

Rotating shaft oil seals M

DESCRIPTION

The M series rotary shaft seals, known on the market as metal-cased oil seals or Type M, are dynamic seals designed to ensure the retention of hydraulic oils and fluid lubricants. The profile features an exposed "L"-shaped outer metal reinforcement, precision-ground, and a dynamic elastomer lip preloaded by a garter spring. This configuration ensures absolute mechanical locking and high flatness within the housing.

PROFILES

Type M / WB Standard

Single dynamic sealing lip profile equipped with an internal garter spring and an exposed ground metal outer diameter.

Type M/DL

Double-lip variant, where applicable, equipped with an additional front dust lip without a spring, corresponding to the standardized WC profile, for protection against external contaminants.

MATERIALS

Materials and operating conditions

MATERIAL / COMPOUND	PERIPHERAL SPEED	TEMPERATURE	MAX PRESSURE
NBR Nitrile rubber 70 / 80 ShA	Up to 12.0 m/s Up to 0.5 m/s in low-speed applications	−30 / +100 °C	0.05 MPa Standard atmospheric pressure
FKM Fluoroelastomer / Viton	Up to 35.0 m/s	−20 / +200 °C	—

STRUCTURAL COMPONENTS

Metal structure

Exposed metal casing	Stamped and ground carbon steel
Casing option	AISI 304/316 stainless steel
Garter spring	Spring steel
Spring option	AISI 302/316 stainless steel for corrosive environments

COMPATIBLE FLUIDS

Mineral hydraulic oils, fluid gear lubricating oils, mineral and synthetic greases, water and fluid emulsions.

FEATURES

Main features

Ground metal outer diameter

The outer steel surface is mechanically press-fitted into the housing with precise diametrical interference. The metal-to-metal fit ensures structural locking in the housing, reducing the risk of torsional micro-movements.

Constant radial load

The spring positioned behind the lip applies calibrated and continuous radial pressure to the rotating shaft diameter. It compensates for elastomer ageing, vibrations and minor misalignments, maintaining the dynamic sealing area.

Sealing edge

The main lip is finished with a precise, sharp geometric cut. The angle creates a hydrodynamic wedge that uses the surface tension of the oil film to limit leakage and provide self-lubrication of the running surface.

ADVANTAGES

Advantages of the M profile

Torsional stability

The press-fitted metal casing eliminates axial movement and elastic rebound during installation and counteracts the risk of seal ejection caused by vibrations or mechanical shocks from the machine.

Liquid fluid sealing

The presence of the spring makes the seal suitable for very fluid, low-viscosity oils, maintaining correct alignment of the dynamic lip with respect to the axis of rotation.

Heat transfer

Direct metal-to-metal contact between the oil seal's outer casing and the housing promotes dissipation of the heat generated by friction between the dynamic lip and the shaft.

COMPLIANCE AND STANDARDS

International standards

Construction dimensions, geometric tolerances and installation dimensions in compliance with DIN 3760 Form B and ISO 6194-1 Type 1C standards, corresponding to the universal WB profile.

VARIANTS

Available configurations

NBR**Type M Standard**

Traditional configuration suitable for general heavy-duty mechanical applications. It is ideally suited to stable housings machined in cast iron or steel, where it provides effective oil sealing at competitive cost.

ADVANTAGES

Mechanical locking in the housing, high long-term geometric stability and wide availability of dimensional ranges.

FKM / VITON + STAINLESS STEEL**Type M Premium**

Specific configuration for high-speed shafts up to 35 m/s or operating at high temperatures in contact with aggressive synthetic oils. The use of stainless steel for the casing counteracts external oxidation, while the fluoroelastomer withstands special synthetic lubricants.

ADVANTAGES

Continuous thermal resistance up to +200 °C, high stability of the dynamic lip at high temperatures and protection against corrosion.

COMMERCIAL EQUIVALENTS

Market equivalents

MANUFACTURER	TYPE M STANDARD - NBR	TYPE M PREMIUM - FKM / VITON
Net Seals	Metal Oil Seal Series WB / M	Viton Metal Oil Seal Series WB / M FKM
Freudenberg (Simrit)	Simmerring® B / 827S Profile	Simmerring® B FKM Profile
Parker Prädifa	SB / B Profile	SB (FKM) Profile
Dichtomatik	WB Profile	WB FKM Profile
Kastas Sealing Technologies	K27 Profile	—
Corteco	Type M External Metal Oil Seal Series	—
SKF	—	Viton metal-cased seals (CRW1)