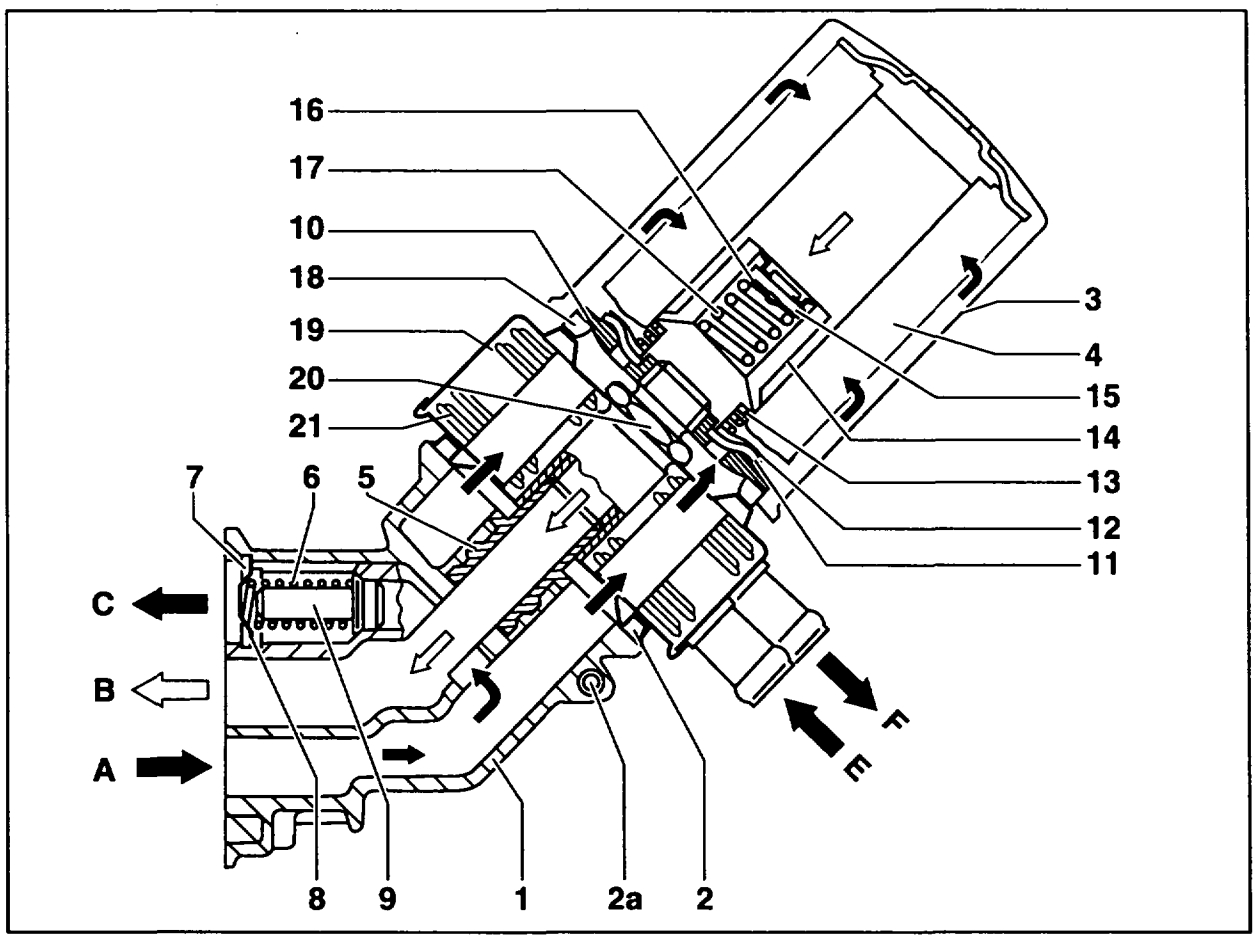

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	Oil filter		**Return flow shut-off valve**
1	Bottom part of oil filter	14	Valve holder
2	Seal	15	Valve plate
2a	Oil pressure sensor connection (clean side)	16	Valve plate carrier
3	Replacable cartridge	17	Compression spring
4	Filter element	18	Seal
5	Connection fitting		
		19	Oil cooler
	Oil filter bypass valve	20	Central bolt
6	Compression spring	21	Cooling plates
7	Circlip		
8	Spring plate	A	Feed from oil pump
9	Valve cone	B	Filtered oil to main oil gallery
		C	Unfiltered oil to main oil gallery
	Oil drain lock	E	Coolant from crankcase
10	Pressure plate	F	Coolant to coolant pump
11	Rubber diaphragm		
12	Spring plate		
13	Compression spring		

Operation

The engine oil-to-coolant heat exchanger cools the engine oil by about 7 – 10° Celsius. The heat exchanger is positioned between the bottom part of the oil filter (1) and the replacable cartridge (3) and is connected to the coolant circuit. The coolant flows from the crankcase (E), and returns (F) along the return flow pipe to the coolant pump. The unfiltered engine oil flows from the bottom part of the oil filter (1) through the oil cooler (19) to the replacable cartridge (3) and through the central bolt (20) to the main oil gallery (B).

Depending on the temperature of the engine oil, a varying partial quantity of oil flows through the cooling plates (21) which are surrounded by coolant. The other partial oil quantity flows to the replacable cartridge (3) without being cooled.