

Chapter 12 Chassis electrical system

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Specifications

Bulbs

Application

Headlight

1981 and earlier

1982 and later

Front parking light

Turn signal

Side marker light

Tail light

Back-up light

License plate light

Interior light

1984 and earlier

1986 and later

Wattage

37.5, 37.5/50, 40/45, 45, 50/40, 50/37.5

65/55, 65/35 (halogen)

8

27

3.8, 8

8, 27

27

6, or 4 for models with step bumper

1 General information

The electrical system is a 12-volt, negative ground type. Power for the lights and all electrical accessories is supplied by a lead/acid-type battery which is charged by the alternator.

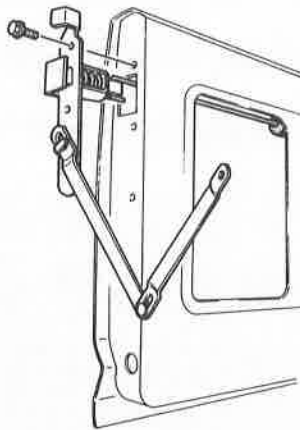
This Chapter covers repair and service procedures for the various electrical components not associated with the engine. Information on the battery, alternator, distributor and starter motor can be found in Chapter 5.

It should be noted that when portions of the electrical system are serviced, the negative battery cable should be disconnected from the battery to prevent electrical shorts and/or fires.

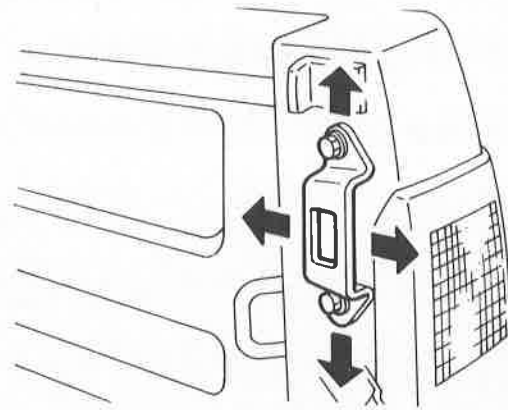
2 Electrical troubleshooting — general information

A typical electrical circuit consists of an electrical component, any switches, relays, motors, etc. related to that component and the wiring and connectors that connect the component to both the battery and the chassis. To aid in locating a problem in any electrical circuit, wiring diagrams are included at the end of this Chapter.

Before tackling any troublesome electrical circuit, first study the appropriate diagrams to get a complete understanding of what makes up that individual circuit. Trouble spots, for instance, can often be narrowed down by noting if other components related to that circuit are operating properly or not. If several components or circuits fail at one



15.5 Later model tailgate latch assembly details



15.8 On later models, the tailgate closing can be adjusted by loosening the bolts and moving the latch striker

15 Tailgate latch — removal and installation

Refer to illustrations 15.5 and 15.8

Early models

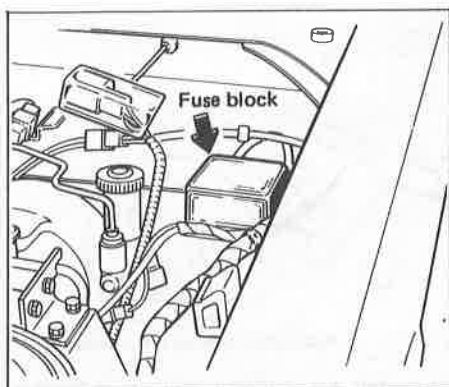
- 1 With the tailgate closed, loosen the chain retaining bracket and move it to one side. Remove the retaining screws and lift the latch off.
- 2 Installation is the reverse of removal.

Later models

- 3 Remove the retaining screws from the inside of the cover plate

and remove the plate.

- 4 Remove the nuts or screws retaining the tailgate latch, disconnect the control rods and remove the latch assembly.
- 5 Remove the two bolts and lift off the latch assembly (see illustration).
- 6 Remove two screws and lift off the control handle.
- 7 Installation is the reverse of removal.
- 8 Adjustment of the tailgate position is made by loosening the tailgate latch striker bolts and moving the striker fore-and aft and/or up and down until the tailgate locks securely (see illustration).



3.2a Fuse block location — 1984 and earlier models

time, chances are the problem lies in the fuse or ground connection, as several circuits often are routed through the same fuse and ground connections.

Electrical problems often stem from simple causes, such as loose or corroded connections, a blown fuse or melted fusible link. Prior to any electrical troubleshooting, always visually check the condition of the fuse, wires and connections of the problem circuit.

If testing instruments are going to be utilized, use the diagrams to plan ahead of time where you will make the necessary connections in order to accurately pinpoint the trouble spot.

The basic tools needed for electrical troubleshooting include a circuit tester or voltmeter (a 12 volt bulb with a set of test leads can also be used), a continuity tester (which includes a bulb, battery and set of test leads) and a jumper wire, preferably with a circuit breaker incorporated, which can be used to bypass electrical components.

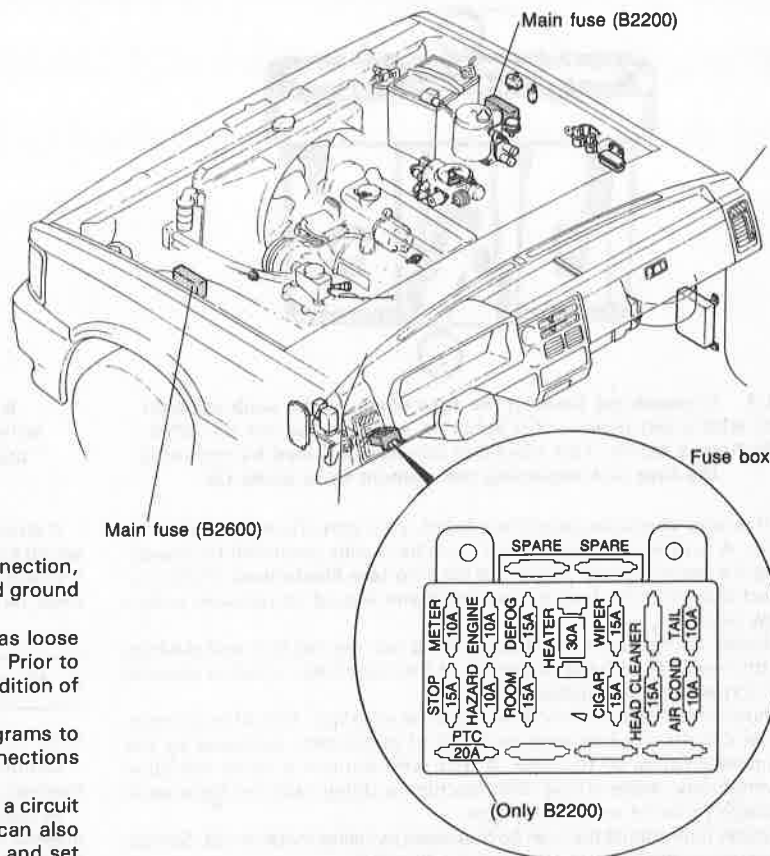
Voltage checks should be performed if a circuit is not functioning properly. Connect one lead of a circuit tester to either the negative battery terminal or a known good ground. Connect the other lead to a connector in the circuit being tested, preferably nearest to the battery or fuse. If the bulb of the tester lights, voltage is reaching that point (which means the part of the circuit between that connector and the battery is problem free). Continue checking along the entire circuit in the same fashion. When you reach a point where no voltage is present, the problem lies between there and the last good test point. Most of the time the problem is due to a loose connection. Keep in mind that some circuits receive voltage only when the ignition key is in the Accessory or Run position.

A method of finding shorts in a circuit is to remove the fuse and connect a test light or voltmeter in its place to the fuse terminals. There should be no load in the circuit. Move the wiring harness from side-to-side while watching the test light. If the bulb lights, there is a short to ground somewhere in that area, probably where insulation has rubbed off a wire. The same test can be performed on other components of the circuit, including the switch.

A ground check should be done to see if a component is grounded properly. Disconnect the battery and connect one lead of a self-powered test light, such as a continuity tester, to a known good ground. Connect the other lead to the wire or ground connection being tested. If the bulb lights, the ground is good. If the bulb does not light, the ground is not good.

A continuity check is performed to see if a circuit, section of circuit or individual component is passing electricity through it properly. Disconnect the battery, and connect one lead of a self-powered test light, such as a continuity tester, to one end of the circuit being tested and the other lead to the other end of the circuit. If the bulb lights, there is continuity, which means the circuit is passing electricity through it properly. Switches can be checked in the same way.

Remember that all electrical circuits are composed basically of electricity running from the battery, through the wires, switches, relays, etc. to the electrical component (light bulb, motor, etc.). From there it is run to the body (ground) where it is passed back to the battery. Any electrical problem is basically an interruption in the flow of electricity to and from the battery.



3.2b Fuse block location — 1986 and later models

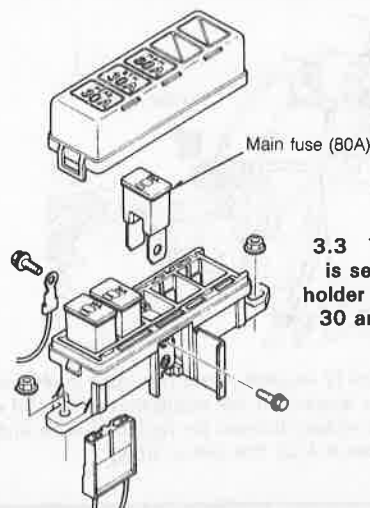
3 Fuses — general information

Refer to illustrations 3.2a, 3.2b, 3.3 and 3.4

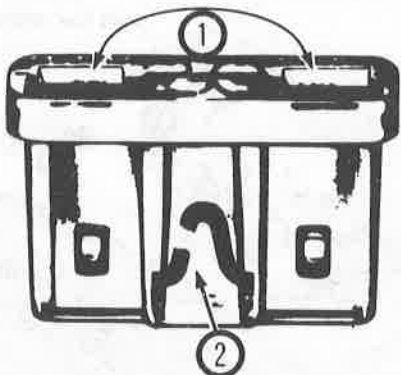
The electrical circuits of the vehicle are protected by a combination of fuses and fusible links.

The fuse box is located underneath the dash on the left side or under the hood in the rear of the engine compartment (see illustrations). Access to the fuses is achieved by simply unsnapping the fuse cover.

Each of the fuses is designed to protect a specific circuit, as identified on the fuse cover or fuse block. Early models use glass-tube fuses, while later models use the miniaturized blade-terminal style. The entire circuit is protected by a main fuse, located along the right-side inner fender panel, behind the battery (see illustration).



3.3 The main fuse (80 amp) is secured in the main fuse holder by two screws. The two 30 amp fuses can simply be pulled straight out



3.4 To check the fuses in the fuse block, probe each terminal (1) with a test lamp — if it lights on one side but not the other, the fuse is blown. This condition can be confirmed by removing the fuse and inspecting the element for a break (2)

If an electrical component has failed, your first check should be the fuse. A fuse which has "blown" can be readily identified by inspecting the metal element inside the housing (see illustration). If this element is broken the fuse is inoperable and should be replaced with a new one.

Fuses are replaced by simply pulling out the old one and pushing in the new one with the exception of the main fuse, which is secured by screws (see illustration 3.3).

It is important that the correct fuse be installed. The different electrical circuits need varying amounts of protection, indicated by the amperage rating on the fuse. A fuse with too low a rating will blow prematurely, while a fuse with too high a rating may not blow soon enough to avoid serious damage.

At no time should the fuse be bypassed by using metal or foil. Serious damage to the electrical system could result.

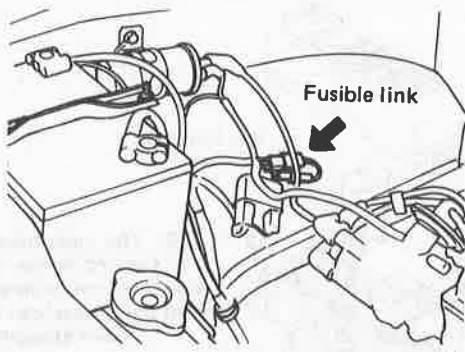
If the replacement fuse immediately fails, do not replace it with another until the cause of the problem is isolated and corrected. In most cases this will be a short circuit in the wiring system caused by a broken or deteriorated wire.

4 Fusible links — general information

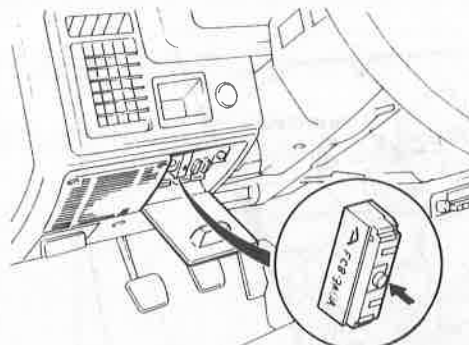
Refer to illustration 4.2

In addition to fuses, the wiring system incorporates fusible links for additional overload protection. These links are used in circuits which are not ordinarily fused, such as the ignition circuit.

The fusible links are located near the positive battery terminal, and are easily removed by unplugging the connectors at either end (see illustration).



4.2 The fusible link is located along the right inner fender panel, behind the battery. If the insulation is burned or appears bubbly or swollen, it must be replaced with another fusible link of the same rating



Push button to re-set circuit breaker.

5.2 Some models are equipped with circuit breakers, which protect the heater and air conditioner circuits — if it "pops", open the fuse panel cover and press the button in the center of the breaker to reset it

If an electrical failure occurs in a circuit or group of circuits, and there are no blown fuses, check for a melted fusible link. If the link is melted, it should be replaced, but only after checking and correcting the electrical fault that caused it.

5 Circuit breakers — general information

Refer to illustration 5.2

Circuit breakers, which are located in the main fuse block on some models, protect accessories such as the heater and air conditioner.

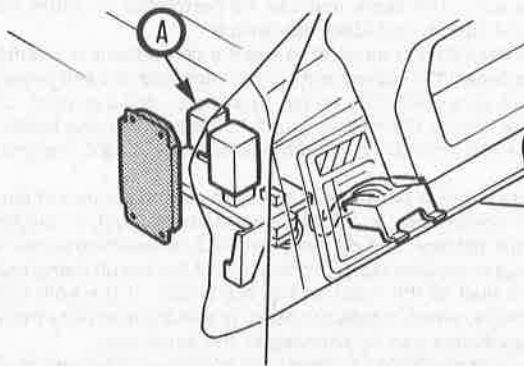
An electrical overload in the system will cause the blower or air compressor to go off and come on or, in some cases, to remain off. If this happens, check the malfunctioning circuit. The circuit breaker can be reset by pushing the button in the center of the breaker (see illustration). Refer to the wiring diagrams at the end of this book for the application of circuit breakers in your vehicle.

6 Hazard warning and turn signal flashers — check and replacement

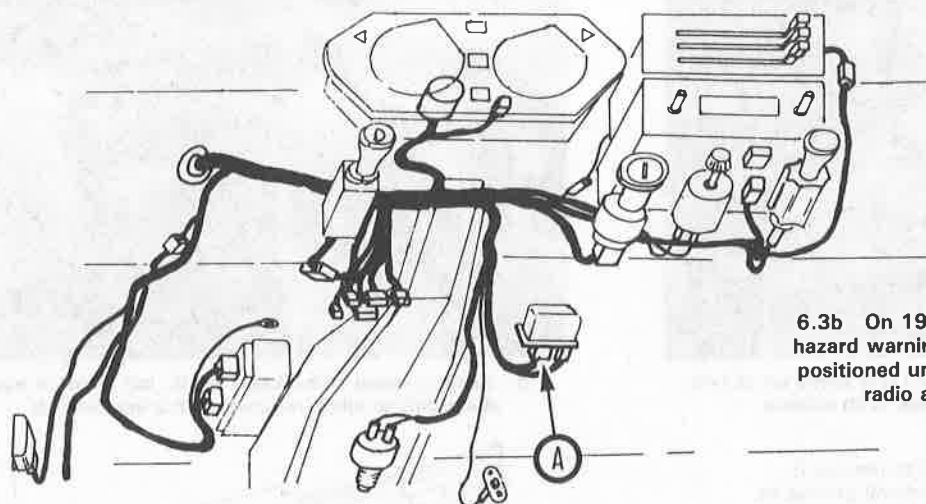
Refer to illustrations 6.3a, 6.3b and 6.4

1 If the flashers fail to work properly, first check the bulbs, then make sure that the nuts which hold the light units to the vehicle are tight and free from corrosion. These complete the circuit and any resistance here could affect the operation of the flasher unit.

2 Check the security of all wiring connectors after referring to the proper wiring diagram. Make sure all of the fuses are good.



6.3a The hazard warning/turn signal flasher unit (A) is located under the dash near the left kick panel on 1986 and later models



6.3b On 1984 and earlier models, the hazard warning/turn signal flasher (A) is positioned under the dash between the radio and steering column

3 If everything is secure after making the above checks, then the hazard warning/turn signal flasher unit itself must be faulty. Since it cannot be repaired, it must be replaced with a new unit. It is located under the dash, approximately between the left side kick panel and the air conditioning duct on 1986 and later models, or between the steering column and the radio on 1984 and earlier models (**see illustrations**). To replace it, slide it from its bracket mount, disconnect the electrical connector and install a new unit.

4 Some very early models employ separate turn signal and hazard flasher units. They are mounted on separate sides of the steering column (**see illustration**).

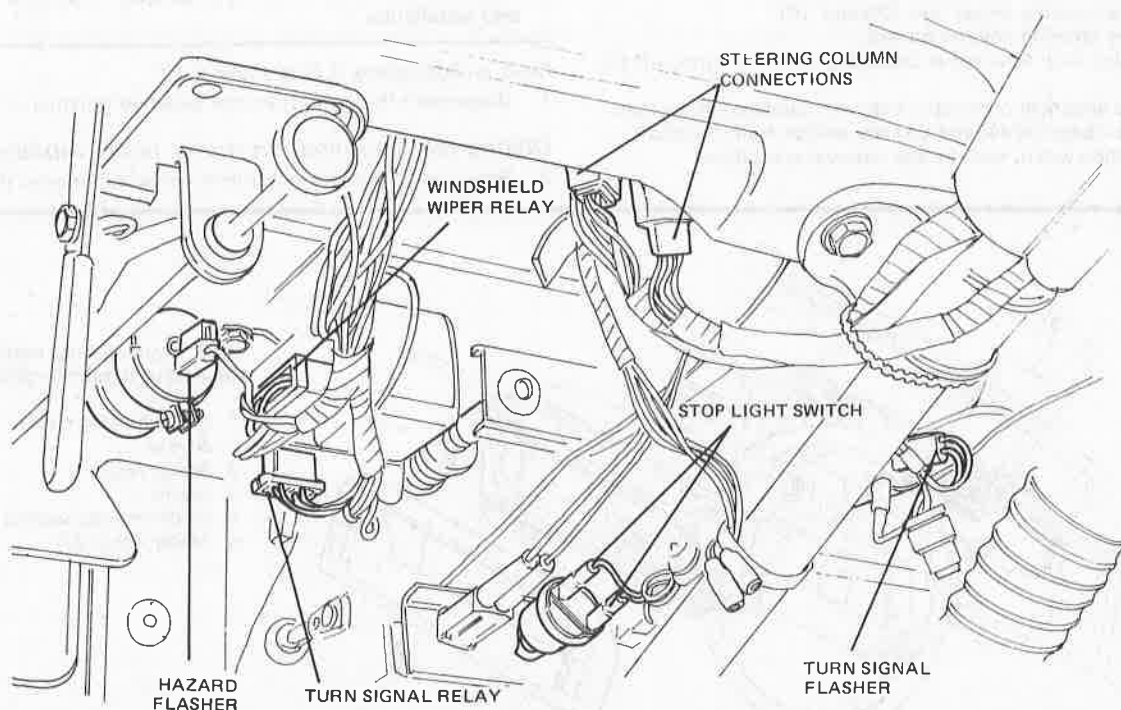
7 Ignition switch — removal and installation

Refer to illustrations 7.6 and 7.8

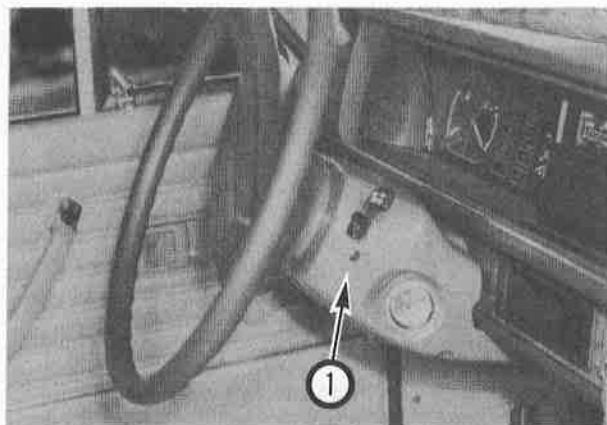
- 1 Disconnect the cable from the negative terminal of the battery.

Dash mounted switch

- 2 Reach under the dash and unplug the electrical connector from the back of the switch.
- 3 Hold the switch from behind the dash panel, then unscrew the re-



6.4 Location of the flasher units — some early models



7.6 The steering column cover (1) is made up of two halves and is held together with screws



7.8 Using a chisel or hacksaw blade, cut a slot in each shear bolt to allow removal with a screwdriver

taining nut.

4 Push the switch through the panel to remove it.

5 Installation is the reverse of the removal procedure.

Steering column mounted switch

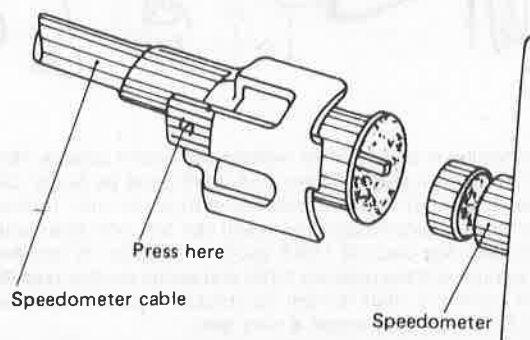
6 Remove the steering column cover (see illustration).

7 Unplug the ignition switch wiring harness.

8 Remove the two ignition switch/steering lock mounting bolts. On models with shear-head bolts it will be necessary to cut slots in the tops of the bolts with a chisel or hacksaw blade, then unscrew them with a screwdriver (see illustration).

9 Remove the switch assembly from the steering column.

10 Installation is the reverse of the removal procedure.



9.8 Some speedometer cables are fastened to the cluster by a threaded collar, others by a spring clip retainer as shown here

8 Combination switch (light control, wiper and washer switch) — removal and installation

1 Disconnect the cable from the negative terminal of the battery.

2 Remove the steering wheel (see Chapter 10).

3 Remove the steering column covers.

4 Slide the stop ring, turn signal cancelling cam and spring off the steering shaft.

5 Unplug the electrical connector from the combination switch.

6 Loosen the clamp screw and pull the switch from the shaft.

7 To install the switch, reverse the removal procedure.

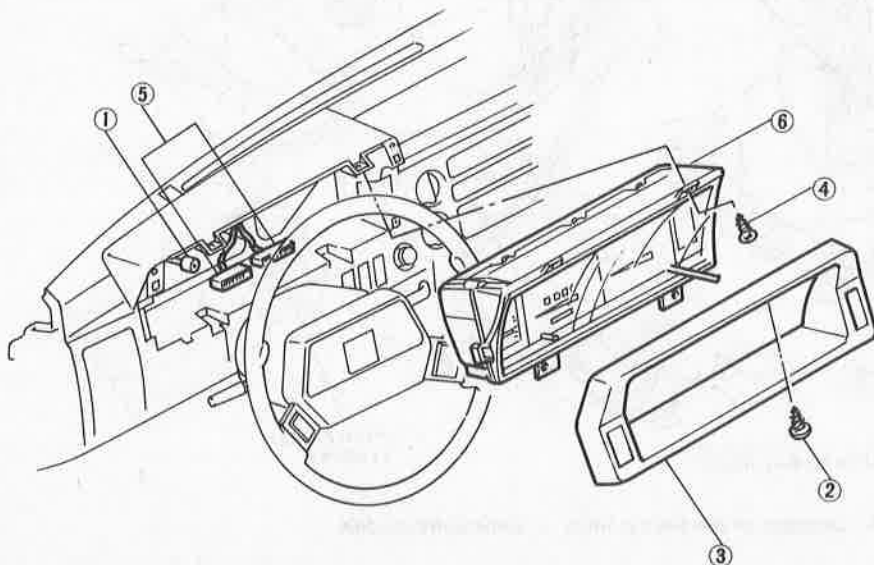
9 Combination meter (instrument cluster) — removal and installation

Refer to illustrations 9.8, 9.9 and 9.13

1 Disconnect the cable from the negative terminal of the battery.

Oblong dial combination meter (early models)

2 Reach up behind the instrument panel and remove the two bolts



9.9 Combination meter mounting details (typical)

1 Speedometer cable

2 Screw

3 Meter hood

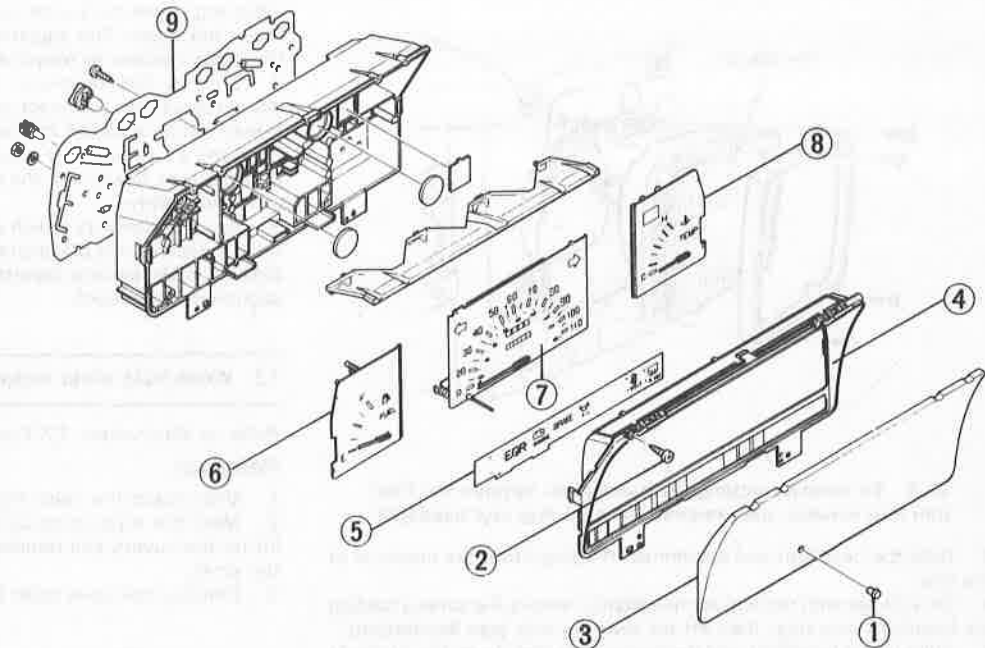
4 Screw

5 Electrical connectors

6 Meter assembly

9.13 Exploded view of the combination meter assembly (1988 model shown, others similar)

- 1 Trip meter knob
- 2 Screws
- 3 Front lens
- 4 Window plate
- 5 Warning plate
- 6 Fuel gauge
- 7 Speedometer
- 8 Coolant temperature gauge
- 9 Printed circuit board



and washers and the two nuts and washers.

- 3 Pull the cluster out as far as possible then unscrew the speedometer cable from the back of the unit.
- 4 Using pieces of numbered tape, carefully mark the positions of the wires that must be disconnected to remove the unit, then disconnect them.
- 5 Remove the meter assembly from the dash.
- 6 Installation is the reverse of the removal procedure.

All others

- 7 Remove the meter hood, if so equipped.
- 8 Reach behind the meter from under the dash and disconnect the speedometer cable. Some models have a threaded collar that must be unscrewed, others have a spring clip type device that must be pressed in to free the cable casing (see illustration).
- 9 Remove the four cluster assembly-to-dash panel screws (see illustration).
- 10 Pull the meter assembly out as far as possible and unplug the multi-wire connector(s) from the back of the unit. Some models have additional wires that must be disconnected, so be sure to mark them before removing.
- 11 Remove the combination meter from the dash panel.

12 If it is necessary to remove the printed circuit board from the rear of the meter assembly, remove all of the bulbs and retainers. Remove the gauge retaining screws and the lens screws and carefully lift the printed circuit from the unit.

13 The combination meter assembly can be dismantled to allow access to the enclosed gauges and indicators by removing the lens and plate retaining screws (see illustration).

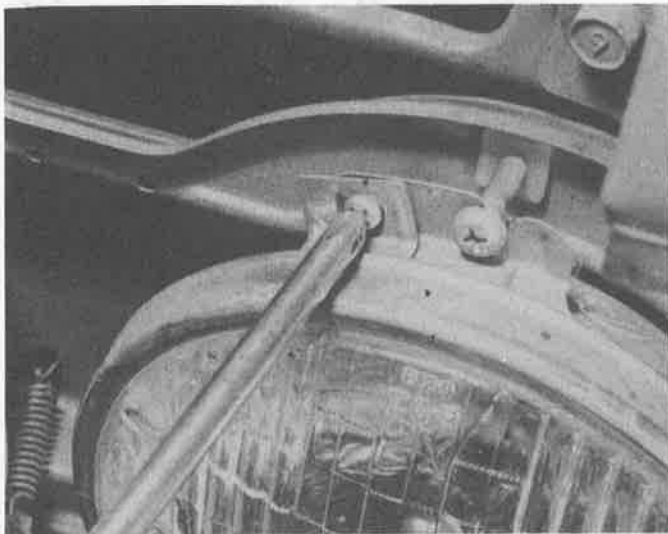
14 Installation is the reverse of the removal procedure.

10 Headlights — removal and installation

Refer to illustrations 10.2a, 10.2b and 10.4

1 Depending on the vehicle, it may be necessary to remove the headlight trim or grille for access to the bezel screws. Refer to Chapter 11 for the grille or headlight trim piece removal procedure.

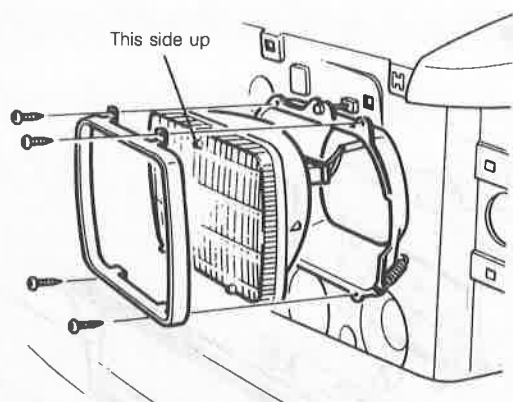
2 On vehicles with round headlights, loosen, but do not remove the three screws in the keyhole slots in the light bezel. Do not disturb the adjusting screws. Turn the bezel clockwise, then lift the bezel off the screw heads (see illustrations).



10.2a To remove a round headlight, loosen the bezel retaining screws . . .



10.2b . . . rotate the bezel to line up the screw "keyhole" slots and pull it off



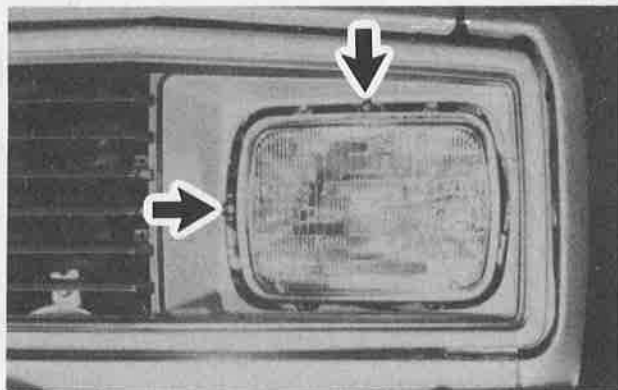
10.4 To remove rectangular headlights, remove the four trim ring screws, then remove the trim ring and headlight

- 3 Hold the headlight and disconnect the plug from the contacts at the rear.
- 4 On vehicles with rectangular headlights, remove the screws holding the headlight trim ring, then lift off the trim ring (see illustration).
- 5 Pull out the headlight and disconnect the plug from the contacts at the rear.
- 6 Installation is the reverse of removal.

11 Headlights — adjustment

Refer to illustration 11.2

- 1 It's important that the headlights be aimed correctly. If adjusted incorrectly they could blind an oncoming driver and cause a serious accident or seriously reduce your ability to see the road. The headlights should be checked for proper aim every 12 months and each time a new sealed beam headlight is installed or front end body work is performed.
- 2 Each headlight has two spring-loaded adjusting screws, one on the top controlling up-and-down movement and one on the side controlling left-and-right movement (see illustration). There are several methods of adjusting the headlights. The simplest method requires an empty wall 25 feet in front of the vehicle and a level floor.
- 3 Park the vehicle on a level floor 25 feet from the wall.
- 4 Position masking tape vertically on the wall in reference to the vehicle centerline and the centerlines of both headlights.
- 5 Position a horizontal tape line in reference to the centerline of all the headlights. **Note:** It may be easier to position the tape on the wall with the vehicle parked only a few inches away.
- 6 Adjustment should be made with the vehicle sitting level, the gas tank half-full and no unusually heavy load in the vehicle.
- 7 Starting with the Low beam adjustment, position the high intensity zone two inches below the horizontal line and two inches to the right of the headlight vertical line. Adjustment is made by turning the top



11.2 Location of the headlight aim adjusting screws

adjusting screw clockwise to raise the beam and counterclockwise to lower the beam. The adjusting screw on the side should be used in the same manner to move the beam left-or-right.

8 With the High beams on, the high intensity zone should be vertically centered with the exact center just below the horizontal line. **Note:** It may not be possible to position the headlight aim exactly for both High and Low beams. If a compromise must be made, keep in mind that the Low beams are the most used and have the greatest effect on driver safety.

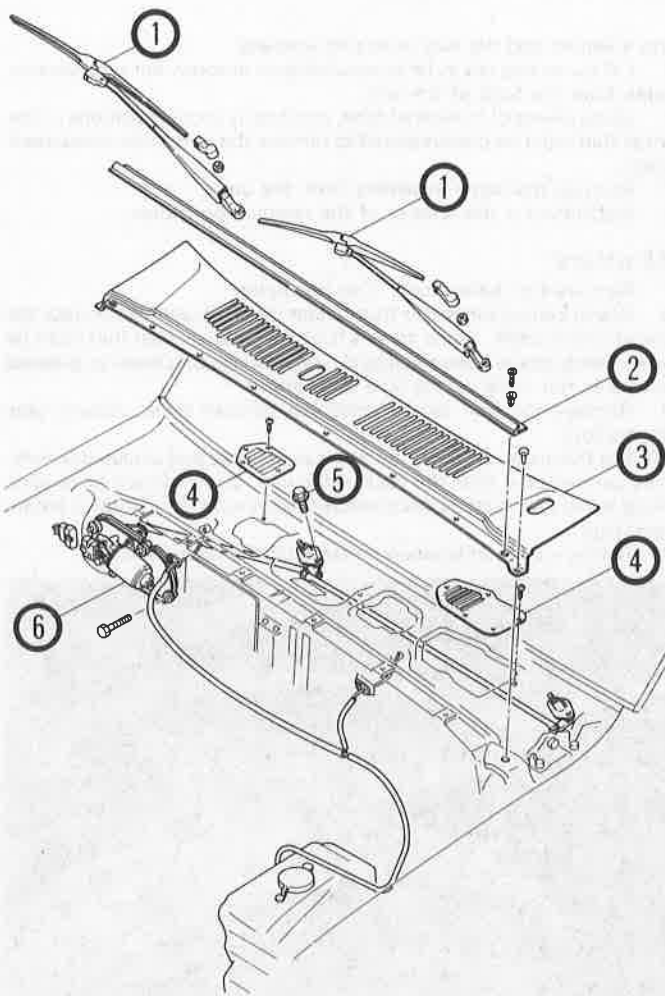
9 Any adjustments which are made should be regarded only as interim measures and the alignment should be checked as soon as possible by a dealer service department or other service station with optical alignment equipment.

12 Windshield wiper motor — removal and installation

Refer to illustrations 12.3 and 12.4

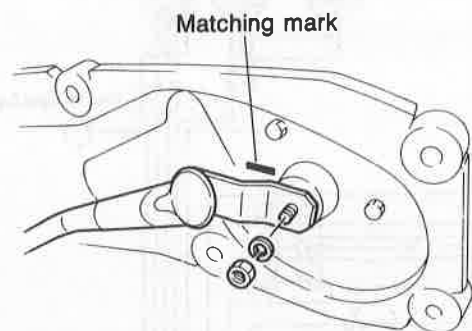
Removal

- 1 Disconnect the cable from the negative terminal of the battery.
- 2 Mark the wiper arms as to which side of the vehicle they are on, lift up the covers and remove the wiper arm securing nuts. Remove the arms.
- 3 Remove the cowl grille (see illustration).



12.3 Wiper motor and related components

- | | |
|-------------------------|---------------------------------|
| 1 Wiper arms and blades | 5 Bolt |
| 2 Weatherstrip | 6 Wiper motor and link assembly |
| 3 Cowl grille | |
| 4 Seal covers | |



12.4 Mark the position of the motor arm to the motor to ensure correct wiper operation

- 4 Apply a match mark from the wiper motor arm to the wiper motor (see illustration), then remove the nut and washer, separating the motor arm from the motor shaft.
- 5 Disconnect the motor electrical connector, remove the mounting bolts and separate the motor from the firewall.

Installation

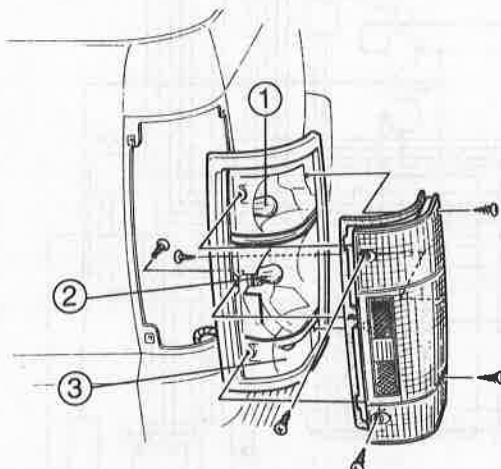
- 6 Position the motor on the firewall and install the bolts, tightening them securely. Plug in the electrical connector.

- 7 Install the wiper motor arm to the motor shaft, aligning the previously applied match mark. Install the lock washer and nut, tightening the nut securely.
- 8 Install the cowl grille.
- 9 Install the wiper arms.
- 10 Connect the negative cable to the battery.
- 11 Operate the wipers, noting the sweep pattern on the windshield. If the wiper arms travel too high or too low, remove and reposition them as necessary.

13 Bulbs — replacement

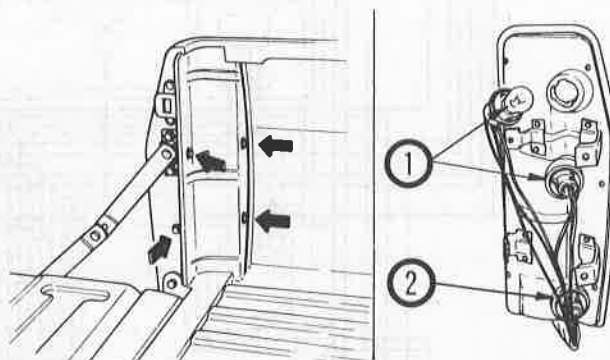
Refer to illustrations 13.2a, 13.2b and 13.3

- 1 The lenses of most lights are held on by screws, which makes it a simple procedure to gain access to the bulbs.
- 2 A few lights have their lenses held in by clips. On these, the lens can either be removed by unsnapping it by hand or, as with the interior overhead light, using a small screwdriver inserted in the rear to pry it off (see illustrations).
- 3 Four different types of bulbs are used (see illustration). Type A and B are removed by pushing in and turning counterclockwise. Type D simply unclips from its terminals and Type C simply pulls out of its socket.
- 4 To gain access to the instrument panel illumination light bulbs, the combination meter must be removed as described in Section 9.

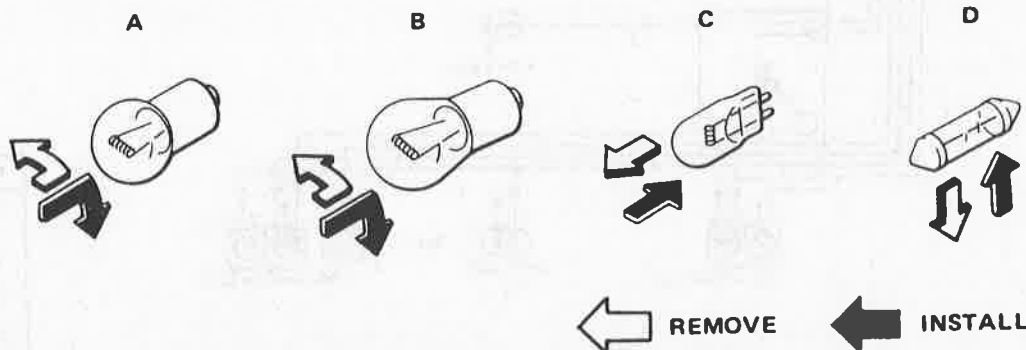


13.2a Rear combination light installation details — 1986 and later

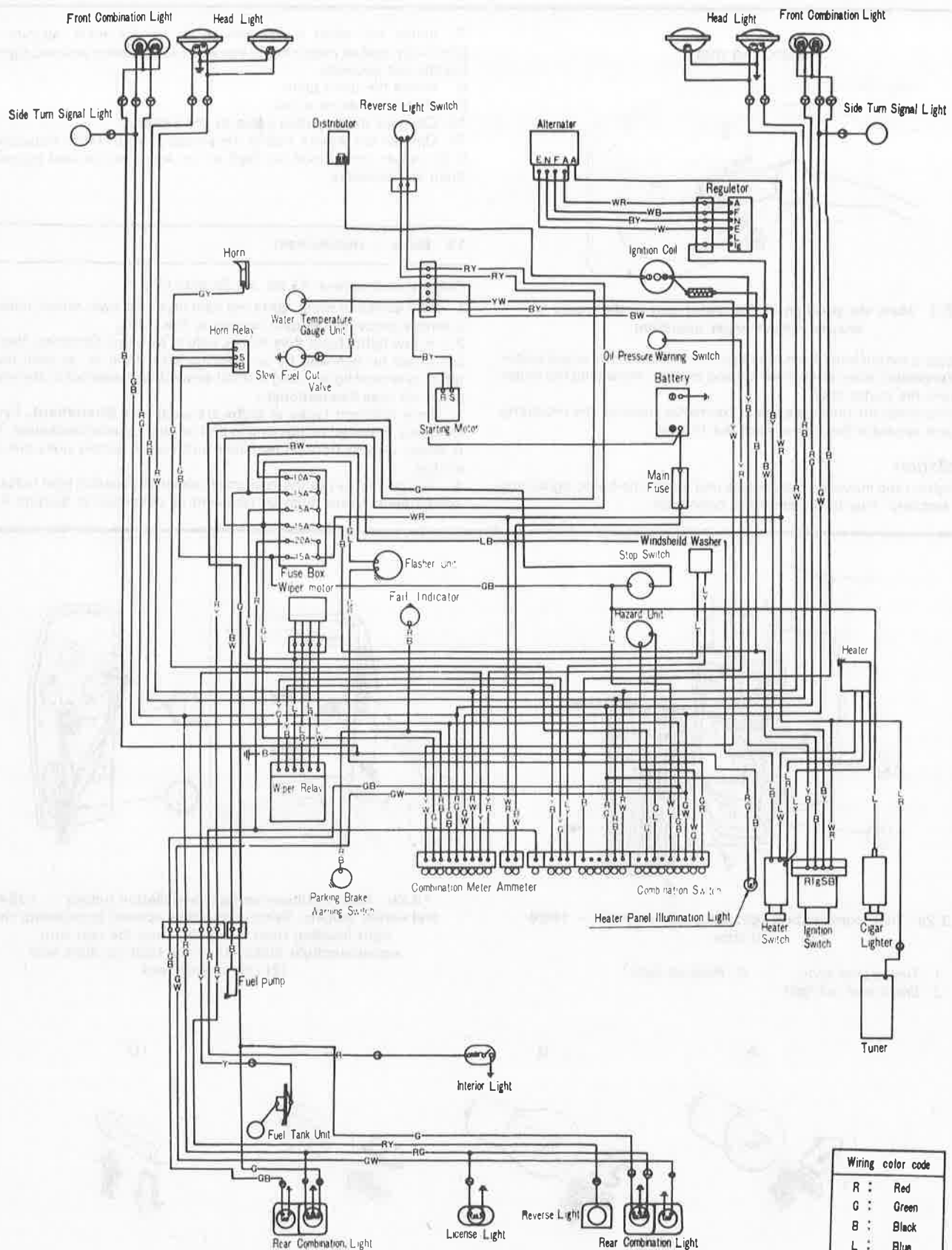
- 1 Turn signal light
- 2 Brake and tail light
- 3 Back-up light



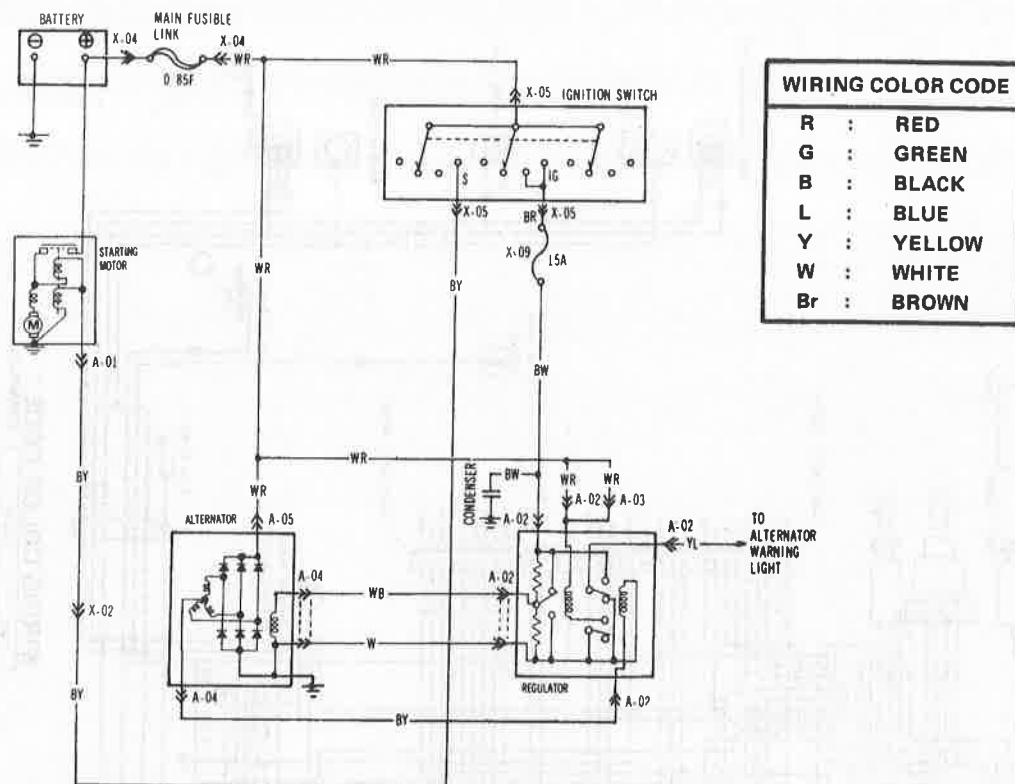
13.2b Rear combination light installation details — 1984 and earlier models. Remove the four screws to separate the light housing from the body, then the rear turn signal/stoplight bulbs (1) or the back-up light bulb (2) can be removed



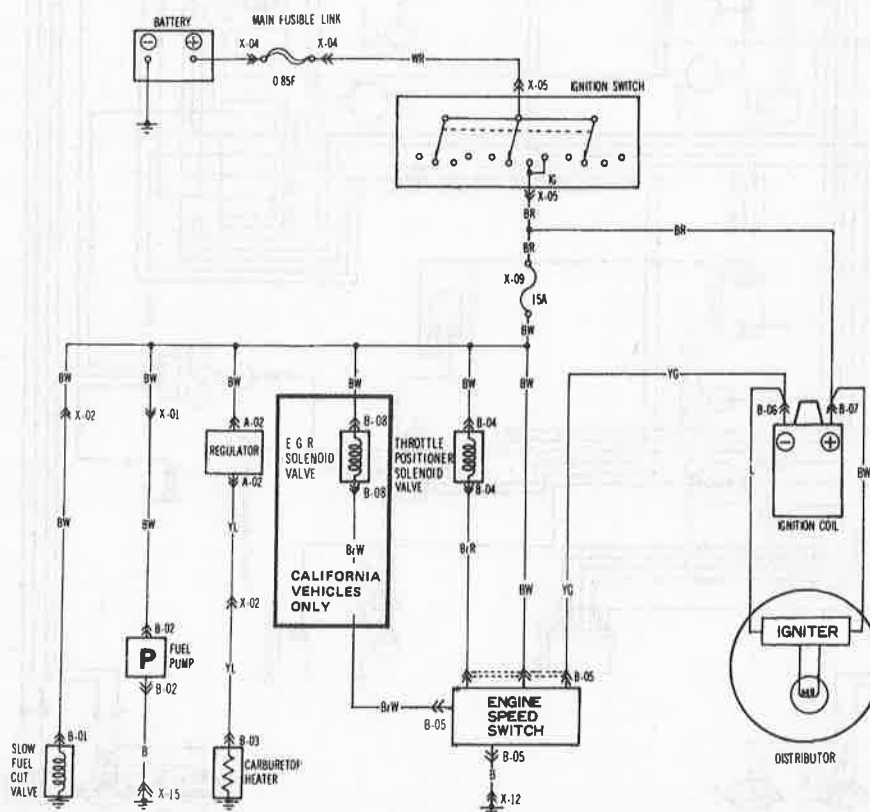
13.3 The four types of bulbs used on these vehicles



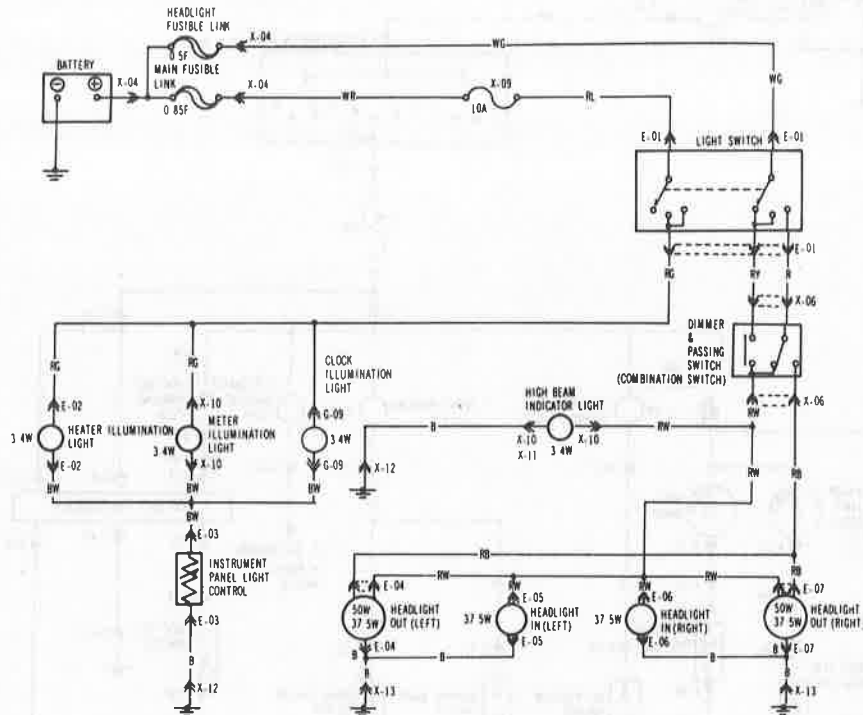
Wiring diagram — early model B1600



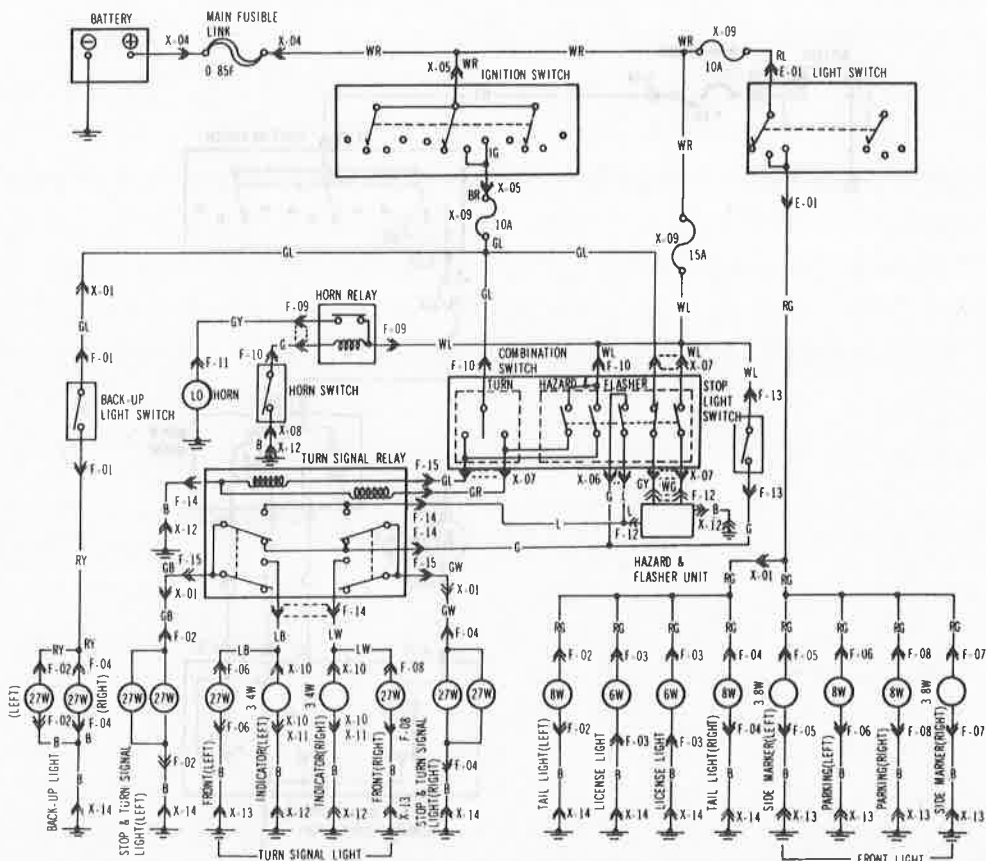
Charging system/starting system — 1979 thru 1981 B2000



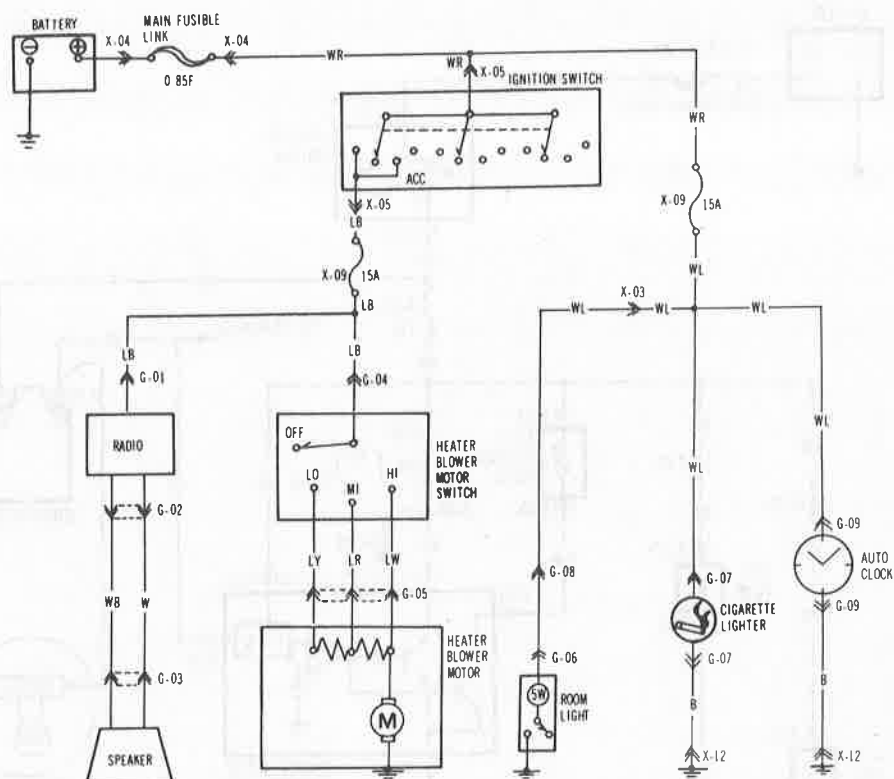
Ignition system/slow fuel cut valve/fuel pump circuit — 1979 thru 1981 B2000



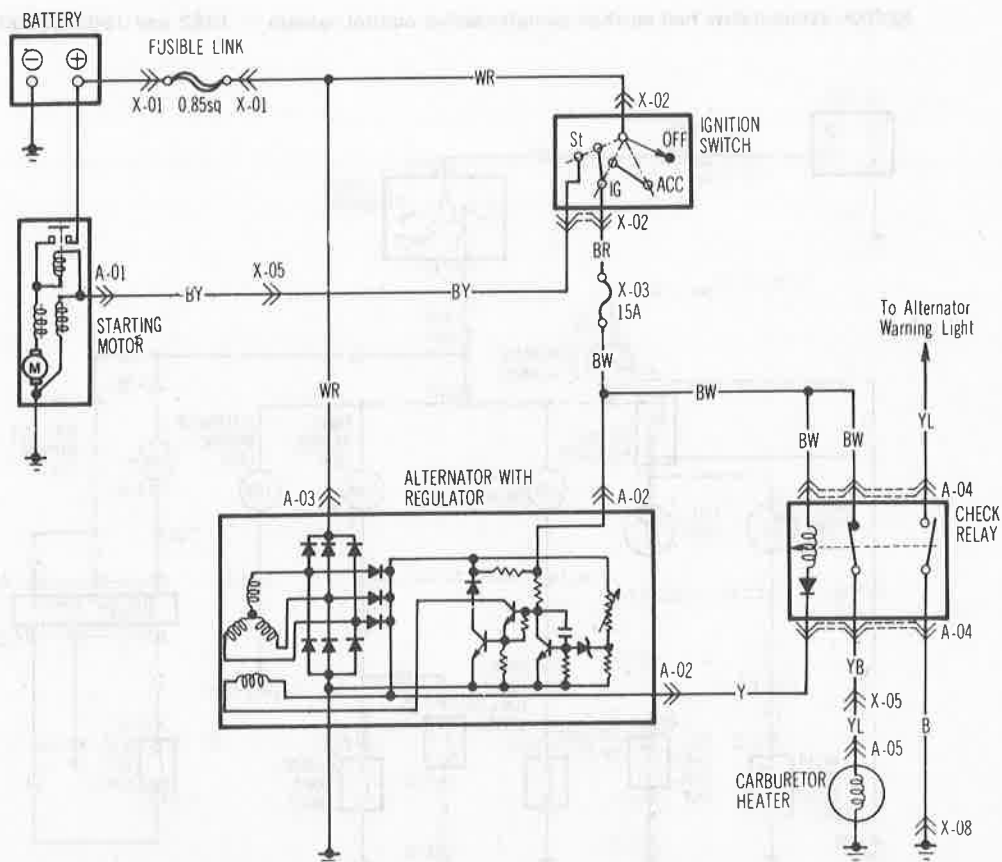
Headlight system/illumination system — 1979 thru 1981 B2000



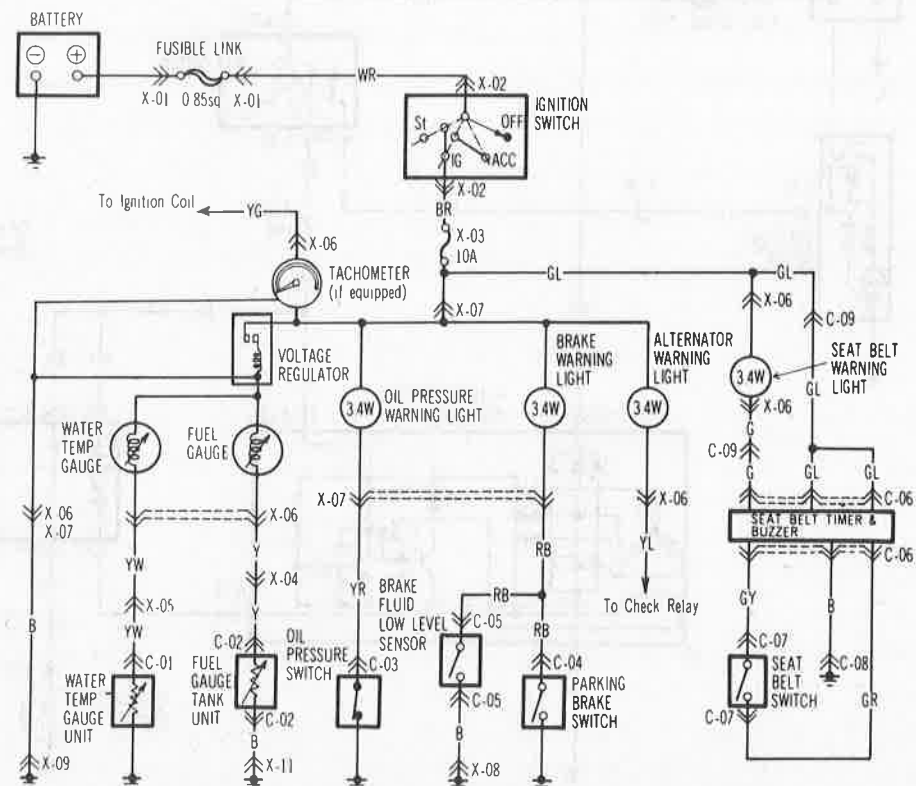
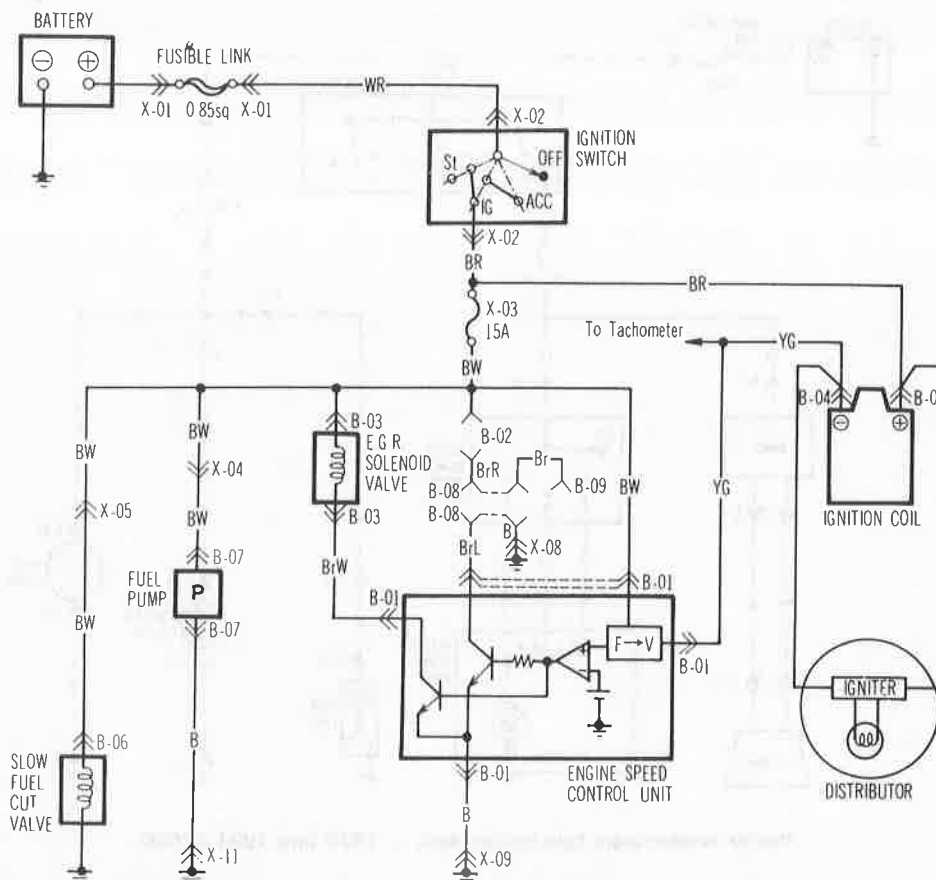
Signal light system/horn circuit — 1979 thru 1981 B2000

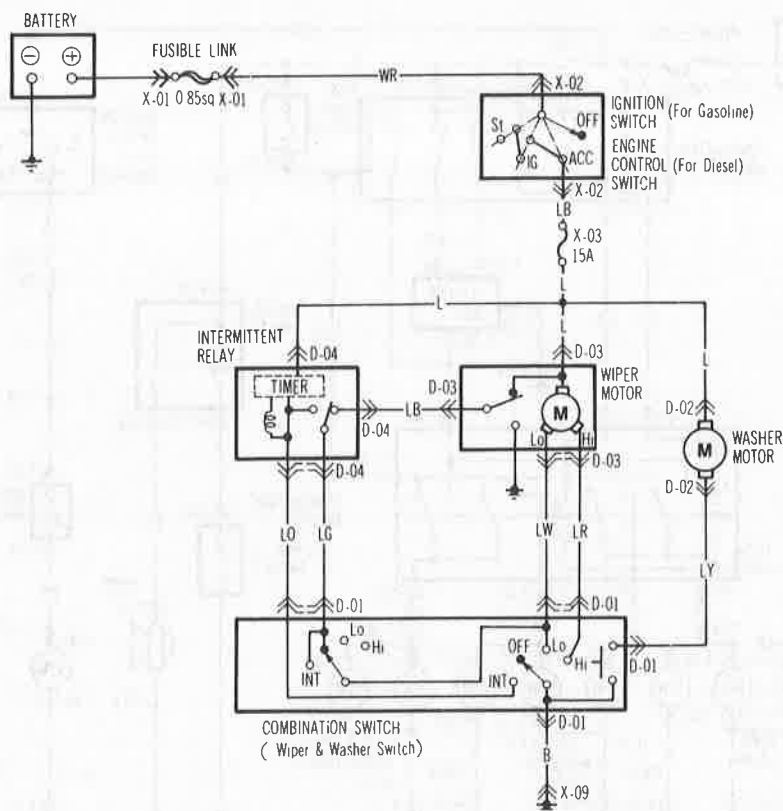


Heater system/room light/lighter/clock — 1979 thru 1981 B2000

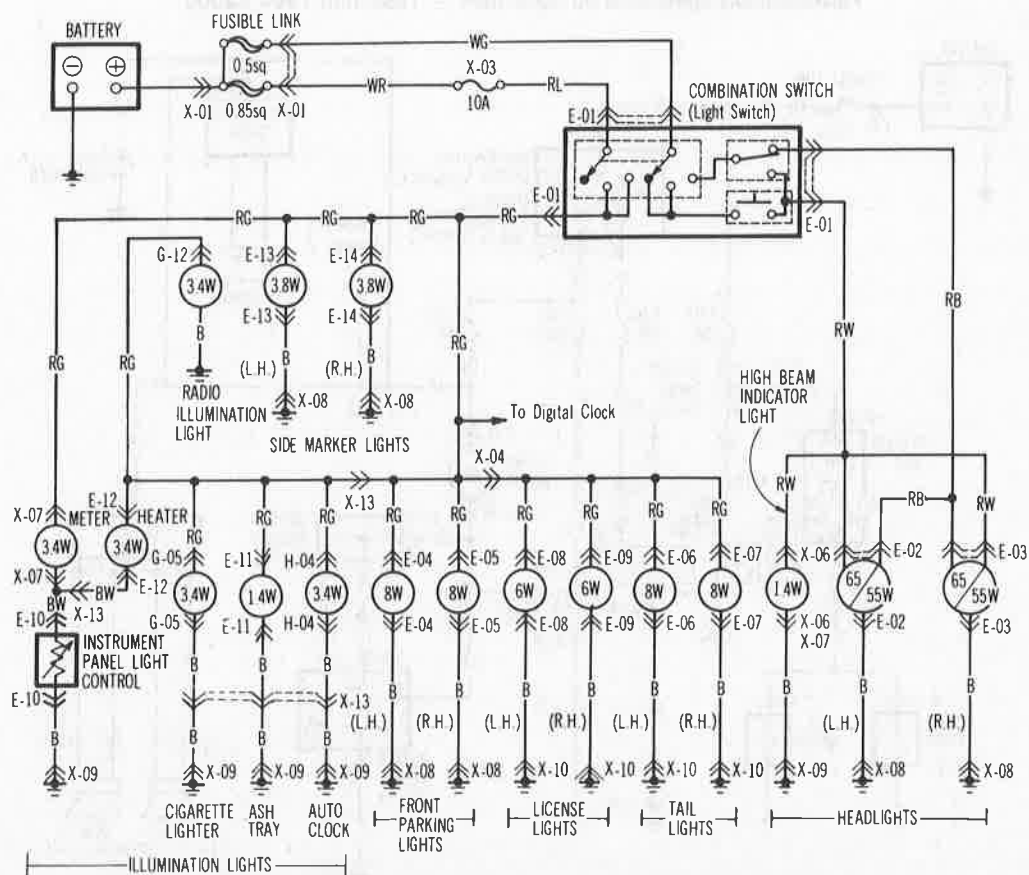


Charging system/starting system — 1982 thru 1984 B2000

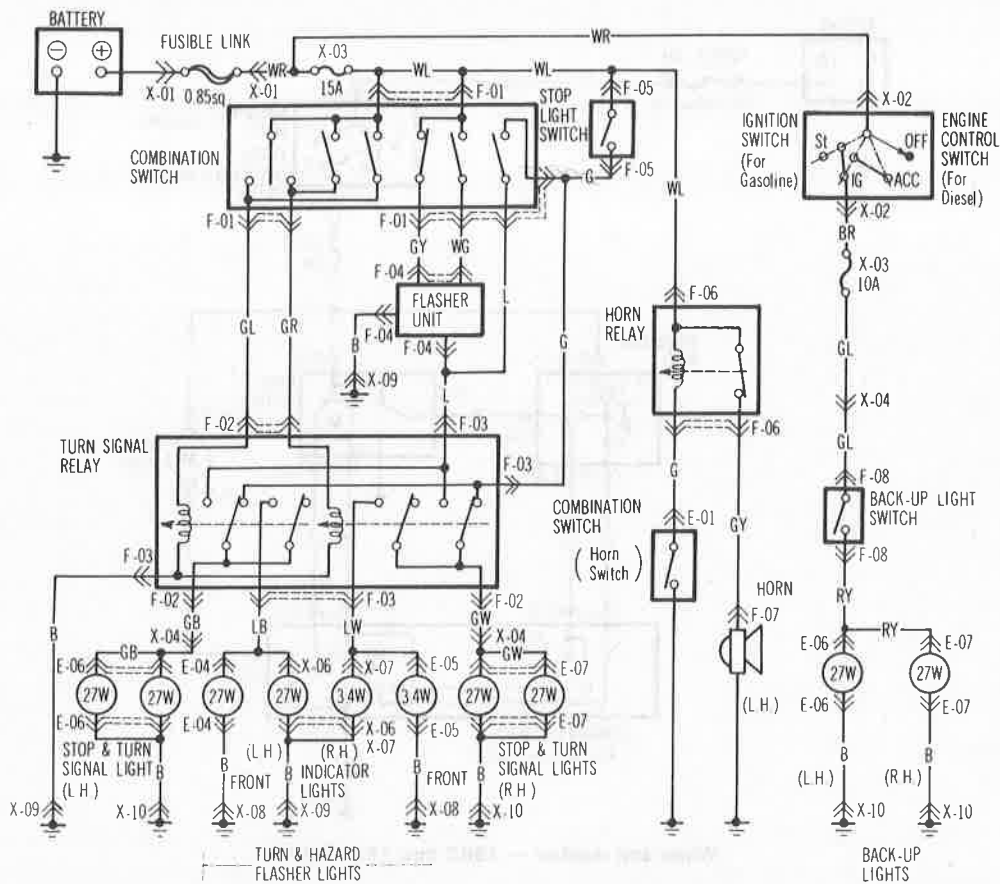
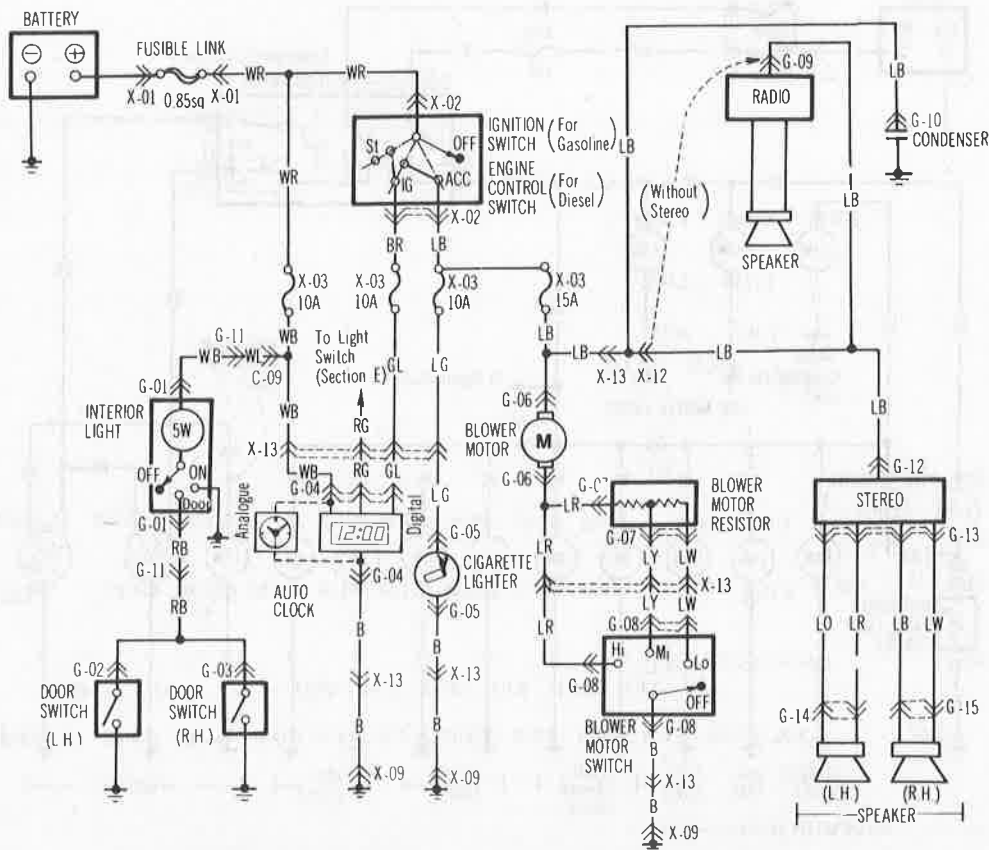




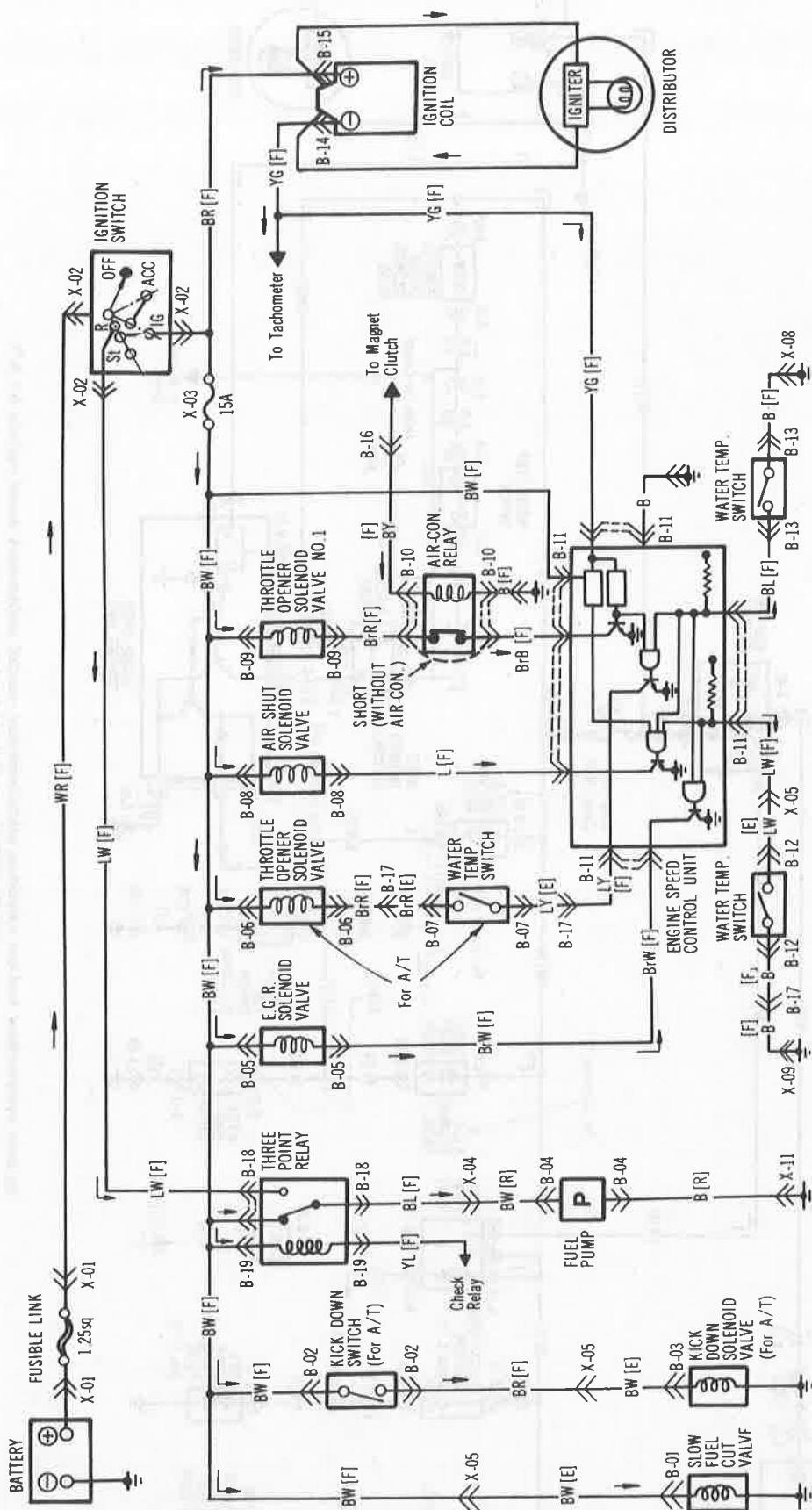
Wiper and washer — 1982 thru 1984 B2000



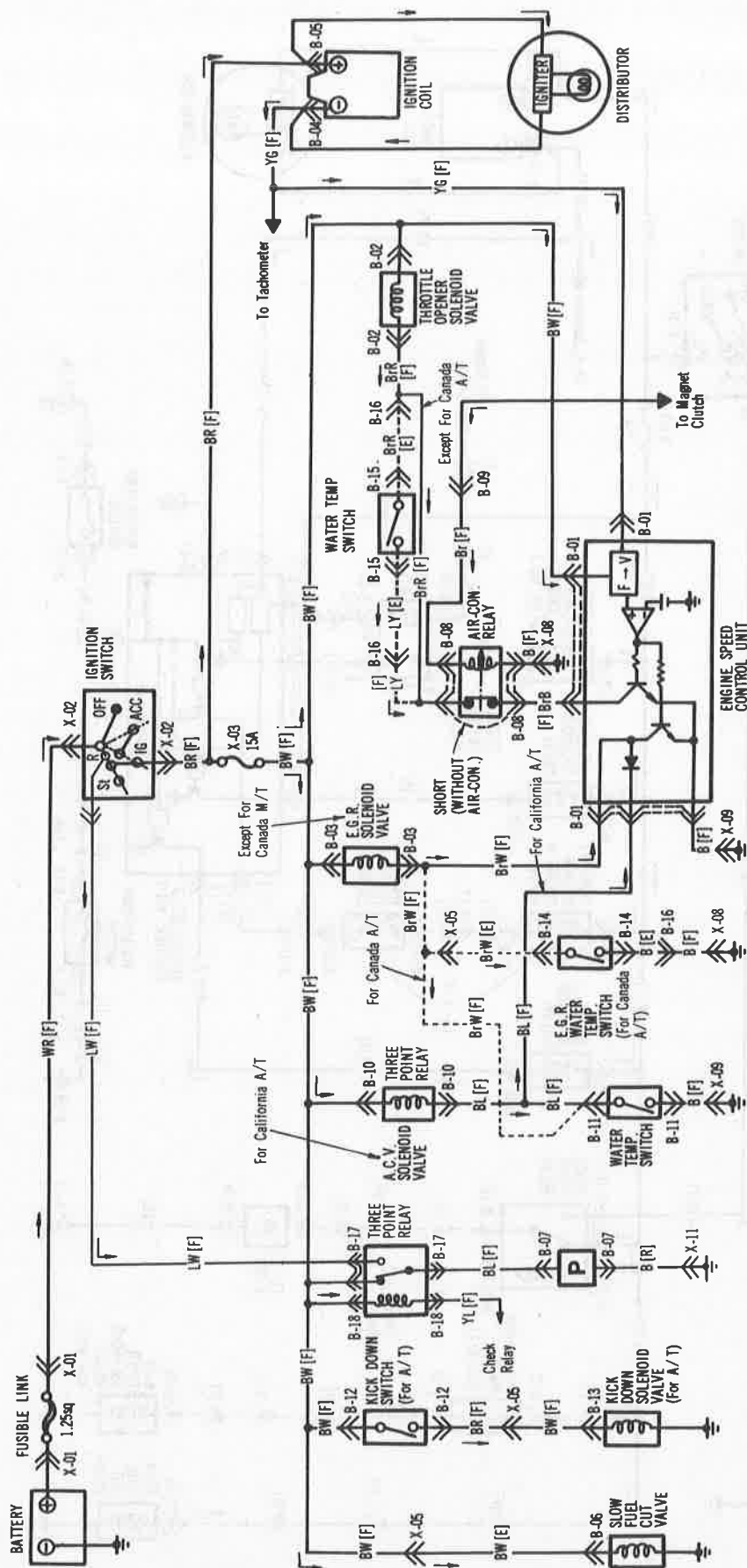
Lighting and illumination system — 1982 thru 1984 B2000

**Flashers/brake lights/back-up lights/horn — 1982 thru 1984 B2000**

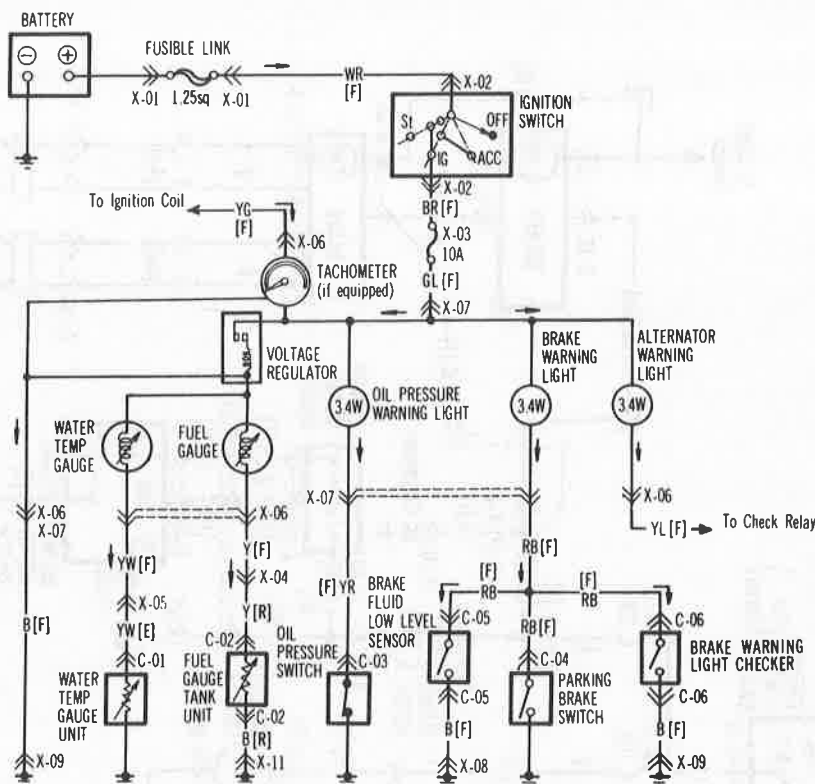
Heater/lighter/radio/clock/interior light — 1982 and 1983 B2000



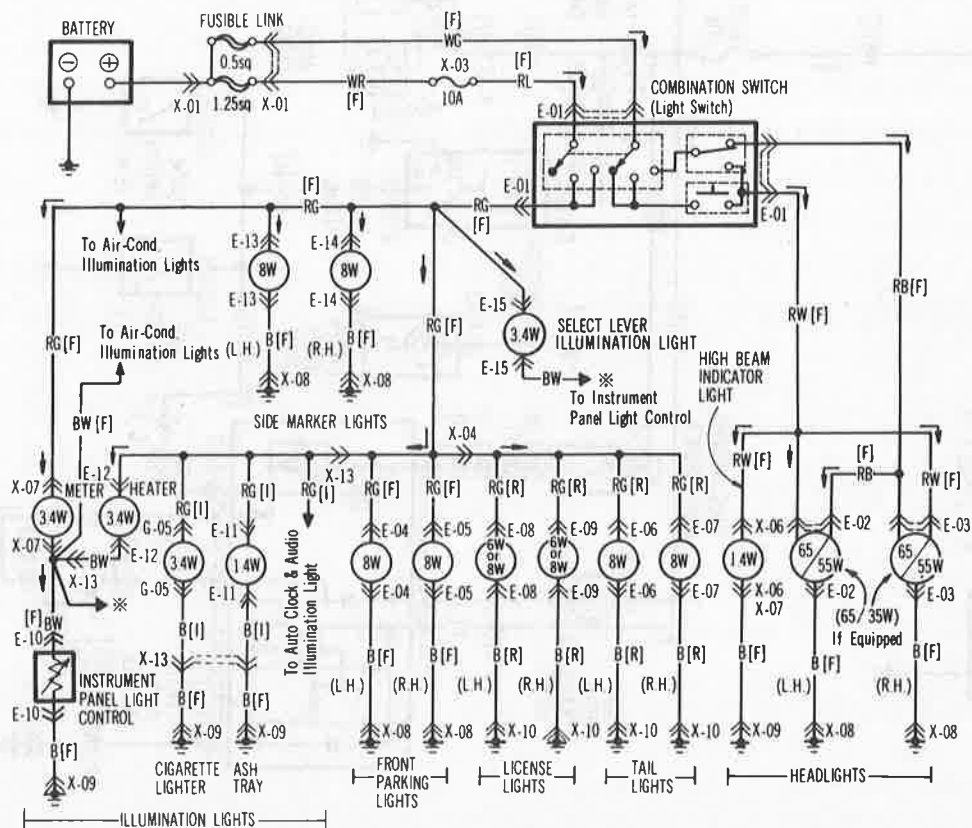
Ignition system/slow fuel cut valve/fuel pump/emission control system/kick-down system for A/T
(1984 B2000 Federal models)



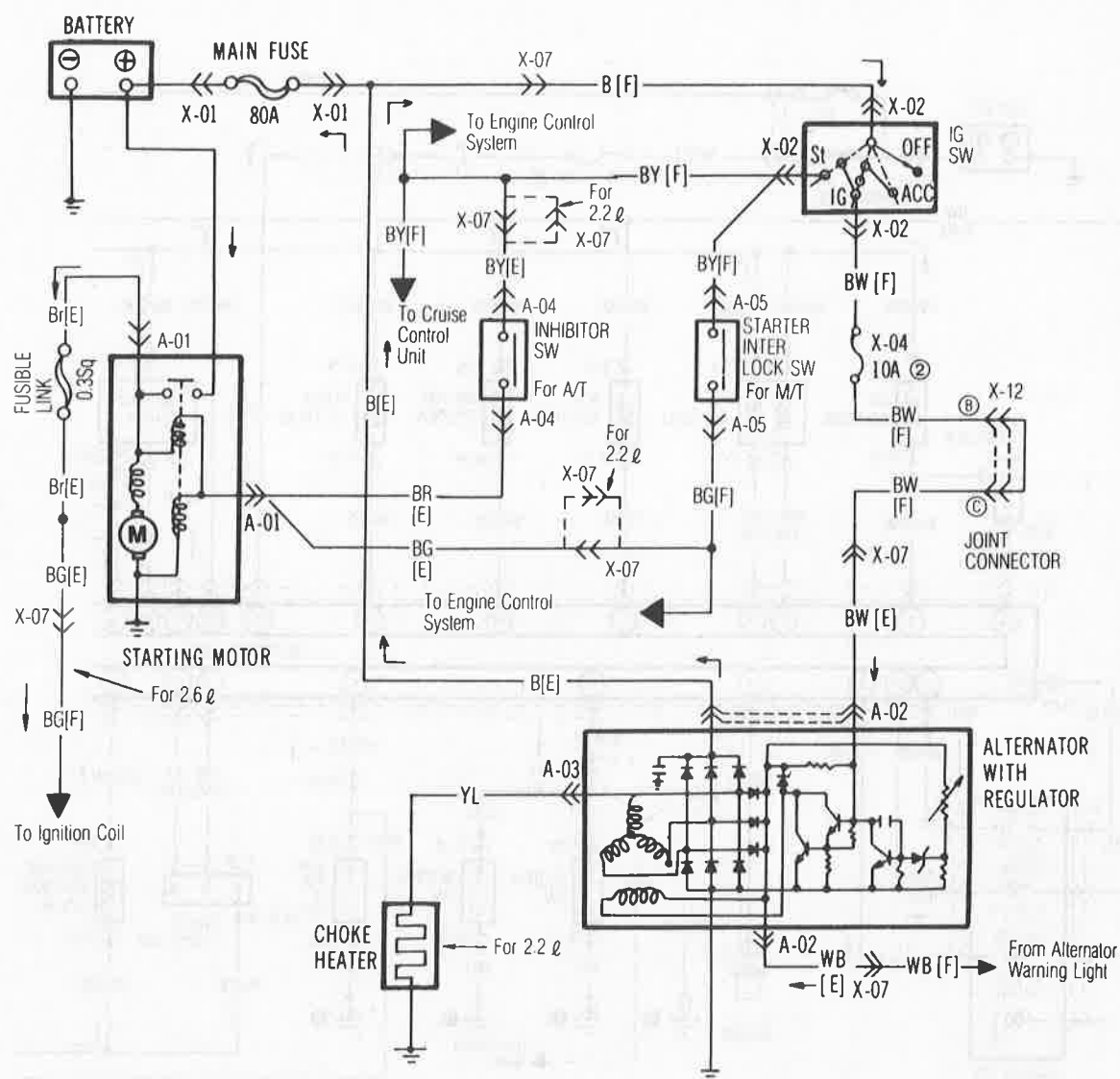
Ignition system/slow fuel cut valve/fuel pump/emission control system/kick-down system for A/T
(1984 B2000 non-Federal models)



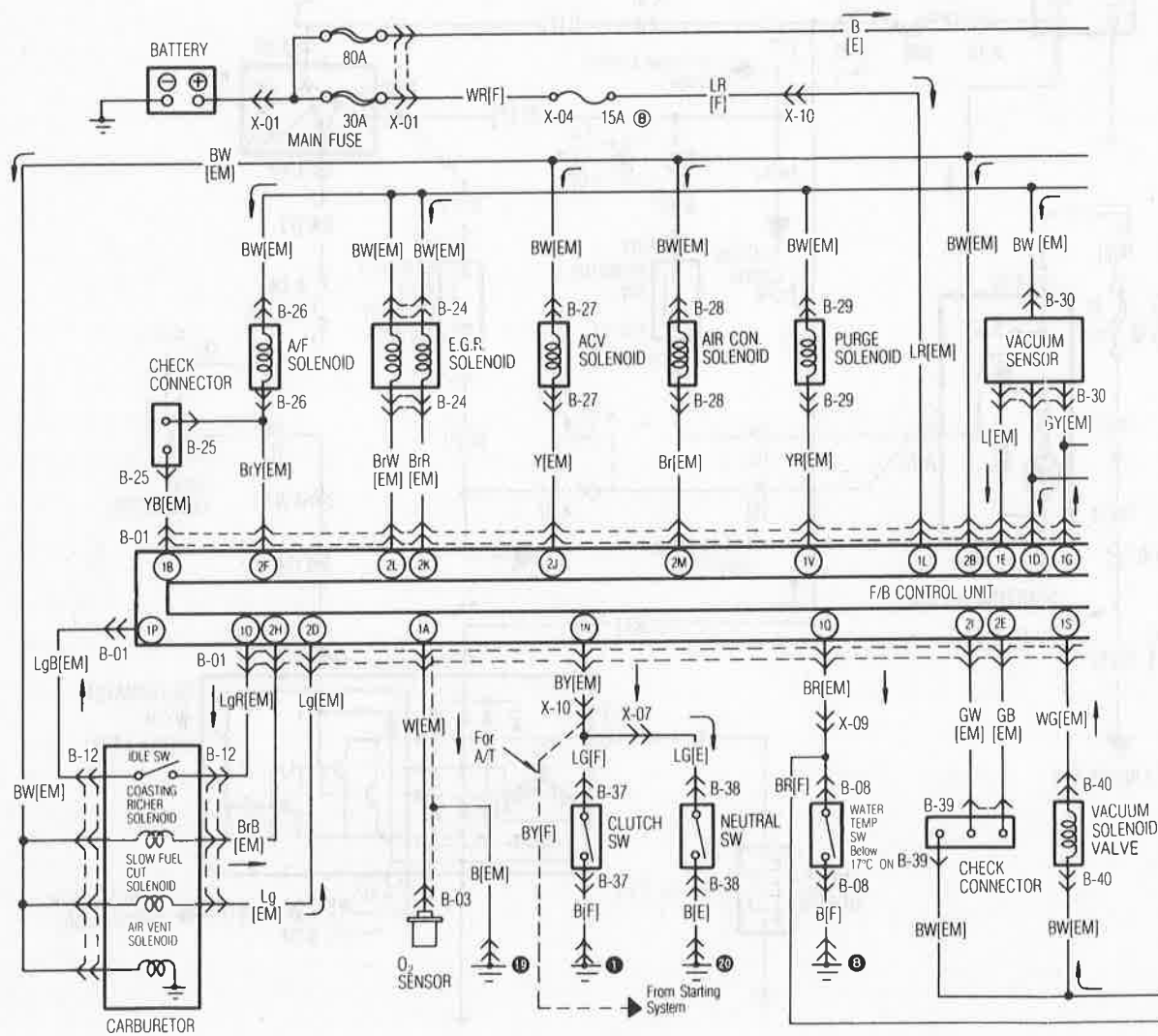
Meters and warning system — 1984 B2000



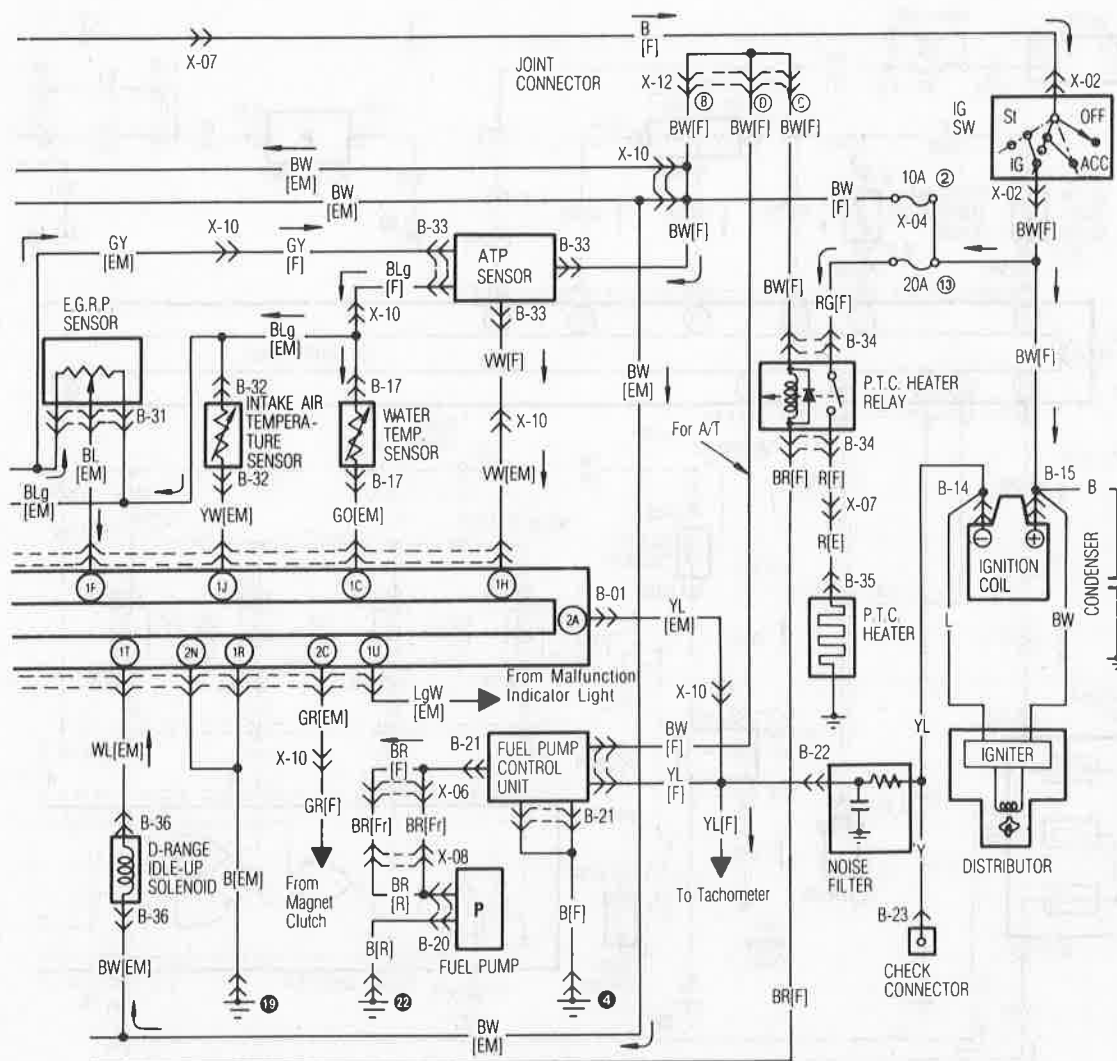
Exterior lights — 1984 B2000



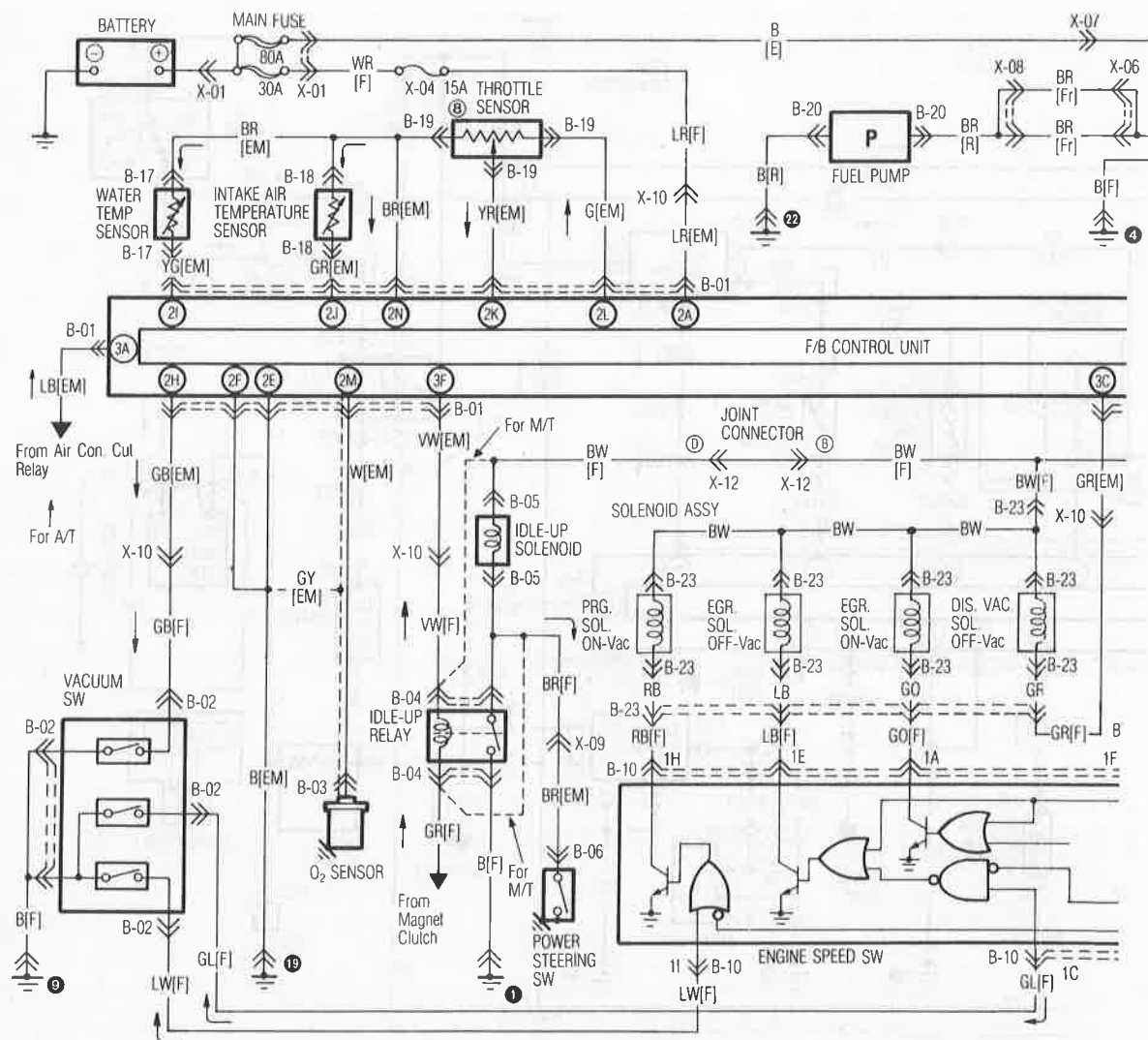
Starting system/charging system — 1984 and later models



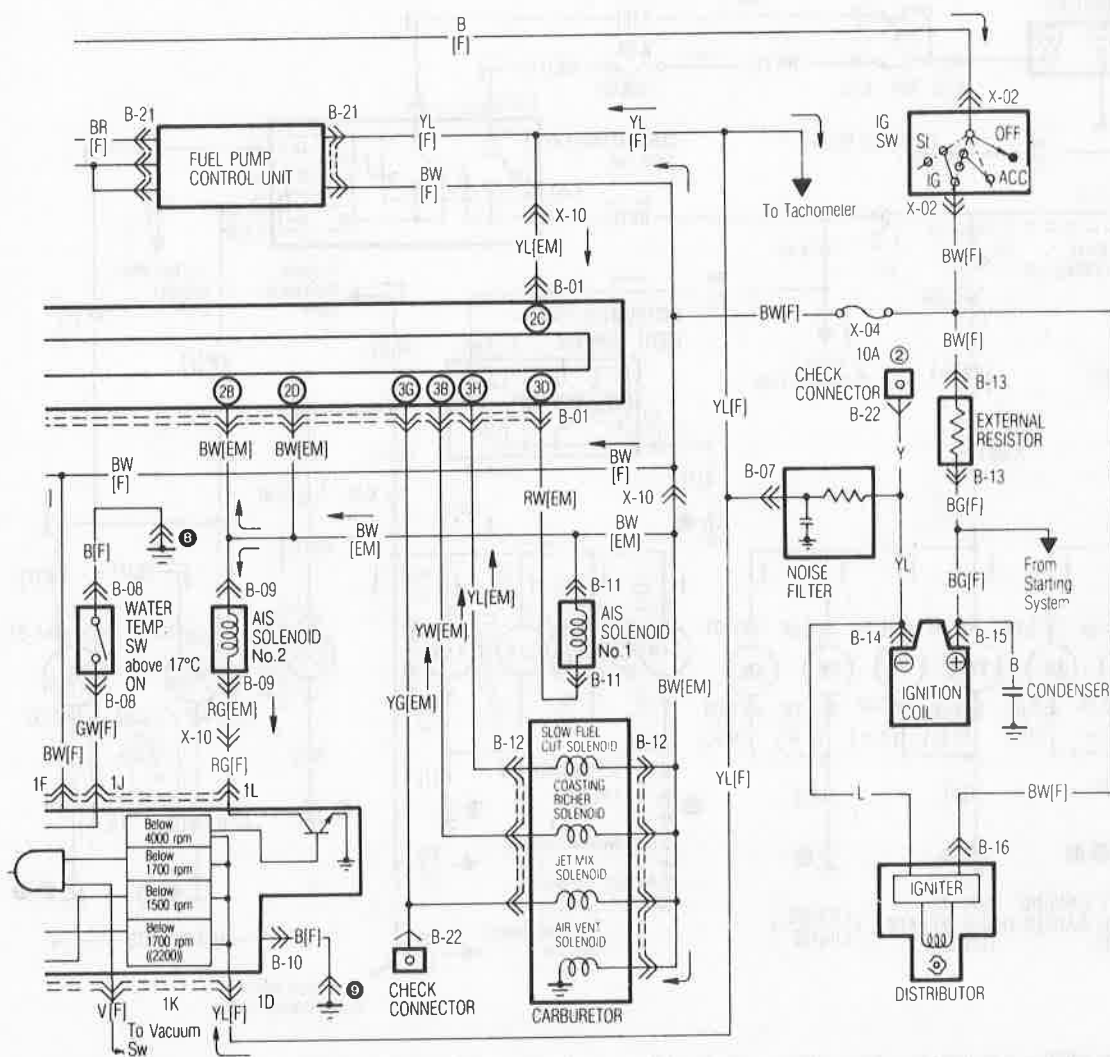
Engine control system/ignition system/fuel pump circuit — B2200 models



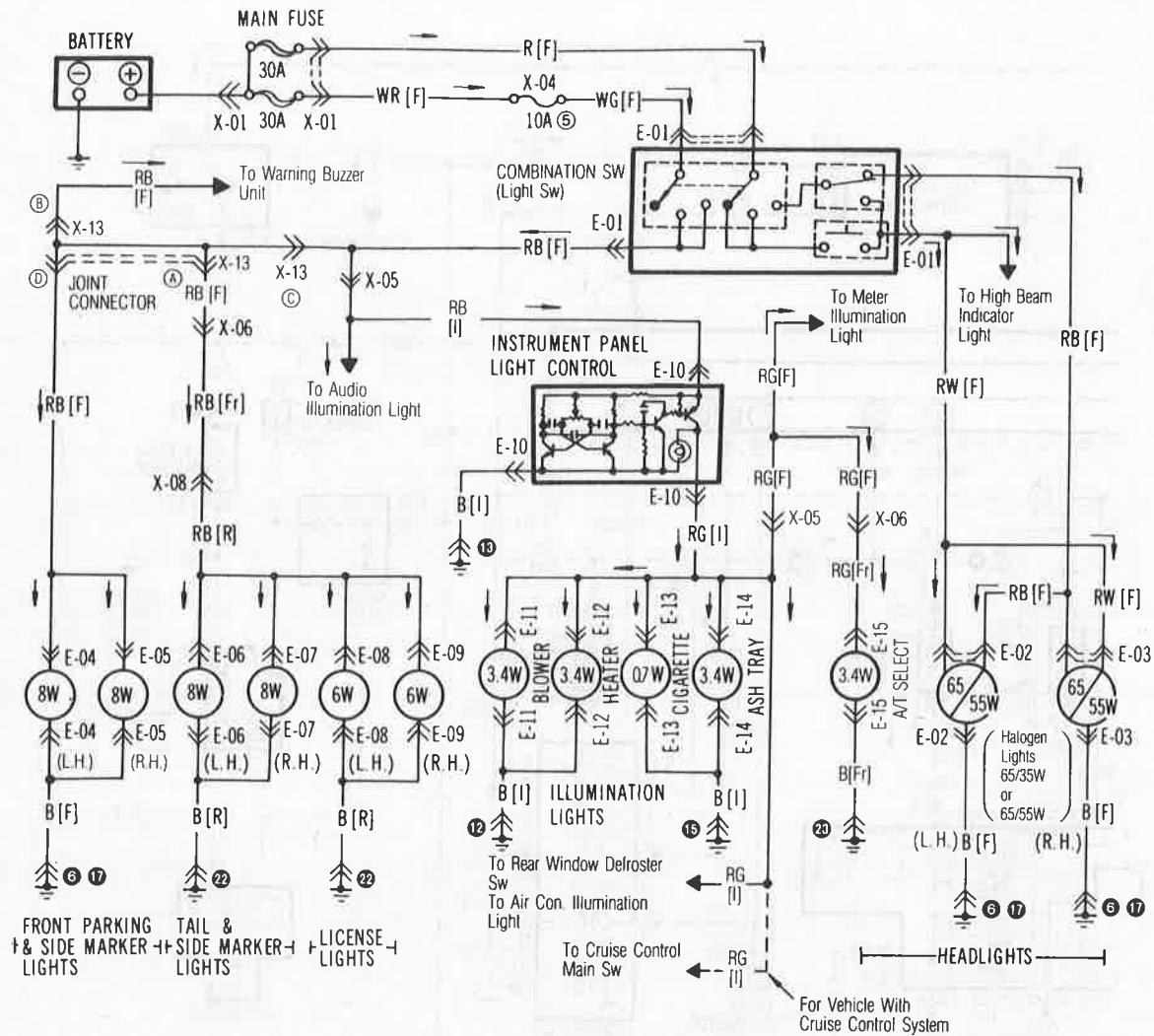
Engine control system/ignition system/fuel pump circuit — B2200 models (continued)



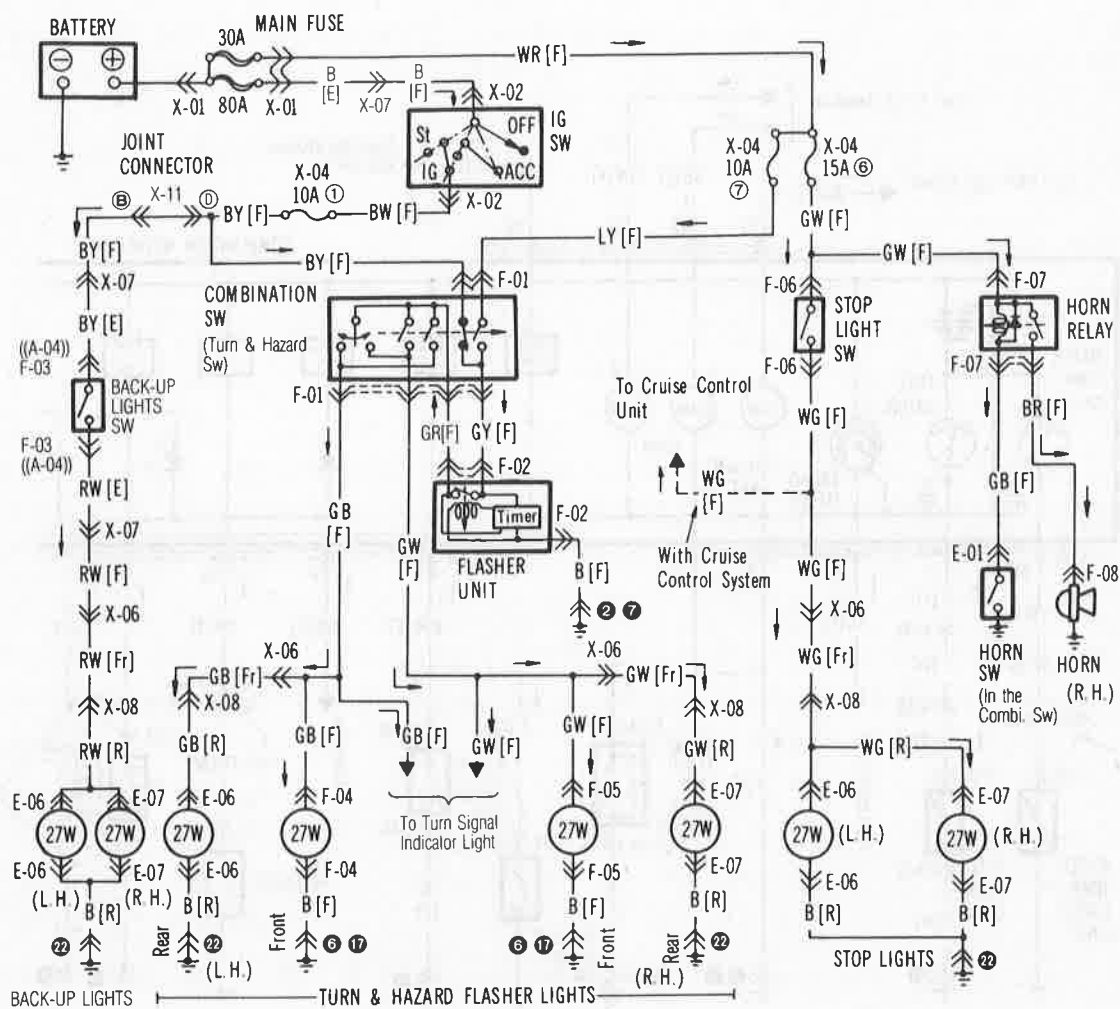
Engine control system/ignition system/fuel pump circuit — B2600 models



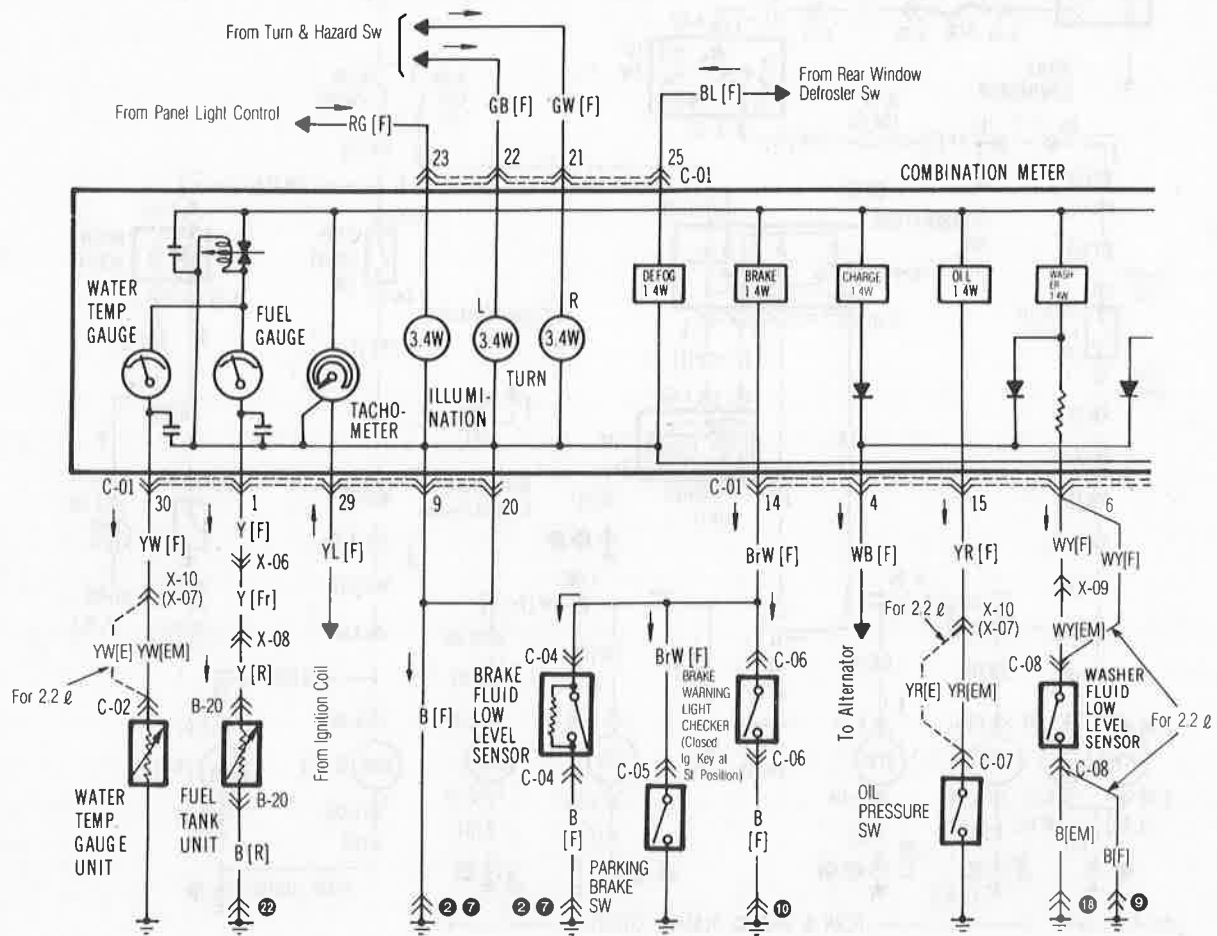
Engine control system/ignition system/fuel pump circuit — B2600 models (continued)



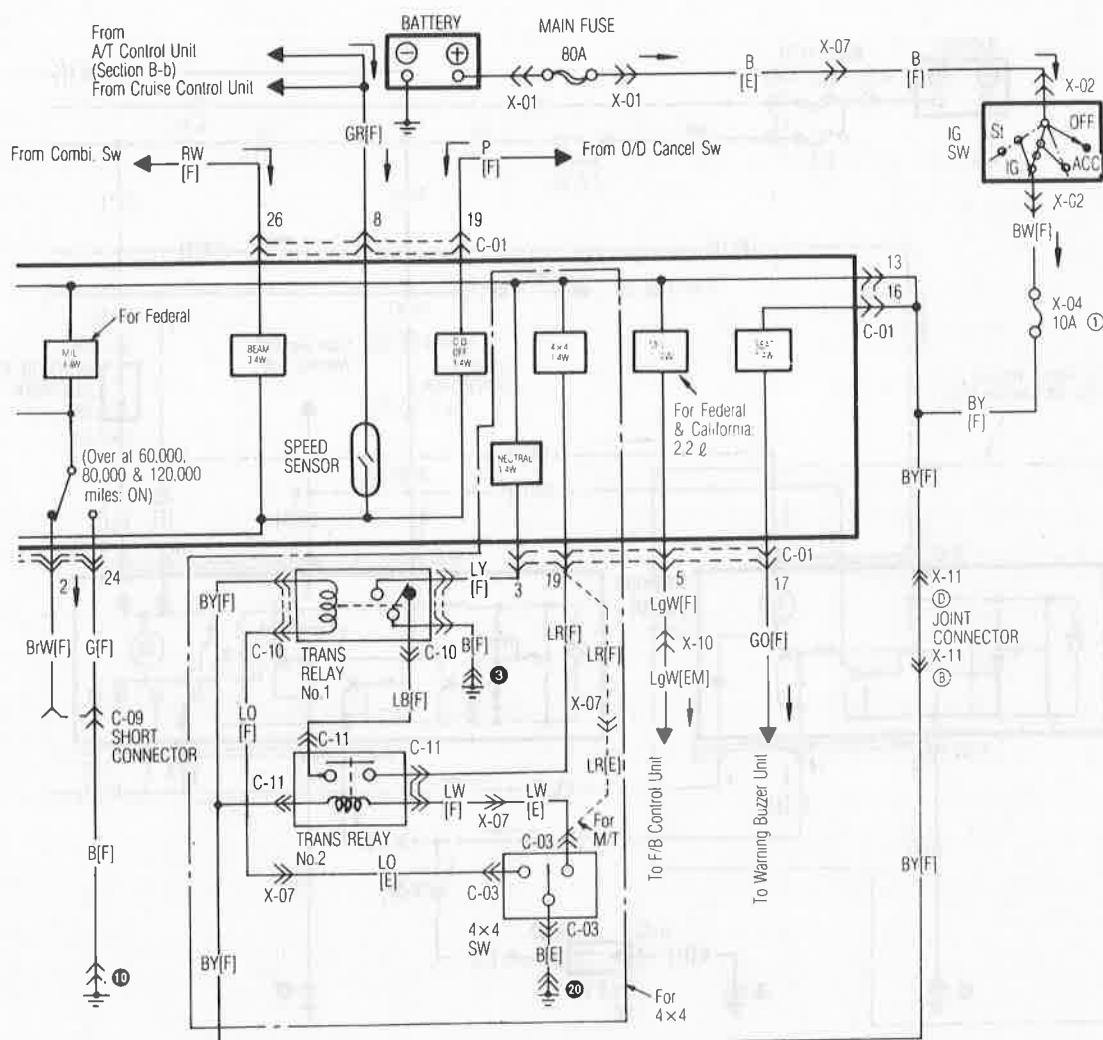
Headlights/tail lights/parking, side marker and license plate lights/illumination lights — 1986 and later models



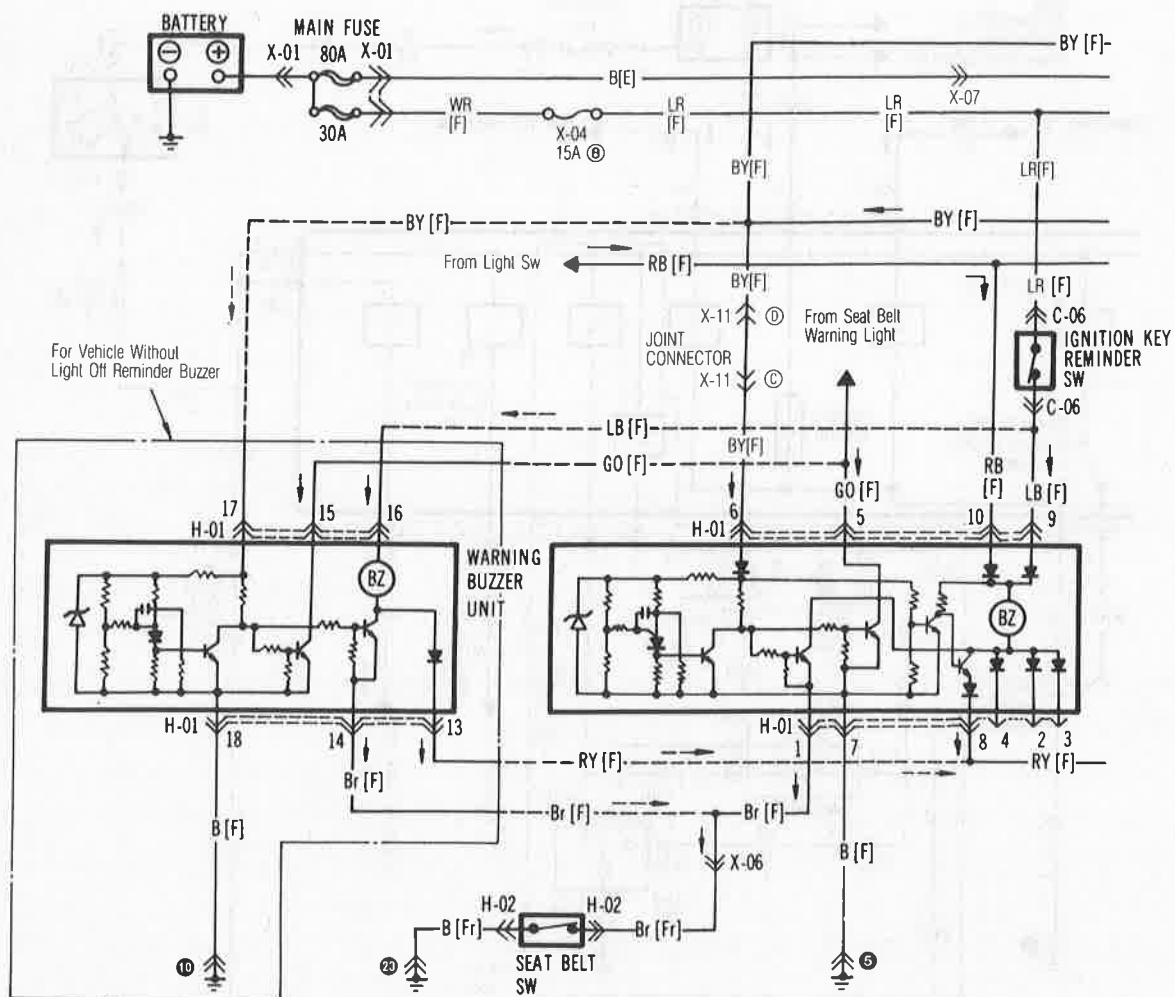
Turn signal and hazard flasher lights/back-up and stop lights/horn — 1986 and later models



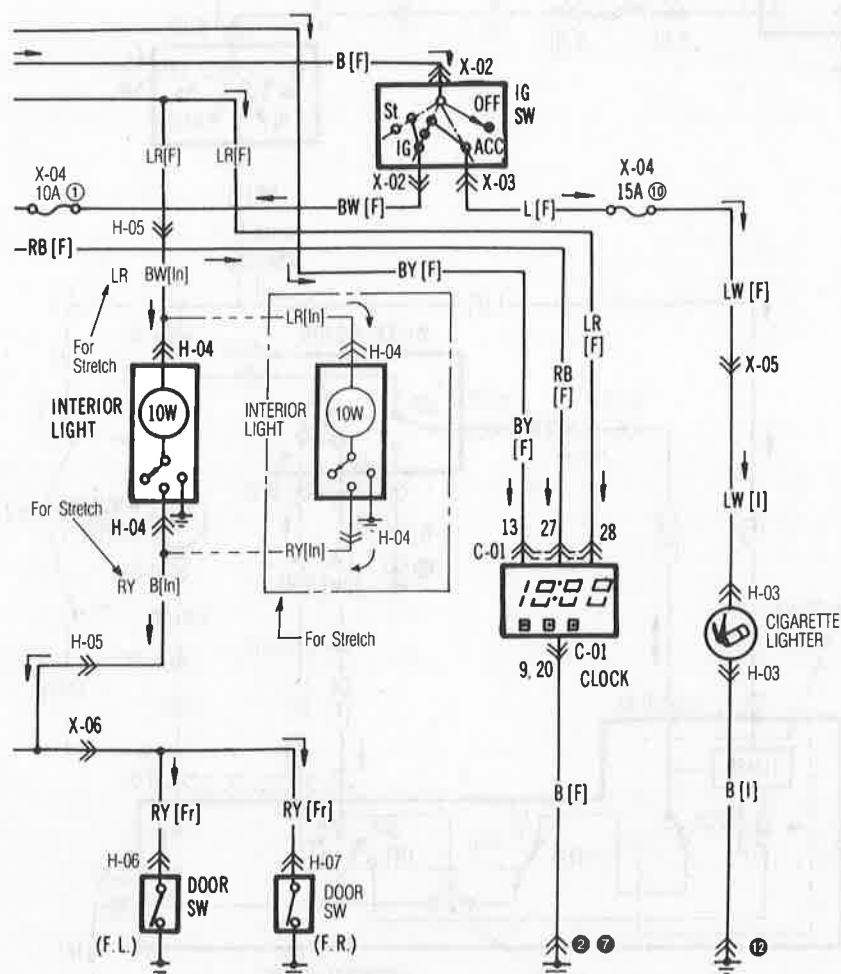
Warning lights/meters – 1988 and later models (1986 and 1987 models similar)



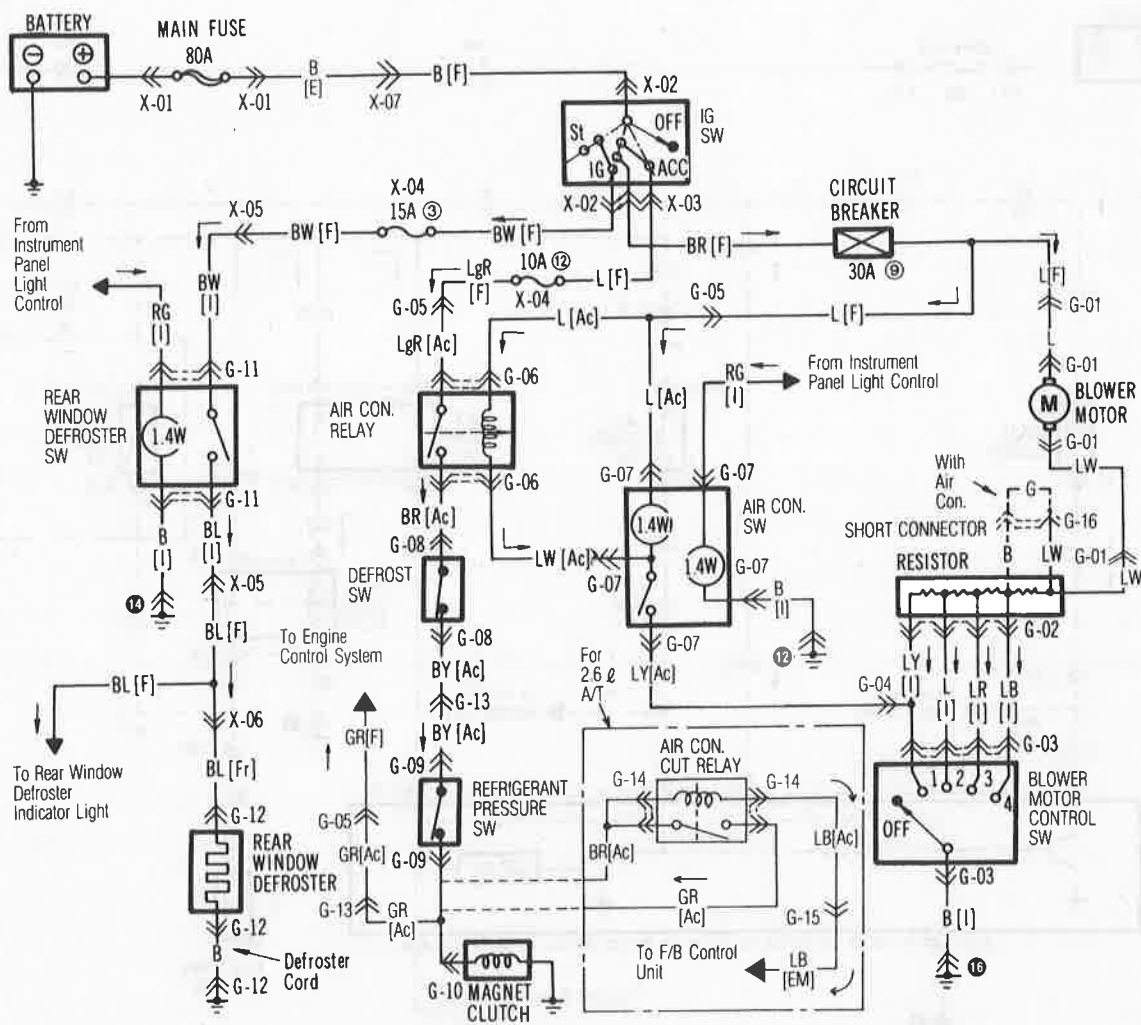
Warning lights/meters - 1988 and later models (1986 and 1987 models similar) (continued)



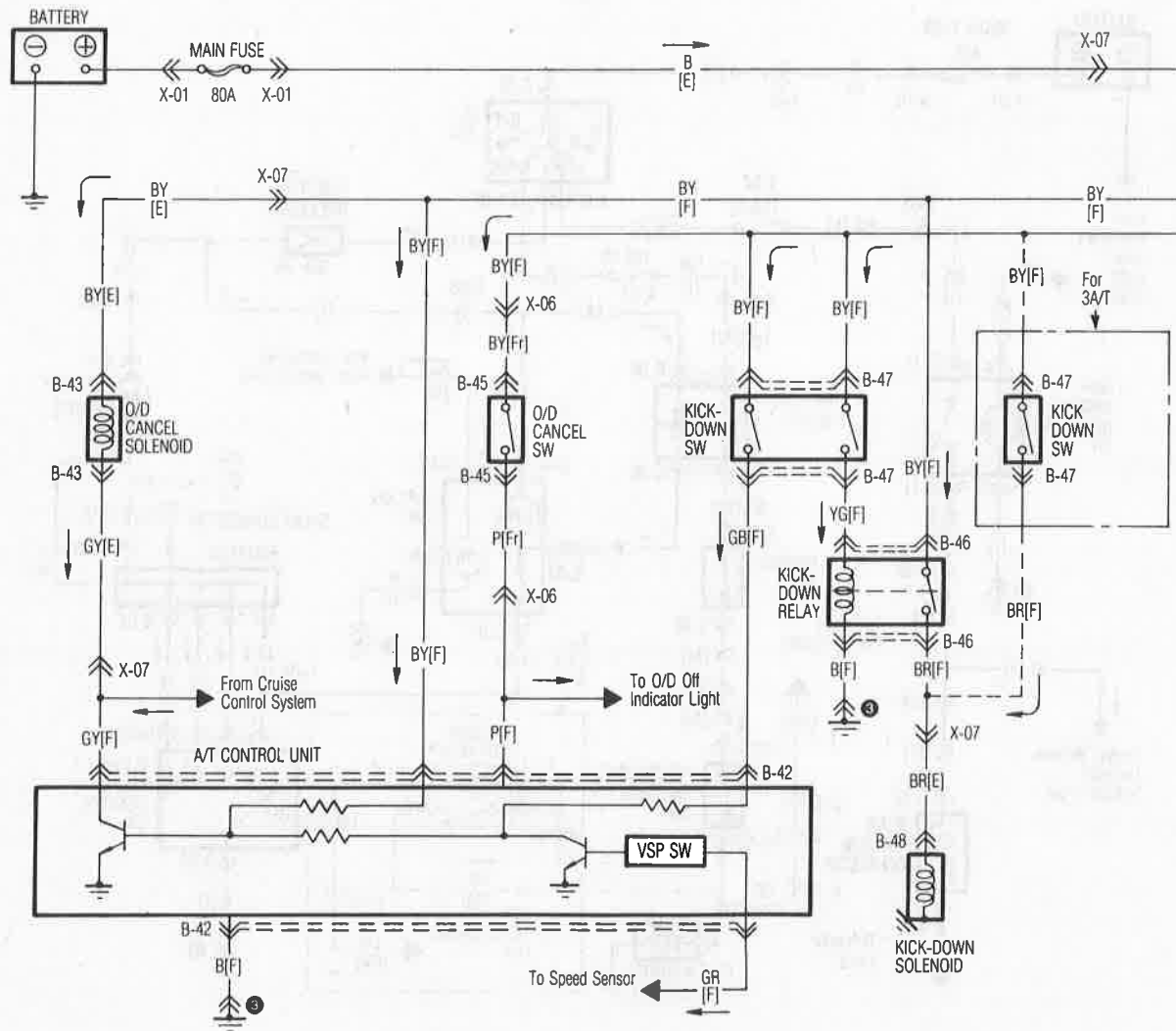
Interior lights/cigarette lighter/ignition key and seat belt warning buzzers — 1986 and later models



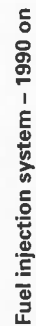
Interior lights/cigarette lighter/ignition key and seat belt warning buzzers — 1986 and later models (continued)



Heater and air conditioner/rear window defroster - 1988 and later models (1986 and 1987 models similar)



Automatic transmission control system - 1988 and later models



NOTES

