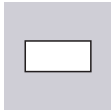
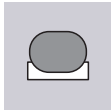
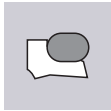
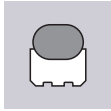
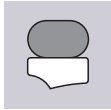
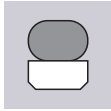
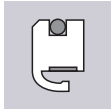




MOONTOWN LTD  
SEALING SYSTEMS BROCHURE

[www.moontown.co.uk](http://www.moontown.co.uk)



## COMPANY PROFILE

## JACKET MATERIALS

Jacket materials

Spring materials

## SE SEALS:

Helicoil spring (M01 - 10)

U-spring (M20 - 29)

U-finger spring (M30 - 31)

Solid backup and O rings (M50 - 55)

SE Seals Assembly notes

## ROTARY SEALS (M50 - 59)

## HYDRAULIC SEALS:

Double acting (M70 - 71)

Single acting (M72 - 73)

Rotary seals (M74 - 75)

Wiper/Scrapers (M76 - 77)

Compact double acting (M78 - 79)

Wearings (M80 - 81)

## USEFUL TABLES

## SPECIAL DESIGNS

### RADIAL SEALS

For Reciprocating Motion, series M20 is suitable for rod and piston applications. The M20 series has a low load, high deflection spring and is suitable for general sealing at low to moderate pressures.

For more severe duties, series M01 can be considered. This design has a higher spring load but may exhibit increased friction. The design is good for moderate to high pressure sealing and for cryogenic applications (subject to confirmation by our technical department).

For Static Duty, series M01 is generally recommended for radial applications.

For Rotary Motion, both M01 and M20 series can be used, the flanged designs being the preferred choice. Due to the lighter spring load, series M20 is generally recommended but, for very slow, (under 0,25 m/s) and/or for slow/ intermittent duty at high pressures, series M01 is recommended.

### FACE SEALS (AXIAL SEALS)

For Static Duty, series M09/M10 should be considered as first choice. Due to their moderate to high spring load, they offer positive sealing over a wide temperature and pressure range. For severe duty, the very high spring loaded series M30 should be used ie. High vacuum/cryogenic and thin gas duty.

Series M20 should only be used when light spring loading is essential.

For Rotary Face Seal duty at slow to moderate speeds, series M20 may be used. However, for products such as loading arms and swivels where high torques are available and where the sealing of thin gases at cryogenic temperatures is demanded, series M30 should be used.

If in doubt about any seal choice for your application, please consult our technical department.

All spring energised and hydraulic seals are available up to 2000mm diameter.

Moontown also offers a range of machined PTFE rotary shaft seals (series M50) ; Metal Cased PTFE lipseals and Metal 'O' and 'C' rings.

## COMPANY PROFILE

Moontown Limited was established in 1996 to offer a comprehensive range of PTFE spring energised and hydraulic seals. The company offers its customers the benefits of the latest technology for cost effective sealing solutions, supported by over 2 decades of experience working with PTFE resins and high performance plastics.

With our experience and technical support, our customers can be confident that they will receive the most suitable sealing solution, manufactured to the highest standards.

Moontown Limited is a ISO 9001:2008 approved company.



## JACKET MATERIALS

Moontown offers a wide choice of seal jacket materials, mainly based on PTFE resins.

PTFE is resistant to most chemicals except chlorine trifluoride/fluorine gas at high temperatures and molten alkali metals. However, as many sealing applications use filled PTFE resins to improve performance, care should be taken that the filler will not be attacked by the sealed medium.

Stainless steel and NACE approved springs are available as is a range of elastomeric energisers.

When using elastomers, consideration of temperature/chemical compatibility and life should be accounted for.

At temperatures below -40 deg. C, PTFE and many other jacket materials will harden and shrink. This feature imposes higher loads on the energiser and may compromise sealing efficiency. Face seals (Axial Seals) are less affected than Radial Seals but we recommend our technical department be consulted for seal designs working at -40 deg. C and below.

CODE	DESCRIPTION	COL	APPLICATION	TEMP (°C)	COEFF. FRICTION	WEAR FACTOR
01	Virgin PTFE	White	Excellent for light dynamic and static service. Low gas permeability. Good cryogenic properties. FDA approved.	-260 +200	0.09	10000 HIGH
02	Premium PTFE	Blue	Similar properties to code 01 but with improved wear resistance.	-260 +200	0.09	150
03	PTFE/Carbon /Graphite	Black	Excellent material for heat and wear resistance. Recommended for dry and poorly lubricated applications, suitable in water and steam service.	-260 +300	0.09	10
04	PTFE/Glass /MOS2	Grey	Recommended for high pressure hydraulic service, steam and water. Abrasive against soft metal in dynamic applications under high pressure.	-200 +260	0.08	10
05	PTFE/Carbon /Graphite	Black	Similar to code 03 but increased wear resistance. Excellent in steam and water under severe conditions. Very good extrusion resistance at high temperature. Excellent material for back up rings.	-250 +320	0.10	6
06	Premium PTFE	Black	Excellent material for extreme dynamic conditions. Combinations such as high temperature, pressure, speed and dry running. Excellent in water and water based solutions. Abrasive against soft metals.	-250 +300	0.09	1
07	PTFE / Bronze	Brown	Good abrasive resistance. Excellent in hydraulic applications. Not recommended for rotary applications.	-150 +290	0.08	5
08	PTFE / Polyester	Tan	Special compound for high temperature applications. Recommended for low to medium speed applications running against soft metals.	-240 +300	0.13	4
09	Ekonal filled PTFE	Brown	Special compound with superior heat and wear resistance characteristics. Non abrasive. Recommended for low to high speed running against soft metals. Not good in water.	-250 +340	0.15	3

## JACKET MATERIALS AND SPRING MATERIALS

CODE	DESCRIPTION	COL	APPLICATION	TEMP (°C)	COEFF. FRICTION	WEAR FACTOR
10	UHMW-PE	White	Excellent wear material but limited heat and chemical resistance. Excellent for cryogenic temperatures. FDA approved.	-250 +80	0.11	4
11	PTFE / Glass /MOS2	Grey	Similar to code 04 but softer for improved sealing at lower pressure. Can be abrasive running against soft metals.	-250 +300	0.09	1
12	PTFE / Graphite	Black	General purpose material with good heat and wear characteristics. Good in water, non lubricating fluids and compatible with all hydraulic fluids and most chemicals.	-250 +300	0.09	20
13	PEEK	Tan	A high modulus material with excellent high temperature resistance. Excellent for back-up rings only.	-70 +250	N/A	N/A
15	Filled PTFE	White	A food/drug compatible blend. Application tests should be carried out for prolonged use in water. FDA approved.	-250 +300	0.11	3
17	15% Glass Filled PTFE	White	Typically used for backup rings. Abrasive in dynamic applications running against soft metals.	-200 +270	0.10	3
21	Moly Filled PTFE	Dark Grey	Typically used in dynamic vacuum applications and in rotary duty in electronics industry.	-200 +250	0.09	10
22	Modified PTFE	White	Excellent for static applications, particularly good in cryogenic duty using thin gases, FDA approved.	-260 +230	0.09	10
23	Carbon / Peek Filled PTFE	Dark Tan	Useful high pressure / high temperature material.	-120 +300	0.10	5

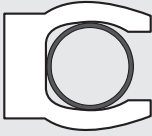

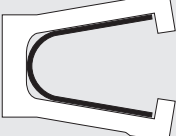
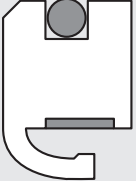
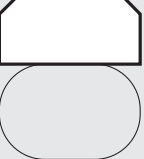
Ekonol is a registered trademark of SOHIO Co.

Other materials available. Use will be determined by our technical department in consideration of specific application.

## SPRING MATERIALS

Moontown's spring energized seals are available with the following spring energizers. These materials are compatible with most mediums. Other spring materials are available but may require minimum production quantities.

Other elastomer compounds are available to suit special applications/mediums, please consult us for technical advice.

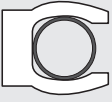



Code No	Description	SE-SEAL	20 - 29	30+31	ROTARY	HYDRAULIC
		01 - 10			50 - 59	70 - 81
						
01	AISI 301 1.4301		Standard	Standard	Standard	
02	Elgiloy		Optional			
03	Phynox	Optional				
04	17/7 ph	Standard				
05	Viton O-ring	Optional			Standard	Optional
06	Buna O-ring	Optional			Optional	Standard

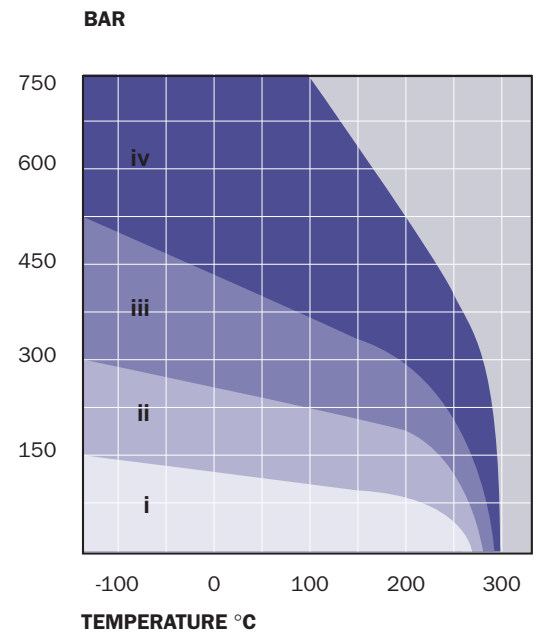
Elgiloy is a registered TM of the Elgiloy Co.

Viton is a registered TM of the DuPont Co.

# SE SEALS: TECHNICAL SPECIFICATIONS

## TEMPERATURE, PRESSURE AND EXTRUSION GAPS

MATERIAL		i	ii	iii	iv
 L WIDTH	Unfilled	0.10	0.07	0.05	
	Filled PTFE	0.15	1.10	0.07	
 L1 WIDTH	Unfilled	0.15	0.10	0.07	
	Filled PTFE	0.20	0.15	0.10	0.07
 L2 WIDTH	Filled Back-up	0.20	0.15	0.10	0.07
	Peek Back-up	0.20	0.15	0.10	0.07
 L2 WIDTH	Filled Back-Up	0.25	0.20	0.15	0.10
	Peek Back-up	0.35	0.25	0.20	0.15



## MAXIMUM RECOMMENDED DIAMETRAL EXTRUSION GAPS

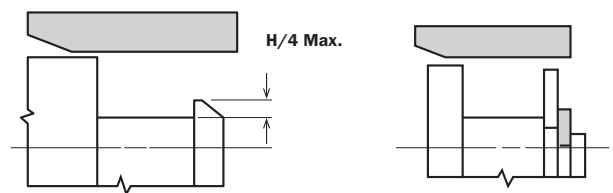
When sealing high pressure and/or temperature the clearance between the hardware “Extrusion gap” becomes very important. At high pressure and /or temperature the jacket material can extrude into the gap causing premature sealing failure. The extrusion gap should be held to the minimum practical or should not exceed above values. Back-up rings are manufactured of a harder material than the seal material.

## SE SEALS: ASSEMBLY NOTES

Special attention should be given to the assembly of PTFE seals. The diagrams show alternative gland designs for Spring Energised Seals, applicable to both the SE series. Split glands should be used wherever possible.

It is not recommended to fit SE series M20 to M25 into closed grooves as the spring can be damaged. In special circumstances, SE series M01 to M06 can be fitted to closed grooves and Moontown will be happy to advise on suitability and offer advice about fitting tools.

Light, clean oil or grease may be used to assist assembly. Grease with fillers should not be used, and compatibility with sealed media should be considered.



## SE SEALS: ASSEMBLY NOTES

### UNI SEAL SMALL DIAMETER DETAILS

SERIES 01 - 08			SERIES 09 / 10 /28 & 29			SERIES 20 - 27		
C/S	Min Rod	Min Bore	C/S	Min I.D	Min O.D.	C/S	Min Rod	Min Bore
1	2	5	1	6	10	1	5	8
2	4	9	2	12	15	2	10	15
3	7	13	3	20	26	3	12	18
4	15	25	4	45	50	4	16	26
5	60	72	5	85	95	5	65	77
6	85	105	6	100	110	6	100	120

SERIES 30 & 31		
C/S	Min I.D.	Min O.D.
3	20	26
4	40	45
5	85	95
6	100	120
7	120	150

For Diameters outside the ranges quoted, please call or email Moontown.

## SURFACE FINISHES AND HARDNESS

### DYNAMIC

The quality of the surface finish influences the relative wear of the cover material. The transfer of a thin film of PTFE from the seal cover to the mating dynamic surface will improve seal life. Relatively rough finishes wear the cover material too rapidly, too smooth surfaces result in insufficient material transfer to form a thin film.

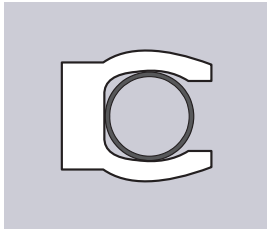
As general rule, the higher the sealing surface hardness the better the seal performance. Higher hardness reduces wear and increases seal life. A 40 HRC or higher is recommended for slow to moderate movements. The ideal hardness is between 60 and 70 HRC.

### STATIC

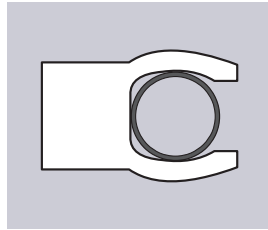
The lay of surfaces for static face seals must be concentric.

FLUID BEING SEALED	SURFACE FINISH	
	DYNAMIC	STATIC
cryogenics helium gas hydrogen gas freon	0.05 to 0.2 Ra	0.1 to 0.2 Ra 0.15 to 0.3 Ra
air nitrogen gas argon gas natural gas fuel	0.15 to 0.3 Ra	0.3 to 0.8 Ra
water hydraulic oil crude oil sealants	0.2 to 0.4 Ra	0.4 to 1.6 Ra

## RADIAL SEALS



TYPE M01

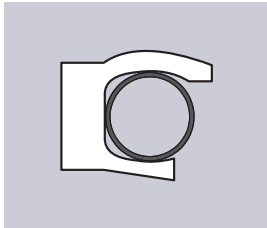


TYPE M02

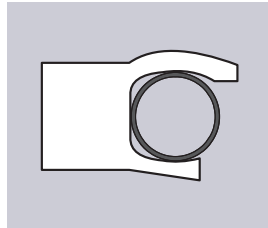
Radial for seal for static and dynamic application rod and piston seals. The medium to high spring load provides positive sealing but with some increase in seal friction. Suitable for medium to high pressure.

**TYPE M01:** Standard Profile

**TYPE M02:** As M01 + extended heel for high pressure



TYPE M03

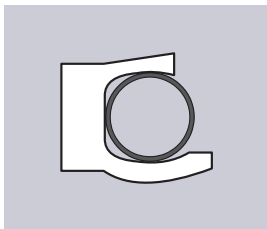


TYPE M04

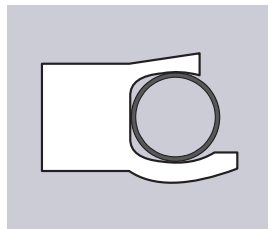
As Type M01 but for reciprocating movements only. Scraper on inside diameter.

**TYPE M03:** Standard Profile

**TYPE M04:** As M03 + extended heel for high pressure



TYPE M05



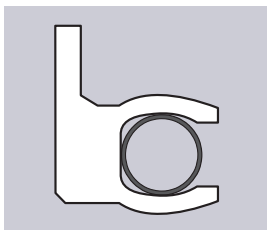
TYPE M06

As Type M01 but for reciprocating movements only. Scraper on outside diameter.

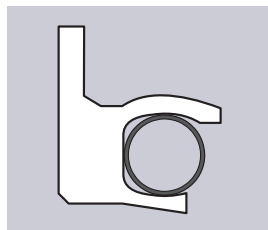
**TYPE M05:** Standard Profile

**TYPE M06:** As M05 + extended heel for high pressure

## RADIAL FLANGE SEALS



TYPE M07



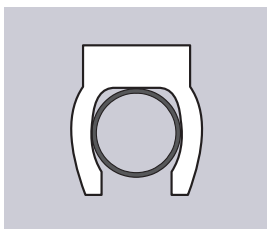
TYPE M08

Due to the clamping of the flange, the seal will be prevented from turning with the shaft - this can occur with standard designs due to thermal expansion and other effects with dynamic applications.

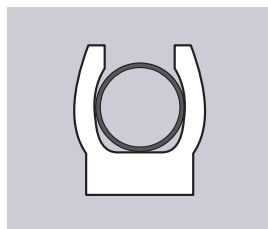
**TYPE M07:** As Type M01 Standard profile / flanged.

**TYPE M08:** As Type M03 but for reciprocating movements only. Flanged / Scraper on inside diameter.

## AXIAL SEALS



TYPE M09

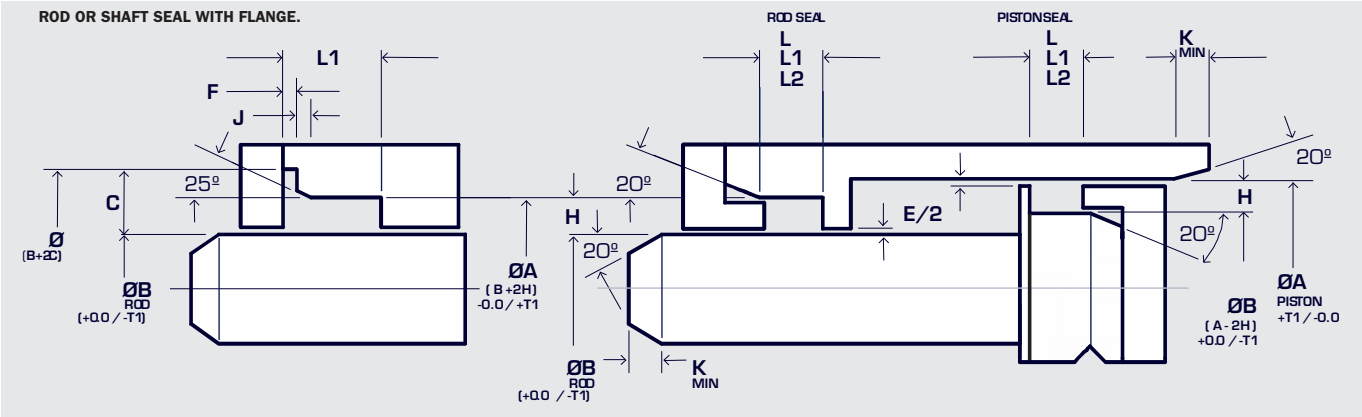


TYPE M10

**TYPE M09:** Axial seal for static applications as in type M01, inside face.

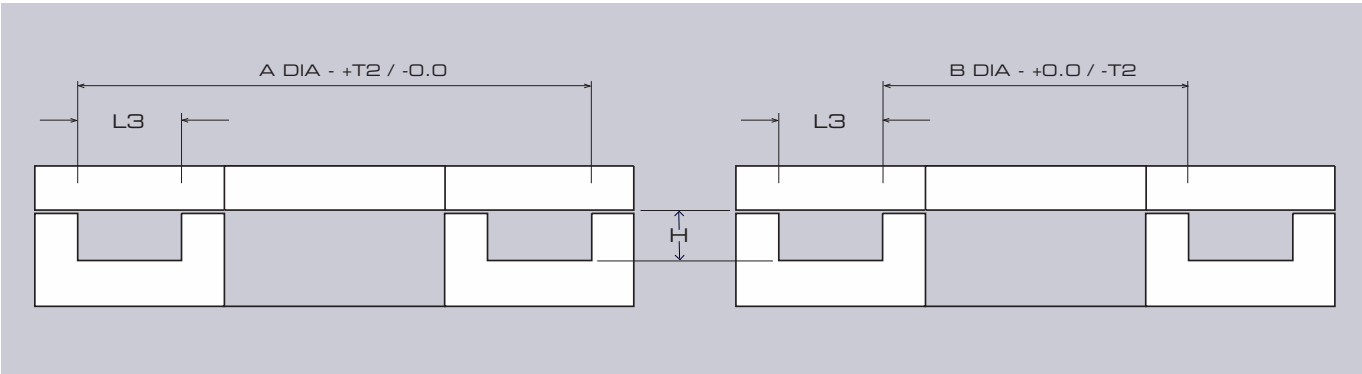
**TYPE M10:** Axial seal for static applications as in type M01, outside face.

## RADIAL SEAL: HARDWARE DESIGN



Cross Section	H	T1	L	L1	L2	C	F	J	K	E
			+0.3/-0	+0.3/-0	+0.3/-0	+/-0.15	+/-0.05	+/-0.15		NOM
1	1.42 / 1.47	0.05	2.4	3.8	5.3	3.4	0.40	0.8	3.5	0.10
2	2.26 / 2.31	0.05	3.6	4.6	6.2	4.3	0.58	0.9	4.5	0.13
3	3.07 / 3.12	0.05	4.8	6.0	7.7	5.5	0.70	1.3	6.0	0.15
4	4.72 / 4.78	0.06	7.1	8.5	10.8	8.5	0.80	1.8	7.5	0.18
5	6.05 / 6.12	0.07	9.5	12.1	14.7	11.5	1.20	2.3	8.5	0.20
6	9.35 / 9.40	0.08	13.5	15.0	18.0	15.5	1.60	3.3	10.0	0.24

## AXIAL SEAL: HARDWARE DESIGN



Cross Section	H	T2	L3 MIN
1	1.42 / 1.47	0.13	2.4
2	2.26 / 2.31	0.13	3.6
3	3.07 / 3.12	0.15	4.8
4	4.72 / 4.78	0.15	7.1
5	6.05 / 6.12	0.20	9.5
6	9.35 / 9.40	0.25	13.5

### ORDER EXAMPLE

**RADIAL SEAL M02 3 1 - 01250 - 04 02**

**AXIAL SEAL M09 3 0 - 01250 - 04 03**

PART No \_\_\_\_\_

CROSS SECTION \_\_\_\_\_

HARDWARE INDICATOR      0 = AXIAL  
    1 = RADIAL SHAFT SEAL  
    2 = RADIAL PISTON SEAL

HARDWARE DIAMETER (125.0 mm) \_\_\_\_\_

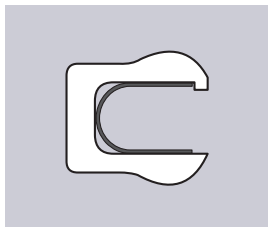
SEAL JACKET MATERIAL \_\_\_\_\_

SPRING MATERIAL \_\_\_\_\_

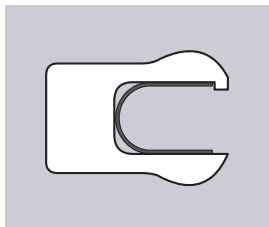




## RADIAL SEALS



TYPE M20

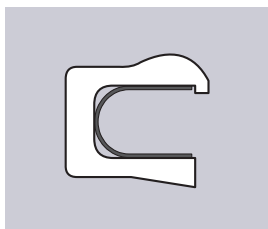


TYPE M21

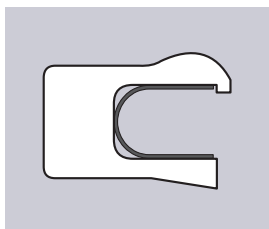
Radial seal for dynamic applications. For rod and piston seals with low to medium pressure and/or speed. This spring has a low load and high deflection which provides low friction sealing and compensates for minor eccentricity or misalignment.

**TYPE M20:** Standard Profile

**TYPE M21:** As M20 but with extended heel for high pressures.



TYPE M22

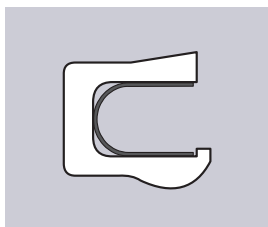


TYPE M23

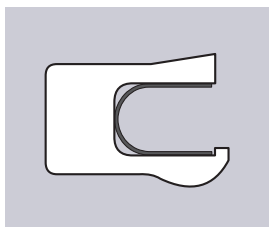
As Type M20 but for reciprocating motion. Scraper on inside diameter.

**TYPE M22:** Standard Profile

**TYPE M23:** As M22 but with extended heel for high pressures.



TYPE M24



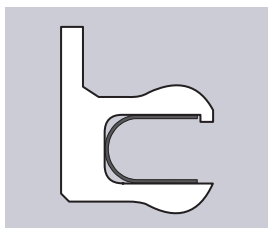
TYPE M25

As Type M20 but for reciprocating motion only. Scraper on outside diameter.

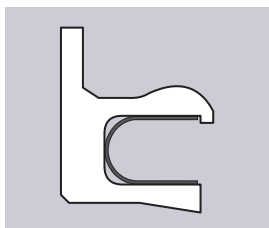
**TYPE M24:** Standard Profile

**TYPE M25:** As M24 but with extended heel for high pressures.

## RADIAL FLANGE SEALS



TYPE M26



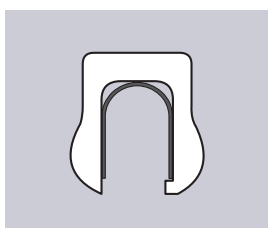
TYPE M27

Due to the clamping of the flange, the seal will be prevented from turning with the shaft - this can occur with standard designs due to thermal expansion and other effects with dynamic applications.

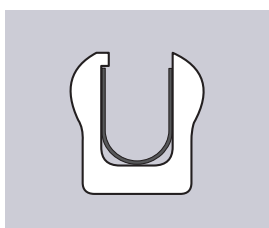
**TYPE M26:** As type M20. Standard Profile / Flanged

**TYPE M27:** As M22 but for reciprocating movements only. Flanged / Scraper on inside diameter.

## AXIAL SEALS



TYPE M28

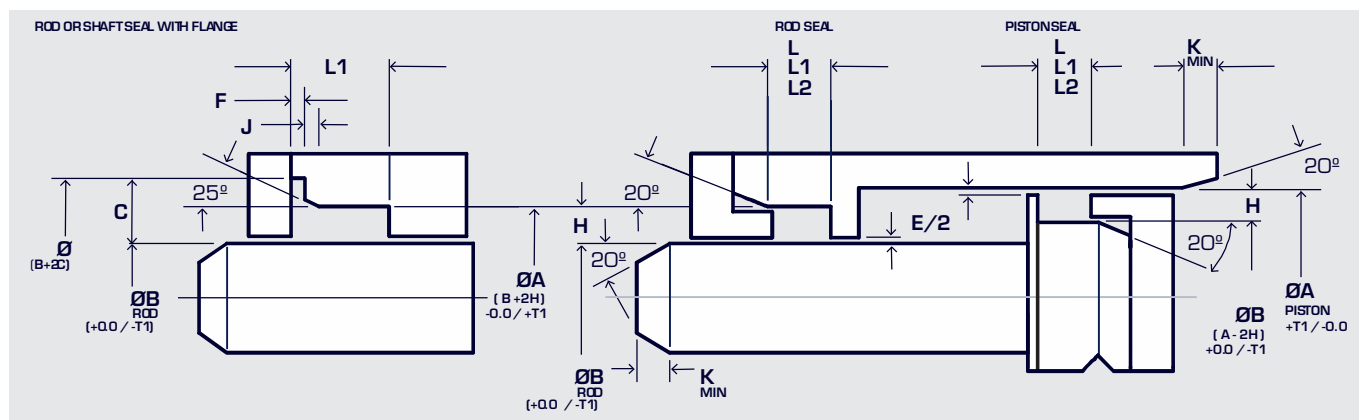


TYPE M29

**TYPE M28:** Axial seal for static or dynamic applications as in type M20, inside face seal.

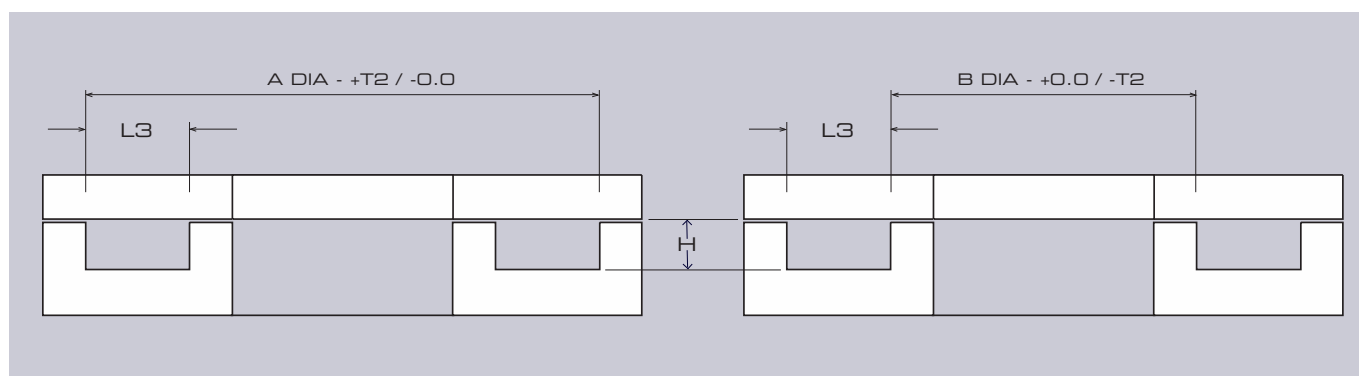
**TYPE M29:** Axial seal for static or dynamic applications as in type M20, outside face seal.

## RADIAL SEAL: HARDWARE DESIGN



Cross Section	H	T1	L	L1	L2	C	F	J	K	E
			+0.3/-0	+0.3/-0	+0.3/-0	+/-0.15	+/-0.05	+/-0.15		NOM
1	1.42 / 1.47	0.05	2.4	3.8	5.3	3.4	0.40	0.8	3.5	0.10
2	2.26 / 2.31	0.05	3.6	4.6	6.2	4.3	0.58	0.9	4.5	0.13
3	3.07 / 3.12	0.05	4.8	6.0	7.7	5.5	0.70	1.3	6.0	0.15
4	4.72 / 4.78	0.06	7.1	8.5	10.8	8.5	0.80	1.8	7.5	0.18
5	6.05 / 6.12	0.07	9.5	12.1	14.7	11.5	1.20	2.3	8.5	0.20
6	9.35 / 9.40	0.08	13.5	15.0	18.0	15.5	1.60	3.3	10.0	0.24

## AXIAL SEAL: HARDWARE DESIGN



Cross Section	H	T2	L3
			MIN
1	1.42 / 1.47	0.13	2.4
2	2.26 / 2.31	0.13	3.6
3	3.07 / 3.12	0.15	4.8
4	4.72 / 4.78	0.15	7.1
5	6.05 / 6.12	0.20	9.5
6	9.35 / 9.40	0.25	13.5

## ORDER EXAMPLE

RADIAL SEAL M20 3 1 - 01250 - 04 03

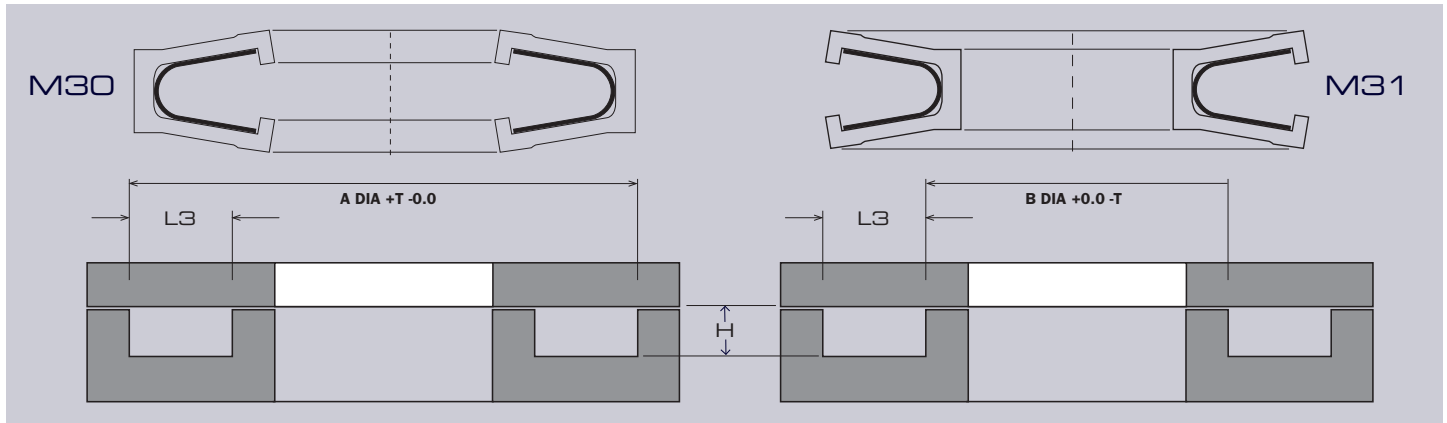
AXIAL SEAL M28 3 0 - 01250 - 04 01

PART No \_\_\_\_\_  
 CROSS SECTION \_\_\_\_\_  
 HARDWARE INDICATOR 0 = AXIAL  
 1 = RADIAL SHAFT SEAL  
 2 = RADIAL PISTON SEAL  
 HARDWARE DIAMETER (125.0mm) \_\_\_\_\_  
 SEAL JACKET MATERIAL \_\_\_\_\_  
 SPRING MATERIAL \_\_\_\_\_

# U FINGER SPRING

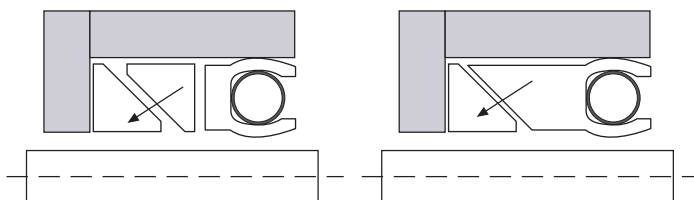
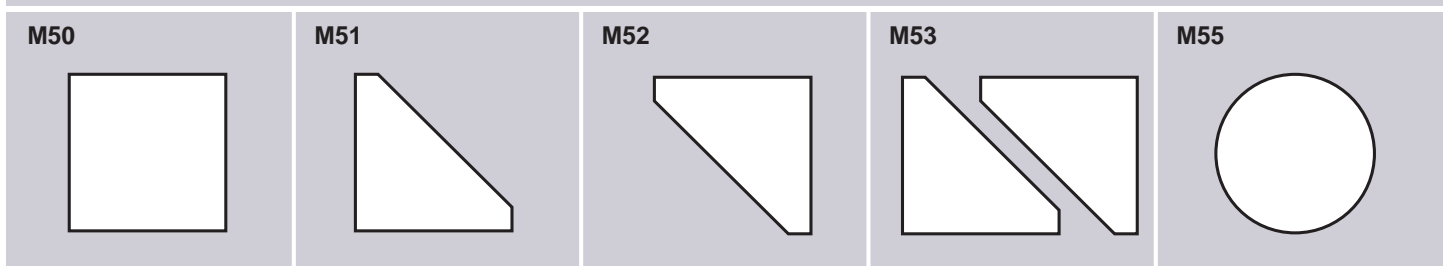
## TYPE M30 AND M31:

The Axial Face Seals - Type M30 and M31 employ a heavy duty, high load spring, recommended for extreme sealing conditions, static and dynamic. These are ideal for marine loading arm swivels and similar applications where high torque and clamping forces are available. Recommended for cryogenic applications, Ultra High Vacuum and other thin gases.



Cross Section	H	T	L3 MIN
3	3.07 / 3.12	0.15	4.8
4	4.72 / 4.78	0.15	7.1
5	6.05 / 6.12	0.20	9.5
6	9.35 / 9.40	0.25	13.5
7	12.40 / 12.45	0.30	16.5

## SOLID BACK-UP RINGS AND O-RINGS



Back-up rings are used in combination with axial and radial seals when the extrusion gap is too big for the required pressure and temperature.

O-rings made of PTFE are used in all applications in which the chemical resistance of conventional elastomer O-rings is not adequate. PTFE O-rings can only be used as static seals. PTFE O-rings are manufactured by cutting and can be produced in all sizes.

Back up rings for use with a seal will always have a special part no. allocated by Moontown.

### ORDER EXAMPLE

**M55 - 55,5x3,53-01**

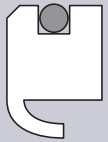
PART No. \_\_\_\_\_  
 INSIDE DIAMETER \_\_\_\_\_  
 C / S \_\_\_\_\_  
 MATERIAL CODE \_\_\_\_\_

## STANDARD PROFILES

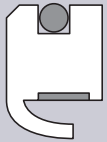
Moontown solid PTFE Lip seals provide the designer with a significant improvement in performance over elastomer lip seals at a much lower cost than a mechanical face seal.

## ADVANTAGES

- Temperature range: -20°C to +250°C
- Pressure up to 30 bar.
- High chemical resistance.
- Metal Support ring for high temperatures
- Low friction.
- Surface speeds up to 25 m/s
- Dry running or abrasive media
- Easy to install and replace.



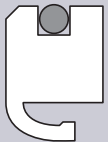
TYPE M50



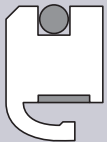
TYPE M51

**TYPE M50:** Shaft speed up to 25m/s. Maximum pressure = 5 bar. Used in lubricated and non lubricated applications. Maximum temperature 100°C

**TYPE M51:** As type M50 but due to the metal support ring can be used up to 200°C or maximum O-ring material temperature,



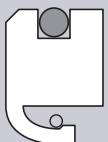
TYPE M52



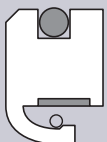
TYPE M53

**TYPE M52:** Improved sealing of gases and abrasive media due to higher lip load. Not recommended for shaft speeds greater than 8m/s.

**TYPE M53:** As type M52 but can be used up to 200°C or maximum O-ring material temperature due to metal support ring.



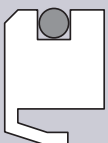
TYPE M54



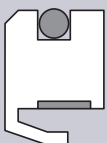
TYPE M55

**TYPE M54:** Incorporates spring loading for use in applications where shaft run-out or misalignment exists. Pressures up to 3 bar. Speed up to 7m/s.

**TYPE M55:** As type M54 but can be used up to 200°C or maximum O-ring material temperature due to metal support ring.



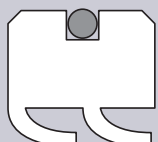
TYPE M56



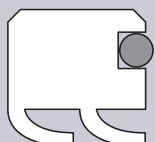
TYPE M57

**TYPE M56:** Shaft speed up to 30m/s. Maximum pressure 1.5 bar. Low friction seal, used as environmental seals.

**TYPE M57:** As type M56 but can be used up to 200°C or maximum O-ring material temperature due to metal support ring.



TYPE M58



TYPE M59

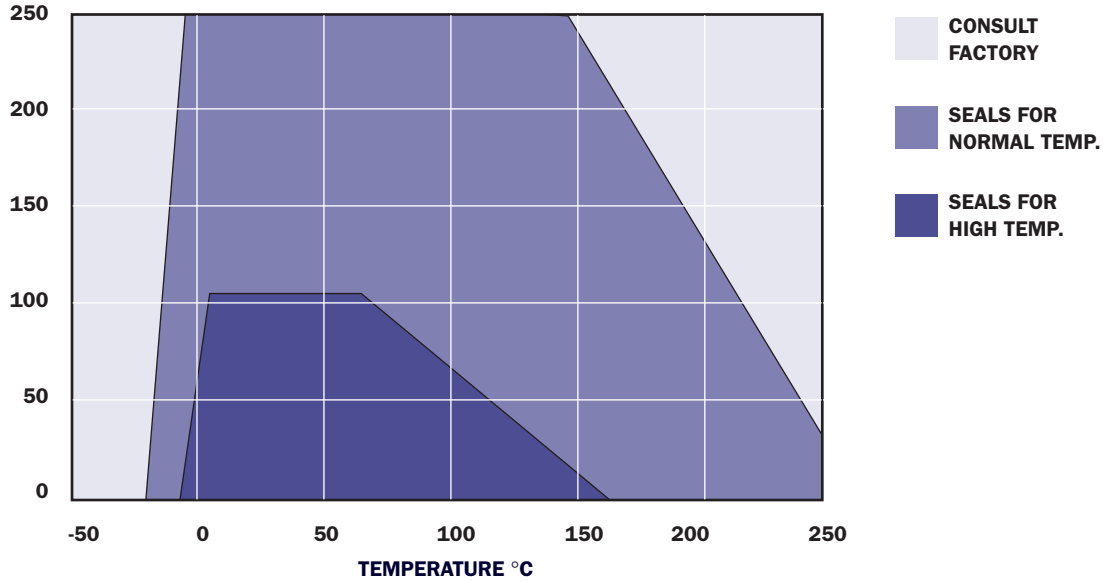
**TYPE M58:** used in high pressure hydraulic applications - pumps, hydraulic motors. Operational PV factor 65 bar m/s max.

**TYPE M59:** As type M58 but the clamping is in the axial direction which requires the gland width to be held to the seal width -0.0/+0.1

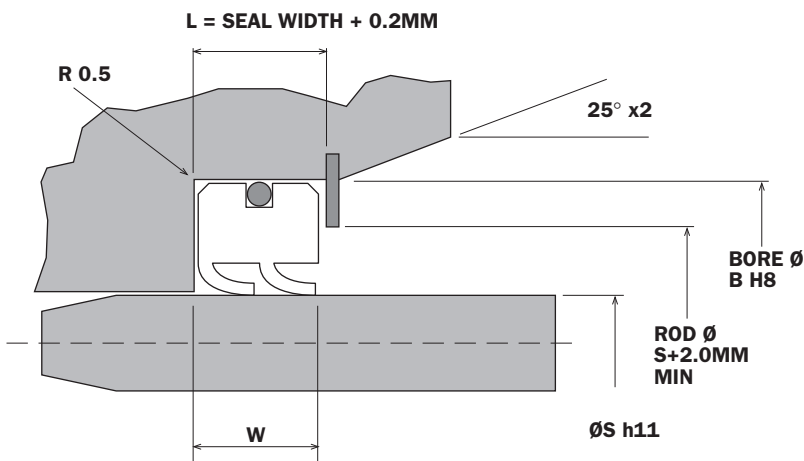
# ROTARY SEALS HARDWARE DESIGN

## ROTARY SEAL SELECTION CHART

BORE Ø



SHAFT MATERIAL AND HARDNESS	FINISH
<p><b>Cast Iron or Hardenable steel</b></p> <p>-40 to 65 HRc with hydraulic oil up to 15 bar. -58 to 65 HRc with pressure &gt; 15 bar and non-lubricating or abrasive media.</p>	<p><b>Shaft</b> - Ra 0.3 - 0.5 µm for lubricated applications Ra 0.2 - 0.4 µm for non-lubricated or abrasive media Ra &lt; 0.2 µm in Vacuum</p> <p><b>Bore or O-Ring side</b> - Ra = 0.8 - 1.6 µm</p> <ul style="list-style-type: none"> <li>- Maximum bore finish of 0.8 µm for utilizing a spring energized PTFE seal for OD sealing</li> <li>- Preferred finishing method is plunge grinding with no lead</li> </ul>



**ORDER EXAMPLE**

**M58 - 20 x 30 x 7 - 08**

PART No. \_\_\_\_\_

HARDWARE DIMENTION (S x B x W) \_\_\_\_\_

MATERIAL \_\_\_\_\_

# HARDWARE DIMENSIONS

NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.
8	22 24 26	7	14	24 28 30 35	7	18	30 32 35 40	7	25	35 40 42 47 52	7
9	22 24 26	7	15	26 30 32 35	7	20	30 32 35 40 47	7	26	37 42 47	7
10	22 24 26	7	16	28 30 32 35	7	22	32 35 40 47	7	28	40 47 52	7
11	22 26	7	17	28 30 32 35 40	7	24	35 37 40 47	7	30	40 42 47 52 62	7    8

NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.
32	45 47 52	7	40	52 55 60 62 72	7 8	50	65 68 72 80	8	60	75 80 85 90	8  10
35	47 50 52 62	7 8	42	55 60 62 72	8	52	68 72	8	62	80 85 90	8 10
36	47 50 52 62	7 8	45	60 62 65 72	8	55	70 72 80 85	8 10	63	85 90	10
38	52 55 62	7 8	48	62 65 72	8	56	70 72 80 85	8 10	65	85 90 100	10
						58	72 80	8	68	90 100	10

NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.	NOM SHAFT S DIM.	NOM BORE B DIM.	SEAL WIDTH W DIM.
70	90 100	10	95	120 125	12	130	160 170	12 15
72	95 100	10	100	120 125 130	12	135	170	15
75	95 100	10	105	130 140	12	140	170	15
78	100	10	110	130 140	12	145	175	15
80	100 110	10 12	115	140 150	12	150	180	15
85	110 120	12	120	150 160	12	160	190	15
90	110 120	12	125	150 160	12	170	200	15
						180	210	15
						190	220	15
						200	230	15

Bore and shaft dimensions are based on DIN Standards 3760.

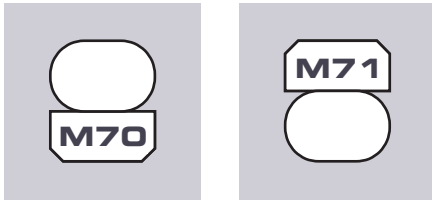
Moontown can manufacture non-standard sizes to fit your existing hardware. Please consult Moontown for further details.

This table also applies to our metal cased lip seals.

Please see separate sheet for metal cased PTFE Lips Seal.

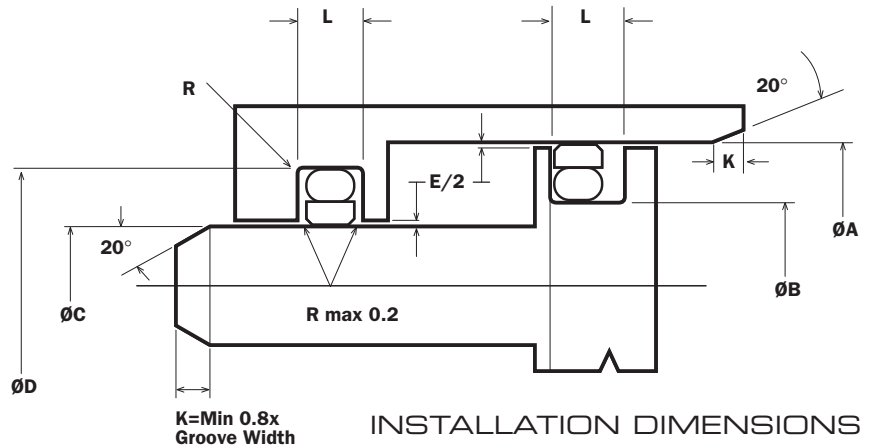


# HYDRAULIC SEALS



M70 and M71 are double acting seals. They have been used successfully for many years to seal the rods and pistons of working cylinders.

Well proven in the hydraulic and pneumatic fields as well as general engineering, these robust seals offer designers an excellent choice of sealing components.



INSTALLATION DIMENSIONS

Advantages	Surface Roughness	Operating Ranges
<ul style="list-style-type: none"> <li>• Excellent anti-friction characteristics</li> <li>• No stick-slip effect during start up</li> <li>• No adhesion effect</li> <li>• Can be used in dry and lubricated media</li> <li>• Single piece piston and cylinder head poss.</li> <li>• Available up to 2000mm diameter</li> <li>• Compact simple groove design</li> </ul>	<ul style="list-style-type: none"> <li>• Cylinder/bore: Ra=0.05 - 0.6µm</li> <li>• Rod/shaft: Ra=0.05 - 0.5µm</li> <li>• GrooveØ: Ra&lt;2.5µm</li> <li>• Groove walls: Ra&lt;4µm</li> </ul>	<ul style="list-style-type: none"> <li>• Reciprocating up to 800 bar and 15m/s</li> <li>• Temperature from -60°C to + 200°C limited by the O-ring material.</li> </ul>

M70: ROD DIAMETER C f8										
HEAVY DUTY M70A	STANDARD DUTY M70B	LIGHT DUTY M70C	GROOVE DIA D H9	GROOVE WIDTH L + 0.2	DIAMETRAL CLEARANCE EMAX (BAR)		RADIUS R	O-RING SERIES	O-RING	
					0 - 200	200 - 400			C / S	INSIDE Ø = C+
8 - 18.9 19 - 37.9 38 - 199.9 200 - 255.9 256 - 649.9	<b>3 - 7.9</b>	8 - 18.9	C + 4.9	2.2	0.6 - 0.4	0.4 - 0.3	0.3 - 0.5	000	1.78	2.0
	<b>8 - 18.9</b>	19 - 37.9	C + 7.3	3.2	0.8 - 0.5	0.5 - 0.3	0.5 - 0.8	100	2.62	3.5
	<b>19 - 37.9</b>	38 - 199.9	C + 10.7	4.2	0.8 - 0.5	0.5 - 0.4	0.8 - 1.2	200	3.53	5.0
	<b>38 - 199.9</b>	38 - 199.9	C + 15.1	6.3	1.0 - 0.6	0.6 - 0.4	1.2 - 1.5	300	5.33	7.0
	<b>200 - 255.9</b>	200 - 255.9	C + 20.5	8.1	1.0 - 0.6	0.6 - 0.5	1.5 - 2.0	400	7.00	9.5
	<b>256 - 649.9</b>	256 - 649.9	C + 24.0	8.1	1.2 - 1.0	1.0 - 0.6	1.5 - 2.0	400	7.00	13.0
	<b>650 - 999.9</b>	256 - 649.9	C + 27.3	9.5	1.4 - 1.0	1.0 - 0.7	2.0 - 3.0	500	8.40	14.5

M71: CYLINDER DIAMETER A H9										
HEAVY DUTY M71A	STANDARD DUTY M71B	LIGHT DUTY M71C	GROOVE DIA B h9	GROOVE WIDTH L + 0.2	DIAMETRAL CLEARANCE EMAX (BAR)		RADIUS R	O-RING		
					0 - 200	200 - 400		SERIES	C / S	
15 - 39.9 40 - 79.9 80 - 132.9 133 - 329.9 330 - 669.9	<b>8 - 14.9</b>	15 - 39.9	A - 4.9	2.2	0.6 - 0.4	0.4 - 0.3	0.3 - 0.5	000	1.78	
	<b>15 - 39.9</b>	40 - 79.9	A - 7.5	3.2	0.8 - 0.5	0.5 - 0.3	0.5 - 0.8	100	2.62	
	<b>40 - 79.9</b>	80 - 132.9	A - 11	4.2	0.8 - 0.5	0.5 - 0.3	0.8 - 1.2	200	3.53	
	<b>80 - 132.9</b>	133 - 329.9	A - 15.5	6.3	1.0 - 0.6	0.6 - 0.4	1.2 - 1.5	300	5.33	
	<b>133 - 329.9</b>	330 - 669.9	A - 21	8.1	1.0 - 0.6	0.6 - 0.4	1.5 - 2.0	400	7.00	
	<b>330 - 669.9</b>	670 - 999.9	A - 24.5	8.1	1.2 - 1.0	1.0 - 0.6	1.5 - 2.0	400	7.00	
	<b>670 - 999.9</b>	670 - 999.9	A - 28	9.5	1.4 - 1.0	1.0 - 0.7	2.0 - 3.0	500	8.40	

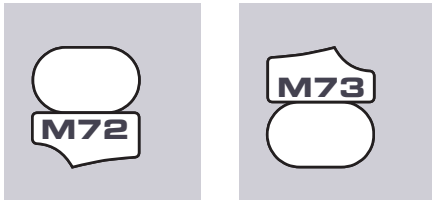
As a guide, the O= Ring ID for type M71 should be equal to or up to less than 5% of the groove Ø B

**ORDER EXAMPLE**

**M70B - 01250 - 05 06**  
**M71B - 01250 - 05 06**

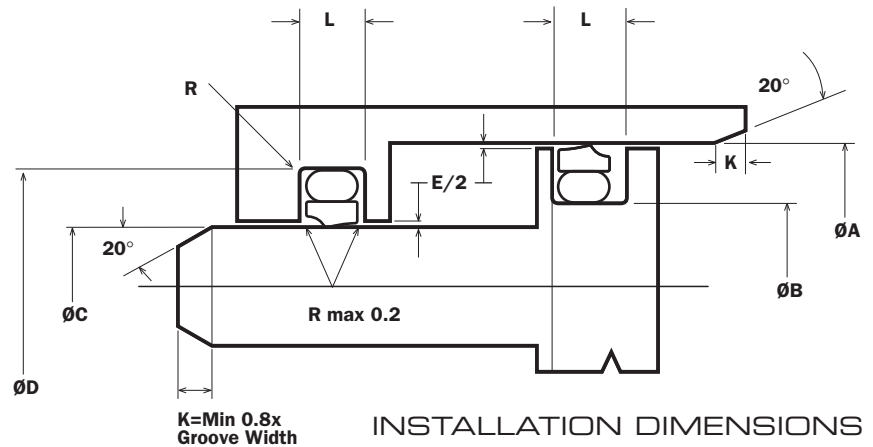
STYLE. \_\_\_\_\_ 'O' RING MAT.  
DATUM SIZE \_\_\_\_\_ MATERIAL

# HYDRAULIC SEALS



M72 and M73 are single acting, well proven rod and piston seals for working cylinders in hydraulics and pneumatics, and many applications in general engineering such as automotive and machine tools.

Like hydraulic seal piston seals, they offer a wide choice of sealing components.



INSTALLATION DIMENSIONS

Advantages	Surface Roughness	Operating Ranges
<ul style="list-style-type: none"> <li>• Excellent anti-friction characteristics</li> <li>• No stick-slip effect during start up</li> <li>• No adhesion effect</li> <li>• Can be used in dry and lubricated media</li> <li>• Single piece piston and cylinder head poss.</li> <li>• Available up to 2000mm diameter</li> <li>• Compact simple groove design</li> </ul>	<ul style="list-style-type: none"> <li>• Cylinder/bore: Ra= 0.05 - 0.6µm</li> <li>• Rod/shaft: Ra= 0.05 - 0.5µm</li> <li>• GrooveØ: Ra&lt;2.5µm</li> <li>• Groove walls: Ra&lt;4µm</li> </ul>	<ul style="list-style-type: none"> <li>• Reciprocating up to 800 bar and 15m/s</li> <li>• Temperature from -60°C to + 200°C limited by the O-ring material.</li> </ul>

## M72: ROD DIAMETER C f8

HEAVY DUTY M72A	STANDARD DUTY M72B	LIGHT DUTY M72C	GROOVE DIA D H9	GROOVE WIDTH L + 0.2	DIAMETRAL CLEARANCE EMAX (BAR)		RADIUS R	O-RING SERIES	O-RING	
					0 - 200	200 - 400			c / s	INSIDE Ø = C+
	<b>3 - 7.9</b>	8 - 18.9	C + 4.9	2.2	0.6 - 0.4	0.4 - 0.3	0.3 - 0.5	000	1.78	2.0
	<b>8 - 18.9</b>	19 - 37.9	C + 7.3	3.2	0.8 - 0.5	0.5 - 0.3	0.5 - 0.8	100	2.62	3.5
8 - 18.9	<b>19 - 37.9</b>	38 - 199.9	C + 10.7	4.2	0.8 - 0.5	0.5 - 0.4	0.8 - 1.2	200	3.53	5.0
19 - 37.9	<b>38 - 199.9</b>	200 - 255.9	C + 15.1	6.3	1.0 - 0.6	0.6 - 0.4	1.2 - 1.5	300	5.33	7.0
38 - 199.9	<b>200 - 255.9</b>	256 - 649.9	C + 20.5	8.1	1.0 - 0.6	0.6 - 0.5	1.5 - 2.0	400	7.00	9.5
200 - 255.9	<b>256 - 649.9</b>	650 - 888.9	C + 24.0	8.1	1.2 - 1.0	0.8 - 0.6	1.5 - 2.0	400	7.00	13.0
256 - 649.9	<b>650 - 999.9</b>		C + 27.3	9.5	1.4 - 1.0	1.0 - 0.7	2.0 - 3.0	500	8.40	14.5

## M73: CYLINDER DIAMETER A H9

HEAVY DUTY M73A	STANDARD DUTY M73B	LIGHT DUTY M73C	GROOVE DIA B h9	GROOVE WIDTH L + 0.2	DIAMETRAL CLEARANCE EMAX (BAR)		RADIUS R	O-RING	
					0 - 200	200 - 400		SERIES	c / s
	<b>8 - 16.9</b>	17 - 26.9	A - 4.9	2.2	0.6 - 0.4	0.4 - 0.3	0.3 - 0.5	000	1.78
	<b>17 - 26.9</b>	27 - 59.9	A - 7.3	3.2	0.8 - 0.5	0.5 - 0.3	0.5 - 0.8	100	2.62
17 - 26.9	<b>27 - 59.9</b>	60 - 199.9	A - 10.7	4.2	0.8 - 0.5	0.5 - 0.4	0.8 - 1.2	200	3.53
27 - 59.9	<b>60 - 199.9</b>	200 - 255.9	A - 15.1	6.3	1.0 - 0.6	0.6 - 0.4	1.2 - 1.5	300	5.33
60 - 199.9	<b>200 - 255.9</b>	256 - 669.9	A - 20.5	8.1	1.0 - 0.6	0.6 - 0.4	1.5 - 2.0	400	7.00
200 - 255.9	<b>256 - 669.9</b>	670 - 999.9	A - 24.0	8.1	1.2 - 0.7	0.7 - 0.5	1.5 - 2.0	400	7.00
256 - 669.9	<b>670 - 999.9</b>		A - 27.3	9.5	1.4 - 0.8	0.8 - 0.6	2.0 - 3.0	500	8.40

As a guide, the O= Ring ID for type M73 should be equal to or up to less than 5% of the groove Ø B

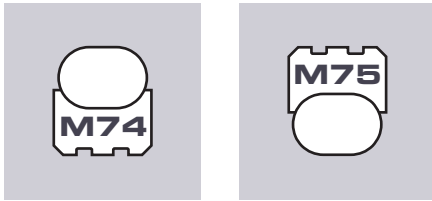
### ORDER EXAMPLE

**M72B - 01250 - 05 06**  
**M73B - 01250 - 05 06**

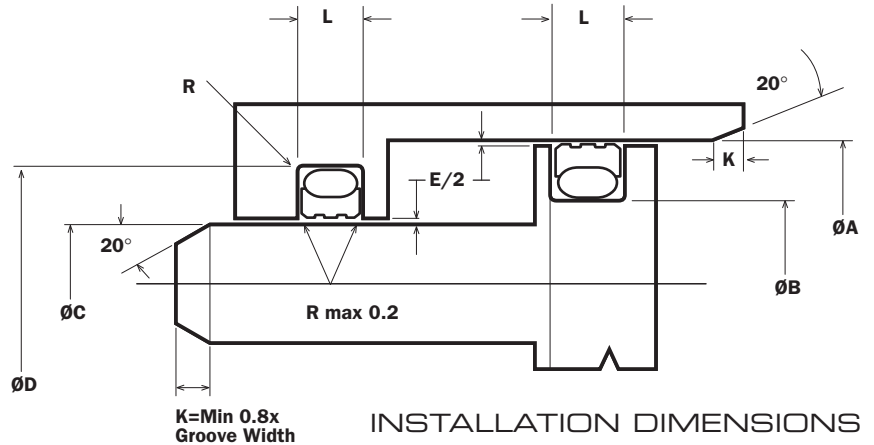
STYLE. \_\_\_\_\_ 'O' RING MAT.  
 DATUM SIZE \_\_\_\_\_ MATERIAL



# HYDRAULIC SEAL



M74 and M75 are double acting seals for rotary rod and piston designs, rotary distributors for example.



Advantages	Surface Roughness	Operating Ranges
<ul style="list-style-type: none"> <li>• Excellent anti-friction characteristics</li> <li>• No stick-slip effect during start up</li> <li>• No adhesion effect</li> <li>• Can be used in dry and lubricated media</li> <li>• Single piece piston and cylinder head poss.</li> <li>• Available up to 2000mm diameter</li> <li>• Compact simple groove design</li> </ul>	<ul style="list-style-type: none"> <li>• Cylinder/bore: Ra=0.05 - 0.4µm</li> <li>• Rod/shaft: Ra=0.05 - 0.4µm</li> <li>• GrooveØ: Ra&lt;2.5µm</li> <li>• Groove walls: Ra&lt;4µm</li> </ul>	<ul style="list-style-type: none"> <li>• Up to 300 bar</li> <li>• Oscillatory up to 5m/s, intermittent. continuous up to 1m/s.</li> <li>• Temperature from -60°C to +200° limited by the O-ring material.</li> </ul>

**TABLE FOR TYPE M74:**

TYPE	ROD DIA C f8	GROOVE DIA D H9	GROOVE WIDTH L + 0.2	DIAMETRAL CLEARANCE EMAX (BAR)		RADIUS	O-RING	
				0 - 150	150 - 300		SERIES	C/S
<b>M74A</b>	8 - 18.9	C + 4.9	2.2	0.4 - 0.25	0.25 - 0.15	0.3 - 0.5	000	1.78
<b>M74B</b>	19 - 37.9	C + 7.5	3.2	0.6 - 0.40	0.40 - 0.20	0.5 - 0.8	100	2.62
<b>M74C</b>	38 - 199.9	C + 11.0	4.2	0.6 - 0.40	0.40 - 0.20	0.8 - 1.2	200	3.53
<b>M74D</b>	200 - 255.9	C + 15.5	6.3	0.8 - 0.55	0.55 - 0.30	1.2 - 1.5	300	5.33
<b>M74E</b>	256 - 649.9	C + 21.0	8.1	0.8 - 0.55	0.55 - 0.30	1.5 - 2.0	400	7.00
<b>M74F</b>	650 - 999.9	C + 28.0	9.5	1.2 - 0.85	0.85 - 0.50	2.0 - 3.0	500	8.40

**TABLE FOR TYPE M75:**

TYPE	CYLINDER DIA A H9	GROOVE DIA B h9	GROOVE WIDTH L + 0.2	DIAMETRAL CLEARANCE EMAX (BAR)		RADIUS	O-RING	
				0 - 150	150 - 300		SERIES	C/S
<b>M75A</b>	8 - 18.9	A - 4.9	2.2	0.4 - 0.25	0.25 - 0.15	0.3 - 0.5	000	1.78
<b>M75B</b>	19 - 37.9	A - 7.5	3.2	0.6 - 0.40	0.40 - 0.20	0.5 - 0.8	100	2.62
<b>M75C</b>	38 - 199.9	A - 11.0	4.2	0.6 - 0.40	0.40 - 0.20	0.8 - 1.2	200	3.53
<b>M75D</b>	200 - 255.9	A - 15.5	6.3	0.8 - 0.55	0.55 - 0.30	1.2 - 1.5	300	5.33
<b>M75E</b>	256 - 649.9	A - 21.0	8.1	0.8 - 0.55	0.55 - 0.30	1.5 - 2.0	400	7.00
<b>M75F</b>	650 - 999.9	A - 28.0	9.5	1.2 - 0.85	0.85 - 0.50	2.0 - 3.0	500	8.40

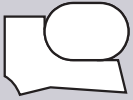
As a guide, the O-Ring ID for type M75 should be equal to or up to less than 5% of the groove ØB

**ORDER EXAMPLE**

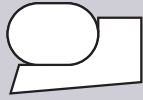
**M74C - 01250 - 05 06**  
**M75B - 01250 - 05 06**

STYLE. \_\_\_\_\_ 'O' RING MAT.  
DATUM SIZE \_\_\_\_\_ MATERIAL

# HYDRAULIC SEAL



**M76**

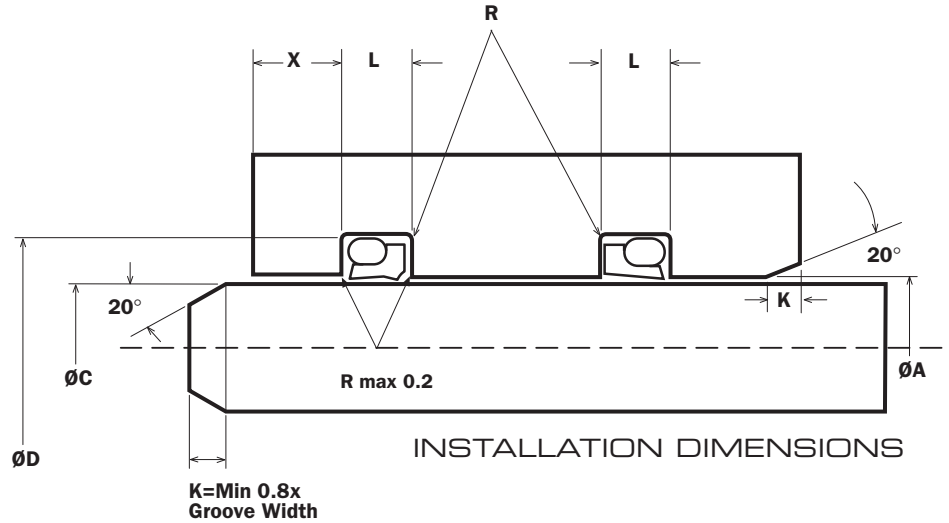


**M77**

M76 is a double wiper with two geometrically profiled wiper lips and an O-ring energiser.

M77 as type M76 but only single wiper.

## ADVANTAGES



Advantages	Surface Roughness	Operating Ranges
<ul style="list-style-type: none"> <li>• Very good external wiping effect even when subject to firmly adhering dirt and ice</li> <li>• Very good internal wiping effect even when subject to firmly adhering dirt and ice</li> <li>• Abrasion resistant.</li> <li>• Low friction.</li> <li>• Available up to 2000mm diameter</li> </ul>	<ul style="list-style-type: none"> <li>• Cylinder/bore: Ra=0.05-0.5µm</li> <li>• GrooveØ: Ra&lt;2.5µm</li> <li>• Groove walls: Ra&lt;4µm</li> </ul>	<ul style="list-style-type: none"> <li>• Reciprocating up to 15m/s.</li> <li>• Temperature from -60°C to +200° limited by the O-ring material.</li> </ul>

**TABLE FOR TYPE M76:**

TYPE	ROD Ø C f8	GROOVE DIA D H9	GROOVE WIDTH L + 0.2	RADIUS R	BORE DIA A + 0.3	X MIN	O-RING	
							C/S	INSIDE Ø = C+
<b>M76A</b>	19 - 39.9	C + 7.6	4.2	0.8	C + 1.0	3	1.78	2.5
<b>M76B</b>	40 - 69.9	C + 8.8	6.3	0.8	C + 1.5	3	2.62	3.5
<b>M76C</b>	70 - 139.9	C + 12.2	8.1	1.5	C + 2.0	4	3.53	4.0
<b>M76D</b>	140 - 399.9	C + 16.0	9.5	1.5	C + 2.5	5	5.33	4.0
<b>M76E</b>	400 - 649.9	C + 24.0	14.0	1.5	C + 2.5	8	7.00	5.0
<b>M76F</b>	650 - 999.9	C + 27.3	16.0	2.0	C + 2.5	10	8.40	6.0

**TABLE FOR TYPE M77:**

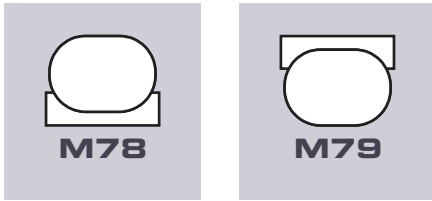
TYPE	ROD Ø C f8	GROOVE DIA D H9	GROOVE WIDTH L + 0.2	RADIUS R	BORE DIA A + 0.3	X MIN	O-RING	
							C/S	INSIDE Ø = C+
<b>M77A</b>	6 - 11.9	C + 4.8	3.7	0.4	C + 1.5	2	1.78	2.0
<b>M77B</b>	12 - 64.9	C + 6.8	5.0	0.7	C + 1.5	2	2.62	3.0
<b>M77C</b>	65 - 250.9	C + 8.8	6.0	1.0	C + 1.5	3	3.53	4.0
<b>M77D</b>	251 - 420.9	C + 12.2	8.4	1.2	C + 2.0	3	5.33	4.0
<b>M77E</b>	421 - 650.9	C + 16.0	11.0	1.5	C + 2.0	4	7.00	5.0
<b>M77F</b>	651 - 999.9	C + 20.0	14.0	2.0	C + 2.5	5	8.40	6.0

### ORDER EXAMPLE

**M76C - 01250 - 02 06**  
**M77C - 01250 - 02 06**

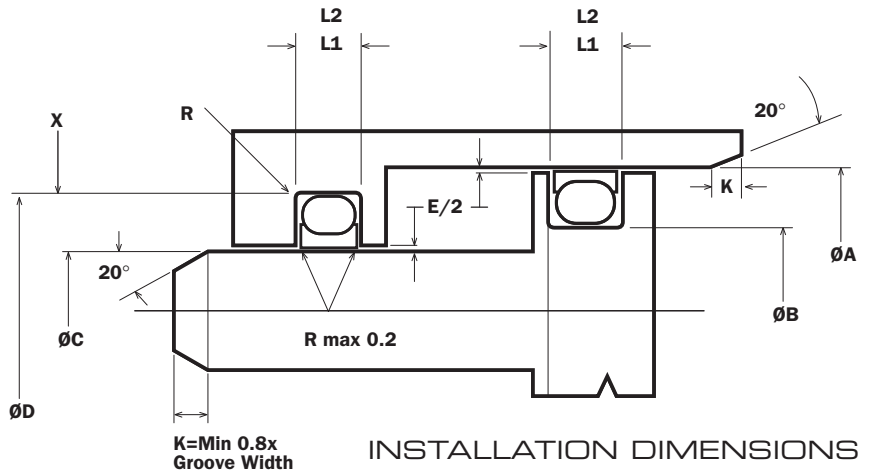
STYLE. \_\_\_\_\_ 'O' RING MAT.  
 DATUM SIZE \_\_\_\_\_ MATERIAL

# HYDRAULIC SEALS



M78 and M79 are compact double acting seals for rod and piston seals. They can replace O-ring seals, without hardware modifications, to improve performance for existing equipment.

Unless space is a premium, it is advisable to use larger section seals such as M74/M75 if possible.



INSTALLATION DIMENSIONS

Advantages	Surface Roughness	Operating Ranges
<ul style="list-style-type: none"> <li>• Simple and stable design.</li> <li>• Compatibility an temperature limited only by elastomer material.</li> <li>• Good extrusion resistance.</li> <li>• No vulcanising to hardware.</li> <li>• Compact seal envelope.</li> <li>• Good wear resistance.</li> </ul>	<ul style="list-style-type: none"> <li>• Cylinder/bore: Ra=0.05 - 0.6µm</li> <li>• Rod/shaft: Ra=0.2 - 0.5µm</li> <li>• GrooveØ: Ra&lt;2.5µm</li> <li>• Groove walls: Ra&lt;4µm</li> </ul>	<ul style="list-style-type: none"> <li>• Up to 350 bar</li> <li>• Oscillatory up to 5m/s. High frequencies over 5Hz - please consult Moontown.</li> <li>• Temperature from -25°C to +250° limited by the O-ring material.</li> </ul>

TABLE FOR TYPE M78

TYPE	GROOVE WIDTH L1 + 0.2	TYPE	GROOVE WIDTH L2 + 0.2	ROD ØC #8	GROOVE ØD H11	GROOVE DEPTH X	RADIUS R MAX	DIAMETRICAL CLEARANCE E MAX	O-RING	
									SERIES	C/S
M78A	2.40	M78F	3.80	4 - 9.9	C + 2.9	1.45	0.4	0.13	000	1.78
M78B	3.60	M78G	4.65	10 - 19.9	C + 4.5	2.25	0.4	0.13	100	2.62
M78C	4.80	M78H	5.70	20 - 39.9	C + 6.2	3.10	0.6	0.15	200	3.53
M78D	7.10	M78J	8.50	40 - 119.9	C + 9.4	4.70	0.8	0.17	300	5.33
M78E	9.50	M78K	11.20	120 - 400.9	C + 12.2	6.10	0.8	0.25	400	7.00

TABLE FOR TYPE M79

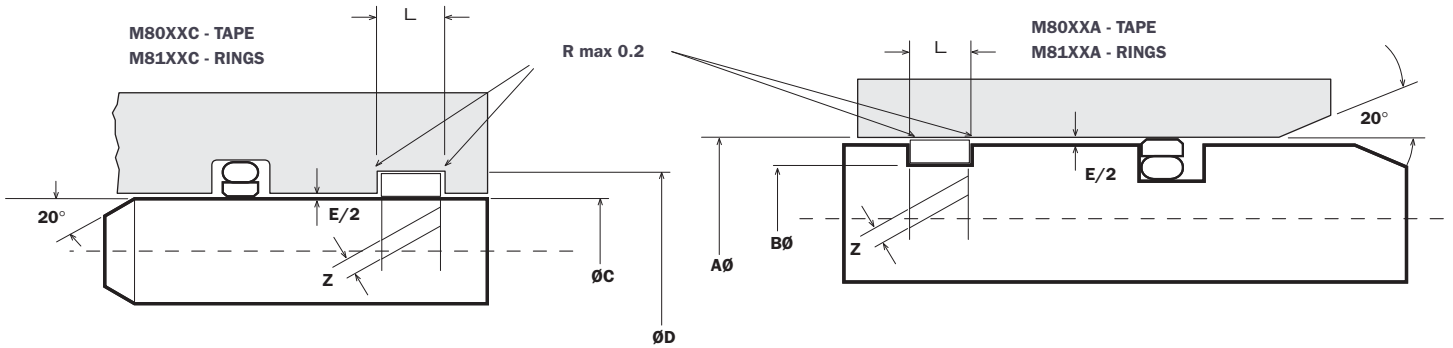
TYPE	GROOVE WIDTH L1 + 0.2	TYPE	GROOVE WIDTH L2 + 0.2	BORE ØA H9	GROOVE ØB h11	GROOVE DEPTH X	RADIUS R MAX	DIAMETRICAL CLEARANCE E MAX	O-RING	
									SERIES	C/S
M79A	2.40	M79F	3.80	8 - 13.9	A - 2.9	1.45	0.4	0.13	000	1.78
M79B	3.60	M79G	4.65	14 - 24.9	A - 4.5	2.25	0.4	0.13	100	2.62
M79C	4.80	M79H	5.70	25 - 45.9	A - 6.2	3.10	0.6	0.15	200	3.53
M79D	7.10	M79J	8.50	46 - 124.9	A - 9.4	4.70	0.8	0.17	300	5.33
M79E	9.50	M79K	11.20	125 - 400.9	A - 12.2	6.10	0.8	0.25	400	7.00

**ORDER EXAMPLE**

**M78C - 00350 - 02 06**  
**M79C - 00350 - 02 06**

STYLE. \_\_\_\_\_ 'O' RING MAT.  
 DATUM SIZE \_\_\_\_\_ MATERIAL

## INSTALLATION DIMENSIONS



### Advantages

- Very good anti-friction behaviour
- No stick-slip effect
- Good dry running characteristics
- Good wear resistance, long service life.

Wear rings are designed to guide the piston and piston rods of power cylinders and to absorb lateral forces where they occur. They also prevent metal to metal contact between sliding parts. Wear rings are available in tape or machined rings.

An important advantage is that metallic seizure cannot occur with the correct design. The most frequently used non-metallic wear rings are filled PTFE and compounds of PTFE and fabric materials.

Wear rings are easily fitted into the closed grooves on the piston or in the glands. The number of wear rings to be used will depend on the radial forces and the permissible surface pressure of the wear ring material, in addition to the length of stroke, the diameter and other design factors.

TABLE FOR TYPE M80 AND M81

TAPE	RING	ROD Ø C f8	GROOVE Ø D + 0.08	GROOVE WIDTH L + 0.2	DIAMETRAL CLEARANCE E MAX *	GROOVE Ø B - 0.05	CYLINDER Ø A H9	TAPE	RING
M8003C	/ M8103C	8 - 20	C + 3	3.2	0.4 - 1.0	A - 3	10 - 25	M8003A	/ M8103A
M8004C	/ M8104C	15 - 35	C + 5	4.2	0.5 - 2.0	A - 5	20 - 40	M8004A	/ M8104A
M8006C	/ M8106C	20 - 75	C + 5	6.3	0.5 - 2.0	A - 5	25 - 80	M8006A	/ M8106A
M8008C	/ M8108C	30 - 250	C + 5	8.1	0.5 - 2.0	A - 5	40 - 270	M8008A	/ M8108A
M8009C	/ M8109C	50 - 300	C + 5	9.7	0.5 - 2.0	A - 5	60 - 320	M8009A	/ M8109A
M8010C	/ M8110C	50 - 300	C + 5	10.0	0.5 - 2.0	A - 5	60 - 320	M8010A	/ M8110A
M8015C	/ M8115C	120 - 900	C + 5	15.0	0.5 - 2.0	A - 5	120 - 900	M8015A	/ M8115A
M8020C	/ M8120C	200+	C + 5	20.0	0.5 - 2.0	A - 5	200 +	M8020A	/ M8120A
M8025C	/ M8125C	300+	C + 5	25.0	0.5 - 2.0	A - 5	300 +	M8025A	/ M8125A
M8030C	/ M8130C	300+	C + 5	30.0	0.5 - 2.0	A - 5	300 +	M8030A	/ M8130A
M8040C	/ M8140C	300+	C + 5	40.0	0.5 - 2.0	A - 5	300 +	M8040A	/ M8140A
M8050C	/ M8150C	300+	C + 5	50.0	0.5 - 2.0	A - 5	300 +	M8050A	/ M8150A

### ORDER EXAMPLE

**M8015C - 01250 - 05 X**

STYLE. \_\_\_\_\_ CUT  
 DATUM SIZE \_\_\_\_\_ MATERIAL

\*The extrusion gap applies only to the area around the wear ring and not the area around the seal

## CALCULATING WEAR RING LENGTHS AND GAPS

If:

**L** = Length

**C** = Rod  $\varnothing$

**A** = Bore  $\varnothing$

**S** = Wear Ring Thickness

**Z** = Gap between ends of installed  
Wear ring (mm) ( see table A)

Then:

$L = 3.142 (C + S) - Z$  for Rod

$L = 3.142 (A - S) - Z$  for piston

## CALCULATING WEAR RING WIDTHS

$$H = 0.5 \frac{F}{F_g \times A}$$

where

**H** = Ring Width

**F** = Side Load (Kp)

**F<sub>g</sub>** = Material Specific Load (Table B)

**A** = Cylinder  $\varnothing$  or **C** = Shaft  $\varnothing$

TABLE A:

Dia A or C mm	Z mm up to 120°C	Z mm at 200 °C
50	3.5	5.5
100	6.0	8.0
200	11.0	13.0
300	16.0	20.0
600	30.0	37.0
800	38.0	48.0

TABLE B:

CODE No	Composition	Temp. / °C	Material Load kp / mm <sup>2</sup>	Application	Coeff. Friction
05	PTFE / Carbon graphite	-250 to +320	0.85 at 50°C 0.65 at 85°C	Water / Air	0.10
07	PTFE / Bronze	-150 to +290	1.60 at 50°C 0.90 at 85°C	Hydraulic Oil	0.08
10	UHMW - PE	-150 to +80	16.5 at 50°C	Water	0.11
99	PTFE / polyester	-150 to +145	340 at 50°C	Water, Air Hydraulic Oil	0.10

## CUT STYLES

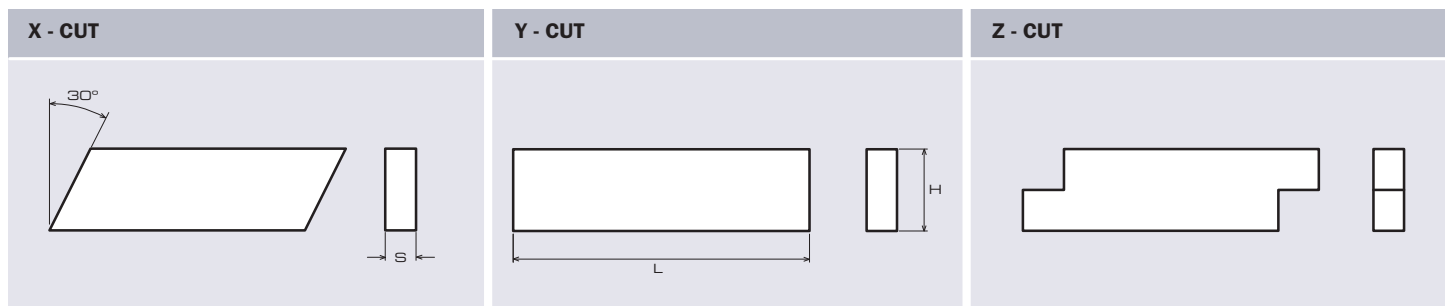
Bearing capacities are given for speeds up to 1.5 m/s, Above this value, consult Moontown. Moontown wear rings can be used in all hydraulic oil media.

PTFE materials have a low coefficient of friction but also low load characteristics. They are therefore more suitable for low load applications.

Thermoplast materials have a higher friction coefficient but also high load characteristics, and can be used in high pressure

Wear rings are made with different cuts: x for reciprocating, y for rotary and z for reciprocating or rotary movements in contaminated systems to protect the seal.

In extremely contaminated systems, consideration should be given to the use of code 99 material positioned inboard of the seal with any other wear ring material situated in the outboard position if required.



## ASSEMBLY NOTES HYDRAULIC SEALS

Assembly into two-piece glands should not require any special fitting tools. This applies to both rod and piston seals.

Fitting rod seals into one-piece glands should ideally use fitting tools. Sizes smaller than  $\varnothing 30.00$  should use light section seals. Standard section seals smaller than  $\varnothing 30.00$  and light section seals smaller  $\varnothing 12.00$  should be installed in open or split grooves only.

Rod seals should be carefully deformed into a kidney shape and located into its groove. The seal should then be sized with a sizing tool.

Fitting piston seals into a one-piece gland can be achieved by hand. The PTFE component should be carefully stretched and positioned in its groove, prior to compressing to size by hand.

For volume production, a pusher and sizing tool should be used.

Full details of assembly tools can be obtained from Moontown.

## GENERAL COMMENTS AND USEFUL TABLES

### PRESSURE CONVERSION FORMULAE:

1 BAR = 14.500 PSI	1 KPa = 0.0100 BAR
1 BAR = 100.00 KPa	1 KPa = 0.1450 PSI
1 BAR = 1.0193 KG/CM <sup>2</sup>	1 KPa = 0.0102 KG/CM <sup>2</sup>
1 PSI = 0.0690 BAR	1 KG/CM <sup>2</sup> = 0.9810 BAR
1 PSI = 6.8966 KPa	1 KG/CM <sup>2</sup> = 14.225 PSI
1 PSI = 0.0703 KG/CM <sup>2</sup>	1 KG/CM <sup>2</sup> = 0.0098 KPa

### TEMPERATURE CONVERSION

$$^{\circ}\text{F} = \frac{9}{5} (^{\circ}\text{C} + 32)$$

$$^{\circ}\text{C} = \frac{5}{9} (^{\circ}\text{F} - 32)$$

### FRICTION INFORMATION

The use of PTFE seals can lower friction; wear; improve motion etc, but the measurement of friction is related to several factors such as hardware finish / hardware material / temperature / lubrication etc.

As a guide only, and using the average value of spring load for designated seal design, the following formula may be used:

$$\text{Friction Torque (N/mm)} = 3.142 \mu \cdot F \cdot \frac{D^2}{2}$$

$$\text{Linear Friction (N)} = 3.142 \mu \cdot F \cdot D$$

Where F = Spring Load  
D = Diameter of Dynamic Surface  
 $\mu$  = Coefficient of friction for jacket material

### AVERAGE SPRING LOADS:

Seal Type

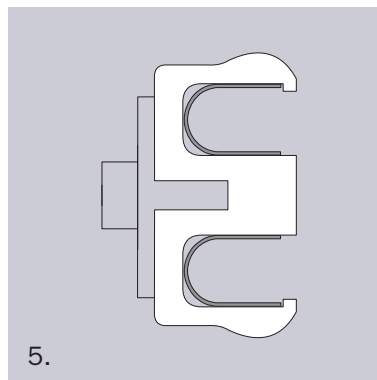
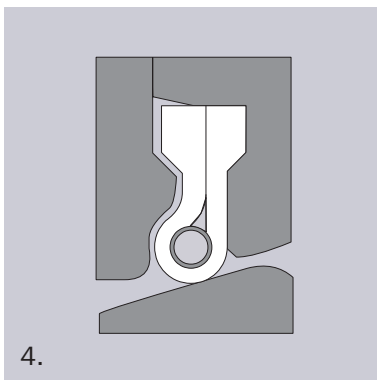
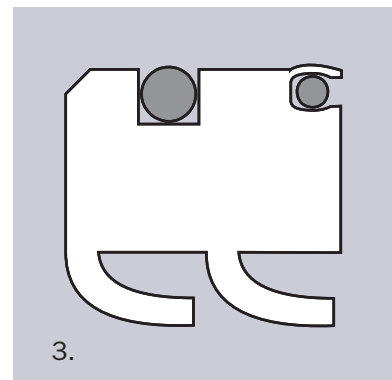
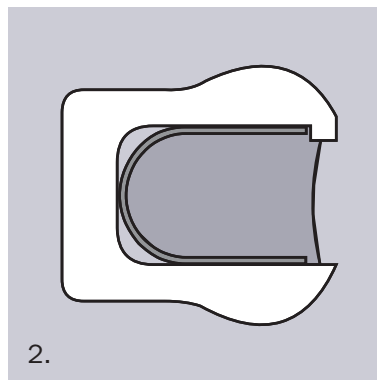
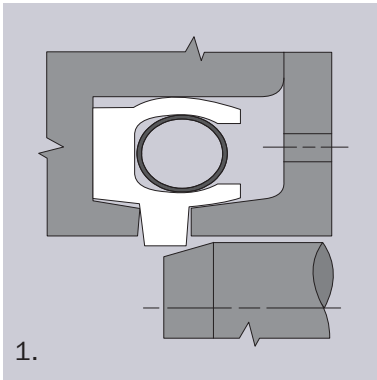
M01 4.6 N/mm of circumference

M20 1.4 N/mm of circumference

We hope you have found our product catalogue interesting. If you are undecided in the choice of seal or materials, then please contact us for advice, giving full details of the application demands. As a rule of thumb, the following general comments may be considered:

- Wherever possible, use the largest seal selection possible
- Decide how the seal will be assembled
- Make sure the surface finishes required for the application are attainable and how they can be achieved (Particularly important for cryogenic applications)
- The material selection chart contains useful information regarding jacket/slipper choice in respect of running surface hardness for dynamic applications
- Imperial sizes can be manufactured

## SPECIAL DESIGN

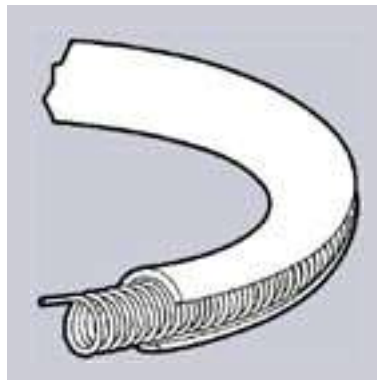
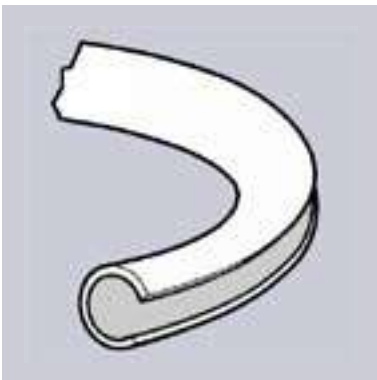
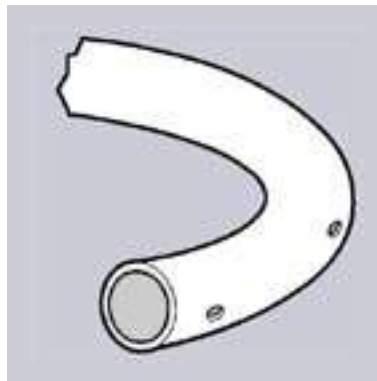
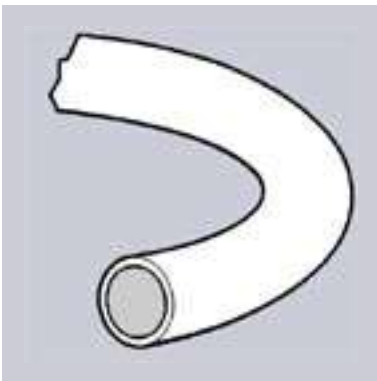


1. Anti Blow-Out seal
2. Sanitary seal with silicon seal.
3. Rotary Lipseal with spring integrated energised seal.
4. Butterfly valve seal.
5. Integral piston seal.

These special design profiles are only a part of the many sealing solutions available from Moontown.

From your inquiry, you can be sure of our attention to detail, from the proposal to product.

## O-RINGS AND C-RINGS



A wide range of "O" and "C" Rings are available in a choice of materials and platings.

Please contact Moontown for further Details.



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Seal performance is dependant on several factors, some of which, such as installation, are beyond our control.

Consequently, seal performance cannot be guaranteed. We do guarantee that our products are manufactured to the appropriate specifications and/or drawings.

Products may incorporate modifications not shown or described in this, or subsequent brochures.