

ENGINE**Fuel supply system - Repair Instructions****DRAWING OFF OF FUEL, SYSTEM CLEANING****16 00 GENERAL FUNCTION DESCRIPTION FOR FUEL SUPPLY SYSTEMS****Fuel supply systems, spark-ignition engines****Fuel system**

The electric fuel pump in the fuel tank generates the pressure in the fuel system which is set by the pressure regulator to a specific level.

Tank venting system

The tank venting system is an enclosed system which is vented via a carbon canister. The carbon is incorporated in the carbon canister as granulate. The large surface of the carbon stores the fuel vapors which occur in the fuel tank. The carbon canister must be regenerated on a regular basis so as to be able to continue storing fuel vapors. Regeneration is performed by way of purging with fresh air via the intake manifold. This process is controlled by the engine control unit.

16 00 005 DRAINING AND FILLING FUEL TANK**Special tools required:**

- 13 5 460
- 16 1 080

IMPORTANT: Observe country-specific safety regulations.

Ensure adequate ventilation in the place of work!

Connect the exhaust and extraction systems to the exhaust tailpipe.

The electric fuel pump must not operate without fuel! After completing repairs but before starting the engine for the first time, fill the fuel tank with min. 5 l fuel through the fuel filler pipe.

Do not damage non-return flap when pulling out extraction hose.

Drawing off fuel:

Start engine and allow to run.

IMPORTANT: Once fuel has been drawn off through the fuel filler pipe, there are still residual amounts in the fuel tank, in the fuel filter and in the fuel pump surge chamber.

NOTE: **The electric fuel pump runs.**

In this way, the fuel is repumped through the suction jet pump and the tank expansion line from the left to the right side of the fuel tank.

Fuel can be drawn out of the left and right sides of the tank through the filler neck, leaving only a small residual amount.

This residual amount in the fuel tank is drawn off after removal of the sensors for the fuel gauge (right/left).

Insert special tool **16 1 080** into filler neck.

Special tool **16 1 080** has two different diameters for gasoline and diesel vehicles!

Slide extraction hose of extractor unit through special tool **16 1 080** into the fuel filler pipe, turning in the process if necessary.

Draw off fuel as much as possible with extractor unit .

Follow drawing off of fuel on fuel gauge in instrument cluster.

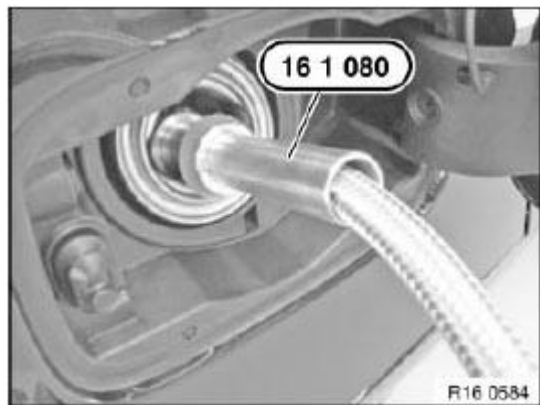


Fig. 1: Inserting Special Tool 16 1 080 Into Filler Neck
Courtesy of BMW OF NORTH AMERICA, INC.

Draining fuel filter and surge chamber:

Connect special tool **13 5 460** to connection of fuel filter (1).

Connect special tool to extractor unit.

Draw off remaining fuel from filter and surge chamber.

NOTE: **A small amount of fuel still remains in the fuel tank.**

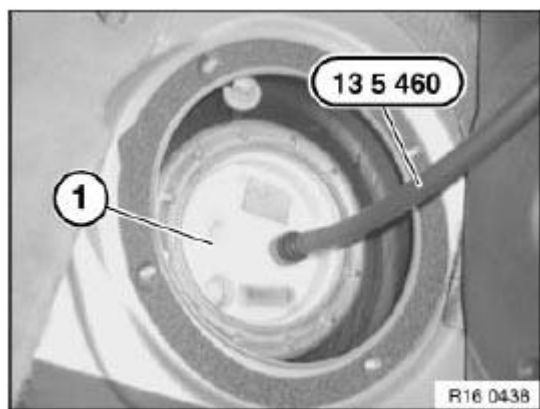


Fig. 2: Identifying Fuel Filter With Special Tool 13 5 460

Courtesy of BMW OF NORTH AMERICA, INC.

Drawing off residual fuel amount from fuel tank:

Drawing off residual fuel amount is not included in the time value of this operation.

IMPORTANT: Ensure car interior is adequately ventilated.

Catch dripping fuel in a suitable container.

Fuel gauge must roughly indicate zero before the left tank opening is opened.

If the suction jet pump is faulty, the fuel level in the left tank half may be above the service opening!

Large quantities of fuel may emerge on opening!

In this event, keep left tank half closed and feed extraction hose through right service opening to left tank half.

REMOVE FUEL GAUGE SENSOR (RIGHT).

REMOVE FUEL GAUGE SENSOR (LEFT).

Draw off residual fuel quantity through installation openings.

Fuel filling:

Insert special tool **16 1 080** into filler neck.

Special tool **16 1 080** has two different diameters for gasoline and diesel vehicles!

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

Fill fuel from suction extractor unit.

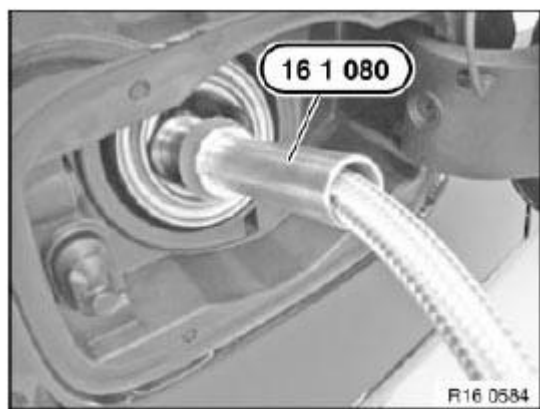


Fig. 3: Inserting Special Tool 16 1 080 Into Filler Neck
 Courtesy of BMW OF NORTH AMERICA, INC.

Drawing off after fault in suction jet pump:

Draw off right half of tank completely through fuel filler pipe.

Drain surge chamber and fuel filter.

REMOVE SENSOR FOR FUEL GAUGE (LEFT).

Insert extraction hose through sensor opening in tank, fuel (also residual quantity) can be drawn off.

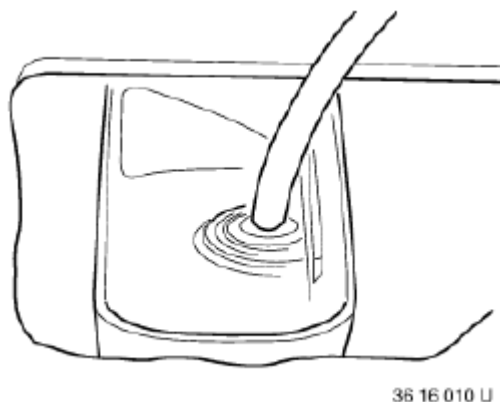


Fig. 4: Identifying Fuel Filler Pipe In Tank
 Courtesy of BMW OF NORTH AMERICA, INC.

16 00 100 CHECKING FUEL TANK AND TANK VENTILATION SYSTEM FOR LEAKS

Special tools required:

- **13 3 010**
- **16 1 170**

- 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.

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.

Remove **REAR RIGHT WHEEL ARCH TRIM** .

Remove evaporation strainer from carbon canister.

S85:

Unlock quick-release fastener and detach line with evaporation strainer.

IMPORTANT: Risk of breakage!

Carefully remove evaporation strainer with a screwdriver from carbon canister.

Using special tool **16 1 070**, seal opening for evaporation strainer on carbon canister.

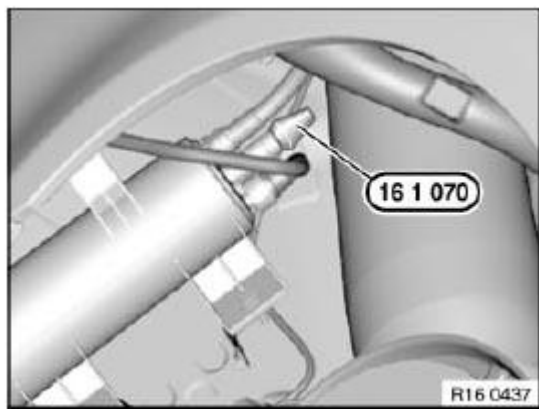


Fig. 5: Identifying Special Tool 16 1 070
Courtesy of BMW OF NORTH AMERICA, INC.

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).

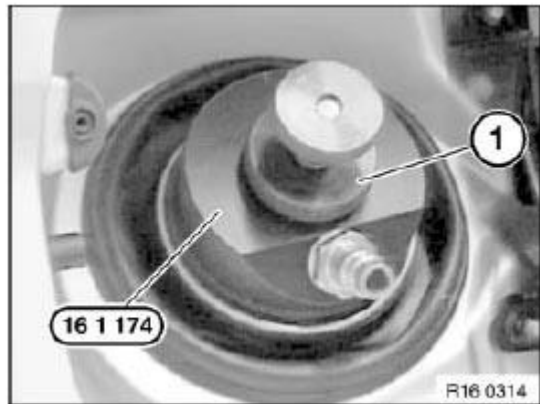


Fig. 6: Identifying Adjusting Wheel With Special Tool 16 1 174

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 connect fast-release coupling (3) of special tool **16 1 171** yet.

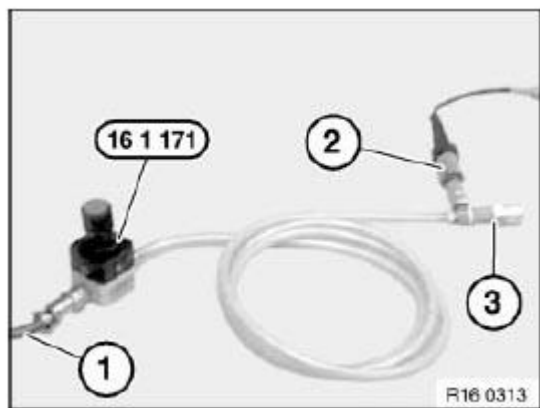


Fig. 7: Identifying Air Line, Pressure Sensor And Fast-Release Coupling With Special Tool 16 1 171

Courtesy of BMW OF NORTH AMERICA, INC.

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

Set measuring range according to pressure sensor to 0...3.5 bar.

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**.

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 0.100 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:

EVALUATION MEASUREMENT

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. Carry out LEAK TEST .

16 00 102 CHECKING FUEL TANK AND TANK VENTING SYSTEM FOR LEAKS WITH TANK LEAKAGE DIAGNOSIS MODULE (DM-TL)

NOTE: An OBD fault is indicated by the "Check Engine" indicator lamp in the instrument cluster lighting up. This may indicate a leak in the tank venting system. Information on this is provided by the fault memory of the DME control unit.

- Read out fault memory of DME control unit and carry out a diagnosis in accordance with faults stored.
- A leak test with the DM-TL module is then carried out if:
 - The components of the DM-TL module are O.K.
 - A fault is stored in the DME fault memory (tank leak detected).

Adhere to following conditions in order to carry out a correct leak test:

- Content of fuel tank < 90 %
- Reserve indicator lamp "off"
- Leave car in workshop for at least 2 hours so that fuel temperature comes into line with workshop temperature (ideal fuel temperature approx. 10...20 °C).

- Do not under any circumstances fill up car with fresh fuel (strong exhalation of fresh fuel).
- Check that fuel tank cap is correctly seated.

WARNING: During the leak test, under no circumstances apply external pressurization through the fuel filler neck as this may cause incorrect readings.

Clear DME fault memory.

In the Diagnosis and Information System (DIS), go to the "Function and component selection" page.

Work through tank leakage diagnosis module. Leakage test is carried out.

If fault is recorded again in DME fault memory (tank leak detected), carry out **LEAK TEST**.

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

NOTE: The following procedure is only applicable to vehicles with the tank leak diagnosis module (DM-TL).
Select "Tank leak diagnosis module (DM-TL)" on Diagnosis and Information System (DIS).

- The leak diagnosis pump pressurizes the fuel tank and tank venting system for 30 secs.
- If pressure is required for more than 30 secs., reactivate the "Activate" button after 30 secs. in each case.

For vehicles without tank leak diagnosis module:

Pressurize **FUEL TANK AND TANK VENTING SYSTEM**.

When leak-testing with a leak detector: follow manufacturer's operating instructions.

IMPORTANT: On vehicles with tank leak diagnosis modules (DM-TL), do not work with external pressurization as the tank venting system will leak under this condition.
On account of emerging fuel vapors, carry out all operations in well ventilated rooms. Or use a suitable extractor system.
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 tank cap leaking (**CHECK FUEL CAP PRESSURE RELIEF VALVE**)
- Tank venting lines leaking (fuel tank carbon canister - tank venting valve)

- Tank venting valve leaking (engine compartment)
- Fuel level sensor flange on tank leaking



R16 0131

Fig. 8: Identifying Leak Detector

Courtesy of BMW OF NORTH AMERICA, INC.

FUEL TANK WITH MOUNTING

16 11 030 REMOVING AND INSTALLING FUEL TANK

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

Check electrical resistance between earthing/grounding cable (fuel filler pipe) and wheel hub.

Measured value approx. 0.6 ohms

Fill fuel tank with min. 5 l fuel.

Necessary preliminary tasks:

- **DRAW OFF FUEL FROM FUEL TANK**
- Remove **REAR RIGHT WHEEL ARCH TRIM**
- **REMOVE COMPLETE PROPELLER SHAFT**
- Remove **HANDBRAKE BOWDEN CABLES** from wheel carrier and unclip from fuel tank
- Remove right **TENSION STRUT FOR REAR AXLE**

Unfasten nut.

Installation:

Tightening torque **16 12 11AZ** .

Seal nut with underseal again.

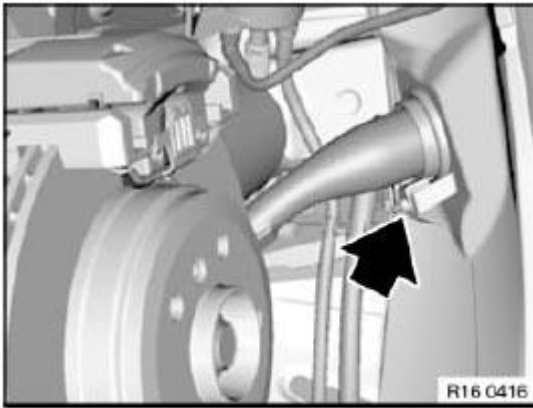


Fig. 9: Locating Nut

Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten hose clip (1).

Disconnect filler vent line (4) from fuel filler pipe.

Vehicles with gasoline engines:

Disconnect service vent line (2) from carbon canister.

Unclip both lines and remove retaining clip (3).

Installation:

Replace hose clamp (1).

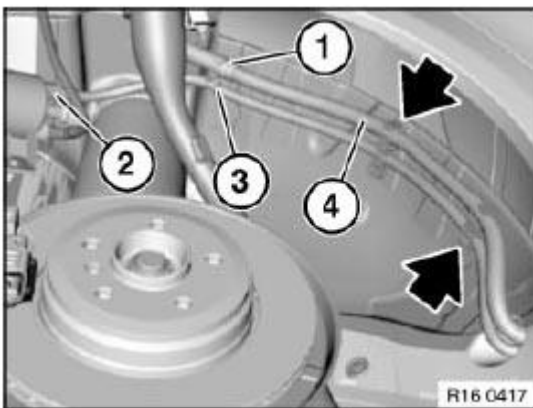


Fig. 10: Identifying Hose Clip, Retaining Clip, Filler And Service Vent Line

Courtesy of BMW OF NORTH AMERICA, INC.

Vehicles with gasoline engines:

Unlock and disconnect plug connections (1) of feed line.

If necessary, disconnect line (2) for independent heating.

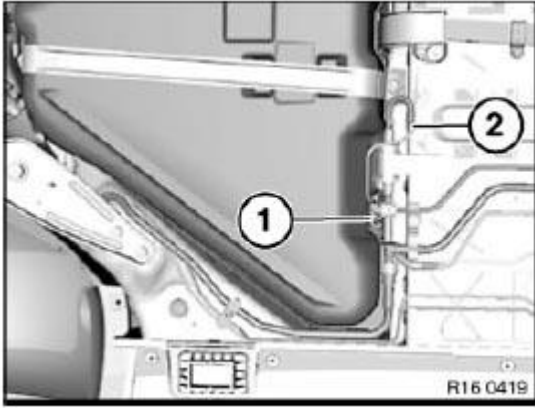


Fig. 11: Identifying Plug Connections And Line
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw.

Tightening torque, **16 11 1AZ** .

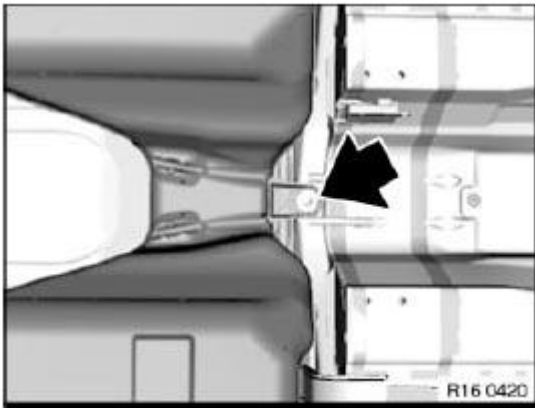


Fig. 12: Locating Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Heavily support the fuel tank.



Fig. 13: Supporting Fuel Tank

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws for tightening straps on left and right and remove tightening straps.

Tightening torque, **16 11 1AZ** .

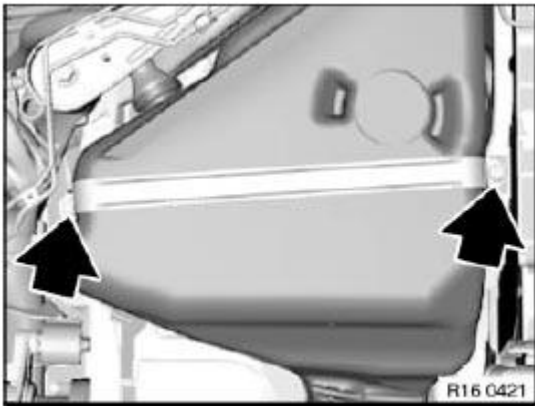


Fig. 14: Locating Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Note rubber mount with spacer bush.

Wide collar on spacer bush points to screw head.

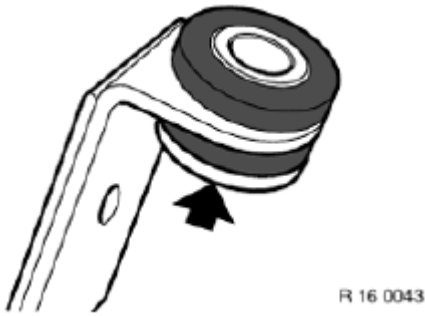


Fig. 15: Locating Spacer Bush

Courtesy of BMW OF NORTH AMERICA, INC.

Lower tank until plug (1) on top side of right tank half is accessible.

Unlock plug (1) and detach from delivery unit.

NOTE: Get a second person to feed out vent lines to wheel arch while removing tank towards bottom.

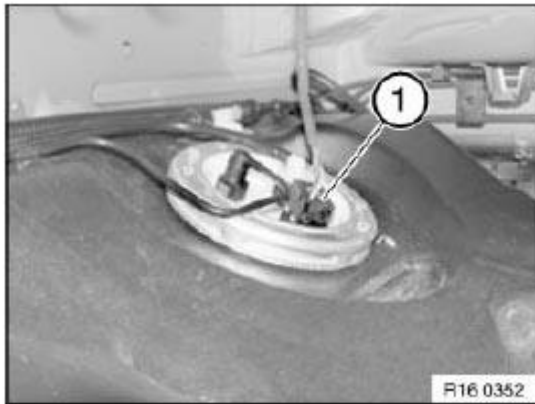


Fig. 16: Identifying Tank Until Plug

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Feed vent lines (1) and (2) through body.

Do not kink lines.

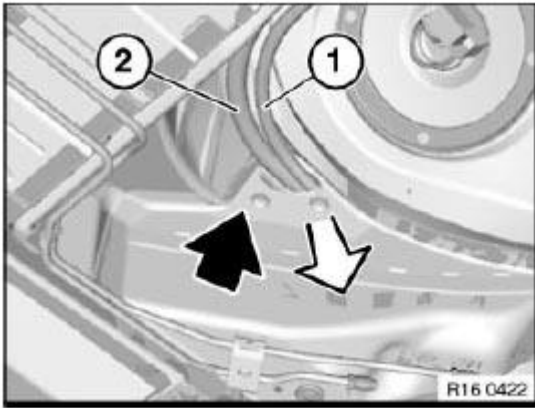


Fig. 17: Feeding Vent Lines

Courtesy of BMW OF NORTH AMERICA, INC.

16 11 130 CHECKING TANK CAP PRESSURE RELIEF VALVE

Special tools required:

- **13 3 010**
- **16 1 171**
- **16 1 172**
- **16 1 173**

Necessary preliminary tasks:

- Remove tank cap

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

Connect special tool **16 1 171** via compressed air line (1) to workshop/garage compressed air system (8...10 bar).

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

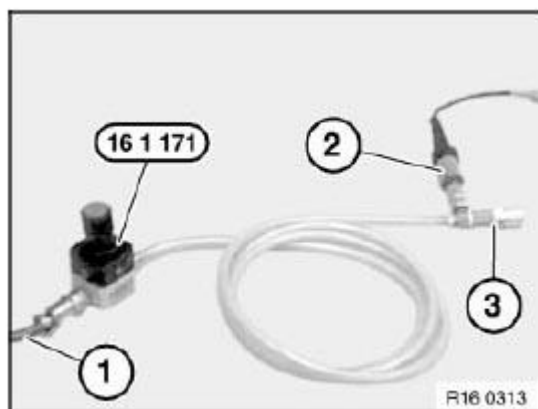


Fig. 18: Identifying Air Line, Pressure Sensor And Fast-Release Coupling With Special Tool 16 1 171
 Courtesy of BMW OF NORTH AMERICA, INC.

Select special tool **16 1 172** or **16 1 173** matching vehicle's filler cap and attach to quick release coupling of special tool **16 1 171**.

Install tank cap on selected special tool.



Fig. 19: Identifying Special Tool 16 1 172 And 16 1 173
 Courtesy of BMW OF NORTH AMERICA, INC.

Check testing equipment for leaks!

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

Increase pressure by 0.2 bar with pressure regulator on special tool **16 1 171**.

Using special tool **13 3 010**, disconnect supply line (1) 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.

Wait approx. 120 secs.

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

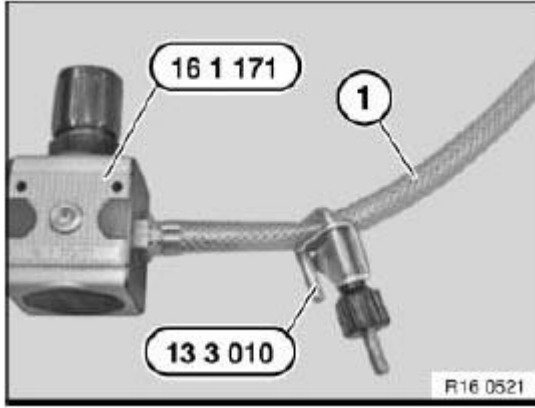


Fig. 20: Identifying Supply Line With Special Tool 13 3 010 And 16 1 171
Courtesy of BMW OF NORTH AMERICA, INC.

Measurement evaluation:

- Pressure drop up to 0.01 bar:
System OK
- Pressure drop over 0.02 bar:
System leaking beyond permitted levels

If system is leaking, check connection points for leaks.

Check tank cap pressure relief valve.

Follow same test procedure as for "Checking testing equipment for leaks".

Increase pressure by 0.3 bar with pressure regulator on special tool **16 1 171** .

Measurement evaluation:

- Pressure drop up to 0.01 bar:
Tank cap pressure relief valve OK
- Pressure drop over 0.02 bar:
Tank cap is leaking and must be replaced

FUEL TRANSFER, SENSOR FOR GAUGE

16 12... CHECKING REPUMPING FUNCTION OF SUCTION-JET PUMP WITH BMW DIAGNOSIS SYSTEM

IMPORTANT: Ensure adequate ventilation in the place of work!

Ensure absolute cleanliness when working on the open fuel tank.

Contaminants in the fuel tank can impair driving operation or may even result in vehicle breakdown!

Catch escaping fuel in a suitable container.

Necessary preliminary tasks:

- Fill level must be < or = 28 l
 - If necessary, **DRAW OFF FUEL FROM FUEL TANK**
- Pour two to three liters of fuel into the left tank chamber via the flange opening
- Connect diagnosis system
 - Path:
 - Brief test KOMBI Instrument cluster
 - Diagnosis control unit functions
 - Diagnosis requests
 - Tank sensor 1, tank sensor 2

NOTE: **Tank sensor 1 = right tank sensor**
 Tank sensor 2 = left tank sensor

Start engine.

Compare display for left and right tank chambers.

Repumping function OK

If fill level of tank sensor 2 (left chamber) is falling (approx. one liter per minute).

Repumping function not OK

If fill level of tank sensor 2 (left chamber) is stable or rising.

16 12 000 REMOVING AND INSTALLING/REPLACING FUEL GAUGE SENSOR (COMPLETE RIGHT SENSOR UNIT)

Special tools required:

- **16 1 020**

IMPORTANT: Ensure adequate ventilation in the place of work!
Ensure absolute cleanliness when working on the open fuel tank.
Contaminants in the fuel tank can impair driving operation or may even result in vehicle breakdown!

Necessary preliminary tasks:

- **DRAW OFF FUEL COMPLETELY FROM FUEL TANK**
- **REMOVE REAR SEAT**
- Remove **LEFT SENSOR UNIT**

Fold carpet (1) forwards.

Detach insulating mat (2) above left and right sensor units at perforation and fold back towards rear. Pop out rubber plugs here.

Fold back rubber mat (2).

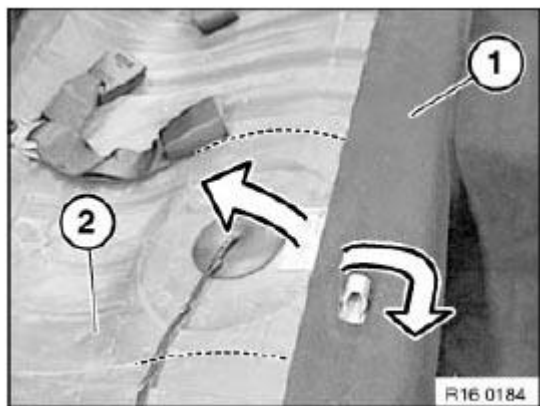


Fig. 21: Detaching Insulating Mat
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not damage gasket.

Release nuts (1) on left and right.

Fold metal cover of left and right sensor units upwards.

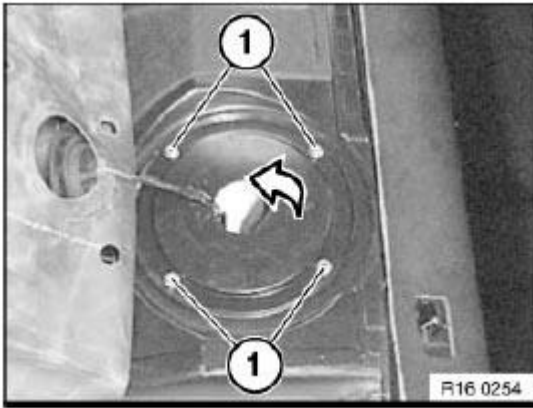


Fig. 22: Identifying Nuts

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Fuel line is pressurized.
Catch escaping fuel in a suitable container.

If necessary, unlock and disconnect plug connection (1) of right sensor unit.

If necessary, release and disconnect hose (2) for independent heating (E60 only).

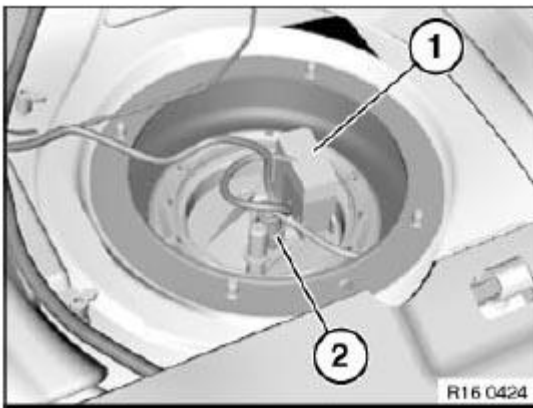


Fig. 23: Identifying Plug Connection And Hose

Courtesy of BMW OF NORTH AMERICA, INC.

Release rotary catch of left and right sensor units with special tool **16 1 020** .

Installation:

Replace rubber seal on left and right.

Tightening torque **16 14 2AZ** .

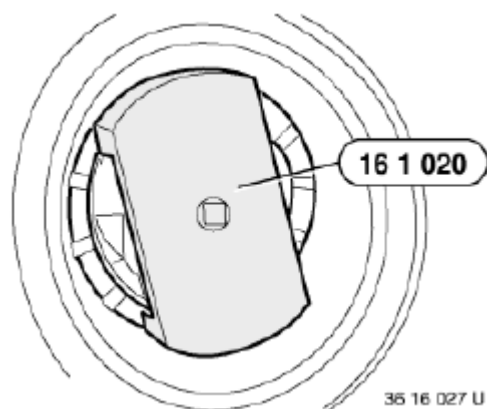


Fig. 24: Identifying Special Tool 16 1 020

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of breakage!

Carefully raise connecting cover. In so doing, do not pull excessively on connecting piece of fuel feed.

Installation:

When installing connecting cover, make sure that lug (1) in opening (2) engages fuel tank.

During torque tightening, notch (3) on screw cap can be clearly heard and felt to engage toothed segment (4) on fuel tank.

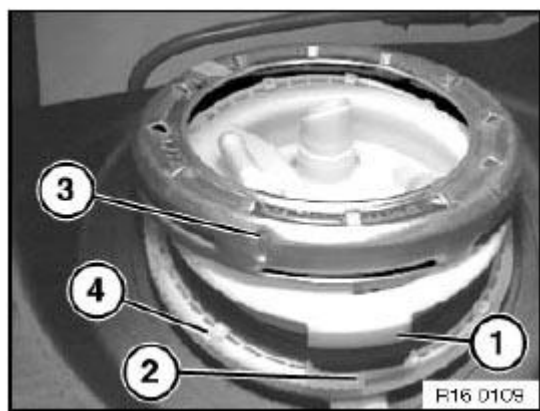


Fig. 25: Identifying Lug, Notch And Toothed Segment

Courtesy of BMW OF NORTH AMERICA, INC.

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

The cable facilitates reinstallation of the hose pack.

Carefully remove right sensor unit from fuel tank.

IMPORTANT: Surge chamber is filled with fuel.
Drain surge chamber through upper opening (1). Catch fuel in a suitable container.

Feed hose pack out of fuel tank.

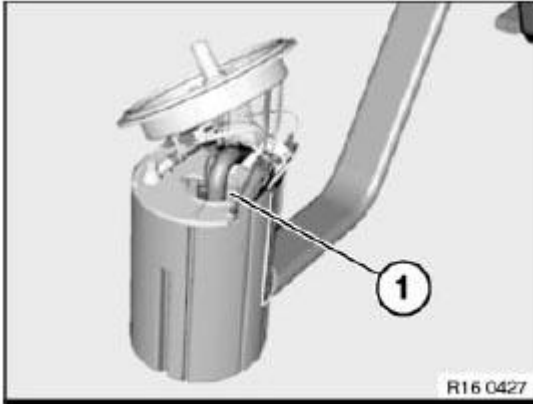


Fig. 26: Identifying Surge Chamber
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The new sensor unit is supplied with a plastic cover over the hose pack.

Secure the cable pulled through the tank during removal to the eyelet on the plastic cover.

Carefully feed hose pack through fuel tank using cable.

IMPORTANT: The lines on the connection are turned to the sensor unit as the hose pack is fed in.
Turn sensor unit in the same direction of rotation and align.
It is absolutely essential to avoid kinking the hoses.

Remove the plastic cover after feeding in the hose pack.

Replacing fuel level sensor:

Unlock and disconnect plug (2).

Release catches (1) and pull fuel level sensor out of unit.

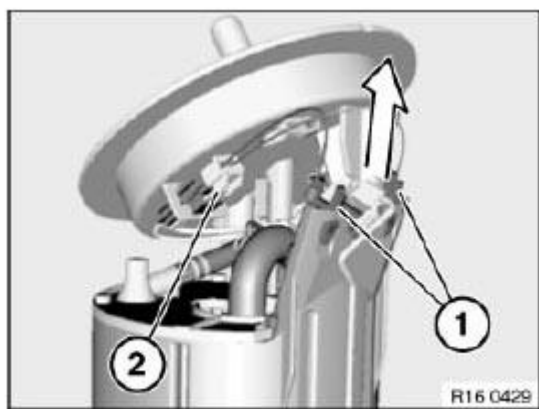


Fig. 27: Disconnecting Plug

Courtesy of BMW OF NORTH AMERICA, INC.

16 12 001 REMOVING AND INSTALLING/REPLACING FUEL GAUGE SENSOR (COMPLETE LEFT SENSOR UNIT)

Special tools required:

- **16 1 020**

IMPORTANT: Ensure adequate ventilation in the place of work!

Ensure absolute cleanliness when working on the open fuel tank.

Contaminants in the fuel tank can impair driving operation or may even result in vehicle breakdown!

Necessary preliminary tasks:

- **DRAW OFF FUEL FROM FUEL TANK**
- Remove **REAR SEAT BENCH**

After completing work:

- **CHECK REPUMPING FUNCTION OF SUCTION-JET PUMP**

Fold carpet (1) forwards.

Detach insulating mat (2) at perforation and fold back towards rear, pop out rubber plugs here.

Fold back rubber mat.

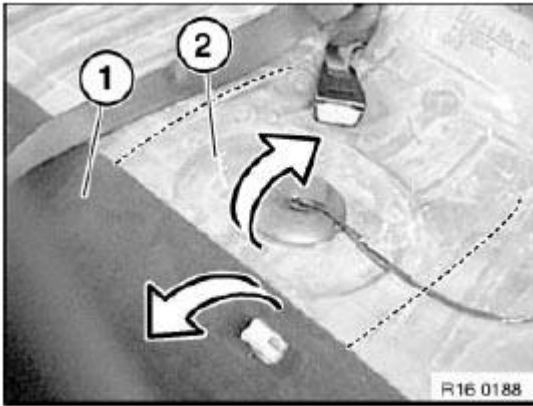


Fig. 28: Detaching Insulating Mat

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not damage gasket.

Release nuts (1) and fold back metal cover.

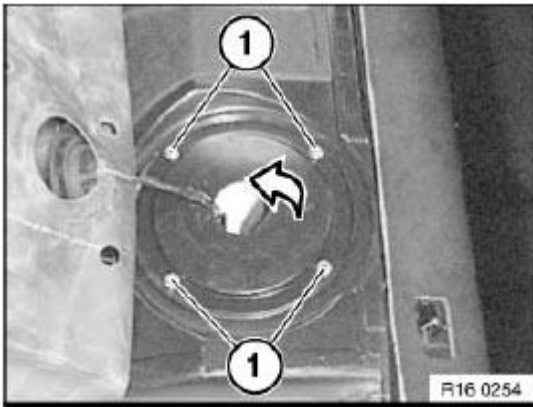


Fig. 29: Identifying Metal Cover Nuts

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Fuel line is pressurized.
Catch escaping fuel in a suitable container.

Disconnect plug connection.

Release and disconnect feed line (1).

M57TU:

Release and disconnect feed and return lines.

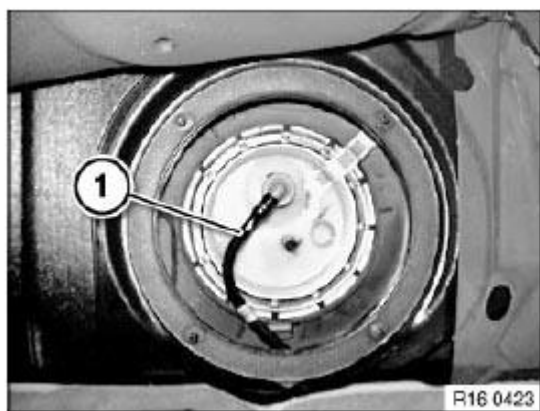


Fig. 30: Identifying Feed Line

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Fuel gauge must roughly indicate zero before the left tank opening is opened.
If the suction jet pump is faulty, the fuel level in the left tank half may be above the service opening!
Large quantities of fuel may emerge on opening!
In this event, keep left tank half closed and feed extraction hose through right service opening to left tank half.

Release screw cap with special tool **16 1 020** .

Installation:

Replace rubber gasket.

Tightening torque **16 14 2AZ** .

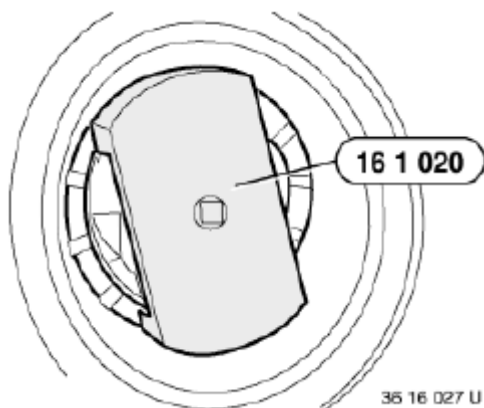


Fig. 31: Identifying Special Tool 16 1 020

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of breakage!

Carefully raise fuel level sensor until sensor flange projects out of tank opening. In so doing, do not pull excessively on connecting piece of fuel return.

Installation:

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

During torque tightening, notch (3) on screw cap can be clearly heard and felt to engage toothed segment (4) on fuel tank.

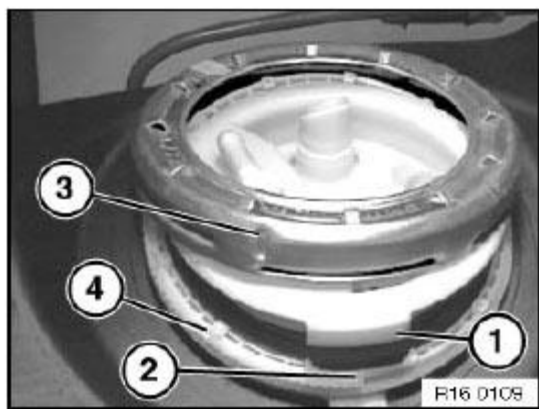


Fig. 32: Identifying Lug, Notch And Toothed Segment
Courtesy of BMW OF NORTH AMERICA, INC.

Carefully remove left sensor unit from tank.

Disconnect line (1) to fuel filter and seal off at fuel filter.

Disconnect suction jet pump from fuel filter.

To do so, press catch (2) downwards and detach suction jet pump.

IMPORTANT: Look out of escaping fuel.

Catch fuel in a suitable container.

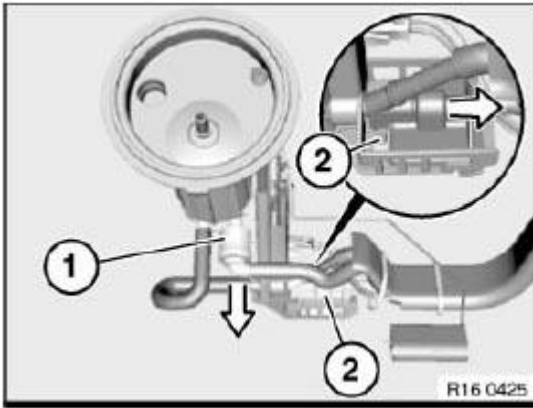


Fig. 33: Disconnecting Line Of Fuel Filter
Courtesy of BMW OF NORTH AMERICA, INC.

E60/M57TU only:

Carefully remove left sensor unit from tank.

Unlock line (1).

Pull suction jet pump out of holder.

To do so, press catch (2) downwards and detach suction jet pump (2).

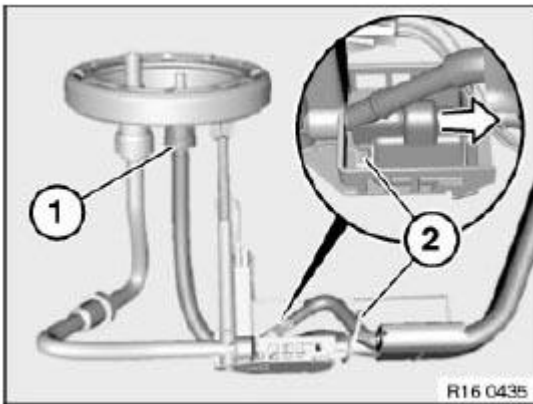


Fig. 34: Pressing Catch
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug (1) of hose pack.

NOTE: Release plug by pressing lock and disconnect.

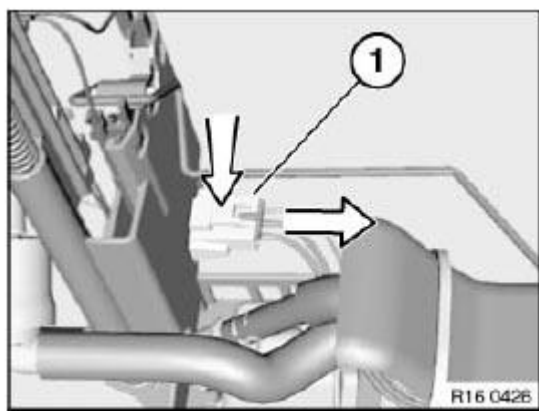


Fig. 35: Disconnecting Plug Of Hose Pack
Courtesy of BMW OF NORTH AMERICA, INC.

Replacing fuel level sensor:

Unlock plug (2) and press out in direction of arrow.

Release catches (1) and pull fuel level sensor out of unit.

Disconnect cable from pressure regulator and feed out of cable gland.

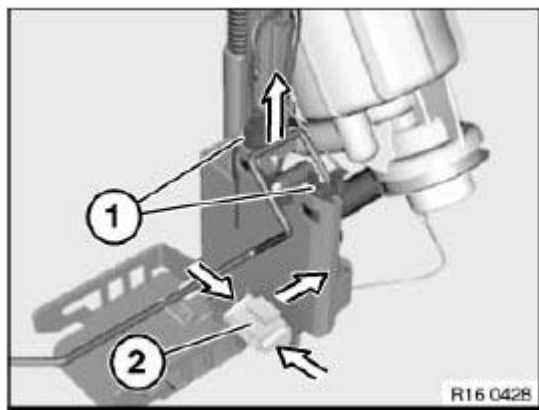


Fig. 36: Unlocking Plug
Courtesy of BMW OF NORTH AMERICA, INC.

16 12 010 REMOVING AND INSTALLING/REPLACING CARBON CANISTER

Necessary preliminary tasks:

- Remove **REAR RIGHT WHEEL ARCH TRIM** .

Detach lines (1 and 2) from carbon canister (3).

Unfasten screws.

Installation:

Tightening torque **16 13 2AZ** .

Remove carbon canister (3).

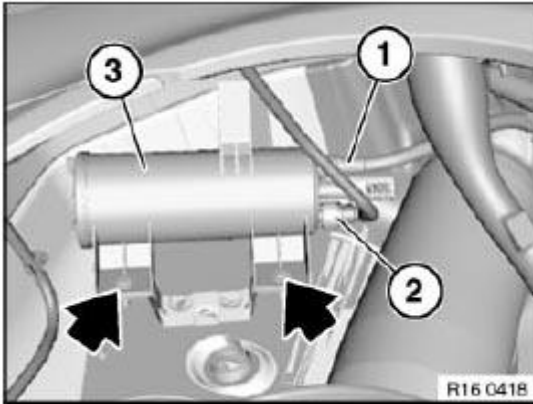


Fig. 37: Identifying Lines And Carbon Canister With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

16 12 010 REMOVING AND INSTALLING/REPLACING CARBON CANISTER WITH DM-TL

DM-TL = diagnosis module-tank leakage

Necessary preliminary tasks:

- **REMOVE REAR RIGHT WHEEL.**
- Remove **REAR RIGHT WHEEL ARCH TRIM** .

Unlock and detach lines (1) to (3).

1. Scavenging air line
2. Vent line to fuel tank
3. Evaporation line

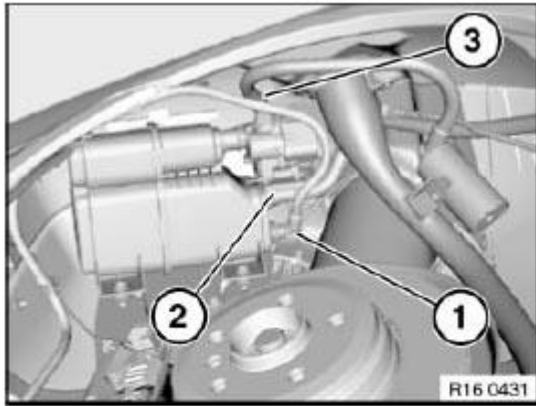


Fig. 38: Identifying Scavenging Air Line, Vent Line To Fuel Tank And Evaporation Line
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug (1).

Release screws and remove carbon canister with DM-TL towards bottom.

Tightening torque **16 13 2AZ** .

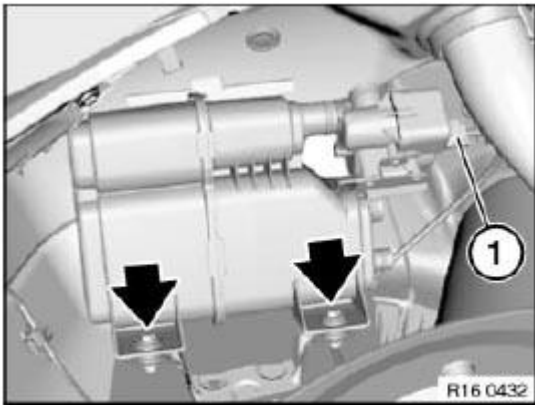


Fig. 39: Identifying Plug With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

FUEL PUMP

16 14 021 REMOVING AND INSTALLING/REPLACING FUEL FILTER (IN 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)!

Ensure absolute cleanliness when working on the open fuel tank.

Contaminants in the fuel tank can impair driving operation or may even result in vehicle breakdown!

Before starting the engine for the first time:

- Fill fuel tank with at least 5 liters of fuel.

Necessary preliminary tasks:

- **DRAW OFF FUEL FROM FUEL TANK**
- Remove **REAR SEAT BENCH**

After completing work:

- **CHECK REPUMPING FUNCTION OF SUCTION-JET PUMP**

Fold carpet (1) forwards.

Detach insulating mat (2) at perforation and fold back towards rear, pop out rubber plugs here.

Fold back rubber mat.

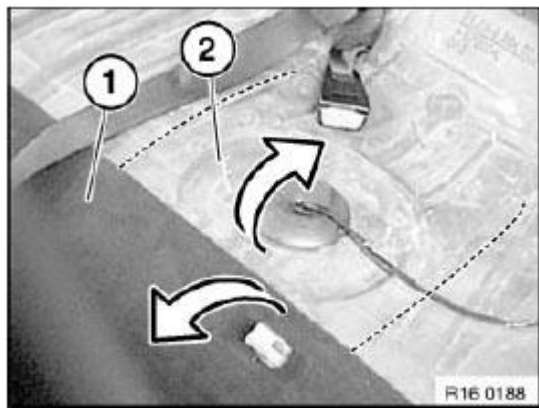


Fig. 40: Detaching Insulating Mat

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not damage gasket.

Release nuts (1) and fold back metal cover.

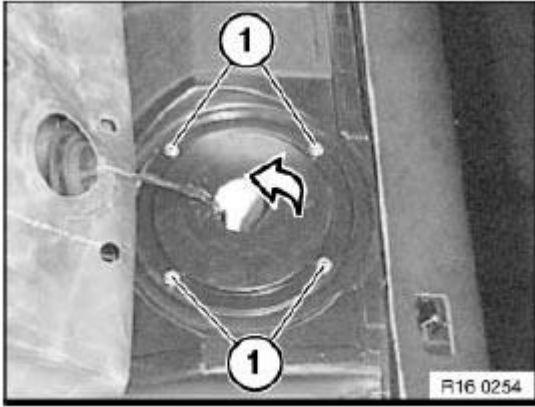


Fig. 41: Identifying Metal Cover Nuts

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Fuel line is pressurized.
Catch escaping fuel in a suitable container.

Disconnect plug connection.

Release and disconnect feed line (1).

M57TU:

Release and disconnect feed and return lines.

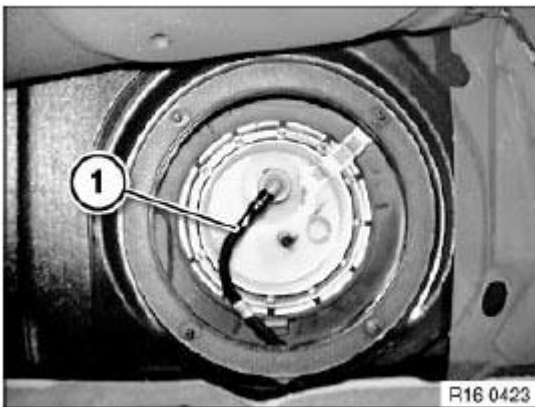


Fig. 42: Identifying Feed Line

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Fuel gauge must roughly indicate zero before the left tank opening is opened.
If the suction jet pump is faulty, the fuel level in the left tank half may be above the service opening!
Large quantities of fuel may emerge on opening!
In this event, keep left tank half closed and feed extraction hose through right service opening to left tank half.

Release screw cap with special tool **16 1 020** .

Installation:

Tightening torque **16 14 2AZ** .

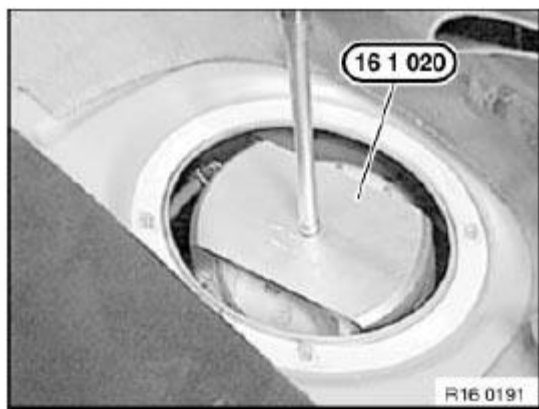


Fig. 43: Identifying Special Tool 16 1 020

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of breakage!

Carefully raise fuel level sensor until sensor flange projects out of tank opening. In so doing, do not pull excessively on connecting piece of fuel return.

Installation:

Replace rubber gasket.

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

Fit screw cap without using a tool and tighten hand-tight.

Then tighten screw cap with special tool **16 1 020** until notch (3) points to marking (4).

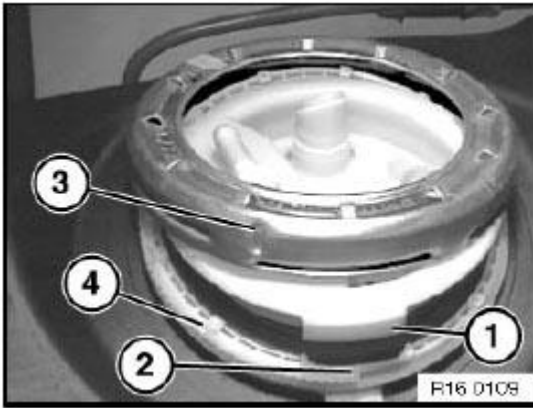


Fig. 44: Identifying Lug, Notch And Toothed Segment
 Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Look out of escaping fuel.
 Catch fuel in a suitable container.

Carefully remove left sensor unit from tank.

Disconnect line (1) to fuel filter.

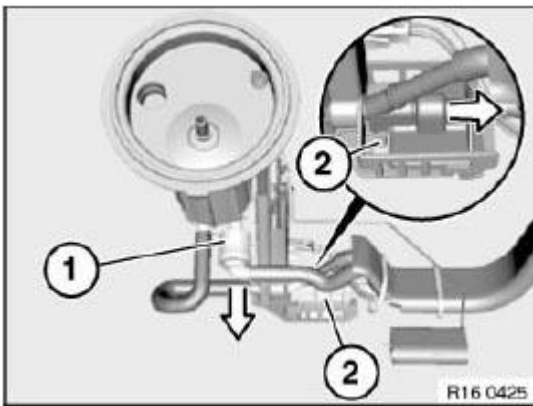


Fig. 45: Disconnecting Line Of Fuel Filter
 Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect line (1) to fuel filter and seal off at fuel filter.

Disconnect suction jet pump from fuel filter.

To do so, press catch (2) downwards and detach suction jet pump.

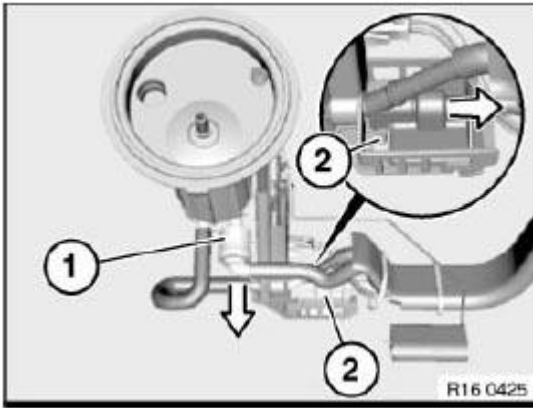


Fig. 46: Disconnecting Line Of Fuel Filter
Courtesy of BMW OF NORTH AMERICA, INC.

E60/M57TU only:

Carefully remove left sensor unit from tank.

Unlock line (1).

Pull suction jet pump out of holder.

To do so, press catch (2) downwards and detach suction jet pump (2).

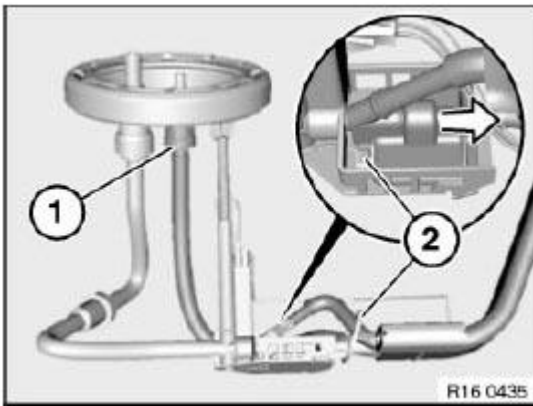


Fig. 47: Pressing Catch
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug (1) of hose pack.

NOTE: Release plug by pressing lock and disconnect.

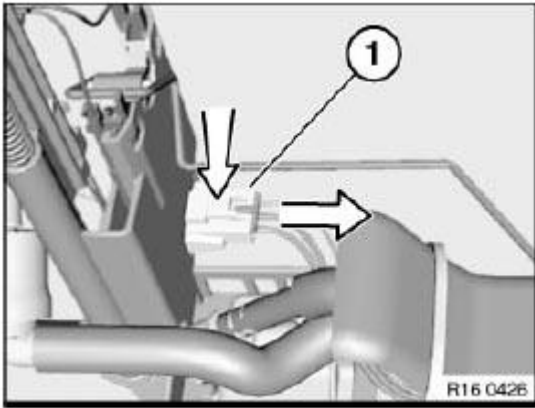


Fig. 48: Disconnecting Plug Of Hose Pack
Courtesy of BMW OF NORTH AMERICA, INC.

Replacing fuel level sensor:

Unlock plug (2) and press out in direction of arrow.

Release catches (1) and pull fuel level sensor out of unit.

Disconnect cable from pressure regulator and feed out of cable gland.

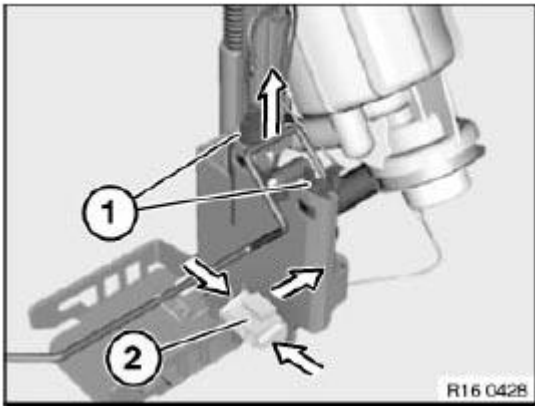


Fig. 49: Disconnecting Plug Of Hose Pack
Courtesy of BMW OF NORTH AMERICA, INC.