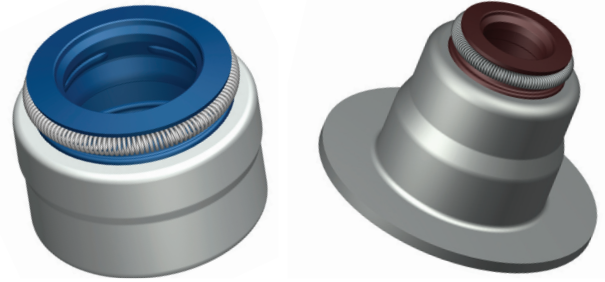


VALVE STEM SEALS

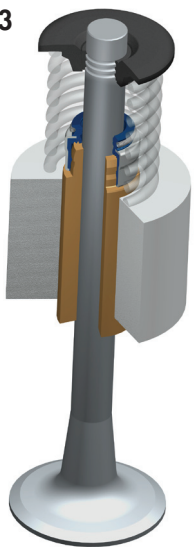


Freudenberg Sealing Technologies valve stem seals control leak rate for the life of the engine to assure correct guide lubrication while avoiding excessive oil consumption.

Prevent any flow of blow-by gas from the manifold to the engine head with: special metal case for improved seal retention, special lip geometry to further increase Lip Opening Pressure (LOP).

Freudenberg Sealing Technologies valve stem seals are produced from high-performance materials which lead to increased lifetime and lower wear. They are supplied in a variety of geometries to satisfy different assembly needs. Different valve stem seal types are also available to match customers' application requirements.

VA03



VA09

VA03 with an integrated flange at the bottom that replaces the spring washer normally fit separately



VALUES TO THE CUSTOMER

Freudenberg Sealing Technologies valve stem seals offer premium service capabilities:

Engine performance benefits

- Improve engine (mechanical) performance
- Constant performance over life of the engine
- Reduced valve train wear rate
- Increased engine efficiency

Product development for customers' specific requirements and needs

State-of-the-art manufacturing process with "global footprint" technology

Continuous technical support and expertise throughout the project lifetime, established by a strong, cooperative partnership with our customer

VALVE STEM SEALS

FEATURES AND BENEFITS

OIL METERING

"CONTROLLED LEAKAGE" CONCEPT

Avoid inadequate oil flow and its effects

- Increased valve train wear rate
- Premature valve train failure
- Increased valve train noise
- Higher local temperature

Avoid excessive oil flow and its effects

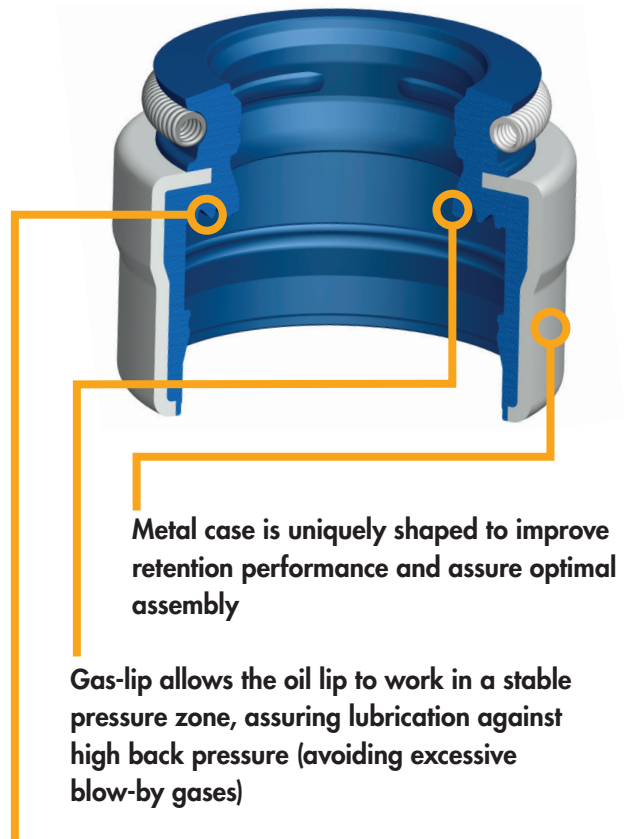
- High oil consumption
- Lower engine efficiency
- Poor catalyst performance

BLOW-BY CONTROL

PREVENT EXHAUST GASES PASSING THROUGH THE SEAL

Avoid inadequate control and its effects

- Insufficient lubrication causes:
 - Increased valve train wear rate
 - Premature valve train failure
 - Increased valve train noise
 - Higher local temperature
- Engine oil contamination
- Power loss
- VSS damage



Metal case is uniquely shaped to improve retention performance and assure optimal assembly

Gas-lip allows the oil lip to work in a stable pressure zone, assuring lubrication against high back pressure (avoiding excessive blow-by gases)

"Wave-shaped rubber support" assures flexibility while maintaining the adequate integrity of the gas-lip

The information contained herein is believed to be reliable, but no representation, guarantees or warranties of any kind are made to its accuracy or suitability for any purpose. The information presented herein is based on laboratory testing and does not necessarily indicate end product performance. Full scale testing and end product performance are the responsibility of the user.