

## CHAPTER SEVEN

### ELECTRICAL SYSTEM

The electrical system is a 12-volt negative ground type. This chapter includes service procedures for the battery, starter, charging system, lighting system, ignition system, fuses, instruments, and windshield wipers. Wiring diagrams are included at the end of the chapter.

#### BATTERY

##### Care and Inspection

1. Disconnect both battery cables and remove the battery.
2. Clean the top of the battery with a baking soda and water solution. Scrub with a stiff bristle brush. Wipe battery clean with a cloth moistened in ammonia or baking soda solution.

##### CAUTION

*Keep cleaning solution out of battery cells or the electrolyte will be seriously weakened.*

3. Clean battery terminals with a stiff wire brush or one of the many tools made for this purpose.
4. Examine entire battery case for cracks.
5. Install the battery and reconnect the cables.
6. Coat the battery connections with light mineral grease or Vaseline after tightening.

7. Check electrolyte level and top up with distilled water if necessary.

##### Testing

Hydrometer testing is a good way to check battery condition. Use a hydrometer with numbered graduations from 1.100 to 1.300 rather than one with just color-coded bands. To use the hydrometer, squeeze the rubber bulb, insert the tip in the cell, and release the bulb (**Figure 1**). Draw enough electrolyte to float the weighted float inside the hydrometer. Note the number in line with the surface of the electrolyte. This is the specific gravity of the cell. Return the electrolyte to the cell from which it came.

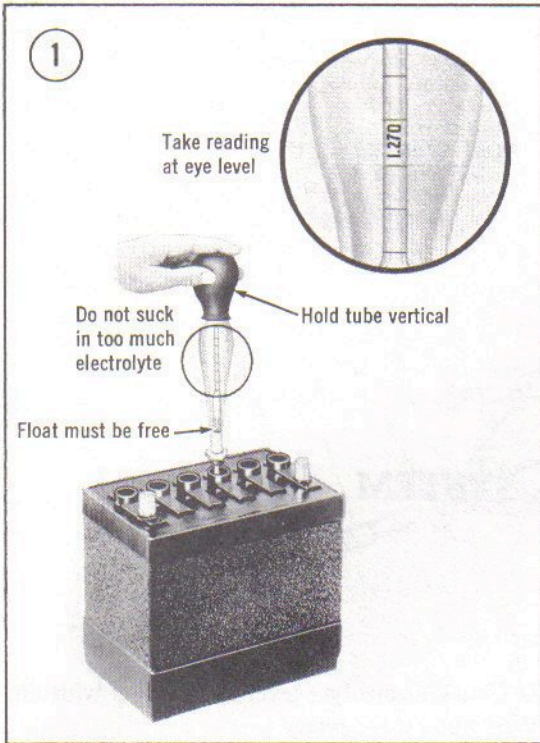
The specific gravity of the electrolyte in each cell is an excellent indicator of that cell's condition. A fully charged cell will read approximately 1.260. If the cells are below 1.200, the battery must be recharged.

##### CAUTION

*Battery electrolyte must be fully topped up and the battery cables disconnected before charging.*

#### ALTERNATOR

The alternator generates alternating current in the stator coils. Diodes act as one-way valves

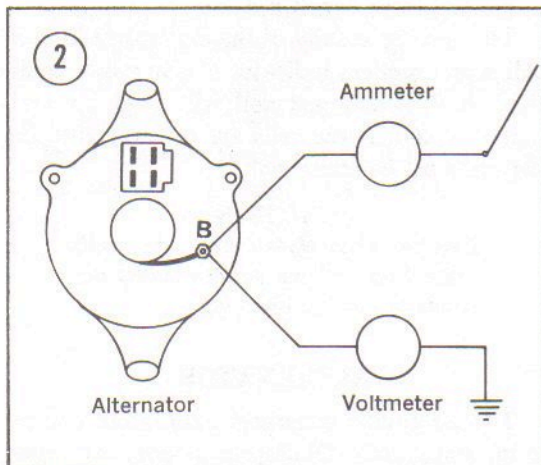


for the alternating current, letting only charging current through. In this manner the AC is converted to DC.

**On-Car Testing**

Insufficient charging can be isolated to the alternator or regulator without removing them from the car. Test as follows.

1. Disconnect the wire from the alternator (B) terminal (Figure 2).



2. Connect the positive lead of an ammeter to the terminal. Connect the negative lead to the disconnected wire. The ammeter must be capable of indicating at least 32 amps.
3. Connect the positive lead of a voltmeter to the (B) terminal. Ground the negative lead. The voltmeter must be capable of indicating at least 14 volts.
4. Turn on the headlights.
5. Start the engine and run it at 1,200 rpm. If the ammeter indicates less than 32 amps, the alternator is defective. If the voltmeter indicates less than 14 volts the regulator is defective.

**Removal/Installation**

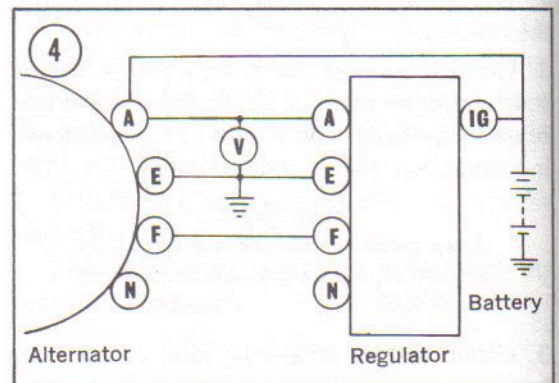
1. Loosen the alternator mounting and adjusting bolts (Figure 3). Loosen the alternator belt and take it off.
2. Remove the alternator bolts and lift the alternator off the engine.
3. Install in the reverse order. Adjust the alternator belt as described in Chapter Two.

**REGULATOR**

**Testing and Adjustment**

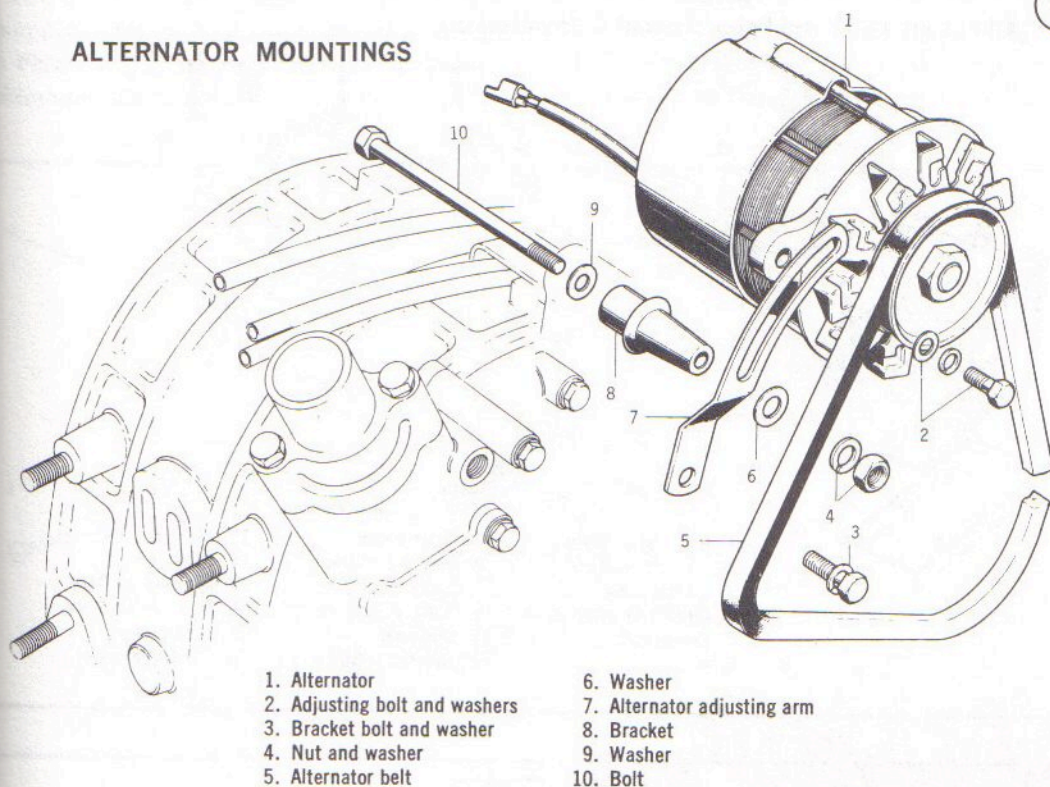
This procedure requires a voltmeter and a battery at nearly full charge.

1. Connect a voltmeter between the (A) and (E) terminals of the regulator (Figure 4).



2. Start the engine and run it at 2,000 rpm. The voltmeter should indicate between 13.5 and 14.5 volts. If not, the regulator must be adjusted. However, adjustment may cost more than a new regulator. Compare prices before deciding.

## ALTERNATOR MOUNTINGS

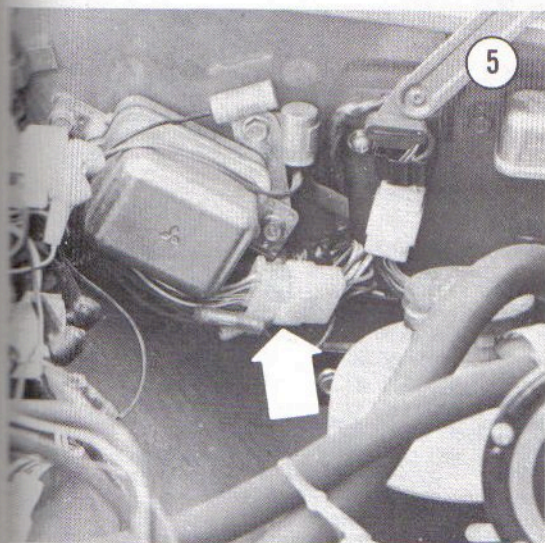


1. Alternator
2. Adjusting bolt and washers
3. Bracket bolt and washer
4. Nut and washer
5. Alternator belt

6. Washer
7. Alternator adjusting arm
8. Bracket
9. Washer
10. Bolt

## Removal/Installation

1. Detach the wiring connector from the regulator (Figure 5).



2. Remove the attaching screws and take the regulator out.
3. Installation is the reverse of these steps.

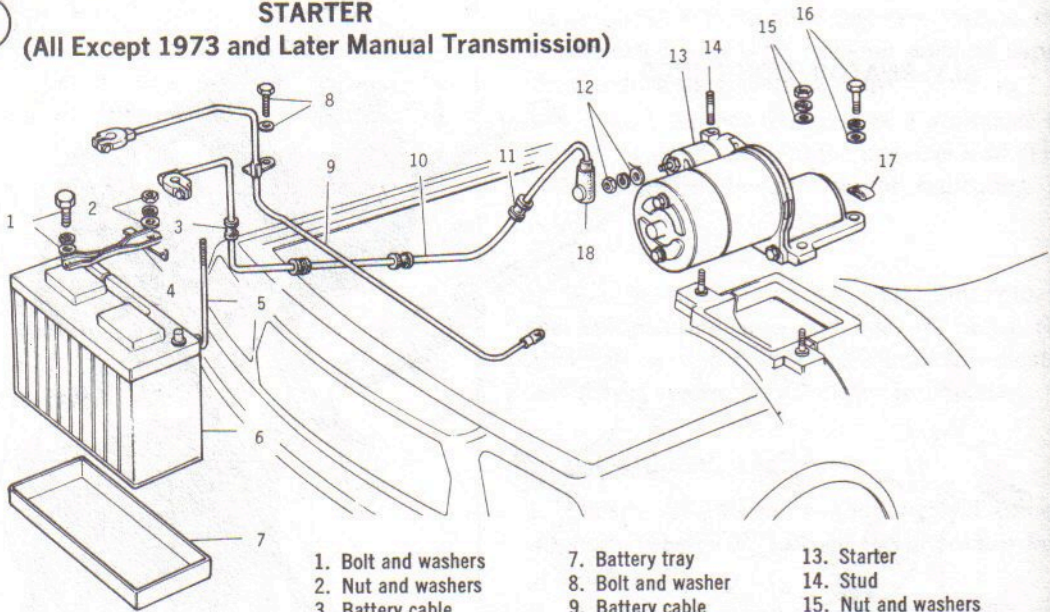
## STARTER

## Removal/Installation

On 1973 and later automatic transmission cars and *all* earlier models, the starter is mounted on top of the clutch housing (Figure 6). On 1973 and later manual transmission cars, the starter is mounted low on the left side of the clutch housing (Figure 7).

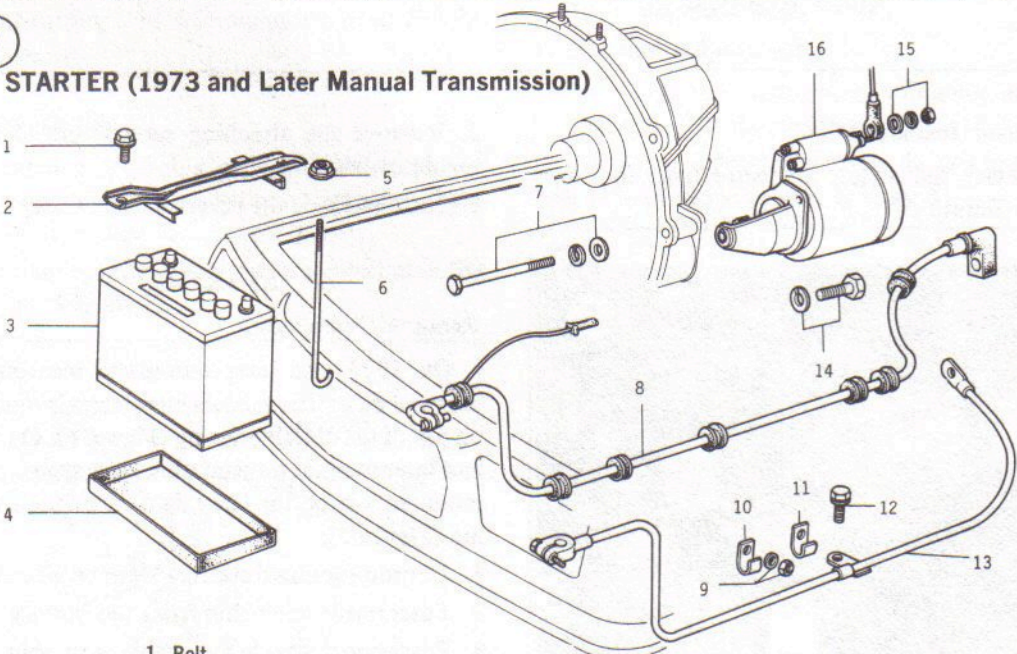
1. For top-mounted starters, remove air cleaner.
2. Disconnect one cable from the battery.
3. Disconnect the heavy cable and thin wire from the starter solenoid.
4. Remove the starter attaching bolts (and nut on top-mounted starters). Lift the starter out.
5. Installation is the reverse of these steps.

**6** **STARTER**  
(All Except 1973 and Later Manual Transmission)



- |                           |                     |                      |
|---------------------------|---------------------|----------------------|
| 1. Bolt and washers       | 7. Battery tray     | 13. Starter          |
| 2. Nut and washers        | 8. Bolt and washer  | 14. Stud             |
| 3. Battery cable          | 9. Battery cable    | 15. Nut and washers  |
| 4. Battery securing strap | 10. Battery cable   | 16. Bolt and washers |
| 5. Clamp bolt             | 11. Grommet         | 17. Wiring clip      |
| 6. Battery                | 12. Nut and washers | 18. Starter terminal |

**7** **STARTER (1973 and Later Manual Transmission)**

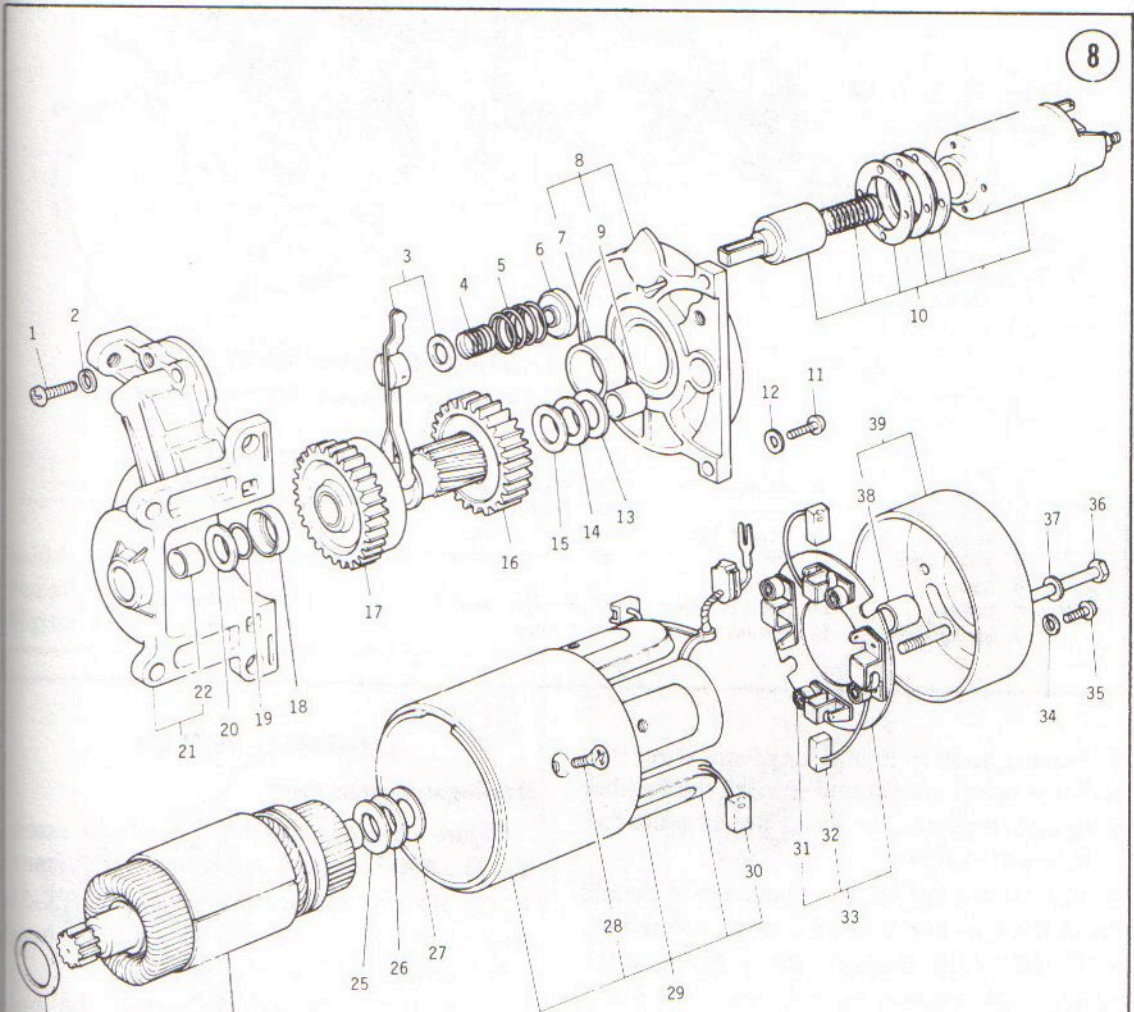


- |                           |                     |                     |
|---------------------------|---------------------|---------------------|
| 1. Bolt                   | 7. Bolt and washers | 12. Bolt and washer |
| 2. Battery securing strap | 8. Battery cable    | 13. Battery cable   |
| 3. Battery                | 9. Nut and washer   | 14. Bolt and washer |
| 4. Battery tray           | 10. Cable clip      | 15. Nut and washers |
| 5. Nut                    | 11. Cable clip      | 16. Starter         |
| 6. Clamp bolt             |                     |                     |

**Brush Replacement**

Brushes must be replaced if they are worn to approximately 3/8 in. (9.5mm) or less. Refer to **Figure 8** (top-mounted starters) or **Figure 9** (side-mounted starters).

1. Remove 2 through bolts and 2 brush holder attaching screws from the brush end cover. Remove the cover.
2. Remove the insulator washer and 2 plain washers from the end of the armature shaft.

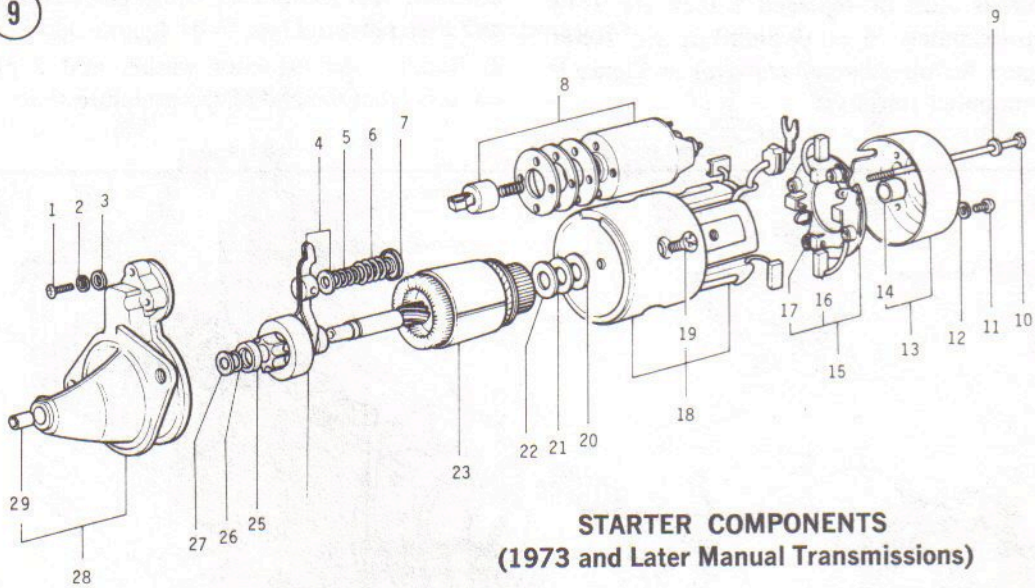


**STARTER COMPONENTS**  
(All Except 1973 and Later Manual Transmission)

- |                   |                        |                           |                        |
|-------------------|------------------------|---------------------------|------------------------|
| 1. Screw          | 11. Screw              | 21. Rear end housing      | 31. Brush spring       |
| 2. Lockwasher     | 12. Washer             | 22. Bushing               | 32. Brush              |
| 3. Pinion lever   | 13. Insulator washer   | 23. Washer                | 33. Brush holder plate |
| 4. Spring         | 14. Washer             | 24. Armature              | 34. Lockwasher         |
| 5. Spring         | 15. Washer             | 25. Washer                | 35. Bolt               |
| 6. Spring holder  | 16. Pinion gear        | 26. Washer                | 36. Through bolt       |
| 7. Bushing        | 17. Overrunning clutch | 27. Insulator washer      | 37. Washer             |
| 8. Center bracket | 18. Pinion stopper     | 28. Screw                 | 38. Bushing            |
| 9. Bushing        | 19. Snap ring          | 29. Frame and field coils | 39. Brush end cover    |
| 10. Solenoid      | 20. Washer             | 30. Brush                 |                        |

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**STARTER COMPONENTS  
(1973 and Later Manual Transmissions)**

1. Screw
2. Lockwasher
3. Washer
4. Pinion lever
5. Spring
6. Spring
7. Spring holder

8. Solenoid
9. Washer
10. Through bolt
11. Bolt
12. Washer
13. Brush end cover
14. Bushing

15. Brush holder plate
16. Brush
17. Brush spring
18. Starter frame and field coils
19. Screw
20. Insulator washer
21. Washer

22. Washer
23. Armature
24. Overrunning clutch
25. Pinion stopper
26. Snap ring
27. Washer
28. Front end housing
29. Bushing

3. Make a hook from a piece of stiff wire. Pull back the brush springs and remove the brushes from their holders. The brush holder plate can then be removed.

4. Cut the brushes off. Leave enough of the old brush leads so new brushes can be soldered on.

5. Check brush springs with a spring scale. Spring tension should be  $3\frac{1}{2}$  pounds (1.6 kg). Replace weak springs.

6. Solder the new brushes on. Don't let solder run down the brush leads, since it will prevent them from flexing. Always replace brushes in complete sets.

7. Install the brush holder bracket in the starter. Pull back the brush springs, using a hook made of stiff wire. Insert the brushes in their holders.

8. Install the washers on the armature shaft, insulator washer last. Install the brush end cover. Install the 2 brush attaching screws and the 2 through bolts.

## LIGHTING SYSTEM

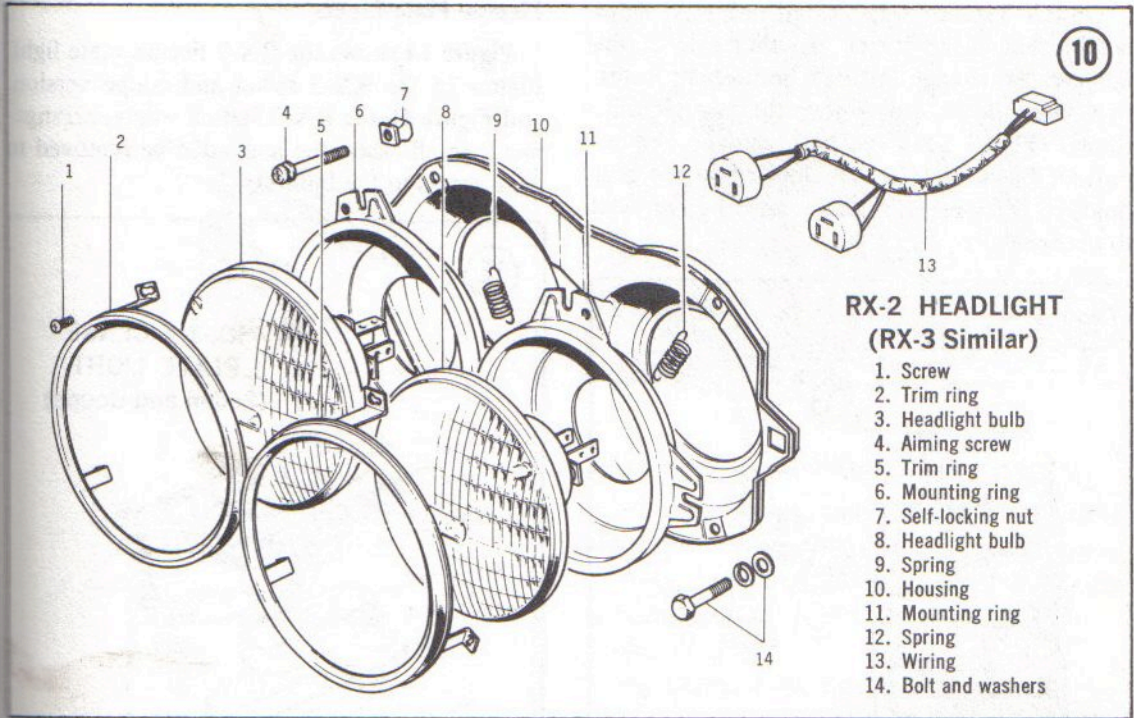
### Headlight Replacement

Figure 10 shows the RX-2 headlight assembly. The RX-3 arrangement is basically the same.

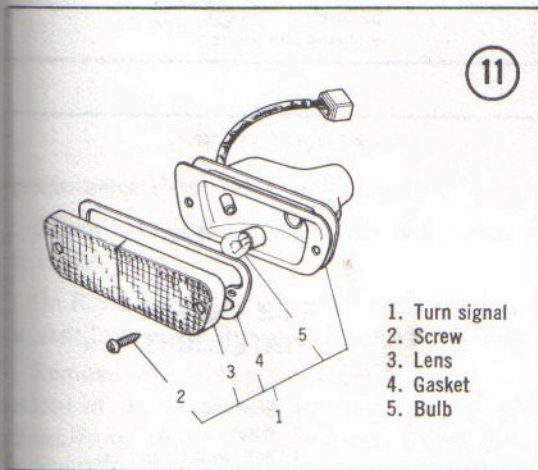
1. On RX-2's, remove the grille. On RX-3's, remove the trim piece surrounding the headlights, secured by 3 screws.
2. Open the hood and disconnect the bulb wiring plug.
3. Remove headlight ring retaining screws (1, Figure 10). Do not remove the adjusting screws.
4. Remove the retaining ring and bulb.
5. Install a new bulb in the reverse order. If necessary, have the headlights adjusted according to local traffic regulations.

### Front Parking-Turn Signal Lights

To remove the bulb, remove 2 screws securing the lens and take it off. Press the bulb into the

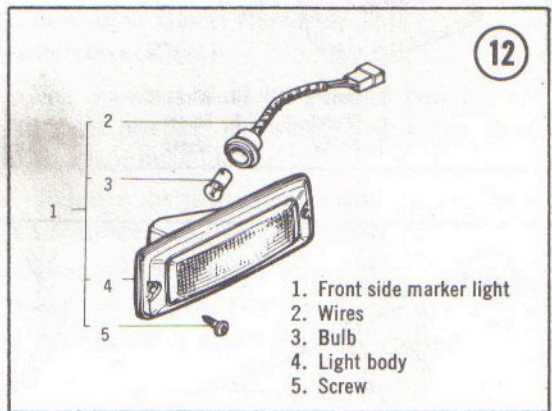


socket and turn it counterclockwise to remove. Install a new bulb in the reverse order. See Figure 11.



**Front Side Marker Lights**

On RX-2's, the bulb is removed and installed in the same manner as front parking-turn signal lights. On RX-3's, turn the socket counterclockwise and remove it from the light body. See Figure 12. Press the bulb into the socket and take it out. Install a new bulb in reverse order.



**Rear Side Marker Lights**

To change a bulb, remove the lens securing screws and take off the lens. Press the bulb into the socket and turn counterclockwise to remove.

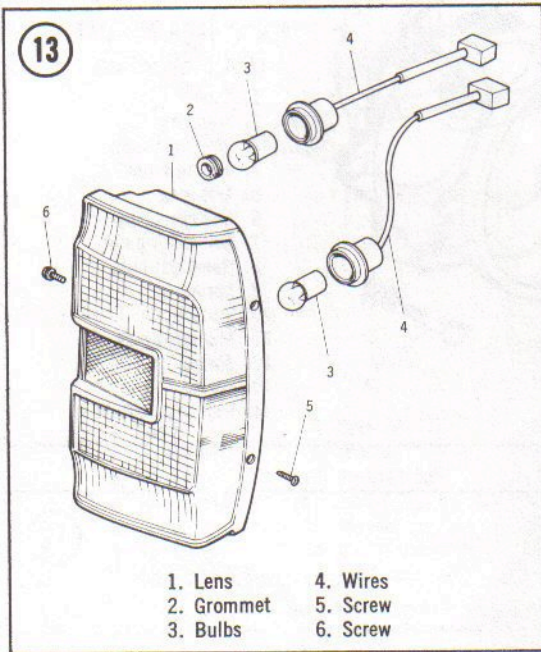
**Tail, Brake, and Back-up Lights**

On RX-2's and RX-3 sedans and coupes, tail, brake, and back-up lights are accessible from inside the trunk. To remove a bulb, turn the socket counterclockwise and take it out. Press the bulb into the socket and turn it counterclockwise to remove.

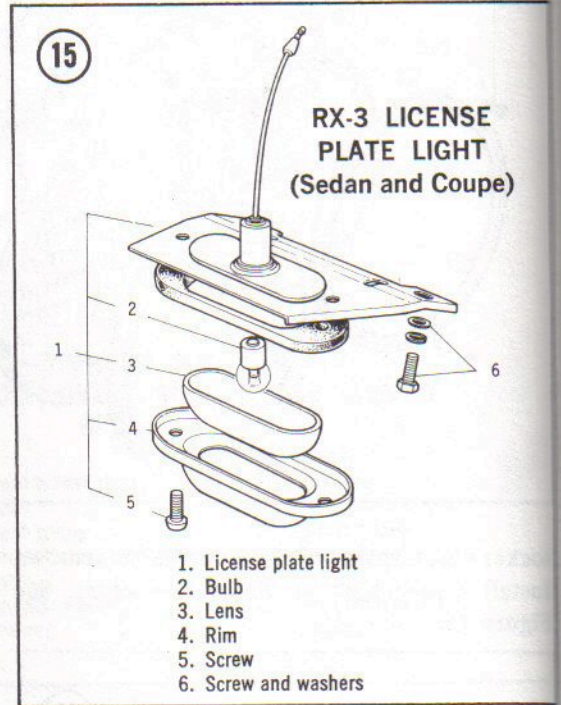
On RX-3 station wagons, tail and brake lights are located inside lenses to either side of the tailgate. To change tail and brake light bulbs, open the tailgate and remove the lens securing screws (Figure 13). The bulb can then be removed. Back-up lights are located in the rear bumper. Back-up light lenses must be removed to change bulbs.

**License Plate Lights**

Figure 14 shows the RX-2 license plate light, Figure 15 the RX-3 sedan and coupe version, and Figure 16 the RX-3 station wagon arrangement. In all cases, the lens must be removed to gain access to the bulb(s).

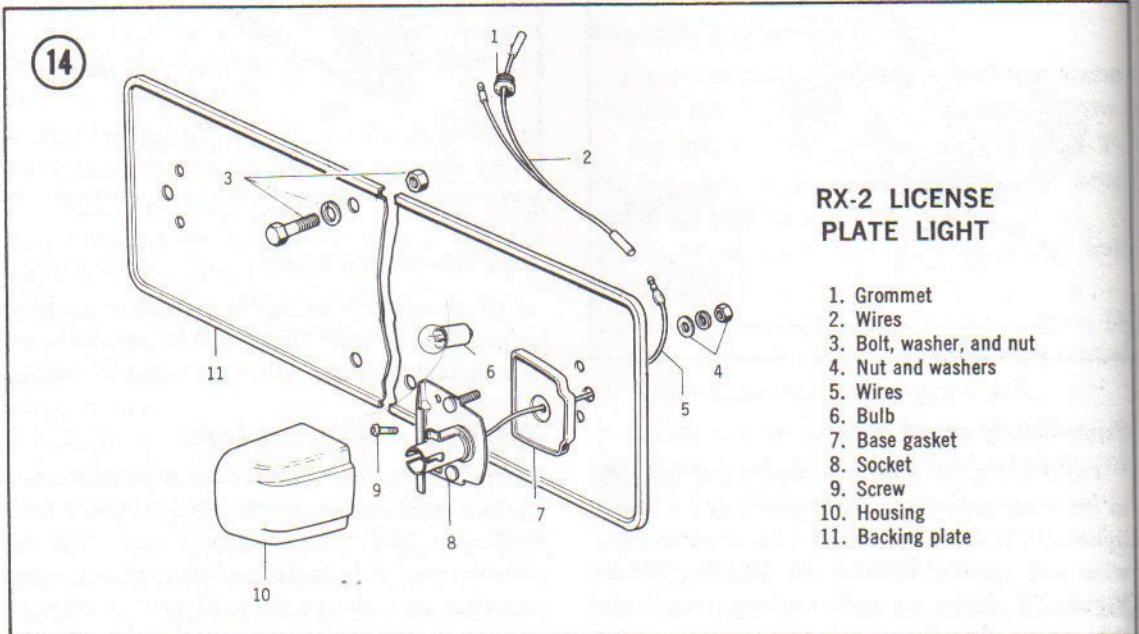


- 1. Lens
- 2. Grommet
- 3. Bulbs
- 4. Wires
- 5. Screw
- 6. Screw



**RX-3 LICENSE PLATE LIGHT (Sedan and Coupe)**

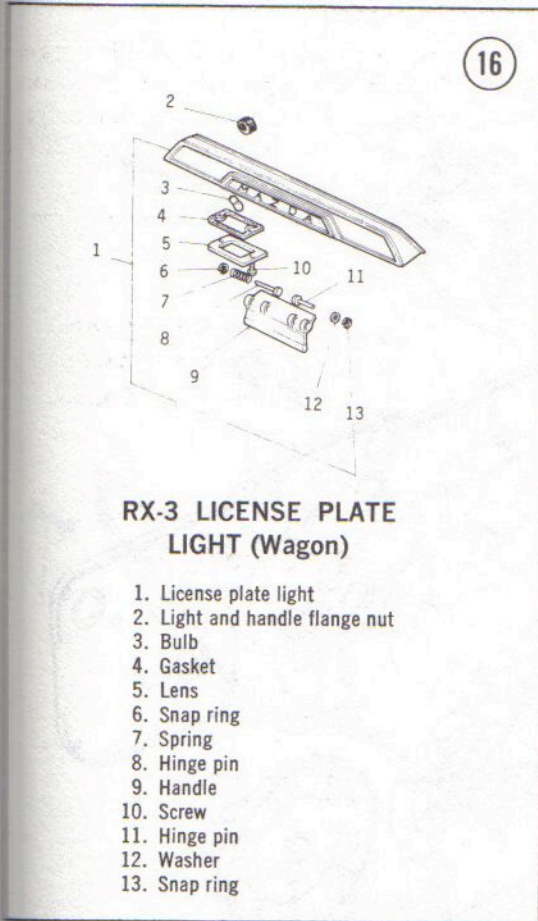
- 1. License plate light
- 2. Bulb
- 3. Lens
- 4. Rim
- 5. Screw
- 6. Screw and washers



**RX-2 LICENSE PLATE LIGHT**

- 1. Grommet
- 2. Wires
- 3. Bolt, washer, and nut
- 4. Nut and washers
- 5. Wires
- 6. Bulb
- 7. Base gasket
- 8. Socket
- 9. Screw
- 10. Housing
- 11. Backing plate

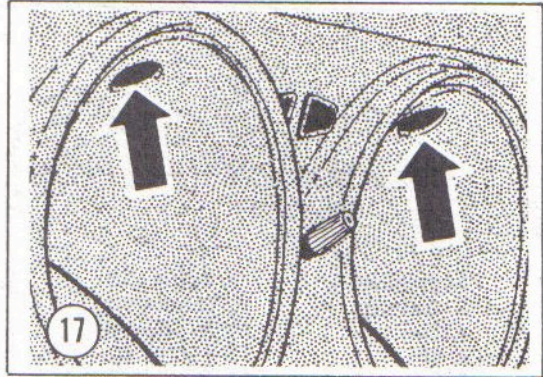




## INSTRUMENTS

### Speedometer Removal/Installation

1. Reach behind the speedometer and unscrew the cable.
2. On RX-2's, remove the attaching screw from the ventilator control knob, then take knob off.
3. Remove the screws from the left side and bottom of the instrument cluster. Remove the screws from above the speedometer and tachometer (**Figure 17**).
4. Remove the steering column shell.
5. Lower the top of instrument cluster toward you. Disconnect the wires from the back of the cluster, then take it out of the panel.
6. Take off the back of the cluster, then remove the speedometer. See **Figure 18** (RX-2) or **Figure 19** (RX-3).
7. Installation is the reverse of these steps.



### Tachometer Removal/Installation

1. Remove the instrument cluster as described in the previous procedure.
2. Remove the back of the cluster and take the tachometer out. See **Figure 18** (RX-2) or **Figure 19** (RX-3).
3. Installation is the reverse of these steps.

### Combination Gauge Removal/Installation (RX-2)

The ammeter, fuel gauge, and temperature gauge are installed in a single pod in the center of the instrument cluster.

1. Remove the instrument cluster as described in *Speedometer Removal/Installation*.
2. Remove the back of the cluster. Individual gauges can then be removed.
3. Installation is the reverse of these steps.

### Combination Gauge Removal/Installation (RX-3)

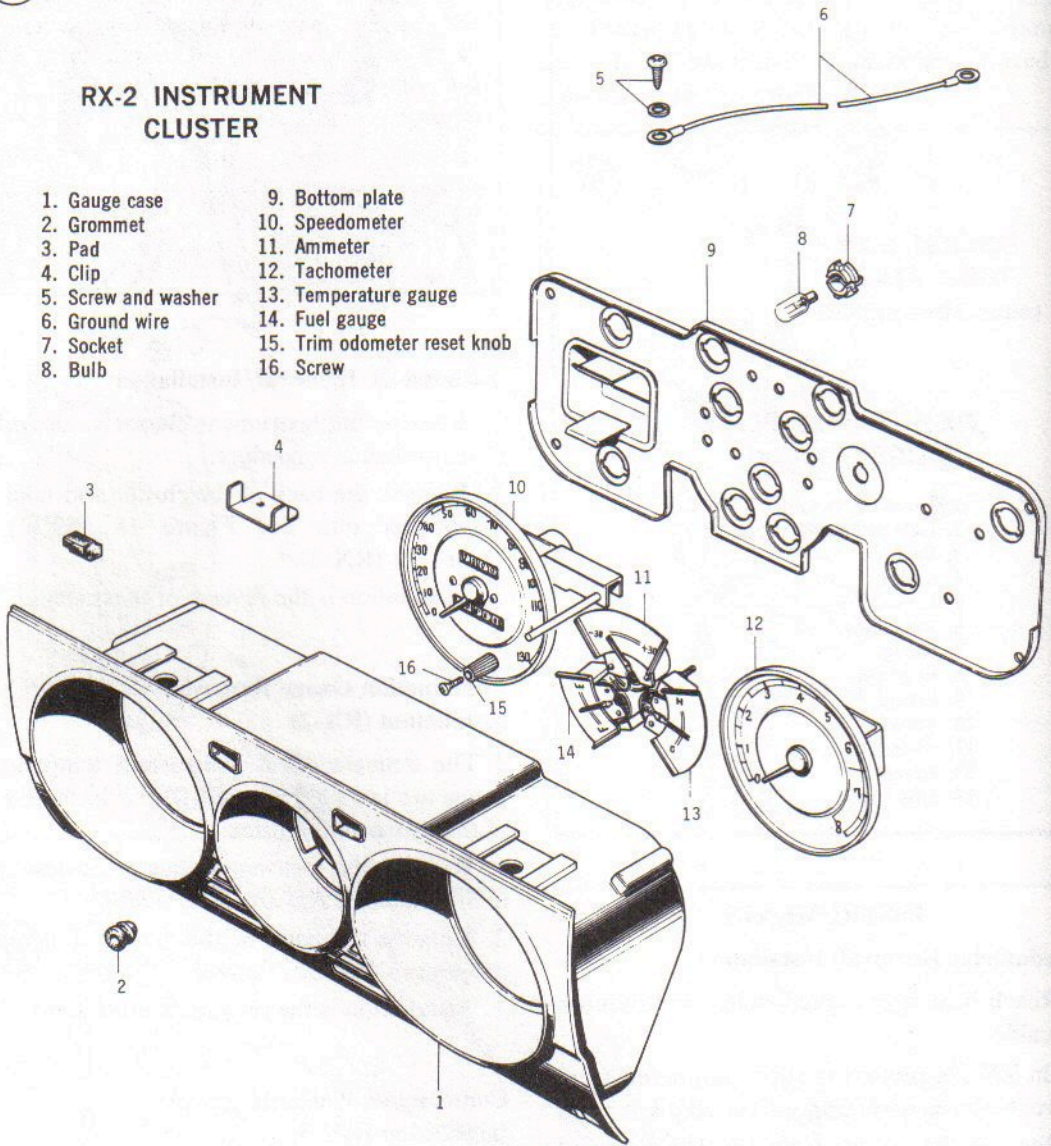
The ammeter, fuel gauge, and temperature gauge are clustered in the center of the instrument panel.

1. Remove the glove box.
2. Reach through the glove box hole and disconnect the gauge wires.
3. Remove 3 screws securing the gauge cluster. See **Figure 20**. Take the cluster out.
4. Remove the back of the cluster. The individual gauges can then be removed.
5. Installation is the reverse of these steps.

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## RX-2 INSTRUMENT CLUSTER

- |                     |                              |
|---------------------|------------------------------|
| 1. Gauge case       | 9. Bottom plate              |
| 2. Grommet          | 10. Speedometer              |
| 3. Pad              | 11. Ammeter                  |
| 4. Clip             | 12. Tachometer               |
| 5. Screw and washer | 13. Temperature gauge        |
| 6. Ground wire      | 14. Fuel gauge               |
| 7. Socket           | 15. Trim odometer reset knob |
| 8. Bulb             | 16. Screw                    |



### FUSES

A main fuse located in the engine compartment (**Figure 21**) protects the car's electrical equipment and wiring. The fuse box is located in the glove compartment (**Figure 22**). Fuse functions and amperage ratings are listed inside the fuse box cover.

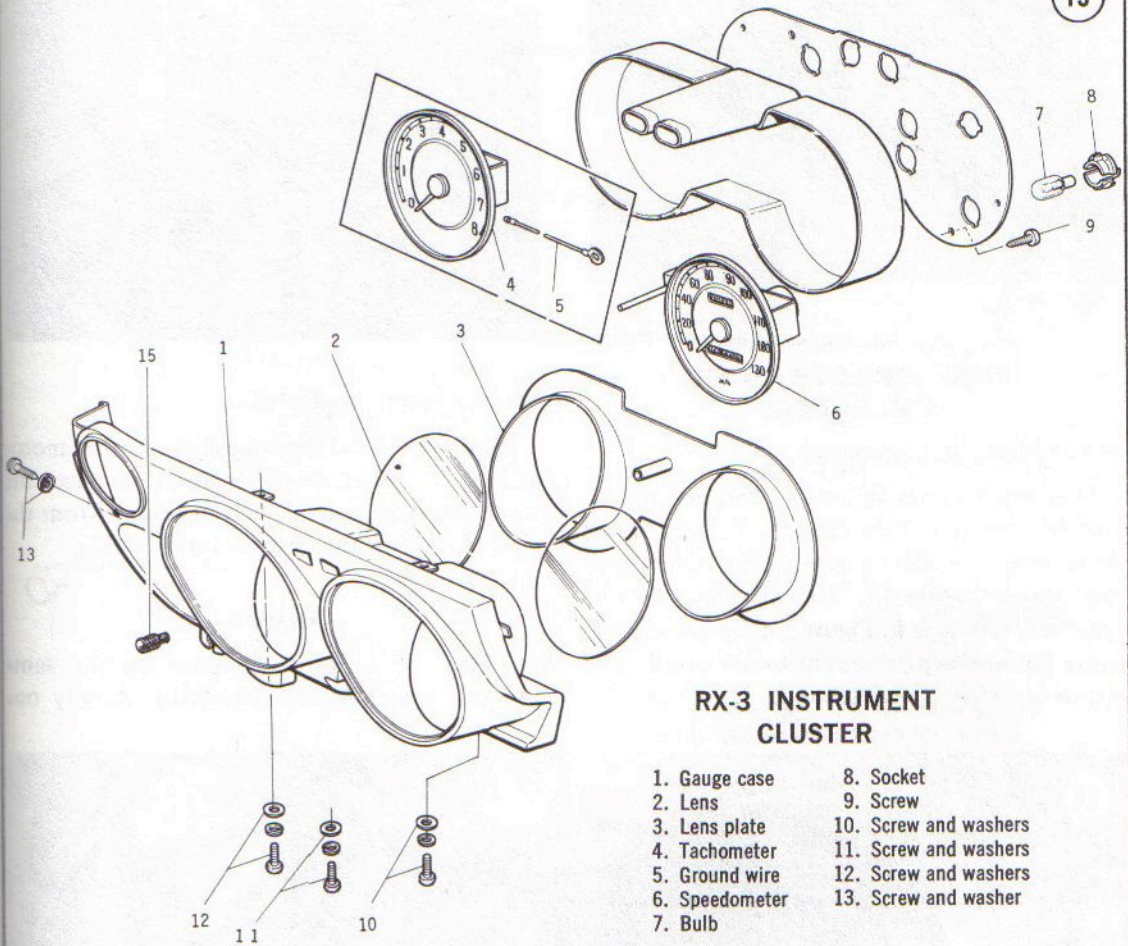
Whenever a fuse blows, find out the cause before replacing. Usually the trouble is a short

circuit in the wiring. This may be caused by worn insulation or a wire that works its way loose and shorts to ground. Spare fuses can be stored inside the fuse box cover.

### CAUTION

*Never substitute tinfoil or wire for a fuse. An overload could cause a fire and complete loss of the car.*

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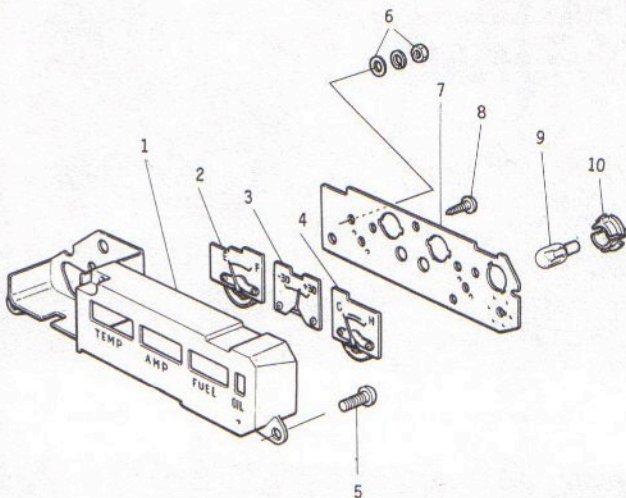


**RX-3 INSTRUMENT CLUSTER**

- |                |                       |
|----------------|-----------------------|
| 1. Gauge case  | 8. Socket             |
| 2. Lens        | 9. Screw              |
| 3. Lens plate  | 10. Screw and washers |
| 4. Tachometer  | 11. Screw and washers |
| 5. Ground wire | 12. Screw and washers |
| 6. Speedometer | 13. Screw and washer  |
| 7. Bulb        |                       |

7

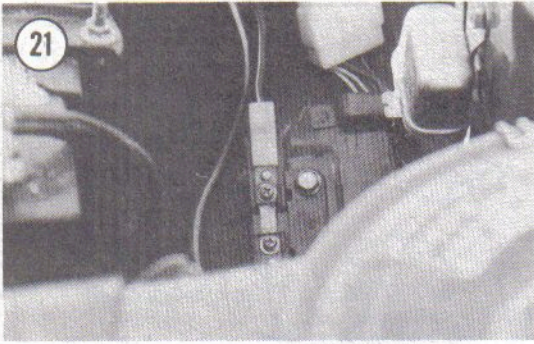
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**RX-3 GAUGE ASSEMBLY**

- |                          |
|--------------------------|
| 1. Gauge case            |
| 2. Fuel gauge            |
| 3. Ammeter               |
| 4. Temperature gauge     |
| 5. Screw                 |
| 6. Nut and washers       |
| 7. Printed circuit board |
| 8. Screw                 |
| 9. Bulb                  |
| 10. Socket               |

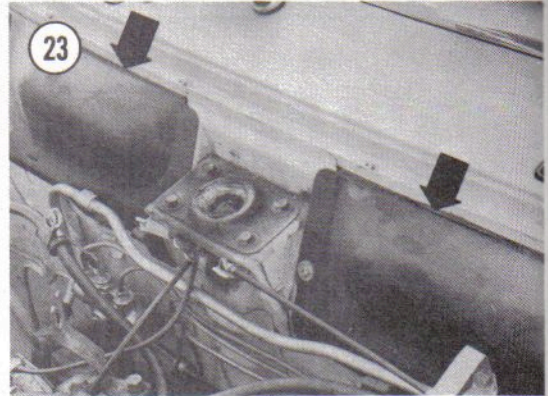
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### WINDSHIELD WASHER AND WIPERS

#### Wiper Motor Replacement

The wiper motor is located between the instrument panel and the firewall. To gain access to the motor on RX-2's, remove the covers from the firewall (**Figure 23**). The motor can then be removed, referring to **Figure 24**. On RX-3's, remove the cowl top grille. The motor can then be removed, referring to **Figure 25**.

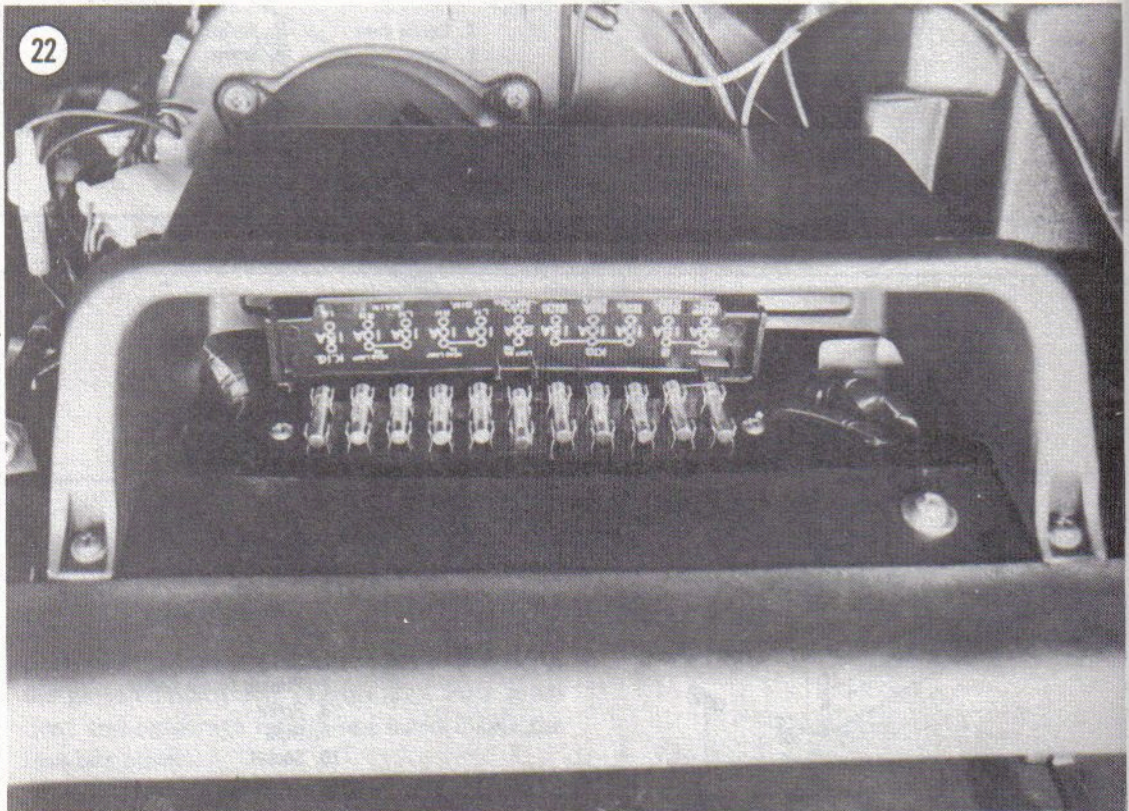


#### Washer Motor Replacement

**Figure 26** shows the windshield washer motor and tank. To replace the motor, disconnect the wires and hose, then detach the motor from the tank. Install in the reverse order.

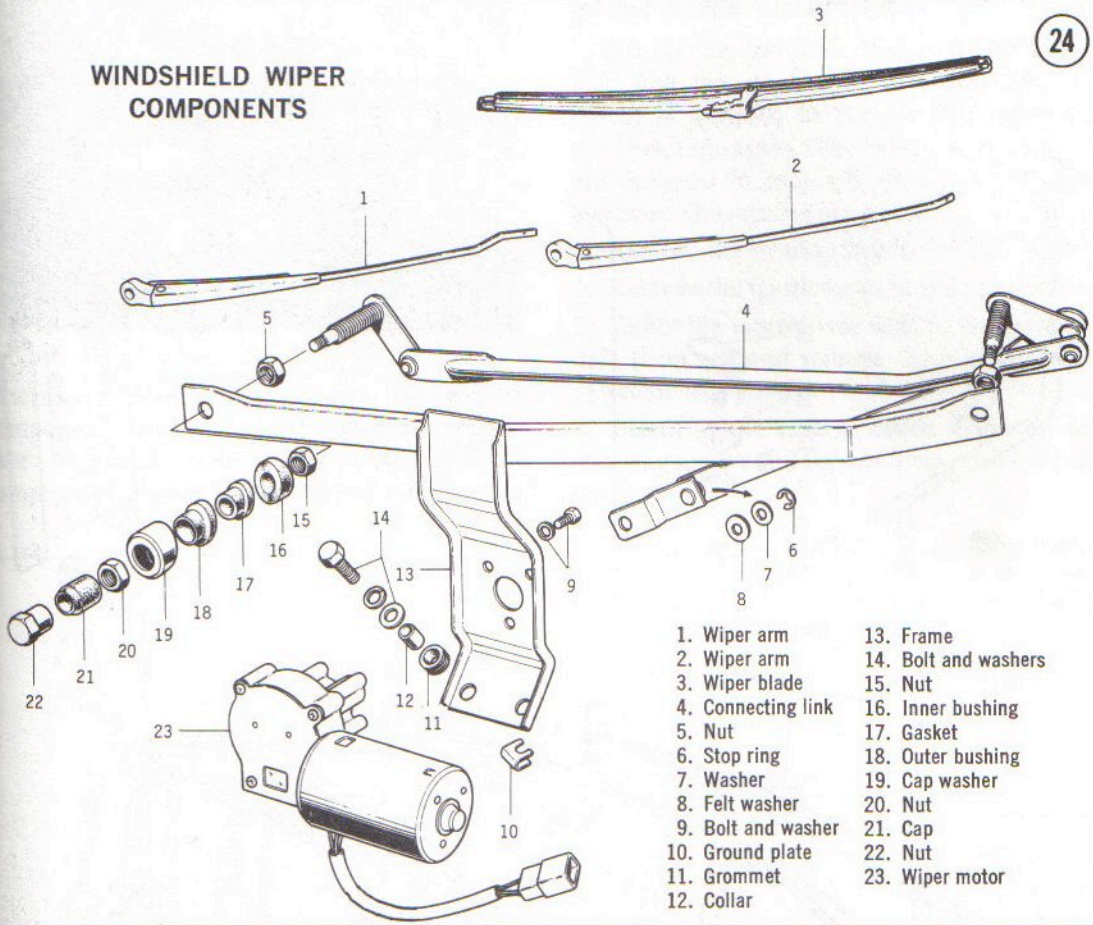
### HORNS

There are 2 horns, mounted on the same bracket behind the left headlight. If only one



**WINDSHIELD WIPER COMPONENTS**

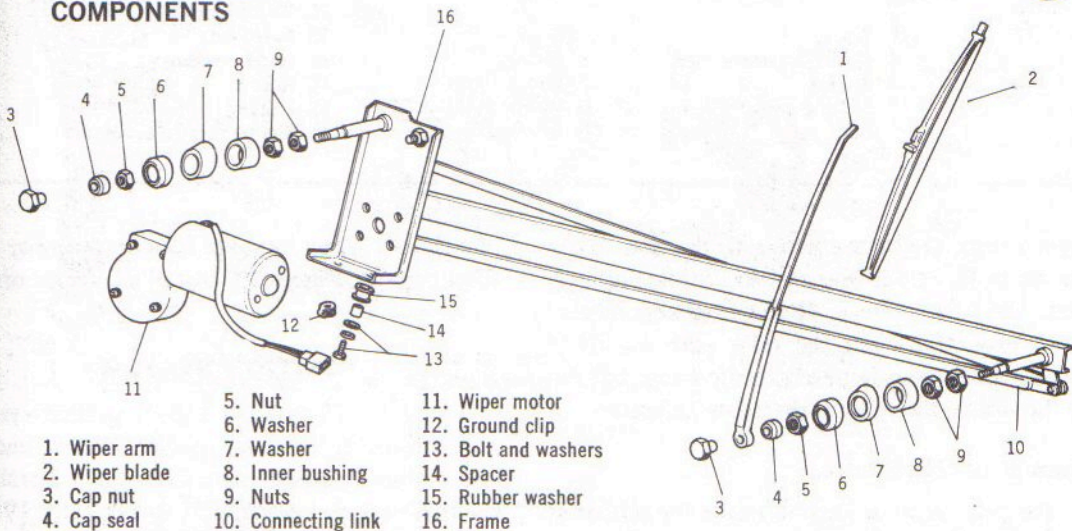
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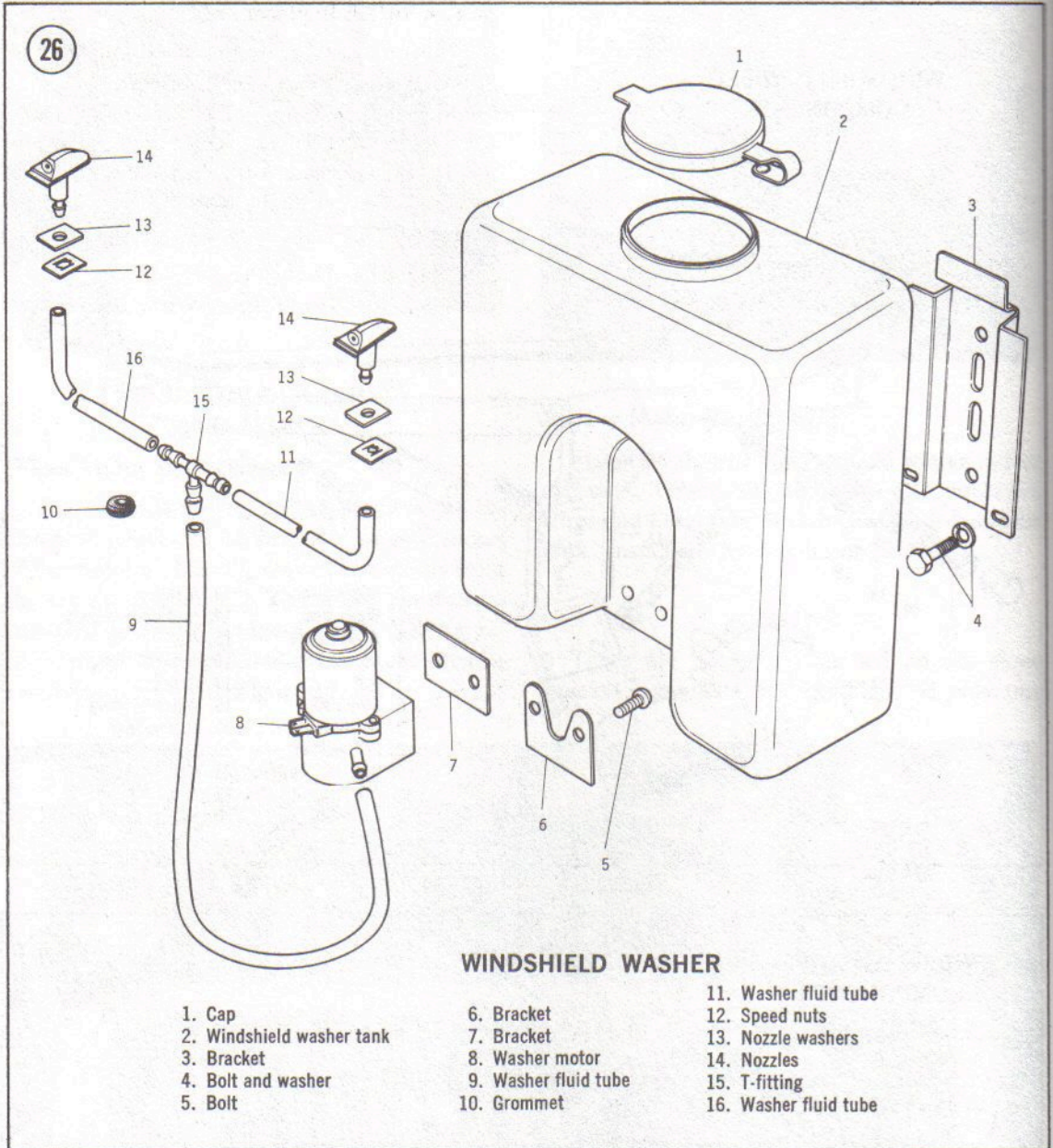
- |                    |                      |
|--------------------|----------------------|
| 1. Wiper arm       | 13. Frame            |
| 2. Wiper arm       | 14. Bolt and washers |
| 3. Wiper blade     | 15. Nut              |
| 4. Connecting link | 16. Inner bushing    |
| 5. Nut             | 17. Gasket           |
| 6. Stop ring       | 18. Outer bushing    |
| 7. Washer          | 19. Cap washer       |
| 8. Felt washer     | 20. Nut              |
| 9. Bolt and washer | 21. Cap              |
| 10. Ground plate   | 22. Nut              |
| 11. Grommet        | 23. Wiper motor      |
| 12. Collar         |                      |

**WINDSHIELD WIPER COMPONENTS**

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- |                |                     |                      |
|----------------|---------------------|----------------------|
| 1. Wiper arm   | 5. Nut              | 11. Wiper motor      |
| 2. Wiper blade | 6. Washer           | 12. Ground clip      |
| 3. Cap nut     | 7. Washer           | 13. Bolt and washers |
| 4. Cap seal    | 8. Inner bushing    | 14. Spacer           |
|                | 9. Nuts             | 15. Rubber washer    |
|                | 10. Connecting link | 16. Frame            |



horn works, check the wiring to the non-working horn. If neither horn works, check the horn fuse, then the battery. If the fuse and battery work properly, check the relay with a 12-volt test lamp. If there is power to the relay, but not to the horns, the relay is probably defective.

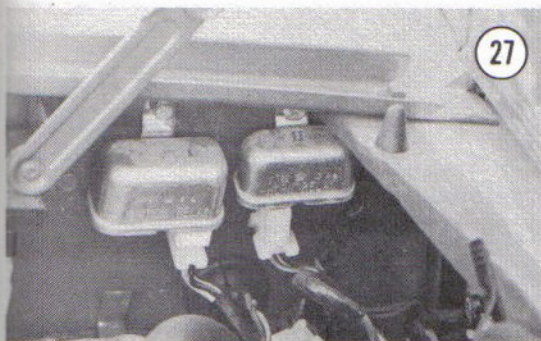
### Horn Relay Replacement

The horn relay is located inside the left front fender, and is labeled. To remove the relay, dis-

connect its wires, remove attaching screw, and lift it out. See **Figure 27**. Install in reverse order.

### IGNITION SYSTEM

The 1971-73 cars use a dual ignition system consisting of the battery, ignition switch, leading and trailing ignition coils, leading and trailing distributors, and associated wiring. The 1974's use a single distributor. The following section

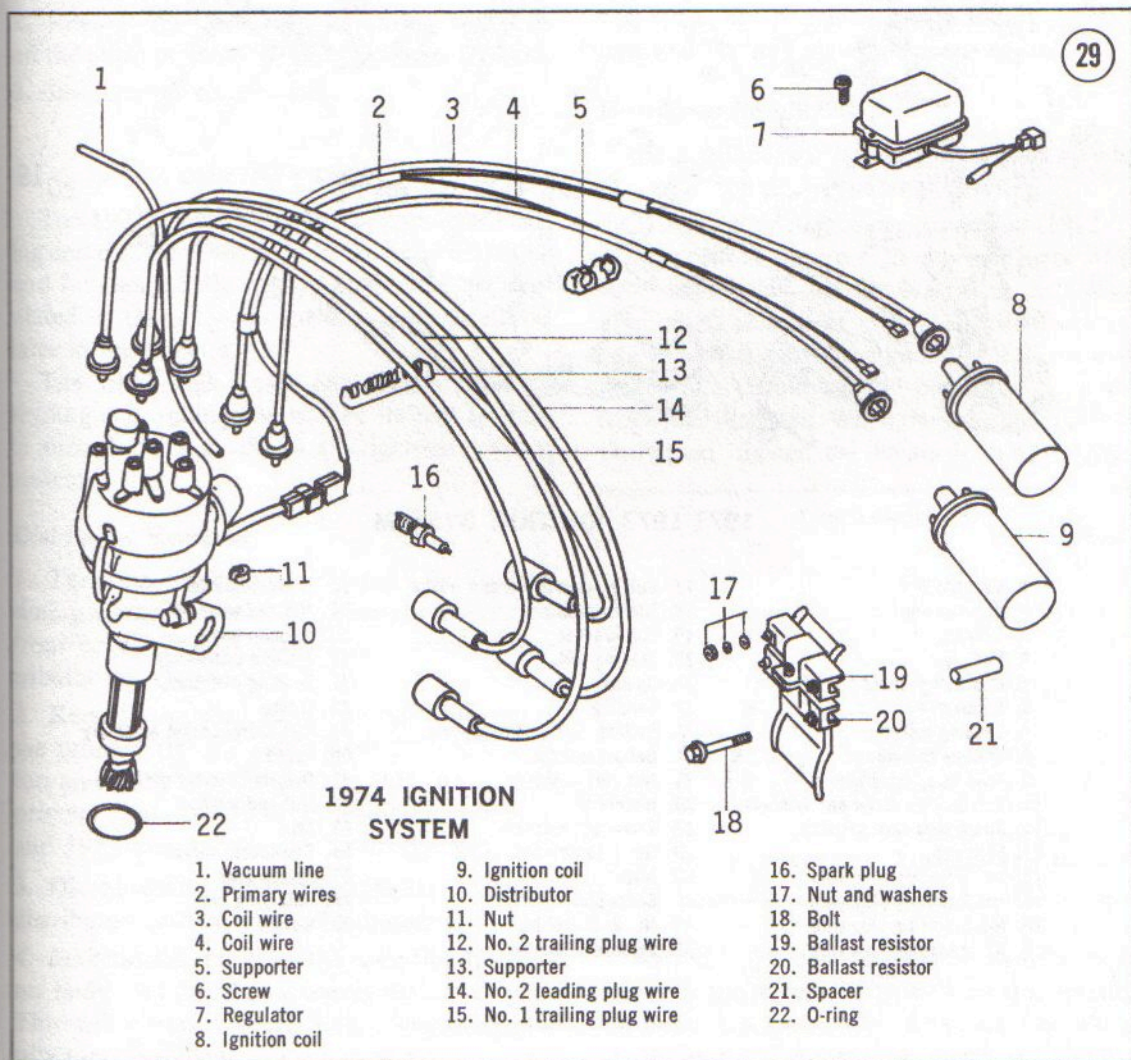


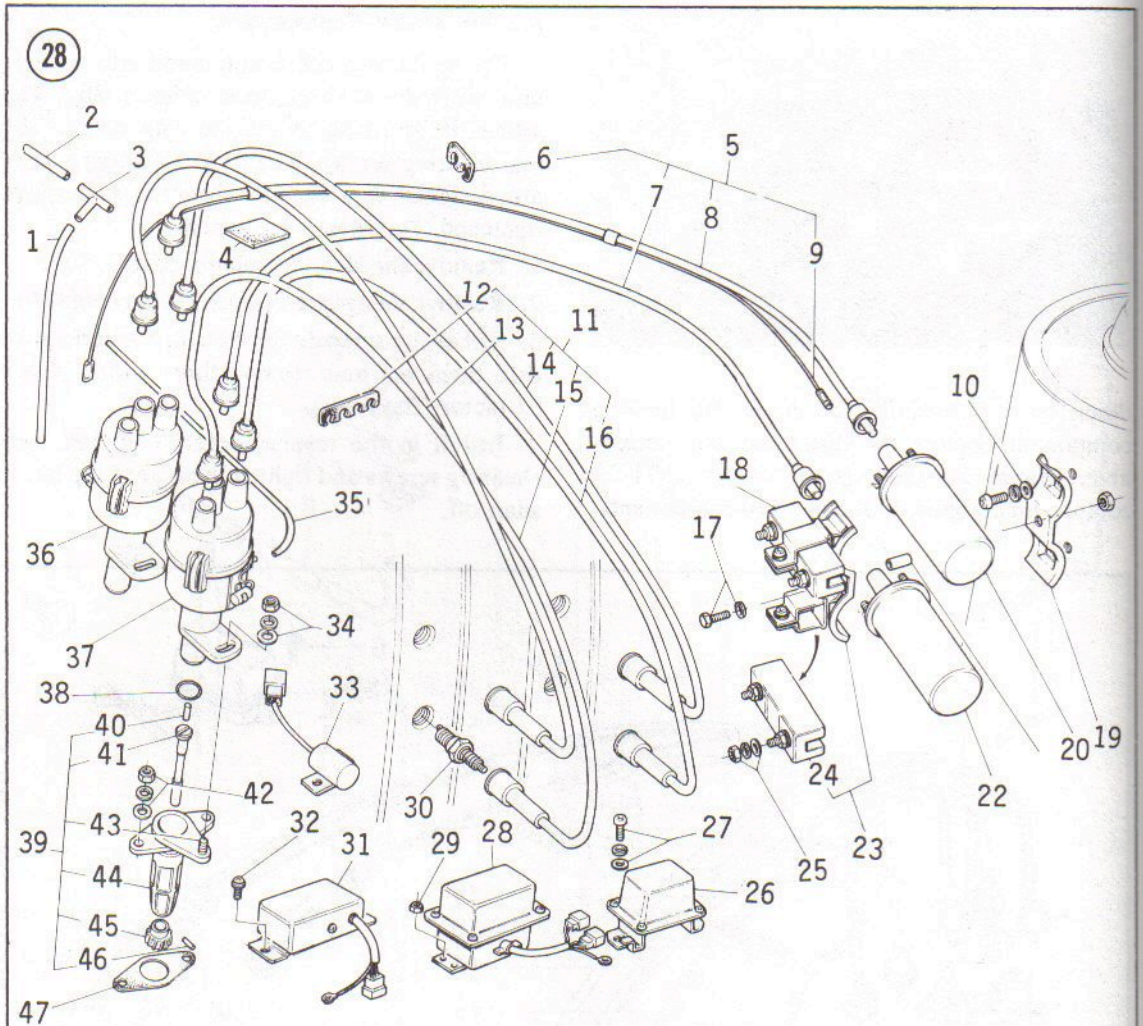
**Ignition Switch Replacement**

The ignition switch is combined into a single unit with the steering lock (Figure 30). The switch is attached to the steering column by self-shearing screws. The heads of these screws are designed to snap off when the screws are tightened. To replace the switch:

1. Remove the steering column cover.
2. Remove the ignition switch wiring connector.
3. Either file screwdriver slots in the screws, or drill them out and remove them with a screw extractor (Easy-out).
4. Install in the reverse order. Use new self-shearing screws and tighten them until the heads snap off.

describes replacement procedures. No ignition components except the distributor are repairable. Figure 28 (next page) shows 1971-73 components. Figure 29 shows 1974 components.

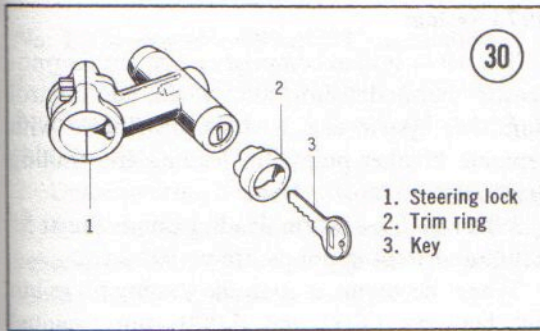




### 1971-1973 IGNITION SYSTEM

- |                                    |                                   |                                 |
|------------------------------------|-----------------------------------|---------------------------------|
| 1. Vacuum line                     | 17. Coil bracket screw and washer | 33. Thermodetector              |
| 2. Vacuum line                     | 18. Ballast resistor              | 34. Nut and washers             |
| 3. T-fitting                       | 19. Coil bracket                  | 35. Vacuum line                 |
| 4. Pad                             | 20. Trailing coil                 | 36. Trailing distributor        |
| 5. Coil wire harness               | 21. Spacer                        | 37. Leading distributor         |
| 6. Supporter                       | 22. Leading coil                  | 38. O-ring                      |
| 7. Leading coil wire               | 23. Ballast resistor and bracket  | 39. Distributor socket assembly |
| 8. Trailing coil wire              | 24. Ballast resistor              | 40. Insert                      |
| 9. Trailing primary wire           | 25. Nut and washers               | 41. Distributor drive shaft     |
| 10. Coil bracket screw and washers | 26. Regulator                     | 42. Nut and washers             |
| 11. Spark plug wire harness        | 27. Screw and washers             | 43. Stud                        |
| 12. Supporter                      | 28. No. 1 control box             | 44. Distributor socket          |
| 13. No. 1 trailing plug wire       | 29. Nut                           | 45. Driven gear                 |
| 14. No. 2 trailing plug wire       | 30. Spark plug                    | 46. Retaining pin               |
| 15. No. 1 leading plug wire        | 31. No. 2 control box             | 47. Gasket                      |
| 16. No. 2 leading plug wire        | 32. Screw and washer              |                                 |





### Ignition Coil Replacement

Separate coils are used for leading and trailing ignitions. The coils are not interchangeable.

1. Disconnect the coil wires. See Figure 28 (1971-73) or Figure 29 (1974).
2. Remove the coil bracket securing bolt. Lift off the outer bracket half and remove the coil(s).
3. Install in the reverse order.

## DISTRIBUTORS

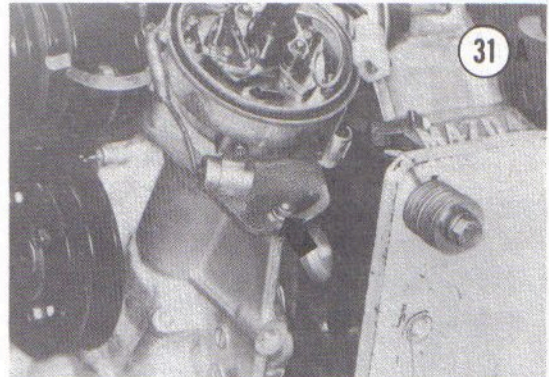
The 1971-73 engine uses 2 distributors, leading and trailing. Timing of the leading distributor and function of the trailing distributor are regulated by the ignition control system, discussed later in this chapter.

The 1974 engine uses one distributor, with leading and trailing points. The trailing ignition is turned on and off by the ignition control system.

### Distributor Removal

1. Turn the engine by hand until the leading timing mark aligns with the pointer on the engine front cover. This is necessary for correct distributor installation.
2. Remove the distributor cap and disconnect the primary (thin) lead(s). Both 1971 distributors and 1972-73 trailing distributors use a single primary lead. The 1972-73 leading distributors and 1974 distributors use 2 primary leads.
3. Disconnect the vacuum line (1971-73 leading distributors and all 1974 distributors).
4. Make match marks on the rotor tip, distributor body, and distributor socket with a felt pen. This will ensure correct timing when the distributor is installed.

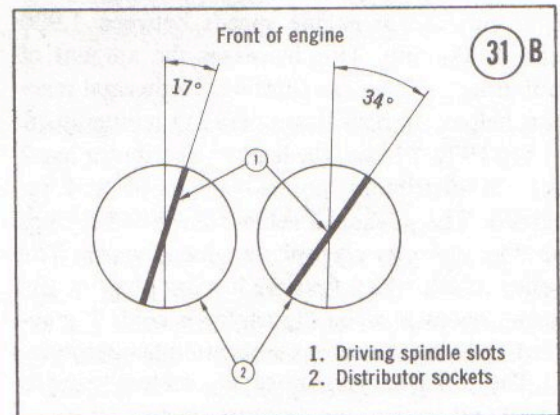
5. Remove the distributor hold-down nut (Figure 31A) and lift distributor out of the engine.



6. On 1971-73 cars, the distributor sockets (39, Figure 28) can be removed if necessary. Undo 2 nuts and lift the socket out of the engine.

### Distributor Installation

1. Be sure the leading timing mark lines up with the pointer on the engine front cover.
2. If distributor sockets were removed (1971-73 cars), position them as shown in Figure 31B. After installation, the slot in leading distributor drive shaft should be  $34^\circ$  clockwise from the engine's front-rear direction. The trailing drive shaft's slot should be  $17^\circ$  clockwise from the front-rear direction. When the slots are correctly positioned, tighten the socket hold-down nuts.



3. On 1971-73 cars, install the distributor(s), lining up the match marks on rotor tip, distributor body, and socket. On 1974 cars, line up the dimple in the distributor gear with the notch at

the bottom of the distributor housing. When the distributor is correctly positioned, tighten the hold-down nut.

*NOTE: If both distributors have been removed (1971-73) be sure to reinstall them in the correct sockets. The leading distributor goes in the socket nearest the left side of the engine; the trailing distributor goes toward the right.*

4. Install the distributor cap and connecting wires. On 1971-73 cars, be careful to connect the wires to the correct distributor.
5. Check ignition timing as described in Chapter Two. Adjust if necessary.

### IGNITION CONTROL SYSTEM

The ignition control system is designed to speed thermal reactor warm-up. On 1971 and 1974 cars, the system cuts out the trailing ignition at specified engine temperatures and speeds. On 1972-73 cars, the system also retards the leading ignition timing when the engine is cold.

#### 1971-1973 System

When the engine is warm, the leading distributor fires its spark plugs at top dead center (TDC) and the trailing distributor fires its plugs at 10° after top dead center (ATDC).

When the engine is cold, the trailing distributor cuts out at engine speeds between 1,900 and 4,000 rpm. This increases the amount of unburned exhaust gas entering the thermal reactor, helping to heat it to operating temperature.

On 1972-73 cars, the leading distributor has 2 sets of distributor points—advanced and retarded. The advanced set, which fires its plugs at TDC, operates when the engine is warm. The retarded set, which fires the leading plugs at 10° ATDC, operates when the engine is cold. The retarded timing increases combustion temperature.

The 1972-73 version of the system consists of oil and coolant temperature sensors (thermosensors), thermodetector, vacuum switch, choke switch, and 2 control boxes. The 1971 system is similar, but does not use the No. 2 control box, oil temperature sensor, choke switch, or retarded points in the leading distributor.

#### 1974 System

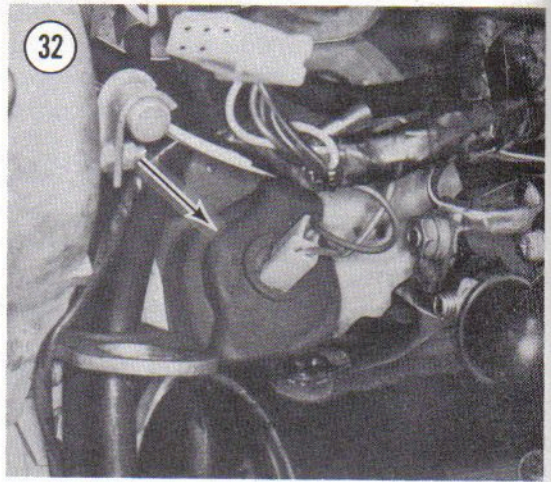
The 1974 system comprises a coolant thermosensor, thermodetector, idle switch, and control unit. The system uses a single distributor with separate breaker points for leading and trailing ignitions.

When engine is warm, leading points fire at 5° ATDC, and trailing points fire at 10° ATDC.

When the engine is cold, the trailing plugs cut out between 1,200 and 4,000 rpm (manual transmission) or 1,400 and 4,800 rpm (automatic transmission). During deceleration or outside the specified speed range, the trailing plugs will ignite.

#### No. 1 Coolant Thermosensor Test

The No. 1 thermosensor is mounted in a coolant passage on top of the engine (**Figure 32**). It signals the No. 1 control box (1971-73) or control unit (1974) when the coolant reaches operating temperature. This is the only thermosensor used on 1971 and 1974 cars.



1. Detach the wiring connector from the thermosensor. Check for visible damage.
2. Connect an ohmmeter between the thermosensor terminals. With the coolant temperature below 86° F (engine cold), the ohmmeter should indicate more than 7,000 ohms. With the coolant temperature above 156° F (engine warm), the ohmmeter should show less than 2,300 ohms. Replace the thermosensor if the readings aren't within specifications.

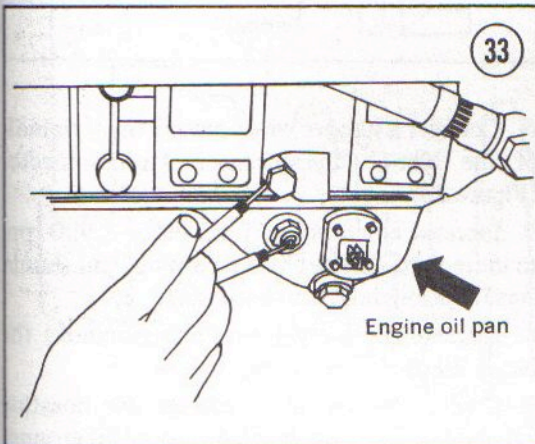
**No. 1 Thermosensor Removal/Installation**

1. Remove the air cleaner (see Chapter Five).
2. Remove the starter as described earlier in this chapter.
3. Detach wiring connector from thermosensor.
4. Remove the boot from the top of the thermosensor. Remove 2 screws and lift the thermosensor out of the engine.
5. Install in the reverse order.

**No. 2 Thermosensor Test**

The No. 2 thermosensor, mounted in the oil pan, signals the No. 2 control box to retard the leading ignition timing when the engine is cold. It is not used on 1971 or 1974 cars.

1. Disconnect the wire from the thermosensor. Check for visible damage.
2. Connect an ohmmeter between the thermosensor and a convenient ground (**Figure 33**). With coolant temperature below 86° F (engine cold), the ohmmeter should indicate more than 5,000 ohms. With coolant temperature above 156° F (engine warm), the ohmmeter should show less than 2,000 ohms. Replace the thermosensor if not within specifications.

**No. 2 Thermosensor Removal/Installation**

1. Drain the oil from the engine.
2. Disconnect the wire from the thermosensor, then unscrew it from the oil pan.
3. Install in the reverse order. After installation, fill the engine with an oil recommended in Chapter Two.

**Thermodetector Test**

The thermodetector (**Figure 34**) prevents the No. 1 (coolant) thermosensor from being affected by atmospheric temperatures. It is mounted near the front of the engine compartment. One wire is green with a blue tracer; the other is green with a red tracer.



To test, detach the thermodetector from the car harness. Connect an ohmmeter between the wires running to the thermodetector. Compare ohmmeter reading with **Table 1**. Replace the thermodetector if not within specifications.

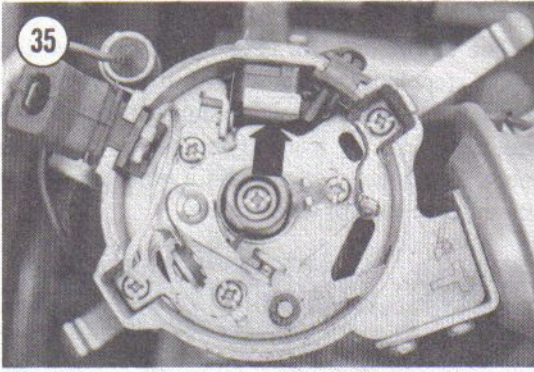
**Table 1 VOLTAGE REGULATOR RESISTANCE**

Ambient temperature	Resistance ( $\pm 5\%$ )
-4° F (-20° C)	10,000 ohms
32° F (0° C)	3,000 ohms
68° F (20° C)	1,200 ohms
105° F (40° C)	500 ohms

**Vacuum Switch Test (1971-73)**

The vacuum switch (**Figure 35**) is located in the leading distributor on 1971 RX-2's. On 1972-73 cars, the switch was moved to the trailing distributor. The switch signals the No. 1 control box to cut in the trailing ignition when the engine is cold, but running at speeds below 1,900 rpm or above 4,000 rpm.

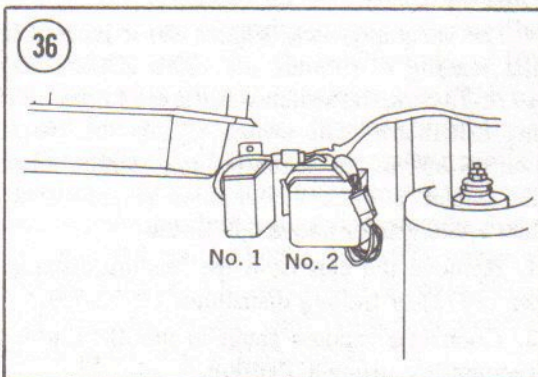
1. Remove the cap from the leading distributor (1971) or trailing distributor (1972-73).
2. Connect a vacuum gauge in the distributor's vacuum line, using a T-fitting.



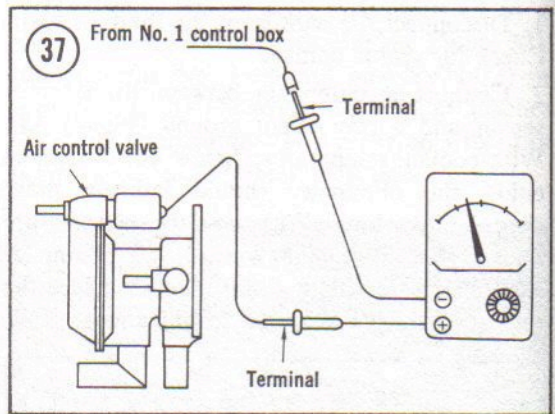
3. Suck on the end of the vacuum line and listen to the switch. It should click off before the vacuum reading reaches 7 inches. Let the vacuum drop to approximately 5 inches. The switch should click back on.
4. Install the distributor cap and reconnect the vacuum line.
5. Detach the wiring connector from the No. 1 thermosensor (Figure 32).
6. Connect a timing light to the trailing distributor. Start engine. At speeds below  $1,900 \pm 300$  rpm and above  $4,000 \pm 200$  rpm, the timing light should go off. Between those speeds, the light should go on. Replace the vacuum switch if not within specifications.

### No. 1 Control Box Test (1971-73)

The No. 1 control box regulates firing of the trailing ignition. It also regulates the air injection system's air control valve. On all sedans and coupes, the control boxes are located in the trunk (Figure 36). On RX-3 station wagons, the control boxes are behind the instrument panel near the glove box.



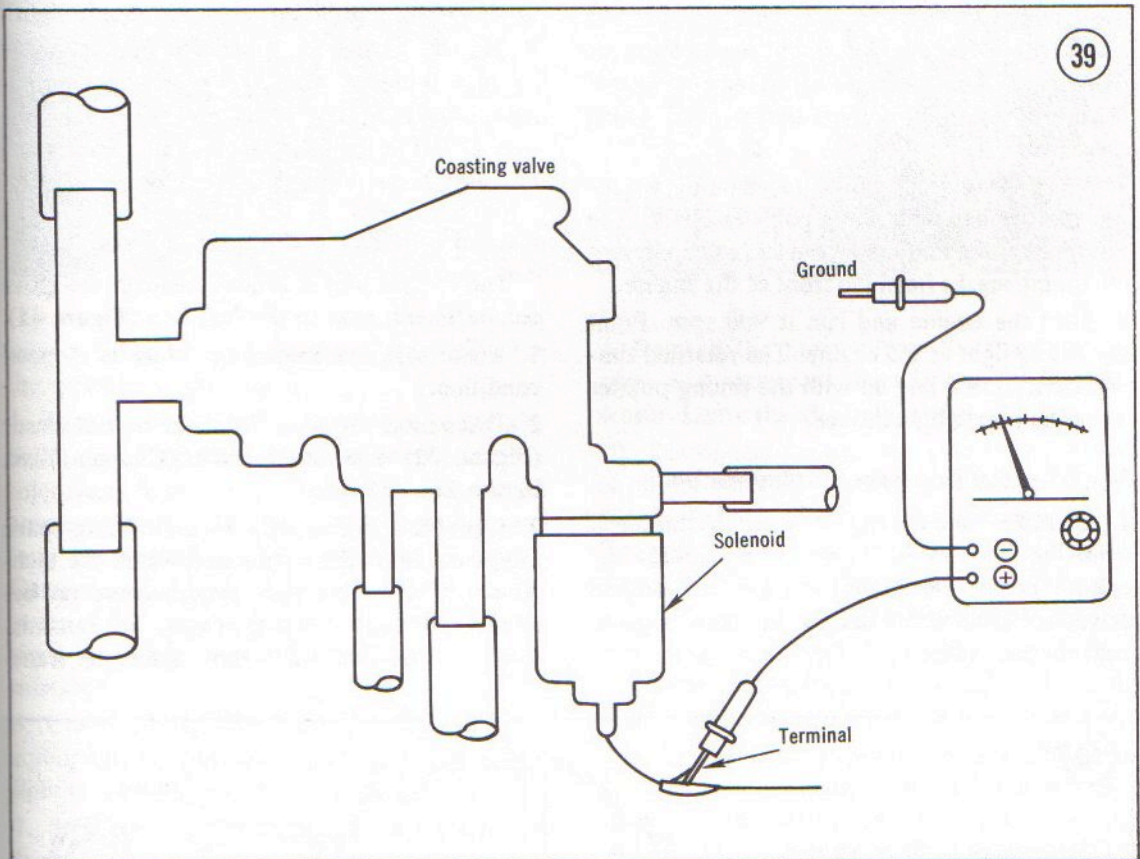
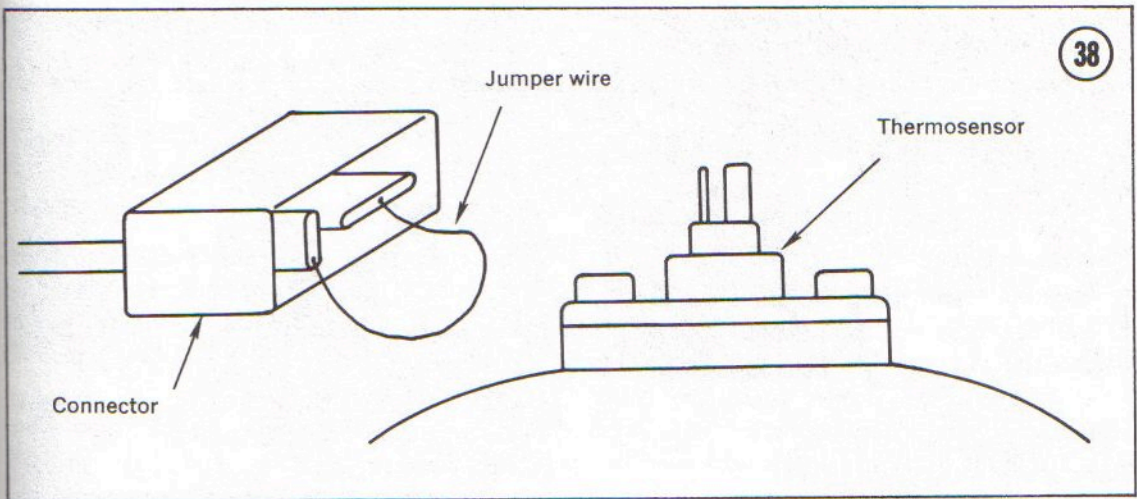
1. Warm engine to operating temperature.
2. Detach the connector from the No. 1 (coolant) thermosensor (Figure 32).
3. Connect a timing light to trailing distributor.
4. Run the engine. At speeds below  $1,900 \pm 300$  rpm and above  $4,000 \pm 200$  rpm, the timing light should go out. Above 4,200 rpm, the timing light should go on.
5. Disconnect the wire from the air control valve solenoid. Connect an ammeter between the disconnected ends of the wire (Figure 37). At engine speeds between 900 rpm and  $4,000 \pm 200$  rpm, the ammeter should indicate current flow. Above 4,200 rpm, the current flow should stop. After checking, reconnect wire to the solenoid.



6. Connect a jumper wire between the terminals of the No. 1 thermosensor wire connector (Figure 38).
7. Increase engine speed from below 1,900 rpm to more than 4,200 rpm. The timing light should stay on throughout the speed range.
8. Remove the jumper wire and reconnect the No. 1 thermosensor wires.
9. Connect an ammeter between the coasting valve solenoid terminal and a convenient ground. See Figure 39. Start the engine. There should be no current flow at idle. The current should come on at a speed between 1,250 and 1,550 rpm. Current flow should stop when engine speed drops to 1,100-1,300 rpm.

### No. 1 Control Box Removal/Installation

1. On sedans and coupes, remove the trim panel from the front of the trunk.



2. Referring to Figure 36, detach the control box wiring connector.
3. Remove the control box attaching nuts and lift it out.
4. Install in the reverse order.

#### No. 2 Control Box Test (1972-73)

The No. 2 control box regulates leading ignition timing. When the engine is cold, the control box routes ignition current through the leading distributor's retarded breaker points. When the

engine warms up, ignition current is routed through the advanced breaker points.

1. Disconnect the wires from No. 1 and No. 2 thermostats (Figures 32 and 33).
2. Disconnect the wires from the vacuum switch at the trailing distributor.
3. Connect a timing light to the front rotor's leading spark plug wire.
4. Start the engine. Run it at 2,000-2,500 rpm.
5. Pull the choke out approximately ½ inch to actuate the choke switch. Engine speed should drop 200-300 rpm. If not, check the choke switch as described later in this chapter. If the switch is good, push the choke back in. Turn off the engine.
6. Detach the leading distributor's primary wire connector. Connect a jumper wire between the black-and-white terminals in the connector. This disconnects the leading distributor's advanced breaker points, leaving only the retarded points connected.
7. Mark the retarded timing mark on the eccentric shaft pulley with white paint or chalk. The retarded timing mark is on the left when viewing the timing marks from the front of the engine.
8. Start the engine and run it 900 rpm. Point the timing light at the engine. The retarded timing mark should line up with the timing pointer when the timing light flashes.

### No. 2 Control Box Removal/Installation

1. On sedans and coupes, remove the trim panel from the front of the trunk. This exposes the control boxes. On station wagons, the control boxes are located behind the instrument panel near the glove box.

2. Referring to Figure 36, detach the wiring connector from the control box.
3. Remove the attaching nuts and take the control box out.
4. Install in the reverse order.

### Choke Switch Test

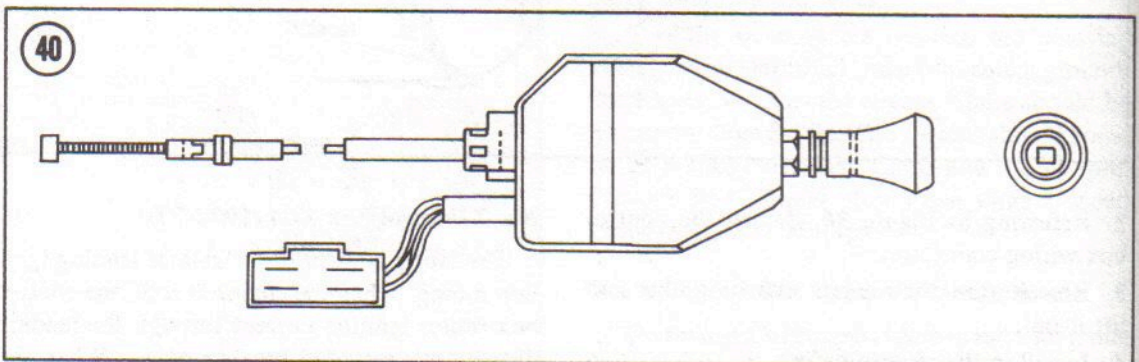
On 1971-73 cars, the choke switch signals the No. 2 control box when the choke knob is pulled out. On 1974 cars, the choke switch activates the automatic transmission kickdown solenoid to speed engine warm up.

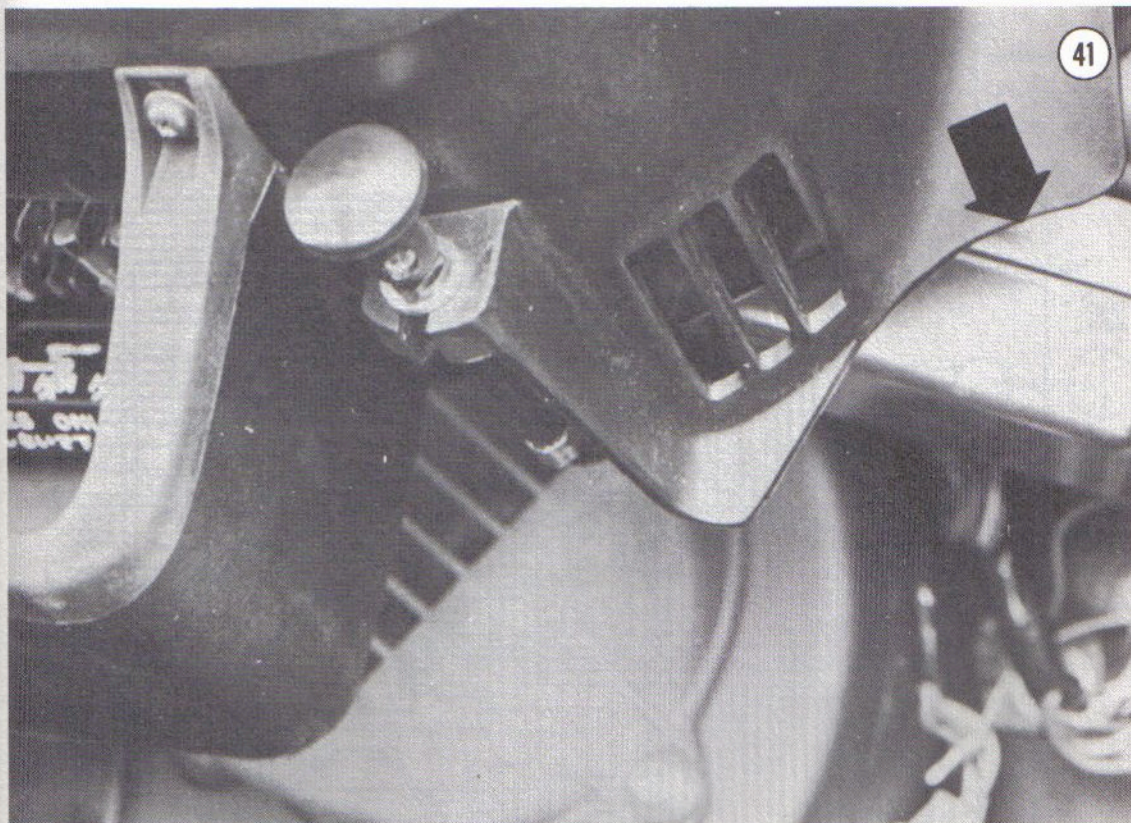
1. Disconnect the choke switch wires. See **Figure 40**.
2. Connect an ohmmeter or self-powered test lamp between the switch wires. The ohmmeter should show continuity (test lamp should light).
3. Pull the choke knob out. The circuit should be broken when the knob is pulled approximately 0.4 inch (all 1971-73; manual transmission 1974) or 1 inch (1974 automatic transmission). Replace the assembly if defective.

### Control Unit Test (1974)

The control unit is located beneath the glove compartment, next to the fuse box (**Figure 41**).

1. Make sure the control unit fuse is in good condition.
2. Disconnect the wires from the thermostat (Figure 32) and idle switch (Chapter Five, Figure 26).
3. Connect a timing light to the trailing spark plug wire. Start the engine and watch the tachometer. The timing light should come on between 3,600 and 4,400 rpm (manual transmission) or 4,320 and 5,280 rpm (automatic trans-



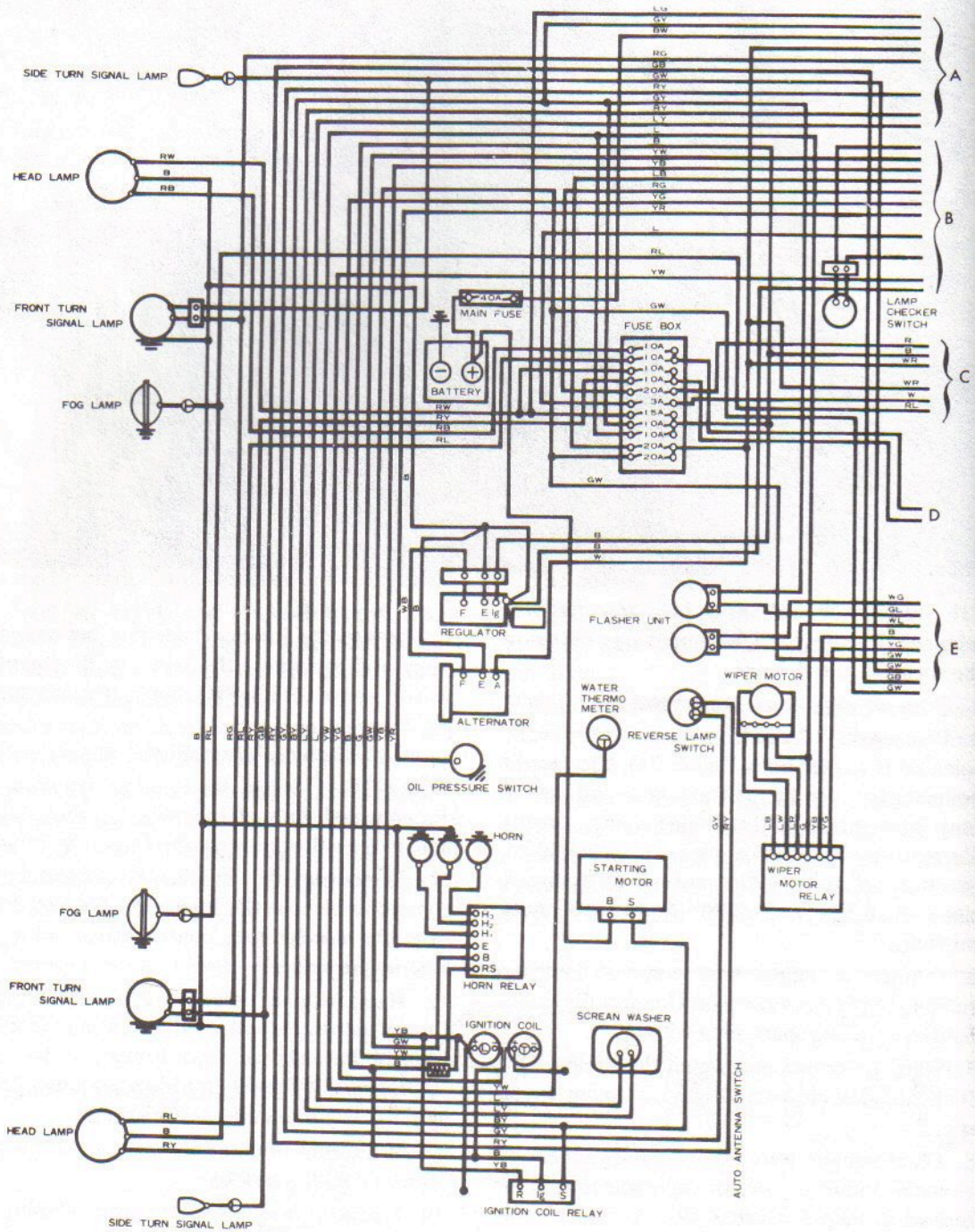


mission). The timing light should stay off below the specified speed range.

4. Turn off engine and disconnect timing light.
5. Disconnect the wire from the air control valve solenoid (Chapter Five, Figure 21). Connect an ammeter between the solenoid wire and ground (any bare metal in the engine compartment). Current should start flowing to the solenoid between 3,600 and 4,400 rpm (manual transmission) or 4,320 and 5,280 (automatic transmission).
6. Connect a jumper wire between the wires running to the thermosensor. Connect the timing light to a trailing spark plug wire.
7. Start the engine and watch the timing light. It should stay on from idle to maximum engine speed.
8. On automatic transmission cars, connect the ammeter to the air control valve solenoid as described in Step 5. Current flow to the solenoid should begin between 3,060 and 3,740 rpm. Below that speed there should be no current flow.

9. Remove the jumper from the thermosensor wires and reconnect the wires to the thermosensor. Leave the idle switch wires disconnected.
10. Disconnect the wire from the front solenoid on the deceleration control valve (Chapter Five, Figure 21). Connect an ammeter between the disconnected ends of the wire. Current should flow to the solenoid when the engine is idling.
11. Disconnect the air cleaner-to-deceleration control valve hose (D, Figure 21, Chapter Five) from the deceleration control valve. Plug the hole in the valve.
12. Raise engine speed to 2,000-3,000 rpm. Lower speed gradually and watch the ammeter. Current flow should start between 1,100 and 1,450 rpm (manual transmission) or 1,250 and 1,650 (automatic transmission).
13. If the control unit fails any part of this test, replace it with a new one.
14. Connect the idle switch wires. Unplug the deceleration control valve and connect the hose to it.

### WIRING DIAGRAM — 1972 RX-2

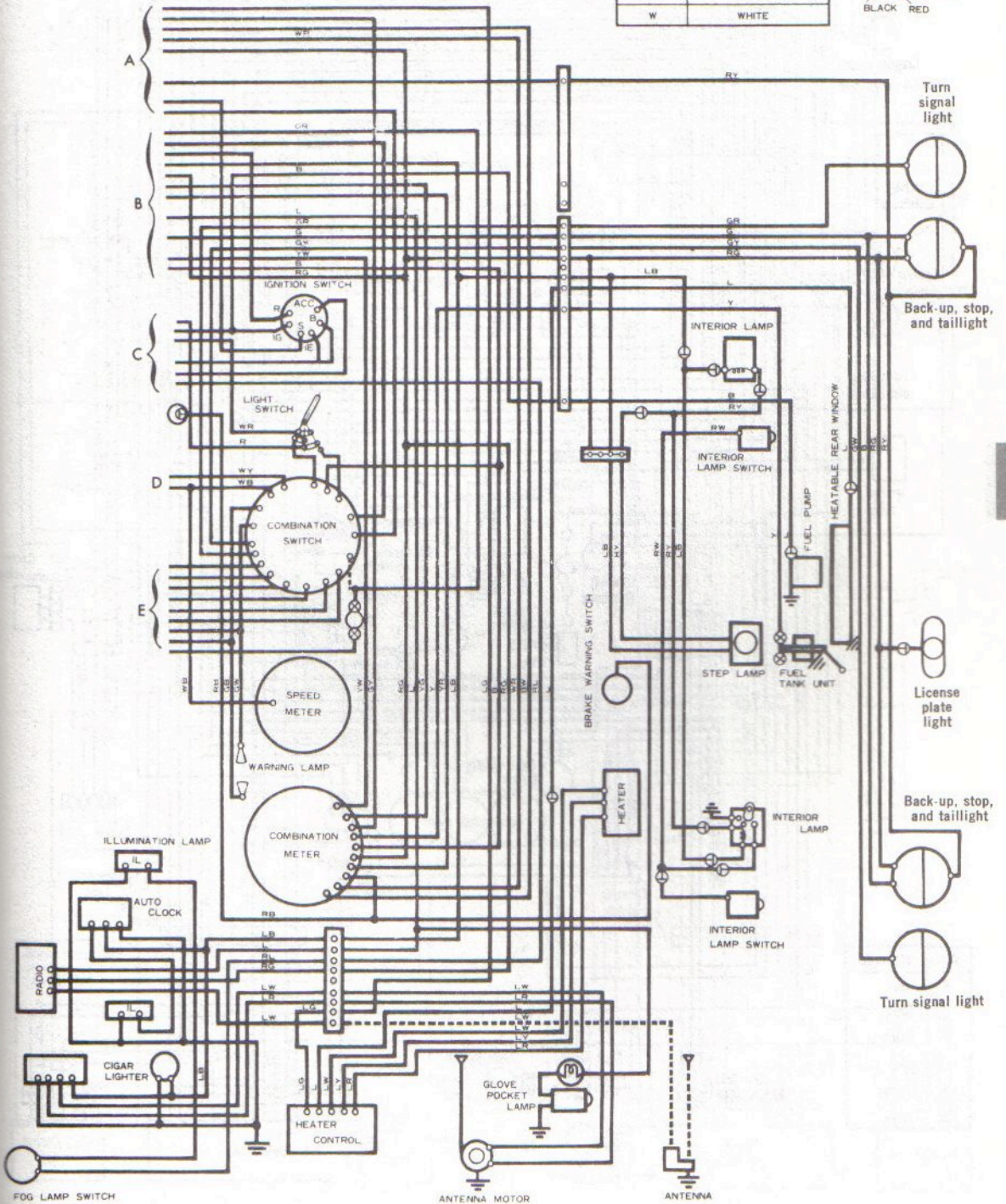
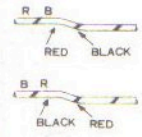




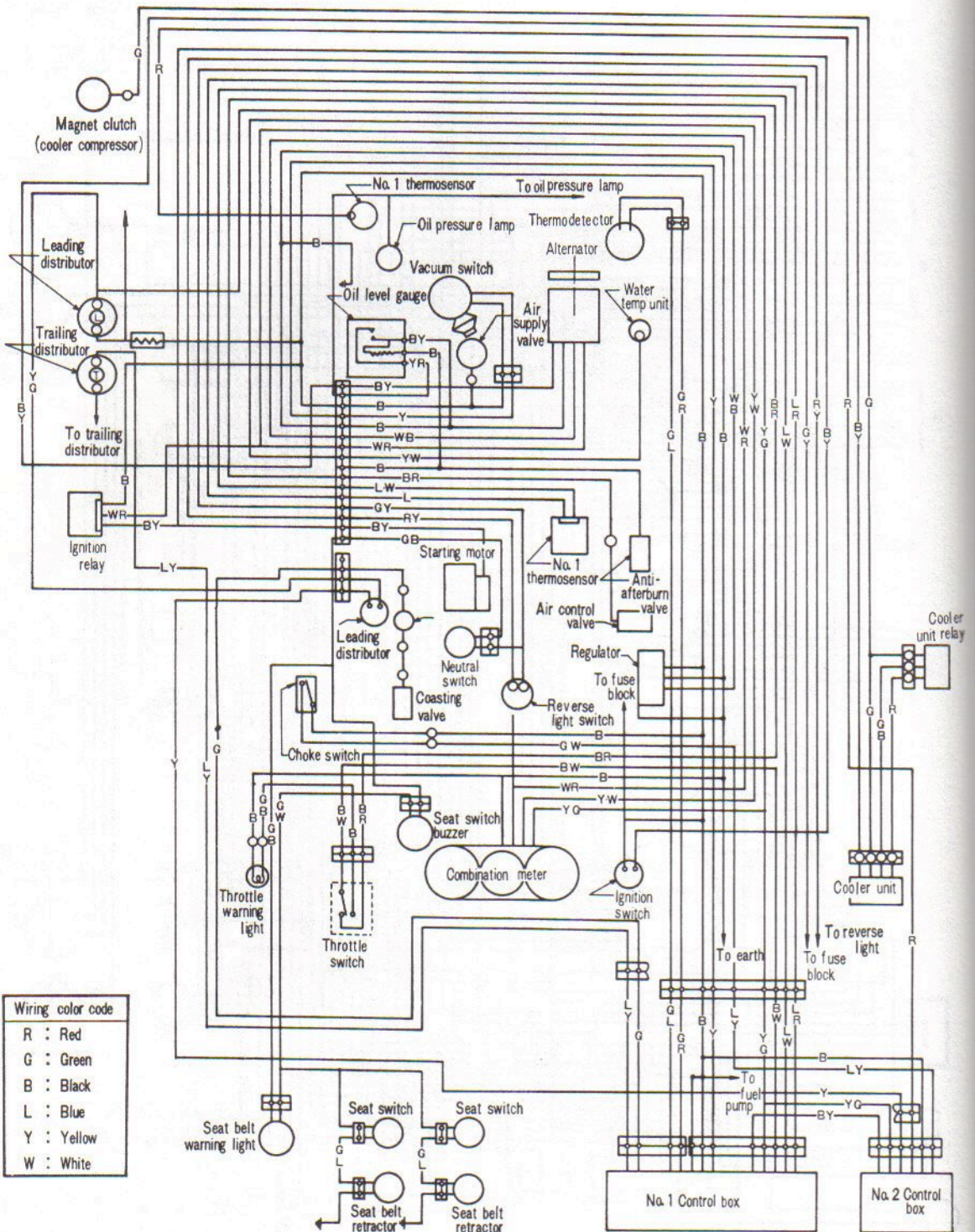
WIRING COLOR CODE

CODE	COLOR
R	RED
G	GREEN
B	BLACK
L	BLUE
Y	YELLOW
W	WHITE

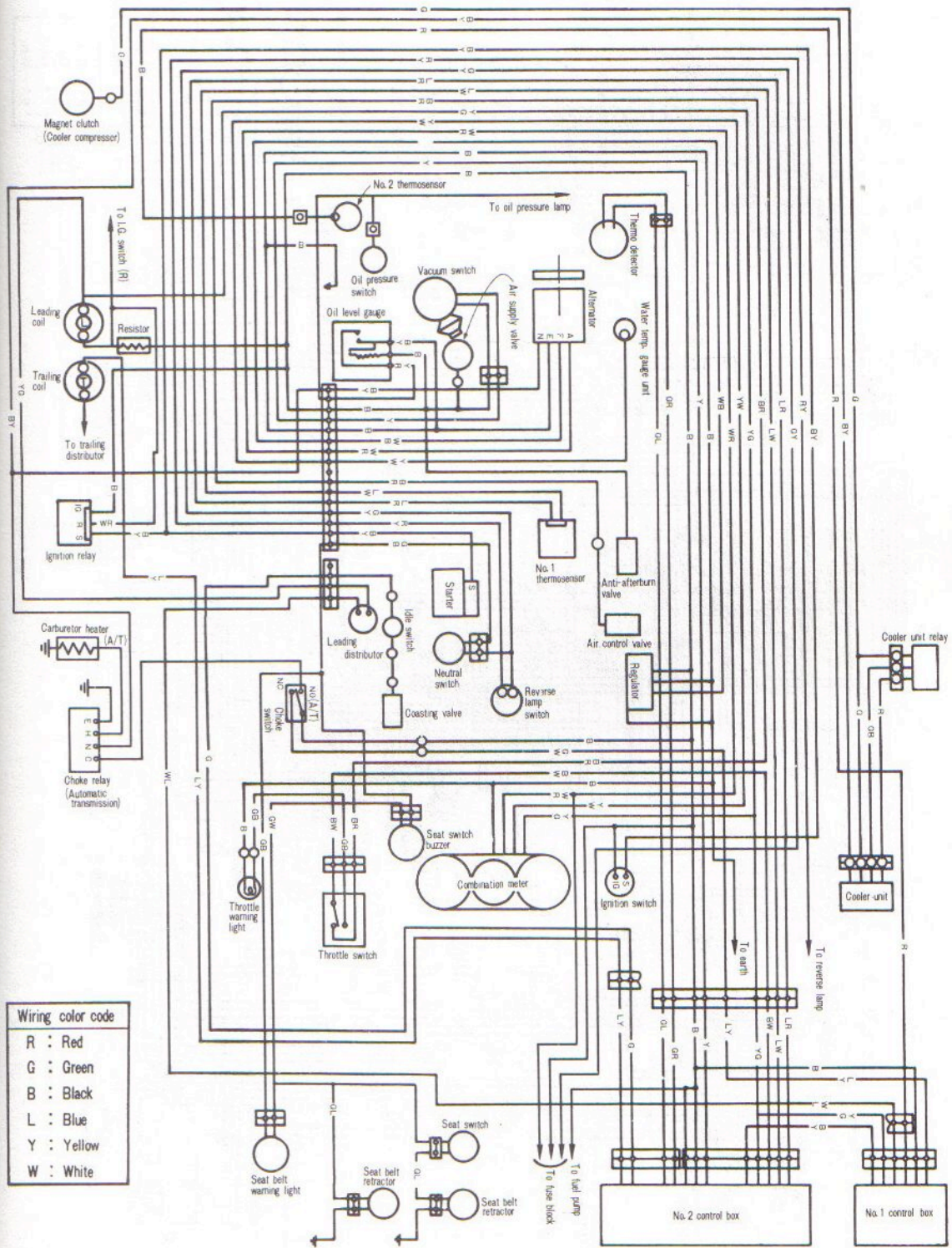
EXAMPLE



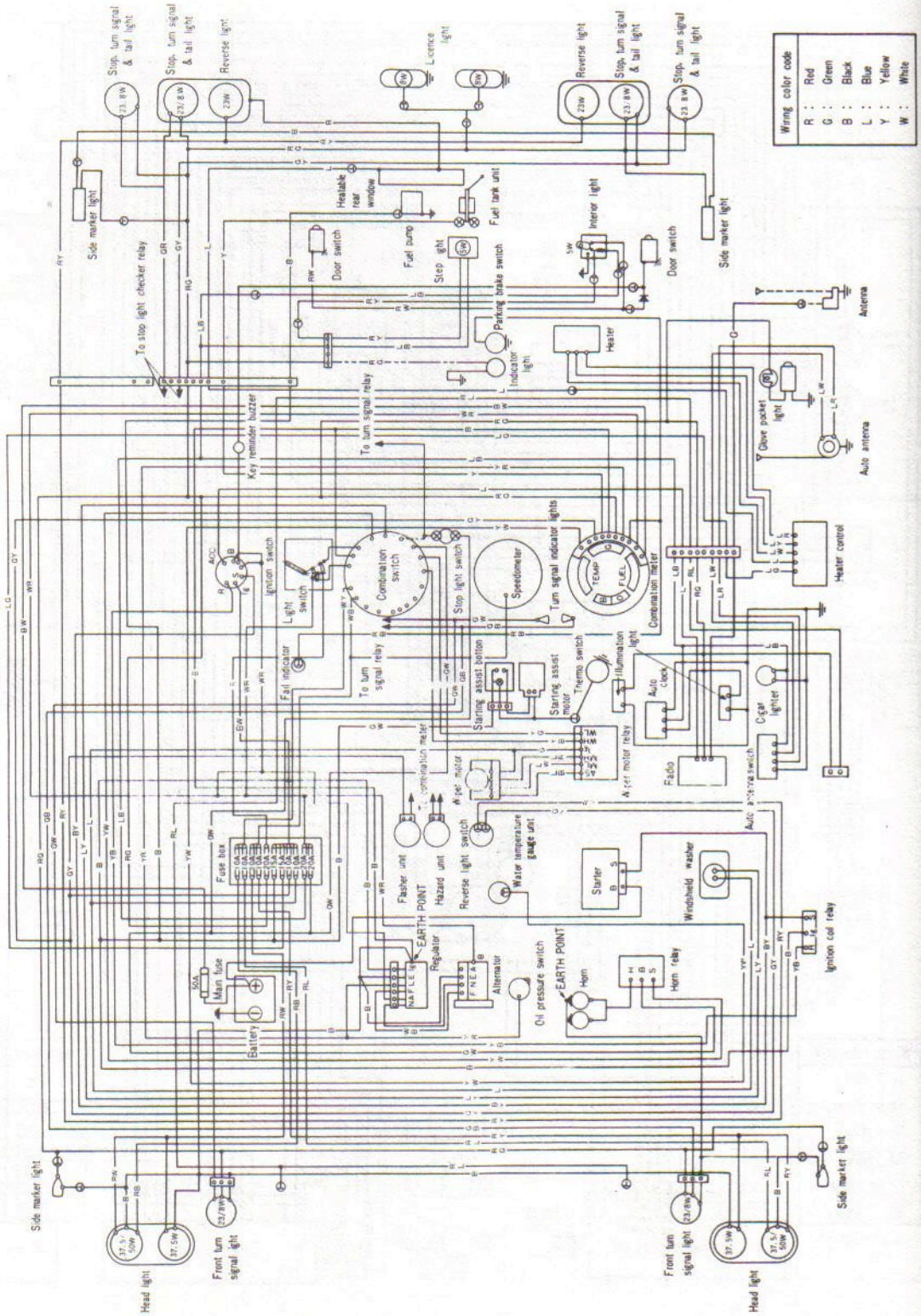
### 1972 RX-2 EMISSION CONTROL SYSTEM (Early Models)



## 1972 RX-2 EMISSION CONTROL SYSTEM (Late Models)

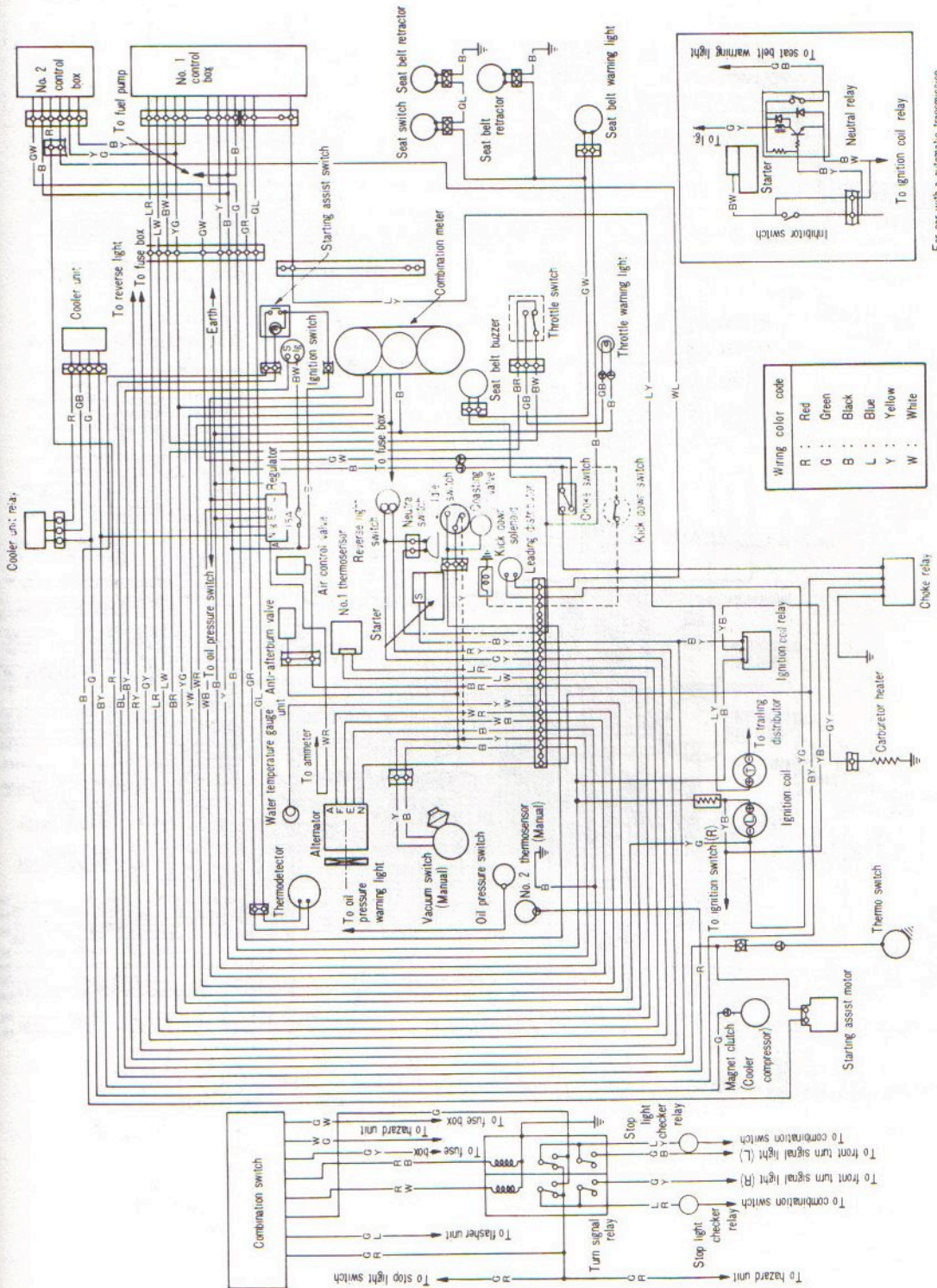


### WIRING DIAGRAM — 1973 RX-2

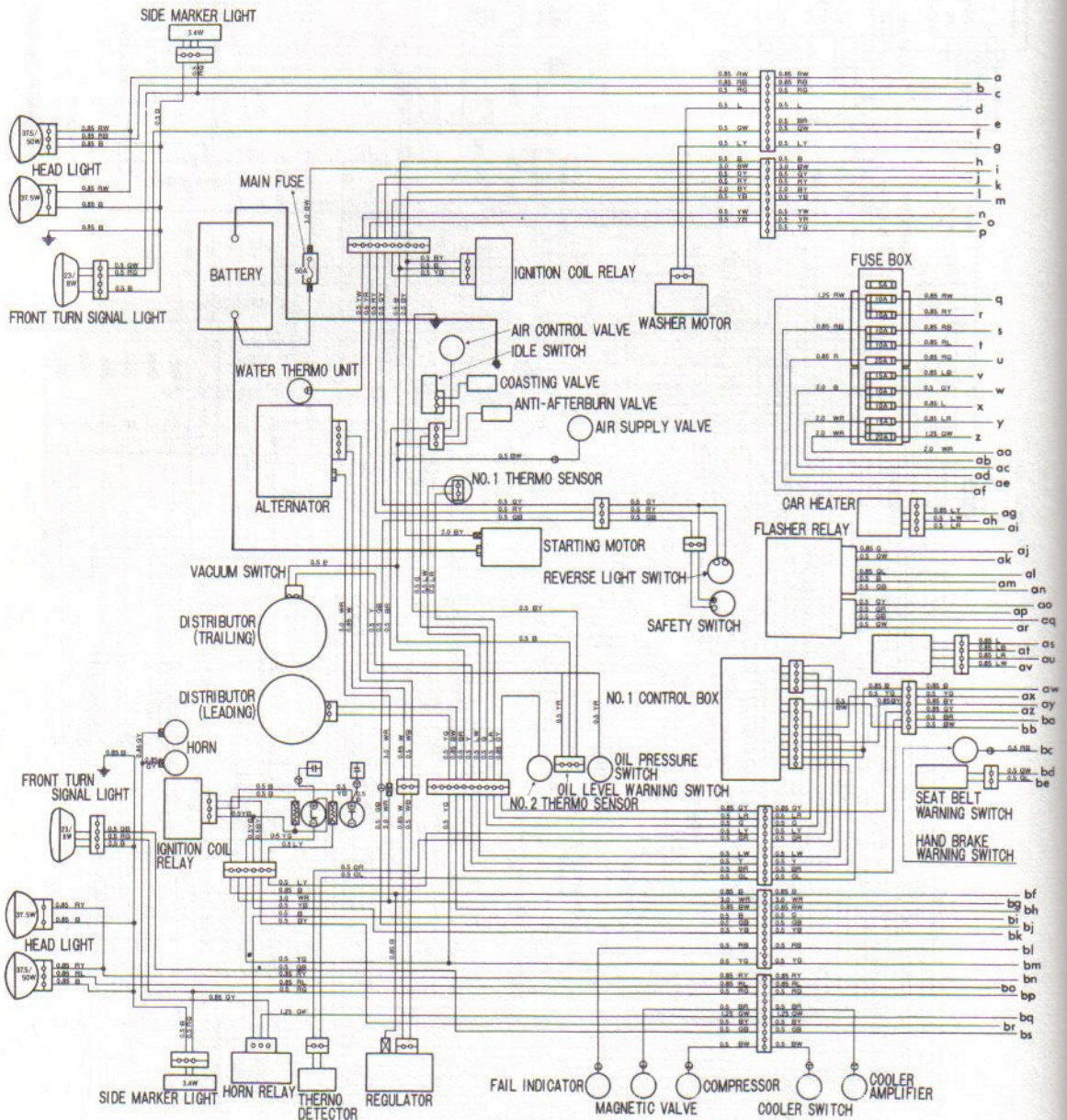


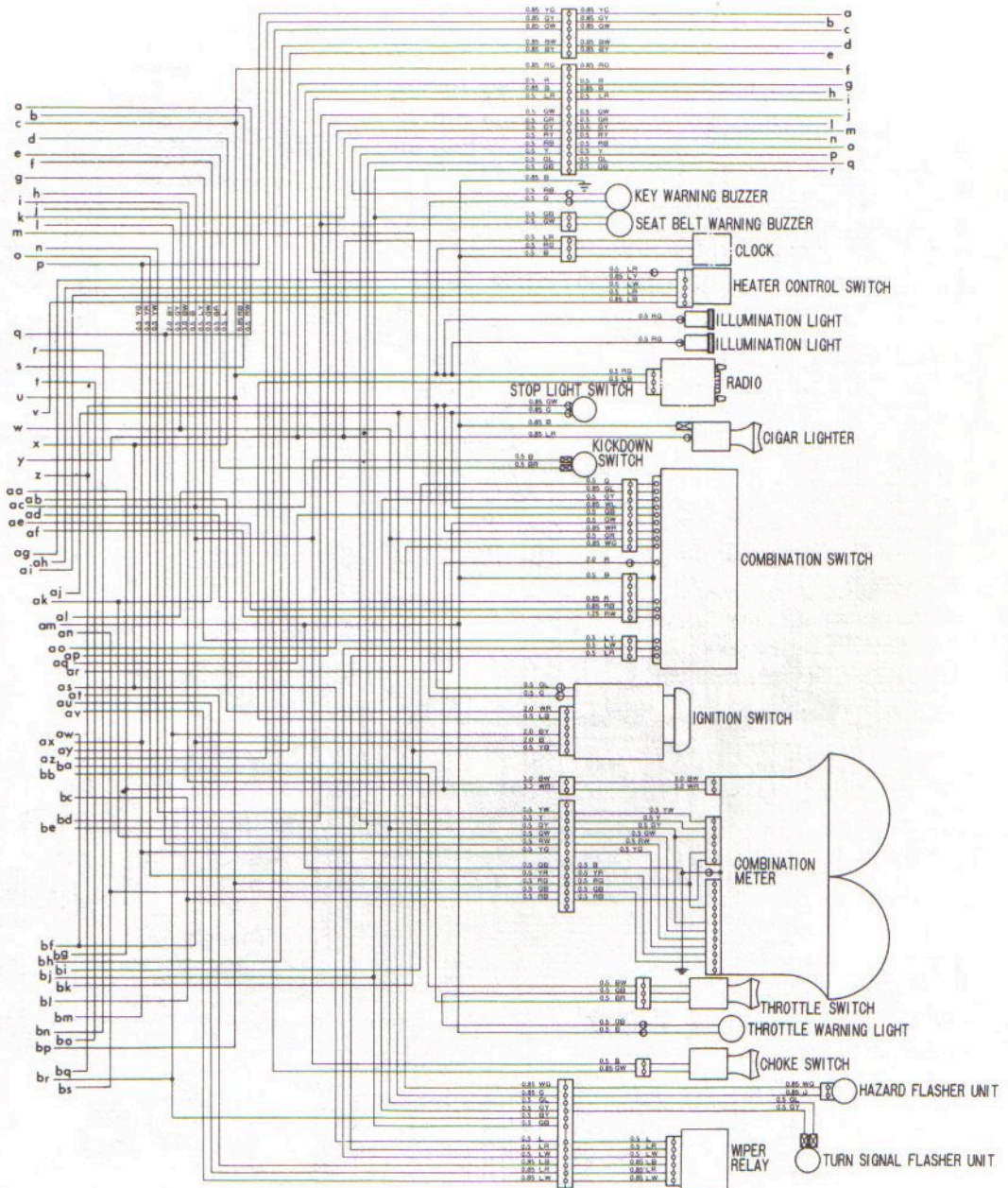
Wiring color code	
R :	Red
G :	Green
B :	Black
L :	Blue
Y :	Yellow
W :	White

1973 RX-2 EMISSION CONTROL SYSTEM

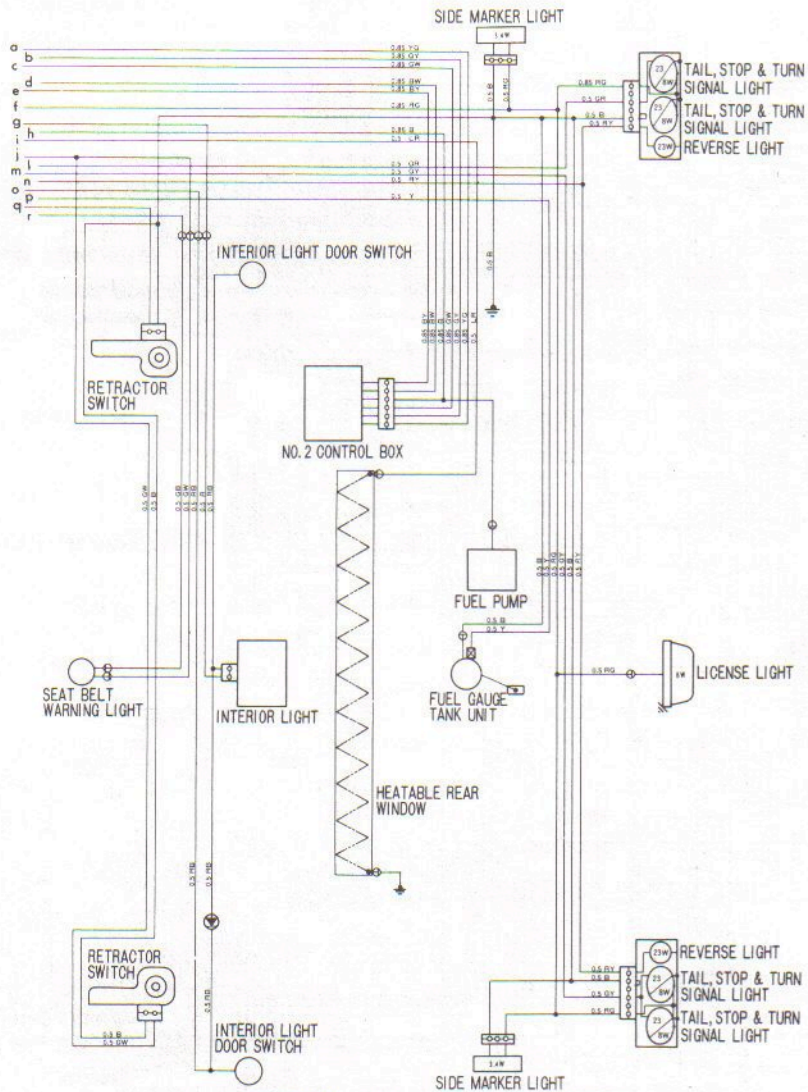


### WIRING DIAGRAM — 1972 RX-3

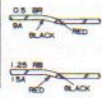




WIRING DIAGRAM — 1972 RX-3 (Contd.)



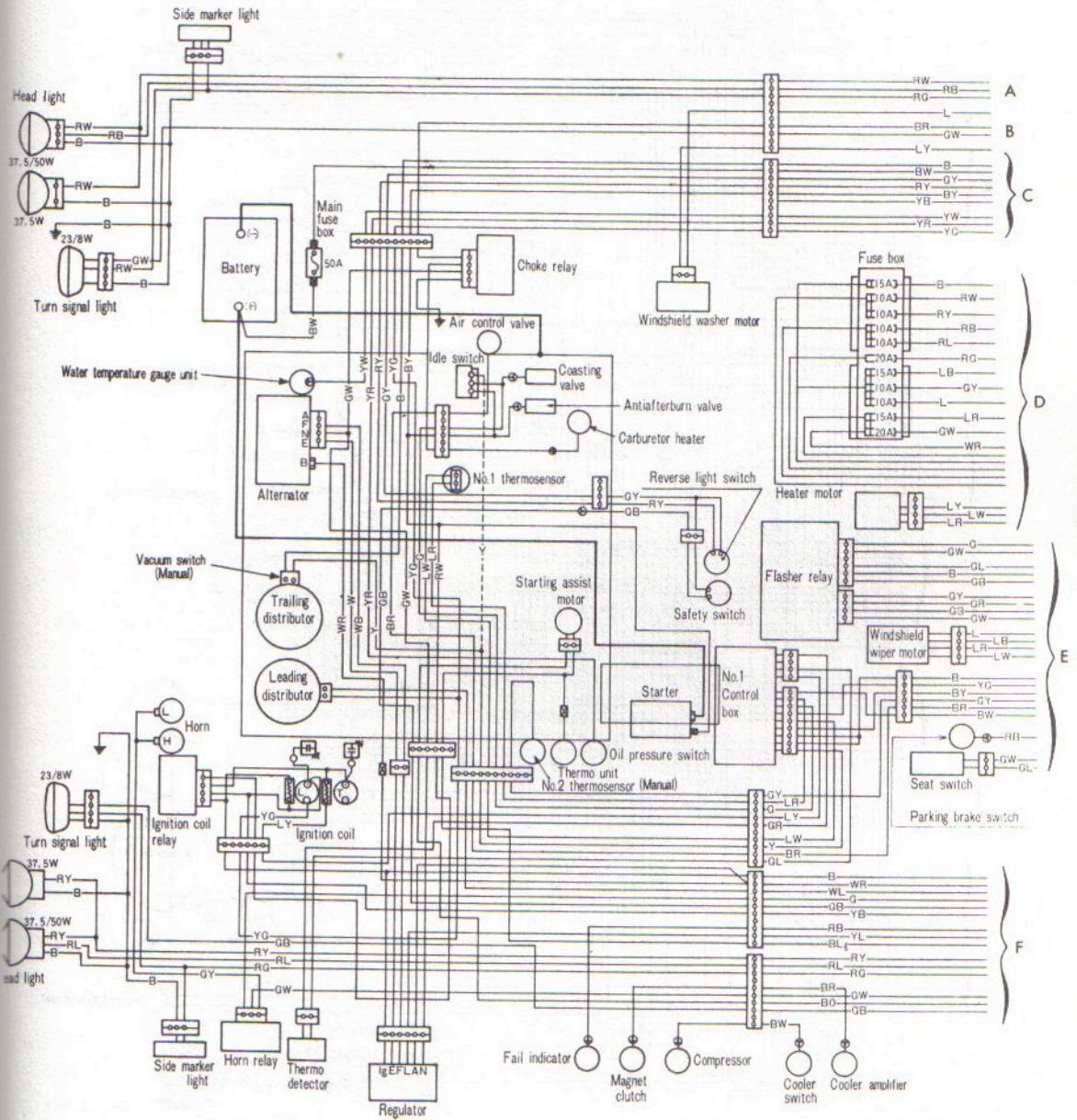
WIRING CODE		EXAMPLE	
CODE	COLOR	CODE	CARRYING CAPACITY
R	RED	0.5	5A
G	GREEN	0.85	12A
B	BLACK	1.25	15A
L	BLUE	2.0	20A
Y	YELLOW	3.0	27A
W	WHITE		



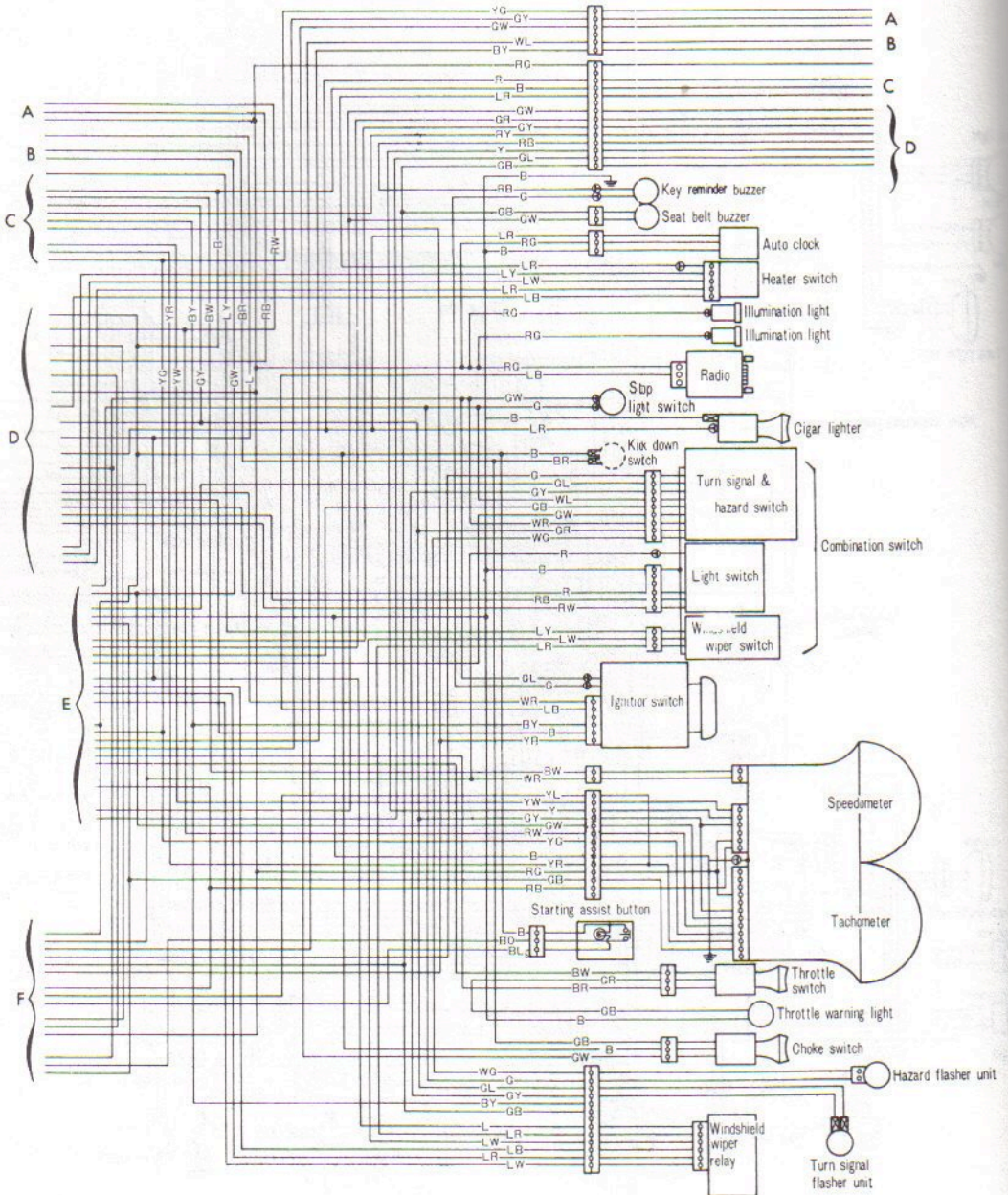
OPTIONAL EQUIPMENT

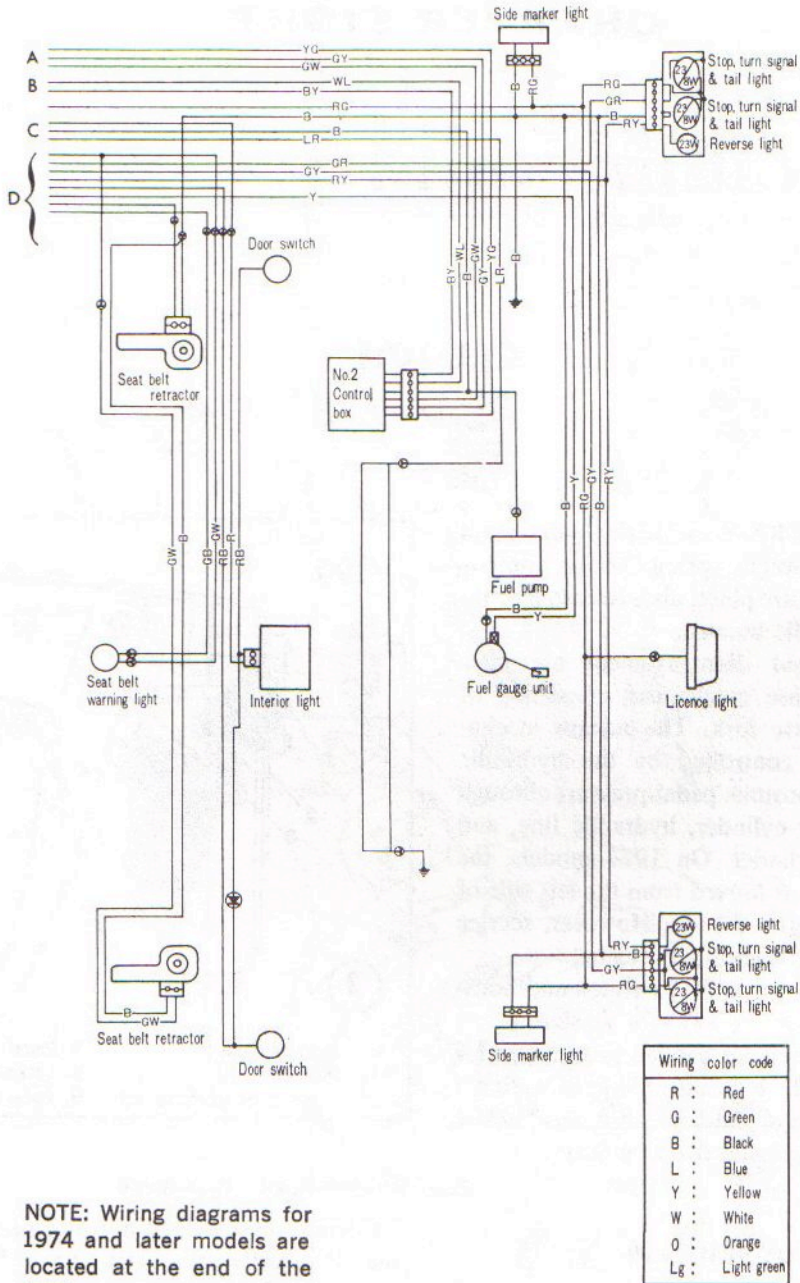


WIRING DIAGRAM — 1973 RX-3



### WIRING DIAGRAM — 1973 RX-3 (Contd.)





NOTE: Wiring diagrams for 1974 and later models are located at the end of the book.