

**Special tools required:**

- 00 2 030
- 17 0 100

Type	Engine	Adapter Y from 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
R50/R52	W10	17 0 107 and 17 0 102
R50	W17	17 0 109
R52/R53	W11	17 0 109
R55/R56/R57/R58/R60/R61	All	17 0 109
F25/F26	All	17 0 113
F20/F21/F22/F23/F30/F31/F32/F33/F34/F35/F36/F87	All	17 0 113
F80/F82/F83	S55	17 0 113
F15/F16	All	17 0 113
F54/F55/F56/F57/F60	All	17 0 109
F45/F46/F48/F52	All	17 0 109
F85/F86	All	17 0 113

**Attention!****Life-time 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.



**Attention!**

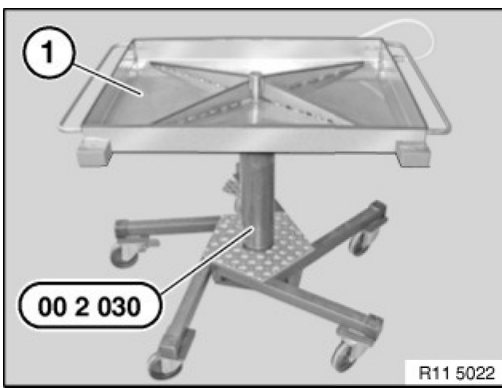
You must protect the alternator against contamination by coolant when carrying out repair work on the cooling circuit.

Cover alternator with suitable materials.

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

**Ordering information:**

- Workshop equipment
- Workshop equipment catalogue
- Vacuum filler device, order number 81 39 2 152 473
- Drip pan, order number 81 49 2 152 347
- Adapter: 17 0 100

**Attention!**

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 jack). **Recycling:**

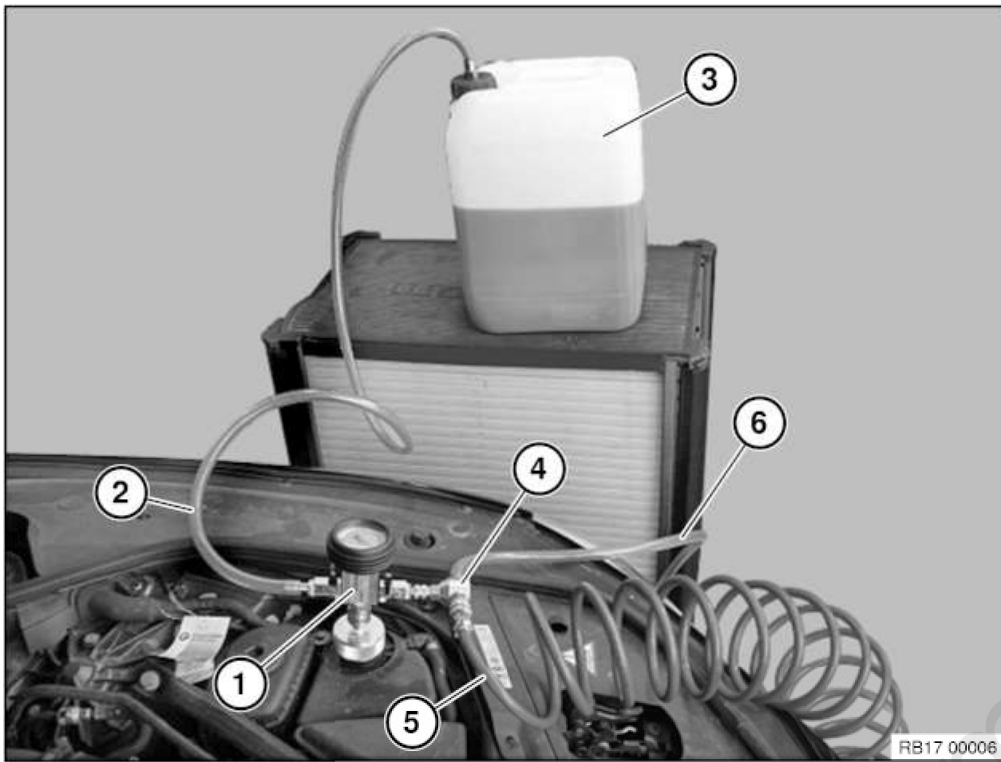
Observe country-specific waste disposal regulations.

**Attention!**

All coolant hoses must be checked before filling cooling system with vacuum filling unit.

If necessary, replace damaged and porous coolant hoses.





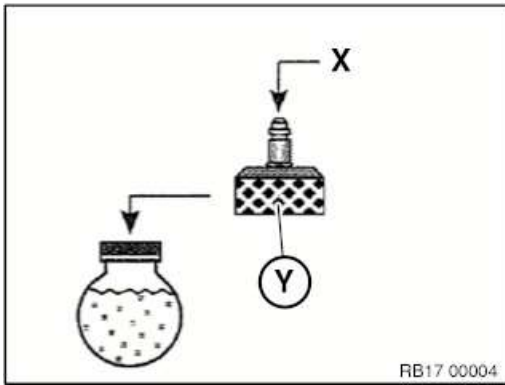
- 1) Vacuum filler device with pressure gauge and shutoff valves
- 2) Filler hose
- 3) Coolant container
- 4) Venturi nozzle
- 5) Compressed air connection (max. 6 bar)
- 6) Outgoing-air hose (lead outgoing-air hose into a collecting container)



Preconditions

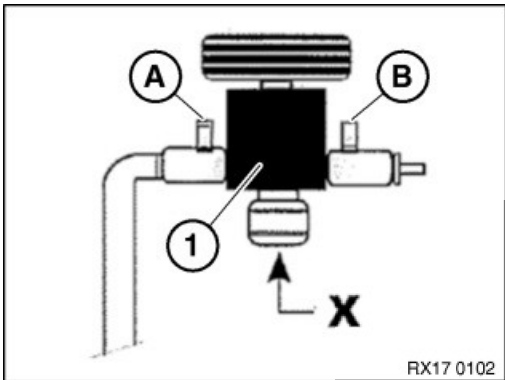
- Cooling system expansion tank must be empty.
- There must be sufficient premixed coolant in the vacuum filler device collecting vessel, 1–2 litres more than the filling capacity prescribed for the vehicle.
 - Use only recommended coolant.
 - Observe mixture ratio.
 - Observe capacities.
- Position the vacuum filler device container at the same height as the coolant expansion tank.
- Compressed-air connection with 6 bar pressure present.
- Set heating to maximum temperature.





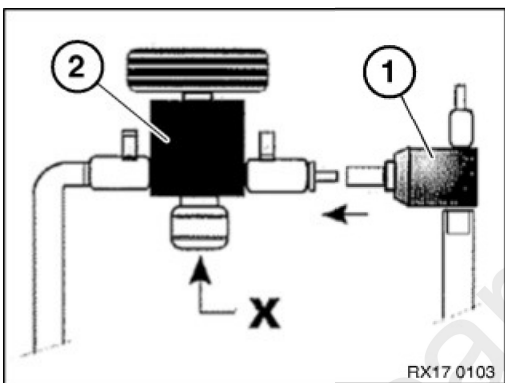
Select adapter (Y) according to table and connect to coolant expansion tank.

Connect vacuum filling unit to adapter connection (X).



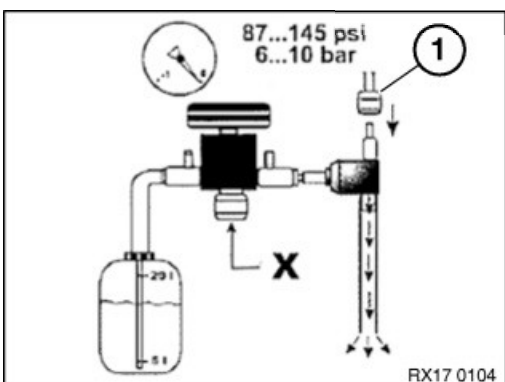
Shutoff valves (A) and (B) of the vacuum filler device (1) must be closed.

(X) Expansion tank connection



Connect Venturi nozzle (1) to vacuum filling unit (2).

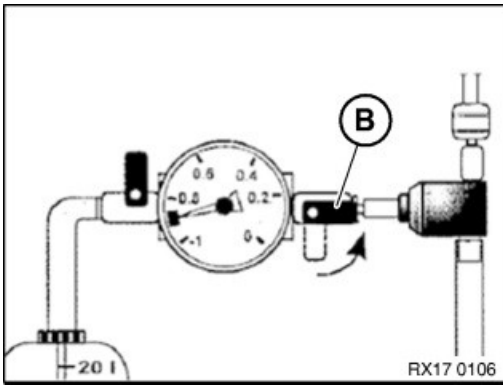
(X) Expansion tank connection



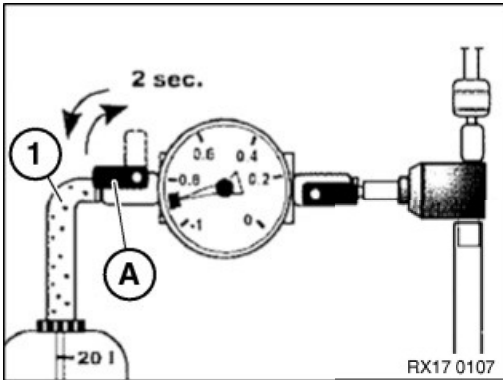
Connect compressed air (1).

(X) Expansion tank connection

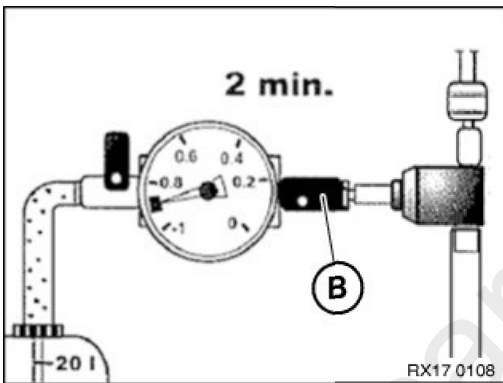




Open shutoff valve (B).
The venturi nozzle produces a flow noise.



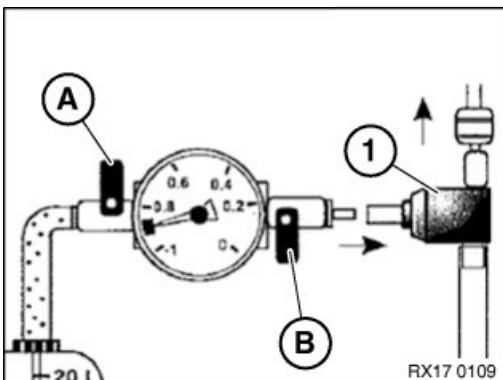
Then open shutoff valve (A) until the filling hose (1) is free of bubbles.
Close shutoff valve (A) again. The filling hose (1) is vented in this way.



Shutoff valve (B) will remain 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 in the pressure gauge.

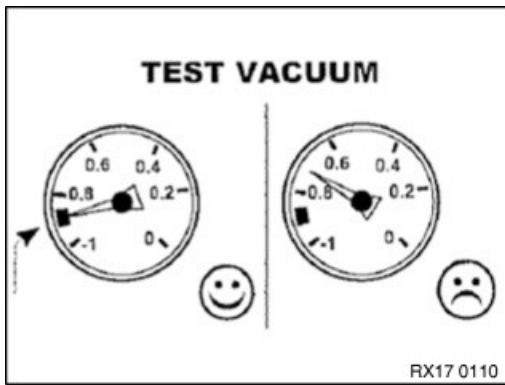
Note:
The coolant hoses contract during vacuum build-up.

Then close shutoff valve (B) again.



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

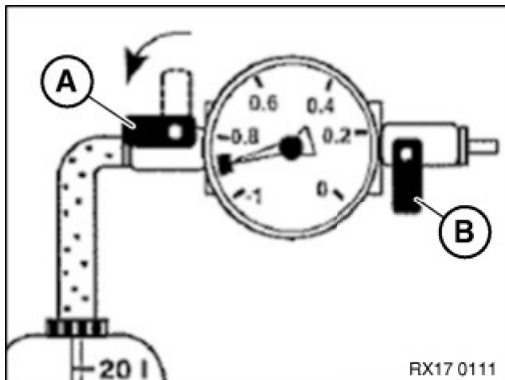




The cooling system must hold the vacuum for 30 s. If the needle in the pressure gauge drops, this indicates a leak in the cooling system.

If the vacuum remains constant, proceed with filling.

In event of leaks, check for leaks.



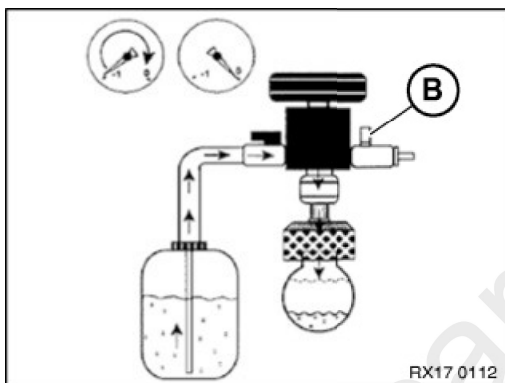
Attention!

There must be sufficient premixed coolant in the vacuum filler device collecting vessel, 1-2 litres more than the vehicle capacity.

Position the vacuum filler device 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 shutoff valve (A) to vacuum filler device container.



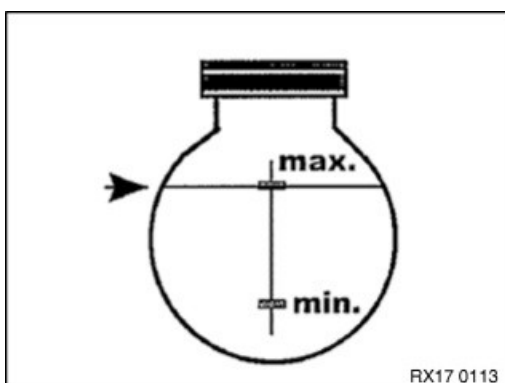
Coolant is now added.

The filling procedure is finished when the needle in the pressure gauge is at 0 bar or no longer falls.

If necessary, reduce remaining vacuum. Open shutoff valve (B) to do so.



Remove vacuum filling unit with adapter from expansion tank.



Adjust coolant level to maximum.

Close coolant expansion tank.





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

- E84 N20
- F25, F26 N52T, N55,
- F25, F26 N20
- E70, E71 N63, S63
- E70, E71 N57 D30 S 1
- E72 N63
- F20, F21, F30, F31 F35, N13
- F20, F21, F22, F23, F30, F31, F32, F33, F34, F35 F36 N20, N26
- F20, F21, F22, F23, F30, F31, F32, F33, F34, F35 F36 F87 N55
- F30 N55 Hybrid car
- F15 N55
- F15 N63 B44 O1
- F15 N57 D30 S 1
- F54, F55 , F56, F57, F60, B36, B38, B48, B46
- F80, F82, F83, S55
- F45, F46, F48, B38, B46, B48
- F25, F26, B47
- F45, F46, F48, B47, B37
- F54, F55, F56, F60, B37, B47
- F16 N63 B44 O1
- F16 N55
- F16 N57 D30 S 1
- F20, F21, F22, F23, F30, F31, F32, F33, F34, F36, B47
- F21, F20, B37
- F85, F86 S63 T 2





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 sealing 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. Driving experience switch must not be set to ECO PRO!
6. Press accelerator pedal for 10 seconds to floor. **Engine must not** be started.
7. The bleeding procedure was started by pressing the accelerator pedal and takes approx. 12 min. (the electrical coolant pump was activated and switches off automatically after approx. 12 min).
8. Then adjust filling level in coolant expansion tank to maximum.
9. Check cooling system for leaks.
10. If the cooling system bleeding 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 leaks.



17 00 009 Checking cooling system for watertightness (N47 D16/20 K/U/O/T 1, N57 D30 O/T 1, N55)



Special tools required:

- 00 2 030
- 17 0 100



Warning!

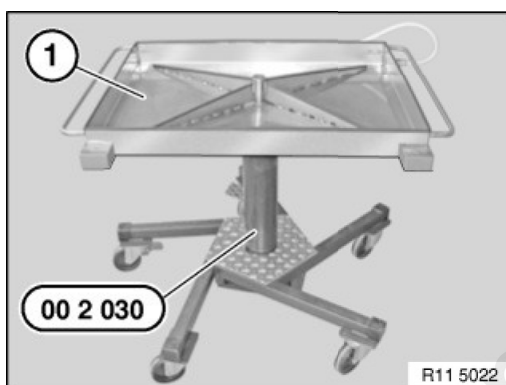
Risk of scalding!

Only perform this repair work after engine has cooled down.



Protective measures/rules of conduct:

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

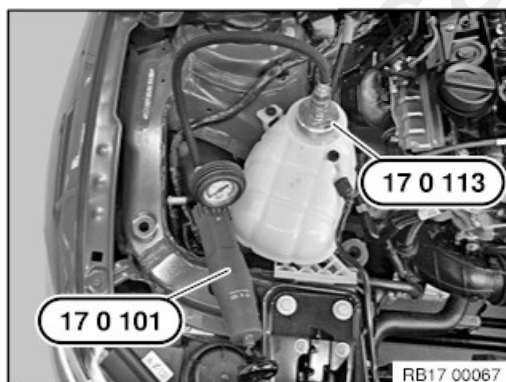


Important!

Risk of skidding 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 lifting equipment). **Recycling:** Observe country-specific waste disposal regulations.



Checking pressure drop in cooling system:

Open the sealing cap on the coolant expansion tank. Mount special tool 17 0 101 / 17 0113 from special tool set 17 0 100 .

Generate excess pressure and wait approx. 2 min.

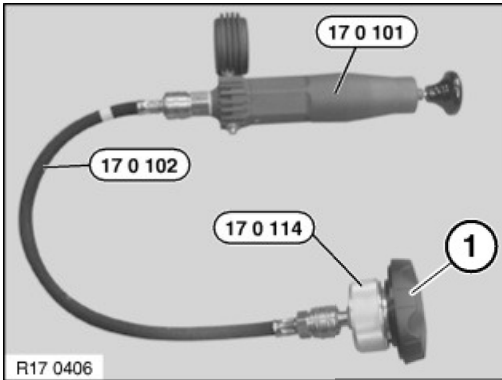
Cooling system is impervious to watertightness if pressure drop is max. 0.1 bar.



**Checking pressure relief valve in sealing cap: Note:**

While the driving at high ambient temperatures, the design may cause the pressure relief valve in the sealing cap to open slightly and air together with dissolved coolant to escape. This coolant vapour condenses on the surface of the expansion tank and leaves toes when the vehicle has cooled down. These toes do not indicate whether the sealing cap is defective or not. With vehicle standstill for an extended period of time, the residual escaping coolant can cause the pressure relief valve in the sealing cap to stick; therefore test procedure the sealing cap again 2 to 3 times.

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

**Checking pressure relief valve in sealing cap:**

Screw sealing cap (1) onto special tool 17 0 114 from the special tool set 17 0 100 .

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.



**Special tools required:**

- 00 2 030

**Warning!**

Risk of scalding!

The repair work on the cooling system should only be carried out on an engine that has cooled down!

**Attention!****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.

Installation note:

Use only recommended coolant.

Observe mixture ratio.

**Protective measures/rules of conduct:**

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

**Attention!**

For contamination of the cooling system (e.g. by engine oil), the cooling system must be rinsed with water until all contamination is removed!

**Attention!**

Risk of skidding due to coolant on the floor.

Danger of injury!

Catch and dispose of drained coolant using drip pan (1) and if necessary special tool 00 2 030 (universal jack). **Recycling:**

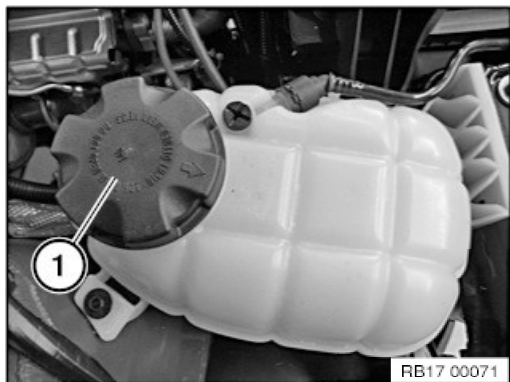
Observe country-specific waste disposal regulations.





Necessary preliminary tasks:

- Follow notes for carrying out repair work on the cooling system .
- Remove front underbody protection.
- **F23, F87 only:**
Remove stiffening plate
- **F23 all-wheel drive only:**
Remove reinforcement plate.

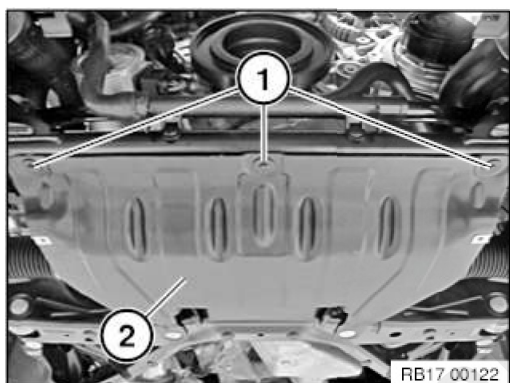


Draining coolant:

Release sealing cap (1) on coolant expansion tank.

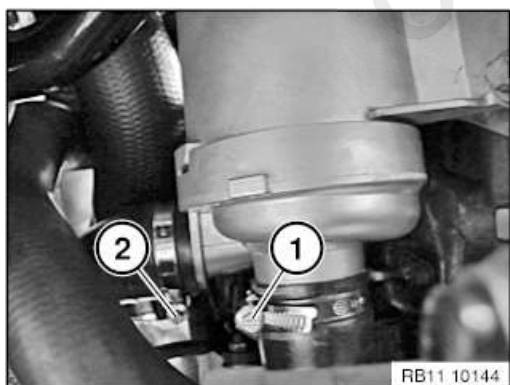
Installation note:

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



Loosen screws (1).

Remove cover (2).



Release hose clamps (1) and (2).

Pull off coolant hoses from coolant pump and drain coolant.

Installation note:

Note installation hose clamps.





Note:

Adding coolant:

Use only recommended coolant.

Observe mixture ratio.

Observe capacities.

Observe bleeding instructions without fail.

Fill and bleed cooling system.

Visual inspection of cooling system for tightness.

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**Warning!**

Risk of scalding, carry out repairs on the cooling system only when the engine has cooled down.

**Attention!**

Wear protective gloves and safety goggles.

**Attention!****Life-time 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.

Installation note:

Use only recommended coolant.

Observe mixture ratio.

**Attention!**

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.

**Attention!**

Protect the alternator from contamination when carrying out any repairs on the coolant circuit.

Cover alternator with suitable materials.

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

**Attention!**

Do not fill coolant expansion tank over maximum level, as overfilling will cause the coolant to overflow. This may cause traces of coolant on the expansion tank or in the engine compartment and allow an incorrect conclusion about possible leaks.

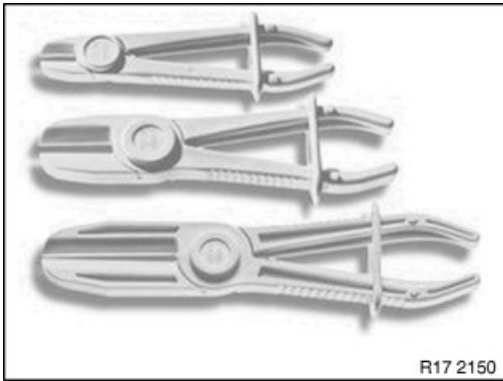




Recycling

Catch and dispose of drained coolant.

Observe country-specific waste disposal regulations.

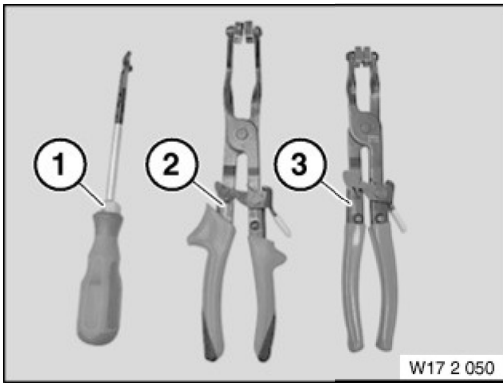


R17 2150

Note:

To disconnect the coolant hoses, use a commercially available disconnection tool such as HAZET (see table).

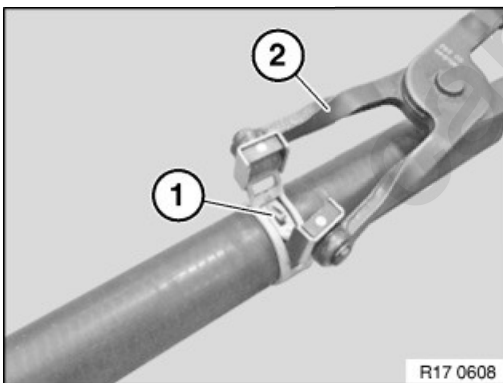
HAZET number:	Description
4590-1	Length of disconnect pliers (mm): 150
4590-2	Length of disconnect pliers (mm): 180
4590-3	Length of disconnect pliers (mm): 253
4590 / 2	Set of clamping pliers
4590 / 3	Set of clamping pliers



W17 2 050

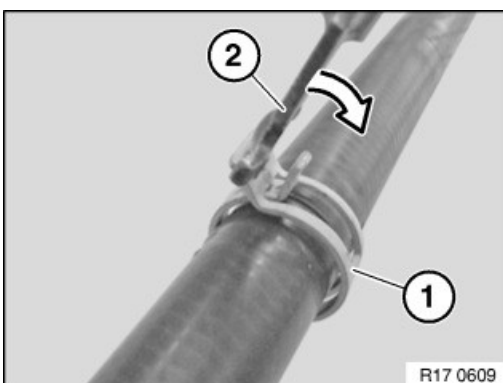
Set of special tools 17 2 050 for removing and installing the spring bracket clamps for coolant hoses.

- (1) Release tool.
- (2) Pliers (bent version).
- (3) Pliers (straight version).



R17 0608

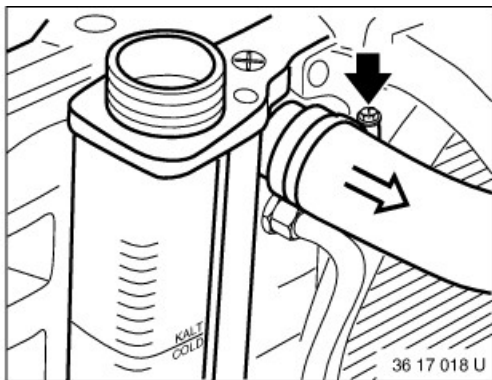
Loosen spring strap (1) with the pliers (2).



R17 0609

Unlock spring strap (1) with the release tool (2).

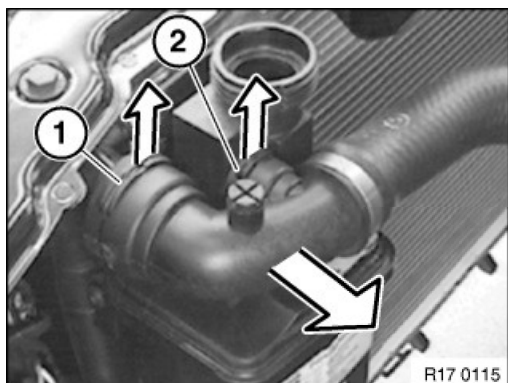




Note:

Tightening torque for hose clamps

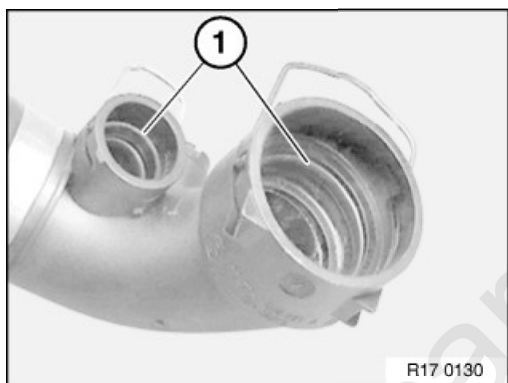
WAF 5	1.0 - 1.5 Nm
WAF 6	2.5 - 3.5 Nm



Notes on disassembly/installation of the quick-release couplings of the coolant hoses

Dismantling of quick-release coupling

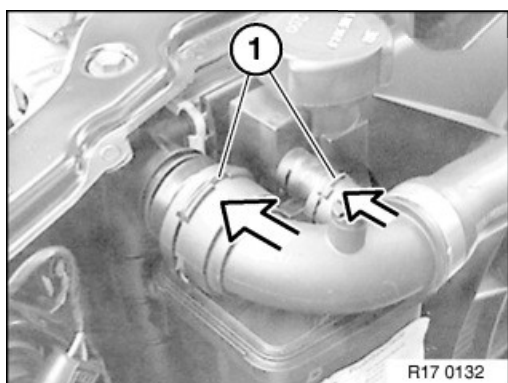
Pull out lock (1) and (2). Pull off hose.



Installation note:

Check O-rings (1).

Do not coat O-rings (1) with lubricant.



Assembly of quick-release coupling

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

Push on hose.

Quick-release couplings must clearly snap audibly into place.



00 Safety information for working on vehicles with automatic engine start-stop function (MSA)



Warning!

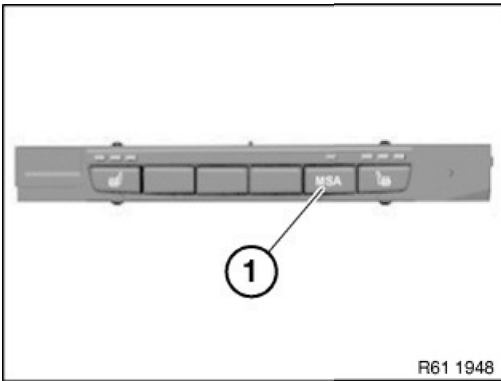
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

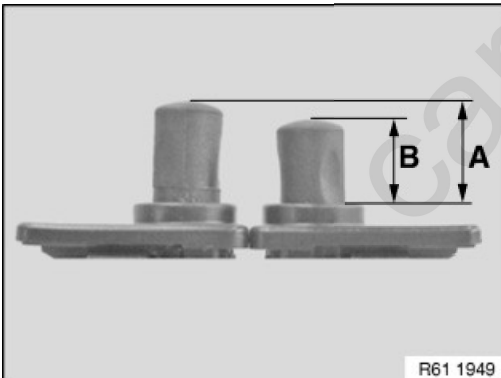
Observe safety precautions when working on MSA vehicles.

Before carrying out practical work on the engine, always ensure that the MSA functionality is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by:



- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door



- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
 - Workshop mode
 $A = 10 \text{ mm}$
 - Basic setting (engine hood/bonnet open)
 $B = 7 \text{ mm}$

To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the limit position before starting work and slowly release.



When working with diagnosis tools:

- Observe instructions in diagnosis tool





Note:

For further information on automatic engine start-stop function (MSA):

- Refer to the Service Information (bulletin) (for manual transmissions) Service Information (bulletin) 61 01 07 335
- Refer to the Service Information (bulletin) (for automatic transmissions or twin-clutch gearboxes) Service Information (bulletin) 61 01 10 629

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**Warning!**

Risk of scalding!

Open sealing cap only after engine has cooled down.

**Important!**

Electric coolant pump!

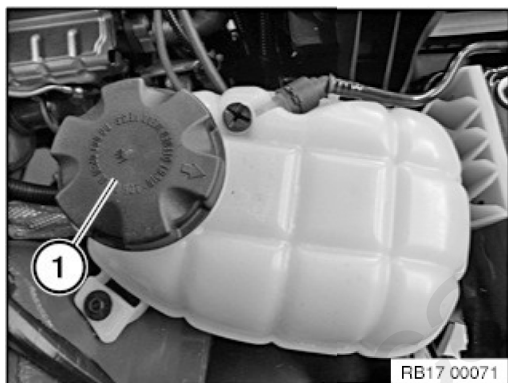
Follow notes for carrying out repair work on the cooling system.

**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 part 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 maximum.

Close coolant expansion tank.

Installation note:

Close the sealing cap (1) until the arrows line up.

**Important!**

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

**Adding coolant:**

Fill cooling system with a vacuum filling unit.

Use only recommended coolant.

Observe mixture ratio.



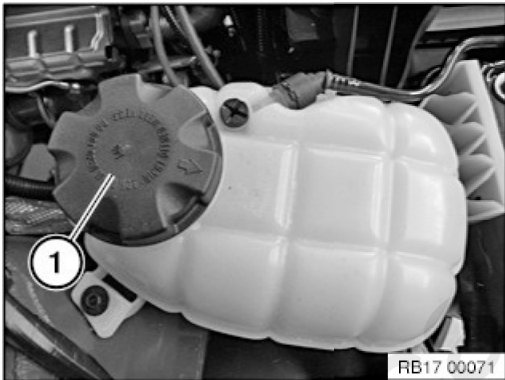


Only when venting! Note:

Do not leave the coolant expansion tank sealing cap open 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 heater to maximum temperature and turn blower down to lowest speed.
5. Driving experience switch must not be set to ECO PRO!
6. Press accelerator pedal for 10 seconds to floor. **Engine must not** be started.
7. The bleeding procedure was started by pressing the accelerator pedal and takes approx. 12 mins. (the electrical coolant pump was activated and switches off automatically after approx. 12 mins.).
8. Then adjust fluid level in the coolant expansion tank to maximum.
9. Check cooling system on watertightness.
10. 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 mins.), then repeat from Point 2.



Close coolant expansion tank. *Installation note:*
Close the sealing cap (1) until the arrows line up.



17 00 009 Checking cooling system for watertightness (N47 D16/20 K/U/O/T 1, N57 D30 O/T 1, N55)



Special tools required:

- 00 2 030
- 17 0 100



Warning!

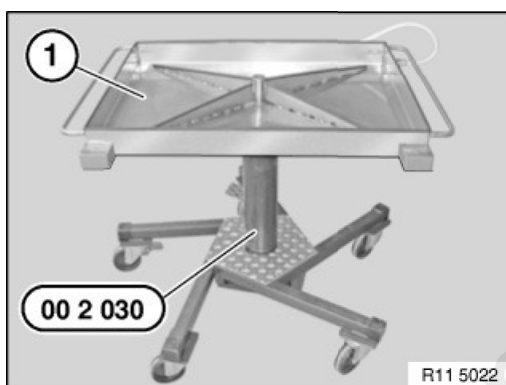
Risk of scalding!

Only perform this repair work after engine has cooled down.



Protective measures/rules of conduct:

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

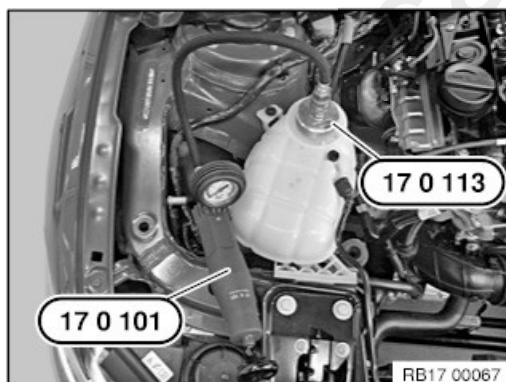


Important!

Risk of skidding 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 lifting equipment). **Recycling:** Observe country-specific waste disposal regulations.



Checking pressure drop in cooling system:

Open the sealing cap on the coolant expansion tank. Mount special tool 17 0 101 / 17 0113 from special tool set 17 0 100 .

Generate excess pressure and wait approx. 2 min.

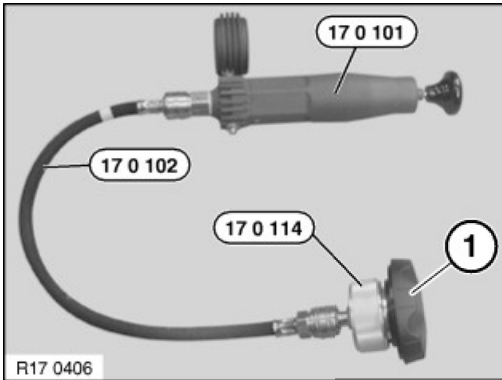
Cooling system is impervious to watertightness if pressure drop is max. 0.1 bar.



**Checking pressure relief valve in sealing cap: Note:**

While the driving at high ambient temperatures, the design may cause the pressure relief valve in the sealing cap to open slightly and air together with dissolved coolant to escape. This coolant vapour condenses on the surface of the expansion tank and leaves toes when the vehicle has cooled down. These toes do not indicate whether the sealing cap is defective or not. With vehicle standstill for an extended period of time, the residual escaping coolant can cause the pressure relief valve in the sealing cap to stick; therefore test procedure the sealing cap again 2 to 3 times.

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

**Checking pressure relief valve in sealing cap:**

Screw sealing cap (1) onto special tool 17 0 114 from the special tool set 17 0 100 .

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.



64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

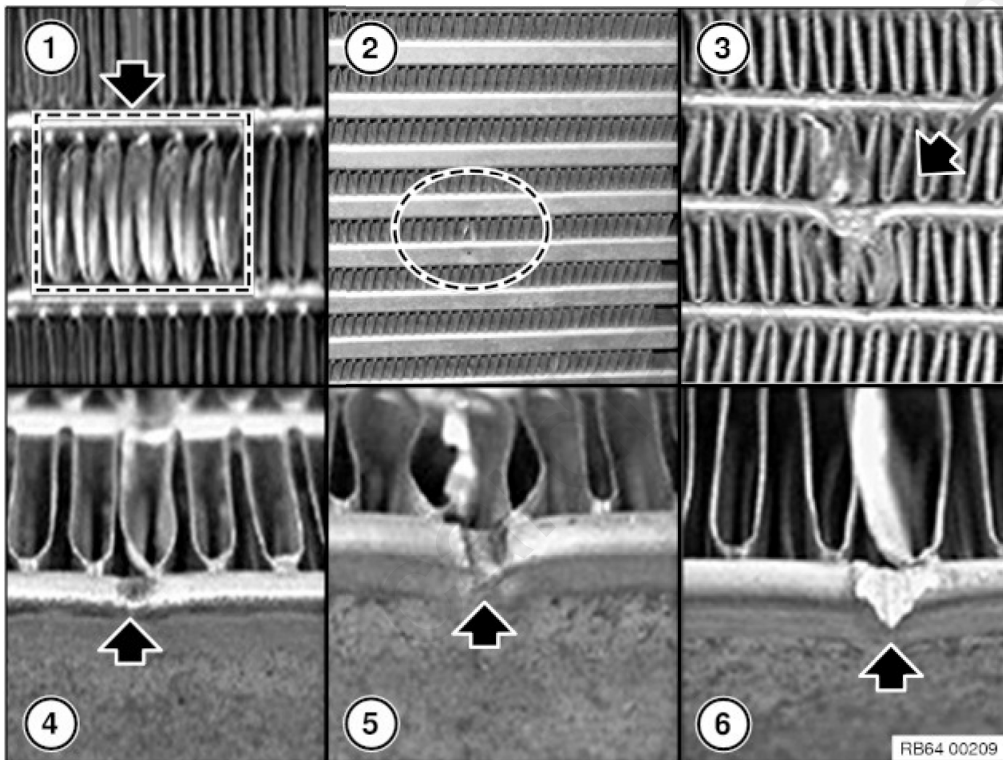
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig.Â (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.



17 11 ... Clean the radiator ribs



Warning!

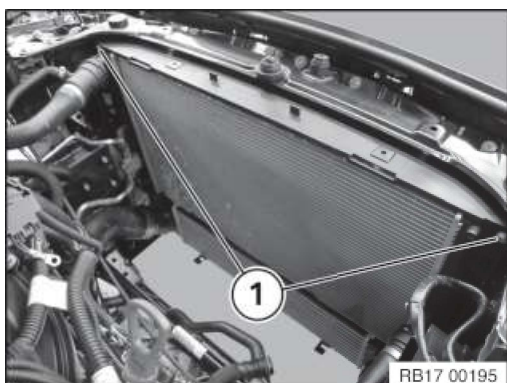
Risk of scalding!

Only perform this repair work after engine has cooled down.



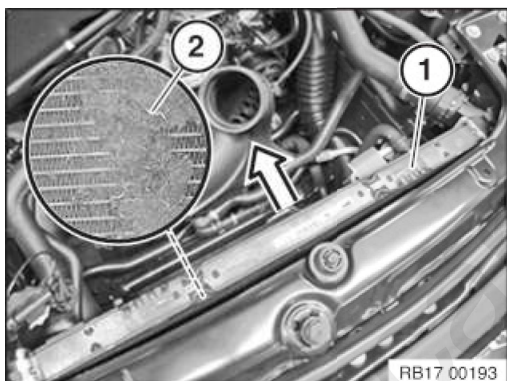
Necessary preliminary tasks:

- Remove fan cowl.



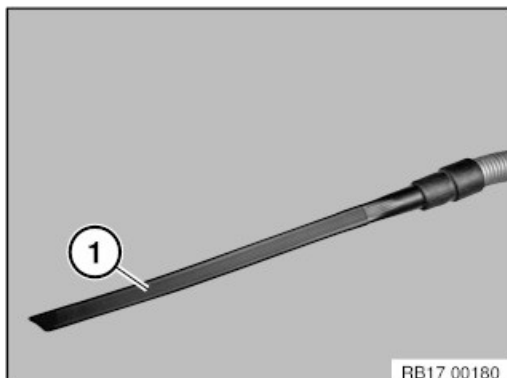
Release screws (1).

Tightening torque 17 10 2AZ.



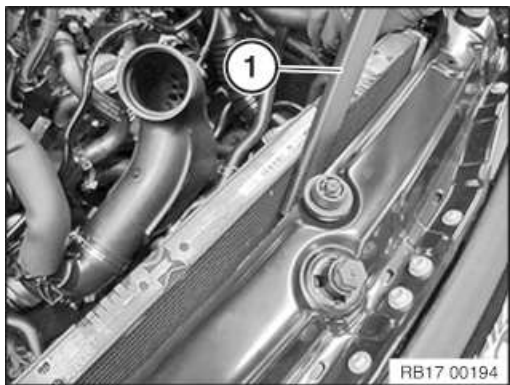
Press radiator (1) slightly towards rear.

Check radiator (1) for dirt contamination.



To clean the radiator use a standard narrow vacuum-cleaner attachment (1) with a length of approx. 600 mm.





Important!

Risk of damage to the radiator.

Ensure that the cooler fins are not damaged.

Vacuum dirt off the radiator using a vacuum cleaner with a narrow attachment (1).



Reassemble the vehicle.

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64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

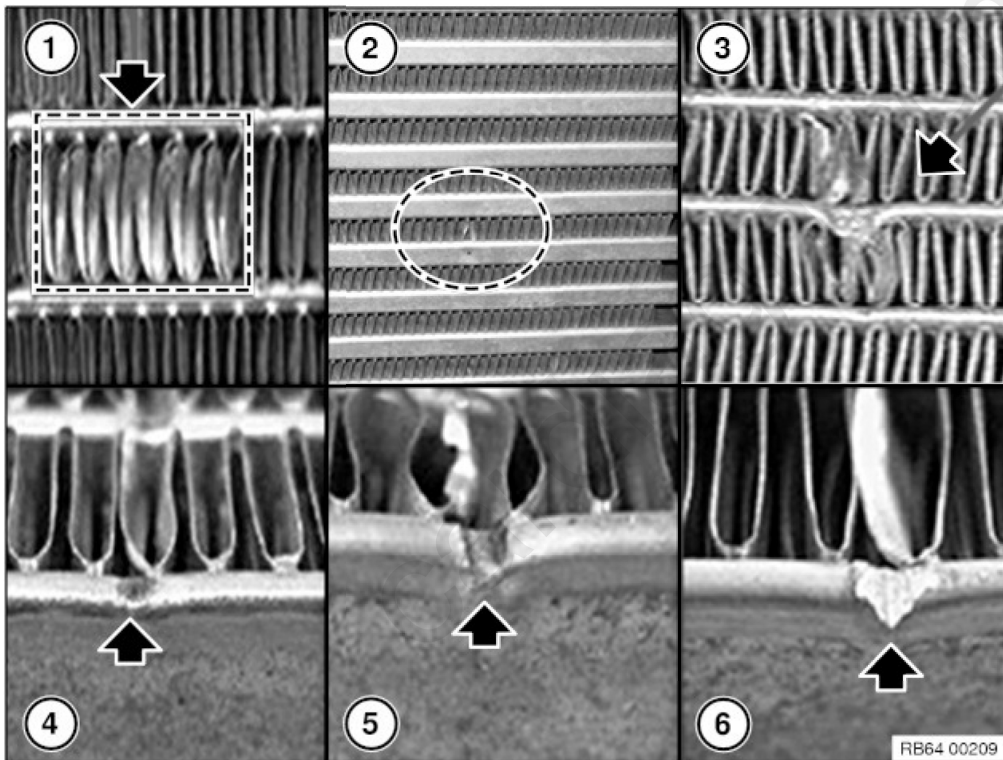
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig.Â (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.



**Warning!**

Risk of scalding!

Only perform this repair work after engine has cooled down.

**Important!**

Wear safety goggles and protective gloves.

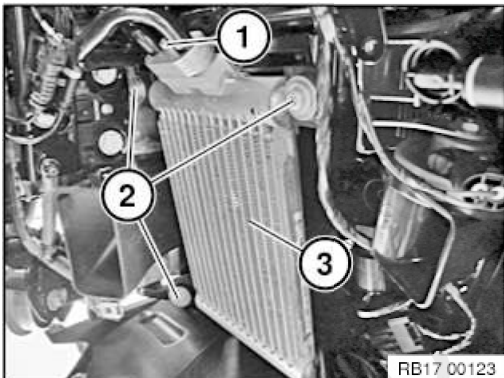
**Recycling:**

Engine oil escapes when engine oil pipes are released. Collect any escaping engine oil using a suitable vessel and dispose of it.

Observe country-specific waste disposal regulations.

**Necessary preliminary tasks:**

- Remove the right front section of the wheel arch cover.



Release screw (1).

Tightening torque 17 22 5AZ.

Remove engine oil pipe from engine oil cooler flange.

Replace sealing rings.

Unfasten screws (2).

Tightening torque 17 22 3AZ.

Catch and dispose of emerging oil.

Remove engine oil cooler (3).

**Note:**

After completing the repair work, check the oil level in the engine; top up if necessary.

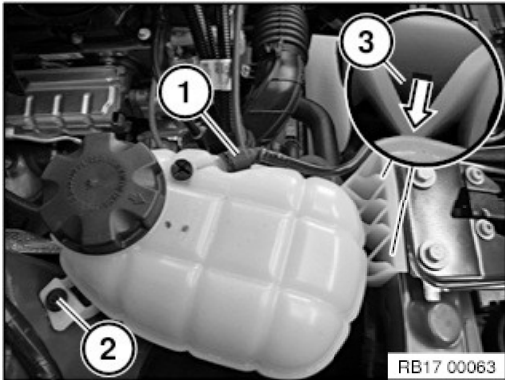


17 11 100 Removing and installing / replacing coolant expansion tank (N47 D16/20 K/U/O/T 1, N57 D30 O/T 1, N55)



Necessary preliminary tasks:

- Disconnect coolant hoses from coolant expansion tank with disconnection tools.
- **F23,F33,F87 only:**
Remove right front end strut.

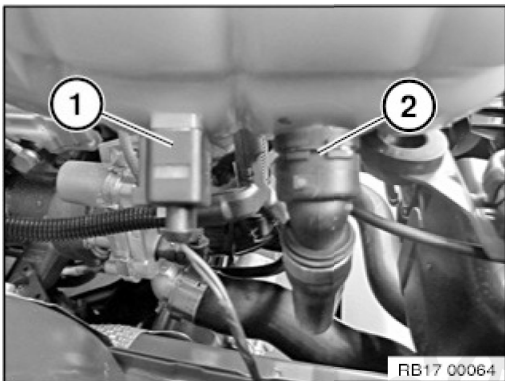


Unlock and detach coolant hose (1) from top of expansion tank.

Release screw (2).

Tightening torque 17 10 5AZ.

Unlock locks (3) in the direction of the arrow. Pull off expansion tank upwards from carrier support until coolant hose below expansion tank is accessible.



Unlock and unplug connector on coolant level switch (1).

Unlock and detach coolant hose (2).

Lift out expansion tank.



Check coolant level, top up coolant if necessary.



**Warning!**

Risk of scalding!

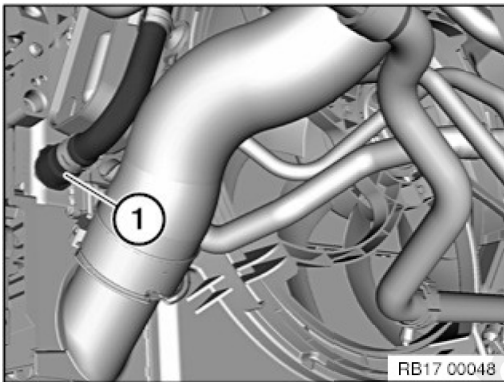
Only perform this repair work after engine has cooled down.

**Important!**

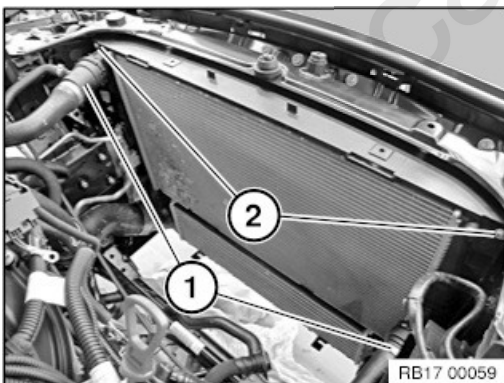
Wear safety goggles and protective gloves.

*Necessary preliminary work:*

- Follow instructions for repair work on the cooling system.
- Remove fan cowl.
- Drain coolant.

**Only vehicles with automatic transmissions:**

Unlock and detach coolant hose (1) from transmission oil cooler on the radiator.

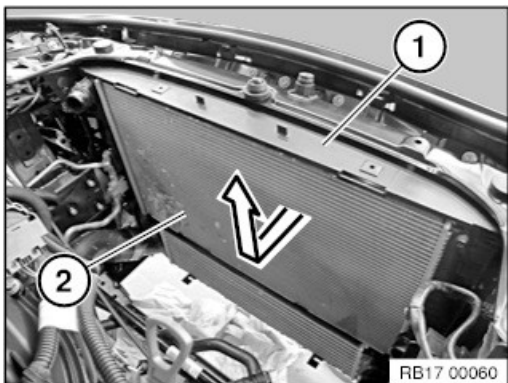


Release and disconnect coolant hoses (1).

Unfasten screws (2).

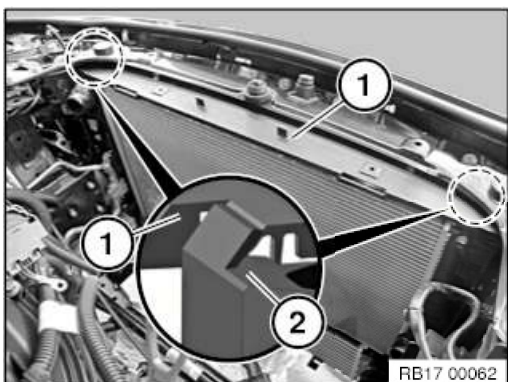
Tightening torque 17 10 2AZ.





Remove cover (1) from the radiator.

Carefully feed out radiator (2) towards top and remove.



Installation note:

Make sure the installation position of the cover (1) on the left and right module carriers (2) is correct!



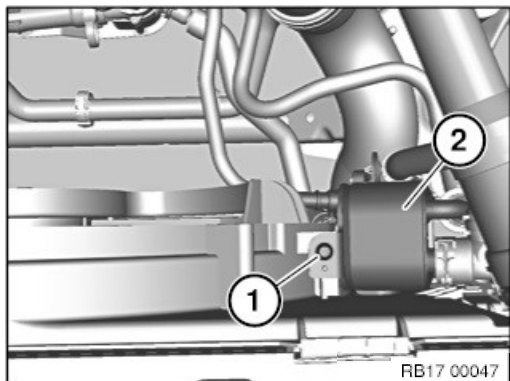
Reassemble the vehicle.

Check cooling system for leaks.



**Necessary preliminary work:**

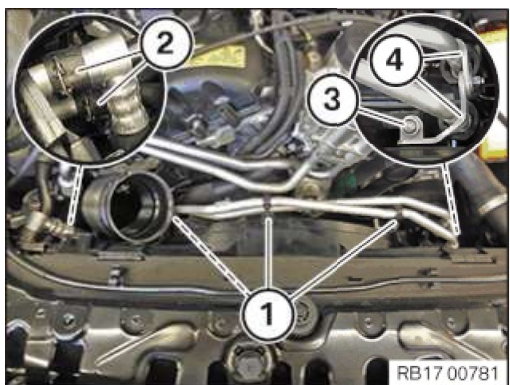
- Switch off ignition.
- Remove intake silencer housing.

**Only vehicles with automatic transmissions:**

Release screw (1).

Tightening torque 17 10 4AZ.

Pull off transmission oil cooler (2) for automatic transmission in upward direction from fan cowl.

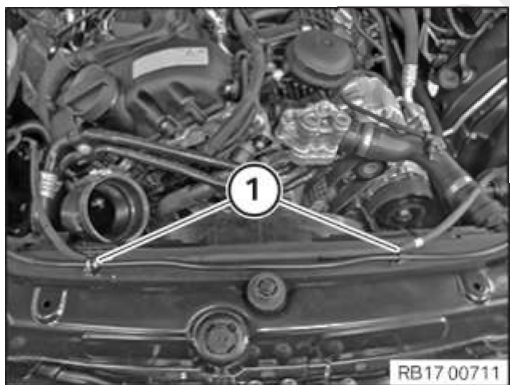
**Vehicles with twin-clutch gearbox only:**

Loosen clamps (1).

Unlock transmission fluid lines (2) and detach from gearbox oil cooler.

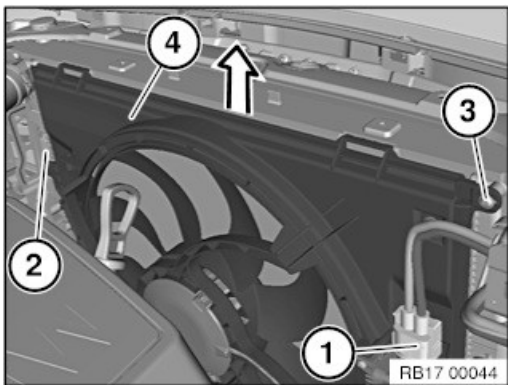
Release screw (3).

Unlock and remove the transmission oil lines (4).

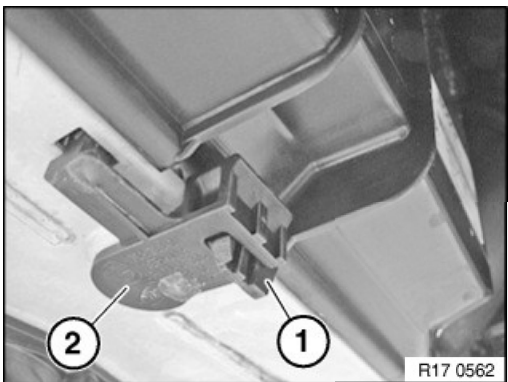


Unclip the coolant line from the clamps and set it aside.





Unlock and pull off connector (1) and unclip cable from fan cowl.
 Unlock catch (2).
 Release screw (3).
 Tightening torque 17 10 1AZ.
 Feed out fan cowl upwards and remove.



Installation note:
 Make sure fan cowl (1) and holder (2) are in correct installation position.



Note:
 Check saved fault code entry.
 Delete the fault memory.

Vehicles with twin-clutch gearbox only:

Check the transmission oil.



**Necessary preliminary tasks:**

- Remove front section of wheel arch cover on left.

**Warning!**

Risk of scalding!

Only perform this repair work after engine has cooled down.

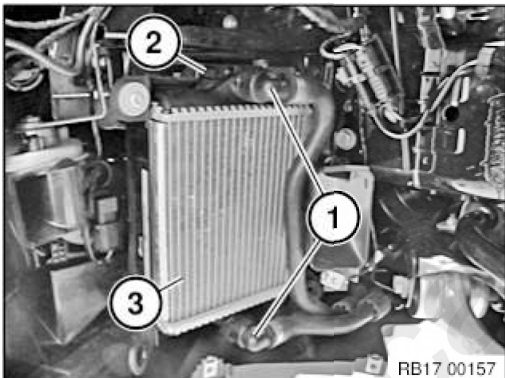
**Important!**

Wear safety goggles and protective gloves.

**Recycling:**

Coolant emerges when coolant lines are detached. Catch and dispose of escaping coolant in a suitable container.

Observe country-specific waste disposal regulations.



Detach coolant lines (1).

Catch and dispose of escaping coolant.

Release clip (2).

Removing auxiliary coolant cooler (3).

Installation note: Check coolant hoses for damage.

**Note:**

After completion of repair work, check coolant level.

If necessary, add coolant.

Reassemble the vehicle.





Necessary preliminary tasks:

- Drain coolant.
- Remove coolant expansion tank



Warning!

Risk of scalding!

Only perform this repair work after engine has cooled down.



Important!

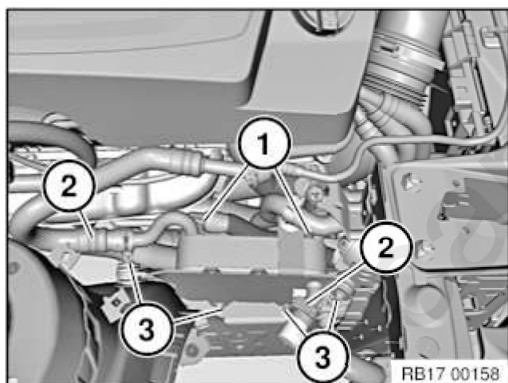
Wear safety goggles and protective gloves.



Recycling:

Coolant emerges when coolant lines are detached. Catch and dispose of escaping coolant in a suitable container.

Observe country-specific waste disposal regulations.



Detach coolant lines (1).

Catch and dispose of escaping coolant.

Unlock engine oil pipes (2) and pull off.

Release screws (3).

Remove heat exchanger for engine oil.



Note:

After completion of repair work, check coolant level and engine oil level.

Reassemble the vehicle.



64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

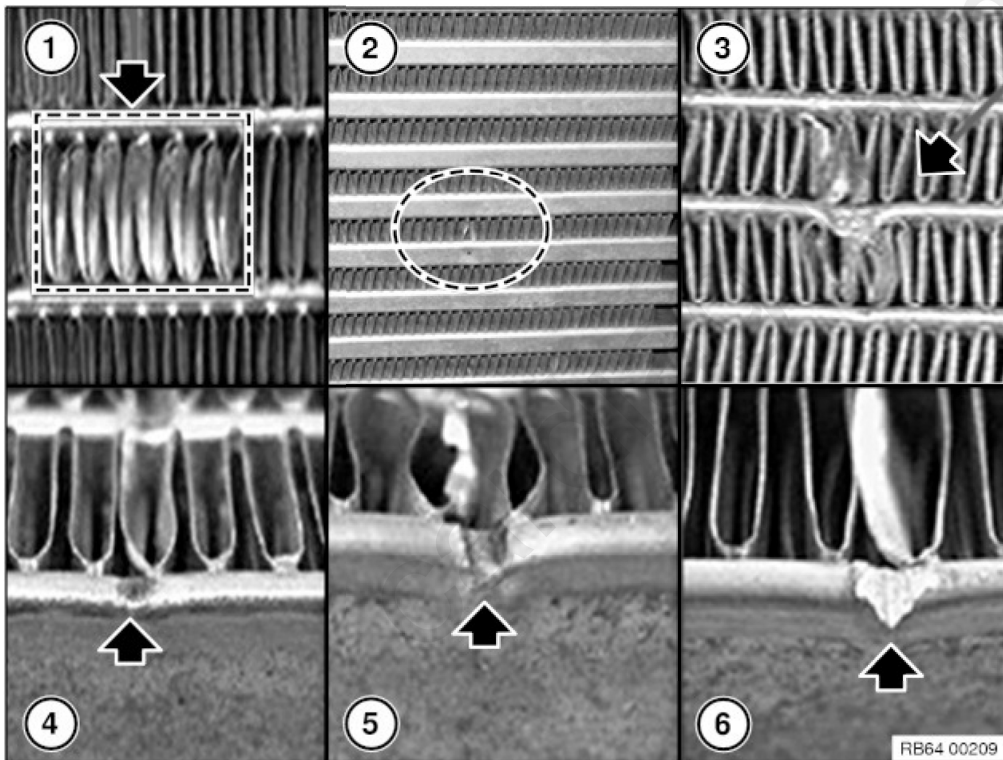
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig.Â (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.



**Warning!**

Risk of scalding!

Only perform this repair work after engine has cooled down.

**Important!**

Wear safety goggles and protective gloves.

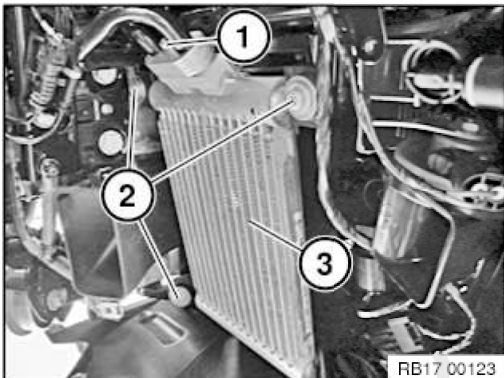
**Recycling:**

Engine oil escapes when engine oil pipes are released. Collect any escaping engine oil using a suitable vessel and dispose of it.

Observe country-specific waste disposal regulations.

**Necessary preliminary tasks:**

- Remove the right front section of the wheel arch cover.



Release screw (1).

Tightening torque 17 22 5AZ.

Remove engine oil pipe from engine oil cooler flange.

Replace sealing rings.

Unfasten screws (2).

Tightening torque 17 22 3AZ.

Catch and dispose of emerging oil.

Remove engine oil cooler (3).

**Note:**

After completing the repair work, check the oil level in the engine; top up if necessary.





Necessary preliminary tasks:

- Drain coolant.
- Remove coolant expansion tank



Warning!

Risk of scalding!

Only perform this repair work after engine has cooled down.



Important!

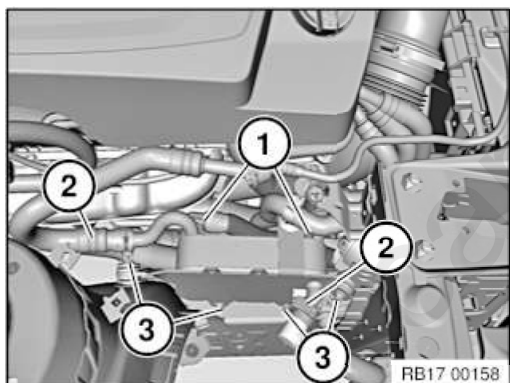
Wear safety goggles and protective gloves.



Recycling:

Coolant emerges when coolant lines are detached. Catch and dispose of escaping coolant in a suitable container.

Observe country-specific waste disposal regulations.



Detach coolant lines (1).

Catch and dispose of escaping coolant.

Unlock engine oil pipes (2) and pull off.

Release screws (3).

Remove heat exchanger for engine oil.



Note:

After completion of repair work, check coolant level and engine oil level.

Reassemble the vehicle.



17 21 500 Rinse transmission oil cooler with lines (automatic transmission) (GA8HP45Z, GA8HP50Z, GA8HP70Z, GA8HP75Z, GA8HP90Z)



Special tools required:

- 17 2 018
- 17 2 019



Note:

Carry out the operations listed when:
Install a new or exchange transmission.



Procedure:

Automatic transmission removed.

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

Use quick-release coupling to connecting line 17 2 019 from oil dispenser unit.

Use quick-release coupling to drain line 17 2 018 .

Hold and direct open end of drain line into a suitable collecting vessel.

Using oil dispenser unit, flush approx. 1 litre of transmission fluid (refer to BMW Service 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 litre of transmission fluid (refer to BMW Service Operating Fluids).

Disconnect quick-release couplings.

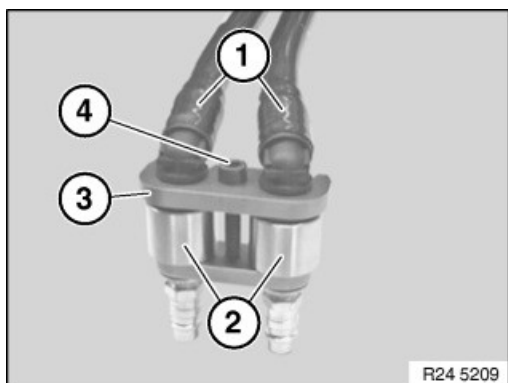
Remove adapter.



Recycling:

Never use flushing oil.

Dispose of flushing oil according to country-specific waste disposal regulations.

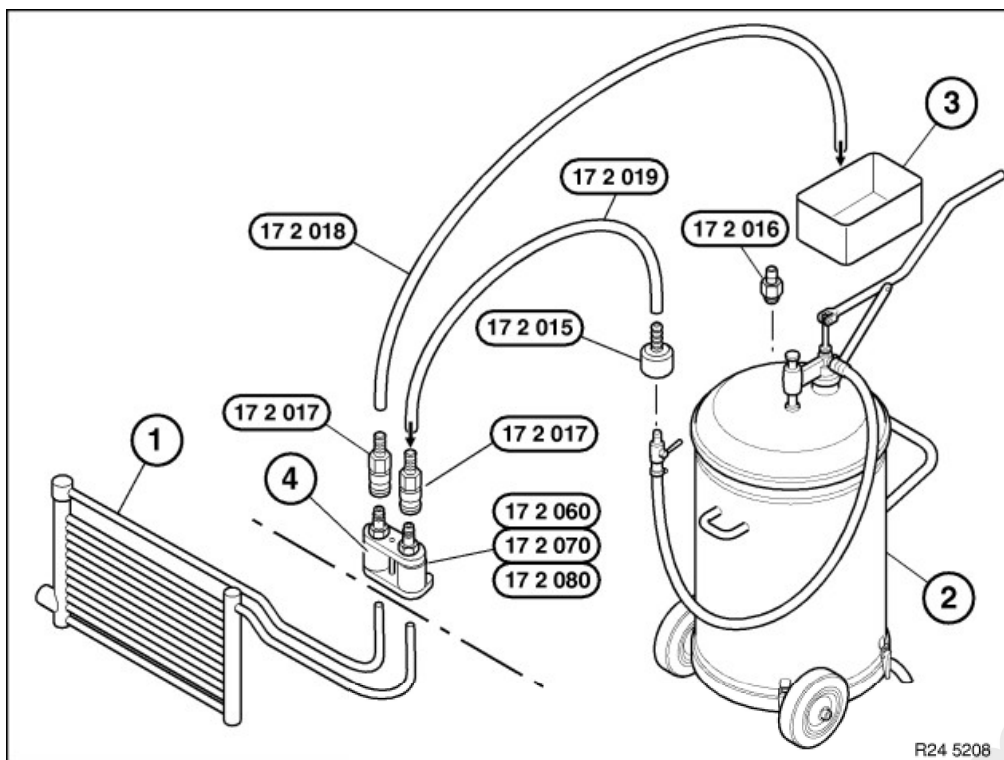


Press hydraulic lines (1) into adapters (2).

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

Arrangement of flushing device for transmission GA8HP45Z, GA8HP50, GA8HP70Z, GA8HP75Z, GA8HP90Z





1) Transmission oil cooler with lines

2) Oil dispenser unit

17 2 015 Connection for oil dispenser unit (2), manufacturer: Deutsche Tecaletmit or

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

17 2 017 Quick-release coupling (2 pieces)

17 2 019 Hose to oil dispenser unit (2)

3) Oil drip tray

17 2 018 Hose to oil drip tray (3)

4) Adapter with clamping bracket

17 2 080 Adapter with clamping bracket GA8HP45Z /GA8HP70Z /GA8HP90Z



17 22 010 Removing and installing/replacing transmission oil cooler for automatic transmission (N20, N26, N55)



Important!

Risk of scalding!

Only perform this repair work after engine has cooled down.



Necessary preliminary tasks:

- Drain coolant.
- **N55 Only:**
Remove intake silencer housing.



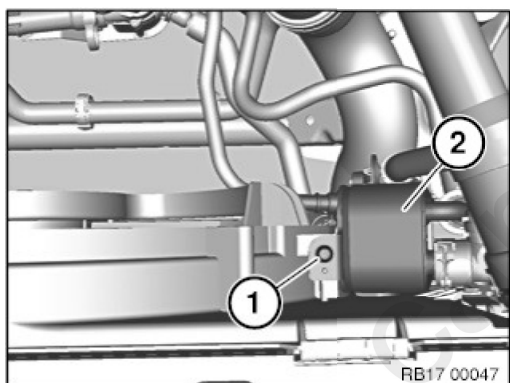
Recycling

Catch and dispose of drained coolant in a suitable container.

Transmission oil emerges when fluid lines are detached from transmission oil cooler.

Catch and dispose of escaping transmission oil in a suitable container.

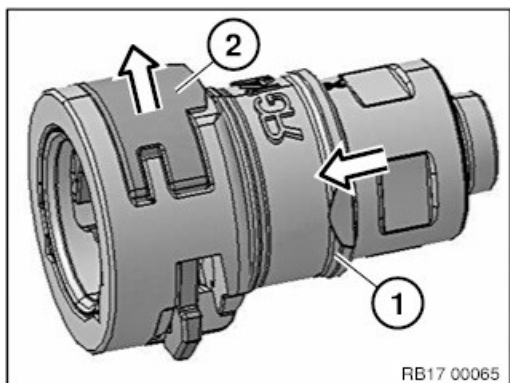
Observe country-specific waste disposal regulations.



Release screw (1).

Tightening torque 17 10 4AZ.

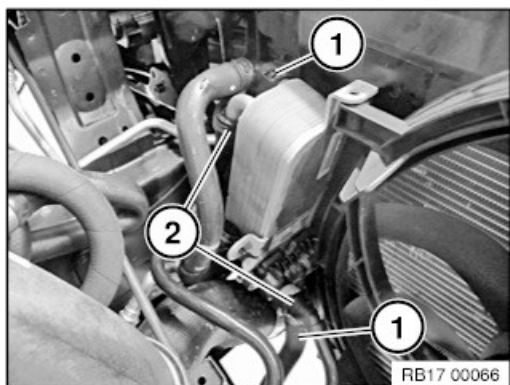
Pull off transmission oil cooler (2) for automatic transmission in upward direction from fan cowl.



Note:

To unlock the transmission oil lines, push the transmission oil line connection to the stop of the transmission oil cooler connection and unlock the lock (2) in the direction of the arrow.





Release and disconnect coolant hoses (1).
Unlock transmission oil lines (2) and detach.
Unthread and remove transmission oil cooler.



Note:

Assemble engine.

Check oil level in automatic transmission. If necessary, top up automatic transmission fluid.

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17 21 500 Rinse transmission oil cooler with lines (automatic transmission) (GA8HP45Z, GA8HP50Z, GA8HP70Z, GA8HP75Z, GA8HP90Z)



Special tools required:

- 17 2 018
- 17 2 019



Note:

Carry out the operations listed when:
Install a new or exchange transmission.



Procedure:

Automatic transmission removed.

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

Use quick-release coupling to connecting line 17 2 019 from oil dispenser unit.

Use quick-release coupling to drain line 17 2 018 .

Hold and direct open end of drain line into a suitable collecting vessel.

Using oil dispenser unit, flush approx. 1 litre of transmission fluid (refer to BMW Service 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 litre of transmission fluid (refer to BMW Service Operating Fluids).

Disconnect quick-release couplings.

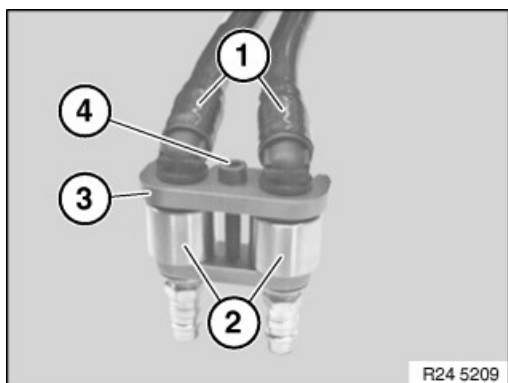
Remove adapter.



Recycling:

Never use flushing oil.

Dispose of flushing oil according to country-specific waste disposal regulations.

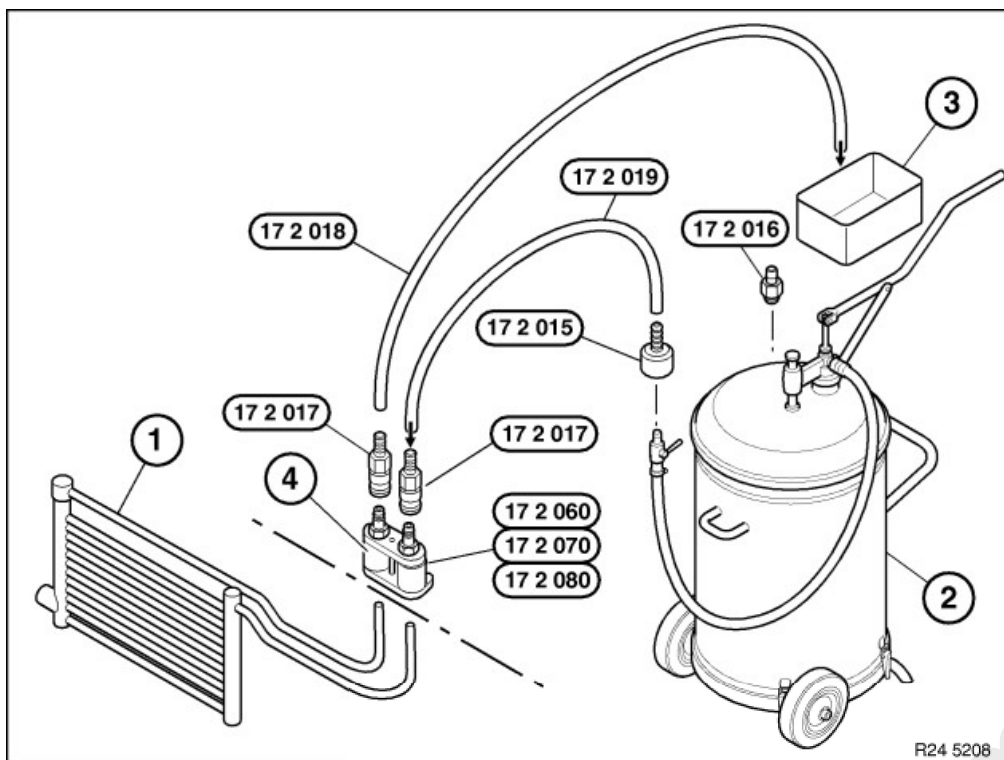


Press hydraulic lines (1) into adapters (2).

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

Arrangement of flushing device for transmission GA8HP45Z, GA8HP50, GA8HP70Z, GA8HP75Z, GA8HP90Z





1) Transmission oil cooler with lines

2) Oil dispenser unit

17 2 015 Connection for oil dispenser unit (2), manufacturer: Deutsche Tecaletmit or

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

17 2 017 Quick-release coupling (2 pieces)

17 2 019 Hose to oil dispenser unit (2)

3) Oil drip tray

17 2 018 Hose to oil drip tray (3)

4) Adapter with clamping bracket

17 2 080 Adapter with clamping bracket GA8HP45Z /GA8HP70Z /GA8HP90Z



64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

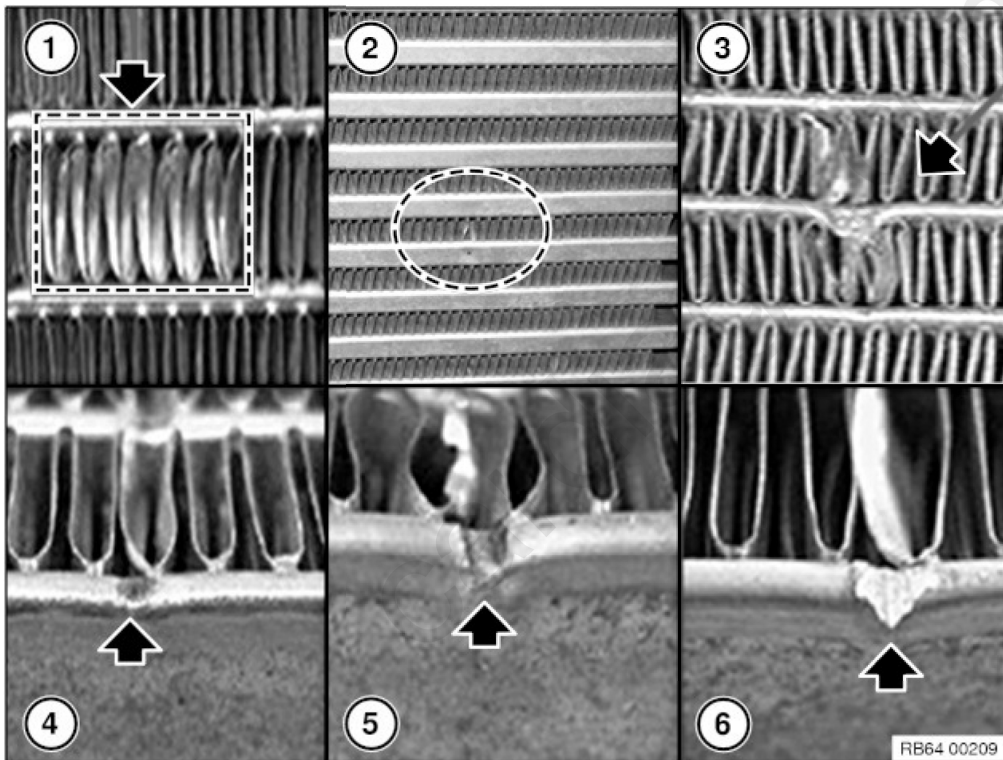
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig.Â (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.





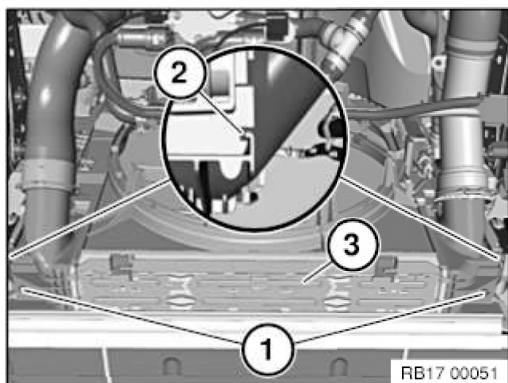
Necessary preliminary tasks:

- Remove fan cowl.
- Remove underbody protection
- **Do the following only F87:**
Remove stiffening plate



Important!

Coat sealing rings of snap fasteners with lubricant.
Pressure pipes cannot be fitted without lubricant.



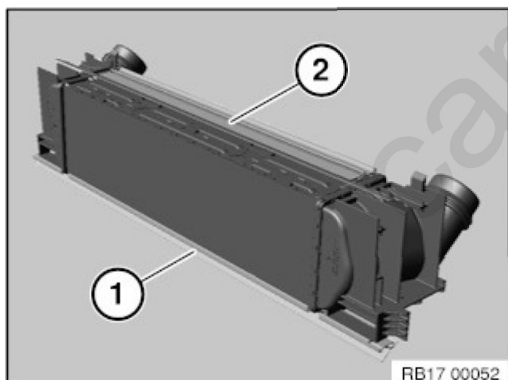
Unlock the left and right pressure pipes on the charge air cooler, pull them off and then set them aside.

Release screws (1).

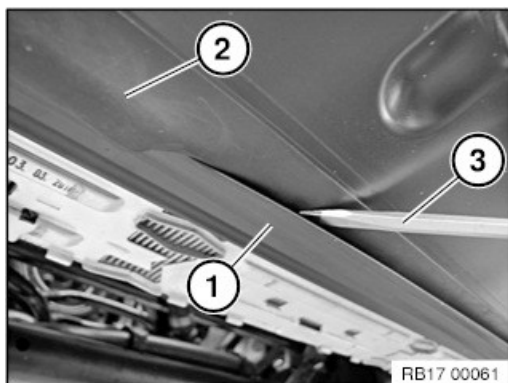
Tightening torque 17 10 3AZ.

Detach the charge air cooler from the left and right of the module carrier (2).

Remove charge air cooler (3) towards bottom.



Check gaskets (1) and (2) on the charge air cooler and replace damaged gaskets.



Installation note:

When installing the charge air cooler, make sure that the sealing lip (1) of the charge air cooler is installed above the sealing lip (2) of the bumper panel.

If applicable, mount the sealing lips with a screwdriver (3).





Reassemble the vehicle.

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**Warning!**

Risk of scalding, carry out repairs on the cooling system only when the engine has cooled down.

**Attention!**

Wear protective gloves and safety goggles.

**Attention!****Life-time 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.

Installation note:

Use only recommended coolant.

Observe mixture ratio.

**Attention!**

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.

**Attention!**

Protect the alternator from contamination when carrying out any repairs on the coolant circuit.

Cover alternator with suitable materials.

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

**Attention!**

Do not fill coolant expansion tank over maximum level, as overfilling will cause the coolant to overflow. This may cause traces of coolant on the expansion tank or in the engine compartment and allow an incorrect conclusion about possible leaks.

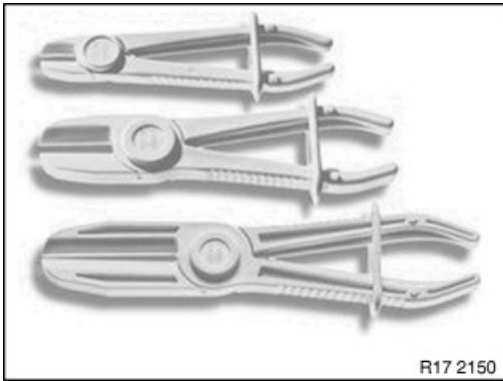




Recycling

Catch and dispose of drained coolant.

Observe country-specific waste disposal regulations.

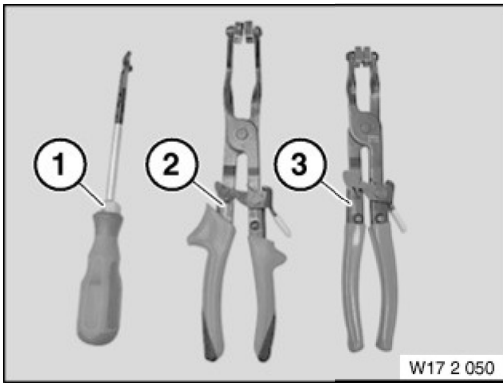


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Note:

To disconnect the coolant hoses, use a commercially available disconnection tool such as HAZET (see table).

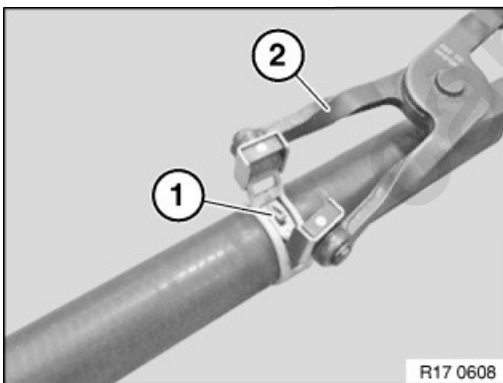
HAZET number:	Description
4590-1	Length of disconnect pliers (mm): 150
4590-2	Length of disconnect pliers (mm): 180
4590-3	Length of disconnect pliers (mm): 253
4590 / 2	Set of clamping pliers
4590 / 3	Set of clamping pliers



W17 2 050

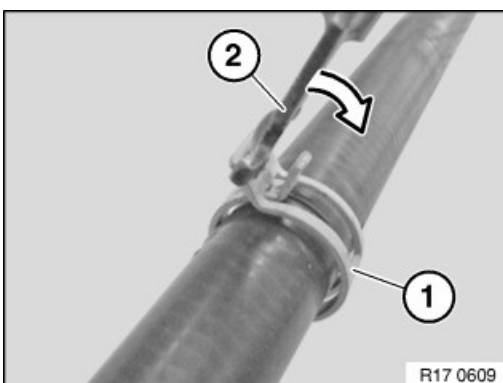
Set of special tools 17 2 050 for removing and installing the spring bracket clamps for coolant hoses.

- (1) Release tool.
- (2) Pliers (bent version).
- (3) Pliers (straight version).



R17 0608

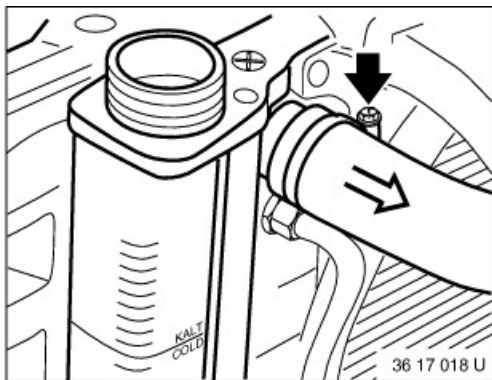
Loosen spring strap (1) with the pliers (2).



R17 0609

Unlock spring strap (1) with the release tool (2).

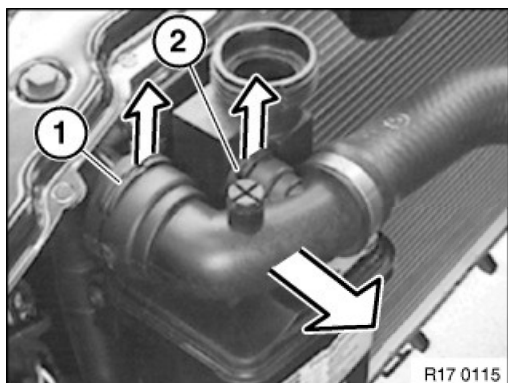




Note:

Tightening torque for hose clamps

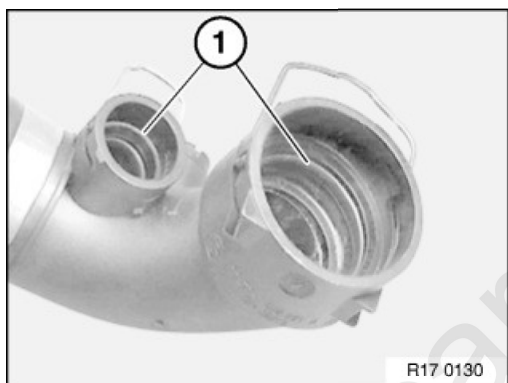
WAF 5	1.0 - 1.5 Nm
WAF 6	2.5 - 3.5 Nm



Notes on disassembly/installation of the quick-release couplings of the coolant hoses

Dismantling of quick-release coupling

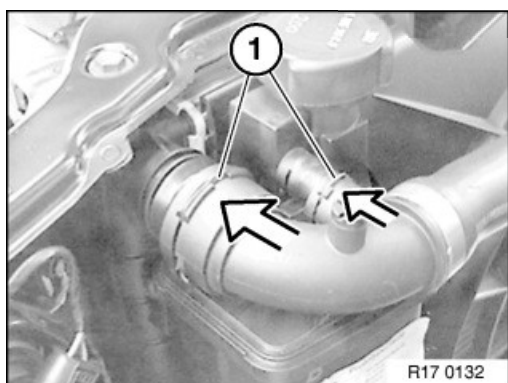
Pull out lock (1) and (2). Pull off hose.



Installation note:

Check O-rings (1).

Do not coat O-rings (1) with lubricant.



Assembly of quick-release coupling

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

Push on hose.

Quick-release couplings must clearly snap audibly into place.

