

The Cooling System: gapped exercise for motor vehicle students

Name _____ Date _____

Cooling system

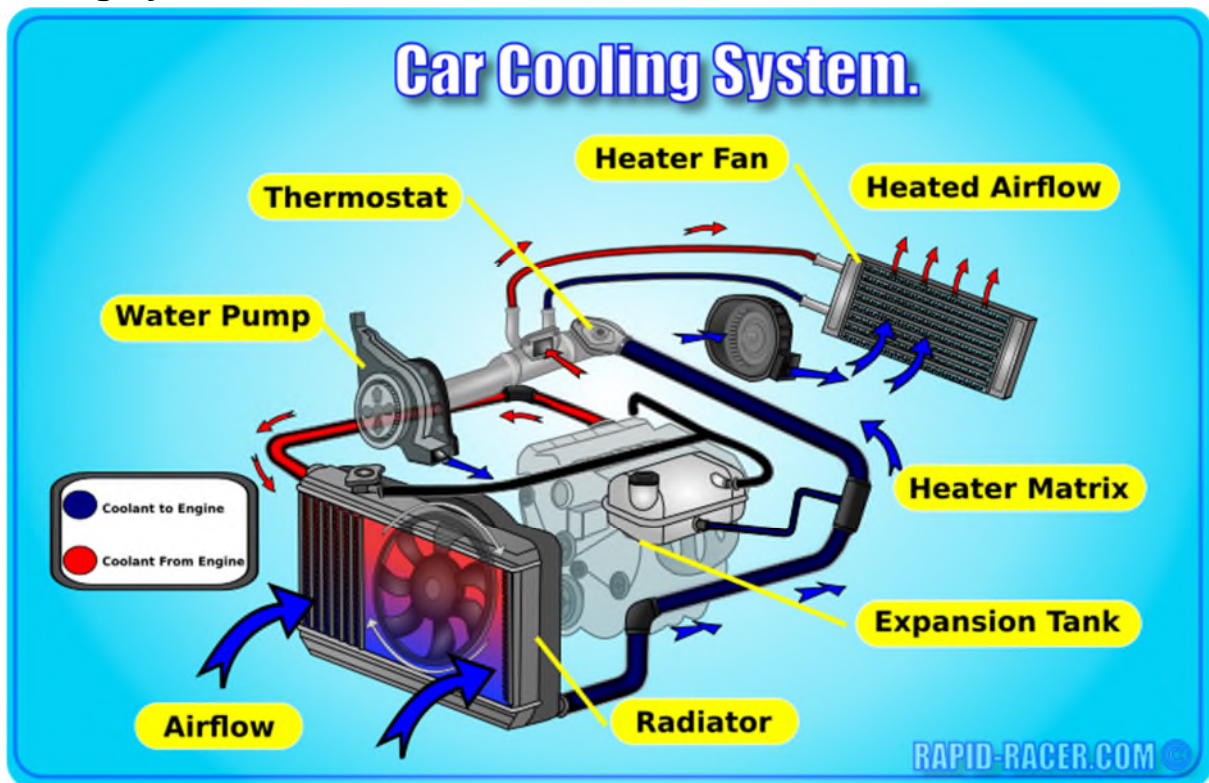


Image source: <https://www.rapid-racer.com/tuning/cooling-system/>

Boiling point of water: 100°C.

The cooling system is pressurised. This raises the atmospheric pressure, so the boiling point is higher. Engine operating temperature: 200-250°C. The thermostat allows the coolant to flow to the radiator to be cooled.

The expansion bottle is a reservoir that releases the water back into the radiator when it has cooled down. The radiator pressurised cap has a wax strip that melts and expands, allowing the water to circulate to cool. The electric fan helps with cooling. The wax melts and the fan runs when the engine has stopped or slowed down. This saves fuel because it only runs when the water temperature rises.

The viscous bearing helps with cooling. It runs when the temperature increases and then runs at engine speed. It has a bi-metallic strip that turns it on and off.

Anti freeze / Coolant

- prevents freezing in winter
- Helps to stop overheating in summer
- Prevents corrosion

Hoses are made of rubber and fabric to reduce vibration. Check for bulging and wear and splits. If the water pump is driven by cam belt and is frozen all the teeth will be stripped off the cam belt and the valves bent. Because of this an auxiliary, belt driven water pump is better.

The Cooling System:
gapped exercise for motor vehicle students

Name _____ Date _____



- Write the correct words in the gaps.
- Check your spellings.

1. **Water pump:** pumps _____ around the cooling system.
2. **Impeller:** part of the water _____ (submerged propeller). It rotates to _____ the water through the _____.
3. **Hoses** _____ coolant to _____ parts of the _____ system.
4. **Clips:** retain the coolant _____.
5. **Heater matrix:** a mini _____ behind the _____ that _____ the passenger _____.
6. **Radiator:** cools the _____.
7. **Coolant** is the _____ in the cooling system. It:
 - prevents _____ in winter.
 - helps to _____ in summer.
 - prevents _____.
8. **Thermostat:** keeps the engine at a _____.

The Cooling System:
gapped exercise for motor vehicle students

Name _____ Date _____



- Write the correct words in the gaps.
- Check your spellings.

9. **Expansion bottle:** allows the _____ of coolant into a _____ for passing back into the _____ when it has _____ down.

10. **Electric fan:** _____ the _____ cool in _____ moving traffic when there is _____ air _____. Saves _____.

11. **Viscous fan:** runs when the _____ increases and then runs at engine _____. The bi-metallic strip turns it _____ and off. This saves fuel.

12. **Bi-metallic strip** is a _____. It controls the _____ bearing in the cooling _____. The movement of one type of _____ away from the other _____ (e.g., copper / steel), acts as a switch.

13. **Fan Switch:** a _____-filled switch that is screwed into the radiator. As the temperature _____ the wax _____ and allows the coolant to _____. It will continue to run when the engine is _____.

The Cooling System:
gapped exercise for motor vehicle students

Name _____ Date _____



- Write the correct words in the gaps.
- Check your spellings.

14. **Thermistor:** is a temperature _ _ _ _ _ (in the cooling system). The _ _ _ will melt at a certain temperature and _ _ _ _ _ a reading to the temperature _ _ _ _ _.

15. **Coolant temperature sender:** sends a message to the _ _ _ to say what _ _ _ _ air ratio is needed. E.g., if engine is _ _ _ _ , it needs more fuel to _ _ _ _ .

16. **Cooling system** has to be _ _ _ _ so that there are no air _ _ _ _ _ that would affect the _ _ _ _ _ point.

17. **Heater matrix:** when _ _ _ _ _ turn matrix onto the _ _ _ _ setting so that the coolant can flow through to empty.

18. **Coolant** must be changed as per the manufacturers' _ _ _ _ _ in the service _ _ _ _ _ .