

2001-2003 ACCESSORIES AND EQUIPMENT**Accessories Control Systems - Repair Instructions - X5 (3.0i) M54****TROUBLESHOOTING****12 00 ... INSTRUCTIONS ON STARTING AID**

Do not start the engine with help of starting sprays.

Preparation:

Conform with the following when starting engine with starting cable.

- Ensure that jump lead wires are to appropriate cross-section size.
- Only use fuse-protected jump leads.
- Check whether the current supplying battery has 12 V voltage.
- If engine is started from battery of another vehicle, ensure that there is no contact between the bodies of both vehicles.

CAUTION: Never touch ignition system components and current - dangerous high tension!

If the battery in the vehicle supplying power is weak, start the engine of this vehicle and let it run at idling speed.

Carrying Out:

Always conform with the procedures to avoid injury to persons or damage to parts.

- On automatic transmission, select "P" setting, apply handbrake.
- Move the shift lever of vehicles with manual transmission into neutral and apply the parking brake.
- Ensure that the jump leads cannot get caught in rotating parts, e.g. fan.
- First connect positive terminals of both batteries with one jump lead (red).
- Use positive connection point in engine compartment for vehicles with one battery in trunk.
- Then attach second jump lead (black) to negative terminal of donor battery and to engine ground or body ground on vehicle to be started.

CAUTION: Never connect second jump lead (black) to negative terminal of battery in vehicle to be started. This would produce explosive gas which could be ignited by sparks.

Danger Of Explosion!

After engine of vehicle to be started has started up, first disconnect the jump lead on the negative terminal/ground connection. Then remove jump lead from positive terminals.

61 00... BATTERY

NOTE: Important notes and instructions for handling batteries can be found in:

- **Disconnecting battery. Refer to 12 00 ... INSTRUCTIONS FOR DISCONNECTING AND CONNECTING BATTERY .**
- **Battery charging. Refer to 61 00 ... BATTERY CHARGING .**
- **Welding work. Refer to 12 00 ... INSTRUCTIONS FOR WELDING WORK (OVERLOAD PROTECTION OF CONTROL UNITS) .**
- **External jump-starting aid. Refer to 12 00 ... INSTRUCTIONS ON STARTING AID .**

Battery Care And Maintenance:

In low-maintenance batteries, check the acid level at least once a year. If necessary, top up with distilled water up to the top marking.

The increasing number of electronic control units in the car reduces the self-discharging time of the battery (even in standby mode). To maintain the battery service life and to avoid exhaustive discharging, recharge laid-up vehicles every 6 weeks at the latest (refer to battery recharging schedule here, SI 610 398 387 BATTERY RECHARGING SCHEDULE). The time for self-discharging depends on vehicle type and equipment specification.

Battery Test:

The battery acid density can be used to measure the charge state. However this test produces uncertainty caused by a design-related range of variation. The acid density e.g. for a charged battery is 1.28 kg/l (in the tropical version the acid density is 1.23 kg/l).

Another interference factor is the acid lamination immediately after filling with distilled water.

Battery wear with partially sulfated and/or heavily contaminated plates will also lead to incorrect acid density test results.

61 00 ... BATTERY CHARGING

If a normal or quick charger is used to charge the battery, the battery must be disconnected from the vehicle electrical system and removed. This prevents damage to paintwork and upholstery.

Ideally, battery charging is performed with BMW-approved charging computers, refer to

SI 2 03 98 350 and

SI 2 06 02 854 .

IMPORTANT: In order to prevent the intelligent battery sensor from malfunctioning, the charging terminals in the engine compartment must be used without fail in vehicles from E60 and should be used if possible in other vehicles.

IMPORTANT: Before charging the battery while it is installed, first carry out a closed-circuit current test. Refer to 61 20 ... BATTERY OPEN-CIRCUIT CURRENT TEST . If here the voltage is 10 V or less, one or more of the cells may be faulty or the entire battery may already be damaged. In this case, always remove the battery as escaping gases during charging could damage the interior equipment and trim. Attempt to regenerate faulty cells with low charging current.

If necessary, open existing plugs on the individual cells.

61 00 ... REPAIRING AIRBAG CABLES

IMPORTANT: Only Repair Those Cables Which Show Visible Signs Of Damage. In The Event Of Visible Damage, Make Sure There Is Only One Cable Repair In Effect After The Repair Work. If No Visible Damage Can Be Identified, The Entire Cable Must Be Replaced. When Carrying Out Repairs To The Airbag Wiring Harness, You Must Use The Spare Parts Offered In The Electronic Parts Catalogue (EPC).

Safety Regulations:

Safety regulations for handling components of airbag system, refer to **AIR BAG SAFETY PRECAUTIONS** .

Instructions for disconnecting and connecting battery, refer to **12 00 ... INSTRUCTIONS FOR DISCONNECTING AND CONNECTING BATTERY** .

Procedure For Cable Repair:

In Event Of Non-Visible Damage To Wiring Harness:

Disconnect plug connection on airbag module or on adapter plug. It is absolutely vital to disconnect the contacts in succession as there is a risk of them being mixed up! Cut through one cable after the other at an appropriate position, do not under any circumstances cut through both cables at the same time. Insulate cables remaining in wiring harness with insulating tape. Now disconnect plug connection on airbag control unit. Unpin contacts. Cut through one cable after the other at an appropriate position and insulate with insulating tape, do not under any circumstances cut through both cables at the same time. Pin contacts of repair cable for airbag control unit in control unit plug, assignment of repair cables is relevant. Lay repair cable in car parallel to existing airbag lead. Now pin in contacts for airbag control unit or contacts of adapter plug, assignment of repair cables is relevant. Cut off excess length of repair cable in proximity (visible area) of airbag module or of adapter plug. Twist open cables. With the connectors and shrink-fit hoses in the Electronic Parts Catalogue (EPC), reconnect the cables with the same cable colors. Twist cables again, open length (twist) must not exceed 40 mm. Secure interface (shrink-fit hoses) with insulating tape to prevent cables from twisting open.

In Event Of Visible Damage:

Expose cable at damaged areas. Cut through one cable after the other at an appropriate position and insulate cables no longer required in wiring harness with insulating tape, do not under any circumstances cut through both cables at the same time. Now, depending on the scope of work, unpin contacts either on airbag control unit/airbag module or on adapter plug. Cut off unpinned cables. Insulate cables remaining in wiring harness with insulating tape. Now pin in contacts of repair cable, assignment of repair cables is relevant. Lay repair lead in car parallel to existing airbag lead up to cutting point. Cut off excess length of repair lead. Twist open cables. Connect cables with connectors and shrink-fit hoses in Electronic Parts Catalogue (EPC), assignment of repair cables is relevant. Twist cables again, open length (twist) must not exceed 40 mm. Secure interface (shrink-fit hoses) with insulating tape to prevent cables from twisting open.

61 00 ... SAFETY INSTRUCTIONS FOR HANDLING VEHICLE BATTERY**Battery Acid Is Highly Corrosive:**

Do not allow any battery acid to come into contact with the eyes, the skin or clothing. Therefore wear protective clothing, gloves and goggles.

Do not tilt the battery, acid may emerge from the vent opening.

In Event Of Contact With Acid:

If acid is splashed into the eyes, rinse them immediately for several minutes with clear water. You must then consult a doctor without delay.

If acid is splashed onto the skin or clothing, neutralize it immediately with a soapy solution and rinse with lots of water.

Seek medical attention immediately if battery acid is accidentally swallowed.

Explosion Hazard:

Strictly no flames, sparks, naked light or smoking!

A highly explosive mixture of electrolytic gas is created when batteries are charged. The rooms where charging is carried out must therefore always be well ventilated.

Avoid the formation of sparks when handling cables, wiring and electrical devices.

Turn the ignition lock to the 0 position before disconnecting or connecting the battery.

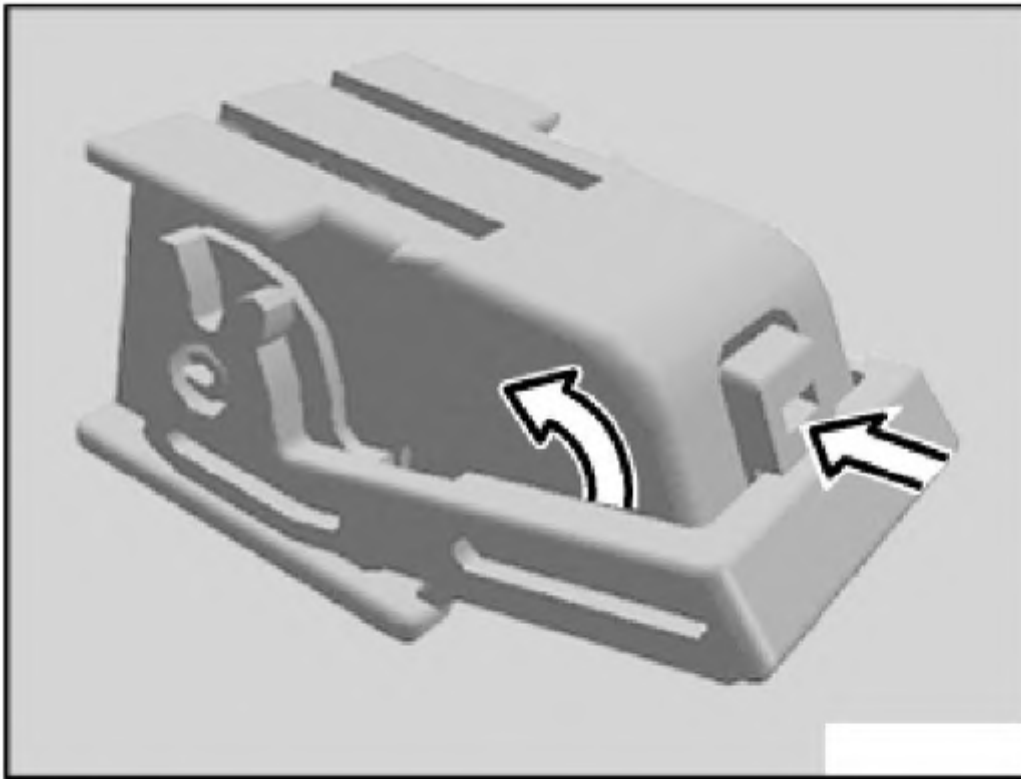
Do not place tools or any similar object on the battery (danger of short-circuiting and explosion!).

61 13 . . UNLOCKING AND DISCONNECTING DIFFERENT PLUG CONNECTIONS

NOTE: Examples of unlocking and disconnecting different plug connections.

Press lock and open clip in direction of arrow.

Disconnect plug connection.

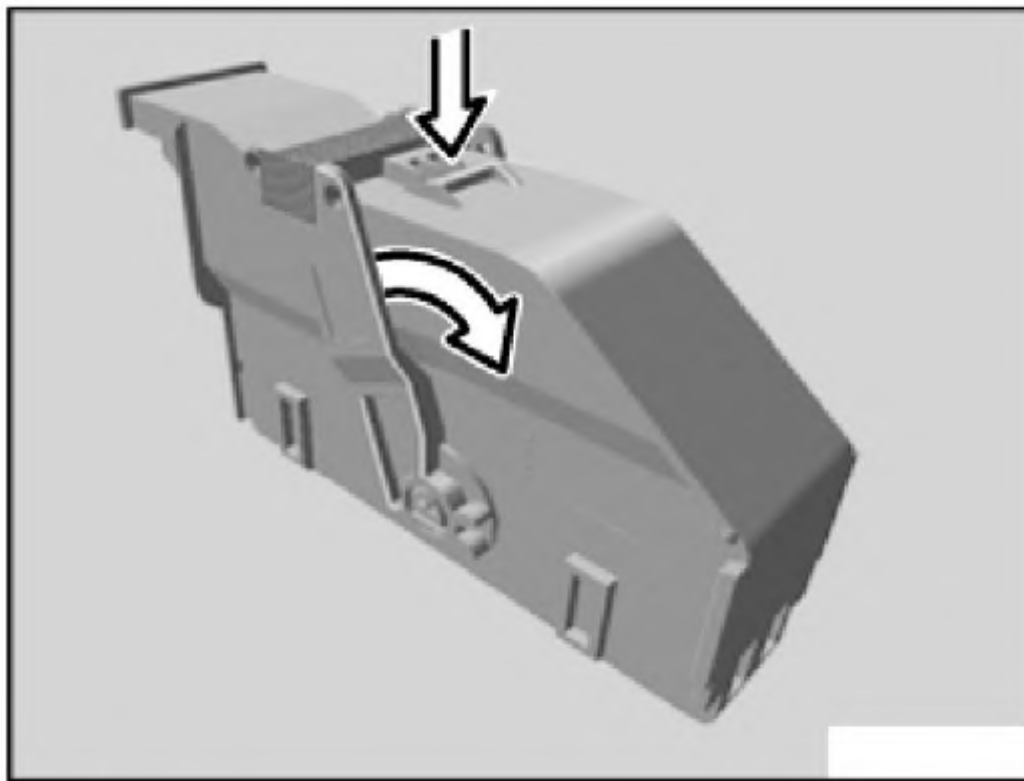


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Fig. 1: Pressing Lock And Opening Clip (1 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

Press lock and open clip in direction of arrow.

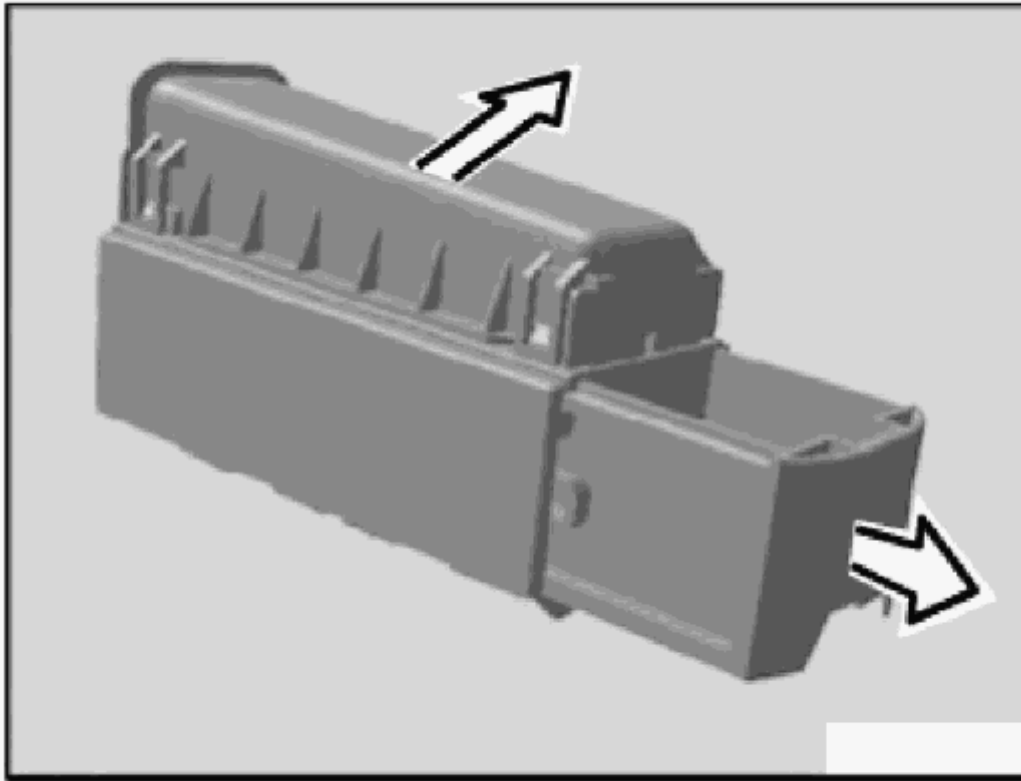
Disconnect plug connection.



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Fig. 2: Pressing Lock And Opening Clip (2 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

Open clip in direction of arrow and disconnect plug connection in direction of arrow.

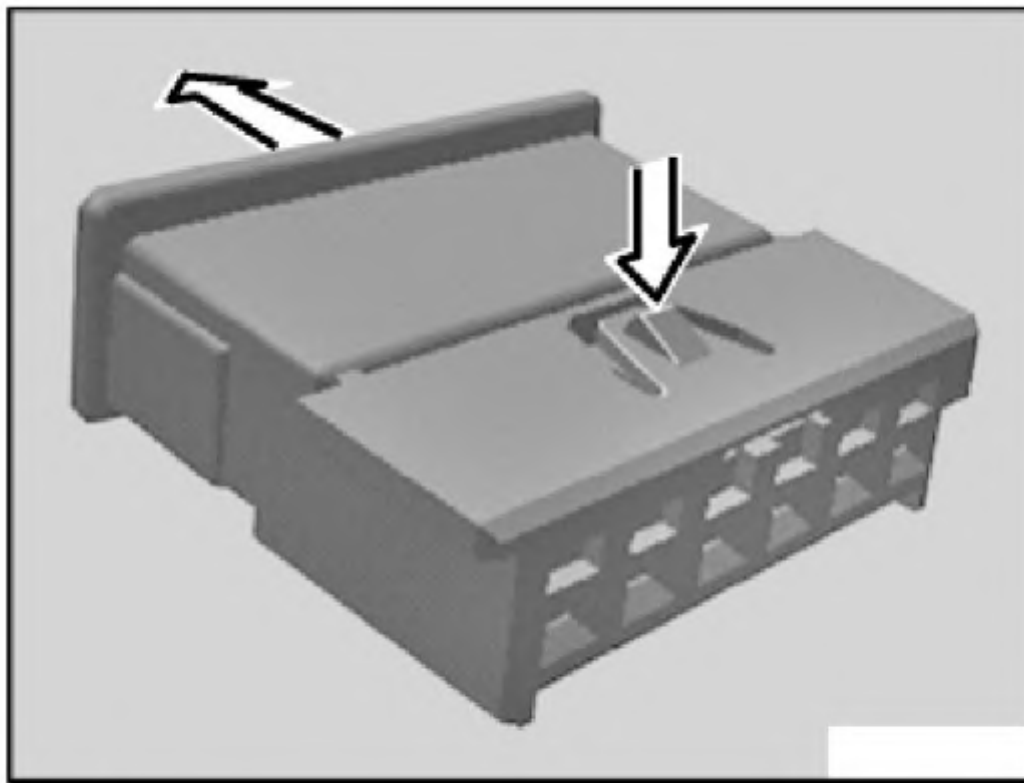


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Fig. 3: Opening Clip

Courtesy of BMW OF NORTH AMERICA, INC.

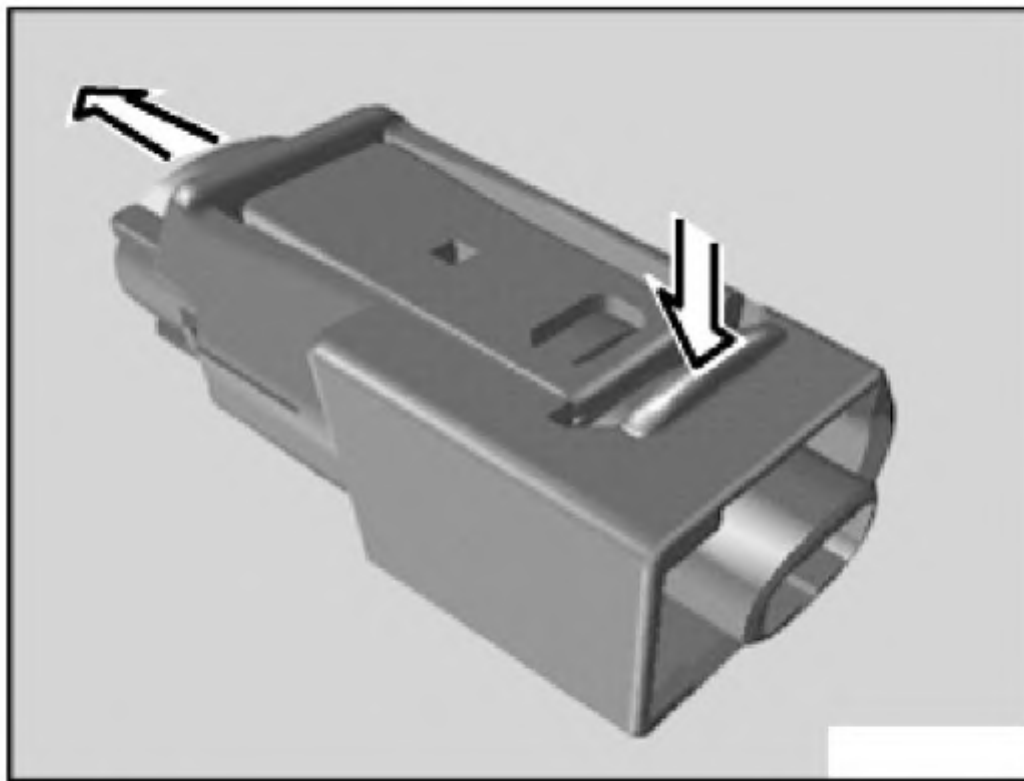
Press lock and disconnect plug connection in direction of arrow.



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Fig. 4: Pressing Lock And Disconnecting Plug Connection (1 Of 6)
Courtesy of BMW OF NORTH AMERICA, INC.

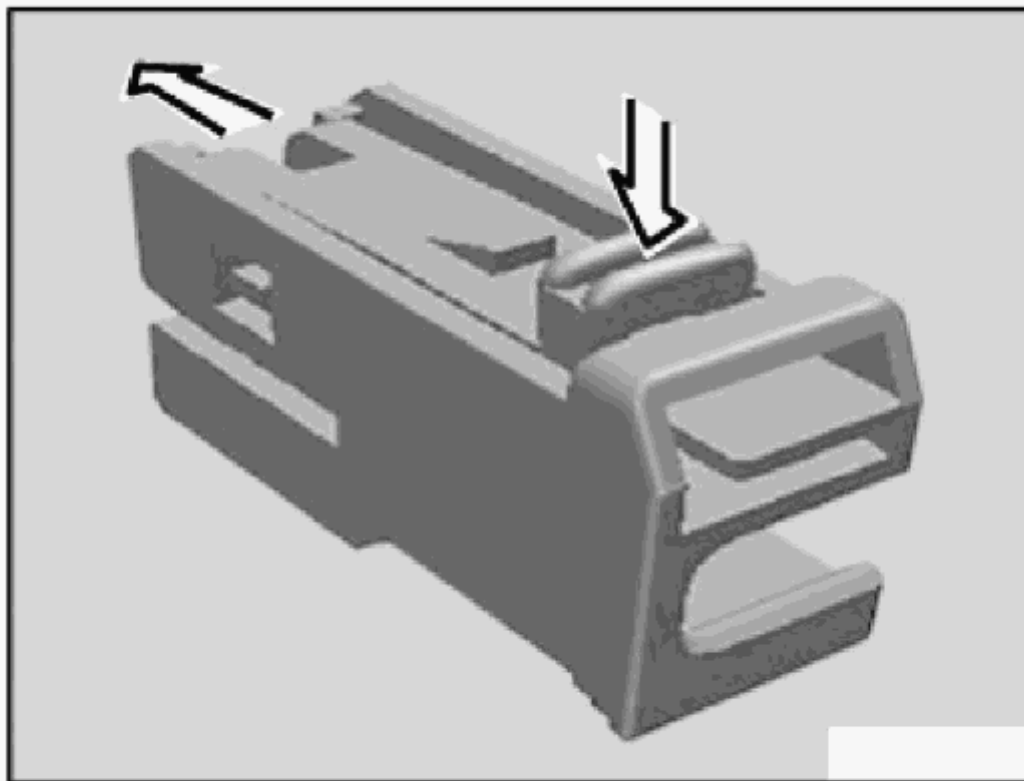
Press lock and disconnect plug connection in direction of arrow.



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Fig. 5: Pressing Lock And Disconnecting Plug Connection (2 Of 6)
Courtesy of BMW OF NORTH AMERICA, INC.

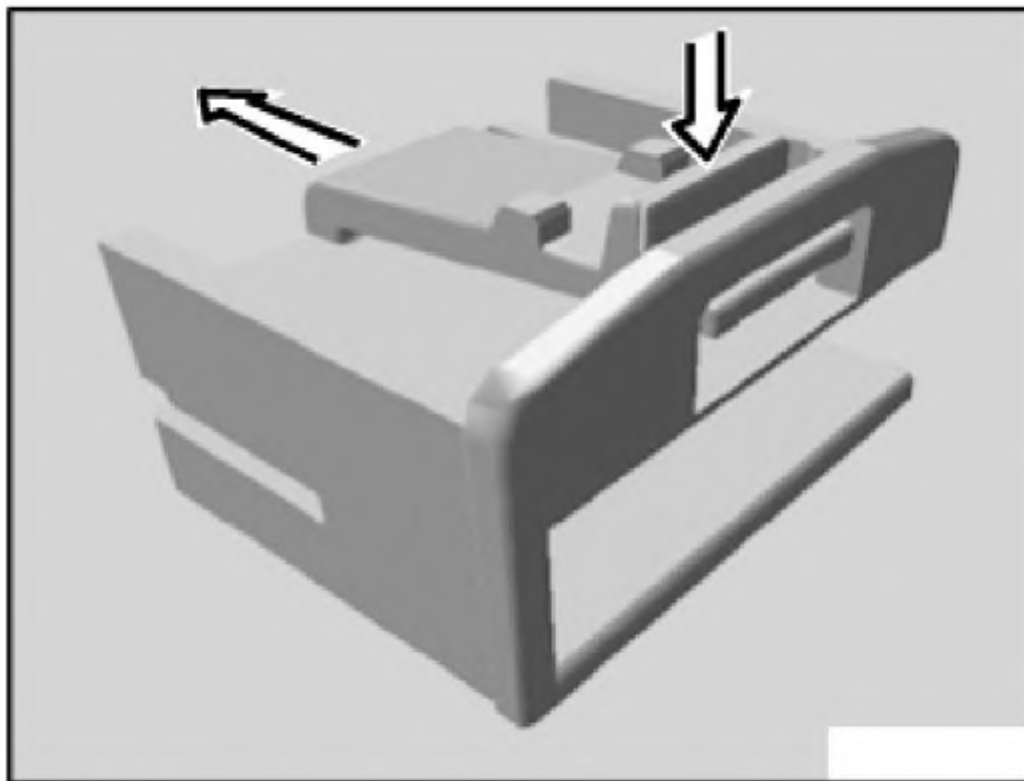
Press lock and disconnect plug connection in direction of arrow.



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Fig. 6: Pressing Lock And Disconnecting Plug Connection (3 Of 6)
Courtesy of BMW OF NORTH AMERICA, INC.

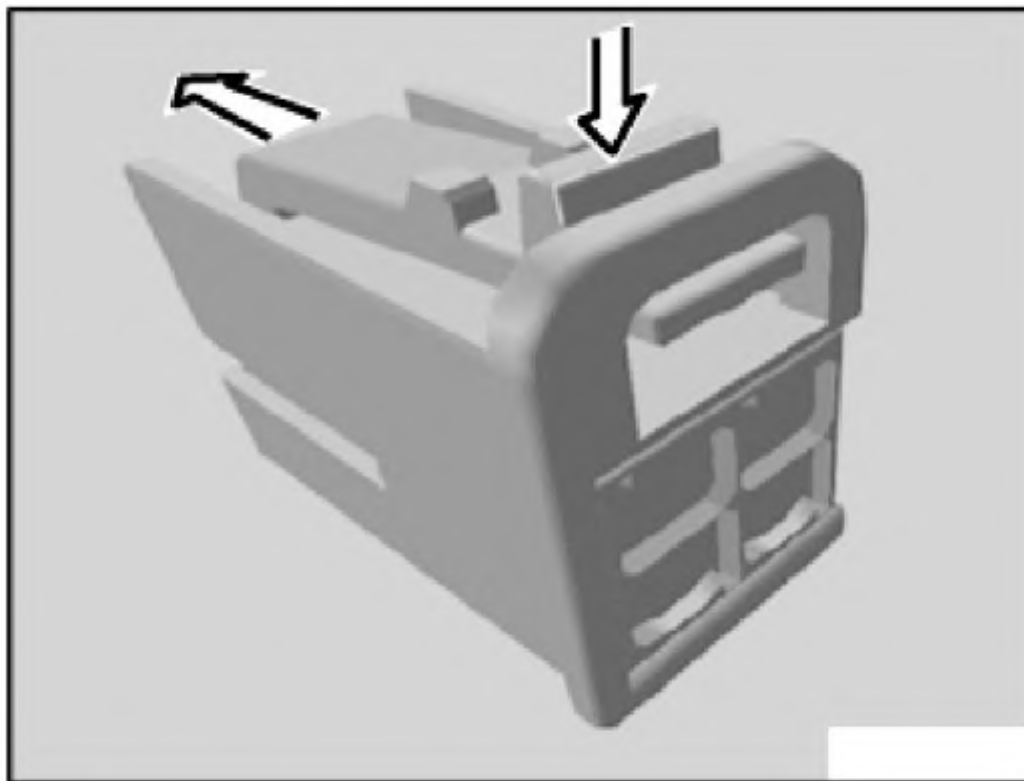
Press lock and disconnect plug connection in direction of arrow.



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Fig. 7: Pressing Lock And Disconnecting Plug Connection (4 Of 6)
Courtesy of BMW OF NORTH AMERICA, INC.

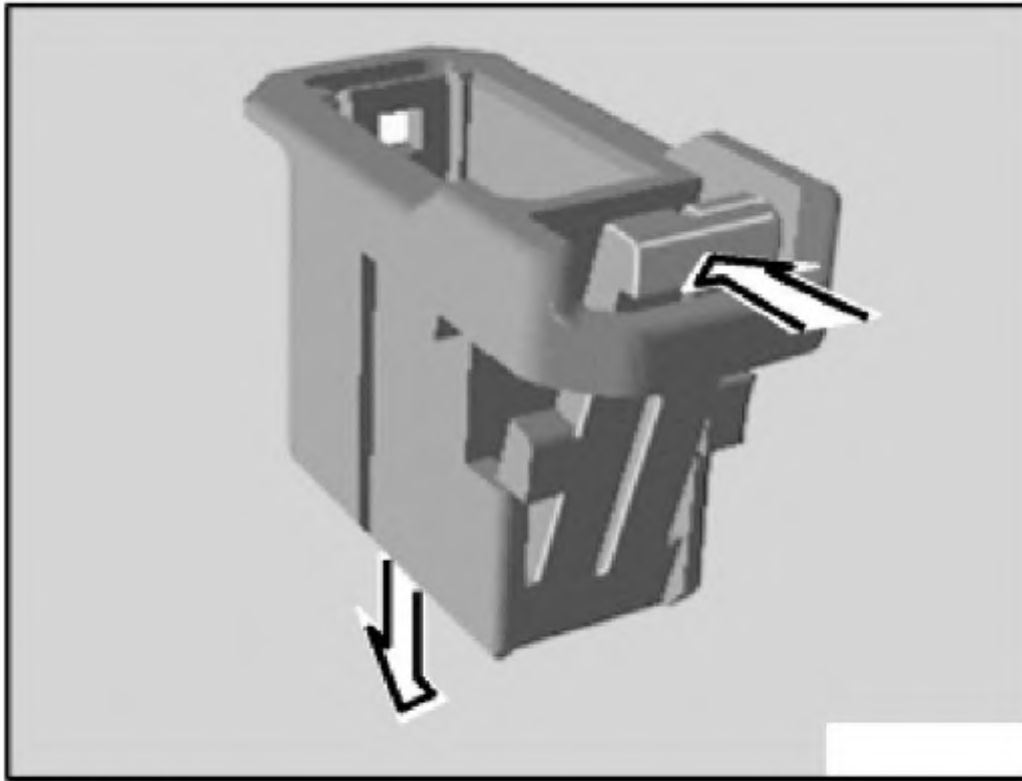
Press lock and disconnect plug connection in direction of arrow.



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Fig. 8: Pressing Lock And Disconnecting Plug Connection (5 Of 6)
Courtesy of BMW OF NORTH AMERICA, INC.

Press lock and disconnect plug connection in direction of arrow.



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Fig. 9: Pressing Lock And Disconnecting Plug Connection (6 Of 6)
Courtesy of BMW OF NORTH AMERICA, INC.

WIRING HARNESS

61 11 ... REPLACING WIRING HARNESS AT FRONT LEFT

Remove front bumper trim. Refer to **51 11 156 REMOVING AND INSTALLING FRONT BUMPER TRIM (FROM 10/03)** or **51 11 156 REMOVING AND INSTALLING FRONT BUMPER TRIM (UP TO 10/03)** .

Remove wheel arch cover at front left.

If necessary, remove horn (anti-theft device). Refer to **61 33 000 REPLACING HORN (ANTI-THEFT SYSTEM)** .

Remove driver's seat. Refer to **52 14 000 REMOVING AND INSTALLING LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC) NOTE:** or **52 17 000 REMOVING AND INSTALLING FRONT SEAT (COMFORT)** .

Disconnect battery negative lead. Refer to **12 00 ... INSTRUCTIONS FOR DISCONNECTING AND CONNECTING BATTERY** .

Remove lower left trim from instrument panel. Refer to **51 45 180 REMOVING AND INSTALLING TRIM FOR INSTRUMENT PANEL, BOTTOM LEFT** .

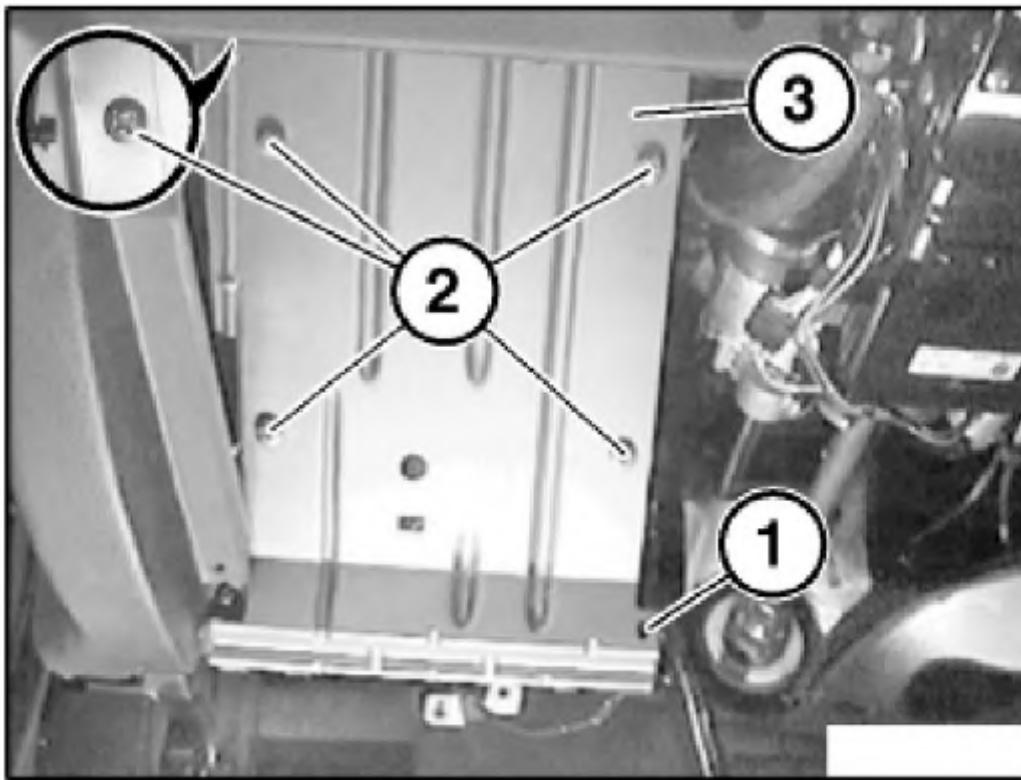
Remove footwell side trim panel on A-pillar on left. Refer to **51 43 070 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, LEFT** .

Remove adapter plate. Refer to **35 40 503 REPLACING ADAPTER PLATE** .

Remove storage tray. Refer to **51 16 200 REMOVING AND INSTALLING CENTER CONSOLE** .

Release cable strap (1).

Release screws (2) and remove plate (3).



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Fig. 10: Releasing Screws And Removing Plate

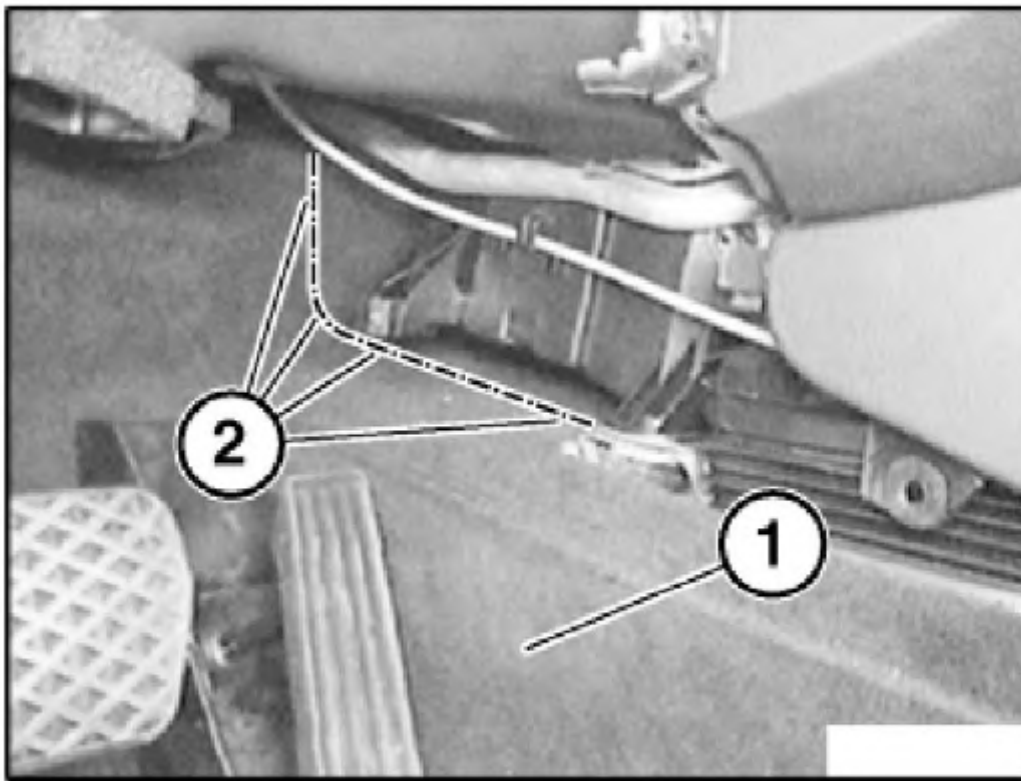
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Under no circumstances bend carpet.

Cut carpet (1) as illustrated as closely as possible to A/C unit.

Installation:

Join cutting lines at marked points (2) with cable ties (short) from repair kit.



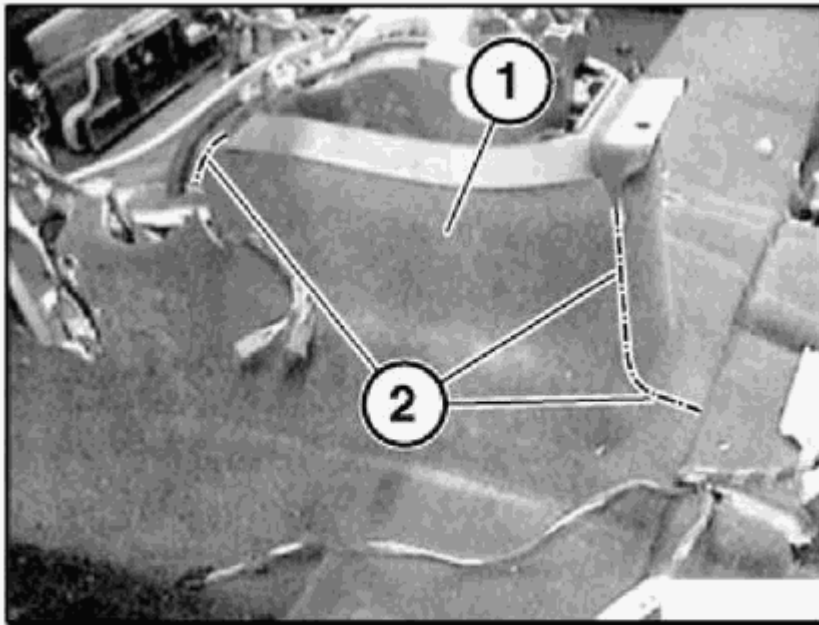
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Fig. 11: Identifying Cutting Lines On Carpet
Courtesy of BMW OF NORTH AMERICA, INC.

Cut carpet (1) as illustrated and remove from car.

Installation:

Join cutting lines at marked points (2) with cable ties (short) from repair kit.



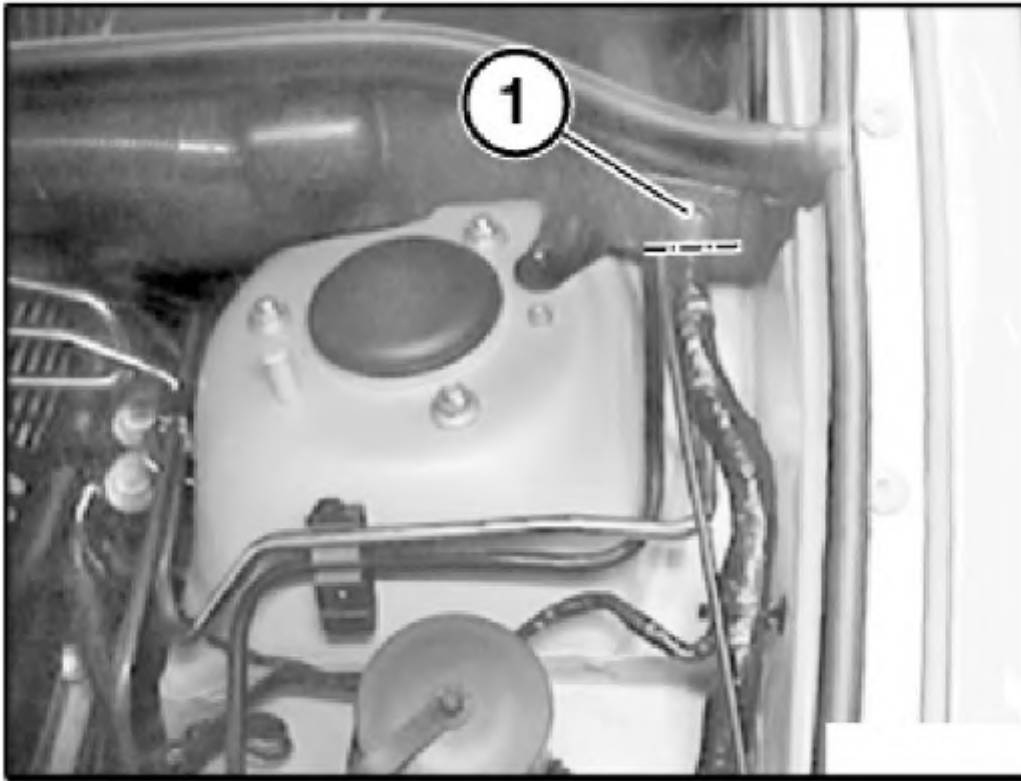
G03256430

Fig. 12: Join Cutting Lines Using Cable Ties
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Vehicles with tire pressure control (RDC): Unwind operational RDC lead from wiring harness. Replace faulty RDC lead separately.

Cut through wiring harness (1) approx. 10 cm before splash shield and pull back from inside into footwell.

Detach cut wiring harness from engine compartment and remove.



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Fig. 13: Identifying Unwind Operational RDC Lead From Wiring Harness
Courtesy of BMW OF NORTH AMERICA, INC.

General Information:

Information on assigning the repair connectors are contained in the DIS under the heading COMPONENT AND SIGNAL INFORMATION/pin, fan and solder connector/connectors from X1-/X18985 - X18992.

Installation:

The cable ties and foam supports contained in the repair kit are for securing the repair plugs.

Fit all cut leads of main wiring harness with stop parts. Pin in leads in accordance with schematic in DIS.

Strip insulation from cable.

Crimp stop parts. Refer to **61 13 ... CRIMPING ANNULAR CONTACTS** .

Connect precrimped leads to corresponding plugs (refer to appropriate schematic). Cut off and insulate unpinned leads.

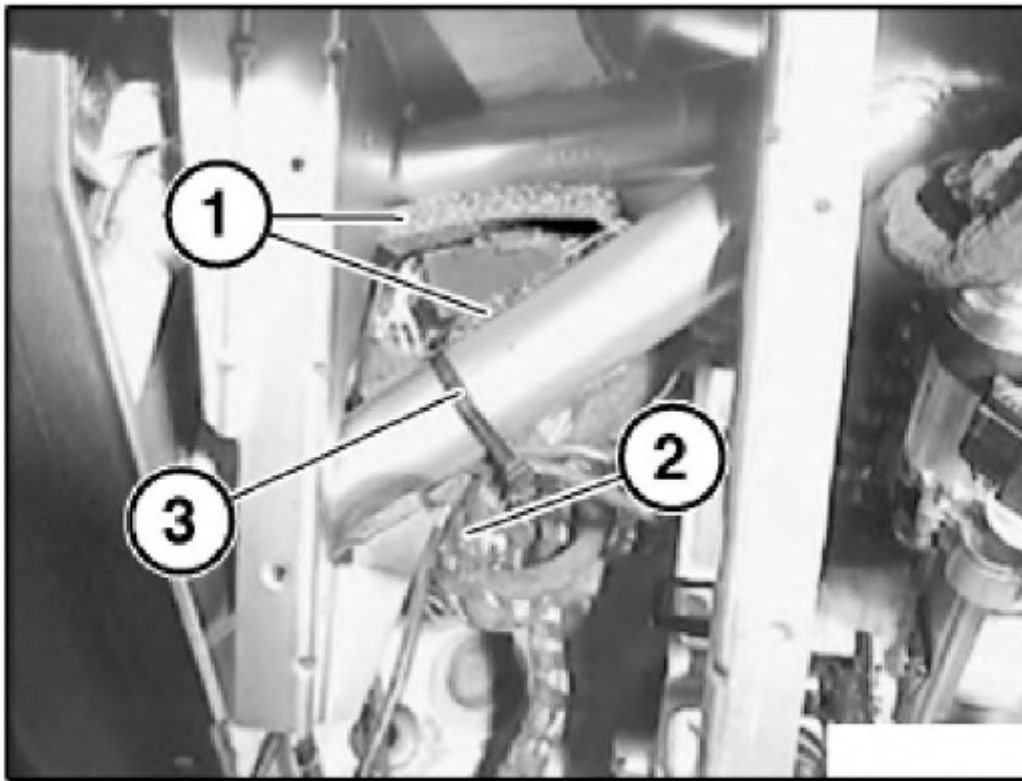
Installation/removal of multiple connector systems. Refer to **61 13 ... OPENING PLUG HOUSINGS AND REMOVING CONTACTS OF DIFFERENT PLUG SYSTEMS** .

Replace cable ties that have been cut open.

Installation:

Stick foam supports (1) from repair kit as illustrated to both pipe carriers.

Secure repair plugs (2) with long cable tie (3) from repair kit to lower pipe carrier.



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Fig. 14: Identifying Repair Plugs With Long Cable Tie
Courtesy of BMW OF NORTH AMERICA, INC.

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Remove front bumper trim. Refer to **51 11 156 REMOVING AND INSTALLING FRONT BUMPER TRIM (FROM 10/03)** or **51 11 156 REMOVING AND INSTALLING FRONT BUMPER TRIM (UP TO 10/03)** .

Remove cowl panel cover. Refer to **51 13 115 REMOVING AND INSTALLING/REPLACING COWL PANEL COVER** .

Remove wheel arch cover at front right.

Remove passenger seat. Refer to **52 14 000 REMOVING AND INSTALLING LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC) NOTE:** or **52 17 000 REMOVING AND INSTALLING FRONT SEAT (COMFORT)** .

Disconnect battery negative lead. Refer to **12 00 ... INSTRUCTIONS FOR DISCONNECTING AND CONNECTING BATTERY** .

Remove lower right trim from instrument panel. Refer to **51 45 181 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** .

Remove entrance cover strip on right. **51 47 000 REMOVING AND INSTALLING/REPLACING THE FRONT (INSIDE) LEFT OR RIGHT ROCKER PANEL STRIP** .

Remove footwell side trim panel on A-pillar on right. Refer to **51 43 075 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, RIGHT** .

Remove glovebox. Refer to **51 16 360 REMOVING AND INSTALLING RIGHT GLOVE BOX** .

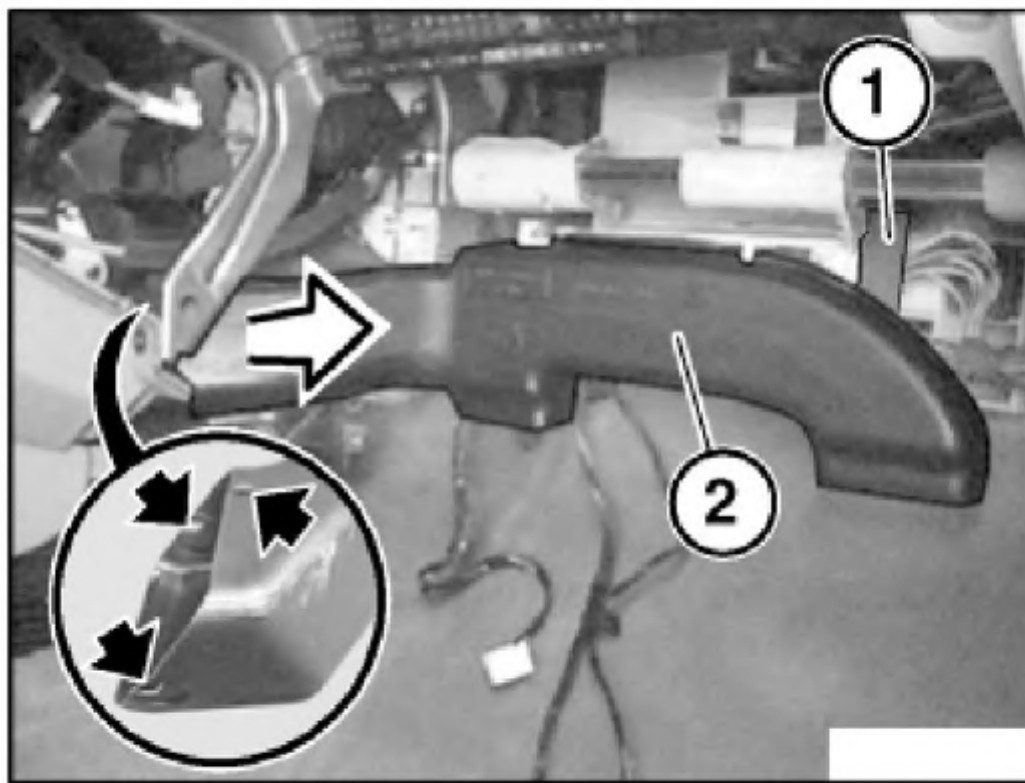
Remove storage tray. Refer to **51 16 200 REMOVING AND INSTALLING CENTER CONSOLE** .

Unhook holder (1).

Unclip heating duct for right footwell (2) and remove in direction of arrow.

Installation:

Ensure heating channel for right footwell (2) is correctly seated.



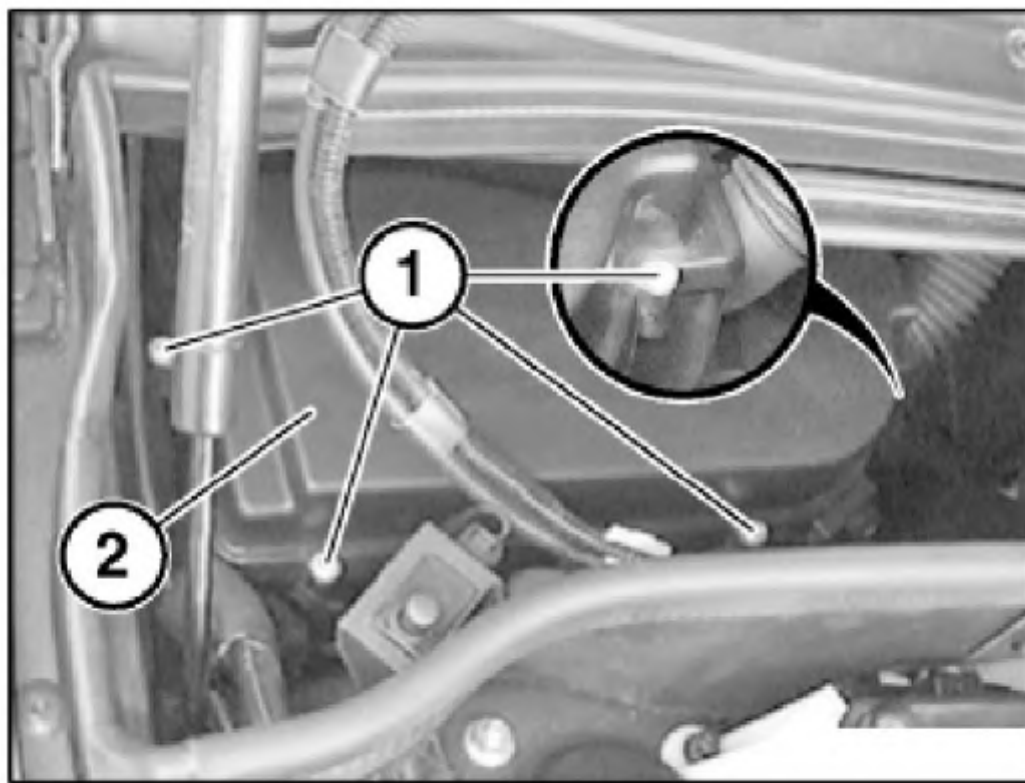
G03256433

Fig. 15: Unhooking Holder

Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (1).

Remove lid (2) of control unit box.

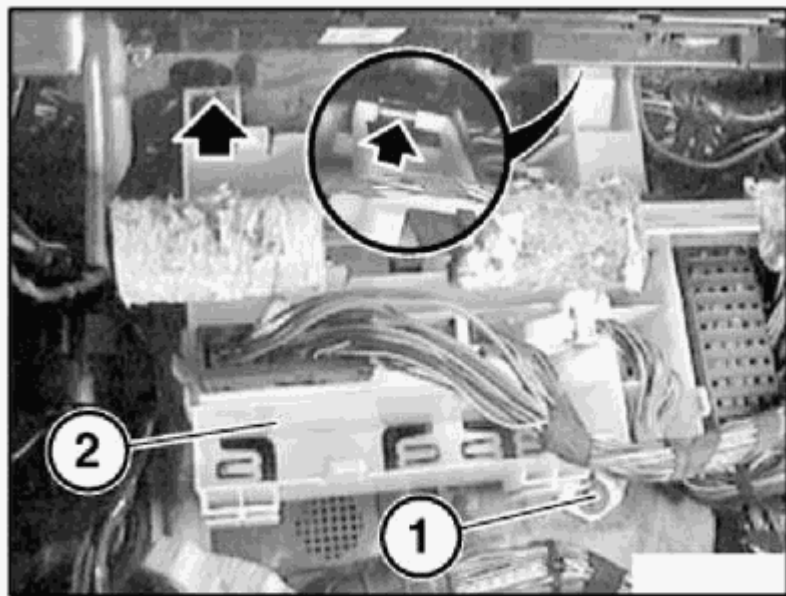


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Fig. 16: Removing Lid Of Control Unit Box
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew bolt (1).

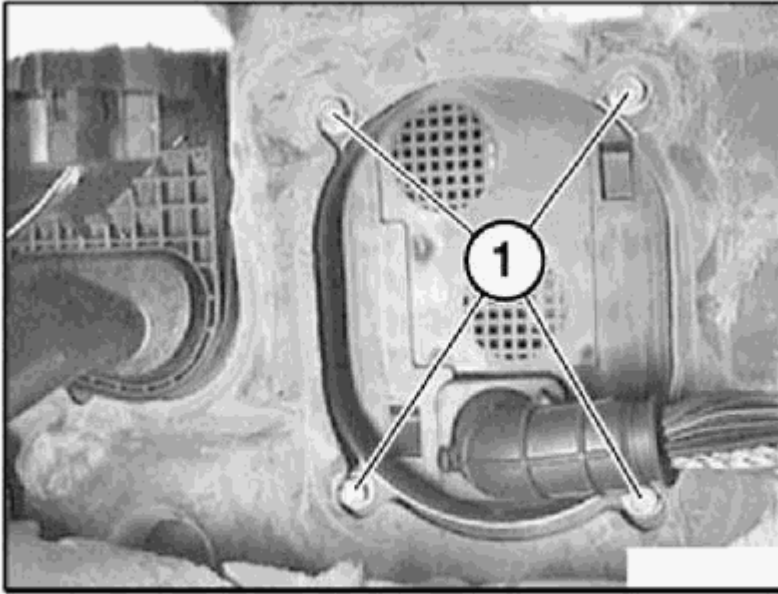
Unclip module holder (2) from both mountings and remove.



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Fig. 17: Removing Module Holder From Mountings
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) on control unit box.



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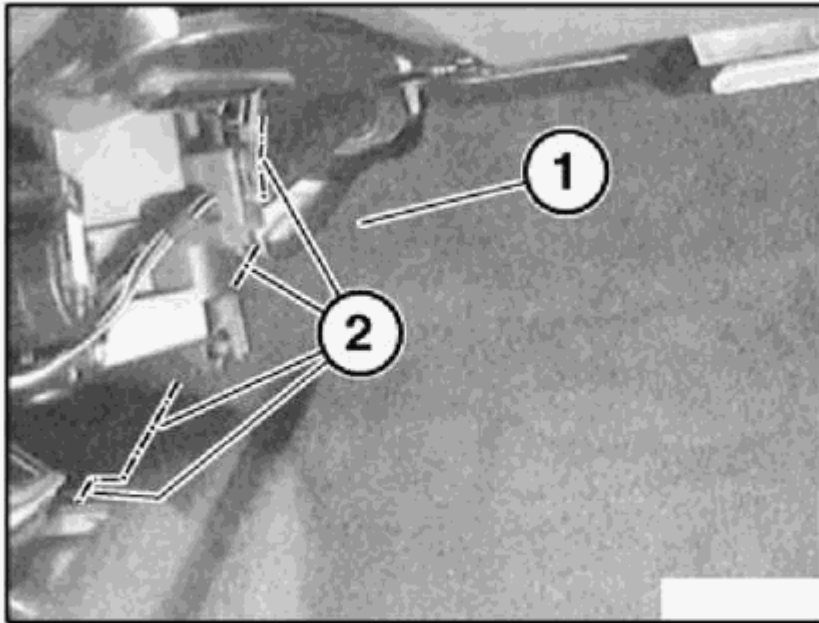
Fig. 18: Releasing Screws On Control Unit Box
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Under no circumstances bend carpet.

Cut carpet (1) as illustrated as closely as possible to A/C unit.

Installation:

Join cutting lines at marked points (2) with cable ties (short) from repair kit.



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Fig. 19: Identifying Cutting Lines

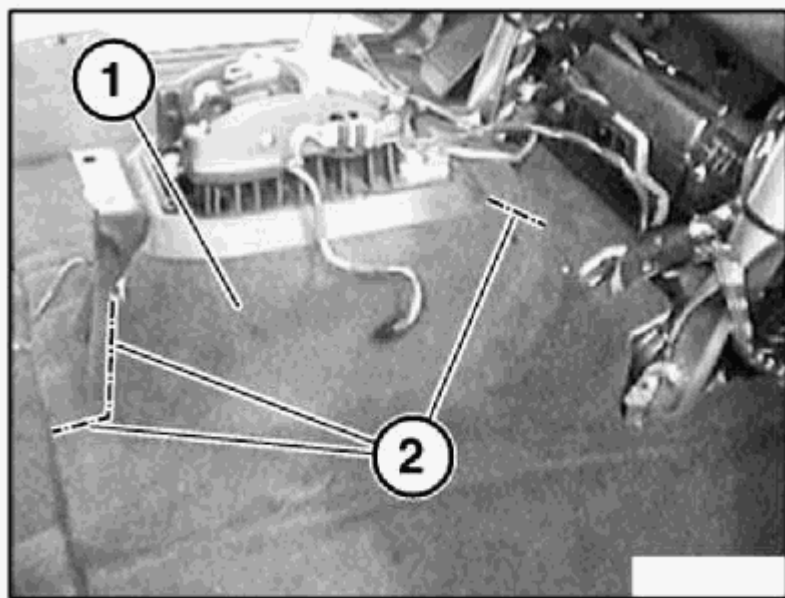
Courtesy of BMW OF NORTH AMERICA, INC.

Cut carpet (1) as illustrated and remove from car.

Installation:

Join cutting lines at marked points (2) with cable ties (short) from repair kit.

CAUTION: Vehicles with tire pressure control (RDC): Unwind operational RDC lead from wiring harness. Replace faulty RDC lead separately.



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Fig. 20: Join Cutting Lines At Marked Points With Cable Ties
Courtesy of BMW OF NORTH AMERICA, INC.

Cut through wiring harness (1) approx. 10 cm before splash shield and pull back from inside into footwell.

Detach cut wiring harness from engine compartment and remove.

General Information:

Information on assigning the repair connectors are contained in the DIS under the heading COMPONENT AND SIGNAL INFORMATION/pin, fan and solder connectors/connectors from X1-/X18987 - X18988.

Installation:

The cable ties and foam supports contained in the repair kit are for securing the repair plugs.

Fit all cut leads of main wiring harness with stop parts. Pin in leads in accordance with schematic in DIS.

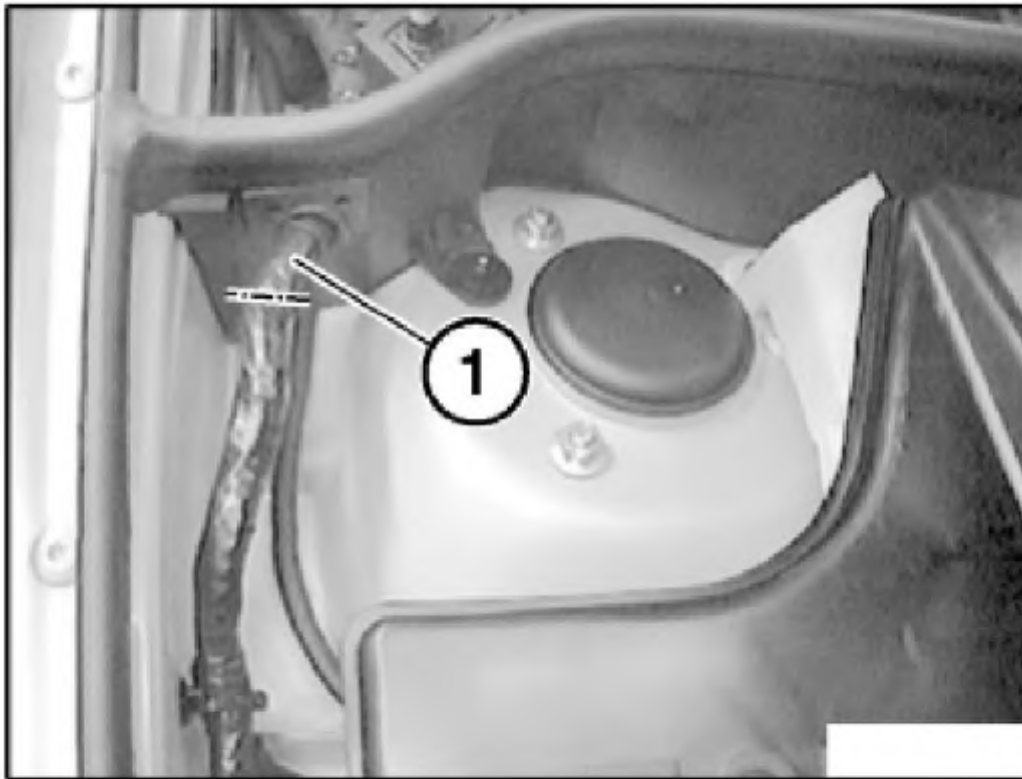
Strip insulation from cable.

Crimp stop parts. Refer to **61 13 ... CRIMPING ANNULAR CONTACTS** .

Connect precrimped leads to corresponding plugs (refer to appropriate schematic). Cut off and insulate unpinned leads.

Installation/removal of multiple connector systems. Refer to **61 13 ... OPENING PLUG HOUSINGS AND REMOVING CONTACTS OF DIFFERENT PLUG SYSTEMS** .

Replace cable ties that have been cut open.

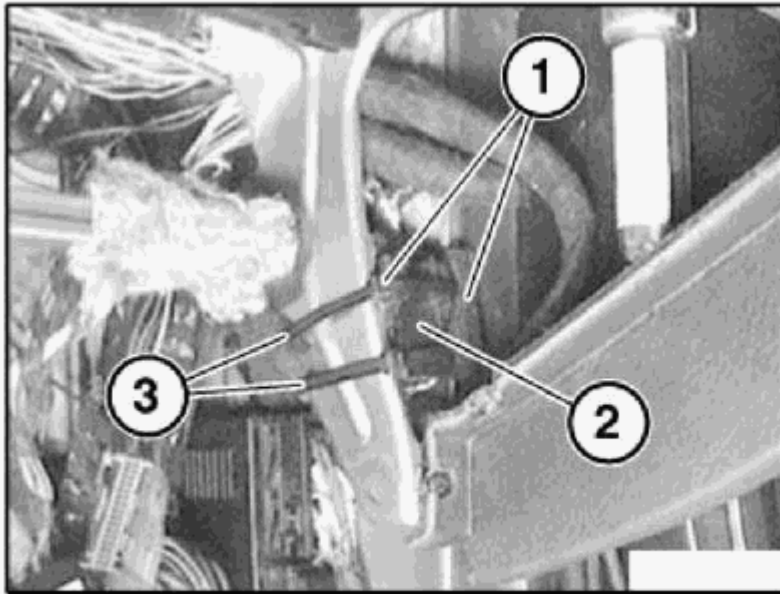


G03256439

Fig. 21: Installation/Removal Of Multiple Connector Systems
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Stick foam supports (1) from repair kit as illustrated to strut and carrier. Secure repair plugs (2) with long cable ties (3) from repair kit to strut.



G03256440

Fig. 22: Identifying Stick Foam Supports From Repair Kit
Courtesy of BMW OF NORTH AMERICA, INC.

61 11 ... REPLACING WIRING HARNESS AT REAR

Remove luggage compartment floor trim panel. Refer to **51 47 101 REMOVING AND INSTALLING/REPLACING LUGGAGE COMPARTMENT FLOOR TRIM PANEL** .

Remove flaps in luggage compartment trim on left and right. Refer to **51 47 172 REMOVING AND INSTALLING/REPLACING FLAP IN LUGGAGE COMPARTMENT TRIM, LEFT OR RIGHT** .

If necessary, remove navigation computer with CD drive. Refer to **65 90 510 REMOVING AND INSTALLING/REPLACING NAVIGATION COMPUTER WITH CD-DRIVE** .

If necessary, remove receiver module of Global Positioning System (GPS). Refer to **65 90 520 REMOVING AND INSTALLING/REPLACING RECEIVER MODULE OF GLOBAL POSITIONING SYSTEM (GPS)** .

If necessary, remove CD changer. Refer to **65 11 070 REMOVING AND INSTALLING/REPLACING CD-CHANGER** .

If necessary, remove transmit-receive unit. Refer to **84 11 523 REMOVING AND INSTALLING/REPLACING TRANSCEIVER** .

If necessary, remove basic carrier for navigation computer, CD changer etc.

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Remove luggage compartment wheel arch trim on left. Refer to **51 47 151 REMOVING AND INSTALLING/REPLACING TRUNK WHEEL HOUSING TRIM, LEFT** .

Remove trim for tail panel at top. Refer to **51 46 050 REMOVING AND INSTALLING/REPLACING FINISHER FOR TOP OF REAR APRON** .

Remove spare wheel (refer to Owner's Manual).

Disconnect battery negative lead. Refer to **12 00 ... INSTRUCTIONS FOR DISCONNECTING AND CONNECTING BATTERY** .

Remove holder for shims.

Remove cover for loading edge (on tailgate). Refer to **51 49 080 REMOVING AND INSTALLING/REPLACING COVER FOR LOADING SILL (ON REAR LID LOWER SECTION)** .

Remove insert for panel on tailgate. Refer to **51 49 085 REMOVING AND INSTALLING/REPLACING INSERT FOR TRIM ON REAR LID LOWER SECTION** .

Remove panel for tailgate. Refer to **51 49 090 REMOVING AND INSTALLING/REPLACING TRIM FOR REAR LID LOWER SECTION** .

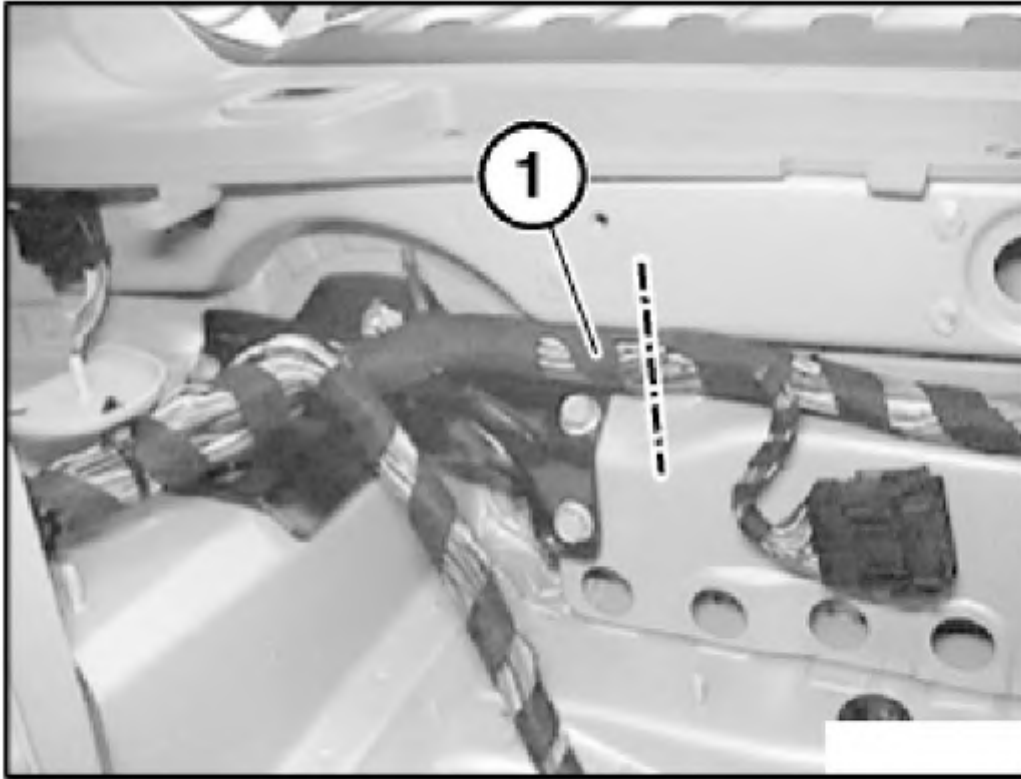
CAUTION: Vehicles with tire pressure control (RDC): Unwind operational RDC lead from wiring harness. Replace faulty RDC lead separately.

Remove wiring harness cover, tail panel.

If necessary, disconnect hi-fi wiring harness from main wiring harness (1).

Cut through main wiring harness (1) as illustrated.

Detach main wiring harness from luggage compartment and remove.



G03256441

Fig. 23: Removing Main Wiring Harness
Courtesy of BMW OF NORTH AMERICA, INC.

General Information:

Information on assigning the repair connectors are contained in the DIS under the heading COMPONENT AND SIGNAL INFORMATION/pin, fan and solder connectors/connectors from X1-/X18989 - X18990.

Installation:

The cable ties and foam supports contained in the repair kit are for securing the repair plugs.

Fit all cut leads of main wiring harness with stop parts. Pin in leads in accordance with schematic in DIS.

Strip insulation from cable.

Crimp stop parts. Refer to **61 13 ... CRIMPING ANNULAR CONTACTS** .

Connect precrimped leads to corresponding plugs (refer to appropriate schematic). Cut off and insulate unpinned leads.

Installation/removal of multiple connector systems. Refer to **61 13 ... OPENING PLUG HOUSINGS AND REMOVING CONTACTS OF DIFFERENT PLUG SYSTEMS** .

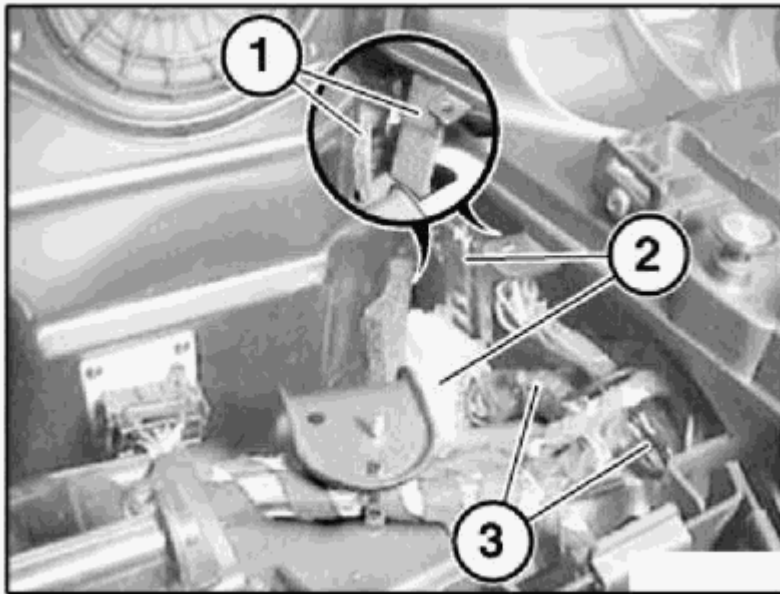
Replace cable ties that have been cut open.

Installation:

Stick a foam support (1) as illustrated to tail panel.

If necessary, stick a second foam support to subwoofer speaker.

Secure both repair plugs (2) on top of each other using cable ties (3) from repair kit.



G03256442

Fig. 24: Identifying Stick Foam Support
Courtesy of BMW OF NORTH AMERICA, INC.

AUXILIARY CABLES

61 13 . . UNLOCKING AND DISCONNECTING DIFFERENT PLUG CONNECTIONS

Operations are identical to **61 13 . . UNLOCKING AND DISCONNECTING DIFFERENT PLUG CONNECTIONS** .

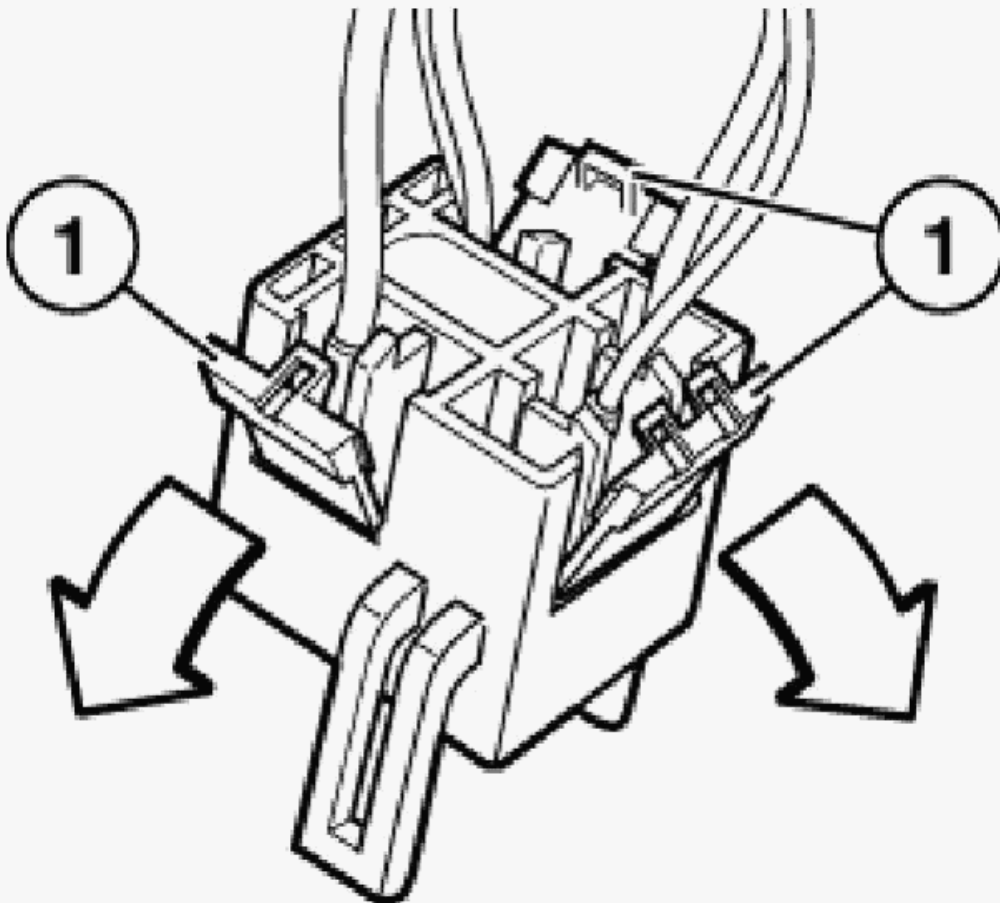
CONNECTORS, TERMINALS, FUSE BOX

61 00 ... REPAIRING AIRBAG CABLES

Refer to 61 00 ... REPAIRING AIRBAG CABLES .

61 13 DME MASTER RELAY CONNECTOR

Unlock locking flap (1) of corresponding cable.



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Fig. 25: Unlocking Locking Flap Of Corresponding Cable
Courtesy of BMW OF NORTH AMERICA, INC.

With special tool 61 1 136 or 61 1 137 (ejector), press back arrester hook (2) of appropriate contact and pull out cable.

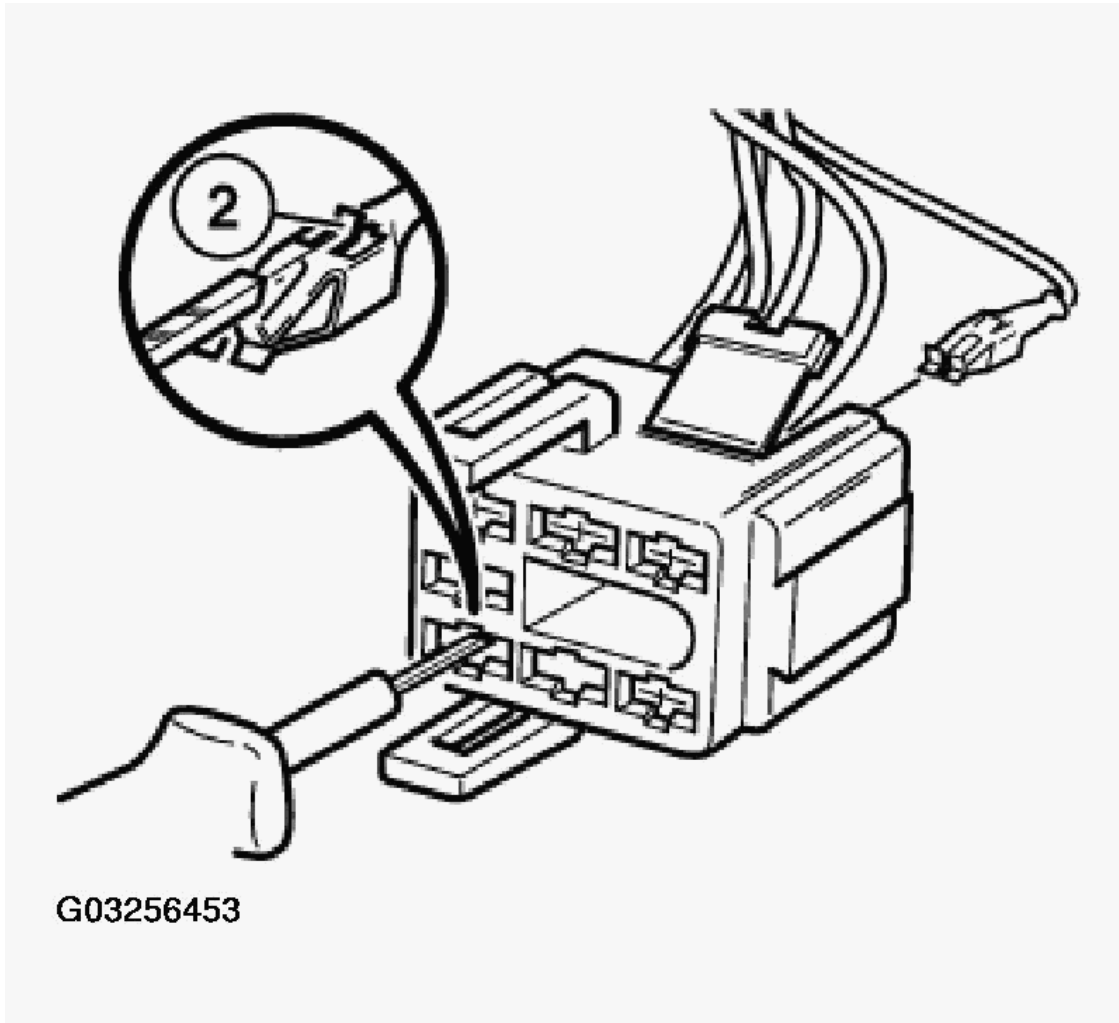


Fig. 26: Pressing Back Arrester Hook
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 SPECIAL TOOLS FOR WIRING HARNESS REPAIRS

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

- 61 1 150
- 61 1 190
- 61 4 320
- 61 8 084
- 61 9 020

2002 BMW X5 30i

2001-2003 ACCESSORIES AND EQUIPMENT Accessories Control Systems - Repair Instructions - X5 (3.0i) M54

- 61 9 029
- 61 9 041
- 61 9 042
- 61 9 043
- 61 9 044

Repair Ranges I, II, III For Vehicle Electrical System:

- I. Order No.: 81 24 9 408 080.
- II. Order No.: 81 24 9 408 300.
- III. Order No.: 81 24 9 408 400.



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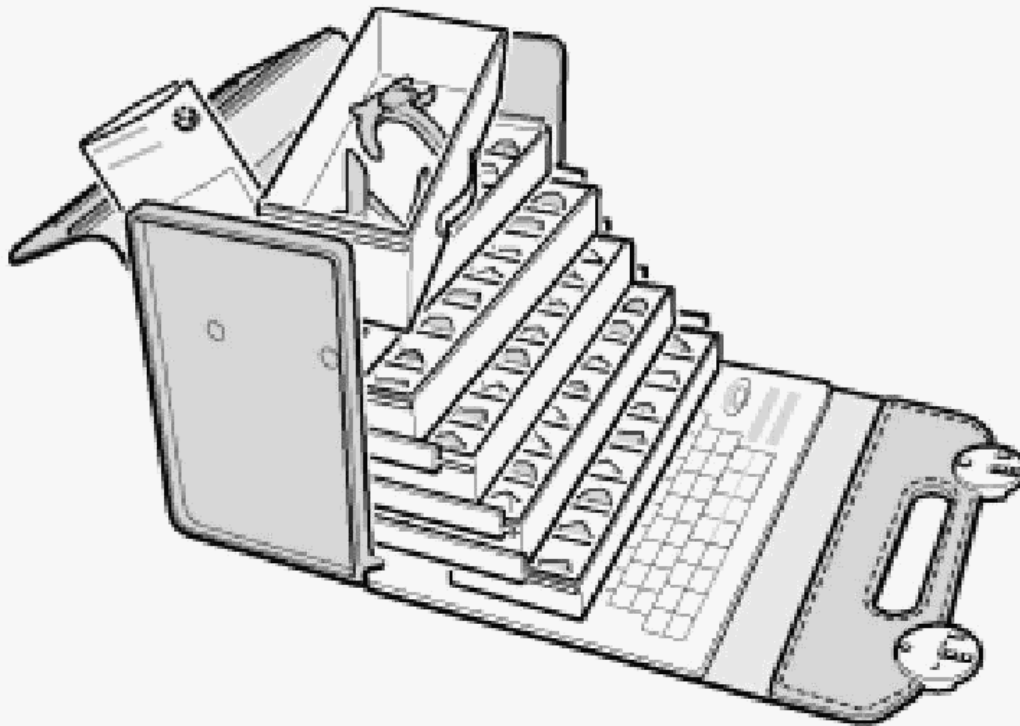
Fig. 27: View Of Repair Range Special Tool Kit
Courtesy of BMW OF NORTH AMERICA, INC.

Repair range IV for vehicle electrical system, special tool 61 9 020:

Contents:

- Special tool 61 9 041 (hand pliers).
- Special tool 61 9 042 (matrix).

- Special tool 61 9 043 (wire stripper).
- Special tool 61 9 044 (matrix).



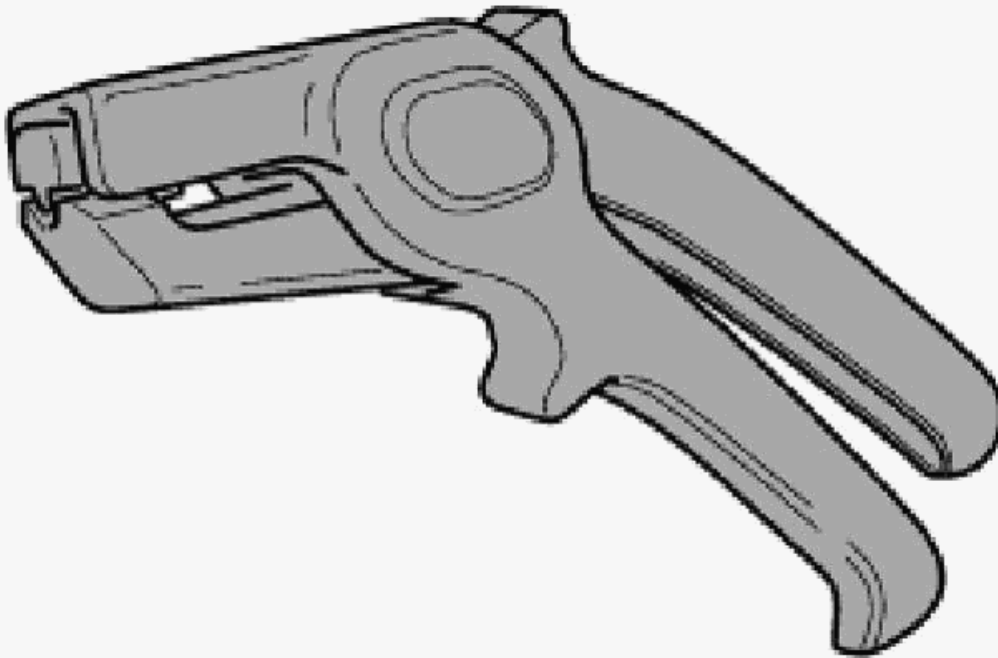
G03256455

Fig. 28: Identifying Repairing Range IV
Courtesy of BMW OF NORTH AMERICA, INC.

Special tool 61 9 043 (wire stripper with wire cutter) for cutting and stripping wires.

Handling:

Cutting to length and stripping insulating from cables.



G03256456

Fig. 29: Identifying Special Tool For Cutting And Stripping Wires
Courtesy of BMW OF NORTH AMERICA, INC.

Special tool 61 9 041 (hand pliers) with special tool 61 9 042 (matrix) for crimping connectors and contact tubes for fan connectors up to a wire cross-section of 2.5 mm² and for pushing on contact tubes for fan connectors.

Handling:

Crimping stop parts (contacts).

Fan connector for retrofitting/repairs.

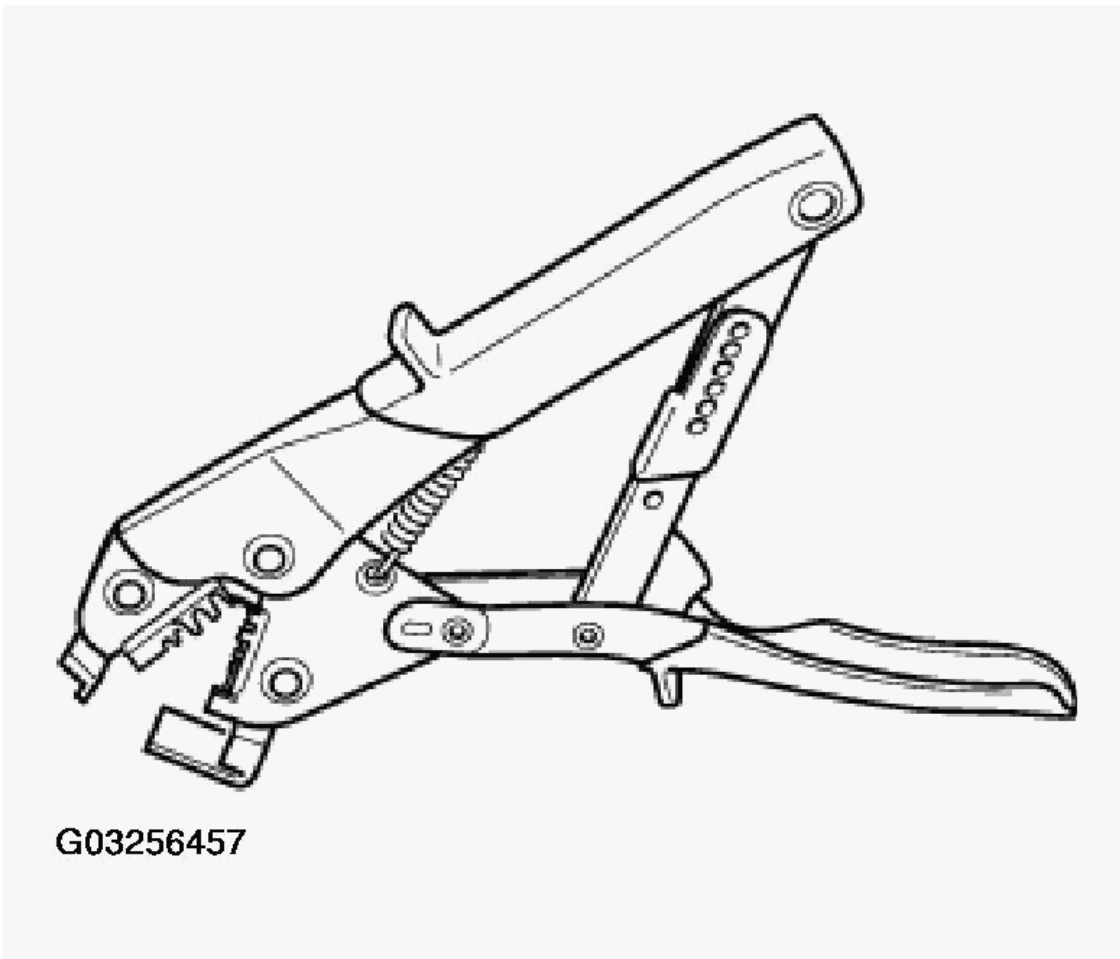


Fig. 30: Identifying Hand Pliers

Courtesy of BMW OF NORTH AMERICA, INC.

Special tool 61 1 150 (release and pressing-out tool) for:

- Releasing round plug housings.
- Releasing relay carriers.
- Pressing out contacts removing indicator lights.

Handling:

Opening plug housings and removing contacts of different plug systems. Refer to **61 13 ... OPENING PLUG HOUSINGS AND REMOVING CONTACTS OF DIFFERENT PLUG SYSTEMS** .

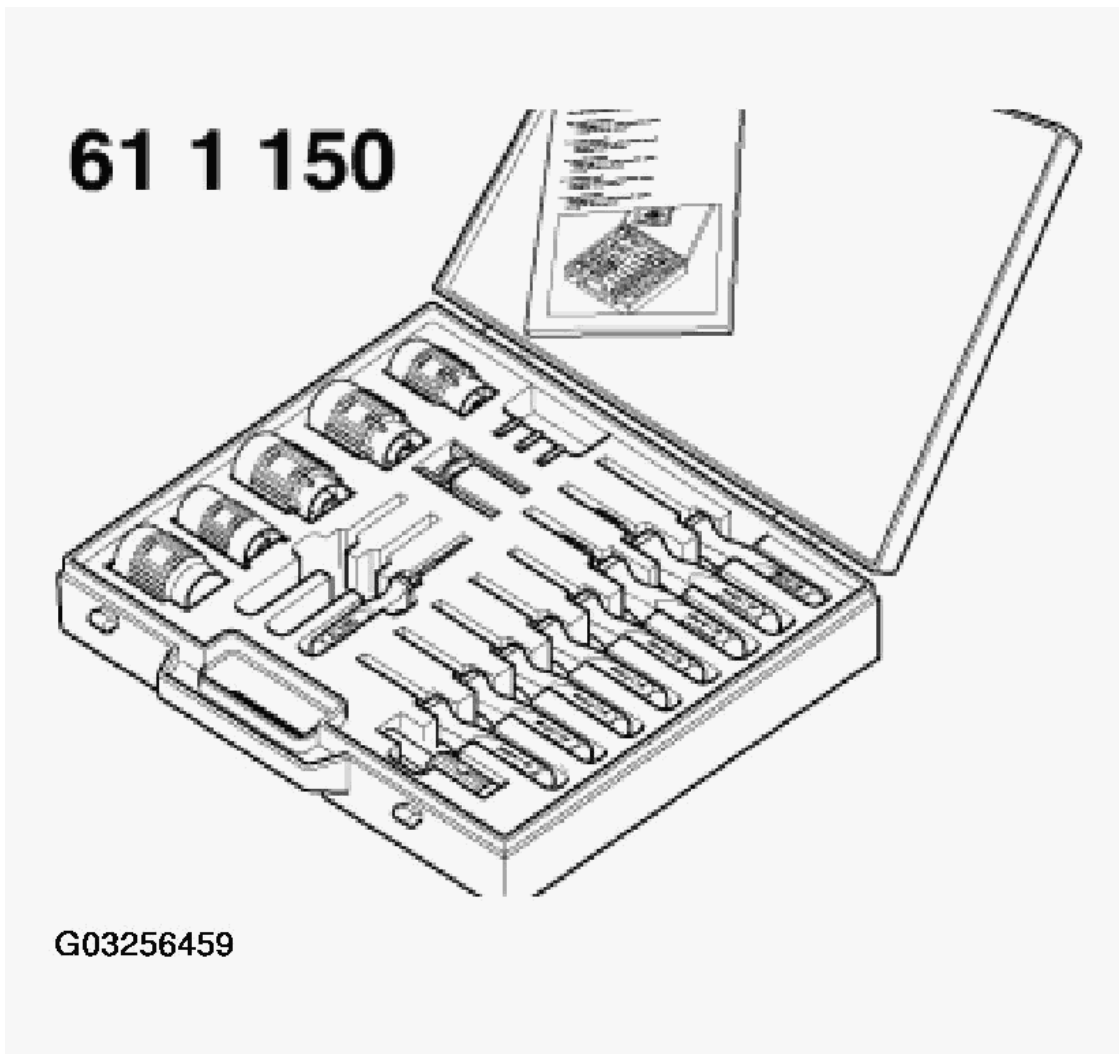


Fig. 31: Identifying Releasing And Pressing-Out Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Repair kit for ignition cables and for crimping fan connector receptacles 4 mm².

Handling:

Crimping stop parts (contacts).

Service Information 1 03 89 (037).



G03256460

Fig. 32: Identifying Repair Kit For Ignition Cables And Crimping Fan Connectors
Courtesy of BMW OF NORTH AMERICA, INC.

Special tool 61 4 320 (crimping set with pliers) for:

- Cutting to length and stripping insulation from optical fibers, refer to **61 13 ... CUTTING OFF, STRIPPING INSULATION AND CUTTING OPTICAL FIBRES TO LENGTH** .
- Crimping optical fibers, refer to **61 13... CRIMPING OPTICAL FIBRES** .
- Crimping MPQ contacts, refer to **61 13 ... CRIMPING MICRO POWER QUADLOCK CONTACTS (MPQ)** .

- Crimping MQS contacts, refer to **61 13 ... CRIMPING MICRO QUADLOCK SYSTEM CONTACTS (MQS)** .



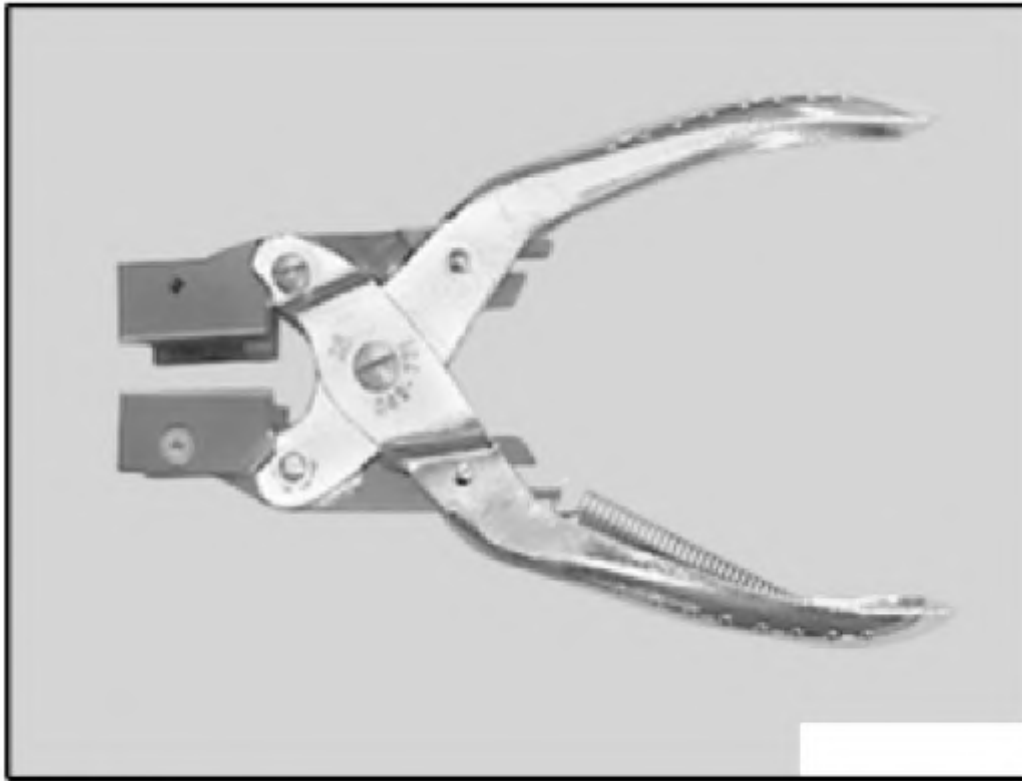
G03256461

Fig. 33: Identifying Crimping Set With Pliers
Courtesy of BMW OF NORTH AMERICA, INC.

Special tool 61 1 190 pliers for insulation displacement connector for repairing ribbon cables.

Handling:

Repairing ribbon cables, refer to **61 13 ... REPAIRING RIBBON CABLES** .



G03256462

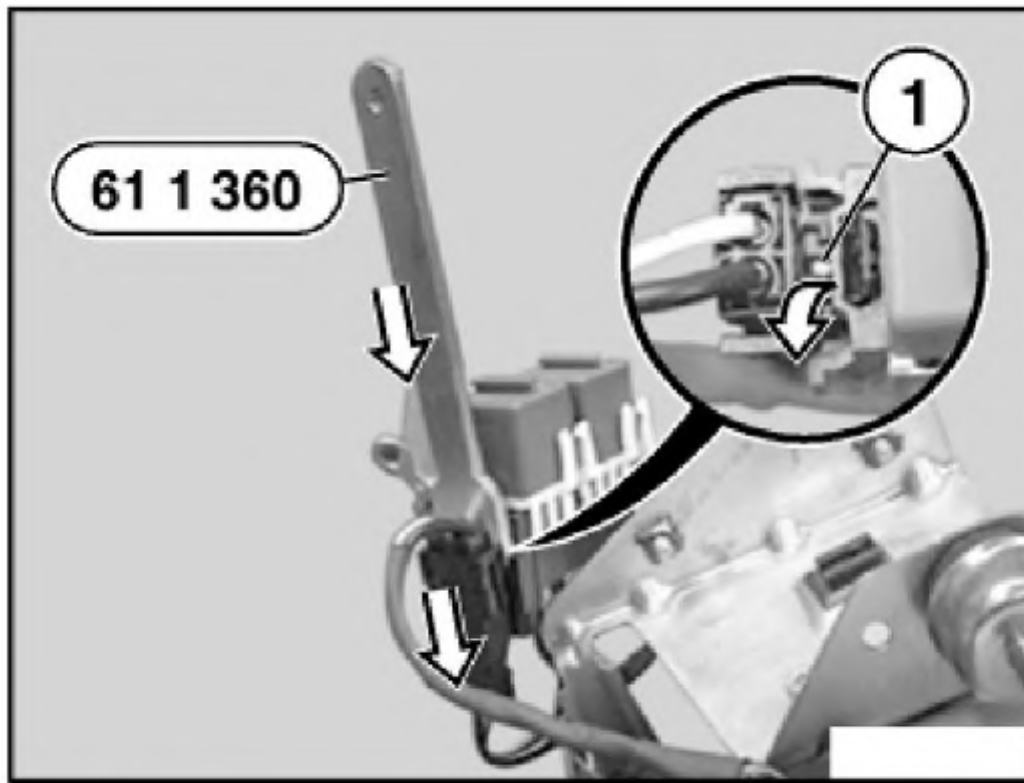
Fig. 34: Installing Pliers For Repairing Ribbon Cables
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 .. UNLOCKING AND DISCONNECTING DIFFERENT PLUG CONNECTIONS

Operations are identical to **61 13 .. UNLOCKING AND DISCONNECTING DIFFERENT PLUG CONNECTIONS** .

61 13 ... BASE OF TAB CONNECTOR HOUSINGS

Unlock hook (1) with special tool 61 1 360 and slide plug housing downwards out of base.



G03256479

Fig. 35: Unlocking Hook With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 ... CRIMPING MICRO POWER QUADLOCK CONTACTS (MPQ)

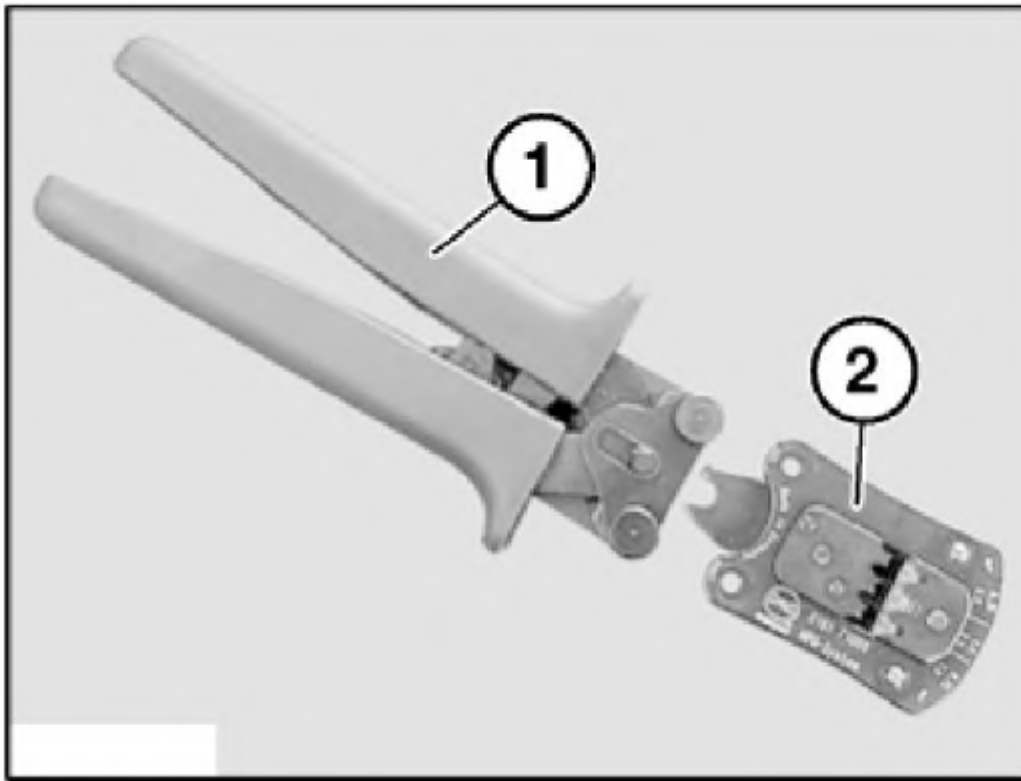
NOTE: For Special Tool identification, see SPECIAL TOOLS - X-5 (3.0i) .

Special Tools Required:

- 61 4 320

To crimp MPQ contacts, use pliers 61 4 321 (1) in conjunction with crimping head 61 4 325 (2) from crimping set 61 4 320.

NOTE: Pliers (1) open automatically as far as they will go when handles are pressed together.

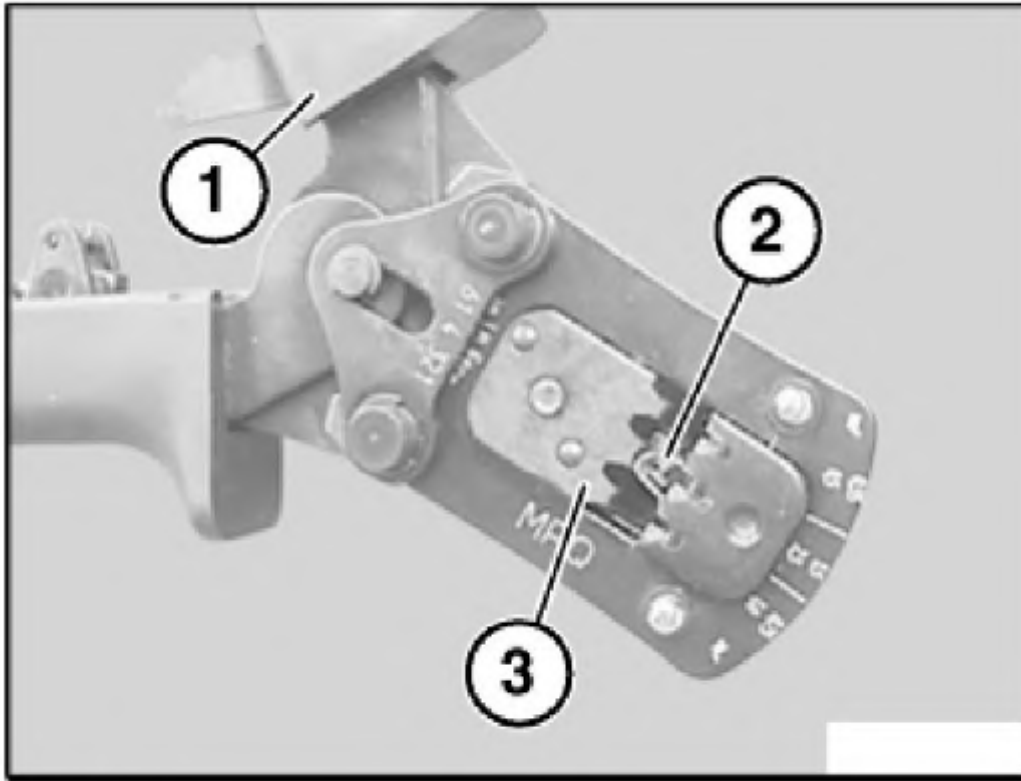


G03256480

Fig. 36: Identifying Pliers With Crimping Head
Courtesy of BMW OF NORTH AMERICA, INC.

Open pliers (1).

NOTE: Place contact (2) with utmost care in designated nest (observe cable cross-section) in crimping head (3). Make sure it is exactly positioned. Place MPQ contact (2) in crimping head (3). Close pliers (1) one notch.



G03256481

Fig. 37: Placing MPQ Contact In Crimping Head Nest
Courtesy of BMW OF NORTH AMERICA, INC.

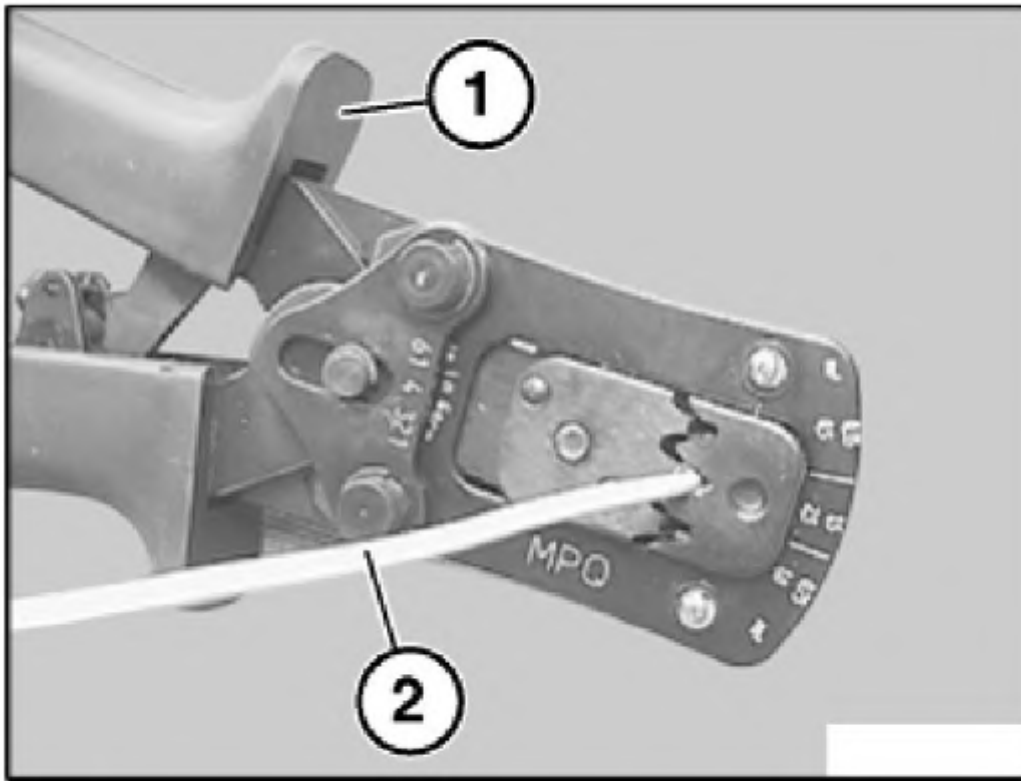
NOTE: Follow procedure for cutting and stripping insulation from cables.

Insert stripped cable (2).

Close pliers (1) fully.

Open pliers (1) and remove cable (2).

NOTE: Check contact for correct crimping.



G03256482

Fig. 38: Inserting Stripped Cable Into Crimp Head
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 ... CRIMPING MICRO QUADLOCK SYSTEM CONTACTS (MQS)

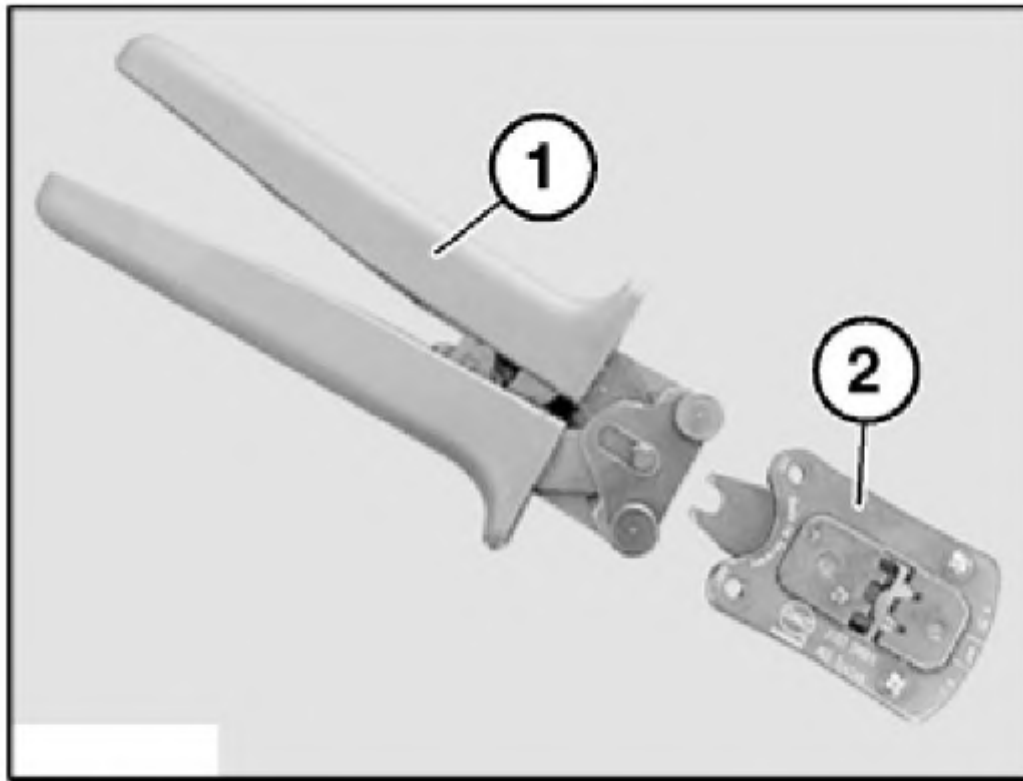
NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

- 61 4 320

To crimp MQS contacts, use pliers 61 4 321 (1) in conjunction with crimping head 61 4 324 (2) from crimping set 61 4 320.

NOTE: Pliers (1) open automatically as far as they will go when handles are pressed together.



G03256483

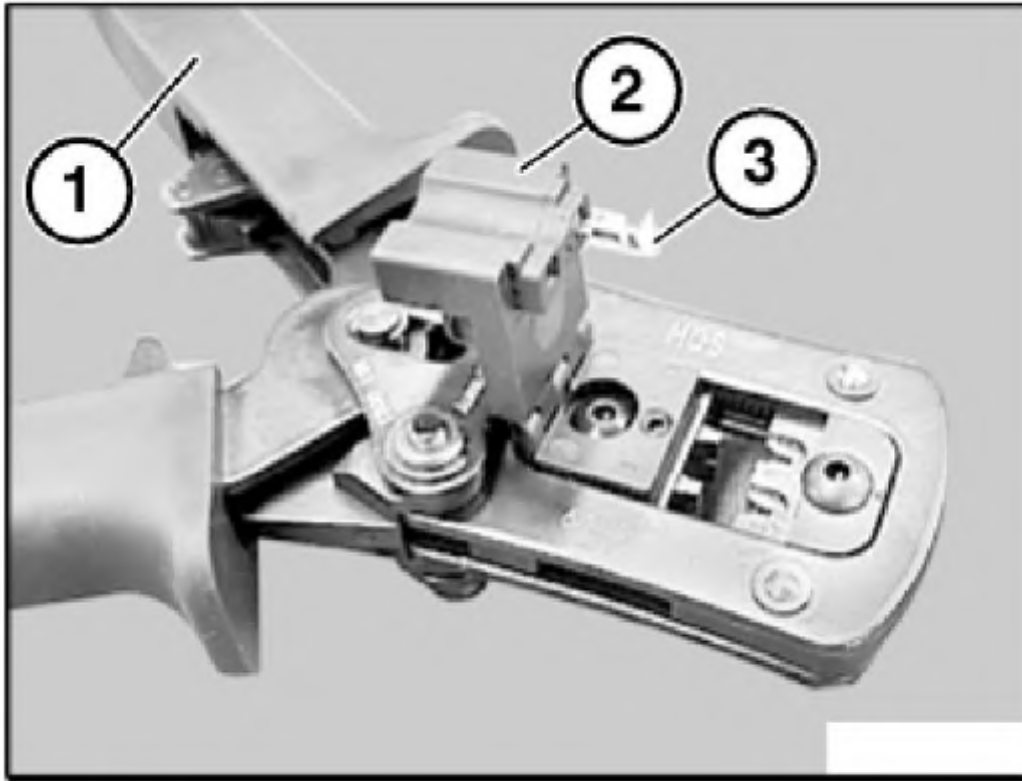
Fig. 39: Identifying Pliers With Crimping Head From Crimping Set
Courtesy of BMW OF NORTH AMERICA, INC.

Open pliers (1).

Fold up contact carrier (2).

Insert MQS contact (3) in contact carrier (2).

Fold back contact carrier (2).



G03256484

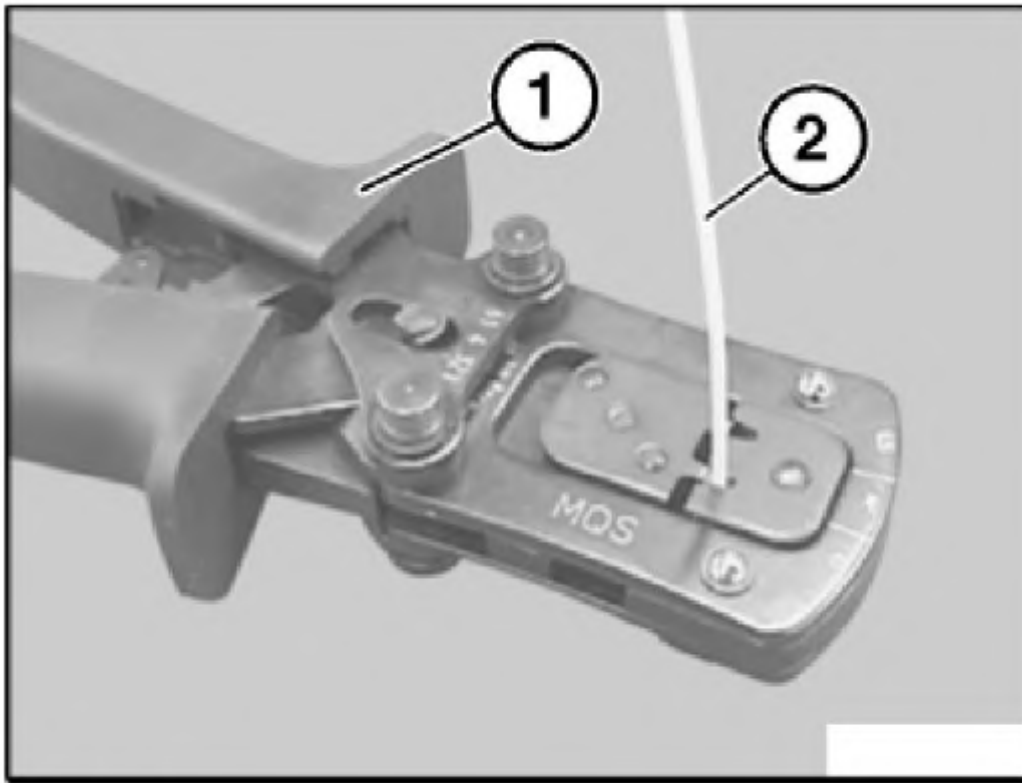
Fig. 40: Inserting MQS Contact In Contact Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Follow procedure for cutting and stripping insulation from cables.

Close pliers (1) one notch.

Insert stripped cable (2).

Close pliers (1) fully.



G03256485

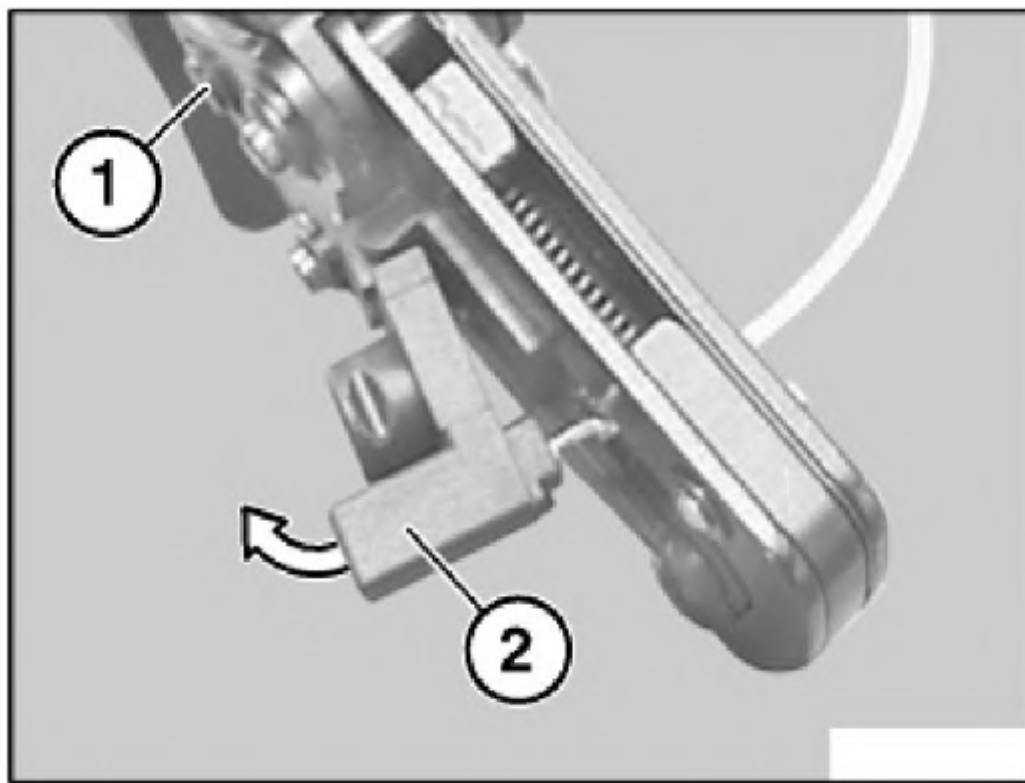
Fig. 41: Inserting Stripped Cable

Courtesy of BMW OF NORTH AMERICA, INC.

Open pliers (1).

Open contact carrier (2) gently and carefully remove MQS contact.

NOTE: Check contact for correct crimping.



G03256486

Fig. 42: Installing Open Contact Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 ... CRIMPING ANNULAR CONTACTS

CrimpacII crimping pliers from repair kit 1 are used to crimp annular contacts.

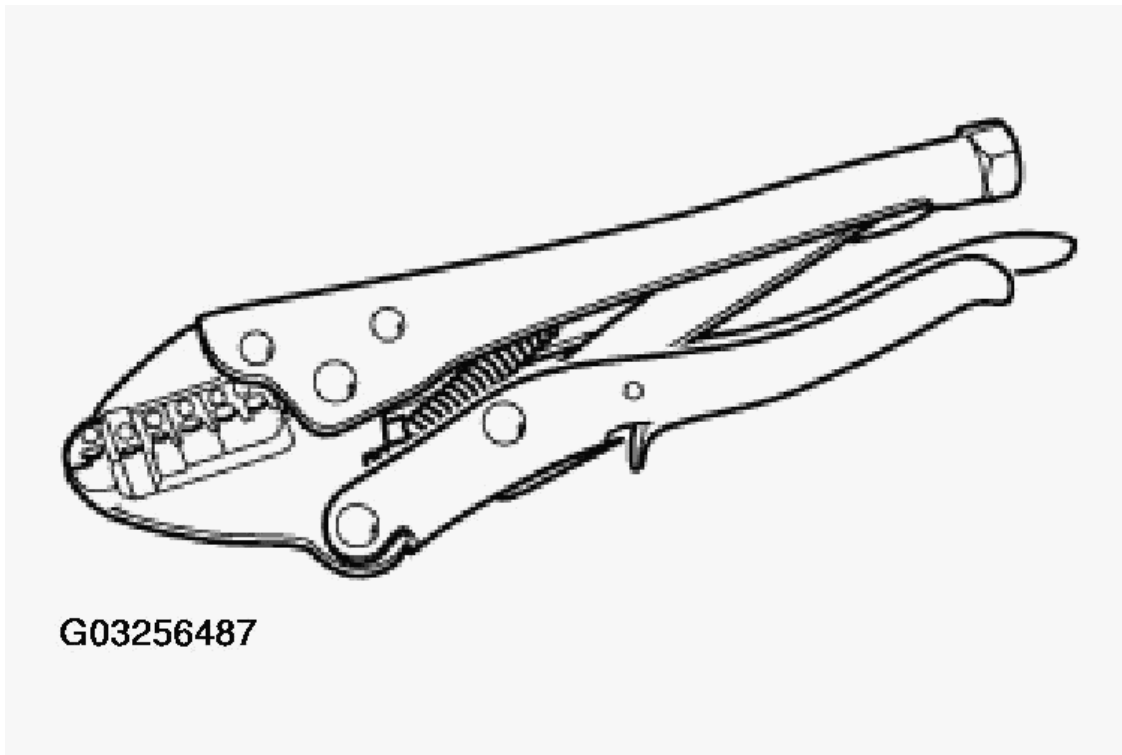


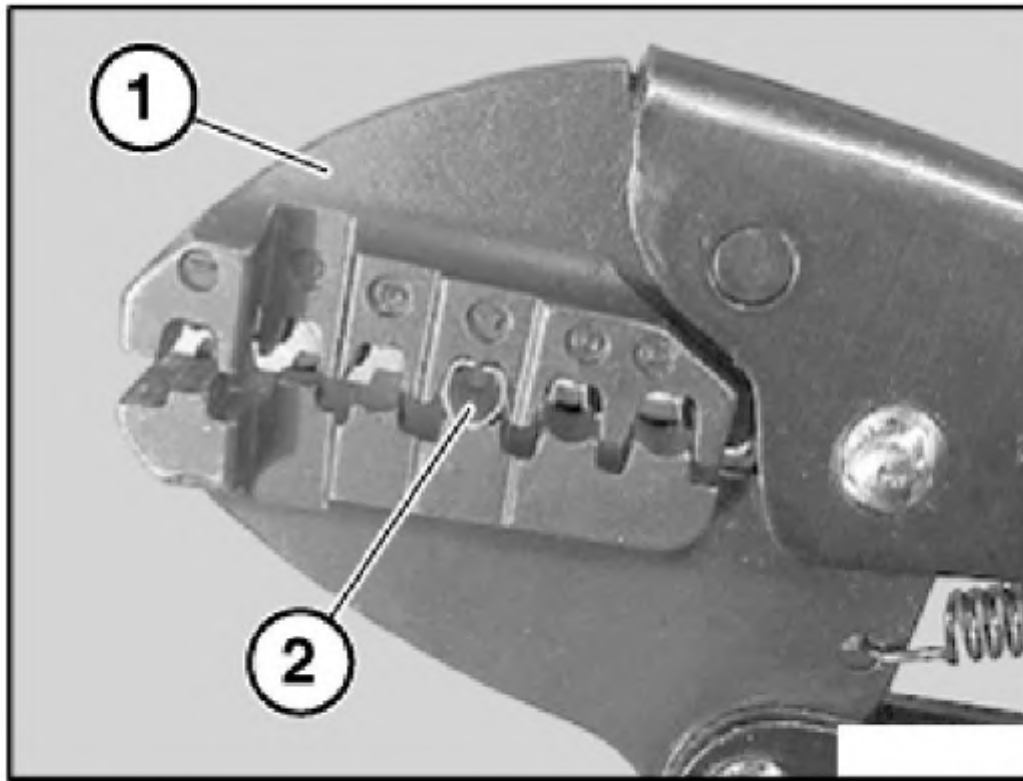
Fig. 43: Identifying CrimpacII Crimping Pliers
Courtesy of BMW OF NORTH AMERICA, INC.

Open crimping pliers (1).

NOTE: Place contact (2) in designated nest (observe wire cross-section) with particular care. Make sure it is exactly positioned.

Insert annular contact (2) in crimping pliers (1).

Close crimping pliers (1) gently and keep closed.



G03256488

Fig. 44: Placing Contact In Crimping Pliers
Courtesy of BMW OF NORTH AMERICA, INC.

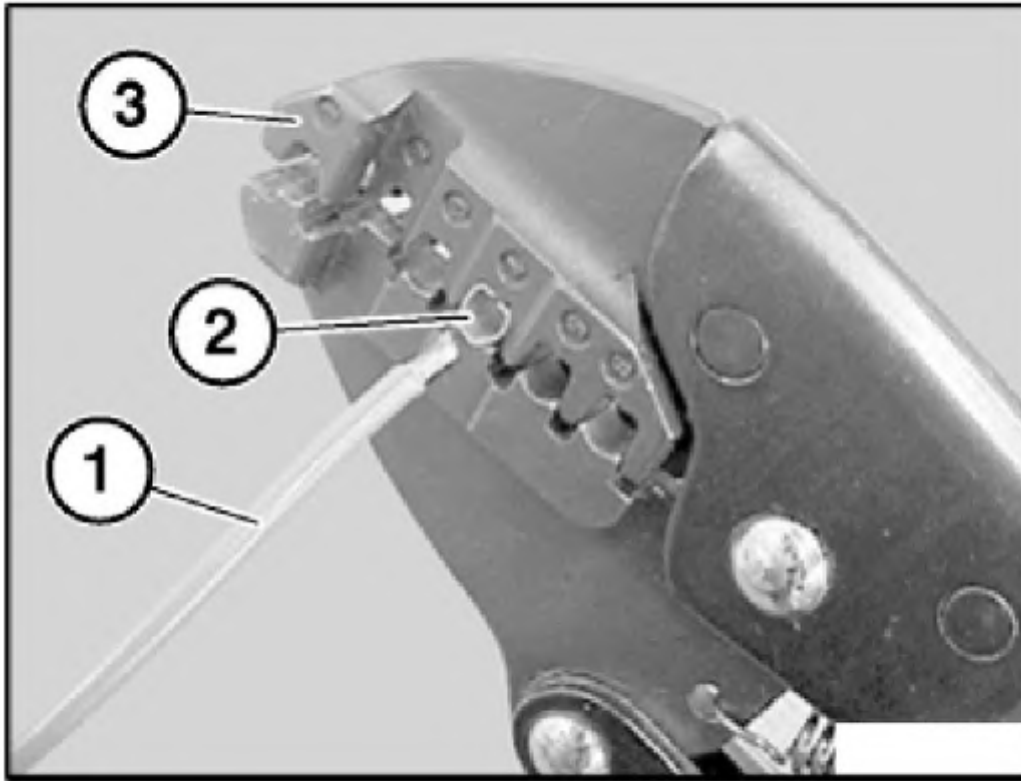
NOTE: Follow procedure for cutting and stripping insulation from cables.

Feed stripped cable (1) into annular contact (2) completely.

Close crimping pliers (3) fully.

Open crimping pliers (3) and remove cable (2).

NOTE: Check contact for correct crimping.



G03256489

Fig. 45: Inserting Stripped Cable Into Annular Contact
Courtesy of BMW OF NORTH AMERICA, INC.

61 13... CRIMPING OPTICAL FIBRES

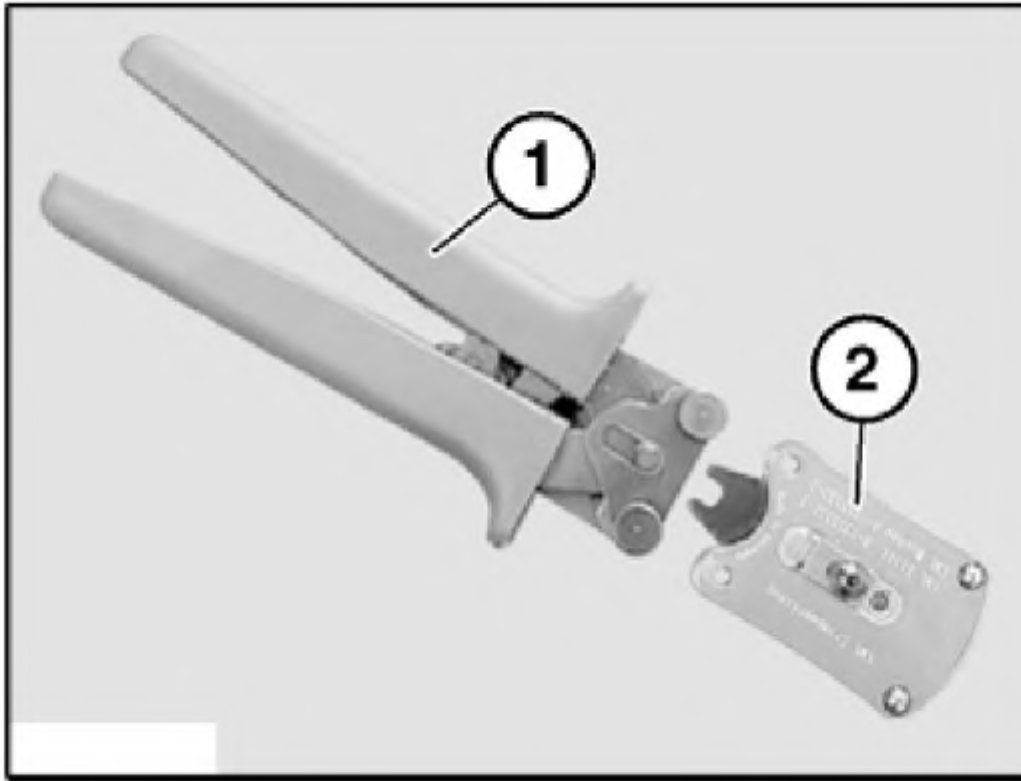
NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

- 61 4 320

To crimp optical fibres, use pliers 61 4 321 (1) in conjunction with crimping head 61 4 323 (2) from crimping set 61 4 320.

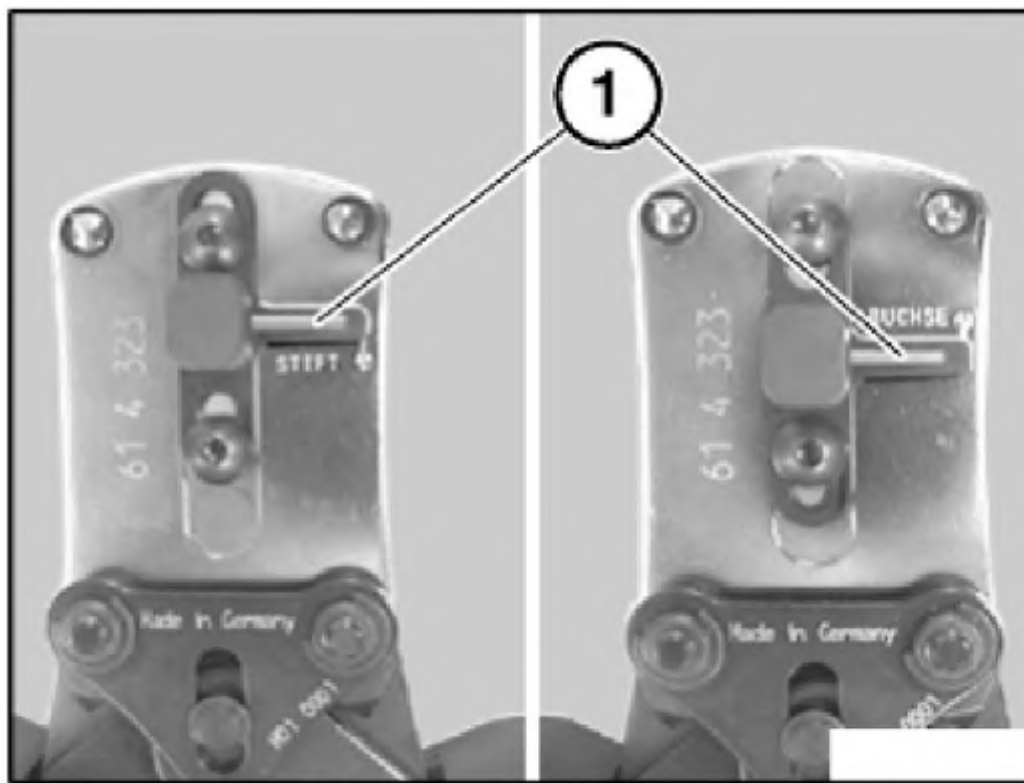
NOTE: Pliers (1) open automatically as far as they will go when handles are pressed together.



G03256490

Fig. 46: Identifying Crimping Pliers With Crimping Head
Courtesy of BMW OF NORTH AMERICA, INC.

Move contact guide by means of stop lever (1) into corresponding position (pin contact or jack).



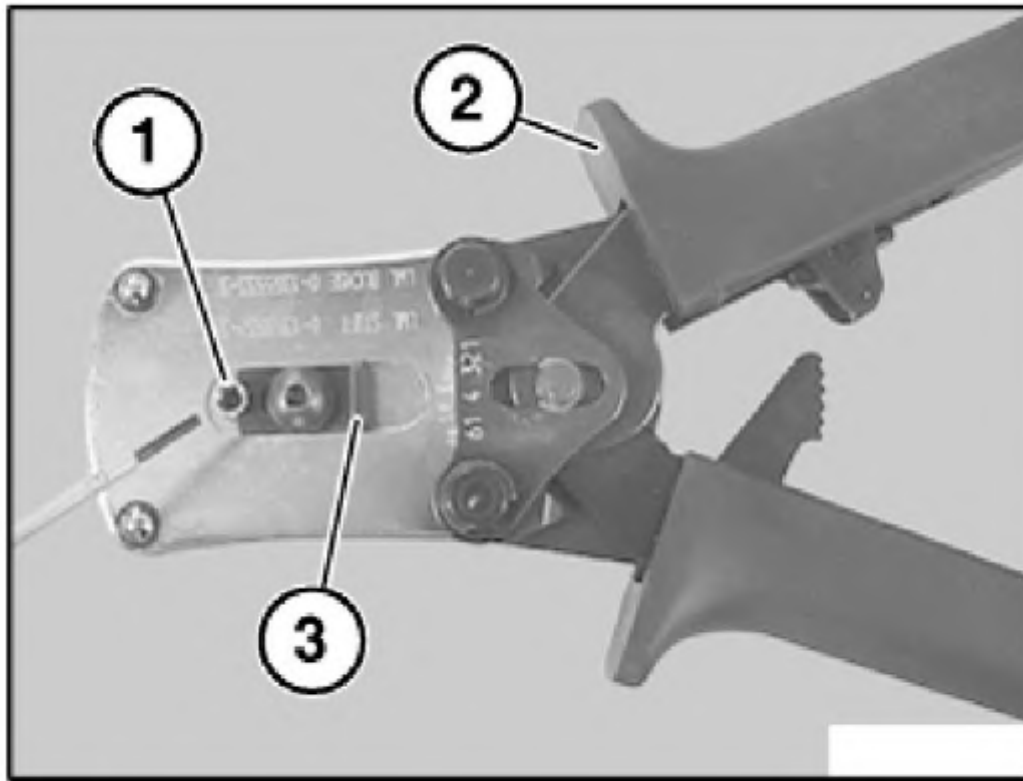
G03256491

Fig. 47: Identifying Stop Lever

Courtesy of BMW OF NORTH AMERICA, INC.

Open pliers (2).

Place pin contact or jack (1) in crimping head and secure with locking lever (3).



G03256492

Fig. 48: Placing Pin Contact Or Jack In Crimping Head
Courtesy of BMW OF NORTH AMERICA, INC.

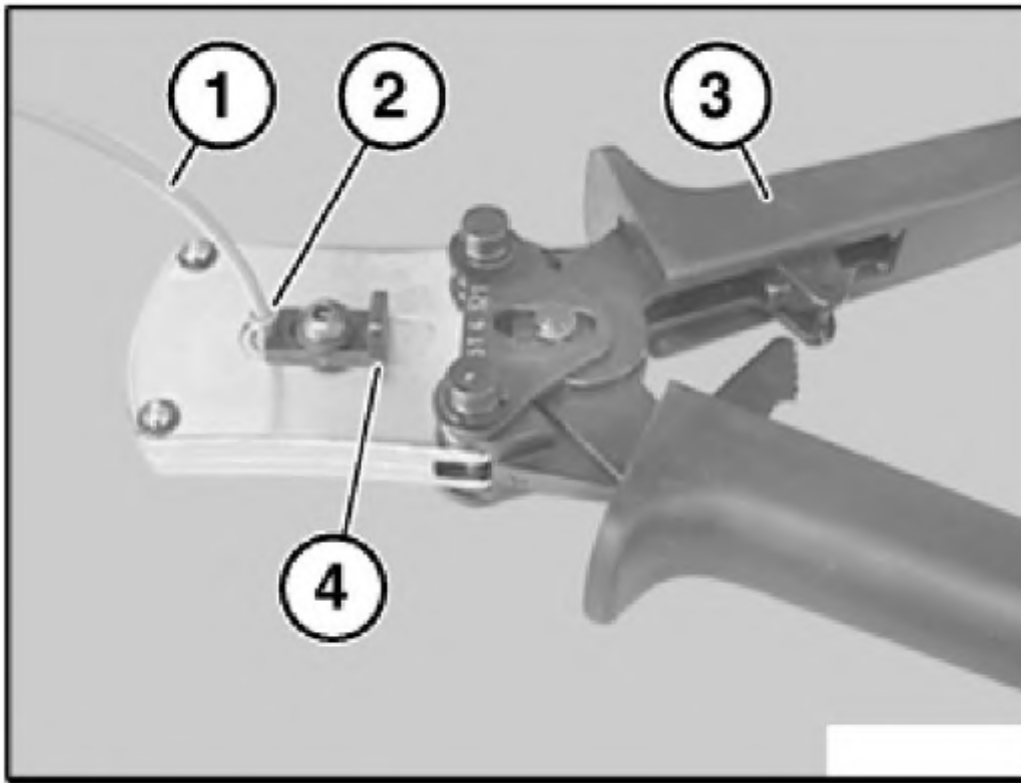
NOTE: Follow procedure for cutting and stripping insulation from optical fibres. Refer to **61 13 ... CUTTING OFF, STRIPPING INSULATION AND CUTTING OPTICAL FIBRES TO LENGTH** .

Insert stripped optical fibre (1) as far as it will go into pin contact or jack (2).

Close pliers (3) fully.

Open pliers (3) and locking lever (4).

Remove optical fibre (1).



G03256493

Fig. 49: Removing Optical Fibre

Courtesy of BMW OF NORTH AMERICA, INC.

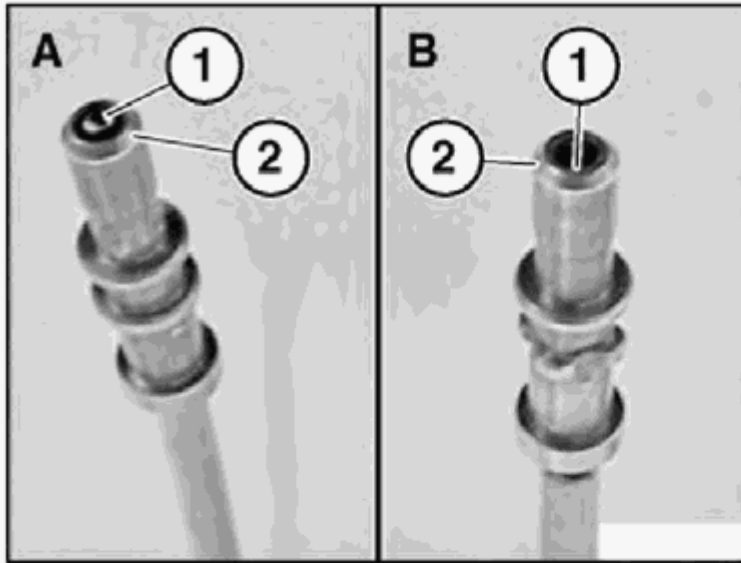
IMPORTANT: Make sure optical fibre is correctly seated in jack.

Right (A):

End of optical fibre (1) must be flush with tip of pin contact (2).

Wrong (B):

End of optical fibre (1) is not flush with tip of pin contact (2).



Right (A)

End of optical fibre (1) must be flush with tip of pin contact (2).

Wrong (B)

End of optical fibre (1) is not flush with tip of pin contact (2).

G03256494

Fig. 50: Identifying Alignment Of End Of Optical Fibre

Courtesy of BMW OF NORTH AMERICA, INC.

61 13 ... CUTTING OFF, STRIPPING INSULATION AND CUTTING OPTICAL FIBRES TO LENGTH

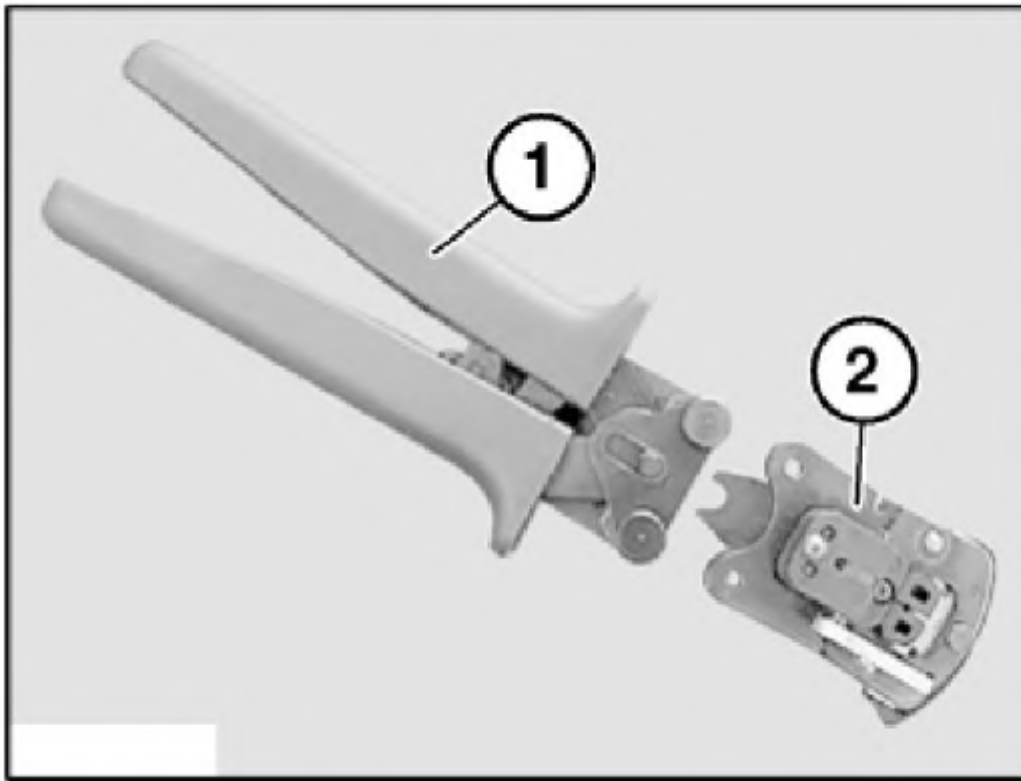
NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

- 61 4 320

To cut off, strip insulation and cut optical fibres to length, use pliers 61 4 321 (1) in conjunction with crimping head 61 4 322 (2) from crimping set 61 4 320.

NOTE: Pliers (1) open automatically as far as they will go when handles are pressed together.



G03256495

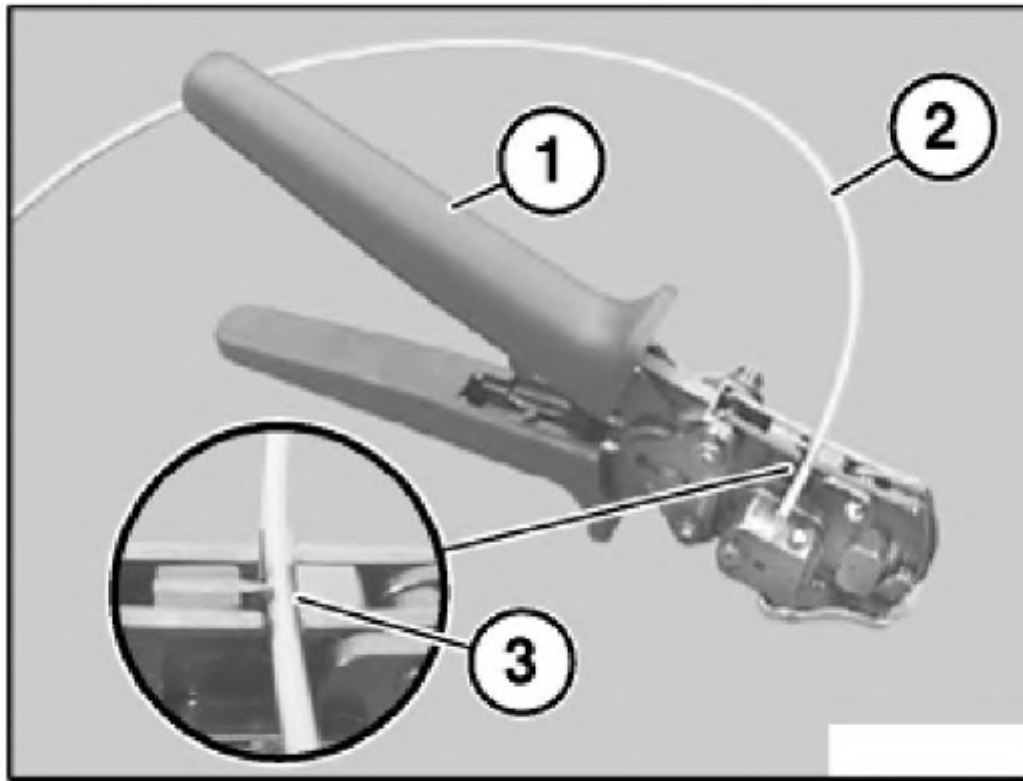
Fig. 51: Identifying Crimping Pliers With Crimping Head
Courtesy of BMW OF NORTH AMERICA, INC.

Cutting Optical Fibre:

Open pliers (1).

Place optical fibre (2) in cutting device (3).

Close pliers (1) and remove optical fibre (2).



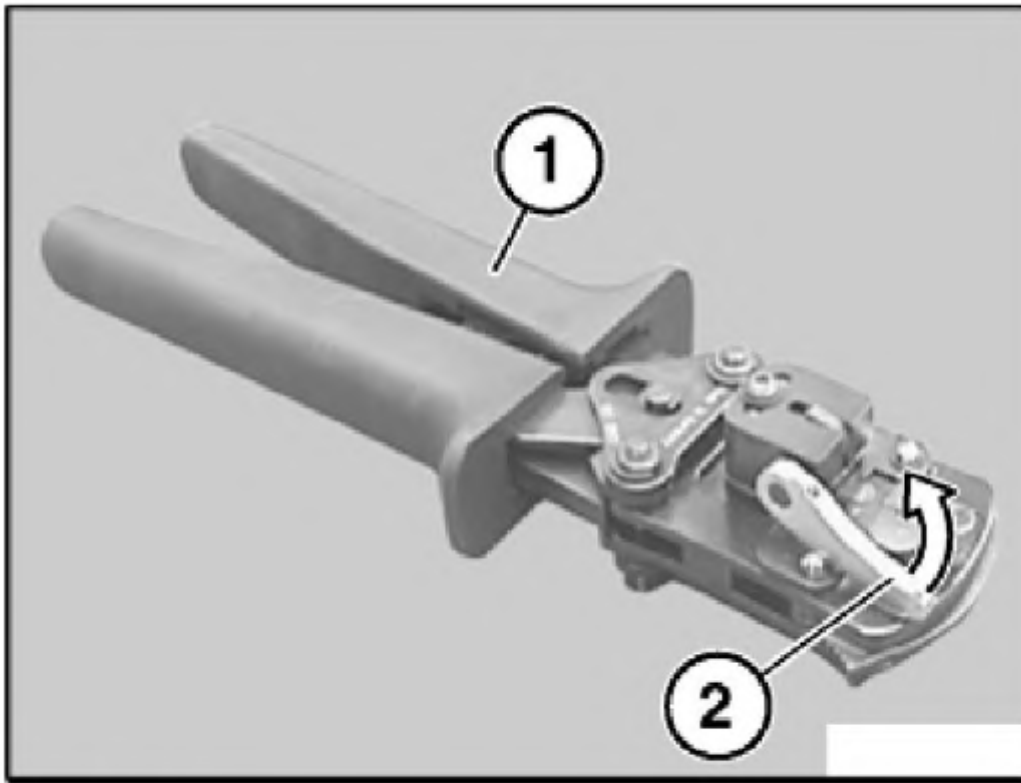
G03256496

Fig. 52: Placing Optical Fibre In Cutting Device
Courtesy of BMW OF NORTH AMERICA, INC.

Stripping Insulation From Optical Fibre:

Open pliers (1).

Open lever (2) in direction of arrow.



G03256497

Fig. 53: Opening Clamping Lever

Courtesy of BMW OF NORTH AMERICA, INC.

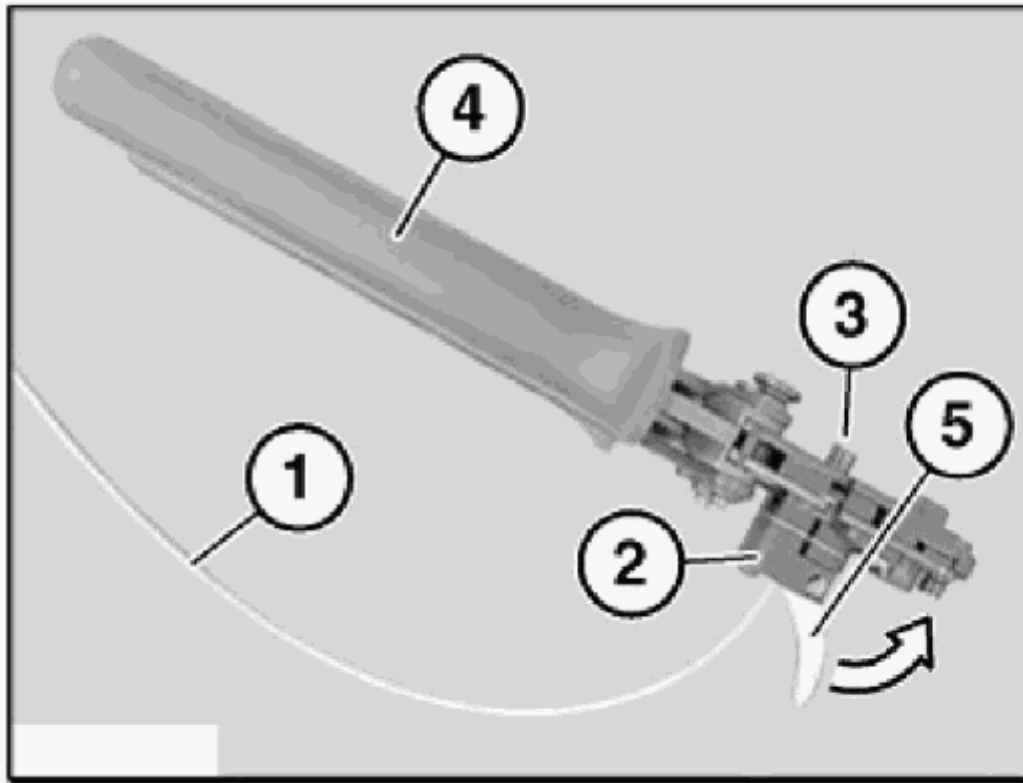
Slide optical fibre (1) into stripping device (2) until flush at point (3).

Close pliers (4) fully.

Close clamping lever (5) in direction of arrow.

Open pliers (4) by one tooth notch.

Open clamping lever (5) against direction of arrow again and remove optical fibre (1).



G03256498

Fig. 54: Closing Clamping Lever

Courtesy of BMW OF NORTH AMERICA, INC.

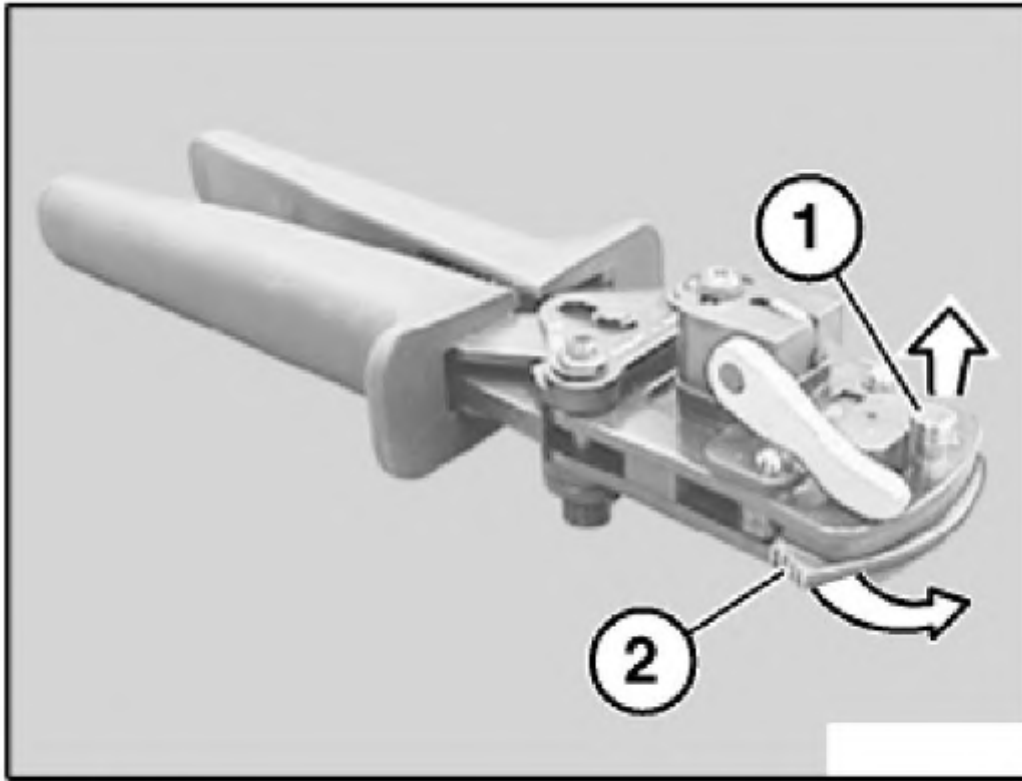
NOTE: A stripping replacement blade set is available under number 61 4 327.

Cutting Optical Fibre To Length:

IMPORTANT: The cutting blade must be replaced prior to each cutting of the optical fibre.

Pull pin (1) in direction of arrow.

Fold up blade retaining link (2) in direction of arrow.



G03256499

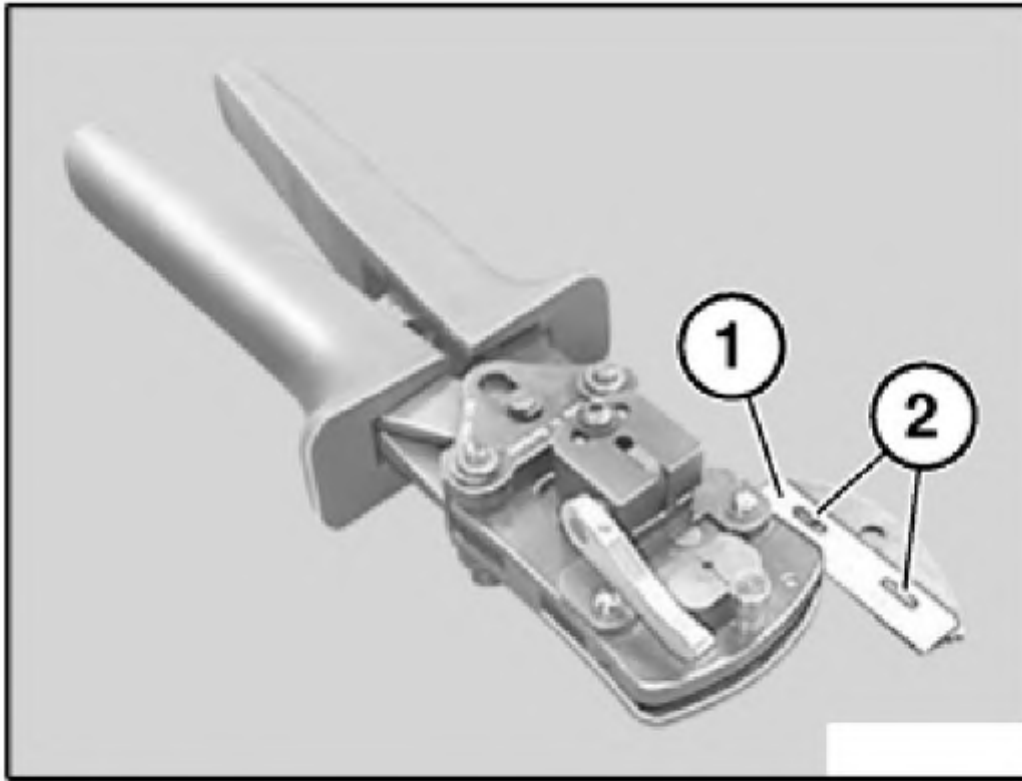
Fig. 55: Identifying Pin And Blade Retaining Link
Courtesy of BMW OF NORTH AMERICA, INC.

WARNING: Risk of injury when changing the blade.

Remove blade (1) and replace.

Installation:

Make sure blade (1) is correctly seated on locating points (2).



G03256500

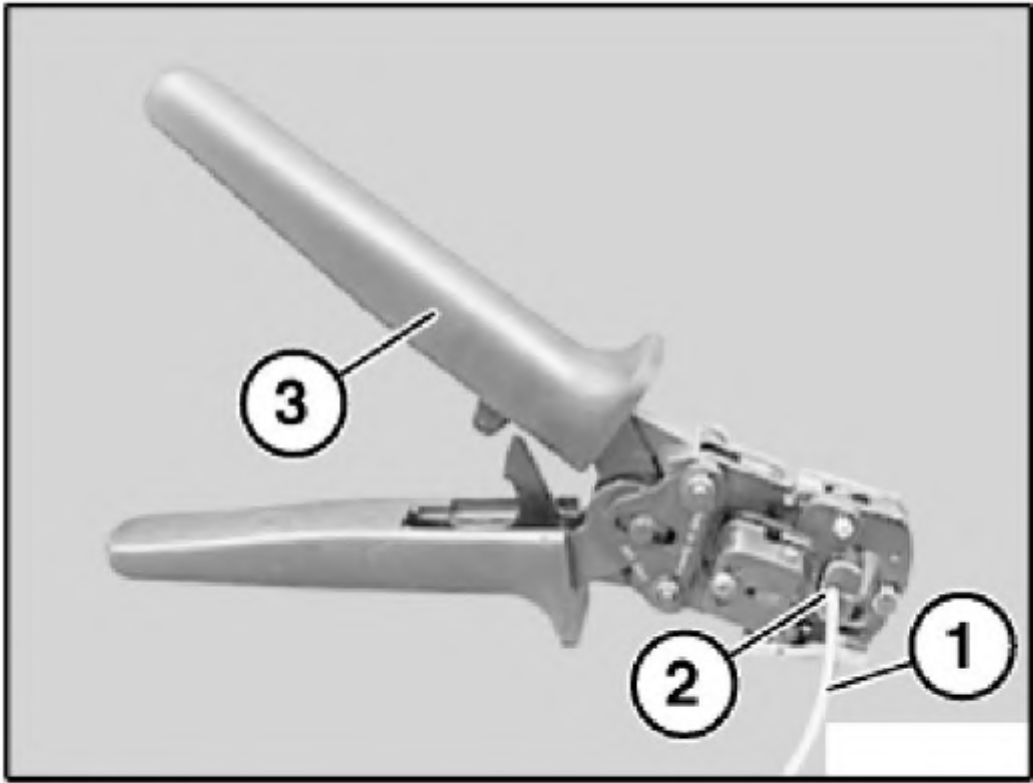
Fig. 56: Installing Blade On Locating Points
Courtesy of BMW OF NORTH AMERICA, INC.

Open pliers (3).

Slide optical fibre (1) into cutting device (2) until insulation of optical fibre (1) butts against clamping device.

Close pliers (3) fully and keep closed.

Remove optical fibre (1).



G03256501

Fig. 57: Removing/Installing Optical Fibre
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 ... OPENING PLUG HOUSINGS AND REMOVING CONTACTS OF DIFFERENT PLUG SYSTEMS

Abbreviations And What They Mean:

ABBREVIATIONS

MDK 3plus	Miniature double flat spring contact.
JPT ELA	Junior Power Timer flat spring contacts with strand sealing.
DFK ELA	Double flat spring contacts with strand sealing.
Elo	Electronic contacts with and without strand sealing. Manufacturer: Siemens.
Elo Power	Electronic contacts for heavy loads with and without strand sealing. Manufacturer: Siemens.
	Micro Quadlock System electronic contacts with and without strand sealing.

MQS	Manufacturer: AMP
MPQ	Micro Power Quadlock electronic contacts for heavy loads with and without strand sealing. Manufacturer: AMP.
D 1.5/2.5	Round contacts of 1.5 mm or 2.5 mm diameter.

Ultrasonic-Welded Connectors:

Ultrasonic-welded connectors (1) can be identified by the welds (2) on their longitudinal side.

The contacts of these connectors cannot be replaced. Replace plug completely.

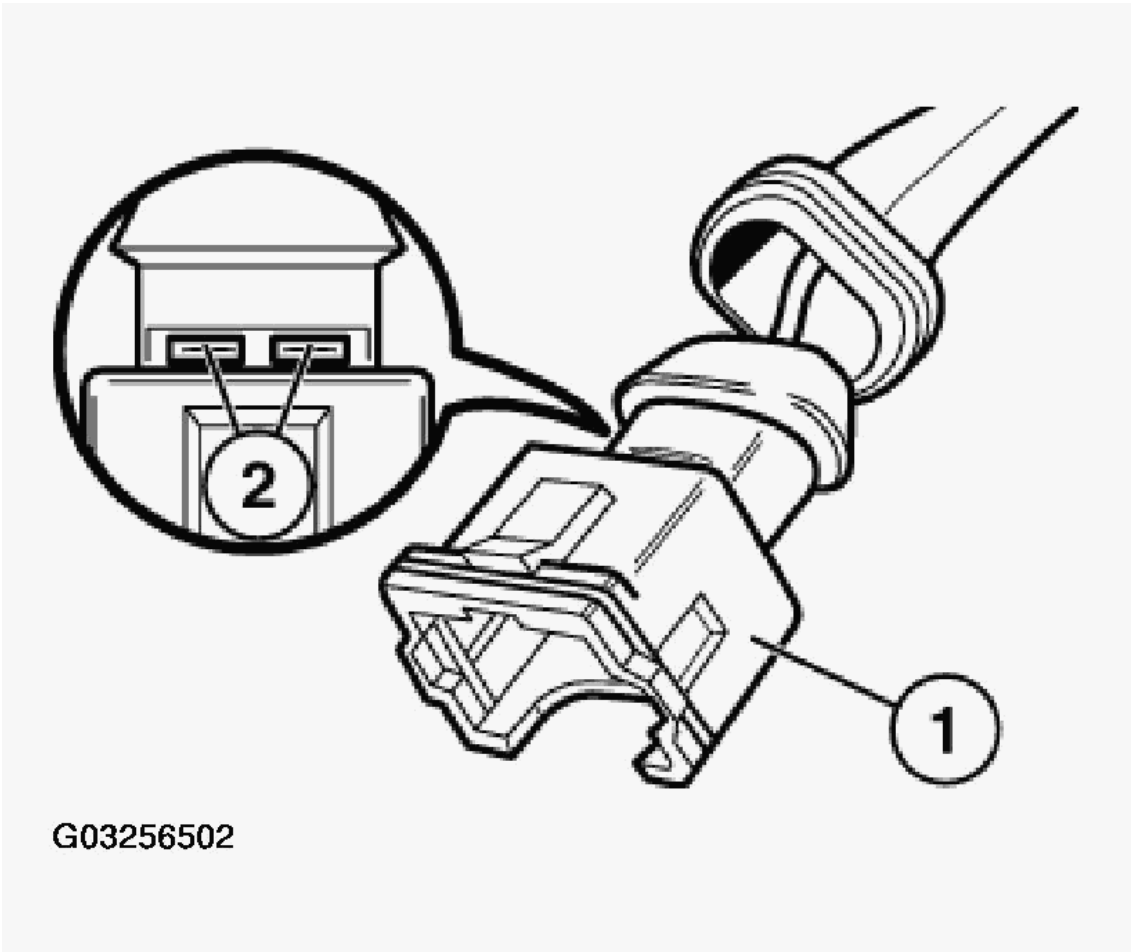


Fig. 58: Identifying Ultrasonic-Welded Connectors
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Special tools referred to in the repair instructions below are contained in the following special tool kits:

Release and press-out tool 61 1 150.

Repair Instructions For Opening Plug Housings And Removing Contacts Of Different Plug Systems:**Plug System D 1.5/D 2.5:**

- Circular plugs, 7-, 8-pin, System D 2.5.
- Circular plugs, 13-pin, System D 2.5.
- Circular plugs, 20-pin, System D 2.5.
- Circular plugs, 4-, 7-, 10-, 12-, 25-pin, System D 1.5/D 2.5.
- In-line plugs, 15-pin, System D 2.5.
- In-line plugs, 8-, 12-pin, System D 2.5.
- In-line plugs, 30-pin, System D 2.5.
- In-line plugs, 20-pin, System D 2.5.

Plug System JPT/MDK/DFK:

- In-line plugs, 2-pin, System JPT ELA.
- In-line plugs, 2-pin, System MDK 3 plus 2.8.
- In-line plugs, 4-pin, System DFK ELA.

Plug System Elo/Elo-Power:

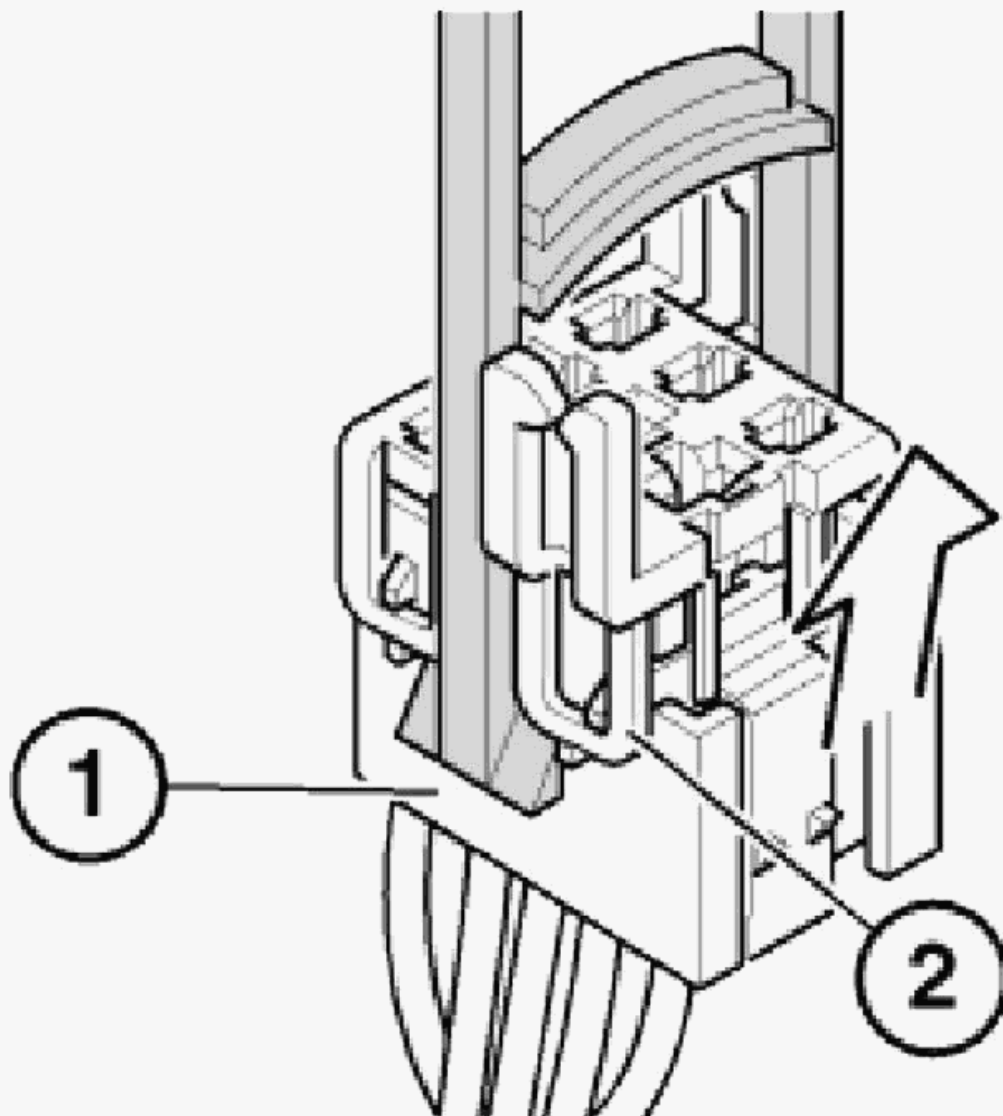
- In-line plugs, 4-, 10-pin, System Elo.
- In-line plugs, 6- to 50-pin, System Elo.
- In-line plugs, 3-, 6-pin, System Elo-Power 2.8.

Plug System MQS/MPQ:

- In-line plugs, 6-, 8-pin, System MQS.
- In-line plugs, 2-pin, System MPQ 2.8.
- Control unit plugs, 25-, 35-, 55-, 83-, 88-pin.
- In-line plugs, 24-pin, Hybrid System MQS/MPQ.
- Socket housing 42-, 43-pin, Hybrid System MQS/MPQ.
- Socket housings, 2x21-, 2x27-pin, Hybrid System MQS/MPQ, Elo/Elo-Power.
- In-line plugs, 30-pin, Hybrid System MQS/MPQ.
- Socket housings, 5-, 8-pin, System MQS/MPQ.

61 13... RELAY CARRIER

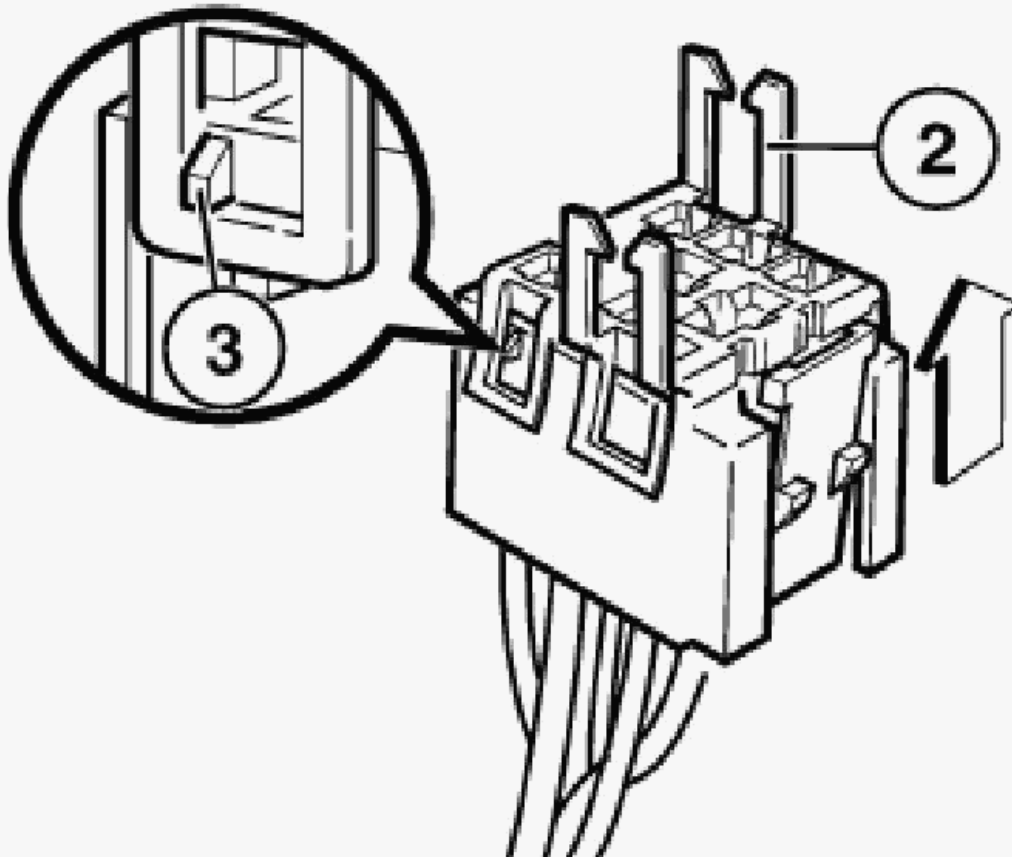
Place special tool 61 1 153 on relay carrier (1) and carefully pull in direction of arrow until retaining lugs (2) on relay carrier are raised.



G03256503

Fig. 59: Placing Special Tool On Relay Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Pull relay carrier (2) in direction of arrow into first catch (3).



G03256504

Fig. 60: Pulling Relay Carrier Into First Catch
Courtesy of BMW OF NORTH AMERICA, INC.

Press down arrester hook (4) of appropriate contact and pull out cable with contact.

Press out double flat spring contact with special tool 61 1 136 or 61 1 137 (ejector).

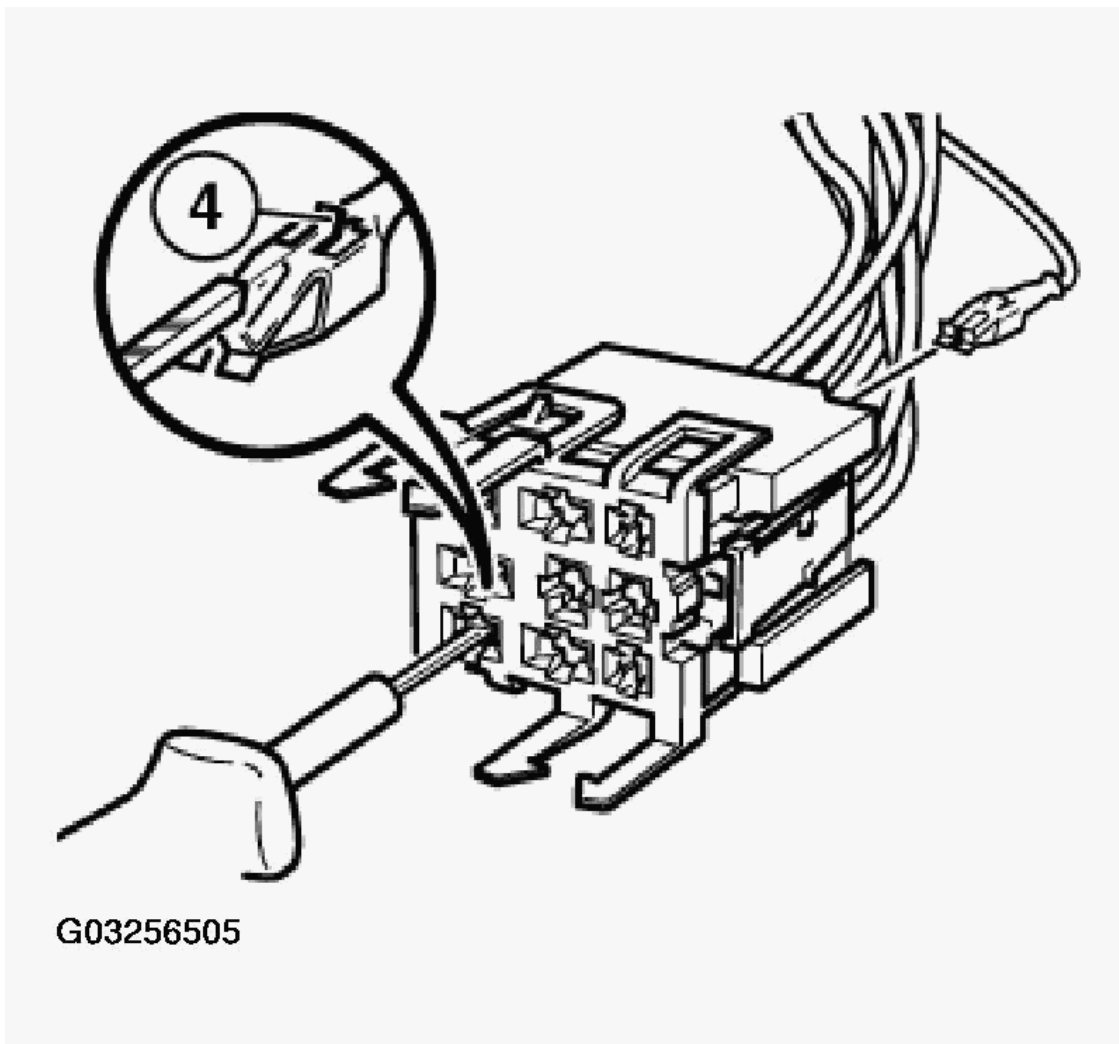


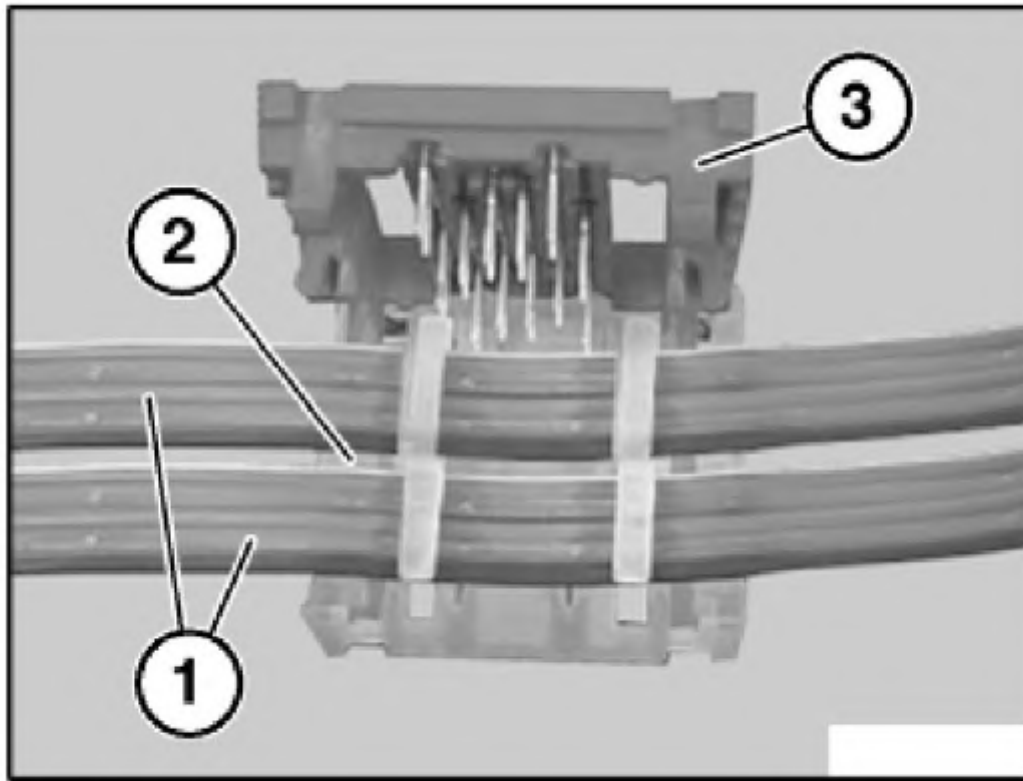
Fig. 61: Removing Double Flat Spring Contact
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 ... REPAIRING RIBBON CABLES

NOTE: For Special Tool identification, see SPECIAL TOOLS - X-5 (3.0i) .

Special Tools Required:

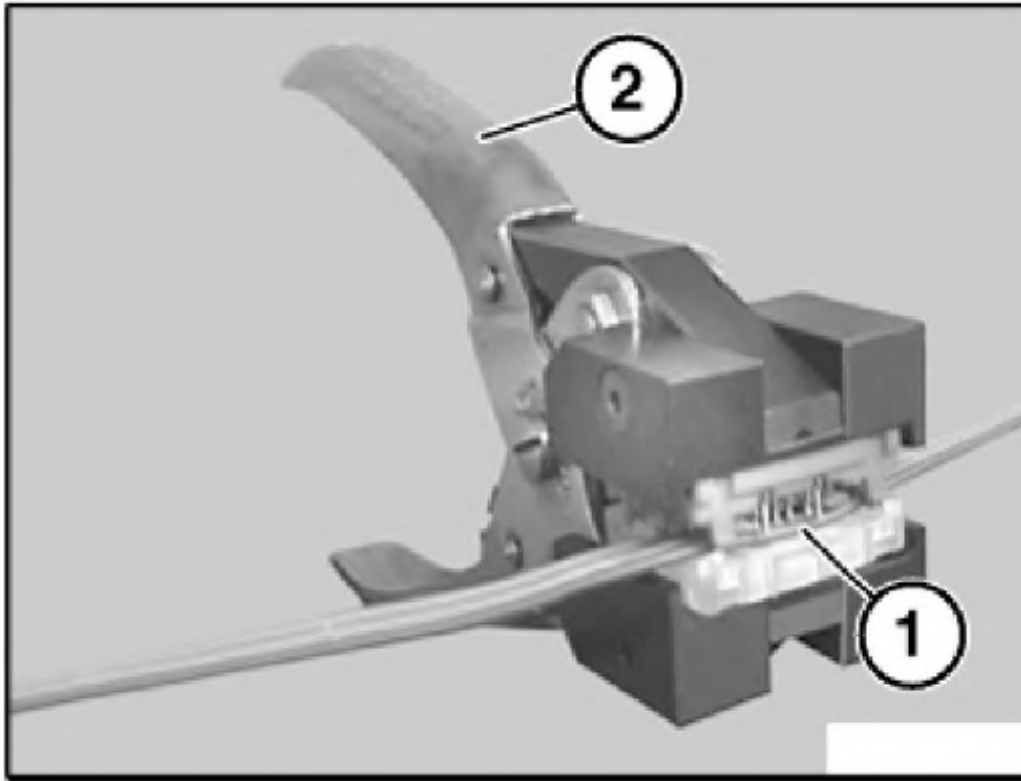
- 61 1 190



G03256506

Fig. 62: Placing Ribbon Cables In Connector Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Place ribbon cables (1) in connector housing (2) and close cover (3).



G03256507

Fig. 63: Placing Connector Housing In Pliers
Courtesy of BMW OF NORTH AMERICA, INC.

Place connector housing (1) in pliers (2) 61 1 190.

Close pliers (2).

61 13 ... RETAINING BRACKET

Pull relevant fuse out of fuse block (1).

NOTE: Mark positions when removing fuses. Pull locking slide (2) out of fuse block (1) as far as it will go.

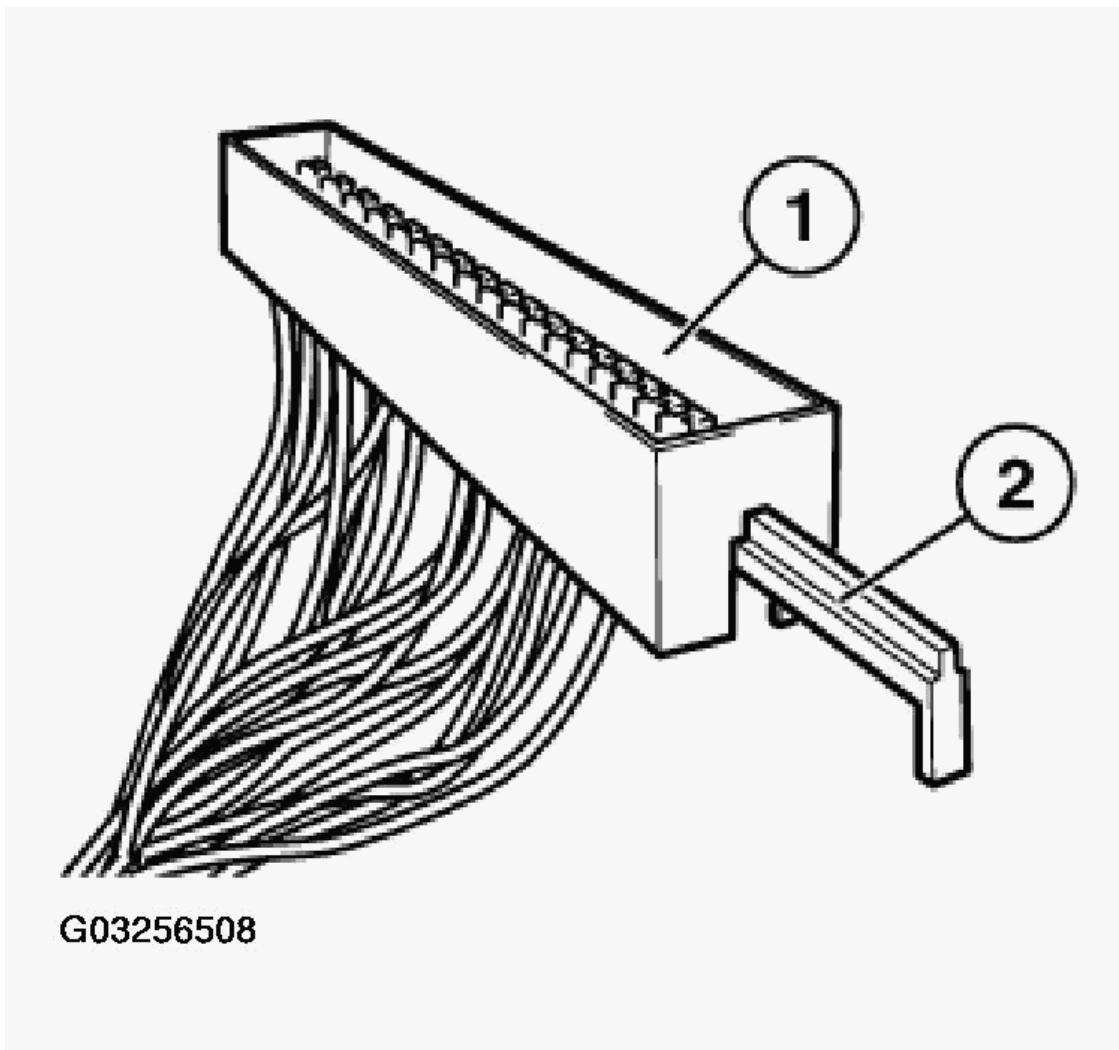


Fig. 64: Removing Relevant Fuse Out Of Fuse Block
Courtesy of BMW OF NORTH AMERICA, INC.

With special tool 61 1 136 or 61 1 137 (ejector), press back arrester hook (3) of appropriate contact and pull out cable.

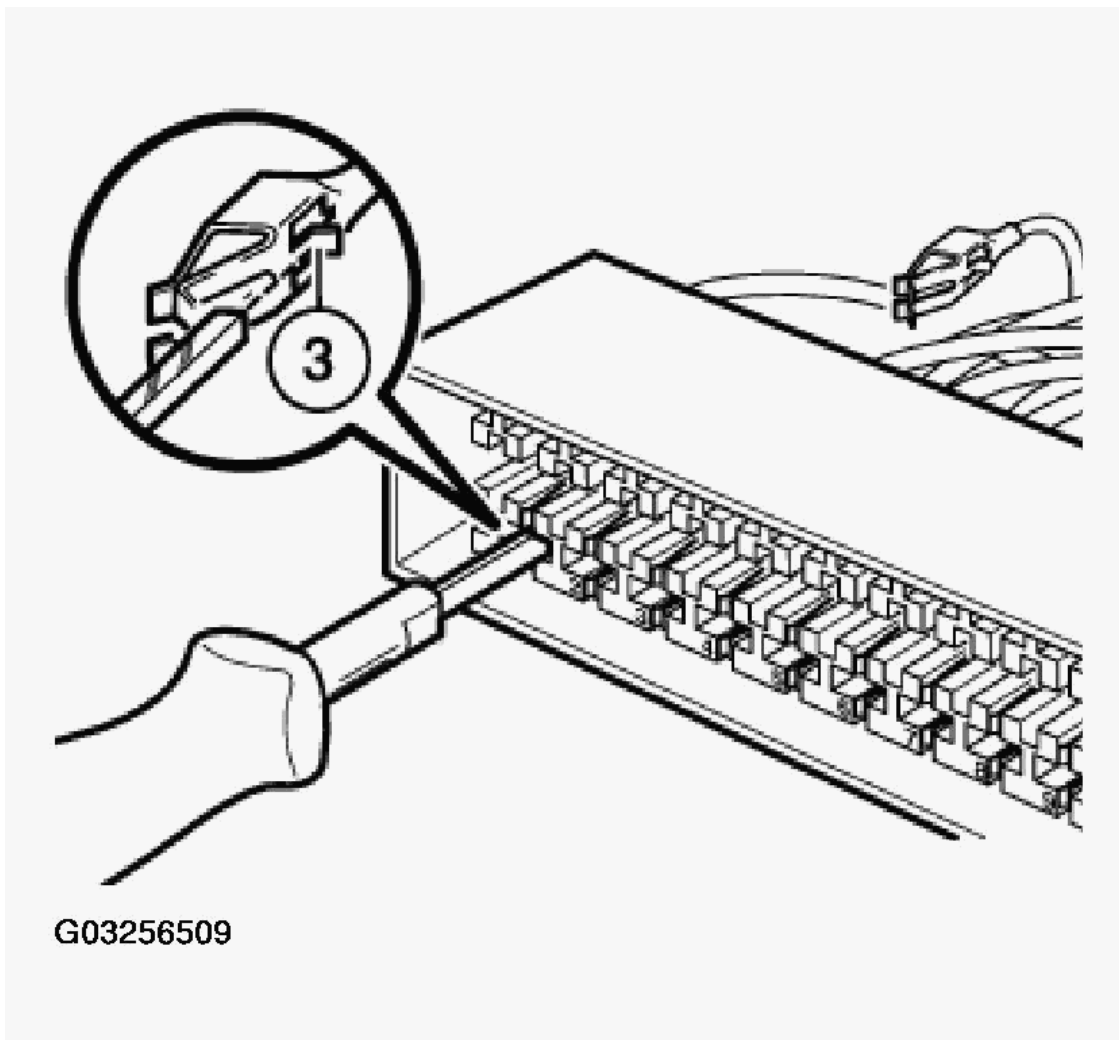


Fig. 65: Pressing Arrestor Hook With Ejector
Courtesy of BMW OF NORTH AMERICA, INC.

61 13 ... SOCKET HOUSING (RADIO PLUG), HYBRID SYSTEM MQS/MPQ

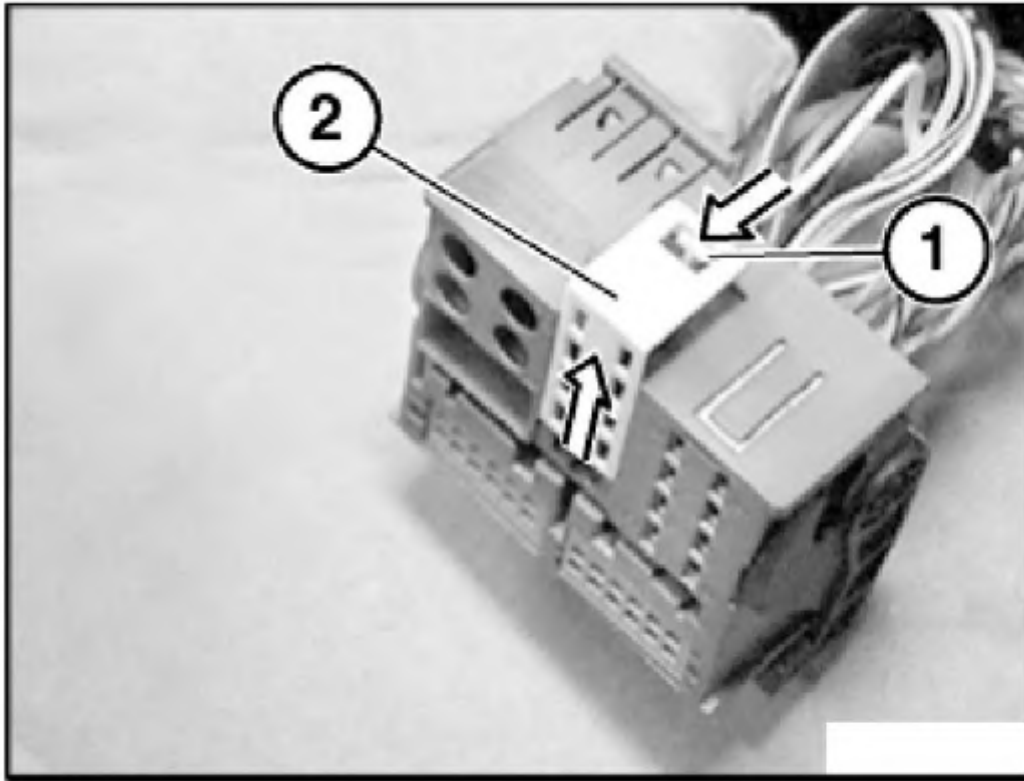
Manufactured By AMP: The following contact types without strand sealing can be fitted in the plug housings:

- MQS (Micro Quadlock System).
- MPQ, width 2.8 mm (Micro Power Quadlock).
- MPQ, width 5.2 mm (Micro Power Quadlock).

Removing MPQ Contacts From Radio Plug:

Press lock (1) in direction of arrow.

Detach secondary lock (2) from radio plug.



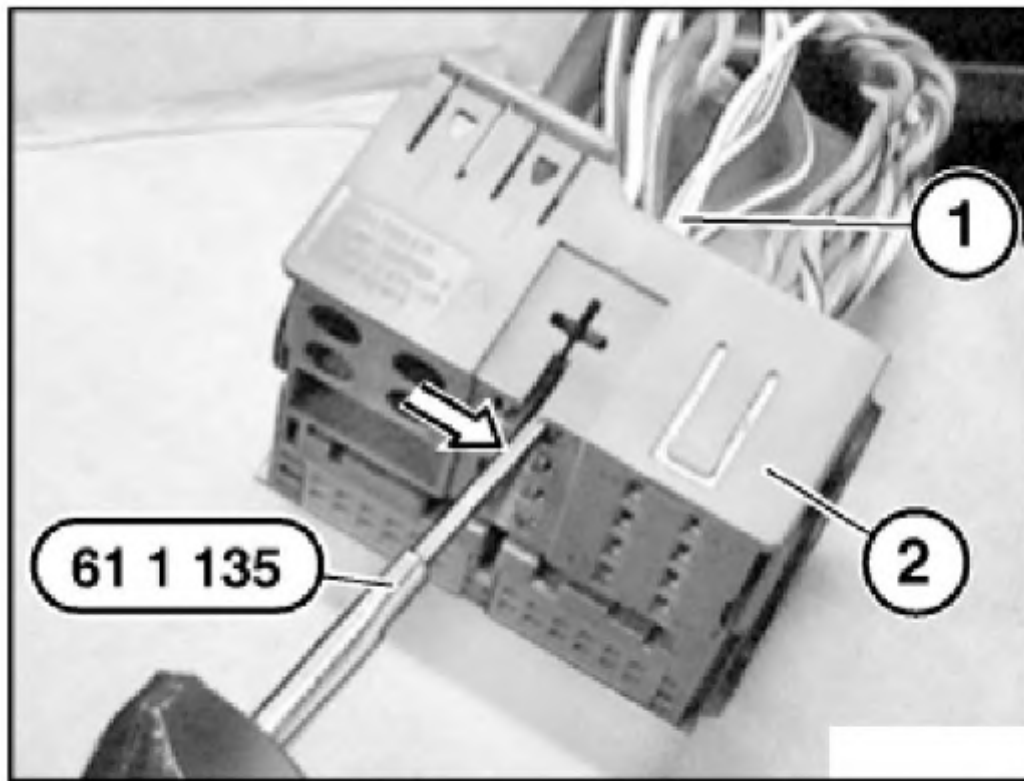
G03256510

Fig. 66: Detaching Secondary Lock From Radio Plug
Courtesy of BMW OF NORTH AMERICA, INC.

Feed special tool 61 1 135 past side of contact.

Press special tool 61 1 135 in direction of arrow.

Pull wire (1) with socket contact out of radio plug (2).

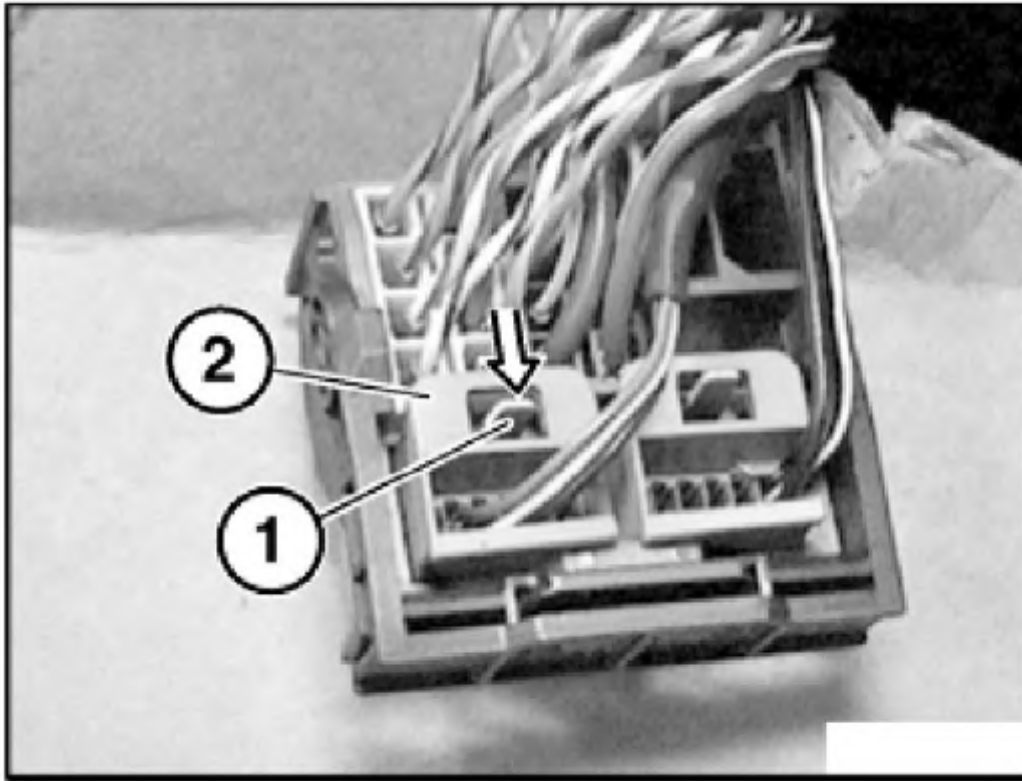


G03256511

Fig. 67: Removing Wire With Socket Contact From Radio Plug
Courtesy of BMW OF NORTH AMERICA, INC.

Removing MQS Contacts From Contact Carrier:

Press lock (1) in direction of arrow and pull housing (2) out of radio plug.

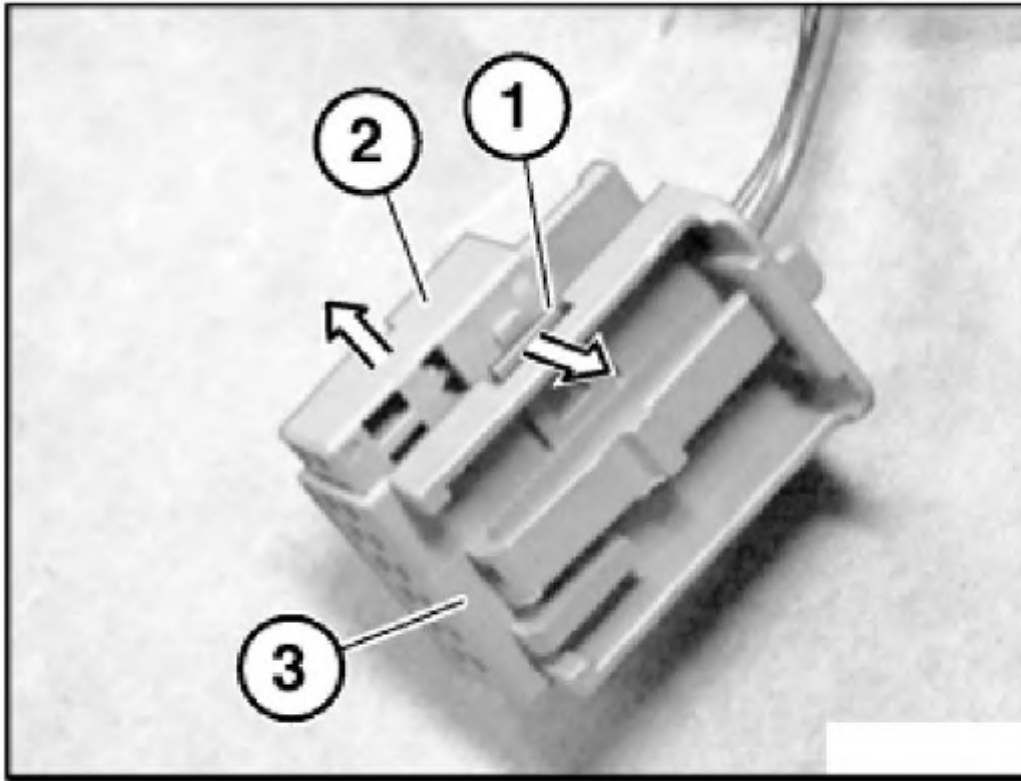


G03256512

Fig. 68: Removing Housing From Radio Plug
Courtesy of BMW OF NORTH AMERICA, INC.

Press lock (1) in direction of arrow. Pull contact carrier (2) out of housing (3).

NOTE: When the contact carrier is pulled out, the secondary locks of the socket contacts are raised.



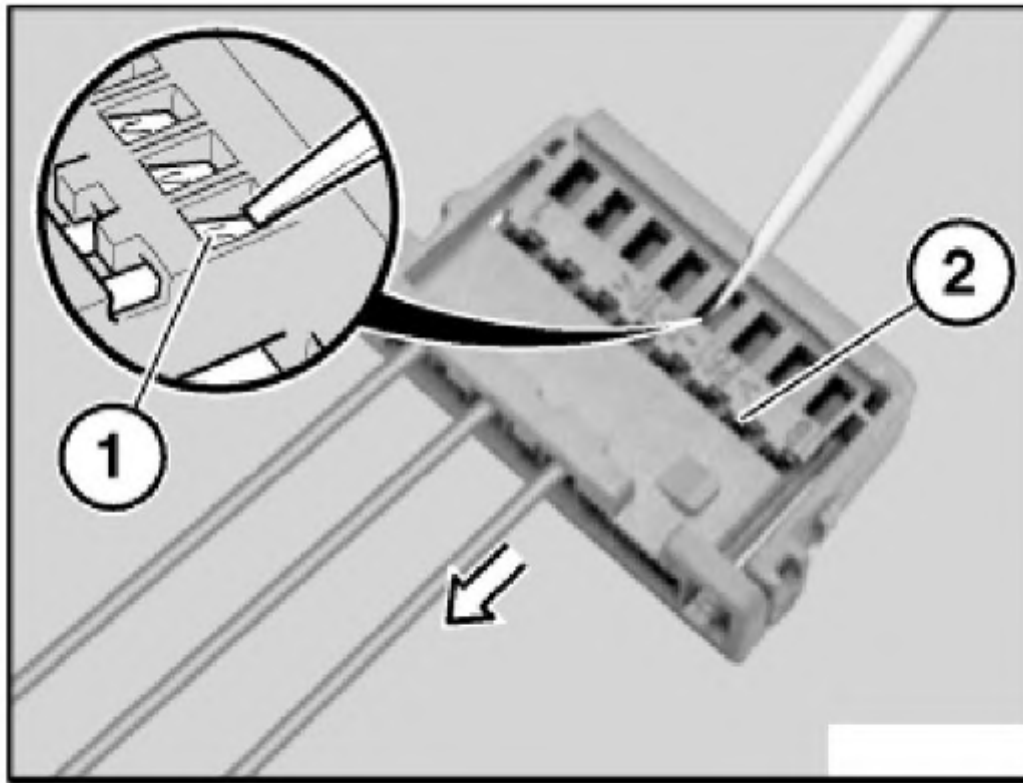
G03256513

Fig. 69: Removing Contact Carrier From Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

Pull wire with socket contact in direction of arrow as far as secondary lock (2).

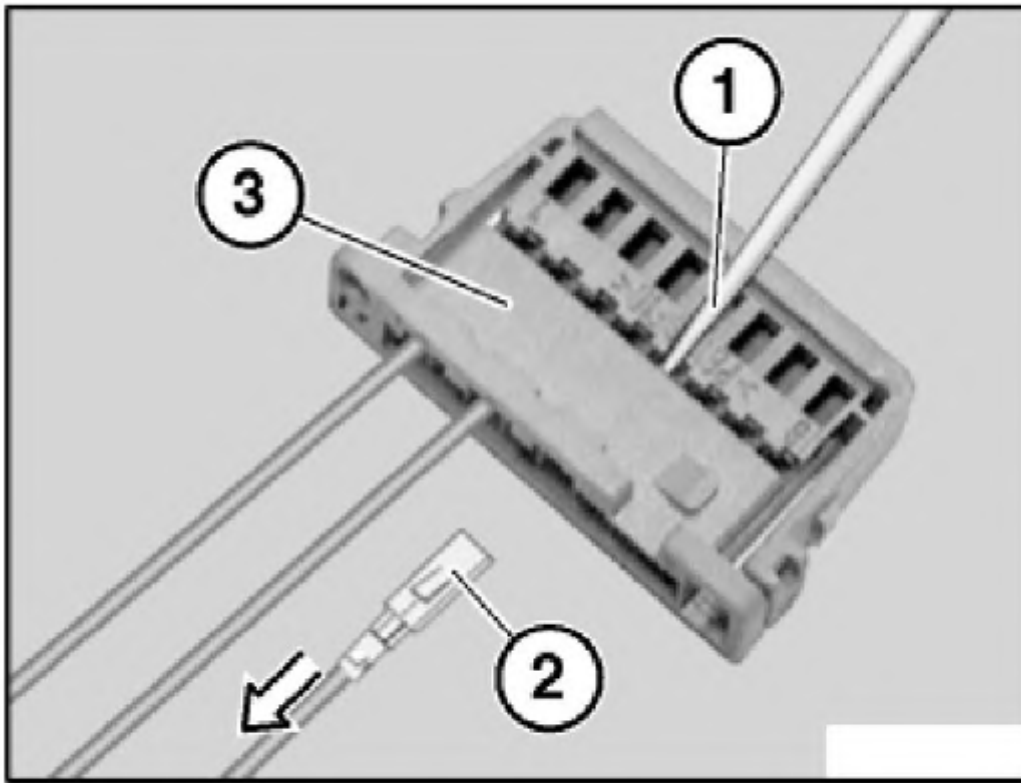
NOTE: The illustration shows an 8-pin socket housing where removal of the contacts is identical.



G03256514

Fig. 70: Pressing Retaining Hook Of Socket Contact Using Screwdriver
Courtesy of BMW OF NORTH AMERICA, INC.

Hold down arrester hook in secondary lock (1) again. Pull wire with socket contact (2) out of contact carrier (3).



G03256515

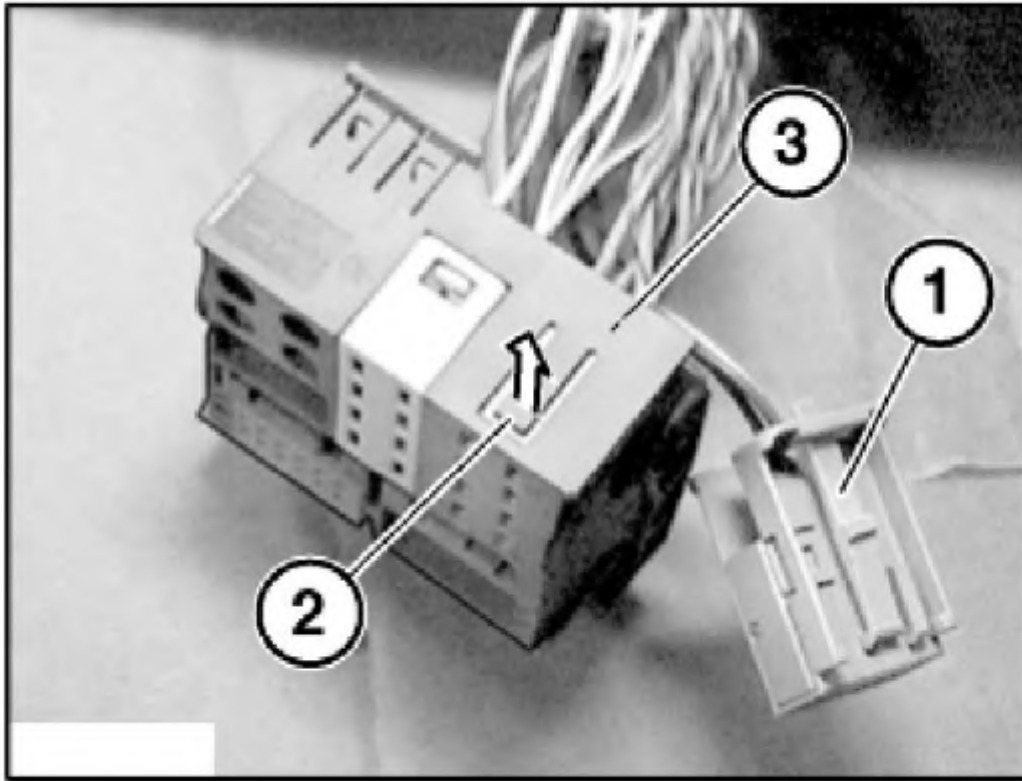
Fig. 71: Removing Wire With Socket Contact Out Of Contact Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Removing MPQ Contacts From Contact Carrier:

Remove contact carrier (1) with MQS contacts from radio plug.

Raise lock (2) on radio plug.

Pull contact carrier (3) out of radio plug.

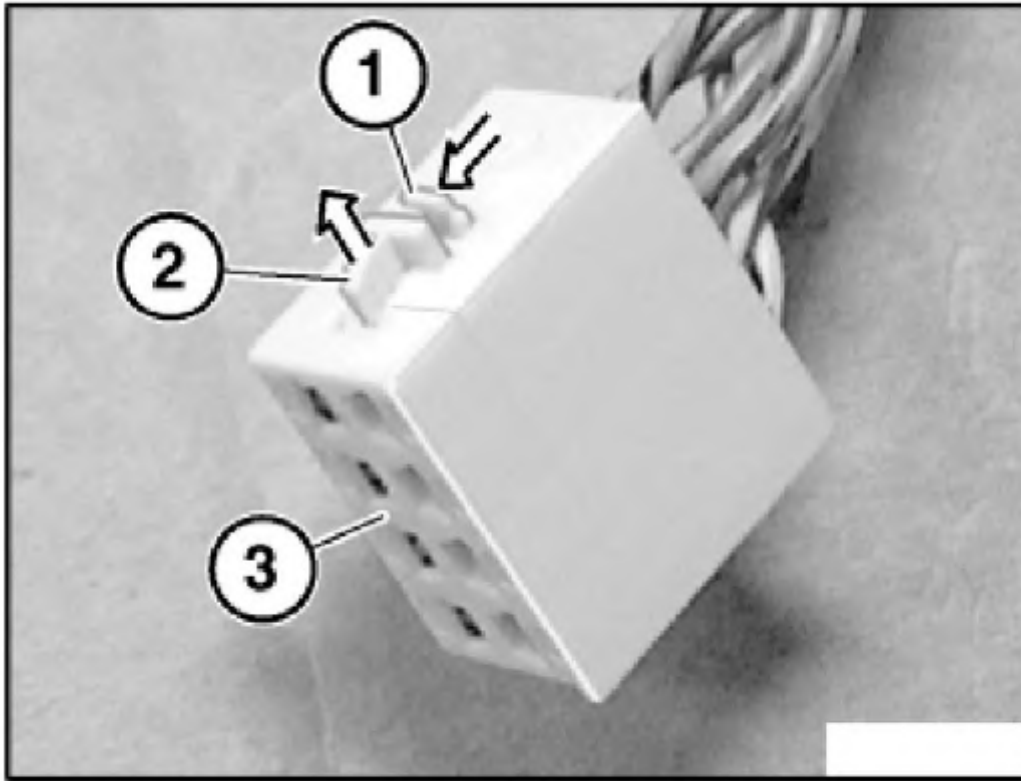


G03256516

Fig. 72: Removing MPQ Contacts From Contact Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Press lock (1) in direction of arrow.

Pull secondary lock (2) in direction of arrow completely out of contact carrier (3).

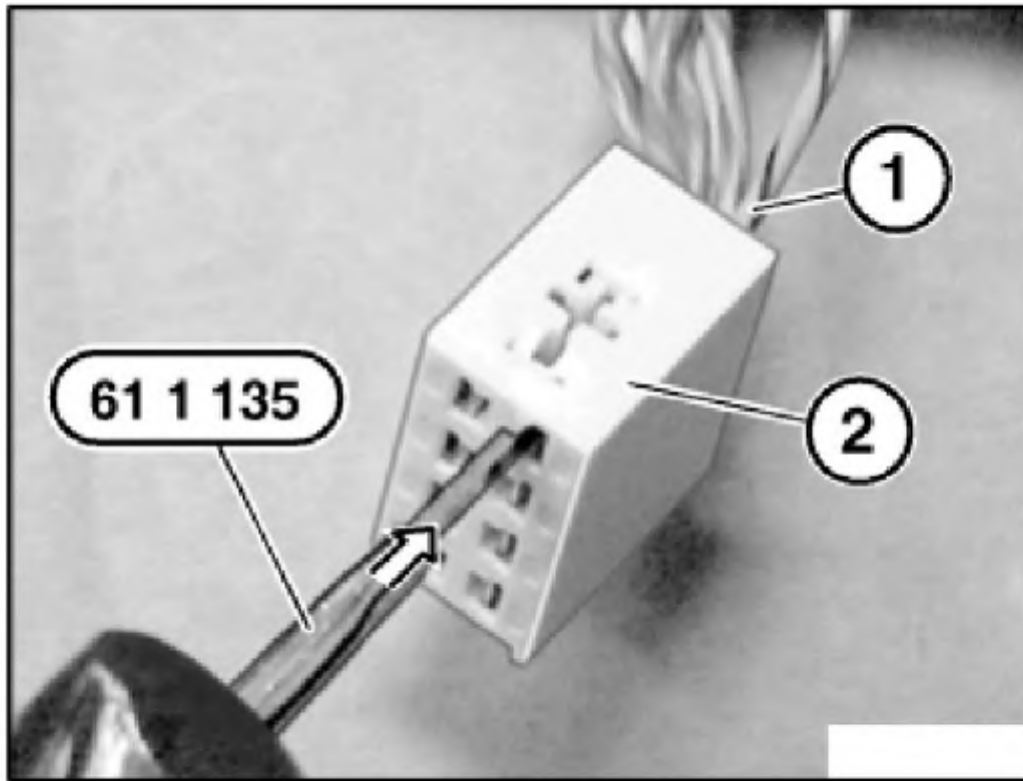


G03256517

Fig. 73: Removing Secondary Lock From Contact Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Press special tool 61 1 135 on inside of contact into contact carrier (2).

Pull wire with socket contact (1) out of contact carrier (2).



G03256518

Fig. 74: Pressing Special Tool On Inside Of Contact Into Contact Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

BATTERY

12 00 ... INSTRUCTIONS FOR DISCONNECTING AND CONNECTING BATTERY

Observe safety instructions for handling vehicle battery. Refer to **12 00 ... INSTRUCTIONS FOR DISCONNECTING AND CONNECTING BATTERY** .

12 00 ... INSTRUCTIONS ON STARTING AID

Instructions are identical to **12 00 ... INSTRUCTIONS ON STARTING AID** .

61 00 ... BATTERY

Instructions are identical to **61 00... BATTERY** .

61 00 ... BATTERY CHARGING

Instructions are identical to **61 00 ... BATTERY CHARGING** .

61 00 ... REPAIRING AIR BAG CABLES

Refer to **61 00 ... REPAIRING AIRBAG CABLES** .

61 00 ... SAFETY INSTRUCTIONS FOR HANDLING VEHICLE BATTERY

Instructions are identical to **61 00 ... SAFETY INSTRUCTIONS FOR HANDLING VEHICLE BATTERY** .

61 20 ... THRESHOLD VALUES FOR BATTERY INSPECTION OF ALL BATTERY (TELEPHONE EXCEPT FOR TELEPHONE BATTERY)

Safety instructions for handling vehicle battery, refer to **61 00 ... SAFETY INSTRUCTIONS FOR HANDLING VEHICLE BATTERY** .

Test Step 1 - Before Charging The Battery:**CHARGING BATTERY SPECIFICATION**

Charge state ¹⁾	Starting capability ²⁾	Test result
Not testable		Charge
Less than 50 % ²⁾		Charge
More than 50 %	Less than 75 %	Charge
More than 50 %	More than 75 % ³⁾	Charge
More than 80 %	More than 75 %	O.K.

Test Step 2 - After Charging The Battery**CHARGING BATTERY SPECIFICATION**

Charge condition ¹⁾	Starting capability ²⁾	Test result
Not testable		Defective
Less than 50 %	Less than 75 %	Charge
More than 50 %	more than 75 %	Charge

1) Charge condition and starting power must always be evaluated together.

2) When test charging for more than 5 hours, use charger Gossen CG 32 or Siemens/Gossen VB 801.

3) Fully charge until charge state is more than 80 %.

NOTE: If battery was checked on the positive terminal in the engine compartment, repeat check directly on battery for sake of safety.

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61 20 ... BATTERY OPEN-CIRCUIT CURRENT TEST

NOTE: Observe safety instructions for handling vehicle battery, refer to **61 00 ... SAFETY INSTRUCTIONS FOR HANDLING VEHICLE BATTERY** . Observe Service Information Adapter for open-circuit current measurement.

The open-circuit current test is performed using the Diagnosis and Information System (DIS).



G03256519

Fig. 75: Identifying Diagnosis And Information System (DIS)
Courtesy of BMW OF NORTH AMERICA, INC.

SWITCH

61 31 005 REMOVING AND INSTALLING/REPLACING FIXTURE FOR STEERING COLUMN STALK

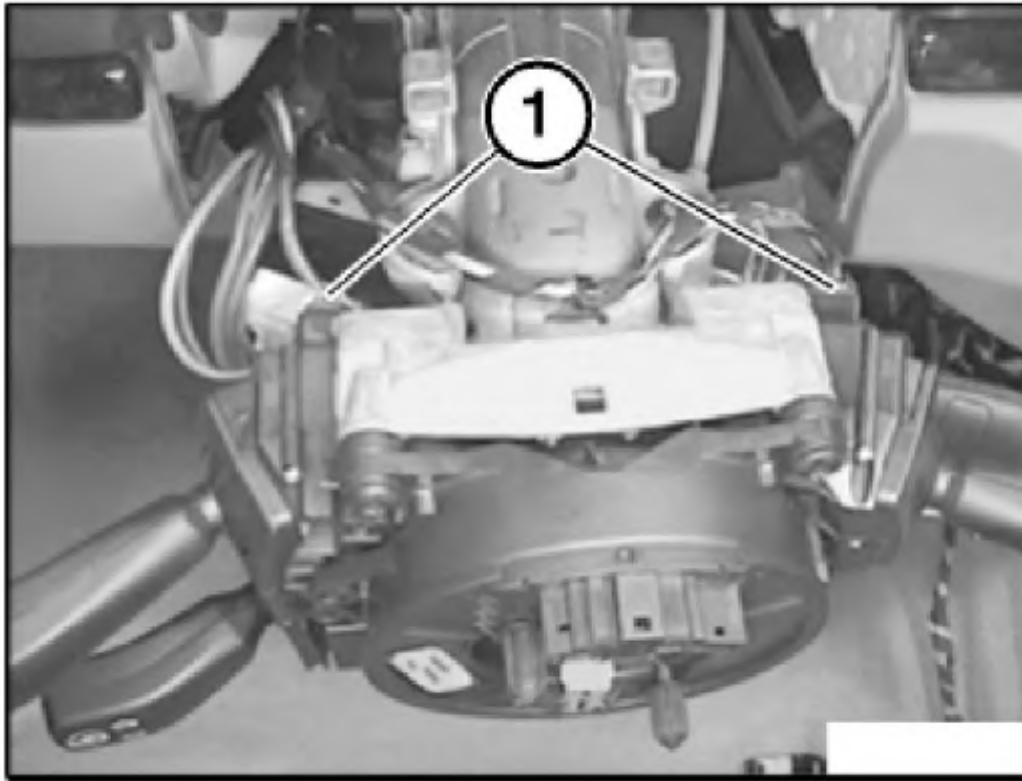
WARNING: Move wheels into straight-ahead position and do not alter this position during the repair work.

With steering wheel removed, do not under any circumstances turn/twist fixture for steering column stalk!

Necessary Preliminary Tasks:

- Remove steering wheel. Refer to **STEERING WHEEL** for year model 2001, or **STEERING WHEEL** for year model 2002 or **STEERING WHEEL** for year model 2003.
- Remove lower section of steering column trim. Refer to **STEERING COLUMN TRIM (LOWER SECTION)** .
- Remove top section of steering column casing. Refer to **STEERING COLUMN TRIM (UPPER SECTION)** .

Unlock and disconnect plug connections (1) on turn indicator/headlight dipping stalk and on windscreen wiper stalk.

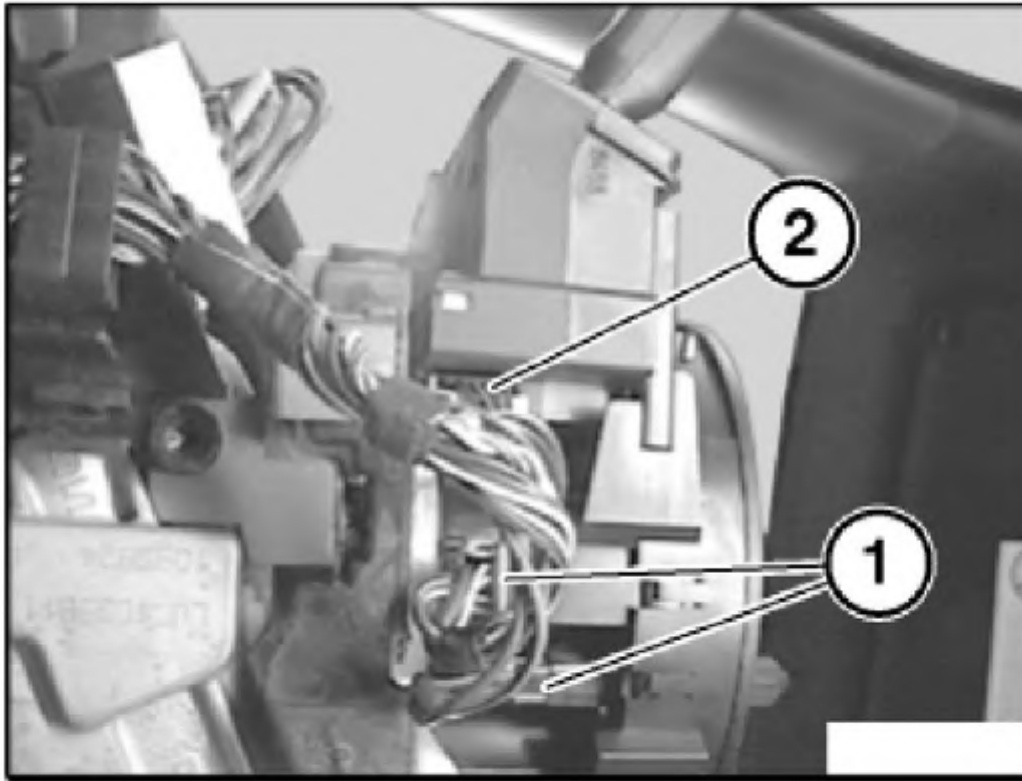


G03256520

Fig. 76: Disconnecting Plug Connections On Turn Indicator/Headlight Dipping Stalk
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug connections (1) on fixture for steering column stalk.

If necessary, unlock and disconnect plug connection (2) on steering column adjustment stalk.

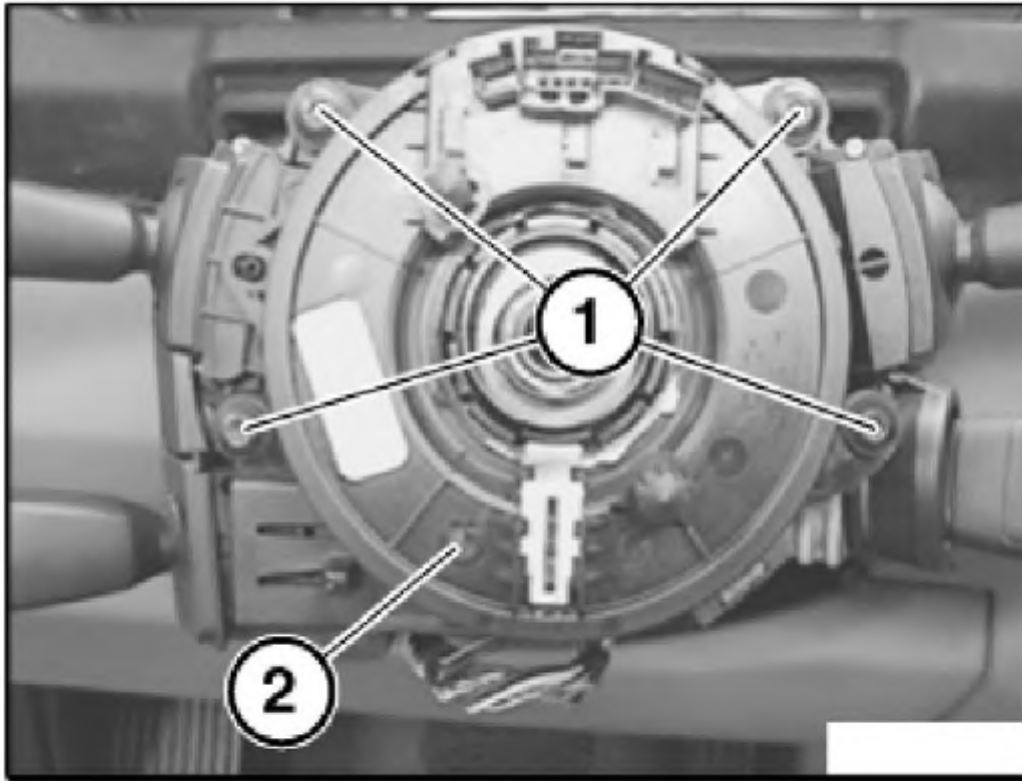


G03256521

Fig. 77: Disconnecting Plug Connection On Steering Column Adjustment Stalk
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

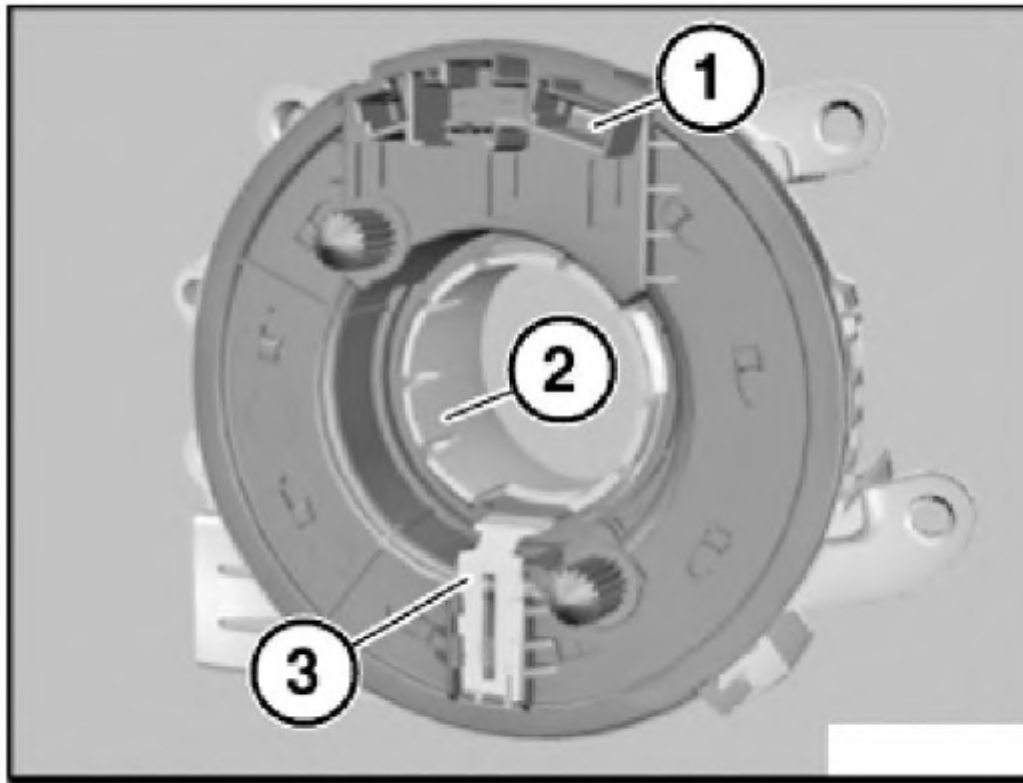
Remove fixture for steering column stalk (2).



G03256522

Fig. 78: Releasing Fixture For Steering Column Stalk
Courtesy of BMW OF NORTH AMERICA, INC.

WARNING: When removed, the cover (1) of the fixture for the steering column stalk (2) is secured against turning/twisting by the lock (3). Do not under any circumstances twist the cover (1) out of its centered position against the fixture for the steering column stalk (2).



G03256523

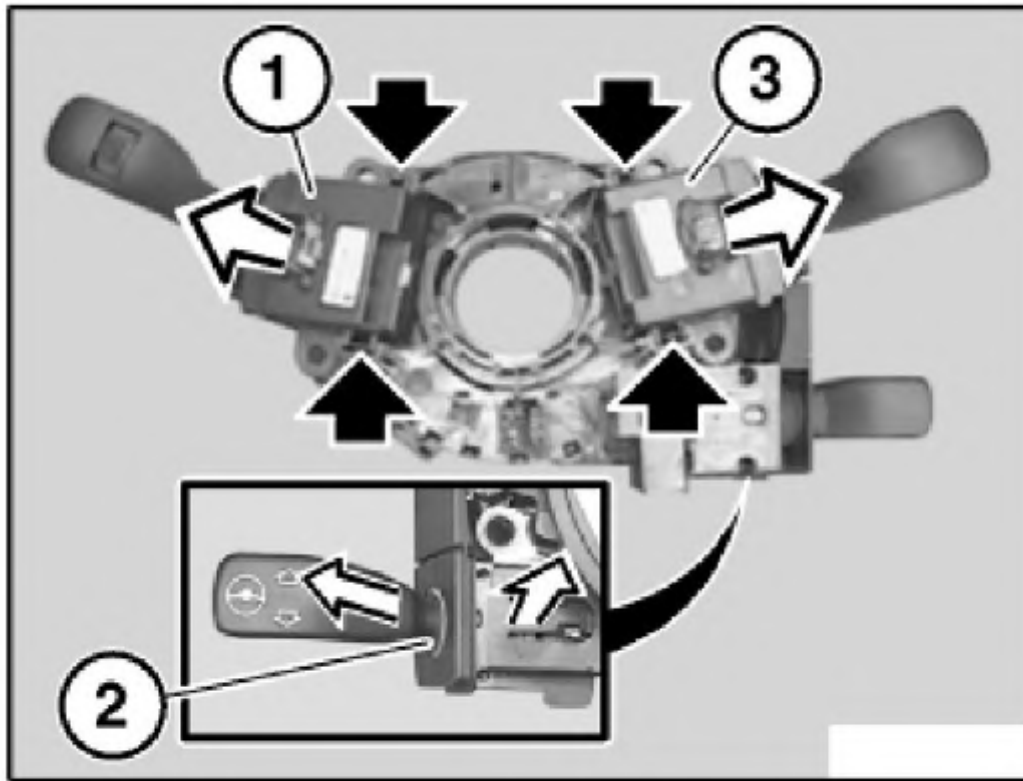
Fig. 79: Identifying Steering Column Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock clips and pull out stalk for windscreen wipers (1).

NOTE: If necessary, remove steering column adjustment stalk (2).

Raise lock in direction of arrow and pull out stalk for steering column adjustment (2) in direction of arrow.

Unlock clips and pull out turn indicator/dimmer stalk (3) towards top.



G03256524

Fig. 80: Unlocking Clips And Pulling Out Stalk For Windscreen Wipers
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 016 REMOVING AND INSTALLING/REPLACING TURN INDICATOR/DIMMER STALK

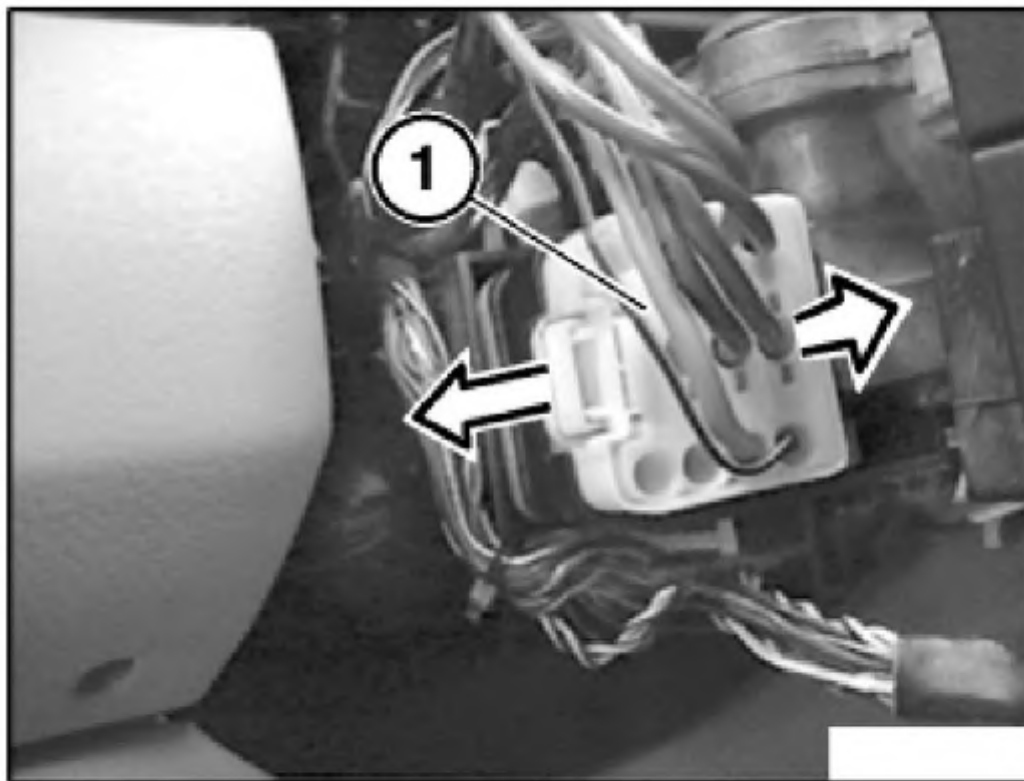
Remove fixture for steering column stalk. Refer to **STEERING COLUMN** .

61 31 020 REMOVING AND INSTALLING IGNITION SWITCH

Remove upper section of steering column trim. Refer to **STEERING COLUMN TRIM (UPPER SECTION)** .

Remove lower section of steering column trim. Refer to **STEERING COLUMN TRIM (LOWER SECTION)** .

Unlock plug connection (1) and disconnect.

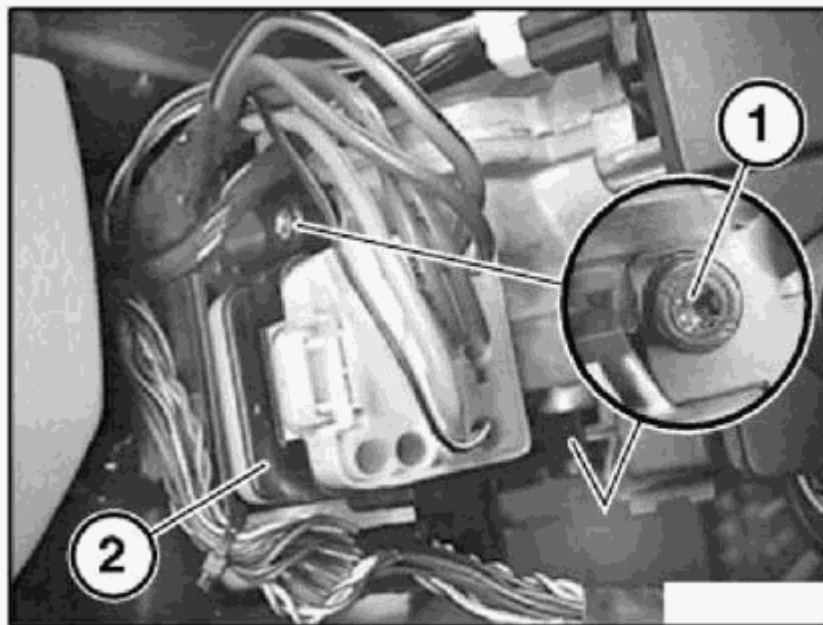


G03256525

Fig. 81: Disconnecting Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (1).

Move fixture (2) for wiring harness slightly.



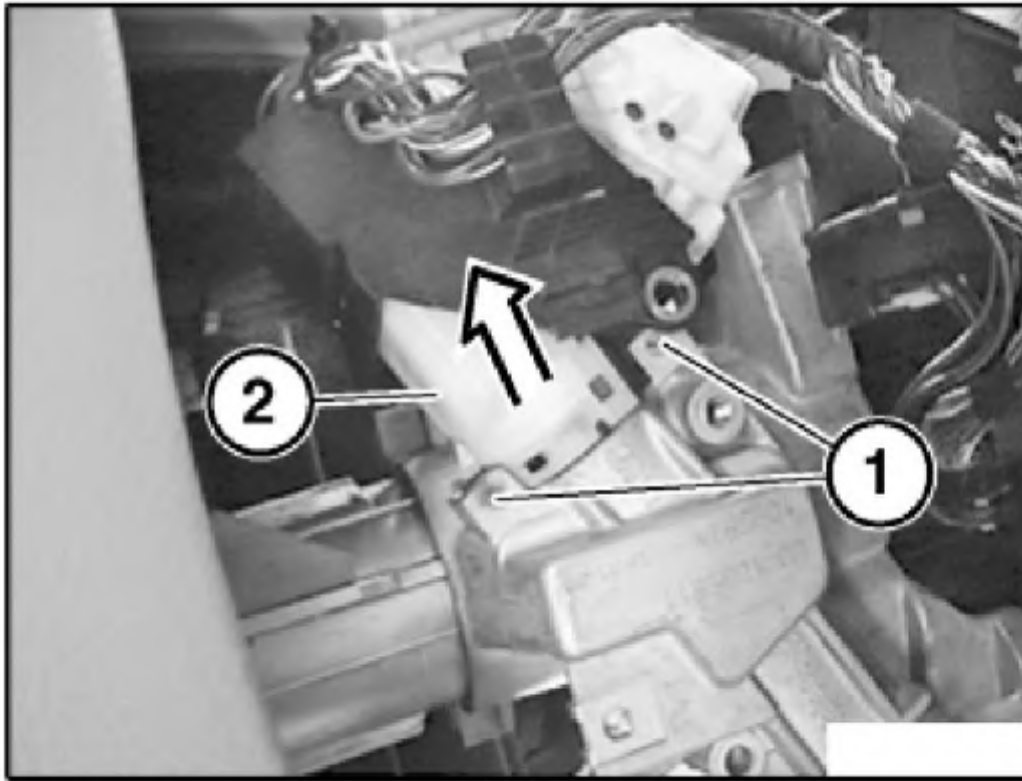
G03256526

Fig. 82: Loosening Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Remove sealing varnish and release headless setscrews (1).

Detach ignition switch (2) in direction of arrow.



G03256527

Fig. 83: Removing Sealing Varnish And Releasing Headless Setscrews
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Secure headless setscrews with sealing varnish.

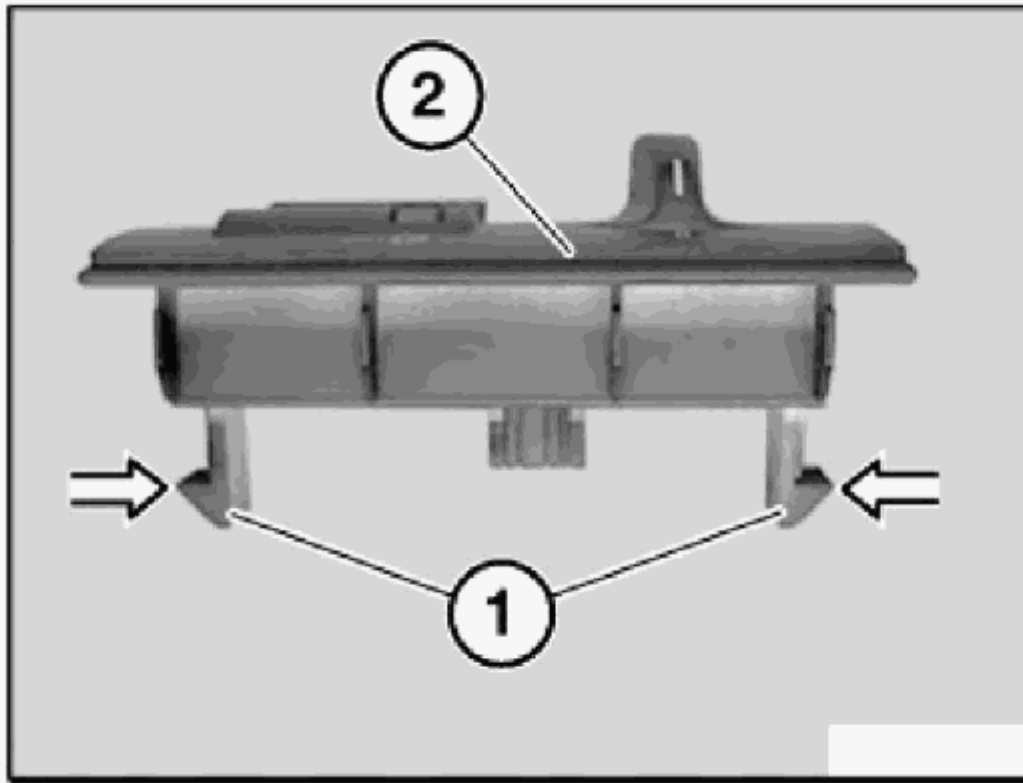
61 31 033 REMOVING AND INSTALLING LIGHT SWITCH UNIT

Remove left fresh-air grill. Refer to **64 22 135 REMOVING AND INSTALLING/REPLACING LEFT FRESH-AIR GRILL** .

NOTE: For purposes of clarity, illustration shows component removed.

Press retaining hook (1) in direction of arrow and remove switch unit (2).

Disconnect plug.



G03256528

Fig. 84: Removing And Installing Light Switch Unit
Courtesy of BMW OF NORTH AMERICA, INC.

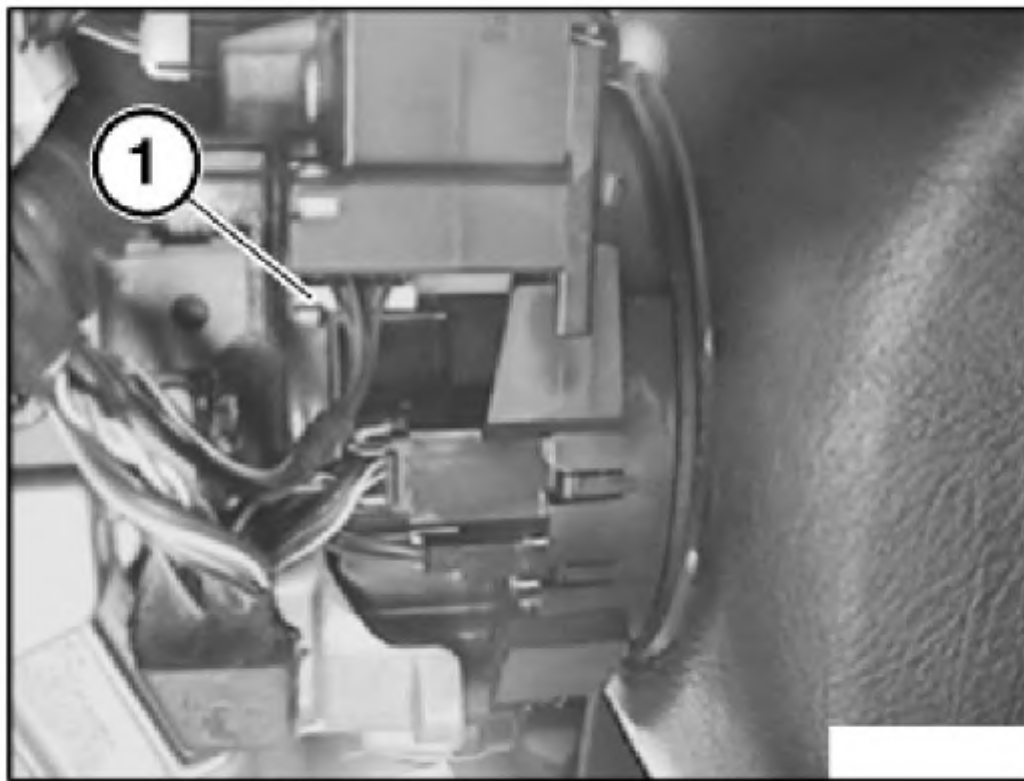
61 31 034 REPLACING LIGHT SWITCH UNIT

Remove and install light switch unit. Refer to **61 31 033 REMOVING AND INSTALLING LIGHT SWITCH UNIT** .

61 31 035 REMOVING AND INSTALLING/REPLACING STALK FOR STEERING COLUMN ADJUSTMENT

Remove lower section of steering column trim. Refer to **STEERING COLUMN TRIM (LOWER SECTION)** .

Disconnect plug connection (1).

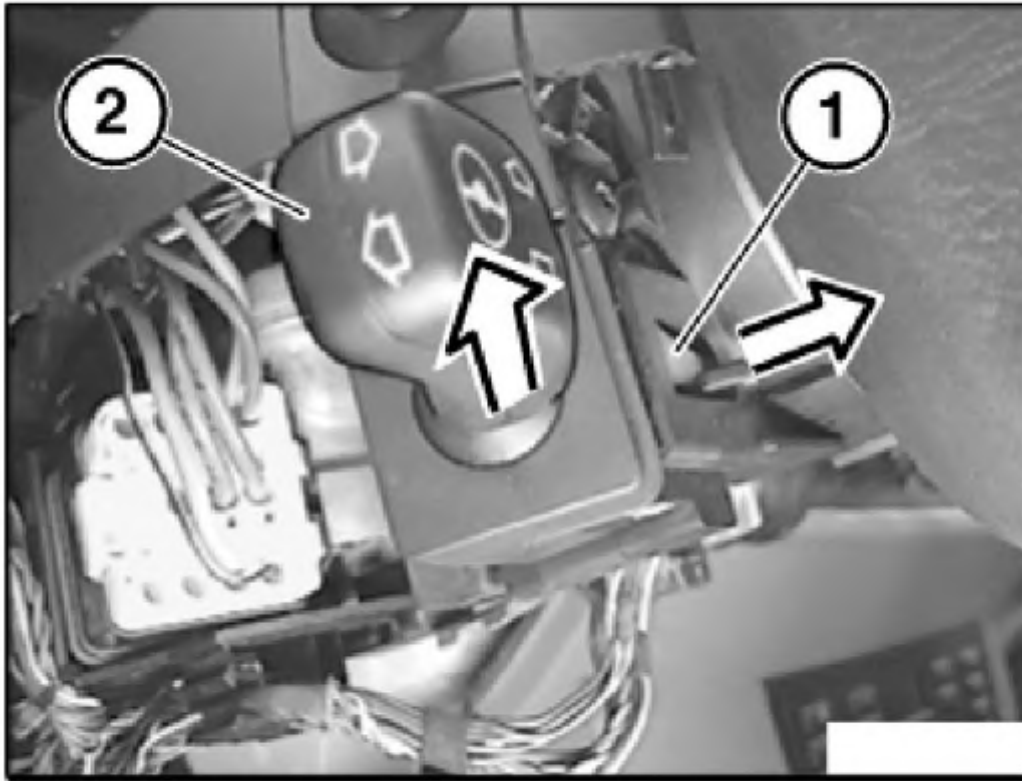


G03256529

Fig. 85: Disconnecting Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Raise lock (1) in direction of arrow and pull out stalk for steering column adjustment (2) in direction of arrow.



G03256530

Fig. 86: Removing Stalk For Steering Column Adjustment

Courtesy of BMW OF NORTH AMERICA, INC.

61 31 040 REMOVING AND INSTALLING/REPLACING STALK FOR WINDSHIELD WIPERS

Remove fixture for steering column stalk. Refer to **61 31 005 REMOVING AND INSTALLING/REPLACING FIXTURE FOR STEERING COLUMN STALK** .

61 31 057 REMOVING AND INSTALLING SWITCH UNIT IN CENTER CONSOLE

Remove heating controls. Refer to **64 11 749 REMOVING AND INSTALLING HEATER CONTROL (AUTOMATIC AIR CONDITIONING)** .

Press out switch unit (1) through opening for heating controls.

Disconnect plug.



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Fig. 87: Removing Switch Unit

Courtesy of BMW OF NORTH AMERICA, INC.

61 31 058 REPLACING SWITCH UNIT IN CENTER CONSOLE

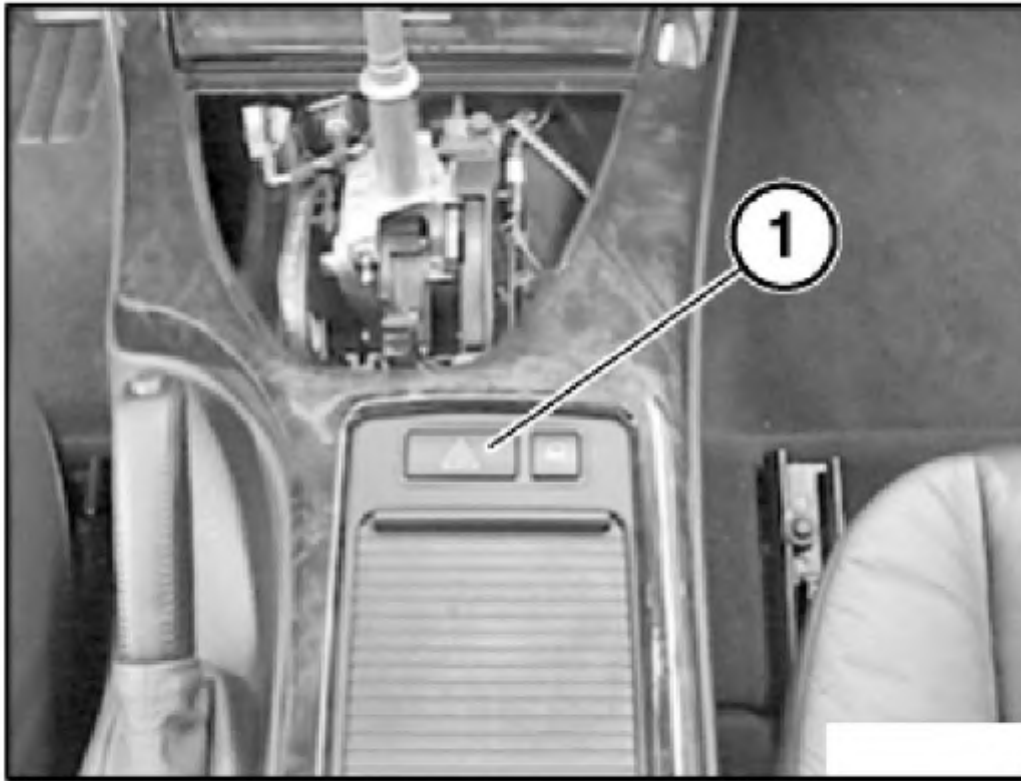
Remove switch unit from center console. Refer to **61 31 057 REMOVING AND INSTALLING SWITCH UNIT IN CENTER CONSOLE** .

61 31 079 REMOVING AND INSTALLING/REPLACING SWITCH FOR HAZARD WARNING FLASHERS/CENTRAL LOCKING

Remove finisher for preselector lever. Refer to **51 16 210 REMOVING AND INSTALLING/REPLACING TRIM FOR PRESELECTOR KNOB** .

Press out switch for hazard warning flashers/central locking (1) through opening for preselector lever finisher.

Disconnect plug.



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Fig. 88: Removing Switch For Hazard Warning Flashers/Central Locking
Courtesy of BMW OF NORTH AMERICA, INC.

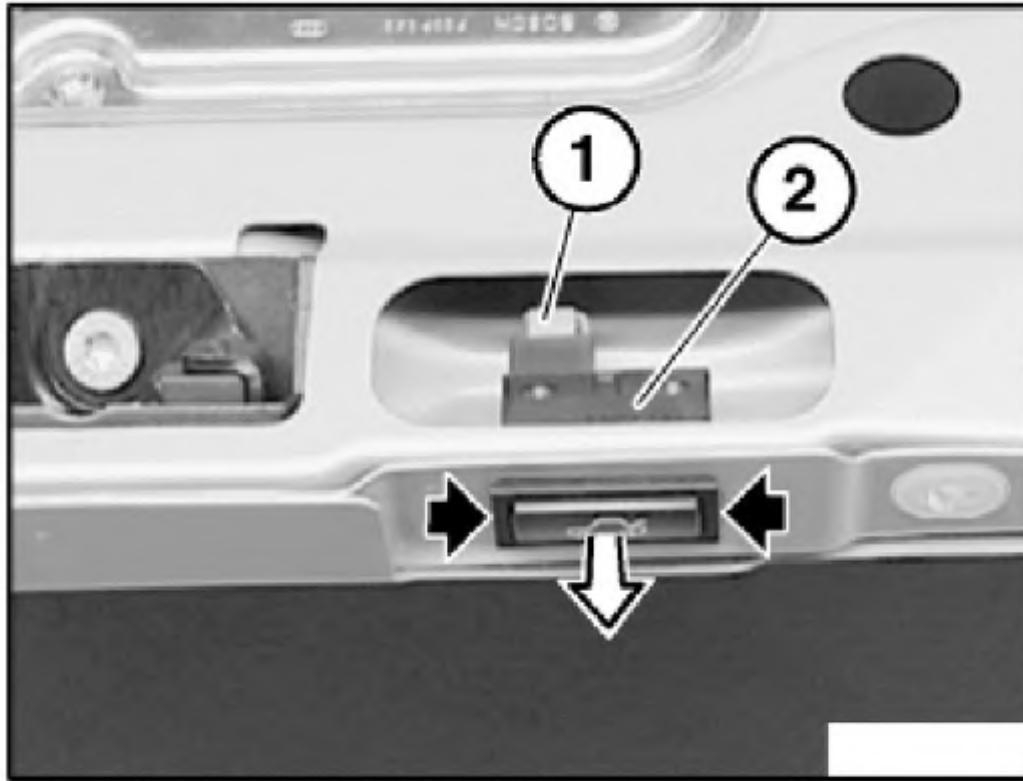
61 31 083 REMOVING AND INSTALLING/REPLACING SWITCH FOR UNLOCKING REAR LID

NOTE: For purposes of clarity, pictures show "panel for rear lid lower section" removed.

Remove cover for loading sill. Refer to **51 49 080 REMOVING AND INSTALLING/REPLACING COVER FOR LOADING SILL (ON REAR LID LOWER SECTION)** .

Grip sides of switch (2) and pull out.

Disconnect plug connection (1) and remove switch (2).



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Fig. 89: Removing Switch For Unlocking Rear Lid

Courtesy of BMW OF NORTH AMERICA, INC.

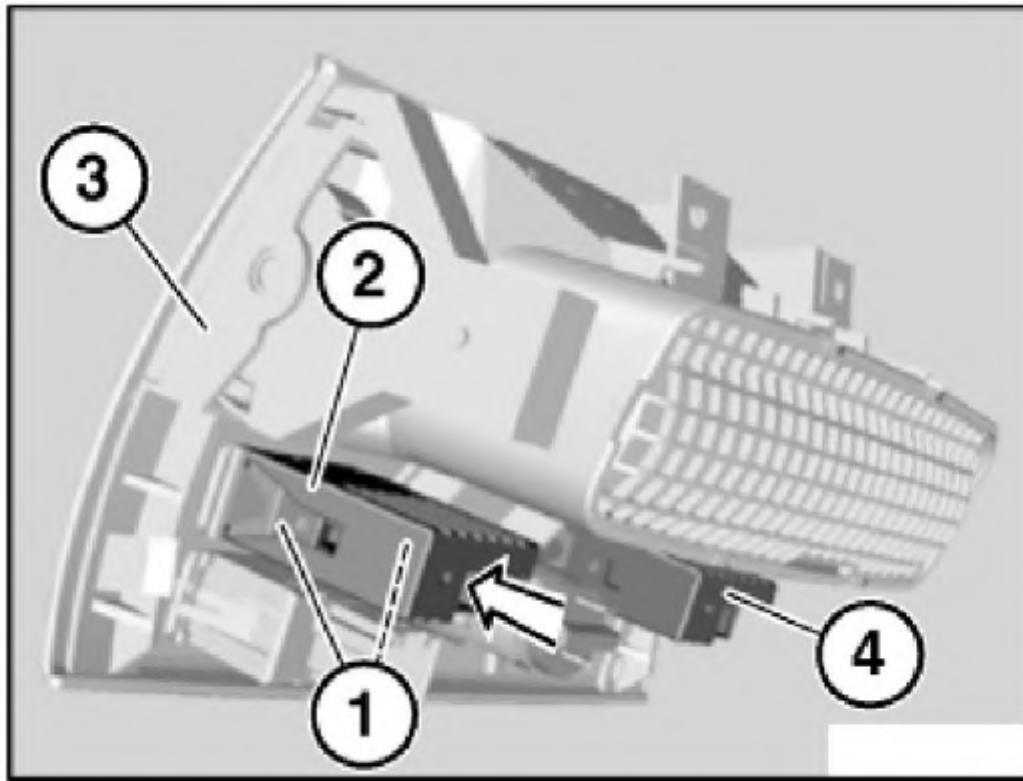
61 31 091 REMOVING AND INSTALLING/REPLACING SWITCH FOR LEFT OR RIGHT SEAT HEATING (REAR)**Necessary Preliminary Tasks:**

- Remove rear compartment fresh air grill. Refer to **64 22 190 REMOVING AND INSTALLING/REPLACING FRESH-AIR GRILL IN REAR OF CAR** .

NOTE: Removal of switch for right seat heating (2) is depicted.

Switch for left seat heating (4) is removed in the same way as switch for right seat heating (2).

Press locks (1) together, feed switch for right seat heating (2) out of rear compartment fresh-air grill (3) and remove.



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Fig. 90: Removing Switch For Left/Right Seat Heating (Rear)

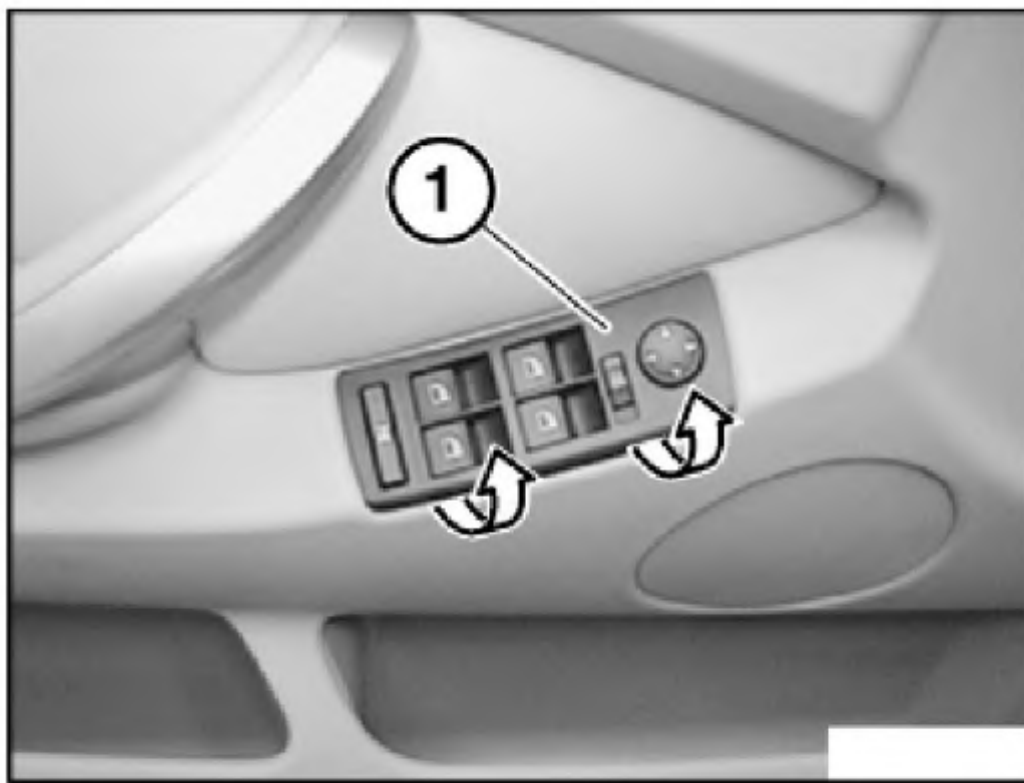
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 115 REPLACING ROCKER SWITCH FOR SIDE WINDOW OPERATION (DOOR SWITCH CENTER)

Front Door:

Lever out door switch center (1) in direction of arrow.

Disconnect associated plug connection(s) and remove door switch center (1).



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Fig. 91: Removing Door Switch Center
Courtesy of BMW OF NORTH AMERICA, INC.

Rear Door:

Lever out rocker switch for side window operation (1) in direction of arrow.

Disconnect associated plug connection and remove rocker switch for side window operation (1).



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Fig. 92: Removing Rocker Switch For Side Window Operation
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 175 REMOVING AND INSTALLING/REPLACING SWITCH FOR SLIDE/TILT SUNROOF

Remove front ceiling light. Refer to **63 31 000 REMOVING AND INSTALLING/REPLACING COMPLETE CEILING LIGHT** .

Press out switch for sunroof (1) from inside.

Disconnect plug connection.

NOTE: **Initialize sunroof.**

(2) = Remote control for garage door opening.

(3) = Hands-free microphone.



G03256537

Fig. 93: Removing Switch For Slide/Tilt Sunroof
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 204 REPLACING SWITCH COMBINATION FOR SEAT ADJUSTMENT

Remove outer cover on front seat. Refer to 52 14 040 REMOVING AND INSTALLING/REPLACING OUTER COVER ON FRONT LEFT OR RIGHT SEAT (NORMAL/ELECTRIC) or 52 16 040 REMOVING AND INSTALLING/REPLACING OUTER COVER ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC) .

Installation:

Code control unit.

61 31 208 REMOVING AND INSTALLING/REPLACING SWITCH FOR FRONT LUMBAR SUPPORT

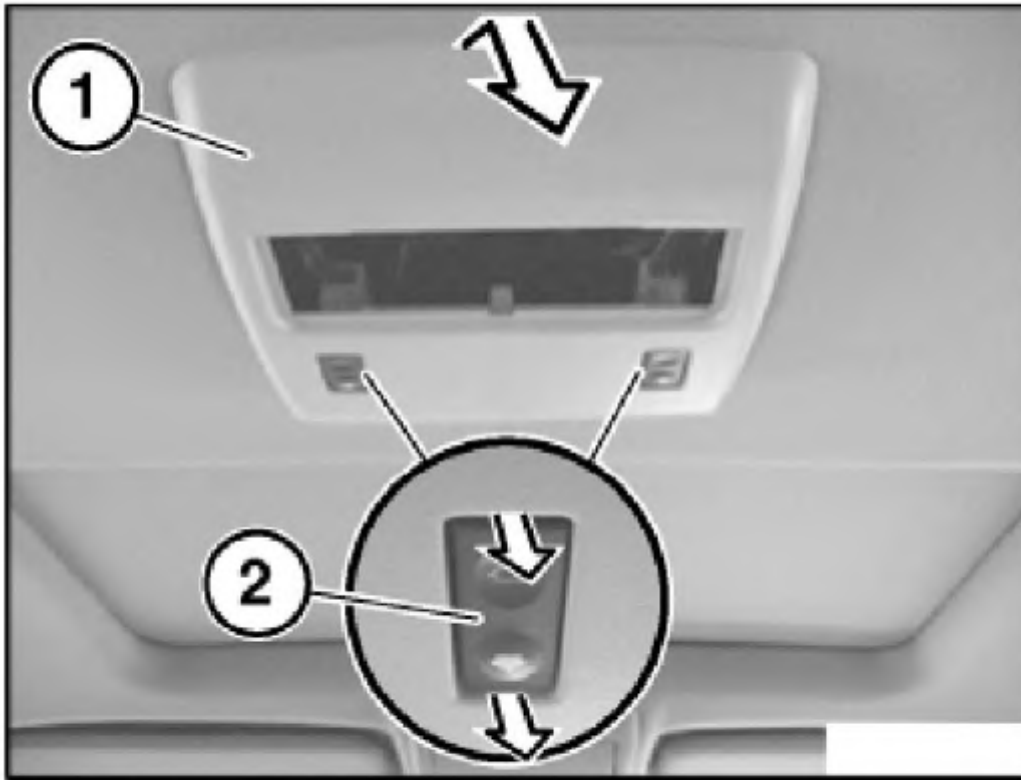
This operation is described in: 52 13 040 REMOVING AND INSTALLING / REPLACING OUTER

COVER ON LEFT OR RIGHT FRONT SEAT BACK-REST (NORMAL / MANUAL) or 52 16 040 REMOVING AND INSTALLING/REPLACING OUTER COVER ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC) .

61 31 219 REMOVING AND INSTALLING/REPLACING SWITCH FOR REAR SEAT BACKREST ADJUSTMENT

Remove rear ceiling light. Refer to **63 31 000 REMOVING AND INSTALLING/REPLACING COMPLETE CEILING LIGHT** .

Lever out trim (1) at rear in direction of arrow.



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Fig. 94: Removing Trim For Rear Seat Backrest Adjustment Switch
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure trim (1) is correctly installed and engaged.

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Unlock and disconnect plug connections underneath and remove trim (1).

Press out switch for rear seat backrest adjustment (2) in direction of arrow and remove.

Installation:

Make sure switch for rear seat backrest adjustment (2) is correctly installed and engaged.

61 31 224 REPLACING SWITCH ON IMPACT CUSHION FOR LEFT OR RIGHT AIRBAG

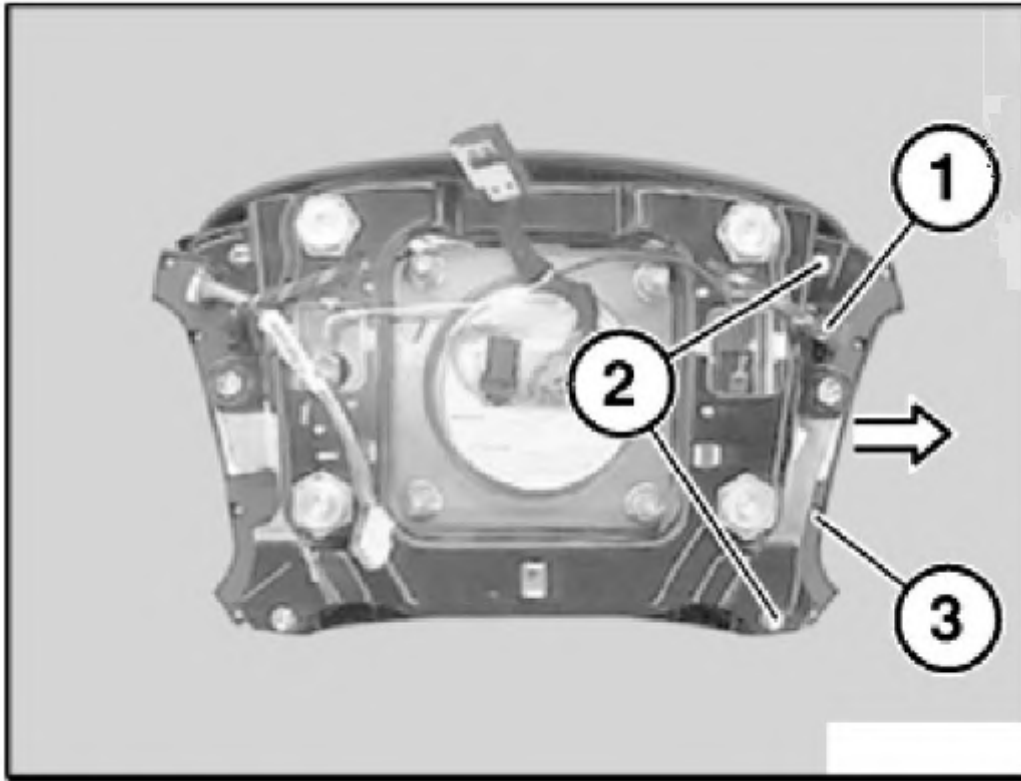
Remove airbag unit from steering wheel, refer to **STEERING WHEEL** for year model 2001, or **STEERING WHEEL** for year model 2002 or **STEERING WHEEL** for year model 2003.

Illustration Shows Removal Of Switch On Impact Cushion For Airbag On Left:

Disconnect plug connection (1).

Loosen screws (2).

Remove switch on impact cushion for airbag (3) in direction of arrow.



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Fig. 95: Removing Switch On Impact Cushion
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 228 REPLACING SWITCH ON SPORT STEERING WHEEL (WITH CONNECTED AIRBAG UNIT)

Necessary Preliminary Tasks:

- Remove airbag unit, refer to **STEERING WHEEL** for year model 2001, or **STEERING WHEEL** for year model 2002 or **STEERING WHEEL** for year model 2003.

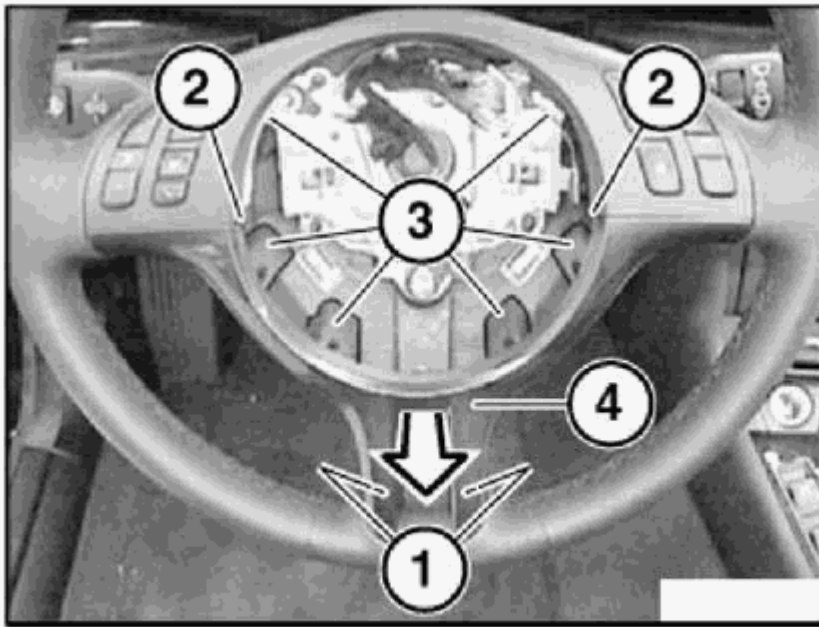
NOTE: There 2 screw variants:

- Self-tapping screws.
- Screws with insert nuts (secure against falling out).

Release screws (1) and (2).

Unclip complete trim (4) in direction of arrow from fixtures (3).

Disconnect plug connection underneath.

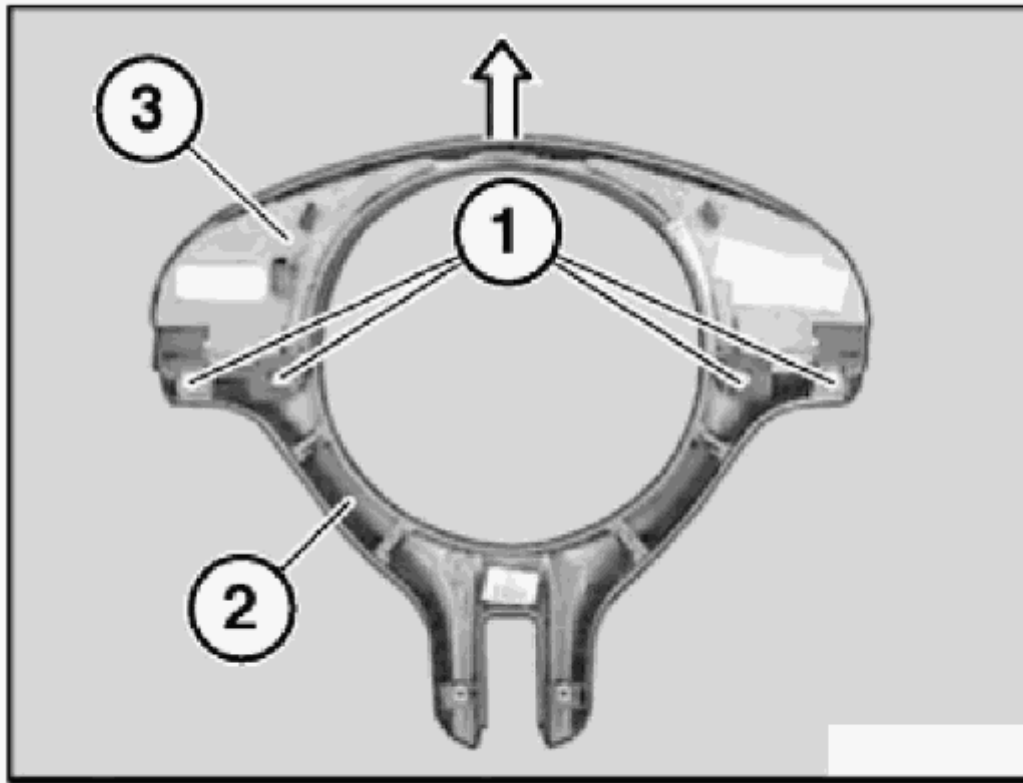


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Fig. 96: Removing Trim From Steering Wheel
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Detach switch on sport steering wheel (3) in direction of arrow from trim (2).



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Fig. 97: Detaching Switch On Sport Steering Wheel

Courtesy of BMW OF NORTH AMERICA, INC.

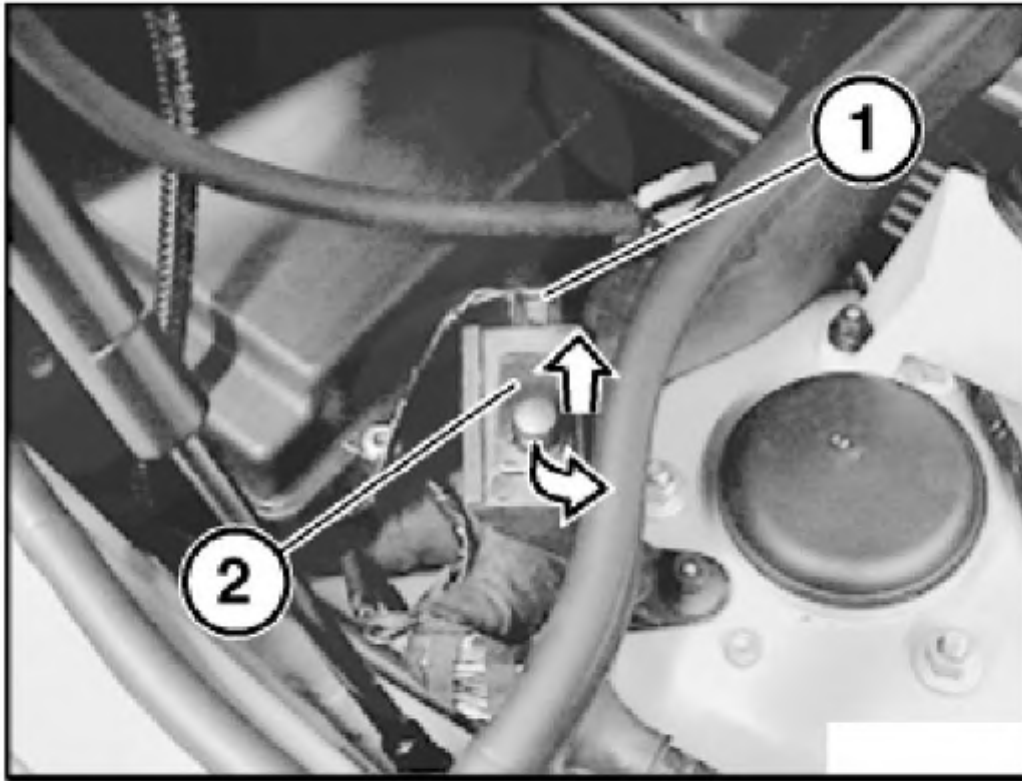
Installation:

Ensure gap dimension is uniform between trim (2) and switch on sport steering wheel (3).

61 31 241 REMOVING AND INSTALLING/REPLACING ENGINE HOOD CONTACT SWITCH

Disconnect plug connection (1).

Move engine hood contact switch (2) in direction of arrow and pull out.



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Fig. 98: Removing Engine Hood Contact Switch
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 255 REPLACING SWITCH FOR OUTSIDE MIRROR

This operation is described in: **61 31 115 REPLACING ROCKER SWITCH FOR SIDE WINDOW OPERATION (DOOR SWITCH CENTER)** .

61 31 273 REMOVING AND INSTALLING/REPLACING AIR SUSPENSION SWITCH

NOTE: For Special Tool identification, see SPECIAL TOOLS - X-5 (3.0i) .

Special Tools Required:

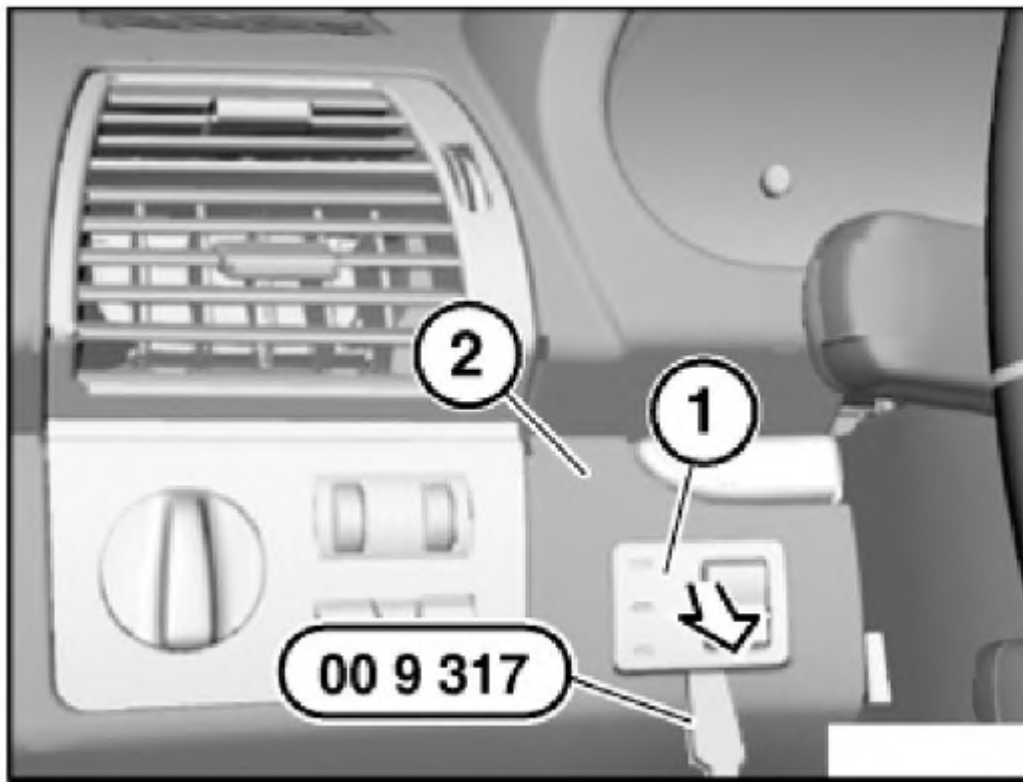
- 00 9 317

Partially fit special tool 00 9 317 as illustrated.

Lever air suspension switch (1) out of instrument panel trim (2).

Unlock associated plug connection and disconnect.

Remove air suspension switch (1).



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Fig. 99: Removing Air Suspension Switch
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 295 REPLACING CLUTCH SWITCH FOR CRUISE CONTROL SYSTEM

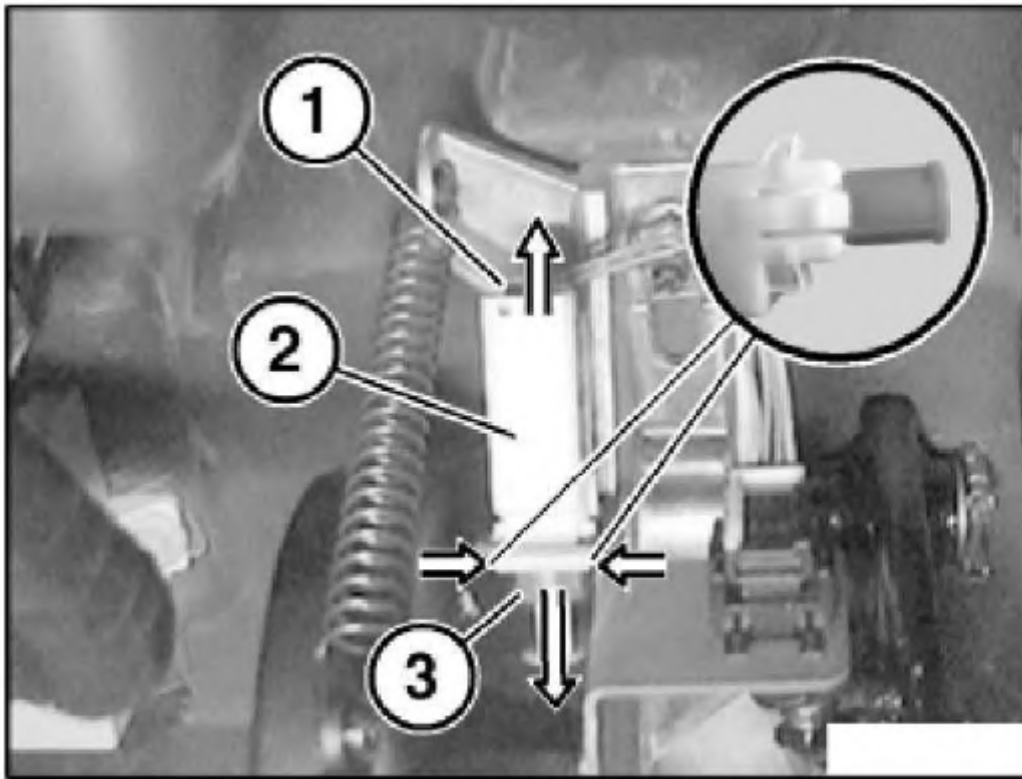
Remove trim panel for pedal assembly. Refer to **51 45 185 REMOVING AND INSTALLING/REPLACING TRIM FOR PEDAL ASSEMBLY** .

Press clutch pedal with pedal support down to flow and lock in position.

Disconnect plug connection (1).

Withdraw sleeve (3) in direction of arrow up to stop.

Press both retaining clips together at front end and pull out switch (2) in direction of arrow towards rear.



G03231905

Fig. 100: Removing Clutch Switch

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Slowly move clutch pedal to initial position.

61 31 299 REMOVING AND INSTALLING/REPLACING CLUTCH SWITCH MODULE

Necessary Preliminary Tasks:

- Remove trim panel for pedal assembly. Refer to **51 45 185 REMOVING AND INSTALLING/REPLACING TRIM FOR PEDAL ASSEMBLY** .

NOTE: Clutch master cylinder (2) is removed for purposes of clarity.

Lever out clutch switch module (1) from clutch master cylinder (2) with screwdriver.

Unlock plug (4) and disconnect from housing (3).

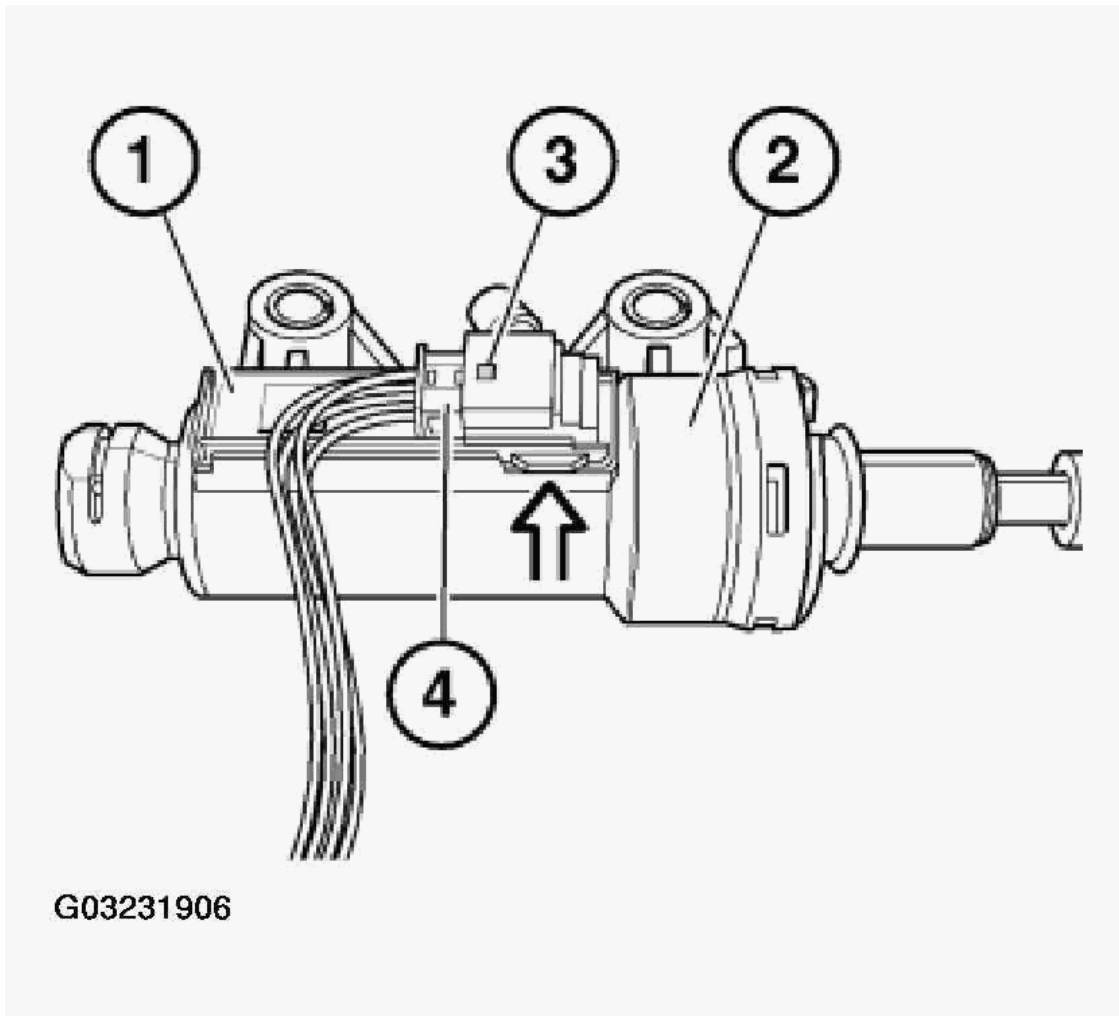


Fig. 101: Removing Clutch Switch Module
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Clutch switch module is protected against incorrect installation.

Clutch switch module must snap audibly into place.

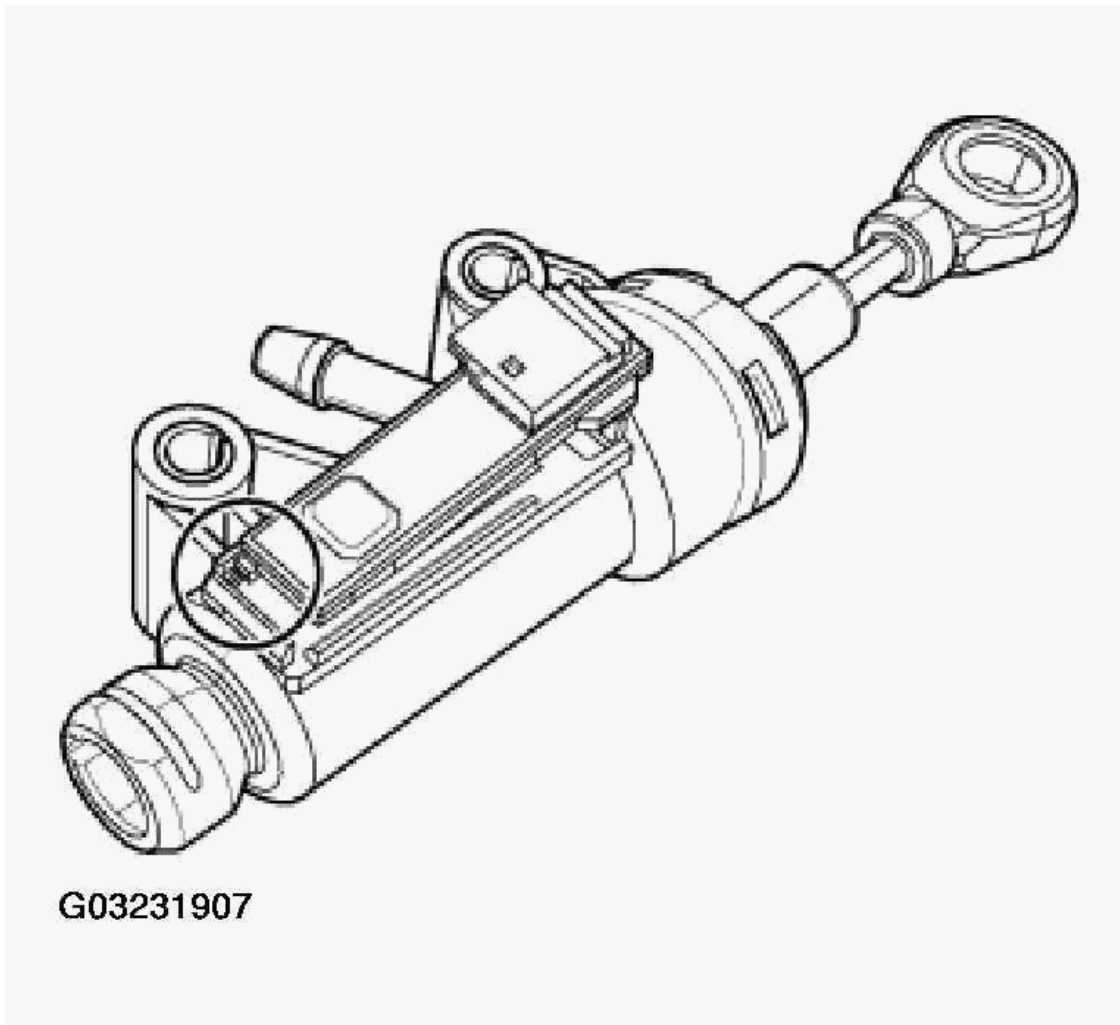


Fig. 102: Installing Clutch Switch Module
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 310 REPLACING BRAKE LIGHT SWITCH

Necessary Preliminary Tasks:

- Remove trim panel for pedal assembly. Refer to **51 45 185 REMOVING AND INSTALLING/REPLACING TRIM FOR PEDAL ASSEMBLY** .

E53:

Installation:

On all cars with DSC:

A gap of 0.7 mm must be adjusted between brake pedal and brake light switch.

If this gap fails to guarantee problem-free operation, the gap must be reduced to 0.6 mm.

Unfasten plug connection (1) and disconnect.

Pull brake light switch (2) in direction of arrow out of brake light switch holder (4).

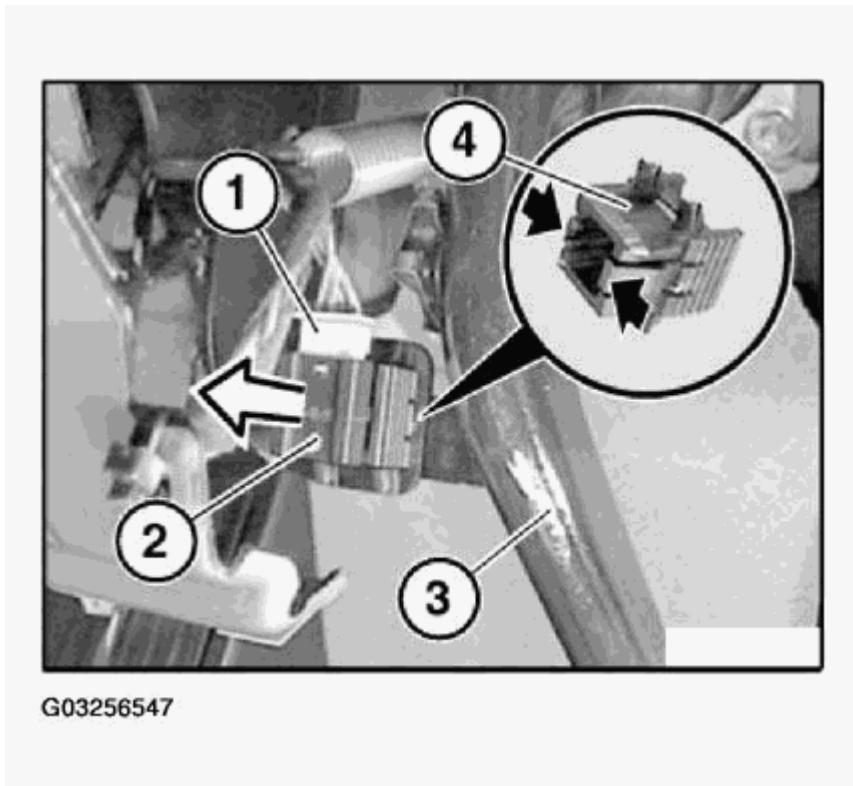


Fig. 103: Removing Brake Light Switch From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

- Press brake pedal (3) to floor.
- Slide brake light switch (2) as far as it will go into brake light switch holder (4).
- Grip brake light switch holder (4), slowly return brake pedal (3) to starting position and pull back to stop.

NOTE: Removing brake light switch holder (4):

Press brake pedal (3).

Press catches together and unclip brake light switch holder (4) from brake pedal (3).

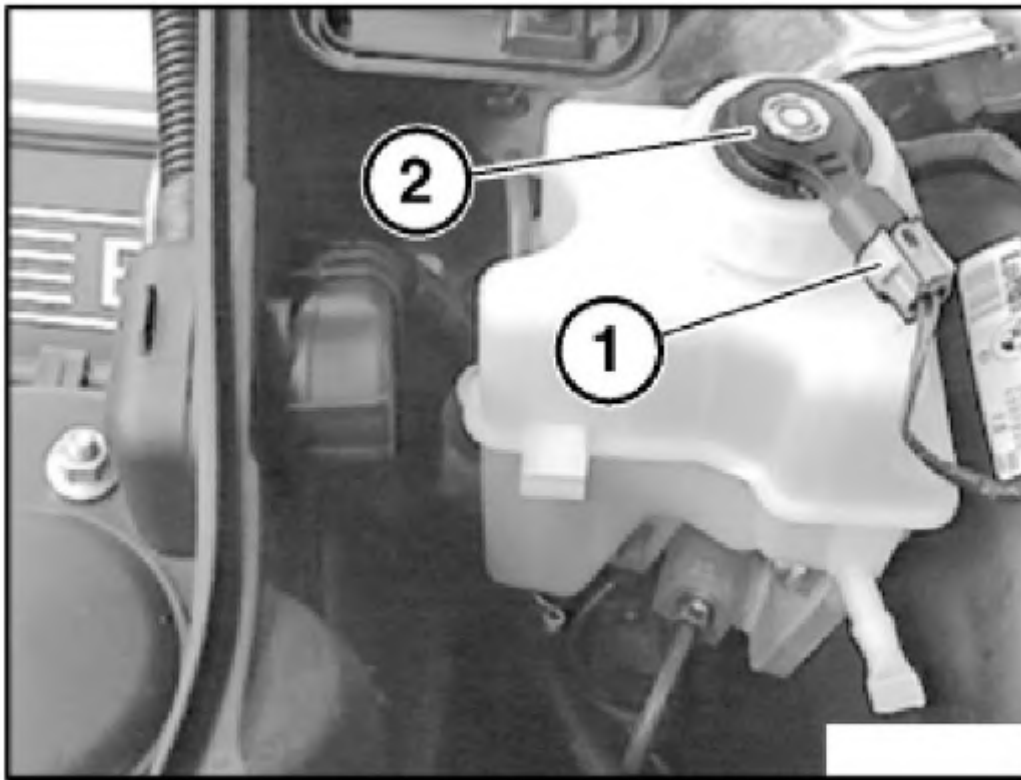
61 31 315 REPLACING LEVEL SWITCH FOR BRAKE FLUID

Remove cover. Refer to **51 71 080 REMOVING AND INSTALLING/REPLACING HEATER**

BULKHEAD .

Disconnect plug connection (1).

Release screw ring and remove level switch for brake fluid (2).



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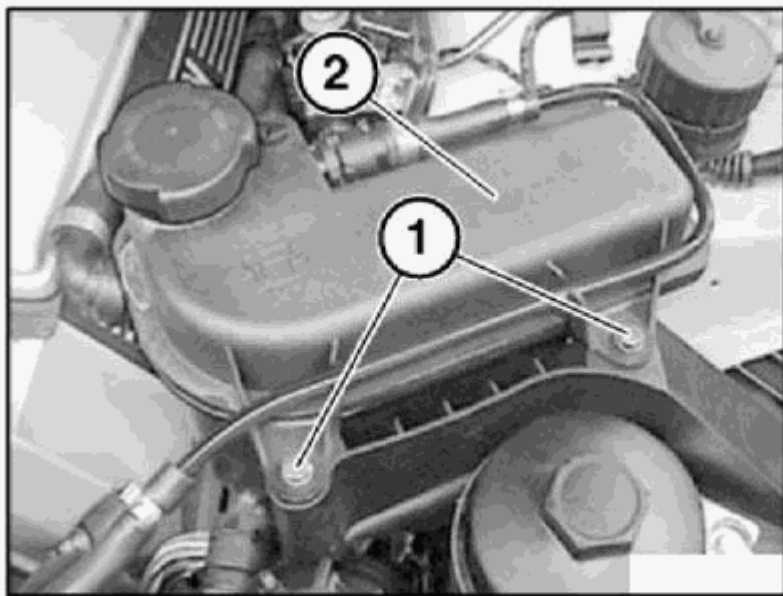
Fig. 104: Removing Level Switch For Brake Fluid
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 382 REPLACING LEVEL SWITCH FOR COOLANT

WARNING: Danger of scalding! Only perform this work after engine has cooled down.

Release screws (1).

Raise expansion tank (2) slightly.



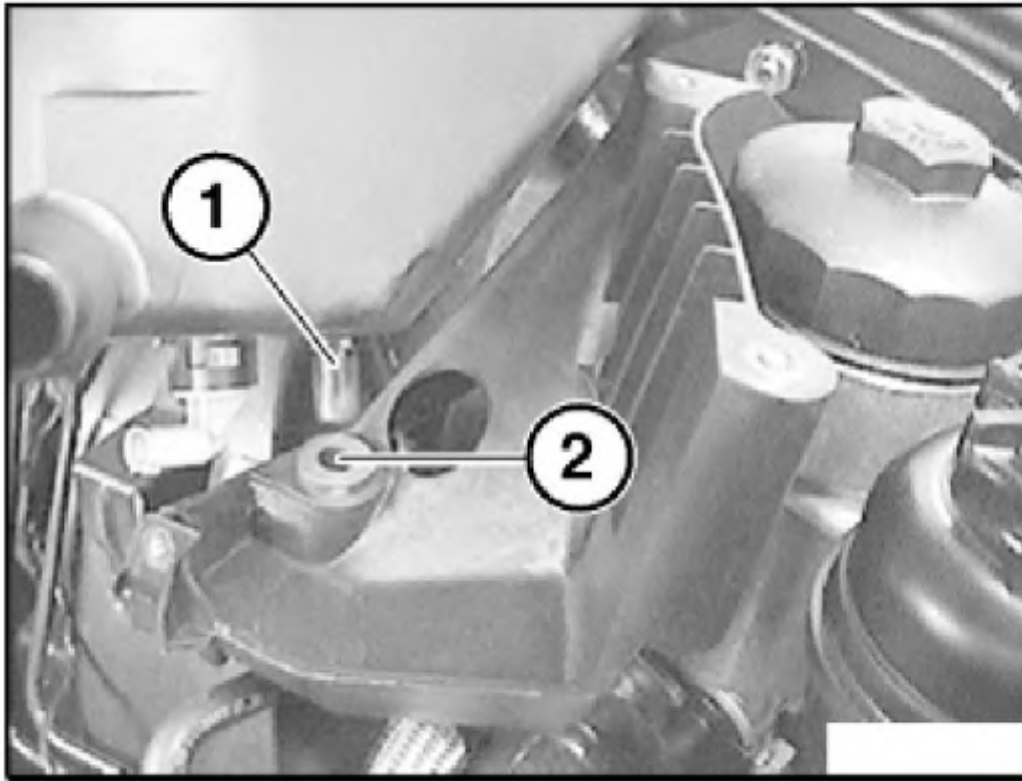
G03256549

Fig. 105: Releasing Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert locating pin (1) into locating bore (2).



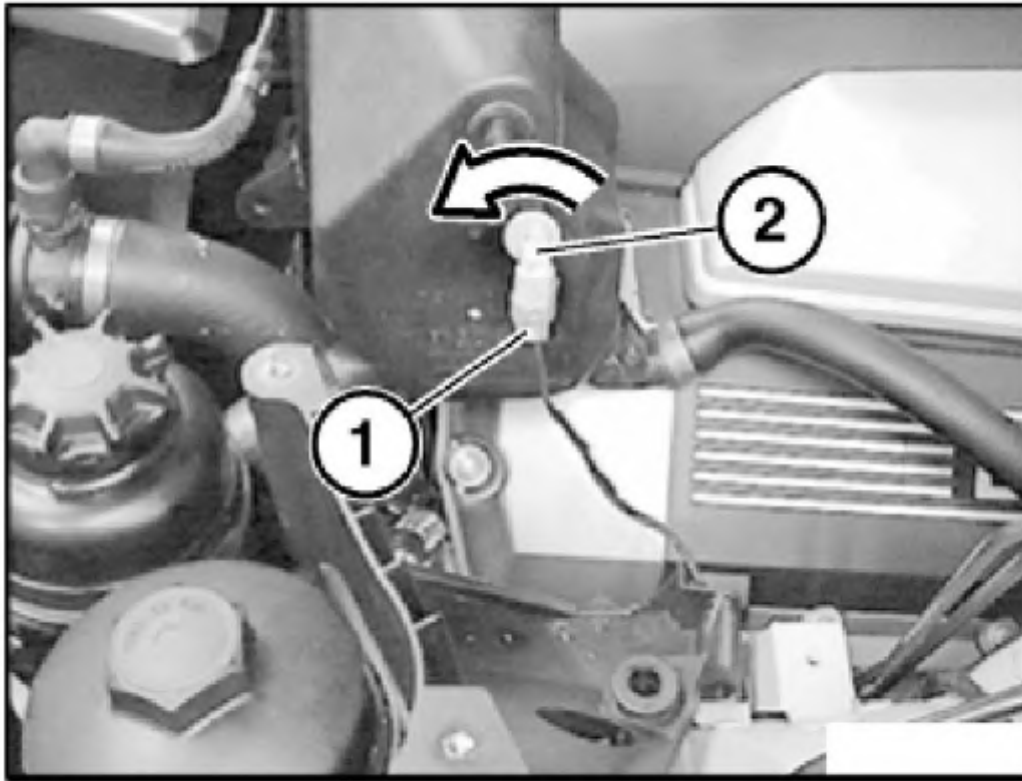
G03256550

Fig. 106: Installing Locating Pin Into Locating Bore
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not damage connected water hoses. Reposition expansion tank as far as possible until coolant level switch (2) forms the highest point. This will prevent coolant from escaping on opening. If necessary, catch escaping coolant and feed back in later.

Disconnect plug connection (1).

Turn coolant level switch (2) approx. 90° in direction of arrow and pull out.



G03256551

Fig. 107: Rotating Coolant Level Switch 90° And Removing
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 405 REMOVING AND INSTALLING/REPLACING REMOTE CONTROL FOR GARAGE DOOR OPENING

Remove front ceiling light. Refer to **63 31 000 REMOVING AND INSTALLING/REPLACING COMPLETE CEILING LIGHT**.

Press out remote control for garage door opening (2) from inside.

Disconnect plug.

NOTE: Initialize garage door opener.

(1) = Switch for sunroof.

(3) = Hands-free microphone.



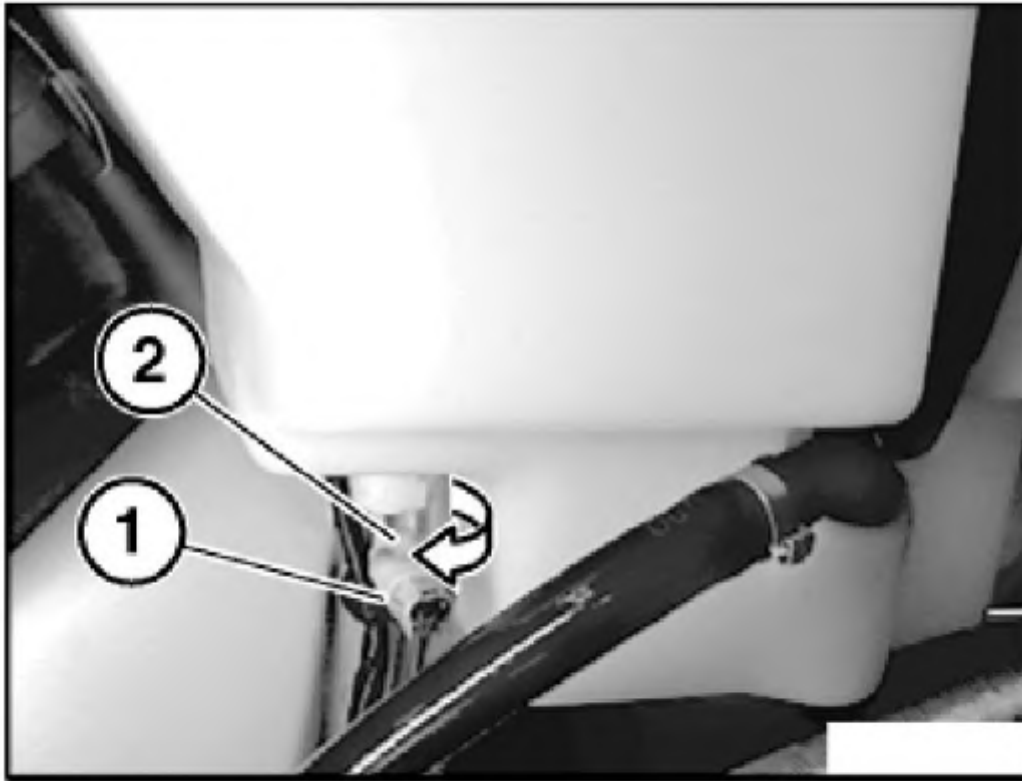
G03256552

Fig. 108: Identifying Remote Control For Garage Door Opener
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 992 REPLACING LEVEL SWITCH FOR WINDSHIELD WASHER SYSTEM

Disconnect plug connection (1).

Turn windshield washer system level switch (2) approx. 90° in direction of arrow and pull out towards bottom.



G03256553

Fig. 109: Replacing Level Switch For Windshield Washer System
Courtesy of BMW OF NORTH AMERICA, INC.

61 31 996 CARRY OUT STEERING ANGLE SENSOR ADJUSTMENT

NOTE: Steering angle sensor adjustment must be carried out:

- After adjustment work on the front axle/steering.
- After all mechanical work on the steering system.
- After the following components have been replaced/coded:
 - Steering Column Switch Cluster.
 - DSC Control Unit.
 - ARS Control Unit.

Connect vehicle to BMW diagnosis system. Select and carry out steering angle sensor adjustment under Service functions.

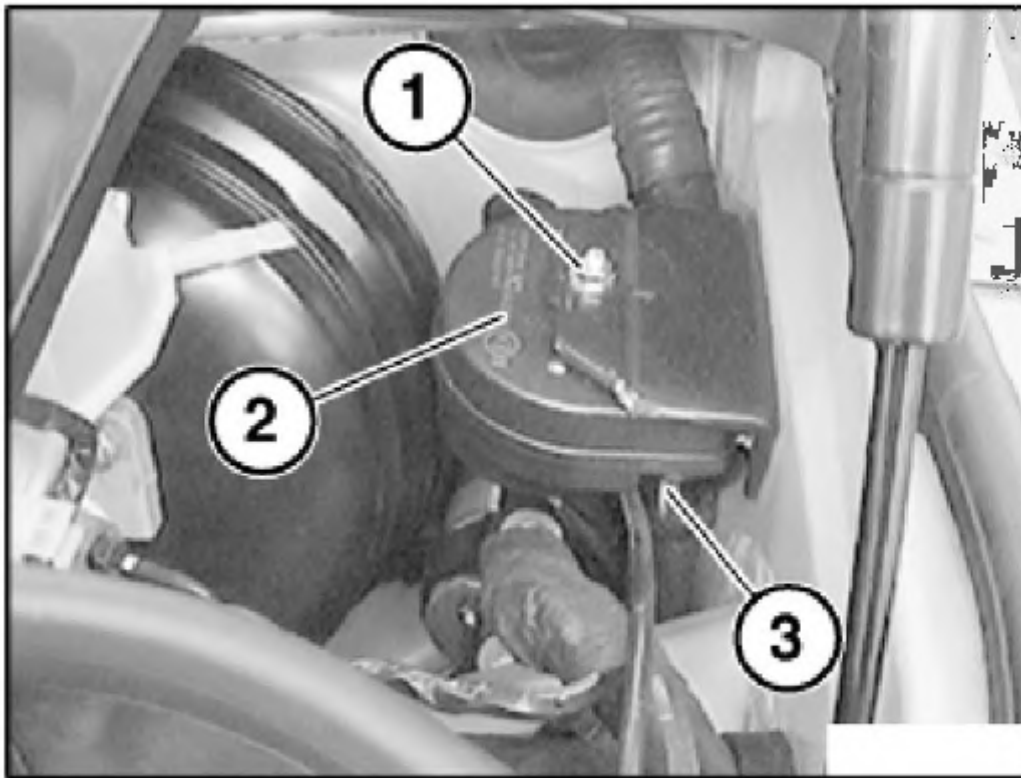
HORN

61 33 000 REPLACING HORN (ANTI-THEFT SYSTEM)

Unscrew nut (1).

Remove horn (2) from fixture and disconnect plug connection (3). Refer to **61 33 000 REPLACING HORN (ANTI-THEFT SYSTEM)** .

Remove horn (2).



G03256554

Fig. 110: Locating Horn, Retaining Nut And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

ECUS MODULES

61 35... NOTE ON REPLACING CODABLE/PROGRAMMABLE CONTROL UNITS

Replacement:

Carry out coding/programming.

Observe following IDC specifications:

- Programming.
- Coding.



G03256555

Fig. 111: Replacing Codable/Programmable Control Units
Courtesy of BMW OF NORTH AMERICA, INC.

61 35... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE)

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

2002 BMW X5 30i

2001-2003 ACCESSORIES AND EQUIPMENT Accessories Control Systems - Repair Instructions - X5 (3.0i) M54

- 12 7 060

NOTE: Electrical components which are particularly sensitive to electrostatic discharge (electronic control units, sensors, etc.) are marked with the ESD warning symbol.

E -Electro.

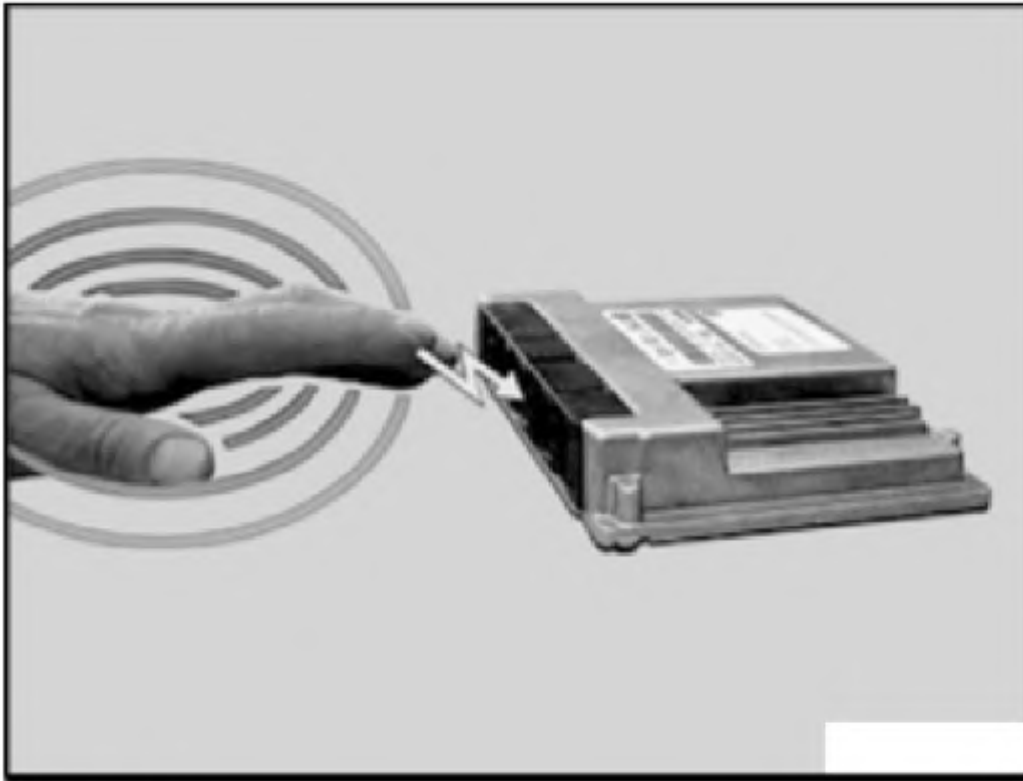
S -Static.

D -Discharge.

Statically charged persons can discharge by touching electrical components.

NOTE: Humans can only detect a discharge starting from a level of approx. 3000 V.

The danger threshold for electrical components already starts from a level of approx. 100 V.



G03256556

Fig. 112: Identifying Electrostatic Discharge By Touching Electrical Components
Courtesy of BMW OF NORTH AMERICA, INC.

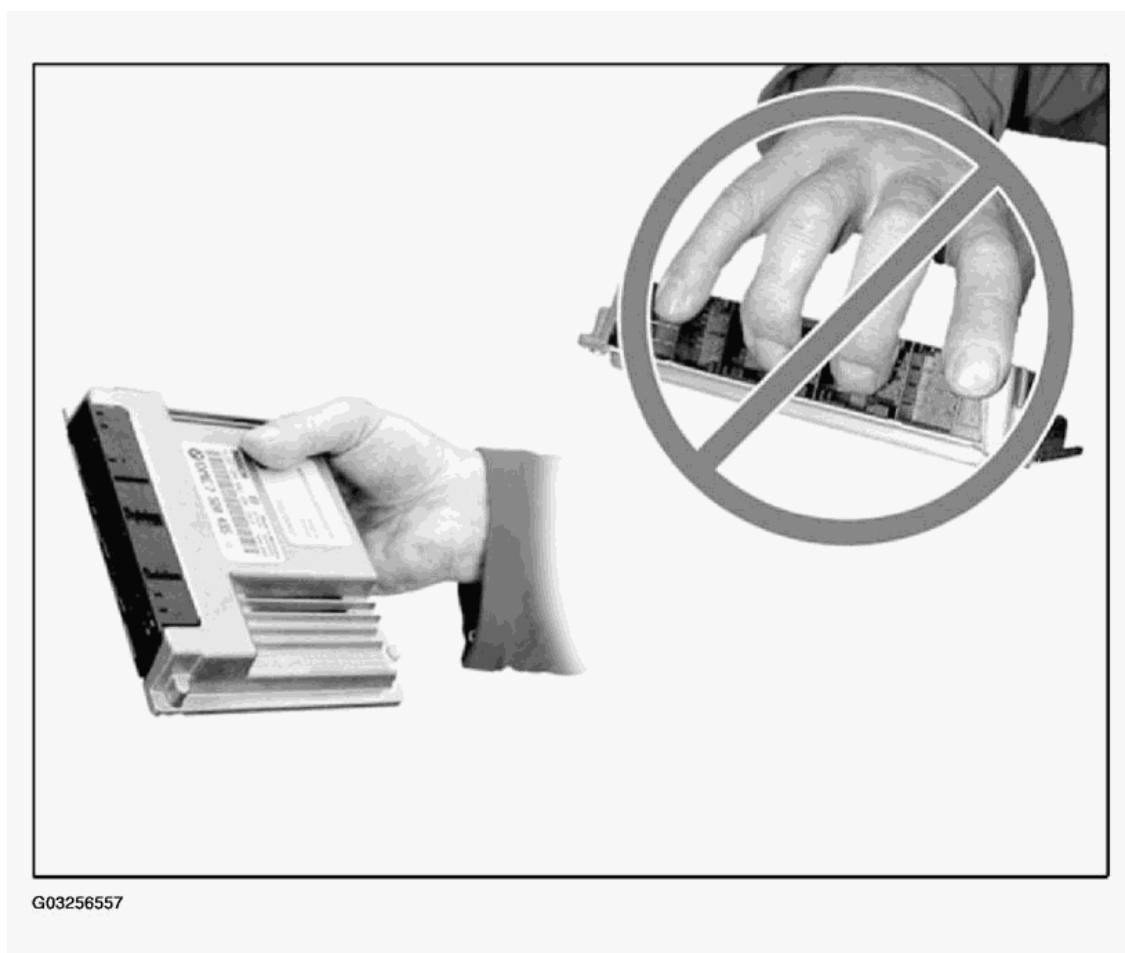


Fig. 113: Identifying Correct And Incorrect Handling Of Electrical Components
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not touch pins or multi-pin connectors directly! Touch electrical components by their housings only.

IMPORTANT: To prevent electrical components from being damaged or destroyed by electrostatic discharge, it is absolutely essential to comply with the following instructions:

- When replacing electrical components, leave the replacement components in their original packaging until immediately before they are to be installed.
- If necessary, always return a removed component in its original packaging (always pack the component away immediately).
- Read and comply with user information on using the associated ESD special tool.

Up To 09/2001:

Version with rain sensor.

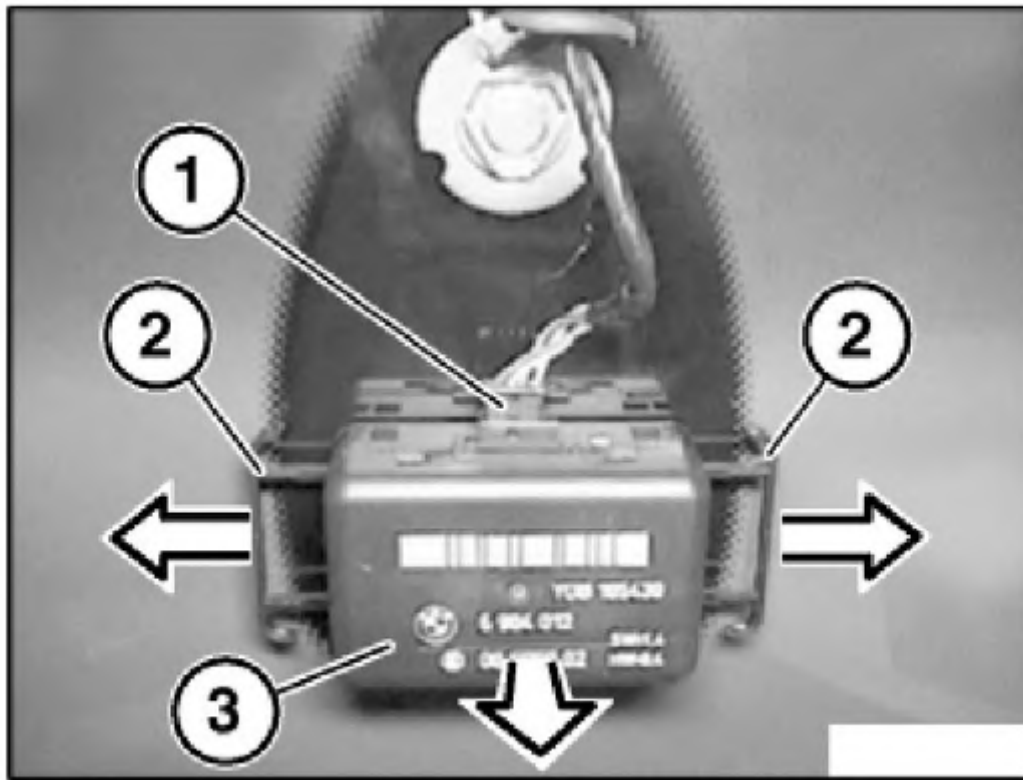
Necessary Preliminary Tasks:

- Remove inside rearview mirror. Refer to **51 16 060 REMOVING AND INSTALLING OR REPLACING INTERIOR REARVIEW MIRROR (OVERVIEW)** and **51 16 063 REMOVING AND INSTALLING/REPLACING INTERIOR REARVIEW MIRROR (WITH REMOTE CONTROL)** .

Pull out retaining clips (2) in each case in direction of arrow and remove.

Unclip rain sensor (3) at bottom in direction of arrow.

Disconnect plug connection (1) and remove rain sensor (3).



G03256558

Fig. 114: Removing Rain Sensor

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Do not damage optical element below rain sensor (3).

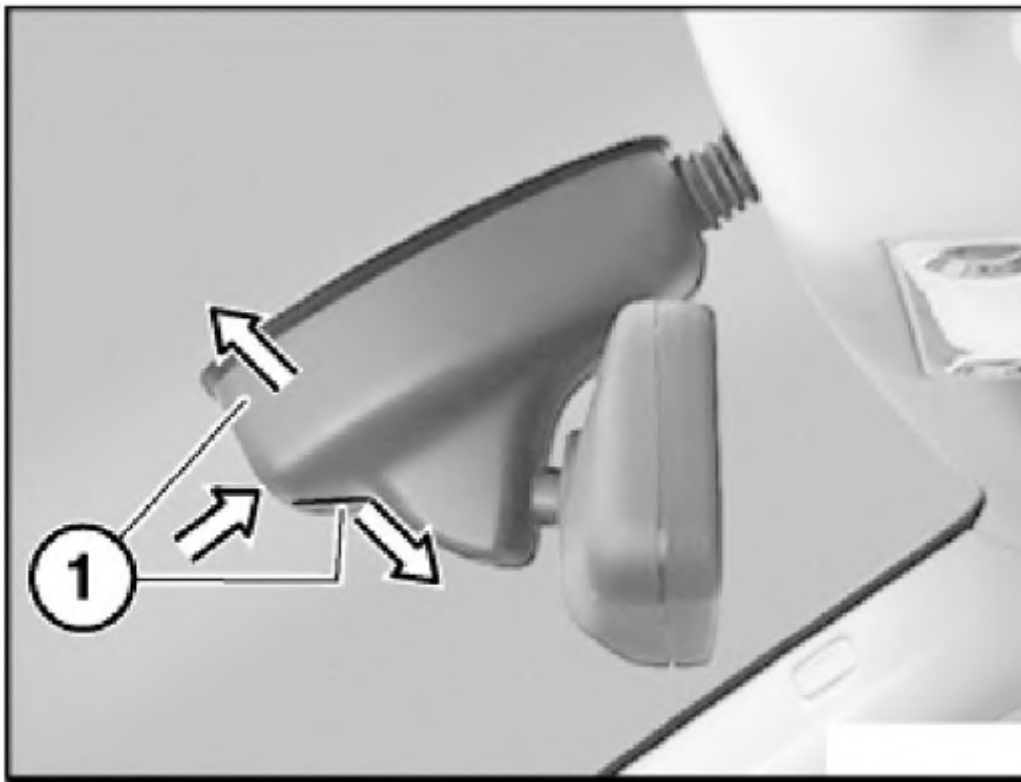
If necessary, initialize rain sensor. Refer to **61 35 680 INITIALIZING RAIN SENSOR** .

From 09/2001:

Version with rain/light sensor.

Expand two-part mirror base cover (1) by pressing from below and detach.

Feed out two-part mirror base cover (1) and remove.

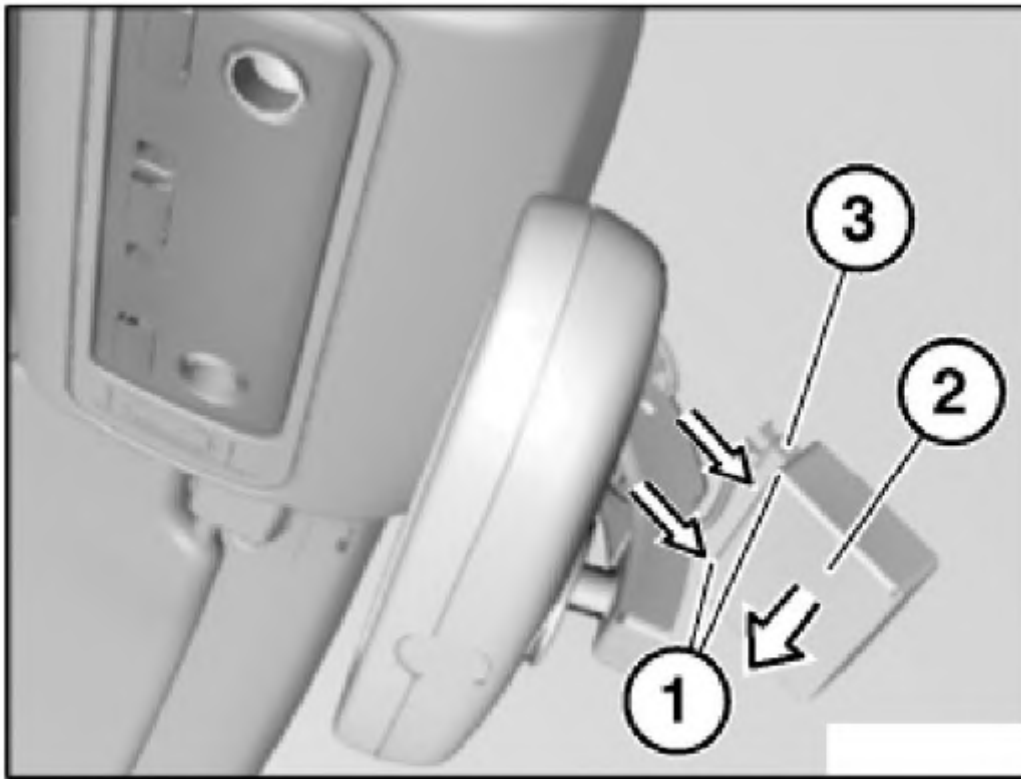


G03256559

Fig. 115: Removing Two-Part Mirror Base Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (3).

Press locks (1) in direction of arrow and remove rain/light sensor (2) towards bottom.



G03256560

Fig. 116: Removing Rain/Light Sensor

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Do not damage optical element below rain/light sensor (2).

If necessary, initialize rain/light sensor. Refer to **61 35 680 INITIALIZING RAIN SENSOR** .

61 35 680 INITIALIZING RAIN SENSOR

NOTE: Initialization is necessary:

- After replacing windscreen.

- When installing a used rain sensor.

NOTE:

- **Connect BMW diagnosis system.**
- **Initializing rain sensor.**

61 35 715 REMOVING AND INSTALLING/REPLACING ELECTRONIC CONTROL UNIT FOR SLIDE/TILT SUNROOF (PANORAMIC GLASS SUNROOF)

Necessary Preliminary Tasks:

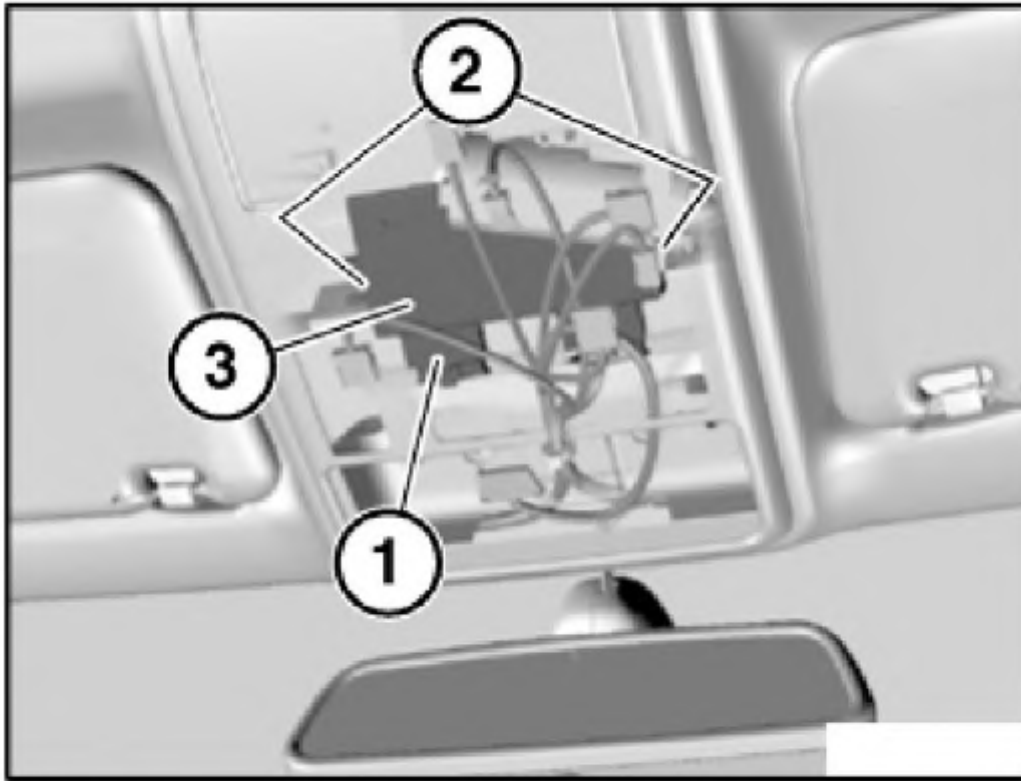
- Remove bracket from roofliner at front, refer to **51 44 020 REMOVING AND INSTALLING/REPLACING BRACKET ON ROOF LINING AT FRONT** .

NOTE: **Secure drive for slide/tilt sunroof (3) against falling out.**

Release screws (2).

Lower control unit for slide/tilt sunroof (3).

Unlock and disconnect plug connections (1) and remove control unit for slide/tilt sunroof (3).



G03256561

Fig. 117: Removing Control Unit For Slide/Tilt Sunroof
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

- Initialize slide/tilt sunroof. Refer to **54 0 ... NOTES ON PANORAMA GLASS ROOF (INITIALIZATION/NORMALIZATION/LEARNING OF CHARACTERISTIC CURVE)** .

Replacement:

Carry out programming/coding. Refer to **DIAGNOSIS PROGRAMMING/CODING** .

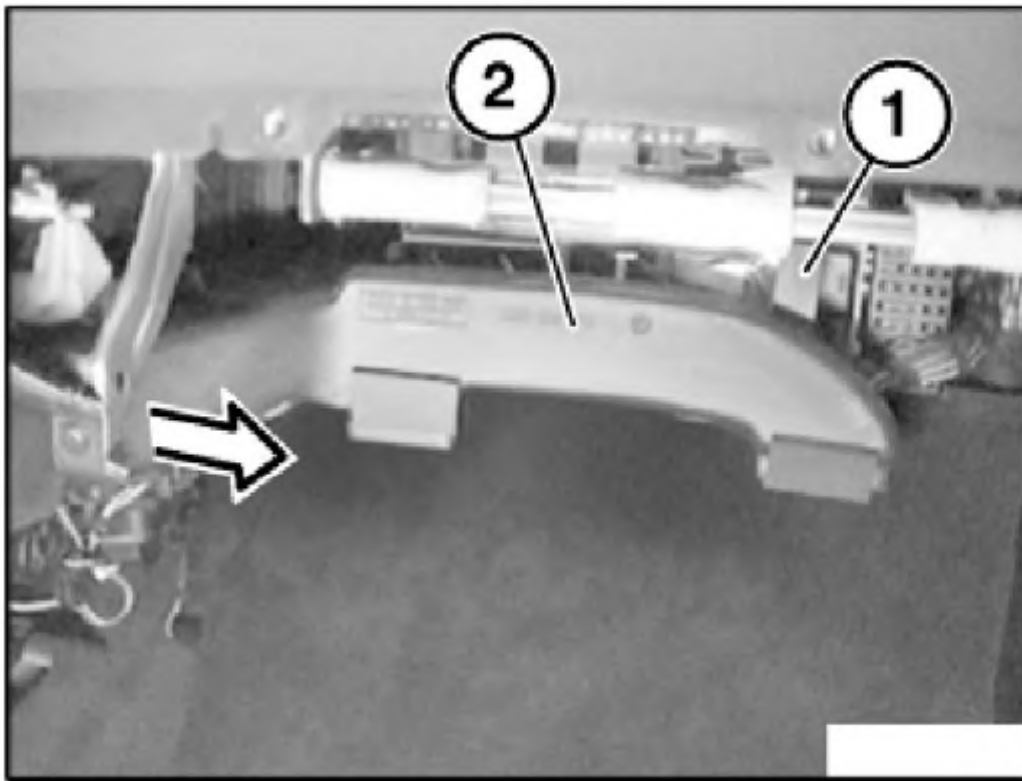
IMPORTANT: There is a risk of permanent battery discharge if programming/coding is not carried out!

Necessary Preliminary Tasks:

- Remove right glovebox. Refer to **51 16 360 REMOVING AND INSTALLING RIGHT GLOVE BOX** .

Unscrew bolt (1).

Detach air duct for right footwell (2) in direction of arrow.



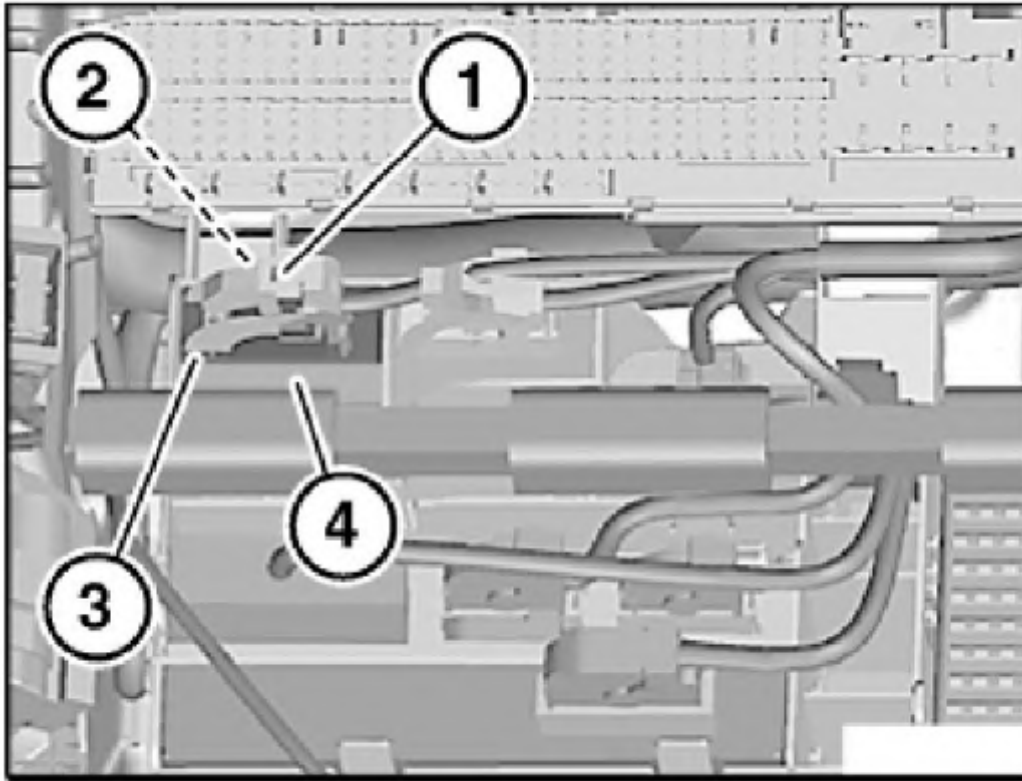
G03256562

Fig. 118: Locating Air Duct For Right Footwell
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1) and disconnect.

Unlock catch (2) towards top.

Pull control unit for adaptive headlight (3) out of equipment carrier (4) and remove.



G03256563

Fig. 119: Identifying Control Unit For Adaptive Headlight
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding. Refer to **DIAGNOSIS PROGRAMMING/CODING** .

61 35 900 REMOVING AND INSTALLING/REPLACING RING ANTENNA OF ELECTRONIC IMMOBILIZER

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

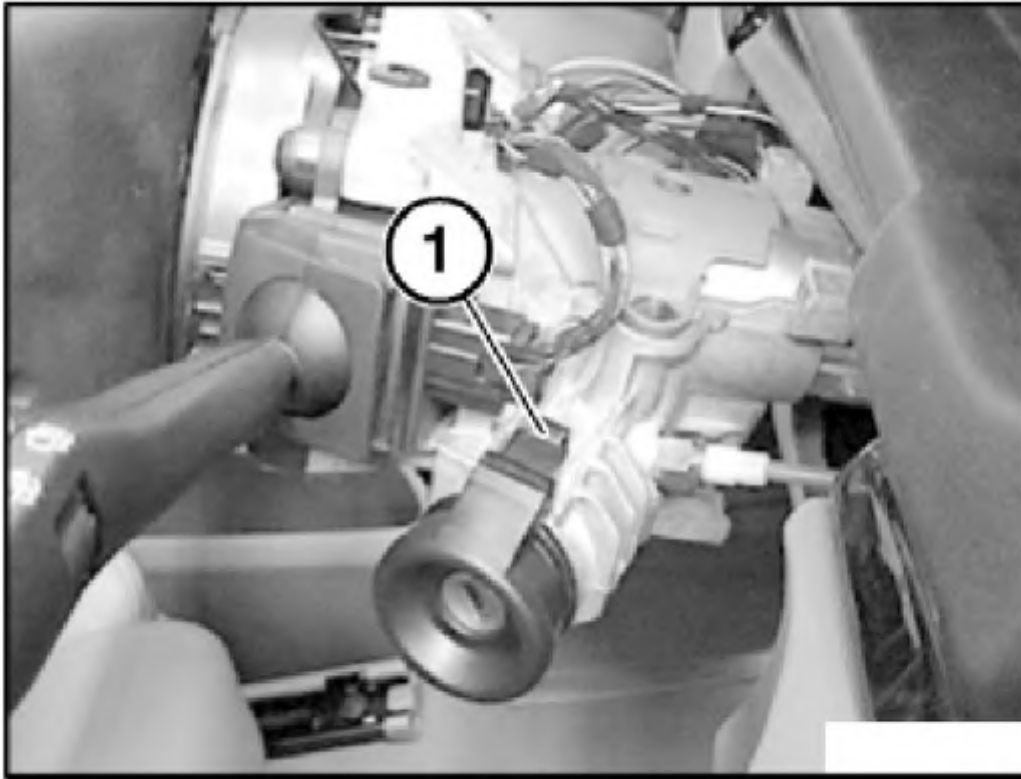
Special Tools Required:

- 61 3 300

Remove upper section of steering column trim. Refer to **STEERING COLUMN TRIM (UPPER SECTION)** .

Remove lower section of steering column trim. Refer to **STEERING COLUMN TRIM (LOWER SECTION)** .

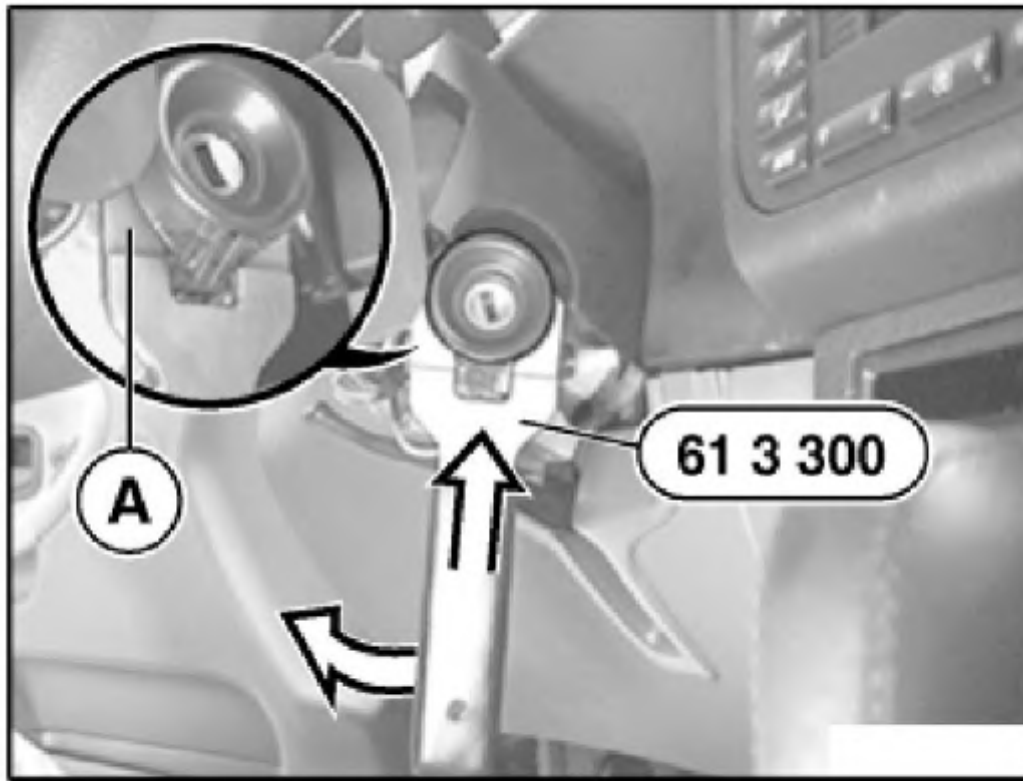
Disconnect plug connection (1).



G03256564

Fig. 120: Disconnecting Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Slide in special tool 61 3 300 with flattened end (A) facing ring antenna and lever out ring antenna.



G03256565

Fig. 121: Removing Ring Antenna Using Special Tool 61 3 300
Courtesy of BMW OF NORTH AMERICA, INC.

DIAGNOSIS PROGRAMMING/CODING

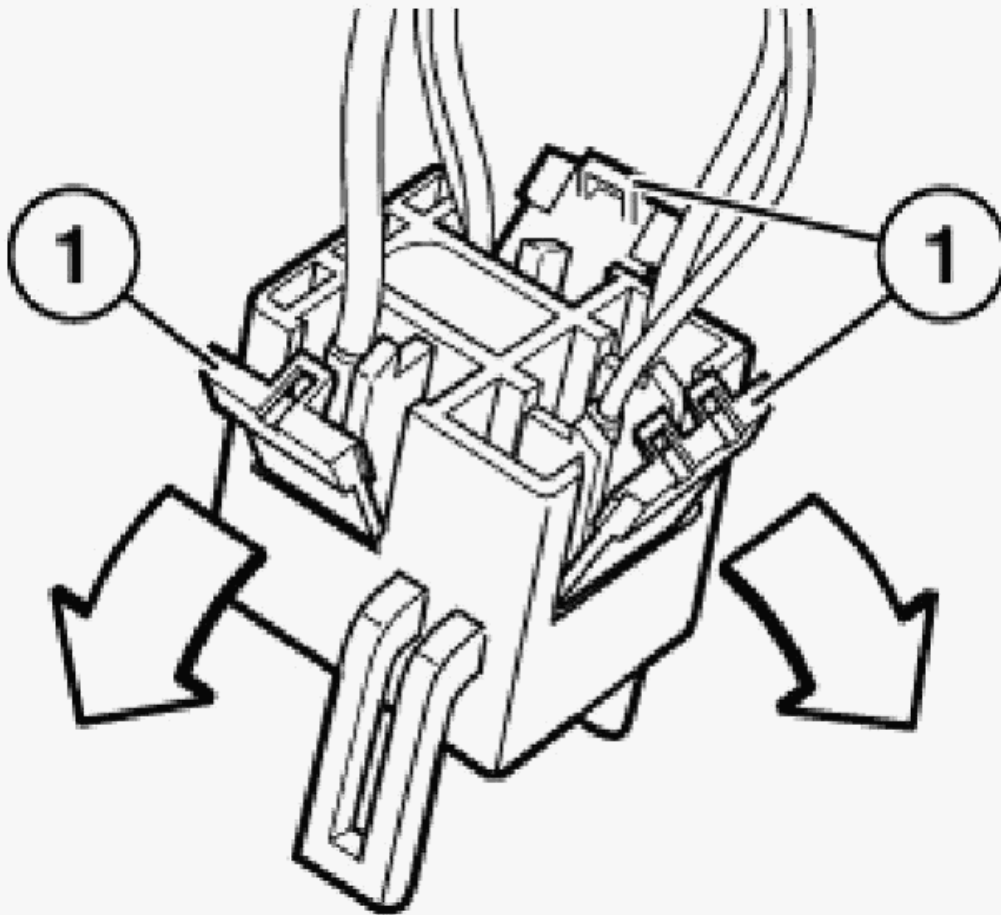
Using the current TIS CD:

- Document type: Select SI Diagnosis Coding.
- Index number 11: Select Programming Information to display the table of contents.

RELAYS

61 13 ... DME MASTER RELAY CONNECTOR

Unlock locking flap (1) of corresponding cable.



G03256566

Fig. 122: Identifying Unlock Locking Flap Of Corresponding Cable
Courtesy of BMW OF NORTH AMERICA, INC.

With special tool 61 1 136 or 61 1 137 (ejector), press back arrester hook (2) of appropriate contact and pull out cable.

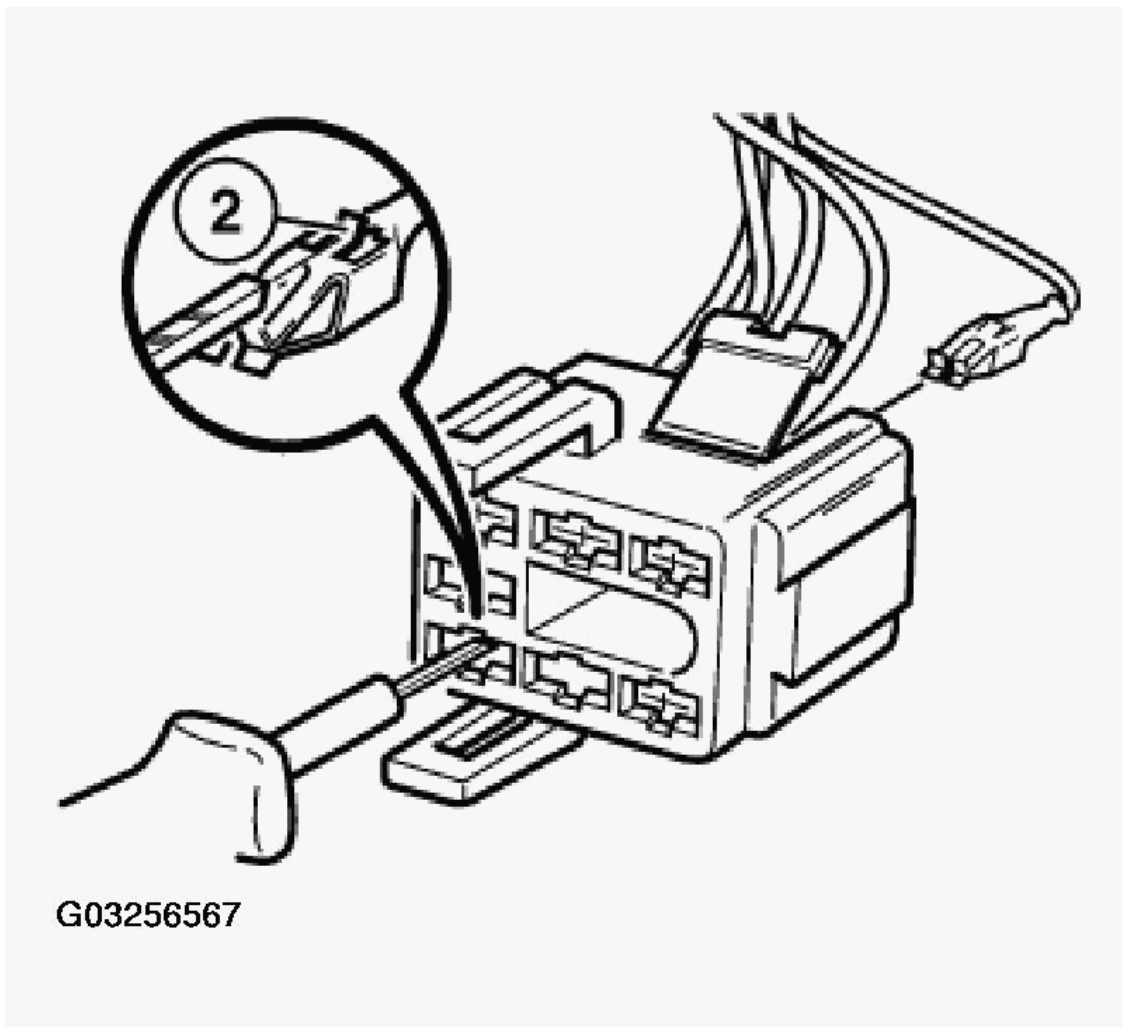


Fig. 123: Pressing Back Arrester Hook Using Ejector
Courtesy of BMW OF NORTH AMERICA, INC.

61 13... RELAY CARRIER

Operation is identical to 61 13... RELAY CARRIER .

WINDSHIELD WIPERS

61 61 010 CHECKING/ADJUSTING APPROACH ANGLE OF WINDSHIELD WIPER ARMS ON FRONT WINDSCREEN

NOTE: For Special Tool identification, see SPECIAL TOOLS - X-5 (3.0i) .

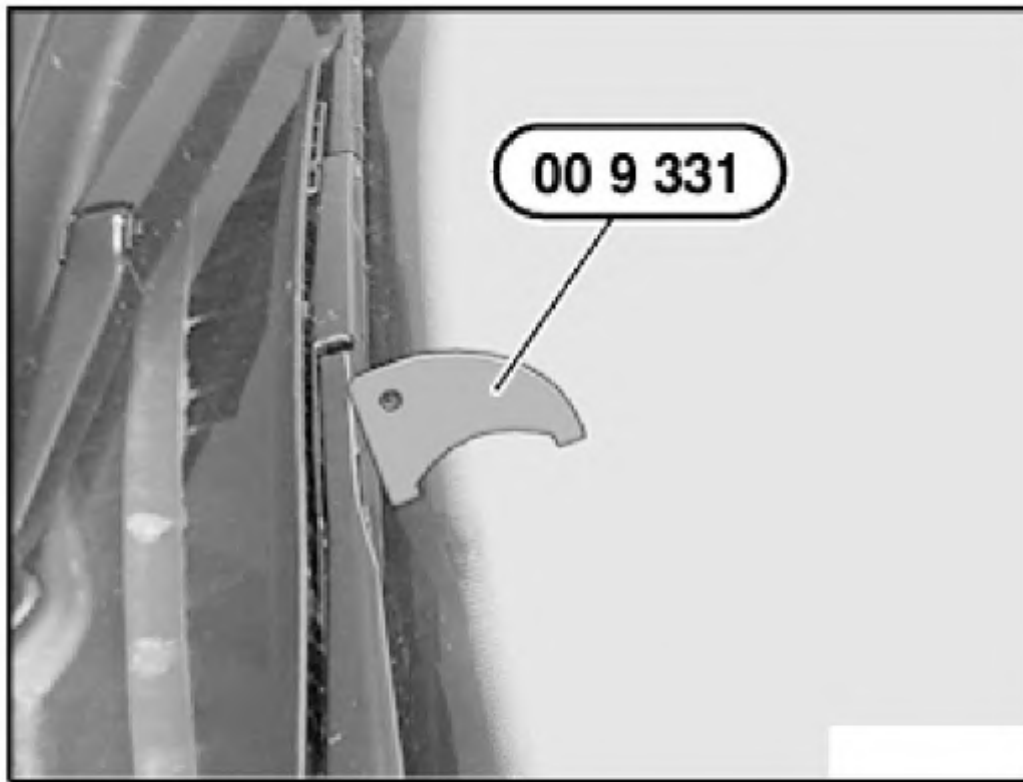
Special Tools Required:

- 00 9 221

- 00 9 222
- 00 9 331

NOTE: Wiping quality is increased if the approach angle of the windshield wiper arms is precisely adjusted.

Place special tool 00 9 331 next to pivot point of windshield wiper blade on windshield.

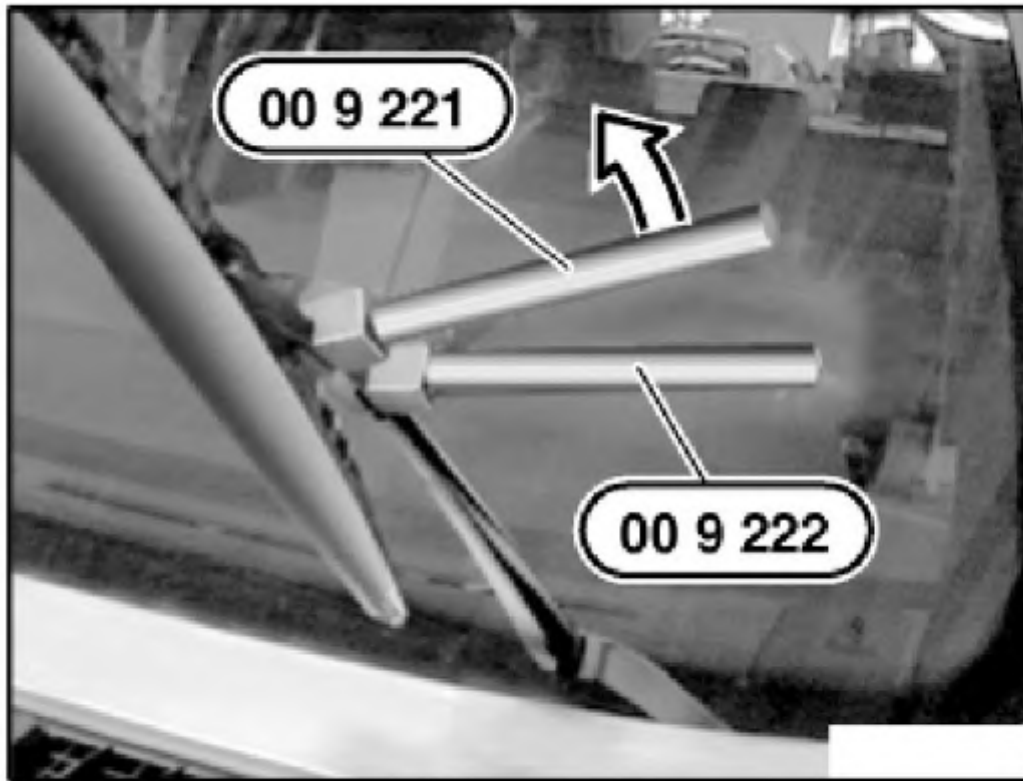


G03256571

Fig. 124: Aligning Windscreen Wiper Setting Tool To Pivot Point Of Blade
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: To prevent the wiper arm from scratching the glass, cover the arm with adhesive tape. To adjust passenger windshield wiper arm, move it into vertical position.

If contact angle is too large (light gap at top between gauge and wiper blade), grip wiper arm with special tool 00 9 222 and turn in direction of arrow with special tool 00 9 221.



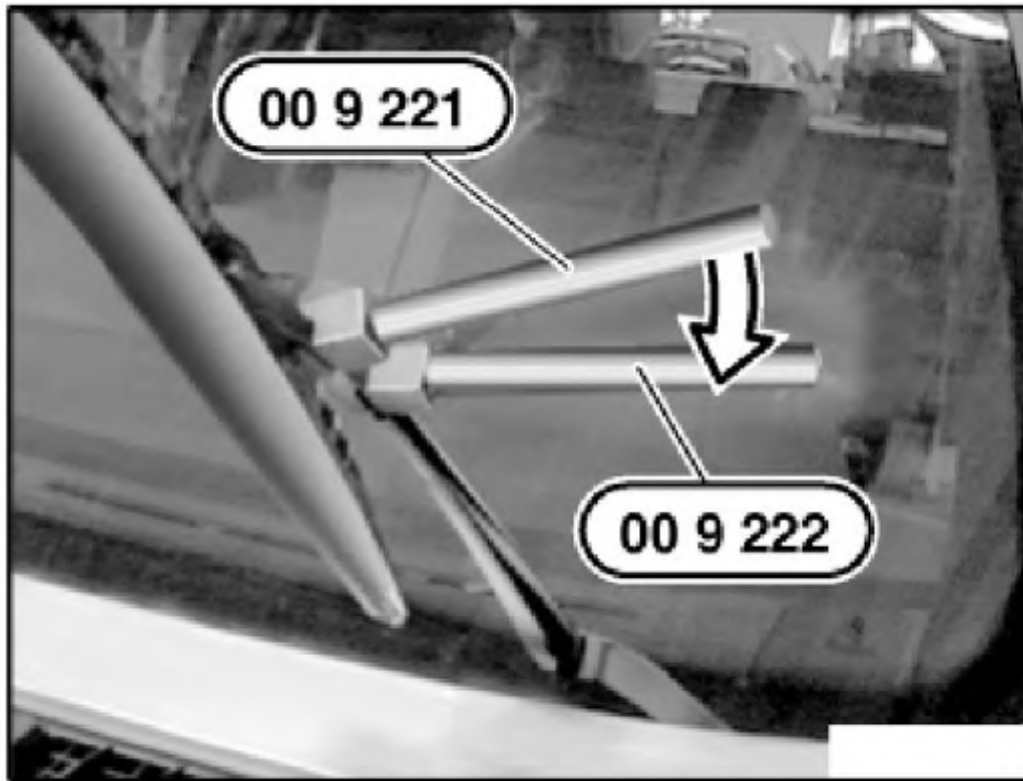
G03256572

Fig. 125: Adjusting Passenger Windshield Wiper Arm
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: To prevent the wiper arm from scratching the glass, cover the arm with adhesive tape.

To adjust passenger windshield wiper arm, move it into vertical position.

If contact angle is too small (light gap at bottom between gauge and wiper blade), grip wiper arm with special tool 00 9 222 and turn in direction of arrow with special tool 00 9 221.



G03256573

Fig. 126: Adjusting Windshield Wiper Arm

Courtesy of BMW OF NORTH AMERICA, INC.

61 61 081 REPLACING LEFT OR RIGHT WINDSHIELD WIPER ARM

Remove and install/replace both windshield wiper arms, refer to **61 61 100 REMOVING AND INSTALLING/REPLACING BOTH WINDSHIELD WIPER ARMS** .

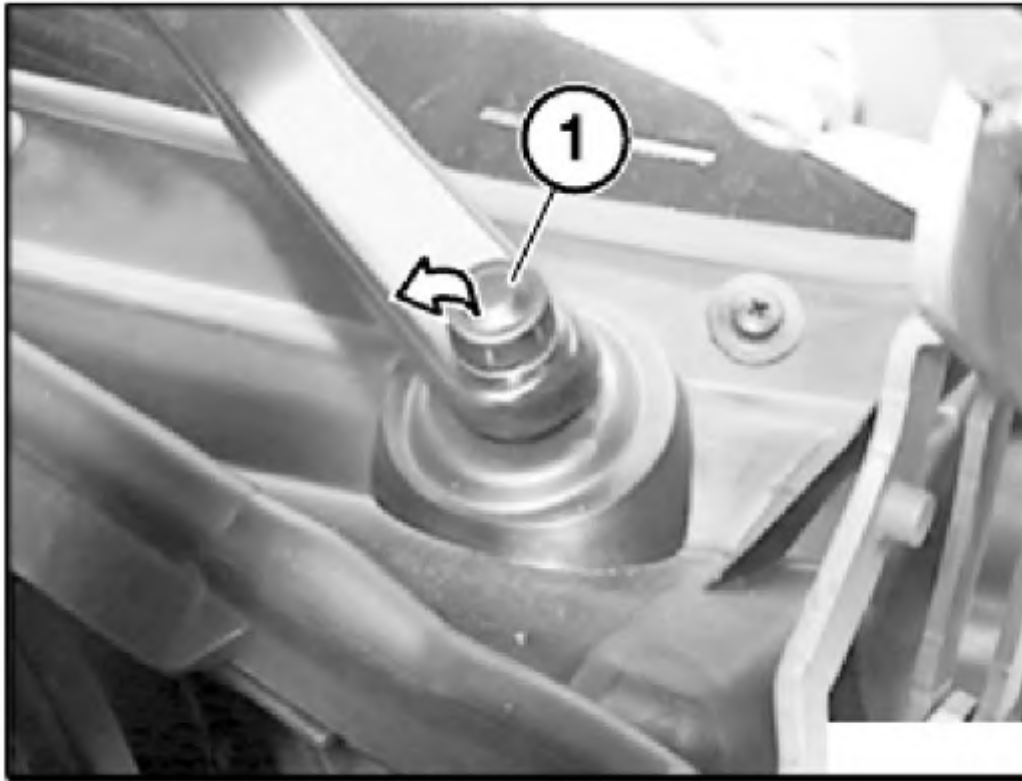
61 61 100 REMOVING AND INSTALLING/REPLACING BOTH WINDSHIELD WIPER ARMS

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

- 61 6 060

Remove cover (1).



G03256574

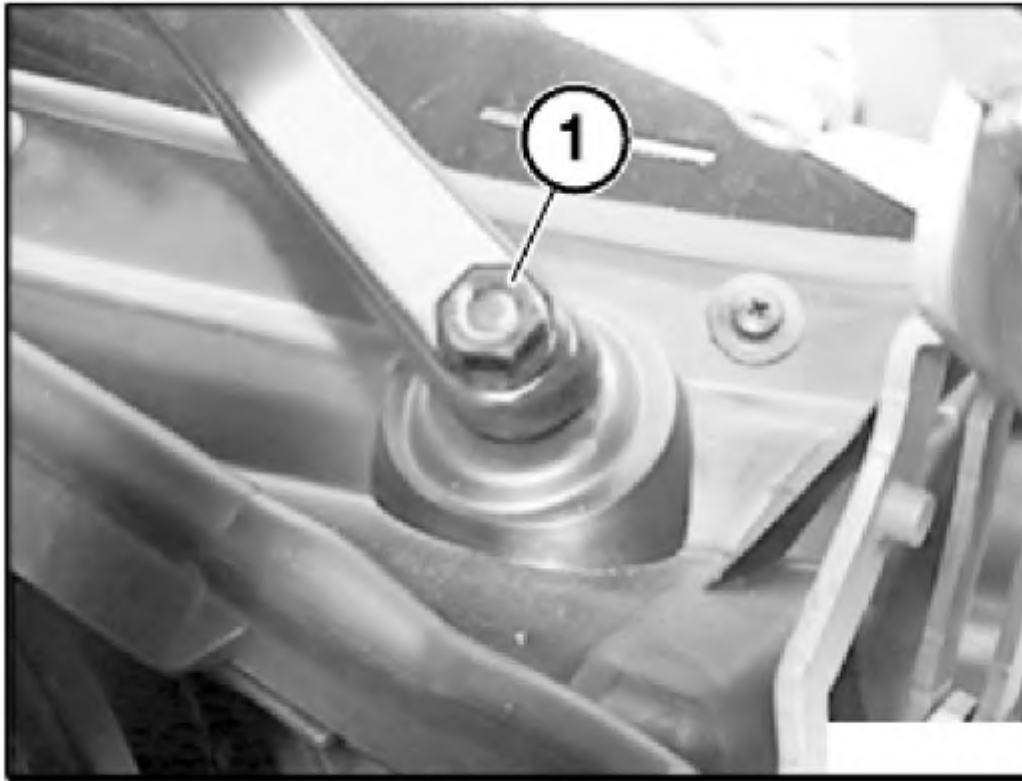
Fig. 127: Removing Cover On Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew nut (1).

Installation:

Tighten nut to appropriate torque, (30 N.m).

After waiting 15 minutes, retighten nut to appropriate torque, (30 N.m).



G03256575

Fig. 128: Removing/Installing Nut

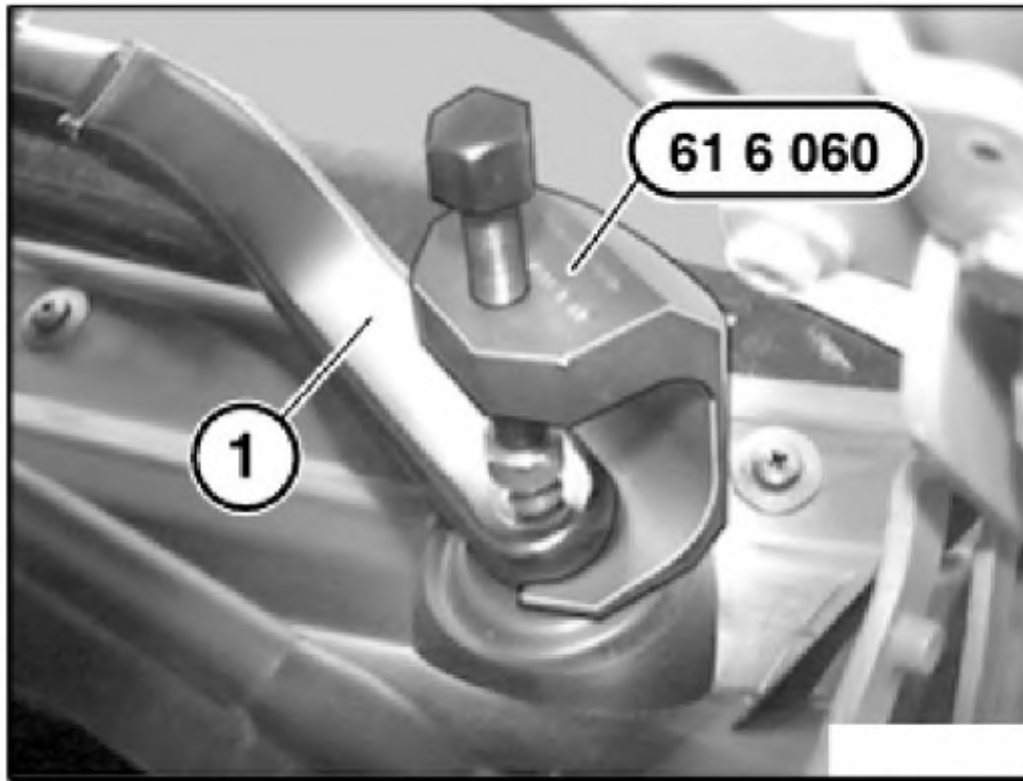
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Do not bend wiper arm during removal (risk of breakage).

Detach windshield wiper arm with special tool 61 6 060.

Replacement:

Remove wiper blade.



G03256576

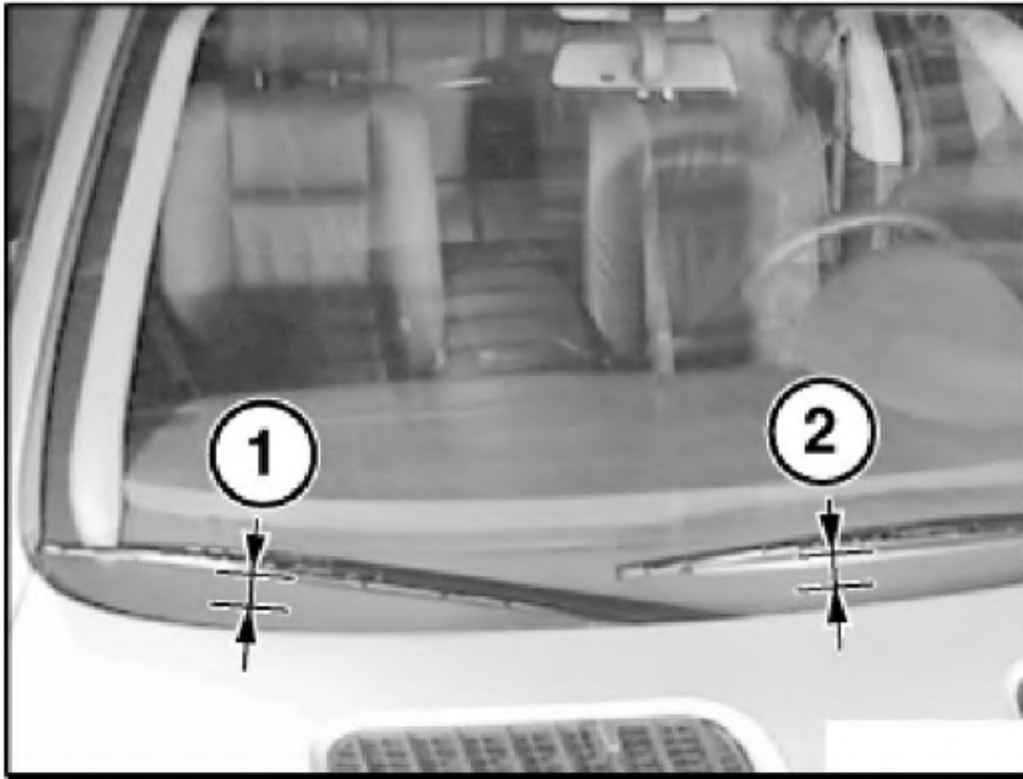
Fig. 129: Detaching Windshield Wiper Arm With Wiper Arm Puller
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Adjust position of wiper arm in question in rest position (measured between wiper lip and top edge of cowl panel cover).

Then tighten down wiper arm and check position of relevant wiper arm again.

1. 54+/-3 mm.
2. 55+/-3 mm.



1. 54 ± 3 mm

2. 55 ± 3 mm

G03256577

Fig. 130: Identifying Adjustment Measurements Of Wiper Arms

Courtesy of BMW OF NORTH AMERICA, INC.

61 61 270 REMOVING AND INSTALLING MOUNTING BRACKET FOR WINDSHIELD WIPER SYSTEM COMPLETELY WITH MOTOR

NOTE: For Special Tool identification, see SPECIAL TOOLS - X-5 (3.0i) .

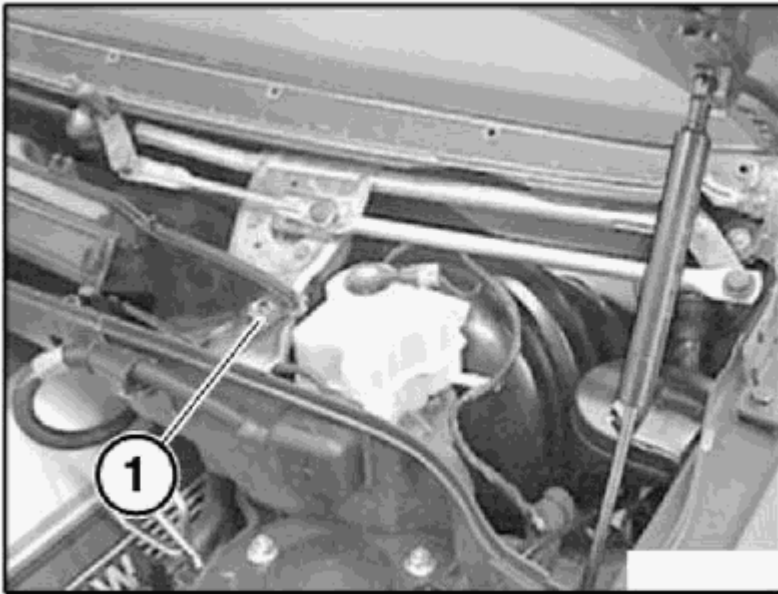
Special Tools Required:

- 61 6 250

Remove cover for cowl. Refer to **51 13 115 REMOVING AND INSTALLING/REPLACING COWL**

PANEL COVER .

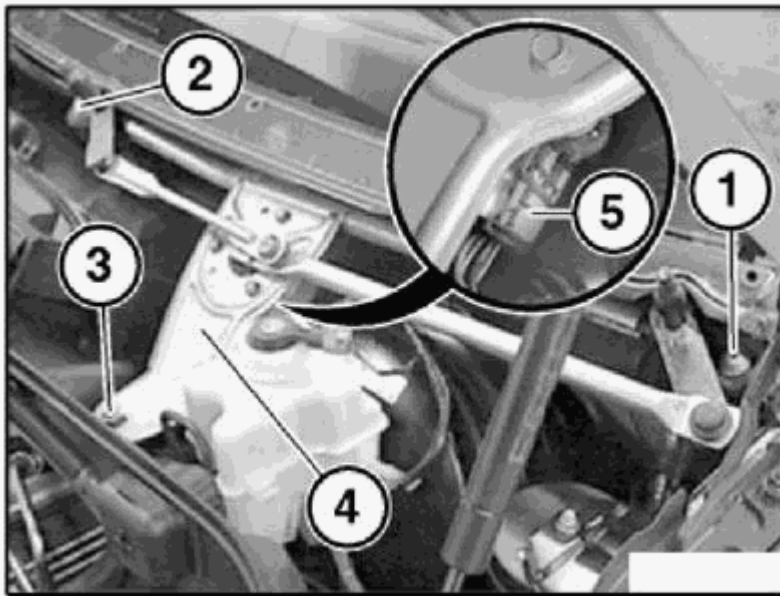
Pull out air funnel (1) on microfilter housing.



G03256578

Fig. 131: Removing Air Funnel On Microfilter Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Remove screws (1) and (2).



G03256579

Fig. 132: Removing Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace damping ring upper/lower section.

Tighten screws (1) and (2) in specified sequence.

Observe tightening torque, (10 N.m).

Release nut (3) with special tool 61 6 250.

Installation:

If necessary, replace rubber buffer.

Fit nut (3) loosely.

Remove bracket for windshield wiper system (4) and disconnect plug connection (5).

Installation:

Before installing wiper arms, allow wiper motor to return to its rest position.

To ensure the wiper system works properly, check and correct the contact angle of the wiper arms. Refer to **61 61 010 CHECKING/ADJUSTING APPROACH ANGLE OF WINDSHIELD WIPER ARMS ON FRONT WINDSCREEN** .

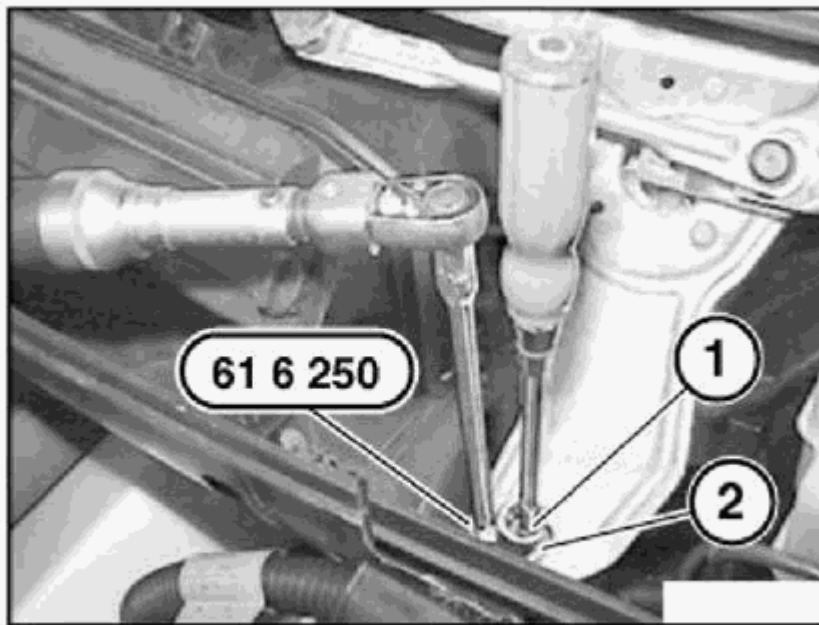
In event of deviations from specified value, correct contact angle using adjusting screw (1).

Check contact angle of wiper arms again. Refer to **61 61 010 CHECKING/ADJUSTING APPROACH ANGLE OF WINDSHIELD WIPER ARMS ON FRONT WINDSCREEN** .

Grip adjusting screw (1) and tighten nut (2) with special tool 61 6 250.

Observe tightening torque, (10 N.m).

Secure nut (2) with locking varnish.



G03256580

Fig. 133: Adjusting Screw Using Special Tool 61 6 250

Courtesy of BMW OF NORTH AMERICA, INC.

61 61 271 REPLACING BRACKET FOR WINDSHIELD WASHER SYSTEM

Remove and install complete bracket for windshield wiper system with motor.

REAR SCREEN WIPER

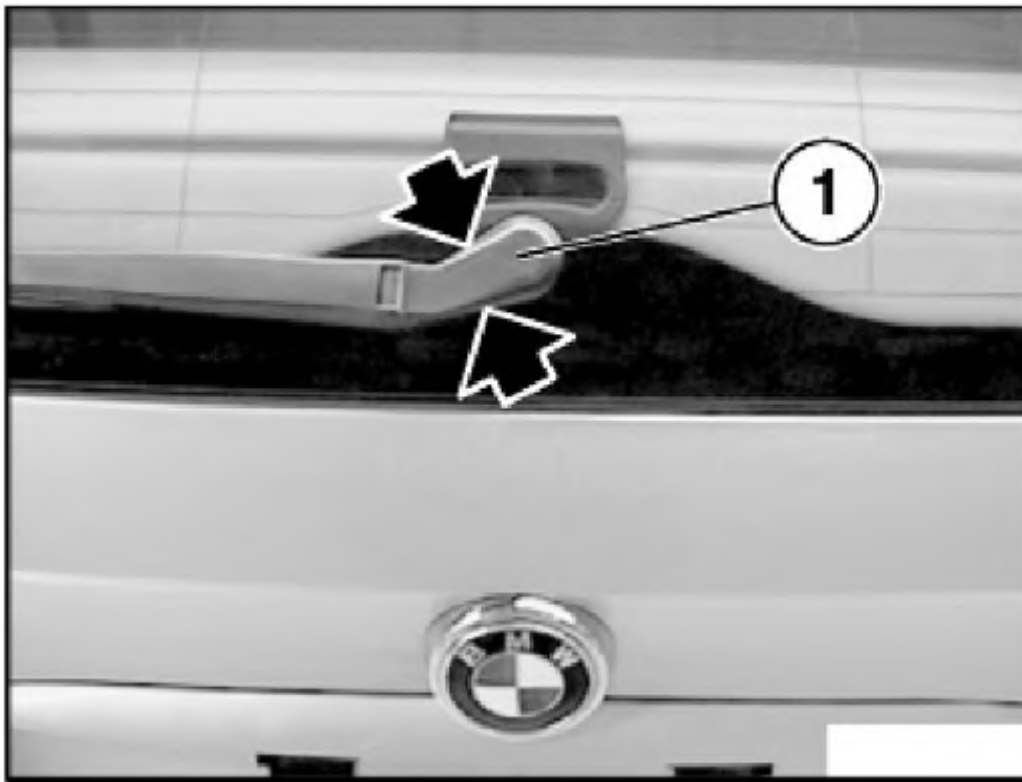
61 62 030 REPLACING WIPER ARM FOR REAR WINDOW WIPER

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

- 61 6 060

Lever out cap (1) at side and remove.

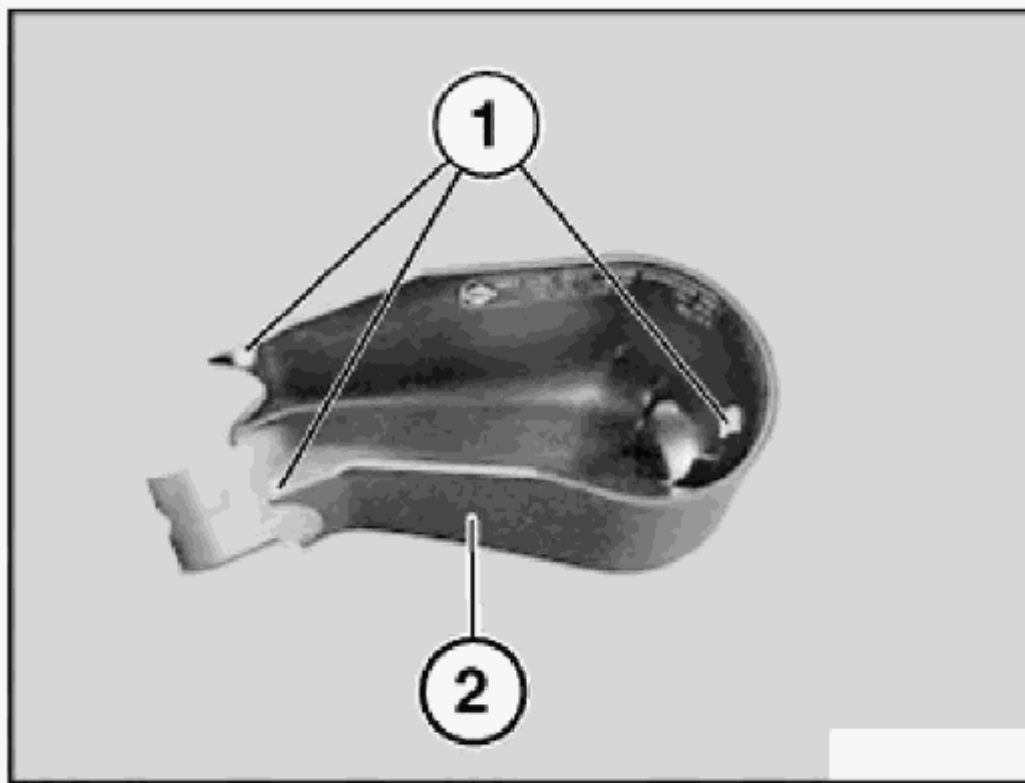


G03256581

Fig. 134: Removing Lever Out Cap
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Catches (1) of cap (2) must not be damaged.



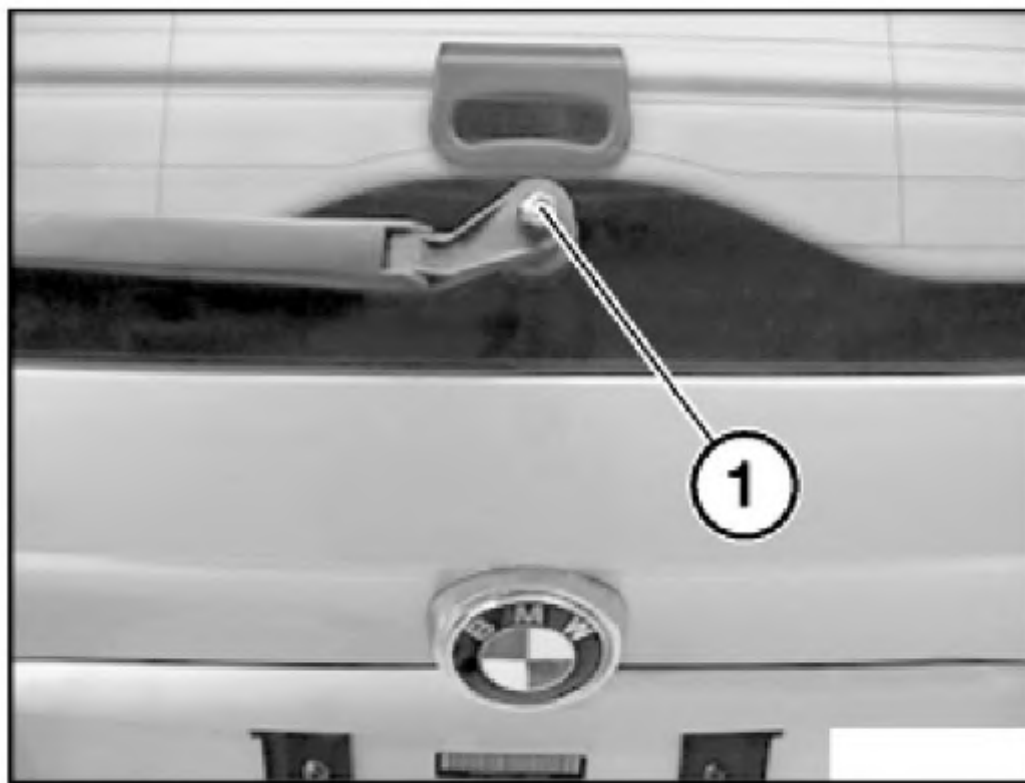
G03256582

Fig. 135: Identifying Catches Of Cap
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew nut (1).

Installation:

Observe tightening torque, (13.5 N.m).

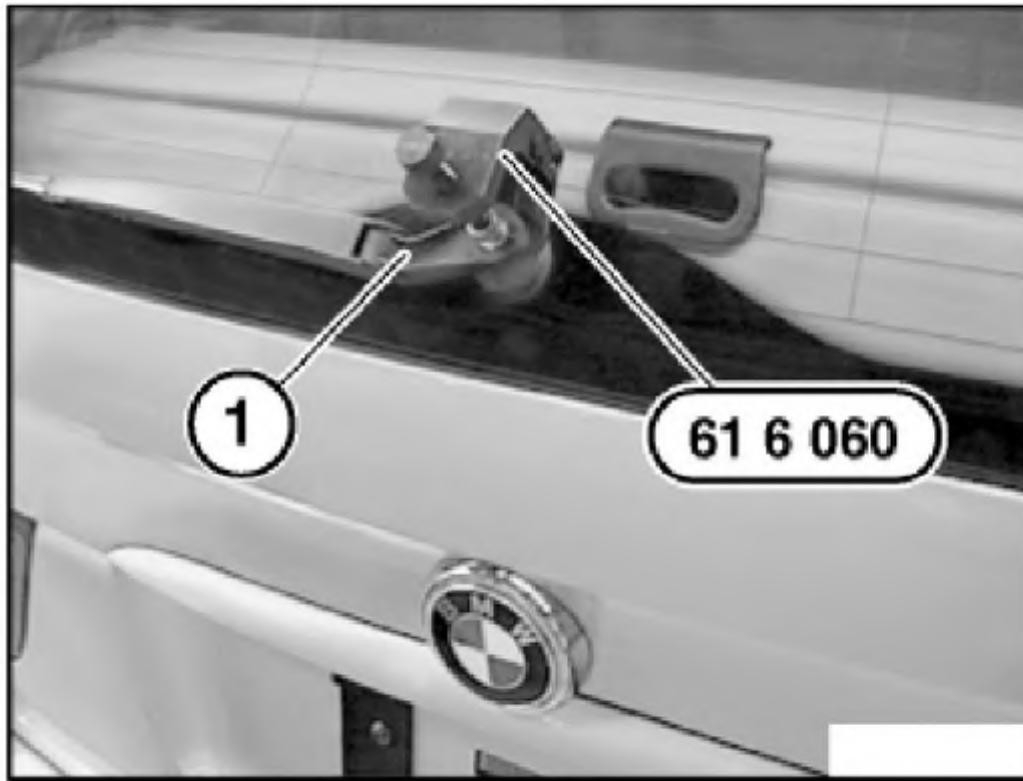


G03256583

Fig. 136: Unscrewing Nut

Courtesy of BMW OF NORTH AMERICA, INC.

Detach wiper arm (1) with special tool 616 060 and remove.



G03256584

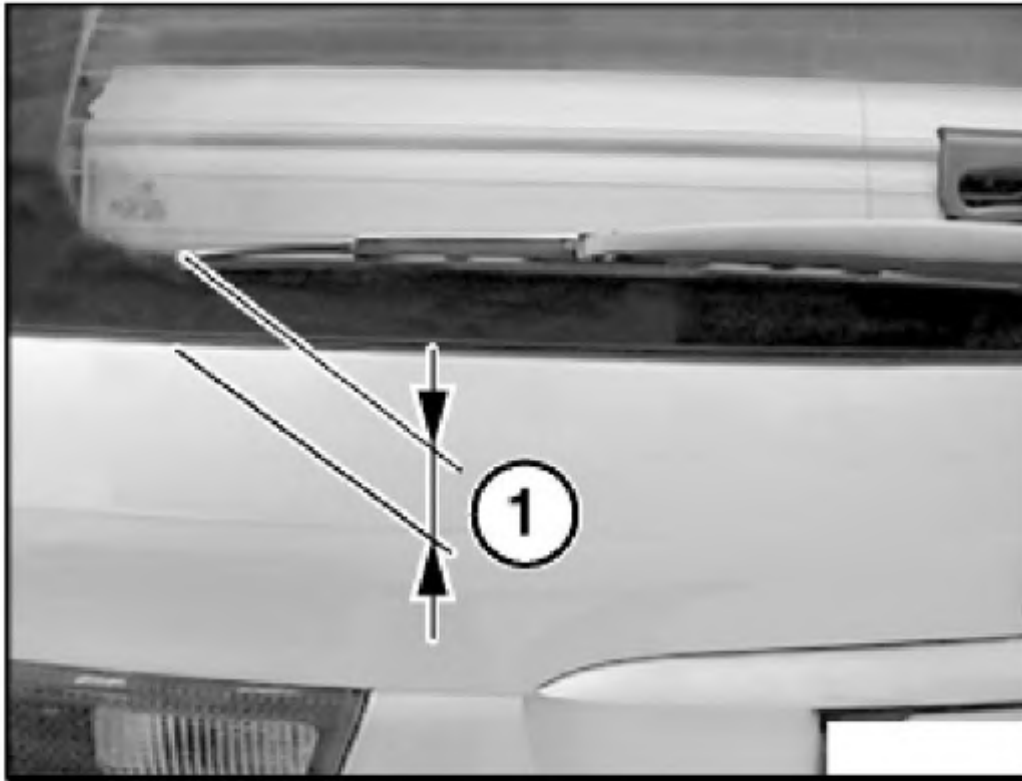
Fig. 137: Detaching Wiper Arm With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Wiper motor must be in end position.

Adjust distance (1) between wiper arm and rear window edge.

(1) 32.5+/-2mm.



(1) 32.5 ± 2 mm

G03256585

Fig. 138: Adjusting Distance Between Wiper Arm And Rear Window Edge
Courtesy of BMW OF NORTH AMERICA, INC.

61 62 060 REMOVING AND INSTALLING / REPLACING REAR WINDOW WIPER MOTOR

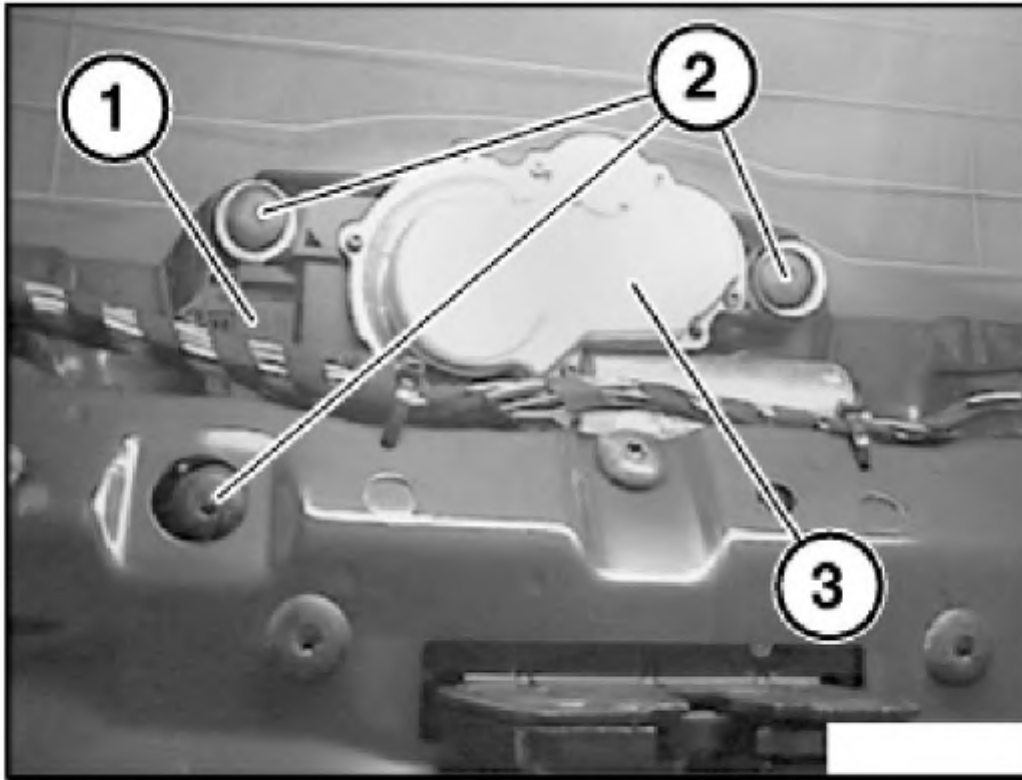
Remove panel for rear lid upper section at bottom. Refer to **51 49 050 REMOVING AND INSTALLING/REPLACING LOWER TRIM FOR REAR LID UPPER SECTION** .

Remove wiper arm for rear wiper. Refer to **61 62 030 REPLACING WIPER ARM FOR REAR WINDOW WIPER** .

NOTE: **Secure rear window wiper motor against falling out.**

Disconnect plug connection (1) and release screws (2).

Remove rear window wiper motor (3).



G03256586

Fig. 139: Locating Rear Window Wiper Motor
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert screws (2) and tighten until hand-tight.

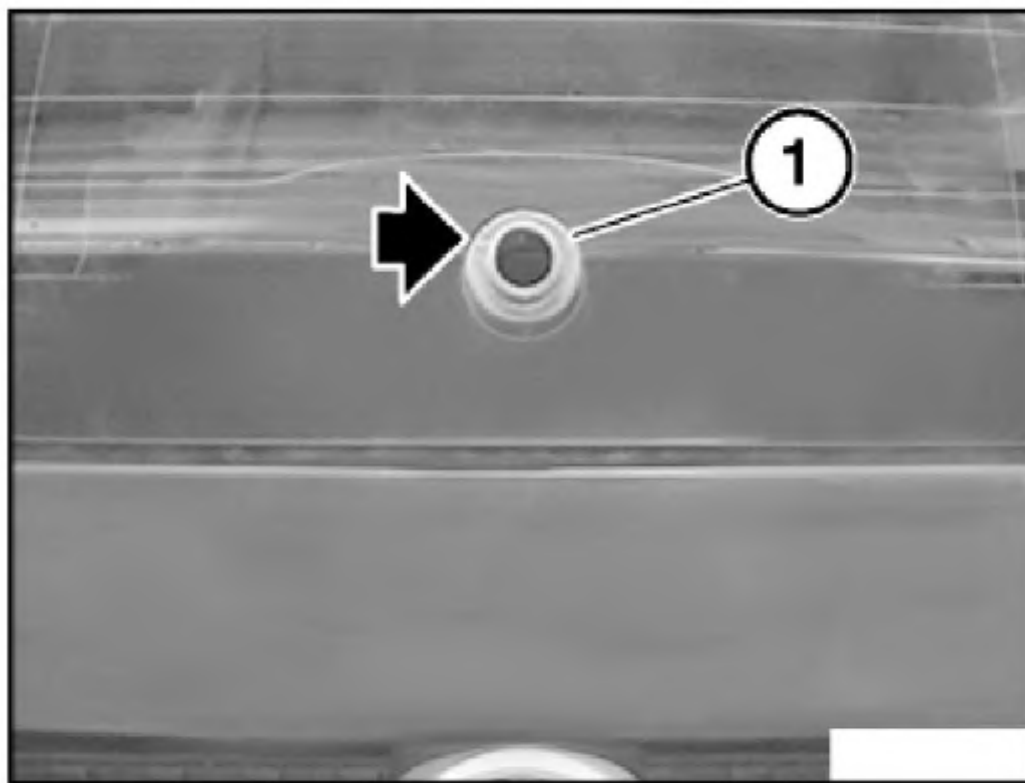
Center rear window wiper motor (3) and tighten down screws (2).

Observe tightening torque, (10 N.m).

Installation:

Replace rubber grommet (1).

Note installation position of rubber grommet (1) (marking must be in horizontal position).



G03256587

Fig. 140: Replacing Rubber Grommet
Courtesy of BMW OF NORTH AMERICA, INC.

61 62 100 ADJUSTING JET NOZZLE FOR REAR WINDOW WASHER UNIT

NOTE: The spray must meet the contact point (1).

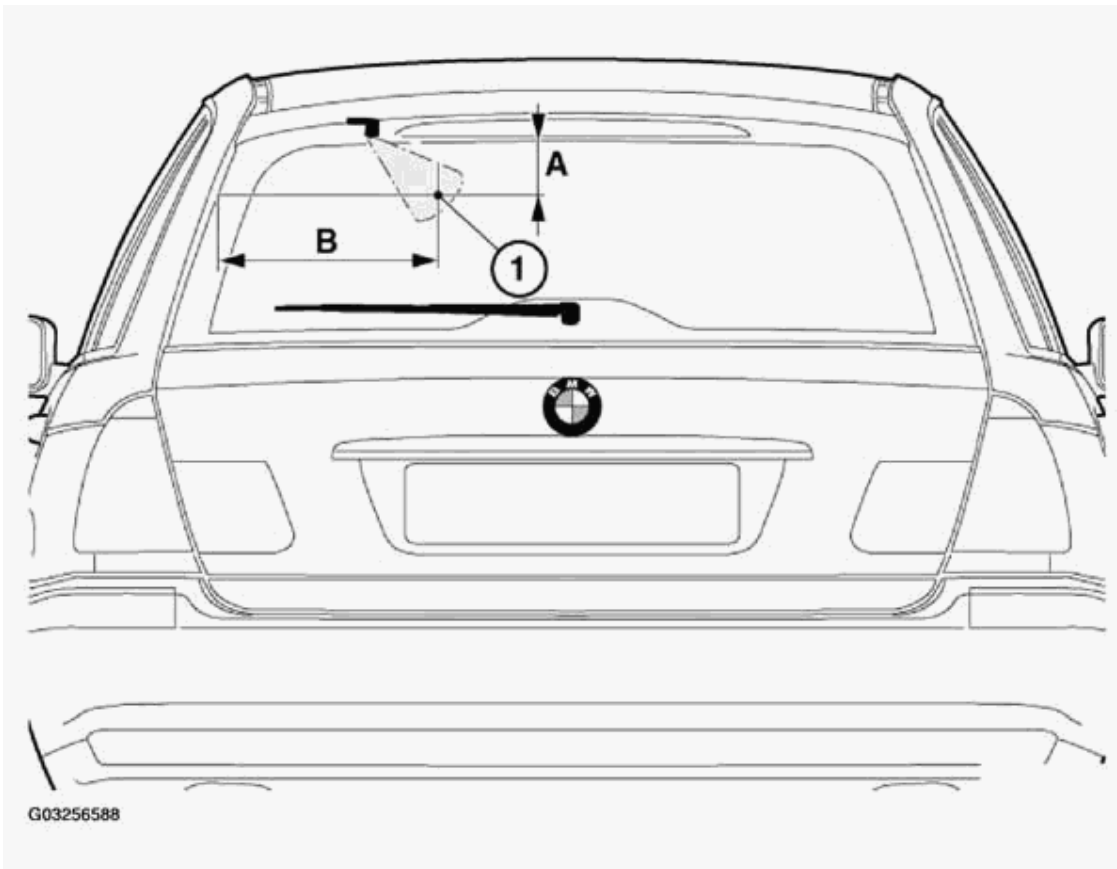


Fig. 141: Adjusting Jet Nozzle For Rear Window Washer Unit
Courtesy of BMW OF NORTH AMERICA, INC.

SPECIFICATION

	Measurement A [mm]	Measurement B [mm]
E53	100	450

IMPORTANT: Do not insert any pointed objects in nozzle (risk of damage).

Mark contact point with crepe tape. Adjust jet nozzle with offset screwdriver (3.5 mm) in slot.

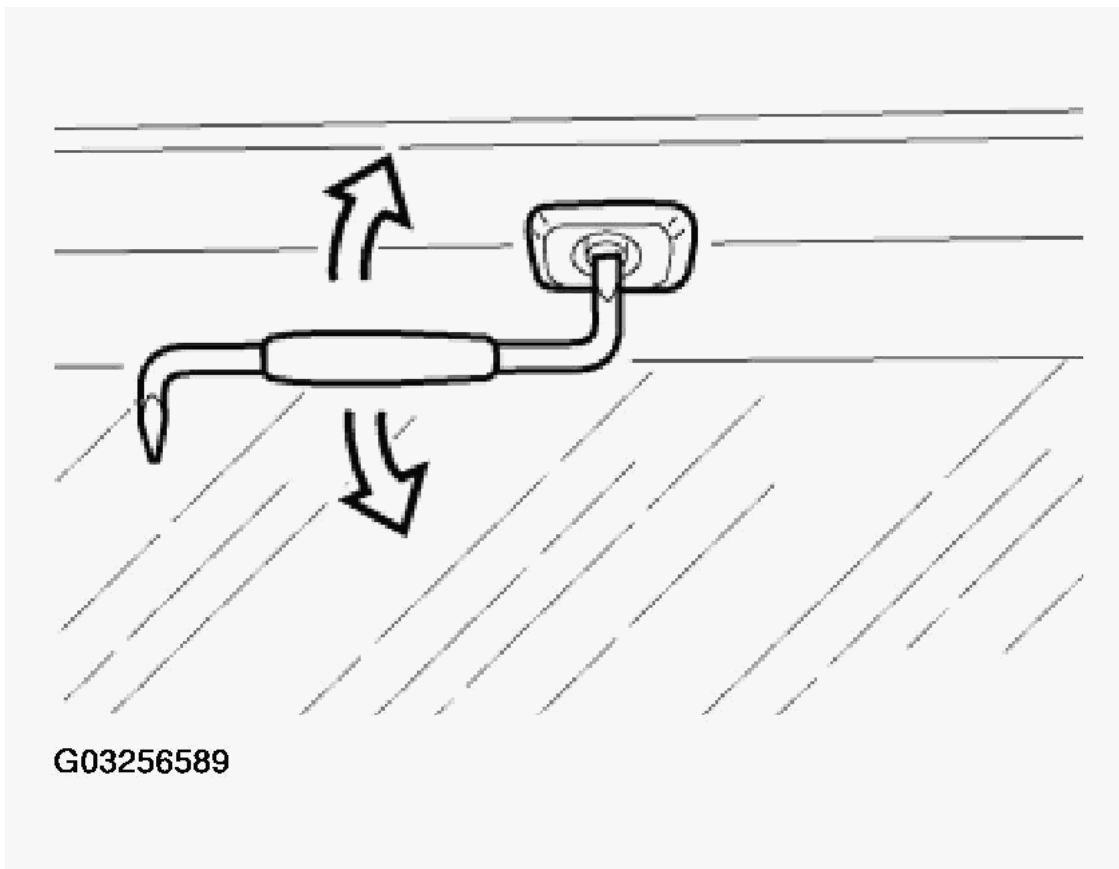


Fig. 142: Adjusting Jet Nozzle With Offset Screwdriver

Courtesy of BMW OF NORTH AMERICA, INC.

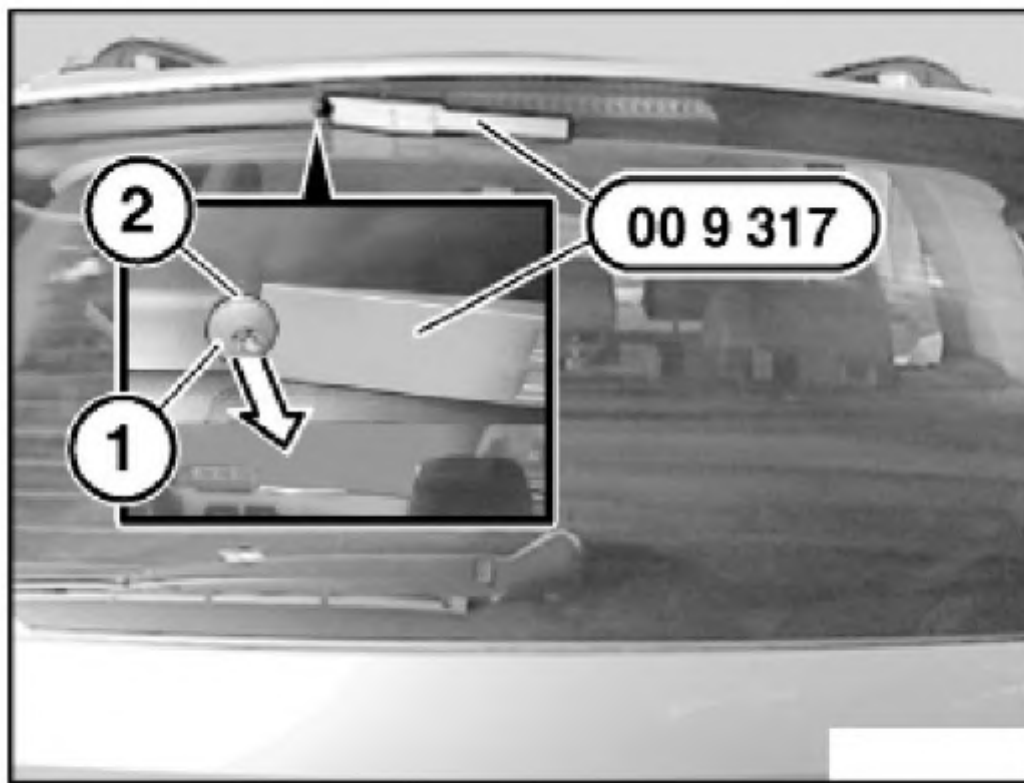
61 62 110 REMOVING AND INSTALLING / REPLACING SPRAY NOZZLE FOR REAR WINDOW WASHER UNIT

NOTE: For Special Tool identification, see SPECIAL TOOLS - X-5 (3.0i) .

Special Tools Required:

- 00 9 317

Lever spray nozzle for rear window washer system (1) with special tool 00 9 317 out of spray nozzle holder (2).

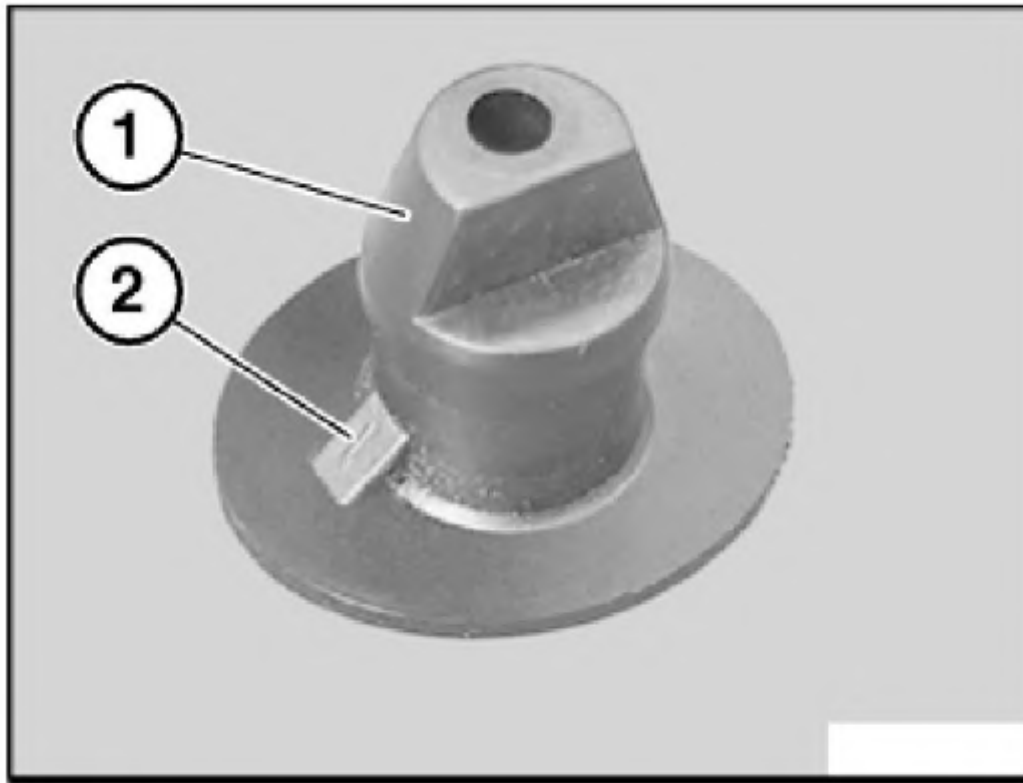


G03256590

Fig. 143: Removing Spray Nozzle From Spray Nozzle Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert lug (2) of spray nozzle for rear window washer system (1) into groove of spray nozzle holder.



G03256591

Fig. 144: Inserting Lug Of Spray Nozzle Into Groove Of Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement Only:

Adjusting spray nozzle on rear window washer unit. Refer to **61 62 100 ADJUSTING JET NOZZLE FOR REAR WINDOW WASHER UNIT** .

WINDSCREEN WASHER SYSTEM

61 71 015 REMOVING AND INSTALLING/REPLACING A JET NOZZLE IN WINDSHIELD WASHER SYSTEM

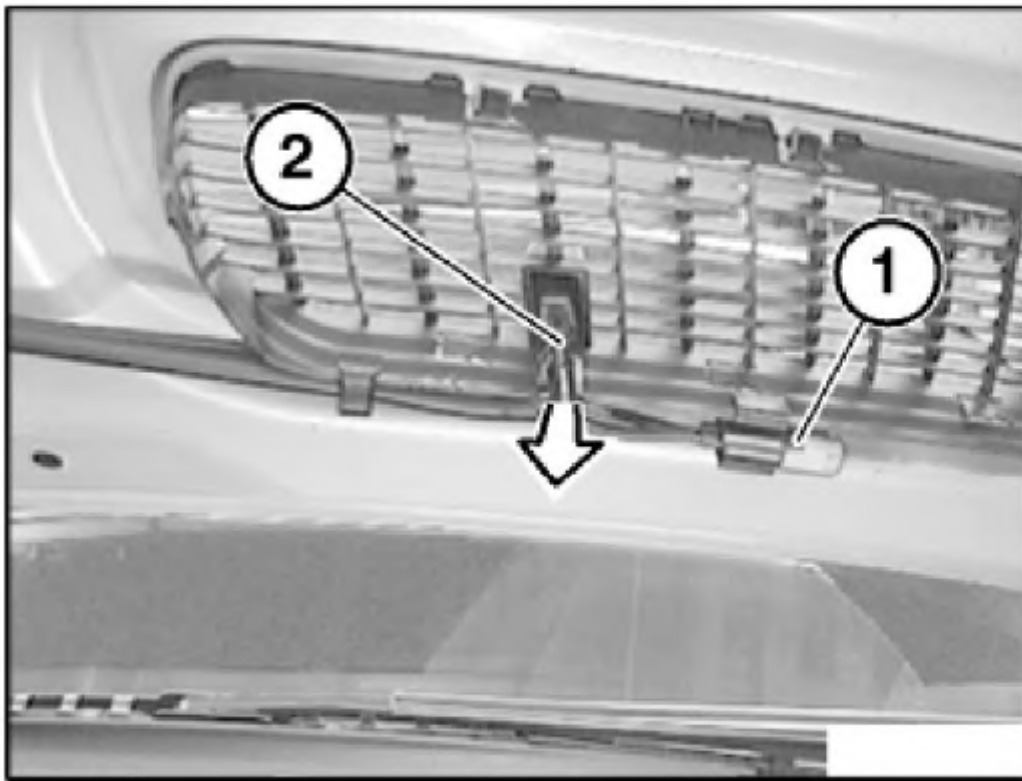
NOTE: For Special Tool identification, see **SPECIAL TOOLS - X-5 (3.0i)** .

Special Tools Required:

- 00 9 317

Unclip plug connection (1) and disconnect.

Detach angle (2) or T-piece from jet nozzle.



G03256592

Fig. 145: Disconnecting Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Unlock jet nozzle (1) with a suitable screwdriver (2).

Lever out jet nozzle (1) with special tool 00 9 317 and remove.

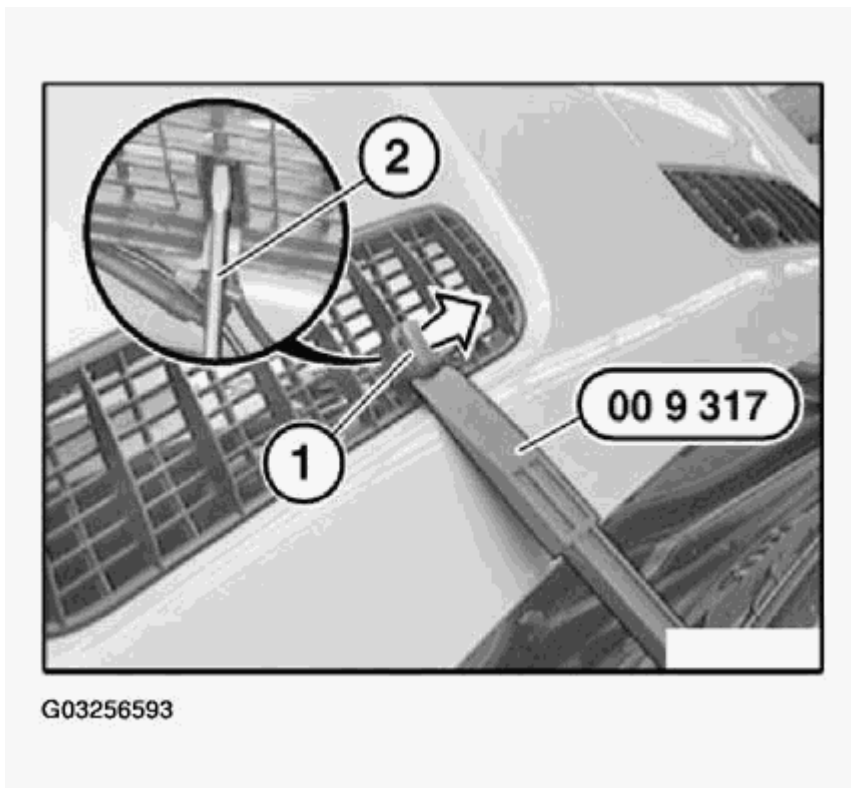


Fig. 146: Removing Jet Nozzle

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Ensure hose is laid without kinks.

Adjust jet nozzle.

HEADLIGHT WASHER SYSTEM

61 67 045 REMOVING AND INSTALLING/REPLACING SPRAY NOZZLES FOR LEFT OR RIGHT HEADLIGHT CLEANING SYSTEM

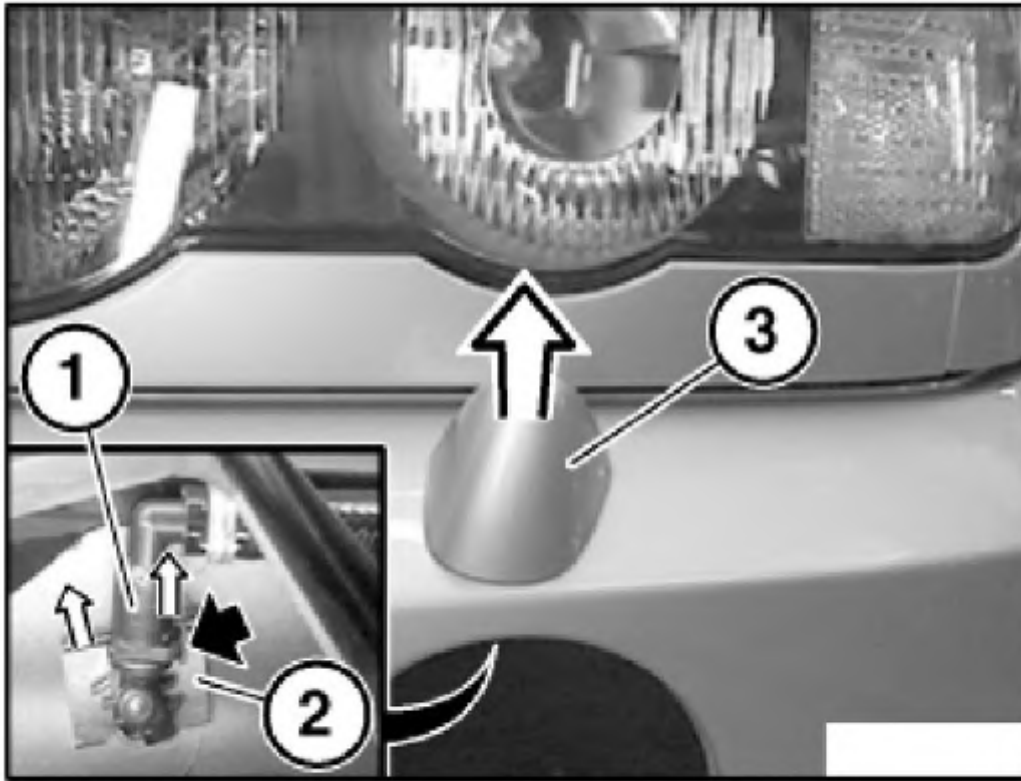
Necessary Preliminary Tasks:

- Remove fog lamp. Refer to **63 17 060 REMOVING AND INSTALLING LEFT OR RIGHT FOG LAMP (FROM 10/2003)** or **63 17 060 REMOVING AND INSTALLING LEFT OR RIGHT FOG LAMP (UP TO 10/2003)** .

Unlock hose connection (1) and disconnect.

Unlock retainer (2) in direction of arrow and remove.

Pull out spray nozzle of headlight cleaning system (3) in direction of arrow.



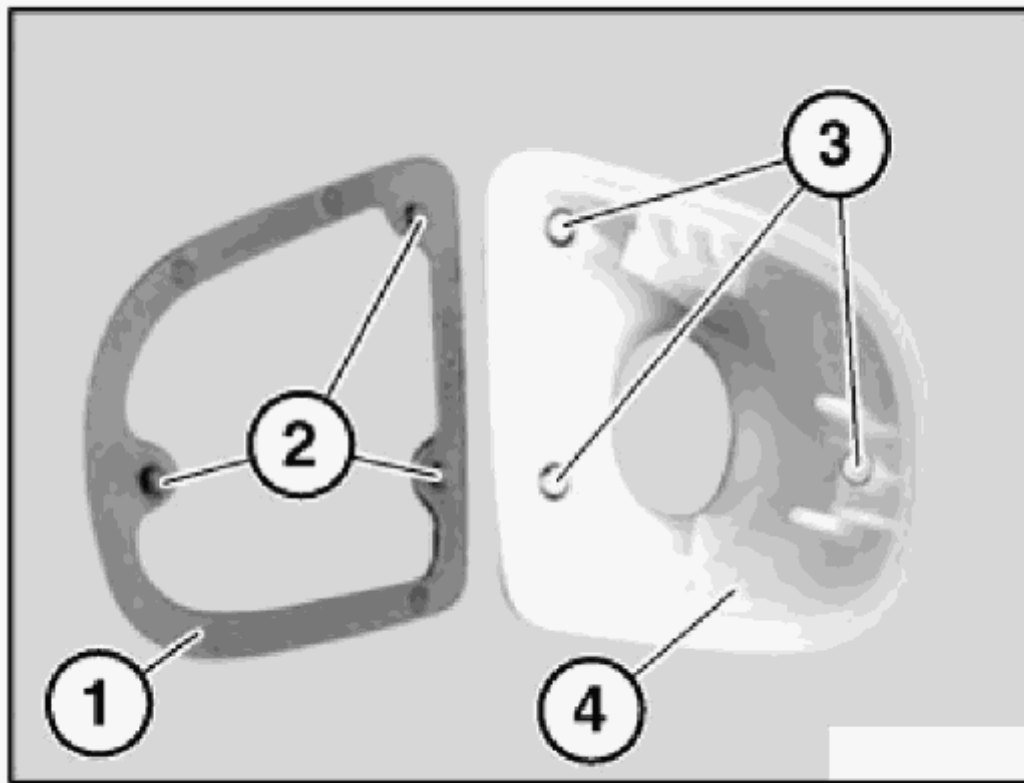
G03256594

Fig. 147: Disconnecting Hose Connection And Removing Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace backing (1).

Guides (2) of backing (1) must be located in openings (3) in trim (4).



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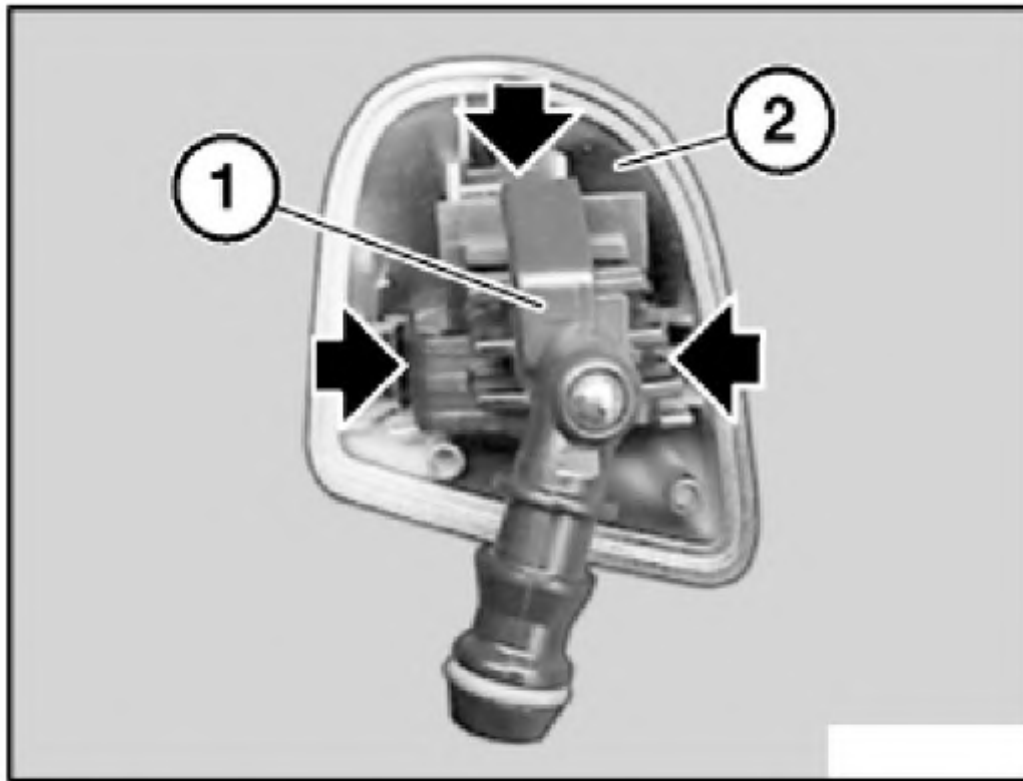
Fig. 148: Locating Guides In Backing

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, illustration shows backing removed.

Replacement:

Unclip spray nozzle (1) from trim (2).



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Fig. 149: Unclipping Spray Nozzle From Trim
Courtesy of BMW OF NORTH AMERICA, INC.

SCREEN WASHER SYSTEM

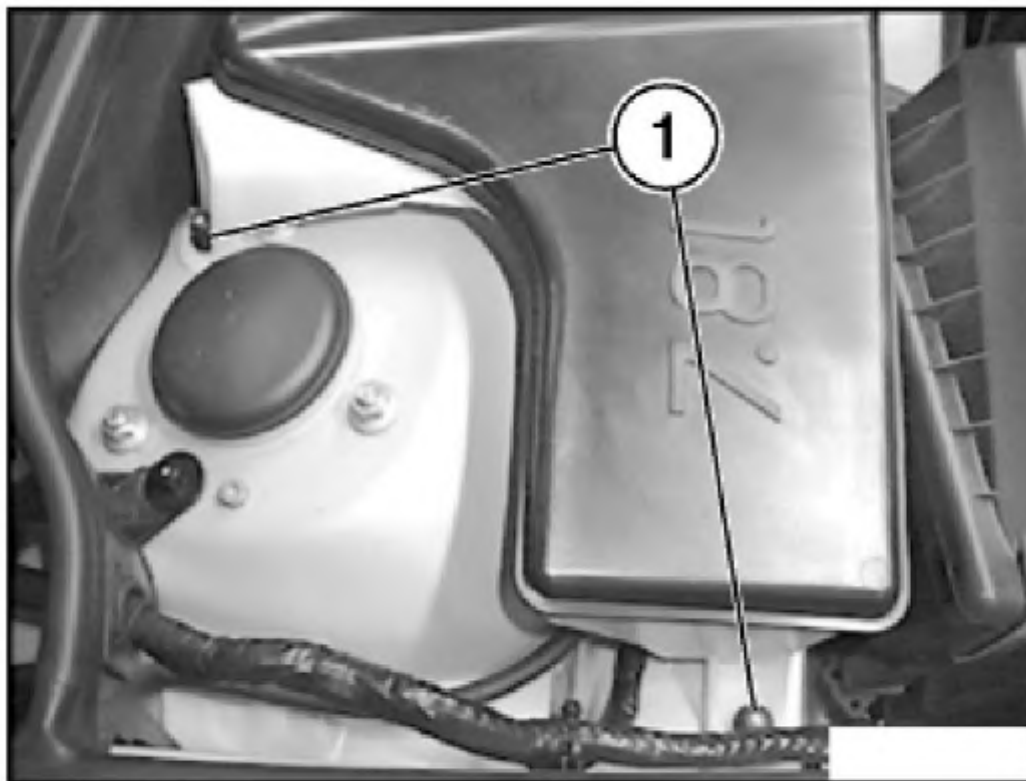
61 71 015 REMOVING AND INSTALLING/REPLACING A JET NOZZLE IN WINDSHIELD WASHER SYSTEM

Operation is identical to 61 71 015 REMOVING AND INSTALLING/REPLACING A JET NOZZLE IN WINDSHIELD WASHER SYSTEM .

61 71 061 REPLACING FLUID TANK FOR WINDSHIELD WASHER SYSTEM

NOTE: Drain fluid tank for windshield washer system.

Unscrew nuts (1).



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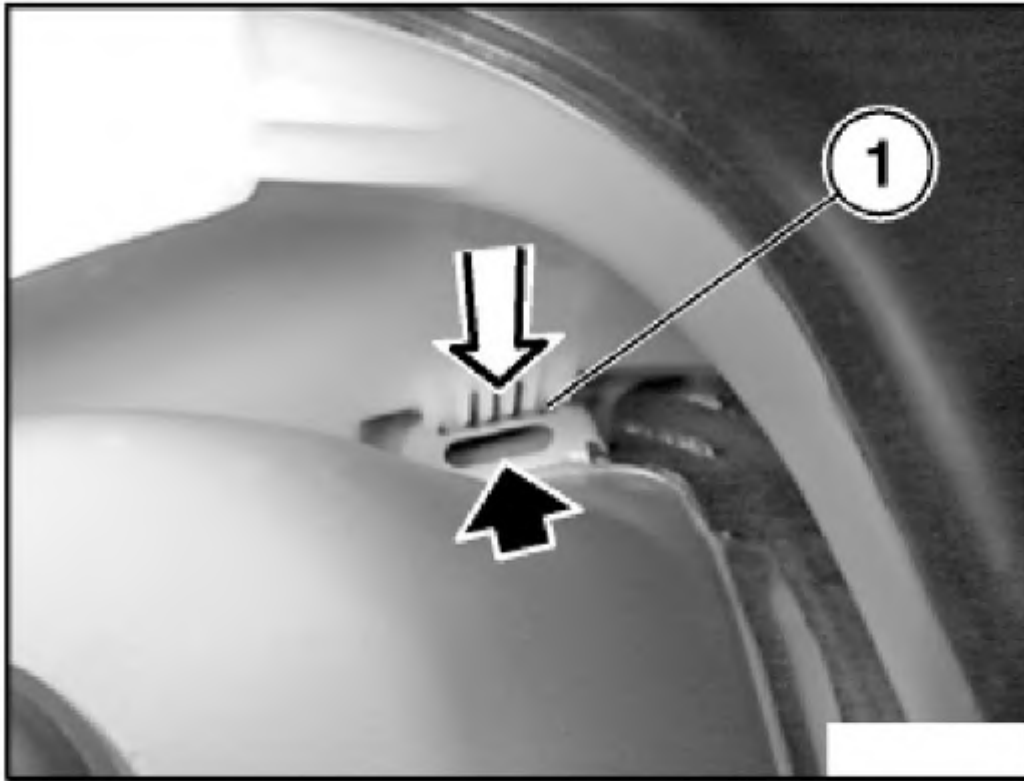
Fig. 150: Unscrewing Nuts

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Feed lug (1) into tab.

Press fluid tank for windshield washer system downwards until it is heard snapping into place.



G03256600

Fig. 151: Feeding Lug Into Tab

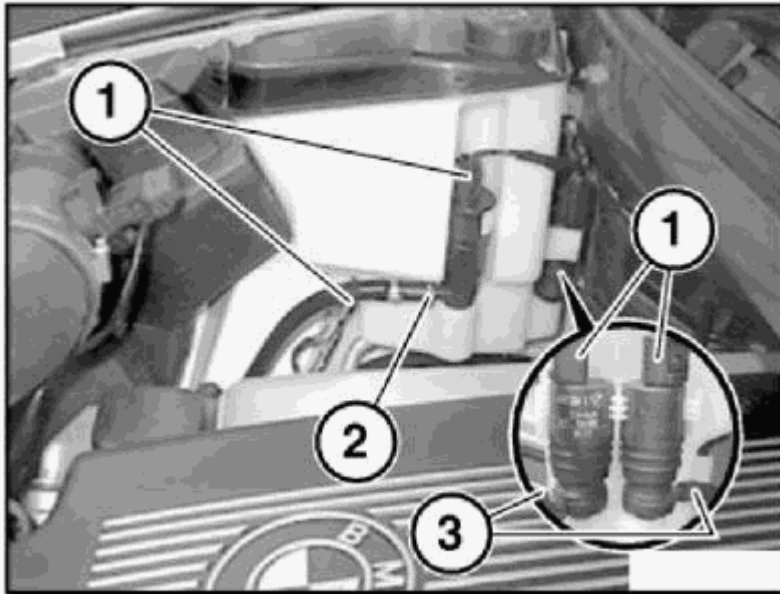
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connections (1).

Unlock hose (2) and detach.

Raise fluid tank for windshield washer system.

Detach hoses (3) and lift out fluid tank for windshield washer system.



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Fig. 152: Locating Plug Connections

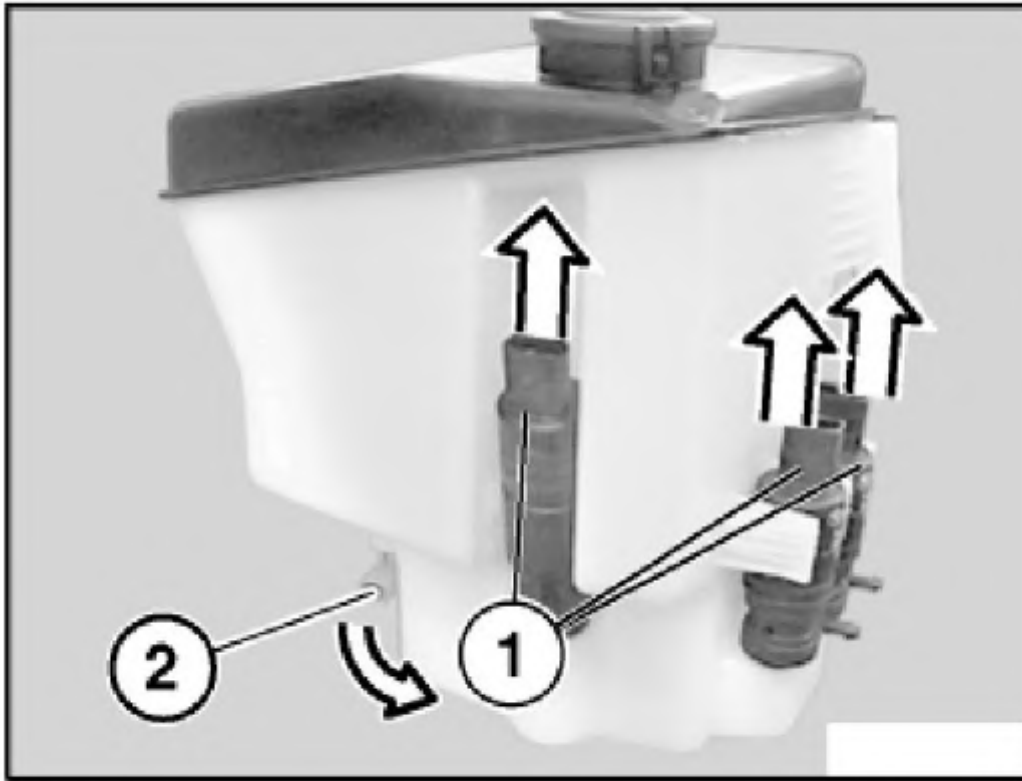
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure hoses are laid without kinks.

Fill fluid tank for windshield washer system.

Pull washer pumps (1) vertically upwards and remove.



G03256602

Fig. 153: Pulling Washer Pumps Vertically Upwards And Removing
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Coat sealing rings of washer pump with anti-friction agent.

Replace sealing rings/strainers on washer pumps.

Turn level switch (2) approx. 90° in direction of arrow and pull out.

Remove cap and strainer for fluid tank of windshield washer system.