

SECTION 8E

WIPER/WASHER SYSTEMS

NOTICE: Always use the correct fastener in the proper location. When you replace a fastener, use **ONLY** the exact part number for that application. General Motors will call out those fasteners that require a replacement after removal. General Motors will also call out the fasteners that require thread lockers or thread sealant. **UNLESS OTHERWISE SPECIFIED**, do not use supplemental coatings (paints, greases, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and joint clamping force, and may damage the fastener. When you install fasteners, use the correct sequence and tightening specifications. Following these instructions can help you avoid damage to parts and systems.

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GENERAL DESCRIPTION

FRONT WIPER/WASHER SYSTEM

The front wiper/washer system consists of a wiper motor, wiper linkage, wiper arm, wiper blade assembly and wiper blade rubber, washer fluid reservoir and a washer pump. It is controlled through the combination (windshield wiper/washer) lever which is integrated into the combination switch. The combination (windshield wiper/washer) lever is located on the right side of the steering column. The front wiper circuit is designed so that when the combination (windshield wiper/washer) lever is moved to "OFF," the wiper blades will automatically return to their final rest position.

REAR WIPER/WASHER SYSTEM

The optional rear wiper/washer system consists of a wiper motor, wiper arm, wiper blade assembly, wiper blade rubber and a washer pump. The rear wiper/washer system is controlled through the rear wiper/washer switch located on the instrument panel, right of the steering column. The rear wiper operates at one speed.

WASHER SYSTEM

The front and rear washer systems consist of a shared washer fluid reservoir, separate washer pumps (which are attached to the washer fluid reservoir),

hoses, nozzles and washer switches. The washer fluid reservoir is mounted on the right fender behind the right headlamp. The front washer system is actuated by pulling the combination (windshield wiper/washer) lever rearward. The front washer will operate until the lever is released. When the front washer system is activated, the front wipers will operate at low speed regardless of the lever's position. The rear washer is actuated through the rear wiper/washer switch located on the instrument panel, right of the steering column. The rear washer will operate as long as the washer switch is depressed. When the washer switch is depressed the rear wiper will operate regardless of the wiper switch position.

INTERMITTENT OPERATION

Intermittent wiper operation is achieved through the charging and discharging of the intermittent controller condenser. With the combination (windshield wiper/washer) lever in the "INT" position, the front wipers begin to operate at low speed. By the time the wiper motor makes one complete rotation, the condenser in the intermittent controller has discharged. Current flow to the wipers is then cut off until the condenser is recharged (approximately six seconds). When the wash switch is engaged while the intermittent wipers are activated, the wipers will begin to operate at low speed until the wash switch is released. When the switch is released, the wipers will resume intermittent operation.

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DIAGNOSIS

Refer to SECTION 8A for front and rear wiper/washer system electrical diagnosis.

ON-VEHICLE SERVICE

FRONT WIPER/WASHER SYSTEM

Front Wiper Arm

Figure 1

 Remove or Disconnect

 Important

- Before removing the front wiper arm, note its location for proper installation.

1. One retaining nut from front wiper arm.
2. Front wiper arm from front wiper linkage (Figure 1).

 Install or Connect


- Front wiper arm to front wiper linkage; secure with retaining nut.

 Tighten

- Front wiper arm retaining nut to 20 N.m (15 lbs. ft.).

Front Wiper Blade Assembly

Figure 2

 Remove or Disconnect

NOTICE: Place the wiper arm(s) in locked vertical position to prevent damage to the windshield.

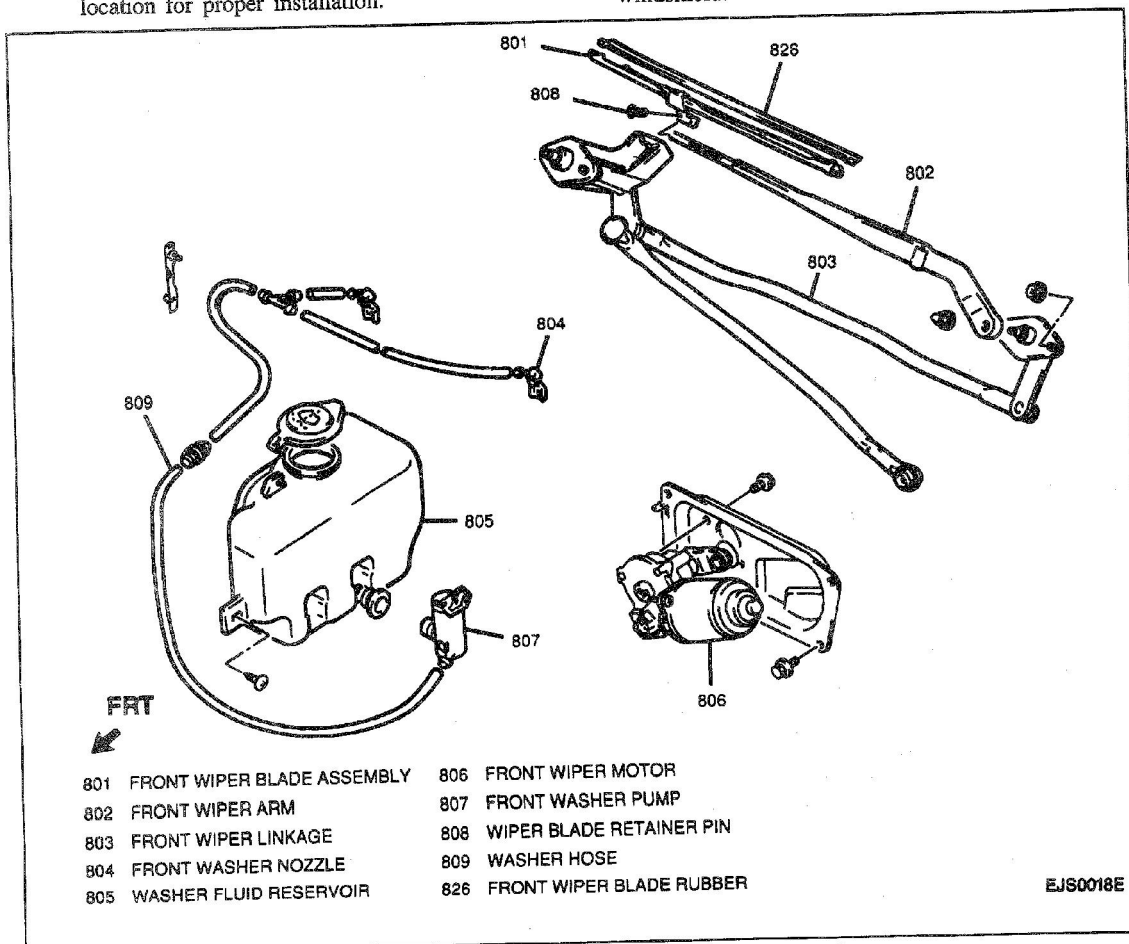


Figure 1—Front Windshield Wiper/Washer System (Typical)

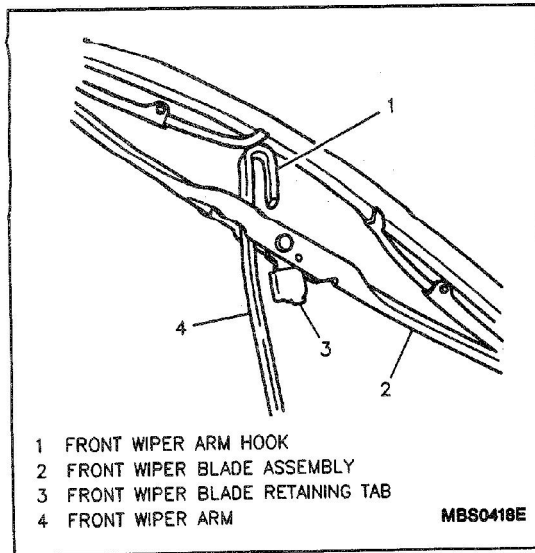


Figure 2—Removing Wiper Blade Assembly

- Depress the front wiper blade retaining tab, slide blade assembly down wiper arm until the blade clears the wiper arm hook and then remove the blade from the arm (Figure 2).

Install or Connect

- Slide wiper blade assembly onto wiper arm hook until release tab clicks into place and locks.
- Gently lower wiper arm to its normal position on the windshield.

Front Wiper Blade Rubber

Figures 3 and 4

Remove or Disconnect

- Pull the front wiper blade rubber out of the wiper blade assembly hooks (Figure 3).

Install or Connect

- Slide wiper blade rubber through wiper blade assembly hooks until it is locked into place (Figure 4).

Front Wiper Linkage

Figures 1 and 5 through 10

Remove or Disconnect

1. Negative (-) battery cable.

Important

- Before removing the front wiper arms, note their location for proper installation.

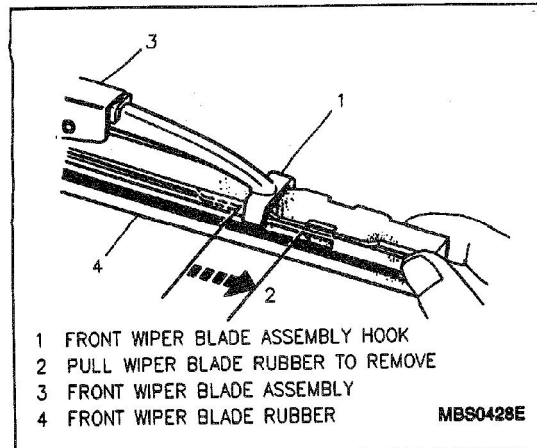


Figure 3—Wiper Blade Rubber Removal

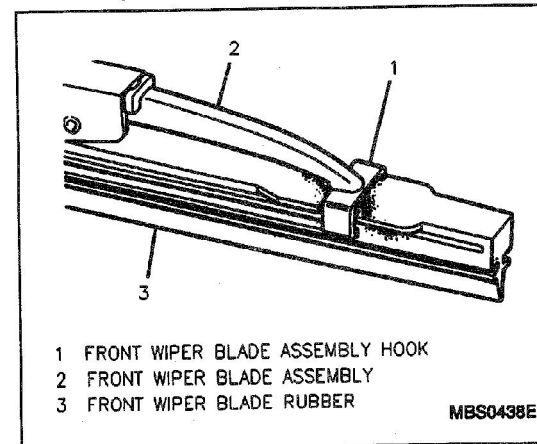


Figure 4—Wiper Blade Rubber Locked in Place

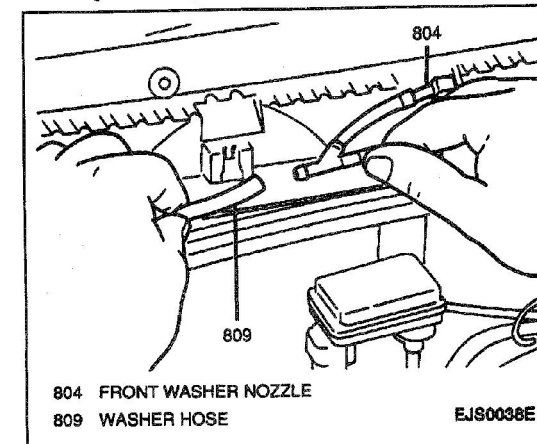


Figure 5—Disconnecting Washer Hose

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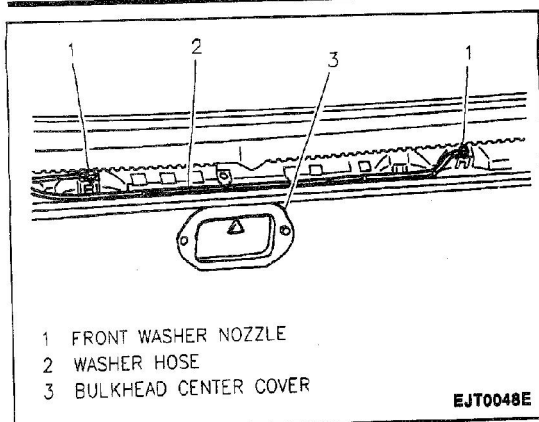


Figure 6—Bulkhead Center Cover

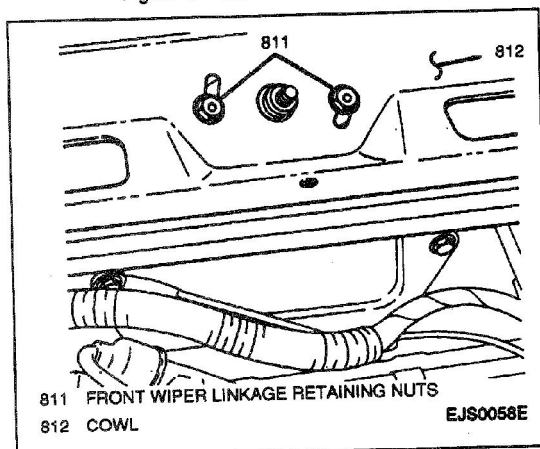


Figure 7—Front Wiper Linkage Retaining Nuts

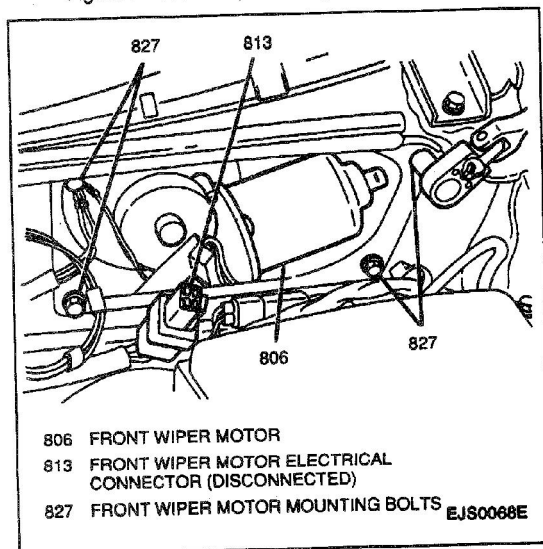


Figure 8—Removing Front Wiper Motor

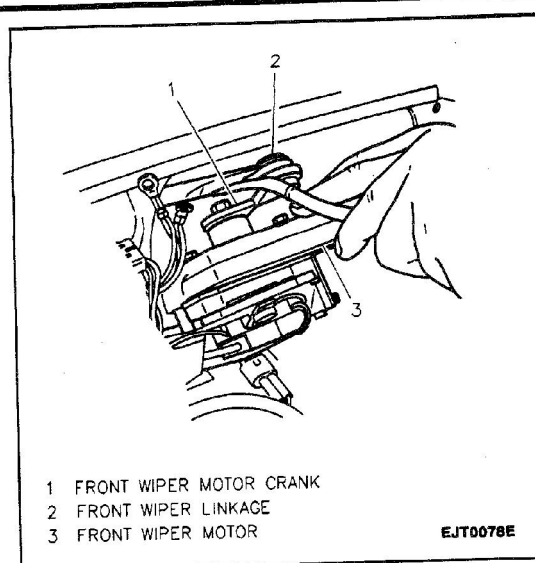


Figure 9—Disconnecting Front Wiper Linkage From Front Wiper Motor

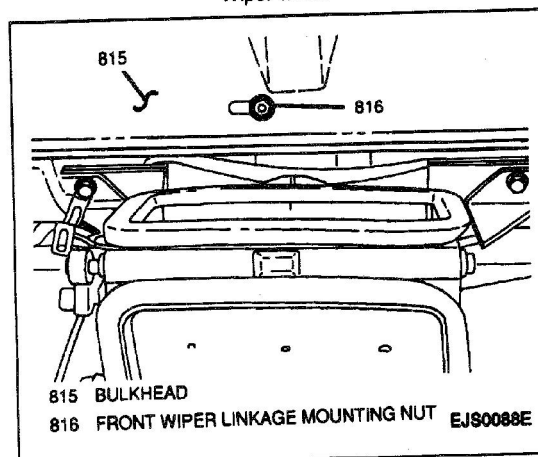


Figure 10—Front Wiper Linkage Mounting Nut

2. Instrument panel from vehicle. Refer to SECTION 8C.
3. One retaining nut from each front wiper arm (Figure 1).
4. Front wiper arms from vehicle.
5. Washer hose from front washer nozzle (Figure 5).
6. Six plastic retaining clips and right-side bulkhead vent grille from vehicle.
7. Three plastic retaining clips and left-side bulkhead vent grille from vehicle.
8. Two bolts and bulkhead center cover, exposing wiper linkage (Figure 6).
9. Four retaining nuts securing front wiper linkage to bulkhead (Figure 7).
10. Front wiper motor electrical connector.
11. Four mounting bolts and pull front wiper motor away from bulkhead (Figure 8).

12. Gently pry front wiper linkage from front wiper motor crank arm (Figure 9).

! Important

- The front wiper motor crank arm is not serviced separately and should not be disconnected from the front wiper motor. The crank arm is positioned on the wiper motor to allow the wiper arms to return to their normal park position.
13. Front wiper motor from vehicle.
 14. Front wiper linkage mounting nut from interior side of bulkhead (Figure 10).
 15. Slide the front wiper linkage through the front wiper motor opening.

↔ Install or Connect

1. Slide the front wiper linkage through the front wiper motor opening.
2. Front wiper linkage mounting nut to interior side of bulkhead.

⌚ Tighten

- Front wiper linkage mounting bolt to 20 N.m (15 lbs. ft.).
3. Front wiper motor to vehicle; connect front wiper linkage to front wiper motor crank arm.
 4. Front wiper motor to bulkhead; secure with four mounting bolts.

⌚ Tighten

- Front wiper motor mounting bolts to 20 N.m (15 lbs. ft.).
5. Front wiper motor electrical connector.
 6. Four retaining nuts securing front wiper linkage to bulkhead.

⌚ Tighten

- Front wiper linkage retaining nuts to 15 N.m (11 lbs. ft.).
7. Bulkhead center cover; secure with two bolts.
 8. Left-side bulkhead vent grille; secure with three plastic retaining clips.
 9. Right-side bulkhead vent grille; secure with six plastic retaining clips.
 10. Washer hose to front washer nozzle.
 11. Front wiper arms to vehicle; secure each with one retaining nut.

⌚ Tighten

- Front wiper arm retaining nuts to 20 N.m (15 lbs. ft.).
12. Instrument panel to vehicle. Refer to SECTION 8C.
 13. Negative (-) battery cable.

⌚ Tighten

- Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N.m (11 lbs. ft.).

Front Wiper Motor

Figures 1, 8 and 9

↔ Remove or Disconnect

1. Negative (-) battery cable.
2. Front wiper motor electrical connector.
3. Four mounting bolts and pull front wiper motor away from bulkhead (Figure 8).
4. Gently pry front wiper linkage from front wiper motor crank arm (Figure 9).

! Important

- The front wiper motor crank arm is not serviced separately and should not be disconnected from the front wiper motor. The crank arm is positioned on the wiper motor to allow the front wiper arms to return to their normal park position.
5. Front wiper motor from vehicle.

↔ Install or Connect

1. Front wiper motor to vehicle; connect front wiper linkage to front wiper motor crank arm.
2. Front wiper motor to bulkhead; secure with four mounting bolts.

⌚ Tighten

- Front wiper motor mounting bolts to 20 N.m (15 lbs. ft.).
3. Front wiper motor electrical connector.
 4. Negative (-) battery cable.

⌚ Tighten

- Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N.m (11 lbs. ft.).

Front Washer Nozzle

Figures 1 and 5

! Important

- If a nozzle becomes plugged, apply air pressure to help remove the obstruction. If it remains plugged, the nozzle must be replaced.

↔ Remove or Disconnect

1. Front washer hose from nozzle (Figure 5).
2. Front washer nozzle from bulkhead vent grille.

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Install or Connect

1. Front washer nozzle to bulkhead vent grille.
2. Front washer hose to front washer nozzle.

Front Washer Pump

Figure 1

Remove or Disconnect

1. Negative (-) battery cable.
2. Front washer pump electrical connectors.
3. Washer hose from front washer pump.
4. Front washer pump from washer fluid reservoir (Figure 1).

Install or Connect

1. Front washer pump to washer fluid reservoir.
2. Washer hose to front washer pump.
3. Front washer pump electrical connectors.
4. Negative (-) battery cable.

Tighten

- Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N.m (11 lbs. ft.).

Washer Fluid Reservoir

Figure 1

Remove or Disconnect

1. Negative (-) battery cable.
2. Two screws and washer fluid reservoir assembly from vehicle (Figure 1).
3. Front (and rear, if equipped) washer pump(s) electrical connector(s).
4. Washer hose(s) from pump(s).
5. Front (and rear if equipped) washer pump(s) from reservoir.

Install or Connect

1. Front (and rear, if equipped) washer pump(s) to washer fluid reservoir.
2. Washer hose(s) to pump(s).
3. Front (and rear, if equipped) electrical connector(s).
4. Washer fluid reservoir to vehicle; secure with two screws.
5. Negative (-) battery cable.

Tighten

- Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N.m (11 lbs. ft.).

REAR WIPER/WASHER SYSTEM

Rear Wiper Arm

Figures 11 and 12

Remove or Disconnect

1. Spare tire from rear door to gain access to rear wiper arm by removing spare tire cover, tire lock and wheel nuts.
2. Lift nut cover to gain access to rear wiper arm retaining nut (Figure 11).

Important

- Before removing the rear wiper arm, note its location for proper installation.
3. Rear wiper arm retaining nut from rear wiper arm (Figure 12).
 4. Rear wiper arm from rear wiper pivot assembly (Figure 11).

Install or Connect

1. Rear wiper arm to rear wiper pivot assembly; secure with retaining nut.

Tighten

- Rear wiper arm retaining nut to 20 N.m (15 lbs. ft.).
2. Place nut cover over rear wiper arm retaining nut.
 3. Spare tire to rear door; secure with wheel nuts.

Tighten

- Spare tire wheel nuts to 54 N.m (40 lbs. ft.).
4. Tire lock and spare tire cover.

Rear Wiper Blade Assembly

Figure 2

Remove or Disconnect

- Depress retaining tab on rear wiper blade assembly, slide blade assembly down rear wiper arm until it clears the wiper arm hook and then remove the blade assembly from the wiper arm (Figure 2).

Install or Connect

- Rear wiper blade assembly to rear wiper arm, slide blade assembly into the wiper arm hook until blade assembly clicks and locks into place.

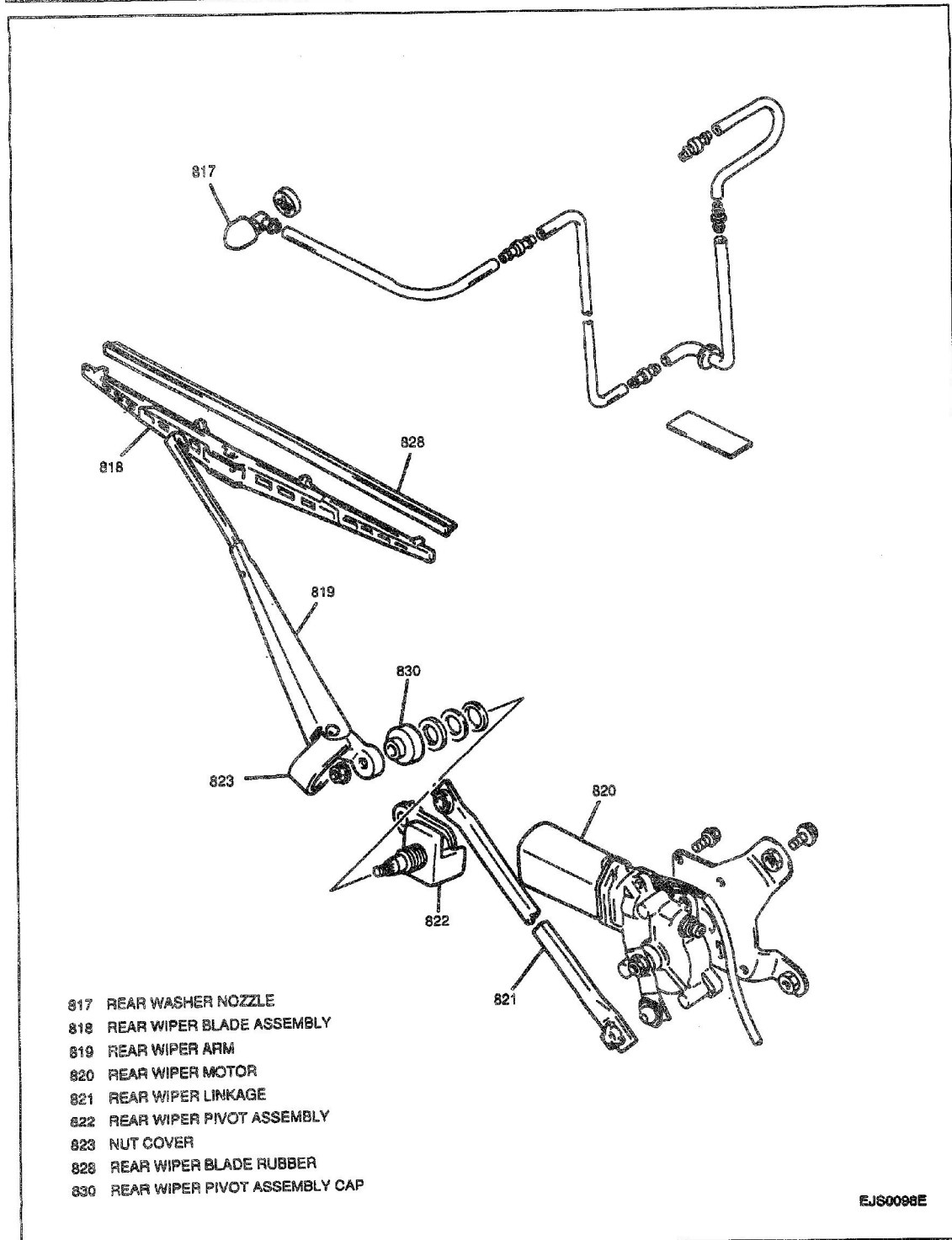


Figure 11—Rear Wiper/Washer System

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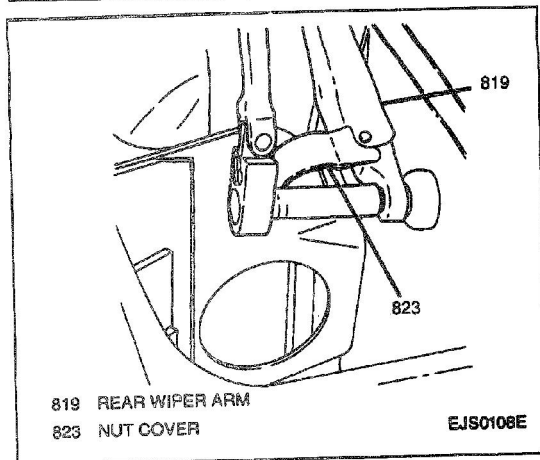


Figure 12—Removing Rear Wiper Arm Retaining Nut

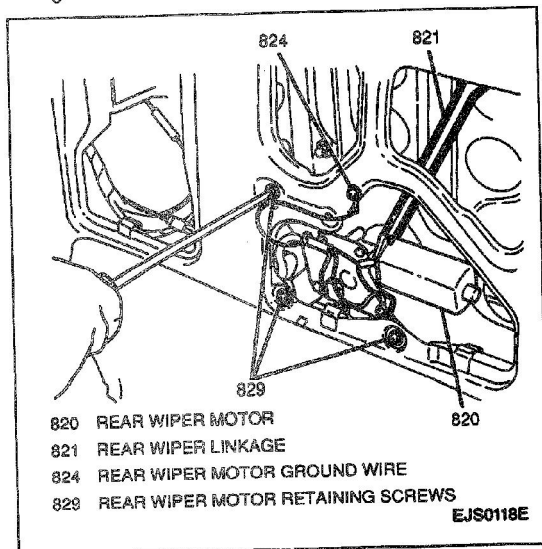


Figure 13—Removing Rear Wiper Motor and Rear Wiper Linkage

Rear Wiper Blade Rubber

Figure 3

Remove or Disconnect

- Lift the rear wiper blade rubber tip to clear the retaining tab, then slide the blade rubber out of the rear wiper blade assembly (Figure 3).

Install or Connect

- Slide the rear wiper blade rubber completely through the rear wiper blade assembly until it clicks into place and locks.

Rear Wiper Linkage

Figures 11 through 13

Remove or Disconnect

1. Negative (-) battery cable.
2. Spare tire from rear door to gain access to rear wiper arm by removing spare tire cover, tire lock and wheel nuts.
3. Lift nut cover to gain access to rear wiper arm retaining nut (Figure 11).

Important

- Before removing rear wiper arm, note its location for proper installation.

4. Rear wiper arm retaining nut from rear door wiper arm (Figure 12).
5. Rear wiper arm from rear wiper pivot assembly.
6. Fourteen plastic retaining clips and rear door inner trim panel.
7. Three screws retaining rear wiper motor to rear door (Figure 13).
8. One screw and rear wiper motor ground wire from rear door (Figure 13).
9. Gently pry rear wiper linkage from rear wiper motor crank arm.

Important

- The rear wiper motor crank arm is not serviced separately and should not be disconnected from the rear wiper motor. The crank arm is positioned on the wiper motor to allow the rear wiper arm to return to its normal park position.

10. Rear wiper pivot assembly cap, nut, washer, and gasket from rear wiper pivot assembly (Figure 11).
11. Slide rear wiper linkage and rear wiper pivot assembly out of rear door.
12. Gently pry rear wiper linkage from rear wiper pivot assembly.

Install or Connect

1. Rear wiper linkage to rear wiper pivot assembly.
2. Rear wiper pivot assembly (with rear wiper linkage) to rear door secure with gasket, washer, and nut.

Tighten

- Rear wiper pivot assembly nut to 20 N.m (15 lbs. ft.).
3. Rear wiper pivot assembly cap to pivot assembly.
 4. Rear wiper linkage to rear wiper motor crank arm.
 5. Three screws securing rear wiper motor to rear door.

6. Rear wiper motor ground wire to rear door; secure with screw.
7. Rear door inner trim panel; secure with plastic retaining clips.
8. Rear wiper arm to rear wiper pivot assembly; secure with retaining nut.

Tighten

- Rear wiper arm retaining nut to 20 N.m (15 lbs. ft.).
9. Place nut cover over rear wiper arm retaining nut.
 10. Spare tire to rear door; secure with wheel nuts.

Tighten

- Spare tire wheel nuts to 54 N.m (40 lbs. ft.).
11. Tire lock and spare tire cover.
 12. Negative (-) battery cable.

Tighten

- Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N.m (11 lbs. ft.).

Rear Wiper Motor

Figures 11 and 13

Remove or Disconnect

1. Negative (-) battery cable.
2. Fourteen plastic retaining clips and rear door inner trim panel.
3. Three screws securing rear wiper motor to rear door (Figure 13).
4. One screw and rear wiper motor ground wire from rear door (Figure 13).
5. Gently pry rear wiper linkage from rear wiper motor crank arm.

Important

- The rear wiper motor crank arm is not serviced separately and should not be disconnected from the rear wiper motor. The crank arm is positioned on the wiper motor to allow the rear wiper arm to return to its normal park position.

6. Rear wiper motor from vehicle.

Install or Connect

1. Rear wiper motor to rear door.
2. Rear wiper linkage to rear wiper motor crank arm.
3. Three screws securing rear wiper motor to rear door.
4. Rear wiper motor ground wire to rear door; secure with one screw.
5. Rear door inner trim panel; secure with fourteen plastic retaining clips.
6. Negative (-) battery cable.

Tighten

- Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N.m (11 lbs. ft.).

Rear Washer Nozzle

Figures 11 and 14

Remove or Disconnect

1. Gently pull rear washer nozzle from rear washer nozzle mounting hole above rear door. (Figure 14).
2. Rear washer hose from rear washer nozzle.

Install or Connect

1. Rear washer hose to rear washer nozzle.
2. Rear washer nozzle to rear washer nozzle mounting hole above rear door.

Rear Washer Pump

Remove or Disconnect

1. Negative (-) battery cable.
2. Rear washer pump electrical connector.
3. Rear washer hose from rear washer pump.
4. Rear washer pump from washer fluid reservoir.

Install or Connect

1. Rear washer pump to washer fluid reservoir.
2. Washer hose to rear washer pump.
3. Electrical connector.
4. Negative (-) battery cable.

Tighten

- Negative (-) battery cable-to-negative (-) battery terminal retainer to 15 N.m (11 lbs. ft.).

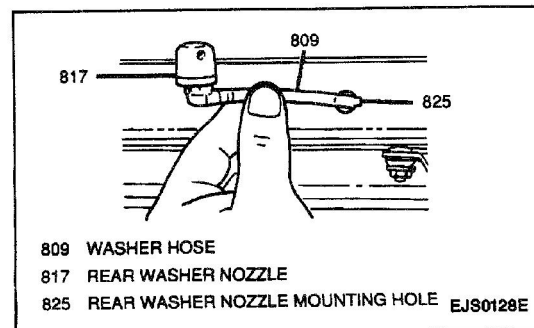


Figure 14—Removing Rear Washer Nozzle

SPECIFICATIONS

FASTENER TORQUES

Spare Tire Wheel Nuts.....	54 N.m (40 lbs. ft.)
Wiper Linkage Retaining Nuts.....	15 N.m (11 lbs. ft.)
Wiper Arm Retaining Nut.....	20 N.m (15 lbs. ft.)
Rear Wiper Pivot Assembly Nut.....	20 N.m (15 lbs. ft.)
Wiper Motor Mounting Bolts.....	20 N.m (15 lbs. ft.)
Washer Fluid Reservoir Retaining Nuts	13 N.m (115 lbs. in.)
Negative (-) Battery Cable-to-Negative (-) Battery Terminal Retainer.....	15 N.m (11 lbs. ft.)