TOP SEALING PARTNER

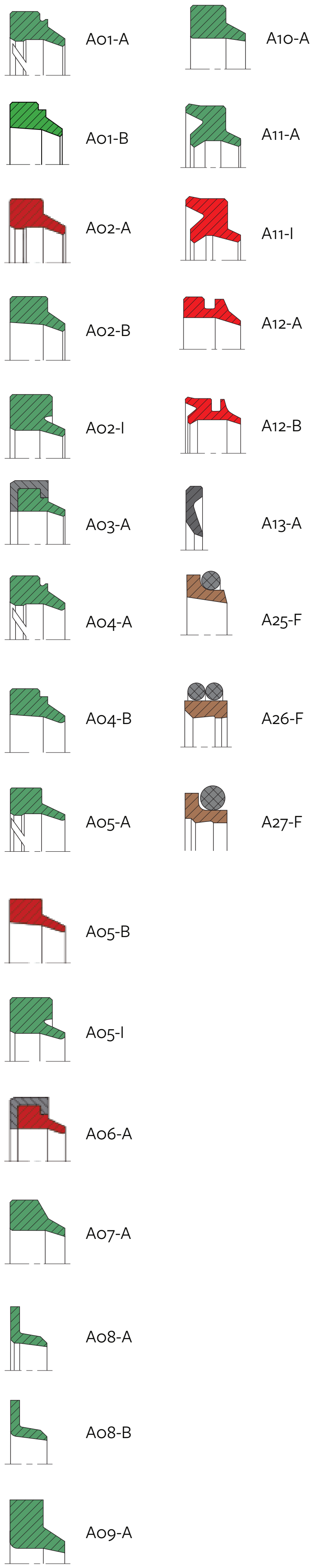
PART OF NOMO

Machined Seals & Materials

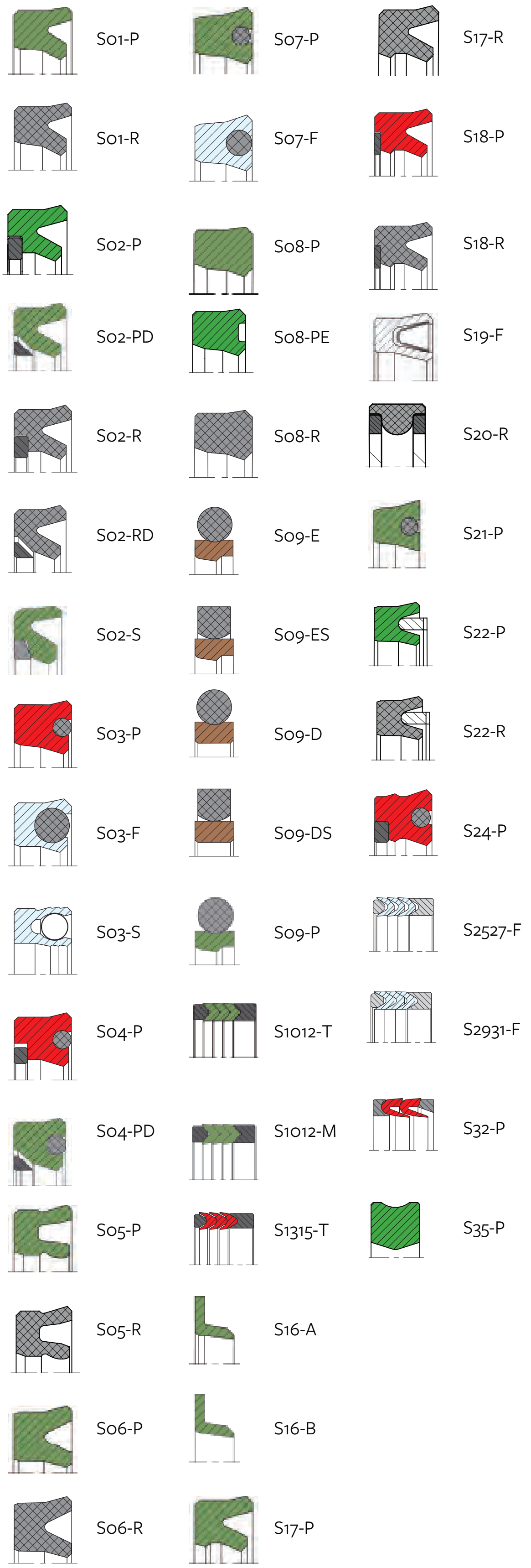
Seal Jet Profiles

Piston seals

Wipers

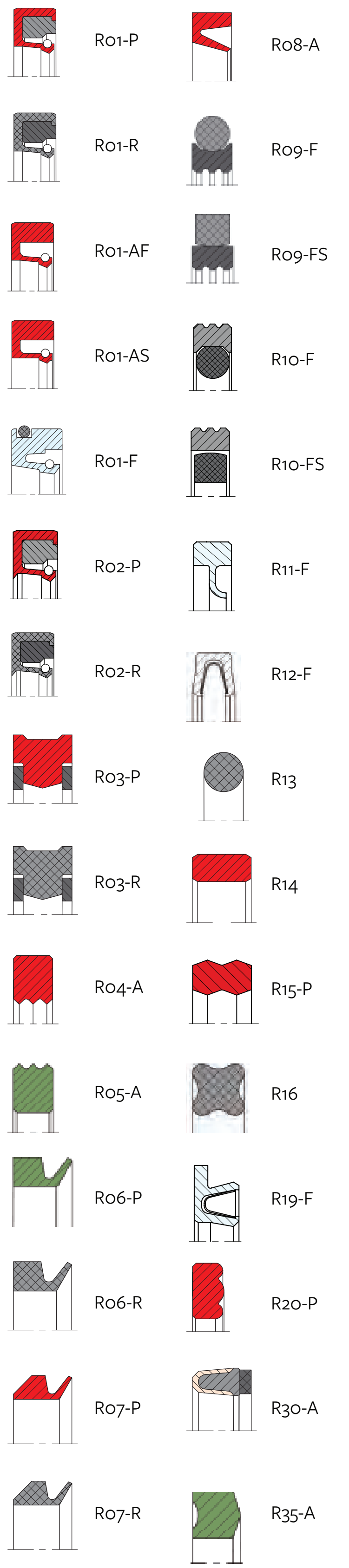


Rod seals



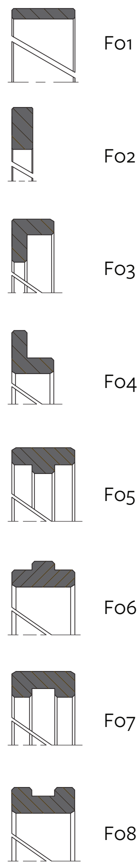
S01-P	S07-P	S17-R
S01-R	S07-F	S18-P
S02-P	S08-P	S18-R
S02-PD	S08-PE	S19-F
S02-R	S08-R	S20-R
S02-RD	S09-E	S21-P
S02-S	S09-ES	S22-P
S03-P	S09-D	S22-R
S03-F	S09-DS	S24-P
S03-S	S09-P	S2527-F
S04-P	S1012-T	S2931-F
S04-PD	S1012-M	S32-P
S05-P	S1315-T	S35-P
S05-R	S16-A	
S06-P	S16-B	
S06-R	S17-P	

Rotary and static seals



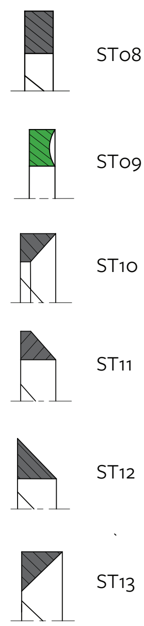
R01-P	R08-A
R01-R	R09-F
R01-AF	R09-FS
R01-AS	R10-F
R01-F	R10-FS
R02-P	R11-F
R02-R	R12-F
R03-P	R13
R03-R	R14
R04-A	R15-P
R05-A	R16
R06-P	R19-F
R06-R	R20-P
R07-P	R30-A
R07-R	R35-A

Guide rings



F01
F02
F03
F04
F05
F06
F07
F08

Back-up rings



ST08
ST09
ST10
ST11
ST12
ST13

SML Profiles

Wipers

- WR01
- WR01A
- WR02
- WR02A
- WR02B
- WR02C
- WR02D
- WR03
- WR04
- WR07
- WR08
- WR11
- WR12
- WR13
- WR13_E2
- WR14
- WR15
- WR16
- WR17
- WR18

Rod seals

- RS01
- RS01A
- RS01B
- RS01C
- RS02
- RS02A
- RS02B
- RS02C
- RS03
- RS04
- RS04A
- RS05
- RS05A
- RS08
- RS09
- RS09A
- RS09B
- RS10-12B
- RS91
- RS91B
- RS16
- RS17
- RS17A
- RS17B
- RS17C
- RS17D
- RS17E
- RS19
- RS19A
- RS20
- RS31-33
- RS35
- RS35A

Piston seals

- PS01
- PS01A
- PS01B
- PS01C
- PS02
- PS02A
- PS03
- PS04
- PS04A
- PS05
- PS05A
- PS08
- PS08A
- PS08B
- PS08C
- PS08D
- PS08E
- PS08F
- PS81
- PS81B
- PS81C
- PS09
- PS09A
- PS10-12B
- PS16
- PS16A
- PS17
- PS17A
- PS17B
- PS19
- PS19A
- PS20
- PS23
- PS35
- PS35A

Symmetrical seals

- PRS06
- PRS06A
- PRS06B
- PRS06C
- PRS06D
- PRS06E
- PRS07
- PRS10SP
- PRS10-12
- PRS10-12A
- PRS13-15
- PRS18
- PRS19
- PRS19B
- PRS19C
- PRS19D
- PRS22
- PRS25-27
- PRS99

Back-up rings

- BUR08
- BUR09
- BUR10
- BUR11
- BUR12
- BUR13

Guide rings

- BWR01
- BWR01A
- BWR03
- BWR04
- BWR05
- BWR06
- BWR07
- BWR08
- BWR09

Static seals and O-rings

- FL01A
- FL02B
- FL03
- FL04
- FL05
- FL06
- FL07
- FL08
- OR
- ORH
- ORV
- QR01
- QR02
- SS01

Rotary seals

- OS01A
- OS02A
- OS03A
- OS08
- OS08A
- R03
- R04
- R04A
- R05
- R05A
- VR06
- VR07
- R08
- R08D
- R09
- R09A
- R10
- R10A
- R11
- R11D
- R35A
- R35B

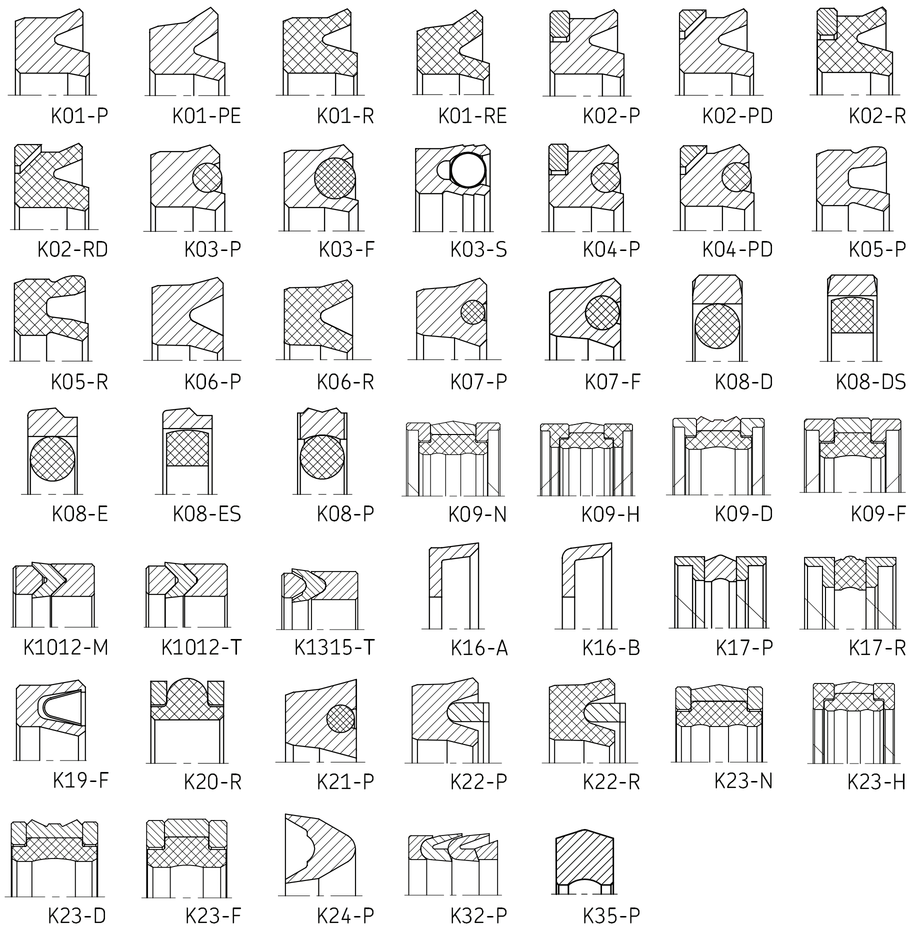
Mining seals

- P50
- P50A
- P51
- P51A
- P51G
- P52
- P53
- P54
- P54A
- P55
- R50
- R50A
- R51
- R52
- R53
- W50
- W51
- W53
- W54
- BWR01-P
- BWR01-R
- P58

Materials	COLOUR	SHORE A/D	TEMPERATURE	
POLYURETHANES			**min.**	**max.**
PU		95/48	-30	110
HPU		95/48	-20	110
SPU		95/48	-20	110
TPU		95/48	-50	100
GPU		95/47	-30	110
XPU		97/57	-30	115
XHPU		97/60	-20	115
XSPU		97/58	-20	115
GPU54D		97/54	-30	110
PU SOFT		86/-	-30	95
PU HOT		96/-	-30	135
PU C-RED		95/-	-30	125
ELASTOMERS			**min.**	**max.**
NBR		85/-	-30	100
NBR SOFT		73/-	-35	110
NBR COLD		82/-	-50	105
NBR HARD		95/-	-25	100
FPM BLACK		80/-	-20	220
FPM BROWN		85/-	-25	220
FPM SOFT		74/-	-25	220
EPDM		85/-	-50	150
HNBR		85/-	-30	150
MVQ		84/-	-60	210
TOPFLAS (TFE/P / FEPM)		83/-	-10	200
TOPFLON			**min.**	**max.**
TF100		-/57	-200	260
TF200		-/60	-200	260
TF201		-/55	-200	260
TF300		-/58	-200	260
TF301		-/62	-200	260
TF400		-/64	-200	260
TF401		-/60	-200	260
TF402		-/60	-200	260
TF411		-/59	-200	250
TF412		-/59	-200	260
TF500		-/55	-200	260
TF501		-/64	-200	250
TF502			-200	260
TOPPLAST MATERIALS & OTHERS			**min.**	**max.**
TOPTAL (POM)		-/82	-50	100
TOPMID (PA)		-/77	-40	110
UHMWPE (PE1000)		-/61	-200	90
PEEK		-/87	-100	260
TOPTEX		-	-40	130

Seal Jet Profiles

Piston seals

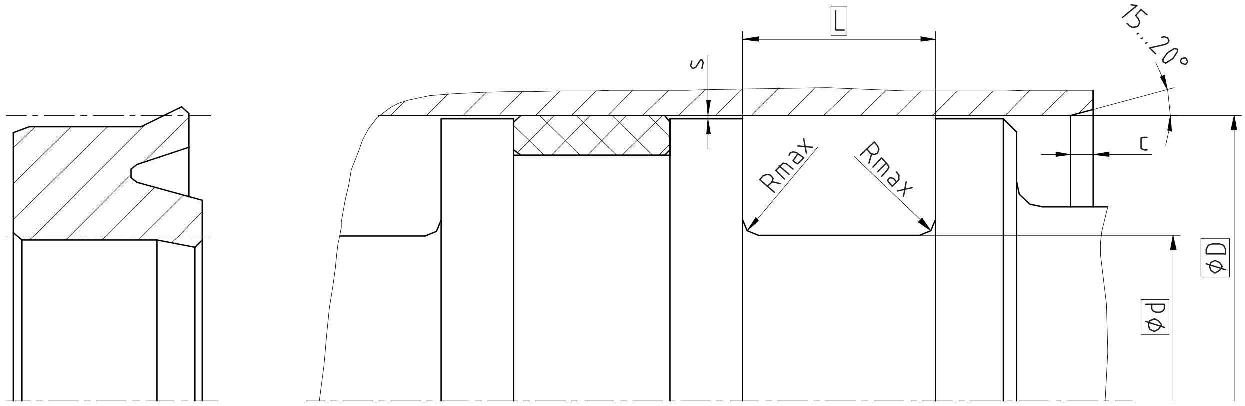


Seal data sheet

K01-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33	0,18	0,11	0,05
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42	0,27	0,20	0,14
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,67	0,52	0,45	0,39
> 750 ...	D - 40	26,0	0,4	13,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C	0,7 m/s	
TPU	-50 °C...+110 °C	0,5 m/s	
GPU	-30 °C...+110 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K01-P, D=100mm, d=85mm, L=10mm, PU

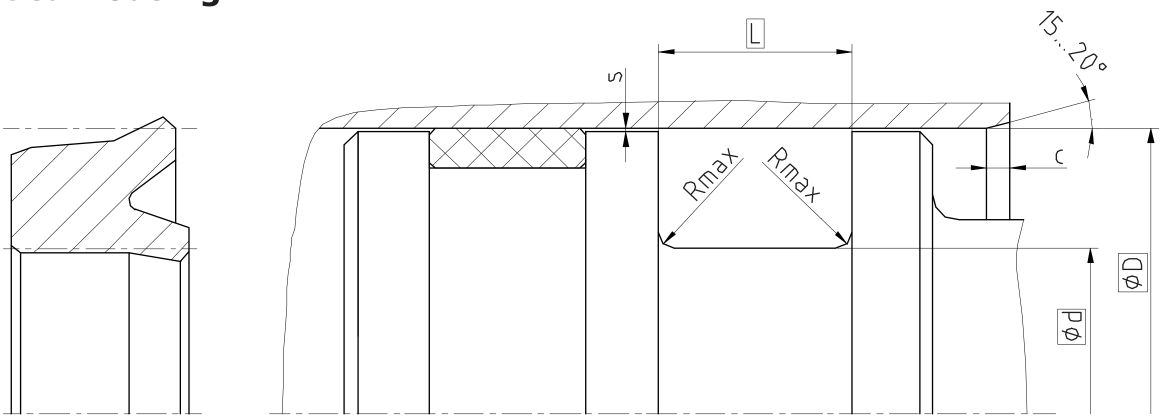
Piston Seal K01-P	**100 x 85 x 10**	**PU**
Profile	D x d x L	Sealing material

Seal data sheet

K01-PE

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33	0,18	0,11	0,05
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42	0,27	0,20	0,14
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,67	0,52	0,45	0,39
> 750 ...	D - 40	26,0	0,4	13,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C	0,7 m/s	
TPU	-50 °C...+110 °C	0,5 m/s	
GPU	-30 °C...+110 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K01-PE, D=100mm, d=85mm, L=10mm, PU

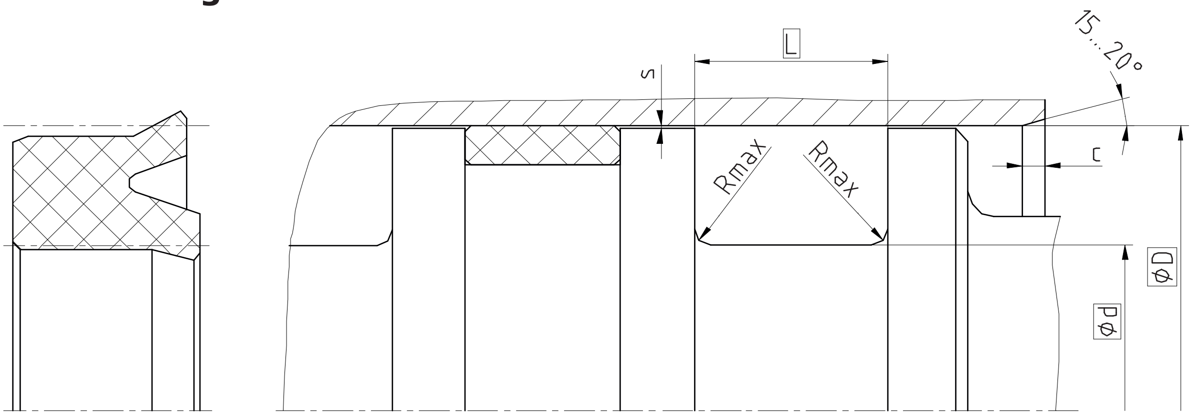
Piston Seal K01-PE	**100 x 85 x 10**	**PU**
Profile	D x d x L	Sealing material

Seal data sheet

K01-R

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,29	0,22	0,20
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,32	0,24	0,22
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,35	0,27	0,25
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,39	0,30	0,29
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,40	0,34	0,32
> 750 ...	D - 40	26,0	0,4	13,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
NBR	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
MVQ	-60 °C...+200 °C	-	-
TOPFLAS	-10 °C...+200 °C	0,5 m/s	160 bar (16 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K01-R, D=100mm, d=85mm, L=10mm, NBR

Piston Seal K01-R	**100 x 85 x 10**	**NBR**
Profile	D x d x L	Sealing material

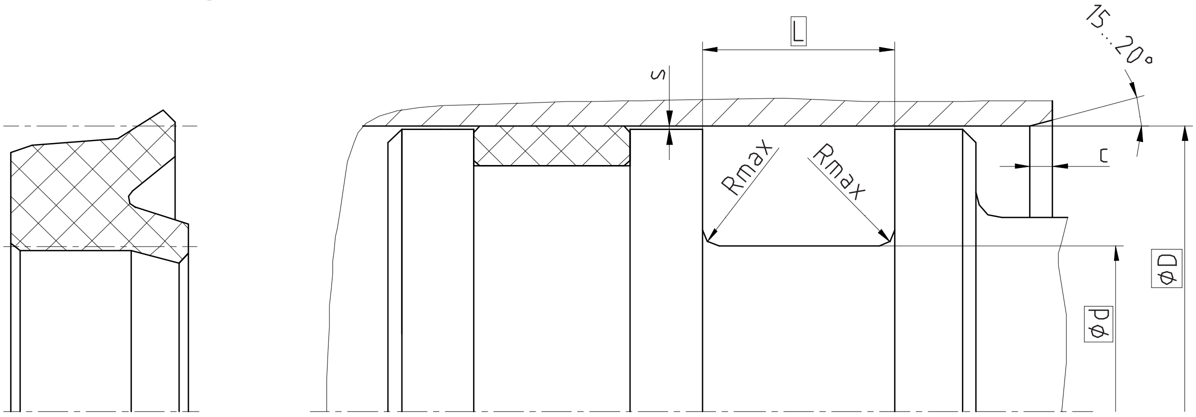
Seal data sheet

K01-RE

Piston seals

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,29	0,22	0,20
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,32	0,24	0,22
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,35	0,27	0,25
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,39	0,30	0,29
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,40	0,34	0,32
> 750	D - 40	26,0	0,4	13,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
NBR	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
MVQ	-60 °C...+200 °C	-	-
TOPFLAS	-10 °C...+200 °C	0,5 m/s	160 bar (16 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K01-RE, D=100mm, d=85mm, L=10mm, NBR

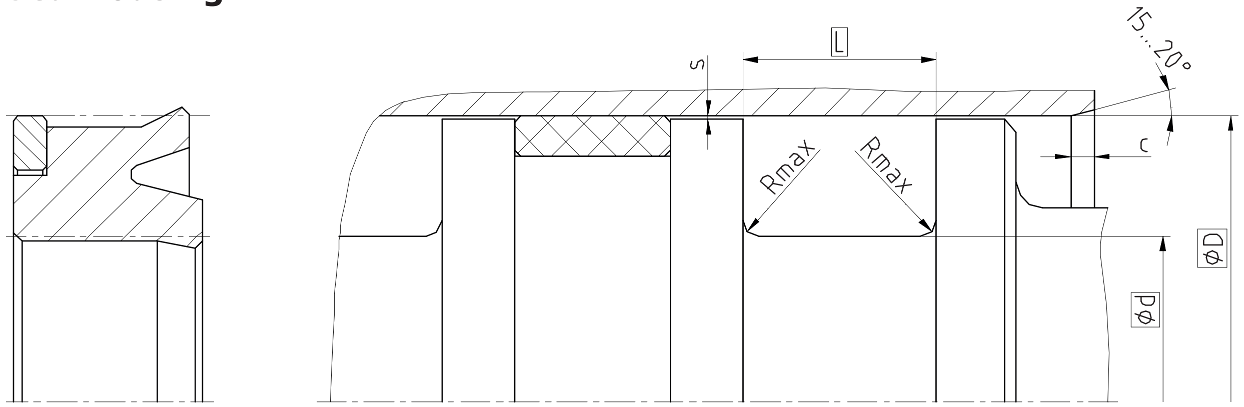
Piston Seal K01-RE	**100 x 85 x 10**	**NBR**
Profile	D x d x L	Sealing material

Seal data sheet

K02-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	1,25	1,24	0,42	0,05
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	2,5	2,06	0,62	0,06
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	3,00	2,43	0,76	0,06
> 750	D - 40	26,0	0,4	13,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU		-20 °C...+100 °C		
SPU		-20 °C...+100 °C	0,7 m/s	
TPU		-40 °C...+100 °C	0,5 m/s	
GPU		-30 °C...+100 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K02-P, D=100mm, d=85mm, L=10mm, PU / TOPTAL (POM)

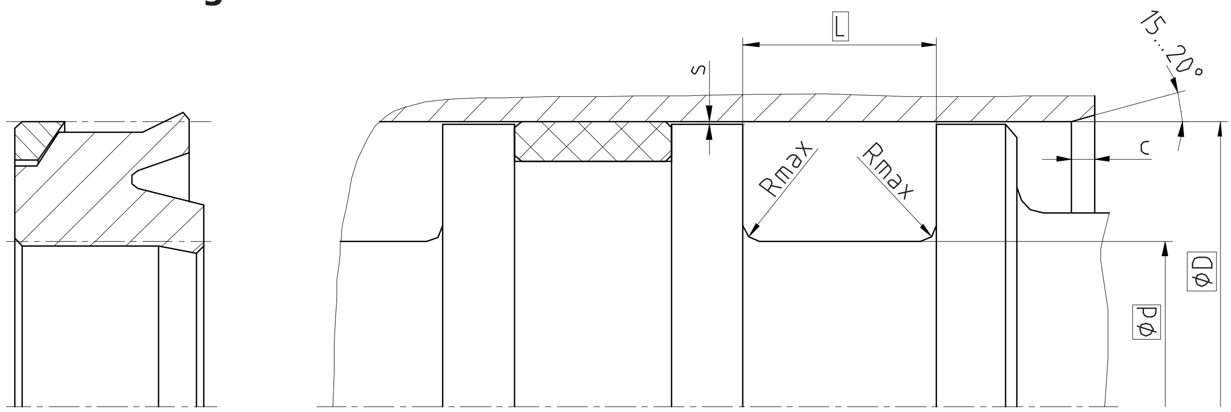
Piston Seal K02-P	**100 x 85 x 10**	**PU / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Backup ring

Seal data sheet

K02-PD

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	1,25	1,24	0,42	0,05
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	2,5	2,06	0,62	0,06
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	3,00	2,43	0,76	0,06
> 750	D - 40	26,0	0,4	13,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU		-20 °C...+100 °C		
SPU		-20 °C...+100 °C	0,7 m/s	
TPU		-40 °C...+100 °C	0,5 m/s	
GPU		-30 °C...+100 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K02-PD, D=100mm, d=85mm, L=10mm, PU / TOPTAL (POM)

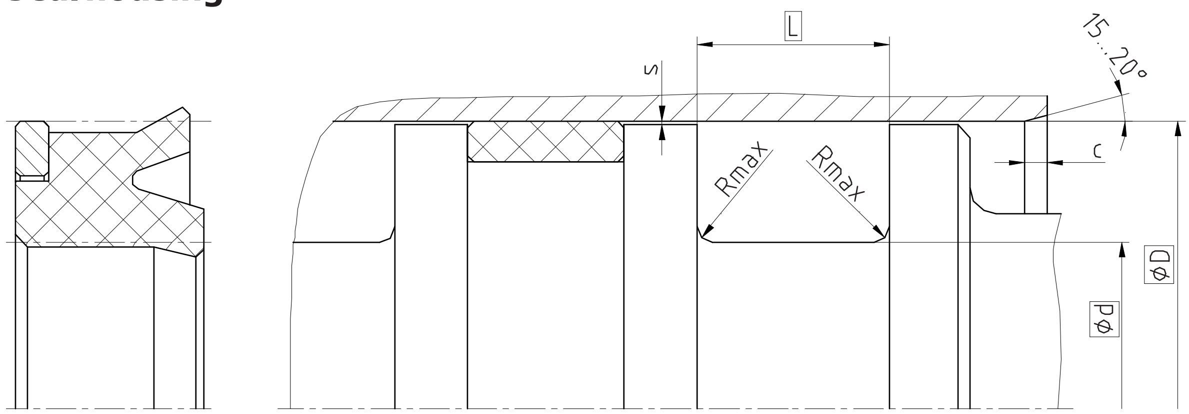
Piston Seal K02-PD	**100 x 85 x 10**	**PU / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Backup ring

Seal data sheet

K02-R

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	250 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,80	0,80	0,52
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	1,00	1,00	0,66
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	1,25	1,20	0,72
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	1,50	1,40	0,78
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	2,00	1,66	0,88
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	2,50	1,91	1,00
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	3,00	2,18	1,13
> 750	D - 40	26,0	0,4	13,0	3,00	2,18	1,13

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**250 bar (25 MPa)**
FPM Brown	TF201	-20 °C...+200 °C		
EPDM	TOPTAL (POM) TOPMID (PA)[2]	-40 °C...+100 °C		
	TF201	-50 °C...+150 °C		
HNBR	TOPTAL (POM) TOPMID (PA)[2]	-25 °C...+100 °C		
	TF201	-25 °C...+150 °C		
TOPFLAS	PEEK	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K02-R, D=100mm, d=85mm, L=10mm, NBR / TOPTAL (POM)

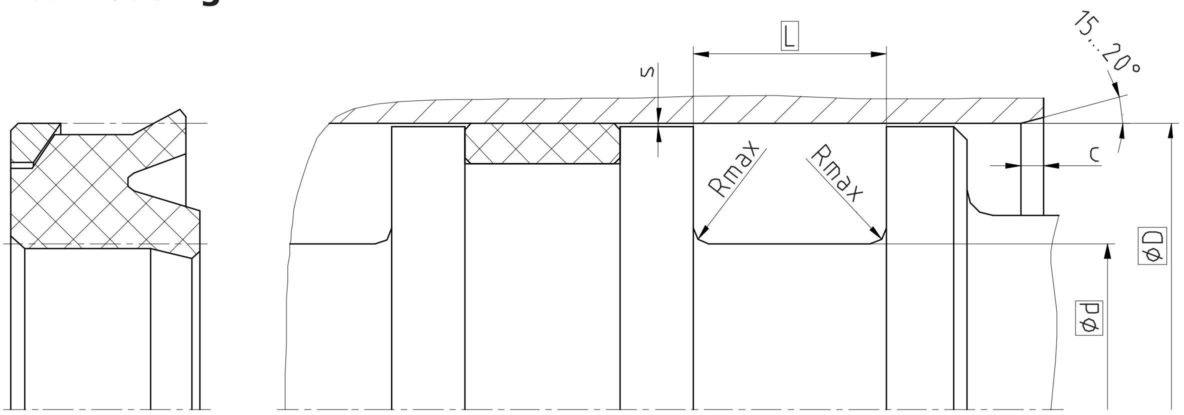
Piston Seal K02-R	**100 x 85 x 10**	**NBR / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Backup ring

Seal data sheet

K02-RD

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	250 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,80	0,80	0,52
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	1,00	1,00	0,66
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	1,25	1,20	0,72
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	1,50	1,40	0,78
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	2,00	1,66	0,88
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	2,50	1,91	1,00
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	3,00	2,18	1,13
> 750	D - 40	26,0	0,4	13,0	3,00	2,18	1,13

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**250 bar (25 MPa)**
FPM Brown	TF201	-20 °C...+200 °C		
EPDM	TOPTAL (POM) TOPMID (PA)[2]	-40 °C...+100 °C		
	TF201	-50 °C...+150 °C		
HNBR	TOPTAL (POM) TOPMID (PA)[2]	-25 °C...+100 °C		
	TF201	-25 °C...+150 °C		
TOPFLAS	PEEK	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering examples

K02-RD, D=100mm, d=85mm, L=10mm, NBR / TOPTAL (POM)

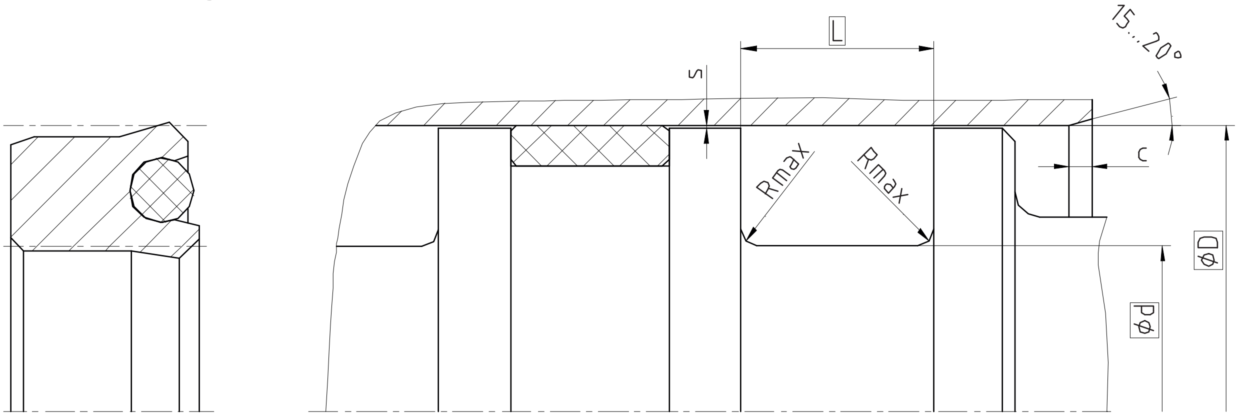
Piston Seal K02-RD	**100 x 85 x 10**	**NBR / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Backup ring

Seal data sheet

K03-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33	0,18	0,11	0,05
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42	0,27	0,20	0,14
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	D - 30	20,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU		-20 °C...+100 °C		
SPU			0,7 m/s	
TPU	MVQ70	-50 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K03-P, D=100mm, d=85mm, L=10mm, PU / NBR70

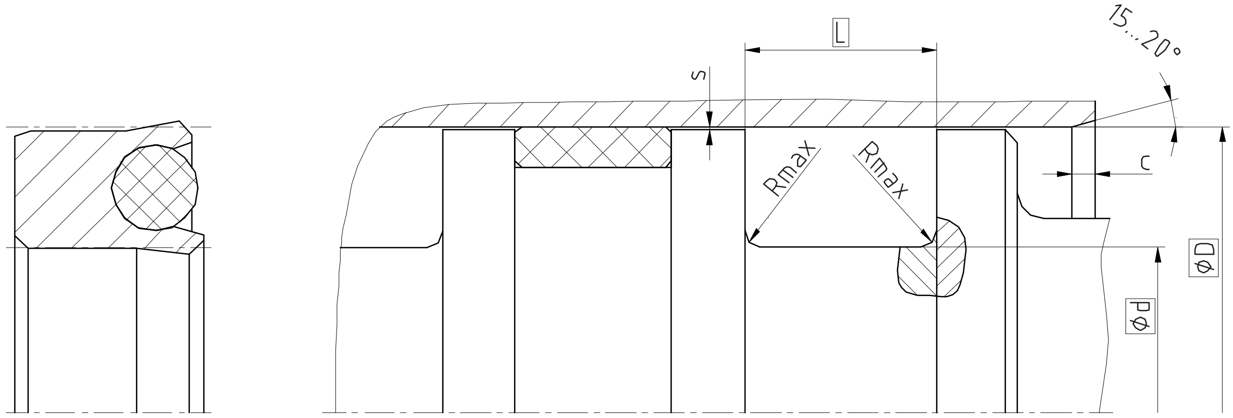
Piston Seal K03-P	**100 x 85 x 10**	**PU / NBR70**
Profile	D x d x L	Sealing material / Backup ring

Seal data sheet

K03-F

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 13 ... ≤ 25	D - 8	6,4	0,4	3,5	0,40	0,20	0,15	0,09
> 25 ... ≤ 50	D - 10	8,5	0,4	4,0	0,45	0,22	0,17	0,10
> 50 ... ≤ 75	D - 12	10,0	0,4	4,5	0,60	0,36	0,25	0,14
> 75 ... ≤ 150	D - 15	12,3	0,4	5,0	0,75	0,40	0,33	0,18
> 150 ... ≤ 300	D - 20	16,0	0,4	6	0,87	0,48	0,38	0,20
> 300 ... ≤ 500	D - 25	19,8	0,4	8,5	0,87	0,48	0,38	0,20
> 500 ... ≤ 600	D - 30	24,5	0,4	10,0	0,87	0,48	0,38	0,20

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF100 TF201 **TF300** TF400	MVQ70	-55 °C...+200 °C	**1,0 m/s**	**200 bar (20 MPa)**
	NBR70	-30 °C...+100 °C		400 bar (40 MPa)
	FPM75	**-20 °C...+200 °C**		
	EPDM70	-50 °C...+150 °C		
UHMWPE	NBR70	-30 °C...+80 °C	0,5 m/s	200 bar (20 MPa)
	FPM75	-20 °C...+80 °C		
	EPDM70	-50 °C...+80 °C		
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K03-F, D=100mm, D=85mm, L=12,3mm, TF300 / FPM75

Piston Seal K03-F	**100 x 85 x 12,3**	**TF300 / FPM75**
Profile	D x d x L	Sealing material / Backup ring

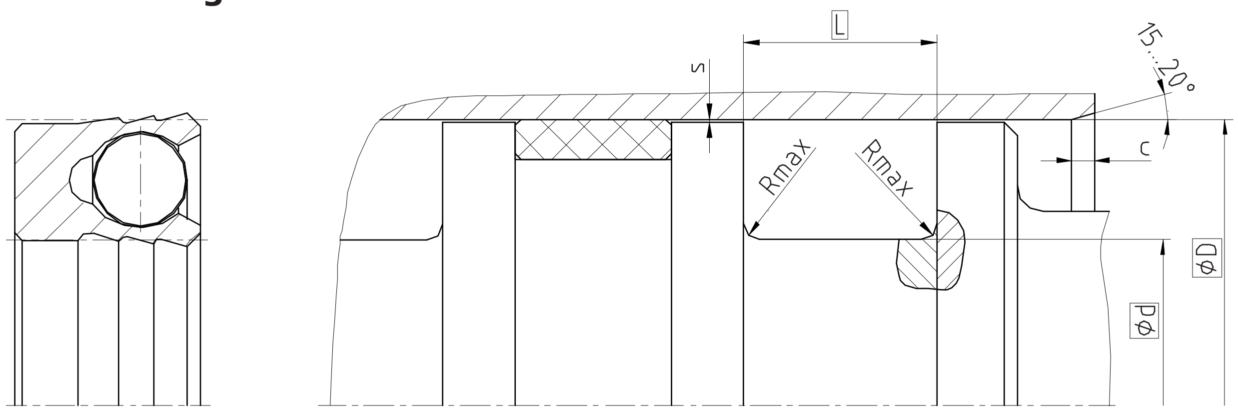
Seal data sheet

K03-S

Piston seals

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 9 ... ≤ 15	D - 4	3,5	0,4	2,0	0,25	0,12	0,10	0,07
> 15 ... ≤ 30	D - 6	5,0	0,4	3,0	0,35	0,17	0,12	0,08
> 30 ... ≤ 120	D - 10	8,0	0,4	4,0	0,45	0,22	0,17	0,10
> 120 ... ≤ 200	D - 15	11,5	0,4	5,0	0,75	0,40	0,33	0,18
> 200 ... ≤ 250	D - 20	13,0	0,4	6,0	0,87	0,48	0,38	0,20
> 250 ... ≤ 500	D - 25	18,5	0,4	8,5	0,87	0,48	0,38	0,20
> 500 ... ≤ 1600	D - 30	23,0	0,4	10,0	0,87	0,48	0,38	0,20

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Spring	Temperature	max. speed	max. pressure[1]
TF100	**1.4310**	**-200 °C...+260 °C**	**1 m/s**	200 bar (20 MPa)
TF201 **TF300** TF400				**400 bar (40 MPa)**
UHMWPE		-200 °C...+80 °C	0,5 m/s	200 bar (20 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K03-S, D=100mm, d=90mm, L=8mm, TF300 / 1.4310

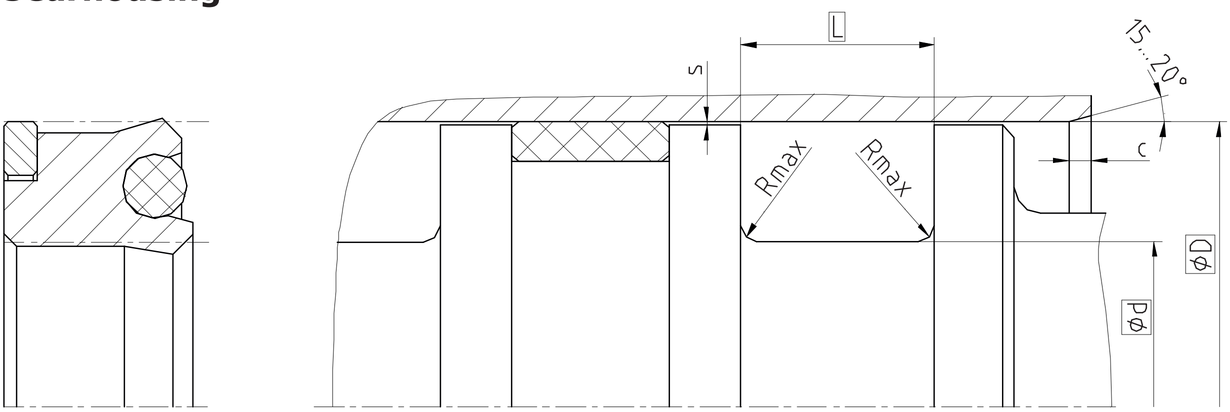
Piston Seal K03-S	**100 x 90 x 8**	**TF300 / 1.4310**
Profile	D x d x L	Sealing material / Spring

Seal data sheet

K04-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	1,25	1,24	0,42	0,05
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	2,50	2,06	0,62	0,06
> 500 ... ≤ 600	D - 30	20,0	0,4	10,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU			-20 °C...+100 °C		
SPU				0,7 m/s	
TPU	MVQ70		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K04-P, D=100mm, d=85mm, L=10mm, PU / NBR70 / TOPTAL (POM)

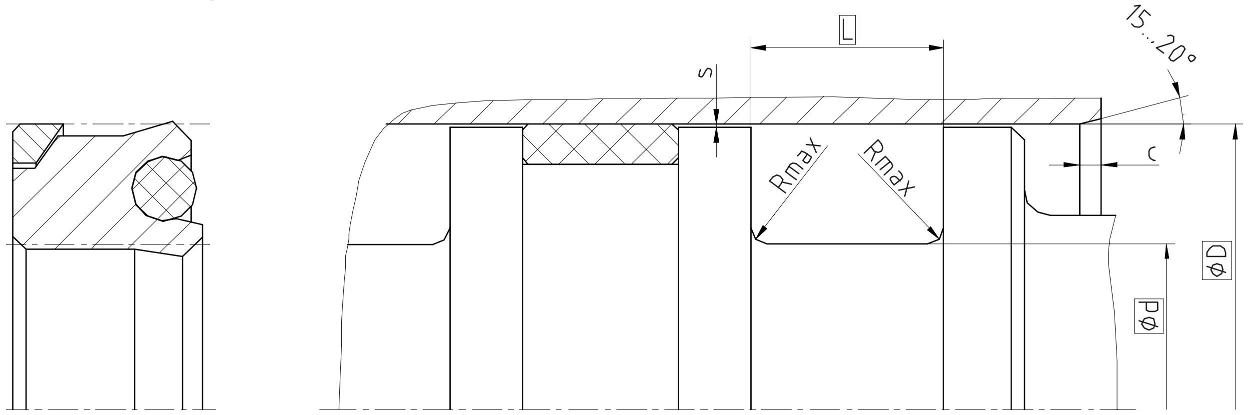
Piston Seal K04-P	**100 x 85 x 10**	**PU / NBR70 / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Energizer / Backup ring

Seal data sheet

K04-PD

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	1,25	1,24	0,42	0,05
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	2,50	2,06	0,62	0,06
> 500 ... ≤ 600	D - 30	20,0	0,4	10,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU			-20 °C...+100 °C		
SPU				0,7 m/s	
TPU	MVQ70		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

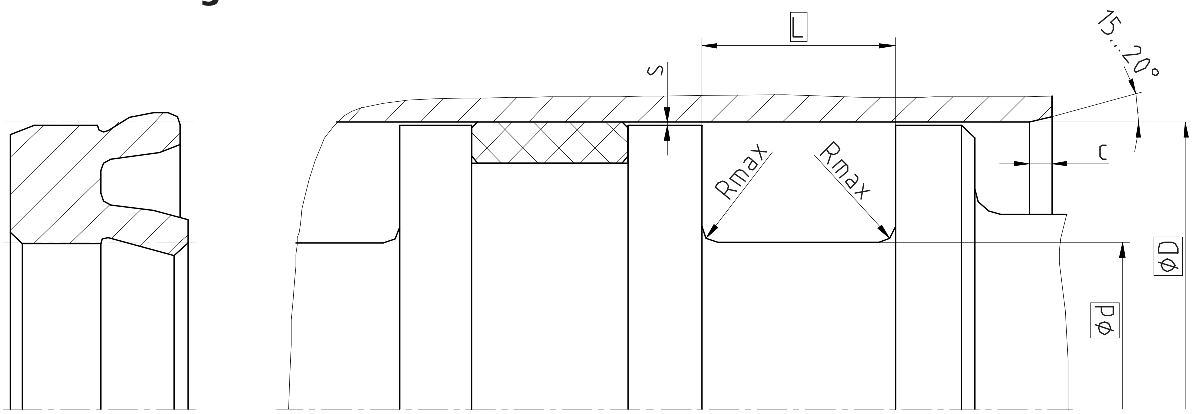
K04-PD, D=100mm, d=85mm, L=10mm, PU / NBR70 / TOPTAL (POM)

Piston Seal K04-PD	**100 x 85 x 10**	**PU / NBR70 / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Energizer / Backup ring

Seal data sheet
Piston seals

K05-P

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**s***
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,67
> 750	D - 40	26,0	0,4	13,0	0,67

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure
PU	**-30 °C...+110 °C**	**1 m/s**	**25 bar (2,5 MPa)**
HPU	-20 °C...+110 °C		
SPU		2 m/s	
TPU	-50 °C...+110 °C	1 m/s	
GPU	-30 °C...+110 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

K05-P, D=100mm, d=85mm, L=10mm, PU

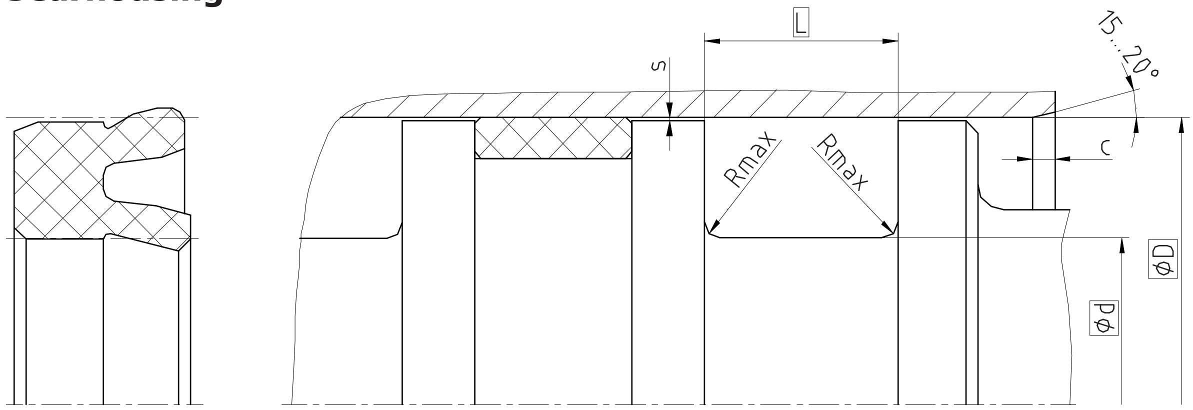
Piston Seal K05-P	**100 x 85 x 10**	**PU**
Profile	D x d x L	Sealing material

Seal data sheet

K05-R

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**s***
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,67
> 750	D - 40	26,0	0,4	13,0	0,67

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure
NBR	**-30 °C...+100 °C**	**1 m/s**	**25 bar (2,5 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

K05-R, D=100mm, d=85mm, L=10mm, NBR

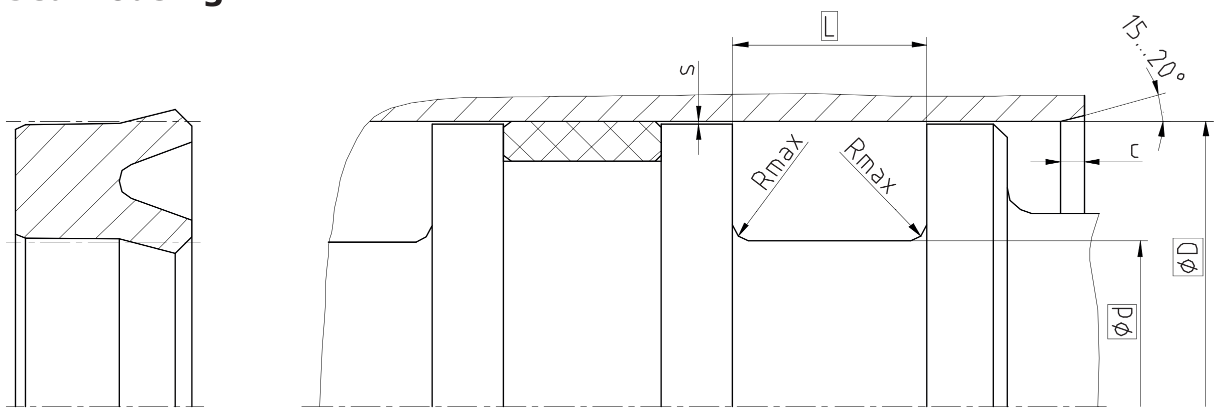
Piston Seal K05-R	**100 x 85 x 10**	**NBR**
Profile	D x d x L	Sealing material

Seal data sheet

K06-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 14 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33	0,18	0,11	0,05
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42	0,27	0,20	0,14
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,67	0,52	0,45	0,39
> 750	D - 40	26,0	0,4	13,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C	0,5 m/s	400 bar (40 MPa)
SPU	-20 °C...+110 °C	0,7 m/s	400 bar (40 MPa)
TPU	-50 °C...+110 °C	0,5 m/s	400 bar (40 MPa)
GPU	-30 °C...+110 °C	0,5 m/s	400 bar (40 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K06-P, D=100mm, d=85mm, L=10mm, PU

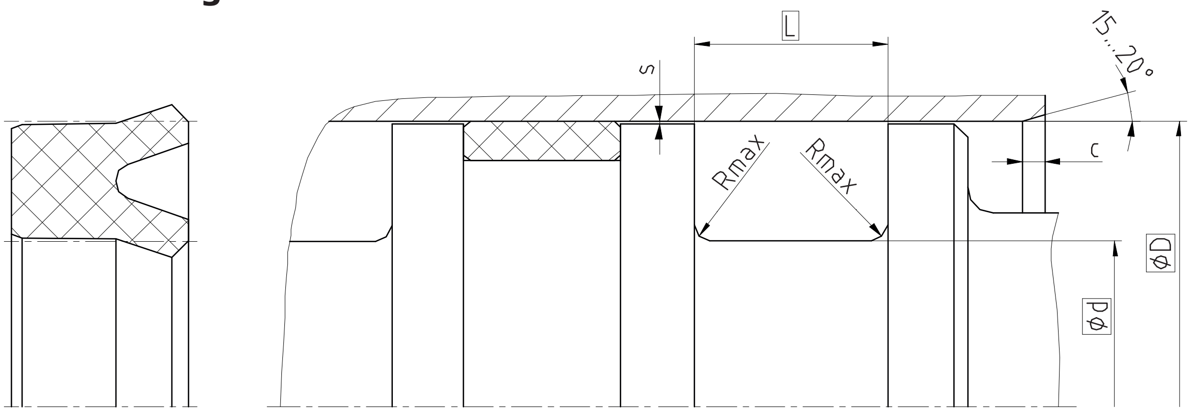
Piston Seal K06-P	**100 x 85 x 10**	**PU**
Profile	D x d x L	Sealing material

Seal data sheet

K06-R

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 14 ... ≤ 25	D - 8	6,0	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,29	0,22	0,20
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,31	0,24	0,22
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,34	0,27	0,25
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,37	0,30	0,29
> 500 ... ≤ 750	D - 30	20,0	0,4	10,0	0,40	0,34	0,32
> 750	D - 40	26,0	0,4	13,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
NBR	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
MVQ	-60 °C...+200 °C	-	-
TOPFLAS	0 °C...+200 °C	0,5 m/s	160 bar (16 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K06-R, D=100mm, d=85mm, L=10mm, NBR

Piston Seal K06-R	**100 x 85 x 10**	**NBR**
Profile	D x d x L	Sealing material

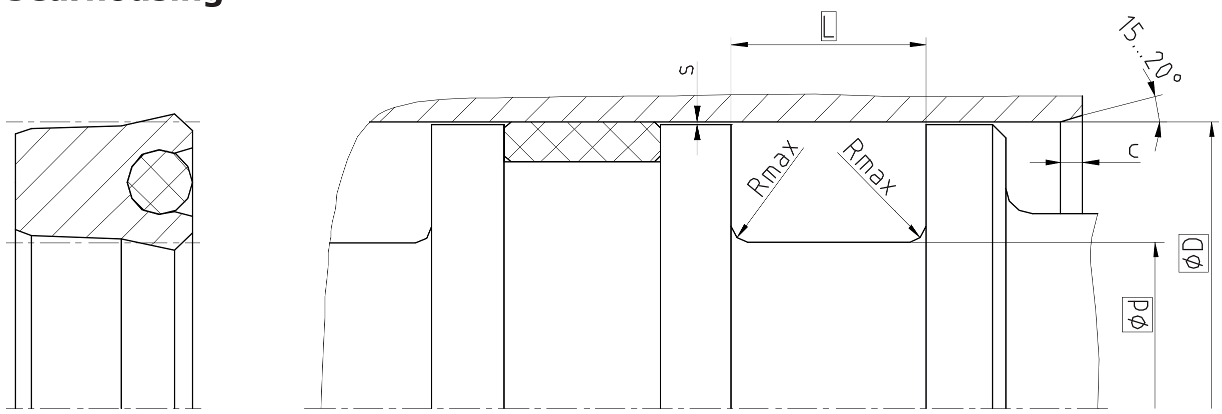
Seal data sheet

K07-P

TOP SEALING PARTNER
PART OF nomo

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33	0,18	0,11	0,05
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42	0,27	0,20	0,14
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	D - 30	20,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU		-20 °C...+100 °C		
SPU			0,7 m/s	
TPU	MVQ70	-50 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K07-P, D=100mm, d=85mm, L=10mm, PU / NBR70

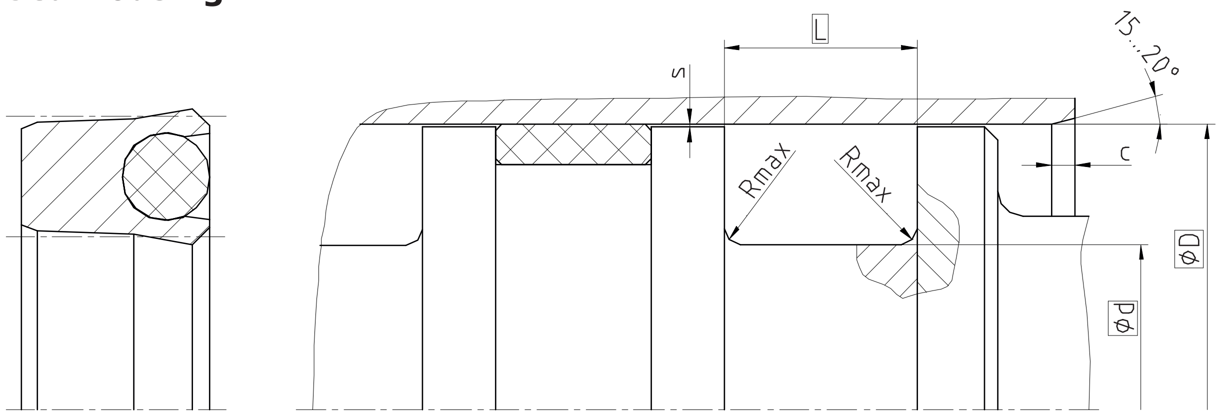
Piston Seal K07-P	**100 x 85 x 10**	**PU / NBR70**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K07-F

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 13 ... ≤ 25	D - 8	6,4	0,4	3,5	0,25	0,12	0,10	0,07
> 25 ... ≤ 50	D - 10	8,5	0,4	4,0	0,35	0,17	0,12	0,08
> 50 ... ≤ 75	D - 12	10,0	0,4	4,5	0,45	0,22	0,17	0,10
> 75 ... ≤ 150	D - 15	12,3	0,4	5,0	0,75	0,40	0,33	0,18
> 150 ... ≤ 300	D - 20	16,0	0,4	6,0	0,87	0,48	0,38	0,20
> 300 ... ≤ 500	D - 25	19,8	0,4	8,5	0,87	0,48	0,38	0,20
> 500 ... ≤ 600	D - 30	24,5	0,4	10,0	0,87	0,48	0,38	0,20

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF100 TF201 **TF300** TF400	MVQ70	-55 °C...+200 °C	**1,0 m/s**	**200 bar (20 MPa)**
	NBR70	-30 °C...+100 °C		400 bar (40 MPa)
	FPM75	**-20 °C...+200 °C**		
	EPDM70	-50 °C...+150 °C		
UHMWPE	NBR70	-30 °C...+80 °C	0,5 m/s	200 bar (20 MPa)
	FPM75	-20 °C...+80 °C		
	EPDM70	-50 °C...+80 °C		
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K07-F, D=100mm, d=85mm, L=12,3mm, TF300 / FPM75

Piston Seal K07-F	**100 x 85 x 12,3**	**TF300 / FPM75**
Profile	D x d x L	Sealing material / Energizer

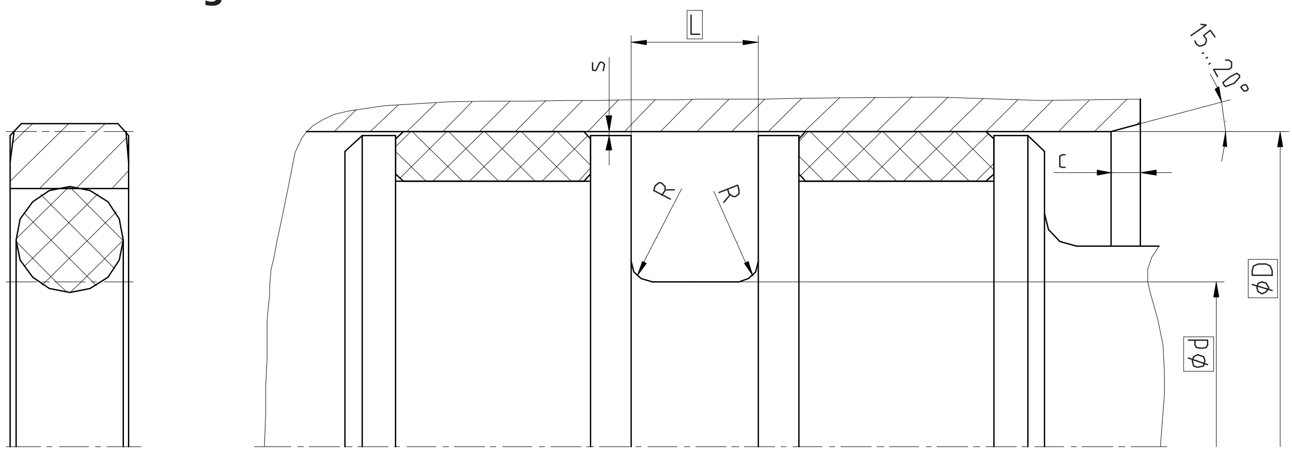
Seal data sheet

Piston seals

K08-D X-Slide

TOP SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
≥ 10 ... < 15	D - 4,9	2,2	0,4	2,5	1,78	0,30	0,30	0,20	0,10
≥ 15 ... < 40	D - 7,5	3,2	0,6	3,5	2,62	0,40	0,30	0,20	0,10
≥ 40 ... < 80	D - 11	4,2	1,0	4,5	3,53	0,50	0,40	0,30	0,20
≥ 80 ... < 133	D - 15,5	6,3	1,3	5,0	5,33	0,50	0,40	0,30	0,20
≥ 133 ... < 330	D - 21	8,1	1,8	6,0	7,00	0,70	0,50	0,40	0,20
≥ 330 ... < 670	D - 24,5	8,1	1,8	8,0	7,00	0,70	0,50	0,40	0,20
≥ 670 ... < 1000	D - 28	9,5	2,5	10,0	8,40	0,80	0,70	0,50	0,30
≥ 1000 ... ≤ 3000	D - 38	13,8	3,0	12,0	12,00	1,10	0,80	0,70	0,40

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
XPU XHPU XSPU GPU54D	**NBR70**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ70	-30 °C...+110 °C		
UHMWPE	NBR70	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide K08-D, D=100mm, d=84,5mm, L=6,3mm, XPU / NBR70

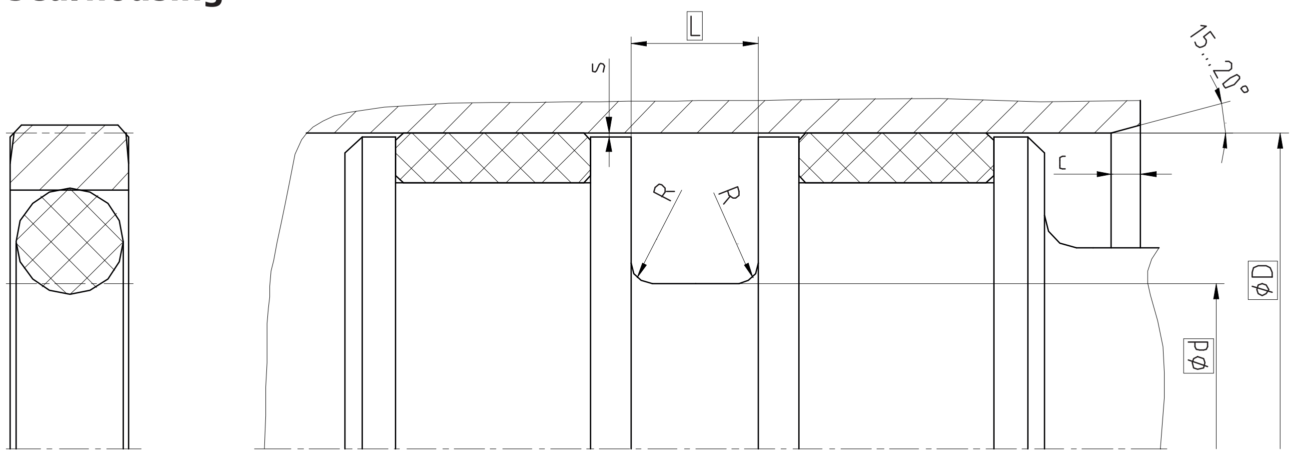
X-Slide K08-D	**100 x 84,5 x 6,3**	**XPU / NBR70** Sealing
Profile	D x d x L	material / Energizer

Seal data sheet

K08-D F-Slide

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
≥ 10 ... < 15	D - 4,9	2,2	0,4	2,5	1,78	0,30	0,20	0,15	0,05
≥ 15 ... < 40	D - 7,5	3,2	0,6	3,5	2,62	0,40	0,25	0,15	0,05
≥ 40 ... < 80	D - 11	4,2	1,0	4,5	3,53	0,40	0,25	0,20	0,10
≥ 80 ... < 133	D - 15,5	6,3	1,3	5,0	5,33	0,50	0,30	0,20	0,10
≥ 133 ... < 330	D - 21	8,1	1,8	6,0	7,00	0,60	0,35	0,25	0,15
≥ 330 ... < 670	D - 24,5	8,1	1,8	8,0	7,00	0,60	0,35	0,25	0,15
≥ 670 ... < 1000	D - 28	9,5	2,5	10,0	8,40	0,70	0,50	0,30	0,20
≥ 1000 ... ≤ 2000	D - 38	13,8	3,0	12,0	12,00	1,00	0,70	0,60	0,30

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR70**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FKM70	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide K08-D, D=100mm, d=84,5mm, L=6,3mm, TF300 / NBR70

F-Slide K08-D	**100 x 84,5 x 6,3**	**TF300 / NBR70**
Profile	D x d x L	Sealing material / Energizer

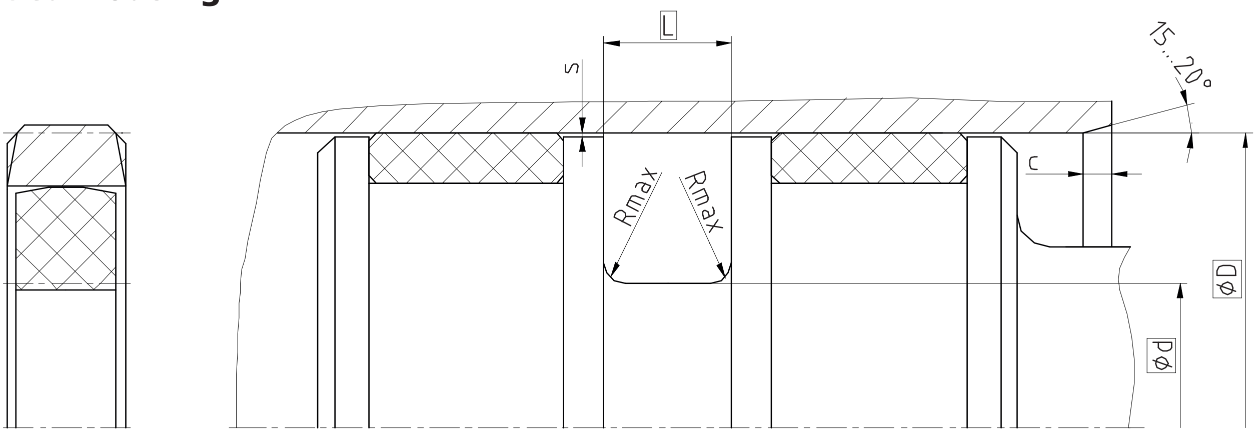
Seal data sheet

Piston seals

K08-DS X-Slide

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
≥ 15 ... < 50	D - 10	5,0	0,3	4,0	0,50	0,40	0,30	0,20
≥ 50 ... < 60	D - 15	7,5	0,4	5,0	0,50	0,40	0,30	0,20
≥ 60 ... < 200	D - 20	10,0	0,4	6,0	0,70	0,50	0,40	0,20
≥ 200 ... < 300	D - 25	12,5	0,4	8,5	0,80	0,60	0,50	0,30
≥ 300 ... < 530	D - 30	15,0	0,8	10,0	0,90	0,70	0,60	0,30
≥ 530 ... < 680	D - 35	17,5	1,2	13,0	1,00	0,80	0,70	0,30
≥ 680 ... ≤ 1500	D - 40	20,0	1,2	15,0	1,10	0,90	0,80	0,40

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
XPU XHPU XSPU GPU54D	**NBR**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ	-30 °C...+100 °C		
UHMWPE	NBR	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ	-60 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1]Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide K08-DS, D=100mm, d=80mm, L=10mm, XPU / NBR

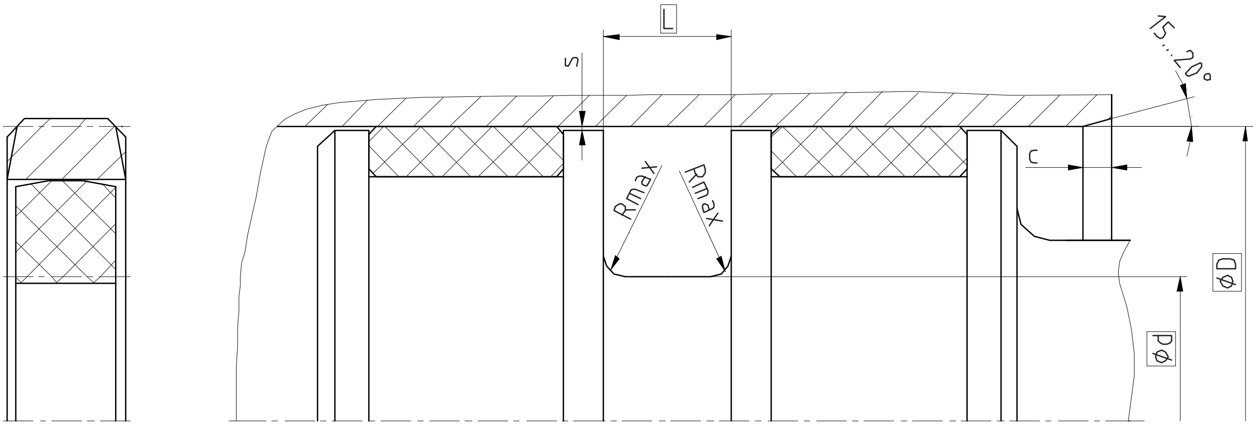
X-Slide K08-DS	**100 x 80 x 10**	**XPU / NBR**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K08-DS F-Slide

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
≥ 15 ... < 50	D - 10	5,0	0,3	4,0	0,40	0,30	0,20	0,10
≥ 50 ... < 60	D - 15	7,5	0,4	5,0	0,50	0,30	0,20	0,10
≥ 60 ... < 200	D - 20	10,0	0,4	6,0	0,60	0,40	0,25	0,15
≥ 200 ... < 300	D - 25	12,5	0,4	8,5	0,60	0,40	0,25	0,15
≥ 300 ... < 530	D - 30	15,0	0,8	10,0	0,70	0,50	0,30	0,20
≥ 530 ... < 680	D - 35	17,5	1,2	13,0	0,80	0,60	0,50	0,20
≥ 680 ... ≤ 1500	D - 40	20,0	1,2	15,0	1,00	0,70	0,60	0,30

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FPM Brown	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide K08-DS, D=100mm, d=80mm, L=10mm, TF300 / NBR

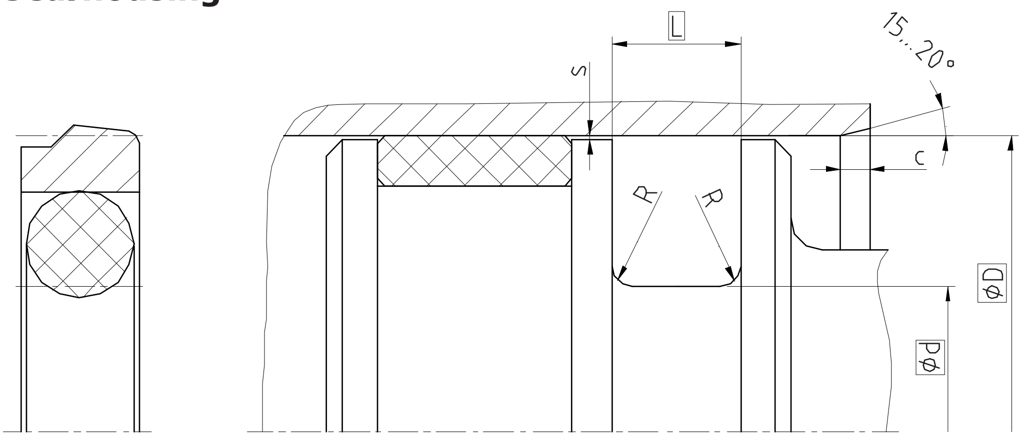
F-Slide K08-DS	**100 x 80 x 10**	**TF300 / NBR**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K08-E X-Slide

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
≥ 10 ... < 15	D - 4,9	2,2	0,4	2,5	1,78	0,30	0,30	0,20	0,10
≥ 15 ... < 40	D - 7,5	3,2	0,6	3,5	2,62	0,40	0,30	0,20	0,10
≥ 40 ... < 80	D - 11	4,2	1,0	4,5	3,53	0,50	0,40	0,30	0,20
≥ 80 ... < 133	D - 15,5	6,3	1,3	5,0	5,33	0,50	0,40	0,30	0,20
≥ 133 ... < 330	D - 21	8,1	1,8	6,0	7,00	0,70	0,50	0,40	0,20
≥ 330 ... < 670	D - 24,5	8,1	1,8	8,0	7,00	0,70	0,50	0,40	0,20
≥ 670 ... < 1000	D - 28	9,5	2,5	10,0	8,40	0,80	0,70	0,50	0,30
≥ 1000 ... ≤ 3000	D - 38	13,8	3,0	12,0	12,00	1,10	0,80	0,70	0,40

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
XPU XHPU XSPU GPU54D	**NBR70**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ70	-30 °C...+110 °C		
UHMWPE	NBR70	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide K08-E, D=100mm, d=84,9mm, L=6,3mm, XPU / NBR70

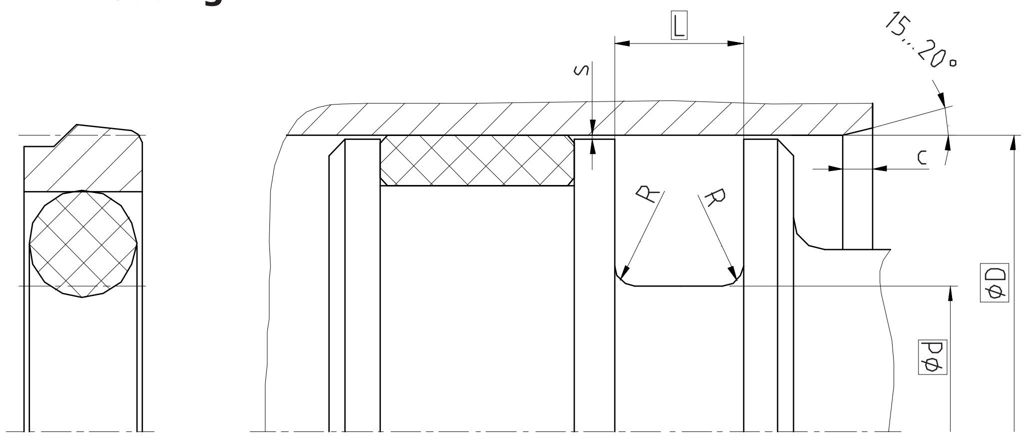
X-Slide K08-E	**100 x 84,9 x 6,3**	**XPU / NBR70**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K08-E F-Slide

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
≥ 10 ... < 15	D - 4,9	2,2	0,4	2,5	1,78	0,30	0,20	0,15	0,05
≥ 15 ... < 40	D - 7,5	3,2	0,6	3,5	2,62	0,40	0,25	0,15	0,05
≥ 40 ... < 80	D - 11	4,2	1,0	4,5	3,53	0,40	0,25	0,20	0,10
≥ 80 ... < 133	D - 15,5	6,3	1,3	5,0	5,33	0,50	0,30	0,20	0,10
≥ 133 ... < 330	D - 21	8,1	1,8	6,0	7,00	0,60	0,35	0,25	0,15
≥ 330 ... < 670	D - 24,5	8,1	1,8	8,0	7,00	0,60	0,35	0,25	0,15
≥ 670 ... < 1000	D - 28	9,5	2,5	10,0	8,40	0,70	0,50	0,30	0,20
≥ 1000 ... ≤ 3000	D - 38	13,8	3,0	12,0	12,00	1,00	0,70	0,60	0,30

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR70**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FKM70	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide K08-E, D=100mm, d=84,9mm, L=6,3mm, TF300 / NBR70

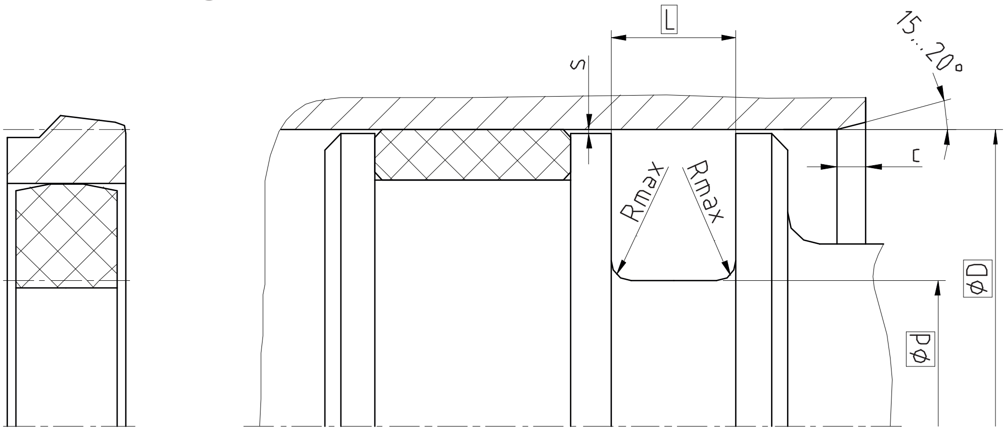
F-Slide K08-E	**100 x 84,9 x 6,3**	**TF300 / NBR70**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K08-ES X-Slide

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
≥ 15 ... < 50	D - 10	5,0	0,3	4,0	0,50	0,40	0,30	0,20
≥ 50 ... < 60	D - 15	7,5	0,4	5,0	0,50	0,40	0,30	0,20
≥ 60 ... < 200	D - 20	10,0	0,4	6,0	0,70	0,50	0,40	0,20
≥ 200 ... < 300	D - 25	12,5	0,4	8,5	0,80	0,60	0,50	0,30
≥ 300 ... < 530	D - 30	15,0	0,8	10,0	0,90	0,70	0,60	0,30
≥ 530 ... < 680	D - 35	17,5	1,2	13,0	1,00	0,80	0,70	0,30
≥ 680 ... ≤ 1500	D - 40	20,0	1,2	15,0	1,10	0,90	0,80	0,40

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
XPU XHPU XSPU GPU54D	**NBR**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ	-60 °C...+100 °C		
UHMWPE	NBR	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide K08-ES, D=100mm, d=80mm, L=10mm, XPU / NBR

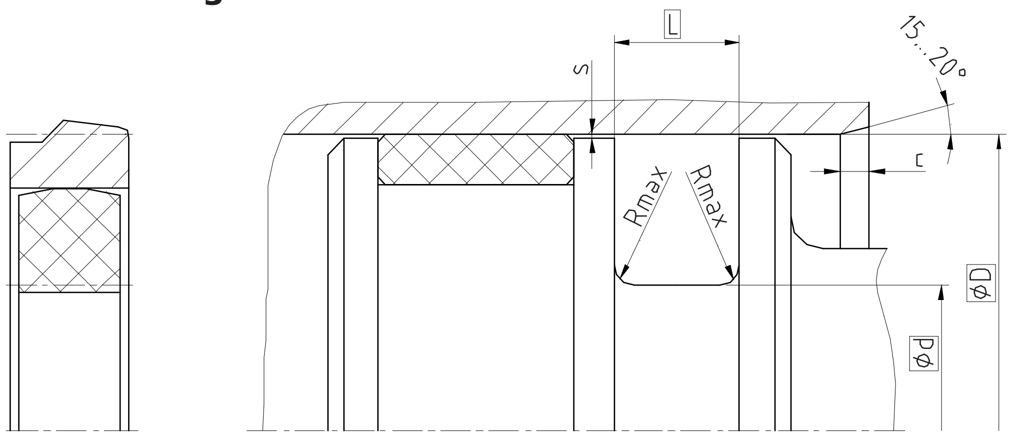
X-Slide K08-ES	**100 x 80 x 10**	**XPU / NBR**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K08-ES F-Slide

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
≥ 15 ... < 50	D - 10	5,0	0,3	4,0	0,40	0,30	0,20	0,10
≥ 50 ... < 60	D - 15	7,5	0,4	5,0	0,50	0,30	0,20	0,10
≥ 60 ... < 200	D - 20	10,0	0,4	6,0	0,60	0,40	0,25	0,15
≥ 200 ... < 300	D - 25	12,5	0,4	8,5	0,60	0,40	0,25	0,15
≥ 300 ... < 530	D - 30	15,0	0,8	10,0	0,70	0,50	0,30	0,20
≥ 530 ... < 680	D - 35	17,5	1,2	13,0	0,80	0,60	0,50	0,20
≥ 680 ... ≤ 1500	D - 40	20,0	1,2	15,0	1,00	0,70	0,60	0,30

* The extrusion gap referred to is valid up to 80 °C and valid for the side opposite to the pressure side; higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FPM Brown	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide K08-ES, D=100mm, d=80mm, L=10mm, TF300 / NBR

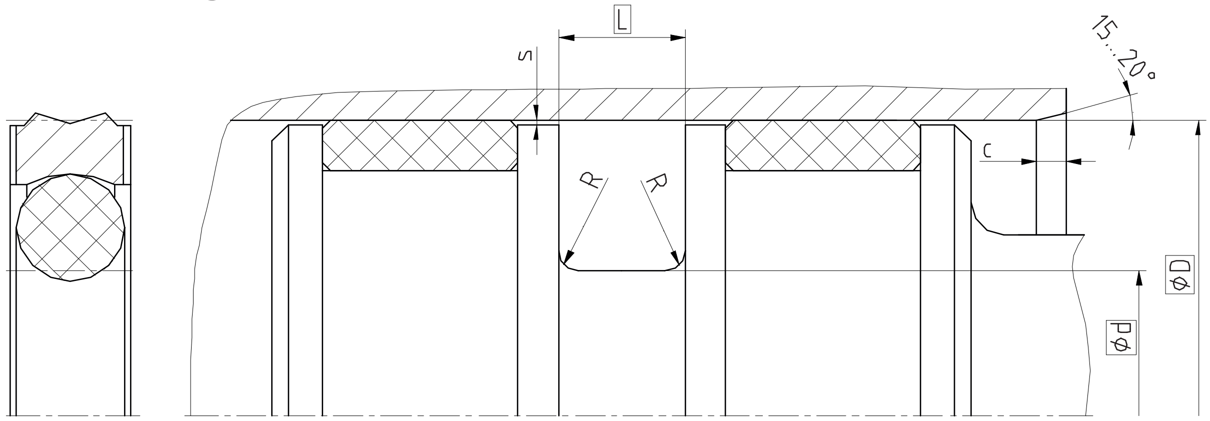
F-Slide K08-ES	**100 x 80 x 10**	**TF300 / NBR**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K08-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***		
						20 bar	100 bar	250 bar
≥ 10 ... < 15	D - 4,9	2,2	0,4	2,5	1,78	0,35	0,22	0,13
≥ 15 ... < 40	D - 7,5	3,2	0,6	3,5	2,62	0,5	0,30	0,16
≥ 40 ... < 80	D - 11	4,2	1,0	4,5	3,53	0,6	0,34	0,18
≥ 80 ... < 133	D - 15,5	6,3	1,3	5,0	5,33	0,75	0,40	0,21
≥ 133 ... < 330	D - 21	8,1	1,8	6,0	7,00	0,85	0,45	0,24
≥ 330 ... < 600	D - 24,5	8,1	1,8	8,0	7,00	1,0	0,53	0,28

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**-30 °C...+100 °C**	**1 m/s**	**250 bar (25 MPa)**
HPU		-20 °C...+110 °C		
SPU			1,4 m/s	
TPU	MVQ70	-50 °C...+110 °C	1 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K08-P, D=100mm, d=84,5mm, L=6,3mm, PU / NBR70

Piston Seal K08-P	**100 x 84,5 x 6,3**	**PU / NBR70**
Profile	D x d x L	Sealing material / Energizer

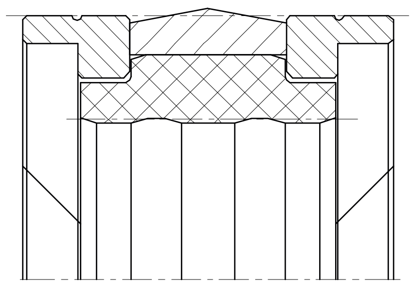
Seal data sheet

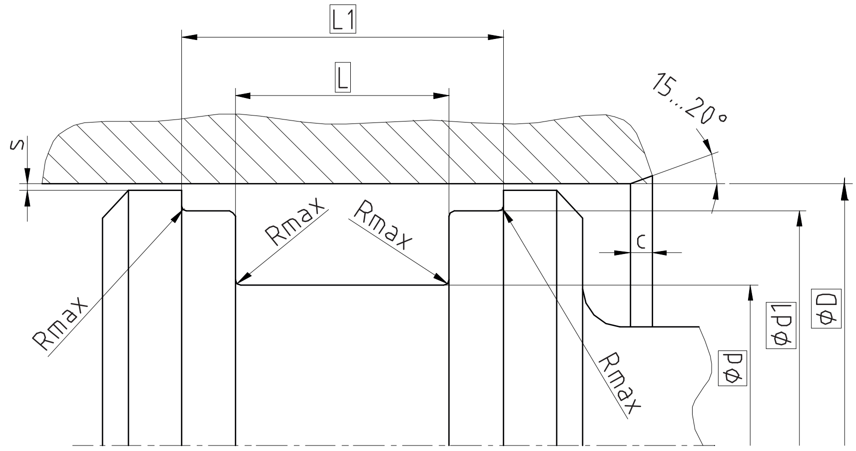
Piston seals

K09-N

TOP SEALING PARTNER PART OF nomo

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**Ød1** h8	**L** +0,2	**L1**	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	D - 3	12,5	20,5	0,4	4	0,35
≥ 50 ... < 80	D - 15	D - 4	20	28	0,4	5	0,52
≥ 80 ... < 150	D - 20	D - 5	25	36	0,4	6	0,65
≥ 150 ... < 400	D - 25	D - 6	32	46	0,4	8,5	0,78
≥ 400 ... < 600	D - 30	D - 8	36	50	0,4	10	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

<table>
<tr><th>Sealing material</th><th>Energizer</th><th>Backup ring</th><th>Temperature</th><th>max. speed</th><th>max. pressure[1]</th></tr>
<tr><td>PU</td><td rowspan="3">NBR</td><td rowspan="4">TOPTAL (POM)
TOPMID (PA)[2]</td><td>-30 °C...+100 °C</td><td rowspan="2">0,5 m/s</td><td rowspan="4">400 bar (40 MPa)</td></tr>
<tr><td>HPU</td><td rowspan="2">-20 °C...+100 °C</td></tr>
<tr><td>SPU</td><td>0,7 m/s</td></tr>
<tr><td>TPU</td><td>MVQ</td><td>-40 °C...+100 °C</td><td>0,5 m/s</td></tr>
</table>

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K09-N, D=100mm, d=80mm, d1=95 L=25mm, L1=36mm, PU / NBR / TOPTAL (POM)

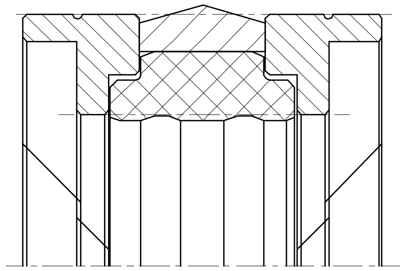
Piston Seal K09-N	**100 x 80/95 x 25/36**	**PU / NBR / TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Sealing material / Energizer / Backup ring

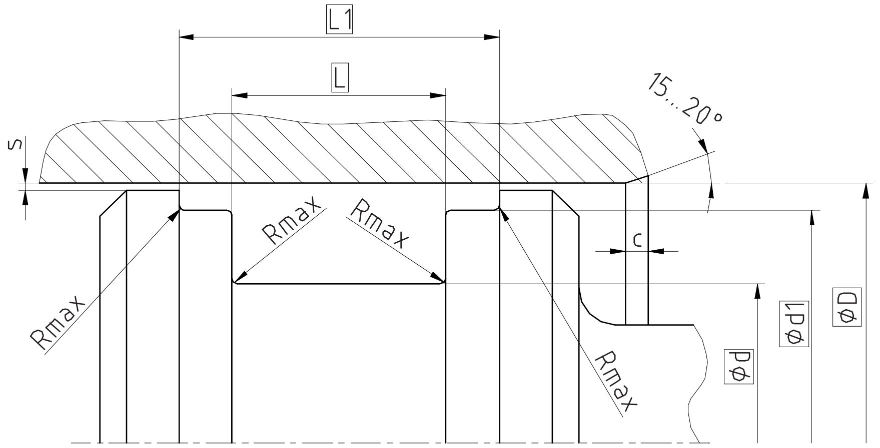
Seal data sheet

Piston seals

K09-H

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**Ød1** h8	**L** +0,2	**L1**	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	D - 3	12,5	20,5	0,4	4	0,4
≥ 50 ... < 80	D - 15	D - 4	20	28	0,4	5	
≥ 80 ... < 150	D - 20	D - 5	25	36	0,4	6	
≥ 150 ... < 400	D - 25	D - 6	32	46	0,4	8,5	
≥ 400 ... < 600	D - 30	D - 8	36	50	0,4	10	

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,3 m/s**	**1500 bar (150 MPa)**
HPU			-20 °C...+100 °C		
SPU				0,4 m/s	
TPU	MVQ		-40 °C...+100 °C	0,3 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K09-H, D=100mm, d=80mm, d1=95, L=25mm, L1=36mm, PU / NBR / TOPTAL (POM)

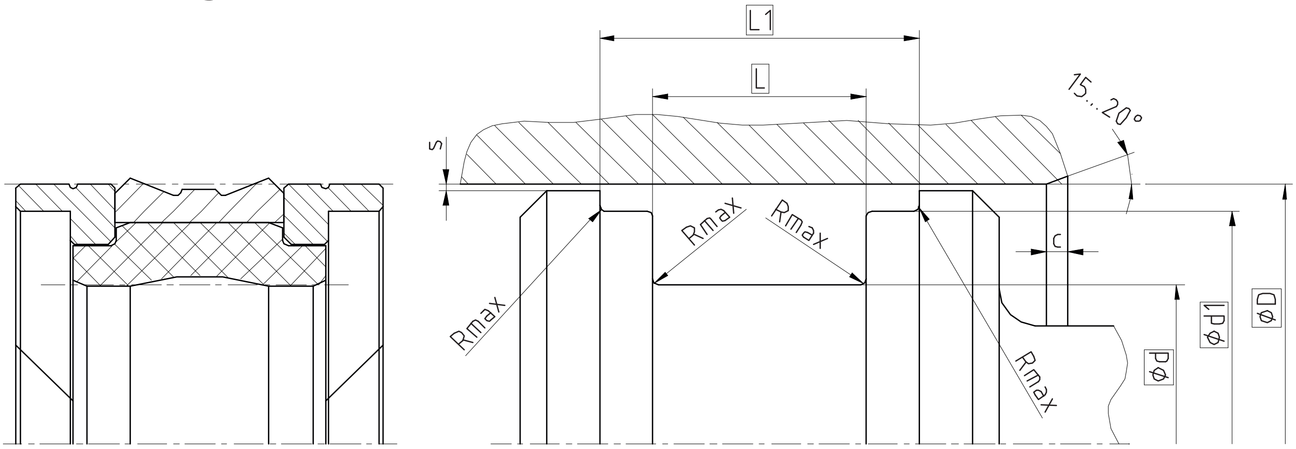
Piston Seal K09-D	**100 x 80/95 x 25/36**	**PU / NBR / TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Sealing material / Energizer / Backup ring

Seal data sheet

K09-D

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**Ød1** h8	**L** +0,2	**L1**	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	D - 3	12,5	20,5	0,4	4	0,35
≥ 50 ... < 80	D - 15	D - 4	20	28	0,4	5	0,52
≥ 80 ... < 150	D - 20	D - 5	25	36	0,4	6	0,65
≥ 150 ... < 400	D - 25	D - 6	32	46	0,4	8,5	0,78
≥ 400 ... < 600	D - 30	D - 8	36	50	0,4	10	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU			-20 °C...+100 °C		
SPU				0,7 m/s	
TPU	MVQ		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K09-D, D=100mm, d=80mm, d1=95, L=25mm, L1=36mm, PU / NBR / TOPTAL (POM)

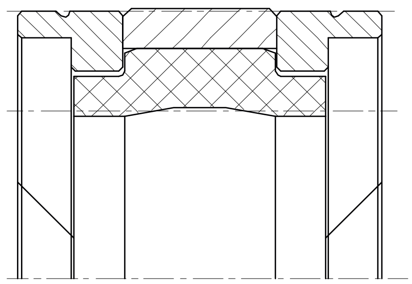
Piston Seal K09-D	**100 x 80/95 x 25/36**	**PU / NBR / TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Sealing material / Energizer / Backup ring

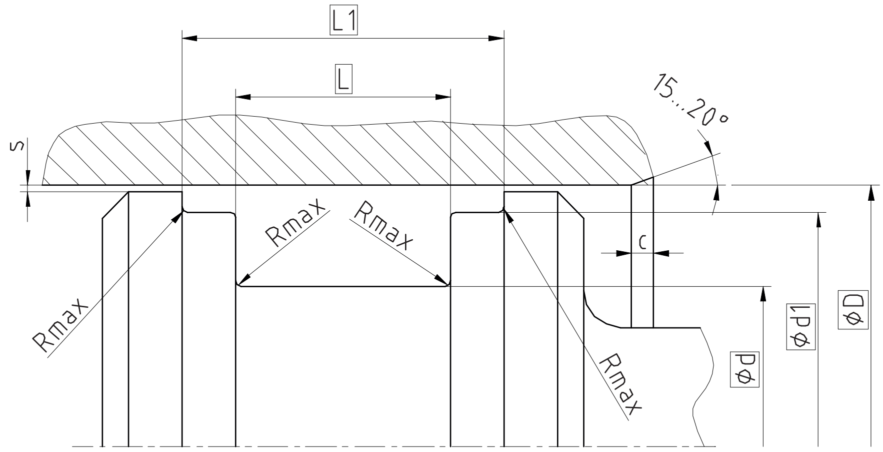
Seal data sheet

K09-F

Piston seals

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 μm	0,1...0,5 μm
Bottom of groove	≤ 6,3 μm	≤ 1,6 μm
Groove face	≤ 15 μm	≤ 3 μm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**Ød1** h8	**L** +0,2	**L1**	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	D - 3	12,5	20,5	0,4	4	0,35
≥ 50 ... < 80	D - 15	D - 4	20	28	0,4	5	0,50
≥ 80 ... < 150	D - 20	D - 5	25	36	0,4	6	0,65
≥ 150 ... < 400	D - 25	D - 6	32	46	0,4	8,5	0,78
≥ 400 ... ≤ 650	D - 30	D - 8	36	50	0,4	10	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
XPU	NBR	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	1 m/s	400 bar (40 Mpa)
XHPU					
XSPU				1,2 m/s	
TF201 **TF300** TF400	**NBR**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**1,5 m/s**	**400 bar (40 Mpa)**
	FPM Brown	PEEK	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K09-F, D=100mm, d=80mm, d1=95 L=25mm, L1=36, TF300 / NBR / TOPTAL (POM)

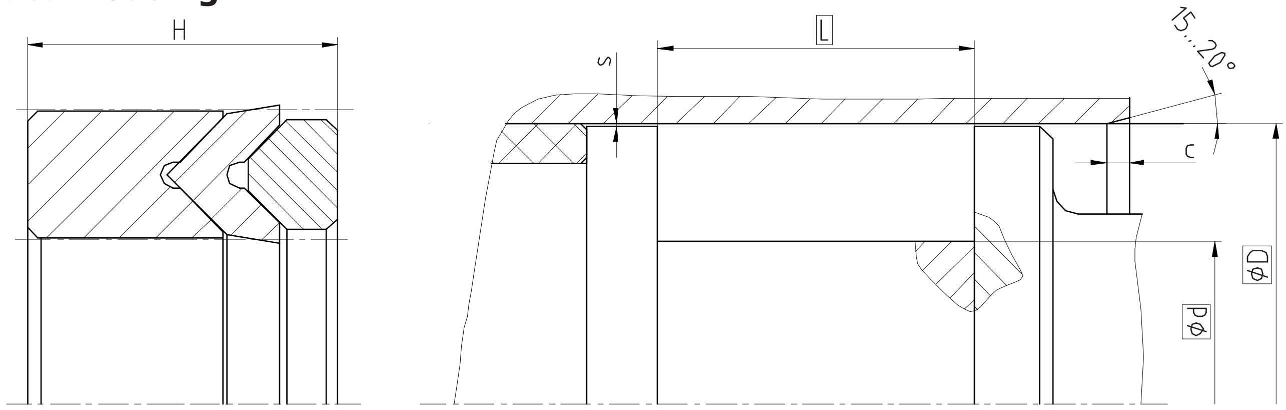
Piston Seal K09-F	**100 x 80/95 x 25/36**	**TF300 / NBR / TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Sealing material / Energizer / Backup ring

Seal data sheet

K1012-M

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**s***
- ... < 40	D - 10	9,5	0,4	4,0	0,25
≥ 40 ... < 75	D - 15	12,3	0,4	5,0	0,37
≥ 75 ... < 150	D - 20	21,2	0,4	6,0	0,50
≥ 150 ... < 200	D - 25	25,8	0,4	8,5	0,62
≥ 200 ... < 300	D - 30	33,5	0,4	10,0	0,75
≥ 300	D - 40	41,5	0,4	13,0	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Backup ring K10-A	Chevron K11-T	Pressure ring K12-T	Temperature	max. speed	max. pressure[1]
TOPTAL (POM) TOPMID (PA)[2]	**PU**	**X-PU** XHPU XSPU GPU54D	**-30 °C...+100 °C**	**0,5 m/s**	**500 bar (50 MPa)**
	HPU		-20 °C...+100 °C	0,5 m/s	
	SPU		-30 °C...+100 °C	0,7 m/s	
	GPU		-30 °C...+100 °C	0,5 m/s	
TOPTAL (POM) TOPMID (PA)[2]	PU	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	0,5 m/s	500 bar (50 MPa)
	HPU		-20 °C...+100 °C	0,5 m/s	
	SPU		-30 °C...+100 °C	0,7 m/s	
	GPU		-30 °C...+100 °C	0,5 m/s	
TF201	NBR	TF201	-30 °C...+100 °C	0,5 m/s	250 bar (25 MPa)
	FPM Brown		-20 °C...+200 °C	0,5 m/s	
	EPDM		-50 °C...+150 °C	0,5 m/s	
	HNBR		-25 °C...+150 °C	0,5 m/s	
	TOPFLAS		-10 °C...+200 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K1012-M, D=100mm, d=80mm, L=21,2mm, TOPTAL (POM) / PU / XPU

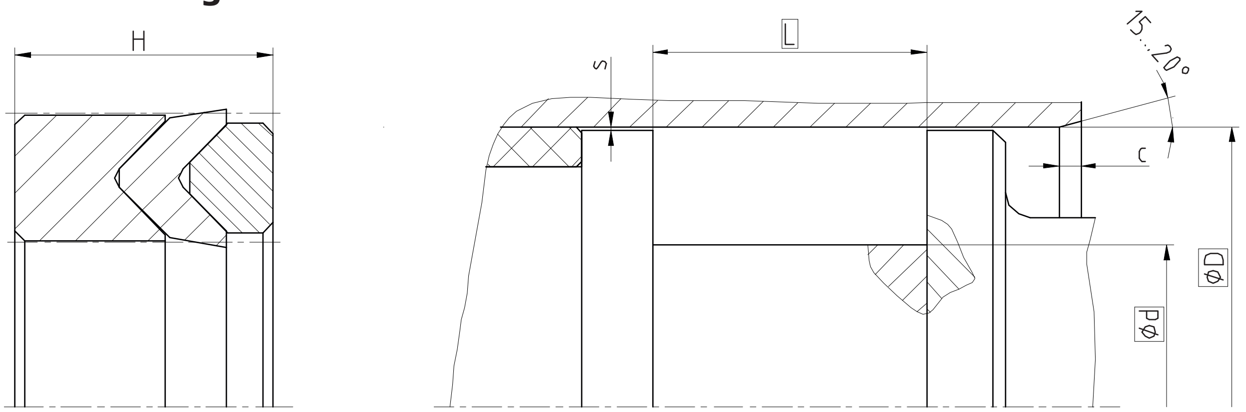
Piston Seal K1012-M	**100 x 80 x 21,2**	**TOPTAL (POM) / PU / XPU**
Profile	D x d x L	Backup ring / Chevron / Pressure ring

Seal data sheet
Piston seals

K1012-T

SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**s***
- ... < 40	D - 10	9,5	0,4	4,0	0,25
≥ 40 ... < 75	D - 15	12,3	0,4	5,0	0,37
≥ 75 ... < 150	D - 20	21,2	0,4	6,0	0,50
≥ 150 ... < 200	D - 25	25,8	0,4	8,5	0,62
≥ 200 ... < 300	D - 30	33,5	0,4	10,0	0,75
≥ 300	D - 40	41,5	0,4	13,0	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

<table>
<tr><th>Backup ring
K10-A</th><th>Chevron
K11-T</th><th>Pressure ring
K12-T</th><th>Temperature</th><th>max. speed</th><th>max. pressure[1]</th></tr>
<tr><td rowspan="4">TOPTAL (POM)
TOPMID (PA)[2]</td><td>PU</td><td rowspan="4">XPU XHPU
XSPU
GPU54D</td><td>-30 °C...+100 °C</td><td>0,5 m/s</td><td rowspan="4">500 bar
(50 MPa)</td></tr>
<tr><td>HPU</td><td>-20 °C...+100 °C</td><td>0,5 m/s</td></tr>
<tr><td>SPU</td><td>-30 °C...+100 °C</td><td>0,7 m/s</td></tr>
<tr><td>GPU</td><td>-30 °C...+100 °C</td><td>0,5 m/s</td></tr>
<tr><td rowspan="4">TOPTAL (POM)
TOPMID (PA)[2]</td><td>PU</td><td rowspan="4">TOPTAL (POM)

TOPMID (PA)[2]</td><td>-30 °C...+100 °C</td><td>0,5 m/s</td><td rowspan="4">500 bar
(50 MPa)</td></tr>
<tr><td>HPU</td><td>-20 °C...+100 °C</td><td>0,5 m/s</td></tr>
<tr><td>SPU</td><td>-30 °C...+100 °C</td><td>0,7 m/s</td></tr>
<tr><td>GPU</td><td>-30 °C...+100 °C</td><td>0,5 m/s</td></tr>
<tr><td rowspan="5">TF201</td><td>NBR</td><td rowspan="5">TF201</td><td>-30 °C...+100 °C</td><td>0,5 m/s</td><td rowspan="5">250 bar
(25 MPa)</td></tr>
<tr><td>FPM Brown</td><td>-20 °C...+200 °C</td><td>0,5 m/s</td></tr>
<tr><td>EPDM</td><td>-50 °C...+150 °C</td><td>0,5 m/s</td></tr>
<tr><td>HNBR</td><td>-25 °C...+150 °C</td><td>0,5 m/s</td></tr>
<tr><td>TOPFLAS</td><td>-10 °C...+200 °C</td><td>0,5 m/s</td></tr>
</table>

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K1012-T, D=100mm, d=80mm, L=21,2mm, TOPTAL (POM) / PU / XPU

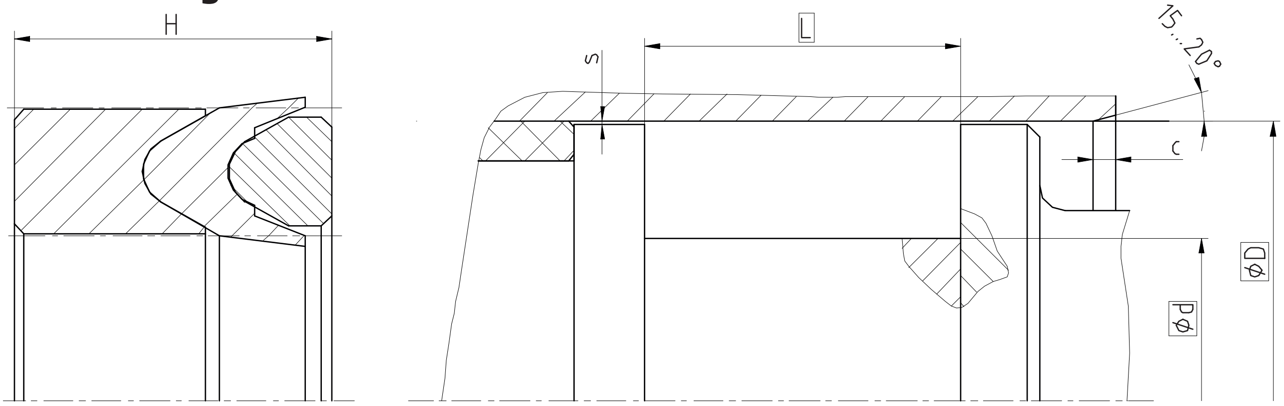
Piston Seal K1012-T	**100 x 80 x 21,2**	**TOPTAL (POM) / PU / XPU**
Profile	D x d x L	Backup ring / Chevron / Pressure ring

Seal data sheet

K1315-T

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 μm	0,1...0,5 μm
Bottom of groove	≤ 6,3 μm	≤ 1,6 μm
Groove face	≤ 15 μm	≤ 3 μm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**s***
- ... < 40	D - 10	12,0	0,4	4,0	0,25
≥ 40 ... < 75	D - 15	18,2	0,4	5,0	0,37
≥ 75 ... < 150	D - 20	23,2	0,4	6,0	0,50
≥ 150 ... < 200	D - 25	28,8	0,4	8,5	0,62
≥ 200 ... < 300	D - 30	35,7	0,4	10,0	0,75
≥ 300	D - 40	43,2	0,4	13,0	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

<table>
<tr><th>Backup ring
K13-T</th><th>Chevron
K14-T</th><th>Pressure ring
K15-T</th><th>Temperature</th><th>max. speed</th><th>max. pressure[1]</th></tr>
<tr><td rowspan="5">TOPTAL (POM)
TOPMID (PA)[2]</td><td>PU</td><td rowspan="5">PU
XHPU
XSPU
GPU54D</td><td>-30 °C...+110 °C</td><td rowspan="2">0,5 m/s</td><td rowspan="5">600 bar (60 MPa)</td></tr>
<tr><td>HPU</td><td>-20 °C...+110 °C</td></tr>
<tr><td>SPU</td><td>-30 °C...+110 °C</td><td>0,7 m/s</td></tr>
<tr><td>TPU</td><td>-40 °C...+110 °C</td><td rowspan="2">0,5 m/s</td></tr>
<tr><td>GPU</td><td>-30 °C...+110 °C</td></tr>
</table>

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K1315-T, D=100mm, d=80mm, L=23,8mm, TOPTAL (POM) / PU / X-PU™

Piston Seal K1315-T	**100 x 80 x 23,8**	**TOPTAL (POM) / PU / X-PU™**
Profile	D x d x L	Backup ring / Chevron / Pressure ring

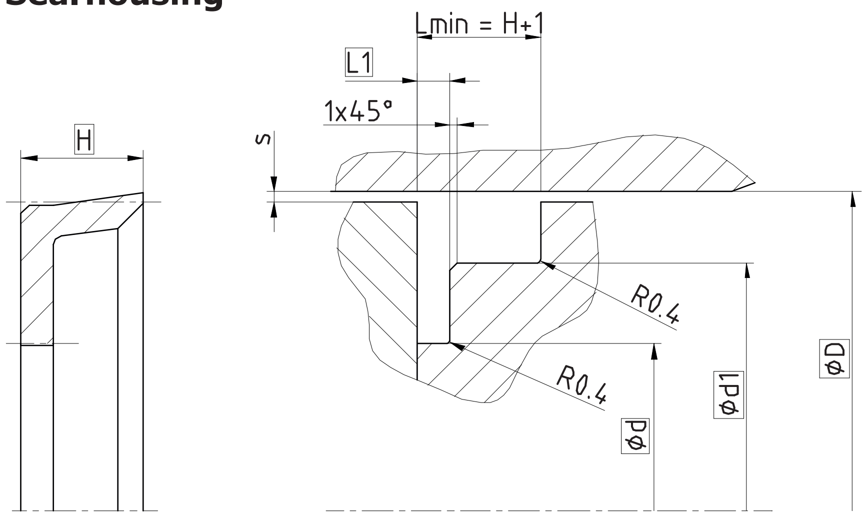
Seal data sheet

K16-A

Piston seals

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

This is not a standard profile and serves as a replacement for an existing housing. New constructions should use standard profiles.

Operating parameters

Sealing material	Temperature	max. speed		max. pressure	
		linear	rotary	linear[1]	rotary
PU	**-30 °C...+110 °C**	**0,5 m/s**	**2 m/s**	**160 bar (16 MPa)**	**7 bar (0,7 MPa)**
HPU	-20 °C...+110 °C				
SPU	-20 °C...+110 °C	0,7 m/s			
TPU	-50 °C...+110 °C	0,5 m/s			
GPU	-30 °C...+110 °C				
NBR	-30 °C...+100 °C	0,5 m/s	5 m/s	160 bar (16 MPa)	5 bar (0,5 MPa)
FPM Brown	-20 °C...+200 °C				
EPDM	-50 °C...+150 °C				
HNBR	-25 °C...+150 °C				
TOPFLAS	-10 °C...+200 °C				

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K16-A, D=58mm, d=50mm, d1=53mm, L1=3mm, H=12mm, PU

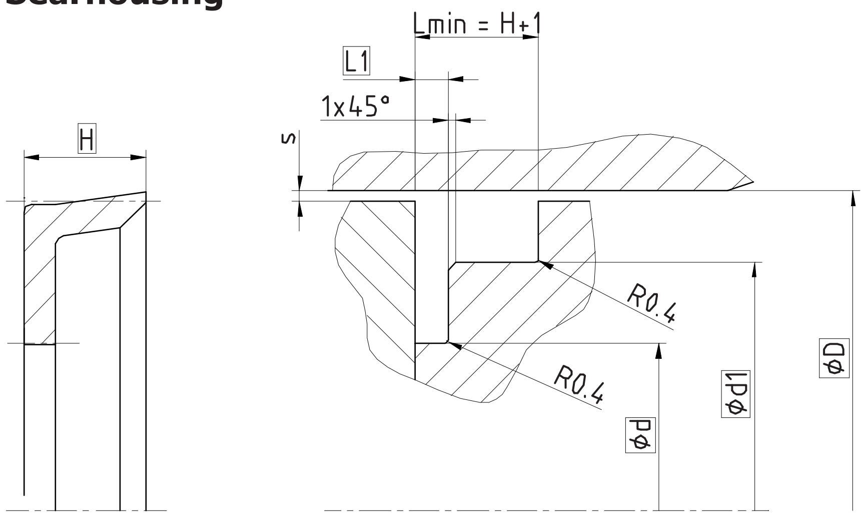
Piston Seal K16-A	**58 x 50/53 x 3/12**	**PU**
Profile	D x d/d1 x L1/H	Sealing material

Seal data sheet

K16-B

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

This is not a standard profile and serves as a replacement for an existing housing. New constructions should use standard profiles.

Operating parameters

Sealing material	Temperature	max. speed		max. pressure	
		linear	rotary	linear[1]	rotary
PU	**-30 °C...+110 °C**	**0,5 m/s**	**2 m/s**	**160 bar (16 MPa)**	**7 bar (0,7 MPa)**
HPU	-20 °C...+110 °C				
SPU	-20 °C...+110 °C	0,7 m/s			
TPU	-50 °C...+110 °C	0,5 m/s			
GPU	-30 °C...+110 °C				
NBR	-30 °C...+100 °C	0,5 m/s	5 m/s	160 bar (16 MPa)	5 bar (0,5 MPa)
FPM Brown	-25 °C...+150 °C				
EPDM	-20 °C...+200 °C				
HNBR	-50 °C...+150 °C				
TOPFLAS	-10 °C...+200 °C				

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K16-B, D=58mm, d=50mm, d1=53mm, L1=3mm, H=12mm, PU

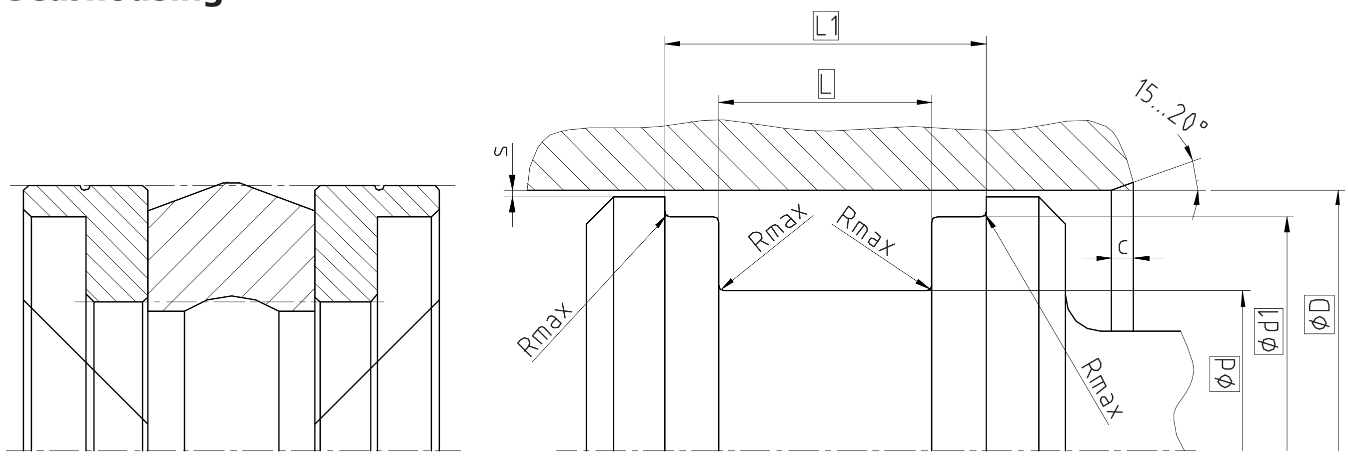
Piston Seal K16-B	**58 x 50/53 x 3/12**	**PU**
Profile	D x d/d1 x L1/H	Sealing material

Seal data sheet

K17-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...□

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**Ød1** h8	**L** +0,2	**L1**	**Rmax**	**c**	**s***
≥ 13 ... < 40	D - 8	D - 3	10	18	0,4	4	0,35
≥ 40 ... < 80	D - 10	D - 3	10	18	0,4	4	0,40
≥ 80 ... < 120	D - 15	D - 4	15	23	0,4	5	0,50
≥ 120 ... < 200	D - 20	D - 5	20	33	0,4	6	0,65
≥ 200 ... < 400	D - 25	D - 6	25	39	0,4	8,5	0,75
≥ 400 ... < 600	D - 30	D - 8	30	44	0,4	10	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**250 bar (25 MPa)**
HPU		-20 °C...+100 °C		
SPU			0,7 m/s	
TPU		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K17-P, D=100mm, d=85mm, d1=96, L=15mm, L1=23mm, PU / TOPTAL (POM)

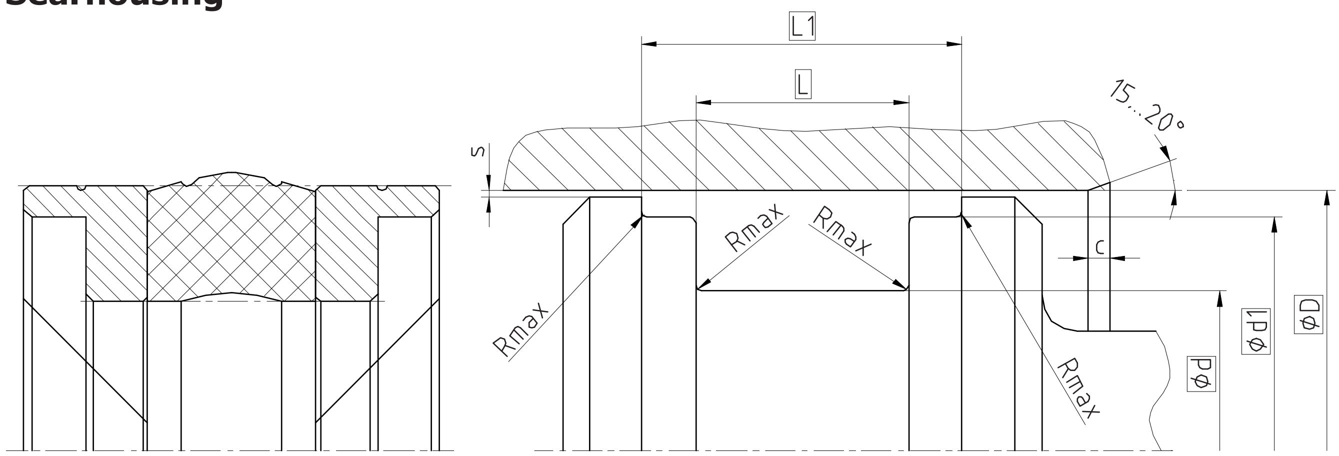
Piston Seal K09-D	**100 x 85/96 x 15/23**	**PU / TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Sealing material / Backup ring

Seal data sheet

K17-R

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**Ød1** h8	**L** +0,2	**L1**	**Rmax**	**c**	**s***
≥ 13 ... < 40	D - 8	D - 3	10	18	0,4	4	0,39
≥ 40 ... < 80	D - 10	D - 3	10	18	0,4	4	0,39
≥ 80 ... < 120	D - 15	D - 4	15	23	0,4	5	0,52
≥ 120 ... < 200	D - 20	D - 5	20	33	0,4	6	0,65
≥ 200 ... < 400	D - 25	D - 6	25	39	0,4	8,5	0,78
≥ 400 ... < 600	D - 30	D - 8	30	44	0,4	10	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

<table>
<tr><th>Sealing material</th><th>Backup ring</th><th>Temperature</th><th>max. speed</th><th>max. pressure[1]</th></tr>
<tr><td>NBR</td><td rowspan="2">TOPTAL (POM)
TOPMID (PA)[2]</td><td>-30 °C...+100 °C</td><td rowspan="4">0,5 m/s</td><td rowspan="4">250 bar (25 MPa)</td></tr>
<tr><td>HNBR</td><td>-25 °C...+100 °C</td></tr>
<tr><td>FPM Brown</td><td rowspan="2">PEEK TF201</td><td>-20 °C...+200 °C</td></tr>
<tr><td>HNBR</td><td>-25 °C...+150 °C</td></tr>
</table>

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K17-R, D=100mm, d=85mm, d1=96, L=15mm, L1=23mm, NBR / TOPTAL (POM)

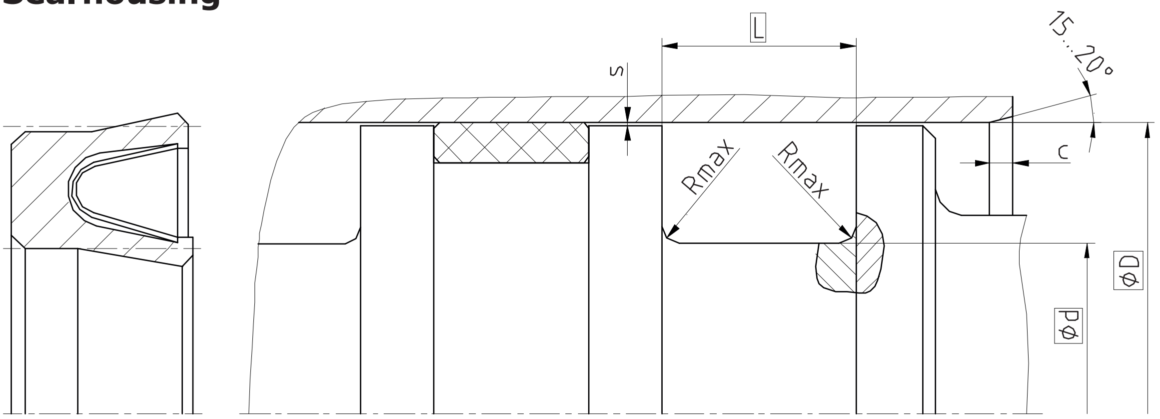
Piston Seal K17-R	**100 x 85/96 x 15/23**	**NBR / TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Sealing material / Backup ring

Seal data sheet

K19-F

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***				
					20 bar	100 bar	200 bar	300 bar	400 bar
≥ 10 ... < 18	D - 4,5	3,6	0,3	1,13	0,25	0,12	0,10	0,08	0,07
≥ 18 ... < 50	D - 6,2	4,8	0,3	1,55	0,35	0,17	0,12	0,1	0,08
≥ 50 ... < 120	D - 9,4	7,1	0,3	2,35	0,45	0,22	0,17	0,12	0,1
≥ 120 ... < 630	D - 12,2	9,5	0,3	3,05	0,6	0,31	0,25	0,15	0,12
≥ 630 ... < 1600	D - 19	15	0,3	4,75	0,87	0,48	0,38	0,28	0,2

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Spring	Temperature	max. speed	max. pressure[1]
TF100	**1.4310**	**-200 °C...+260 °C**	**15 m/s**	200 bar (20 MPa)
TF201 **TF300** TF400				**400 bar (40 MPa)**
UHMWPE		-200 °C...+80 °C		200 bar (20 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K19-F, D=100mm, d=90,6mm, L=7,1mm, TF300 / 1.4310

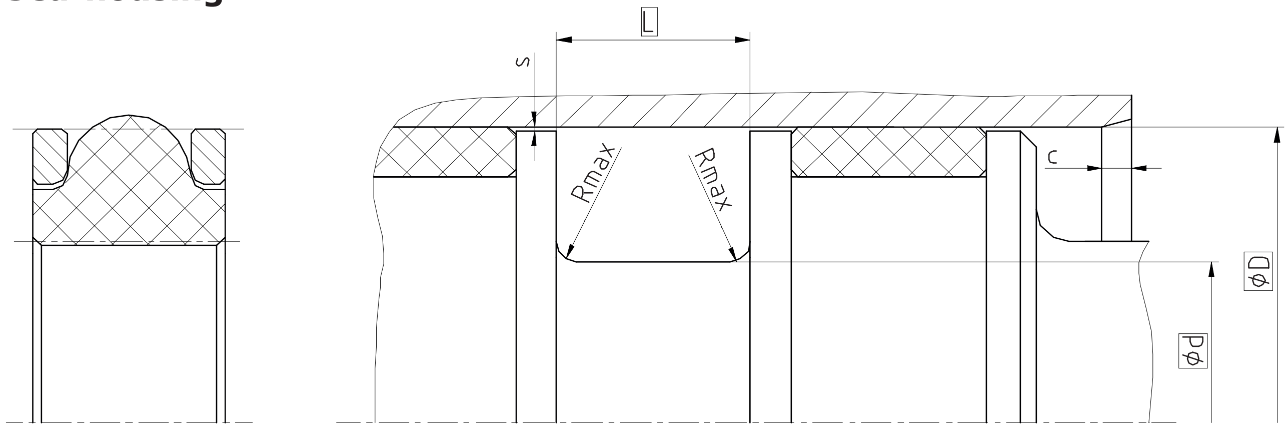
Piston Seal K19-F	**100 x 90,6 x 7,1**	**TF300 / 1.4310**
Profile	D x d x L	Sealing material / Spring

Seal data sheet

K20-R

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9		**Ød** h9	**L** +0,25	**Rmax**[1]	**c**	**s***
static	dynamic					
≥ 8 ... < 100	-	D - 2,70	4,5	0,2 0,4	2	H9/f8
≥ 100 ... < 150	≥ 8 ... < 20	D - 4,36	6,5		2	
≥ 150 ... < 250	≥ 20 ... < 40	D - 6,00	7,4		3	
≥ 250 ... < 400	≥ 40 ... < 100	D - 9,06	10,1		3,5	
≥ 400 ... < 600	≥ 100 ... < 300	D - 11,88	12,8		4,5	
≥ 600 ...	≥ 300 ... ≤ 600	D - 17,00	17,5		5	

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.
[1] Ød ≤ 40mm: 0,2 ; > 40mm: 0,4

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 Mpa)**
HNBR		-25 °C...+100 °C		
FPM Brown	PEEK TF201	-20 °C...+200 °C		
HNBR		-25 °C...+150 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.
[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K20-R, D=100mm, d=95,64mm, L=6,5mm, NBR / TOPTAL (POM)

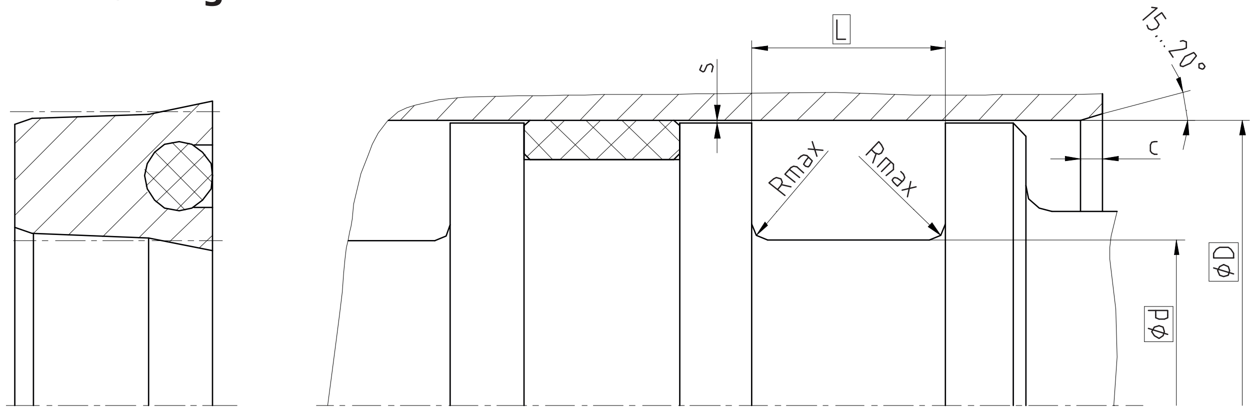
Piston Seal K20-R	**100 x 95,64 x 6,5**	**NBR / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Backup ring

Seal data sheet

K21-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 13 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33	0,18	0,11	0,05
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42	0,27	0,20	0,14
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	D - 30	20,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR 70**	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 Mpa)**
HPU		-20 °C...+100 °C	0,5 m/s	
SPU			0,7 m/s	
TPU	MVQ70	-50 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K21-P, D=100mm, d=85mm, L=10mm, PU / NBR70

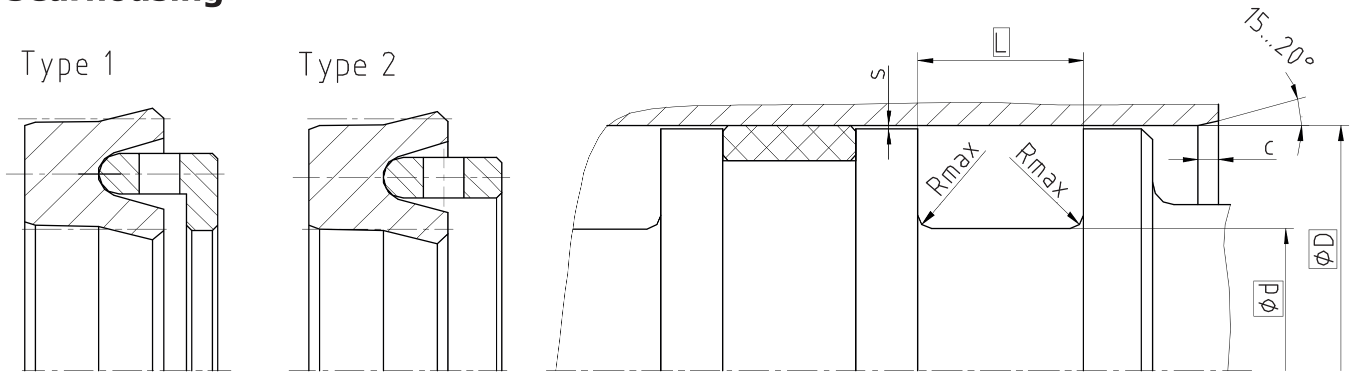
Piston Seal K21-P	**100 x 85 x 10**	**PU / NBR 70**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

K22-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 14 ... ≤ 25	D - 8	6,0	0,4	3,5	0,33	0,18	0,11	0,05
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,42	0,27	0,20	0,14
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	D - 30	20,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.
Standard: Type 2

Operating parameters

Sealing material	Support ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	0,5 m/s	**400 bar (40 Mpa)**
HPU		-20 °C...+100 °C		
SPU		-20 °C...+100 °C	0,7 m/s	
TPU		-40 °C...+100 °C	0,5 m/s	
GPU		-30 °C...+100 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K22-P, D=100mm, d=85mm, L=10mm, PU / TOPTAL (POM)

Piston Seal K22-P	**100 x 85 x 10**	**PU / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Support ring

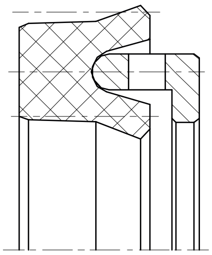
Seal data sheet

K22-R

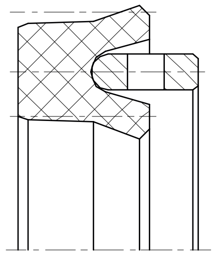
Piston seals

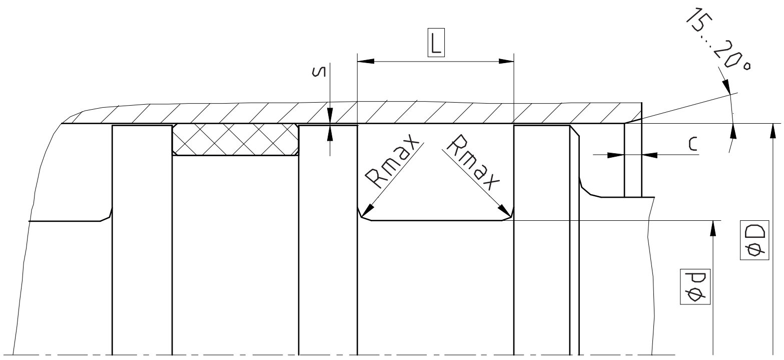
Seal housing

Type 1



Type 2





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 14 ... ≤ 25	D - 8	6,0	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	D - 10	7,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 75	D - 12	8,0	0,4	4,5	0,29	0,22	0,20
> 75 ... ≤ 150	D - 15	10,0	0,4	5,0	0,31	0,24	0,22
> 150 ... ≤ 300	D - 20	12,0	0,4	6,0	0,34	0,27	0,25
> 300 ... ≤ 500	D - 25	18,0	0,4	8,5	0,37	0,30	0,29
> 500 ... ≤ 600	D - 30	20,0	0,4	10,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.
Standard: Type 2

Operating parameters

Sealing material	Support ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 Mpa)**
FPM Brown	TF201	-20 °C...+100 °C		
EPDM	TOPTAL (POM) TOPMID (PA)[2]	-40 °C...+100 °C		
	TF201	-50 °C...+150 °C		
HNBR	TOPTAL (POM) TOPMID (PA)[2]	-25 °C...+100 °C		
	TF201	-25 °C...+150 °C		
TOPFLAS		-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K22-P, D=100mm, d=85mm, L=10mm, NBR / TOPTAL (POM)

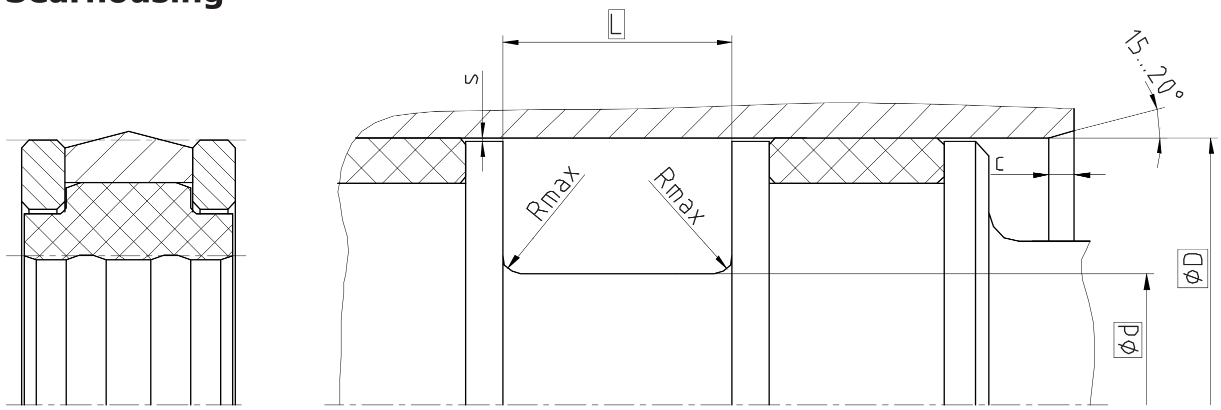
Piston Seal K22-P	**100 x 85 x 10**	**NBR / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Support ring

Seal data sheet

K23-N

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**L** +0,2	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	12,5	0,4	4	0,4
≥ 50 ... < 80	D - 15	20		5	
≥ 80 ... < 150	D - 20	25		6	
≥ 150 ... < 400	D - 25	32		8,5	
≥ 400 ... ≤ 600	D - 30	36		10	

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 Mpa)**
HPU			-20 °C...+100 °C		
SPU				0,7 m/s	
TPU	MVQ		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K23-N, D=100mm, d=80mm, L=25mm, PU / NBR / TOPTAL (POM)

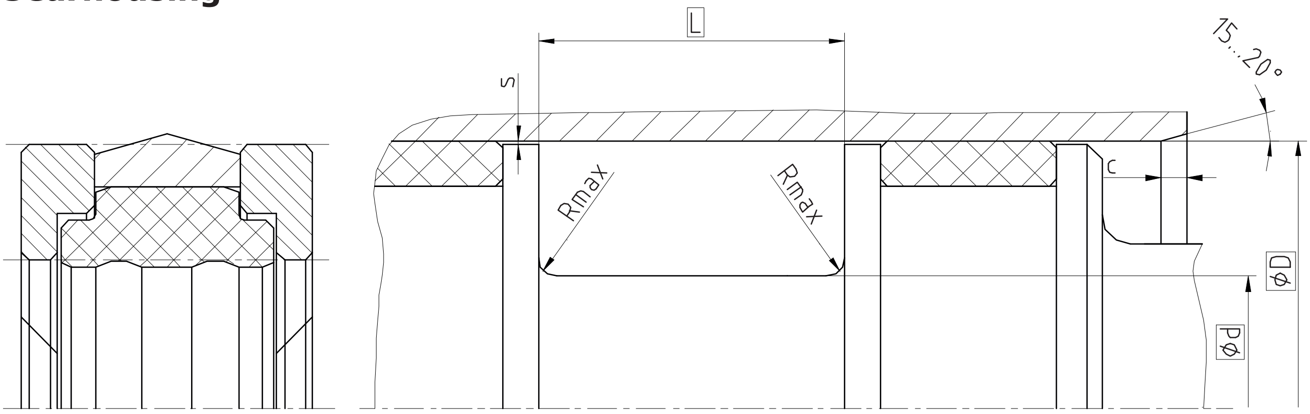
Piston Seal K23-N	**100 x 80 x 25**	**PU / NBR / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Energizer / Backup ring

Seal data sheet

K23-H

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**L** +0,2	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	12,5	0,4	4	0,4
≥ 50 ... < 80	D - 15	20		5	
≥ 80 ... < 150	D - 20	25		6	
≥ 150 ... < 400	D - 25	32		8,5	
≥ 400 ... < 600	D - 30	36		10	

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,3 m/s**	**1500 bar (150 MPa)**
HPU			-20 °C...+100 °C		
SPU				0,4 m/s	
TPU	MVQ		-40 °C...+100 °C	0,3 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K23-H, D=100mm, d=80mm, L=25mm, PU / NBR / TOPTAL (POM)

Piston Seal K23-H **100 x 80 x 25** **PU / NBR / TOPTAL (POM)**
Profile D x d x L Sealing material / Energizer / Backup ring

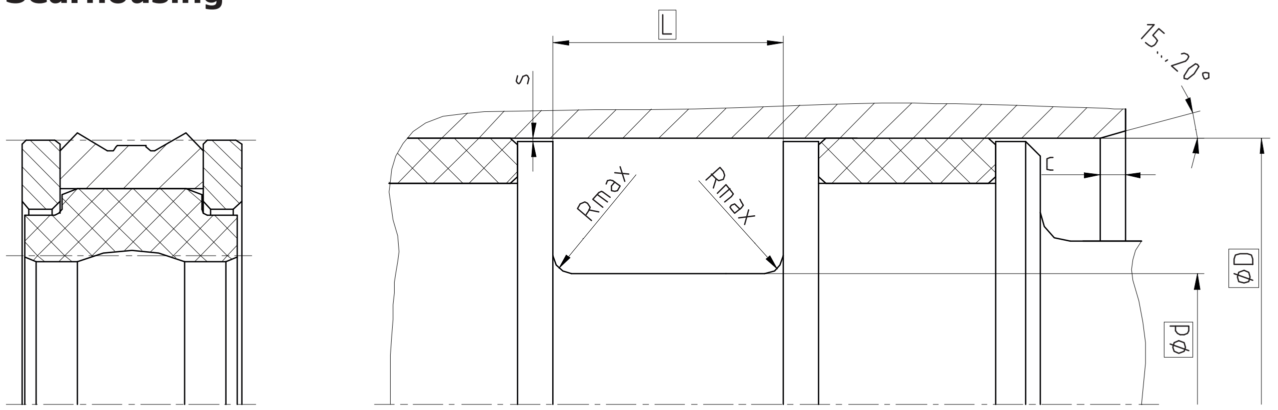
Seal data sheet

K23-D

Piston seals

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**L** +0,2	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	12,5	0,4	4	0,4
≥ 50 ... < 80	D - 15	20		5	
≥ 80 ... < 150	D - 20	25		6	
≥ 150 ... < 400	D - 25	32		8,5	
≥ 400 ... ≤ 600	D - 30	36		10	

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 Mpa)**
HPU			-20 °C...+100 °C		
SPU				0,7 m/s	
TPU	MVQ		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K23-D, D=100mm, d=80mm, L=25mm, PU / NBR / TOPTAL (POM)

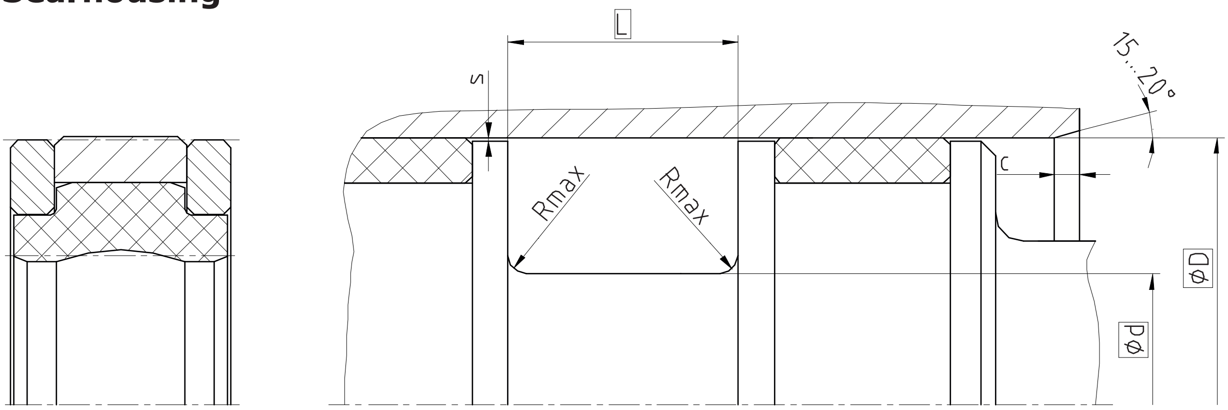
Piston Seal K23-D	100 x 80 x 25	PU / NBR / TOPTAL (POM)
Profile	D x d x L	Sealing material / Energizer / Backup ring

Seal data sheet

K23-F

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h9	**L** +0,2	**Rmax**	**c**	**s***
≥ 20 ... < 50	D - 10	12,5	0,4	4	0,4
≥ 50 ... < 80	D - 15	20		5	
≥ 80 ... < 150	D - 20	25		6	
≥ 150 ... < 400	D - 25	32		8,5	
≥ 400 ... ≤ 750	D - 30	36		10	
> 750	D - 40	40		13	

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
XPU	NBR	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	1 m/s	400 bar (40 Mpa)
XHPU					
XSPU				1,2 m/s	
TF201 **TF300** TF400	**NBR**	**TOPTAL(POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**1,5 m/s**	**400 bar (40 Mpa)**
	FPM Brown	PEEK	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K23-F, D=100mm, d=80mm, L=25mm, TF300 / NBR / TOPTAL (POM)

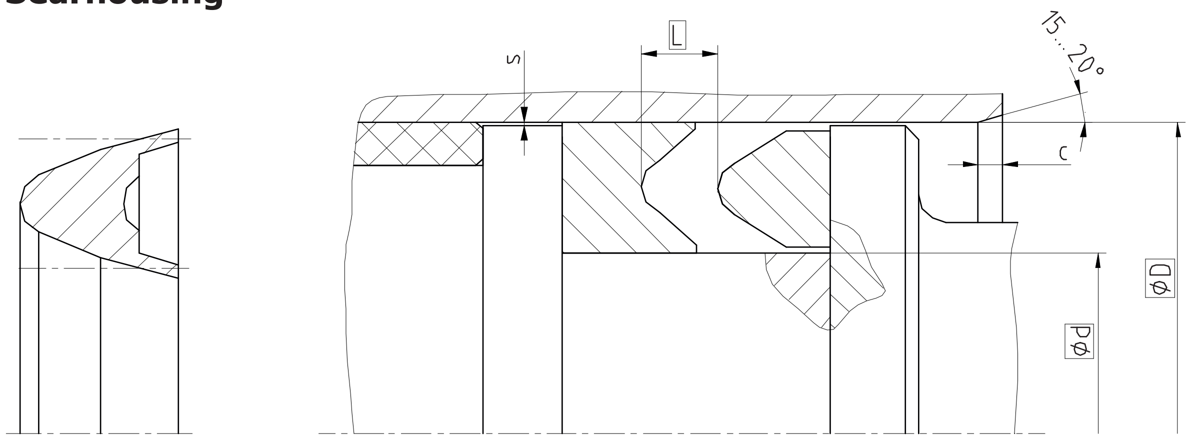
Piston Seal K23-F	**100 x 80 x 25**	**TF300 / NBR / TOPTAL (POM)**
Profile	D x d x L	Sealing material / Energizer / Backup ring

Seal data sheet

K24-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 22mm
This is not a standard profile and serves as a replacement for an existing installation space. New constructions should use standard profiles.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,5 m/s**	500 bar (50 Mpa)
HPU	-20 °C...+110 °C		
TPU	-50 °C...+110 °C		
SPU	-20 °C...+110 °C	0,7 m/s	
GPU	-30 °C...+110 °C	0,5 m/s	
NBR	-30 °C...+100 °C	0,5 m/s	250 bar (25 Mpa)
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

K24-P, D=100mm, d=80mm, L=25mm, PU

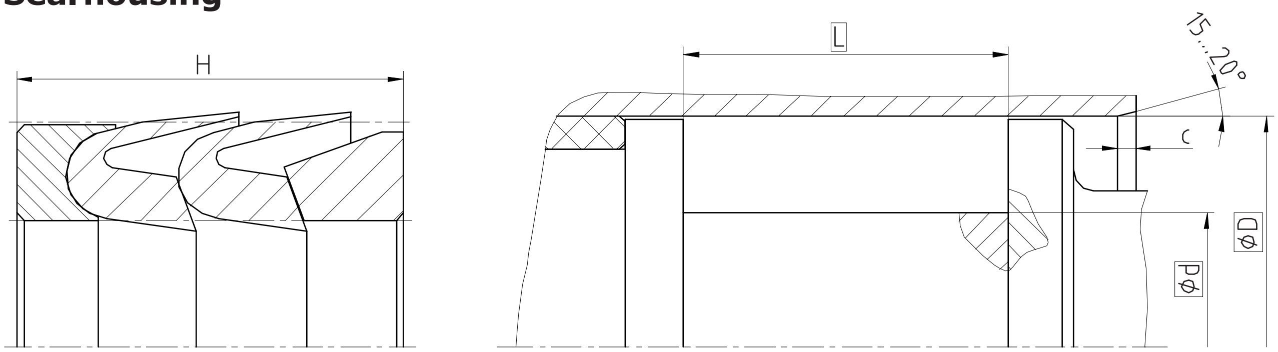
Piston Seal K24-P	**100 x 80 x 25**	**PU**
Profile	D x d x L	Sealing material

Seal data sheet

Piston seals

K32-P

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 μm	0,1...0,5 μm
Bottom of groove	≤ 6,3 μm	≤ 1,6 μm
Groove face	≤ 15 μm	≤ 3 μm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**s***
- < 24	D - 12	24		4,5	0,6
≥ 25 ... < 44	D - 15	29		5	0,38
≥ 44 ... < 100	D - 20	38		6	0,50
≥ 100 ... < 150	D - 25	47,5	0,4	8,5	0,63
≥ 150 ... < 250	D - 30 / 35	57		10	0,75 / 0,88
> 250 ... < 500	D - 40 / 45	76		13	1,00 / 1,13
> 500	D - 50	95		16	1,25

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Pressure ring	Chevron	Backup ring	Temperature	max. speed	max. pressure[1]
TOPTAL (POM) TOPMID (PA)[2]	PU	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	0,5 m/s	500 bar (50 Mpa)
	HPU		-20 °C...+100 °C		
	SPU		-20 °C...+100 °C	0,7 m/s	
	TPU		-40 °C...+100 °C	0,5 m/s	
	GPU		-30 °C...+100 °C		
TOPTAL(POM) TOPMID (PA)[2]	**PU**	**XPU**	**-30 °C...+110 °C**	**0,5 m/s**	**500 bar (50 Mpa)**
	HPU	XHPU	-20 °C...+110 °C		
	SPU	XSPU	-20 °C...+110 °C	0,7 m/s	
	GPU	GPU54D	-30 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

K32-P, D=100mm, d=75mm, L=47,5mm, TOPTAL (POM) / PU / X-PU

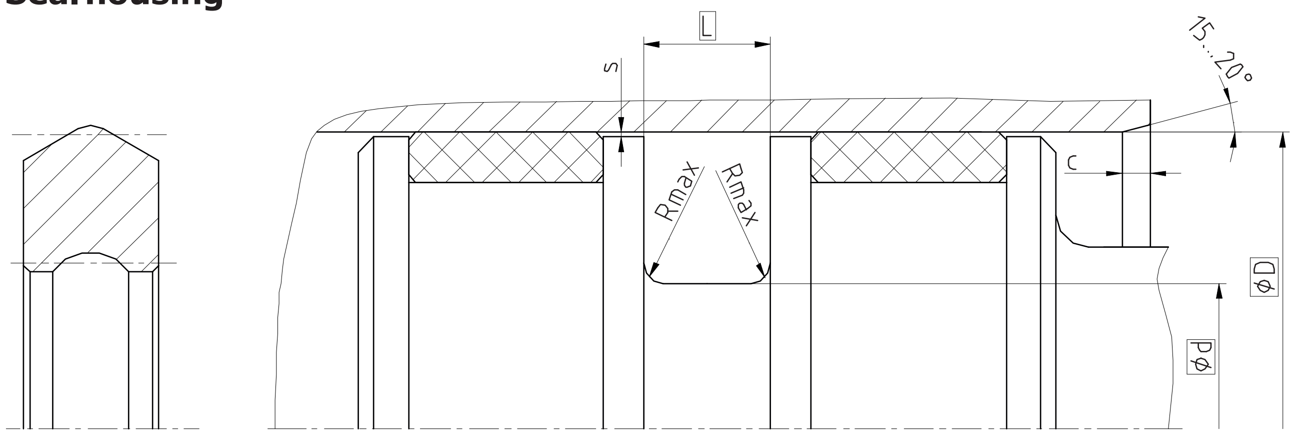
Piston Seal K32-P	**100 x 75 x 47,5**	**TOPTAL (POM) / PU/ X-PU**
Profile	D x d x L	Pressure ring / Chevron / Backup ring

Seal data sheet

K35-P

Piston seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					100 bar	200 bar	400 bar
≥ 10 ... < 20	D - 5	4	0,4	2	0,16	0,08	0,03
≥ 20 ... < 40	D - 6	4,5		3	0,18	0,10	0,05
≥ 40 ... < 60	D - 8	5,5		3,5	0,18	0,10	0,05
≥ 60 ... < 100	D - 10	6,5		4	0,23	0,15	0,10
≥ 100 ... < 150	D - 15	9,5		5	0,33	0,25	0,18
≥ 150 ... < 300	D - 20	12,5		6	0,38	0,33	0,25
≥ 300 ... < 500	D - 25	15		8,5	0,45	0,40	0,33
≥ 500 ... ≤ 700	D - 30	17,5		10	0,5	0,45	0,40
> 700 ...	D - 40	22		13	0,65	0,63	0,55

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed[1]	max. pressure[2]
PU	**-30 °C...+110 °C**	**0,4 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C	0,4 m/s	
SPU	-20 °C...+110 °C	0,5 m/s	
TPU	-50 °C...+110 °C	0,4 m/s	
GPU	-30 °C...+110 °C	0,4 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Rotary applications max. 0,2 m/s
[2] Pressure ratings depend on the size of the extrusion gap.

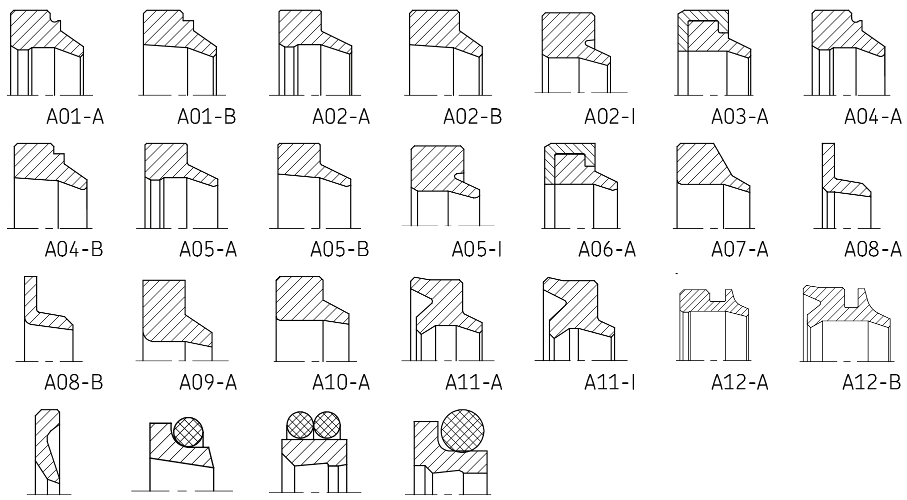
Ordering example

K35-P, D=100mm, d=85mm, L=9,5mm, PU

Piston Seal K35-P	**100 x 85 x 9,5**	**PU**
Profile	D x d x L	Sealing material

TOP SEALING PARTNER
PART OF nomo

Wipers



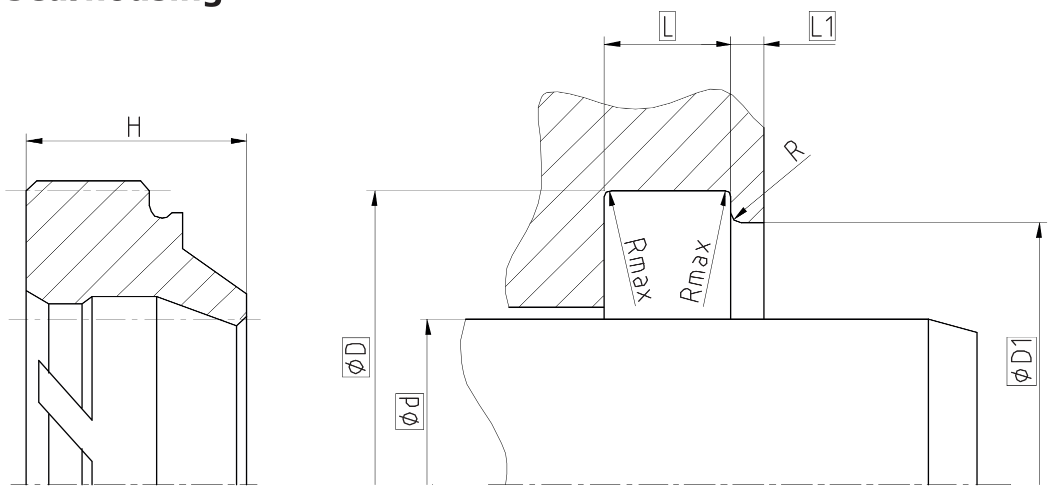
A01-A A01-B A02-A A02-B A02-I A03-A A04-A
A04-B A05-A A05-B A05-I A06-A A07-A A08-A
A08-B A09-A A10-A A11-A A11-I A12-A A12-B
A13-A A25-F A26-F A27-F

Seal data sheet

Wipers

A01-A

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 11 ... ≤ 100	d + 8	d + 6	4	1			7
> 100 ... < 150	d + 12	d + 9	5,5	1,5	0,4	≤ 0,4	10
≥ 150	d + 15	d + 11	6,5	2			13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
GPU	-30 °C...+110 °C	
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
GPU54D	-30 °C...+110 °C	4 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A01-A, d=50mm, D=58mm, D1=56mm, L=4mm, L1=1mm, PU

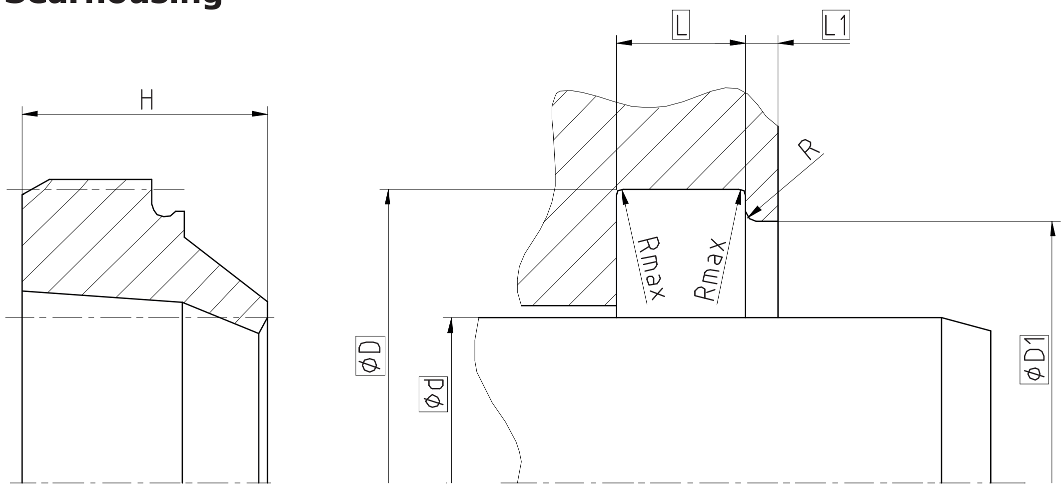
Wiper A01-A	**50 x 58/56 x 4/1**	**PU**
Profile	d x D/D1 x L/L1	Sealing material

Seal data sheet
Wipers

A01-B

SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	H
≥ 5 ... ≤ 100	d + 8	d + 6	4	1	0,4	≤ 0,4	7
> 100 ... < 150	d + 12	d + 9	5,5	1,5			10
≥ 150 ... ≤ 600	d + 15	d + 11	6,5	2			13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A01-B, d=50mm, D=58mm, D1=56mm, L=4mm, L1=1mm, PU

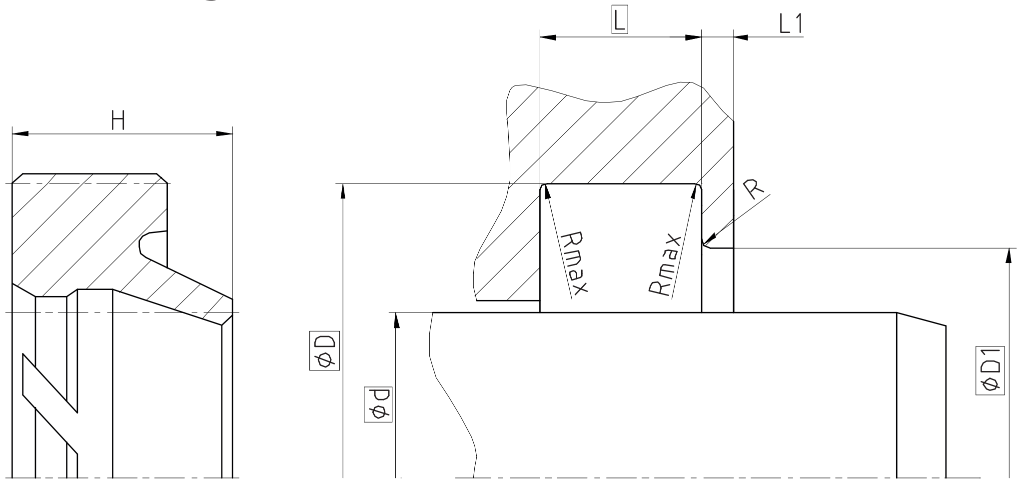
Wiper A01-B	**50 x 58/56 x 4/1**	**PU**
Profile	d x D/D1 x L/L1	Sealing material

Seal data sheet

Wipers

A02-A

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 μm	0,1...0,5 μm
Bottom of groove	≤ 6,3 μm	≤ 1,6 μm
Groove face	≤ 15 μm	≤ 3 μm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	H
≥ 11 ... ≤ 50	d + 8	d + 4	5	≥ 2	0,4	≤ 0,3	8
> 50 ... < 100	d + 10	d + 5	6				9,7
≥ 100	d + 15	d + 7,5	8,5				13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
GPU	-30 °C...+110 °C	
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
GPU54D	-30 °C...+110 °C	4 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

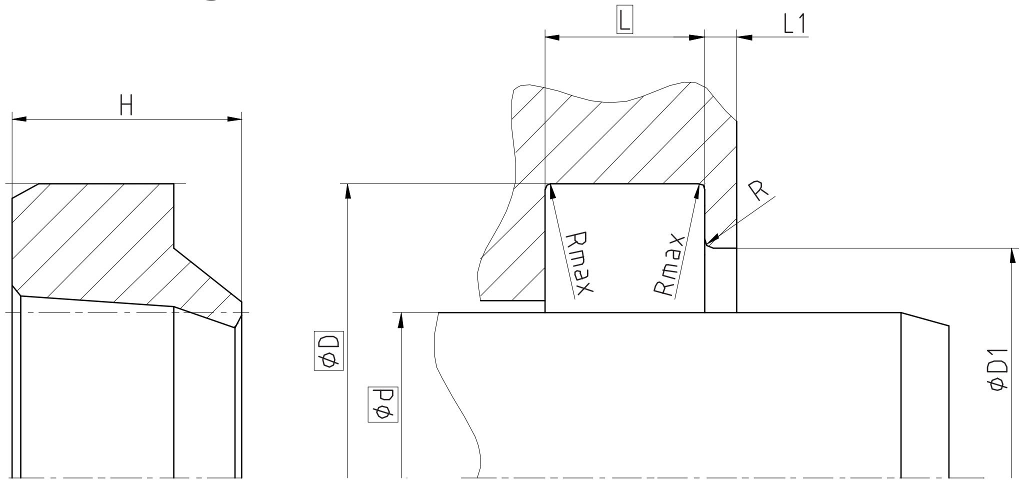
A02-A, d=50mm, D=58mm, D1=54mm, L=5mm, PU

Wiper A02-A	**50 x 58/54 x 5**	**PU**
Profile	d x D/D1 x L	Sealing material

Seal data sheet
Wipers

A02-B

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 5 ... ≤ 50	d + 8	d + 4	5	≥ 2	0,4	≤ 0,4	7,15
> 50 ... < 100	d + 10	d + 5	6				8,6
≥ 100	d + 15	d + 7,5	8,5				12,15

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
GPU	-30 °C...+110 °C	
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
GPU54D	-30 °C...+110 °C	4 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A02-B, d=50mm, D=58mm, L=5mm, PU

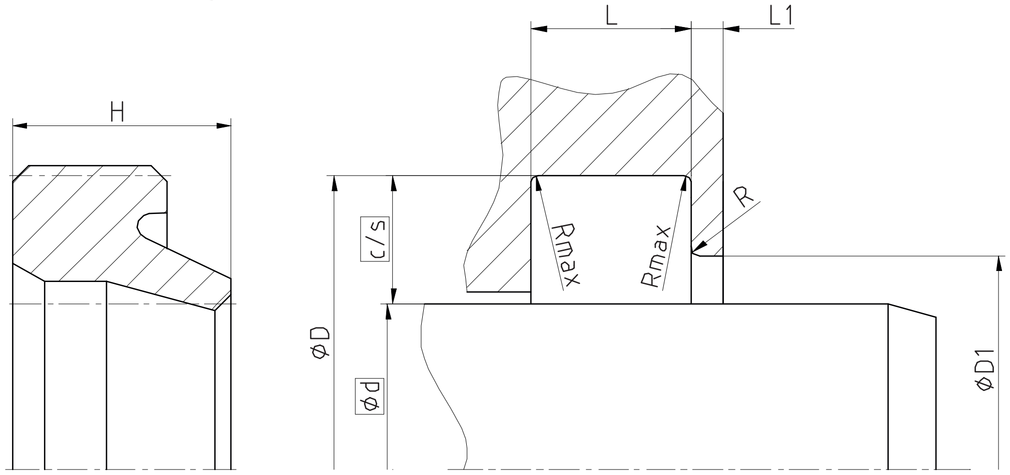
Wiper A02-B	**50 x 58 x 5**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

Wipers

A02-I

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**c/s**	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 5 ... ≤ 28	3	d + 6	d + 2,5	4	≥ 2	0,4	≤ 0,43	5,3
> 28 ... ≤ 56	4	d + 8	d + 3	5				7
> 56 ... ≤ 110	5	d + 10	d + 3	6				8
> 110	7,5	d + 15	d + 4	8,5			≤ 0,4	11

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
GPU	-30 °C...+110 °C	
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
GPU54D	-30 °C...+110 °C	4 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A02-I, d=50mm, c/s=4mm, PU

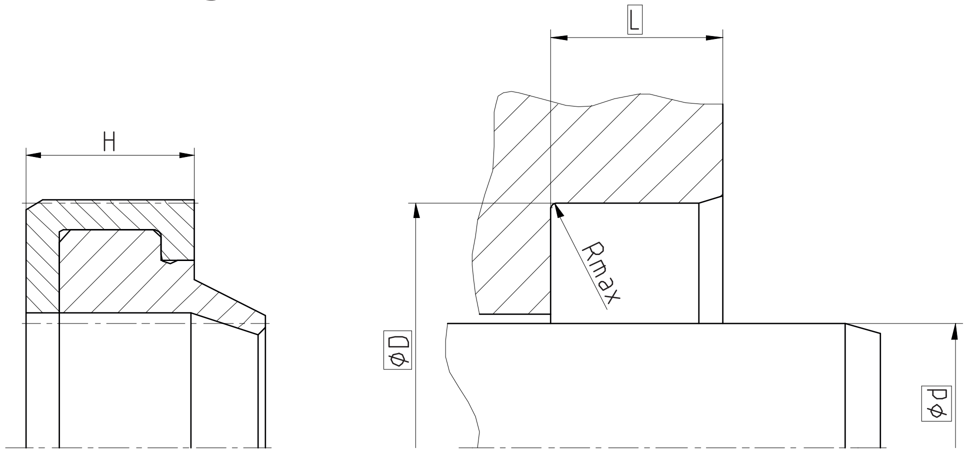
Wiper A02-I	**50 x 4**	**PU**
Profile	d x c/s	Sealing material

Seal data sheet

A03-A

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H8	**L** +0,2	**Rmax**	**H**
≥ 22 ... < 100	d + 10	7	0,4	10
≥ 100 ... ≤ 200	d + 15	9		12
> 200 ... ≤ 600	d + 20	12		16

Operating parameters

Sealing material	Housing	Temperature	max. speed
PU	**TOPTAL (POM)** TOPMID (PA)[1]	**-30 °C...+80 °C**	**4 m/s**
HPU		-20 °C...+80 °C	
SPU		-20 °C...+80 °C	5 m/s
TPU		-50 °C...+80 °C	4 m/s
XPU	TOPTAL (POM) TOPMID (PA)[1]	-30 °C...+80 °C	4 m/s
XHPU		-20 °C...+80 °C	
XSPU		-20 °C...+80 °C	5 m/s
NBR	TOPTAL (POM) TOPMID (PA)[1]	-30 °C...+80 °C	4 m/s
FPM Brown	PEEK	-20 °C...+200 °C	
EPDM		-50 °C...+150 °C	
HNBR	TOPTAL (POM) TOPMID (PA)[1]	-25 °C...+80 °C	
TOPFLAS	PEEK	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

A03-A, d=50mm, D=60mm, L=7mm, PU / TOPTAL (POM)

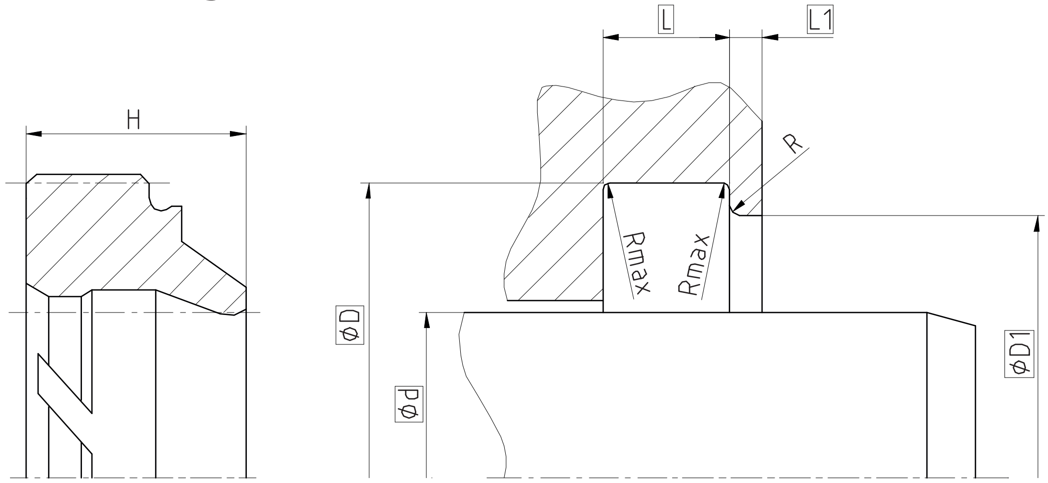
Wiper A03-A	**50 x 60 x 7**	**PU / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Housing

Seal data sheet

Wipers

A04-A

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 11 ... ≤ 100	d + 8	d + 6	4	1	0,4	≤ 0,4	7
> 100 ... < 150	d + 12	d + 9	5,5	1,5			10
≥ 150 ... ≤ 600	d + 15	d + 11	6,5	2			13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	4 m/s
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A04-A, d=50mm, D=58mm, D1=56mm, L=4mm, L1=1mm, PU

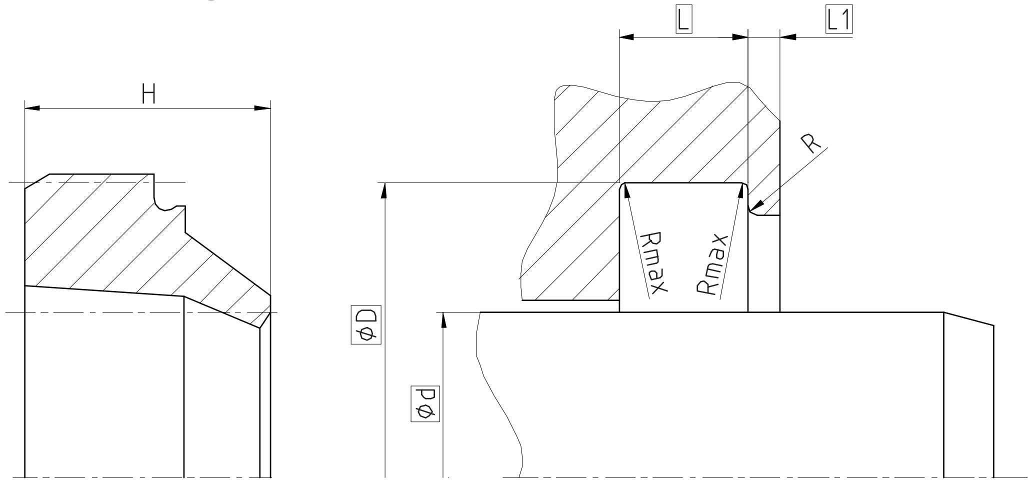
Wiper A04-A	**50 x 58/56 x 4/1**	**PU**
Profile	d x D/D1 x L/L1	Sealing material

Seal data sheet

A04-B

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 5	...	≤ 100	d + 8	d + 6	4	1	0,4	≤ 0,4	7
> 100	...	< 150	d + 12	d + 9	5,5	1,5			10
≥ 150	...	≤ 600	d + 15	d + 11	6,5	2			13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

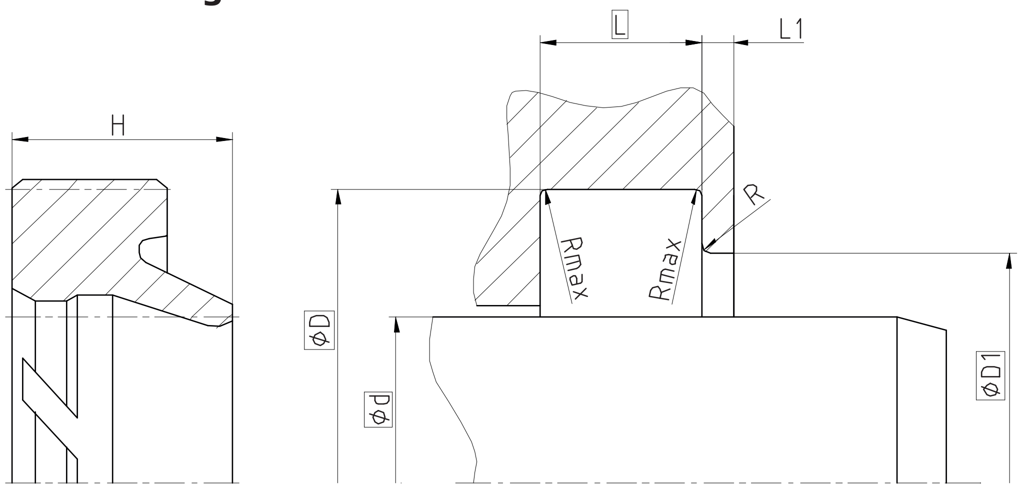
A04-B, d=50mm, D=58mm, D1=56mm, L=4mm, L1=1mm, PU

Wiper A04-B	**50 x 58/56 x 4/1**	**PU**
Profile	d x D/D1 x L/L1	Sealing material

Seal data sheet
Wipers

A05-A

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 11	...	≤ 50	d + 8	d + 4	5	≥ 2	0,4	≤ 0,3	8
> 50	...	< 100	d + 10	d + 5	6				9,7
≥ 100	...	≤ 600	d + 15	d + 7,5	8,5				13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A05-A, d=50mm, D=58mm, D1=54mm, L=5mm, PU

Wiper A05-A	**50 x 58/54 x 5**	**PU**
Profile	d x D/D1 x L	Sealing material

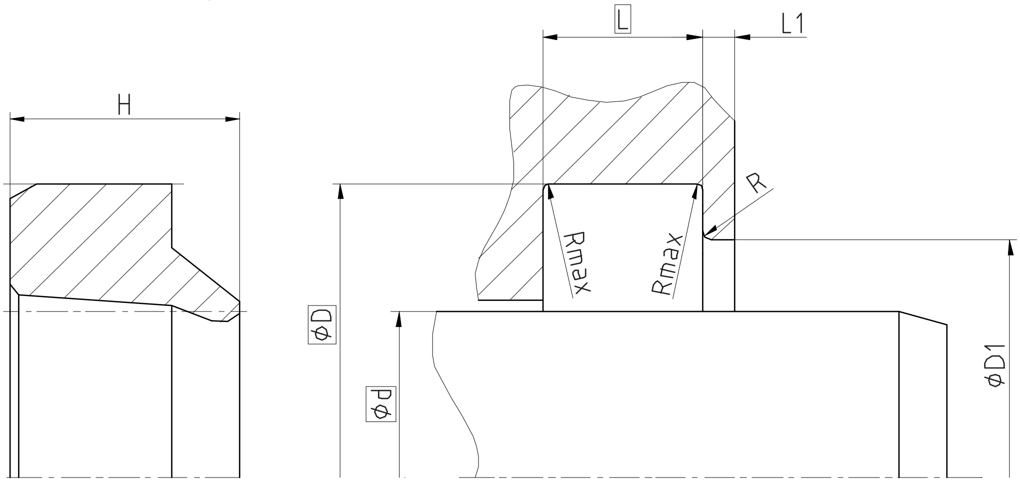
Seal data sheet

Wipers

A05-B

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 5 ... ≤ 50	d + 8	d + 4	5	≤ 2	0,4	≤ 0,3	7,15
> 50 ... < 100	d + 10	d + 5	6				8,6
≥ 100 ... ≤ 600	d + 15	d + 7,5	8,5				12,15

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A05-B, d=50mm, D=58mm, L=5mm, PU

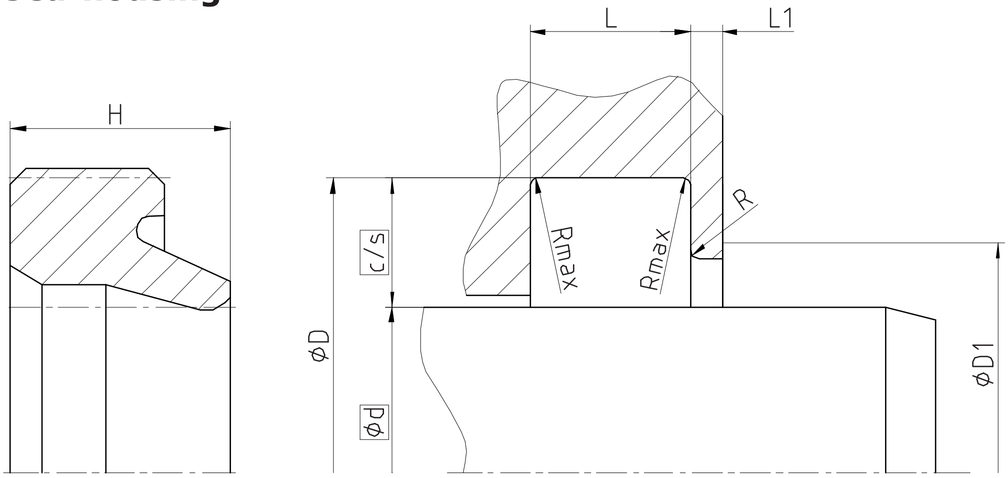
Wiper A05-B	**50 x 58 x 5**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

Wipers

A05-I

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**c/s**	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 5 ... ≤ 28	3	d + 6	d + 2,5	4	≥ 2	0,4	≤ 0,4	5,3
> 28 ... ≤ 56	4	d + 8	d + 3	5				7
> 56 ... ≤ 110	5	d + 10	d + 3	6				8
> 110 ... ≤ 600	7,5	d + 15	d + 4	8,5				11

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A05-I, d=50mm, c/s=4mm, PU

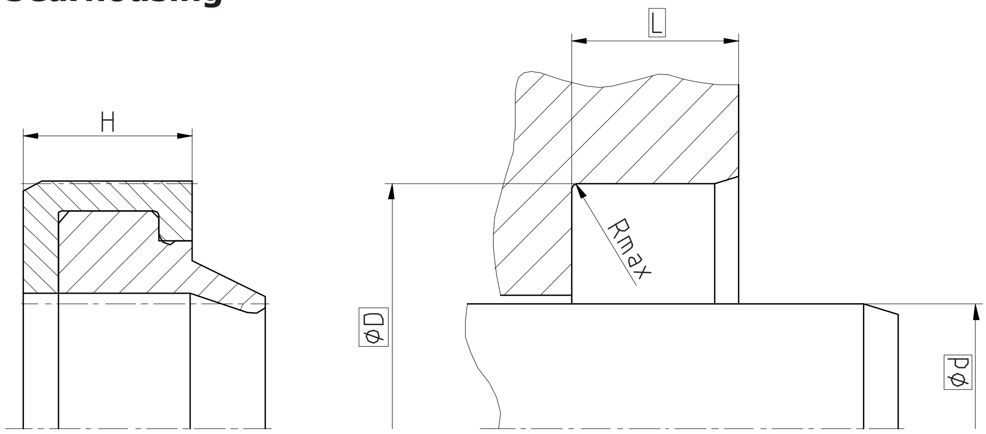
Wiper A05-I	**50 x 4**	**PU**
Profile	d x c/s	Sealing material

Seal data sheet

Wipers

A06-A

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H8	**L** +0,2	**Rmax**	**H**
≥ 22 ... < 100	d + 10	7	0,4	10
≥ 100 ... ≤ 200	d + 15	9		12
> 200 ... ≤ 600	d + 20	12		16

Operating parameters

Sealing material	Housing	Temperature	max. speed
PU	**TOPTAL (POM)** TOPMID (PA)[1]	**-30 °C...+80 °C**	**4 m/s**
HPU		-20 °C...+80 °C	
SPU		-20 °C...+80 °C	5 m/s
TPU		-50 °C...+80 °C	4 m/s
XPU	TOPTAL (POM) TOPMID (PA)[1]	-30 °C...+80 °C	4 m/s
XHPU		-20 °C...+80 °C	
XSPU		-20 °C...+80 °C	5 m/s
NBR	TOPTAL (POM) TOPMID (PA)[1]	-30 °C...+80 °C	4 m/s
FPM Brown	PEEK	-20 °C...+200 °C	
EPDM		-50 °C...+150 °C	
HNBR	TOPTAL (POM) TOPMID (PA)[1]	-25 °C...+80 °C	
	PEEK	-20 °C...+150 °C	
TOPFLAS		-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

A06-A, d=50mm, D=60mm, L=7mm, PU / TOPTAL (POM)

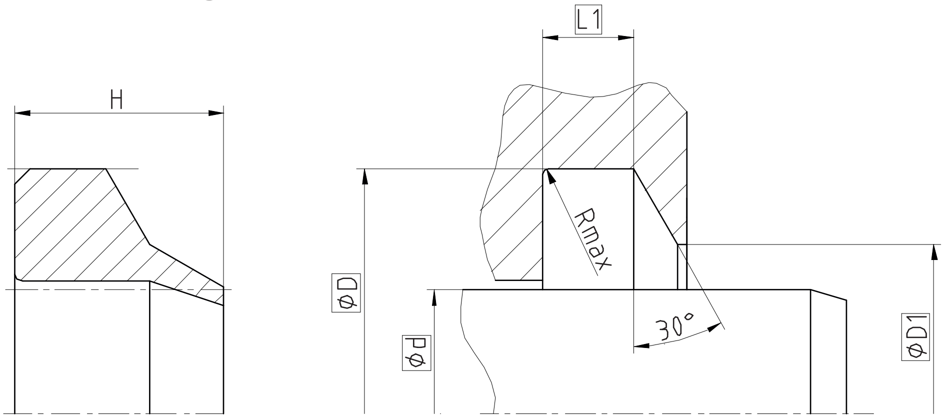
Wiper A06-A	**50 x 60 x 7**	**PU / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Housing

Seal data sheet

A07-A

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** ±0,127	**ØD1** ±0,127	**L1** +0,127	**Rmax**
≥ 22	...	≤ 50	d + 8	d + 3	3,4	0,4
> 50	...	< 200	d + 12,7	d + 5,4	5,3	

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A07-A, d=50mm, D=58mm, D1=53mm, L1=3,4mm, PU

Wiper A07-A	**50 x 58/53 x 3,4**	**PU**
Profile	d x D/D1 x L1	Sealing material

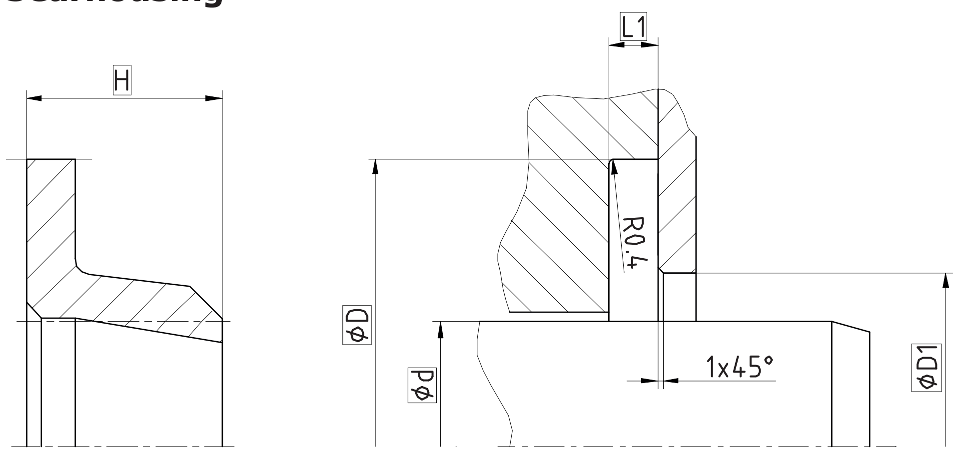
Seal data sheet

A08-A

Wipers

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 6mm
This is not a standard profile and serves as a replacement for an existing installation space. New constructions should use standard profiles.

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A08-A, d=50mm, D=70mm, D1=56mm, L1=3mm, H=12mm, PU

Wiper A08-A	**50 x 70/56 x 3/12**	**PU**
Profile	d x D/D1 x L1/H	Sealing material

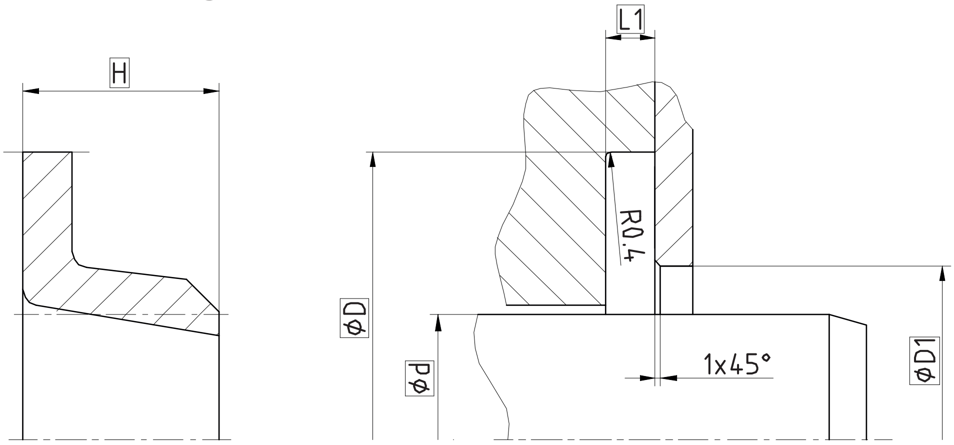
Seal data sheet

Wipers

A08-B

SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 11mm
This is not a standard profile and serves as a replacement for an existing installation space. New constructions should use standard profiles.

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A08-B, d=50mm, D=70mm, D1=56mm, L1=3mm, H=12mm, PU

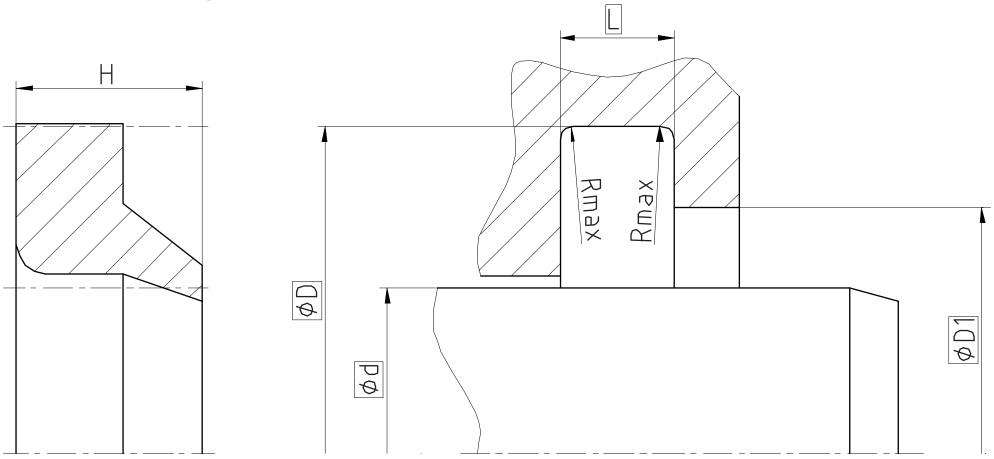
Wiper A08-B	**50 x 70/56 x 3/12**	**PU**
Profile	d x D/D1 x L1/H	Sealing material

Seal data sheet

A09-A

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H10	**ØD1** H11	**L** +0,1	**Rmax**
≥ 5		≤ 65	d + 7	d + 4	2,7	0,4
≥ 65	...	≤ 100	d + 9,3	d + 5	3,1	0,4
≥ 100	...	≤ 140	d + 11	d + 6	3,5	0,4
≥ 140	...	≤ 280	d + 12,5	d + 7	3,9	0,4
≥ 280	...	≤ 600	d + 12,5	d + 7	4,3	0,4

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A09-A, d=70mm, D=79,3mm, D1=75mm, L=3,1mm PU

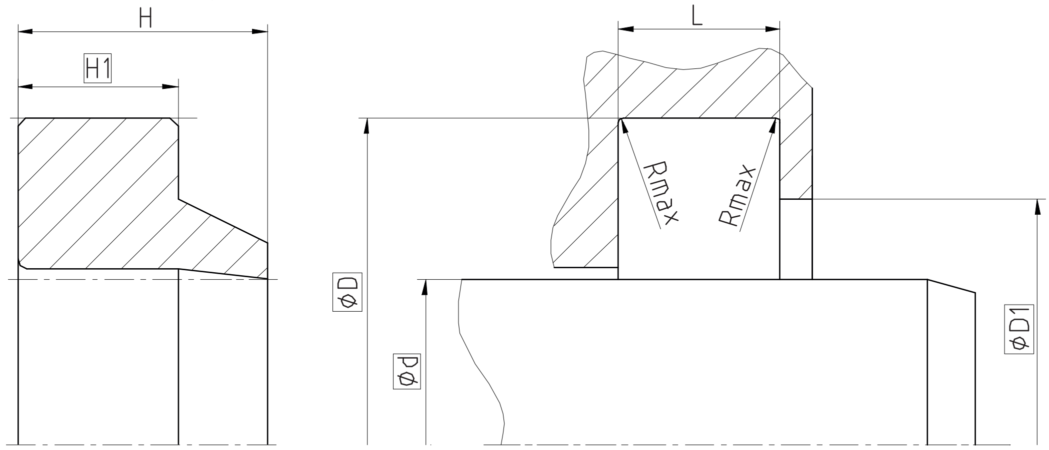
Wiper A09-A	**70 x 79,3/75 x 3,1**	**PU**
Profile	d x D/D1 x L	Sealing material

Seal data sheet

A10-A

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H10	**ØD1** H11	**L** +0,2	**Rmax**	**c/s**
≥ 6	...	≤ 17,5	d + 6,35	d + 4,1	3,15	0,4	3,15
> 17,5	...	≤ 50	d + 9,5	d + 6,3	4,75		4,72
> 50	...	≤ 600	d + 12,7	d + 8,3	6,3		6,3

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A10-A, d=50mm, D=59,5mm, D1=56,3mm, L=4,75mm, PU

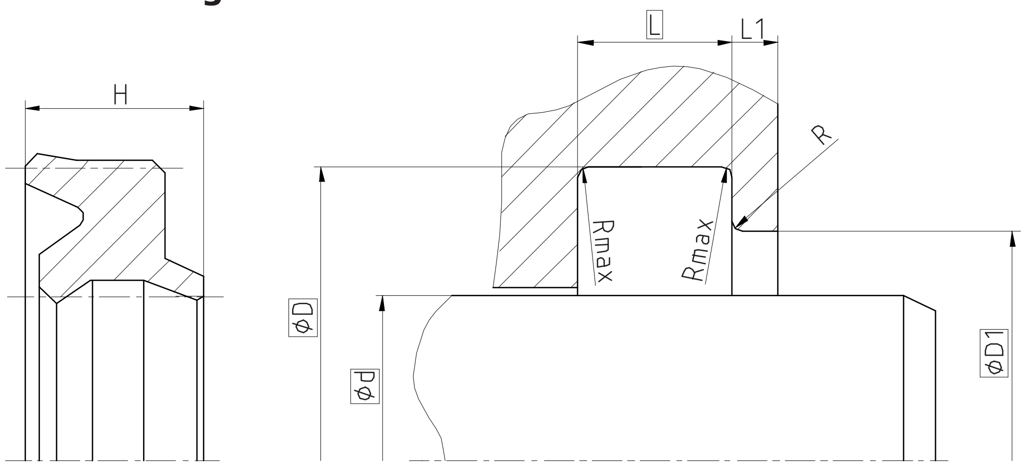
Wiper A10-A	**50 x 59,5/56,3 x 4,75**	**PU**
Profile	d x D/D1 x L	Sealing material

Seal data sheet

A11-A

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 5 ... ≤ 50	d + 8	d + 4	5			≤ 0,3	8
> 500 ... < 100	d + 10	d + 5	6	≥ 2	0,4	≤ 0,4	9,7
≥ 100	d + 15	d + 7,5	8,5				13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
GPU	-30 °C...+110 °C	
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A11-A, d=50mm, D=58mm, D1=54mm, L=5mm, PU

Wiper A11-A	**50 x 58/54 x 5**	**PU**
Profile	d x D/D1 x L	Sealing material

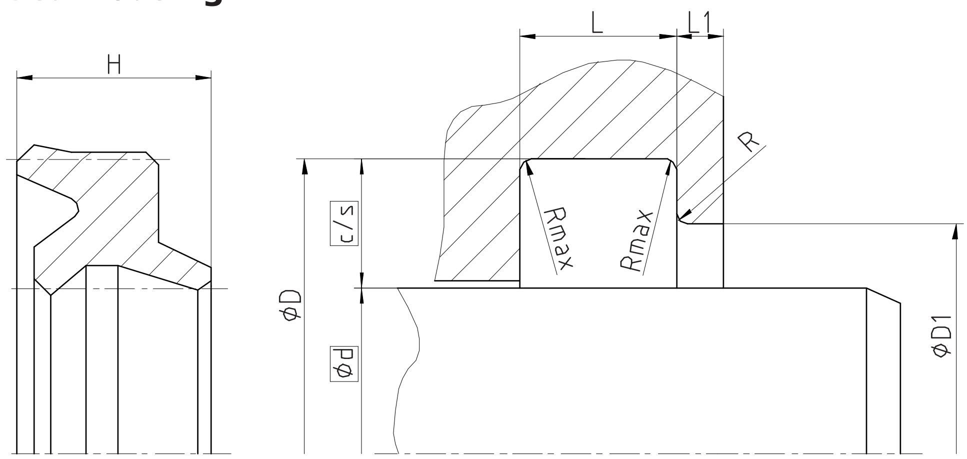
Seal data sheet

A11-I

Wipers

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**c/s**	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 5 ... ≤ 28	3	d + 6	d + 2,5	4	≥ 2	0,4	≤ 0,4	5,1
> 28 ... ≤ 56	4	d + 8	d + 3	5				6,8
> 56 ... ≤ 110	5	d + 12	d + 3	6				7,8
> 110	7,5	d + 15	d + 4	8,5				10,8

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
GPU	-30 °C...+110 °C	
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A11-I, d=50mm, c/s=4mm, PU

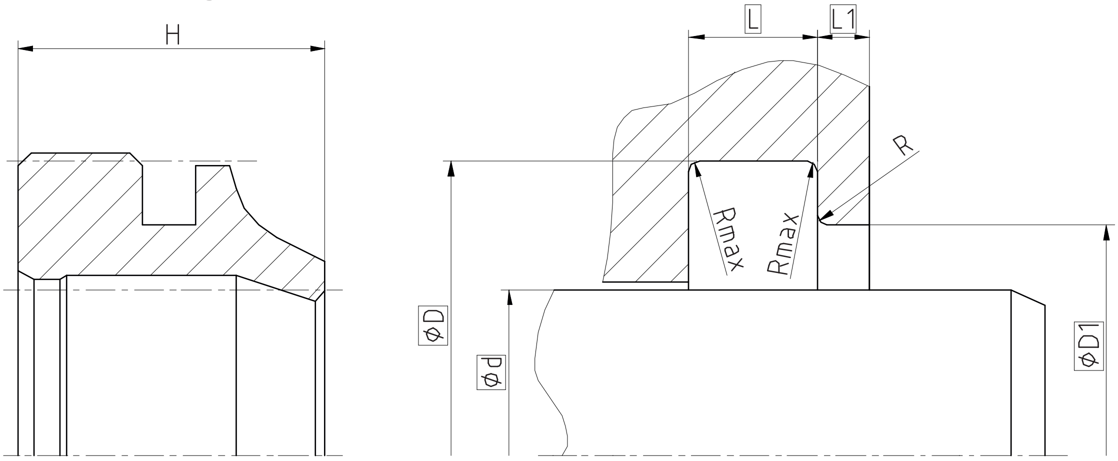
Wiper A11-I	**50 x 4**	**PU**
Profile	d x c/s	Sealing material

Seal data sheet

A12-A

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**	**H**
≥ 11 ... ≤ 100	d + 8	d + 4	5	1,5	0,4	≤ 0,3	8
> 100 ... < 150	d + 10	d + 5	6	2		≤ 0,4	9,7
≥ 150 ... ≤ 600	d + 15	d +7,5	8,5	3			13

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A12-A, d=50mm, D=58mm, D1=54mm, L=5mm, L1=1,5mm, PU

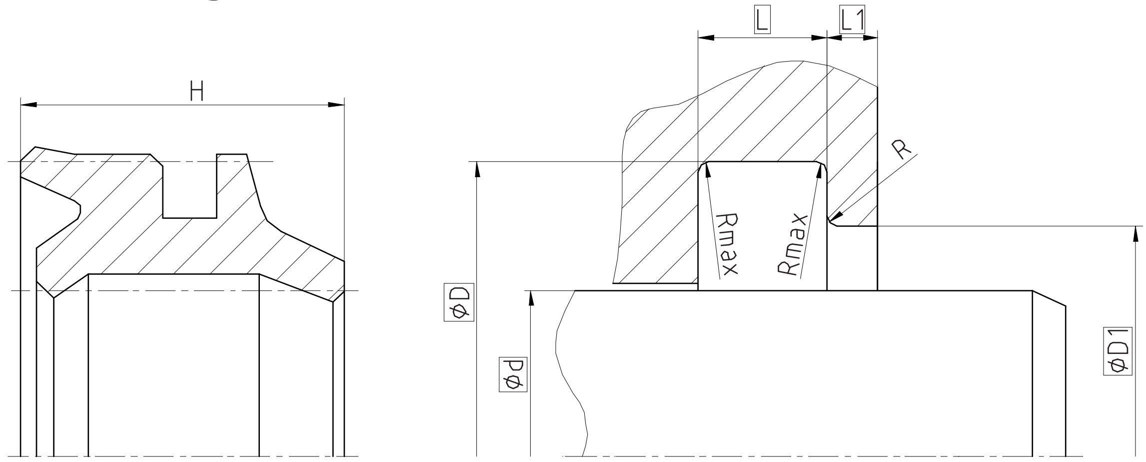
Wiper A12-A	**50 x 58/54 x 5/1,5**	**PU**
Profile	d x D/D1 x L/L1	Sealing material

Seal data sheet

Wipers

A12-B

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H11	**ØD1** H11	**L** +0,2	**L1**	**Rmax**	**R**
≥ 5	...	≤ 50	d + 8	d + 4	5	1,5	0,4	≤ 0,3
> 50	...	< 100	d + 10	d + 5	6	2		≤ 0,4
≥ 100	...	≤ 600	d + 15	d +7,5	8,5	3		

Operating parameters

Sealing material	Temperature	max. speed
PU	**-30 °C...+110 °C**	**4 m/s**
HPU	-20 °C...+110 °C	
SPU	-20 °C...+110 °C	5 m/s
TPU	-50 °C...+110 °C	4 m/s
NBR	-30 °C...+100 °C	4 m/s
FPM Brown	-20 °C...+200 °C	
EPDM	-50 °C...+150 °C	
HNBR	-25 °C...+150 °C	
TOPFLAS	-10 °C...+200 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

A12-B, d=50mm, D=58mm, D1=54mm, L=5mm, L1=1,5mm, PU

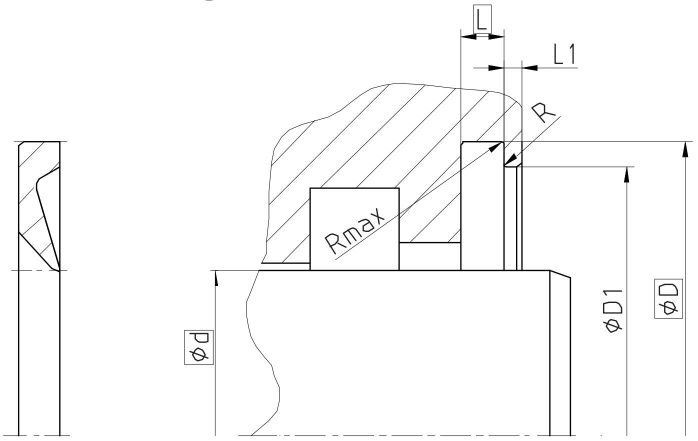
Wiper A12-B	**50 x 58/54 x 5/1,5**	**PU**
Profile	d x D/D1 x L/L1	Sealing material

Seal data sheet

A13-A

Wipers

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H9	**ØD1** +0,1	**L** +0,2	**Rmax**
≥ 5	...	≤ 50	d + 10	d + 9	2	0,4
> 50	...	≤ 150	d + 15	d + 14	2,5	
> 150		≤ 600	d + 20	d + 18,5	3	

Operating parameters

Sealing material	Temperature	max. speed
XPU	-30 °C...+110 °C	4 m/s
XHPU	-20 °C...+110 °C	
XSPU	-20 °C...+110 °C	5 m/s
TOPTAL (POM) TOPMID (PA)[1]	**-40 °C...+80 °C**	**4 m/s**
PEEK	-60 °C...+110 °C	5 m/s
UHMWPE	-200 °C...+80 °C	4 m/s

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

A13-A, d=60mm, D=75mm, D1=74mm, L=2,5mm, TOPTAL (POM)

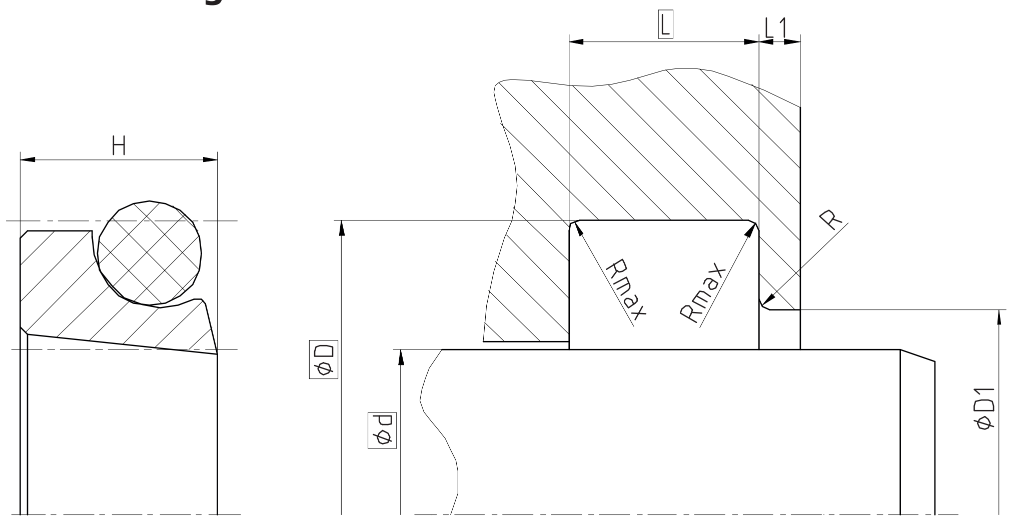
Wiper A13-A	**60 x 75/74 x 2,5**	**TOPTAL (POM)**
Profile	d x D/D1 x L	Sealing material

Seal data sheet

Wipers

A25-F

Seal housing



	PU		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H10	**ØOD**	**L** +0,2	**Rmax**	**ØD1** H11
≥ 5	...	≤ 11	d + 4,8	1,78	3,7	0,4	d + 2,7
> 11	...	< 63	d + 6,8	2,62	5,0	1,2	d + 3,5
≥ 63	...	< 400	d + 8,8	3,53	6,0	2,0	d + 4,0
> 400	...	< 600	d + 12,2	5,33	8,4	2,0	d + 6,0

Operating parameters

Glide ring	Energizer	Temperature	max. speed
XPU	NBR70	-30 °C...+100 °C	5 m/s
XHPU		-20 °C...+100 °C	
XSPU		-20 °C...+100 °C	
TF100 TF201 **TF300** TF400	**NBR70**	**-30 °C...+100 °C**	**10 m/s**
	FPM75	-20 °C...+200 °C	
UHMWPE	NBR70	-30 °C...+80 °C	
	MVQ70	-55 °C...+80 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.
The pressure on the standard version is limited to 16 bar.

Ordering example

A25-F, d=70mm, D=78,8mm, L=6mm, TF300 / NBR70

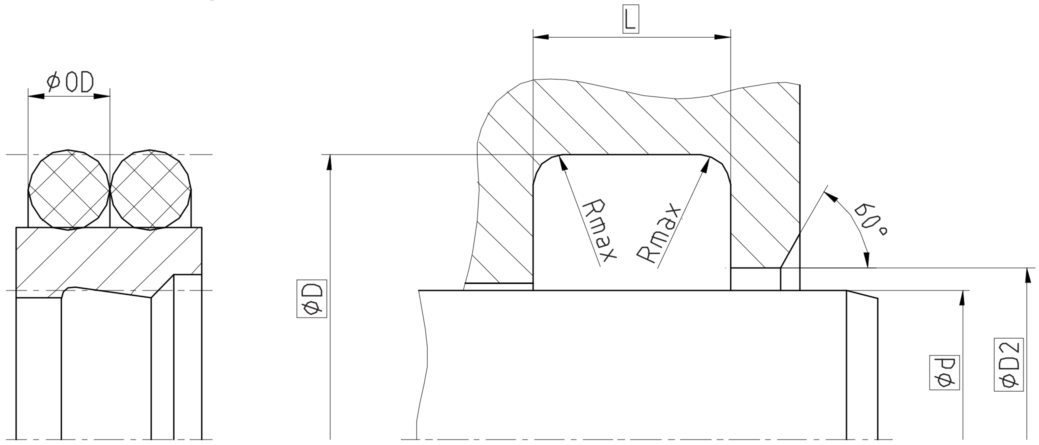
Wiper A25-F	**70 x 78,8 x 6**	**TF300 / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

A26-F

Wipers

Seal housing



	PU		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H9	**ØOD**	**L** +0,2	**Rmax**	**ØD1** H11
≥ 5	...	≤ 30	d + 7,6	1,78	4,2	0,4	d + 1,0
> 30	...	< 80	d + 8,8	2,62	6,3	1,2	d + 1,5
≥ 80	...	<120	d + 12,2	3,53	8,1	2,0	d + 2,0
> 120	...	< 250	d + 16,0	5,33	11,5	2,0	d + 2,0
> 250	...	< 630	d + 24,0	7,00	15,5	2,0	d + 2,5
> 630	...	< 1000	d + 27,3	8,40	18,0	2,0	d + 2,5
> 1000	...	< 1250	d + 33,0	10,00	21,5	2,0	d + 2,5

Operating parameters

Glide ring	Energizer	Temperature	max. speed
XPU	NBR70	-30 °C...+100 °C	5 m/s
XHPU		-20 °C...+100 °C	
XSPU		-20 °C...+100 °C	
GPU54D		-30 °C...+100 °C	
TF100 TF201 **TF300** TF400	**NBR70**	**-30 °C...+100 °C**	**10 m/s**
	FPM75	-20 °C...+200 °C	
UHMWPE	NBR70	-30 °C...+80 °C	
	MVQ70	-55 °C...+80 °C	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.
The pressure on the standard version is limited to 16 bar.

Ordering example

A26-F, d=70mm, D=78,8mm, L=6,3mm, TF300 / NBR70

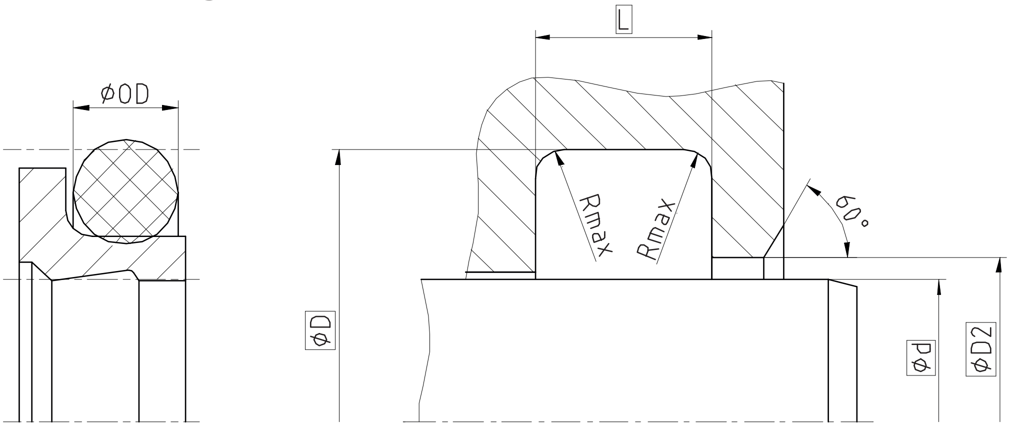
Wiper A26-F	**70 x 78,8 x 6,3**	**TF300 / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

A27-F

Wipers

Seal housing



	PU		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H9	**ØOD**	**L** +0,2	**Rmax**	**ØD1** H11
≥ 5	...	≤ 12	d + 4,8	1,78	3,7	0,4	d + 1,5
> 12	...	< 65	d + 6,8	2,62	5,0	0,7	d + 1,5
≥ 65	...	< 180	d + 8,8	3,53	6,0	1,0	d + 1,5
> 180	...	< 300	d + 12,2	5,33	8,4	1,5	d + 2,0
> 300	...	< 650	d + 16,0	7,00	11,0	1,5	d + 2,0
> 650	...	< 1000	d + 20,0	8,40	14,0	2,0	d + 2,5
> 1000	...	< 2500	d + 27,3	10,00	16,0	2,0	d + 2,5

Operating parameters

Glide ring	Energizer	Temperature	max. speed
XPU	NBR70	-30 °C...+100 °C	5 m/s
XHPU		-20 °C...+100 °C	
XSPU		-20 °C...+100 °C	
GPU54D		-30 °C...+100 °C	
TF100 TF201 **TF300** TF400	**NBR70**	**-30 °C...+100 °C**	**10 m/s**
	FPM75	-20 °C...+200 °C	
UHMWPE	NBR70	-30 °C...+80 °C	
	MVQ70	-55 °C...+80 °C	

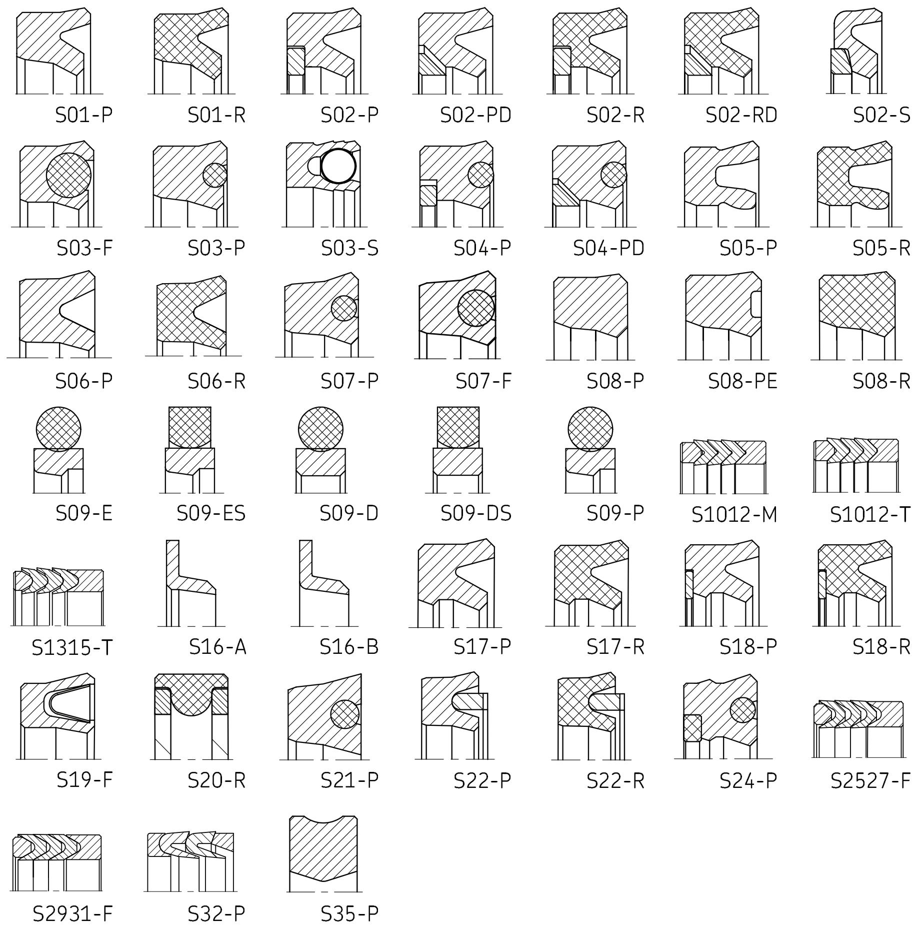
The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.
The pressure on the standard version is limited to 16 bar.

Ordering example

A27-F, d=70mm, D=78,8mm, L=6mm, TF300 / NBR70

Wiper A27-F	**70 x 78,8 x 6**	**TF300 / NBR70**
Profile	d x D x L	Sealing material / Energizer

Rod seals

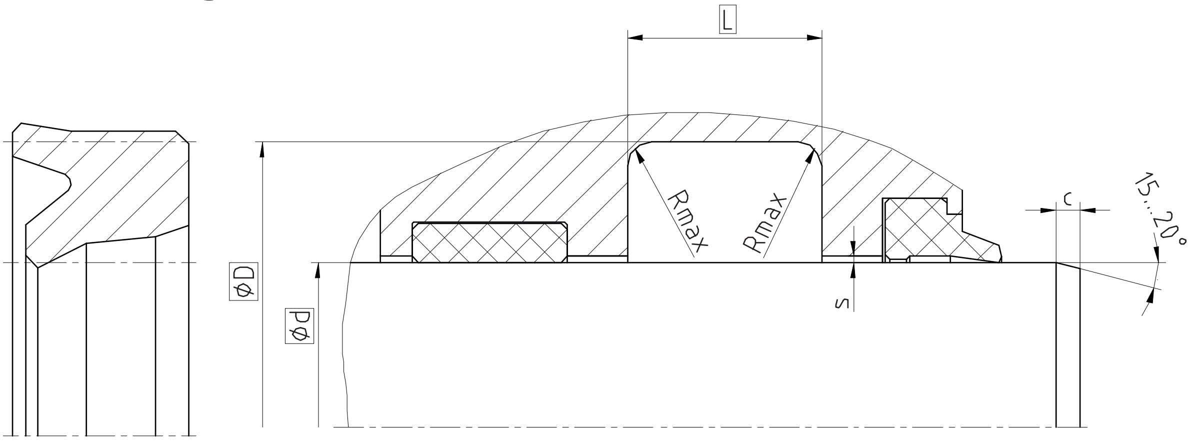

S01-P
S01-R
S02-P
S02-PD
S02-R
S02-RD
S02-S
S03-F
S03-P
S03-S
S04-P
S04-PD
S05-P
S05-R
S06-P
S06-R
S07-P
S07-F
S08-P
S08-PE
S08-R
S09-E
S09-ES
S09-D
S09-DS
S09-P
S1012-M
S1012-T
S1315-T
S16-A
S16-B
S17-P
S17-R
S18-P
S18-R
S19-F
S20-R
S21-P
S22-P
S22-R
S24-P
S2527-F
S2931-F
S32-P
S35-P

Seal data sheet

S01-P

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 11 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 700	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39
> 700	d + 40	32,0	0,4	13,0	0,67	0,52	0,45	0,39

***** Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C	0,5 m/s	
SPU	-20 °C...+110 °C	0,7 m/s	
TPU	-50 °C...+110 °C	0,5 m/s	
GPU	-30 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

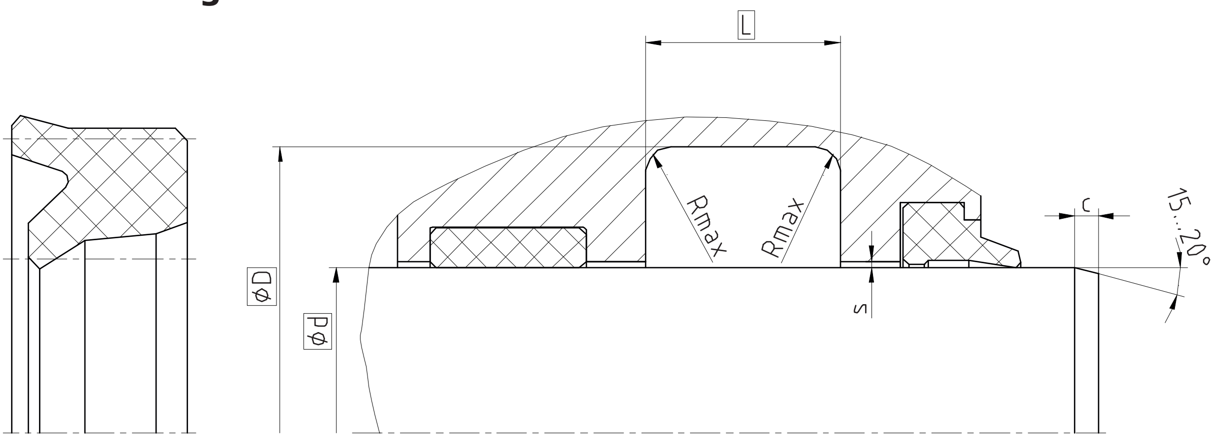
Ordering example

S01-P, d=100mm, D=115mm, L=10mm, PU

Rod Seal S01-P	**100 x 115 x 10**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet
S01-R
Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 μm	0,1...0,5 μm
Bottom of groove	≤ 6,3 μm	≤ 1,6 μm
Groove face	≤ 15 μm	≤ 3 μm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 11 ... ≤ 25	d + 8	6,3	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,31	0,24	0,22
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,34	0,27	0,25
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,37	0,30	0,29
> 500 ... ≤ 700	d + 30	25,0	0,4	10,0	0,40	0,34	0,32
> 700	d + 40	32,0	0,4	13,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure¹
NBR	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
MVQ	-60 °C...+200 °C	-	-
TOPFLAS	-10 °C...+200 °C	0,5 m/s	160 bar (16 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S01-R, d=100mm, D=115mm, L=10mm, NBR

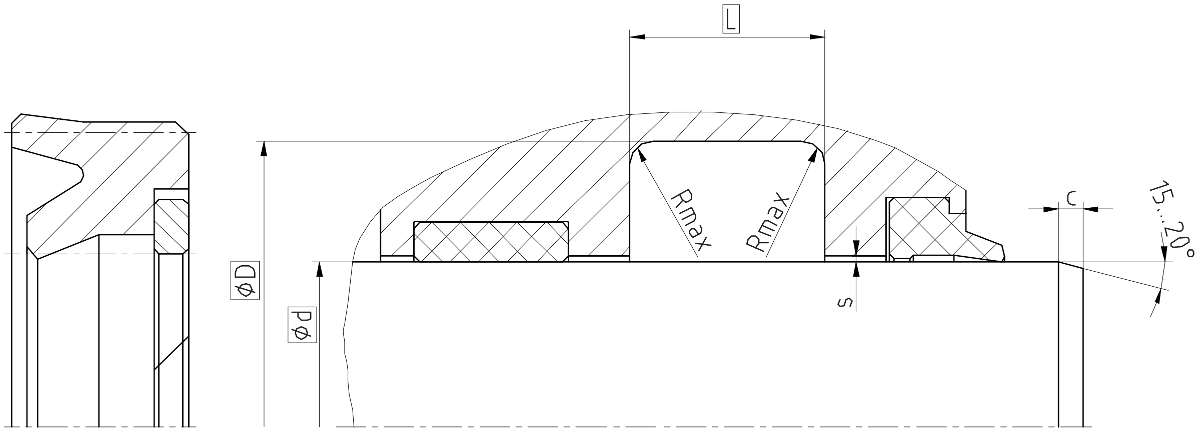
Rod Seal S01-R	**100 x 115 x 10**	**NBR**
Profile	d x D x L	Sealing material

Seal data sheet

S02-P

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
≥ 23 ... ≤ 25	d + 8	6,3	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	2,50	2,06	0,62	0,06
> 500 ... ≤ 700	d + 30	25,0	0,4	10,0	3,00	2,43	0,76	0,06
> 700	d + 40	32,0	0,4	13,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU		-20 °C...+100 °C	0,5 m/s	
SPU		-20 °C...+100 °C	0,7 m/s	
TPU		-40 °C...+100 °C	0,5 m/s	
GPU		-30 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S02-P, d=100mm, D=115mm, L=10mm, PU / TOPTAL (POM)

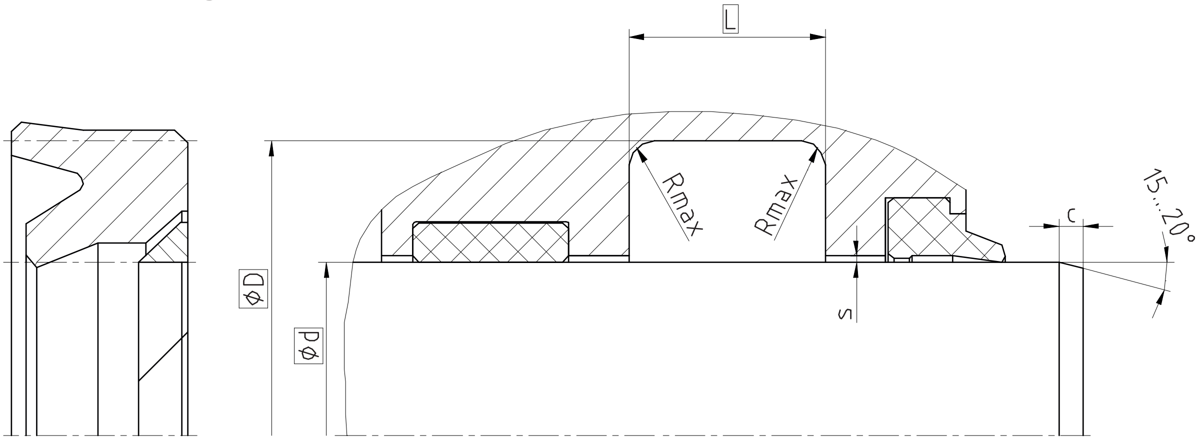
Rod Seal S02-P	**100 x 115 x 10**	**PU / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

S02-PD

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
> 16 ... ≤ 25	d + 8	6,3	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	2,50	2,06	0,62	0,06
> 500 ... ≤ 700	d + 30	25,0	0,4	10,0	3,00	2,43	0,76	0,06
> 700	d + 40	32,0	0,4	13,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU		-20 °C...+100 °C	0,5 m/s	
SPU		-20 °C...+100 °C	0,7 m/s	
TPU		-40 °C...+100 °C	0,5 m/s	
GPU		-30 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S02-PD, d=100mm, D=115mm, L=10mm, PU / TOPTAL (POM)

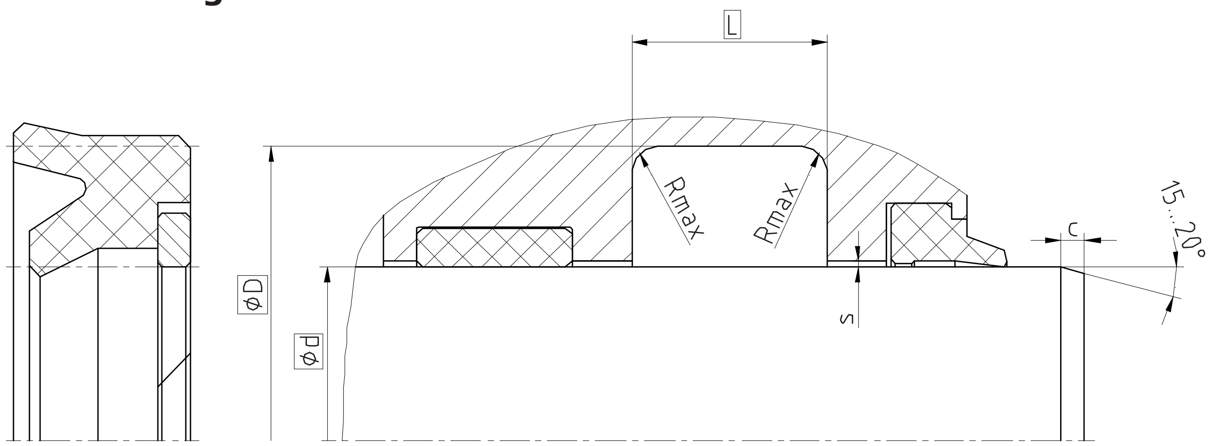
Rod Seal S02-PD	**100 x 115 x 10**	**PU / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

Rod seals

S02-R

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
							20 bar	100 bar	250 bar
≥ 23	...	≤ 25	d + 8	6,3	0,4	3,5	0,60	0,80	0,52
> 25	...	≤ 50	d + 10	8,0	0,4	4,0	1,00	1,00	0,66
> 50	...	≤ 150	d + 15	10,0	0,4	5,0	1,50	1,40	0,78
> 150	...	≤ 300	d + 20	14,0	0,4	6,0	2,00	1,66	0,88
> 300	...	≤ 500	d + 25	17,0	0,4	8,5	2,50	1,91	1,00
> 500	...	≤ 700	d + 30	25,0	0,4	10,0	3,00	2,18	1,13
> 700			d + 40	32,0	0,4	13,0	3,00	2,18	1,13

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C ... +100 °C**	**0,5 m/s**	**250 bar (25 MPa)**
FPM Brown	TF201	-20 °C ... +200 °C		
EPDM	TOPTAL (POM) TOPMID (PA)[2]	-40 °C ... +100 °C		
	TF201	-50 °C ... +150 °C		
HNBR	TOPTAL (POM) TOPMID (PA)[2]	-25 °C ... +100 °C		
	TF201	-25 °C ... +150 °C		
TOPFLAS	PEEK	-10 °C ... +200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S02-R, d=100mm, D=115mm, L=10mm, NBR / TOPTAL (POM)

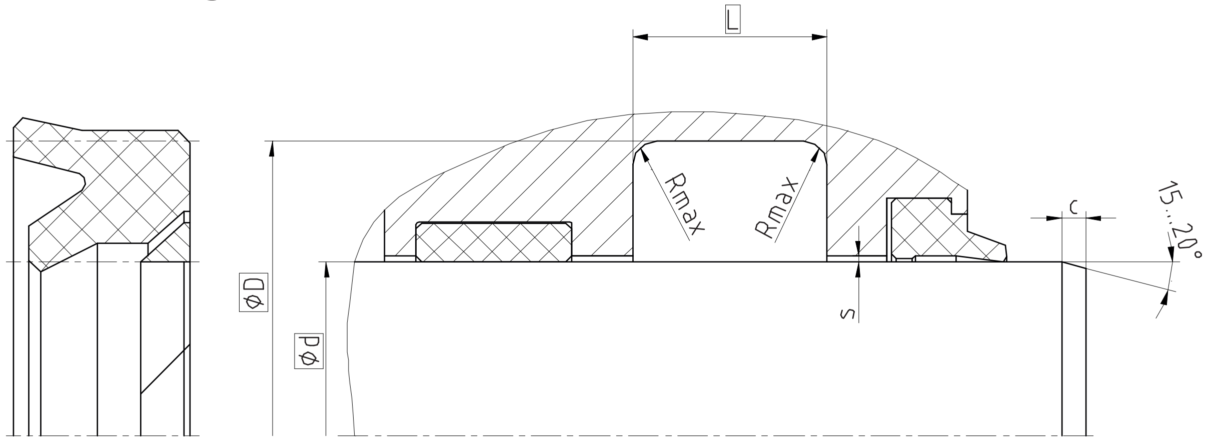
Rod Seal S02-R	**100 x 115 x 10**	**NBR / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

S02-RD

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	250 bar
> 16 ... ≤ 25	d + 8	6,3	0,4	3,5	0,60	0,80	0,52
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	1,00	1,00	0,66
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	1,50	1,40	0,78
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	2,00	1,66	0,88
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	2,50	1,91	1,00
> 500 ... ≤ 700	d + 30	25,0	0,4	10,0	3,00	2,18	1,13
> 700	d + 40	32,0	0,4	13,0	3,00	2,18	1,13

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C ... +100 °C**	**0,5 m/s**	**250 bar (25 MPa)**
FPM Brown	TF201	-20 °C ... +200 °C		
EPDM	TOPTAL (POM) TOPMID (PA)[2]	-40 °C ... +100 °C		
	TF201	-50 °C ... +150 °C		
HNBR	TOPTAL (POM) TOPMID (PA)[2]	-25 °C ... +100 °C		
	TF201	-25 °C ... +150 °C		
TOPFLAS	PEEK	-10 °C ... +200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S02-RD, d=100mm, D=115mm, L=10mm, NBR / TOPTAL (POM)

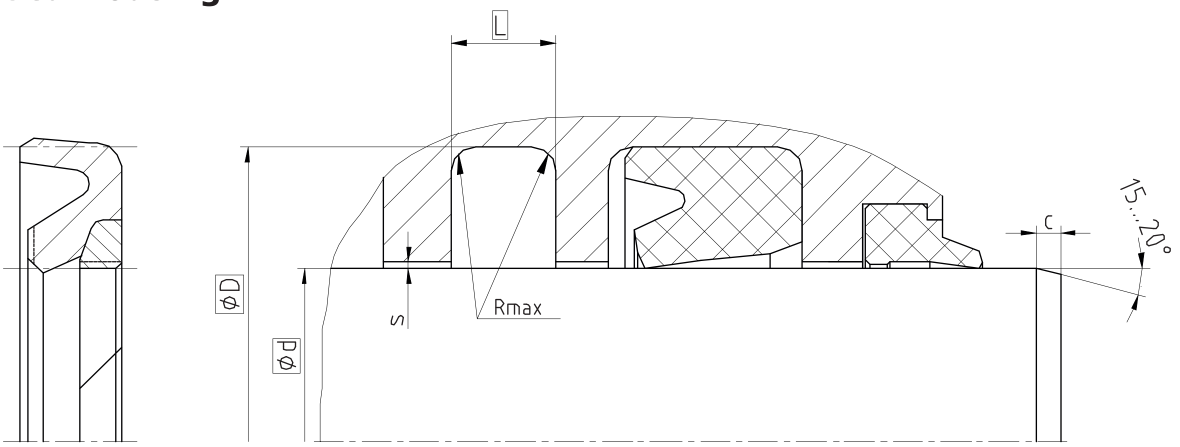
Rod Seal S02-RD	**100 x 115 x 10**	**NBR / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

S02-S

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 8	d + 4,9	2,2	0,4	2,5	1,78	0,30	0,20	0,15	0,05
> 8 ... ≤ 19	d + 7,3	3,2	0,6	3,5	2,62	0,40	0,25	0,15	0,05
> 19 ... ≤ 38	d + 10,7	4,2	1,0	4,5	3,53	0,40	0,25	0,20	0,10
> 38 ... ≤ 200	d + 15,1	6,3	1,3	5,0	5,33	0,50	0,30	0,20	0,10
> 200 ... ≤ 256	d + 20,5	8,1	1,8	6,0	7,00	0,60	0,35	0,25	0,15
> 256 ... ≤ 600	d + 24,0	8,1	1,8	8,0	7,00	0,60	0,35	0,25	0,15

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**5 m/s**	**400 bar (40 MPa)**
HPU		-20 °C...+100 °C	5 m/s	
SPU		-20 °C...+100 °C	7 m/s	
TPU		-40 °C...+100 °C	5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S02-S, d=100mm, D=115mm, L=10mm, PU / TOPTAL (POM)

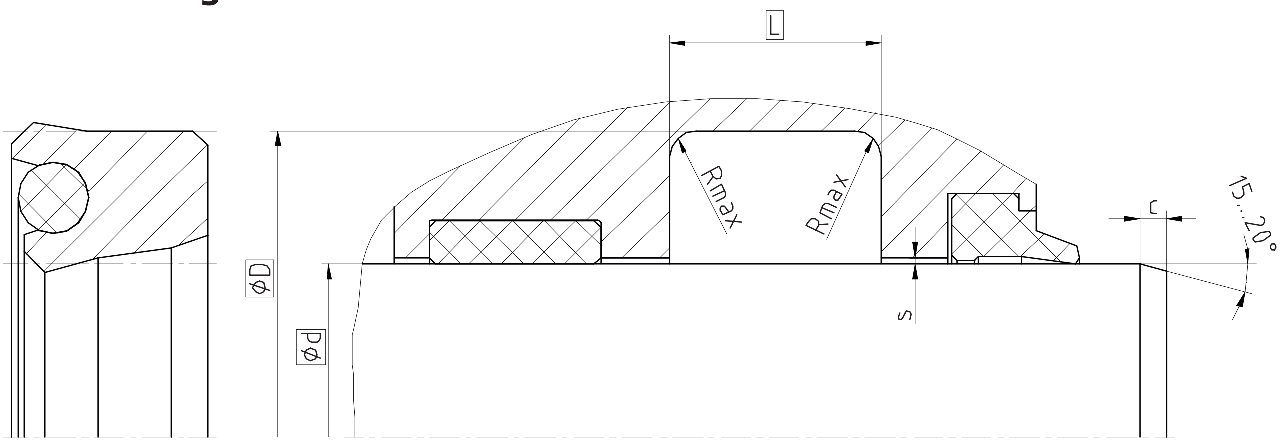
Rod Seal S02-S	**100 x 115 x 10**	**PU / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

Rod seals

S03-P

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,18	0,10	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,23	0,15	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,33	0,25	0,18
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,38	0,33	0,25
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,45	0,40	0,33
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,67	0,50	0,45	0,40
> 600 ... ≤ 1000	d + 40	32,0	0,4	13,0	0,67	0,50	0,45	0,40
> 1000 ... ≤ 1600	d + 50	40,0	0,4	15,0	0,80	0,60	0,50	0,40
> 1600 ... ≤ 2000	d + 60	47,0	0,4	18,0	0,90	0,70	0,50	0,40
> 2000 ... ≤ 2500	d + 80	62,0	0,4	20,0	0,90	0,70	0,50	0,40

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU		-20 °C...+100 °C		
SPU			0,7 m/s	
TPU	MVQ70	-50 °C...+110 °C	0,5 m/s	
GPU	NBR70	-30 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S03-P, d=100mm, d=115mm, L=10mm, PU / NBR70

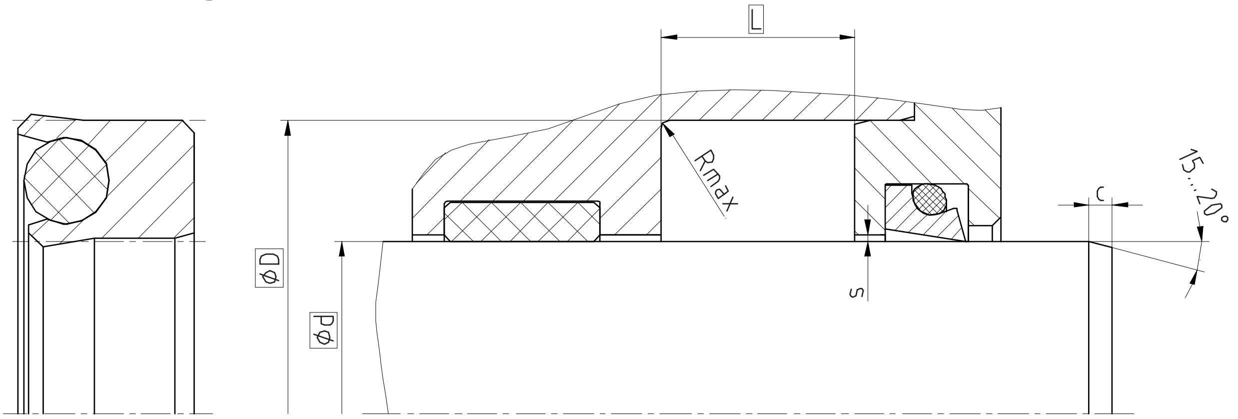
Rod Seal S03-P	**100 x 115 x 10**	**PU / NBR 70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

S03-F

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,40	0,20	0,15	0,09
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,45	0,22	0,17	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,75	0,40	0,33	0,18
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,87	0,48	0,38	0,20
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,87	0,48	0,38	0,20
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,87	0,48	0,38	0,20

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF100 TF201 **TF300** TF400	MVQ70	-55 °C...+200 °C	**1,0 m/s**	200 bar (20 MPa)
	NBR70	-30 °C...+100 °C		**400 bar (40 MPa)**
	FPM75	**-20 °C...+200 °C**		
	EPDM70	-50 °C...+150 °C		
UHMWPE	NBR70	-30 °C...+80 °C	0,5 m/s	200 bar (20 MPa)
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S03-F, d=100mm, D=115mm, L=10mm, TF300 / FPM75

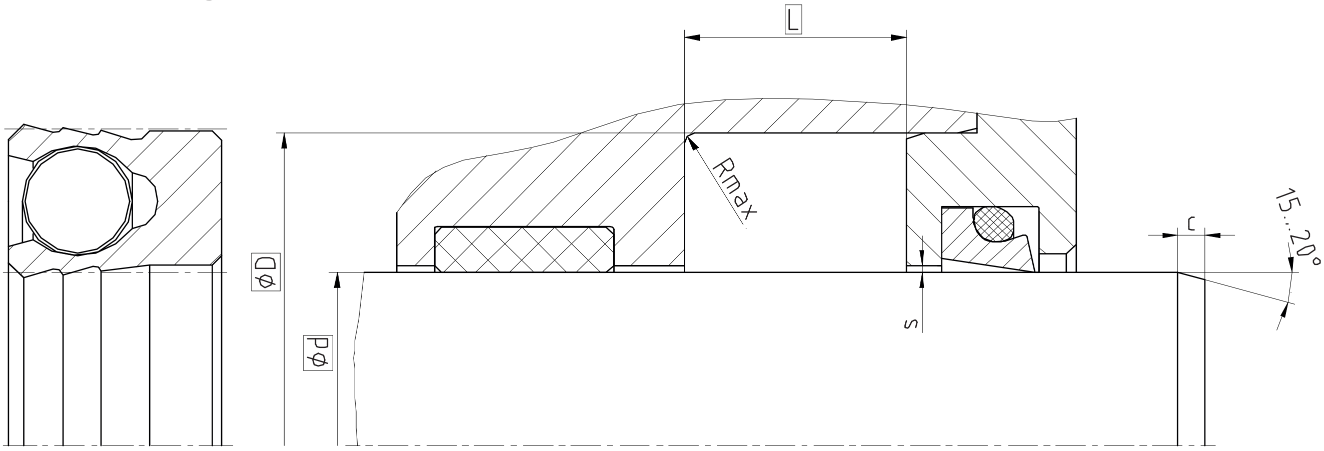
Rod Seal S03-F	**100 x 115 x 10**	**TF300 / FPM75**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

S03-S

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***				
					20 bar	100 bar	200 bar	300 bar	400 bar
≥ 6 ... ≤ 10	d + 4	3,5	0,4	3,5	0,25	0,12	0,10	0,08	0,07
> 10 ... ≤ 30	d + 6	5,0	0,4	3,0	0,35	0,17	0,12	0,10	0,08
> 30 ... ≤ 120	d + 10	8,0	0,4	4,0	0,45	0,22	0,17	0,12	0,10
> 120 ... ≤ 200	d + 15	11,5	0,4	5,0	0,75	0,40	0,33	0,25	0,18
> 200 ... ≤ 250	d + 20	13,0	0,4	6,0	0,87	0,48	0,38	0,28	0,20
> 250 ... ≤ 500	d + 25	18,5	0,4	8,5	0,87	0,48	0,38	0,28	0,20
> 500 ... ≤ 1600	d + 30	23,0	0,4	10,0	0,87	0,48	0,38	0,28	0,20

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Spring	Temperature	max. speed	max. pressure[1]
TF100	**1.4310**	**-200 °C...+260 °C**	**1 m/s**	200 bar (20 MPa)
TF201 **TF300** TF400				**400 bar (40 MPa)**
UHMWPE		-200 °C...+80 °C	0,5 m/s	200 bar (20 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S03-S, d=100mm, D=110mm, L=8,0mm, TF300 / 1.4310

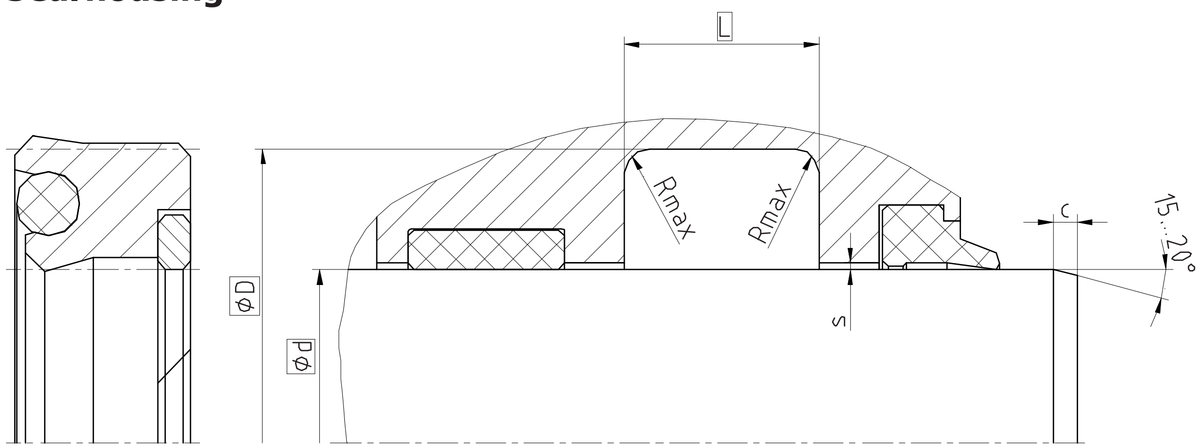
Rod Seal S03-S	**100 x 110 x 8**	**TF300 / 1.4310**
Profile	d x D x L	Sealing material / Spring

Seal data sheet

S04-P

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
≥ 22 ... ≤ 25	d + 8	6,3	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	2,50	2,06	0,62	0,06
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

<table>
<tr><th>Sealing material</th><th>Energizer</th><th>Backup ring</th><th>Temperature</th><th>max. speed</th><th>max. pressure[1]</th></tr>
<tr><td>PU</td><td rowspan="3">NBR70</td><td rowspan="4">TOPTAL (POM)
TOPMID (PA)[2]</td><td>-30 °C...+100 °C</td><td rowspan="2">0,5 m/s</td><td rowspan="4">700 bar (70 MPa)</td></tr>
<tr><td>HPU</td><td rowspan="2">-20 °C...+100 °C</td></tr>
<tr><td>SPU</td><td>0,7 m/s</td></tr>
<tr><td>TPU</td><td>MVQ70</td><td>-40 °C...+100 °C</td><td>0,5 m/s</td></tr>
</table>

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S04-P, d=100mm, D=115mm, L=10mm, PU / NBR70 / TOPTAL (POM)

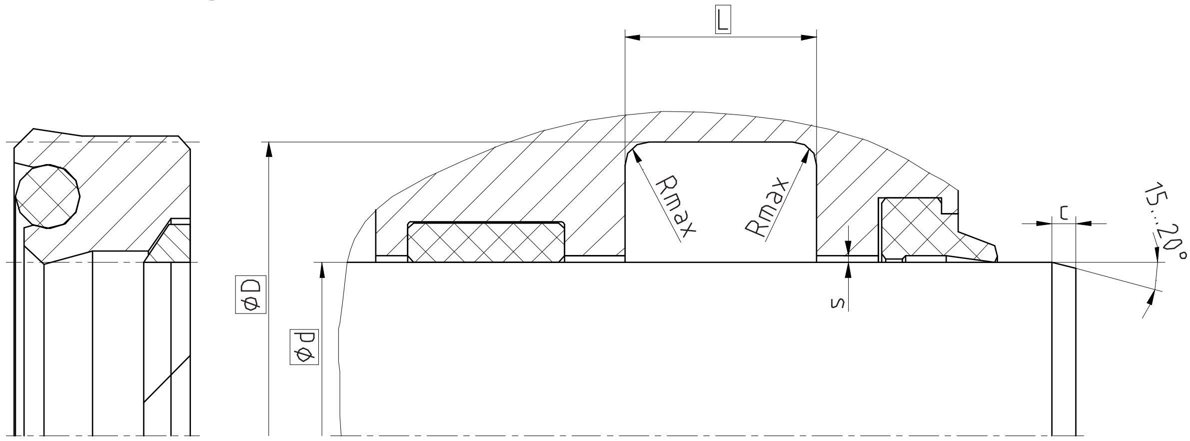
Rod Seal S04-P	**100 x 115 x 10**	**PU / NBR70 / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

Rod seals

S04-PD

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	ØD H10	L +0,2	Rmax	c	max. radial extrusion gap s*			
					20 bar	100 bar	400 bar	700 bar
> 16 ... ≤ 25	d + 8	6,3	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	2,50	2,06	0,62	0,06
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU			-20 °C...+100 °C		
SPU				0,7 m/s	
TPU	MVQ70		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

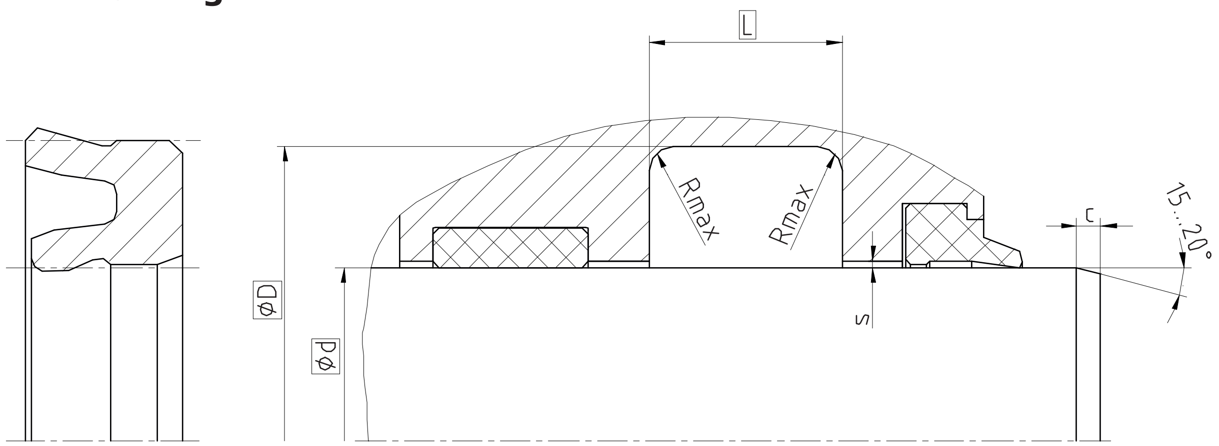
S04-PD, d=100mm, D=115mm, L=10mm, PU / NBR70 / TOPTAL (POM)

Rod Seal S04-PD	**100 x 115 x 10**	**PU / NBR70 / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Energizer / Backup ring

Seal data sheet
Rod seals

S05-P

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**s***
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37
> 50 ... ≤ 150	d + 12	9,0	0,4	5,0	0,46
> 150 ... ≤ 300	d + 16	14,0	0,4	6,0	0,54
> 300 ... ≤ 500	d + 20	17,0	0,4	8,5	0,61
> 500 ... ≤ 700	d + 24	25,0	0,4	10,0	0,67
> 700 ... ≤ 1000	d + 30	32,0	0,4	13,0	0,67
> 1000	d + 40	32,0	0,4	13,0	0,67

***** Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**1 m/s**	**25 bar (2,5 MPa)**
HPU	-20 °C...+110 °C	1 m/s	25 bar (2,5 MPa)
SPU	-20 °C...+110 °C	2 m/s	25 bar (2,5 MPa)
TPU	-50 °C...+110 °C	1 m/s	25 bar (2,5 MPa)
GPU	-30 °C...+110 °C	1 m/s	25 bar (2,5 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

S05-P, d=100mm, D=112mm, L=10mm, PU

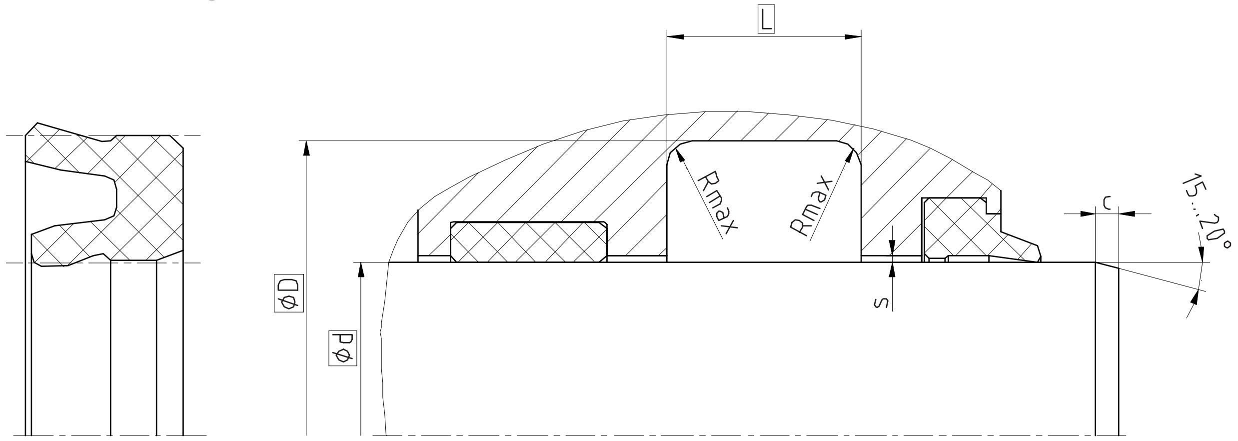
Rod Seal S05-P	**100 x 112 x 10**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

S05-R

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**s***
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37
> 50 ... ≤ 150	d + 12	10,0	0,4	5,0	0,46
> 150 ... ≤ 300	d + 16	14,0	0,4	6,0	0,54
> 300 ... ≤ 500	d + 20	17,0	0,4	8,5	0,61
> 500 ... ≤ 700	d + 24	25,0	0,4	10,0	0,67
> 700 ... ≤ 1000	d + 30	32,0	0,4	13,0	0,67
> 1000	d + 40	32,0	0,4	13,0	0,67

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure
NBR	**-30 °C...+100 °C**	**1 m/s**	**25 bar (2,5 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

S05-R, d=100mm, D=112 mm, L=10mm, NBR

Rod Seal S05-R	**100 x 112 x 10**	**NBR**
Profile	d x D x L	Sealing material

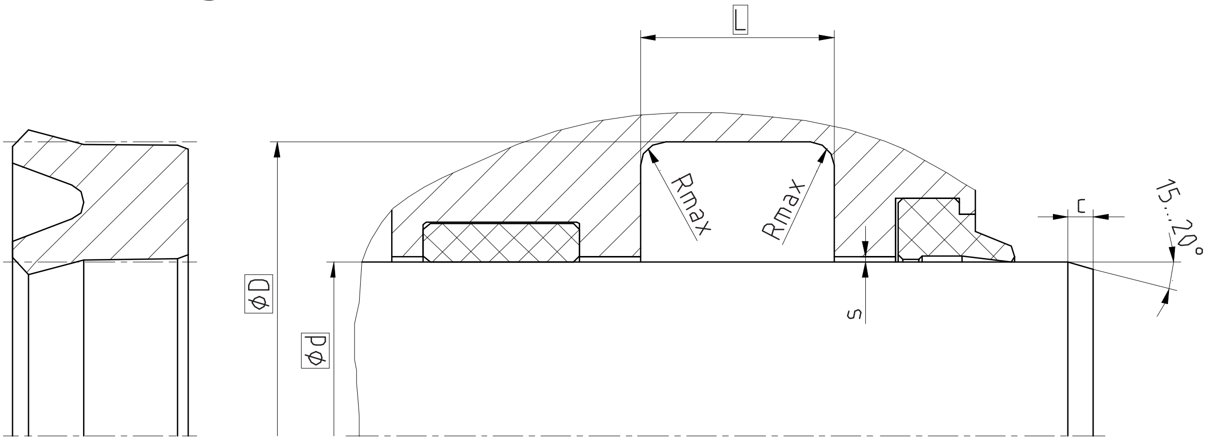
Seal data sheet

S06-P

Rod seals

TOP SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 6 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 700	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39
> 700	d + 40	32,0	0,4	13,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C		
SPU		0,7 m/s	
TPU	-50 °C...+110 °C	0,5 m/s	
GPU	-30 °C...+110 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S06-P, d=100mm, D=115mm, L=10mm, PU

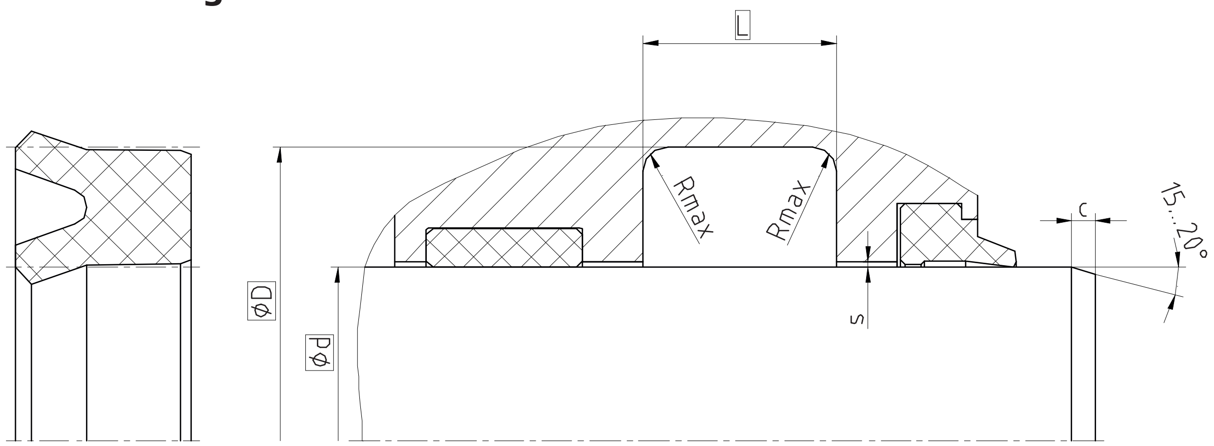
Rod Seal S06-P	**100 x 115 x 10**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

S06-R

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 6 ... ≤ 25	d + 8	6,3	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,31	0,24	0,22
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,34	0,27	0,25
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,37	0,30	0,29
> 500 ... ≤ 700	d + 30	25,0	0,4	10,0	0,40	0,34	0,32
> 700	d + 40	32,0	0,4	13,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
NBR	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
MVQ	-60 °C...+200 °C	-	-
TOPFLAS	-10 °C...+200 °C	0,5 m/s	160 bar (16 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S06-R, d=100mm, D=115mm, L=10mm, NBR

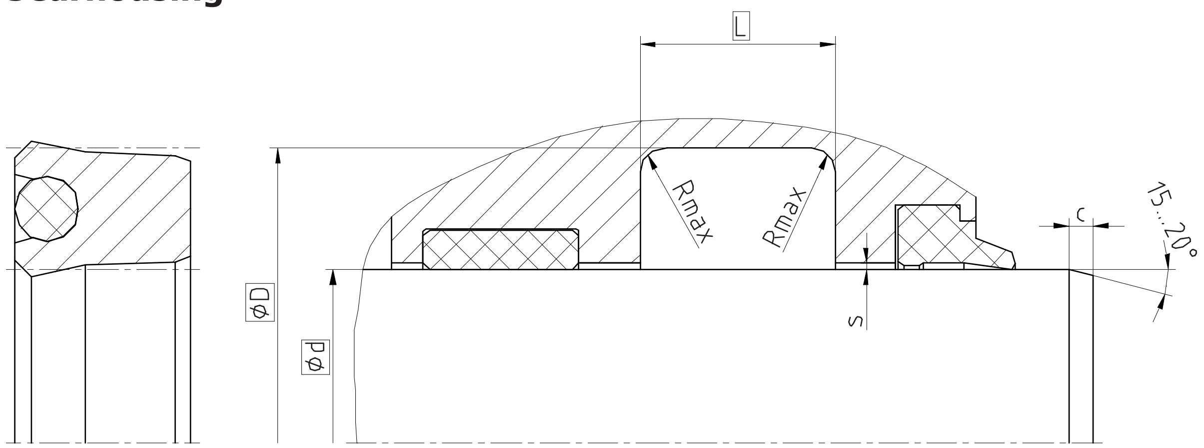
Rod Seal S06-R	**100 x 115 x 10**	**NBR**
Profile	d x D x L	Sealing material

Seal data sheet

S07-P

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU		-20 °C...+100 °C		
SPU			0,7 m/s	
TPU	MVQ70	-50 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S07-P, d=100mm, D=115mm, L=10mm, PU / NBR70

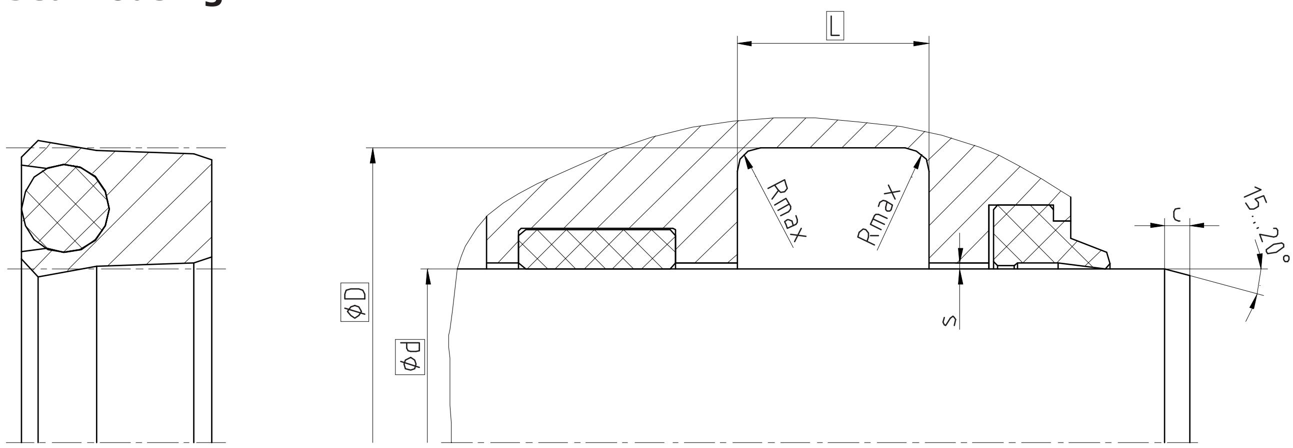
Rod Seal S07-P	**100 x 115 x 10**	**PU / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

S07-F

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	ØD H10	L +0,2	Rmax	c	max. radial extrusion gap s*			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,40	0,20	0,15	0,09
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,45	0,22	0,17	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,75	0,40	0,33	0,18
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,87	0,48	0,38	0,20
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,87	0,48	0,38	0,20
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,87	0,48	0,38	0,20

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF100 TF201 **TF300** TF400	MVQ70	-55 °C...+200 °C	**1,0 m/s**	200 bar (20 MPa)
	NBR70	-30 °C...+100 °C		**400 bar (40 MPa)**
	FPM75	**-20 °C...+200 °C**		
	EPDM70	-50 °C...+150 °C		
UHMWPE	NBR70	-30 °C...+80 °C	0,5 m/s	200 bar (20 MPa)
	FPM75	-20 °C...+80 °C		
	EPDM70	-50 °C...+80 °C		
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

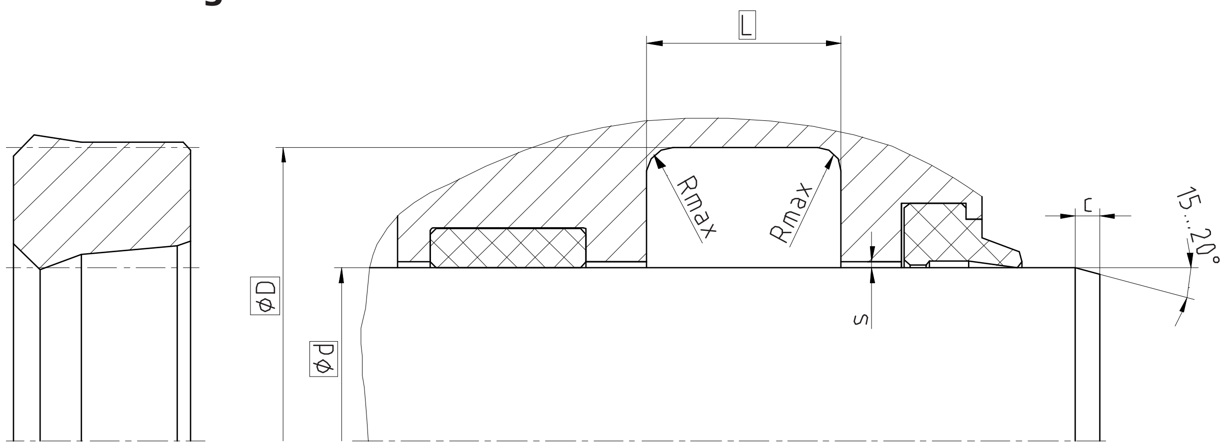
[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S07-F, d=100mm, D=115mm, L=10mm, TF300 / FPM75

Rod Seal S07-F	**100 x 115 x 10**	**TF300 / FPM75**
Profile	d x D x L	Sealing material / Energizer

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39
> 600	d + 40	32,0	0,4	13,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,3 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C	0,3 m/s	
SPU	-20 °C...+110 °C	0,4 m/s	
TPU	-50 °C...+110 °C	0,3 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S08-P, d=100mm, D=115mm, L=10mm, PU

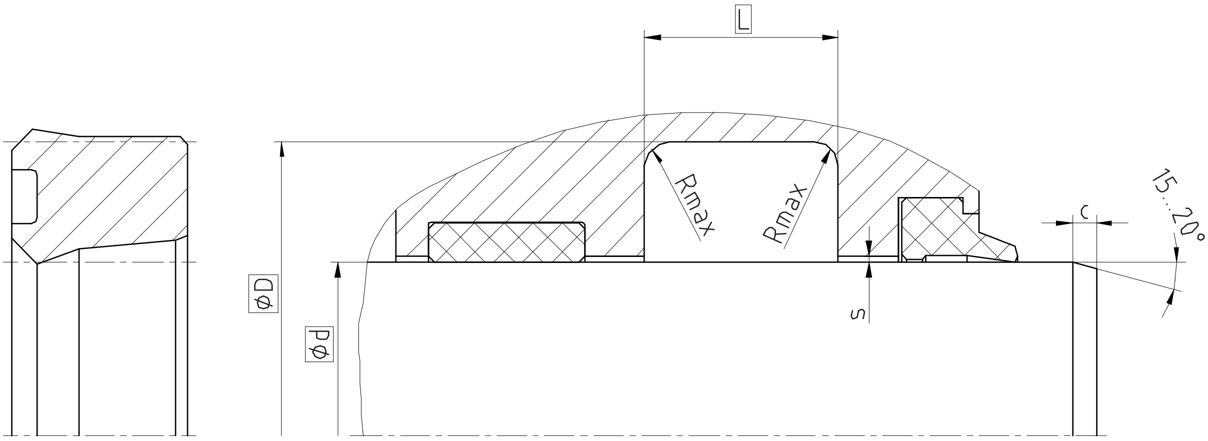
Rod Seal S08-P	**100 x 115 x 10**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

Rod seals

S08-PE

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,3 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C	0,3 m/s	
SPU	-20 °C...+110 °C	0,4 m/s	
TPU	-50 °C...+110 °C	0,3 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S08-PE, d=100mm, D=115mm, L=10mm, PU

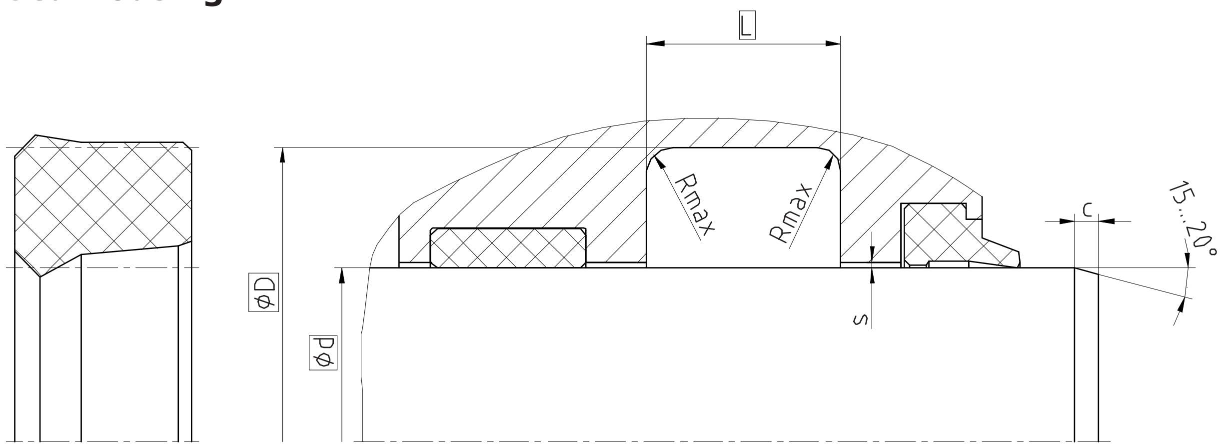
Rod Seal S08-PE	**100 x 115 x 10**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

S08-R

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,31	0,24	0,22
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,34	0,27	0,25
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,37	0,30	0,29
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
NBR	**-30 °C...+100 °C**	**0,3 m/s**	**160 bar (16 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200°C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S08-R, d=100mm, D=115mm, L=10mm, NBR

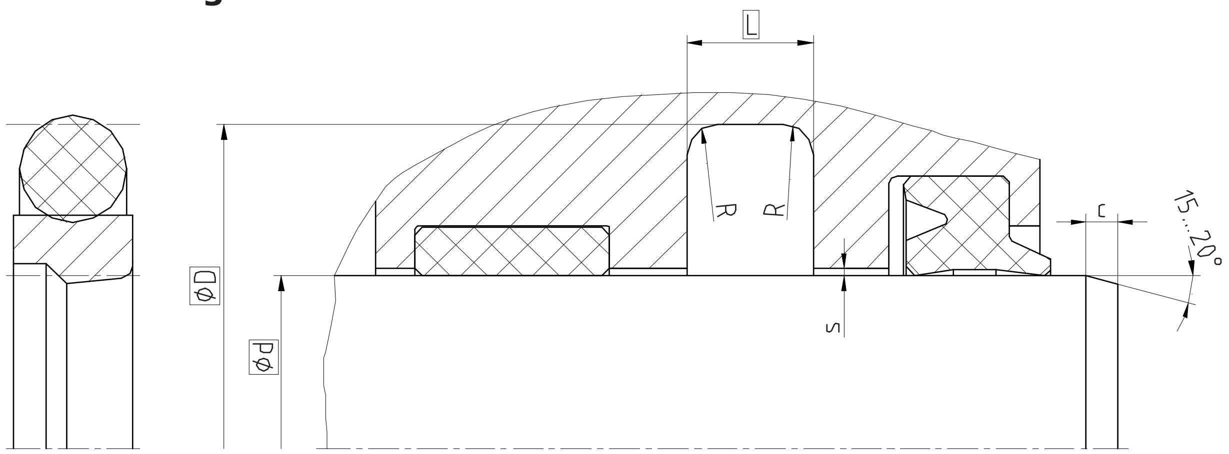
Rod Seal S08-R	**100 x 115 x 10**	**NBR**
Profile	d x D x L	Sealing material

Seal data sheet

Rod seals

S09-E **X-Slide**

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 8	d + 4,9	2,2	0,4	2,5	1,78	0,30	0,30	0,20	0,10
> 8 ... ≤ 19	d + 7,3	3,2	0,6	3,5	2,62	0,40	0,30	0,20	0,10
> 19 ... ≤ 38	d + 10,7	4,2	1,0	4,5	3,53	0,50	0,40	0,30	0,20
> 38 ... ≤ 200	d + 15,1	6,3	1,3	5,0	5,33	0,50	0,40	0,30	0,20
> 200 ... ≤ 256	d + 20,5	8,1	1,8	6,0	7,00	0,70	0,50	0,40	0,20
> 256 ... ≤ 650	d + 24,0	8,1	1,8	8,0	7,00	0,70	0,50	0,40	0,20
> 650 ... ≤ 1000	d + 27,3	9,5	2,5	10,0	8,40	0,80	0,70	0,50	0,30
> 1000 ... ≤ 3000	d + 38,0	13,8	3,0	12,0	12,00	1,10	0,80	0,70	0,40

***** Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
XPU XSPU XHPU GPU54D	**NBR70**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ70	-30 °C...+110 °C		
UHMWPE	NBR70	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide S09-E, d=100mm, D=115,1mm, L=6,3mm, XPU / NBR70

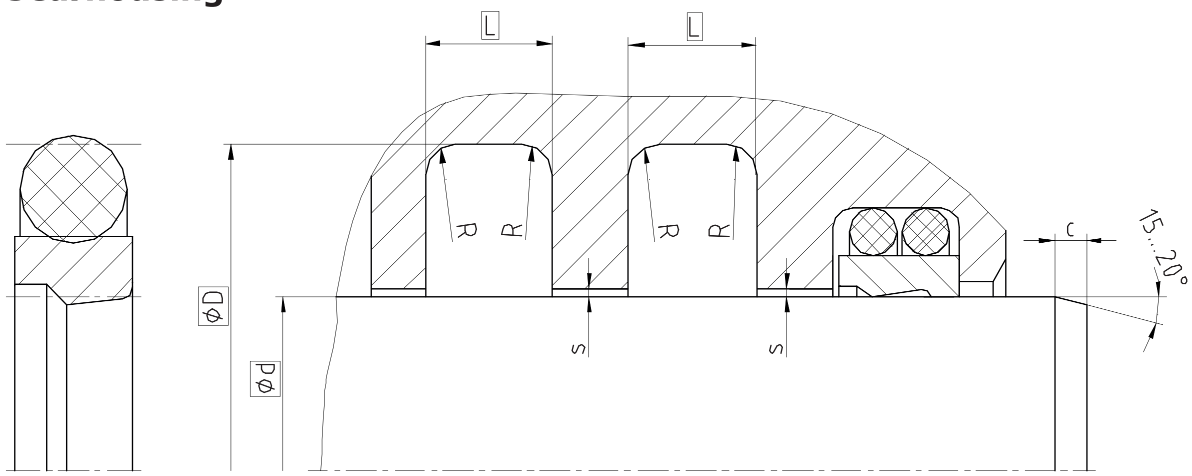
X-Slide S09-E	**100 x 115,1 x 6,3**	**XPU / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

S09-E F-Slide

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 8	d + 4,9	2,2	0,4	2,5	1,78	0,30	0,20	0,15	0,05
> 8 ... ≤ 19	d + 7,3	3,2	0,6	3,5	2,62	0,40	0,25	0,15	0,05
> 19 ... ≤ 38	d + 10,7	4,2	1,0	4,5	3,53	0,40	0,25	0,20	0,10
> 38 ... ≤ 200	d + 15,1	6,3	1,3	5,0	5,33	0,50	0,30	0,20	0,10
> 200 ... ≤ 256	d + 20,5	8,1	1,8	6,0	7,00	0,60	0,35	0,25	0,15
> 256 ... ≤ 650	d + 24,0	8,1	1,8	8,0	7,00	0,60	0,35	0,25	0,15
> 650 ... ≤ 1000	d + 27,3	9,5	2,5	10,0	8,40	0,70	0,50	0,30	0,20
> 1000 ... ≤ 2000	d + 38,0	13,8	3,0	12,0	12,00	1,00	0,70	0,60	0,30

***** Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR70**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FPM70	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide S09-E, d=100mm, D=115,1mm, L=6,3mm, TF300 / NBR70

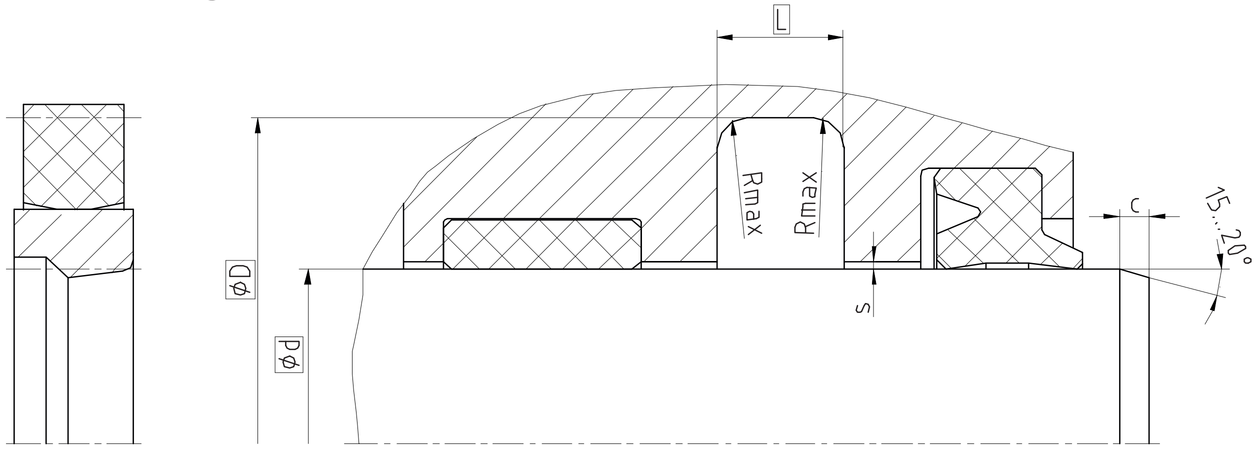
F-Slide S09-E	**100 x 115,1 x 6,3**	**TF300 / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

S09-ES X-Slide

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 50	d + 10	5,0	0,2	4,0	0,50	0,40	0,30	0,20
> 50 ... ≤ 60	d + 15	7,5	0,3	5,0	0,50	0,40	0,30	0,20
> 60 ... ≤ 200	d + 20	10,0	0,4	6,0	0,70	0,50	0,40	0,20
> 200 ... ≤ 300	d + 25	12,5	0,4	8,5	0,80	0,60	0,50	0,30
> 300 ... ≤ 530	d + 30	15,0	0,8	10,0	0,90	0,70	0,60	0,30
> 530 ... ≤ 680	d + 35	17,5	1,2	11,5	1,00	0,80	0,70	0,30
> 680 ... ≤ 1500	d + 40	20,0	1,2	13,0	1,10	0,90	0,80	0,40

***** Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
XPU XHPU XSPU GPU54D	**NBR**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ	-30 °C...+110 °C		
UHMWPE	NBR	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ	-60 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide S09-ES, d=100mm, D=120mm, L=10mm, XPU / NBR

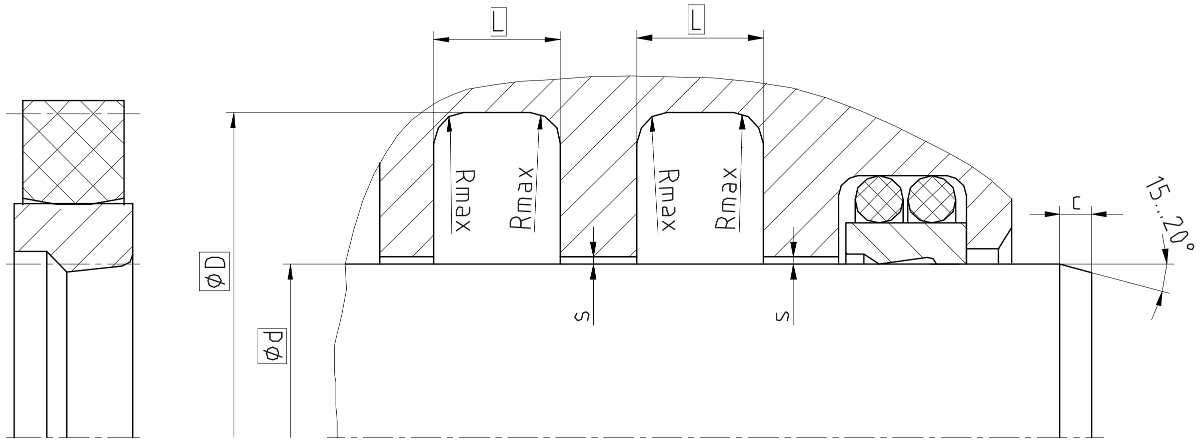
X-Slide S09-ES	**100 x 120 x 10**	**XPU / NBR**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

Rod seals

S09-ES F-Slide

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 50	d + 10	5,0	0,2	4,0	0,40	0,30	0,20	0,10
> 50 ... ≤ 60	d + 15	7,5	0,3	5,0	0,50	0,30	0,20	0,10
> 60 ... ≤ 200	d + 20	10,0	0,4	6,0	0,60	0,40	0,25	0,15
> 200 ... ≤ 300	d + 25	12,5	0,4	8,5	0,60	0,40	0,25	0,15
> 300 ... ≤ 530	d + 30	15,0	0,8	10,0	0,70	0,50	0,30	0,20
> 530 ... ≤ 680	d + 35	17,5	1,2	11,5	0,80	0,60	0,50	0,20
> 680 ... ≤ 1500	d + 40	20,0	1,2	13,0	1,00	0,70	0,60	0,30

***** Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FPM Brown	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide S09-ES, d=100mm, D=120mm, L=10mm, TF300 / NBR

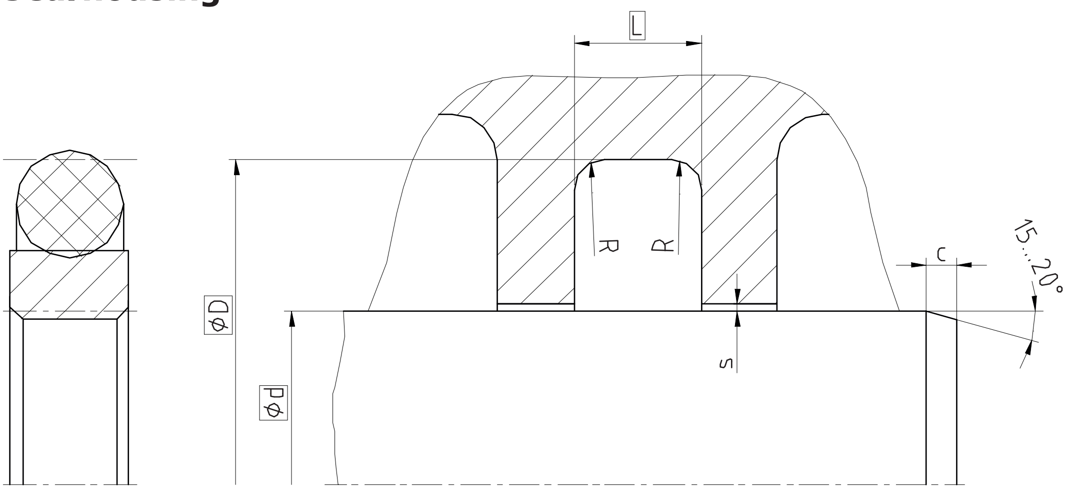
F-Slide S09-ES	**100 x 120 x 10**	**TF300 / NBR**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

Rod seals

S09-D X-Slide

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
						100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 8	d + 4,9	2,2	0,4	2,5	1,78	0,30	0,30	0,20	0,10
> 8 ... ≤ 19	d + 7,3	3,2	0,6	3,5	2,62	0,40	0,30	0,20	0,10
> 19 ... ≤ 38	d + 10,7	4,2	1,0	4,5	3,53	0,50	0,40	0,30	0,20
> 38 ... ≤ 200	d + 15,1	6,3	1,3	5,0	5,33	0,50	0,40	0,30	0,20
> 200 ... ≤ 256	d + 20,5	8,1	1,8	6,0	7,00	0,70	0,50	0,40	0,20
> 256 ... ≤ 650	d + 24,0	8,1	1,8	8,0	7,00	0,70	0,50	0,40	0,20
> 650 ... ≤ 1000	d + 27,3	9,5	2,5	10,0	8,40	0,80	0,70	0,50	0,30
> 1000 ... ≤ 3000	d + 38,0	13,8	3,0	12,0	12,00	1,10	0,80	0,70	0,40

***** Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
XPU XHPU XSPU GPU54D	**NBR70**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ70	-30 °C...+110 °C		
UHMWPE	NBR70	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ70	-55 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide S09-D, d=100mm, D=115,1mm, L=6,3mm, XPU / NBR70

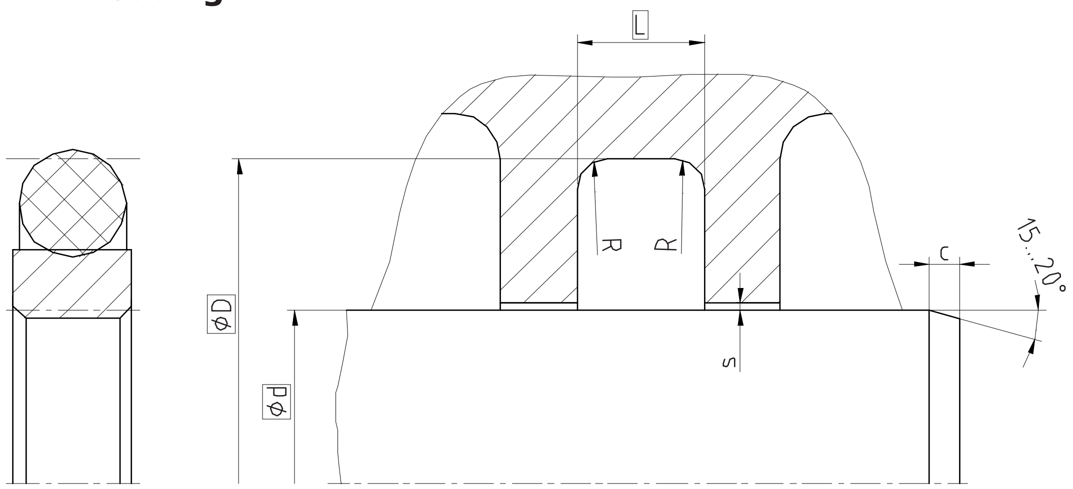
X-Slide S09-D	**100 x 115,1 x 6,3**	**XPU / NBR70** Sealing material / Energizer
Profile	d x D x L	

Seal data sheet

Rod seals

S09-D F-Slide

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***			
								100 bar	200 bar	400 bar	600 bar
> 4	...	≤ 8	d + 4,9	2,2	0,4	2,5	1,78	0,30	0,20	0,15	0,05
> 8	...	≤ 19	d + 7,3	3,2	0,6	3,5	2,62	0,40	0,25	0,15	0,05
> 19	...	≤ 38	d + 10,7	4,2	1,0	4,5	3,53	0,40	0,25	0,20	0,10
> 38	...	≤ 200	d + 15,1	6,3	1,3	5,0	5,33	0,50	0,30	0,20	0,10
> 200	...	≤ 256	d + 20,5	8,1	1,8	6,0	7,00	0,60	0,35	0,25	0,15
> 256	...	≤ 650	d + 24,0	8,1	1,8	8,0	7,00	0,60	0,35	0,25	0,15
> 650	...	≤ 1000	d + 27,3	9,5	2,5	10,0	8,40	0,70	0,50	0,30	0,20
> 1000	...	≤ 2000	d + 38,0	13,8	3,0	12,0	12,00	1,00	0,70	0,60	0,30

***** Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR70**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FPM70	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

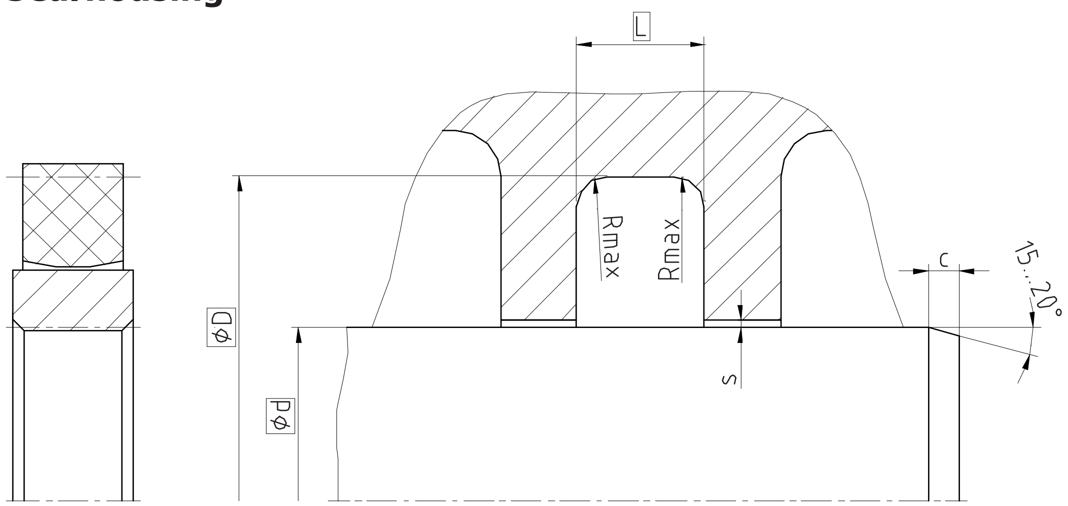
[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide S09-D, d=100mm, D=115,1mm, L=6,3mm, TF300 / NBR70

F-Slide S09-D	**100 x 115,1 x 6,3**	**TF300 / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 50	d + 10	5,0	0,2	4,0	0,50	0,40	0,30	0,20
> 50 ... ≤ 60	d + 15	7,5	0,3	5,0	0,50	0,40	0,30	0,20
> 60 ... ≤ 200	d + 20	10,0	0,4	6,0	0,70	0,50	0,40	0,20
> 200 ... ≤ 300	d + 25	12,5	0,4	8,5	0,80	0,60	0,50	0,30
> 300 ... ≤ 530	d + 30	15,0	0,8	10,0	0,90	0,70	0,60	0,30
> 530 ... ≤ 680	d + 35	17,5	1,2	11,5	1,00	0,80	0,70	0,30
> 680 ... ≤ 1500	d + 40	20,0	1,2	13,0	1,10	0,90	0,80	0,40

***** Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
XPU XHPU XSPU GPU54D	**NBR**	**-30 °C...+100 °C**	**5 m/s**	**600 bar (60 MPa)**
	MVQ	-30 °C...+110 °C		
UHMWPE	NBR	-30 °C...+80 °C		400 bar (40 MPa)
	MVQ	-60 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

X-Slide S09-DS, d=100mm, D=120mm, L=10mm, XPU / NBR

X-Slide S09-DS	**100 x 120 x 10**	**XPU / NBR**
Profile	d x D x L	Sealing material / Energizer

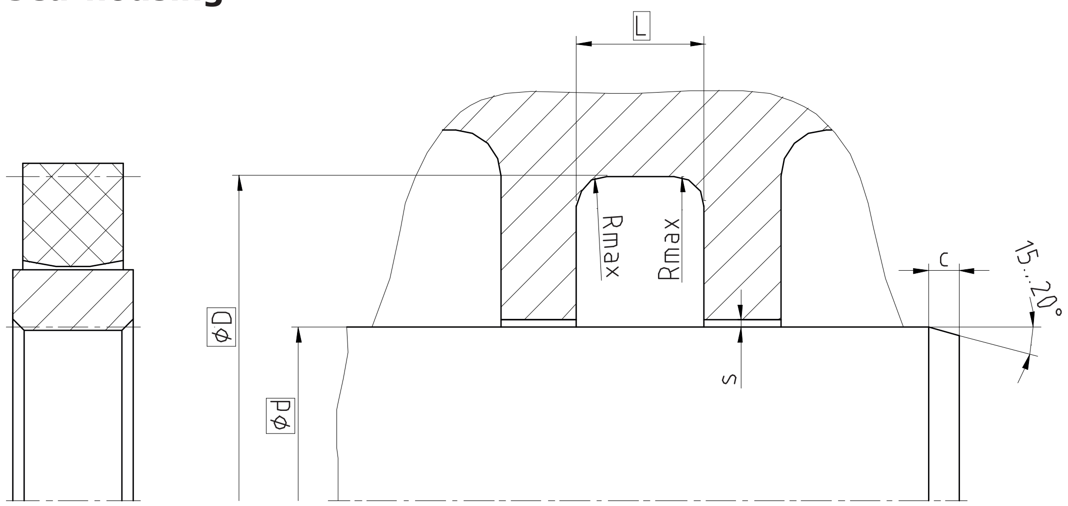
Seal data sheet

Rod seals

S09-DS F-Slide

TOP SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					100 bar	200 bar	400 bar	600 bar
> 4 ... ≤ 50	d + 10	5,0	0,2	4,0	0,40	0,30	0,20	0,10
> 50 ... ≤ 60	d + 15	7,5	0,3	5,0	0,50	0,30	0,20	0,10
> 60 ... ≤ 200	d + 20	10,0	0,4	6,0	0,60	0,40	0,25	0,15
> 200 ... ≤ 300	d + 25	12,5	0,4	8,5	0,60	0,40	0,25	0,15
> 300 ... ≤ 530	d + 30	15,0	0,8	10,0	0,70	0,50	0,30	0,20
> 530 ... ≤ 680	d + 35	17,5	1,2	11,5	0,80	0,60	0,50	0,20
> 680 ... ≤ 1500	d + 40	20,0	1,2	13,0	1,00	0,70	0,60	0,30

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
TF201 **TF300** TF400	**NBR**	**-30 °C...+100 °C**	**10 m/s**	**600 bar (60 MPa)**
	FPM Brown	-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

F-Slide S09-DS, d=100mm, D=120mm, L=10mm, TF300 / NBR

F-Slide S09-DS	**100 x 120 x 10**	**TF300 / NBR**
Profile	d x D x L	Sealing material / Energizer

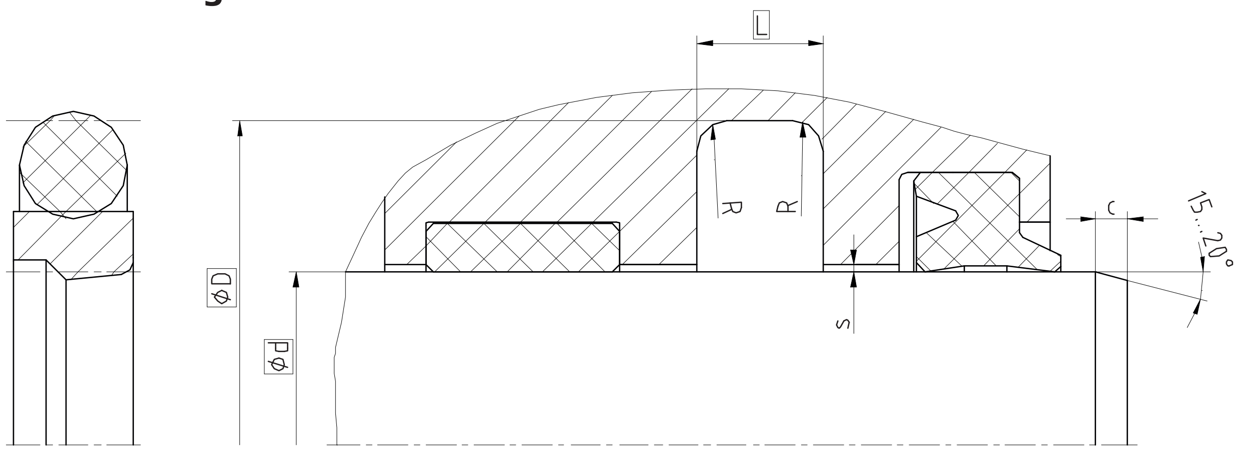
Seal data sheet

Rod seals

S09-P

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**R**	**c**	**ØOD**	**max. radial extrusion gap s***		
						100 bar	160 bar	250 bar
> 4 ... ≤ 8	d + 4,9	2,2	0,4	2,5	1,78	0,30	0,25	0,20
> 8 ... ≤ 19	d + 7,3	3,2	0,6	3,5	2,62	0,40	0,30	0,25
> 19 ... ≤ 38	d + 10,7	4,2	1,0	4,5	3,53	0,50	0,35	0,25
> 38 ... ≤ 200	d + 15,1	6,3	1,3	5,0	5,33	0,50	0,40	0,30
> 200 ... ≤ 256	d + 20,5	8,1	1,8	6,0	7,00	0,70	0,50	0,35
> 256 ... ≤ 600	d + 24,0	8,1	1,8	8,0	7,00	0,70	0,50	0,35

***** Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Glide ring	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**-30 °C...+100 °C**	**1 m/s**	**250 bar (25 MPa)**
HPU		-20 °C...+200 °C	1 m/s	
SPU		-20 °C...+200 °C	1,4 m/s	
TPU		-30 °C...+100 °C	1 m/s	
GPU		-30 °C...+100 °C	1 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S09-P, d=100mm, D=115,1mm, L=6,3mm, PU / NBR70

Rod Seal S09-P	**100 x 115,1 x 6,3**	**PU / NBR70**
Profile	d x D x L	Sealing material / Energizer

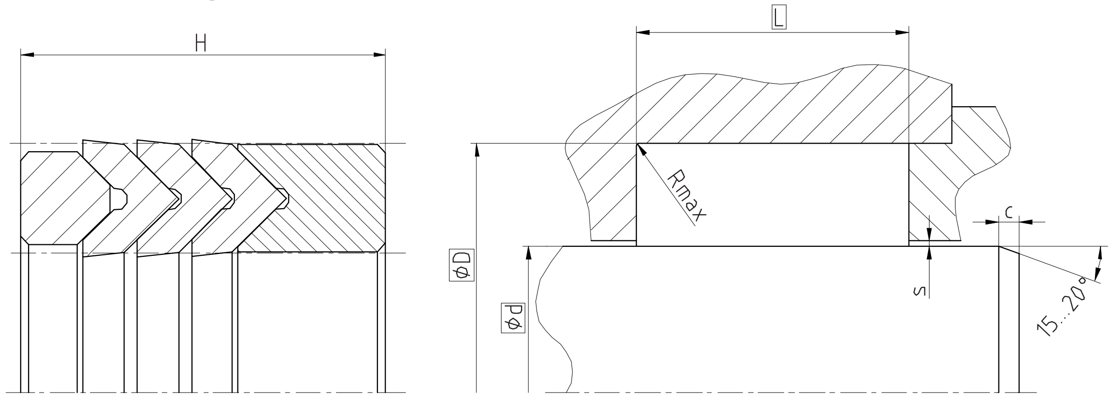
Seal data sheet

S1012-M

Rod seals

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**s***
≥ 5 ... < 40	d + 10	16	0,4	4	0,25
≥ 40 ... < 75	d + 15	25		5	0,38
≥ 75 ... < 150	d + 20	32		6	0,50
≥ 150 ... < 200	d + 25	40		8,5	0,63
≥ 200 ... < 300	d + 30	50		10	0,75
≥ 300	d + 40	63		13	1,00

***** Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Pressure ring S10-A	Chevron S11-M	Backup ring S12-M	Temperature	max. speed	max. pressure[1]
TOPTAL (POM) TOPMID (PA)[2]	PU	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	0,5 m/s	500 bar (50 MPa)
	HPU		-20 °C...+100 °C	0,5 m/s	
	SPU		-20 °C...+100 °C	0,7 m/s	
	TPU		-40 °C...+100 °C	0,5 m/s	
	GPU		-30 °C...+100 °C	0,5 m/s	
TOPTAL (POM) TOPMID (PA)[2]	**PU**	**XPU**	**-30 °C...+100 °C**	**0,5 m/s**	**500 bar (50 MPa)**
	HPU	XHPU	-20 °C...+100 °C	0,5 m/s	
	SPU	XSPU	-20 °C...+100 °C	0,7 m/s	
	GPU	GPU54D	-30 °C...+100 °C	0,5 m/s	
TF201	NBR	TF201	-30 °C...+100 °C	0,5 m/s	250 bar (25 MPa)
	FPM Brown		-20 °C...+200 °C	0,5 m/s	
	EPDM		-50 °C...+150 °C	0,5 m/s	
	HNBR		-25 °C...+150 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S1012-M, d=100mm, D=120mm, L=32mm, TOPTAL (POM) / PU / X-PU

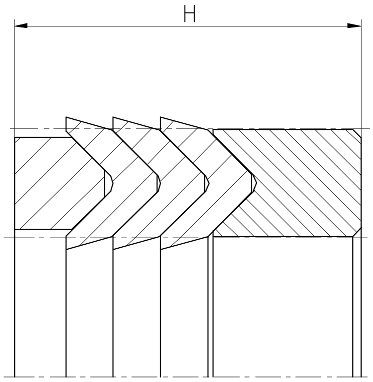
Rod Seal S1012-M	**100 x 120 x 32**	**TOPTAL (POM) / PU / X-PU**
Profile	d x D x L	Pressure ring / Sealing material / Backup ring

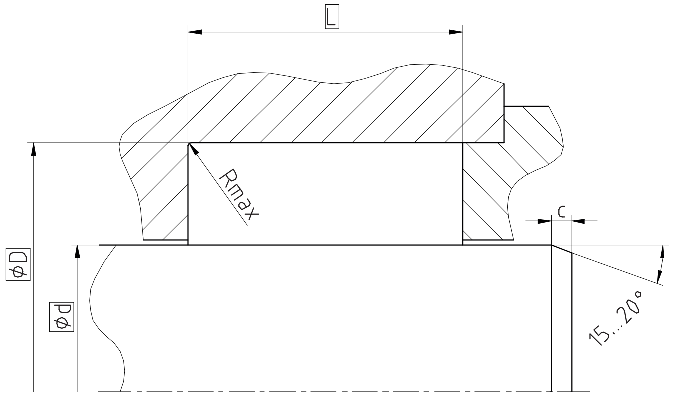
Seal data sheet

S1012-T

Rod seals

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**s***
≥ 10 ... < 40	d + 10	16	0,4	4	0,25
≥ 40 ... < 75	d + 15	25		5	0,38
≥ 75 ... < 150	d + 20	32		6	0,50
≥ 150 ... < 200	d + 25	40		8,5	0,63
≥ 200 ... < 300	d + 30	50		10	0,75
≥ 300	d + 40	63		13	1,00

***** Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Pressure ring S10-A	Chevron S11-T	Backup ring S12-T	Temperature	max. speed	max. pressure[1]
TOPTAL (POM) TOPMID (PA)[2]	PU	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	0,5 m/s	500 bar (50 MPa)
	HPU		-20 °C...+100 °C	0,5 m/s	
	SPU		-20 °C...+100 °C	0,7 m/s	
	TPU		-40 °C...+100 °C	0,5 m/s	
	GPU		-30 °C...+100 °C	0,5 m/s	
TOPTAL(POM) TOPMID (PA)[2]	**PU**	**X-PU™**	**-30 °C...+100 °C**	**0,5 m/s**	**500 bar (50 MPa)**
	HPU	XHPU	-20 °C...+100 °C	0,5 m/s	
	SPU	XSPU	-20 °C...+100 °C	0,7 m/s	
	GPU	GPU54D	-30 °C...+100 °C	0,5 m/s	
TF201	NBR	TF201	-30 °C...+100 °C	0,5 m/s	250 bar (25 MPa)
	FPM Brown		-20 °C...+200 °C	0,5 m/s	
	EPDM		-50 °C...+150 °C	0,5 m/s	
	HNBR		-25 °C...+150 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S1012-T, d=100mm, D=120mm, L=32mm, TOPTAL (POM) / PU / X-PU

Rod Seal S1012-T	**100 x 120 x 32**	**TOPTAL (POM) / PU / X-PU**
Profile	d x D x L	Pressure ring / Sealing material / Backup ring

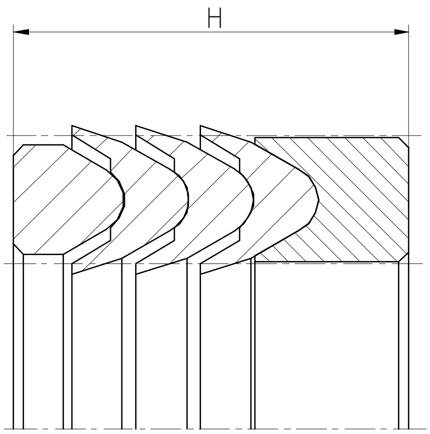
Seal data sheet

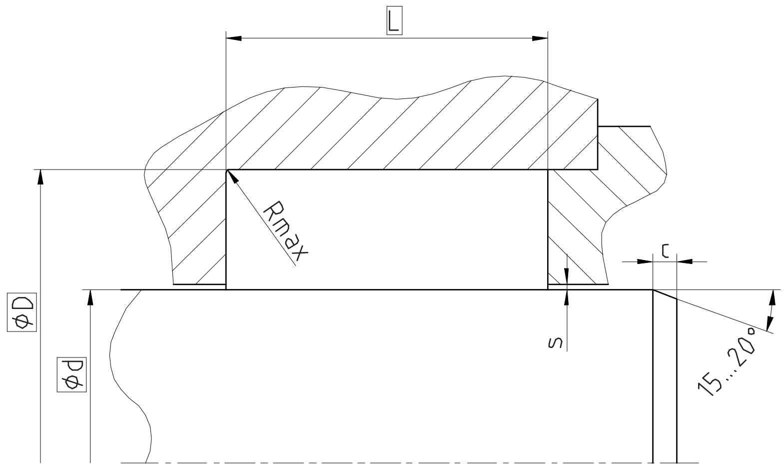
S1315-T

Rod seals

TOP SEALING PARTNER PART OF nomo

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**s***
≥ 10 ... < 40	d + 10	16	0,4	4	0,25
≥ 40 ... < 75	d + 15	25		5	0,38
≥ 75 ... < 150	d + 20	32		6	0,50
≥ 150 ... < 200	d + 25	40		8,5	0,63
≥ 200 ... < 300	d + 30	50		10	0,75
≥ 300	d + 40	63		13	1,00

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Pressure ring S13-A	Chevron S14-T	Backup ring S15-T	Temperature	max. speed	max. pressure[1]
TOPTAL (POM) TOPMID (PA)[2]	PU	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	0,5 m/s	600 bar (60 MPa)
	HPU		-20 °C...+100 °C	0,5 m/s	
	SPU		-20 °C...+100 °C	0,7 m/s	
	TPU		-40 °C...+100 °C	0,5 m/s	
	GPU		-30 °C...+100 °C	0,5 m/s	
TOPTAL (POM) TOPMID (PA)[2]	**PU**	**XPU**	**-30 °C...+100 °C**	**0,5 m/s**	**600 bar (60 MPa)**
	HPU	XHPU	-20 °C...+100 °C	0,5 m/s	
	SPU	XSPU	-20 °C...+100 °C	0,7 m/s	
	GPU	GPU54D	-30 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S1315-T, d=100mm, D=120mm, L=32mm, TOPTAL (POM) / PU / X-PU

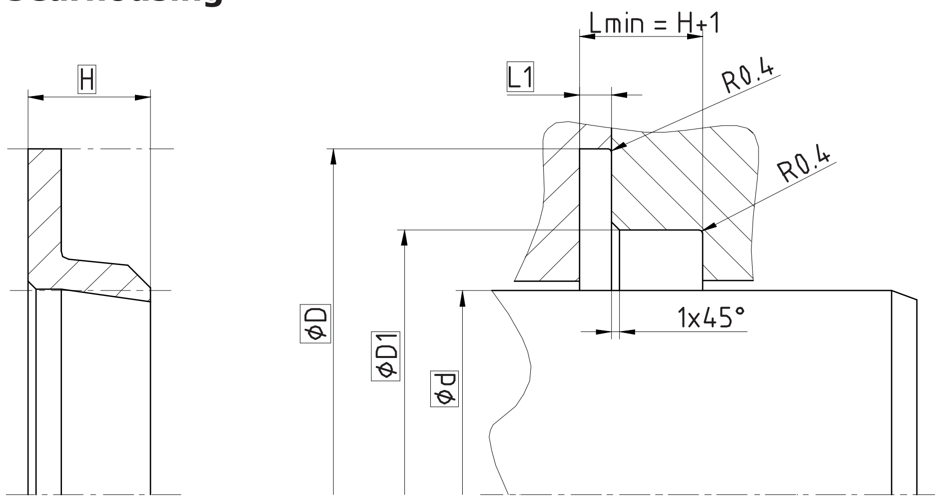
Rod Seal S1315-T	**100 x 120 x 32**	**TOPTAL (POM) / PU / X-PU**
Profile	d x D x L	Pressure ring / Sealing material / Backup ring

Seal data sheet

S16-A

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 6mm
This is not a standard profile and serves as a replacement for an existing installation space. New constructions should use standard profiles.

Operating parameters

Sealing material	Temperature	max. speed		max. pressure	
		linear	rotary	linear[1]	rotary
PU	**-30 °C...+110 °C**	**0,5 m/s**	**2 m/s**	**160 bar (16 MPa)**	**7 bar (0,7 MPa)**
HPU	-20 °C...+110 °C				
SPU	-20 °C...+110 °C	0,7 m/s			
TPU	-50 °C...+110 °C	0,5 m/s			
GPU	-30 °C...+110 °C				
NBR	-30 °C...+100 °C	0,5 m/s	5 m/s	160 bar (16 MPa)	5 bar (0,5 MPa)
FPM Brown	-20 °C...+200 °C				
EPDM	-50 °C...+150 °C				
HNBR	-25 °C...+150 °C				
TOPFLAS	-10 °C...+200 °C				

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S16-A, d=100mm, D=150mm, D1=120mm, L1=5mm, H=25mm, PU

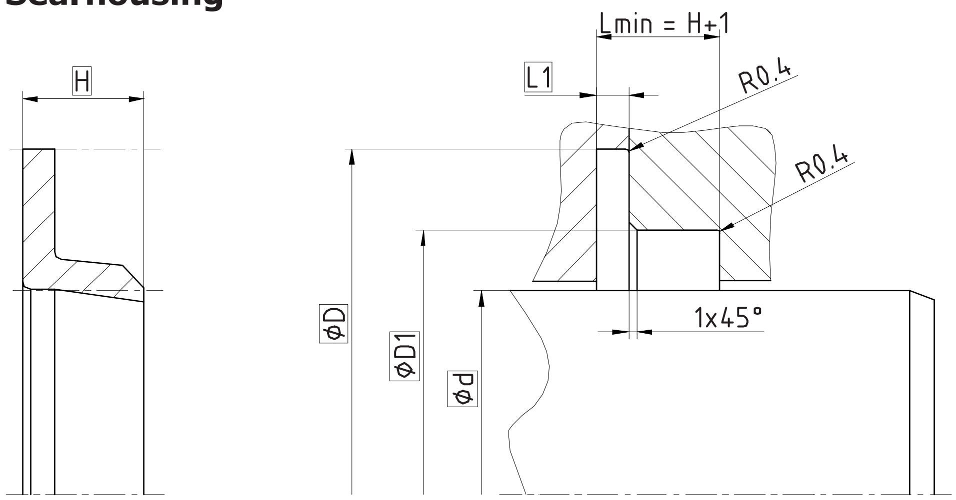
Rod Seal S16-A	**100 x 150/120 x 5/25**	**PU**
Profile	d x D/D1 x L1/H	Sealing material

Seal data sheet

S16-B

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 11mm
This is not a standard profile and serves as a replacement for an existing installation space. New constructions should use standard profiles.

Operating parameters

Sealing material	Temperature	max. speed		max. pressure	
		linear	rotary	linear[1]	rotary
PU	**-30 °C...+110 °C**	**0,5 m/s**	**2 m/s**	**160 bar (16 MPa)**	**7 bar (0,7 MPa)**
HPU	-20 °C...+110 °C				
SPU	-20 °C...+110 °C	0,7 m/s			
TPU	-50 °C...+110 °C	0,5 m/s			
GPU	-30 °C...+110 °C				
NBR	-30 °C...+100 °C	0,5 m/s	5 m/s	160 bar (16 MPa)	5 bar (0,5 MPa)
FPM Brown	-20 °C...+200 °C				
EPDM	-50 °C...+150 °C				
HNBR	-25 °C...+150 °C				
TOPFLAS	-10 °C...+200 °C				

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.
[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S16-B, d=100mm, D=150mm, D1=120mm, L1=5mm, H=25mm, PU

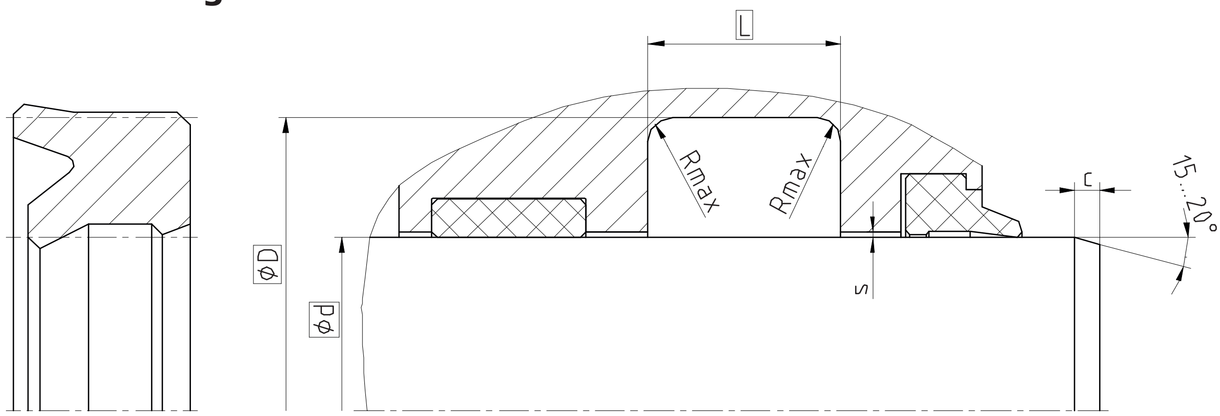
Rod Seal S16-B	**100 x 150/120 x 5/25**	**PU**
Profile	d x D/D1 x L1/H	Sealing material

Seal data sheet

S17-P

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 μm	0,1...0,5 μm
Bottom of groove	≤ 6,3 μm	≤ 1,6 μm
Groove face	≤ 15 μm	≤ 3 μm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 6 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,5 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C	0,5 m/s	
SPU	-20 °C...+110 °C	0,7 m/s	
TPU	-50 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S17-P, d=100mm, D=115mm, L=10mm, PU

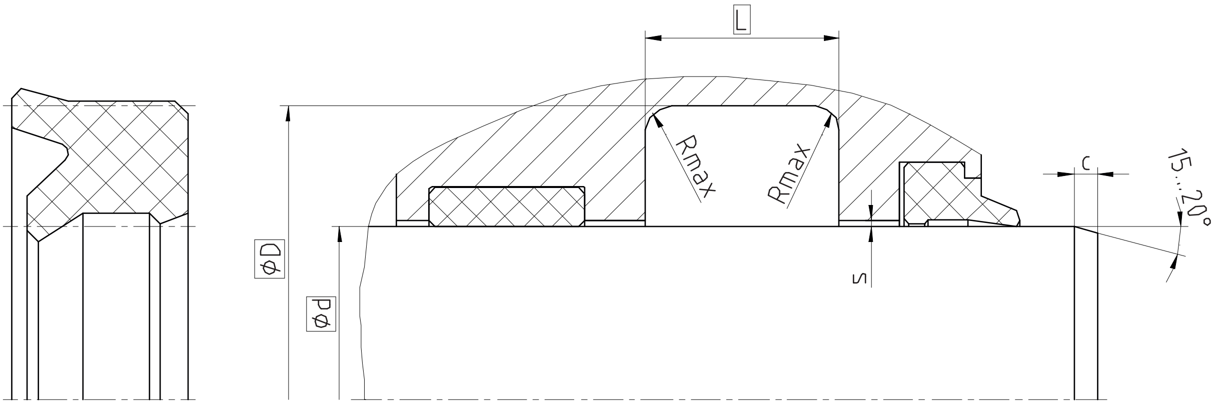
Rod Seal S17-P	**100 x 115 x 10**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

S17-R

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...□

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
							20 bar	100 bar	160 bar
≥ 6	...	≤ 25	d + 8	6,3	0,4	3,5	0,23	0,16	0,14
> 25	...	≤ 50	d + 10	8,0	0,4	4,0	0,26	0,19	0,17
> 50	...	≤ 150	d + 15	10,0	0,4	5,0	0,31	0,24	0,22
> 150	...	≤ 300	d + 20	14,0	0,4	6,0	0,34	0,27	0,25
> 300	...	≤ 500	d + 25	17,0	0,4	8,5	0,37	0,30	0,29
> 500	...	≤ 600	d + 30	25,0	0,4	10,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
NBR	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 MPa)**
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S17-R, d=100mm, D=115mm, L=10mm, NBR

Rod Seal S17-R	**100 x 115 x 10**	**NBR**
Profile	d x D x L	Sealing material

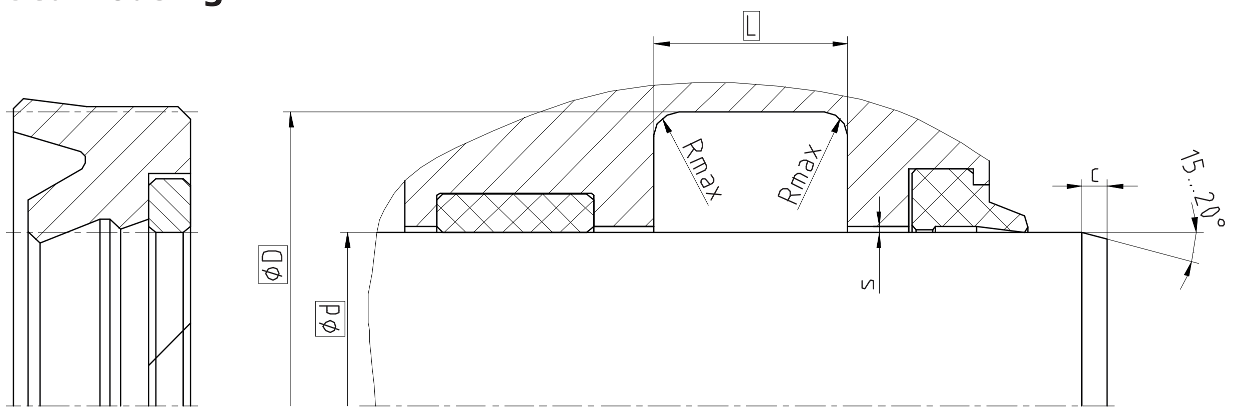
Seal data sheet

S18-P

Rod seals

TOP SEALING PARTNER PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	600 bar
≥ 23 ... ≤ 25	d + 8	8,0	0,4	3,5	0,80	0,80	0,30	0,11
> 25 ... ≤ 50	d + 10	9,0	0,4	4,0	1,00	1,00	0,37	0,14
> 50 ... ≤ 150	d + 15	14,0	0,4	5,0	1,50	1,47	0,46	0,17
> 150 ... ≤ 300	d + 20	17,0	0,4	6,0	2,00	1,77	0,54	0,18
> 300 ... ≤ 500	d + 25	20,0	0,4	8,5	2,50	2,06	0,62	0,20
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	3,00	2,43	0,76	0,25

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**600 bar (60 MPa)**
HPU		-20 °C...+100 °C	0,5 m/s	
SPU		-20 °C...+100 °C	0,7 m/s	
TPU		-40 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

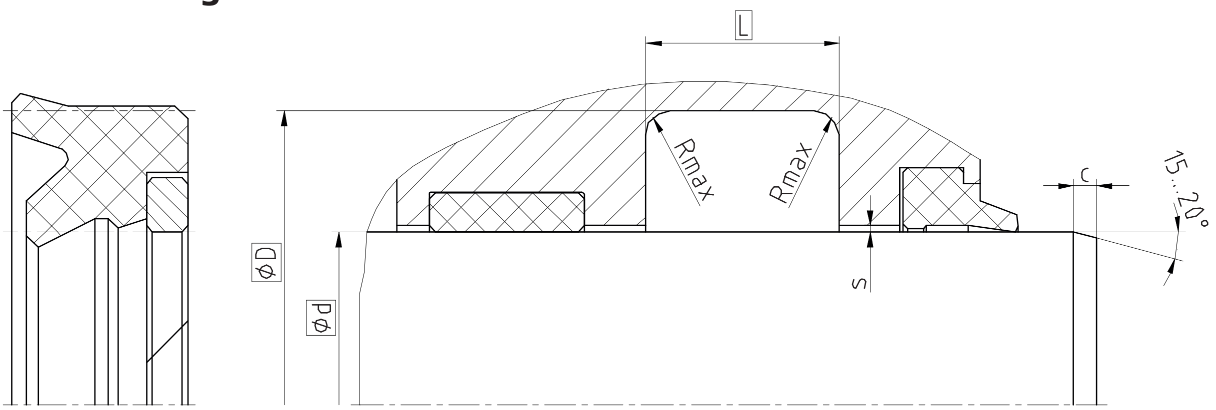
S18-P, d=100mm, D=115mm, L=10mm, PU / TOPTAL (POM)

Rod Seal S18-P	**100 x 115 x 10**	**PU / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet
Rod seals

S18-R

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8			**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
							20 bar	100 bar	250 bar
≥ 23	...	≤ 25	d + 8	8,0	0,4	3,5	0,60	0,80	0,52
> 25	...	≤ 50	d + 10	9,0	0,4	4,0	1,00	1,00	0,66
> 50	...	≤ 150	d + 15	14,0	0,4	5,0	1,50	1,40	0,78
> 150	...	≤ 300	d + 20	17,0	0,4	6,0	2,00	1,66	0,88
> 300	...	≤ 500	d + 25	20,0	0,4	8,5	2,50	1,91	1,00
> 500	...	≤ 600	d + 30	25,0	0,4	10,0	3,00	2,18	1,13

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)**	**-30 °C...+100 °C**	**0,5 m/s**	**250 bar (25 MPa)**
	TOPMID (PA)[2]	-30 °C...+100 °C		
FPM Brown	TF201	-20 °C...+200 °C		
EPDM	TOPTAL (POM)	-50 °C...+100 °C		
	TOPMID (PA)[2]	-40 °C...+100 °C		
	TF201	-50 °C...+150 °C		
HNBR	TOPTAL (POM)	-25 °C...+100 °C		
	TOPMID (PA)[2]	-25 °C...+100 °C		
	TF201	-25 °C...+150 °C		
TOPFLAS	TF201	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S18-R, d=100mm, D=115mm, L=10mm, NBR / TOPTAL (POM)

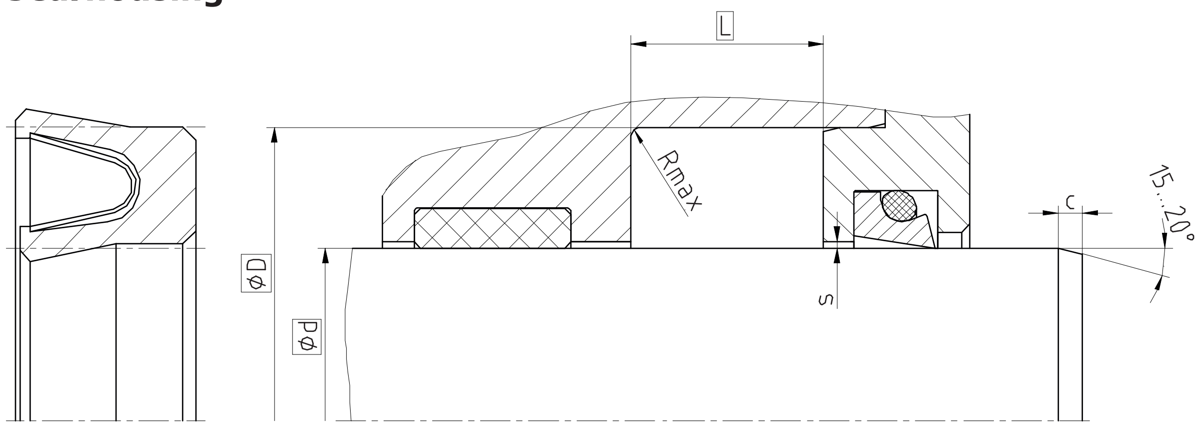
Rod Seal S18-R	**100 x 115 x 10**	**NBR / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

S19-F

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***				
					20 bar	100 bar	200 bar	300 bar	400 bar
≥ 5 ... ≤ 18	d + 4,5	3,6	0,4	2,0	0,25	0,12	0,10	0,08	0,07
> 18 ... ≤ 50	d + 6,2	4,8	0,4	3,0	0,35	0,17	0,12	0,10	0,08
> 50 ... ≤ 120	d + 9,4	7,1	0,4	4,0	0,45	0,22	0,17	0,12	0,10
> 120 ... ≤ 630	d + 12,2	9,5	0,4	5,0	0,60	0,31	0,25	0,15	0,12
> 630 ... ≤ 1600	d + 19,0	15,0	0,4	6,0	0,87	0,48	0,38	0,28	0,20

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Spring	Temperature	max. speed	max. pressure[1]
TF100				200 bar (20 MPa)
TF201		**-200 °C...+260 °C**		
TF300	**1.4310**		**15 m/s**	**400 bar (40 MPa)**
TF400				
UHMWPE		-200 °C...+80 °C		200 bar (20 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

S19-F, d=100mm, D=109,4mm, L=7,1mm, TF300 / 1.4310

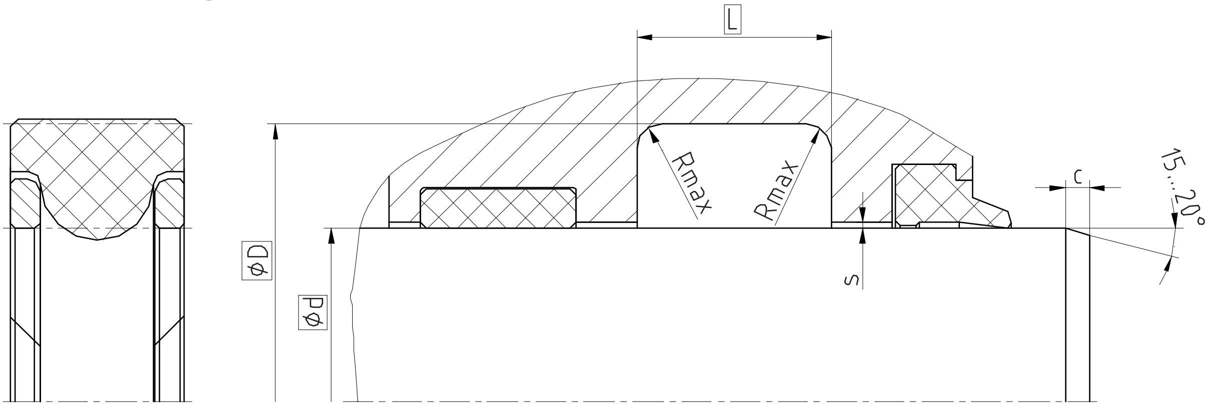
Rod Seal S19-F	**100 x 109,4 x 7,1**	**TF300 / 1.4310**
Profile	d x D x L	Sealing material / Spring

Seal data sheet
Rod seals

S20-R

TOP SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8		**ØD** H10	**L** +0,25	**Rmax**	**c**	**s***
static	dynamic					
≥ 11 ... < 100	-	d + 4,36	4,5	0,4	2,0	f8/H8
≥ 100 ... < 150	≥ 11 ... < 20	d + 4,36	6,5	0,4	2,0	
≥ 150 ... < 250	≥ 20 ... < 40	d + 6,00	7,4	0,4	3,0	
≥ 250 ... < 400	≥ 40 ... < 100	d + 9,06	10,1	0,4	3,5	
≥ 400 ... < 600	≥ 100 ... < 300	d + 11,88	12,8	0,4	4,5	
≥ 600	≥ 300 ... ≤ 600	d + 17	17,5	0,4	4,5	

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 Mpa)**
HNBR		-25 °C...+100 °C		
FPM Brown	PEEK TF201	-20 °C...+200 °C		
HNBR		-25 °C...+150 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; >Ø260mm: TOPMID (PA)

Ordering example

S20-R, d=100mm, D=115mm, L=10mm, NBR / TOPTAL (POM)

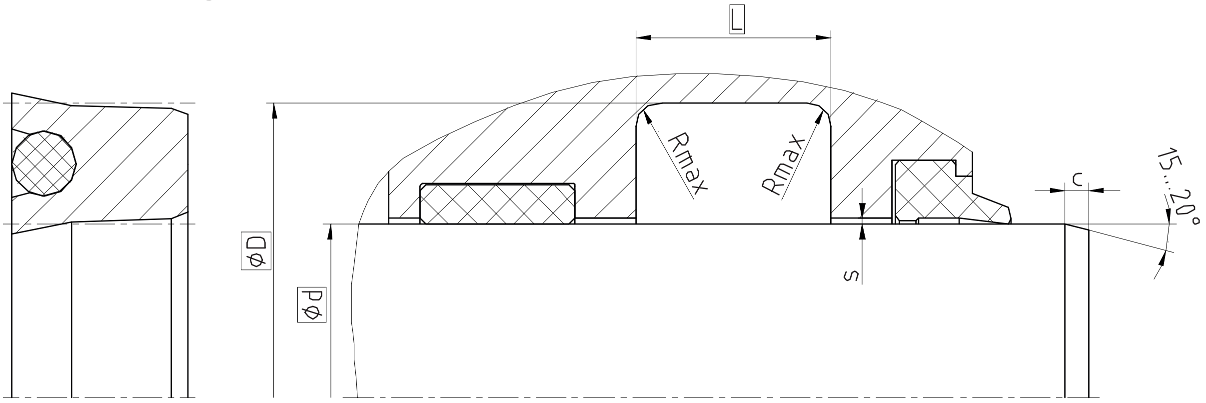
Rod Seal S20-R	**100 x 115 x 10**	**NBR / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

S21-P

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...□

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
PU	**NBR 70**	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 Mpa)**
HPU		-20 °C...+100 °C	0,5 m/s	
SPU		-25 °C...+150 °C	0,7 m/s	
TPU	MVQ70	-50 °C...+110 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

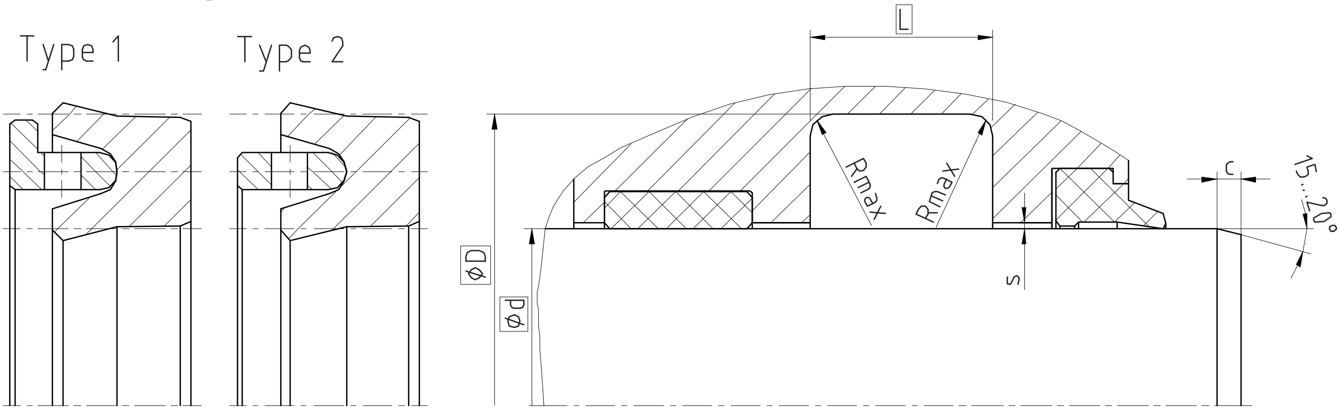
S21-P, d=100mm, D=115mm, L=10mm, PU / NBR70

Rod Seal S21-P	**100 x 115 x 10**	**PU / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet
S22-P

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 6 ... ≤ 25	d + 8	6,3	0,4	3,5	0,33	0,17	0,11	0,05
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,37	0,22	0,16	0,10
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,46	0,31	0,25	0,19
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,54	0,39	0,32	0,26
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,61	0,46	0,39	0,33
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,67	0,52	0,45	0,39

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values. Standard: Type 2

Operating parameters

Sealing material	Support ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**400 bar (40 Mpa)**
HPU		-20 °C...+100 °C		
TPU		-40 °C...+100 °C		
SPU		-20 °C...+100 °C	0,7 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S22-P, d=100mm, D=115mm, L=10mm, PU / TOPTAL (POM)

Rod Seal S22-P	**100 x 115 x 10**	**PU/ TOPTAL (POM)**
Profile	d x D x L	Sealing material / Support ring

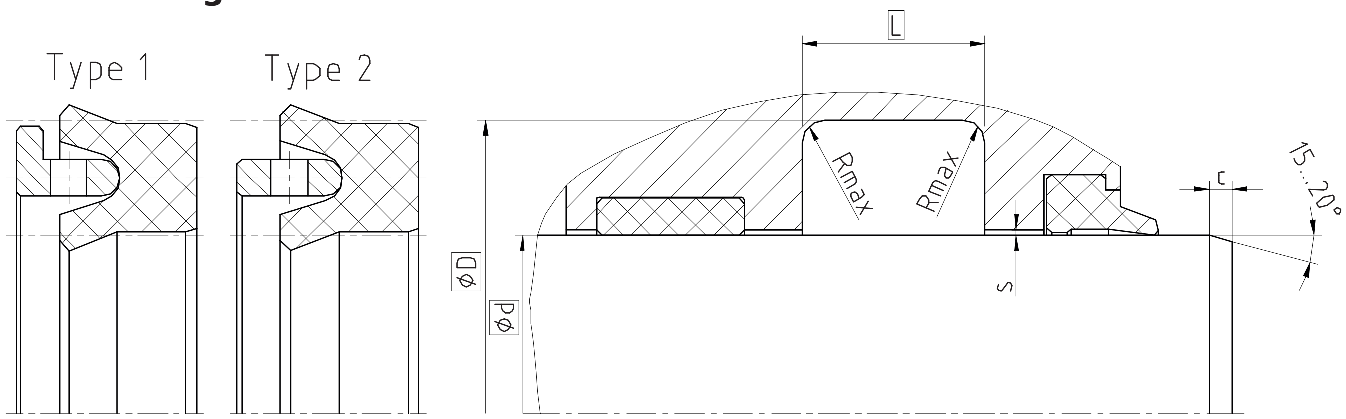
Seal data sheet

S22-R

Rod seals

SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***		
					20 bar	100 bar	160 bar
≥ 6 ... ≤ 25	d + 8	6,3	0,4	3,5	0,23	0,16	0,14
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	0,26	0,19	0,17
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	0,31	0,24	0,22
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	0,34	0,27	0,25
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	0,37	0,30	0,29
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	0,40	0,34	0,32

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values. Standard: Type 2

Operating parameters

Sealing material	Support ring	Temperature	max. speed	max. pressure[1]
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**160 bar (16 Mpa)**
FPM Brown	TF201	-20 °C...+100 °C		
EPDM	TOPTAL (POM) TOPMID (PA)[2]	-40 °C...+100 °C		
	TF201	-50 °C...+150 °C		
HNBR	TOPTAL (POM) TOPMID (PA)[2]	-25 °C...+100 °C		
	TF201	-25 °C...+150 °C		
TOPFLAS	TF201	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S22-R, d=100mm, D=115mm, L=10mm, NBR / TOPTAL (POM)

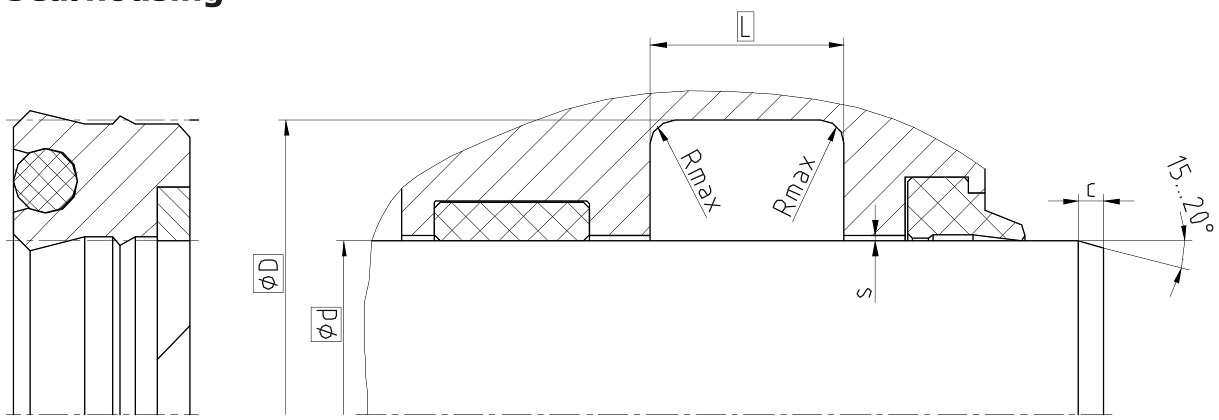
Rod Seal S22-R	**100 x 115 x 10**	**NBR / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Support ring

Seal data sheet

Rod seals

S24-P

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	400 bar	700 bar
≥ 22 ... ≤ 25	d + 8	6,3	0,4	3,5	0,80	0,80	0,30	0,04
> 25 ... ≤ 50	d + 10	8,0	0,4	4,0	1,00	1,00	0,37	0,04
> 50 ... ≤ 150	d + 15	10,0	0,4	5,0	1,50	1,47	0,46	0,05
> 150 ... ≤ 300	d + 20	14,0	0,4	6,0	2,00	1,77	0,54	0,06
> 300 ... ≤ 500	d + 25	17,0	0,4	8,5	2,50	2,06	0,62	0,06
> 500 ... ≤ 600	d + 30	25,0	0,4	10,0	3,00	2,43	0,76	0,06

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**NBR70**	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,5 m/s**	**700 bar (70 MPa)**
HPU			-20 °C...+100 °C	0,5 m/s	
SPU			-20 °C...+100 °C	0,7 m/s	
TPU			-30 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S24-P, d=100mm, D=115mm, L=10mm, HPU / NBR70 / TOPTAL (POM)

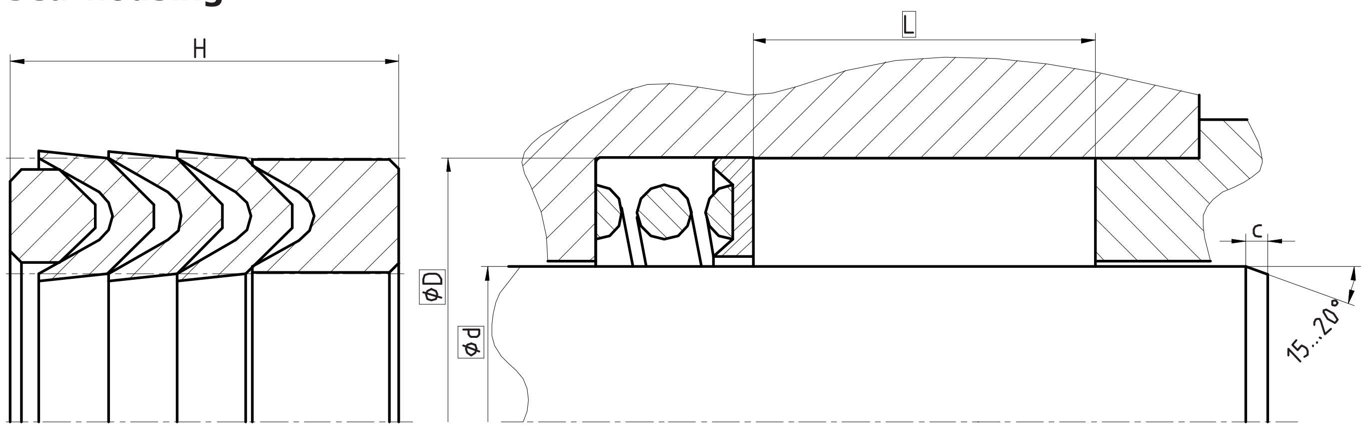
Rod Seal S24-P	**100 x 115 x 10**	**HPU / NBR70 / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Energizer / Backup ring

Seal data sheet

S2527-F

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H8	**c**	**Installation height L***		
			2 Chevrons < 16 bar	3 Chevrons ≥ 16 bar ... ≤ 50 bar	4 Chevrons ≥ 50 bar ... ≤ 100 bar
≥ 10 ... < 16	d + 8	3,5	12	15	18
≥ 16 ... < 40	d + 10	4,0	14	19	23
≥ 40 ... < 50	d + 12	4,5	16	22	26
≥ 50 ... < 75	d + 15	5	19	27	33
≥ 75 ... < 150	d + 20	6	25	35	42
≥ 150 ... < 200	d + 25	8,5	32	44	53
≥ 200 ... < 300	d + 30	10	39	54	64
≥ 300	d + 40	13	45	64	76

* The recommended chevron height depends on the pressure area and is valid for TF100. Installation height L = Chevron set height H! Standard: 3 Chevrons

Operating parameters

Pressure ring S25-F	Chevron S26-F	Backup ring S27-F	Temperature	max. speed	max. pressure
TF201	**TF100**	**TF201**	**-200 °C...+260 °C**	**1,5 m/s**	**100 bar (10 MPa)**

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

S2527-F, d=100mm, D=120mm, L=35mm, TF201 / TF100 / TF201

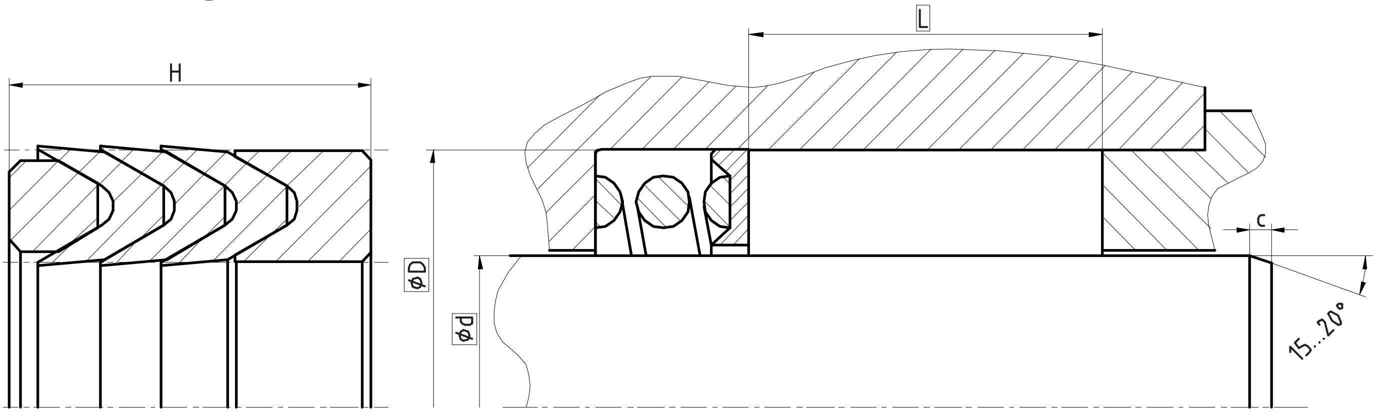
Rod Seal S2527-F	**100 x 120 x 35**	**TF201 / TF100 / TF201**
Profile	d x D x L	Pressure ring / Chevron / Backup ring

Seal data sheet

S2931-F

Rod seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H8	**c**	**Installation height L*** 3 Chevrons < 50 bar	4 Chevrons ≥ 50 bar ... ≤ 100 bar	5 Chevrons ≥ 100 bar ... ≤ 315 bar
≥ 10 ... < 15	d + 8	3,5	14	17	20
≥ 15 ... < 40	d + 10	4,0	16	19	22
≥ 40 ... < 50	d + 12	4,5	19	23	27
≥ 50 ... < 75	d + 15	5	22	26,5	32
≥ 75 ... < 150	d + 20	6	32	38	44
≥ 150 ... < 200	d + 25	8,5	35	42	50
≥ 200 ... < 300	d + 30	10	39	47	56
≥ 300 ... < 600	d + 40	13	50	62	74

* The recommended chevron height depends on the pressure area and is valid for TF100. Installation height L = Chevron set height H! Standard: 3 Chevrons

Operating parameters

Pressure ring S29-F	Chevron S30-F	Backup ring S31-F	Temperature	max. speed	max. pressure
TF201	**TF100**	**TF201**	**-200 °C...+260 °C**	**1,5 m/s**	**315 bar (31,5 MPa)**

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

S2931-F, d=100mm, D=120mm, L=10mm, TF201 / TF100 / TF201

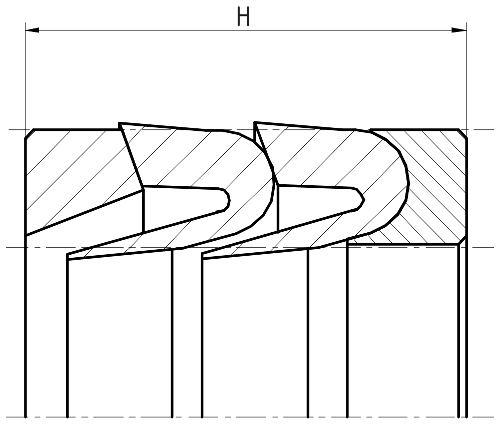
Rod Seal S2931-F	**100 x 120 x 10**	**TF201 / TF100 / TF201**
Profile	d x D x L	Pressure ring / Chevron / Backup ring

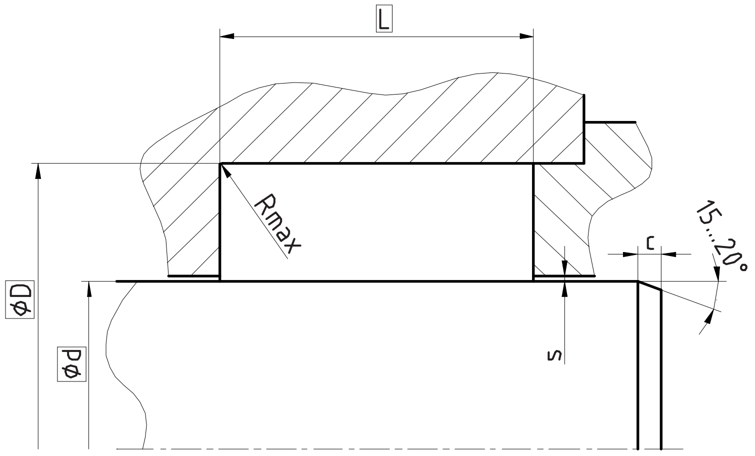
Seal data sheet

S32-P

Rod seals

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**s***
- ... < 25	d + 12	24	0,4	4,5	0,6
≥ 25 ... < 47	d + 15	29	0,4	5	0,38
≥ 47 ... < 100	d + 20	38	0,4	6	0,50
≥ 100 ... < 150	d + 25	47,5	0,4	8,5	0,63
≥ 150 ... < 250	d + 30 / 35	57	0,4	10	0,75 / 0,88
> 250 ... < 500	d + 40 / 45	76	0,4	13	1,00 / 1,13
> 500 ... < 1000	d + 50	95	0,4	16	1,25
> 1000 ... < 2500	d + 60	113	0,4	19	1,50

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Pressure ring	Chevron	Backup ring	Temperature	max. speed	max. pressure[1]
TOPTAL (POM) TOPMID (PA)[2]	PU	TOPTAL (POM) TOPMID (PA)[2]	-30 °C...+100 °C	0,5 m/s	500 bar (50 Mpa)
	HPU		-20 °C...+100 °C		
	SPU		-20 °C...+100 °C	0,7 m/s	
	TPU		-40 °C...+100 °C	0,5 m/s	
	GPU		-30 °C...+100 °C		
TOPTAL (POM) TOPMID (PA)[2]	**PU**	**XPU**	**-30 °C...+100 °C**	**0,5 m/s**	**500 bar (50 Mpa)**
	HPU	XHPU	-20 °C...+100 °C		
	SPU	XSPU	-20 °C...+100 °C	0,7 m/s	
	GPU	GPU54D	-30 °C...+100 °C	0,5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

S32-P, d=100mm, D=125mm, L=10mm, TOPTAL (POM) / PU / X-PU

Rod Seal S32-P	**100 x 125 x 10**	**TOPTAL (POM) / PU / X-PU**
Profile	d x D x L	Pressure ring / Chevron / Backup ring

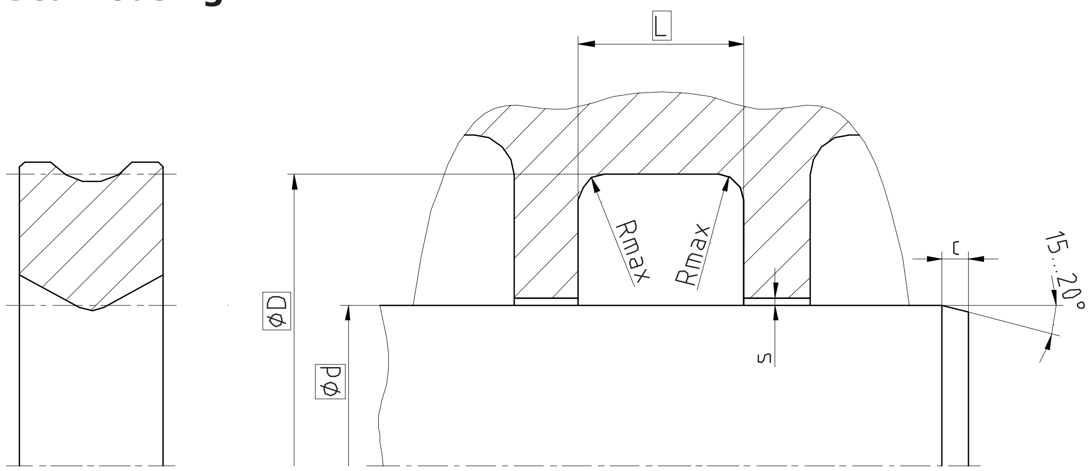
Seal data sheet

S35-P

Rod seals

TOP SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**L** +0,2	**Rmax**	**c**	**max. radial extrusion gap s***			
					20 bar	100 bar	200 bar	400 bar
≥ 5 ... ≤ 10	d + 5	4,0	0,4	2,0	0,33	0,18	0,10	0,05
> 10 ... ≤ 25	d + 6	4,5	0,4	3,0	0,33	0,18	0,10	0,05
> 25 ... ≤ 50	d + 8	5,5	0,4	3,5	0,33	0,18	0,10	0,05
> 50 ... ≤ 100	d + 10	6,5	0,4	4,0	0,37	0,23	0,15	0,10
> 100 ... ≤ 150	d + 15	9,5	0,4	5,0	0,46	0,33	0,25	0,18
> 150 ... ≤ 300	d + 20	12,5	0,4	6,0	0,54	0,38	0,33	0,25
> 300 ... ≤ 500	d + 25	15,0	0,4	8,5	0,61	0,45	0,40	0,33
> 500 ... ≤ 700	d + 30	17,5	0,4	10,0	0,67	0,50	0,45	0,40
> 700 ... ≤ 1250	d + 40	22,0	0,4	13,0	0,77	0,50	0,45	0,40
> 1250 ... ≤ 2000	d + 50	27,0	0,4	15,0	0,87	0,60	0,50	0,40
> 2000 ... ≤ 4000	d + 60	32,0	0,4	18,0	0,97	0,70	0,50	0,40

* Extrusion gap applies to a temperature of 70 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Temperature	max. speed[2]	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,4 m/s**	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C	0,4 m/s	
SPU	-20 °C...+110 °C	0,5 m/s	
TPU	-50 °C...+110 °C	0,4 m/s	
GPU	-30 °C...+110 °C	0,4 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

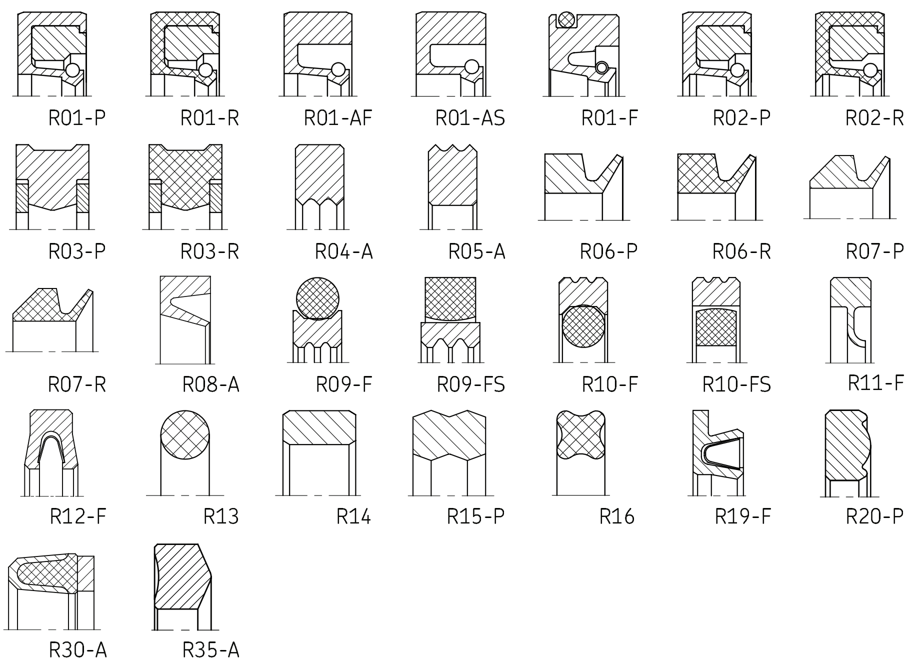
[1] Pressure ratings depend on the size of the extrusion gap.
[2] Rotary applications max. 0,2 m/s

Ordering example

S35-P, d=120mm, D=135mm, L=9,5mm, PU

Rod Seal S35-P	**120 x 135 x 9,5**	**PU**
Profile	d x D x L	Sealing material

Rotary seals

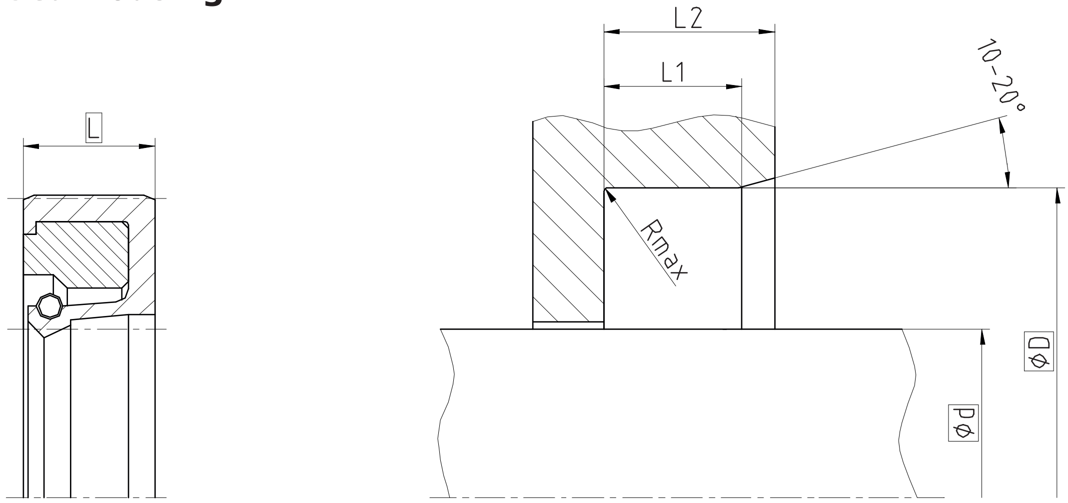


Seal data sheet

Rotary seals

R01-P

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD** H8	**L**	**L1**	**L2**	**Rmax**
≥ 5 ... < 60	d + 12	7,0	5,95	7,3	0,4
≥ 60 ... < 140	d + 15	8,0	6,8	8,3	
≥ 140 ... < 300	d + 20	10,0	8,5	10,3	
≥ 300 ... < 500	d + 30	12,0	10,3	12,3	0,8
≥ 500 ... ≤ 800	d + 40	20,0	17	20,3	
> 800	d + 50	22,0	18,7	22,3	

Operating parameters

Sealing material	Clamping ring	Spring	Temperature	max. speed[1]	max. pressure
PU	**TOPTAL(POM)** TOPMID (PA)[2]	**1.4310**	**-30 °C...+80 °C**	**5 m/s**	**0,5 bar (0,05 MPa)**
HPU			-20 °C...+80 °C		
SPU			-20 °C...+80 °C		
TPU			-40 °C...+80 °C		
GPU			-30 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Depending on shaft diameter
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

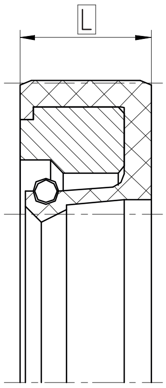
R01-P, d=100mm, D=115mm, L=8mm, PU / TOPTAL (POM) / 1.4310

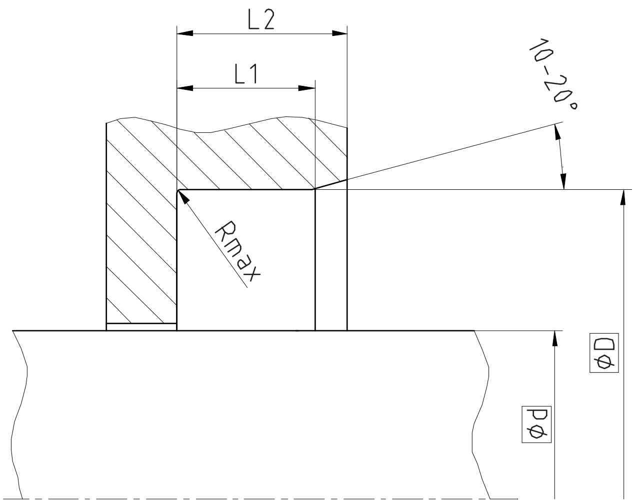
Rotary Seal R01-P	**100 x 115 x 8**	**PU / TOPTAL (POM) / 1.4310**
Profile	d x D x L	Sealing material / Clamping ring / Spring

Seal data sheet
Rotary seals

TOP SEALING PARTNER
PART OF nomo

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD** H8	**L**	**L1**	**L2**	**Rmax**
≥ 5 ... < 60	d + 12	7,0	5,95	7,3	0,4
≥ 60 ... < 140	d + 15	8,0	6,8	8,3	
≥ 140 ... < 300	d + 20	10,0	8,5	10,3	
≥ 300 ... < 500	d + 30	12,0	10,3	12,3	0,8
≥ 500 ... ≤ 800	d + 40	20,0	17	20,3	
> 800	d + 50	22,0	18,7	22,3	

Operating parameters

Sealing material	Clamping ring	Spring	Temperature	max. speed[1]	max. pressure
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**1.4310**	**-30 °C...+80 °C**	**10 m/s**	**0,5 bar (0,05 MPa)**
FPM Brown			-20 °C...+80 °C	15 m/s	
EPDM			-50 °C...+80 °C	10 m/s	
HNBR			-25 °C...+80 °C		
TOPFLAS			-10 °C...+80 °C		
MVQ			-60 °C...+80 °C	5 m/s	-
NBR	PEEK		-30 °C...+100 °C	10 m/s	0,5 bar (0,05 MPa)
FPM Brown			-20 °C...+200 °C	15 m/s	
EPDM			-50 °C...+150 °C	10 m/s	
HNBR			-25 °C...+150 °C		
TOPFLAS			-10 °C...+200 °C		
MVQ			-60 °C...+200 °C	5 m/s	-

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Depending on shaft diameter
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

R01-R, d=100mm, D=115mm, L=8mm, NBR / TOPTAL (POM) / 1.4310

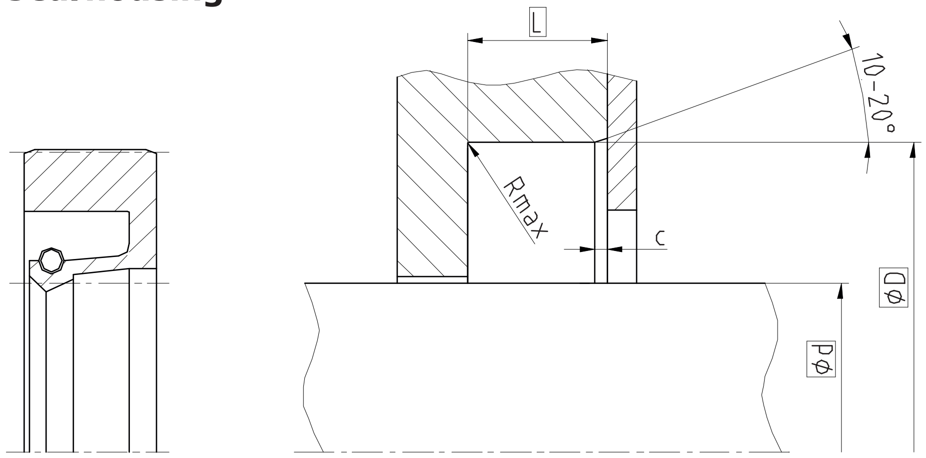
Rotary Seal R01-R	**100 x 115 x 8**	**NBR / TOPTAL (POM) / 1.4310**
Profile	d x D x L	Sealing material / Clamping ring / Spring

Seal data sheet

R01-AF

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød[1] h11 Rotating application	**Ød**[2] h11 Pivoting application	**ØD** H8	**L** -0,2	**c**	**Rmax**
≥ 5 ... ≤ 80	≥ 5 ... ≤ 40	d + 15	7	1,2	0,4
> 80 ... ≤ 140	> 40 ... ≤ 70	d + 20	8	1,5	
> 140 ... ≤ 240	> 70 ... ≤ 120	d + 20	10	1,5	
> 240 ... ≤ 480	> 120 ... ≤ 240	d + 30	12	1,8	0,8
> 480 ... ≤ 2240	> 240 ... ≤ 1120	d + 40	15	1,8	
> 2240 ... ≤ 3200	> 1120 ... ≤ 1600	d + 50	25	3,3	
> 3200	> 1600	d + 60	30	3,3	

Operating parameters

Sealing material	Spring	Temperature	max. speed[1]	max. pressure
PU	**1.4310**	**-30 °C...+110 °C**	**5 m/s**	**0,5 bar (0,05 MPa)**
HPU		-20 °C...+110 °C		
SPU		-20 °C...+110 °C		
TPU		-50 °C...+110 °C		
GPU		-30 °C...+110 °C		-
NBR	1.4310	-30 °C...+100 °C	10 m/s	0,5 bar (0,05 MPa)
FPM Brown		-20 °C...+200 °C	15 m/s	
EPDM		-50 °C...+150 °C	10 m/s	
HNBR		-25 °C...+150 °C		
TOPFLAS		-10 °C...+200 °C		
MVQ		-60 °C...+200 °C	5 m/s	-

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Depending on shaft diameter

Ordering example

R01-AF, d=100mm, D=120mm, L=8mm, PU / 1.4310

Rotary Seal R01-AF	**100 x 120 x 8**	**PU / 1.4310**
Profile	d x D x L	Sealing material / Spring

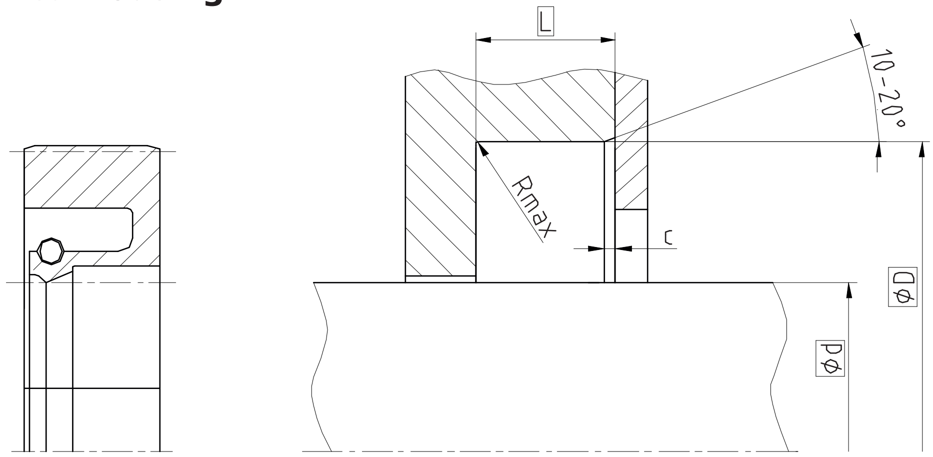
Seal data sheet

R01-AS

Rotary seals

SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1…0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions…☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50…95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød[1] h11 Rotating application	**Ød**[2] h11 Pivoting application	**ØD** H8	**L** -0,2	**c**	**Rmax**
≥ 5 … ≤ 70	≥ 5 … ≤ 35	d + 20	8	1,5	0,4
> 70 … ≤ 120	> 35 … ≤ 60	d + 20	10	1,5	
> 120 … ≤ 240	> 60 … ≤ 120	d + 30	12	1,8	0,8
> 240 … ≤ 1120	> 120 … ≤ 560	d + 40	15	3	
> 1120 … ≤ 1600	> 560 … ≤ 800	d + 50	20	3,3	
> 1600	> 800 … ≤ 2220	d + 60	25	3,3	

Operating parameters

Sealing material	Spring	Temperature	max. speed[1]	max. pressure
PU	**1.4310**	**-30 °C…+110 °C**	**5 m/s**	-
HPU		-20 °C…+110 °C		
SPU		-20 °C…+110 °C		
TPU		-50 °C…+110 °C		
GPU		-30 °C…+110 °C		
NBR	1.4310	-30 °C…+100 °C	10 m/s	
FPM Brown		-20 °C…+200 °C	15 m/s	
EPDM		-50 °C…+150 °C	10 m/s	
HNBR		-25 °C…+150 °C		
TOPFLAS		-10 °C…+200 °C		
MVQ		-60 °C…+200 °C	5 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Depending on shaft diameter

Ordering example

R01-AS, d=100mm, D=120mm, L=10mm, PU / 1.4310

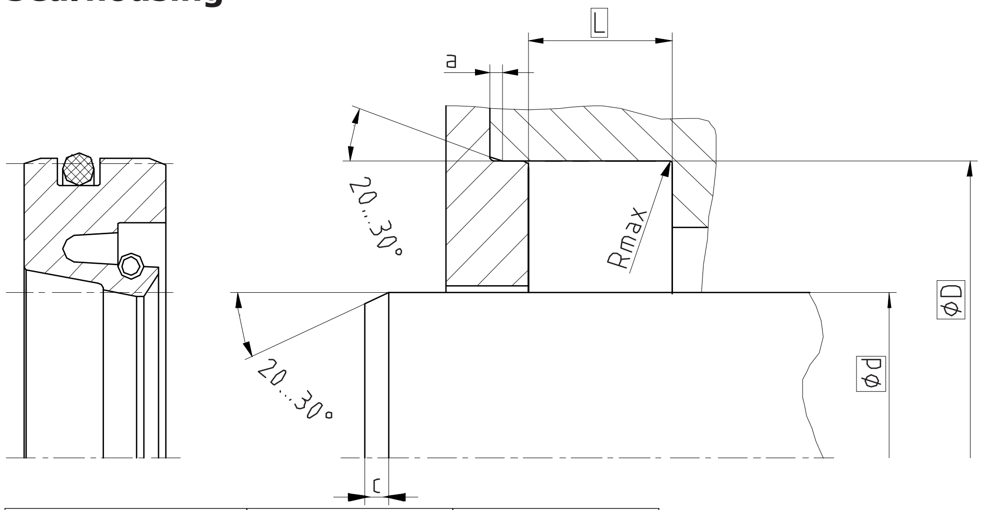
Rotary Seal R01-AS	**100 x 120 x 10**	**PU / 1.4310**
Profile	d x D x L	Sealing material / Spring

Seal data sheet

R01-F

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: On the surface min 55 HRC
Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11 Rotating applications	**Ød** h11 Pivoting applications	**ØD** H8	**L** -0,1	**c**	**a**	**Rmax**
≥ 10 ... ≤ 66	≥ 10 ... ≤ 33	d + 12	7,0	3	1,25	0,4
> 66 ... ≤ 110	> 33 ... ≤ 55	d + 15	9,0	3,5	1,5	
> 110 ... ≤ 280	> 55 ... ≤ 140	d + 20	10,0	5	2	
> 280 ... ≤ 400	> 140 ... ≤ 200	d + 25	12,5	6,5	2,5	0,8
> 400 ... ≤ 600	> 200 ... ≤ 400	d + 30	15,0	7,5	3	
-	> 400 ... ≤ 600	d + 40	20,0	9	3,5	

Operating parameters

Sealing material	Energizer	Spring	Temperature	max. speed	max. pressure
TF100 TF201 TF300 **TF400**	**NBR70**	**1.4310**	**-30 °C...+100 °C**	**10 m/s**	**15 bar (1,5 MPa)**
	FPM/FKM		-20 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

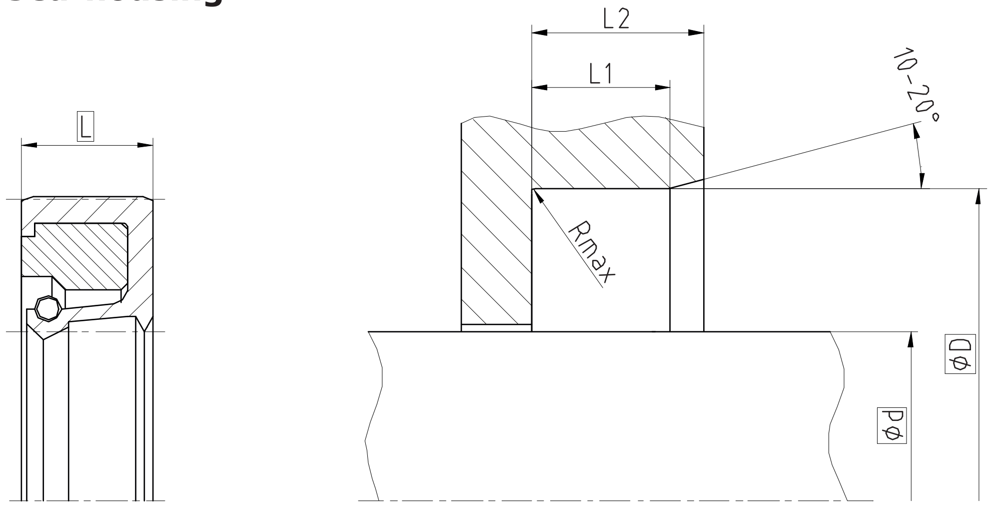
R01-F, d=100mm, D=120mm, L=10mm, TF400 / NBR70 / 1.4310

Rotary Seal R01-F	**100 x 120 x 10**	**TF400 / NBR70 / 1.4310**
Profile	d x D x L	Sealing material / O-Ring / Spring

Seal data sheet
Rotary seals

R02-P

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD** H8	**L**	**L1**	**L2**	**Rmax**
≥ 5 ... < 60	d + 12	7	5,95	7,3	0,4
≥ 60 ... < 140	d + 15	8	6,8	8,3	
≥ 140 ... < 300	d + 20	10	8,5	10,3	
≥ 300 ... < 500	d + 30	12	10,3	12,3	0,8
≥ 500 ... ≤ 800	d + 40	20	17	20,3	
> 800	d + 50	22	18,7	22,3	

Operating parameters

Sealing material	Clamping ring	Spring	Temperature	max. speed[1]	max. pressure
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**1.4310**	**-30 °C...+80 °C**	**5 m/s**	**0,5 bar (0,05 MPa)**
HPU			-20 °C...+80 °C		
SPU					
TPU			-40 °C...+80 °C		
GPU			-30 °C...+80 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Depending on shaft diameter
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

R02-P, d=100mm, D=115mm, L=8mm, PU / TOPTAL (POM) / 1.4310

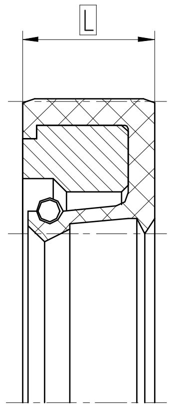
Rotary Seal R02-P	**100 x 115 x 8**	**PU / TOPTAL (POM) / 1.4310**
Profile	d x D x L	Sealing material / Clamping ring / Spring

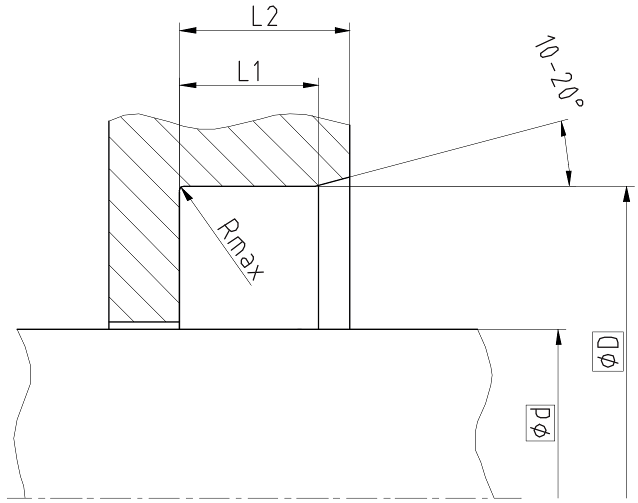
Seal data sheet

R02-R

Rotary seals

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD** H8	**L**	**L1**	**L2**	**Rmax**
≥ 5 ... < 60	d + 12	7,0	5,95	7,3	0,4
≥ 60 ... < 140	d + 15	8,0	6,8	8,3	
≥ 140 ... < 300	d + 20	10,0	8,5	10,3	
≥ 300 ... < 500	d + 30	12,0	10,3	12,3	0,8
≥ 500 ... ≤ 800	d + 40	20,0	17	20,3	
> 800	d + 50	22,0	18,7	22,3	

Operating parameters

Sealing material	Clamping ring	Spring	Temperature	max. speed[1]	max. pressure
NBR	**TOPTAL (POM)** TOPMID (PA)[2]	**1.4310**	**-30 °C...+80 °C**	**10 m/s**	**0,5 bar (0,05 MPa)**
FPM Brown			-20 °C...+80 °C	15 m/s	
EPDM			-50 °C...+80 °C	10 m/s	
HNBR			-25 °C...+80 °C	10 m/s	
MVQ			-60 °C...+80 °C	5 m/s	-
NBR	PEEK		-30 °C...+100 °C	10 m/s	0,5 bar (0,05 MPa)
FPM Brown			-20 °C...+200 °C	15 m/s	
EPDM			-50 °C...+150 °C	10 m/s	
HNBR			-25 °C...+150 °C	10 m/s	
MVQ			-60 °C...+200 °C	-	-

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Depending on shaft diameter
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

R02-R, d=100mm, D=115mm, L=8mm, NBR / TOPTAL (POM) / 1.4310

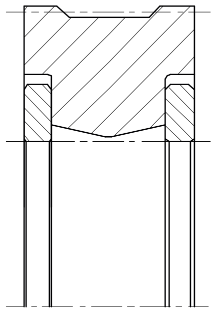
Rotary Seal R02-R	**100 x 115 x 8**	**NBR / TOPTAL (POM) / 1.4310**
Profile	d x D x L	Sealing material / Clamping ring / Spring

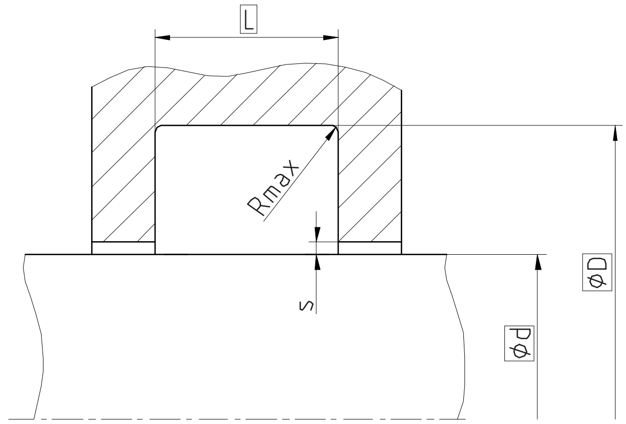
Seal data sheet

Rotary seals

R03-P

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød*	**ØD** H9	**L** +0,2	**Rmax**	**s**
≥ 21 ... ≤ 22	d + 8	6,5	0,2	e8/H9
> 22 ... ≤ 36	d + 10	8		
> 36 ... ≤ 56	d + 12	8		
> 56 ... ≤ 85	d + 15	11		f7/H7
> 85 ... ≤ 140	d + 20	13		
> 140 ... ≤ 200	d + 25	16		
> 200 ... ≤ 300	d + 30	19		
> 300	d + 40	26		

*Tolerance area shaft ≤ 56mm: e8 > 56mm: f7

Operating parameters

Sealing material	Backup ring	Temperature	max. speed	max. pressure[1]
PU	**TOPTAL (POM)** TOPMID (PA)[2]	**-30 °C...+100 °C**	**0,2 m/s**	**400 bar (40 MPa)**
HPU		-20 °C...+100 °C		
SPU		-40 °C...+100 °C	0,3 m/s	
TPU		-20 °C...+100 °C	0,2 m/s	

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

R03-P, d=100mm, D=120mm, L=13mm, PU / TOPTAL (POM)

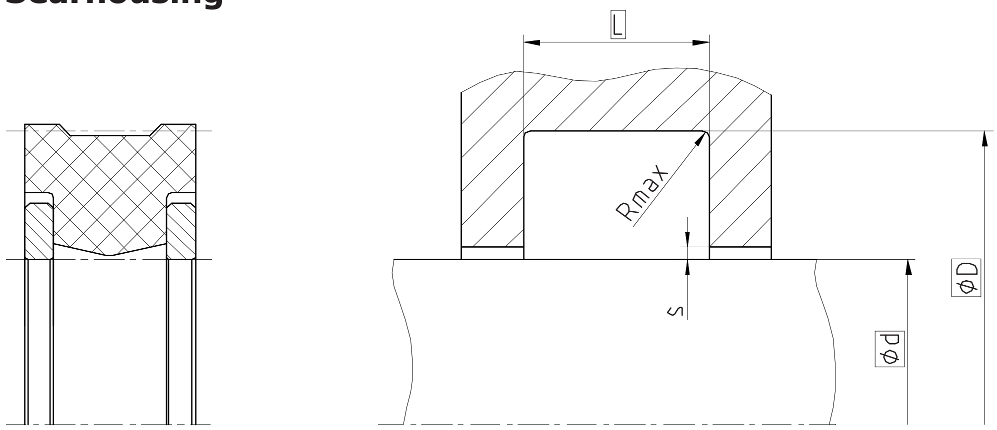
Rotary Seal R03-P	**100 x 120 x 13**	**PU / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

Rotary seals

R03-R

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

<table>
<tr><th>Ød*</th><th>ØD H9</th><th>L +0,2</th><th>Rmax</th><th>s</th></tr>
<tr><td>> 22 ... ≤ 36</td><td>d + 10</td><td>8</td><td rowspan="7">0,2</td><td rowspan="2">e8/H9</td></tr>
<tr><td>> 36 ... ≤ 56</td><td>d + 12</td><td>8</td></tr>
<tr><td>> 56 ... ≤ 85</td><td>d + 15</td><td>11</td><td rowspan="5">f7/H7</td></tr>
<tr><td>> 85 ... ≤ 140</td><td>d + 20</td><td>13</td></tr>
<tr><td>> 140 ... ≤ 200</td><td>d + 25</td><td>16</td></tr>
<tr><td>> 200 ... ≤ 300</td><td>d + 30</td><td>19</td></tr>
<tr><td>> 300</td><td>d + 40</td><td>26</td></tr>
</table>

*Tolerance area shaft ≤ 56mm: e8 > 56mm: f7

Operating parameters

<table>
<tr><th>Sealing material</th><th>Backup ring</th><th>Temperature</th><th>max. speed</th><th>max. pressure[1]</th></tr>
<tr><td>NBR</td><td>TOPTAL (POM)
TOPMID (PA)[2]</td><td>-30 °C...+100 °C</td><td rowspan="8">0,2 m/s</td><td rowspan="8">250 bar
(25 MPa)</td></tr>
<tr><td>FPM Brown</td><td>TF201</td><td>-20 °C...+200 °C</td></tr>
<tr><td rowspan="2">EPDM</td><td>TOPTAL (POM)
TOPMID (PA)[2]</td><td>-40 °C...+100 °C</td></tr>
<tr><td>TF201</td><td>-50 °C...+150 °C</td></tr>
<tr><td rowspan="2">HNBR</td><td>TOPTAL (POM)
TOPMID (PA)[2]</td><td>-25 °C...+100 °C</td></tr>
<tr><td>TF201</td><td>-25 °C...+150 °C</td></tr>
<tr><td>TOPFLAS</td><td>PEEK</td><td>-10 °C...+200 °C</td></tr>
</table>

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.
[2] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

R03-R, d=100mm, D=120mm, L=13mm, NBR / TOPTAL (POM)

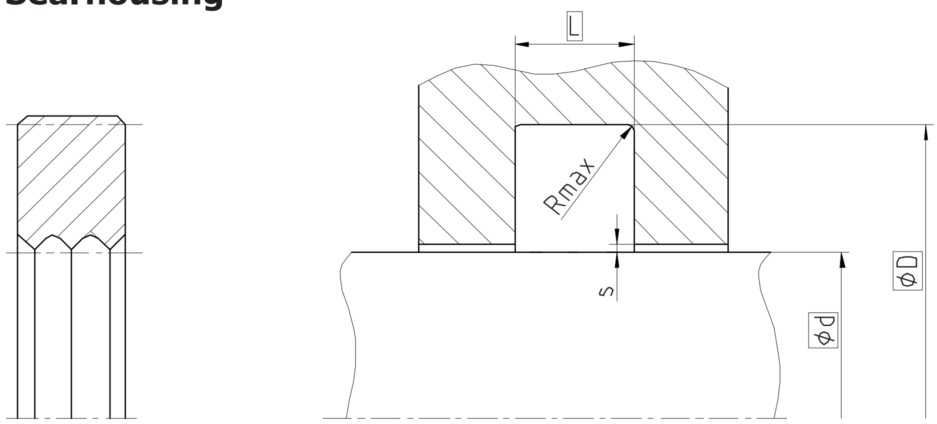
Rotary Seal R03-R	**100 x 120 x 13**	**NBR / TOPTAL (POM)**
Profile	d x D x L	Sealing material / Backup ring

Seal data sheet

R04-A

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød*	**ØD** H9	**L** +0,2	**Rmax**	**s**
≥ 5 ... ≤ 22	d + 8	4,5	0,2	e8 / H9
> 22 ... ≤ 36	d + 10	5,6		
> 36 ... ≤ 56	d + 12	5,6		
> 56 ... ≤ 85	d + 15	7,7		f7 / H7
> 85 ... ≤ 140	d + 20	9,2		
> 140 ... ≤ 200	d + 25	11,3		
> 200 ... ≤ 300	d + 30	13,5		
> 300	d + 40	18,5		

*Tolerance area shaft ≤ 56mm: e8 > 56mm: f7

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,2 m/s**	**160 bar (16 MPa)**
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C	0,3 m/s	
TPU	-50 °C...+110 °C	0,2 m/s	
NBR	-30 °C...+100 °C	0,2 m/s	100 bar (10 MPa)
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

R04-A, d=100mm, D=120mm, L=13mm, PU

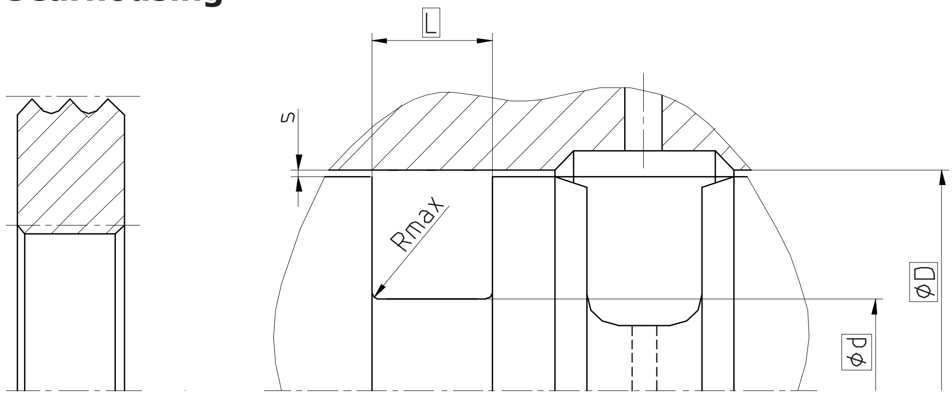
Rotary Seal R04-A	**100 x 120 x 13**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

R05-A

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended),
Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD[1]	**Ød** h8	**L** +0,2	**Rmax**	**s**
≥ 13 ... ≤ 30	D - 8	4,5		
> 30 ... ≤ 46	D - 10	5,6		H9 / e8
> 46 ... ≤ 68	D - 12	5,6		
> 68 ... ≤ 100	D - 15	7,7		
> 100 ... ≤ 160	D - 20	9,2	0,2	
> 160 ... ≤ 225	D - 25	11,3		H7 / f7
> 225 ... ≤ 330	D - 30	13,5		
> 330	D - 40	18,5		

[1] Tolerance area counter surface ≤ 68mm: H9 > 68mm: H7

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	**0,2 m/s**	**160 bar (16 MPa)**
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C	0,3 m/s	
TPU	-50 °C...+110 °C	0,2 m/s	
NBR	-30 °C...+100 °C	0,2 m/s	100 bar (10 MPa)
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

R05-A, d=100mm, D=120mm, L=9,2mm, PU

Rotary Seal R05-A	**100 x 120 x 9,2**	**PU**
Profile	d x D x L	Sealing material

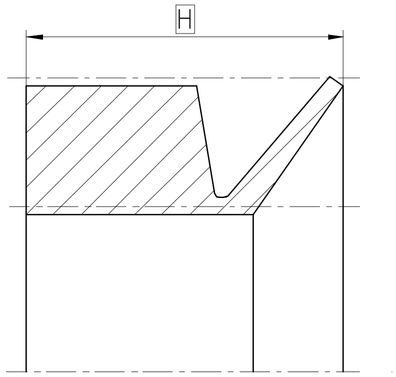
Seal data sheet

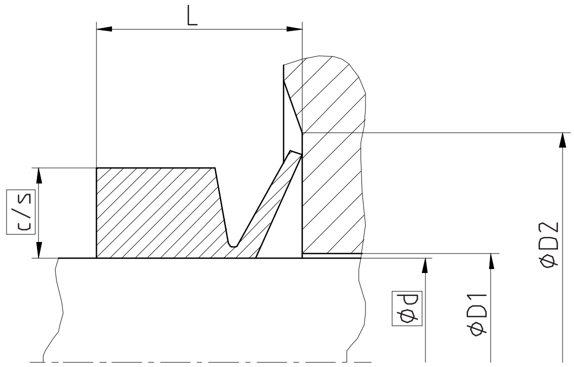
Rotary seals

R06-P

SEALING PARTNER
PART OF nomo

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD1** max	**ØD2** min	**c/s**	**H**	**L**
≥ 5 ... < 40	d + 2,0	d + 12	4	7,5	6
≥ 40 ... < 70	d + 2,5	d + 15	5	9	7
≥ 70 ... < 100	d + 3,0	d + 18	6	10,85	9
≥ 100 ... < 150	d + 3,5	d + 21	7	12,7	10,5
≥ 150 ... < 210	d + 4,0	d + 24	8	14,6	12
≥ 210 ... < 300	d + 5,0	d + 30	10	17,56	14,5
≥ 300 ... < 450	d + 6,25	d + 36,5	12,5	21,26	17,5
≥ 450	d + 7,5	d + 45	15	25	20

Operating parameters

Sealing material	Temperature	max. speed[1]	max. pressure
PU	**-30 °C...+110 °C**	**25 m/s**	-
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C		
TPU	-50 °C...+110 °C		
GPU	-30 °C...+110 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] For speeds above 10 m/s, axial support is recommended.

Ordering example

R06-P, d=100mm, c/s=7mm, H=12,7mm, PU

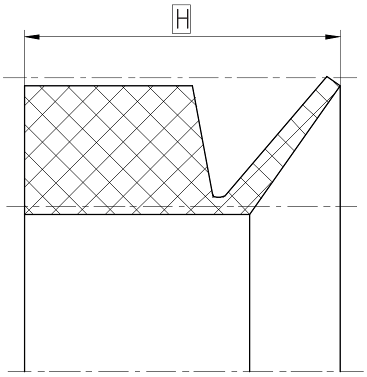
Rotary Seal R06-P	**100 x 7 x 12,7**	**PU**
Profile	d x c/s x H	Sealing material

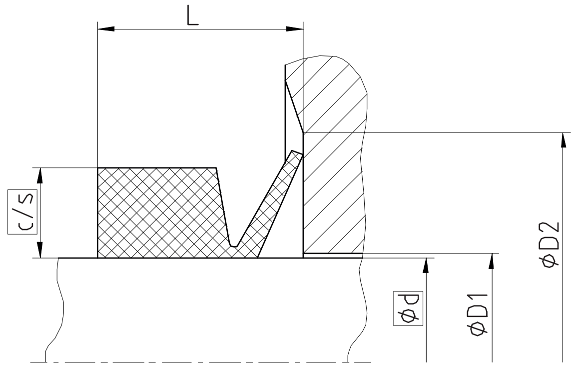
Seal data sheet

R06-R

Rotary seals

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD1** max	**ØD2** min	**c/s**	**H**	**L**
≥ 5 ... < 40	d + 2,0	d + 12	4	7,5	6
≥ 40 ... < 70	d + 2,5	d + 15	5	9	7
≥ 70 ... < 100	d + 3,0	d + 18	6	10,85	9
≥ 100 ... < 150	d + 3,5	d + 21	7	12,7	10,5
≥ 150 ... < 210	d + 4,0	d + 24	8	14,6	12
≥ 210 ... < 300	d + 5,0	d + 30	10	17,56	14,5
≥ 300 ... < 450	d + 6,25	d + 36,5	12,5	21,26	17,5
≥ 450	d + 7,5	d + 45	15	25	20

Operating parameters

Sealing material	Temperature	max. speed[1]	max. pressure
NBR	**-30 °C...+100 °C**	**25 m/s**	-
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] For speeds above 10 m/s, axial support is recommended.

Ordering example

R06-R, d=100mm, c/s=7mm, H=12,7mm, NBR

Rotary Seal R06-R	**100 x 7 x 12,7**	**NBR**
Profile	d x c/s x H	Sealing material

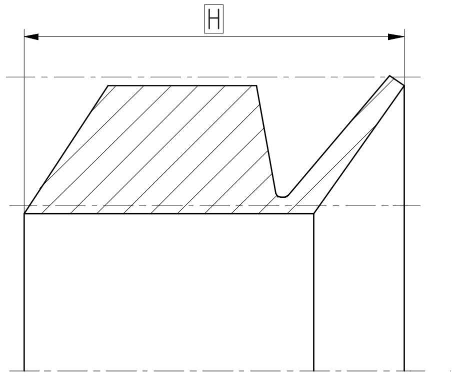
Seal data sheet

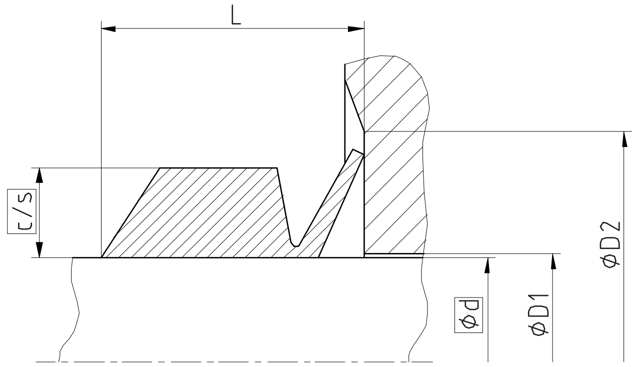
R07-P

Rotary seals

TOP SEALING PARTNER PART OF nomo

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD1** max	**ØD2** min	**c/s**	**H**	**L**
≥ 5 ... < 40	d + 2,0	d + 12	4	9,76	8,5
≥ 40 ... < 70	d + 2,5	d + 15	5	11,82	10
≥ 70 ... < 100	d + 3,0	d + 18	6	14,23	12,5
≥ 100 ... < 150	d + 3,5	d + 21	7	16,65	14,5
≥ 150 ... < 210	d + 4,0	d + 24	8	19,11	16,5
≥ 210 ... < 300	d + 5,0	d + 30	10	23,20	20,5
≥ 300 ... < 450	d + 6,25	d + 36,5	12,5	28,31	24,5
≥ 450	d + 7,5	d + 45	15	33,42	28,5

Operating parameters

Sealing material	Temperature	max. speed[1]	max. pressure
PU	**-30 °C...+110 °C**	**25 m/s**	-
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C		
TPU	-50 °C...+110 °C		
GPU	-30 °C...+110 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] For speeds above 10 m/s, axial support is recommended.

Ordering example

R07-P, d=100mm, c/s=7mm, H=16,65mm, PU

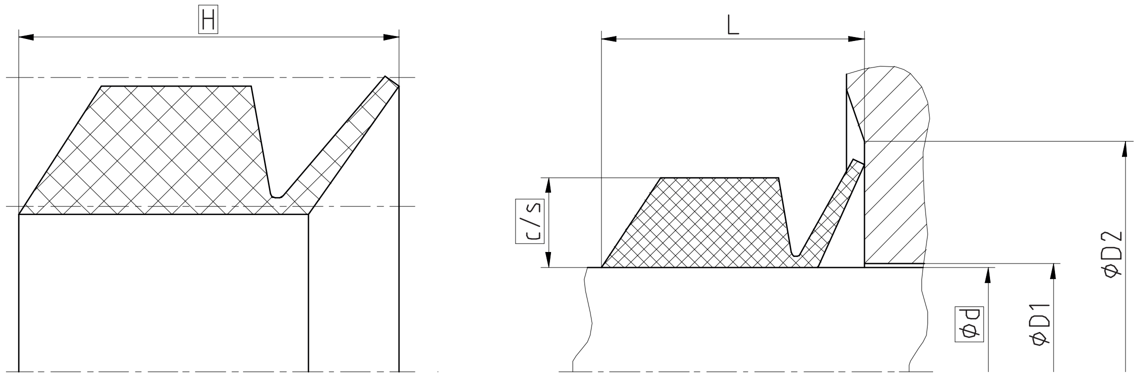
Rotary Seal R07-P	**100 x 7 x 16,65**	**PU**
Profile	d x c/s x H	Sealing material

Seal data sheet

R07-R

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h11	**ØD1** max	**ØD2** min	**c/s**	**H**	**L**
≥ 5 ... < 40	d + 2,0	d + 12	4	9,76	8,5
≥ 40 ... < 70	d + 2,5	d + 15	5	11,82	10
≥ 70 ... < 100	d + 3,0	d + 18	6	14,23	12,5
≥ 100 ... < 150	d + 3,5	d + 21	7	16,65	14,5
≥ 150 ... < 210	d + 4,0	d + 24	8	19,11	16,5
≥ 210 ... < 300	d + 5,0	d + 30	10	23,20	20,5
≥ 300 ... < 450	d + 6,25	d + 36,5	12,5	28,31	24,5
≥ 450	d + 7,5	d + 45	15	33,42	28,5

Operating parameters

Sealing material	Temperature	max. speed[1]	max. pressure
NBR	**-30 °C...+100 °C**	**25 m/s**	-
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] For speeds above 10 m/s, axial support is recommended.

Ordering example

R07-R, d=100mm, c/s=7mm, H=16,65mm, NBR

Rotary Seal R07-R	**100 x 7 x 16,65**	**NBR**
Profile	d x c/s x H	Sealing material

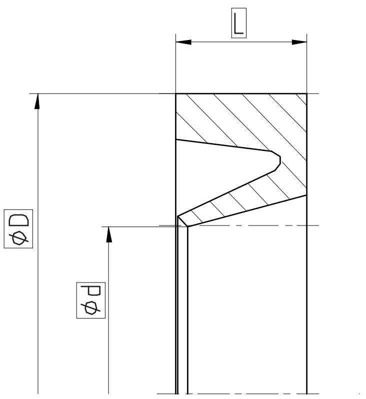
Seal data sheet

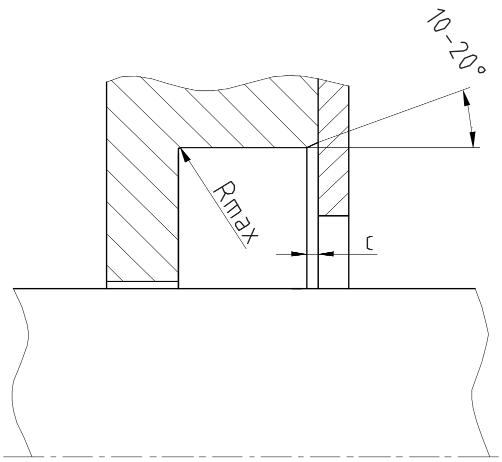
Rotary seals

R08-A

TOP SEALING PARTNER
PART OF nomo

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

NB	c	Rmax
6,0	1	0,4
7,5	1,2	
10,0	1,5	
15,0	1,8	
20,0	3	
25,0	3,3	

* Because of the design diversity of this profile, it is not useful to classify it.
* The standard design considers no preload on the sealing lip.

Operating parameters

Sealing material	Temperature
PU	**-30 °C...+110 °C**
HPU	-20 °C...+110 °C
SPU	-20 °C...+110 °C
TPU	-50 °C...+110 °C
GPU	-30 °C...+110 °C
NBR	-30 °C...+100 °C
FPM Brown	-20 °C...+200 °C
EPDM	-50 °C...+150 °C
HNBR	-25 °C...+150 °C
MVQ	-60 °C...+200 °C
TOPFLAS	-10 °C...+200 °C

Ordering example

R08-A, d=100mm, D=115mm, L=8mm, PU

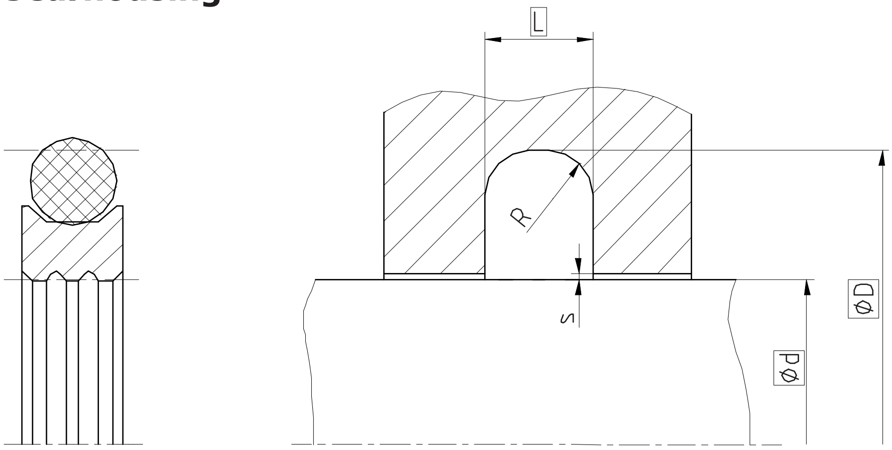
Rotary Seal R08-A	**100 x 115 x 8**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

R09-F

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: On the surface min 55 HRC
Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H9	**L** +0,2	**R**	**max. radial extrusion gap s***		
				100 bar	200 bar	350 bar
≥ 5 ... < 18,9	d + 4,9	2,2	0,3	0,15	0,10	0,10
≥ 19 ... < 38	d + 7,5	3,2	0,5	0,20	0,15	0,10
≥ 38 ... < 200	d + 11	4,2	0,7	0,25	0,20	0,10
≥ 200 ... < 256	d + 15,5	6,3	1,2	0,30	0,25	0,10
≥ 256 ... < 650	d + 21	8,1	1,5	0,30	0,25	0,15
≥ 650 ... ≤ 1000	d + 28	9,5	2,0	0,45	0,30	0,20

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF400	**NBR70**	**-30 °C...+100 °C**	**0,4 m/s**	**350 bar (35 MPa)**

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

R09-F, d=100mm, D=111mm, L=4,2mm, TF400 / NBR70

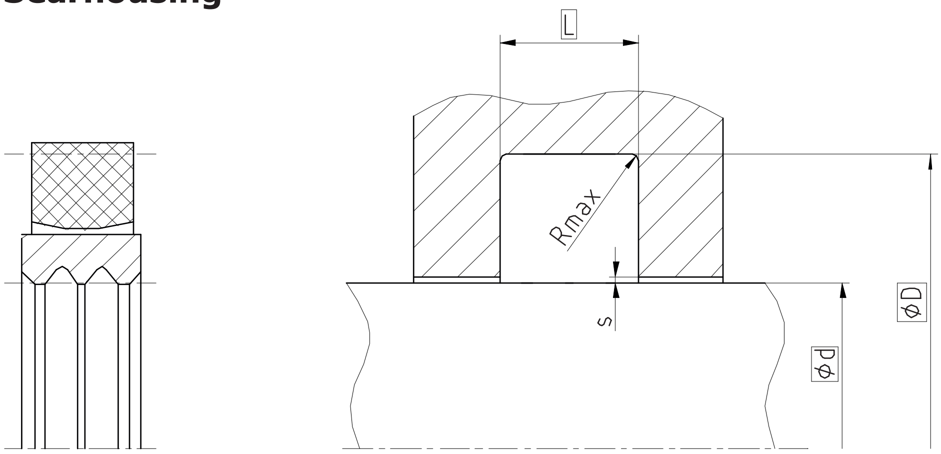
Rotary Seal R09-F	**100 x 111 x 4,2**	**TF400 / NBR70**
Profile	d x D x L	Sealing material / Energizer

Seal data sheet

R09-FS

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: On the surface min 55 HRC
Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H9	**L** +0,2	**Rmax**	**max. radial extrusion gap s***		
				100 bar	200 bar	350 bar
≥ 5 ... < 49,9	d + 10	5	0,4	0,25	0,2	0,10
≥ 50 ... < 60	d + 15	7,5		0,3	0,25	0,10
≥ 60 ... < 200	d + 20	10		0,3	0,25	0,15
≥ 200 ... < 300	d + 25	12,5		0,3	0,25	0,15
≥ 300 ... < 530	d + 30	15		0,45	0,3	0,2
≥ 530 ... < 650	d + 35	17,5		0,45	0,3	0,2
≥ 650 ... < 1000	d + 40	20		0,5	0,35	0,25

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF400	**NBR**	**-30 °C...+100 °C**	**0,4 m/s**	**350 bar (35 MPa)**

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

R09-FS, d=100mm, D=120mm, L=10mm, TF400 / NBR

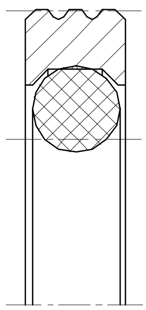
Rotary Seal R09-FS	**100 x 120 x 10**	**TF400 / NBR**
Profile	d x D x L	Sealing material / Energizer

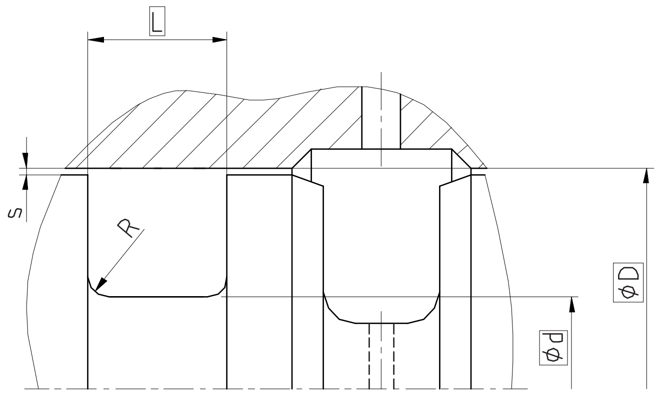
Seal data sheet

R10-F

Rotary seals

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: On the surface min 55 HRC
Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H8	**Ød** h8	**L** +0,2	**R**	**max. radial extrusion gap s***		
				100 bar	200 bar	350 bar
≥ 10 ... < 18,9	D - 4,9	2,2	0,3	0,15	0,10	0,10
≥ 19 ... < 38	D - 7,5	3,2	0,5	0,20	0,15	0,10
≥ 38 ... < 200	D - 11	4,2	0,7	0,25	0,20	0,10
≥ 200 ... < 256	D - 15,5	6,3	1,2	0,30	0,25	0,10
≥ 256 ... < 650	D - 21	8,1	1,5	0,30	0,25	0,15
≥ 650 ... ≤ 1000	D - 28	9,5	2,0	0,45	0,30	0,20

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF400	**NBR70**	**-30 °C...+100 °C**	**0,4 m/s**	**350 bar (35 MPa)**

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

R10-F, D=100mm, d=89mm, L=4,2mm, TF400 / NBR70

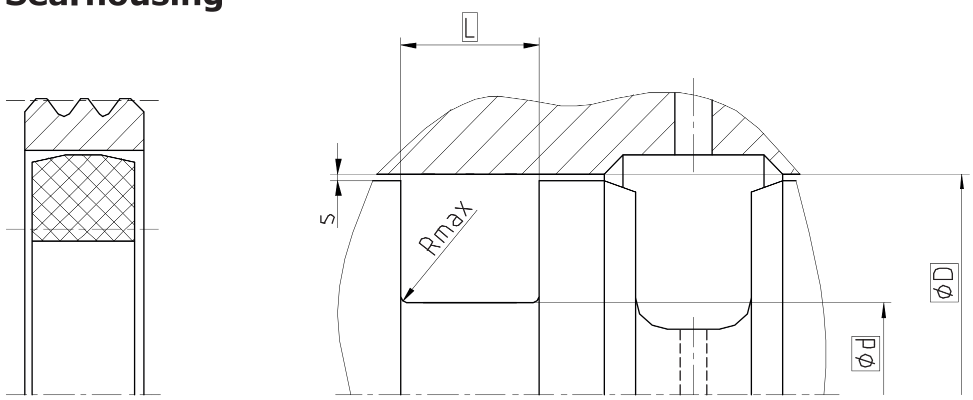
Rotary Seal R10-F	**100 x 89 x 4,2**	**TF400 / NBR70**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

R10-FS

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: On the surface min 55 HRC
Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H8	**Ød** h8	**L** +0,2	**Rmax**	**max. radial extrusion gap s***		
				100 bar	200 bar	350 bar
≥ 15 ... < 49,9	D - 10	5	0,4	0,25	0,2	0,10
≥ 50 ... < 60	D - 15	7,5		0,3	0,25	0,10
≥ 60 ... < 200	D - 20	10		0,3	0,25	0,15
≥ 200 ... < 300	D - 25	12,5		0,3	0,25	0,15
≥ 300 ... < 530	D - 30	15		0,45	0,3	0,2
≥ 530 ... < 650	D - 35	17,5		0,45	0,3	0,2
≥ 650 ... < 1000	D - 40	20		0,5	0,35	0,25

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Energizer	Temperature	max. speed	max. pressure[1]
TF400	**NBR**	**-30 °C...+100 °C**	**0,4 m/s**	**350 bar (35 MPa)**

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

R10-FS, D=100mm, d=80mm, L=10mm, TF400 / NBR

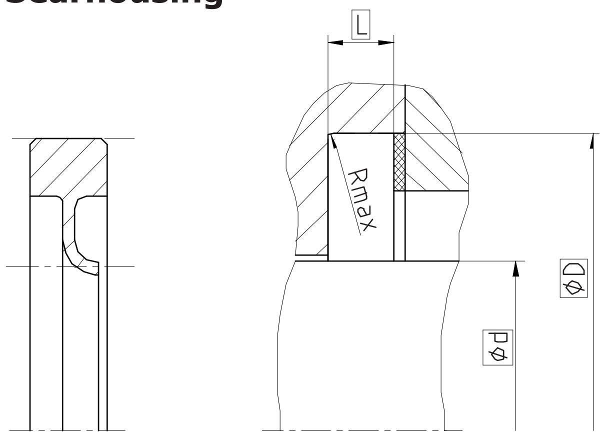
Rotary Seal R10-FS	**100 x 80 x 10**	**TF400 / NBR**
Profile	D x d x L	Sealing material / Energizer

Seal data sheet

R11-F

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**Lmin** (-Tol.)	**Rmax**
≥ 50 ... ≤ 100	d + 20	4 (-0,05)	0,4
> 100 ... ≤ 150	d + 25	5 (-0,05)	
> 150 ...	d + 30	6 (-0,10)	

Operating parameters

Sealing material	Temperature	max. speed[1]	max. pressure
TF201	**-200 °C...+260 °C**	**20 m/s**	**5 bar (0,5 MPa)**
TF300			
TF400			

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Depending on shaft diameter

Ordering example

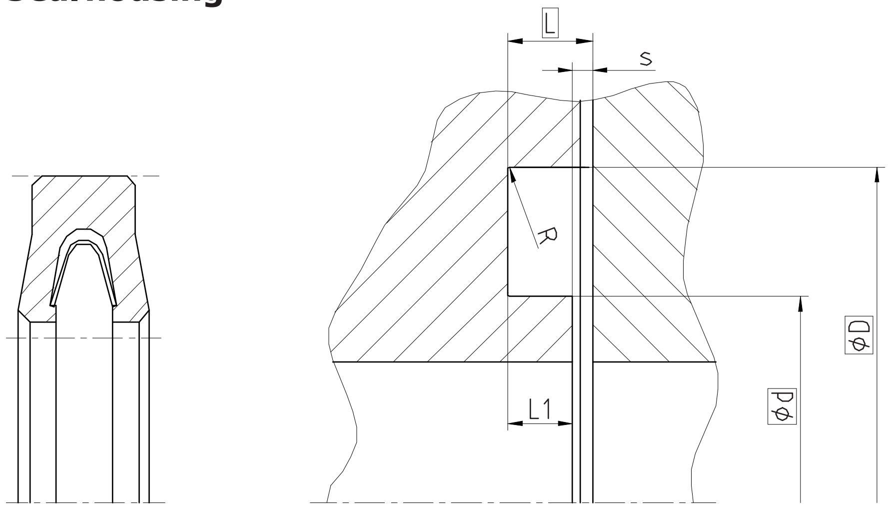
R11-F, d=100mm, D=120mm, L=4mm, TF400

Rotary Seal R11-F	**100 x 120 x 4**	**TF400**
Profile	d x D x L	Sealing material

Seal data sheet R12-F

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H8	**Ød**	**L** (+Tol)	**L1** min	**R**	**smax**[1]
≥ 39,6 ... < 46	D - 9,6	3,1 (+0,08)	1,5	0,4	0,15
≥ 46 ... < 125	D - 14,2	4,7 (+0,10)	2,4		0,2
≥ 125 ... < 600	D - 19	6,1 (+0,15)	3,1		0,25

[1] The extrusion gap is valid for the side opposite to the pressure side.

Operating parameters

Sealing material	Spring	Temperature	max. speed	max. pressure[1]
TF100	**1.4310**	**-200 °C...+260 °C**	**1 m/s**	**300 bar (30 MPa)**
TF201				
TF300				
TF400				

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings are dependent on the size of the extrusion gap.

Ordering example

R12-F, D=100mm, d=85,8mm, L=1,4mm, TF201 / 1.4310

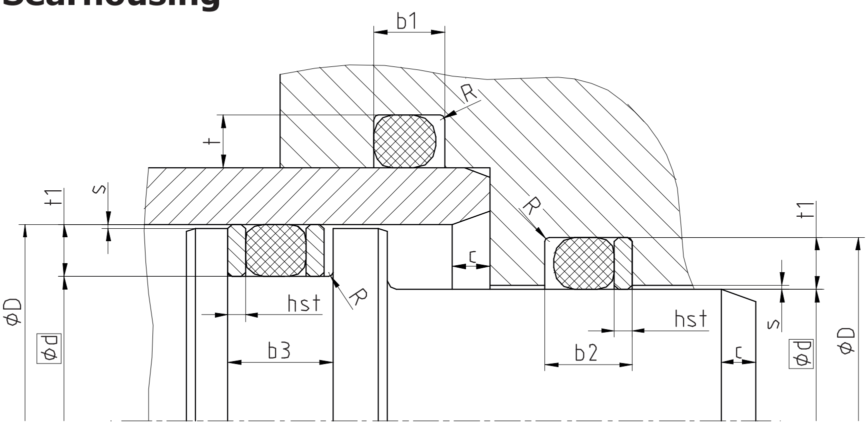
Rotary Seal R12-F	**100 x 85,8 x 1,4**	**TF201 / 1.4310**
Profile	D x d x L	Sealing material / Spring

Seal data sheet

R13

Rotary seals

Seal housing



pressure	constant		pulsating	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface[1]	12,5 µm	3,2 µm	6,3 µm	1,6 µm
Bottom of groove[2]				
Groove face				

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

[1] Rtmax / Ra for dynamic application: 1,6 µm / 0,4 µm
[2] Rtmax / Ra for dynamic application: 6,3 µm / 1,6 µm

Standard dimensions

OD (AS 568A[1])	**OD** (ISO 3601[2])	**t**	**b1**	**t1**	**b2**	**b3**	**R**	**h_{ST}**	**c**	**s**
1,78	1,8	1,35	2,5	1,58	3,5	4,5	0,3	1	3	f7 / H8
2,62	2,65	2,18	3,5	2,42	5,0	6,5	0,3	1,5	3,5	
3,53	3,55	3	4,4	3,70	5,9	7,4	0,5	1,5	4	
5,33	5,3	4,5	6,7	5,60	8,4	10,1	0,6	1,7	5	
6,99	7	5,94	8,8	7,37	10,8	12,8	0,8	2	6	
10	10	8,5	12,5	10,5	15,0	17,5	1	2,5	10	
12	12	10,2	15,5	12,85	18,5	21,5	1	3	12	
15	15	12,75	19	15,88	22	25	1	3	15	

[1] American Standard ; [2] DIN 3771

Operating parameters

Sealing material	Temperature	max. speed	max. pressure[1]
PU	**-30 °C...+110 °C**	only recommended for static application	**600 bar (60 MPa)**
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C		
TPU	-50 °C...+110 °C		
GPU	-30 °C...+110 °C		
NBR	-30 °C...+100 °C		160 bar (16 MPa)
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
MVQ	-60 °C...+200 °C		
TF100	-200 °C...+260 °C		160 bar (16 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] We recommend the use of backup rings for PU above 400 bar and for SKF ECORUBBER above 100 bar.

Ordering example

R13, Inner diameter d=100mm, OD=3,53, PU

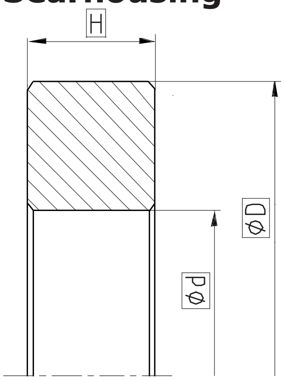
Rotary Seal R13	**100 x 3,53**	**PU**
Profile	d x OD	Sealing material

Seal data sheet

R14

Rotary seals

Seal housing



Ordering dimensions...☐

Standard dimensions

Because of the design diversity of this profile, it is not useful to classify it.
The size and position of the tolerance field have to be considered and maybe adapted to special functions.

Operating parameters

Sealing material	Temperature
PU	**-30 °C...+110 °C**
HPU	-20 °C...+110 °C
SPU	-20 °C...+110 °C
TPU	-50 °C...+110 °C
GPU	-30 °C...+110 °C
XPU	-30 °C...+110 °C
XHPU	-20 °C...+110 °C
XSPU	-20 °C...+110 °C
GPU54D	-20 °C...+110 °C
NBR	-30 °C...+100 °C
FPM Brown	-20 °C...+200 °C
EPDM	-50 °C...+150 °C
HNBR	-25 °C...+150 °C
MVQ	-60 °C...+200 °C
TOPTAL (POM)	**-50 °C...+100 °C**
TOPMID (PA)	-40 °C...+100 °C
UHMWPE	-200 °C...+260 °C
PEEK	-60 °C...+260 °C
TF100	-200 °C...+260 °C
TF201	-200 °C...+260 °C
TF300	-200 °C...+260 °C
TF300	-200 °C...+260 °C
TF400	-200 °C...+260 °C
TOPTEX	-40 °C...+120 °C

Ordering example

R14, d=85mm, D=100mm, L=2mm, TOPTAL (POM)

Rotary Seal R14	**85 x 100 x 2**	**TOPTAL (POM)**
Profile	d x D x H	Sealing material

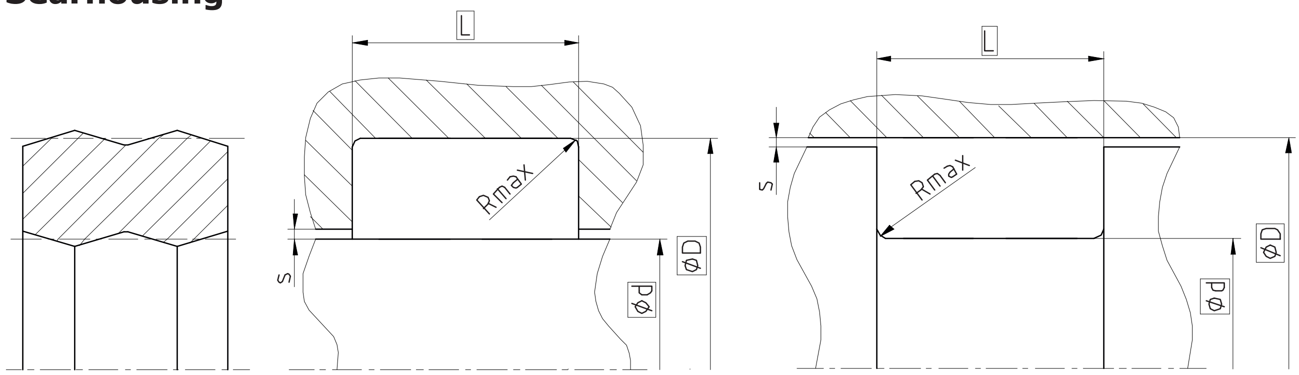
Seal data sheet

R15-P

Rotary seals

TOP SEALING PARTNER
PART OF nomo

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød h9	**ØD** H8	**L** +0,2	**Rmax**	**s**
≥ 5 ... < 15	d + 2,5	3,3	0,3	g6 / H8
> 15 ... ≤ 75	d + 5	5,4		
> 75 ... ≤ 150	d + 8	7,7		
> 150 ... ≤ 200	d + 10	9,3	0,6	
> 200 ... ≤ 350	d + 15	13		
> 350 ... ≤ 600	d + 20	17		

Operating parameters

Sealing material	Temperature	max. speed	max. pressure
PU	**-30 °C...+110 °C**	only recommended for static applications	**400 bar (40 MPa)**
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C		
TPU	-50 °C...+110 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously.

Ordering example

R15-P, d=100mm, D=108mm, L=7,7mm, PU

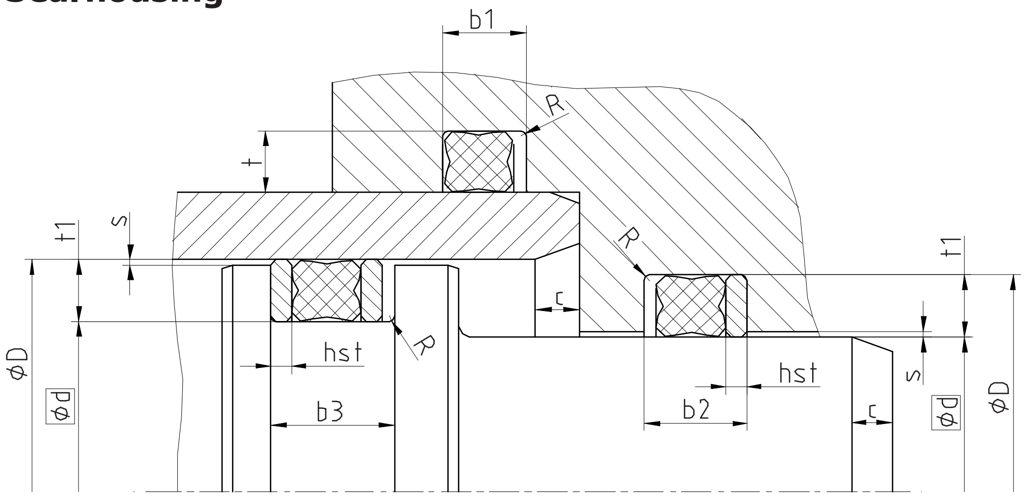
Rotary Seal R15-P	**100 x 108 x 7,7**	**PU**
Profile	d x D x L	Sealing material

Seal data sheet

R16

Rotary seals

Seal housing



pressure	constant		pulsating	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface[1]	6,3 µm	1,6 µm	4 µm	0,8 µm
Bottom of groove[2] Groove face[2]	12,5 µm	3,2 µm	6,3 µm	1,6 µm

[1] Rtmax / Ra for dynamic application: 1,6 µm / 0,4 µm
[2] Rtmax / Ra for dynamic application: 6,3 µm / 1,6 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

OD (AS 568A[1])	**OD** (ISO 3601[2])	**t**	**b1**	**t1**	**b2**	**b3**	**R**	**h_{ST}**	**c**	**s**
2,62	2,65	2,25	3	2,35	4,4	5,8	0,3	1,4	3,5	0,08
3,53	3,55	3,1	4	3,21	5,4	6,8	0,4	1,4	4	0,08
5,33	5,3	4,75	6	4,89	7,7	9,4	0,4	1,7	5	0,10
6,99	7	6,2	8	6,40	10,5	13	0,6	2,5	6	0,10

[1] American Standard ; [2] DIN 3771

Operating parameters

Sealing material	Temperature	max. speed	max. pressure
NBR	**-30 °C...+100 °C**	only recommended for static applications	**50 bar (5 MPa)**
FPM Brown	-50 °C...+150 °C		
EPDM	-20 °C...+200 °C		
HNBR	-25 °C...+150 °C		
MVQ	-60 °C...+200 °C		-
TOPFLAS	-10 °C...+200 °C		50 bar (5 MPa)

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously.

Ordering example

R16, D=100mm, OD=3,55, NBR

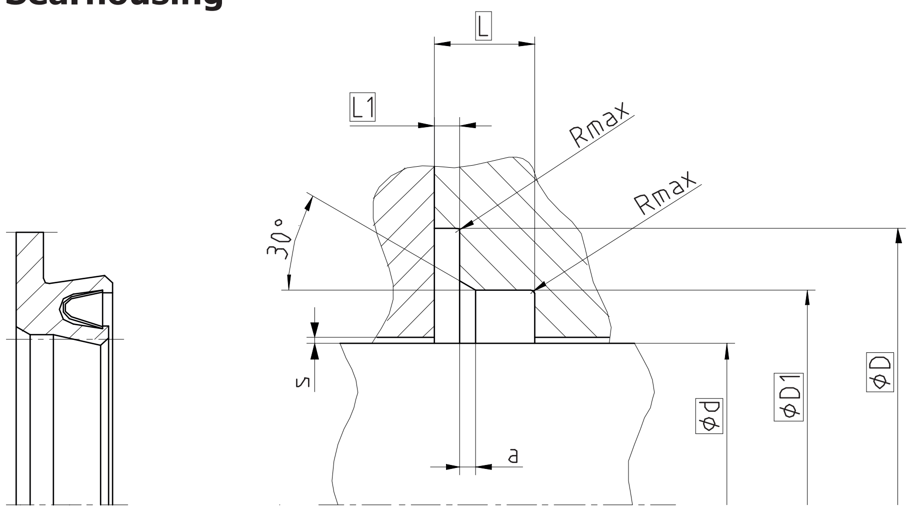
Rotary Seal R16	**100 x 3,55**	**NBR**
Profile	D x OD	Sealing material

Seal data sheet

R19-F

Rotary seals

Seal housing



Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐
Hardness: min. 45 HRC (55 HRC recommended), Hardened depth > 0,3mm
Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**ØD1** H9	**L** +0,2	**L1** (-Tol)	**Rmax**	**max. radial extrusion gap s***		
						20 bar	100 bar	150 bar
≥ 5 ... < 20	d + 9,0	d + 5,0	3,6	0,85 (-0,10)	0,4	0,25	0,15	0,10
≥ 20 ... < 40	d + 12,5	d + 7,0	4,8	1,35 (-0,10)		0,35	0,20	0,15
≥ 40 ... < 400	d + 17,5	d + 10,5	7,1	1,80 (-0,15)		0,50	0,25	0,20
≥ 400	d + 22,0	d + 14,0	9,5	2,80 (-0,20)		0,60	0,30	0,25

* Extrusion gap applies to a temperature of 80 °C, higher temperatures require lower values.

Operating parameters

Sealing material	Spring	Temperature	max. speed	max. pressure[1]
TF100	**1.4310**	**-200 °C...+260 °C**	**2 m/s**	**150 bar (15 MPa)**
TF201				
TF300				
TF400				

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] Pressure ratings depend on the size of the extrusion gap.

Ordering example

R19-F, d=100mm, D=117,5mm, D1=110,5mm, L=7,1mm, L1=1,8mm, TF400 / 1.4310

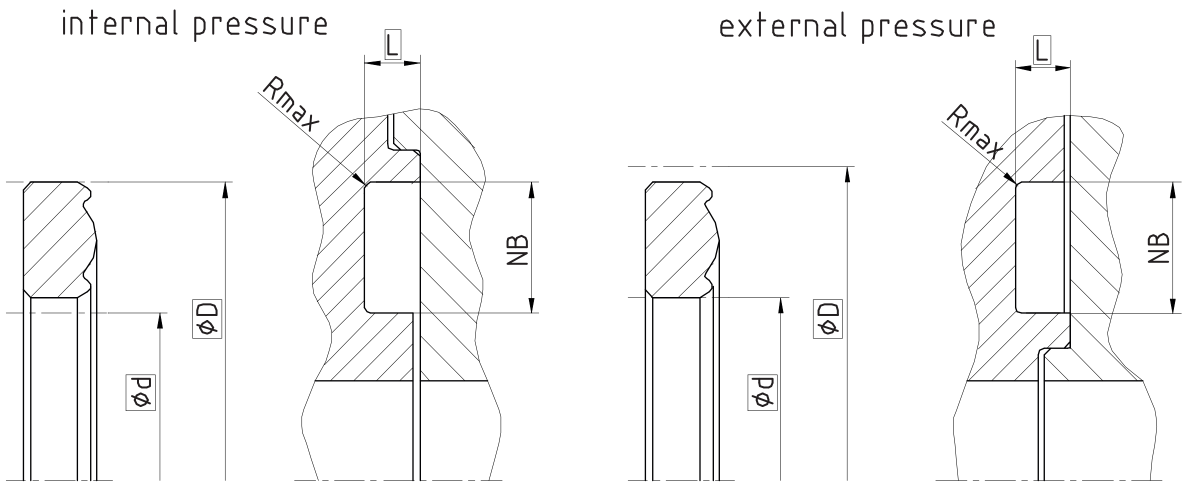
Rotary Seal R19-F	**100 x 117,5/110,5 x 7,1/1,8**	**TF400 / 1.4310**
Profile	d x D/D1 x L/L1	Sealing material / Spring

Seal data sheet

R20-P

Rotary seals

Seal housing



<table>
<tr><th>pressure</th><th colspan="2">constant</th><th colspan="2">pulsating</th></tr>
<tr><th>Surface roughness</th><th>Rtmax</th><th>Ra</th><th>Rtmax</th><th>Ra</th></tr>
<tr><td>Sliding Surface</td><td rowspan="3">12,5 µm</td><td rowspan="3">3,2 µm</td><td rowspan="3">6,3 µm</td><td rowspan="3">1,6 µm</td></tr>
<tr><td>Bottom of groove</td></tr>
<tr><td>Groove face</td></tr>
</table>

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

<table>
<tr><th>Ød h11</th><th>c/s</th><th>L +0,2</th><th>Rmax</th></tr>
<tr><td>≥ 5 ... ≤ 75</td><td>7,5</td><td>2,5</td><td rowspan="6">0,4</td></tr>
<tr><td>> 75 ... ≤ 100</td><td>8</td><td>4</td></tr>
<tr><td>> 100 ... ≤ 150</td><td>10</td><td>5</td></tr>
<tr><td>> 150 ... ≤ 200</td><td>12,5</td><td>6</td></tr>
<tr><td>> 200 ... ≤ 350</td><td>15</td><td>7,5</td></tr>
<tr><td>> 350 ... ≤ 600</td><td>20</td><td>10</td></tr>
</table>

Standard definition for this profile is inner pressure.
Ød h11 = **ØD** H11

Operating parameters

<table>
<tr><th>Sealing material</th><th>Temperature</th><th>max. speed</th><th>max. pressure</th></tr>
<tr><td>PU</td><td>-30 °C...+110 °C</td><td rowspan="4">only recommended for static applications</td><td rowspan="4">800 bar (80 MPa)</td></tr>
<tr><td>HPU</td><td>-20 °C...+110 °C</td></tr>
<tr><td>SPU</td><td>-50 °C...+110 °C</td></tr>
<tr><td>TPU</td><td>-20 °C...+110 °C</td></tr>
</table>

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Standard of this profile is inner pressure.

Ordering example

R20-P, d=100mm, D=108mm, L=7,7mm, PU

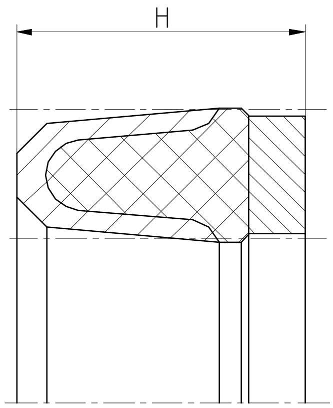
Rotary Seal R20-P	**100 x 108 x 7,7**	**PU**
Profile	d x D x L	Sealing material

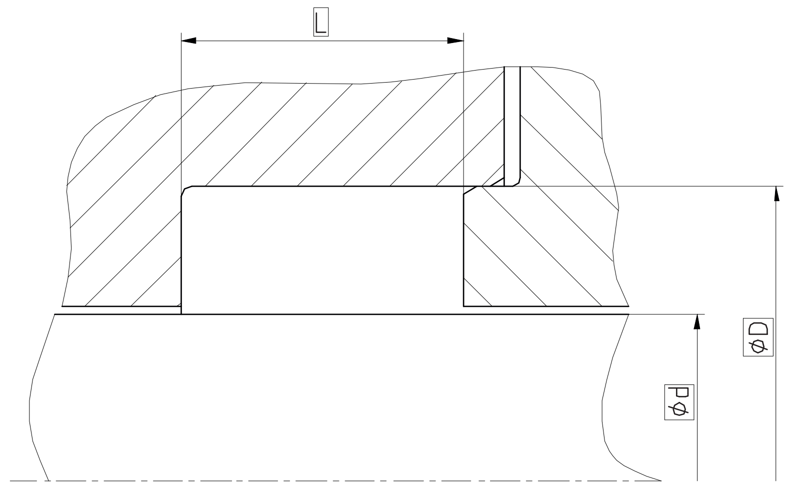
Seal data sheet

R30-A

Rotary seals

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 5mm
This is not a standard profile and serves as a replacement for an existing installation space. New constructions should use standard profiles.

Operating parameters

Sealing material	casing	Backup ring	Temperature	max. speed	max. pressure
NBR	TF100 TF201 TF300 TF400	**TOPTAL (POM)** TOPMID (PA)[1]	-30 °C...+100 °C	**0,5 m/s**	**500 bar (50 MPa)**
FPM Brown			-20 °C...+100 °C		
EPDM			**-40 °C...+100 °C**		
HNBR			-25 °C...+100 °C		
FPM Brown		PEEK	-20 °C...+200 °C		1000 bar (100 MPa)
EPDM			-50 °C...+150 °C		
HNBR			-25 °C...+150 °C		
TOPFLAS			-10 °C...+200 °C		

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

Ordering example

R30-A, d=100mm, D=108mm, L=10mm, EPDM / TF100 / TOPTAL (POM)

Rotary Seal R30-A	**100 x 108 x 10**	**EPDM / TF100 / TOPTAL (POM)**
Profile	d x D x L	Sealing material / casing / Backup ring

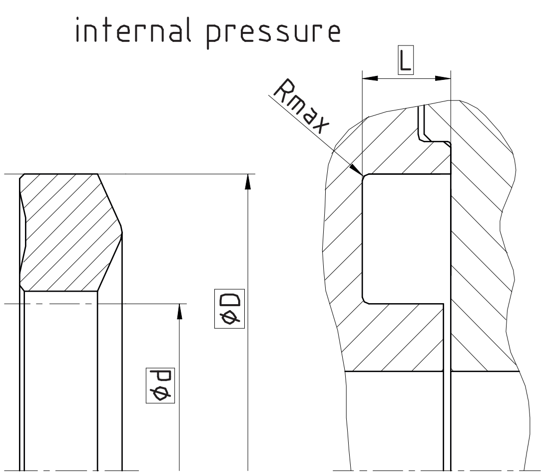
Seal data sheet

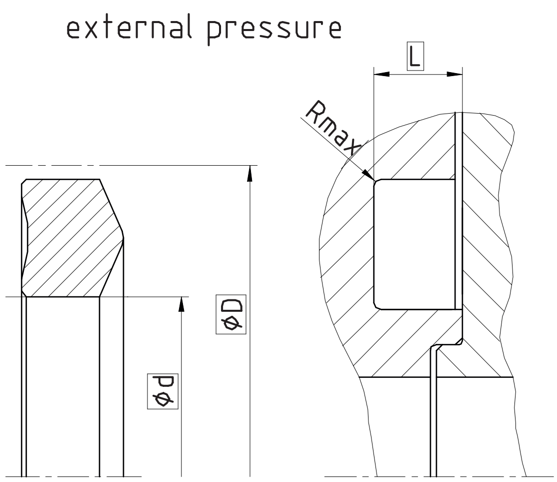
R35-A

Rotary seals

TOP SEALING PARTNER
PART OF nomo

Seal housing





Surface roughness	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 5mm
Standard definition for this profile is inside pressure.

OD (AS 568A[1])	**OD** (ISO 3601[2])	**NB**	**L**	**R**
1,78	1,8	2	1,4	0,4
2,62	2,65	3	2,25	
3,53	3,55	4	3,1	
5,33	5,3	6	4,75	
6,99	7	8	6,2	

[1] American Standard ; [2] DIN 3771

Operating parameters

Sealing material	Temperature	max. speed	max. pressure
PU	**-30 °C...+110 °C**	only recommended for static applications	**800 bar (80 MPa)**
HPU	-20 °C...+110 °C		
SPU	-20 °C...+110 °C		
TPU	-50 °C...+110 °C		
GPU	-30 °C...+110 °C		
NBR	-30 °C...+100 °C		250 bar (25 MPa)
FPM Brown	-20 °C...+200 °C		
EPDM	-50 °C...+150 °C		
HNBR	-25 °C...+150 °C		
TOPFLAS	-10 °C...+200 °C		
MVQ	-60 °C...+200 °C		

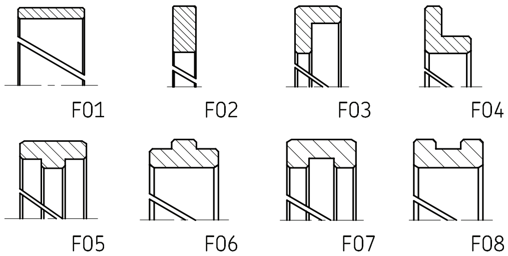
The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously.

Ordering example

R30-A, d=100mm, D=110mm, L=5mm, PU

Rotary Seal R35-A	**100 x 110 x 5**	**PU**
Profile	d x D x L	Sealing material

Guide rings

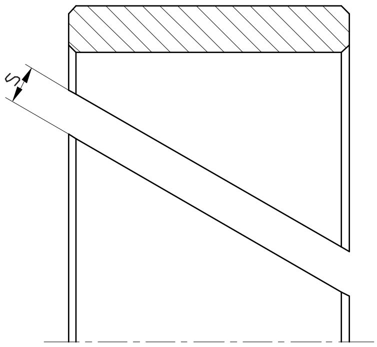


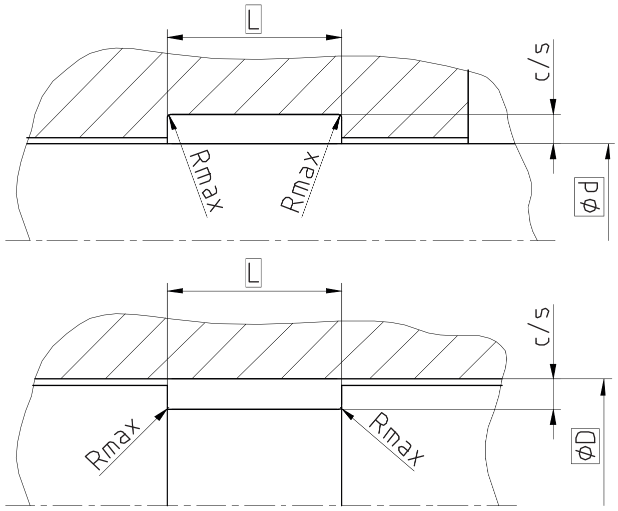
Seal data sheet

F01

Guide rings

Seal housing





Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

inside dynamic surface		outside dynamic surface				
Ød f8	**ØD** H9	**ØD** H9	**Ød** f8	**c/s**	**L** +0,2	**Rmax**
≥ 6 ... < 30	d + 3	≥ 6 ... < 30	D - 3	1,5	4	0,3
≥ 30 ... < 50	d + 3	≥ 30 ... < 50	D - 3	1,5	5,6	
≥ 50 ... < 100	d + 5	≥ 50 ... < 100	D - 5	2,5	9,7	
≥ 100 ... ≤ 800	d + 5	≥ 100 ... ≤ 800	D - 5	2,5	15	
> 800	d + 8	> 800	D - 8	4	25	

* cutting gap s : values depend on material and temperature. For detailed information please refer to the profile description.

Operating parameters

guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm²
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm²
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm²
TOPTAL (POM)[1]	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm²**
TOPMID (PA)	-40 °C...+100 °C	4 m/s	25 N/mm²
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm²

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)
[2] Depending on temperature and allowed compression. Detailed information see profile description.

Ordering example

F01, d=100mm, D=105mm, L=2,5mm, TOPTAL (POM)

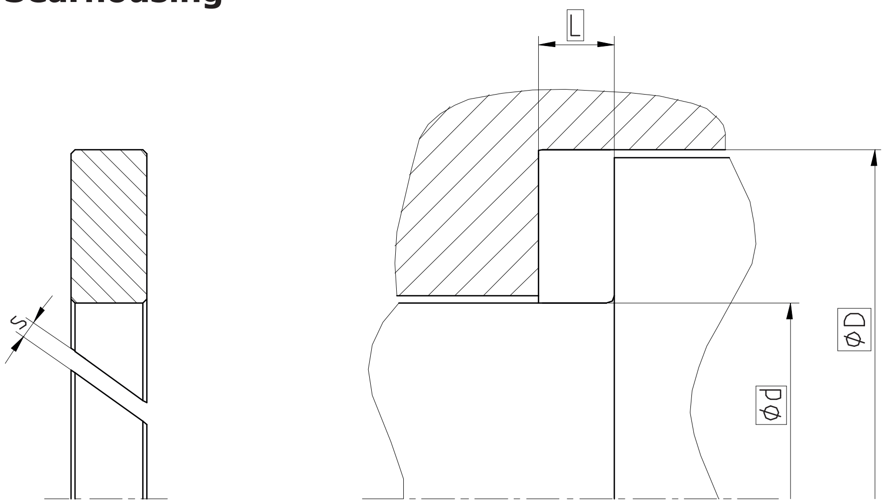
Guide Ring F01	**100 x 105 x 2,5**	**TOPTAL (POM)**
Profile	d x D x L	guiding material

Seal data sheet

F02

Guide rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 3mm
This is not a standard profile and serves as a replacement for an existing installation space. New constructions should use standard profiles.

Operating parameters

Guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm²
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm²
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm²
TOPTAL (POM)	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm²**
TOPMID (PA)	-40 °C...+100 °C	4 m/s	25 N/mm²
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm²

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)
[2] Depending on temperature and allowed compression. Detailed information see profile description.

Ordering example

F02, d=100mm, D=105mm, L=2,5mm, TOPTAL (POM)

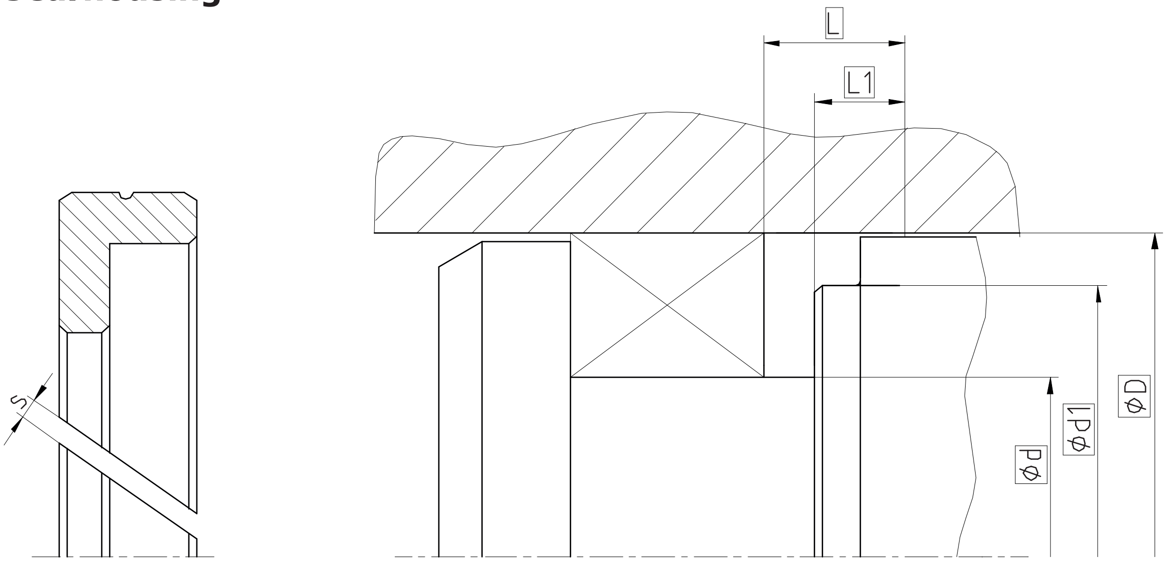
Guide Ring F02	**100 x 105 x 2,5**	**TOPTAL (POM)**
Profile	d x D x L	Guiding material

Seal data sheet

F03

Guide rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød**[1] h10	**Ød1** h8	**L** +0,2	**L1** +0,2
≥ 20 ... < 50	D - 10	D - 3	6,5	4
≥ 50 ... < 80	D - 15	D - 4	8	4
≥ 80 ... < 150	D - 20	D - 5	10,5	5,5
≥ 150 ... ≤ 400	D - 25	D - 6	13,4	7
> 400 ... ≤ 750	D - 30	D - 8	14,2	7
> 750	D - 40		15	7

Basic version: with a cutting gap s > 0 allow no supporting function. For supporting function a cutting gap s=0 and a spiral groove is used.

[1] Cross section usually depends on the seal profile.

cutting gap s : values depend on material and temperature. For detailed information please refer to the profile description.

Operating parameters

Guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm²
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm²
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm²
TOPTAL (POM)	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm²**
TOPMID (PA)	-40 °C...+100 °C	4 m/s	25 N/mm²
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm²

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

[2] Depending on temperature and allowed compression. Detailed information see profile description.

Ordering example

F03, D=100mm, d=80mm, d1=95mm, L=10,5mm L1=5,5mm, TOPTAL (POM)

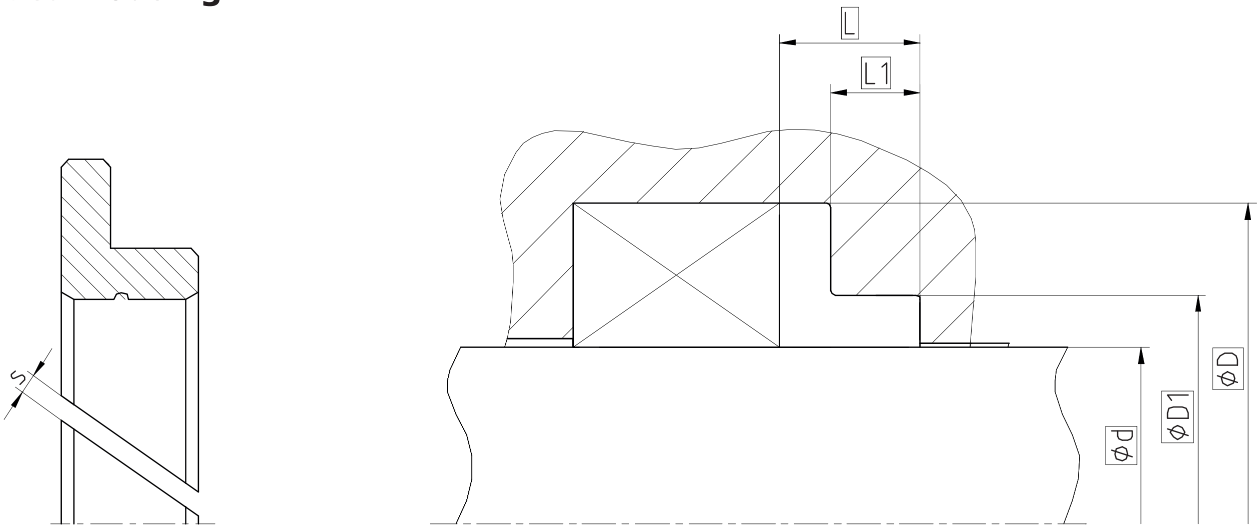
Guide Ring F03	**100 x 80/95 x 10,5/5,5**	**TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Guiding material

Seal data sheet

F04

Guide rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD**[1] H10	**ØD1** H8	**L** +0,2	**L1** +0,2
≥ 4 ... < 50	d +10	d + 3	6,5	4
≥ 50 ... < 80	d +15	d + 4	8	4
≥ 80 ... < 150	d +20	d + 5	10,5	5,5
≥ 150 ... ≤ 400	d +25	d + 6	13,4	7
> 400 ... ≤ 750	d +30	d + 8	14,2	7
> 750	d +40		15	7

Basic version: with a cutting gap s > 0 allow no supporting function. For supporting function a cutting gap s=0 and a spiral groove is used.

[1] Cross section usually depends on the seal profile.

cutting gap s : values depend on material and temperature. For detailed information please refer to the profile description.

Operating parameters

Guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm²
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm²
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm²
TOPTAL (POM)	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm²**
TOPMID (PA)	-40 °C...+100 °C	4 m/s	25 N/mm²
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm²

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

[2] Depending on temperature and allowed compression. Detailed information see profile description.

Ordering example

F04, d=100mm, D=80mm, D1=95mm, L=10,5mm L1=5,5mm, TOPTAL (POM)

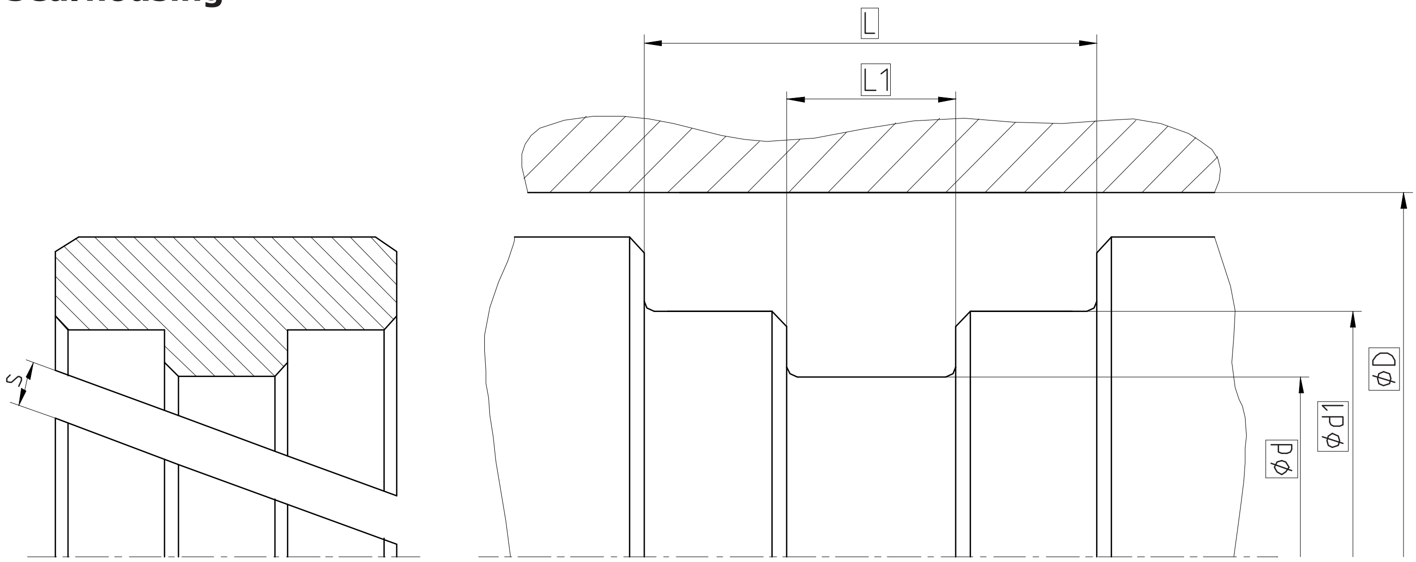
Guide Ring F04	**100 x 80/95 x 10,5/5,5**	**TOPTAL (POM)**
Profile	d x D/D1 x L/L1	Guiding material

Seal data sheet

F05

Guide rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

ØD H9	**Ød** h10	**Ød1** h8	**Ød2**	**L** +0,2	**L1** +0,2
≥ 28 ... ≤ 36	D - 6	D - 2,8	D - 0,35	8,5	3
> 36 ... ≤ 60	D - 7,5	D - 3,2	D - 0,4	10,5	3,5
> 60 ... ≤ 90	D - 9	D - 3,5	D - 0,5	15	5
> 90 ... ≤ 150			D - 0,6		
> 150 ... ≤ 200	D - 16	D - 7,1	D - 0,7	20,3	8
> 200	D - 17	D - 7,5	D - 0,8	25	

* cutting gap s : values depend on material and temperature. For detailed information please refer to the profile description.

Operating parameters

Guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm^2
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm^2
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm^2
TOPTAL (POM)	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm^2**
TOPMID (PA)	-40 °C...+100 °C	4 m/s	25 N/mm^2
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm^2

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)

[2] Depending on temperature and allowed compression. Detailed information see profile description.

Ordering example

F05, D=100mm, d=91mm, d1=96,5mm, L=15mm, L1=5mm, TOPTAL (POM)

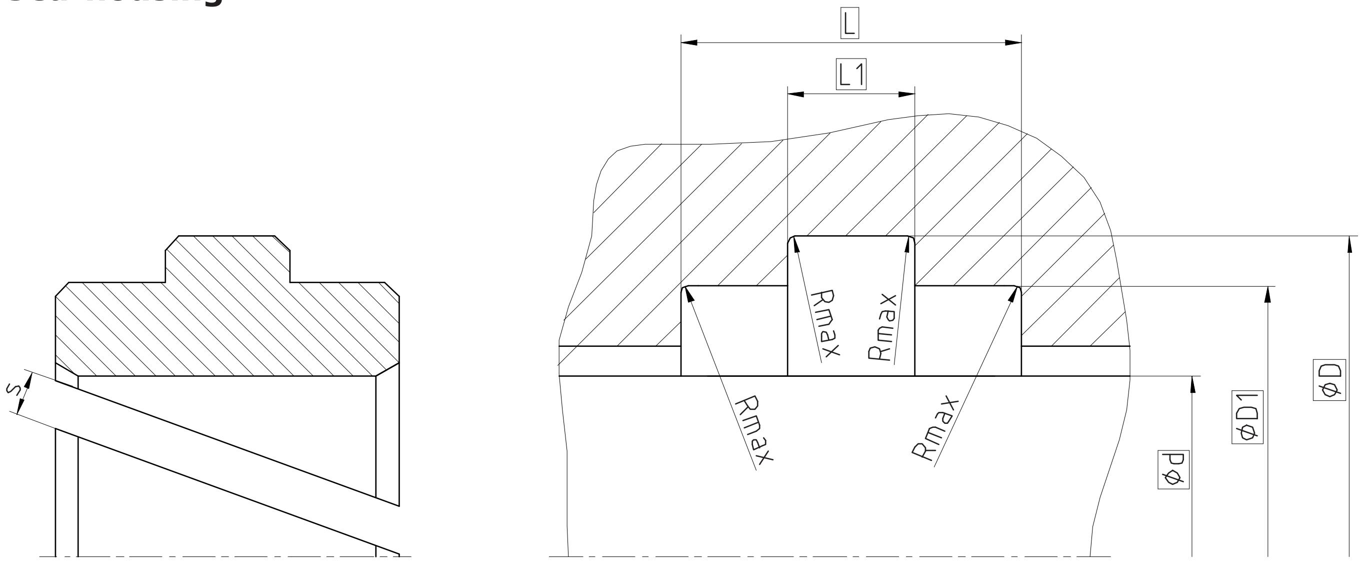
Guide Ring F05	**100 x 91/96,5 x 15/5**	**TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Guiding material

Seal data sheet

Guide rings

F06

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

Ød f8	**ØD** H10	**ØD1** H8	**ØD2**	**L** +0,2	**L1** +0,2
≥ 5 ... ≤ 36	d + 6	d + 2,8	d + 0,35	8,5	3
> 36 ... ≤ 60	d + 7,5	d + 3,2	d + 0,4	10,5	3,5
> 60 ... ≤ 90	d + 9	d + 3,5	d + 0,5	15	5
> 90 ... ≤ 150			d + 0,6		
> 150 ... ≤ 200	d + 16	d + 7,1	d + 0,7	20,3	8
> 200	d + 17	d + 7,5	d + 0,8	25	

* cutting gap s : values depend on material and temperature. For detailed information please refer to the profile description.

Operating parameters

Guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm²
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm²
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm²
TOPTAL (POM)	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm²**
TOPMID (PA)	-40 °C...+100 °C	4 m/s	25 N/mm²
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm²

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)
[2] Depending on temperature and allowed compression. Detailed information see profile description.

Ordering example

F06, d=100mm, D=109mm, D1=103,5, L=15mm, L1=5mm, TOPTAL (POM)

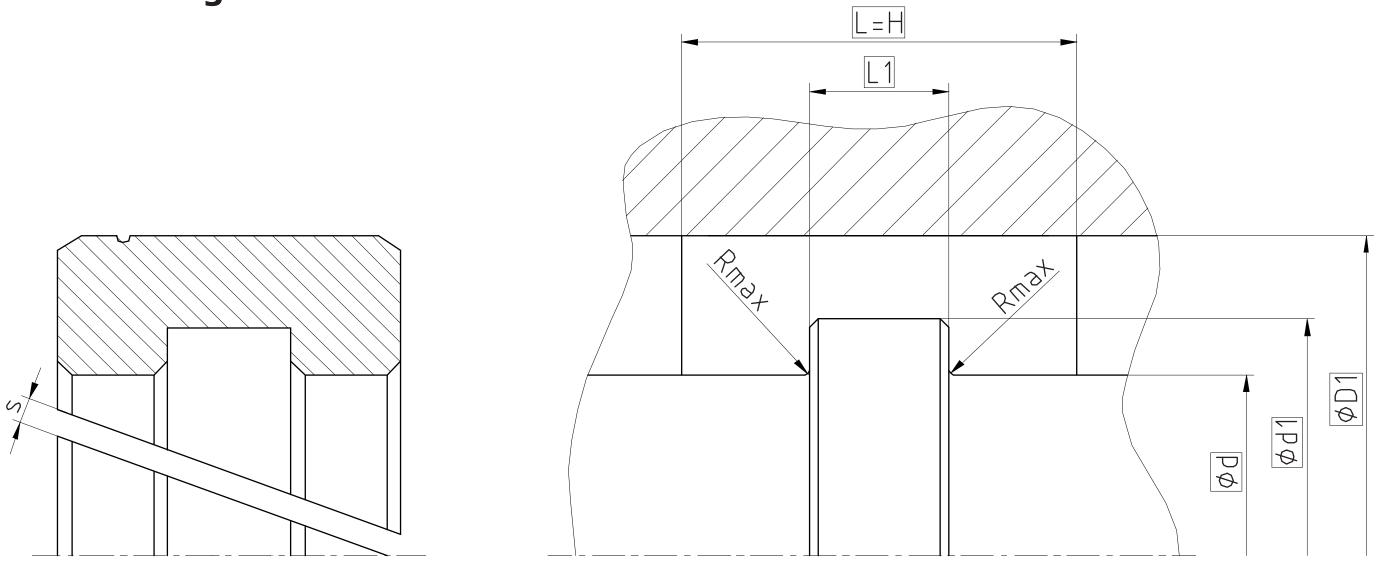
Guide Ring F06	**100 x 109/103,5 x 15/5**	**TOPTAL (POM)**
Profile	d x D/D1 x L/L1	Guiding material

Seal data sheet

F07

Guide rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 22mm
Depending on the application, the geometry of the guide element should be adapted to the type of application (please refer to the profile description - Seal housing). Because uncut versions would be pointless for assembly reasons, rotating applications should to be avoided. Standard version with cutting gap s > 0 do not allow a supporting function. For a supporting function a cutting gap of s=0 and a spiral groove is provided. cutting gap s: values depend on material and temperature. For detailed information please refer to the profile description.

Operating parameters

Guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm²
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm²
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm²
TOPTAL (POM)	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm²**
TOPMID (PA)[1]	-40 °C...+100 °C	4 m/s	25 N/mm²
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm²

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)
[2] Depending on temperature and allowed compression. Detailed information see profile description.

Ordering example

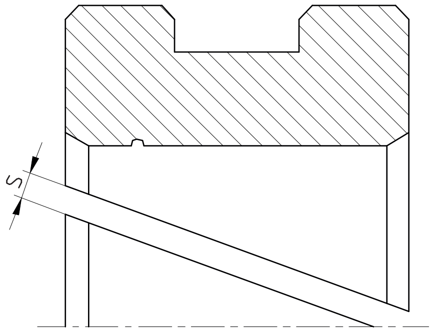
F07, D=100mm, d=91mm, d1=96,5mm, L=15mm, L1=5mm, TOPTAL (POM)

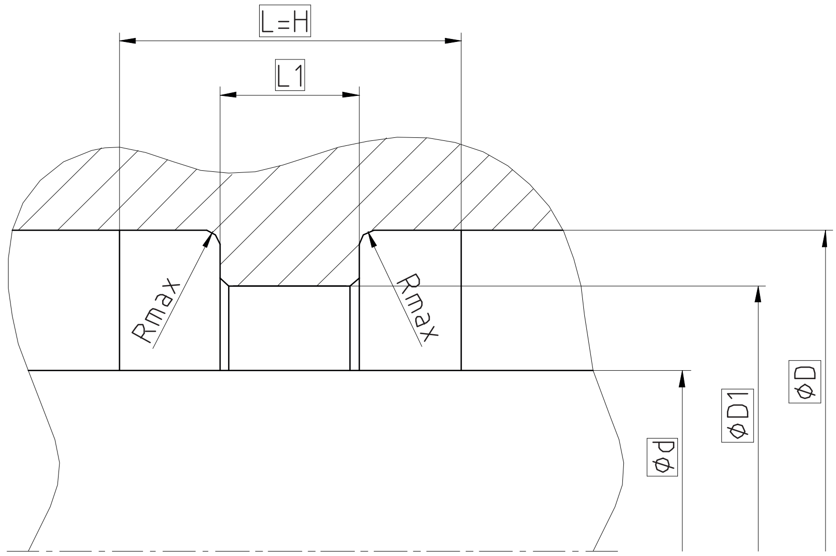
Guide Ring F07	**100 x 91/96,5 x 15/5**	**TOPTAL (POM)**
Profile	D x d/d1 x L/L1	Guiding material

Seal data sheet

Guide rings

Seal housing





Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 22mm
Depending on the application, the geometry of the guide element should be adapted to the type of application (please refer to the profile description - Seal housing). Because uncut versions would be pointless for assembly reasons, rotating applications should to be avoided. Standard version with cutting gap s > 0 do not allow a supporting function. For a supporting function a cutting gap of s=0 and a spiral groove is provided. cutting gap s: values depend on material and temperature. For detailed information please refer to the profile description.

Operating parameters

Guiding material	Temperature	max. speed	Specific load[2]
TF201	-200 °C...+200 °C	4 m/s	3,0 N/mm²
TF300	-200 °C...+200 °C	5 m/s	4,5 N/mm²
TF301	-200 °C...+200 °C	5 m/s	7,5 N/mm²
TOPTAL (POM)	**-50 °C...+100 °C**	**4 m/s**	**25 N/mm²**
TOPMID (PA)[1]	-40 °C...+100 °C	4 m/s	25 N/mm²
TOPTEX	-40 °C...+130 °C	4 m/s	90 N/mm²

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

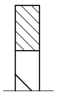
[1] ≤ Ø260mm: TOPTAL (POM) ; > Ø260mm: TOPMID (PA)
[2] Depending on temperature and allowed compression. Detailed information see profile description.

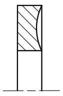
Ordering example

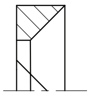
F08, d=100mm, D=109mm, D1=103,5, L=15mm, L1=5mm, TOPTAL (POM)

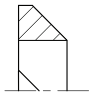
Guide Ring F08	**100 x 109/103,5 x 15/5**	**TOPTAL (POM)**
Profile	d x D/D1 x L/L1	Guiding material

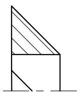
Back-up rings

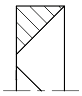

ST08


ST09


ST10


ST11


ST12

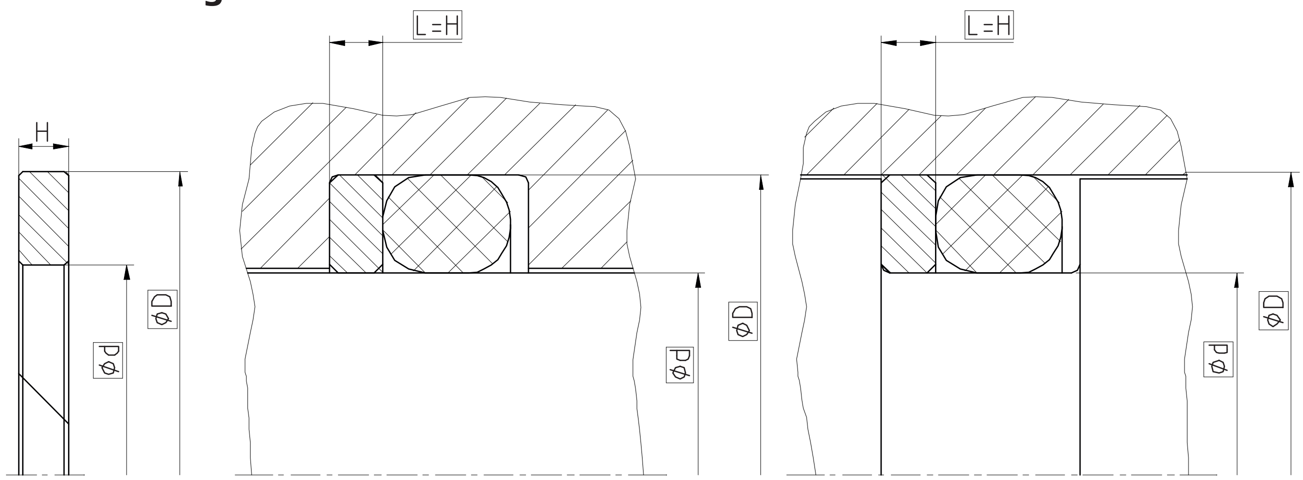

ST13

Seal data sheet

Backup rings

ST08

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 4,5mm
Profile size, surface data and tolerances are the result of a combination of the relevant application specific sealing material. Standard version: cutting gap 0. cut 45°

Operating parameters

Backup material	Temperature
PU	-30 °C...+110 °C
HPU	-20 °C...+110 °C
TPU	-50 °C...+110 °C
GPU	-30 °C...+110 °C
XPU	-30 °C...+110 °C
XHPU	-20 °C...+110 °C
XSPU	-20 °C...+110 °C
GPU54D	-30 °C...+110 °C
TF100	-200 °C...+260 °C
TF201	-200 °C...+260 °C
TOPTAL (POM)	**-50 °C...+100 °C**
TOPMID (PA)	-40 °C...+100 °C
PEEK	-60 °C...+260 °C

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

ST08, d=100mm, D=120mm, L=13mm, TOPTAL (POM)

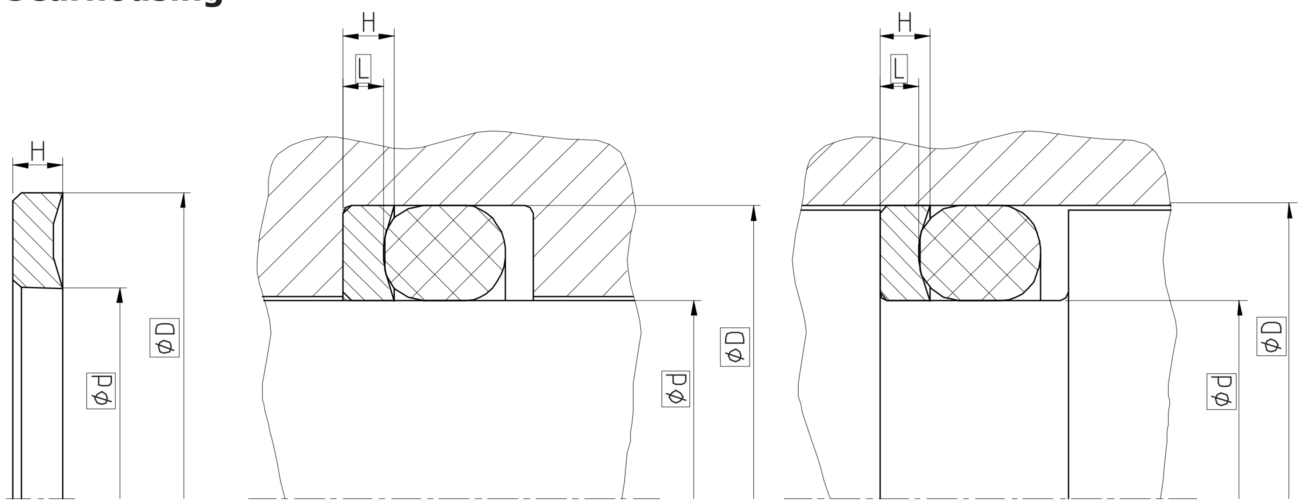
Backup ring ST08	**100 x 120 x 13**	**TOPTAL (POM)**
Profile	d x D x L	Backup ring

Seal data sheet

ST09

Backup rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 4,5mm
Profile size, surface data and tolerances are the result of a combination of the relevant application specific sealing material. Standard version: uncut

Operating parameters

Backup material	Temperature
PU	-30 °C...+110 °C
HPU	-20 °C...+110 °C
TPU	-50 °C...+110 °C
GPU	-30 °C...+110 °C
XPU	**-30 °C...+110 °C**
XSPU	-20 °C...+110 °C
XHPU	-20 °C...+110 °C
GPU54D	-30 °C...+110 °C
TF100	-200 °C...+260 °C
TF201	-200 °C...+260 °C

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

ST09, d=100mm, D=120mm, L=13mm, X-PU

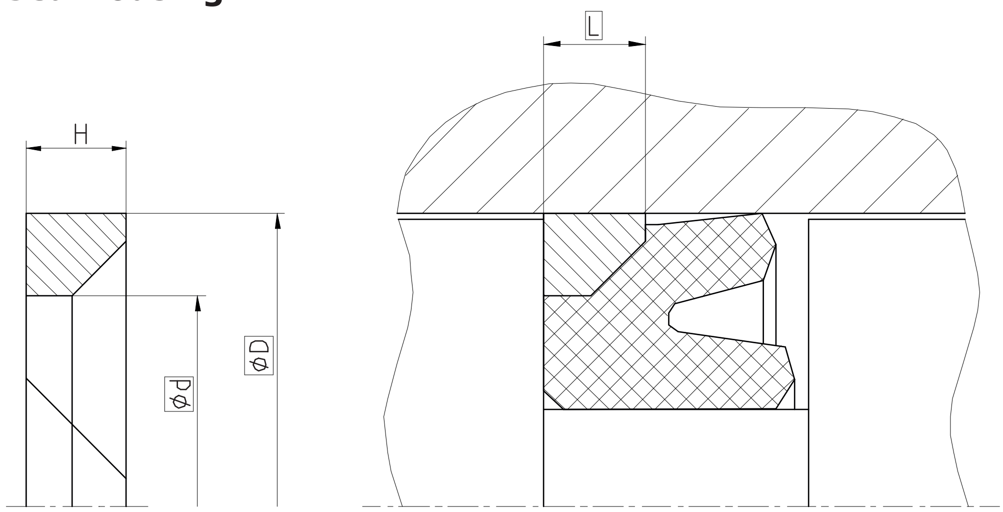
Backup ring ST09	**100 x 120 x 13**	**X-PU** Backup ring
Profile	d x D x L	

Seal data sheet

ST10

Backup rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 4,5mm
Profile size, surface data and tolerances are the result of a combination of the relevant application specific sealing material. Standard version: cutting gap 0. cut 45°

Operating parameters

Backup material	Temperature
TOPTAL (POM)	**-50 °C...+100 °C**
TF201	-200 °C...+260 °C
TOPMID (PA)	-40 °C...+100 °C
PEEK	-60 °C...+260 °C

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

ST10, D=100mm, d=85mm, L=10mm, TOPTAL (POM)

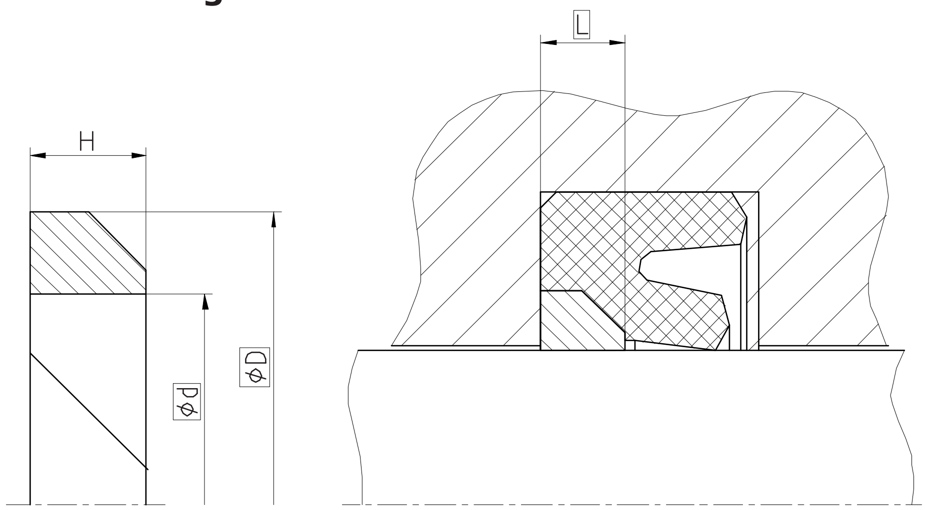
Backup ring ST10	**100 x 85 x 10**	**TOPTAL (POM)**
Profile	D x d x L	Backup ring

Seal data sheet

Backup rings

ST11

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 4,5mm
Profile size, surface data and tolerances are the result of a combination of the relevant application specific sealing material. Standard version: cutting gap 0. cut 45°

Operating parameters

Backup material	Temperature
TOPTAL (POM)	**-50 °C...+100 °C**
TF201	-200 °C...+260 °C
TOPMID (PA)	-40 °C...+100 °C
PEEK	-60 °C...+260 °C

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

ST11, d=100mm, D=120mm, L=13mm, TOPTAL (POM)

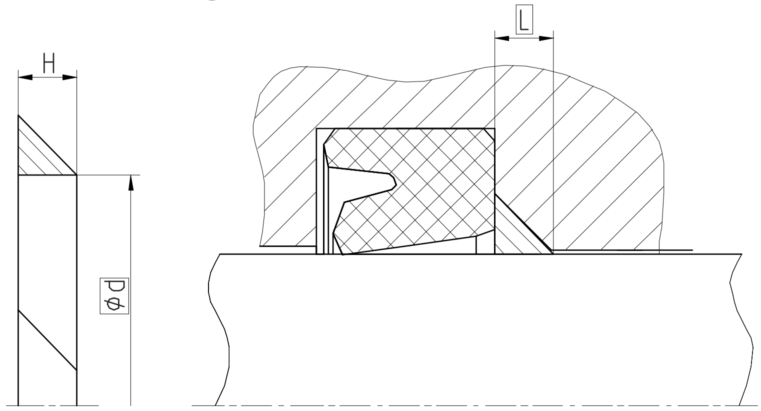
Backup ring ST11	**100 x 120 x 13**	**TOPTAL (POM)**
Profile	d x D x L	Backup ring

Seal data sheet

ST12

Backup rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 4,5mm
Profile size, surface data and tolerances are the result of a combination of the relevant application specific sealing material. Standard version: incision gap 0. cut 45°

Operating parameters

Backup material	Temperature
TOPTAL (POM)	**-50 °C...+100 °C**
TF201	-200 °C...+260 °C
TOPMID (PA)	-40 °C...+100 °C
PEEK	-60 °C...+260 °C

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

Ordering example

ST12, d=100mm, L=13mm, TOPTAL (POM)

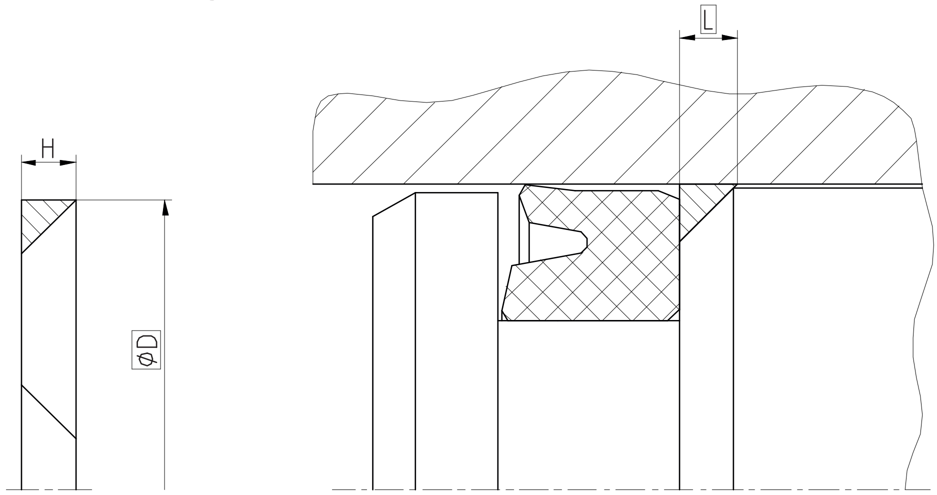
Backup ring ST12	**100 x 13**	**TOPTAL (POM)**
Profile	d x L	Backup ring

Seal data sheet

ST13

Backup rings

Seal housing



Sealing material	PU/Elastomers		PTFE	
Surface roughness	Rtmax	Ra	Rtmax	Ra
Sliding Surface	≤ 2,5 µm	0,1...0,5 µm	≤ 2 µm	0,05...0,3 µm
Bottom of groove	≤ 6,3 µm	≤ 1,6 µm	≤ 6,3 µm	≤ 1,6 µm
Groove face	≤ 15 µm	≤ 3 µm	≤ 15 µm	≤ 3 µm

Ordering dimensions...☐

Bearing area: 50...95% and a cutting depth of 0,5xRz based on Cref = 0%

Standard dimensions

minimum nominal inside diameter Ød ≥ 4,5mm
Profile size, surface data and tolerances are the result of a combination of the relevant application specific sealing material. Standard version: incision gap 0. cut 45°

Operating parameters

Backup material	Temperature
TOPTAL (POM)	**-50 °C...+100 °C**
TF201	-200 °C...+260 °C
TOPMID (PA)	-40 °C...+100 °C
PEEK	-60 °C...+260 °C

The stated operation conditions represent general indications. It is recommended not to use all maximum values simultaneously. Surface speed limits apply only to the presence of adequate lubrication film.

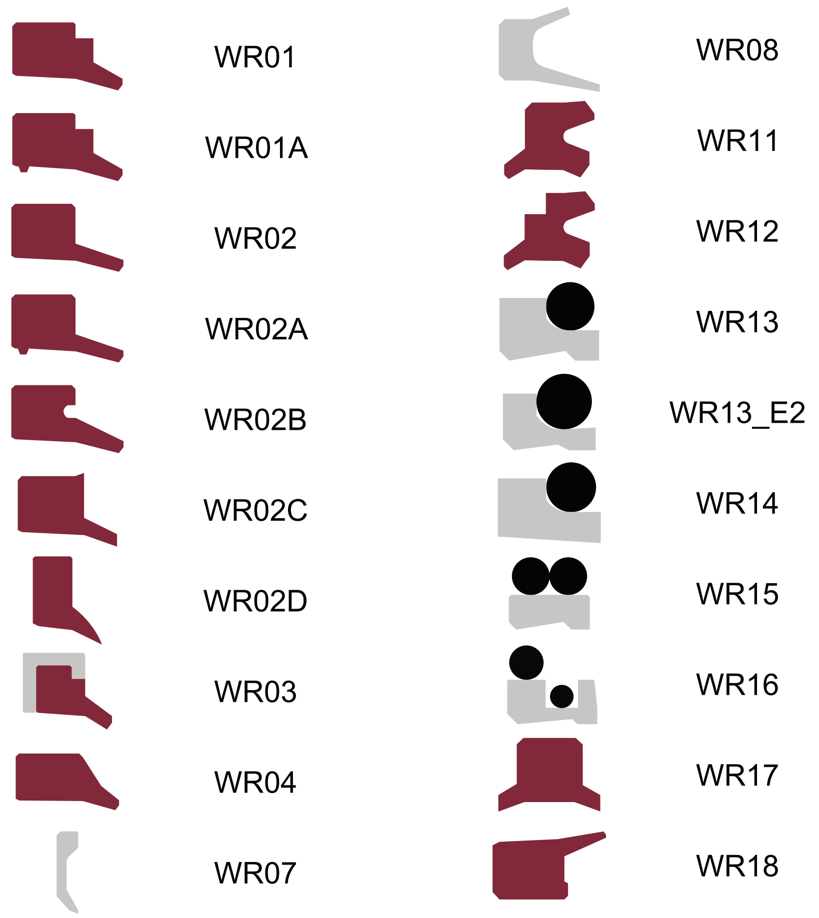
Ordering example

ST13, D=100mm, L=13mm, TOPTAL (POM)

Backup ring ST13	**100 x 13**	**TOPTAL (POM)**
Profile	D x L	Backup ring

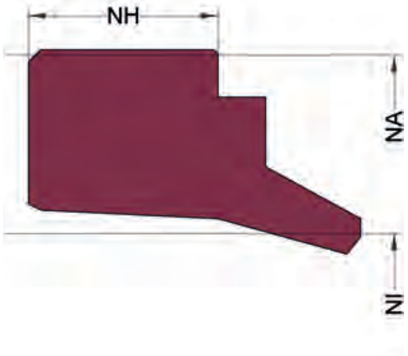
SML Profiles

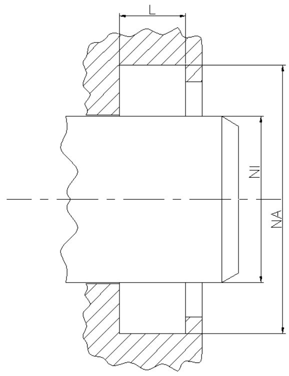
Wipers


WR01
WR01A
WR02
WR02A
WR02B
WR02C
WR02D
WR03
WR04
WR07
WR08
WR11
WR12
WR13
WR13_E2
WR14
WR15
WR16
WR17
WR18

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR01





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit in the groove, preventing the entry of humidity and other contamination via the outside diameter.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- For housings acc. to ISO 6195-Type A.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

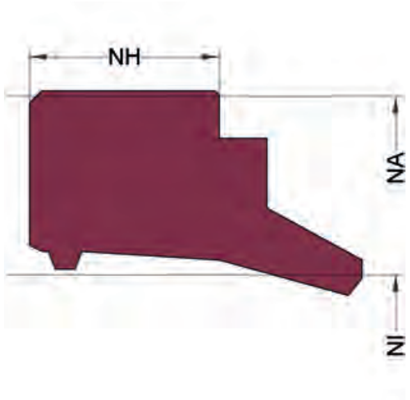
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

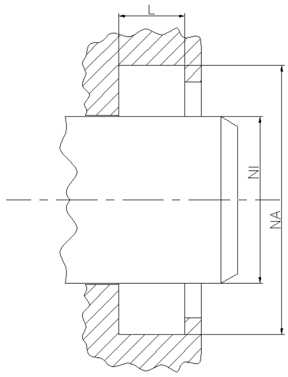
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR01A





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit in the groove, preventing the entry of humidity and other contamination via the outside diameter.
- The support shoulder prevents tilting of the wiper.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- For housings acc. to ISO 6195-Type A.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

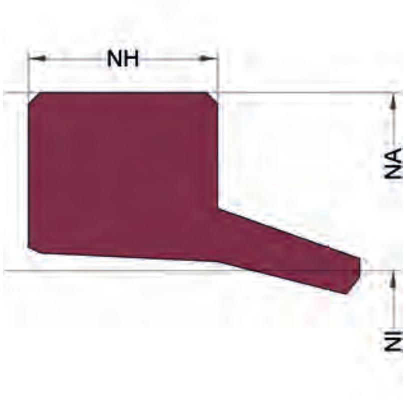
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

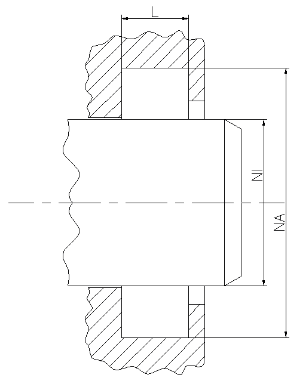
Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

TOP SEALING PARTNER PART OF nomo

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR02





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

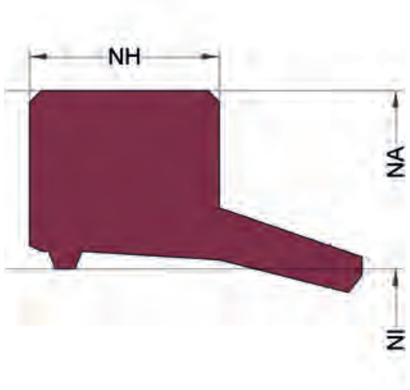
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

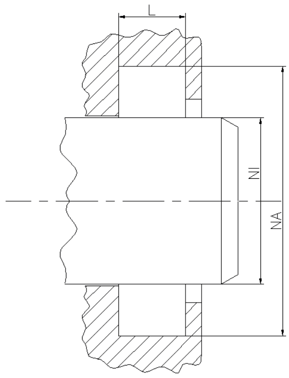
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR02A





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- Support shoulder to prevent tilting.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

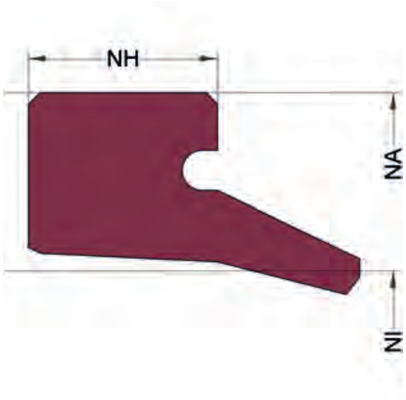
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

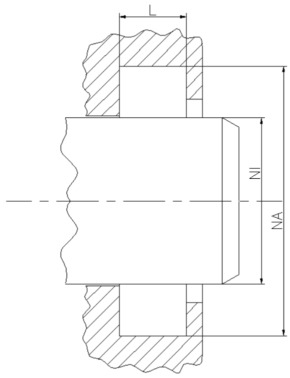
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR02B





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- For housings acc. to ISO 6195-1986 Type C.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

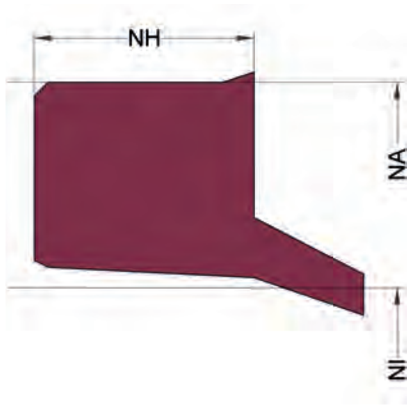
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

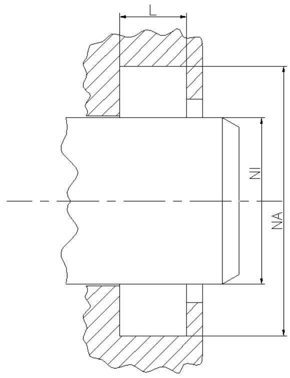
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR02C





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with an additional sealing lip on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Sharp sealing lip for wiping in extreme conditions (minig industry, ice,...).
- Commonly made out of hard materials such as hard grade PU.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Extreme working conditions in mining industry or earth moving devices.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.

Seal housing recommendation

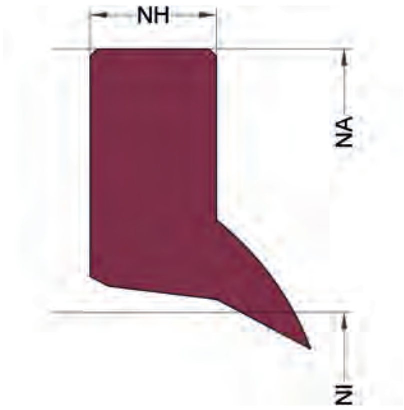
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f9

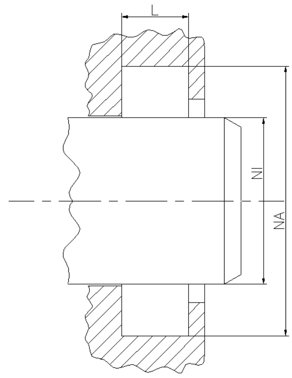
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR02D





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Sharp sealing edge for aggressive wiping.
- The hump on the sealing lip enables better stapility of the wiper.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version. In this case the diameter should be increased by 2-3%.

Seal housing recommendation

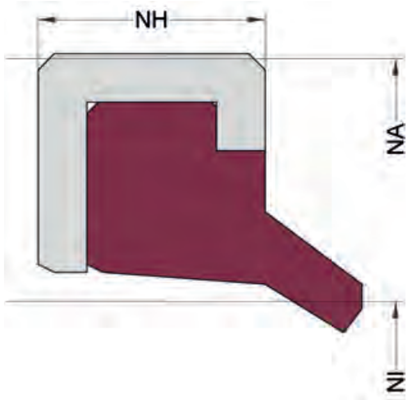
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

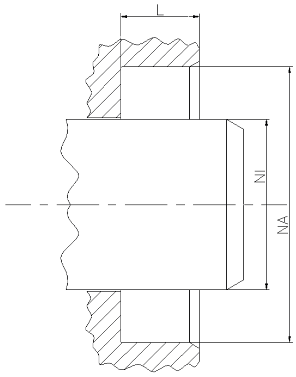
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR03





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Tight seat in the housing ensures that the wiper is held in place.
- Prevention of corrosion in the seat due to the use of a retainer ring in hard plastics.
- Not suitable for pressure from the trailing side.
- For housings acc. to ISO 6195-1986 Type B.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Press-in installation; separate installation of retainer ring and elastomer part possible.

Seal housing recommendation

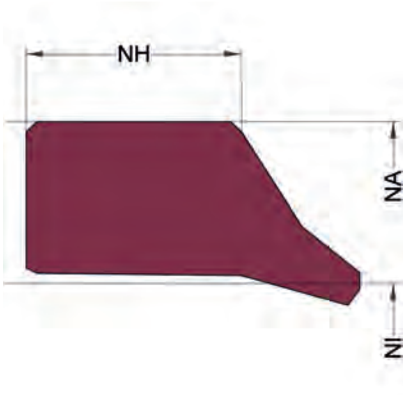
Tolerances	[mm]
L	+ 0.2
Ø NA	H11
Ø NI	f 8

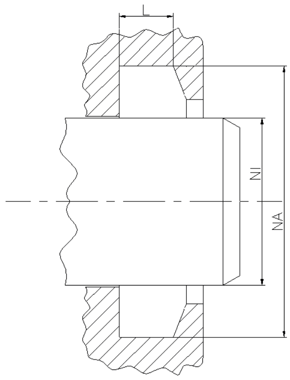
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR04





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- No precission fit required.
- Mainly used in English machines.
- Special housing designs required.
- Pressure on the trailing side should be avoided.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

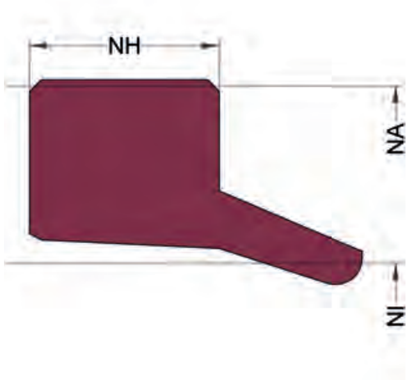
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

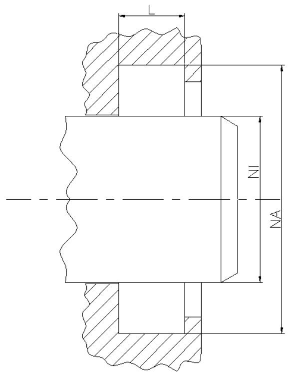
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR05





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit in the groove, preventing the entry of humidity and other contamination via the outside diameter.
- The rounded design of the wiper lip helps to maintain the initial lubricating film into the cylinder, whilst the exclusion of contamination is guaranteed.
- The provision of a support lip, along with relief grooves, prevents tilting of the wiper and pressure build up on the trailing slide, which is to be avoided.
- WR05 Versions A and C for housings acc. to ISO 6195-Type A.
- WR05 Versions B and D for housings acc. ISO 6195-1986 Type C

Application

Reciprocation rods in pneumatic cylinders, plungers.

Push rods and valve systems.

Installation

Snap-in installation.

Seal housing recommendation

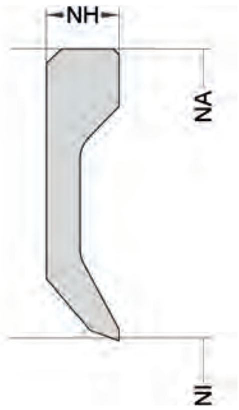
Tolerances	[mm]
L < 10mm	+/- 0.2
L ≥ 10mm	+/- 0.3
Ø NA	H11
Ø NI	f 8

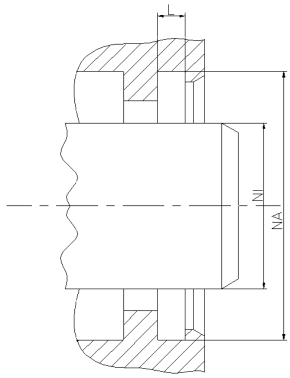
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR07





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination. WR07 wipers are designed to work as an initial wiper, protecting the elastomer wiper from hard encrusted dirt or ice on the rod.

Features

- The profile is designed with a slight interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Wiper is made in hard plasics (POM, PEEK, etc.) or hard grade PU which ensures high stiffness, breaking strength and stability.
- Good dry running properties.
- Not suitable for pressure from the trailing side.
- Special designed housings required.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 1 m/s.

Installation

Snap-in installation.

Seal housing recommendation

Tolerances	[mm]
L	+ 0.2
Ø NA	H9
Ø NI	h10

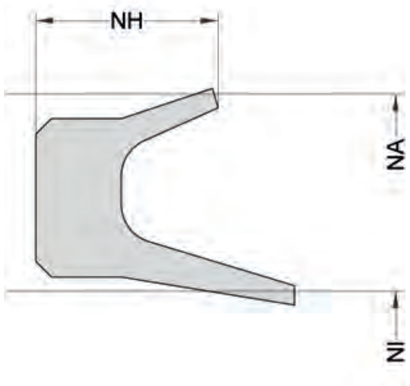
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

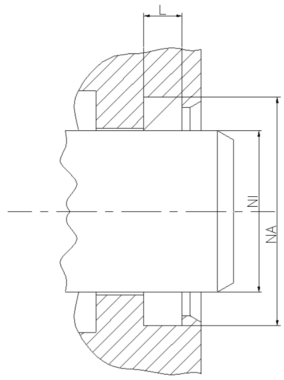
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

TOP SEALING PARTNER
PART OF nomo

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR08





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination. WR08 wipers are designed to work as an initial wiper, protecting the elastomer wiper from hard encrusted dirt or ice on the rod.

Features

- The profile is designed without any interference on the OD or ID.
- It is held in place via the outside lip and the retainer nose.
- Made in hard plasics (POM, PEEK, etc.) or hard grade PU which ensures high stiffness, breaking strength and stability.
- Good dry running properties.
- Not suitable for pressure from the trailing side.
- Special designed housings required.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 1 m/s.

Installation

Snap-in installation.

Seal housing recommendation

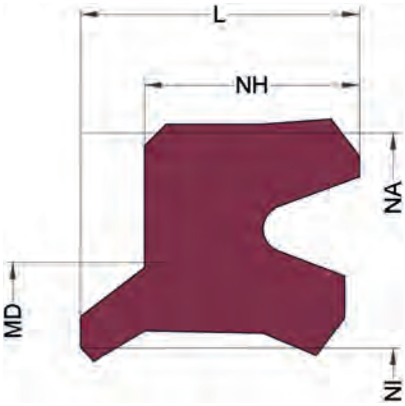
Tolerances	[mm]
L	+ 0.2
Ø NA	H9
Ø NI	h10

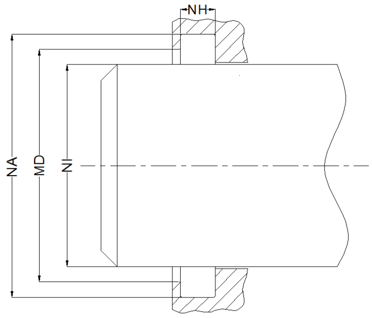
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR11





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- The sealing lip on the fluid side reduces the remaining oil film to a minimum if used in combination with composite seals as a tandem seal.
- For housings acc. to ISO 6195-Type C.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Can also be used as rod seal/wiper combination in pneumatic applications.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

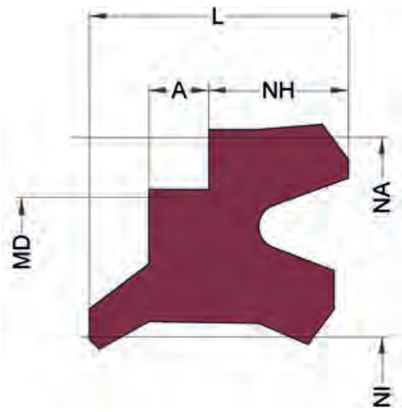
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

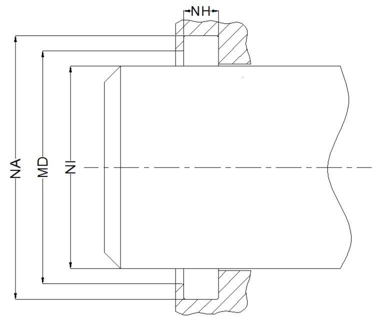
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR12





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- The sealing lip on the fluid side reduces the remaining oil film to a minimum if used in combination with composite seals as a tandem seal.
- For housings acc. to ISO 6195-Type C.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Can also be used as rod seal/wiper combination in pneumatic applications.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

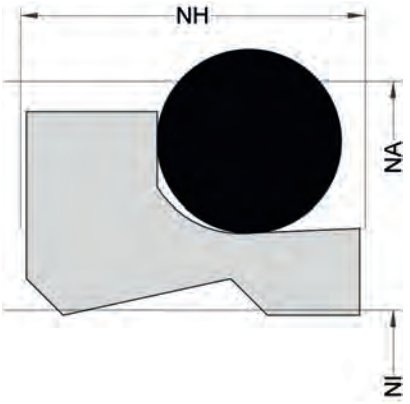
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

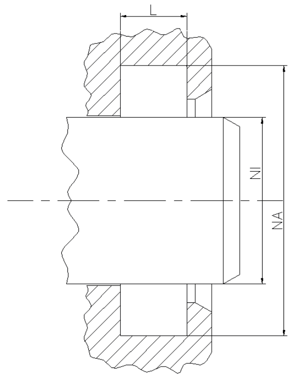
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR13





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with two geometric different lips for wiping off any dirt on the rod and to reduce the residual oil film on the medium side.
- The wiper consists of a PTFE wiping part and an O-Ring as preload element, maintaining contact pressure on the rod.
- Due to the use of an O-Ring the wiper is able to compensate deflections of the rod.
- Mainly used in combination with rod seal RS09B.
- Pressure should be limited to 15bar.
- For housings acc. to ISO 6195 Type D.

Application

Reciprocation rods in hydraulic cylinders, swivelling and coiling rods, plungers.

Installation

Snap-in installation for wipers bigger 25mm otherwise a partite groove is recommended.
A large insertion chamfer needs to be provided (angle 20-30°).

Seal housing recommendation

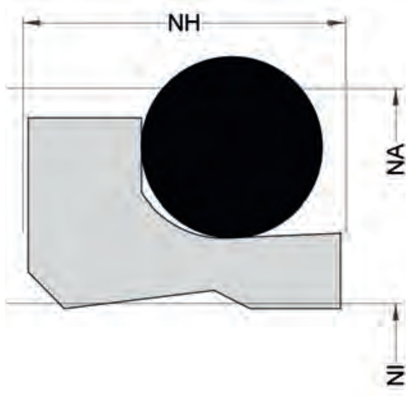
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

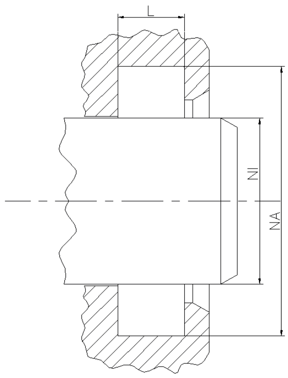
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR13_E2





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with two geometric different lips for wiping off any dirt on the rod and to reduce the residual oil film on the medium side.
- The wiper consists of a PTFE wiping part and an O-Ring as preload element, maintaining contact pressure on the rod.
- Due to the use of an O-Ring the wiper is able to compensate deflections of the rod.
- Bigger O-Ring compared to WR13.
- Mainly used in combination with rod seal RS09B.
- Pressure should be limited to 15bar.
- For housings acc. to ISO 6195 Type D.

Application

Reciprocation rods in hydraulic cylinders, swivelling and coiling rods, plungers.

Installation

Snap-in installation for wipers bigger 25mm otherwise a partite groove is recommended.
A large insertion chamfer needs to be provided (angle 20-30°).

Seal housing recommendation

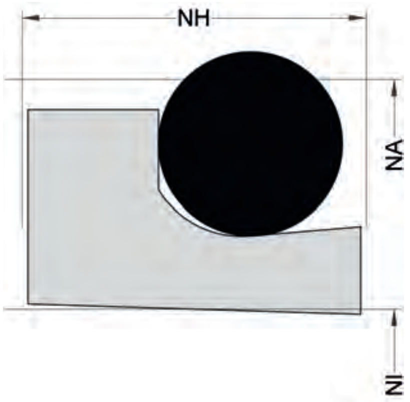
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

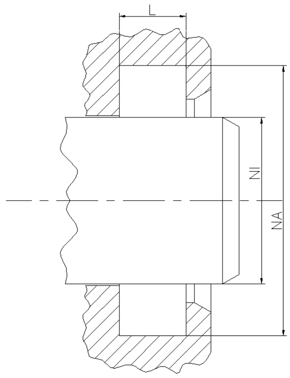
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR14





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with one sharp lip for wiping off any dirt on the rod. The residual oil film is recovered.
- The wiper consists of a PTFE wiping part and an O-Ring as preload element, maintaining contact pressure on the rod.
- Due to the use of an O-Ring the wiper is able to compensate deflections of the rod.
- Good dry running properties.
- No "stick-slip".
- Pressure on the trailing side should be avoided.
- For housings acc. to ISO 6195 Type D.

Application

Reciprocation rods in hydraulic cylinders, swivelling and coiling rods, plungers.

Installation

Snap-in installation for wipers bigger 25mm otherwise a partite groove is recommended.
A large insertion chamfer needs to be provided (angle 20-30°).

Seal housing recommendation

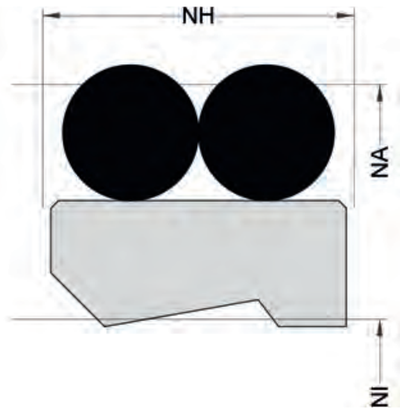
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

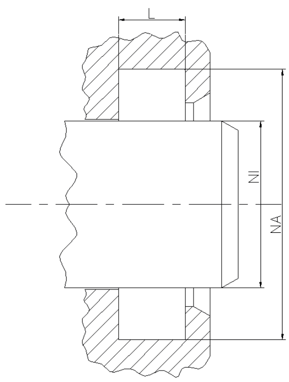
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR15





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with two geometric different lips for wiping off any dirt on the rod and to reduce the residual oil film on the medium side.
- The wiper consists of a PTFE wiping part and two O-Rings as preload element, maintaining contact pressure on the rod.
- Due to the use of an O-Ring the wiper is able to compensate deflections of the rod.
- Mainly used in combination with rod seal RS09B.
- Pressure should be limited to 15bar.
- For housings acc. to ISO 6195 Type D.

Application

Reciprocation rods in hydraulic cylinders, swivelling and coiling rods, plungers.

Installation

Snap-in installation for wipers bigger 25mm otherwise a partite groove is recommended.
A large insertion chamfer needs to be provided (angle 20-30°).

Seal housing recommendation

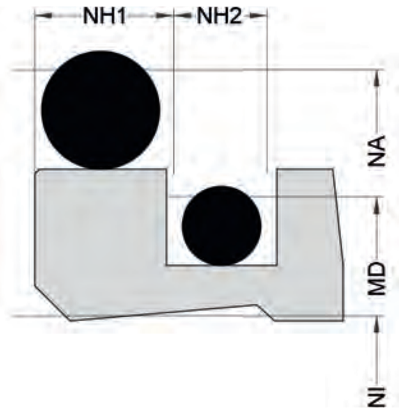
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

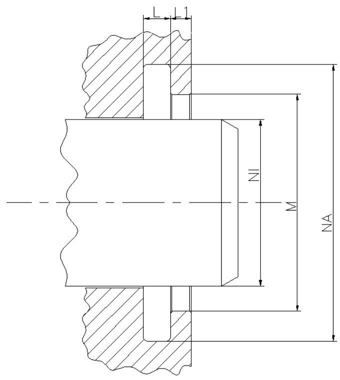
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR16





General Description

Wipers are designed to keep dust, dirt, sand etc. out of the system and protect therefore the sealing and guiding elements from abrasive damage caused by external contamination.

Features

- double wiper consisting out of a wiping lip for wiping off any dirt/dust of the rod and a sealing lip to reduce the residual oil film and improve the tightness.
- The wiper consists of a PTFE profile ring and two O-Rings as preload element, maintaining contact pressure on the rod.
- Due to the use of an O-Ring the wiper is able to compensate deflections of the rod.
- Mainly used in combination with rod seal RS09B.
- Pressure should be limited to 15bar.

Application

Reciprocation rods in hydraulic cylinders, swivelling and coiling rods, plungers.

Installation

Snap-in installation for wipers bigger 25mm otherwise a partite groove is recommended.
A large insertion chamfer needs to be provided (angle 20-30°).

Seal housing recommendation

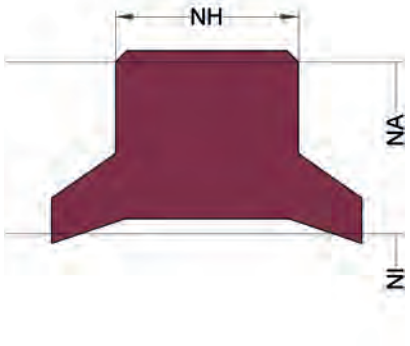
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

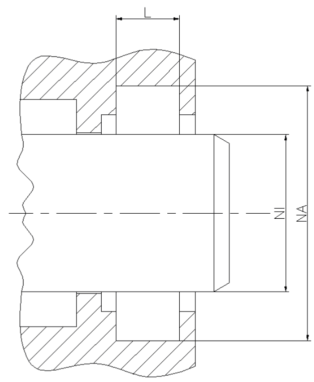
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR17





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Double acting wiper that is only used in old machineries anymore. For new constructions WR11 or WR12 is recommended.
- Special designed housings required.
- Pressure from the trailing side should be avoided.

Application

Reciprocation rods in old hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version. In this case the diameter should be increased by 2-3%.

Seal housing recommendation

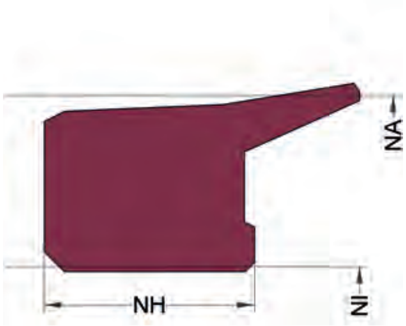
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

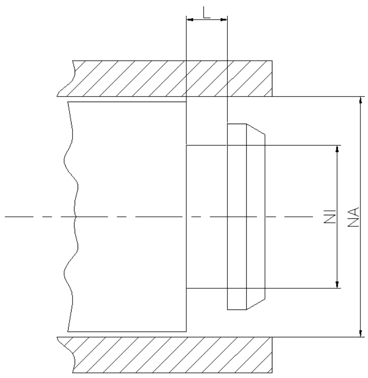
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Wiper Ring	Profile: WR18





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- Special wiper for outside sealing.
- The profile is designed with interference on the ID which provides a good static fit, preventing the entry of humidity and other contamination via the inside diameter.
- The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.
- Pressure from the trailing side has to be avoided.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 4 m/s.

Installation

Snap-in installation.

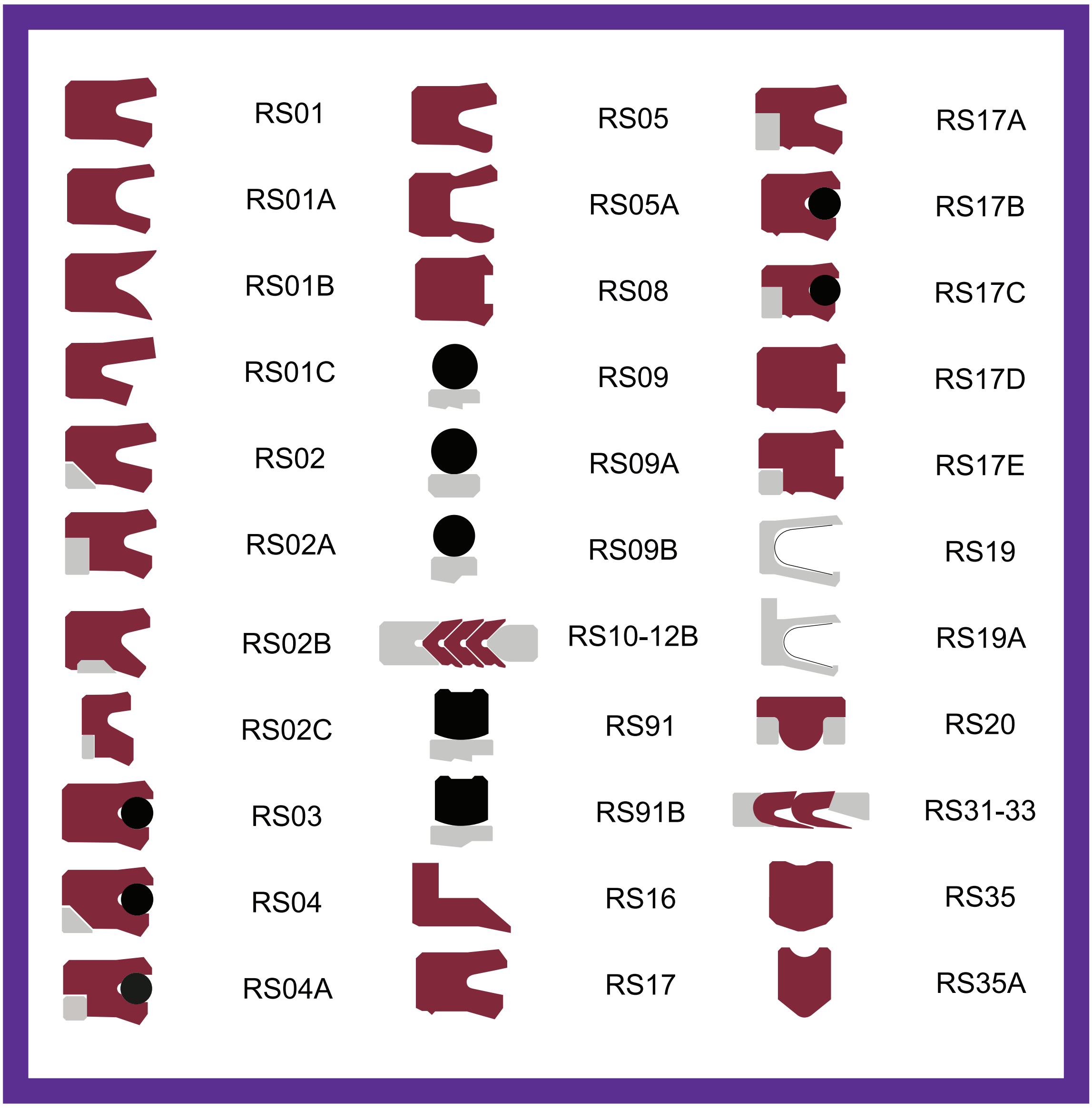
Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

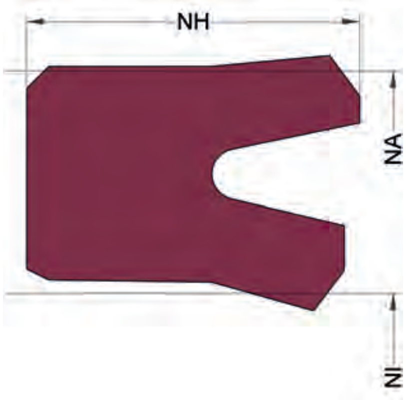
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

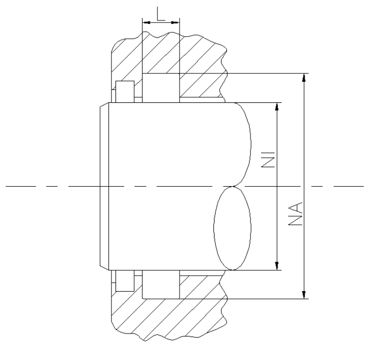
Rod seals


RS01
RS01A
RS01B
RS01C
RS02
RS02A
RS02B
RS02C
RS03
RS04
RS04A
RS05
RS05A
RS08
RS09
RS09A
RS09B
RS10-12B
RS91
RS91B
RS16
RS17
RS17A
RS17B
RS17C
RS17D
RS17E
RS19
RS19A
RS20
RS31-33
RS35
RS35A

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS01





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.
  For lower speeds the dynamic lip should be redesigned (shorter, stiffer).

Application

Reciprocation rods in hydraulic cylinders, plungers.
Universal rod seal for small extrusion gaps and minor load impacts.
Also used as secondary seal in combination with RS09 (PTFE + O-Ring energizer).
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

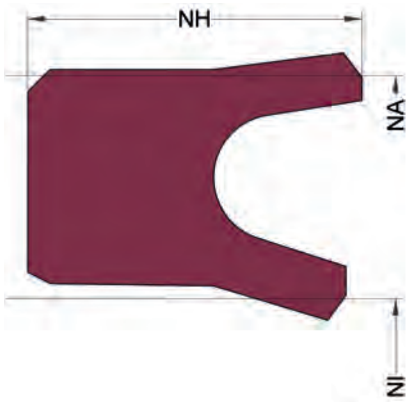
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H10

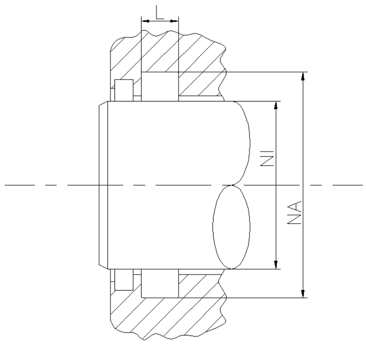
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS01A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Wider groove and softer lips compared to RS01.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application

Reciprocation rods in hydraulic cylinders, plungers where low friction is required
Universal rod seal for small extrusion gaps and minor load impacts.
Also used as secondary seal in combination with RS09 (PTFE + O-Ring energizer).
Max. pressure 160 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

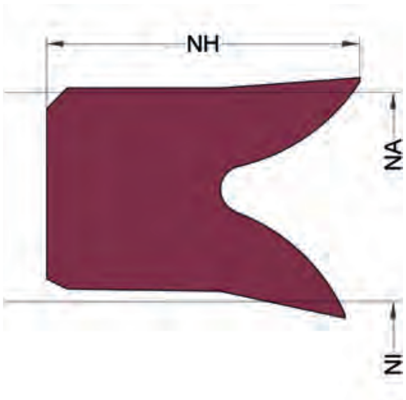
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

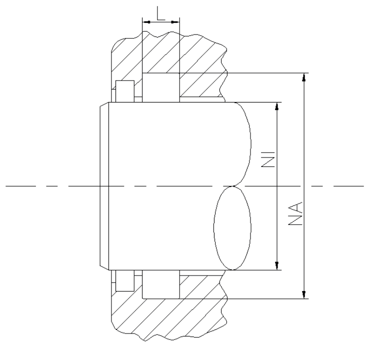
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS01B





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Sharp lips on ID and OD.
- Good static and dynamic sealing performance.
- Good performance in low pressure conditions.
- Useable for long stroke lengths.
- Out-of date profile; only used in old machineries.
- Poor sealing that causes a relative thick oil film.

Application

Reciprocating pistons in hydraulic cylinders, plungers etc.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

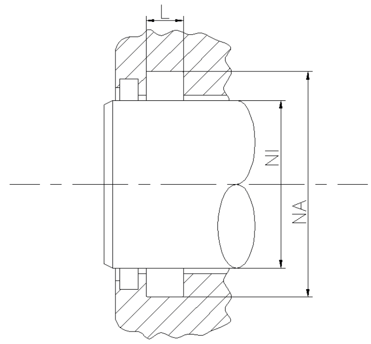
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS01C



General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rod seal for hydraulic applications, designed with interference on the OD which provides a good static fit in the groove.
- Shortened sealing lip decreases contact area to the sealing surface thus resulting in reduced friction.
- Use in applications with lubricated air is possible.
- Small and compact housings possible.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip”, small break-away loads after long standstill.

Application

Reciprocating pistons in hydraulic cylinders
Universal riston seal for small extrusion gaps and minor load impacts.
Max. pressure 400bar, max. speed 0,5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

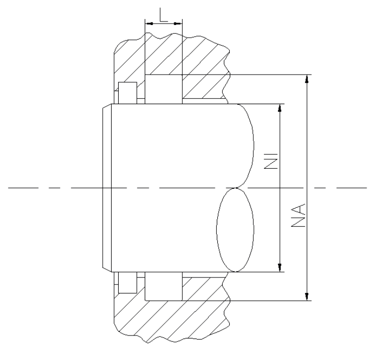
Tolerances	[mm]
L	+ 0.2
Ø NA	H10
Ø NI	f 8

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS02



General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.
  For lower speeds the dynamic lip should be redesigned (shorter, stiffer).
- Activated back-up rings prevent and reduce gap extrusion.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Universal rod seal for larger extrusion gaps and higher load impacts.
Max. pressure 700 bar, max. speed 0.5 m/s, depending on material selection.

Installation

Snap-in installation.

Seal housing recommendation

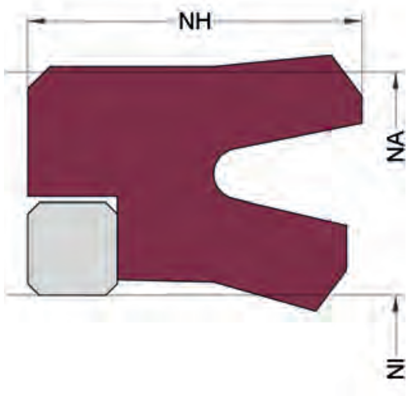
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

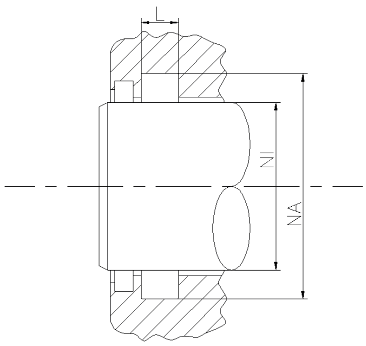
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS02A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.
  For lower speeds the dynamic lip should be redesigned (shorter, stiffer).
- Activated back-up rings prevent and reduce gap extrusion.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Universal rod seal for larger extrusion gaps and higher load impacts.
Max. pressure 700 bar, max. speed 0.5 m/s, depending on material selection.

Installation

Snap-in installation.

Seal housing recommendation

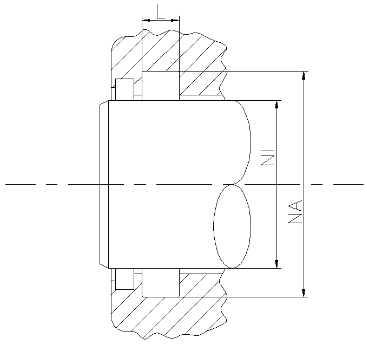
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS02B



General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
  Improved sealing performance in pressureless condition because of the glide ring on the ID
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip”
- Activated back-up rings prevent and reduce gap extrusion.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Universal rod seal for larger extrusion gaps and higher load impacts.
Max. pressure 700 bar, max. speed 0.5 m/s, depending on material selection.

Installation

Snap-in installation.

Seal housing recommendation

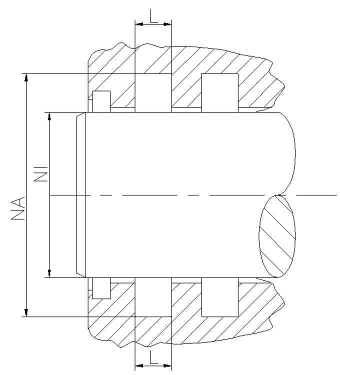
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS02C



General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal with anti extrusion ring, designed with interference on the OD which provides a good static fit in the groove.
- Primary seal in tandem arrangements of heavy duty applications.
- Thin and flexible static lip to enable pressure relief, built up between primary and secondary seal.
- Replacement for the primary O-Ring energised rod seals in tandem arrangements.
- Not recommended as single/main seal in sealing systems.
- Suitable for high pressure peaks at about 700 bar.
- Radial grooves on the sealing lip recommended to reduce any risk of „blow-by“.
- Useable for long stroke lengths.

Application

Primary seal in tandem arrangements in hydraulic cylinders for construction machines, draulic excavators or earthmoving equippment.
Max. regular pressure 400 bar (peaks up to 700bar), max. speed 1 m/s, depending on material selection.

Installation

Snap-in installation.

Seal housing recommendation

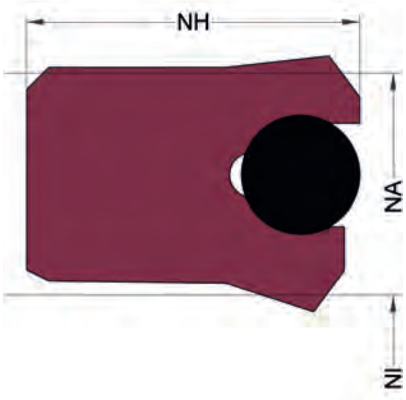
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

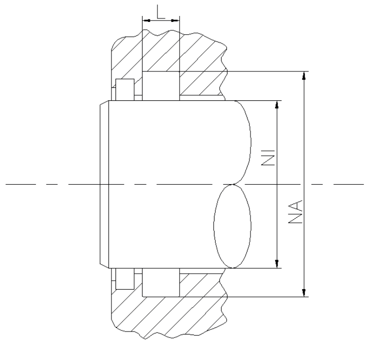
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS03





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- Used for short, pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating rods in hydraulic cylinders, plungers, push rods, fittings, etc.
Switching or clamping functions.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

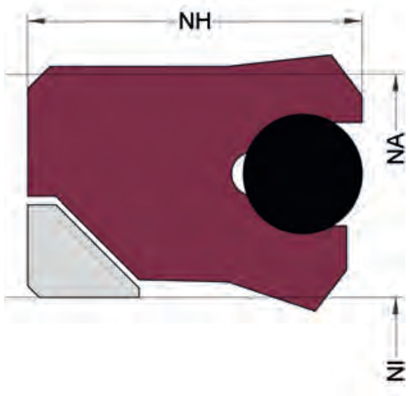
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

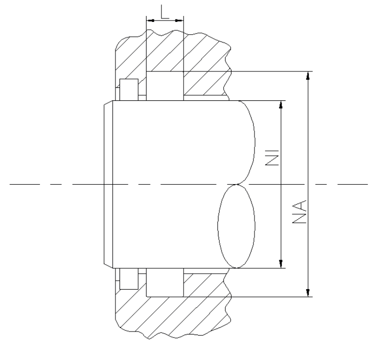
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS04





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring.
- Activated back-up ring prevents and reduces gap extrusion.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- Used for short, pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application
Reciprocating rods in hydraulic cylinders, plungers, push rods, fittings, etc.
Switching or clamping functions. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

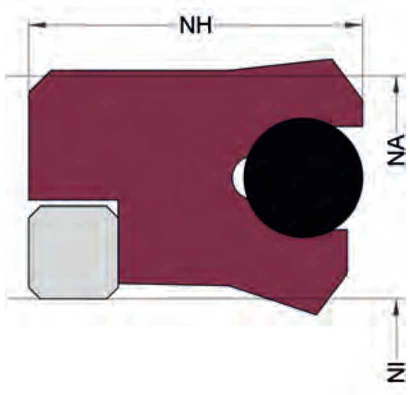
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

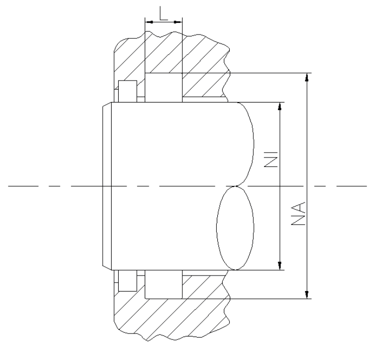
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS04A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring.
- Activated back-up ring prevents and reduces gap extrusion.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- Used for short, pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating rods in hydraulic cylinders, plungers, push rods, fittings, etc.
Switching or clamping functions. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

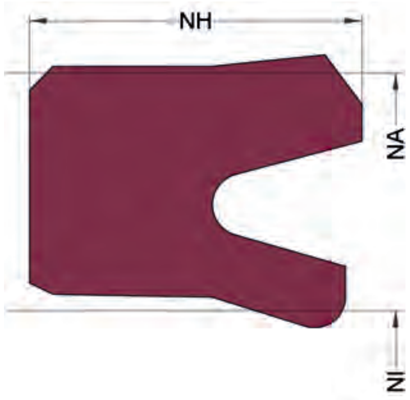
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

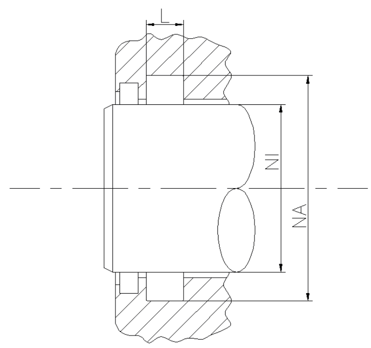
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS05





General Description

Rod seals are designed to seal the pressurized hydraulic fluid or air against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rod seal for pneumatic applications, designed with interference on the OD which provides a good static fit in the groove.
- Special designed sealing lip to retain the lubrication film and prevent dry running.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip”, small break-away loads after long standstill.

Application

Reciprocating rods in pneumatic cylinders, suitable for dry and lubricated air.
Universal rod seal for small extrusion gaps and minor load impacts.
Max. pressure 25 bar, max. speed 1 m/s.

Installation

Snap-in installation.

Seal housing recommendation

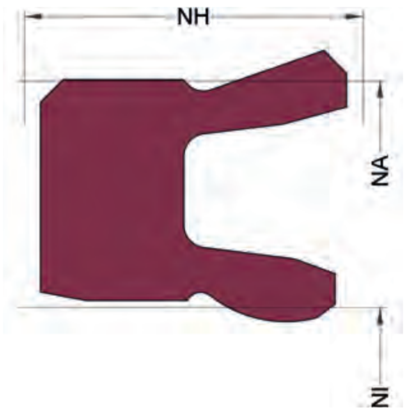
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

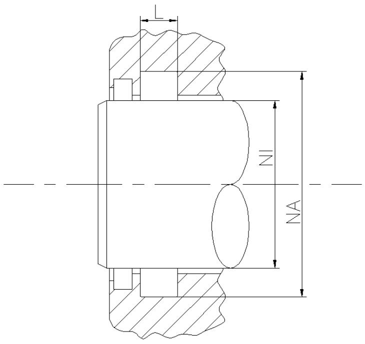
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS05A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rod seal for pneumatic applications, designed with interference on the ID which provides a good static fit in the groove.
- Special designed sealing lip to retain the lubrication film and prevent dry running.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Almost no tendency to “stick-slip”, small break-away loads after long standstill.

Application

Reciprocating rods in pneumatic cylinders, suitable for dry and lubricated air.
Universal rod seal for small extrusion gaps and minor load impacts.
Max. pressure 25 bar, max. speed 1.3 m/s.

Installation

Snap-in installation.

Seal housing recommendation

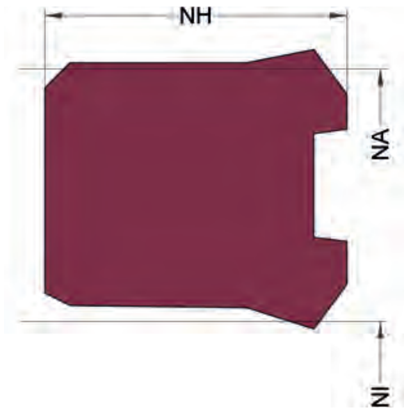
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

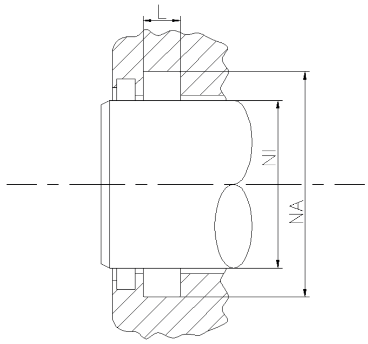
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS08





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Special design for small cross sections where lips would be too thin.
- Excellent static and dynamic sealing performance.
- Excellent performance over all pressure ranges.
- Used for short pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.
- Particularly suitable for high viscosity media.

Application
Reciprocating pistons/rods in hydraulic cylinders, push rods, fittings etc.
Switching or clamping functions.
Replacement for rubber fabric seals.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

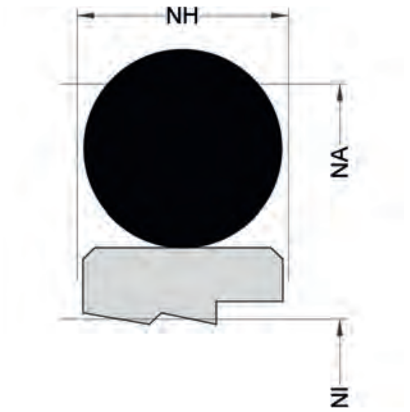
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

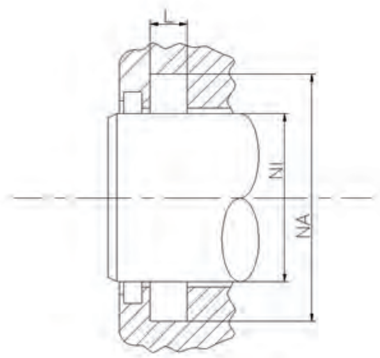
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS09





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference of the O-Ring on the OD and slight interference of the PTFE glide ring on the ID.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance due to the free space on the trailing side.

Application

Reciprocating rods in hydraulic cylinders, plungers.
Dynamic seals in hydraulic systems.
Max. pressure 400 bar, max. speed 10 m/s.
Tandem arrangement possible.

Installation

Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

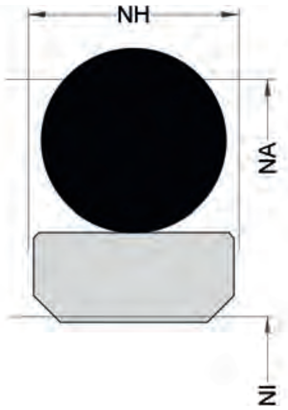
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

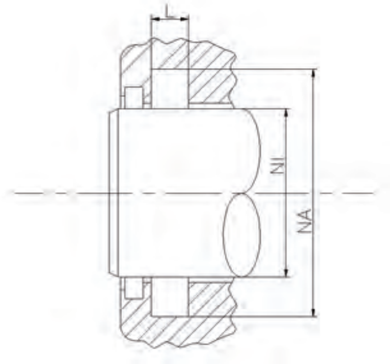
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS09A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Symmetrical, double acting rod seal, designed with interference of the O-Ring on the OD and slight interference of the PTFE glide ring on the ID.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.

Application

Reciprocating rods in hydraulic cylinders, plungers.
Dynamic seals in hydraulic systems.
Max. pressure 400 bar, max. speed 10 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

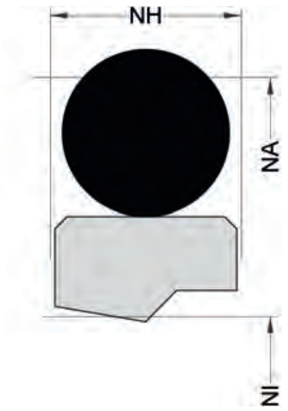
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

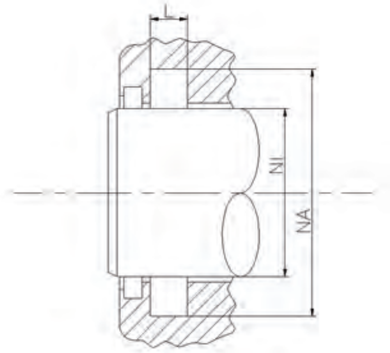
Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

TOP SEALING PARTNER
PART OF nomo

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS09B





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference of the O-Ring on the OD and slight interference of the PTFE glide ring on the ID.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance due to the free space on the trailing side.

Application
Reciprocating rods in hydraulic cylinders, plungers.
Dynamic seals in hydraulic systems.
Max. pressure 400 bar, max. speed 10 m/s.
Tandem arrangement possible.

Installation
Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

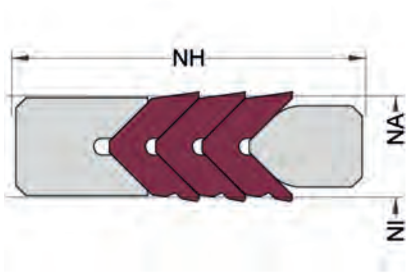
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

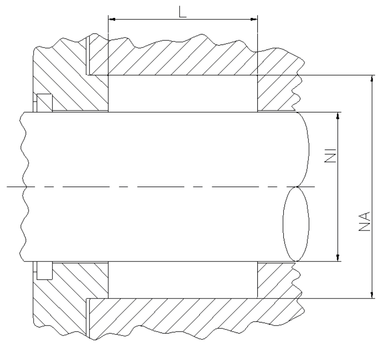
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS10_12B





General Description

Asymmetrical rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- friction optimized asymmetrical, single acting rod seal, combined with pressure ring and support ring.
- special vee design to assure a sufficient lubrication for the whole packing. Additional groove on the dynamic lip to reduce the contact surface and also working as a grease depot.
- By adjusting the number of vee's friction characteristics can be influenced - recommendation max. 4 vee's.
- Excellent static and dynamic sealing performance.
- Useable for short and long stroke lengths.
- High wear resistance.

Application

Reciprocating rods in hydraulic cylinders, plungers etc.
Used in heavy duty applications (presses) with return stroke by equipment weight.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Installation normally in open housings.
At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

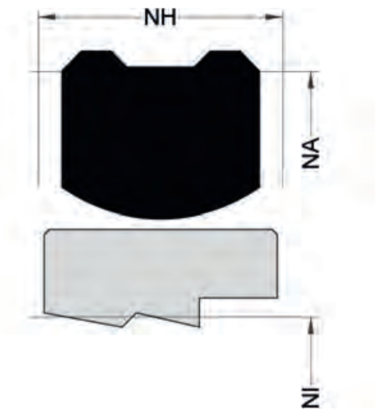
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

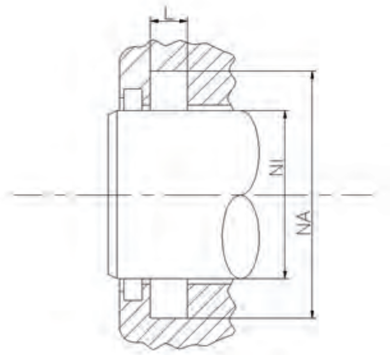
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS91





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference of the preload element on the OD and slight interference of the PTFE glide ring on the ID.
- High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance due to the free space on the trailing side.
- Can be used in grooves where no O-Ring is possible.

Application

Reciprocating rods in hydraulic cylinders, plungers in heavy-duty applications. Max. pressure 400 bar, max. speed 10 m/s. Tandem arrangement possible.

Installation

Snap-in installation. Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

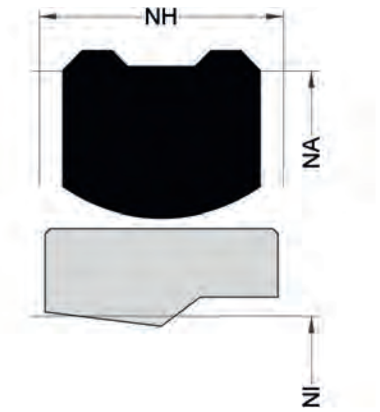
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

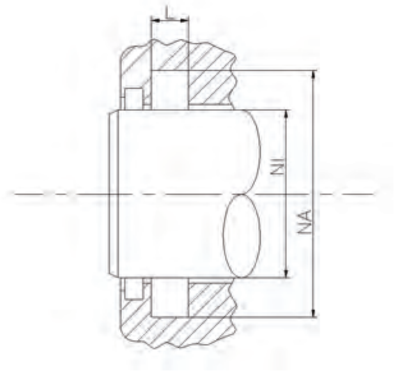
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS91B





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference of the preload element on the OD and slight interference of the PTFE glide ring on the ID.
- High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance due to the free space on the trailing side.
- Can be used in grooves where no O-Ring is possible.

Application

Reciprocating rods in hydraulic cylinders, plungers in heavy-duty applications.
Max. pressure 400 bar, max. speed 10 m/s.
Tandem arrangement possible.

Installation

Snap-in installation. Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

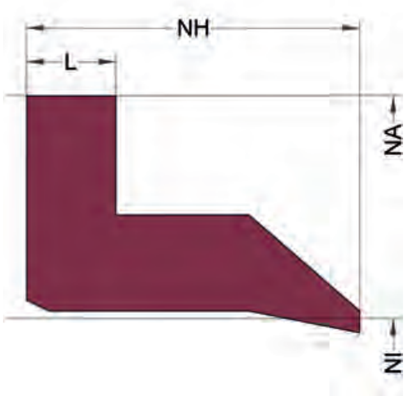
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

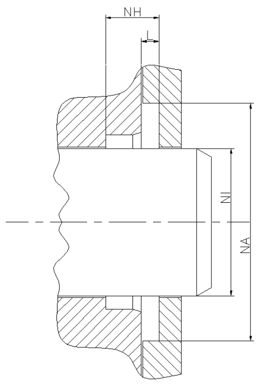
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS16





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rod seal.
- Long sealing lip compensates for radial inaccuracy or excentricity.
- Useable for long stroke lengths.
- Low break-away load after long standstills.
- Seal design tends to “stick-slip” effect.

Application

Reciprocating pistons in hydraulic and pneumatic cylinders.
Replacement for seal designs (leather seals etc.) used in old cylinders.
Max. pressure 160 bar, max. speed 0.5 m/s.

Installation

Clamped by flange.

Seal housing recommendation

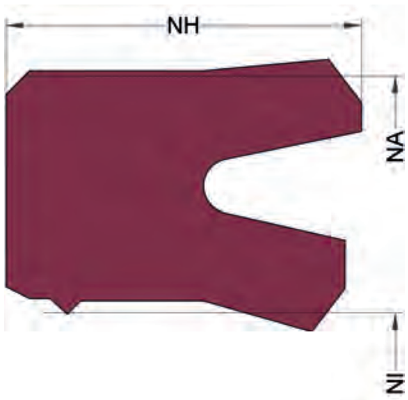
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H10
Ø NI	f 8

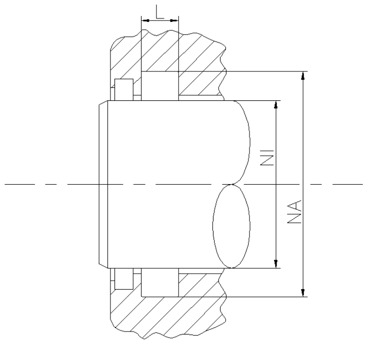
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS17





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Secundary lip for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application
Reciprocation rods in hydraulic cylinders, plungers.
Mainly usd in telescopic cylinders
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

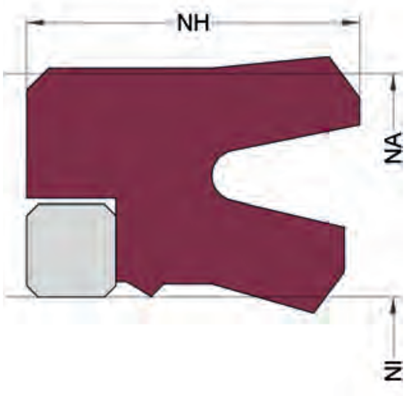
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

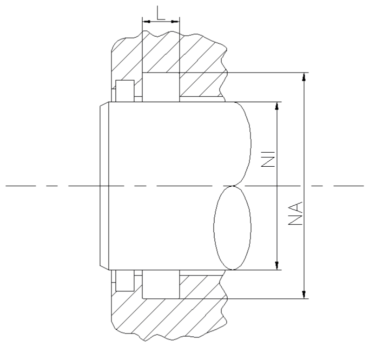
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS17A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Secundary lip for stabilising at large seal heights and reducing the residual oil film.
- Activated back-up ring prevents and reduces gap extrusion.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application

Reciprocation rods in hydraulic cylinders, plungers.
Mainly usd in telescopic cylinders.
Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

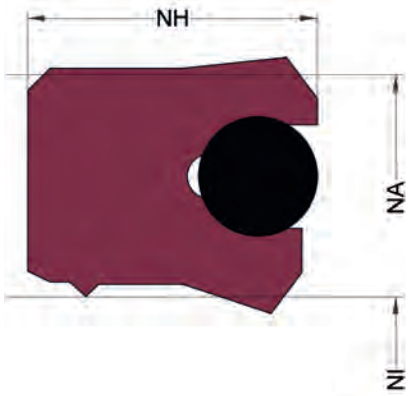
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

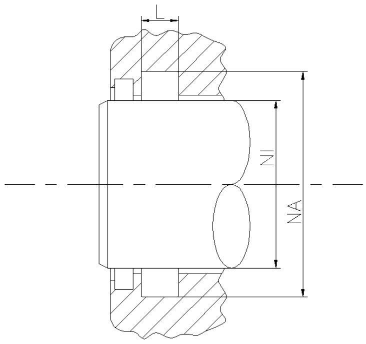
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS17B





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring.
- Secundary lip for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application
Reciprocating rods in hydraulic cylinders, plungers, push rods, telescopic cylinders, fittings, etc.
Switching or clamping functions.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

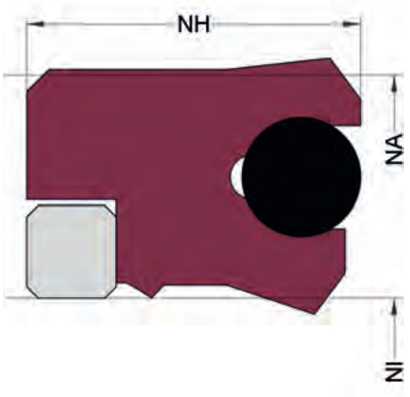
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

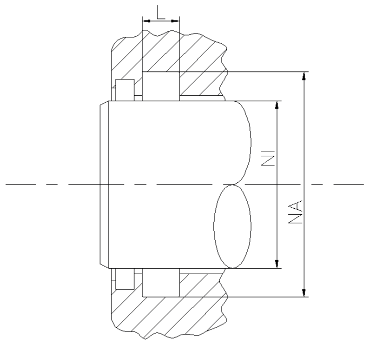
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS17C





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring.
- Activated back-up ring prevents and reduces gap extrusion.
- Secundary lip for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application
Reciprocating rods in hydraulic cylinders, plungers, push rods, telescopic cylinders, fittings, etc.
Switching or clamping functions. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

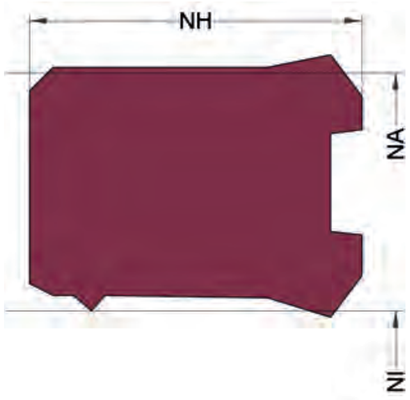
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

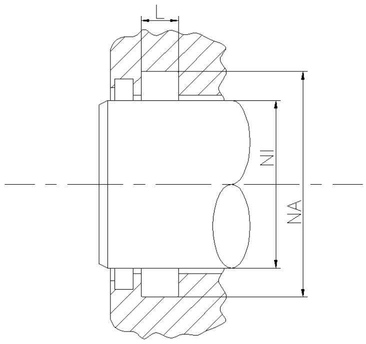
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS17D





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Special design for small cross sections where lips would be too thin.
- Secundary lip for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance over all pressure ranges.
- Used for short pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.
- Particularly suitable for high viscosity media.

Application

Reciprocating pistons/rods in hydraulic cylinders, push rods, fittings etc. Switching or clamping functions. Replacement for rubber fabric seals. Max. pressure 400 bar, max. speed 0.3 m/s.

Installation

Snap-in installation.

Seal housing recommendation

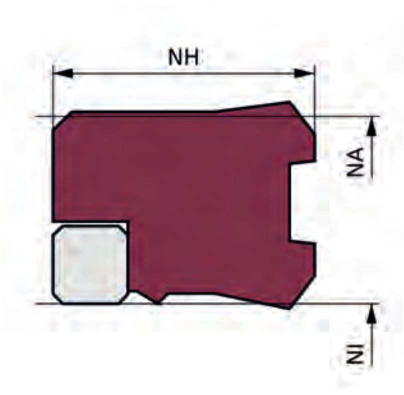
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

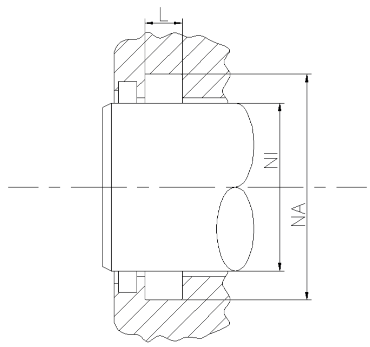
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS17E





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Special design for small cross sections where lips would be too thin.
- Secundary lip for stabilising at large seal heights and reducing the residual oil film.
- Activated back-up ring prevents and reduces gap extrusion.
- Excellent static and dynamic sealing performance.
- Excellent performance over all pressure ranges.
- Used for short pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.
- Particularly suitable for high viscosity media.

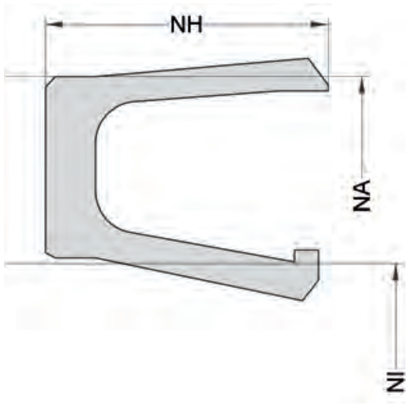
Application
Reciprocating pistons/rods in hydraulic cylinders, push rods, fittings etc.
Switching or clamping functions.
Replacement for rubber fabric seals.
Max. pressure 700 bar, max. speed 0.3 m/s.

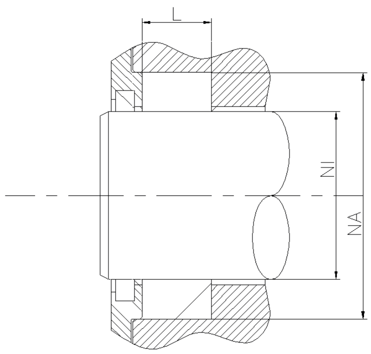
Installation
Snap-in installation.

We recommend to maintain a nominal width/seal height ration (CS/NH) above 1/1,25.

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS19





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rod seal, designed with no interference on the static sealing diameter.
- Preload effected through V-spring.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions.
- Negligible tendency to “stick-slip” effect, small break away loads.

Application

Reciprocating and swivelling rods in hydraulic cylinders, plungers. Chemical and pharmaceutical industry, aggressive fluids and high temp. Max. pressure 160 bar, max. speed 15 m/s.

Installation

Installation in open housing, snap-in installation possible in special designed housings.

Seal housing recommendation

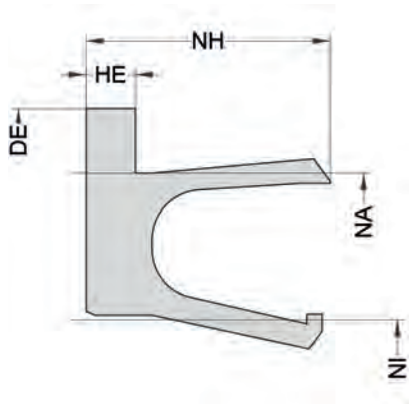
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

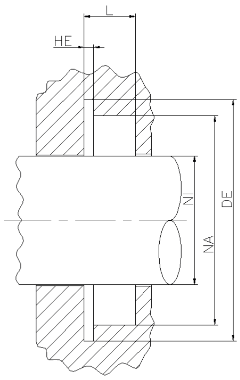
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS19A





General Description
Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Asymmetrical, single acting rotary seal with clamping flange.
- Preload effected through V-spring.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions, no stick-slip effect.

Application
Reciprocating and swivelling shafts. Chemical and pharmaceutical industry, aggressive fluids and high temp. Max. pressure 150 bar, max. speed 2 m/s.

Installation
Installation in open housing.

Seal housing recommendation

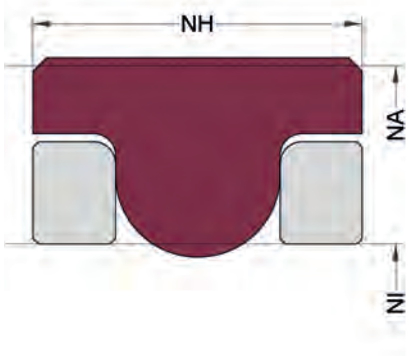
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

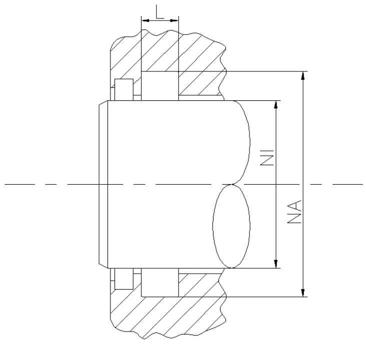
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS20





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, double acting compact rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Negligible tendency to “stick-slip” effect.
- High break-away load after long standstills.
- Activated back-up rings reduce gap extrusion and prevent twisting of the seal in the groove

Application
Reciprocating rods in hydraulic cylinders, plungers. Static and dynamic seals in hydraulic systems, replacement for O-Rings (no twisting or pumping). Max. pressure 700 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

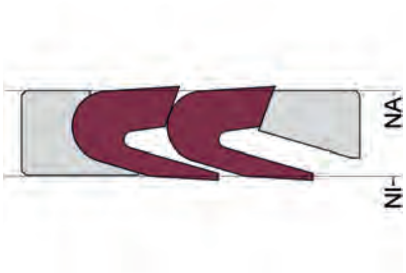
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

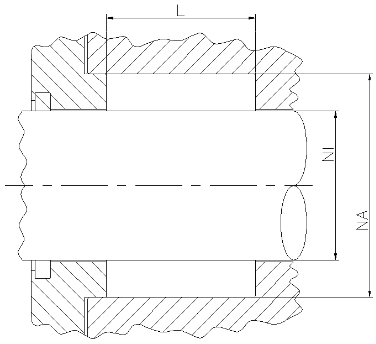
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS31_33





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent dynamic and good static sealing performance.
- Excellent performance in high pressure conditions.
- Especially used for long stroke lengths.
- Low friction due to flexiple lip design.

Application

Reciprocating rods in hydraulic cylinders, plungers, cylinders with very long strokes etc. as a replacement of fabric reinforced rubber seals. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation

Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

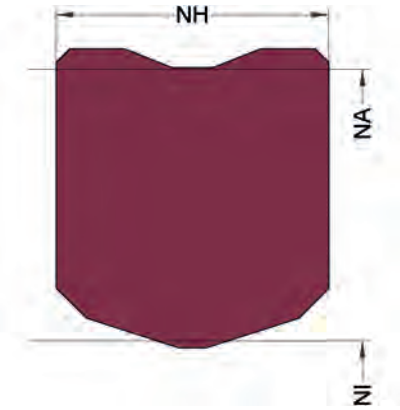
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

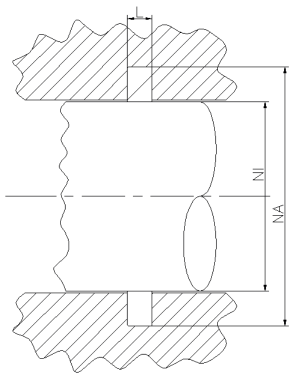
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS35





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, double acting compact rod seal, designed with interference on the OD which provides a good static fit in the groove.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- For rotary applications the interference on the OD has to be increased (better static fit to reduce the danger of the seal rotating in the housing), the preload has to be reduced (lower friction).

Application

Reciprocating rods in hydraulic cylinders, plungers. Static and dynamic seals in hydraulic systems, replacement for O-Rings (no twisting or pumping), alternative design for composite rod seals (PTFE + O-Ring energizer). Max. pressure 400 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.

Seal housing recommendation

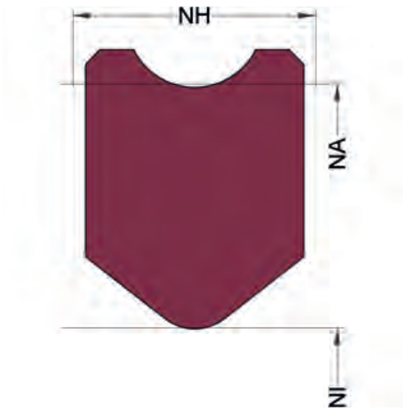
Tolerances	**[mm]**
L < 10mm	+/- 0.2
L ≥ 10mm	+/- 0.3
Ø NA	H9
Ø NI	h10

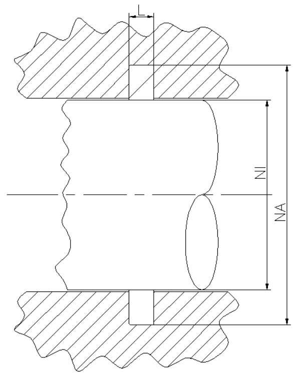
Surface Roughness	**Rtmax [μ]**	**Ra [μ]**
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	**Rtmax [μ]**	**Ra [μ]**
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rod Seal	Profile: RS35A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, double acting compact rod seal, optimized sealing edge and groove design to reduce and optimize the stress/strain in operation.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- For rotary applications the interference on the ID has to be increased (better static fit to reduce the danger of the seal rotating in the housing), the preload has to be reduced (lower friction).

Application

Reciprocating rods in hydraulic cylinders, plungers. Static and dynamic seals in hydraulic systems, replacement for O-Rings (no twisting or pumping), alternative design for composite piston seals (PTFE + O-Ring energizer). Max. pressure 400 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.

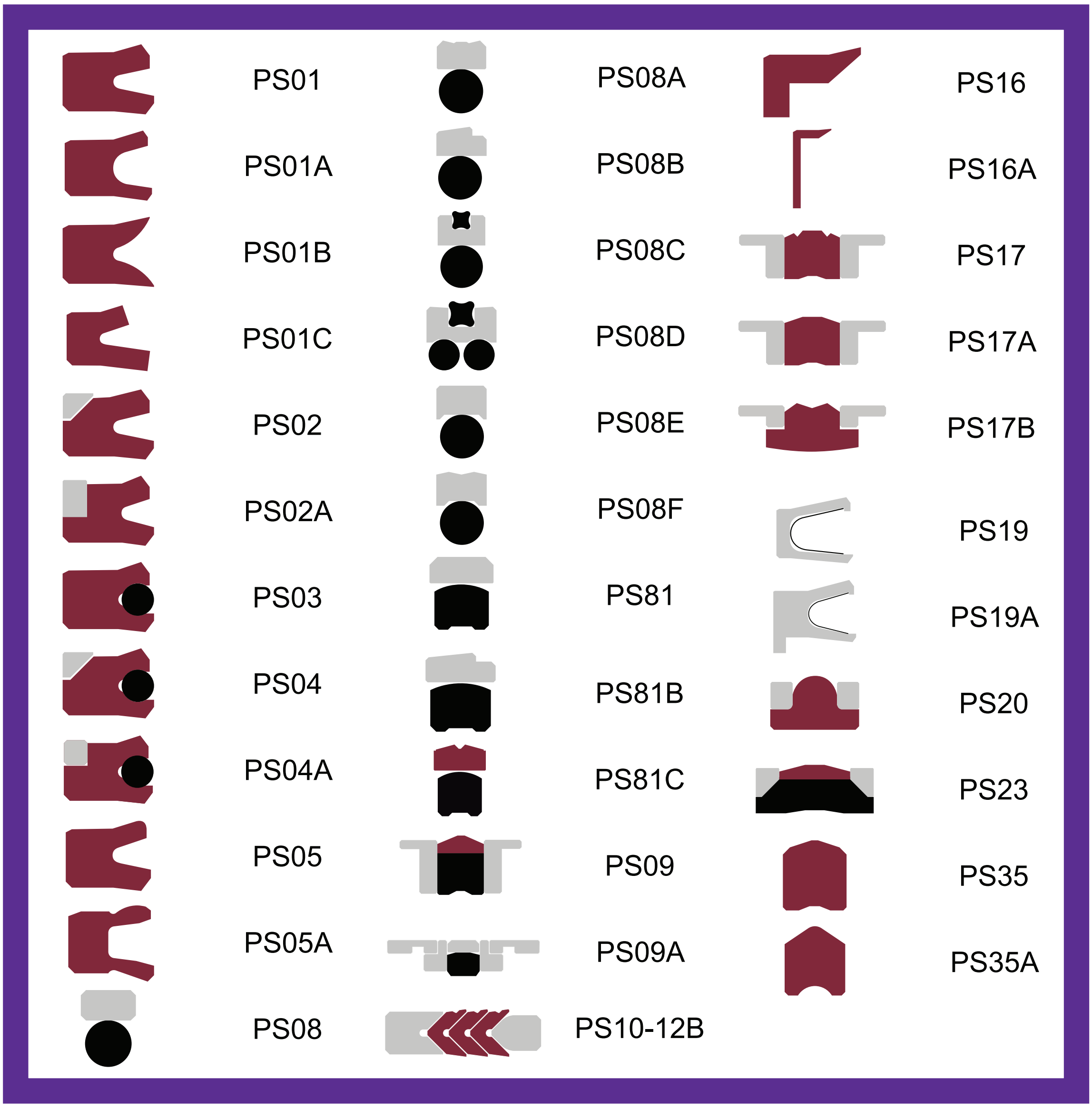
Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

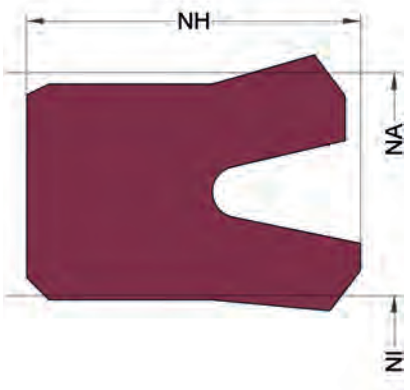
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

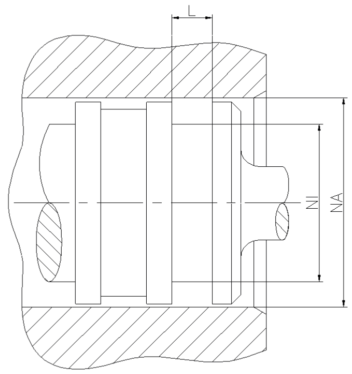
Piston seals



PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS01





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer).

Application

Reciprocating pistons in hydraulic cylinders, plungers.
Universal piston seal for small extrusion gaps and minor load impacts.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

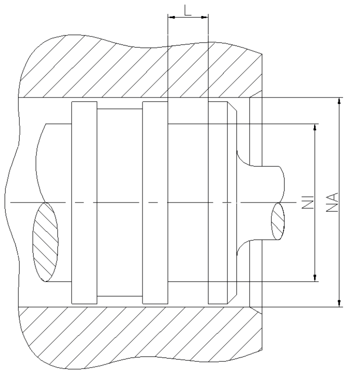
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS01A



General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Wider groove and softer lips compared to PS01.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application

Reciprocating pistons in hydraulic cylinders, plungers where low friction is required
Universal piston seal for small extrusion gaps and minor load impacts.
Max. pressure 160 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

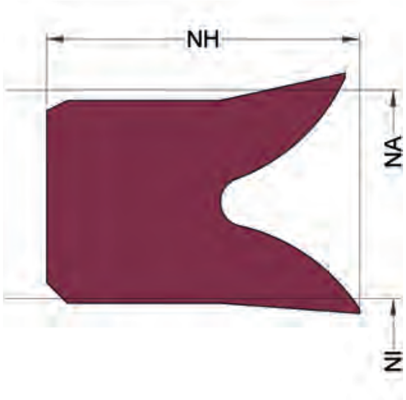
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

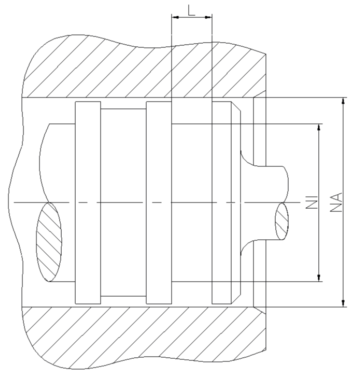
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS01B





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Sharp lips on ID and OD.
- Good static and dynamic sealing performance.
- Good performance in low pressure conditions.
- Useable for long stroke lengths.
- Out-of date profile; only used in old machineries.
- Poor sealing that causes a relative thick oil film.

Application

Reciprocating pistons in hydraulic cylinders, plungers etc.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

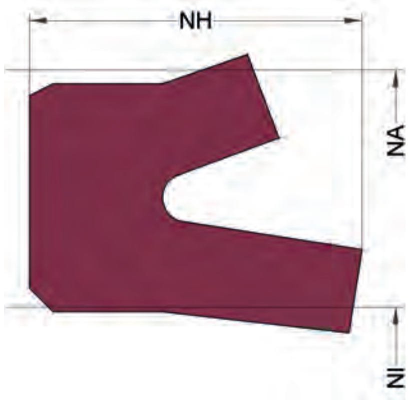
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

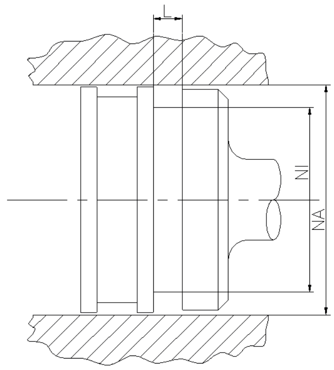
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS01C





General Description
Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Asymmetrical, single acting piston seal for hydraulic applications, designed with interference on the ID which provides a good static fit in the groove.
- Shortened sealing lip decreases contact area to the sealing surface thus resulting in reduced friction.
- Use in applications with lubricated air is possible.
- Small and compact housings possible.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip”, small break-away loads after long standstill.

Application
Reciprocating pistons in hydraulic cylinders.
Universal piston seal for small extrusion gaps and minor load impacts.
Max. pressure 400bar, max. speed 0,5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

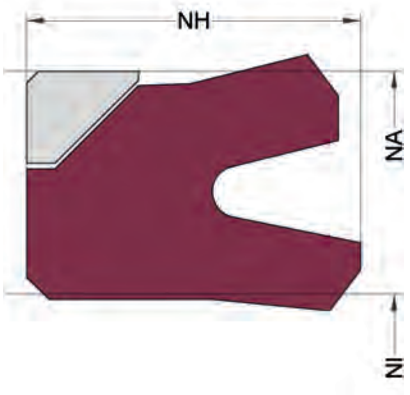
Tolerances	[mm]
L	+ 0.2
Ø NA	H9
Ø NI	h10

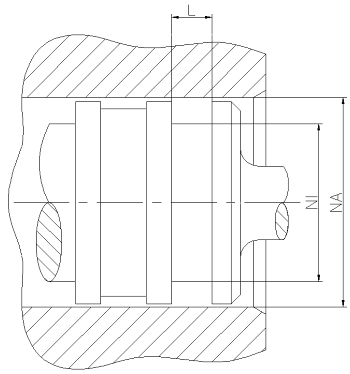
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS02





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.
  For lower speeds the dynamic lip should be redesigned (shorter, stiffer).
- Activated back-up rings prevent and reduce gap extrusion.

Application

Reciprocating pistons in hydraulic cylinders, plungers.
Universal piston seal for small extrusion gaps and minor load impacts.
Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

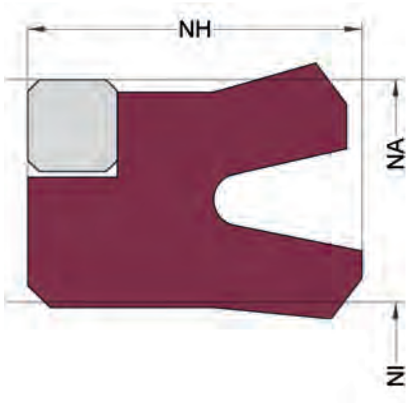
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

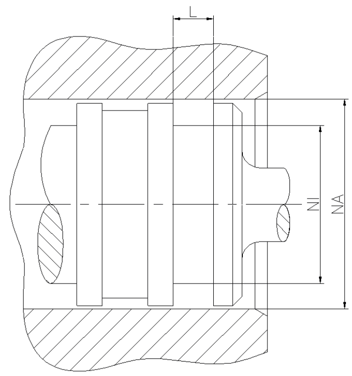
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS02A





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer).
- Activated back-up rings prevent and reduce gap extrusion.

Application

Reciprocating pistons in hydraulic cylinders, plungers.
Universal piston seal for small extrusion gaps and minor load impacts.
Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

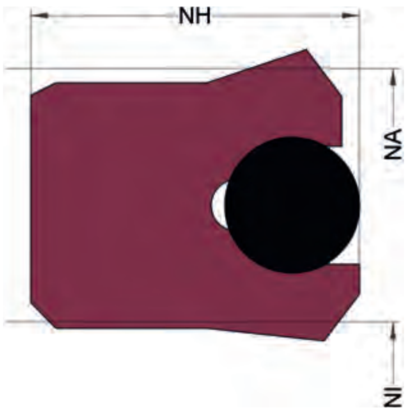
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

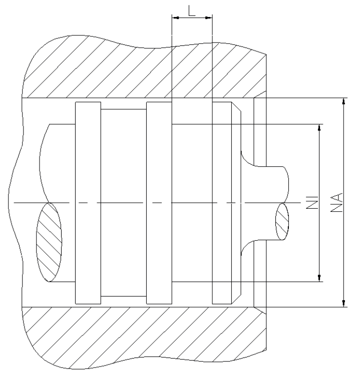
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS03





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- Used for short, pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating pistons in hydraulic cylinders, plungers, push rods, fittings, etc.
Switching or clamping functions.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

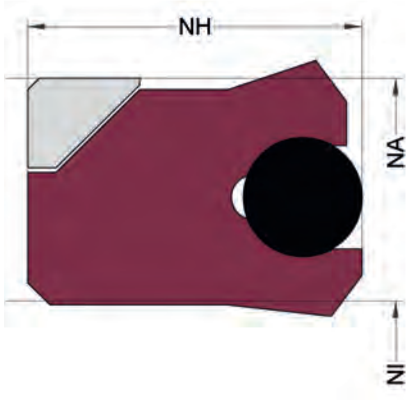
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

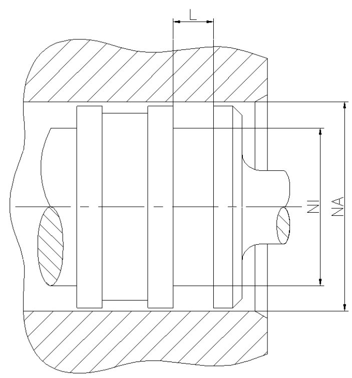
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS04





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring.
- Activated back-up ring prevents and reduces gap extrusion.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- Used for short, pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating pistons in hydraulic cylinders, plungers, push rods, fittings, etc.
Switching or clamping functions. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

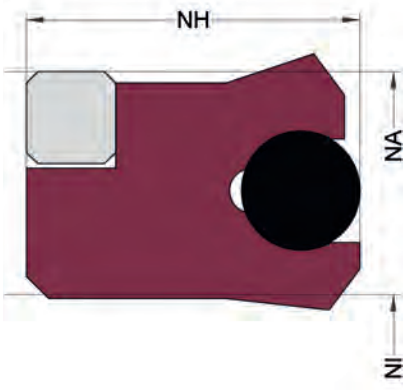
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

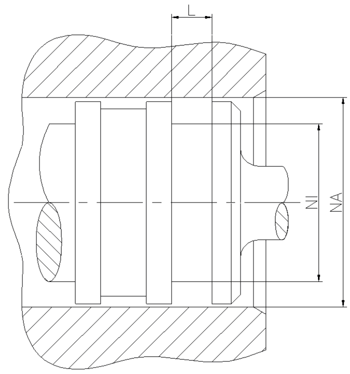
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS04A





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Increased preload due to an additional O-Ring.
- Activated back-up ring prevents and reduces gap extrusion.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- Used for short, pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating pistons in hydraulic cylinders, plungers, push rods, fittings, etc. Switching or clamping functions. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

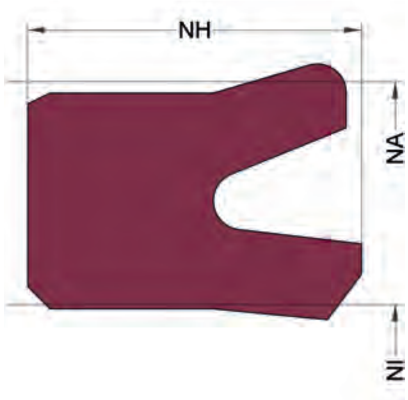
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

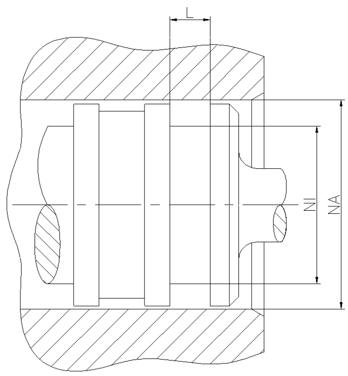
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS05





General Description
Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Asymmetrical, single acting piston seal for pneumatic applications, designed with interference on the ID which provides a good static fit in the groove.
- Special designed sealing lip to retain the lubrication film and prevent dry running.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip”, small break-away loads after long standstill.

Application
Reciprocating pistons in pneumatic cylinders, suitable for dry and lubricated air. Universal piston seal for small extrusion gaps and minor load impacts. Max. pressure 25 bar, max. speed 1 m/s.

Installation
Snap-in installation.

Seal housing recommendation

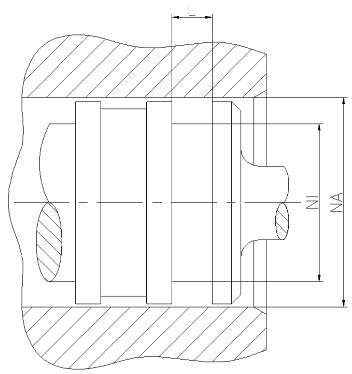
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS05A



General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal for pneumatic applications, designed with interference on the ID which provides a good static fit in the groove.
- Special designed sealing lip to retain the lubrication film and prevent dry running.
- Excellent static and dynamic sealing performance.
- Useable for long stroke lengths.
- Almost no tendency to “stick-slip”, small break-away loads after long standstill.

Application

Reciprocating pistons in pneumatic cylinders, suitable for dry and lubricated air. Universal piston seal for small extrusion gaps and minor load impacts. Max. pressure 25 bar, max. speed 1.3 m/s.

Installation

Snap-in installation.

Seal housing recommendation

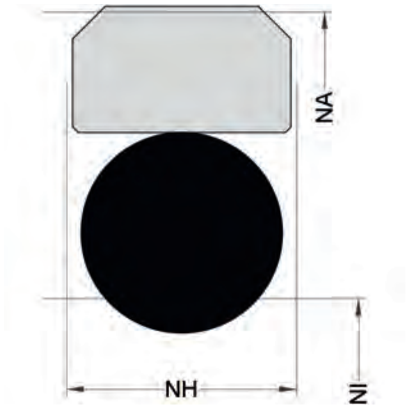
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

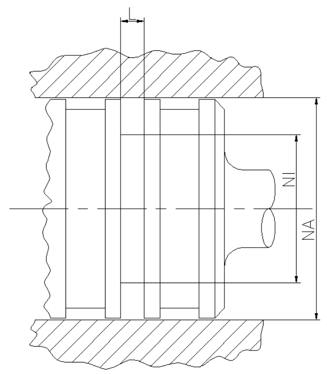
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS08





General Description
Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the PTFE glide ring on the OD.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.

Application
Reciprocating pistons in hydraulic cylinders, plungers. Dynamic seals in hydraulic systems.
Max. pressure 400 bar, max. speed 15 m/s.

Installation
Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

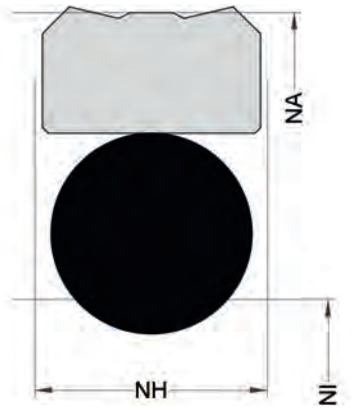
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

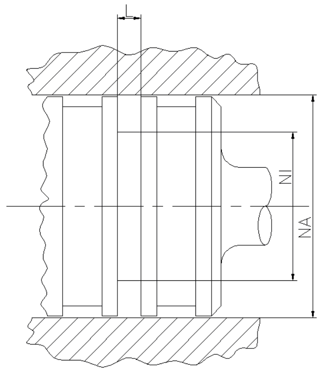
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS08A





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmospherer between two pressurized spaces.

Features

- Asymmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the glide ring on the OD.
- Two external sealing edges working as a primary seal and reducing the risk of the blow-by effect.
- Central back-up and sealing bulge.
- Glide ring in very wear resistent hard grade polyurethane (PU-D57).
- Suitable for positioning and holding functions.
- Negligible tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.

Application

Reciprocating pistons in hydraulic cylinders, plungers. Dynamic seals in hydraulic systems.
Max. pressure 250 bar, max. speed 1 m/s.

Installation

Snap-in installation.

Seal housing recommendation

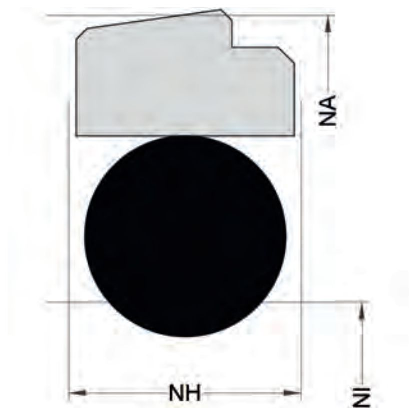
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

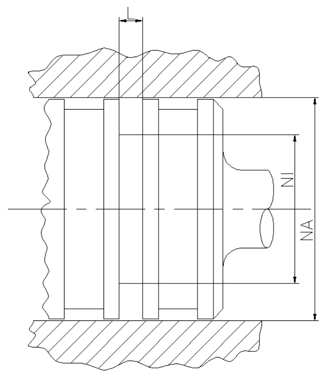
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS08B





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the PTFE glide ring on the OD.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance due to the free space on the trailing side.

Application

Reciprocating pistons in hydraulic cylinders, plungers. Dynamic seals in hydraulic systems.
Tandem arrangement possible. Max. pressure 400 bar, max. speed 15 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

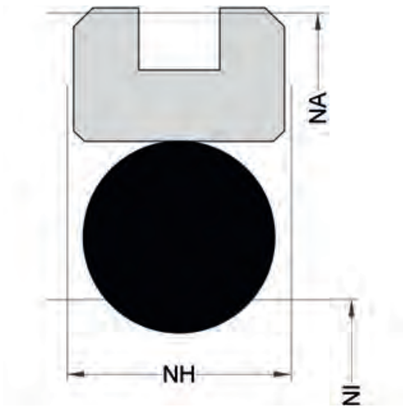
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

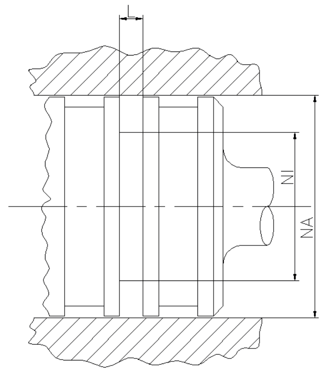
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS08C





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the PTFE glide ring on the OD.
- Quad ring® on the outside diameter ensures additional sealing especially at holding and positioning functions.
- Good sealing function at medium separation.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.

Application

Reciprocating pistons in hydraulic cylinders, plungers. Dynamic seals in hydraulic systems. Max. pressure 400 bar, max. speed 2 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

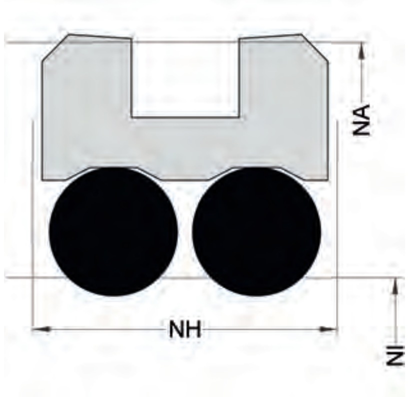
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

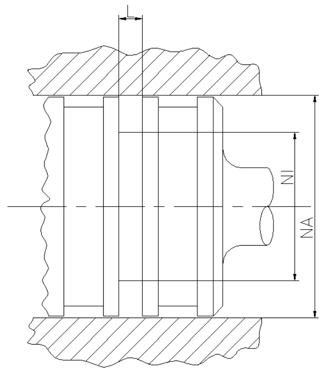
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS08D





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, double acting piston seal, designed with interference of the O-Rings on the ID and slight interference of the PTFE glide ring on the OD.
- Quad ring® on the outside diameter ensures additional sealing especially at holding and positioning functions.
- The use of two O-Rings ensures better pressure distribution on the sealing edges.
- Good sealing function at medium separation.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.

Application

Reciprocating pistons in hydraulic cylinders, plungers.

Dynamic seals in hydraulic systems.

Max. pressure 400 bar, max. speed 3 m/s

Installation

Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

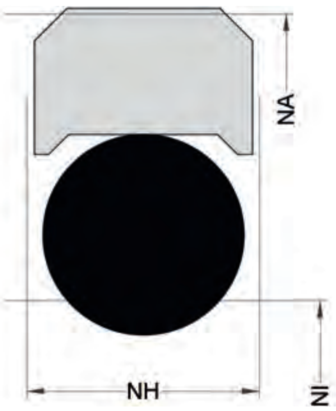
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

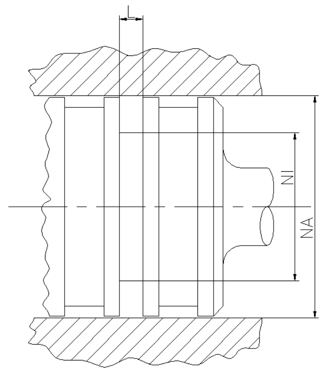
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS08E





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the glide ring on the OD.
- Glide ring commonly made in hard grade Polyurethane (PU-D57).
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.

Application

Reciprocating pistons in hydraulic cylinders, plungers. Dynamic seals in hydraulic systems.
Max. pressure 250 bar, max. speed 1 m/s (PU-D57)
Max. pressure 400 bar, max. speed 10 m/s (PTFE Materials)

Installation

Snap-in installation.
Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

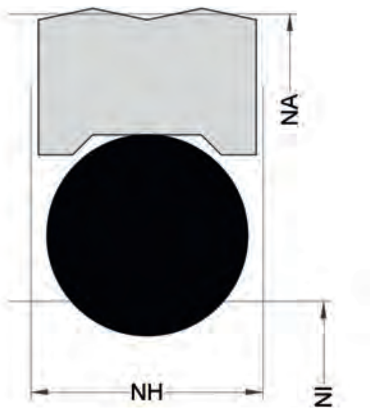
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

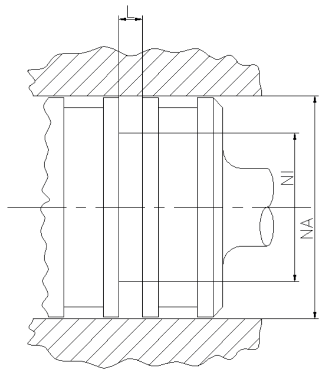
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS08F





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.
- Glide ring in very wear resistent hard grade polyurethane (PU-D57).
- Excellent sealing performance in low and high speeds.
- Suitable for positioning and holding functions.
- Negligible tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.

Application

Reciprocating pistons in hydraulic cylinders, plungers.
Dynamic seals in hydraulic systems.
Max. pressure 250 bar, max. speed 1 m/s.

Installation

Snap-in installation.

Seal housing recommendation

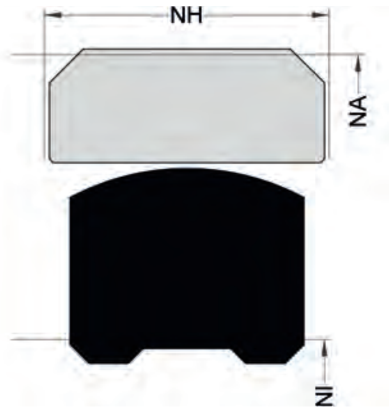
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

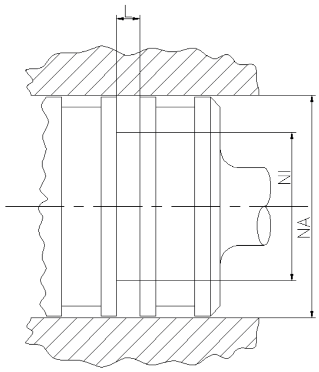
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS81





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, double acting piston seal, designed with interference of the preload element on the ID and slight interference of the PTFE glide ring on the OD.
- High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.
- Can be used in grooves where no O-Ring is possible.

Application

Reciprocating pistons in hydraulic cylinders, plungers in heavy-duty applications. Max. pressure 400 bar, max. speed 10 m/s.

Installation

Snap-in installation. Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

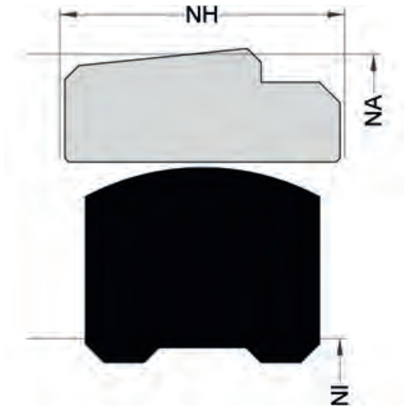
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

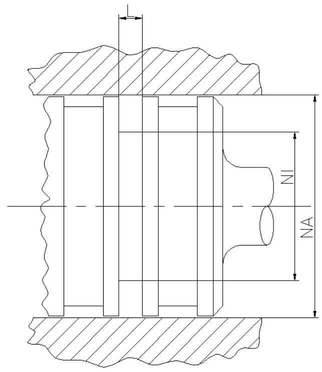
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS81B





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal, designed with interference of the preload element on the ID and slight interference of the PTFE glide ring on the OD.
- High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance.
- Excellent sealing performance in low and high speeds.
- Suitable for positioning functions.
- Negligible tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.
- Can be used in grooves where no O-Ring is possible.

Application

Reciprocating pistons in hydraulic cylinders, plungers in heavy-duty applications. Max. pressure 400 bar, max. speed 10 m/s.

Installation

Snap-in installation. Attention: PTFE glide rings needs calibration after installation!

Seal housing recommendation

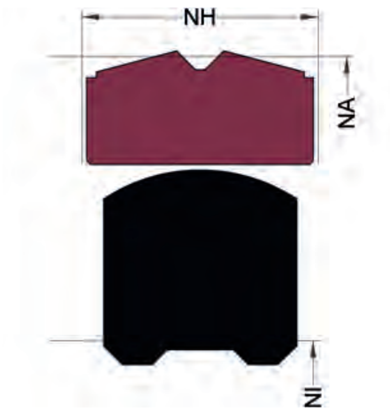
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

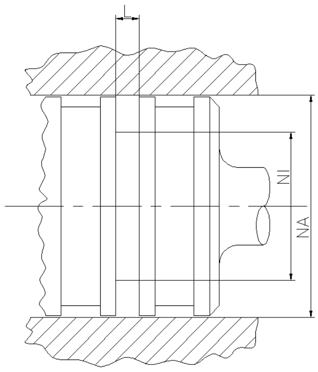
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS81C





General Description
Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, double acting piston seal, designed with two defined sealing edges on the profile ring to lower the friction.
- High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance.
- Excellent sealing performance also in low pressure range.
- Suitable for positioning functions.
- Almost no tendency to “stick-slip” effect, good sliding properties.
- Low break-away load after long standstills.
- Excellent gap extrusion resistance.
- Can be used in grooves where no O-Ring is possible.

Application
Reciprocating pistons in hydraulic cylinders, plungers in heavy-duty applications. Max. pressure 400 bar, max. speed 0.6 m/s.

Installation
Snap-in installation.

Seal housing recommendation

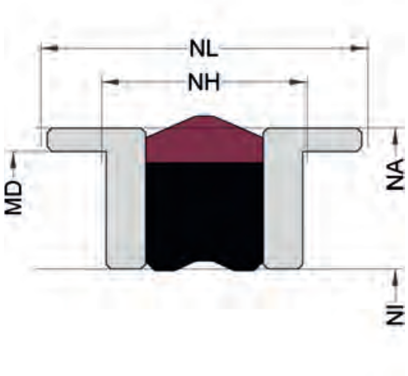
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h8

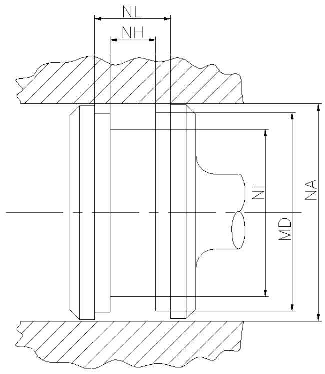
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS09





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one gliding, energizing and two guiding/back-up elements.
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders. Universal piston seal for double-acting cylinders.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation. The deformation of the energizing element during installation should not exceed 30% - risk of permanent deformation!

Seal housing recommendation

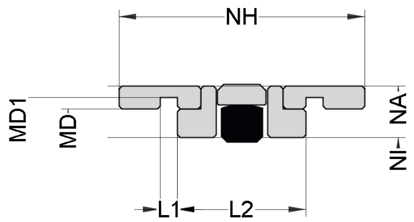
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

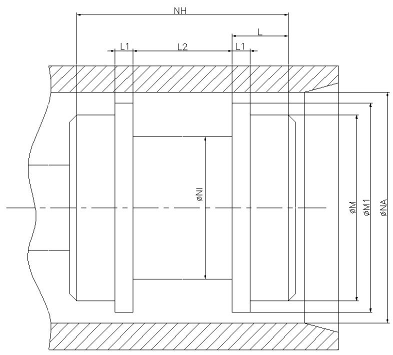
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS09A





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one gliding, energizing, two back-up and two gide elements.
- Useable for short and long stroke lengths.
- Compact piston design possible
- Good static and dynamic sealing performance.
- Good positioning control.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation. The deformation of the energizing element during installation should not exceed 30% - risk of permanent deformation!

Seal housing recommendation

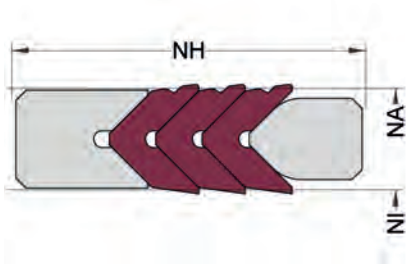
Tolerances	[mm]
L1	d10
L2	D10
NH	D10
Ø NA	H8
Ø NI	h9

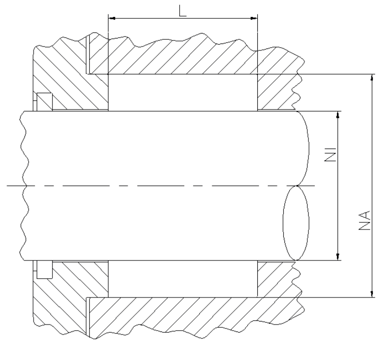
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS10_12B





General Description

Asymmetrical piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Friction optimized asymmetrical, single acting piston seal, combined with pressure ring and support ring.
- Special vee design to assure a sufficient lubrication for the whole packing. Additional groove on the dynamic lip to reduce the contact surface and also working as a grease depot.
- By adjusting the number of vee's friction characteristics can be influenced - recommendation max. 4 vee's.
- Excellent static and dynamic sealing performance.
- Useable for short and long stroke lengths.
- High wear resistance.

Application

Reciprocating pistons in hydraulic cylinders, etc.
Used in heavy duty applications (presses) with return stroke by equipment weight.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter).

Seal housing recommendation

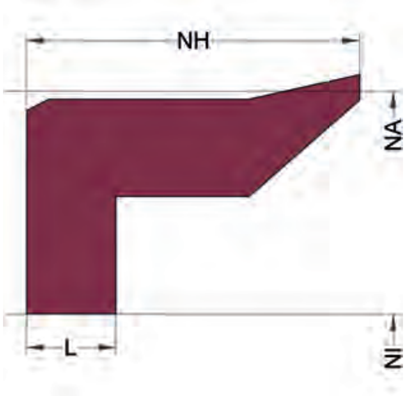
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

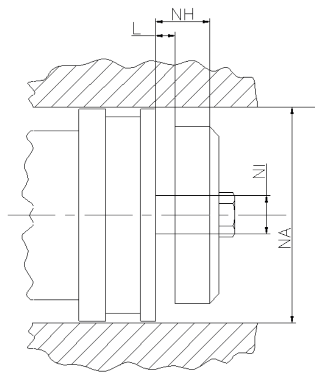
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS16





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal.
- Long sealing lip compensates for radial inaccuracy or excentricity.
- Useable for long stroke lengths.
- Low break-away load after long standstills.
- Seal design tends to “stick-slip” effect.

Application

Reciprocating pistons in hydraulic and pneumatic cylinders. Replacement for seal designs (leather seals etc.) used in old cylinders.
Max. pressure 160 bar, max. speed 0.5 m/s.

Installation

Clamped by flange.

Seal housing recommendation

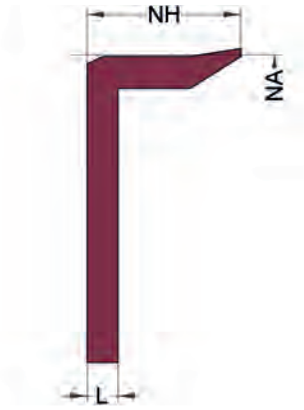
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

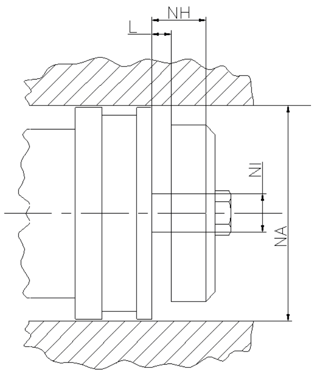
Surface Roughness	Rtmax [μ]	Ra [μ]
Face of groove	≤ 15	≤ 3
Bottom of groove	≤ 6.3	≤ 1.6

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS16A





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting piston seal.
- Long sealing lip compensates for radial inaccuracy or excentricity.
- Useable for long stroke lengths.
- Low break-away load after long standstills.
- Seal design tends to “stick-slip” effect.

Application

Reciprocating pistons in hydraulic and pneumatic cylinders.
Replacement for seal designs (leather seals etc.) used in old cylinders.
Max. pressure 160 bar, max. speed 0.5 m/s.

Installation

Clamped by flange.

Seal housing recommendation

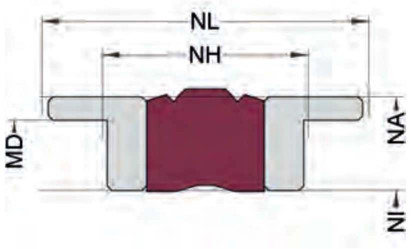
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

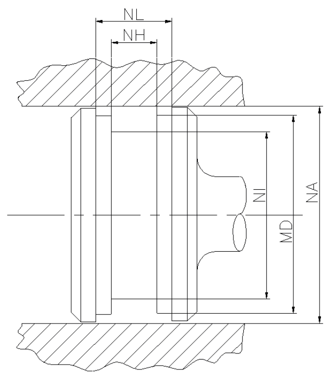
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS17





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one sealing and two guiding/back-up elements.
- Useable for short and long stroke lengths.
- Good dynamic and static sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders. Universal piston seal for double-acting cylinders. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation. Recommended for cross sections up to approx. 10mm.

Seal housing recommendation

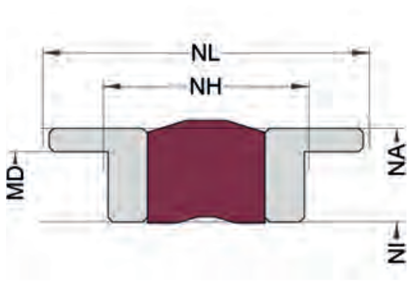
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

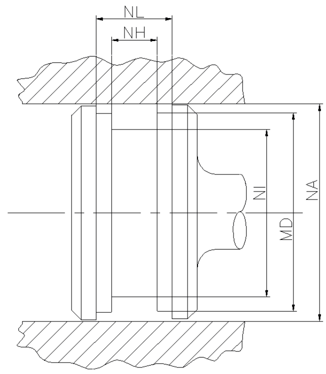
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS17A





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one sealing and two guiding/back-up elements.
- Useable for short and long stroke lengths.
- Good dynamic and static sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders. Universal piston seal for double-acting cylinders. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation. Recommended for cross sections up to approx. 10mm.

Seal housing recommendation

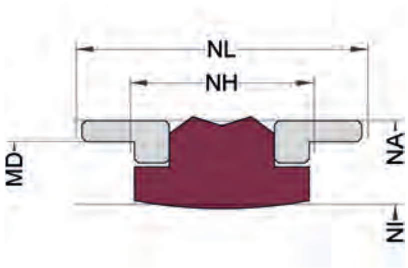
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

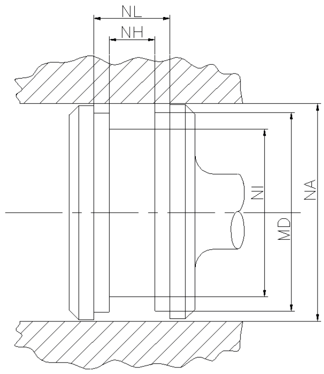
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS17B





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one sealing and two guiding/back-up elements.
- Two sealing edges on the OD for improved media seperation.
- Useable for short and long stroke lengths.
- Good dynamic and static sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders. Universal piston seal for double-acting cylinders.
Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.
Recommended for cross sections up to approx. 10mm.

Seal housing recommendation

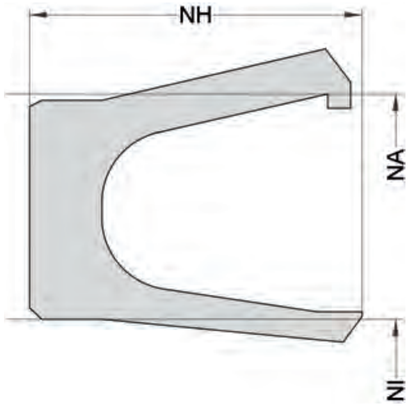
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

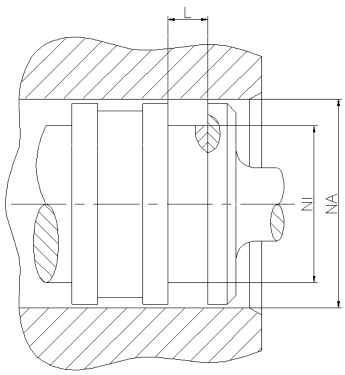
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS19





General Description
Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Asymmetrical, single acting piston seal, designed with no interference on the static sealing diameter.
- Preload effected through V-spring.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions.
- Negligible tendency to “stick-slip” effect, small break away loads.

Application
Reciprocating and swivelling pistons in hydraulic cylinders, plungers.
Chemical and pharmaceutical industry, aggressive fluids and high temp.
Max. pressure 160 bar, max. speed 15 m/s.

Installation
Installation in open housing, snap-in installation possible in special designed housings.

Seal housing recommendation

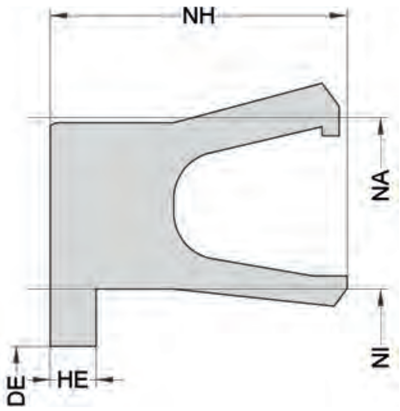
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

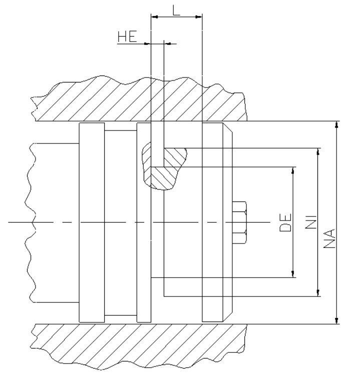
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: PS19A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, single acting rotary seal with clamping flange.
- Preload effected through V-spring.
- Dynamic sealing lip shorter than static lip to avoid drag pressure.
- Excellent static and dynamic sealing performance.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions, no stick-slip effect.

Application

Reciprocating and swivelling pistons or housings.
Chemical and pharmaceutical industry, aggressive fluids and high temp.
Max. pressure 150 bar, max. speed 2 m/s.

Installation

Installation in open housing.

Seal housing recommendation

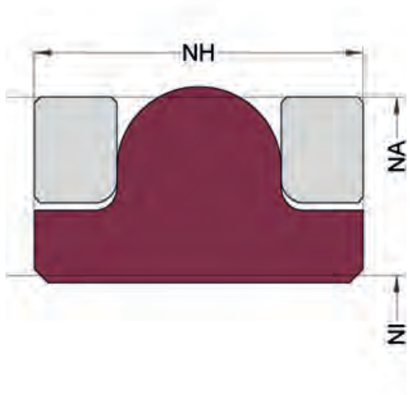
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

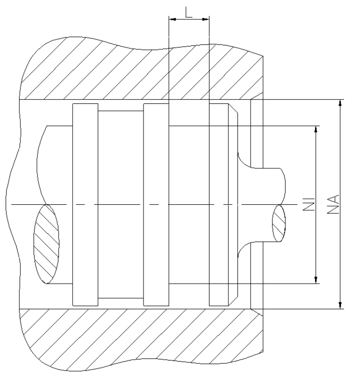
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS20





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, double acting compact piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Negligible tendency to “stick-slip” effect.
- High break-away load after long standstills.
- Activated back-up rings reduce gap extrusion and prevent twisting of the seal in the groove.

Application

Reciprocating pistons in hydraulic cylinders, plungers. Static and dynamic seals in hydraulic systems, replacement for O-Rings (no twisting or pumping). Max. pressure 700 bar, max. speed 0.5 m/s

Installation

Snap-in installation.

Seal housing recommendation

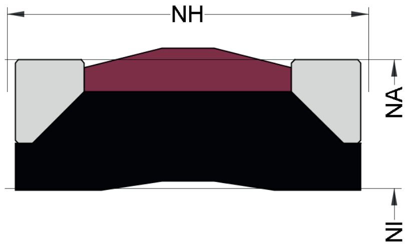
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

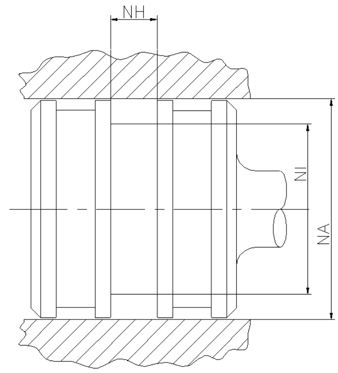
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS23





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one gliding, energizing and two back-up elements.
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.
- No drag pressure build-up.

Application

Reciprocating pistons in hydraulic cylinders. Universal piston seal for double-acting cylinders. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation. The deformation of the energizing element during installation should not exceed 30% - risk of permanent deformation!

Seal housing recommendation

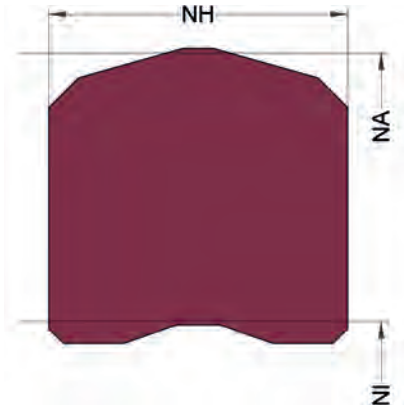
Tolerances	[mm]
NH < 10 mm	+ 0.2
NH > 10 mm	+ 0.3
Ø NI	h10
Ø NA	H9

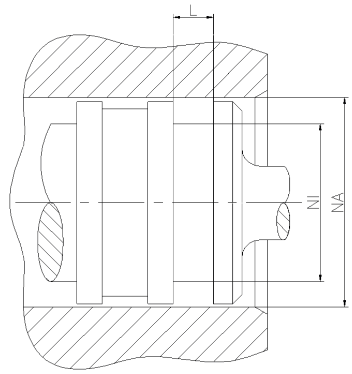
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS35





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, double acting compact piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- For rotary applications the interference on the ID has to be increased (better static fit to reduce the danger of the seal rotating in the housing), the preload has to be reduced (lower friction).

Application

Reciprocating pistons in hydraulic cylinders, plungers.
Static and dynamic seals in hydraulic systems, replacement for O-Rings (no twisting or pumping), alternative design for composite piston seals (PTFE + O-Ring energizer).
Max. pressure 400 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.

Seal housing recommendation

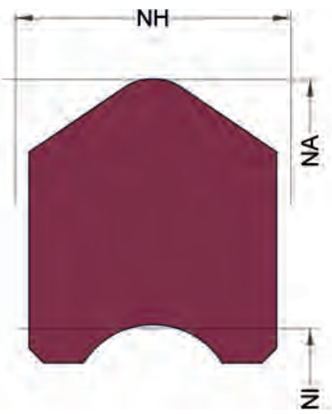
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

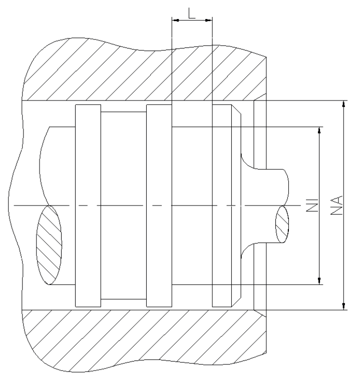
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston Seal	Profile: PS35A





General Description

Piston seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Asymmetrical, double acting compact piston seal, optimized sealing edge and groove design to reduce and optimize the stress/strain in operation.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- For rotary applications the interference on the ID has to be increased (better static fit to reduce the danger of the seal rotating in the housing), the preload has to be reduced (lower friction).

Application

Reciprocating pistons in hydraulic cylinders, plungers. Static and dynamic seals in hydraulic systems, replacement for O-Rings (no twisting or pumping), alternative design for composite piston seals (PTFE + O-Ring energizer). Max. pressure 400 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.

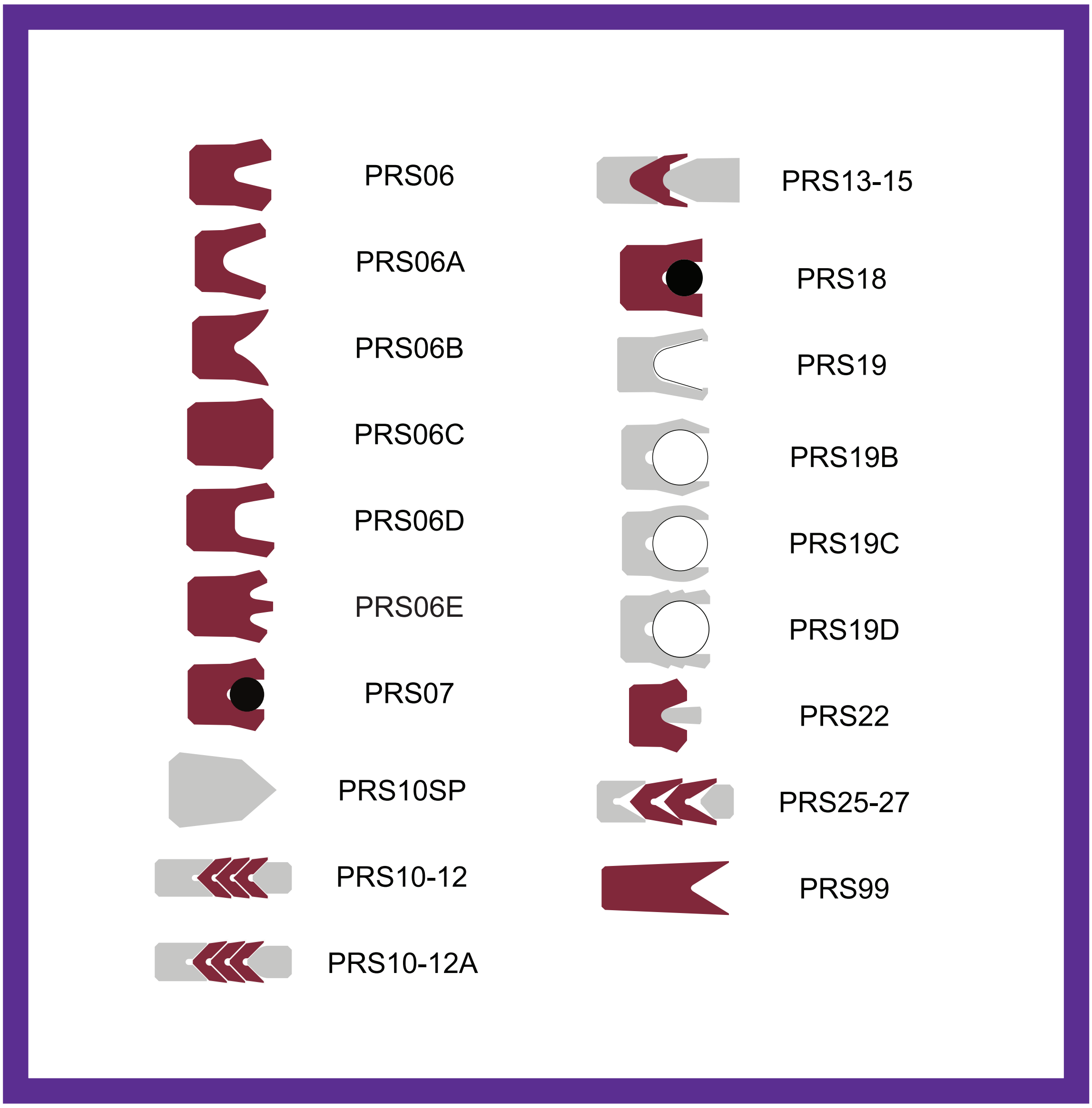
Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

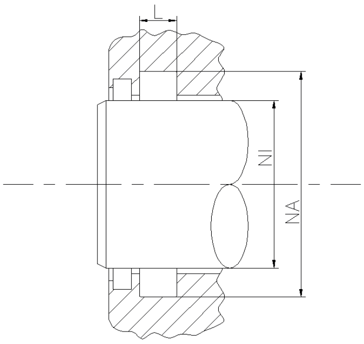
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

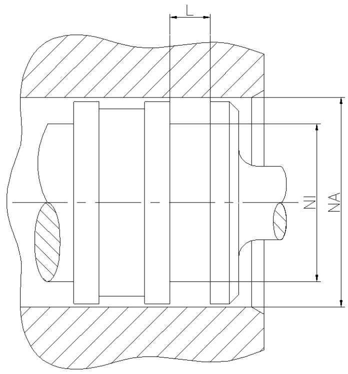
Symmetrical seals



PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS06





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Universal piston / rod seal for small extrusion gaps and minor work loads. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

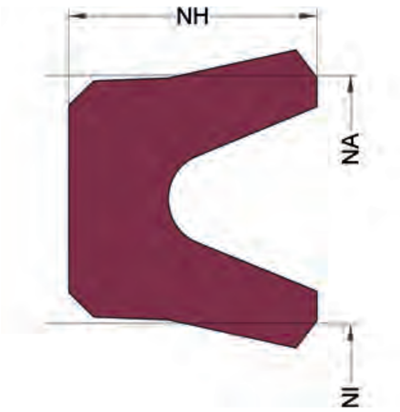
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NI (piston groove)	h10
Ø NA (cylinder diam.)	H9

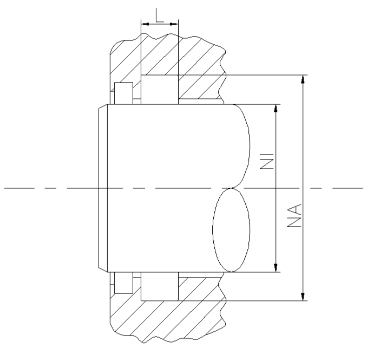
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

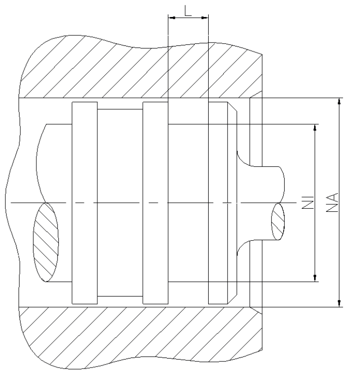
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS06A







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Wider groove and softer lips compared to PRS06.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. where low friction is required. Universal piston / rod seal for small extrusion gaps and minor work loads. Max. pressure 160 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

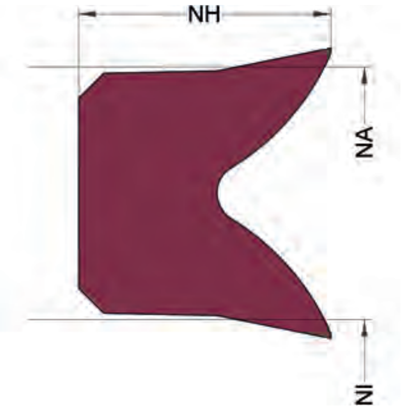
Tolerances	**[mm]**
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

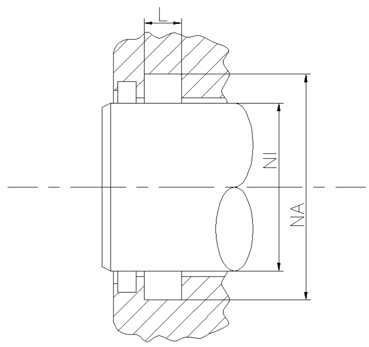
Surface Roughness	**Rtmax [µ]**	**Ra [µ]**
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

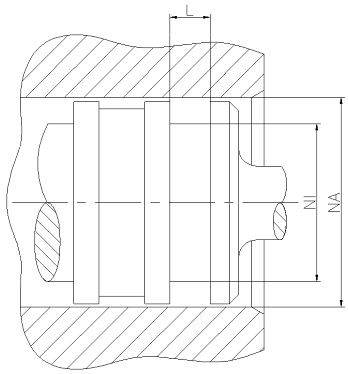
Sliding Surface	**Rtmax [µ]**	**Ra [µ]**
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS06B







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Sharp lips on ID and OD.
- Good static and dynamic sealing performance.
- Good performance in low pressure conditions.
- Useable for long stroke lengths.
- Out-of date profile; only used in old machineries.
- Poor sealing that causes a relative thick oil film.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

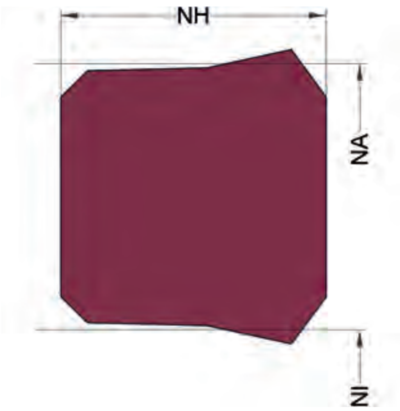
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

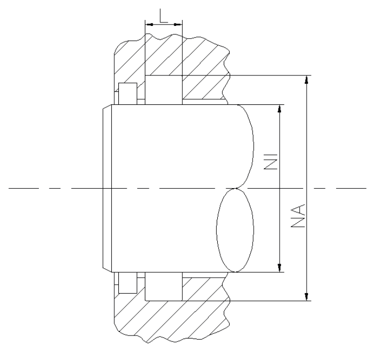
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

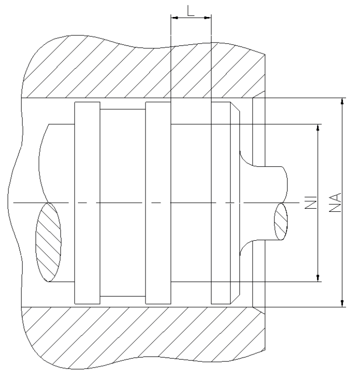
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS06C







General Description
Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Special design for small cross sections where lips would be too thin.
- Excellent static and dynamic sealing performance.
- Excellent performance over all pressure ranges.
- Used for short pulsating strokes.
- No reverse leakage when changing direction.
- Particularly suitable for high viscosity media.
- Recommended for positioning or holding under pressure.

Application
Reciprocating pistons/rods in hydraulic cylinders, push rods, fittings etc. Switching or clamping functions. Replacement for rubber fabric seals. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

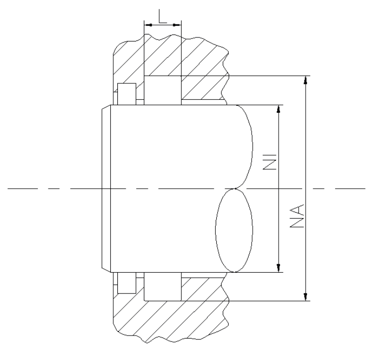
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

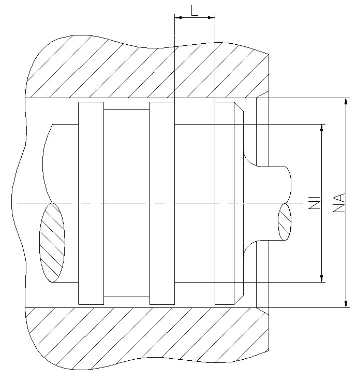
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS06D





General Description
Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Special design with wider groove for large cross sections.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application
Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Universal piston / rod seal for small extrusion gaps and minor work loads. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

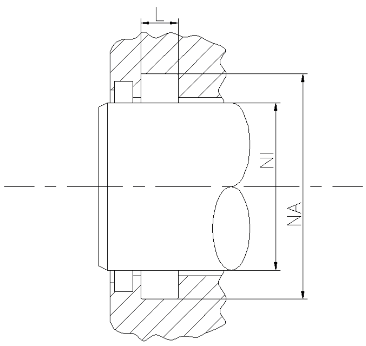
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

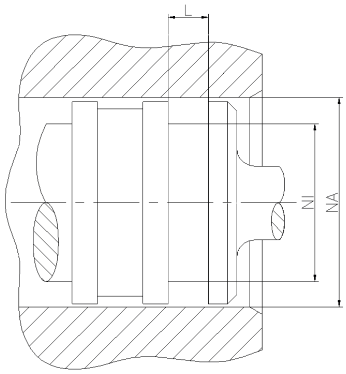
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS06E





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Axial stabilisation of the seal by means of an additional land.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Replacement for rubber fabric seals of older machineries. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

We recommend to maintain a nominal width/seal height ration (CS/NH) above 1/1,25.

Seal housing recommendation

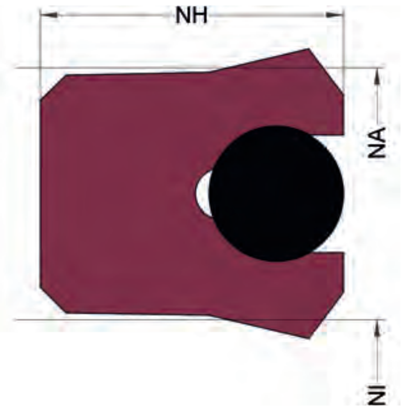
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

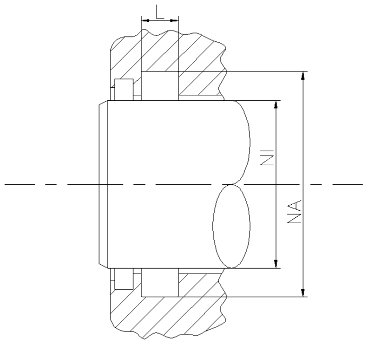
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

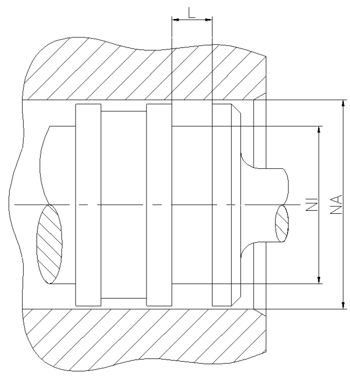
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS07







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Increased preload due to an additional O-Ring.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Used for short pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Switching or clamping functions. Replacement for rubber fabric seals. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

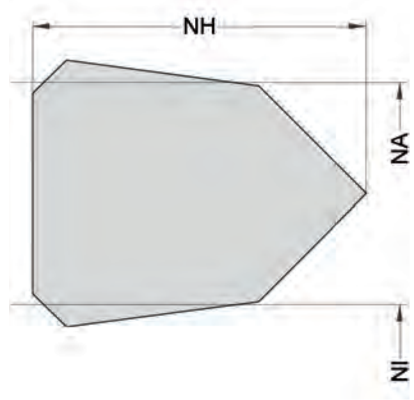
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

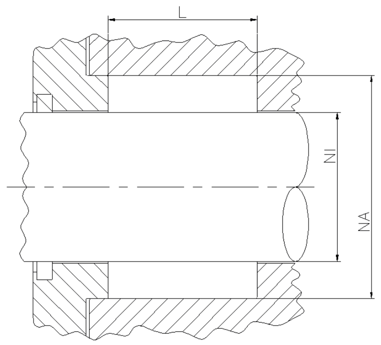
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS10SP





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Variable support ring for vee packings PRS10-12
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- High wear resistance.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation

Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

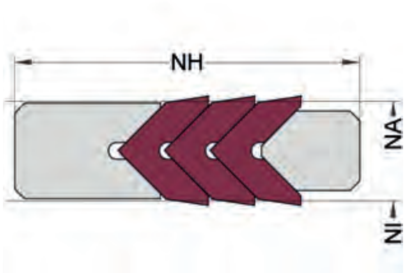
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

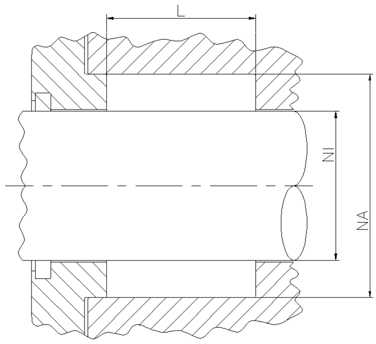
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS10_12





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- High wear resistance.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation

Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

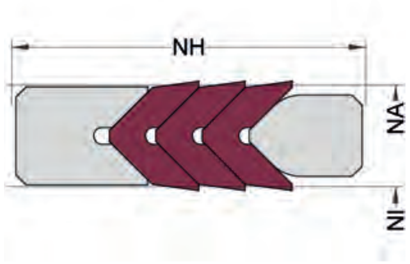
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

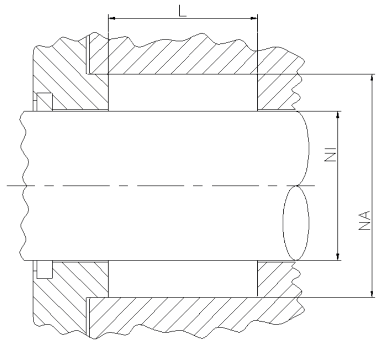
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS10_12A





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- friction optimized symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of vee's friction characteristics can be influenced - recommendation max. 4 vee's.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- High wear resistance.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation

Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

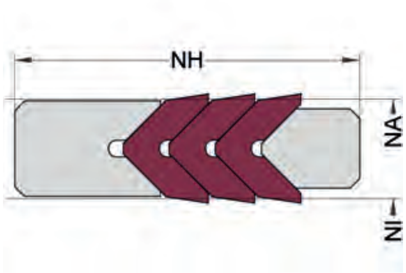
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

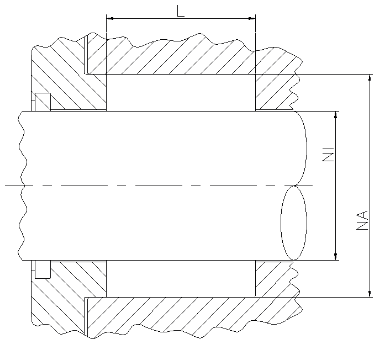
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS10_12_PLAST





General Description
Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- High wear resistance.

Application
Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation
Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

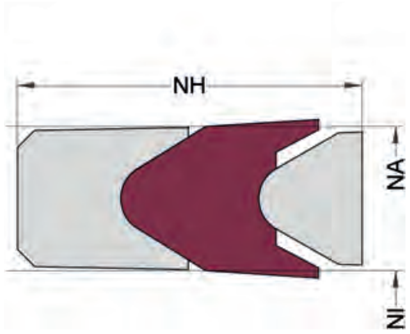
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

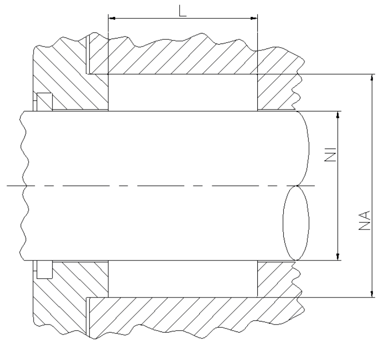
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS13_15





General Description
Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- Reduced friction compared to PRS10-12 profile especially in the high pressure range.

Application
Reciprocating pistons/rods in hydraulic cylinders, plungers and warer hydraulics. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation
Installation in open housings.

Seal housing recommendation

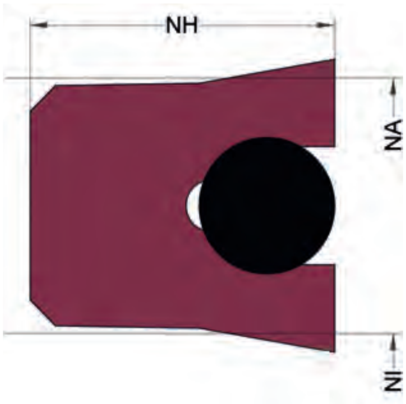
Tolerances	**[mm]**
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

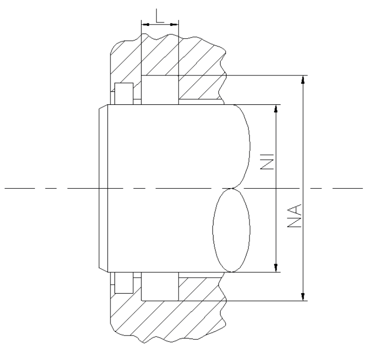
Surface Roughness	**Rtmax [µ]**	**Ra [µ]**
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

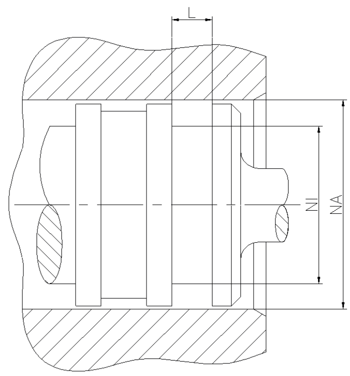
Sliding Surface	**Rtmax [µ]**	**Ra [µ]**
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS18







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Increased preload due to an additional O-Ring.
- Sharp lips for use in high viscosity media.
- Excellent static and dynamic sealing performance.
- Good performance in all pressure ranges.
- Used for short pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Switching or clamping functions. Replacement for rubber fabric seals. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

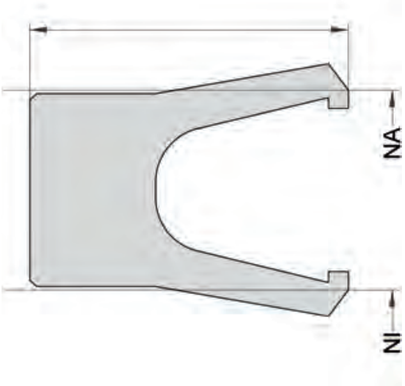
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

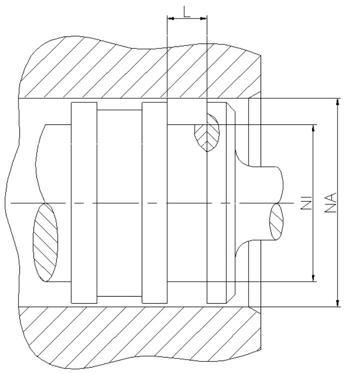
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

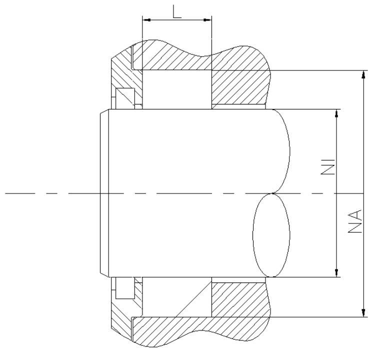
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS19







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting seal, no interference on the ID or OD.
- For use as rod or piston seal
- Preload effected through V-spring which ensures the continious pressure on the sealing lips.
- Retainer nose on inside and outside lip.
- Excellent static and dynamic sealing performance.
- Excellent sealing performance in low and high pressure ranges.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions.
- Negligible tendency to “stick-slip” effect, small break away loads.

Application

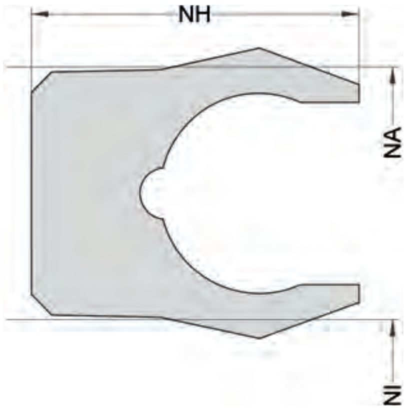
Reciprocating and swivelling pistons in hydraulic cylinders, plungers.
Chemical and pharmaceutical industry, aggressive fluids and high temp.
Max. pressure 160 bar, max. speed 5 m/s linear; 0,1m/s rotating.

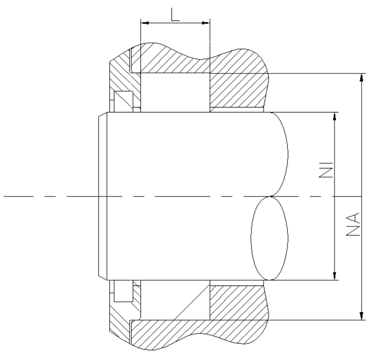
Installation

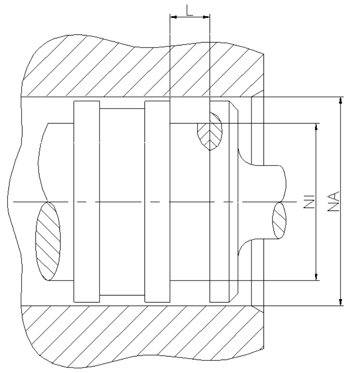
Installation in open housing, snap-in installation possible in special designed housings. We recommend to maintain a nominal width/seal height ration (CS/NH) above 1/1,5.

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS19B







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Preload effected through round Helicoil-spring which ensures high pressure on the sealing edges.
- Excellent static and dynamic sealing performance.
- Excellent sealing performance in low and high pressure ranges.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions.
- Also used for gas applications.
- Negligible tendency to “stick-slip” effect, small break away loads.

Application

Reciprocating and swivelling pistons in hydraulic cylinders, plungers. Chemical and pharmaceutical industry, aggressive fluids and high temp. Max. pressure 160 bar, max. speed 5 m/s linear; 0,1m/s rotating.

Installation

Installation in open housing, snap-in installation possible in special designed housings.

Seal housing recommendation

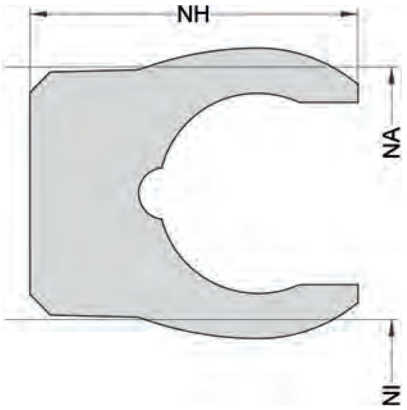
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

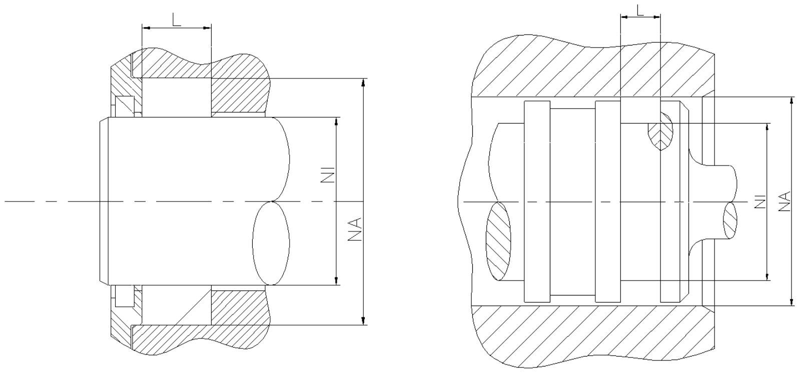
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS19C





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Preload effected through Helicoil-spring which ensures high pressure on the rounded sealing lips.
- Excellent static and dynamic sealing performance.
- Excellent sealing performance in low and high pressure ranges.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions.
- Also used for gas applications.
- Negligible tendency to “stick-slip” effect, small break away loads.

Application

Reciprocating and swivelling pistons in hydraulic cylinders, plungers. Chemical and pharmaceutical industry, aggressive fluids and high temp. Max. pressure 160 bar, max. speed 5 m/s linear; 0,1m/s rotating.

Installation

Installation in open housing, snap-in installation possible in special designed housings.

We recommend to maintain a nominal width/seal height ration (CS/NH) above 1/1,5.

Seal housing recommendation

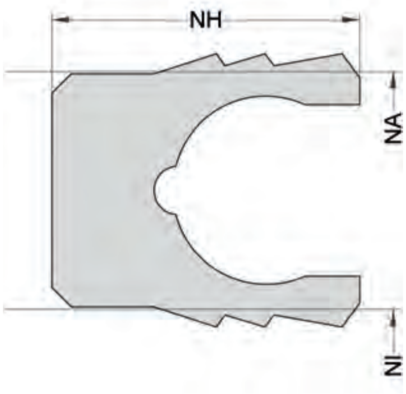
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

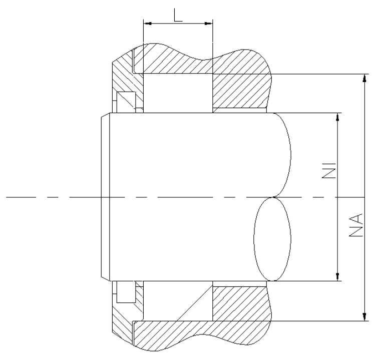
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

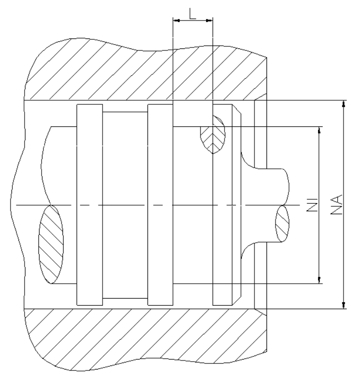
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS19D







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Preload effected through round Helicoil-spring which ensures high pressure on the sealing edges.
- Excellent static and dynamic sealing performance.
- Excellent sealing performance in low and high pressure ranges.
- Useable for short and long stroke lengths.
- Low friction in dry running or poor lubrication conditions.
- Negligible tendency to “stick-slip” effect, small break away loads.

Application

Reciprocating and swivelling pistons in hydraulic cylinders, plungers. Chemical and pharmaceutical industry, aggressive fluids and high temp. Max. pressure 200 bar, max. speed 1 m/s

Installation

Installation in open housing, snap-in installation possible in special designed housings.

We recommend to maintain a nominal width/seal height ration (CS/NH) above 1/1,5.

Seal housing recommendation

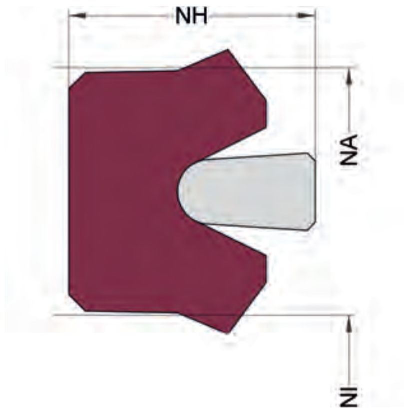
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

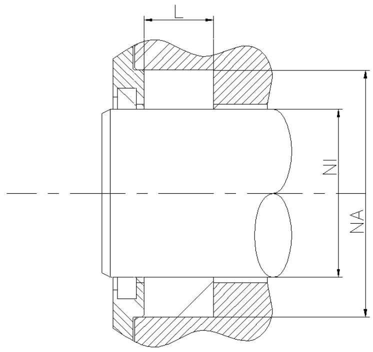
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS22





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Stabilisation of the sealing ring by an additional retainer ring.
- Excellent static and dynamic sealing performance.
- Excellent performance in low pressure conditions.
- Useable for long stroke lengths.
- Negligible tendency to “stick-slip” effect above a speed of 0.15 m/s.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Replacement for rubber fabric seals of older machineries. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Installation in open housings

Seal housing recommendation

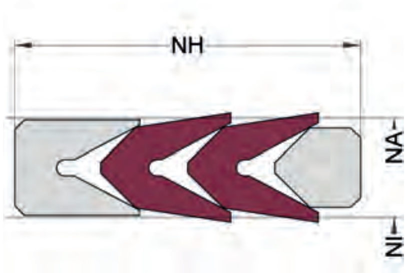
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

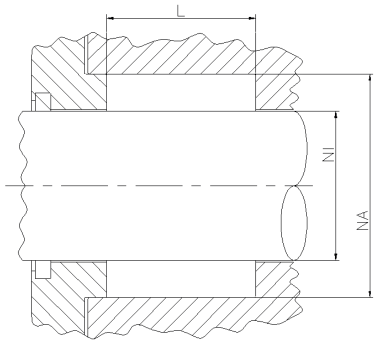
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS25_27





General Description
Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, single acting piston/rod seal, combined with pressure ring and supporting ring.
- Special lip geometry for packings out of PTFE or other non elastic materials.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Designed for low pressure ranges up to 100bar.
- Excellent static and dynamic sealing performance.
- Useable for short and long stroke lengths.
- High wear resistance.

Application
Reciprocating pistons/rods in hydraulic cylinders, plungers, etc. in the pharma, chemical or food industry, high temperature applications. Max. pressure 100 bar, max. speed 1.5 m/s.

Installation
Open housings are recommended, the axial contact force on the individial parts usually is generated by a spring element.

Seal housing recommendation

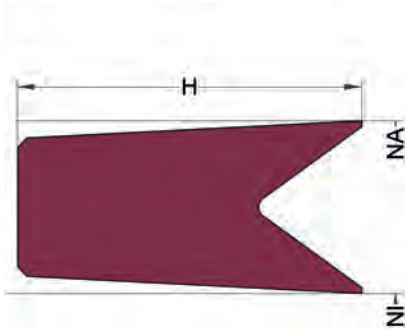
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

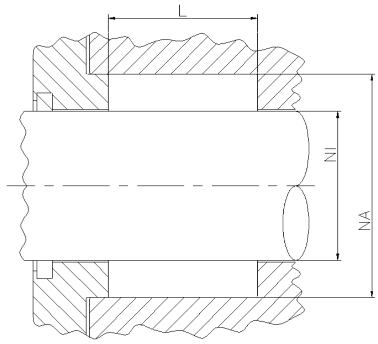
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS99





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Variable pressure ring for vee packings PRS10-12
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- High wear resistance.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation

Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

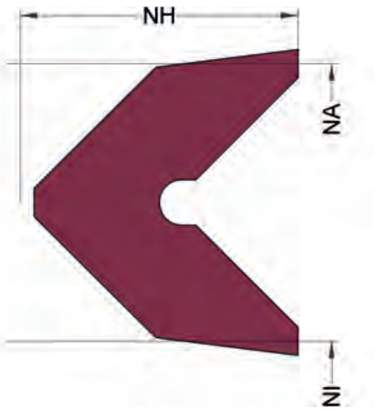
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

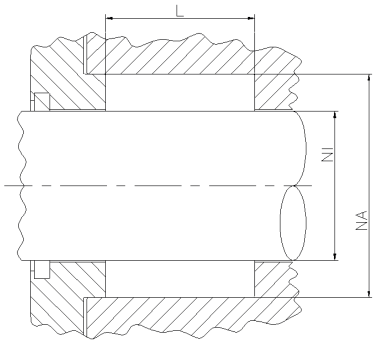
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS_11_Plast





General Description
Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- High wear resistance.

Application
Reciprocating pistons/rods in hydraulic cylinders, plungers etc. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation
Installation normally in open housings. At closed housings the parts need to be split. In this case the seal must be done slightly larger (approx. 1% in diameter)

Seal housing recommendation

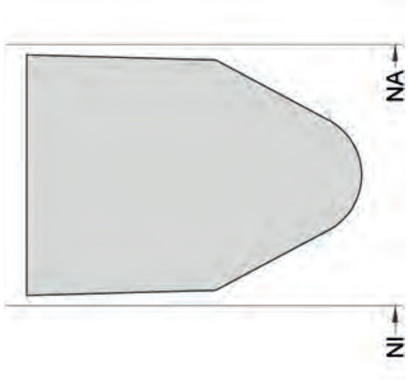
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

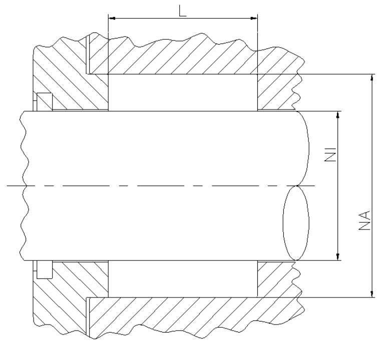
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS_13





General Description
Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features
- Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- Reduced friction compared to PRS10-12 profile especially in the high pressure range.

Application
Reciprocating pistons/rods in hydraulic cylinders, plungers and warer hydraulics. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation
Installation in open housings.

Seal housing recommendation

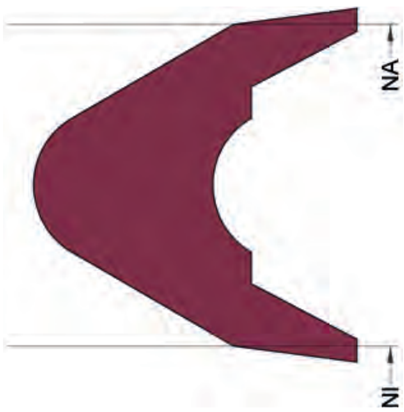
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

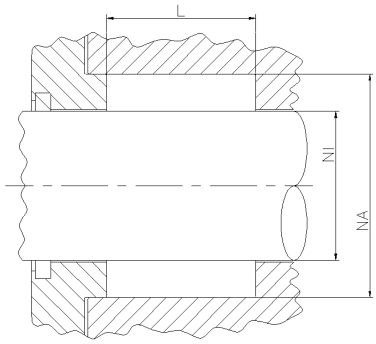
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS_14





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- Reduced friction compared to PRS10-12 profile especially in the high pressure range.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers and warer hydraulics. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation

Installation in open housings.

Seal housing recommendation

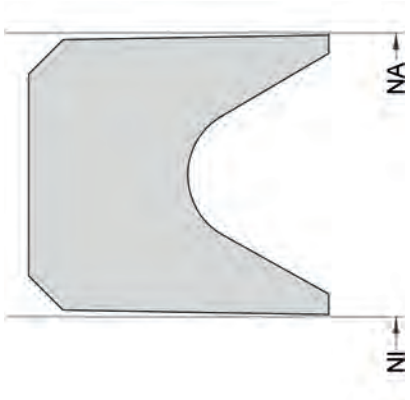
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

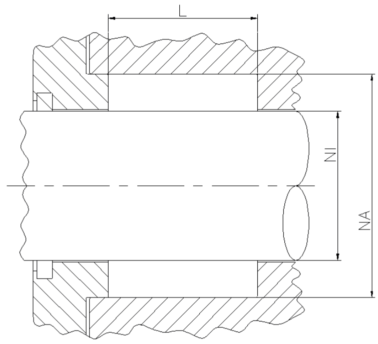
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Piston-/Rod Seal	Profile: PRS_15





General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring.
- By adjusting the number of packings friction and leakage characteristics can be influenced.
- Excellent static and dynamic sealing performance.
- Excellent performance in high pressure conditions.
- Useable for short and long stroke lengths.
- Reduced friction compared to PRS10-12 profile especially in the high pressure range.

Application

Reciprocating pistons/rods in hydraulic cylinders, plungers and warer hydraulics. Used in heavy duty applications (presses) with return stroke by equipment weight. Max. pressure 500 bar, max. speed 0.5 m/s.

Installation

Installation in open housings.

Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

Back-up rings

BUR08

BUR09

BUR10

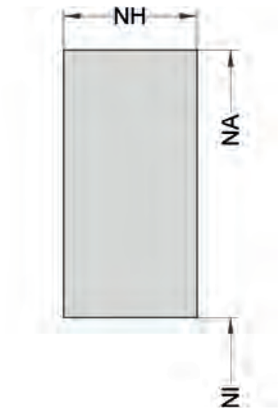
BUR11

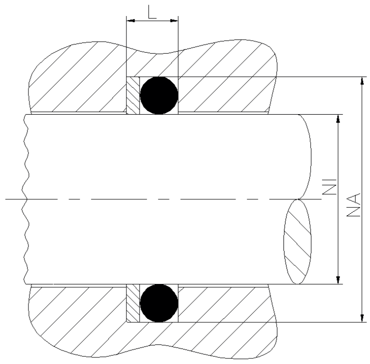
BUR12

BUR13

PROFILE DESCRIPTION

Profiletype: Back-up Ring	Profile: BUR08





General Description

Back-up rings do not have a sealing function. They are designed to prevent elastic sealing elements such as O-Rings or Quad Rings of gap extrusion.

Features

- Normally cut at an angle for easy installation, but also available as non-split version.
- Low dynamic friction.
- Low break-away forces after long standstills.
- Activated back-up rings reduce gap extrusion and prevent twisting of the seal in the groove.

Application

Dynamic and static applications in reciprocating pistons and rods in hydraulic cylinders, plungers, etc. Unfavourable tolerances and wide gap dimensions. Intensely pulsating pressures and pressure change.

Installation

Snap-in installation; split or unsplit

Seal housing recommendation

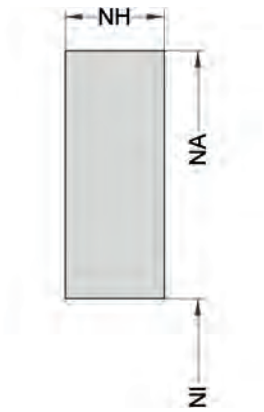
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

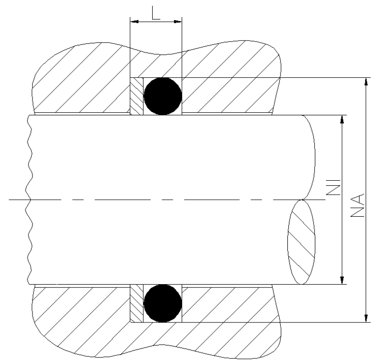
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Back-up Ring	Profile: BUR08_SCHEIBEN





General Description
Back-up rings do not have a sealing function. They are designed to prevent elastic sealing elements such as O-Rings or Quad Rings of gap extrusion.

Features
- Normally cut at an angle for easy installation, but also available as non-split version.
- Low dynamic friction.
- Low break-away forces after long standstills.
- Activated back-up rings reduce gap extrusion and prevent twisting of the seal in the groove.

Application
dynamic and static applications in reciprocating pistons and rods in hydraulic cylinders, plungers, etc.
Unfavourable tolerances and wide gap dimensions.
Intensely pulsating pressures and pressure change.

Installation
Snap-in installation; split or unsplit.

Seal housing recommendation

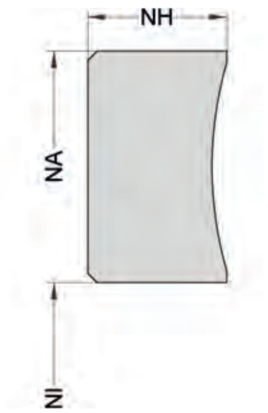
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

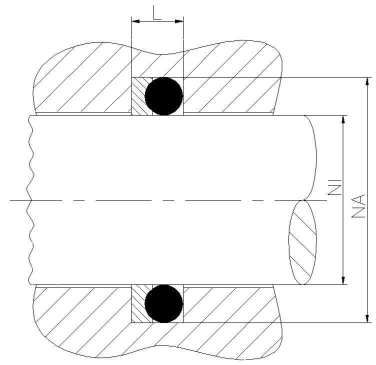
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Back-up Ring	Profile: BUR09





General Description
Back-up rings do not have a sealing function. They are designed to prevent elastic sealing elements such as O-Rings or Quad Rings of gap extrusion.

Features
- Especially designed for use with O-Rings.
- Improved formstability of the elastomer O-Ring
- Bigger contact area of the O-Ring compared to BUR08 creates in less deformation.
- Normally cut at an angle for easy installation, but also available as non-split version.
- Low dynamic friction.
- Low break-away forces after long standstills.
- Activated back-up rings reduce gap extrusion and prevent twisting of the seal in the groove.

Application
dynamic and static applications in reciprocating pistons and rods in hydraulic cylinders, plungers, etc. Unfavourable tolerances and wide gap dimensions. Intensely pulsating pressures and pressure change.

Installation
Snap-in installation

Seal housing recommendation

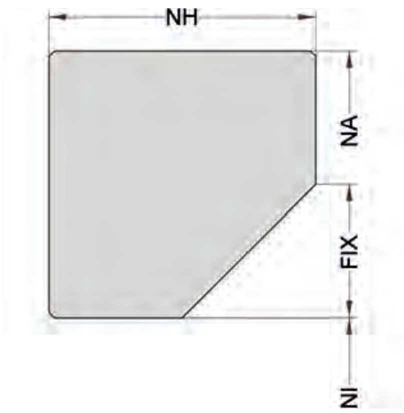
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

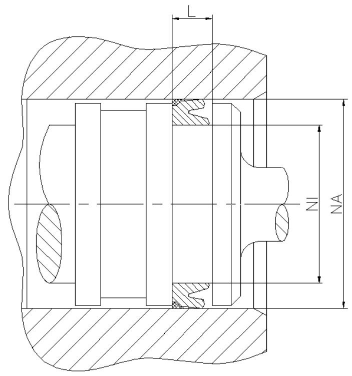
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Back-up Ring	Profile: BUR10





General Description

Back-up rings or Anti Extrusion Rings do not have a sealing function. They are designed to prevent elastic sealing elements of gap extrusion.

Features

- Active Anti Extrusion Ring for Piston Seal PS02
- Reduced gap extrusion of the elastomer seal and/or higher pressures up to 700bar possible
- Preventio of twisting of the seal in the groove.
- Available as split non-split version.

Application

dynamic and static applications in reciprocating pistons and rods in hydraulic cylinders, plungers, etc. Unfavourable tolerances and wide gap dimensions.

Installation

Snap-in installation

Seal housing recommendation

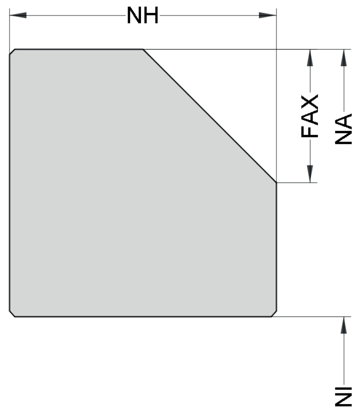
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H8

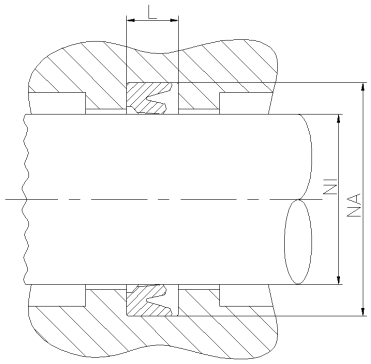
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Back-up Ring	Profile: BUR11





General Description

Back-up rings or Anti Extrusion Rings do not have a sealing function. They are designed to prevent elastic sealing elements of gap extrusion.

Features

- Active Anti Extrusion Ring for Rod Seal RS02
- Reduced gap extrusion of the elastomer seal and/or higher pressures up to 700bar possible
- Preventio of twisting of the seal in the groove.
- Available as split non-split version.

Application

dynamic and static applications in reciprocating pistons and rods in hydraulic cylinders, plungers, etc. Unfavourable tolerances and wide gap dimensions.

Installation

Snap-in installation

Seal housing recommendation

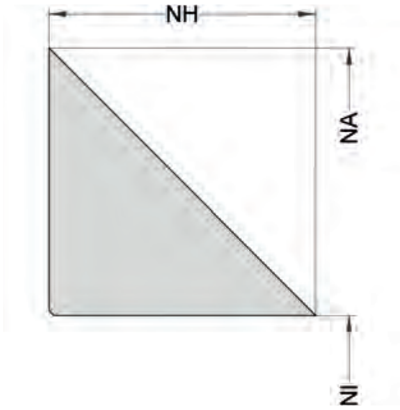
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H8

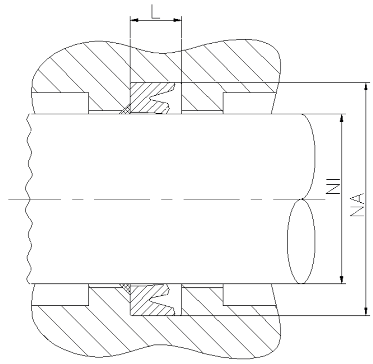
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Back-up Ring	Profile: BUR12





General Description
Back-up rings or Anti Extrusion Rings do not have a sealing function. They are designed to prevent elastic sealing elements of gap extrusion.

Features
- Triangular Anti Extrusion Ring for Rod applications
- Special housing designs required.
- Reduced gap extrusion of the elastomer seal and/or higher pressures up to 700bar possible.
- Available as split and non-split version.

Application
Dynamic and static applications in reciprocating rods in hydraulic cylinders, plungers, etc. Unfavourable tolerances and wide gap dimensions.

Installation
Snap-in installation

Seal housing recommendation

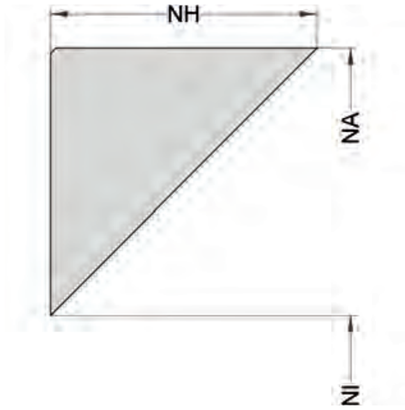
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H10
Ø NI	f 8

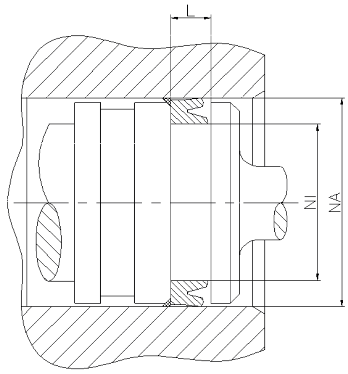
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Back-up Ring	Profile: BUR13





General Description

Back-up rings or Anti Extrusion Rings do not have a sealing function. They are designed to prevent elastic sealing elements of gap extrusion.

Features

- Triangular Anti Extrusion Ring for Piston applications.
- Special housing designs required.
- Reduced gap extrusion of the elastomer seal and/or higher pressures up to 700bar possible.
- Available as split and non-split version.

Application

dynamic and static applications in reciprocating pistons in hydraulic cylinders, plungers, etc. Unfavourable tolerances and wide gap dimensions.

Installation

Snap-in installation

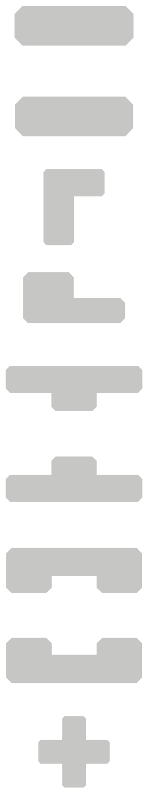
Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

Guide rings



BWR01

BWR01A

BWR03

BWR04

BWR05

BWR06

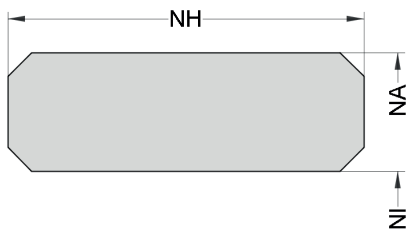
BWR07

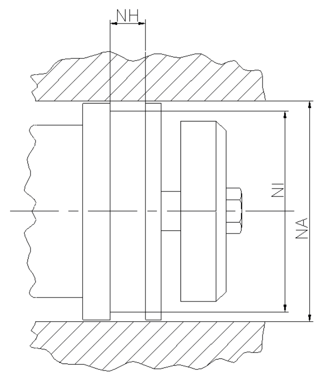
BWR08

BWR09

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR01





General Description

Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features

- Normally cut at an angle for easy installation, but also available as non-split version
- Low dynamic friction.
- Low break-away forces after long standstills.

Application

Reciprocating pistons and rods in hydraulic cylinders, plungers.

Max. speed 4 m/s, radial loads max. 70 N/mm2.

Installation

Snap-in installation.

Seal housing recommendation

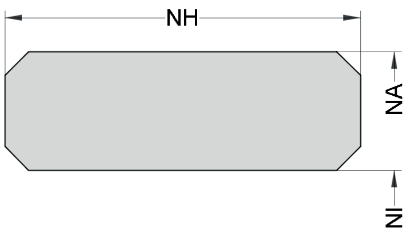
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

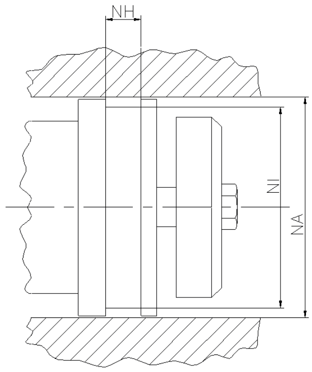
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR01A





General Description

Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features

- Spiral groove on the outside diameter for better lubrication
- Normally cut at an angle for easy installation, but also available as non-split version
- Low dynamic friction.
- Low break-away forces after long standstills.

Application

Reciprocating pistons and rods in hydraulic cylinders, plungers.

Max. speed 4 m/s, radial loads max. 70 N/mm2.

Installation

Snap-in installation.

Seal housing recommendation

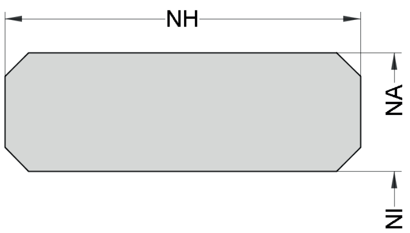
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

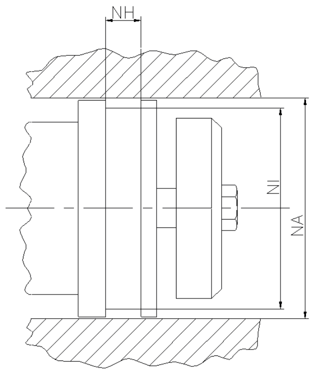
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR01C





General Description

Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features

- Spiral groove on the outside diameter for better lubrication.
- Normally cut at an angle for easy installation, but also available as non-split version.
- Low dynamic friction.
- Low break-away forces after long standstills.

Application

Reciprocating pistons and rods in hydraulic cylinders, plungers. Max. speed 4 m/s, radial loads max. 70 N/mm2.

Installation

Snap-in installation.

Seal housing recommendation

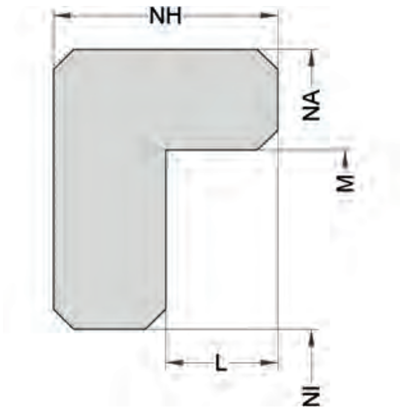
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

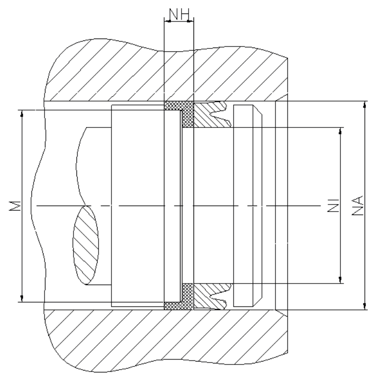
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR03





General Description
Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features
- Normally cut at an angle for easy installation, but also available as non-split version
- For use in piston applications.
- Design combines guiding and backring function.
- Low dynamic friction.
- Low break-away forces after long standstills.

Application
Reciprocating pistons and rods in hydraulic cylinders, plungers.

Max. speed 4 m/s, radial loads max. 70 N/mm2.

Installation
Snap-in installation.

Seal housing recommendation

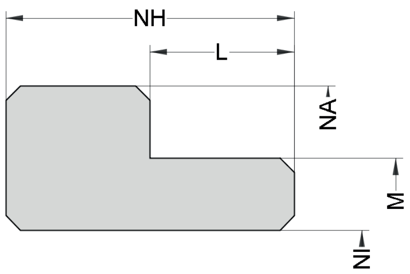
Tolerances	[mm]
Ø NA	H8
Ø NI	h9
Ø M	h9

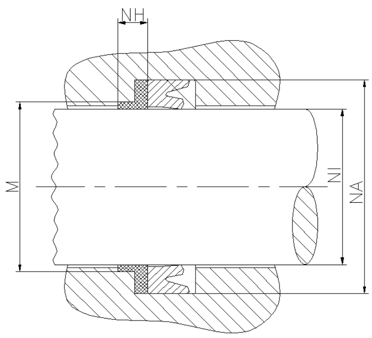
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR04





General Description
Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features
- Normally cut at an angle for easy installation, but also available as non-split version.
- For use in rod applications.
- Design combines guiding and backring function.
- Low dynamic friction.
- Low break-away forces after long standstills.

Application
Reciprocating rods in hydraulic cylinders, plungers, etc.

Max. speed 4 m/s, radial loads max. 70 N/mm2.

Installation
Snap-in installation.

Seal housing recommendation

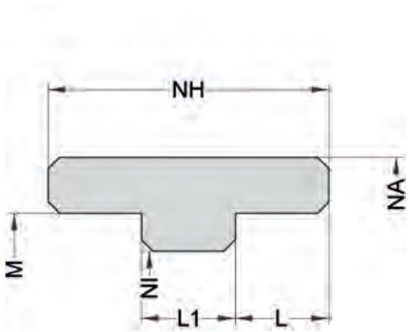
Tolerances	[mm]
Ø NA	H9
Ø NI	h8
Ø M	H9

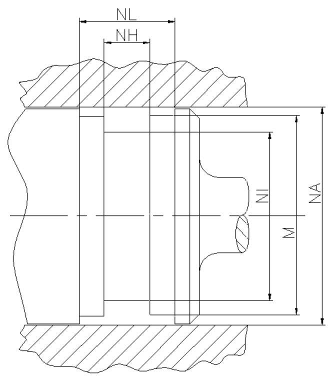
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR05





General Description
Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features
- Normally cut at an angle for easy installation, but also available as non-split version.
- For use in piston applications.
- Integrated collar on inside diameter.
- Low dynamic friction.
- Low break-away forces after long standstills.

Application
mainly used at minor loads e.g. pneumatic applications

Installation
Snap-in installation.

Seal housing recommendation

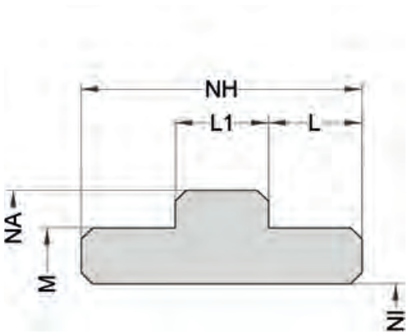
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H8
Ø NI	h9

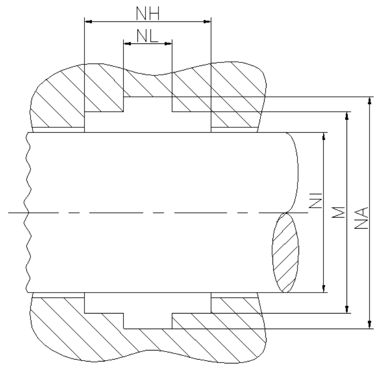
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR06





General Description
Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features
- Normally cut at an angle for easy installation, but also available as non-split version.
- For use in rod applications.
- Integrated collar on outside diameter.
- Low dynamic friction.
- Low break-away forces after long standstills.

Application
mainly used at minor loads e.g. pneumatic applications

Installation
Snap-in installation.

Seal housing recommendation

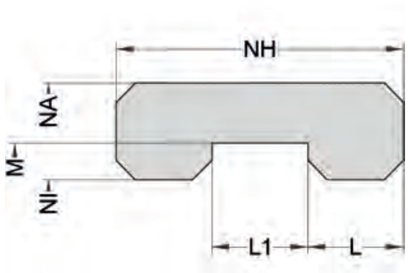
Tolerances	[mm]
NH	+ 0.2
NL	+ 0.2
Ø NA	H9
Ø NI	h8

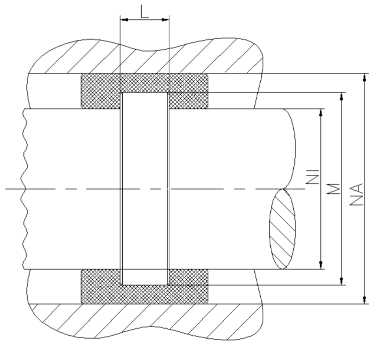
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR07





General Description
Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features
- Normally cut at an angle for easy installation, but also available as non-split version.
- For use in piston applications.
- Integrated collar on Inside diameter.
- Design combines guiding and backring function.
- Low dynamic friction.
- Low break-away forces after long standstills.

Application
Reciprocating pistons and rods in hydraulic cylinders, plungers.

Installation
Snap-in installation.

Seal housing recommendation

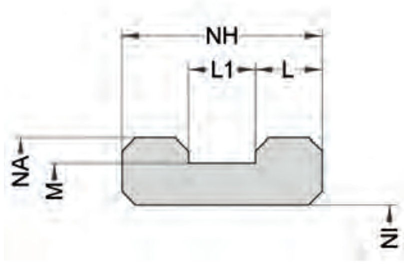
Tolerances	[mm]
Ø NA	H8
Ø NI	h9
Ø M	h9

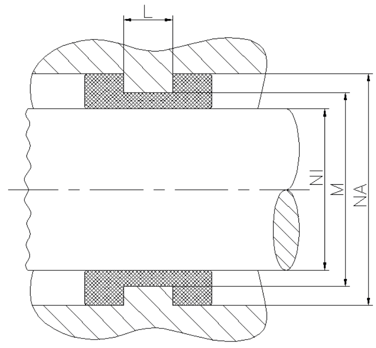
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR08





General Description

Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features

- Normally cut at an angle for easy installation, but also available as non-split version.
- For use in rod applications.
- Integrated collar on outside diameter.
- Design combines guiding and backring function.
- Low dynamic friction.
- Low break-away forces after long standstills.

Application

Reciprocating pistons and rods in hydraulic cylinders, plungers.

Installation

Snap-in installation.

Seal housing recommendation

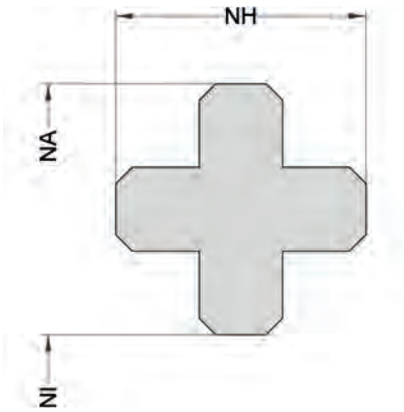
Tolerances	[mm]
Ø NA	H9
Ø NI	h8
Ø M	H9

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

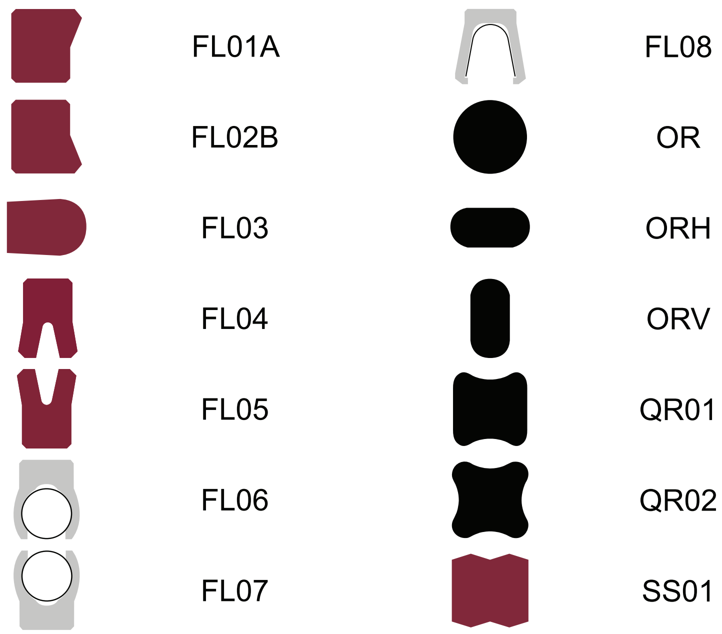
Profiletype: Guide Ring	Profile: BWR09



General Description

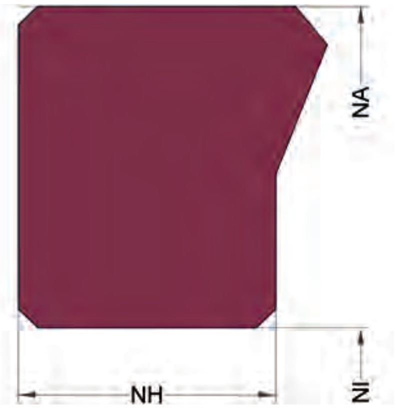
The profile BWR09 is a not a common seal or guide ring. It is a profile, fully variable, thought to be a basic profile for any customer specific machined part. For further information concerning design, application or materials please ask your responsible Seal Maker contact person.

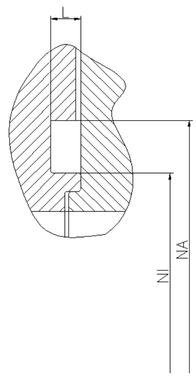
Static seals and O-rings



PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL01A





General Description

The Flange Seals FL01A is a simple designed assymetric seal for a wide range of static applications. Common sealing edge on the gap side for improved sealing performance.

Features

- Especially designed for pressure from outside.
- Simple seal design maintain low costs.
- Variable dimesions to be used also in special dimensioned grooves.
- Sealing over a wide range of pressures, temperatures and tolerances.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application

Static sealing (e.g. flanges)

Installation

Snap-in installation

Seal housing recommendation

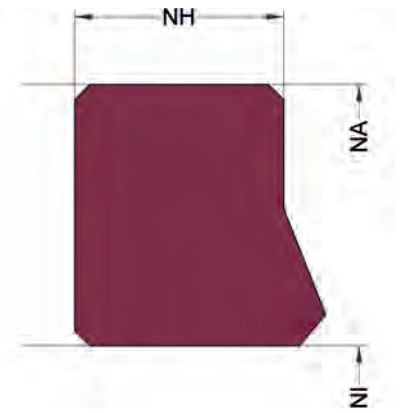
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	f7

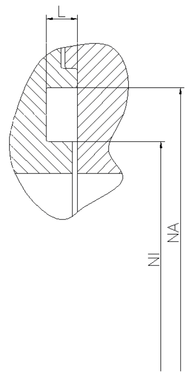
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL02B





General Description
The Flange Seals FL02B is a simple designed assymetric seal for a wide range of static applications. Common sealing edge on the gap side for improved sealing performance.

Features
- Especially designed for pressure from inside.
- Simple seal design maintain low costs.
- Variable dimesions to be used also in special dimensioned grooves.
- Sealing over a wide range of pressures, temperatures and tolerances.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application
Static sealing (e.g. flanges)

Installation
Snap-in installation

Seal housing recommendation

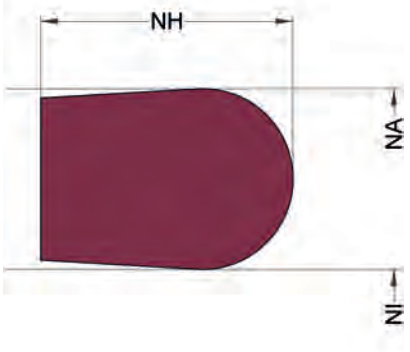
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	f7

Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL03



General Description
The Flange Seals FL03 is a simple designed symetrical seal for a wide range of static applications. It can be designed for axial and radial sealing.

Features
- Simple seal design maintain low costs.
- Variable dimesions to be used also in special dimensioned grooves.
- Sealing over a wide range of pressures, temperatures and tolerances.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application
Static sealing (e.g. flanges)

Installation
Snap-in installation

Seal housing recommendation

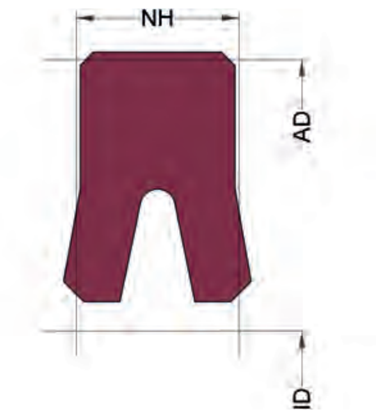
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	f7

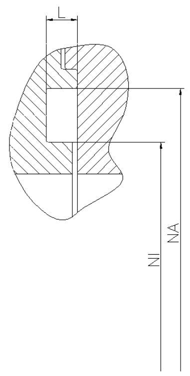
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL04





General Description

The flange seal FL04 is a symetric seal for axial sealing applications. The geometry is leant against profile PRS06.

Features

- Especially designed for pressure from inside.
- Good static and dynamic sealing performance.
- Good sealing performance in low and high pressure ranges.
- Simple mounting.
- Simple groove design.

Application

Static sealing (e.g. flanges or fittings), chemical industry, Oil&Gas, aviation, rotary joints

Note

inside diameter is limited to about 27mm minimum and cross section of 10mm maximum. For dimensions out of the limits production from 2 sides or special tools might be necessary!

Installation

Snap-in installation

Seal housing recommendation

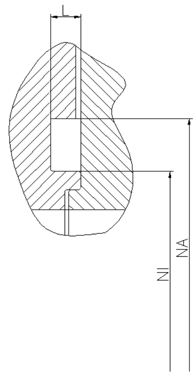
Tolerances	[mm]
L < 10mm	+/- 0.2
Ø NI	f 8
Ø NA	H8

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5

PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL05



General Description
The flange seal FL05 is a symetric seal for axial sealing applications. The geometry is leant against profile PRS06.

Features
- Especially designed for pressure from outside.
- Good static and dynamic sealing performance.
- Good sealing performance in low and high pressure ranges.
- Simple mounting.
- Simple groove design.

Application
Static sealing (e.g. flanges or fittings), chemical industry, Oil&Gas, aviation, rotary joints

Note
inside diameter is limited to about 40mm minimum and cross section of 10mm maximum. For dimensions out of the limits production from 2 sides or special tools might be necessary!

Installation
Snap-in installation

Seal housing recommendation

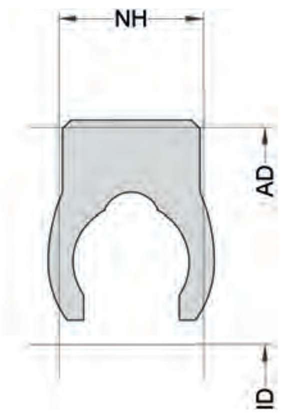
Tolerances	[mm]
L < 10mm	+/- 0.2
Ø NI	f 8
Ø NA	H8

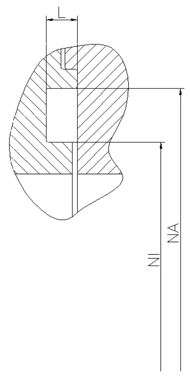
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5

PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL06





General Description
The flange seal FL06 is a symetric, spring energized seal for axial sealing applications. The geometry is leant against profile PRS19C.

Features
- Especially designed for pressure from inside.
- Preload effected through Helicoil-spring which ensures high pressure on the sealing lips.
- Excellent static and dynamic sealing performance.
- Excellent sealing performance in low and high pressure ranges.
- Wide application ranges - Especially suitable for gas and vacuum applications.
- Simple mounting.
- Compact and simple grooves.

Application
Static sealing (e.g. flanges), chemical industry, Oil&Gas, aviation, rotary joints

Note
inside diameter is limited to about 27mm minimum and cross section of 10mm maximum. For dimensions out of the limits production from 2 sides or special tools might be necessary!

Installation
Snap-in installation

Seal housing recommendation

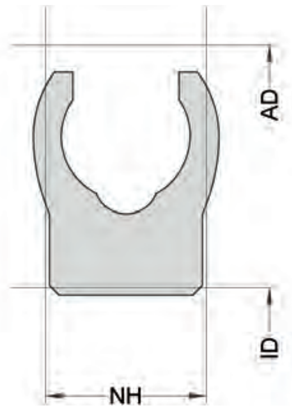
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

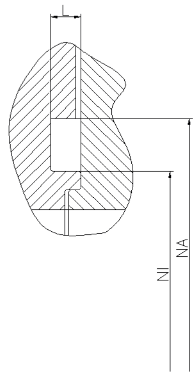
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL07





General Description
The flange seal FL07 is a symetric, spring energized seal for axial sealing applications. The geometry is leant against profile PRS19C.

Features
- Especially designed for pressure from outside.
- Preload effected through Helicoil-spring which ensures high pressure on the sealing lips.
- Excellent static and dynamic sealing performance.
- Excellent sealing performance in low and high pressure ranges.
- Wide application ranges - Especially suitable for gas and vacuum applications.
- Simple mounting.
- Compact and simple grooves.

Application
Static sealing (e.g. flanges), chemical industry, Oil&Gas, aviation, rotary joints

Note
The inside diameter is limited to about 15mm minimum. The cross section should not exceed 10mm. For dimensions out of the limits production from 2 sides or special tools might be necessary!

Installation
Snap-in installation

Seal housing recommendation

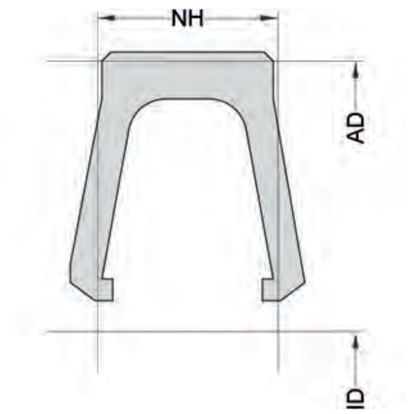
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

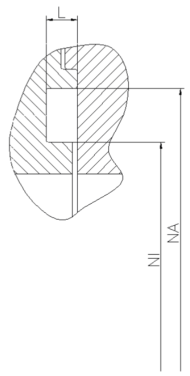
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Flange Seal	Profile: FL08





General Description

The flange seal FL06 is a symetric, spring energized seal for axial sealing applications. The geometry is leant against profile PRS19.

Features

- Especially designed for pressure from inside.
- Preload effected through V-spring which ensures high pressure on the sealing lips.
- Excellent static and dynamic sealing performance.
- Excellent sealing performance in low and high pressure ranges.
- Simple mounting.
- Compact and simple grooves.

Application

Static sealing (e.g. flanges or fittings), chemical industry, Oil&Gas, aviation, rotary joints

Note

inside diameter is limited to about 27mm minimum and cross section of 10mm maximum. For dimensions out of the limits production from 2 sides or special tools might be necessary!

Installation

Snap-in installation

Seal housing recommendation

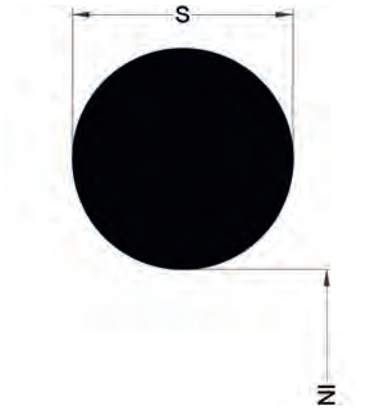
Tolerances	[mm]
L < 10mm	+ 0.2
Ø NI	f 8
Ø NA	H8

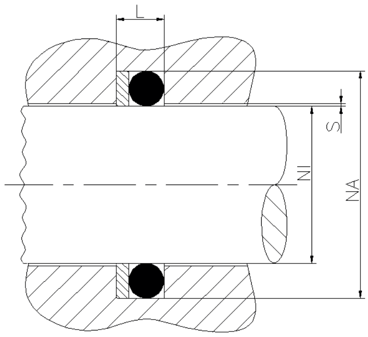
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: O-Ring	Profile: OR





General Description

O-Rings are used in widely differing technical areas, for instance as individual sealing elements in pneumatics and hydraulics, and as preload elements for seals and wipers. ORings are double acting, activated by the systempressure. The sealingeffect is generated by axial or radial preload. The preload of the O-ring is superposed by the hydraulic pressure, thus assuring the overall sealing pressure.

Features

- Sealing over a wide range of pressures, temperatures and tolerances.
- Simple and compact design.
- Symmetrical profile cross section.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application

Static sealing (e.g. flanges and threaded joints), rotation and linear movement applications with minor loads and small groove dimensions, preloadelement for PTFE seals and wipers.

Installation

Snap-in installation

Seal housing recommendation

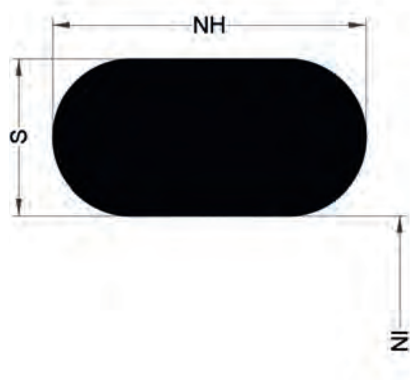
Tolerances	[mm]
s	f7/H8

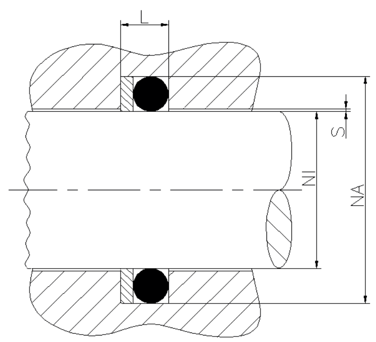
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: O-Ring	Profile: ORH





General Description

O-Rings are used in widely differing technical areas, for instance as individual sealing elements in pneumatics and hydraulics, and as preload elements for seals and wipers. ORings are double acting, activated by the systempressure. The sealingeffect is generated by axial or radial preload. The preload of the O-ring is superposed by the hydraulic pressure, thus assuring the overall sealing pressure.

Features

- used for special dimensioned grooves
- Sealing over a wide range of pressures, temperatures and tolerances.
- Simple and compact design.
- Symmetrical profile cross section.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application

Static sealing (e.g. flanges and threaded joints), rotation and linear movement applications with minor loads and small groove dimensions, preloadelement for PTFE seals and wipers.

Installation

Snap-in installation

Seal housing recommendation

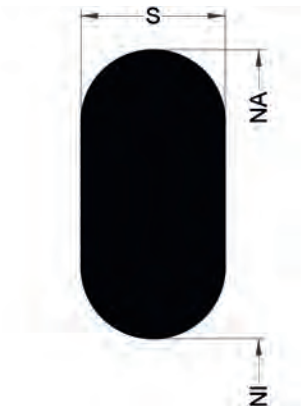
Tolerances	[mm]
s	f7/H8

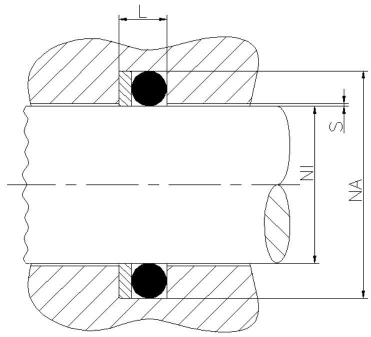
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: O-Ring	Profile: ORV





General Description

O-Rings are used in widely differing technical areas, for instance as individual sealing elements in pneumatics and hydraulics, and as preload elements for seals and wipers. ORings are double acting, activated by the systempressure. The sealingeffect is generated by axial or radial preload. The preload of the O-ring is superposed by the hydraulic pressure, thus assuring the overall sealing pressure.

Features

- Used for special dimensioned grooves.
- Sealing over a wide range of pressures, temperatures and tolerances.
- Simple and compact design.
- Symmetrical profile cross section.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application

Static sealing (e.g. flanges and threaded joints), rotation and linear movement applications with minor loads and small groove dimensions, preloadelement for PTFE seals and wipers.

Installation

Snap-in installation

Seal housing recommendation

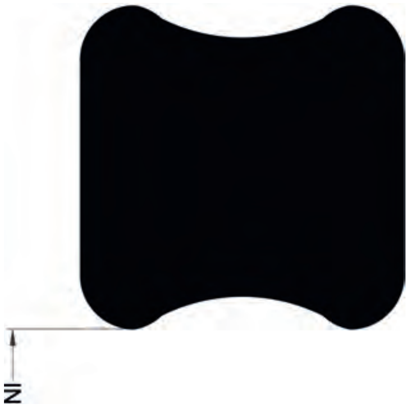
Tolerances	[mm]
s	f7/H8

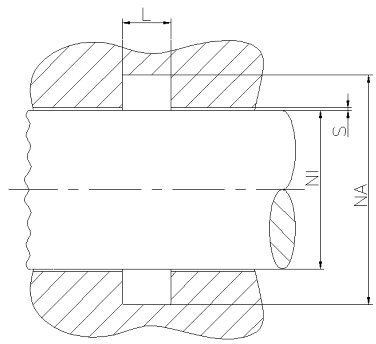
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: Quad-Ring	Profile: QR01





General Description

X-Rings or Quad Rings are used in widely differing technical areas, for instance as individual sealing elements in pneumatics and hydraulics, and as preload elements for seals and wipers. Quad Rings are double acting, activated by the systempressure. The sealingeffect is generated by axial or radial preload. The preload of the Quad Ring is superposed by the hydraulic pressure, thus assuring the overall sealing pressure.

Features

- Better pressure distribution compared to O-Rings.
- Used for special dimensioned grooves.
- Sealing over a wide range of pressures, temperatures and tolerances.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application

Static sealing (e.g. flanges and threaded joints), rotation and linear movement applications with minor loads and small groove dimensions, additional sealing element in PTFE seals (PS08C, PS08D).

Installation

Snap-in installation

Seal housing recommendation

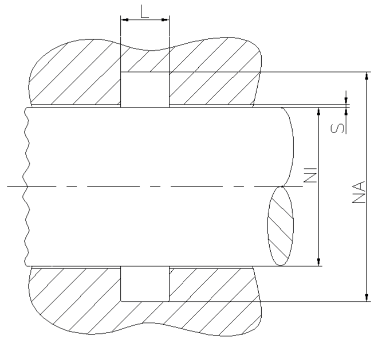
Tolerances	[mm]
s	f7/H8

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: Quad-Ring	Profile: QR02



General Description
X-Rings or Quad Rings are used in widely differing technical areas, for instance as individual sealing elements in pneumatics and hydraulics, and as preload elements for seals and wipers. Quad Rings are double acting, activated by the systempressure. The sealingeffect is generated by axial or radial preload. The preload of the Quad Ring is superposed by the hydraulic pressure, thus assuring the overall sealing pressure.

Features
- Better pressure distribution compared to O-Rings.
- Used for special dimensioned grooves.
- Sealing over a wide range of pressures, temperatures and tolerances.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.
- Additional grooves on face and cut-off side in order to improve elasticity (special tools required)

Application
Static sealing (e.g. flanges and threaded joints), rotation and linear movement applications with minor loads and small groove dimensions, additional sealing element in PTFE seals (PS08C, PS08D).

Installation
Snap-in installation

Seal housing recommendation

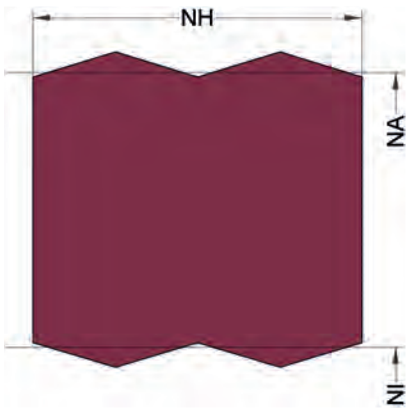
Tolerances	[mm]
s	f7/H8

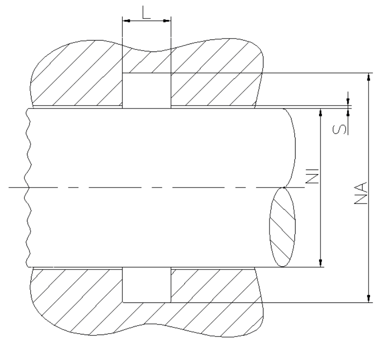
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
	≤ 6,3	≤ 1,6

PROFILE DESCRIPTION

Profiletype: Static Seal	Profile: SS01





General Description

The SS01 seal is a double acting seal, activated by the systempressure. The sealingeffect is generated by axial or radial preload. The preload of the seal is superposed by the hydraulic pressure, thus assuring the overall sealing pressure.

Features

- Better pressure distribution compared to O-Rings
- Flexible dimensioning of the seal for use also in special dimensioned grooves.
- Sealing over a wide range of pressures, temperatures and tolerances.
- Wide application ranges.
- Simple mounting.
- Compact and simple grooves.
- Easy and cost saving constructions possible.

Application

mainly used as static seal (e.g. flanges and threaded joints) but also used at rotation and linear movement applications

Installation

Snap-in installation

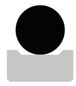
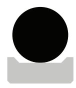
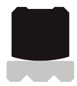
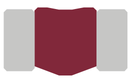
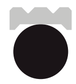
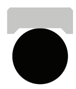
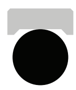
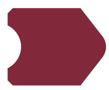
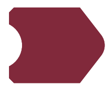
Seal housing recommendation

Tolerances	[mm]
s	f7/H8

Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

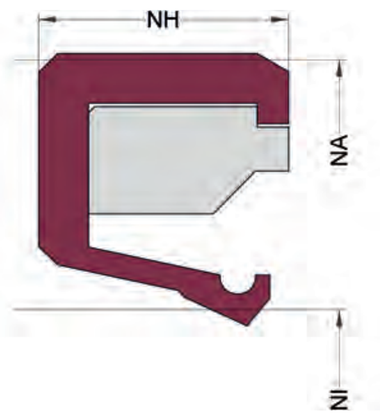
Sliding Surface	Rtmax [μ]	Ra [μ]
	≤ 6,3	≤ 1,6

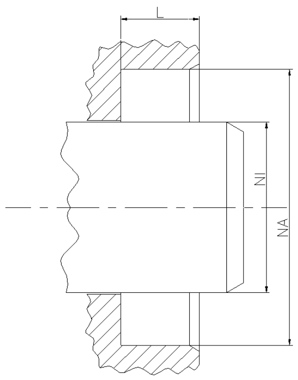
Rotary seals

	OS01A		VR07
	OS02A		R08
	OS03A		R08D
	OS08		R09
	OS08A		R09A
	R03		R10
	R04		R10A
	R04A		R11
	R05		R11D
	R05A		R35A
	VR06		R35B

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: OS01A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Tight seat in the housing and an additional retainer ring in hard plastic or Aluminium/Steel ensures that the seal is held in place.
- Tension spring for increasing the bonding force.
- Not suitable for high pressure from the trailing side.

Application

Pumps, electric motors, swiveling cylinders, etc. Max. pressure 0,5 bar, max. speed: PU/POM 5 m/s; NBR/POM 10m/s; FPM/PTFE 25m/s.

Installation

press-in installation; separate installation of retainer ring and elastomer part possible.

Seal housing recommendation

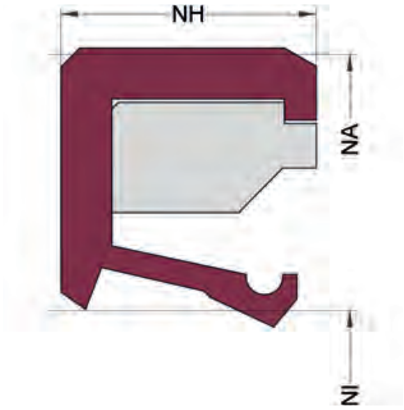
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

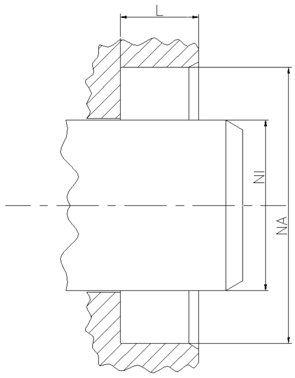
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: OS02A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Additional dust lip for preventing the sealing lip of dirt.
- Tight seat in the housing and an additional retainer ring in hard plastic or Aluminium/Steel ensures that the seal is held in place.
- Tension spring for increasing the bonding force.
- Not suitable for high pressure from the trailing side.

Application

Pumps, electric motors, swiveling cylinders, etc. Max. pressure 0,5 bar, max. speed: PU/POM 5 m/s; NBR/POM 10m/s; FPM/PTFE 25m/s.

Installation

press-in installation; separate installation of retainer ring and elastomer part possible.

Seal housing recommendation

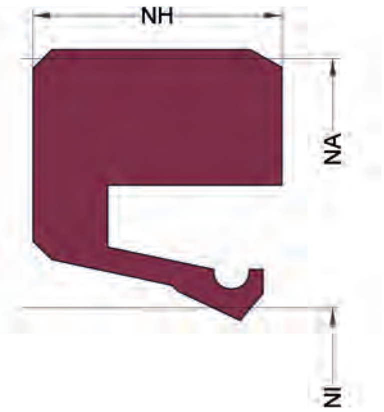
Tolerances	[mm]
L < 10mm	+ 0.2
Ø NI	f 8
Ø NA	H8

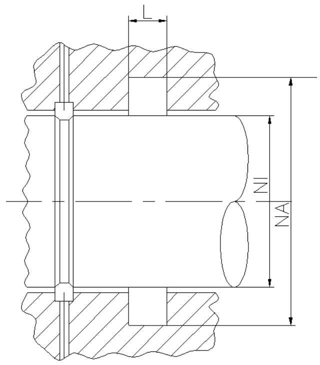
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: OS03A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Solid version of OS01 profile for closed housings.
- Tension spring for increasing the bonding force.
- Not suitable for high pressure from the trailing side.

Application

Pumps, electric motors, swiveling cylinders, etc. Max. pressure 0,5 bar, max. speed: PU 5 m/s; NBR 10m/s; FPM 25m/s.

Installation

snap-in installation

Seal housing recommendation

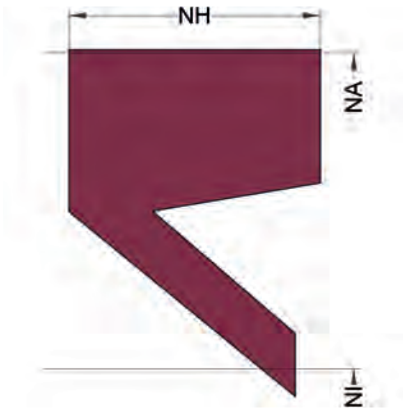
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

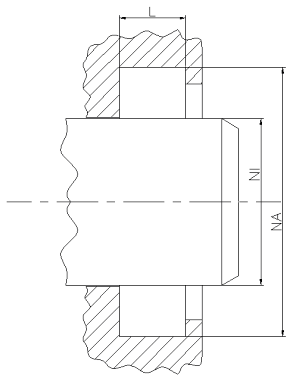
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Oil Seal	Profile: OS08





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- No spring preloaded sealing lip which enables a compact design.
- Small friction and low heat build-up.
- Not suitable for pressure from the trailing side.

Application

Needle bearings, sealing of viscous media (f.e. grease), etc. Useage as additional wiper. Max. speed: PU 5 m/s; NBR 10m/s

Installation

snap-in installation

Seal housing recommendation

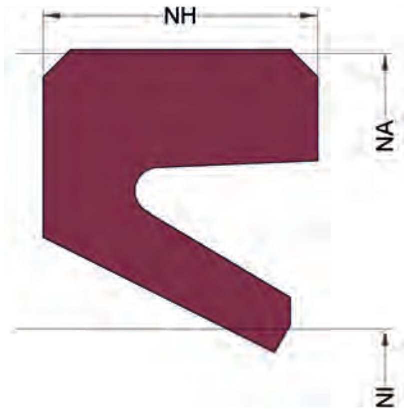
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

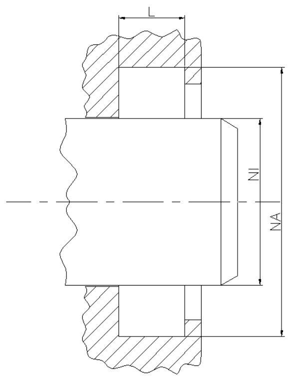
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Oil Seal	Profile: OS08A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- No spring preloaded sealing lip which enables a compact design.
- Small friction and low heat build-up.
- Not suitable for pressure from the trailing side.
- Increased design possibilities compared to OS08.

Application

Needle bearings, sealing of viscous media (f.e. grease), etc. Useage as additional wiper. Max. speed: PU 5 m/s; NBR 10m/s

Installation

snap-in installation

Seal housing recommendation

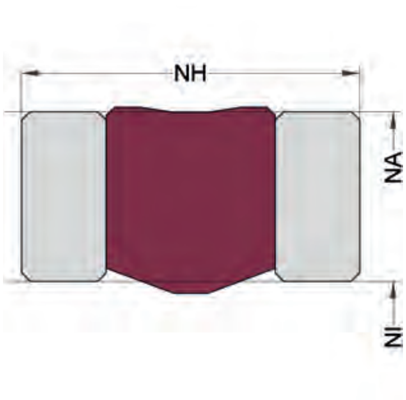
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

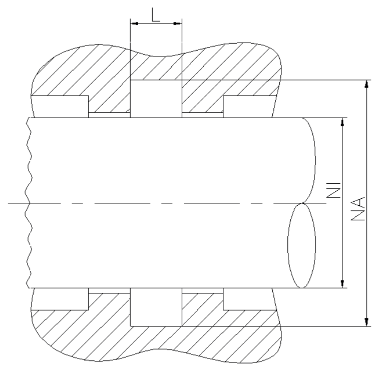
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R03





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for high pressures and low speeds, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing on the ID.
- Backup elements on the left and right side for maintaining the function also at large sealing gaps.
- Excellent static and dynamic sealing performance.

Application

Slow moving shafts, pivoting movements, swivel or rotary joints.
Used as seal between two pressurized spaces.
Max. pressure 400 bar, max. speed 0.2 m/s.

Installation

Snap-in installation. Backup elements shall not be split!

Seal housing recommendation

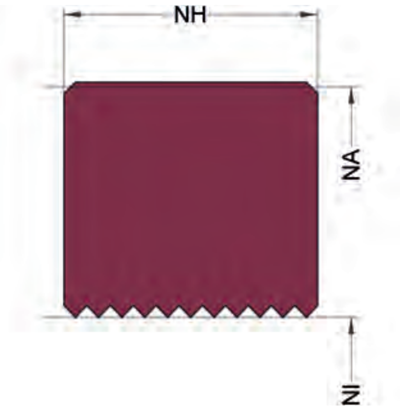
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f7

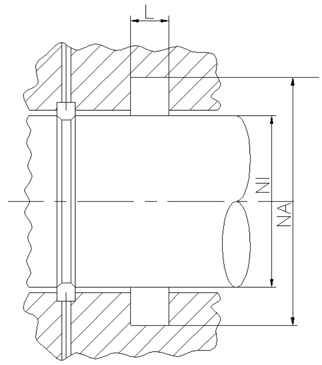
Surface Roughness	Rtmax [μ]	Ra [μ]
Face of groove	≤ 15	≤ 3
Bottom of groove	≤ 10	≤ 1,8

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R04





General Description
Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features
- Asymmetrical, double acting rotary seal, designed with interference on the OD which provides a good static fit in the groove.
- Dynamic sealing on the ID.
- Excellent static and dynamic sealing performance.
- Low friction.

Application
Slow moving shafts, pivoting movements, revolving distributors, swivel joints.
Universal rotary seal for minor work loads.
Max. pressure 160 bar, max. speed 0.2 m/s.

Installation
Snap-in installation.

Seal housing recommendation

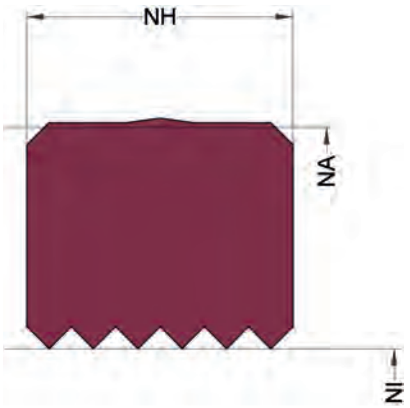
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

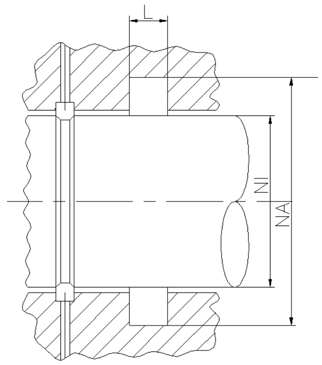
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R04A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal, designed with interference on the OD which provides a good static fit in the groove.
- Additional sealing edge on the OD for better static sealing.
- Dynamic sealing on the ID.
- Excellent static and dynamic sealing performance.
- Low friction.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints.
Universal rotary seal for minor work loads.
Max. pressure 160 bar, max. speed 0.2 m/s.

Installation

Snap-in installation.

Seal housing recommendation

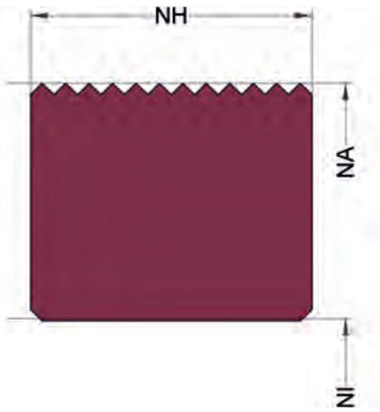
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

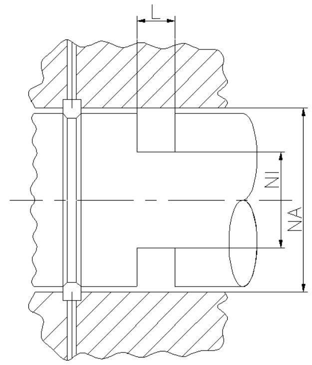
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R05





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal, designed with interference on the ID which provides a good static fit in the groove.
- Dynamic sealing on the OD.
- Excellent static and dynamic sealing performance.
- Low friction.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints.
Universal rotary seal for minor work loads.
Max. pressure 160 bar, max. speed 0.2 m/s.

Installation

Snap-in installation.

Seal housing recommendation

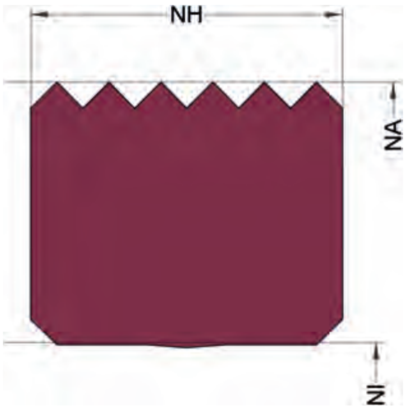
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

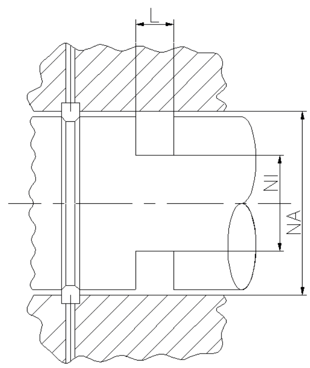
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R05A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal, designed with interference on the ID which provides a good static fit in the groove.
- Additional sealing edge on the ID for better static sealing.
- Dynamic sealing on the OD.
- Excellent static and dynamic sealing performance.
- Low friction.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints.
Universal rotary seal for minor work loads.
Max. pressure 160 bar, max. speed 0.2 m/s.

Installation

Snap-in installation.

Seal housing recommendation

Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

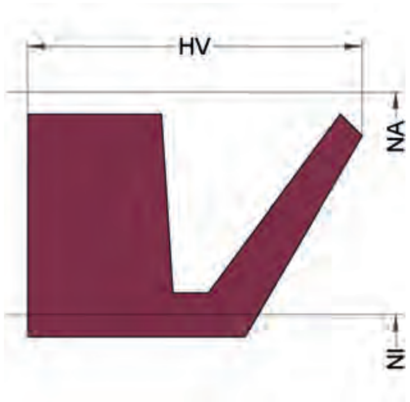
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

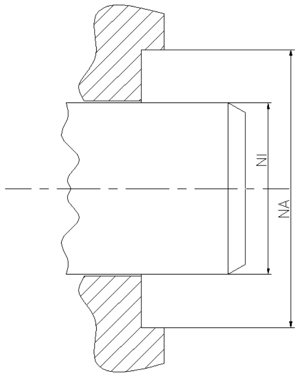
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

TOP SEALING PARTNER PART OF nomo

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: VR06





General Description

V-Rings are designed to axially seal bearings against dirt, dust, water, etc. in rotating machinery. The V-Ring itself rotates with the shaft.

Features

- Rotary seal, designed with interference on the ID which provides a good static fit on the shaft and ensures the seal rotates with the shaft.
- Axial dynamic sealing lip vertical to the rod.
- Small contact pressure of the sealing lip that enables also "dry running".
- Low friction on the sealing lip - decreasing with the rotation speed as a result of the centrifugal force.
- Little abrasion and long lifetime.
- Ensurance of sealing also at excentric rods or rod misalignments.
- Pressure must be avoided.

Application

Slow and fast rotating shafts.
Secondary sealing element for preventing the primary seal (f.e. OS01).
Max. pressure 0 bar, max. speed 25 m/s.

Installation

Pull-over installation.

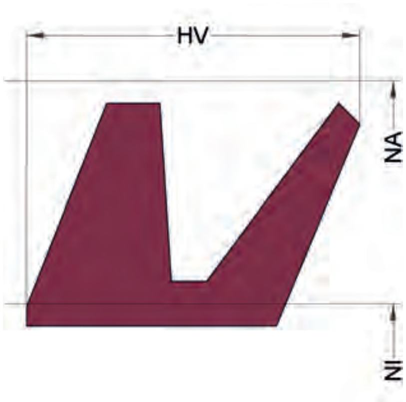
Seal housing recommendation

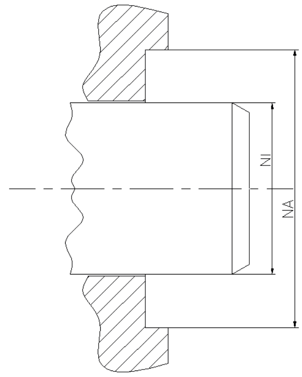
Tolerances	[mm]
Ø NA	H12
Ø NI	h11

Sliding Surface	Rtmax [μ]	Ra [μ]
	≤ 12	≤ 2.5

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: VR07





General Description

V-Rings are designed to axially seal bearings against dirt, dust, water, etc. in rotating machinery. The V-Ring itself rotates with the shaft.

Features

- Rotary seal, designed with interference on the ID which provides a good static fit on the shaft and ensures the seal rotates with the shaft.
- Axial dynamic sealing lip vertical to the rod.
- Small contact pressure of the sealing lip that enables also "dry running".
- Low friction on the sealing lip - decreasing with the rotation speed as a result of the centrifugal force.
- Little abrasion and long lifetime.
- Ensurance of sealing also at excentric rods or rod misalignments.
- Pressure must be avoided.

Application

Slow and fast rotating shafts.
Secondary sealing element for preventing the primary seal (f.e. OS01).
Max. pressure 0 bar, max. speed 25 m/s.

Installation

Pull-over installation.

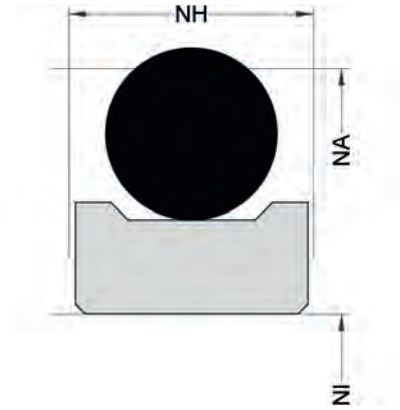
Seal housing recommendation

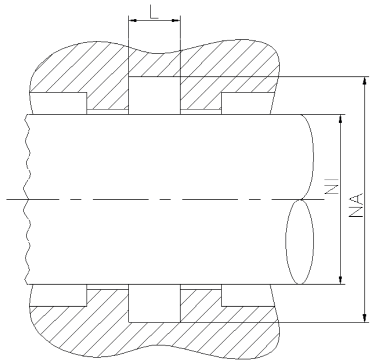
Tolerances	[mm]
Ø NA	H12
Ø NI	h11

Sliding Surface	Rtmax [µ]	Ra [µ]
	≤ 12	≤ 2.5

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R08





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for inside sealing, designed with interference of the O-Ring on the OD and no interference of the PTFE glide ring on the ID.
- Excellent sealing performance at low speeds with high pressure.
- Peripheral grooves that enable the build up of a lubricant reservoir.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.

Application

Slow moving shafts, pivoting movements, swivel or rotary joints.

Used as seal between two pressurized spaces.

Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

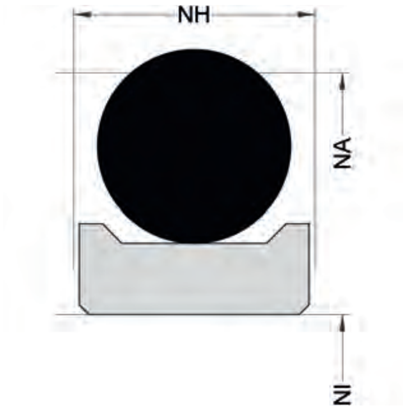
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f7

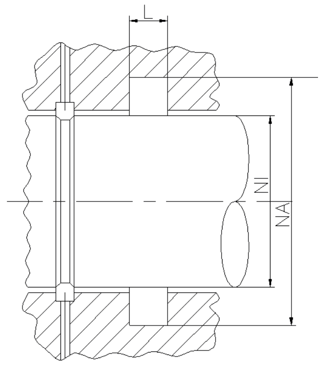
Surface Roughness	Rtmax [μ]	Ra [μ]
Face of groove	≤ 15	≤ 3
Bottom of groove	≤ 10	≤ 1,8

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R08D





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for inside sealing, designed with interference of the O-Ring on the OD and no interference of the PTFE glide ring on the ID.
- Excellent sealing performance at low speeds with high pressure.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.

Application

Slow moving shafts, pivoting movements, swivel or rotary joints.
Used as seal between two pressurized spaces.
Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

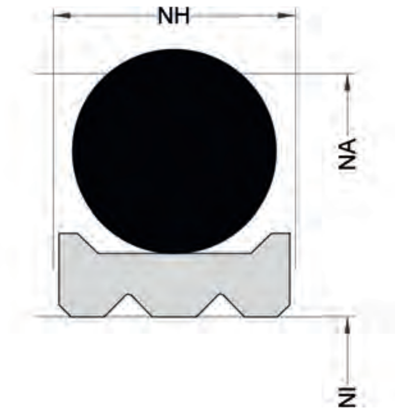
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f7

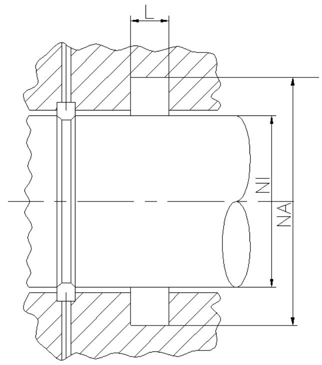
Surface Roughness	Rtmax [µ]	Ra [µ]
Face of groove	≤ 15	≤ 3
Bottom of groove	≤ 10	≤ 1,8

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R09





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for inside sealing, designed with interference of the O-Ring on the OD and no interference of the PTFE glide ring on the ID.
- Excellent sealing performance at low speeds with high pressure.
- Peripheral grooves that enable the build up of a lubricant reservoir.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints. Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

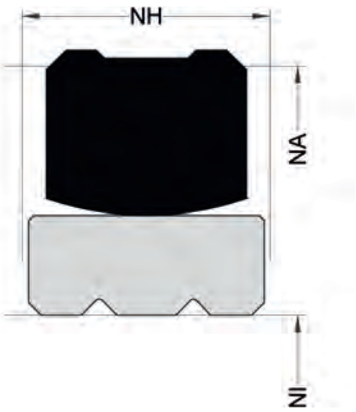
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H8

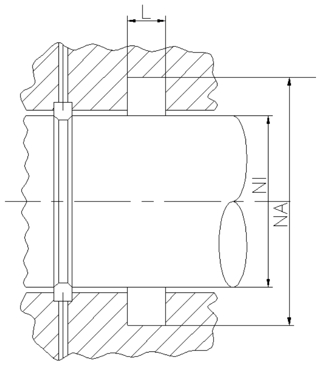
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R09A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for inside sealing, designed with interference of the preload element on the OD and no interference of the PTFE glide ring on the ID.
- Excellent sealing performance at low speeds with high pressure.
- Peripheral grooves that enable the build up of a lubricant reservoir.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.
- Especially for use in non standardized grooves.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints. Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation. Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

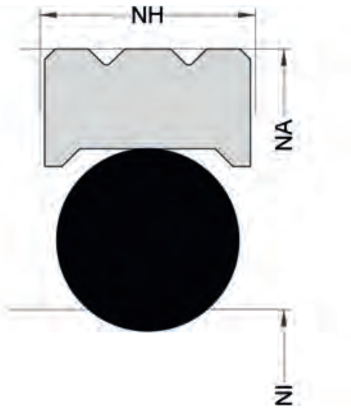
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H8

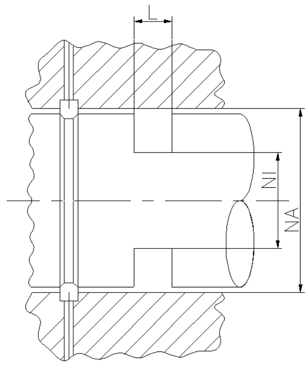
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R10





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for outside sealing, designed with interference of the O-Ring on the ID and no interference of the PTFE glide ring on the OD.
- Excellent sealing performance at low speeds with high pressure.
- Peripheral grooves that enable the build up of a lubricant reservoir.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints. Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

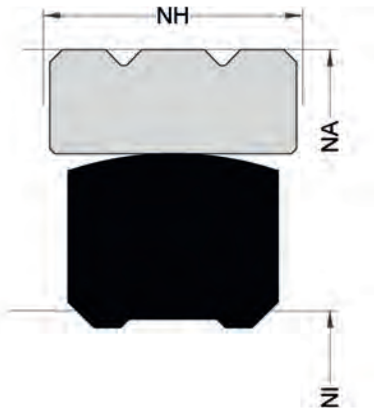
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H8

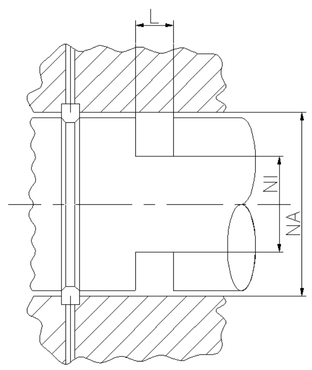
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R10A





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for outside sealing, designed with interference of the preload element on the ID and no interference of the PTFE glide ring on the OD.
- Excellent sealing performance at low speeds with high pressure.
- Peripheral grooves that enable the build up of a lubricant reservoir.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.
- Especially for use in non standardized grooves.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints. Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

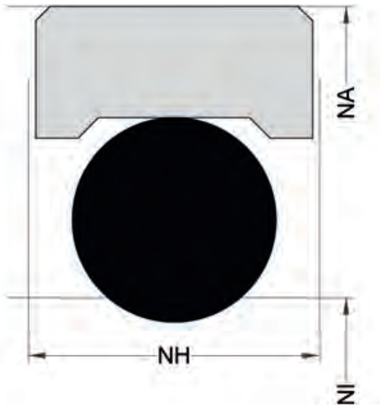
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H8

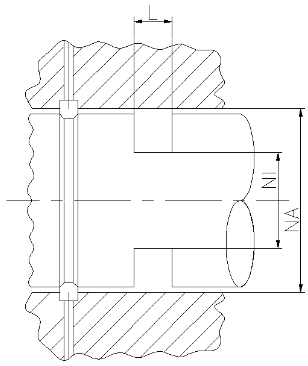
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R11





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for outside sealing, designed with interference of the O-Ring on the ID and no interference of the PTFE glide ring on the OD.
- Excellent sealing performance at low speeds with high pressure.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints. Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

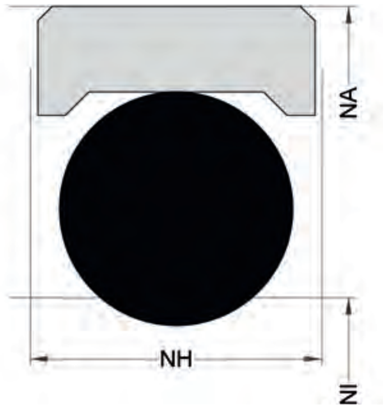
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H8

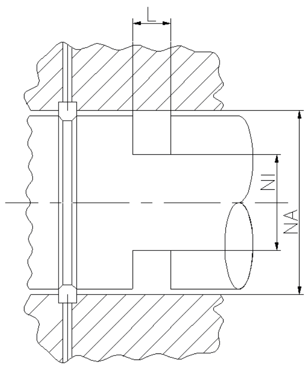
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R11D





General Description

Rotary seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment or to transfer liquids and/or gases from a stationary part into or out of rotating machinery.

Features

- Asymmetrical, double acting rotary seal for outside sealing, designed with interference of the O-Ring on the ID and no interference of the PTFE glide ring on the OD.
- Excellent sealing performance at low speeds with high pressure.
- No tendency to “stick-slip” effect.
- Low break-away load after long standstills.
- Good gap extrusion resistance.
- Bigger O-Ring choosen compared to R11

Application

Slow moving shafts, pivoting movements, revolving distributors, swivel joints. Max. pressure 350 bar, max. speed 0.4 m/s.

Installation

Snap-in installation.
Attention: PTFE glide rings need calibration after installation!

Seal housing recommendation

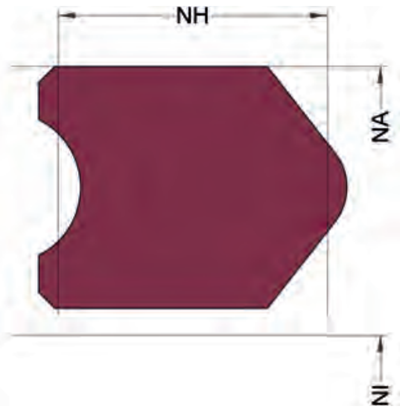
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

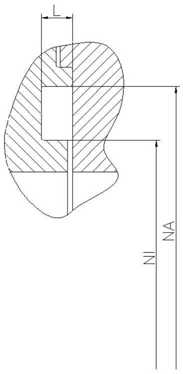
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R35A





General Description
The rotary seal R35A is an asymmetric, axially compressed seal for static, rotating and pivoting sealing applications. The geometry is compareable to 90° tilted RS35A or PS35A.

Features
- Especially designed for pressure from inside
- Oversized on the OD to ensure a proper static fit in the groove
- Excellent static and dynamic sealing performance
- Simple mounting
- Compact and simple grooves

Application
Static sealing (e.g. flanges or fittings), chemical industry, Oil&Gas, aviation, rotary joints

Installation
Snap-in installation

Seal housing recommendation

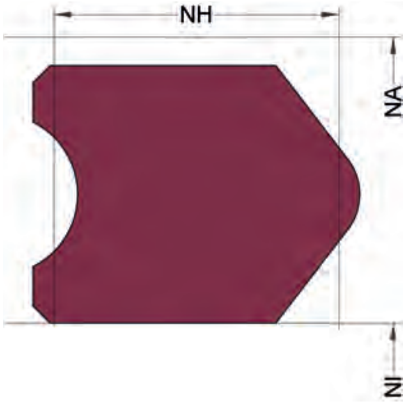
Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

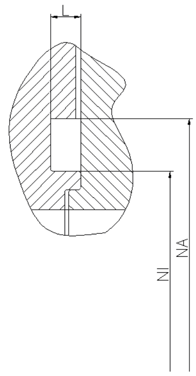
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Rotary Seal	Profile: R35B





General Description

The rotary seal R35B is an asymmetric, axially compressed seal for static, rotating and pivoting sealing applications. The geometry is compareable to 90° tilted RS35A or PS35A.

Features

- Especially designed for pressure from outside
- Undersized on the ID to ensure a proper static fit in the groove
- Excellent static and dynamic sealing performance
- Simple mounting
- Compact and simple grooves

Application

Static sealing (e.g. flanges or fittings), chemical industry, Oil&Gas, aviation, rotary joints

Installation

Snap-in installation

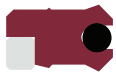
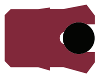
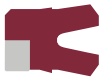
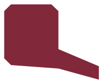
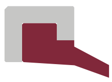
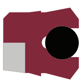
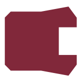
Seal housing recommendation

Tolerances	[mm]
L	+ 0.2
Ø NA	H8
Ø NI	f 8

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

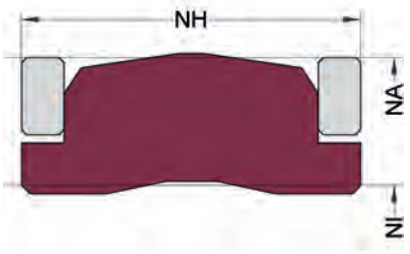
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

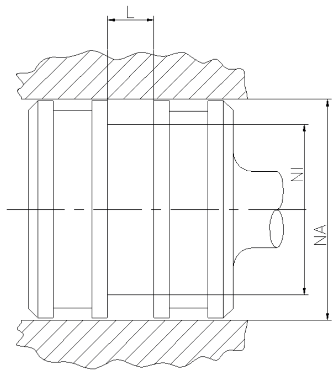
Mining seals

	P50		R50A
	P50A		R51
	P51		R52
	P51A		R53
	P51G		W50
	P52		W51
	P53		W53
	P54		W54
	P54A		BWR01-P
	P55		BWR01-R
	R50		P58

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P50





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one elastic sealing element and two back-up elements.
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 400 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

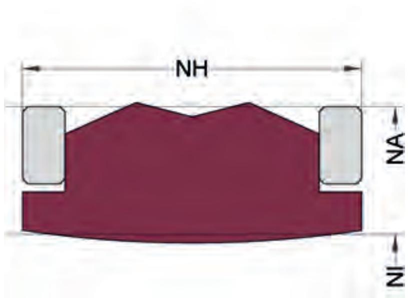
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

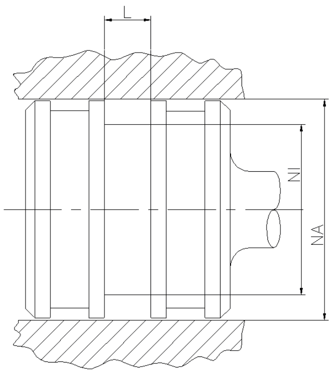
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P50A





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one elastic sealing element and two back-up elements.
- Two sealing edges on the OD for improved madia seperation
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 400 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

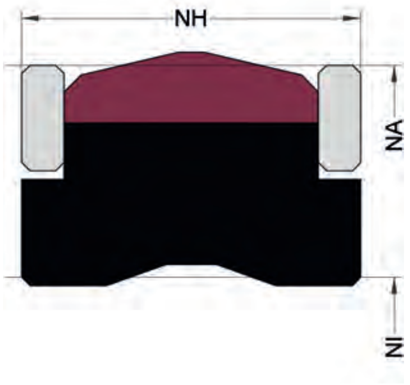
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

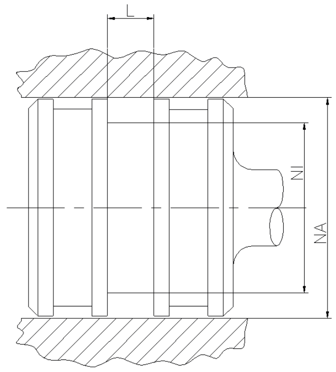
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P51





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one gliding, energizing and two back-up elements.
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.
- No drag pressure build-up.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 400 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

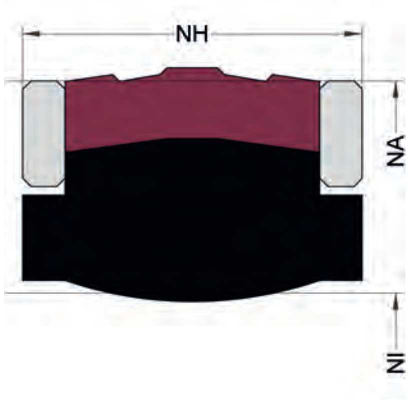
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

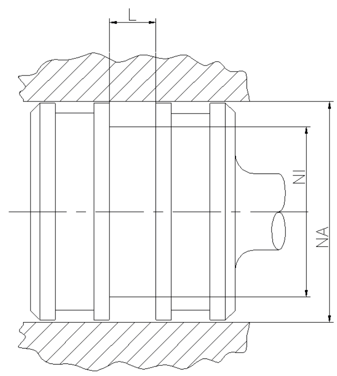
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P51A





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of a sliding ring commonly in PU or PTFE, an elastomere preload element and back-up elements on both sides.
- Two sealing edges on the OD for improved madia seperation
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 400 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

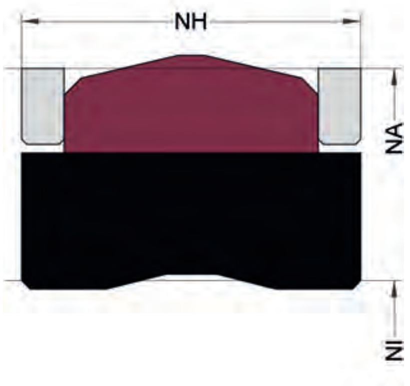
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

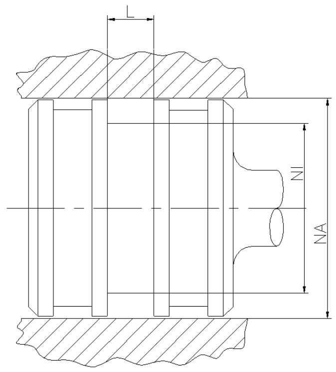
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P51G





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one gliding, energizing and two back-up elements.
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.
- No drag pressure build-up.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 400 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

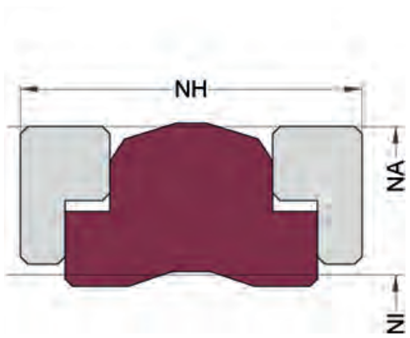
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

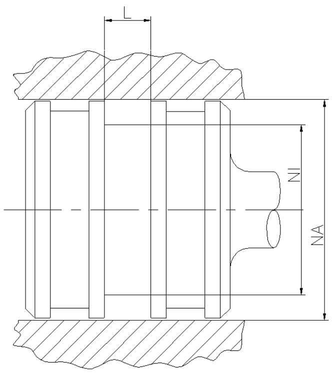
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P52





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one elastic sealing element and two back-up elements that also have guiding properties.
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.
- No drag pressure build-up.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 700 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

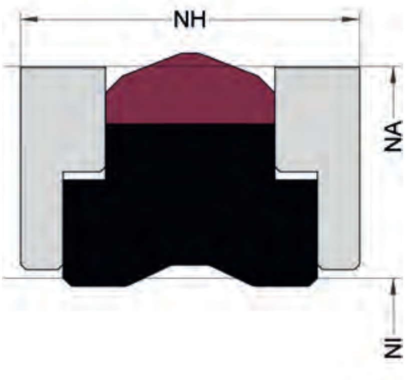
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

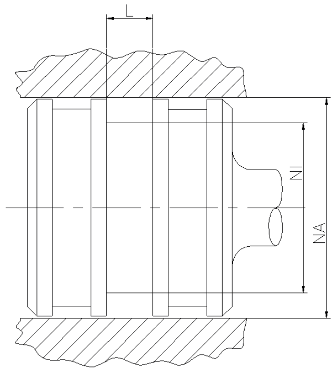
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P53





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one gliding and energizing and two integrated back-up elements that also have guiding properties.
- Useable for short and long stroke lengths.
- Good static and dynamic sealing performance.
- High frictional force.
- No drag pressure build-up.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 700 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

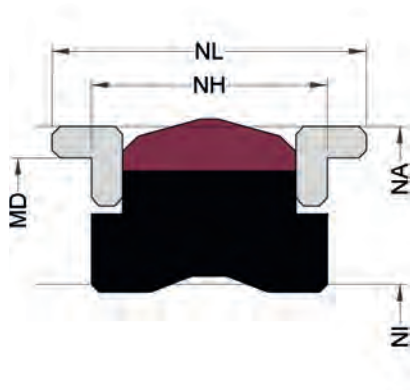
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H9
Ø NI	h10

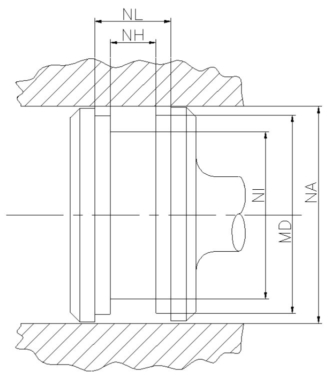
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P54





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of one gliding and energizing and two integrated guiding/back-up elements.
- Useable for short and long stroke lengths.
- Good dynamic and static sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders.
Universal piston seal for double-acting cylinders.
Dynamic: Max. pressure 400 bar, max. speed 0.5 m/s.
Static: Max. pressure 1500 bar, max. speed 0.2 m/s.*

*) for static application the preload should be increased to 13-15% instead of 10% (dynamic)

Installation

Snap-in installation.

Seal housing recommendation

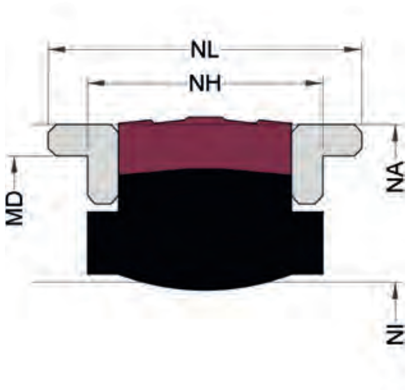
Tolerances	[mm]
Ø NA	H9
Ø NI	h10
L1	+ 0,2
L2	+ 0,2

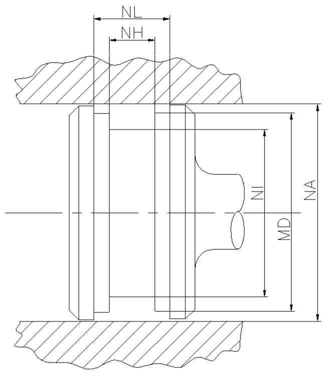
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P54A





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of a sliding ring commonly in PU or PTFE an elastomere preload element and combined guid/back-up elements on both sides.
- Useable for short and long stroke lengths.
- Good dynamic and static sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders. Universal piston seal for double-acting cylinders. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.
Recommended for cross sections up to approx. 10mm.

Seal housing recommendation

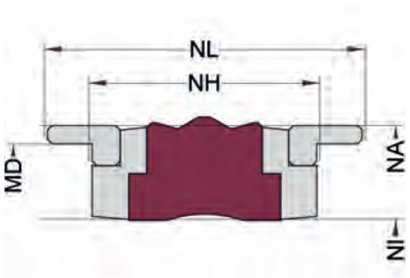
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

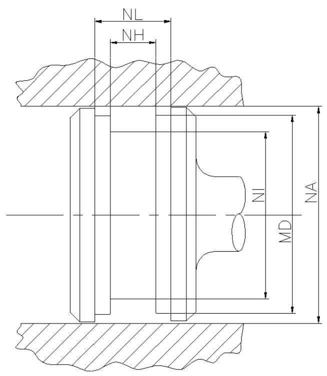
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P55





General Description

Compact piston seal set, designed to seal the hydraulic fluid between two pressurized spaces, preventing the flow of the fluid to the other side and transforming the pressure force into the movement.

Features

- Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove.
- Consisting of a PU or elastomere sealing element and all-over fitting backup rings with bracket guide rings sitting on.
- Useable for short and long stroke lengths.
- Good dynamic and static sealing performance.
- High frictional force.

Application

Reciprocating pistons in hydraulic cylinders. Universal piston seal for double-acting cylinders. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.
Recommended for cross sections up to approx. 10mm.

Seal housing recommendation

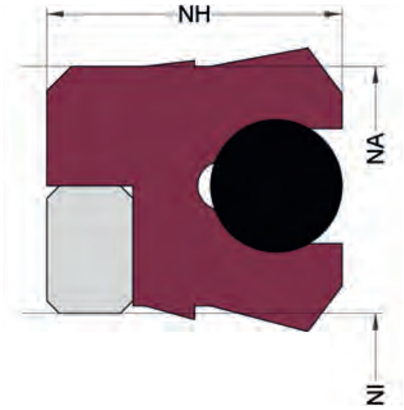
Tolerances	[mm]
NL	+ 0.2
NH	+ 0.2
Ø NA	H9
Ø NI	h10

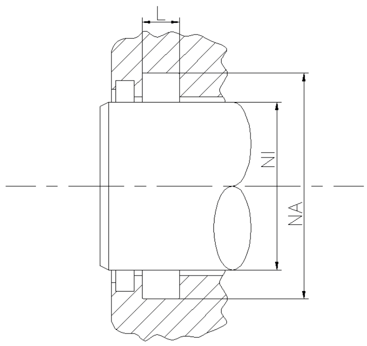
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: R50





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference of the additional stabilizing lip on the OD which provides a good static fit in the groove.
- Increased preload due to an additional O-Ring.
- Activated back-up ring prevents and reduces gap extrusion.
- Secundary lip on the ID for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating rods in hydraulic cylinders, plungers, push rods, telescopic cylinders, fittings, mining cylinders, etc. Switching or clamping functions. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

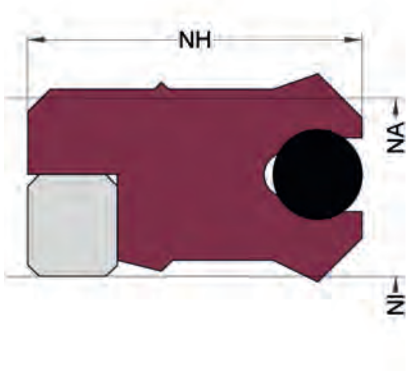
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H10

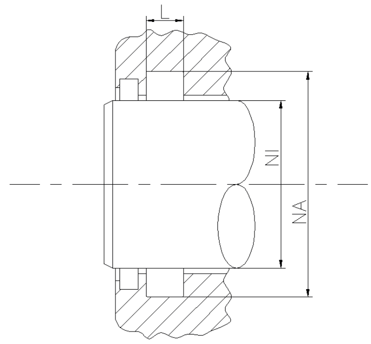
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: R50A





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference of the additional stabilizing lip on the OD which provides a good static fit in the groove.
- Increased preload due to an additional O-Ring.
- Activated back-up ring prevents and reduces gap extrusion.
- Secundary lip on the ID for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application

Reciprocating rods in hydraulic cylinders, plungers, push rods, telescopic cylinders, fittings, mining cylinders, etc. Switching or clamping functions. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

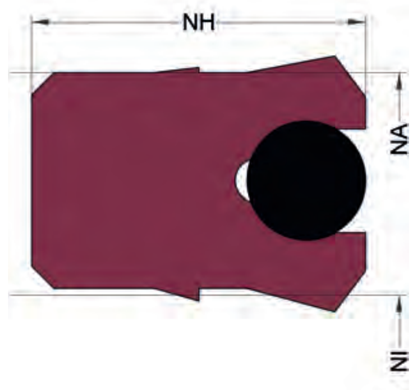
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H10

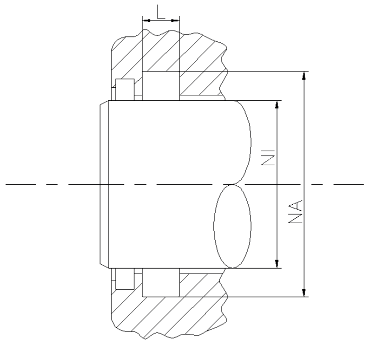
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: R51





General Description
Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features
- Asymmetrical, single acting rod seal, designed with interference of the additional stabilizing lip on the OD which provides a good static fit in the groove.
- Increased preload due to an additional O-Ring.
- Secundary lip on the ID for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.

Application
Reciprocating rods in hydraulic cylinders, plungers, push rods, telescopic cylinders, fittings, mining cylinders, etc. Switching or clamping functions. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation
Snap-in installation.

Seal housing recommendation

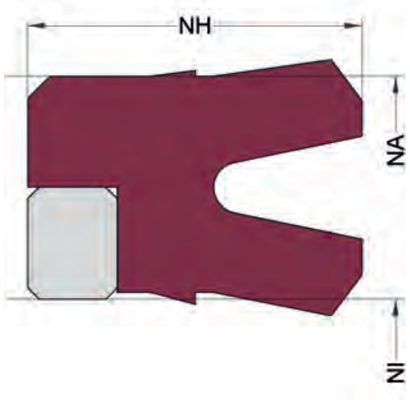
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H10

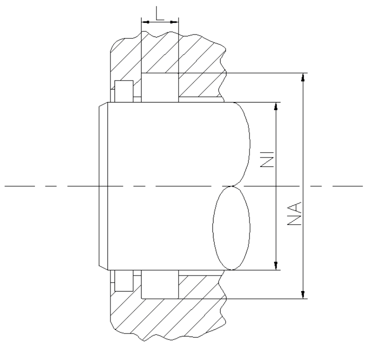
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: R52





General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference of the additional stabilizing lip on the OD which provides a good static fit in the groove.
- Activated back-up ring prevents and reduces gap extrusion.
- Secundary lip on the ID for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- No reverse leakage when changing direction.
- Useable for long stroke lengths.

Application

Reciprocating rods in hydraulic cylinders, plungers, mining cylinders, etc. Max. pressure 700 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

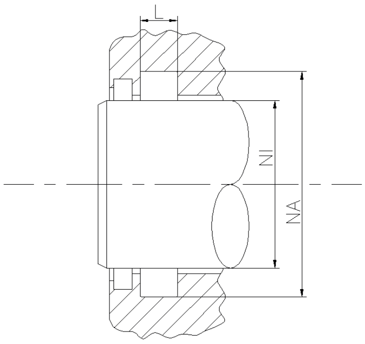
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H10

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: R53



General Description

Rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere, preventing leakage and pollution of the environment.

Features

- Asymmetrical, single acting rod seal, designed with interference of the additional stabilizing lip on the OD which provides a good static fit in the groove.
- Secundary lip on the ID for stabilising at large seal heights and reducing the residual oil film.
- Excellent static and dynamic sealing performance.
- Excellent performance in all pressure ranges.
- No reverse leakage when changing direction.
- Useable for long stroke lengths.

Application

Reciprocating rods in hydraulic cylinders, plungers, mining cylinders, etc. Max. pressure 400 bar, max. speed 0.5 m/s.

Installation

Snap-in installation.

Seal housing recommendation

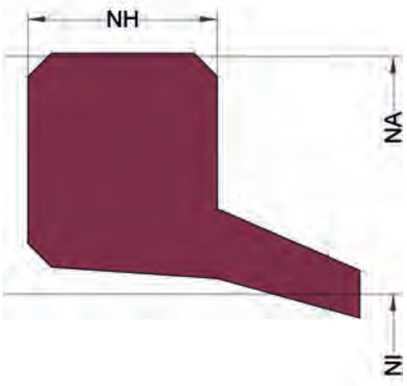
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NI	f 8
Ø NA	H10

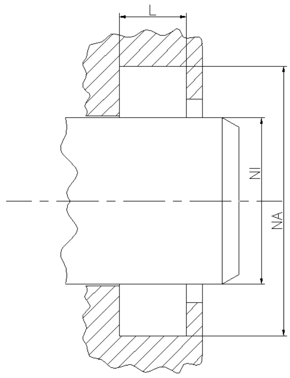
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: W50





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Sharp wiping lip to ensure any dirt is wiped off properly.
- Pressure from the trailing side has to be avoided.

Application

Reciprocation rods in hydraulic cylinders, plungers. Max. pressure 0 bar, max. speed 2 m/s.

Installation

Snap-in installation. When the cylinder can not be dismantled, the wiper can also be installed in cut version. In this case the diameter should be increased by 2-3%.

Seal housing recommendation

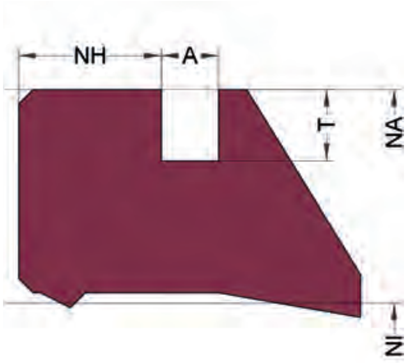
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

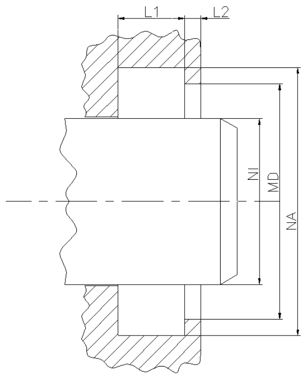
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: W51





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Additional sealing on the housing face.
- Sharp wiping lip to ensure any dirt is wiped off properly.
- Secundary lip for stabilizing and reducing the residual oil film.
- Pressure from the trailing side has to be avoided.

Application

Reciprocation rods in hydraulic cylinders, plungers, rolling mills.
Max. pressure 0 bar, max. speed 2 m/s.

Installation

Snap-in installation.
When the cylinder can not be dismantled, the wiper can also be installed in cut version.
In this case the diameter should be increased by 2-3%.

Seal housing recommendation

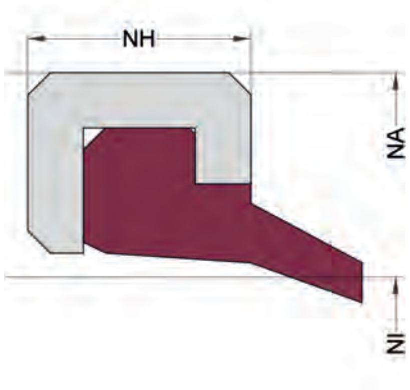
Tolerances	[mm]
L1	+ 0,2
L2	- 0,2
Ø NA	H11
Ø NI	f 8

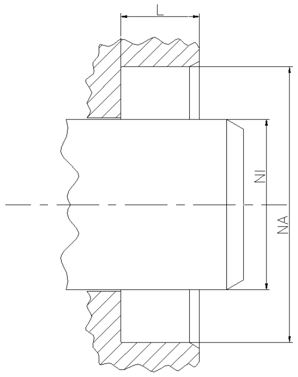
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: W53





General Description
Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features
- The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter.
- Tight seat in the housing ensures that the wiper is held in place.
- Prevention of corrosion in the seat due to the use of a retainer ring in hard plastics.
- Sharp wiping lip to ensure any dirt is wiped off properly.
- Not suitable for pressure from the trailing side.
- For housings acc. to ISO 6195-1986 Type B.

Application
Reciprocation rods in hydraulic cylinders, plungers.
Max. pressure 0 bar, max. speed 2 m/s.

Installation
Press-in installation; separate installation of retainer ring and elastomer part possible.

Seal housing recommendation

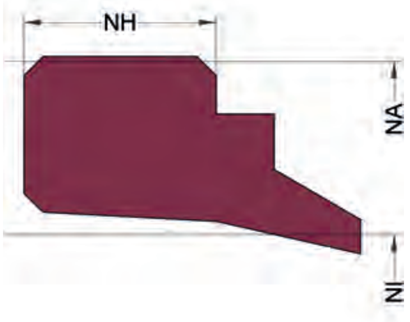
Tolerances	[mm]
L	+ 0.2
Ø NA	H11
Ø NI	f 8

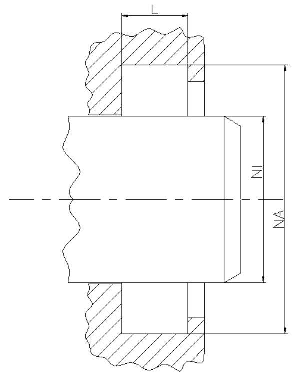
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: W54





General Description

Wipers are designed to keep dust, dirt, sand and others off the rod and the sealing and guiding elements, avoiding abrasive damage caused by external contamination.

Features

- The profile is designed with interference on the OD which provides a good static fit in the groove, preventing the entry of humidity and other contamination via the outside diameter.
- Sharp wiping lip to ensure any dirt is wiped off properly.
- For housings acc. to ISO 6195-Type A.
- Pressure from the trailing side has to be avoided.

Application

Reciprocation rods in hydraulic cylinders, plungers. Max. pressure 0 bar, max. speed 2 m/s.

Installation

Snap-in installation. When the cylinder can not be dismantled, the wiper can also be installed in cut version. In this case the diameter should be increased by 2-3%.

Seal housing recommendation

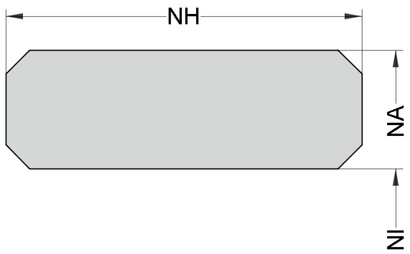
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H11
Ø NI	f 8

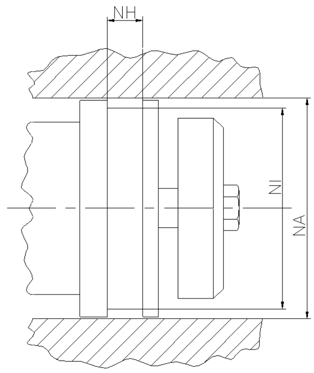
Surface Roughness	Rtmax [μ]	Ra [μ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [μ]	Ra [μ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR01_P_PS





General Description
Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features
- Normally cut at an angle for easy installation, but also available as non-split version
- Low dynamic friction.
- Low break-away forces after long standstills.

Application
Reciprocating pistons and rods in hydraulic cylinders, plungers.

Max. speed 4 m/s, radial loads max. 70 N/mm2.

Installation
Snap-in installation.

Seal housing recommendation

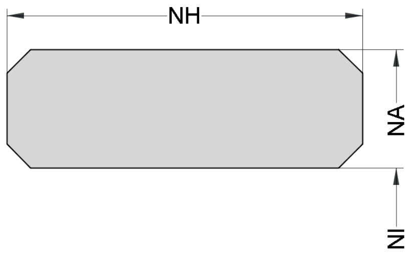
Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

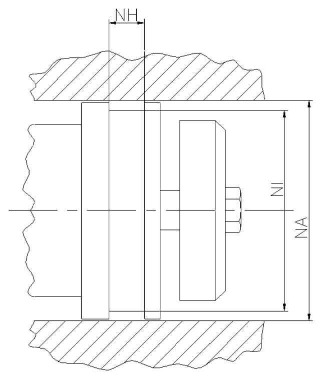
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

PROFILE DESCRIPTION

Profiletype: Guide Ring	Profile: BWR01_P_RS





General Description

Guiding elements are designed to prevent metal to metal contact between components of hydraulic systems e.g. piston and cylinder barrel or shaft and cylinder head.

Features

- Normally cut at an angle for easy installation, but also available as non-split version
- Low dynamic friction.
- Low break-away forces after long standstills.

Application

Reciprocating pistons and rods in hydraulic cylinders, plungers.

Max. speed 4 m/s, radial loads max. 70 N/mm2.

Installation

Snap-in installation.

Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA	H8
Ø NI	h9

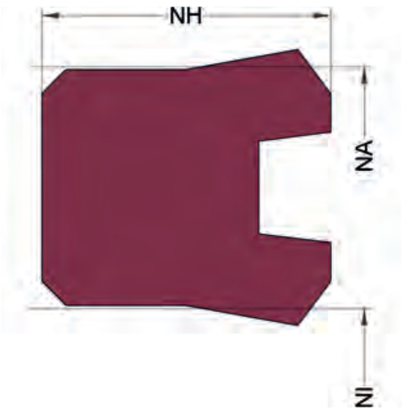
Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

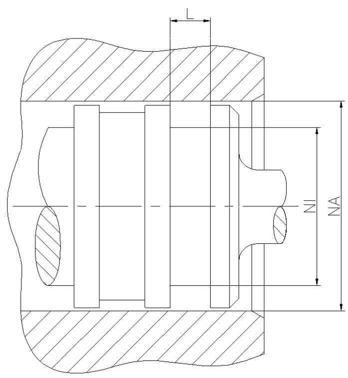
Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

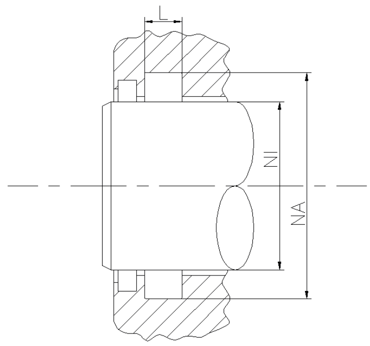
SEALING PARTNER
PART OF nomo

PROFILE DESCRIPTION

Profiletype: Mining Seal	Profile: P58







General Description

Symmetrical piston/rod seals are designed to seal the pressurized hydraulic fluid against the atmosphere or between two pressurized spaces.

Features

- Symmetrical, single acting piston/rod seal, no interference on the ID or OD.
- Special design for small cross sections where lips would be too thin.
- Excellent static and dynamic sealing performance.
- Excellent performance over all pressure ranges.
- Used for short pulsating strokes.
- No reverse leakage when changing direction.
- Recommended for positioning or holding under pressure.
- Particularly suitable for high viscosity media.

Application

Reciprocating pistons/rods in hydraulic cylinders, push rods, fittings etc. Switching or clamping functions. Replacement for rubber fabric seals. Max. pressure 400 bar, max. speed 0.3 m/s.

Installation

Snap-in installation.

Seal housing recommendation

Tolerances	[mm]
L < 10mm	+ 0.2
L ≥ 10mm	+ 0.3
Ø NA (rod groove)	H10
Ø NI (rod diam.)	f8
Ø NA (cylinder diam.)	H9
Ø NI (piston groove)	h10

Surface Roughness	Rtmax [µ]	Ra [µ]
Bottom of groove	≤ 6.3	≤ 1.6
Face of groove	≤ 15	≤ 3

Sliding Surface	Rtmax [µ]	Ra [µ]
PU, elastomeres	≤ 2.5	≤ 0.1-0.5
PTFE	≤ 2	≤ 0.05-0.3

Materials

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TOP SEALING PARTNER
PART OF nomo

Polyurethanes

In this brochure, our most commonly used sealing materials.
If you can't find what you're looking for, ask about our other options.

PU (ECOPUR)

ECOPUR is premium sealing grade thermoplastic polyurethane elastomer (TPU), offering low compression set, excellent pressure and abrasion resistance as well as high tensile properties and tear strength. In sealing applications, this grade is mostly used for U-cups, lip seals, wipers and packings, but may also be used for dampers and other customized parts. Products from this material can be used in mineral oil, in water up to 40°C and in bio-degradable hydraulic oils like vegetable oils and synthetic esters up to 60°C. Depending on the seal design and the housing conditions, seals made of ECOPUR can be used up to 400 bar (for high pressure demands, experts from Top Sealing Partner recommend to use anti-extrusion-rings).

Property	Unit	Value	Standard
Standard color	–	Green	
Durometer hardness*	Shore A	95 ±2	DIN ISO 7619
Durometer hardness*	Shore D	48 ±3	DIN ISO 7619
Density	g/cm³	1,20 ±0,01	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 50	DIN 53504
Elongation at break	%	≥ 430	DIN 53504
100% modulus	MPa	≥ 12	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 27	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 33	DIN ISO 815
Tear strength	N/mm	100	DIN ISO 34-1
Abrasion	mm³	18	DIN ISO 4649
Minimum service temperature	°C	–30	–
Brittleness temperature	°C	< –60	–
Maximum service temperature	°C	+110	–
Short term	°C	+125	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

HPU (H-ECOPUR)

H-ECOPUR is a hydrolysis-resistant thermoplastic polyurethane elastomer (TPU). It combines the engineering properties of ECOPUR with a high resistance to hydrolysis which is otherwise rarely found in polyurethanes. It is stable in water up to +90°C and has an outstanding stability in mineral oil. Because of its resistance to hydrolysis, H-ECOPUR can be used for water hydraulic and for applications in mining, tunneling and presses. H-ECOPUR is particularly recommended for the use in pure and seawater, for HFA and HFB fluids and biologically degradable hydraulic fluids (vegetable oils and synthetic esters) and food articles. H-ECOPUR meets food contact regulations according EC1935/2004 and FDA.

Property	Unit	Value	Standard
Standard color	–	Red	
Durometer hardness*	Shore A	95 ±2	DIN ISO 7619
Durometer hardness*	Shore D	48 ±3	DIN ISO 7619
Density	g/cm^3	1,20 ±0,01	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 50	DIN 53504
Elongation at break	%	≥ 330	DIN 53504
100% modulus	MPa	≥ 13	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 27	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 33	DIN ISO 815
Tear strength	N/mm	100	DIN ISO 34-1
Abrasion	mm^3	17	DIN ISO 4649
Minimum service temperature	°C	–20	–
Brittleness temperature	°C	< –60	–
Maximum service temperature	°C	+110	–
Short term	°C	+125	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

SPU (S-ECOPUR)

S-ECOPUR has been optimized with regard to the tribological characteristics of wear resistance. This was achieved by the addition of a synergetic combination of solid lubricants. This special material is therefore best suitable for most applications with starved lubrication such as water hydraulics and oil-free pneumatics.

Property	Unit	Value	Standard
Standard color	–	Grey/black	
Durometer hardness*	Shore A	95 ±2	DIN ISO 7619
Durometer hardness*	Shore D	48 ±3	DIN ISO 7619
Density	g/cm³	1,23 ±0,02	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 45	DIN 53504
Elongation at break	%	≥ 380	DIN 53504
100% modulus	MPa	≥ 17	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 30	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 35	DIN ISO 815
Tear strength	N/mm	120	DIN ISO 34-1
Abrasion	mm³	21	DIN ISO 4649
Minimum service temperature	°C	–20	–
Brittleness temperature	°C	< –60	–
Maximum service temperature	°C	+110	–
Short term	°C	+125	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

TPU (T-ECOPUR)

T-ECOPUR (TPU) is modified for low temperature applications. The properties of T-ECOPUR are similar to those of ECOPUR, but the minimum service temperature is extended to -50°C. For that reason, T-ECOPUR is most suitable for applications in severe climate conditions and processes for frozen goods.

Property	Unit	Value	Standard
Standard color	–	Blue	
Durometer hardness*	Shore A	95 ±2	DIN ISO 7619
Durometer hardness*	Shore D	48 ±3	DIN ISO 7619
Density	g/cm^3	1,17 ±0,01	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 50	DIN 53504
Elongation at break	%	≥ 450	DIN 53504
100% modulus	MPa	≥ 12	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 27	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 33	DIN ISO 815
–40 °C / 24 h, 20% compression	%	≤ 45	DIN ISO 815
Tear strength	N/mm	80	DIN ISO 34-1
Abrasion	mm^3	15	DIN ISO 4649
Minimum service temperature	°C	–50	–
Brittleness temperature	°C	< –60	–
Maximum service temperature	°C	+100	–
Short term	°C	+120	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

Testing time is 3 seconds

GPU (G-ECOPUR)

G-ECOPUR is a casted hydrolysis-resistant polyurethane-elastomer (CPU) with similar properties to H-ECOPUR, especially regarding its chemical stability. G-ECOPUR can be used in the same hydraulic fluids as H-ECOPUR. Generally, G-ECOPUR is used for seals with a diameter from 540 mm up to 4000 mm, where seals can be made in one piece. Larger diameters are feasible using our special welding technique.

Property	Unit	Value	Standard
Standard color	–	Red	
Durometer hardness*	Shore A	95 ±2	DIN ISO 7619
Durometer hardness*	Shore D	47 ±3	DIN ISO 7619
Density	g/cm³	1,17 ±0,01	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 45	DIN 53504
Elongation at break	%	≥ 330	DIN 53504
100% modulus	MPa	≥ 11	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 30	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 40	DIN ISO 815
Abrasion	mm³	18	DIN ISO 4649
Minimum service temperature	°C	–30	–
Brittleness temperature	°C	<–60	–
Maximum service temperature	°C	+110	–
Short term	°C	+125	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

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XPU (X-ECOPUR)

Compared to standard materials, harder grades show nearly the same tensile strength and elongation at break at a considerably higher stiffness, as well as higher tear strength. X-ECOPUR versions have higher extrusion resistance than standard polyurethanes and therefore allow higher pressure at same geometries. The X-ECOPUR grades have increased wear resistance, extended lifetime and a strongly reduced tendency to stick-slip compared to standard polyurethanes.

Property	Unit	Value	Standard
Standard color	–	Dark green	
Durometer hardness*	Shore A	97 ±1	DIN ISO 7619
Durometer hardness*	Shore D	57 ±3	DIN ISO 7619
Density	g/cm³	1,21 ±0,01	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 45	DIN 53504
Elongation at break	%	≥ 400	DIN 53504
100% modulus	MPa	≥ 16	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 30	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 35	DIN ISO 815
Tear strength	N/mm	130	DIN ISO 34-1
Abrasion	mm³	18	DIN ISO 4649
Minimum service temperature	°C	–30	–
Brittleness temperature	°C	< –60	–
Maximum service temperature	°C	+115	–
Short term	°C	+130	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

XHPU (X-ECOPUR H)

Compared to the standard grade H-ECOPUR, X-ECOPUR H (TPU) has a significantly higher hardness. The composition of the material based on special raw materials provides outstanding friction and wear characteristics as well as pressure resistance. This material exhibits an outstanding chemical and hydrolysis resistance for applications in mineral oil, biodegradable hydraulic fluids (HETG and HEES, etc) and water based fluids (HFA and HFB).

Property	Unit	Value	Standard
Standard color	–	Dark red	
Durometer hardness*	Shore A	97 ±1	DIN ISO 7619
Durometer hardness*	Shore D	60 ±3	DIN ISO 7619
Density	g/cm³	1,22 ±0,01	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 45	DIN 53504
Elongation at break	%	≥ 350	DIN 53504
100% modulus	MPa	≥ 22	DIN 53504
Compression set:			
70 °C / 70 h, 20% compression	%	≤ 30	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 35	DIN ISO 815
Tear strength	N/mm	160	DIN ISO 34-1
Abrasion	mm³	20	DIN ISO 4649
Minimum service temperature	°C	–20	–
Brittleness temperature	°C	< –60	–
Maximum service temperature	°C	+115	–
Short term	°C	+130	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

XSPU (X-ECOPUR S)

Compared to the S-ECOPUR standard material, X-ECOPUR S is harder and therefore further improves sliding properties. X-ECOPUR S has a better extrusion resistance than the standard material and therefore seals made of this material can be used at higher pressure, assuming the same profiles are used. X-ECOPUR S is most suitable for poor lubricated working conditions. The material can also withstand dry-running depending on the overall service conditions.

Property	Unit	Value	Standard
Standard color	–	Dark grey	■
Durometer hardness*	Shore A	97 ±1	DIN ISO 7619
Durometer hardness*	Shore D	58 ±3	DIN ISO 7619
Density	g/cm³	1,23 ±0,02	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 38	DIN 53504
Elongation at break	%	≥ 300	DIN 53504
100% modulus	MPa	≥ 22	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 33	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 39	DIN ISO 815
Tear strength	N/mm	160	DIN ISO 34-1
Abrasion	mm³	29	DIN ISO 4649
Minimum service temperature	°C	–20	–
Brittleness temperature	°C	< –60	–
Maximum service temperature	°C	+115	–
Short term	°C	+130	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

GPU54D (G-ECOPUR54D)

G-ECOPUR 54D is a casted hard grade hydrolysis resistant polyurethane (CPU) most suitable for heavy duty large diameter applications. It has comparable chemical and mechanical properties to G-ECOPUR but with higher shore hardness and improved friction and wear characteristics.

Property	Unit	Value	Standard
Standard color	–	Red	
Durometer hardness*	Shore A	97 ±1	DIN ISO 7619
Durometer hardness*	Shore D	54 ±3	DIN ISO 7619
Density	g/cm³	1,19 ±0,01	DIN EN ISO 1183-1
Tensile strength	N/mm²	≥ 45	DIN 53504
Elongation at break	%	≥ 330	DIN 53504
100% modulus	N/mm²	≥ 15	DIN 53504
Compression set:			
70 °C / 24 h, 20% compression	%	≤ 30	DIN ISO 815
100 °C / 24 h, 20% compression	%	≤ 40	DIN ISO 815
Abrasion	mm³	18	DIN ISO 4649
Minimum service temperature	°C	–30	–
Brittleness temperature	°C	<–60	–
Maximum service temperature	°C	+110	–
Short term	°C	+125	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

* Testing time is 3 seconds

MATERIAL DATASHEET

PU SOFT

PU SOFT is a hydrolysis-resistant polyurethane. In sealing applications, this grade is mostly used for static seals, rod and piston seals, wiper seals and rotary seals. It is recommended as a substitute for NBR in most of the hydraulic and pneumatic applications. PU SOFT is resistant to mineral oils, HFD-U and HETG-fluids, sour oils and gases, cold water as well as diluted acids and bases.

Properties	Value	Unit	DIN Standard
Hardness	86 ±3	Shore A	DIN ISO 7619-1
Density	1,188	g/cm³	DIN EN ISO 1183-1
100% Modulus	6,5	MPa	DIN 53504
300% Modulus	33,3	MPa	DIN 53504
Elongation at break	355	%	DIN 53504
Tensile strength	44,2	MPa	DIN 53504
Compression set 23°C/70h	18	%	DIN ISO 815-1
Compression set 70°C/22h	17	%	DIN ISO 815-1
Compression set 70°C/70h	21	%	DIN ISO 815-1
Compressive modulus	15,1	MPa	Acc. Studer/Kunz
Rebound resilience	41	%	DIN ISO 4662:2017
Tear resistance	69	N/mm	DIN ISO 34-1 A
Abrasion resistance	51	mm³	DIN ISO 4649 B
min. Service temperature	-30	°C	
max. Service temperature	+95	°C	

PU HOT

PU HOT is a hydrolysis–resistant (H-PU), casted Polyurethane, based on MDI, Polycarbonate Polyol and certain additives. Due to the excellent stability of the physical properties at higher temperatures and outstanding thermal ageing resistance, compared to other Polyurethanes it is recommended for applications where temperature and mechanical stress of the material reach the limits of standard Polyurethanes. PU HOT has been optimized to withstand the risk of rapid gas decompression (RGD) or explosivedecompression (ED) which is an essential demand in the oil and gas industry.

Physical properties

Density:	DIN ISO 1183-1	g/cm³	1,09 ±0,03
Hardness at 23°C:	DIN ISO 7619-1	Shore A	96 ±2
Hardness at +100°C:	DIN ISO 7619-1	Shore A	93 ±2
100% Modulus:	DIN 53504	N/mm²	≥ 10
300% Modulus:	DIN 53504	N/mm²	≥ 25
Tensile strength:	DIN 53504	N/mm²	≥ 45
Elongation at break:	DIN 53504	%	≥ 350
Tear strength:	DIN ISO 34-1	kN/m	≥ 110
Compression set, 24h, 70°C, 25%:	DIN ISO 815-1	%	≤ 25
Compression set, 24h, 100°C, 25%:	DIN ISO 815-1	%	≤ 30
Compression set, 24h, 125°C, 25%:	DIN ISO 815-1	%	≤ 65

Temperature range: **-30°C to 135°C**

Chemical resistance

Resistant to:	Water up to 90°C, Sea Water, Mineral Oils, Vegetable Oils, Silicone Oils, Ozone, Oxygen (cold), HFA fluids, HFB fluids, diluted Acids and Lyes
Not Resistant to:	Steam, conc. Acids and Lyes, conc. Alcohols, Solvents, HFD fluids

PU C-RED

PU C-RED is a MoS2 filled, hydrolysis-resistant polyurethane. It is recommended in application where reduced friction and poor lubrication is an issue. The material is able to reduce or eliminate the stick-slip effect when it appears. Mostly used for U-seals, wipers, packings and rotary seals up to 400 bar pressure in standard hydraulics and applications with poor lubrication or even pneumatics. Due to its outstanding hydrolysis resistance it can be used in the most common hydraulic fluids, oil in water emulsions but also water power applications, applications in the mining industry and presses.

Physical properties

Density:	DIN ISO 1183-1	g/cm³	1,16 ±0,03
Hardness at 23°C:	DIN ISO 7619-1	Shore A	95 ±2
Hardness at +100°C:	DIN ISO 7619-1	Shore A	93 ±2
100% Modulus:	DIN 53504	N/mm²	≥ 10
300% Modulus:	DIN 53504	N/mm²	≥ 30
Tensile strength:	DIN 53504	N/mm²	≥ 45
Elongation at break:	DIN 53504	%	≥ 320
Tear strength:	DIN ISO 34-1	kN/m	≥ 110
Compression set, 24h, 70°C, 25%:	DIN ISO 815-1	%	≤ 25
Compression set, 24h, 100°C, 25%:	DIN ISO 815-1	%	≤ 35

Temperature range: **-30°C to 125°C**

Chemical resistance

Resistant to:	Water up to 90°C, Sea Water, Mineral Oils, Vegetable Oils, Silicone Oils, Ozone, Oxygen (cold), HFA fluids, HFB fluids
Not Resistant to:	Steam, conc. Acids and Lyes, conc. Alcohols, Solvents, HFD fluids

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In this brochure, our most commonly used sealing materials.
If you can't find what you're looking for, ask about our other options.

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NBR

Nitrile butadiene rubber (NBR) is a family of synthetic rubber copolymers of acrylonitrile and butadiene. It is a copolymer manufactured from acrylonitrile and butadiene that provides good resistance to the following media:

- Most mineral oils and greases with a mineral oil base, HFA, HFB and HFC pressure fluids
- Normal fuels like gasoline, diesel and light heating oils
- Animal and vegetable oils and fats and hot water

Poor resistance is given to HFD fluids, aromatic fluids (such as benzene), esters, ketones and amines or concentrated acids and bases.
Nitrile rubbers can be used for radial shaft seals or U-cups, packings, special seals and various customized components. Nitrile rubber tolerates short-term dry running of the sealing lip.

Property	Unit	Value	Standard
Standard color	–	Black	
Durometer hardness	Shore A	85 ±5	DIN ISO 7619
Density	g/cm^3	1,32 ±0,02	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 16	DIN 53504
Elongation at break	%	≥ 130	DIN 53504
100% modulus	MPa	≥ 11	DIN 53504
Compression set:			
100 °C / 24 h	%	≤ 15	DIN ISO 815
Tear strength	N/mm	20	DIN ISO 34-1
Abrasion	mm^3	90	DIN ISO 4649
Swelling behavior			
ASTM Oil No. 1, 168 h / 100 °C			
Change in durometer hardness	Shore A	+1	DIN ISO 7619
Volume change	%	–3	DIN 53521
ASTM Oil No. 3, 168 h / 100 °C			
Change in durometer hardness	Shore A	–3	DIN ISO 7619
Volume change	%	+9,1	DIN 53521
Swelling behaviour, water, 168 h / 70 °C			
Change in durometer hardness	Shore A	–3	DIN ISO 7619
Volume change	%	+4	DIN 53521
Heat resistance, air 168 h / 100 °C			
Change in durometer hardness	Shore A	+2	DIN ISO 7619
Volume change	%	–0,5	DIN 53521
Minimum service temperature	°C	–30	–
Maximum service temperature	°C	+100	–
Short term	°C	+120	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

NBR SOFT

NBR SOFT is a material for softer settings and general applications. It is resistant to mineral oil, HFC and cold water. Products from this material can be used in Rod and Piston seals, Wiper Seals, Rotary Seals and Static Seals.

Properties	Value	Unit	DIN Standard
Hardness	73 ±5	Shore A	DIN ISO 7619-1
Density	1,220	g/cm³	DIN EN ISO 1183-1
100% Modulus	6,1	MPa	DIN 53504
Elongation at break	238	%	DIN 53504
Tensile strength	14,0	MPa	DIN 53504
Compression set 23°C/70h	3,3	%	DIN ISO 815-1
Compression set 70°C/22h	5,9	%	DIN ISO 815-1
Compression set 100°C/22h	9,9	%	DIN ISO 815-1
Rebound resilience	31	%	DIN ISO 4662:2017
Tear resistance	4,4	N/mm	DIN ISO 34-1 A
Abrasion resistance	136	mm³	DIN ISO 4649 B
min. Service temperature	-35	°C	
max. Service temperature	+110	°C	

NBR COLD

NBR COLD is designed for low temperature applications and is resistant to mineral oil, HFC and cold water. Products from this material can be used in Rod and Piston seals, Wiper Seals, Rotary Seals and Static Seals.

Properties	Value	Unit	DIN Standard
Hardness	82 ±5	Shore A	DIN ISO 7619-1
Density	1,293	g/cm³	DIN EN ISO 1183-1
100% Modulus	12,2	MPa	DIN 53504
Elongation at break	147	%	DIN 53504
Tensile strength	16,3	MPa	DIN 53504
Compression set 23°C/70h	7,7	%	DIN ISO 815-1
Compression set 70°C/22h	9,9	%	DIN ISO 815-1
Compression set 100°C/22h	13,7	%	DIN ISO 815-1
Rebound resilience	45	%	DIN ISO 4662:2017
Tear resistance	4,5	N/mm	DIN ISO 34-1 A
Abrasion resistance	79	mm³	DIN ISO 4649 B
min. Service temperature	-50	°C	
max. Service temperature	+105	°C	

NBR HARD

NBR HARD is a black Nitrile Butadiene Rubber commonly referred to as NBR, Nitrile or BUNA. Because of its good physical characteristics and chemical resistance to the most common hydraulic fluids NBR is excellently suitable for sealing material. NBR materials are one of the most used elastomers in sealing applications. Products from this material can be used in static and dynamic seals (standard and special), wipers, O-rings, flange seals, rotary seals, rubber energizers (preload elements).

Physical properties

Density:	DIN ISO 1183-1	g/cm^3	1,31	±0,03
Hardness at 23°C:	DIN ISO 7619-1	Shore A	95	±3
Tensile strength:	DIN 53504	N/mm^2	21,2	*
Elongation at break:	DIN 53504	%	56,8	*
Tear resistance:	DIN ISO 34-1 B/b	N/mm	16,2	*
Rebound resiliance:	DIN 53512	%	26,0	*
Compression set, 24h, 70°C, 25%:	DIN ISO 815-1	%	13,5	*
Compression set, 24h, 100°C, 25%:	DIN ISO 815-1	%	14,2	*

* mentioned values are subject to a tolerance of +/- 25%

Temperature range: **-25°C to 100°C**

Chemical resistance

Resistant to: water up to 70°C, HFA, HFB, HFC Fluids, mineral/vegetable oils, Diesel fuel, Gasoline Fuel, Alcohols

Not Resistant to: Steam, HFD fluids, Ozone

FPM BLACK

FPM BLACK is Fluorocarbon elastomere. FPM materials have a very high resistance to hydraulic fluids, chemicals and a number of organic compounds and operate in temperatures between -25 to +220°C. FPM BLACK is recommended for applications where its outstanding resistance to heat, chemicals, weathering and ozone is required. Products from this material can be used in Static and dynamic seals (standard and special), wipers, O-rings, flange seals, rotary seals, rubber energizers (preload elements). Applications where high temperature and/or chemical resistance is required.

Properties	Value	Unit	DIN Standard
Hardness	80 ±5	Shore A	DIN ISO 7619-1
Density	1,96	g/cm³	DIN EN ISO 1183-1
100% Modulus	5,6	MPa	DIN 53504
Elongation at break	123	%	DIN 53504
Tensile strength	11,9	MPa	DIN 53504
Compression set 23°C/70h	4,6	%	DIN ISO 815-1
Compression set 100°C/22h	23,0	%	DIN ISO 815-1
Compression set 175°C/22h	38,6	%	DIN ISO 815-1
Rebound resilience		%	DIN ISO 4662:2017
Tear resistance	4,2	N/mm	DIN ISO 34-1 A
Abrasion resistance	211	mm³	DIN ISO 4649 B
min. Service temperature	-20	°C	
max. Service temperature	+220	°C	

FPM BROWN

FPM BROWN is a Fluorocarbon elastomere. FPM materials have a very high resistance to hydraulic fluids, chemicals and a number of organic compounds and operate in temperatures between -25 to +220°C. FPM BROWN is recommended for applications where its outstanding resistance to heat, chemicals, weathering and ozone is required.
FPM BROWN is FDA approved, can be used in food and medical applications.
Products from this material can be used in Static and dynamic seals (standard and special), wipers, O-rings, flange seals, rotary seals, rubber energizers (preload elements). Applications in the food industry where high temp. and/or chemical resistance is required.

Properties	Value	Unit	DIN Standard
Hardness	85 ±5	Shore A	DIN ISO 7619-1
Density	2,512	g/cm³	DIN EN ISO 1183-1
100% Modulus	6,5	MPa	DIN 53504
Elongation at break	207	%	DIN 53504
Tensile strength	10,3	MPa	DIN 53504
Compression set 23°C/70h	9,8	%	DIN ISO 815-1
Compression set 100°C/22h	17,4	%	DIN ISO 815-1
Compression set 175°C/22h	17,7	%	DIN ISO 815-1
Rebound resilience	8	%	DIN ISO 4662:2017
Tear resistance	6,3	N/mm	DIN ISO 34-1 A
Abrasion resistance	205	mm³	DIN ISO 4649 B
min. Service temperature	-25	°C	
max. Service temperature	+220	°C	

FPM SOFT

FPM SOFT is a material for softer settings. It is resistant to mineral oil, HFD-U and HETG, to acidic oils and gases, to cold water. Products from this material can be used in static seals, rod and piston seals, wiper seals and rotary seals.

Properties	Value	Unit	DIN Standard
Hardness	74 ±5	Shore A	DIN ISO 7619-1
Density	2,130	g/cm³	DIN EN ISO 1183-1
100% Modulus	3,9	MPa	DIN 53504
Elongation at break	252	%	DIN 53504
Tensile strength	10,3	MPa	DIN 53504
Compression set 23°C/70h	8,6	%	DIN ISO 815-1
Compression set 150°C/22h	15,2	%	DIN ISO 815-1
Compression set 175°C/22h	16,2	%	DIN ISO 815-1
Rebound resilience	8	%	DIN ISO 4662:2017
Tear resistance	5,1	N/mm	DIN ISO 34-1 A
Abrasion resistance	209	mm³	DIN ISO 4649 B
min. Service temperature	-25	°C	
max. Service temperature	+220	°C	

EPDM

EPDM approved for drinking water; recommended for approval acc. EU1935/2004
Resistant to HFC, cold water, hot water and steam, diluted acids and bases
Applicable for Static seals, Rod and Piston Seals, Wiper seals and Rotary seals

Properties	Value	Unit	DIN Standard
hardness	88 ± 5	Shore A	DIN 53505
density	1,17	g/cm³	DIN EN ISO 1183-1
Compression set 22℃/72h	9,1	%	DIN ISO 815-1
Compression set 70℃/22h	6,9	%	DIN ISO 815-1
Compression set 100℃/22h	9,6	%	DIN ISO 815-1
Compression set 150℃/22h	24,5	%	DIN ISO 815-1
Elongation at break	115	%	DIN 53504
Tensile strength	15,5	MPa	DIN 53504
Rebound resilience	49	%	DIN 53512
Abrasion	108	mm³	DIN 53516
Tear strength	3,6	N/mm	DIN 53515
min. service temperature	- 40	℃	
max. service temperature	+ 135	℃	

HNBR ■

Hydrogenated nitrile butadiene rubbers are saturated copolymers of acrylonitrile and butadiene and are suitable for higher service temperatures (up to 150°C) compared to standard nitrile rubbers and offer improved weathering, ageing and ozone resistance. HNBR can be used for applications with aliphatic hydrocarbons like propane or butane, mineral oils, greases as well as sulfonated crude oil. Furthermore, it can be used in many diluted acids, bases, salt solutions and glycol-water mixtures. Low compatibility is given to fuels, which have a high content of aromatic hydrocarbons (premium blend petrol), gasolines (petrol / alcohol blends), ketones, esters, ethers and chlorinated hydrocarbons like trichloroethylene and tetrachloroethylene. The exact physical and chemical properties vary depending on the polymer's composition.

Property	Unit	Value	Standard
Standard color	–	Black	■
Durometer hardness	Shore A	85 ±5	DIN ISO 7619
Density	g/cm^3	1,24 ±0,02	DIN EN ISO 1183-1
Tensile strength	MPa	≥ 18	DIN 53504
Elongation at break	%	≥ 180	DIN 53504
100% modulus	MPa	≥ 9	DIN 53504
Compression set			
100 °C / 24 h	%	≤ 22	DIN ISO 815
Tear strength	N/mm	24	DIN ISO 34-1
Abrasion	mm^3	90	DIN ISO 4649
Swelling behavior			
ASTM Oil No. 1, 70 h / 100 °C			
Change in durometer hardness	Shore A	+6	DIN ISO 7619
Volume change	%	–8	DIN 53521
ASTM Oil No. 3, 70 h / 100 °C			
Change in durometer hardness	Shore A	–8	DIN ISO 7619
Volume change	%	+11	DIN 53521
Swelling behavior, wet			
Change in durometer hardness	Shore A	0	DIN ISO 7619
Volume change	%	+2,5	DIN 53521
Heat resistance, air 70 h / 150 °C			
Change in durometer hardness	Shore A	+5	DIN ISO 7619
Volume change	%	0	DIN 53521
Minimum service temperature	°C	–30	–
Maximum service temperature	°C	+150	–
Short term	°C	+160	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

MVQ (SILICON RUBBER)

MVQ is a silicone rubber, which can be used for O-rings, gaskets and special seals. Due to its poor mechanical properties compared to other rubbers, MVQ is mainly used for static applications. It is highly resistant to weathering, ozone and ageing. The compatibility with mineral oils depends on the content of aromatic hydrocarbons in the oil.
MVQ is an FDA approved material.

Properties	Value	Unit	DIN Standard
Hardness	84 ±5	Shore A	DIN ISO 7619-1
Density	1,503	g/cm³	DIN EN ISO 1183-1
100% Modulus	5,3	MPa	DIN 53504
Elongation at break	192	%	DIN 53504
Tensile strength	6,4	MPa	DIN 53504
Compression set 70°C/70h	5,0	%	DIN ISO 815-1
Compression set 100°C/22h	33,7	%	DIN ISO 815-1
Compression set 175°C/22h		%	DIN ISO 815-1
Rebound resilience	51	%	DIN ISO 4662:2017
Tear resistance	10,2	N/mm	DIN ISO 34-1 A
Abrasion resistance	657	mm³	DIN ISO 4649 B
min. Service temperature	-60	°C	
max. Service temperature	+210	°C	

TOPFLAS (TFE/P/FEPM)

TOPFLAS is a unique fluoroelastomer based on an alternating co-polymer of tetrafluoroethylene and propylene (TFE/P). This material is chemically related to fluororubber.
TOPFLAS has the following properties:

- High resistance to mineral oils
- Outstanding resistance to hot water and hot stream up to 230°C
- Excellent resistance to sour gas and amines
- Excellent resistance to brake fluids (based on glycol, mineral oil or silicon oil) and fire-resistant hydraulic fluids)
- Good radiation resistance

Compared to fluororubber materials, TOPFLAS shows slightly higher tensile strength and a similar heat resistance, however does not reach the compression set level of standard rubbers.

Property	Unit	Value	Standard
Standard color	–	Black	■
Durometer hardness	Shore A	83 ±5	DIN ISO 7619
Density	g/cm³	1,73 ±0,03	DIN EN ISO 1183-1
Tensile strength	MPa	10	DIN 53504
Elongation at break	%	190	DIN 53504
100% modulus	MPa	6	DIN 53504
Compression set: 175 °C / 24 h	%	33	DIN ISO 815
Tear strength	N/mm	20	DIN ISO 34-1
Minimum service temperature	°C	–10	–
Maximum service temperature	°C	+200	–
Short term	°C	+220	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards. The values density, durometer hardness (Shore A) and those marked with the symbols, greater than or equal to (≥) and smaller than or equal to (≤), are nominal values and must be fulfilled for each batch. These values are tested on selected samples.

TOP SEALING PARTNER

PART OF nomo

TopFlon Materials

In this brochure, our most commonly used sealing materials.
If you can't find what you're looking for, ask about our other options.

TopFlon

PTFE materials

TopFlon is a trade name of
Top Sealing Partner for PTFE materials.

What is PTFE?

Polytetrafluoroethylene (PTFE) is a synthetic fluoropolymer of tetrafluoroethylene. Being hydrophobic, non-wetting, high density and resistant to high temperatures, PTFE is an incredibly versatile material with a wide variety of applications, though it's perhaps best-known for its non-stick properties.

Virgin PTFE (TF100)
PTFE is one of the most chemically inert materials known and is used in many different applications and industries.
PTFE is an incredibly versatile material with a wide variety of applications. It has extreme chemical resistance, a massive temperature range, is completely unaffected by UV, excellent electrical insulation properties. Flexible, low friction, inert.
The key properties that Virgin PTFE is widely known for it's extreme chemical resistance, thermal stability, electrical insulation and it's very low coefficient of friction. TF100 is FDA approved material.

Glass Filled PTFE (TF200, TF201)
Glass fibre is used as a PTFE filler as it offers much improved compression and wear properties. The material may also be inert gas sintered to further improve creep properties and reduce porosity and gas permeability (there would be a consequent loss of tensile properties).
Glass Filled PTFE is reinforced with glass fibres with the percentage varying between 5% and 40% depending on the needs of the application. As the filler percentage increases so does the properties the filler offers (increased compressive strength, lower deformation under load) but conversely the coefficient of friction properties of the material increases over that of virgin PTFE.

Bronze filled PTFE (TF300, TF301)
The addition of Bronze to PTFE gives better dimensional stability and lowers creep, cold flow and wear. It increases hardness and compressive strength whilst also increasing thermal and electrical conductivity.
Bronze Filled PTFE is reinforced with bronze powder with the percentage varying between 40% and 60%, resulting in a very hard wearing material. It has weaker chemical resistance than other grades of PTFE and isn't suitable for electrical applications.

Carbon filled PTFE (TF400, TF401, TF402, TF411, TF412)
Carbon Filled PTFE was developed to provide a PTFE based material with improved mechanical strength. Carbon in itself is a brittle material with poor wear properties and mechanical strength. However with the two combined in Carbon Filled PTFE formulations, the resultant material has excellent mechanical and wear properties, retains the excellent frictional properties and is an excellent choice for seals and rings in dynamic and high pressure applications. Carbon filled PTFE also provides good thermal conductivity, low permeability and is also electrically conductive making it a good choice for anti-static applications.

TECHNICAL DATA SHEET

TF100

VIRGIN PTFE

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	2,14 - 2,18
Hardness - Shore D	/	ASTM D2240	≥ 50
Tensile Strength - CD	N/mm^2	ISO 12086 ISO 527	≥ 20
Elongation at break - CD	%	ISO 12086 ISO 527	≥ 200
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	4 - 5
Deformation under load at room temperature after 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 17
Permanent deformation as above after 24 hours of rest at room temperature - CD	%	ASTM D621	≤ 8
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D3702	0,06
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	12 - 13
ELECTRICAL			
Dielectric strength (specimen 0,5 mm thick)	KV/mm	ASTM D149	≥ 20
Volume resistivity	Ω·cm	ASTM D257	10^{18}
Dielectric strength (specimen 0,5 mm thick)	Ω	ASTM D257	10^{17}

CD=Cross Direction

The data we are herewith providing are all based on laboratory testing and are proposed to technical designers as possible and useful advice. Deviations from the values hereabove indicated may occur, but they do not constitute themselves either detriment of quality or reason for rejection.

TECHNICAL DATA SHEET

TF200

PTFE+ 25% GLASS FIBER

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	2,20 - 2,26
Hardness - Shore D	/	ASTM D2240	≥ 60
Tensile Strength - CD	N/mm^2	ISO 12086 ISO 527	≥ 17
Elongation at break - CD	%	ISO 12086 ISO 527	≥ 230
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	8 - 9
Deformation under load at room temperature 24 Hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 10
Permanent deformation as above after releasing of 24 hours at room temperature - CD	%	ASTM D621	≤ 6,5
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D1894 ASTM D3702	0,15 - 0,3
Wear factor	/	ASTM D3702	0,015 - 0,030
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	7,5 - 11
ELECTRICAL			
Volume Resistivity	Ω • cm	ASTM D257	> 10^{15}
Surface Resistivity	Ω	ASTM D257	> 10^{15}

CD=Cross Direction

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TECHNICAL DATA SHEET

TF201

PTFE+ 15% GLASS FIBER+ 5% MOS_2

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	2,20 - 2,30
Hardness - Shore D	/	ASTM D2240	≥ 55
Tensile Strength - CD	N/mm^2	ISO 12086 ISO 527	≥ 15
Elongation at break - CD	%	ISO 12086 ISO 527	≥ 230
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	≥ 8
Deformation under load at room temperature 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 8
Permanent deformation as above after releasing of 24 hours at room temperature - CD	%	ASTM D621	≤ 4
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D1894 ASTM D3702	0,08 - 0,18
Wear factor K	/	ASTM D3702	0,015 - 0,021
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Coefficient of Linear Expansion (25° - 100°C)	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	9 - 12

CD=Cross Direction

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TECHNICAL DATA SHEET

TF300

PTFE+ 40% Bronze+ 2% Carbon

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	2,98 - 3,16
Hardness - Shore D	/	ASTM D2240	≥ 58
Tensile Strength - CD	N/mm^2	ISO 12086 ISO 527	≥ 20
Elongation at break - CD	%	ISO 12086 ISO 527	≥ 220
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	≥ 8
Deformation under load at room temperature 24 Hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 8
Permanent deformation as above after releasing of 24 hours at room temperature - CD	%	ASTM D621	≤ 5
TRIBOLOGICAL			
Dynamic coefficient of friction-PV = 0,7 N/mm^2 • m/s	/	ASTM D3702	0,15 - 0,25
Wear factor (K) - PV = 0,7 N/mm2 m/s	μm/h•N/mm2 •m•min	ASTM D3702	0,010 - 0,030
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Coefficient of Linear Expansion (25° - 100°C)	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	8 - 11
ELECTRICAL			
Surface Resistivity	Ω	ASTM D257	> 10^{12}

CD=Cross Direction

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TECHNICAL DATA SHEET

TF301

PTFE+ 60% Bronze+ 2% Carbon

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	3,75 - 3,85
Hardness - Shore D	/	ASTM D2240	62
Tensile Strength - CD	N/mm^2	ISO 527 v = 50mm/min microtensile die	15
Elongation at break - CD	%	ISO 527 v = 50mm/min microtensile die	100
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	10 - 11
Deformation under load at room temperature after 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 6
Permanent deformation as above after 24 hours of rest at room temperature - CD	%	ASTM D621	≤ 2,5
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D1894 ASTM D3702	0,15 - 0,30
Wear factor K	/	ASTM D3702	0,010 - 0,030
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	7 - 8
ELECTRICAL			
Surface Resistivity	Ω	ASTM D257	$<10^{11}$

CD=Cross Direction

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TECHNICAL DATA SHEET

TF400

PTFE+ 25% Carbon-Graphite

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	2,05 - 2,11
Hardness - Shore D	/	ASTM D2240	≥ 64
Tensile Strength - CD	N/mm^2	ISO 12086 ISO 527	≥ 14
Elongation at break - CD	%	ISO 12086 ISO 527	≥ 90
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	≥ 7
Deformation under load at room temperature after 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 7
Permanent deformation as above after 24 hours of rest at room temperature - CD	%	ASTM D621	≤ 5
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D1894 ASTM D3702	0,12 - 0,25
Wear factor K	/	ASTM D3702	0,010 - 0,020
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	10 - 12
ELECTRICAL			
Volume Resistivity	Ω • cm	ASTM D257	≤ 10^4
Surface Resistivity	Ω	ASTM D257	≤ 10^4

CD=Cross Direction

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TECHNICAL DATA SHEET

TF401

PTFE+ 25% Soft Cabon

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	2,05 - 2,11
Hardness - Shore D	/	ASTM D2240	≥ 60
Tensile Strength - CD	N/mm^2	ISO 12086 ISO 527	≥ 15
Elongation at break - CD	%	ISO 12086 ISO 527	≥ 150
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	7 - 9
Deformation under load at room temperature after 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 6,5
Permanent deformation as above after 24 hours of rest at room temperature - CD	%	ASTM D621	≤ 4
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D1894 ASTM D3702	0,13
Wear factor K	/	ASTM D3702	20 - 30
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	9 - 12
ELECTRICAL			
Volume Resistivity	Ω • cm	ASTM D257	10^3
Surface Resistivity	Ω	ASTM D257	10^3

CD=Cross Direction

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TECHNICAL DATA SHEET

TF402

PTFE+ 10% Carbon Fiber

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	2,03 - 2,08
Hardness - Shore D	/	ASTM D2240	≥ 60
Tensile Strength - CD	N/mm^2	ISO 527 v = 50mm/min microtensile die	≥ 20
Elongation at break - CD	%	ISO 527 v = 50mm/min microtensile die	≥ 250
Deformation under load at room temperature after 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 8
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D1894 ASTM D3702	0,26 - 0,30
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	8,5 - 10

CD=Cross Direction

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TECHNICAL DATA SHEET

TF411			
PTFE +15% Soft Carbon			
Properties	Norm	Value	Unit
MECHANICAL			
Hardness - Shore D	–	59	Sh. D.
Tensile Strength (23C°)	ASTM D1457	21,9	N/mm²
Elongation at break (23C°)	ASTM D1457	321,5	%min
Diametric shrinkage	–	2,61	%
PHYSICAL			
Specific gravity	ASTM D1457	2,12	g/cm³
THERMAL			
Maximum Continuous operating temperature	–	250	°C
Minimum Continuous operating temperature	–	-200	°C

The data we are herewith providing are all based on laboratory testing and are proposed to technical designers as possible and useful advice. Deviations from the values hereabove indicated may occur, but they do not constitute themselves either detriment of quality or reason for rejection.

TECHNICAL DATA SHEET

TF412

PTFE + 10% Carbon Fiber

Properties	Norm	Value	Unit
MECHANICAL			
Hardness - Shore D	DIN 53 505	59-65	Sh. D.
Tensile Strength (23C°)	DIN 53 455	15-21	N/mm²
Elongation at break (23C°)	DIN 53 455	190-290	%min

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TECHNICAL DATA SHEET

TF500

PTFE+ 20% Ekonol FDA approved

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	1,92 - 2,06
Hardness - Shore D	/	ASTM D2240	≥ 55
Tensile Strength - CD	N/mm^2	ISO 527 v = 50mm/min microtensile die	≥ 14
Elongation at break - CD	%	ISO 527 v = 50mm/min microtensile die	≥ 220
Compressive strength at 1% deformation - CD	N/mm^2	ASTM D695	5 - 7
Deformation under load at room temperature after 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 13
Permanent deformation as above after 24 hours of rest at room temperature - CD	%	ASTM D621	≤ 9
TRIBOLOGICAL			
Dynamic coefficient of friction	/	ASTM D1894 ASTM D3702	0,10 - 0,20
Wear factor K	/	ASTM D3702	0,011 - 0,018
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	9 - 12

CD=Cross Direction

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TECHNICAL DATA SHEET

TF501

PTFE+ 50% Stainless Steel (FDA)

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm^3	ASTM D792	3,35 - 3,45
Hardness - Shore D	/	ASTM D2240	≥ 60
Tensile Strength - CD	N/mm^2	ISO 12086 ISO 527	≥ 20
Elongation at break - CD	%	ISO 12086 ISO 527	≥ 230
Compressive strength (offset 1%) - CD	N/mm^2	ASTM D695	> 13
Deformation under load at room temperature after 24 hours at 13,7 N/mm^2 - CD	%	ASTM D621	≤ 6
Permanent deformation as above after 24 hours of rest at room temperature - CD	%	ASTM D621	≤ 3
TRIBOLOGICAL			
Dynamic coefficient of friction *	/	ASTM D1894 ASTM D3702	0,25 - 0,35
Wear factor K *	10^{-7} $mm^3/N*m$	ASTM D3702	30 - 40
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / + 260
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	10 - 12

CD=Cross Direction

*PV=0,35 MPA m/s Counterface Cast Iron

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TECHNICAL DATA SHEET

TF502

PTFE+ 20% Mineral Filler+ Additives

Properties	Unit	Method	Data
PHYSICAL - MECHANICAL			
Density	g/cm³	ASTM D792	2,28 - 2,36
Hardness - Shore D	/	ASTM D2240	≥ 56
Tensile Strength - CD	N/mm²	ISO 527 v = 50mm/min microtensile die	≥ 18
Elongation at break - CD	%	ISO 527 v = 50mm/min microtensile die	≥ 180
Compressive strength (offset 1%) - CD	Mpa	ASTM D695	> 13,5
Deformation under load at room temperature after 24 hours at 13,7 N/mm² - CD	%	ASTM D621	≤ 7,5
Permanent deformation as above after 24 hours of rest at room temperature - CD	%	ASTM D621	≤ 5
TRIBOLOGICAL			
Dynamic coefficient of friction *	/	ASTM D1894 ASTM D3702	0,20- 0,30
Wear factor	mm³/N*m*10-7	ASTM D3702	10 - 30
THERMAL			
Service Temperature (min - max)	°C	/	- 200 / +
Thermal expansion coefficient (linear) 25 - 100°C	10^{-5}(mm/mm)/ °C	Similar to ASTM D696	10 - 12

CD=Cross Direction

*PV=0,35 MPA m/s Counterface Cast Iron

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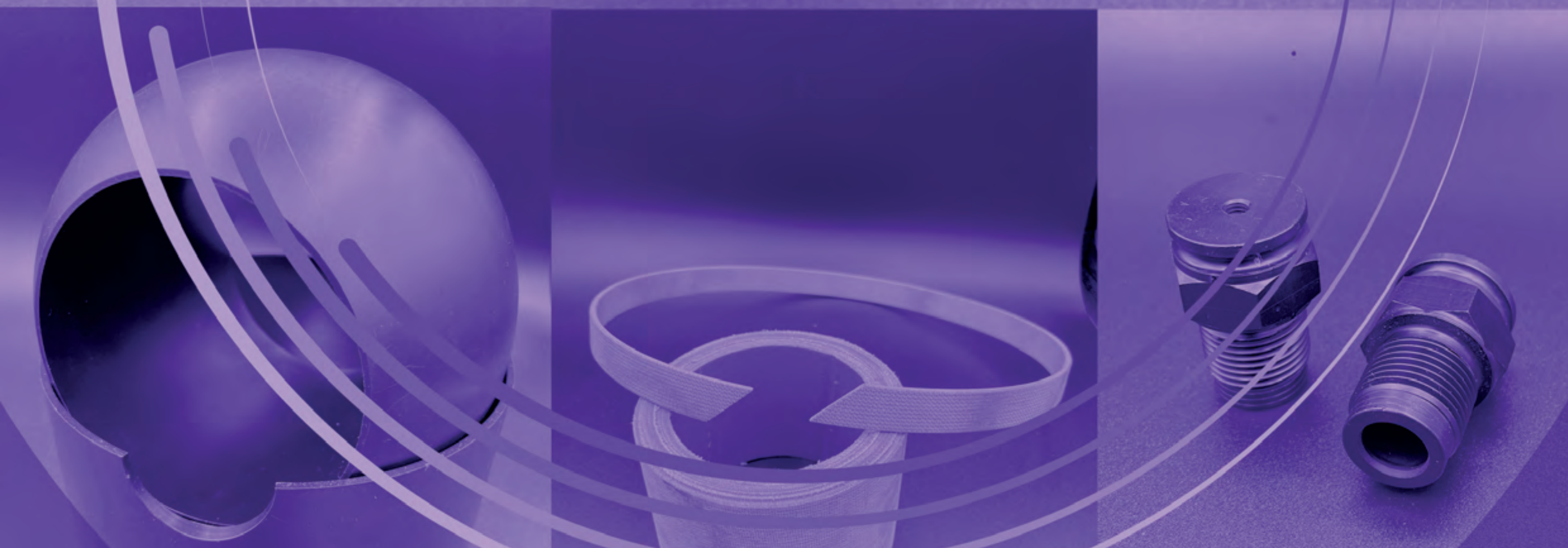
TopPlast Materials & Others



In this brochure, our most commonly used sealing materials.
If you can't find what you're looking for, ask about our other options.

TOPTAL (POM)

Polyoxymethylene (POM) - also known as polyacetal or polyformaldehyde is a group of engineering thermoplastic materials with high stiffness, low friction and excellent dimensional stability.
TOPTAL is a semi-crystalline polyacetal-copolymer (POM), which is used for anti-extrusion rings, guide ring bushes, scrapers and for precision-machined parts with tight tolerances. TOPTAL is one of the most important engineering thermoplastics with good physical properties, low water absorption and good chemical resistance. TOPTAL can be used in mineral oils, in water-based fire-resistant hydraulic fluids (HFA, HFB and HFC fluids). In direct contact with acids and bases limited chemical resistance must be taken into consideration.

Property	Unit	Value	Standard
Standard color	–	Black	■
Durometer hardness	Shore D	82	ISO 868
Density	g/cm³	1,41	DIN EN ISO 1183-1
Yield stress	MPa	65	ISO 527-1/2
Elongation at yield	%	8–10	ISO 527-1/2
Elongation at break	%	25	ISO 527-1/2
Tensile modulus	MPa	2 900	ISO 527-1/2
Impact resistance, charpy			
at +23 °C	kJ/m²	10	ISO 179-1
at –30 °C	kJ/m²	8	ISO 179-1
Water absorption, 23 °C, saturation	%	0,65	ISO 62
Coefficient of sliding	–	0,25–0,32	–
Minimum service temperature	°C	–50	–
Maximum service temperature	°C	+100	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards.

TOPMID (PA)

TOPMID (PA) is a cast polyamide with good sliding properties and is used for back-up rings, guide rings and bearing components for diameters above 260 mm. TOPMID can be used in mineral oils and water-based fire-resistant hydraulic fluids. When designing components using TOPMID for an application in water or water-based fluids, the swelling of the material must be taken into account.

Property	Unit	Value	Standard
Standard color	–	Black/natural	
Durometer hardness	Shore D	77	ISO 868
Density	g/cm³	1,15	DIN EN ISO 1183-1
Yield stress, saturated	MPa	55	ISO 527-1/2
Elongation at break, saturated	%	100	ISO 527-1/2
Tensile modulus, saturated	MPa	1 800	ISO 527-1/2
Impact resistance, charpy, 23 °C, saturated	kJ/m²	no break	ISO 179-1
Water absorption, 23 °C, saturation	%	8,5	ISO 62
Moisture absorption, 23 °C, saturation	%	2,2	–
Coefficient of sliding	–	0,35–0,42	–
Minimum service temperature	°C	–40	–
Maximum service temperature	°C	+110	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards.

UHMWPE (PE1000)

UHMWPE is a semi crystalline thermoplastic material based on ultrahigh molecular weight polyethylene with the following properties:

- Low coefficient of friction
- Excellent wear resistance
- High impact strength (also at low temperature down to -200 °C)
- Very high creep resistance
- Water-repellent
- No swelling

UHMWPE is suitable for applications where outstanding sliding, wear or dry running properties

Property	Unit	Value	Standard
Standard color	–	Nature	
Hardness	Shore D	61	ISO 868
Density	g/cm³	0,93	ISO 1183
Yield stress	MPa	20	ISO 527-1
Elongation at break	%	≥350	ISO 527-1
Modulus of elasticity in tension	MPa	600	ISO 527-1
Coefficient of linear expansion 20–80 °C	K^{-1}	$1{,}7\times10^{-4}$	ASTM E831
Minimum service temperature	°C	–200	–
Maximum service temperature (permanent)	°C	+90	–
Maximum service temperature (short time)	°C	+125	–

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards.

PEEK

PEEK is a polymer with high tensile strength, stiffness, high heat distortion temperature and good sliding and friction properties. As far as strength and stiffness are concerned, PEEK exceeds most technical plastics, especially at high temperatures.

Property	Unit	Value	Standard
Standard color	–	Cream	
Durometer hardness	Shore D	87	ISO 868
Density	g/cm^3	1,30	DIN EN ISO 1183-1
Yield stress Elongation at break Tensile modulus	MPa % MPa	100 45 3 700	ISO 527 ISO 527 ISO 527
Impact resistance notched, charpy, 23 °C	kJ/m^2	7,0	ISO 179/1eA
Dimensional stability at high temperature HDT/A	°C	152	ISO R 75-f
Water absorption 24 h, 23 °C	%	0,07	ISO 62-1
Minimum service temperature Maximum service temperature	°C °C	–100 +260	– –

IMPORTANT NOTE: The values shown above are only valid for material samples prepared for test purposes according to the stated standards.

TOPTEX

Toptex is a high load composite bearing material constructed from a synthetic fabric reinforced thermoset resinand incorporating lubricating additives. The material features excellent mechanical strength and low friction.

Property	Standard	Unit	TOPTEX 2	TOPTEX 5	TOPTEX 7
Color	-	-			
Compressive strength	ISO 604	MPa	330	340	380
Flexural strength	ISO178	MPa	85	69	175
Tensile strength	ISO 527	MPa	45	65	80
Friction coefficient	ASTM D1489	µ	0,05	0,05-0,12	0,08-0,14
Temperature max	ISO 75-3	°C	130	130	200
Temperature min	ISO 75-3	°C	-40	-40	-40
Density	DIN 53479	g/cm^3	1,15	1,25	1,2-1,25
Water absorption	ISO 62:2008	%	<0,5	<0,06	0,08

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TOP

SEALING PARTNER

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