



### WATER PUMP LEAKAGE TEST.

The leakage of all the water pumps manufactured by Industrias Dolz is tested in automatic calibrated leakage tests equipment, that introduce air to the water pump surfaces in contact with coolant during a specified time and after passing a stabilizing time, it is checked if the air pressure drop is under tolerance.  
**Because of that, the water pump manufactured by us do not leak under proper working conditions.**

**SUITABLE SEALANT OF THE WATER PUMP CONTACT SURFACES.**

The sealing of the water pump housing is solved by the correct joint between the water pump housing and the engine holder or water pump back housing. The rugosity and tolerances between two contact faces make necessary to add an additional component to correct them and to avoid leakage between the contact faces.

THE ELEMENTS THAT ARE USED TO ASSURE THE SEALING OF THE WATER PUMP CONTACT SURFACES ARE:

#### FLAT SURFACES.

Para conseguir la perfecta estanqueidad de superficies planas se To achieve the perfect sealing of flat surfaces it can be used paper gaskets, metallic gaskets, O-rings or metallic gaskets with injected rubber. The aim of the gaskets is to avoid leakage between two contact surfaces.

#### CYLINDRICAL SURFACES.

To achieve the perfect seal of cylindrical surfaces, it is used O-rings.



**WHEN IT IS RECOMMENDED THE USE OF SEALANT PASTE TO ASSURE THE SEALING OF THE CONTACT SURFACES.**

If the contact surfaces have not knocks or damages, it is not recommended the use of additional sealant pastes. **Only it is necessary the use of sealant paste in that references where the water pump is not supplied with gasket.** In the below picture we can see one of these cases. It can be seen in the below pictures that the water pump engine contact surfaces have grooves that allow a good sealant using sealant paste.

In case that the water pump is supplied with gasket but engine contact surfaces are not free of damages, it will be recommended to add sealant paste in both faces of the gasket to increase the capacity of the gasket to correct irregularities. If it is

applied a gross film of sealant paste, it can be lost the perfect parallelism between two contact surfaces and then could be produced misalignment of the water pump pulley. A gross film of sealant paste can also produce water pump leakage in the way we describe below.



Sealant correctly applied where it should be recommended.

**WHY AND WHEN IT IS PRODUCED THE WATER PUMP LEAKAGE DUE TO THE PRESENCE OF SEALANT IN THE COOLANT**

Any particle of sealant paste that circulates by the cooling circuit can affect the correct function of the dynamic seal and to produce a premature failure of it.

The way of failure depends on the volume and quantity of the particles of sealant found.

#### OPTION 2.

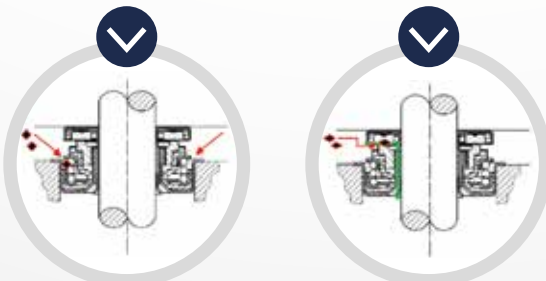
**Big particles (around 1 mm)** can introduce inside the dynamic seal spring, the spring function can be affected or even can be blocked. These particles can introduce inside the dynamic seal spring by passing by the little space that exists between the graphite ring and the metallic bush. The function of the spring is to balance the hydrostatic pressure of the coolant, maintaining always two dynamic rings in contact.

#### OPTION 3.

**Small particles (< 0.5 mm.)** can introduce between two dynamic seal contact faces, creating an imperfect contact between them and the water pump leakage. Two dynamic seal contact rings are lubricated by a slim coolant film that is created by the coolant that introduces between two contact faces due to the rugosity of that surfaces. Of course, the coolant evaporates when arrives to the bearing shaft. If these particles introduces in the dynamic seal, the contact will not be uniform and it will be produced water pump leakage.

#### OPTION 1.

**Very big particles (>10 mm),** reach the dynamic seal because the surface that is under the impeller is a low pressure area. This pieces of sealant can cover the dynamic seal, to limit the contact of the coolant with the dynamic seal and producing an incorrect lubrication of the dynamic seal.



**EFFECTS OF SEALANT INCORRECTLY USED (EXAMPLES)**