

611 Wipers and Washers

GENERAL	611-1	Windshield wiper motor removing and installing	611-6
WIPER BLADES	611-1	WASHER SYSTEM	611-7
Wiper Blade Symptoms and Fixes	611-1	Windshield spray nozzle, removing and installing	611-7
Wiper blades, replacing	611-2	Headlight spray nozzle, removing and installing	611-7
Wiper blade inserts, replacing	611-3	Washer Fluid Pumps	611-8
Wiper arms, removing and installing	611-3	Washer Fluid Level Sensor	611-8
WINDSHIELD WIPER ASSEMBLY	611-4		
Windshield wiper assembly, removing and installing	611-4		

GENERAL

This repair group covers windshield wiper and washer system repair information.

Removal and replacement of the windshield wiper/washer stalk switch assembly is covered in **612 Switches and Electrical Accessories**. Electrical wiring diagrams and relays for the wiper/washer system are covered in **Electrical Wiring Diagrams**.

NOTE —

Some E32 7 Series cars are equipped with a mechanism that electronically increases the force on the driver's side wiper blade based on road speed. This wiper contact force system is identified by BMW as "ADV." Some repair procedures vary slightly on cars equipped with ADV, as specified in the text.

WIPER BLADES

Wiper Blade Symptoms and Fixes

Common problems with the windshield wipers include streaking or sheeting, water drops after wiping, and blade chatter.

Streaking is usually caused when wiper blades are coated with road film or car wash wax. Clean the blades using soapy water. If cleaning does not cure the problem, the blades should be replaced. BMW recommends replacing the wipers blades twice a year, before and after the cold season.

Drops that remain behind after wiping are usually caused by oil, road film or diesel exhaust residue on the glass. Use an alcohol or ammonia solution, or a non-abrasive cleanser (Bon-Ami®) to clean the windshield.

WIPER BLADES

611-2 WIPERS AND WASHERS

Wiper blade chatter may be caused by dirty or worn blades or by wiper arms that are out of alignment. Clean the blades and windshield as described above. Adjust the wiper arm so that there is even pressure along the blade, and so that the blade is perpendicular to the windshield at rest. If the problem persists, the blades and wiper arms should be replaced.

NOTE —

BMW has available a special tool/gauge (BMW special tool no. 00 9 210) to align the angle of the wiper arm to the windshield glass.

The rubber wiper blades can be replaced in one of two ways; either by replacing the complete blade or by replacing just the rubber insert itself.

Insert replacement is the most economical method, although over time the wiper blade itself will become worn. One rule of thumb would be to replace just the inserts every second time.

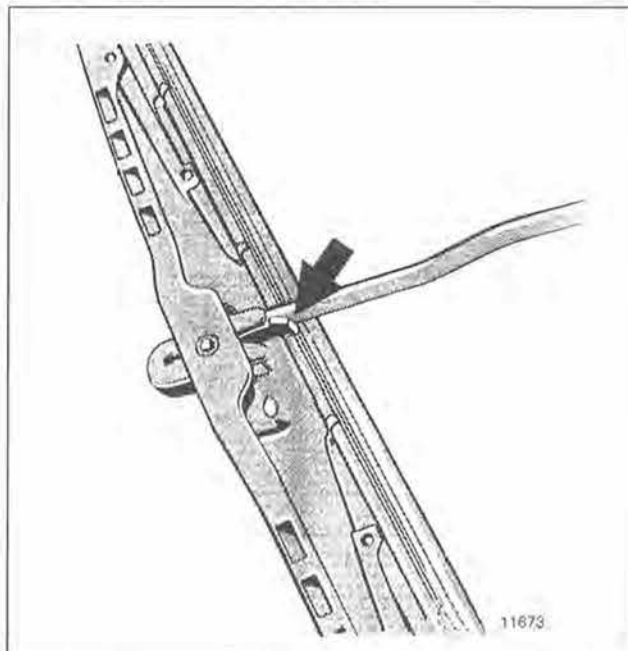
Wiper blades, replacing

- Pivot wiper arm up off glass.
- Position wiper blade approximately perpendicular to wiper arm.
- Remove wiper blade from wiper arm by depressing retaining tab (arrow) and sliding blade out of arm.

NOTE —

Some wiper blade versions may have two retaining tabs.

- Installation is reverse of removal. Install wiper blade to wiper arm until it can be heard to click into position.



Wiper blade inserts, replacing

- Remove wiper blade as described earlier.
- Unhook end of wiper blade insert from wiper arm guides.

NOTE—

If necessary, spread guides slightly using needle nose pliers.

- Pull old insert from wiper arm guides.
- Remove metal support strips from old insert and install into slots in new insert, noting installation direction of cutouts in support strips.

NOTE—

The notched cutouts in the retaining strips should engage the molded tangs in the inserts.

- Slide new insert through wiper blade guides. Lock insert in place at end guides.



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Wiper arms, removing and installing

- Swing hinged plastic cover upwards from base of wiper arm.
 - Some early models are equipped with a driver's side wiper pressure control system (called ADV). This system electronically regulates the wiper contact force on the windshield. Wiper arm removal varies slightly on cars with ADV.

- On cars without ADV, remove wiper arm retaining nut (arrow) and remove wiper arm.

NOTE—

Marking the position of the wiper arm on the shaft will aid installation.

- On cars with ADV wiper arm, remove the wiper arm clamping screw and remove the wiper arm.

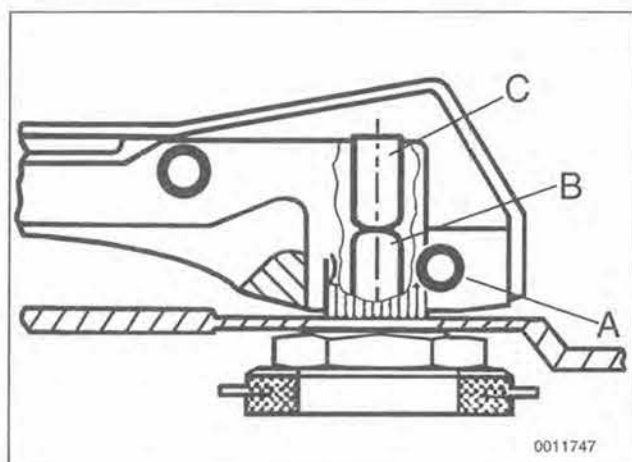
NOTE—

If necessary, use a screwdriver to spread clamping gap in wiper arm.



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611-4 WIPERS AND WASHERS



- Wiper arm on cars with ADV. After installing arm, tighten clamping screw (A), then tighten adjusting screw (C) until screw contacts ADV pin (B).
- Recheck wiper arm tightening torque after waiting 15 minutes.

Tightening Torques

- Wiper arm to wiper shaft

Passenger side	25 Nm (18 ft-lb)
Driver side (with ADV)	21 Nm (15 ft-lb)
Driver side (w/o ADV)	25 Nm (18 ft-lb)

WINDSHIELD WIPER ASSEMBLY

The windshield wiper assembly (linkage and motor) is removed as a single unit. Once the assembly is removed, the wiper motor and other linkage parts can be repaired or replaced.

Windshield wiper assembly, removing and installing

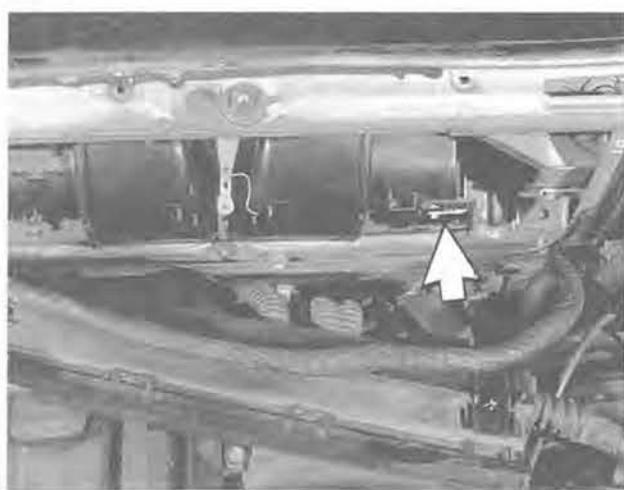
NOTE—

- The wiper arms should be in the parked position before removing the wiper assembly. To avoid damaging the wiper arms and pivots, do not manually slide or force the wiper arm across the windshield.
- Before beginning the procedure, set the ventilation flaps in the closed position. If necessary turn the ignition key on and off with the air control/volume lever in the off position to operate the flap motor.

- Disconnect negative (–) battery cable. See **020 Maintenance**.

WARNING—

Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.



- Remove heater blower motor. See **640 Heating and Air Conditioning**.
- Ventilation flap control linkage (arrow).
 - Remove small cover from left side of blower motor housing. Disconnect linkage rod from beneath cover.
- Remove temperature sensor from top of blower motor housing.

WINDSHIELD WIPER ASSEMBLY

WIPERS AND WASHERS 611-5



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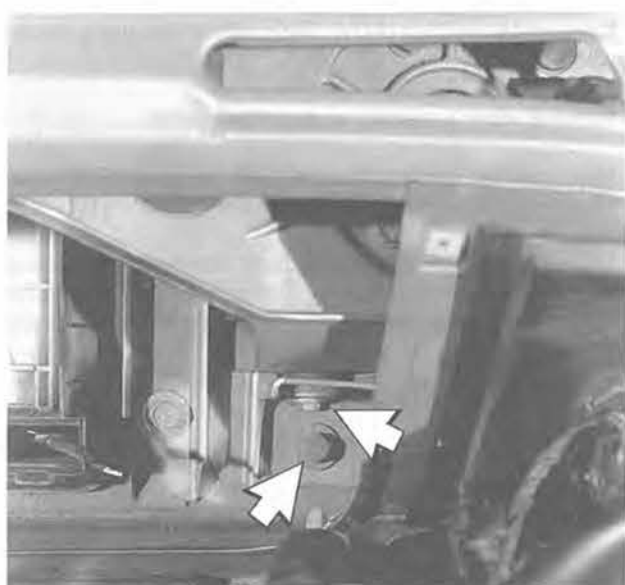
➤ Blower motor housing spring retainers and spring clips (**arrows**).

- Working inside rear of blower housing, release (pry back) spring retainers on left and right sides of housing. Remove spring clips on front of blower housing.

- While lifting blower housing up slightly, remove inlet cowls on left and right sides. Then remove blower motor housing.

NOTE—

Tilt blower motor housing out from below to remove.



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➤ Remove wiper assembly mounting bolts (**arrows**).

- Remove wiper arms as described earlier.
- Remove left and right molding grilles at base of windshield.



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➤ The grilles at the base of the windshield are retained by two-piece plastic clips (**arrows**). Use thin-bladed screwdriver to remove the center part of the clip (**A**) and then remove the clip outer piece (**B**).

- Remove large nuts and washers from left and right wiper arm shafts.
- Separate harness connector at wiper motor.
- Push wiper arm shafts down into cowl area and maneuver wiper assembly out of cowl.
- Installation is reverse of removal.

WINDSHIELD WIPER ASSEMBLY

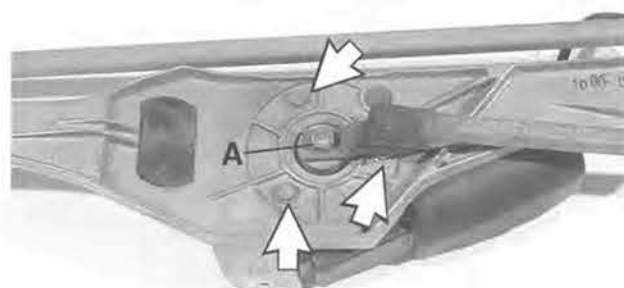
611-6 WIPERS AND WASHERS

Tightening Torques

- Wiper arm to wiper shaft
Passenger side 25 Nm (18 ft-lb)
Driver side (with ADV) 21 Nm (15 ft-lb)
Driver side (w/o ADV) 25 Nm (18 ft-lb)
- Wiper contact pressure motor (ADV)
to wiper assembly 6.5 Nm (57 in-lb)
- Wiper motor crank to
wiper motor (M8 nut) 27 Nm (20 ft-lb)
- Wiper shaft nut to body 12 Nm (9 ft-lb)

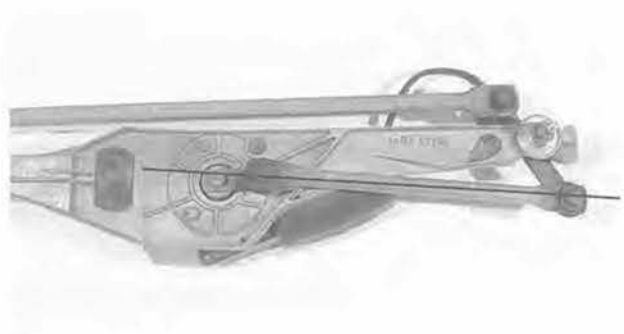
Windshield wiper motor, removing and installing

The procedure given here applies to cars without the wiper force contact system (ADV). Slight differences apply on cars with ADV.



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- Remove wiper assembly as described earlier.
- Mark position of wiper linkage crank to wiper motor shaft. Remove linkage crank from motor.
- Unbolt wiper motor mounting bolts (arrows) and remove motor from linkage. When reinstalling old motor, mark position of crank to wiper shaft after removing nut A from crank.



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- Attach wiper arm crank to "parked" motor so that crank is in straight line with linkage.

WASHER SYSTEM

The windshield washer system includes the windshield spray nozzles, the washer fluid pumps and the washer fluid reservoirs. Two separate washer fluid tanks are used, one for "intensive", the other for normal washing. Separate plumbing from each tank feeds the nozzles.

Cars with the headlight/foglight washer system are equipped with an additional fluid reservoir, a fluid pump, hoses and nozzles on the top and bottom of the front bumper.

Washer spray nozzles can be aimed by using a sewing needle or a similar diameter stiff piece of single-core wire.

Windshield spray nozzle, removing and installing

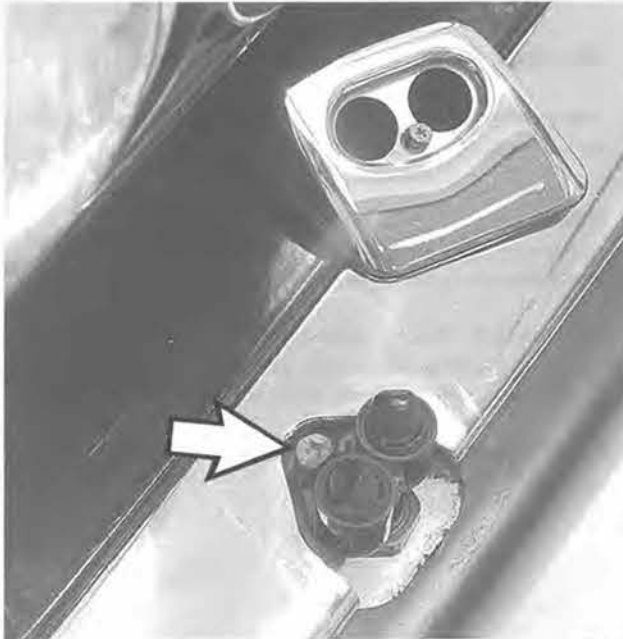
- Open hood and remove hood insulating pad retaining clips until nozzle can be fully accessed from below.
- Carefully disconnect hose from nozzle. Disconnect harness connector for nozzle heater.
- Depress nozzle retaining clips and push nozzle up out of hood.
- Installation is reverse of removal.



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Headlight spray nozzle, removing and installing

- Remove headlight washer bezel from bumper. Remove washer nozzle retaining screw (arrow).
- Twist nozzle assembly gently and pull up to remove.
- Installation is reverse of removal. Adjust spray nozzle as described earlier.

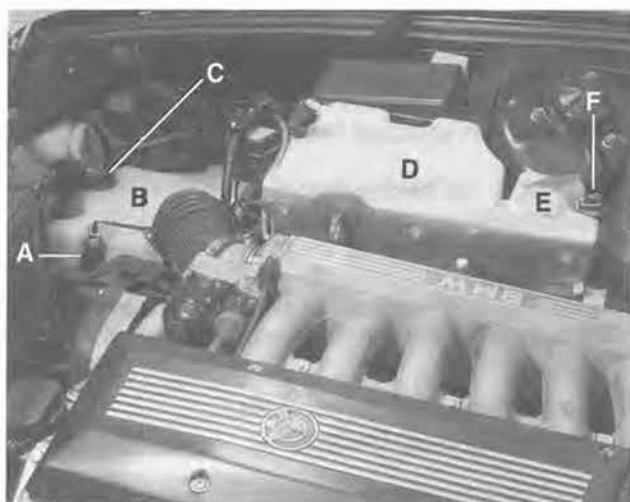


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NOTE—

The plumbing to the windshield washer system can best be accessed by removing the front bumper as described in 510 Exterior Trim, Bumpers.

611-8 WIPERS AND WASHERS



- | | |
|----------------------------------|--------------------------------------|
| A Windshield washer pump | D Windshield washer tank |
| B Headlight/foglight washer tank | E Intensive windshield cleaning tank |
| C Headlight/foglight washer pump | F Intensive windshield cleaning pump |

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Washer Fluid Pumps

The "intensive" windshield washer fluid pump is mounted in the small washer fluid tank next to the right strut tower.

The regular windshield washer pump in cars without headlight washers is mounted in the large tank forward of the intensive tank.

Windshield and headlight washer tanks and pumps.

In cars with the headlight washer system, the windshield and headlight washer pumps are installed in the lower tank, behind the right headlight assembly.

To replace any of the pumps, open engine hood and drain washer fluid tank as applicable.

Remove tank retaining screw(s). Loosen tank from mount and pull up slightly to access washer pump. Unplug harness connectors for washer fluid level switch (if applicable) and pump.

CAUTION—

Be careful when pulling harness connector off washer fluid pump. The pump can easily pull out of the rubber grommet resulting in spilled washer fluid.

Pull pump out of tank.

NOTE—

Access to the headlight washer pump may be easier after removing the right headlight assembly.

Loosen hose clamp and disconnect hose from pump. Installation is reverse of removal. Check pump sealing grommet for damage.

Washer Fluid Level Sensor

The washer fluid level sensor is mounted in the washer fluid tank near the bottom of the container.

NOTE—

Check wire leads at sensor for worn insulation and corrosion. Check electrical contacts in harness connector for corrosion.

To replace the sensor, drain the fluid tank, detach the sensor electrical harness connector, and pull sensor out of rubber grommet in bottom of tank. If necessary, lift tank slightly.

When installing the sensor, inspect the rubber grommet and replace if necessary.

