

SECTION XIII

INSTRUMENTS

Instrument Cluster

REMOVAL—Disconnect the positive cable from the battery. Disconnect the flexible wire cables from the heater controls. Remove the steering column bracket retaining cap screws and remove the bracket. To facilitate removal of the bracket screws at the upper right end of the bracket, it may be necessary to remove the glove box screws and shift the box to the right. Disconnect the speedometer cable at the rear of the speedometer. Disconnect the wiring from the gauges. Pull the directional signal and instrument light bulbs out of the cluster. Remove the wiring harness clip retaining screw and remove the clip and harness from the speedometer case.

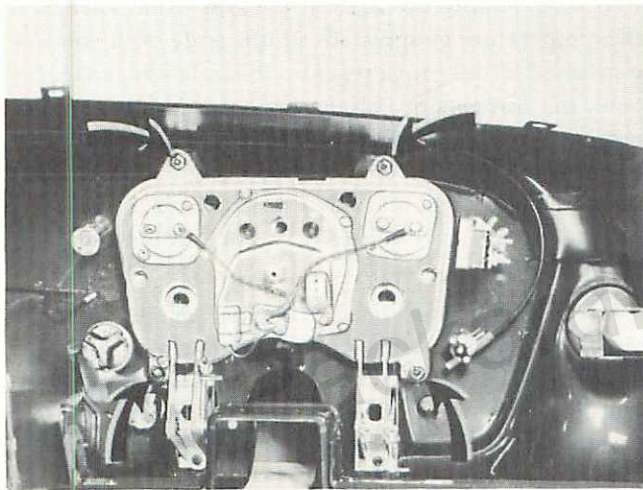


Figure 1—Instrument Cluster Removal

Remove the four stud nuts indicated in Fig. 1, slip the cluster off the studs, and lower and remove the cluster.

DISASSEMBLY—Remove the gauges and speedom-

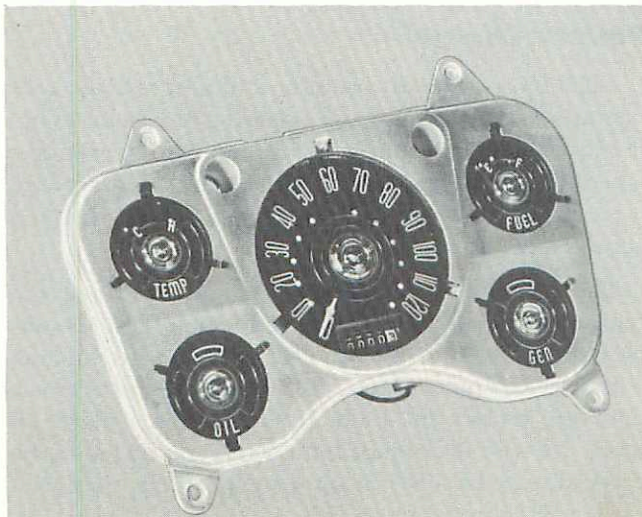


Figure 2—Instrument Cluster

eter. Uncrimp the edge of the front half of the cluster case and separate the case. To remove the dial faces, straighten the retaining tabs (see Fig. 2) and slip the dial face and retainer out of the case front.

ASSEMBLY—Assemble the dial face and retainer on the case front and turn the tabs of the retainer over. Assemble the case and crimp the edge at several points around the case to retain the two parts.

Install the gauges and speedometer on the back of the cluster case.

INSTALLATION—Slip the instrument cluster case mounting flanges over the studs and install the stud nuts.

Connect the wiring to the gauges. Snap the directional signal and instrument light bulb sockets into position in the proper openings in the case. Connect the speedometer cable.

Position the steering column support bracket and install the retaining cap screws. Connect the cables to the heater controls. Connect the battery cable.

Gauge (Fuel or Temperature)

REMOVAL and INSTALLATION—Disconnect the positive cable from the battery. Disconnect the wiring at the gauge. Remove the screws which hold the gauge retainer to the case. Lift the gauge out of the case, turn the gauge clockwise approximately 45 degrees or as required to slip the gauge out of the opening in the case (see Fig. 3).

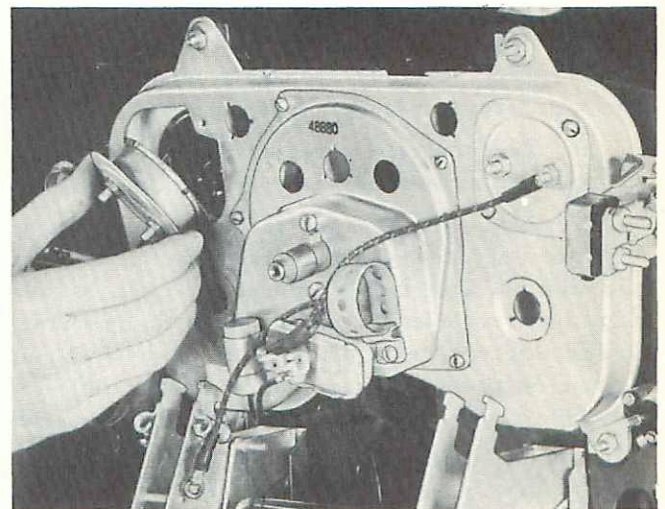


Figure 3—Removing Gauge

To install the gauge, turn the gauge as required and slip the gauge into the case opening. Position the gauge so that the terminals are horizontal, align the screw holes, and install the retaining screws. Connect the gauge wires.

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Speedometer

REMOVAL—Disconnect the positive cable from the battery. Disconnect the wire cables from the heater controls. Remove the steering column bracket retaining screws and remove the bracket. To facilitate the removal of the bracket screws at the upper right end of the bracket, it may be necessary to remove the glove box retaining screws and shift the box to the right.

Disconnect the speedometer cable at the speedometer. Disconnect the instrument voltage regulator wires at the fuel and temperature gauges. Remove the wiring harness clip retaining screw from the speedometer case and move the clip and harness down out of the way. Remove the five speedometer case retaining screws and remove the speedometer from the case (see Fig. 4).

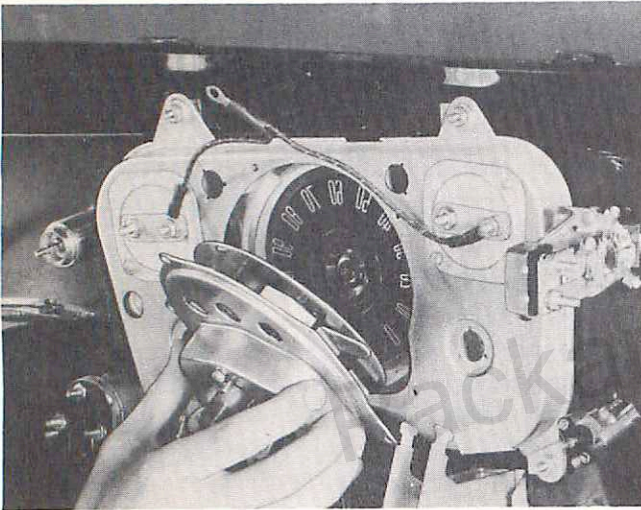


Figure 4—Removing Speedometer

Remove the instrument voltage regulator and condenser from the rear of the speedometer case.

If the speedometer requires servicing, it should be sent to an authorized King-Seeley Service Station.

INSTALLATION—Install the instrument voltage regulator and condenser on the rear of the speedometer case. Slip the unit into position on the cluster case, align the screw holes, and install the retaining screws. Connect the voltage regulator wires to the fuel and temperature gauges. Connect the speedometer cable. Install the wiring harness clip on the rear of the unit case.

Install the steering column support bracket and retaining screws. Connect the heater control cables. Connect the battery cable.

Clock

REMOVAL and INSTALLATION—Slip the clock light bulb out of the socket in the clock case. Disconnect the wire from the terminal at the clock. Remove the stud nuts and slip the clock off the studs.

If the clock is in need of service, it should be taken to an authorized service station. It should first be made certain that the clock is not operating because of a blown fuse. If the clock runs too fast or too slow, it may be adjusted by means of the regulator screw located on the face of the clock.

To install the clock, position it on the studs and install the stud nuts securely. Then connect the wire to the terminal and install the lamp bulb in the socket.

Instrument Voltage Regulator

The voltage regulator is common to both the temperature and fuel level systems. The regulator operates at a constant average value of 5.0 volts.

If both the temperature gauge and the fuel gauge read considerably too high at the same time, that is, if the temperature gauge reads up the scale with cold engine and the fuel gauge reads up the scale with an empty tank, the instrument voltage regulator is not working properly and should be replaced. Before replacing a regulator, check the regulator retaining screws to make sure they are tight so that the regulator is properly grounded. The unit must have a good ground to function properly.

If the temperature gauge and fuel gauge both read too low at the same time, either the input voltage to the regulator is below 5.0 volts or the regulator is not operating properly and should be replaced. Check the battery output voltage before replacing the regulator.

A definite check to determine if the regulator is defective is to disconnect the wires from the regulator and attach them to a unit which is known to be operating properly. Then ground the unit against the case and check the gauge operation.

Indicator (Oil Pressure or Battery Charge)

TESTING—The oil pressure indicator telltale light operates in conjunction with a sending unit in the cylinder block. The indicator will at times light up or flicker when the engine is idling, even though the oil pressure is adequate. However, the light should go out when the engine speed is increased.

The pressure indicator should light up when the ignition switch is turned on. If it does not light, disconnect the wire from the sending unit and ground the wire to the cylinder block. If the indicator still does not light up, replace the bulb. If the indicator lights up when the wire is grounded, the sending unit should be checked to make sure it is tight and properly grounded. If the unit is found to be tight and properly grounded, it is defective internally and should be replaced. If the

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indicator remains lit when it normally should be out, replace the sending unit. If this does not correct the condition, determine the cause for the low oil pressure.

The battery discharge indicator should always light up when the ignition switch is turned on before starting the engine. If the indicator does not light at any time, the bulb should be replaced. If the indicator shows constant discharge when it normally should show a charge, check the battery regulator, generator, and wiring to determine the cause.

Gauge and Sending Unit

TESTING—The water temperature and fuel gauges operate in conjunction with the constant voltage regulator, which is mounted on the back of the speedometer case, and sending units in the cylinder head and the fuel tank.

A fuel tank sending unit, which is known to operate properly, and two test leads with clip terminals at each end can be used to determine the operation of the temperature or fuel gauge and their respective sending units. The test leads should be approximately 10 feet long to permit the individual to sit in the front seat and observe the gauge being checked.

To check the water temperature gauge, disconnect the wire from the terminal on the sending unit and clip one end of a test lead to the disconnected wire. Clip the other end of the same lead to the terminal on the test tank unit. Clip one end of the second test lead to the flange of the test unit and the other end to a good ground. Turn on the ignition switch and operate the float arm of the test unit.

When the float is at the bottom (see Fig. 5) the tem-

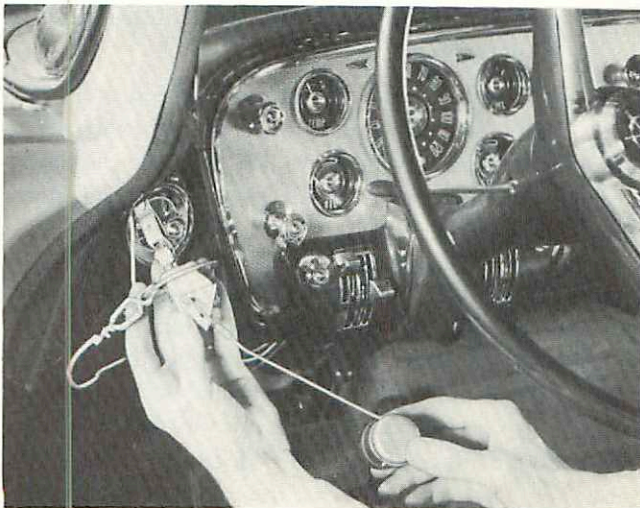


Figure 5—Testing Temperature Gauge Panel Unit

perature gauge should register at the "C" mark on the dial face. When the float is moved upward to its top

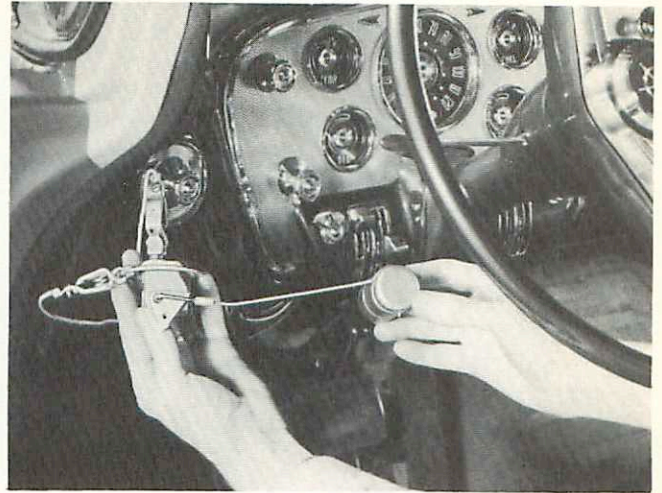


Figure 6—Testing Temperature Gauge Panel Unit

position (see Fig. 6) the gauge needle should move up to the "H" mark on the dial.

If the gauge operates satisfactorily, the sending unit should be replaced. If the gauge still does not operate, the trouble may be in the wire. Disconnect the sending unit-to-gauge wire at the gauge and connect the test lead, which had been connected to the wire, to the gauge terminal. If the gauge now operates properly, replace the sending unit-to-gauge wire; if not, replace the gauge.

The fuel gauge and the tank sending unit may be checked by following the same procedure. Be sure that the tank unit is tight and properly grounded in the tank and that the tank is grounded to the frame.

Windshield Wipers

DESCRIPTION—The vacuum operated windshield wiper system consists of a driving motor, auxiliary drive, tensioners, pivot shaft and cable assemblies, wiper arms, and blades (see Fig. 7).

A tensioner is provided at each side to automatically maintain tension on the cable at all times.

The system incorporates a cam mounted on the pivot shaft assembly and a cam follower which is integral with the wiper arm (see Fig. 8). The arm is of two piece construction: the rigid head and a rotatable section which carries the cam follower. In operation, the follower riding over the face of the cam rotates the outer section of the arm to keep the blade at the normal angle to the windshield as it passes over the curvature.

The blade is attached to the arm by means of a rigidly fitted non-rotatable bayonet shank interlock so that the cam controls the angle of the blade.

A spring interlock is provided in the arm to permit

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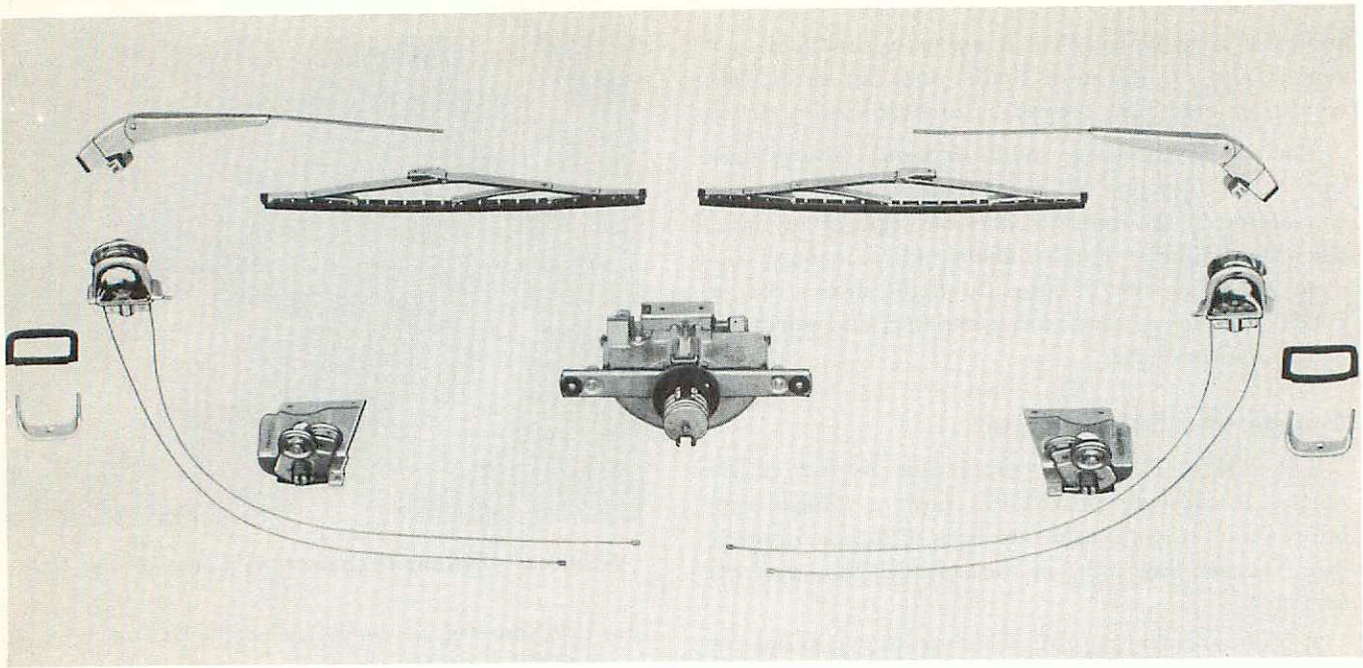


Figure 7—Exploded View of Windshield Wiper System

the rotatable section to be pulled out and the follower disengaged from the cam for removal or installation.

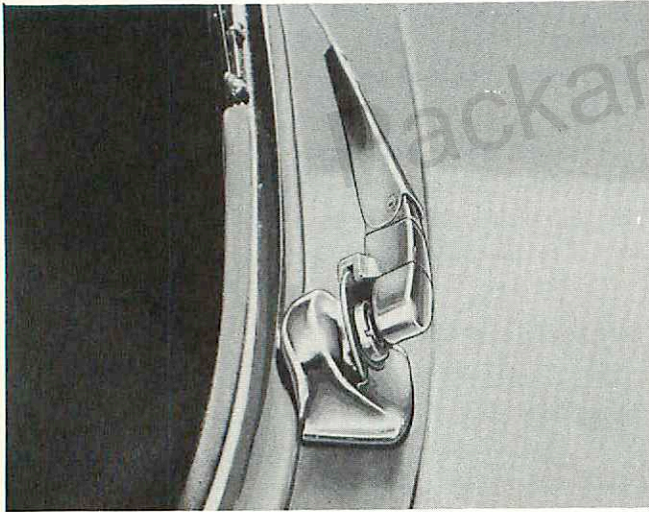


Figure 8—Wiper Arm Cam and Follower

Windshield Wiper Motor

REMOVAL and INSTALLATION—Disconnect the hoses from the motor nipples. Loosen the control cable retaining screw and disconnect the cable from the motor.

Remove the motor-to-auxiliary drive bracket screws, slip the drive plate out of the auxiliary drive, and remove the assembly.

Slip the drive plate into the auxiliary drive, align the mounting screw holes, and install the retaining screws.

Wiper Motor Auxiliary Drive

REMOVAL—The wiper motor and the auxiliary drive can be removed as an assembly. Disconnect the hoses and control cable from the wiper motor.

Before the auxiliary drive can be removed, the tension must be released on the cables at both sides. Release the flat spring by pulling it down away from the ratchet on the tensioner. Then, while holding the spring, rotate the tensioner toward the center of the car until the locking pin hole is in line with a similar hole in the bracket and install a $\frac{1}{8}$ " diameter pin or pin punch in the hole. With the tensioner locked in this position, the cables are released. Lock both tensioners in the same manner.

Slip the ends of the cables out of the drive pulley clips. To facilitate the removal of the cables from the drive pulley, remove the glove box. Remove the retaining screws and remove the drive assembly and motor from the dash panel.

INSTALLATION—Position the drive assembly and motor on the dash panel and install the retaining screws. Connect the cables to the drive pulley (see Fig. 9). The copper connectors must be connected to the copper-colored clip and the steel connectors to the plain clip. Hold the tensioner and slip the locking pin out of the tensioner. Then slowly release the tensioner and engage the cables in the pulleys. When fully released, the tensioner will automatically apply the proper tension to the cables. Make sure that the cables are not kinked and are riding in the center of the pulleys.

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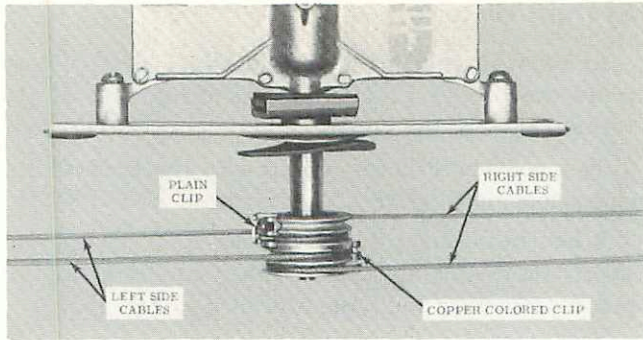


Figure 9—Connect the Cables to the Drive Pulley

Tensioner

REMOVAL—Pull the flat spring away from the tensioner ratchet. Hold the ratchet spring in this position and rotate the tensioner toward the center of the car until the locking pin hole is in line with the hole in the bracket. Then install a $\frac{1}{8}$ " diameter locking pin or pin punch to hold the position of the tensioner. Remove the bracket retaining cap screws. Slip the cables off the pulleys and remove the tensioner.

INSTALLATION—If the tensioner is not in the

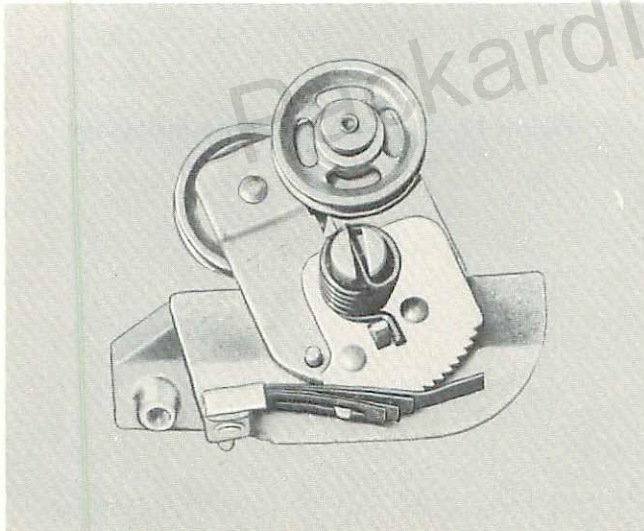


Figure 10—Windshield Wiper Cable Tensioner

locked position (see Fig. 10) lock it in position following the procedure outlined under Tensioner—Removal.

Slip the cables over the pulleys. Position the tensioner bracket on the dash panel and install the retaining screws. Make sure that the cable ends are properly connected to the drive pulley. Then, remove the locking pin or pin punch to release the tensioner and apply tension to the cable. When fully released, the tensioner will automatically apply the proper tension to the cables.

Pivot Shaft and Cable Assembly

REMOVAL—Remove the wiper blade and arm.

Release the tension on the cable by locking the tensioner as outlined under Tensioner—Removal. Then, disconnect the cable ends from the drive pulley and slip the cable off the tensioner pulleys. Remove the retaining bracket and screw. Lift the pivot shaft and cable assembly out of the cowl panel. Remove the assembly gasket.

INSTALLATION—Apply Lubriplate to the cables at the places where the cable will contact the pulleys. Position the gasket on the cowl, insert the cable ends through the opening, and place the assembly on the cowl panel. Install the retaining bracket and screw.

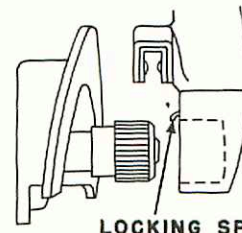
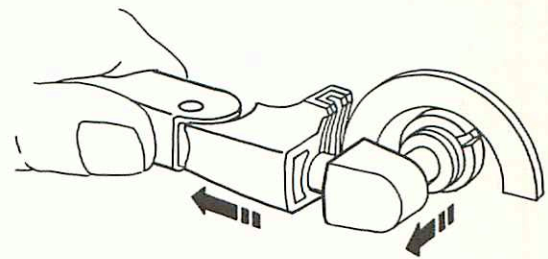
Connect the cable ends in the drive pulley clips as shown in Fig. 9. The copper ends must be installed in the copper-colored clip and the steel ends in the plain clip.

Then release the tensioners as outlined under Tensioner—Installation. Install the wiper blade and arm.

Wiper Arm

REMOVAL—To facilitate installation, stop the wiper in the parked position.

Grasp the arm above the cam follower and pull the arm, against the spring tension, until the follower clears the cam (see Fig. 11). Then, while holding the



LOCKING SPRING

Figure 11—Grasp the Arm Above the Cam Follower

arm in this position, pull the arm head straight off the shaft serrations.

INSTALLATION—Make sure the pivot shaft is in the normal parked position.

Line up the arm and blade in the parked position,

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the blade toward the center of the windshield and resting on the upper edge of the windshield lower moulding. Pull out to elongate the arm and start the arm on the shaft. Check for correct park position. Hold the arm elongated, then push the arm on the shaft until the locking spring snaps over the inner edge of the serrations, and release the arm to permit the cam follower to engage the cam.

Cam Follower Shoe

REMOVAL and INSTALLATION—Remove the wiper arm from the pivot shaft.

Push in on the shoe locking lug with a small screw driver or punch and pry the shoe out of the follower (see Fig. 12).

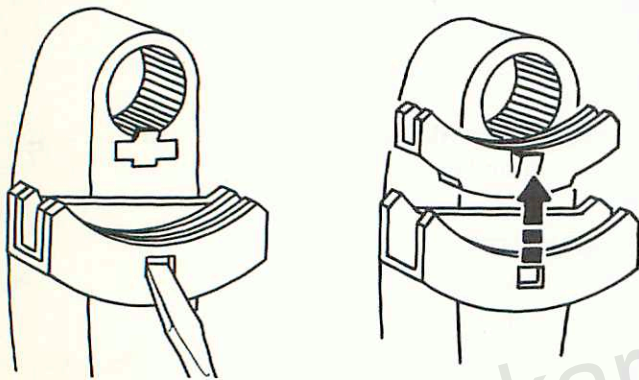


Figure 12—Push In On the Shoe Locking Lug

To install the shoe, press the shoe down into place until the lug engages the hole in the arm head.

System Hoses

REMOVAL and INSTALLATION—Figure 13 illustrates the proper installation and connection of the vacuum hoses of the system.

To remove the hoses, simply slip the hose off the connectors and remove.

When installing the hoses, make sure that they fit snugly on the fittings and that they are not kinked or pinched. Connect the hoses as shown in Fig. 13.

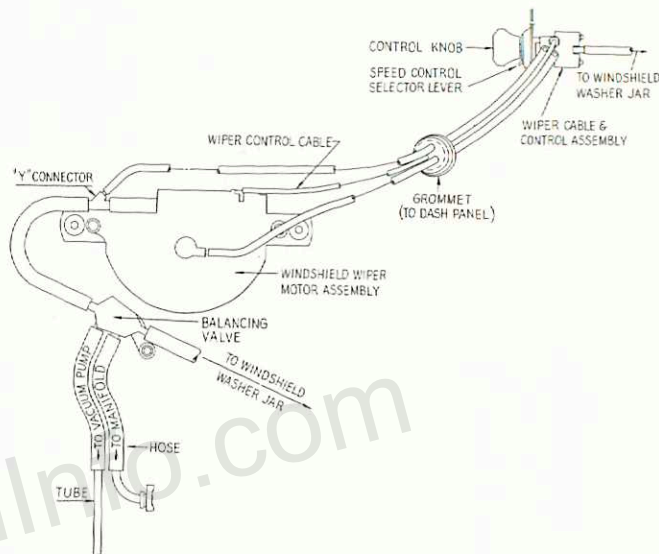


Figure 13—Wiper System Hose Installation