

Rod seals TTI/L

DESCRIPTION

TTI series rod seals are asymmetric-lip dynamic seals made of Tecnolan polyurethane, designed for hydraulic applications under standard and heavy-duty operating conditions. The inner lip, shorter and more robust, provides dynamic sealing on the rod, while the outer lip ensures static retention of the seal inside the cylinder housing.

PROFILES AND VARIANTS

TTI and TTI/L

TTI Standard

Asymmetric-lip profile made of compact polyurethane with high elastic memory, developed to combine static sealing on the outer housing with dynamic sealing on the rod.

Geometry	Asymmetric lips
Material	Tecnolan polyurethane
Configuration	Single lip

TTI/L

Evolution of the TTI profile featuring a second stabilizing and internal scraper lip positioned on the dynamic side. The geometry is designed to improve sliding performance and radial stability of the rod.

Geometry	Double lip
Second lip	Stabilizer / Scraper
Function	Micro-lubrication and radial stability

MATERIALS

Materials and operating conditions

MATERIAL	COMPOUND	LINEAR SPEED	TEMPERATURE	MAX PRESSURE
Standard PU	Tecnolan 93 ShA	Up to 0.5 m/s	−40 / +110 °C	Up to 40.0 MPa 400 bar
Special PU	Tecnolan 95 ShA	Up to 0.5 m/s	−35 / +120 °C	Up to 50.0 MPa 500 bar

COMPATIBLE FLUIDS

Mineral-based hydraulic oils, standard lubricants, synthetic greases and environmentally friendly biodegradable hydraulic fluids.

FEATURES

Main features

Asymmetric geometry

The lip geometry distributes radial loads between the dynamic rod surface and the static housing, helping to reduce friction under no-load conditions and increase the sealing effect as circuit pressure rises.

Tecnolan elastic memory

The polyurethane compound maintains the radial preload required for proper lip contact throughout operating cycles, contributing to stable performance over time.

Extrusion resistance

The polyurethane formulation and profile geometry counteract seal deformation into the mechanical clearance during pressure peaks.

TTI/L SPECIFIC FEATURES**Second dynamic lip**

The additional lip of the TTI/L version contributes to rod stabilization under misaligned loads and retains a thin lubricant film on the sliding surface. This configuration reduces static friction and provides an additional barrier against micro-leakage.

ADVANTAGES**Advantages of the TTI / TTI-L profile****Static and dynamic sealing**

The different geometry of the two lips allows the housing retention function to be separated from the dynamic sealing function on the rod.

High pressures

The available Tecnolan compounds allow applications up to 400 bar in the standard configuration and up to 500 bar with Special PU 95 ShA.

TTI/L sliding performance

The second lip of the TTI/L variant promotes rod micro-lubrication and helps reduce stick-slip and wear during reciprocating motion.

APPLICATIONS**Typical applications**

- Industrial hydraulic cylinders, machine-tool cylinders and industrial automation
- Earth-moving machinery, excavators, front loaders and wheel loaders
- Agricultural machinery, tractor lifting cylinders, combine harvesters and forestry equipment
- Forklifts, hydraulic tail lifts, aerial platforms and logistics handling equipment
- Light and medium hydraulic presses, clamping cylinders and linear hydraulic actuators

TTI/L: the double-lip variant is particularly suitable for rods subject to micro-vibrations.

COMMERCIAL EQUIVALENTS**Market equivalents**

MANUFACTURER	TTI STANDARD	TTI/L - SECOND LIP
Net Seals	TTI	TTI/L
Guarnitec	TTI	TTI/L
Freudenberg (Simrit)	Merkel® T20	Merkel® T24 / T22
Parker Prädifa	Profile B3 / BD	Profile BS