

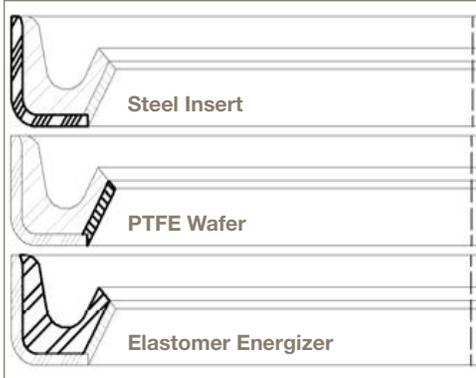
Three-Piece Seal

Engineered Solutions
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Problem:

In the past, two primary seal technologies have been used to seal rotating transmission shafts. The inherent flexibility and elasticity of simple elastomeric seals absorb larger tolerances and can function even with some wear. Elastomer seals will gradually wear under pressure when used on shafts rotating at significant speeds. Polytetrafluoroethylene (PTFE) seals exhibit lower dynamic wear than elastomeric seals, and are capable of surviving at higher pressures and shaft speeds. However, PTFE alone lacks the elasticity required to maintain seal pressure and function over time due to the combined effects of wear and creep.



Solution:

Parker Engineered Seals Division designed a three-piece sealing technology which combines the advantages of PTFE and elastomeric seals. With the development of reliable manufacturing processes bonding PTFE to elastomers, Parker ESD has created a three-piece seal consisting of a steel insert, elastomer energizer, and PTFE sealing interface as shown to the left. The steel insert on the outside of the seal provides retention in a bore and structural support for the lip seal configuration. A PTFE wafer bonded to the inside lip creates a low-drag sealing surface. An elastomer bonded to both the outside steel insert and inside PTFE wafer, energizes the wafer which generates reliable, long-term seal contact pressure. The three-piece seal is molded in a lip configuration, minimizing load on the shaft to optimize efficiency and durability. The three-piece seal energizes when exposed to application pressures, improving overall sealing capabilities when the application demands are highest.

Applications: Any automotive or heavy-duty transmissions which requires reliable, long-term sealing with low friction can benefit from this three-piece seal technology.

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Contact Parker Engineered Seals Division and ask for a product engineer to review your application and see what opportunities are waiting to be discovered!



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