

# WIPER AND WASHER SYSTEMS

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### GENERAL INFORMATION - XJ

Following are general descriptions of the major components in the XJ (Cherokee) wiper and washer systems. Refer to Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

#### WINDSHIELD WIPER SYSTEM

A two-speed wiper system is standard equipment on all left-hand drive XJ models. An optional intermittent wipe system is available. The intermittent wipe system is standard equipment on all right-hand drive XJ models. The two-speed wiper system allows the driver to select from two wiper speeds. The intermittent wipe system allows the driver to select from two wiper speeds or an intermittent wipe feature that allows a delay between wipes of 2 to 15 seconds. Refer to the owner's manual for more information on wiper system controls and operation.

The wipers will operate only when the ignition switch is in the ACCESSORY or ON position. A circuit breaker near the fuseblock module protects the circuitry of the wiper system on left-hand drive models. The circuit breaker is in the fuseblock module on right-hand drive models.

#### WINDSHIELD WASHER SYSTEM

A electrically-operated windshield washer system is standard equipment on all XJ models. The washers will operate only when the ignition switch is in the ACCESSORY or ON position. A circuit breaker near the fuseblock module protects the circuitry of the washer system. Refer to the owner's manual for more information on washer system controls and operation.

#### LIFTGATE WIPER/WASHER SYSTEM

A liftgate wiper/washer system is an available option on XJ models. The liftgate wiper is a fixed cycle intermittent wipe system. A single switch on the instrument panel controls both the liftgate wiper and washer functions. These systems will operate only when the ignition switch is in the ON position. Fuse 1 in the fuseblock module protects the circuitry of

both the liftgate wiper and washer. Refer to the owner's manual for more information on liftgate wiper/washer system controls and operation.

#### WIPER ARMS, BLADES, AND ELEMENTS

All XJ models have two 18-inch windshield wiper blades with replaceable rubber elements (squeegees). Models with the liftgate wiper option use a single 12-inch wiper blade with a replaceable rubber element (squeegee).

Caution should be exercised to protect the rubber squeegees from any petroleum-based cleaners or contaminants, which will rapidly deteriorate the squeegee rubber. If squeegees are damaged, worn or contaminated they must be replaced.

Wiper squeegees exposed to the weather for a long time tend to lose their wiping effectiveness. Periodic cleaning of the squeegees is suggested to remove deposits of salt and road film. The wiper blades, arms and windshield or liftgate glass should be cleaned with a sponge or cloth and a mild detergent or non-abrasive cleaner. If the squeegees continue to streak or smear, they should be replaced.

The blades are mounted to spring-loaded wiper arms. Spring tension of the wiper arms controls the pressure applied to the blades on the glass. The windshield wiper arms are attached by an integral latch to the two wiper pivots on the cowl grille panel at the base of the windshield. The liftgate wiper arm is attached by an integral latch directly to the liftgate wiper motor output shaft on the liftgate panel. The wiper arms and blades can not be adjusted or repaired. If faulty, they must be replaced.

#### WIPER LINKAGE AND PIVOTS

The wiper pivots are fastened to the cowl top panel with screws beneath the cowl cover/grille panel. Each pivot assembly can be replaced by removing the cowl grille panel, unsnapping the linkage bushing(s) from the pivot crank arm pins, and removing the mounting screws.

The two pivot cranks are joined by a connecting link, and a drive link connects the motor crank to the drive link near the left pivot. Pressed-in plastic bushings in the ends of the links can be replaced if worn or damaged.

#### WINDSHIELD WIPER MOTOR

The two-speed permanent magnet wiper motor has an integral transmission and park switch. The motor is mounted to the engine side of the cowl panel with a reinforcement/stud plate and a rubber-isolated mounting bracket. The wiper motor output shaft passes through the cowl panel into the cowl plenum area, where a crank arm attached to the output shaft drives the wiper drive link.

Wiper speed is controlled by current flow to the appropriate set of brushes. The wiper motor completes its wipe cycle when the switch is turned OFF, and parks the blades in the lowest portion of the wipe pattern. The wiper motor assembly can not be repaired. If faulty, the entire motor assembly must be replaced. The crank arm, mounting bracket, and reinforcement/stud plate are available for service.

#### LIFTGATE WIPER MOTOR

The liftgate wiper motor contains integral electronic controls and a transmission to provide three operating modes:

- intermittent wipe with a fixed 5 to 8 second delay between wipes
- constant wipe that operates when the liftgate washer is operated
- a park mode that runs the motor until the wiper blade reaches the park position after the liftgate wiper switch or ignition switch is turned OFF.

The liftgate wiper motor can not be repaired. If faulty, the entire assembly must be replaced.

#### WINDSHIELD WIPER/WASHER SWITCH

Controls for the windshield wiper and washer systems are contained in the multi-function switch control lever. The multi-function switch is mounted on the left side of the steering column between the steering wheel and the instrument panel. This switch also controls many other functions. The multi-function switch can not be repaired. If any function of the switch is faulty, the entire switch must be replaced.

#### LIFTGATE WIPER/WASHER SWITCH

The single two-function switch on the instrument panel right of the steering column controls the liftgate wiper and washer functions. The rocker-type switch features a detent in the WIPE position, but only momentary contact in the WASH position. Both the liftgate wiper and liftgate washer motors will operate continuously for as long as the switch is held in the WASH position. The switch can not be repaired; if faulty, it must be replaced.

#### INTERMITTENT WIPE MODULE

In addition to low and high speed, the optional intermittent wipe system has a delay mode. The delay mode has a range of 2 to 15 seconds. The length of the delay is selected with a variable resistor in the wiper (multi-function) switch and is accomplished by electronic circuitry within the intermittent wipe module. If the washer knob is depressed while the wiper (multi-function) switch is in the OFF position, the intermittent wipe module will operate the wiper motor for approximately 2 wipes and automatically turn the motor off.

The intermittent wipe module is mounted to the lower instrument panel, behind the knee blocker and near the steering column with a hook and loop fastener patch. The module can not be repaired.

#### WINDSHIELD WASHER NOZZLES

The two fluidic washer nozzles are riveted into openings in the cowl grille panel below the windshield and are not adjustable. Washer fluid is fed to the nozzles through hoses clipped to the underside of the cowl grille panel. The nozzles can not be repaired and, if faulty, should be replaced.

#### LIFTGATE WASHER NOZZLE

The single liftgate washer nozzle snaps into place on the liftgate wiper arm. Washer fluid is fed to the nozzle from the washer reservoir in the engine compartment. A liftgate washer hose system is routed through the body of the vehicle with the body wiring harness from the reservoir to the liftgate. The fluid passes through a nipple on the liftgate wiper motor output shaft bezel to a hose clipped to the underside of the wiper arm. The nozzle can not be repaired and, if faulty, should be replaced.

#### WASHER RESERVOIR

The washer solvent reservoir is mounted to the left front inner fender shield near the cowl panel. The same reservoir is used for both the standard front and optional liftgate washer systems. It also has a provision for a low washer fluid level sensor. Refer to Group 8E - Instrument Panel and Gauges for diagnosis and service of the sensor. The reservoir and filler cap are available for service.

#### WASHER PUMPS

The washer pump and motor are press-fit into a rubber grommet near the bottom of the washer reservoir. Vehicles with the optional liftgate wiper/washer system have two pumps installed in the single reservoir. A permanently lubricated and sealed motor is coupled to a rotor-type pump. Washer fluid is gravity fed from the reservoir to the pump. The pump then pressurizes the fluid and forces it through the plumbing to the nozzles when the motor is energized. The pump and motor can not be repaired. If faulty, the entire assembly must be replaced.

## DIAGNOSIS - XJ

## WINDSHIELD WIPER SYSTEM

(1) Remove in-line circuit breaker near fuseblock module and turn ignition switch to ACCESSORY or ON.

(a) Measure voltage at battery side of circuit breaker cavity. Meter should read battery voltage. If not OK, repair wiring from ignition switch.

(b) Measure resistance across circuit breaker terminals. Meter should read zero ohms. If not OK, replace failed circuit breaker.

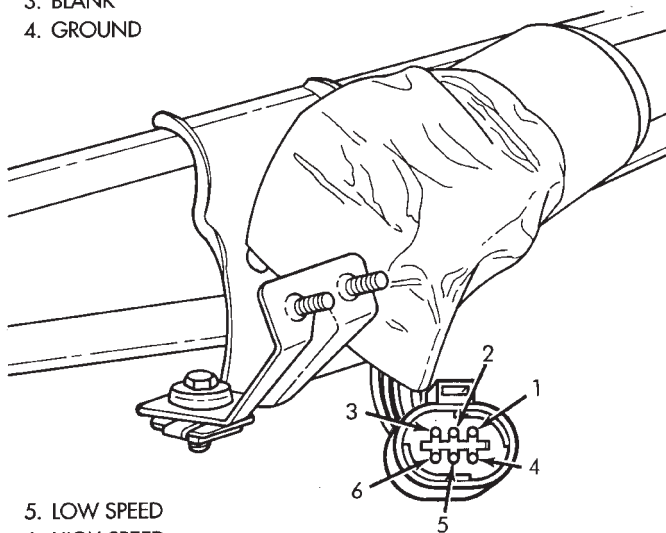
(2) Unplug wiper motor side of wiring harness connector (gray) from wiper (multi-function) switch side of wiring harness connector (black), or from intermittent wipe module (if equipped) at base of steering column. Turn ignition switch to ACCESSORY or ON.

(a) Measure voltage at unplugged wiper motor side of wiring harness connector (gray) terminal D. Meter should read battery voltage. If not OK, repair wiring from circuit breaker.

(b) Turn ignition switch to OFF and measure resistance from unplugged wiper motor side of wiring harness connector (gray) terminal G to ground. Meter should read zero ohms. If not OK, repair wiring to ground.

(3) Leave ignition switch in OFF, and back probe wiring harness connector at wiper motor (Fig. 1). Measure resistance from terminal 4 of wiper motor side of connector to ground. Meter should read zero ohms. If not OK, repair wiring to ground.

1. B+, PARK FEED
2. RETURN TO PARK SWITCH
3. BLANK
4. GROUND



5. LOW SPEED
6. HIGH SPEED
7. RUBBER PROTECTOR

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**Fig. 1 Windshield Wiper Motor Connector**

(4) If equipped with intermittent wipe, replace the intermittent wipe module with a known good unit

and test wiper operation in all modes. If OK, replace faulty intermittent wipe module. If not OK, re-install original module and go to next step.

(5) To test the wiper/washer (multi-function) switch, see Windshield Wiper/Washer Switch. If switch tests OK, go to step 6. If not OK, replace switch and go to step 7.

(6) To test the wiper (multi-function) switch circuits, turn ignition switch to ACCESSORY or ON. Position the wiper switch as indicated in the tests below, and back probe switch side of wiring harness connector (black).

(a) Measure voltage at connector terminal E with wiper switch in LOW, MIST and with washer switch depressed. Meter should read battery voltage. If not OK, repair wiring to switch.

(b) Measure voltage at connector terminal C with wiper switch in HIGH. Meter should read battery voltage. If not OK, repair wiring to switch.

(c) With wiper switch in LOW or HIGH, measure voltage at connector terminal F, then move wiper switch to OFF. Meter should read battery voltage until wipers park and then zero volts. If OK, go to step 7. If not OK, check wiring to wiper motor, then go to step 7.

(7) To test the wiper motor, turn the ignition switch to ACCESSORY or ON. Position the wiper (multi-function) switch and back probe the motor connector (Fig. 1) as indicated.

(a) Wiper switch in any position, measure voltage at terminal 1. Meter should read battery voltage. If not OK, repair wiring from circuit breaker.

(b) Wiper switch in LOW, measure voltage at terminal 5. Meter should read battery voltage. If OK, but wipers do not operate, replace failed wiper motor. If not OK, repair wiring from switch or intermittent wipe module connector.

(c) Wiper switch in HIGH, measure voltage at terminal 6. Meter should read battery voltage. If OK, but wipers do not operate, replace failed wiper motor. If not OK, repair wiring from switch or intermittent wipe module connector.

(d) Wiper switch in LOW or HIGH, voltmeter connected to terminal 2. Turn wiper switch to OFF and observe meter. Meter should read battery voltage when switch goes to OFF, then zero volts after wipers fail to park. If battery voltage is present, but wipers fail to park; or, if no battery voltage present, replace failed wiper motor.

### WINDSHIELD WASHER SYSTEM

#### WITH NON-INTERMITTENT WIPE

(1) Unplug washer pump connector. Measure resistance between terminal B at pump and a clean chassis ground. Meter should read zero ohms. If not OK, repair open to ground.

(2) Turn ignition switch to ACCESSORY and washer (multi-function) switch to ON.

(a) Measure voltage at washer pump connector terminal A. Meter should read battery voltage. If OK, replace washer pump. If not OK, go to next step.

(b) Measure voltage at wiper/washer switch connector terminal B. Meter should read battery voltage. If OK, repair open to washer pump. If not OK, replace switch.

#### WITH INTERMITTENT WIPE

(1) Unplug washer pump connector. Measure resistance between terminal B at pump and a clean chassis ground. Meter should read zero ohms. If not OK, repair open to ground.

(2) Turn ignition switch to ACCESSORY and washer (multi-function) switch to ON.

(a) Measure voltage at intermittent wipe module switch connector terminal B (pink wire). Meter should read battery voltage. If not OK, replace wiper switch.

(b) Measure voltage at wipe module motor connector terminal B (brown wire). Meter should read battery voltage. If not OK, replace module.

(c) Measure voltage at washer pump connector terminal A at pump. Meter should read battery voltage. If OK, replace pump. If not OK, repair open from wipe module.

### WINDSHIELD WIPER/WASHER SWITCH

Use an ohmmeter to test for continuity (no resistance) between the terminals of the switch as shown in the Multi-Function Switch Continuity chart (Fig. 2 or 3).

### INTERMITTENT WIPE MODULE

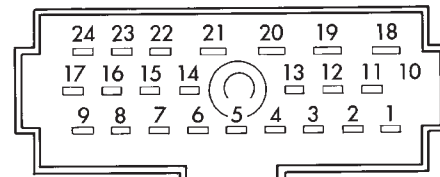
The intermittent wipe module is non-serviceable. Refer to Group 8W - Wiring Diagrams for more information.

The intermittent wipe module is attached to the lower instrument panel cover near the steering column with a hook and loop fastener patch.

### LIFTGATE WIPER SYSTEM

(1) Remove and inspect fuse 1. Replace faulty fuse, if required.

(2) Turn ignition switch to ACCESSORY and liftgate wiper switch to WASH.

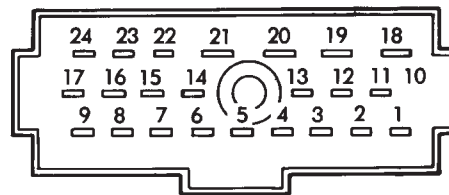


MULTIFUNCTION SWITCH PINS

TWO SPEED WIPER SWITCH CONTINUITY CHART	
SWITCH POSITION	CONTINUITY BETWEEN
OFF & PARK	PIN 1 & PIN 2
LOW	PIN 1 & PIN 4
HIGH	PIN 4 & PIN 5
WASH	PIN 3 & PIN 4

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Fig. 2 Multi-Function Switch Continuity (Two-Speed Wipers)



MULTIFUNCTION SWITCH PINS

SWITCH POSITION	CONTINUITY BETWEEN
OFF	PIN 6 AND PIN 7
DELAY	PIN 8 AND PIN 9 PIN 2 AND PIN 4 PIN 1 AND PIN 2 PIN 1 AND PIN 4
LOW	PIN 4 AND PIN 6
HIGH	PIN 4 AND PIN 5
WASH	PIN 3 AND PIN 4
*RESISTANCE AT MAXIMUM DELAY POSITION SHOULD BE BETWEEN 270,000 OHMS AND 330,000 OHMS. *RESISTANCE AT MINIMUM DELAY POSITION SHOULD BE ZERO WITH OHMMETER SET ON HIGH OHM SCALE.	

918J-4

Fig. 3 Multi-Function Switch Continuity (Intermittent Wipe)

(a) Measure voltage at liftgate wiper switch terminal B. Meter should read battery voltage. If not OK, repair open to fuse 1.

(b) Measure voltage at liftgate wiper switch terminals A, C and D. Meter should read battery voltage. If not OK, replace switch.

(3) Turn ignition switch to ACCESSORY, place liftgate wiper switch in WIPE. Measure voltage at lift-

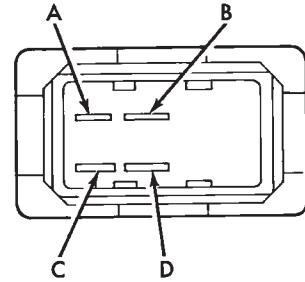


gate wiper switch terminal C. Meter should read battery voltage. If not OK, replace switch.

(4) Remove liftgate cover and measure resistance from liftgate wiper motor terminal 1 to a good ground. Meter should read zero ohms. If not OK, repair open to ground splice.

(5) Turn ignition switch to ACCESSORY and liftgate wiper switch to WASH. Measure voltage at motor connector terminals 2, 3 and 4. Meter should read battery voltage. If OK, replace wiper motor. If not OK, repair open(s) to liftgate wiper switch.

form as shown, replace faulty switch.



**LIFTGATE WASHER SYSTEM**

(1) Turn ignition switch to ACCESSORY and place liftgate wiper/washer switch in WASH. Operate liftgate wiper motor. If motor does not operate check fuse 1. Replace faulty fuse, if required.

(2) Turn ignition switch to ACCESSORY and unplug liftgate washer pump connector.

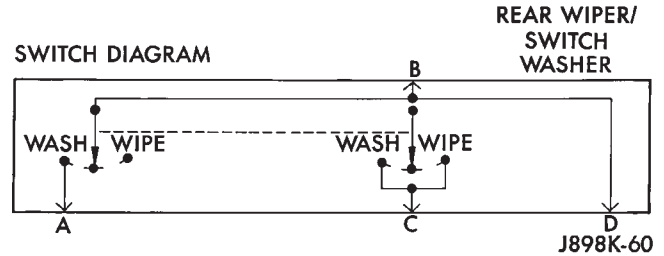
(a) Measure resistance at pump connector terminal B (ignition switch OFF). Meter should read zero ohms. If not OK, repair open to ground.

(b) Measure voltage at pump connector terminal A, switch in WASH. Meter should read battery voltage. If OK, replace pump. If not OK, go to step 3.

(3) Remove switch and reconnect below instrument panel. Backprobe switch connector with ignition switch in ACCESSORY.

(a) Measure voltage at switch connector terminal B. Meter should read battery voltage. If not OK, repair open to fuse.

(b) Measure voltage at switch connector terminal A, switch in WASH. Meter should read battery voltage. If not OK, replace switch.



**SWITCH TEST**

SWITCH POSITION	TERMINALS	ZERO OHMS
OFF (NORMAL)	B AND A	NO
	B AND C	NO
WIPE	B AND C	YES
	B AND A	NO
WASH	A AND B	YES
	B AND C	YES

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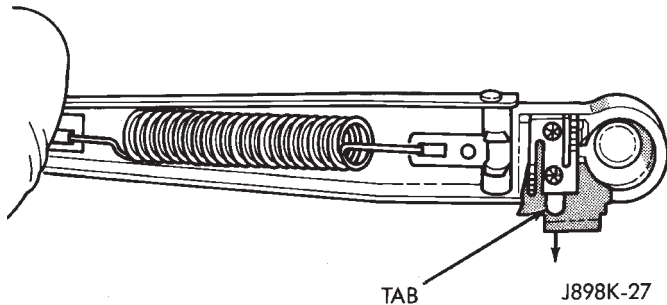
**LIFTGATE WIPER/WASHER SWITCH**

Use an ohmmeter to test switch resistance as shown in the following charts. If switch fails to per-

## SERVICE PROCEDURES - XJ

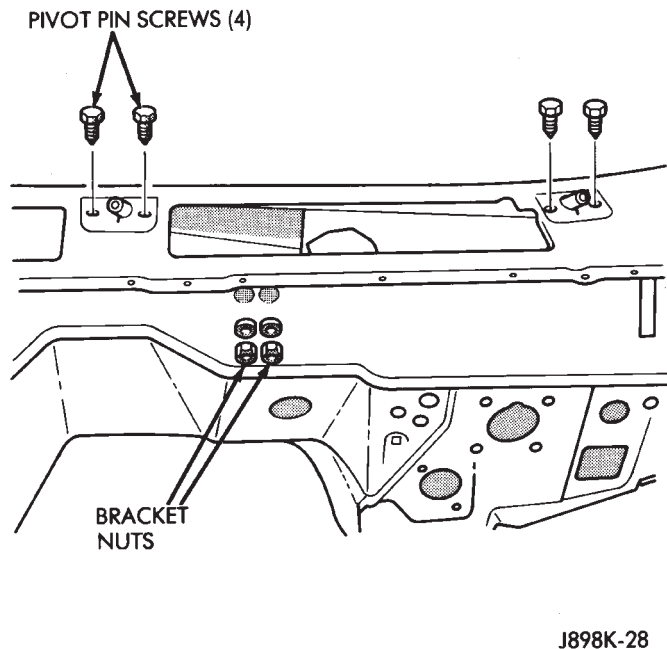
## WINDSHIELD WIPER MOTOR REMOVE/INSTALL

(1) Remove wiper arm assemblies by lifting blade off windshield and pulling out on the tab (Fig. 4) to lock wiper arm in up position.



**Fig. 4 Wiper Arm Remove**

(2) Remove cowl trim panel. Disconnect the washer hose. Remove the cowl mounting bracket attaching nuts (Fig. 5) and pivot pin attaching screws.



**Fig. 5 Pivot Assembly Remove**

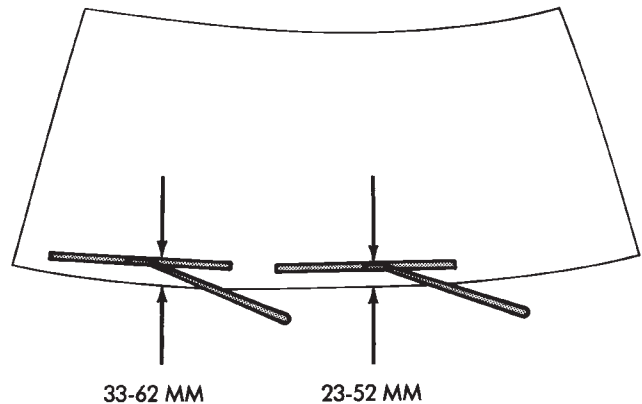
(3) Disconnect wiring harness and remove the assembly.

(4) Remove the plastic motor cover.

(5) Remove bolts and nuts holding motor to linkage and remove motor.

**The wiper motor is shrouded in a protective rubber boot. Care should be taken not to puncture the boot during removal or installation.**

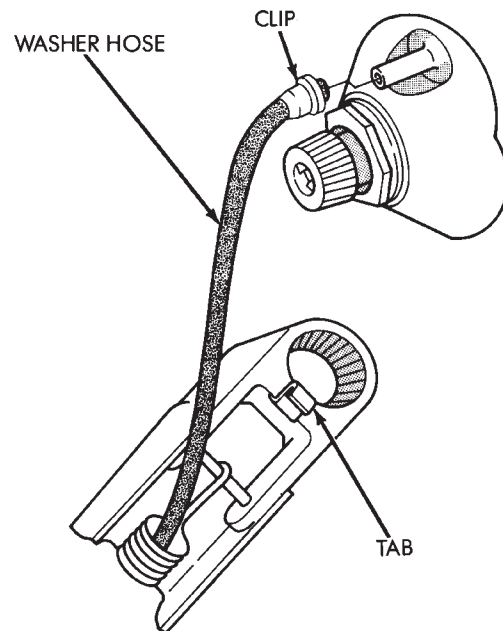
(6) Reverse removal procedures to install. Tighten wiper motor screws and nuts to 4 N·m (35 in. lbs.) torque. Install wiper arms and position as shown in Fig. 6.



**Fig. 6 Windshield Wiper Arms Install**

## LIFTGATE WIPER MOTOR REMOVE/INSTALL

(1) Remove the wiper arm assembly from the pivot pin by depressing the tab (Fig. 7) and pulling straight out.



**Fig. 7 Liftgate Wiper Arm Remove/Install**

(2) Slide clip along hose until clip is off hose mounting.

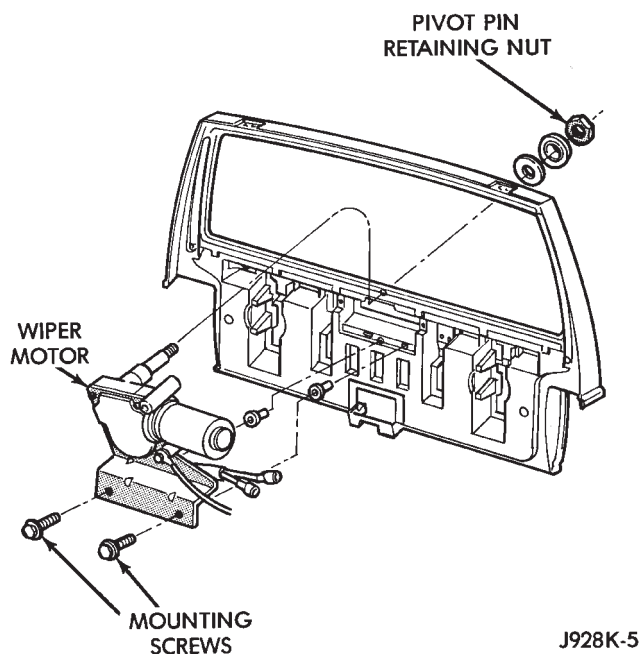
(3) Disconnect the washer hose.

(4) Remove pivot pin retaining nut (Fig. 8).

(5) Remove external bezel and seal.

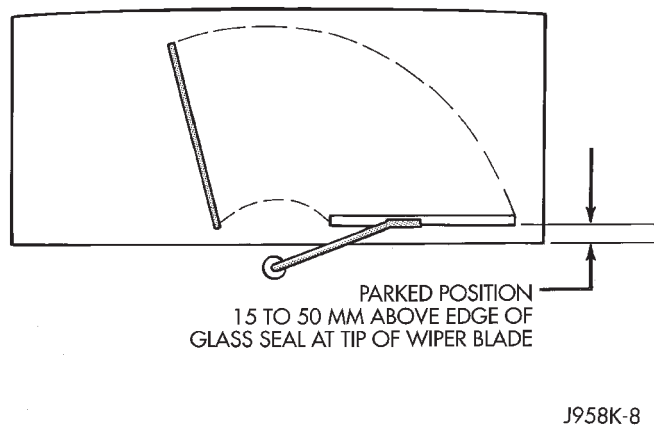
(6) Remove the liftgate interior trim panel.

(7) Disconnect the wiper motor at the wiring harness.



**Fig. 8 Liftgate Wiper Motor Remove/Install**

- (8) Remove the wiper motor mounting screws.
- (9) Remove the wiper motor.
- (10) Reverse removal procedures to install. Tighten pivot pin retaining nut to 4 N·m (32 in. lbs.). Lubricate the bezel nipples with a small amount of water when installing washer hoses. The liftgate wiper blade should be installed parallel to window opening and no closer than 5mm to window seal when operated on a wet window (Fig. 9).

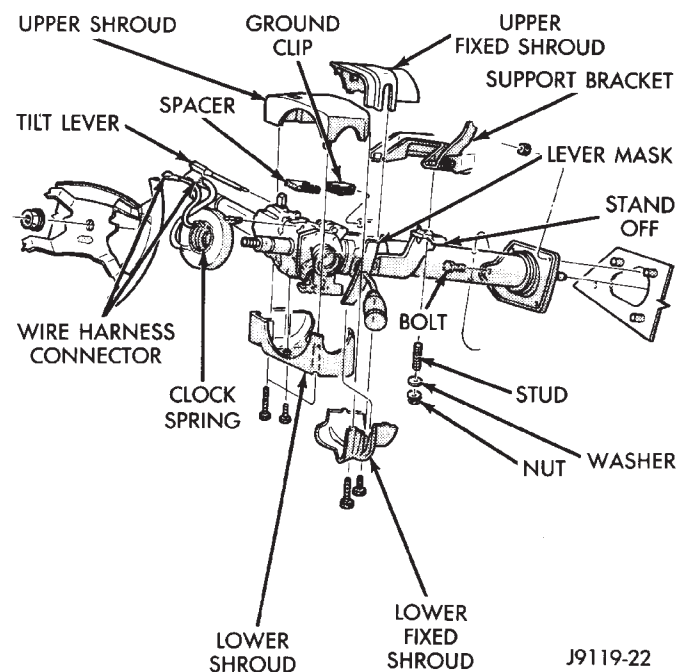


**Fig. 9 Liftgate Wiper Arm Install**

## WINDSHIELD WIPER/WASHER SWITCH REMOVE/INSTALL

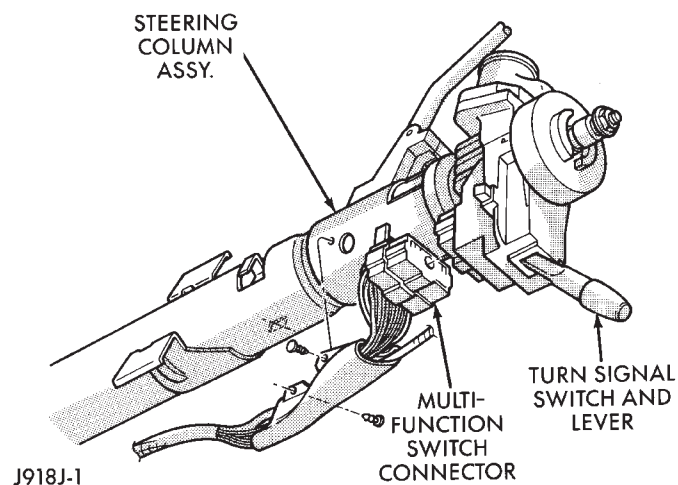
- (1) Disconnect battery negative cable.
- (2) Remove lower instrument panel/knee blocker assembly. Refer to Group 8E - Instrument Panel and Gauges for procedure.
- (3) Remove tilt lever (tilt column only).

- (4) Remove upper and lower column shrouds to gain access to the switch connector (Fig. 10).



**Fig. 10 Steering Column Shrouds Remove/Install**

- (5) Remove lower fixed column shroud.
- (6) Loosen steering column upper bracket nuts. Do not remove nuts.
- (7) Move upper fixed column shroud to gain access to rear of multi-function switch.
- (8) Remove switch connector (Figs. 11 and 12).



**Fig. 11 Multi-Function Switch Connector**

- (9) Remove multi-function switch tamper proof mounting screws (tamper proof torx bit Snap On TTXR20B2 or equivalent required).
- (10) Gently pull switch away from column. Loosen connector screw. The screw will remain in the connector.
- (11) Remove wiring connector from multi-function switch (Fig. 13).

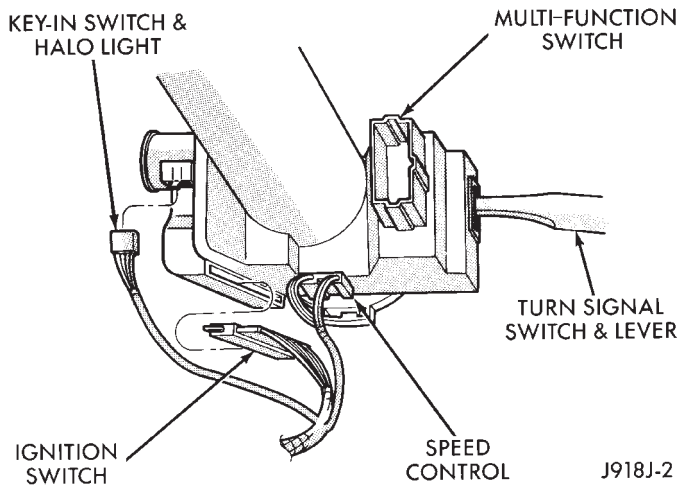


Fig. 12 Steering Column Connectors

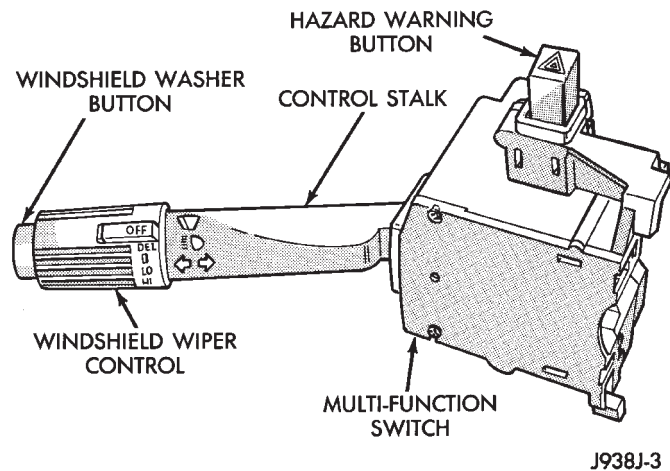


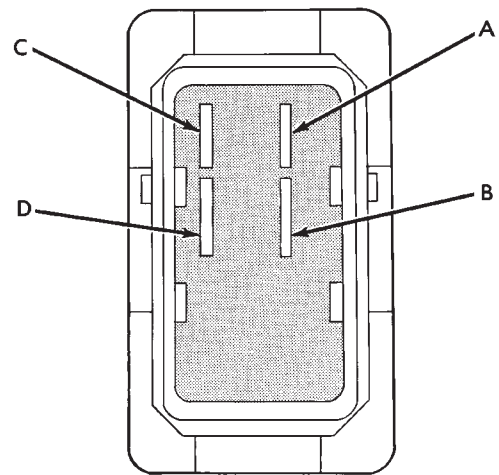
Fig. 13 Multi-Function Switch

(12) Reverse removal procedures to install. Tighten fasteners as follows:

- wiring connector to switch retaining screw to 2 N·m (17 in. lbs.)
- multi-function switch to column retaining screws to 2 N·m (17 in. lbs.)
- steering column shroud retaining screws to 2 N·m (17 in. lbs.)

**LIFTGATE WIPER/WASHER SWITCH REMOVE/INSTALL**

- (1) Remove the instrument cluster bezel. Refer to Group 8E - Instrument Panel and Gauges for procedure.
- (2) Remove the switch housing panel.
- (3) Unplug the switch connector. Slightly depress the switch mounting tabs and remove the switch (Fig. 14).
- (4) Reverse removal procedures to install.



A. WIPER MOTOR FEED (PARK) B. WIPER MOTOR FEED (RUN) C. WASHER MOTOR FEED D. BATTERY FEED

J928K-7

Fig. 14 Liftgate Wiper/Washer Switch

**WASHER PUMP/RESERVOIR REMOVE/INSTALL**

**LEFT-HAND DRIVE**

- (1) Remove 2 washer reservoir attaching screws and 1 nut (Fig. 15).

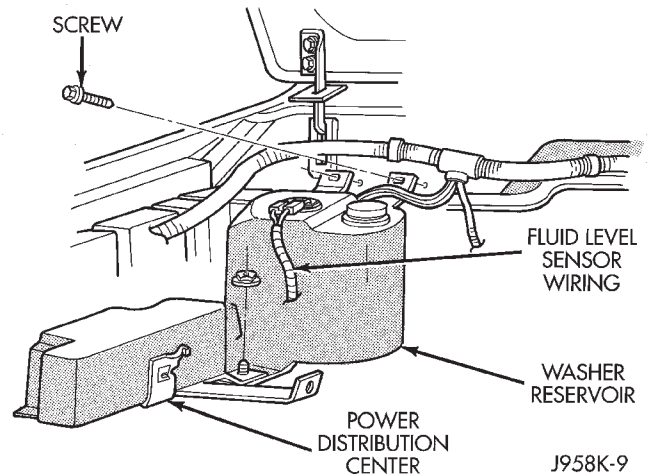


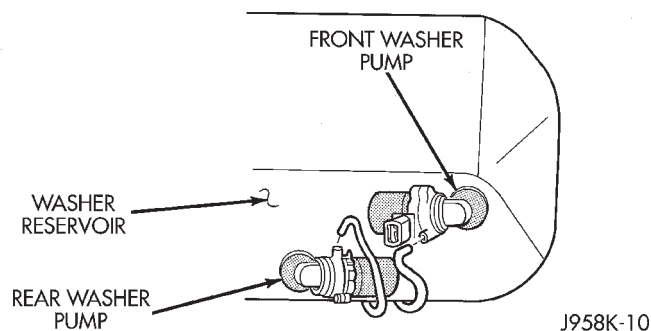
Fig. 15 Washer Reservoir Remove/Install (LHD)

- (2) Disconnect hose(s) from washer pump(s) (Fig. 16) and drain solvent from reservoir into a clean container for re-use.
- (3) Use a deep socket and extension inserted through the filler neck to remove washer pump filter/nut from inside reservoir. Remove pump from reservoir.
- (4) Reverse removal procedures to install.

**RIGHT-HAND DRIVE**

- (1) Disconnect battery cables, negative cable first, and remove battery.





**Fig. 16 Washer Pumps (LHD)**

(2) Reservoir filler neck is held in reservoir by a grommet. Remove reservoir filler neck (Fig. 17) by pulling sharply away from reservoir.

(3) Remove 2 reservoir mounting screws.

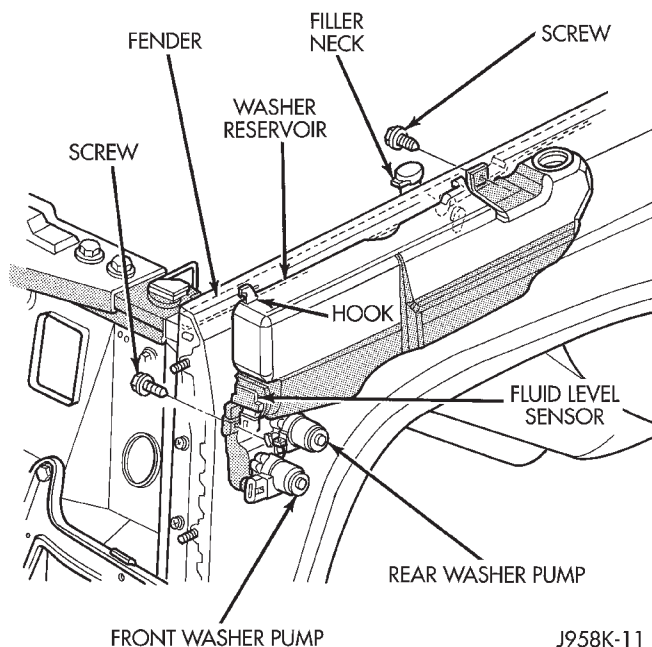
(4) Raise vehicle on hoist and remove left front inner wheelhouse splash shield.

(5) Disconnect hose(s) from washer pump(s) and drain solvent from reservoir into a clean container for re-use.

(6) Disconnect wiring from pump(s) and fluid level sensor (if equipped).

(7) Remove washer pumps from reservoir by pulling out of grommets.

(8) To remove reservoir, slide slightly towards rear of vehicle to release hook (Fig. 17) from inner fender slot. Then lower front of reservoir and slide unit forward to remove.



**Fig. 17 Washer Reservoir and Pumps (RHD)**

(9) Reverse removal procedures to install. Use new grommets when installing washer pumps.

## GENERAL INFORMATION - YJ

Following are general descriptions of the major components in the YJ (Wrangler) wiper and washer systems. Refer to Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

**WINDSHIELD WIPER SYSTEM**

A two-speed wiper system is standard equipment on all YJ models. An optional intermittent wipe system is available. The standard system allows the driver to select from two wiper speeds. The optional intermittent wipe system allows the driver to select from two wiper speeds or an intermittent wipe feature that allows a delay between wipes of 2 to 15 seconds. Refer to the owner's manual for more information on wiper system controls and operation.

The wipers will operate only when the ignition switch is in the ACCESSORY or ON position. A circuit breaker in the fuseblock module protects the circuitry of the wiper system.

**WINDSHIELD WASHER SYSTEM**

A electrically-operated windshield washer system is standard equipment on all YJ models. The washers will operate only when the ignition switch is in the ACCESSORY or ON position. A circuit breaker in the fuseblock module protects the circuitry of the washer system. Refer to the owner's manual for more information on washer system controls and operation.

**LIFTGATE WIPER/WASHER SYSTEM**

A liftgate wiper/washer system is an available option on YJ models equipped with the optional hardtop. The liftgate wiper is a fixed cycle wipe system. A single switch on the instrument panel controls both the liftgate wiper and washer functions. These systems will operate only when the ignition switch is in the ON position. Fuse 1 in the fuseblock module protects the circuitry of both the liftgate wiper and washer. Refer to the owner's manual for more information on liftgate wiper/washer system controls and operation.

*WIPER ARMS, BLADES, AND ELEMENTS*

All YJ models have two 12-inch windshield wiper blades with replaceable rubber elements (squeegees). Models with the liftgate wiper option use a single 16-inch wiper blade with a replaceable rubber element (squeegee).

Caution should be exercised to protect the rubber squeegees from any petroleum-based cleaners or contaminants, which will rapidly deteriorate the squeegee rubber. If squeegees are damaged, worn or contaminated they must be replaced.

Wiper squeegees exposed to the weather for a long time tend to lose their wiping effectiveness. Periodic

cleaning of the squeegees is suggested to remove deposits of salt and road film. The wiper blades, arms and windshield or liftgate glass should be cleaned with a sponge or cloth and a mild detergent or non-abrasive cleaner. If the squeegees continue to streak or smear, they should be replaced.

The blades are mounted to spring-loaded wiper arms. Spring tension of the wiper arms controls the pressure applied to the blades on the glass. The windshield wiper arms are attached by an integral latch to the two wiper pivots on the windshield frame at the base of the windshield. The liftgate wiper arm is attached by an integral latch directly to the liftgate wiper motor output shaft on the liftgate glass. The wiper arms and blades can not be adjusted or repaired. If faulty, they must be replaced.

*WIPER LINKAGE AND PIVOTS*

The wiper pivots are fastened to the windshield frame with nuts. The pivots and linkage are serviced through access holes in the interior side of the lower windshield frame. The two pivots and their connecting link are serviced as a unit. The drive link, which connects the motor crank arm to the left pivot, is serviced separately.

*WINDSHIELD WIPER MOTOR*

The two-speed permanent magnet wiper motor has an integral transmission and park switch. The motor is mounted to a cover plate on the interior side of the lower windshield frame. The wiper motor output shaft passes through a gasket and the cover plate into the space between the inner and outer lower windshield frame, where the crank arm attached to the output shaft drives the wiper drive link.

Wiper speed is controlled by current flow to the appropriate set of brushes. The wiper motor completes its wipe cycle when the switch is turned OFF, and parks the blades in the lowest portion of the wipe pattern. The wiper motor assembly can not be repaired. If faulty, the entire motor assembly must be replaced. The cover plate, gasket and drive link to crank arm retaining ring are available for service.

*LIFTGATE WIPER MOTOR*

The liftgate wiper motor operates in three modes:

- constant wipe that operates when the liftgate wiper/washer switch is placed in the Wipe position
- constant wipe that operates when the liftgate washers are operated
- a park mode that runs the motor until the wiper blade reaches the park position after the liftgate wiper switch or ignition switch is turned OFF.

The liftgate wiper motor can not be repaired. If faulty, the entire assembly must be replaced.

#### *WINDSHIELD WIPER/WASHER SWITCH*

Controls for the windshield wiper and washer systems are contained in the turn signal switch lever. The turn signal switch lever is mounted on the left side of the steering column between the steering wheel and the instrument panel. The wiper/washer switch can not be repaired. If any function of the switch is faulty, the entire switch must be replaced.

#### *LIFTGATE WIPER/WASHER SWITCH*

The single two-function switch on the instrument panel right of the steering column controls the liftgate wiper and washer functions. The rocker-type switch features a detent in the WIPE position, but only momentary contact in the WASH position. Both the liftgate wiper and liftgate washer motors will operate continuously for as long as the switch is held in the WASH position. The switch can not be repaired; if faulty, it must be replaced.

#### *INTERMITTENT WIPE MODULE*

In addition to low and high speed, the optional intermittent wipe system has a delay mode. The delay mode has a range of 2 to 15 seconds. The length of the delay is selected with a variable resistor in the wiper switch and is accomplished by electronic circuitry within the intermittent wipe module. If the washer knob is depressed while the wiper switch is in the OFF position, the intermittent wipe module will operate the wiper motor for approximately 2 wipes and automatically turn the motor off.

The intermittent wipe module is mounted to a bracket behind the lower instrument panel, near the steering column with a hook and loop fastener patch. The module can not be repaired.

#### *WINDSHIELD WASHER NOZZLES*

The two fluidic washer nozzles are screwed into openings in the cowl panel below the windshield and are not adjustable. Washer fluid is fed to the nozzles through hoses underneath the cowl panel. The nozzles can not be repaired and, if faulty, should be replaced.

#### *LIFTGATE WASHER NOZZLE*

The single liftgate washer nozzle is installed through the liftgate glass and secured with a nut on the inside of the glass. Washer fluid is fed to the nozzle from the washer reservoir in the engine compartment. A liftgate washer hose system is routed through the body of the vehicle with the body wiring harness from the reservoir to the liftgate. The nozzle can not be repaired and, if faulty, should be replaced.

#### *WASHER RESERVOIR*

The washer solvent reservoir is mounted with a bracket to the left front inner fender shield near the cowl panel. The same reservoir is used for both the standard front and optional liftgate washer systems. The reservoir and filler cap are available for service.

#### *WASHER PUMPS*

The washer pump and motor are press-fit into a rubber grommet near the bottom of the washer reservoir. Vehicles with the optional liftgate wiper/washer system have two pumps installed in the single reservoir. A permanently lubricated and sealed motor is coupled to a rotor-type pump. Washer fluid is gravity fed from the reservoir to the pump. The pump then pressurizes the fluid and forces it through the plumbing to the nozzles when the motor is energized. The pump and motor can not be repaired. If faulty, the entire assembly must be replaced.

## DIAGNOSIS - YJ

## WINDSHIELD WIPER SYSTEM

(1) Remove circuit breaker from fuseblock module and turn ignition switch to ACCESSORY or ON.

(a) Measure voltage at battery side of circuit breaker cavity. Meter should read battery voltage. If not OK, repair wiring from ignition switch.

(b) Measure resistance across circuit breaker terminals. Meter should read zero ohms. If not OK, replace failed circuit breaker.

(2) Unplug wiper motor side of wiring harness connector (gray) from wiper switch side of wiring harness connector (black), or from intermittent wipe module (if equipped) at base of steering column. Turn ignition switch to ACCESSORY or ON.

(a) Measure voltage at unplugged wiper motor side of wiring harness connector (gray) terminal D. Meter should read battery voltage. If not OK, repair wiring from circuit breaker.

(b) Turn ignition switch to OFF and measure resistance from unplugged wiper motor side of wiring harness connector (gray) terminal G to ground. Meter should read zero ohms. If not OK, repair wiring to ground.

(3) Leave ignition switch in OFF, and back probe wiring harness connector at wiper motor. Measure resistance from terminal E of wiper motor side of connector to ground. Meter should read zero ohms. If not OK, repair wiring to ground.

(4) If equipped with intermittent wipe, turn ignition switch to ACCESSORY or ON. Turn wiper switch to LOW or HIGH. Unplug wiper switch side of wiring harness connector (black) from intermittent wipe module. Then plug both connectors that have been removed from intermittent wipe module into each other.

**CAUTION: DO NOT** move the wiper switch to **DELAY** with the intermittent wipe module removed from the circuit. If the switch is moved to the **DELAY** position during the next step, the switch will be damaged.

Test wiper operation in LOW and HIGH speed modes, and test washer operation. If these modes were inoperative, but are OK now, replace failed intermittent wipe module.

(5) To test the wiper/washer switch, see Windshield Wiper/Washer Switch Testing. Turn ignition switch to OFF. Position the wiper switch as indicated, and back probe wiper switch side of wiring harness connector (black). If switch tests OK, go to step 6. If not OK, replace switch and go to step 7.

(6) To further test the wiper/washer switch, turn ignition switch to ACCESSORY or ON. Position the

wiper switch as indicated in the tests below, and back probe wiper switch side of wiring harness connector (black).

(a) Measure voltage at connector terminal E with wiper switch in LOW, MIST and with washer switch depressed. Meter should read battery voltage. If not OK, replace switch.

(b) Measure voltage at connector terminal C with wiper switch in HIGH. Meter should read battery voltage. If not OK, replace switch.

(c) With wiper switch in LOW or HIGH, measure voltage at connector terminal F, then move wiper switch to OFF. Meter should read battery voltage until wipers park and then zero volts. If OK, go to step 7. If not OK, check wiring to wiper motor, then go to step 8.

(7) To test the wiper motor, turn the ignition switch to ACCESSORY or ON. Position the wiper switch and back probe the motor connector as indicated.

(a) Wiper switch in any position, measure voltage at terminal B. Meter should read battery voltage. If not OK, repair wiring from circuit breaker.

(b) Wiper switch in LOW, measure voltage at terminal A. Meter should read battery voltage. If OK, but wipers do not operate, replace failed wiper motor. If not OK, repair wiring from switch or intermittent wipe module connector.

(c) Wiper switch in HIGH, measure voltage at terminal H. Meter should read battery voltage. If OK, but wipers do not operate, replace failed wiper motor. If not OK, repair wiring from switch or intermittent wipe module connector.

(d) Wiper switch in LOW or HIGH, voltmeter connected to terminal D. Turn wiper switch to OFF and observe meter. Meter should read battery voltage when switch goes to OFF, then zero volts after wipers park. If battery voltage is present, but wipers fail to park; or, if no battery voltage present, replace failed wiper motor.

## WINDSHIELD WASHER SYSTEM

*WITH NON-INTERMITTENT WIPE*

(1) Measure resistance from washer pump connector terminal B to a clean chassis ground. Meter should read zero ohms. If not OK, repair open between terminal B and ground.

(2) Turn ignition switch to ON and press washer switch.

(a) Measure voltage at switch connector terminal B. Meter should read battery voltage. If not OK, replace wiper/washer switch.

(b) Measure voltage at washer pump connector terminal A. Meter should read battery voltage. If



OK, replace pump. If not OK, repair open between switch connector and pump connector.

#### WITH INTERMITTENT WIPE

(1) Measure resistance from washer pump connector terminal B to a clean chassis ground. Meter should read zero ohms. If not OK, repair open between terminal B and ground.

(2) Turn ignition switch to ON and rotate washer switch tab forward.

(a) Measure voltage at wiper/washer switch connector terminal B located at intermittent wipe module. Meter should read battery voltage. If not OK, replace wiper switch.

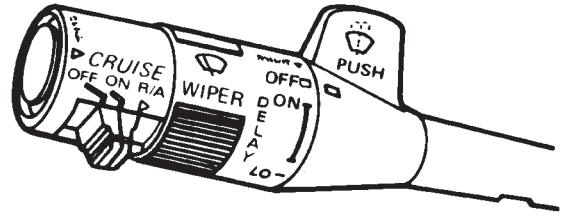
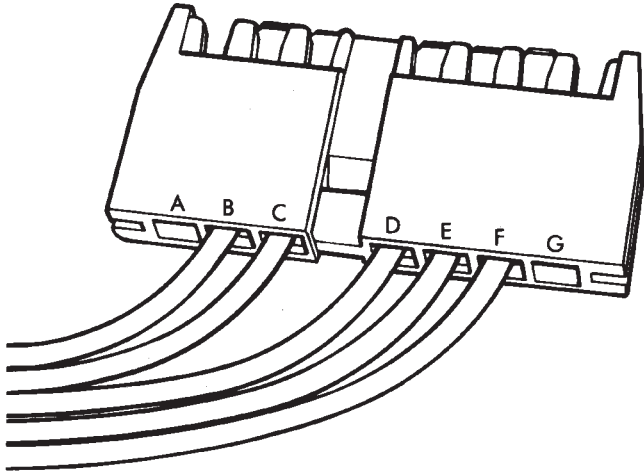
(b) Measure voltage at intermittent wipe module connector terminal B (to washer pump). Meter should read battery voltage. If not OK, replace intermittent wipe module.

(c) Measure voltage at washer pump connector terminal A. Meter should read battery voltage. If OK, replace pump. If not OK, repair open from intermittent wipe module connector terminal B.

#### WINDSHIELD WIPER/WASHER SWITCH

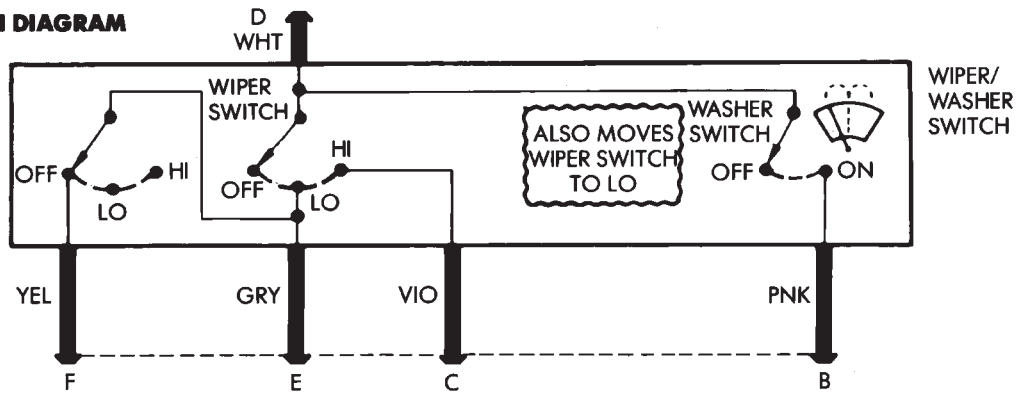
To test windshield wiper/washer switches, perform the resistance tests shown in the following charts. If switch fails any test, replace faulty switch.

NON-INTERMITTENT WIPE SWITCH TESTING



- B - WASHER PINK
- C - HI VIOLET
- D - IGNITION WHITE
- E - LO/PARK GRAY
- F - OFF/PARK YELLOW

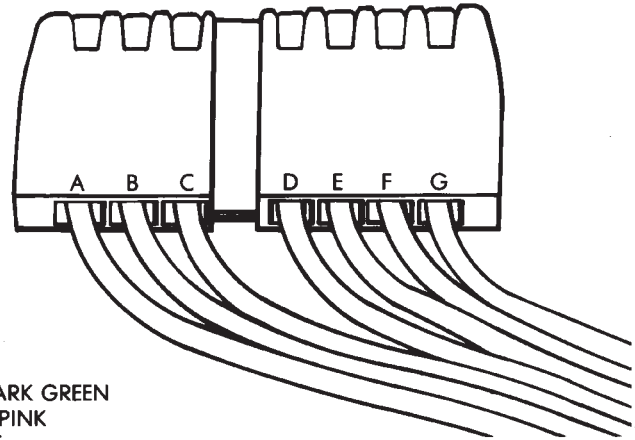
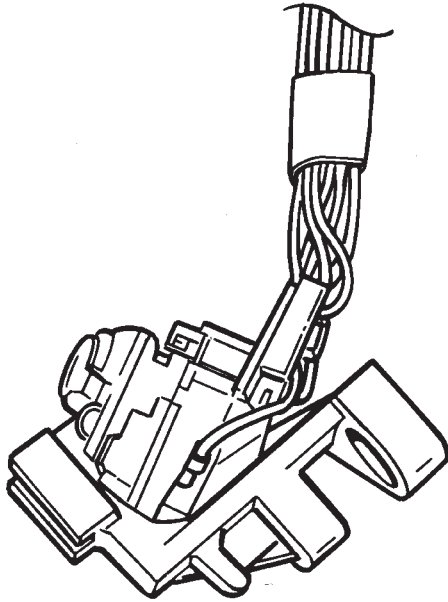
SWITCH DIAGRAM



SWITCH TEST

SWITCH POSITION	TERMINALS	ZERO OHMS
Off	E and F	Yes
	All Others	No
Lo	D and E	Yes
	All Others	No
Hi	C and D	Yes
	All Others	No
Wash	B and D	Yes
	D and E	Yes
	All Others	No

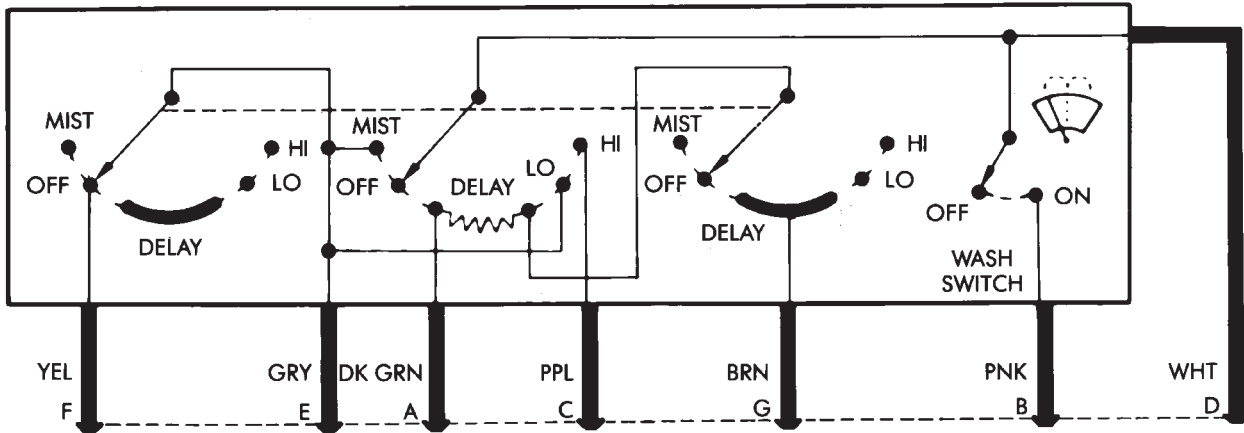
INTERMITTENT WIPE SWITCH TESTING



- A - DELAY DARK GREEN
- B - WASHER PINK
- C - HI VIOLET
- D - IGNITION WHITE
- E - LO/MIST PARK GRAY
- F - OFF/PARK YELLOW
- G - DELAY BROWN

**SWITCH DIAGRAM**

WIPER/WASHER SWITCH



**SWITCH TEST**

SWITCH POSITION	TERMINALS	ZERO OHMS
Off	E and F	Yes
	All Others	No
Lo	D and E	Yes
	All Others	No
Hi	C and D	Yes
	All Others	No
Wash/Mist	B and D	Yes
	D and E	Yes
	All Others	No
Delay	A and G	152-480K ohms

**LIFTGATE WIPER/WASHER SYSTEM**

(1) Turn ignition switch to ON and liftgate wiper/washer switch to WASH.

(a) Measure voltage at switch connector terminal P. Meter should read battery voltage. If not OK, check fuse 1.

(b) Measure voltage at switch connector terminal B. Meter should read battery voltage. If not OK, replace switch.

(c) Measure voltage at switch connector terminal A. Meter should read battery voltage. If not OK, replace switch.

(2) Unplug liftgate washer pump connector.

(a) With ignition switch in OFF position, measure resistance at pump connector black wire to ground. Meter should read zero ohms. If not OK, repair open to ground.

(b) With ignition switch in ON position, measure voltage at pump connector brown/white wire, switch in WASH. Meter should read battery voltage. If OK, replace pump. If not OK, check wiring.

(3) Turn ignition switch to ON, unplug liftgate wiper motor connector and place wiper switch in WIPE.

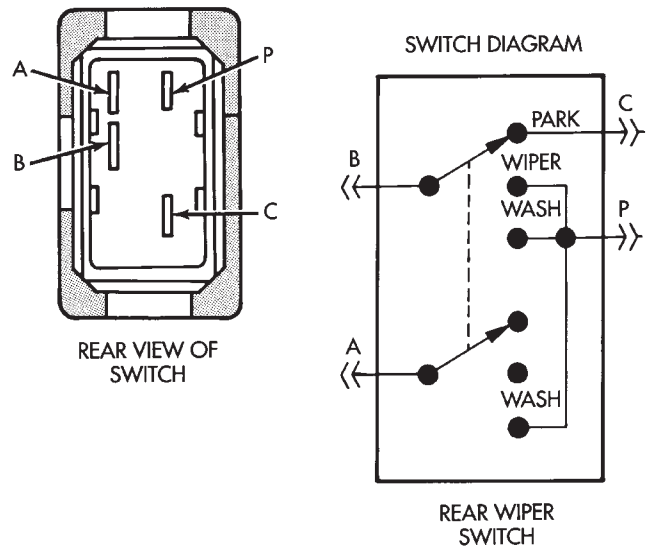
(a) Measure resistance at motor connector terminal B to ground. Meter should read zero ohms. If not OK, repair open to ground.

(b) Measure voltage at motor connector terminal A. Meter should read battery voltage. If not OK, check wiring to fuse.

(c) Measure voltage at motor connector terminal C. Meter should read battery voltage. If OK, replace motor. If not OK, repair open to switch.

**LIFTGATE WIPER/WASHER SWITCH**

See Liftgate Wiper/Washer Switch Diagram (Fig. 1) and Liftgate Wiper Switch Tests (Fig. 2). Check switch continuity and resistance accordingly. If switch fails any test, replace faulty switch.



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**Fig. 1 Liftgate Wiper/Washer Switch Diagram**

**SWITCH TEST**

SWITCH POSITION	TERMINALS	ZERO OHMS
OFF (NORMAL)	P AND B	NO
	P AND A	NO
WIPE	P AND B	YES
	P AND A	NO
WASH	P AND B	YES
	P AND A	YES

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**Fig. 2 Liftgate Wiper/Washer Switch Tests**

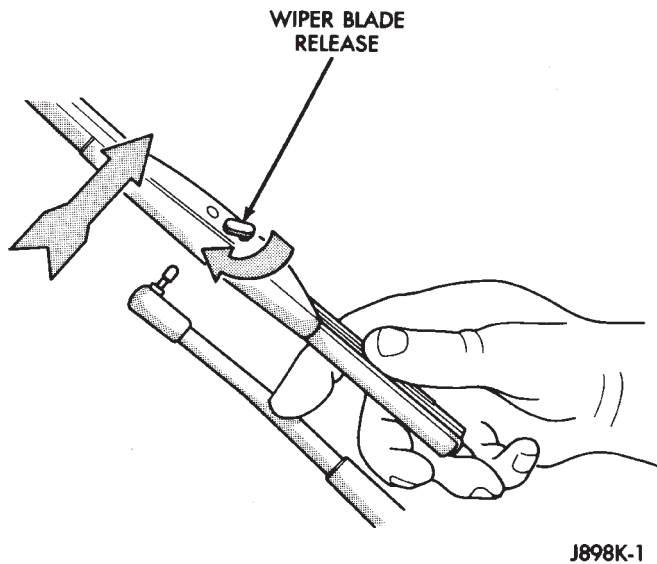


## SERVICE PROCEDURES - YJ

**WINDSHIELD WIPER BLADE REMOVE/INSTALL**

(1) Rotate the wiper blade release (Fig. 3) clockwise. This will release the wiper blade from the pivot pin.

**CAUTION:** Take care to ensure that the wiper arm does not strike the windshield after the wiper blade has been removed.



**Fig. 3 Wiper Blade Remove/Install**

(2) To install, place the blade assembly on the wiper arm and snap the blade assembly into position.

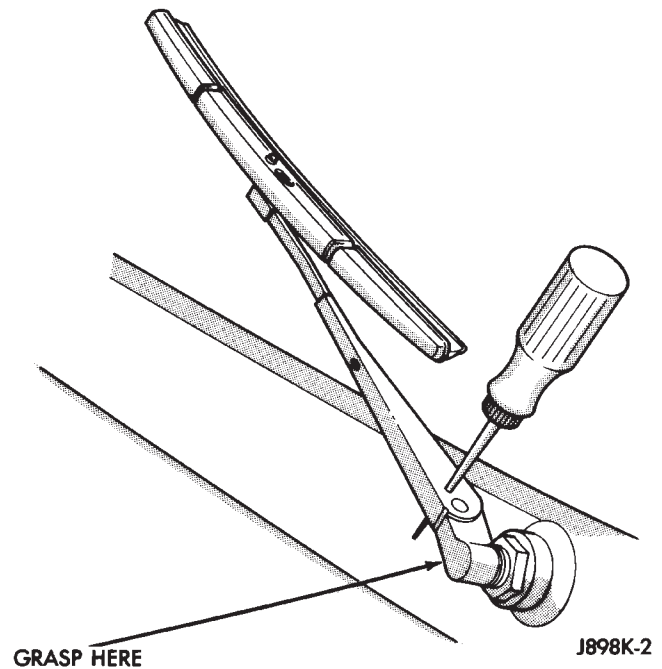
**WINDSHIELD WIPER ARM REMOVE/INSTALL**

- (1) Pull the wiper arm forward.
- (2) Insert an ice pick type tool into the hole (Fig. 4).
- (3) Grasp the wiper arm above the pivot nut.
- (4) Pull and remove the wiper arm assembly.
- (5) To install, push the wiper arm over the pivot shaft. Be sure the pivot shaft is in the park position and the wiper arm is positioned correctly on the windshield (Fig. 5).

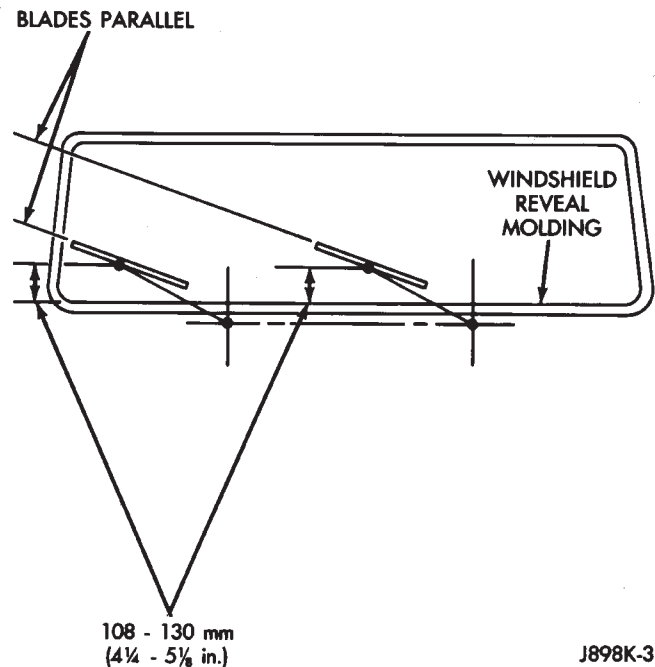
**LIFTGATE WIPER ARM REMOVE/INSTALL**

(1) Install wiper arm remover, Snap On A192 or equivalent, on wiper arm (Fig. 6). Lift arm and then remove from pivot shaft.

**CAUTION:** Do not use a screwdriver or other prying tool to remove an arm. This may distort it in a way that will allow it to come off the pivot shaft in the future despite how carefully it is installed. NEVER push or bend the spring clip in the base of the arm in an attempt to release the arm. This clip is self releasing.



**Fig. 4 Windshield Wiper Arm Remove/Install**

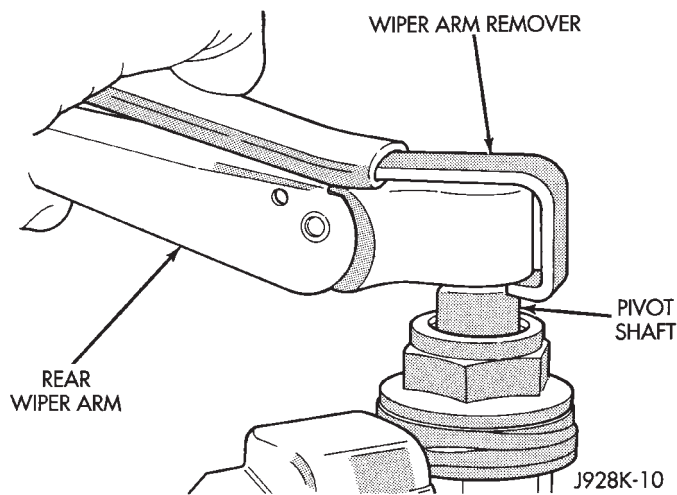


**Fig. 5 Windshield Wiper Arm Indexing**

- (2) Reverse removal procedures to install.
- (3) Wet the liftgate glass and check the park position by operating the wiper motor several times.

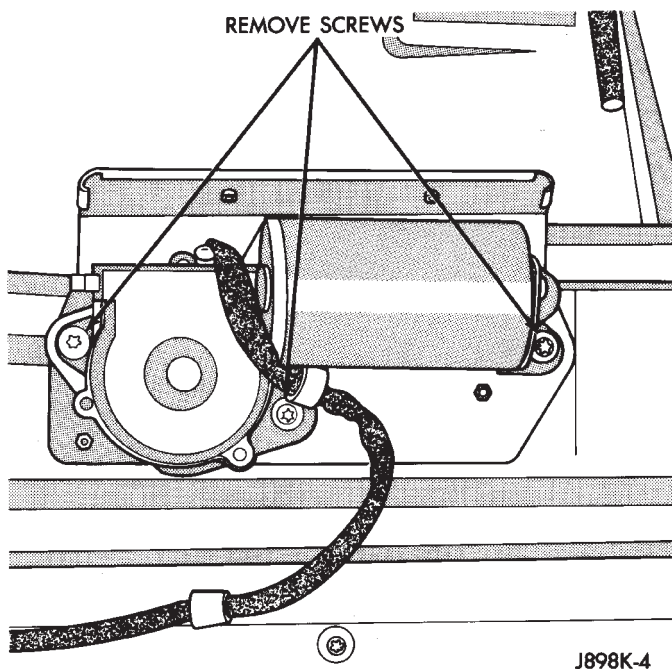
**WINDSHIELD WIPER LINKAGE AND PIVOTS REMOVE/INSTALL**

- (1) Remove the left and right wiper arms.



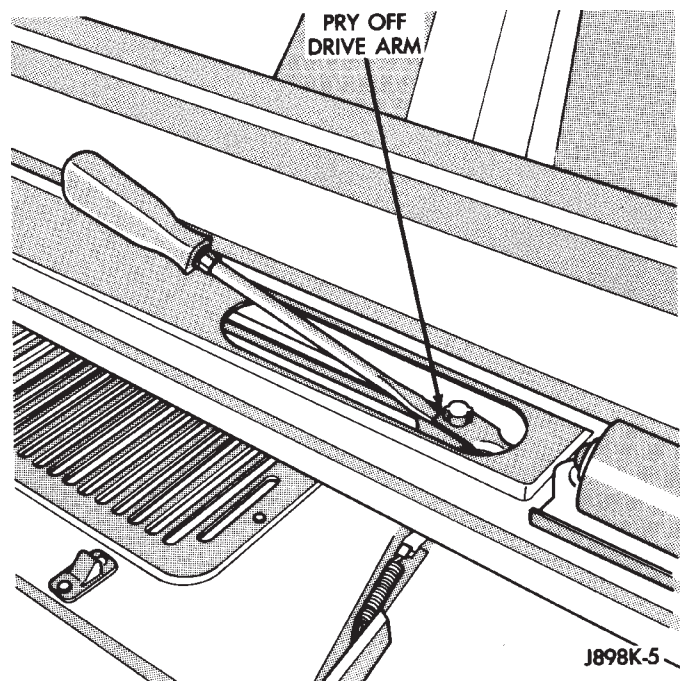
**Fig. 6 Liftgate Wiper Arm Remove/Install**

- (2) Remove the nuts attaching the pivots to the windshield frame.
- (3) Remove the necessary hard or soft top components from the windshield frame.
- (4) Remove the windshield holddown bolts in the lower corners of the instrument panel and fold the windshield forward.
- (5) Remove wiper motor mounting screws (Fig. 7).



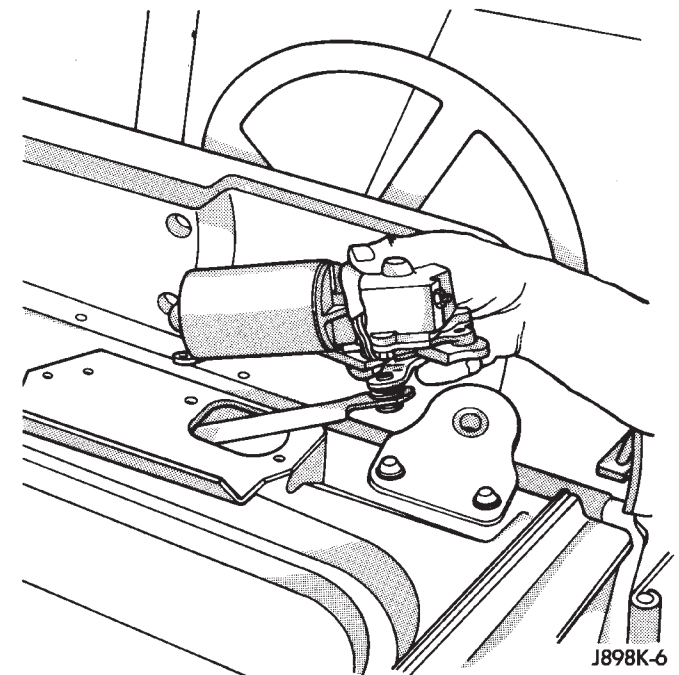
**Fig. 7 Windshield Wiper Motor Mounts**

- (6) Disconnect wiper drive link (Fig. 8).
- (7) Remove motor wiring clip from base of windshield frame.
- (8) Remove 4 inboard screws holding seal to bottom of windshield frame (protruding screw ends interfere with pivot and connecting link removal and installation).



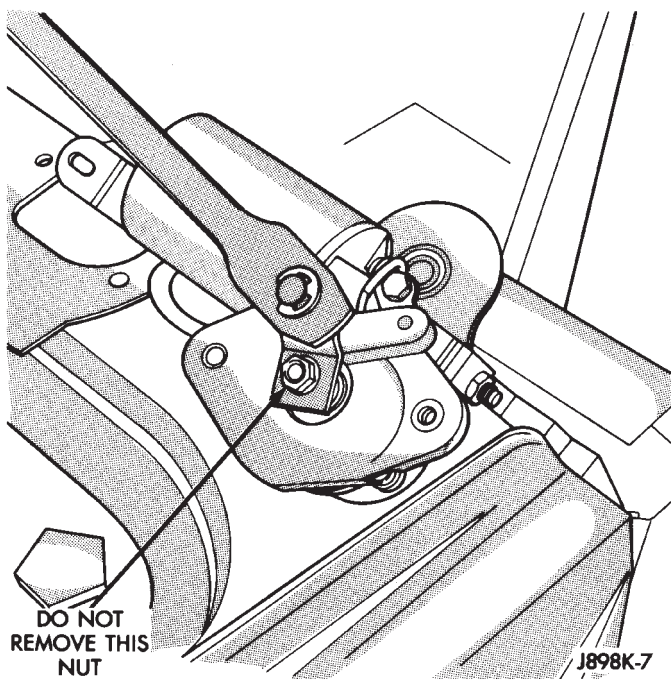
**Fig. 8 Disconnect Drive Link**

- (9) Grasp motor and pull motor and drive link out of access hole (Fig. 9).

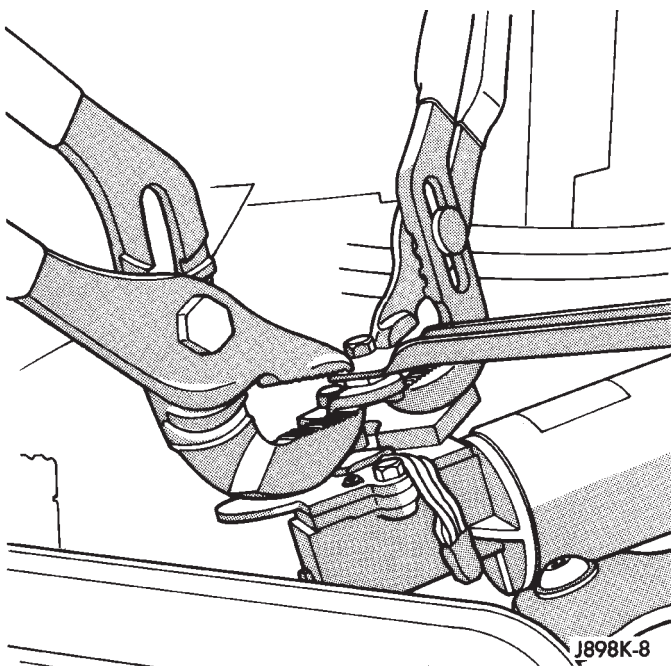


**Fig. 9 Windshield Wiper Motor and Drive Link**

- (10) Remove pivot and connecting link assembly through access hole.
- (11) Pry drive link off the motor pivot. DO NOT remove crank arm attaching nut (Fig. 10).
- (12) To install, assemble wiper drive link onto motor crank arm (Fig. 11).
- (13) Install pivot and connecting link assembly in windshield frame.



**Fig. 10 Drive Link Remove**



**Fig. 11 Drive Link Install**

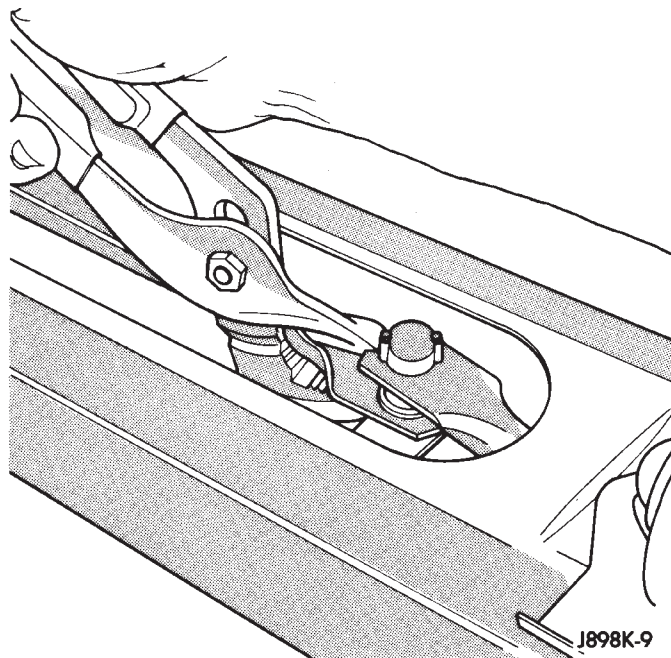
(14) Install motor and drive link in windshield frame.

(15) Install weatherstrip screws.

(16) Connect wiper drive link to pivot shaft (Fig. 12).

(17) Install motor mounting screws. Tighten screws to 10.5 N·m (96 in. lbs.).

**Be sure wire harness is not pinched or cut when windshield frame is rotated to upright position.**



**Fig. 12 Connect Drive Link To Pivot Shaft**

(18) Raise windshield to upright position and install left and right windshield holddown bolts.

(19) Install nuts attaching pivots to windshield frame. Tighten nuts to 10 N·m (7.5 ft. lbs.).

(20) Turn wipers on to allow motor to cycle to park position.

(21) Install left and right wiper arms.

(22) Install necessary top components on windshield frame.

#### WINDSHIELD WIPER MOTOR REMOVE/INSTALL

(1) Remove the necessary hard or soft top components from the windshield frame.

(2) Remove the windshield holddown bolts in the lower corners of the instrument panel.

(3) Remove wiper motor mounting screws.

(4) Remove wiper motor harness retaining clip located on bottom of windshield.

(5) Disconnect the wiper drive link.

(6) Grasp the motor and pull the motor and drive link out of the access hole.

(7) Pry the drive link off the motor crank arm. **DO NOT** remove the crank arm attaching nut.

(8) Remove 2 screws holding intermittent wipe module bracket to bottom of instrument panel.

(9) Reach up behind instrument panel and disconnect wiper motor wiring harness.

(10) Remove wiper motor.

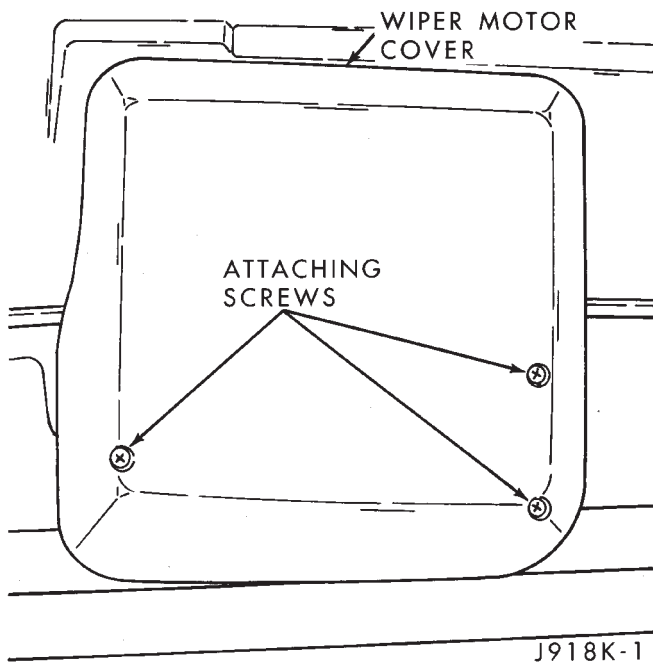
(11) Reverse removal procedures to install. Tighten motor mounting screws to 10.5 N·m (96 in. lbs.).

**Be sure wire harness is not pinched or cut when windshield frame is rotated to upright position.**

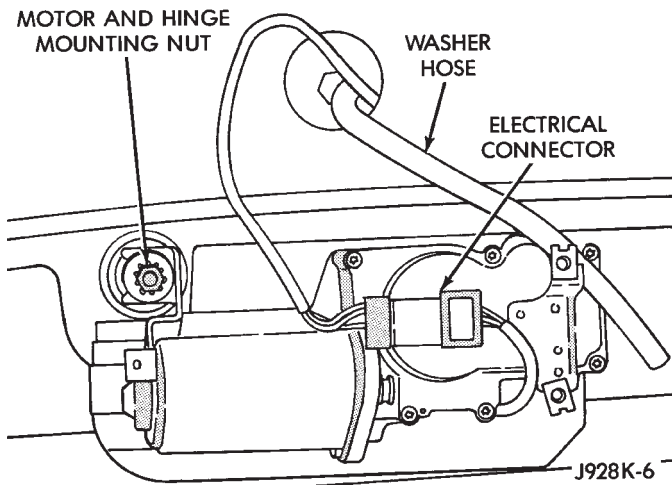


**LIFTGATE WIPER MOTOR REMOVE/INSTALL**

- (1) Remove wiper arm from motor (see Liftgate Wiper Arm Remove/Install).
- (2) Remove pivot shaft retaining nut.
- (3) Remove motor trim cover (Fig. 13).

**Fig. 13 Liftgate Wiper Motor Cover**

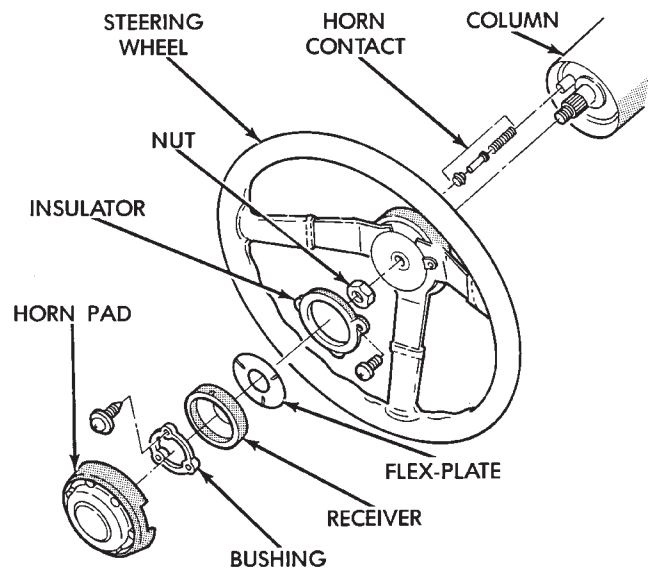
- (4) Disconnect electrical connector (Fig. 14).

**Fig. 14 Liftgate Wiper Motor**

- (5) Remove hinge nut holding motor to top.
- (6) Reverse removal procedures to install.

**WINDSHIELD WIPER/WASHER SWITCH REMOVE/INSTALL**

- (1) Disconnect negative cable from battery.
- (2) Remove horn button with a push and turn motion.
- (3) Remove horn button components (Fig. 15).

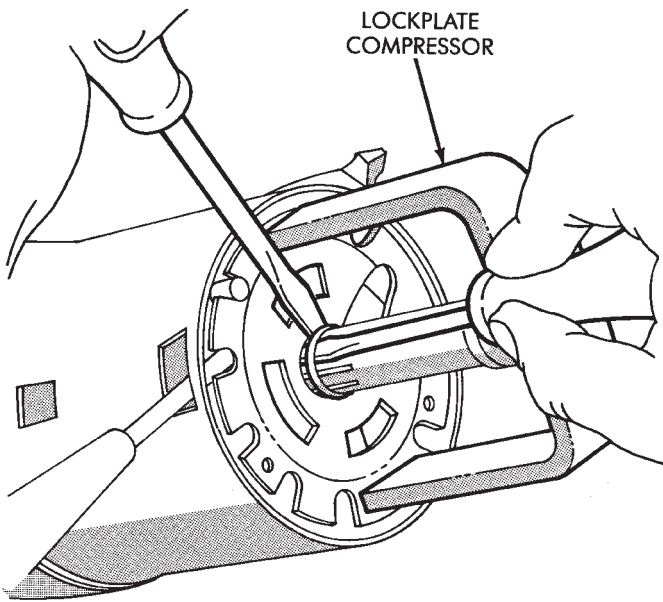
**Fig. 15 Steering Wheel Remove/Install**

- (4) Turn ignition switch to the LOCK position and remove the steering wheel nut and washer.
- (5) Scribe an alignment mark on the steering wheel in line with the mark already existing on the end of the steering column.
- (6) Remove vibration damper from the steering column hub, if equipped.
- (7) Remove steering wheel using a steering wheel puller. DO NOT hammer on puller or end of steering shaft.

**WARNING: TO REMOVE THE STEERING SHAFT SNAP RING IN THE FOLLOWING STEP, THE LOCK-PLATE MUST BE COMPRESSED. DO NOT ATTEMPT TO REMOVE THE LOCKPLATE WITHOUT COMPRESSOR TOOL C4156 AS THE LOCKPLATE IS UNDER HEAVY SPRING TENSION.**

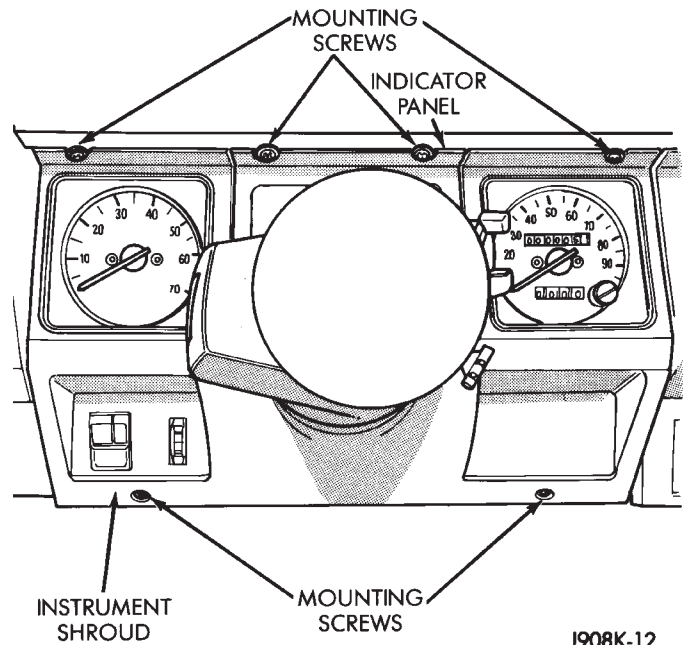
- (8) Compress lockplate with compressor tool C4156.
- (9) Remove steering shaft snap ring (Fig. 16). Discard snap ring. It is not reusable.
- (10) Remove compressor tool.
- (11) Remove lockplate, cancelling cam, and upper bearing preload spring.
- (12) Remove horn button components from cancelling cam.
- (13) Remove screw and hazard warning switch knob.
- (14) Remove dimmer switch actuator arm attaching screw (Fig. 17).
- (15) Remove turn/hazard switch attaching screws.
- (16) Remove 6 instrument bezel screws (Fig. 18).
- (17) Slide bezel toward steering wheel.





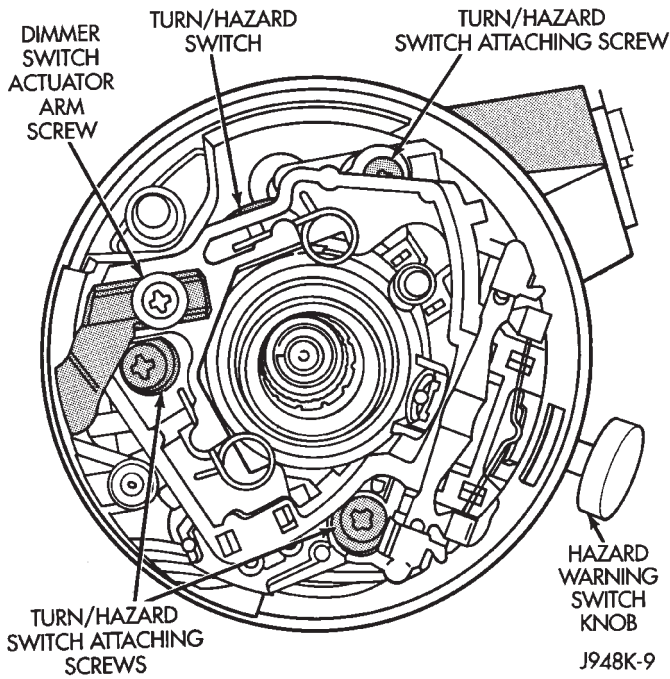
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**Fig. 16 Lockplate Remove**



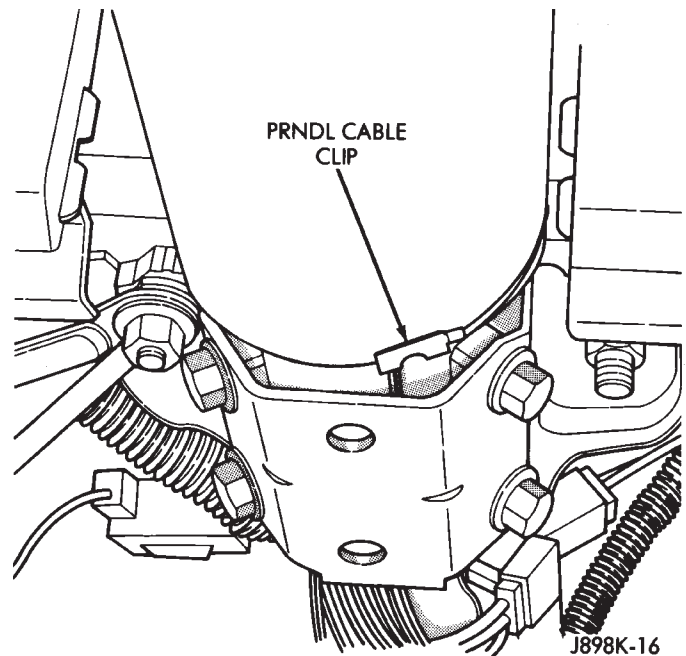
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**Fig. 18 Instrument Bezel Remove/Install**



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**Fig. 17 Turn/Hazard Switch and Dimmer Actuating Arm**

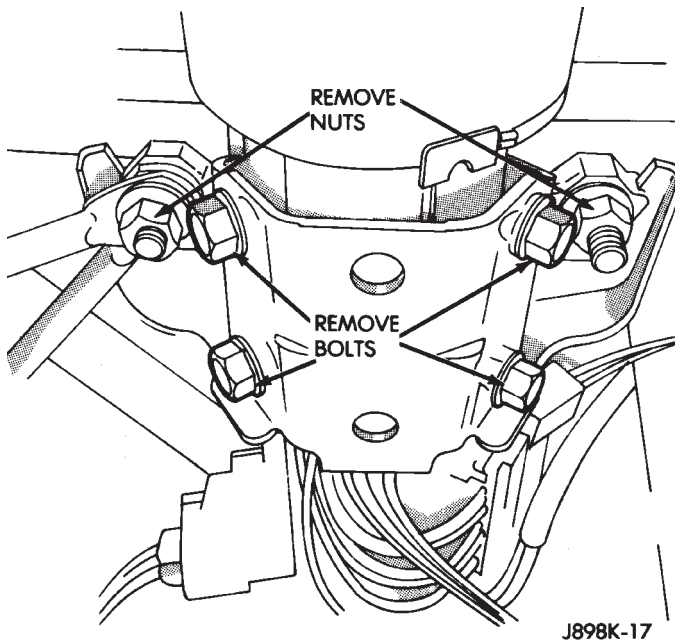


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**Fig. 19 PRNDL Cable Clip Remove/Install**

- (18) Remove cover under column.
- (19) If vehicle is equipped with a column shift, remove PRNDL cable clip (Fig. 19).

(20) Remove 2 nuts holding steering column bracket to brake sled (Fig. 20).



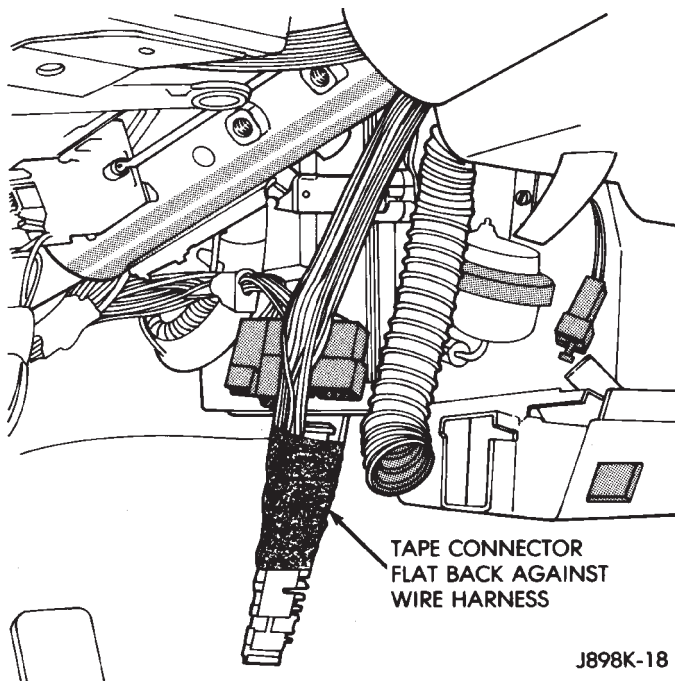
**Fig. 20 Lower Steering Column Mounting**

(21) Remove 4 bolts holding steering column brace to column.

(22) Loosen column brace mounting nut at drivers side kick panel. This will allow column to drop.

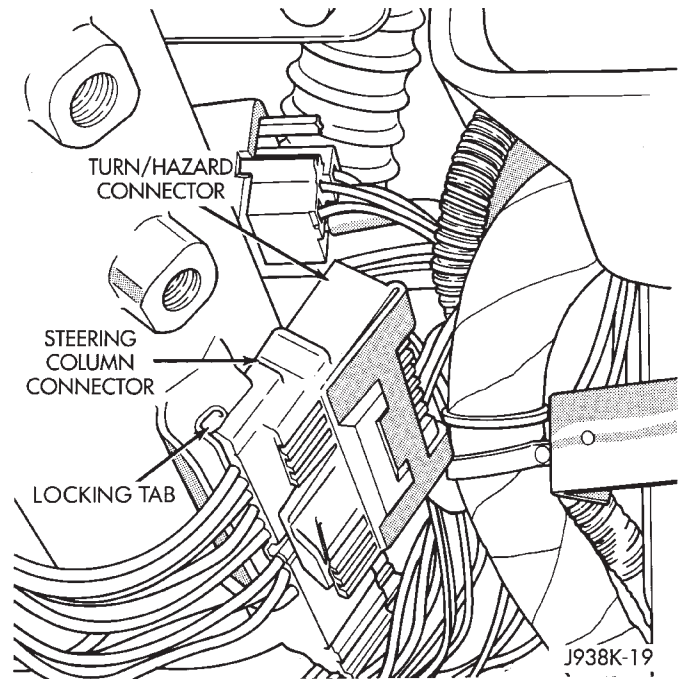
(23) Unplug wiper switch connector.

(24) Tape connector to wires (Fig. 21).



**Fig. 21 Tape Wiper Switch Connector**

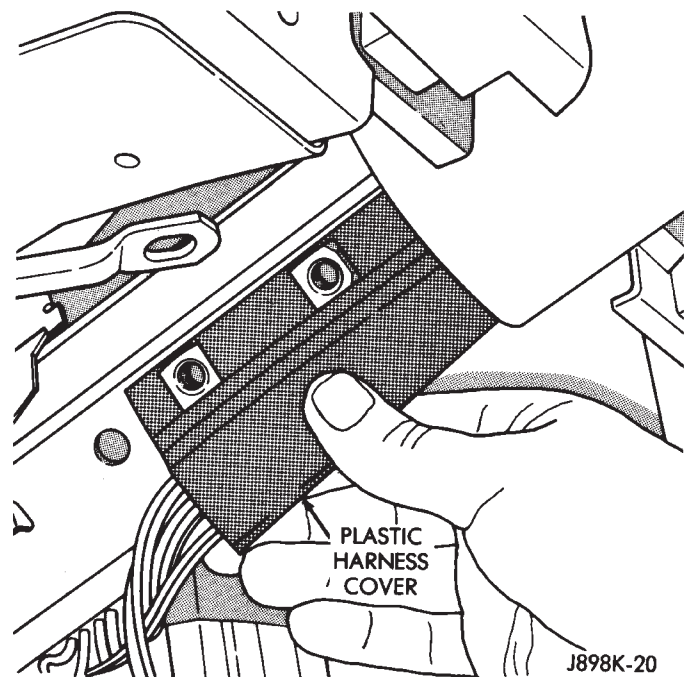
(25) Push turn/hazard connector up and out of steering column connector (Fig. 22).



**Fig. 22 Turn/Hazard Switch and Steering Column Connectors**

(26) Pry up locking tabs of steering column connector and remove connector from column bracket.

(27) Remove plastic harness cover by pulling it up and over weld nuts then open and slide the cover off harness (Fig. 23).



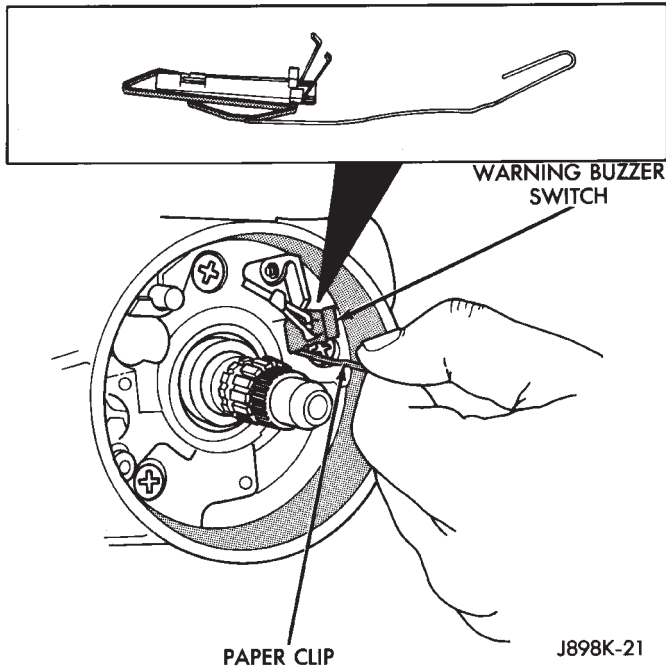
**Fig. 23 Remove Plastic Harness Cover**

(28) Pull turn/hazard switch out of column far enough to allow access to remaining screws.

(29) Insert ignition key in lock cylinder and turn ignition switch to ON position.

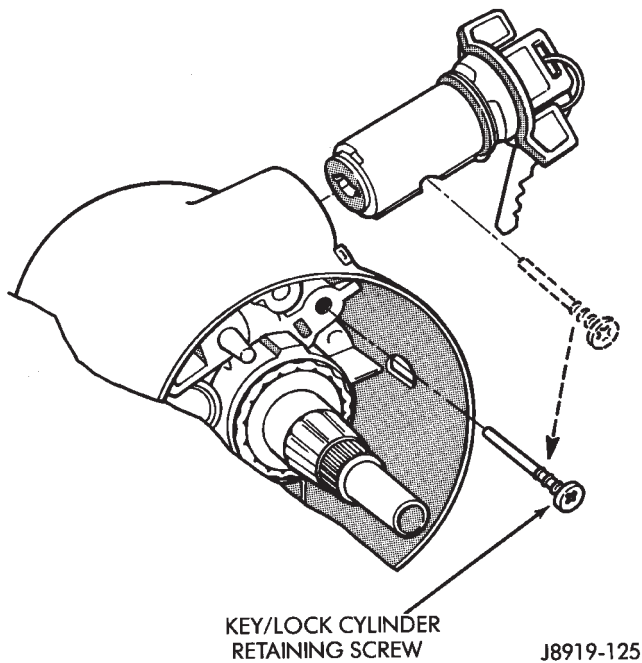
(30) Remove key warning buzzer switch and retaining clip with a paper clip inserted below retainer so that retainer is flattened (Fig. 24).

**Do not attempt to remove buzzer switch and clip separately. The clip could fall into the column jacket.**



**Fig. 24 Buzzer Switch Remove**

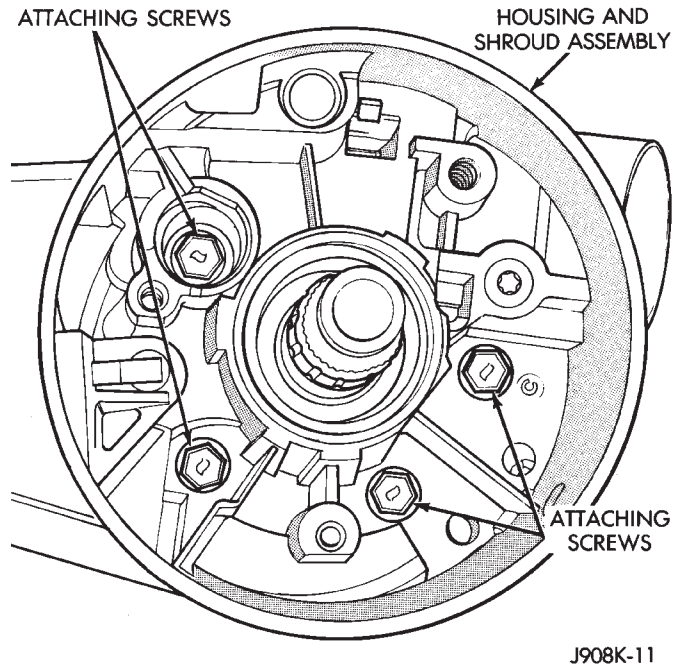
(31) Remove ignition lock cylinder retaining screw and pull lock cylinder out of column housing (Fig. 25)



**Fig. 25 Lock Cylinder Remove/Install**

(32) Remove screws that attach housing and shroud assembly to column jacket and carefully remove housing and shroud assembly (Fig. 26).

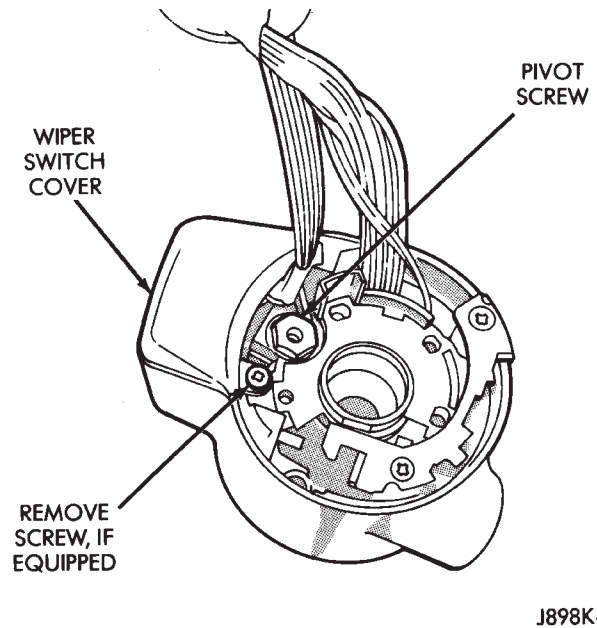
**DO NOT let dimmer switch rod, lock pin or lock rack fall out.**



**Fig. 26 Steering Column Housing Remove/Install**

(33) Remove turn/hazard/wiper lever by pulling it straight out of column.

(34) Remove wiper switch cover from back of housing and shroud assembly (Fig. 27). If equipped with column shift, remove screw holding the cover on.



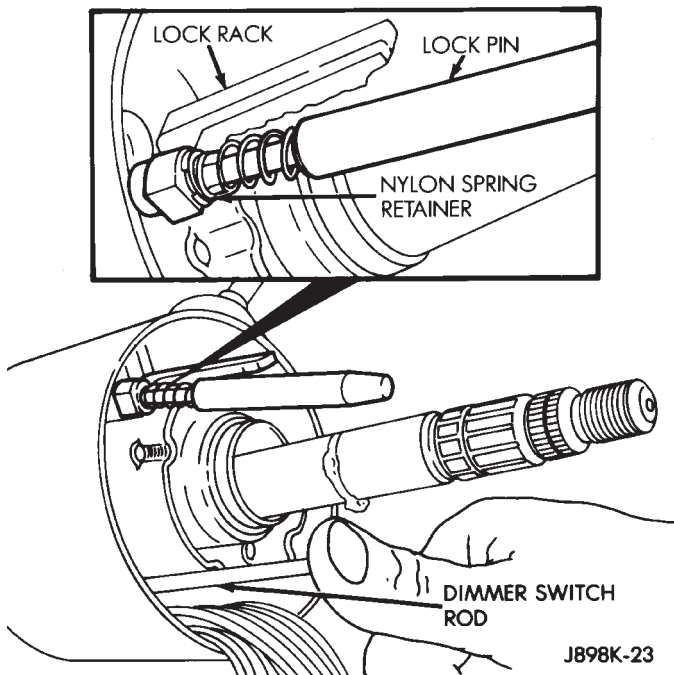
**Fig. 27 Remove Pivot Screw**

(35) Remove pivot screw from housing and remove wiper switch.



(36) Install a new switch and switch cover.

(37) Push on dimmer switch rod to make sure it is connected then carefully position housing and shroud assembly to column (Fig. 28).



**Fig. 28 Check Dimmer Switch Rod and Lock Pin**

Make sure nylon spring retainer on lock pin is positioned forward of the retaining slot of lock rack.

Position first tooth of gear (farthest from the block tooth) with the most forward tooth of lock rack.

(38) Install screws that attach housing and shroud assembly to column jacket and carefully mate housing and shroud assembly.

(39) Insert key and lock cylinder and test that lock pin extends fully when key is moved to lock position.

(40) Reverse removal procedures to complete installation.

**CAUTION:** When installing a wiper switch, make sure wires are laying flat on bottom inside of column.

On vehicles equipped with column shift, install PRNDL cable clip with shift indicator on N (neutral). Move selector through the range and make sure it lines up with each letter.

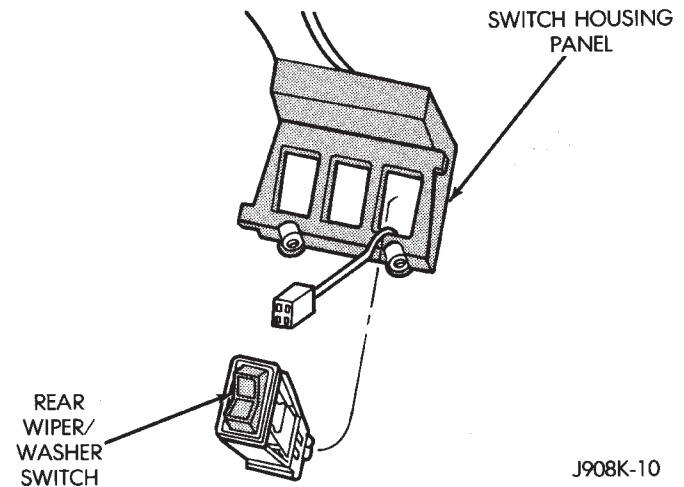
(41) Install steering wheel. Tighten steering wheel nut to 34 N·m (25 ft. lbs.) torque.

#### LIFTGATE WIPER/WASHER SWITCH REMOVE/INSTALL

(1) Remove the left instrument panel bezel. Refer to Group 8E - Instrument Panel and Gauges for procedure.

(2) Remove the switch housing panel.

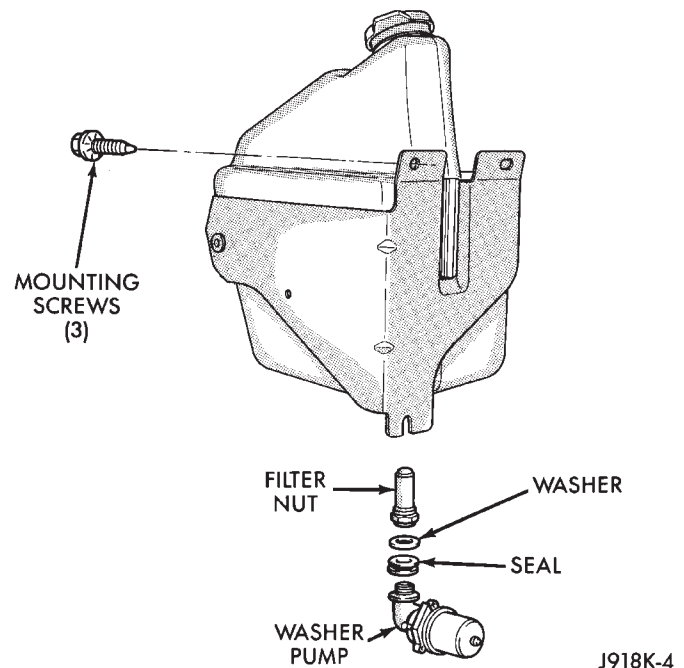
(3) Unplug the switch connector. Slightly depress the switch mounting tabs and remove the switch (Fig. 29).



**Fig. 29 Liftgate Wiper/Washer Switch**

#### WASHER PUMP REMOVE/INSTALL

(1) Remove 3 washer reservoir mounting screws (Fig. 30 or 31).



**Fig. 30 Washer Reservoir and Pump**

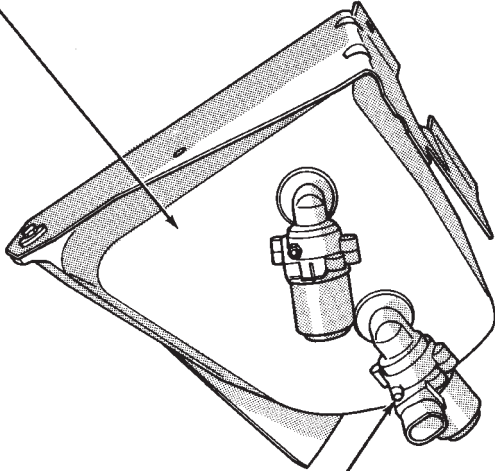
- (2) Disconnect hose(s) from pump(s).
- (3) Drain washer reservoir.
- (4) Using a deep socket, remove filter nut from bottom inside reservoir and remove pump.
- (5) Reverse removal procedures to install.

#### LIFTGATE WASHER NOZZLE REMOVE/INSTALL

(1) From inside the vehicle remove the motor trim cover.



WASHER  
RESERVOIR



REAR WASHER  
PUMP

J918K-3

**Fig. 31 Liftgate Washer Pump**

(2) Remove the washer hose from the back of the washer nozzle.

- (3) Remove the nut holding the nozzle to the glass.
- (4) Install the new washer nozzle.

