

# Rod seals TTS/L

## DESCRIPTION

TTS and TTS/L series rod seals are asymmetric-lip dynamic sealing elements made of high elastic-memory thermosetting Tecnolan polyurethane. The inner dynamic lip, shorter and more robust than the outer static lip, promotes correct distribution of radial loads, reducing friction and counteracting extrusion phenomena in the presence of high pressures in the hydraulic circuit.

## PROFILES AND VARIANTS

### TTS, TTS/L and TTS/X

|                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                         |
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| <b>TTS Standard</b><br><br>Single asymmetric-lip profile, optimized for standardized housings and hydraulic applications with variable pressures.<br>Geometry <b>Single asymmetric lip</b><br><br>Material <b>Tecnolan PU</b><br><br>Application <b>Standard / heavy-duty hydraulics</b> | <b>TTS/L Advanced</b><br><br>Variant featuring a second stabilizing dynamic lip on the inner diameter. The additional lip retains a thin lubricant film and contributes to seal stability during rod movement.<br>Geometry <b>Double dynamic lip</b><br><br>Function <b>Stabilization</b><br><br>Lubrication <b>Controlled film on the rod</b> | <b>TTS/X Reinforced</b><br><br>Special configuration equipped with a rear anti-extrusion ring, suitable for applications with high pressure peaks or larger radial mating clearances.<br>Reinforcement <b>Anti-extrusion ring</b><br><br>Material <b>POM / Filled Nylon</b><br><br>Position <b>Rear</b> |
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## MATERIALS

### Materials and operating conditions

| MATERIAL                    | COMPOUND | MAX SPEED     | TEMPERATURE   | MAX PRESSURE                     |
|-----------------------------|----------|---------------|---------------|----------------------------------|
| <b>Tecnolan PU Standard</b> | 93 ShA   | Up to 0.5 m/s | −40 / +110 °C | <b>Up to 40.0 MPa</b><br>400 bar |
| <b>Tecnolan PU Premium</b>  | 95 ShA   | Up to 0.5 m/s | −35 / +120 °C | <b>Up to 50.0 MPa</b><br>500 bar |

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| <b>STRUCTURE</b><br><br><b>Polyurethane and reinforcement</b><br><br>The polyurethane is formulated to provide high resistance to hydrolysis and mechanical wear. For reinforced configurations, an anti-extrusion ring made of Polyoxymethylene (POM) is available.<br>Main material <b>Tecnolan PU</b><br><br>Optional reinforcement <b>Reinforced POM</b> | <b>COMPATIBLE FLUIDS</b><br><br>Mineral-based hydraulic oils, synthetic and environmentally friendly biodegradable lubricants, water-oil emulsions and universal industrial lubricating greases. |
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**FEATURES**

## Features and advantages

**Asymmetric-lip geometry**

The short dynamic lip generates localized radial pressure on the rod surface, promoting rapid seal response during stroke reversals.

**Low Compression Set**

The Tecnolan compound maintains its elastic properties during operation, counteracting the loss of preload caused by prolonged thermal cycles.

**TTS/L double lip**

The second dynamic lip retains a controlled film of fluid on the rod surface, helping to reduce friction and stick-slip during slow strokes.

**Installation in closed grooves**

The flexibility and elastic memory of polyurethane facilitate insertion of the seal into closed internal housings, limiting the risk of lip damage during installation.

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

The secondary lip stabilizes the seal in the presence of vibrations or mechanical rod deflections and maintains a thin micro-lubricating film on the dynamic surface, helping to reduce wear and micro-leakage.

**APPLICATIONS**

## Typical applications

- Industrial hydraulic cylinders for standard and heavy-duty applications
- Agricultural machinery, lifting equipment and tipping trailers
- Earth-moving machinery, light excavators, skid-steer loaders and front loaders
- Aerial work platforms, forklifts and logistics handling systems
- Multistage telescopic hydraulic cylinders subject to rapid changes in extension and pressure

**COMMERCIAL EQUIVALENTS**

## Market equivalents

| MANUFACTURER / BRAND                | TTS - SINGLE LIP    | TTS/L - DOUBLE LIP      |
|-------------------------------------|---------------------|-------------------------|
| <b>Net Seals</b>                    | TTS Rod Seal Series | TTS/L Rod Seal Series   |
| <b>Guarnitec</b>                    | TTS Profile         | TTS/L Profile           |
| <b>Freudenberg (Simrit) Merkel®</b> | T18 Profile         | T20 / TTI Profile       |
| <b>Parker Prädifa</b>               | B3 / BD Profile     | BS / BS Premium Profile |
| <b>Kastas Sealing Tech.</b>         | K22 Profile         | K32 / K38 Profile       |
| <b>Hallite</b>                      | 605 Series          | 621 / 658 TTI Series    |