GENERAL MOTORS LIFTGATE

DESCRIPTION

Liftgate wiper and washer system consists of 2 motors, a transmission mechanism, circuit breaker, park switch and impeller pump. The wiper motor is a single-speed, permanent magnet type enclosed with a drive gear in a staked metal housing. The transmission mechanism is contained in a plastic housing attached to the motor and gearbox assembly. The motor is protected by an internal, automatic reset type, circuit breaker.

The park switch, which is snapped into the side of the transmission housing, allows the wiper blade to stop in the park position when the wiper is turned off. The washer motor is also permanent magnet type and is jar-mounted with the impeller type pump assembly.

OPERATION

The wiper can only be operated with the ignition switch in the run or accessory position. There are 4 terminals on the motor and gearbox assembly. Terminals 1 and 2 are for the park switch and 3 and 4 are for the motor. See *Fig. 1*.

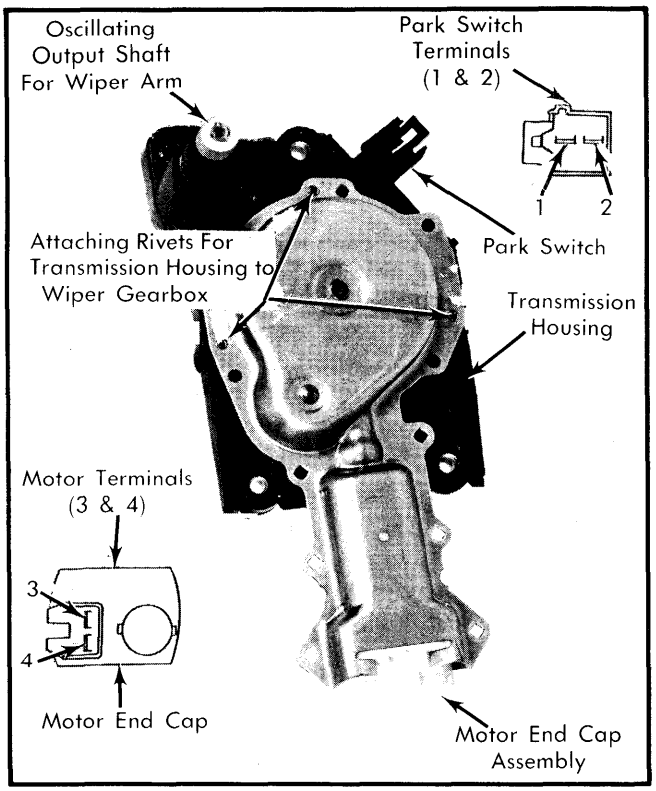

Fig. 1 General Motors Liftgate Wiper Motor Assembly

Turning the dash switch to "ON" position provides 12 volts to motor terminal 3. The circuit is completed to ground through motor terminal 4, thus operating the wiper motor. See *Fig. 2*. Turning the switch to the "OFF" position provides 12 volts to motor terminal 3 through the park switch. The wiper will continue to operate until a cam, located in the transmission housing, opens the park switch contacts. The cam opens the park switch contacts when the wiper blade reaches the correct park position. See *Fig. 2*.

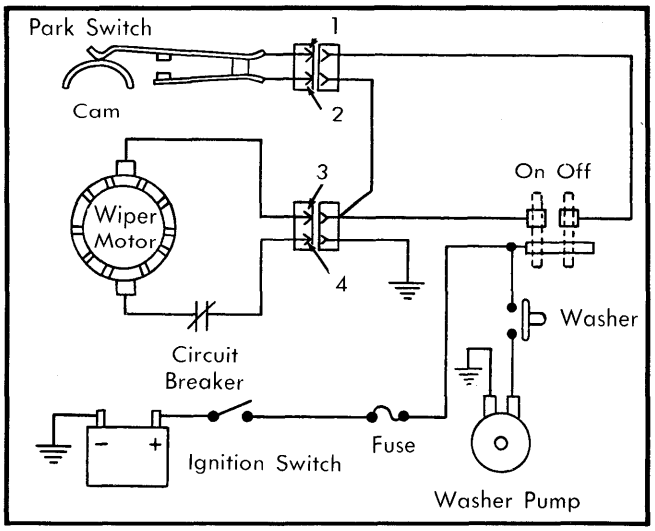

Fig. 2 General Motors Liftgate Wiper & Washer System Circuit Diagram

Pushing the wash button in completes the washer motor circuit to ground and turns the washer motor on, which operates the pump. The pump allows direct control of the amount of solution delivered to the back glass and shuts off as soon as the wash button is released. The wiper will continue to operate until the dash switch is returned to the "OFF" position.

TROUBLE SHOOTING

WIPER INOPERATIVE

1) Check fuse. If fuse is okay, turn ignition switch and wiper switch to "ON" position. Ground test lamp and touch probe to wiper terminal 3. If test lamp lights, check for open in wire between terminal 4 and ground. If okay, repair or replace wiper motor. If test lamp does not light, touch probe to terminals of both wires at wiper switch.

2) If test lamp lights on both wires, check for open in wire between wiper switch and motor. If test lamp does not light on either wire, check for open in feed wire between fuse block and wiper switch. If test lamp does not light on one wire, replace wiper switch.

3) If fuse is blown, replace fuse and recheck wiper operation. If fuse blows again, disconnect wiring from wiper motor. Replace fuse. Turn ignition and wiper switch "ON". If fuse is okay, repair or replace wiper motor. If fuse blows again, locate and repair grounded wiring between fuse block and switch.

WIPER WILL NOT SHUT OFF

With ignition switch "ON" and wiper switch "OFF", disconnect wiring from wiper park switch terminals 1 and 2. If wiper keeps operating, replace wiper switch. If wiper stops, replace park switch.

WIPER BLADE DOES NOT PARK

1) With ignition switch "ON" and wiper switch "OFF", stop the wiper blade in the middle of wipe stroke using the wiper

GENERAL MOTORS LIFTGATE (Cont.)

switch. With wiring still connected to the wiper motor, connect a jumper wire across wiper park switch terminals 1 and 2. If wiper operates, replace park switch.

2) If wiper does not operate, ground test lamp and touch probe to terminal 1 at park switch. If test lamp lights, check for open in wire between wiper terminals 2 and 3. If test lamp does not light, check for open in wire between wiper switch and terminal 1. If okay, replace wiper switch.

WIPERS OPERATE INTERMITTENTLY

1) Remove wiper fuse and connect an ammeter across fuse block terminals. Turn ignition switch "ON" and operate wiper and washer pump. Observe current draw while glass is wet. If current draw exceeds 3.5 amps., remove wiper arm and blade. Repeat test. If current draw is still high, repair or replace wiper motor. If current draw is okay, install a new wiper blade and recheck operation.

2) If current draw was less than 3.5 amps., duplicate condition by operating wiper for approximately 5 minutes while depressing the wash button every 2 minutes. If condition still exists, repair or replace wiper motor. If wiper operates okay, check wiper system wiring for loose connections. Check for loose ground wire from terminal 4 to body metal.

WIPER MOTOR OPERATES BUT CURRENT DRAW EXCEEDS 3.0 AMPS.

Remove transmission housing cover from wiper motor. Disconnect drive link from drive cam. Connect 12 volts source lead to terminal 3. Ground terminal 4 to operate motor. If current draw still exceeds 3.0 amps., replace wiper motor and transmission assembly. If current draw is okay, replace wiper transmission assembly only.

REAR WINDOW WASHER INOPERATIVE

1) Turn ignition switch "ON" and depress wash button. If washer motor operates, but no solution is delivered to rear glass, check for low solution, plugged screen or nozzle, loose or kinked hoses, or reversed electrical leads to washer motor. If okay, replace motor and pump assembly.

2) If washer motor does not operate, ground test lamp and touch probe to terminal of feed wire at pump motor. Depress wash button again. If test lamp lights, check for open in ground wire or poor connection or terminal to body metal. If okay, replace motor and pump assembly. If test lamp does not light, check for open in feed wire between instrument panel switch and pump motor. If okay, replace switch assembly.

TESTING

NOTE – *Connecting power source to wiper motor with improper polarity will result in wiper rotating in wrong direction.*

To operate motor without using park switch, connect battery voltage to terminal 3 and ground lead to terminal 4. *See Fig. 3, View A.* To turn wiper motor off and obtain proper park position, install park switch, if previously removed, and connect terminal 4 to ground. Connect a jumper wire from terminal 2 of the park switch to terminal 3 of the motor. Connect battery voltage to terminal 1 of park switch. *See Fig. 3, View B.*

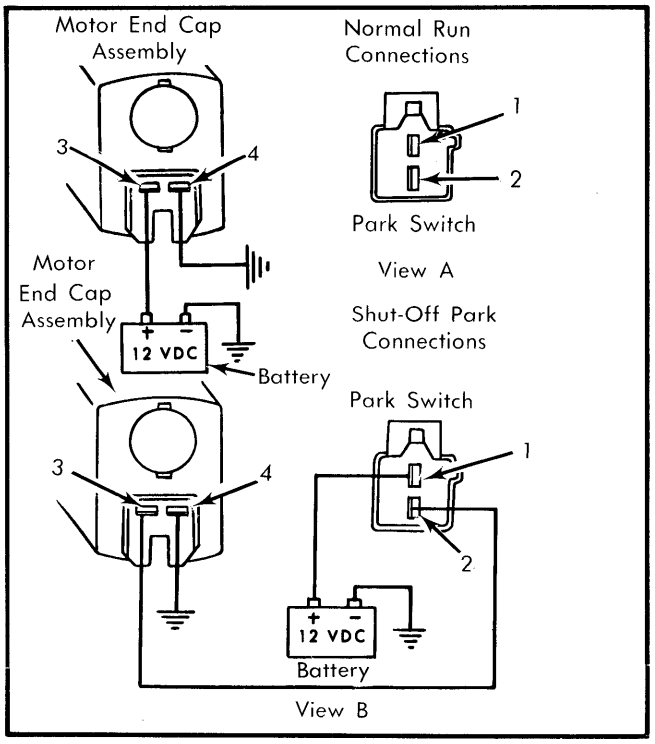

Fig. 3 Testing Liftgate Wiper Motor With Motor Off Vehicle

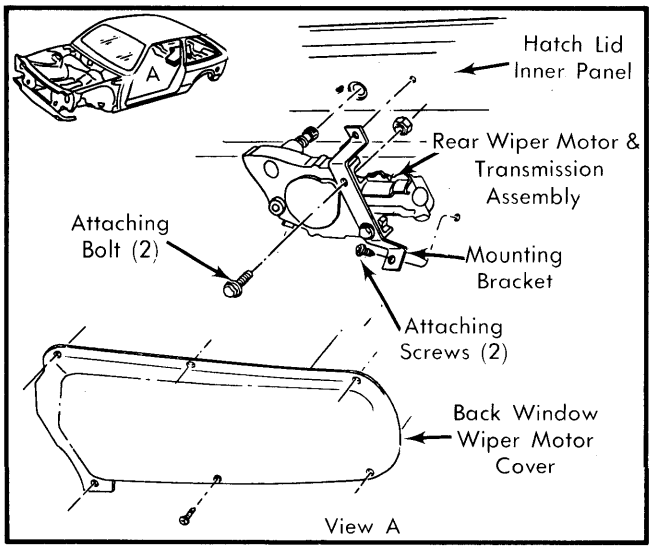

Fig. 4 Removal & Installation of General Motors Liftgate Wiper Motor

REMOVAL & INSTALLATION

WIPER MOTOR

Removal – Remove 6 screws attaching liftgate wiper motor cover to hatch lid inner panel. Remove 2 bolts and 2 screws attaching wiper motor mounting bracket to hatch lid inner panel. Remove wiper motor and transmission assembly. *See Fig. 4.*

Installation – Reverse removal procedure.