

# OIL SEAL SOLUTIONS WORLDWIDE

• CLIPPER® OIL SEALS • SPLIT SEALS • HIGH AND MEDIUM PRESSURE SEALS •



# EXPERIENCE, EXPERTISE, SOLUTIONS



JM Clipper is a world leader in formulating highly-effective solutions to sealing problems throughout industry. Few companies can match JM Clipper's expertise and experience in developing products for OEM and plant applications. Clipper Oil Seals are used in a wide range of equipment from pumps and gear boxes to construction and mining machinery to industrial equipment. These highly-effective seals are also used in plants in virtually every industry including primary metals, pulp and paper, chemicals and petrochemical, power generation, and more.

## Solving Problems High Over the Pacific

The JM Clipper name began in the 1930s with the development of the Clipper Oil Seal to control engine oil leaks on Pan Am Clipper aircraft flying the Pacific. As a division of Johns Manville until 1989, JM Clipper's history goes back to the 1800s. Today, JM Clipper brings sealing solutions to 500 OEMs and thousands of industrial plants through its own dedicated sales force and 2,000 independent distributors.



*A world leader in  
formulating highly-effective  
solutions to sealing  
problems*

## Non-Metallic Clipper Oil Seals

JM Clipper's proprietary design is based on a rubber/fiber outer case and elastomeric inner lip integrally molded to form a leak-free bond. A stainless steel garter spring provides the correct interference with the rotating shaft for an effective seal. Clipper Oil Seals are available in over 10,000 styles and sizes in a variety of compounds including fluoroelastomers.

## Specialized Radial Seals

In addition to standard Clipper Oil Seals, JM Clipper pioneered factory-split oil seals for fast, easy in-plant installation with no special tools or equipment modification. JM Clipper HP and MP seals combine elastomers and metal shells for superior O.D. sealing and performance in high and medium-pressure applications. SlipTite™ high-performance seals handle shaft speeds up to 5,000 fpm. For sealing performance beyond radial lip seals, JM Clipper developed ProTech™, a new kind of PTFE labyrinth seal.

## ISO-9001 Certification

In 1994, Det Norske Veritas Industries of the Netherlands completed its ISO audit and JM Clipper gained ISO-9001 certification for manufacturing, product design, and engineering which adds yet a higher level of quality assurance.





## Non-Metallic Advantages

The unique non-metallic construction of Clipper Oil Seals offers important benefits over metal-cased seals before installation, during installation, and throughout the life of the seal.

### Clipper Characteristics

Aramid fiber-reinforced composite

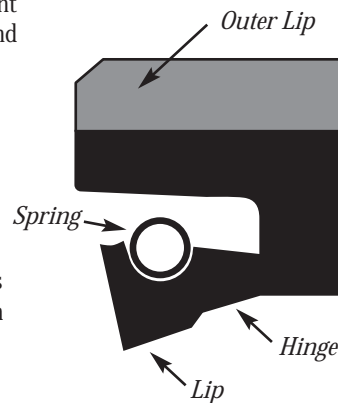
Integrally-molded unit

Stainless steel garter spring

Specially-formulated elastomer lip with designed flexibility

### Advantages

- Fits a wider range of bore tolerances and finishes, resulting in lower machining costs and easier installation
- Resists corrosion
- Takes more abuse, eliminating damage
- Gives better I.D. to O.D. concentricity resulting in less potential leakage and shaft wear
- Provides more uniform lip load
- Resists corrosion
- Minimizes friction resulting in less shaft wear
- Follows shaft eccentricity



## Comparison of Non-Metallic and Metal-Cased Seals




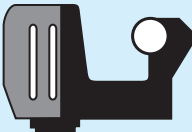












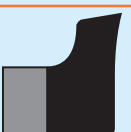

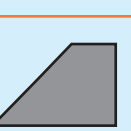


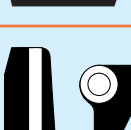
Key Benefits	Non-Metallic Clipper Oil Seals	Metal-Cased Seals
Corrosion Resistance	Yes	No
Positive O.D. Sealability	Yes	No
Durability and Damage Resistance	Yes	No
Easy Installation with No Special Skills or Tools	Yes	No
Built-In Interference	Yes	Yes
Sizes to Fit Most Industrial Applications	Yes	Yes
Wearability/Long Life	Yes	Yes
Split Styles without Cover Plate	Yes	No



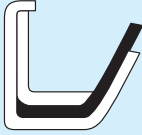
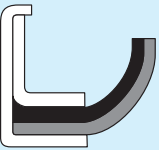
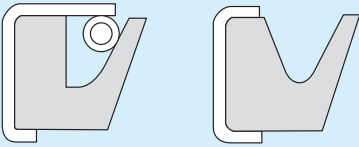
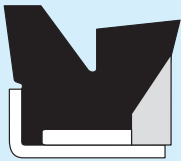

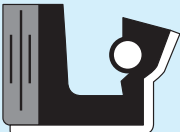


**Non-metallic  
Clipper Oil Seals are  
available in over  
10,000 styles  
and sizes**

# STANDARD SEALS

Cross Section	Type	Application	Shaft Surface Speed (m/min)	Shaft Size Range Inches (mm)
	LUP	General Purpose.	Thru 3200 FPM (976)	$\frac{5}{8}$ "-60" (16-1524)
	LPD Without Spring Retainer	General Purpose.	Thru 3200 FPM (976)	$\frac{5}{8}$ "-60" (16-1524)
	LPD With Spring Retainer	General Purpose.	Thru 3200 FPM (976)	$\frac{5}{8}$ "-60" (16-1524)
	MIST	Heavy Duty Steel Mill Roll Neck Bearing Service. Steel bands offer greater retention in the bore. Molded in spring eliminates spring dumping.	Thru 3200 FPM (976)	5"-50" (127-1270)
	RUP	General Purpose. Split design.	Thru 2000 FPM (610)	$1\frac{1}{8}$ "-60" (33-1524)
	RPD	General Purpose. Split design.	Thru 2000 FPM (610)	$1\frac{1}{8}$ "-60" (33-1524)
	SS	General Purpose. Springless - for small flange dimensions.	Thru 2000 FPM (610)	$\frac{1}{4}$ "-6" (6-152)
	ST-LUP	Heavy Duty Steel Mill Roll Neck Bearing Service. Steel bands offer greater retention in the bore.	Thru 3200 FPM (976)	5"-50" (127-1270)
	ST-LPD	Heavy Duty Steel Mill Roll Neck Bearing Service. Steel bands offer greater retention in the bore.	Thru 3200 FPM (976)	5"-50" (127-1270)
	OL	Outside lip design.	Thru 1000 FPM (306)	$\frac{5}{8}$ "-50" (16-1270)

Cross Section	Type	Application	Shaft Surface Speed (m/min)	Shaft Size Range Inches (mm)
	LDS	General Purpose. Dual lip - used against fluid & dust conditions.	Thru 2500 FPM (762)	¾"-25" (19-635)
	SDS	General Purpose. Dual lip springless for small shaft sizes.	Thru 2000 FPM (610)	¾"-25" (19-635)
	LUPW	Oscillating or angular movement at low surface speed.	Thru 1000 FPM (306)	1½"-50" (41-1270)
	LPDW	Oscillating or angular movement at low surface speed.	Thru 1000 FPM (306)	1½"-50" (41-1270)
	P	Shallow Cavity Rod Wiper for reciprocating service.	Thru 300 FPM Reciprocating. (92)	¾"-30" (10-762)
	H	General Purpose Rod Wiper Seal for rotary or reciprocating service.	Thru 2000 FPM (610) Rotary. Thru 300 (92) FPM Reciprocating.	¾"-30" (10-762)
	DS	Baffle or Deflector.	Thru 2500 FPM (762)	¾"-15" (19-381)
	SSW	Face Sealing Excluder.	Thru 2500 FPM (762)	1"-25" (25-635)
	RPDT	All compound - split seal with Tapered Heel.	Thru 2000 FPM (610)	1¼"-30" (33-762)
	LifeLine-Fe™	Steel mill work and back-up rolls, continuous caster areas, bar and rod mills.	Strip Output Feed 6000 FPM (1836)	5" - 50" (127 -1270)

# SPECIAL DESIGN SEALS

Cross Section	Description
	<p>The Type FL low cost general purpose seal is designed for rotary and reciprocating service. The all rubber lip element is integrally formed into its sealing position and self gasketed within the closed shell assembly to eliminate inner case leakage. The formed metal contour under the lip provides stability to the lip.</p>
	<p>The SlipTite (Teflon*/Rubber) seal was specifically developed for severe service. It has a single lip element that combines the low friction properties of Teflon with the flexibility and durability of rubber. It is sealed into an outer metal case and engineered for intermittent pressure service up to 10 psi.</p> <p><small>*Registered DuPont trademark</small></p>
	<p>The TMA-L and TMA-S seals are designed specifically for special corrosive chemical service. The Stainless Steel outer case contains a machined Teflon seal insert with or without a spring activated lip.</p>
	<p>The Type HP high pressure seal is a sophisticated design to handle rotary and/or reciprocating motion at high speeds and pressures over a temperature range of (-40°F to +400°F). Pressures up to 300 psi and 4,000 FPM can be handled.</p>
	<p>The Type MP medium pressure seal is designed to handle rotary applications up to 100 psi and temperatures from -40°F to 400°F. The inner metal shell is encapsulated in fluoroelastomer.</p>
	<p>The Clipper SlipTite is a specially designed seal that utilizes a layer of PTFE molded to the sealing lip to reduce excessive wearing on the shaft. It can handle pressure applications up to 40 psi and higher temperatures up to 350°F. The Clipper SlipTite can be utilized in applications with limited lubrication. LUP, RUP, SS, SSW, HP &amp; MP designs can be produced.</p>
	<p>JM Clipper Extruded seals are available in both single and dual lip types where installation of solid or rigid seals becomes difficult or impossible due to size or location.</p>
	<p>The JM Clipper positive lip contact sheave seal provides excellent foreign matter exclusion properties while retaining bearing lubricant. These seals are used on wire rope sheaves found in overhead cranes in the steel mills; on rotary drilling rig crown and travel blocks; and on draglines, hoists and elevators. They also have application on mine car wheels, flywheels and idler wheels.</p>

# MATERIAL STYLES

Style	Type of Elastomer	Typical Shore A Hardness	Temperature Range °F (°C)	Relative Price
Outer Heel				
H1	Hard, dense, rugged aramid fiber oil resistant - rubber composition	95+	-65 to +250 (-54 to +177)	Low
H3	Rigid dense - aramid fiber oil resistant - composition	93	-20 to +250 (-29 to +121)	Medium
H5	Hard, dense, special aramid fiber - high temperature rubber composition of Resistan® (special formulation of fluoroelastomer)	95+	-40 to +400 (-40 to +260)	High
STH1	Style H1 with metal reinforcement in heel, body	95+	-65 to +300 (-54 to +149)	Low
Lip Element				
L3	Neoprene Nitrile	55	-40 to +200 (-40 to +93)	Medium
L5	Nitrile (replaces Style L10)	77	-20 to +250 (-29 to +149)	Low
L7	Nitrile	89	-30 to +300 (-34 to +149)	Low
L8	Neoprene - Fiber	93	-20 to +250 (-29 to +121)	Medium
L16*	Resistan® (special formulation of fluoroelastomer)	85	-40 to +400 (-40 to +260)	High
L17	Teflon* (Types TMA-L and TMA-S only)		-300 to +350 (-184 to +177) (+260) +500 intermittent	High
L50	Alaska Nitrile™ (special formulation of Nitrile Elastomer)	85	-50 to +250 (-46 to +121)	Medium
L70	Alaska Nitrile™ (special formulation of Nitrile Elastomer)	75	-70 to +250 (-57 to +121)	Medium

1. Other special application seal materials are available - contact JM Clipper representative.
2. Specialty Materials for use with the F/L and SlipTite designs are available for varying service conditions. Contact your JM Clipper representative or our Nacogdoches customer service department.

\* Registered DuPont trademark

\* Style H5/L16 marked with narrow white band on heel body for identification purposes.