

ENGINE

Cooling system - Repair Instructions

COOLANT, CHECKING COOLING SYSTEM

17 00... INSTRUCTIONS FOR WORKING ON COOLING SYSTEM

WARNING: Danger of scalding! Work on the cooling system should only be carried out when the engine has cooled down.

IMPORTANT: Wear protective gloves and goggles.

IMPORTANT: *Lifetime coolant filling:*

Never reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be drained and refilled.

In the case of other removal work involving the draining of partial quantities of coolant, replace these quantities which have been drained with new coolant.

IMPORTANT: Open cooling system only when it has cooled down.

Opening the cooling system while hot can result in air entering the system. This can cause overheating with permanent damage to the engine.

IMPORTANT: When working on the oil, coolant or fuel circuit, protect the alternator against contamination.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

IMPORTANT: Do not fill coolant expansion tank over MAX level as overfilling will cause the coolant to overflow. This may give rise to traces of residual coolant on the expansion tank or in the engine compartment and wrongly suggest possible leakages.

Recycling

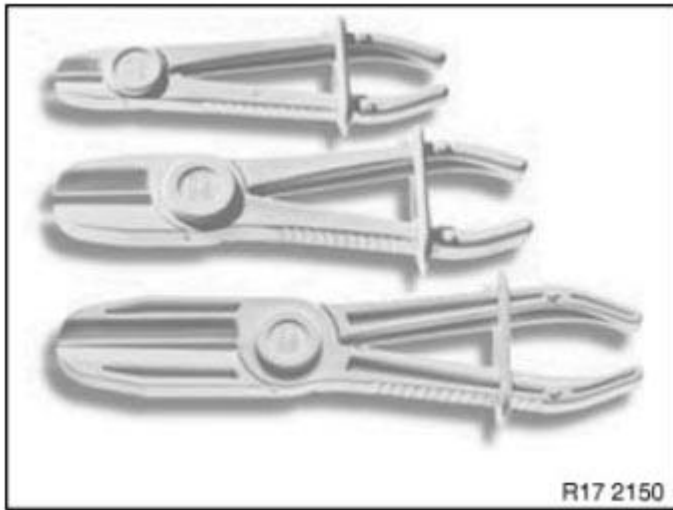
Catch and dispose of drained coolant.

Observe country-specific waste-disposal regulations.

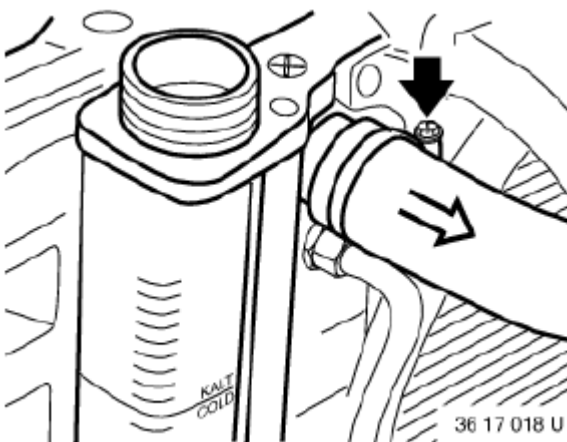
NOTE: To disconnect coolant hoses, use commercially available disconnect tools such as HAZET brand tools (see table).

HAZET TOOLS DESCRIPTION CHART

HAZET no.:	Description
4590-1	Disconnect tool, length (mm): 150
4590-2	Disconnect tool, length (mm): 180
4590-3	Disconnect tool, length (mm): 253
4590/2	Disconnect/plier set
4590/3	Disconnect/plier set

**Fig. 1: Identifying Special Tools**

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Tightening torque, hose clamps 17 00 1AZ .**Fig. 2: Locating Hose Clamps Screws**

Courtesy of BMW OF NORTH AMERICA, INC.

Instructions for disassembly/assembly of coolant hose fast-release couplings

Disassembly of fast-release coupling

Withdraw lock (1/2), disconnect hose.

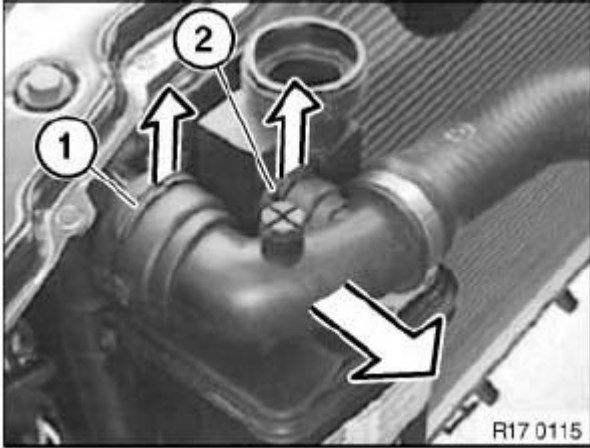


Fig. 3: Disconnecting Hose

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check O-rings (1).

Do not coat O-rings (1) with antiseize agent.

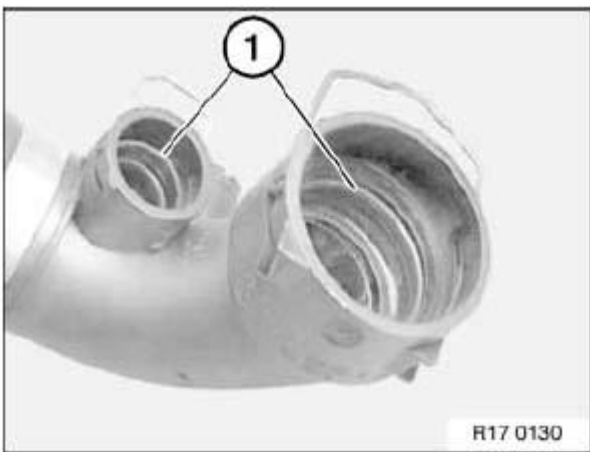


Fig. 4: Identifying O-Rings

Courtesy of BMW OF NORTH AMERICA, INC.

Assembly of fast-release coupling

Press in lock (1) before installing fast-release coupling.

Push on hose.

Fast-release coupling must clearly snap audibly into place.

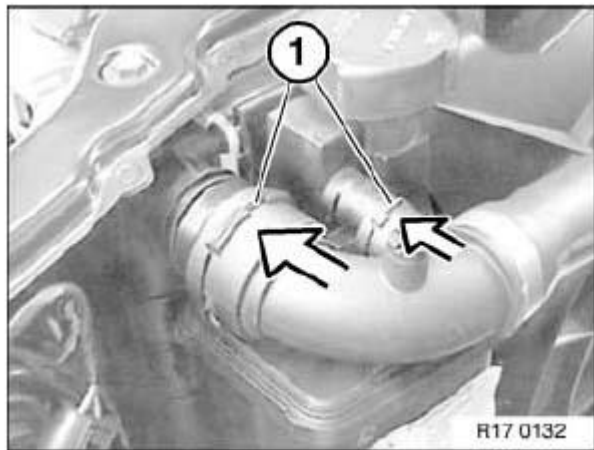


Fig. 5: Pressing Lock

Courtesy of BMW OF NORTH AMERICA, INC.

17 00... NOTES ON RETROFITTING A TRAILER TOWING DEVICE

Starting with delivery of the E90, in certain vehicle types, the size of the electric cooler fan will be linked to the optional extra trailer tow hitch or trailer provision.

A larger fan may therefore be required for retrofits. Please refer to the BMW ETK (Electronic Parts Catalogue) for exact allocation.

The larger fan is necessary to ensure mountain driving with a full trailer load in accordance with BMW-internal specifications. Otherwise the engine electronics will detect possible overheating of the cooling system and activate protective functions.

For the customer, this involves impaired A/C output, automatic transmission and engine power. These will be continuously reduced, which in the end may result in the vehicle coming to a standstill in the mountain area.

17 00 008 DRAINING AND ADDING COOLANT

Special tools required:

- **00 2 030**

WARNING: Danger of scalding!

Only carry out work on the cooling system after the engine has cooled down!

IMPORTANT: Lifetime coolant filling:

If removing radiator, oil-coolant heat exchanger or transmission oil cooler, do not reuse drained coolant!

Installation:

Use only recommended coolant.

Observe mixture ratio (antifreeze/water).

Protective measures/rules of conduct:

- Wear protective goggles
- Wear protective gloves
- Observe national/country-specific regulations

IMPORTANT: Risk of slipping due to coolant on the floor.

Danger of injury!

Catch and dispose of drained coolant in drip tray (1) and if necessary special tool 00 2 030 (universal hydraulic lifter).

Recycling:

Observe country-specific waste-disposal regulations.

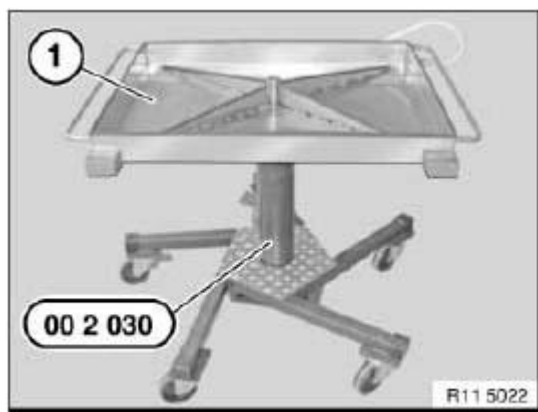


Fig. 6: Identifying Drip Tray

Courtesy of BMW OF NORTH AMERICA, INC.

Necessary preliminary tasks:

- Remove intercooler
- Follow **INSTRUCTIONS FOR WORKING ON COOLING SYSTEM.**

Draining coolant:

Open cap (1) on coolant expansion tank (2).

Installation:

Observe arrow marks on cap and expansion tank.

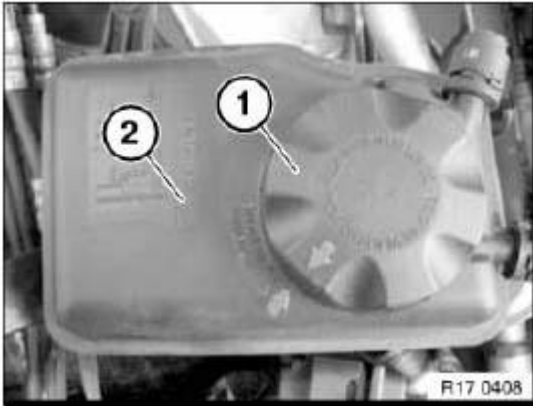


Fig. 7: Identifying Cap And Expansion Tank
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten and detach coolant hose (1) from radiator housing.

Drain, catch and dispose of coolant.

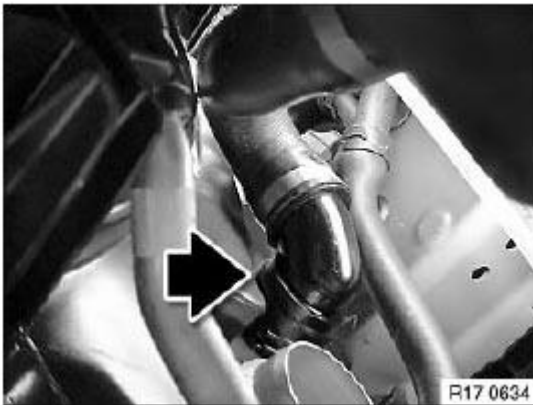


Fig. 8: Identifying Drip Tray
Courtesy of BMW OF NORTH AMERICA, INC.

Adding coolant:*Installation:*

Observe venting instructions without fail.

VENT COOLING SYSTEM.

Check COOLING SYSTEM for leaks.

17 00 009 CHECKING COOLING SYSTEM FOR WATER LEAKS

Special tools required:

- 00 2 030
- 17 0 101
- 17 0 113
- 17 0 114

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

Protective measures/rules of conduct:

- Wear protective goggles
- Wear protective gloves
- Observe national/country-specific regulations

IMPORTANT: Risk of slipping due to coolant on the floor.
Danger of injury!

Catch and dispose of drained coolant in drip tray (1) and if necessary special tool **00 2 030** (universal hydraulic lifter).

Recycling:

Observe country-specific waste-disposal regulations.

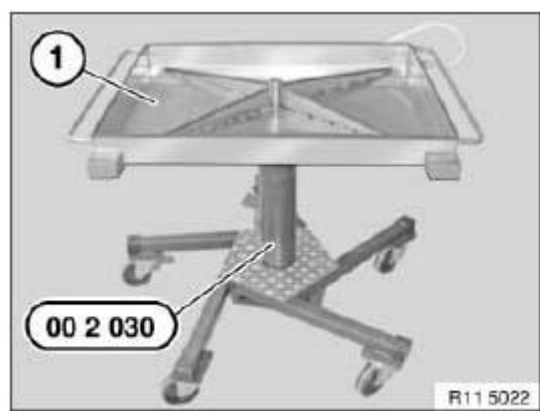


Fig. 9: Identifying Drip Tray

Courtesy of BMW OF NORTH AMERICA, INC.

Checking pressure drop in cooling system:

Open cap on coolant expansion tank. Fit special tools **17 0 101** / **17 0 113**.

BUILD UP GAUGE PRESSURE , wait approx. 2 minutes.

Cooling system is impervious to leaks if pressure drop is max. 0.1 bar.

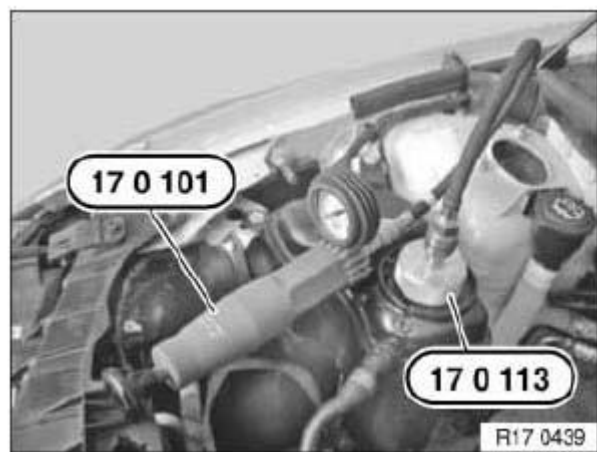


Fig. 10: Identifying Special Tools (17 0 101) And (17 0 113)

Courtesy of BMW OF NORTH AMERICA, INC.

Checking pressure relief valve in cap:

NOTE: While the vehicle is driven at high outside temperatures, the design may cause the pressure relief valve in the cap to open slightly and air together with dissolved coolant to escape. This coolant vapor condenses on the surface of the expansion tank and leaves traces when the vehicle has cooled down. These

traces do not indicate whether the cap is defective or not. When the vehicle has been parked up for an extended period of time, the residual escaping coolant can cause the pressure relief valve in the cap to stick; therefore check the cap again 2 to 3 times.

Replace the cap only after you have checked three times and there is an incorrect opening pressure.

Checking pressure relief valve in cap:

Screw cap (1) onto special tool 17 0 114 .

Build up pressure with special tool (hand pump) 17 0 101 ; observe pressure gauge to ascertain when opening pressure is achieved.

Compare opening pressure of pressure relief valve.

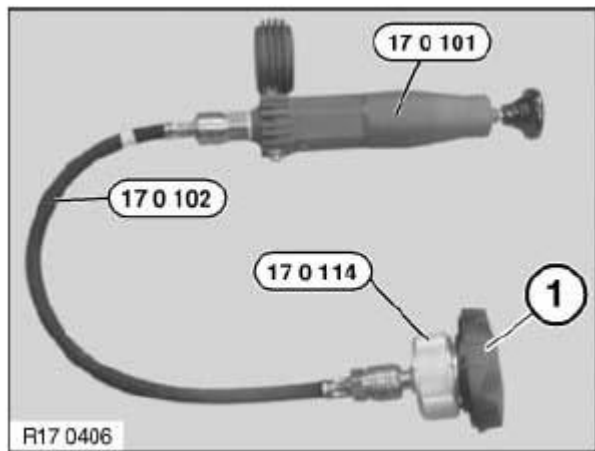


Fig. 11: Identifying Screw Cap Onto Special Tool

Courtesy of BMW OF NORTH AMERICA, INC.

17 00 039 VENTING COOLING SYSTEM AND CHECKING FOR WATER LEAKS

WARNING: Danger of scalding!

Open sealing cap only after engine has cooled down.

IMPORTANT: Electric coolant pump!

FOLLOW INSTRUCTIONS FOR WORKING ON COOLING SYSTEM.

IMPORTANT: Lifetime coolant filling:

Never reuse used coolant!

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The

cooling system must therefore be drained and refilled.
In the case of other removal work involving the draining of partial quantities of coolant, replace these quantities which have been drained with new coolant.

Only when refilling!

Use only recommended coolant.

Observe mixture ratio.

Perform filling operation slowly.

Adjust coolant level to MAX.

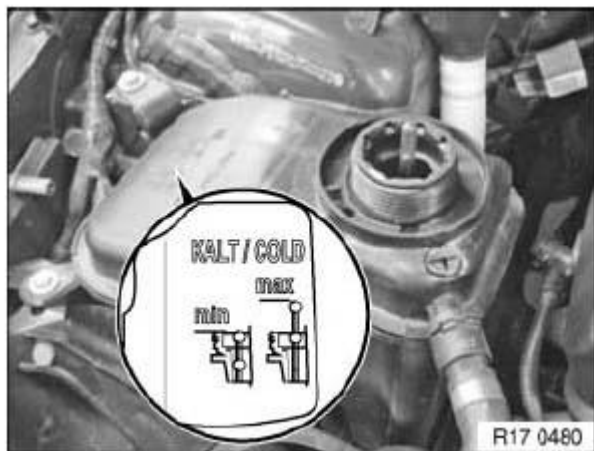


Fig. 12: Identifying Coolant Level Adjusting Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Close coolant expansion tank.

Installation:

Close cap (1) until the arrow marks line up.

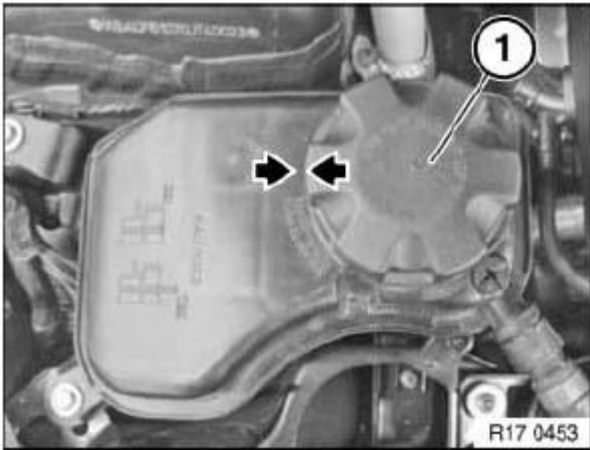


Fig. 13: Identifying Coolant Cap

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: The following venting procedure is necessary e.g. when a part is replaced in the cooling system or when the cooling system is refilled.

Vehicles with independent heating only:

Open vent screw (1).

Tightening torque **17 00 4AZ** .

Slowly fill coolant expansion tank with recommended coolant.

Close vent screw (1) after coolant emerges.

Installation:

Have a cleaning cloth ready and mop up emerging coolant.

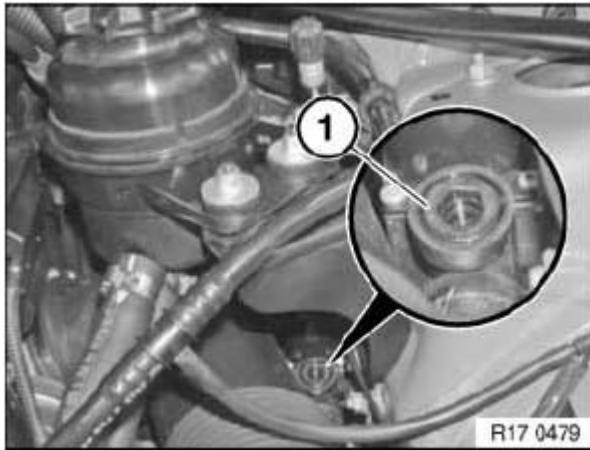


Fig. 14: Identifying Vent Screw

Courtesy of BMW OF NORTH AMERICA, INC.

Adding coolant:

NOTE: Open vent screw (1).
 Fill coolant expansion tank up to lower edge of filler neck with recommended coolant.
 Observe mixture ratio.
 Close bleed screw (1).
 Close cap on expansion tank.

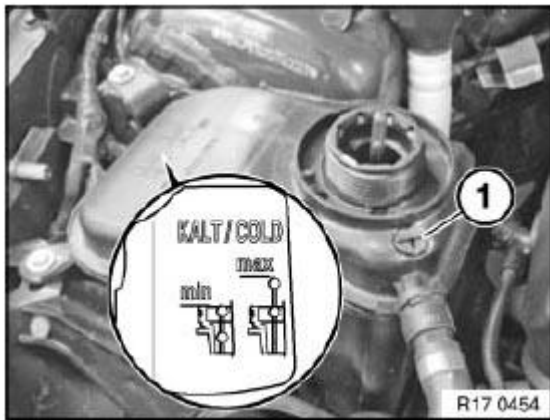


Fig. 15: Identifying Vent Screw

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Have a cleaning cloth ready and mop up emerging coolant.

Only when venting!

NOTE: Do not open the coolant expansion tank cap during the venting procedure.

1. Connect battery charger.
2. Switch on ignition.
3. Set heater to maximum temperature and turn fan down to lowest speed.
4. Press accelerator pedal for 10 seconds to floor. **Engine** must **not** be started.
5. The venting procedure is started when the accelerator pedal is pressed and takes approx. 12 minutes. (Electric coolant pump was activated and shuts down automatically after approx. 12 minutes).
6. Then top up fill level in coolant expansion tank with 100 ml above max (see illustration below).
7. Check **COOLING SYSTEM FOR LEAKS**.
8. If venting has to be carried out again (e.g. if cooling system is leaking), allow DME to fall completely (leave ignition key removed for approx. 3 minutes), then repeat from Point 3.

Only when venting!

Perform filling operation slowly.

Fill coolant expansion tank with 100 ml above max.

100 ml corresponds to A=6 mm.

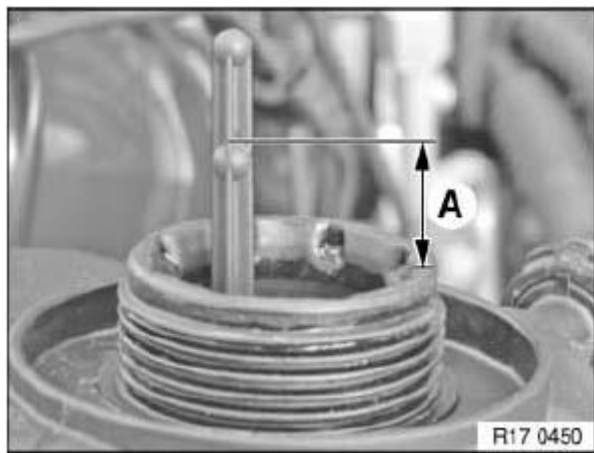


Fig. 16: Identifying Coolant Expansion Tank Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Close coolant expansion tank.

Installation:

Close cap (1) until the arrow marks line up.

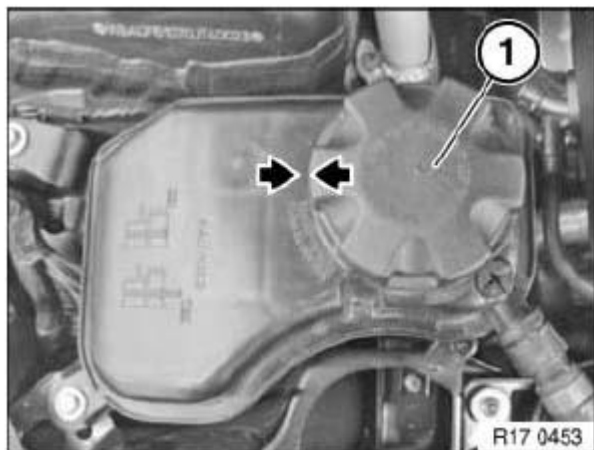


Fig. 17: Identifying Coolant Cap

Courtesy of BMW OF NORTH AMERICA, INC.

17 00 039 VENTING AND FILLING COOLING SYSTEM WITH VACUUM FILLING UNIT

SPECIAL TOOLS DESCRIPTION

Type	Engine	Adapter Y from tester 17 0 100
E60/E61/E63/E64	All	17 0 113
E65/E66	M54/N52/N62/N62T/N73	17 0 105
E65/E66	M57S/M57T/M67/M67T	17 0 113
E70/E71/E72	All	17 0 113
E81/E82/E84/E87/E88/E89	All	17 0 113
E83	M54/N46/N52K	17 0 105
E83	M47S/M57S/M57T/M57Y/N47	17 0 113
E85/E86	All	17 0 105
E90/E91/E92/E93	All	17 0 113
F01/F02/F03/F04/F07/F10	All	17 0 113
R50/R52	W10	17 0 107 and 17 0 102
R50	W17	17 0 109
R52/R53	W11	17 0 109
R55/R56/R57/R60	All	17 0 109
F25	All	17 0 113

IMPORTANT: Lifetime coolant filling:

Never reuse used coolant!

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be drained and refilled.

In the case of other removal work involving the draining of part quantities of coolant, replace these quantities which have been drained with new coolant.

IMPORTANT: You must protect the alternator against contamination by coolant when carrying out repair work on the cooling circuit.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

Note on ordering:

- Workshop equipment
- Workshop equipment catalogue
- Filler unit no. 81 39 2 152 473
- Collecting vessel no. 81 49 2 152 347
- Adapter from tester 17 0 100

IMPORTANT: Risk of slipping due to coolant on the floor.

Danger of injury!

Catch and dispose of emerging coolant in drip tray (1) and if necessary special tool 00 2 030 (universal hydraulic lifter base unit).

Recycling

Observe country-specific waste disposal regulations.

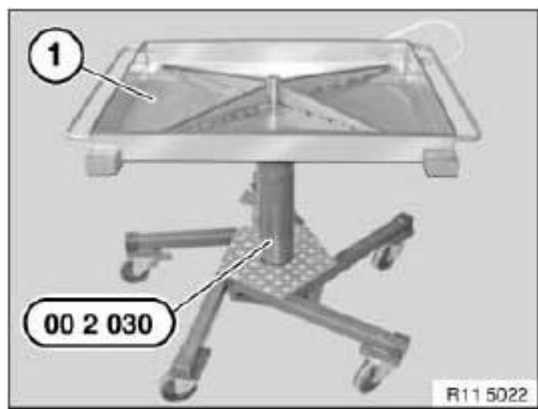


Fig. 18: Lifting Drip Tray Using Special Tool (00 2 030)
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Check all the coolant hoses before filling the cooling system with the vacuum filling unit.

If necessary, replace damaged and porous coolant hoses.

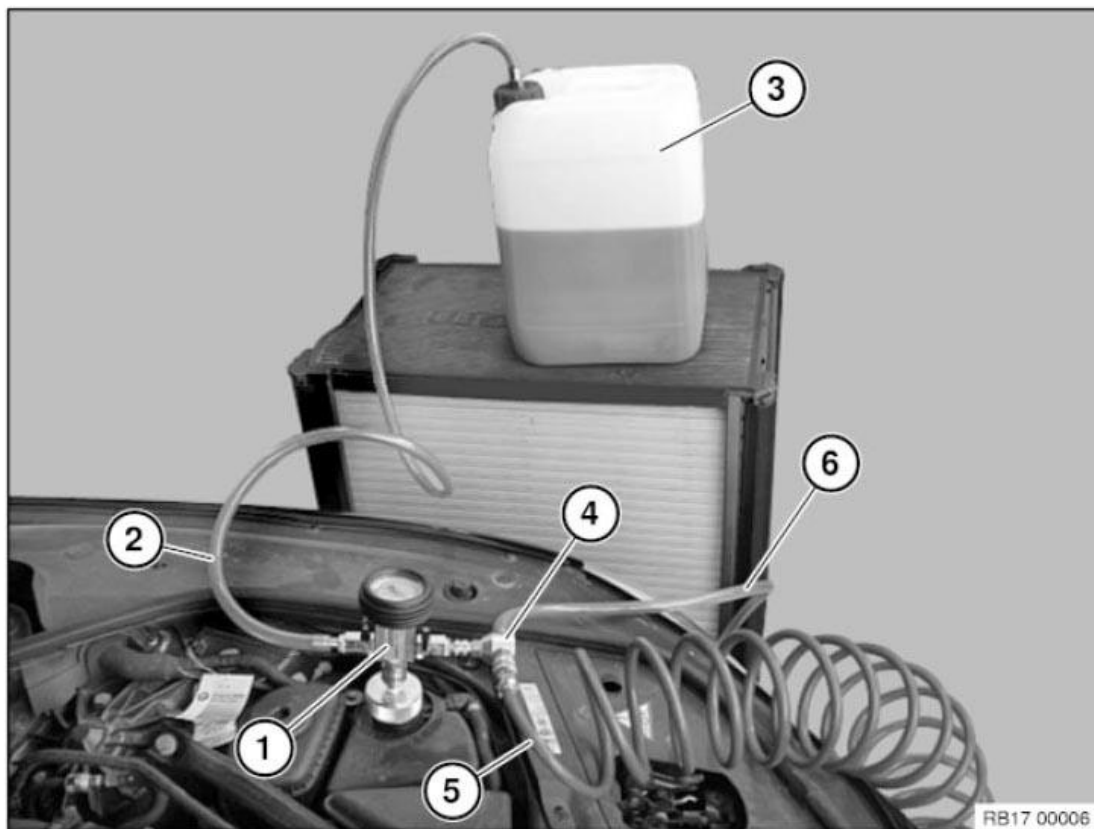


Fig. 19: Identifying Cooling System Components
Courtesy of BMW OF NORTH AMERICA, INC.

- 1) Filling unit with vacuum meter and shut-off valves
- 2) Filler hose
- 3) Coolant container
- 4) Venturi nozzle
- 5) Compressed air connection (max. 6 bar)
- 6) Outgoing-air hose (lead outgoing-air hose into a collecting container)

Requirements

- Cooling system expansion tank must be empty.
- There must be sufficiently premixed coolant in the filling unit container, 1 - 2 liters more than the vehicle filling capacity.
 - Use **RECOMMENDED COOLANT AND OBSERVE PROPER MIXTURE RATIO** .

- Observe capacities.
- Position the filling unit container at the same height as the coolant expansion tank.
- Compressed-air connection with 6 bar pressure present.
- Set vehicle heater to maximum temperature.

Select adapter (Y) according to table and connect to coolant expansion tank.

Connect filler unit to adapter connection (X).

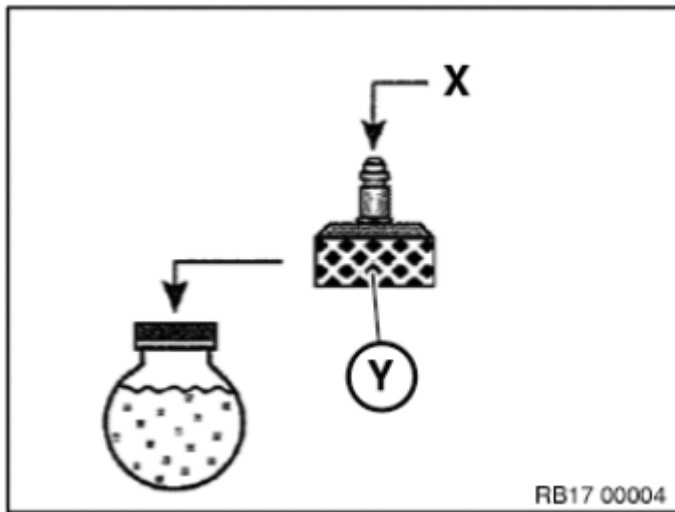


Fig. 20: Identifying Adapter And Adapter Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Shut-off valves (A) and (B) of the filling unit (1) must be closed.

X) Expansion tank connection

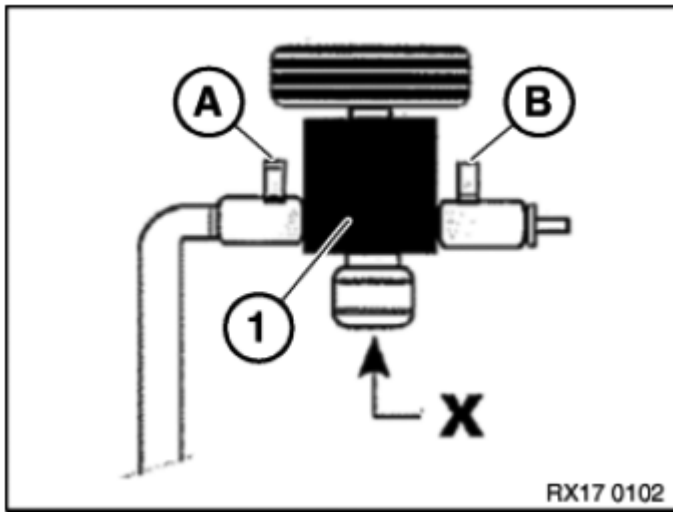


Fig. 21: Identifying Filling Unit Shut-Off Valves
 Courtesy of BMW OF NORTH AMERICA, INC.

Connect venturi nozzle (1) to filling unit (2).

X) Expansion tank connection

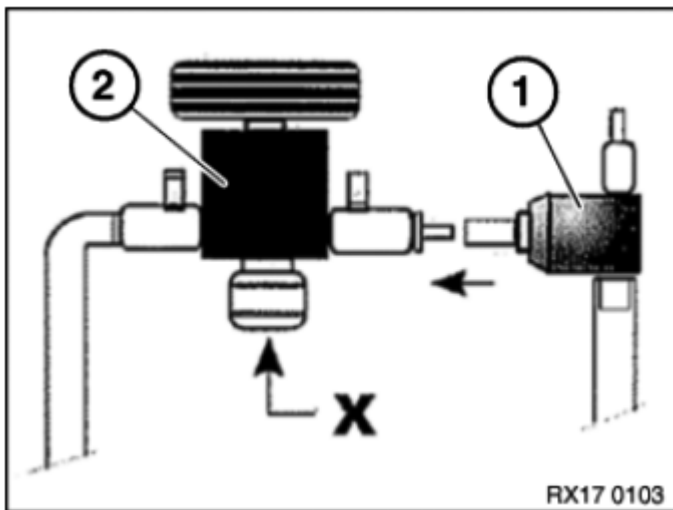


Fig. 22: Connecting Venturi Nozzle To Filling Unit
 Courtesy of BMW OF NORTH AMERICA, INC.

Connect compressed air (1).

X) Expansion tank connection

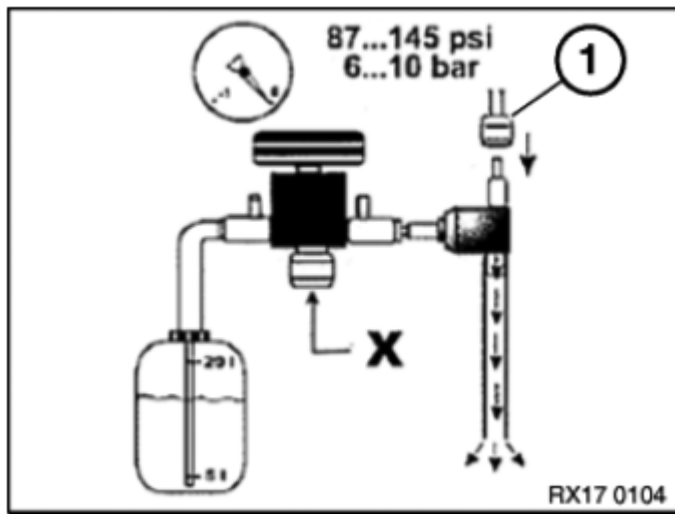


Fig. 23: Connecting Compressed Air Line
Courtesy of BMW OF NORTH AMERICA, INC.

Open shut-off valve (B).

The venturi nozzle produces a flow noise.

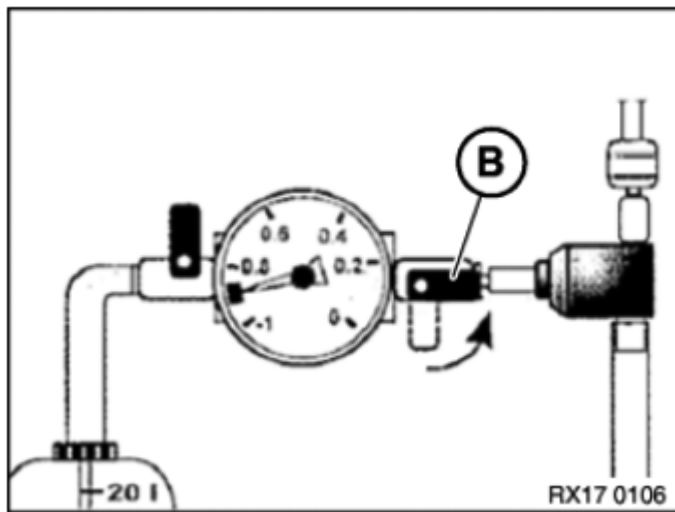


Fig. 24: Opening Shut-Off Valve
Courtesy of BMW OF NORTH AMERICA, INC.

Then open shut-off valve (A) until the filling hose (1) is free of bubbles.

Close shut-off valve (A) again. The filling hose (1) is vented in this way.

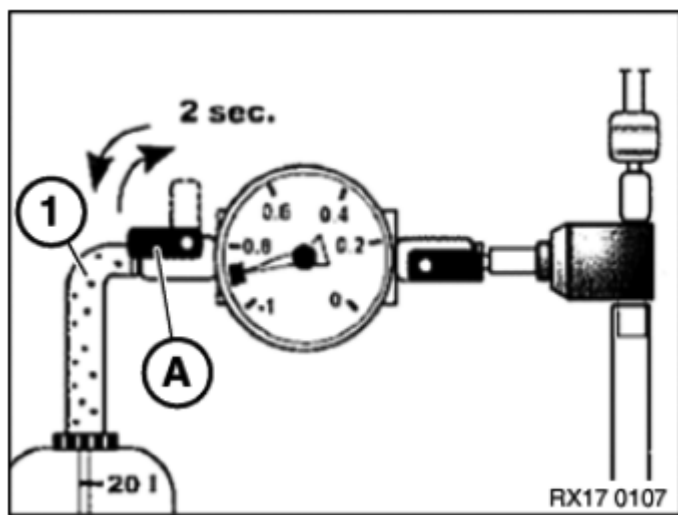


Fig. 25: Opening/Closing Shut-Off Valve
Courtesy of BMW OF NORTH AMERICA, INC.

Shut-off valve (B) remains open. Generate vacuum in coolant system for approx. 2 minutes. The final vacuum is reached at a vacuum of -0.7 to -0.95 bar. Green scale on the vacuum meter.

NOTE: The coolant hoses contract during vacuum build-up.

Then close shut-off valve (B) again.

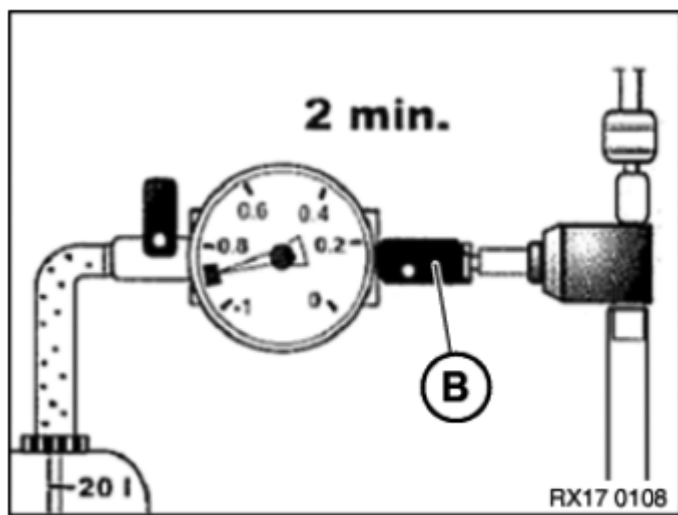


Fig. 26: Identifying Shut-Off Valve
Courtesy of BMW OF NORTH AMERICA, INC.

Both shut-off valves (A) and (B) must be closed. Then seal Venturi nozzle (1).

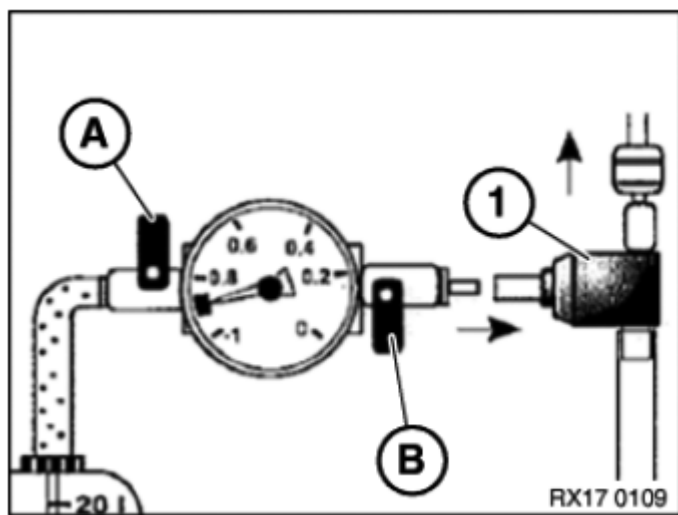


Fig. 27: Sealing Venturi Nozzle

Courtesy of BMW OF NORTH AMERICA, INC.

The cooling system must hold the vacuum for 30 seconds. If the needle in the vacuum meter falls, this indicates a leak in the cooling system.

If the vacuum remains constant, proceed with filling.

In event of leaks, check cooling system for leaks.

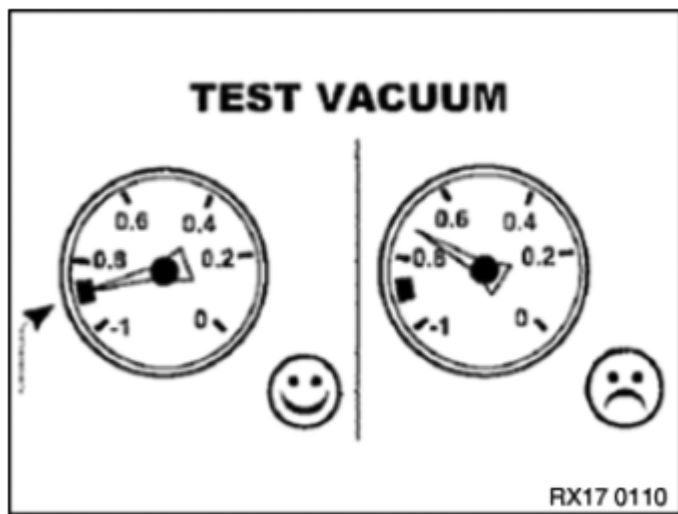


Fig. 28: Testing Cooling System Vacuum

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: There must be sufficiently premixed coolant in the filling unit container, 1 - 2 liters more than the vehicle filling capacity.

Position the filling unit container at the same height as the coolant expansion tank.

Shut-off valve (B) remains closed during the filling process.

To fill the cooling system, open shut-off valve (A) to filling unit container.

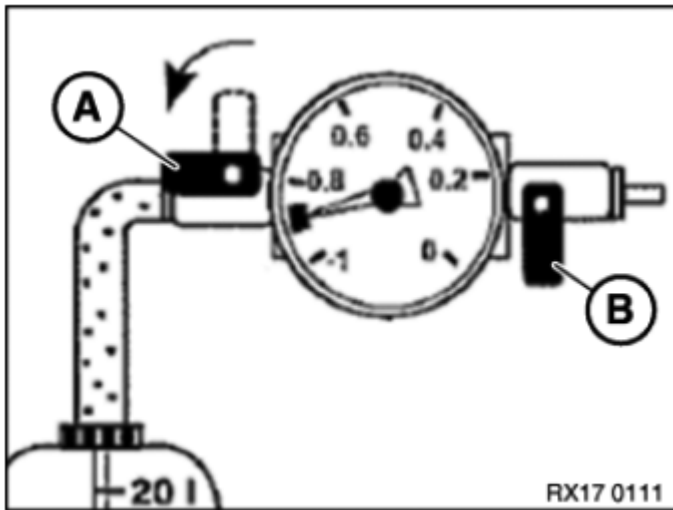


Fig. 29: Opening Shut-Off Valve To Filling Unit Container
Courtesy of BMW OF NORTH AMERICA, INC.

Coolant is now added.

The filling process is finished when the needle in the vacuum meter is at 0 bar or no longer falls.

If necessary, reduce remaining vacuum. Open shut-off valve (B) to do so.

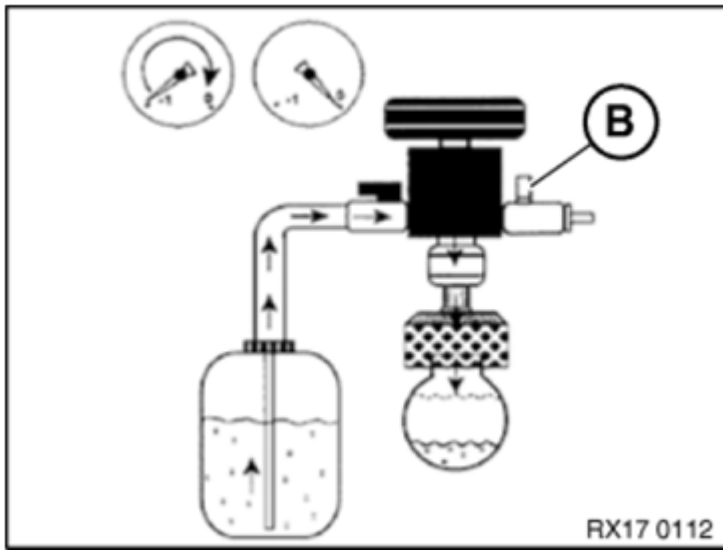


Fig. 30: Identifying Shut-Off Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Remove filling unit with adapter from expansion tank.

Adjust coolant level to maximum.

Close coolant expansion tank.

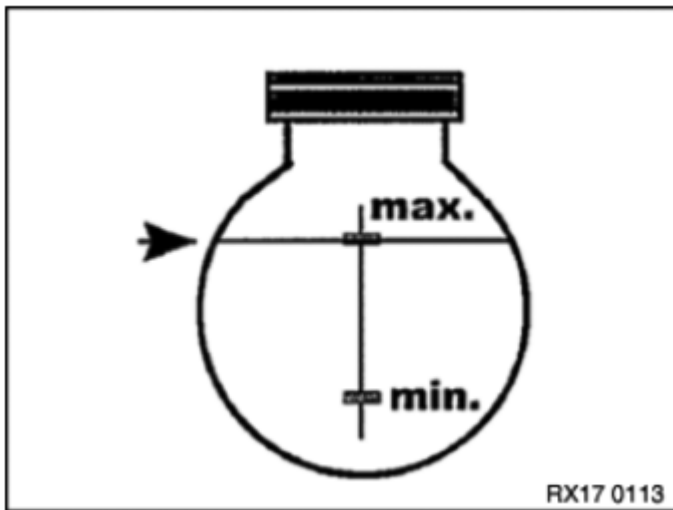


Fig. 31: Adjusting Coolant Level To Max

Courtesy of BMW OF NORTH AMERICA, INC.

After the cooling system has been filled with the vacuum filling unit, another bleeding procedure must be performed for vehicles with an electric coolant pump:

NOTE: Do not open the coolant expansion tank cap during the bleeding procedure.

Switch on the low-beam headlights to perform the bleeding procedure. If the low-beam headlights are not switched on, the ignition (Terminal 15) will switch off automatically after a certain period of time and interrupt the bleeding procedure.

1. Connect battery charger.
2. Switch the ignition on.
3. Switch on low-beam headlight.
4. Set heating to maximum temperature. Take back blower to smallest stage.
5. FES (driving experience switch) must not be in ECO PRO!
6. Press accelerator pedal for 10 seconds to floor. Engine must not be started.
7. The venting procedure is started when the accelerator pedal is pressed and takes approx. 12 minutes. (Electric coolant pump was activated and shuts down automatically after approx. 12 min).
8. Then adjust fluid level in the coolant expansion tank to maximum.
9. Check cooling system for leaks.
10. If the ventilation has to be performed again, deactivate DME completely (remove ignition key for approx. 3 minutes). Then repeat from point 3.

Check function of cooling system.

Check cooling system for tightness.

17 00 515 CHECKING FUNCTION OF RADIATOR AND HEATING SYSTEM

WARNING: Danger of scalding!

Only carry out work on cooling system after engine has cooled down.

Necessary preliminary tasks:

- Switch off ignition.
- Remove air duct.
- Remove fan cowl with electronic fan.

Check production date.

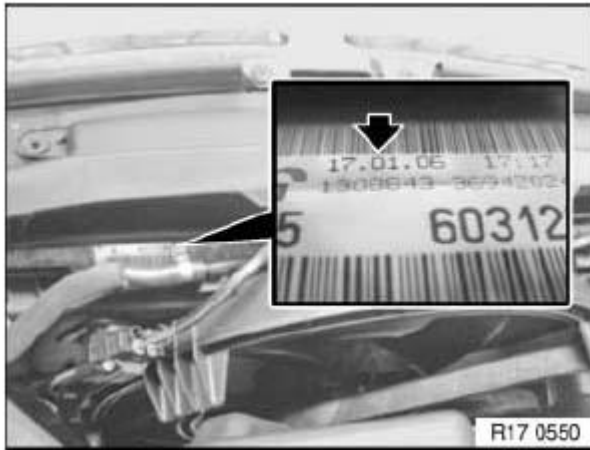


Fig. 32: Identifying Production Date
Courtesy of BMW OF NORTH AMERICA, INC.

Clamp off low-temperature feed lines with special tool 13 3 010.

Function test:

Observe diagnosis instructions.

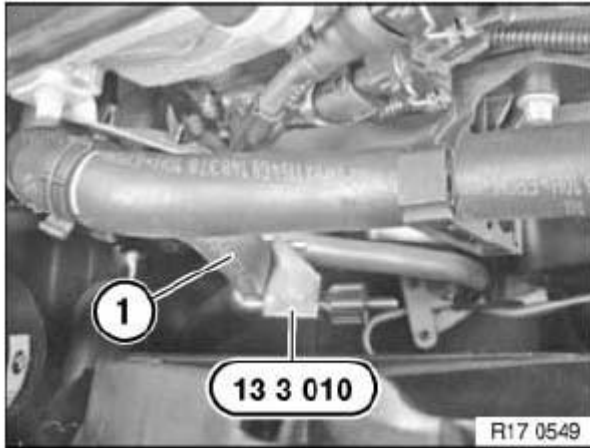


Fig. 33: Identifying Special Tools
Courtesy of BMW OF NORTH AMERICA, INC.

Check function of radiator.

Clamp off low-temperature feed line (1) at coolant pump outlet **or** radiator inlet with special tool 13 3 010 (see arrows).

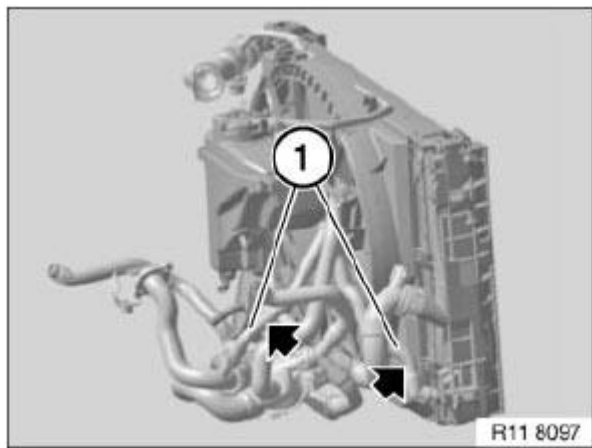


Fig. 34: Identifying Low-Temperature Feed Line
Courtesy of BMW OF NORTH AMERICA, INC.

Automatic transmission only

Check function of heat exchanger.

Clamp off low-temperature feed line (1) at coolant pump outlet with special tool 13 3 010 (see arrow).

Clamp off low-temperature feed line (2) at oil-coolant heat exchanger with special tool 13 3 010 (see arrow).

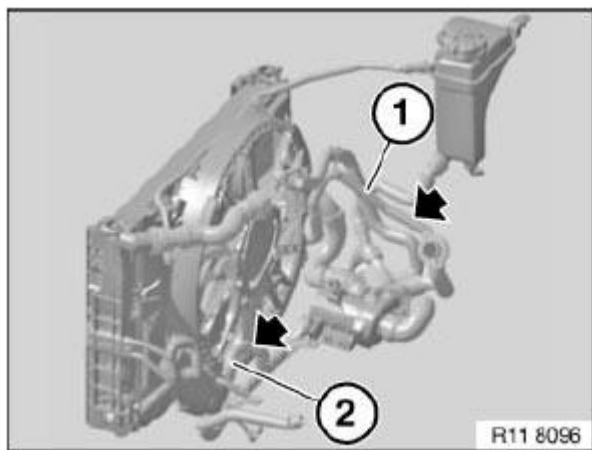


Fig. 35: Identifying Low-Temperature Feed Line
Courtesy of BMW OF NORTH AMERICA, INC.

Check heating and cooling circuits in accordance with diagnosis instruction.

ENGINE RADIATOR

64 53... INSTRUCTIONS FOR REPLACEMENT OF AIR CONDITIONING CAPACITORS AND

RADIATOR/COOLERS

IMPORTANT: Even when they are correctly installed or due to normal driving, coolers (oil cooler, radiator, charge air cooler) or air conditioning capacitors may show slight impressions or deformations on their discs (picture).

This is not damage.

Radiators, cooler or capacitors are not to be replaced in this case.

NOTE: The deformations shown in illustration "1" (see [Fig. 36](#)) can be bent back with a standard fin comb.

Damage to lines carrying media or on the flat pipe require replacement of the radiator/ or air conditioning condenser. Examples of such damage are shown in illustrations "2", "3", "4", "5", and "6" (see [Fig. 36](#)).

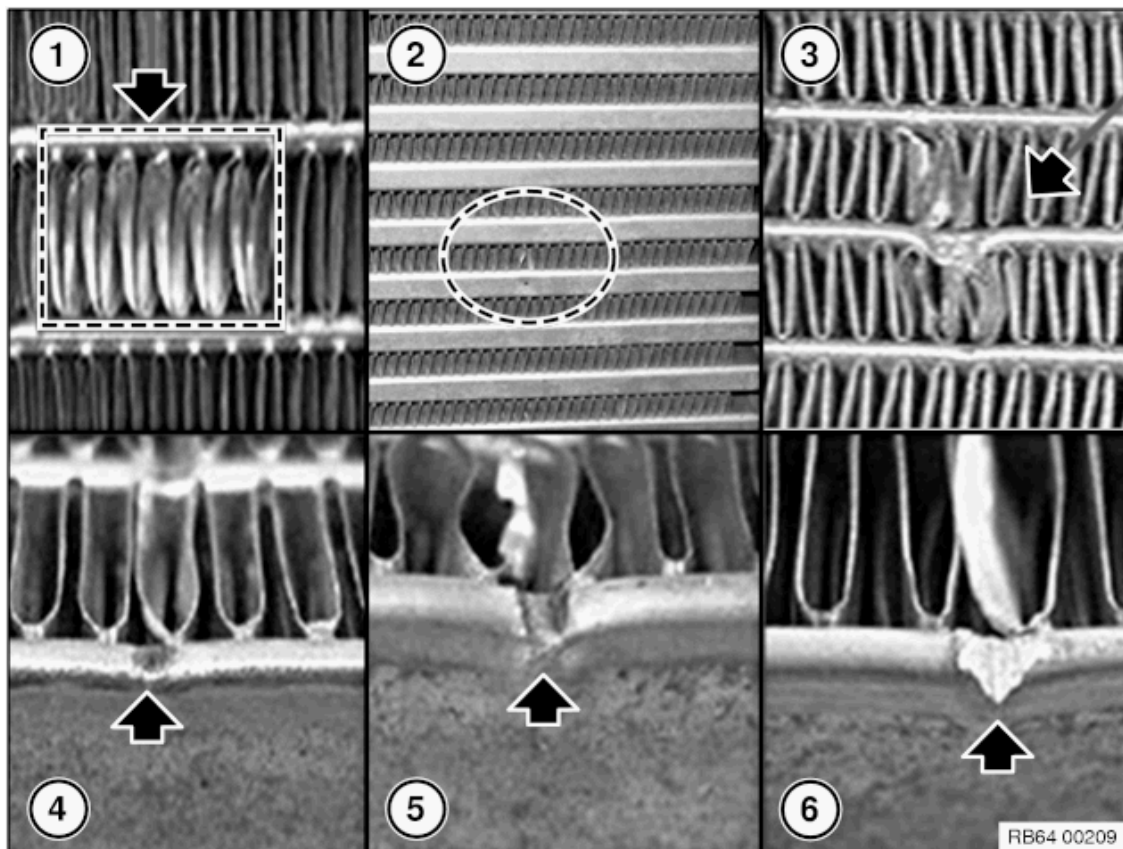


Fig. 36: Identifying Damage And Deformations
Courtesy of BMW OF NORTH AMERICA, INC.

REMOVING RADIATOR COVER

Illustrations show M54:

IMPORTANT: Do not place front panel center section (2) on jump start terminals.
Do not kink Bowden cables for engine hood locking.

Release screws (1).

Remove front panel center section (2) in direction of arrow and place to one side.

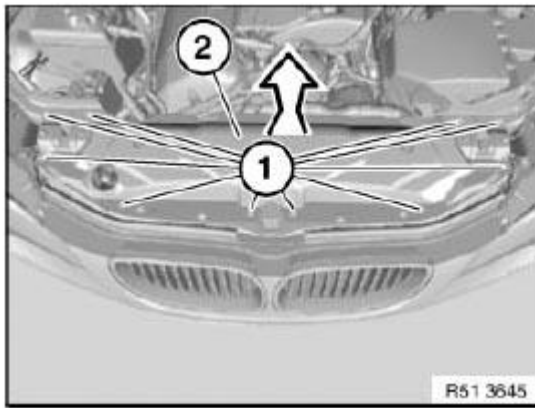


Fig. 37: Removing Front Panel Center Section And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Illustrations show M54:

Release screws (1).

Remove radiator cover (2) in direction of arrow.

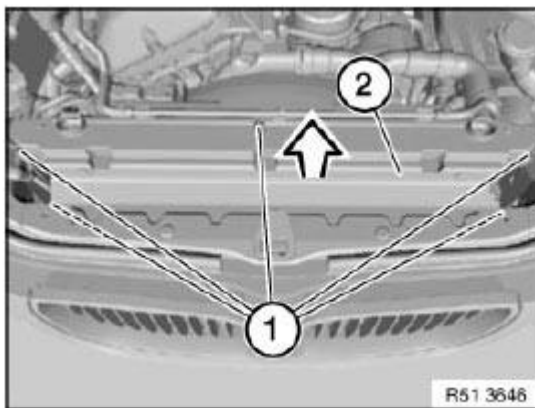


Fig. 38: Removing Radiator Cover And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

17 11 000 REMOVING AND INSTALLING RADIATOR

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

IMPORTANT: Wear protective goggles and gloves.

Necessary preliminary tasks:

- Follow **INSTRUCTIONS FOR WORKING** on cooling system
- Remove **FAN COWL**
- Drain coolant

Release and disconnect coolant hoses (1).

Lift out radiator (2).

Installation:

Coolant hoses must audibly snap into place.

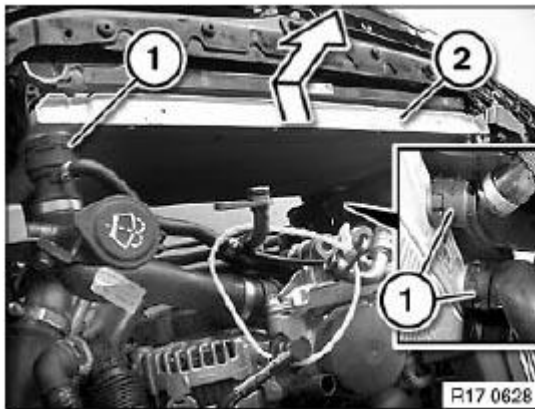


Fig. 39: Lifting Out Radiator

Courtesy of BMW OF NORTH AMERICA, INC.

17 11 035 REPLACING FAN COWL WITH ELECTRIC FAN

Switch off ignition

Necessary preliminary tasks:

- Remove **RADIATOR COVER**
- Disconnect **ENGINE OIL LINES**
- Remove **FRONT UNDERBODY PROTECTION**

Lay coolant line (1) over engine.

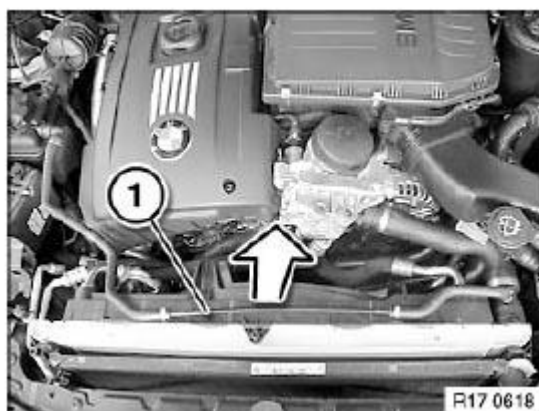


Fig. 40: Laying Coolant Line Over Engine
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock plug (1) and remove.

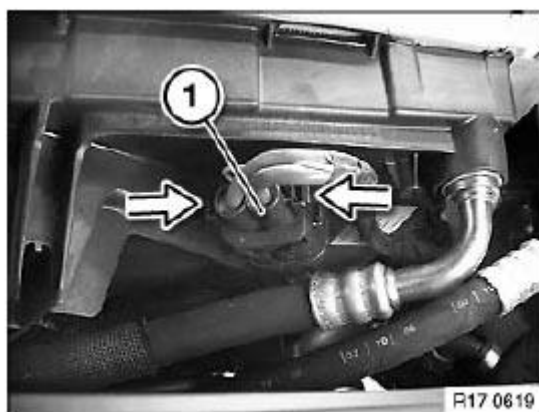


Fig. 41: Unlocking Plug
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip left lines (1) at lower section of fan cowl from holder.

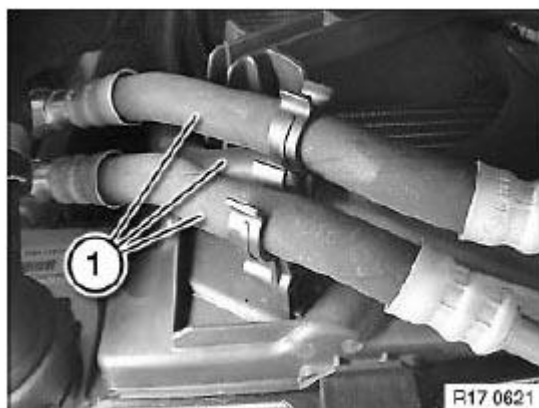


Fig. 42: Identifying Left Lines At Lower Section Of Fan Cowl From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Pull clip (1) on holder (2) in direction of arrow and slide down holder (2) in direction of arrow.

NOTE: For purposes of clarity, this work step is shown with the component removed.

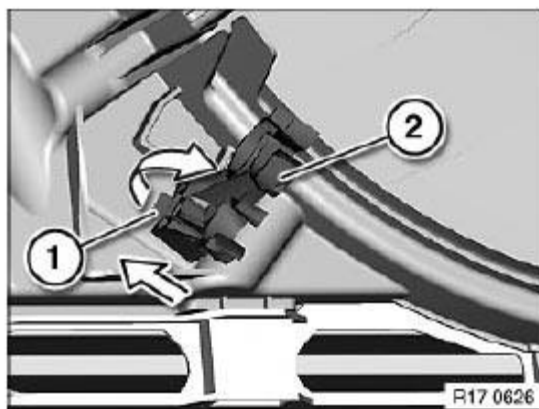


Fig. 43: Pulling Clip On Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip right lines (1) at lower section of fan cowl from holder.

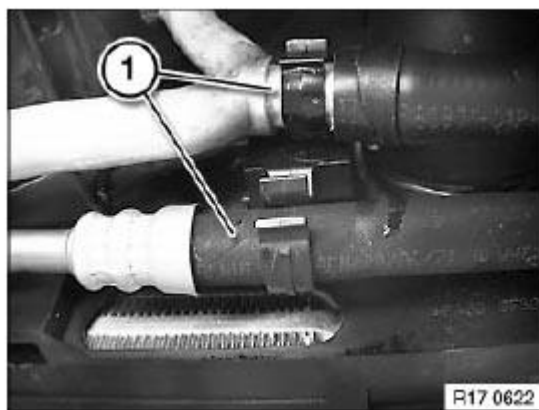


Fig. 44: Identifying Right Lines At Lower Section Of Fan Cowl From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Slide screwdriver (1) under holder (2) and press towards radiator. At the same time slowly slide holder (2) under in direction of arrow.

NOTE: For purposes of clarity, this work step is shown with the component removed.

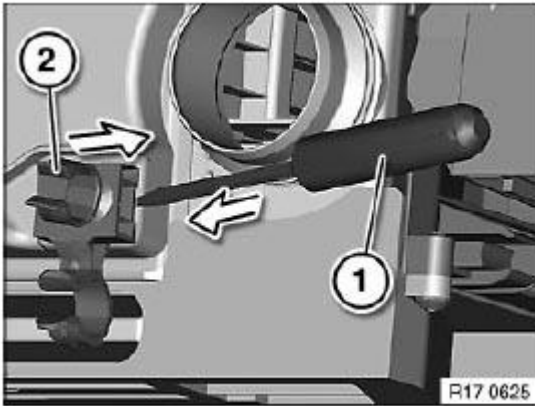


Fig. 45: Sliding Screwdriver Under Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Cut through cable tie (1).

NOTE: For purposes of clarity, this work step is shown with the component removed.

Installation:

Replace cable ties.

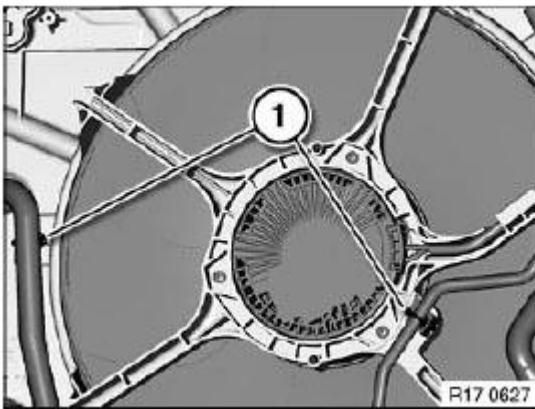


Fig. 46: Identifying Cable Tie
Courtesy of BMW OF NORTH AMERICA, INC.

Remove fan cowl (1) in direction of arrow.

IMPORTANT: Set down fan cowl in upright position, otherwise oil will escape from engine oil cooler.



Fig. 47: Removing Fan Cowl

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: After completing work, check engine oil level and top up if necessary.
Check function of DME.

17 11 100 REMOVING AND INSTALLING/REPLACING COOLANT EXPANSION TANK

Necessary preliminary tasks:

- Drain coolant from radiator

Release and disconnect coolant hoses (1).

Release screws.

Raise expansion tank, unlock plug on coolant level switch and disconnect.

Remove coolant expansion tank (2).

Installation:

Insert locating pin in rubber grommet.

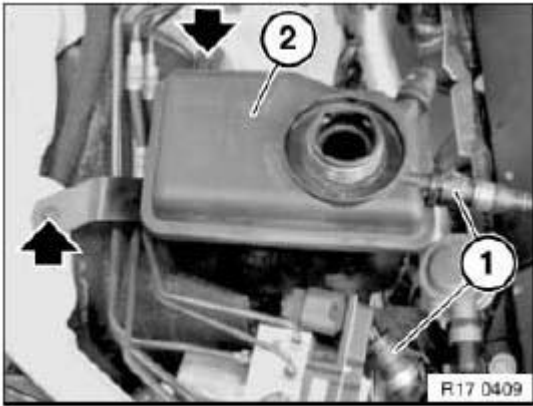


Fig. 48: Identifying Coolant Hoses And Coolant Expansion Tank
Courtesy of BMW OF NORTH AMERICA, INC.

Check cooling system for leaks.

17 11 150 REMOVING AND INSTALLING/REPLACING ENGINE OIL COOLER

Necessary preliminary tasks:

- Remove **FAN COWL**

WARNING: Danger of scalding!

Only perform this work after engine has cooled down.

IMPORTANT: Wear protective goggles and gloves.

Recycling:

Engine oil escapes when oil lines are released. Catch and dispose of emerging engine oil.

Observe country-specific waste-disposal regulations.

Release screw (1).

Tightening torque **17 21 2AZ** .

Detach oil line (2) from engine oil cooler flange.

Catch and dispose of emerging fluid.

Hang oil line upwards so that no more oil can escape.

The same procedure applies to the second oil line.

Installation:

Replace sealing rings.

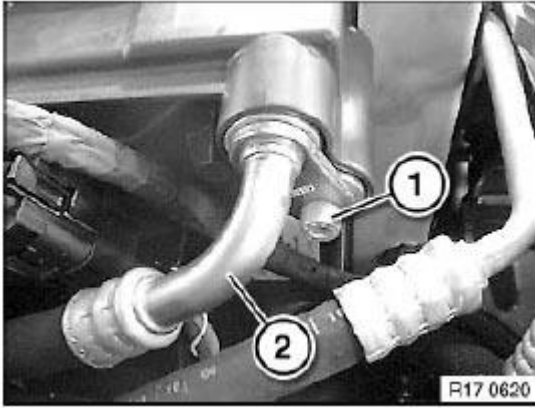


Fig. 49: Identifying Oil Line And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Feed out engine oil cooler and remove.

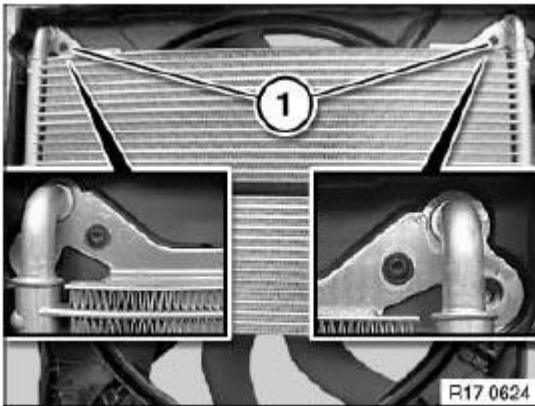


Fig. 50: Identifying Engine Oil Cooler Screws
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: After completing work, check engine oil level and top up if necessary.

OIL COOLER**64 53... INSTRUCTIONS FOR REPLACEMENT OF AIR CONDITIONING CAPACITORS AND RADIATOR/COOLERS**

IMPORTANT: Even when they are correctly installed or due to normal driving, coolers (oil cooler, radiator, charge air cooler) or air conditioning capacitors may show slight impressions or deformations on their discs (picture).

This is not damage.

Radiators, cooler or capacitors are not to be replaced in this case.

NOTE: The deformations shown in illustration "1" (see [Fig. 51](#)) can be bent back with a standard fin comb.

Damage to lines carrying media or on the flat pipe require replacement of the radiator/ or air conditioning condenser. Examples of such damage are shown in illustrations "2", "3", "4", "5", and "6" (see [Fig. 51](#)).

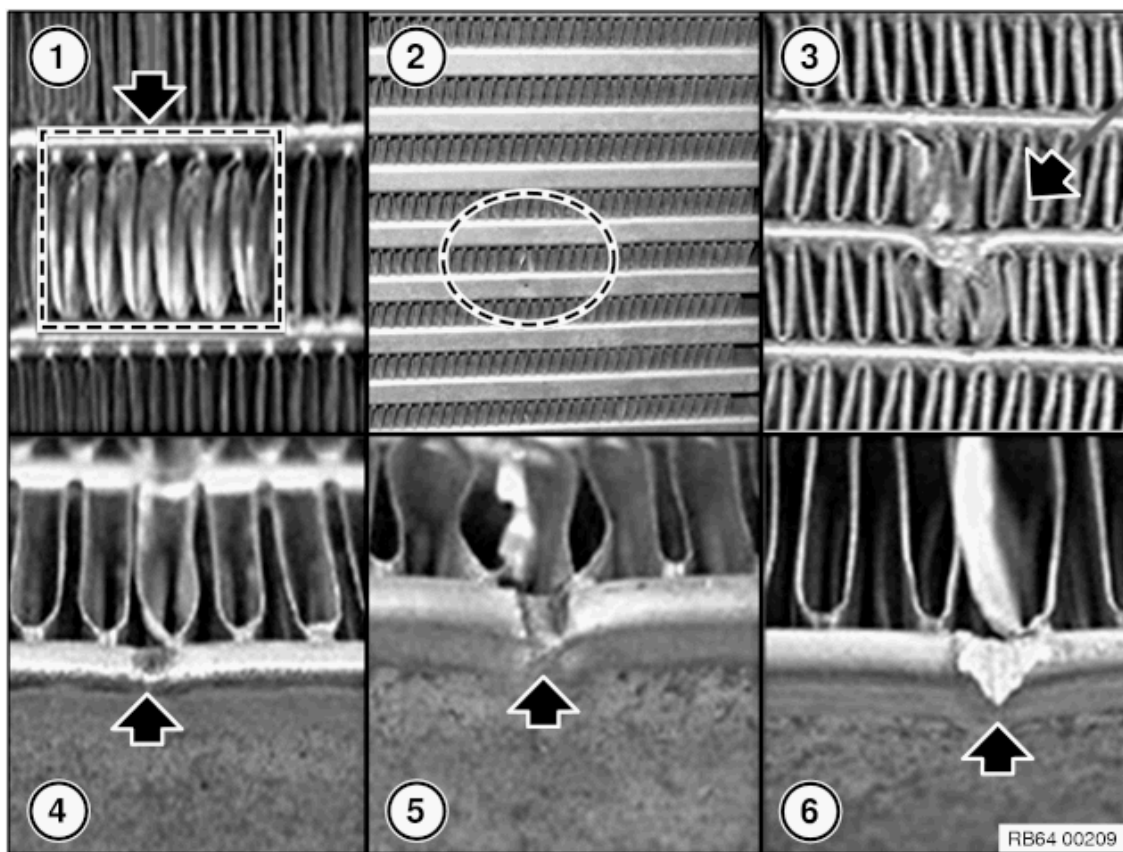


Fig. 51: Identifying Damage And Deformations
Courtesy of BMW OF NORTH AMERICA, INC.

17 21 500 FLUSHING OIL COOLER WITH LINES (AUTOMATIC TRANSMISSION)

Special tools required:

- **17 2 018**

- **17 2 019**

NOTE: Carry out the work steps listed when:
Fitting a new or replacement transmission
Flushing can only be carried out with the automatic transmission removed.

Procedure:

Automatic transmission removed.

Connect appropriate adapters (see description below) to oil lines exiting from automatic transmission.

Connect the connecting line **17 2 019** from the oil collection unit with the quick-release coupling.

Connect drain line **17 2 018** using quick-release coupling.

Feed open end of drain line into a suitable collection container.

Using oil collection unit, flush approx. 1 liter of transmission fluid through oil lines and oil cooler.

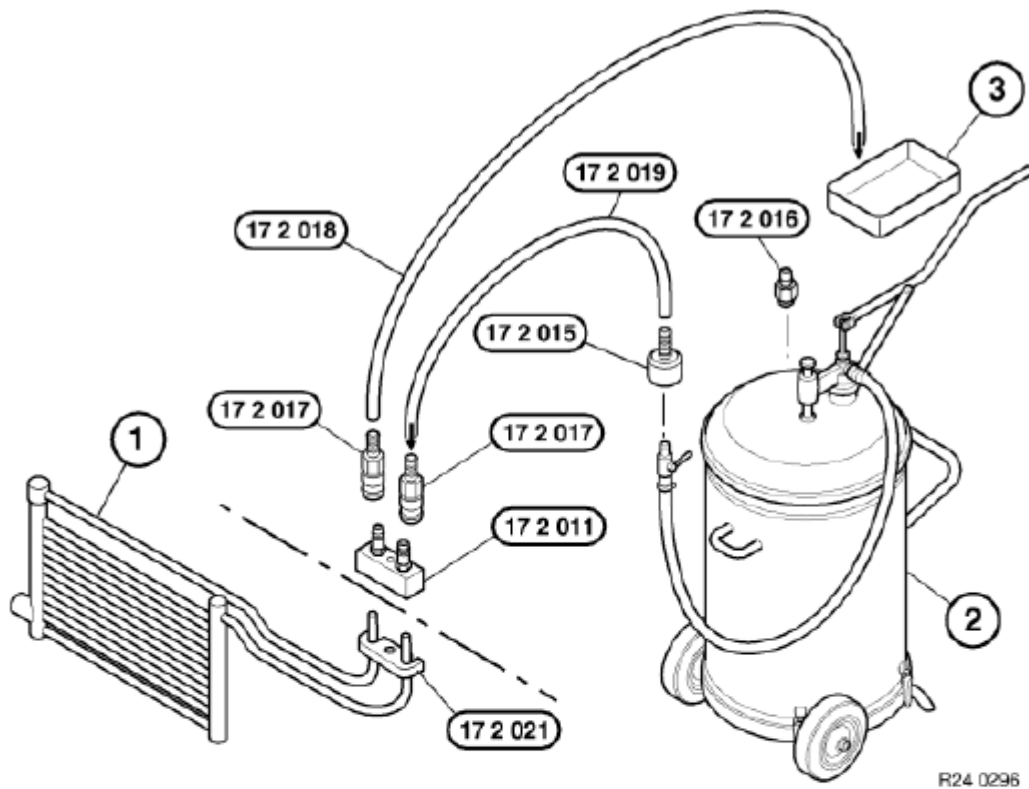
Reposition quick-release couplings.

Flush oil lines/oil cooler in opposite direction with approx. 1 liter of transmission fluid .

Disconnect quick-release couplings, remove adapters.

NOTE: Dispose of flushing oil properly; do not under any circumstances reuse it.

Arrangement of flushing device for transmission A5S 310Z, A5S, 560Z, A5S 360R/390R, A4S 200R, A5S 325Z, GA6HP26Z



R24 0296

- 1) Transmission-oil cooler with lines
- 2) Oil collection unit
- 3) Oil drip tray

17 2 011 Adapter for connecting transmission-side oil cooler lines (1)

17 2 015 Connection for oil collection unit (2), manufacturer: Deutsche Tecaletit or

17 2 016 Connection for oil collection unit (2), manufacturer: Horn

17 2 017 Quick-release coupling (2 pieces)

17 2 018 Hose to oil drip tray (3)

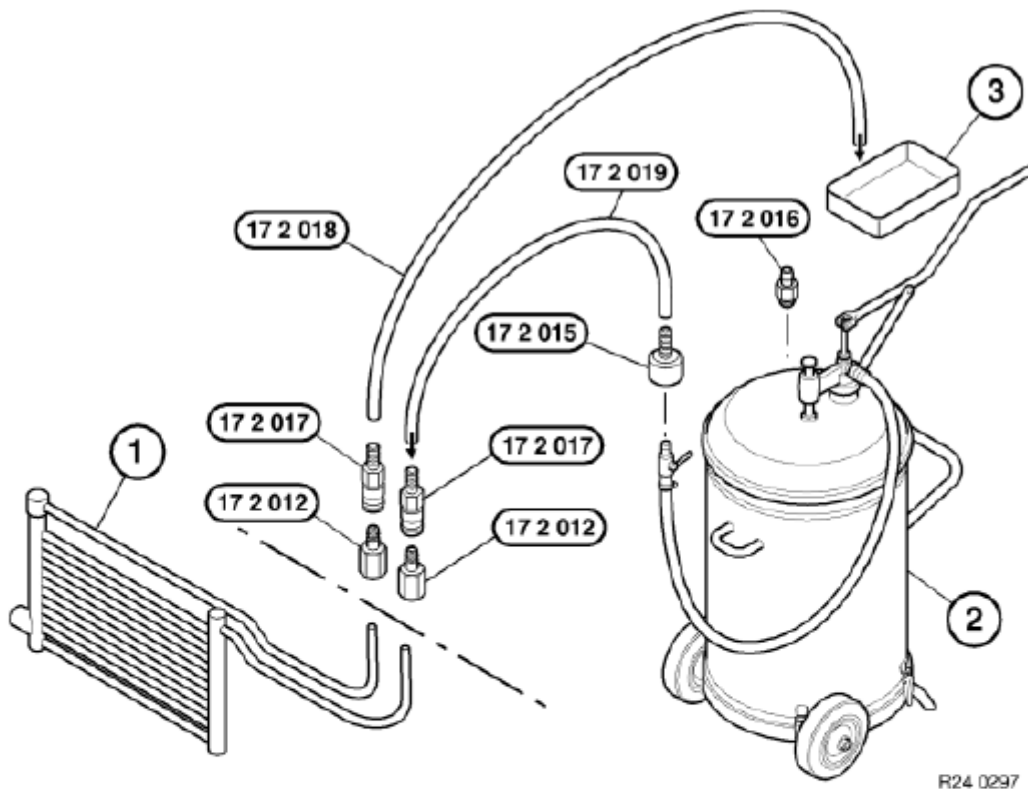
17 2 019 Hose to oil collection unit (2)

17 2 021 Mounting plate for adapter 17 2 011 for transmissions A5S 325Z, GA6HP26Z

Fig. 52: Identifying Radiator Flushing Procedure

Courtesy of BMW OF NORTH AMERICA, INC.

Arrangement of flushing device for transmission A4S 310R



- 1) Transmission-oil cooler with lines
- 2) Oil collection unit
- 3) Oil drip tray

17 2 012 Adapters (2 x) for connecting transmission-side oil cooler lines (1)

17 2 015 Connection for oil collection unit (2), manufacturer: Deutsche Tecalemit or

17 2 016 Connection for oil collection unit (2), manufacturer: Horn

17 2 017 Quick-release coupling (2 pieces)

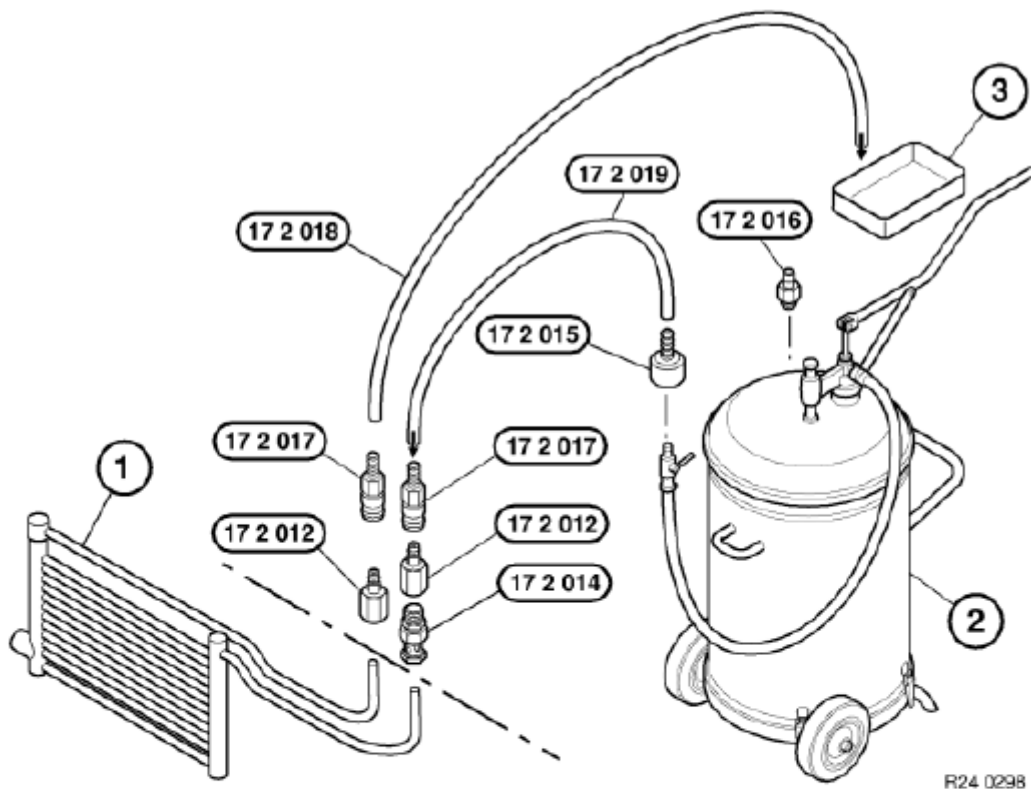
17 2 018 Hose to oil drip tray (3)

17 2 019 Hose to oil collection unit (2)

Fig. 53: Identifying Radiator Flushing Procedure

Courtesy of BMW OF NORTH AMERICA, INC.

Arrangement of flushing device for transmission A4S 300J



R24 0298

- 1) Transmission-oil cooler with lines
- 2) Oil collection unit
- 3) Oil drip tray

17 2 012 Adapters (2 x) for connecting transmission-side oil cooler lines (1)

17 2 014 Banjo bolt for connecting transmission-side oil cooler lines (1)

17 2 015 Connection for oil collection unit (2), manufacturer: Deutsche Tecaletit or

17 2 016 Connection for oil collection unit (2), manufacturer: Horn

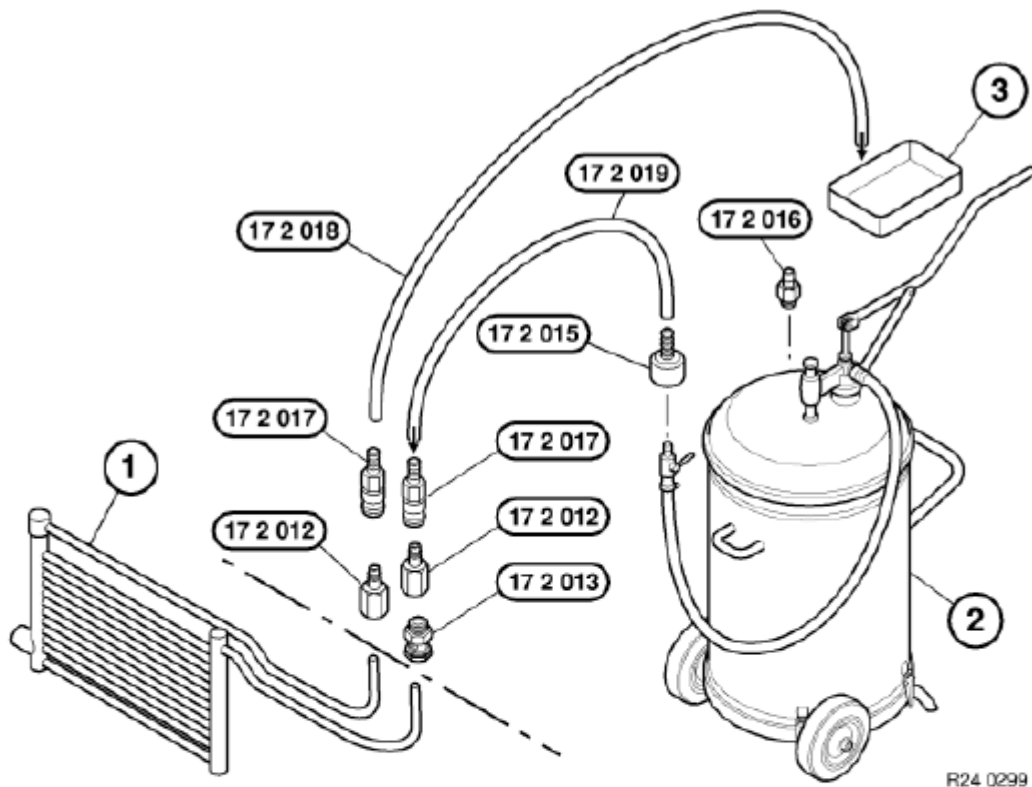
17 2 017 Quick-release coupling (2 pieces)

17 2 018 Hose to oil drip tray (3)

17 2 019 Hose to oil collection unit (2)

Fig. 54: Identifying Radiator Flushing Procedure
 Courtesy of BMW OF NORTH AMERICA, INC.

Arrangement of flushing device for transmission A5S 440Z



R24 0299

- 1) Transmission-oil cooler with lines
- 2) Oil collection unit
- 3) Oil drip tray

17 2 012 Adapters (2 x) for connecting transmission-side oil cooler lines (1)

17 2 013 Banjo bolt for connecting transmission-side oil cooler lines (1)

17 2 015 Connection for oil collection unit (2), manufacturer: Deutsche Tecaletit or

17 2 016 Connection for oil collection unit (2), manufacturer: Horn

17 2 017 Quick-release coupling (2 pieces)

17 2 018 Hose to oil drip tray (3)

17 2 019 Hose to oil collection unit (2)

Fig. 55: Identifying Radiator Flushing Procedure

Courtesy of BMW OF NORTH AMERICA, INC.

17 21 500 FLUSHING TRANSMISSION OIL COOLER WITH LINES (AUTOMATIC TRANSMISSION) (GA6HP19Z, GA6HP26Z, GA6HP32Z)

NOTE: Carry out the work steps listed when:
Installing a new or replacement transmission.

Procedure

Automatic transmission removed.

Connect appropriate adapters (see description below) to oil lines exiting from automatic transmission.

Connect connecting line 17 2 019 from the oil collection unit with the quick-release coupling.

Connect drain line 17 2 018 using quick-release coupling.

Hold and direct open end of drain line into a suitable drip tray.

Using oil collection unit, flush approx. 1 liter of transmission fluid (refer to **AUTOMATIC TRANSMISSION - OPERATING FLUIDS**) through oil lines and transmission oil cooler.

Reposition quick-release couplings.

Flush oil lines/transmission oil cooler in opposite direction with approx. 1 liter of transmission fluid (refer to **AUTOMATIC TRANSMISSION - OPERATING FLUIDS**).

Disconnect quick-release couplings.

Remove adapter.

NOTE: **Dispose of flushing oil correctly.**
 Do not reuse under any circumstances.

Press hydraulic lines (1) into adapters (2).

Slide clamping bar (3) into guides and secure with screw (4).

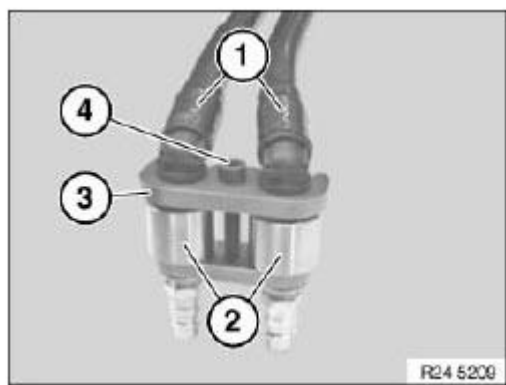
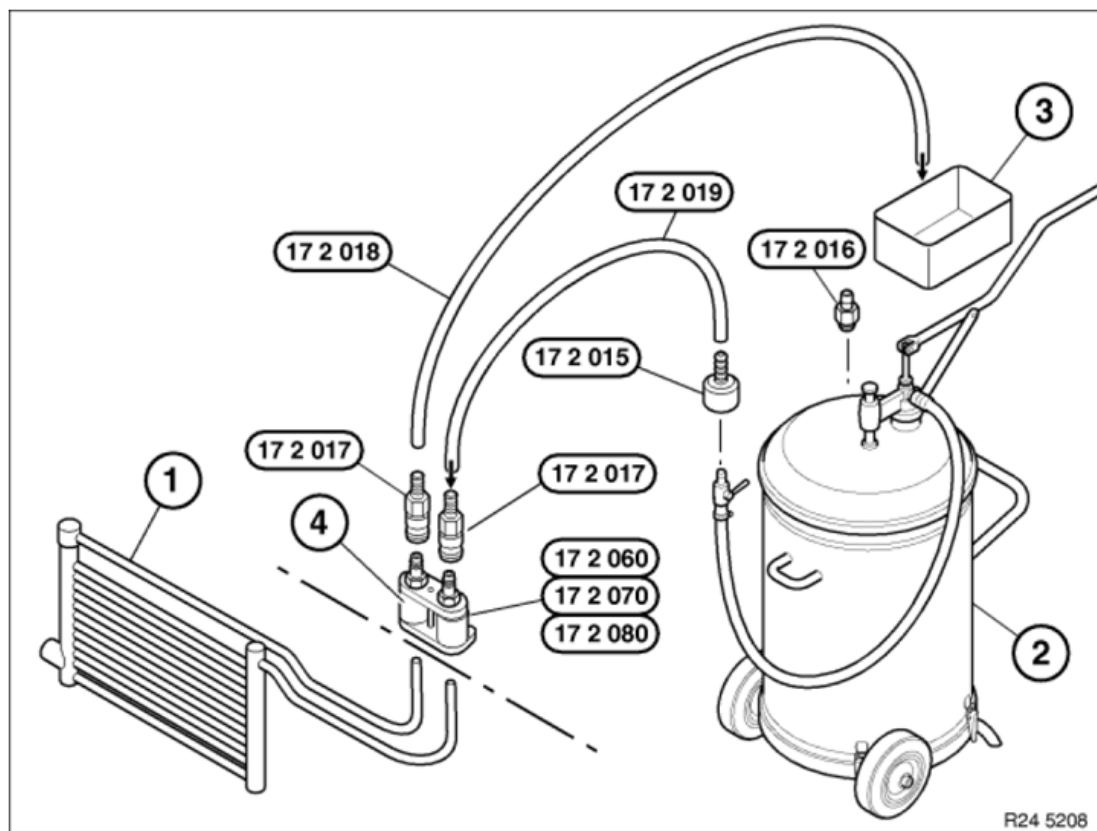


Fig. 56: Identifying Hydraulic Lines, Adapters, Clamping Bar With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Arrangement of flushing apparatus for transmissions GA6HP19Z, GA6HP26Z, GA6HP32Z



1) Transmission-oil cooler with lines

2) Oil collection unit

17 2 015 Connection for oil collection unit (2), manufacturer: Deutsche Tecaletit or

17 2 016 Connection for oil collection unit (2), manufacturer: Horn

17 2 017 Quick-release coupling (2 pieces)

17 2 019 Hose to oil collection unit (2)

3) Oil drip tray

17 2 018 Hose to oil drip tray (3)

4) Adapter with clamping bar

17 2 060 Adapter with clamping bar for aluminium lines and steel lines with aluminium connection (line diameter 12 mm) GA6HP19Z

17 2 070 Adapter with clamping bar (line diameter 15 mm) GA6HP26Z, GA6HP32Z, TCT for N54 engine

17 2 080 Adapter with clamping bar for fuel lines GA6HP26Z

Fig. 57: Arrangement - Flushing Apparatus For Transmissions (GA6HP19Z, GA6HP26Z, GA6HP32Z)
Courtesy of BMW OF NORTH AMERICA, INC.

1. Transmission-oil cooler with lines

2. Oil collection unit

17 2 015 Connection for oil collection unit (2), manufacturer: Deutsche Tecalemit or

17 2 016 Connection for oil collection unit (2), manufacturer: Horn

17 2 017 Quick-release coupling (2 pieces)

17 2 019 Hose to oil collection unit (2)

3. Oil drip tray

17 2 018 Hose to oil drip tray (3)

4. Adapter with clamping bar

17 2 060 Adapter with clamping bar for aluminium lines and steel lines with aluminium connection (line diameter 12 mm) GA6HP19Z

17 2 070 Adapter with clamping bar (line diameter 15 mm) GA6HP26Z, GA6HP32Z, TCT for N54 engine

17 2 080 Adapter with clamping bar for fuel lines GA6HP26Z

OIL COOLER LINES

64 53... INSTRUCTIONS FOR REPLACEMENT OF AIR CONDITIONING CAPACITORS AND RADIATOR/COOLERS

IMPORTANT: Even when they are correctly installed or due to normal driving, coolers (oil cooler, radiator, charge air cooler) or air conditioning capacitors may show slight impressions or deformations on their discs (picture).

This is not damage.

Radiators, cooler or capacitors are not to be replaced in this case.

NOTE: The deformations shown in illustration "1" (see [Fig. 58](#)) can be bent back with a standard fin comb.

Damage to lines carrying media or on the flat pipe require replacement of the radiator/ or air conditioning condenser. Examples of such damage are shown in illustrations "2", "3", "4", "5", and "6" (see [Fig. 58](#)).

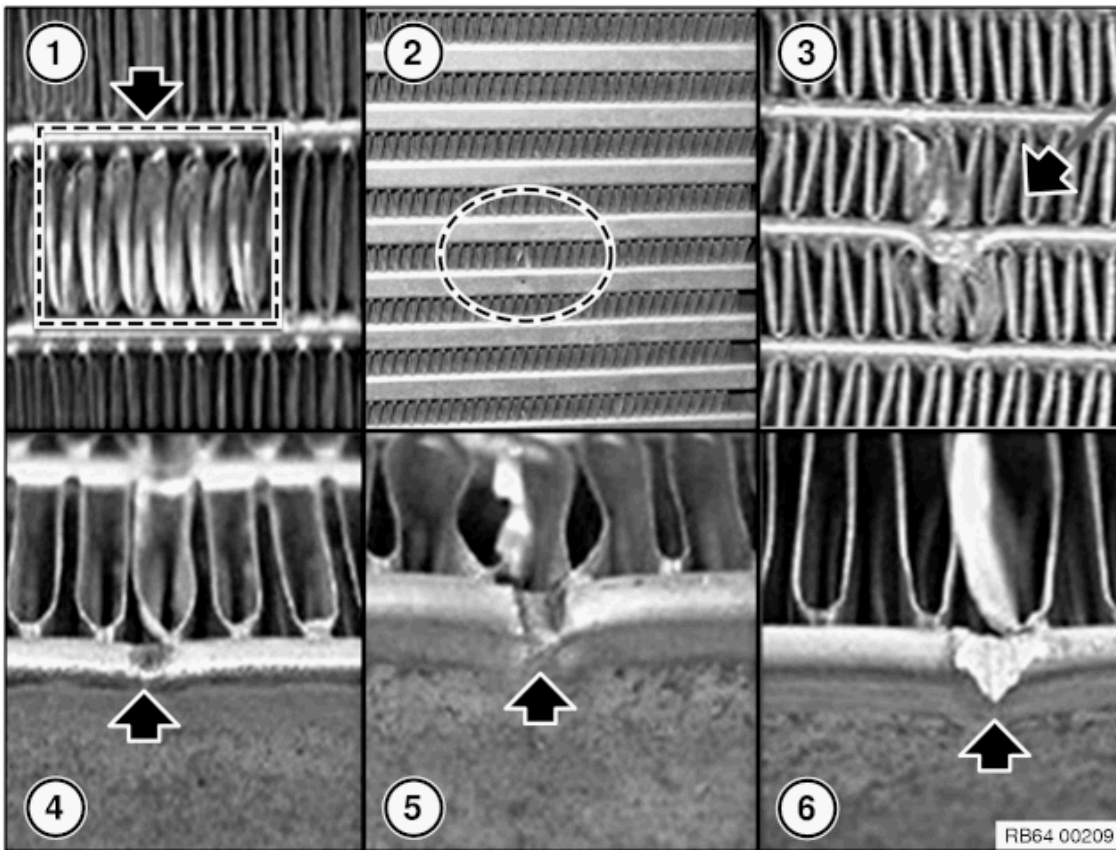


Fig. 58: Identifying Damage And Deformations
 Courtesy of BMW OF NORTH AMERICA, INC.

17 22 030 REMOVING AND INSTALLING/REPLACING OIL LINE FOR ENGINE OIL COOLER

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

IMPORTANT: Wear protective gloves and goggles.

Recycling:

Engine oil escapes when oil line is released.

Catch and dispose of emerging engine oil.

Observe country-specific waste-disposal regulations.

Necessary preliminary tasks:

REMOVE FAN COWL

Release screw.

Tightening torque **17 22 1AZ** .

Detach oil line from oil filter control housing.

Catch and dispose of emerging fluid.

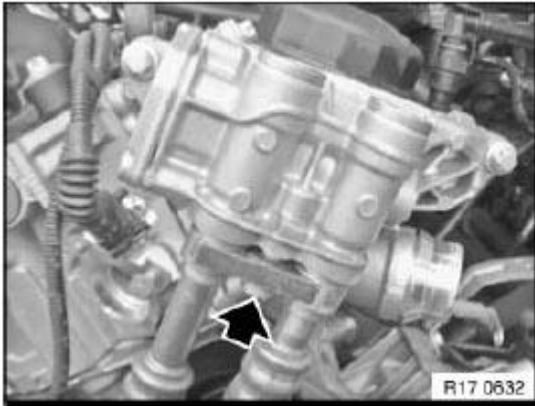


Fig. 59: Detaching Oil Line From Oil Filter Control Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Release bolt (1).

Tightening torque **17 22 2AZ**

Disconnect oil line (2) from engine oil cooler flange and remove.

Catch and dispose of emerging fluid.

IMPORTANT: When tightening down the bolt, use suitable means/equipment to prevent the flange from twisting.

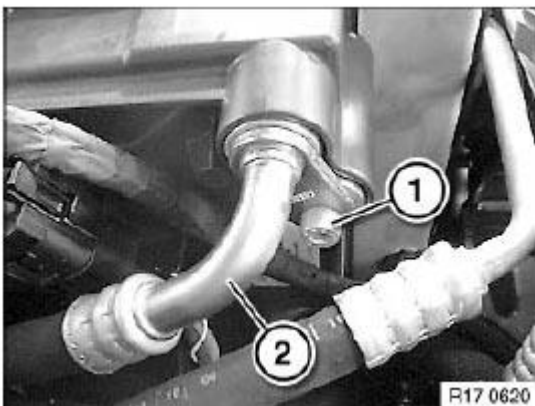


Fig. 60: Identifying Oil Line And Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace all sealing rings on oil line.

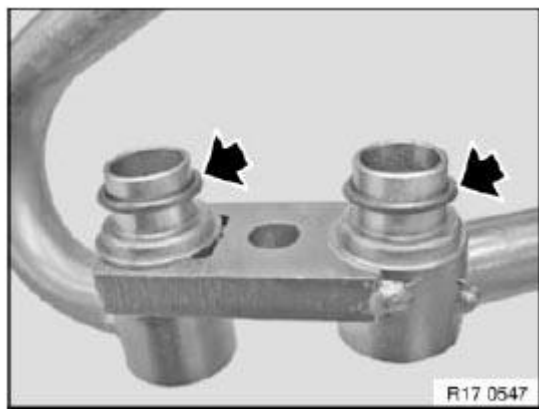


Fig. 61: Locating Sealing Rings On Oil Line
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: After completing work, check engine oil level and top up if necessary.

CHANGE AIR COOLER

64 53... INSTRUCTIONS FOR REPLACEMENT OF AIR CONDITIONING CAPACITORS AND RADIATOR/COOLERS

IMPORTANT: Even when they are correctly installed or due to normal driving, coolers (oil cooler, radiator, charge air cooler) or air conditioning capacitors may show slight impressions or deformations on their discs (picture).

This is not damage.

Radiators, cooler or capacitors are not to be replaced in this case.

NOTE: The deformations shown in illustration "1" (see [Fig. 62](#)) can be bent back with a standard fin comb.

Damage to lines carrying media or on the flat pipe require replacement of the radiator/ or air conditioning condenser. Examples of such damage are shown in illustrations "2", "3", "4", "5", and "6" (see [Fig. 62](#)).

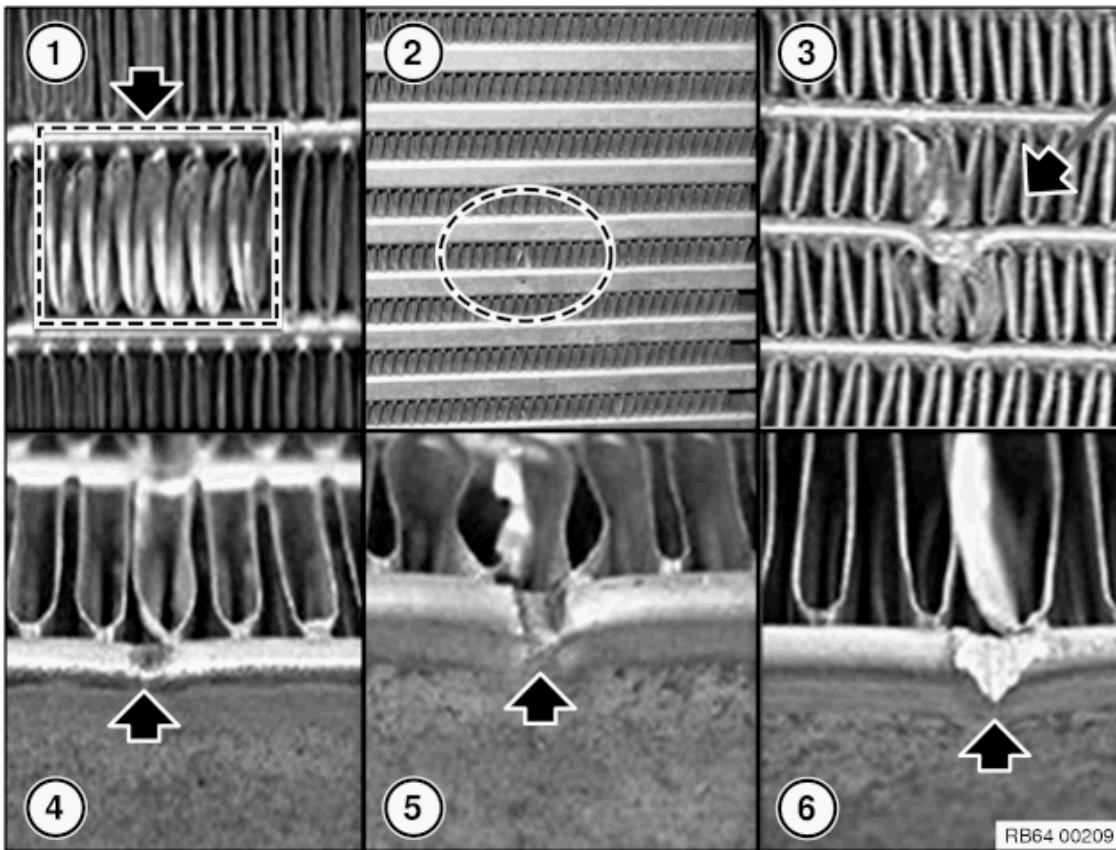


Fig. 62: Identifying Damage And Deformations
 Courtesy of BMW OF NORTH AMERICA, INC.

17 51 000 REMOVING AND INSTALLING/REPLACING INTERCOOLER

Special tools required:

- 11 8 670

Necessary preliminary tasks:

- Remove **FRONT UNDERBODY PROTECTION**
- Unlock charge-air duct on left and right of intercooler and detach

IMPORTANT: Coat sealing rings of quick-connect couplings with antiseize agent. Pressure pipes cannot be fitted without antiseize agent.

Release screws. (Picture shows right side).

Open quick-connect couplings on charge-air hoses.

Remove intercooler.

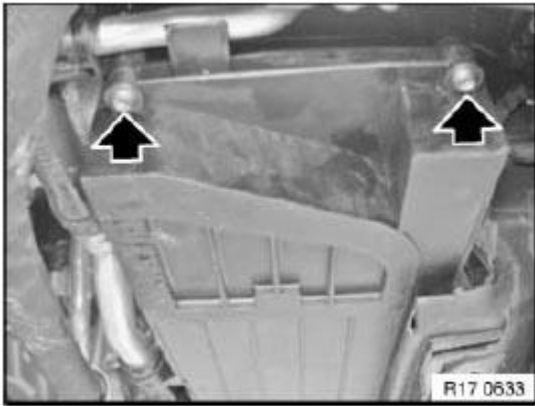


Fig. 63: Locating Intercooler Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

**CAUTION: Risk of damage to sealing rings!
Special tool 11 8 670 is essential!**

- Coat sealing rings with antiseize agent.
- Attach charge-air duct (1) with special tool **11 8 670** to intercooler (2).
- Charge-air ducts must audibly snap into place.

Texts refer to and illustrations show the right side. The procedure is identical for the left side.

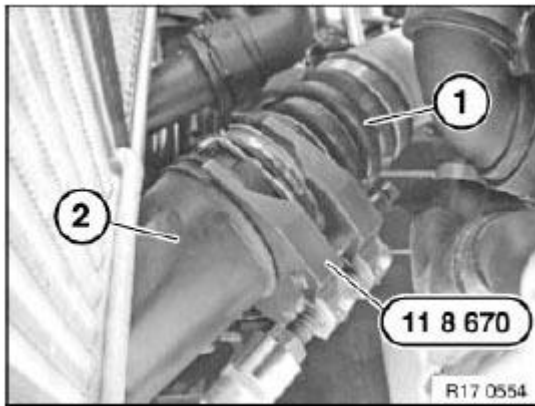


Fig. 64: Locating Charge-Air Duct And Intercooler

Courtesy of BMW OF NORTH AMERICA, INC.