TURBOCHARGER SEAL

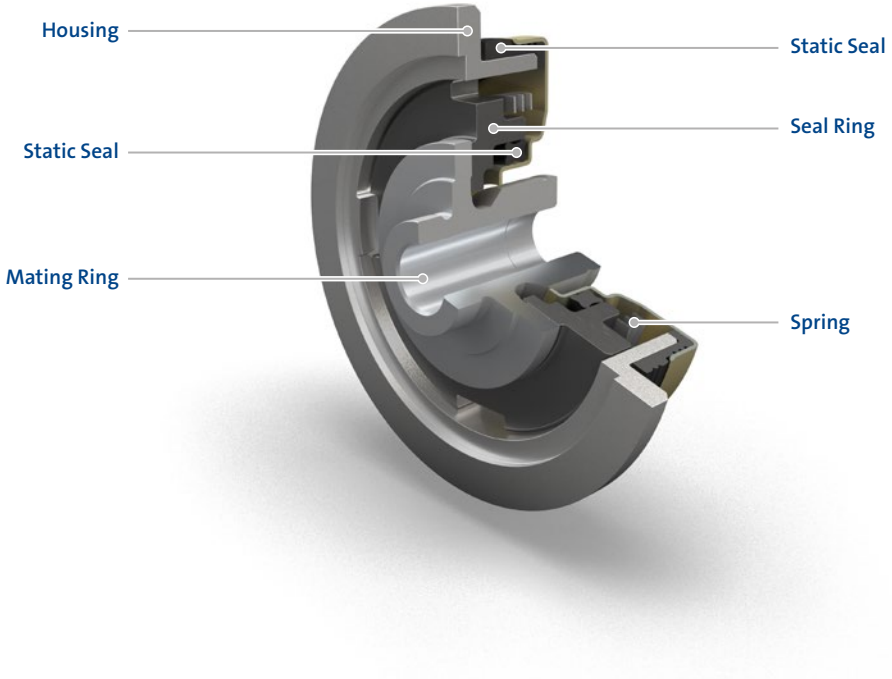
Turbocharged gasoline and diesel engines contribute to a drop in CO_2 emissions while the engine output is held constant.

Freudenberg Sealing Technologies offers a turbocharger seal in the form of a gas-lubricated mechanical face seal that replaces the standard piston ring. The turbocharger seal can be used on the compressor side of all mechanical charger, electric charger, and turbocharger designs.

VALUES FOR THE CUSTOMER

- Eliminates oil leakage and reduces blow by up to 90%
- Almost no friction losses due to gas film between the sealing surfaces
- Contact-less sealing: leads to very low abrasion and increased product life
- Easy assembly: the turbocharger seal is delivered as a complete unit
- Wide range of rotational speeds of up to 250.000 rpm
- Extreme resistance to high temperature with the ability to handle short heat bursts of up to 200° C
- Ideally suited for applications with fast-rotating shafts with a centrifugal speed v ≥ 30 m/s

Turbocharger Seal construction scheme:



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FEATURES & BENEFITS

Reduction in oil leakage
Oil leakage leads to a reduction in engine efficiency due to the soiling of the charge air cooler and can lead to a total breakdown of the engine. Oil burned in the engine tends to accelerate the incineration of the particle filter and thus its design must be enlarged. Escaped motor oil can also damage the catalytic converter. The turbocharger seal prevents oil leakage when the engine is stopped as well as at positive- and negative-pressure (0,3 to 5 bar).

Reduction of blow-by:
The flow of leaked air through the seal (blow-by) leads to undesirable effects in the engine compartment. The air is mixed with acidic components from the exhaust gas recirculation (EGR), which leads to a long-term deterioration of the oil's composition. Freudenberg Sealing Technologies innovative turbocharger seal can reduce blow-by up to 90 percent which can increase the lifetime of the engine.

Alternative applications:
The turbocharger seal can also be used in a wide variety of applications with similarly high rotational speeds when a gas is available as a "lubricant," such as, turbo tools and compressors in fuel cells applications.

The turbocharger seal is adaptable to meet the needs of any application. New varieties of turbochargers can be specifically designed and tested to meet an applications specific operating conditions.

With the sealing gap minimized, the flow of air is significantly reduced compared to conventional one- and two-step solutions with piston rings. As the shaft rotates, a contact-less, self-regulating, and minimal sealing gap is created though which air is pumped to create a barrier against the oil pressure.