

SECTION 12

ELECTRICAL—BODY AND CHASSIS

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INSTRUMENTS AND GAUGES

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GENERAL DESCRIPTION

All Corvette instruments and gauges are installed in a removable instrument panel. The entire cluster may be removed for servicing the various instruments and gauges. Figure 1 illustrates the wiring color codes and gauge location as viewed from the rear of the instrument panel.

Regular maintenance is not required for the instrument panel or its components other than maintaining clean, tight electrical connections, replacing defective components and keeping the speedometer and tachometer drive cables properly lubricated.

SERVICE OPERATIONS

INSTRUMENT PANEL

REMOVAL AND INSTALLATION

Refer to the appropriate Body Section for complete removal and installation procedures.

NOTE: Disconnect the battery ground cable before attempting instrument panel removal procedures.

FUEL OR TEMPERATURE GAUGE

REMOVAL AND INSTALLATION

1. Remove instrument panel as outlined under the appropriate Body Section.
2. Remove the two nuts retaining the individual fuel and temperature cluster in the instrument panel. Remove the cluster from the panel.
3. Remove two nuts retaining the defective gauge to

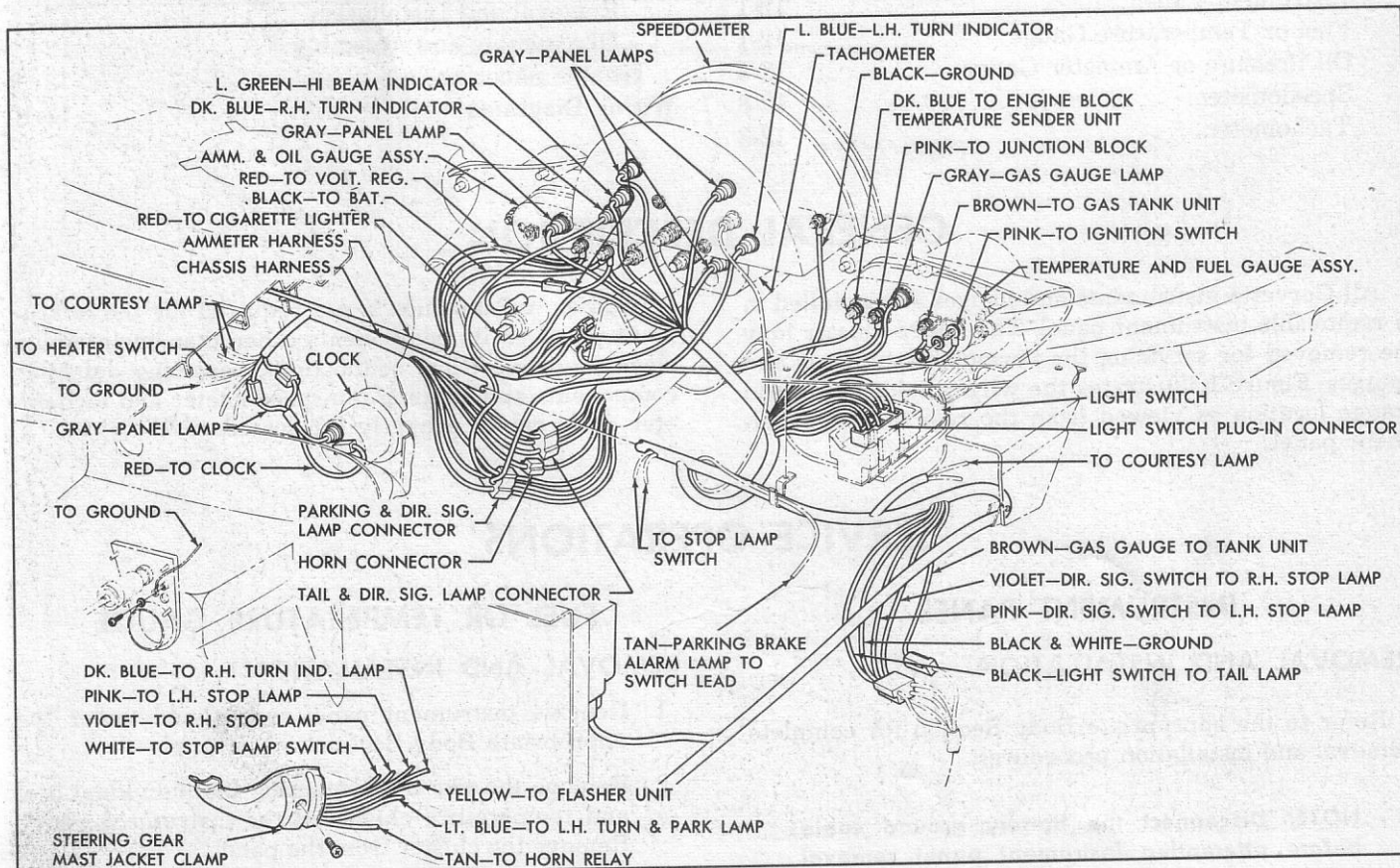
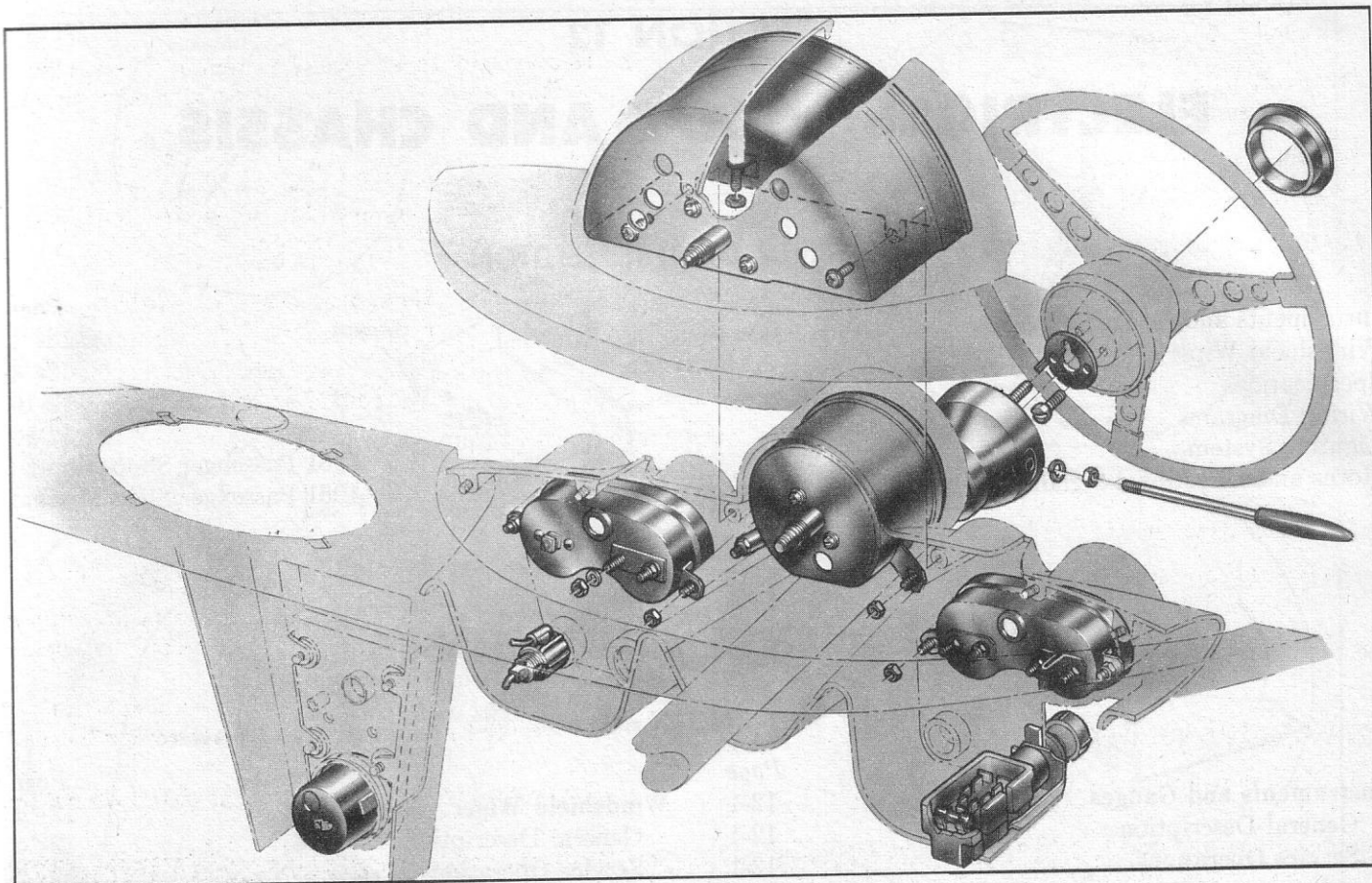


Fig. 1—Instrument Panel

the cluster housing. Remove the gauge from the cluster housing.

4. Position a new gauge in the cluster housing and reverse procedures 1 thru 3 to complete operation.

OIL PRESSURE OR AMMETER GAUGE

REMOVAL AND INSTALLATION

1. Remove instrument panel as outlined under the appropriate Body Section.
2. Remove the two nuts retaining the individual oil and ammeter cluster in the instrument panel. Remove the cluster from the panel.
3. Remove the two nuts or screws retaining the defective gauge to the cluster housing. Remove the gauge from the cluster housing.
4. Position the new gauge in the cluster housing and reverse Steps 1 thru 3 to complete operations.

SPEEDOMETER

REMOVAL AND INSTALLATION

1. Remove the instrument panel as outlined under

the appropriate Body Section.

2. Remove the three screws retaining the speedometer to the panel, remove the speedometer from the panel.

NOTE: Servicing of the speedometer head should be performed by an authorized 'AC Speedometer Service Station.

3. Reverse the above procedures to complete the installation operations.

TACHOMETER

REMOVAL AND INSTALLATION

1. Remove the instrument panel as outlined under the appropriate Body Section.
2. Remove the speedometer as outlined above.
3. Remove the two nuts retaining the tachometer to the panel, remove the tachometer from the panel.

NOTE: Servicing of the tachometer should be performed by an authorized AC Service Station.

4. Reverse above procedures to complete installation.

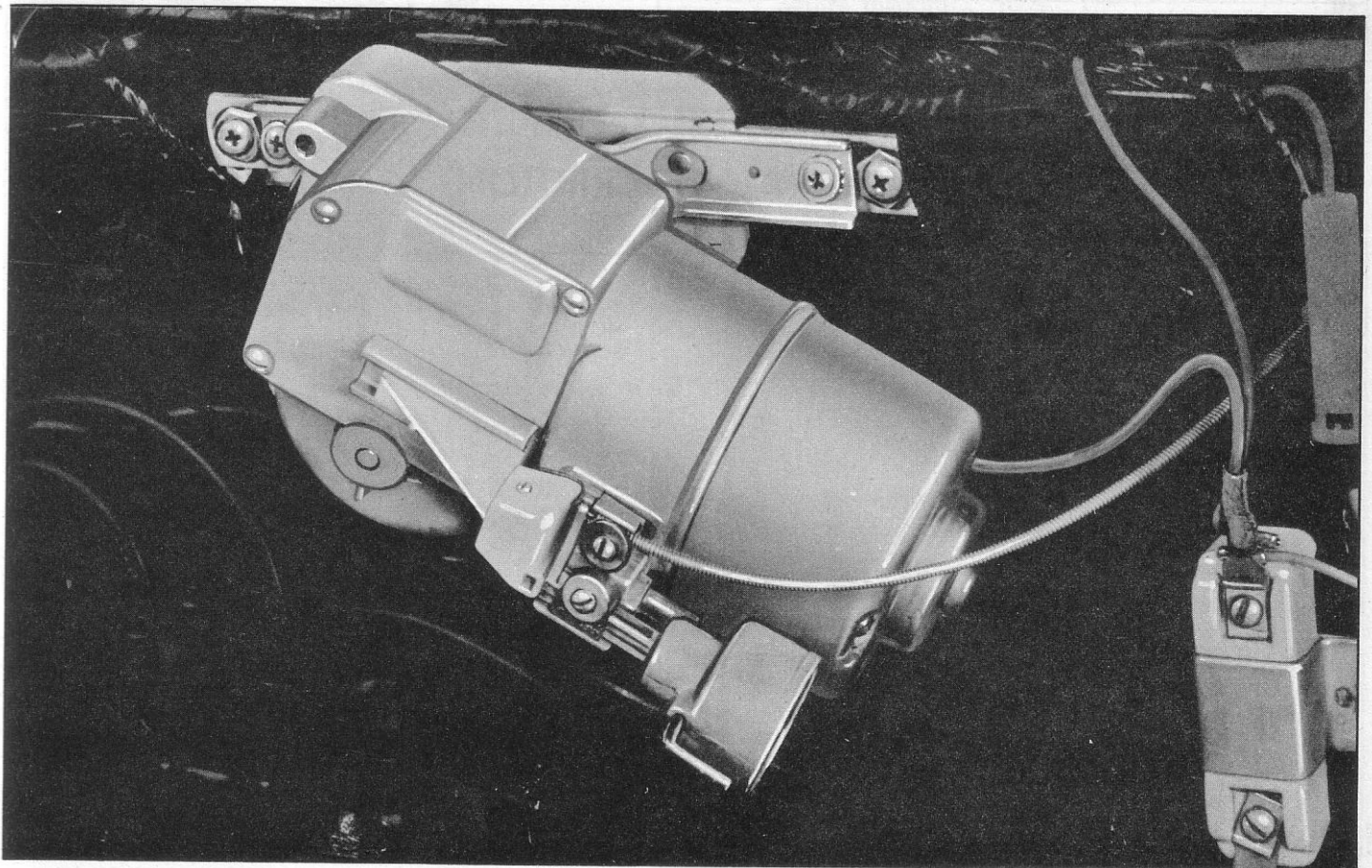


Fig. 2—Electric Windshield Wiper

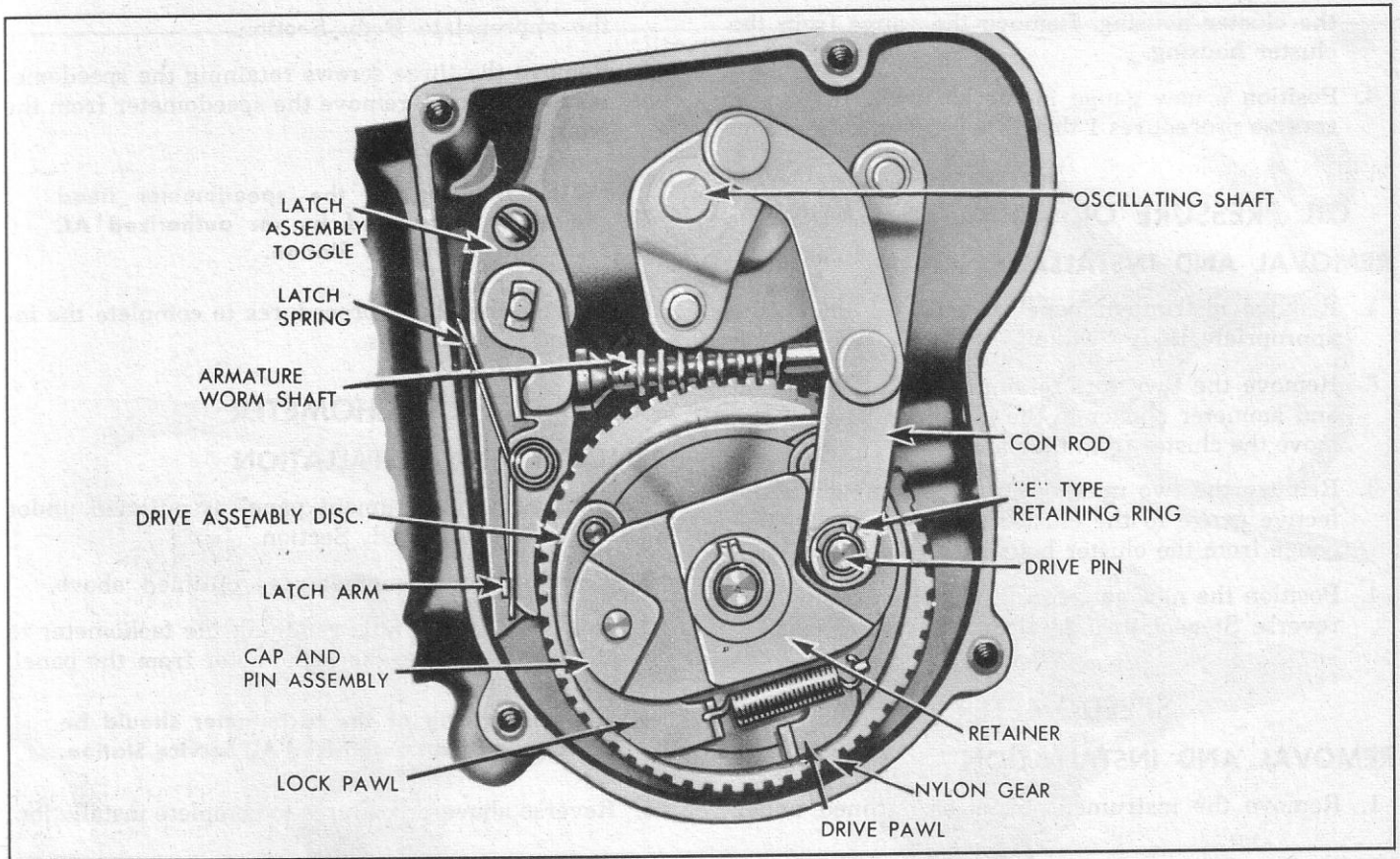


Fig. 3—Wiper Drive Mechanism

WINDSHIELD WIPER GENERAL DESCRIPTION

The 12-volt electric windshield wiper (fig. 2) used on the Corvette is powered by an internally grounded motor containing a series and shunt wound field. The motor armature is fitted with a worm gear which drives the oscillating mechanism thru a nylon gear (fig. 3).

A leaf-type switch (fig. 4) located within the gear housing provides a three-position control—high speed, low speed and park or off. This switch is operated from the dash panel by means of a bowden cable. A thermal circuit breaker provides motor protection against severe loading conditions.

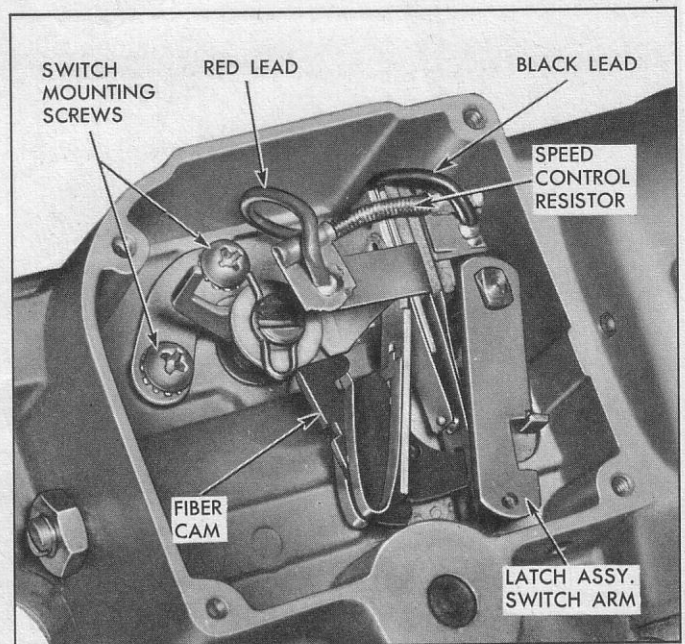


Fig. 4—Wiper Switch Mechanism

SERVICE OPERATIONS

REMOVAL AND INSTALLATION

WIPER MOTOR

1. Disconnect bowden control cable, washer vacuum hose (if present) and motor electrical connectors.
2. Remove two screws retaining motor to mounting plate (fig. 5). Remove motor assembly from vehicle.

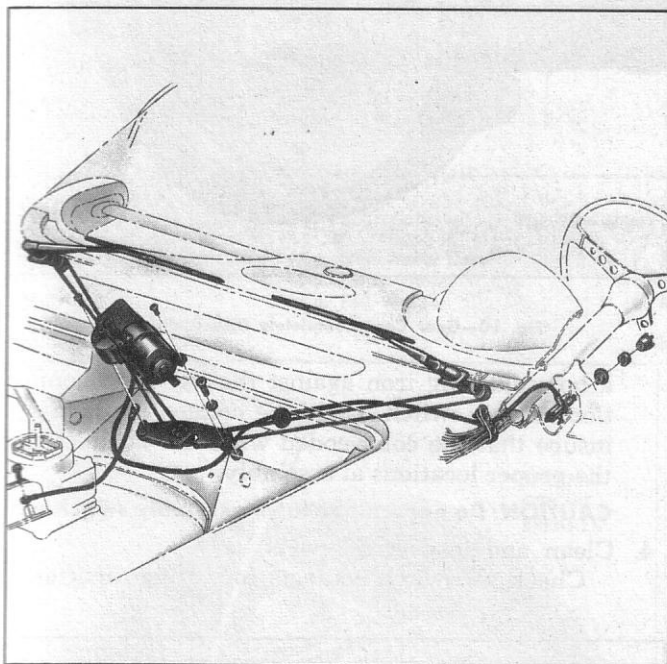


Fig. 5—Wiper Motor Mounting

NOTE: Be sure motor is in park position before removal.

3. Reverse above procedure to install motor assembly.

NOTE: Be sure to reinstall ground lead to engine.

WIPER TRANSMISSION

1. Remove wiper blade and arm assembly.
2. Remove nut, bezel and gasket from transmission (fig. 6).
3. From under the dash, remove two nuts retaining transmission mounting bracket to dash panel. Pull transmission from mounting hole, disconnect drive cables and remove transmission from vehicle.

NOTE: Drive cables to right transmission assembly only are crossed over each other.

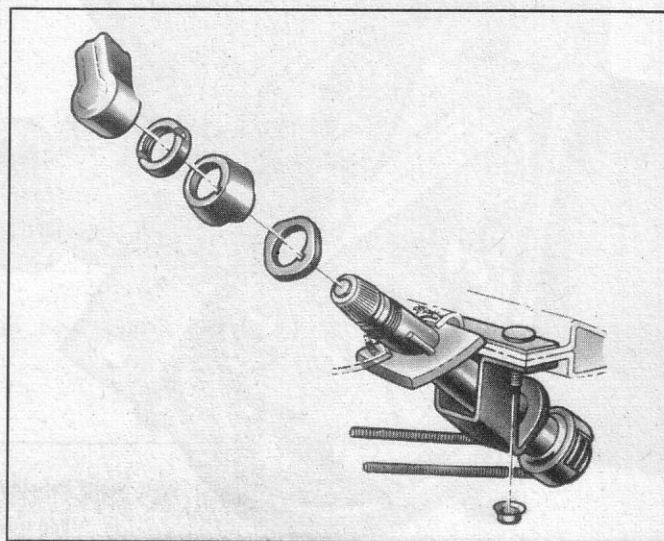


Fig. 6—Wiper Transmission Mounting

4. Reverse above procedure to install transmission. Apply sealing cement around transmission shaft before installing.

NOTE: Adjust cable tension by pressing in on outer end of transmission shaft. This adjustment must be performed after the transmission is installed and drive cables are connected.

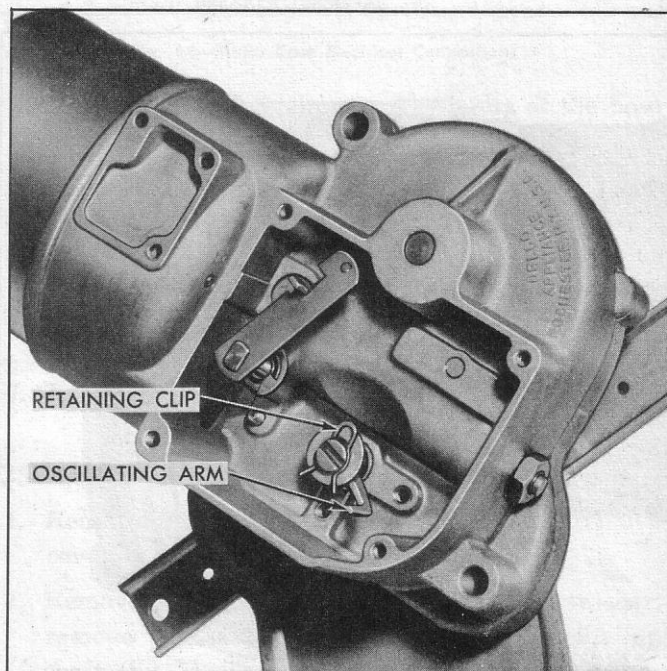


Fig. 7—Oscillating Arm—Switch Removed for Clarity Only

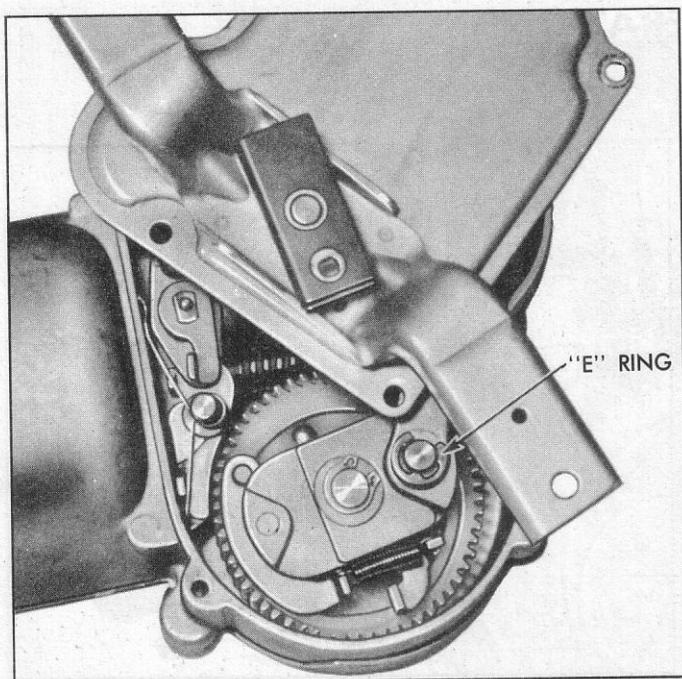


Fig. 8—Gear Cover Rotated to Expose "E" Ring

DISASSEMBLY AND ASSEMBLY

SWITCH

Refer to Figure 4.

1. Remove four screws securing switch cover and remove cover.
2. Remove two switch assembly mounting screws and lift out switch to extent of slack in connecting wires.
3. Complete removal of switch assembly by placing

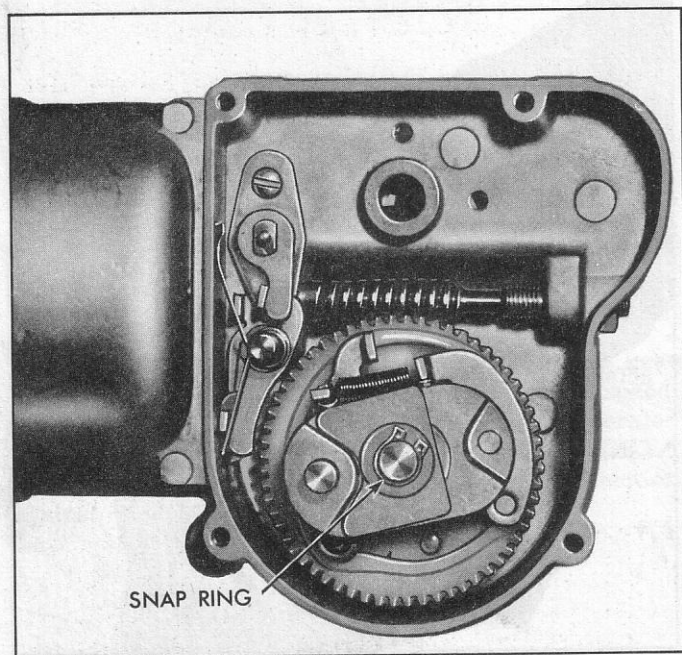


Fig. 9—Gear Cover and Connecting Linkage Assembly Removed

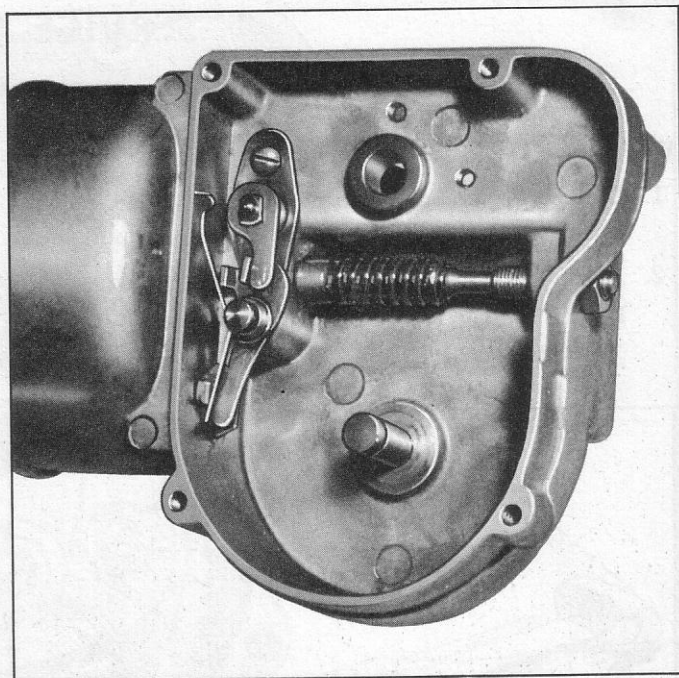


Fig. 10—Gear Case Completely Disassembled

a hot soldering iron against the two lead connections to the switch. Code the connection points to insure that the color coded wires are connected at the proper locations at assembly.

CAUTION: Do not remove latch assembly switch arm.

4. Clean and inspect all parts.
Check all switch contacts for foreign matter or

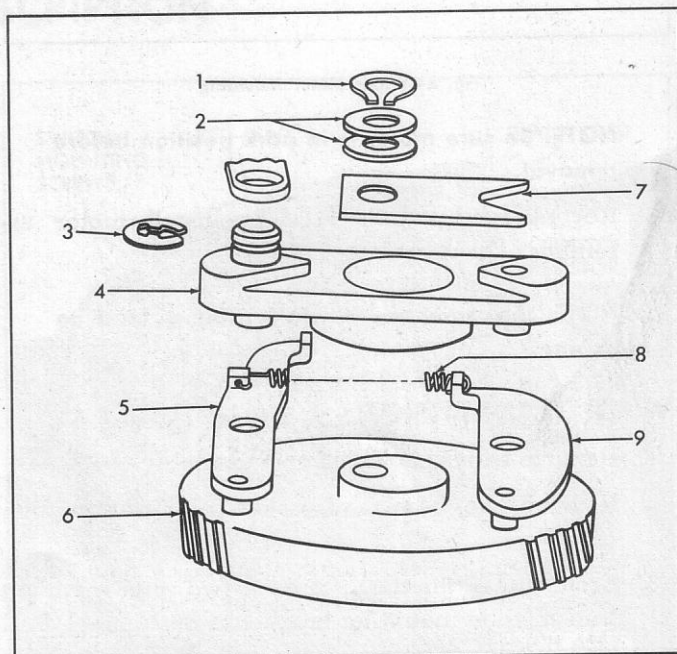


Fig. 11—Drive Gear Assembly Exploded View

- | | | |
|-----------------------|----------------------|--------------|
| 1. "C" Retaining Ring | 4. Cap and Pin Assy. | 7. Retainer |
| 2. End Play Washers | 5. Drive Pawl | 8. Spring |
| 3. "E" Ring | 6. Drive Gear | 9. Lock Pawl |

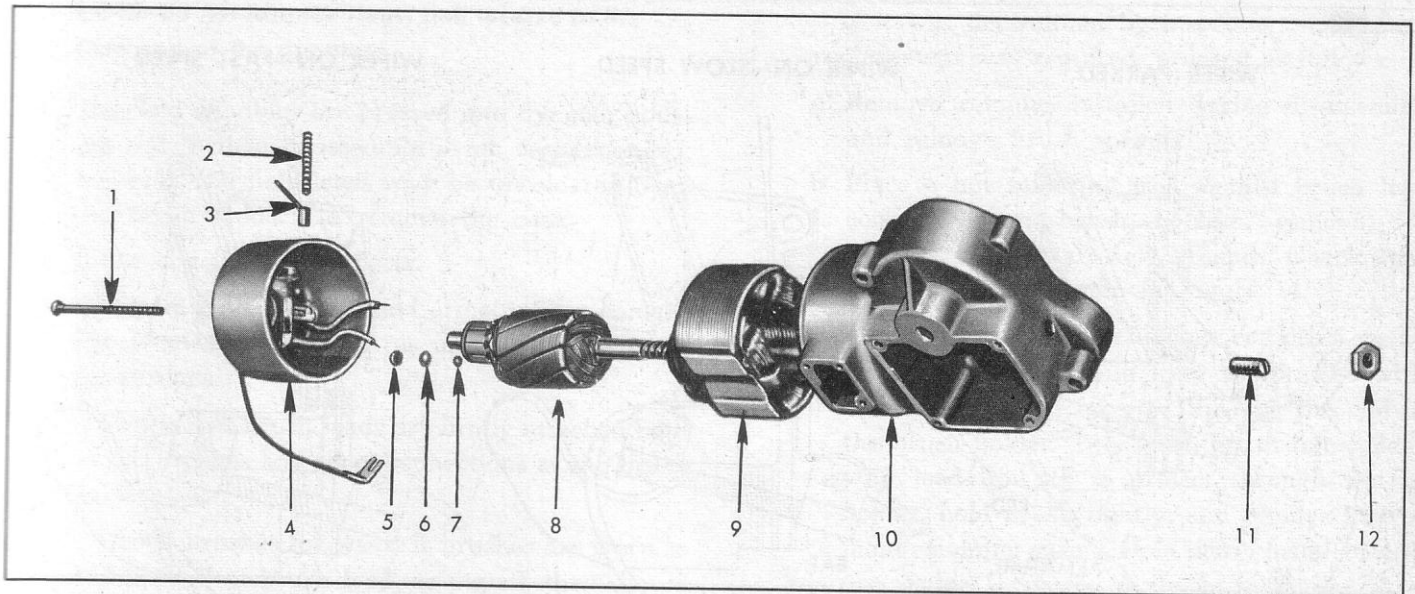


Fig. 12—Wiper Motor Exploded View

1. Tie Bolts
2. Brush Spring
3. Brush

4. Steel Motor Case
5. Thrust Plate
6. Felt Washer

7. 3/16\" Thrust Ball
8. Armature
9. Motor Field

10. Wiper Housing
11. Armature End-Play Adjusting Screw
12. Adjusting Screw Lock Nut

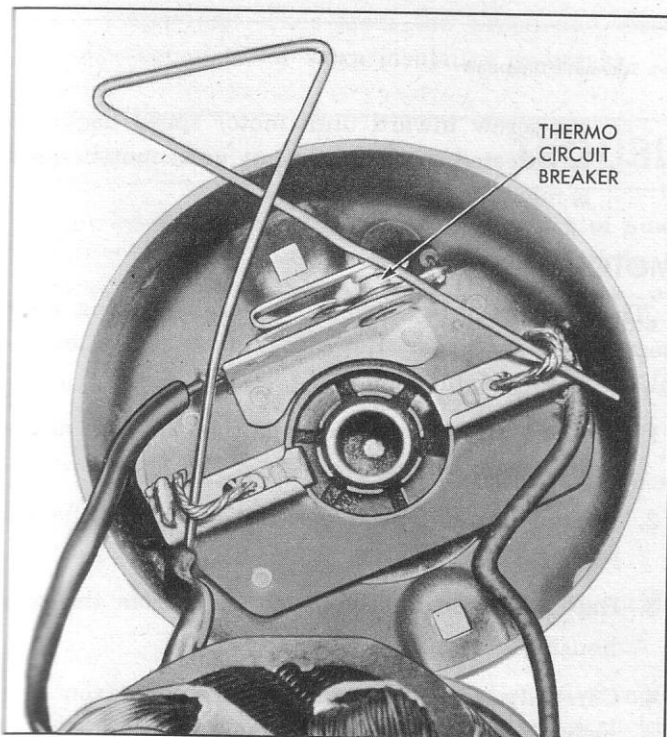


Fig. 13—Retaining Brushes

possible deformation. Contacts can be cleaned with a cloth dampened with carbon tetrachloride or small imperfections removed with emery paper. Broken contacts require replacement of the switch as an assembly.

Be especially careful to check that there is no

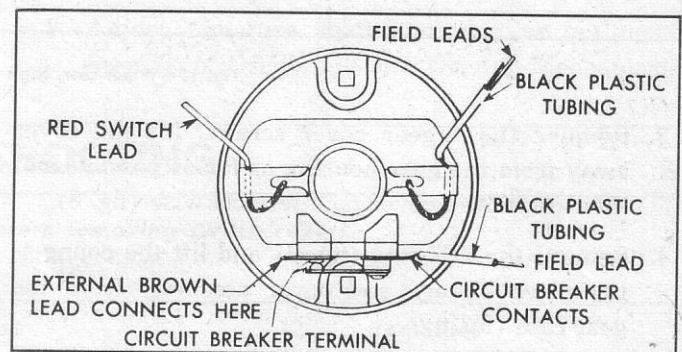


Fig. 14—Motor Case Electrical Connections

foreign matter bridging the insulators at the base of the switch.

Check that the breaker arm fiber contact surface is in good condition.

5. Resolder electrical leads to switch assembly.
6. Fasten switch assembly with two mounting screws and position as required to insure unit will park.
7. Reinstall switch cover and secure with four screws.

OSCILLATING—DRIVING MECHANISM

1. Remove 4 switch cover retaining screws, remove cover.
2. Remove oscillating arm retaining clip and washer, remove oscillating arm from slot in oscillating shaft (fig. 7). This operation is necessary for removal of the drive mechanism.

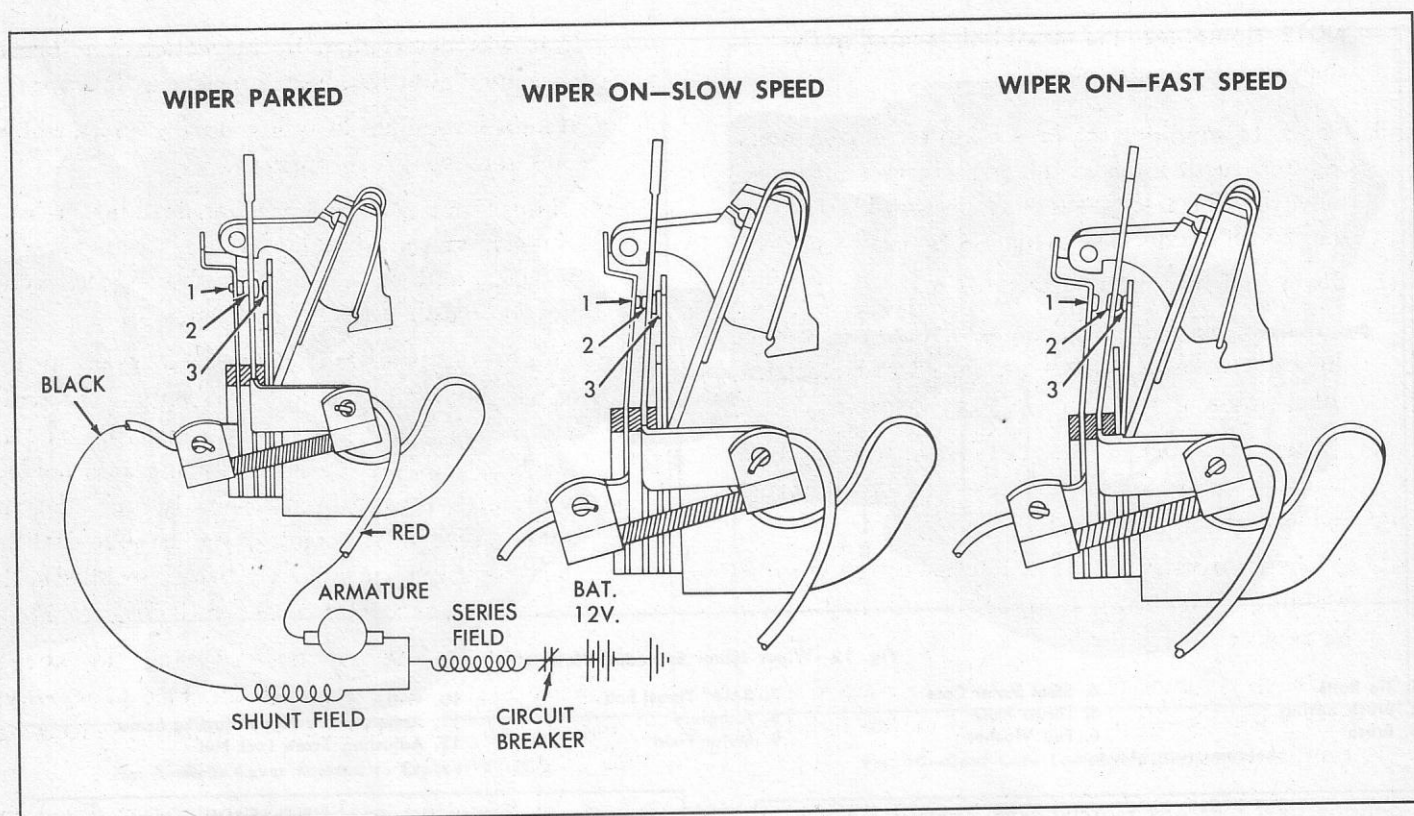


Fig. 15—Wiper Low, High and Park Schematic Diagrams

3. Remove the 4 gear cover screws, lift the cover away from the gear housing as far as possible and then rotate the cover counterclockwise (fig. 8).
4. Remove the "E" ring (fig. 8) and lift the connecting drive linkage and cover assembly from the gear case (fig. 9).
5. Remove the "C" ring and end play washers retaining the drive gear assembly to the pivot shaft (fig. 9). Lift the gear assembly from the shaft (fig. 10).
6. Disassemble the gear assembly as follows: Refer to Figure 11 for exploded view of drive gear assembly.
 - a. Remove the coil spring.
 - b. Lift off the cap and pin assembly.
 - c. Slide the lock pawl and drive pawl off their respective pins.
7. Reassemble the gear mechanism by reversing the the above procedure. Apply light grease to all moving parts. Do not apply grease to moving parts located in the switch compartment.
 - a. Check nylon gear end play; add washers to reduce end play to .008" maximum.
 - b. Check armature drive shaft end play by turn-

ing screw inward until motor speed begins to be affected, back screw out until motor speed is maximum.

MOTOR

The motor may be serviced without disturbing other sections of the wiper. Refer to Figure 12 for an exploded view of the motor.

1. Remove the two tie bolts securing the case to the gear housing.
2. Loosen the end play lock nut, back out the adjusting screw.
3. Rap steel case lightly to loosen it from the gear housing.
4. Carefully remove case and armature from the gear housing. Retain the armature in the case to prevent brushes from being displaced from their holders.

NOTE: The armature will just clear the gear housing with the lead wires fully extended.

5. Use a brush holder made from heavy wire to keep the brushes in place while removing the armature from the case (fig. 13).

NOTE: Do not lose the thrust ball located at the case end of the armature.

6. The field windings are pressed into the gear housing and further disassembly is not recommended; however, the field leads may be unsoldered from the brush holders to remove the case.
7. Clean and inspect all parts.

Inspect both the field and armature for damage due to overheating such as unsoldered electrical connections.

Check that brush leads are firmly attached both to the brushes and their connections at the brush holders.

Check brushes for wear. If brushes are worn to within $\frac{3}{16}$ " of brush lead, or pigtail, they should be replaced.

Check contacts of circuit breaker shown at top of Figure 13. Clean as required or file lightly to remove irregularities.

Inspect all leads from the brush and circuit breaker plate for worn insulation or breaks.

If it was determined by inspection that brush replacement was required, proceed as follows:

- a. Remove retainer installed during disassembly and remove brush springs.
- b. Place a hot soldering iron against brush lead connection on brush holders, remove old brushes, and install new brushes. Check connections with diagram in Figure 14.
- c. To reinstall brushes in holders, compress spring within holder and hold fully compressed with a thin instrument inserted through the slot in the brush holder. Then push brush into holder with lead upward to project through slot in holder, hold brush tightly, and remove instrument retaining spring. Hold brush installed with improvised separator as shown in Figure 13.
8. Reassemble the motor by reversing the above procedures. If leads were disconnected to separate case from gear housing, resolder connections according to Figure 14.
9. Adjust armature shaft end play as outlined in Step 7b of Oscillating and Driving Mechanism.

TROUBLE SHOOTING

CAUTION: Disconnect unit from source of power before removing switch cover.

Refer to Figure 15 for schematic diagrams of the three position switch.

Trouble	Possible Causes	Remedies
A. Unit will not turn on.	1. No supply voltage at wiper unit.	1. Check automobile wiring carefully.
	2. Unit improperly grounded.	2. The wiper unit ground strap should be placed under one of the auxiliary drive mounting screws.
	3. Defective soldering at switch.	3. Resolder switch connections if necessary.
	4. Defective motor — open field, brushes sticking.	4. Repair defective motor.
	5. Contacts 2 and 3 dirty or not making contact when unit is turned on.	5. Bend contact 3 slightly so that it will make contact with contact No. 2. (Be sure switch is tripped to low or high speed position when doing this.) (Figure 15)
	6. Circuit breaker contacts dirty, defective circuit breaker.	6. Remove case and brush assembly and check circuit breaker contacts.

TROUBLE SHOOTING—Continued

B. Unit will not shut off.	1. Failure of oscillating switch arm to trip switch fiber cam releasing contact 2 from contact 3. 2. Poor fit between oscillating arm and oscillating shaft slot which would allow excessive circular play of the oscillating switch arm. 3. Red or Black switch leads grounded.	1. Bend slightly the oscillating switch arm toward the switch fiber cam. 2. Replace oscillating switch arm, or try staking it in position. 3. Remove grounded condition.
C. No fast speed.	1. Switch slide not opening contacts 1 and 2. (Figure 15) 2. Short between switch cover and resistor terminal to which black lead is connected.	1. Bend contact #1 slightly away from contact #2 so that they will separate when slider is moved to fast speed position. 2. Bend the resistor terminal down so that it will clear the cover.
D. No Slow Speed.	1. Speed control contacts (No. 1 and 2, Figure 15) not making contact at low speed position.	1. Check for dirty contacts and clean if necessary. If contacts 1 and 2 appear to be separated in the low speed switch position, it may be possible to bend contact #1 slightly so that it will make contact with contact #2. If the above repairs fail to correct this condition replace the switch assembly.
E. Excessive speed in high speed position, slow speed OK.	1. Switch assembly resistor open.	1. Replace switch assembly.
F. Excessive speed in both low and high speed positions.	1. Defective soldering of the black shunt field lead to the switch assembly. 2. Open shunt field.	1. Resolder black field lead to switch. 2. Replace entire motor unit.

SPECIFICATIONS

Refer to Specifications—Section 14.

WIRING DIAGRAMS

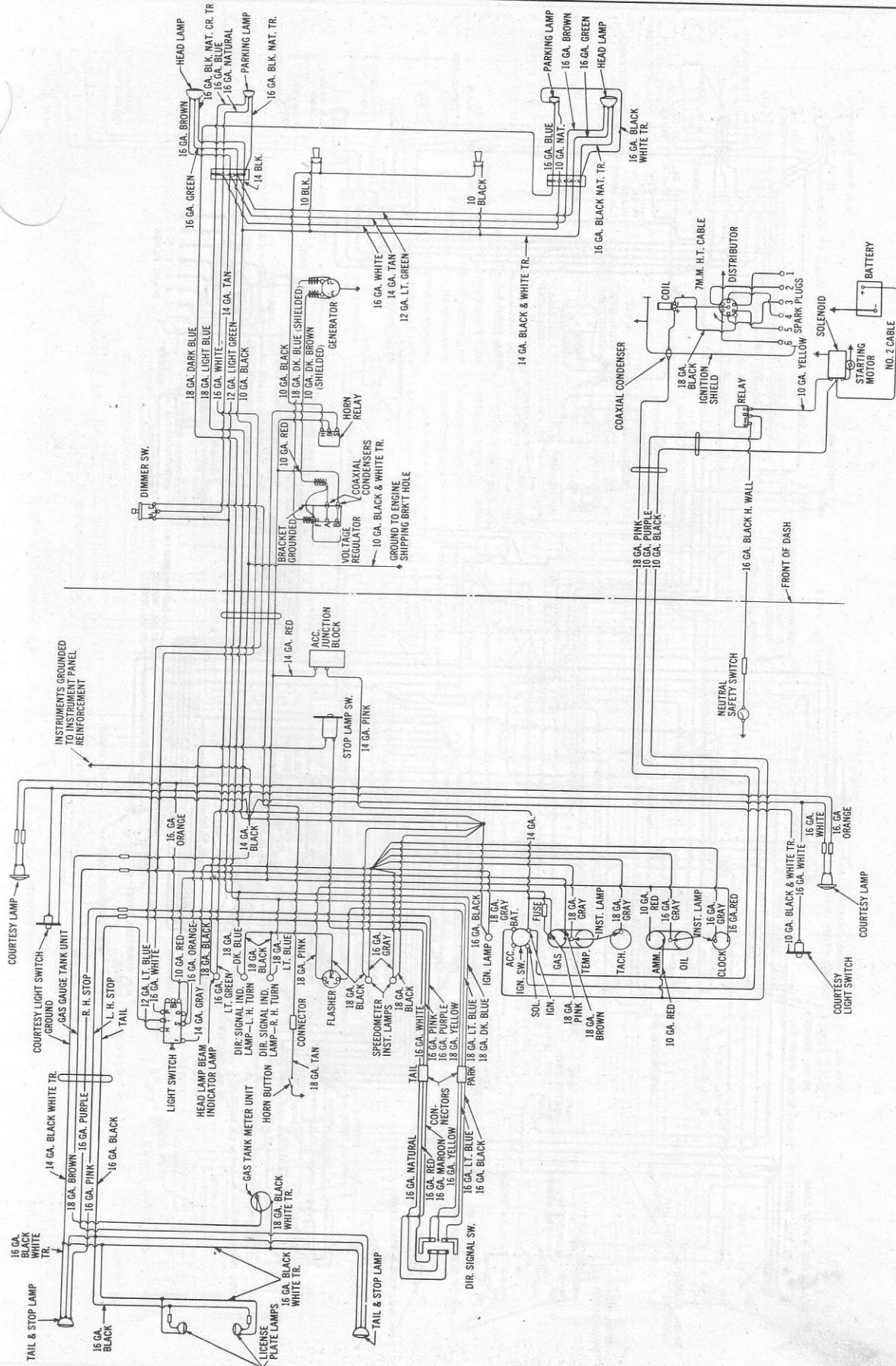


Fig. 16—Chassis Wiring—6 Cyl. (1953 thru 1955)

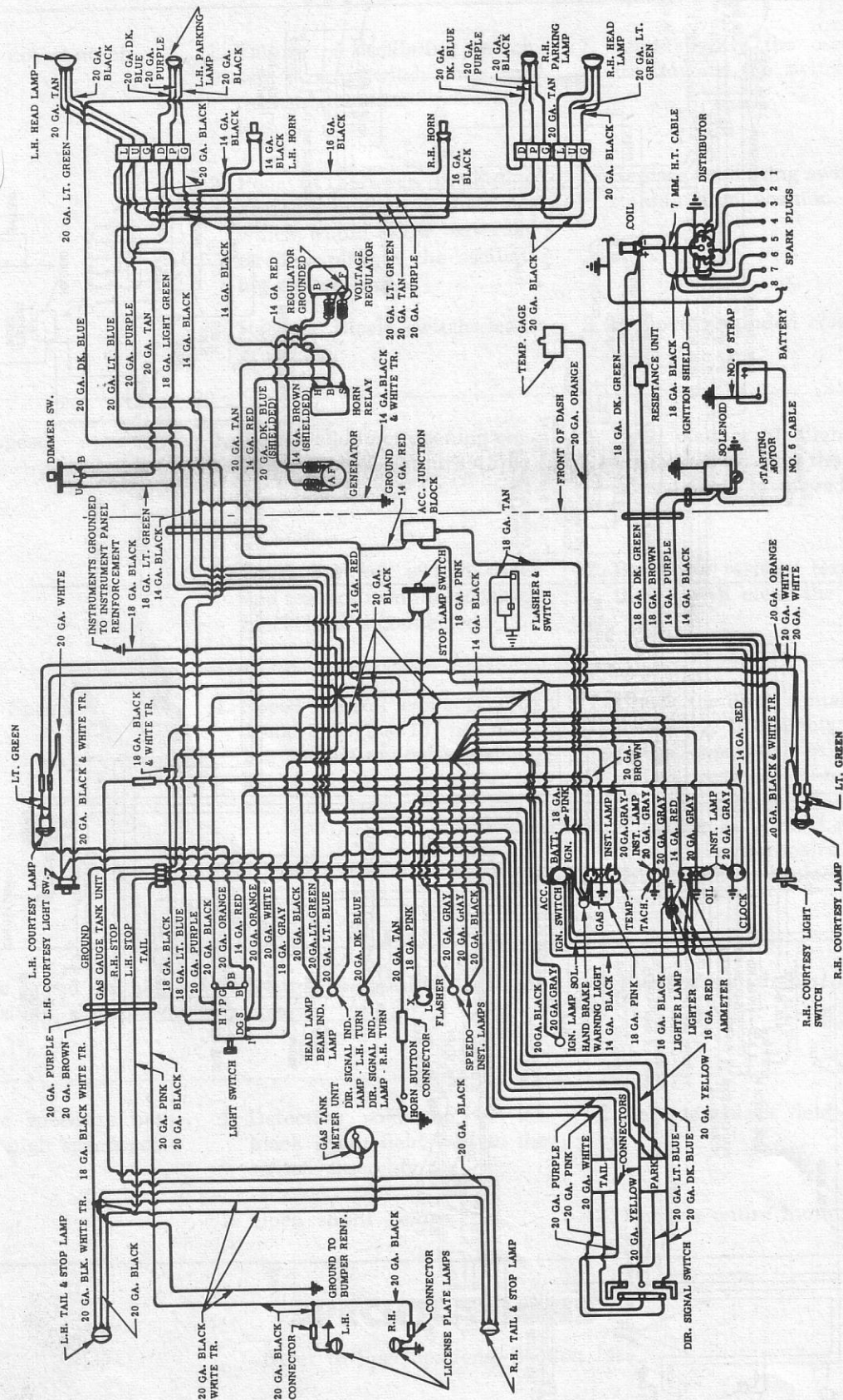


Fig. 17—Chassis Wiring—(1955 thru 1957)

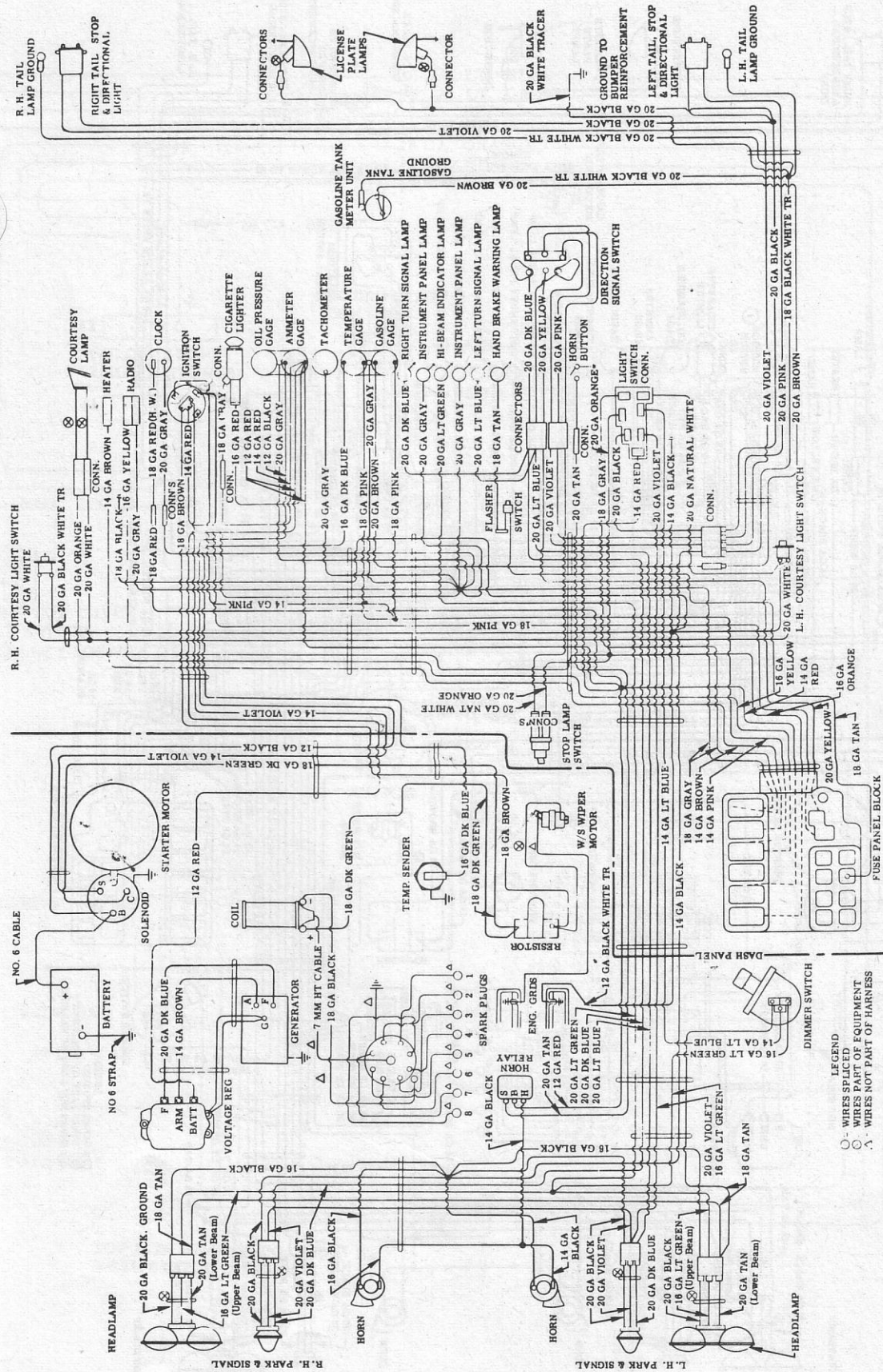


Fig. 18—Chassis Wiring—(1958 thru 1960)

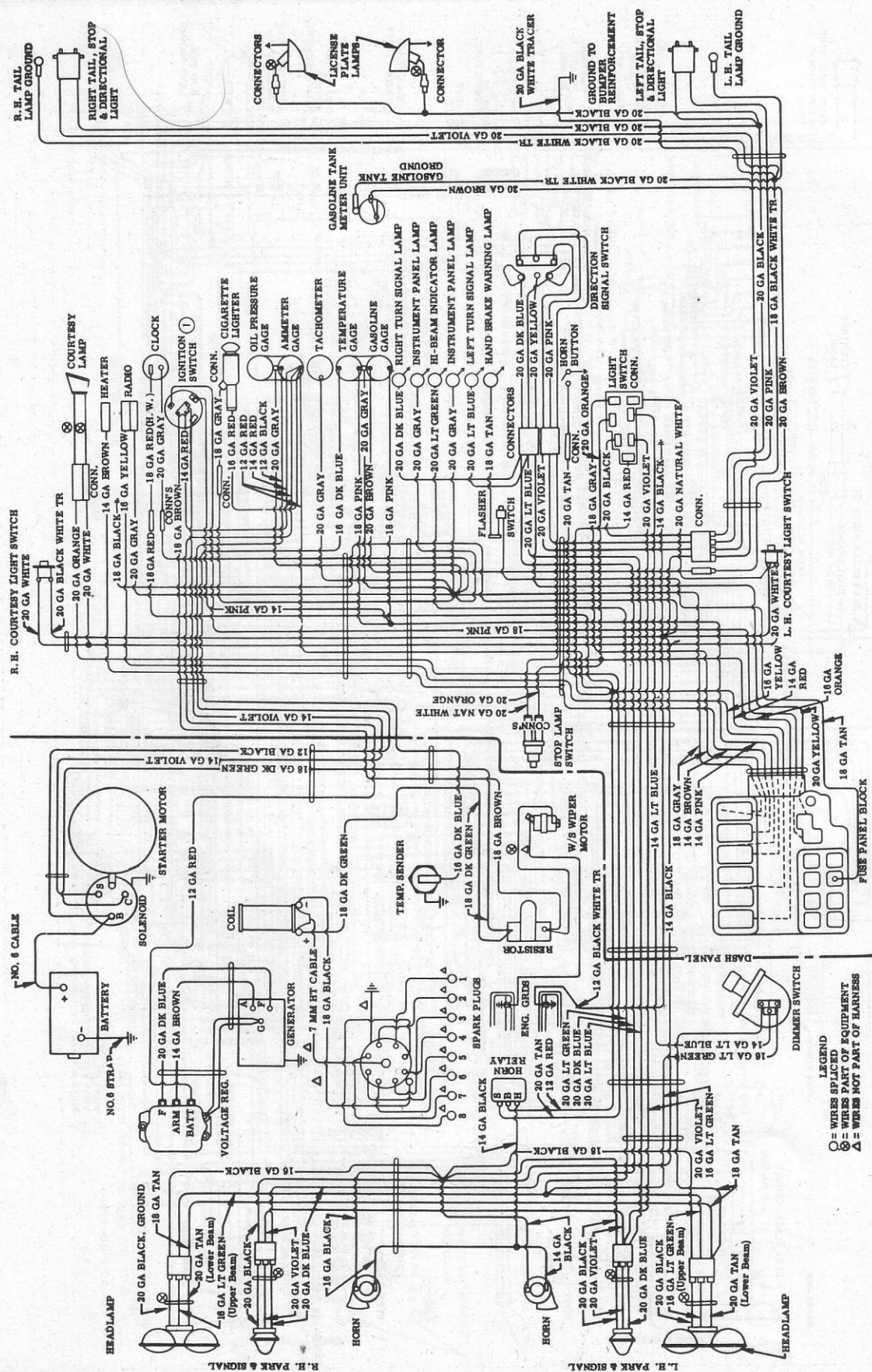


Fig. 19—Chassis Wiring—(1961 thru 1962)

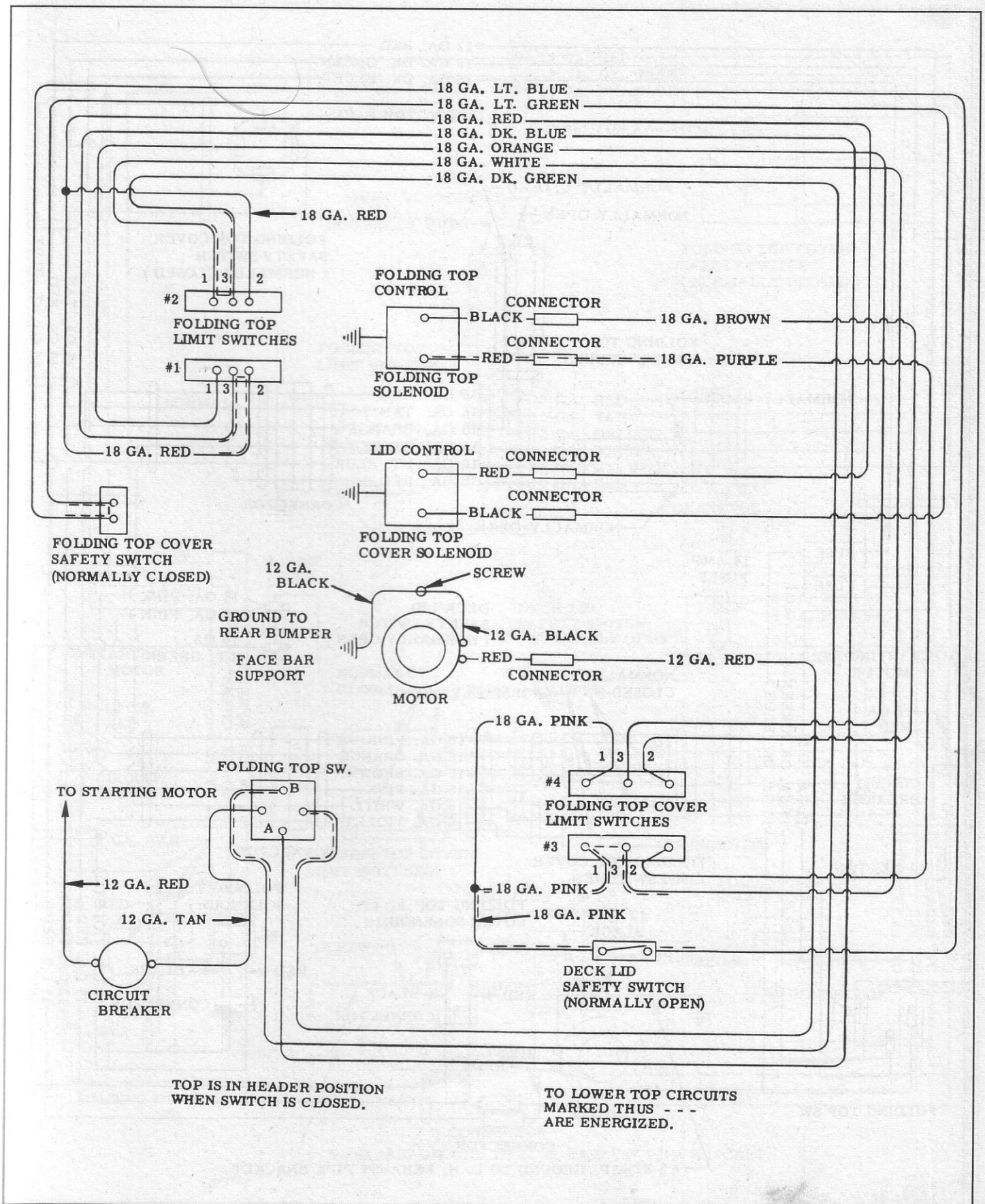


Fig. 20—Top Wiring—(1955 thru 1956)

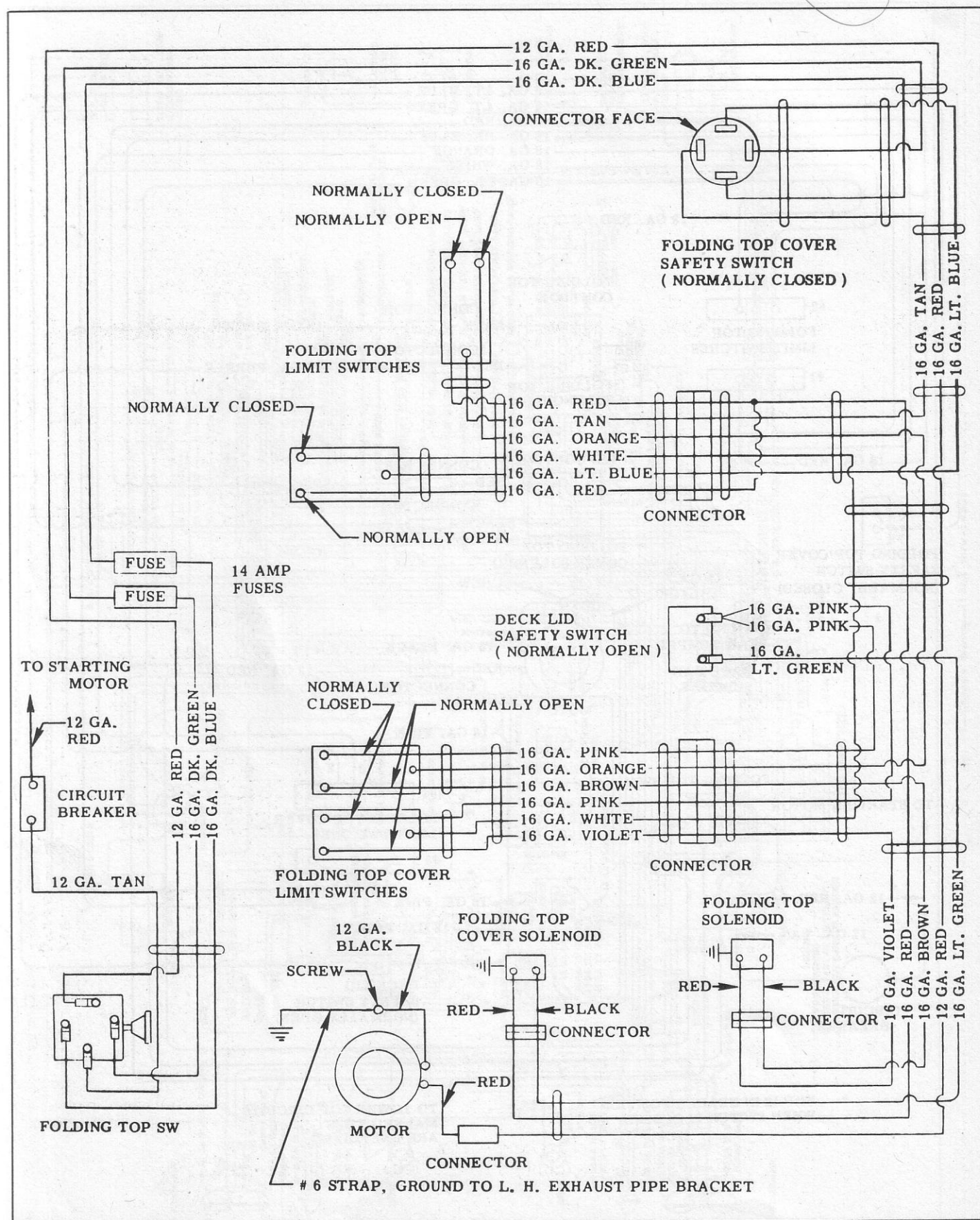


Fig. 21—Top Wiring—(1957)

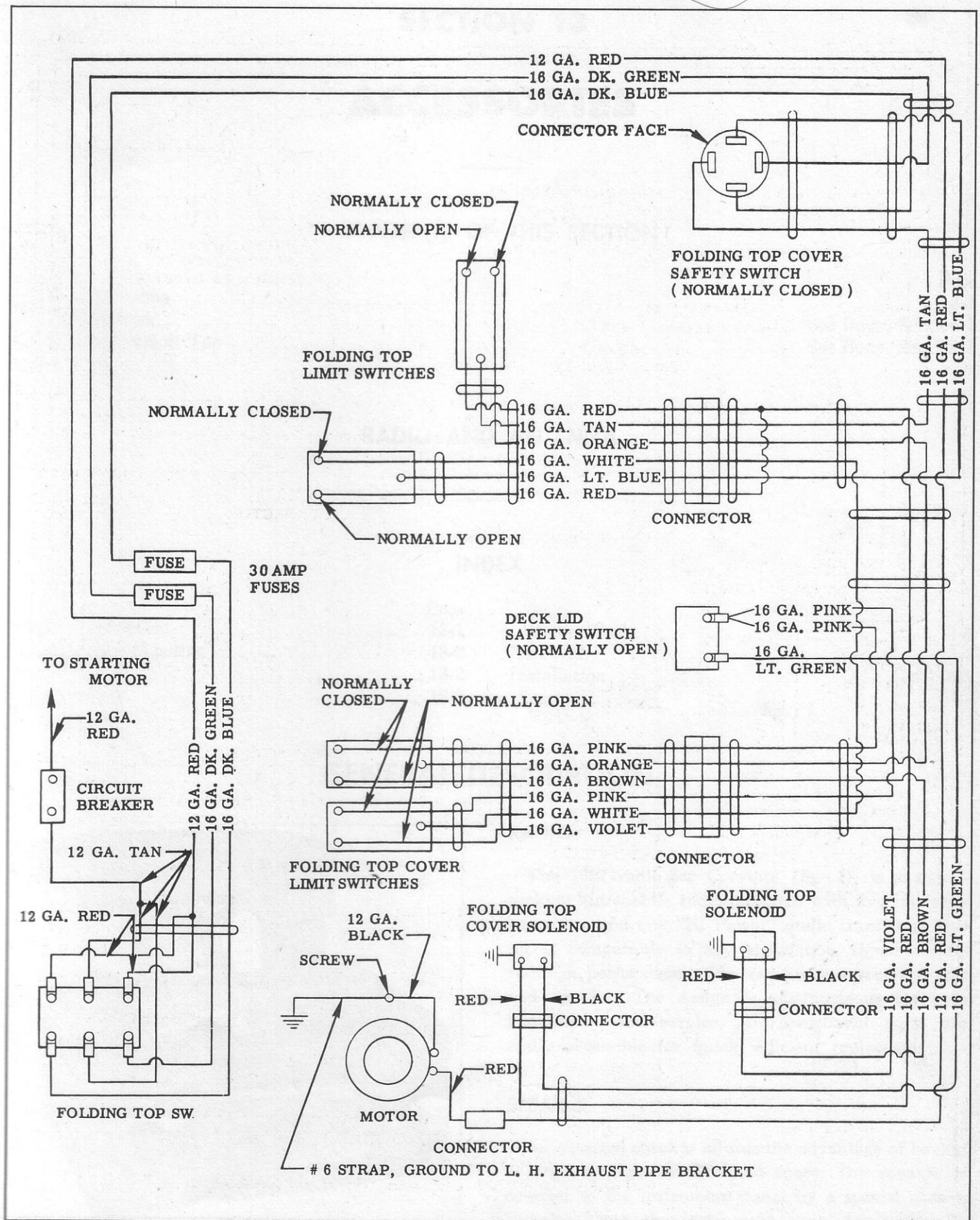


Fig. 22—Top Wiring—(1958 thru 1962)