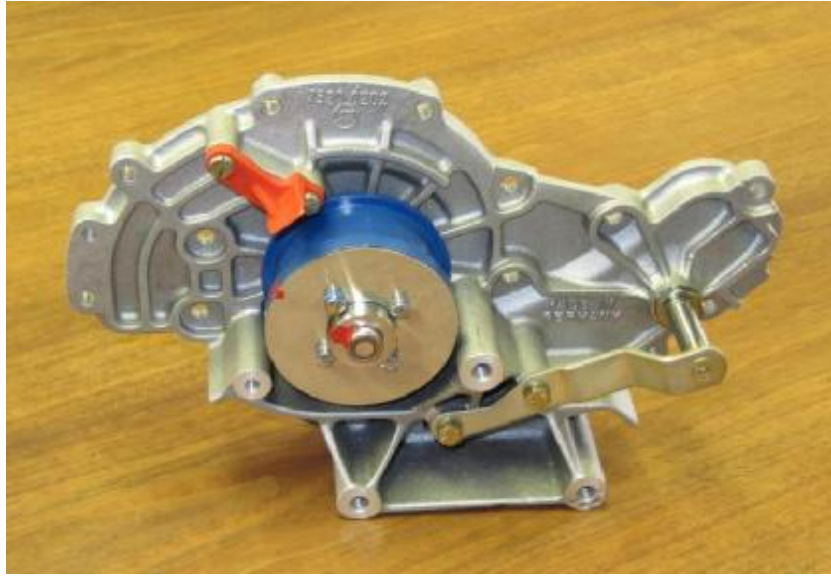


The Engine Guardian Water Pump Drive System (EGDS)TM



Perfex Manufacturing, Inc.

EGDS was developed for the Porsche 928 32 valve engine because of the need to prevent catastrophic engine damage in the event of a water pump failure. The water pump is driven by the timing belt which also drives the camshafts. If the water pump shaft seized or became difficult to turn this would cause the timing belt to fail and in return cause internal damage to the valve train by way of piston to valve contact.

The **EGDS** incorporates a separate large double row ball bearing to do the job of idler pulley in the valve train system, and couples that energy to spin the water pump shaft via a consumable coupler. The consumable coupler is engineered to shear itself from its drive sprocket at a load point less than the load point that would cause the timing belt to slip or stop.

The **EGDS** protects the valve train in case of pump failure and increases the life of the water pump shaft bearing immensely as it no longer has to carry the load of the valve train. Also, the separation of linear side to side loads from the timing belt tracking issues from the shaft to the larger bearing eliminate pulley and impeller migration which has also been a ticking time bomb in these engines. The **EGDS** increases the life of the water pump as a result.

The **EGDS** includes a removable cover to allow inspection/ replacement of the coupler at anytime. The removable cover also allows the inspection of the water pump shaft and drive bearing play at service intervals. The **EGDS** impeller is drilled and pinned to the shaft for added measure to assure no migration into the engine block.

Pumps that are received for modification are inspected at time of arrival including shipping box condition and pump condition. Perfex Manufacturing, Inc. assign the pump an ID number and perform a pre mod test and inspection of all parts and pump condition, as well as Impeller clearance, bearing stiffness/noise and a torque test. These items are continuously monitored during the disassembling and assembling of the pump to ensure no damage has been done during the process. During assembly at Perfex Manufacturing, Inc. all operations are paint marked after completion to assure quality. A final inspection and torque test and the pump is packed with a focus on impeller and drive pulley protection, and a copy of the report for the customer's records.

Perfex Manufacturing, Inc. offers brand new water pumps with **EGDS** as well as in house rebuilt pumps with **EGDS**.

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