

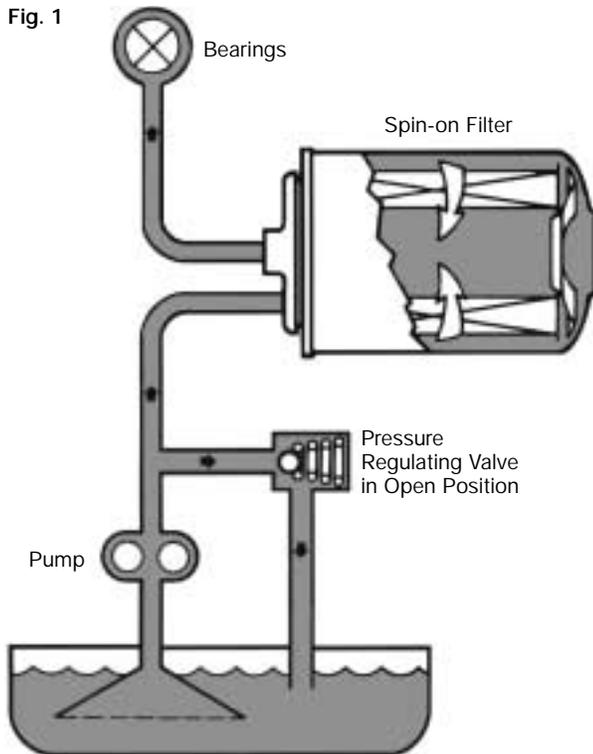
Over-Pressurized Lube Oil Filters

Over-pressurized oil filters: the causes, the solutions.

The oil pressure drops, The red "CHECK ENGINE" light flicks on or the oil gauge drops to zero. You stop your car and check under the hood: your oil filter looks like it has burst. Understandably, you think the filter has failed. You send it back to the manufacturer. He denies any responsibility. You're upset, of course. If the filter didn't fail, what did happen?

Lube oil system problems are usually invisible. After they occur, a burst or deformed oil filter is often the only "evidence" you have. Yet it's misleading. Just as a blown fuse is not the cause of an electrical failure, a burst oil filter isn't the cause of excessive system pressure. Rather, it is the result of a faulty regulating valve located in the engine.

Fig. 1



How your lube system works.

Figure 1 is a simplified diagram of the lube oil system showing the oil pump, regulating valve, and bearings. To properly separate the engine parts and prevent excessive wear, the oil must be under pressure. The pump supplies oil at volumes and pressures greater than what the system requires to lubricate the bearings and other moving parts. The regulating valve opens to allow excessive volume and pressure to be diverted back to the oil pan without causing damage to the filter or engine.

On most automobiles, the regulating valve maintains an oil system pressure of 40 to 60 psi.

What causes over-pressurization?

Excessive engine pressure is the result of a faulty oil pressure regulating valve. There are two ways that the valve fails to operate correctly: either it sticks in the closed position, or it is slow to move to the open position after the engine has started.

Unfortunately, a stuck valve can free itself after filter failure, leaving no evidence of any malfunction.

Fig. 2

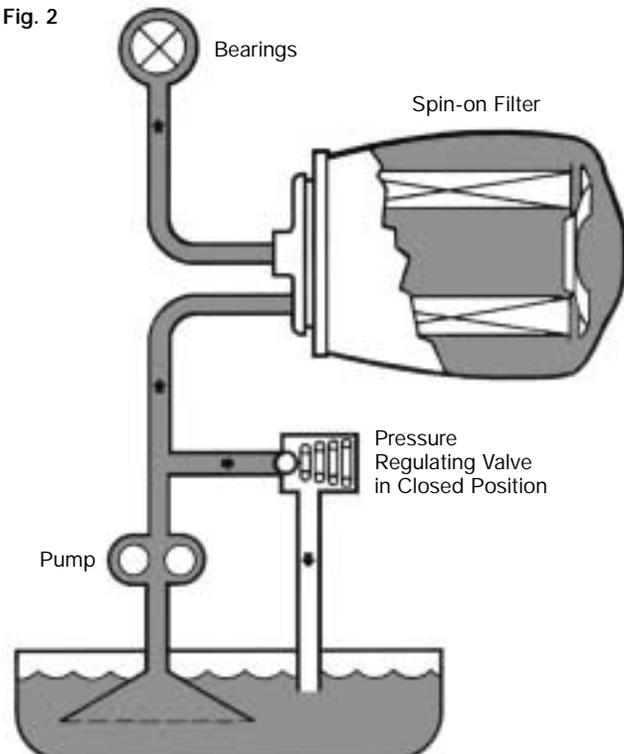


Figure 2 shows the system operating with the regulating valve stuck in the closed position. Pressure builds up equally on all components. If the regulating valve remains stuck, the pressure will increase dramatically. **Normal pressure plus 100 psi causes filter deformation.** If the regulating valve still remains stuck, the gasket between the filter and the base can blow out, or the filter seam will open. The system will then lose all its oil and pose significant risk to the engine. If you continue to run the engine without oil, considerable damage will occur.

How to minimize the risk of an over-pressurized system.

1. Change the oil and filter often, according to the engine manufacturer's instructions for frequency, viscosity, and type.
2. Warm the engine on cold mornings before starting to drive to allow oil to flow properly.