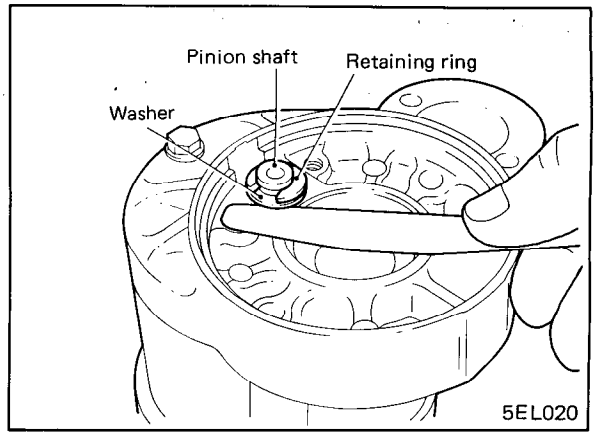
3. Remove the two through bolts and two screws, and then remove the rear bracket.



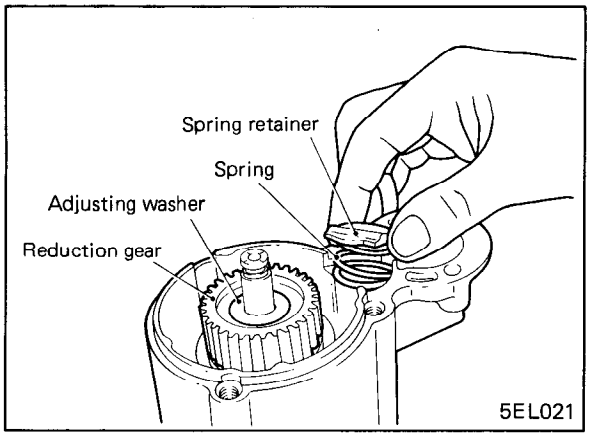
4. Slide the two brushes from brush holder by prying retaining springs back, and then remove the brush holder assembly.
5. Remove the yoke assembly.
6. Remove the armature.



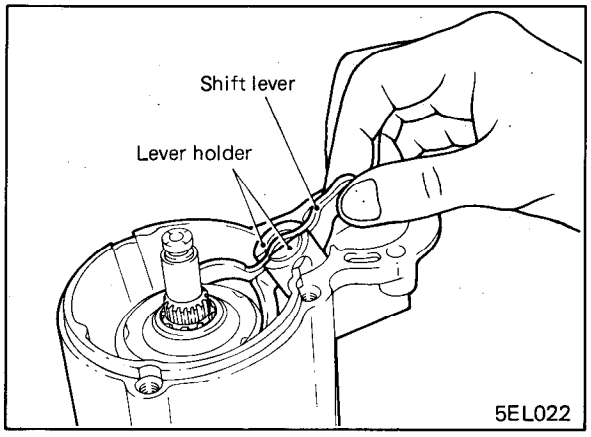
7. Remove the pinion shaft end cover from the center cover.
8. Measure the pinion shaft end play using feeler gauge for reassembly.
9. Remove the retaining ring and washer from the pinion shaft.
10. Remove the center bracket.



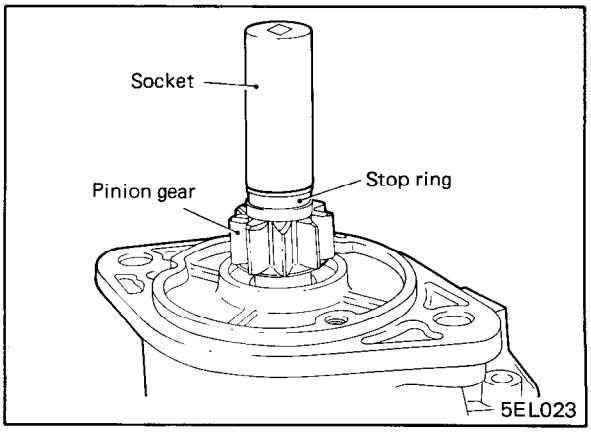
11. Remove the lever spring retainer and spring.
12. Remove the adjusting washer and reduction gear.



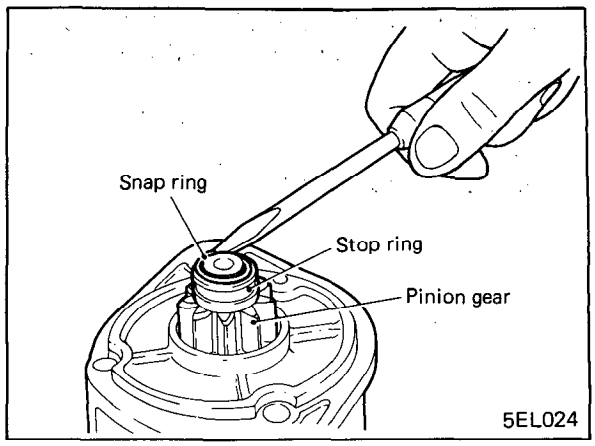
13. Remove the clutch shift lever and two lever holder.



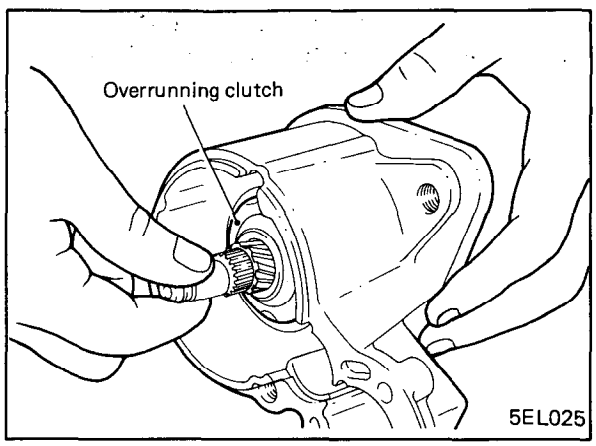
14. Press the stop ring off the snap ring with suitable socket.



15. Remove the snap ring with screwdriver, and then remove the stop ring.
16. Remove the pinion and spring from pinion shaft.



17. Remove the overrunning clutch from the front bracket.

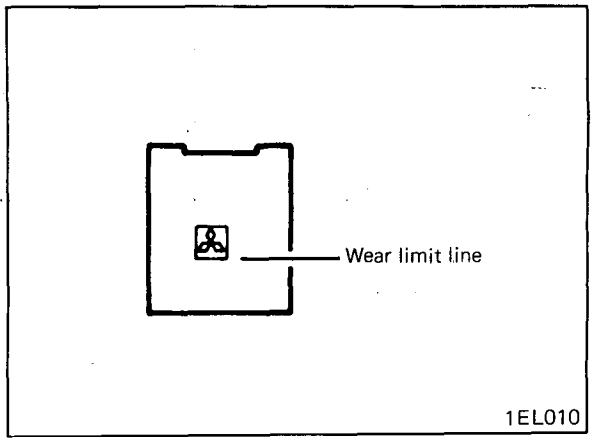


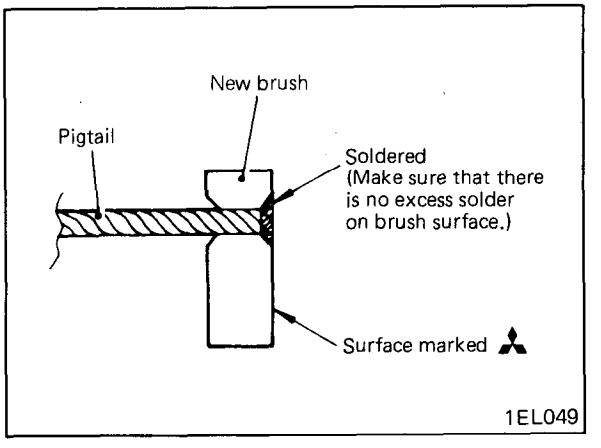
CLEANING STARTER MOTOR PARTS

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

BRUSHES AND SPRINGS-REPLACEMENT

1. Brushes that are worn beyond wear limit line, or are oil-soaked, should be replaced.
2. When replacing field coil brushes, crush worn brush with pliers, taking care not to damage pigtail.
3. Sand pigtail end with sandpaper to ensure good soldering.
4. Insert pigtail into hole provided in new brush and solder it. Make sure that pigtail and excess solder do not come out onto brush surface.
5. When replacing ground brush, slide the brush from brush holder by prying retaining spring back.

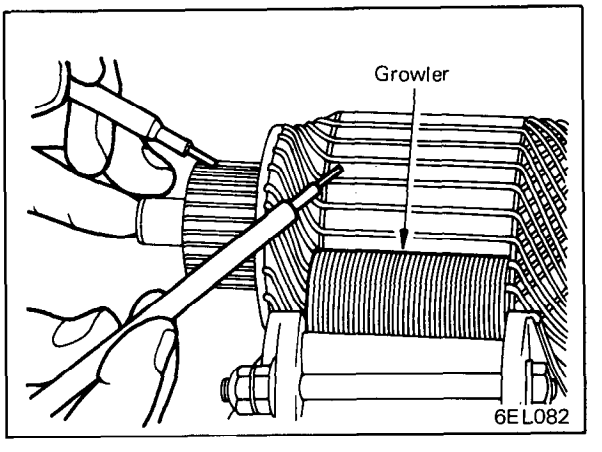




TESTING ARMATURE

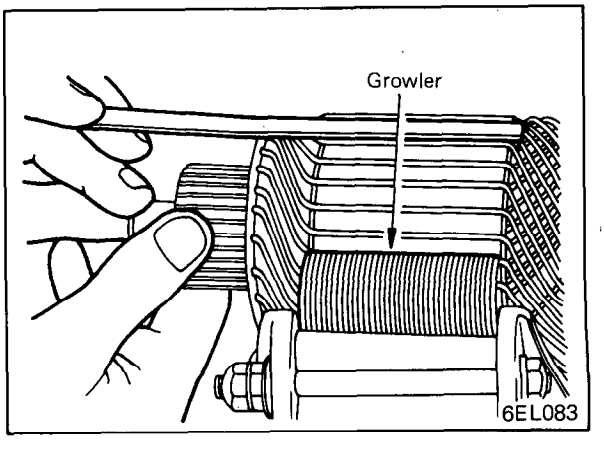
Testing Armature for Short Circuit

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



Testing Armature for Grounding

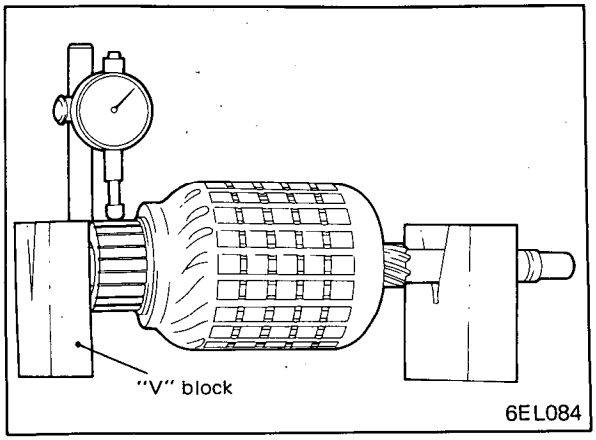
1. Touch armature coil core and the end of each commutator bar with a pair of test lamp prods.
2. If lamp lights, it indicates a grounded armature. Replace grounded armature.



Testing Commutator Runout

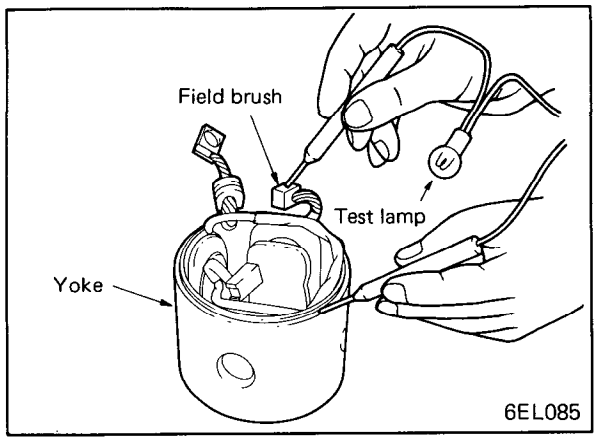
1. Place armature in a pair of "V" blocks and check runout with a dial indicator.
2. Check both shaft and commutator. A bent shaft requires replacement of armature.
3. If commutator runout exceeds 0.05 mm (.002 in.), commutator should be refaced. Remove only enough metal to provide a smooth, even surface.

Commutator runout	Max 0.05 mm (.002 in.)
Under cut depth	0.5 mm (.02 in.)



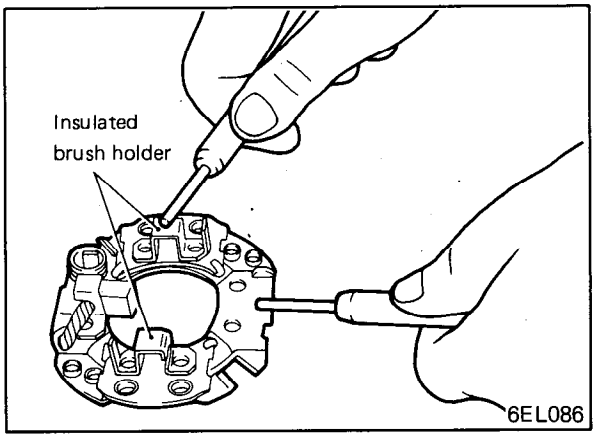
TESTING FIELD COILS FOR GROUNDING

1. Touch one probe of test lamp to series field coil lead and other probe to yoke. Lamp should not light.
   If lamp lights, coils are grounded. If field coils are grounded, replace field coil and yoke assembly.



TESTING BRUSH HOLDER

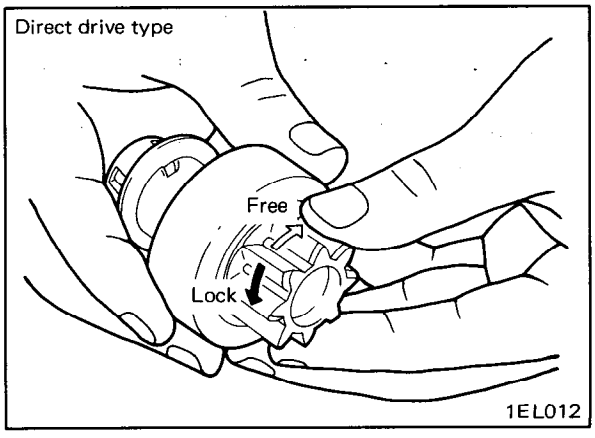
1. Touch each of the insulated brush holders with one test probe, while holding other test probe against brush holder plate.
2. The lamp should not light during this test since the brush holders are insulated. If the lamp lights brush holders on brush holder plate are grounded. Replace brush holder assembly if brush holders are grounded.

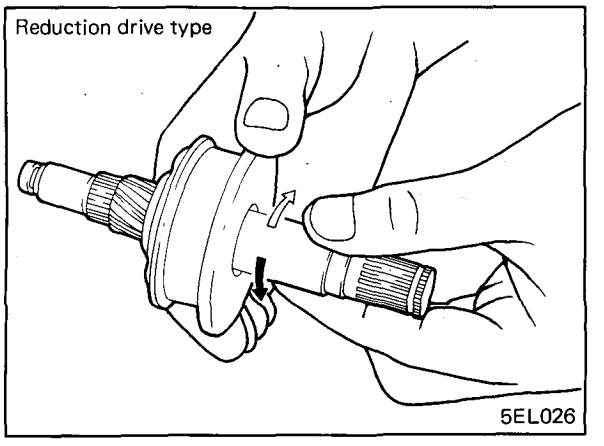


SERVICING DRIVE UNIT

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.





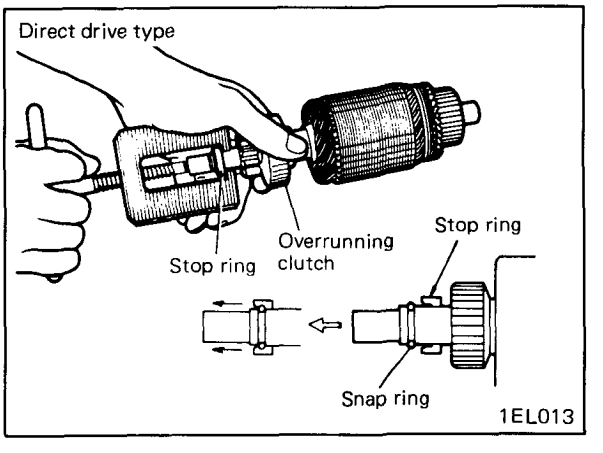
FRONT AND REAR BRACKET BUSHING-DIRECT DRIVE TYPE

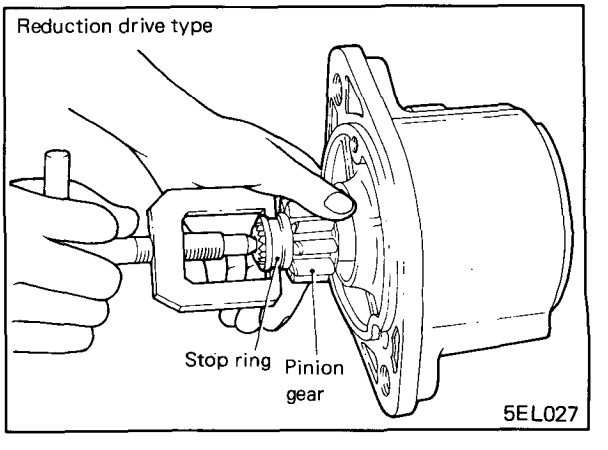
1. Inspect bushing for wear or burr. If bushing is worn or burred, replace front bracket assembly or rear bracket assembly.

REASSEMBLY

Reassemble starter motor in the reverse order of disassembly with the following exception.

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





INSTALLATION

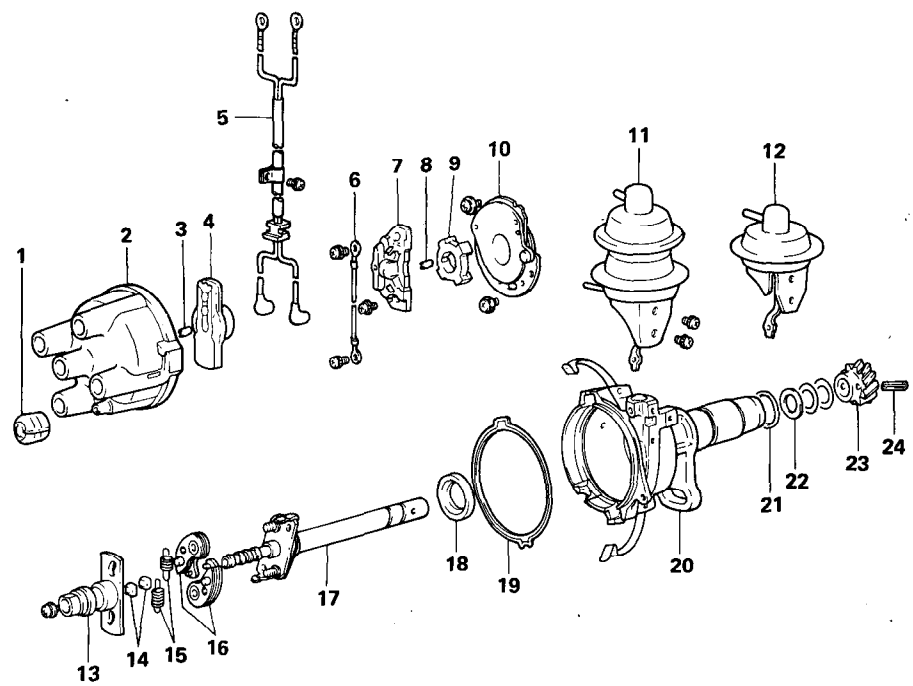
1. Clean both surfaces of starter motor flange and rear plate.
2. Install starter motor to engine and tighten two bolts to specified torque.

Starter motor mounting bolts	22-31 Nm (16-23 ft.lbs.)

3. Connect battery cable and switch wire to starter motor.
4. Connect battery ground cable.

COMPONENTS

1. Breather
2. Cap
3. Contact carbon
4. Rotor
5. Lead wire
6. Earth wire
7. Igniter
8. Pin
9. Rotor
10. Breaker base
11. Vacuum controller for dual diaphragm
12. Vacuum controller for single diaphragm
13. Rotor shaft
14. Spring retainer (2)
15. Governor spring (2)
16. Governor weight (2)
17. Distributor shaft
18. Oil seal
19. Packing
20. Distributor housing
21. O-ring
22. Washer
23. Gear
24. Pin

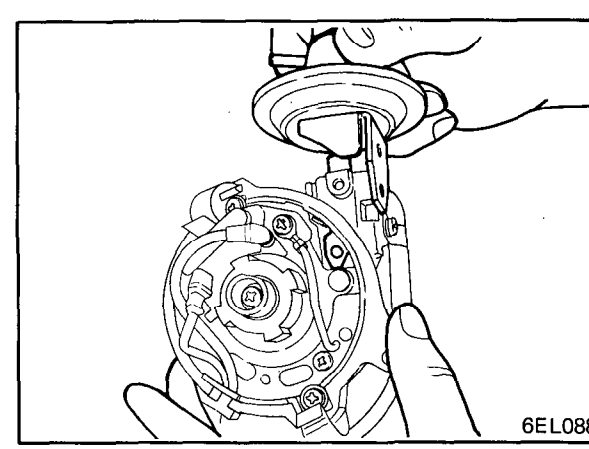


NOTE
Numbers show order of disassembly.
For reassembly, reverse order of disassembly.

6EL087

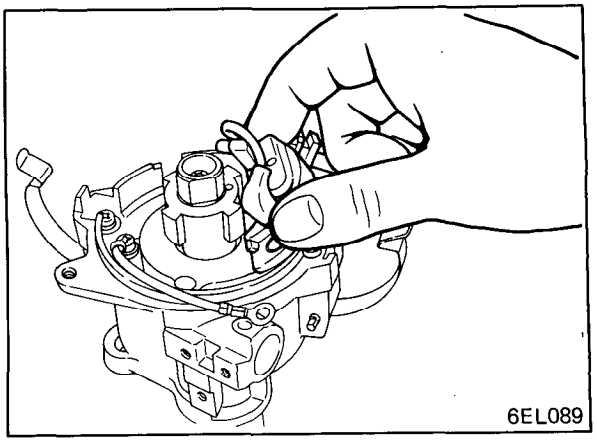
DISASSEMBLY

1. Lightly clamp distributor in a vise equipped with soft jaws.
2. Remove retaining clips and lift off distributor cap and seal ring.
3. Pull-off rotor from rotor shaft.
4. Remove two vacuum controller mounting screws.
5. Remove link of controller from pin on the breaker base, and then remove vacuum controller.

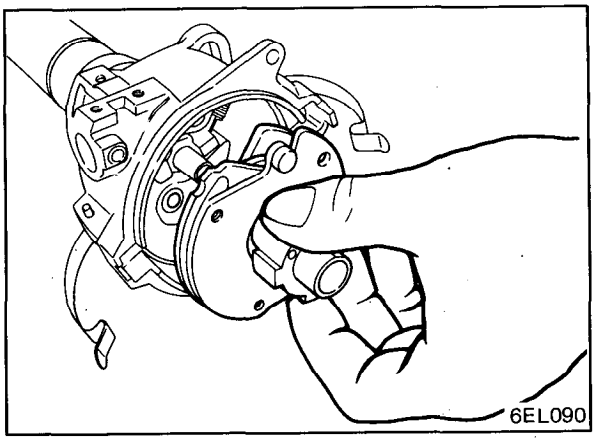


6EL088

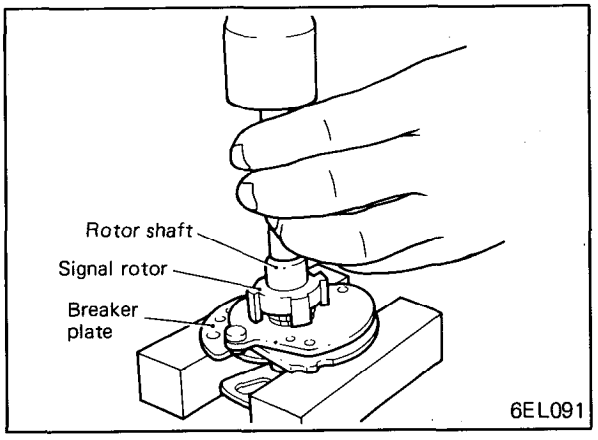
6. Remove two screws and remove igniter.
7. Remove lead wire (black).



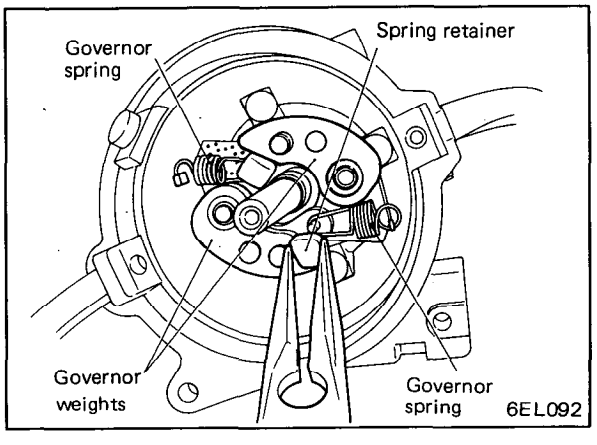
8. Remove signal rotor shaft tightening screw and two breaker plate retaining screws.
9. Remove signal rotor shaft and breaker plate assembly.



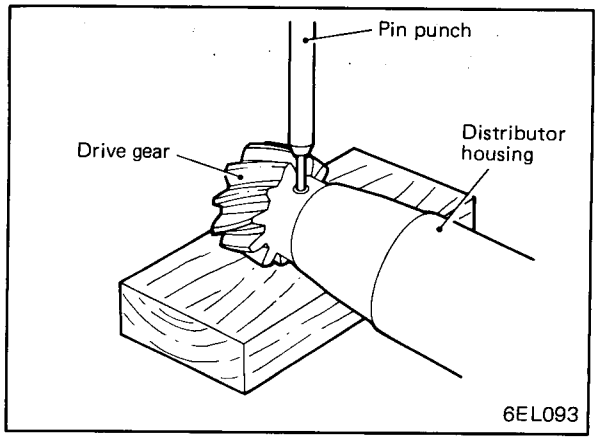
10. Remove signal rotor shaft from signal rotor.



11. Remove two spring retainers with pliers and then remove two governor springs.
12. Remove two governor weights.

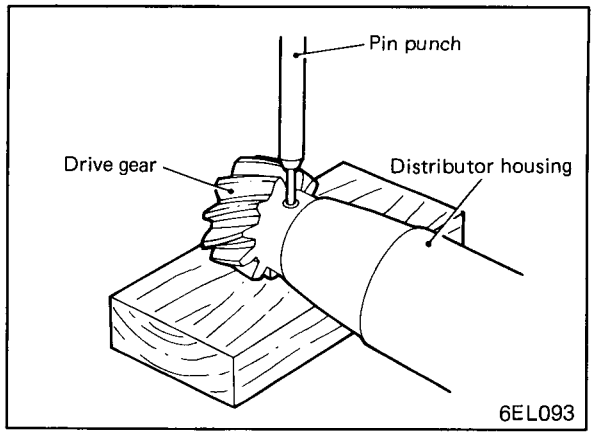


13. Mark location of drive gear on distributor shaft.
14. Place drive gear on soft base (wood block) so that roll pin can be removed.
15. Using a pin punch, remove roll pin.
16. Remove drive gear and washer.
17. Remove distributor shaft from housing.

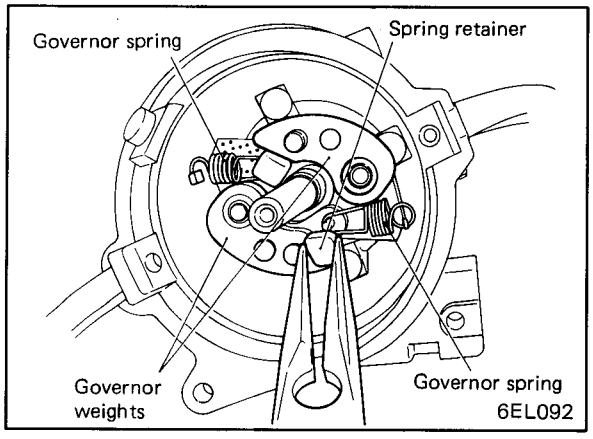


REASSEMBLY

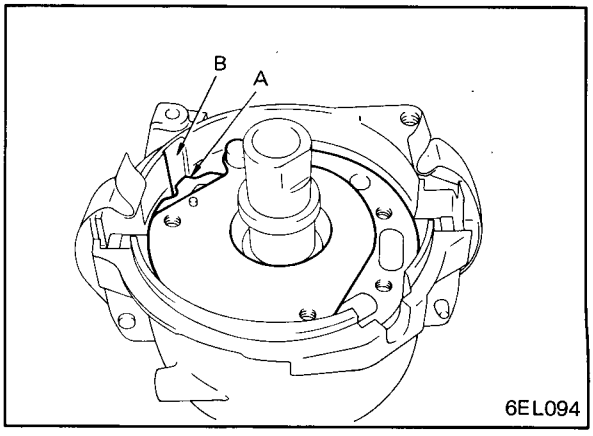
1. Clean and inspect all parts.
2. Install shaft into housing.
3. Install drive gear into distributor shaft at previously marked location. Then install new roll pin.



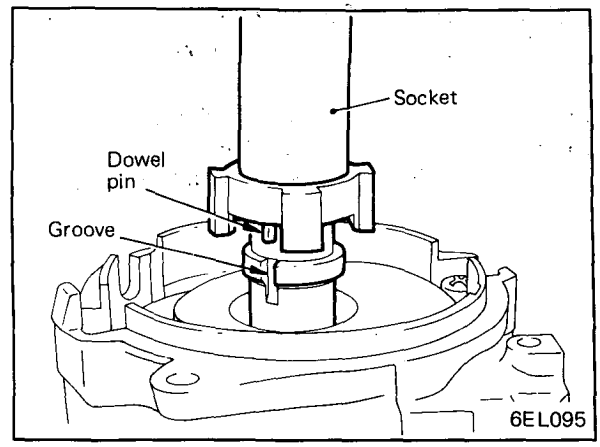
4. Install governor weights on the governor plate.
5. Install governor springs and spring retainer.



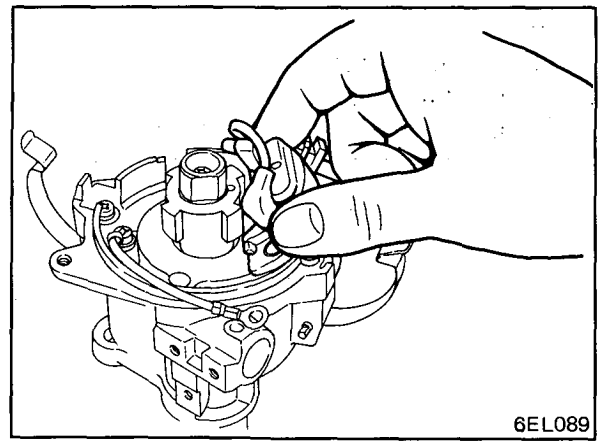
6. Install signal rotor shaft into distributor shaft.
7. Install breaker plate to housing. Position the breaker plate so that the projection (A) fits into the groove (B).
8. Tighten two breaker plate retaining screws.



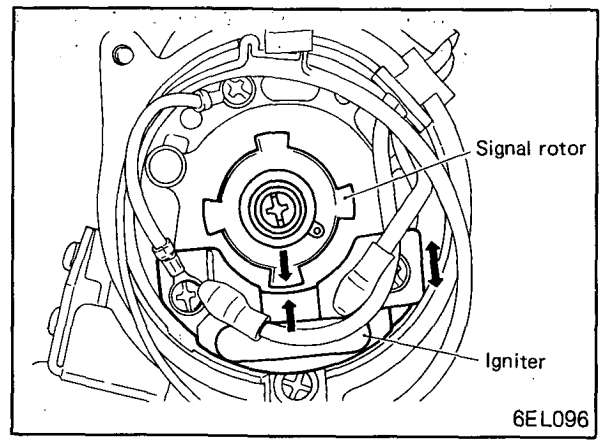
9. Install signal rotor to rotor shaft. Position the signal rotor so that the dowel pin fits into the groove.



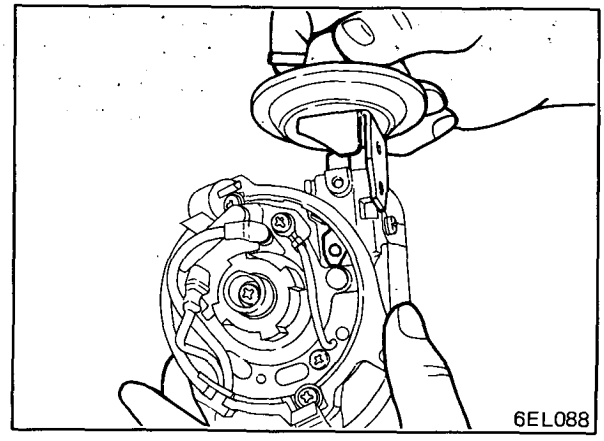
10. Install igniter to breaker plate and install two screws.
11. Connect one end of lead wire to igniter mounting screw and other end to breaker plate.



12. Adjust air gap between signal rotor and pick-up of igniter.

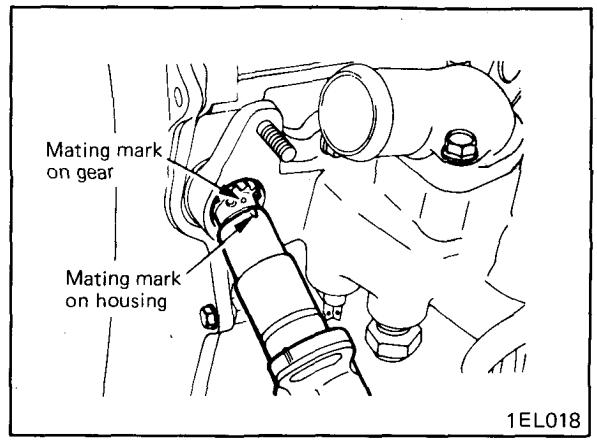


13. Connect vacuum control link to breaker plate and tighten two vacuum controller screws.
14. Install rotor to rotor shaft.
15. Install seal ring and distributor cap to housing and set the retaining clips.

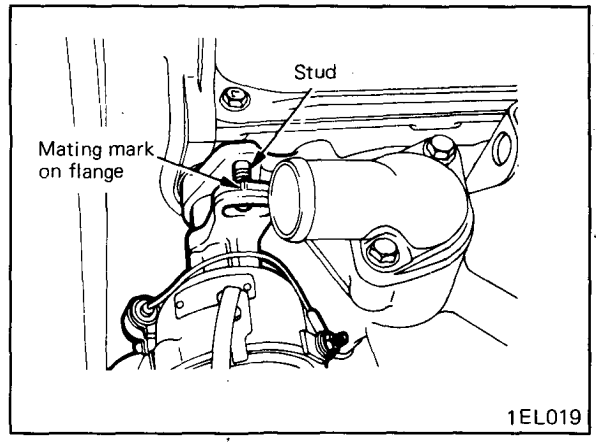


INSTALLATION

1. Turn crankshaft until piston of No. 1 cylinder is at top dead center of compression stroke.
2. Align mating mark on distributor housing with mating mark (punch) on distributor driven gear. (1EL018)



3. Install distributor to cylinder head while aligning mating mark on distributor attaching flange with center of distributor installing stud and tighten nuts. (1EL019)
4. Adjust ignition timing.

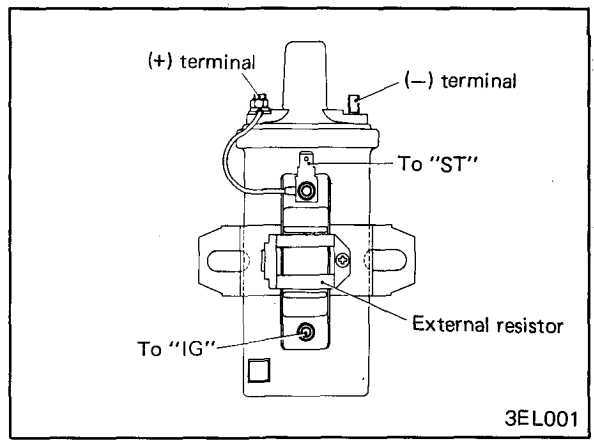


IGNITION COIL

INSPECTION

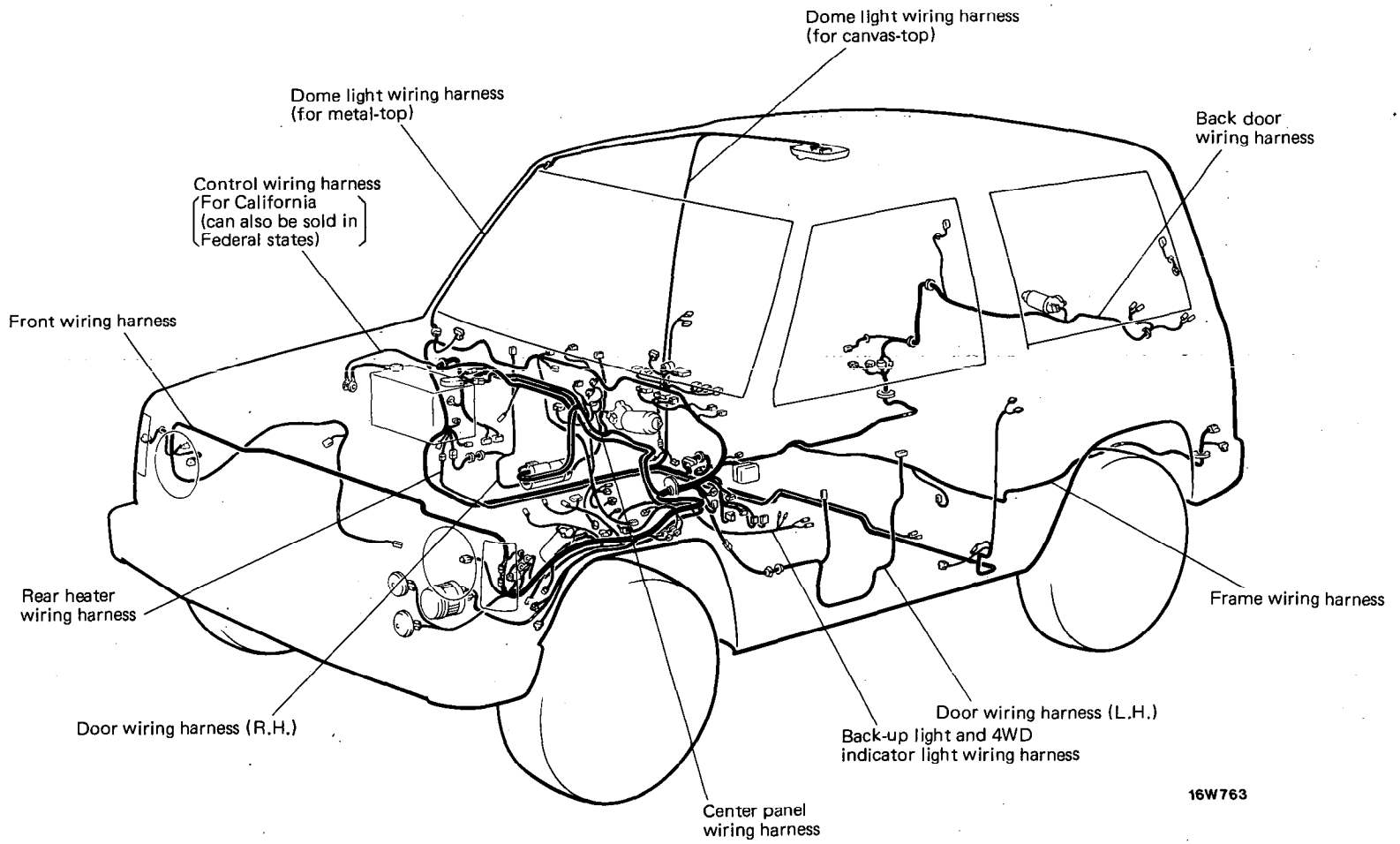
1. Using a circuit tester, measure resistance. An open- or short-circuited coil should be replaced.

Model No.	
Primary resistance E-064	1.1-1.3 Ω at 20°C (68°F)
Secondary resistance	11.6-15.8 kΩ at 20°C (68°F)
External resistor resistance	1.2-1.5 Ω at 20°C (68°F)

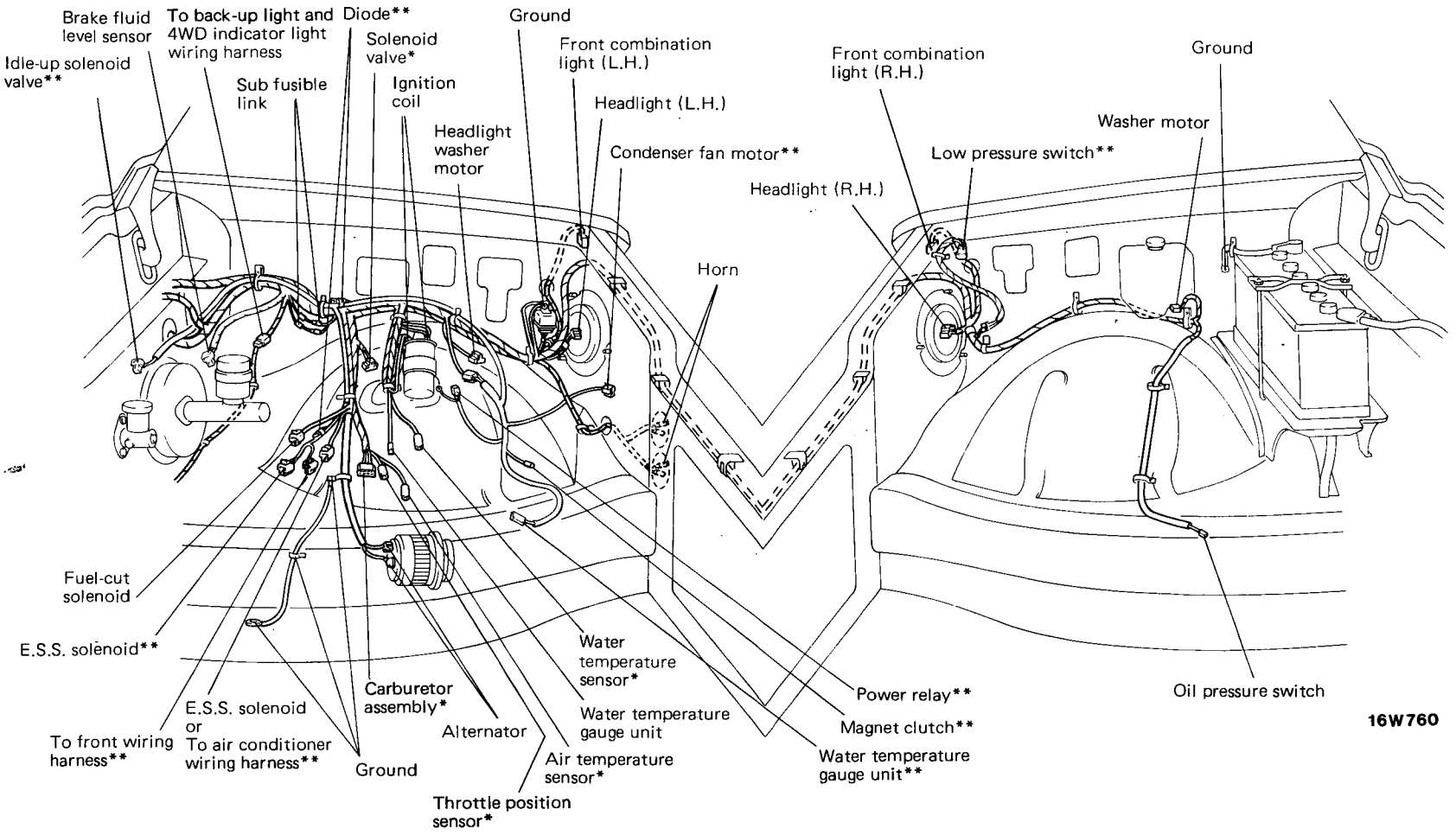


2. Check resin portion for cracks. If there are cranks, replace.
3. Check for fluid (oil) leaks. If there are leaks, replace.

Wiring harness locations

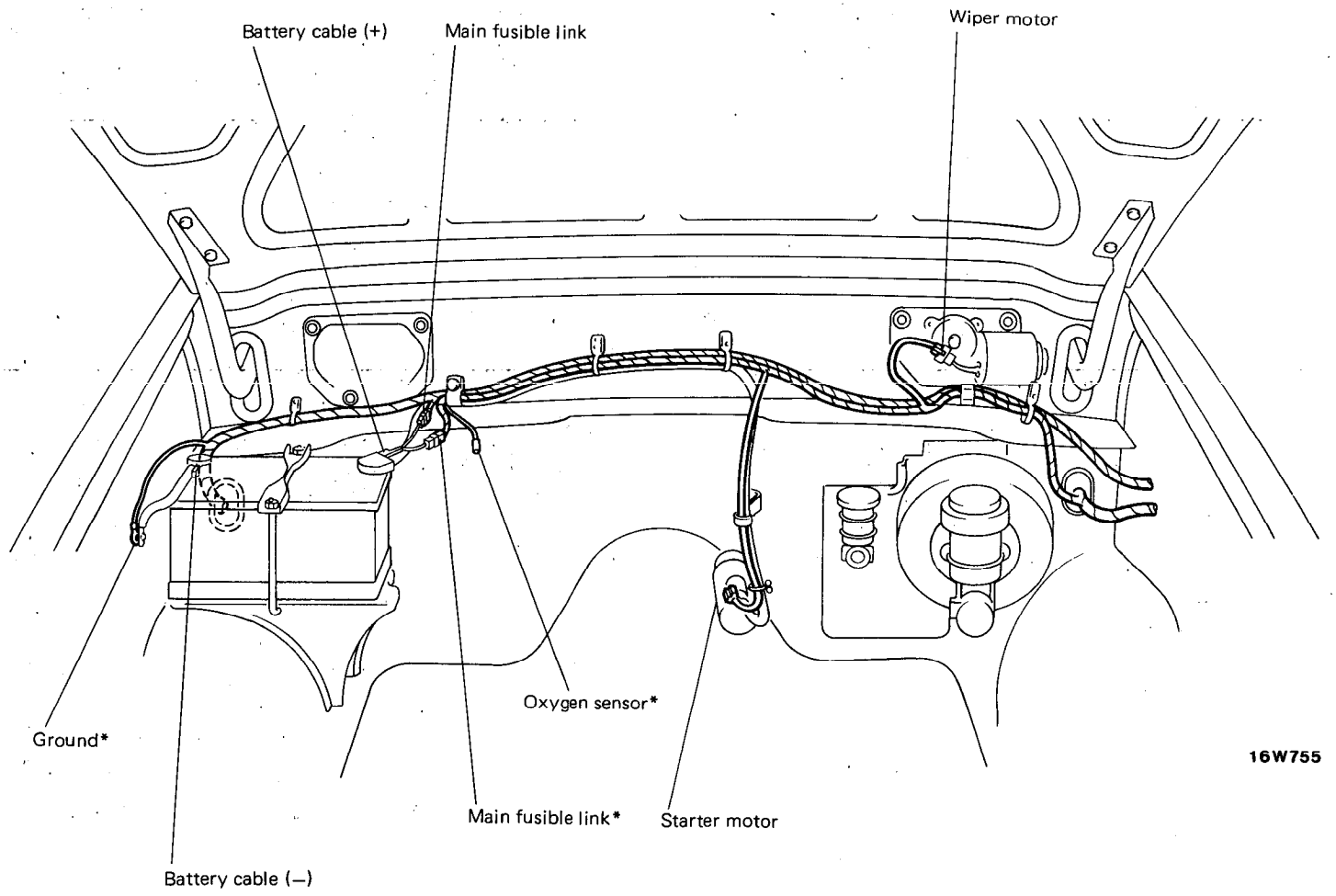


Engine compartment — Front

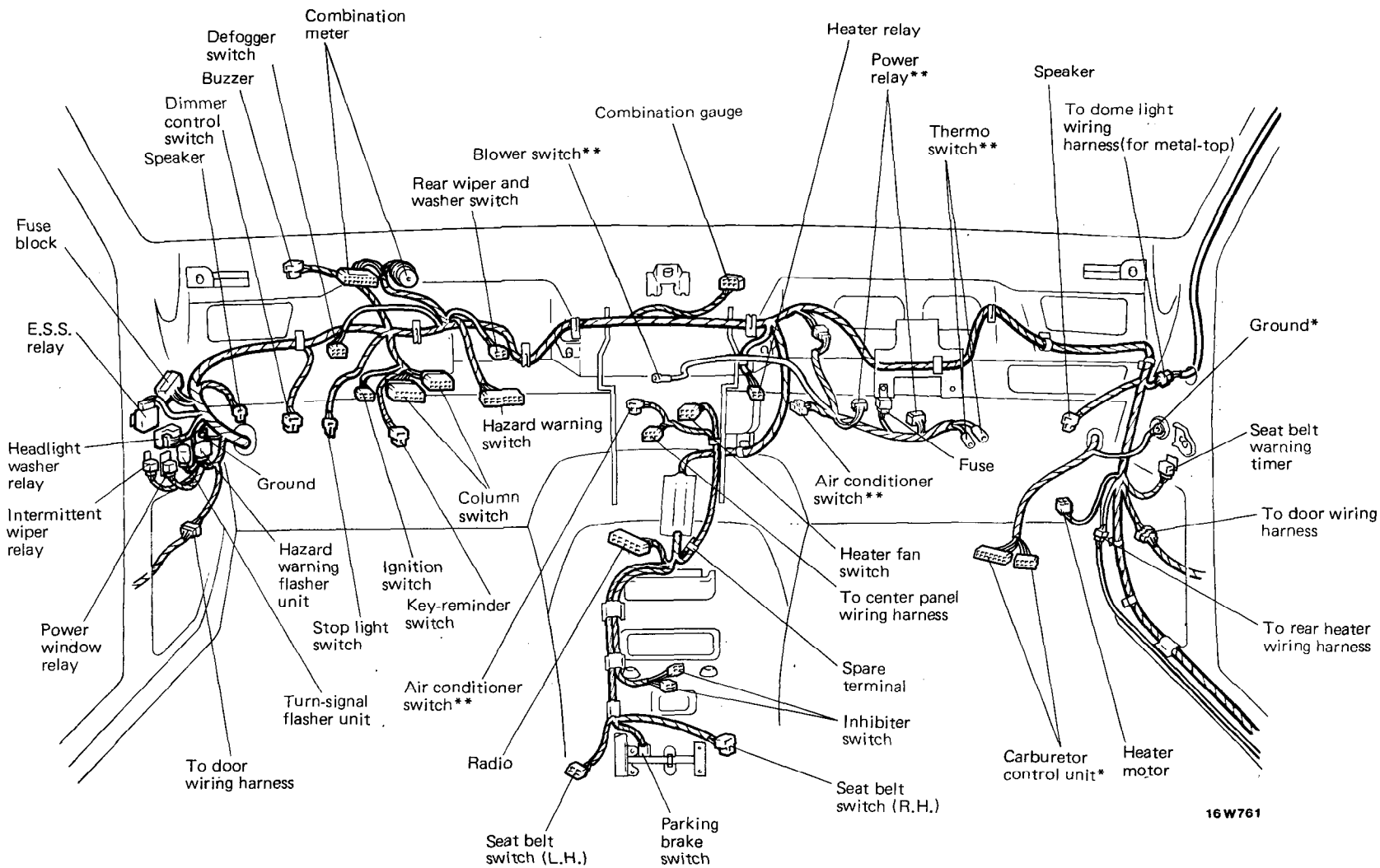


NOTE
* : For California (can also be sold in Federal States).
** : indicates connection for vehicles with an air conditioner.

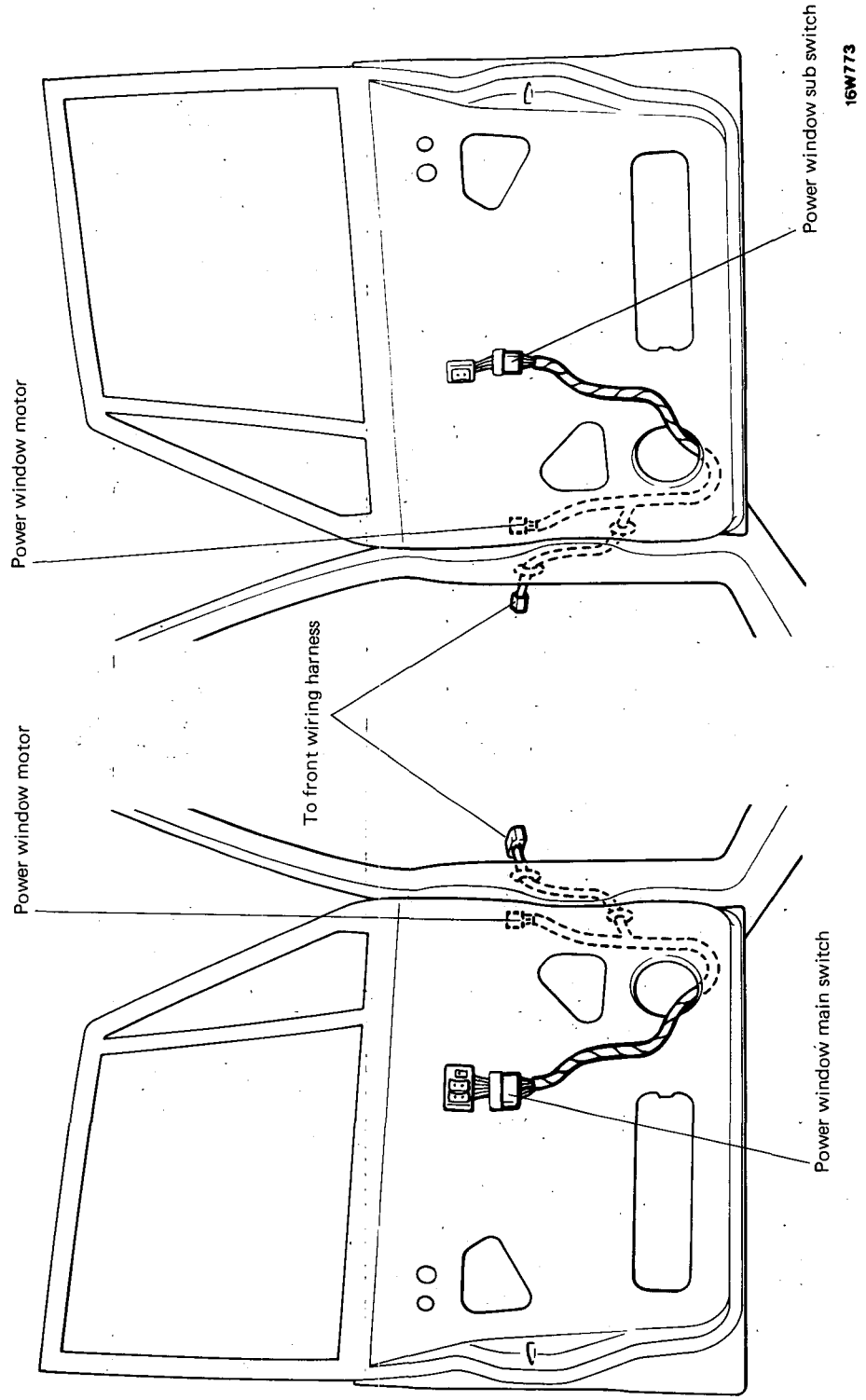
Engine compartment — Rear



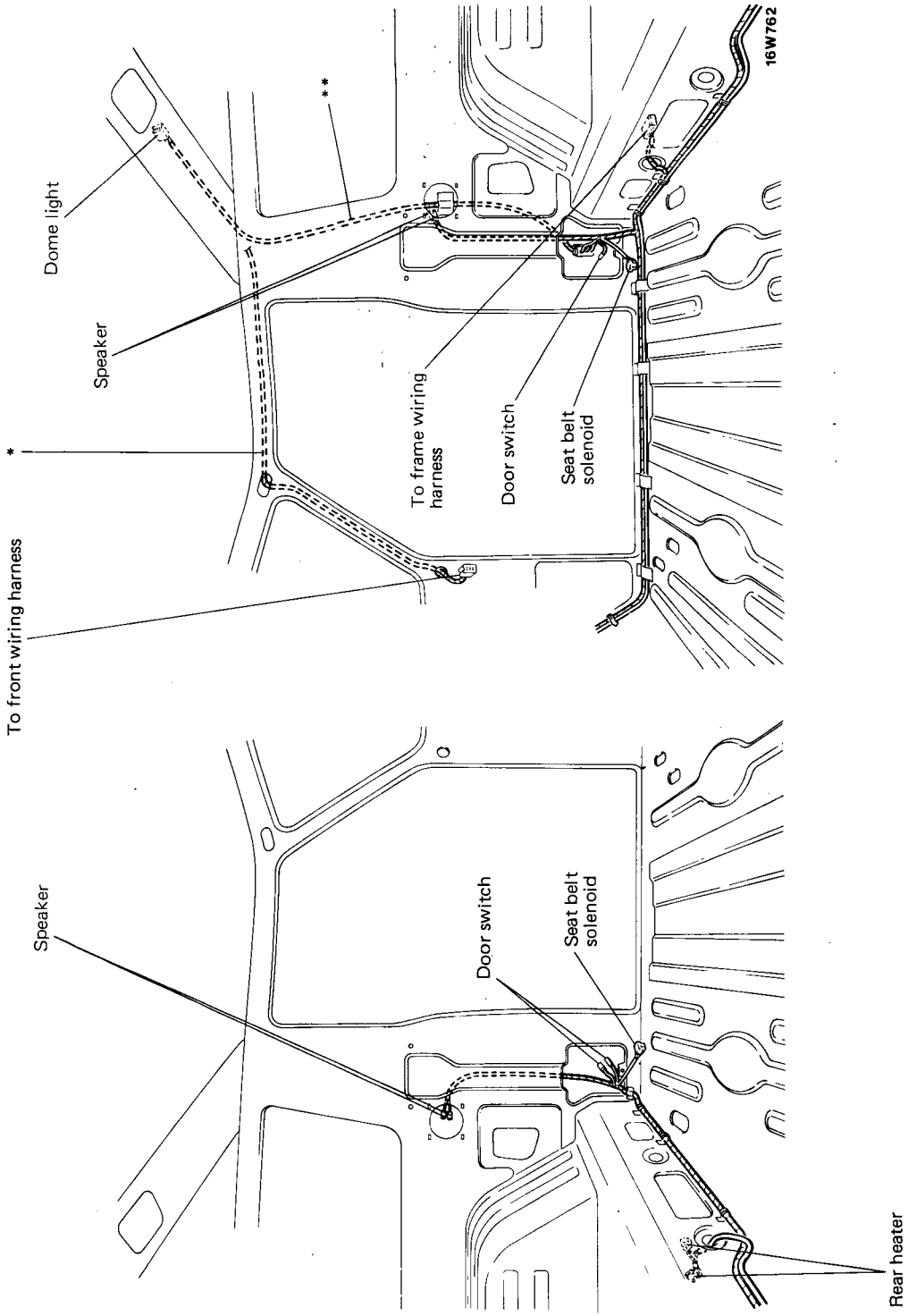
NOTE
* : For California (can also be sold in Federal States)



NOTE
* : For California (can also be sold in Federal States).
** : indicates connection for vehicles with an air conditioner.

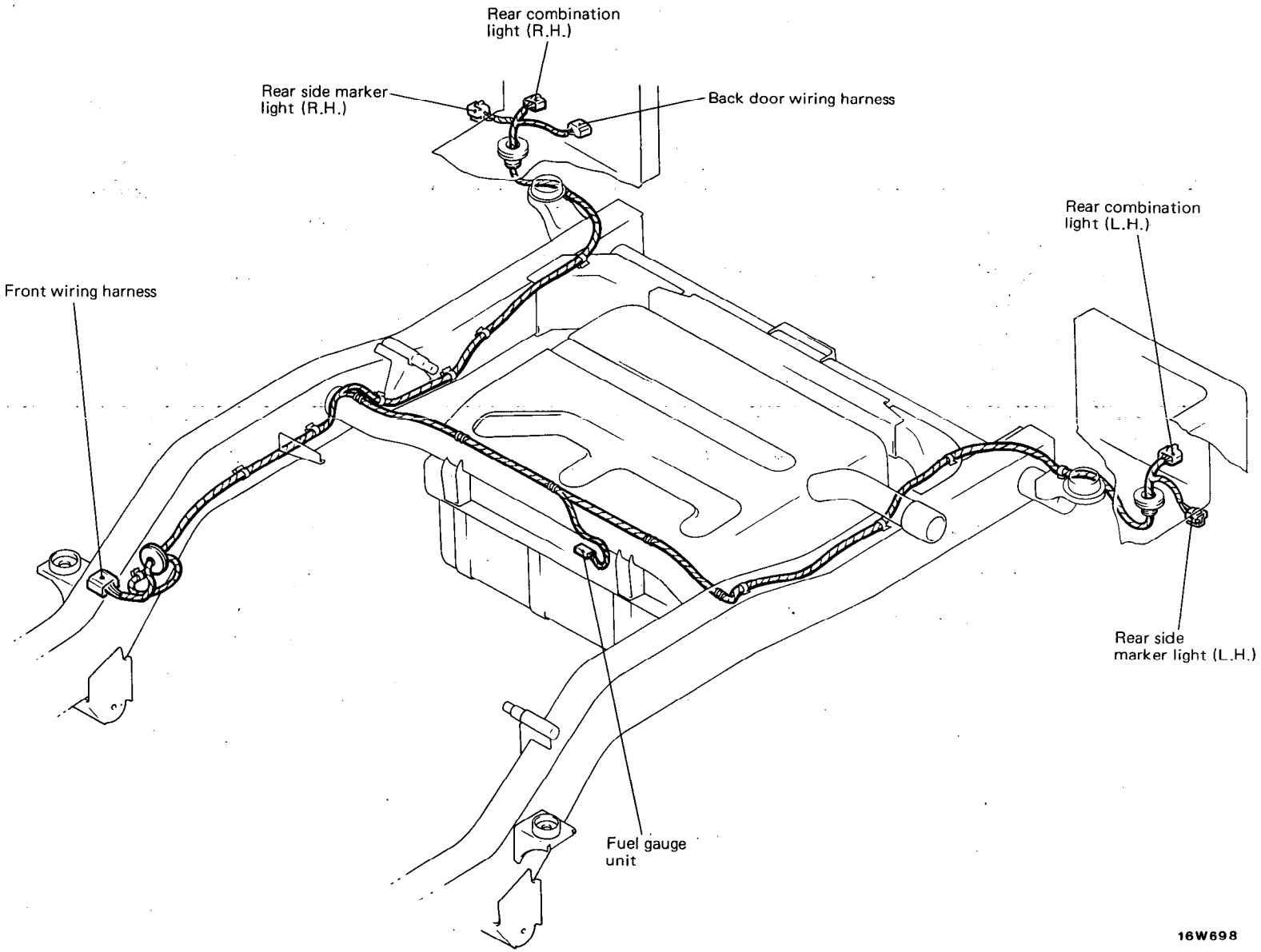

Power window sub switch
16W773
Power window motor
To front wiring harness
Power window motor
Power window main switch

Door

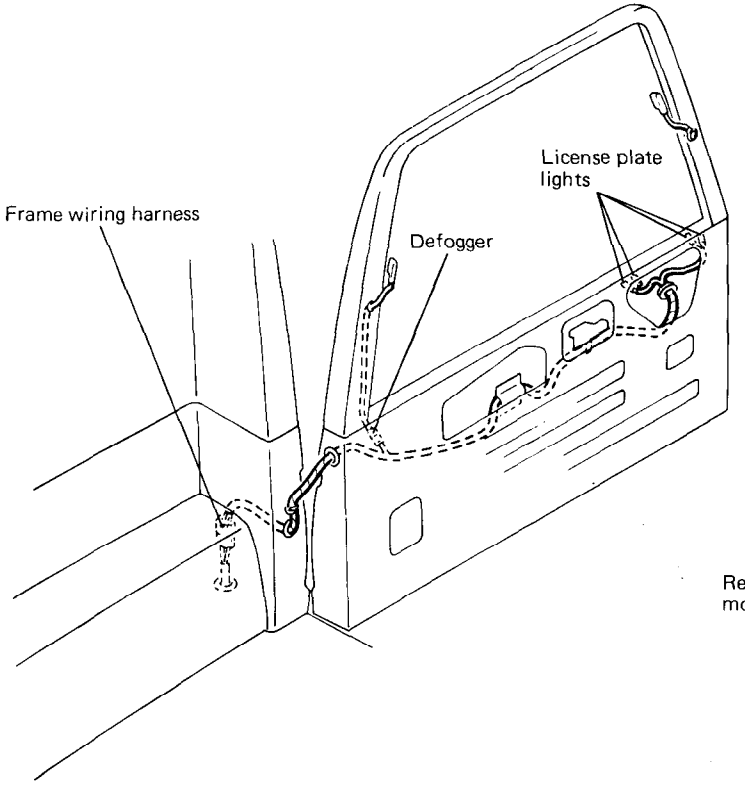


NOTE
* : Routing of the dome light wiring harness for vehicles equipped with a metal-top.
** : Routing of the dome light wiring harness for vehicles equipped with a canvas-top.

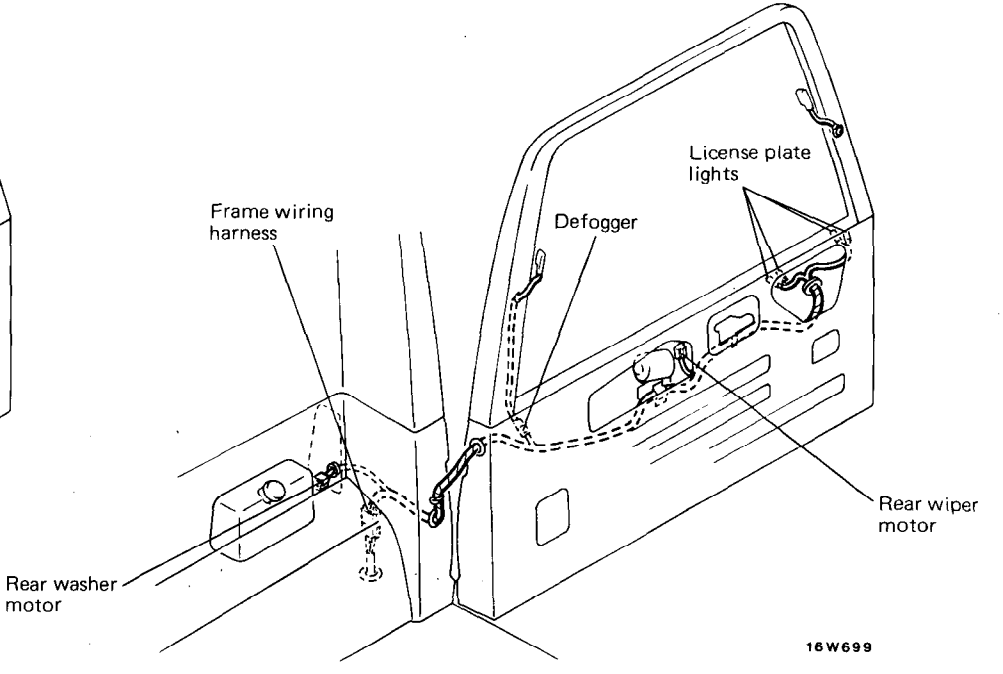
Floor and Roof

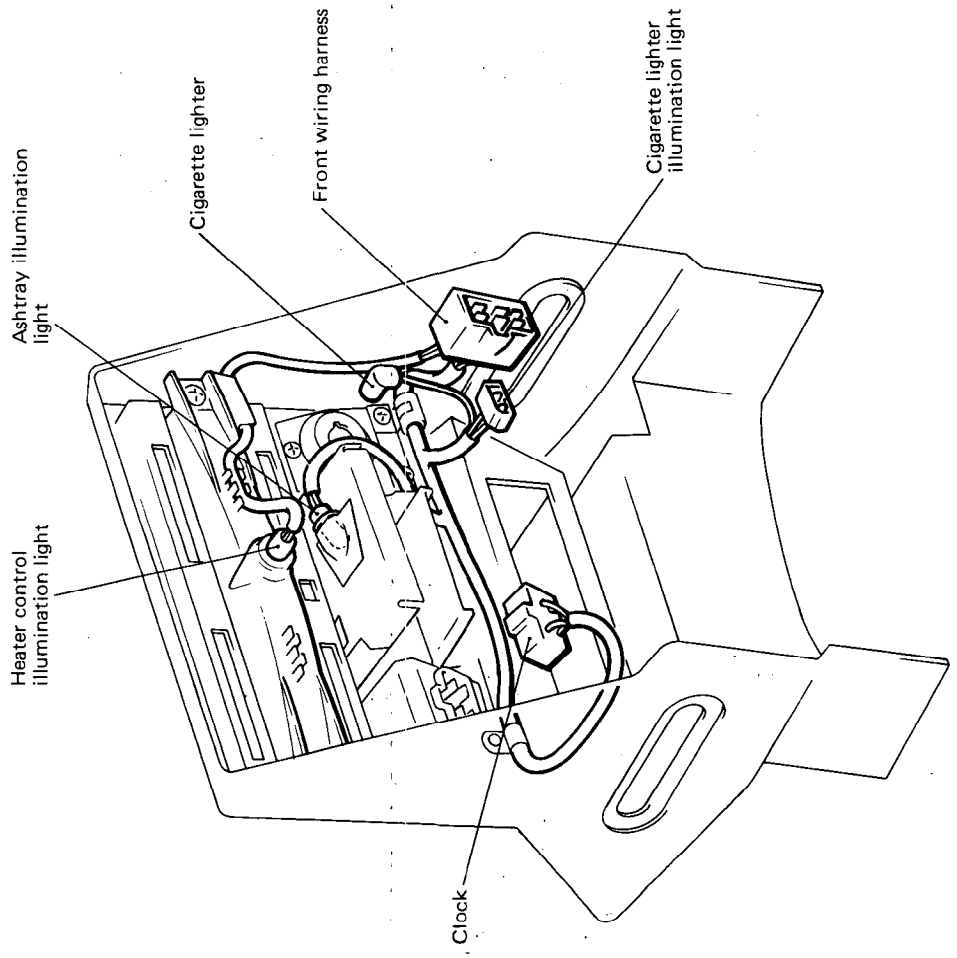

Rear combination light (R.H.)
Rear side marker light (R.H.)
Back door wiring harness
Rear combination light (L.H.)
Front wiring harness
Rear side marker light (L.H.)
Fuel gauge unit
16W698

Back door – Vehicles without a rear wiper and washer



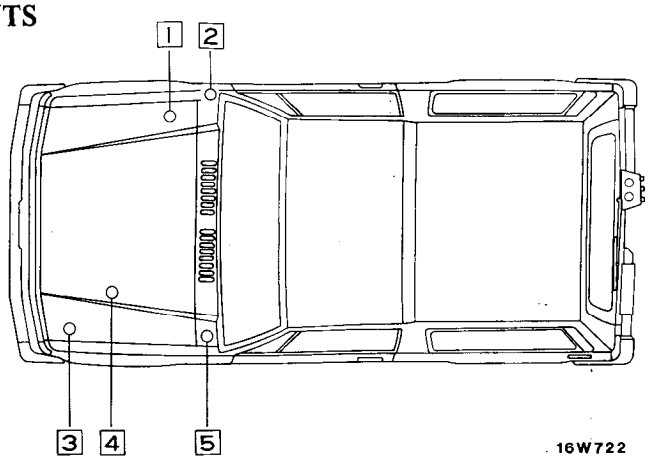
Back door – Vehicles with a rear wiper and washer



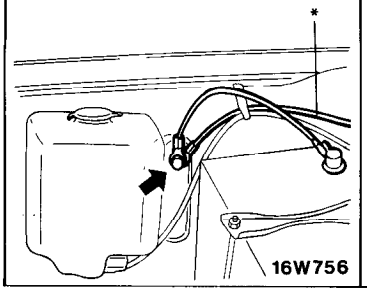
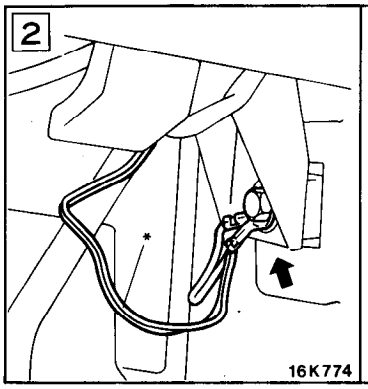
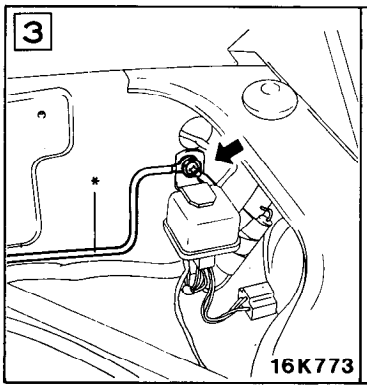
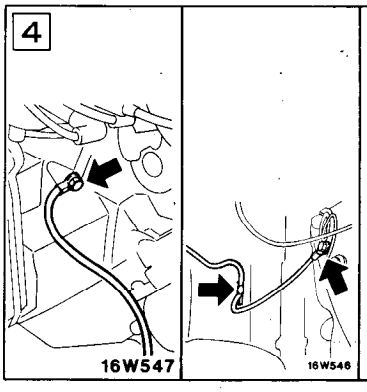
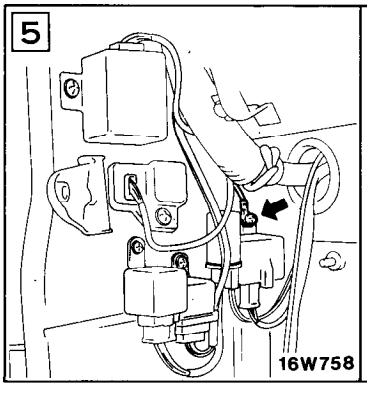


Center panel

CENTRALIZED GROUND POINTS

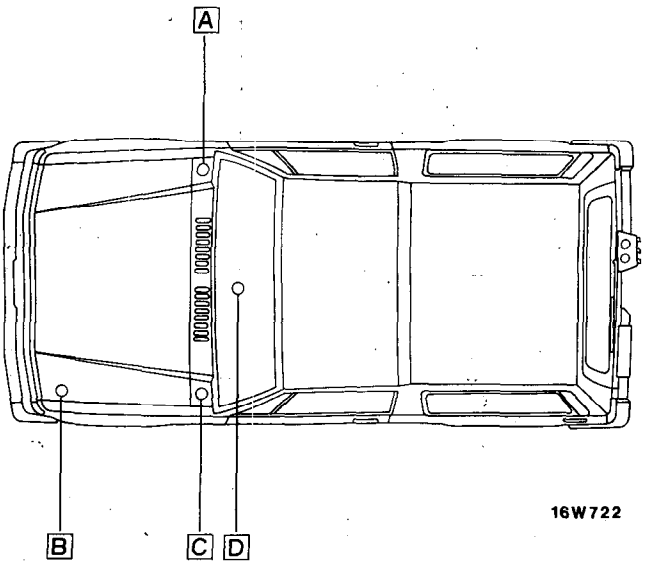


16W722

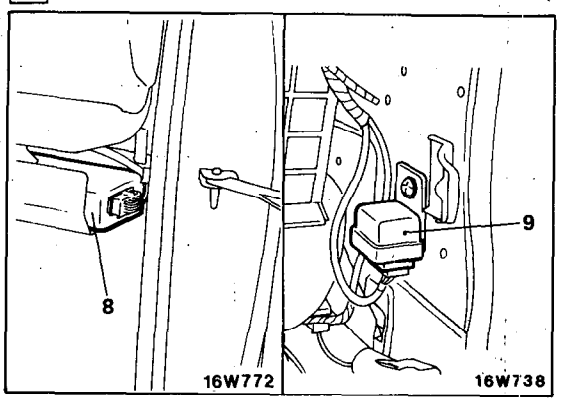
1  16W756	Fender shield, inner (right side)
2  16K774	Front pillar, inner (right side)
3  16K773	Fender shield, inner (left side)
4  16W547 16W546	Engine block (left side) Frame (left side) Fender shield (left side)
5  16W758	Front pillar, inner (left side)

NOTE
* : For California (can also be sold in Federal States).

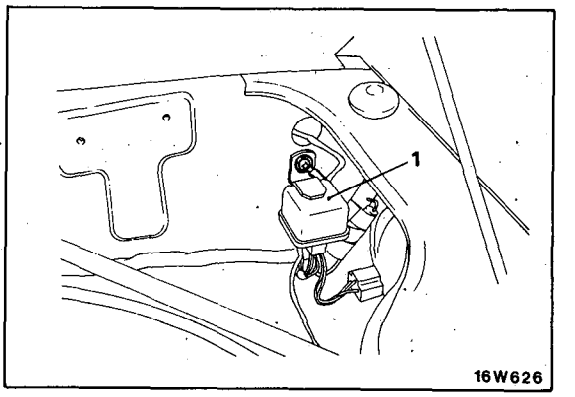
RELAY MOUNTING LOCATIONS



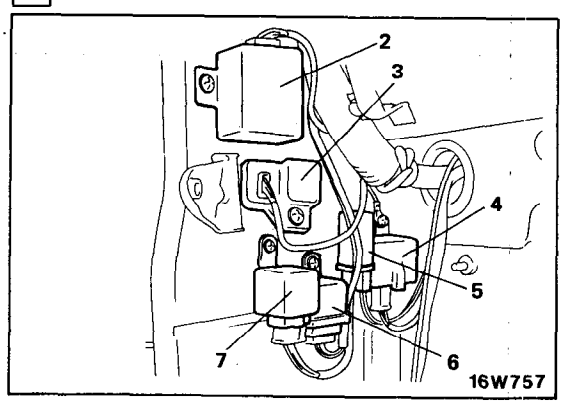
A Front pillar (right side)



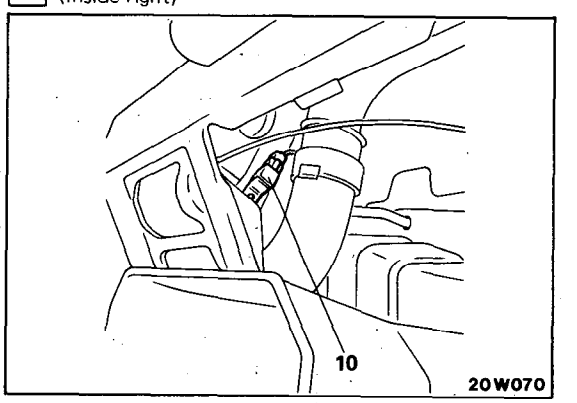
B Fender shield, inner (left side)



C Front pillar, inner (left side)

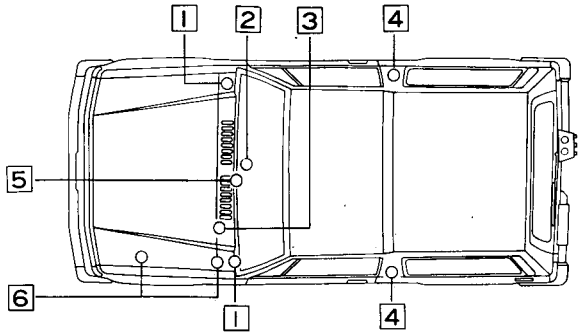


D Dash panel, upper (inside right)



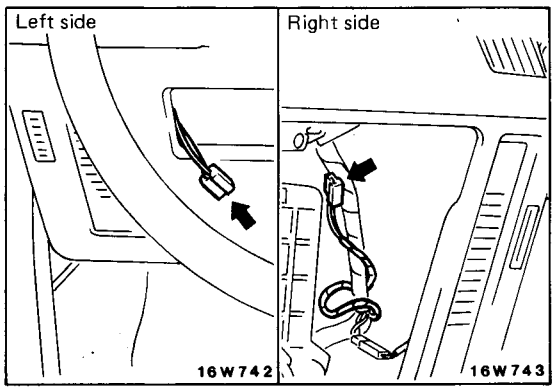
1. Light control relay
2. E.S.S. relay
3. Headlight washer relay
4. Turn-signal flasher unit
5. Hazard warning flasher unit
6. Power window relay
7. Intermittent wiper relay
8. Carburetor control unit (For California (can also be sold in Federal States))
9. Seat belt timer
10. Heater relay

SPARE TERMINALS

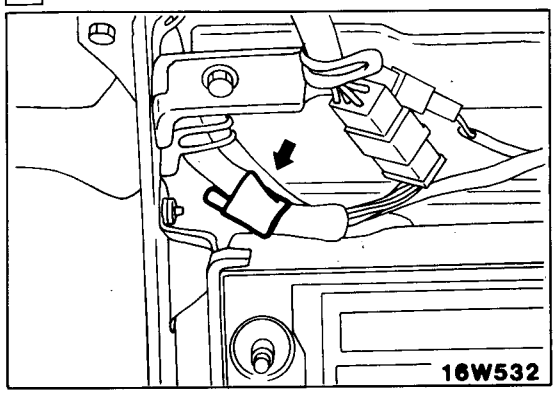


16W722

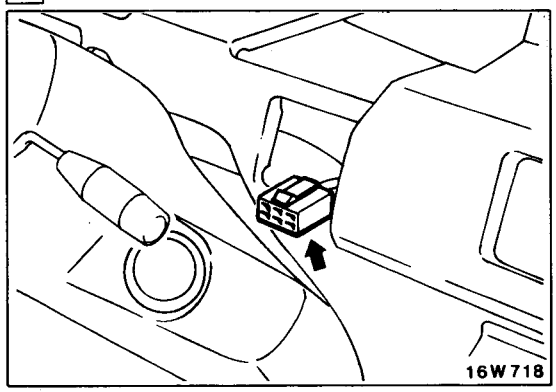
1 Front speaker



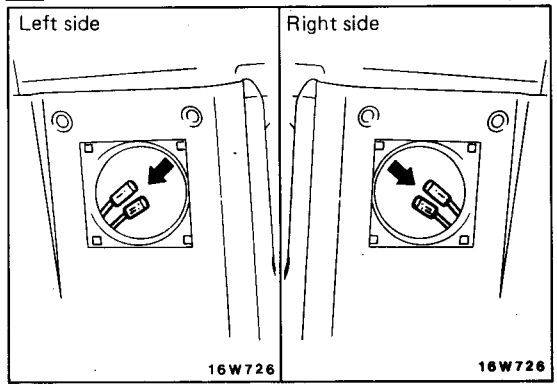
2 ACC spare terminal



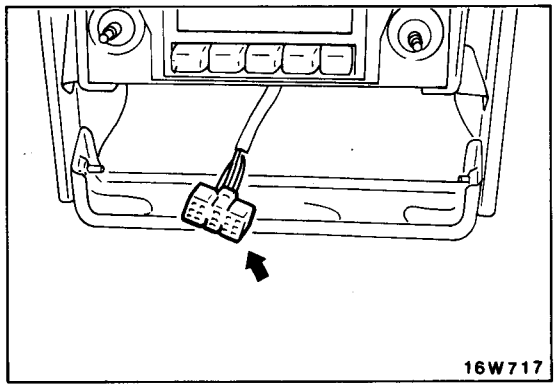
3 Rear wiper and washer switch



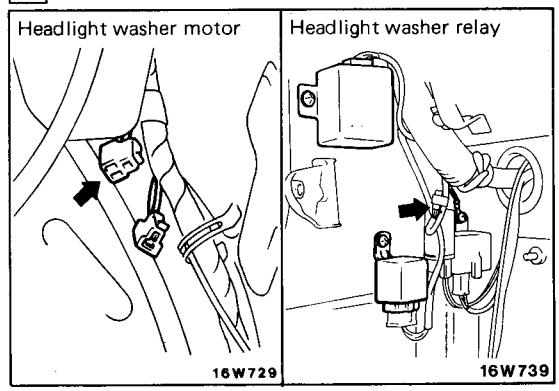
4 Rear speaker



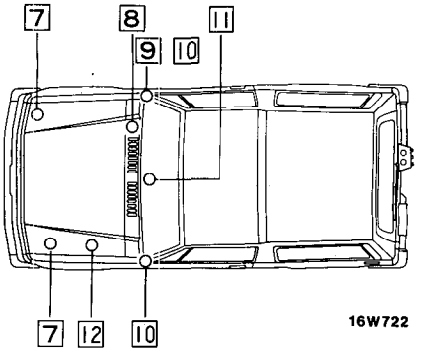
5 Radio



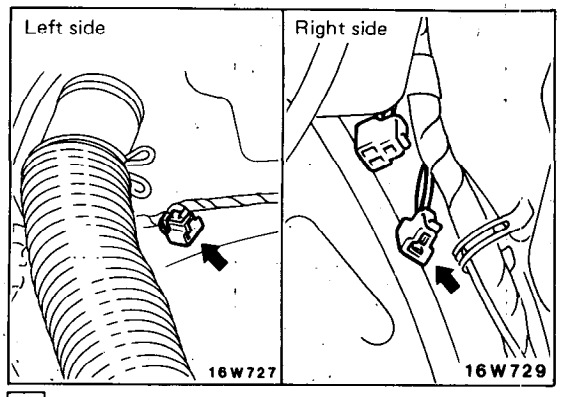
6 Headlight washer motor and relay



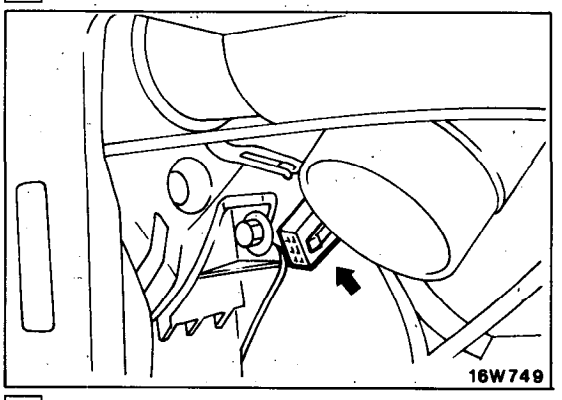
NOTES
(1) If ACC spare terminal 1 is used, it must not be used for more than 5 A.
(2) If the vehicle is not equipped with the optional equipment corresponding to a spare terminal, that spare terminal will be secured to the main line with blue tape.



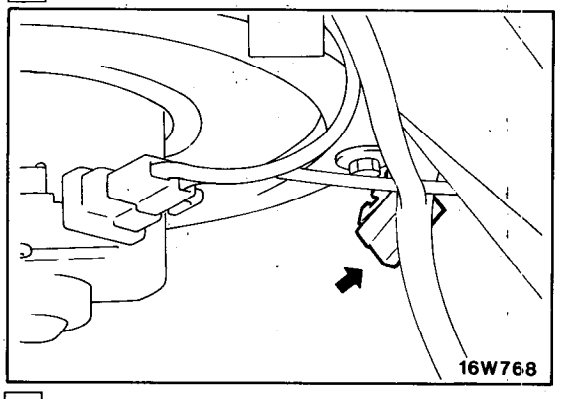
7 Air conditioner compressor and low pressure switch



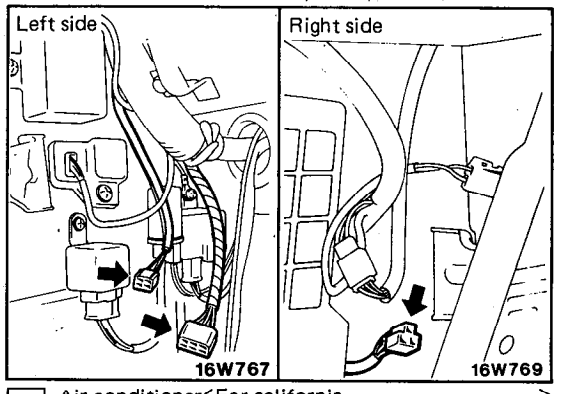
8 Air conditioner unit



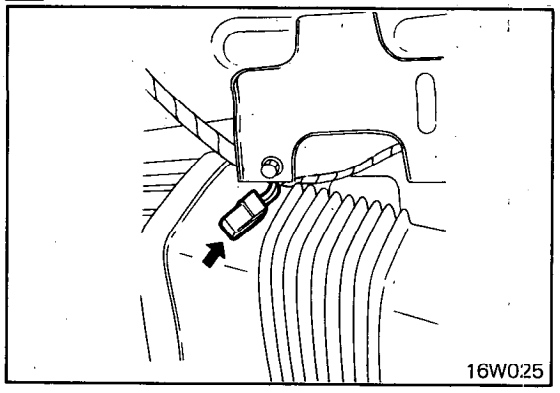
9 Rear Heater



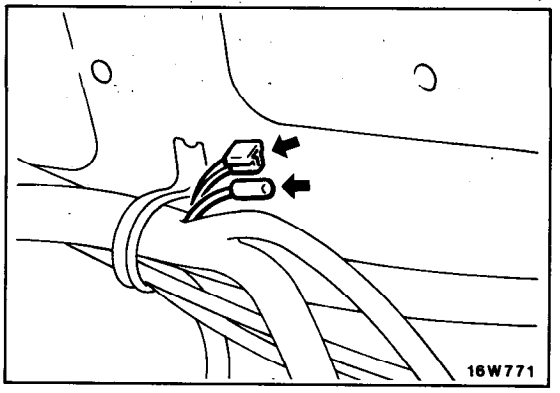
10 Power Window



11 Air conditioner switch

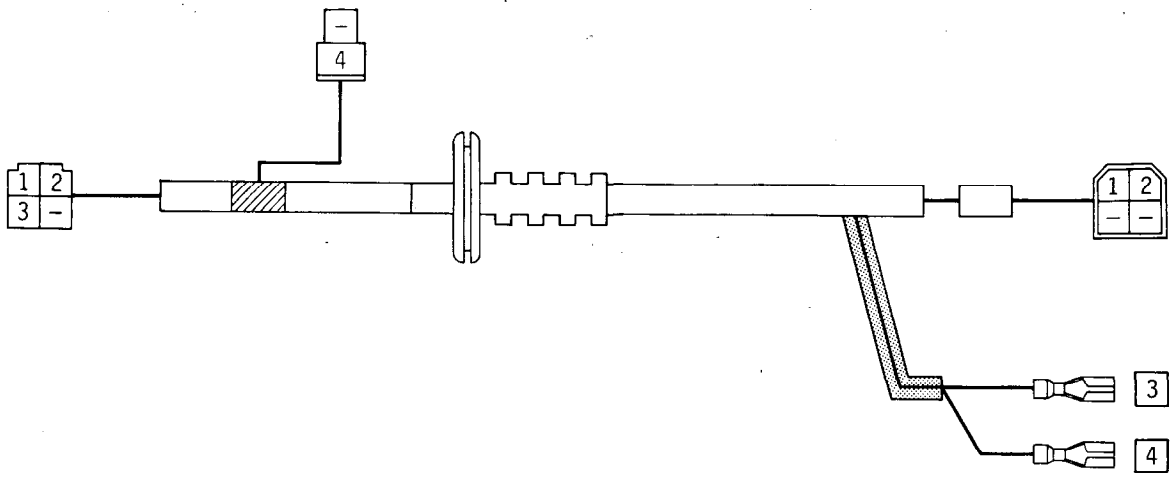


12 Air conditioner (For california (can also be sold in Federal states))



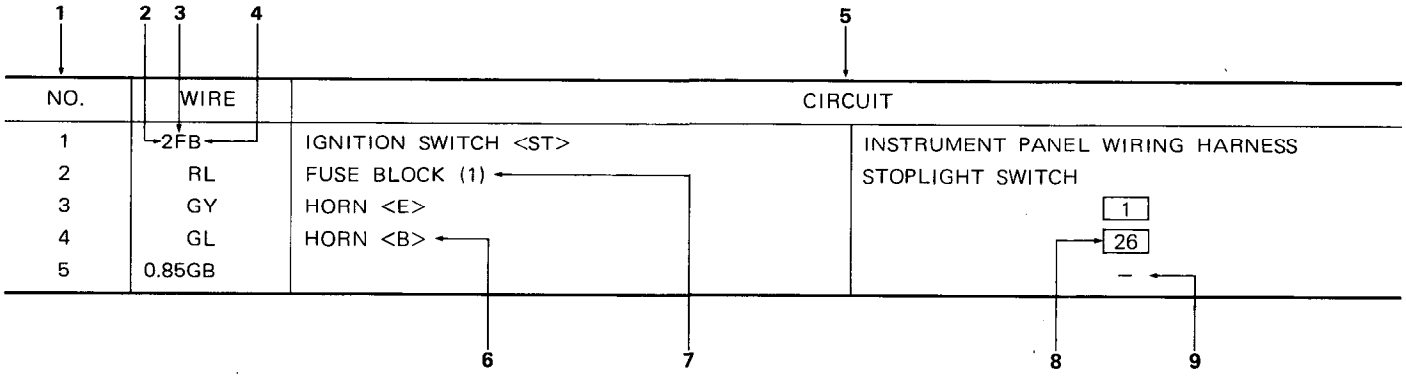
READING THE HARNESS DIAGRAMS

Harness Diagram Example



16E962

How to Read the Accompanying



1. The connector terminal number indicated in the diagram.
2. The numbers indicate the nominal cross-sectional area of the wire; refer to the table at right. If a number is not used, it indicates that the cross-sectional area of the wire is 0.5 mm².
3. "F" indicates that this is flexible wire.

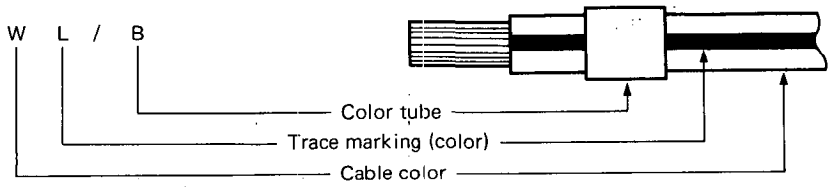
No.	Nominal size mm²	SAE gauge No.	Permissible current	
			In engine compartment	Other areas
0.3	0.3	AWG 22	–	5 A
–	0.5	AWG 20	7 A	13 A
0.85	0.85	AWG 18	9 A	17 A
1.25	1.25	AWG 16	12 A	22 A
2	2.0	AWG 14	16 A	30 A
3	3.0	AWG 12	21 A	40 A
5	5.0	AWG 10	31 A	54 A

4. The letters indicate the color of the wire.

Symbol	B	G	L	O	R	W	Y	Br
Color	Black	Green	Blue	Orange	Red	White	Yellow	Brown

Wires which have two-color insulation covering are indicated by two letters. The first letter indicates the cable color and the second letter indicates the trace marking (color).

Example



M16063

5. Indicates the circuits which are connected.
6. The letters in angular brackets indicate which part of the circuit this terminal is connected to; refer to the following table.

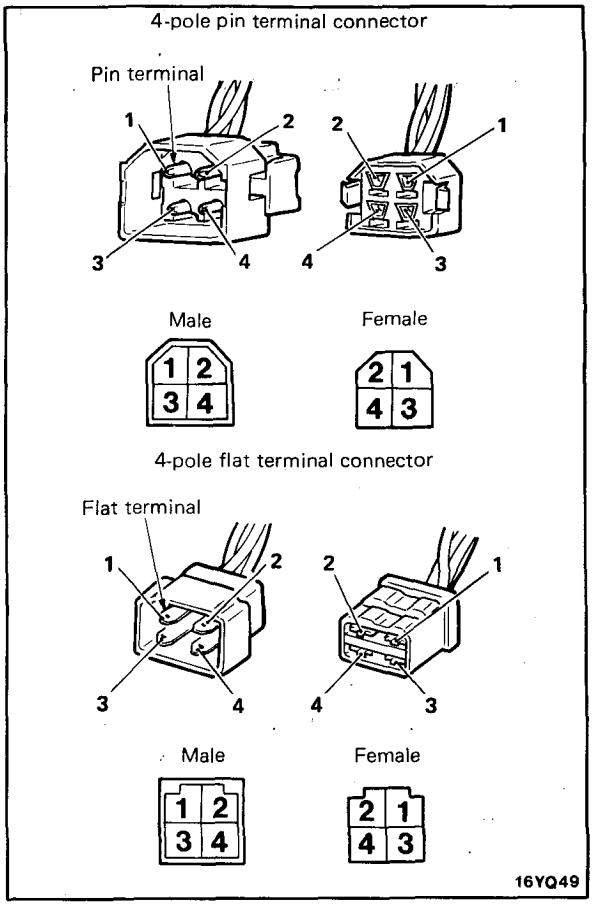
Letter	Meaning	Letter	Meaning
ACC	Accessory	L	Load
AS	Auto-stop	LO	Low-speed terminal
B	Battery	LI	License plate lights
BACK	Back-up lights	OIL	Oil pressure
BEAM	Headlight upper beam indicator light	RL	Rear left
BK	Brake	RR	Rear right
CHG	Charging	S	Soft
DEF	Defogger	ST	Starter
DR	Door	STOP	Stop lights
E	Ground	TAC	Tachometer
FL	Front left	TAIL	Tail lights
FR	Front right	TEMP	Water temperature
H	Hard	TUL	Turn-signal light, left
HI	High speed terminal	TUR	Turn-signal light, right
HL	Headlight low beam	W	Washer
HU	Headlight high beam	+	Positive terminal
IG	Ignition	–	Negative terminal
ILL	Illumination	4WD	4WD indicator light
IND	Indicator light		

7. Parentheses contain supplementary information; in the example, the "1" indicates the number 1 fuse of the fuse block.
8. The boxed numbers ☐ indicate to which terminal is connected.
9. If neither a circuit nor a number is listed, it indicates that this wire of this terminal is not connected to another terminal.

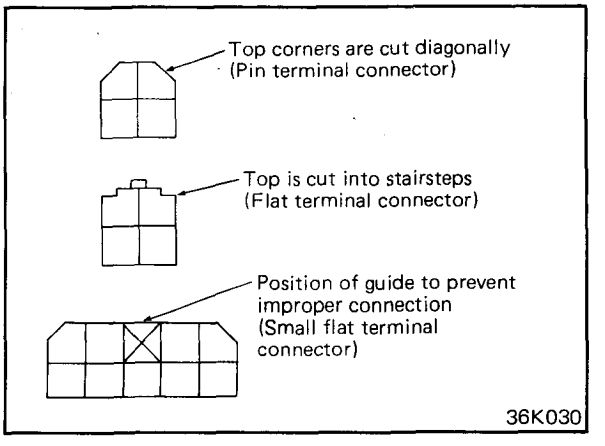
WIRING CONNECTORS

Connector Classifications

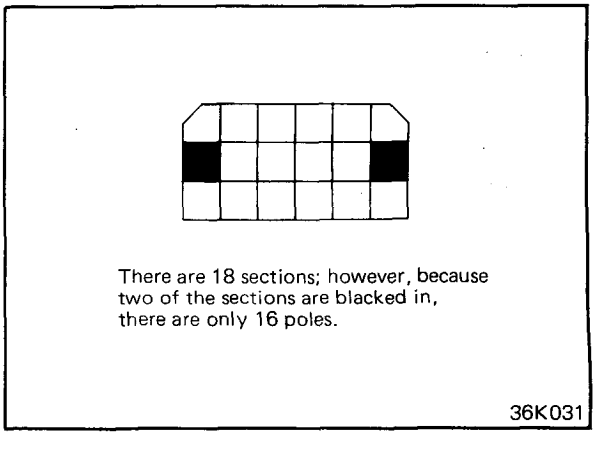
Electrical wiring connectors can be classified according to the type of terminals (such as pin terminals or flat terminals), the number of poles (terminals), whether they are male or female, whether they have a locking device or not, etc. In this Service Manual, connectors will generally be classified as follows:



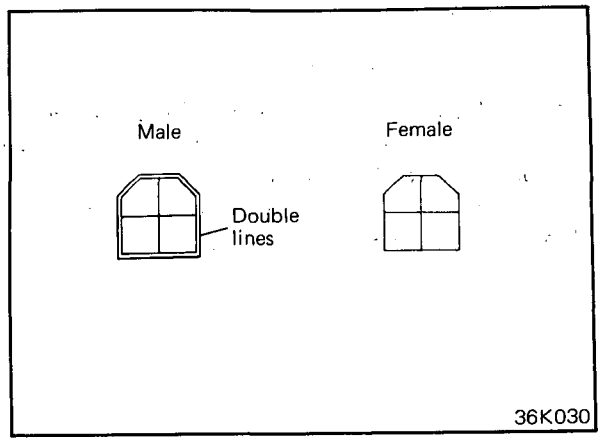
1. Classification according to terminal type
   Connectors illustrated with outer lines shaped so that the top corners are cut diagonally usually have pin terminals, and those illustrated with outer lines shaped so that the top is cut into stairsteps usually have flat terminals.
   Note that connectors illustrated with diagonally cut corners on which one section is marked with an "X" are small flat terminal connectors. The "X" indicates the position of a guide to prevent the connector from being improperly connected.



2. Classification according to number of poles
   The number of sections represents the number of poles inside the connector. However, sections in the illustration marked with an "X" or blacked in do not represent poles.

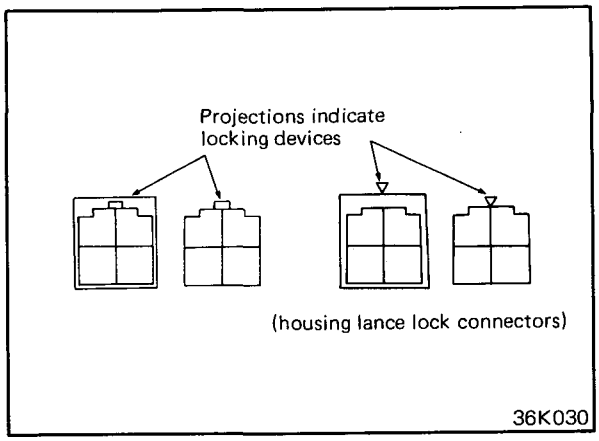


3. Classification according to male and female
   Connectors illustrated with double outer lines are male, and those with single outer lines are female.

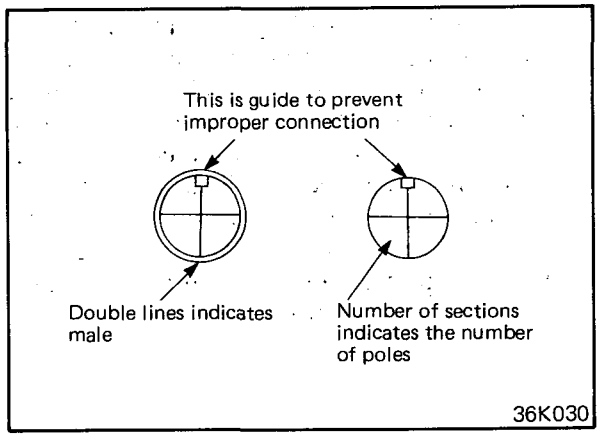


4. Classification according to the presence of a locking device
   If a flat terminal connector is illustrated with a projection at the top, it indicates that the connector is equipped with a locking device.

NOTE
(1) Because all pin terminal connectors, small flat terminal connectors, and sealed connectors are equipped with locking devices, there are special indications in the graphic illustrations.
(2) Housing lance lock connectors have lances inside the connector housing which securely lock the terminals to prevent them from becoming disconnected, thus providing increased reliability.

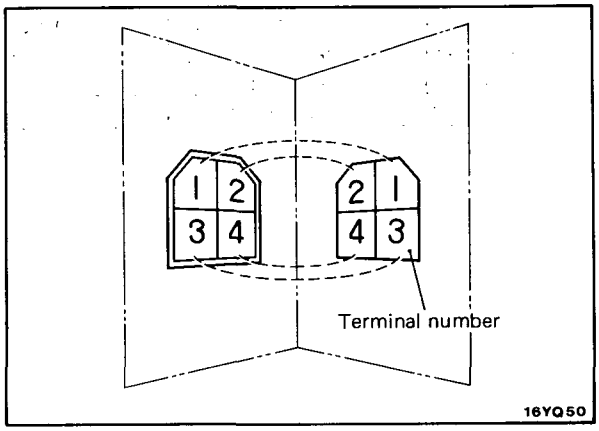


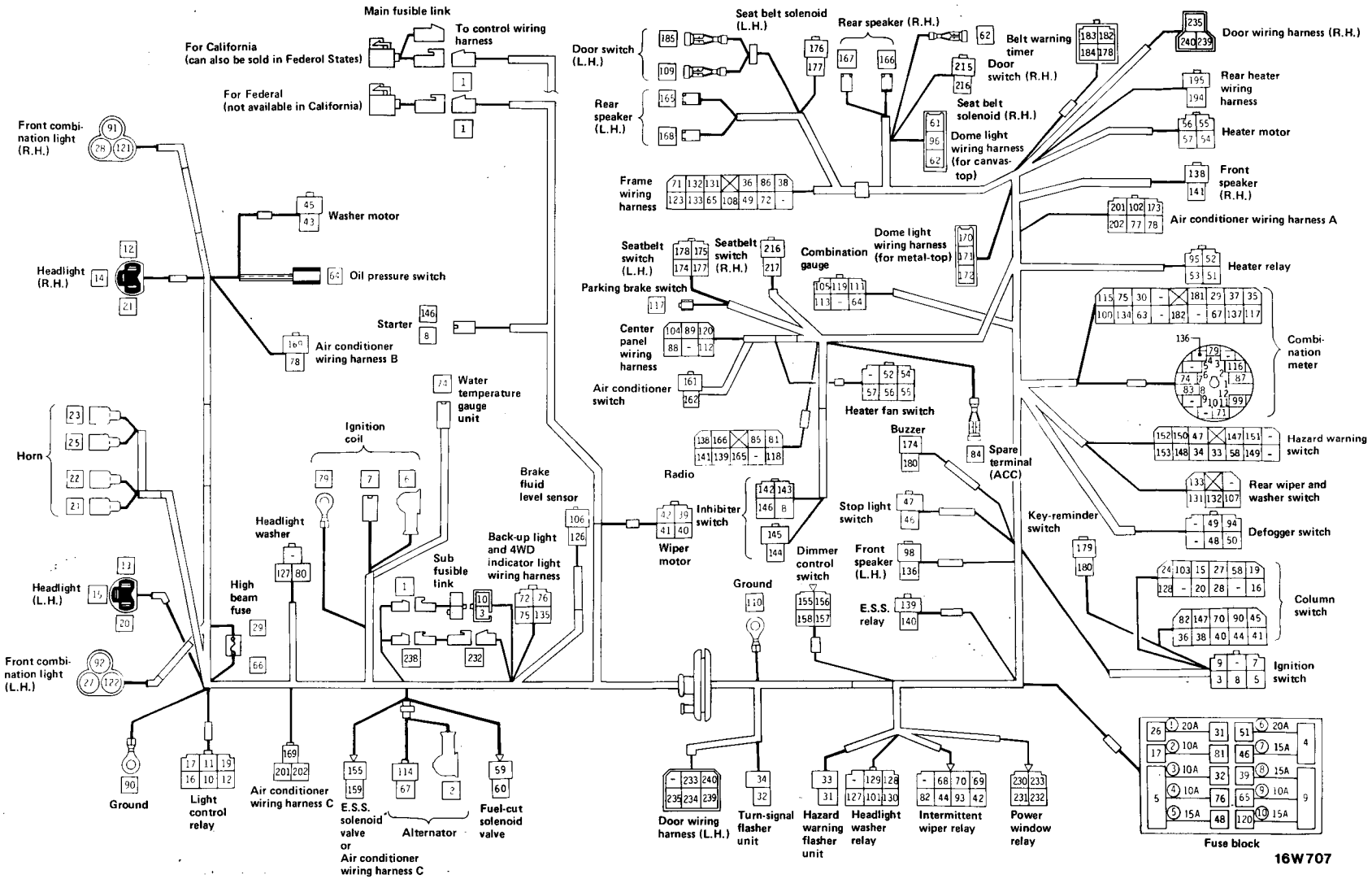
5. Classification according to sealed connector
   Classification of round shape-sealed connector (pin terminal water-proofed connector) which is used for engine wiring harness is the same as above.



Terminal numbers

If a pair of connectors (male and female) is illustrated as disconnected, the corresponding terminal numbers will be positioned symmetrically. Therefore when the pair of connectors is connected, the corresponding terminal numbers on the male and female connectors will match.




Main fusible link
To control wiring harness
For California (can also be sold in Federol States)
For Federal (not available in California)
Front combination light (R.H.)
Washer motor
Headlight (R.H.)
Oil pressure switch
Starter
Air conditioner wiring harness B
Water temperature gauge unit
Horn
Ignition coil
Brake fluid level sensor
Headlight washer
Back-up light and 4WD indicator light wiring harness
Sub fusible link
High beam fuse
Headlight (L.H.)
Front combination light (L.H.)
Ground
Light control relay
Air conditioner wiring harness C
E.S.S. solenoid valve or Air conditioner wiring harness C
Alternator
Fuel-cut solenoid valve
Door switch (L.H.)
Rear speaker (L.H.)
Seat belt solenoid (L.H.)
Rear speaker (R.H.)
Belt warning timer
Door switch (R.H.)
Seat belt solenoid (R.H.)
Dome light wiring harness (for canvas-top)
Door wiring harness (R.H.)
Rear heater wiring harness
Heater motor
Front speaker (R.H.)
Air conditioner wiring harness A
Frame wiring harness
Seatbelt switch (L.H.)
Seatbelt switch (R.H.)
Combination gauge
Dome light wiring harness (for metal-top)
Parking brake switch
Heater relay
Center panel wiring harness
Air conditioner switch
Heater fan switch
Combination meter
Buzzer
Spare terminal (ACC)
Radio
Inhibiter switch
Wiper motor
Stop light switch
Hazard warning switch
Rear wiper and washer switch
Key-reminder switch
Defogger switch
Dimmer control switch
Front speaker (L.H.)
Ground
E.S.S. relay
Column switch
Ignition switch
Door wiring harness (L.H.)
Turn-signal flasher unit
Hazard warning flasher unit
Headlight washer relay
Intermittent wiper relay
Power window relay
Fuse block
16W707

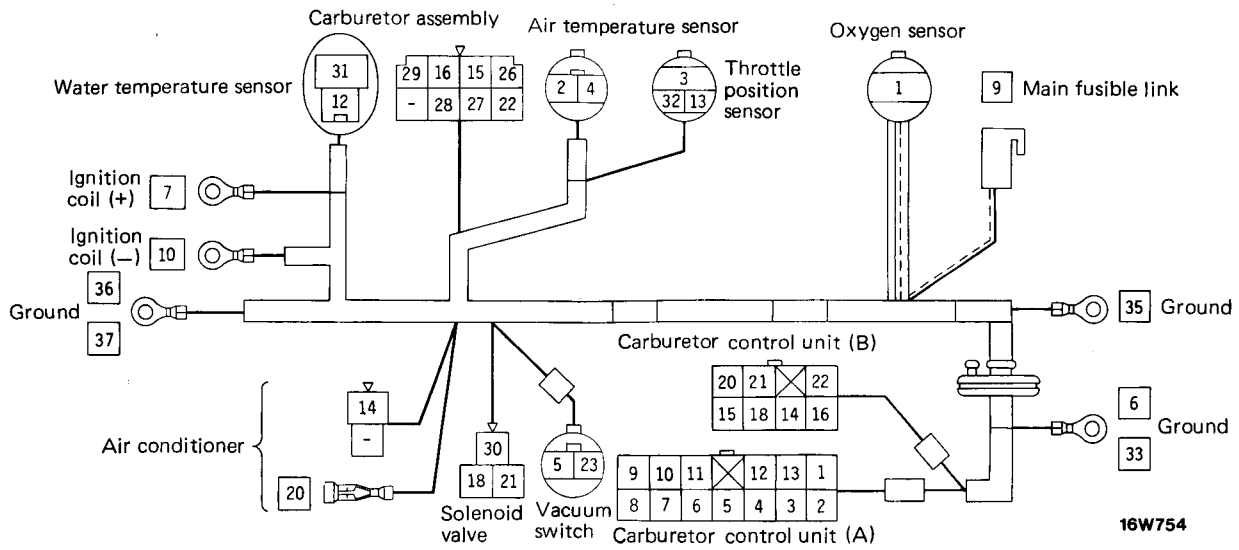
No.	WIRE	CIRCUIT	
1	3W	MAIN FUSIBLE LINK <BATTERY>	SUB FUSIBLE LINK
2	5W	ALTERNATOR <B>	[1]
3	2W	FUSIBLE LINK	IGNITION SWITCH
4	3W	FUSE BLOCK	[2]
5	2BW	IGNITION SWITCH <IG>	FUSE BLOCK
6	2BW	IGNITION COIL <+>	[5]
7	2BR	IGNITION SWITCH	IGNITION COIL
8	2BY	IGNITION SWITCH <ST>	STARTER
*8	2BY	IGNITION SWITCH <ST>	INHIBITER SWITCH
9	2LW	IGNITION SWITCH <ACC>	FUSE BLOCK
10	2R	LIGHT CONTROL RELAY	FUSIBLE LINK
11	1.25R	LIGHT CONTROL RELAY	[10]
12	1.25RL	LIGHT CONTROL RELAY	HEADLIGHT (R.H.) <B>
13	1.25RL	HEADLIGHT (L.H.) <B>	[12]
14	0.85RW	HEADLIGHT (R.H.) <HL>	[15]
15	0.85RW	HEADLIGHT (L.H.) <HL>	COLUMN SWITCH
16	R	LIGHT CONTROL RELAY	COLUMN SWITCH
17	1.25RW	LIGHT CONTROL RELAY	FUSE BLOCK
19	GW	LIGHT CONTROL RELAY	COLUMN SWITCH
20	0.85R	HEADLIGHT (L.H.) <HU>	COLUMN SWITCH
21	0.85R	HEADLIGHT (R.H.) <HU>	[20]
22	0.85B	HORN <S>	[39]
23	0.85B	HORN <H>	[22]
24	0.85B	HORN <S>	COLUMN SWITCH
25	0.85B	HORN <H>	[24]
26	1.25R	FUSE BLOCK	[10]
27	0.85GL	FRONT COMBINATION LIGHT (L.H.)	COLUMN SWITCH
28	0.85GY	FRONT COMBINATION LIGHT (R.H.)	COLUMN SWITCH
29	YR	UPPER BEAM FUSE	COMBINATION METER <BEAM>
30	0.3R	COMBINATION METER <BEAM>	[20]
31	1.25GB	HAZARD WARNING FLASHER UNIT <B>	FUSE BLOCK (1)
32	0.85RL	TURN-SIGNAL FLASHER UNIT <IG>	FUSE BLOCK (3)
33	1.25GO	HAZARD WARNING FLASHER UNIT	HAZARD WARNING SWITCH
34	GR	TURN-SIGNAL FLASHER UNIT	HAZARD WARNING SWITCH
35	0.3GL	COMBINATION METER	[27]
36	WL	FRAME WIRING HARNESS	COLUMN SWITCH
37	0.3GY	COMBINATION METER	[28]
38	WR	FRAME WIRING HARNESS	COLUMN SWITCH
39	0.85L	WIPER MOTOR <ACC>	FUSE BLOCK (8)
40	LO	WIPER MOTOR <LO>	COLUMN SWITCH
41	LB	WIPER MOTOR <HI>	COLUMN SWITCH
42	LW	WIPER MOTOR <AS>	INTERMITTENT WIPER RELAY
43	L	WASHER MOTOR <ACC>	[39]
44	0.3BY	INTERMITTENT WIPER RELAY	COLUMN SWITCH
45	YL	WASHER MOTOR	COLUMN SWITCH
46	0.85GR	FUSE BLOCK (7)	STOP LIGHT SWITCH <B>
47	0.85G	HAZARD SWITCH	STOP LIGHT SWITCH <L>
48	2BB	FUSE BLOCK (5)	DEFOGGER SWITCH <IG>
49	2B	FRAME WIRING HARNESS	DEFOGGER SWITCH <DEF>
50	BR	DEFOGGER SWITCH <IND>	[49]
51	2LR	FUSE BLOCK (6)	HEATER RELAY <B>
52	2L	HEATER FAN SWITCH <B>	HEATER RELAY
53	LR	HEATER RELAY <IG>	[32]
54	0.85LW	HEATER MOTOR <LO>	HEATER FAN SWITCH
55	1.25LY	HEATER MOTOR	HEATER FAN SWITCH
56	1.25LB	HEATER MOTOR	HEATER FAN SWITCH
57	2LR	HEATER MOTOR <HI>	HEATER FAN SWITCH
58	GR	COLUMN SWITCH	HAZARD WARNING SWITCH
59	1.25BW	FUEL-CUT SOLENOID VALVE	[60]
60	2BW	FUEL-CUT SOLENOID VALVE	[6]
61	RB	DOME LIGHT WIRING HARNESS <B>	[31]
62	RG	DOME LIGHT WIRING HARNESS	DOOR SWITCH (R.H.)
63	0.3RG	COMBINATION METER	[62]
64	YB	OIL PRESSURE SWITCH	COMBINATION GAUGE
65	L	FUSE BLOCK (9)	FRAME WIRING HARNESS <ACC>
66	1.25Y	HIGH BEAM FUSE	[12]
67	0.85W	COMBINATION METER <CHG>	ALTERNATOR <L>
68	0.3YL	INTERMITTENT WIPER RELAY <W>	[45]
69	L	INTERMITTENT WIPER RELAY <ACC>	[39]
70	BR	INTERMITTENT WIPER RELAY <LO>	COLUMN SWITCH
71	Y	FRAME WIRING HARNESS	COMBINATION METER
72	RL	FRAME WIRING HARNESS	B/LP AND 4WD INDICATOR LIGHT WIRING HARNESS
74	YL	WATER TEMPERATURE GAUGE UNIT	COMBINATION METER <TEMP>
75	YR	B/LP AND 4WD INDICATOR LIGHT WIRING HARNESS	COMBINATION METER <4WD>
76	R	B/LP AND 4WD INDICATOR LIGHT WIRING HARNESS	FUSE BLOCK (4)
77	3LR	AIR CONDITIONER WIRING HARNESS A	[4]
78	0.85BW	AIR CONDITIONER WIRING HARNESS B	AIR CONDITIONER WIRING HARNESS A
79	WL/B	IGNITON COIL <–>	COMBINATION METER <TAC>
80	1.25LW	HEADLIGHT WASHER <B>	[10]
81	GW	FUSE BLOCK (2)	RADIO <ILL>
82	0.3Y	INTERMITTENT WIPER RELAY	COLUMN SWITCH
83	YR	COMBINATION METER	[75]
84	LW	SPARE TERMINAL <ACC>	[120]
85	0.3BY	RADIO <ILL–>	[136]
86	0.3GW	FRAME WIRING HARNESS	[81]
87	GW	COMBINATION METER <ILL+>	[81]
88	0.3BY	CENTER PANEL WIRING HARNESS <ILL–>	[136]
89	0.3GW	CENTER PANEL WIRING HARNESS <ILL+>	[81]
90	2B	COLUMN SWITCH <E>	GROUND
91	B	FRONT COMBINATION LIGHT (R.H.) <E>	[90]
92	B	FRONT COMBINATION LIGHT (L.H.) <E>	[90]
93	B	INTERMITTENT WIPER RELAY <E>	[101]
94	0.3B	DEFOGGER SWITCH <E>	[90]
95	0.3B	HEATER RELAY <E>	[104]
96	B	DOME LIGHT WIRING HARNESS <E>	[108]
98	0.3B	DIMMER CONTROL SWITCH <E>	[90]
99	B	COMBINATION METER <E>	[100]

No.	WIRE	CIRCUIT	
100	B	COMBINATION METER <E>	[90]
101	1.25B	HEADLIGHT WASHER RELAY <E>	[90]
102	0.3B	AIR CONDITIONER WIRING HARNESS A	[90]
103	0.3B	COLUMN SWITCH <E>	[90]
104	0.85B	CENTER PANEL WIRING HARNESS <E>	[90]
105	0.3B	COMBINATION GAUGE < E >	[104]
106	0.3B	BRAKE FLUID LEVEL SENSOR	[90]
107	0.3B	REAR WIPER AND WASHER SWITCH <E>	[90]
108	B	FRAME WIRING HARNESS <E>	[90]
109	RG	DOOR SWITCH (L.H.)	[62]
110	2B	GROUND	[90]
111	0.3RL	COMBINATION GAUGE < IG >	[115]
112	0.3RB	CENTER PANEL WIRING HARNESS <B>	[61]
113	0.3BY	COMBINATION GAUGE	[136]
114	0.85L	ALTERNATOR <IG>	[32]
115	RL	COMBINATION METER <IG>	[76]
116	RL	COMBINATION METER <IG>	[115]
117	YG	PARKING BRAKE SWITCH	COMBINATION METER <BK>
118	LW	RADIO <ACC>	[120]
119	0.3GW	COMBINATION GAUGE	[81]
120	0.85LW	FUSE BLOCK (10)	CENTER PANEL WIRING HARNESS <ACC>
121	RG	FRONT COMBINATION LIGHT (R.H.)	[81]
122	RG	FRONT COMBINATION LIGHT (L.H.)	[121]
123	0.3RG	FRAME WIRING HARNESS <TAIL>	[86]
126	0.3YG	BRAKE FLUID LEVEL SENSOR	[117]
127	1.25L	HEADLIGHT WASHER RELAY	HEADLIGHT WASHER
128	0.3LB	HEADLIGHT WASHER RELAY	COLUMN SWITCH
129	GW	HEADLIGHT WASHER RELAY	[81]
130	0.3LW	HEADLIGHT WASHER RELAY <ACC>	[69]
131	0.3WB	FRAME WIRING HARNESS <W>	REAR WIPER AND WASHER SWITCH
132	0.3BrW	FRAME WIRING HARNESS <LO>	REAR WIPER AND WASHER SWITCH
133	0.3Br	FRAME WIRING HARNESS <AS>	REAR WIPER AND WASHER SWITCH
134	0.3RB	COMBINATION METER <B>	[61]
135	B	B/LP AND 4WD INDICATOR LIGHT WIRING HARNESS <E>	[106]
136	BY	DIMMER CONTROL SWITCH	COMBINATION METER <ILL–>
137	YB	COMBINATION METER <OIL>	[64]
138	0.3BW	SPEAKER <FR+>	RADIO <FR+>
139	0.3BY	SPEAKER <FL+>	RADIO <FL+>
140	0.3B	SPEAKER <FL–>	[141]
141	B	SPEAKER <FL–>	RADIO <E>
*142	R	INHIBITER SWITCH	[76]
*143	RL	INHIBITER SWITCH	[72]
*144	0.3GW	INHIBITER SWITCH	[81]
*145	BY	INHIBITER SWITCH	[85]
*146	2BY	INHIBITER SWITCH	STARTER
147	0.85WG	HAZARD WARNING SWITCH <ST>	COLUMN SWITCH <ST>
148	WL	HAZARD WARNING SWITCH <RL>	COLUMN SWITCH <ST>
149	WR	HAZARD WARNING SWITCH <RR>	[38]
150	GL	HAZARD WARNING SWITCH <FL>	[27]
151	GY	HAZARD WARNING SWITCH <FR>	[28]
152	0.3GW	HAZARD WARNING SWITCH <ILL+>	[87]
153	0.3BY	HAZARD WARNING SWITCH <ILL–>	[136]
155	BW	E.S.S. SOLENOID VALVE	E.S.S. RELAY
**155	BW	AIR CONDITIONER WIRING HARNESS C	E.S.S. RELAY
156	2L	E.S.S. RELAY	[6]
157	B	E.S.S. RELAY	[90]
158	W	E.S.S. RELAY	[79]
159	2L	E.S.S. SOLENOID VALVE	[6]
**159	2L	AIR CONDITIONER WIRING HARNESS C	[6]
161	0.3GW	AIR CONDITIONER SWITCH	[81]
162	0.5BY	AIR CONDITIONER SWITCH	[88]
165	BG	SPEAKER <RL+>	RADIO <RL+>
166	BR	SPEAKER <RR+>	RADIO <RR+>
167	B	SPEAKER <RR–>	[141]
168	B	SPEAKER <RL–>	[167]
169	0.85BW	AIR CONDITIONER WIRING HARNESS B	AIR CONDITIONER WIRING HARNESS C
170	RB	DOME LIGHT WIRING HARNESS <B>	[61]
171	B	DOME LIGHT WIRING HARNESS <B>	[108]
172	RG	DOME LIGHT WIRING HARNESS <DR>	[109]
173	LW	AIR CONDITIONER WIRING HARNESS A	[120]
174	0.3Y	SEAT BELT SWITCH	BUZZER
175	0.3B	SEAT BELT SWITCH (L.H.)	[104]
176	0.3RL	SEAT BELT SOLENOID	[215]
177	0.3YB	SEAT BELT SOLENOID	SEAT BELT SWITCH (L.H.)
178	0.3RB	SEAT BELT SWITCH	BELT WARNING TIMER
179	GR	KEY-REMINDER SWITCH	[46]
180	G	KEY-REMINDER SWITCH	BUZZER
181	G	COMBINATION METER	[180]
182	0.3YB	COMBINATION METER	BELT WARNING TIMER
183	0.3RL	BELT WARNING TIMER	[53]
184	0.3B	BELT WARNING TIMER	[195]
185	YW	DOOR SWITCH (L.H.)	[174]
194	0.85RB	REAR HEATER WIRING HARNESS	[48]
195	0.85B	REAR HEATER WIRING HARNESS <E>	[90]
201	BY	AIR CONDITIONER WIRING HARNESS A	AIR CONDITIONER WIRING HARNESS C
202	0.85L	AIR CONDITIONER WIRING HARNESS A	AIR CONDITIONER WIRING HARNESS C
215	RL	SEAT BELT SOLENOID	[32]
216	0.3YB	SEAT BELT SOLENOID	SEAT BELT SWITCH (R.H.)
217	0.3B	SEAT BELT SWITCH	[104]
***230	0.3RL	POWER WINDOW RELAY	[32]
***231	0.3B	POWER WINDOW RELAY	[101]
***232	2LR	POWER WINDOW RELAY	FUSIBLE LINK
***233	2L	POWER WINDOW RELAY	DOOR WIRING HARNESS
***234	2B	DOOR WIRING HARNESS (DRIVER'S SIDE)	[90]
***235	2LB	DOOR WIRING HARNESS (DRIVER'S SIDE)	DOOR WIRING HARNESS
***238	3W	FUSIBLE LINK	[2]
***239	2RL	DOOR WIRING HARNESS (DRIVER'S SIDE)	DOOR WIRING HARNESS
***240	2GL	DOOR WIRING HARNESS (DRIVER'S SIDE)	DOOR WIRING HARNESS

NOTES
* : Vehicles with an automatic transmission.
** : Vehicles equipped with an air conditioner.
*** : Vehicles with power windows.

CONTROL WIRING HARNESS

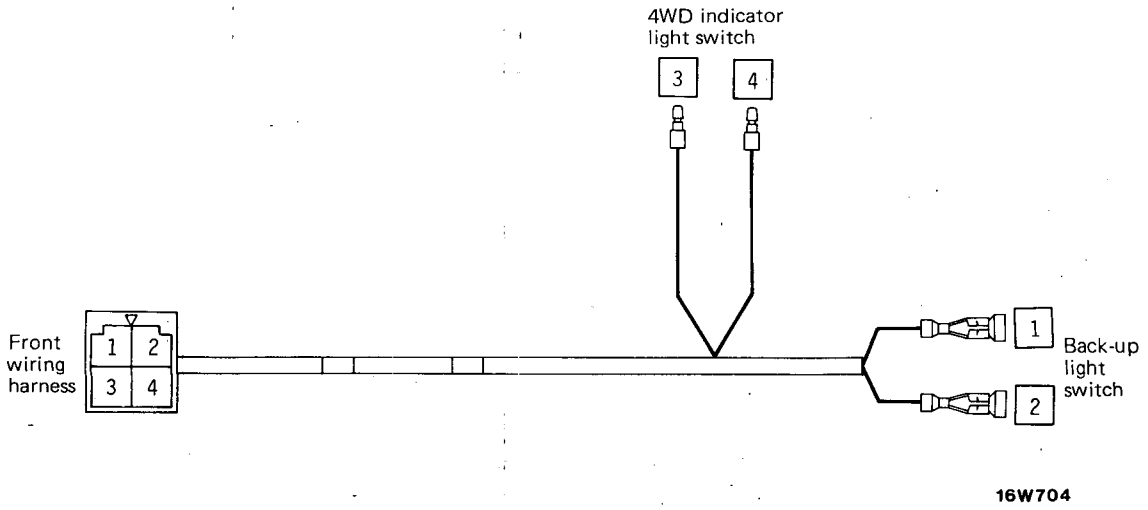
For California (can also be sold in Federal States)



NO.	WIRE	CIRCUIT	
1	SB	CARBURETOR CONTROL UNIT (A)	OXYGEN SENSOR
2	1.25GY	CARBURETOR CONTROL UNIT (A)	AIR TEMPERATURE SENSOR
3	G	CARBURETOR CONTROL UNIT (A)	THROTTLE POSITION SENSOR
4	GR	CARBURETOR CONTROL UNIT (A)	AIR TEMPERATURE SENSOR
5	GB	CARBURETOR CONTROL UNIT (A)	VACUUM SWITCH
6	1.25B	CARBURETOR CONTROL UNIT (A)	GROUND
7	2BW	CARBURETOR CONTROL UNIT (A)	IGNITION COIL (+)
8	2BW	CARBURETOR CONTROL UNIT (A)	[7]
9	2RL	CARBURETOR CONTROL UNIT (A)	MAIN FUSIBLE LINK
10	SB	CARBURETOR CONTROL UNIT (A)	IGNITION COIL (–)
11	1.25B	CARBURETOR CONTROL UNIT (A)	[6]
12	YG	CARBURETOR CONTROL UNIT (A)	WATER TEMPERATURE SENSOR
13	YR	CARBURETOR CONTROL UNIT (A)	THROTTLE POSITION SENSOR
*14	0.85BW	CARBURETOR CONTROL UNIT (B)	AIR CONDITIONER
15	YW	CARBURETOR CONTROL UNIT (B)	CARBURETOR ASSEMBLY
16	YL	CARBURETOR CONTROL UNIT (B)	CARBURETOR ASSEMBLY
18	RW	CARBURETOR CONTROL UNIT (B)	SOLENOID VALVE ASSEMBLY
*20	0.85L	CARBURETOR CONTROL UNIT (B)	AIR CONDITIONER
21	GL	CARBURETOR CONTROL UNIT (B)	SOLENOID VALVE ASSEMBLY
22	YG	CARBURETOR CONTROL UNIT (B)	CARBURETOR ASSEMBLY
23	B	VACUUM SWITCH	[37]
26	1.25BW	CARBURETOR ASSEMBLY	[7]
27	1.25BW	CARBURETOR ASSEMBLY	[7]
28	1.25BW	CARBURETOR ASSEMBLY	[7]
29	1.25BW	CARBURETOR ASSEMBLY	[7]
30	1.25BW	SOLENOID VALVE	[7]
31	GY	WATER TEMPERATURE SENSOR	[2]
32	GY	CARBURETOR	[2]
33	B	GROUND	[1]
35	1.25B	GROUND	[6]
36	B	GROUND	[10]
37	1.25B	GROUND	[35]

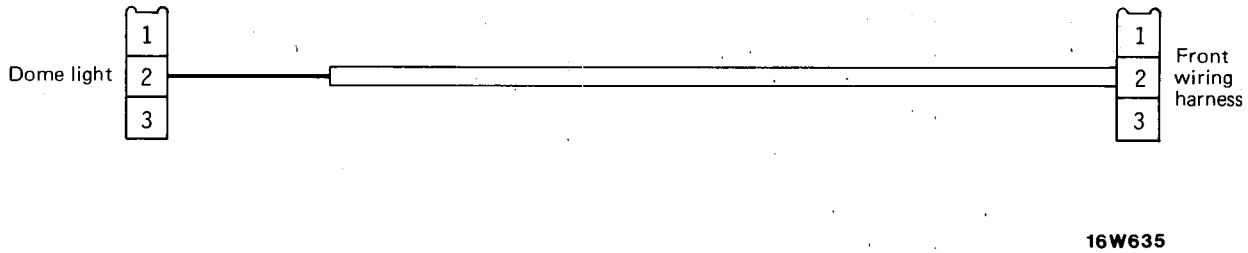
NOTE
*Vehicles equipped with an air conditioner.

BACK-UP LIGHT AND 4WD INDICATOR LIGHT WIRING HARNESS



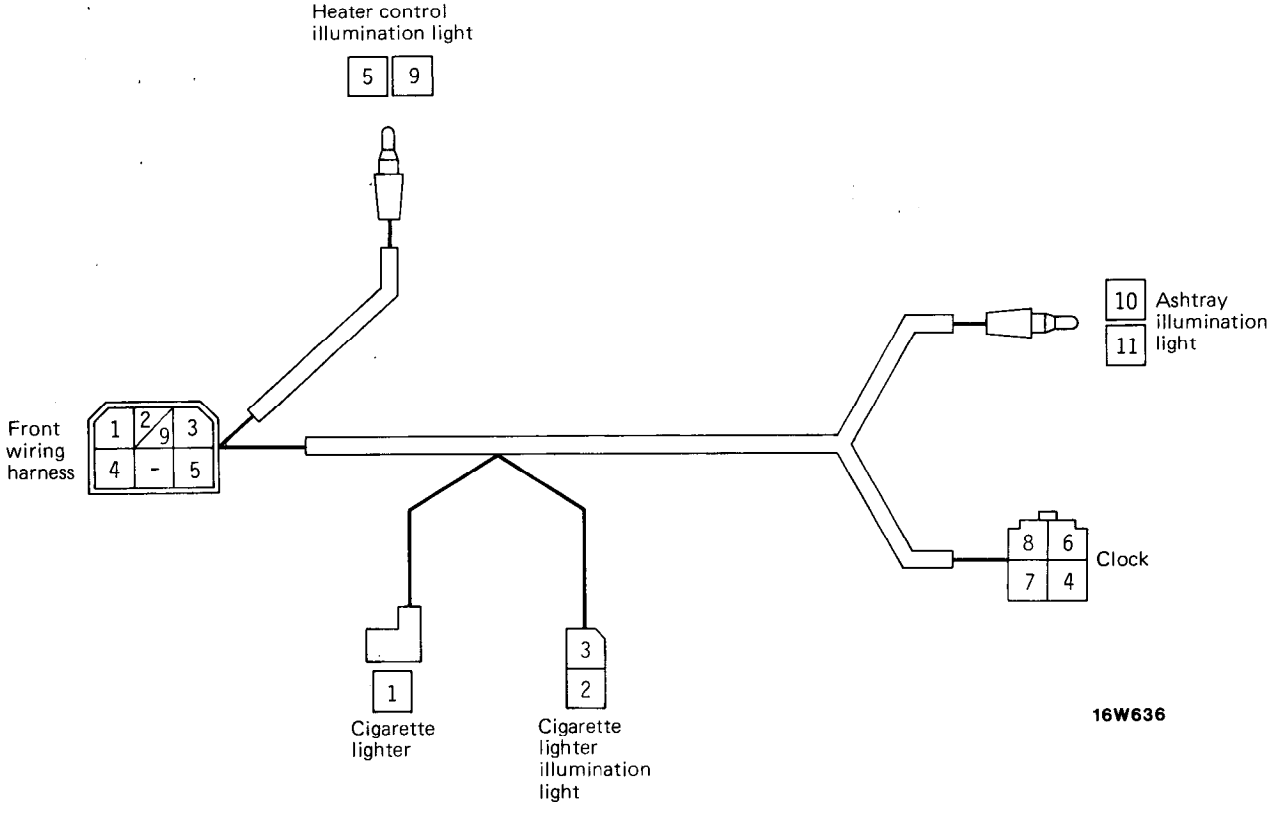
NO.	WIRE	CIRCUIT	
1	R	FRONT WIRING HARNESS	BACK-UP LIGHT SWITCH
2	RL	FRONT WIRING HARNESS	BACK-UP LIGHT SWITCH
3	BR	FRONT WIRING HARNESS	4WD INDICATOR LIGHT SWITCH
4	YR	FRONT WIRING HARNESS	4WD INDICATOR LIGHT SWITCH

DOME LIGHT WIRING HARNESS



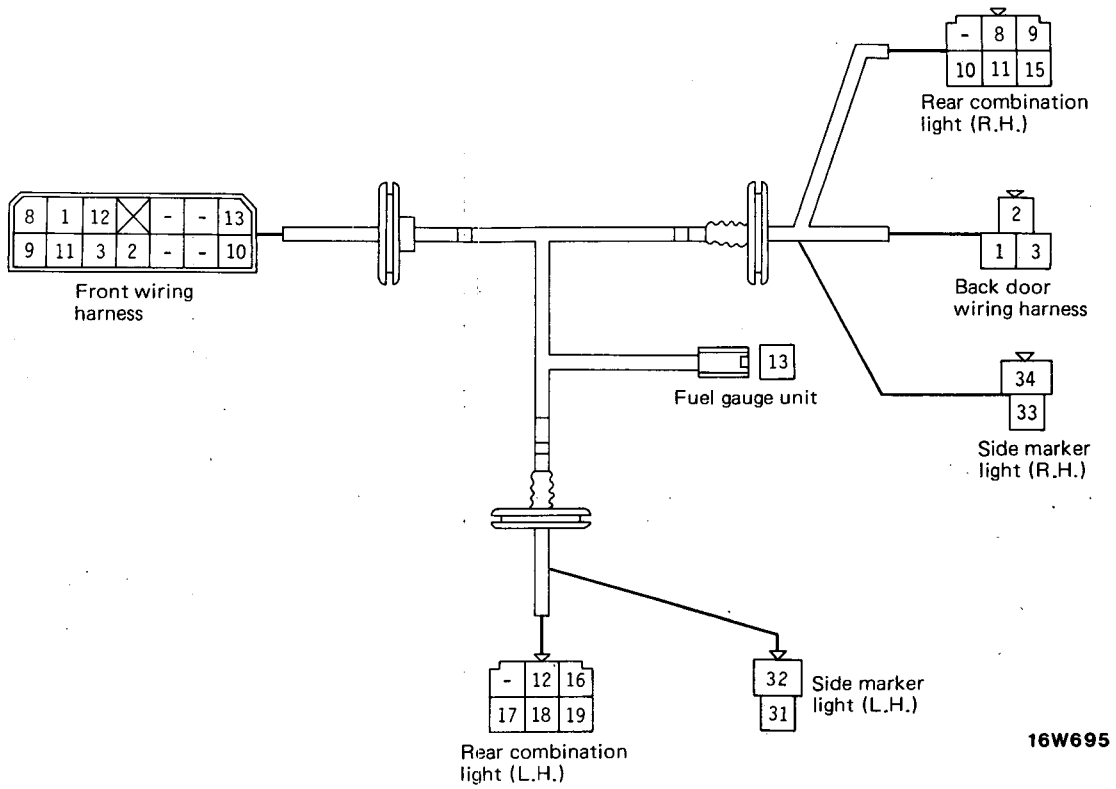
NO.	WIRE	CIRCUIT	
1	RB	FRONT WIRING HARNESS	DOME LIGHT <B>
2	B	FRONT WIRING HARNESS	DOME LIGHT <E>
3	RG	FRONT WIRING HARNESS	DOME LIGHT <DR>

CENTER PANEL WIRING HARNESS



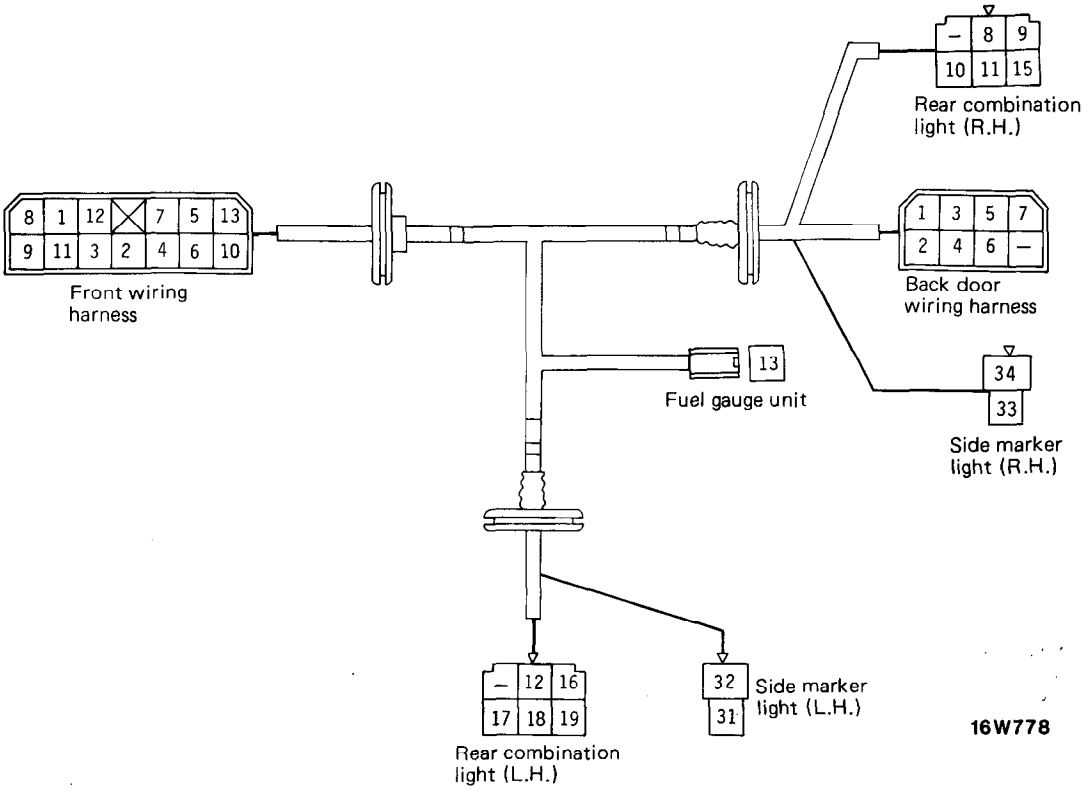
NO.	WIRE	CIRCUIT	
1	0.85LW	FRONT WIRING HARNESS <ACC>	CIGARETTE LIGHTER
2	GW	FRONT WIRING HARNESS <ILL+>	CIGARETTE LIGHTER ILLUMINATION LIGHT
3	0.85B	FRONT WIRING HARNESS <E>	CIGARETTE LIGHTER ILLUMINATION LIGHT
4	0.3RB	FRONT WIRING HARNESS <B>	CLOCK
5	0.3GY	FRONT WIRING HARNESS <ILL–>	HEATER CONTROL ILLUMINATION LIGHT
6	B	CLOCK <E>	3
7	LW	CLOCK <ACC>	1
8	0.3GW	CLOCK <ILL+>	2
9	0.3GW	FRONT WIRING HARNESS <ILL+>	HEATER CONTROL ILLUMINATION LIGHT
10	0.3B	ASHTRAY ILLUMINATION LIGHT <E>	3
11	0.3GW	ASHTRAY ILLUMINATION LIGHT <ILL>	2

FRAME WIRING HARNESS – Vehicles without a rear wiper and washer



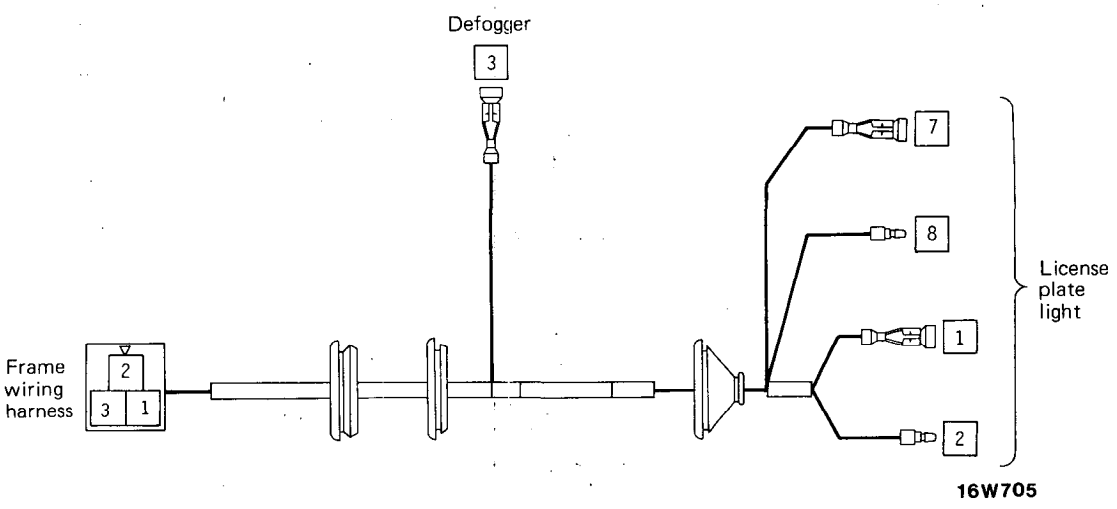
NO.	WIRE	CIRCUIT	
1	0.3GW	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS <LI>
2	B	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS <E>
3	2B	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS <DEF>
8	0.3GY	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.) <TUR/STOP>
9	G	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.)
10	RG	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.) <TAIL>
11	RL	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.) <BACK>
12	0.3GL	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (L.H.) <TUL/STOP>
13	Y	FRONT WIRING HARNESS	FUEL GAUGE UNIT
15	B	REAR COMBINATION LIGHT (R.H.) <E>	2
16	0.3G	REAR COMBINATION LIGHT (L.H.)	9
17	0.3RG	REAR COMBINATION LIGHT (L.H.) <TAIL>	10
18	0.3RL	REAR COMBINATION LIGHT (L.H.) <BACK>	11
19	B	REAR COMBINATION LIGHT (L.H.) <E>	2
31	GW	SIDE MARKER LIGHT (L.H.)	17
32	0.3B	SIDE MARKER LIGHT (L.H.)	19
33	0.3GW	SIDE MARKER LIGHT (R.H.)	10
34	0.3B	SIDE MARKER LIGHT (R.H.)	15

FRAME WIRING HARNESS – Vehicles with a rear wiper and washer



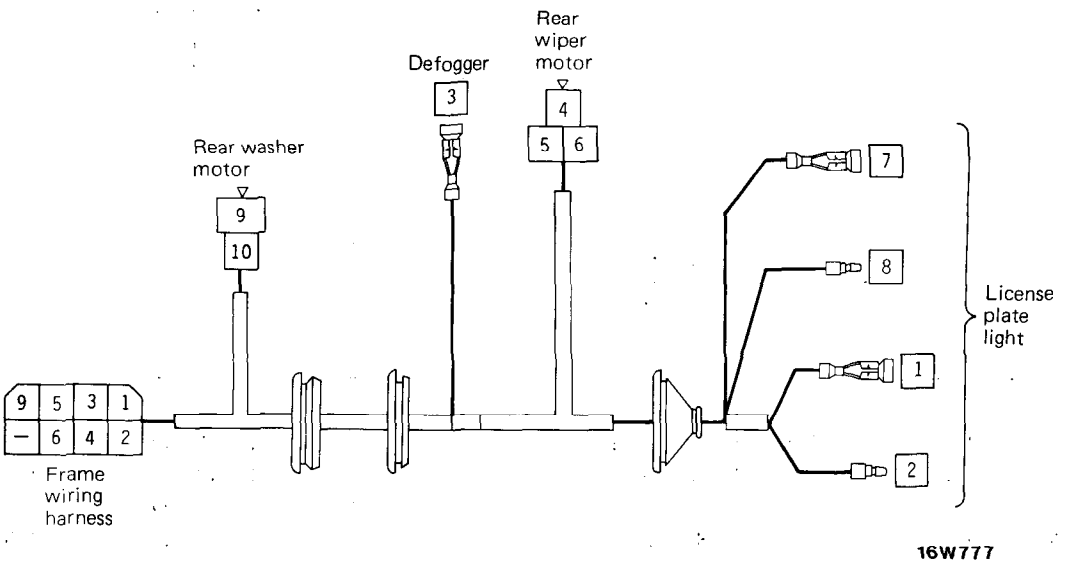
NO.	WIRE	CIRCUIT	
1	0.3GW	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS <LI>
2	B	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS <E>
3	2B	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS <DEF>
4	L	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS (REAR WIPER) <ACC>
5	0.3BrW	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS (REAR WIPER) <LO>
6	0.3Br	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS (REAR WIPER) <AS>
7	0.3WB	FRONT WIRING HARNESS	BACK DOOR WIRING HARNESS (REAR WASHER)
8	0.3GY	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.) <TUR/STOP>
9	G	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.)
10	RG	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.) <TAIL>
11	RL	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (R.H.) <BACK>
12	0.3GL	FRONT WIRING HARNESS	REAR COMBINATION LIGHT (L.H.) <TUL/STOP>
13	Y	FRONT WIRING HARNESS	FUEL GAUGE UNIT
15	B	REAR COMBINATION LIGHT (R.H.) <E>	2
16	0.3G	REAR COMBINATION LIGHT (L.H.)	9
17	0.3RG	REAR COMBINATION LIGHT (L.H.) <TAIL>	10
18	0.3RL	REAR COMBINATION LIGHT (L.H.) <BACK>	11
19	B	REAR COMBINATION LIGHT (L.H.) <E>	2
31	GW	SIDE MARKER LIGHT (L.H.)	17
32	0.3B	SIDE MARKER LIGHT (L.H.)	19
33	0.3GW	SIDE MARKER LIGHT (R.H.)	10
34	0.3B	SIDE MARKER LIGHT (R.H.)	15

BACK DOOR WIRING HARNESS – Vehicles without a rear wiper and washer



NO.	WIRE	CIRCUIT	
1	FGW	FRAME WIRING HARNESS	LICENSE PLATE LIGHT <B>
2	FB	FRAME WIRING HARNESS	LICENSE PLATE LIGHT <E>
3	2FB	FRAME WIRING HARNESS	DEFOGGER
7	GW	LICENSE PLATE LIGHT <B>	1
8	B	LICENSE PLATE LIGHT <E>	2

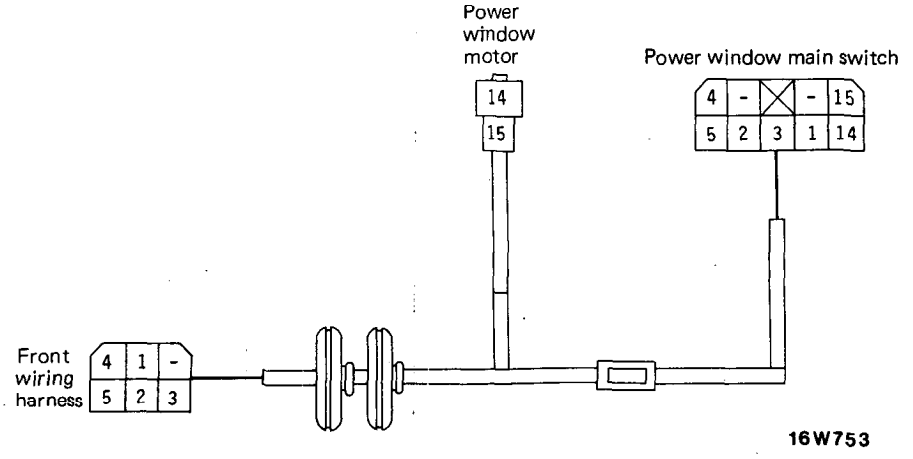
BACK DOOR WIRING HARNESS – Vehicles with a rear wiper and washer



NO.	WIRE	CIRCUIT	
1	FGW	FRAME WIRING HARNESS	LICENSE PLATE LIGHT <B>
2	FB	FRAME WIRING HARNESS	LICENSE PLATE LIGHT <E>
3	2FB	FRAME WIRING HARNESS	DEFOGGER
4	FL	FRAME WIRING HARNESS	REAR WIPER MOTOR <ACC>
5	FBrW	FRAME WIRING HARNESS	REAR WIPER MOTOR <LO>
6	FBr	FRAME WIRING HARNESS	REAR WIPER MOTOR <AS>
7	GW	LICENSE PLATE LIGHT <B>	1
8	B	LICENSE PLATE LIGHT <E>	2
9	0.3WB	FRAME WIRING HARNESS	REAR WASHER MOTOR <–>
10	0.3L	REAR WASHER MOTOR <+>	4

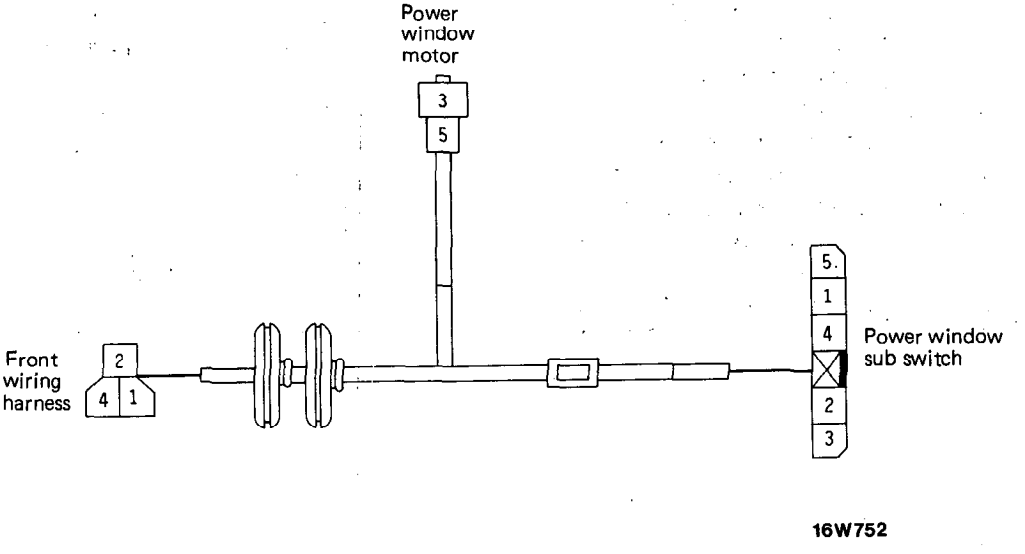
DOOR WIRING HARNESS – Vehicles with a rear power window

Left side



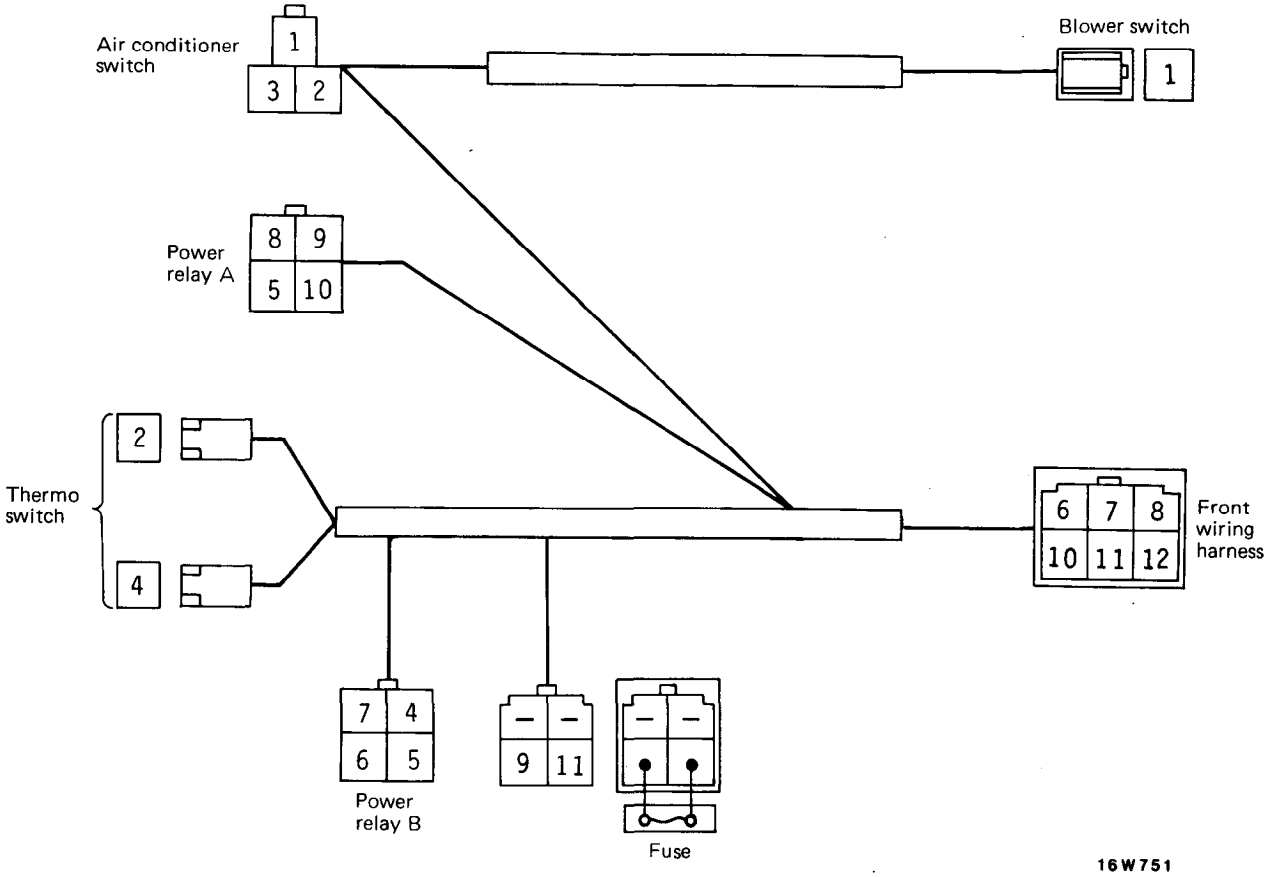
NO.	WIRE	CIRCUIT	
1	2FL	FRONT WIRING HARNESS	POWER WINDOW MAIN SWITCH <B>
2	2FL	FRONT WIRING HARNESS	POWER WINDOW MAIN SWITCH <E>
3	2FW	FRONT WIRING HARNESS	POWER WINDOW MAIN SWITCH
4	1.25FG	FRONT WIRING HARNESS	POWER WINDOW MAIN SWITCH (R.H.-UP)
5	1.25FR	FRONT WIRING HARNESS	POWER WINDOW MAIN SWITCH (R.H.-DOWN)
14	1.25R	POWER WINDOW MAIN SWITCH	POWER WINDOW MOTOR
15	1.25G	POWER WINDOW MAIN SWITCH	POWER WINDOW MOTOR

Right side



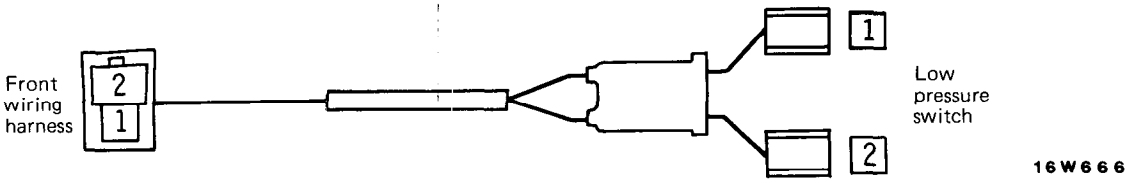
NO.	WIRE	CIRCUIT	
1	2FR	FRONT WIRING HARNESS	POWER WINDOW SUB SWITCH (UP)
2	2FL	FRONT WIRING HARNESS	POWER WINDOW SUB SWITCH <B>
3	2RB	POWER WINDOW MOTOR	POWER WINDOW SUB SWITCH (UP)
4	2FG	FRONT WIRING HARNESS	POWER WINDOW SUB SWITCH (DOWN)
5	2GB	POWER WINDOW MOTOR	POWER WINDOW SUB SWITCH (DOWN)

AIR CONDITIONER WIRING HARNESS A



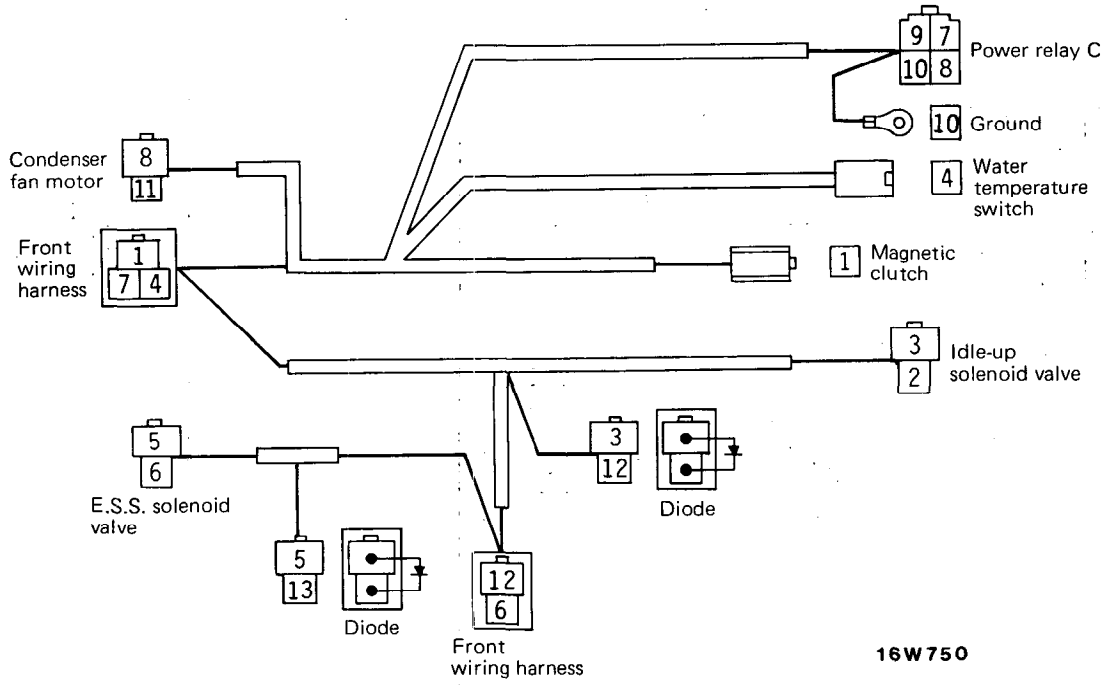
NO.	WIRE	CIRCUIT	
1	0.85WB	BLOWER SWITCH	AIR CONDITIONER SWITCH
2	0.85LB	AIR CONDITIONER SWITCH	THERMO SWITCH
3	B	AIR CONDITIONER SWITCH	[7]
4	0.85GB	THERMO SWITCH	POWER RELAY B
5	0.85L	POWER RELAY B	POWER RELAY A
6	0.85LW	POWER RELAY B	FRONT WIRING HARNESS <ACC>
7	0.85B	POWER RELAY B	FRONT WIRING HARNESS <E>
8	0.85BY	POWER RELAY A	FRONT WIRING HARNESS
9	0.85LR	POWER RELAY A	FUSE
10	0.85BW	POWER RELAY A	FRONT WIRING HARNESS
11	3LR	FUSE	FRONT WIRING HARNESS
12	0.85L	FRONT WIRING HARNESS	[9]

AIR CONDITIONER WIRING HARNESS B



NO.	WIRE	CIRCUIT	
1	0.85BW	FRONT WIRING HARNESS	LOW PRESSURE SWITCH
2	0.85BW	FRONT WIRING HARNESS	LOW PRESSURE SWITCH

AIR CONDITIONER WIRING HARNESS C



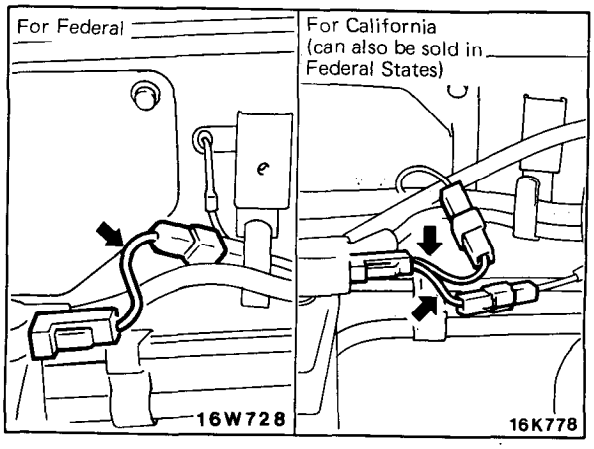
NO.	WIRE	CIRCUIT	
1	0.85BW	FRONT WIRING HARNESS	MAGNETIC CLUTCH
2	0.85BW	IDLE-UP SOLENOID VALVE	1
3	0.85B	IDLE-UP SOLENOID VALVE	DIODE
4	0.85BY	WATER TEMPERATURE SWITCH	FRONT WIRING HARNESS
5	0.85BW	E.S.S. SOLENOID VALVE	DIODE
6	0.85L	E.S.S. SOLENOID VALVE	FRONT WIRING HARNESS
7	0.85L	POWER RELAY C	FRONT WIRING HARNESS
8	0.85GB	POWER RELAY C	CONDENSER FAN MOTOR
9	0.85BW	POWER RELAY C	1
10	0.85B	POWER RELAY C	GROUND
11	0.85GY	CONDENSER FAN MOTOR	10
12	0.85BW	DIODE	FRONT WIRING HARNESS
13	0.85BW	DIODE	12

FUSIBLE LINKS

The fusible links consist of main link and sub link. Every circuit except the starter motor uses fusible links.

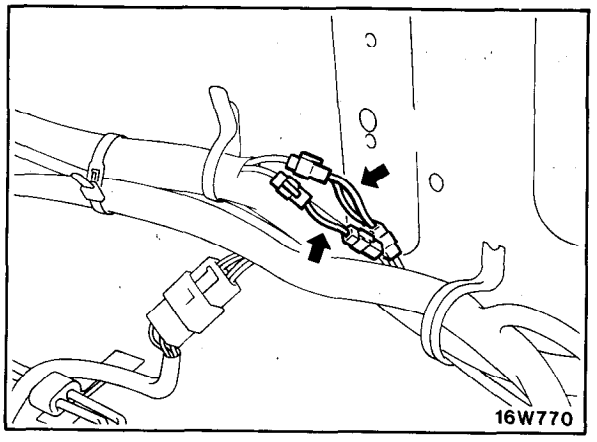
Main fusible link

Connected to the positive (+) terminal of the battery.



Sub fusible link

The sub fusible link is secured with tape to the wiring harness at the rear of the left front fender shield.



Inspection

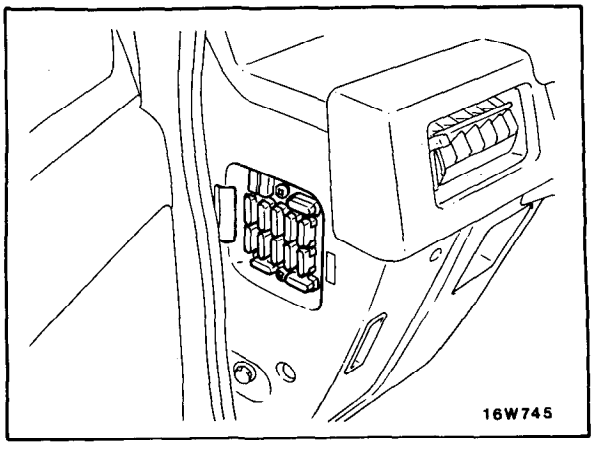
Check for a burnt fusible link with a circuit tester, since visual diagnosis may be difficult.

If a fusible link burns out, the cause is a short or some other problem in the circuit. Carefully determine the cause and correct it before replacing the fusible link.

When replacing fusible links, be sure to use a fusible link of the specified capacity.

FUSE BLOCK

The fuse block is located on the left hand side of the instrument panel.



Inspection

If any of the fuses are to be replaced, be sure to use a fuse of the specified capacity.

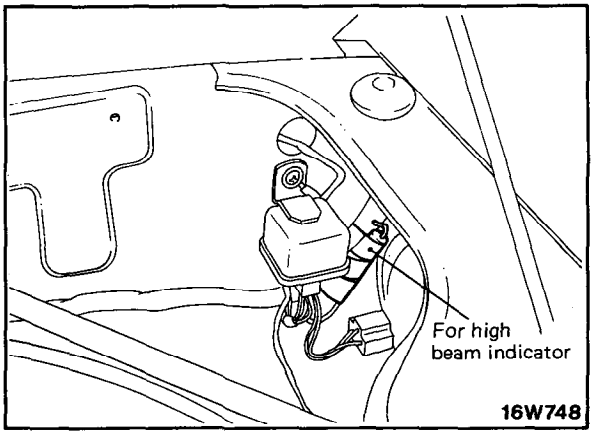
NOTE
If a fuse has failed, locate the cause and completely eliminate the problem before installing a new fuse.

Fuse Capacity Table

Power supply circuit	Fuse No.	Rated capacity A	Applicable circuits
Battery	1	20	Clock, Dome light, Door switches, Hazard warning flashers
Headlight relay	2	10	Tail lights, License plate lights, Illumination lights, Headlight washer relay, Position lights
Ignition switch (IG)	3	10	Heater relay, Seat belt warning timer, Turn-signal lights, Alternator, Seat belt switches, power window relay
	4	10	Back-up lights, Fuel and water temperature gauges, indicator and warning lights, oil pressure gauge, voltage meter
	5	15	Rear window defogger, Rear heater
Battery	6	20	Heater
	7	15	Key-reminder switch, Stop lights, Buzzer, Seat belt switch (L.H.) Door switch (L.H.)
Ignition switch (ACC)	8	15	Windshield wipers and washer, Headlight washer relay, Intermittent wiper relay, Horn
	9	10	Rear window wiper and washer
	10	15	Cigarette lighter, Radio, Tape player, Clock (ACC), Spare terminal

INDEPENDENT FUSE

An independent fuse is provided behind the left-hand headlight, for the high beam indicator light.



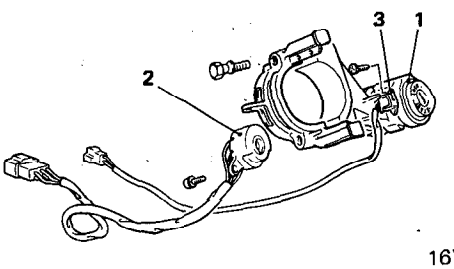
COMPONENTS

Ignition switch

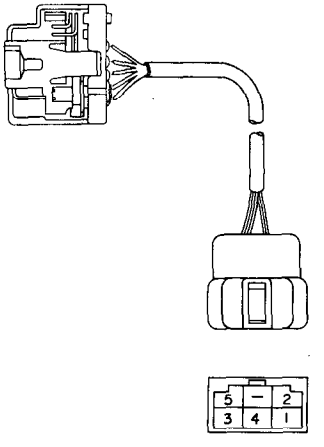
Key position \ Terminal	1	2	3	4	5
LOCK					
ACC	○	○			
ON	○	○	○		
START	○		○	○	○

Key-reminder switch

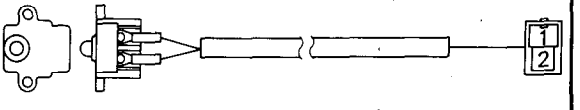
Key position \ Terminal	1	2
When the key is removed	○	○
When the key is inserted		



16Y062



16YE45

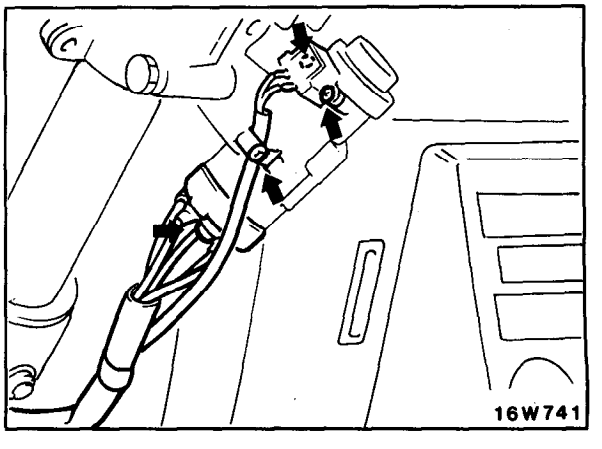


16Y062

1. Steering wheel lock cylinder (key lock cylinder)
2. Ignition switch segment
3. Key-reminder switch segment

REPLACEMENT OF THE IGNITION SWITCH SEGMENT

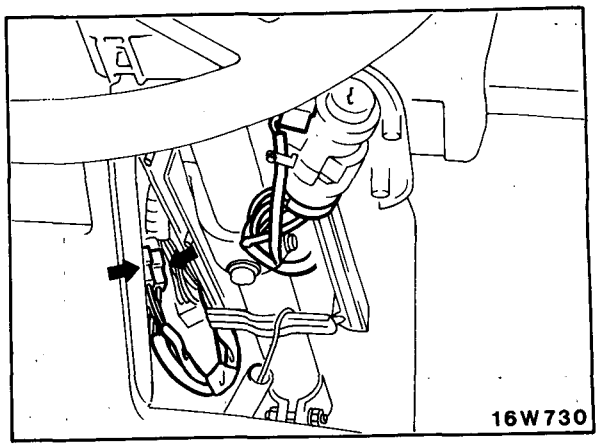
1. Disconnect the negative cable from the terminal of the battery.
2. Remove the column cover. (Refer to GROUP 19.)
3. Remove the band clip of the wiring harness, and then disconnect the ignition switch harness connector and the key-reminder switch harness connector.
4. Remove the ignition switch segment and key-reminder switch mounting screws, and then pull the switch segment out of the key cylinder. (16W741)



16W741

INSTALLATION

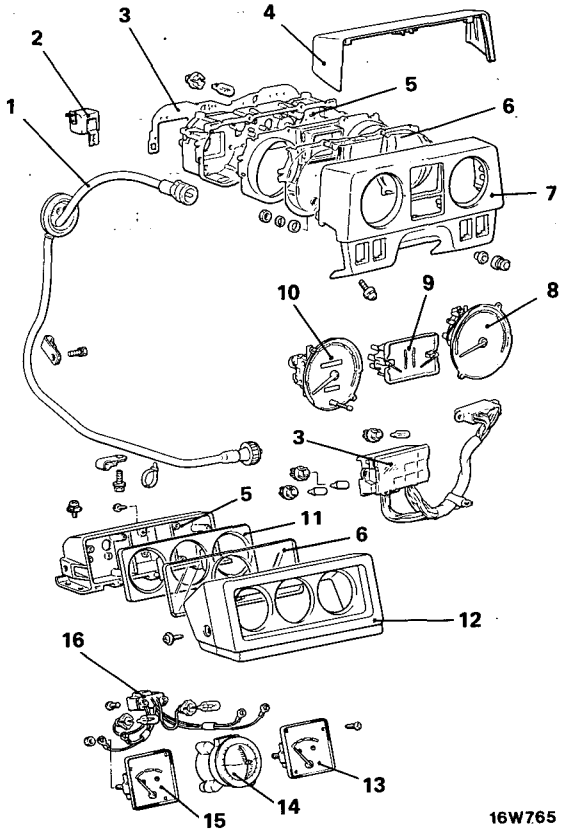
1. Secure the column switch harness and ignition switch harness to the steering column with band clips to make sure that the harnesses are not caught in the boss or moving portion of the column cover.
2. The ignition harness connector and the key-reminder switch harness connector should be connected to the front wiring harness together with the column switch harness connector at the left side of steering support bracket. (16W730)



METERS AND GAUGES

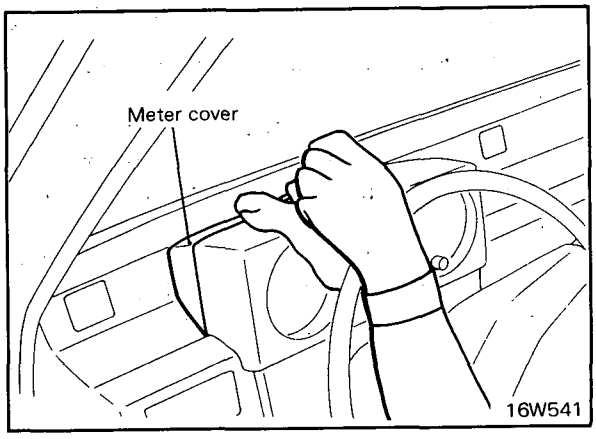
COMPONENTS

1. Speedometer cable
2. Buzzer
3. Printed-circuit board
4. Meter cover
5. Meter case
6. Meter glass
7. Meter hood
8. Speedometer
9. Fuel gauge, water temperature gauge
10. Tachometer
11. Window plate
12. Combination meter pad
13. Voltage gauge
14. Inclinometer
15. Oil pressure gauge
16. Meter wiring harness

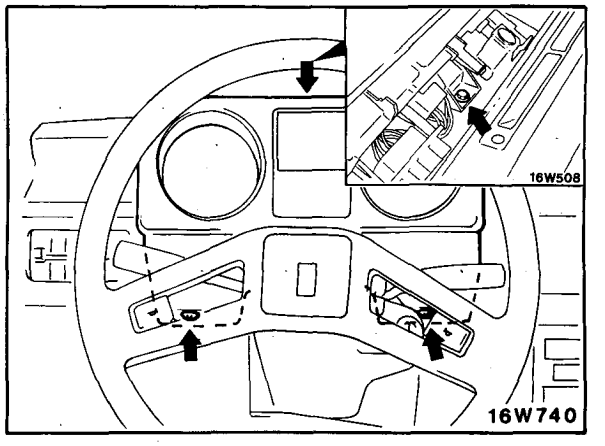


REMOVAL

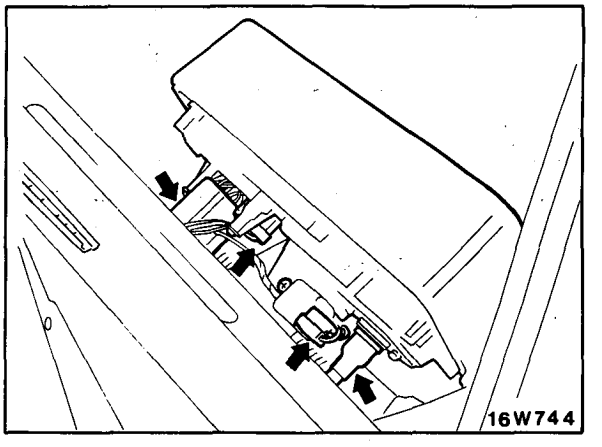
1. Remove the meter cover.



2. Remove the screws from the bottom of the case. (16W740)
3. Remove the bolt from the upper part of the case. (16W508)



4. Disconnect the speedometer cable from the meter case by pushing the stopper of the plug on the speedometer cable side of the connection. (16W744)
5. Disconnect the connectors of the meter harness and the buzzer (located behind the meter case), and also of the body harness.
6. Disconnect the connectors (all located behind the meter case at the bottom) of the hazard switch, the rear window defogger, and the rear wiper/washer switch, and then remove the meter case.



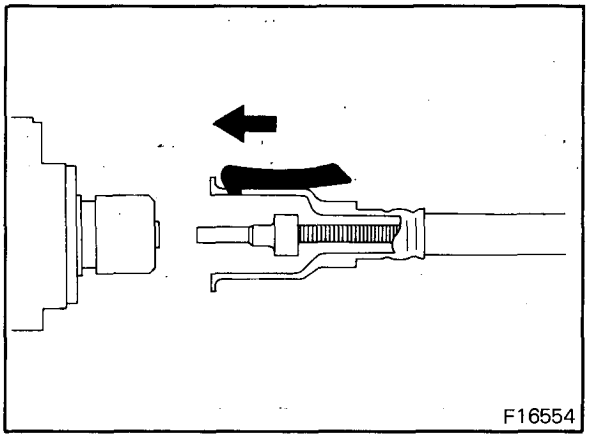
INSTALLATION

When installing the instrument cluster, be sure to secure the speedometer cable and connector positively.

SPEEDOMETER

Replacement of the Speedometer Cable

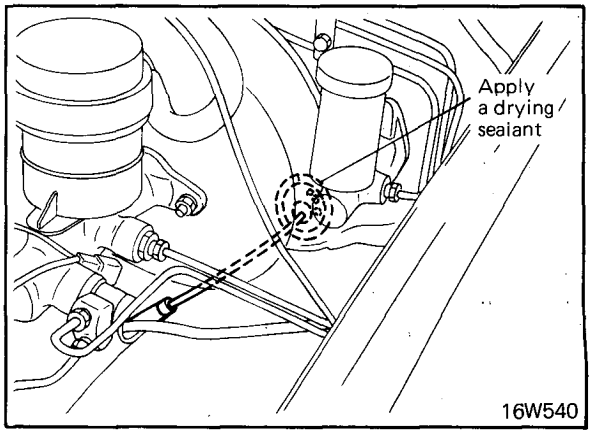
1. Replace the cable assembly if there is a malfunction.
2. When connecting the cable to the speedometer, insert the cable until the stopper properly fits to the speedometer groove. (16F554)



3. After installing the speedometer, pull the speedometer cable through the grommet in the fire wall until the cable marking is visible from the engine compartment side.
4. Apply a drying sealant to the outside surface of the grommet. (16W540)
5. Securely clamp the speedometer cable to the frame clip at the marking (yellow) on the transmission side.

Caution

Disconnect installation of the cable may cause the meter indication to fluctuate, damage a harness, or produce noise.



TACHOMETER

Inspection

Connect a tach-dwell meter, and then compare the meter readings at various engine speeds with the values indicated on the tachometer. If there is a large error, replace the tachometer.

rpm

Engine speed	Tolerance
1,000	± 100
2,000	± 100
3,000	± 150
4,000	± 200
5,000	± 250

Caution

The tachometer is the negative-ground type, and therefore should not be connected in reverse polarity to the battery. If the tachometer is connected in reverse polarity, the transistors and diodes will be damaged.

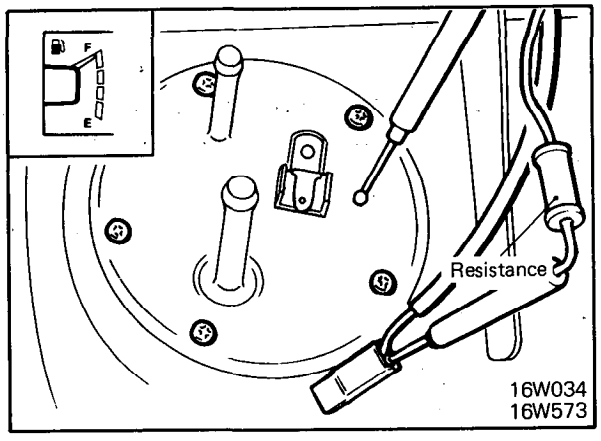
FUEL GAUGE AND UNIT

Inspection

FUEL GAUGE INDICATION TEST

Disconnect the wiring connector from the fuel gauge unit inside the luggage compartment. Connect a resistance between the terminals and confirm the gauge indications.

Indication point	Resistance value
Empty	120 Ω
Full	17 Ω



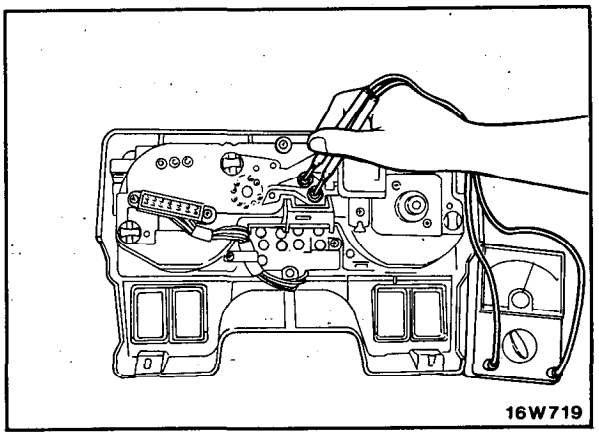
FUEL GAUGE CONTINUITY TEST

Measure the resistance value between the terminals with an ohmmeter.

Resistance value	Approx. 25 Ω

NOTE

If the resistance value is extremely small, there may be a short in the coil. If it is extremely large, there may be a broken wire or some other problem in the coil. In either case, replace the gauge.



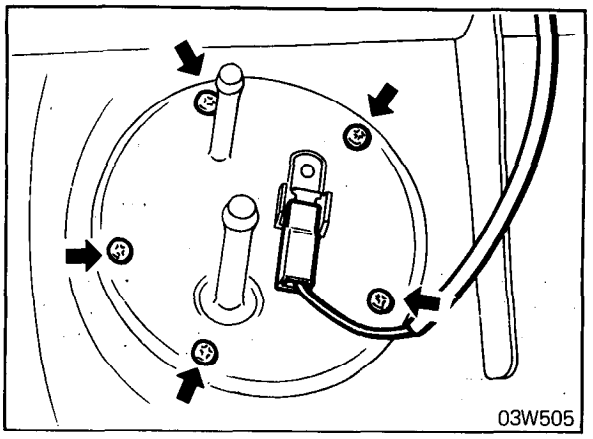
Replacement of the Fuel Gauge Unit

1. Remove the fuel gauge unit. (03W505)

Caution
Since the fuel gauge unit is mounted to the side of the tank, drain the fuel first. The in-tank filter of the fuel gauge unit should be handled carefully because there is the danger of the filter coming out of position.

2. When installing the fuel gauge unit, be careful not to bend the float arm.
3. After installation, confirm that the unit is securely grounded.

Tightening torque	
Fuel gauge unit	1 Nm (0.7 ft.lbs.)



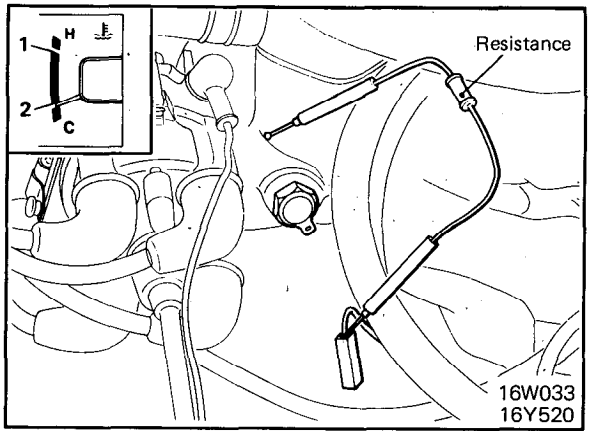
WATER TEMPERATURE GAUGE AND UNIT

Inspection

WATER TEMPERATURE GAUGE INDICATION TEST

1. Disconnect the wiring connector from the water temperature gauge unit inside the engine compartment.
2. Connect a resistance to the connector, and then confirm the gauge indications.

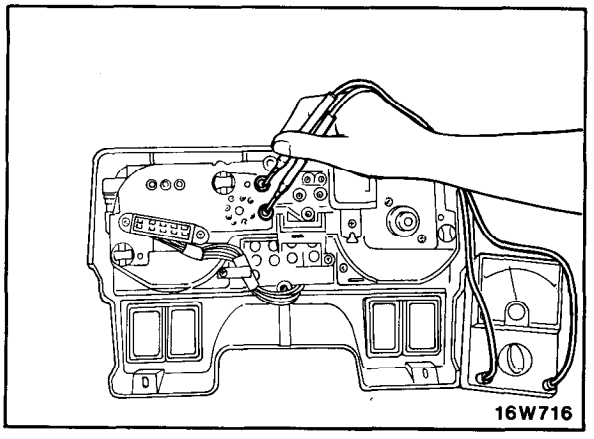
Indication point	Resistance value
(1) 115°C (239°F)	23.8 Ω
(2) 70°C (158°F)	104 Ω



WATER TEMPERATURE GAUGE CONTINUITY TEST

Measure the resistance value between the terminals with an ohmmeter.

Resistance value	Approx. 55 Ω



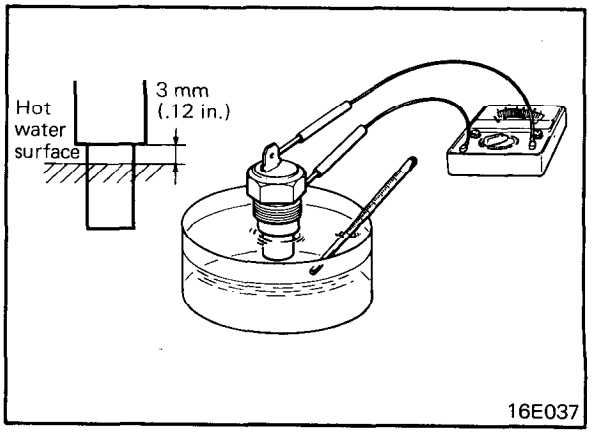
NOTE
If the resistance value is extremely small, there may be a short in the coil; if it is extremely large, there may be a broken wire or some other problem in the coil. In either case, replace the gauge.

WATER TEMPERATURE GAUGE UNIT OPERATION CHECK

Measure the resistance with the gauge unit in hot water at 70°C (158°F).

Resistance value	104 Ω

Caution
The gauge unit should be held with its housing 3 mm (.12 in.) away from the surface of the hot water.



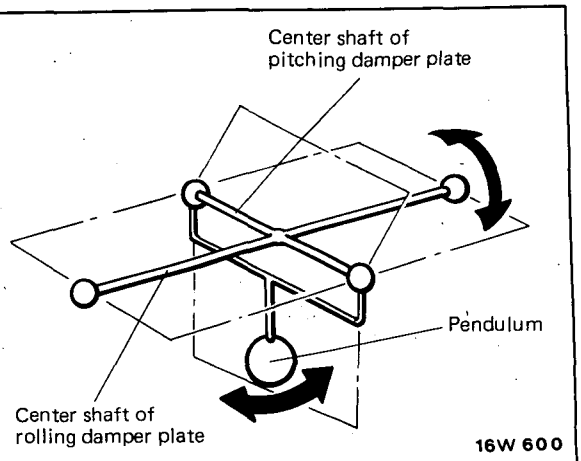
INCLINOMETER

Outline

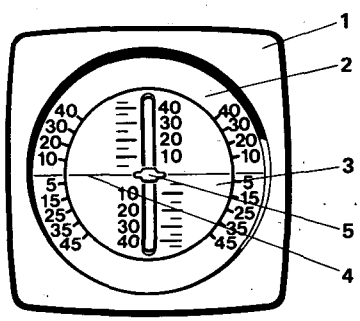
The inclinometer is an instrument which indicates the forward or backward inclination (pitching) or side to side inclination (rolling) of vehicle.
Motion of a pendulum in the system is displayed on the system. The pitching and rolling pointer is supported by a double support mechanism in which the rolling fulcrum is supported in such a way as to be rotatable around the case and the pitching fulcrum supported on the rolling system.

Construction

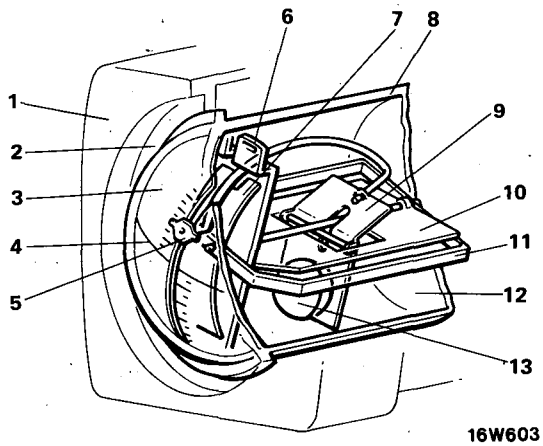
The inclinometer consists of an outer case which inclines with the vehicle, a pointer which is provided in an oil case and always maintains a level position, and a spherical dial. The spherical dial is coupled through the dial support plate to the rolling damper plate. The rolling damper plate is swivel bearing coupled to a stationary frame by the center axis, so it can incline side-to-side, but is always held in a level position by a pendulum. The pointer is coupled with the pitching damper plate.
Since the pitching damper plate is swivel bearing coupled to the rolling damper plate by the center axis, it can incline forward and backward, but is always maintained in a level position by the pendulum.



16W 600



68W500

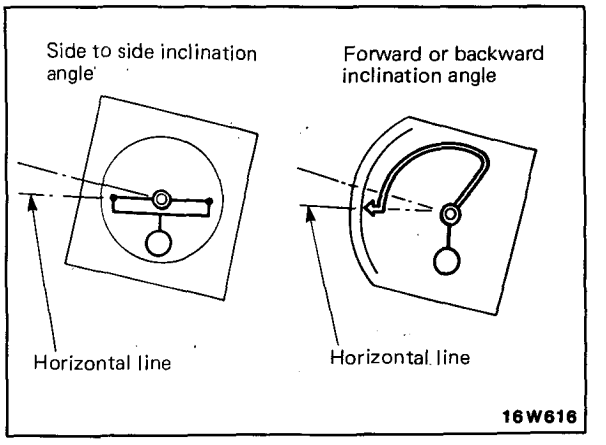


16W603

1. Outer case
2. Front panel
3. Spherical dial
4. Spherical dial horizontal centerline
5. Pointer
6. Dial support plate
7. Blind plate
8. Oil case
9. Pitching damper plate
10. Rolling damper plate
11. Stationary frame
12. Oil
13. Pendulum

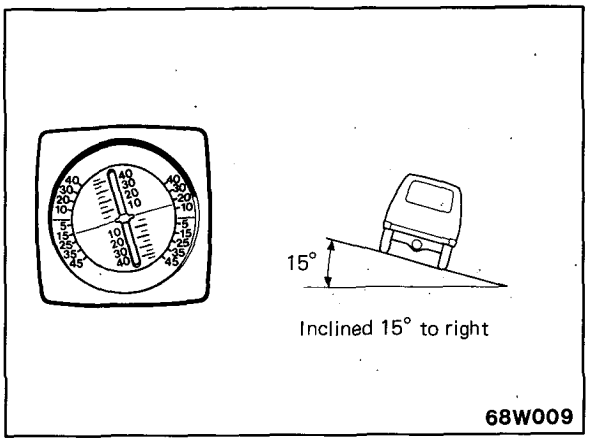
Operation

The side-to-side inclination angle should be read on a scale of the front panel as indicated by the horizontal centerline of the spherical dial, whereas the forward or backward inclination angle should be read on a scale of the spherical dial as indicated by the pointer.



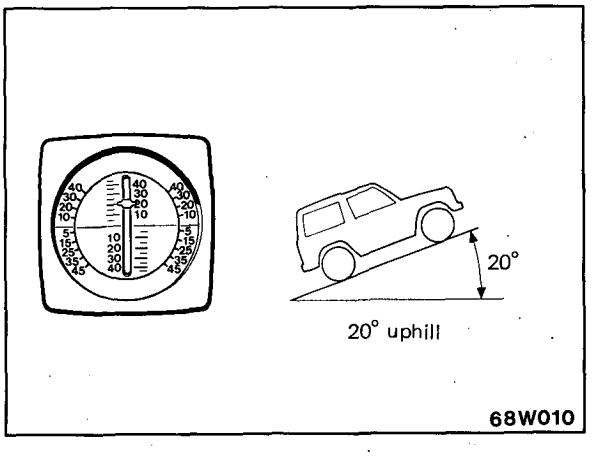
SIDE-TO-SIDE INCLINATION

The front panel inclines with the vehicle, but the spherical dial maintains a horizontal condition, so the horizontal centerline of the spherical dial shows the side-to-side inclination angle.



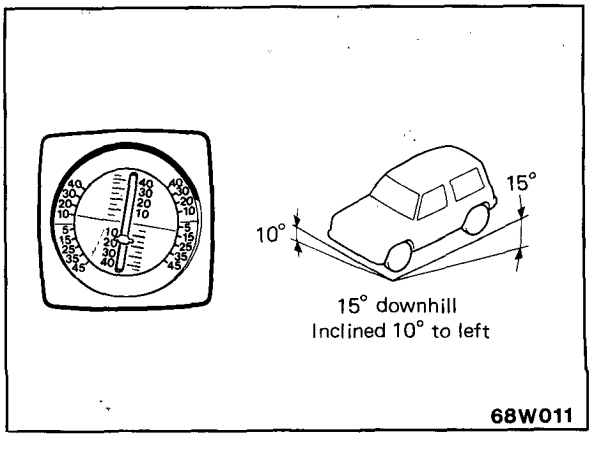
FORWARD OR BACKWARD INCLINATION

The spherical dial inclines forward or backward with the vehicle, but the pointer maintains a level position, so the pointer indicates the forward or backward inclination angle.



COMBINED FORWARD OR BACKWARD AND SIDE-TO-SIDE INCLINATION

The forward or backward inclination angle and the side-to-side inclination angle are indicated by the pointer and spherical dial.

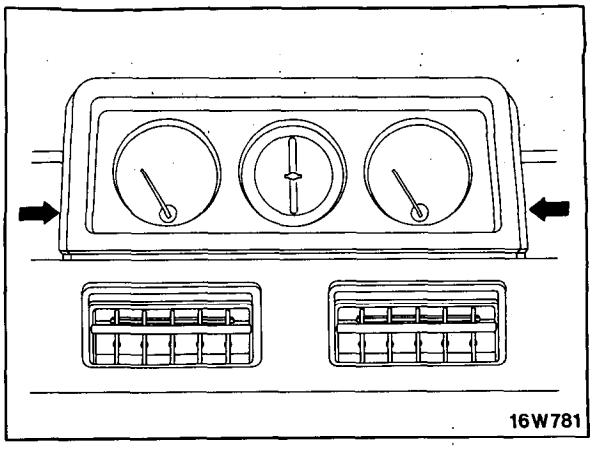


Removal

1. Remove the combination meter. (Refer to p. 8-134.)
2. Remove the pad. (16W781)
3. Remove the meter case attaching screws.
4. Disconnect the connectors of the meter harness located behind the meter case.
5. Remove the inclinometer from the meter case.

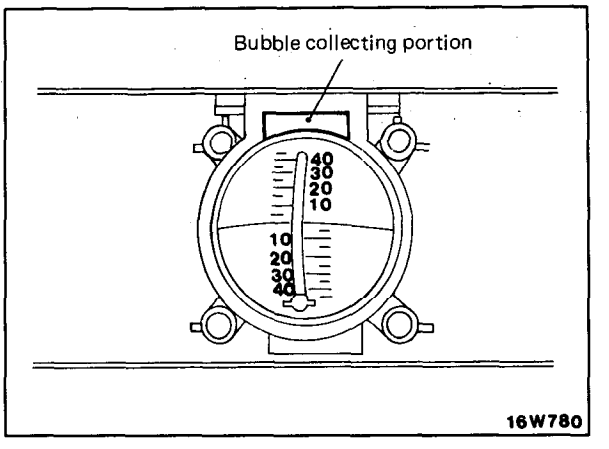
Caution

To prevent internal trouble, the meter must not be dropped or subjected to shock or must not be abruptly inclined to the extent that the maximum indication angle is exceeded.


16W781

Installation

1. Make sure that all water bubbles in the oil case are collected in the upper bubble collecting portion before installation. (16W780)
2. With the vehicle in a level postiion (unladen), check to ensure that the spherical dial and pointer indicate a level position.
3. If the spherical dial and pointer do not indicate that the vehicle is level, adjust the inclinometer by inserting shims between it and either the combination gauge bracket or the instrument panel. If the pointer indication is very far from horizontal, replace the inclinometer.

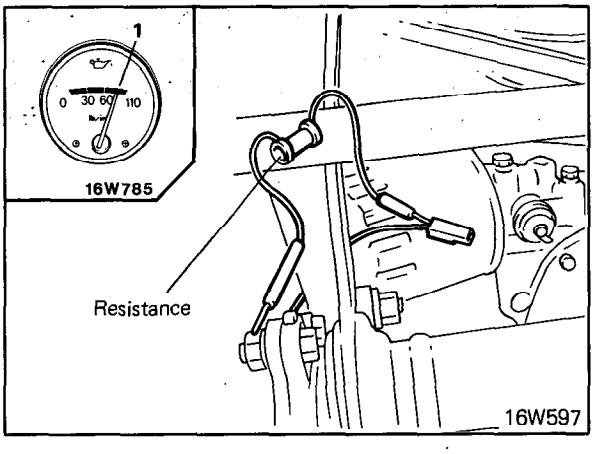


16W780

OIL PRESSURE GAUGE AND UNIT

Removal

1. Remove the combination meter.
2. Remove the pad.
3. Disconnect the oil pressure gauge from the meter wiring harness.
4. Remove the oil pressure gauge to meter case attaching screws.



16W597

Inspection

OIL PRESSURE GAUGE INDICATION TEST

Disconnect the wiring connector from the oil pressure gauge unit inside the engine compartment.

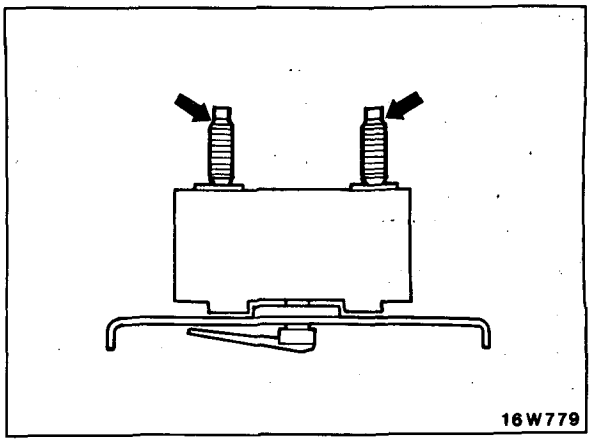
Connect a resistance to the connector, and then confirm the gauge indications. (16W785, 16W597)

Indication point	Resistance value
(1) 588 kPa (85 psi)	120Ω

OIL PRESSURE GAUGE CONTINUITY TEST

Measure the resistance value between the terminals with an ohmmeter.

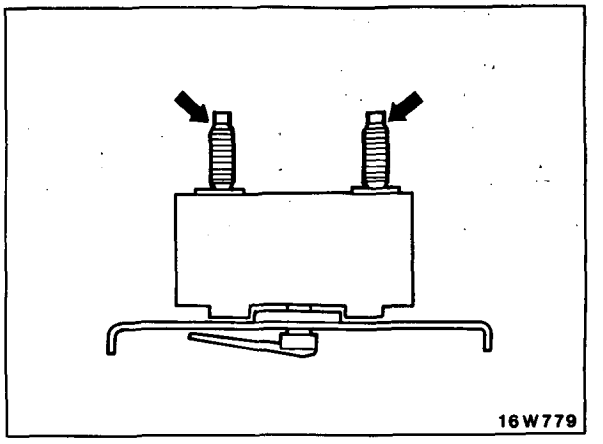
NOTE
If the resistance value is extremely small, there may be a short in the coil; if it is extremely large, there may be a broken wire or some other problem in the coil.



VOLTAGE METER

Removal

1. Remove the combination meter.
2. Remove the pad.
3. Disconnect the voltage meter from the meter wiring harness.
4. Remove the voltage meter to meter case attaching screws.



Inspection

VOLTAGE METER CONTINUITY TEST

1. Connect an ohmmeter to the voltmeter. (16W779)
2. Confirm that the value indicated on the ohmmeter agrees with the standard value.

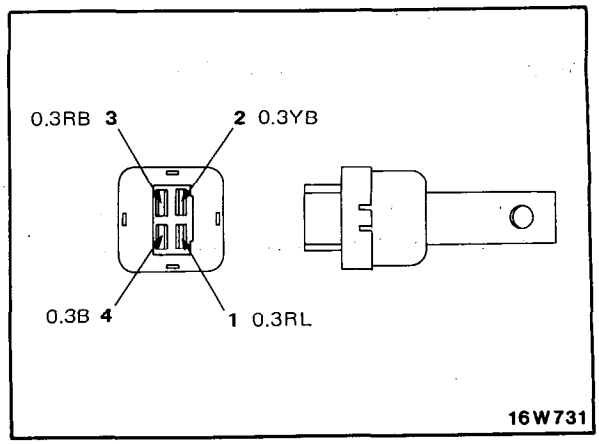
Resistance value	420Ω

SEAT BELT WARNING SYSTEM

1. If the driver turns the ignition key to "ON" while his seat belt is unbuckled, the seat belt warning system is activated to provide an audible and visual reminder through a buzzer and light to fasten the seat belt properly.
2. The seat belt warning system consists of a belt switch, buzzer, warning light, belt warning timer.

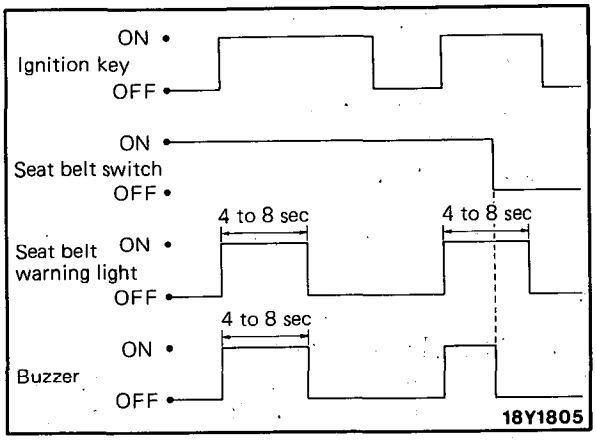
Seat Belt Warning Timer

The timer operates when the ignition key is in the "ON" position and terminals 2 and 3 are electrically connected to terminal 4 (ground). (16W731)



Seat Belt Warning Light and Buzzer

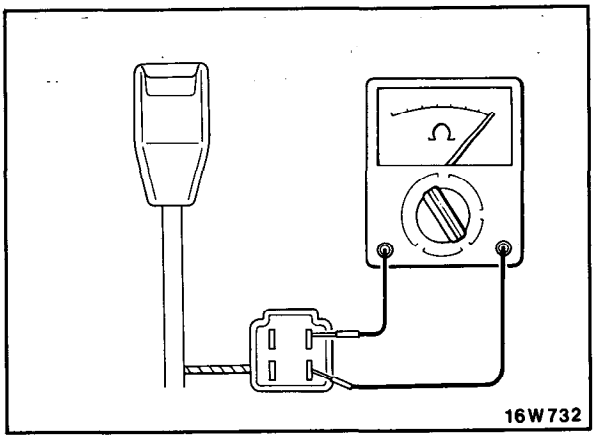
When the seat belt switch is ON (seat belts not buckled) with the ignition key at the ON position, the seat belt warning timer causes the seat belt warning light to illuminate and the buzzer to sound for 4 to 8 seconds. If the seat belt switch is set to OFF (the seat belts buckled) during the seat belt warning timer interval, only the buzzer is cancelled.



Seat Belt Switch

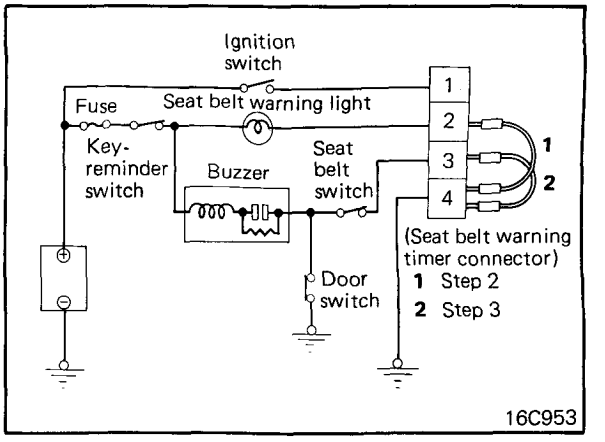
CONTINUITY TEST

1. Pull back the floor mat and disconnect the seat belt switch connector from where it is at the attachment to the buckle stalk assembly.
2. Use an ohmmeter to check for a short circuit at the 0.3-Y wire and the 0.3-RB wire of the driver's seat belt switch. (16W732)
3. If the ohmmeter reads no resistance with the buckle unlocked and indicates an open circuit when the buckle is locked, the belt switch is operating properly.
4. If a microswitch is defective, the buckle stalk assembly containing microswitch should be replaced. For replacement, see GROUP 23.



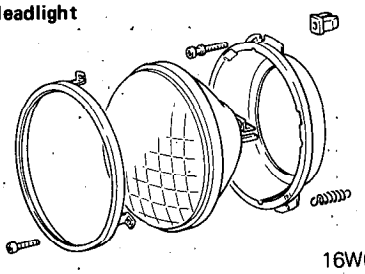
System Inspection

1. Disconnect the seat belt warning timer connector.
2. When the 0.3-YB wire (terminal 2) and 0.3-B wire (terminal 4) are connected with a jumper wire, the seat belt warning light should illuminate. If it fails to illuminate, check the bulb, key-reminder switch and fuse. (16C953)
3. Also the buzzer should sound when the 0.3-RB wire (terminal 3) and 0.3-B wire (terminal 4) are connected with a jumper wire. In this condition, fasten the buckle; if the buzzer stops sounding, the seat belt switch is good. (16C953)
4. If the buzzer does not sound when terminal 3 and terminal 4 are connected with a jumper wire, and check continuity of the seat belt switch. If these is continuity in the seat belt switch, replace the buzzer.
5. After performing the above inspections, connect the seat belt warning timer.
6. With the ignition switch turned to IG, verify the function of the seat belt warning system.



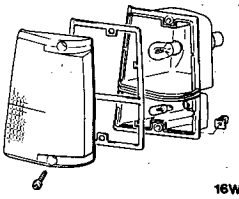
COMPONENTS

Headlight



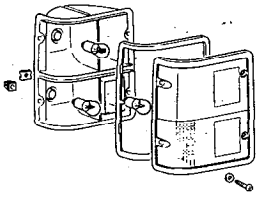
16W606

Front combination light



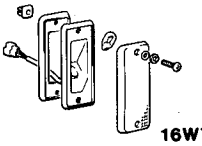
16W720

Rear combination light



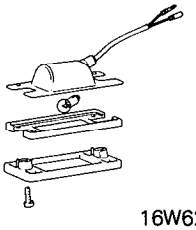
16W623

Rear side marker light



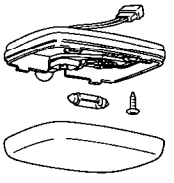
16W766

License plate light



16W622

Dome light



16W602

HEADLIGHTS

1. The headlight system consists of two sealed-beam bulbs.
2. The bulbs are the dual filament type for low and high beams and are marked by a number 2DI molded in the lens.
3. The low beam is intended for use in congested areas and on highways when oncoming vehicles are within a distance of 153 m (500 ft.).
4. The high beam is intended primarily for distant illumination and for use on the open highway when there are no oncoming vehicles.

AIMING

Pre-aiming Instructions

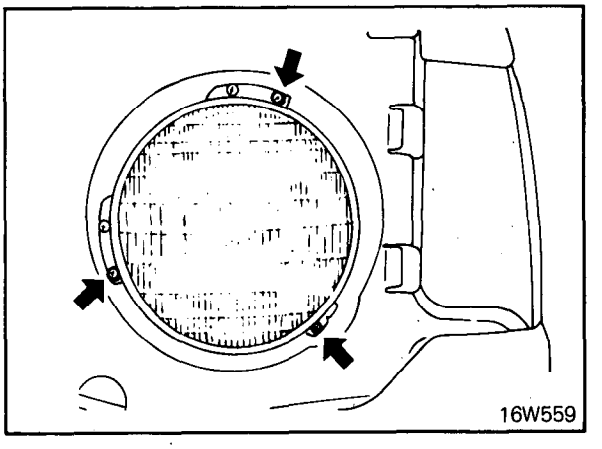
1. Test dimmer switch operation.
2. Confirm operation of high beam indicator light mounted in instrument cluster.
3. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
4. Fill the fuel tank.
5. Position vehicle on a level floor.
6. Bounce the front of the vehicle up and down three times by applying your body weight to the hood or bumper.
7. Check tire inflation.
8. Rock vehicle sideways to allow it to assume its normal position.
9. There should be no other load in the vehicle except the driver or substituted weight of approximately 70 kg (150 lbs.) placed in driver's seat.
10. Thoroughly clean headlight lenses.
11. Adjust headlights by following the instructions for the headlight tester.

Removal

1. Remove the radiator grille, front combination light and headlight bezel. (Refer to GROUP 23.)
2. Disconnect the harness connector from the bulb socket.
3. Remove the retaining ring from the mounting ring. (16W559)

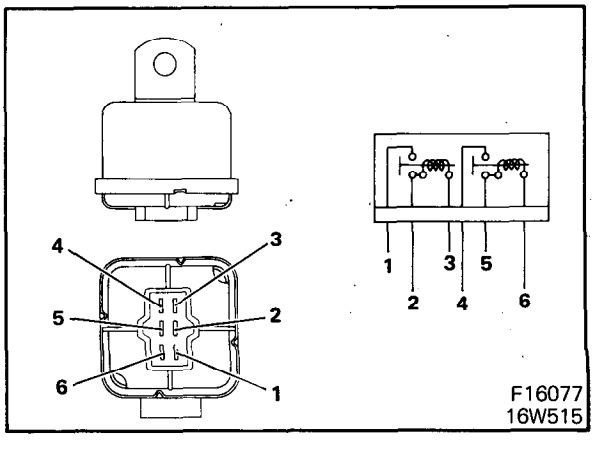
Caution
Do not disturb headlight adjusting screws.

4. Remove the headlight assembly.

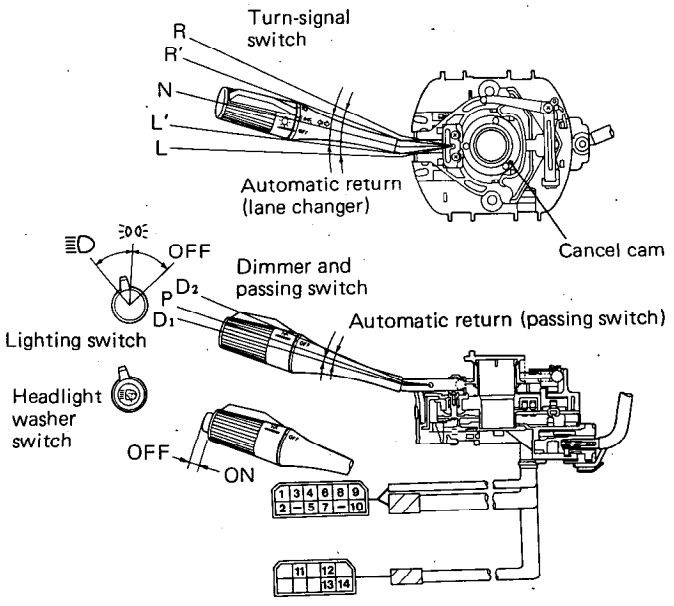


LIGHT CONTROL RELAY

1. Check to ensure that when battery voltage is applied between terminals 2 and 3 and between terminals 5 and 6 an operating sound (click) is heard. (F16077, 16W515)
2. In the above conditions, check to see if the battery voltage is applied to terminals 1 and 4. (F16077, 16W515)



LIGHTING SWITCH



16W734

NOTE
R' and L' indicate lane-changing operation.

Terminal			Lighting switch			Dimmer and passing switch			Turn-signal switch			Headlight washer switch		Horn switch	
No.	Wire	Used for	OFF	≡D○	≡D	D_1	D_2	P	L (L')	N	R (R')	OFF	ON	OFF	ON
1	(G)	Lighting switch (≡D○)		○	○										
2	R	Lighting switch (≡D)			○			○							
3	0.85GR	Turn-signal power supply							○		○				
4	0.85GL	Turn-signal light (L.H.)							○						
5	0.85GY	Turn-signal light (R.H.)									○				
6	2RW	Dimmer switch (low beam)				○		○							
7	2R	Dimmer switch (high beam)					○	○							
8	(B)	Lighting switch ground		○	○										
9	GB	Horn switch													○
10	(L)	Headlight washer relay											○		○
11	2B	Ground				○	○	○					○		
12	0.85WG	Stop light switch								○					
13	0.85WR	Stop light (R.H.)								○	○				
14	0.85WL	Stop light (L.H.)							○	○					

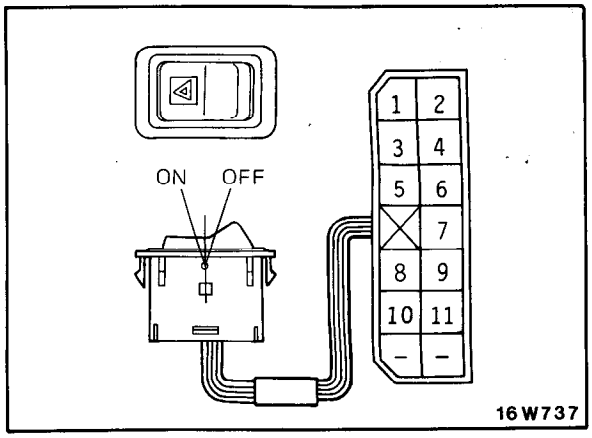
NOTE
The sizes for wires whose size is not specified in the "Wire" column above are 0.3 mm^2 for items in parentheses, and 0.5 mm^2 for all others.

HAZARD WARNING SWITCH

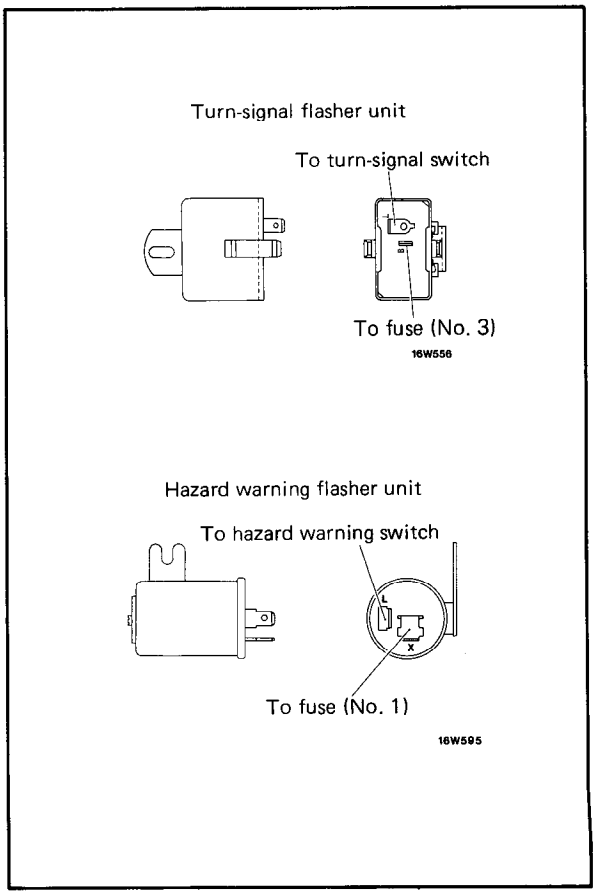
Inspeciton

Move the switch to ON and OFF, and check the continuity between the terminals.

Terminal No.	Switch position OFF	Switch position ON	Connection point
1	○	○	Fuse block No.2
2	○	○	Ground
3		○	Front turn-signal light (L.H.)
4		○	Rear turn-signal light (L.H.)
5	○		Stop light switch
6	○		Turn-signal flasher unit
7		○	Hazard warning flasher unit
8	○		Column switch
9	○		Column switch
10		○	Front turn-signal light (R.H.)
11		○	Rear turn-signal light (R.H.)

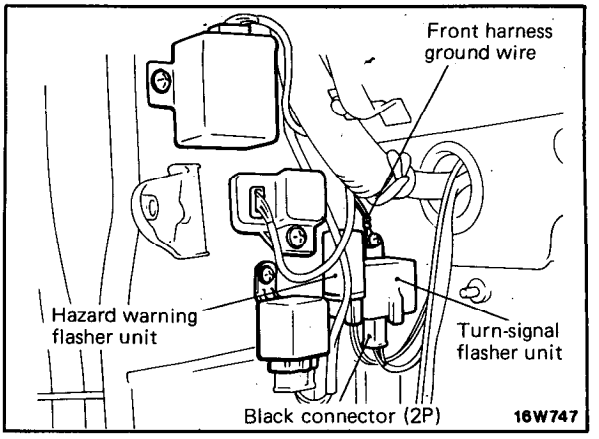


TURN-SIGNAL AND HAZARD WARNING FLASHER UNIT



Installation

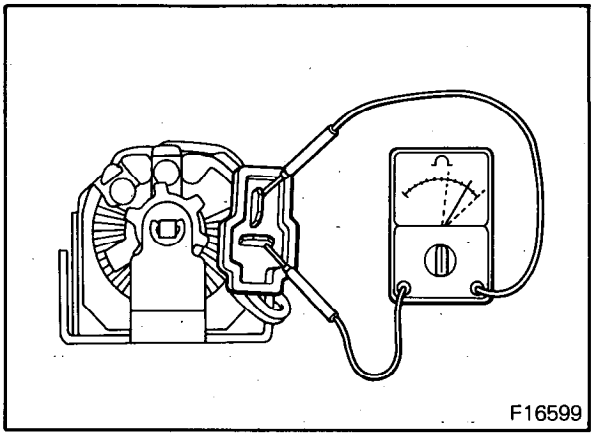
1. Connect the black connector to the turn-signal flasher unit. (16W747)
2. The ground wires for turn-signal flasher unit and front-wiring harness should be tightened together. (16W747)



DIMMER CONTROL SWITCH

Inspection

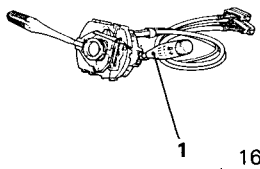
1. With the connector disconnected, measure the continuity between the dimmer control switch terminals with an ohmmeter. (F16599)
2. If the resistance value varies smoothly between 0 and 10 ohms throughout the entire operation range, the dimmer control switch is functioning properly. (F16599)



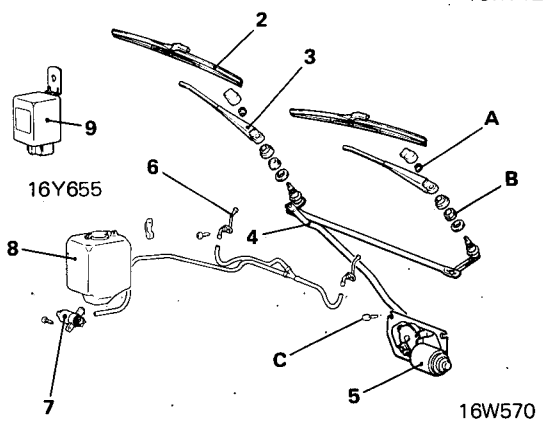
COMPONENTS

1. Wipers and washer switch assembly
2. Wiper blade
3. Wiper arm
4. Wiper linkage
5. Wiper motor
6. Washer nozzle
7. Washer motor
8. Washer tank
9. Intermittent wiper relay

	Nm	ft.lbs.
A	10-16	7-12
B	7	5
C	3	2



16W712

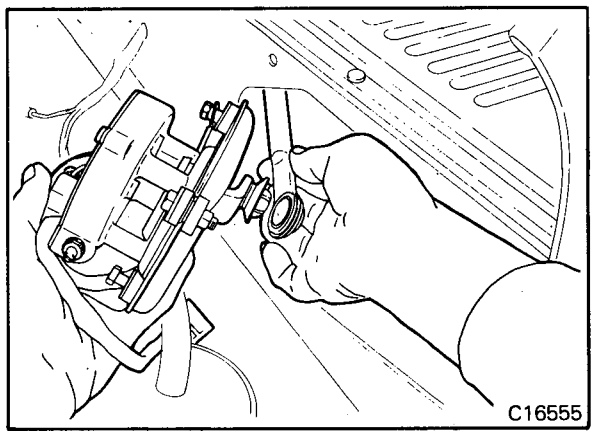


16W570

WIPER MOTOR AND LINKAGE

Removal

1. Remove the wiper arms and the pivot shaft mounting nuts, then push the pivot shafts toward the inside.
2. Loosen the wiper motor mounting bolts, and then with the motor pulled out slightly, disconnect the linkage and the motor. (C16555)
3. Remove both the motor and the linkage.


C16555

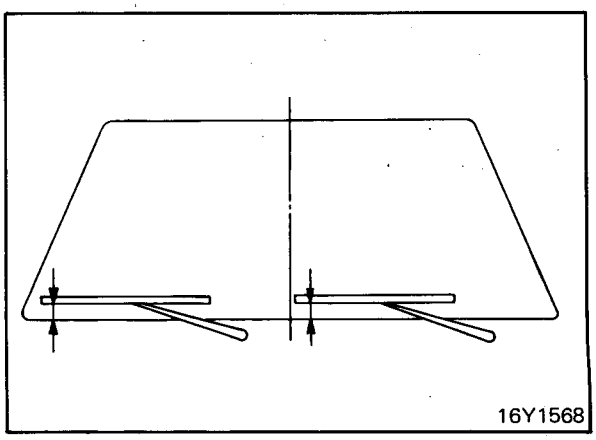
Caution

Because the installation angle of the crank arm and the motor has been set, do not separate them unless it is necessary to do so. If they must be separated, do so only after marking the mounting positions.

Installation

Install the wiper arms on the pivot shafts so that the stopping position of the wiper blades is at the specified point. (16Y1568)

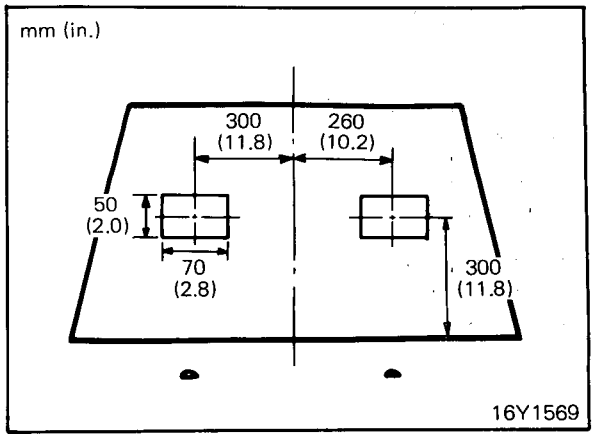
Wiper blade stopping position (distance between blade tip and front deck garnish) . . . . . 37-47 mm (1.5-1.9 in.)


16Y1568

WINDSHIELD WASHER

Inspection and Adjustment

Check the washer fluid spray pattern.
Adjust by moving the nozzle.



INTERMITTENT WIPER RELAY

Inspection

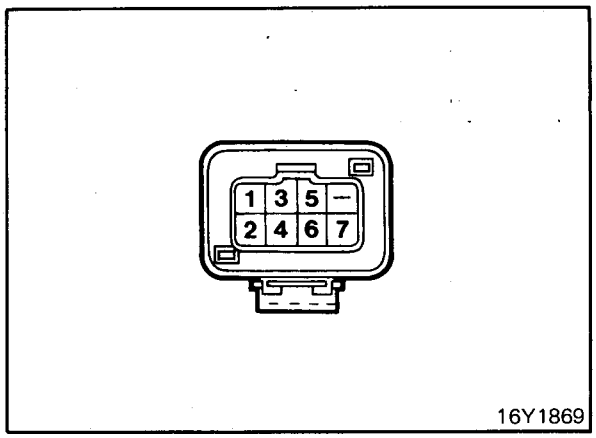
If the wipers do not stop in the correct position when the wiper switch is set to the star mark:
(1) Check whether the output of the voltage from terminal 3 is synchronized with the operation of the wipers.

When the wipers are stopped:	12 V
When the wipers are operating:	0 V

If the wipers do not operate intermittently when the wiper switch is set to the star mark:
(1) Perform the same check as described above.

If the wipers do not operate when the wiper switch is set to the star mark:
(1) Confirm that power is being supplied to terminals 1 and 4.
(2) Confirm that the voltage between terminal 6 and ground is 0 V.
(3) Confirm that the voltage between terminal 3 and ground is 0 V.

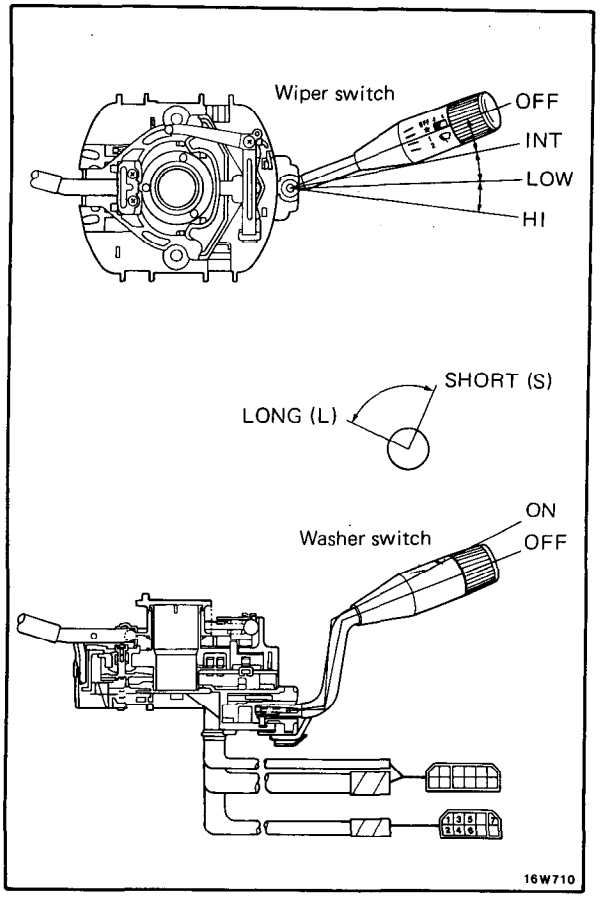
If the wipers do not operate when the washer switch is turned ON:
(1) Confirm that power is being supplied to terminals 1 and 4.
(2) Confirm that the voltage between terminal 5 and ground is 0 V while the washer switch is ON.
(3) Confirm that the voltage between terminal 3 and ground is 12 V at the moment that the washer switch is turned on, and that the voltage is 0 V approximately one second later. Also, confirm that the voltage is 0 V 2 to 5 seconds after the washer switch is turned off.



WINDSHIELD WIPER AND WASHER SWITCH ASSEMBLY (COLUMN SWITCH)

Inspection

Move the column switch to each position to check for continuity between terminals.



Terminal			Wiper/washer switch				Intermittent time adjusting switch
No.	Wire	Used for	OFF	INT (★)	LOW (1)	HI (2)	SHORT ~ LONG (S) (L)
1	YL	Washer switch (ON)	○	○	○	○	
2	LB	Wiper switch (High speed)				○	
3	2B	Ground	○	○ ○	○ ○	○ ○	○
4	BY	Wiper switch (Intermittent)		○			
5	BR	Wiper switch (OFF)	○	○			
6	LO	Wiper switch (Low speed)	○	○	○		
7	0.3Y	Intermittent time adjusting switch					○

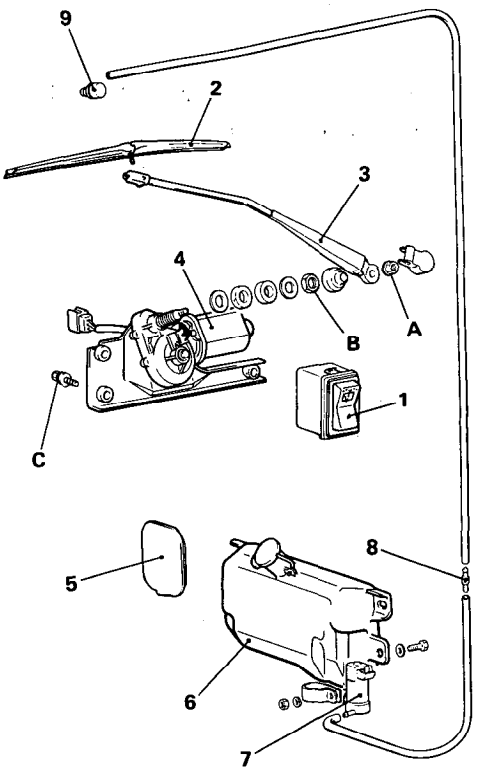
Remarks

The dotted lines indicate that the automatic-return switch is ON.

COMPONENTS

1. Rear wiper and washer switch
2. Rear wiper blade
3. Rear wiper arm
4. Rear wiper motor
5. Rear washer tank lid
6. Rear washer tank
7. Rear washer motor
8. Joint
9. Rear washer nozzle

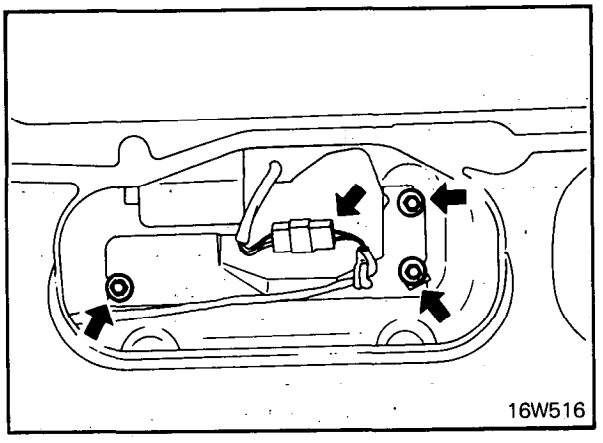
	Nm	ft.lbs.
A	7-10	5-7
B	8-12	6-9
C	7-10	5-7



REAR WIPER MOTOR AND WIPER ARM

Removal

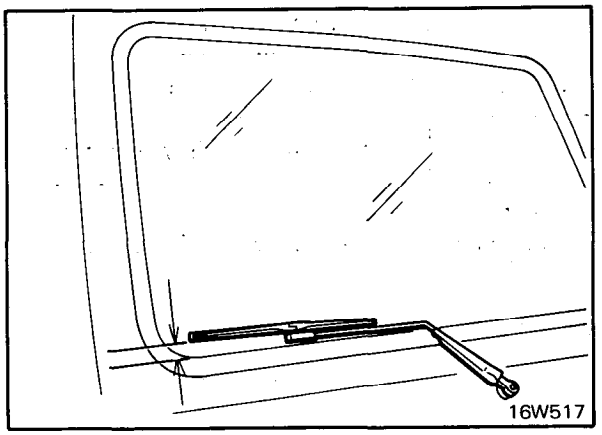
1. Remove the spare wheel from the back door.
2. Remove the wiper arm and remove the pivot shaft locking nut.
3. Remove the back door trim and remove the waterproof film. (Refer to GROUP 23.)
4. Remove the rear wiper motor mounting bolts and remove the rear wiper motor. (16W516)



Installation

Adjust the mounting position of the wiper arm so that the stopping position of the wiper blade agrees with the standard value.

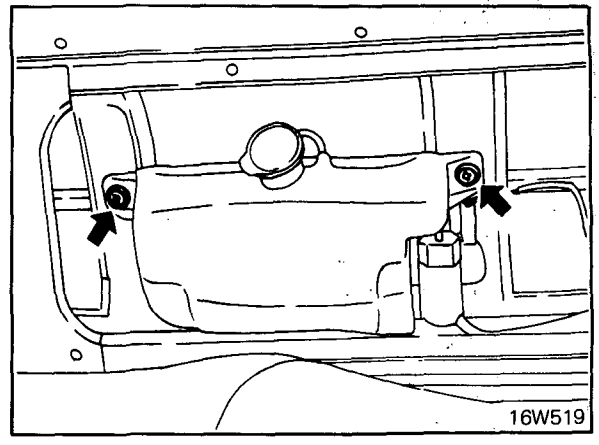
Wiper blade stopping position (distance between blade tip and back door window weatherstrip .... 20 mm (.8 in.)



REAR WASHER TANK

Removal

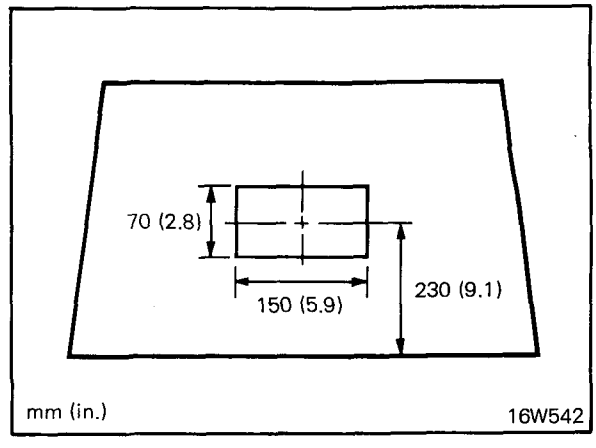
1. Remove the right rear quarter trim.
2. Remove the rear washer tank mounting screws and then remove the tank. (16W519)



REAR WASHER NOZZLE

Inspection and Adjustment

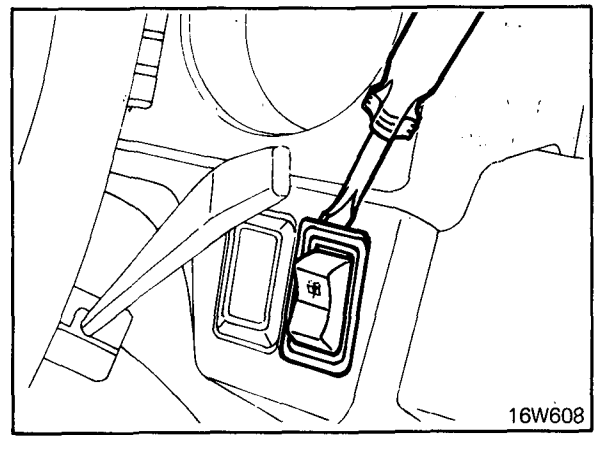
Check the washer fluid spray pattern.
Adjust the nozzle.



REAR WIPER AND WASHER SWITCH

Removal

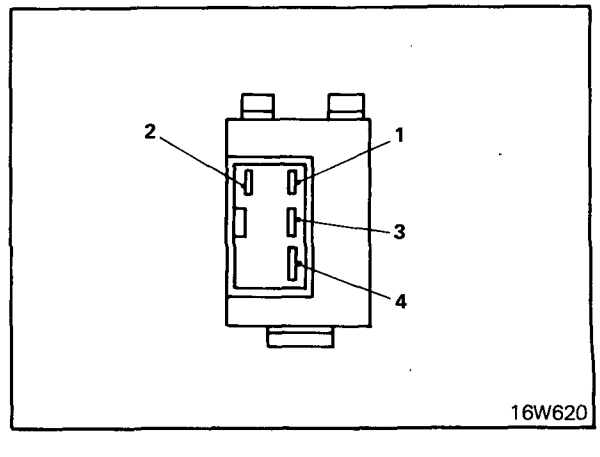
Remove the switch from the instrument cluster and disconnect the connector.



Inspection

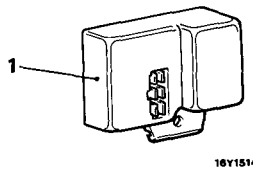
Operate the switch and check the continuity between the terminals.

Position \ Terminal	1	2	3	4
Washer	○			○
Wiper OFF		○	○	
Wiper ON			○	○
Wiper Washer	○		○	○

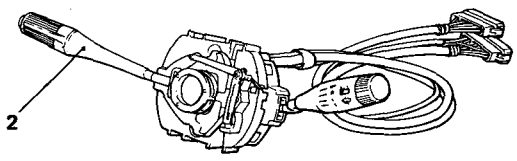


COMPONENTS

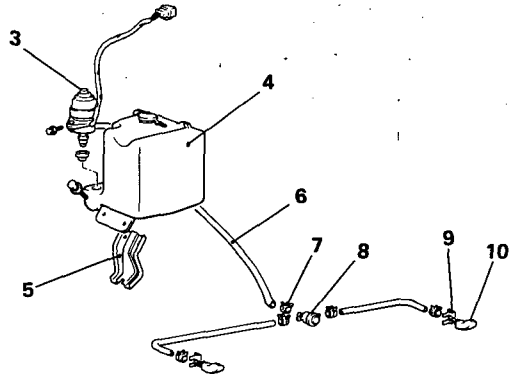
1. Headlight washer control relay
2. Headlight washer switch
3. Headlight washer motor
4. Headlight washer tank
5. Bracket
6. Main hose
7. Clamp
8. Check valve
9. Nozzle clamp
10. Headlight washer nozzle



16Y1514



16W712

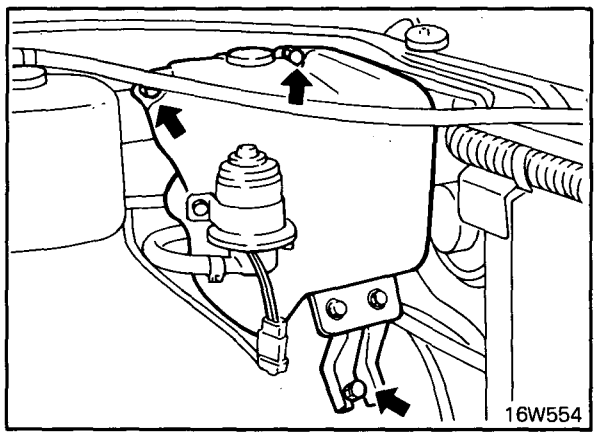


16W569

HEADLIGHT WASHER TANK

Removal

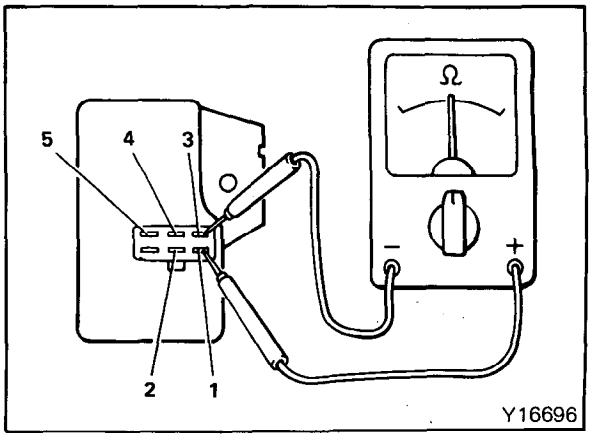
Remove the headlight washer tank mounting bolts and remove the tank.


16W554

HEADLIGHT WASHER CONTROL RELAY

Continuity Test

1. Check for continuity between the terminals of the headlight washer control relay with an ohmmeter. (Y16696)
2. If the results obtained do not agree with the conditions of continuity shown in the chart below, replace the relay.



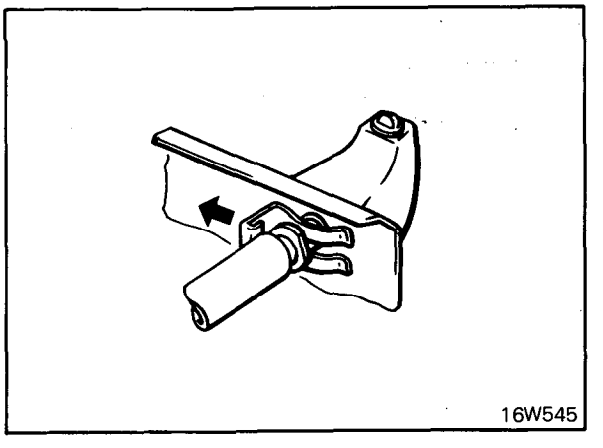
1	2	3	4	5
⊖		⊕		
	⊖	⊕		
		⊕	⊖	
		⊕		⊖

NOTE
Connect the test probe (+) to terminal 3. There should be no continuity in the opposite direction; therefore, during inspection, pay attention to the direction of continuity when connecting the test probe.

HEADLIGHT WASHER NOZZLES

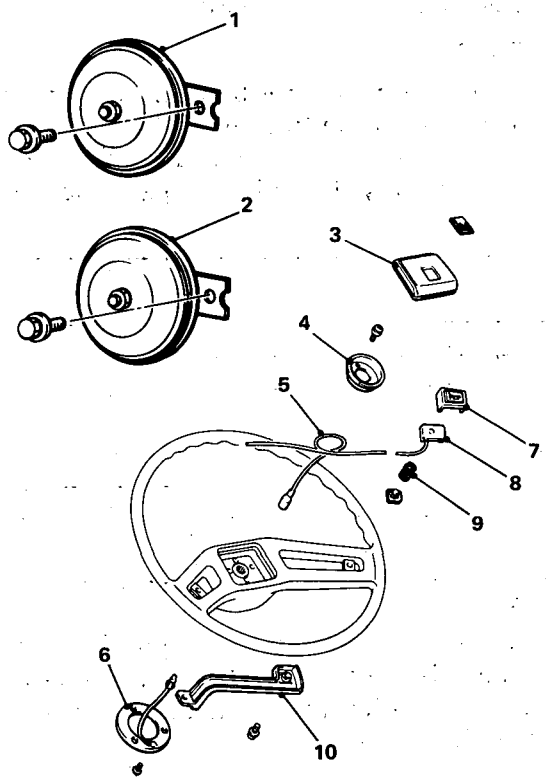
Removal

1. Remove the radiator grille and headlight bezels. (Refer to GROUP 23.)
2. Remove the nozzle clamp and remove the washer nozzle from the grille filler panel. (16W545)



COMPONENTS

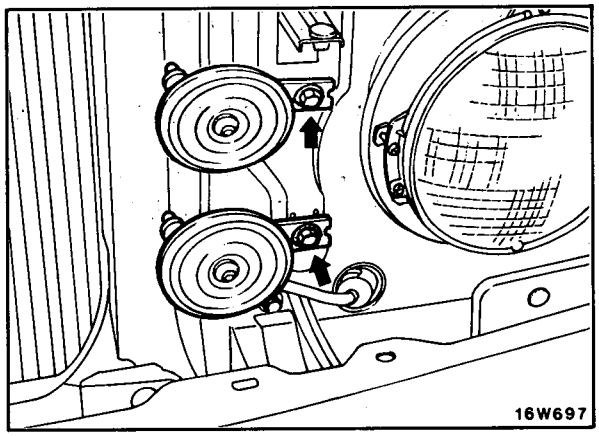
1. Horn (high pitch)
2. Horn (low pitch)
3. Center pad
4. Fixture
5. Horn cable
6. Contact plate
7. Horn button
8. Contact cup
9. Horn spring
10. Pad



16W590
16D861

REMOVAL

1. Remove the radiator grille. (Refer to GROUP 23.)
2. Disconnect the horn connectors.
3. Remove the horn mounting bolts. (16W697)



INSPECTION

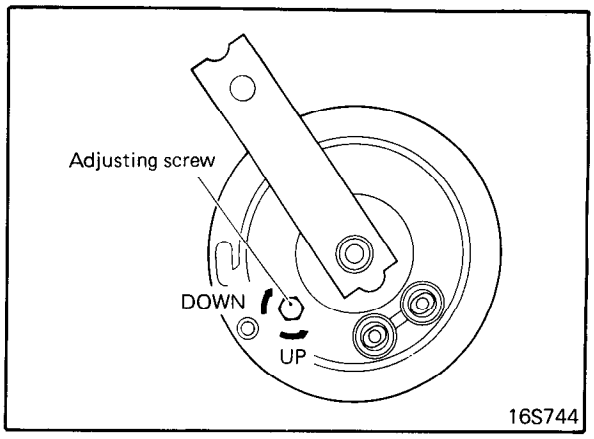
1. Check horn switch contact for burned-out or short-circuited.
2. Check horn switch spring for broken or damaged.
3. Check horn switch harness for damage.
4. Check horn adjustment screw for looseness.
5. Check the horn for water, dirt or other foreign matter lodged.

HORN ADJUSTMENT

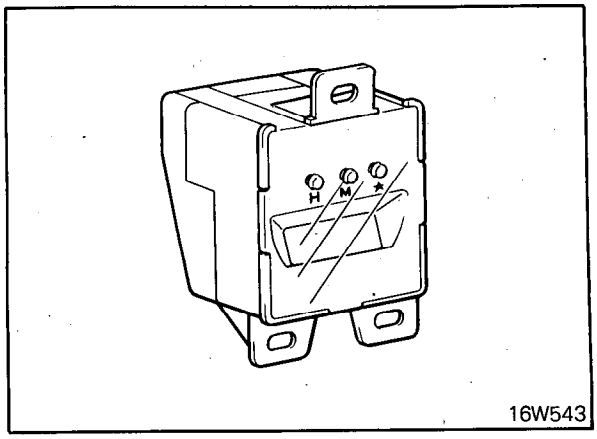
Secure the horn bracket in a vice, and then connect a battery of the specified voltage (12 volts).
Sound the horn, and adjust it by turning the adjusting screw.

1. The sound volume is too low:
   Turn the adjusting screw in the "UP" direction within a range of about 180°, and then lock it in position when a satisfactory sound volume has been obtained.
2. The sound volume is too loud:
   Turn the adjusting screw 20° to 30° in the "DOWN" direction, and then lock it in positon when a satisfactory sound volume has been obtained.
3. Horn will not sound:
   Turn the adjusting screw slightly in the "UP" direction until the horn sounds, find a satisfactory sound volume by continuing to turn the screw within a range of 180°, and then lock the screw in place.
   If a satisfactory volume cannot be obtained, replace the horn.

Caution
After the adjustment, apply lacquer to prevent the adjusting screw from becoming loose.

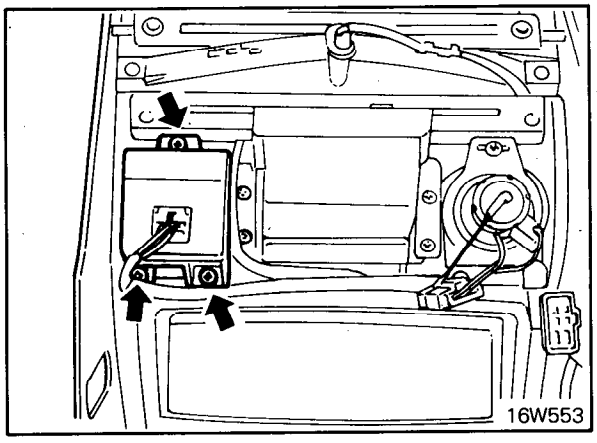


COMPONENTS



REMOVAL

1. Remove the center console. (Refer to GROUP 23.)
2. Remove the mounting screws and disconnect the power supply connector. (16W553)

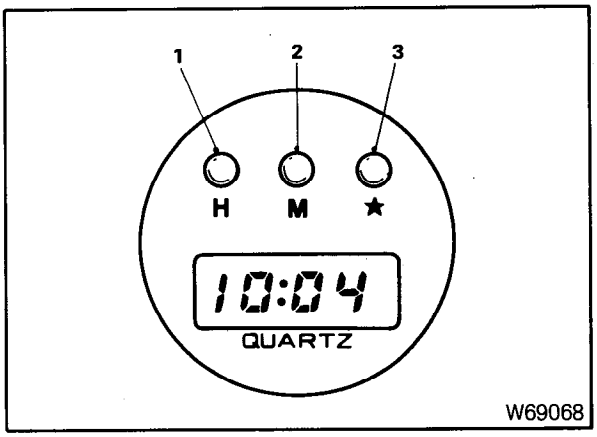


TIME ADJUSTMENT

Adjust the clock as follows:
1. To adjust the hour, push button (1).
2. To adjust the minutes, push button (2).
3. To clear away the minutes display, push button (3).

Example of time adjustment

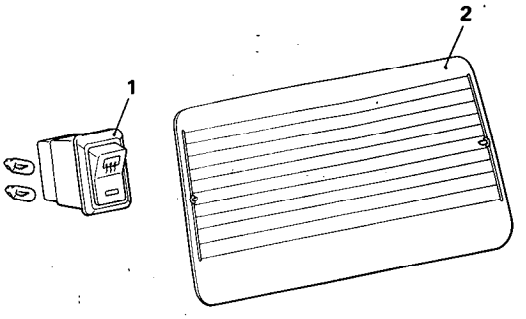
Before adjustment	After adjustment
10:01 – 10:29	10:00
10:30 – 10:59	11:00



Caution
This clock is a delicate mechanism containing a crystal oscillator, transistors, etc., and should be handled with care. Specialized technical skill is needed to repair the internal mechanism; do not attempt to disassemble it. If the clock itself is malfunctioning, replace the entire assembly. When bake-finishing a paint coat, take care not to allow the clock to be exposed to temperatures exceeding 60°C (140°F).

COMPONENTS

1. Rear window defogger switch
2. Rear window defogger glass

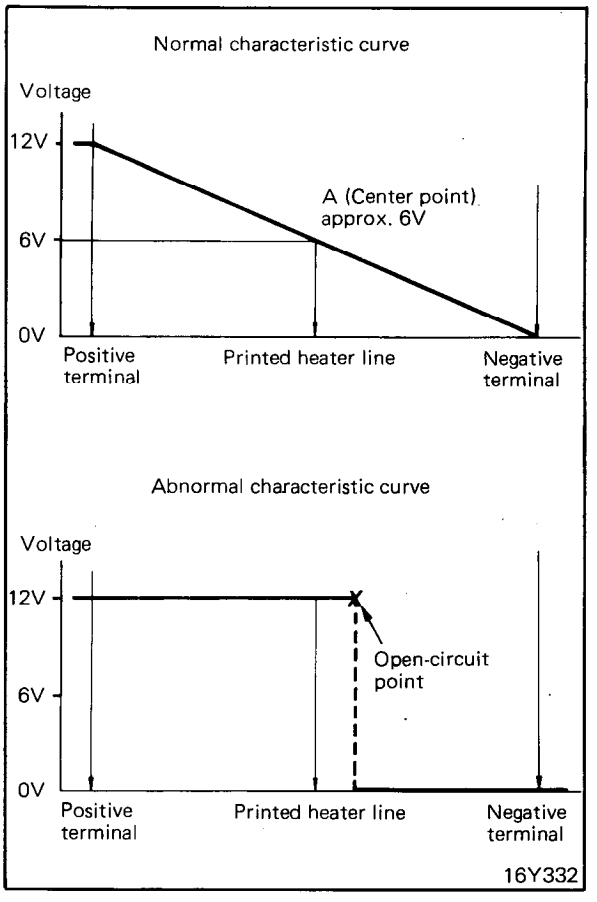


16W708

PRINTED HEATER LINES

Inspection

1. The printed heater lines should be tested while the engine is running at 2,000 rpm and the battery is being charged.
2. Turn the defogger switch to the "ON" position, and use voltmeter to measure the voltage of each printed heater line at the rear window glass center point "A".
3. If all of the heater lines indicate approximately 6V, the rear window printed heater lines are functioning properly.
4. If a voltage of 12V is indicated at point "A", the wire is broken between point "A" and the negative (−) terminal. Move the test probe gradually toward the negative (−) terminal and search for the place where there is a sudden change in the voltage (to 0V).
5. This place where the voltage suddenly changes indicates the location of the broken wire.
6. If 0V is indicated at point "A", the wire is broken between point "A" and the positive (+) terminal. Find the point where there is a sudden change in the voltage (to 12V), as described in step 4. above.

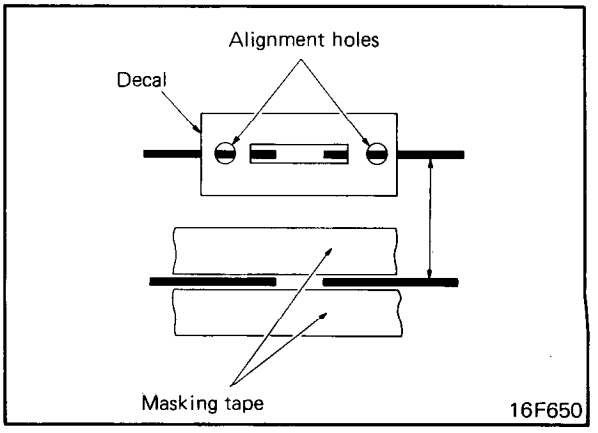


16Y332

Repair

1. Prepare the following items:
   - Conductive paint
   - Paint thinner
   - Masking tape, decal, etc.
   - Unleaded gasoline
   - Thin brush

   Wipe the glass adjacent to the broken heater line, clean with unleaded gasoline, and bond a decal or masking tape as shown.



16F650

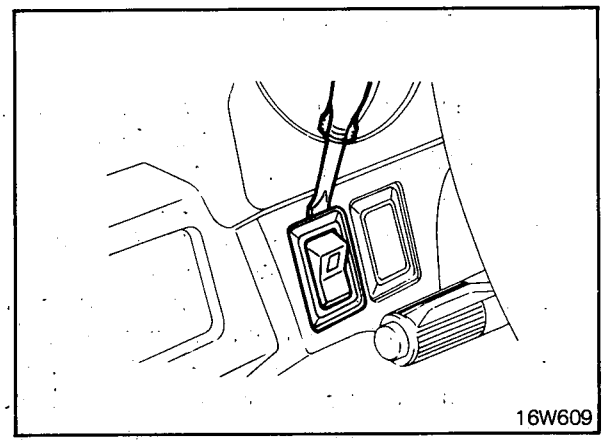
2. Shake the electroconductive paint container well, and remove the amount of paint needed. Dilute it with a small quantity of paint thinner, and apply three coats with the brush at intervals of about 15 minutes.
3. Remove the tape or decal and leave the repaired defogger unused for a while before supplying power.
4. For a better finish, scrape away excess deposits with a knife after drying is complete (one day later).

Caution
After repair, clean the glass with a soft dry shop towel or wipe along the printed heater line with a slightly moistened shop towel.

REAR WINDOW DEFOGGER SWITCH

Removal

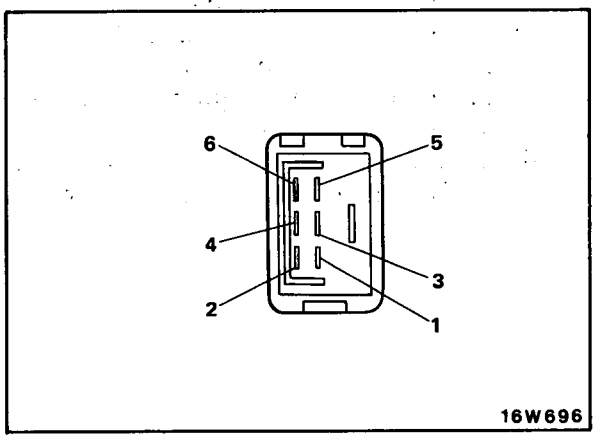
Remove the switch from the instrument cluster and push the connector bar to detach the switch.


16W609

Inspection

Operate the switch and check continuity between the terminals.

Position \ Terminal	1	*	2	3	4	5	*	6
OFF	○	⊚	○			○	⊚	○
ON	○	⊚	○	○	○	○	⊚	○

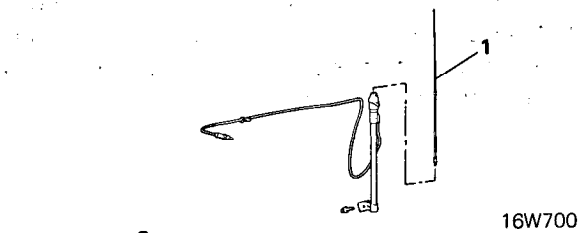


16W696

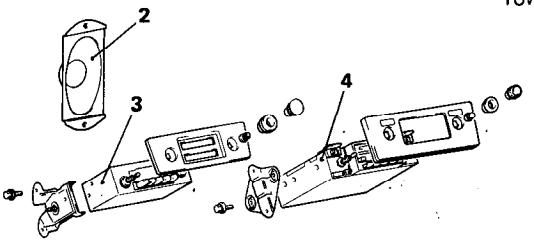
NOTE
* Denotes indicator light.

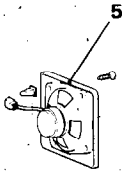
COMPONENTS

1. Whip antenna
2. Front speaker
3. Radio
4. Tape player
5. Rear speaker



16W700



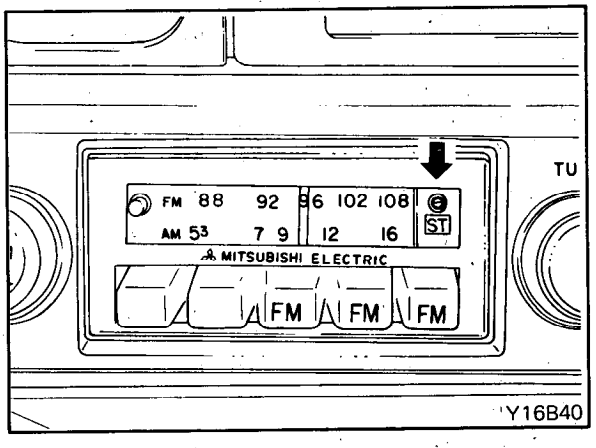


16W567

ANTENNA TRIMMER

The antenna trimmer is essential for matching the antenna with the radio in order to obtain the maximum sensitivity of the radio. It must be adjusted with the antenna actually mounted on the vehicle. If the trimmer is not adjusted properly, the radio suffers from not only low sensitivity but also noises, such as external noise and noise from passing vehicles. In the following cases, therefore, adjust it as described below:

(1) When radio is installed.
(2) If antenna is replaced.
(3) If radio has low sensitivity.
(4) If radio is noisy.



Y16B40

Trimmer Adjustment

Make the following preparations for adjustment.

(1) Turn the ignition key to the "ACC" position.
(2) Extend the antenna all the way.
(3) Tune accurately to a station near 1,400 kHz in order to receive a broadcast in as weak an electric field as can be barely received. If there is no station near 1,400 kHz, tune to any high-frequency station (above 1,000 kHz) available. If there are two or more stations near 1,400 kHz, choose the stronger one.
(4) Set the volume control to the proper volume.
(5) Set the tone control to high-pitched tone.

Be sure that preparations 1 through 5 have been correctly made.
Insert a screwdriver into the trimmer adjusting hole.
Turn the screwdriver clockwise or counterclockwise for maximum sensitivity (maximum broadcast wave sound).
If the optimum sensitivity point cannot be found, check for an antenna malfunction or a broken wire.

NOISE SUPPRESSION

Noise interfering with radio reception may be roughly classified as follows:
(1) Noise produced by the vehicle itself
Noise from the ignition circuit, alternator circuit, etc.
(2) Noise generated in the radio itself
Thermal noise from transistors, IC, resistor, etc.
(3) Atmospheric noise
Noise from other cars, neon signs, etc.
The radio has devices to suppress noise of the radio itself and atmospheric noise, but it is difficult to eliminate them completely. Noise produced by the vehicle includes whining from the alternator system, and a strong, impulsive, fast popping noise from the ignition system.
Before performing any checking or adjustments, first confirm the following points.

- Adjust the antenna trimmer completely.
- Set the pushbuttons (tuning) properly.
- Extend the antenna all the way.

Prevention of Ignition Circuit Noise

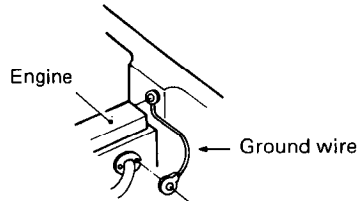
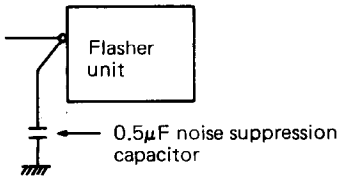
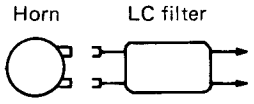
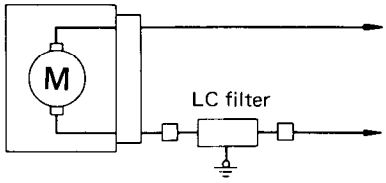
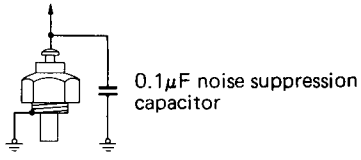
A resistance-equipped cable is used for the high-tension cable in order to prevent noise; however, if any noise from the ignition circuit does occur, check the tightness and ground connection of the positive (+) terminal of the noise filter, and, if necessary, check the noise filter.

Caution
Be careful not to connect the noise filter to the high-tension cable; doing so could damage the noise filter.

Prevention of Other Circuit Noise

For other noises, take necessary corrective actions in accordance with the following items and the NOISE SUPPRESSION CHART.
Polish the grounding cable terminal, and connect it properly.
Polish the pillar antenna ground terminal, and connect it properly.
Ground electric parts completely.
Keep the antenna cable and speaker lead wire away from other electric wiring.

NOISE SUPPRESSION CHART

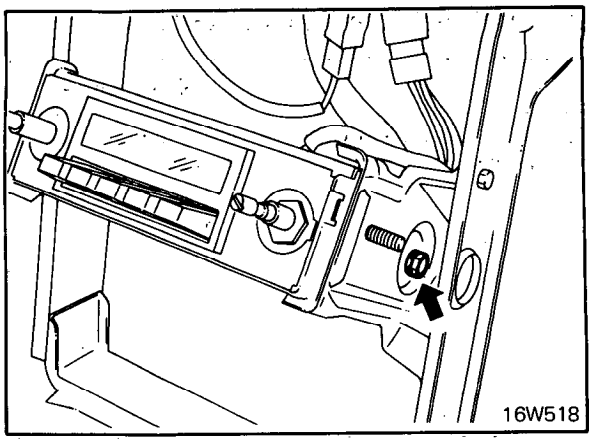
Symptom	Noise source	Remedy
Unusual noise related to engine speed.	Engine	Securely ground the engine, frame and/or body and engine hood.  16E710
"Clatter" noise related to the flashing of turn signal lights.	Turn signals	Connect a 0.5 μF noise-suppression capacitor to the B-terminal of the flasher unit.  16E712
Abnormal noise when the horn is operated.	Horn	1. Connect a 0.5 μF noise-suppression capacitor to the + B-terminal of the horn. 2. For an FM radio, connect an LC filter to the horn terminals.  16E713
Noise when the windshield washer operates.	Washer motor	Connect an LC filter between the terminal of the washer motor and the power source wire.  16F671
Unusual noise when the engine is started.	Water temperature gauge unit	Connect a 0.1 μF noise-suppression capacitor to the terminal of the water temperature gauge unit.  16F672

RADIO AND TAPE PLAYER

Removal

1. Remove the radio switch knobs, loosen the mounting nuts, and then detach the radio panel.
2. Remove the center console, loosen the mounting screws on the side of the radio, and then remove the radio. (16W518)
3. Disconnect the antenna lead wire, the speaker connector, and the power supply connector from the back of the radio.

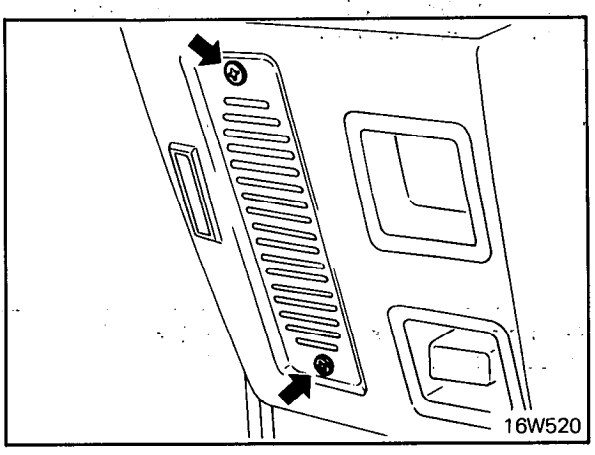
NOTE
The fuse box for the radio circuits is located on the back of the radio; therefore, the radio must be removed in order to replace a fuse.



FRONT SPEAKER

Removal

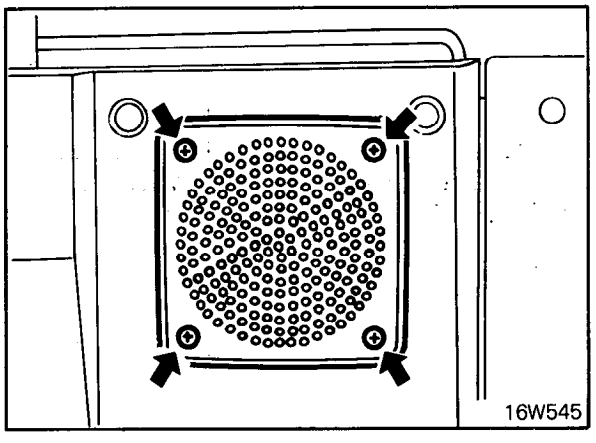
1. Remove the speaker mounting screws. (16W520)
2. Remove the speaker from inside of the instrument panel.
3. Disconnect the speaker wiring connector.



REAR SPEAKER

Removal

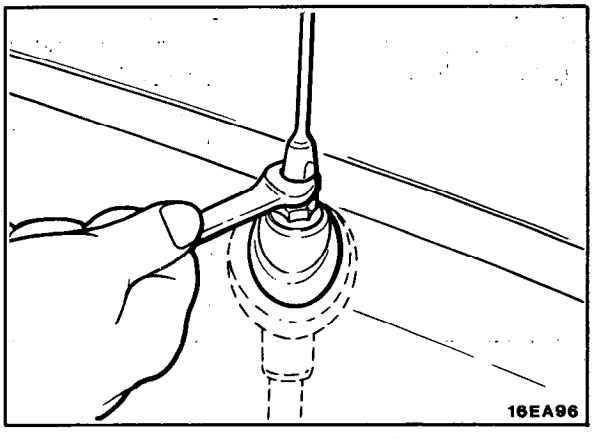
1. Remove the speaker mounting screws. (16W545)
2. Remove the speaker and disconnect the speaker wiring connector.



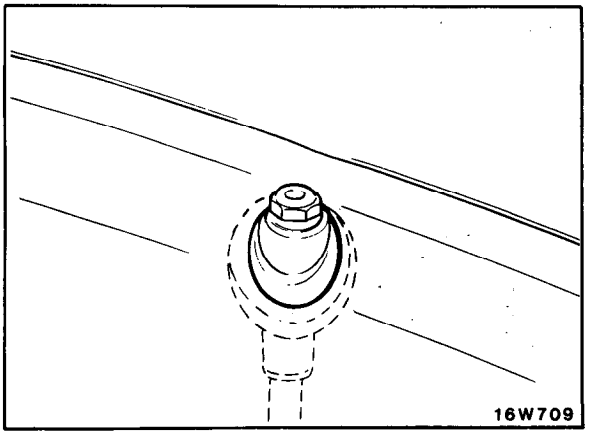
ANTENNA

Removal

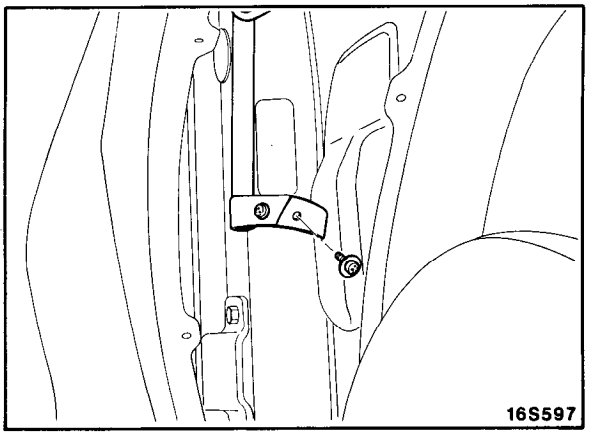
1. Disconnect the antenna lead wire from the back of the radio.
2. Remove antenna mast. (16EA96)



3. Remove splash shield mounting bolts and screws.
4. Detach splash shields from fender about a half of rearward.
5. Remove the antenna mounting nut. (16W709)

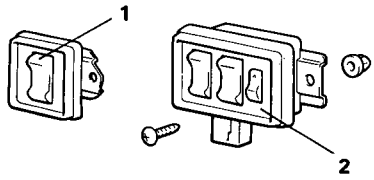


6. Remove the screw which mounts the antenna bracket to the body from inside the fender. (16S597)
7. Remove the antenna toward the bottom.

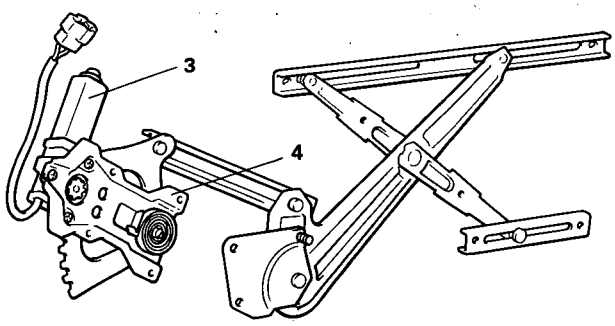


COMPONENTS

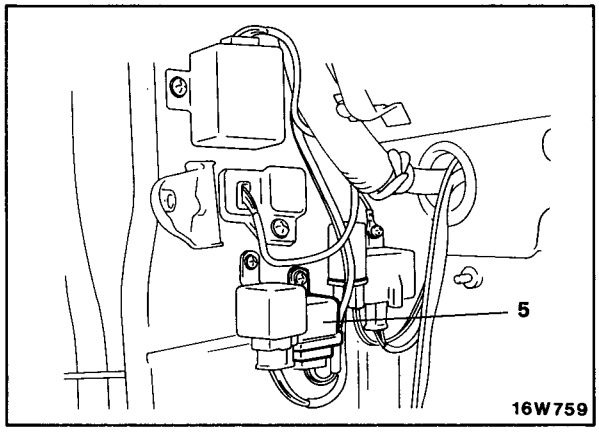
1. Sub switch
2. Main switch
3. Power window motor
4. Power window regulator assembly
5. Power window relay



16W764



18W671



16W759

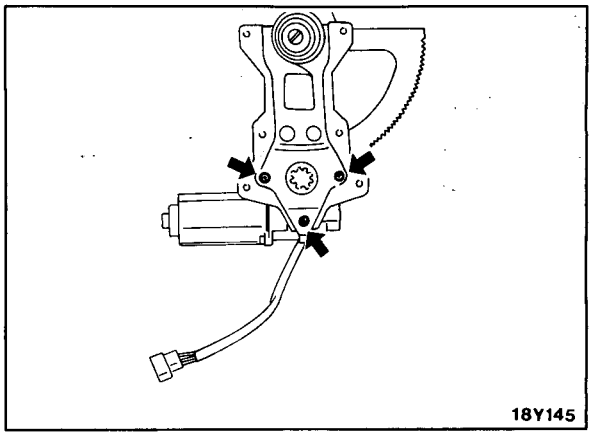
NOTE
For information regarding adjustments, removal, inspection, and installation, or installation procedures other than those contained in this section on the Power Window Regulator System, refer to GROUP 23.

POWER WINDOW MOTOR

Removal

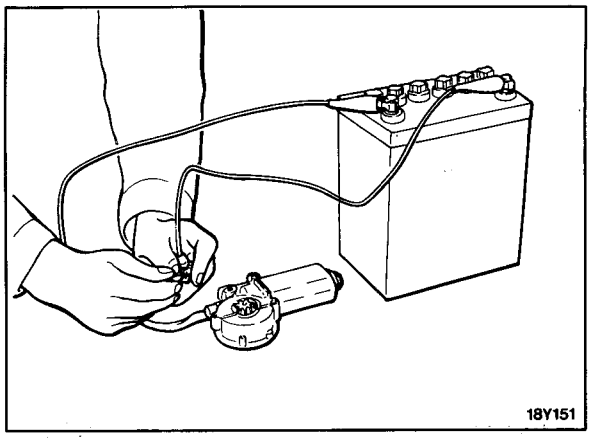
1. Detach the regulator assembly. (Refer to GROUP 23.)
2. Disconnect the power window motor from the regulator assembly. (18Y415)

Caution
When loosening the connecting screws of the regulator and the motor assembly, the compressed force of the regulator spring may cause the regulator arm to spring up.



Inspection

Connect the motor terminals directly to the battery and check that the motor operates smoothly.
Next, reverse the polarity and check that the motor operates smoothly in the reverse direction.

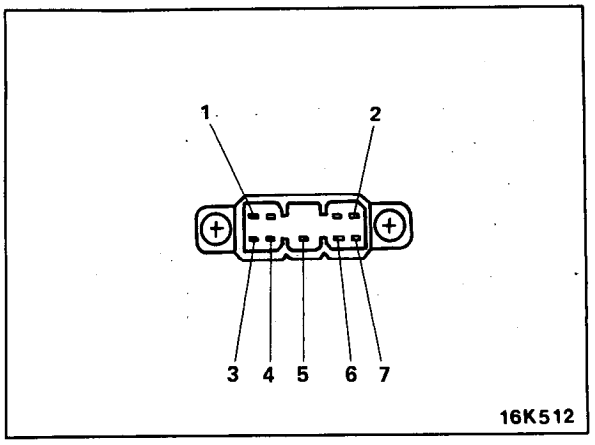


POWER WINDOW SWITCH

Inspection

MAIN SWITCH

Check for continuity in accordance with the following connection table.

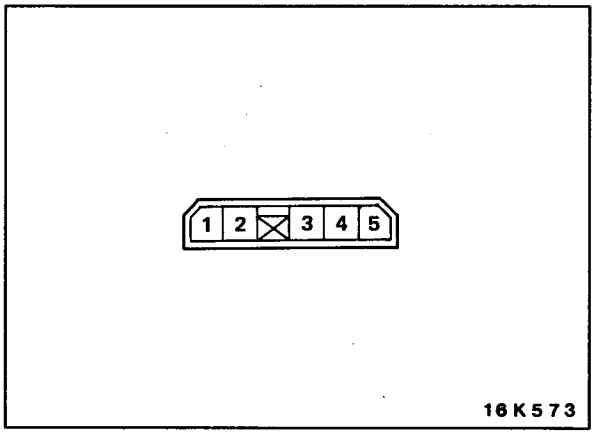


Switch \ Terminal		L.H. side				R.H. side				LOCK	
		1	4	3	6	2	4	7	6	4	5
Power window switch (manual)	UP	○—○		○—○		○—○		○—○			
	OFF	○—		○	—○	○—		○	—○		
				○—	—○			○—	—○		
	DOWN	○—	—○		—○	○—	—○		—○		
Lock switch	ON (LOCK)										
	OFF (FREE)									○—	—○

SUB SWITCH

Check for continuity in accordance with the following connection table.

Switch \ Terminal	2	1	5	4	3
UP	○—	—○			
			○—		—○
OFF		○—		—○	
			○—		—○
DOWN	○—		—○		
		○—		—○	

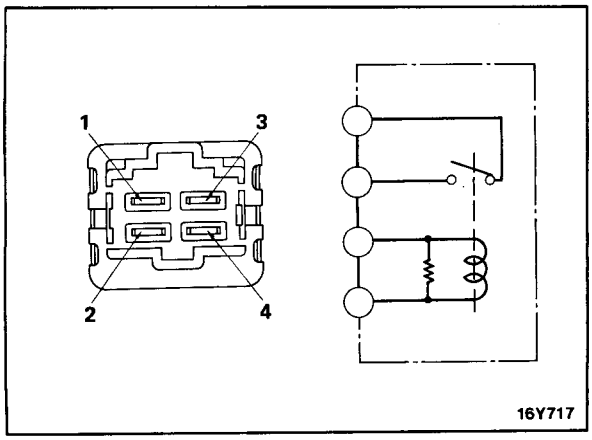


POWER WINDOW RELAY

Inspection

Check for continuity between the terminals with the power ON and OFF.

While power is OFF	
Between terminals 1 – 2	no continuity
Between terminals 3 – 4	continuity
While power is ON	
Between terminals 1 – 2	continuity

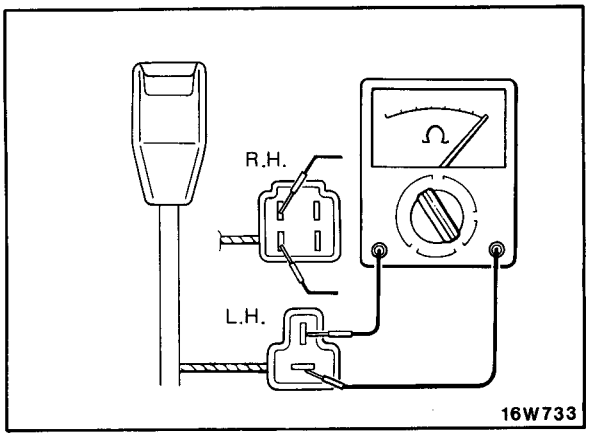


3-POINT ELR SEAT BELTS WITH TENSION RELIEFERS

SEAT BELT SWITCH

Inspection

1. Pull back the floor mat and disconnect the seat belt switch connection from where it is at the attachment to the buckle stalk assembly.
2. Use an ohmmeter to check the YB wire and the B wire for breakage. (16W733)
3. If there is no continuity when the buckle is unlocked and continuity when it is locked, the seat belt switch can be assumed to be functioning properly.
4. If a microswitch is defective, the buckle stalk assembly containing the microswitch should be replaced. For replacement. (Refer to GROUP 23.)



SOLENOID

Inspection

1. Lock the buckle and set the ignition key to "ON".
2. Pull the seat belt out slightly from the retractor and allow about 40 mm (1.5 in.) to be taken up.
3. Pull the seat belt out again and let go of it. If the retractor stops and there is slack in the seat belts, the solenoid can be assumed to be funcitoning properly.
4. If the results of the above test are not satisfactory, inspect the seat belt switch. If no problem can be found, replace the entire seat belt assembly in order to replace the seat belt solenoid.