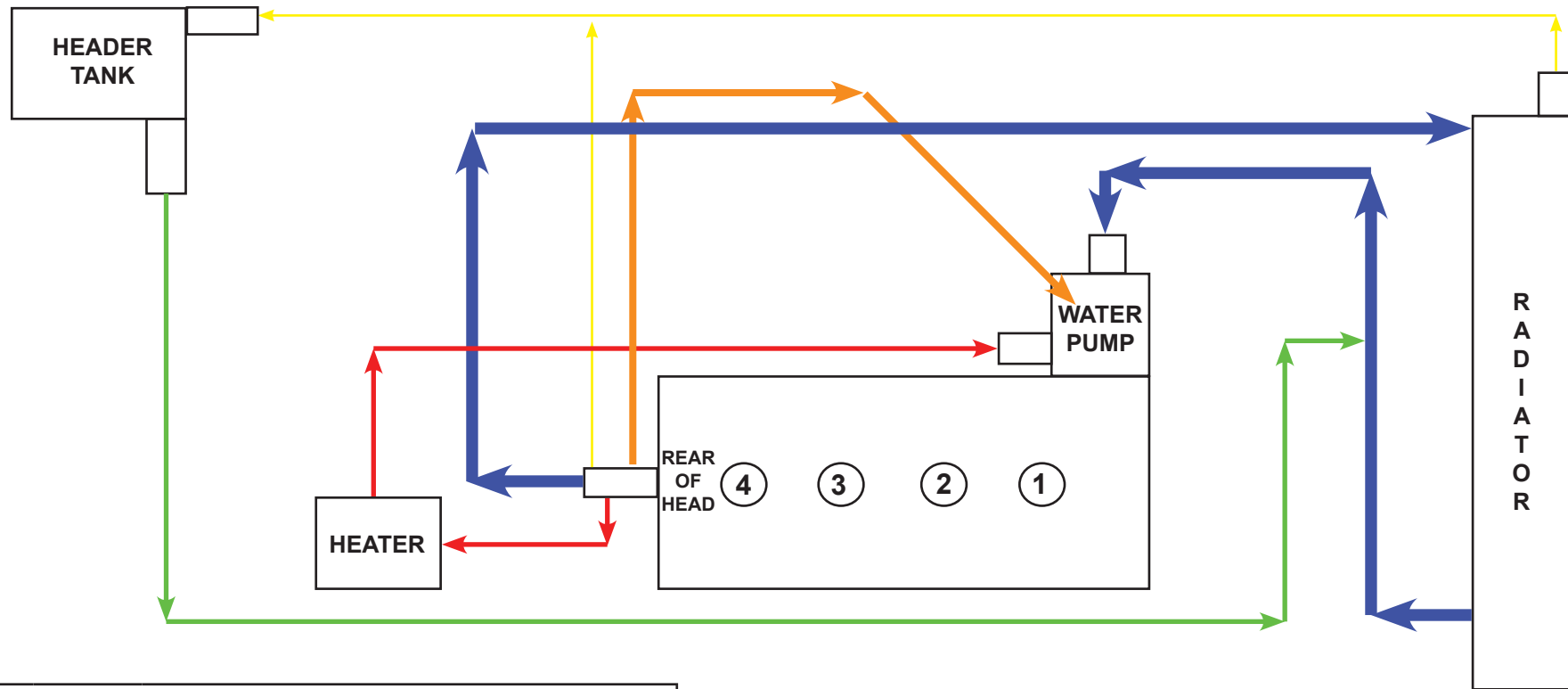


Duratec Cooling System with Heater

View from above



Arrowhead direction shows direction of flow		
	Blue	Main cooling system flow
	Orange	Engine recirculation flow
	Yellow	Engine automatic bleeding system flow
	Green	Header tank supply to cooling system
	Red	Heater flow through matrix and back to engine

The cooling system shown is the design as used by SBD Motorsport, when using a mechanical water pump. The most important part of the cooling system is the orange recirculation pipe. When the thermostat is shut, the coolant passes through the engine, reaches the closed thermostat, the coolant flow is then directed through the front of the cylinder head to the water outlet on the underside of the inlet manifold and the coolant is then drawn back in to the engine by the water pump. This keeps the coolant flowing through the engine maintaining an even temperature. As the temperature rises within the engine, the thermostat slowly opens allowing the coolant to pass into the main cooling system to the radiator. The thermostat is a 2-part stat and as the thermostat slowly opens, the second part of the stat begins to slowly close the entry into the recirculation part of the cooling system and as the temperature begins to fall again, the thermostat begins to slowly shut. This maintains an even temperature throughout the engine.

Important Note: Some engines used in specific race car championships (Formula 3, etc) do not use thermostats. They carry out extensive testing, design the radiators and cooling system around their design and quite often change the water pump design and even on occasions use restrictors. This is not something recommended for a single user. If you get your cooling system design wrong, the water could flow too fast or too slow causing hot and cold spots within the engine, creating damage to the engine itself. In many cases this problem may not be visible straight away and may become more apparent over long periods of time. We do not recommend this set up.

The most common mistake when designing a cooling system is to misunderstand the flow of the cooling system itself. The mistake normally made is when connecting one of the following: the header tank outlet (green), the heater outlet (red) and the recirculation outlet (orange). These pipes must separately be fed into the blue water pipe shown flowing from the radiator outlet and going towards the back of the water pump. DO NOT attempt to T any of the pipes together, this will completely destroy the water flow causing a major problem with your cooling system.

