

Rod seals GIR HD

DESCRIPTION

GIR HD series rod seals are composite Slipper Seal sealing systems designed for double-acting hydraulic cylinders operating under heavy-duty conditions, with high pressures and high linear speeds. The system combines an outer dynamic ring made of filled PTFE with an internal energizing O-Ring that maintains the correct radial preload of the seal.

PROFILES

GIR HD configurations

GIR HD Standard Standard configuration with a Bronze-filled PTFE dynamic ring and an internal energizing O-Ring. Suitable for double-acting industrial hydraulic cylinders and earth-moving machinery. Dynamic ring PTFE / Bronze Energizer NBR or FKM O-Ring		GIR HD Custom Special variant formulated for applications characterized by extremely low lubrication or the presence of chemically aggressive fluids and complex hydrocarbons. Dynamic ring PTFE / Carbon-graphite or Glass Application Special conditions	
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MATERIALS

Materials and operating conditions

DYNAMIC RING	ENERGIZING RING	LINEAR SPEED	TEMPERATURE	MAX PRESSURE
Bronze-filled PTFE Standard Carbon-graphite or Glass-filled PTFE	NBR 70/75 Shore A FKM / Viton for high temperatures	Up to 15.0 m/s	-30 / +100 °C	Up to 50.0 MPa 500 bar continuous, depending on radial mating clearance

COMPOSITE SYSTEM PTFE dynamic ring The outer element forms the dynamic surface in contact with the rod. Filled PTFE provides a low coefficient of friction even at high sliding speeds. Standard Bronze-filled PTFE Custom Carbon-graphite / Glass-filled PTFE		ENERGIZATION Internal O-Ring The internal O-Ring applies the required radial force to the PTFE ring, helping to maintain sealing contact and compensate for misalignment, micro-deflection and wear of the guides. Standard NBR 70/75 Shore A High temperature FKM / Viton	
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COMPATIBLE FLUIDS Mineral hydraulic oils, hydrocarbon-based synthetic fluids, water-glycol emulsions, industrial lubricants and high-viscosity greases.

FEATURES

Main features

Reduced stick-slip

The low dynamic coefficient of friction of PTFE promotes smooth and uniform rod movement even at low speeds or under high pressure loads.

Uniform radial energization

The internal O-Ring applies constant pressure to the PTFE ring, maintaining seal preload even in the presence of micro-deflections or progressive wear of the mechanical guides.

Extrusion resistance

The thermomechanical stability of Bronze-filled PTFE allows the seal to operate at pressures up to **500 bar**, depending on the radial mating clearance.

ADVANTAGES

Advantages of the GIR HD profile

Service life

The abrasion resistance of the composite materials helps reduce seal wear and the frequency of maintenance operations.

Minimum axial dimensions

The compact geometry of the Slipper profile requires smaller housing grooves than traditional lip seals, allowing compact cylinder heads.

High linear speeds

The combination of filled PTFE and the energizing element allows linear speeds up to **15 m/s**.

COMPLIANCE AND STANDARDS
ISO 7425-2

Radial housing groove dimensions, rod geometric tolerances and surface roughness R_a / R_z according to ISO 7425-2 for low-friction hydraulic rod seal grooves.

COMMERCIAL EQUIVALENTS

Market equivalents

MANUFACTURER / DISTRIBUTOR	GIR HD PROFILE / EQUIVALENT
Net Seals	GIR HD Rod Seal Series
Trelleborg	Stepseal® V / Stepseal® 2K (equivalent Slipper profiles)
Parker	OE / OD Series
Extended interchangeability	RGS / RSB / GK / 19 / S03