

WIPER AND WASHER SYSTEMS

CONTENTS

page

HEADLAMP WASHERS 1

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INDEX

pagepage

GENERAL INFORMATION		REMOVAL AND INSTALLATION	
INTRODUCTION	1	HEADLAMP WASHER HOSES	6
DIAGNOSIS AND TESTING		HEADLAMP WASHER NOZZLE	7
WINDSHIELD WASHERS	1	HEADLAMP WASHER PUMP	7
SERVICE PROCEDURES		WINDSHIELD/HEADLAMP WASHER	
HEADLAMP WASHER SYSTEM PRIMING		RESERVOIR	5
PROCEDURE	4	WINDSHIELD/HEADLAMP WASHER	
		RESERVOIR FILLER TUBE	6

GENERAL INFORMATION

INTRODUCTION

Headlamp washers are available as a factory-installed option on this model. The headlamp washers on this vehicle work in conjunction with the windshield washers. The headlamp washers are enabled with the headlamps “ON” and the windshield washers activated. With the windshield washers activated the headlamp washers will spray for a preset amount of time controlled by a relay.

The headlamp washer system utilizes a separate high pressure pump that is attached to the windshield washer reservoir. The headlamp washer pump feeds four nozzles that are mounted behind the front fascia of the vehicle. The nozzle bodies

have a telescopic action that will extend the nozzles in front of the headlamp assembly. During the telescopic action, doors in the fascia will open to allow the nozzles to advance into the proper spray position. These nozzles spray the headlamps when the system is activated.

DIAGNOSIS AND TESTING

WINDSHIELD WASHERS

Whenever a windshield washer malfunction occurs, first verify that the windshield washer wire harness is properly connected to all connectors before starting normal diagnosis and repair procedures. Refer to Windshield Washer Test table.

DIAGNOSIS AND TESTING (Continued)

WINDSHIELD WASHER TEST

CONDITION	POSSIBLE CAUSE	CORRECTION
WASHER POWER FEED FUSE OPEN	1. JUNCTION BLOCK FUSE #5 BLOWN.	CHECK FUSE #5. REPLACE IF NOT OK.
BLOWN FUSE WHEN WASHER SWITCH IS DEPRESSED	1. SHORT IN WIPER / WASHER SWITCH. 2. SHORT IN MOTOR POWER CIRCUIT. 3. SHORT IN WASHER MOTOR.	1. DEFECTIVE WASHER SWITCH. REFER TO WIPE / WASHER SWITCH DIAGNOSTIC PROCEDURES. 2. SHORT OR DEFECTIVE CIRCUIT BETWEEN WIPER / WASHER SWITCH CONNECTOR TERMINAL #2 AND MOTOR CONNECTOR TERMINAL #1. IF NOT OK, REPAIR CIRCUIT. 3. REPLACE WASHER MOTOR.
WASHER SYSTEM WILL NOT FLOW WASHER FLUID	1. JUNCTION BLOCK FUSE #5 BLOWN. 2. MOTOR CONNECTOR LOOSE. 3. MOTOR CONNECTOR TERMINALS BENT. 4. OPEN POWER CIRCUIT TO SWITCH. 5. OPEN OR DEFECTIVE WIPER / WASHER SWITCH. 6. OPEN POWER CIRCUIT TO MOTOR. 7. OPEN OR DEFECTIVE MOTOR GROUND CIRCUIT. 8. OPEN CIRCUIT IN MOTOR. 9. SEIZED MOTOR BEARINGS. 9. PINCHED WASHER HOSE.	1. SHORT CIRCUIT BETWEEN JUNCTION BLOCK FUSE #5 AND WIPER SWITCH TERMINAL #1. SHORT IN WIPER SWITCH. IF NOT OK, REPAIR CIRCUIT OR REFER TO WIPER / WASHER SWITCH DIAGNOSTIC PROCEDURES. 2. PROPERLY SEAT CONNECTOR TO MOTOR. 3. REPAIR TERMINALS AND PROPERLY SEAT CONNECTOR TO MOTOR. 4. OPEN OR DEFECTIVE CIRCUIT BETWEEN JUNCTION BLOCK FUSE #5 AND WASHER SWITCH CONNECTOR TERMINAL #1. IF NOT OK, REPAIR CIRCUIT. 5. REFER TO WIPER / WASHER SWITCH DIAGNOSTIC PROCEDURES. 6. OPEN OR DEFECTIVE CIRCUIT BETWEEN WIPER / WASHER SWITCH CONNECTOR TERMINAL #2 AND MOTOR CONNECTOR TERMINAL #1. IF NOT OK, REPAIR CIRCUIT. 7. OPEN OR DEFECTIVE CIRCUIT BETWEEN WASHER MOTOR CONNECTOR GROUND TERMINAL #2 AND LEFT HEADLAMP GROUND #5 OR ENGINE GROUND #1 OR #2. 8. CHECK FOR AN OPEN CIRCUIT ON MOTOR BETWEEN POWER TERMINAL #1 AND GROUND TERMINAL #2. IF NOT OK, REPLACE WASHER MOTOR. 9. APPLY DIRECT BATTERY VOLTAGE TO MOTOR TERMINALS. IF MOTOR DOES NOT RUN, REPLACE MOTOR. 10. ASSURE WASHER HOSE IS NOT PINCHED. IF NOT O.K., PROPERLY ROUTE WASHER HOSE.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSE	CORRECTION
HOOD NOZZLE WILL NOT FLOW	1. PINCHED NOZZLE HOSE. 2. PLUGGED NOZZLE OR NOZZLE HOSE BY CONTAMINATION. 3. DEFECTIVE NOZZLE CHECK VALVE.	1. ASSURE NOZZLE HOSE IS NOT PINCHED, LOOSE, BROKEN, OR DISCONNECTED. IF NOT OK, PROPERLY ROUTE OR REPAIR NOZZLE HOSE. 2. CLEAN NOZZLE OR NOZZLE HOSE OF CONTAMINATION. DETERMINE SOURCE OF CONTAMINATION. INSPECT RESERVOIR FOR EXCESSIVE CONTAMINATION. CLEAN SYSTEM AS REQUIRED. 3. REPLACE HOOD NOZZLE.
HOOD NOZZLE STREAM OVERSHOOTS WINDSHIELD.	1. NOZZLE NOT SEATED IN HOOD. 2. NOZZLE JET(S) OUT OF ADJUSTMENT.	1. ASSURE NOZZLE IS SNAPPED IN PLACE. ADJUST JETS USING A SAFETY PIN.
WIPER WILL NOT CYCLE WHEN WASHER SWITCH IS DEPRESSED	1. OPEN OR DEFECTIVE WASHER SYSTEM CONTROL CIRCUIT. 2. DEFECTIVE BODY CONTROL MODULE (BCM).	1. OPEN OR DEFECTIVE CIRCUIT BETWEEN WIPER / WASHER SWITCH CONNECTOR TERMINAL #2 AND BCM #C2 BLACK CONNECTOR TERMINAL #7. IF NOT OK REPAIR CIRCUIT. 2. REFER TO BCM DIAGNOSTIC PROCEDURES.
WASHER FLUID LEVEL INDICATOR INOPERATIVE	1. LOOSE FLUID LEVEL SENSOR CONNECTOR. 2. FLUID LEVEL SENSOR SWITCH OPEN OR DEFECTIVE.	1. PROPERLY SEAT CONNECTOR TO SWITCH. 2. ASSURE SENSOR FLOAT SWITCH IS CLOSED (DOWN POSITION). APPLY OHMMETER TO SWITCH TO CHECK FOR COMPLETE CIRCUIT. IF NOT O.K., REPLACE SWITCH.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSE	CORRECTION
HEADLAMP WASHER SYSTEM WILL NOT FLOW WASHER FLUID	1. NO WASHER FLUID IN RESERVOIR. 2. JUNCTION BLOCK FUSE #5 BLOWN. 3. HEADLAMP WASHER HOSE NOT FLOWING FLUID. 4. MOTOR CONNECTOR LOOSE. 5. MOTOR CONNECTOR TERMINALS BENT. 6. OPEN POWER CIRCUIT TO SWITCH. 7. OPEN OR DEFECTIVE WIPER / WASHER SWITCH. 8. OPEN POWER CIRCUIT TO MOTOR. 9. OPEN OR DEFECTIVE MOTOR GROUND CIRCUIT. 10. OPEN CIRCUIT IN HEADLAMP WASHER MOTOR. 11. SEIZED MOTOR BEARINGS. 12. DEFECTIVE HEADLAMP WASHER RELAY.	1. FILL RESERVOIR. 2. SHORT CIRCUIT BETWEEN JUNCTION BLOCK FUSE #5 AND WIPER SWITCH TERMINAL #1. SHORT IN WIPER SWITCH. IF NOT OK, REPAIR CIRCUIT OR REFER TO WIPER / WASHER SWITCH DIAGNOSTIC PROCEDURES. 3. ASSURE WASHER HOSE IS NOT PINCHED, LOOSE, BROKEN, OR DISCONNECTED. IF NOT OK, PROPERLY ROUTE OR REPAIR WASHER HOSE. 4. PROPERLY SEAT CONNECTOR TO MOTOR. 5. REPAIR TERMINALS AND PROPERLY SEAT CONNECTOR TO MOTOR. 6. OPEN OR DEFECTIVE CIRCUIT BETWEEN JUNCTION BLOCK FUSE #5 AND WASHER SWITCH CONNECTOR TERMINAL #1. IF NOT OK, REPAIR CIRCUIT. 7. CONNECT AN OHMMETER ACROSS WIPER / WASHER SWITCH TERMINAL #1 AND #2 AND DEPRESS WASHER BUTTON AND CHECK FOR CONTINUITY. IF NOT OK, REFER TO WIPER / WASHER SWITCH DIAGNOSTIC PROCEDURES. 8. OPEN OR DEFECTIVE CIRCUIT BETWEEN WIPER / WASHER SWITCH CONNECTOR TERMINAL #2 AND MOTOR CONNECTOR TERMINAL #1. IF NOT OK, REPAIR CIRCUIT. 9. OPEN OR DEFECTIVE CIRCUIT BETWEEN WASHER MOTOR CONNECTOR GROUND TERMINAL #2 AND LEFT HEADLAMP GROUND #5 OR ENGINE GROUND #1 OR 2. 10. CHECK FOR AN OPEN CIRCUIT ON MOTOR BETWEEN POWER TERMINAL #1 AND GROUND TERMINAL #2. IF NOT OK, REPLACE WASHER MOTOR. 11. APPLY DIRECT BATTERY VOLTAGE TO MOTOR TERMINALS. IF MOTOR DOES NOT RUN, REPLACE MOTOR. - REPLACE THE HEADLAMP WASHER RELAY.
ONE HEADLAMP WASHER NOZZLE WILL NOT FLOW WASHER FLUID	1. HEADLAMP WASHER HOSE NOT FLOWING FLUID. 2. PLUGGED HEADLAMP WASHER NOZZLE.	1. REPAIR OR REPLACE THE HEADLAMP WASHER HOSE. 2. REPLACE HEADLAMP WASHER NOZZLE.

SERVICE PROCEDURES

HEADLAMP WASHER SYSTEM PRIMING PROCEDURE

The headlamp washer system may lose its prime when the system is serviced. The following procedure must be used to prime the headlamp washer system. A DRB III must be used for this priming procedure.

CAUTION: Do not allow washer fluid to spray on hot engine with the hood up.

CAUTION: Do not stand near the headlamp washer nozzles when actuating the headlamp washer system. The washer fluid comes out of the nozzles at high pressure.

SERVICE PROCEDURES (Continued)

- (1) Connect a DRB III.
- (2) Go to the "BODY" menu.
- (3) Go to the "ACTUATOR" menu.
- (4) Actuate the "HEADLAMP WASHER" actuator until the headlamp washer system is properly primed.

CAUTION: Do not actuate the headlamp washers longer than 4 seconds at a time. Allow pump to cool prior to next attempt. Damage to the headlamp washer pump may occur.

REMOVAL AND INSTALLATION

WINDSHIELD/HEADLAMP WASHER RESERVOIR

REMOVAL

- (1) Open hood and disconnect the negative battery cable remote terminal from the remote battery post.
- (2) Hoist vehicle.
- (3) Drain washer fluid into a clean container.
- (4) Partially remove the front fascia to gain access to the windshield/headlamp washer reservoir. Refer to Group 23, Body for Removal and Installation procedures.
- (5) Disconnect the wire connectors from the windshield washer pump, headlamp washer pump, and the washer fluid level sensor.
- (6) Disconnect the windshield washer pump and the headlamp washer pump hoses.
- (7) Reach up behind the washer reservoir and pull the filler tube off the rear of the reservoir.
- (8) Remove the four mounting bolts to washer reservoir (Fig. 1).
- (9) Remove the washer reservoir from vehicle.
- (10) Transfer the washer fluid level sensor, headlamp washer pump, and the windshield washer pump to the new reservoir (Fig. 2).

INSTALLATION

- (1) Connect the windshield washer pump hose, headlamp washer pump hose, filler tube, and the wire connectors to reservoir.
- (2) Install the reservoir retaining bolts. Torque bolts to 5 to 7 N·m.
- (3) Reinstall the front fascia as necessary. Refer to Group 23, Body for Removal and Installation procedures.
- (4) Reconnect the negative battery cable remote terminal.
- (5) Lower vehicle from hoist.

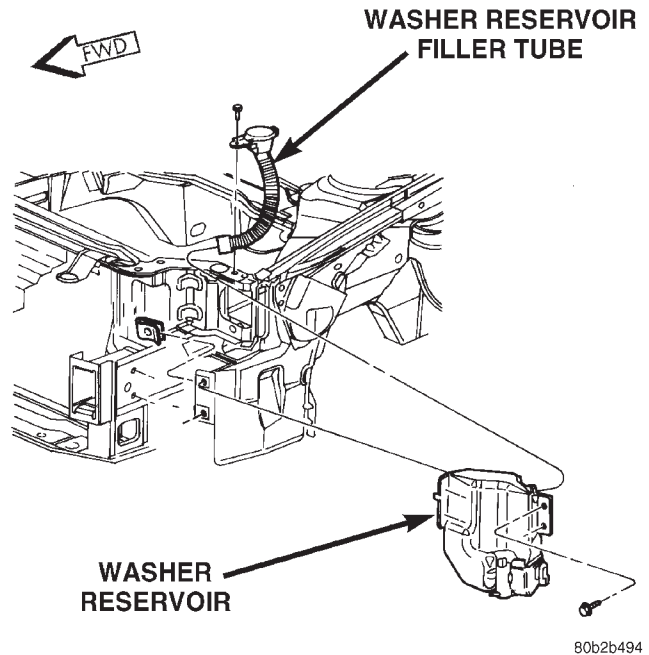


Fig. 1 Windshield/Headlamp Washer Reservoir Removal

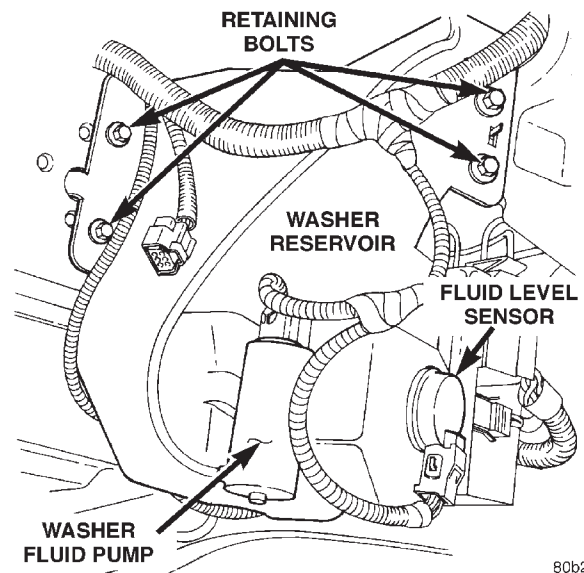


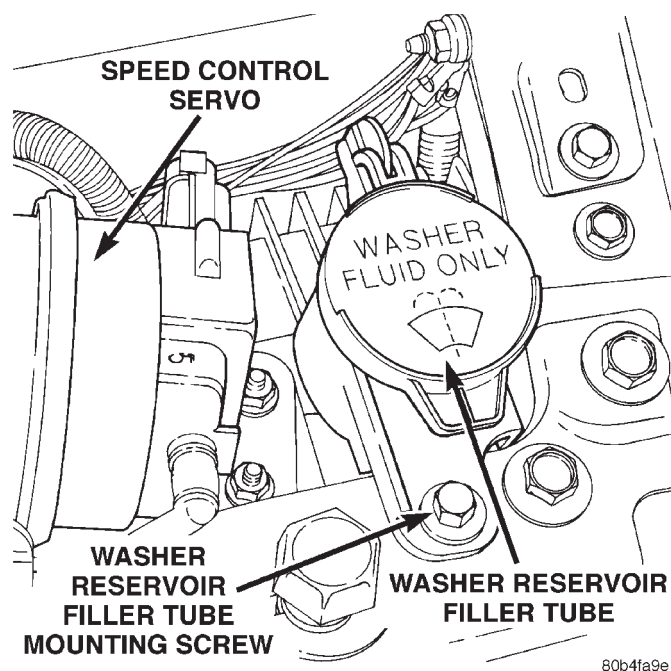
Fig. 2 Windshield/Headlamp Washer Reservoir

- (6) Refill the windshield/headlamp washer reservoir.
- (7) Reconnect the negative battery cable at the remote battery post.
- (8) Prime the headlamp washer system. Refer to the Headlamp Washer Priming Procedure in this section.

REMOVAL AND INSTALLATION (Continued)

WINDSHIELD/HEADLAMP WASHER RESERVOIR FILLER TUBE**REMOVAL**

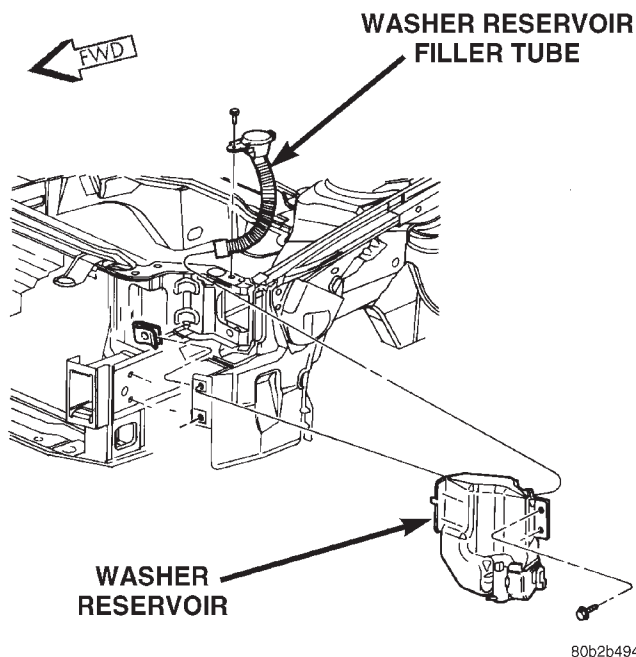
- (1) Open hood and disconnect the negative battery cable remote terminal from the remote battery post.
- (2) Hoist vehicle.
- (3) Drain washer fluid into a clean container.
- (4) Partially remove the front fascia to gain access to the windshield/headlamp washer reservoir. Refer to Group 23, Body for Removal and Installation procedures.
- (5) Reach up behind the washer reservoir and pull the filler tube off the rear of the reservoir.
- (6) Remove the windshield/headlamp washer reservoir filler tube mounting screw (Fig. 3).

**Fig. 3 Washer Reservoir Filler Tube Mounting Bolt**

- (7) Reach up behind the windshield/headlamp washer reservoir and pull the filler tube off of the reservoir.
- (8) Pull filler tube and hose up through left fender and remove (Fig. 4).

INSTALLATION

- (1) Reconnect the windshield/headlamp washer reservoir filler tube to the reservoir.
- (2) Install the windshield/headlamp washer reservoir filler tube mounting screw.
- (3) Reinstall the front fascia as necessary. Refer to Group 23, Body for Removal and Installation Procedures.

**Fig. 4 Washer Reservoir Filler Tube Removal**

- (4) Lower vehicle from hoist.
- (5) Refill the washer fluid.
- (6) Reconnect the negative battery cable at the remote battery post.

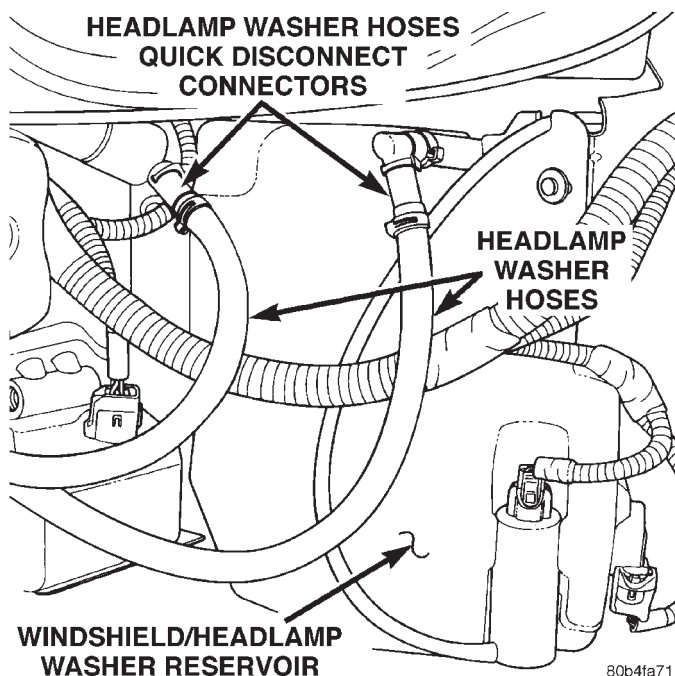
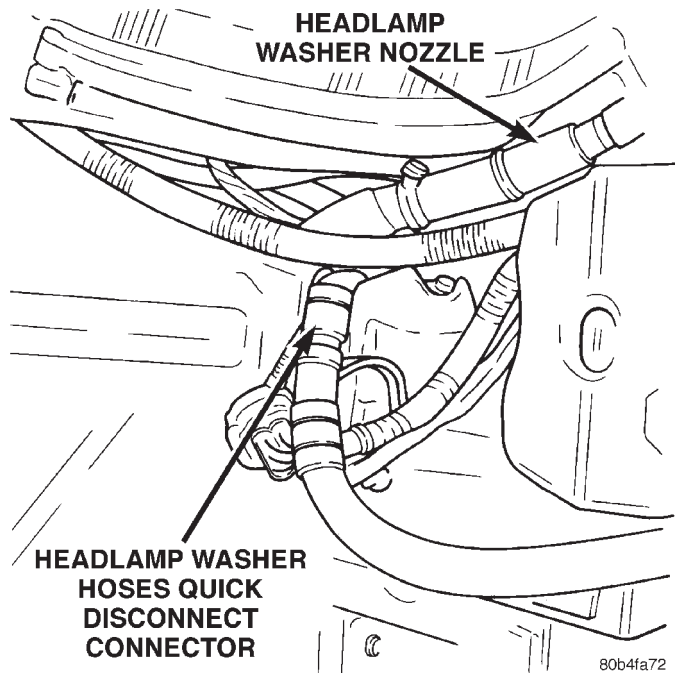
HEADLAMP WASHER HOSES**Removal**

- (1) Open hood and disconnect the negative battery cable remote terminal from the remote battery post.
- (2) Hoist vehicle.
- (3) Remove the front fascia. Refer to Group 23, Body for Removal and Installation procedures.
- (4) Disconnect the headlamp washer hoses at the quick disconnect connectors (Fig. 5) (Fig. 6).
- (5) Remove the headlamp washer hoses from the radiator closure panel.

Installation

- (1) Install the headlamp washer hoses to the radiator closure panel.
- (2) Connect the headlamp washer hoses quick disconnect connectors (Fig. 5) (Fig. 6).
- (3) Reinstall the front fascia. Refer to Group 23, Body for Removal and Installation procedures.
- (4) Lower vehicle from hoist.
- (5) Refill the washer fluid.
- (6) Reconnect the negative battery cable remote terminal.

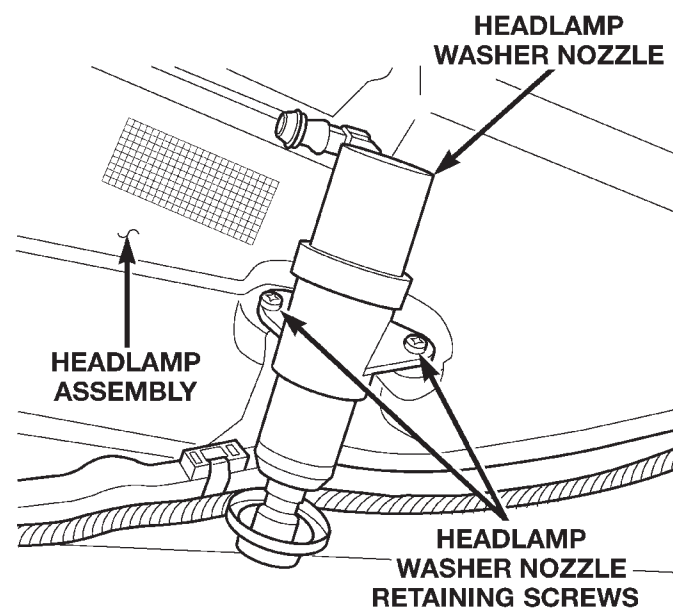
REMOVAL AND INSTALLATION (Continued)

**Fig. 5 Left Side Headlamp Washer Hoses****Fig. 6 Right Side Headlamp Washer Hoses****HEADLAMP WASHER NOZZLE****Removal**

- (1) Hoist vehicle.
- (2) Partially remove the front fascia to gain access to the headlamp assembly. Refer to Group 13, Body for Removal and Installation procedures.

(3) Remove the headlamp assembly. Refer to Group 8L, Lamps for Removal and Installation Procedures.

(4) Remove the headlamp washer nozzle retaining screws and remove the nozzle from the headlamp assembly.

**Fig. 7 Headlamp Washer Nozzle****Installation**

(1) Place the headlamp washer nozzle in position on the headlamp assembly.

(2) Install the headlamp washer nozzle retaining screws. Torque to 0.7 to 1.3 N·m.

(3) Reinstall the headlamp assembly. Refer to Group 8L, Lamps for Removal and Installation Procedures.

(4) Reinstall the front fascia as necessary. Refer to Group 13, Body for Removal and Installation Procedures.

(5) Lower vehicle from hoist.

(6) Refill the washer fluid.

(7) Prime the headlamp washer system. Refer to the Headlamp Priming Procedure in this section.

HEADLAMP WASHER PUMP**Removal**

(1) Open hood and disconnect the negative battery cable remote terminal from the battery post.

(2) Hoist vehicle.

(3) Drain washer fluid into a clean container.

REMOVAL AND INSTALLATION (Continued)

(4) Partially remove the front fascia to gain access to the windshield/headlamp washer pump. Refer to Group 23, Body for Removal and Installation procedures.

(5) Remove the four windshield/headlamp washer reservoir mounting bolts.

(6) Pull the reservoir away from body to gain access to the headlamp washer pump.

(7) Disconnect the headlamp washer pump electrical connector and the headlamp washer pump hose.

(8) Pull the headlamp washer pump from the reservoir.

Installation

(1) Install the headlamp washer motor in the windshield/headlamp washer pump.

(2) Connect the headlamp washer pump hose and electrical connector.

(3) Install the reservoir retaining bolts. Torque bolts to 5 to 7 N·m.

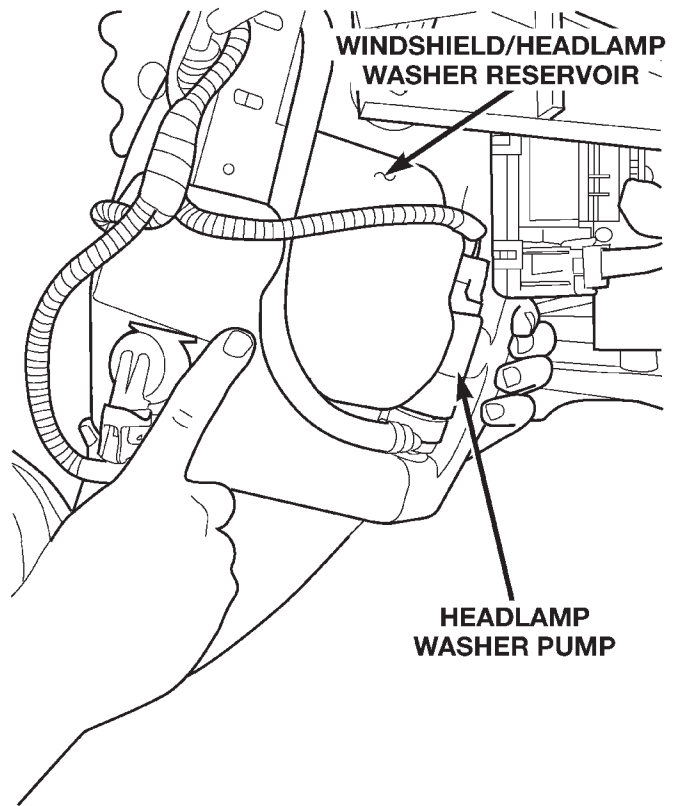
(4) Reinstall the front fascia as necessary. Refer to Group 23, Body for Removal and Installation procedures.

(5) Lower vehicle from hoist.

(6) Refill the windshield/headlamp washer reservoir.

(7) Reconnect the negative battery cable remote terminal.

(8) Prime the headlamp washer system. Refer to the Headlamp Washer Priming Procedure in this section.



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Fig. 8 Headlamp Washer Pump