



Delta Secondary School
Home of the Pacers

Lab

Technology Education

Mr. Mynott

Coolant Flush

Your Mission:

- Understand the parts of the cooling system.
- Understands the safety aspects revolving around a cooling flush.
- Be able to identify parts of the cooling system and their function.
- Be able to flush and fill a coolant system. **IN CLASS**
- Be able to remove and replace a thermostat. **IN CLASS**

Safety



**Eye protection
must be worn**

- **Always wear eye protection** – although it might seem remote that the coolant system poses any safety risks, it contains potentially scalding hot fluid which can be lethal if ingested by people or animals.

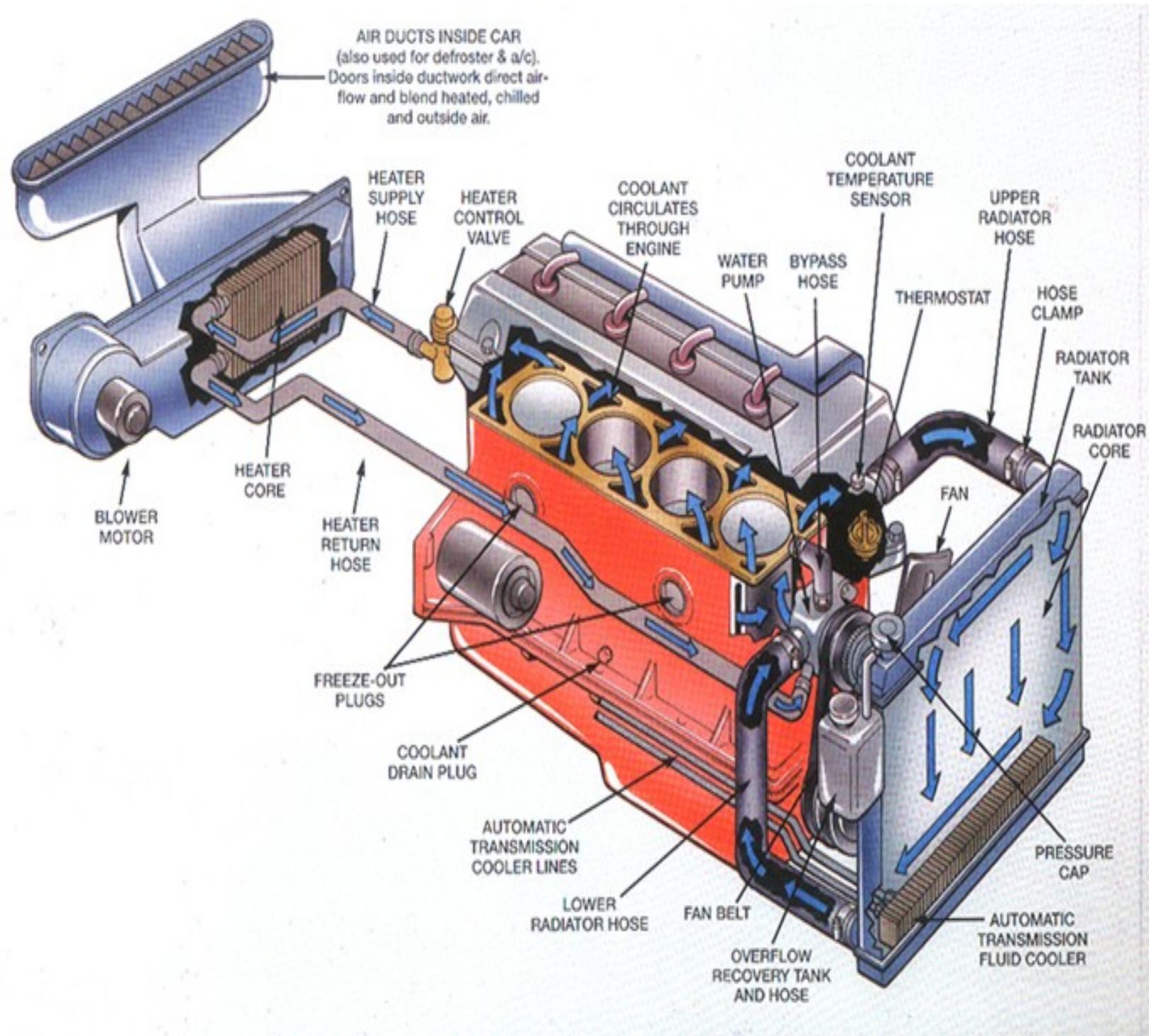


- **Always pay attention** – whether you are doing the work on the vehicle or not you should be paying attention to what is going on around you. Only when you are paying attention will you be able to ensure your safety and know what to do in case of an emergency.



- **Always ask** – if you are not sure what to do or need assistance ask your instructor.

Parts



Shown above is an example of a typical Internal Combustion Engine coolant system

Tools

Depending on the vehicle you will need a selection of 6 point sockets, screwdrivers, pliers, and a pan to catch any coolant that may be emitted from the vehicle. Also, you should always use anti-seize on all fasteners during the reassembly process.

Notes:

1. Wear appropriate safety equipment (eye and ear protection) before proceeding. A hot, pressurized coolant system may spray when the pressure is released.
2. If you don't know or are unsure of how to accomplish a cooling flush or remove and replace the thermostat ask you instructor. Failure to do so could result in personal injury, damage to the new parts, and / or damage to the vehicle you are working on, all of which are completely preventable.

Instructor Signature _____

Removing the Thermostat

Step 1.

****Place a catch bin under the car to catch and coolant that might emit from the vehicle.****

****Get a box. All parts that may come off of the vehicle must be put into this box.****

We need to remove the radiator cap first. If the vehicle is hot ensure that you have a rag handy to put over the cap to deflect any coolant that might spray downwards. So, carefully push down and twist lefty-loosey to remove the radiator cap.

Step 2.

To remove the top radiator hose, remove what ever hose clamp that may be in place and then remove the top radiator hose from where it connects to the radiator by carefully pulling and rotating. Follow the same procedure to remove the bottom radiator hose where it connects to the radiator.

Step 3.

Identify where the thermostat housing is located. If you can not locate it get instructor assistance.

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Step 4.

Once we have correctly identified the thermostat housing carefully remove any electrical connections.

Step 5.

Remove the bolts or nuts that may be holding the thermostat housing to the block / head or both.

Step 6.

Using a soft faced mallet carefully tap the housing to break the seal and remove the housing to expose the thermostat.

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Step 7.

Using a polishing tool clean the thermostat housing mating surface and the surface of the block / head of any left over gasket material.

Also, at this time we could also remove the overflow bottle if it is considerably dirty, wash it out and reinstall it.

Flushing the System

Step 8.

Using a simple garden hose flush the radiator. First, flush the radiator by placing the hose in the top radiator opening and watch the flow of liquid come out the bottom opening. When the solution runs clear you are finished.

Step 9.

Find the hoses that go to the heater core and flush the heater core in the same fashion as above.

Step 10.

Now, to flush the block, we must place the hose in the thermostat opening and watch the flow of liquid coming from the bottom of the block which the bottom radiator hose should still be attached to. When the flow of liquid runs clear you are finished.

Reassembly

Step 11.

With all systems flushed it is time to start putting things back together. Put the new thermostat back into the housing exactly as it came out. Usually the spring goes towards the inside. Make sure the new gasket is on the housing and place it all back together. Check the torque of the housing bolts before final tightening and reattach any wiring that might have been disconnected.

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Step 12.

Reconnect all the hoses that were disconnected during the flush and ensure that all the clamps are put back on and tightened.

Step 13.

Fill the system with a 50 / 50 mix of coolant, which includes filling the overflow bottle to the full line.

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Step 14.

With your instructors assistance run the vehicle up to operating temperature and check for proper operation and any leaks that might need to be addressed at this time.

Instructor Signature _____

THE END! ;D