

Revision of automatic transmission with hydrodynamic operation principle



Automatic transmission revision or maintenance involves several operations, as follows:

- evaluation and remediation of external oil leaks at the mechatronics coupling or at plugging the oil cooler pipes onto the housing;
- oil change (approx. 7 liters out of 9.5 liters);
- changing the filter (as the case of the bath with built-in filter);
- ZF Testman diagnostics, error evaluation and deletion;
- reset transmission adaptations;
- drive test and function evaluation;

Oil is one of the most important "parts" of a hydrodynamic transmission having 3 functions:

lubrication, cooling and not least torque transmission. Thus the need to carry out the automatic transmission revision at the intervals prescribed by its manufacturer - ZF Getriebe Saarbrücken, results from the consideration that after a certain time and running, greater or less depending on the way the transmission is used or if there are modifications of the car (tuning), the oil loses its quality and initial characteristics (additive factors, viscosity, behavior / stability at temperature, contamination, etc.), which leads to premature wear of the transmission components and even its malfunction.

Regarding the oil exchange, a complete range of information regarding the exchange intervals, oil types and others can be found in the TE-ML 11 oil list (approved by ZF Getriebe Saarbrücken), which is available on the website [www. .zf.com](http://www.zf.com) at the link below:

https://www.zf.com/global/media/en_zf/lubricantslists/TE-ML_11.pdf

So, categorically, information emerges: Despite the concept promoted by the producers - "LIFETIME OIL", the oil must be changed to have a larger "LIFETIME" for transmission. In fact, by "LIFETIME", the producers understand the average life of the product which more or less coincides with the period (mileage) mentioned as maintenance interval for transmission by the manufacturer ZF Getriebe Saarbrücken. As for the oil change procedure, the "gravitational" method is the one recommended by the manufacturer ZF which involves the free drain of the oil from the box and the addition of the new oil through the "overflow" procedure (too full) at controlled temperature and the sequential passage of the steps of the position selector. This is why it is very important that the transmission be cold when starting the maintenance procedure in order to be able to adjust the oil level correctly, given that the hydraulic oil has quite large volume variations with temperature.



Be careful! Not always the amount of oil that is added is equal to the one that is leaking because the box may have lost oil in operation or may have been overfilled during another change.

The leakage of a certain amount of oil also depends on the type of the box, the configuration of the inner seals, the amount of oil left in the converter, the communications with the vents, the adjustments of couplings and brakes, etc. Therefore, one can only estimate, depending on the type of a box, how much oil is needed. In most cases, 7 liters of oil can be changed, after detaching the valve block from the communication area with the box.

It is forbidden to drain the transmission oil with the engine running!

It is also very important to look for the oil that comes from the point of view of the smell, the appearance, the color, the existence of metallic particles (in the oil and on the magnets of the bath) etc. which gives us an image of the box's operation and the state of internal wear.

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