

# ORD Problem Solved!

## ParkerSlick

Parker's innovative external coating, ParkerSlick, was designed to provide excellent adhesion and friction properties beyond that of standard polytetrafluoroethylene (PTFE) coatings. It not only serves as an identification aid, but also reduces drag friction during installation and dynamic applications. Its uses are broad enough to accommodate any market and application, from general assembly lines to critical hydraulic valves.

ParkerSlick is dry to the touch and does not flake off. It comes in an array of contrasting colors which can be used to help distinguish between similar parts on assembly lines.

## Success Story

### Application:

Diesel engine turbocharger

### Problem:

A large turbocharger manufacturer was having recurring field issues, where routine sensor replacement was prevented by the O-ring on the sensor bonding into the mating bore of the turbo. This caused the fragile plastic body of the sensor to be damaged during the extraction process, due to excessive force being applied to remove the seal. This minor maintenance issue turned into a major repair, requiring removal of the entire turbo assembly from the engine.

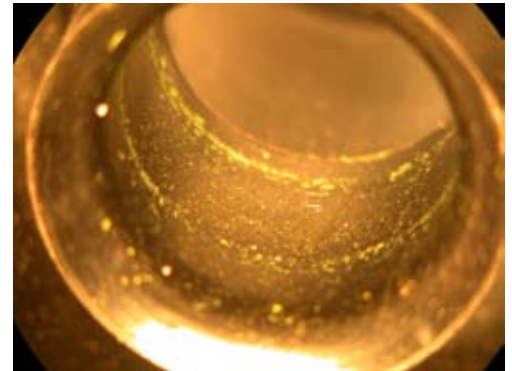
The customer also had a second issue where the same seal was leaking intake pressure at extreme low temperatures below  $-30^{\circ}\text{C}$ . This was causing a loud whistling sound when the engine was started in cold conditions, which was annoying to the operator and inefficient to the engine.

### Parker Solution:

Parker constructed a test plan using actual sensors and various FKM compounds and coatings. These parts were assembled into an aluminum bore (to simulate the turbocharger body) then heat aged in Parker's ISO 17025 aerospace certified laboratory for 168 hours at  $200^{\circ}\text{C}$ . The results demonstrated that V1289-75 (FKM) did an excellent job of resisting permanent bonding to the aluminum bore when used with a ParkerSlick coating. After the heat age was complete, only a light prying force was needed to extract the sensor and the O-ring with no damage to either. V1289-75 has a temperature range of  $-46^{\circ}$  to  $200^{\circ}\text{C}$  ( $-50^{\circ}$  to  $392^{\circ}\text{F}$ ) which matched the customer's challenging high and low temperature sealing requirements. Previous testing showed that ParkerSlick on FKM was an excellent choice for reducing O-ring sticking in plastic bores (see Figures 1 & 2).

### Outcome:

Parker provided custom samples from their Rapid Prototype Cell for the customer to test on actual turbochargers. The results were unanimous; elimination of low temperature leaks with no damage to O-rings or sensors during sensor removal at the completion of heat aging trials. The customer implemented V1289-75 with ParkerSlick for both field service fixes and in production parts.



**Figure 1** Sample bore after heat aging in contact with competitor's PTFE coating. You can clearly see witness lines where the coating bonded to the bore



**Figure 2** Same sample bore but after heat aging using Parker FKM O-rings with ParkerSlick coating. No coating has bonded into the plastic bore and there are no witness marks from O-ring contact