

GENERAL MOTORS — S10

DESCRIPTION

Wiper system is a permanent magnet positive park system with a dynamic brake and separate washer assembly. Washer system consists of a permanent magnet motor and pump assembly that is mounted to the solution jar by a nut located inside inside jar. The motor can be operated only when the ignition switch is in the "RUN" or "ACCESSORY" position.

TESTING & TROUBLE SHOOTING

WIPER SYSTEM

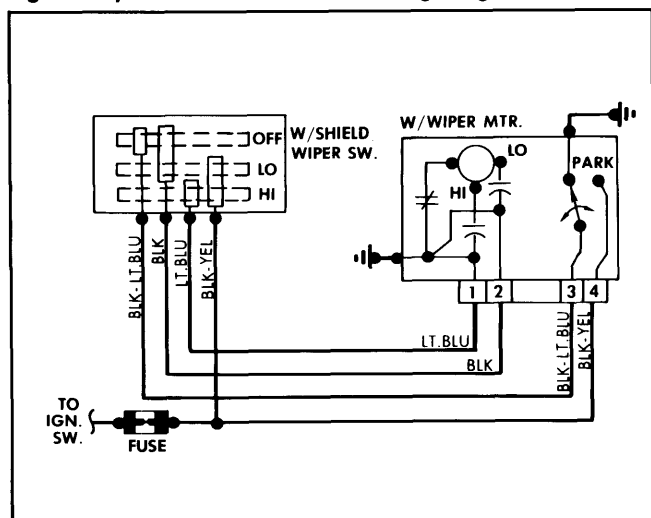
Wiper Inoperative

1) With ignition switch "ON" and wiper switch on "HIGH", ground 12 volt test lamp and touch probe to wiper terminal No. 1. If lamp lights, proceed to step 3). If lamp does not light, check fuse.

2) If fuse is okay, repair open in feed circuit between fuse box and wiper motor. If fuse is blown, replace fuse. If fuse blows, check for short in wiring or high amperage draw in motor.

3) If lamp lit in step 1), place switch in "LOW". Connect jumper wire to ground. If wiper runs, repair open in ground strap. If wiper does not run, problem is in motor. Repair or replace motor as necessary.

Fig. 1: Wiper Motor and Switch Wiring Diagram



Wiper Has Low Speed Only

1) With ignition switch "ON" and wiper switch in "HIGH" position, remove connector from wiper terminal. Connect 12 volt source to high speed terminal No. 1. If wiper is inoperative, repair wiper motor.

2) With wiper in "HIGH", check for open wire from wiper terminal No. 1 to column switch and repair. If wire is okay, replace column switch.

Wiper Has High Speed Only

1) With ignition switch "ON" and wiper switch in "LOW" position, remove connector from wiper terminal. Connect 12 volt source to terminal No. 2. If wiper does not run, repair wiper motor.

2) If wiper runs in "LOW", check for open in wire from wiper terminal No. 2 to column switch and repair. If wire is okay, replace column switch.

Wiper Works at Same Speed in Both "LOW" and "HIGH" Positions

1) With ignition switch "ON" and wiper switch in "LOW" or "HIGH" position, remove connector from wiper terminal. Connect 12 volt source to low or high terminals. If wiper runs at one speed, repair wiper motor. Check for low or high speed brushes shorting.

2) If wiper runs in both "HIGH" and "LOW", check for open in wires from terminals No. 1 and No. 2 to column switch and repair. If there are no opens, replace column switch.

Wipers Will Not Park

1) With ignition switch "ON" and wiper switch in "PARK" position, remove connector from wiper terminal. Connect jumper from terminal No. 2 to No. 3 and 12 volt source to terminal No. 4. If wiper is inoperative or does not park, repair wiper motor.

2) Check park switch actuator and brush holder. If wiper runs and parks in step 1), turn column switch "OFF". Check current flow between terminals No. 2 and No. 3 on harness. If lamp lights, check for open in wire from terminal No. 4 to fuse block and repair.

3) If there is no current flow in step 2), check for open in wires from terminal No. 3 to column switch and repair. If there are no opens, replace column switch.

Wiper Will Not Shut Off

1) With ignition "ON" and wiper switch "OFF", remove connector from wiper terminal. Connect jumper from terminals No. 2 and No. 3 and 12 volts to terminal No. 4.

2) If wiper still runs, repair wiper motor (check park switch actuator and brush holder assembly). If wiper parks, replace column switch.

Intermittent Wiper Condition

1) Remove wiper fuse from fuse block and connect an ammeter across fuse block terminals. Operate wipers in "HIGH" with windshield dry. Current draw will fluctuate. If current draw is below 5.0 amps., a weak circuit breaker is indicated. Replace brush holder assembly.

2) If current draw exceeds 5.0 amps., remove wiper arms and blades and repeat test. If current still exceeds 5 amps., go to step 3). If current draw is okay, replace wiper blade elements and repeat test. If current draw is okay, problem is corrected.

3) If current draw exceeded 5.0 amps. in step 2), disconnect wiper linkage from motor crank arm and repeat test. If current draw is okay, wiper transmission linkage is binding. Repair or replace as needed.

4) If current draw exceeds 5.0 amps. with linkage disconnected, repair wiper motor. Check for shorted or grounded armature.

Wiper Motor Runs But Blades Do Not Move

1) Check wiper linkage connection to crank arm. If linkage disconnected, connect linkage and check system.

2) If linkage is connected, wiper gear is stripped. Repair motor.

Wiper Motor Parks But Above Normal Position

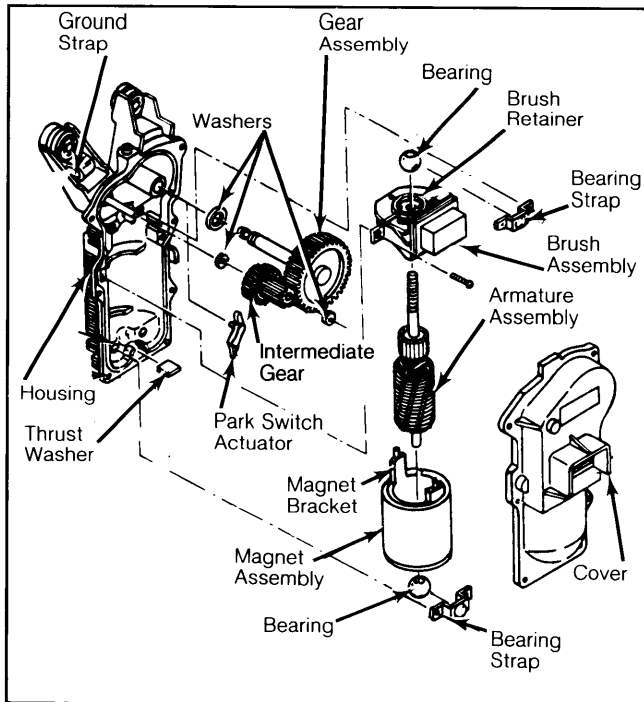
1) With ignition switch "ON" and wiper switch in "PARK" position, remove connector from wiper terminal. Check for open between terminal No. 3 and ground. If there is an open, repair open in motor or replace holder assembly.

Wiper/Washer Systems

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2) If there is no open, check arm and blade location and/or transmission linkage.

Fig. 2: Windshield Wiper Motor Components



Replace rivets with self-tapping screws when reassembling.

REMOVAL & INSTALLATION

WIPER MOTOR

Removal

1) Disconnect negative battery cable. Remove wiper arms. Remove cowl vent and grille. Loosen but do not remove transmission drive link to motor crank arm attaching nuts.

2) Detach drive link from motor crank arm. Disconnect motor electrical leads. Remove motor attaching screws. Rotate motor upward and outward to remove.

Installation

Install motor by reversing removal procedure. Check operation of system.

WIPER MOTOR COVER

Removal

Remove wiper motor. From housing side, drill the ends off 7 rivets holding cover to housing with an $\frac{1}{64}$ " drill bit. Remove cover.

Installation

To install, attach the cover to housing with self-tapping screws.

WIPER HOUSING

Removal

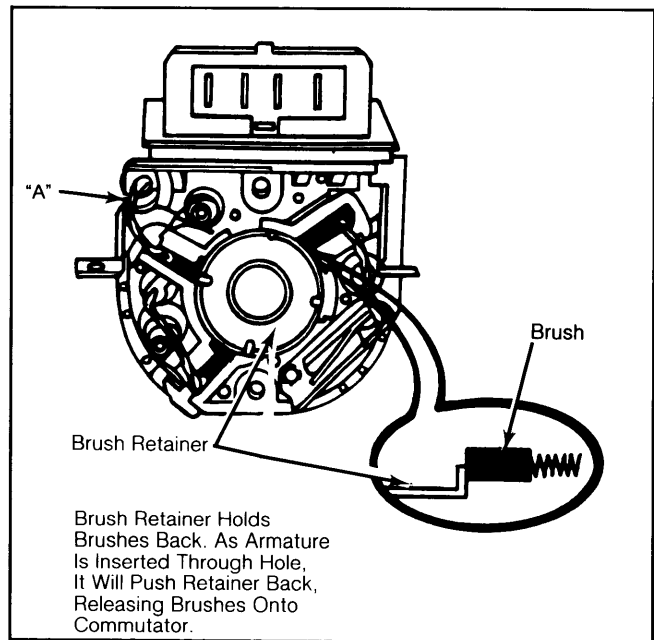
1) Remove wiper motor. Remove wiper motor cover. Remove crank gear lock nut, crank arm, shaft seal, thrust collar and washer. Push end of gear shaft through housing and remove gear assembly and washer.

2) File burr from retaining ring groove and where crank arm seats on shaft. Remove intermediate

gear and washers. Drill ends off the 4 rivets holding bearings and bearing straps in place with an $\frac{1}{64}$ " drill bit. Be careful not to get metal chips into motor.

3) Remove the 6-lobed socket screws holding brush assembly in place. Remove armature, brush and magnet assembly together to avoid realignment of brushes. Proper alignment is shown in illustration. See Fig. 3.

Fig. 3: Wiper Motor Brush Retainer Assembly



Braided contact wire "A" must be behind brush retaining spring.

Installation

To install, reverse removal procedure, using new housing, new retaining ring and self-tapping screws. Place thrust pin casing with insert about $\frac{1}{32}$ " (.8 mm) above rear of pin as shown in Fig. 4.

Fig. 4: Wiper Thrust Pin Adjustments

