

Rod seals TSE/AI

DESCRIPTION

TSE series rod seals are composite dynamic sealing elements designed for heavy-duty hydraulic cylinders operating under high pressure. The profile combines an elastomer sealing element with a reinforced rubber-fabric support, providing mechanical stability and resistance to deformation under load.

PROFILES

TSE configurations

TSE Standard Standard composite configuration with an NBR dynamic sealing lip vulcanized to a reinforced rubber-fabric support base. Dynamic element NBR Support Reinforced rubber fabric	TSE/AI Reinforced configuration with an additional rigid anti-extrusion ring positioned on the inner diameter, designed for high-pressure hydraulic applications. Reinforcement Internal /AI ring Material POM / High-modulus Nylon	TSE/AE Modified configuration with a reinforcement ring on the outer diameter, reconfigured for installation on single-acting pistons. Reinforcement External /AE ring Application Piston
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MATERIALS

Materials and operating conditions

ELASTIC ELEMENT	SUPPORT BASE	/AI REINFORCEMENT	LINEAR SPEED	TEMPERATURE	MAX PRESSURE
NBR High-resilience nitrile rubber	Rubber fabric Reinforced fabric impregnated with rubber	POM / Nylon Acetal resin or high-modulus Nylon	Up to 0.5 m/s	−30 / +110 °C	Up to 40.0 MPa 400 bar continuous for TSE/AI with active ring

COMPOSITE STRUCTURE NBR + Rubber fabric The mechanical structure is obtained by vulcanizing the sealing elastomer to the reinforced fabric support, forming a single compact element. Dynamic lip NBR Rear support Reinforced fabric impregnated with rubber Construction Combined vulcanization	/AI VERSION Anti-extrusion ring In the TSE/AI configuration, a rigid plastic ring is added to the inner diameter of the seal. The reinforcement bridges the radial clearance between the guide bush and the rod, counteracting elastomer extrusion during pressure peaks. Position Inner diameter Material POM / High-modulus Nylon Rated pressure Up to 400 bar
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COMPATIBLE FLUIDS

Mineral-based hydraulic oils, water-glycol solutions, aqueous emulsions and commercial lubricating greases.

FEATURES

Main features

Vulcanized composite compound

The vulcanized bond between NBR and reinforced fabric prevents relative movement between the dynamic lip and the rear support, forming a compact and mechanically stable structure.

Compact profile

The one-piece construction requires shorter longitudinal grooves than multi-component sealing systems such as traditional V-packing sets, allowing more compact cylinder heads.

Active /AI anti-extrusion

The reinforcement ring of the TSE/AI version counteracts elastomer intrusion into the radial clearance between the guide bush and the rod during impact loads and pressure shocks.

ADVANTAGES

Advantages of the TSE profile

High pressures

The combination of the rubber-fabric base and, in the /AI version, the POM ring allows the seal to operate in applications characterized by high hydraulic loads.

Tolerance compensation

The reinforced configuration is also suitable for maintenance and revamping of cylinders where mating clearances have increased as a result of wear.

Rod lubrication

The fabric component retains micro-particles of hydraulic fluid, contributing to lubrication of the sliding surface along the rod.

APPLICATIONS

Typical applications

- Heavy earth-moving machinery: excavators, backhoe loaders and demolition grabs
- Agricultural and forestry machinery: boom lifting cylinders, ploughs and log splitters
- Industrial vehicles, construction hydraulic cranes and articulated aerial platforms
- Hydraulic cylinders for industrial moulding presses and shearing machines

COMPLIANCE AND STANDARDS

Industrial standards

Nominal dimensions and internal housings manufactured according to the main international industrial standards for heavy-duty cylinders. The series is designed for interchangeability with the main established commercial configurations.

COMMERCIAL EQUIVALENTS

Market equivalents

MANUFACTURER / DISTRIBUTOR	STANDARD PROFILE	REINFORCED /AI PROFILE
Net Seals	TSE Rod Seal Series	TSE/AI Rod Seal Series