



HOW TO PROPERLY DRAIN, FLUSH AND REFILL THE COOLING SYSTEM



Proper draining, flushing and refilling of the cooling system ensure optimum cooling system operation, increased engine efficiency and high customer satisfaction levels. Following guidelines will help you to correctly drain, flush and refill the cooling system.

Remember! These are only general guidelines. Always refer to the vehicle manufacturer's recommended procedures. Failure to follow these instructions could result in injury or property damage. Gates disclaims all liability due to failure to follow these instructions.

Draining the old coolant

STEP 1 - *Safety first*

Always wait until the engine is cool before working on any part of the cooling system.

STEP 2 - *Press down on the radiator cap, slowly turn it counter-clockwise until it hisses, wait until the hissing stops and then remove the cap*

STEP 3 - *Place a large container under the drain valve at the bottom of the radiator*

Check the vehicle service manual to locate all of the coolant drain valves in the engine block and cooling system.

STEP 4 - *Loosen the drain valve and allow the coolant to completely drain out*

If the radiator does not have a drain valve, disconnect the lower radiator hose and allow the coolant to drain out.

If the vehicle is equipped with an individual expansion tank, disconnect all hoses connecting it to the cooling circuit and allow the coolant to drain out.

STEP 5 - *Think about the environment and properly dispose of the old coolant*

Flushing the system



In case of part replacements, make sure the flush is completed with the old components still in place!

Flushing after the new components are installed can lead to premature failure due to abrasive particles and debris negatively impacting the new components.

STEP 6 - *Read the Gates Power Clean™ Flush Tool user instructions completely before you begin and follow them carefully*

STEP 7 - Prepare the vehicle for the flush

Radiator: remove lower radiator hose, upper radiator hose, and if possible, completely remove the drain valve to allow for debris outflow from the lowest point of the radiator.

Engine block: remove lower radiator hose, upper radiator hose and thermostat.

Heater core: the heater control valve must be verified to be open before attempting to flush through the valve. If this cannot be verified then it should be removed.

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STEP 8 - Install the accessory best suited for the respective flush job and flush as much as needed until the radiator/engine block/heater core outflow is clear

A complete set of tips and connectors comes with the Gates Power Clean™ Flush Tool to make it suitable for use on radiator filler necks, engine blocks and heater core tubes.

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STEP 9 - Inspect the coolant hoses, thermostat and water pump and replace them if necessary – as described earlier in this manual

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Refilling the system

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STEP 10 - Retighten the drain valve at the bottom of the radiator

Make sure all the hoses are properly reconnected.

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STEP 11 - Refill the cooling system with the correct vehicle manufacturer's recommended coolant, ensuring that the cooling system is bled following vehicle manufacturer instructions

The moment the cooling system is drained, air replaces the coolant. When the system is refilled, air can get trapped in the cooling circuit. Air in the system is to be avoided at all times. Air bubbles considerably reduce the circulation of the coolant and may lead to engine overheating. They also accelerate the rust process, shortening the life of the system. Some systems are equipped with a bleeding valve on the upper radiator hose that allows trapped air to escape from the system. Other systems require that the expansion tank is dismantled/pulled upwards to vent the trapped air. Therefore, Gates recommends to always check the vehicle service manual for the prescribed bleeding procedure.

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STEP 12 - Inspect the radiator cap and expansion tank cap (if applicable) and replace them if necessary – as described earlier in this manual

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STEP 13 - With the engine at operating temperature, recheck the coolant level and top up after engine cool down if required

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STEP 14 - Do a final visual inspection to ensure there are no leaks

Keep in mind that some leaks will become obvious when the engine is cold, but others only when it is hot.

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