

High pressure GB

DESCRIPTION

The GB series rotary shaft seals, also known on the market as high-pressure oil seals or BABSL type with hydrodynamic grooves, are special dynamic seals designed to operate under high internal back-pressure. The profile features a short, rigid main sealing lip, supported by a garter spring and provided with micro-grooves on its back surface to optimize fluid circulation. The smooth rubber-covered outer casing ensures static stability within the housing and counteracts the axial thrust generated by hydraulic pressure.

PROFILES

Type GB Standard

Reinforced single-lip profile with a short cross-section, internal garter spring, hydrodynamic micro-grooves on the inclined dynamic surface and a completely smooth elastomer outer diameter.

Type GB/DL

Variant equipped with a second auxiliary front dust lip on the air side, suitable for applications simultaneously exposed to internal hydraulic back-pressure and environmental contamination.

MATERIALS

Materials and operating conditions

MATERIAL / COMPOUND	PERIPHERAL SPEED	TEMPERATURE	MAX PRESSURE
NBR Nitrile rubber 70 / 80 ShA	Up to 12.0 m/s	−30 / +100 °C	Up to 1.0 MPa continuous 10 bar, with peaks up to 1.5 MPa depending on rotational speed
FKM Fluoroelastomer / Viton	Up to 35.0 m/s	−20 / +200 °C	—

REINFORCEMENT COMPONENTS

Internal structure

Internal reinforcement	Heavy-gauge stamped carbon steel, fully embedded and vulcanized
Garter spring	Stabilized spring steel
Spring option	AISI 302/316 stainless steel

COMPATIBLE FLUIDS

Mineral and synthetic hydraulic oils, high-viscosity fluid gear lubricants, greases and oil emulsions.

FEATURES

Main features

Short section with reinforced base

The lip geometry reduces the flexible area exposed to hydraulic pressure. The reinforced base counteracts outward lip deformation and keeps the sealing edge in contact with the shaft surface even at pressures up to 10 bar.

Hydrodynamic micro-grooves

The inclined back surface of the dynamic lip features molded helical micro-grooves. During shaft rotation, these act as a viscous-dynamic micro-pump, promoting the return of oil towards the inside of the housing and limiting pressure-induced micro-leakage.

Smooth rubber-covered outer casing

The full elastomer coating ensures static sealing against the housing. It compensates for thermal expansion of the metals and counteracts axial displacement caused by fluid pressure.

ADVANTAGES

Advantages of the GB profile

Sealing under hydraulic load

The profile is designed to withstand continuous pressures up to 1.0 MPa and can reduce the need for external leakage-oil drainage systems.

Minimum hydrodynamic friction

The structural rigidity of the short profile limits the increase in dynamic contact area under pressure, reducing localized heat generation and wear on the shaft surface.

Installation precision

The outer rubber coating reduces the mechanical force required for press-fitting into the housing and limits the risk of damage or scoring in seats made of aluminium or soft metals.

COMPLIANCE AND STANDARDS

International standards

Construction dimensions, geometric tolerances and installation dimensions in compliance with international standards and construction specifications for ISO 6194 hydraulic pumps and reinforced BABSL-type high-pressure series.

VARIANTS

Available configurations

NBR 70**Type GB Standard**

Reference configuration for standard mobile hydraulics and hydraulic motors operating at medium temperatures. It provides resistance to hydraulic pressure and long-term axial stability at a competitive cost.

ADVANTAGES

Excellent value for money, high elastic memory and easy stock management.

FKM / VITON**Type GB Premium**

Configuration for applications exposed to high peripheral speeds, up to 35 m/s, or subject to continuously high temperatures. The fluoroelastomer provides greater resistance to synthetic lubricants and to heat generated during operation under pressure.

ADVANTAGES

Continuous thermal resistance up to +200 °C, consistent spring radial load and protection against hydrodynamic wear.

COMMERCIAL EQUIVALENTS

Market equivalents

MANUFACTURER	TYPE GB STANDARD - NBR	TYPE GB PREMIUM - FKM / VITON
Net Seals	Pressure Oil Seal Series BABSL / GAP / GB	Viton Pressure Oil Seal Series BABSL / GB FKM
Freudenberg (Simrit)	Simmerring® BABSL Hydrodynamic Profile	Simmerring® BABSL FKM Hydrodynamic Profile
Parker Prädifa	TCN / BP Pressure Profile	TCN (FKM) Profile
Kastas Sealing Technologies	K33 / K34 Hydrodynamic Profile	—
Corteco	Pressure Oil Seal Series with Hydrodynamic Grooves	—
Dichtomatik	—	BABSL FKM Helix Profile
SKF	—	Viton Hydrodynamic High-Pressure Seals