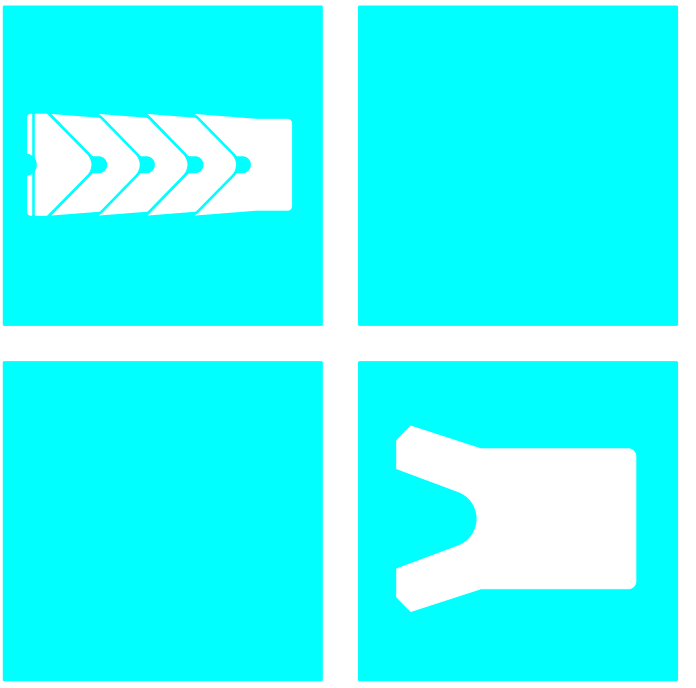
SYMMETRIC SEALS FOR ROD OR PISTON



Symmetric Seals

Contents

Symmetric Seals

Choice of the Sealing Element

Sealing elements have a decisive influence on the design, function and service life of hydraulic and pneumatic cylinders and systems.

This applies equally to the symmetric seals where leak tightness, resistance to wear and gap extrusion, resistance to process media, resistance to high and low temperatures, low friction, compact form and simple installation are demanded in order to meet the requirements of industry for a functional sealing solution.

The significance of these parameters and their limits is generally dependent on the requirements of the specific application. B+S has therefore developed a complete range of seals which, due to their optimized geometries and designs and the use of high-quality materials, satisfy the technical and economic demands of the industry in full.

In order to be in a position to select the most appropriate seal type and material, it is necessary to first define all the desired functional parameters. Table I can then be used to make an initial selection of seals and materials according to the specific requirements of the application.

The second column of the table contains the number of the page on which further general information together with specific design and installation instructions on the particular seal type and materials can be found.

Furthermore on page 6, attention is drawn to the quality of the mating surface. We recommend that the limits specified there be observed, as they have a decisive influence on the functionality and service life of the system.

The final choice of seal type and material must also take account of the detailed information on the seal elements.

Please do not hesitate to contact our Technical Department for further information on specific applications and special technical questions.

Older designs of seals no longer contained in this catalogue naturally continue to be available. For all new applications, however, we recommend the use of the seal types and preferred sizes (ISO series, wherever possible) listed in this catalogue.

The sizes contained in this catalogue are mostly available from stock or can be supplied at short notice. We reserve the right to modify our supply programme.

This Catalogue is a compilation of the preferred product ranges of Busak+Shamban, Sealing Parts and POLYPAC. All similar products are technically equivalent but availability and pricing may vary. For further information please contact your local Busak+Shamban company.

Symmetric Seals

Table I Selection Criteria for Symmetric Seals

Seal		Application				Standard	Size Range	Action		Technical Data*			Seal Material
										Temp. Range**	Speed	Pressure	
Type	Page	Field of Application	Light	Medium	Heavy	ISO/DIN	mm	Single	Double	°C	m/s	MPa max.	
Veepac CH 	7	Presses Steel mills Ship hydraulics Scrape shears Civil engineering Continous casting Special hydraulic cylinders Water locks	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	-	20-545	X		-30 to +130	0.5	40	NBR + cotton
										-25 to +200			FKM + aramidic
										-25 to +150			FKM + cotton
U-Cup MU/P 	21	Hydraulic cylinders Presses Lift platform After market	● ● ● ●	● ● ● ●		-	5-202	X		-30 to +80	0.5	40	TPU
U-Cup RUB 							5-250	X					
U-Cup RSS 							8-390	X					

* The data below are maximum values and cannot be used at the same time. The max. pressure depends on temperature and gap dimension.
** Temperature Range is depending on choise of elastomer material.

Symmetric Seals

Surface Roughness DIN EN ISO 4287

The functional reliability and service life of a seal depend to a very great extent on the quality and surface finish of the mating surface to be sealed.

Scores, scratches, pores, concentric or spiral machining marks are not permitted. Higher demands must be made on the surface finish of dynamic surfaces than of static mating surfaces.

The characteristics most frequently used to describe the surface microfinish R_a, R_z and R_{max} are defined in DIN EN ISO 4287. These characterics alone, however, are not sufficient for assessing the suitability in seal technology. In addition the material contact area of the surface roughness profile R_{mr} in accordance with DIN EN ISO 4287 should be demanded. The significance of this surface specification is illustrated in Fig. 1. It shows clearly that specification of R_a and R_z alone does not describe the surface roughness profile accurately enough for the seal technology and is thus not sufficient for assessing the suitability. The material contact area R_{mr} is essential for assessing surfaces, as this parameter is determined by the specific surface roughness profile. This in turn is directly dependent on the machining process employed.

Busak+Shamban recommends that the following surface finishes be observed:

Table II Surface Roughness

Surface Roughness µm		
Parameter	**Mating Surface**	**Groove Surface**
	Polyurethane and Rubber	
R_{max}	1.00 - 4.00	< 16.0
$R_{z\ DIN}$	0.63 - 2.50	< 10.0
R_a	0.10 - 0.40	< 1.6

The material contact area R_{mr} should be approx. 50 to 70%, determined at a cut depth c = 0.25 x R_z, relative to a reference line of $C_{ref.}$ 5%.

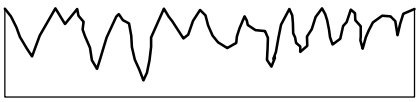
Surface profile	R_a	R_z	R_{mr}
closed profile form 	0.1	1.0	70%
open profile form 	0.2	1.0	15%

Figure 1 Profile forms of surfaces

Figure 1 shows two surface profiles, both of which exhibit nearly the same value for R_z in the test procedure. The difference becomes obvious only when the material contact area of the surface roughness profiles are compared. These show that the upper roughness profile with R_{mr} = 70% has the better seal/mating surface ratio.

Hardware

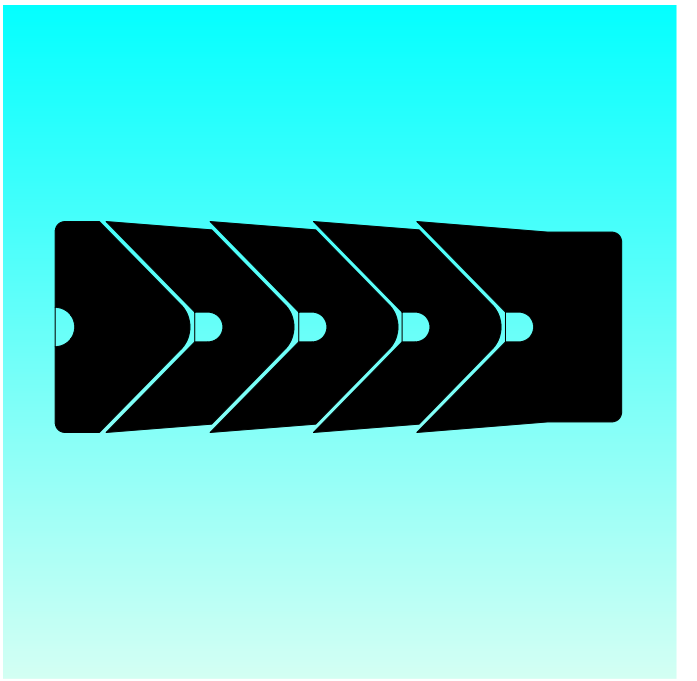
For optimum performance Busak+Shamban recommends a piston rod of chrome-plated steel.

Material: preferably 42CrMo4V, purity class K3 to DIN 50602.

Induction hardened	min. HRC 45
Hardening depth	min. 2.5 mm
Ground and hard chrome-plated, coating thickness 20 to 30 µm, polished	
Roughness	R_a 0.1 to 0.3 µm max. corresponding to N4 DIN/ISO 1302
Material contact area	R_{mr}= 50 to 70%
Cut depth	c = 0.25 x R_z

For other rod materials, special coatings and treatments please contact your local B+S Company.

POLYPAC® VEEPAC



- Single Acting -

- Rod and Piston Seals -

- Set of Chevron Rings -

- With Support and Pressure Energising Ring -

- Without and with Anti-extrusion Ring -

- Material -

- Fabric Reinforced Rubber - POM or PTFE -

Veepac

Description

Veepac seals are sets of fabric reinforced chevron rings. They are composed by a support ring, "V" shaped sealing rings and a pressure energizing ring.

The support ring or base ring guides and sustains the other "V" shaped rings for best performance. Special versions provide incorporated anti-extrusion rings, either on the inner or outer side, for rod or piston applications. In standard version the support ring is manufactured in cotton fabric reinforced rubber, for a good anti-extrusion resistance.

The intermediate "V" shaped rings (vee-rings) are the real sealing elements of Veepac seals. Their particular shape confirs the capacity of increasing sealing effectiveness under high pressure. In standard version they are made in cotton fabric reinforced rubber, with good sealing efficiency and extrusion resistance.

The energizer ring ensures uniform loading of pressure on the other rings. This element is manufactured in acetal resin, or cotton fabric reinforced nitrile for diameters over 300 mm (standard material).

Design

The veepac seals are available in different compositions. The standard version consists in a support ring, two fabric reinforced vee-rings, one rubber vee-ring and the energizing ring.

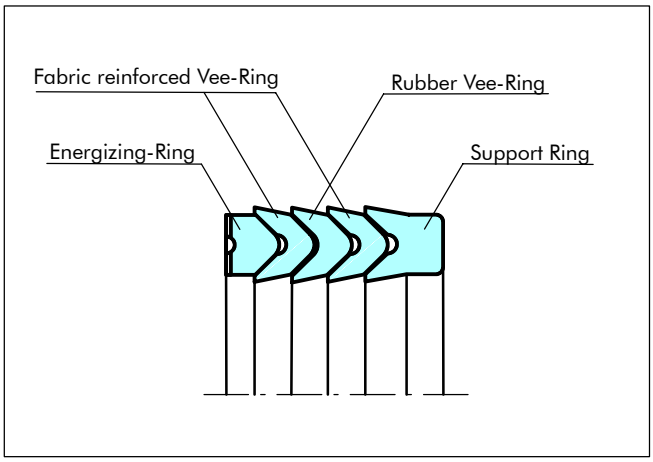


Figure 2 Veepac standard design

When the rubber vee-ring isn't available (indicated in the table IV with the symbol ^) the veepac are assembled with three fabric reinforced vee-ring as shown in figure below.

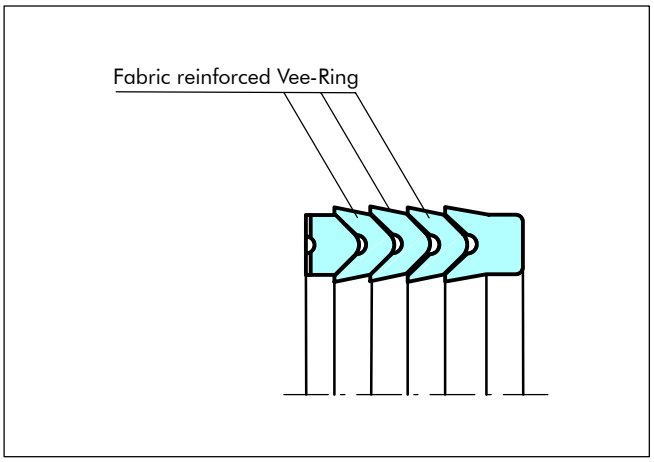


Figure 3 Veepac design with 3 fabric reinforced vee-ring

Where extrusion gaps are greater than those specified or for higher pressure conditions, special designs incorporating anti-extrusion rings can be made, to suit rods (suffix NEI) and piston (suffix NEO) at the Polypac ref.

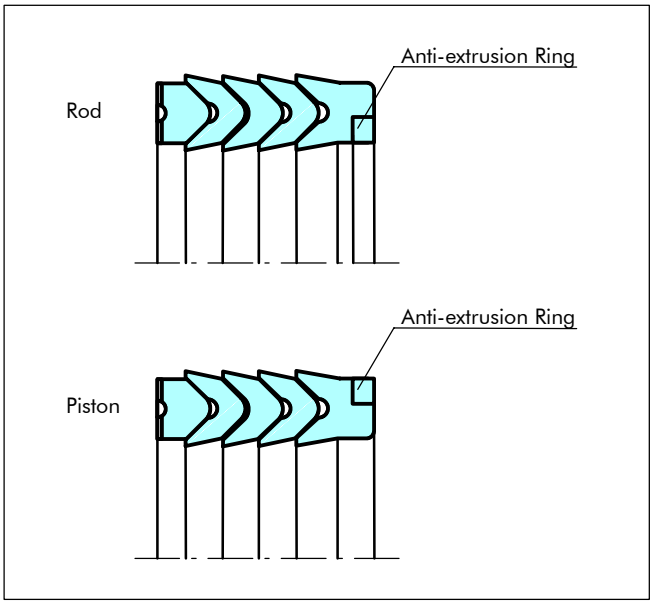


Figure 4 Veepac design with anti-extrusion ring

Polypac® - Veepac

Advantages

- Exceptional wear resistance
- Pre-load adjustment capability
- Excellent behaviour in harsh conditions
- Rod-seal replacement without complete cylinder dismantling possible
- Long service life

Application Examples

VEEPAC seals are recommended for single acting or double acting (back to back installation) hydraulic cylinders in the following applications:

- Ship hydraulics
- Excavators
- Steel mills
- Presses

Technical Data

Pressure: Up to 40 MPa

Velocity: Up to 0.5 m/s

Temperature: -30°C to +200°C

Media: Hydraulic fluids
Mineral Oil based hydraulic fluids, Water/oil and Water/Glycol emulsions.

Groove type: Open

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Gap Dimensions

To prevent extrusion the diameter not facing the pressure must be max. 0.3 mm smaller (than the piston seal) and 0.3 mm larger (than the rod seal). Using Veepac with Back-up Ring enables double values.

Materials

Components of the VEEPAC seals are made in different combinations of materials, according to the specific application (see table below).

Table III Material Selection

Material Set Code	Temperature	Sealing Ring Material	Energizer Ring Material	
N0O0C	-30 to +130°C	Cotton reinforced NBR	POM-GL-BK	up to 300 mm I.D.
			Cotton reinforced NBR	over 300 mm I.D.
V0P0C	-20 to +150°C	Cotton reinforced FKM	POM-GL-BK	up to 300 mm I.D.
			Cotton reinforced FKM	over 300 mm I.D.
V0P0A	-20 to +200°C	Aramidic Fibre reinforced FKM	Filled PTFE	up to 300 mm I.D.
			Aramidic Fibre reinforced FKM	over 300 mm I.D.

Highlighted material is standard.

Installation Recommendation

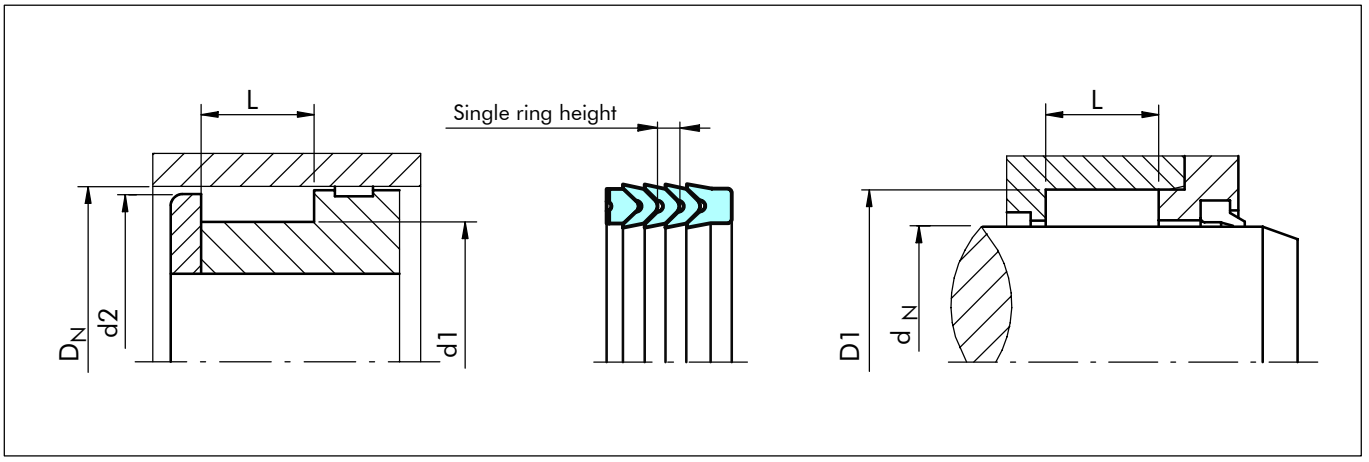


Figure 5 Installation drawing

Table IV Installation Dimensions / Part No.

Rod/Groove Dia.	Groove Dia./ Bore	Groove Width	Diameter	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
d_N h9/F8	**D1** H11	**L** -0.25	**d2** +/-0.1					
d1 h11	D_N H9/f8							
10.00	20.00	11.00	19.00	1.70			CH 078039/B	RCH000100
12.00	25.00	14.32	24.00	2.56			CH 098047/B	RCH000120
12.70	25.40	19.05	24.40	3.17			CH 100050	RCH000127
14.00	27.00	14.32	26.00	2.56	#		CH 106055/B	RCH000140
16.00	29.00	14.32	28.00	2.56			CH 114062/B	RCH000160
18.00	31.00	14.32	30.00	2.56			CH 122070/B	RCH000180
18.25	28.57	16.05	27.60	2.56			CH 112071	RCH000183
20.00	30.00	21.50	29.00	3.81			CH 118078	RCH000200
20.00	31.50	17.50	30.50	2.97			CH 124078	RCH100200
20.00	32.00	18.15	31.00	3.15	#	^	CH 125078	RCH200200
20.00	33.00	14.32	32.00	2.56			CH 129078/B	RCH300200
20.00	36.00	24.00	35.00	4.04			CH 141078	RCH400200
22.00	32.00	18.13	31.00	2.75			CH 125086	RCH000220
22.00	38.00	26.00	37.00	4.21			CH 149086	RCH100220
22.00	40.00	22.50	39.00	3.70		^	CH 157086	RCH200220
25.00	35.00	17.30	34.00	2.82			CH 137098	RCH000250
25.00	40.00	19.84	39.00	3.50			CH 157098	RCH100250
25.00	42.00	25.40	41.00	4.29			CH 165098	RCH200250
25.00	45.00	25.40	44.00	4.50	#	^	CH 177098	RCH300250
25.40	38.10	19.45	37.10	3.48			CH 150100	RCH000254
26.00	45.00	29.37	44.00	5.16			CH 177102	RCH000260
28.00	40.00	17.00	39.00	2.80			CH 157110	RCH000280
28.00	44.00	17.62	43.00	3.17	#		CH 173110/B	RCH100280
28.00	44.00	24.00	43.00	4.15	#		CH 173110/1	RCH200280
28.57	41.27	19.84	40.30	3.50			CH 162112	RCH000286
30.00	40.00	21.80	39.00	3.76			CH 157118	RCH000300
30.00	42.00	20.00	41.00	3.50			CH 165118	RCH100300

"#" and "^" see page 16.
*As the Polypac Ref. No. does not refer to the material, please always state the full number.

Polypac® - Veepac

Rod/Groove Dia. d_N h9/F8 **d1** h11	Groove Dia./ Bore **D1** H11 D_N H9/f8	Groove Width **L** -0.25	Diameter **d2** +/-0.1	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
30.00	50.00	29.37	49.00	5.08			CH 196118	RCH300300
31.75	44.45	16.25	43.40	3.19			CH 175125/1	RCH000318
31.75	44.45	19.05	43.40	3.50			CH 175125	RCH100318
31.75	47.62	29.05	46.60	4.34		^	CH 187125	RCH200318
32.00	42.00	17.30	41.00	2.82			CH 165125	RCH000320
32.00	48.00	17.63	47.00	3.17	#	^	CH 188125/B	RCH100320
34.92	47.62	20.64	46.60	3.43			CH 187137	RCH000349
34.92	50.80	24.21	49.80	4.14	#		CH 200137	RCH100349
35.00	45.00	21.78	44.00	3.81			CH 177137	RCH000350
35.00	50.00	22.50	49.00	3.57			CH 196137	RCH100350
36.00	52.00	17.60	51.00	3.17			CH 204141/B	RCH100360
38.00	55.00	28.00	54.00	5.05			CH 216149	RCH000380
38.10	50.80	19.45	49.80	3.51			CH 200150	RCH000381
38.10	53.97	25.27	53.00	4.60			CH 212150	RCH100381
38.10	53.97	27.78	53.00	4.60			CH 212150/1	RCH200381
39.00	55.00	25.40	54.00	4.65		^	CH 216153	RCH000390
40.00	50.00	17.30	49.00	2.82			CH 196157	RCH000400
40.00	55.00	22.62	54.00	3.84			CH 216157	RCH100400
40.00	55.00	26.19	54.00	3.84			CH 216157/1	RCH200400
40.00	56.00	17.63	55.00	3.17			CH 220157/B	RCH300400
40.00	60.00	30.00	59.00	5.16	#		CH 236157	RCH400400
40.00	65.00	35.72	64.00	6.15			CH 255157	RCH500400
44.45	57.15	21.83	56.20	3.38			CH 225175	RCH000445
44.45	60.32	27.80	59.30	4.07	#		CH 237175	RCH100445
45.00	55.00	17.50	54.00	2.80			CH 216177	RCH000450
45.00	60.00	22.22	59.00	3.89			CH 236177	RCH100450
45.00	65.00	28.00	64.00	5.34			CH 255177	RCH200450
48.00	60.00	25.00	59.00	4.07		^	CH 236188	RCH000480
50.00	70.00	21.94	69.00	3.95			CH 275196/B	RCH200500
50.00	70.00	30.00	69.00	5.16			CH 275196	RCH300500
50.80	63.50	19.84	62.50	3.35			CH 250200	RCH000508
50.80	66.67	23.00	65.70	4.27			CH 262200	RCH100508
50.80	66.67	25.27	65.70	4.27			CH 262200/1	RCH200508
50.80	69.85	33.50	68.80	5.08	#	^	CH 275200	RCH300508
50.80	70.80	38.50	69.80	6.75	#		CH 278200	RCH400508
51.00	69.00	28.00	68.00	5.03			CH 271200	RCH000510
53.97	63.50	16.67	62.50	2.59	#	^	CH 250212	RCH000540
53.97	66.67	19.45	65.70	3.35	#		CH 262212	RCH100540
53.97	69.85	25.27	68.80	4.07			CH 275212	RCH200540
55.00	67.00	25.00	66.00	4.07			CH 263216	RCH000550
55.00	70.00	26.50	69.00	4.02			CH 275216	RCH100550
55.00	75.00	30.00	74.00	6.48			CH 295216	RCH200550
55.00	75.00	38.50	74.00	6.48			CH 295216/1	RCH400550
55.00	80.00	33.73	79.00	5.16	#		CH 314216	RCH500550
56.00	76.00	21.95	75.00	3.94		^	CH 299220/B	RCH000560

"#" and "^" see page 16.

*As the Polypac Ref. No. does not refer to the material, please always state the full number.

Polypac® - Veepac

Rod/Groove Dia.	Groove Dia./ Bore	Groove Width	Diameter	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
d_N h9/F8	**D1** H11	**L** -0.25	**d2** +/-0.1					
d1 h11	D_N H9/f8							
56.00	76.00	33.40	75.00	5.38			CH 299220	RCH100560
57.15	69.85	19.05	68.80	3.25			CH 275225	RCH000572
57.15	73.02	27.78	72.00	4.27	#		CH 287225	RCH100572
57.15	76.20	32.54	75.20	5.16			CH 300225	RCH200572
60.00	76.00	29.00	75.00	4.34			CH 299236	RCH100600
60.00	77.00	27.00	76.00	4.59			CH 303236	RCH200600
60.00	80.00	32.15	79.00	5.66			CH 314236	RCH300600
63.00	83.00	21.94	82.00	3.95			CH 326248/B	RCH000630
63.00	85.00	32.00	84.00	5.67			CH 334248	RCH100630
63.50	80.00	28.00	79.00	5.03		^	CH 314250	RCH200635
63.50	82.50	26.59	81.50	4.76			CH 325250	RCH300635
63.50	82.50	31.62	81.50	4.76			CH 325250/1	RCH400635
64.00	80.00	25.80	79.00	4.65			CH314251	RCH000640
65.00	77.00	21.00	76.00	4.04			CH 303255	RCH000650
65.00	80.00	26.00	79.00	4.00	#		CH 314255	RCH100650
65.00	85.00	29.00	84.00	5.21			CH 334255	RCH200650
65.00	90.00	30.00	89.00	5.00		^	CH 354255	RCH300650
66.30	85.00	24.13	84.00	4.60	#		CH 334261	RCH000663
68.00	88.00	30.00	87.00	5.21	#		CH 346267	RCH000680
69.85	88.90	25.40	87.90	4.83			CH 350275	RCH100699
69.85	88.90	35.50	87.90	4.83			CH 350275/1	RCH200699
70.00	85.00	28.00	84.00	4.32			CH 334275	RCH100700
70.00	90.00	21.95	89.00	3.95		^	CH 354275/B	RCH200700
70.00	90.00	30.00	89.00	5.08			CH 354275	RCH300700
72.00	90.00	30.16	89.00	4.86		^	CH 354283	RCH000720
73.02	88.90	26.58	87.90	4.34			CH 350287	RCH000730
75.00	90.00	22.50	89.00	4.04			CH 354295	RCH000750
75.00	95.00	30.00	94.00	5.21			CH 374295	RCH100750
75.00	100.00	30.00	99.00	5.80		^	CH 393295	RCH300750
75.00	100.00	37.50	99.00	6.32	#	^	CH 393295/1	RCH400750
76.20	88.90	16.27	87.90	2.78			CH 350300	RCH000762
76.20	95.25	25.52	94.20	5.16	#		CH 375300/1	RCH100762
76.20	95.25	28.97	94.20	5.16			CH 375300	RCH200762
80.00	95.00	17.50	94.00	3.05			CH 374314	RCH000800
80.00	100.00	30.00	99.00	4.83			CH 393314	RCH100800
80.00	105.00	27.41	104.00	4.98		^	CH 413314/B	RCH200800
82.55	101.60	28.97	100.60	4.88			CH 400325	RCH100826
85.00	100.00	17.30	99.00	2.50			CH 393334	RCH000850
85.00	105.00	30.00	104.00	5.35			CH 413334	RCH100850
85.72	104.77	29.37	103.80	4.88			CH 412337	RCH100857
88.90	101.60	17.00	100.60	3.40			CH 400350	RCH000889
88.90	107.95	33.33	106.90	4.90		^	CH 425350/1	RCH200889
89.00	105.00	25.80	104.00	4.65			CH 413350	RCH000890
90.00	105.00	31.75	104.00	5.71			CH 413354	RCH000900
90.00	110.00	25.00	109.00	4.88			CH 433354/1	RCH100900

"#" and "^" see page 16.

*As the Polypac Ref. No. does not refer to the material, please always state the full number.

Polypac® - Veepac

Rod/Groove Dia. d_N h9/F8 d1 h11	Groove Dia./ Bore D1 H11 D_N H9/f8	Groove Width L -0.25	Diameter d2 +/-0.1	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
90.00	110.00	26.88	109.00	4.88			CH 433354	RCH200900
90.00	115.00	27.41	114.00	4.98		^	CH 452354/B	RCH300900
92.07	111.13	29.37	110.10	5.16	#	^	CH 437362	RCH000921
95.00	110.00	24.00	109.00	4.11			CH 433374	RCH000950
95.25	111.13	24.30	110.10	4.09	#	^	CH 437375	RCH000953
98.42	123.82	36.96	122.80	6.55			CH 487387	RCH100984
100.00	114.30	20.64	113.30	3.57			CH 450393	RCH001000
100.00	115.00	25.30	114.00	3.96			CH 452393	RCH101000
100.00	120.00	28.00	119.00	5.16			CH 472393	RCH201000
100.00	120.00	31.00	119.00	5.16	#		CH 472393/1	RCH301000
100.00	125.00	27.40	124.00	4.98		^	CH 492393/B	RCH401000
100.00	125.00	36.90	124.00	6.60		^	CH 492393	RCH501000
101.60	127.00	32.15	126.00	5.82	#		CH 500400	RCH001016
104.00	130.00	37.00	129.00	6.73			CH 511409	RCH001040
105.00	120.00	25.00	119.00	4.00			CH 472413	RCH001050
105.00	125.00	29.76	124.00	5.00		^	CH 492413	RCH201050
105.00	135.00	34.50	134.00	5.80		^	CH 531413	RCH301050
106.00	135.00	33.00	134.00	5.65	#	^	CH 531417	RCH001060
110.00	132.00	36.50	131.00	6.96			CH 519433	RCH201100
111.12	136.52	38.89	135.50	6.53	#	^	CH 537437	RCH001111
114.00	130.00	25.80	129.00	4.80			CH511448	RCH001140
114.30	127.00	18.41	126.00	3.43			CH 500450	RCH001143
114.30	133.35	28.18	132.30	5.26		^	CH 525450	RCH101143
114.30	139.70	31.75	138.70	5.56	#	^	CH 550450	RCH201143
115.00	140.00	37.12	139.00	6.00		^	CH 551452	RCH101150
117.47	142.87	36.10	141.90	6.15	#	^	CH 562462	RCH001175
120.00	140.00	30.00	139.00	5.36			CH 551472	RCH001200
125.00	145.00	29.62	144.00	5.18			CH 570492	RCH001250
125.00	150.00	27.40	149.00	4.98			CH 590492/B	RCH101250
125.00	155.00	34.50	154.00	5.80	#	^	CH 610492	RCH201250
127.00	152.40	38.63	151.40	6.48			CH 600500	RCH001270
130.00	150.00	29.76	149.00	4.96			CH 590511	RCH001300
130.00	155.00	40.00	154.00	7.25	#	^	CH 610511	RCH101300
130.00	160.00	41.50	159.00	5.50	#		CH 629511	RCH201300
130.00	160.00	43.50	159.00	5.50	#		CH 629511/1	RCH301300
135.00	155.00	30.55	154.00	5.11			CH 610531	RCH001350
139.70	165.10	37.30	164.10	5.56	#	^	CH 650550	RCH001397
140.00	160.00	28.50	159.00	5.16			CH 629551	RCH001400
140.00	165.00	41.95	164.00	6.56	#		CH 649551	RCH101400
140.00	170.00	32.97	169.00	5.99		^	CH 669551/B	RCH201400
145.00	170.00	38.10	169.00	6.45		^	CH 669570	RCH001450
146.05	171.45	38.89	170.40	6.53		^	CH 675575	RCH001461
150.00	170.00	30.56	169.00	5.16			CH 669590	RCH001500
150.00	180.00	40.00	179.00	6.28		^	CH 708590	RCH101500
152.40	177.80	33.34	176.80	5.77		^	CH 700600	RCH001524

"#" and "^" see page 16.
*As the Polypac Ref. No. does not refer to the material, please always state the full number.

Polypac® - Veepac

Rod/Groove Dia.	Groove Dia./ Bore	Groove Width	Diameter	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
d_N h9/F8	**D1** H11	**L** -0.25	**d2** +/-0.1					
d1 h11	D_N H9/f8							
154.00	175.00	29.44	174.00	5.31		^	CH 688606	RCH001540
157.00	182.00	30.25	181.00	5.72		^	CH 716618	RCH001570
160.00	180.00	30.00	179.00	5.00	#		CH 708629	RCH001600
160.00	190.00	32.97	189.00	5.99		^	CH 748629/B	RCH101600
161.92	180.97	28.57	180.00	5.00	#	^	CH 712637	RCH001619
170.00	195.00	37.50	194.00	6.55		^	CH 767669	RCH001700
170.00	200.00	50.00	199.00	8.00	#	^	CH 787669	RCH101700
171.45	187.32	24.20	186.30	4.09	#	^	CH 737675	RCH001715
175.00	200.00	42.00	199.00	7.54			CH 787688	RCH001750
177.80	196.85	31.00	195.80	5.16		^	CH 775700	RCH001778
177.80	203.20	32.54	202.20	5.95		^	CH 800700	RCH101778
180.00	210.00	32.97	209.00	5.99			CH 826708/B	RCH001800
180.97	203.20	31.75	202.20	5.95			CH 800712	RCH000810
187.32	200.00	21.74	199.00	3.86		^	CH 787737	RCH001873
190.50	222.25	50.00	221.20	7.57		^	CH 875750	RCH001905
200.00	220.00	30.00	219.00	5.00			CH 866787	RCH002000
200.00	230.00	32.97	229.00	5.99		^	CH 905787/B	RCH102000
205.00	225.00	19.48	224.00	3.17		^	CH 885807	RCH002050
210.00	240.00	34.50	239.00	5.80			CH 944826	RCH002100
210.00	240.00	42.10	239.00	7.55		^	CH 944826/1	RCH102100
220.00	250.00	52.00	249.00	8.25		^	CH 984866	RCH002200
224.00	254.00	32.97	253.00	5.99		^	CH 1000881/B	RCH002240
228.60	254.00	38.10	253.00	6.30		^	CH 1000900	RCH002286
228.60	260.35	48.42	259.30	8.46			CH 1025900	RCH102286
240.00	270.00	45.00	269.00	8.03		^	CH 1062944	RCH002400
250.00	270.00	32.00	269.00	5.00			CH 1062984	RCH002500
254.00	279.40	38.10	268.40	5.95		^	CH 11001000	RCH002540
268.29	298.45	45.24	297.40	7.97		^	CH 11751056	RCH002683
269.88	307.98	53.97	307.00	8.44		^	CH 12121062	RCH002699
280.00	315.00	38.45	314.00	6.98		^	CH 12401102/B	RCH002800
288.93	307.98	28.57	307.00	5.21		^	CH 12121137	RCH002889
290.00	320.00	50.80	319.00	7.29		^	CH 12591141	RCH002900
300.00	320.00	32.00	319.00	5.00			CH 12591181	RCH003000
304.80	330.20	38.10	329.20	6.55		^	CH 13001200	RCH003048
310.00	330.00	30.00	329.00	5.50		^	CH 12991220	RCH003100
315.00	350.00	38.45	349.00	6.98		^	CH 13771240/B	RCH003150
320.00	365.00	55.00	364.00	8.50		^	CH 14371259	RCH003200
340.00	380.00	60.00	379.00	10.41		^	CH 14961338	RCH003400
350.00	390.00	60.00	389.00	10.54	#	^	CH 15351377	RCH003500
355.60	381.00	38.10	380.00	5.95			CH 15001400	RCH003556
368.30	406.40	57.15	405.40	10.00		^	CH 16001450	RCH003683
369.00	400.00	45.00	399.00	7.68		^	CH 15741452	RCH003690
400.00	440.00	54.00	439.00	8.38		^	CH 17321574	RCH004000
416.00	450.00	50.00	449.00	8.67		^	CH 17711637	RCH004160
420.00	460.00	51.60	459.00	8.40			CH 18111653	RCH004200

"#" and "^" see page 16.

*As the Polypac Ref. No. does not refer to the material, please always state the full number.

Polypac® - Veepac

Rod/Groove Dia.	Groove Dia./ Bore	Groove Width	Diameter	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
d_N h9/F8	**D1** H11	**L** -0.25	**d2** +/-0.1					
d1 h11	**D_N** H9/f8							
505.00	545.00	60.00	544.00	10.40		^	CH 21451988	RCH005050
700.00	750.00	73.00	749.00	6.35	#		CH 29532756	RCH007000

*As the Polypac Ref. No. does not refer to the material, please always state the full number.

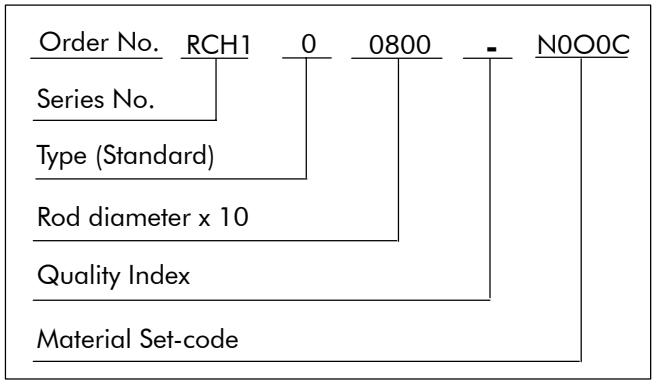
Table V Explanation to "Special Version"

Not available with rubber V-ring		^		
Available upon request	#			

Ordering Example

For a **rod or piston** application of standard Veepac sealing element composed by: Support ring, 3 elements vee-rings and Energizer ring:

Rod/Groove Dia.: $d_N/d1$ = 80.0 mm
Groove Dia./Bore: $D1/D_N$ = 100.0 mm
Part. No.: RCH1 0 0800
Material Set-Code: N0O0C
Polypac Part. No.: CH 393314



Installation Recommendation, Type POLYPAC® CH/NEO (with Back-up Ring)

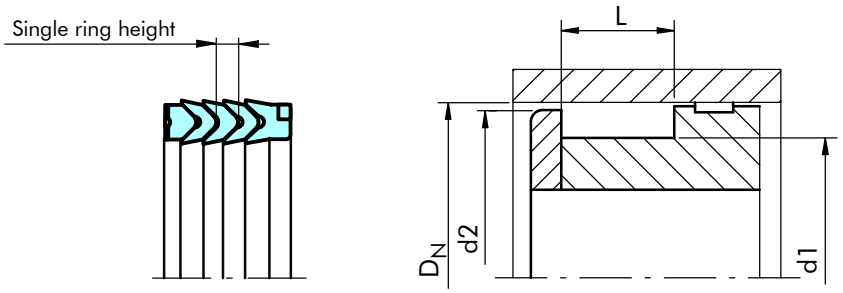


Figure 6 Installation drawing

Table VI Installation Dimensions / Part No.

Bore Diameter	Groove Diameter	Groove Width	Diameter	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
D_N H9/f8	**d1** h11	**L** -0.25	**d2** +/-0.1					
80.00	60.00	32.15	79.00	5.66			CH 314236/NEO	PCH1E0800
88.90	69.85	35.50	87.90	4.83			CH 350275/1/NEO	PCH0E0889
90.00	70.00	30.00	89.00	5.08			CH 354275/NEO	PCH0E0900
95.25	76.20	28.97	94.20	5.16			CH 375300/NEO	PCH0E0952
95.25	82.55	21.72	94.20	3.71	#	^	CH 375325/NEO	PCH1E0952
101.60	85.72	26.75	100.60	4.14		^	CH 400337/NEO	PCH0E1016
107.95	88.90	31.00	106.90	4.90		^	CH 425350/NEO	PCH0E1079
114.30	88.90	35.32	113.30	6.55		^	CH 450350/NEO	PCH0E1143
114.30	95.25	25.40	113.30	5.00		^	CH 450375/NEO	PCH1E1143
114.30	98.42	26.59	113.30	4.34		^	CH 450387/NEO	PCH2E1143
125.00	100.00	36.90	124.00	6.60		^	CH 492393/NEO	PCH1E1250
125.00	105.00	27.00	124.00	5.00	#	^	CH 492413/1/NEO	PCH2E1250
127.00	101.60	32.15	126.00	5.82	#		CH 500400/NEO	PCH0E1270
127.00	107.95	30.00	126.00	4.52		^	CH 500425/NEO	PCH1E1270
139.70	114.30	33.50	138.70	5.56		^	CH 550450/1/NEO	PCH0E1397
140.00	115.00	37.12	139.00	6.00		^	CH 551452/NEO	PCH0E1400
140.00	120.00	30.00	139.00	5.36			CH 551472/NEO	PCH1E1400
150.00	120.00	44.00	149.00	7.50			CH 590472/NEO	PCH0E1500
152.40	127.00	38.63	151.40	6.48			CH 600500/NEO	PCH0E1524
160.00	130.00	41.50	159.00	5.50	#		CH 629511/NEO	PCH1E1600
160.00	130.00	43.50	159.00	5.50	#		CH 629511/1/NEO	PCH2E1600
187.32	171.45	24.20	186.30	4.09	#	^	CH 737675/NEO	PCH0E1873
210.00	180.00	32.97	209.00	5.99			CH 826708/B/NEO	PCH0E2100
222.25	190.50	50.00	221.20	7.57		^	CH 875750/NEO	PCH0E2222
280.00	250.00	32.97	279.00	5.99		^	CH 1102984/B/NEO	PCH0E2800

*As the Polypac Ref. No. does not refer to the material, please always state the full number.

Table VII Explanation to "Special Version"

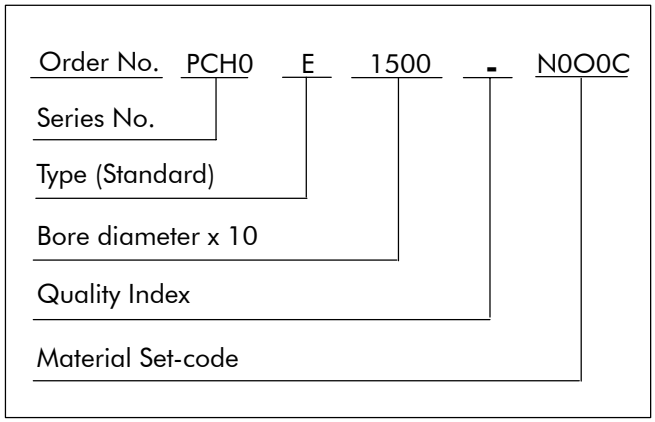
Not available with rubber V-ring		^		
Available upon request	#			

Polypac® - Veepac - for Piston

Ordering Example

For a **piston** application of standard Veepac sealing element composed by: Support ring **with anti-extrusion ring**, 3 elements vee-rings and Energizer ring:

Bore diameter:	D_N = 150.0 mm
Groove diameter:	d1 = 120.0 mm
Part. No.:	PCH0 E 1500
Material Set-Code:	N0O0C
Polypac Part. No.:	CH 590472/NEO



Installation Recommendation, Type POLYPAC® CH/NEI (with Back-up Ring)

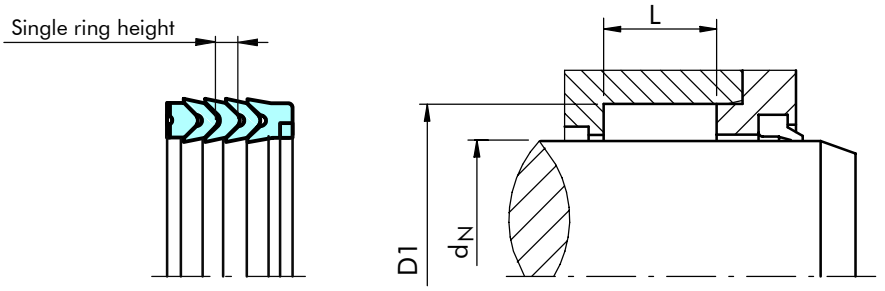


Figure 7 Installation drawing

Table VIII Installation Dimensions / Part No.

Rod Diameter	Groove Diameter	Groove Width	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
d_N h9/F8	**D1** H11	**L** -0.25					
10.00	20.00	11.00	1.70			CH 078039/B/NEI	RCH0E0100
28.00	44.00	17.62	3.17	#		CH 173110/B/NEI	RCH1E0280
28.00	44.00	24.00	4.15	#		CH 173110/1/NEI	RCH2E0280
30.00	45.00	22.20	3.80	#		CH 177118/NEI	RCH2E0300
30.00	50.00	29.37	5.08			CH 196118/NEI	RCH3E0300
32.00	48.00	17.63	3.17	#	^	CH 188125/B/NEI	RCH1E0320
36.00	51.00	24.00	4.14	#		CH 200141/NEI	RCH0E0360
40.00	55.00	22.62	3.84			CH 216157/NEI	RCH1E0400
40.00	55.00	26.19	3.84			CH 216157/1/NEI	RCH2E0400
45.00	60.00	22.22	3.89			CH 236177/NEI	RCH1E0450
48.00	62.00	22.22	3.73			CH 244188/NEI	RCH1E0480
50.00	65.00	24.60	4.34			CH 255196/NEI	RCH0E0500
50.00	65.00	26.00	4.34			CH 255196/1/NEI	RCH1E0500
50.00	70.00	30.00	5.16			CH 275196/NEI	RCH3E0500
53.97	73.02	31.75	5.16			CH 287212/NEI	RCH3E0540
55.00	70.00	26.50	4.02			CH 275216/NEI	RCH1E0550
55.00	75.00	31.00	6.48	#		CH 295216/2/NEI	RCH3E0550
55.00	75.00	38.50	6.48			CH 295216/1/NEI	RCH4E0550
56.00	76.00	33.40	5.38			CH 299220/NEI	RCH1E0560
60.00	75.00	19.00	3.00			CH 295236/NEI	RCH0E0600
60.00	76.00	29.00	4.34			CH 299236/NEI	RCH1E0600
60.00	80.00	32.15	5.66			CH 314236/NEI	RCH3E0600
63.00	85.00	32.00	5.67			CH 334248/NEI	RCH1E0630
63.50	82.50	26.59	4.76			CH 325250/NEI	RCH3E0635
63.50	82.50	31.62	4.76			CH 325250/1/NEI	RCH4E0635
65.00	80.00	26.00	4.00	#		CH 314255/NEI	RCH1E0650
65.00	85.00	29.00	5.21			CH 334255/NEI	RCH2E0650

"#" and "^" see page 20.
*As the Polypac Ref. No. does not refer to the material, please always state the full number.

Polypac® - Veepac - for Rod -

Rod Diameter	Groove Diameter	Groove Width	Single Ring Height	Special Version		Polypac Ref. No.*	Part. No.
d_N h9/F8	**D1** H11	**L** -0.25					
69.85	85.72	23.81	4.09			CH 337275/NEI	RCH0E0699
70.00	83.00	25.00	4.25	#		CH 326275/NEI	RCH0E0700
75.00	90.00	22.50	4.04			CH 354295/NEI	RCH0E0750
75.00	95.00	31.50	5.21			CH 374295/1/NEI	RCH2E0750
80.00	100.00	30.00	4.83			CH 393314/NEI	RCH1E0800
85.00	105.00	30.00	5.35			CH 413334/NEI	RCH1E0850
85.72	104.77	29.37	4.88			CH 412337/NEI	RCH1E0857
90.00	110.00	26.88	4.88			CH 433354/NEI	RCH2E0900
95.00	110.00	24.00	4.11			CH 433374/NEI	RCH0E0950
95.00	120.00	41.00	7.50	#	^	CH 472374/NEI	RCH1E0950
100.00	120.00	28.00	5.16			CH 472393/NEI	RCH2E1000
106.00	135.00	33.00	5.65	#	^	CH 531417/NEI	RCH0E1060
110.00	130.00	27.00	5.00	#		CH 511433/1/NEI	RCH0E1100
110.00	130.00	30.00	5.00	#		CH 511433/NEI	RCH1E1100
110.00	132.00	36.50	6.96			CH 519433/NEI	RCH2E1100
110.00	135.00	41.50	7.00	#	^	CH 531433/NEI	RCH3E1100
115.00	130.00	25.49	4.35	#		CH 511452/NEI	RCH0E1150
120.00	140.00	30.00	5.36			CH 551472/NEI	RCH0E1200
120.00	145.00	39.50	7.25	#	^	CH 570472/NEI	RCH1E1200

*As the Polypac Ref. No. does not refer to the material, please always state the full number.

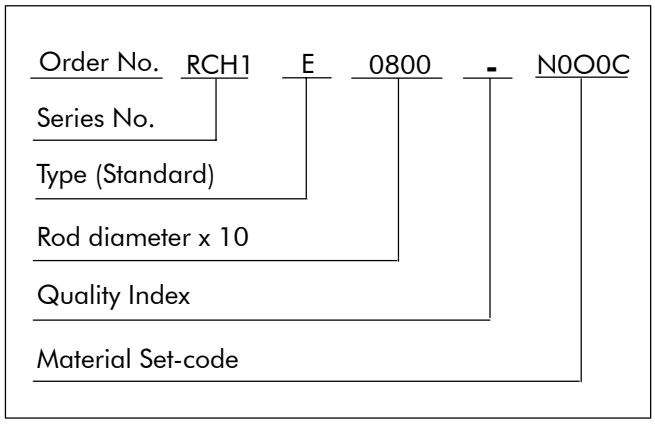
Table IX Explanation to "Special Version"

Not available with rubber V-ring		^		
Available upon request	#			

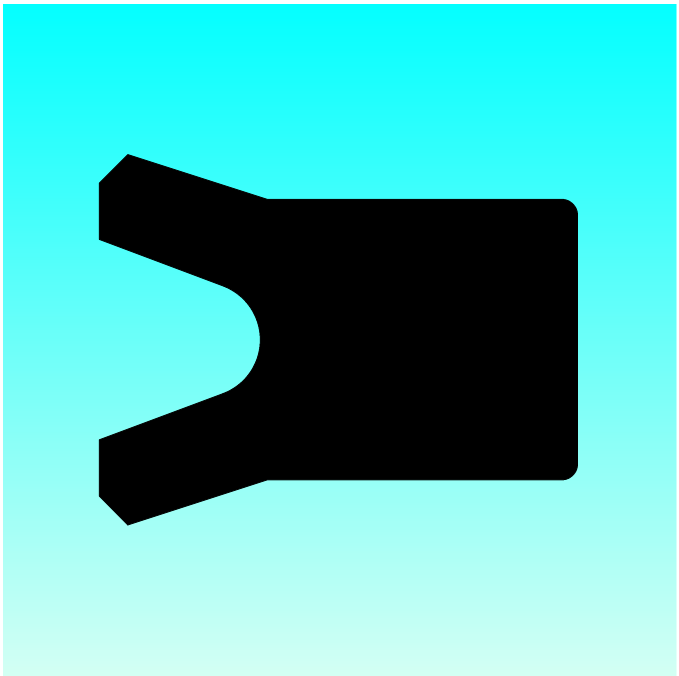
Ordering Example

For a **rod** application of Veepac sealing element composed by: Support ring **with anti-extrusion ring**, 3 elements Vee-rings and energizer ring:

Rod diameter: d_N = 80.0 mm
Groove diameter: D1 = 100.0 mm
Part. No.: RCH1 E 0800
Material Set-Code: N0O0C
Polypac Part. No.: CH 393314/NEI



Polypac® MU/P
B+S RUB
SEALING PARTS RSS



- Single Acting U-Cup -

- Rod and Piston Seals -

- Symmetric Single Lip -

- Material -

- Polyurethane -

U-Cup Symmetrical Seals

Description

These seals have a symmetrical configuration of the sealing lips and are mainly used in single acting or double acting standard hydraulic cylinders, particularly for mobile hydraulics under rough operating conditions.

The thermoplastic Polyurethane material used for U-Cups has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion. The seal design and the Polyurethane properties give efficient fluid sealing, reduced friction values and low wear rate. These seals are suitable for closed groove installation.

The sealing effect of a U-Cup symmetric seal is obtained thanks to the lip pre-compression due to installation and to the pressure effect on the lips.

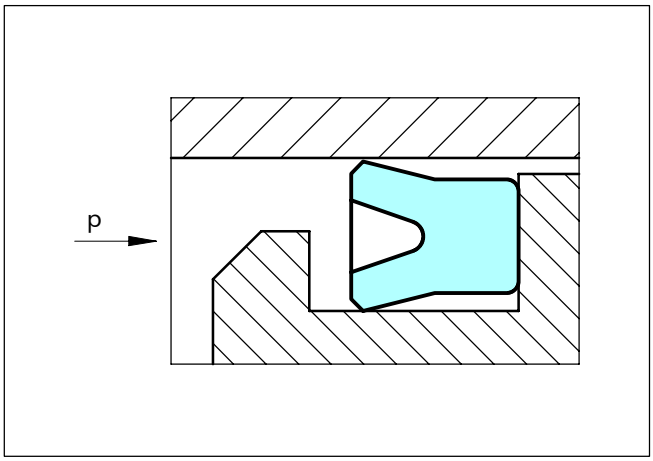


Figure 8 U-Cup for piston

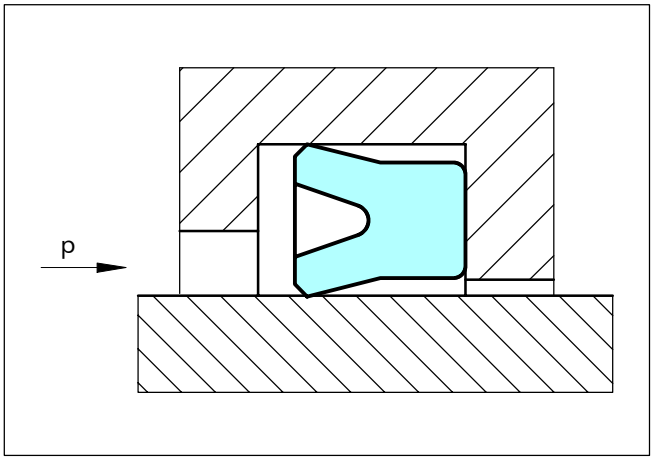


Figure 9 U-Cup for rod

Advantages

- Economical solution
- Simple, easy-construction groove
- Easy installation and removal without tools due to diameter
- Exceptional wear resistance

Application Examples

- Standard hydraulic cylinders
- Presses
- Lift platforms

Table X Guide Values for Radial Clearance

Operating Pressure MPa	Radial clearance: S max.	
	d < 60 mm	d > 60 mm
5	0.40	0.50
10	0.30	0.40
20	0.20	0.30
30	0.15	0.20
40	0.10	0.15

Technical Data

Operating conditions

Pressure: Up to 40 MPa

Velocity: Up to 0.5 m/s

Temperature: -30°C to +80°C

Media: Hydraulic fluids
Mineral oil-based hydraulic fluids

Groove type: Closed for Piston application
Open/closed for rod application

Table XI Cross Section / Dia. Relationships for Close Groove Installation of U-Cup

Cross Section	Min. Rod Diameter
4.0	30
5.0	35
6.0	40
7.5	50
10.0	90

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

U-Cup

Materials

Standard Application:

Polyurethane

Material-Code

Polypac UAT60	red
B+S WUAQ3	turquoise
Sealing Parts WU9L3	blue

Ordering Example

For **piston** application of a U-Cup Symmetric Seal:

Bore diameter:	D_N = 35 mm
Groove diameter:	d1 = 25 mm
Groove width:	L = 11 mm

Or for **rod** application of a U-Cup Symmetric Seal:

Rod diameter:	d_N = 25 mm
Groove diameter:	D1 = 35 mm
Groove width:	L = 11 mm

Part number table XII: RUB1 0 0250

Order No. RUB1 0 0250 - UAT60

- Series No.
- Type (Standard)
- Piston diameter x 10
- Quality Index
- Material-code

Polypac ref.: MU/P 3525

Order No. RUB1 0 0250 - WUAQ3

- Series No.
- Type (Standard)
- Groove diameter x 10
- Quality Index
- Material-code

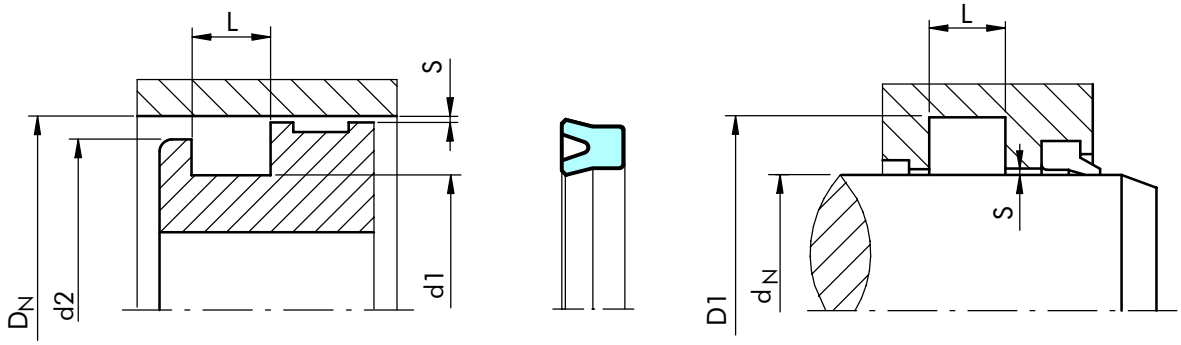
Busak+Shamban ref.: RUB100250

Order No. RUB1 0 0250 - WU9L3

- Series No.
- Type (Standard)
- Groove diameter x 10
- Quality Index
- Material-code

Sealing Parts ref.: RSS 25 35/1

Installation Recommendation



Dimension "S" see table X

Figure 10 Installation drawing

Table XII Installation Dimensions / Part No.

Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**	Material Code			
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
5.00	12.00	5.00	8.50	MU/P 1205			RUB000050
5.00	12.00	5.50	8.50			RUB300050	RUB300050
6.00	12.00	5.00	9.00	MU/P 1206			RUB300060
6.00	12.00	6.00	9.00			RUB200060	RUB200060
6.00	12.00	7.00	9.00			RUB000060	RUB000060
8.00	12.00	6.00	10.00			RUBA00080	RUBA00080
8.00	14.00	6.00	11.00			RUB900080	RUB900080
8.00	14.00	7.00	11.00			RUB000080	RUB000080
8.00	**16.00**	**6.30**	**12.00**			**RUB300080**	**RUB300080**
8.00	16.00	8.00	12.00			RUB700080	RUB700080
8.00	22.00	9.00	15.00		RSS 8 22		RUBB00080
9.00	15.00	9.00	12.00		RSS 9 15		RUB000090
9.00	19.00	7.00	14.00		RSS 9 19		RUB100090
10.00	16.00	6.50	13.00		RSS 10 16	RUB000100	RUB000100
10.00	18.00	6.00	14.00		RSS 10 18/1		RUB700100
10.00	**18.00**	**6.30**	**14.00**			**RUB600100**	**RUB600100**
10.00	18.00	7.00	14.00	MU/P 1810	RSS 10 18/2		RUB800100
10.00	18.00	9.00	14.00		RSS 10 18		RUB900100
10.00	**20.00**	**8.00**	**15.00**			**RUB500100**	**RUB500100**
10.00	20.00	9.00	15.00		RSS 10 20	RUB300100	RUB300100
10.00	22.00	7.00	16.00		RSS 10 22		RUBA00100
10.00	22.00	9.00	16.00		RSS 10 22/1		RUBB00100
11.00	17.00	5.00	14.00		RSS 11 17		RUB000110
11.00	20.50	7.00	15.75		RSS 11 20.5		RUB100110

The dimensions in **bold** type are suitable for grooves to ISO/DIN 5597.

U-Cup

Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**		**Material Code**		
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
12.00	18.00	5.50	15.00		RSS 12 18/1		RUBE00120
12.00	18.00	6.00	15.00	MU/P 1812			RUB600120
12.00	18.00	7.00	15.00		RSS 12 18	RUB000120	RUB000120
12.00	19.00	6.00	15.50			RUBA00120	RUBA00120
12.00	20.00	8.00	16.00	MU/P 2012/1	RSS 12 20/1		RUBF00120
12.00	20.00	9.00	16.00	MU/P 2012	RSS 1220		RUBG00120
12.00	22.00	6.00	17.00		RSS 12 22/1	RUB500120	RUB500120
12.00	**22.00**	**8.00**	**17.00**		**RSS 12 22**		**RUB700120**
12.00	22.00	9.00	17.00		RSS 1222/2		RUB800120
12.00	24.00	9.00	18.00		RSS 12 24		RUB900120
12.00	24.00	10.00	18.00		RSS 12 24/1		RUBB00120
12.00	25.00	9.00	18.50		RSS 12 25		RUBD00120
12.00	25.00	11.00	18.50	MU/P 2512	RSS 12 25/1		RUBC00120
14.00	20.00	5.30	17.00		RSS 1420	RUB000140	RUB000140
14.00	**22.00**	**4.50**	**18.00**		**RSS 14 22/3**		**RUB800140**
14.00	**22.00**	**7.00**	**18.00**		**RSS 14 22**	**RUB100140**	**RUB100140**
14.00	22.00	9.00	18.00		RSS 14 22/1		RUB600140
14.00	22.00	12.00	18.00		RSS 14 22/2		RUB500140
14.00	**24.00**	**8.00**	**19.00**			**RUB200140**	**RUB200140**
14.00	24.00	9.00	19.00	MU/P 2414	RSS 14 24		RUB700140
15.00	23.00	6.30	19.00			RUB200150	RUB200150
15.00	25.00	9.00	20.00		RSS 15 25	RUB000150	RUB000150
15.00	25.00	11.00	20.00	MU/P 2515	RSS 15 25/1		RUB300150
15.00	27.00	7.00	21.00		RSS1527		RUB500150
15.00	28.00	11.00	21.50		RSS 1528		RUB400150
16.00	22.00	4.50	19.00		RSS 16 22/1	RUB100160	RUB100160
16.00	22.00	5.00	19.00	MU/P 2216			RUB900160
16.00	22.00	5.50	19.00		RSS 1622		RUB800160
16.00	22.00	6.00	19.00			RUB600160	RUB600160
16.00	24.00	6.00	20.00		RSS 1624/1		RUBA00160
16.00	**24.00**	**6.30**	**20.00**			**RUB700160**	**RUB700160**
16.00	24.00	10.00	20.00	MU/P 2416	RSS1624		RUBB00160
16.00	26.00	6.00	21.00		RSS1626	RUB400160	RUB400160
16.00	26.00	9.00	21.00		RSS 1626/1		RUBC00160
16.00	26.00	11.00	21.00		RSS1626/2		RUBD00160
16.00	28.00	7.00	22.00		RSS1628		RUBE00160
16.00	32.00	9.00	24.00		RSS1632		RUBF00160
17.00	25.00	11.00	21.00		RSS1725		RUB000170
18.00	**25.00**	**5.50**	**21.50**		**RSS1825**		**RUB800180**
18.00	26.00	7.50	22.00	MU/P 2618	RSS1826/1		RUB900180
18.00	26.00	8.00	22.00			RUB600180	RUB600180
18.00	26.00	9.00	22.00		RSS 1826/2		RUBA00180
18.00	26.00	9.50	22.00		RSS1826		RUBB00180
18.00	28.00	6.30	23.00			RUB700180	RUB700180
18.00	28.00	9.00	23.00		RSS1828		RUBC00180

The dimensions in **bold** type are suitable for grooves to ISO/DIN 5597.

U-Cup

Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**		**Material Code**		
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
18.00	30.00	9.00	24.00		RSS1830		RUBD00180
19.00	25.00	7.00	22.00	MU/P 2519	RSS1925		RUB000190
20.00	26.00	5.50	23.00			RUBB00200	RUBB00200
20.00	**28.00**	**5.00**	**24.00**	**MU/P 2820**	**RSS 20 28**		**RUBC00200**
20.00	28.00	8.00	24.00			RUB800200	RUB800200
20.00	28.00	9.00	24.00		RSS 20 28/1		RUBD00200
20.00	29.00	5.50	24.50		RSS 20 29		RUBE00200
20.00	**30.00**	**9.00**	**25.00**	**MU/P 3020/1**	**RSS 20 30**	**RUB100200**	**RUB100200**
20.00	30.00	11.00	25.00	MU/P 3020	RSS 20 30/1	RUB200200	RUB200200
20.00	32.00	8.50	26.00		RSS 20 32		RUBF00200
20.00	35.00	13.00	27.50	MU/P 3520	RSS 20 35		RUBK00200
20.00	39.00	11.00	29.50		RSS 20 39		RUBG00200
20.00	40.00	11.00	30.00		RSS 20 40		RUBH00200
20.00	40.00	12.00	30.00	MU/P 4020			RUBJ00200
20.00	40.00	13.00	30.00		RSS 20 40/1		RUBI00200
22.00	28.00	5.00	25.00			RUB000220	RUB000220
22.00	28.00	9.00	25.00		RSS 22 28		RUBA00220
22.00	**30.00**	**7.00**	**26.00**		**RSS 22 30**	**RUB100220**	**RUB100220**
22.00	30.00	7.50	26.00	MU/P 3022			RUB700200
22.00	30.00	11.00	26.00		RSS 22 30/1		RUB600200
22.00	**32.00**	**9.00**	**27.00**	**MU/P 3222**	**RSS 22 32**	**RUB200220**	**RUB200220**
22.00	32.00	11.00	27.00		RSS 22 32/1		RUB800220
22.00	35.00	11.00	28.50	MU/P 3522	RSS 22 35		RUB400220
22.00	40.00	11.00	31.00		RSS 22 40		RUB900220
23.00	30.00	7.50	26.50		RSS 23 30		RUB000230
24.00	32.00	7.50	28.00	MU/P 3224/1			RUB100240
24.00	32.00	8.00	28.00		RSS 24 32		RUB000240
24.00	40.00	9.00	32.00		RSS 24 40		RUB200240
25.00	33.00	7.50	29.00	MU/P 3325			RUBA00250
25.00	35.00	5.50	30.00		RSS 25 35		RUBB00250
25.00	35.00	6.00	30.00			RUB500250	RUB500250
25.00	35.00	7.00	30.00	MU/P 3525/W			RUB700250
25.00	**35.00**	**9.00**	**30.00**	**MU/P 3525/1**	**RSS 25 35/2**	**RUB200250**	**RUB200250**
25.00	35.00	11.00	30.00	MU/P 3525	RSS 25 35/1	RUB100250	RUB100250
25.00	38.00	11.00	31.50	MU/P 3825	RSS 25 38		RUB800250
25.00	40.00	11.00	32.50		RSS 25 40	RUB400250	RUB400250
28.00	35.00	5.50	31.50		RSS 28 35		RUB600280
28.00	36.00	7.50	32.00	MU/P 3628	RSS 28 36		RUB500280
28.00	**38.00**	**6.30**	**33.00**			**RUB400280**	**RUB400280**
28.00	38.00	9.00	33.00		RSS 28 38	RUB100280	RUB100280
28.00	40.00	11.00	34.00		RSS 28 40	RUB200280	RUB200280
29.00	40.00	11.00	34.50			RUB000290	RUB000290
30.00	38.00	6.50	34.00		RSS 30 38		RUBB00300
30.00	38.00	7.00	34.00			RUB800300	RUB800300
30.00	38.00	8.00	34.00	MU/P 3830			RUBC00300

The dimensions in **bold** type are suitable for grooves to ISO/DIN 5597.

U-Cup

Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**		**Material Code**		
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
30.00	40.00	5.50	35.00		RSS 30 40/1		RUBD00300
30.00	**40.00**	**8.00**	**35.00**			**RUB900300**	**RUB900300**
30.00	40.00	10.00	35.00	MU/P 4030			RUBE00300
30.00	40.00	11.00	35.00		RSS 30 40	RUB100300	RUB100300
30.00	42.00	10.00	36.00	MU/P 4230	RSS 30 42/1		RUBI00300
30.00	42.00	11.00	36.00		RSS 30 42	RUB300300	RUB300300
30.00	45.00	10.00	37.50	MU/P 4530			RUBF00300
30.00	45.00	11.00	37.50	MU/P 4530/1	RSS 30 45	RUB500300	RUB500300
30.00	50.00	11.00	40.00		RSS 30 50/1		RUBG00300
30.00	50.00	13.00	40.00		RSS 30 50		RUBH00300
32.00	40.00	6.00	36.00	MU/P 4032/1	RSS 32 40		RUB800320
32.00	**40.00**	**6.30**	**36.00**			**RUB000320**	**RUB000320**
32.00	40.00	6.50	36.00	MU/P 4032			RUBB00320
32.00	40.00	9.00	36.00		RSS 32 40/1		RUB700320
32.00	**42.00**	**8.00**	**37.00**			**RUB600320**	**RUB600320**
32.00	42.00	11.00	37.00	MU/P 4232	RSS 32 42	RUB200320	RUB200320
32.00	45.00	11.00	38.50		RSS 32 45		RUB900320
32.00	50.00	13.00	41.00		RSS 32 50		RUBA00320
33.00	43.00	7.00	38.00			RUB000330	RUB000330
34.00	45.00	8.00	39.50		RSS 34 45		RUB300340
34.00	45.00	10.00	39.50	MU/P 4534	RSS 34 45/1		RUB200340
34.00	50.00	15.00	42.00		RSS 34 50		RUB400340
35.00	45.00	8.00	40.00	MU/P 4535/W		RUB200350	RUB200350
35.00	45.00	9.00	40.00		RSS 35 45/1	RUB100350	RUB100350
35.00	45.00	11.00	40.00		RSS 35 45	RUB000350	RUB000350
35.00	48.00	11.00	41.50		RSS 35 48	RUB700350	RUB700350
35.00	50.00	11.00	42.50		RSS 35 50	RUB300350	RUB300350
35.00	55.00	11.00	45.00		RSS 35 55/1	RUB500350	RUB500350
35.00	55.00	13.00	45.00		RSS 35 55	RUB400350	RUB400350
36.00	**46.00**	**8.00**	**41.00**	**MU/P 4636**	**RSS 36 46**		**RUB000360**
36.00	48.00	9.00	42.00	MU/P 4836			RUB200360
36.00	51.00	11.00	43.50			RUB100360	RUB100360
36.00	70.00	11.00	53.00		RSS 36 70		RUB300360
38.00	45.00	5.50	41.50		RSS 38 45	RUB100380	RUB100380
38.00	46.00	7.50	42.00	MU/P 4638	RSS 38 46	RUB600380	RUB600380
38.00	50.00	10.00	44.00		RSS 38 50		RUB900380
38.00	55.00	11.00	46.50		RSS 38 55		RUB700380
38.00	58.00	11.00	48.00		RSS 38 58		RUB800380
40.00	48.00	12.00	44.00		RSS 40 48		RUBG00400
40.00	**50.00**	**7.00**	**45.00**			**RUB900400**	**RUB900400**
40.00	50.00	7.50	45.00	MU/P 5040	RSS 40 50/1		RUBH00400
40.00	50.00	9.00	45.00		RSS 40 50/2	RUB400400	RUB400400
40.00	50.00	11.00	45.00	MU/P 5040/1	RSS 40 50	RUB100400	RUB100400
40.00	52.00	9.00	46.00	MU/P 5240			RUBI00400
40.00	52.00	10.00	46.00			RUBE00400	RUBE00400

The dimensions in **bold** type are suitable for grooves to ISO/DIN 5597.

U-Cup

Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**	Material Code			
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
40.00	52.00	11.00	46.00			RUBF00400	RUBF00400
40.00	55.00	11.00	47.50	MU/P 5540	RSS 40 55	RUB500400	RUB500400
40.00	56.00	11.00	48.00		RSS 40 56	RUB600400	RUB600400
40.00	60.00	11.00	50.00		RSS 40 60/1	RUB800400	RUB800400
40.00	60.00	13.00	50.00			RUBB00400	RUBB00400
40.00	60.00	14.00	50.00		RSS 40 60		RUBK00400
40.00	60.00	19.00	50.00		RSS 40 60/2		RUBJ00400
40.00	65.00	13.00	52.50		RSS 40 65		RUBC00400
40.00	70.00	16.00	55.00		RSS 40 70		RUBL00400
40.00	75.00	11.00	57.50		RSS 40 75		RUBM00400
40.80	50.80	7.70	45.80	MU/P 5141			RUB000408
42.00	50.00	9.00	46.00	MU/P 5042	RSS 42 50		RUB000420
42.00	52.00	10.00	47.00		RSS 42 52		RUB100420
42.00	62.00	13.00	52.00		RSS 42 62		RUB200420
45.00	53.00	7.50	49.00	MU/P 5345			RUB700450
45.00	**55.00**	**7.50**	**50.00**	**MU/P 5545**	**RSS 45 55/1**		**RUB100450**
45.00	55.00	9.00	50.00			RUB600450	RUB600450
45.00	55.00	11.00	50.00	MU/P 5545/1	RSS 45 55	RUB000450	RUB000450
45.00	57.70	10.50	51.35	MU/P 5745			RUB800450
45.00	60.00	11.00	52.50	MU/P 6045	RSS 45 60	RUB200450	RUB200450
45.00	63.00	11.00	54.00		RSS 45 63		RUB900450
45.00	65.00	11.00	55.00		RSS 45 65	RUB400450	RUB400450
45.00	65.00	13.00	55.00		RSS 45 65/1	RUB500450	RUB500450
48.00	58.00	11.00	53.00		RSS 48 58		RUB000480
50.00	60.00	11.00	55.00	MU/P 6050	RSS 50 60	RUB000500	RUB000500
50.00	60.00	12.00	55.00	MU/P 6050/1	RSS 50 60/1		RUB900500
50.00	62.00	10.00	56.00	MU/P 6250	RSS 50 62		RUBA00500
50.00	63.00	7.00	56.50		RSS 50 63		RUB700500
50.00	65.00	11.00	57.50	MU/P 6550/1	RSS 50 65	RUB200500	RUB200500
50.00	70.00	11.00	60.00		RSS 50 70	RUB500500	RUB500500
50.00	70.00	13.00	60.00	MU/P 7050	RSS 50 70/1	RUB600500	RUB600500
50.00	70.00	19.00	60.00		RSS 50 70/2		RUB800500
52.00	62.00	11.00	57.00			RUB100520	RUB100520
52.00	62.00	13.00	57.00	MU/P 6252	RSS 52 62		RUB200520
53.00	**63.00**	**7.50**	**58.00**	**MU/P 6353**	**RSS 53 63**	**RUB100530**	**RUB100530**
55.00	65.00	11.00	60.00	MU/P 6555/1	RSS 55 65/1	RUB100550	RUB100550
55.00	65.00	13.00	60.00	MU/P 6555	RSS 55 65	RUB000550	RUB000550
55.00	70.00	11.00	62.50	MU/P 7055		RUB500550	RUB500550
55.00	70.00	13.00	62.50		RSS 55 70	RUB200550	RUB200550
55.00	75.00	11.00	65.00	MU/P 7555			RUB600550
55.00	75.00	13.00	65.00		RSS 55 75	RUB300550	RUB300550
55.00	80.00	13.00	67.50	MU/P 8055	RSS 55 80		RUB700550
56.00	66.00	11.00	61.00			RUB000560	RUB000560
56.00	71.00	11.00	63.50	MU/P 7156			RUB200560
56.00	76.00	13.00	66.00			RUB100560	RUB100560

The dimensions in **bold** type are suitable for grooves to ISO/DIN 5597.

U-Cup

Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**		**Material Code**		
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
60.00	70.00	8.00	65.00			RUBA00600	RUBA00600
60.00	70.00	9.00	65.00	MU/P 7060	RSS 60 70/1	RUB100600	RUB100600
60.00	70.00	11.00	65.00		RSS 60 70/2	RUB200600	RUB200600
60.00	70.00	13.00	65.00	MU/P 7060/1	RSS 60 70	RUB000600	RUB000600
60.00	70.00	15.00	65.00	MU/P 7060/S			RUBB00600
60.00	75.00	11.00	67.50		RSS 60 75/1		RUBF00600
60.00	75.00	13.00	67.50	MU/P 7560	RSS 60 75	RUB300600	RUB300600
60.00	80.00	11.00	70.00		RSS 60 80	RUB500600	RUB500600
60.00	**80.00**	**13.00**	**70.00**		**RSS 60 80/1**	**RUB600600**	**RUB600600**
60.00	80.00	19.00	70.00		RSS 60 80/2		RUBE00600
60.00	85.00	13.50	72.50		RSS 60 85		RUBD00600
60.00	90.00	16.00	75.00	MU/P 9060	RSS 60 90		RUBC00600
63.00	73.00	11.00	68.00			RUB300630	RUB300630
63.00	75.00	11.00	69.00		RSS 63 75	RUB000630	RUB000630
63.00	75.00	13.00	69.00			RUB400630	RUB400630
63.00	78.00	11.00	70.50		RSS 63 78		RUB600630
63.00	**78.00**	**13.00**	**70.50**	**MU/P 7863**			**RUB700630**
63.00	80.00	11.00	71.50	MU/P 8063			RUB800630
63.00	83.00	13.00	73.00			RUB500630	RUB500630
63.00	83.00	16.00	73.00		RSS 63 83		RUB900630
65.00	75.00	13.00	70.00	MU/P 7565	RSS 65 75	RUB000650	RUB000650
65.00	80.00	11.00	72.50			RUB500650	RUB500650
65.00	**80.00**	**12.00**	**72.50**		**RSS 65 80/1**		**RUB600650**
65.00	**80.00**	**13.00**	**72.50**	**MU/P 8065**	**RSS 65 80**	**RUB100650**	**RUB100650**
65.00	85.00	11.00	75.00		RSS 65 85/1		RUB700650
65.00	85.00	13.00	75.00	MU/P 8565	RSS 65 85	RUB300650	RUB300650
66.00	76.00	9.00	71.00		RSS 66 76		RUB000660
66.00	80.00	11.00	73.00		RSS 66 80		RUB100660
66.00	80.00	14.00	73.00		RSS 66 80/1		RUB200660
67.00	77.00	11.00	72.00		RSS 67 77/1		RUB100670
67.00	77.00	13.00	72.00	MU/P 7767	RSS 67 77		RUB000670
69.85	88.90	12.70	79.38		RSS 69.85 88.90		RUB000698
70.00	80.00	6.00	75.00		RSS 70 80/3		RUB900700
70.00	**80.00**	**8.00**	**75.00**			**RUB700700**	**RUB700700**
70.00	80.00	9.00	75.00	MU/P 8070	RSS 70 80/1		RUBA00700
70.00	80.00	11.00	75.00		RSS 70 80/2	RUB200700	RUB200700
70.00	80.00	13.00	75.00	MU/P 8070/1	RSS 70 80	RUB000700	RUB000700
70.00	85.00	11.00	77.50	MU/P 8570		RUB400700	RUB400700
70.00	**85.00**	**13.00**	**77.50**		**RSS 70 85**	**RUB300700**	**RUB300700**
70.00	90.00	13.00	80.00	MU/P 9070	RSS 70 90	RUB500700	RUB500700
70.00	90.00	19.00	80.00		RSS 70 90/1		RUBB00700
75.00	85.00	11.00	80.00			RUB500750	RUB500750
75.00	85.00	13.00	80.00	MU/P 8575	RSS 75 85	RUB000750	RUB000750
75.00	90.00	8.50	82.50		RSS 75 90		RUB800750
75.00	90.00	11.00	82.50	MU/P 9075	RSS 75 90/2		RUBA00750

The dimensions in **bold** type are suitable for grooves to ISO/DIN 5597.

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Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**	Material Code			
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
75.00	90.00	13.00	82.50		RSS 75 90/1		RUB900750
75.00	95.00	13.00	85.00		RSS 75 95	RUB400750	RUB400750
75.00	95.00	14.50	85.00	MU/P 9575			RUB700750
75.00	95.50	12.00	85.25	MU/P 9575/X			RUB600750
76.50	96.50	13.00	86.50	MU/P 9676			RUB000765
78.00	86.00	13.50	82.00	MU/P 8678			RUB200780
78.00	88.00	15.00	83.00	MU/P 8878/S			RUB100780
78.00	93.00	11.50	85.50		RSS 78 93		RUB000780
80.00	90.00	8.00	85.00			RUB500800	RUB500800
80.00	90.00	11.00	85.00		RSS 80 90	RUB000800	RUB000800
80.00	90.00	13.00	85.00		RSS 80 90/1		RUB600800
80.00	**95.00**	**13.00**	**87.50**		**RSS 80 95**		**RUB700800**
80.00	100.00	11.00	90.00		RSS 80 100		RUB900800
80.00	**100.00**	**13.00**	**90.00**	**MU/P 10080**	**RSS 80 100/1**	**RUB400800**	**RUB400800**
82.00	92.00	11.00	87.00		RSS 82 92		RUB000820
82.55	101.60	10.50	92.08	MU/P 10182			RUB000825
84.50	94.00	8.80	89.25		RSS 84.5 94		RUB000845
85.00	95.00	9.50	90.00	MU/P 9585	RSS 85 95		RUB500850
85.00	95.00	13.00	90.00		RSS 85 95/1	RUB100850	RUB100850
85.00	95.50	8.50	90.25	MU/P 9585/X			RUB600850
85.00	**100.00**	**10.00**	**92.50**		**RSS 85 100/2**		**RUB700850**
85.00	100.00	12.00	92.50		RSS 85 100/1	RUB400850	RUB400850
85.00	**100.00**	**13.00**	**92.50**	**MU/P 10085**	**RSS 85 100**	**RUB200850**	**RUB200850**
85.00	105.00	13.00	95.00	MU/P 10585/1	RSS 85 105		RUB800850
85.00	115.00	16.00	100.00		RSS 85 115		RUB900850
90.00	**100.00**	**8.00**	**95.00**		**RSS 90 100/2**		**RUB500900**
90.00	100.00	9.00	95.00	MU/P 10090	RSS 90 100		RUB600900
90.00	100.00	11.50	95.00	MU/P 10090/1			RUB700900
90.00	100.00	13.00	95.00		RSS 90 100/1	RUB100900	RUB100900
90.00	**105.00**	**13.00**	**97.50**	**MU/P 10590**	**RSS 90 105**		**RUB800900**
90.00	110.00	13.00	100.00	MU/P 11090	RSS 90110	RUB300900	RUB300900
90.00	110.00	19.00	100.00		RSS 90 110/1		RUB400900
90.00	115.00	23.00	102.50		RSS 90115		RUB900900
95.00	105.00	13.00	100.00	MU/P 10595			RUB600950
95.00	110.00	13.00	102.50		RSS 95 110		RUB000950
95.00	110.00	13.50	102.50			RUB500950	RUB500950
95.00	110.00	16.00	102.50		RSS 95 110/1		RUB300950
95.00	112.00	12.00	103.50		RSS 95112		RUB700950
95.00	115.00	13.00	105.00	MU/P 11595	RSS 95 115		RUB800950
95.00	115.00	19.00	105.00		RSS 95 115/1		RUB400950
99.00	109.00	15.00	104.00	MU/P 10999/S			RUB000990
100.00	115.00	13.00	107.50	MU/P 115100	RSS 100 115		RUB501000
100.00	**120.00**	**13.00**	**110.00**	**MU/P 120100**	**RSS 100 120**	**RUB101000**	**RUB101000**
100.00	125.00	13.00	112.50		RSS 100 125		RUB201000
100.00	**125.00**	**16.00**	**112.50**		**RSS 100 125/1**		**RUB301000**

The dimensions in **bold** type are suitable for grooves to ISO/DIN 5597.

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Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**		**Material Code**		
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
100.00	130.00	13.00	115.00	MU/P 130110/1	RSS 100 130		RUB401000
105.00	120.00	9.00	112.50		RSS 105120		RUB001050
105.00	120.00	16.00	112.50		RSS 105 120/1		RUB101050
105.00	**125.00**	**13.00**	**115.00**		**RSS 105 125/1**		**RUB201050**
105.00	**125.00**	**16.00**	**115.00**		**RSS 105 125**		**RUB301050**
106.00	120.00	9.50	113.00		RSS 106120		RUB001060
110.00	125.00	13.00	117.50		RSS 110 125		RUB401100
110.00	125.00	16.00	117.50		RSS 110125/1		RUB501100
110.00	**130.00**	**16.00**	**120.00**	**MU/P 130110**	**RSS 110 130**	**RUB301100**	**RUB301100**
110.00	130.00	19.00	120.00		RSS 110130/1		RUB601100
113.00	125.00	10.50	119.00	MU/P 125113	RSS 113 125		RUB001130
115.00	126.00	16.00	120.50	MU/P 126115	RSS 115 126		RUB001150
115.00	135.00	16.00	125.00	MU/P 135115	RSS 115135		RUB101150
115.00	140.00	16.00	127.50		RSS 115 140/1		RUB201150
115.00	140.00	23.00	127.50		RSS 115 140		RUB301150
120.00	130.00	15.00	125.00	MU/P 130120/S	RSS 120 130		RUB001200
120.00	135.00	16.00	127.50	MU/P 135120	RSS 120 135		RUB301200
120.00	140.00	13.00	130.00	MU/P 140120			RUB401200
120.00	140.00	16.00	130.00		RSS 120 140	RUB201200	RUB201200
125.00	140.00	12.00	132.50	MU/P 140125	RSS 125 140		RUB001250
125.00	140.00	16.00	132.50		RSS 125 140/1		RUB101250
125.00	**145.00**	**16.00**	**135.00**		**RSS 125 145**		**RUB201250**
125.00	145.00	19.00	135.00		RSS 125 145/1		RUB301250
125.00	155.00	16.00	140.00		RSS 125 155		RUB401250
130.00	150.00	16.00	140.00		RSS 130 150		RUB001300
135.00	150.00	16.00	142.50		RSS 135 150	RUB201350	RUB201350
135.00	155.00	16.00	145.00		RSS 135155		RUB301350
135.00	**160.00**	**16.00**	**147.50**		**RSS 135 160**		**RUB401350**
140.00	155.00	16.00	147.50		RSS 140 155/AI		RUB101400
140.00	**160.00**	**13.00**	**150.00**		**RSS 140 160/1**		**RUB201400**
140.00	**160.00**	**16.00**	**150.00**		**RSS 140 160**		**RUB301400**
141.00	151.00	15.00	146.00	MU/P 151141/S			RUB001410
145.00	165.00	16.00	155.00		RSS 145 165		RUB001450
148.00	160.00	10.50	154.00	MU/P 160148			RUB001480
150.00	160.00	13.00	155.00	MU/P 160150			RUB201500
150.00	170.00	16.00	160.00		RSS 150 170		RUB301500
150.00	170.00	19.00	160.00		RSS 150 170/1		RUB101500
154.00	169.00	12.00	161.50	MU/P 169154			RUB001540
160.00	180.00	16.00	170.00		RSS 160 180	RUB001600	RUB001600
162.00	172.00	15.00	167.00	MU/P 172162/S			RUB001620
170.00	190.00	16.00	180.00		RSS 170 190		RUB101700
170.00	**200.00**	**19.00**	**185.00**		**RSS 170200**		**RUB001700**
175.00	**200.00**	**16.00**	**187.50**		**RSS 175200**		**RUB001750**
180.00	200.00	16.00	190.00		RSS 180200		RUB001800
180.00	220.00	21.00	200.00		RSS 180220		RUB101800

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Rod/Groove Dia.	Bore/Groove Dia.	Groove Width	Fitting Dia.	Polypac Ref. No.	Sealing Parts Ref. No.	B+S Ref. No.	Part. No.
d_N h9	**D1** H11	**L** + 0.2	**d2**	**Material Code**			
d1 h11	D_N H9			**UAT60**	**WU9L3**	**WUAQ3**	
183.00	193.00	15.00	188.00	MU/P 193183/S			RUB001830
187.00	202.00	12.00	194.50	MU/P 202187			RUB001870
200.00	**225.00**	**19.00**	**212.50**		**RSS 200 225**		**RUB002000**
207.00	217.00	15.00	212.00	MU/P 217207/S			RUB002070
220.00	**250.00**	**19.00**	**235.00**		**RSS 220 250**	**RUB002200**	**RUB002200**
225.00	245.00	16.00	235.00		RSS 225 245		RUB002250
231.00	241.00	15.00	236.00	MU/P 241231/S			RUB002310
245.00	270.00	16.00	257.50		RSS 245 270		RUB002450
254.00	264.00	15.00	259.00	MU/P 264254/S			RUB002540
265.00	290.00	18.00	277.50		RSS 265 290		RUB002650
270.00	290.00	18.00	280.00		RSS 270 290		RUB002700
270.00	300.00	16.00	285.00		RSS 270 300		RUB102700
280.00	290.00	15.00	285.00	MU/P 290280/S			RUB002800
280.00	300.00	16.00	290.00		RSS 280 300		RUB102800
305.00	320.00	18.00	312.50		RSS 305 320		RUB003050
360.00	390.00	23.00	375.00		RSS 360 390		RUB003600

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