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More than hot air

Simple sealing solution for use in small compressors

Industrial, medical technology and automotive applications are increasingly using compressed air. Dry-running compressors are suitable for such applications. As a matter of fact, oil-free systems are a prerequisite for using small, mobile compressors to generate air. A vast array of seals and guiding elements made from PTFE compounds is available for oil-free operations.

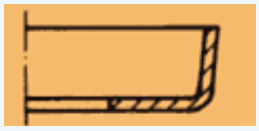
Wobble piston compressor with Elring Memory Packing (red)

For over 40 years, ElringKlinger Kunststofftechnik has been offering a comprehensive range of PTFE high-performance plastics for seals and engineering design elements. These plastics solutions are being used in virtually all industrial sectors employing state-of-the-art technology and in a large variety of different products and product versions. The EMT memory cup packing is used as a packing for wobble piston compressors. This type of packing is well-suited for sealing the piston. The packing adapts to the changing installation conditions resulting from the wobbling motion. In addition, the benefits of the PTFE seal precisely address the requirements of small compressors, such as minimal wear, low friction, no stick-slip effect, and thus low start-up forces even after long down times, as well as high temperature resistance. Small compressors are lightweight units, consisting of a small number of assembly components, and require virtually no maintenance. The air generated by these compressors is clean, oil-free odorless.

Portable analytical equipment

In industrial environments, portable analytical devices are fitted with small compressors, allowing the user to operate freely, without connection to the stationary compressed air supply system. For creative work, such as airbrush painting, advantages like low weight and higher mobility are particularly important. Hence, such systems are used by both, private individuals pursuing a respective hobby, and professionals.

Small air compressors were initially used in motor racing (cars and bikes) as well as in special-purpose vehicles, replacing the inevitable compressed air cylinder. Today, these alternative air systems are increasingly making their way into automotive engineering. Examples of applications for small compressors in automobiles include transmissions with electro-pneumatic systems, systems controlling tire pressure while the vehicle is in motion, pneumatic opening/closing mechanisms for convertible tops as well as pneumatically actuated valves in the engine.



EMT Memory Packing

These small systems are either used as modules, or the compressor is integrated into a larger system. Key criteria to be met in this regard are low weight and long service life, requiring no maintenance. A well-known application in respiratory therapy is compressed air for inhalers. The small and lightweight compressor generates air at the required level of pressure to create a fine mist of the therapeutic substances. In this case, the compressor is a wobble piston-type with a plastic cylinder. The memory cup packing (shown in red in the figure above) was custom-designed for the following specifications:

- Low friction for reduced power consumption, as the device is partially being operated with battery power
- Wear resistance for long service life and low abrasion of the seal
- Compound suitable for medical applications. The material used is a PTFE compound with harmless components for this type of application. The manufacturer uses an extremely fine filter to separate any abrasion particles from the seal and mating surface.

Each application is unique

Manufacturers of compressors supply equipment manufacturers with more and more compact and lightweight compressors. Today, miniature modular devices, smaller than a pack of cigarettes, are available. The EMT memory cup packing is a lip seal, designed and developed jointly with the customer's design engineer to meet the specific requirements of the application. The material used is a PTFE compound meeting the operating limits for this type of seal. These are: temperatures between –40 and + 200°C, pressures of up to 20 bar and vacuum, and sliding speeds of up to 5 m/s. As each application is unique, ElringKlinger Kunststofftechnik aims to develop a high-performance sealing element that best meets the customer's requirements as well as offering a good cost/benefit ratio.

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