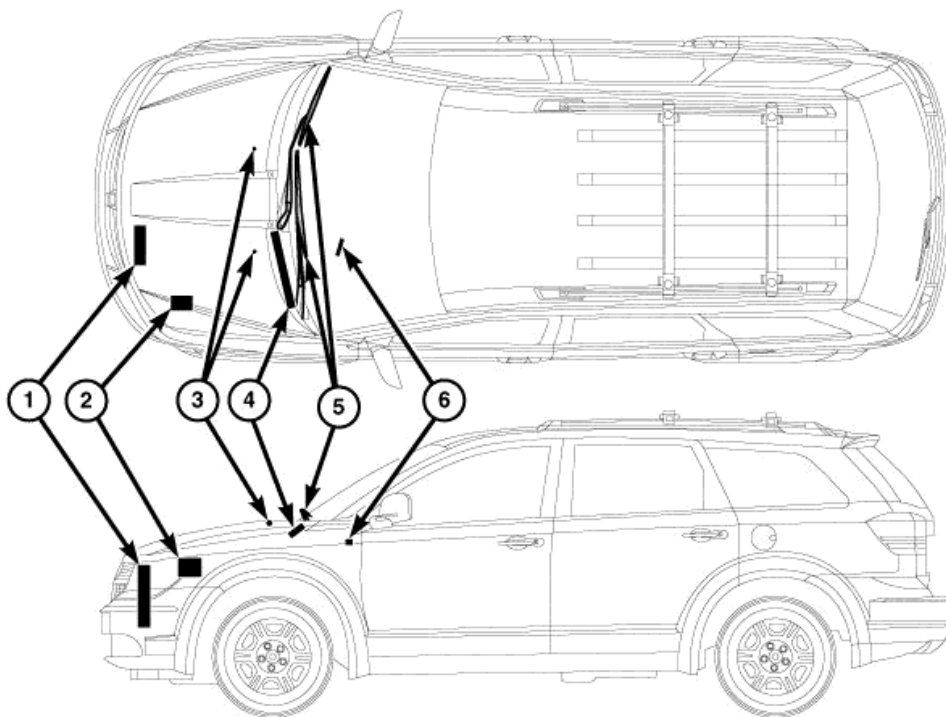


2009 ACCESSORIES AND EQUIPMENT

Wipers/Washers - Service Information - Journey

DESCRIPTION

FRONT



2411185

Fig. 1: Intermittent Front Wiper & Washer System
Courtesy of CHRYSLER LLC

An electrically operated intermittent front wiper and washer system is standard factory-installed safety equipment on this vehicle. The wiper and washer system includes the following major components, which are described in further detail elsewhere in this service information:

- **ElectroMechanical Instrument Cluster** - The ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) is located on the instrument panel directly in front of the driver. Refer to **Electrical - Instrument Cluster/Instrument Cluster - Description**.
- **Front Washer Nozzle (3)** - Two fluidic front washer nozzles with integral check valves are secured by latch features to dedicated openings in the hood panel near the base of the windshield.
- **Front Washer Plumbing** - The plumbing for the washer system consists of rubber hoses, plastic tubes and molded rubber or plastic fittings. The plumbing is routed through the engine compartment from the washer reservoir. The front washer hose is routed along the left fender ledge to the hood hinge, then across the underside of the inner hood panel reinforcement to the washer nozzles.

- **Front Wiper Arms And Blades (5)** - The two front wiper arms are secured with nuts to the threaded ends of the two wiper pivot shafts, which extend through the cowl plenum cover/grille panel located near the base of the windshield. The two front wiper blades are each secured to their wiper arm with an integral latch, and are parked on the glass near the bottom of the windshield when the front wiper system is not in operation. The left and right wiper arms and wiper blades are unique and are not interchangeable.
- **Front Wiper Module (4)** - The wiper pivot shafts are the only visible components of the front wiper module. The remainder of the module is concealed within the cowl plenum beneath the cowl plenum cover/grille panel. The wiper module includes the wiper module bracket, three rubber-isolated wiper module mounts, the wiper motor, the wiper motor crank arm, the two wiper drive links and the two wiper pivots.
- **Right Multi-Function Switch (6)** - The right (wiper) multi-function switch and the left (lighting) multi-function switch are secured to brackets integral to the clockspring housing on the top of the steering column just below the steering wheel. The right multi-function switch is connected by a short jumper harness to the Steering Control Module (SCM), which is internal to the left multi-function switch housing. Only the switch control stalk extending from the right side of the steering column is visible, while the remainder of the switch is concealed beneath the steering column shrouds. The right multi-function switch is dedicated to providing all of the driver controls for both the front and rear wiper and washer systems.
- **Steering Control Module** - The Steering Control Module (SCM) is internal to the left multi-function switch housing, which is secured to a bracket integral to the left side of the clockspring housing on the top of the steering column just below the steering wheel. Only the left switch control stalk extending from the left side of the steering column is visible, while the remainder of the switch housing containing the SCM is concealed beneath the steering column shrouds. Refer to **Electrical - Electronic Control Modules/Electronic Control Modules/MODULE, Steering Column - Description** .
- **Totally Integrated Power Module (2)** - The Totally Integrated Power Module (TIPM) is located in the engine compartment, near the battery. Refer to **Electrical - Wiring/Power Distribution/MODULE, Totally Integrated Power (TIPM) - Description** .
- **Washer Pump/Motor** - The reversible electric washer pump/motor unit is located in a dedicated hole in a sump area on the lower, rearward facing surface of the washer reservoir, on the back of the cooling module just to the left of center. This single reversible washer pump/motor provides washer fluid to either the front or rear washer system plumbing, depending upon the direction of the pump motor rotation.
- **Washer Reservoir (1)** - The washer reservoir is located in the engine compartment on the back of the cooling module just to the left of center. The cap is accessed from the front of the engine compartment.

Hard wired circuitry connects the front wiper and washer system components to the electrical system of the vehicle. These hard wired circuits are integral to several wire harnesses, which are routed throughout the vehicle and retained by many different methods. These circuits may be connected to each other, to the vehicle electrical system and to the front wiper and washer system components through the use of a combination of soldered splices, splice block connectors, and many different types of wire harness terminal connectors and insulators. Refer to **SYSTEM WIRING DIAGRAMS** . The wiring information includes wiring diagrams, proper wire and connector repair procedures, further details on wire harness routing and retention, as well as pin-out and location views for the various wire harness connectors, splices and grounds.

HEADLAMP

An electrically operated headlamp washer system is optional factory-installed equipment on this vehicle when it

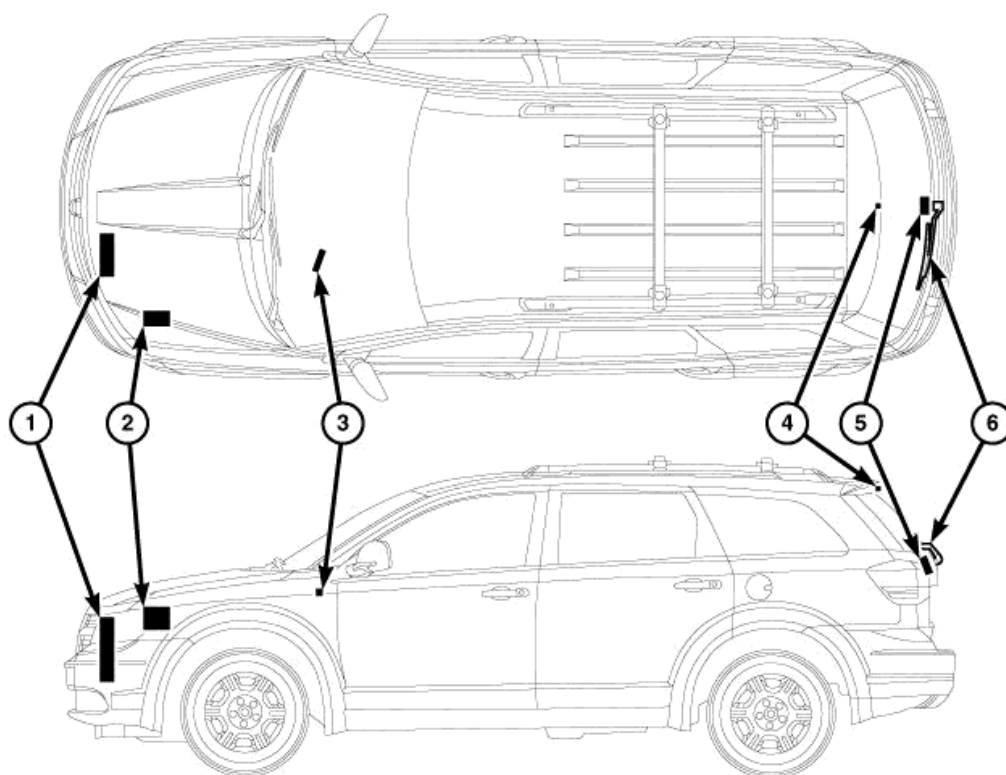
is manufactured for certain export markets. The headlamp washer system includes the following major components, which are described in further detail elsewhere in this service information:

- **ElectroMechanical Instrument Cluster** - The ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) is located on the instrument panel directly in front of the driver. Refer to **Electrical - Instrument Cluster/Instrument Cluster - Description** .
- **Headlamp Washer Nozzle** - A headlamp washer nozzle is secured to the front fascia beneath each front lamp unit.
- **Headlamp Washer Pump/Motor** - The electric headlamp washer pump/motor unit is located in a dedicated hole on the rearward facing side of the washer reservoir, on the left side of the cooling module in the engine compartment. This high pressure pump is located above and to the left of the reversible front and rear washer pump/motor unit on the reservoir.
- **Headlamp Washer Plumbing** - The plumbing for the headlamp washer system consists of large diameter rubber hoses and molded plastic fittings. The plumbing is routed to the washer nozzles on the front fascia from the washer reservoir. The connections at the headlamp washer pump and the two headlamp washer nozzles feature unique quick-connect fittings.
- **Headlamp Washer Relay** - The headlamp washer relay is an International Standards Organization (ISO) relay that is located near the Totally Integrated Power Module (TIPM) in the engine compartment near the battery.
- **Right Multi-Function Switch** - The right (wiper) multi-function switch and the left (lighting) multi-function switch are secured to brackets integral to the clockspring housing on the top of the steering column just below the steering wheel. The right multi-function switch is connected by a short jumper harness to the Steering Control Module (SCM), which is internal to the left multi-function switch housing. Only the switch control stalk extending from the right side of the steering column is visible, while the remainder of the switch is concealed beneath the steering column shrouds. The right multi-function switch is dedicated to providing all of the driver controls for both the front and rear wiper and washer systems.
- **Steering Control Module** - The Steering Control Module (SCM) is internal to the left multi-function switch housing, which is secured to a bracket integral to the left side of the clockspring housing on the top of the steering column just below the steering wheel. Only the left switch control stalk extending from the left side of the steering column is visible, while the remainder of the switch housing containing the SCM is concealed beneath the steering column shrouds. Refer to **Electrical - Electronic Control Modules/Electronic Control Modules/MODULE, Steering Column - Description** .
- **Totally Integrated Power Module** - The Totally Integrated Power Module (TIPM) is located in the engine compartment, near the battery. Refer to **Electrical - Wiring/Power Distribution/MODULE, Totally Integrated Power (TIPM) - Description** .
- **Washer Reservoir** - A unique washer reservoir is used on vehicles with the optional headlamp washer system, which has dedicated provisions for the headlamp washer pump and plumbing. This reservoir is mounted in the same location and using the same mounting hardware as is used for vehicles without the headlamp washers. The reservoir is located on the left side of the cooling module in the engine compartment.

Hard wired circuitry connects the headlamp washer system components to the electrical system of the vehicle. These hard wired circuits are integral to several wire harnesses, which are routed throughout the vehicle and retained by many different methods. These circuits may be connected to each other, to the vehicle electrical

system and to the headlamp washer system components through the use of a combination of soldered splices, splice block connectors, and many different types of wire harness terminal connectors and insulators. Refer to **SYSTEM WIRING DIAGRAMS** . The wiring information includes wiring diagrams, proper wire and connector repair procedures, further details on wire harness routing and retention, as well as pin-out and location views for the various wire harness connectors, splices and grounds.

REAR



2411244

Fig. 2: Intermittent Rear Wiper & Washer System
Courtesy of CHRYSLER LLC

An electrically operated fixed interval intermittent rear wiper and washer system is standard factory-installed equipment on this vehicle. The rear wiper and washer system includes the following major components, which are described in further detail elsewhere in this service information:

- **ElectroMechanical Instrument Cluster** - The ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) is located on the instrument panel directly in front of the driver. Refer to **Electrical - Instrument Cluster/Instrument Cluster - Description** .
- **Rear Washer Nozzle (4)** - The fluidic rear washer nozzle with an integral check valve is secured by integral latch features to a mounting hole on the lower surface of the rear spoiler formation on the liftgate outer panel above the liftgate glass.
- **Rear Washer Plumbing** - The plumbing for the rear washer system consists of rubber hoses and molded plastic fittings. The plumbing is routed along the left side of the engine compartment from the washer reservoir on the cooling module through the dash into the passenger compartment. It is then routed within the body wiring harness along the left side of the floor to the left rear inner wheel housing, then up the

wheel housing to the D-pillar. It exits the wire harness near the top of the D-pillar and connects to the liftgate washer hose, which is routed along the liftgate opening upper reinforcement to the center of the vehicle then through the upper liftgate opening to the rear washer nozzle on the upper liftgate.

- **Rear Wiper Arm And Blade (6)** - The single rear wiper arm is secured by a nut directly to the rear wiper motor output shaft, which extends through a rubber grommet inserted into a hole in the liftgate outer panel at the base of the liftgate glass. The rear wiper blade is secured to the rear wiper arm with an integral latch feature, and is parked near the base of the glass when the rear wiper system is not in operation.
- **Rear Wiper Motor (5)** - The rear wiper motor includes the motor bracket and three rubber-isolated wiper motor mounts. The wiper motor output shaft is the only visible component of the rear wiper motor. The remainder of the motor is concealed by the inner liftgate trim on the inside of the liftgate beneath the liftgate glass opening.
- **Right Multi-Function Switch (3)** - The right (wiper) multi-function switch and the left (lighting) multi-function switch are secured to brackets integral to the clockspring housing, on the top of the steering column just below the steering wheel. The right multi-function switch is connected to the Steering Control Module (SCM) by a short jumper harness. The SCM is internal to the left multi-function switch housing. Only the switch control stalk extending from the right side of the steering column is visible, while the remainder of the switch is concealed beneath the steering column shrouds. The right multi-function switch is dedicated to providing all of the driver controls for both the front and rear wiper and washer systems.
- **Steering Control Module** - The Steering Control Module (SCM) is internal to the left multi-function switch housing, which is secured to a bracket integral to the left side of the clockspring housing on the top of the steering column just below the steering wheel. Only the left switch control stalk extending from the left side of the steering column is visible, while the remainder of the switch housing containing the SCM is concealed beneath the steering column shrouds. Refer to **Electrical - Electronic Control Modules/Electronic Control Modules/MODULE, Steering Column - Description** .
- **Totally Integrated Power Module (2)** - The Totally Integrated Power Module (TIPM) is located in the engine compartment, near the battery. Refer to **Electrical - Wiring/Power Distribution/MODULE, Totally Integrated Power (TIPM) - Description** .
- **Washer Reservoir (1)** - The rear washer system shares a single reservoir and reversible pump with the front washer system, but has its own dedicated plumbing. The washer reservoir is located in the engine compartment attached to the FEM (Front End Module). The filler neck and cap are accessed from the right front corner of the engine compartment.

Hard wired circuitry connects the rear wiper and washer system components to the electrical system of the vehicle. These hard wired circuits are integral to several wire harnesses, which are routed throughout the vehicle and retained by many different methods. These circuits may be connected to each other, to the vehicle electrical system and to the rear wiper and washer system components through the use of a combination of soldered splices, splice block connectors, and many different types of wire harness terminal connectors and insulators. Refer to **SYSTEM WIRING DIAGRAMS** . The wiring information includes wiring diagrams, proper wire and connector repair procedures, further details on wire harness routing and retention, as well as pin-out and location views for the various wire harness connectors, splices and grounds.

OPERATION

FRONT

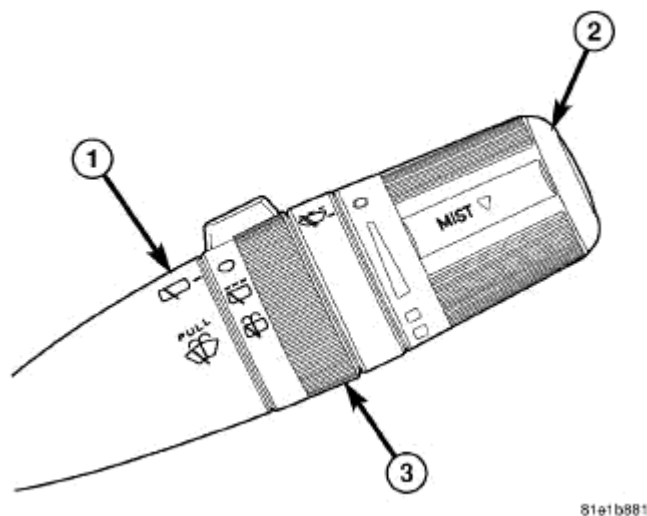


Fig. 3: Right (Wiper) Multi-Function Switch
 Courtesy of CHRYSLER LLC

The front wiper and washer system is designed to provide the vehicle operator with a convenient, safe, and reliable means of maintaining visibility through the windshield glass. The various components of this system are designed to convert electrical energy produced by the vehicle electrical system into the mechanical action of the wiper blades to wipe the outside surface of the glass, as well as into the hydraulic action of the washer system to apply washer fluid stored in an on-board reservoir to the area of the glass to be wiped. When combined, these components provide the means to effectively maintain clear visibility for the vehicle operator by removing excess accumulations of rain, snow, bugs, mud, or other minor debris from the outer surface of the windshield glass that might be encountered while driving the vehicle under numerous types of inclement operating conditions.

The vehicle operator initiates all front and rear wiper and washer system functions with the control stalk of the right (wiper) multi-function switch (1) that extends from the right side of the steering column, just below the steering wheel. Rotating the control knob (2) on the end of the control stalk, selects the OFF, DELAY, LOW, or HIGH front wiper system operating modes. In the DELAY mode, the control knob also allows the vehicle operator to select from one of five intermittent wipe delay intervals.

Pulling the control stalk rearward actuates the momentary front washer system switch, which selects the WASH and WIPE-AFTER-WASH modes, depending upon when and how long the switch is held closed. Pushing the control stalk downward actuates a momentary switch and selects the MIST mode, which cycles the wiper blades for as long as the switch is held closed then completes the current cycle and parks the blades at the base of the windshield after the switch is released.

The right multi-function switch provides hard wired analog and resistor multiplexed inputs to the Steering Control Module (SCM) internal to the left (lighting) multi-function switch housing for all of the wiper and washer system functions. The SCM then sends electronic **wiper** and **washer switch** status messages to the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN), over a Local Interface Network (LIN) data bus. The EMIC responds to the SCM inputs by sending electronic **wiper** and

washer system request messages to the Totally Integrated Power Module (TIPM) over the Controller Area Network (CAN) data bus requesting the appropriate wiper and washer system operating modes.

Front wiper and washer system operation is completely controlled by the SCM, EMIC and TIPM logic circuits, and that logic will only allow these systems to operate when the ignition switch is in the ACCESSORY or ON positions. The TIPM uses intelligent, high current, self-protected high side switches to control wiper system operation by energizing or de-energizing the wiper motor low and high speed brushes. The TIPM uses an H-bridge circuit to control the operation of the reversible washer pump/motor unit. The right multi-function switch circuitry receives battery current and a clean ground output from the SCM, then provides analog and multiplexed inputs to the SCM to indicate the selected front wiper and front washer system mode.

The hard wired circuits and components of the front wiper and washer system may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the front wiper and washer system. The most reliable, efficient, and accurate means to diagnose the front wiper and washer system or the electronic controls and communication related to front wiper and washer system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

OPERATING MODES

Following are paragraphs that briefly describe the operation of each of the front wiper and washer system operating modes.

CONTINUOUS WIPE MODE

When the LOW position of the control knob on the control stalk of the right (wiper) multi-function switch is selected, the SCM sends an electronic **wiper switch low** status message to the EMIC over the LIN data bus. The EMIC then relays an electronic **wiper switch low** request message to the TIPM over the CAN data bus. The TIPM then directs battery current to the low speed brush of the wiper motor, causing the wipers to cycle at low speed.

When the HIGH position of the control knob is selected, the SCM sends an electronic **wiper switch high** status message to the EMIC. The EMIC then relays an electronic **wiper switch high** request message to the TIPM. The TIPM then directs battery current to the high speed brush of the wiper motor, causing the wipers to cycle at high speed.

When the OFF position of the multi-function switch control knob is selected, the SCM sends an electronic **wiper switch off** status message to the EMIC, the EMIC relays an electronic **wiper switch off** request message to the TIPM, then one of two events will occur. The event that occurs depends upon the position of the wiper blades on the windshield at the moment that the control knob OFF position is selected.

If the wiper blades are in the down position on the windshield when the OFF position is selected, the park switch that is integral to the wiper motor is closed to ground, which provides a hard wired park switch sense input to the TIPM. The TIPM then de-energizes the wiper motor and the wiper motor ceases to operate. If the wiper blades are not in the down position on the windshield at the moment the OFF position is selected, the park switch is an open circuit and the TIPM continues running the wiper motor at low speed until the wiper blades are in the down position on the windshield and the park switch input to the TIPM is again closed to

ground.

INTERMITTENT WIPE MODE

When the control knob on the control stalk of the right (wiper) multi-function switch is moved to one of the five DELAY interval positions, the SCM sends an electronic **wiper switch delay interval** status message to the EMIC. The EMIC then relays an electronic **wiper switch delay interval** request message to the TIPM. The TIPM's electronic intermittent wipe logic circuit responds by calculating the correct length of time between wiper sweeps based upon the selected delay interval input.

The TIPM monitors the changing state of the wiper motor park switch through a hard wired park switch sense input. This input allows the TIPM to determine the proper intervals at which to energize and de-energize the wiper motor intermittently for one low speed cycle at a time.

The TIPM logic is also programmed to provide vehicle speed sensitivity to the selected intermittent wipe delay intervals. In order to provide this feature, the TIPM monitors electronic **vehicle speed** messages from the Controller Antilock Brake (CAB) and doubles the selected delay interval whenever the vehicle speed is about 16 kilometers-per-hour (10 miles-per-hour) or less.

MIST WIPE MODE

When the control stalk of the right (wiper) multi-function switch is moved downward to the momentary MIST position, the SCM sends an electronic **wiper mist mode** status message to the EMIC, the EMIC relays an electronic **wiper mist mode** request message to the TIPM, then the TIPM energizes the low speed brush of the wiper motor for as long as the switch is held closed, then de-energizes the motor when the state of the switch changes to open, parking the wiper blades near the base of the windshield. The TIPM can operate the front wiper motor in this mode for only one low speed cycle at a time, or for an indefinite number of sequential low speed cycles, depending upon how long the switch is held closed.

WASH MODE

When the control stalk of the right (wiper) multi-function switch is pulled rearward to the front momentary WASH position for more than about one-half second with the wiper system operating, the SCM sends an electronic **washer switch** status message to the EMIC, the EMIC relays an electronic **washer switch** request message to the TIPM, then the TIPM directs battery current and ground to the washer pump/motor. This will cause the washer pump/motor to be energized in the front wash direction for as long as the switch is held closed (up to approximately 10 seconds) and to be de-energized when the control stalk is released.

When the control stalk is pulled rearward to the front momentary WASH position while the front wiper system is operating in one of the DELAY interval positions, the washer pump/motor operation is the same. However, the TIPM also overrides the selected delay interval and operates the front wiper motor in a continuous low speed mode for as long as the control stalk is held in the front momentary WASH position, then reverts to the selected delay interval several wipe cycles after the control stalk is released. If the WASH switch is held closed for more than approximately 10 seconds, the TIPM will suspend washer pump/motor operation until the control stalk is released for about 2 seconds and then cycled back to the WASH position.

WIPE-AFTER-WASH MODE

When the control stalk of the right (wiper) multi-function switch is pulled rearward to the front momentary WASH position for more than about one-half second while the wiper system is not operating, the SCM sends an electronic **washer switch** status message to the EMIC, the EMIC relays an electronic **washer switch** request message to the TIPM, and the TIPM directs battery current and ground to the washer pump/motor and energizes the wiper motor in a continuous low speed mode for as long as the switch is held closed (up to approximately 10 seconds). When the control stalk is released, the TIPM de-energizes the washer pump/motor immediately, but allows the wiper motor to operate for two or three additional wipe cycles before it de-energizes the wiper motor and parks the wiper blades near the base of the windshield.

If the control stalk is held rearward for more than about 10 seconds, the TIPM will suspend washer pump/motor operation until the stalk is released for about 2 seconds and then cycled back to the WASH position; however, the wipers will continue to operate for as long as the switch is held closed. The TIPM monitors the changing state of the wiper motor park switch through a hard wired wiper park switch sense circuit input. This input allows the TIPM to count the number of wipe cycles that occur after the control stalk is released, and to determine the proper interval at which to de-energize the wiper motor to complete the WIPE-AFTER-WASH mode cycle.

HEADLAMP

The headlamp washer system is designed to provide the vehicle operator with a convenient, safe, and reliable means of maintaining headlamp lighting performance. The various components of this system are designed to convert electrical energy produced by the vehicle electrical system into the hydraulic action of the washer system to apply washer fluid stored in an on-board reservoir to the lenses of the two front lamp units, removing excess accumulations of snow, ice, bugs, mud, or other minor debris from the front lamps that might be encountered while driving the vehicle under numerous types of inclement operating conditions.

The vehicle operator initiates the headlamp washer system function using the control knob on the end of the right multi-function switch control stalk that extends from the right side of the steering column, just below the steering wheel. While the headlamps are turned ON and the engine is running, pushing the knob on the end of the control stalk towards the steering column beyond the actuation point for more than about 100 milliseconds (0.10 second) activates the headlamp washer pump/motor in combination with the front washer pump/motor. When the headlamp washer pump/motor unit is energized, hydraulic pressure builds within the headlamp washer system plumbing against the pressure of the control valve in each headlamp washer nozzle. Sufficient pressure causes the headlamp washer nozzles to dispense high pressure washer fluid onto the lenses of both front lamp units for about 1600 milliseconds (1.6 seconds).

Headlamp washer system operation is completely controlled by the Totally Integrated Power Module (TIPM) logic circuits based upon electronic **wash command** message inputs received from the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) over the Controller Area Network (CAN) data bus. The EMIC monitors electronic **wash switch status** and **lighting switch status** message inputs received over the Local Interface Network (LIN) data bus from the Steering Control Module (SCM) (also known as the steering column module) based upon the right and left multi-function switch positions. The TIPM will only allow this system to operate when the engine is running and the headlamp low beams are turned ON. The TIPM uses a low side driver to energize or de-energize the headlamp washer system relay which, in turn, controls the operation of the headlamp washer pump/motor unit.

The hard wired circuits and components of the headlamp washer system may be diagnosed using conventional

diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS** . However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the headlamp washer system. The most reliable, efficient, and accurate means to diagnose the headlamp washer system or the electronic controls and communication related to headlamp washer system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

REAR

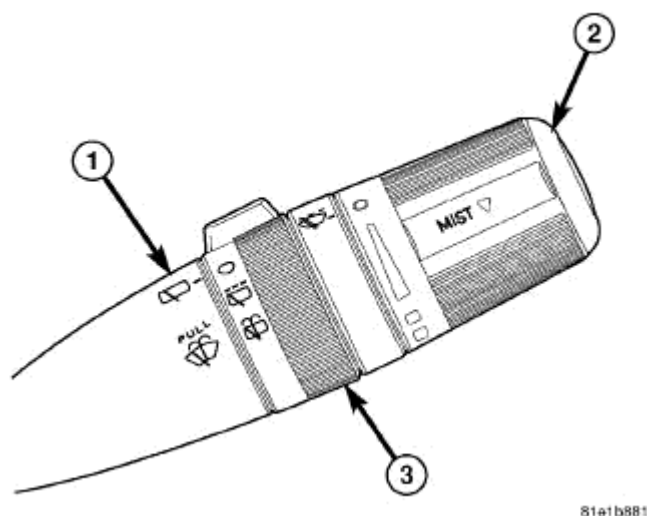


Fig. 4: Right (Wiper) Multi-Function Switch
Courtesy of CHRYSLER LLC

The rear wiper and washer system is designed to provide the vehicle operator with a convenient, safe, and reliable means of maintaining visibility through the liftgate glass. The various components of this system are designed to convert electrical energy produced by the vehicle electrical system into the mechanical action of the wiper blade to wipe the outside surface of the glass, as well as into the hydraulic action of the washer system to apply washer fluid stored in an on-board reservoir to the area of the glass to be wiped. When combined, these components provide the means to effectively maintain clear visibility for the vehicle operator by removing excess accumulations of rain, snow, bugs, mud, or other minor debris from the outer surface of the liftgate glass that might be encountered while driving the vehicle under numerous types of inclement operating conditions.

The vehicle operator initiates all front and rear wiper and washer system functions with the control stalk (1) of the right (wiper) multi-function switch that extends from the right side of the steering column, just below the steering wheel. Rotating the control sleeve (3) on the control stalk to the OFF or INTERMITTENT detent positions or the momentary WASH position selects the rear wiper and washer system operating modes.

The right multi-function switch provides hard wired analog and resistor multiplexed inputs to the Steering Control Module (SCM) integral to the left (lighting) multi-function switch for all of the wiper and washer system functions. The SCM then sends electronic **rear wiper/washer switch** status messages to the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) over a Local

Interface Network (LIN) data bus. The EMIC then sends electronic **rear wiper/washer switch** request messages to the Totally Integrated Power Module (TIPM) over the Controller Area Network (CAN) data bus requesting the appropriate rear wiper and washer system operating modes.

Rear wiper and washer system operation is completely controlled by the SCM, EMIC and TIPM logic circuits, and that logic will only allow these systems to operate when the ignition switch is in the ACCESSORY or ON positions. The TIPM uses intelligent, high current, self-protected high side switches to control wiper system operation by energizing or de-energizing the rear wiper motor. The TIPM uses an H-bridge circuit to control the operation of the reversible washer pump/motor unit. The right multi-function switch circuitry receives a clean ground output from the SCM on a multi-function switch return circuit, then provides analog and resistor multiplexed inputs to the SCM to indicate the selected rear wiper and rear washer system mode.

The hard wired circuits and components of the rear wiper and washer system may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the rear wiper and washer system. The most reliable, efficient, and accurate means to diagnose the rear wiper and washer system or the electronic controls and communication related to rear wiper and washer system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

OPERATING MODES

Following are paragraphs that briefly describe the operation of each of the rear wiper and washer system operating modes.

INTERMITTENT WIPE MODE

When the INTERMITTENT WIPE position of the control sleeve on the control stalk of the right multi-function switch is selected, the SCM sends an electronic **rear wiper switch** status message to the EMIC over the LIN data bus, then the EMIC relays an electronic **rear wiper switch** request message to the TIPM over the CAN data bus, and the TIPM directs battery current to the rear wiper motor at fixed delay intervals to enable the rear wiper motor intermittent wipe mode.

WASH MODE

When the control sleeve of the right multi-function switch is rotated counterclockwise past the INTERMITTENT detent position to the momentary rear WASH position, the SCM sends an electronic **rear washer switch** status message to the EMIC over the LIN data bus, then the EMIC relays an electronic **rear washer switch** request message to the TIPM over the CAN data bus, and the TIPM directs battery current to the rear wiper motor and directs battery current and ground to the washer pump/motor unit. These outputs will cause the washer pump motor and the rear wiper motor to operate continuously for as long as the switch is held closed up to approximately 10 seconds. The washer pump is de-energized as soon as the control sleeve is released, but the rear wiper motor continues to operate for two to three continuous cycles before reverting to the fixed delay interval operation. The TIPM uses a hard wired output from a park switch internal to the rear wiper motor as an additional logic input to monitor the position of the rear wiper blade on the glass and to control the number of continuous wiper sweeps following washer operation.

DIAGNOSIS AND TESTING

FRONT

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the Supplemental Restraint System (SRS) before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment.

If the front wiper motor operates, but the wipers do not move on the windshield, replace the ineffective front wiper module. If the washer pump/motor operates, but no washer fluid is dispensed on the glass; or, if the wipers operate, but chatter, lift, or do not clear the glass, clean and inspect the front wiper and washer system components as required. See Electrical - Wipers/Washers/Wipers/Washers - Cleaning and. See Electrical - Wipers/Washers/Wipers/Washers - Inspection.

The hard wired front wiper and washer system circuits and components may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS** . The wiring information includes wiring diagrams, procedures for proper wire and connector repair, details of wire harness routing and retention, connector pin-out information and location views for the various wire harness connectors, splices and grounds.

However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the front wiper and washer system. The most reliable, efficient, and accurate means to diagnose the front wiper and washer system or the electronic controls and communication related to front wiper and washer system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

NOTE: The front wiper and washer switches are integral to the right multi-function switch. The right multi-function switch is hard wired to the left multi-function switch/Steering Control Module (SCM), which communicates with the ElectroMechanical Instrument Cluster (EMIC)/Cab Compartment Node (CCN) over the Local Interface Network (LIN) data bus. Before performing any of the following tests, determine whether the other functions of the right and left multi-function switch/SCM are operational. If only the right multi-function switch functions are inoperative, test and repair the right multi-function switch or the jumper harness between the right and left multi-function switches before attempting to repair the Front Wiper and Washer System. If both the right and left multi-function switch/SCM functions are ineffective, diagnose and repair that problem before attempting to repair the Front Wiper and Washer System.

CONDITION	POSSIBLE CAUSES	CORRECTION
WIPER MOTOR DOES NOT OPERATE IN ANY SWITCH	1. Ineffective motor ground circuit.	1. Test and repair open wiper motor ground circuit if required.

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POSITION	2. Ineffective motor feed circuits. 3. Ineffective right multi-function switch. 4. Ineffective SCM inputs or outputs. 5. Ineffective EMIC (CCN) inputs or outputs. 6. Ineffective TIPM inputs or outputs. 7. Ineffective wiper motor.	2. Test and repair low speed and high speed feed circuits between TIPM and front wiper motor if required. 3. Test and replace ineffective right multi-function switch if required. 4. Use a diagnostic scan tool to test the SCM inputs and outputs. Refer to the appropriate diagnostic information. 5. Use a diagnostic scan tool to test the EMIC (CCN) inputs and outputs. Refer to the appropriate diagnostic information. 6. Use a diagnostic scan tool to test the TIPM inputs and outputs. Refer to the appropriate diagnostic information. 7. Test and replace open or shorted wiper motor as required.
WIPERS DO NOT PARK CORRECTLY	1. Ineffective wiper motor park switch input circuit. 2. Ineffective TIPM inputs or outputs. 3. Ineffective wiper motor park switch.	1. Test and repair wiper park switch input circuit between TIPM and front wiper motor if required. 2. Use a diagnostic scan tool to test the TIPM inputs and outputs. Refer to the appropriate diagnostic information. 3. Test and replace ineffective wiper motor if required.
WIPER MOTOR OPERATES SLOWLY IN ALL SWITCH POSITIONS	1. Ineffective wiper motor. 2. Amperage draw too low. 3. Amperage draw too high.	1. Check amperage draw with linkage disconnected from wiper motor crank arm. Correct draw should be about 6 amperes. If incorrect, refer to the appropriate Possible Cause that follows: 2. Test and repair shorted low and high speed feed circuits if required. 3. With linkage disconnected from wiper motor crank arm check linkage and pivots for binding. If binding is detected, repair or replace front wiper module if required. If no linkage binding detected, replace the front wiper motor if required.
WIPERS RUN AT HIGH SPEED WITH SWITCH LOW SPEED SELECTED OR AT LOW SPEED WITH SWITCH HIGH SPEED SELECTED	1. Ineffective motor feed circuit wiring.	1. Test and repair low speed and high speed feed circuits between TIPM and front wiper motor if required.
	1. Ineffective washer pump ground circuit. 2. Ineffective washer pump	1. Test and repair open washer pump ground circuit if required. 2. Test and repair washer pump feed circuits between TIPM and washer pump

WASHER PUMP DOES NOT OPERATE	feed circuits.	if required.
	3. Ineffective right multi-function switch.	3. Test and replace ineffective right multi-function switch if required.
	4. Ineffective SCM inputs or outputs.	4. Use a diagnostic scan tool to test the SCM inputs and outputs. Refer to the appropriate diagnostic information.
	5. Ineffective EMIC (CCN) inputs or outputs.	5. Use a diagnostic scan tool to test the EMIC (CCN) inputs and outputs. Refer to the appropriate diagnostic information.
	6. Ineffective TIPM inputs or outputs.	6. Use a diagnostic scan tool to test the TIPM inputs and outputs. Refer to the appropriate diagnostic information.
	7. Ineffective washer pump.	7. Test and replace open or shorted washer pump if required.

HEADLAMP

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the Supplemental Restraint System (SRS) before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment.

Before attempting to diagnose the headlamp washer system, confirm whether the front washer system operates satisfactorily. If the front washer system is ineffective or operates improperly, diagnose and repair that problem before attempting to repair the headlamp washer system. If the front washer system operates satisfactorily and the headlamp washer pump/motor unit operates, but no washer fluid is dispensed on the front lamp unit lenses, inspect the headlamp washer plumbing for pinched or leaking hoses and fittings. If the headlamp washer pump/motor unit does not operate, check the headlamp washer system fuse.

The hard wired headlamp washer system circuits and components may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pin-out information and location views for the various wire harness connectors, splices and grounds.

However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the headlamp washer system. The most reliable, efficient, and accurate means to diagnose the headlamp washer system or the electronic controls and communication related to headlamp washer system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

REAR

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the Supplemental Restraint System (SRS) before attempting any steering wheel, steering column, airbag, occupant classification system, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment, possible personal injury, or death.

If the rear wiper motor operates, but the wiper motor output shaft does not move, replace the ineffective rear wiper motor. If the washer pump/motor operates, but no washer fluid is dispensed on the glass; or, if the wiper operates, but chatters, lifts, or does not clear the glass, clean and inspect the rear wiper and washer system components as required. See Electrical - Wipers/Washers/Wipers/Washers - Cleaning and. See Electrical - Wipers/Washers/Wipers/Washers - Inspection.

The hard wired rear wiper and washer system circuits and components may be diagnosed using conventional diagnostic tools and procedures. Refer to SYSTEM WIRING DIAGRAMS. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pin-out information and location views for the various wire harness connectors, splices and grounds.

However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the rear wiper and washer system. The most reliable, efficient, and accurate means to diagnose the rear wiper and washer system or the electronic controls and communication related to rear wiper and washer system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

NOTE: The rear wiper and washer switches are integral to the right multi-function switch. The right multi-function switch is hard wired to the left multi-function switch/Steering Control Module (SCM), which communicates with the ElectroMechanical Instrument Cluster (EMIC)/Cab Compartment Node (CCN) over the Local Interface Network (LIN) data bus. Before performing any of the following tests, determine whether the other functions of the right and left multi-function switch/SCM are operational. If only the right multi-function switch functions are inoperative, test and repair the right multi-function switch or the jumper harness between the right and left multi-function switches before attempting to repair the Rear Wiper and Washer System. If both the right and left multi-function switch/SCM functions are ineffective, diagnose and repair that problem before attempting to repair the Rear Wiper and Washer System.

CONDITION	POSSIBLE CAUSES	CORRECTION
WIPER MOTOR DOES NOT OPERATE IN ANY SWITCH POSITION	1. Ineffective motor ground circuit. 2. Ineffective motor feed circuits.	1. Test and repair open wiper motor ground circuit if required. 2. Test and repair motor feed circuit between TIPM and rear wiper motor if required.

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2009 ACCESSORIES AND EQUIPMENT Wipers/Washers - Service Information - Journey

	3. Ineffective right multi-function switch. 4. Ineffective SCM inputs or outputs. 5. Ineffective EMIC (CCN) inputs or outputs. 6. Ineffective TIPM inputs or outputs. 7. Ineffective wiper motor.	3. Test and replace ineffective right multi-function switch if required. 4. Use a diagnostic scan tool to test the SCM inputs and outputs. Refer to the appropriate diagnostic information. 5. Use a diagnostic scan tool to test the EMIC (CCN) inputs and outputs. Refer to the appropriate diagnostic information. 6. Use a diagnostic scan tool to test the TIPM inputs and outputs. Refer to the appropriate diagnostic information. 7. Test and replace open or shorted wiper motor if required.
WIPER DOES NOT PARK CORRECTLY	1. Ineffective wiper motor park switch input circuit. 2. Ineffective TIPM inputs or outputs. 3. Ineffective wiper motor park switch.	1. Test and repair wiper park switch input circuit between TIPM and front wiper motor if required. 2. Use a diagnostic scan tool to test the TIPM inputs and outputs. Refer to the appropriate diagnostic information. 3. Test and replace ineffective wiper motor if required.
WIPER MOTOR OPERATES SLOWLY	1. Ineffective wiper motor. 2. Amperage draw too low. 3. Amperage draw too high.	1. Check amperage draw with wiper arm disconnected from rear wiper motor output shaft. Correct draw should be about 6 amperes. If incorrect, refer to the appropriate Possible Cause that follows: 2. Test and repair shorted rear wiper motor signal and fused ignition switch output (run - accessory) circuits if required. 3. With wiper arm disconnected from wiper motor output shaft check for binding between output shaft and rubber grommet in liftgate. If binding is detected, lubricate or replace grommet if required. If no binding is detected, replace the wiper motor if required.
WASHER PUMP DOES NOT	1. Ineffective washer pump ground circuit. 2. Ineffective washer pump feed circuits. 3. Ineffective right multi-function switch. 4. Ineffective SCM inputs or	1. Test and repair open washer pump ground circuit if required. 2. Test and repair washer pump feed circuits between TIPM and washer pump if required. 3. Test and replace ineffective right multi-function switch if required. 4. Use a diagnostic scan tool to test the SCM inputs and outputs. Refer to the

OPERATE	outputs.	appropriate diagnostic information.
	5. Ineffective EMIC (CCN) inputs or outputs.	5. Use a diagnostic scan tool to test the EMIC (CCN) inputs and outputs. Refer to the appropriate diagnostic information.
	6. Ineffective TIPM inputs or outputs.	6. Use a diagnostic scan tool to test the TIPM inputs and outputs. Refer to the appropriate diagnostic information.
	7. Ineffective washer pump.	7. Test and replace open or shorted washer pump if required.

CLEANING

FRONT

WIPER SYSTEM

CAUTION: Protect the rubber squeegees of the wiper blades from any petroleum-based cleaners, solvents, or contaminants. These products can rapidly deteriorate the rubber squeegees.

The squeegees of wiper blades exposed to the elements for a long time tend to lose their wiping effectiveness. Periodic cleaning of the squeegees is suggested to remove any deposits of salt or road film. The wiper blades, arms, and windshield glass should only be cleaned using a sponge or soft cloth and windshield washer fluid, a mild detergent, or a non-abrasive cleaner. If the wiper blades continue to leave streaks, smears, hazing, or beading on the glass after thorough cleaning of the squeegees and the glass, the entire wiper blade assembly must be replaced.

WASHER SYSTEM

CAUTION: Never introduce petroleum-based cleaners, solvents, or contaminants into the washer system. These products can rapidly deteriorate the rubber seals and hoses of the washer system, as well as the rubber squeegees of the wiper blades.

CAUTION: Never use compressed air to flush the washer system plumbing. Compressed air pressures are too great for the washer system plumbing components and will result in further system damage. Never use sharp instruments to clear a plugged washer nozzle or damage to the nozzle orifice and improper nozzle spray patterns will result.

If the washer system is contaminated with foreign material, drain the washer reservoir by removing the washer pump/motor unit from the reservoir. Clean foreign material from the inside of the washer pump inlet filter screen and the washer reservoir using clean washer fluid, a mild detergent, or a non-abrasive cleaner. Flush foreign material from the washer system plumbing by first disconnecting the washer hose from the washer nozzle, then running the washer pump/motor to run clean washer fluid or water through the system. A plugged

or restricted washer nozzle should be carefully back-flushed using compressed air. If the washer nozzle obstruction cannot be cleared, replace the washer nozzle.

REAR

WIPER SYSTEM

CAUTION: Protect the rubber squeegee of the wiper blade from any petroleum-based cleaners, solvents, or contaminants. These products can rapidly deteriorate the rubber squeegee.

The squeegee of a wiper blade exposed to the elements for a long time tends to lose its wiping effectiveness. Periodic cleaning of the squeegee is suggested to remove any deposits of salt or road film. The wiper blade, arm, and liftgate glass should only be cleaned using a sponge or soft cloth and windshield washer fluid, a mild detergent, or a non-abrasive cleaner. If the wiper blade continues to leave streaks, smears, hazing, or beading on the glass after thorough cleaning of the squeegees and the glass, the entire wiper blade assembly must be replaced.

WASHER SYSTEM

CAUTION: Never introduce petroleum-based cleaners, solvents, or contaminants into the washer system. These products can rapidly deteriorate the rubber seals and hoses of the washer system, as well as the rubber squeegee of the wiper blade.

CAUTION: Never use compressed air to flush the washer system plumbing. Compressed air pressures are too great for the washer system plumbing components and will result in further system damage. Never use sharp instruments to clear a plugged washer nozzle or damage to the nozzle orifice and improper nozzle spray patterns will result.

If the washer system is contaminated with foreign material, drain the washer reservoir by removing the washer pump/motor from the reservoir. Clean foreign material from the inside of the washer pump/motor inlet filter screen and the washer reservoir using clean washer fluid, a mild detergent, or a non-abrasive cleaner. Flush foreign material from the washer system plumbing by first disconnecting the washer hose from the rear washer nozzle, then running the washer pump/motor to run clean washer fluid or water through the system. A plugged or restricted rear washer nozzle should be carefully back-flushed using compressed air. If the washer nozzle obstruction cannot be cleared, replace the rear washer nozzle.

INSPECTION

FRONT

WIPER SYSTEM

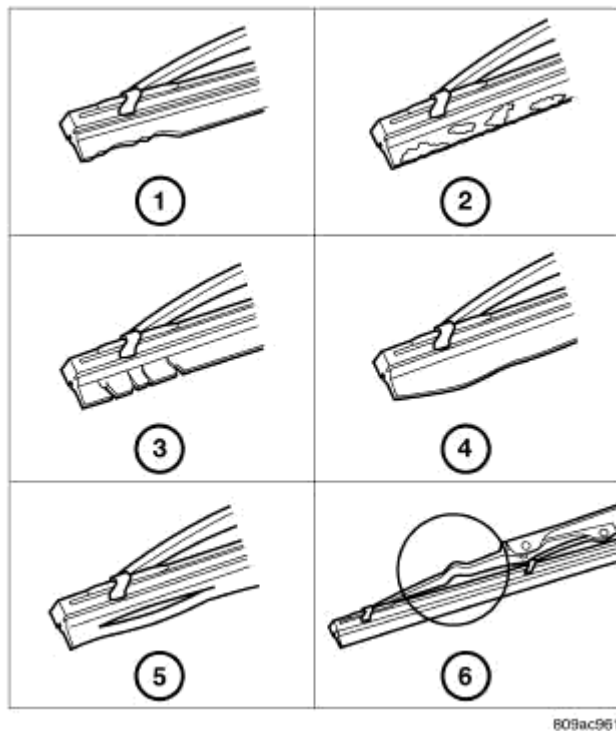


Fig. 5: Inspecting Wiper Blades
Courtesy of CHRYSLER LLC

The wiper blades and wiper arms should be inspected periodically, not just when wiper performance problems are experienced. This inspection should include the following points:

1. Carefully inspect the wiper blades for any indications of worn or uneven edges (1), foreign material deposits (2), hardening or cracking (3), deformation or fatigue (4), or splitting (5). Inspect the wiper blade support components and the wiper arms for damage (6) or corrosion. If the wiper arms and blades are contaminated with any foreign material, clean them and the glass as required. See **Electrical - Wipers/Washers/Wipers/Washers - Cleaning**. If a wiper blade or arm is damaged, or if corrosion is evident, replace the affected wiper arm or blade with a new unit. Do not attempt to repair a wiper arm or blade that is damaged or corroded.
2. Carefully lift the wiper blade off of the glass. Note the action of the wiper arm hinge. The wiper arm should pivot freely at the hinge, but with no lateral looseness evident. If there is any binding evident in the wiper arm hinge, or if there is evident lateral play in the wiper arm hinge, replace the wiper arm.

CAUTION: Do not allow the wiper arm to spring back against the glass without the wiper blade in place or the glass may be damaged.

3. Once proper hinge action of the wiper arm is confirmed, check the hinge for proper spring tension. Remove the wiper blade from the wiper arm. Either place a small postal scale between the blade end of the wiper arm and the glass, or carefully lift the blade end of the arm away from the glass using a small fish scale. On vehicles with unequal wiper arm lengths, be certain that measurements on both arms are

taken at a point an equal distance from their wiper arm hinge pins. Compare the scale readings between the right and left wiper arms. Replace a wiper arm if it has comparatively lower spring tension, as evidenced by a lower scale reading.

4. After cleaning and inspecting the wiper components and the glass, if the wiper blade still fails to clear the glass without smearing, streaking, chattering, hazing, or beading, replace the wiper blade.

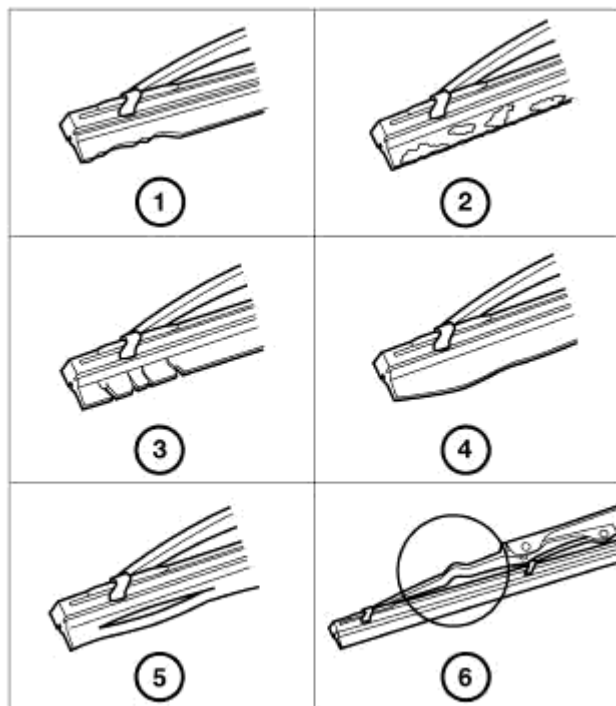
WASHER SYSTEM

The washer system components should be inspected periodically, not just when washer performance problems are experienced. This inspection should include the following points:

1. Check for ice or other foreign material in the washer reservoir. If contaminated, clean and flush the washer system. See **Electrical - Wipers/Washers/Wipers/Washers - Cleaning**.
2. Inspect the washer plumbing for pinched, leaking, deteriorated, or incorrectly routed hoses and damaged or disconnected hose fittings. Replace damaged or deteriorated hoses and hose fittings. Leaking washer hoses can sometimes be repaired by cutting the hose at the leak and splicing it back together using an inline connector fitting. Similarly, sections of deteriorated hose can be cut out and replaced by splicing in new sections of hose using inline connector fittings. Whenever routing a washer hose or a wire harness containing a washer hose, it must be routed away from hot, sharp, or moving parts. Also, sharp bends that might pinch the washer hose must be avoided.

REAR

WIPER SYSTEM



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Fig. 6: Inspecting Wiper Blades
Courtesy of CHRYSLER LLC

The rear wiper blade and wiper arm should be inspected periodically, not just when wiper performance problems are experienced. This inspection should include the following points:

1. Carefully inspect the wiper blade for any indications of worn or uneven edges (1), foreign material deposits (2), hardening or cracking (3), deformation or fatigue (4), or splitting (5). Inspect the wiper blade support components and the wiper arm for damage (6). If the wiper arm and blade are contaminated with any foreign material, clean them and the glass as required. See **Electrical - Wipers/Washers/Wipers/Washers - Cleaning**. If the wiper blade or arm is damaged, replace it with a new unit. Do not attempt to repair a wiper arm or blade that is damaged or corroded.
2. Carefully lift the wiper blade off of the glass. Note the action of the wiper arm hinge. The wiper arm should pivot freely at the hinge, but with no lateral looseness evident. If there is any binding evident in the wiper arm hinge, or there is evident lateral play in the wiper arm hinge, replace the wiper arm.

CAUTION: Do not allow the wiper arm to spring back against the glass without the wiper blade in place or the glass may be damaged.

3. Once proper hinge action of the wiper arm is confirmed, check the hinge for proper spring tension. The spring tension of the wiper arm should be sufficient to cause the rubber squeegee to conform to the curvature of the glass. Replace a wiper arm if it has insufficient spring tension to maintain contact between the squeegee and the glass.
4. After cleaning and inspecting the wiper components and the glass, if the wiper blade still fails to clear the glass without smearing, streaking, chattering, hazing, or beading, replace the wiper blade.

WASHER SYSTEM

The washer system components should be inspected periodically, not just when washer performance problems are experienced. This inspection should include the following points:

1. Check for ice or other foreign material in the washer reservoir. If contaminated, clean and flush the washer system. See **Electrical - Wipers/Washers/Wipers/Washers - Cleaning**.
2. Inspect the washer plumbing for pinched, leaking, deteriorated, or incorrectly routed hoses and damaged or disconnected hose fittings. Replace damaged or deteriorated hoses and hose fittings. Leaking washer hoses can sometimes be repaired by cutting the hose at the leak and splicing it back together using an inline connector fitting. Similarly, sections of deteriorated hose can be cut out and replaced by splicing in new sections of hose using inline connector fittings. Whenever routing a washer hose or a wire harness containing a washer hose, it must be routed away from hot, sharp, or moving parts. Also, sharp bends that might pinch the washer hose must be avoided.

SPECIFICATIONS

SPECIFICATIONS

TORQUE SPECIFICATIONS

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.
Right Multi-Function Switch Mounting Screw	1	-	10
Front Wiper Arm Mounting Nuts	24	18	-
Rear Wiper Arm Mounting Nut	9	-	80
Front Wiper Module Mounting Screws	10	-	90
Front Wiper Motor Mounting Screws	9	-	80
Rear Wiper Motor Bracket Mounting Screws	5	-	44

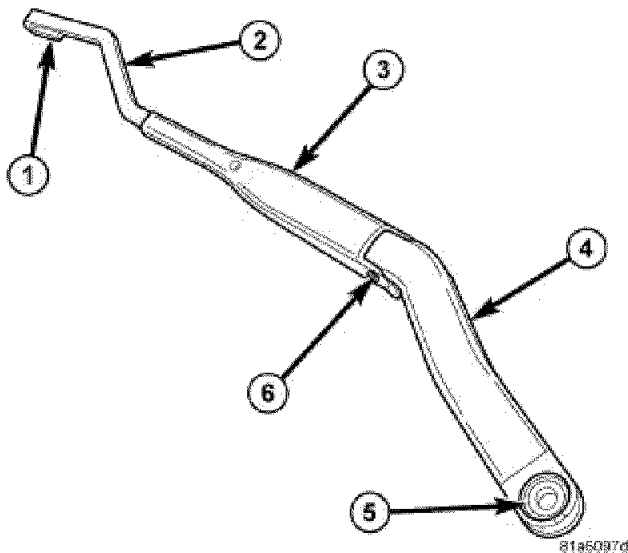
ARM, WIPER**DESCRIPTION****FRONT**

Fig. 7: Front Wiper Arm
 Courtesy of CHRYSLER LLC

The front wiper arms are the rigid members located between the wiper pivots that protrude from the cowl plenum cover/grille panel near the base of the windshield and the wiper blades on the windshield glass. These wiper arms feature an over-center hinge that allows easy access to the windshield glass for cleaning.

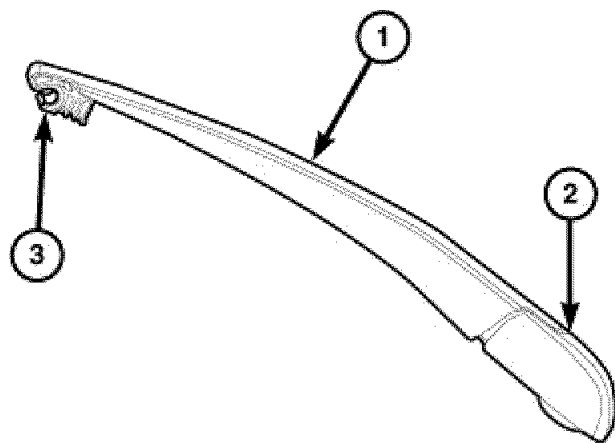
The wiper arm has a die cast metal pivot end (4) with a large tapered mounting hole (5) at one end. A molded

black plastic cap fits over the wiper arm retaining nut to conceal the nut and this mounting hole following wiper arm installation.

The wide end of a tapered, stamped steel channel (3) hinges on and is secured with a hinge pin (6) to the blade end of the wiper arm pivot end. One end of a long, rigid, stamped steel strap (2) with a small hole near its pivot end is riveted and crimped within the narrow end of the stamped steel channel. The tip of the wiper blade end of this strap is bent back under itself to form a small hook (1). Concealed within the stamped steel channel, one end of a long tension spring is engaged with a wire hook on the underside of the die cast pivot end, while the other end of the spring is hooked through the small hole in the steel strap. The entire wiper arm has a satin black finish applied to all of its visible surfaces.

The right and left wiper arms are unique and are not interchangeable. A wiper arm cannot be adjusted or repaired. If damaged or ineffective, the entire wiper arm unit must be replaced.

REAR



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Fig. 8: Rear Wiper Arm

Courtesy of CHRYSLER LLC

The rear wiper arm is the rigid member located between the rear wiper motor output shaft that protrudes through the liftgate outer panel below the center of the liftgate glass opening and the wiper blade on the outside of the glass. The wiper arm is constructed of molded black plastic. A hinged pivot end is also molded plastic.

A molded black plastic nut cover (2) with two pivot pins on one end and a snap feature on the other fits over the wiper arm retaining nut to conceal the nut and mounting hole following wiper arm installation. The wiper arm hinge and tension spring are concealed on the underside of the wide end of the arm (1), while an integral latch feature (3) concealed on the underside of the narrow end of the wiper arm accepts the pivot pin of the matching molded plastic wiper blade unit.

The rear wiper arm cannot be adjusted or repaired. If damaged or ineffective, the entire wiper arm unit must be replaced.

OPERATION**FRONT**

The front wiper arms are designed to mechanically transmit the motion from the wiper pivots to the wiper blades. The wiper arm must be properly indexed to the wiper pivot in order to maintain the proper wiper blade travel on the glass. The tapered mounting hole in the wiper arm pivot end interlocks with the serrations on the tapered outer circumference of the wiper pivot shaft, allowing positive engagement and finite adjustment of this connection.

The mounting nuts lock the wiper arms to the threaded studs of the wiper pivot shafts. The spring-loaded wiper arm hinge controls the down-force applied through the tip of the wiper arm to the wiper blade on the glass. The hook formation on the tip of the wiper arm provides a cradle for securing and latching the wiper blade pivot block to the wiper arm.

REAR

The rear wiper arm is designed to mechanically transmit the motion from the rear wiper motor output shaft to the rear wiper blade. The wiper arm must be properly indexed to the motor output shaft in order to maintain the proper wiper blade travel on the glass. The tapered hole in the wiper arm pivot end interlocks with the serrations on the outer circumference of the tapered motor output shaft, allowing positive engagement and finite adjustment of this connection.

A hex nut secures the wiper arm pivot end to the threads on the rear wiper motor output shaft and the plastic cover snaps over this connection for a neat appearance. The spring-loaded wiper arm hinge controls the down-force applied through the tip of the wiper arm to the wiper blade on the glass. The latch formation on the tip of the wiper arm provides a cradle for securing and latching the wiper blade pivot pin to the wiper arm.

REMOVAL**FRONT**

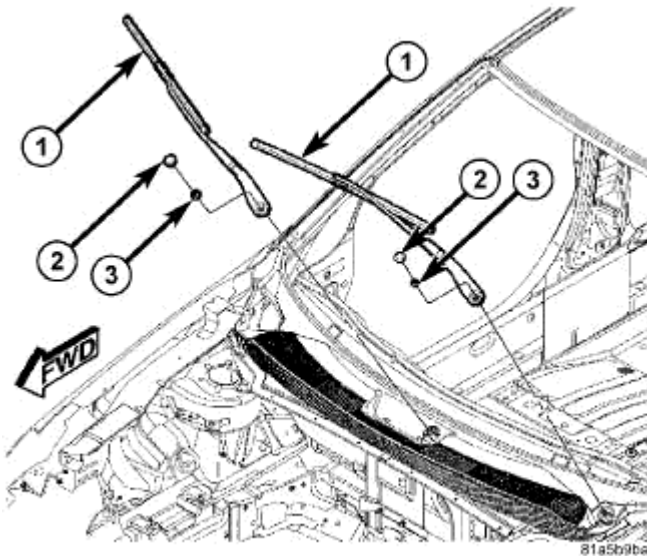


Fig. 9: Removing/Installing Wiper Arm
Courtesy of CHRYSLER LLC

1. Lift the front wiper arm (1) to its over-center position to hold the wiper blade off of the glass and relieve the spring tension on the wiper arm to pivot shaft connection.
2. Carefully pry the plastic nut cap (2) off of the pivot end of the wiper arm.
3. Remove the nut (3) that secures the wiper arm to the wiper pivot shaft.

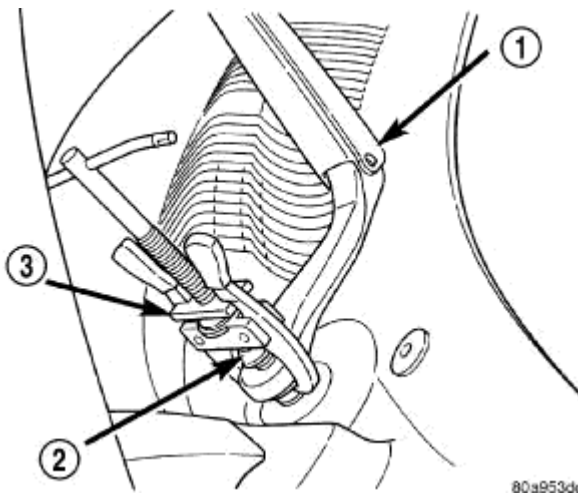


Fig. 10: Disengaging Wiper Arm From Pivot Shaft
Courtesy of CHRYSLER LLC

4. If necessary, use a suitable battery terminal puller (3) to disengage the wiper arm (1) from the pivot shaft (2).
5. Remove the front wiper arm pivot end from the pivot shaft.

REAR

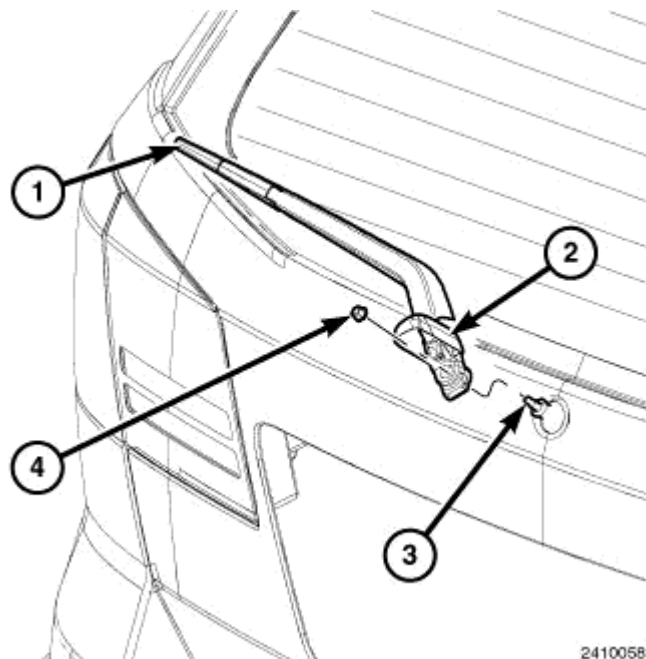


Fig. 11: Rear Wiper Motor Output Shaft
Courtesy of CHRYSLER LLC

1. Unsnap and swing the molded plastic nut cover (2) off of the pivot end of the wiper arm (1).
2. Remove the nut (4) that secures the wiper arm to the rear wiper motor output shaft (3).

CAUTION: The use of a battery terminal puller when removing the rear wiper arm is **NOT** recommended as this may damage the rear wiper arm.

3. Use a slight rocking action to disengage the rear wiper arm pivot end from the output shaft and remove the wiper arm.

INSTALLATION

FRONT

NOTE: Be certain that the wiper motor is in the park position before attempting to install the front wiper arms. Turn the ignition switch to the ON position and move the right (wiper) multi-function switch control knob to its OFF position. If the wiper pivots move, wait until they stop moving, then turn the ignition switch back to the OFF position. The front wiper motor is now in its park position.

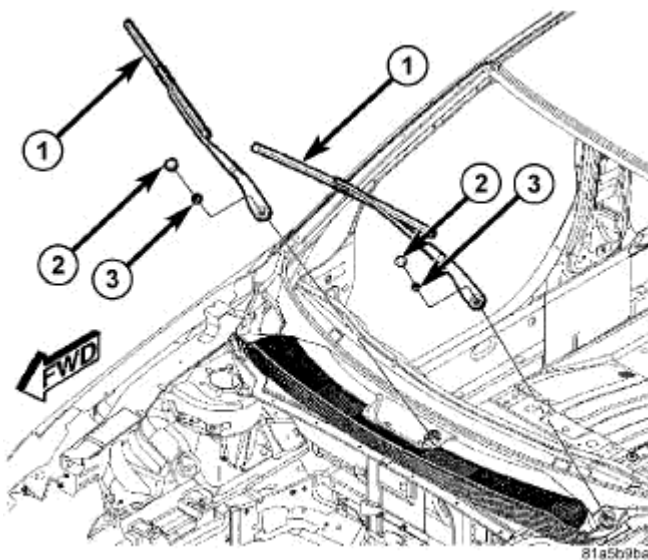


Fig. 12: Removing/Installing Wiper Arm
Courtesy of CHRYSLER LLC

1. The front wiper arms (1) must be indexed to the pivot shafts with the front wiper motor in the park position to be properly installed. Position the wiper arm pivot ends onto the wiper pivot shafts so that the tip of the wiper blade is aligned with the wiper alignment lines located within the lower margin (blackout area) of the windshield glass.
2. Once the wiper blade is aligned, lift the wiper arm away from the windshield slightly to relieve the spring tension on the pivot end and push the pivot end of the wiper arm down firmly and evenly over the pivot shaft.
3. Install and tighten the nut (3) that secures the wiper arm to the pivot shaft. Tighten the nut to 24 N.m (18 ft. lbs.).
4. Wet the windshield glass, then operate the front wipers. Turn the front wipers OFF, then check for the correct wiper arm position and readjust as required.
5. Reinstall the plastic nut cap (2) onto the wiper arm pivot nut.

INSTALLATION

NOTE: Be certain that the rear wiper motor is in the park position before attempting to install the rear wiper arm. Turn the ignition switch to the ON position and move the rear wiper switch to its OFF position. If the wiper motor output shaft moves, wait until it stops moving, then turn the ignition switch back to the OFF position. The wiper motor is now in its park position.

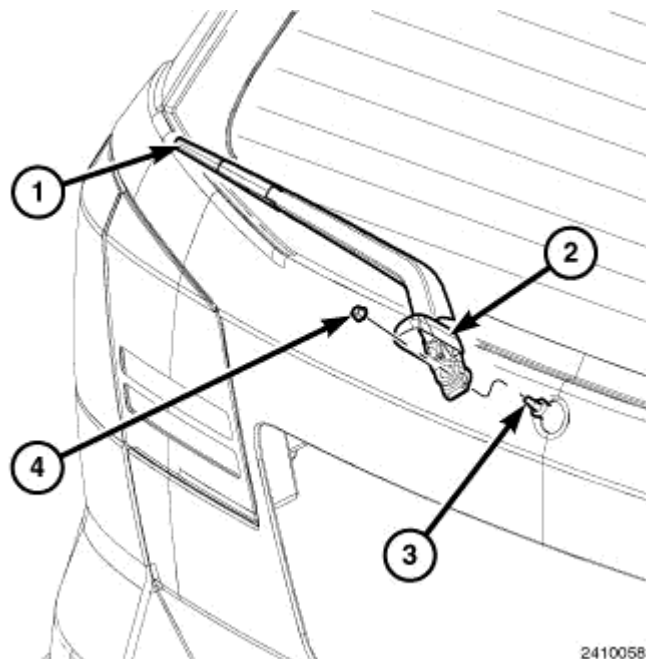


Fig. 13: Rear Wiper Motor Output Shaft
Courtesy of CHRYSLER LLC

1. The rear wiper arm (1) must be indexed to the rear wiper motor output shaft with the motor in the park position to be properly installed. Position the wiper arm pivot end onto the output shaft (3) so that the tip of the wiper blade is aligned with the second rear window defogger grid line from the bottom of the liftgate glass.
2. With the rear wiper arm properly indexed, push the tapered mounting hole on the pivot end of the wiper arm down over the output shaft.
3. Install and tighten the nut (4) that secures the rear wiper arm to the output shaft. Tighten the nut to 9 N.m (80 in. lbs.).
4. Fold and snap the molded plastic nut cover (2) over the nut on the pivot end of the rear wiper arm.
5. Wet the lift glass and operate the rear wiper. Turn the rear wiper switch to the OFF position, then check for correct wiper arm position and readjust as required.

BLADE, WIPER

DESCRIPTION

FRONT

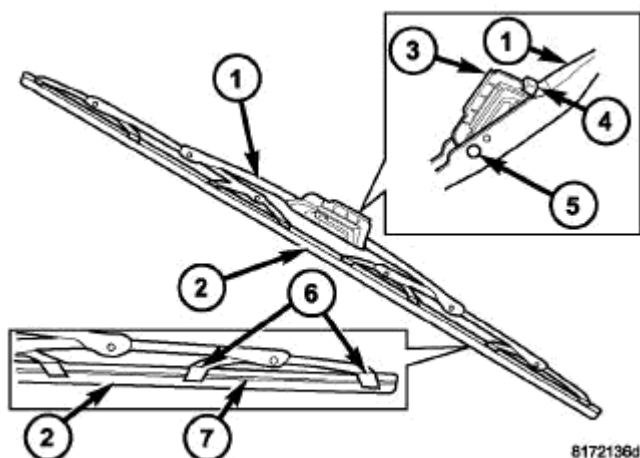


Fig. 14: Identifying Wiper Blade Components
 Courtesy of CHRYSLER LLC

Each wiper blade is secured by an integral latching pivot block (3) to the hook formation on the tip of each wiper arm, and rests on the glass near the base of the windshield when the wipers are not in operation. The wiper blade consists of the following components:

- **Superstructure (1)** - The superstructure includes several stamped steel bridges and links with claw formations (6) that grip the wiper blade element. Also included in this unit is the latching, molded plastic pivot block that secures the superstructure to the wiper arm. All of the metal components of the wiper blade have a satin black finish applied.
- **Element (2)** - The wiper element or squeegee is the resilient rubber member of the wiper blade that contacts the glass.
- **Flexor (7)** - The flexor is a rigid metal component running along the length of each side of the wiper element where it is gripped by the claws of the superstructure.

The passenger side wiper blades are 47.50 centimeters (18.70 inches) long. The driver side wiper blades are 60 centimeters (23.62 inches) long. They have non-replaceable rubber elements (squeegees). The wiper blades cannot be adjusted or repaired. If ineffective, worn, or damaged the entire wiper blade unit must be replaced.

REAR

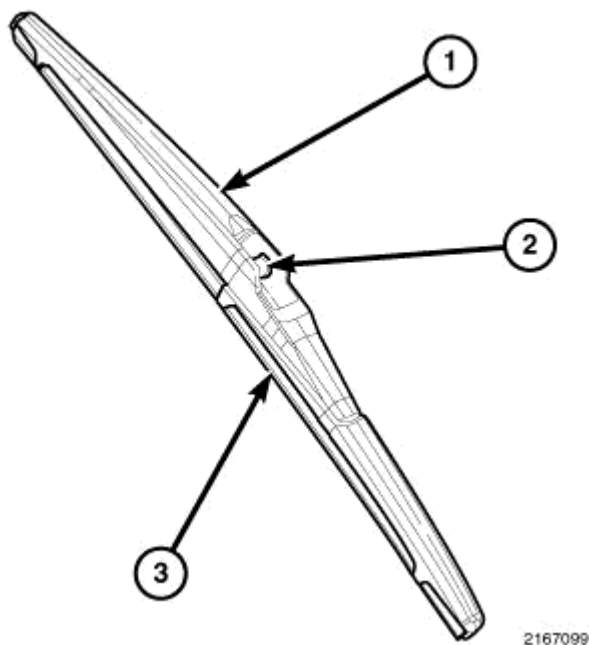


Fig. 15: Rear Wiper Blade Is Secured By An Integral Pivot Pin
Courtesy of CHRYSLER LLC

The rear wiper blade is secured by an integral pivot pin (2) to a receptacle at the tip of the rear wiper arm, and rests near the base of the liftgate glass when the wiper is not in operation. The rear wiper blade consists of the following components:

- **Superstructure (1)** - The superstructure includes a molded black plastic bridge and plastic links with claw formations that grip the wiper blade element. Also included in this unit is the pivot pin that secures the superstructure to the wiper arm.
- **Element (3)** - The wiper element or squeegee is the resilient rubber member of the wiper blade that contacts the glass.
- **Flexor** - The flexor is a rigid metal component running along the length of each side of the wiper element where it is gripped by the claws of the superstructure.

The rear wiper blade is 30.50 centimeters (12.00 inches) long with a non-replaceable element (squeegee). The wiper blade superstructure cannot be adjusted or repaired. If ineffective, worn, or damaged the entire wiper blade unit must be replaced.

OPERATION

FRONT

The wiper blades are moved back and forth across the glass by the wiper arms when the wipers are being operated. The wiper blade superstructure is the flexible frame that grips the wiper blade element and evenly distributes the force of the spring-loaded wiper arm along the length of the element. The combination of the wiper arm force and the flexibility of the superstructure makes the element conform to and maintain proper contact with the glass, even as the blade is moved over the varied curvature that may be encountered across the

glass surface.

The wiper element flexor provides the claws of the blade superstructure with a rigid, yet flexible component on the element which can be gripped. The rubber element is designed to be stiff enough to maintain an even cleaning edge as it is drawn across the glass, yet resilient enough to conform to the glass surface and flip from one cleaning edge to the other each time the wiper blade changes directions.

REAR

The rear wiper blade is moved back and forth across the liftgate glass by the wiper arm when the rear wiper system is in operation. The wiper blade superstructure is the flexible frame that grips the wiper blade element and evenly distributes the force of the spring-loaded wiper arm along the length of the element. The combination of the wiper arm force and the flexibility of the superstructure makes the element conform to and maintain proper contact with the glass, even as the blade is moved over the varied curvature found across the glass surface.

The wiper element flexor provides the claws of the blade superstructure with a rigid, yet flexible component on the element which can be gripped. The rubber element is designed to be stiff enough to maintain an even cleaning edge as it is drawn across the glass, but resilient enough to conform to the glass surface and flip from one cleaning edge to the other each time the wiper blade changes directions.

REMOVAL

FRONT

CAUTION: Do not allow the wiper arm to spring back against the glass without the wiper blade in place or the glass may be damaged.

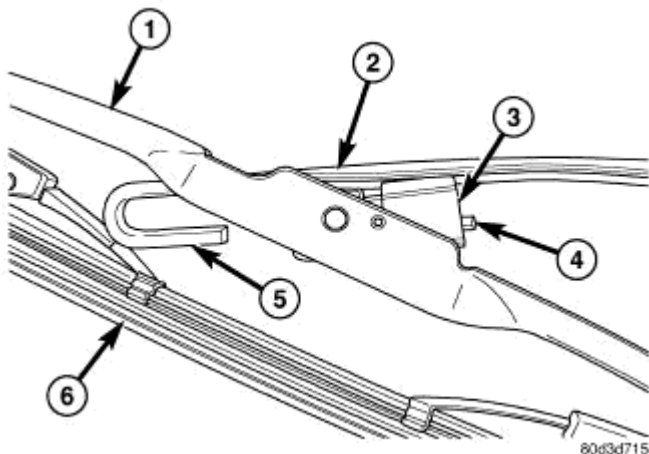


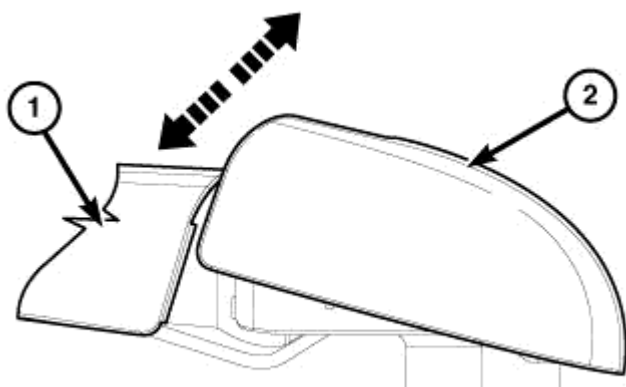
Fig. 16: Removing/Installing Wiper Blade
Courtesy of CHRYSLER LLC

NOTE: The notched end of the wiper element flexor should always be oriented towards

the end of the wiper blade that is nearest to the wiper pivot.

1. Lift the wiper arm (2) to raise the wiper blade and element (6) off of the glass, until the wiper arm hinge is in its over-center position.
2. To remove the blade from the arm, depress the latch release tab (4) on the pivot block (3) under the tip of the arm and slide the blade away from the tip towards the pivot end of the arm far enough to disengage the pivot block from the hook formation (5) on the end of the arm.
3. Extract the hook formation on the tip of the wiper arm through the opening in the wiper blade superstructure (1) just ahead of the pivot block.
4. Gently lower the tip of the wiper arm onto the glass.

REAR



2167257

Fig. 17: Rear Wiper Arm Pivot Cap
Courtesy of CHRYSLER LLC

1. Lift the rear wiper arm pivot cap (2) upward to allow the rear wiper blade to be raised off of the glass.

NOTE: The rear wiper arm cannot be raised to its over-center hinge position unless the pivot cover is raised first.

2. Lift the rear wiper arm to its over-center hinge position to raise the wiper blade and element off of the liftgate glass.

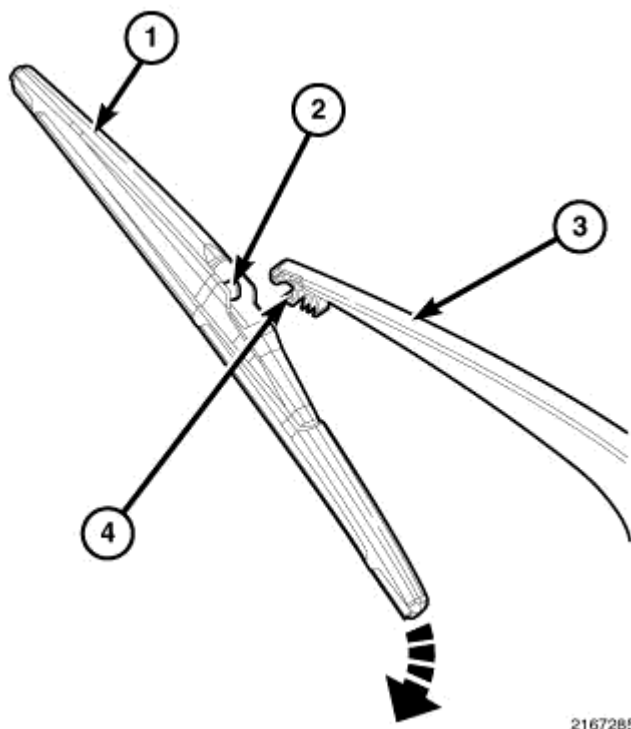


Fig. 18: Removing/Installing Wiper Blade From Wiper Arm
Courtesy of CHRYSLER LLC

3. To remove the wiper blade (1) from the wiper arm (3), grasp the end of the blade nearest to the motor output shaft, then over-rotate it out from under the arm and past its stop far enough to unsnap the blade pivot pin (2) from the receptacle (4) on the end of the arm.
4. Gently lower the tip of the wiper arm onto the glass.

INSTALLATION

FRONT

CAUTION: Do not allow the wiper arm to spring back against the glass without the wiper blade in place or the glass may be damaged.

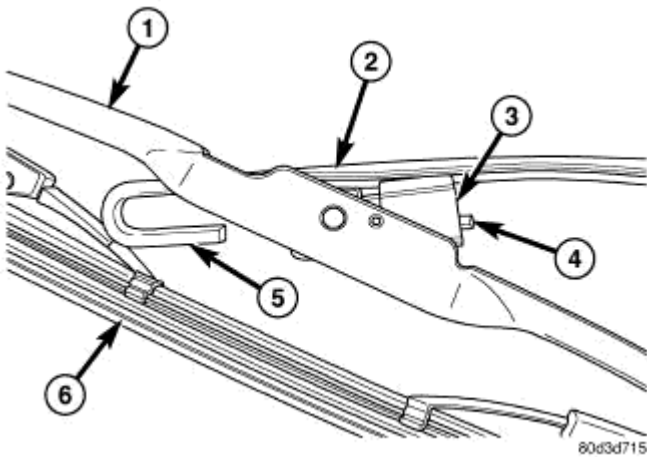
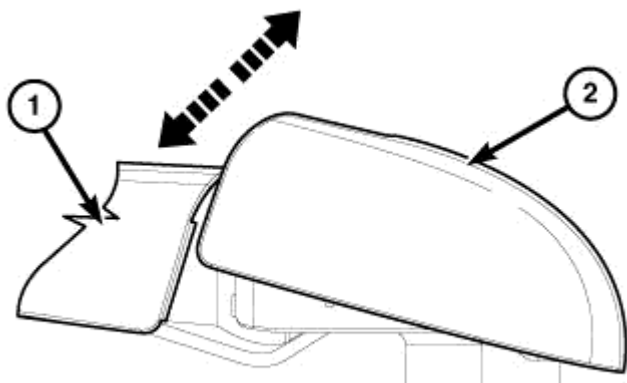


Fig. 19: Removing/Installing Wiper Blade
Courtesy of CHRYSLER LLC

NOTE: The notched end of the wiper element flexor should always be oriented towards the end of the wiper blade that is nearest to the wiper pivot.

1. Lift the wiper arm (2) off of the windshield glass, until the wiper arm hinge is in its over-center position.
2. Position the wiper blade near the hook formation (5) on the tip of the arm with the notched end of the wiper element flexor oriented towards the end of the wiper arm that is nearest to the wiper pivot.
3. Insert the hook formation on the tip of the arm through the opening in the blade superstructure (1) ahead of the pivot block (3) far enough to engage the pivot block into the hook.
4. Slide the pivot block up into the hook formation on the tip of the wiper arm until the latch release tab (4) snaps into its locked position. Latch engagement will be accompanied by an audible click.
5. Gently lower the wiper blade and element (6) onto the glass.

REAR



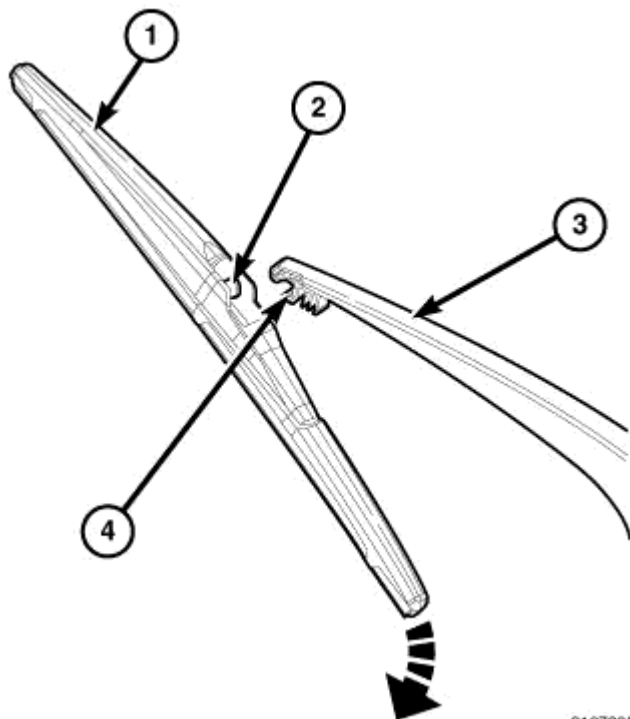
2167257

Fig. 20: Rear Wiper Arm Pivot Cap
Courtesy of CHRYSLER LLC

1. Lift the rear wiper arm pivot cap (2) upward to allow the rear wiper arm to be raised off of the glass.

NOTE: The rear wiper arm cannot be raised to its over-center hinge position unless the pivot cover is raised first.

2. Lift the rear wiper arm to its over-center hinge position and off of the liftgate glass.



2167285

Fig. 21: Removing/Installing Wiper Blade From Wiper Arm
Courtesy of CHRYSLER LLC

3. Position the rear wiper blade (1) with the pivot pin (2) aligned with the opening of the receptacle (4) on the tip of the wiper arm (3).
4. Using hand pressure, press the wiper blade pivot pin firmly and evenly into the wiper arm receptacle until it snaps into place.
5. Lower the wiper blade onto the glass and snap the pivot cover back into place.

CHECK VALVE, WASHER

DESCRIPTION

DESCRIPTION

Diaphragm-type washer system check valves are standard equipment in this vehicle. The check valves for both the front and rear washer systems are integral to their respective washer nozzles. The check valve for the headlamp washer system, which is optional equipment only on vehicles manufactured for certain export markets, is integral to the headlamp washer hose tee fitting. The headlamp washer tee fitting is located behind the front fascia near the left headlamp washer nozzle.

Each diaphragm-type check valve consists of a molded plastic valve body where a small diaphragm is held against the lip of an integral sump well by a small plastic piston and a coiled spring.

The front and rear check valves cannot be adjusted or repaired and, if ineffective or damaged, the washer nozzle unit must be replaced. The headlamp washer system tee fitting with the integral check valve also cannot be adjusted or repaired, and is serviced only as a unit with the headlamp washer hose assembly.

OPERATION

OPERATION

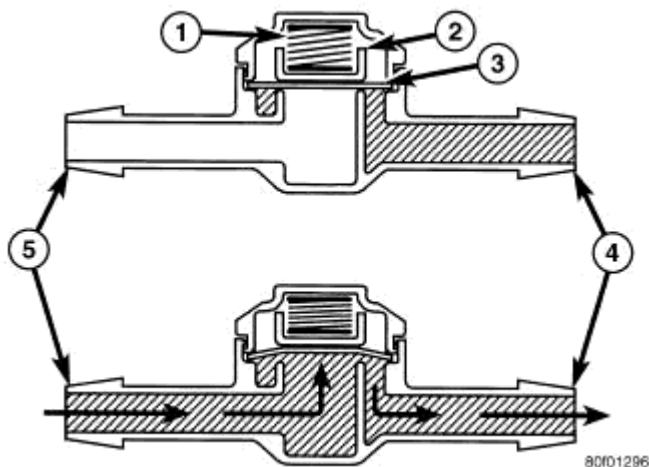


Fig. 22: Cutaway View Of Washer System Check Valve
 Courtesy of CHRYSLER LLC

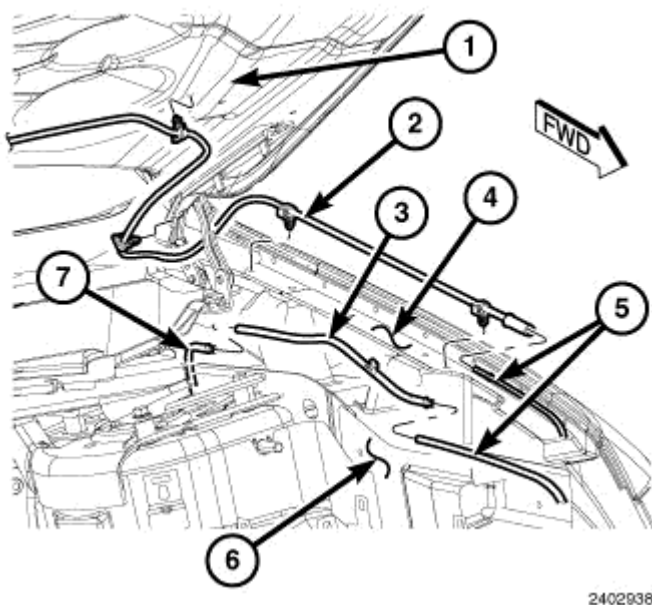
Diaphragm-type washer system check valves provide more than one function. First, they prevent washer fluid from draining out of the washer supply hoses back to the washer reservoir. This drain-back would result in a lengthy delay from when the washer system is activated until washer fluid was dispensed through the washer nozzles because the washer pump would have to refill the washer plumbing from the reservoir to the nozzle. Such a drain-back condition could also result in water, dirt, or other outside contaminants being drawn into the washer system through the washer nozzle orifice. This water could subsequently freeze and plug the nozzle, while other contaminants could interfere with proper nozzle operation and cause improper nozzle spray patterns. In addition, the check valve prevents washer fluid from siphoning out through the washer nozzle after the washer system is turned OFF.

When the washer pump pressurizes and pumps washer fluid from the reservoir through the washer plumbing (5), the fluid pressure unseats a diaphragm (3) from over a sump well within the valve by overriding the pressure applied to it by a piston (2) and coiled spring (1). With the diaphragm unseated, washer fluid is allowed to flow toward the washer nozzle (4). When the washer pump stops operating, the spring pressure on the piston seats the diaphragm over the sump well in the valve and fluid flow in either direction within the washer plumbing is prevented.

HOSES AND TUBES, WASHER

DESCRIPTION

FRONT



2402938

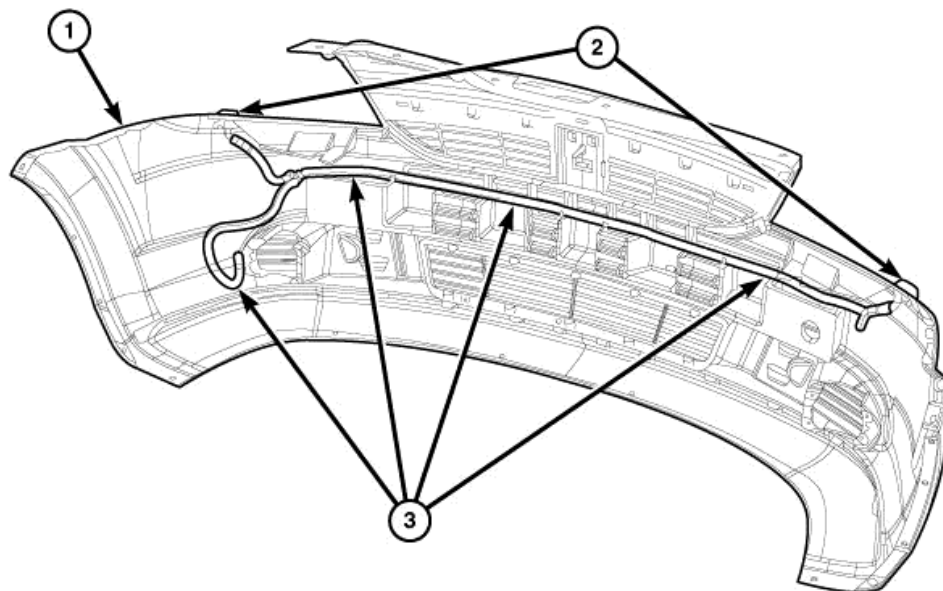
Fig. 23: Front Washer Plumbing Components
 Courtesy of CHRYSLER LLC

The front washer plumbing consists of a small diameter rubber hose (2) that is routed along the left front fender ledge (4) from the washer reservoir hose (5) located at the left front corner of the engine compartment. The reservoir hose is attached to the front outlet nipple of the washer pump/motor unit near the bottom of the reservoir. The hose is then secured by plastic push-in type retainers to the left fender ledge within the engine compartment to the left side of the cowl plenum.

From the cowl plenum, the front hose is routed up toward the inner hood panel reinforcement (1). The hose is secured to the left hood hinge and the left side of the inner hood panel reinforcement by plastic push-in type retainers, then is routed through the rear hood silencer brackets across the underside of the inner hood panel. Plastic inline fittings, a molded rubber tee and a molded rubber elbow provide the take outs for the two front washer nozzles.

Washer hose is available for service as roll stock, which may be cut to length. The molded plastic or rubber washer hose fittings cannot be repaired. If these fittings are ineffective or damaged, they must be replaced.

HEADLAMP



2404663

Fig. 24: Headlamp Washer System Plumbing Components
Courtesy of CHRYSLER LLC

The headlamp washer system plumbing consists of a large diameter high pressure rubber hose (3) that is routed from the outlet nipple of the headlamp washer pump/motor unit on the washer reservoir to the barbed nipple of a tee fitting with an integral check valve located near the left headlamp washer nozzle on the back side of the front fascia (1). The other two barbed nipples of the tee fitting are connected to one short and one long length of hose that each terminate at a headlamp washer nozzle (2) behind the fascia and below the two front lamp units. The hose is secured and routed from left to right behind the fascia and above the fascia reinforcement by several routing clips. The hose connections at the nozzles and the washer pump are secured using molded plastic quick-connect fittings.

The headlamp washer hose is serviced only as a complete unit. The molded plastic washer hose fittings and

check valve cannot be repaired. If these fittings or the check valve are ineffective or damaged, the entire headlamp washer hose unit must be replaced.

REAR

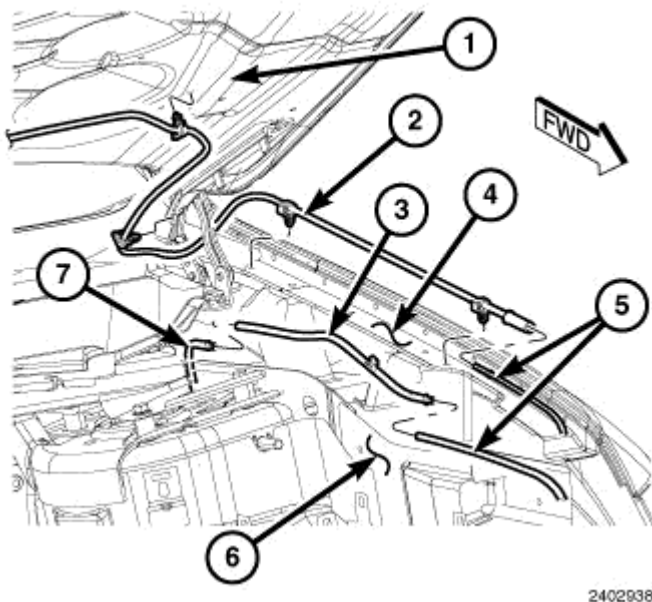
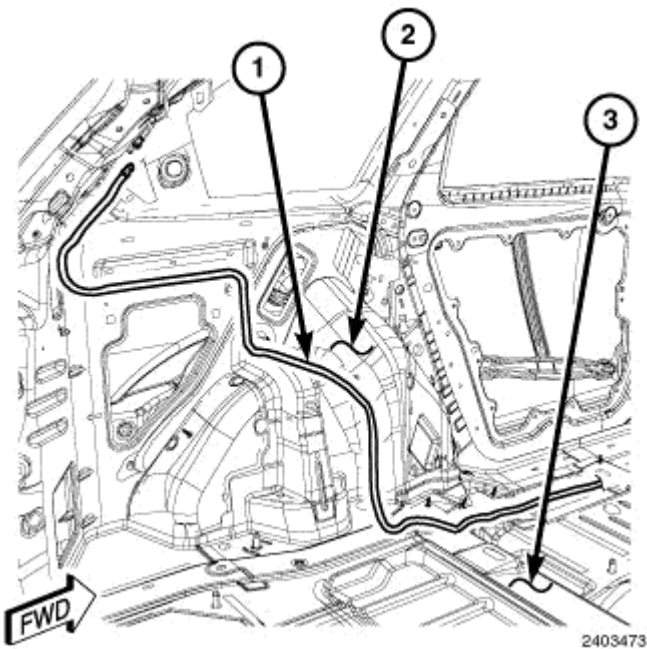


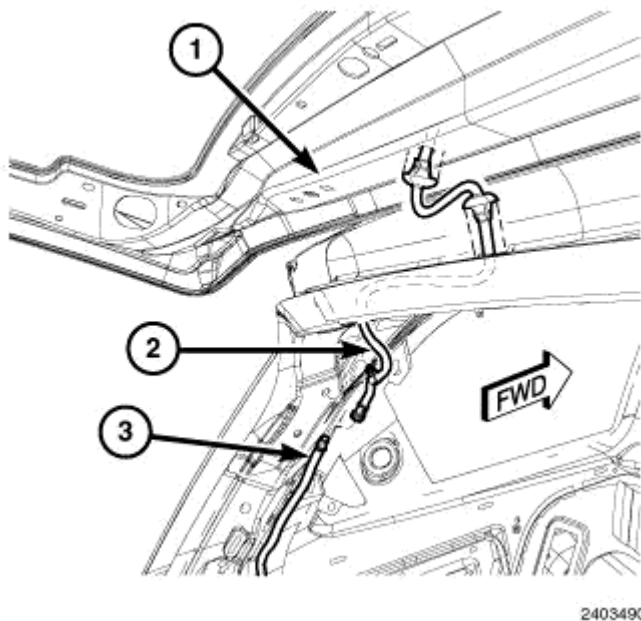
Fig. 25: Front Washer Plumbing Components
Courtesy of CHRYSLER LLC

The rear washer plumbing consists of a small diameter rubber hose (3) that is routed along the left front fender shield (6) from the washer reservoir hose (5) located at the left front corner of the engine compartment. The reservoir hose is attached to the rear outlet nipple of the washer pump/motor unit near the bottom of the reservoir. The hose is then secured by a plastic clip retainer to the front end sheet metal within the engine compartment and routed to just behind the left strut tower, where it connects to the unibody hose (7).

**Fig. 26: Unibody Hose**

Courtesy of CHRYSLER LLC

The unibody hose (1) passes from the engine compartment through a hole with a rubber grommet in the dash panel into the passenger compartment where it enters the body wire harness. The hose and wire harness bundle is routed along the floor panel (3) near the left sill back to the base of the left rear inner wheel house (2). The hose and wiring bundle is then routed over the wheel house and along the quarter inner panel near the belt line, then up the D-pillar.

**Fig. 27: Liftgate Washer Hose**

Courtesy of CHRYSLER LLC

The unibody hose (3) exits the body wire harness near the top of the D-pillar, where it is connected to the liftgate washer hose (2) by a quick connect fitting. The liftgate washer hose is routed up the D-pillar to the upper liftgate opening header panel, then to the center of the upper liftgate opening. The liftgate hose is routed through a hole with a rubber grommet in the upper liftgate opening header panel and passes through another hole with a rubber grommet in the upper liftgate panel (1) to the rear washer nozzle on the upper liftgate.

Washer hose is available for service as roll stock, which may be cut to length. The unibody washer hose is integral to the body wire harness. The molded plastic washer hose fittings and routing clips cannot be repaired. If these fittings or clips are ineffective or damaged, they must be replaced.

OPERATION**FRONT**

Washer fluid in the washer reservoir is pressurized and fed by the washer pump/motor unit through the front washer system plumbing and fittings to the two front washer nozzles. Whenever routing the washer hose or a wire harness containing a washer hose, it must be routed away from hot, sharp, or moving parts; and, sharp bends that might pinch the hose must be avoided.

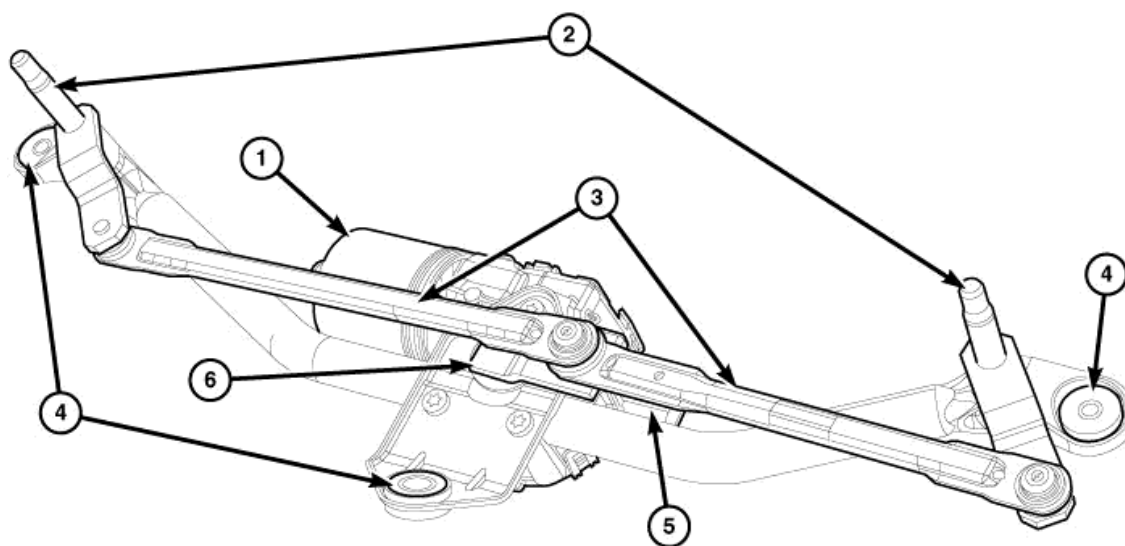
HEADLAMP

Washer fluid in the washer reservoir is pressurized and fed by the headlamp washer pump/motor unit through the headlamp washer system plumbing and fittings to the two headlamp washer nozzles. Whenever routing the washer hose, it must be routed away from hot, sharp, or moving parts; and, sharp bends that might pinch the hose must be avoided.

REAR

Washer fluid in the washer reservoir is pressurized and fed by the washer pump/motor unit through the rear washer system plumbing and fittings to the rear washer nozzle. Whenever routing the washer hose or a wire harness containing a washer hose, it must be routed away from hot, sharp, or moving parts; and, sharp bends that might pinch the hose must be avoided.

LINKAGE, WIPER ARM**DESCRIPTION****DESCRIPTION**



2404695

Fig. 28: Front Wiper Linkage Module
 Courtesy of CHRYSLER LLC

The front wiper linkage module is secured by three screws through three rubber grommet-type insulators to two brackets and weld nuts on the cowl plenum panel and one bracket and weld nut on the driver side strut tower. The module is concealed beneath the molded plastic cowl plenum cover/grille panel between the base of the windshield and the rear edge of the hood panel. The ends of the pivot shafts that protrude through dedicated openings in the cowl plenum cover/grille panel to drive the wiper arms and blades and are the only visible components of the front wiper linkage module. The front wiper linkage module consists of the following major components:

- **Bracket** - The front wiper module bracket consists of a long tubular steel main member that has a die cast pivot bracket formation near each end where the two wiper pivots are secured. A stamped steel mounting bracket for the wiper motor is secured near the center of the main member. Each of the two wiper pivot brackets secures the module to the cowl plenum with a screw through a rubber insulator (4), and a third rubber insulator on the motor bracket secures the module with a screw in the bracket on the driver side strut tower.
- **Crank Arm** - The front wiper motor crank arm (6) is a stamped steel unit with a hole on the driven end that is secured to the wiper motor output shaft with a nut, and has a long ball stud secured to the drive end to accept the wiper linkage.
- **Linkage** - Two stamped steel drive links (3) connect the wiper motor crank arm to the wiper pivot lever arms. The right side drive link has a plastic socket-type bushing on each end. The left side drive link has a plastic socket-type bushing on one end, and a plastic sleeve-type bushing on the other end. The socket-type bushing on one end of each drive link is snap-fit over the ball stud on the lever arm of its respective pivot. The left side drive link sleeve-type bushing end is then fit over the motor crank arm ball stud, and the other socket-type bushing of the right side drive link is snap-fit over the exposed end of the wiper motor crank arm ball stud.
- **Motor** - The front wiper motor (1) features a transmission housing from which the wiper motor output shaft exits, and has three mounting bosses with internal threads to which the motor is mounted to the

center wiper linkage module bracket with screws. is secured with three screws near the center of the main tubular member of the wiper module bracket. A nut secures the wiper motor crank arm to the motor output shaft. The two-speed permanent magnet wiper motor features an integral transmission, an internal park switch, and an internal automatic resetting circuit breaker. A short pigtail wire and connector (5) connect the wiper motor to the vehicle electrical system through a dedicated take out and connector of the headlamp and dash wire harness.

- **Pivots** - The two front wiper pivots (2) are secured within the die cast pivot brackets on the outboard ends of the wiper linkage module main member. The lever arms that extend from the center of the pivot shafts each have a ball stud on their end. The upper end of each pivot shaft where the wiper arms will be fastened each has a finely splined and tapered driver with a threaded stud extending from the top. The lower ends of the pivot shafts are installed through permanently lubricated bushings in the pivot brackets.

The front wiper linkage module cannot be adjusted or repaired. The wiper motor is available for separate service replacement. If any other component of the linkage module is ineffective or damaged, the entire wiper linkage module unit must be replaced.

OPERATION

OPERATION

The front wiper linkage module operation is controlled by the battery current inputs received by the wiper motor from the Totally Integrated Power Module (TIPM). The wiper motor speed is controlled by current flow to either the low speed or the high speed set of brushes.

The park switch is a single pole, single throw, momentary switch within the wiper motor that is mechanically actuated by the wiper motor transmission components. The park switch alternately opens and closes the wiper park switch sense circuit to ground, depending upon the position of the wipers on the glass. This feature allows the motor to complete its current wipe cycle after the wiper system has been turned OFF, and to park the wiper blades in the lowest portion of the wipe pattern. The automatic resetting circuit breaker protects the motor from overloads.

The wiper motor crank arm, the two wiper linkage members, and the two driven wiper pivots mechanically convert the rotary output of the wiper motor to the back and forth wiping motion of the wiper arms and blades on the glass.

The hard wired inputs and outputs of the wiper motor may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the wiper system. The most reliable, efficient, and accurate means to diagnose the wiper system or the electronic controls and communication related to wiper motor operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

REMOVAL

REMOVAL

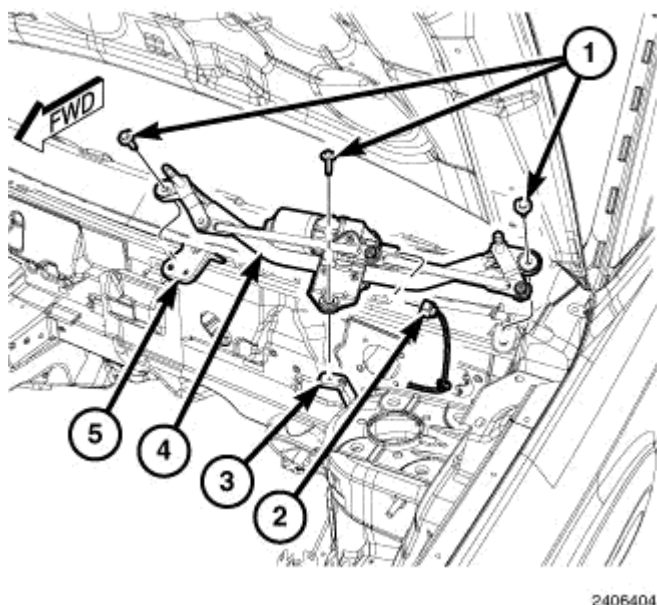


Fig. 29: Front Wiper Linkage Module Wiper Motor
Courtesy of CHRYSLER LLC

NOTE: The front wiper linkage module includes the wiper motor. The wiper motor is also available for separate service replacement and can be removed from the wiper linkage module without removing the module from the vehicle. See [Electrical - Wipers/Washers/Wipers/Washers/MOTOR, Wiper - Removal](#).

1. Remove both front wiper arms from the wiper pivots. See [Electrical - Wipers/Washers/Wipers/Washers/ARM, Wiper - Removal](#).
2. Disconnect and isolate the battery negative cable.
3. Remove the outer and inner cowl plenum cover/grille panels from the vehicle. Refer to [Body/Exterior/COVER, Cowl Panel - Removal](#).
4. Disconnect the headlamp and dash wire harness connector (2) from the wiper motor pigtail wire connector.
5. Remove the three screws (1) that secure the front wiper linkage module (4) to the driver side strut tower bracket (3) and the two cowl brackets (5).
6. Remove the front wiper linkage module from the vehicle as a unit.

INSTALLATION

INSTALLATION

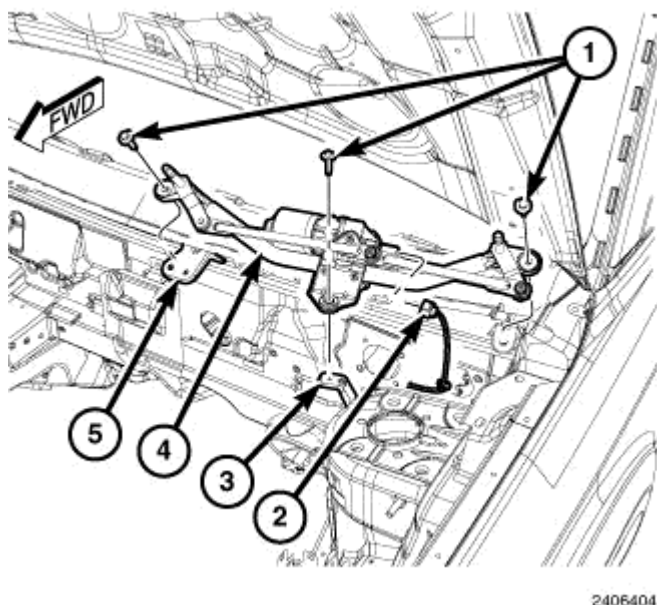


Fig. 30: Front Wiper Linkage Module Wiper Motor
Courtesy of CHRYSLER LLC

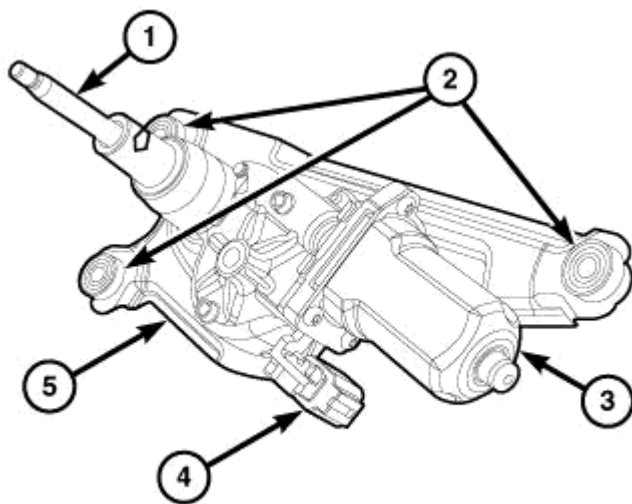
NOTE: The front wiper linkage module includes the wiper motor. The wiper motor is also available for separate service replacement and can be removed from the wiper linkage module without removing the module from the vehicle. See [Electrical - Wipers/Washers/Wipers/Washers/MOTOR, Wiper - Removal](#).

1. Position the front wiper linkage module (4) into the vehicle as a unit.
2. Reconnect the headlamp and dash wire harness connector (2) to the wiper motor pigtail wire connector. Be certain to route the wire harness take out under the wiper linkage module.
3. Install but do not tighten the three screws (1) that secure the front wiper linkage module to the driver side strut tower bracket (3) and the two cowl brackets (5).
4. Starting on the driver side and working toward the passenger side, tighten each of the three screws. Tighten the screws to 10 N.m (90 in. lbs.).
5. Reinstall the inner and outer cowl plenum cover/grille panels. Refer to [Body/Exterior/COVER, Cowl Panel - Installation](#).
6. Reconnect the battery negative cable.
7. Reinstall both front wiper arms onto the wiper pivots. See [Electrical - Wipers/Washers/Wipers/Washers/ARM, Wiper - Installation](#).

MOTOR, WIPER

DESCRIPTION

REAR



2400944

Fig. 31: Rear Wiper Motor
Courtesy of CHRYSLER LLC

The rear wiper motor is concealed within the liftgate, below the liftgate glass and behind the liftgate inner trim panel. The end of the motor output shaft (1) that extends through the liftgate outer panel to drive the rear wiper arm and blade is the only visible component of the rear wiper motor. A rubber bezel and grommet is engaged within the output shaft hole of the liftgate outer panel and seals the output shaft where it passes through the panel. An integral connector receptacle (4) connects the rear wiper motor to the vehicle electrical system through a dedicated take out and connector of the liftgate wire harness. The rear wiper motor consists of the following major components:

- **Bracket (5)** - The rear wiper motor bracket consists of a stamped metal mounting plate for the wiper motor that is secured with screws to the wiper motor transmission housing, and through three rubber isolators (2) to the liftgate inner panel.
- **Motor (3)** - The single-speed permanent magnet rear wiper motor is secured with screws to the rear wiper motor transmission, which is secured to the motor bracket with screws. The wiper motor includes the integral transmission, the motor output shaft, an automatic resetting circuit breaker, and the rear wiper motor park switch that parks the rear wiper blade near the base of the liftgate glass.

The rear wiper motor cannot be adjusted or repaired. If any component of the motor is ineffective or damaged, the entire rear wiper motor unit must be replaced. The output shaft bezel and grommet unit is available for individual service replacement.

OPERATION

REAR

The rear wiper motor operation is controlled by the Totally Integrated Power Module (TIPM), which uses intelligent, high current, self-protected high side switches to control rear wiper system operation for energizing or de-energizing the rear wiper motor. The TIPM uses internal programming and electronic messages received over the Controller Area Network (CAN) data bus from the ElectroMechanical Instrument Cluster (EMIC) (also

known as the Cab Compartment Node/CCN) to provide the appropriate rear wiper and washer system operating modes. The EMIC uses electronic messages received from the Steering Control Module (SCM) over a Local Interconnect Network (LIN) data bus to determine when to send electronic rear wiper system requests to the TIPM.

The rear wiper motor park switch is a single pole, single throw, momentary switch within the wiper motor that is mechanically actuated by the wiper motor transmission components. The park switch alternately closes and opens a path to ground for the rear wiper motor electronic control logic circuitry of the TIPM, depending upon the position of the rear wiper blade on the liftgate glass. This input allows the electronic logic circuits of the TIPM to control all of the electronic features of rear wiper motor operation and to keep the motor energized long enough to complete its current wipe cycle and park the wiper blade after the wiper system or the ignition switch has been turned OFF.

The rear wiper motor is grounded at all times through a take out in the body wire harness that is secured to a remote ground location. The automatic resetting circuit breaker protects the motor from overloads. The rear wiper motor transmission converts the rotary output of the wiper motor to the back and forth wiping motion of the rear wiper arm and blade on the liftgate glass.

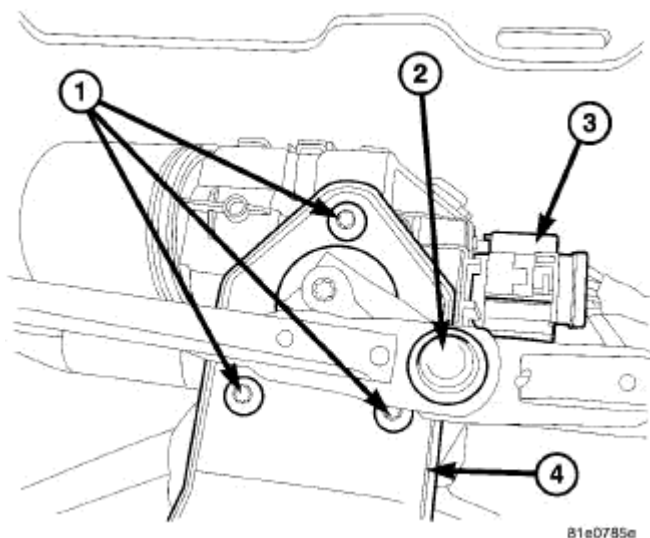
The hard wired inputs and outputs of the rear wiper motor may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS** . However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or communication between other modules and devices that provide some features of the rear wiper and washer system. The most reliable, efficient, and accurate means to diagnose the rear wiper system or the electronic controls and communication related to rear wiper motor operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

REMOVAL

FRONT

CAUTION: Do not apply pressure to, or pry on, the plastic drive link bushings. When removing a drive link from, or installing a drive link onto the ball stud on the wiper motor crank arm, apply pressure to, or pry on, only the metal portions of the drive link around the bushing. If the bushing is damaged, the entire front wiper linkage module **MUST** be replaced.

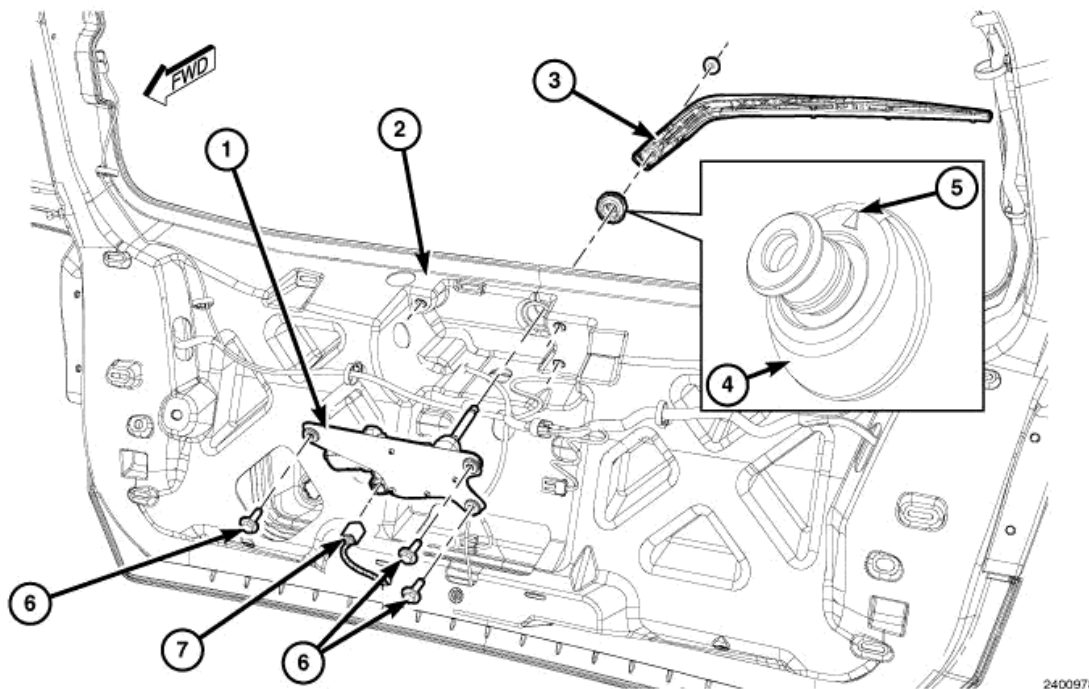
CAUTION: Do not remove the crank arm nut from the wiper motor output shaft. The crank arm is indexed to the output shaft with the motor in the park position during the manufacturing process, but there are no provisions made for correctly indexing this connection in the field. If the crank arm to output shaft indexing is incorrect, the entire front wiper motor and crank arm unit **MUST** be replaced.

**Fig. 32: Wiper Pivots**

Courtesy of CHRYSLER LLC

1. Unlatch and open the hood.
2. Remove both front wiper arms from the wiper pivots. See **Electrical - Wipers/Washers/Wipers/Washers/ARM, Wiper - Removal**.
3. Disconnect and isolate the battery negative cable.
4. Remove the outer and inner cowl plenum cover/grille panels from the vehicle. Refer to **Body/Exterior/COVER, Cowl Panel - Removal**.
5. Disconnect the headlamp and dash wire harness connector from the wiper motor pigtail wire connector (3).
6. Disengage the socket bushing (2) of the right wiper drive link from the ball stud on the wiper motor crank arm using two large screwdrivers, one on each side of the ball stud. Pry between the crank arm and the metal portion of the drive link until the socket unsnaps from the ball.
7. Disengage the sleeve bushing of the left wiper drive link from the ball stud on the wiper motor crank arm using two large screwdrivers, one on each side of the ball stud. Pry between the crank arm and the metal portion of the drive link until the sleeve unsnaps from the ball.
8. Remove the three screws (1) that secure the wiper motor to the center bracket (4) of the wiper linkage module.
9. Remove the wiper motor from under the wiper linkage module bracket and out of the cowl plenum.

REAR

**Fig. 33: Rear Wiper Motor Output Shaft**

Courtesy of CHRYSLER LLC

1. Disconnect and isolate the battery negative cable.
2. Remove the rear wiper arm (3) from the rear wiper motor output shaft. See **Electrical - Wipers/Washers/Wipers/Washers/ARM, Wiper - Removal**.

NOTE: The output shaft bezel and grommet (4) does not have to be removed to remove the rear wiper motor from the liftgate.

3. Remove the trim panel from the liftgate inner panel (2). Refer to **Body/Decklid/Hatch/Liftgate/Tailgate/PANEL, Trim - Removal**.
4. Disconnect the wire harness connector (7) from the rear wiper motor (1).
5. Remove the three screws (6) that secure the motor mounting bracket to the liftgate inner panel.
6. Remove the motor from the liftgate.
7. Remove the bezel and rubber grommet on the outer liftgate panel from the output shaft clearance hole. **Be certain to take proper precautions to protect the outer liftgate panel and its paint finish from damage during this procedure.**

INSTALLATION

FRONT

CAUTION: Do not apply pressure to, or pry on, the plastic drive link bushings. When removing a drive link from, or installing a drive link onto the ball stud on the wiper motor crank arm, apply pressure to, or pry on, only the metal

portions of the drive link around the bushing. If the bushing is damaged, the entire front wiper linkage module **MUST** be replaced.

CAUTION: Do not remove the crank arm nut from the wiper motor output shaft. The crank arm is indexed to the output shaft with the motor in the park position during the manufacturing process, but there are no provisions made for correctly indexing this connection in the field. If the crank arm to output shaft indexing is incorrect, the entire front wiper motor and crank arm unit **MUST** be replaced.

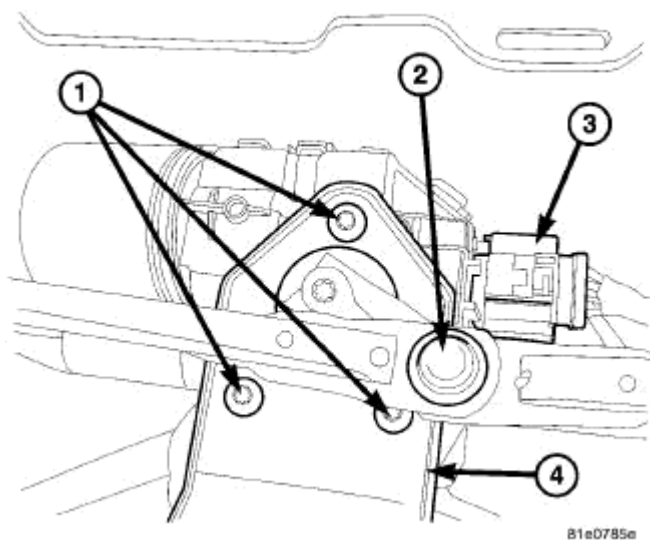


Fig. 34: Wiper Pivots

Courtesy of CHRYSLER LLC

1. Position the front wiper motor to the center bracket (4) of the wiper linkage module from the underside of the bracket.
2. Install and tighten the three screws (1) that secure the motor to the bracket. Tighten the screws to 9 N.m (80 in. lbs.).
3. Reconnect the headlamp and dash wire harness connector to the wiper motor pigtail wire connector (3). Be certain to route the wire harness take out under the wiper linkage module.
4. Reconnect the battery negative cable.
5. Turn the ignition switch (also known as the Wireless Ignition Node/WIN) to the ON position.

WARNING: To avoid serious or fatal injury and vehicle damage, be certain there are no objects including hands or fingers in the rotational path of the wiper motor crank arm. The following step will activate the front wiper motor to ensure it is in the Park position, and may cause the motor crank arm to complete up to one complete revolution.

6. Turn the front wiper system ON, then back to OFF using the right (wiper) multi-function switch control knob.
7. Wait until the wiper motor stops moving, then turn the ignition switch back to the OFF position.
8. Position the sleeve bushing of the left wiper drive link onto the ball stud on the end of the motor crank arm. Place a short 19 millimeter or 3/4 inch socket over the bushing as an installation tool. Then use large channel-lock pliers to apply enough pressure to the underside of the crank arm and the top of the socket to snap the bushing onto the ball stud. **Do not apply pressure directly to the plastic bushing.**

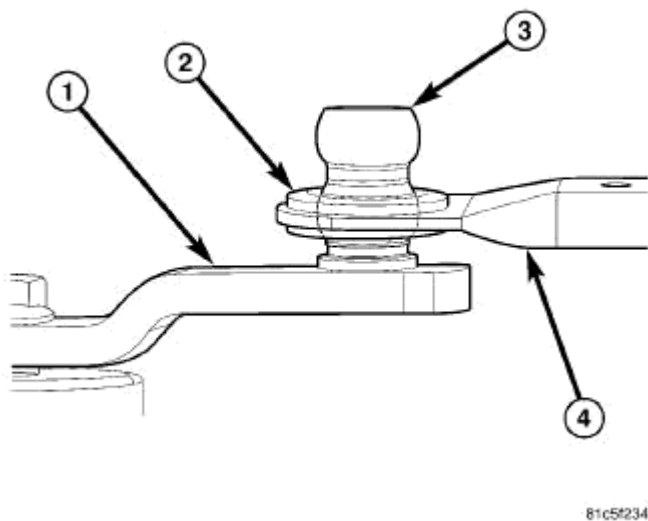
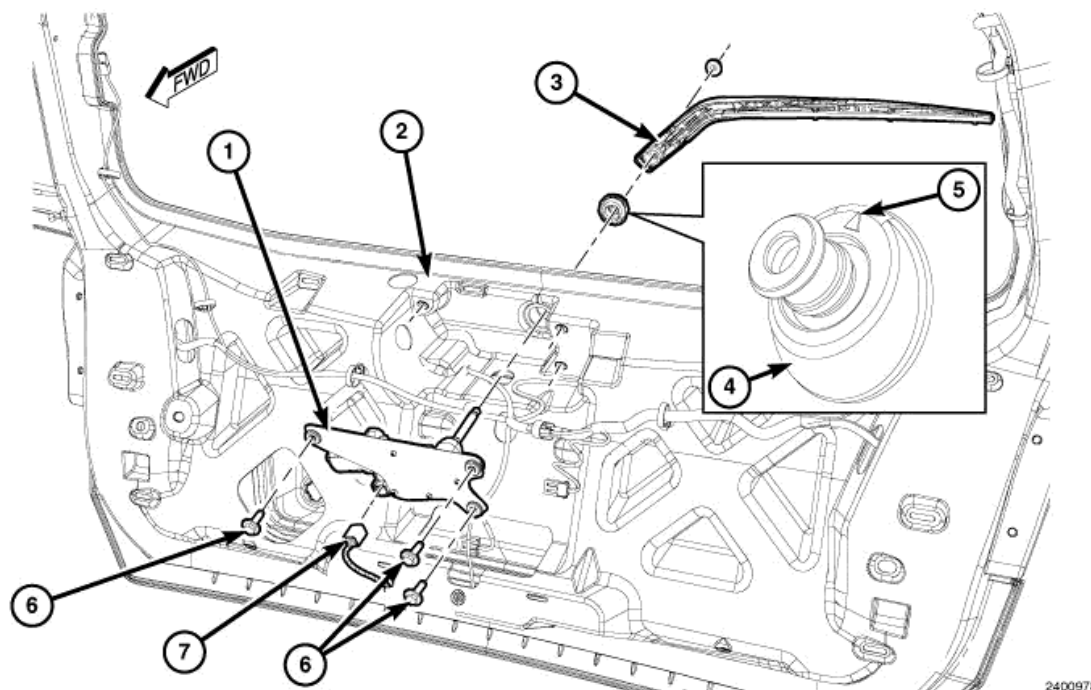


Fig. 35: Motor Crank Arm Ball Stud
Courtesy of CHRYSLER LLC

CAUTION: Carefully inspect the installed sleeve bushing (2) to be certain it is centered over the lower ball of the ball stud (3), and not trapped between the lower ball and the crank arm (1). There should be a visible clearance between the lower surface of the sleeve bushing and the crank arm. Refer to the accompanying illustration. The sleeve bushing must be able to swivel freely on the lower ball during wiper operation. If the bushing is trapped between the lower ball and the crank arm, the bushing and the drive link (4) may be damaged.

9. Position the socket bushing of the right wiper drive link over the ball stud on the crank arm. Place a short 19 millimeter or 3/4 inch socket over the bushing as an installation tool. Then use large channel-lock pliers to apply enough pressure to the underside of the crank arm and the top of the socket to snap the bushing onto the ball stud. **Do not apply pressure directly to the plastic bushing.**
10. Reinstall the inner and outer cowl plenum cover/grille panels. Refer to **Body/Exterior/COVER, Cowl Panel - Installation**.
11. Reinstall both front wiper arms onto the wiper pivots. See **Electrical - Wipers/Washers/Wipers/Washers/ARM, Wiper - Installation**.

REAR

**Fig. 36: Rear Wiper Motor Output Shaft**

Courtesy of CHRYSLER LLC

1. If the output shaft bezel and grommet (4) were removed from the outside of the liftgate, install the rubber bezel and grommet into the clearance hole of the liftgate outer panel. Be certain the arrow (5) molded onto the grommet is oriented upward.
2. Position the rear wiper motor and bracket unit (1) onto the liftgate inner panel (2) as a unit.
3. Install and tighten the three screws (6) that secure the mounting bracket to the liftgate. Tighten the screws to 5 N.m (44 in. lbs.).
4. Reconnect the wire harness connector (7) to the motor connector receptacle.
5. Reinstall the trim panel onto the liftgate inner panel. Refer to **Body/Decklid/Hatch/Liftgate/Tailgate/PANEL, Trim - Installation**.
6. Reinstall the rear wiper arm (3) onto the output shaft. See **Electrical - Wipers/Washers/Wipers/Washers/ARM, Wiper - Installation**.
7. Reconnect the battery negative cable.

NOZZLE, WASHER**DESCRIPTION****FRONT**

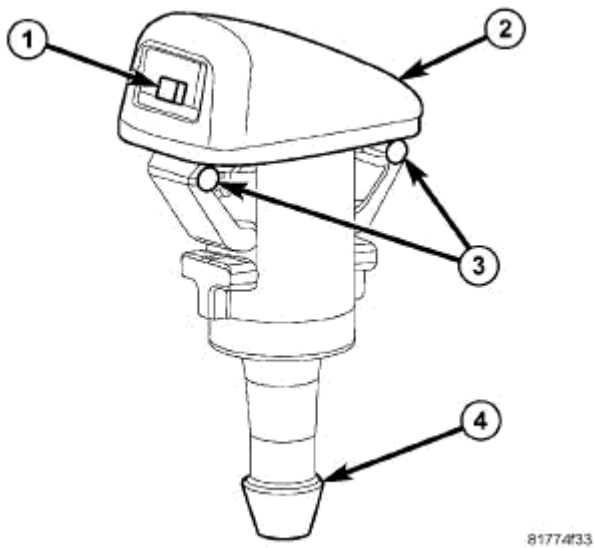


Fig. 37: Front Washer Nozzle

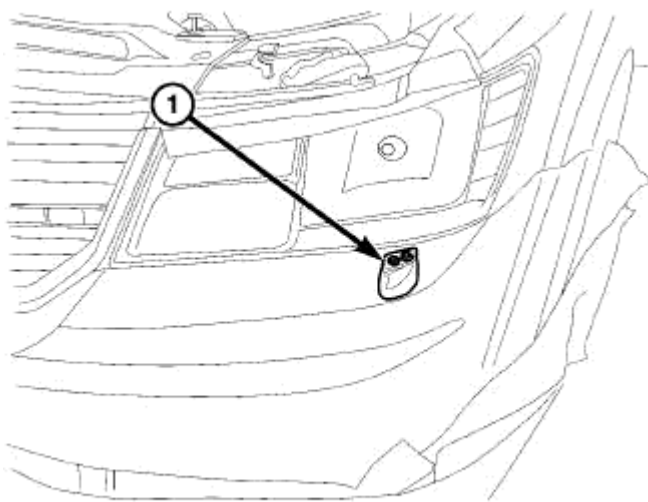
Courtesy of CHRYSLER LLC

The fluidic front washer nozzles (2) are constructed of molded plastic and include an integral check valve. Each nozzle has two integral latches (3) that secure them in dedicated holes in the hood panel near the base of the windshield. The domed upper surface of the washer nozzle is visible on the outside of the hood panel, and the two nozzle orifices (1) are oriented towards the windshield glass.

An integral diaphragm type check valve is contained within the body of each nozzle. The washer plumbing fittings (4) for the washer nozzles extend below the hood panel and are accessible from the engine compartment.

The front washer nozzles cannot be adjusted or repaired and, if ineffective or damaged, they must be replaced.

HEADLAMP

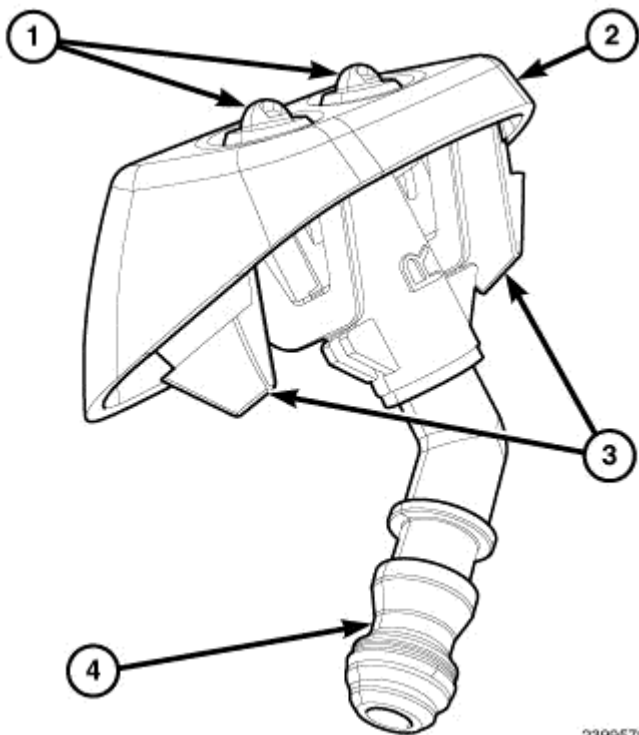


81df21e1

Fig. 38: Headlamp Washer Nozzles

Courtesy of CHRYSLER LLC

Vehicles equipped with the optional headlamp washer system have two fixed headlamp washer nozzles (1), one secured to the front fascia beneath each front lamp unit.



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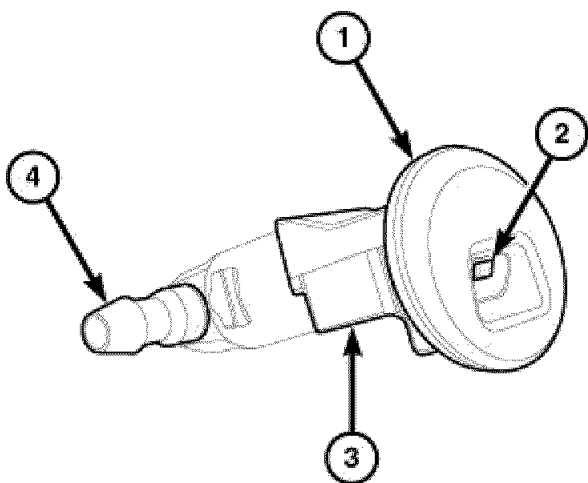
Fig. 39: Integral Mounting Bezel Is Secured By Two Integral Latch

Courtesy of CHRYSLER LLC

Each nozzle includes two orifices (1) to ensure complete headlamp lens coverage by the fluid streams emitted from the nozzle. The fixed body of the molded plastic nozzle is located below the front fascia. An integral mounting bezel (2) is secured by two integral latch features (3) within the mounting hole in the front fascia. A large diameter high pressure washer fluid supply hose from the dedicated headlamp washer pump/motor unit is routed to the nozzle, where it is secured by a quick connect fitting to the nipple fitting (4) at the base of the nozzle.

The headlamp washer nozzle cannot be adjusted or repaired and, if ineffective or damaged, the entire nozzle and mounting bezel must be replaced with a new unit.

REAR



2399627

Fig. 40: Center High-Mounted Stop Lamp
Courtesy of CHRYSLER LLC

The fluidic rear washer nozzle is constructed of molded plastic and includes an integral check valve. The rear washer nozzle is secured by two integral latch features (3) within a mounting hole to the left of the Center High-Mounted Stop Lamp (CHMSL) in the lower surface of the brow above the liftgate glass opening in the outer liftgate panel.

The outer surface of the washer nozzle is visible on the lower exterior surface of the liftgate, and a rubber gasket (1) seals the nozzle to the spoiler mounting hole. The nozzle orifice (2) is oriented downward towards the liftgate glass. The washer plumbing fitting (4) is concealed between the liftgate inner and outer panels.

The rear washer nozzle cannot be adjusted or repaired and, if ineffective or damaged, it must be replaced.

OPERATION

FRONT

The two front washer nozzles are designed to dispense washer fluid into the wiper pattern area on the outside of the windshield glass. Pressurized washer fluid is fed to each nozzle from the washer reservoir by the washer

pump/motor unit through a single hose, which is attached to a barbed nipple on each washer nozzle below the inner hood panel. A fluidic matrix within the washer nozzle causes the pressurized washer fluid to be emitted from the nozzle orifice as an oscillating stream to more effectively cover a larger area of the glass to be cleaned.

The integral check valve in each nozzle prevents washer fluid from draining out of the washer supply hoses back to the washer reservoir. This drain-back would result in a lengthy delay after the washer switch is actuated until washer fluid was dispensed through the nozzles, because the washer pump would have to refill the washer plumbing from the reservoir to the nozzles. Such a drain-back condition could also result in water, dirt, or other outside contaminants being siphoned into the washer system through the washer nozzle orifice. This water could subsequently freeze and plug the nozzle, while other contaminants could interfere with proper nozzle operation and cause improper nozzle spray patterns. In addition, the check valve prevents washer fluid from siphoning through the washer nozzles after the washer system is turned OFF.

When the washer pump pressurizes and pumps washer fluid from the reservoir through the washer plumbing, the fluid pressure unseats a diaphragm from over a sump well within the nozzle by overriding the spring pressure applied to it by a piston. With the diaphragm unseated, washer fluid is allowed to flow toward the nozzle orifice. When the washer pump stops operating, the spring pressure on the piston seats the diaphragm over the sump well in the nozzle and fluid flow in either direction within the washer plumbing is prevented.

HEADLAMP

When the headlamp washer pump/motor unit is activated, pressure builds within the high pressure hoses to each headlamp washer nozzle. Driven by this pressure, a control valve integral to each nozzle allows a precisely metered quantity of washer fluid to be sprayed in several high pressure streams against the lenses of both front lamp units. When the pressure drops, the control valve closes and the nozzle spray ceases.

The headlamp washer system only operates when the engine is running and the headlamps are turned ON. When those conditions have been met, the headlamp washer system operates whenever the front (windshield) washer system is activated.

REAR

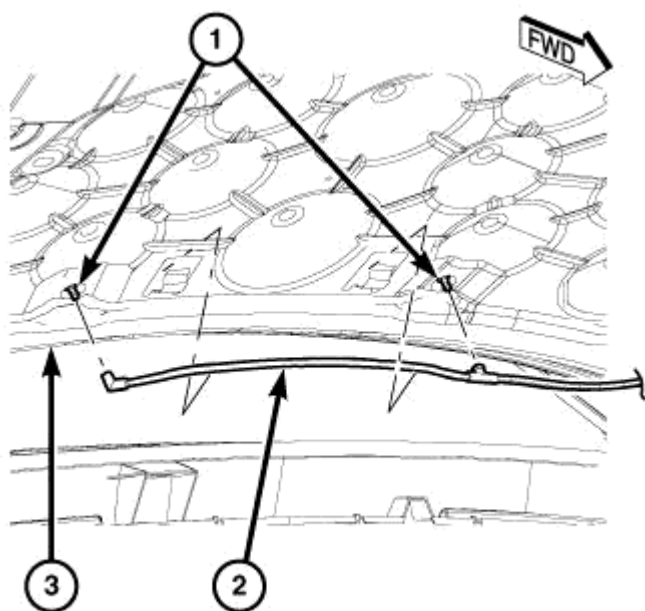
The rear washer nozzle is designed to dispense washer fluid into the wiper pattern area on the outside of the liftgate glass. Pressurized washer fluid is fed to the nozzle from the washer reservoir by the washer pump/motor through a single hose, which is attached to a barbed nipple on the back of the nozzle. A fluidic matrix within the nozzle causes the pressurized washer fluid to be emitted from the nozzle orifice as an oscillating stream to more effectively cover a larger area of the glass to be cleaned.

The integral check valve in the nozzle prevents washer fluid from draining out of the washer supply hose back to the washer reservoir. This drain-back would result in a lengthy delay after the washer switch is actuated until washer fluid was dispensed through the nozzle because the washer pump would have to refill the washer plumbing from the reservoir to the nozzle. Such a drain-back condition could also result in water, dirt, or other outside contaminants being siphoned into the washer system through the washer nozzle orifice. This water could subsequently freeze and plug the nozzle, while other contaminants could interfere with proper nozzle operation and cause improper nozzle spray patterns. In addition, the check valve prevents washer fluid from siphoning through the washer nozzle after the washer system is turned OFF.

When the washer pump pressurizes and pumps washer fluid from the reservoir through the washer plumbing, the fluid pressure unseats a diaphragm from over a sump well within the nozzle by overriding the spring pressure applied to it by a piston. With the diaphragm unseated, washer fluid is allowed to flow toward the nozzle orifice. When the washer pump stops operating, the spring pressure on the piston seats the diaphragm over the sump well in the nozzle and fluid flow in either direction within the washer plumbing is prevented.

REMOVAL

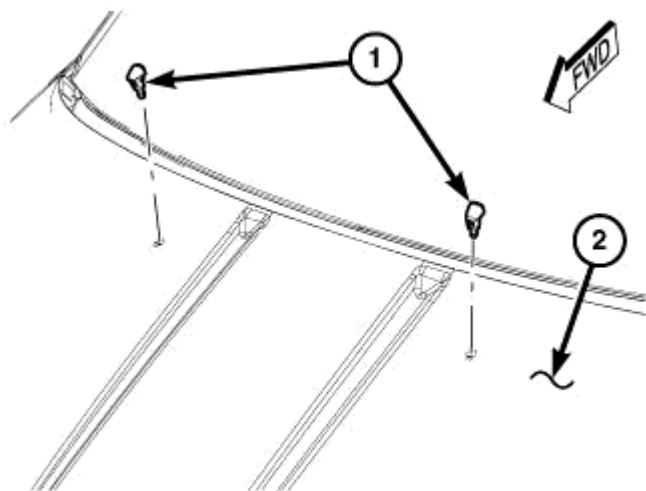
FRONT



2399748

Fig. 41: Washer Nozzle Hose
Courtesy of CHRYSLER LLC

1. From the underside of the hood (3), remove the push-in retainers that secure the rear edge of the hood silencer pad to the inner hood reinforcement as necessary to access the washer nozzle hose (2) connections.
2. From the underside of the hood, disconnect the washer nozzle hose from the barbed nipple (1) of the washer nozzle.



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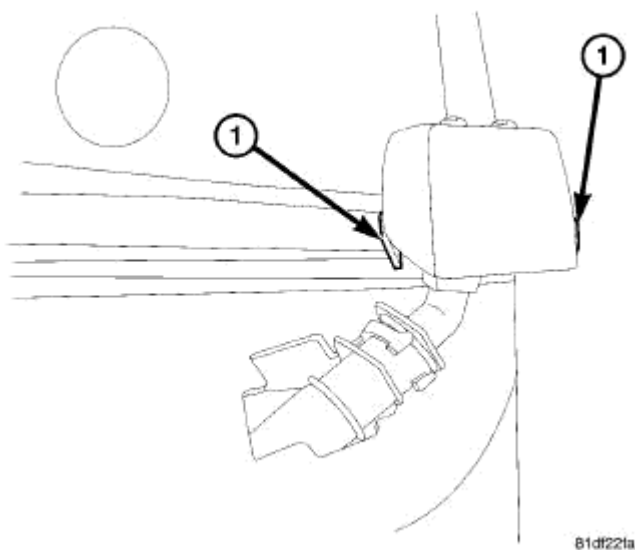
Fig. 42: Washer Nozzle

Courtesy of CHRYSLER LLC

3. From the underside of the hood, release the integral latch features of the washer nozzle (1) and push the nozzle out through the mounting hole toward the top side of the hood.
4. Remove the washer nozzle from the top of the hood panel.

HEADLAMP

CAUTION: Take proper precautions to ensure there is no cosmetic damage done to the paint finish of the headlamp washer nozzle bezel or the front fascia during the following procedure.



81df221a

Fig. 43: Integral Latches Of Washer Nozzle Bezel

Courtesy of CHRYSLER LLC

1. Raise and support the vehicle.
2. Remove the push pin retainers that secure the lower front edge of the front wheel house splash shield. Refer to **Body/Exterior/SHIELD, Splash - Removal**.
3. Reach up behind the front fascia to access and securely clamp the headlamp washer supply hose to prevent the contents of the washer reservoir from draining during the following procedure.
4. From behind the front fascia, depress the two integral latches (1) of the washer nozzle bezel and push the nozzle out through the face of the fascia.

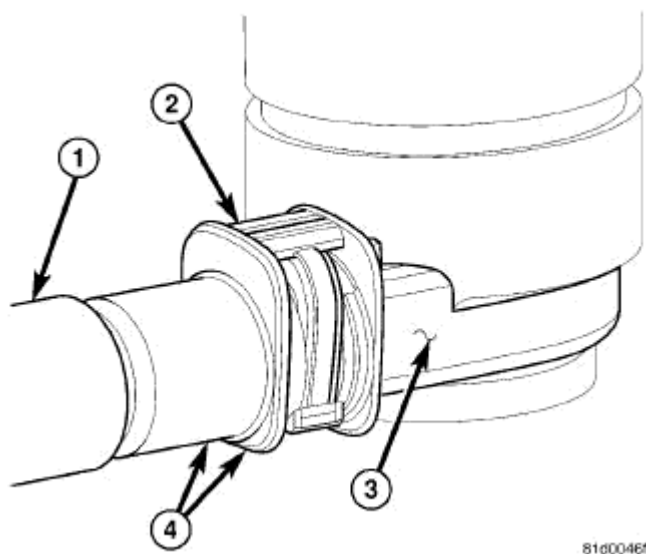


Fig. 44: Removing/Installing Hose At Headlamp Washer Nozzle Nipple
Courtesy of CHRYSLER LLC

5. From the face of the front fascia, pull the nozzle out from the mounting hole far enough to access the headlamp washer nozzle supply hose (1) quick connect fitting (4).
6. Pull the molded plastic lock (2) away from the quick connect fitting far enough to disengage the hose from the washer nozzle nipple (3).
7. Remove the nozzle from the front fascia.

REAR

NOTE: The rear washer nozzle latch feature is a one time component, and will be damaged if the nozzle is removed from its mounting hole for service. If removed from its mounting hole for any reason, the rear washer nozzle must be replaced with a new unit.

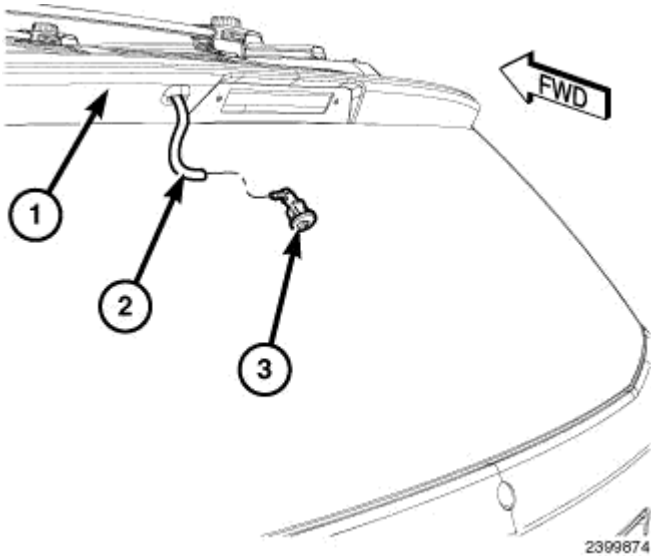
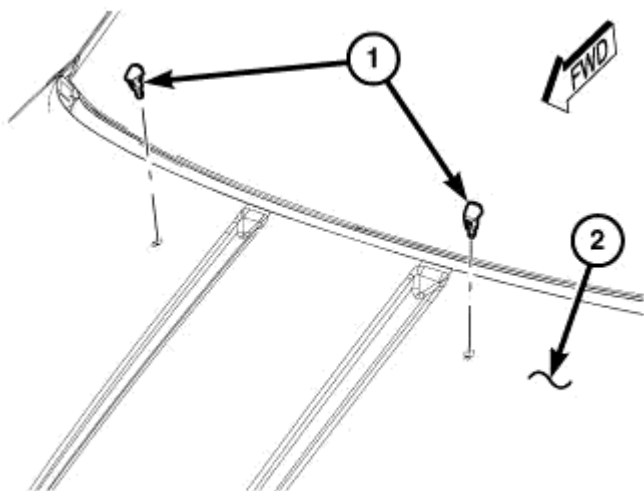


Fig. 45: Rear Washer Nozzle
Courtesy of CHRYSLER LLC

1. Using a trim stick or another suitable wide flat-bladed tool, gently pry the rear washer nozzle (3) to release the latch features that secure it in the mounting hole of the liftgate outer panel (1).
2. Pull the rear washer nozzle out from the liftgate outer panel far enough to access the washer supply hose (2).
3. Disconnect the hose from the barbed nipple on the back of the nozzle.
4. Cut 4 to 6 millimeters (0.15 to 0.23 inch) from the end of the hose to ensure a good fit to the barbed nipple of the replacement rear washer nozzle.
5. Discard the removed nozzle.

INSTALLATION

FRONT

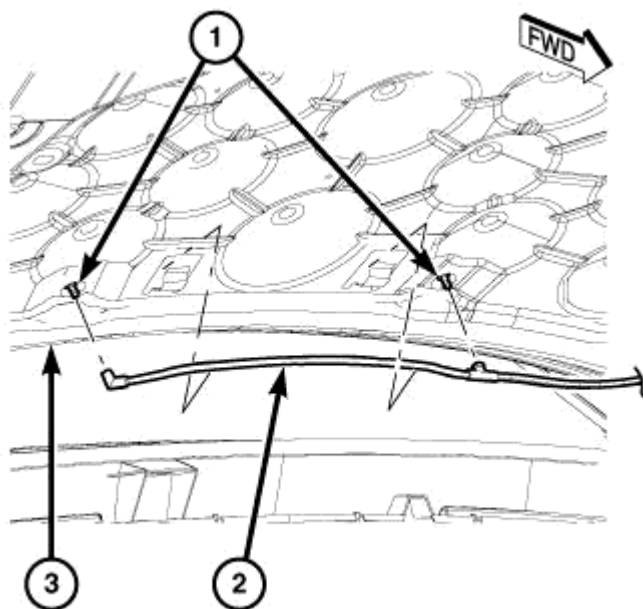


2399766

Fig. 46: Washer Nozzle

Courtesy of CHRYSLER LLC

1. From the top of the hood, position the washer nozzle (1) to the mounting hole on the outside of the hood panel (2).
2. Align the anti-rotation tabs of the nozzle with the anti-rotation notches in the mounting hole.
3. Using hand pressure, push firmly and evenly on the top of the washer nozzle until the integral latch features lock into place on the underside of the hood.



2399748

Fig. 47: Washer Nozzle Hose

Courtesy of CHRYSLER LLC

4. From the underside of the hood (3), reconnect the washer hose (2) fitting to the barbed nipple (1) of the

washer nozzle.

5. Reinstall the washer nozzle hose into its routing clips as necessary on the underside of the hood.
6. Reinstall the push-in retainers that secure the rear edge of the hood silencer pad to the inner hood reinforcement.

HEADLAMP

CAUTION: Take proper precautions to ensure there is no cosmetic damage done to the paint finish of the headlamp washer nozzle bezel or the front fascia during the following procedure.

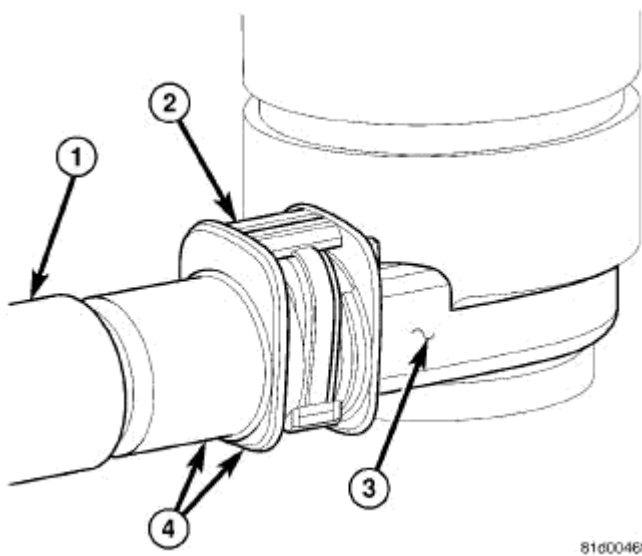


Fig. 48: Removing/Installing Hose At Headlamp Washer Nozzle Nipple
Courtesy of CHRYSLER LLC

1. Pull the washer nozzle supply hose (1) quick connect fitting (4) out through the mounting hole of the front fascia far enough to seat the molded plastic lock (2) onto the fitting.
2. Push the quick connect fitting onto the headlamp washer nozzle nipple (3) until it snaps into place with an audible click.

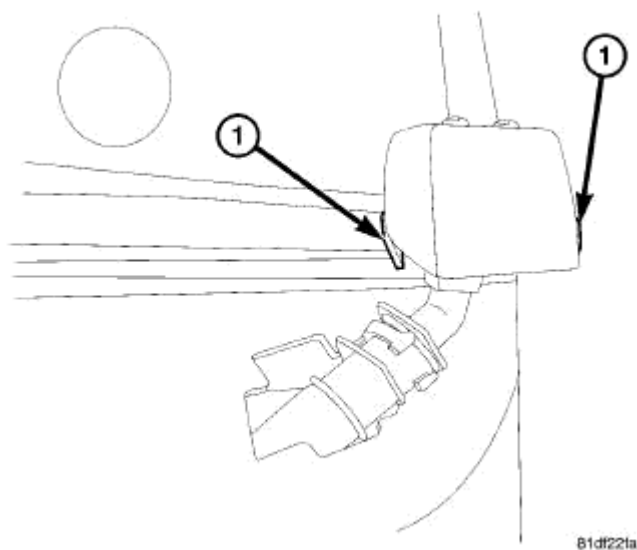


Fig. 49: Integral Latches Of Washer Nozzle Bezel
Courtesy of CHRYSLER LLC

3. Position the headlamp washer nozzle into the mounting hole in the front fascia.
4. Align the washer nozzle bezel with the mounting hole in the front fascia.
5. Using hand pressure, push the bezel down into the fascia mounting hole until both bezel latch features are fully engaged on the back side of the fascia.
6. Reach up behind the front fascia to access and remove the clamp from the washer supply hose.
7. Reinstall the push pin retainers that secure the lower front edge of the front wheel house splash shield.
Refer to **Body/Exterior/SHIELD, Splash - Installation** .

REAR

NOTE: The rear washer nozzle latch feature is a one time component, and will be damaged if the nozzle is removed from its mounting hole for service. If removed from its mounting hole for any reason, the rear washer nozzle must be replaced with a new unit.

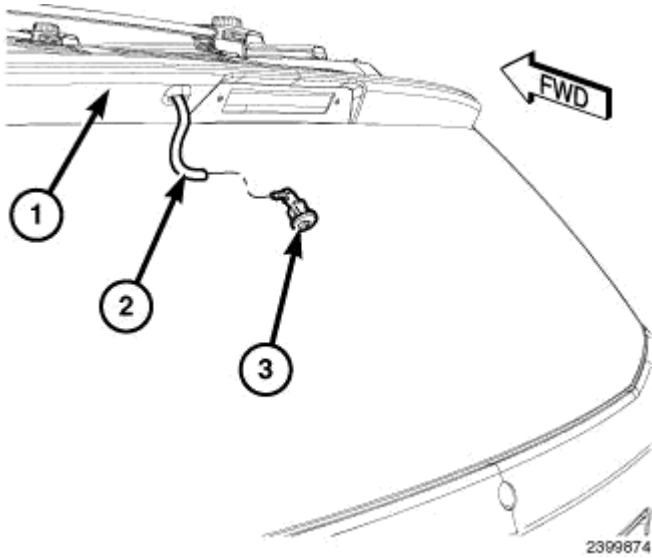


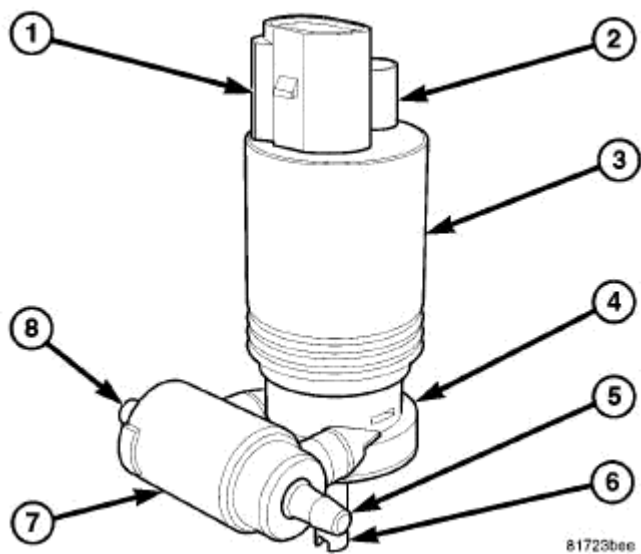
Fig. 50: Rear Washer Nozzle
Courtesy of CHRYSLER LLC

1. Position the new rear washer nozzle (3) to the mounting hole in the liftgate outer panel (1). Be certain that the rubber gasket is in position on the back of the nozzle.
2. Reconnect the washer supply hose (2) to the barbed nipple on the back of the nozzle.
3. Push the hose and nozzle nipple into the mounting hole in the liftgate outer panel and align the anti-rotation tab to the mounting hole.
4. Using hand pressure, push firmly and evenly on the nozzle until both integral latch features are fully engaged on the back side of the outer panel.

PUMP, WINDSHIELD WASHER

DESCRIPTION

FRONT AND REAR

**Fig. 51: Washer Pump/Motor**

Courtesy of CHRYSLER LLC

The washer pump/motor unit is located on the top of a sump area on the rearward facing side of the washer reservoir, which is located on the upper left corner of the cooling module in the engine compartment. A small permanently lubricated and sealed reversible electric motor (3) is coupled to the rotor-type washer pump (4). The use of an integral valve body (7) allows the washer pump/motor unit to provide washer fluid to either the front or the rear washer systems, depending upon the direction of the motor/pump impeller rotation.

An inlet nipple (6) on the pump housing passes through a rubber grommet seal/filter screen installed in a dedicated mounting hole of the washer reservoir sump. The filter screen prevents most debris from entering the pump housing. When the pump is installed in the reservoir the front barbed outlet nipple (5) on the pump valve body housing connects the unit to the front washer hose, and the rear barbed outlet nipple (8) connects the unit to the rear washer hose. The letters **F** and **R** molded into the valve body housing adjacent to each nipple provide further clarification of the nipple assignments.

The washer pump/motor unit is retained on the reservoir by the interference fit between the pump inlet nipple and the grommet seal, which is a light press fit. The top of the washer pump is also secured to the washer reservoir by the use of a snap fit between the motor housing and a receptacle molded into the reservoir that allows for mounting of the washer pump without the use of fasteners. An integral connector receptacle (1) on the top of the motor housing connects the unit to the vehicle electrical system through a dedicated take out and connector of the Front End Module (FEM) wire harness.

Service replacement washer pumps may also include a snap post (2) at the top of the pump motor housing, but this feature is not used in this application. The washer pump/motor unit cannot be repaired. If ineffective or damaged, the entire washer pump/motor unit must be replaced.

HEADLAMP

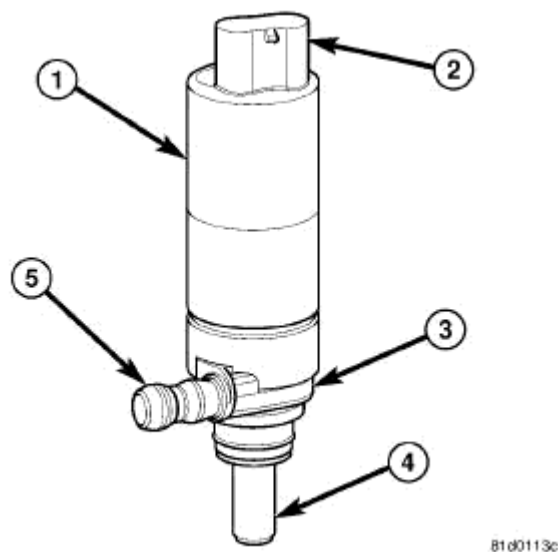


Fig. 52: Headlamp Washer Pump/Motor Unit
Courtesy of CHRYSLER LLC

The headlamp washer pump/motor unit (1) of vehicles so equipped is located on the top of a sump area just above and outboard of the reversible front and rear washer pump on the rearward facing side of the washer reservoir, on the upper left corner of the cooling module in the engine compartment. A small permanently lubricated and sealed electric motor is coupled to the rotor-type washer pump.

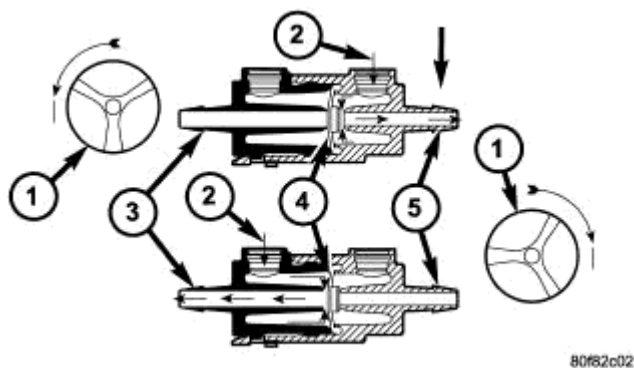
An inlet nipple (4) on the bottom of the pump housing (3) passes through a rubber grommet seal/filter screen installed in a dedicated mounting hole of the washer reservoir. When the pump is installed in the reservoir the quick connect outlet nipple (5) on the pump housing points toward the left side of the vehicle and connects the unit to the headlamp washer hose.

The headlamp washer pump/motor unit is retained on the reservoir by the interference fit between the pump inlet nipple and the grommet seal, which is a light press fit. The top of the washer pump is also secured to the washer reservoir by a light snap fit into a receptacle molded into the reservoir that allows for mounting of the washer pump without the use of fasteners. An integral connector receptacle (2) on the top of the motor housing connects the unit to the vehicle electrical system through a dedicated take out and connector of the Front End Module (FEM) wire harness.

The headlamp washer pump/motor unit cannot be repaired. If ineffective or damaged, the entire headlamp washer pump/motor unit must be replaced.

OPERATION

FRONT AND REAR

**Fig. 53: Washer Pump/Motor Operation**

Courtesy of CHRYSLER LLC

The washer pump/motor unit features a reversible electric motor. The direction of the motor is controlled by hard wired outputs from the Totally Integrated Power Module (TIPM). When battery current and ground are applied to the two pump motor terminals, the motor rotates in one direction. When the polarity of these connections is reversed, the motor rotates in the opposite direction. When the pump motor is energized, the rotor-type pump pressurizes the washer fluid and forces it through one of the two pump outlet nipples, and into the front or rear washer plumbing.

The TIPM controls the hard wired outputs to the pump motor based upon electronic **washer request** messages received over the Controller Area Network (CAN) data bus from the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN). The EMIC receives electronic **washer switch** status messages over a Local Interface Network (LIN) bus connection from the Steering Control Module (SCM) within the left (lighting) multi-function switch housing. The SCM monitors hard wired analog and multiplex inputs from the washer switch circuitry contained within the right (wiper) multi-function switch to determine the proper electronic messages to send.

Washer fluid is drawn through the pump inlet nipple from the washer reservoir to the inlet port of the washer pump housing. An integral valve body is located in a housing on the outlet port side (2) of the pump housing. A diaphragm (4) in this valve body controls which washer system plumbing receives the washer fluid being pressurized by the pump.

When the pump impeller (1) rotates in the counterclockwise direction (viewed from the bottom), the biased diaphragm is sealing off the rear washer system outlet and nipple so the pressurized washer fluid is pushed out through the pump front outlet port and the front washer outlet nipple (5). When the pump impeller rotates in the clockwise direction (viewed from the bottom), pressurized washer fluid is pushed out through the pump rear outlet port and moves the diaphragm to open the rear washer outlet nipple and seal off the front washer outlet nipple, then the pressurized washer fluid is pushed out through the rear washer outlet nipple (3).

The washer pump/motor unit and the hard wired motor control circuits from the TIPM may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the washer pump/motor unit or the electronic controls or communication between other modules and devices that provide some features of the front and rear wiper and washer system. The most reliable, efficient, and accurate means to diagnose the washer pump/motor unit or the electronic controls and communication related to washer pump/motor unit operation

requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

HEADLAMP

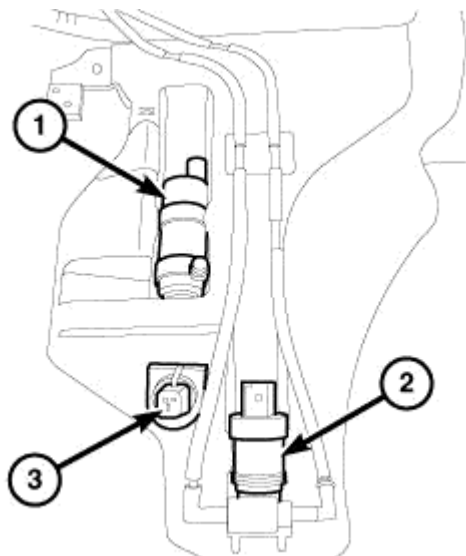
Headlamp washer pump/motor unit operation is completely controlled by the Totally Integrated Power Module (TIPM) logic circuits based upon electronic **wash request** and **lighting request** message inputs received from the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) over the Controller Area Network (CAN) data bus. The EMIC monitors electronic **washer switch** and **lighting switch** status messages received over the Local Interface Network (LIN) data bus from the Steering Control Module (SCM). The SCM monitors analog and resistor multiplexed inputs from the front washer switch circuitry contained within the right (wiper) multi-function switch and the exterior lighting switch circuitry of the left (lighting) multi-function switch to determine the proper washer switch and lighting switch status messages to send.

The headlamp washer relay control coil operates on battery voltage received from the run relay, so it is only functional while the engine is running. In addition, the TIPM will only allow the headlamp washers to operate when the headlamps are turned ON. The TIPM uses a low side driver to energize or de-energize the headlamp washer relay which, in turn, controls the operation of the headlamp washer pump/motor unit.

The hard wired circuits and components of the headlamp washer pump/motor unit may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the headlamp washer pump/motor or the electronic controls or communication between other modules and devices that provide some features of the headlamp washer system. The most reliable, efficient, and accurate means to diagnose the headlamp washer pump/motor unit or the electronic controls and communication related to headlamp washer pump/motor unit operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

REMOVAL

FRONT AND REAR



93875

Fig. 54: Washer Pump/Motor Housing
Courtesy of CHRYSLER LLC

1. Disconnect and isolate the battery negative cable.
2. Siphon the washer fluid from the washer reservoir into a clean container for reuse.
3. Remove the washer reservoir from the cooling module. See **Electrical - Wipers/Washers/Wipers/Washers/RESERVOIR, Windshield Washer - Removal**.
4. Pull lightly outward on the top of the washer pump/motor housing (2), away from the washer reservoir to disengage the top of the motor from the receptacle in the reservoir.
5. Using hand pressure, firmly grasp and pull the washer pump upward far enough to disengage the pump inlet nipple from the rubber grommet seal/filter screen in the reservoir. Care must be taken not to damage the reservoir.
6. Remove the washer pump/motor unit from the washer reservoir.
7. Remove the rubber grommet seal/filter screen from the washer pump mounting hole in the reservoir and discard.

HEADLAMP

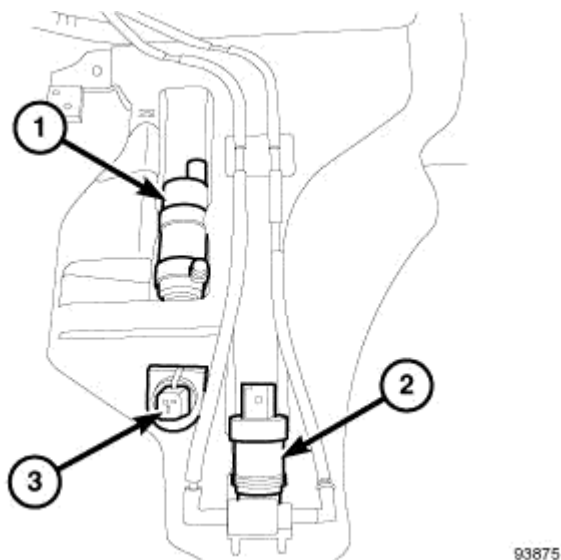


Fig. 55: Washer Pump/Motor Housing
Courtesy of CHRYSLER LLC

1. Disconnect and isolate the battery negative cable.
2. Siphon the washer fluid from the washer reservoir into a clean container for reuse.
3. Remove the washer reservoir from the cooling module. See **Electrical - Wipers/Washers/Wipers/Washers/RESERVOIR, Windshield Washer - Removal**.
4. Pull lightly outward on the top of the washer pump/motor housing (1), away from the washer reservoir to disengage the top of the motor from the receptacle in the reservoir.
5. Using hand pressure, firmly grasp and pull the washer pump upward far enough to disengage the pump inlet nipple from the rubber grommet seal/filter screen in the reservoir. Care must be taken not to damage the reservoir.

the reservoir.

6. Remove the rubber grommet seal/filter screen from the pump mounting hole in the washer reservoir and discard.

INSTALLATION

FRONT AND REAR

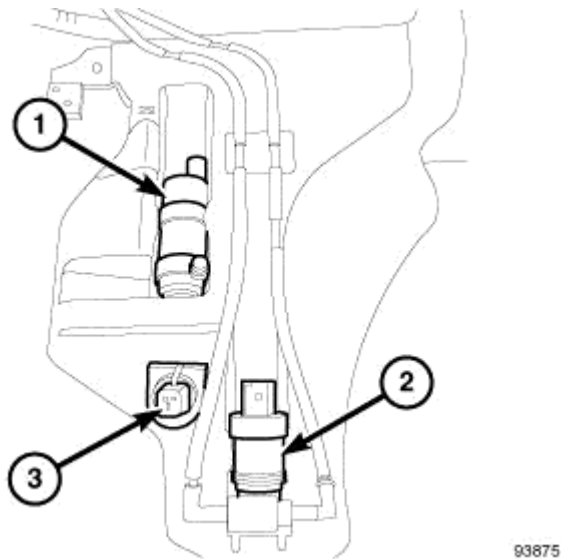
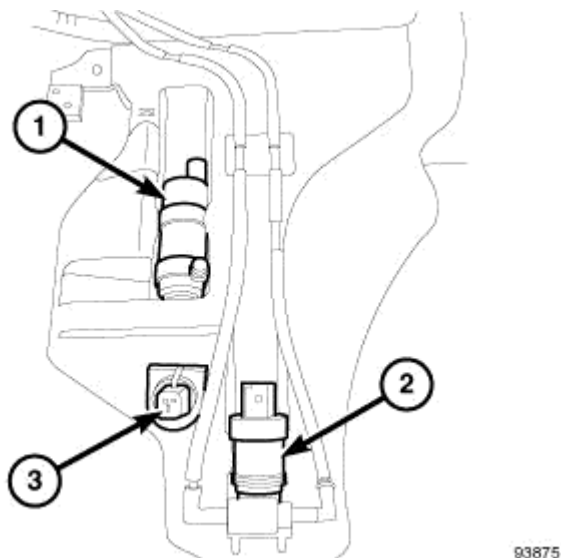


Fig. 56: Washer Pump/Motor Housing
Courtesy of CHRYSLER LLC

1. Install a new rubber grommet seal/filter screen into the washer pump mounting hole in the washer reservoir. Always use a new rubber grommet seal/filter screen on the reservoir.
2. Position the inlet nipple on the base of the pump housing of the washer pump/motor unit (2) to the rubber grommet seal/filter screen in the reservoir.
3. Using hand pressure, press firmly and evenly downward on the top of washer pump/motor unit until the inlet nipple is fully seated in the rubber grommet seal/filter screen in the pump mounting hole of the reservoir.
4. Align the top of the washer pump/motor unit housing with the receptacle in the washer reservoir.
5. Using hand pressure, press firmly and evenly on the top of washer pump/motor unit until the motor housing snaps into the receptacle.
6. Reinstall the washer reservoir onto the cooling module. See **Electrical - Wipers/Washers/Wipers/Washers/RESERVOIR, Windshield Washer - Installation**.
7. Refill the washer reservoir with the washer fluid drained from the reservoir during the removal procedure.
8. Reconnect the battery negative cable.

HEADLAMP



93875

Fig. 57: Washer Pump/Motor Housing

Courtesy of CHRYSLER LLC

1. Install a new rubber grommet seal/filter screen into the headlamp washer pump/motor unit mounting hole in the washer reservoir. Always use a new rubber grommet seal on the reservoir.
2. Position the inlet nipple of the headlamp washer pump/motor unit (1) to the rubber grommet seal/filter screen in the reservoir.
3. Using hand pressure, press firmly and evenly downward on the washer pump/motor unit until the inlet nipple is fully seated in the rubber grommet seal/filter screen in the pump mounting hole of the reservoir.
4. Align the top of the washer pump/motor unit housing with the receptacle in the washer reservoir.
5. Using hand pressure, press firmly and evenly on the top of washer pump/motor unit until the motor housing snaps into the receptacle.
6. Reinstall the washer reservoir onto the cooling module. See **Electrical - Wipers/Washers/Wipers/Washers/RESERVOIR, Windshield Washer - Installation**.
7. Refill the washer reservoir with the washer fluid drained during removal.
8. Reconnect the battery negative cable.

RELAY, HEADLAMP WASHER

DESCRIPTION

DESCRIPTION

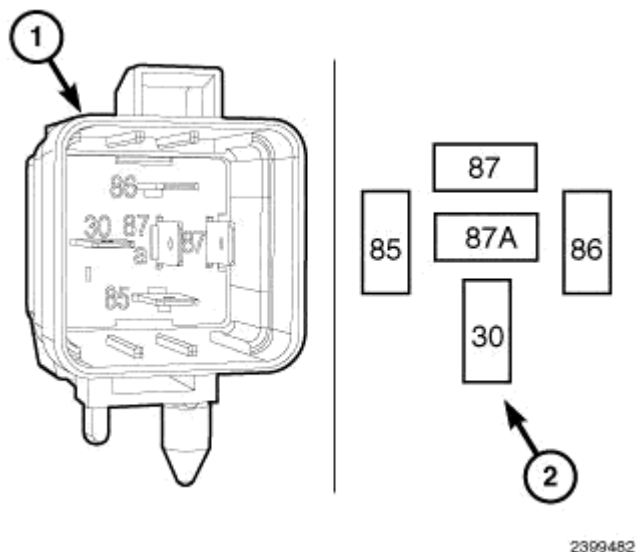


Fig. 58: Headlamp Washer Relay
 Courtesy of CHRYSLER LLC

The headlamp washer relay (1) is a conventional International Standards Organization (ISO) skirted relay. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal patterns (2), and terminal functions. This relay is contained within a small, rectangular, molded plastic housing and is connected to all of the required inputs and outputs through five integral male spade-type terminals that extend from the relay base plate.

The headlamp washer relay is located in a dedicated connector on a take out of the Front End Module (FEM) wire harness, and is secured to the radiator closure panel to the left of the washer reservoir in front of the Totally Integrated Power Module (TIPM) in the engine compartment, near the battery. The headlamp washer relay cannot be adjusted or repaired and, if ineffective or damaged, the unit must be replaced.

OPERATION

OPERATION

The headlamp washer relay is an electromechanical switch that uses a low current input from the Totally Integrated Power Module (TIPM) to control a high current output to the headlamp washer pump/motor unit. The movable common feed contact point is held against the fixed normally closed contact point by spring pressure. When the relay coil is energized, an electromagnetic field is produced by the coil windings. This electromagnetic field draws the movable relay contact point away from the fixed normally closed contact point, and holds it against the fixed normally open contact point. When the relay coil is de-energized, spring pressure returns the movable contact point back against the fixed normally closed contact point. A resistor is connected in parallel with the relay coil in the relay, and helps to dissipate voltage spikes and electromagnetic interference that can be generated as the electromagnetic field of the relay coil collapses.

The headlamp washer relay terminals are connected to the vehicle electrical system through a dedicated take out and connector of the Front End Module (FEM) wire harness. The inputs and outputs of the headlamp washer relay include:

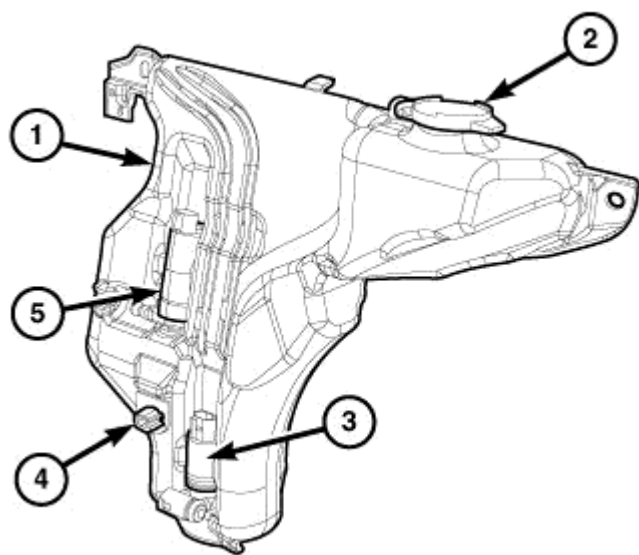
- **Common Feed Terminal** - The common feed terminal (30) is connected to battery current on a fused B (+) circuit from a fuse in the Totally Integrated Power Module (TIPM) at all times.
- **Coil Ground Terminal** - The coil ground terminal (85) is connected to battery current on a fused run relay output circuit from a fuse in the TIPM at all times. This circuit is energized by the run relay only while the engine is running.
- **Coil Battery Terminal** - The coil battery terminal (86) is connected to a low side driver output from the TIPM on a headlamp washer relay control circuit. The TIPM controls headlamp washer system operation through this relay connection.
- **Normally Open Terminal** - The normally open terminal (87) is connected through a headlamp washer relay output circuit to the headlamp washer pump/motor unit at all times. When the relay is energized, the normally open terminal of the relay is connected to battery current from the fuse in the TIPM.
- **Normally Closed Terminal** - The normally closed terminal (87A) is not connected to any circuit in this application, but will have battery current present whenever the headlamp washer relay coil is not energized.

The headlamp washer relay as well as the hard wired inputs and outputs of the relay may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the electronic controls or the communication between modules and other devices that provide some features of the headlamp washer system. The most reliable, efficient, and accurate means to diagnose the headlamp washer relay or the electronic controls and communication related to headlamp washer system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

RESERVOIR, WINDSHIELD WASHER

DESCRIPTION

DESCRIPTION



2398816

Fig. 59: Molded Plastic Washer Fluid Reservoir
 Courtesy of CHRYSLER LLC

The molded plastic washer fluid reservoir (1) is mounted on the upper left corner of the cooling module on the back of the Front End Module (FEM) carrier (also known as the radiator closure). The filler neck for the reservoir extends upward just past the upper radiator closure member and through the upper radiator seal. This reservoir is constructed of opaque black plastic, which does not allow the fluid level to be inspected without removing the reservoir filler cap (2).

The bright yellow plastic filler cap with a rubber seal and an International Control and Display Symbol icon for **Windshield Washer** molded into it snaps over the open end of the washer reservoir filler neck. The cap hinges on and is secured to an integral molded hook formation on the top of the reservoir just to the left of the filler neck when it is removed for inspecting or adjusting the fluid level in the reservoir.

The washer reservoir is secured to the cooling module through integral mounting brackets at the top on the inboard and outboard sides by two screws. In addition, integral mounting tab provisions on the bottom of the washer reservoir engage through slots or slotted loops integral to the cooling module to secure the lower end of the reservoir.

There is a dedicated mounting hole in the top of the sump area on the rearward facing side of the reservoir with a receptacle provided for the mounting of the reversible washer/pump motor unit (3) without the use of fasteners. A separate dedicated mounting hole is provided in the rearward facing side of the reservoir for the washer fluid level switch (4). An integral molded routing trough for the washer hose and washer pump/motor unit wiring routes the hose and wiring bundle from the washer pump to the outboard side of the reservoir.

A unique reservoir is used for vehicles manufactured for export markets with the optional headlamp washer system. This reservoir has a dedicated sump area and mounting receptacle for the high pressure headlamp washer pump (5) near the outboard side of the reservoir, directly above the washer fluid level switch location. The location and mounting provisions for this reservoir are the same as for those vehicles without the headlamp

washer system.

A washer reservoir cannot be repaired and, if ineffective or damaged, the unit must be replaced. The reversible washer pump/motor unit, the washer fluid level switch, the headlamp washer pump/motor unit, their rubber grommet seals, as well as the reservoir filler cap are each available for individual service replacement.

OPERATION

OPERATION

The washer fluid reservoir provides a secure, on-vehicle storage location for a large reserve of washer fluid for operation of the front, rear and, if equipped, headlamp washer systems. The washer reservoir filler cap provides a clearly marked and readily accessible point at which to add washer fluid to the reservoir.

The washer/pump motor unit is located in a sump area near the bottom of the reservoir to be certain that washer fluid will be available to the pump as the fluid level in the reservoir becomes depleted. The washer fluid level switch is mounted far enough above the washer pump inlet nipple in the sump area of the reservoir so that there will be adequate warning to the vehicle operator that the washer fluid level is low, well before the washer system will no longer operate.

REMOVAL

REMOVAL

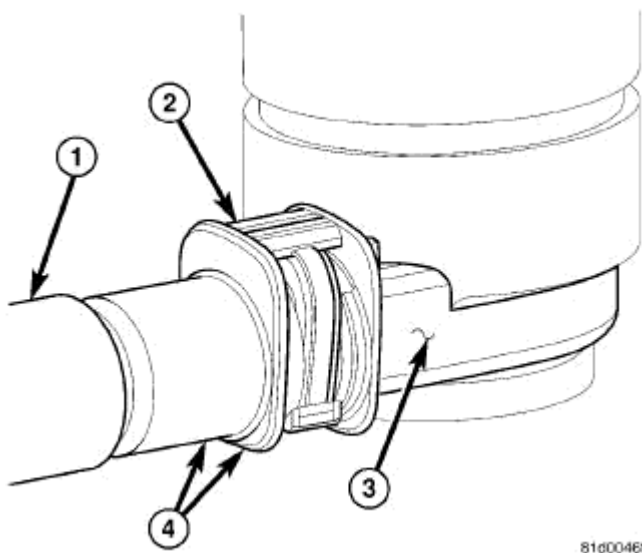


Fig. 60: Removing/Installing Hose At Headlamp Washer Nozzle Nipple
Courtesy of CHRYSLER LLC

1. Disconnect and isolate the battery negative cable.
2. Siphon the washer fluid from the washer reservoir into a clean container for reuse.
3. If equipped with certain optional engines, it may be necessary to remove the air filter housing for access

to the washer reservoir mounting provisions and connections. Refer to **Engine/Air Intake System/BODY, Air Cleaner - Removal** .

4. If the vehicle is so equipped, disconnect the Front End Module (FEM) wire harness connector (2) and headlamp washer supply hose (1) from the headlamp washer pump/motor unit (3). To disconnect the quick connect fitting (4), pull the molded plastic lock (2) away from the headlamp washer supply hose quick connect fitting far enough to disengage the hose from the washer pump nipple.

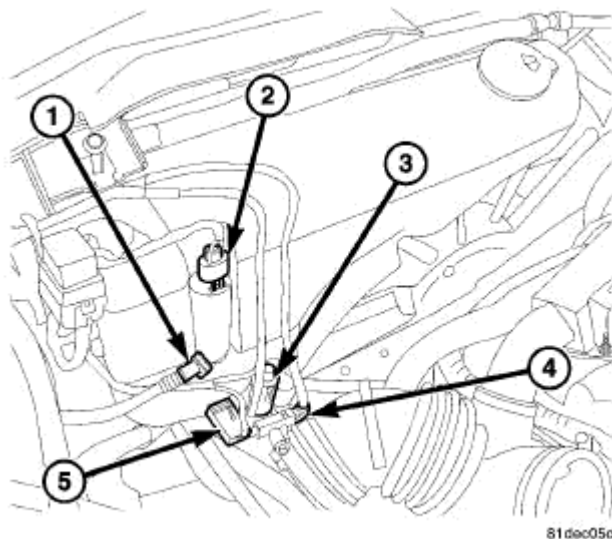


Fig. 61: Front End Module Wire Harness Connector
Courtesy of CHRYSLER LLC

5. Disconnect the FEM wire harness connector (5) from the washer fluid level switch connector receptacle on the back of the reservoir.
6. Disconnect the FEM wire harness connector (3) and the front and rear washer supply hoses (4) from the reversible washer pump/motor unit.
7. Disengage each of the FEM wire harness takeouts and washer supply hoses from the integral routing provisions of the washer reservoir.

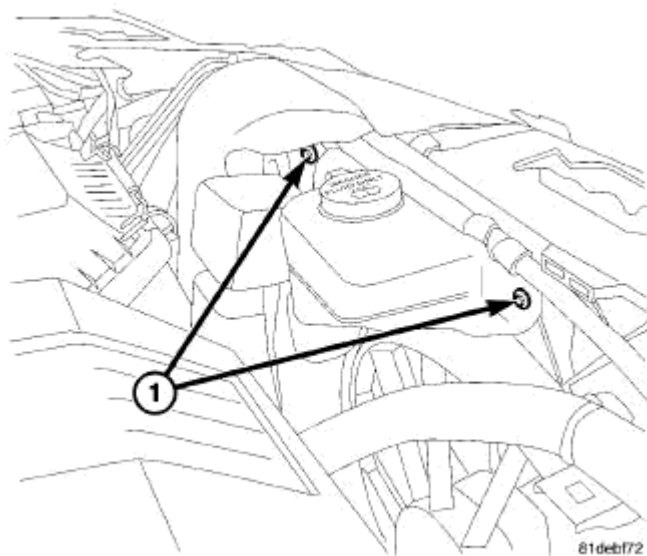


Fig. 62: Washer Reservoir Screws
Courtesy of CHRYSLER LLC

8. Remove the two screws (1) that secure the washer reservoir inboard and outboard mounting brackets to the back of the cooling module.
9. Lift the washer reservoir straight up to disengage the mounting tabs from the cooling module.
10. Remove the washer reservoir from the left side of the cooling module.

INSTALLATION

INSTALLATION

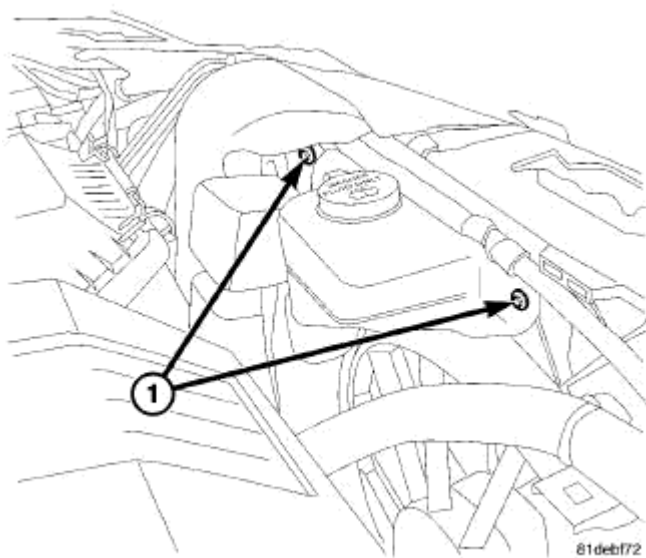


Fig. 63: Washer Reservoir Screws

Courtesy of CHRYSLER LLC

1. Position the washer reservoir to the left side of the cooling module.
2. Engage the mounting provisions at the bottom of the washer reservoir with the cooling module.
3. Install and tighten the two screws (1) that secure the washer reservoir inboard and outboard mounting brackets to the back of the cooling module. Tighten the screws securely.
4. Engage each of the Front End Module (FEM) wire harness takeouts and washer supply hoses into the integral routing provisions of the washer reservoir.

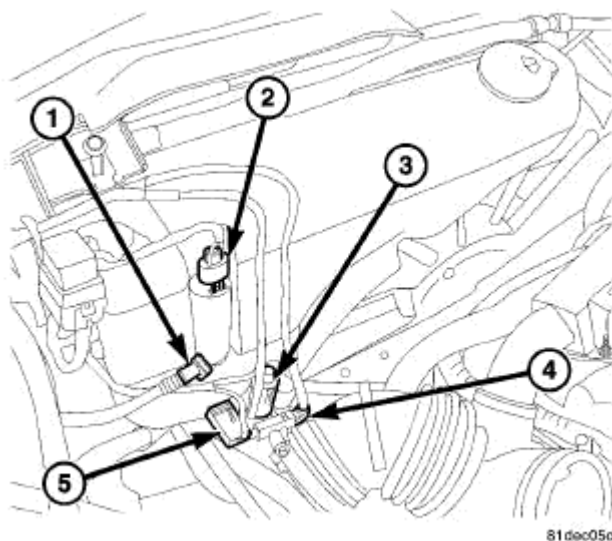


Fig. 64: Front End Module Wire Harness Connector
Courtesy of CHRYSLER LLC

5. Reconnect the FEM wire harness connector (3) and the front and rear washer supply hoses (4) to the reversible washer pump/motor unit.
6. Reconnect the FEM wire harness connector (5) to the washer fluid level switch connector receptacle on the back of the reservoir.

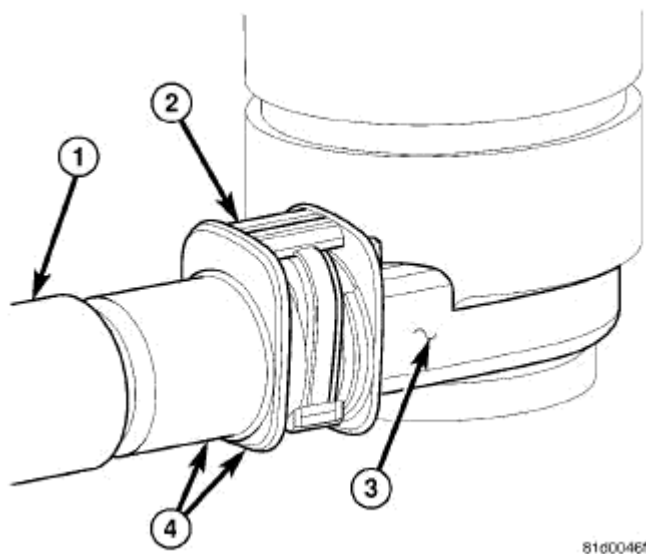


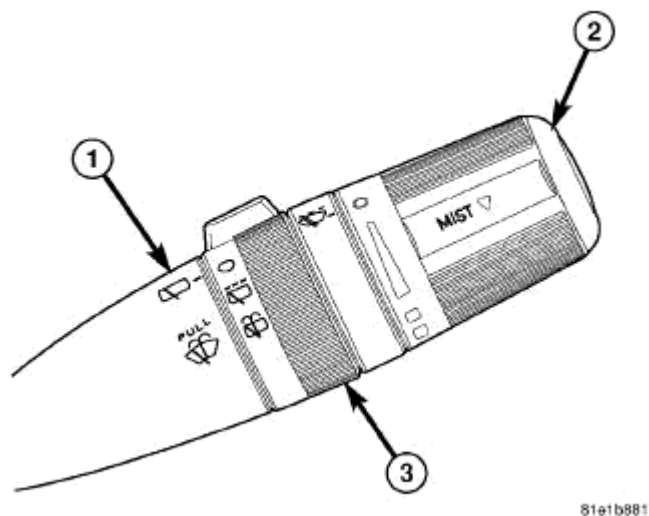
Fig. 65: Removing/Installing Hose At Headlamp Washer Nozzle Nipple
Courtesy of CHRYSLER LLC

7. If the vehicle is so equipped, reconnect the FEM wire harness connector and headlamp washer supply hose (1) to the headlamp washer pump/motor unit. To reconnect the quick connect fitting (4), first seat the molded plastic lock (2) onto the washer supply hose quick connect fitting. Next, push the quick connect fitting onto the headlamp washer pump/motor unit outlet nipple (3) until it snaps into place with an audible click.
8. If removed, reinstall the air filter housing. Refer to **Engine/Air Intake System/BODY, Air Cleaner - Installation** .
9. Refill the washer reservoir with the washer fluid drained from the reservoir during the removal procedure.
10. Reconnect the battery negative cable.

SWITCH, MULTIFUNCTION, RIGHT

DESCRIPTION

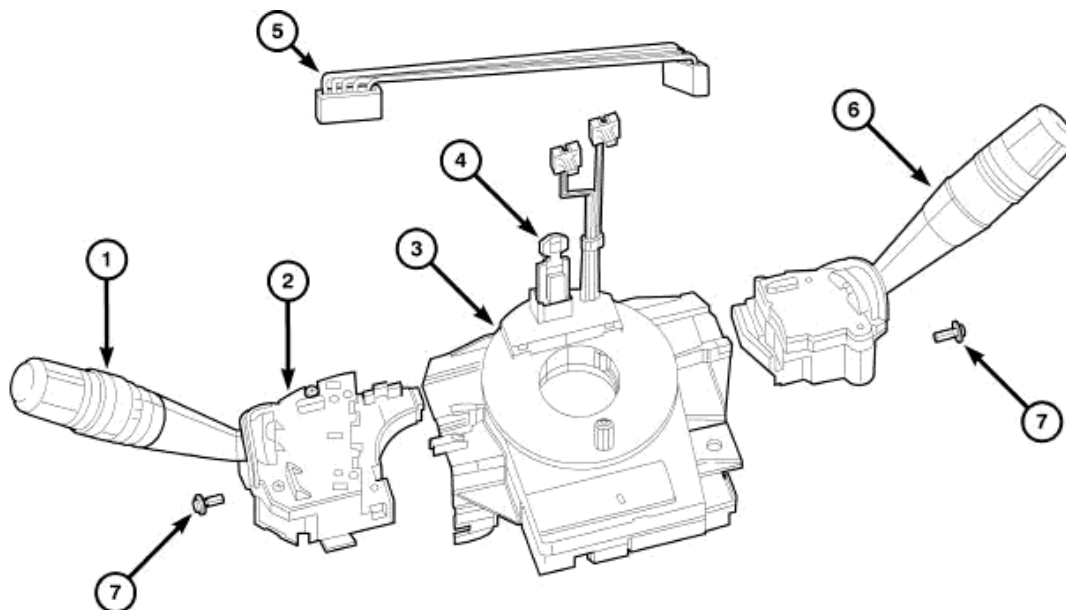
DESCRIPTION



81e1b881

Fig. 66: Right (Wiper) Multi-Function Switch
Courtesy of CHRYSLER LLC

The right (wiper) multi-function switch is located on the right side of the steering column, just below the steering wheel. This switch is the primary control for the front and rear wiper and washer systems. The only visible components of the switch are the control stalk (1), control knob (2) and control sleeve (3) that extend through the steering column shrouds on the right side of the column. The remainder of the switch including its mounting provisions and electrical connection are concealed beneath the shrouds.



817a5ce2

Fig. 67: Identifying Steering Control Module Components
Courtesy of CHRYSLER LLC

The switch housing and controls (6) are constructed of molded black plastic. Each of the switch controls has

white International Control and Display Symbol graphics applied to it, which clearly identify its many functions. A single screw (7) through a mounting tab integral to the back of the switch housing, and a slide tab integral to the bottom of the switch housing secure the switch to the mounting bracket integral to the clockspring (3). A single connector receptacle containing seven terminal pins is integral to the inboard end of the switch housing and is connected by a jumper wire harness (5) directly to the Steering Control Module (SCM), which is internal to the housing (2) of the left multi-function switch (1).

The right (wiper) multi-function switch provides the vehicle operator with a control interface for the following wiper and washer system functions:

- **Continuous Front Wipers** - The right multi-function switch control knob provides detent switching for two continuous front wipe modes, low speed or high speed.
- **Intermittent Front Wipers** - The right multi-function switch control knob provides detent switching for the intermittent front wipe mode with five minor detent delay interval positions.
- **Front Wiper Mist Mode** - The right multi-function switch control stalk includes momentary switching of the front wiper motor low speed circuit to provide a mist mode features (sometimes referred to as pulse wipe), which allows the vehicle operator to momentarily operate the front wipers for one or more complete cycles.
- **Front Washer Mode** - The right multi-function switch control stalk provides momentary switching for control of the front washer system operation.
- **Intermittent Rear Wipe Mode** - The right multi-function switch control sleeve provides detent switching for a single fixed interval intermittent rear wiper mode.
- **Rear Washer Mode** - The right multi-function switch control sleeve provides one momentary switch positions for control of rear washer system operation.

The right multi-function switch cannot be adjusted or repaired. If any function of the switch is ineffective, or if the switch is damaged, the entire switch unit must be replaced. The clockspring (with the multi-function switch mounting bracket), the left multi-function switch (with the SCM), the right multi-function switch and the jumper wire harness are each available for separate service replacement.

OPERATION

OPERATION

The right (wiper) multi-function switch uses a combination of resistor multiplexing and conventional analog switching to control the many functions and features it provides. The switch receives a clean ground from the Steering Control Module (SCM), then provides resistor multiplexed and conventional analog return outputs to the SCM to indicate the selected switch positions. The SCM then sends electronic **switch status** messages over a Local Interface Network (LIN) data bus to the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN), and the EMIC relays electronic **wiper** and **washer switch** request messages over the Controller Area Network (CAN) data bus to other electronic modules in the vehicle.

If the SCM detects no inputs from the right multi-function switch, it transmits an electronic **Signal Not Available (SNA)** status message over the LIN data bus. The SNA status signals the EMIC to request other electronic modules to implement a fail-safe mode of operation for the front and rear wiper systems. The fail-safe mode will maintain the last selected front and rear wiper system operation for the remainder of the current

ignition cycle, after which both wiper systems will default to OFF.

The right multi-function switch as well as the hard-wired inputs and outputs of the switch may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, the most reliable, efficient and accurate means to diagnose this component requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

Following are descriptions of how the right multi-function switch is operated to control the many front and rear wiper and washer system functions and features it provides:

- **Front Wiper Control** - The control knob on the end of the right multi-function switch control stalk is rotated to one of the two continuous wiper detents, to one of five intermittent wiper detents, or to the OFF position to select the front wiper mode. The SCM reads the input from the right multi-function switch and sends electronic **wiper switch** status messages over the LIN data bus to the EMIC, which relays an electronic **wiper switch** request message over the CAN data bus to other electronic modules in the vehicle.
- **Front Wiper Mist Mode** - The front wiper mist mode is requested when the right multi-function switch control stalk is depressed downward towards the floor to a momentary MIST position. The front wiper motor will continue to operate, one complete cycle at a time, for as long as the control stalk is held in this position. The SCM reads the resistor multiplexed input from the right multi-function switch and sends an electronic **wiper switch** status message over the LIN data bus to the EMIC, which relays an electronic **wiper switch** request message over the CAN data bus to other electronic modules in the vehicle.
- **Front Washer Control** - The right multi-function switch control stalk is pulled rearward towards the steering wheel to a momentary WASH position to activate the washer pump/motor in the front washer mode. The washer pump/motor will continue to operate for as long as the control stalk is held in this position. The SCM reads the resistor multiplexed input from the right multi-function switch and sends an electronic **washer switch** status message over the LIN data bus to the EMIC, which relays an electronic **washer switch** request message over the CAN data bus to other electronic modules in the vehicle.
- **Rear Wiper Control** - The rear wiper mode is selected when the right multi-function switch control sleeve is rotated to the fixed interval intermittent rear wipe detent position, or the OFF detent position. The SCM reads the input from the right multi-function switch and sends an electronic **wiper switch** status message over the LIN data bus to the EMIC, which relays an electronic **wiper switch** request message over the CAN data bus to other electronic modules in the vehicle.
- **Rear Washer Control** - The right multi-function switch control sleeve is rotated to one of two momentary WASH positions, either fully forward or fully rearward, to activate the washer pump/motor in the rear washer mode. The washer pump/motor will continue to operate in the rear washer mode until the control sleeve is released. The SCM reads the input from the right multi-function switch and sends an electronic **washer switch** status message over the LIN data bus to the EMIC, which relays an electronic **washer switch** request message over the CAN data bus to other electronic modules in the vehicle.

DIAGNOSIS AND TESTING

RIGHT MULTI-FUNCTION SWITCH

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the Supplemental Restraint System (SRS) before attempting any steering

wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment.

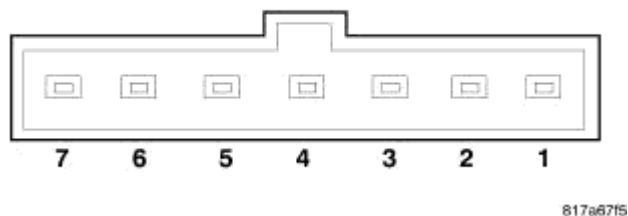


Fig. 68: Right Multi-Function Switch Connector
Courtesy of CHRYSLER LLC

The right multi-function switch as well as the hard wired inputs and outputs of the switch may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**.

However, conventional diagnostic methods will not prove conclusive in the diagnosis of the Steering Control Module (SCM) or the electronic controls or communication between other modules and devices that provide some features of the front and rear wiper and washer systems. The most reliable, efficient and accurate means to diagnose the SCM or the electronic controls and communication related to SCM operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

1. Remove the right multi-function switch from the integral mounting bracket on the right side of the clockspring. See **Electrical - Wipers/Washers/Wipers/Washers/SWITCH, Multifunction - Removal**.
2. Using an ohmmeter, test the resistance between the terminals of the switch as shown in the three Function Tests tables below. For all functions except those of the control stalk the values should be either less than 100 ohms (switch CLOSED) or greater than 1 megohm (switch OPEN).

CONTROL STALK FUNCTION TESTS			
FUNCTION	PINS		RESISTANCE
	1	7	
Front Wash	X	X	10000 Ohms
Front Mist	X	X	5490 Ohms

CONTROL KNOB FUNCTION TESTS			
FUNCTION	BETWEEN PIN 7 (GROUND) AND PINS		
	4	5	6
Off	CLOSED	CLOSED	OPEN

2009 Dodge Journey R/T

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Front Delay 1	CLOSED	CLOSED	CLOSED
Front Delay 2	CLOSED	OPEN	CLOSED
Front Delay 3	OPEN	OPEN	CLOSED
Front Delay 4	OPEN	CLOSED	CLOSED
Front Delay 5	OPEN	CLOSED	OPEN
Front Wiper Low	OPEN	OPEN	OPEN
Front Wiper High	CLOSED	OPEN	OPEN

CONTROL SLEEVE FUNCTION TESTS		
FUNCTION	BETWEEN PIN 7 (GROUND) AND PINS	
	2	3
Off	CLOSED	OPEN
Rear Wipe	CLOSED	CLOSED
Rear Wash	OPEN	CLOSED

- If the switch fails any of the tests, replace the ineffective right multi-function switch as required. If the switch tests okay, but the switch input to the Steering Control Module (SCM) remains incorrect, be certain to check for a short or open in the jumper harness between the right multi-function switch and the SCM.

REMOVAL**REMOVAL**

WARNING: To avoid personal or fatal injury, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

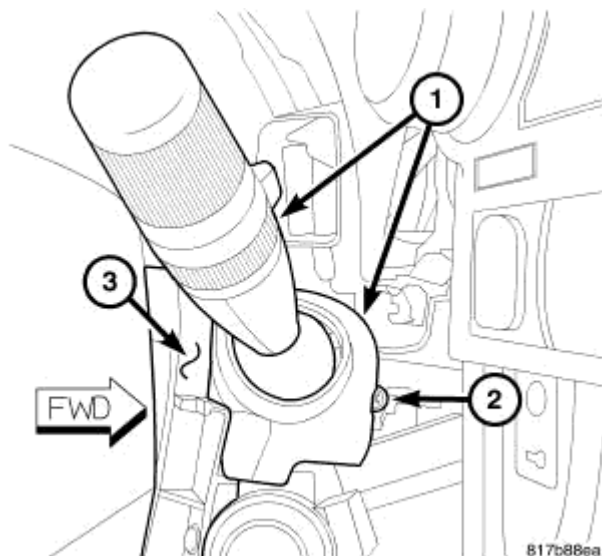


Fig. 69: Removing/Installing Right Multi-Function Switch
Courtesy of CHRYSLER LLC

1. Disconnect and isolate the battery negative cable.
2. Remove both the upper and lower shrouds from the steering column. Refer to **Steering/Column/SHROUD, Steering Column - Removal**.
3. Remove the screw (2) that secures the right multi-function switch (1) to the mounting bracket integral to the right side of the clockspring (3) on the steering column.
4. Slide the switch away from the clockspring far enough to disengage the slide tabs on the switch housing from the channel formations in the mounting bracket.

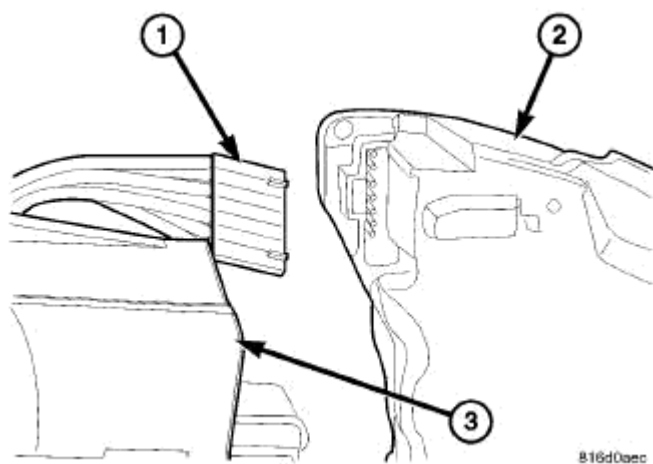


Fig. 70: Right Multi-Function Switch Harness Connector
Courtesy of CHRYSLER LLC

5. Disconnect the jumper wire harness connector (1) from the connector receptacle on the inboard end of the right multi-function switch (2).

6. Remove the switch from the clockspring (3).

INSTALLATION

INSTALLATION

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the Supplemental Restraint System (SRS) before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment.

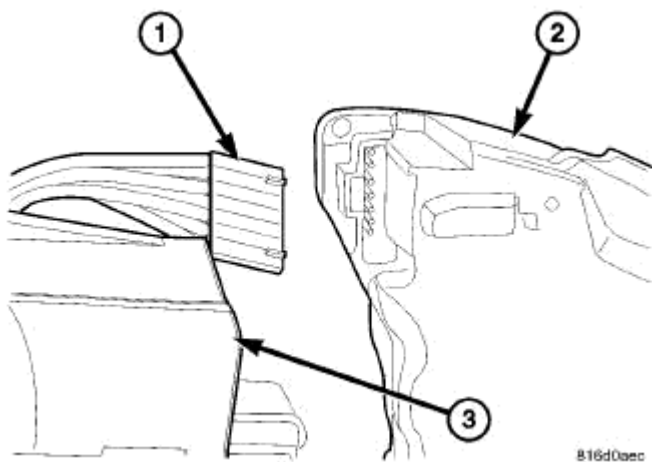


Fig. 71: Right Multi-Function Switch Harness Connector
Courtesy of CHRYSLER LLC

1. Position the right multi-function switch (2) close enough to the mounting bracket (3) integral to the right side of the clockspring to reconnect the jumper wire harness connector (1) to the connector receptacle on the inboard side of the switch housing.
2. Align the slide tabs on the switch housing with the channel formations integral to the clockspring mounting bracket, then slide the switch into the bracket until it is firmly seated.

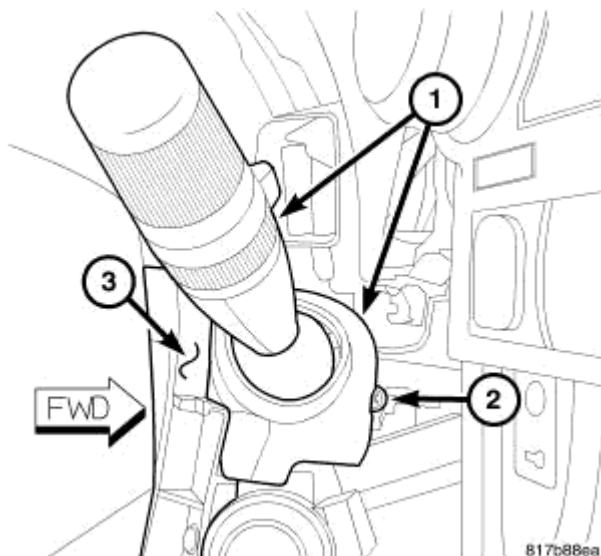


Fig. 72: Removing/Installing Right Multi-Function Switch
Courtesy of CHRYSLER LLC

3. Install and tighten the screw (2) that secures the mounting tab on the back of the right multi-function switch (1) to the mounting bracket on the clockspring (3). Tighten the screw to 1 N.m (10 in. lbs.).
4. Reinstall the upper and lower shrouds onto the steering column. Refer to **Steering/Column/SHROUD, Steering Column - Installation**.
5. Reconnect the battery negative cable.

SWITCH, WASHER FLUID LEVEL

DESCRIPTION

DESCRIPTION

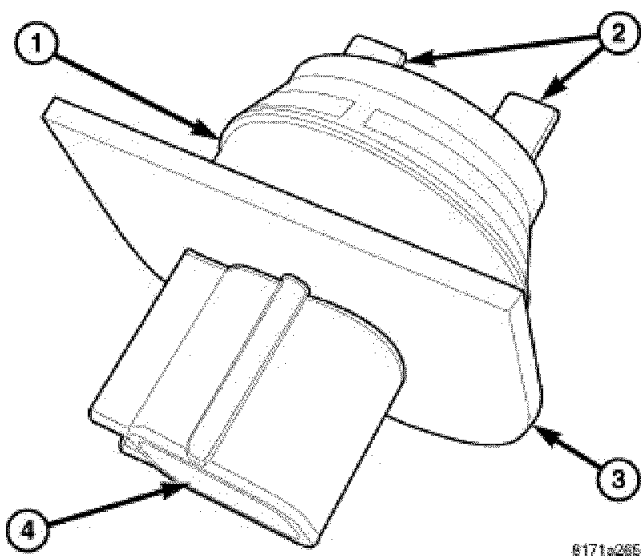


Fig. 73: Washer Fluid Level Switch
Courtesy of CHRYSLER LLC

The washer fluid level switch (3) is a two-pin conductivity sensor with no moving parts mounted on the rearward facing side of the washer reservoir on the upper left corner of the cooling module on the Front End Module (FEM). Only the molded plastic switch mounting flange and the integral connector receptacle (4) are visible when the switch is installed in the reservoir.

A short nipple formation (1) extends from the inner surface of the switch mounting flange, and a barb on the nipple is pressed through a rubber grommet seal installed in the mounting hole of the reservoir. Two over-molded pins or electrodes (2) extend from the back of the nipple formation. The switch is connected to the vehicle electrical system through a dedicated take out and connector of the FEM wire harness.

The washer fluid level switch cannot be adjusted or repaired. If ineffective or damaged, the switch must be replaced.

OPERATION

OPERATION

The washer fluid level switch uses fluid conductivity to monitor the level of the washer fluid in the washer reservoir. Electricity is conducted between the two switch pins or electrodes only when they are immersed in the washer fluid, which closes the switch circuit. When the fluid level in the washer reservoir falls below the pins, electrical current cannot be conducted and the switch becomes an open circuit, which signals a low fluid condition.

In order to prevent an electrical charge from accumulating in the electrical leads of the switch, the switch receives current that is pulsed from the Totally Integrated Power Module (TIPM) located in the engine compartment near the battery. The TIPM monitors the switch return signal and is programmed to respond to three consecutive open switch readings by sending an electronic **washer fluid indicator lamp-ON request**

message to the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) over the Controller Area Network (CAN) data bus. The EMIC responds to this message by illuminating the washer fluid indicator and by sounding an audible chime tone warning.

The washer fluid level switch is connected to the vehicle electrical system through a dedicated take out and connector of the Front End Module (FEM) wire harness. The switch is connected in series between a sensor return circuit and the washer fluid switch sense input to the TIPM.

The washer fluid level switch and the hard wired circuits between the switch and the TIPM may be diagnosed using conventional diagnostic tools and procedures. Refer to **SYSTEM WIRING DIAGRAMS**. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the washer fluid level indicator or the electronic controls or communication between other modules and devices that provide some features of the washer system. The most reliable, efficient, and accurate means to diagnose the washer fluid level indicator or the electronic controls and communication related to washer fluid level switch operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

REMOVAL

REMOVAL

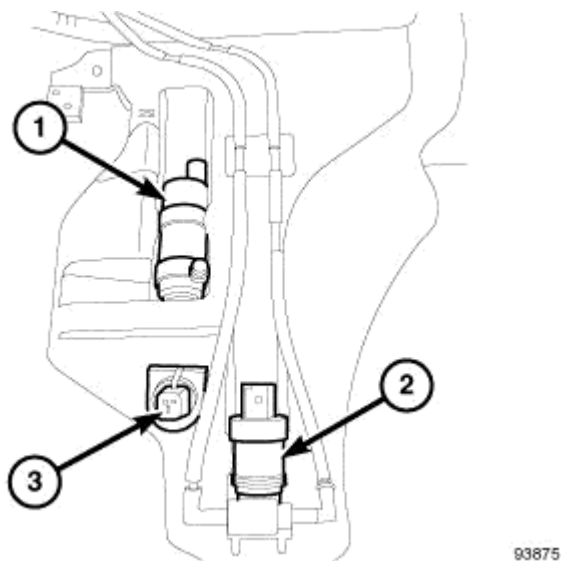


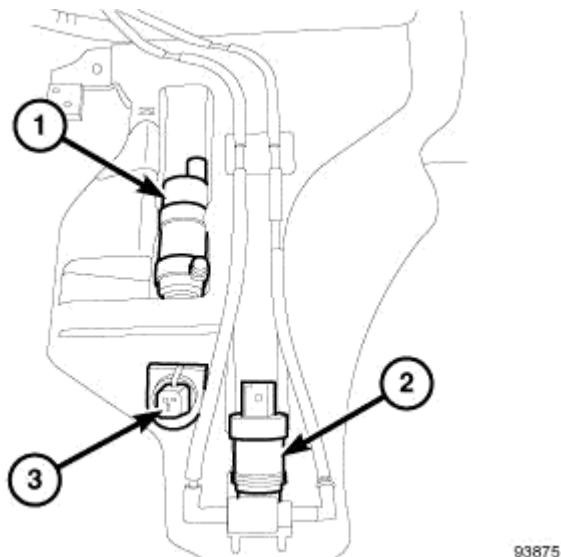
Fig. 74: Washer Pump/Motor Housing
Courtesy of CHRYSLER LLC

1. Disconnect and isolate the battery negative cable.
2. Remove the washer reservoir from the back of the cooling module on the Front End Module (FEM). See **Electrical - Wipers/Washers/Wipers/Washers/RESERVOIR, Windshield Washer - Removal**.
3. Disconnect the FEM wire harness connector from the washer fluid level switch connector receptacle (3) on the back of the reservoir.
4. Using a trim stick or another suitable wide flat-bladed tool, gently pry the barbed nipple of the washer fluid level switch out of the rubber grommet seal in the washer reservoir. Care must be taken not to damage the reservoir.

5. Remove the switch from the washer reservoir.
6. Remove the rubber grommet seal from the switch mounting hole in the washer reservoir and discard.

INSTALLATION

INSTALLATION



93875

Fig. 75: Washer Pump/Motor Housing
Courtesy of CHRYSLER LLC

1. Install a new rubber grommet seal into the washer fluid level switch mounting hole of the washer reservoir. Always use a new rubber grommet seal on the reservoir.
2. Insert the nipple formation of the switch through the rubber grommet seal in the reservoir.
3. Using hand pressure, press firmly and evenly on the switch mounting flange until the barbed nipple is fully seated in the rubber grommet seal in the reservoir. The flat edge of the switch mounting flange should be oriented upward.
4. Reconnect the Front End Module (FEM) wire harness connector (3) to the switch connector receptacle.
5. Reinstall the washer reservoir onto the back of the cooling module on the FEM. See **Electrical - Wipers/Washers/Wipers/Washers/RESERVOIR, Windshield Washer - Installation**.
6. Reconnect the battery negative cable.