



1. WHEN IT IS NECESSARY TO CLEAN THE COOLING CIRCUIT.

A cooling circuit maintained correctly, where the coolant has been changed following intervals defined by the vehicle manufacturer, never needs to be cleaned because the coolant has not attacked any of the metals that compose it.

Then, it has not been produced any aluminum or iron oxides that can be stored in the engine, radiator, expansion tank or any other element of the cooling circuit.

In the picture we can see that the coolant has not changed its color and that it has not been produced solid residues.

It is very important to verify the coolant introduced in a vehicle previously, because it must not be changed coolants of different type (organic, inorganic, hybrid).



2.-HOW TO CHECK IF A COOLING CIRCUIT HAS BEEN MAINTAINED CORRECTLY.

LOOKING INSIDE THE EXPANSION TANK AND THE PIPES.

Solid residues in the bottom of the expansion tank or inside the pipes walls is a sign that it is necessary to clean the cooling circuit.



LOOKING AT THE WATER PUMP.

"The aluminum water pump surfaces that have been in contact with the coolant shows valuable information."



"In water pumps assembled in cooling circuits filled with organic coolants, the alkaline PH of these coolants darken gradually the water pump surfaces that have been in contact with them. This effect is normal and is a sign of using a correct coolant."



WITHOUT USE.



MODERATE USE.



PROLONGED USE



Yellowish and reddish coloring, white spots, incrustations, the presence of white or red rust, indicate the use of an unsuitable coolant which will damage the two contact surfaces of the dynamic seal and cause the pump to leak.



REDDISH COLORING



INCRUSTATIONS AND WHITE POINTS



YELLOWISH COLORING



Outlet holes also provide information about the characteristics of the coolant used. Depending of the color and the darkness of the marks given by the coolant, we are able to know whether it is necessary or not to clean the cooling circuit.



CORRECT LIQUID.



INCORRECT LIQUID.

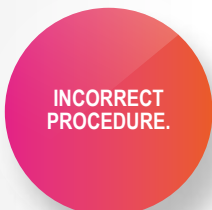


EXTREMELY INSUITABLE COOLANT

Outlet holes are machined in the water pump housings to allow outgassing and Little temporary leakage out of the cooling circuit, that are normal to keep these liquids from arriving to the water pump bearing, removing the bearing internal grease and producing bearing damages quickly.

3.-CLEANING PROCEDURE OF A DIRTY COOLING CIRCUIT.

If a cooling circuit is dirty, it should be cleaned to extend the life of all components of the cooling circuit, particularly the water pump.



"One of the most extended ways to clean the cooling circuit is simply to empty the coolant that is inside it by opening the circuit.
To do so, it is necessary to disengage the radiator lower hose or the tap that some cars have to do so."

"This way to clean the cooling circuit will only empty the 60%, and, in the best case, the 80% of the coolant. It has the problem that practically all the solid residues remain in the circuit because they are in the bottom surfaces of the engine."



"The solid residues that are inside the cooling circuit can be removed by applying a treatment with a chemical product 'oxide cleaner' or an 'oil cleaner', depending of the type of residues produced. After introducing the product, the engine must be started so the product will start working.

Afterwards, it is necessary to remove the liquids inside the circuit making several rinses with natural water.

In some vehicles, it is difficult to disassemble the thermostat, so it is necessary to perform intermittent rinses by stopping the engine to empty the cooling circuit and filling it once more. This procedure will be carried out as many times as necessary until the water that comes out from the radiator lower hose is clean.

This procedure has disadvantages such as the excessive time necessary to do it and that not all the residues are removed from the cooling circuit, because some of them are always in the engine bottom surfaces. There is a risk of damage because the water and engine are very hot."



"The best, most effective, quickest and safest way to clean the cooling circuit is to use a continuous cleaning machine with a chemical product 'oxide cleaner' or an 'oil cleaner', depending of the type of residues produced.

The machine performs a coolant recirculation at a controlled pressure that maintains all solid residues in suspension.

This procedure allows to optimize the extraction of residues renewing the coolant without stopping the engine, by only working with this machine outside the engine.

During the process, the machine will be working until the solid residues disappear."



4.-INDUSTRIAS DOLZ RECOMENDED MACHINE TO CLEAN COOLING CIRCUITS.

Amongst all the machines available in the market, Dolz recommends the use of Micrauto machines, that eliminate minimum 90% of the residues between 20 and 45 minutes depending of the dirtiness of the cooling circuit.