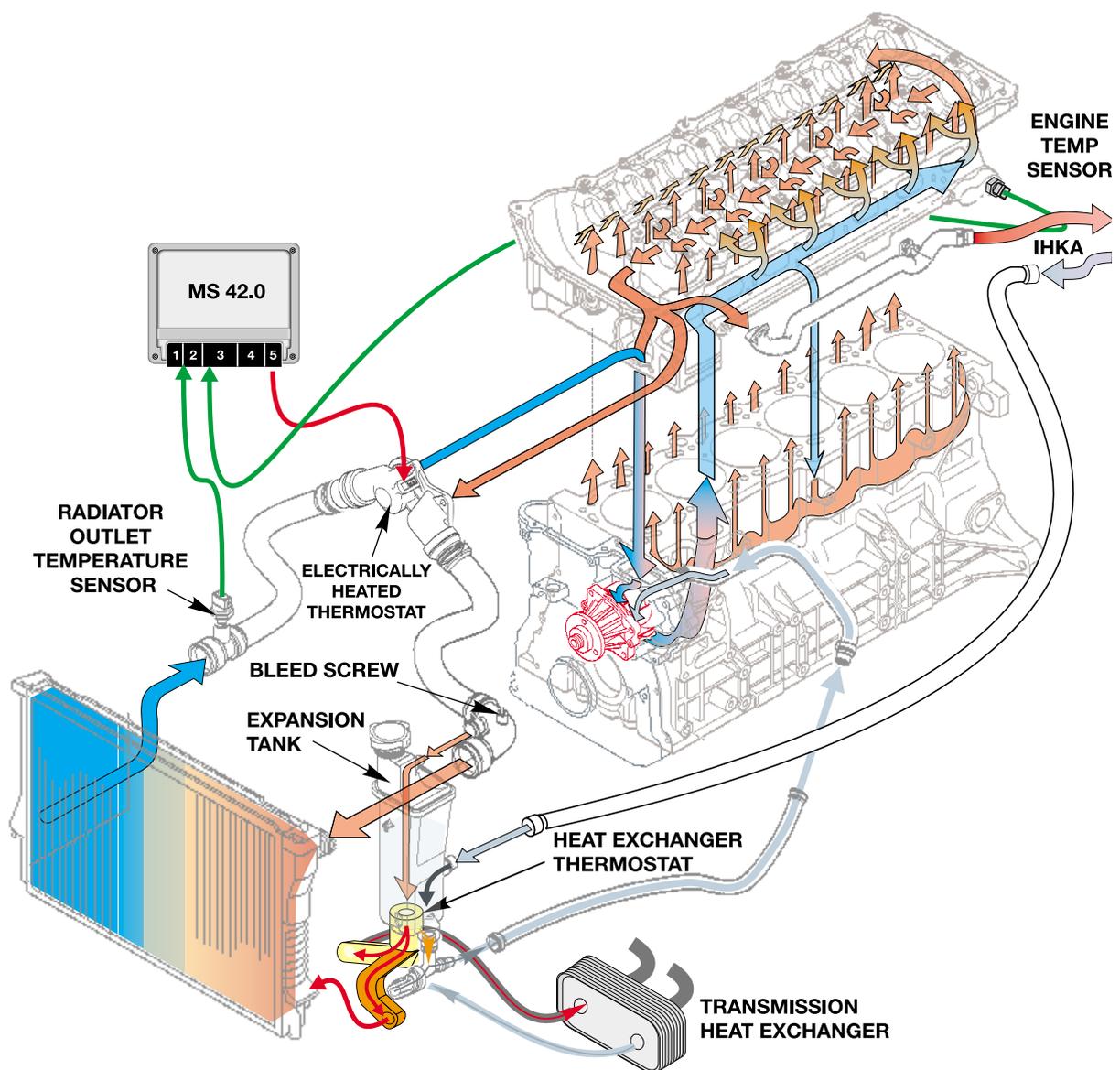


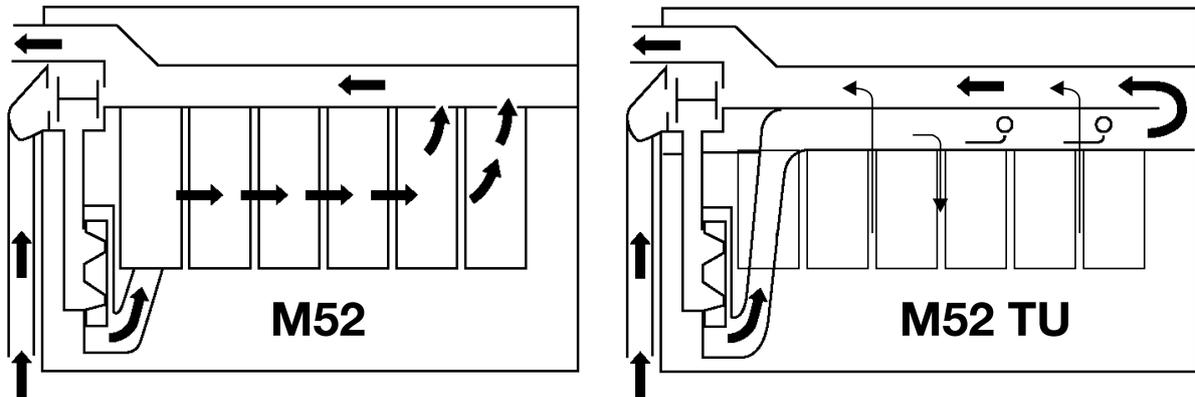
Cooling System

The cooling system of the M52 TU engine has been completely redesigned. The objective in redesigning the system was to optimize the operating temperatures in both cylinder head and block. The cooling system is designed to:

- Reduce the operating temperatures of the cylinder head. This has a positive effect on torque because the lower temperatures improve the volumetric efficiency of the engine.
- Increase the operating temperature of the cylinder block (crankcase). This design change reduces the friction and thereby reduces fuel consumption.



These two changes were achieved in the M52 TU by having the coolant flow directly to the cylinder head from the water pump. The system is referred to as a partial engine cooling concept (MTK).



The coolant is fed by the water pump through a cast coolant feed passage in the cylinder head to the rear of the cylinder head. From there it flows forward to the thermostat housing, radiator and output to the controlled inlet of the heater core.

The water passages in the cylinder block are only connected to the coolant supply and metered through the holes in the head gasket. A reduced volume of the coolant flows through the cylinder block.

Map Cooling Thermostat

As a further measure for controlling the engine's operating temperature, the heated thermostat, introduced on the M62 engine, is carried over to the M52 TU engine. The heated thermostat allows the engine to be operated at higher controlled temperatures during low and part throttle conditions which reduces the fuel consumption of the engine.

The thermostat heating which opens or closed the thermostat to control the engine temperature is controlled by the DME. Any problems will be diagnosed as part of the DME system using the DIS or MoDiC.

