

DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION

The wiper system consists of the following components:

Fig 1: Front Electric Motor Connected To Front Wiper Mechanism



Courtesy of CHRYSLER GROUP, LLC

- Front electric motor connected to the front wiper mechanism

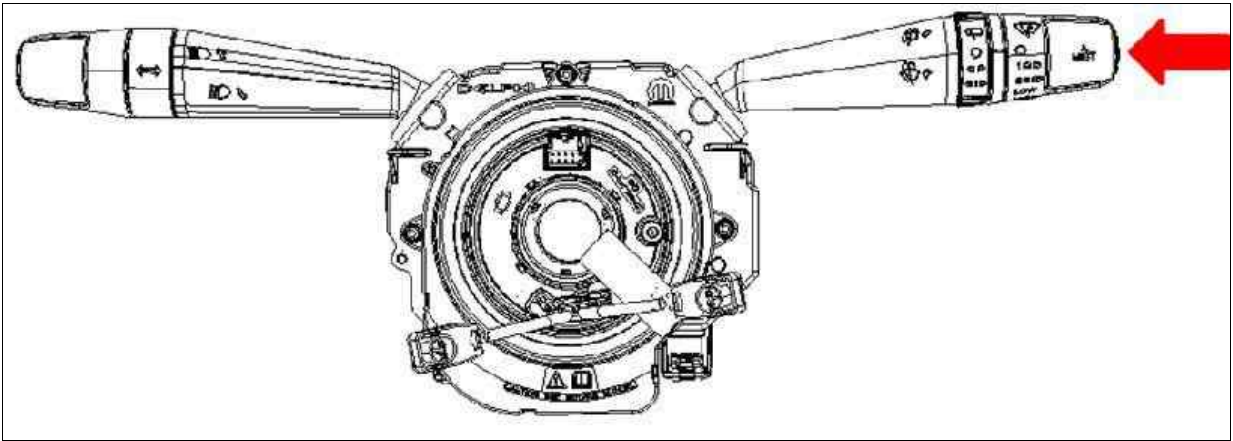
Fig 2: Rear Electric Motor Connected To Rear Wiper Mechanism



Courtesy of CHRYSLER GROUP, LLC

- Rear electric motor connected to the rear wiper mechanism

Fig 3: Activation Controls On Steering Column Stalk



Courtesy of CHRYSLER GROUP, LLC

- Activation controls on the steering column stalk

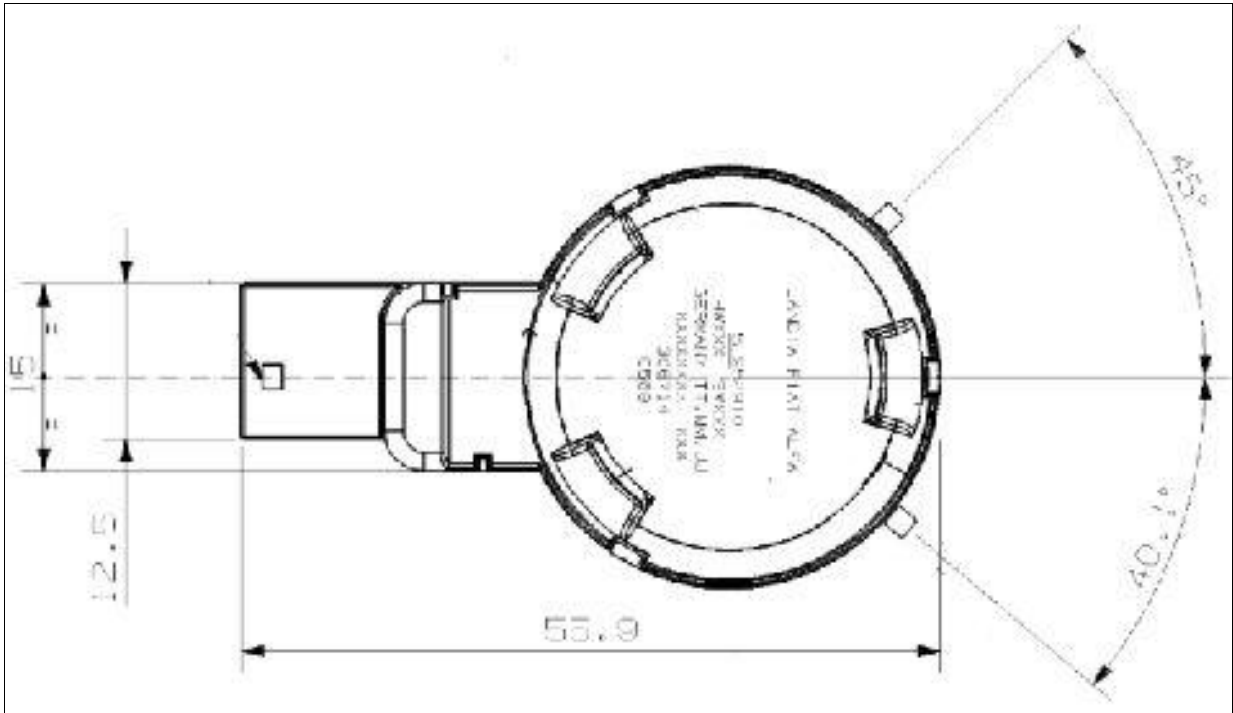
Fig 4: Two-Way Electric Pump & Washer Fluid Reservoir



Courtesy of CHRYSLER GROUP, LLC

- Two-way electric pump for the windshield and rear window washer circuit. The washer fluid circuit is supplied by a two-way electric pump located in the lower part of the washer fluid reservoir.

Fig 5: Rain Sensor



Courtesy of CHRYSLER GROUP, LLC

- RLS - Rain sensor (if Rain sensor = present in the BCM proxy)

The vehicle may be equipped with a rain detection sensor on the windshield. When rain/water is detected on the windshield, the system will automatically operate the wipers. The system uses an infrared sensor fitted behind the windshield in front of the interior rear view mirror. The sensor continuously sends infrared rays against the windshield to detect the presence of water on the glass; if detected, the sensor will send a signal on the Local Interface Network (LIN) data bus to the Body Control Module (BCM), which will activate the wiper at the appropriate speed.

The rain sensor is built into an electronic Rain/Light Sensor Module (RLSM) which, in addition to detecting moisture on the windshield, enables the dusk function by measuring ambient light levels. According to this information and the sensitivity level set by the user, it controls both windshield cleaning and running lights.

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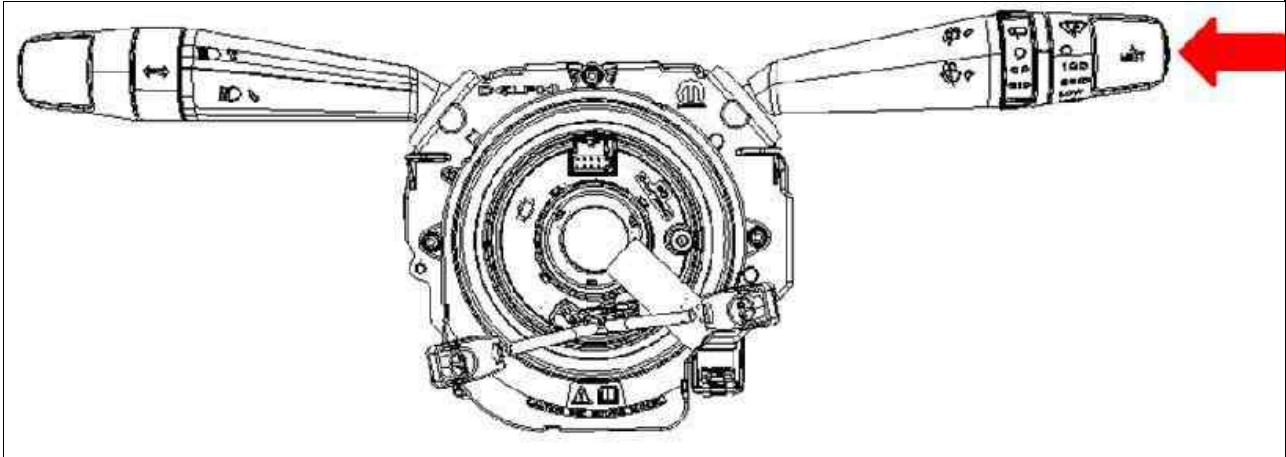
Operating conditions.

Ignition switch status	Function that can be activated
OFF	Servicing position
ON	Front wiper Rear wiper Windshield washer circuit Rear window washer circuit.

START

Windshield wiper - cut-off
Rear window wiper - cut-off
Windshield washer circuit - cut-off
Rear window washer circuit - cut-off
Note: If the rain sensor is present, automatic mode is selected by default during starting.

Fig 1: Activation Controls On Steering Column Stalk

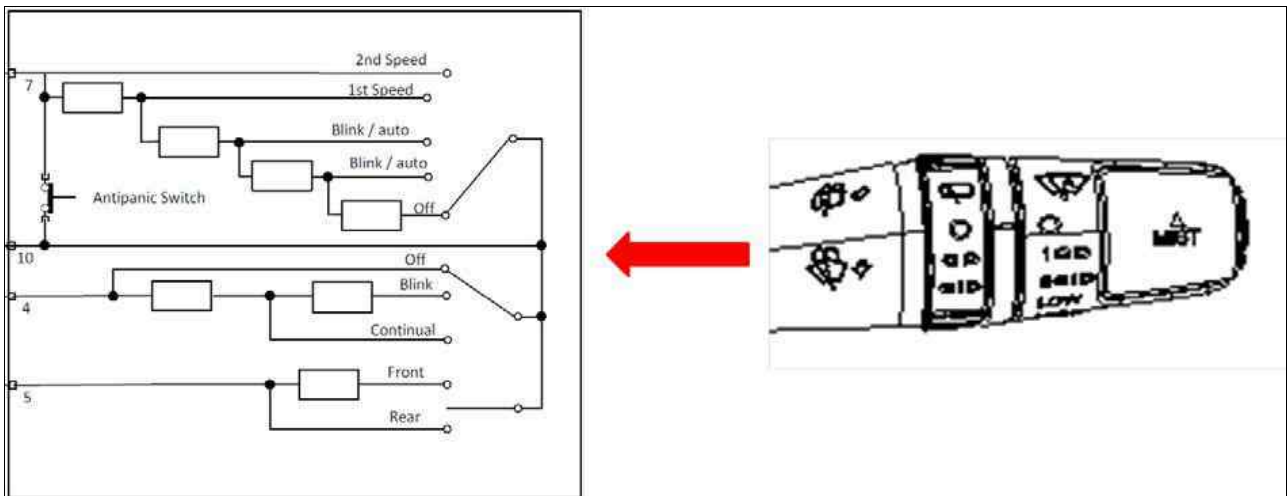


Courtesy of CHRYSLER GROUP, LLC

Wiper activation controls on the steering column stalk.

The windshield (1st and 2nd speed) and rear window wipers can be activated via the controls on the steering column stalk.

Fig 2: Steering Column Stalk Operation



Courtesy of CHRYSLER GROUP, LLC

The control on the steering column stalk is electrically connected to the Body Control Module (BCM). This receives MUX signals (different levels of resistance according to the position of the lever) from the steering column stalk.

The BCM controls the windshield and rear window wiper motors directly.

The BCM activates the electric pump of the washer pump circuit in accordance with the command from the steering column stalk.

DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION > OPERATING MODES - FRONT

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

- **Continuous Wipe Mode** - When the Continuous Low position of the right (wiper) multifunction switch control knob is selected, the switch provides a resistor multiplexed input to the BCM. The BCM responds by energizing a relay that directs battery current to the low speed brush of the wiper motor, causing the wipers to cycle at low speed.

When the Continuous High position of the right (wiper) multifunction switch control knob is selected, the switch provides a resistor multiplexed input to the BCM. The BCM responds by energizing a relay that 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 right multifunction switch control knob is selected, the switch provides a resistor multiplexed input to the BCM. 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 BCM. The BCM 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 BCM 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 BCM is again closed to ground.

- **Intermittent Wipe Mode** - The following applies to vehicles not equipped with the optional automatic wiper system (which is only available in vehicles manufactured for Europe-Middle East-Africa/EMEA markets), or to vehicles equipped with the automatic wiper system that have had that feature disabled using the setup menu in the Instrument Panel Cluster (IPC).

When the right (wiper) multifunction switch control knob is moved to one of the two Delay (Intermittent) positions, the switch provides a resistor multiplexed input to the BCM. The BCM electronic intermittent wipe logic circuit responds by calculating the correct length of time between wiper sweeps based upon the interval selected using the control knob on the end of the control stalk. The BCM logic also uses both time and electronic **vehicle speed** message inputs to calculate the appropriate delay intervals. The BCM then provides control outputs to energize and de-energize the relays to operate the wiper motor intermittently for one low speed cycle at a time.

- **Automatic Wipe Mode** - If the vehicle is equipped with the optional automatic wiper system (available only in vehicles manufactured for EMEA markets) and it is enabled, when the control knob on the control stalk of the right (wiper) multifunction switch is moved to one of the two Delay (Intermittent or Sensitivity) positions, the switch provides a resistor multiplexed input to the BCM. The BCM, which is also a Local Interface Network (LIN) data bus master node, relays the **wiper switch sensitivity** message to the Light Rain Sensor Module (LRSN) (also known as the Rain

Light Sensor Module/RLSM, the Light Sensor Module/LSM or the Rain Sensor Module/RSM), which is a LIN slave node over the LIN data bus.

The LRSM monitors an area within the wipe pattern of the windshield glass for the accumulation of moisture. Based upon internal programming and the selected sensitivity level, when sufficient moisture has accumulated the LRSM sends the appropriate electronic **wipe command** messages back to the BCM over the LIN data bus. Then the BCM operates the wiper system accordingly.

As the sensitivity level is set higher, the LRSM is more sensitive to moisture accumulation and will send **wipe commands** more frequently. The BCM logic is also programmed to provide an immediate wipe cycle each time the control knob on the control stalk of the multifunction switch is moved from the Off position to one of the two sensitivity positions, and another immediate wipe cycle each time the control knob is moved from a lower sensitivity position to a higher sensitivity position.

Also, if a vehicle is equipped with automatic wipers but the feature has been disabled using the setup menu in the IPC, when any sensitivity position is selected with the right multifunction switch control knob the system will respond in the same manner as in the intermittent wipe mode. The automatic wiper system has features designed to protect the mechanical components of the wiper system, and will not allow automatic wiper operation under the following conditions:

- **Low Ambient Temperature** - When the ambient temperature is below 0° C (32° F), the automatic wipers will not operate during a new ignition cycle until the wiper switch has been moved to a different position than that which was selected at the moment the current ignition cycle began, or until a vehicle speed input is detected.
 - **Transmission In Neutral** - When the transmission gear selector is placed in the Neutral **N** position while the ignition status is On, the automatic wipers will not operate during the current ignition cycle until the wiper switch has been moved to a different position than that which was selected at the moment that Neutral **N** was selected, until the vehicle speed is greater than 8 km/h (5 mph) or until the transmission gear selector is moved out of the Neutral **N** position, whichever occurs first.
 - **Mist Wipe Mode** - When the right (wiper) multifunction switch control stalk is moved upward to the momentary Mist (Pulse) position, the switch provides a resistor multiplexed input to the BCM. The BCM responds by energizing a relay that directs battery current to the low speed brush of the wiper motor, causing the wipers to operate for one complete low speed cycle. The BCM 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.
 - **Headlamps On With Wipers Mode** - The circuitry of the BCM provides an automatic Headlamps On With Wipers mode for vehicles equipped with the optional automatic headlamps. This feature can be enabled or disabled through the setup menu of the IPC. If this feature is enabled, when the headlamp switch is in the Auto position, the headlamps will turn On automatically whenever the windshield wipers are turned On; and, if the headlamps were turned On automatically when the wipers were turned On, they will also turn Off automatically when the wipers are turned Off.
- If this feature is enabled in vehicles equipped with the optional automatic wiper feature, when the automatic wiper mode is selected the headlamps will turn On automatically only after the wipers complete three automatic wipe cycles within about 30 seconds, and they will turn Off automatically after 3 minutes elapse without any automatic wipe cycles unless ambient light conditions dictate otherwise.
- **Wash Mode** - When the control stalk of the right (wiper) multifunction switch is pulled rearward to the momentary front Wash position, the switch provides a resistor multiplexed input to the BCM.

The BCM responds by providing 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 and to be de-energized when the control stalk is released.

When the control stalk is pulled rearward to the momentary front Wash position while the front wiper system is operating in the Delay mode (or sensitivity level with automatic wipers), the washer pump/motor operation is the same. However, the BCM also overrides the Delay mode and operates the front wiper motor in a continuous low speed mode for as long as the control stalk is held in the Wash position, then reverts to the selected Delay mode or sensitivity level operation several wipe cycles after the control stalk is released.

- **Wipe-After-Wash Mode** - When the control stalk of the right (wiper) multifunction switch is pulled rearward to the momentary front Wash position for more than about one-half second while the wiper system is not operating, the BCM 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. When the control stalk is released, the BCM de-energizes the washer pump/motor immediately, but allows the wiper motor to operate for about three additional wipe cycles. An additional wipe cycle is performed about six seconds later before the BCM de-energizes the wiper motor and parks the wiper blades near the base of the windshield.

The BCM monitors the changing state of the wiper motor park switch through a hard wired wiper park switch sense circuit input. This input allows the BCM to monitor 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.

DIAGNOSIS AND TESTING > FRONT WIPER AND WASHER SYSTEM

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, airbags, airbag curtains, knee blocker, seat belt tensioner, impact sensor or instrument panel component diagnosis or service. Disconnect the IBS/negative battery cable assembly from the negative battery post, 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 wiper motor operates, but the wiper blades do not move on the windshield with the wiper arms properly installed, replace the ineffective front wiper motor or wiper linkage 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. Refer to CLEANING and INSPECTION .

The hard wired front wiper and washer system circuits and components may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate SYSTEM WIRING DIAGRAMS article. 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 front wiper

and washer system or the electronic controls and 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 & Testing article.

FRONT WIPER AND WASHER SYSTEM DIAGNOSIS		
CONDITION	POSSIBLE CAUSES	CORRECTION
WIPER MOTOR DOES NOT OPERATE IN ANY SWITCH POSITION	1. Ineffective motor ground circuit.	1. Test and repair open wiper motor ground circuit if required.
	2. Ineffective motor feed circuits.	2. Test and repair low speed and high speed feed circuits between Body Control Module (BCM) and wiper motor if required.
	3. Ineffective right multifunction switch.	3. Test and replace the clockspring and stalk unit if required.
	4. Ineffective BCM inputs or outputs.	4. Use a diagnostic scan tool for further testing of the BCM. Refer to the appropriate Diagnostic & Testing article.
	5. Ineffective wiper motor.	5. Test and replace open or shorted wiper motor as required.
WIPER MOTOR OPERATES SLOWLY IN ALL SWITCH POSITIONS	1. Ineffective wiper motor.	1. Check amperage draw with linkage disconnected from wiper motor output shaft. Correct draw should be about 6 amperes. If incorrect, refer to the appropriate Possible Cause that follows:
	2. Amperage draw too low.	2. Test and repair shorted low and high speed feed circuits if required.
	3. Amperage draw too high.	3. With linkage disconnected from wiper motor output shaft, check linkage and pivots for binding. If binding is detected, repair or replace wiper linkage module if required. If no linkage binding detected, replace the 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 BCM and the wiper motor if required.
AUTOMATIC WIPERS ONLY ARE INOPERATIVE	1. Automatic wipers (Rain Sensing) feature has been disabled.	1. Be certain that the automatic wipers (Rain Sensing) feature is enabled in the Instrument Panel Cluster (IPC) setup menu.
WASHER PUMP DOES NOT OPERATE	1. Ineffective washer pump ground circuit.	1. Test and repair open washer pump ground circuit if required.

	2. Ineffective washer pump feed circuit.	2. Test and repair washer pump feed circuits between BCM and washer pump if required.
	3. Ineffective right multifunction switch.	3. Test and replace the clockspring and stalk unit if required.
	4. Ineffective BCM inputs or outputs.	4. Use a diagnostic scan tool to test the BCM inputs and outputs. Refer to the appropriate Diagnostic & Testing article.
	5. Ineffective washer pump.	5. Test and replace open or shorted washer pump if required.

DIAGNOSIS AND TESTING > FRONT WIPER AND WASHER SYSTEM > DIAGNOSING FALSE WIPES (AUTOMATIC WIPER ONLY)

False wipes are unnecessary wipes that occur when the control knob of the right multifunction switch is in one of the two automatic wiper sensitivity positions and no rain or moisture is apparent within the wipe pattern on the windshield glass. Because this system is designed to operate whenever it detects moisture, if the switch is in one of the automatic wiper sensitivity positions any road spray, bug splatters or mist from passing cars or trucks may occasionally cause the wipers to cycle. These are normal characteristics of this system and are not false wipes.

False wipes generally are the result of foreign material or flaws that interfere with the system optics. The optics for this system allow the Light Rain Sensor Module (LRSM) to precisely transmit several InfraRed (IR) light beams and monitor the intensity of these beams reflected from the outer surface of the windshield glass to determine the presence of moisture. The sensitivity of this system is such that anything that distorts the focus or intensity of the IR light beams or impacts the ability of the photo diodes within the LRSM to see and accurately measure these light beams can result in the LRSM logic misinterpreting the resulting input data as moisture on the windshield. The optics for this system include the lenses of the LRSM, the adhesive silicone gelatin (SilGel) layer that bonds the LRSM to the inside of the windshield and the windshield glass.

The following procedure should only be used if false wipe occurrences are frequent and persistent. Perform diagnosis of the wiper system, the right multifunction switch and microcontroller of the Body Control Module (BCM) and the LRSM using a diagnostic scan tool and the appropriate diagnostic procedures before performing the following:



NOTE:

The LRSM mounting bracket is serviced as a unit with the windshield glass. If either the bracket or the glass is ineffective or damaged, the entire LRSM bracket and windshield glass unit must be replaced. Also, if the LRSM is removed from the mounting bracket for any reason, the integrity of the adhesive silicone gelatin (SilGel) layer of the LRSM will be compromised and the silicone gelatin pad must be replaced with a new unit.

1. Carefully inspect the outer surface of the windshield glass for physical damage, including scratches, cracks or chips in the vicinity of the LRSM mounting bracket. **Scratches, cracks or chips in the windshield glass outside the area of the LRSM mounting bracket lenses will**

not cause false wipes. If OK, go to Step 2. If not OK, replace the damaged windshield.

2. From the outside of the windshield glass, carefully inspect the adhesive layer between the windshield glass and the LRSM bracket for any large voids (air pockets). If an adhesive void greater than about 1 millimeter (0.04 inch) is observed, replace the flawed silicone gelatin pad. If OK, go to Step 3.
3. Lightly pull the LRSM away from the windshield bracket to confirm that both sides of the spring steel LRSM mounting band are fully engaged with the mounting bracket on the inside of the windshield glass. If OK, go to Step 4. If not OK, install the LRSM mounting band onto the bracket as required.
4. Remove the LRSM from the mounting bracket. Carefully inspect the LRSM mounting bracket for any physical damage and inspect the windshield glass area within the LRSM mounting bracket for contamination. If OK, go to Step 5. If contaminated, clean any foreign material from the windshield glass using rubbing alcohol and a lint-free cloth. If damaged, replace the damaged LRSM bracket and windshield as a unit.
5. Carefully replace the LRSM with a new unit. Refer to MODULE, LIGHT RAIN SENSOR, REMOVAL AND INSTALLATION .

DIAGNOSIS AND TESTING > REAR WIPER AND WASHER SYSTEM

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, airbags, airbag curtains, knee blocker, seat belt tensioner, impact sensor or instrument panel component diagnosis or service. Disconnect the IBS/negative battery cable assembly from the negative battery post, 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 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. Refer to CLEANING and INSPECTION .

The hard wired rear wiper and washer system circuits and components may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate SYSTEM WIRING DIAGRAMS article. 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 and 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 & Testing article.

REAR WIPER AND WASHER SYSTEM DIAGNOSIS		
CONDITION	POSSIBLE CAUSES	CORRECTION
WIPER MOTOR DOES NOT OPERATE IN ANY SWITCH POSITION	1. Ineffective motor ground circuit.	1. Test and repair open wiper motor ground circuit if required.
	2. Ineffective motor feed circuits.	2. Test and repair motor feed circuit between Body Control Module (BCM) and rear wiper motor if required.
	3. Ineffective right multifunction switch.	3. Test and replace the clockspring and stalk unit if required.
	4. Ineffective BCM inputs or outputs.	4. Use a diagnostic scan tool for further testing of the BCM inputs and outputs. Refer to the appropriate Diagnostic & Testing article.
	5. Ineffective wiper motor.	5. Test and replace open or shorted wiper motor if required.
WIPER DOES NOT PARK CORRECTLY	1. Ineffective wiper motor park switch input circuit.	1. Test and repair wiper park switch input circuit between BCM and rear wiper motor if required.
	2. Ineffective BCM inputs or outputs.	2. Use a diagnostic scan tool for further testing of the BCM. Refer to the appropriate Diagnostic & Testing article.
	3. Ineffective wiper motor park switch.	3. Test and replace ineffective wiper motor if required.
WIPER MOTOR OPERATES SLOWLY	1. Ineffective wiper motor.	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. Amperage draw too low.	2. Test and repair shorted rear wiper motor signal and fused ignition switch output (run - accessory) circuits if required.
	3. Amperage draw too high.	3. With wiper arm disconnected from wiper motor output shaft check for binding between output shaft and motor output shaft housing. If binding is detected, lubricate if required. If no binding is detected, replace the wiper motor if required.
WASHER PUMP DOES NOT OPERATE	1. Ineffective washer pump ground circuit.	1. Test and repair open washer pump ground circuit if required.
	2. Ineffective washer pump feed circuit.	2. Test and repair washer pump feed circuit between BCM and washer pump if required.

	3. Ineffective right multifunction switch.	3. Test and replace the clockspring and stalk unit if required.
	4. Ineffective BCM inputs or outputs.	4. Use a diagnostic scan tool for further testing of the BCM. Refer to the appropriate Diagnostic & Testing article.
	5. Ineffective washer pump.	5. Test and replace open or shorted washer pump if required.

SPECIFICATIONS > TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.	NEW FASTENER*
Front Wiper Arm Mounting Nut	30	22	-	
Front Wiper Linkage Module Mounting Screw	10	7	-	
Rear Wiper Arm Mounting Nut	1.3	-	11	
* NEW FASTENER: Do not reuse these fasteners. If removed, a new fastener must be installed and tightened to specifications.				

CLEANING > FRONT 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 hoses

from the washer nozzles, then running the washer pump/motor to run clean washer fluid or water through the system. If a washer nozzle obstruction cannot be cleared, replace the washer nozzle.

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 and the windshield glass is suggested to remove any deposits of salt, wax 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 cleaning of the squeegees and the glass, clean them again. Wiper blade assembly replacement will NOT resolve hazing or beading.

CLEANING > REAR 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 cannot be back-flushed due to the integral check valve mechanism. If the rear washer nozzle obstruction cannot be cleared, replace the rear washer nozzle.

CLEANING > 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 and the liftgate glass is suggested to remove any deposits of salt, wax 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 cleaning of the squeegee and the glass, clean them again. Wiper blade assembly replacement will NOT resolve hazing or beading.

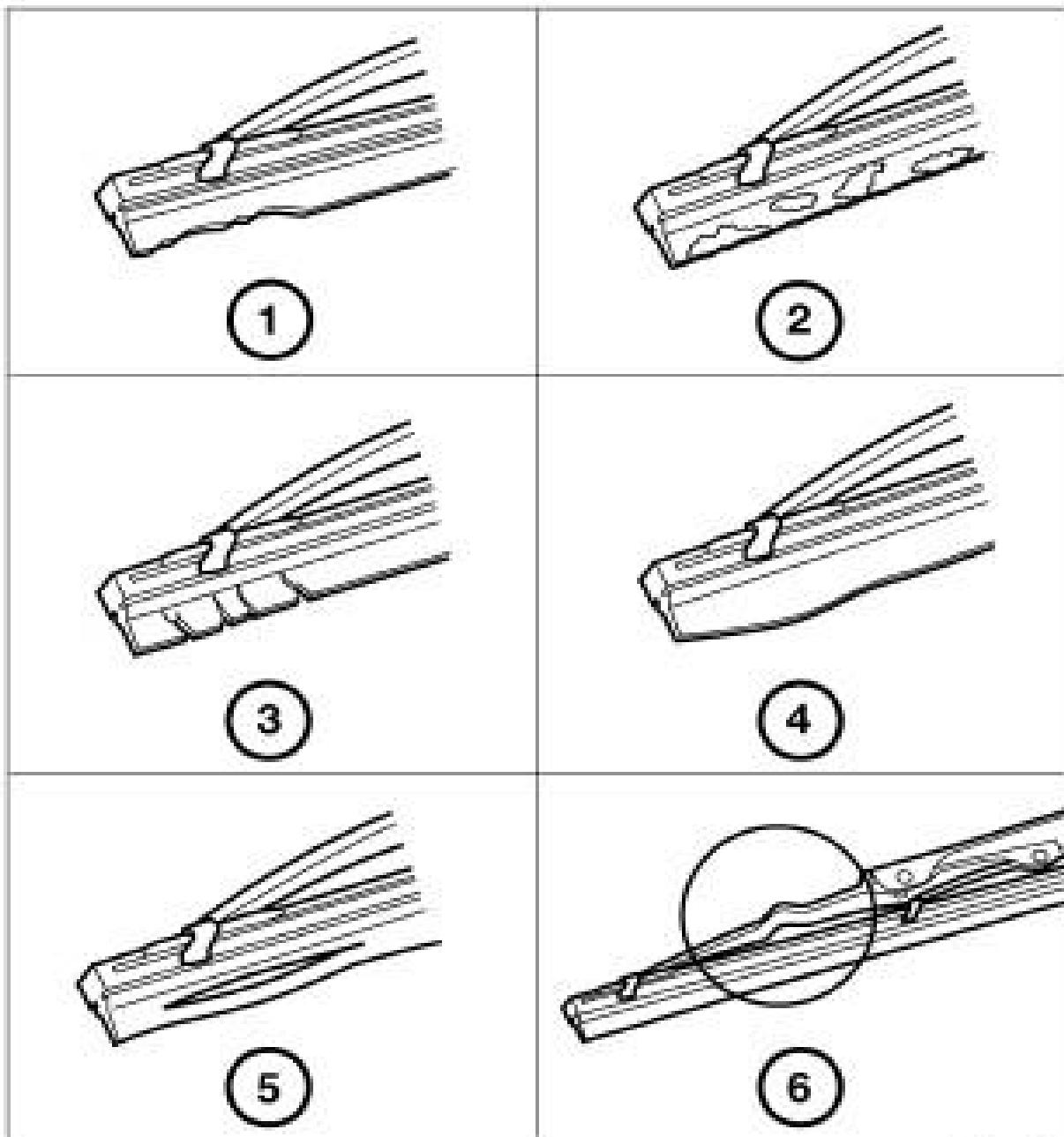
INSPECTION > FRONT WASHER SYSTEM

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. Refer to 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 in-line connector fitting. Similarly, sections of deteriorated hose can be cut out and replaced by splicing in new sections of hose using in-line 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.

INSPECTION > FRONT WIPER SYSTEM

Fig 1: Wiper Blades And Wiper Arms



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Courtesy of CHRYSLER GROUP, 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 severe corrosion. If the wiper arms and blades are contaminated with any foreign material, clean them

and the glass as required. Refer to CLEANING . If a wiper blade or arm is damaged, or if severe 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 severely 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. 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 or chattering, replace the wiper blade.

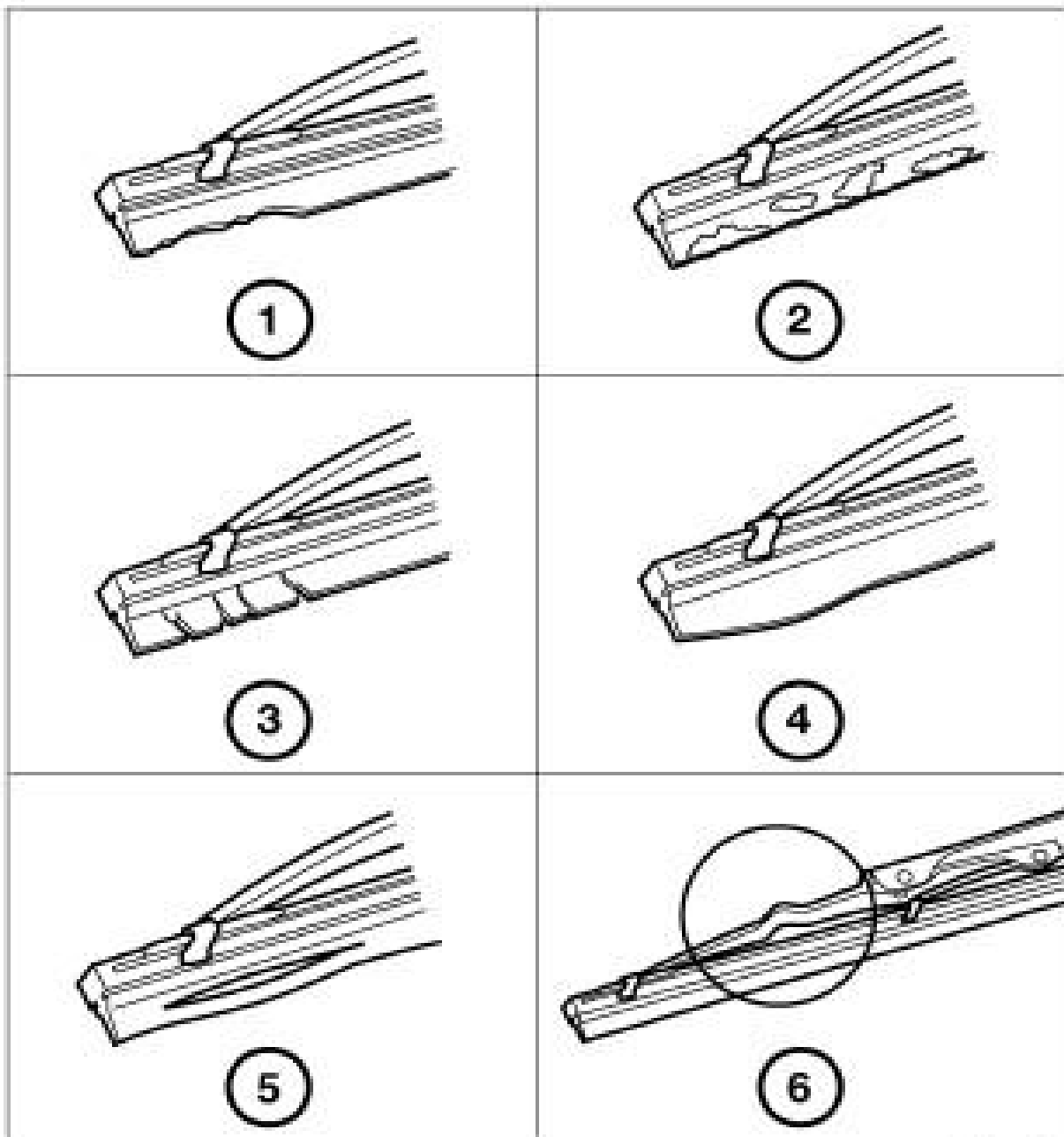
INSPECTION > REAR WASHER SYSTEM

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. Refer to 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 in-line connector fitting. Similarly, sections of deteriorated hose can be cut out and replaced by splicing in new sections of hose using in-line 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.

INSPECTION > REAR WIPER SYSTEM

Fig 1: Inspecting Wiper Blades



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Courtesy of CHRYSLER GROUP, 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.

Refer to 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.



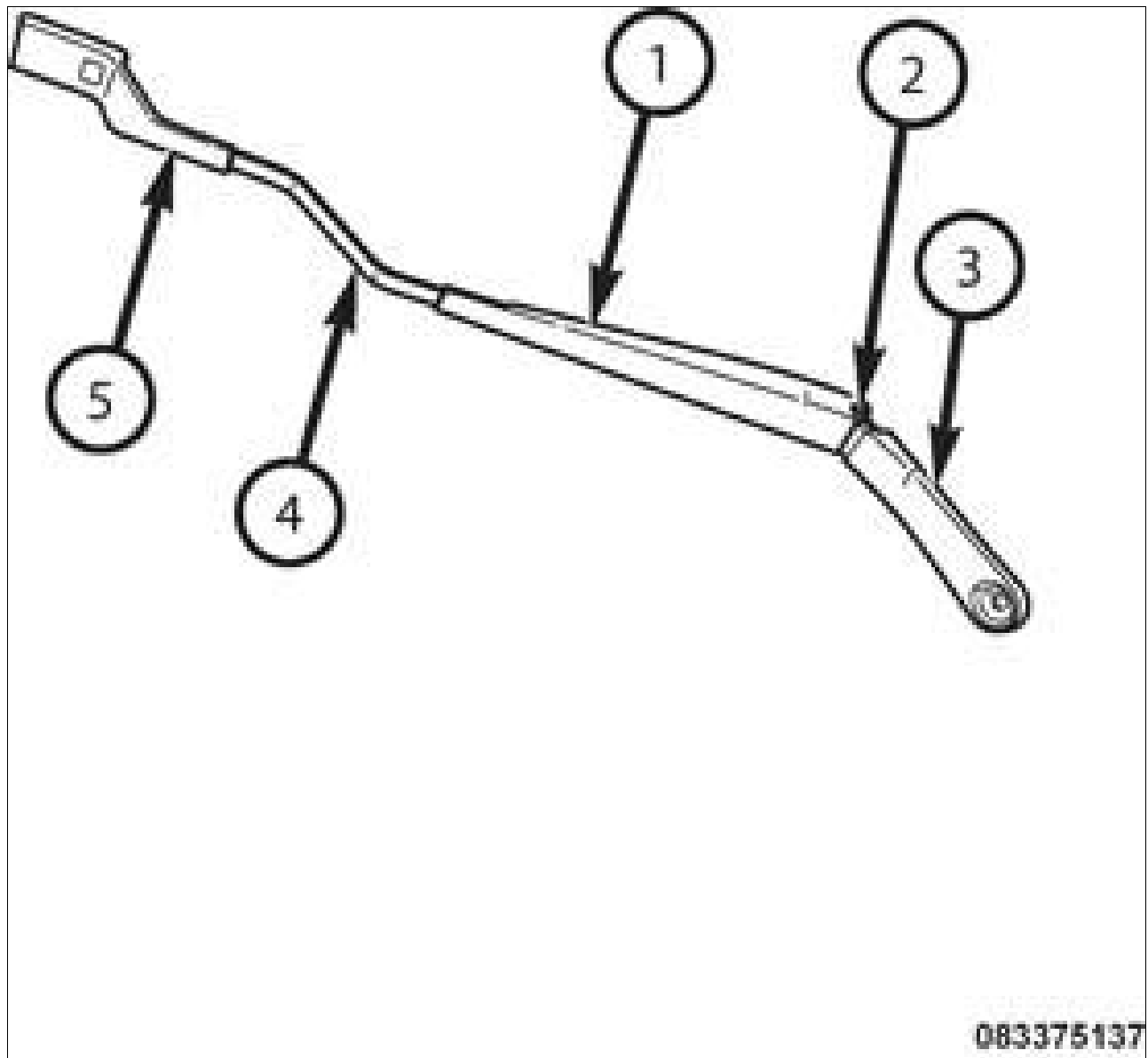
CAUTION:

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.

**ARM, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION -
FRONT WIPER ARM > DESCRIPTION - FRONT**

Fig 1: Front Wiper Arm



Courtesy of CHRYSLER GROUP, 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 (3) with a large tapered mounting hole at one end. A molded black plastic cap fits over the wiper arm retaining nut to conceal the nut and the mounting hole following wiper arm installation.

The wide end of a tapered, stamped steel channel (1) hinges on and is secured with a hinge pin (2) to the blade end of the wiper arm pivot end. One end of a long, rigid, stamped steel strap (4) 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 has a stamped steel receptacle (5) crimped onto it to accept the latching pivot block of the front wiper blade. Concealed within the stamped steel channel is a long tension spring which is engaged with a wire hook on the underside of the die cast pivot end and is hooked through a small hole in the steel strap. The entire wiper arm has a satin black finish applied to all of its visible surfaces.

The driver and passenger side 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.

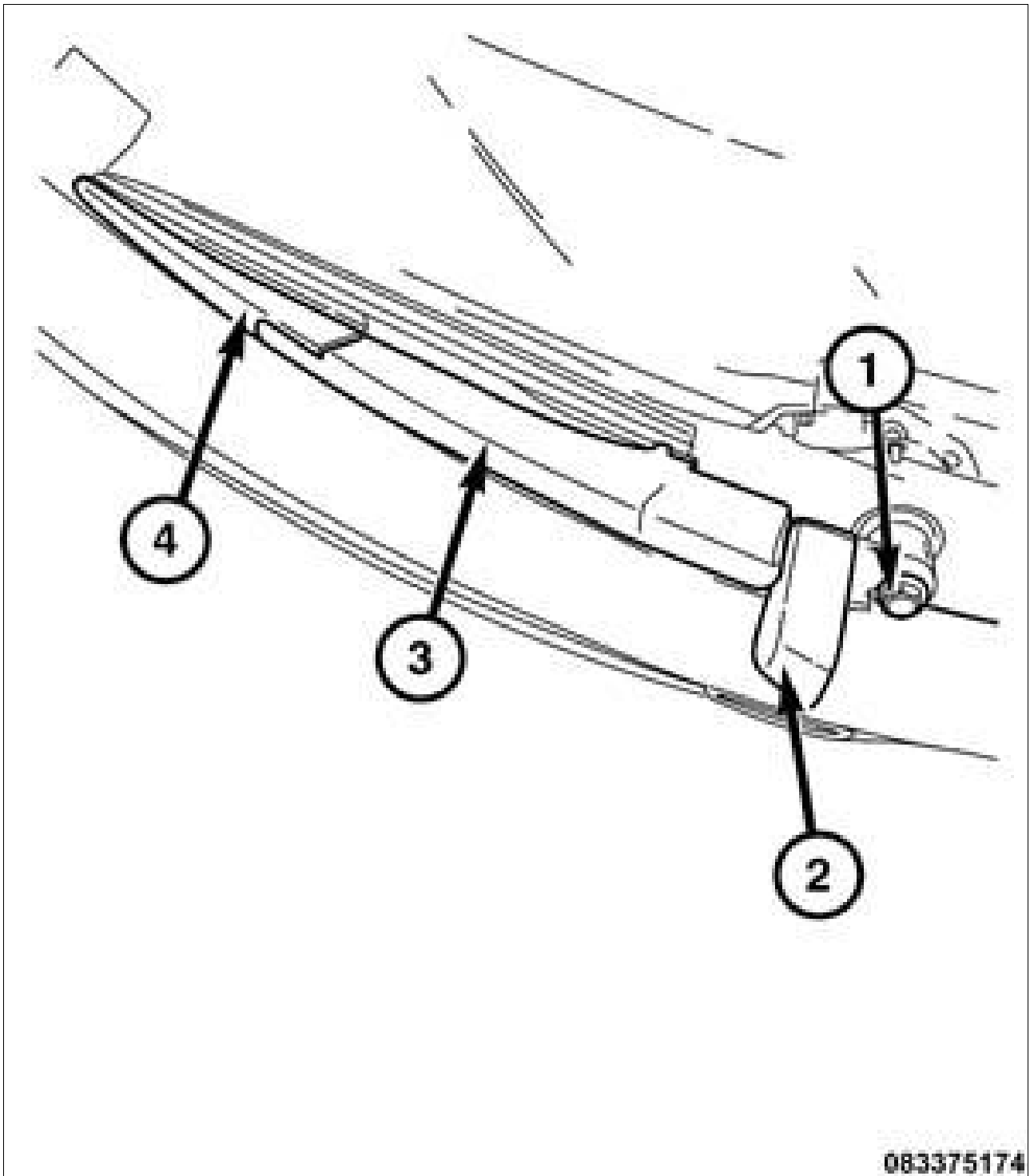
ARM, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - FRONT WIPER ARM > OPERATION - FRONT

The front wiper arms are designed to mechanically transmit the motion from the wiper pivots to the front wiper blades. The front 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 nut locks the front wiper arm to the threaded stud of the wiper pivot shaft. The spring-loaded wiper arm hinge controls the down-force applied through the tip of the wiper arm to the front wiper blade on the glass. The receptacle on the tip of the wiper arm provides a cradle for securing and latching the wiper blade pivot block to the wiper arm.

ARM, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WIPER ARM > DESCRIPTION - REAR

Fig 1: Rear Wiper Arm



Courtesy of CHRYSLER GROUP, LLC

The rear wiper arm (3) is the rigid member located between the rear wiper motor output shaft (1) that protrudes through the liftgate glass above the center of the liftgate glass opening and the wiper blade (4) 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 snap features on the back end and two pivot pins on the end nearest the wiper blade fits over the wiper arm pivot end to conceal the wiper arm retaining 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, while an integral latch feature 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.

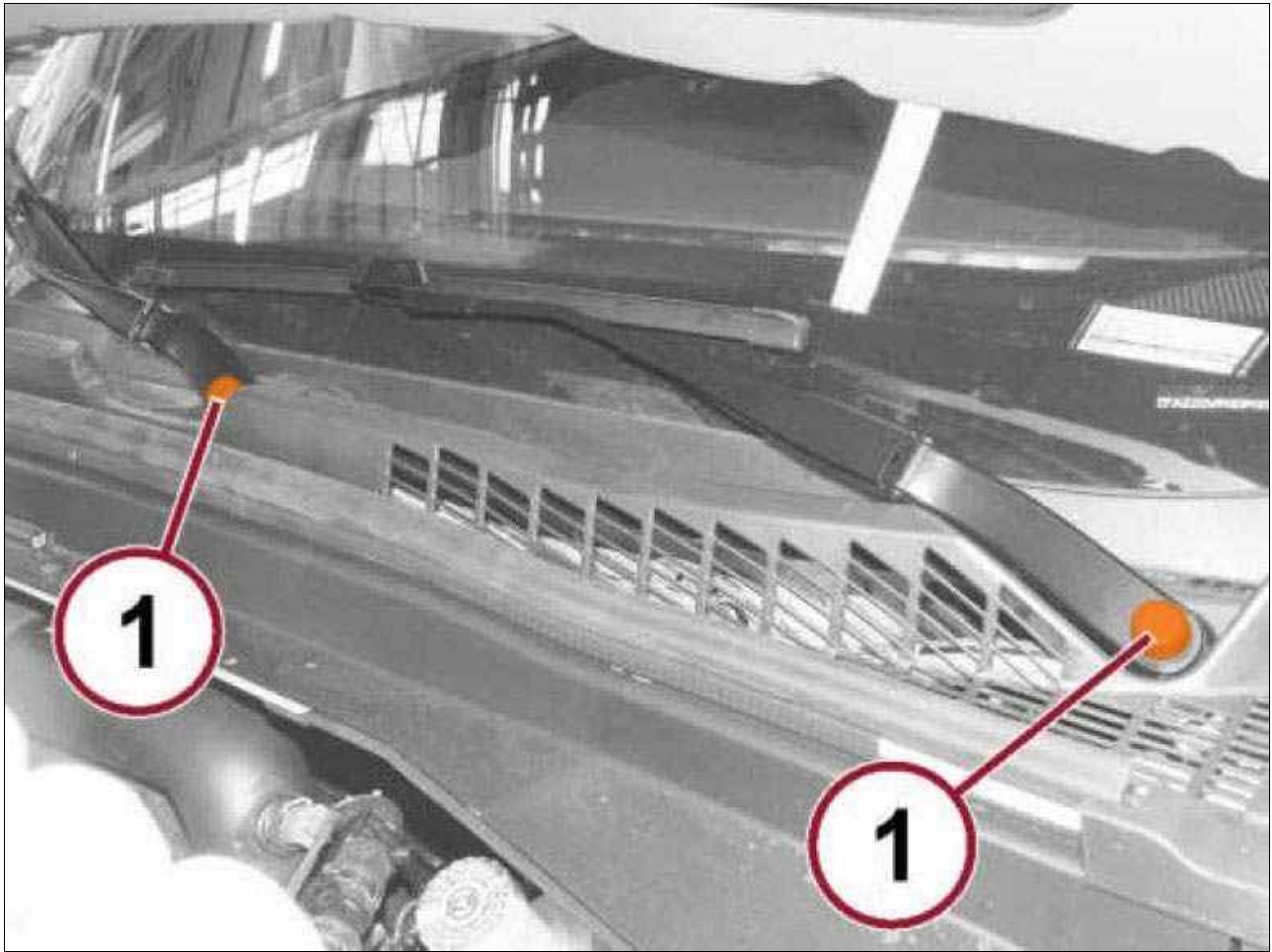
ARM, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WIPER ARM > OPERATION - REAR

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.

ARM, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - FRONT WIPER ARM > REMOVAL - FRONT

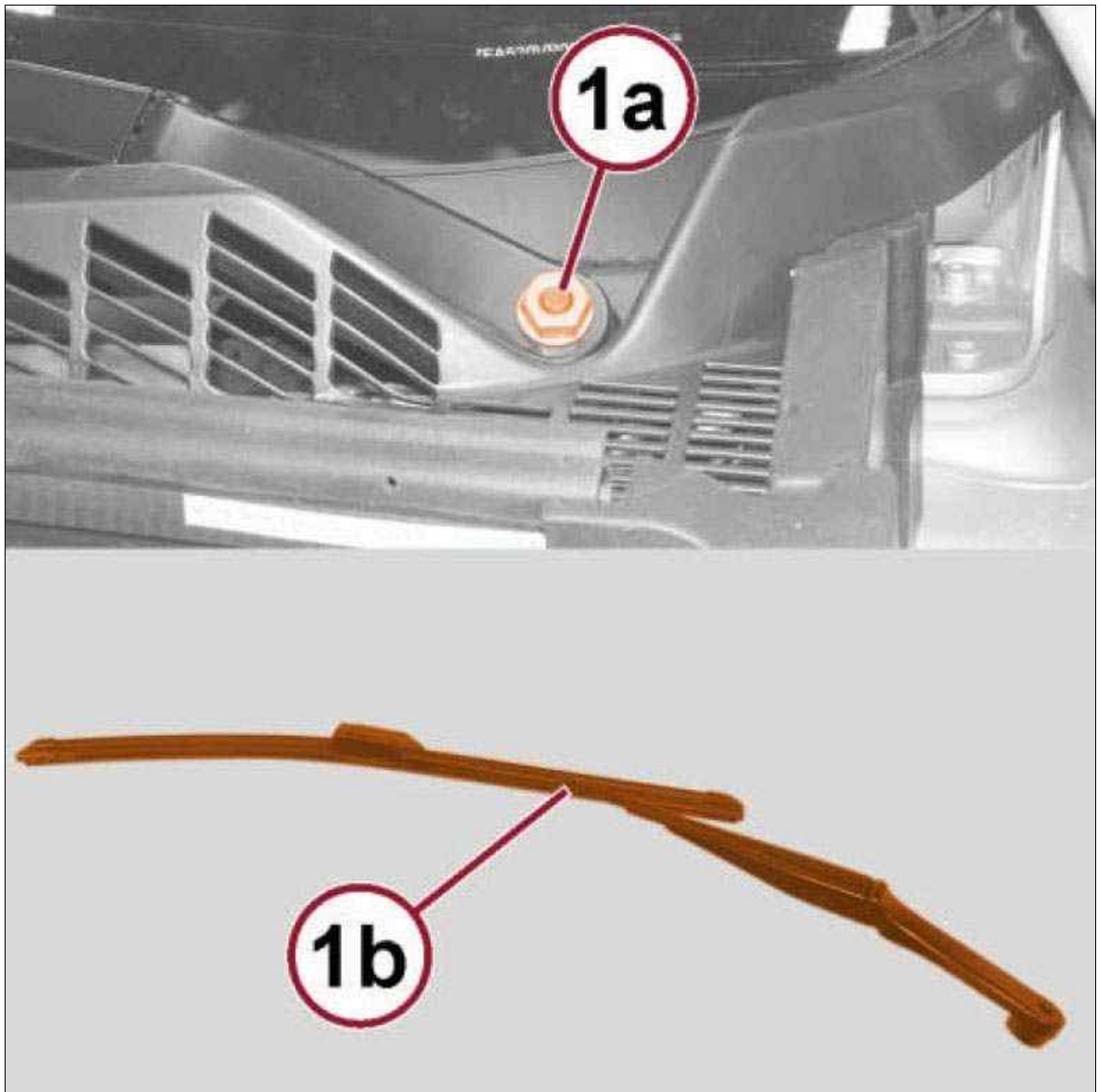
Fig 1: Plastic Nut Cap



Courtesy of CHRYSLER GROUP, LLC

1. Open the hood.
2. Carefully pry the plastic nut cap (1) off of the nut on the pivot end of the wiper arm.

Fig 2: Wiper Arm & Nut



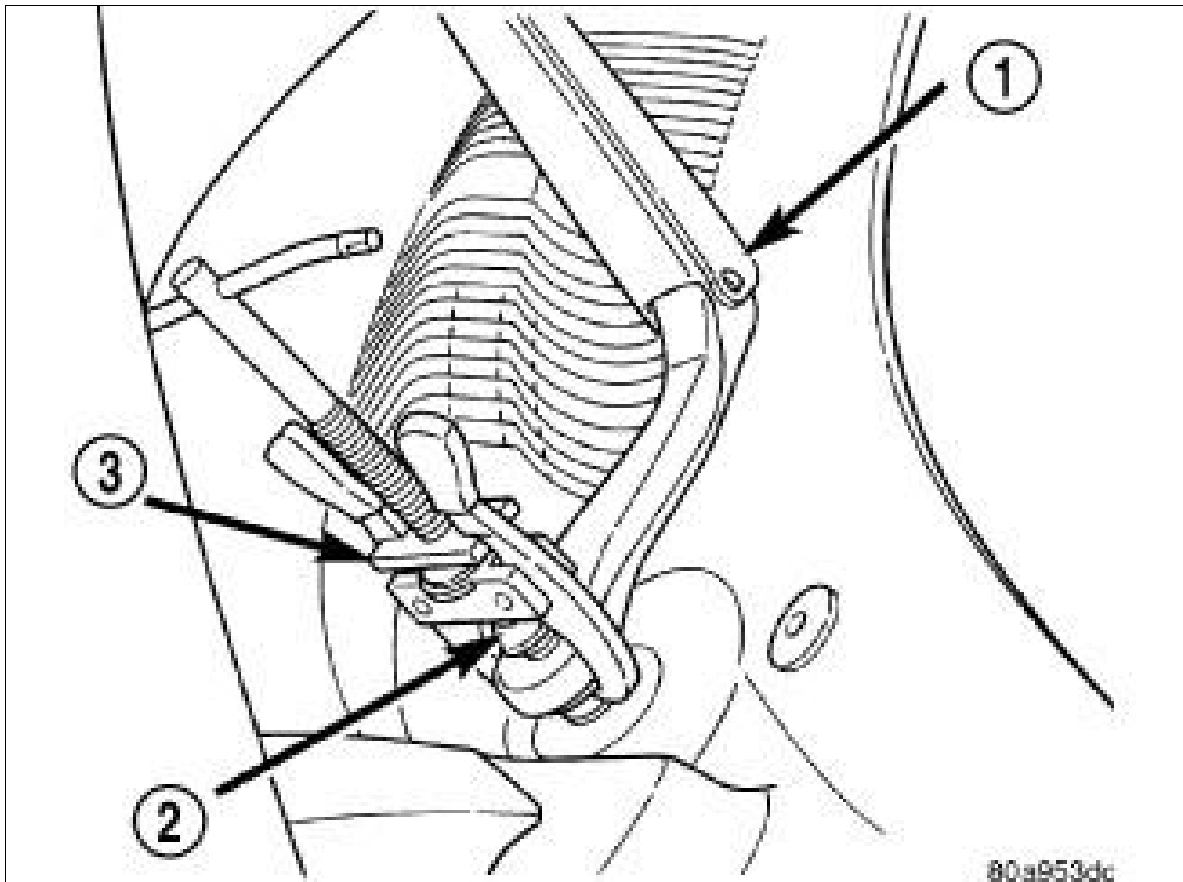
Courtesy of CHRYSLER GROUP, LLC

3. Remove the nut (1a) that secures the wiper arm (1b) to the wiper pivot shaft.
4. Lift the front wiper arm 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.
5. Use a slight rocking action to disengage the front wiper arm pivot end from the pivot shaft and remove the wiper arm.

 CAUTION:

The use of a battery terminal puller when removing the front wiper arm is NOT recommended except as a last resort, as this may damage the front wiper arm.

Fig 3: Disengaging Wiper Arm From Pivot Shaft

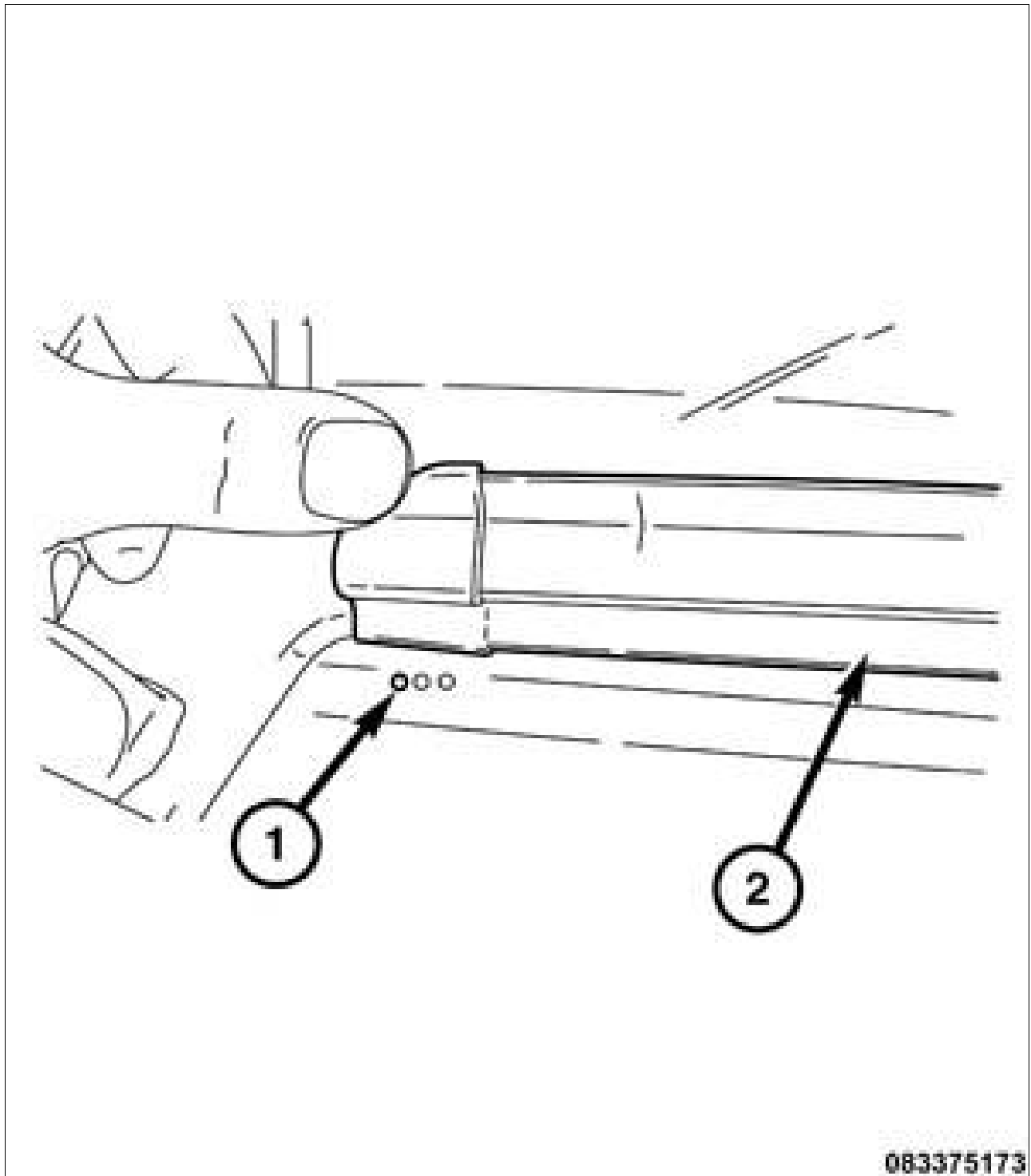


Courtesy of CHRYSLER GROUP, LLC

6. If the rocking action failed to free the wiper arm from the pivot shaft, use a suitable battery terminal puller (3) to disengage the wiper arm (1) from the pivot shaft (2).
7. Remove the wiper arm pivot end from the pivot shaft.

**ARM, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION -
FRONT WIPER ARM > INSTALLATION - FRONT**

Fig 1: Wiper Blade & Alignment Marks



Courtesy of CHRYSLER GROUP, LLC



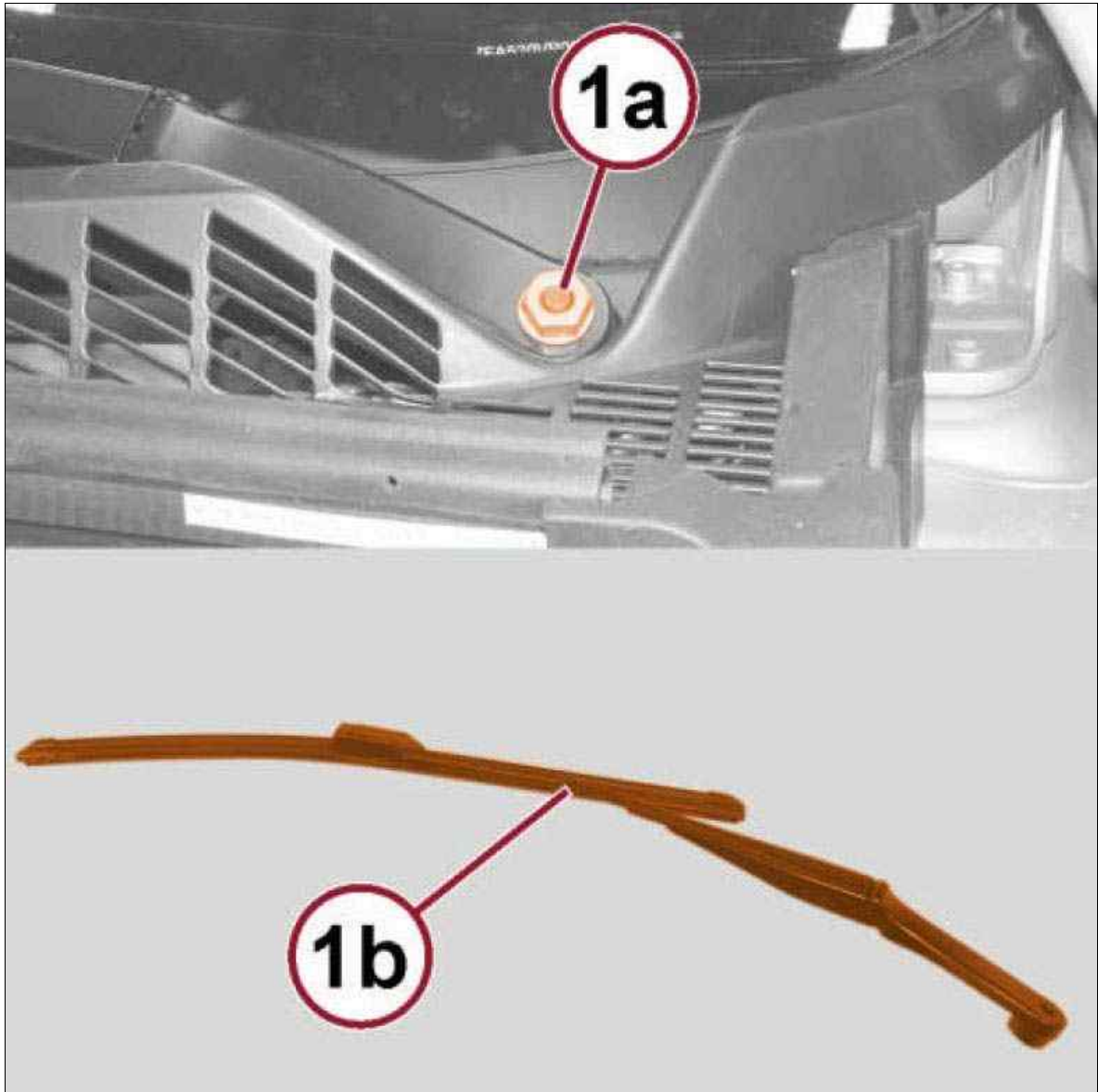
NOTE:

Be certain that the wiper motor is in the park position before attempting to install the front wiper arms. Transition the status of the ignition to On and move the right multifunction switch control knob to its front wiper Off position. If the wiper pivots move, wait until they stop moving, then transition the ignition status back to Off. The front wiper motor is now in its park

position.

1. The front wiper arms 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 end onto the wiper pivot shaft so that the lower edge of the wiper blade (2) is aligned with the wiper alignment marks (1), which are etched marks near the lower margin of the windshield.

Fig 2: Wiper Arm & Nut

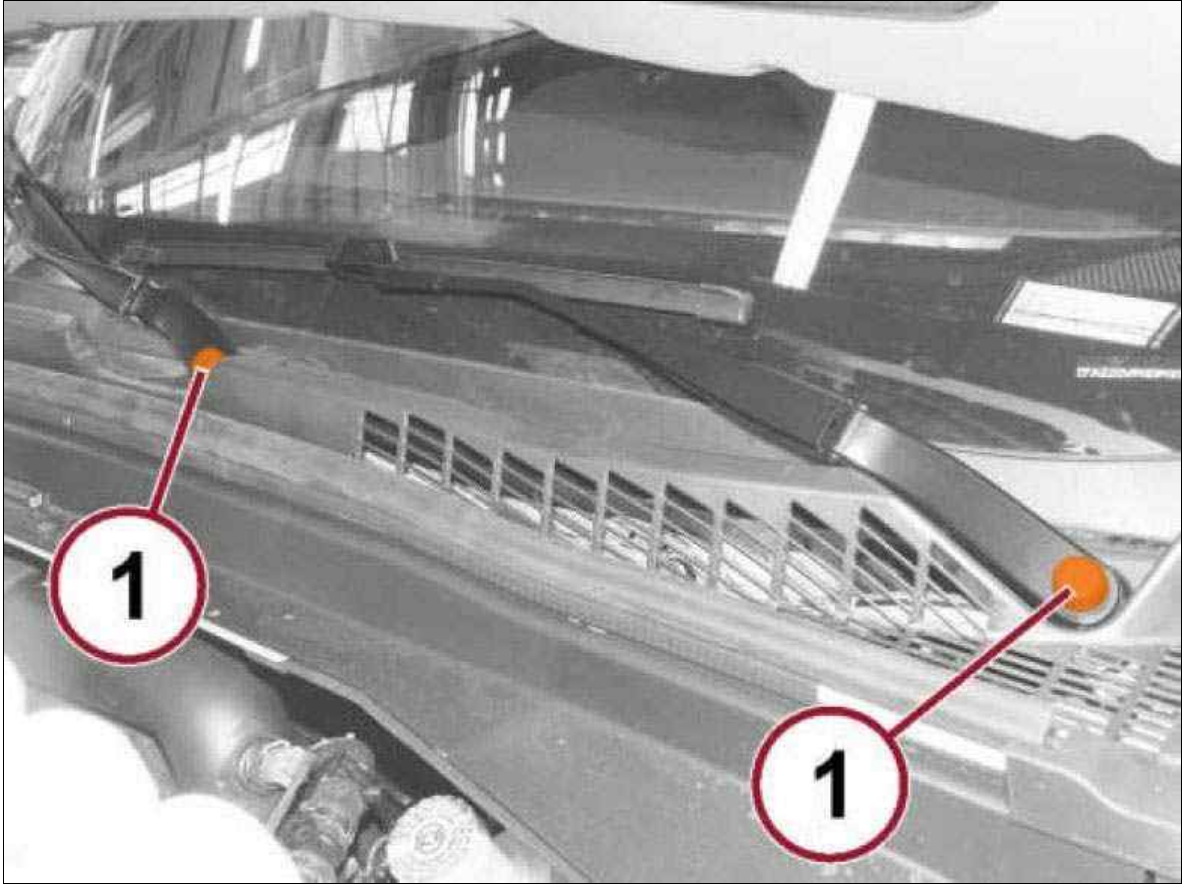


Courtesy of CHRYSLER GROUP, LLC

2. Once the wiper blade is aligned, lift the wiper arm (1b) 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 (1b) that secures the wiper arm to the pivot shaft. Tighten the nut to the proper SPECIFICATIONS .
4. Wet the windshield glass, then operate the front wipers. Turn the wiper switch to the Off

position, then check for the correct wiper arm alignment position and readjust as required.

Fig 3: Plastic Nut Cap

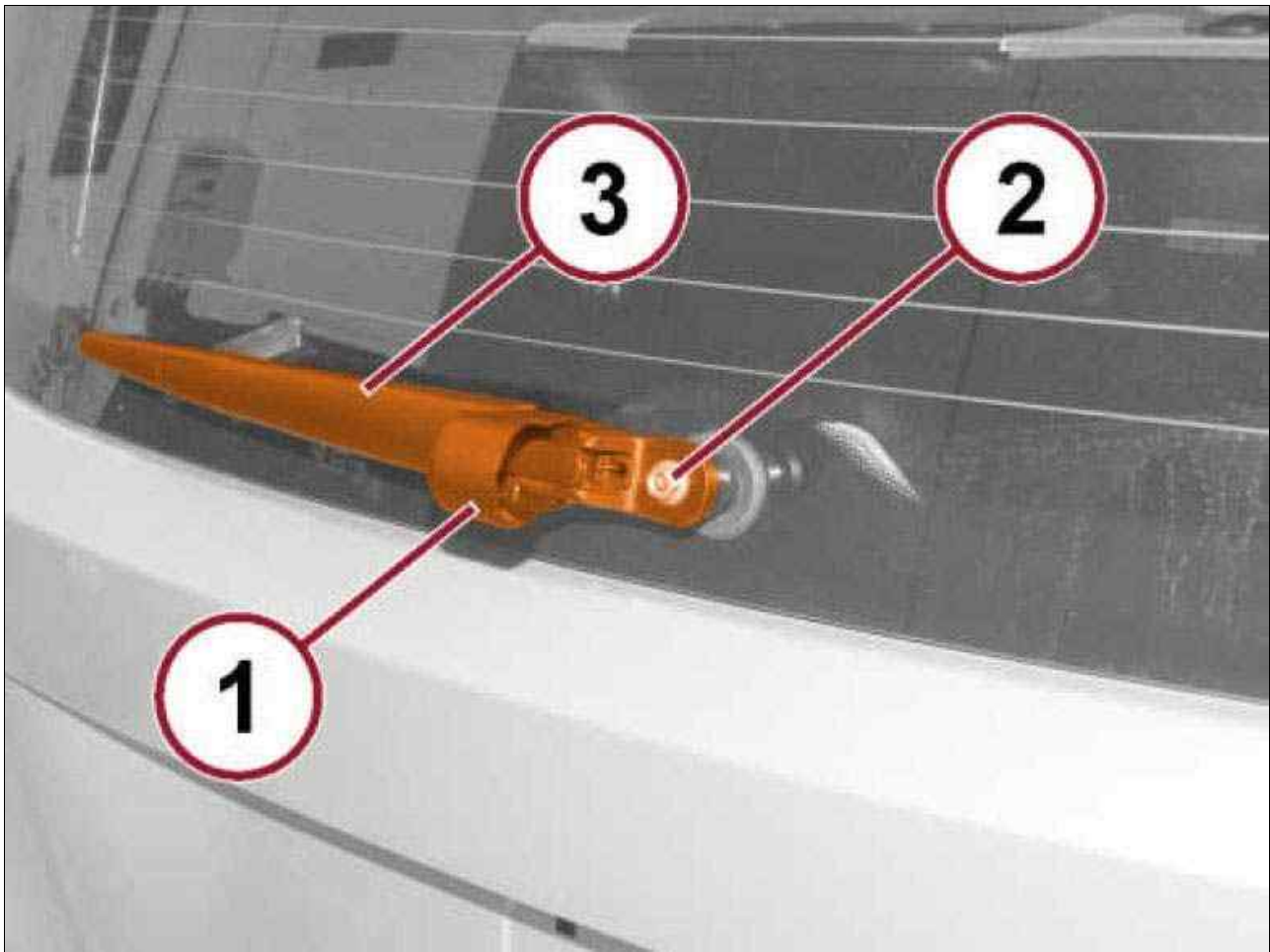


Courtesy of CHRYSLER GROUP, LLC

5. Install the plastic nut cap (1) onto the wiper arm pivot nut.

**ARM, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION -
REAR WIPER ARM > REMOVAL - REAR**

Fig 1: Rear Wiper Arm, Plastic Nut Cover & Nut



Courtesy of CHRYSLER GROUP, LLC

1. Insert your fingertips under the lower edge at the back of the molded plastic nut cover (1), then pull upward to unsnap and swing the cover off of the pivot end of the wiper arm (3).
2. Remove the nut (2) that secures the wiper arm to the rear wiper motor output shaft.

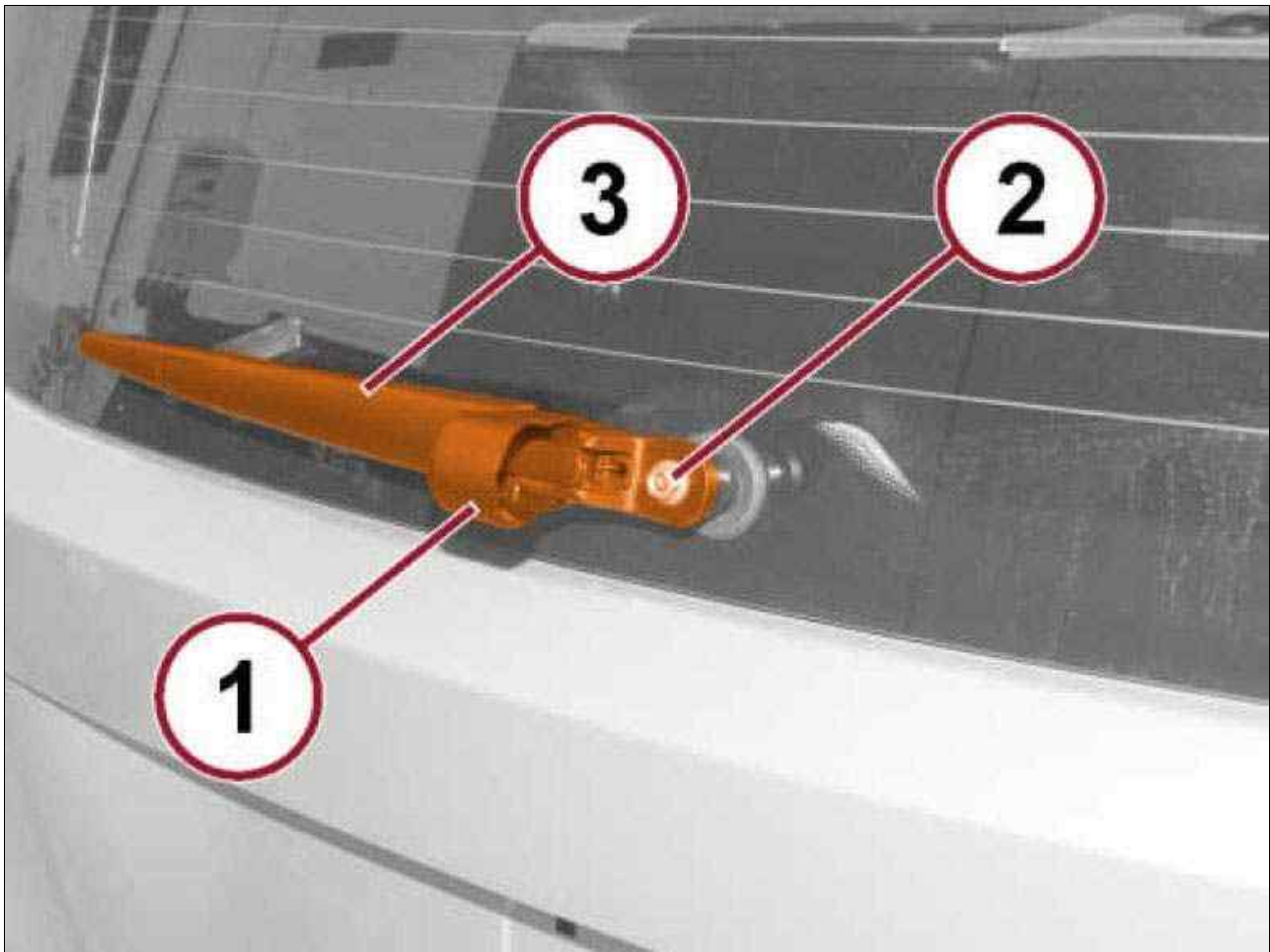
 CAUTION:

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 motor output shaft and remove the wiper arm.

**ARM, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION -
REAR WIPER ARM > INSTALLATION - REAR**

Fig 1: Rear Wiper Arm, Plastic Nut Cover & Nut



Courtesy of CHRYSLER GROUP, LLC



NOTE:

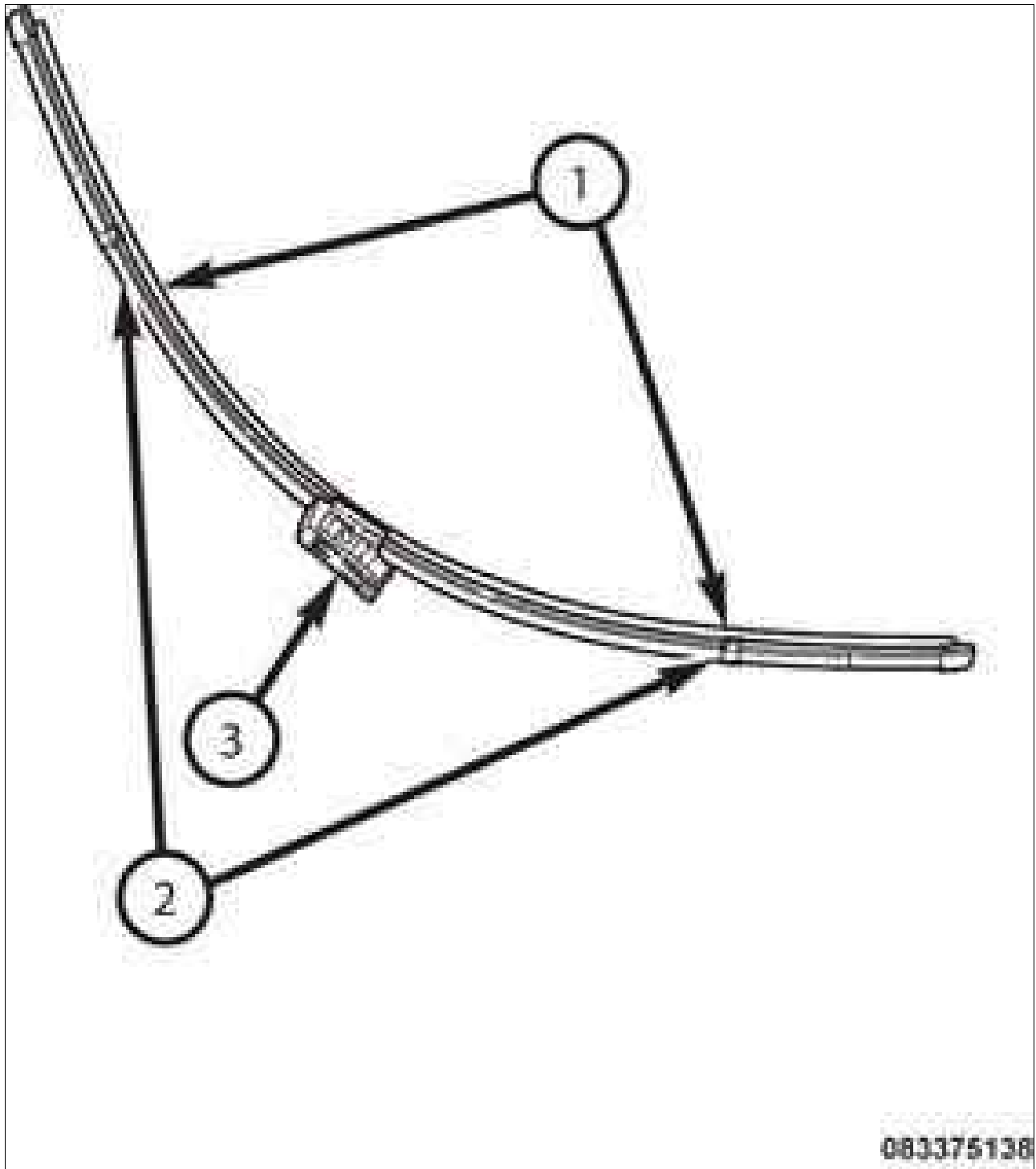
Be certain that the rear wiper motor is in the park position before attempting to install the rear wiper arm. Transition the status of the ignition to On and move the rear wiper switch to its Off position. If the wiper motor output shaft moves, wait until it stops moving, then transition the ignition back to Off. The wiper motor is now in its park position.

1. The rear wiper arm (3) 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 motor output shaft so that the tip of the wiper blade is aligned with the wiper alignment mark, which is a horizontal **T** mark located within the upper margin of the blackout area at 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 (2) that secures the rear wiper arm to the output shaft. Tighten the nut to the proper SPECIFICATIONS .

4. Fold and snap the molded plastic nut cover (1) down over the nut on the pivot end of the rear wiper arm.
5. Wet the liftgate 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 AND OPERATION > DESCRIPTION AND OPERATION
- FRONT WIPER BLADE > DESCRIPTION - FRONT

Fig 1: Wiper Blade, Wiper Arm & Integral Latching Pivot Block



Courtesy of CHRYSLER GROUP, LLC

This vehicle is equipped with frameless (also known as flat or beam) front wiper blades. Each front wiper blade is secured by an integral latching pivot block (3) to the receptacle formation on the tip of each front 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:

- **Element (1)** - The wiper element or squeegee is the resilient rubber member of the wiper blade that contacts the glass.

- **Flexor (2)** - The flexor is an integrated component in the frameless wiper blade running along the entire length of the wiper element.

The front wiper blades for this vehicle are unequal length and are not interchangeable. The right blade is 50 centimeters (19.69 inches) long and the left blade is 55 centimeters (21.65 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.

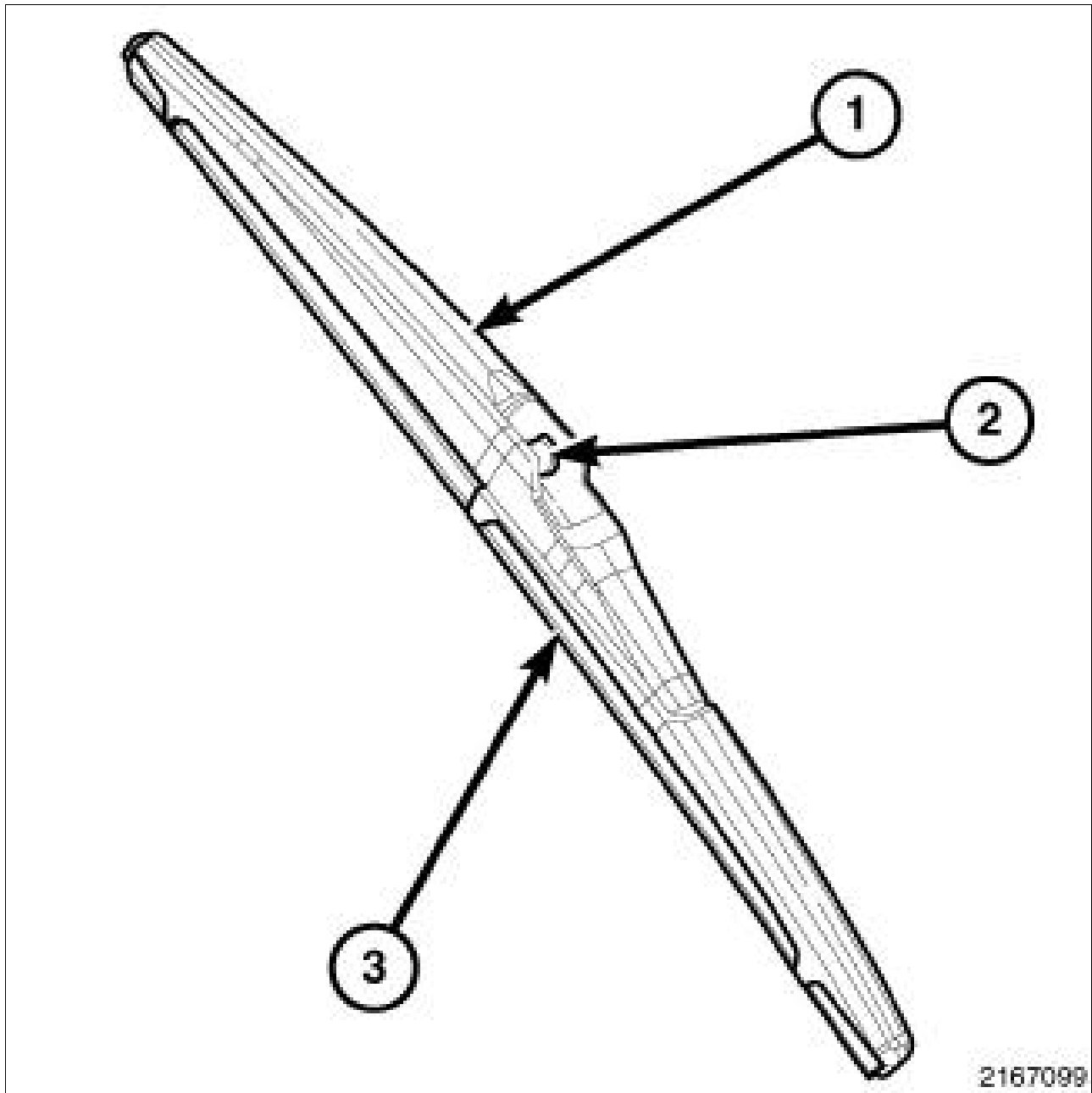
BLADE, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - FRONT WIPER BLADE > OPERATION - FRONT

The front wiper blades are moved back and forth across the glass by the front wiper arms when the wipers are being operated. The wiper blade flexor is the flexible member secured the length of the wiper blade element that 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 flexor 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 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.

BLADE, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WIPER BLADE > DESCRIPTION - REAR

Fig 1: Wiper Blade, Wiper Arm & Integral Pivot Pin



Courtesy of CHRYSLER GROUP, LLC

The rear wiper blade is secured by an integral pivot pin (2) to a receptacle near 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 26.00 centimeters (10.24 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.

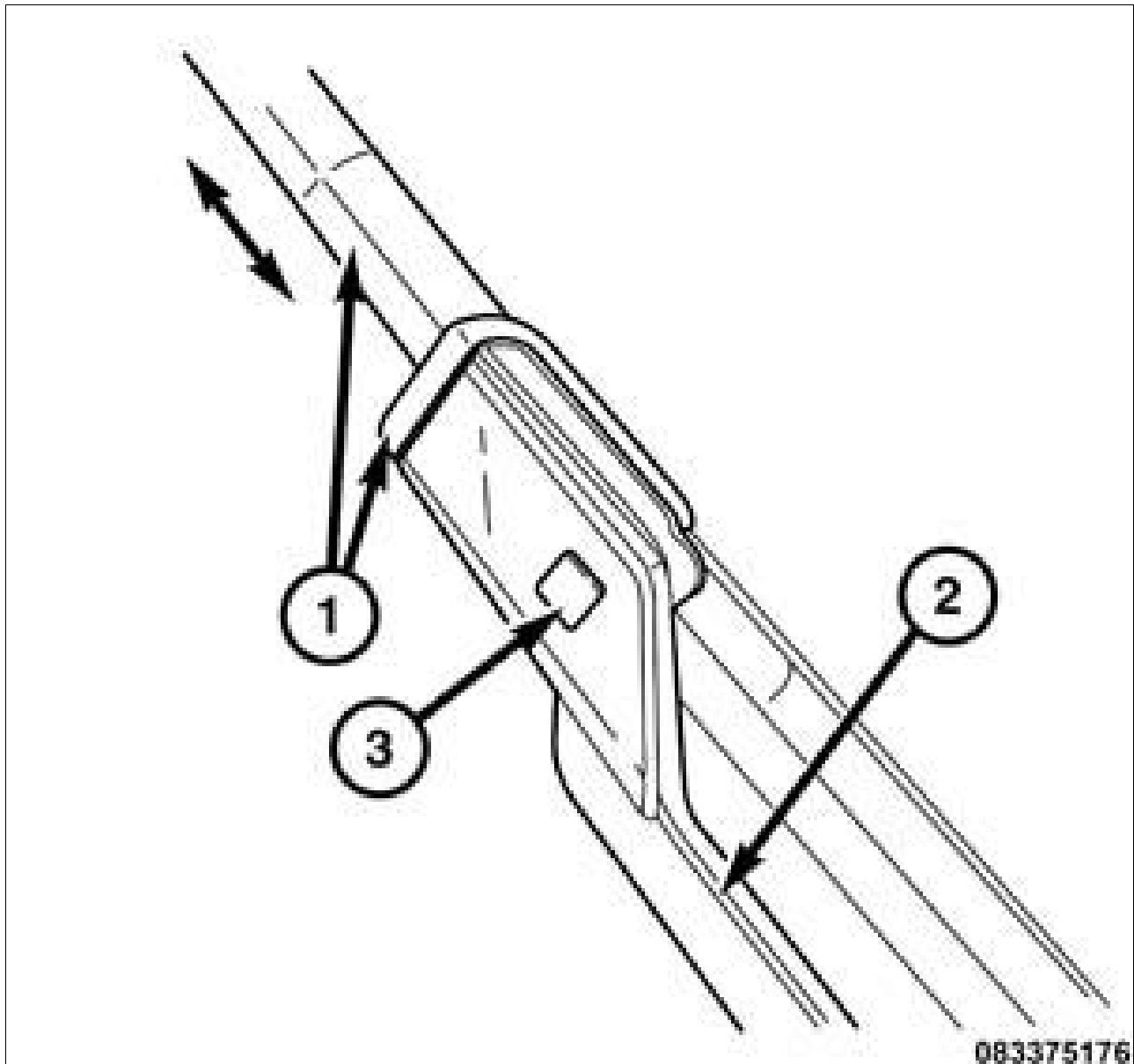
BLADE, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WIPER BLADE > OPERATION - REAR

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.

BLADE, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - FRONT WIPER BLADE > REMOVAL - FRONT

Fig 1: Tab, Wiper Arm & Element



Courtesy of CHRYSLER GROUP, LLC



CAUTION:

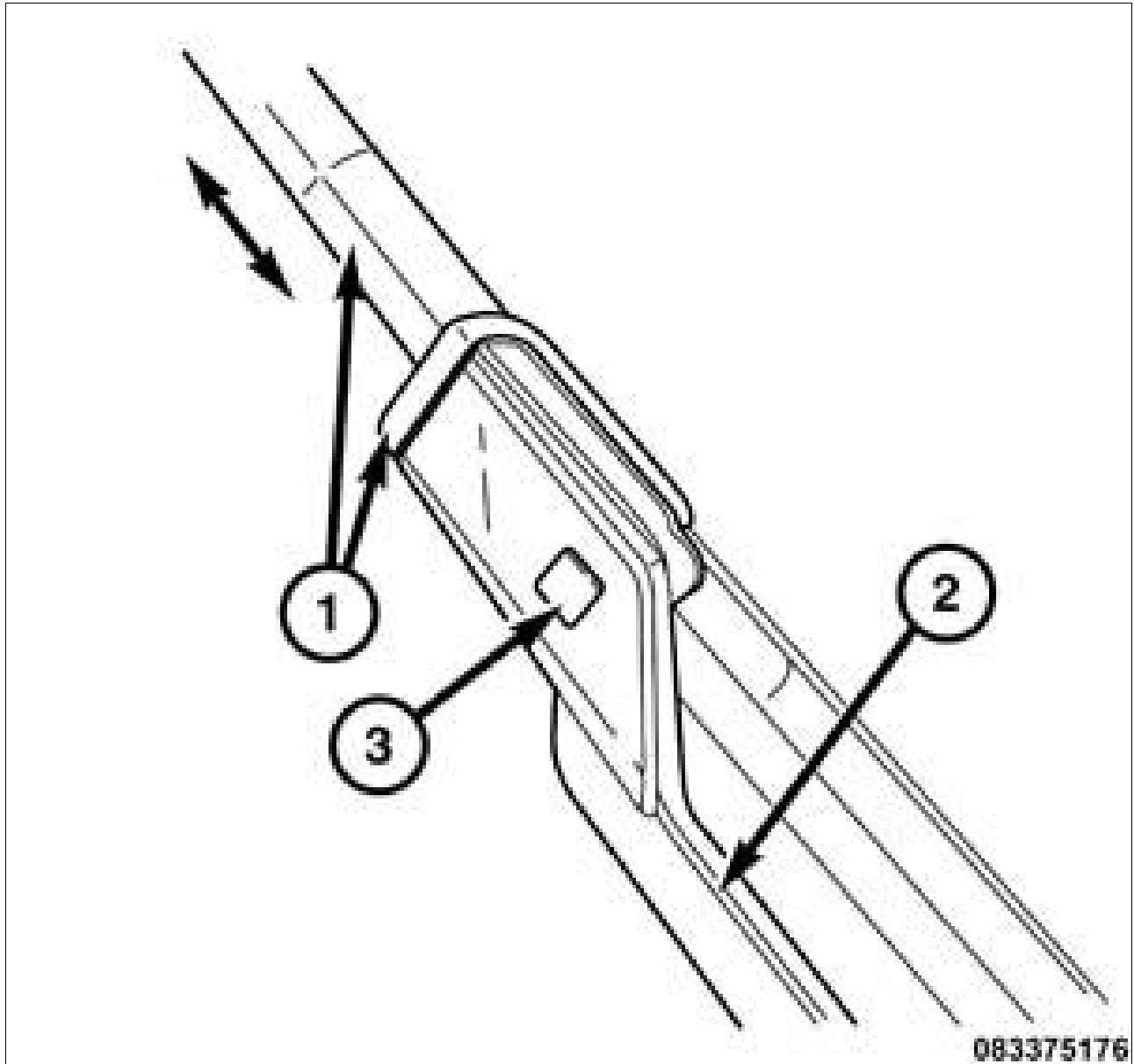
Do not allow the wiper arm to spring back against the glass without the wiper blade in place or the glass may be damaged.

1. Lift the wiper arm (2) to raise the wiper blade and element (1) 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 (3) on the pivot block at the tip of the arm downward (toward the wiper element and away from the wiper arm) and slide the blade away from the tip of the arm far enough to disengage the pivot block from the receptacle formation on the end of the arm.

3. Gently lower the tip of the wiper arm onto the glass.

BLADE, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - FRONT WIPER BLADE > INSTALLATION - FRONT

Fig 1: Tab, Wiper Arm & Element



Courtesy of CHRYSLER GROUP, LLC



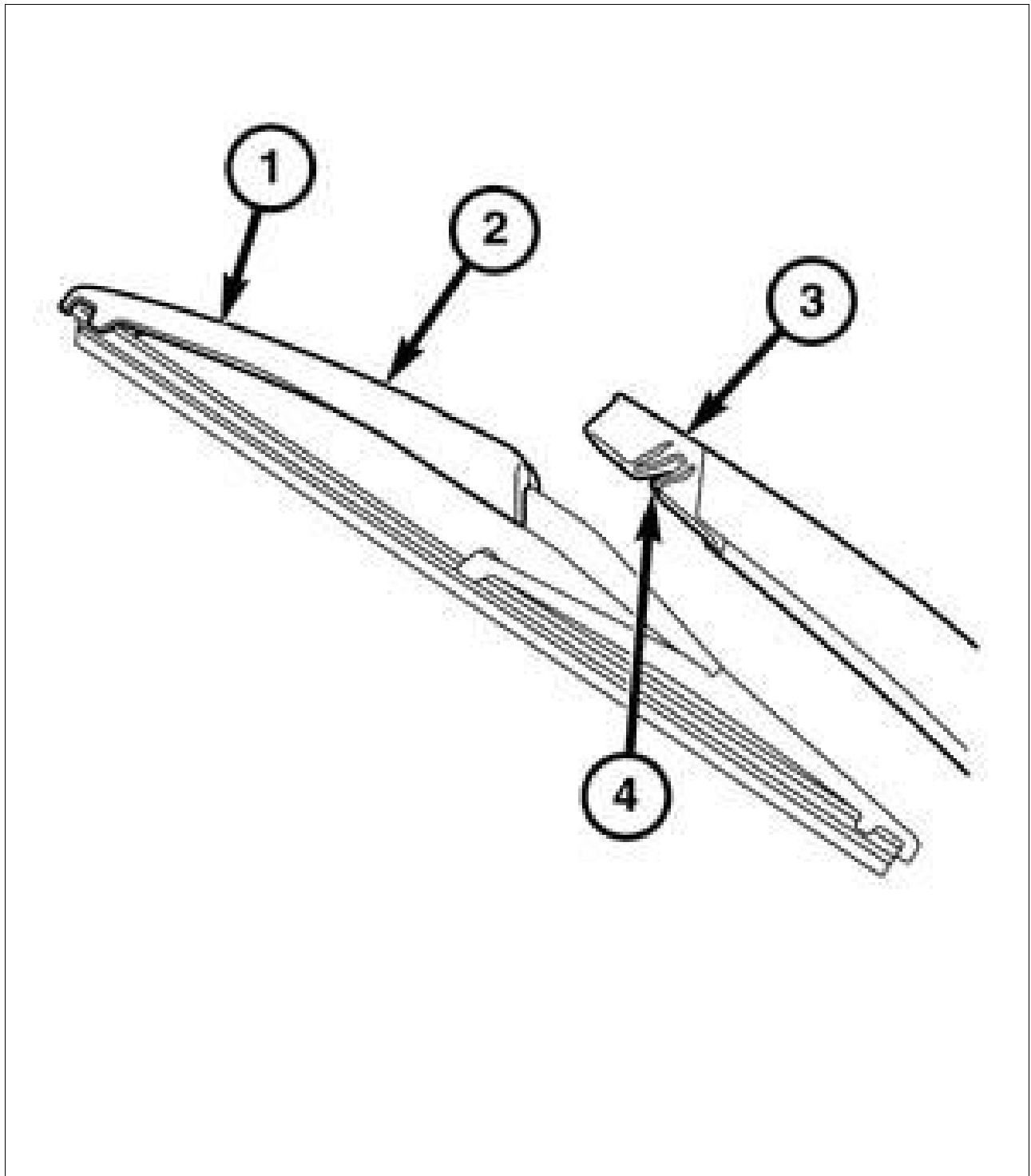
CAUTION:

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

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 (1) near the receptacle formation on the tip of the wiper arm with the latch side of the blade pivot block oriented towards the end of the wiper arm that is nearest to the wiper pivot.
3. Push the wiper blade pivot block into the wiper arm receptacle until the latch tab (3) snaps into place with an audible click.
4. Gently lower the wiper blade and element onto the glass.

**BLADE, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION -
REAR WIPER BLADE > REMOVAL - REAR**

Fig 1: Blade Pivot Pin, Wiper Arm & Blade



Courtesy of CHRYSLER GROUP, LLC

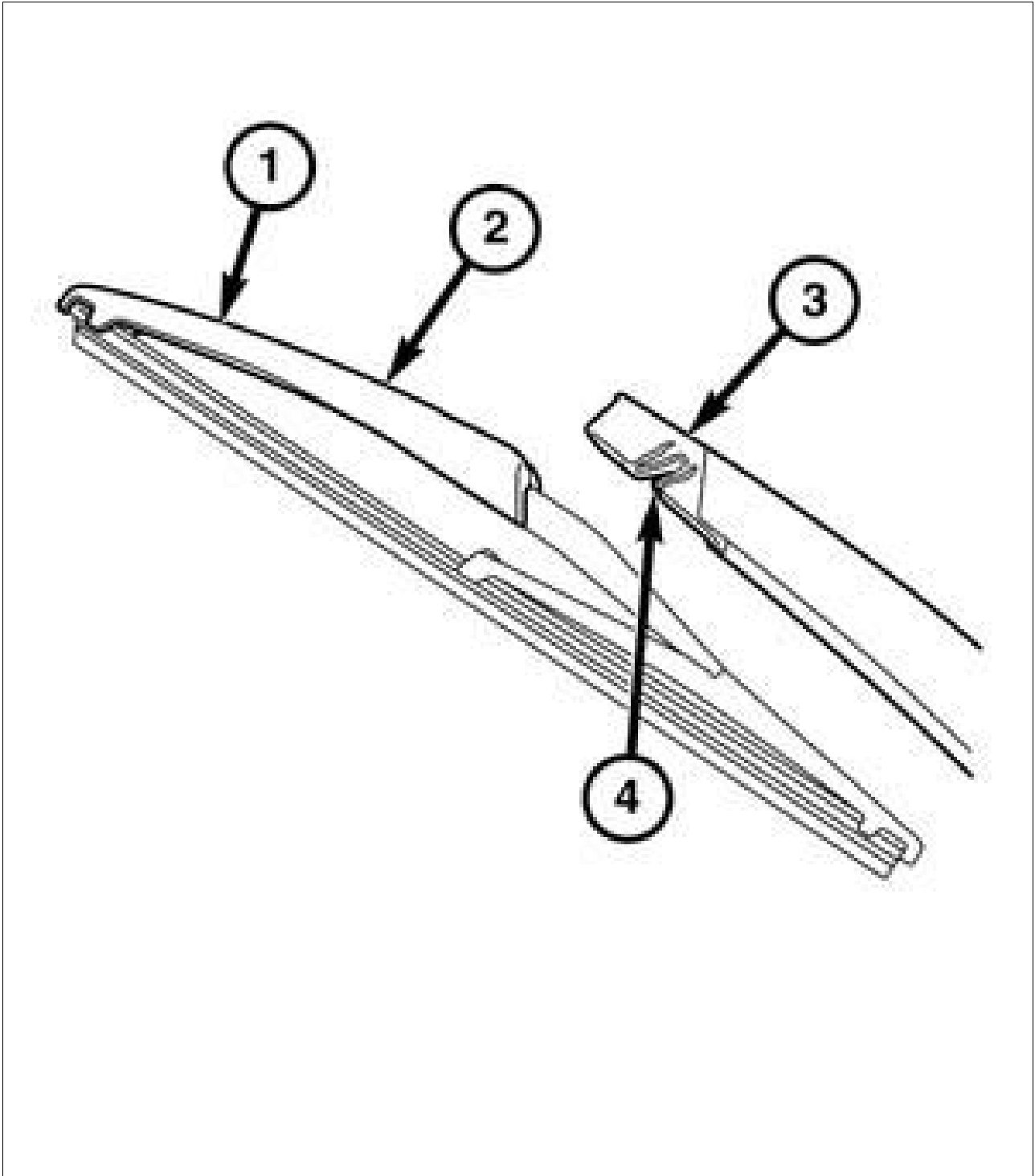
1. Lift the rear wiper arm to raise the wiper blade and element off of the liftgate glass.
2. To remove the wiper blade (1) from the wiper arm (3), grasp the end of the blade nearest to the motor output shaft, then rotate it out from under the arm far enough to access the blade pivot pin (2) engaged within the latch features (4) from under the end of the arm.
3. Using a small screwdriver or another suitable tool, carefully pry the wiper blade pivot pin to

unsnap it from the latch features of the wiper arm.

4. Gently lower the tip of the wiper arm onto the glass.

BLADE, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - REAR WIPER BLADE > INSTALLATION - REAR

Fig 1: Blade Pivot Pin, Wiper Arm & Blade



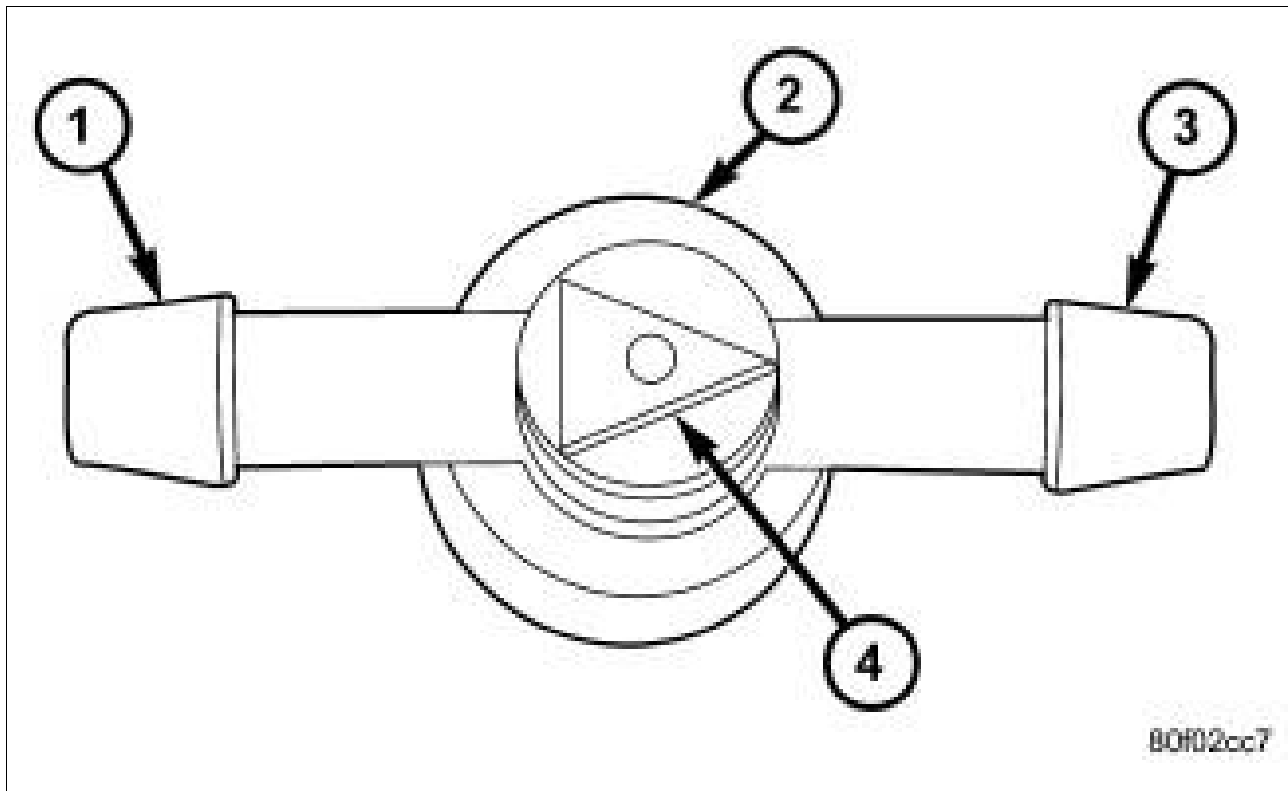
1. Lift the tip of the rear wiper arm (3) off of the liftgate glass.
2. Position the rear wiper blade (1) with the pivot pin (2) aligned with the opening of the latch features (4) under the tip of the wiper arm.
3. Using hand pressure, press the wiper blade pivot pin firmly and evenly into the wiper arm latches until it snaps into place.
4. Lower the wiper blade onto the glass.

CHECK VALVE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION - FRONT

Diaphragm-type front washer system check valves are standard equipment in this vehicle. The check valves for the front washer system are integral to their respective front washer nozzles. Refer to NOZZLE, WASHER, DESCRIPTION AND OPERATION .

CHECK VALVE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION - REAR

Fig 1: Check Valve



Courtesy of CHRYSLER GROUP, LLC

The rear check valve (2) connects the liftgate spoiler washer hose to the supply washer hose and is located near the upper liftgate header within the spoiler. The check valve consists of a molded plastic

valve body with a raised arrowhead (4) molded into its center section indicating the direction of the flow through the valve. A barbed hose nipple (1 and 3) is formed on each side of the raised center section of the valve body. Within the check valve body, a small diaphragm is held against the lip of an integral sump well by a small plastic piston and a coiled spring.

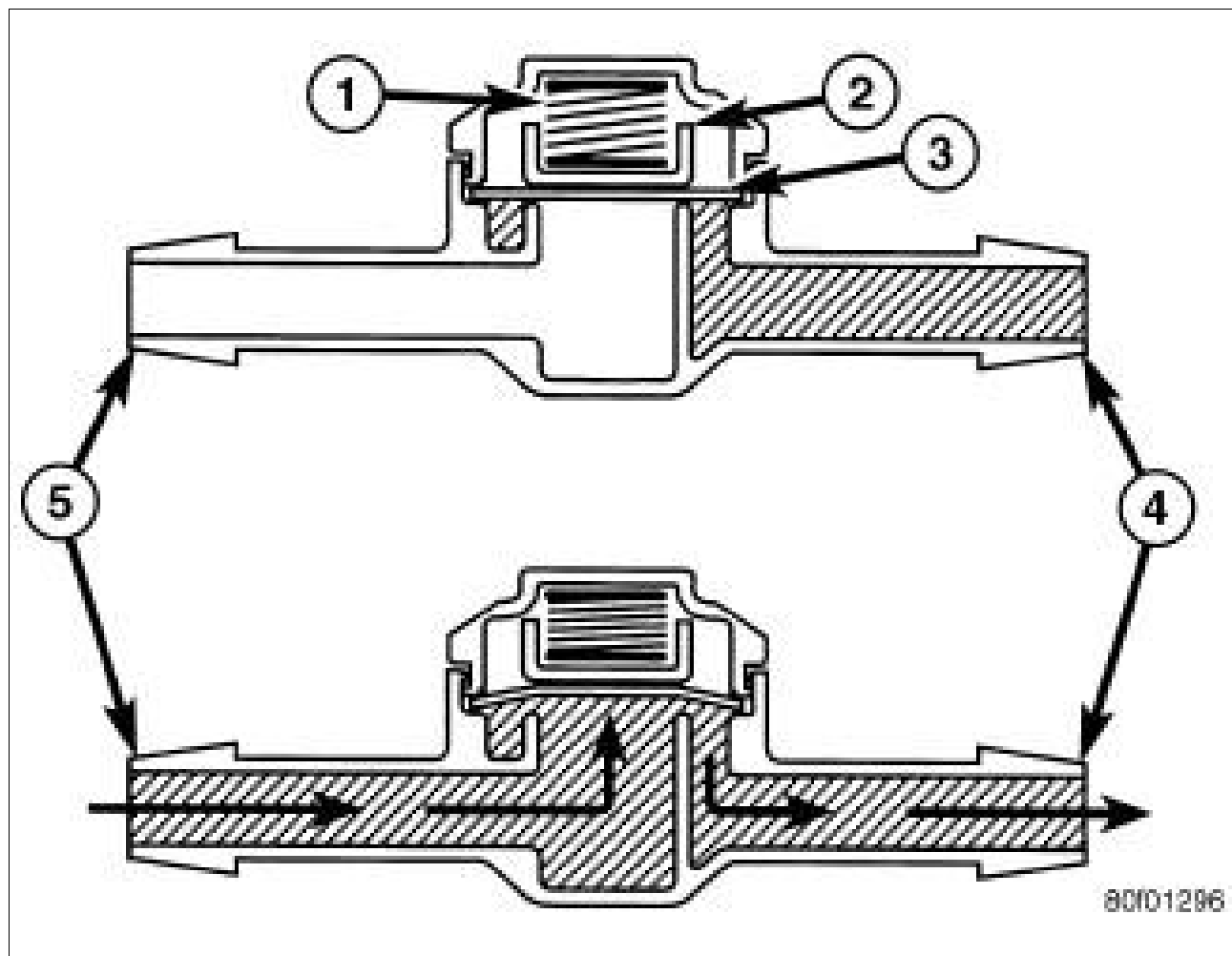
The rear check valve cannot be adjusted or repaired and, if ineffective or damaged, it must be replaced.

CHECK VALVE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION - FRONT

Diaphragm-type front washer system check valves are standard equipment in this vehicle. The check valves for the front washer system are integral to their respective front washer nozzles. Refer to NOZZLE, WASHER, DESCRIPTION AND OPERATION .

CHECK VALVE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION - REAR

Fig 1: Identifying Check Valve

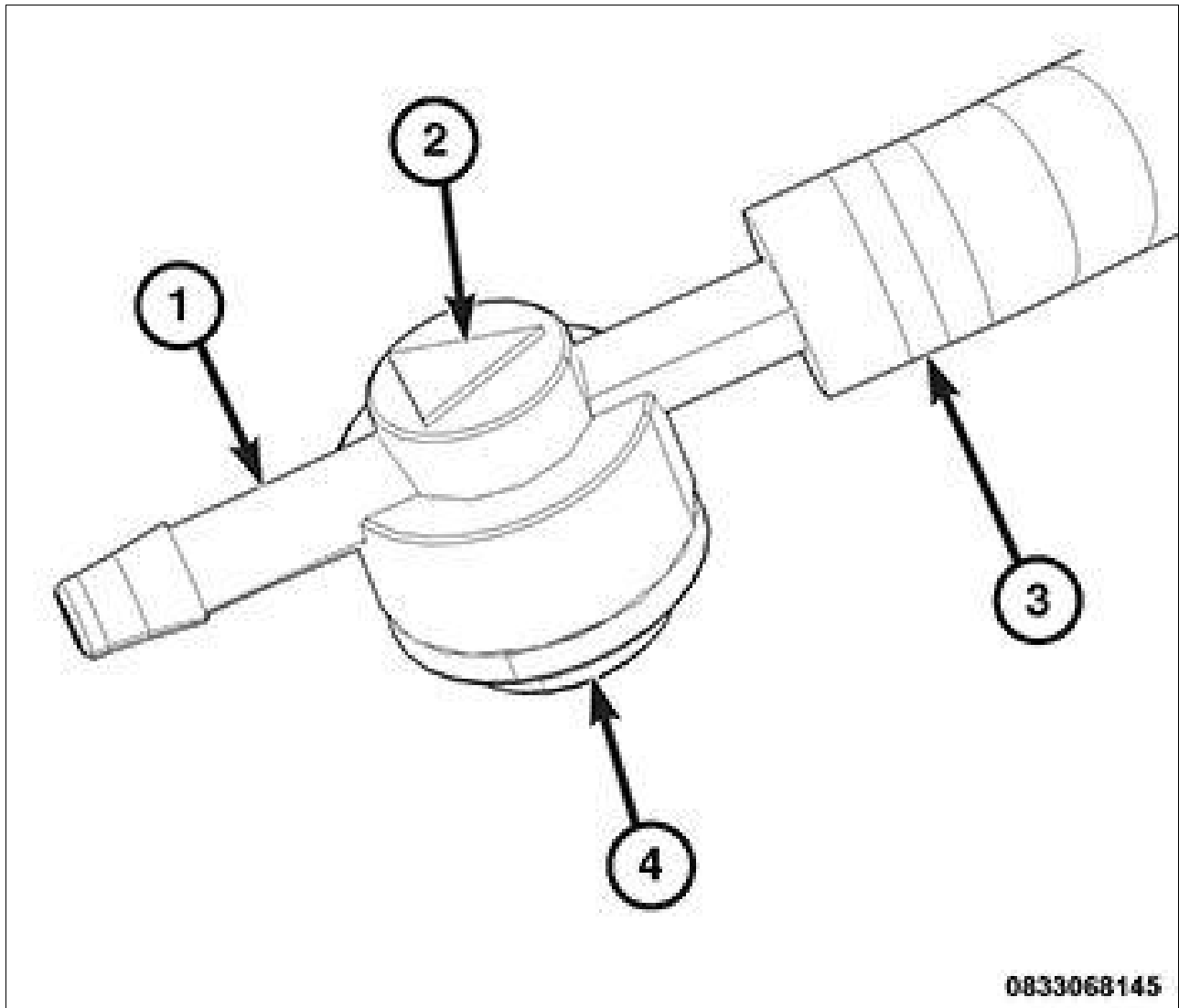


The rear check valve provides more than one function in this application. It prevents washer fluid from draining out of the rear washer supply hoses back to the washer reservoir. This drain-back would result in a lengthy delay from when the rear washer switch is actuated until washer fluid was dispensed through the rear washer nozzle, because the washer pump would have to refill the rear 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 rear check valve prevents washer fluid from siphoning out through the rear washer nozzle after the rear washer system is turned Off.

When the washer pump pressurizes and pumps washer fluid from the reservoir through the rear 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 rear 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 rear washer plumbing is prevented.

CHECK VALVE, WASHER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL - REAR

Fig 1: Rear Check Valve, Barbed Nipple & Water Supply Hose

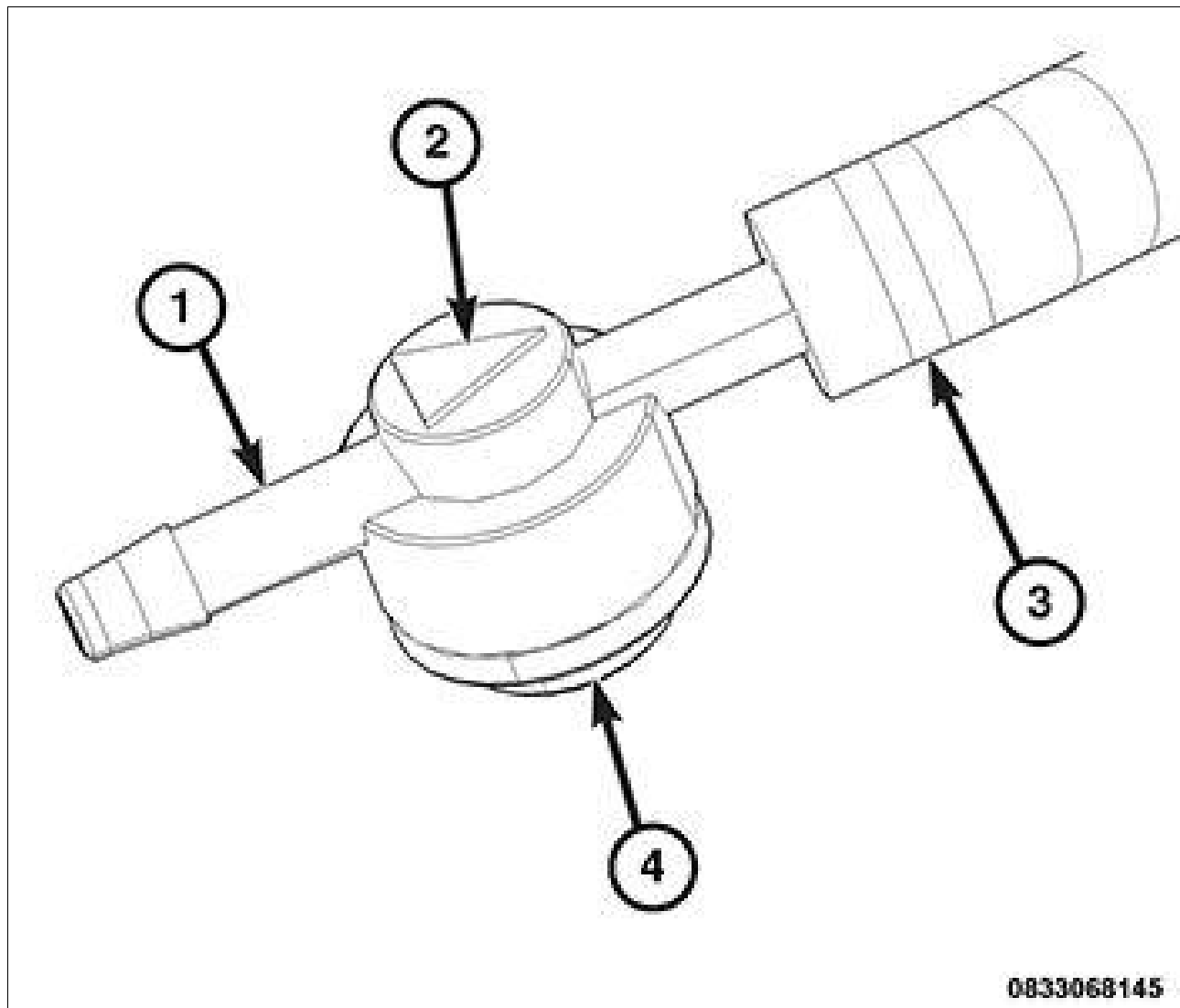


Courtesy of CHRYSLER GROUP, LLC

1. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable
2. Remove the spoiler from the outside of the upper liftgate header. Refer to SPOILER, DECKLID, REMOVAL AND INSTALLATION .
3. Pull the spoiler away from the upper liftgate header far enough to access and disconnect the washer supply hose from the barbed nipple (1) of the rear check valve (4).
4. Disconnect the liftgate washer supply hose (3) from the other barbed nipple of the rear check valve and remove the check valve.

CHECK VALVE, WASHER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION - REAR

Fig 1: Rear Check Valve, Barbed Nipple & Water Supply Hose



Courtesy of CHRYSLER GROUP, LLC

1. Connect the spoiler washer supply hose (3) to the barbed outlet nipple of the rear check valve (4). Be certain that the raised arrow (2) that indicates the flow direction on the center section of the valve is pointed toward the spoiler washer supply hose.
2. Position the liftgate spoiler close enough to the upper liftgate header to access and connect the washer supply hose to the inlet barbed nipple (1) of the rear check valve.
3. Install the spoiler to the outside of the upper liftgate header. Refer to SPOILER, DECKLID, REMOVAL AND INSTALLATION .
4. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector.

HOSES AND TUBES, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - FRONT WASHER HOSES AND TUBES > DESCRIPTION - FRONT

The front washer plumbing consists of small diameter rubber hoses that are routed along with the rear washer plumbing from the washer reservoir located at the left front corner of the engine compartment. Both reservoir hoses are attached to their respective front or rear outlet nipple of the washer pump/motor unit near the bottom of the reservoir. The front hose is then routed up into the engine compartment. The engine compartment hose is routed along the left side of the inner fender to the hood panel.

At the hood panel the front washer hose (1b) is routed through several retainers (1a) to a wye fitting on the inner hood panel reinforcement. The two front nozzle supply hoses are attached to the wye fitting and routed on the underside of the inner hood panel reinforcement to the two front washer nozzles (2).

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

HOSES AND TUBES, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - FRONT WASHER HOSES AND TUBES > 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 plumbing or a wire harness containing washer plumbing, it must be routed away from hot, sharp, or moving parts; and, sharp bends that might pinch the plumbing must be avoided.

HOSES AND TUBES, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WASHER HOSES AND TUBES > DESCRIPTION - REAR

The rear washer plumbing consists of small diameter rubber hoses that are routed along with the front washer plumbing from the washer reservoir located at the left front corner of the engine compartment. Both reservoir hoses are attached to their respective front or rear outlet nipple of the washer pump/motor unit near the bottom of the reservoir. The rear hose is then connected to the body washer hose that is sheathed within molded plastic convolute tubing for protection and routed within the body wire harness along the left side of the inner fender to the dash panel.

The body wire harness containing the rear washer hose passes through a rubber grommet and a clearance hole in the dash panel into the passenger compartment. Within the passenger compartment, the body wire harness is routed along the left inner sill to the C-pillar, then up over the left rear wheel house to the D-pillar. The body rear hose is contained within and routed from the left cowl side inner panel to the liftgate with the body wire harness. The rear hose is then routed separately to the rear washer nozzle in the spoiler trim above the center of the liftgate glass opening.

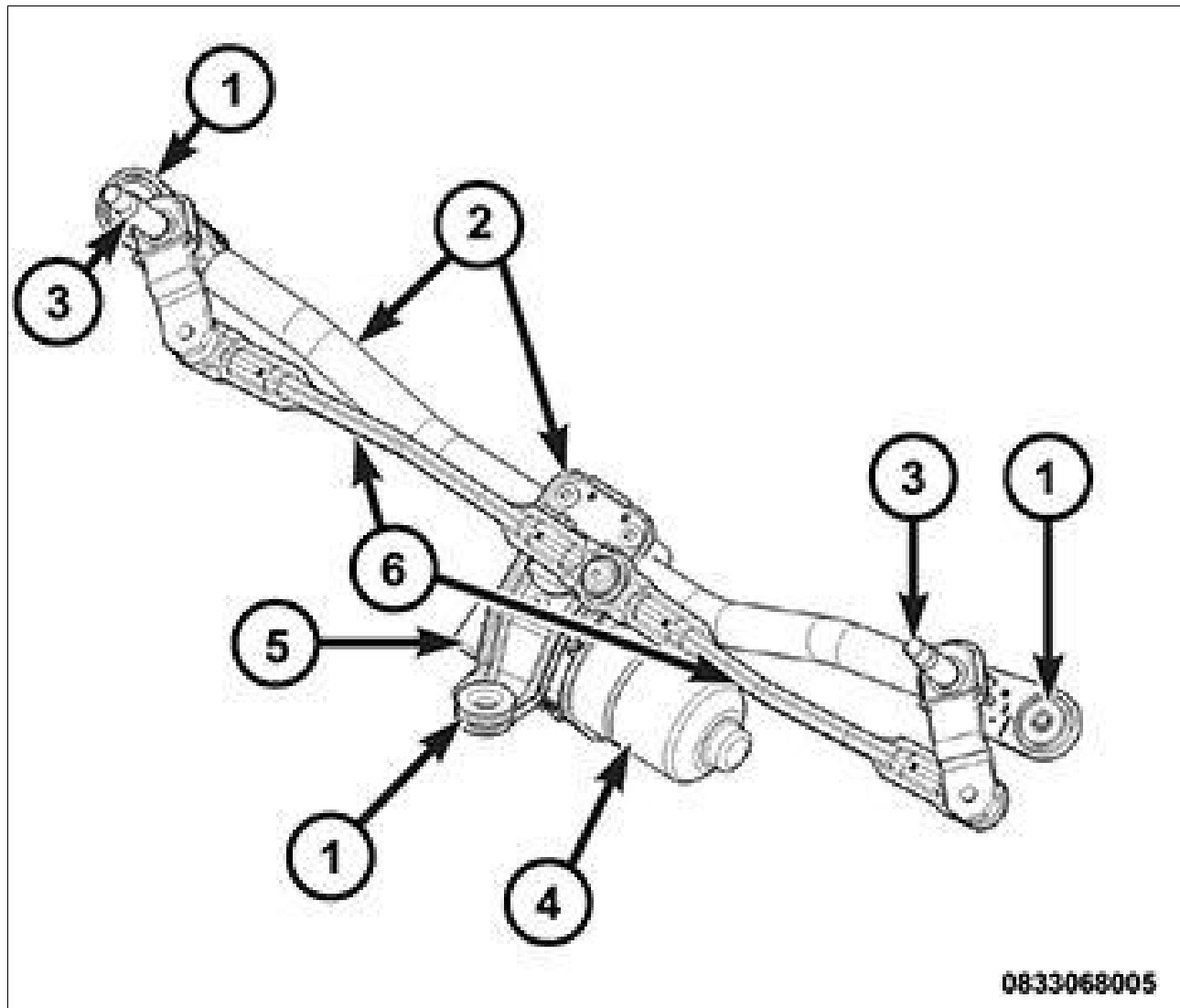
Washer hose or tube is available for service only as roll stock, which must then be cut to length. The molded plastic washer hose fittings cannot be repaired. If these fittings are ineffective or damaged, they must be replaced.

HOSES AND TUBES, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WASHER HOSES AND TUBES > OPERATION - 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 plumbing or a wire harness containing washer plumbing, it must be routed away from hot, sharp or moving parts; and, any sharp bends that might pinch the plumbing must be avoided.

LINKAGE, WIPER ARM > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION

Fig 1: Wiper Arm Linkage



Courtesy of CHRYSLER GROUP, LLC

The front wiper linkage module is secured within the cowl plenum panel beneath the cowl plenum cover/grille panel. The ends of the wiper pivot shafts 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 components:

- **Bracket** - The front wiper linkage module bracket (2) consists of the unit that supports the wiper

motor and transmission unit as well as the wiper pivot brackets at each end where the two wiper pivots are secured. The front wiper linkage module bracket is secured within the cowl plenum by three screws through rubber insulators (1).

- **Crank Arm** - The front wiper motor crank arm 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 a double ball stud secured to the drive end.
- **Linkage** - Two stamped steel links (6) connect the wiper motor to the two wiper pivot lever arms. The shorter drive link has a plastic socket-type bushing on one end and a plastic sleeve-type bushing on the other end. The sleeve bushing on the shorter drive link is snapped over the double ball stud on the crank arm and the socket bushing is snapped over the ball stud of the left pivot lever arm. The plastic socket-type bushings on each end of the longer drive link are snapped over the double ball stud of the crank arm and the ball stud of the right pivot lever arm.
- **Motor** - The front wiper motor (4) is secured through stanchions integral to the transmission housing to the linkage module bracket by three screws. The two-speed permanent magnet wiper motor features an integral transmission, an internal park switch, and an internal automatic resetting circuit breaker. An integral connector receptacle (5) connects the motor to the vehicle electrical system.
- **Pivots** - The two front wiper pivots (3) are secured to the ends of the wiper module bracket. The lever arms that extend from each pivot shaft have ball studs that engage the bushings of the drive links. The end of each pivot shaft where the wiper arms will be fastened each is tapered and serrated with a threaded stud formation at the tip.

The front wiper linkage module cannot be adjusted or repaired. If any component of the module is ineffective or damaged, the entire front wiper linkage module unit must be replaced.

LINKAGE, WIPER ARM > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION

The front wiper linkage module operation is controlled by the battery current inputs received by the wiper motor through the Body Control Module (BCM). The wiper motor speed is controlled by current flow to either the low speed or the high speed set of brushes. An automatic resetting circuit breaker protects the motor from overloads.

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 closes the wiper park switch sense circuit to ground or to battery current, 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.

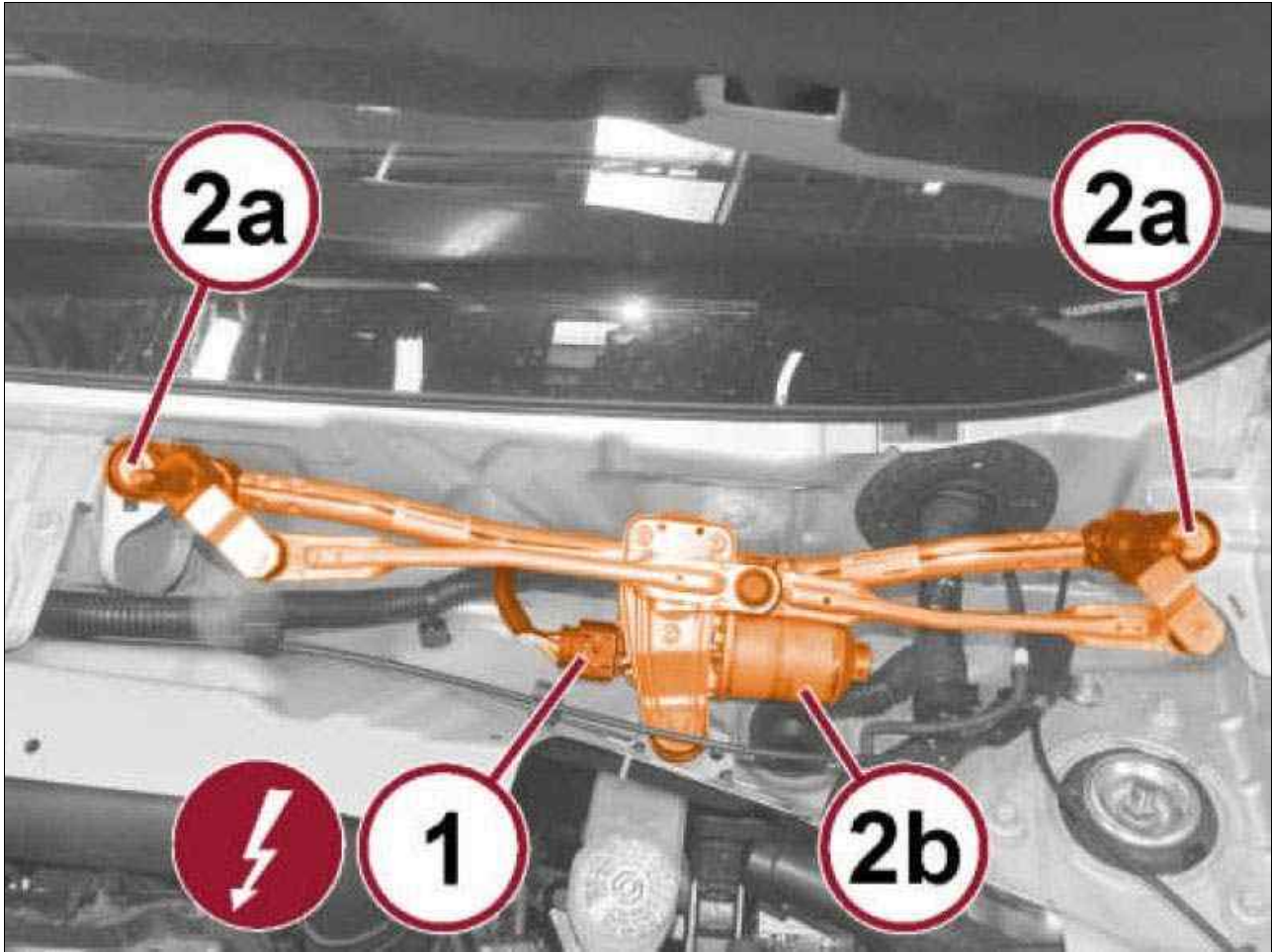
The wiper motor crank arm, the two wiper linkage members and the two wiper pivots mechanically convert the rotary output of the wiper motor to the back and forth wiping motion of the wiper arms and blades on the glass.

The hard wired inputs and outputs of the front wiper motor may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate SYSTEM WIRING DIAGRAMS article. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the front wiper motor or the electronic controls and 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 motor or the electronic controls and communication related to front wiper motor operation requires the use of a diagnostic scan tool. Refer to the appropriate Diagnostic & Testing article.

LINKAGE, WIPER ARM > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

Fig 1: Front Wiper Linkage Module, Wire Connector & Screws



Courtesy of CHRYSLER GROUP, LLC



NOTE:

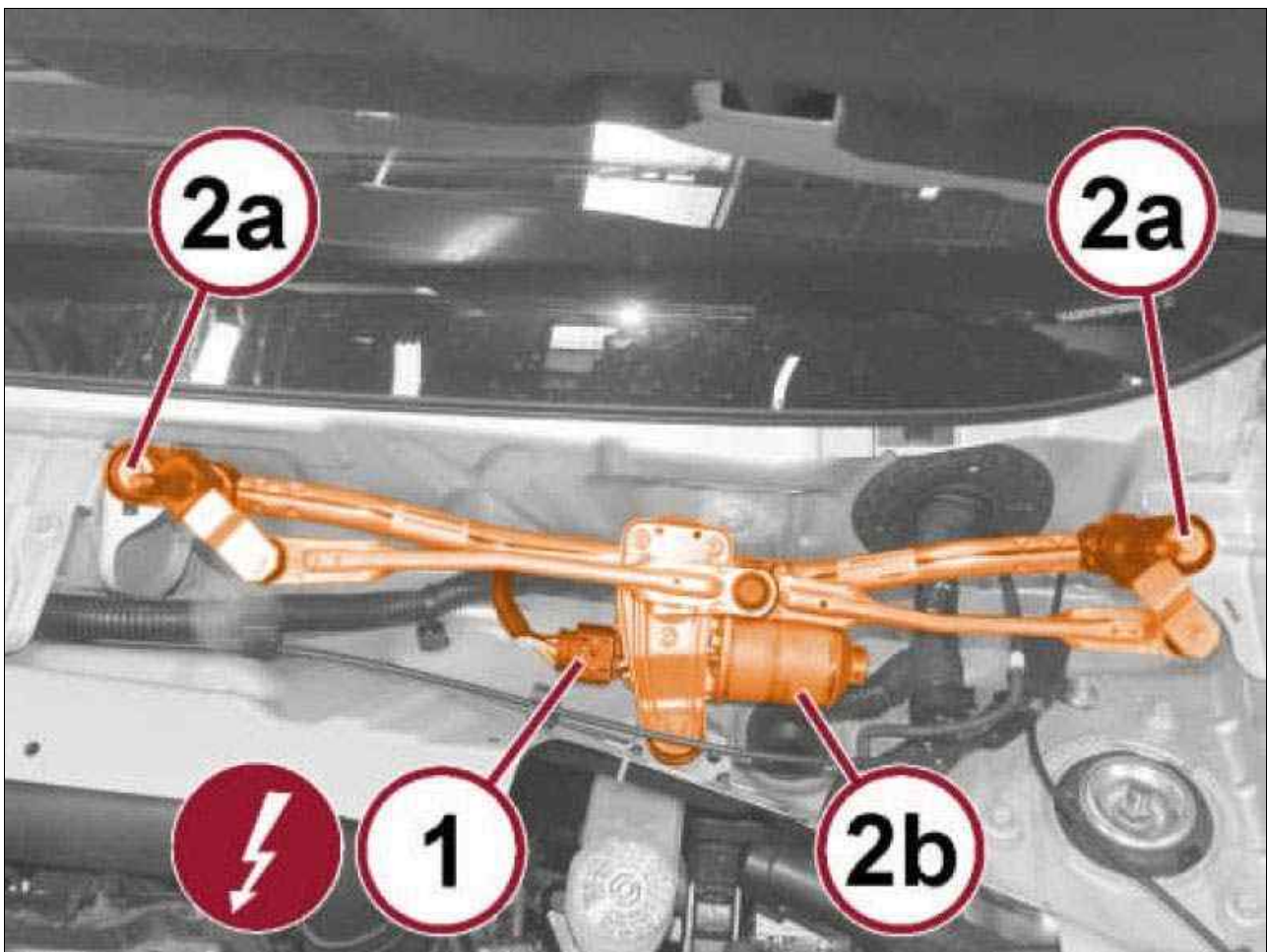
The front wiper linkage module includes the front wiper motor.

1. Disconnect and isolate the negative cable from the battery. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector before disconnecting the negative cable from the battery.
2. Remove both front wiper arms from the wiper pivots. Refer to ARM, WIPER, REMOVAL AND INSTALLATION .

3. Remove the cowl plenum cover/grille panel from over the front wiper linkage module. Refer to COVER, COWL PANEL, REMOVAL AND INSTALLATION .
4. Disconnect the wire harness connector (1) from the connector receptacle for the front wiper motor.
5. Remove the three screws (2a) that secure the module (2b) bracket to the cowl plenum.
6. Remove the front wiper linkage module from the cowl plenum as a unit.

LINKAGE, WIPER ARM > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

Fig 1: Front Wiper Linkage Module, Wire Connector & Screws



Courtesy of CHRYSLER GROUP, LLC



NOTE:

The front wiper linkage module includes the front wiper motor.

1. Position the front wiper linkage module (2b) into the cowl plenum as a unit.

2. Install and tighten the three screws (2a) that secure the module bracket to the cowl plenum. Tighten the screws to the proper SPECIFICATIONS .
3. Connect the wire harness connector (1) to the connector receptacle for the front wiper motor.
4. Install the cowl plenum cover/grille panel over the front wiper linkage module. Refer to COVER, COWL PANEL, REMOVAL AND INSTALLATION .



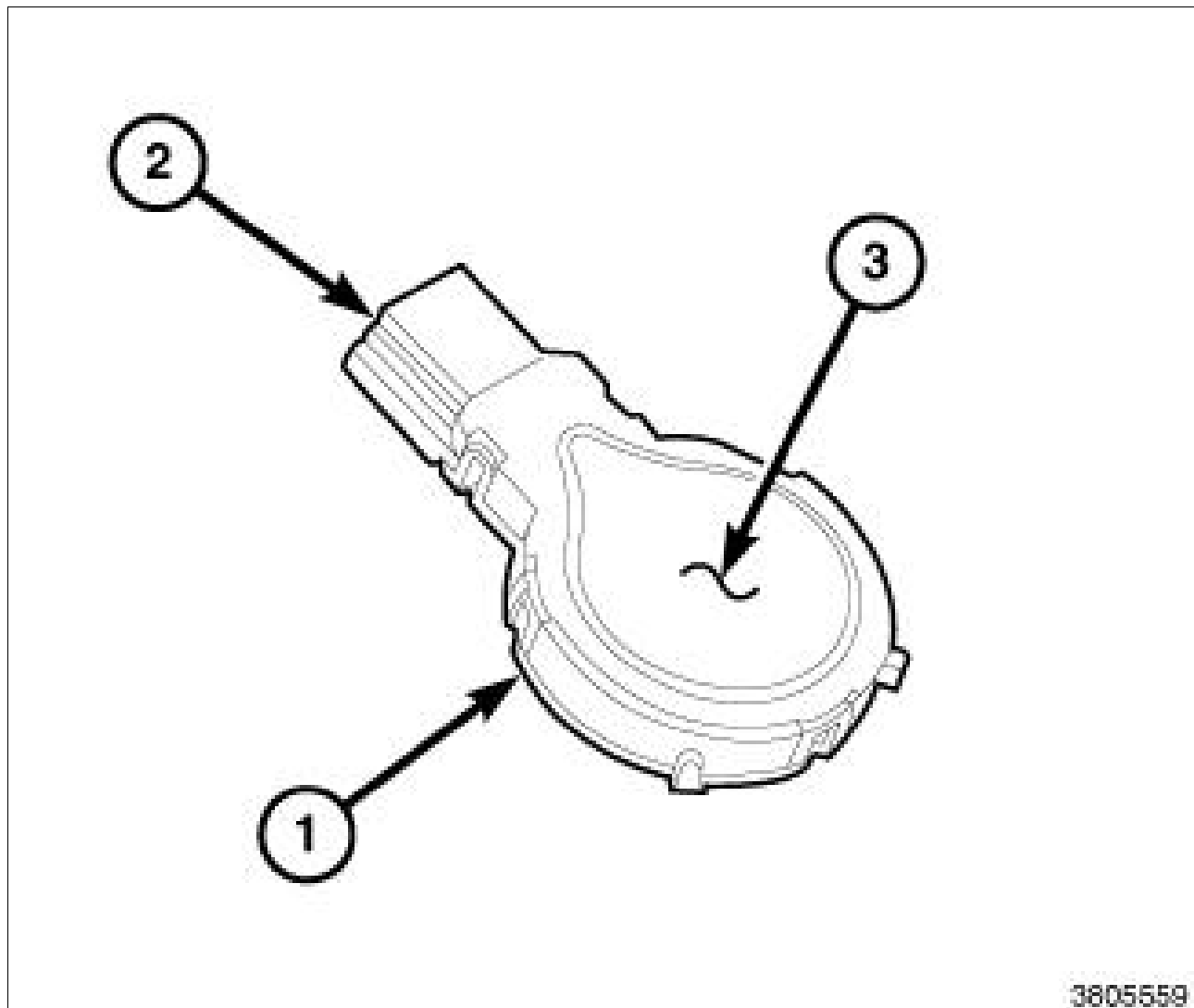
NOTE:

Be certain to transition the ignition to the On status, then turn the front wiper switch On and Off again to cycle the wiper motor and linkage to their natural park position before installing the front wiper arms onto the wiper pivots.

5. Install both front wiper arms onto the wiper pivots. Refer to ARM, WIPER, REMOVAL AND INSTALLATION .
6. Connect the negative cable to the battery. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector.

MODULE, LIGHT RAIN SENSOR > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION

Fig 1: Light Rain Sensor Module Components



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Courtesy of CHRYSLER GROUP, LLC

An automatic wiper system is an available option in vehicles manufactured for Europe-Middle East-Africa (EMEA) markets. The Light Rain Sensor Module (LRS) (1) is the primary component of the automatic wiper system. The LRS is also capable of performing an ambient light sensor function; therefore, it is alternately referred to as the Rain Light Sensor Module (RLSM), the Light Sensor Module (LSM) or the Rain Sensor Module (RSM). The LRS is located on the inside of the windshield glass just below and to the right of the inside rear view mirror mounting button. The LRS is concealed from view within the vehicle interior by a molded plastic inside rear view mirror bracket trim cover that fits over the top of the LRS housing and the LRS mounting bracket, but the LRS is visible through the windshield glass from the exterior of the vehicle.

The molded black plastic LRS housing has an integral connector receptacle (2) with three terminal pins. These terminal pins connect the LRS to the vehicle electrical system through a dedicated take out and connector of the overhead wire harness that extends from above the headliner. The windshield side of the housing is filled with a clear, silicone gelatin (also known as SilGel) adhesive membrane pad (3), which serves as an optical coupler between the sensor and the inside of the windshield glass. A spring steel retaining strap or clip extends forward on each side of the housing to latch the LRS to a molded black plastic mounting bracket, which is permanently bonded to the inside of the windshield glass.

Concealed and protected within the LRSM housing is the electronic circuitry of the module, which includes an InfraRed (IR) diode and photocell based light and rain sensors, control electronics and Local Interface Network (LIN) data bus communication management hardware. The LRSM is a LIN slave node and communicates over a single LIN bus circuit with the Body Control Module (BCM). The BCM is a LIN master node and a gateway to the Controller Area Network (CAN) data bus. The BCM controls the exchange of electronic messages back and forth between the LRSM and other electronic modules in the vehicle, as well as with a diagnostic scan tool connected to the Data Link Connector (DLC).

The LRSM cannot be adjusted or repaired. If ineffective or damaged, the entire module must be replaced. The silicone gelatin adhesive membrane pad is available for separate service replacement. The LRSM mounting bracket is serviced only as a unit with the windshield glass.

MODULE, LIGHT RAIN SENSOR > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION

The Light Rain Sensor Module (LRSM) (also known as the Rain Light Sensor Module/RLSM, the Light Sensor Module/LSM or the Rain Sensor Module/RSM) senses moisture and ambient light levels on the outside of the windshield glass and sends electronic messages to the Body Control Module (BCM) over the Local Interface Network (LIN) data bus. The BCM relays messages back and forth between the LRSM and other electronic modules in the vehicle.

For the rain sensor function, InfraRed (IR) diodes within the LRSM generate infrared light beams that are aimed by the optics of the sensor through the windshield glass, while an IR photo diode monitors the infrared light reflected back from the windshield glass. When sufficient moisture accumulates within the wipe pattern on the windshield glass, less of the infrared light is reflected back and the sensor detects a change in the monitored infrared light intensity. For the light sensor function, an IR photo diode within the sensor monitors the intensity of the ambient infrared light received through the windshield glass and the sensor optics.

The internal programming of the LRSM sends the appropriate electronic **wipe command** messages to the BCM over the LIN data bus. The BCM then responds by activating or deactivating the wiper system. Similarly, the LRSM provides electronic **ambient light level** messages to the BCM, and the BCM relays these messages to other electronic modules in the vehicle.

The BCM microcontroller sends electronic **wiper switch status** and **automatic wipe sensitivity level** messages over the LIN data bus to the LRSM based upon the driver-selected settings of the control knob on the control stalk of the right (wiper) multifunction switch. The higher the selected wipe sensitivity setting the more sensitive the LRSM is to the accumulated moisture on the windshield glass, and the more frequently the LRSM will send **wipe commands** to the BCM to operate the wiper system.

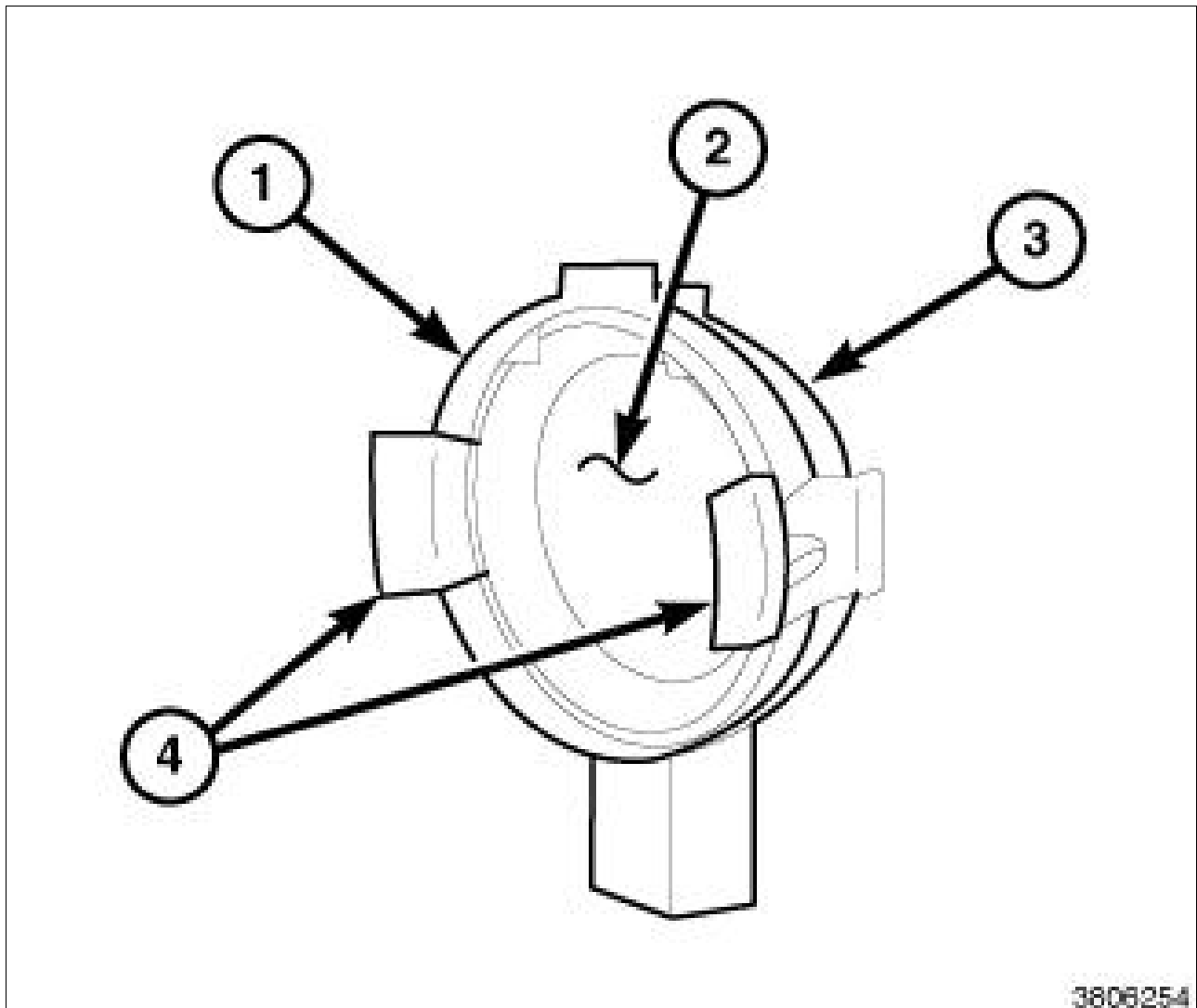
The LRSM operates on battery current received through a fused ignition output (run/accessory) circuit. The LRSM has a path to ground at all times through a take out of the body wire harness with an eyelet terminal that is secured to the body sheet metal. Therefore, the LRSM is operational only when the ignition status is On or Accessory.

If the BCM receives an electronic status message from the LRSM indicating a sensor failure condition, a **Rain Sensor Failure** message should be displayed by the Instrument Panel Cluster (IPC). It is important to note that the default operation of the automatic wiper system is continuous wipe On. Therefore, if no command message is received by the BCM from the LRSM for more than about five seconds when the Automatic wipe mode is selected, the wipers will default to Low Speed or High Speed continuous wipe operation. The BCM must be properly configured for the automatic wipers in order for this system to function.

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

MODULE, LIGHT RAIN SENSOR > STANDARD PROCEDURE > PROTECTIVE CAP REMOVAL

Fig 1: Protective Cap, Adhesive Membrane, LRSM & Latches



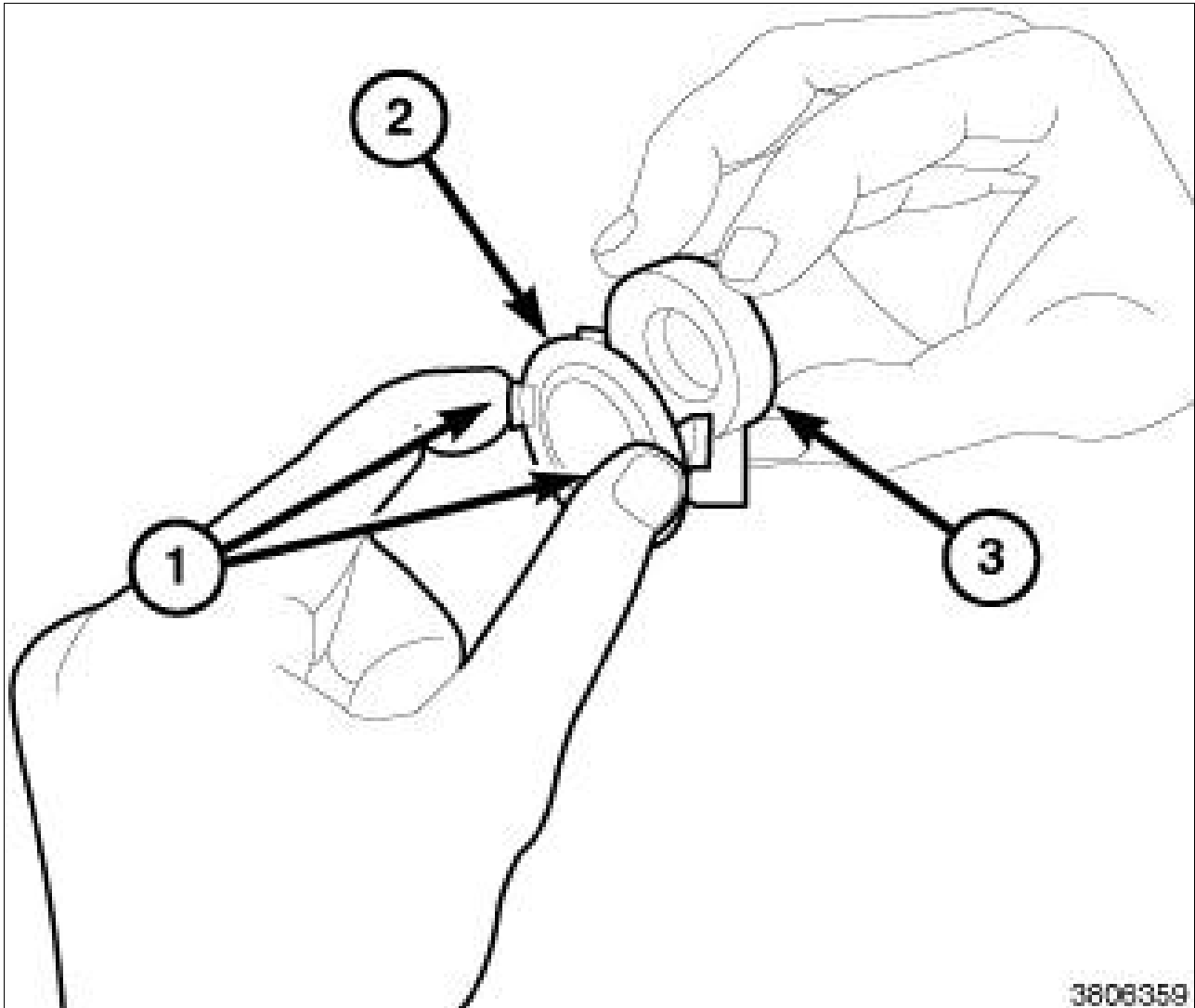
Courtesy of CHRYSLER GROUP, LLC

CAUTION:

The Light Rain Sensor Module (LRSM) (3) is equipped with a clear, silicone gelatin (SilGel) adhesive membrane (2) that serves as an optical coupler between the sensor and the

windshield glass. Extreme care must be exercised to protect this membrane from contamination before it is installed in the vehicle. The LRSM should always be serviced only in a dust-free environment. Do not touch the membrane with your fingers or tools. The membrane should only come into contact with the clean and dry inside surface of the glass within the mounting bracket bonded to the windshield. The service replacement LRSM is shipped with a clear plastic protective cap (1) installed and secured to the outer circumference of the LRSM by two latch features (4). This protective cap should not be removed until immediately before the LRSM is to be installed using the following procedure.

Fig 2: Tabs, Protective Cap & LRSM



Courtesy of CHRYSLER GROUP, LLC

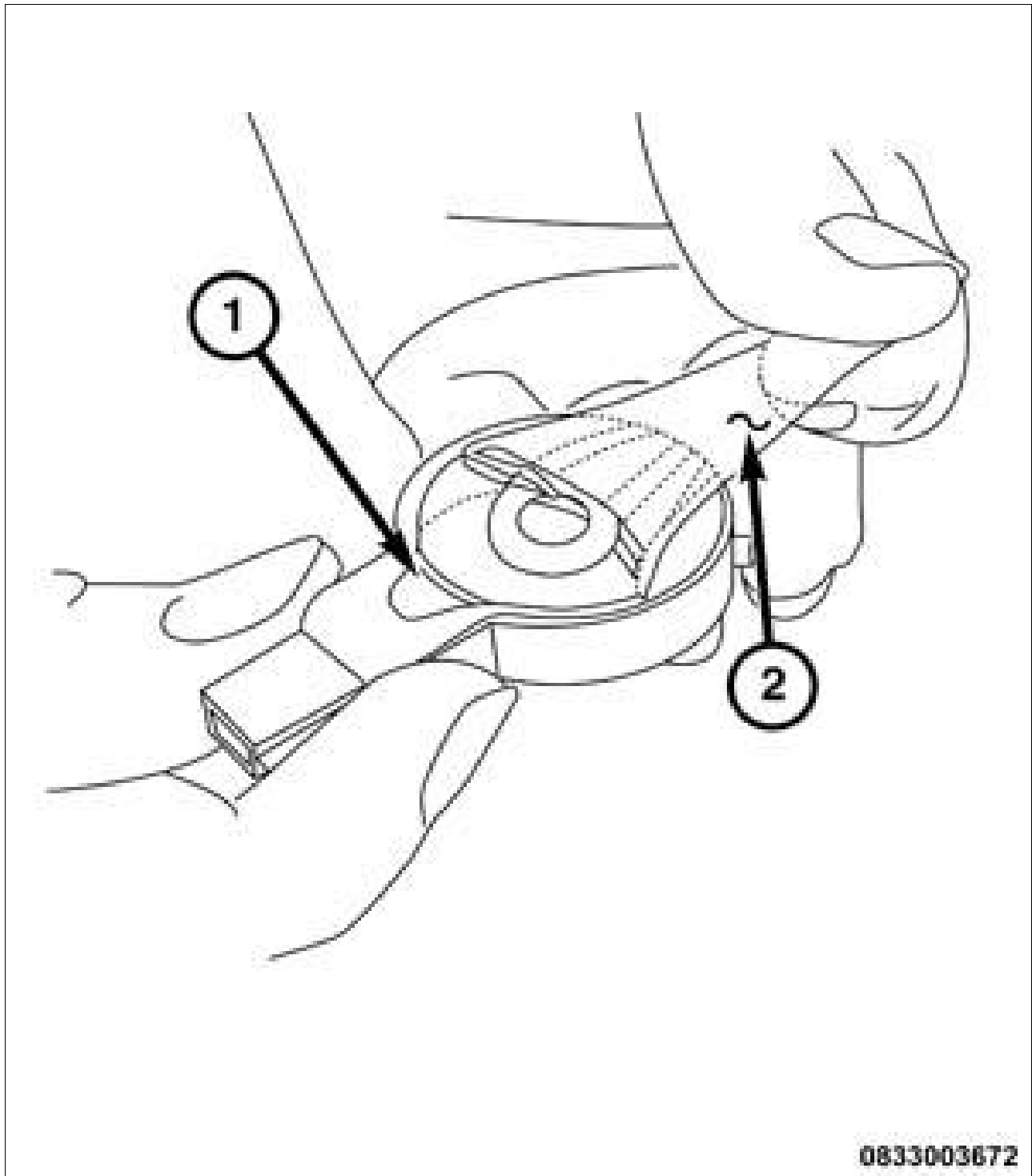
1. Firmly grasp the LRSM (3) by the outer circumference from the side opposite the SilGel membrane pad.
2. Firmly grasp the protective shipping cap (2) of the LRSM by the two latch release tabs (1) between your thumb and index finger from the SilGel membrane pad side of the module.
3. Firmly pinch the two latch release tabs together between your thumb and index finger far enough to release the two latch features of the protective cap from the outer circumference of

the LRSM.

4. Pull the protective cap off of the LRSM.
5. Install the LRSM into the mounting bracket bonded onto the windshield as instructed in the Installation procedure. Refer to MODULE, LIGHT RAIN SENSOR, REMOVAL AND INSTALLATION .

MODULE, LIGHT RAIN SENSOR > STANDARD PROCEDURE > SILICONE GELATIN PAD REPLACEMENT

Fig 1: LRSM & Adhesive Membrane



Courtesy of CHRYSLER GROUP, LLC

 CAUTION:

The Light Rain Sensor Module (LRSM) is equipped with a clear, silicone gelatin (SilGel) adhesive membrane that serves as an optical coupler between the sensor and the windshield glass. Extreme care must be exercised to protect this membrane from contamination before it is installed in the vehicle. The LRSM should always be serviced only

in a dust-free environment. Do not touch the membrane with your fingers or tools. The membrane should only come into contact with the clean and dry inside surface of the glass within the mounting bracket bonded to the windshield. If contaminated, clean any foreign material from the windshield glass using rubbing alcohol and a lint-free cloth. A contaminated SilGel membrane will negatively impact LRSM performance.

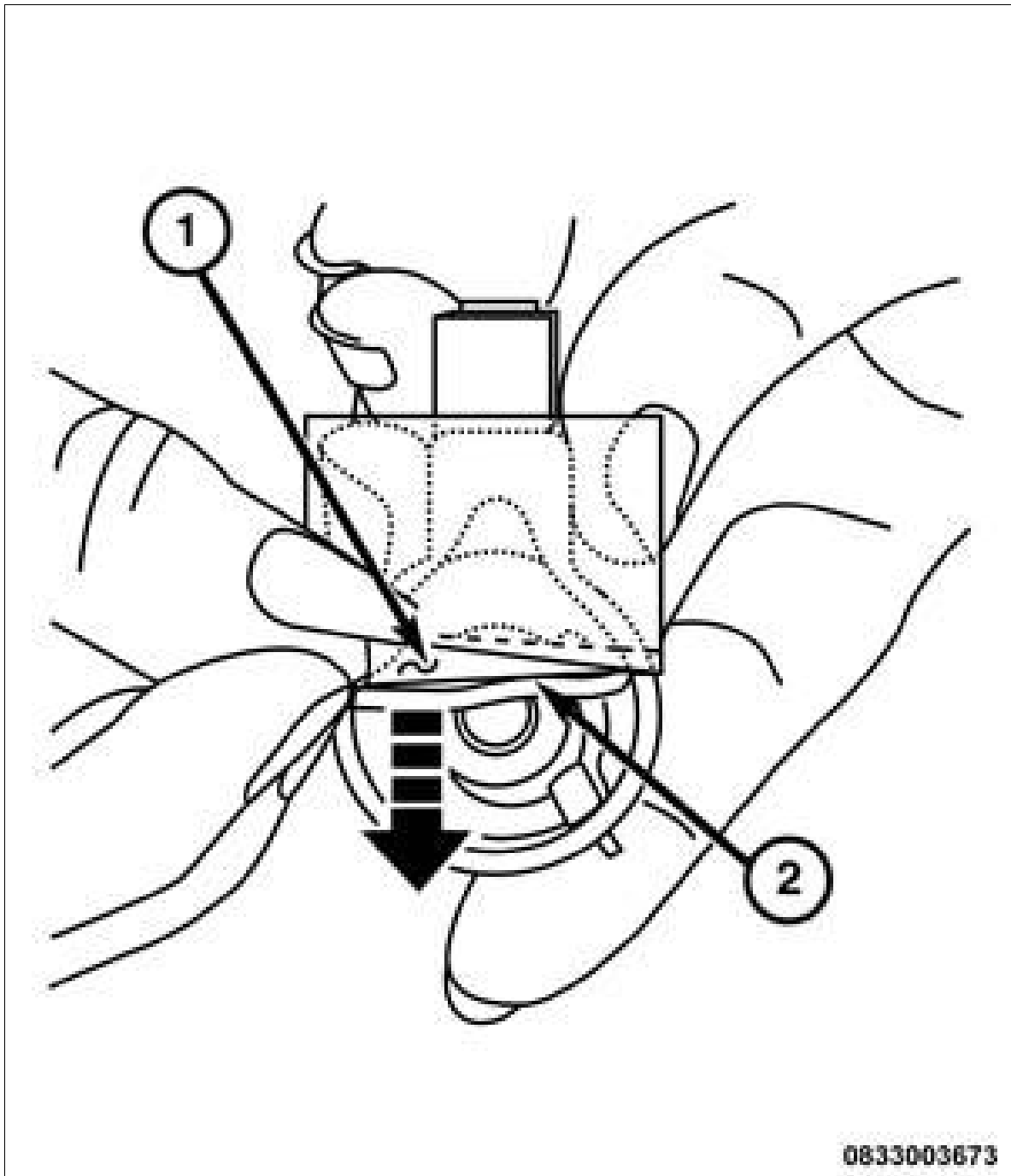


CAUTION:

When installing the replacement silicone gelatin (SilGel) adhesive membrane pad onto the Light Rain Sensor Module (LRSM), it is necessary to minimize air pockets trapped between the SilGel membrane and the LRSM. Excessive air pockets will negatively impact LRSM performance. It is important to adhere to the procedure steps in a deliberate manner to achieve satisfactory results.

1. Carefully peel away the old silicone gelatin adhesive membrane pad (2) from the windshield (optics) side of the Light Rain Sensor Module (LRSM) (1).
2. Thoroughly clean the windshield (optics) side of the LRSM using isopropyl alcohol and a clean, lint-free cloth.
3. Using care not to contaminate, touch or damage the replacement pad, peel off the yellow protective foil.

Fig 2: Protective Film & Replacement Pad

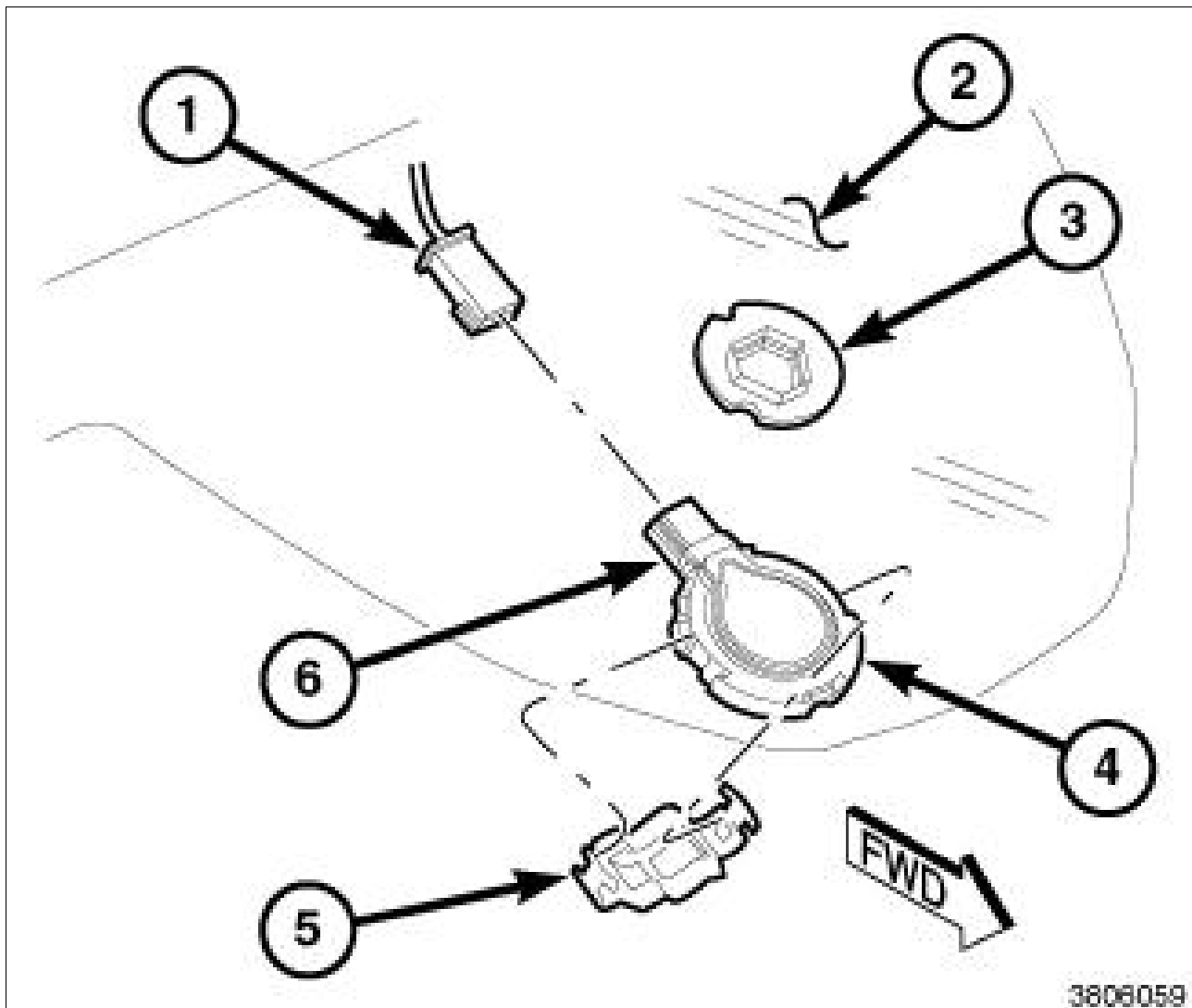


Courtesy of CHRYSLER GROUP, LLC

4. Looking through the transparent protective film (1), align and center the replacement pad (2) over the windshield (optics) side of the LRSM. Then use a slow, smooth and deliberate motion to roll the pad onto the windshield (optics) side of the LRSM.
5. With the transparent protective film still in place, use a thumb and a firm wiping motion to press the entire surface pad against the windshield (optics) side of the LRSM.
6. To avoid contamination or damage of the replacement pad, do not remove the transparent protective film until just before installing the LRSM onto the windshield. Refer to MODULE, LIGHT RAIN SENSOR, REMOVAL AND INSTALLATION .

MODULE, LIGHT RAIN SENSOR > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

Fig 1: LRSM, Harness Connector, Mount Bracket & Retaining Strap



Courtesy of CHRYSLER GROUP, LLC

1. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable
2. Remove the inside rear view mirror from the mounting button (3) on the inside of the windshield glass (2). Refer to MIRROR, REARVIEW, REMOVAL AND INSTALLATION .
3. Disconnect the wire harness connector (1) from the connector receptacle for the Light Rain Sensor Module (LRSM) (6).
4. Insert the tip of a small screwdriver into the rectangular cutout on one side of the spring steel retaining strap (5) on the LRSM and carefully pry the end of the strap closest to the glass away from the groove in the mounting bracket (4) on the windshield. Now rotate the loose side of the

strap away from the glass far enough to disengage the other side of the strap from the mounting bracket groove.

5. Firmly grasp the connector receptacle of the LRSM to pull the module away from the windshield glass and the mounting bracket.
6. If the LRSM will be reinstalled, the silicone gelatin (also known as SilGel) adhesive membrane pad MUST be removed, discarded and replaced with a new unit as described in: STANDARD PROCEDURE - Silicone Gelatin Pad Replacement.

MODULE, LIGHT RAIN SENSOR > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

CAUTION:

The Light Rain Sensor Module (LRSM) is equipped with a clear, silicone gelatin (SilGel) adhesive membrane that serves as an optical coupler between the sensor and the windshield glass. Extreme care must be exercised to protect this membrane from contamination before it is installed in the vehicle. The LRSM should always be serviced only in a dust-free environment. Do not touch the membrane with your fingers or tools. The membrane should only come into contact with the clean and dry inside surface of the glass within the mounting bracket bonded to the windshield. If contaminated, clean any foreign material from the windshield glass using rubbing alcohol and a lint-free cloth. A contaminated SilGel membrane will negatively impact LRSM performance.

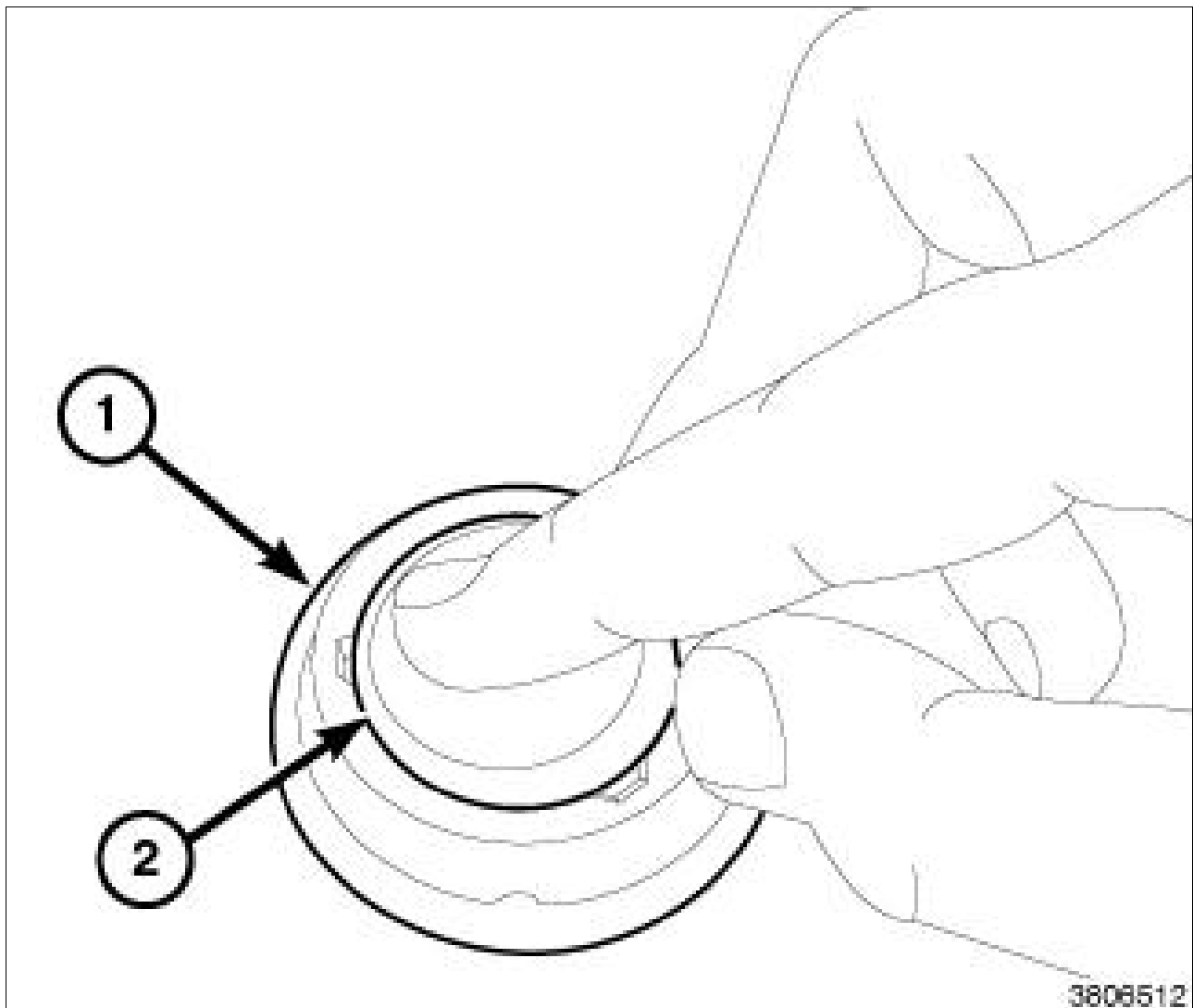
CAUTION:

When installing the Light Rain Sensor Module (LRSM) it is necessary to minimize air pockets trapped between the SilGel membrane and the windshield glass. Excessive air pockets will negatively impact LRSM performance. It is important to adhere to the procedure steps in a deliberate manner to achieve satisfactory results.

CAUTION:

To avoid excessive air pockets, do not try to install the spring steel retaining strap until AFTER the Light Rain Sensor Module (LRSM) has been successfully positioned to the glass within the mounting bracket bonded to the windshield.

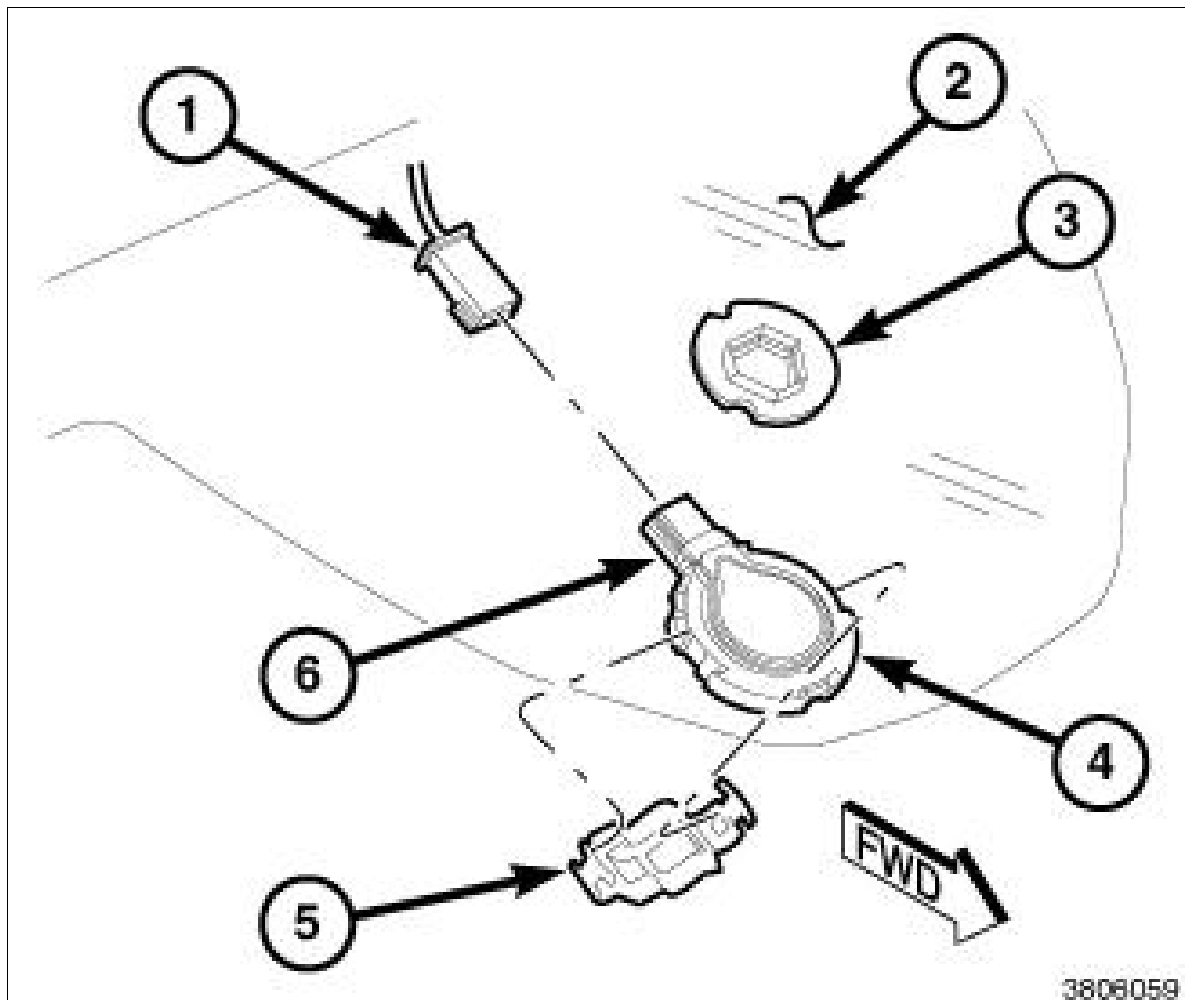
Fig 1: LRSM & Mounting Bracket



Courtesy of CHRYSLER GROUP, LLC

1. If a new Light Rain Sensor Module (LRSM) is being installed, remove the protective shipping cap from the LRSM as described in: STANDARD PROCEDURE - Protective Cap Removal. If an existing LRSM is being reused, the silicone gelatin (also known as SilGel) adhesive membrane pad MUST be removed, discarded and replaced with a new unit as described in: STANDARD PROCEDURE - Silicone Gelatin Pad Replacement.
2. Grasp the LRSM (2) by the connector receptacle between your thumb and middle finger. Place your index finger on the back of the LRSM at the point opposite the connector receptacle.
3. Align the LRSM with the mounting bracket (1) bonded onto the inside of the windshield glass near the inside rear view mirror mounting button.
4. Slowly insert the LRSM into the mounting bracket at a slight angle so that the edge of the module nearest the tip of your index finger makes the initial contact with the windshield glass.
5. Using a slow, deliberate motion and light pressure, draw your index finger across the back of the LRSM toward the connector receptacle until the silicone gelatin adhesive membrane pad is in full contact with the windshield glass.

Fig 2: LRSM, Harness Connector, Mount Bracket & Retaining Strap



Courtesy of CHRYSLER GROUP, LLC

6. Engage one side of the spring steel retaining strap (5) into the groove on one side of the LRSM mounting bracket (4) on the inside of the windshield glass (2).
7. Depress the opposite side of the retaining strap over the LRSM firmly and evenly until it fully engages the groove of the mounting bracket with an audible click.
8. Looking through the windshield from outside the vehicle, inspect the silicone gelatin adhesive membrane pad for air pockets. If air pockets are observed, let the vehicle stand for about four hours at room temperature to allow the air pockets to dissipate. If an adhesive void (air pocket) greater than about 1 millimeter (0.04 inch) is observed, replace the flawed silicone gelatin adhesive membrane pad with a new unit as described in: STANDARD PROCEDURE - Silicone Gelatin Pad Replacement.
9. Connect the wire harness connector (1) to the LRSM connector receptacle (6).
10. Install the inside rear view mirror to the mounting button (3) on the inside of the windshield glass. Refer to MIRROR, REARVIEW, REMOVAL AND INSTALLATION .
11. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector.

**MOTOR, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND
OPERATION - FRONT WIPER MOTOR > DESCRIPTION - FRONT**

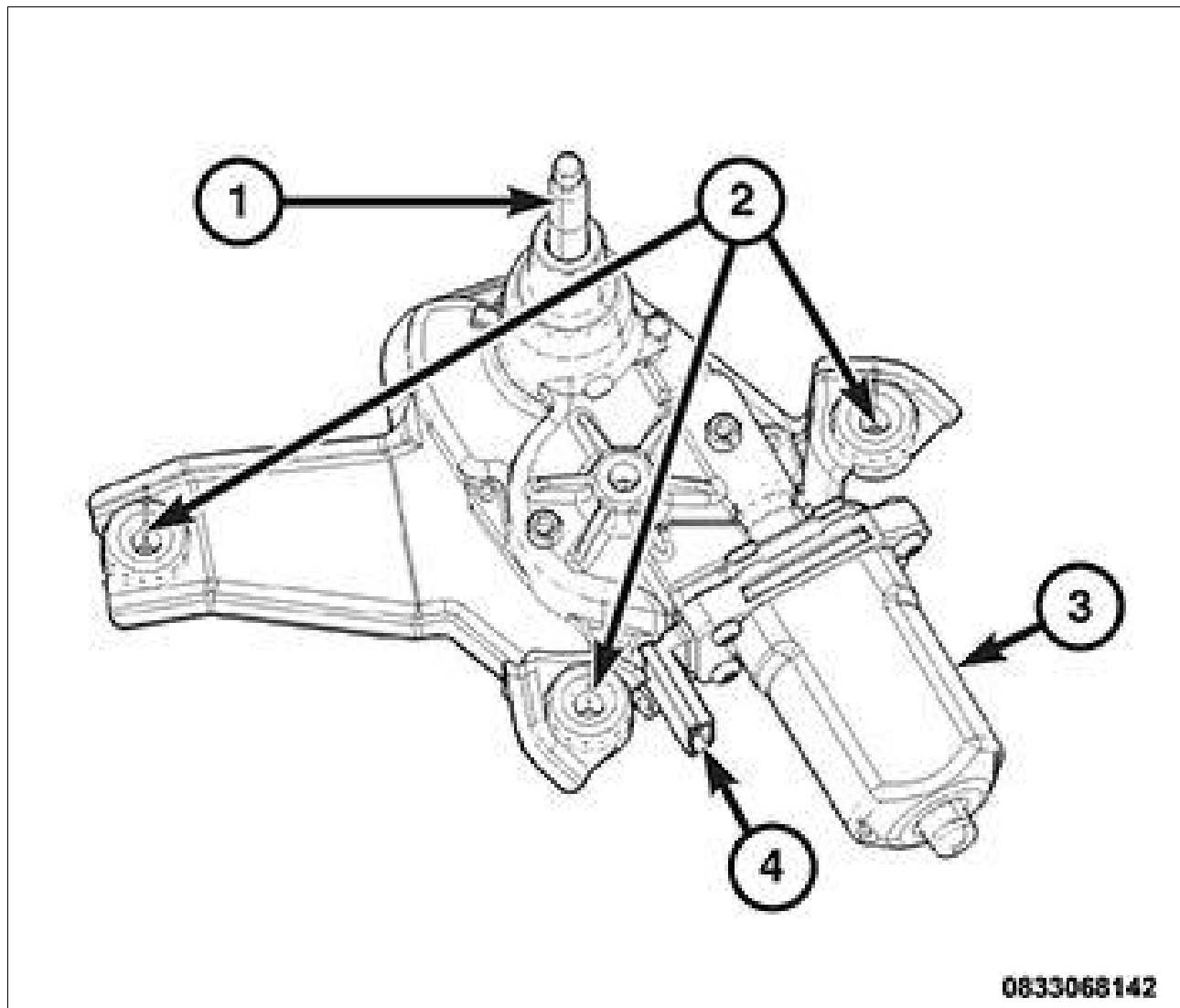
The front wiper motor is packaged with the wiper linkage module in this vehicle. Refer to LINKAGE, WIPER ARM, DESCRIPTION AND OPERATION .

**MOTOR, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND
OPERATION - FRONT WIPER MOTOR > OPERATION - FRONT**

The front wiper motor is packaged with the wiper linkage module in this vehicle. Refer to LINKAGE, WIPER ARM, DESCRIPTION AND OPERATION .

**MOTOR, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND
OPERATION - REAR WIPER MOTOR > DESCRIPTION - REAR**

Fig 1: Rear Wiper Motor, Output Shaft, Connector Receptacle & Rubber Insulators



Courtesy of CHRYSLER GROUP, LLC

The rear wiper motor (3) is located on the liftgate inner panel below the liftgate glass opening and concealed behind the liftgate inner trim. The rear wiper motor is secured to the liftgate inner panel using three blind rivets through three rubber insulators (2). The rear wiper motor output shaft (1) extends through a clearance hole in the lower edge of the liftgate glass to drive the rear wiper arm and blade. A rubber grommet is engaged within the output shaft clearance hole of the glass and seals the output shaft when it passes through the glass.

An integral connector receptacle (4) connects the rear wiper motor to the vehicle electrical system through a dedicated connector of the body wire harness. The single-speed, permanent magnet wiper motor includes an integral transmission, the output shaft, an automatic resetting circuit breaker and the rear wiper motor park switch.

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 motor output shaft rubber grommet is available for individual service replacement.

MOTOR, WIPER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WIPER MOTOR > OPERATION - REAR

The rear wiper motor operation is controlled by the Body Control Module (BCM), which uses relays soldered onto the BCM Printed Circuit Board (PCB) to control rear wiper system operation for energizing or de-energizing the rear wiper motor. The BCM uses internal programming, hard wired inputs received from the right (wiper) multifunction switch and the rear wiper motor park switch as well as electronic messages received over the Controller Area Network (CAN) data bus to provide the rear wiper and washer system operating modes.

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 voltage signal for the rear wiper motor electronic control logic circuitry of the BCM. The park switch is normally an open circuit when the rear wiper blade is in the parked position, and is connected to fused ignition output when the rear wiper blade is anywhere except parked.

This park switch input allows the electronic logic circuits of the BCM 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 at the base of the glass after the status of the rear wiper system or the ignition transitions to Off. The internal BCM circuitry pulls the park switch sense input to ground when the switch is open so that the microcontroller sees a ground when the wiper blade is parked.

The rear wiper motor is grounded at all times through a take out with an eyelet terminal connector in the body wire harness that is secured to a ground location in the passenger compartment. 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 the appropriate SYSTEM WIRING DIAGRAMS article. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the rear wiper motor or the electronic controls and 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 motor 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 & Testing article.

MOTOR, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - FRONT WIPER MOTOR > REMOVAL - FRONT

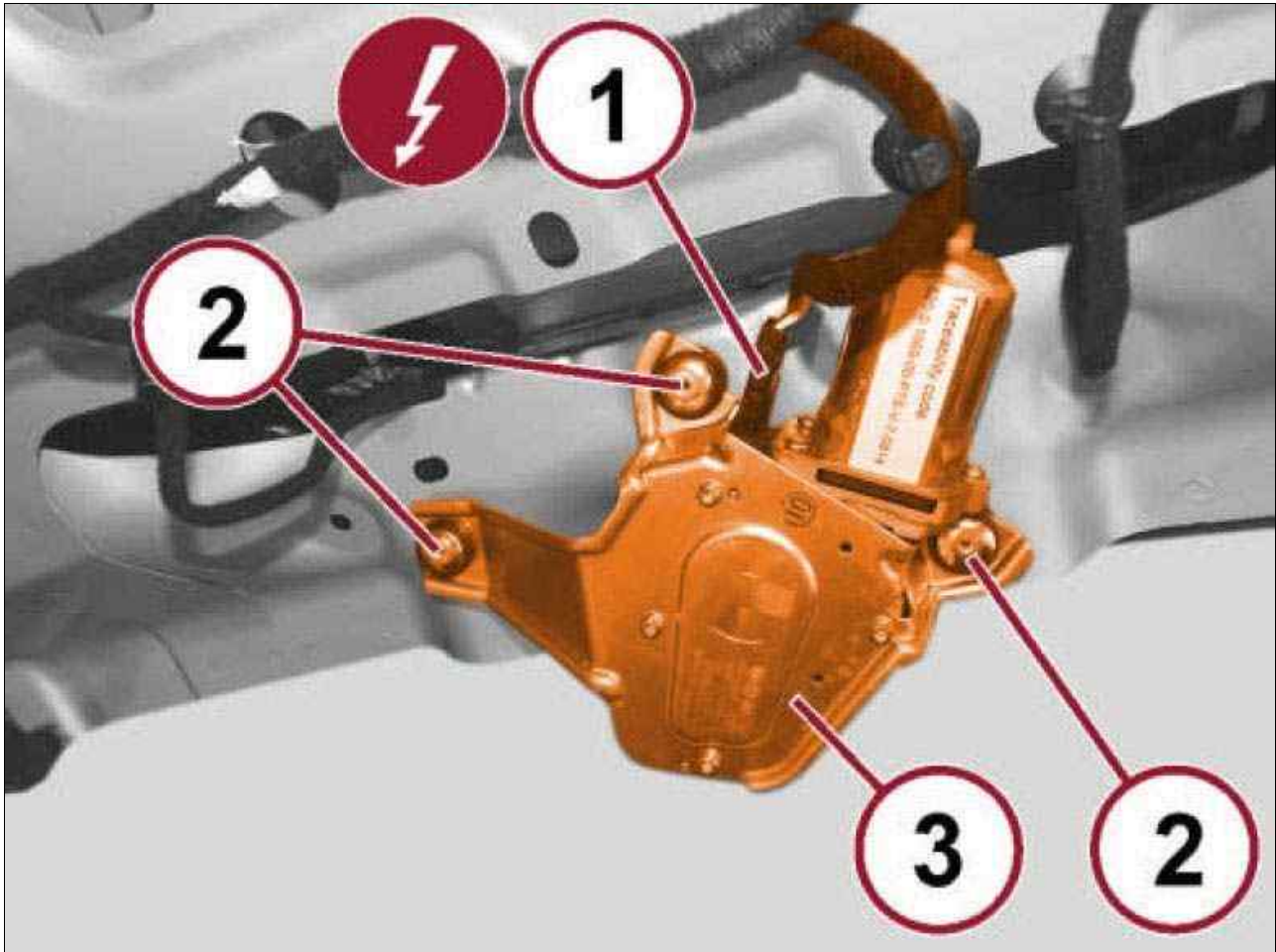
The front wiper motor is packaged and serviced only as a unit with the wiper linkage module in this vehicle. Refer to LINKAGE, WIPER ARM, REMOVAL AND INSTALLATION .

MOTOR, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - FRONT WIPER MOTOR > INSTALLATION - FRONT

The front wiper motor is packaged and serviced only as a unit with the wiper linkage module in this vehicle. Refer to LINKAGE, WIPER ARM, REMOVAL AND INSTALLATION .

MOTOR, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - REAR WIPER MOTOR > REMOVAL - REAR

Fig 1: Rear Wiper Motor, Wire Connector & Rivets



Courtesy of CHRYSLER GROUP, LLC

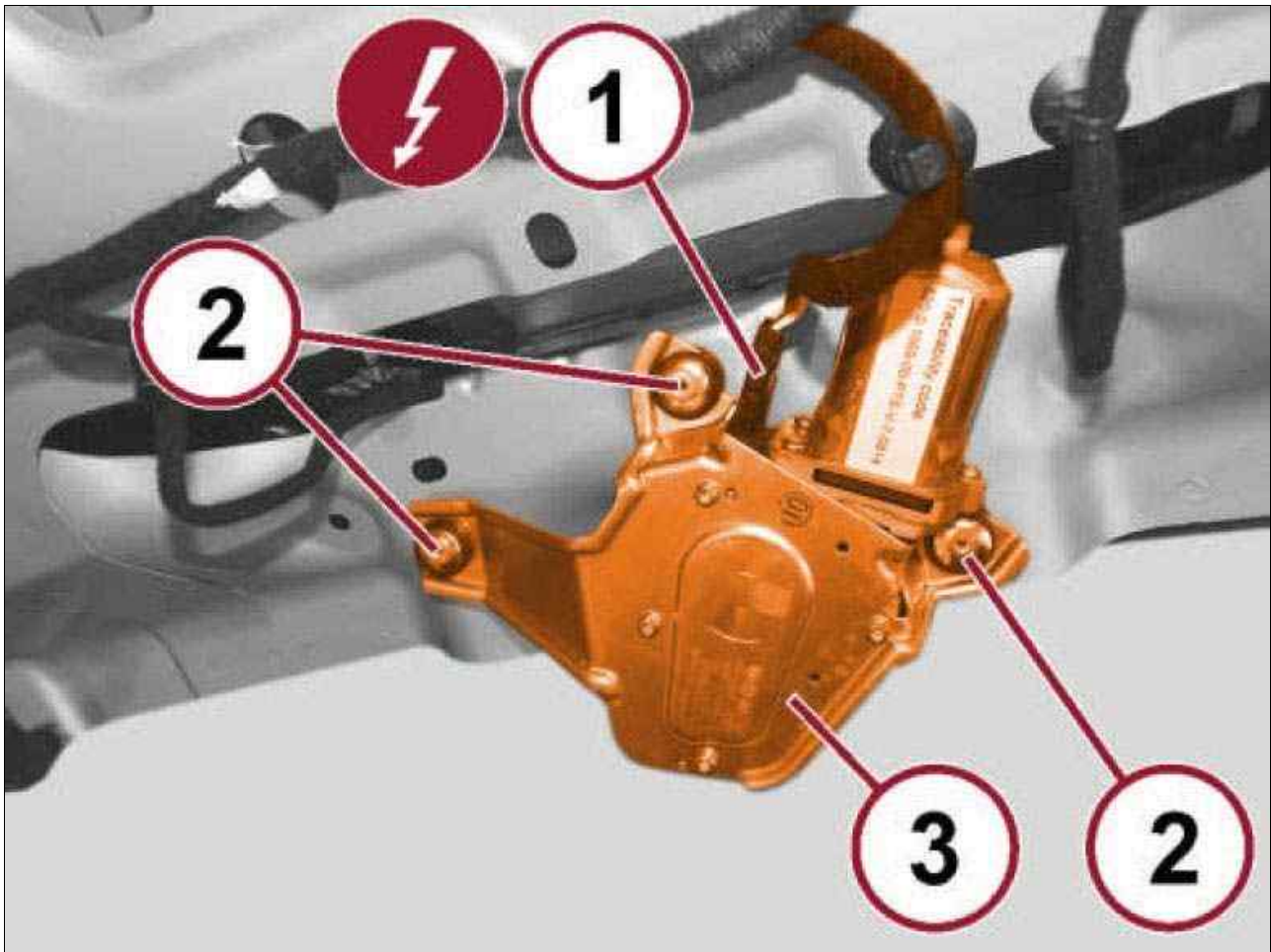
1. Disconnect and isolate the negative cable from the battery. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector before disconnecting the negative cable from the battery.
2. Remove the rear wiper arm from the rear wiper motor output shaft. Refer to ARM, WIPER, REMOVAL AND INSTALLATION .
3. Remove the trim from the inside of the liftgate inner panel. Refer to PANEL, TRIM, LIFTGATE, REMOVAL AND INSTALLATION .
4. Disconnect the body wire harness connector (1) from the rear wiper motor connector receptacle.
5. Use a drill and the appropriate drill bit to carefully remove the three blind rivets (2) that secure the rear wiper motor (3) to the liftgate inner panel.
6. Carefully pull the wiper motor away from the inside of the liftgate inner panel far enough to

disengage the output shaft from the rubber grommet in the clearance hole of the liftgate glass.

7. Remove the motor from the liftgate.
8. If necessary, working from the outside of the liftgate pry the rubber grommet from the output shaft clearance hole in the glass and discard.

MOTOR, WIPER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - REAR WIPER MOTOR > INSTALLATION - REAR

Fig 1: Rear Wiper Motor, Wire Connector & Rivets



Courtesy of CHRYSLER GROUP, LLC

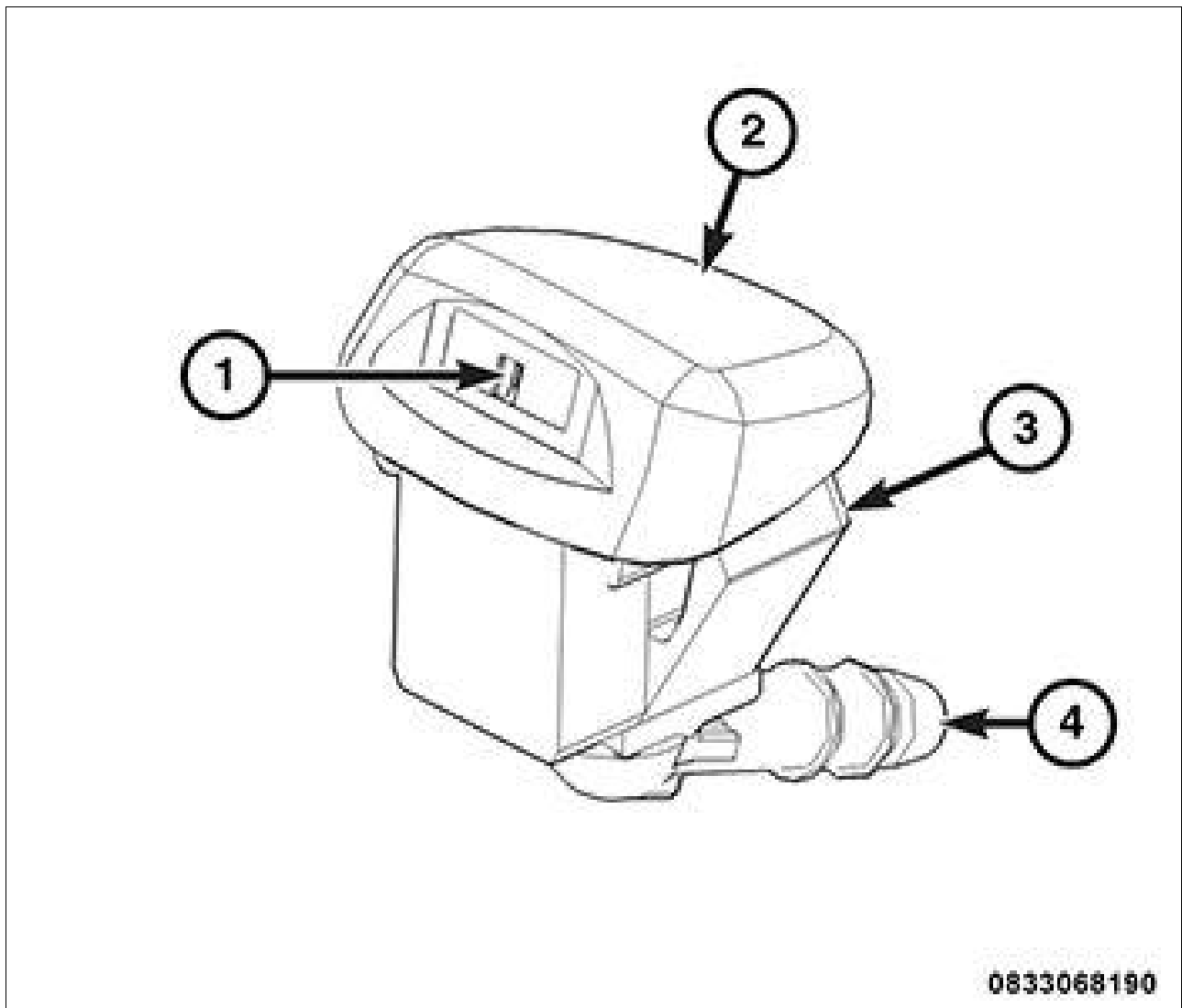
1. If removed, press a new rubber grommet into the rear wiper motor output shaft clearance hole located in the liftgate glass.
2. Position the rear wiper motor (3) to the liftgate inner panel while guiding the output shaft through the rubber grommet in the liftgate glass.
3. Install three new blind rivets (2) to secure the motor to the liftgate inner panel.
4. Connect the body wire harness connector (1) to the rear wiper motor connector receptacle.
5. Install the trim onto the inside of the liftgate inner panel. Refer to PANEL, TRIM, LIFTGATE,

REMOVAL AND INSTALLATION .

6. Install the rear wiper arm onto the motor output shaft. Refer to ARM, WIPER, REMOVAL AND INSTALLATION .
7. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector.

NOZZLE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - FRONT WASHER NOZZLE > DESCRIPTION - FRONT

Fig 1: Fluidic Front Washer Nozzle, Latches, Orifices & Fittings



Courtesy of CHRYSLER GROUP, 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.

NOZZLE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - FRONT WASHER NOZZLE > OPERATION - FRONT

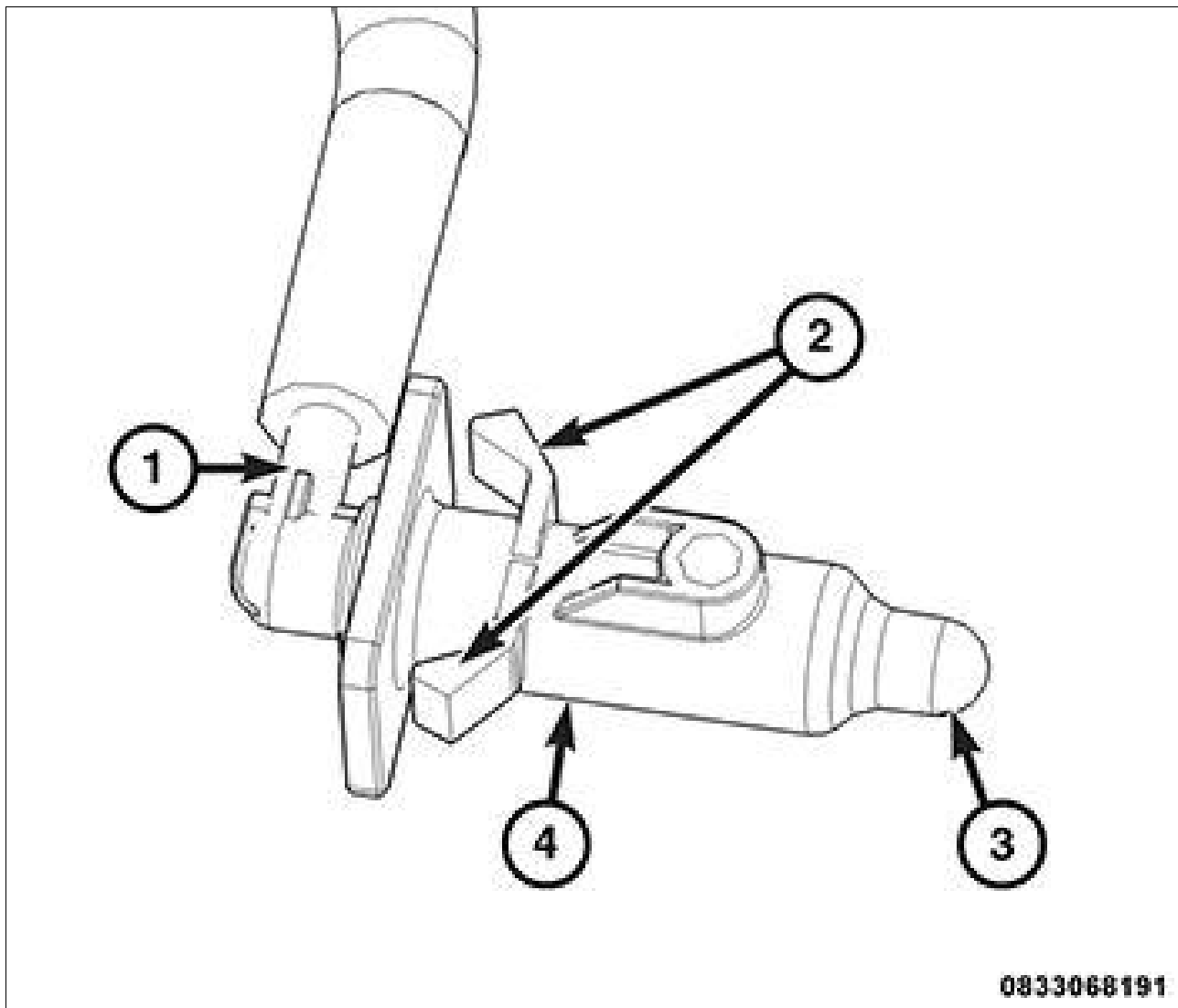
The two front washer nozzles are designed to dispense washer fluid into the wiper pattern area on the outside of the windshield glass. Pressurized washer fluid is fed to each nozzle from the washer reservoir by the washer pump/motor unit through a single hose, which is attached to a barbed nipple on each washer nozzle below the 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.

NOZZLE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WASHER NOZZLE > DESCRIPTION - REAR

Fig 1: Fluidic Rear Washer Nozzle, Latches, Plumbing Fitting & Orifice



Courtesy of CHRYSLER GROUP, LLC

The fluidic rear washer nozzle (4) is constructed of molded plastic. The rear washer nozzle is secured by two integral latch features (2) within a dedicated mounting hole located in the inner structure of the spoiler panel above the liftgate glass opening. The spoiler must be removed from the liftgate to access the rear washer nozzle for service.

The rear washer nozzle orifice (3) is oriented downward towards the liftgate glass through an elongated oval opening in the outer surface on the underside of the spoiler and located just to the left of the Center High Mounted Stop Lamp (CHMSL). The washer plumbing fitting (1) is concealed between the liftgate outer panel and the spoiler.

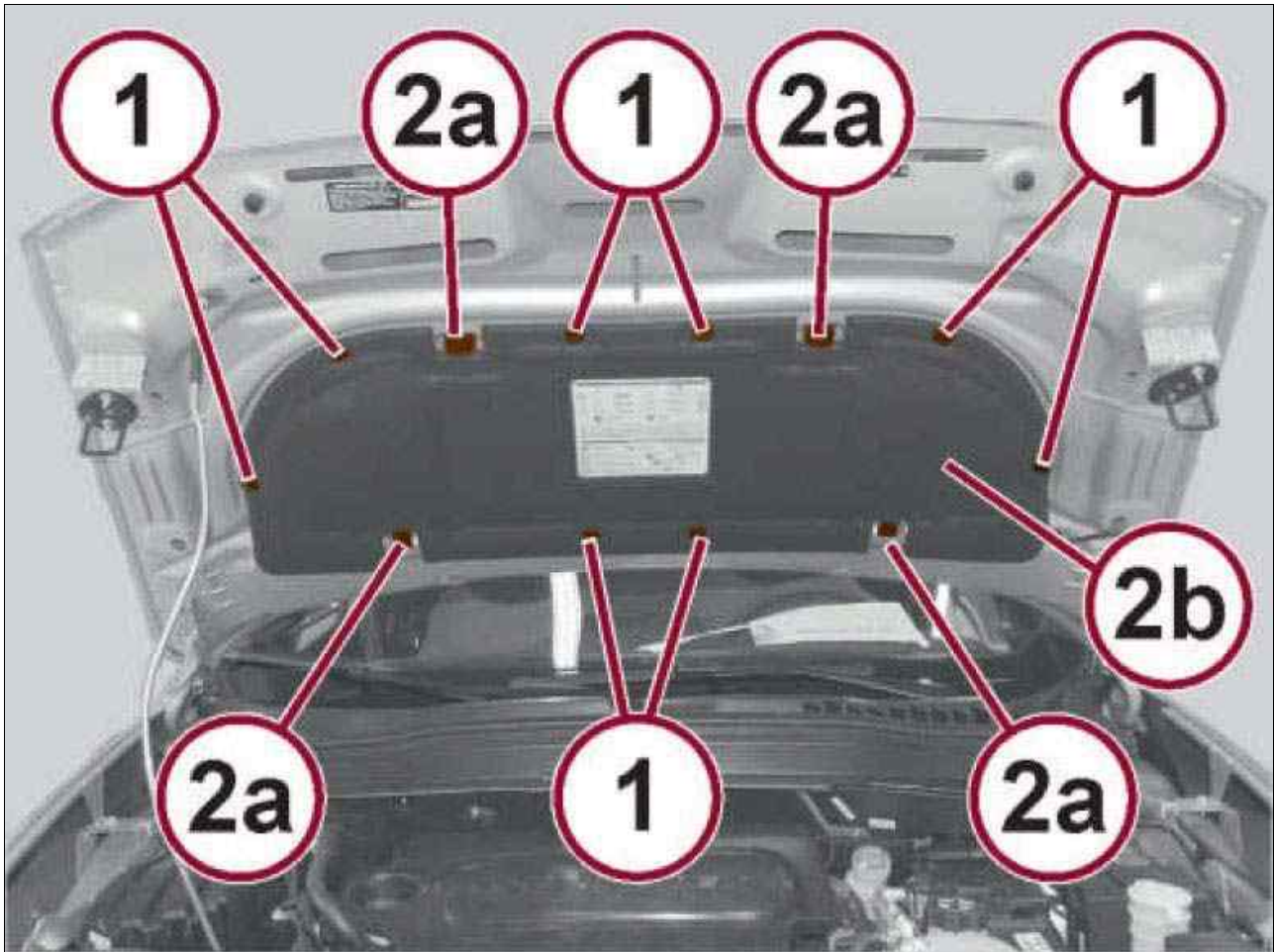
The rear washer nozzle cannot be adjusted or repaired. If ineffective or damaged, the entire nozzle unit must be replaced.

NOZZLE, WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION - REAR WASHER NOZZLE > OPERATION - 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 unit through a single hose, which is attached to a barbed nipple on the back of the rear washer nozzle. 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.

NOZZLE, WASHER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION - FRONT WASHER NOZZLE > REMOVAL - FRONT

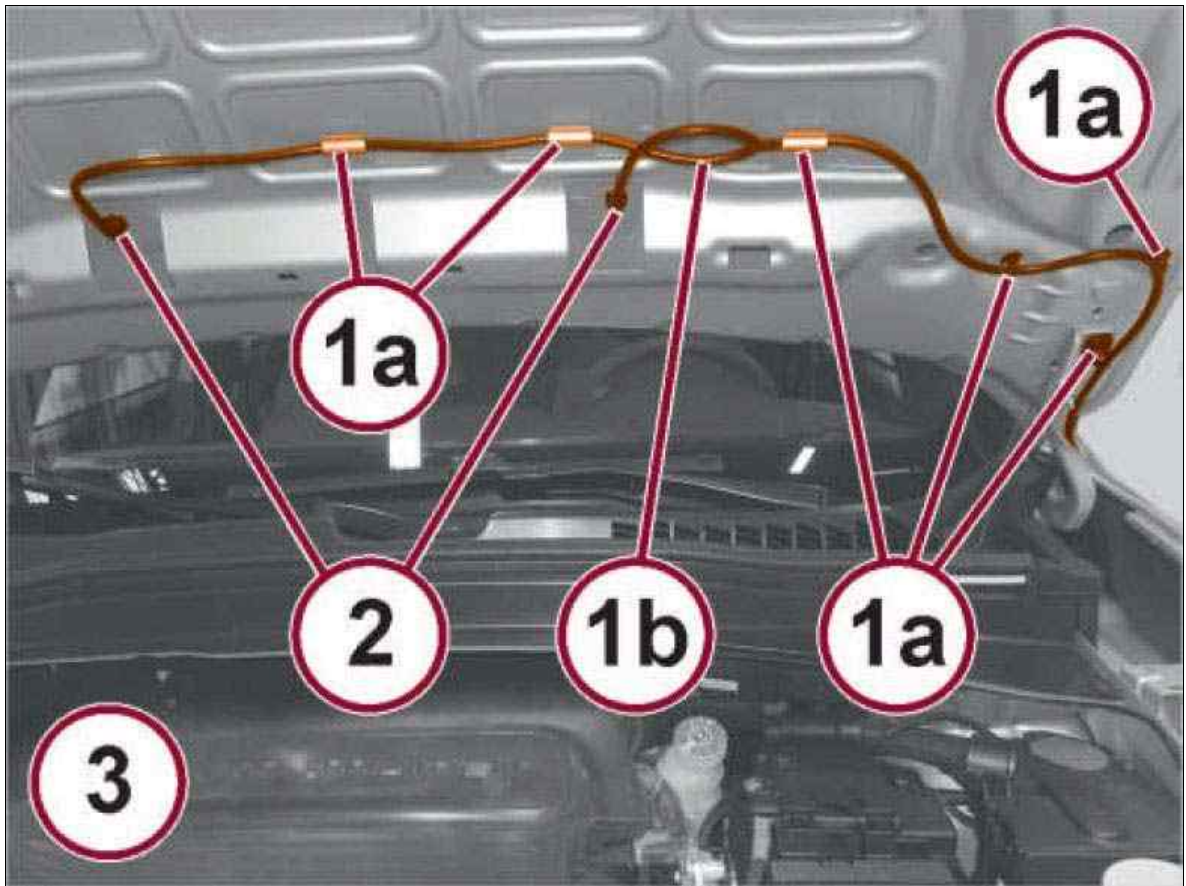
Fig 1: Remove/Install Front Washer Nozzle



Courtesy of CHRYSLER GROUP, LLC

1. Remove the eight retainers (1) that secure the silencer pad (2b) to the inner hood panel reinforcement.
2. Disengage the tabs (2a) of the silencer pad from the slots in the inner hood panel reinforcement and remove the silencer pad.

Fig 2: Supply Hose, Washer Nozzles & Fasteners

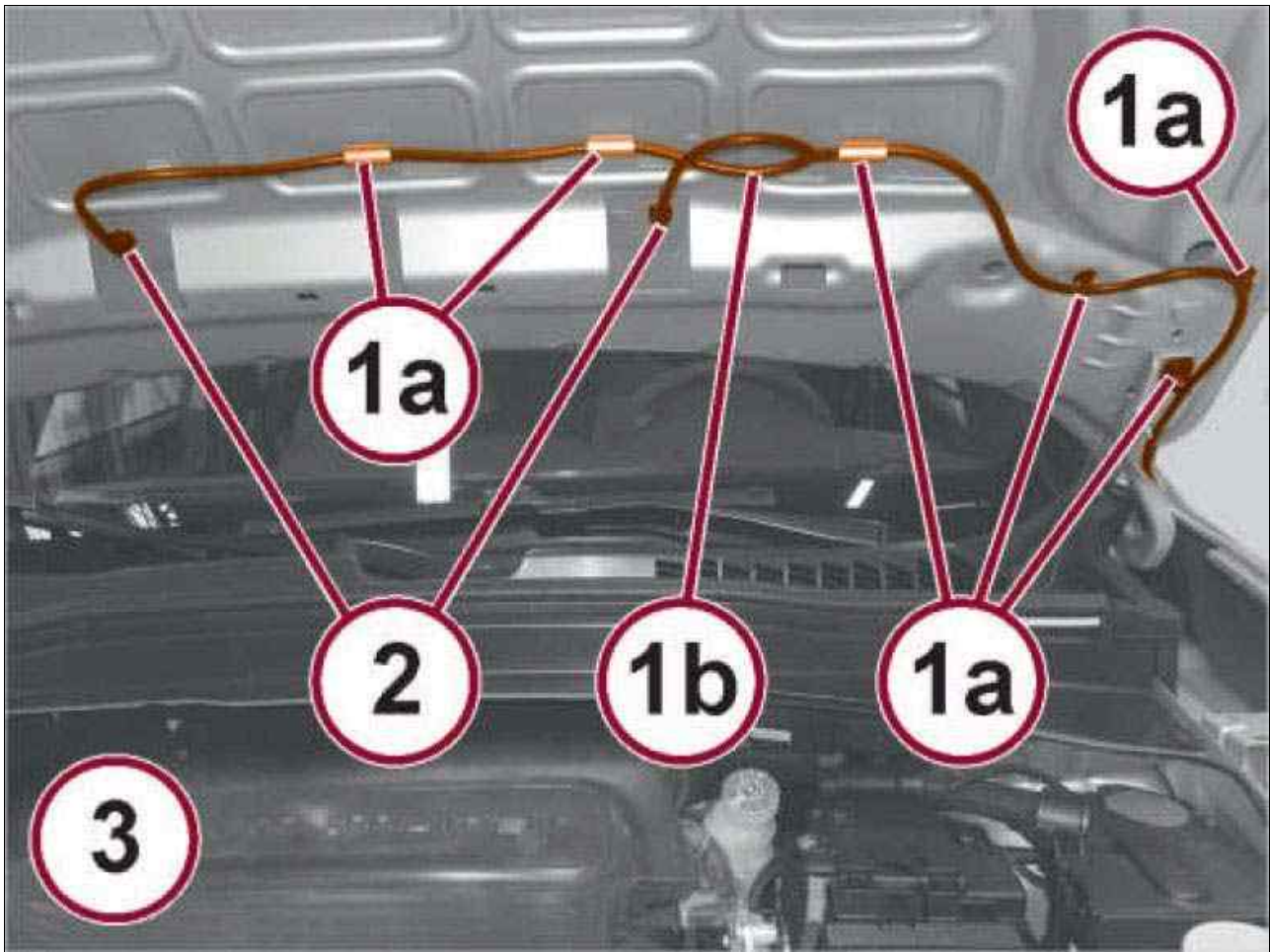


Courtesy of CHRYSLER GROUP, LLC

3. From the underside of the inner hood panel reinforcement disconnect the supply hose (1b) from the nipple of the front washer nozzle (2).
4. Release the two integral latch features of the front washer nozzle and push the nozzle out through the mounting hole toward the outside of the hood panel.

**NOZZLE, WASHER > REMOVAL AND INSTALLATION > REMOVAL AND
INSTALLATION - FRONT WASHER NOZZLE > INSTALLATION - FRONT**

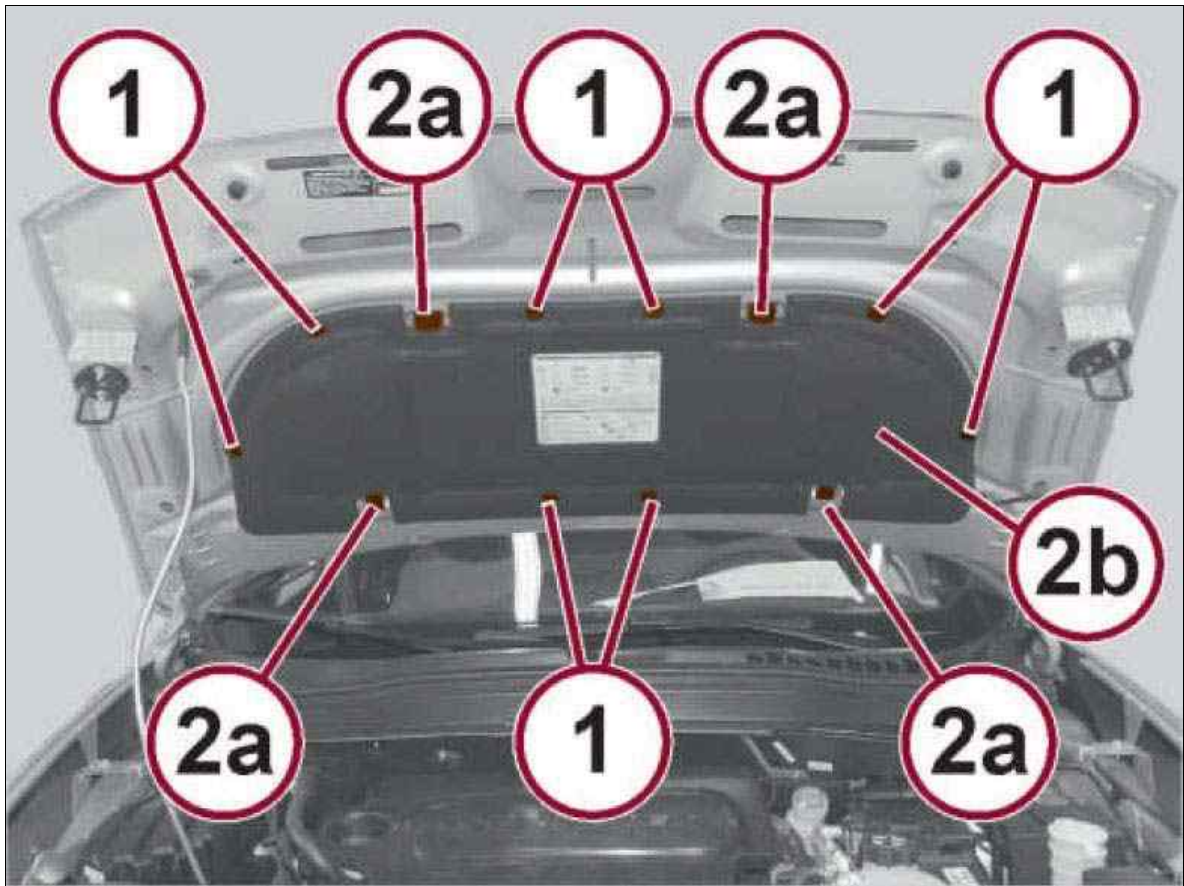
Fig 1: Supply Hose, Washer Nozzles & Fasteners



Courtesy of CHRYSLER GROUP, LLC

1. Position the front washer nozzle (2) to the mounting hole from the outside of the hood panel.
2. Using hand pressure, push firmly and evenly on the top of the nozzle until the two integral latches snap into place on the inside surface of the hood panel.
3. Connect the supply hose (1b) to the front washer nozzle nipple.

Fig 2: Remove/Install Front Washer Nozzle

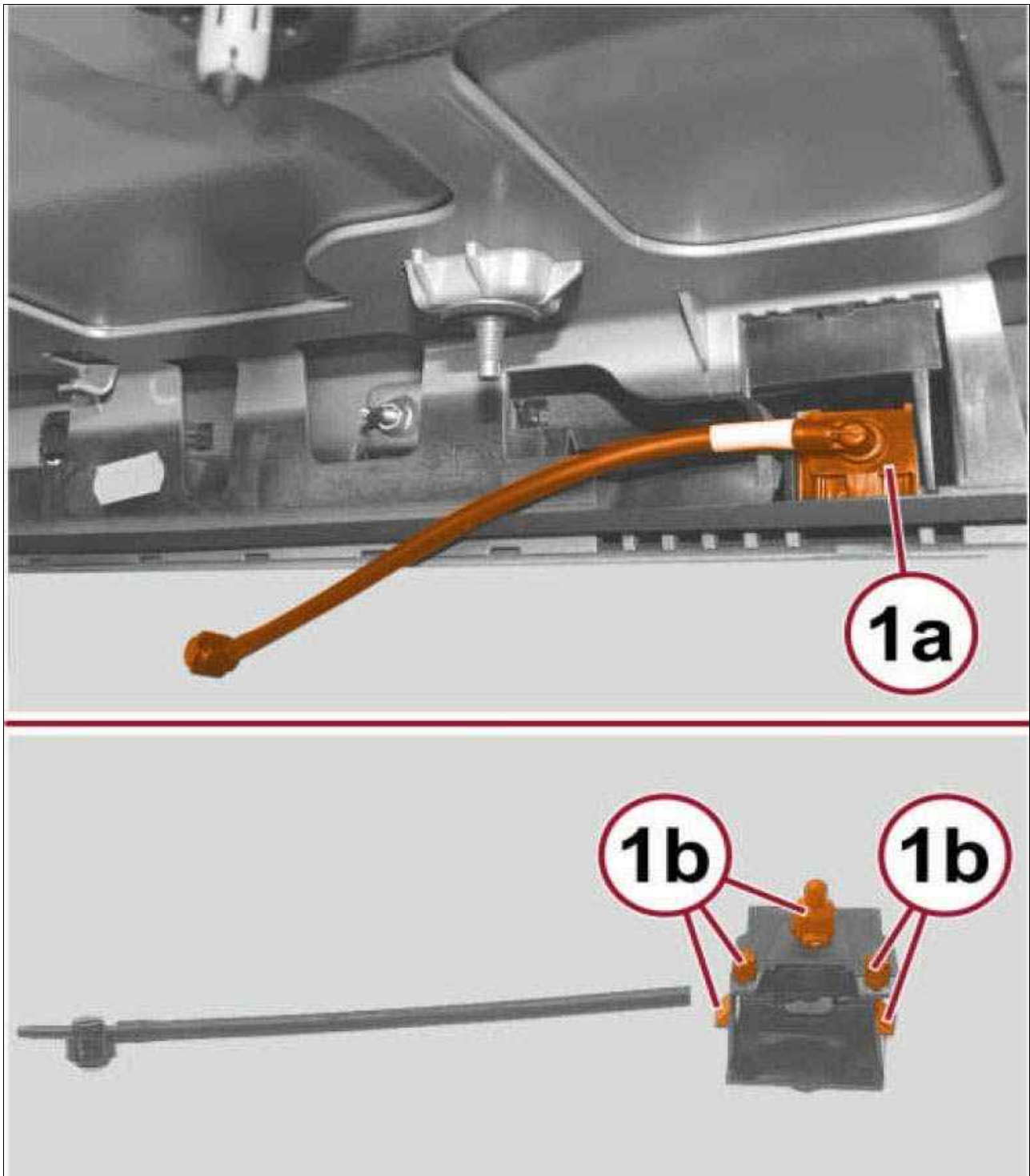


Courtesy of CHRYSLER GROUP, LLC

4. Engage the four tabs (2a) of the hood silencer pad (2b) into the slots in the inner hood panel reinforcement.
5. Install the eight retainers (1) that secure the silencer pad to the inner hood panel reinforcement.

**NOZZLE, WASHER > REMOVAL AND INSTALLATION > REMOVAL AND
INSTALLATION - REAR WASHER NOZZLE > REMOVAL - REAR**

Fig 1: Rear Washer Nozzle & Latches



Courtesy of CHRYSLER GROUP, LLC

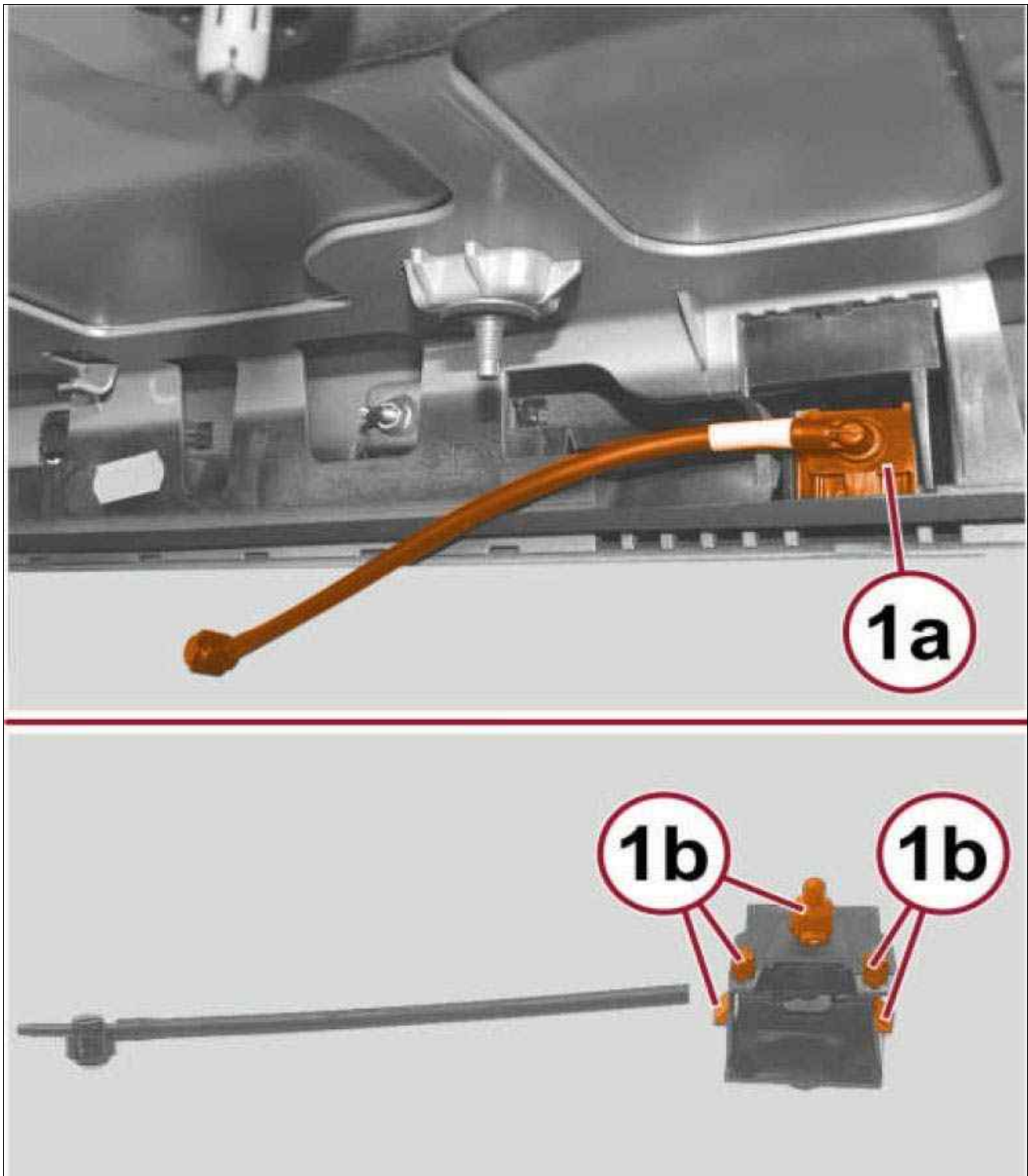
1. Remove the spoiler from the outside of the liftgate. Refer to SPOILER, DECKLID, REMOVAL AND INSTALLATION .
2. Working from the back of the spoiler, disconnect the washer hose and check valve from the nipple of the rear washer nozzle (1a).
3. Using a trim stick or another suitable wide flat-bladed tool, compress the latch features (1b)

that secure the rear washer nozzle in the mounting hole of the spoiler panel far enough to release the nozzle.

4. Remove the rear washer nozzle from the mounting hole of the spoiler panel.

**NOZZLE, WASHER > REMOVAL AND INSTALLATION > REMOVAL AND
INSTALLATION - REAR WASHER NOZZLE > INSTALLATION - REAR**

Fig 1: Rear Washer Nozzle & Latches



Courtesy of CHRYSLER GROUP, LLC

1. Position the rear washer nozzle (1a) to the mounting hole of the liftgate spoiler panel. Be certain that the nozzle orifice is oriented toward the liftgate glass.
2. Using hand pressure, press firmly and evenly on the rear washer nozzle until the latch features (1b) snap into place behind the mounting hole of the liftgate spoiler panel.
3. Connect the check valve and rear washer supply hose unit to the nipple of the rear washer

nozzle.

4. Install the spoiler onto the outside of the liftgate. Refer to SPOILER, DECKLID, REMOVAL AND INSTALLATION .

PUMP, WINDSHIELD WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION

Fig 1: Two-Way Electric Pump & Washer Fluid Reservoir



Courtesy of CHRYSLER GROUP, LLC

The washer pump circuit is supplied by a two-way electric pump located in the lower part of the washer fluid reservoir, which is located between the left front fender and the fender inner shield ahead of the left front wheel and the front wheel house splash shield. A small permanently lubricated and sealed electric motor is coupled to the rotor-type washer pump. The electric motor is reversible and an integral valve body 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 pump impeller rotation.

The washer pump is retained on the reservoir by the interference fit between the pump inlet nipple and the grommet seal, which is a light press fit. This fit allows for mounting of the washer pump without the use of fasteners. An integral connector receptacle on the top of the motor housing connects the unit to the vehicle electrical system through a dedicated take out and connector of the engine compartment wire harness.

The washer pump cannot be repaired. If ineffective or damaged, the entire washer pump must be replaced. The rubber grommet seal/filter screen is available for separate service replacement.

PUMP, WINDSHIELD WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION

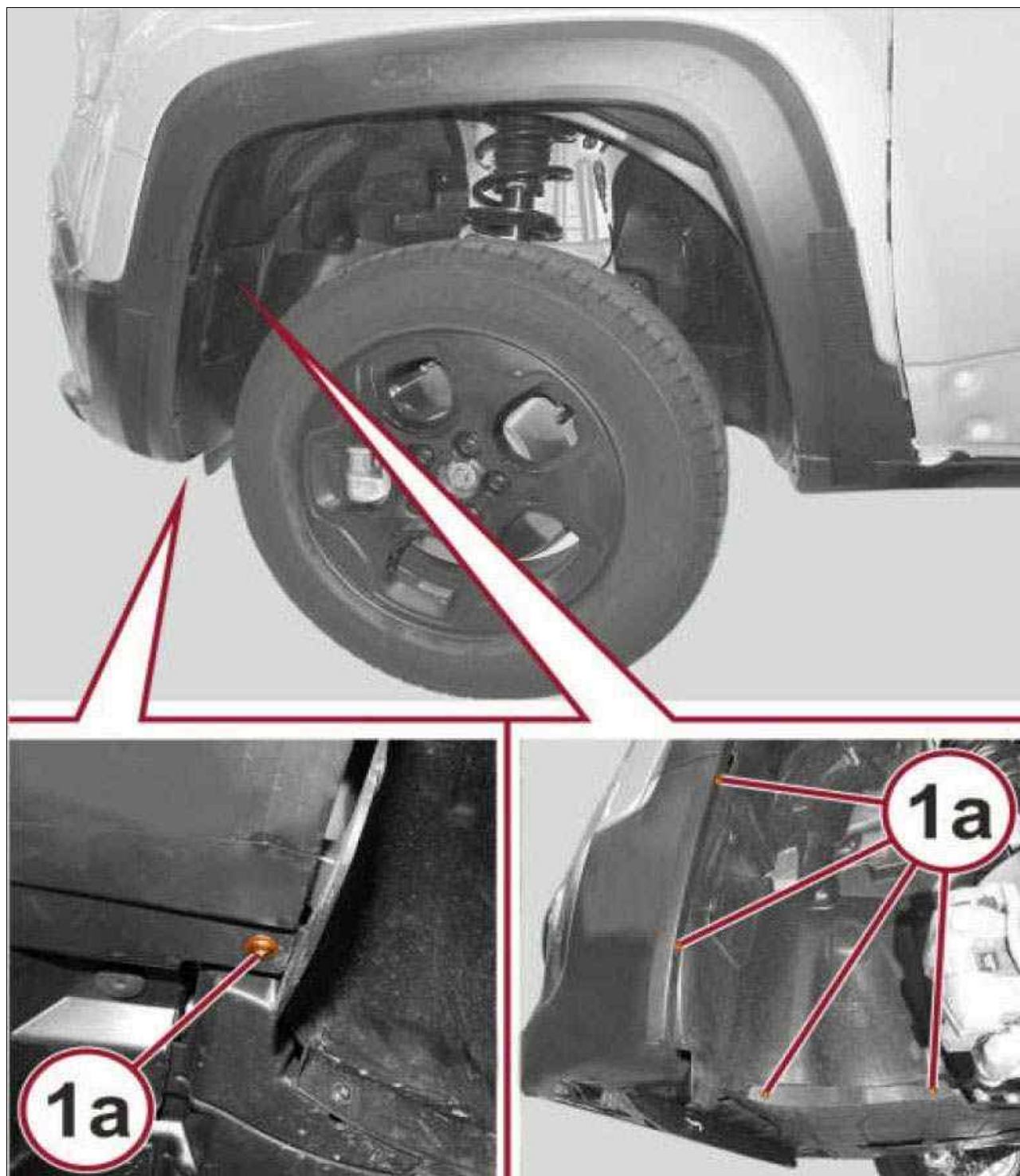
The washer pump features a reversible electric motor. The direction of the motor is controlled by hard wired outputs from the Body Control Module (BCM). When battery current and ground are applied to the two pump motor terminals, the motor rotates in one direction. When the polarity of these connections 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 the appropriate pump outlet nipple and into the front or rear washer plumbing. The BCM controls the hard wired outputs to the pump motor based upon hard wired resistor multiplexed inputs received from the front and rear washer switch circuitry contained within the right (wiper) multifunction switch.

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 of the pump housing. A diaphragm in this valve body controls which washer system plumbing receives the washer fluid being pressurized by the pump. When the pump impeller rotates in a counterclockwise direction, 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. When the pump impeller rotates in a clockwise direction, 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.

The washer pump and the hard wired motor control circuits from the BCM may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate SYSTEM WIRING DIAGRAMS article. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the washer pump or the electronic controls and 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 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 & Testing article.

PUMP, WINDSHIELD WASHER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

Fig 1: Front Wheel House Splash Shield & Fasteners



Courtesy of CHRYSLER GROUP, LLC

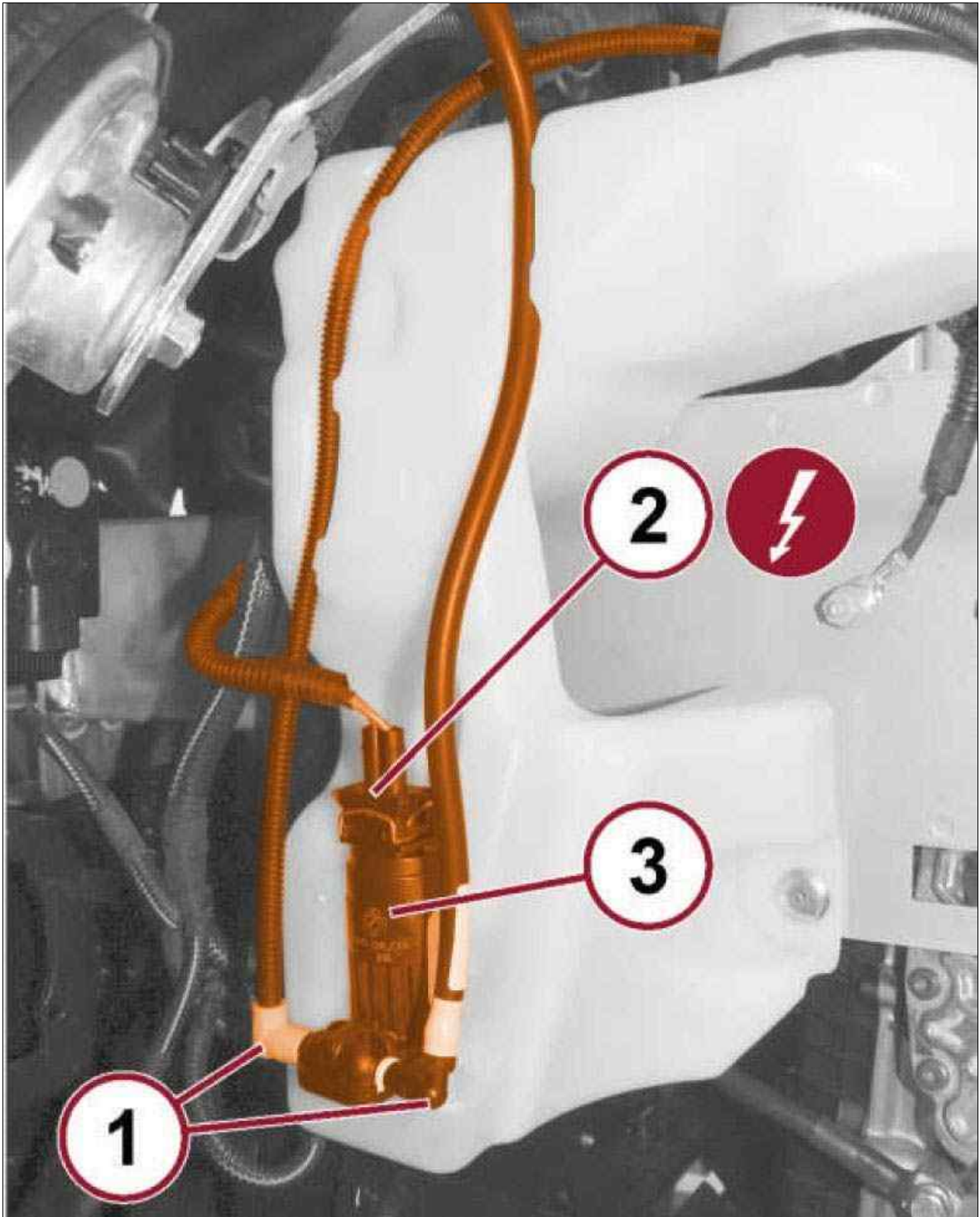


NOTE:

The washer pump/motor can be removed from the washer reservoir without removing the reservoir from the vehicle.

1. Turn the steering wheel to move the front wheels to the full left position.
2. Disconnect and isolate the negative cable from the battery. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector before disconnecting the negative cable from the battery.
3. Raise and support the vehicle.
4. Remove the fasteners (1a) that secure the front of the left front wheel house splash shield to the front of the front fender wheel opening and the front bumper fascia.
5. Pull the splash shield away from the front fascia far enough to access the washer pump/motor unit.

Fig 2: Washer Pump, Front & Rear Washer Hose Fittings And Wire Connector



Courtesy of CHRYSLER GROUP, LLC

6. Disconnect the engine compartment wire harness connector (2) from the washer pump/motor unit connector receptacle.

 NOTE:

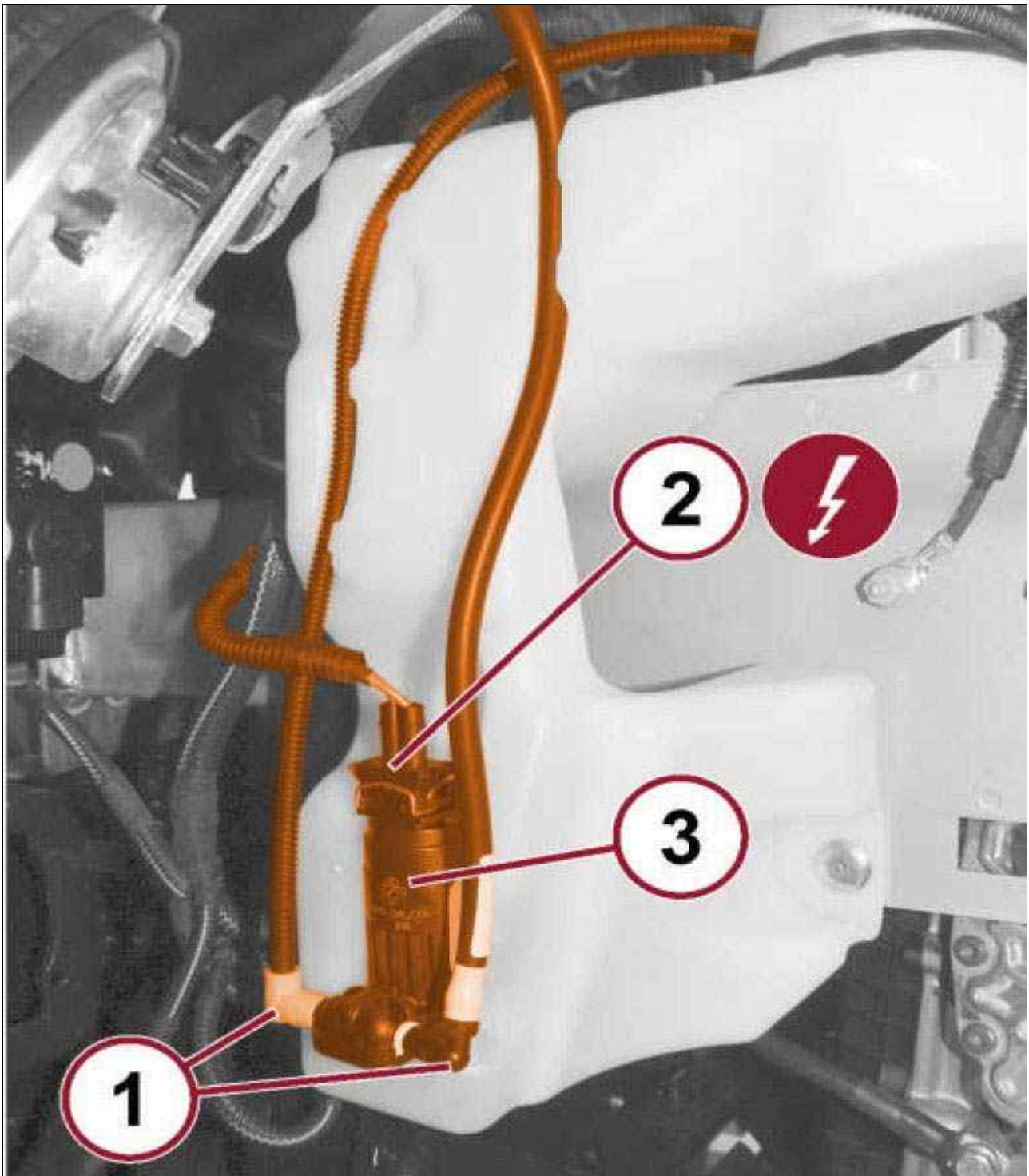
Note the installed position of the washer hoses prior to disconnecting them from the

washer pump.

7. Disconnect the front and rear washer hose fittings (1) from the barbed outlet nipples of the washer pump and allow the washer fluid to drain into a clean container for reuse.
8. Using hand pressure, firmly grasp and pull the washer pump (3) 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.
9. Remove the washer pump/motor unit from the washer reservoir.
10. Remove the rubber grommet seal from the washer pump mounting hole in the reservoir and discard.

**PUMP, WINDSHIELD WASHER > REMOVAL AND INSTALLATION > REMOVAL AND
INSTALLATION > INSTALLATION**

Fig 1: Washer Pump, Front & Rear Washer Hose Fittings And Wire Connector



Courtesy of CHRYSLER GROUP, LLC

1. Lubricate a new rubber grommet seal/filter screen with clean washer fluid and install it 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 (3) to the rubber grommet seal/filter screen in the reservoir.

3. Using hand pressure, press firmly and evenly downward on the top of 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.

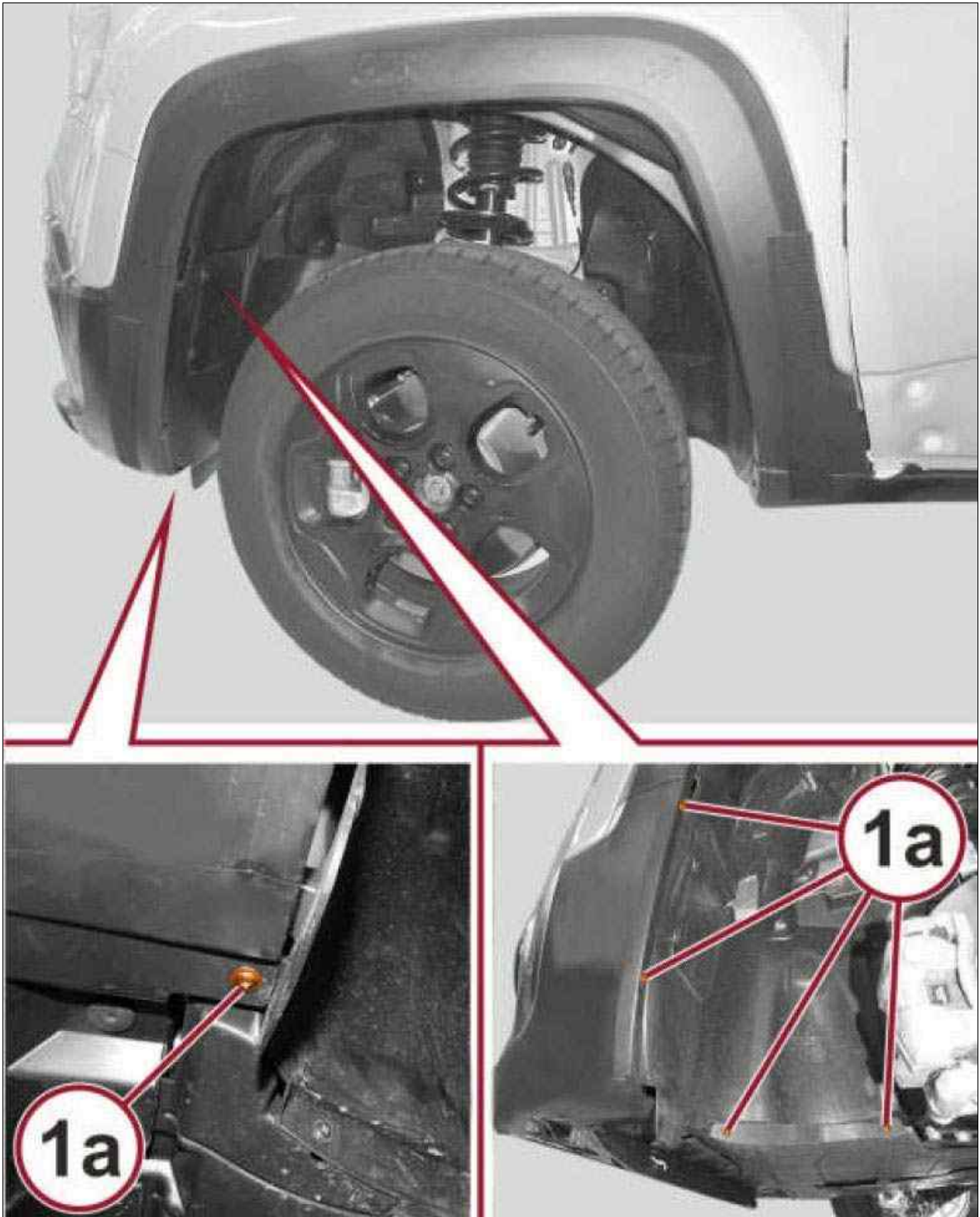


NOTE:

Be certain to connect the front and rear washer hoses to the proper outlet nipples of the washer pump (rear washer hose goes to black nipple, front washer hose goes to white nipple). Failure to properly connect the hoses will cause the front and rear washer systems to operate incorrectly.

4. Connect the front and rear washer hose fittings (1) to the barbed outlet nipples of the washer pump. Be certain that the rear washer hose is connected to the black nipple and the front washer hose is connected to the white nipple.
5. Connect the engine compartment wire harness connector (2) for the washer pump/motor unit to the connector receptacle on the top of the motor.

Fig 2: Front Wheel House Splash Shield & Fasteners



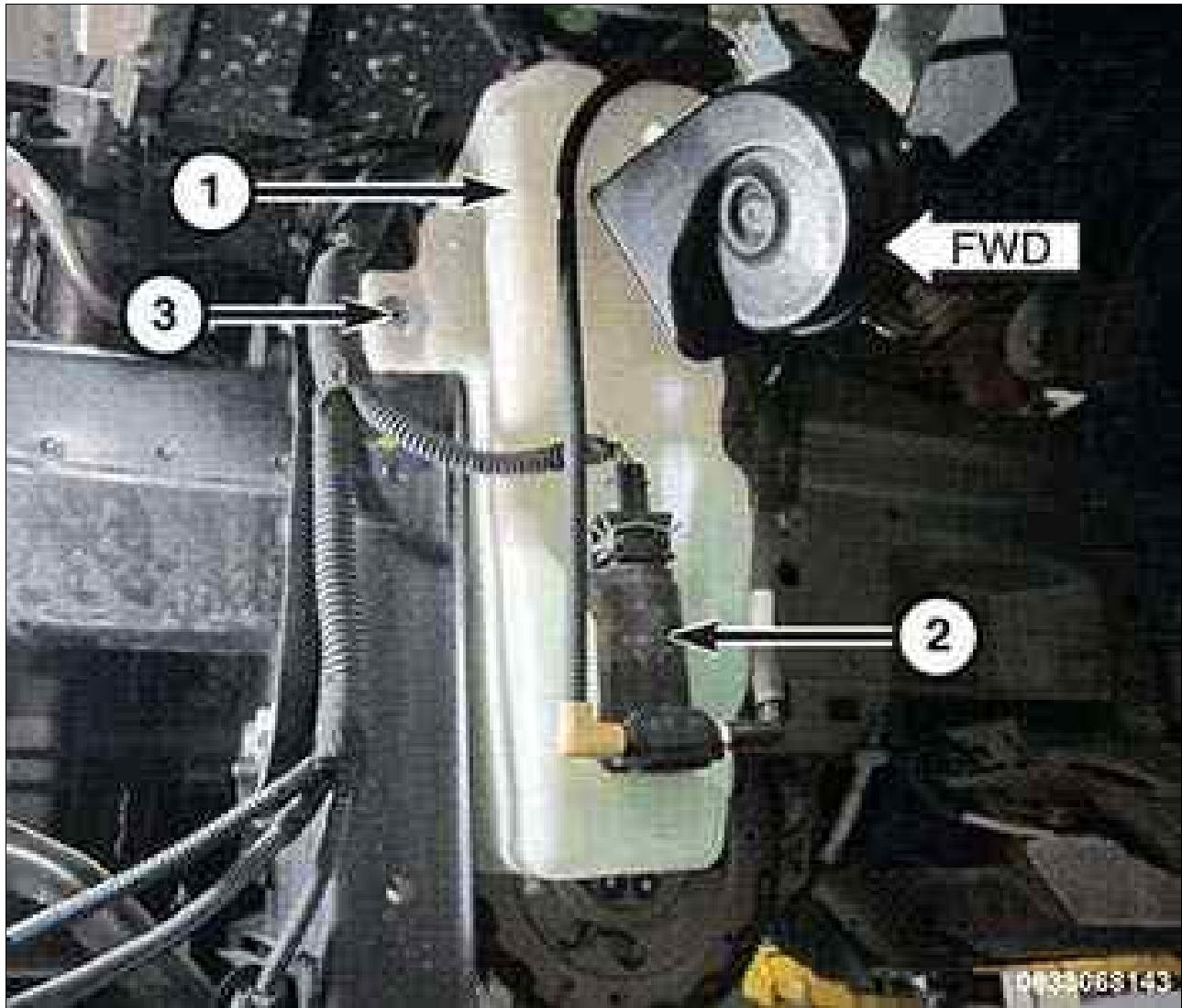
Courtesy of CHRYSLER GROUP, LLC

6. Install the fasteners (1a) to secure the left front wheel house splash shield to the front of the front fender opening and the front bumper fascia.
7. Remove the support and lower the vehicle.
8. Connect the negative cable to the battery. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector.

9. Fill the washer reservoir with the washer fluid drained from the reservoir during the removal procedure.

RESERVOIR, WINDSHIELD WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION

Fig 1: Washer Fluid Reservoir, Pump/Motor Unit & Blind Rivets



Courtesy of CHRYSLER GROUP, LLC

A single washer fluid reservoir (1) is used for both the front and the rear washer systems. The molded plastic washer fluid reservoir is mounted between the left front fender and inner fender shield and ahead of the left front wheel, where it is concealed by the left front wheel house splash shield. The only visible component of the washer reservoir is the filler neck and cap unit, which extends upward into the left front corner of the engine compartment just behind the upper radiator cross member.

A yellow plastic filler cap with an International Control and Display Symbol icon for **Windshield Washer** molded into it snaps over the open end of the filler neck. The cap hinges on an integral bail strap. Two rubber O-rings seal the lower end of the filler neck to the fitting on the top of the reservoir and a unique plastic retainer latches the filler neck to a stanchion on the front outboard corner of the battery tray.

There is a dedicated mounting hole in the sump area at the bottom of the reservoir provided for the washer pump/motor unit (2). The outboard side of the washer reservoir has integral troughs which secure the front and rear washer hoses as they are routed into the engine compartment. The sides of the reservoir have integral mounting tabs that are used to secure the reservoir to the outboard side of the left front end structure with blind rivets (3).

The washer reservoir cannot be repaired and, if ineffective or damaged, it must be replaced. The washer reservoir, the rubber grommet seal/filter screen, the washer pump/motor unit, the filler neck and the filler cap are each available for individual service replacement.

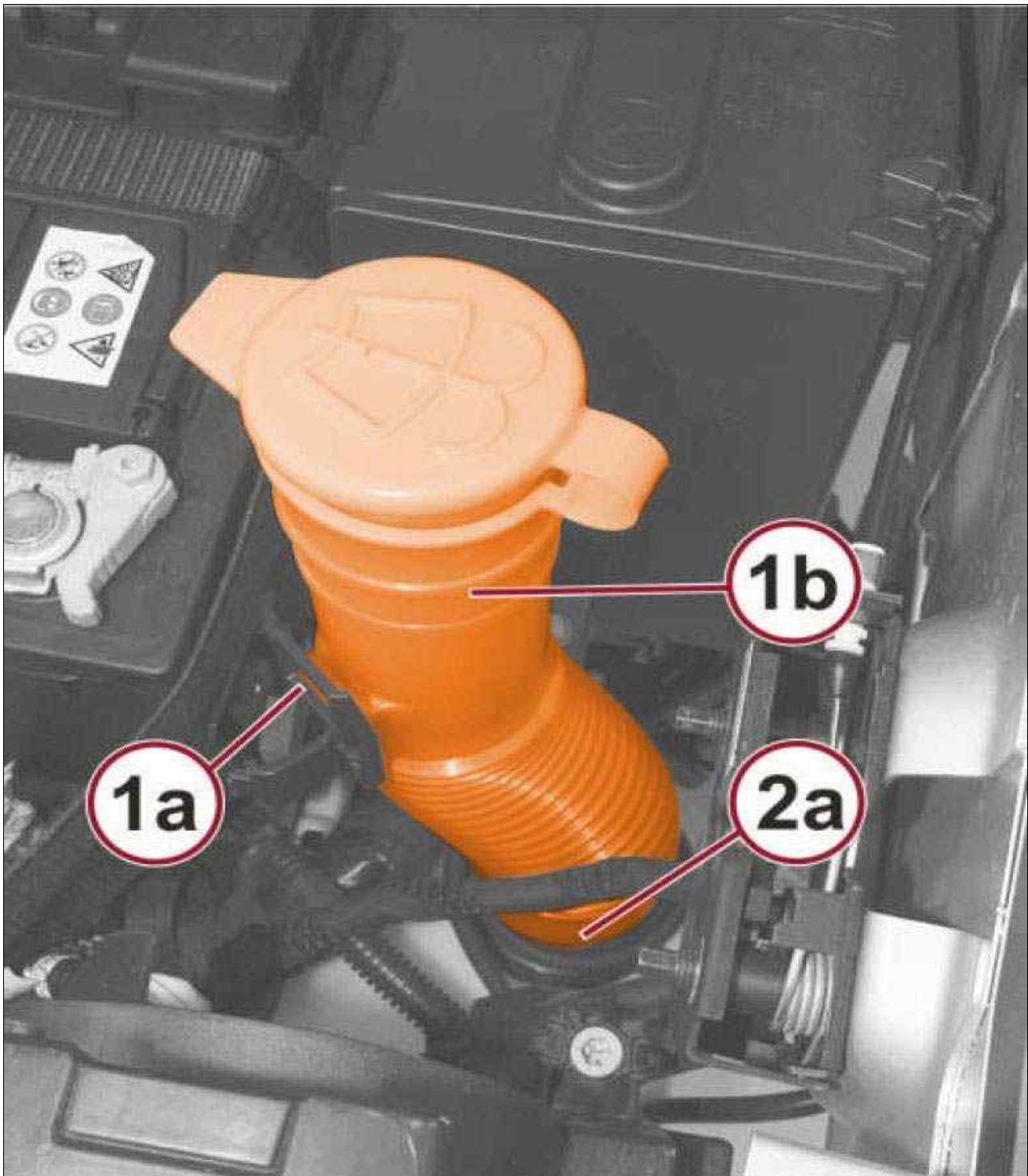
RESERVOIR, WINDSHIELD WASHER > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION

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

The reversible front and rear washer pump is located in a sump area near the bottom on the outboard side of the reservoir to be certain that washer fluid will be available to the pump as the fluid level in the reservoir becomes depleted.

RESERVOIR, WINDSHIELD WASHER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL - FILLER NECK

Fig 1: Filler Neck, Base & Latch Tabs



Courtesy of CHRYSLER GROUP, LLC

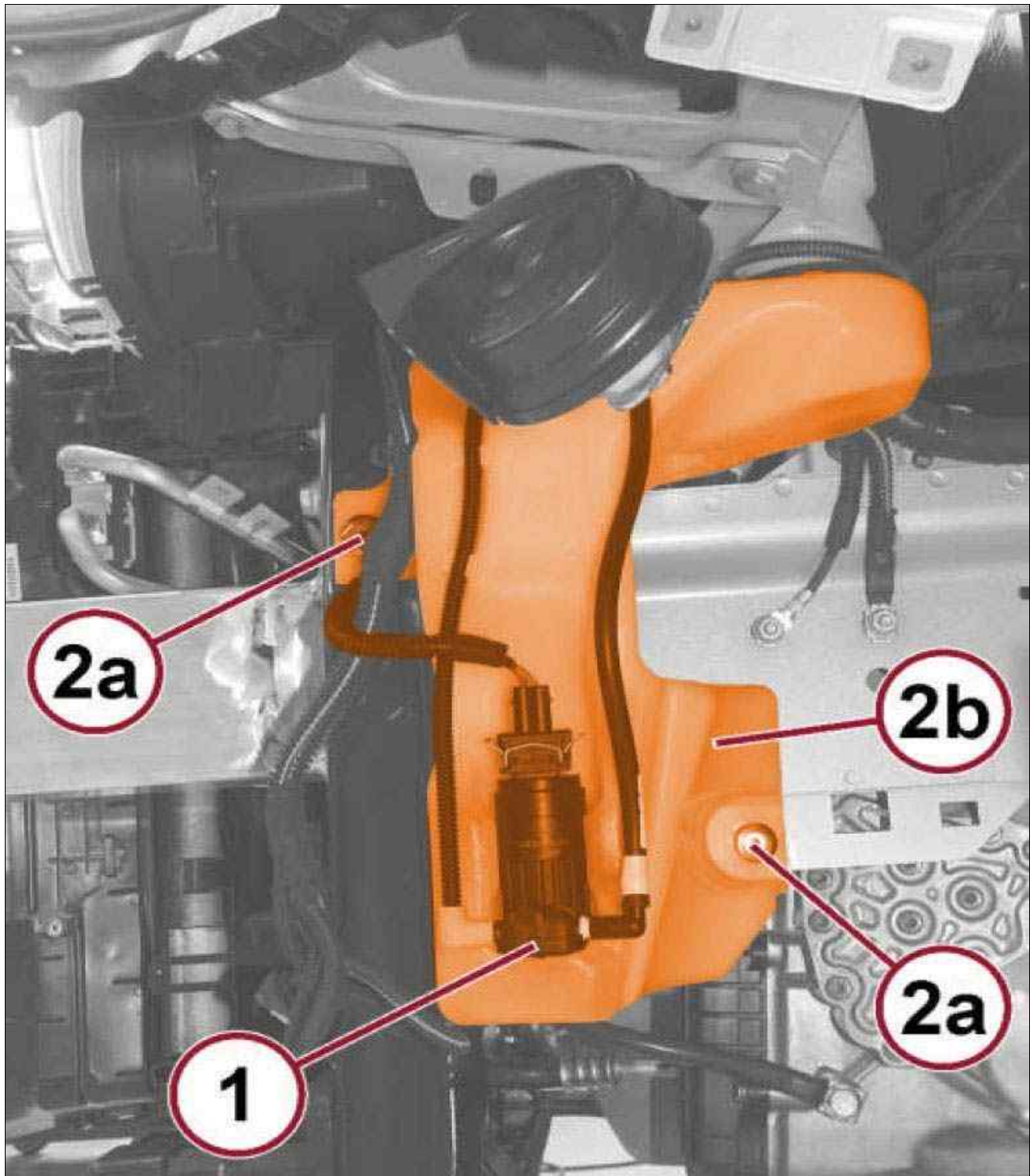
1. Locate the filler neck of the washer reservoir in the left front corner of the engine compartment.
2. Observe the level of the washer fluid through the translucent filler neck and reservoir. If the washer fluid level is above the base of the filler neck, siphon the washer fluid into a clean container for reuse until it is below the base of the filler neck.
3. Disengage the latch tabs of the retainer (1a) on the filler neck (1b) from the stanchion on the

outboard front corner of the battery tray.

4. Use a back and forth twisting action to disengage the base (2a) of the filler neck from the filler neck fitting on the top of the reservoir.
5. Remove the filler neck, retainer and filler cap from the engine compartment as a unit.

**RESERVOIR, WINDSHIELD WASHER > REMOVAL AND INSTALLATION > REMOVAL
AND INSTALLATION > REMOVAL - RESERVOIR**

Fig 1: Washer Reservoir, Pump & Blind Rivets



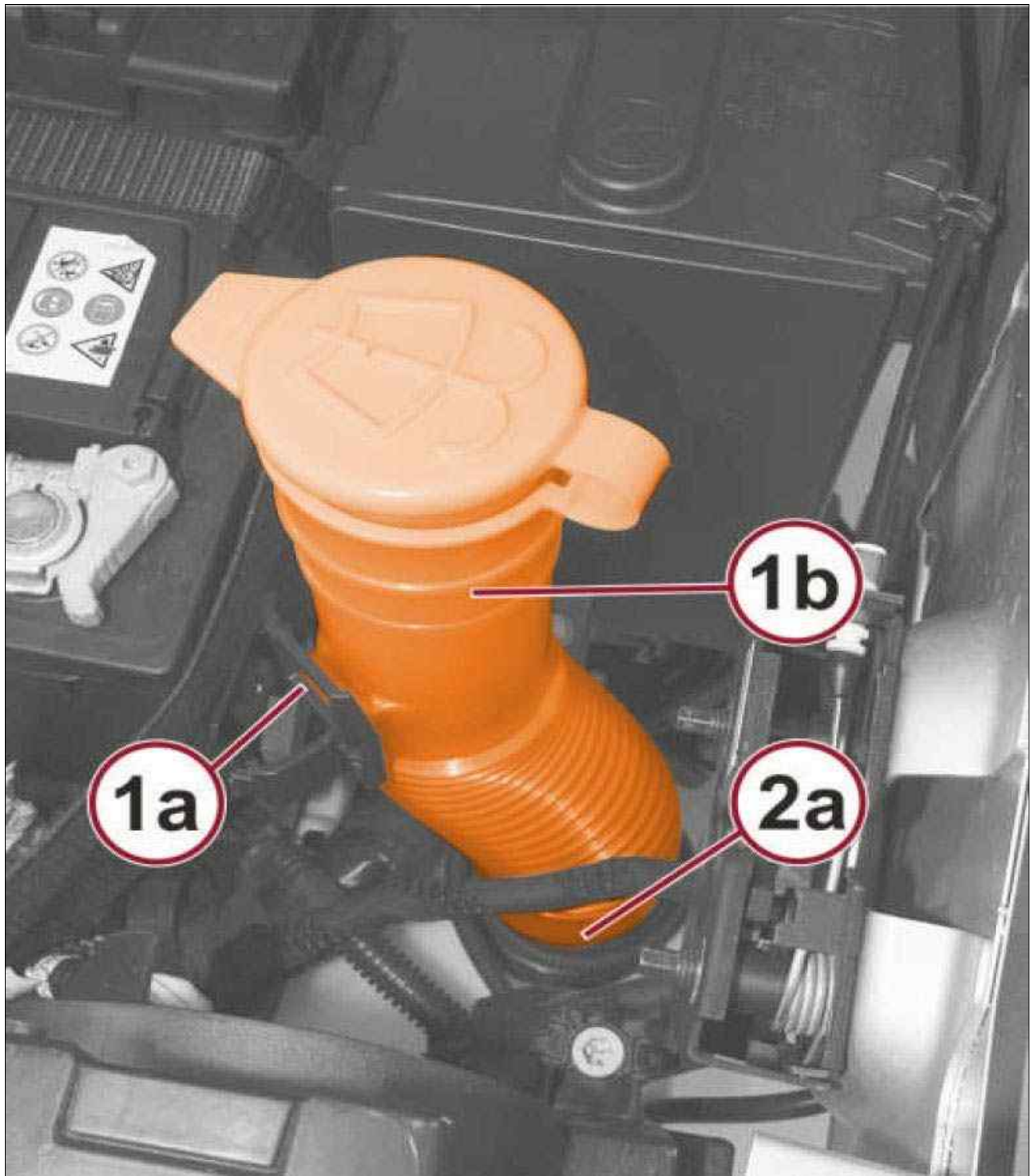
Courtesy of CHRYSLER GROUP, LLC

1. Disconnect and isolate the negative cable from the battery. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector before disconnecting the negative cable from the battery.
2. Remove the filler neck from the washer reservoir. Refer to RESERVOIR, WINDSHIELD WASHER, REMOVAL AND INSTALLATION .

3. Raise and support the vehicle.
4. Remove the washer pump (1) from the washer reservoir without disconnecting the wiring and hoses from the pump. Move the washer pump aside. Refer to PUMP, WINDSHIELD WASHER, REMOVAL AND INSTALLATION .
5. Remove the rubber grommet seal from the washer pump mounting hole in the reservoir and discard.
6. Use a drill to remove the two blind rivets (2a) that secure the washer reservoir (2b) to the outboard side of the left front support structure.
7. Remove the reservoir from the vehicle.

**RESERVOIR, WINDSHIELD WASHER > REMOVAL AND INSTALLATION > REMOVAL
AND INSTALLATION > INSTALLATION - FILLER NECK**

Fig 1: Filler Neck, Base & Latch Tabs



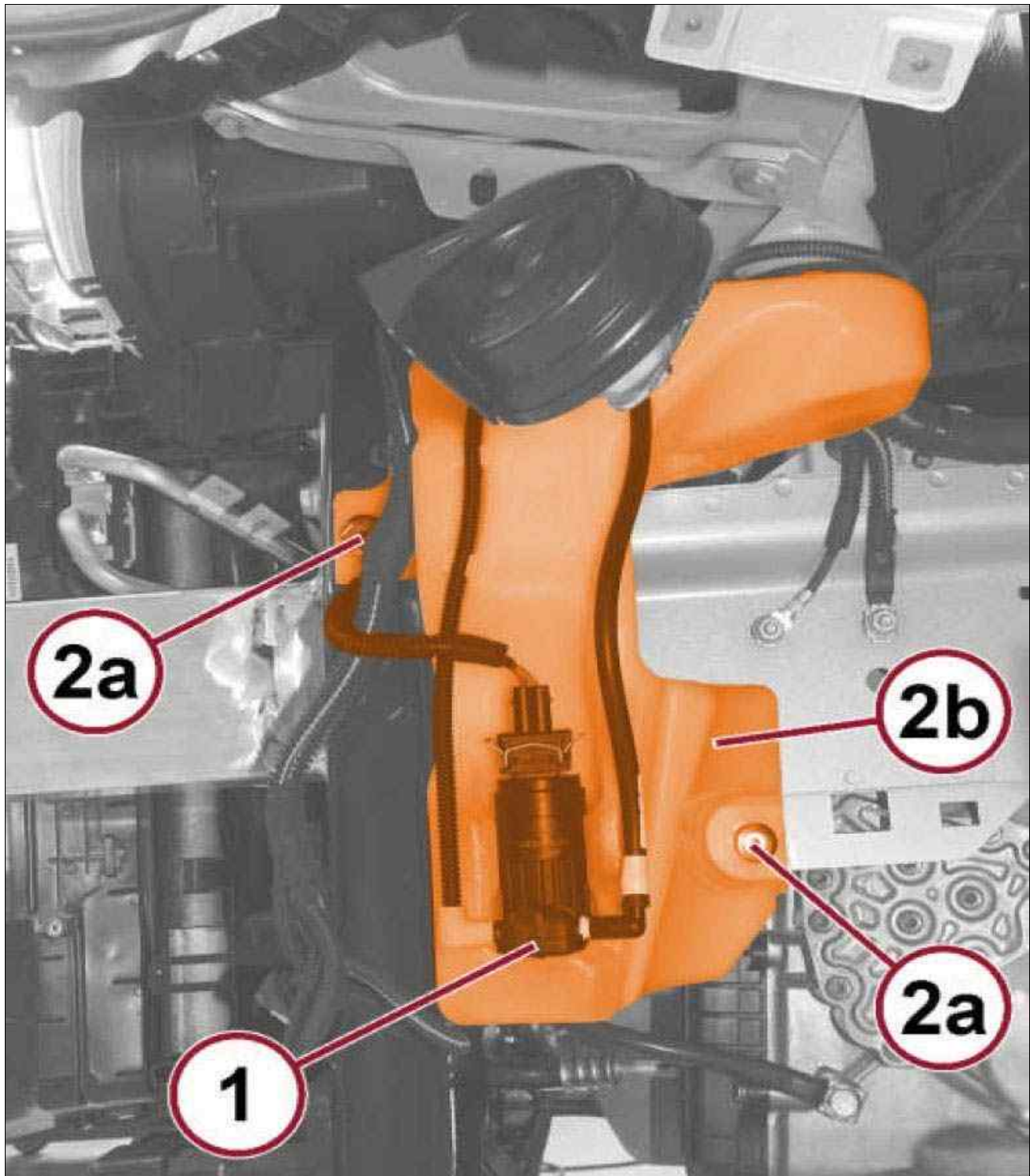
Courtesy of CHRYSLER GROUP, LLC

1. Be certain that the two O-ring seals on the base of the filler neck are properly positioned and in good condition.
2. Position the filler neck (1b), retainer and filler cap into the left front corner of the engine compartment as a unit.
3. Align the base of the filler neck (2a) with the filler neck fitting on the top of the reservoir.

4. Use a back and forth twisting action to engage the base of the filler neck into the filler neck fitting on the top of the reservoir.
5. Align and snap the filler neck retainer (1a) onto the stanchion on the outboard front corner of the battery tray. Be certain that the two latch features of the retainer are fully engaged with the stanchion.
6. Refill the washer reservoir with any washer fluid drained from the filler neck during the removal procedure.

**RESERVOIR, WINDSHIELD WASHER > REMOVAL AND INSTALLATION > REMOVAL
AND INSTALLATION > INSTALLATION - RESERVOIR**

Fig 1: Washer Reservoir, Pump & Blind Rivets



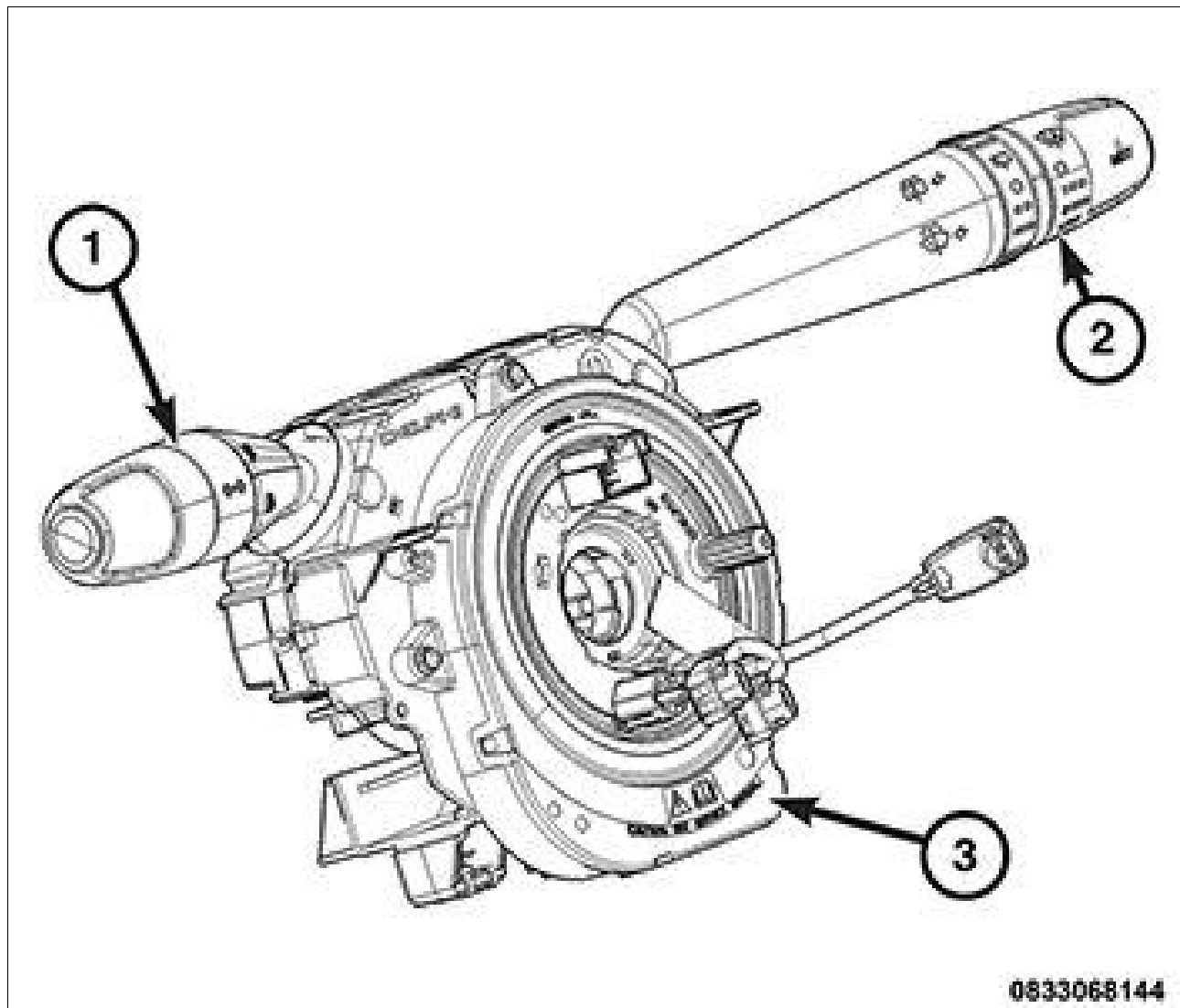
Courtesy of CHRYSLER GROUP, LLC

1. Position the washer reservoir (2b) to the left front support structure of the vehicle.
2. Align the reservoir mounting tabs with the mounting holes on the outboard side of the left front support structure.
3. Install two new blind rivets (2a) to secure the reservoir to the outboard side of the left front support structure.

4. Lubricate a new rubber grommet seal/filter screen with clean washer fluid and install it into the washer pump mounting hole in the washer reservoir. Always use a new rubber grommet seal/filter screen on the reservoir.
5. Install the washer pump/motor unit (1) into the reservoir. Refer to PUMP, WINDSHIELD WASHER, REMOVAL AND INSTALLATION .
6. Install the fasteners to secure the left front wheel house splash shield to the front bumper fascia.
7. Remove the support and lower the vehicle.
8. Install the filler neck onto the washer reservoir. Refer to RESERVOIR, WINDSHIELD WASHER, REMOVAL AND INSTALLATION .
9. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector.
10. Fill the washer reservoir with the washer fluid drained from the reservoir during the removal procedure.

**SWITCH, MULTIFUNCTION, RIGHT > DESCRIPTION AND OPERATION >
DESCRIPTION AND OPERATION > DESCRIPTION**

Fig 1: Right/Left Multifunction Switch & Clockspring



Courtesy of CHRYSLER GROUP, LLC

The wiper (right) multifunction switch (2) is located on the right side of the steering column, just behind 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 with a control knob and control sleeve that extend through the steering column shrouds on the right side of the column. The remainder of the switch including its mounting provisions and its electrical connection are concealed beneath the shrouds.

The switch housing and controls 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. The wiper (right) multifunction switch for this vehicle is integral to the clockspring and stalk unit which also includes an integral lighting (left) multifunction switch (1) and the clockspring (3).

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

- **Continuous Front Wipers** - The right multifunction switch control stalk provides detent switching for two continuous front wipe modes, low speed or high speed.
- **Intermittent Front Wipers** - The right multifunction switch control stalk provides detent switching

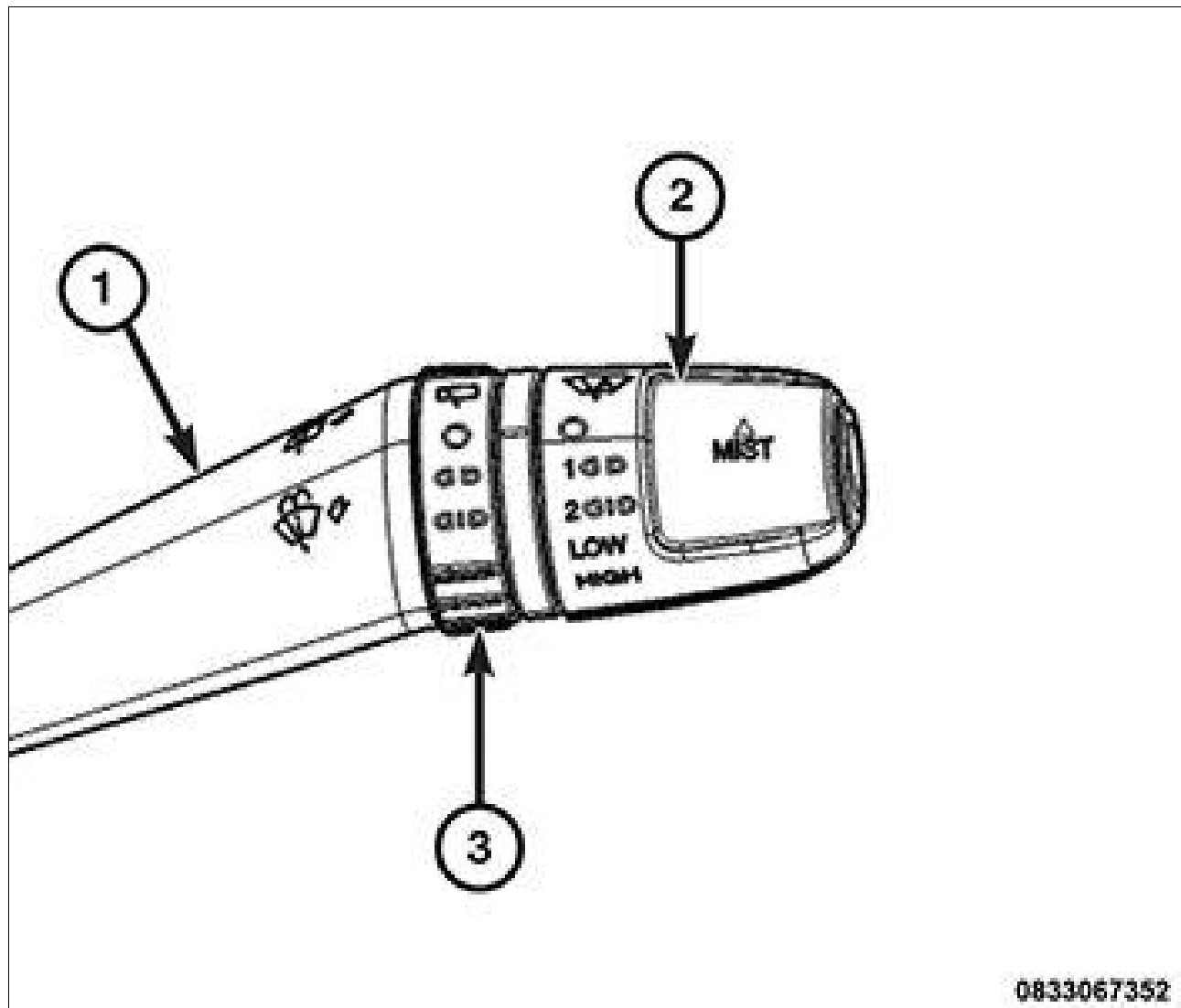
for two speed-sensitive intermittent front wipe modes.

- **Front Wiper Mist Mode** - The right multifunction switch control stalk includes momentary switching of the front wiper motor low speed circuit to provide a mist mode feature (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 multifunction switch control stalk provides momentary switching for control of front washer system operation.
- **Continuous Rear Wipe Mode** - The right multifunction switch control knob provides detent switching for a single continuous rear wiper mode.
- **Intermittent Rear Wipe Mode** - The right multifunction switch control knob provides detent switching for a single fixed interval intermittent rear wiper mode.
- **Rear Washer Mode** - The right multifunction switch control stalk provides momentary switching for control of rear washer system operation.

The wiper (right) multifunction switch cannot be adjusted or repaired. If any function or feature of the switch is ineffective or if the switch is damaged, the entire clockspring and stalk unit must be replaced. Refer to CLOCKSPRING, REMOVAL AND INSTALLATION .

SWITCH, MULTIFUNCTION, RIGHT > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION

Fig 1: Right Multifunction Switch Control Stalk, Knob & Sleeve



Courtesy of CHRYSLER GROUP, LLC

The wiper (right) multifunction switch uses resistor multiplexing to control the many functions and features it provides using a minimal number of hard wired circuits. The switch receives clean grounds from the Body Control Module (BCM), then provides resistor multiplexed return outputs to the BCM to indicate the selected switch positions. The BCM then sends hard wired control outputs as well as electronic **switch status** messages over the Controller Area Network (CAN) data bus to other electronic modules in the vehicle.

Some of the hard wired inputs and outputs of the BCM and the wiper (right) multifunction switch unit may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate SYSTEM WIRING DIAGRAMS article. However, the most reliable, efficient and accurate means to diagnose the BCM and the wiper (right) multifunction switch requires the use of a diagnostic scan tool. Refer to the appropriate Diagnostic & Testing article.

Following are descriptions of how the wiper (right) multifunction switch is operated to control the functions and features it provides:

- **Front Wiper Control** - The right multifunction switch control knob (2) is rotated upward to one of the two continuous wiper detents or to one of the two speed sensitive intermittent wipe detents. It

is rotated to the most downward detent position to select the front wiper Off position. The right multifunction switch control stalk (1) is raised upward to the momentary front wiper 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 the Mist position. If the front wipers are active, the rear wipers are automatically activated whenever the transmission gear selector is placed in the Reverse position. The BCM reads the resistor multiplexed input from the wiper (right) multifunction switch, a hard wired input from the manual transmission backup lamp switch (if equipped), an electronic **reverse gear selected** message input from the automatic Transmission Control Module (TCM) (if equipped) and electronic **vehicle speed** message inputs from the Antilock Brake Module (ABM) and provides a hard wired output to control the relays that energize or de-energize the front and rear wiper motors as appropriate.

- **Front Washer Control** - The right multifunction switch control stalk is pulled rearward towards the steering wheel to a momentary Front 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. If the control stalk is held in the Front Wash position for more than about half a second, the front wiper motor will begin to operate and will continue to operate for about three complete strokes after the control stalk is released. There will also be one additional front wiper stroke about six seconds after the control stalk is released. The BCM reads the resistor multiplexed input from the wiper (right) multifunction switch and provides hard wired outputs to control the washer pump/motor and the front wiper motor as appropriate.
- **Rear Wiper Control** - The rear wiper mode is selected when the right multifunction switch control sleeve (3) is rotated upward to the continuous wipe or the fixed interval intermittent rear wipe detent positions. It is rotated to the most downward detent position to select the rear wiper Off position. If the front wipers are active, the rear wipers will operate in a synchronous mode at half the speed of the front wipers, or in a continuous mode whenever the transmission gear selector is placed in the Reverse position. The BCM reads the resistor multiplexed input from the wiper (right) multifunction switch and provides a hard wired output to control a relay that energizes or de-energizes the rear wiper motor as appropriate.
- **Rear Washer Control** - The right multifunction switch control stalk is pushed forward towards the instrument panel to a momentary Rear Wash position to activate the washer pump/motor in the rear washer mode. The washer pump/motor will continue to operate for as long as the control stalk is held in this position. If the control stalk is held in the Rear Wash position for more than about half a second, the rear wiper motor will begin to operate and will continue to operate for about three complete strokes after the control stalk is released. There will also be one additional rear wiper stroke about six seconds after the control stalk is released. The BCM reads the resistor multiplexed input from the wiper (right) multifunction switch and provides hard wired outputs to control the washer pump/motor and the rear wiper motor as appropriate.

SWITCH, MULTIFUNCTION, RIGHT > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - RIGHT MULTIFUNCTION SWITCH

The internal circuitry of the wiper (right) multifunction switch and the hard wired circuits between the switch and the Body Control Module (BCM) may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate SYSTEM WIRING DIAGRAMS article. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the BCM or the electronic controls and communication between modules and other devices that provide some features of the BCM-controlled wiper and washer system. The most reliable, efficient and accurate means to diagnose the BCM or the electronic controls and communication related to BCM-controlled wiper and washer system operation

requires the use of a diagnostic scan tool. Refer to the appropriate Diagnostic & Testing article.

SWITCH, MULTIFUNCTION, RIGHT > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL



NOTE:

The clockspring and stalk unit for this vehicle includes the wiper (right) multifunction switch, the lighting (left) multifunction switch and the clockspring. The two multifunction switches and the clockspring are inseparable from the clockspring and stalk unit and are serviced only as a unit. If any function or feature of either multifunction switch or the clockspring is ineffective or damaged, or if the Driver AirBag (DAB) has been deployed, the entire clockspring and stalk unit must be replaced. Refer to CLOCKSPRING, REMOVAL AND INSTALLATION .

SWITCH, MULTIFUNCTION, RIGHT > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION



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