

2007 ENGINE

Fuel Supply System - Repair Instructions - Cooper S

00 FUEL PICK-UP, CLEANING

16 00 ... OVERVIEW OF FUEL SUPPLY SYSTEM (PETROL/GASOLINE)

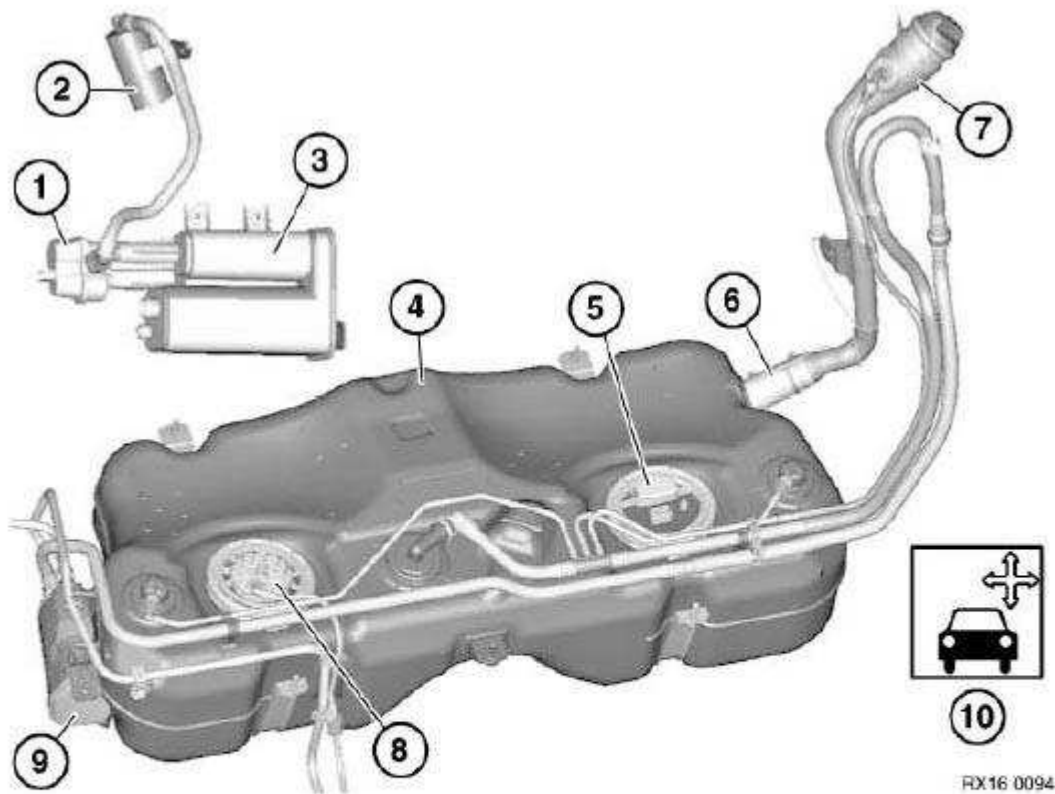


Fig. 1: Fuel Supply System Components And Assembly
Courtesy of BMW OF NORTH AMERICA, INC.

16 00 005 DRAINING AND FILLING FUEL TANK

Recycling

Fuel escapes when fuel lines are detached. Have a suitable collecting container ready.

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Catch and dispose of escaping fuel.

Observe country-specific waste-disposal regulations.

IMPORTANT:

- **Make sure the work bay is adequately ventilated.**
- **Connect an exhaust extractor system to exhaust tailpipe.**
- **Carefully withdraw extraction hose so as not to damage non-return flap.**
- **The electric fuel pump must not operate without fuel!**
- **On conclusion of repair work and before starting the engine for the first time, the fuel tank must be filled via the fuel filler pipe with at least 5 litres of fuel.**

NOTE:

Vehicles with diesel engines:

Before starting the engine for the first time, if the tank has been run dry or drawn off, fill with diesel fuel and turn on ignition for approx. 1 minute. The fuel circuit is thus filled and vented, which results in the engine firing more quickly.

Drawing off fuel:

Start engine and allow to run. The electric fuel pump runs.

The pump delivers fuel via the suction jet pump and the tank expansion line from the left to the right side of the fuel tank.

Fuel can be drawn off from the left and right tank halves through the fuel filler pipe down to a small residual amount. This residual amount is drawn off after removal of the sensors for the fuel gauge (right/left).

Feed suction hose (1) of extractor unit into filler pipe. In so doing, turn hose slightly if necessary.

Insertion length:

90 cm

Draw off fuel with suction extractor unit as far as possible.

Observe the fuel gauge in the instrument cluster while extracting fuel.

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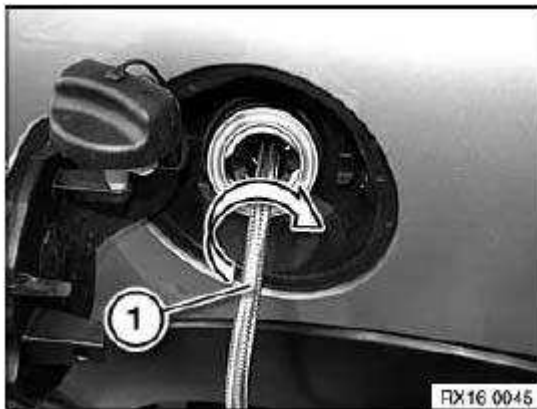


Fig. 2: Suction Hose And Installation Direction
Courtesy of BMW OF NORTH AMERICA, INC.

Drawing off residual fuel quantity:

IMPORTANT: Make sure vehicle interior is adequately ventilated.

Catch dripping fuel in a suitable container.

Remove fuel filter with fuel level sensor (right) (50-litre tank only).

Remove delivery unit (left).

Draw off residual fuel quantity through installation openings.

Fuel filling:

Slide suction hose of extractor unit approx. 40 cm into fuel filler pipe.

Fill fuel from suction extractor unit.

16 00 100 CHECKING FUEL TANK AND TANK VENTING SYSTEM FOR LEAKS (NOT US VERSION WITH DMTL)

Special tools required:

- 13 3 010
- 16 1 070
- 16 1 171
- 16 1 174

NOTE: The following procedure is only applicable to vehicles without the tank leak diagnosis module.

Check tank venting system if a leak is suspected.

Necessary preliminary tasks:

- Remove rear right **Wheel Arch Trim** .

Comply with the following conditions in order to obtain plausible test results:

- Content of fuel tank:
 1. Maximum 90 %
 2. Minimum 13 % (reserve telltale must not light up).
- Park the car in the workshop at least 2 hours before the test so that the fuel temperature is approximately that of the workshop temperature (ideal fuel temperature approx. 10 ... 20°C).
- Never refuel the vehicle directly prior to the leak test due to the strong emission of gas by the fresh fuel.

Using special tool 16 1 070 , seal opening (1) on carbon canister.

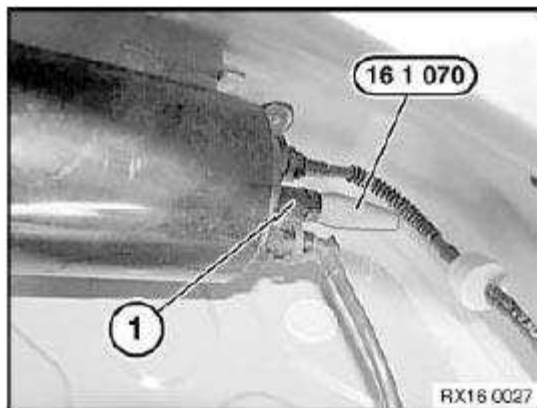


Fig. 3: Seal Opening And Special Tool (16 1 070)
Courtesy of BMW OF NORTH AMERICA, INC.

Remove fuel filler cap and connect special tool 16 1 174 to fuel filler neck.

Clamp special tool 16 1 174 on fuel filler neck with adjusting wheel (1).

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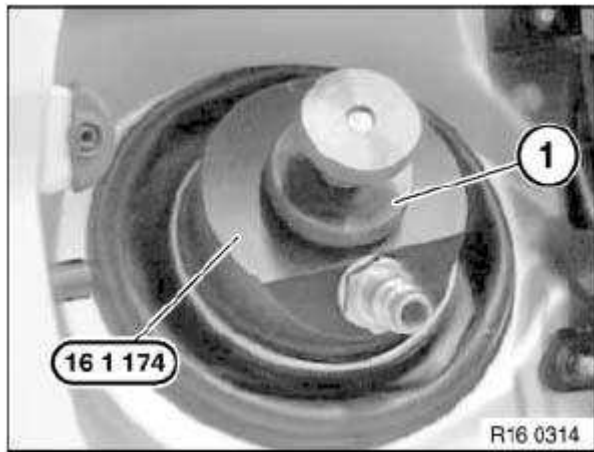


Fig. 4: Wheel And Special Tool (16 1 174)
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Set pressure regulator on special tool 16 1 171 fully in "-" direction.

Connect special tool 16 1 171 using compressed air line (1) to garage compressed air system (8 ... 10 bar).

Connect pressure sensor (2) from Diagnosis and Information System with a measuring range of 0...3.5 bar.

IMPORTANT: Do not yet connect fast-release coupling (3) of special tool 16 1 171 .

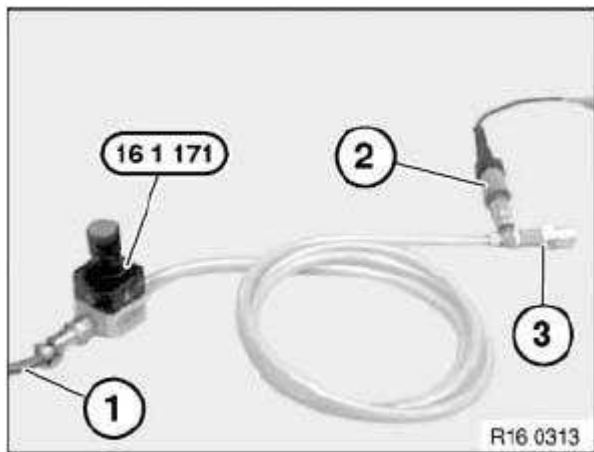


Fig. 5: Air Line, Pressure Sensor, Quick-Release Coupling And Special Tool (16 1 171)
Courtesy of BMW OF NORTH AMERICA, INC.

Select "Measurement" function on Diagnosis and Information System (DIS).

Using pressure regulator on special tool 16 1 171 , increase pressure by 0.050 bar.

Connect special tool 16 1 174 to fast-release coupling of special tool 16 1 171 .

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Using pressure regulator on special tool 16 1 171 , reset gauge pressure in fuel tank to 0.050 bar.

IMPORTANT: Do not under any circumstances increase pressure by more than 0.05 bar as this would result in damage to the fuel tank and venting system.

Using special tool 13 3 010 , disconnect delivery line from special tool 16 1 171 to fuel filler neck.

Allow a rest period of approx. 20 secs.

Read off and note down starting pressure value.

Wait approx. 60 secs.

Read off final pressure value and compare with starting pressure value.

Measurement evaluation:

LEAK TEST REFERENCE

Pressure drop between 0.008 and 0.010 bar.	Measure again.
Pressure drop in 60 secs. greater than 0.010 bar.	System leaking beyond permitted levels. <u>Carry out leak test</u> .

16 00 100 CHECKING FUEL TANK AND TANK VENTING SYSTEM FOR LEAKS (PETROL/GASOLINE CARS WITH LEAK DIAGNOSIS PUMP / US VERSION)

Special tools required:

- 13 3 010
- 16 1 161
- 16 1 171
- 16 1 174

Necessary preliminary tasks:

- Remove rear right **Wheel Arch Trim** .

The following procedure is only applicable to cars with the leak diagnosis pump (US version).

Comply with the following conditions in order to obtain plausible test results:

- Content of fuel tank:
 1. Maximum 90 %
 2. Minimum 13 % (reserve telltale must not light up).
- Park the car in the workshop at least 2 hours before the test so that the fuel temperature is approximately that of the workshop temperature (ideal fuel temperature approx. 10 ... 20°C).

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- Never refuel the vehicle directly prior to the leak test due to the strong emission of gas by the fresh fuel.

Clean housing of dust filter (1).

Slide special tool 16 1 161 over vent openings of dust filter.

IMPORTANT: Slide special tool 16 1 161 on dust filter (1) until openings are sealed.

Tighten down hose clip (2).

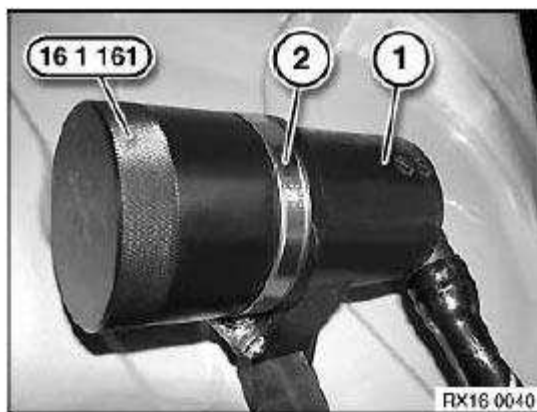


Fig. 6: Hose clip, Housing Of Dust Filter And Special Tool (16 1 161)
Courtesy of BMW OF NORTH AMERICA, INC.

Remove fuel filler cap and connect special tool 16 1 174 to fuel filler neck.

Clamp special tool 16 1 174 on fuel filler neck with adjusting wheel (1).

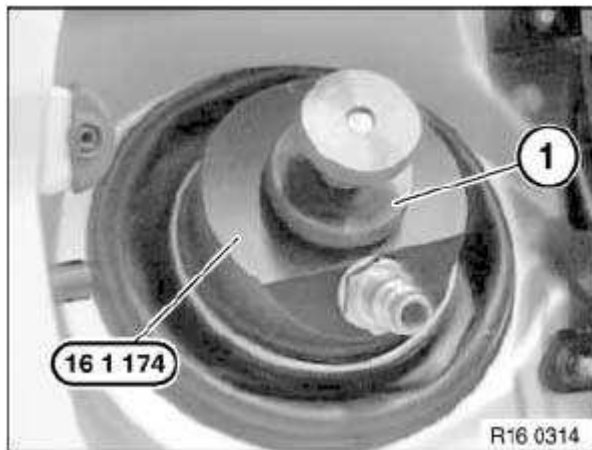


Fig. 7: Wheel And Special Tool (16 1 174)
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Turn pressure regulator on special tool 16 1 171 counterclockwise up to stop.

Connect special tool 16 1 171 using compressed air line (1) to garage compressed air system (8 ... 10 bar).

Connect pressure sensor (2) from Diagnosis and Information System with a measuring range of 0 ... 25 bar.

IMPORTANT: Do not yet connect fast-release coupling (3) of special tool 16 1 171 .

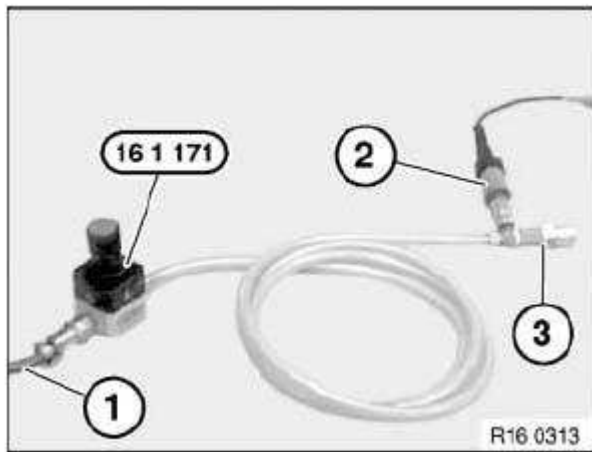


Fig. 8: Air Line, Quick-Release Coupling, Pressure Sensor And Special Tool (16 1 171)
Courtesy of BMW OF NORTH AMERICA, INC.

1. Select "Measurement" function on Diagnosis and Information System (DIS).
2. Using pressure regulator on special tool 16 1 171 , increase pressure by 0.20 bar.
3. Connect special tool 16 1 174 to fast-release coupling of special tool 16 1 171 .
4. Wait until the value at the Diagnosis and Information System has levelled out.
5. Using pressure regulator on special tool 16 1 171 , reset gauge pressure in fuel tank to 0.20 bar.

IMPORTANT: Do not under any circumstances increase pressure by more than 0.30 bar as this would result in damage to the fuel tank and venting system.

Using special tool 13 3 010 , disconnect delivery line from special tool 16 1 171 to fuel filler neck.

Allow a rest period of approx. 20 sec.

Read off and note down starting pressure value.

Wait approx. 120 sec.

Read off final pressure value and compare with starting pressure value.

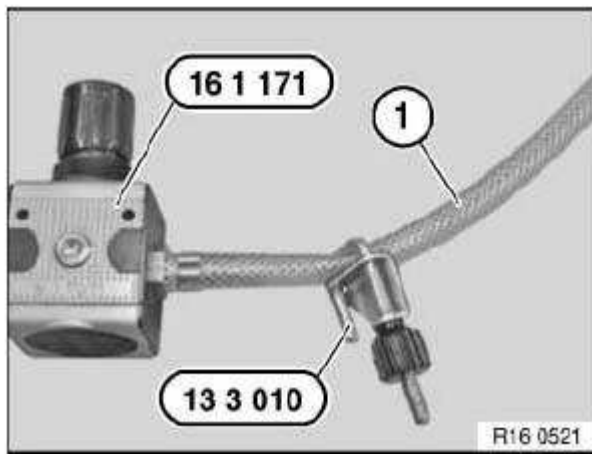


Fig. 9: Fuel Filler Neck Delivery Line, Special Tools (16 1 171) And (13 3 010)
Courtesy of BMW OF NORTH AMERICA, INC.

Measurement evaluation:

- Pressure drop up to 0.01 bar:

System OK

- Pressure drop over 0.02 bar:

System leaking beyond permitted levels

If the system is leaking, a **Leak Test** must be carried out and the defective components replaced.

16 00 510 CONDUCTING LEAK TEST ON FUEL TANK AND TANK VENTING SYSTEM

Necessary preliminary tasks:

- Pressurize **Fuel Tank And Tank Venting System**

NOTE: During the leak test with a leak detector, be sure to follow the operating instructions of the equipment manufacturer.

IMPORTANT: Escaping fuel vapours; only work in well-ventilated rooms or use suitable exhaust extraction unit.

Observe country-specific accident prevention and occupational safety regulations.

The leak test can be carried out with a leak detector.

Possible causes may be:

- Fuel filler cap leaking
- Tank venting lines leaking (fuel tank; carbon canister; tank venting valve)
- Tank ventilation valve leaky (engine compartment)
- Tank sensor on fuel tank leaky



R16 0131

Fig. 10: Leak Detector
Courtesy of BMW OF NORTH AMERICA, INC.

11 FUEL TANK WITH MOUNTING

16 11 ... REPLACING LEFT OR RIGHT CLAMPING BAND

Necessary preliminary tasks:

- Remove rear left or right **Underbody Panelling**

IMPORTANT: Secure fuel tank against slipping and falling out.

Heavily support the fuel tank.

**Fig. 11: Support Fuel Tank****Courtesy of BMW OF NORTH AMERICA, INC.**

Release expansion rivet (1).

Release screws (2) and remove clamping band.

Installation:

For tightening torque refer to 16 11 5AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

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Fig. 12: Expansion Rivet And Clamping Band Mounting Screws**Courtesy of BMW OF NORTH AMERICA, INC.****16 11 030 REMOVING AND INSTALLING FUEL TANK (50-LITRE TANK)**

Recycling

Fuel escapes when fuel lines are detached. Have a suitable collecting container ready.

Catch and dispose of escaping fuel.

Observe country-specific waste-disposal regulations.

IMPORTANT: Avoid skin contact (wear gloves)!

Ensure adequate ventilation in the place of work!

After installation of fuel tank/prior to first engine start-up:

- **Check electrical resistance between metal filler bowl and wheel hub**
- **Measured value: approx. 0.65 ohms**
- **Fill fuel tank with at least 5 litres of fuel**

Necessary preliminary tasks:

- Draw off **Fuel From Fuel Tank**
- Remove rear left and right **Wheel Arch Trim** .
- Remove **underbody panelling** on left and right
- Remove **Exhaust System**
- Remove heat shield

Detach locking clip (1) in direction of arrow.

Disengage parking brake Bowden cable (2) from actuating lever (3) at brake caliper.

Feed out parking brake Bowden cable (2) downwards.

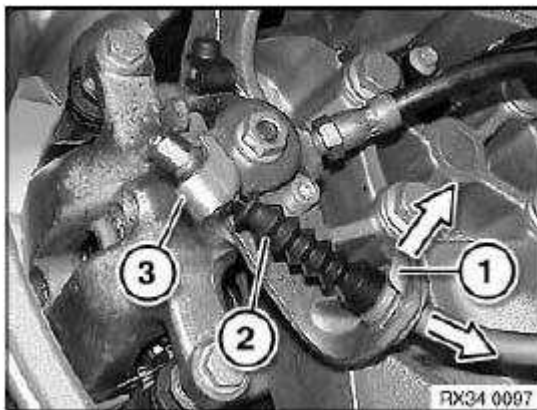


Fig. 13: Locking Clip, Bowden Cable, Actuating Lever And Removal Directions
Courtesy of BMW OF NORTH AMERICA, INC.

Release bolts (2) from rear axle carrier.

Installation:

For tightening torque refer to 34 41 2AZ in **34 41 PARKING BRAKE**

Disengage parking brake Bowden cables from holders (1) and feed out through rear axle carrier.

NOTE: **Parking brake Bowden cables remain suspended on handbrake lever.**

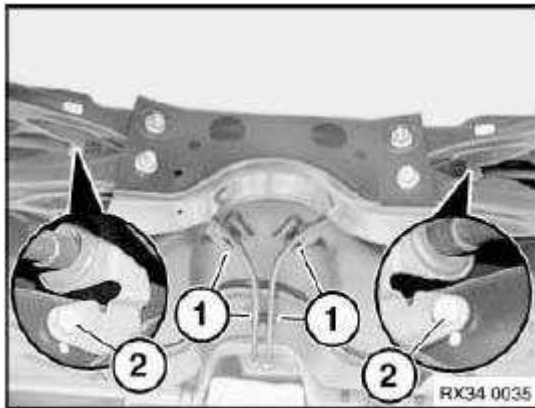


Fig. 14: Rear Axle Carrier, Parking Brake Bowden Cable Holders And Retaining Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock quick-release fasteners (1) on carbon canister and detach.

Installation:

Make sure quick-release fasteners engage correctly.

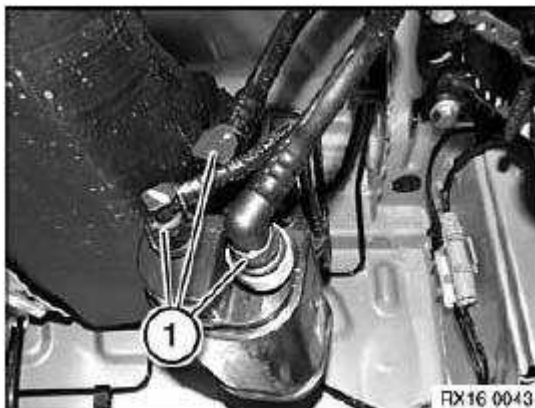


Fig. 15: Carbon Canister Quick-Release Fasteners
Courtesy of BMW OF NORTH AMERICA, INC.

Release hose clamp (1) and disengage filler vent line from holder (2).

Installation:

Replace hose clip.

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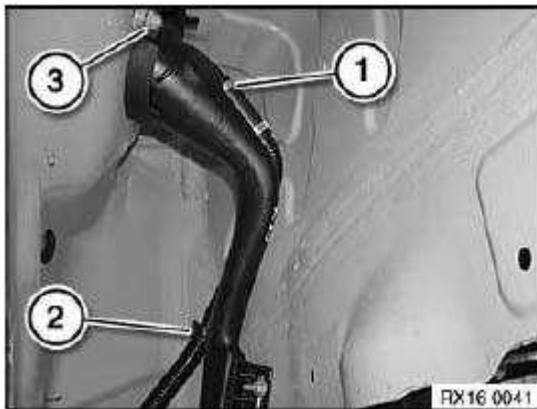


Fig. 16: Hose Clamp And Filler Ventline Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Release hose clamp (1) and detach filler hose from fuel tank.

Installation:

For tightening torque refer to 16 11 4AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

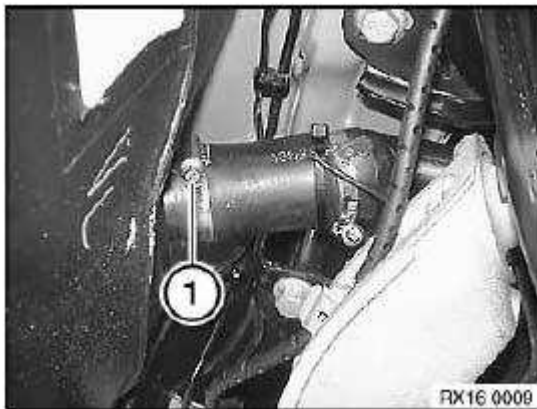


Fig. 17: Filler Hose Clamp
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect quick-release fastener (1) of fuel feed line.

Installation:

Make sure that quick-release fastener is correctly engaged.

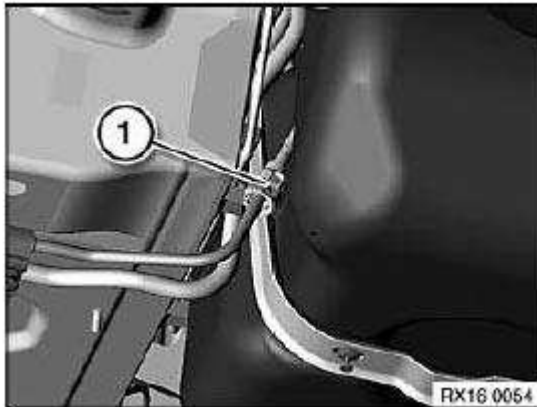


Fig. 18: Fuel Feed Line Quick-Release Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Secure fuel tank over a wide area with a suitable workshop jack and secure against falling down.

Remove expander rivets (1).

Release screws (2) and lower fuel tank a little.

Installation:

For tightening torque refer to 16 11 3AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

Disconnect plug connection on left sensor unit.

IMPORTANT: Vent lines on left must be guided carefully through openings in body.

Lower fuel tank.

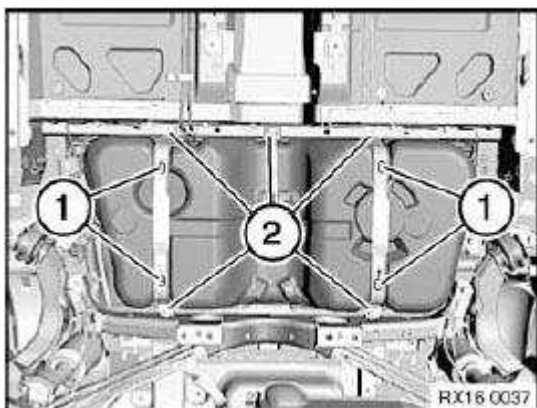


Fig. 19: Expander Rivets And Fuel Tank Mounting Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

- Modify left and right **fuel level sensors**
- Convert fuel feed line between delivery unit and cutting line

Unfasten hose clip (1) and remove hose.

Installation:

Replace hose clip.

Disconnect quick-release fasteners (2), detach vent lines (3) from bracket and modify.

Installation:

Make sure lines and wiring harness are not trapped or crushed during installation.

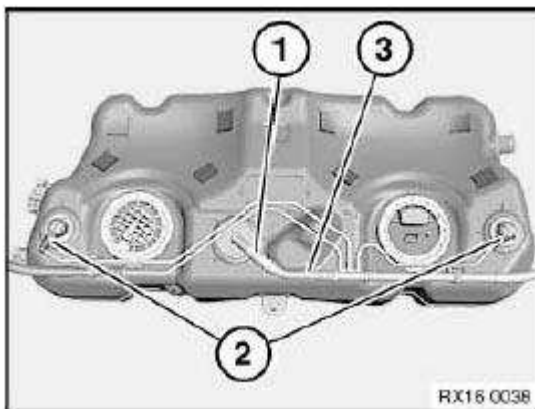


Fig. 20: Quick-Release Fasteners, Vent Lines And Hose Clamp
Courtesy of BMW OF NORTH AMERICA, INC.

16 11 060 REMOVING AND INSTALLING/REPLACING FUEL FILLER PIPE*Recycling*

Fuel escapes when fuel lines are detached. Have a suitable collecting container ready.

Catch and dispose of escaping fuel.

Observe country-specific waste-disposal regulations.

IMPORTANT: Ensure adequate ventilation in the place of work!

Avoid skin contact (wear gloves)!

After installation of fuel tank/prior to first engine start-up:

- Check electrical resistance between metal filler bowl and wheel hub.
- Measured value: approx. 0.65 ohms.
- Fuel tank must be filled with at least 5 litres of fuel.

Necessary preliminary tasks:

- Draw off **fuel from fuel tank**
- Remove rear left **Wheel Arch Trim** .
- Remove left **Underbody Panelling**
- Unscrew fuel filler cap from fuel filler pipe

Unfasten hose clip (1).

Detach fuel hose from fuel tank.

Installation:

For tightening torque refer to 16 11 4AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

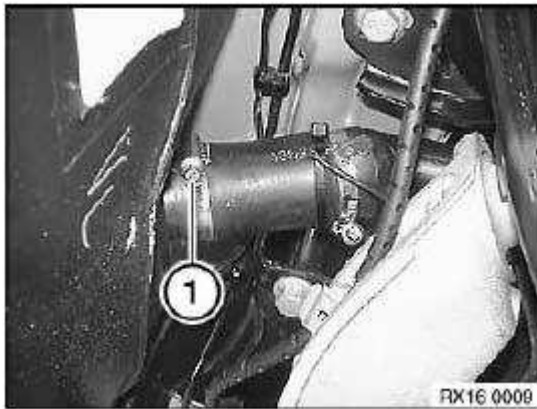


Fig. 21: Fuel Hose Clamp

Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten hose clip (1).

Installation:

Replace hose clip.

Unclip vent line from holder (2).

Unscrew nut (3).

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Installation:

Replace nut.

For tightening torque refer to 16 11 1AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

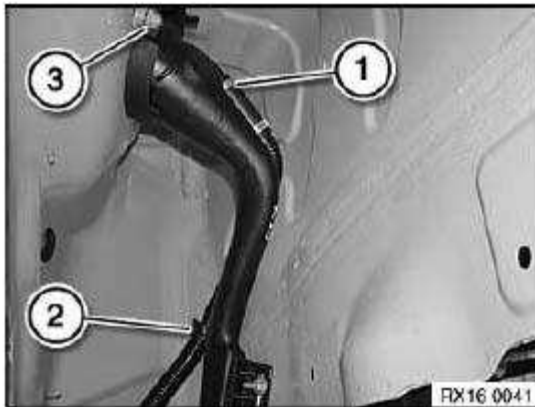


Fig. 22: Vent Line Holder, Hose Clip And Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew nut (1).

Installation:

For tightening torque refer to 16 11 1AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

Wind grounding cable (2) back around fuel filler pipe.

Remove fuel filler pipe (3).

Installation:

Make sure grounding cable (2) is correctly fitted.

Following seals must be correctly fitted:

- Vent hose to fuel filler pipe
- Fuel filler pipe to body cutout

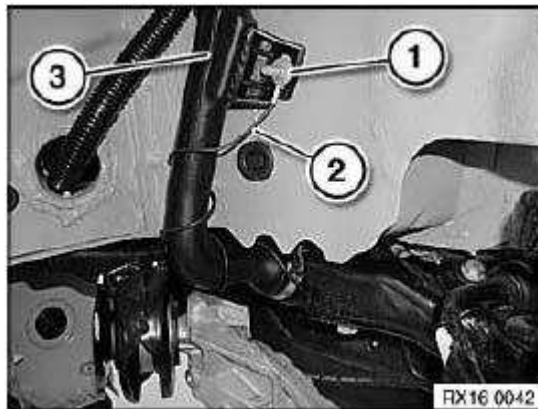


Fig. 23: Grounding Cable, Fuel Filler Pipe And Mounting Nut
Courtesy of BMW OF NORTH AMERICA, INC.

16 11 071 REPLACING RUBBER SLEEVE BETWEEN FUEL FILLER PIPE AND FUEL TANK

Recycling

Fuel escapes when fuel lines are detached. Have a suitable collecting container ready.

Catch and dispose of escaping fuel.

Observe country-specific waste-disposal regulations.

IMPORTANT: After installation of fuel tank/prior to first engine start-up:

- Check electrical resistance between metal filler bowl and wheel hub.
- Measured value: approx. 0.65 ohms.
- Fuel tank must be filled with at least 5 litres of fuel.

Necessary preliminary tasks:

- Remove rear left **Wheel Arch Trim** .
- Remove left **Underbody Panelling**
- Draw off **Fuel From Fuel Tank**

Unscrew nut (1).

Installation:

For tightening torque refer to 16 11 1AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

Make sure grounding cable (2) is correctly laid and secured.

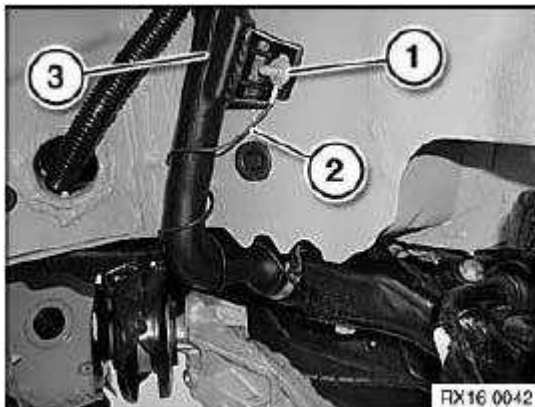


Fig. 24: Grounding Cable, Fuel Filler Pipe And Mounting Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Cut open cable tie (1).

Loosen hose clamps (2).

Detach rubber sleeve (3) first from fuel filler pipe and then from fuel tank.

Installation:

For tightening torque refer to 16 11 4AZ in **16 11 FUEL TANK AND FASTENING ELEMENTS** .

Replace cable ties.

Make sure grounding cable is correctly fitted.

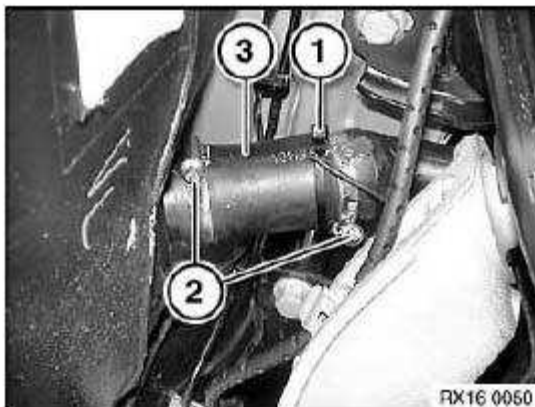


Fig. 25: Rubber Sleeve, Hose Clamp And Cable Tie
Courtesy of BMW OF NORTH AMERICA, INC.

12 FUEL TRANSFER, SENSOR

16 12 010 REMOVING AND INSTALLING/REPLACING CARBON CANISTER (50-LITRE TANK)

Necessary preliminary tasks:

- Remove rear right **Underbody Panelling**

Unlock and detach quick-connect couplings (1).

Unscrew bolt (3).

Withdraw carbon canister (2) from mounting and remove.

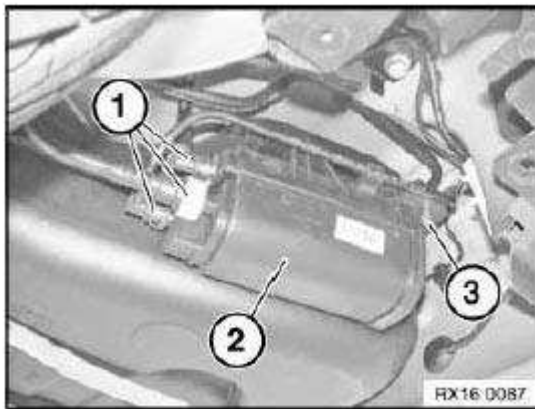


Fig. 26: Quick-Connect Couplings, Carbon Canister And Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

16 12 010 REMOVING AND INSTALLING/REPLACING CARBON CANISTER (US VERSION WITH DMTL)

Necessary preliminary tasks:

- Remove rear right **Underbody Panelling**

Disconnect plug connection (1).

Unlock and detach quick-connect couplings (2).

Release screws (3).

Press off carbon canister with tank leakage diagnosis module in direction of arrow.

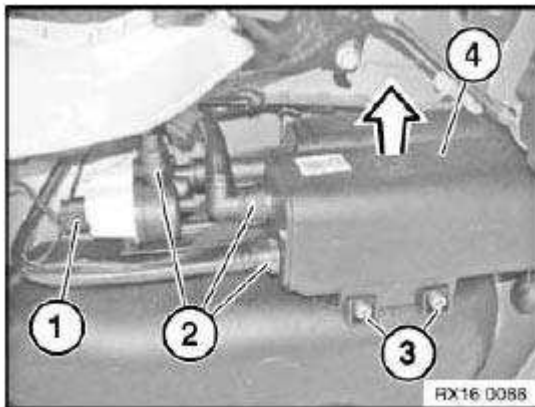


Fig. 27: Plug Connection, Quick-Connect Couplings, Screws And Removal Direction
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carbon canister must snap correctly into place in guide (1).

Replacement:

- Modify **Tank Leakage Diagnosis Module**

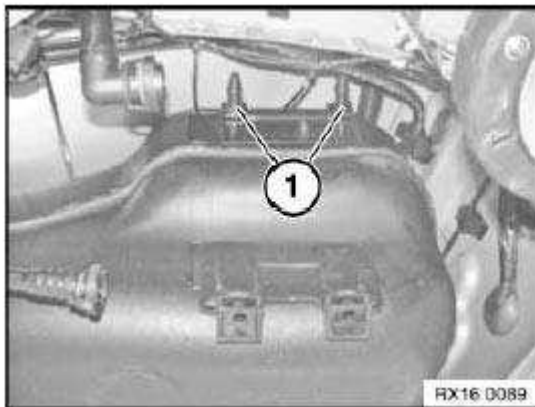


Fig. 28: Carbon Canister Guide
Courtesy of BMW OF NORTH AMERICA, INC.

13 FUEL VENTILATION

16 13 015 REMOVING AND INSTALLING/REPLACING TANK LEAK DIAGNOSIS MODULE (PETROL/GASOLINE CARS WITH US DMTL VERSION)

Necessary preliminary tasks:

- Remove **Carbon Canister**

Release screws (1).

Detach tank leakage diagnosis module (2) in direction of arrow from carbon canister (3).

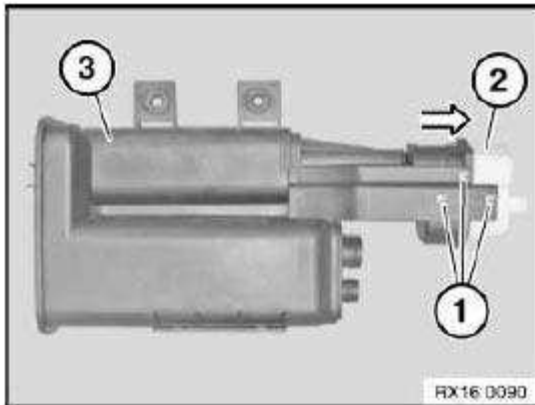


Fig. 29: Retaining Screws, Leak Diagnosis Module, Carbon Canister And Removal Direction
Courtesy of BMW OF NORTH AMERICA, INC.

14 FUEL PUMP

16 14 015 REMOVING AND INSTALLING/REPLACING FUEL PUMP WITH FUEL LEVEL SENSOR (50-LITRE TANK)

Special tools required:

- 16 1 020

Recycling

Fuel escapes when fuel lines are detached. Have a suitable collecting container ready.

Catch and dispose of escaping fuel.

Observe country-specific waste-disposal regulations.

IMPORTANT: Ensure adequate ventilation in the place of work!

Avoid skin contact (wear gloves)!

Before starting the engine for the first time:

- **Fill fuel tank with at least 5 litres of fuel.**

Necessary preliminary tasks:

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- Draw off Fuel From Fuel Tank
- Remove Rear Seat

Push trim panel (1) forward.

Unscrew nuts (2).

For tightening torque refer to 16 11 2AZ in 16 11 FUEL TANK AND FASTENING ELEMENTS .

Remove cover (3).

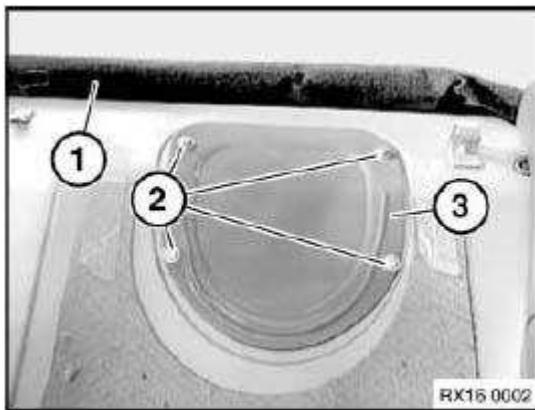


Fig. 30: Cover, Trim Panel And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection.

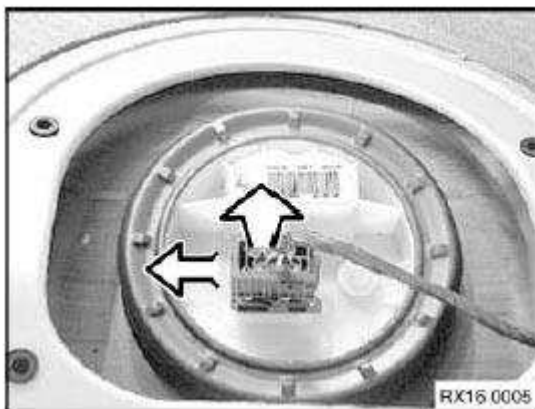


Fig. 31: Plug Connection And Removal Directions
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw cap with special tool 16 1 020 .

Installation:

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For tightening torque refer to 16 14 1AZ in **16 14 FUEL PUMP** .

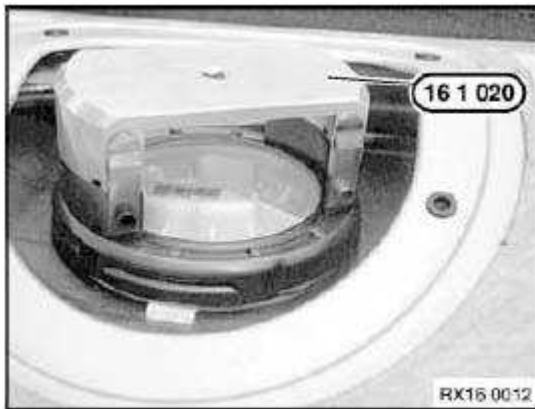


Fig. 32: Special Tool (16 1 020)

Courtesy of BMW OF NORTH AMERICA, INC.

Raise unit.

NOTE: To improve installation, secure cable (1) and lines (2 and 3) with cord.

Disconnect plug connection (1).

Unlock line (2) at quick-release fastener and detach.

Unclip line (3).

Carefully lift fuel pump with fuel level sensor out of fuel tank.

Installation:

Replace rubber seal (4).

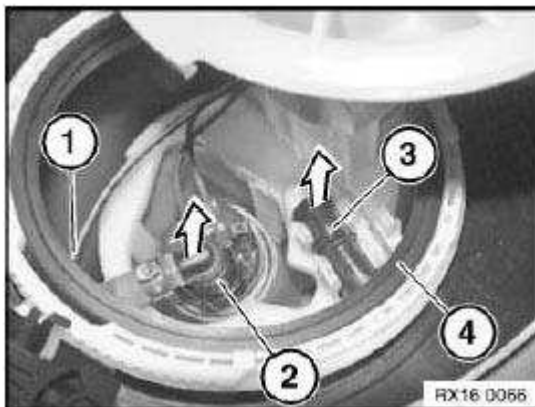


Fig. 33: Cable, Lines, Plug Connection And Removal Directions

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

When installing fuel level sensor, make sure lug (1) engages in recess (2) on tank.

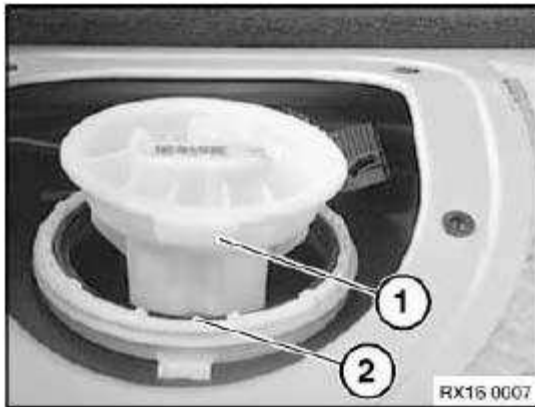


Fig. 34: Fuel Level Sensor Lug And Tank Recess
Courtesy of BMW OF NORTH AMERICA, INC.

16 14 017 REMOVING AND INSTALLING/REPLACING FUEL FILTER WITH FUEL LEVEL SENSOR (50-LITRE TANK)

Special tools required:

- 16 1 020

Recycling

Fuel escapes when fuel lines are detached. Have a suitable collecting container ready.

Catch and dispose of escaping fuel.

Observe country-specific waste-disposal regulations.

IMPORTANT: Ensure adequate ventilation in the place of work!

Avoid skin contact (wear gloves)!

Before starting the engine for the first time:

- **Fill fuel tank with at least 5 litres of fuel.**

Necessary preliminary tasks:

- Draw off Fuel From Fuel Tank
- Remove Rear Seat
- Remove Complete Sensor Unit (Left)

Installation:

Secure a cable to hose pack through left service opening in tank.

The cable facilitates reinstallation of the hose pack.

Push trim panel (1) forward.

Release screws (2).

Installation:

For tightening torque refer to 16 11 2AZ in 16 11 FUEL TANK AND FASTENING ELEMENTS .

Remove cover (3).

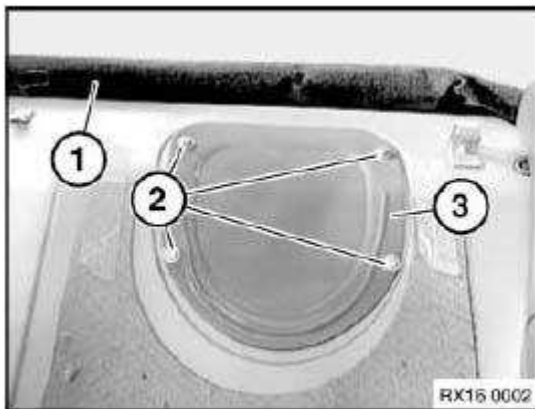


Fig. 35: Cover, Trim Panel And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock fuel line and detach.

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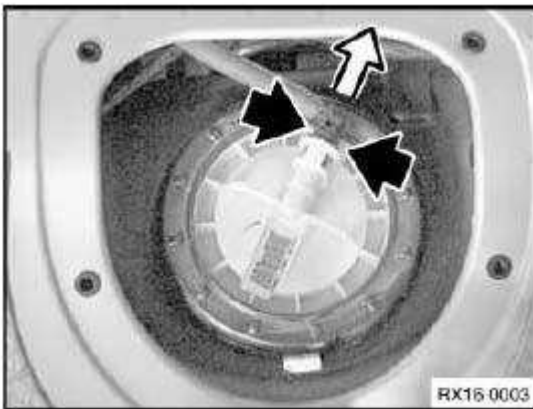


Fig. 36: Fuel Line And Removal Direction
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw cap with special tool 16 1 020 .

Installation:

Replace rubber seal.

For tightening torque refer to 16 14 1AZ in **16 14 FUEL PUMP** .

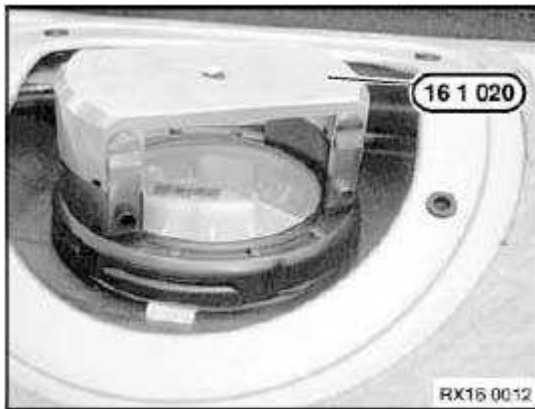


Fig. 37: Special Tool (16 1 020)
Courtesy of BMW OF NORTH AMERICA, INC.

Remove line holder from sensor unit. Lift sensor unit and lines out of fuel tank.

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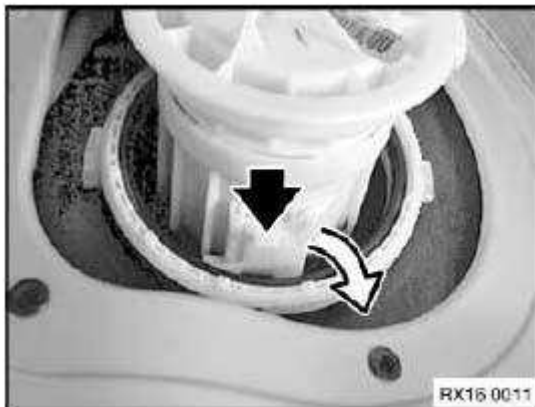


Fig. 38: Removing Line Holder From Sensor Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

When installing fuel filter, make sure lug (1) engages in recess (2) on tank.

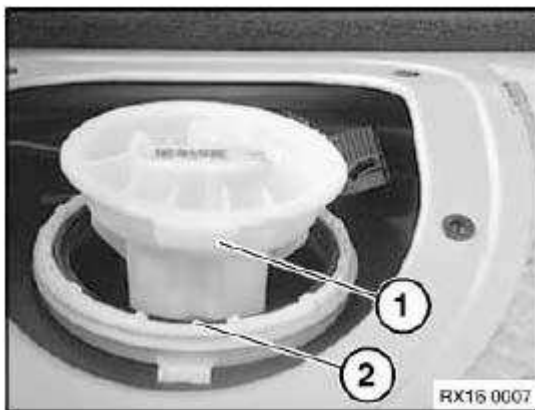


Fig. 39: Fuel Filler Lug And Tank Recess
Courtesy of BMW OF NORTH AMERICA, INC.

16 14 060 REMOVING AND INSTALLING/REPLACING DUST FILTER FOR TANK LEAKAGE DIAGNOSIS MODULE (DMTL)

Necessary preliminary tasks:

- Remove rear right **Wheel Arch Trim** .

Pull off hose (1).

Release nuts (2) and remove dust filter (3).

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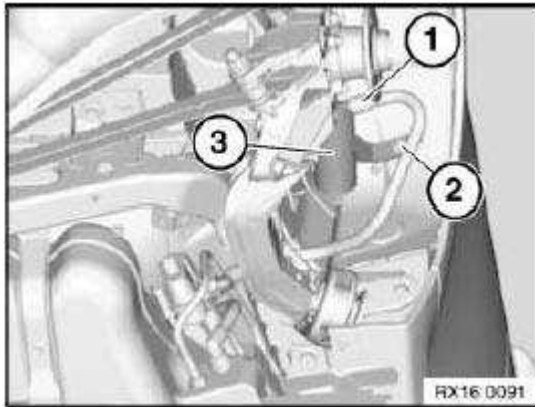


Fig. 40: Dust Filter, Hose And Nuts

Courtesy of BMW OF NORTH AMERICA, INC.