

## Issue No. 4/2013: MAHLE LX 1780/3—anti-rotation protection in use

Every air filter element exhibits greater flow resistance around the pleated paper joint compared with other areas, as it acts as a seal. If the air mass flow meter is in close proximity to the filter element, metering of the air flow volume may be inaccurate depending on the position of the pleated paper joint leading to incorrect data being supplied to the engine management system. An inaccurate fuel injection quantity is calculated on the basis of this incorrect data preventing the engine from running optimally.

If the recorded values deviate heavily from the standard values, the driver will be notified via the on-board computer to take the vehicle to a repair shop—possibly incurring high consequential costs. It is not uncommon for a new air mass flow meter to be fitted and calibrated. The problem appears to be rectified, but if the filter insert is positioned differently when next replaced and the air mass flow meter is not calibrated for the flow conditions for this new position, this can again lead to incorrect measurements.

### THE PATENT-PENDING SOLUTION FROM MAHLE: ANTI-ROTATION ALIGNMENT LUG

In order to consistently achieve the same—or at the very least very similar—flow conditions in the filter housing and therefore enable reliable air flow metering, MAHLE has equipped one of the end plates of the air filter insert with an alignment lug that fits exactly into a recess on

the filter housing. This means the filter element is always inserted in the same pre-determined position in the filter housing and can no longer rotate once inserted. MAHLE has had this design feature protected and filed a patent accordingly.



*Figure 1: The alignment lug developed by MAHLE on the end plate ensures the filter element is correctly aligned and the air flow metering is precise.*

The MAHLE LX 1780/3 air filter insert is equipped with such an alignment lug. As it is clearly visible on the outside after installation, it is easy to visually check that the filter element has been correctly inserted.

Installing this air filter element has double the benefits: reduction of the fitting and maintenance effort thanks to the easy installation, as re-calibration is no longer required after replacing the filter ... and satisfied customers who can rely on accurate air flow metering after replacing the filter.

## ORIGINAL PART FOR FIVE MILLION VEHICLES

The MAHLE LX 1780/3 air filter insert is an original part for applications from Ford, Volvo, and Mazda, and has been specifically tailored to match the requirements of the vehicle manufacturers.



Figure 2: MAHLE LX 1780/3 air filter insert with patented anti-rotation protection

### VEHICLE MODELS (ACCORDING TO VEHICLE MANUFACTURER'S SPECIFICATIONS):

FORD C-MAX/GRAND C-MAX	1.6, 1.8, 2.0	from 2007
FORD FOCUS	1.4, 1.6, 1.8, 2.0, 2.5	from 2007
FORD KUGA	2.0	from 2010
MAZDA 3	1.6	from 2009
VOLVO C30	1.6, 1.8, 2.0	from 2007
VOLVO C70	2.0	from 2008
VOLVO S40	1.6, 1.8, 2.0	from 2007
VOLVO V50	1.6, 1.8, 2.0	from 2007

European fleet: > 5,000,000 vehicles