

Issue no. 3/2014: Oil filter OX 171/2D: engine damage caused by dangerous replicas

Time and again, repair shops and motorists are confronted with serious engine damage. The cause often lies in the installation of an oil filter that can barely function—because it lacks an important detail.

THE MAHLE PIN: MULTITASKING IN THE OIL FILTER
A black plastic mandrel with an O-ring seal is mounted at the end plate of the filter element—known throughout the industry as the MAHLE pin. In the assembled state, the pin fits precisely into the bore in the filter housing and seals it off.



Figure 1: Well thought-out to the last detail: the patented pin for the MAHLE oil filter insert with O-ring seal.

ALL CLEAN: THE AUTOMATIC OIL DRAIN
When unscrewing the cover during a filter change, the pin is pulled out of the bore, clearing it in the filter housing, so that any residual oil in the housing can drain into the oil sump.

This complete draining procedure is crucial:

- It prevents any remaining oil from squirting out of the housing when installing the new filter.
- It ensures that the used oil is completely replaced with new oil as far as possible.

The new MAHLE filter is also equipped with a pin and a seal. As a result, the return bore is completely closed again during assembly and during operation, all the engine oil is fed and cleaned through the filter paper—just as it should be.

SAFE ASSEMBLY USING THE MARBLE RUN PRINCIPLE
At the bottom of the filter housing there is a helical guide, similar to a marble run. By tightening the cover, the pin slides through this guide into the bore, where it snaps into place and locks.

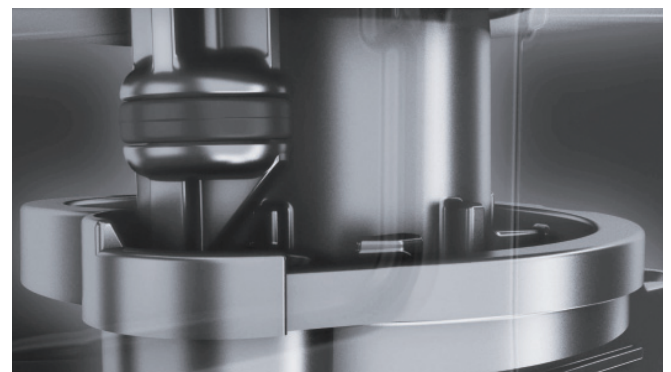


Figure 2: Patented and clever: illustration of the pin moving along the helix to the drainage bore in the housing.

TREACHEROUS COPIES WITH DESTRUCTIVE BLADES
In order not to violate MAHLE's patents, competitors have attached a large plastic blade to the end plate in their efforts to copy our filter insert.

This blade can turn into a destructive weapon: it can get caught when screwing the cover into the housing. In this case, the filter insert can no longer rotate. The fatal consequence: the pin can no longer slide along the helix, and the mechanic does not have a guide anymore to line up the pin exactly with the bore—an extremely difficult task.

Another problem: the sharp plastic blade can come dangerously close to the by-pass valve in the housing, damage it, and put it out of action. This means: the by-pass valve, which should only be opened for short periods in certain situations, is now permanently open—and lets the unfiltered oil circulate (unnoticed!) continuously through the engine. The inevitable consequence is serious engine damage!



Figure 4: Detailed view of the damaged by-pass valve.

WARNING: OIL PRESSURE PROBLEM

With any luck, the pin won't seal the drainage bore properly, which will result in noticeable oil pressure problems and bring the assembly error to the attention of the repair shop before any engine damage occurs.



Figure 3: Replica with blade: while it may not damage MAHLE's patent, it can potentially damage the by-pass valve on the engine.