

12 31 020 Removing and installing/replacing alternator



Make sure that the radiator is not damaged when removing the alternator. Cover the radiator with suitable materials (e.g. cardboard).

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Remove the cover for the centre engine compartment

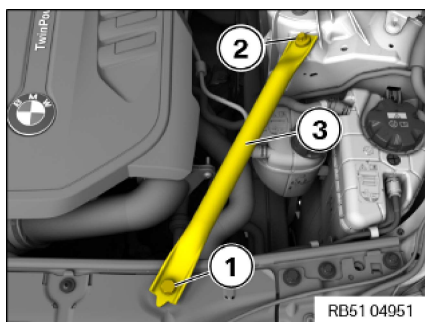


- Release all expanding rivets (arrows).
- Remove the cover (1).

3 – Remove both front-end struts



Description is for left component only. Procedure on the right side is identical.



► Removing the front-end strut



Use of an incorrect tool (impact screwdriver) to release and tighten the screws. Damaged thread.

- Only use a standard tool (e.g. reversible ratchet) to release/tighten the screw.

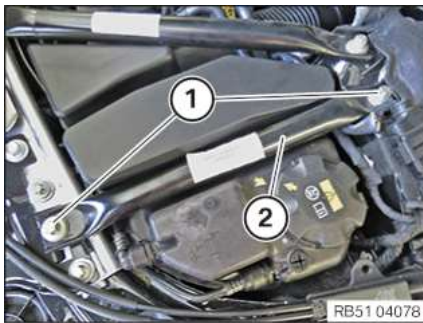
- Loosen screws (1) and (2).
- Remove the front-end strut (3).

► Removing the front-end strut (US version)



Perform this step on the right side only.

- Pull off cover (1) in upward direction out of the latch mechanisms.



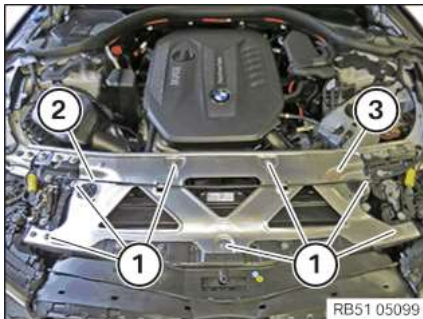
Description is for left component only. Procedure on the right side is identical.



Use of an incorrect tool (impact screwdriver) to release and tighten the screws. Damaged thread.

- Only use a standard tool (e.g. reversible ratchet) to release/tighten the screw.
- Loosen screws (1).
- Remove the front-end strut (2).

4 – Remove front cross connection (front-end strut removed)



- Loosen screws (1).
- Detach the cable (2).
- Feed out the front cross connection (3) toward the top.

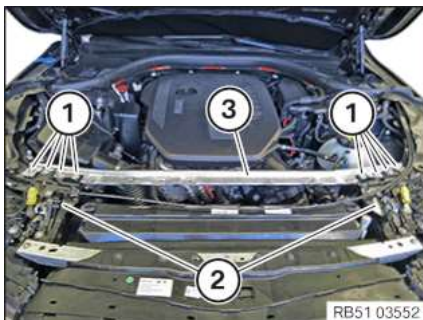
5 – Remove the rear top cross connection



Careless handling of tools and sharp-edged components.

Scratch, surface damage.

- Protect working area.
- Handle tools and components carefully.

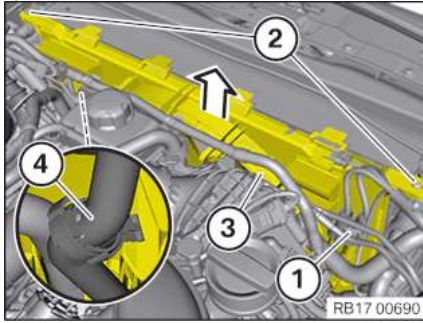


- Loosen screws (1).
- Lift the support (2) of the left bonnet lock slightly and feed out the rear cross connection (3) to the rear.
- Lift the support (2) of the right bonnet lock slightly and feed out the rear top cross connection (3) to the rear and remove.

6 – Remove fan cowl.

Prerequisite

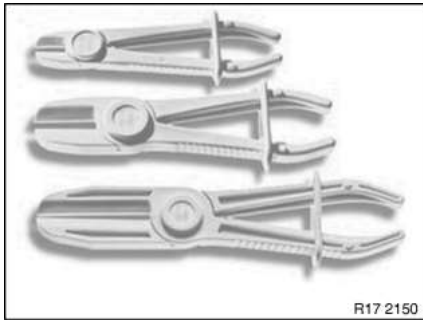
Ignition is switched off.



- Unlock connector (1) and pull off.
- Loosen screws (2).
- Loosen the coolant hose (4) from fan cowl (3).
- Feed out fan cowl (3) upwards and remove.

7 – Remove the coolant expansion tank for the low-temperature coolant circuit

Disconnect tool



Use standard disconnection tools to disconnect the coolant hoses or vacuum lines.



Materials harmful to health.

Contact with fluids harmful to health!

- Note and follow safety information on containers.
- Conduct all work in appropriate personal protective equipment only.



Life-long fill of coolant!

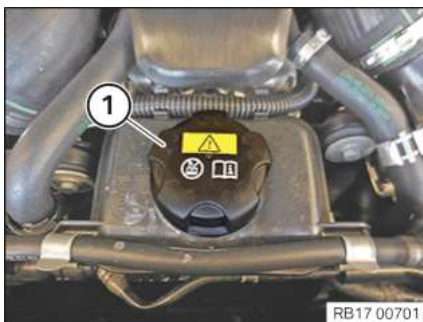
Do not reuse used coolant.

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 emptied and refilled.

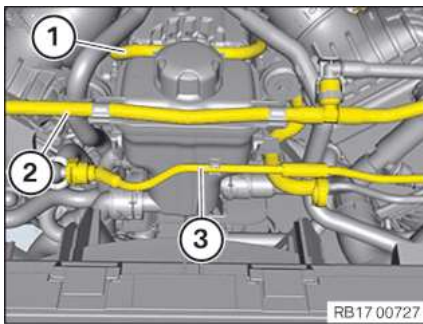
In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.



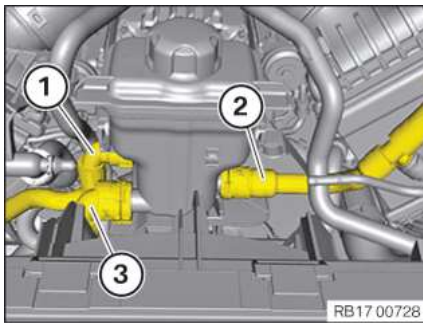
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



- Open the lid (1) on the coolant expansion tank of the charge air coolers.
- Draw the coolant off with a conventional pump.

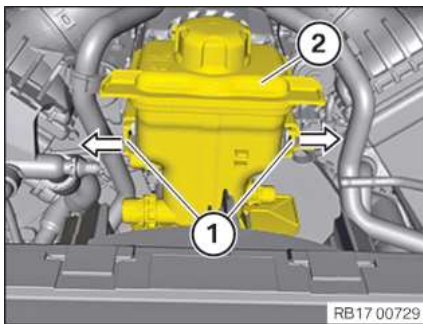


- Release the cable (1) from the coolant expansion tank for the low-temperature coolant circuit and put to one side.
- Release the tank ventilation line (2) from the coolant expansion tank for the low-temperature coolant circuit and put to one side.
- Release the coolant line (3) from the coolant expansion tank for the low-temperature coolant circuit and put to one side.

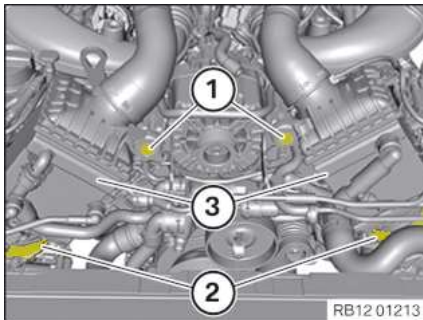


Use commercially available pinch-off tools to pinch off the coolant hoses.

- Disconnect the coolant hoses (1), (2) and (3) with conventional disconnection tools.
- Unlock the coolant hose (1) and pull off the coolant expansion tank for the low-temperature coolant circuit.
- Unlock the coolant hose (2) and pull off the coolant expansion tank for the low-temperature coolant circuit.
- Unlock the coolant hose (3) and pull off the coolant expansion tank for the low-temperature coolant circuit.
- Unlock each lock (1) in the direction of the arrow.
- Release and remove the coolant expansion tank (2) for the low-temperature coolant circuit from the bracket.



8 – Partially remove the charge air cooler



- Loosen screws (1).
- Release locks (2).
- Partially loosen the charge air cooler (3) and set it aside.

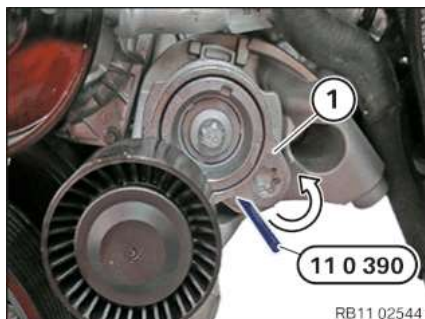
9 – Removing the drive belt



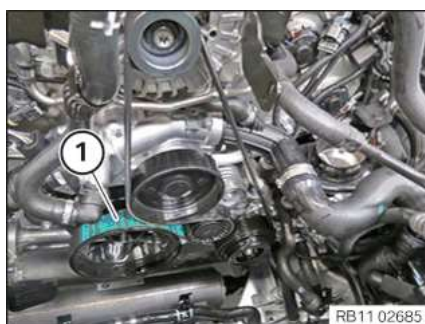
Spring preload.

Danger of injury!

- The use of the specified special tool (tool) is mandatory.
- The described operation must be carried out properly.



- Turn belt tensioner (1) in direction of arrow.
- Push in special tool and block the belt tensioner.



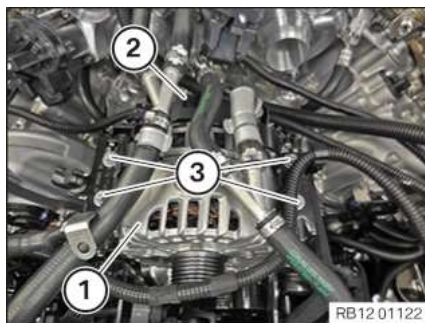
- Remove the drive belt (1).

MAIN WORK

10 – Removing the alternator

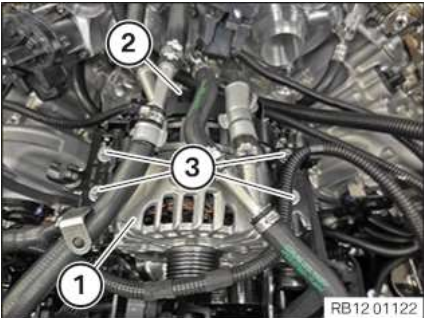


- Pull the cover (1) off and slacken the nut below it.
- Disconnect positive battery cable from alternator.



- Unlock the connector (2) and disconnect it from the alternator (1).
- Slacken the bolts (3) and remove the holder from the alternator (1).
- Guide out alternator (1) and remove.

11 – Installing the alternator



- Install the alternator (1).
- Attach the holder to the alternator (1) and tighten the bolts (3).

Alternator to cylinder head

M8x85	Tightening torque	22 Nm
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- Connect the connector (2) to the alternator (1) and lock it audibly.



- Connect positive battery cable to alternator.
- Tighten nut.

Positive battery cable to alternator

M8	Tightening torque	19 Nm
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- Mount the cover (1) to the nut.

POSTPROCESSES

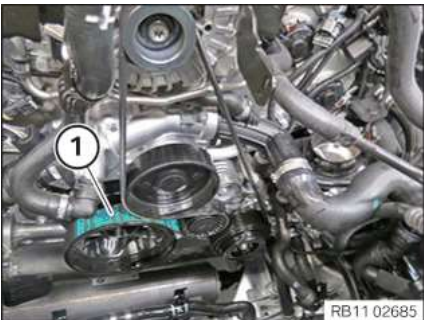
12 – Putting on the drive belt



Spring preload.

Danger of injury!

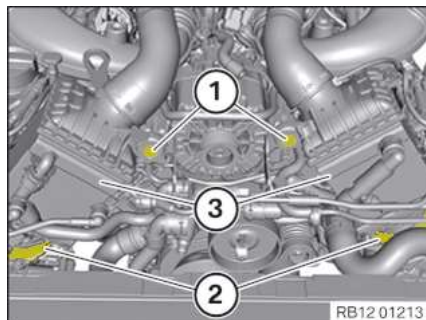
- The use of the specified special tool (tool) is mandatory.
- The described operation must be carried out properly.



- Observe the routing of the drive belt (1) (see figure).
- Put on the drive belt (1).



- Slightly relieve the tension of the belt tensioner (1) against the direction of the arrow and remove the special tool **0 496 268 (11 0 390)**.
- Turn the belt tensioner (1) in the direction of the arrow and tension the drive belt.

13 – Mount the charge air cooler

- Position the charge air cooler (3).
- Audibly lock the locks (2).
- Tighten the screws (1).

Charge air cooler to holder

M6x35

Tightening torque

8 Nm

14 – Install the coolant expansion tank for the low-temperature coolant circuit**Materials harmful to health.****Contact with fluids harmful to health!**

- Note and follow safety information on containers.
- Conduct all work in appropriate personal protective equipment only.

**Life-long fill of coolant!**

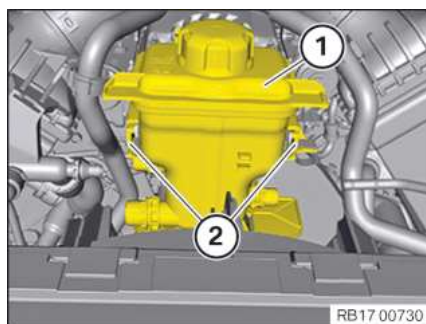
Do not reuse used coolant.

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 emptied and refilled.

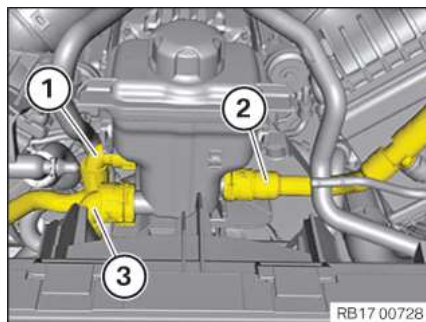
In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.



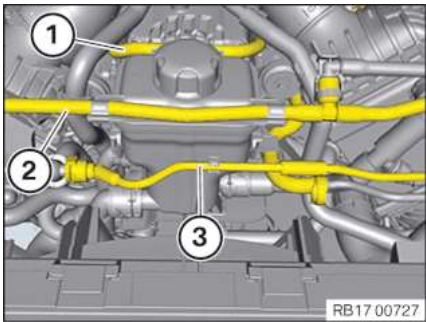
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



- Mount the coolant expansion tank (1) for the low-temperature coolant circuit on the holder.
- Lock the locks (2).

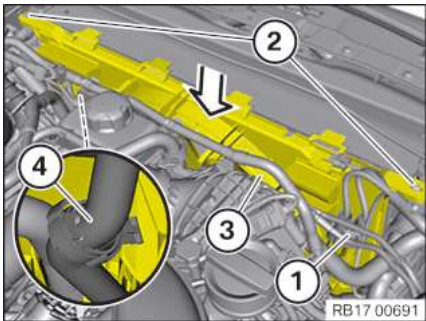


- Connect the coolant hoses (1), (2) and (3) to the coolant expansion tank for the low-temperature coolant circuit and lock them.
- All coolant hoses must audibly snap into place.
- Dismount the mounted disconnection tool.



- Clip the cable (1) on to the coolant expansion tank for the low-temperature coolant circuit.
- Clip the tank ventilation line (2) on to the coolant expansion tank for the low-temperature coolant circuit.
- Clip the coolant line (3) on to the coolant expansion tank for the low-temperature coolant circuit.

15 – Install fan cowl



- Insert and install fan cowl (3) into the guides in the direction of the arrow.
- Secure the coolant hose (4) on the fan cowl (3).
- Attach and lock the connector (1).
- Tighten down screws (2).

The connector (1) must engage audibly.

Fan cowl with electric fan on radiator

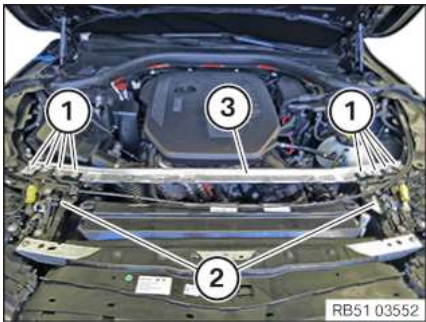
TS6x20	Tightening torque	5,5 Nm
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16 – Install the rear top cross connection



Careless handling of tools and sharp-edged components.
Scratch, surface damage.

- Protect working area.
- Handle tools and components carefully.

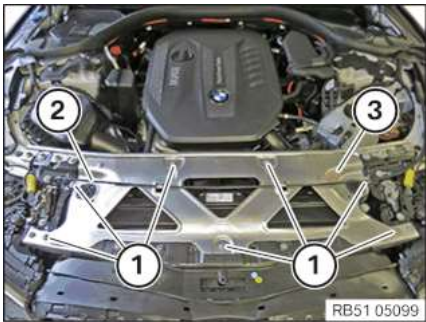


- Slightly lift the support (2) of the bonnet lock on the right and insert the cross connection at the rear top (3) to the front.
- Slightly lift the support (2) of the bonnet lock on the left and insert the cross connection at the rear top (3) to the front.
- Tighten the screws (1).

Rear top cross connection to wheel arch carrier support

Torx screw M8x30	Tightening torque	19 Nm
Torx screw M10x40	Tightening torque	19 Nm

17 – Install front cross connection (front-end strut removed)



- Guide in the front cross connection (3).
- Attach the cable (2).
- Tighten the screws (1).

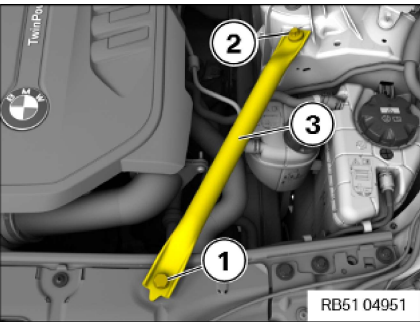
Front cross connection

Screw	Tightening torque	11,8 Nm
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18 – Installing both front-end struts



Description is for right component only. The procedure on the left side is identical.



► Installing the front-end strut

- Install the front-end strut (3).



**Use of an incorrect tool (impact screwdriver) to release and tighten the screws.
Damaged thread.**

- Only use a standard tool (e.g. reversible ratchet) to release/tighten the screw.

- Clean threads on spring strut dome.
- Renew the screw (1).

Parts: Screw

- Tighten down screw (1).

Front-end strut to cross connection

Hexagon screw	Renew screw.	Jointing torque	28 Nm
		Angle of rotation	90 °

- Renew the screw (2).

Parts: Screw

- Tighten down screw (2).

Front end strut

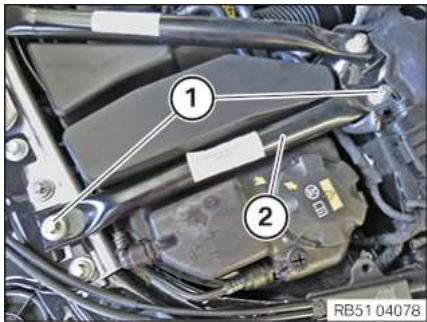
Screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

- Repair damaged threads on the spring strut dome with a Helicoil insert.

Expendable materials

Helicoil thread insert	M10x30 mm	07129909659
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► Installing the front-end strut (US version)



Description is for left component only. Procedure on the right side is identical.

- Install the front-end strut (2).



**Use of an incorrect tool (impact screwdriver) to release and tighten the screws.
Damaged thread.**

- Only use a standard tool (e.g. reversible ratchet) to release/tighten the screw.
- Clean the thread at spring strut dome.
- Renew screws (1).

Parts: Screws

- Tighten the screws (1).

Front end strut

Screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

- Repair damaged threads on the spring strut dome with a Helicoil insert.

Expendable materials

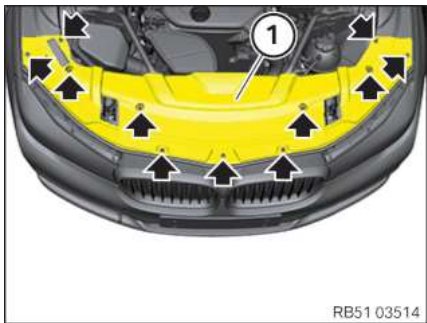
Helicoil thread insert	M10x30 mm	07129909659
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Perform this step on the right side only.

- Install cover (1) and engage in latch mechanisms.

19 – Install the cover of the engine compartment centre



- Install the cover (1).
- Install all expanding rivets (arrows).

20 – Connecting all battery earth leads



- See additional information.

21 – Check the coolant level in the low-temperature coolant circuit and top up, if needed



Materials harmful to health.

Contact with fluids harmful to health!

- Note and follow safety information on containers.
- Conduct all work in appropriate personal protective equipment only.



Follow notes for repair work on the cooling system.

For additional information see:

Main group 17

17 00 ... Notes for working on the cooling system



Life-long fill of coolant!

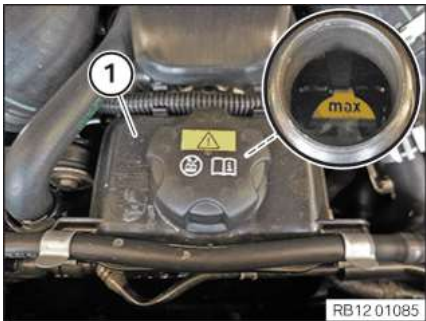
Do not reuse used coolant.

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 emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.



Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



- Check the coolant level in the coolant expansion tank (1) for the low-temperature coolant circuit and top up if needed.

22 – When replacing the alternator/alternator regulator: Reset generator statistical data



- Connect the battery charger to the vehicle.
- **Reset starter generator statistics data.**
 - Power train
 - Digital Diesel Electronics/engine electronics
 - Reset generator statistical data

Additional Information

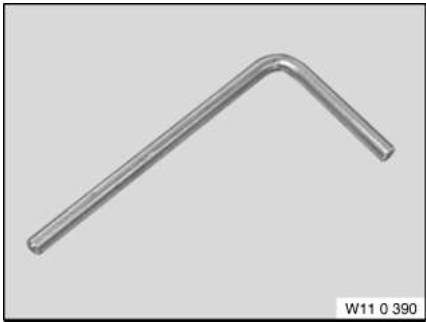
Overview of Tightening Torques

Alternator to cylinder head		Used in step	11
M8x85	Tightening torque		22 Nm
Positive battery cable to alternator		Used in step	11
M8	Tightening torque		19 Nm

Charge air cooler to holder			Used in step 13
M6x35		Tightening torque	8 Nm
Fan cowl with electric fan on radiator			Used in step 15
TS6x20		Tightening torque	5,5 Nm
Rear top cross connection to wheel arch carrier support			Used in step 16
Torx screw M8x30		Tightening torque	19 Nm
Torx screw M10x40		Tightening torque	19 Nm
Front cross connection			Used in step 17
Screw		Tightening torque	11,8 Nm
Front-end strut to cross connection			Used in step 18
Hexagon screw	Renew screw.	Jointing torque	28 Nm
		Angle of rotation	90 °
Front end strut			Used in step 18
Screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Overview of Special Tools

0 496 268 (11 0 390) Pin



Common		Used in step 12
Usage	(roll pin) For securing new tensioning pulley (poly-V belt)	
Included in the tool or work		
Storage location	B24	
Replaced by		
In connection with		
SI-Number	01 15 07 (390)	

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads).	1 20
61 20 900 Disconnecting and connecting battery earth lead	1 20
61 20 900 Disconnecting and connecting battery earth lead	1 20
61 20 900 Disconnecting and connecting battery earth lead	1 20
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61 20 900 Disconnecting and connecting battery earth lead	1	20
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	20
61 20 900 Disconnecting and connecting battery earth lead (Plug-in Hybrid Electric Vehicle)	1	20
61 20 900 Disconnecting and connecting battery earth lead	1	20
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	20
61 20 900 Disconnecting and connecting battery earth lead	1	20
61 20 900 Disconnecting and connecting battery earth lead	1	20
61 20 900 Disconnecting and connecting battery earth lead	1	20
17 00 ... Instructions for working on cooling system		21

Operating materials

Used in step

Main group 17	21
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