


# PTFE SEALING SYSTEMS



M-STEP™  
M-GLIDE™  
M-TURN™  
M-CAP™  
M-WIPE™  
M-GUIDE™  
M-FLEX™

**M** SEALS





Fig. 1

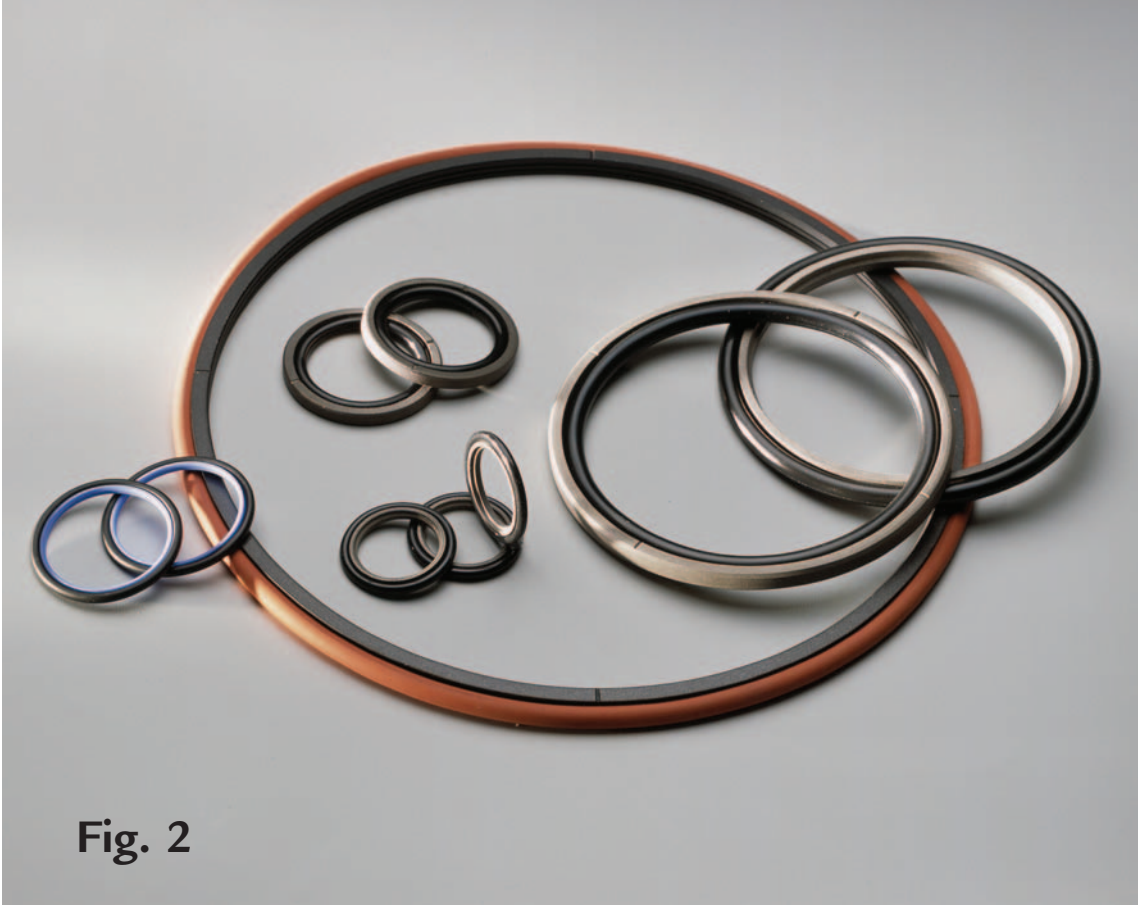


Fig. 2

## PTFE SEALING SYSTEMS

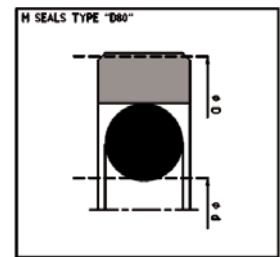
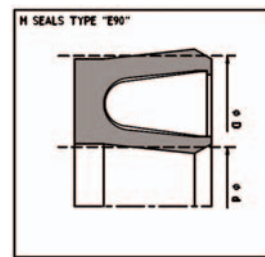
M Seals' program of PTFE seals consists of a variety of high-performance static and dynamic seals, designed for applications where high mechanic and chemical loads exceed the performance of traditional sealing materials.

PTFE seals are manufactured in processes that make the possible applications multiple, PTFE seals can be supplied according to standard programs, or adapted to existing housings, often without additional tooling cost.

PTFE seals are commonly used within chemical, food and drug, petrochemical, offshore and hydraulic industries.

### Concept

PTFE is a relatively inelastic material. To secure surface contact prior to system pressure, a PTFE seal must be equipped with an elastic element. This can be either a stainless steel spring (Fig.1) or an elastomer O-ring (Fig.2).



Each application determines whether one or the other is the most optimal type, often based upon working temperature or demand of chemical resistance.

### Materials

The basic material in these seals is PTFE, but in order to assure an optimal function, a variety of fillers like carbon, carbon-fibre, glass, bronze etc. can be added.

### Advantages of PTFE












- resistant to a large number of chemicals and do not react with the fluid.
- can be used within a wide temperature range, (-269° to +280°C) with considerations to the design.
- good wear property and the elastic elements' low setting, secure a long service life.
- has unlimited stock life, but considerations must be taken to lifetime of an eventual elastomer element.
- has extremely low friction and does not bond to the contact surface.
- high resistance to extrusion.
- high surface speeds can be obtained up to 15m/s reciprocating and 4m/s for rotating.

### Types

PTFE seals can be supplied as either single acting or double acting and can be adapted to AS568 O-ring grooves.

O-rings activated piston and rod seals acc. to ISO7425/1 and 7425/2.

# Range of seals Standard working parameters

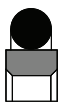
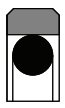
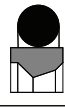
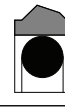
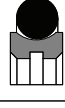
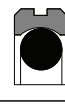

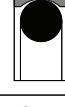

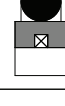




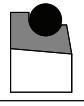
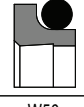
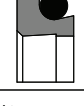
	Profile		Application			Working parameters			Speed		Page
			Static	Dynamic	Rotary	Max. pressure Dynamic Bar	Max. pressure Static Bar	Temperature °C	Dynamic m/sec.	Rotary m/sec.	
M-FLEX	190/192 	E90/E92 	B	A	B	250	450	-70° to +260°	15	1	7 + 8
M-FLEX	194 	E94 	A	B	B	250	450	-70° to +260°	10	0,5	7 + 8
M-FLEX	199 		B	B	A	250	250	-70° to +260°	15	4	9
M-FLEX	196 	E96 	A	B	(B)	400	600	-200° to +260°	5	0,1	10 + 11
M-FLEX	F93 	F92 	A	C	C	400	600	-200° to +260°	-	-	12
M-FLEX	F91 	F90 	A	C	C	250	450	-70° to +260°	-	-	12
	General information										20 + 21

A: Very good  
B: Good  
C: Not recommended

Not all maximum characteristics can be  
obtained at the same time.

# Range of seals

## Standard working parameters

	Profile	Application			Working parameters			Speed		Page
		Static	Dynamic	Rotary	Max. pressure Dynamic Bar	Max. pressure reduced gap Bar	Temperature °C * °F	Dynamic m/sec.	Rotary m/sec.	
M-GLIDE	D70  D80 	B	A	C	450	600	-54° to +200°	15	-	13 + 14
M-STEP	I70  E80 	B	A	(C)	450	600	-54° to +200°	15	0,1	13 + 14
M-TURN	D74  D84 	B	A	A	250	250	-54° to +200°	5	1	15
M-CAP	D78  D88 	B	A	C	250	250	-54° to +200°	5	-	16 + 17
M-GLIDE	D86  D76 	B	A	C	450	600	-54° to +200°	15	-	13 + 14
M-GLIDE	G10  G12  G14  G16 	A	A	B	-	-	-54° to +200°	15	0,1	18
M-WIPE	W54 	C	A	B	-	-	-54° to +200°	15	0,1	19
M-WIPE	W52 	C	A	B	-	-	-54° to +200°	15	0,1	19
M-WIPE	W50 	C	A	B	-	-	-54° to +200°	15	0,1	19

\* Note: Working temperature is depending on O-ring material see page 21

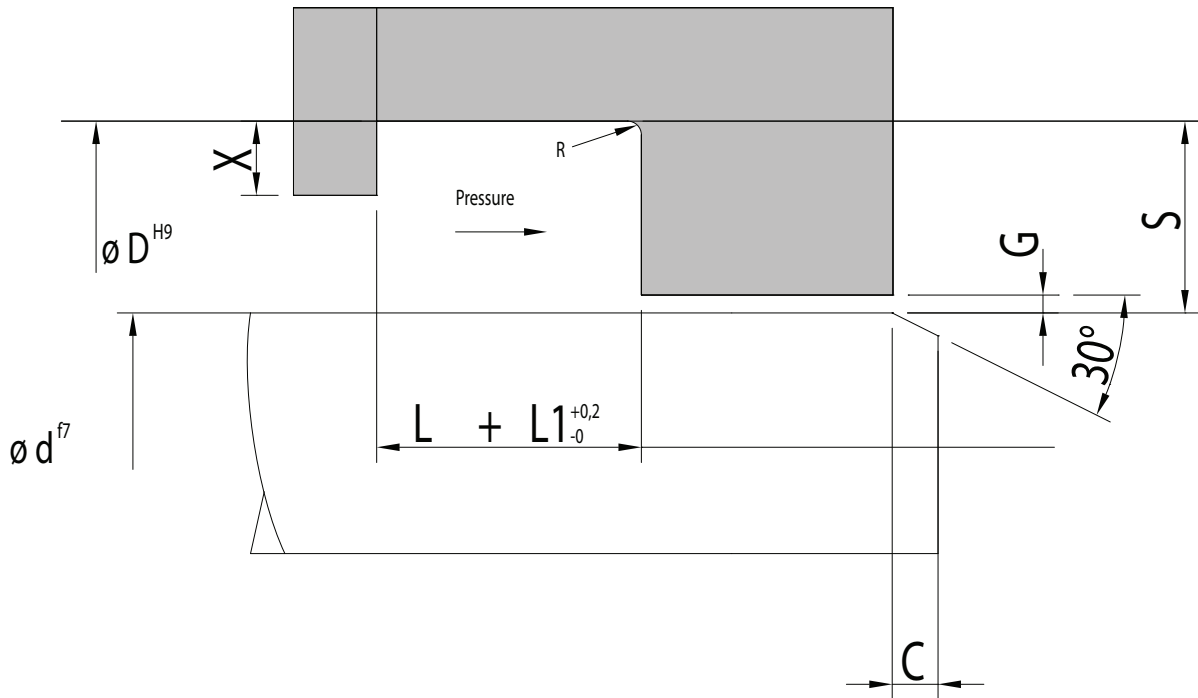
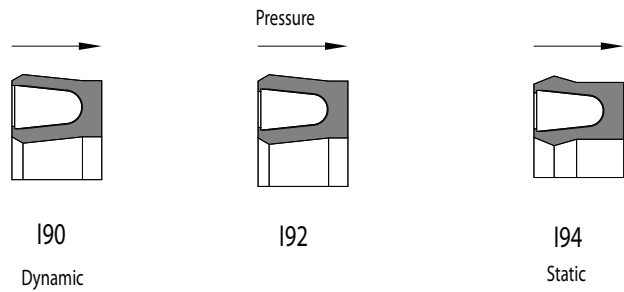
A: Very good  
B: Good  
C: Not recommended

Not all maximum characteristics can be obtained at the same time.

## GENERAL MATERIAL CHARACTERISTIC

MATERIAL CODE	CHARACTERISTIC	APPLICATION	TYPICAL PRODUCTS	RUNNING SURFACES
<b>501</b> Virgin PTFE White	High chemical resistance Low friction Limited wear resistance	Chemical industry Food industry Pharmaceutic industry	Back-up rings Washers Spring activated seals	Aluminum Stainless steel Chromed steel Bronze
<b>502</b> Virgin TFM White	High chemical resistance Low friction Limited wear resistance High mechanical strength	Chemical industry Food industry Pharmaceutic industry	Spring activated seals Valve seats	Aluminum Stainless steel Chromed steel Bronze
<b>504</b> Modified PTFE Green	High chemical resistance Low friction Improved wear resistance	Chemical industry Light hydraulics	Spring activated seals O-ring activated seals	Hardened steel Chromed steel
<b>510</b> PTFE/Car/Graphite Black	Good chemical resistance High mechanical strength Good wear resistance	Hydraulic industry Pneumatics Water/glycol solutions	O-ring activated seals Guide tape Spring activated seals	Hardened steel Chromed steel Stainless steel
<b>511</b> PTFE/Carbon Black	Good chemical resistance Good mechanical strength Good wear resistance	General	Spring activated seals	Hardened steel Chromed steel Stainless steel
<b>514</b> PTFE/Bronze Brownish	High mechanical strength High wear resistance	Hydraulic industry Hydraulic oils	O-ring activated seals Guide tape	Hardened steel Chromed steel Cast iron
<b>518</b> PTFE/Econol Beige	Good mechanical strength Good wear resistance Non-wearing Low friction	Rotary applications	Spring activated seals O-ring activated seals	Aluminum Stainless steel
<b>519</b> PTFE/Carbonfibre Greyish	High wear resistance High mechanical strength Good characteristic in water High chemical resistance	Water hydraulics Saltwater applications	Spring activated seals O-ring activated seals	Hardened steel Chromed steel Aluminum Ceramic coating Stainless steel
<b>507</b> PTFE/Glass Grey/Green	High chemical resistance Good mechanical strength Good wear resistance High mechanical strength	Hydraulic industry	O-ring activated seals Guide tape	Hardened steel Chromed steel Cast iron
<b>526</b> UHMW-PE White	High wear resistance High mechanical strength Good characteristic in water Good dry running properties Good chemical resistance	Pneumatics Food industry Pharmaceutic industry	Spring activated seals O-ring activated seals Guide tape	Hardened steel Chromed steel Aluminum Ceramic coating Stainless steel
<b>527</b> PUR57sh Transp.Yellow	Good mechanical strength Good wear resistance	Hydraulic industry	O-ring activated seals Wipers	Hardened steel Chromed steel Cast iron Ceramic coating Stainless steel

Above mentioned working conditions are guidelines and it is the end users responsibility to prove the product in his application



SECTION	HOUSING DIMENSION			d min.	C min.	X Min.	R Max	G Max	RECOMMENDED DIAMETER RANGE
	S	L	L1						
A	1,45	2,40	3,80	3,00	2,00	0,50	0,40	0,065	3,00 - 9,99
B	2,25	3,60	4,65	8,00	2,20	0,60	0,40	0,065	10,00 - 19,99
C	3,10	4,80	5,70	12,00	2,40	0,70	0,60	0,075	20,00 - 39,99
D	4,70	7,10	8,50	20,00	3,80	0,90	0,80	0,085	40,00 - 119,99
E	6,10	9,50	11,20	35,00	5,50	0,90	0,80	0,125	120,00 - 629,99

Groove width L is standard. L1 is for seals with extended heel.

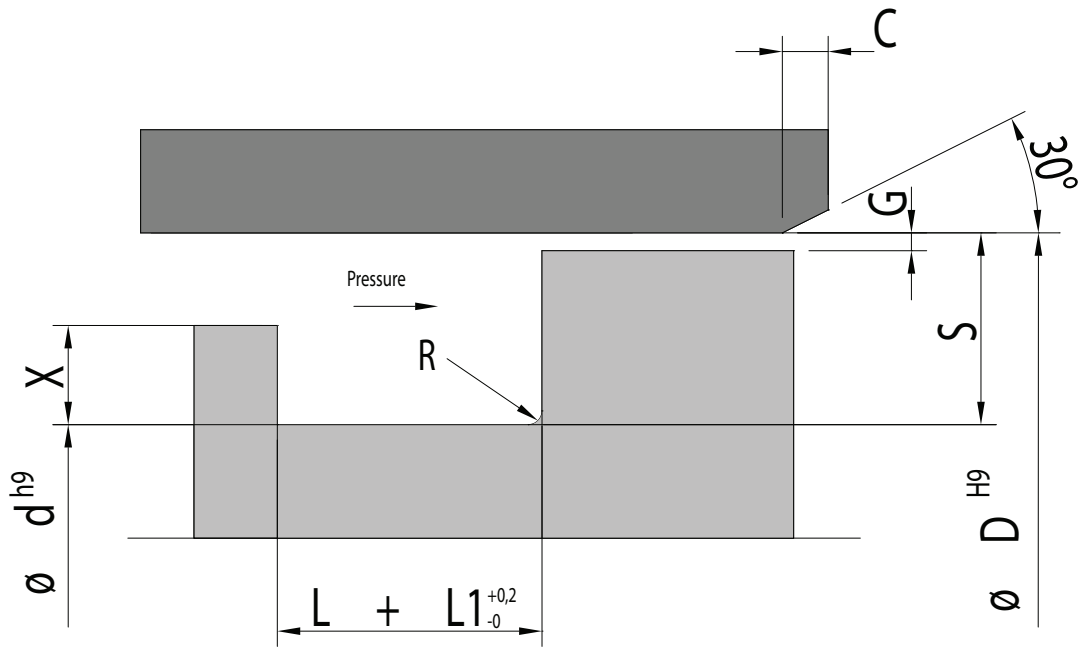
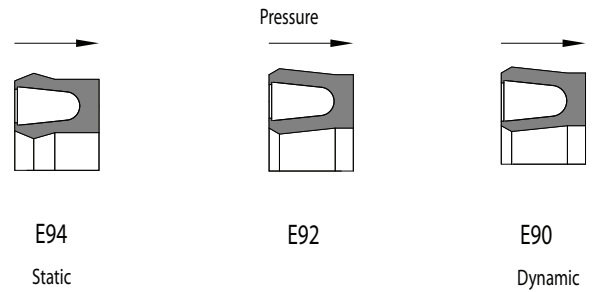
Assembly in split groove.  
For assembly in semi open groove see p.20

Ordering example:  
I90/ 511 80,00 - 89,40 - 7,10 - S

└─ Spring material (see note)  
└─ Housing dimension  
└─ Material acc. to table p. 6  
└─ Profile code

Note: S for standard stainless steel spring.  
E for Elgiloy spring.





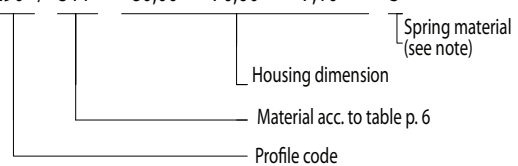
SECTION	HOUSING DIMENSION			d min.	C min.	X Min.	R Max.	G Max.	RECOMMENDED DIAMETER RANGE
	S	L	L1						
A	1,45	2,40	3,80	6,00	2,00	0,50	0,40	0,065	6,00 - 13,99
B	2,25	3,60	4,65	13,00	2,20	0,60	0,40	0,065	14,00 - 24,99
C	3,10	4,80	5,70	18,00	2,40	0,70	0,60	0,075	25,00 - 45,99
D	4,70	7,10	8,50	28,00	3,80	0,90	0,80	0,085	46,00 - 124,99
E	6,10	9,50	11,20	45,00	5,50	0,90	0,80	0,125	125,00 - 629,99

Groove width L is standard. L1 is for seals with extended heel.

Assembly in split groove.  
For assembly in semi open groove see p. 20

Ordering example:

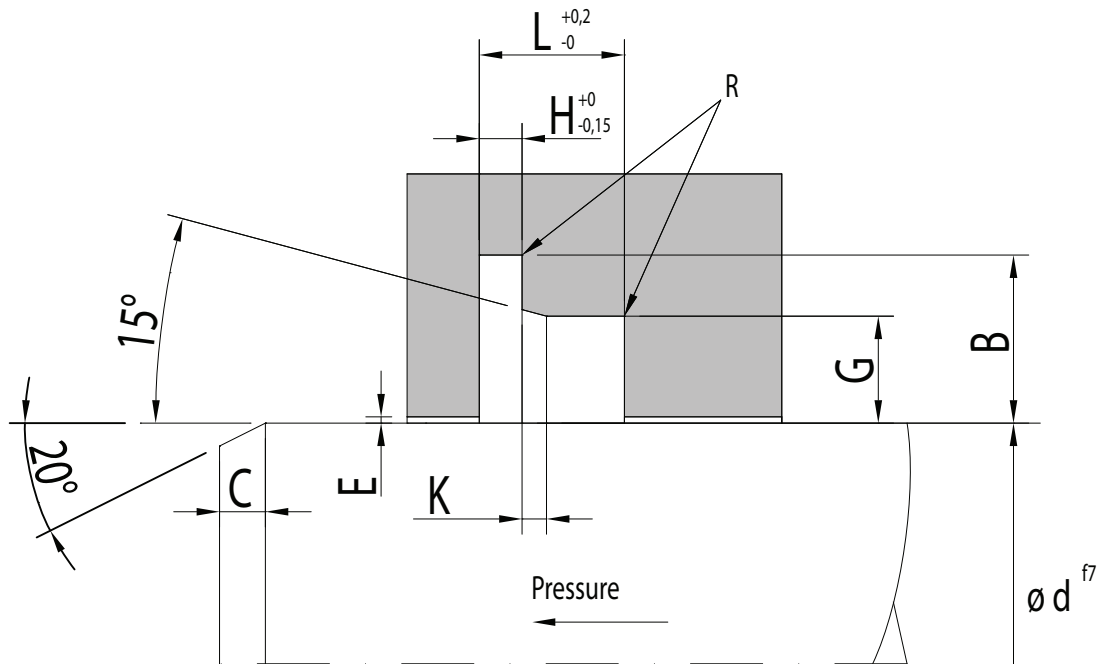
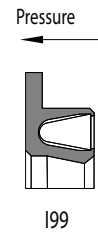
E90 / 511 80,00 - 70,60 - 7,10 - S



Note: S for standard stainless steel spring.  
E for Elgiloy spring.





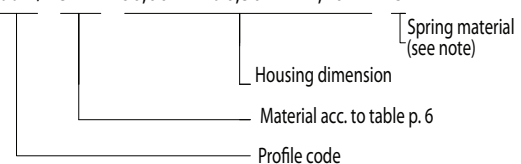


SECTION	HOUSING DIMENSION			d min.	C min.	B	R Max.	E Max.	K	RECOMMENDED DIAMETER RANGE
	G	L	H							
B	2,50	3,60	0,85	8,00	2,20	4,50	0,30	0,13	0,80	8,00 - 19,99
C	3,50	4,80	1,35	12,00	2,40	6,25	0,40	0,13	1,10	20,00 - 39,99
D	5,25	7,10	1,80	20,00	3,80	8,75	0,50	0,15	1,40	40,00 - 119,99
E	7,00	9,50	2,80	35,00	5,50	11,00	0,50	0,17	1,60	120,00 -

Assembly in split groove

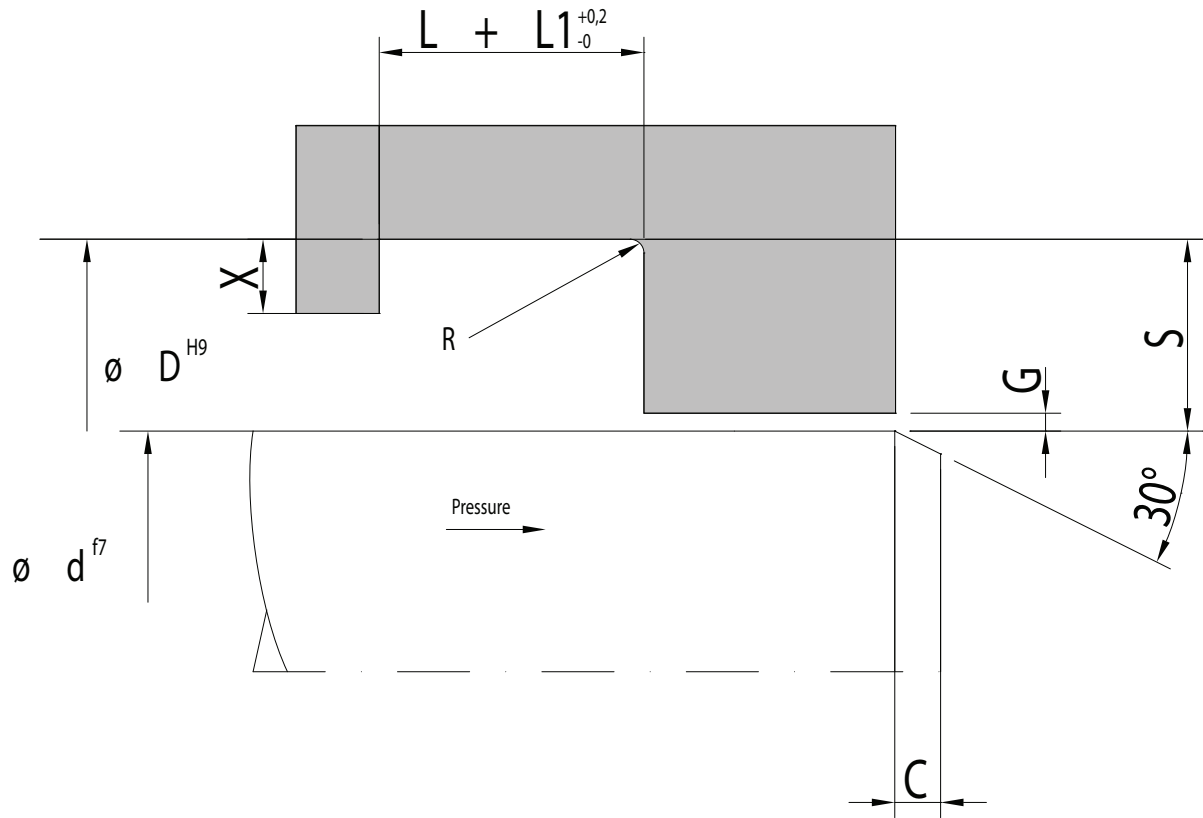
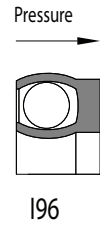
Ordering example:

199 / 511 80,00 - 90,50 - 7,10 - S



Note: S for standard stainless steel spring.  
E for Elgiloy spring.

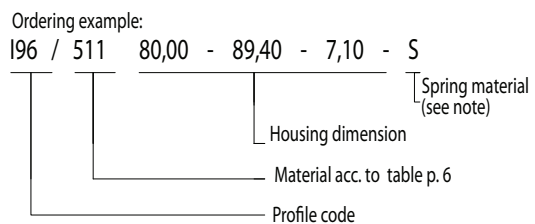




SECTION	HOUSING DIMENSION			d min.	C min.	X Min.	R Max.	G Max.	RECOMMENDED DIAMETER RANGE
	S	L	L1						
A	1,45	2,40	3,80	3,00	2,00	0,50	0,40	0,065	3,00 - 9,99
B	2,25	3,60	4,65	10,00	2,20	0,60	0,40	0,065	10,00 - 19,99
C	3,10	4,80	5,70	20,00	2,40	0,70	0,60	0,075	20,00 - 39,99
D	4,70	7,10	8,50	40,00	3,80	0,90	0,80	0,085	40,00 - 119,99
E	6,10	9,50	11,20	120,00	5,50	0,90	0,80	0,125	120,00 - 629,99

Groove width L is standard. L1 is for seals with extended heel.

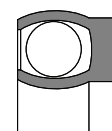
Assembly in split groove.  
For assembly in semi open groove see p. 20



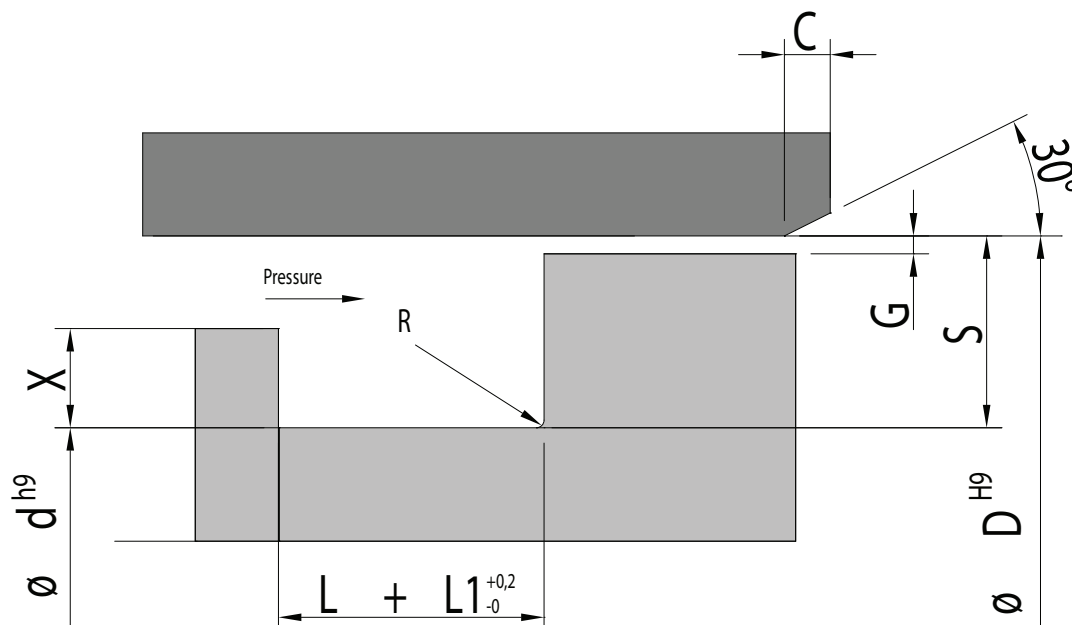
Note: S for standard stainless steel spring.  
E for Elgiloy spring.



Pressure →



E96

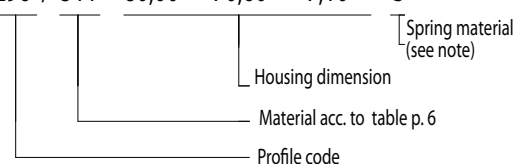


SECTION	HOUSING DIMENSION			d min.	C min.	X Min.	R Max.	G Max.	RECOMMENDED DIAMETER RANGE
	S	L	L1						
A	1,45	2,40	3,80	6,00	2,00	0,50	0,40	0,065	6,00 - 13,99
B	2,25	3,60	4,65	14,00	2,20	0,60	0,40	0,065	14,00 - 24,99
C	3,10	4,80	5,70	25,00	2,40	0,70	0,60	0,075	25,00 - 45,99
D	4,70	7,10	8,50	46,00	3,80	0,90	0,80	0,085	46,00 - 124,99
E	6,10	9,50	11,20	125,00	5,50	0,90	0,80	0,125	125,00 - 629,99

Groove width L is standard. L1 is for seals with extended heel.

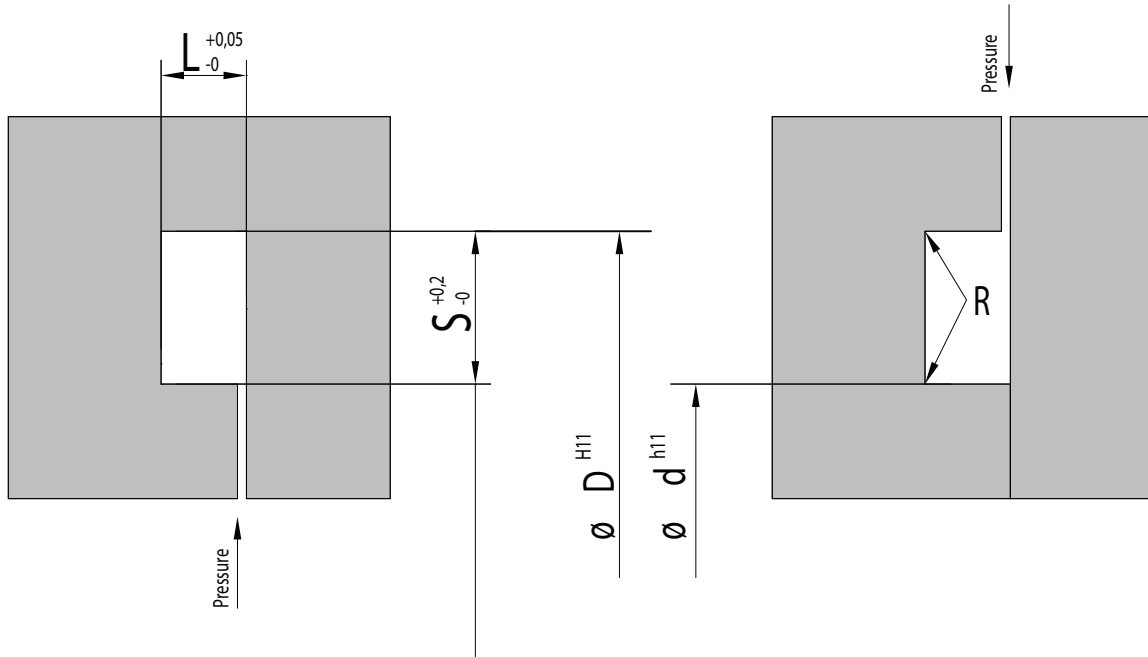
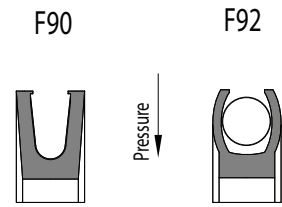
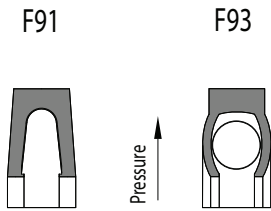
Assembly in split groove.  
For assembly in semi open groove see p. 20

Ordering example:  
E96 / 511 80,00 - 70,60 - 7,10 - S



Note: S for standard stainless steel spring.  
E for Elgiloy spring.

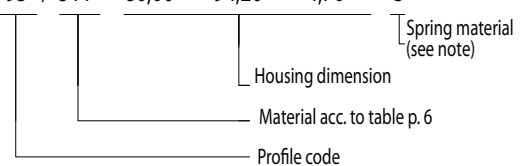




SECTION	HOUSING DIMENSION		F90 d min.	F91 D min.	F92 d min.	F93 D min.	R Max.	
	S	L						
A	2,4	1,45			5,00	12,00	0,40	
B	3,6	2,25	40,00	32,00	10,00	20,00	0,40	
C	4,8	3,10	45,00	45,00	15,00	30,00	0,60	
D	7,1	4,70	80,00	80,00	22,00	40,00	0,80	
E	9,5	6,10	110,00	110,00	30,00	50,00	0,80	

Ordering example:

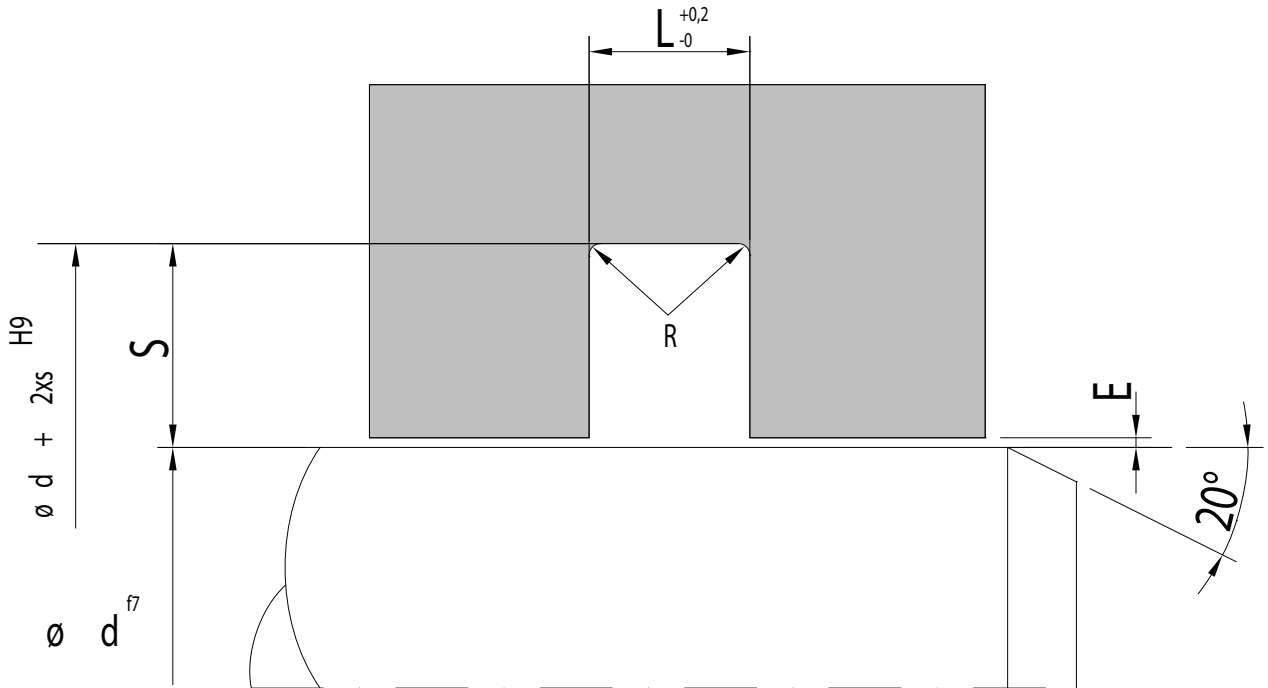
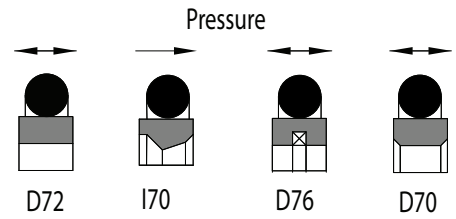
F93 / 511 80,00 - 94,20 - 4,70 - S



Note: S for standard stainless steel spring.  
E for Elgiloy spring.







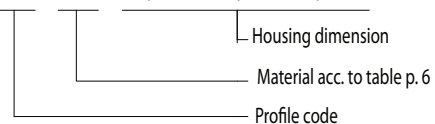
SECTION	$\varnothing d$	S	L	MAXIMUM GAP E		O-RING	R max.
				0-200 bar	200-400 bar		
A	4 - 7,9	2,45	2,20	0,40	0,20	1,78	0,4
B	8-18,9	3,75	3,20	0,50	0,30	2,62	0,6
C	19-37,9	5,50	4,20	0,50	0,30	3,53	0,8
D	38-199,9	7,75	6,30	0,60	0,40	5,33	1,3
E	200-255,9	10,50	8,10	0,70	0,50	6,99	1,5
F	256-649,9	12,25	8,10	0,70	0,50	6,99	1,5

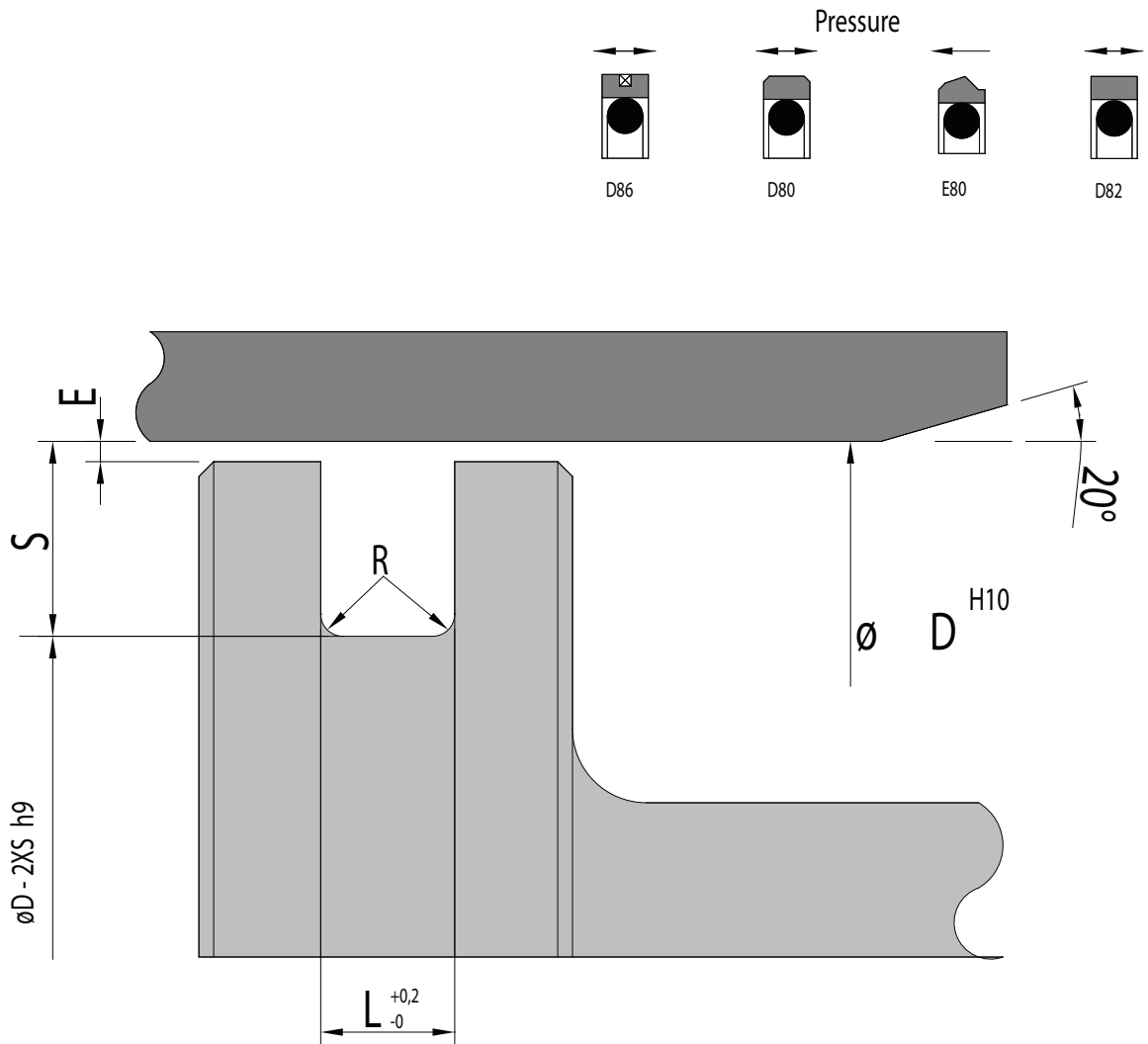
$\varnothing d$  IS RECOMMENDED STANDARD DIAMETER RANGE

Any section can be ordered different from standard diameter range

Ordering example:

D70 / 533 80,00 - 95,50 - 6,30



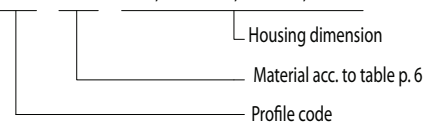


SECTION	$\varnothing D$	S	L	MAXIMUM GAP E		O-RING	R max.
				0-200 bar	200-400 bar		
A	8-14,9	2,45	2,20	0,40	0,20	1,78	0,4
B	15-39,9	3,75	3,20	0,50	0,30	2,62	0,6
C	40-79,9	5,50	4,20	0,50	0,30	3,53	0,8
D	80-132,9	7,75	6,30	0,60	0,40	5,33	1,3
E	133-329,9	10,50	8,10	0,70	0,50	6,99	1,5
F	330-669,9	12,25	8,10	0,70	0,50	6,99	1,5

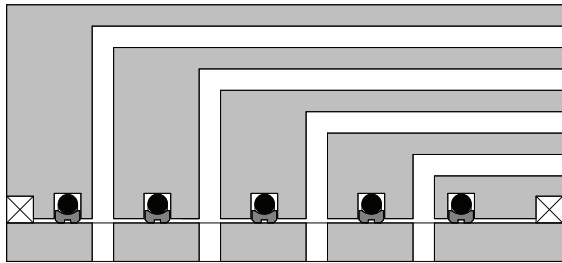
$\varnothing D$  IS RECOMMENDED STANDARD DIAMETER RANGE  
Any section can be ordered different from standard diameter range

Ordering example:

D80 / 533 80,00 - 95,50 - 6,30



**M SEALS**

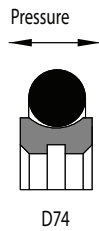


Example.

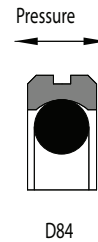
Double acting seal for slow turning applications such as swivel joints, rotary distributors etc.

Velocity: up to 1 m/sec.

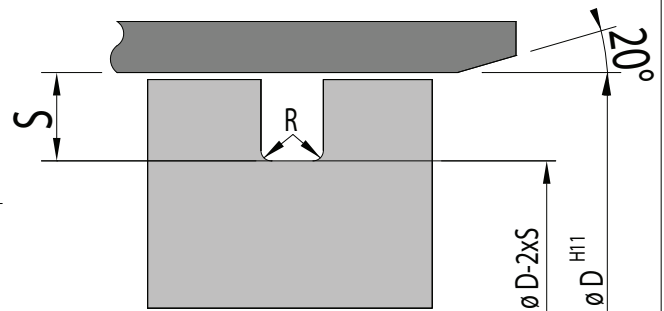
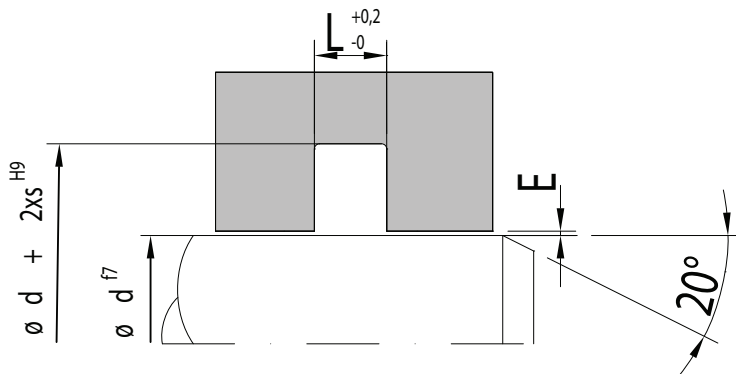
$P \times V < 40$  (pressure x velocity)



D74



D84



SECTION	$\varnothing d$ TYPE D74	$\varnothing D$ TYPE D84	S	L	MAXIMUM GAP E		O-RING	R max.
					0-200 bar	200-400 bar		
A	6 - 18,9	8 - 39,9	2,45	2,20	0,40	0,20	1,78	0,4
B	19 - 37,9	40 - 79,9	3,75	3,20	0,50	0,30	2,62	0,6
C	38 - 199,9	80 - 132,9	5,50	4,20	0,50	0,30	3,53	0,8
D	200 - 255,9	133 - 329,9	7,75	6,30	0,60	0,40	5,33	1,3
E	256 - 649,9	330 - 669,9	10,50	8,10	0,70	0,50	6,99	1,5
F	650 - 999,9	670 - 999,9	12,25	8,10	0,70	0,50	6,99	1,5

$\varnothing d$  AND  $D$  ARE RECOMMENDED STANDARD DIAMETER RANGE

Any section can be ordered different from standard diameter range

Ordering example:

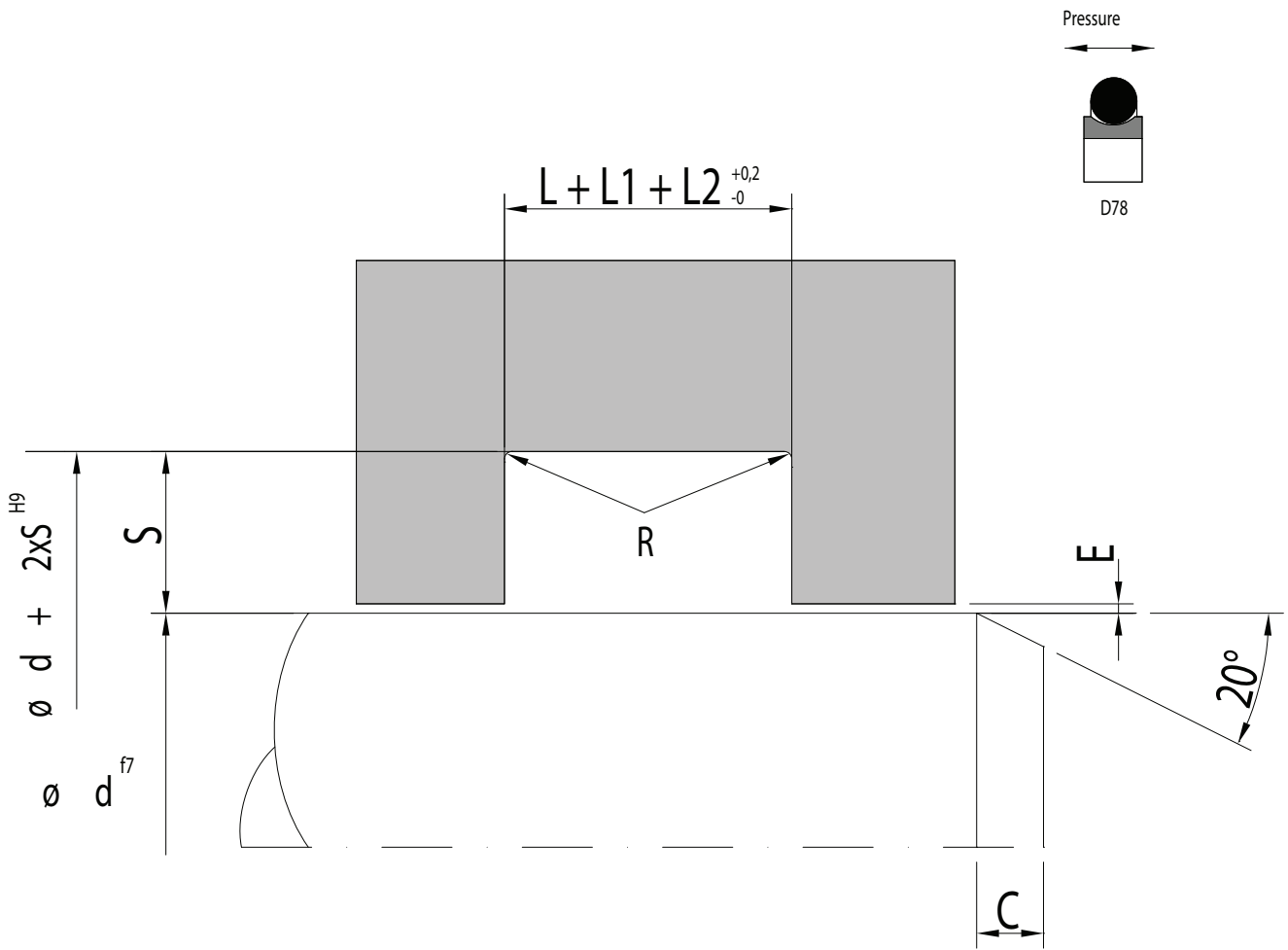
D84 / 510 80,00 - 69,00 - 4,20

Housing dimension

Material acc. to table p. 6

Profile code





SECTION	$\varnothing d$	S	L	L1	L2	O-RING	R max.	E max.	C
A	4 - 9,9	1,45	2,40	3,80	5,30	1,78	0,4	0,08	2,50
B	10 - 19,9	2,25	3,60	4,60	6,20	2,62	0,5	0,10	2,70
C	20 - 39,9	3,10	4,80	5,70	7,70	3,53	0,6	0,12	2,90
D	40 - 119,9	4,70	7,10	8,50	10,80	5,33	0,7	0,15	4,30
E	120 - 400,9	6,10	9,50	11,20	14,70	6,99	0,8	0,15	6,00
F	4 - 19,9	2,00	3,20	4,60	6,00	2,40	0,5	0,08	2,70
K	20 - 45,9	2,50	4,00	5,40	6,80	3,00	1,0	0,10	2,90
L	46 - 145,9	5,00	7,50	9,30	11,10	5,70	1,0	0,12	4,50
M	146 - 250,9	7,50	11,00	13,20	15,40	8,40	1,0	0,15	7,00

### $\varnothing d$ IS RECOMMENDED STANDARD DIAMETER RANGE

Any section can be ordered different from standard diameter range.

Groove width L is standard. L1 is for O-ring groove with 1 back-up ring.

L2 is for O-ring groove with 2 back-up rings.

Ordering example:

D78 / 501 80,00 - 89,40 - 7,10

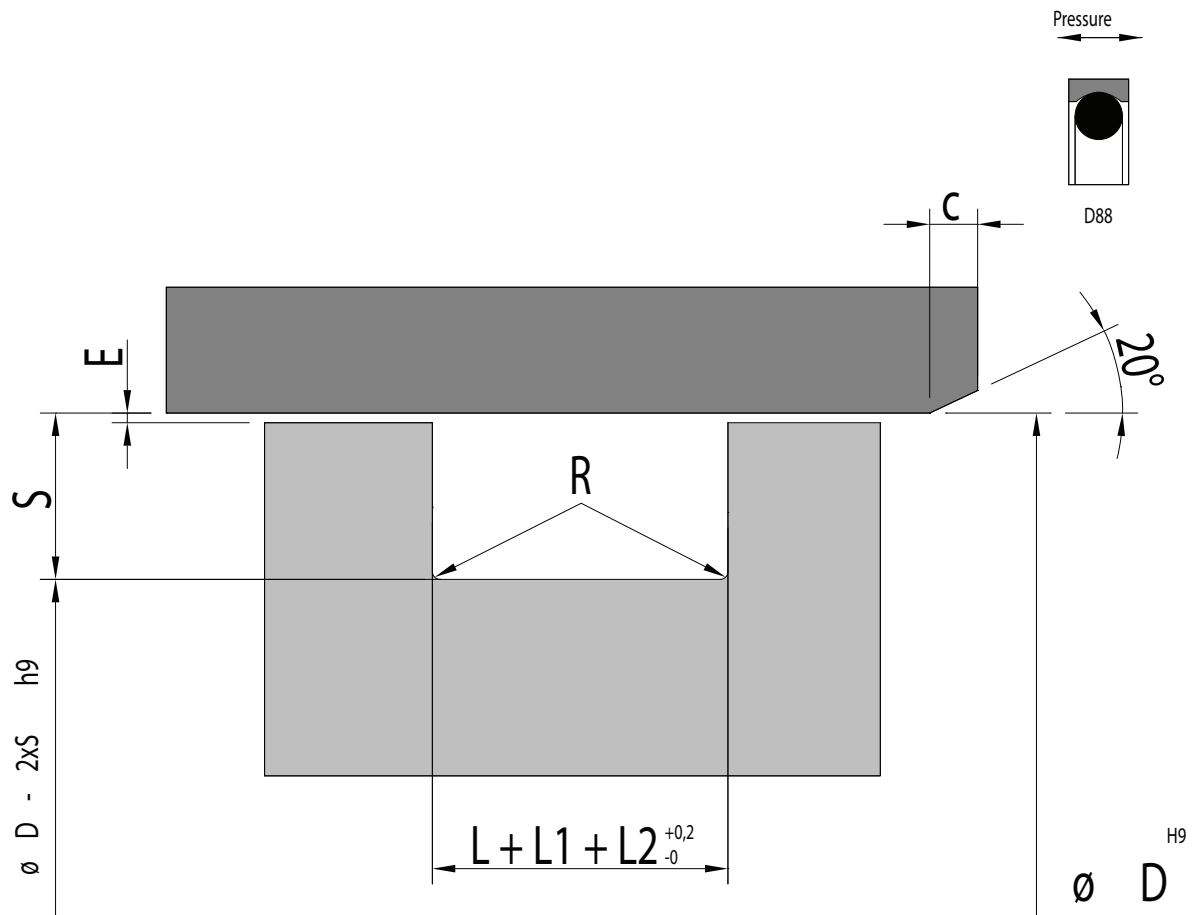
└─ Housing dimension

└─ Material acc. to table p. 6

└─ Profile code







SECTION	ø D	S	L	L1	L2	O-RING	R max.	E	C
A	8 - 13,9	1,45	2,40	3,80	5,30	1,78	0,4	0,08	2,50
B	14 - 24,9	2,25	3,60	4,60	6,20	2,62	0,5	0,10	2,70
C	25 - 45,9	3,10	4,80	5,70	7,70	3,53	0,6	0,12	2,90
D	46 - 124,9	4,70	7,10	8,50	10,80	5,33	0,7	0,15	4,30
E	125 - 400,9	6,10	9,50	11,20	14,70	6,99	0,8	0,15	6,00
F	8 - 24,9	2,00	3,20	4,60	6,00	2,40	0,5	0,08	2,70
K	25 - 54,9	2,50	4,00	5,40	6,80	3,00	1,0	0,10	2,90
L	55 - 159,9	5,00	7,50	9,30	11,10	5,70	1,0	0,12	4,50
M	160 - 265,9	7,50	11,00	13,20	15,40	8,40	1,0	0,15	7,00

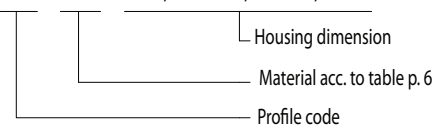
ø D IS RECOMMENDED STANDARD DIAMETER RANGE

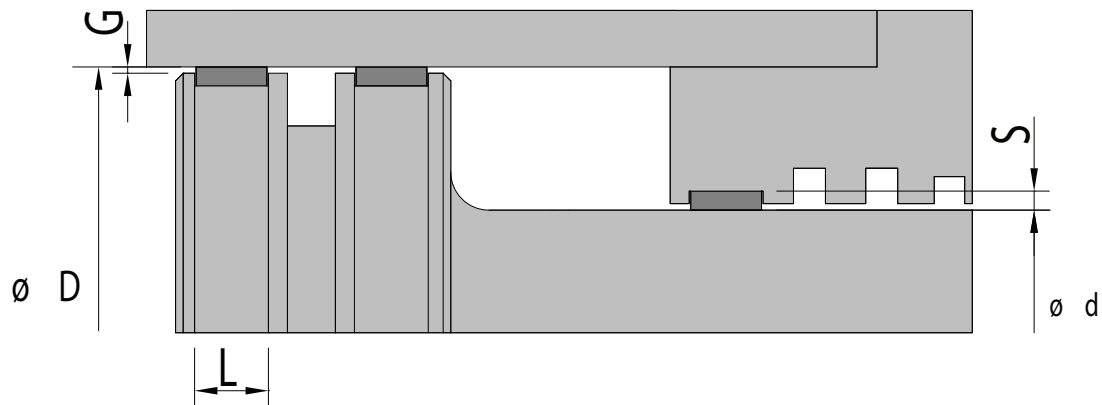
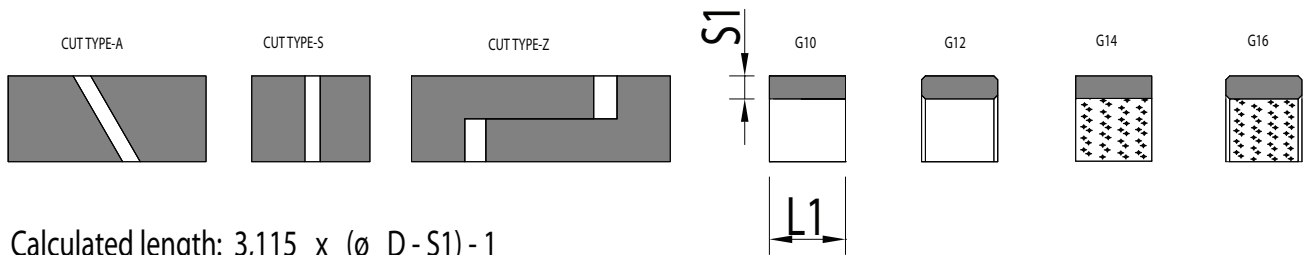
Any section can be ordered different from standard diameter range

Groove width L is standard. L1 is for O-ring groove with 1 back-up ring.  
L2 for O-ring groove with 2 back-up rings.

Ordering example:

D88 / 501 80,00 - 70,60 - 7,10





SIZE	S	L <sup>+0,2</sup> <sub>-0</sub>	S1	L1	ø DH10	ø d h9	R max.	G
15-032	1,5	3,2	1,5	3,0	ød + 3	øD - 3	0,3	See gap for corresponding seal
15-063	1,5	6,3	1,5	6,1	ød + 3	ød + 3	0,3	
16-025	1,55	2,5	1,55	2,4	ød + 3,1	ød + 3,1	0,3	
16-040	1,55	4,0	1,55	3,9	ød + 3,1	ød + 3,1	0,3	
20-042	2,0	4,2	2,0	4,0	ød + 4,0	ød + 4,0	0,3	
20-063	2,0	6,3	2,0	6,1	ød + 4,0	ød + 4,0	0,3	
20-081	2,0	8,1	2,0	7,9	ød + 4,0	ød + 4,0	0,3	
20-097	2,0	9,7	2,0	9,5	ød + 4,0	ød + 4,0	0,3	
20-150	2,0	15,0	2,0	14,8	ød + 4,0	ød + 4,0	0,3	
25-042	2,5	4,2	2,5	4,0	ød + 5,0	ød + 5,0	0,3	
25-056	2,5	5,5	2,5	6,1	ød + 5,0	ød + 5,0	0,3	
25-063	2,5	6,3	2,5	6,1	ød + 5,0	ød + 5,0	0,3	
25-081	2,5	8,1	2,5	7,9	ød + 5,0	ød + 5,0	0,3	
25-097	2,5	9,7	2,5	9,5	ød + 5,0	ød + 5,0	0,3	
25-150	2,5	15,0	2,5	14,8	ød + 5,0	ød + 5,0	0,3	
25-200	2,5	20,0	2,5	19,5	ød + 5,0	ød + 5,0	0,3	
25-250	2,5	25,0	2,5	24,5	ød + 5,0	ød + 5,0	0,3	
25-300	2,5	30,0	2,5	29,5	ød + 5,0	ød + 5,0	0,3	

Other sizes is available on request

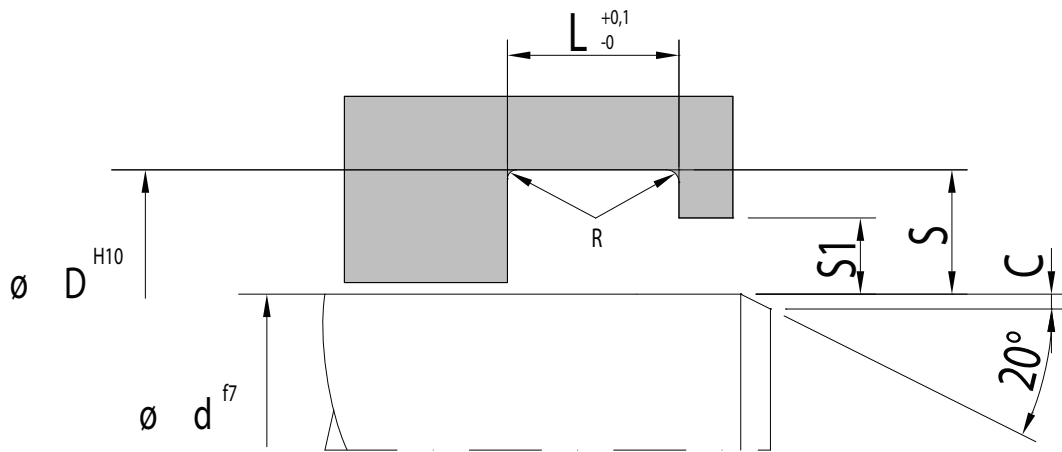
Ordering example in pieces  
 G10 / 533 80,00 - 85,00 - 9,7 - A

— Groove dimension + cut type  
 — Material acc. to table p. 6  
 — Profile code

Ordering example by the meter  
 G10 / 533 25-097

— Groove dimension  
 — Material acc. to table p. 6  
 — Profile code





W54

SECTION	HOUSING DIMENSION			d min.	$\varnothing D$	C Min.	R Max.	O-RING
	S	L	S1					
A	2,40	3,70	1,35	6,00	$\varnothing d + 4,80$	0,75	0,40	1,78
B	3,40	5,00	1,75	12,00	$\varnothing d + 6,80$	1,00	0,40	2,62
C	4,40	6,00	2,00	65,00	$\varnothing d + 8,80$	1,30	0,60	3,53
D	6,10	8,40	2,25	250,00	$\varnothing d + 12,20$	2,00	0,80	5,33
E	8,00	11,00	2,60	420,00	$\varnothing d + 16,00$	2,50	1,00	7,00
	10,00	14,00	3,30	650,00	$\varnothing d + 20,00$	2,80	1,30	8,40



W52

SECTION	HOUSING DIMENSION			d min.	$\varnothing D$	C Min.	R Max.	O-RING
	S	L	S1					
A	2,40	3,70	0,75	6,00	$\varnothing d + 4,80$	0,75	0,40	1,78
B	3,40	5,00	0,75	12,00	$\varnothing d + 6,80$	1,00	0,40	2,62
C	4,40	6,00	1,00	65,00	$\varnothing d + 8,80$	1,30	0,60	3,53
D	6,10	8,40	1,00	250,00	$\varnothing d + 12,20$	2,00	0,80	5,33
E	8,00	11,00	1,25	420,00	$\varnothing d + 16,00$	2,50	1,00	7,00
	10,00	14,00	1,25	650,00	$\varnothing d + 20,00$	2,80	1,30	8,40



W50

SECTION	HOUSING DIMENSION			d min.	$\varnothing D$	C Min.	R Max.	O-RING
	S	L	S1					
A	3,80	4,20	0,50	8,00	$\varnothing d + 7,60$	1,00	0,40	2,62
B	4,40	6,30	0,75	40,00	$\varnothing d + 8,80$	1,00	0,40	2,62
C	6,10	8,10	1,00	70,00	$\varnothing d + 12,20$	1,30	0,60	3,53
D	8,00	9,50	1,25	140,00	$\varnothing d + 16,00$	2,00	0,80	5,33
E	12,00	14,00	1,25	400,00	$\varnothing d + 12,00$	2,50	1,00	7,00
	14,00	16,00	1,75	650,00	$\varnothing d + 28,00$	2,80	1,30	8,40

$\varnothing d$  IS RECOMMENDED STANDARD DIAMETER RANGE

Any section can be ordered different from standard diameter range

Ordering example:

W52 / 533 80,00 - 88,80 - 6,00

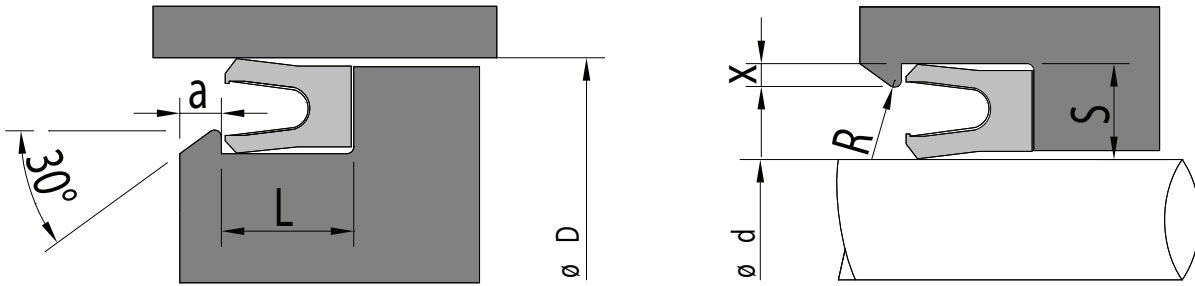
Housing dimension

Material acc. to table p. 6

Profile code



## Groove dimension for M-FLEX, snap-in design



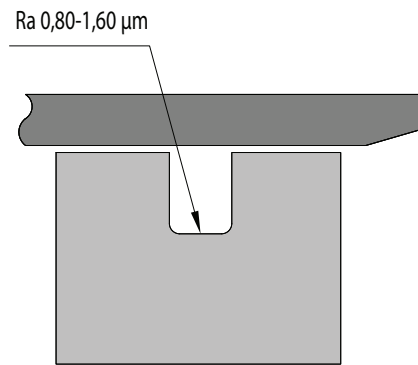
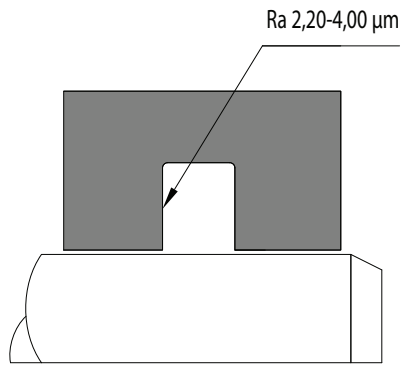
Profile	GROOVE DIMENSION		ø d min.	ø D min.	X +0,1	R	a
	S	L					
A	1,45	2,20	12,00	15,00	0,50	0,40	2,00
B	2,25	3,60	20,00	21,00	0,60	0,40	2,00
C	3,10	4,80	30,00	25,00	0,70	0,60	2,50
D	4,70	7,10	40,00	30,00	0,90	0,80	3,00
E	6,10	9,50	60,00	50,00	0,90	0,80	3,00

## Recommended surface finish for dynamic and static surfaces

Media	Static	Dynamic	Rotary
Low molecular gases and fluids	Ra ≤ 0,3	Ra ≤ 0,2	Ra ≤ 0,1
Fluids with low surface tension	Rt ≤ 1,2	Rt ≤ 0,8	Rt ≤ 0,4
Low temperature			
Low viscosity fluids	Ra ≤ 0,6	Ra ≤ 0,3	Ra ≤ 0,2
High molecular gases	Rt ≤ 2,4	Rt ≤ 1,2	Rt ≤ 0,8
Air and natural gas			
Normal and high viscosity fluids	Ra ≤ 0,8	Ra ≤ 0,4	Ra ≤ 0,2
Water, oils and phosphate esters	Rt ≤ 3,2	Rt ≤ 1,6	Rt ≤ 0,8



## Surface roughness for static surfaces on O-ring activated seals



## Determination of O-ring inside diameter Tolerance +3 %/-5 %

Type	D80, D82, D84 D88, E80	D70, D72 D74, I70	D78	W50	W52, W54
Section A	Nominal $\varnothing d$	$\varnothing d + 2,0 \text{ mm}$	Nominal $\varnothing d + 1 \text{ mm}$	$\varnothing d + 2,0 \text{ mm}$	$\varnothing d + 2,2 \text{ mm}$
Section B	Nominal $\varnothing d$	$\varnothing d + 3,4 \text{ mm}$	Nominal $\varnothing d + 1 \text{ mm}$	$\varnothing d + 3,5 \text{ mm}$	$\varnothing d + 3,0 \text{ mm}$
Section C	Nominal $\varnothing d$	$\varnothing d + 5,1 \text{ mm}$	Nominal $\varnothing d + 1 \text{ mm}$	$\varnothing d + 4,0 \text{ mm}$	$\varnothing d + 3,2 \text{ mm}$
Section D	Nominal $\varnothing d$	$\varnothing d + 6,9 \text{ mm}$	Nominal $\varnothing d + 1 \text{ mm}$	$\varnothing d + 5,0 \text{ mm}$	$\varnothing d + 3,8 \text{ mm}$
Section E	Nominal $\varnothing d$	$\varnothing d + 9,5 \text{ mm}$	Nominal $\varnothing d + 1 \text{ mm}$	$\varnothing d + 6,0 \text{ mm}$	$\varnothing d + 4,8 \text{ mm}$
Section F	Nominal $\varnothing d$	$\varnothing d + 13 \text{ mm}$	Nominal $\varnothing d + 1 \text{ mm}$		

Working temperature with NBR: -30° c to +100° c

Working temperature with FPM: -20° c to +200° c



*The safe choice for seals and moulded parts used in hydraulics, pneumatics, precision engineering and food/medical industries.*

## History and concept

In M Seals we specialize in seals for industrial use. We cover the whole spectrum from the finest precision seals to the largest heavy duty shaft seals and packings.

Our products address the needs of customers that wish to have a broad range of products and solutions at hand.

The company was founded in 1963 as Mogens Christensen, Ingeniør- & Handelsfirma A/S. We are undergoing a rapid period of development and we now have 3,300 m<sup>2</sup> of offices, lab, production and warehouses at our disposal. Our branch in Halmstad, Sweden, has grown significantly and our branch in China, has given us an entry point into this for M Seals already large market.

In 2007 M Seals became a part of the Diploma PLC group. This has opened new possibilities for our company, e.g. the cooperation with the American Hercules Sealing Products.

At M Seals we are specialized in sealing solutions for all kinds of industries. Individual custom parts in rubber and PTFE also are an important part of our business. We have developed our own automated production of M-FLEX™ spring-loaded PTFE lip seals in large series, making this product affordable for many new applications.

## Knowledge

At M Seals, we have developed extensive knowledge of seals and their applications, including their composition, lifetime and suitability for a specific job.

The right choice of seals minimizes the risk of unexpected breakdowns. Our range of seals is wide allowing us to provide multiple solutions. M Seals range alone covers about 50,000 items, of which a large proportion is stocked. We often cooperate with customers in the design of special solutions. We have close relationship with many of the world's leading manufacturers of sealing systems and, in cooperation with us, they provide their knowledge and experience to our customers.





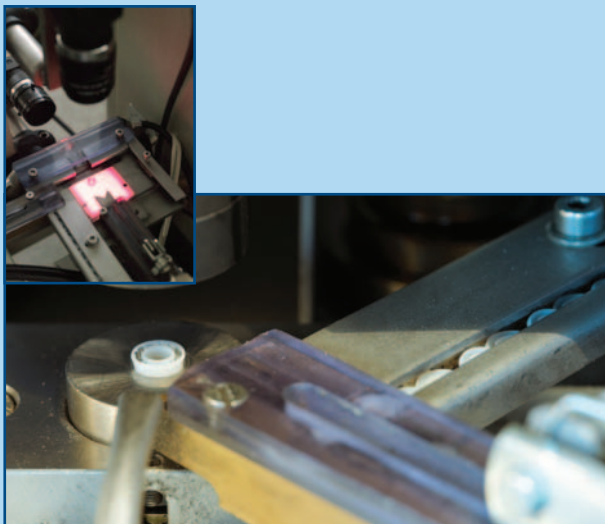
## Quality and inspection – a keystone

Today M Seals has at its disposal advanced equipment for testing all parameters that are important for the function of our rubber and PTFE parts, such as hardness, spec. gravity and compression set. For dimensional checking, we have a Micro-Vu high precision 3-D measuring machine working on the non-touch principle, which is superior for softer materials. Often we agree special inspection schemes, incoming or outgoing, with our customers. Our lab is equipped to carry out different tests for our customers, like volume swell in different liquids.

Since 1996, we have worked according to a certified ISO9001 quality assurance system, and our own production is documented according to the principles of TS16949. Furthermore, a number of our suppliers are certified to TS16949.

## Logistics and key accounts

At M Seals, we consider it to be of the utmost importance to offer the best logistic solutions, based on mutual agreements regarding deliveries at scheduled dates and proper quantities. Under such agreements smooth deliveries are ensured. Furthermore, your company will become a key account customer and benefit from extra monitoring and follow-up service on agreed frame orders. A dedicated person, with knowledge of your requirements, will be responsible for the service.



### Shaft seals

- Radial shaft seals
- Heavy duty shaft seals
- Mechanical seals
- V-rings
- Braided packings

### Hydraulics

- Rod and piston seals
- Guide rings
- Wipers
- Repair kits for earth moving equipment

### PTFE sealing systems

- M-FLEX™
- M-GLIDE™
- M-STEP™
- M-TURN™
- M-WIPE™
- M-CAP™
- M-GUIDE™

### Static seals

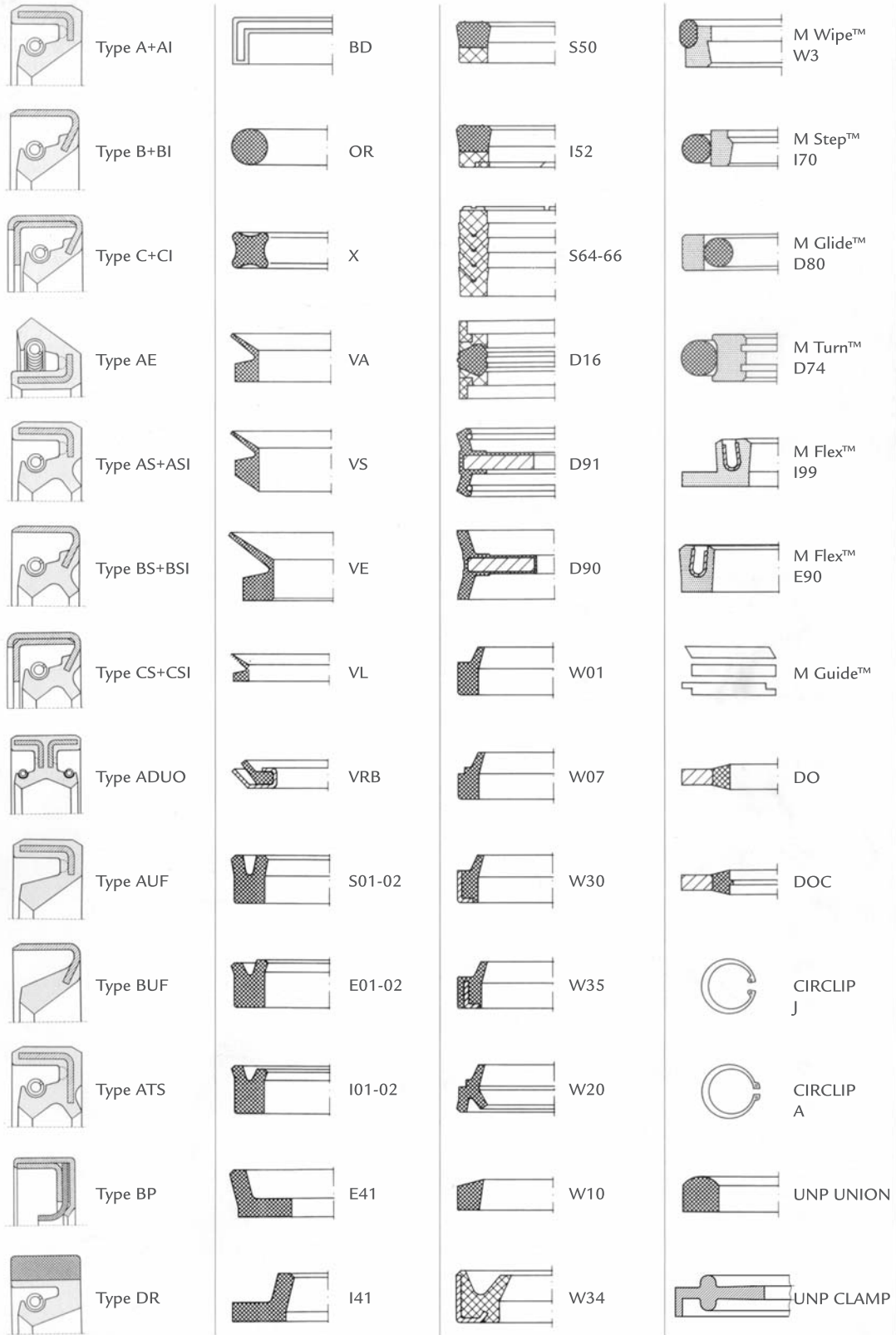
- O-rings
- O-rings in Kalrez®
- X-rings
- Sanitary gaskets/TC gaskets
- Bonded seals
- Flange gaskets in expanded PTFE

### Moulded parts

- Rubber
- Rubber/metal

### Accessories

- Back-up rings
- Circlips
- Speedi Sleeves
- O-ring kits



005093.VER3

## M SEALS

### Denmark

M Seals A/S  
Bybjergvej 13  
DK-3060 Espergærde  
Tel.: +45 49 13 02 05  
Fax: +45 49 13 01 41  
sales@m-seals.dk  
www.m-seals.dk

### Sweden

M Seals AB  
Montörgatan 7  
SE-302 60 Halmstad  
Tel.: +46 (0)35 15 89 40  
Fax: +46 (0)35 12 19 47  
sales@m-seals.se  
www.m-seals.se

### China

M Seals China  
Room 2508, Starlife Building  
Wangjing West  
Chaoyang District  
Beijing 100102, China  
Tel.: +86 10 8453 7121  
Fax: +86 10 6475 0529  
msealschina@gmail.com  
www.m-seals.com