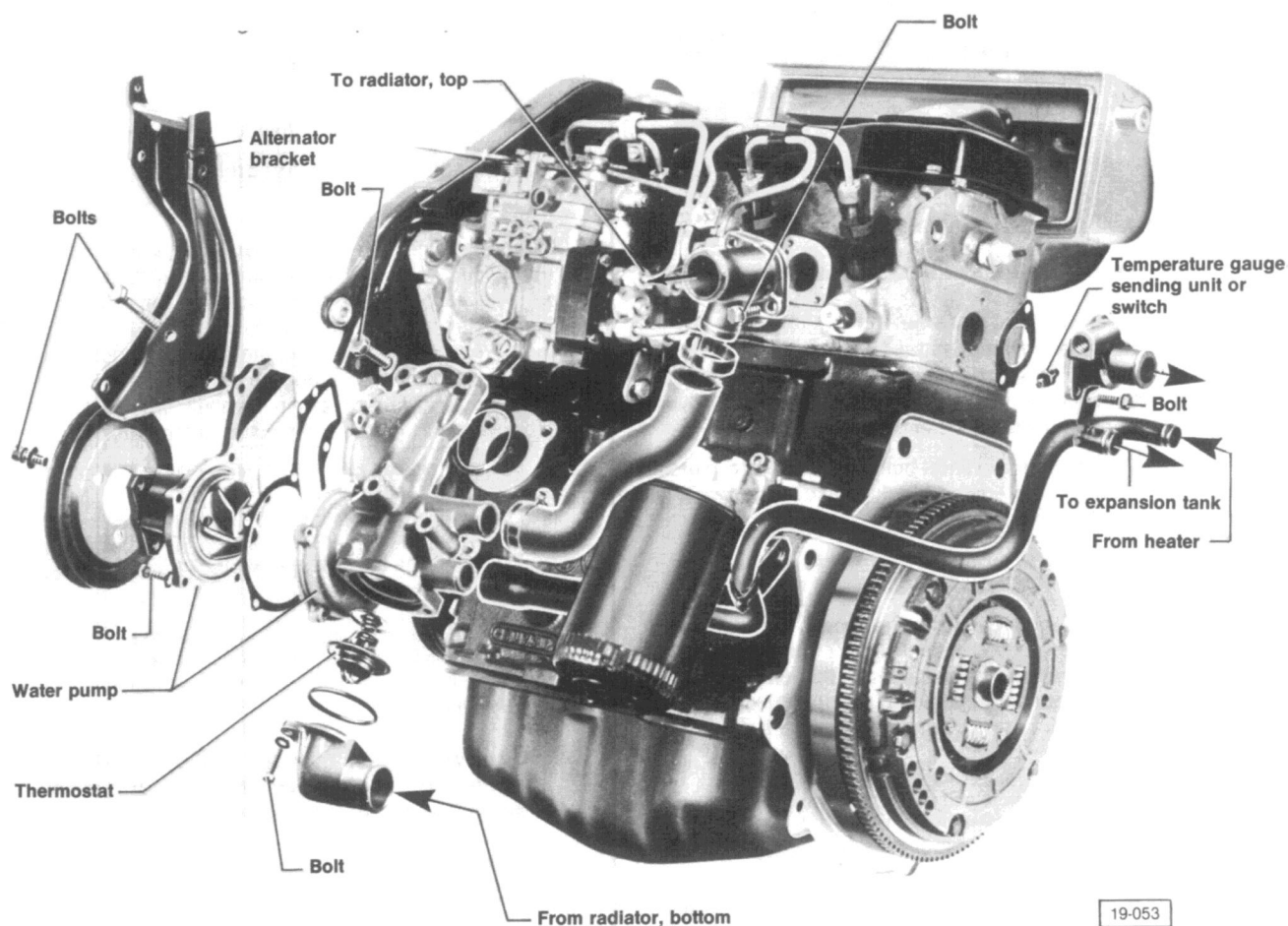


Water Pump: Service and Repair

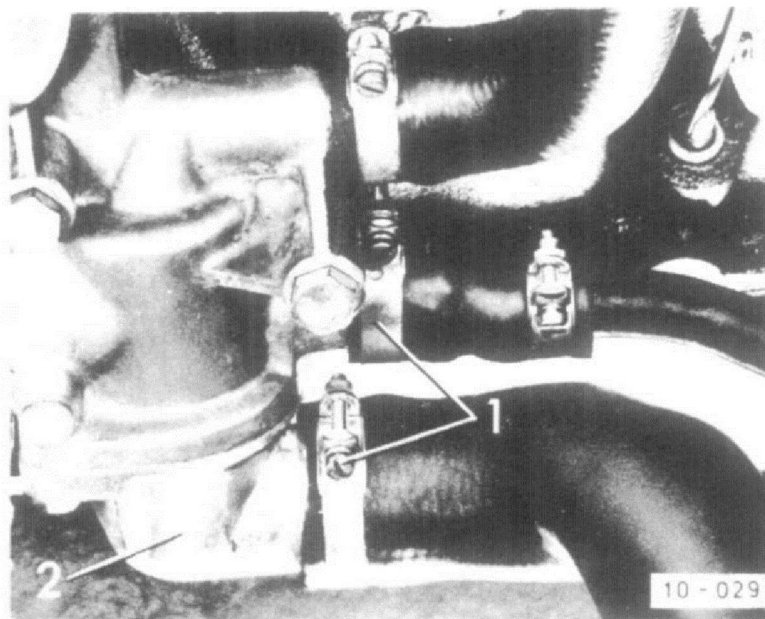


The right-hand part of the water pump, which contains the shaft, the seals, the bearing, and the impeller, can be replaced separately. However, you can avoid removing the camshaft drive belt and sprockets by removing the water pump as a unit before you disassemble it.

For removal of the camshaft drive belt, refer to Engine/Timing Components/Timing Belt. See: Timing Components/Timing Belt/Service and Repair

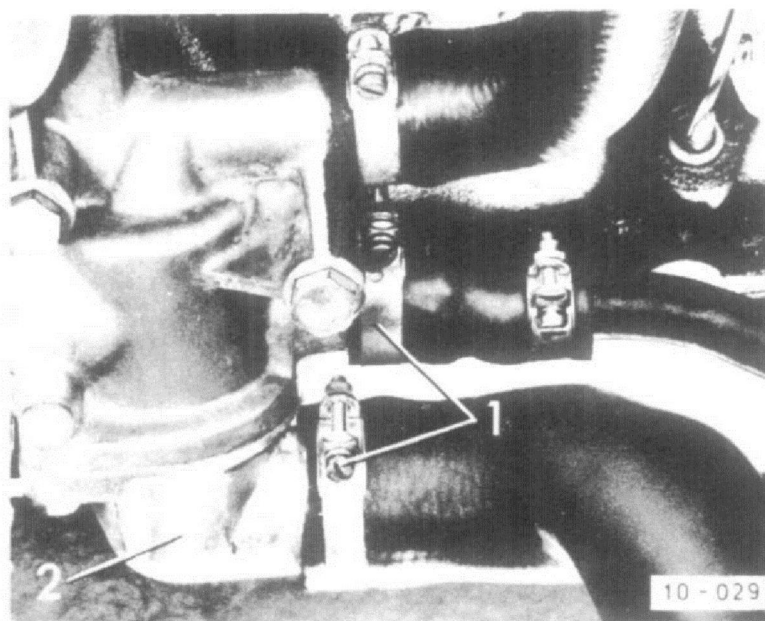
To remove:

- Disconnect the battery's negative (-) cable. Unplug the wires from the alternator, and remove.
- On vehicles without air conditioning, remove the alternator mounting bracket-keeping track of the number of spacers installed between the bracket and the water pump for correct reinstallation.
- On vehicles with air conditioning, dismount the air conditioning compressor. Then remove the air conditioner bracket, with care.
- Remove the expansion tank cap from the cooling system. Place a receptacle beneath the water pump for catching the draining coolant.

**Hose clamps (1) and thermostat housing (2).**

- Detach the thermostat housing from the water pump. Remove the thermostat, and allow the coolant to drain. Remove the drain plug from the rear side of the engine block on vehicles that have this plug.

CAUTION Never drain the coolant while the engine is hot, doing this could warp the engine block or the cylinder head.

**Hose clamps (1) and thermostat housing (2).**

- Using a screwdriver, loosen the hose clamps, two of which are indicated. Slide the clamps toward the center of the hoses, then pull the hoses off their connections on the water pump.
- Remove the nut from the T-head bolt that holds the water pump to the lower part of the camshaft drive belt's cover. (The nut is in a recess in the cover.) Then remove the T-head bolt.
- Take out the two short bolts that hold the top of the pump to the engine block. Remove the pump as you take out the last bolt.

To install:

- Install a new O-ring in the recess that surrounds the water outlet in the pump's mounting flange. Clean the surface of the engine block where it

will be contacted by the pump and the O-ring.

NOTE Do not use sealer between the water pump mounting flange and the engine block.

- Using all four mounting bolts, loosely install the water pump and the alternator mounting bracket, or the air conditioning compressor mounting bracket. Then, tightening each bolt a little at a time, torque the mounting bolts to **20 Nm (15 ft. lb.)**. Also install the T-head bolt-tightening the nut only until the rubber grommets in the camshaft drive belt's cover are slightly compressed.
- Reconnect the hoses and the thermostat housing to the water pump, using water-resistant sealer on the hose connections and a new gasket between the thermostat housing and the water pump. Torque the bolts for the thermostat housing to **10 Nm (7.5 ft. lb.)**.
- If necessary, reinstall the air conditioning compressor.
- Install the alternator, tensioning the belt(s) correctly.
- Reconnect the wires to the alternator; then reconnect the battery's negative (-) cable.
- To refill the cooling system, fully open the heater control valve. Then pour in coolant until the level is up to the full mark on the expansion tank. Install the cap and run the engine in order to bleed air out of the coolant circuit. After stopping the engine, add coolant if it is necessary to bring the level back up to the mark.