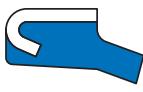


# Wiper seals

<b>Profile overview .....</b>	<b>208</b>	<b>Profile data</b>	
<b>Basics.....</b>	<b>210</b>	<b>4.1 PA .....</b>	216
Installation .....	210	Metric sizes.....	217
Materials.....	211	<b>4.2 MCW .....</b>	220
		Metric sizes.....	221
		Inch sizes .....	223
<b>Press-in wiper seals.....</b>	<b>211</b>	<b>4.3 PAD and PADV .....</b>	226
PA profiles.....	211	Metric sizes.....	227
MCW profiles .....	212	<b>4.4 DTW .....</b>	228
PAD and PADV profiles.....	212	Metric sizes.....	229
		Inch sizes .....	232
<b>Snap-in wiper seals .....</b>	<b>213</b>	<b>4.5 DX .....</b>	236
DTW profiles.....	214	Inch sizes .....	237
DX profiles .....	214	<b>4.6 HW.....</b>	240
HW profiles.....	215	Metric sizes.....	241
		Inch sizes .....	243
		<b>More wiper seals.....</b>	<b>246</b>
		PTFE wiper seals .....	246
		Rod seals used as wiper seals .....	246
		Customized machined seal profiles .....	246

## Wiper seals

## Profile overview

Profile	Description	Additional information → page	Profile data → page
<b>PA</b> 	Polyurethane press-in wiper seal; steel retaining ring; single-lip design; lip protrudes from head; small radial cross section	<b>211</b>	<b>216</b> (metric)
<b>MCW</b> 	Polyurethane press-in wiper seal; steel retaining ring; effective single lip design that sits flush with head; suitable for heavy duty applications	<b>216</b>	<b>220</b> (metric and inch)
<b>PAD</b> 	Polyurethane press-in wiper seal; steel retaining ring; double-lip design improves rod sealing system performance	<b>212</b>	<b>226</b> (metric)
<b>PADV</b> 	PAD design with a vent hole in the inside-facing lip	<b>212</b>	<b>226</b> (metric)
<b>DTW</b> 	Polyurethane snap-in wiper seal; single-lip design; static seal lips on the outside surface and outside face; notches on inside edge of heel	<b>214</b>	<b>228</b> (metric and inch)
<b>DX</b> 	Polyurethane snap-in wiper seal with nitrile rubber O-ring; single-lip design; patented profile for heavy duty applications; notches on inside edge of heel	<b>214</b>	<b>236</b> (inch)
<b>HW</b> 	Polyurethane snap-in wiper seal; double-lip design improves rod sealing system performance	<b>215</b>	<b>240</b> (metric and inch)

Profile overview

4

## Wiper seals

### Basics

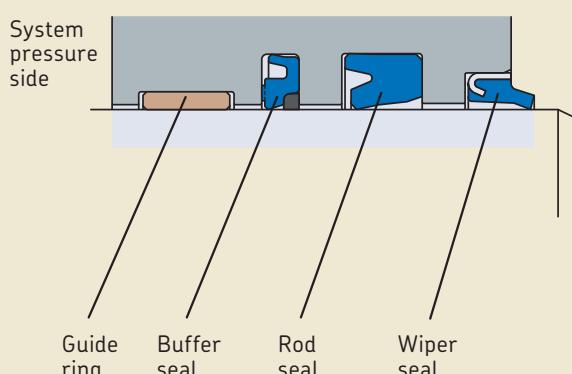
Hydraulic cylinders operate in a variety of applications and environmental conditions, including exposure to dust, debris or outside weather conditions. To prevent these contaminants from entering the cylinder assembly and hydraulic system, wiper seals (also known as scrapers, excluders or dust seals) are fitted on the external side of the cylinder head (**→ fig. 1**).

Wiper seals maintain sealing contact to the piston rod when the equipment is stationary (static, no reciprocating motion of rod) and in use (dynamic, reciprocating rod), whereas the tolerance for the rod diameter  $d$  is determined by the rod seal. Without a wiper seal, the retracting piston rod could transport contaminants into the cylinder.

The outside static sealing of the wiper seal within the housing is also important to avoid moisture or particles from entering around the outside of the wiper seal.

**Fig. 1**

Wiper seal in typical rod sealing system for medium duty hydraulic applications



### Installation

Housings for wiper seals are typically designed either as open or stepped housings (**→ fig. 2**).

Wipers for open housings are bonded to a steel retaining ring and pressed into the housing. Therefore, they are called press-in wiper seals.

Wiper seals for stepped housings do not have metal components and can usually be deformed by hand for installation. They "snap" into the groove and, therefore, are called snap-in wiper seal.

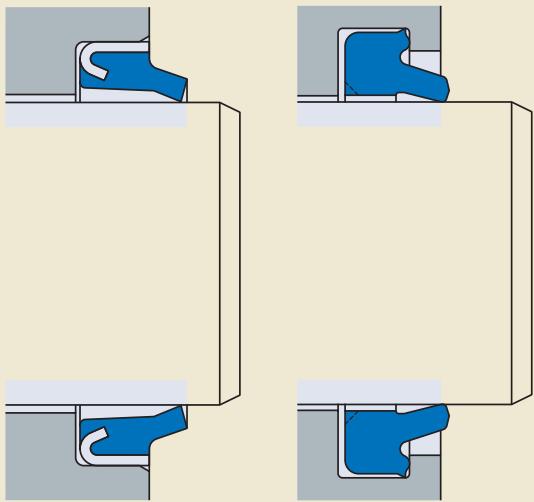
For additional information about installation, refer to *Installing wiper seals* (**→ page 43**).

### More information

Counter-surface finish properties .....	22
Materials .....	26
Hydraulic fluids .....	31
Gap extrusion .....	34
Storage .....	36
Installation and assembly .....	38

Press-in wiper seals

Fig. 2

Open housing  
(press-in wiper seal)Stepped housing  
(snap-in wiper seal)

## Press-in wiper seals

As their name implies, press-in wiper seals are pressed into the housing in the cylinder head. These seals are designed with a steel retaining ring that provides a robust static sealing on the outside surface. The polyurethane (TPU) wiper lip is bonded to the drawn sheet steel retaining ring and maintains a sealing force by tension as well as cantilever action (flexing) to the seal lips. This provides a robust preload of the wiper lips even under minor radial mis-alignments between the rod and head. Press-in wiper seals are available with a single-lip or double-lip design.

### PA profiles

PA profiles (→ fig. 3) have an effective single wiping lip that protrudes from the head. This design allows small radial cross sections and reduces the risk of contaminant adherence on the wiper lip. PA profiles are available in metric sizes.

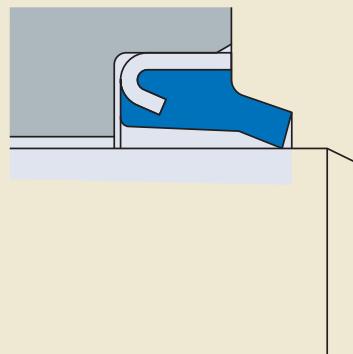
4

## Materials

Polyurethane (TPU) is the most common material for wiper seals in modern hydraulic seal applications. SKF wiper seals made of TPU are developed for wear resistance and flexibility as well as with the right physical properties to effectively remove contaminants. SKF can supply wiper seals in a wide variety of materials, including rubber elastomers and PTFE (→ *More wiper seals, page 246*).

For additional information, refer to *Materials* (→ page 26).

Fig. 3

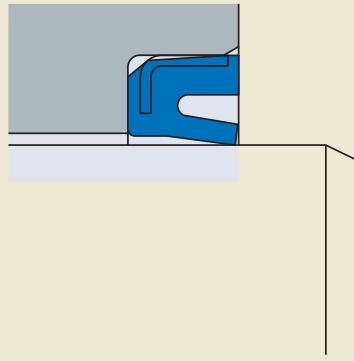


PA

## Wiper seals

### MCW profiles

MCW profiles (→ fig. 4) have an effective single wiping lip that does not protrude from the head. This allows compact arrangement when the cylinder is retracted. These profiles are available in metric and inch sizes.



MCW

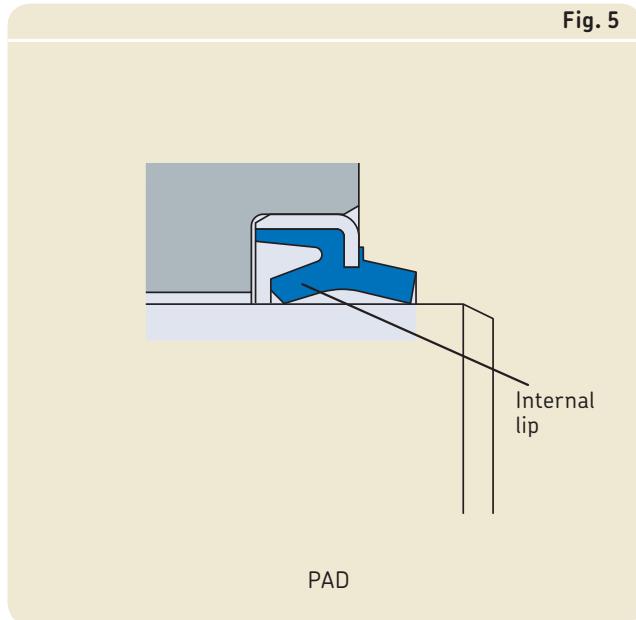
### PAD and PADV profiles

PAD profiles (→ fig. 5) have a double-lip design with an internal-facing wiper lip that regulates the lubrication film on the rod. The internal lip wipes excess fluid film from the rod on extending stroke and allows this excess fluid to return under the rod seal on the retracting stroke. Double-acting wipers, therefore, improve the performance and extend the service life of rod sealing systems.

However, excess system pressure acting on the internal-facing lip, such as fluid passing a damaged rod seal, could overcome the press force between the housing and the steel retaining ring and push the wiper seal out of the housing. Therefore, SKF recommends using double-acting wiper seals in combination with U-cup rod seals with a single-lip design, such as S1S profile (→ Rod seals, page 116), to ensure pressurized fluid can return to the hydraulic system. A snap ring may also be required to retain the wiper seal in the housing (→ fig. 6) in case of pressure build up.

PAD profiles (→ fig. 7) are also available with a vent in the internal lip (designation PADV). They do not need extra snap rings in most applications. The vent prevents pressure build-up on the internal-facing lip. PAD and PADV profiles are available in the same metric sizes.

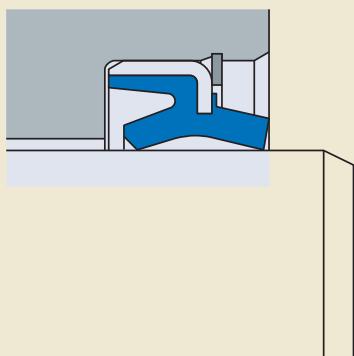
Fig. 4



PAD

Snap-in wiper seals

Fig. 6



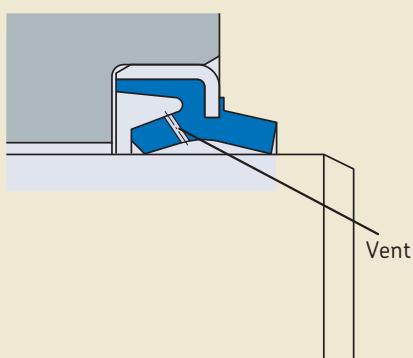
PAD with snap ring

## Snap-in wiper seals

Snap-in wiper seals are designed without any metal component and are easy to install without any special equipment.

A common problem with snap-in wiper seals is that they become loose in the housing resulting in poor static sealing on the outside surface and reduced preload on the dynamic wiper seal lip (**→ fig. 8**). Furthermore, if the inside edge of the wiper seal could contact the rod, it may become an unintended sealing lip (**→ fig. 8**) and could trap pressure between the rod and wiper seal. Therefore, SKF snap-in wiper seals have special sealing and venting features to help ensure proper operation.

Fig. 7

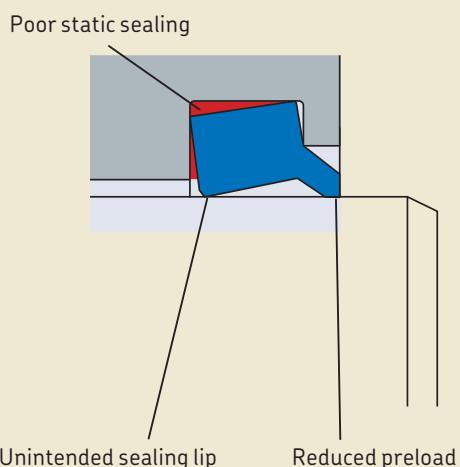


PADV

4

Fig. 8

### Snap-in wiper seal loose in the housing



## Wiper seals

### DTW profiles

DTW profiles (→ fig. 9) have a single-lip design and a radial static seal lip on the outside surface that maintains a positive sealing contact. An axial static seal lip on the external side face keeps the wiper tight in the housing and also serves as an additional static seal. During operation the inside edge of the wiper seal could contact the rod, for example during rod extension. In this case and in the event the rod seal has become damaged or exceeded its service life, notches on the inside edge prevent the wiper seal trapping pressure or being pushed out by pressure. These profiles are available in metric and inch sizes.

### DX profiles

DX wiper seals (→ fig. 10) have a patented profile with a single external lip design and vented inside edge. These profiles incorporate a rubber O-ring that maintains a robust static sealing contact in the housing. The O-ring also serves as an energizer to provide consistent long term preload on the dynamic lip. In case of radial misalignment, the entire TPU wiper ring follows these radial movements ("floating" design) as the relatively soft and flexible rubber O-ring energizer deforms to compensate.

When the wiper lip encounters resistance from contaminants adhered to the retracting rod (e.g. tree sap or frozen rain), the profile reacts by twisting to increase the preload on the dynamic wiper lip.

Therefore, DX profiles include the functionality of press-in wiper seals as well as the convenience of snap-in wiper seals. These profiles are available in inch sizes.

Fig. 9

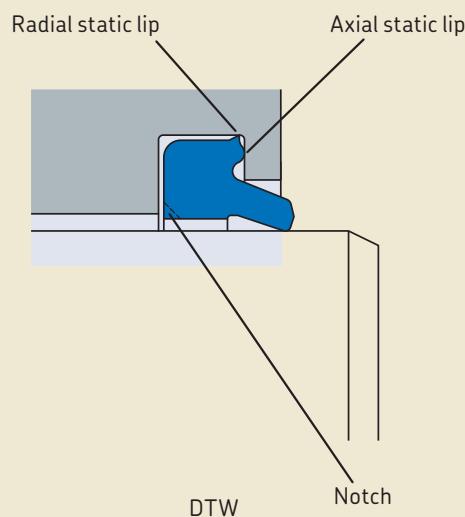
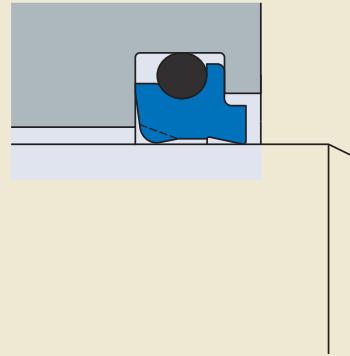


Fig. 10

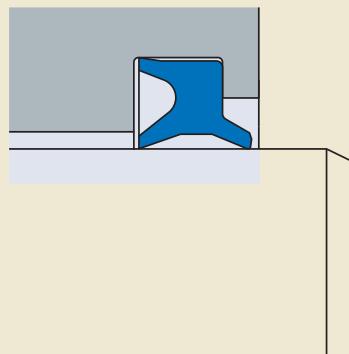


Snap-in wiper seals

## HW profiles

HW profiles (→ **fig. 11**) have a double-lip design with an internal-facing wiper lip that regulates the lubrication film on the rod. The internal lip wipes any excess fluid film from the rod on the extending stroke and allow this excess fluid to return under the rod seal on the retracting stroke. Double-acting wipers, therefore, improve the performance and extend the service life of rod sealing systems. SKF recommends using double-acting wiper seals in combination with U-cup rod seals with a single-lip design, such as S1S profile (→ *Rod seals, page 116*), to ensure pressurized fluid can return to the hydraulic system.

Fig. 11



HW

#### 4.1 PA profile

#### PA profile data

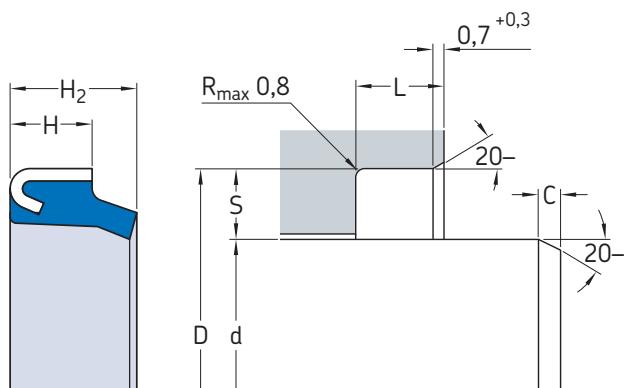


<b>Material code</b>	W93 For additional information → page 26
<b>Speed</b>	Up to 1 m/s (3.2 ft/s)
<b>Temperature range</b>	-40 to +110 °C (-40 to +230 °F)
<b>Dimension standards</b>	Some sizes fit seal housings in accordance with ISO 6195-B.
<b>Counter-surface</b>	→ page 22

Maximum values of application parameters (e.g. speed, temperature) should not be applied continuously nor simultaneously.

## 4.1 PA profile wiper seals, metric sizes

d 12 – 65 mm



Dimensions							Designation
d <sup>1)</sup>	D H8	L +0,5	S	C min.	H	H <sub>2</sub> +1	
mm							–
12	20	4,5	4	3	4	6	PA 12x20x4x6
20	30	7,5	5	4	7	10	• PA 20x30x7x10
25	35	7,5	5	4	7	10	• PA 25x35x7x10
28	38	7,5	5	4	7	10	• PA 28x38x7x10
30	40	7,5	5	4	7	10	PA 30x40x7x10
32	42 45	7,5 7,5	5 6,5	4 5	7 7	10 10	• PA 32x42x7x10 PA 32x45x7x10
35	45	7,5	5	4	7	10	PA 35x45x7x10
36	45 46	7,5 7,5	4,5 5	4	7 7	10 10	PA 36x45x7x10 • PA 36x46x7x10
40	50	7,5	5	4	7	10	• PA 40x50x7x10
45	55 60	7,5 7,5	5 7,5	4 6	7 7	10 10	• PA 45x55x7x10 PA 45x60x7x10
50	60 65	7,5 7,5	5 7,5	4 6	7 7	10 10	• PA 50x60x7x10 PA 50x65x7x10
55	65 70	7,5 7,5	5 7,5	4 6	7 7	10 10	PA 55x65x7x10 PA 55x70x7x10
56	66	7,5	5	4	7	10	• PA 56x66x7x10
60	70	7,5	5	4	7	10	PA 60x70x7x10
63	73 75 78	7,5 7,5 7,5	5 6 7,5	4 4 6	7 7 7	10 10 10	• PA 63x73x7x10 PA 63x75x7x10 PA 63x78x7x10
65	75	7,5	5	4	7	10	PA 65x75x7x10

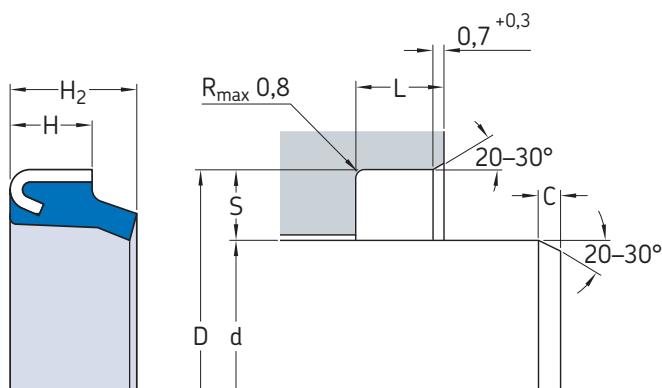
• Seal housing dimensions in accordance with ISO 6195-B

<sup>1)</sup> Tolerance is determined by the rod seal

4.1

## 4.1 PA profile wiper seals, metric sizes

d 70 – 180 mm



Dimensions							Designation
d <sup>1)</sup>	D H8	L +0,5	S	C min.	H	H <sub>2</sub> +1	
mm							–
70	80	7,5	5	4	7	10	• PA 70x80x7x10
75	85	7,5	5	4	7	10	PA 75x85x7x10
80	90	7,5	5	4	7	10	• PA 80x90x7x10
85	95	7,5	5	4	7	10	PA 85x95x7x10
90	100	7,5	5	4	7	10	• PA 90x100x7x10
100	110	7,5	5	4	7	10	PA 100x110x7x10
105	115	7,5	5	4	7	10	PA 105x115x7x10
110	120	7,5	5	4	7	10	PA 110x120x7x10
115	125	7,5	5	4	7	10	PA 115x125x7x10
120	130	7,5	5	4	7	10	PA 120x130x7x10
125	140	9,5	7,5	7	9	12	• PA 125x140x9x12
140	155	9,5	7,5	7	9	12	• PA 140x155x9x12
180	195	9,5	7,5	7	9	12	• PA 180x195x9x12

Other sizes are available on request

• Seal housing dimensions in accordance with ISO 6195-B

<sup>1)</sup> Tolerance is determined by the rod seal

4.1

## 4.2 MCW profile

### MCW profile data

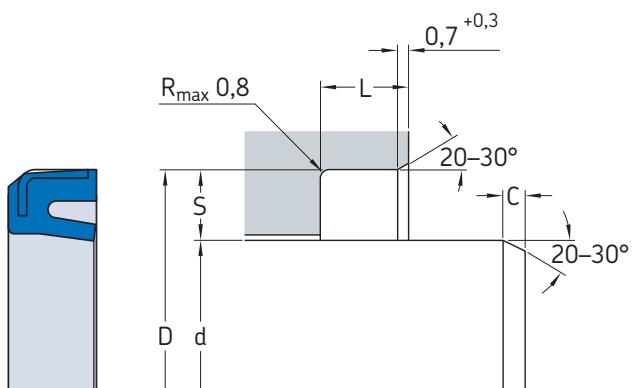


<b>Material codes</b>	Metric sizes → U-1029 Inch sizes → U-1023 For additional information → <b>page 26</b>
<b>Speed</b>	Up to 1,5 m/s (4.9 ft/s)
<b>Temperature range</b>	-40 to +120 °C (-40 to +250 °F)
<b>Dimension standards</b>	Some metric sizes fit seal housings in accordance with ISO 6195-B.
<b>Counter-surface</b>	→ <b>page 22</b>

Maximum values of application parameters (e.g. speed, temperature) should not be applied continuously nor simultaneously.

## 4.2 MCW profile wiper seals, metric sizes

d 20 – 65 mm



Dimensions					Designation
d <sup>1)</sup>	D H8	L +0,5	S	C min.	
mm					–
20	30	7	5	5	• MCW-20x30x7-E6Q
25	35	7	5	5	• MCW-25x35x7-E6Q
30	40	7	5	5	• MCW-30x40x7-E6Q
32	42	7	5	5	• MCW-32x42x7-E6Q
35	50	9	7,5	7	MCW-35x50x9-E6Q
36	46	7	5	5	• MCW-36x46x7-E6Q
40	50	7	5	5	• MCW-40x50x7-E6Q
	55	9	7,5	7	MCW-40x55x9-E6Q
45	55	5	5	5	MCW-45x55x5-E6Q
	55	7	5	5	• MCW-45x55x7-E6Q
	60	9	7,5	7	MCW-45x60x9-E6Q
50	60	5	5	5	MCW-50x60x5-E6Q
	60	7	5	5	• MCW-50x60x7-E6Q
	65	9	7,5	7	MCW-50x65x9-E6Q
55	65	5	5	5	MCW-55x65x5-E6Q
56	66	7	5	5	• MCW-56x66x7-E6Q
	68	7	6	5	MCW-56x68x7-E6Q
	71	9	7,5	7	MCW-56x71x9-E6Q
60	70	5	5	5	MCW-60x70x5-E6Q
	74	8	7	7	MCW-60x74x8-E6Q
63	78	9	7,5	7	MCW-63x78x9-E6Q
65	75	5	5	5	MCW-65x75x5-E6Q
	79	8	7	7	MCW-65x79x8-E6Q

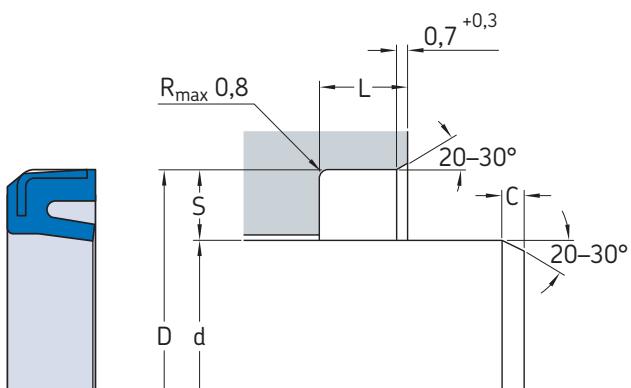
4.2

• Seal housing dimensions in accordance with ISO 6195-B

<sup>1)</sup> Tolerance is determined by the rod seal

## 4.2 MCW profile wiper seals, metric sizes

d 70 – 130 mm



Dimensions					Designation
d <sup>1)</sup>	D H8	L +0,5	S	C min.	
mm					–
70	80	5	5	5	MCW-70x80x5-E6Q
	80	7	5	5	• MCW-70x80x7-E6Q
	84	8	7	7	MCW-70x84x8-E6Q
	85	7	7,5	7	MCW-70x85x7-E6Q
75	89	8	7	7	MCW-75x89x8-E6Q
	90	7,5	7,5	7	MCW-75x90x7.5-E6Q
80	90	7	5	5	• MCW-80x90x7-E6Q
	94	8	7	7	MCW-80x94x8-E6Q
	100	7	10	7,5	MCW-80x100x7-E6Q
	100	10	10	7,5	MCW-80x100x10-E6Q
85	99	8	7	7	MCW-85x99x8-E6Q
90	104	8	7	7	MCW-90x104x8-E6Q
	105	7	7,5	7	MCW-90x105x7-E6Q
	106	8	8	7	MCW-90x106x8-E6Q
	110	7	10	7,5	MCW-90x110x7-E6Q
95	109	8	7	7	MCW-95x109x8-E6Q
100	110	7	5	5	MCW-100x110x7-E6Q
	114	8	7	7	MCW-100x114x8-E6Q
	116	8	8	7	MCW-100x116x8-E6Q
110	130	8	10	7,5	MCW-110x130x8-E6Q
	130	10	10	7,5	MCW-110x130x10-E6Q
120	136	9	8	7	MCW-120x136x9-E6Q
125	140	9	7,5	7	MCW-125x140x9-E6Q
130	150	10	10	7,5	MCW-130x150x10-E6Q

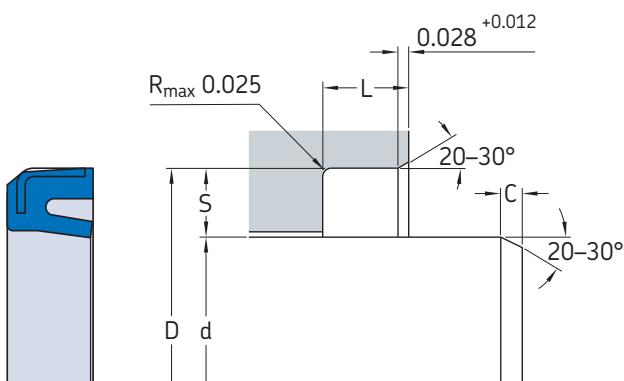
Other sizes are available on request

• Seal housing dimensions in accordance with ISO 6195-B

<sup>1)</sup> Tolerance is determined by the rod seal

## 4.2 MCW profile wiper seals, inch sizes

d 0.5 – 2.125 in.



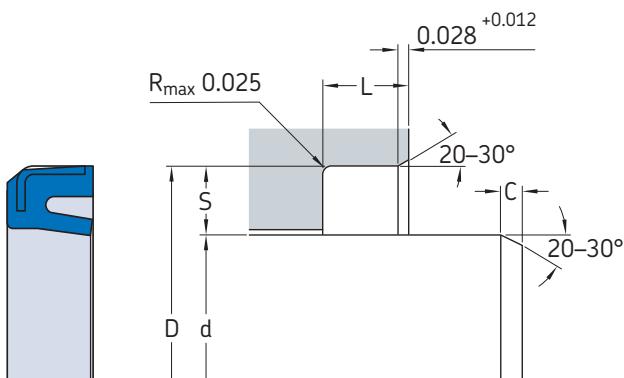
Dimensions					Designation
d <sup>1)</sup>	D ±0.001	L +0.015	S	C min.	-
in.					
0.5	1	0.25	0.25	0.312	MCW-500-H9B
0.625	1.125	0.312	0.25	0.312	MCW-625-H9B
0.75	1.25	0.312	0.25	0.312	MCW-750-H9B
0.875	1.375	0.312	0.25	0.312	MCW-875-H9B
1	1.5	0.312	0.25	0.312	MCW-1000-H9B
1.125	1.625	0.312	0.25	0.312	MCW-1125-H9B
1.187	1.623	0.218	0.25	0.312	MCW218-1187-250-H9B
1.25	1.75	0.312	0.25	0.312	MCW-1250-H9B
1.375	1.875	0.312	0.25	0.312	MCW-1375-H9B
1.5	2	0.312	0.25	0.312	MCW-1500-H9B
	2.125	0.312	0.312	0.312	MCW312-1500-312-H9B
1.562	1.875	0.156	0.375	0.312	MCW156-1562-375-H9B
1.625	2.125	0.312	0.25	0.312	MCW-1625-H9B
1.75	2.25	0.312	0.25	0.312	MCW-1750-H9B
	2.5	0.375	0.375	0.312	MCW375-1750-375-H9B
1.875	2.375	0.312	0.25	0.312	MCW-1875-H9B
2	2.5	0.312	0.25	0.312	MCW-2000-H9B
	2.75	0.375	0.375	0.312	MCW375-2000-375-H9B
	2.875	0.438	0.25	0.312	MCW438-2000-250-H9B
2.125	2.625	0.312	0.25	0.312	MCW-2125-H9B
	2.875	0.375	0.375	0.312	MCW375-2125-375-H9B

4.2

<sup>1)</sup> Tolerance is determined by the rod seal

## 4.2 MCW profile wiper seals, inch sizes

d 2.25 – 8.5 in.



Dimensions					Designation
d <sup>1)</sup>	D ±0.001	L +0.015	S	C min.	
in.					-
2.25	2.75 3	0.312 0.375	0.25 0.25	0.312 0.312	MCW-2250-H9B MCW375-2250-250-H9B
2.375	2.875	0.312	0.25	0.312	MCW-2375-H9B
2.5	3 3.19	0.312 0.345	0.25 0.375	0.312 0.312	MCW-2500-H9B MCW345-2500-375-H9B
2.625	3.125 3.375	0.312 0.375	0.25 0.375	0.312 0.312	MCW-2625-H9B MCW375-2625-375-H9B
2.75	3.25 3.5	0.312 0.375	0.25 0.375	0.312 0.312	MCW-2750-H9B MCW375-2750-375-H9B
3	3.5 3.75	0.312 0.375	0.25 0.375	0.312 0.312	MCW-3000-H9B MCW375-3000-375-H9B
3.125	3.75	0.312	0.312	0.312	MCW-3125-H9B
3.25	3.875	0.312	0.312	0.312	MCW-3250-H9B
3.5	4.125 4.25	0.312 0.375	0.312 0.312	0.312 0.312	MCW-3500-H9B MCW375-3500-312-H9B
3.625	4.25	0.312	0.312	0.312	MCW-3625-H9B
3.75	4.375	0.312	0.312	0.312	MCW-3750-H9B
4	4.625	0.312	0.312	0.312	MCW-4000-H9B
4.25	4.875	0.312	0.312	0.312	MCW-4250-H9B
4.5	5.125	0.312	0.312	0.312	MCW-4500-H9B
5	5.625	0.312	0.312	0.312	MCW-5000-H9B

<sup>1)</sup> Tolerance is determined by the rod seal

**Dimensions****Designation**

d <sup>1)</sup>	D ±0.001	L +0.015	S	C min.	
in.	-				
5.5	6.125 6.25	0.375 0.375	0.312 0.312	0.312 0.312	<b>MCW-5500-H9B</b> <b>MCW375-5500-312-H9B</b>
5.75	6.375 6.75	0.375 0.5	0.312 0.5	0.312 0.375	<b>MCW-5750-H9B</b> <b>MCW500-5750-500-H9B</b>
6	6.625	0.375	0.312	0.312	<b>MCW-6000-H9B</b>
6.5	7.125	0.312	0.312	0.312	<b>MCW312-6500-312-H9B</b>
6.75	7.375 7.375	0.312 0.375	0.312 0.312	0.312 0.312	<b>MCW312-6750-312-H9B</b> <b>MCW-6750-H9B</b>
7	7.75	0.375	0.312	0.312	<b>MCW375-7000-312-H9B</b>
8	8.75	0.375	0.375	0.312	<b>MCW375-8000-375-H9B</b>
8.5	9.125	0.375	0.312	0.312	<b>MCW-8500-H9B</b>

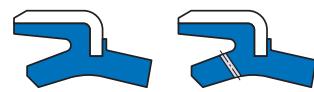
Other sizes are available on request

4.2

<sup>1)</sup> Tolerance is determined by the rod seal

#### 4.3 PAD and PADV profiles

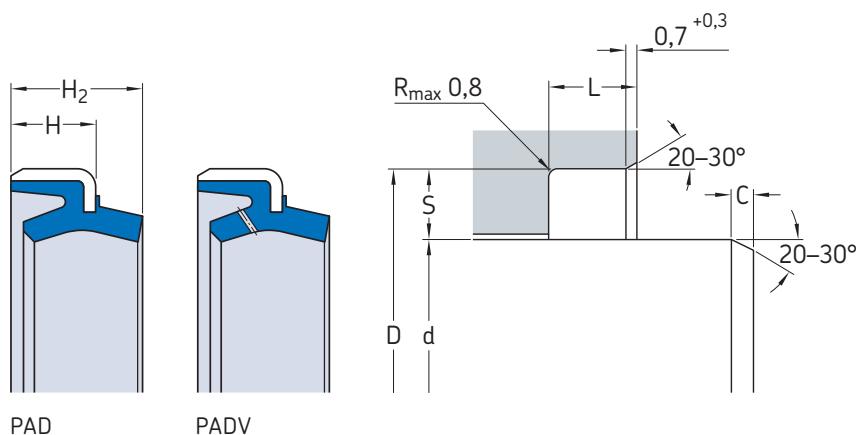
#### PAD and PADV profile data



<b>Material code</b>	W93 For additional information → page 26
<b>Speed</b>	Up to 1 m/s (3.2 ft/s)
<b>Temperature range</b>	-40 to +110 °C (-40 to +230 °F)
<b>Counter-surface</b>	→ page 22

Maximum values of application parameters (e.g. speed, temperature) should not be applied continuously nor simultaneously.

#### 4.3 PAD and PADV profile wiper seals, metric sizes d 30 – 120 mm



Dimensions							Designations	
d <sup>1)</sup>	D H8	L +0,5	S	C min.	H	H <sub>2</sub> +1	PAD	PADV (with vent)
mm							–	
30	42	6,5	6	4	6	9	PAD 30x42x6x9	PADV 30x42x6x9
35	47	7,5	6	4	7	10	PAD 35x47x7x10	PADV 35x47x7x10
40	52	7,5	6	4	7	10	PAD 40x52x7x10	PADV 40x52x7x10
45	57	7,5	6	4	7	10	PAD 45x57x7x10	PADV 45x57x7x10
50	62	7,5	6	4	7	10	PAD 50x62x7x10	PADV 50x62x7x10
55	69	8,5	7	5	8	11	PAD 55x69x8x11	PADV 55x69x8x11
60	74	8,5	7	5	8	11	PAD 60x74x8x11	PADV 60x74x8x11
65	79	8,5	7	5	8	11	PAD 65x79x8x11	PADV 65x79x8x11
70	84	8,5	7	5	8	11	PAD 70x84x8x11	PADV 70x84x8x11
75	89	8,5	7	5	8	11	PAD 75x89x8x11	PADV 75x89x8x11
80	94	8,5	7	5	8	11	PAD 80x94x8x11	PADV 80x94x8x11
85	99	8,5	7	5	8	11	PAD 85x99x8x11	PADV 85x99x8x11
90	104	8,5	7	5	8	11	PAD 90x104x8x11	PADV 90x104x8x11
95	109	8,5	7	5	8	11	PAD 95x109x8x11	PADV 95x109x8x11
100	114	8,5	7	5	8	11	PAD 100x114x8x11	PADV 100x114x8x11
105	121	9,5	8	7	9	12	PAD 105x121x9x12	PADV 105x121x9x12
110	126	9,5	8	7	9	12	PAD 110x126x9x12	PADV 110x126x9x12
115	131	9,5	8	7	9	12	PAD 115x131x9x12	PADV 115x131x9x12
120	136	9,5	8	7	9	12	PAD 120x136x9x12	PADV 120x136x9x12

Other sizes are available on request

<sup>1)</sup> Tolerance is determined by the rod seal

#### 4.4 DTW profile

## DTW profile data

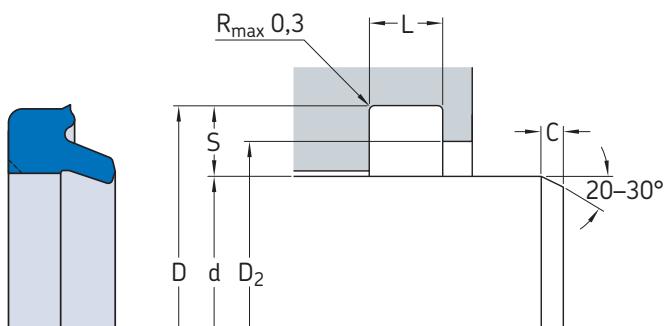


<b>Material code</b>	U-1003 For additional information → page 26
<b>Speed</b>	Up to 0,75 m/s (2.4 ft/s)
<b>Temperature range</b>	-40 to +120 °C (-40 to +250 °F)
<b>Counter-surface</b>	→ page 22

Maximum values of application parameters (e.g. speed, temperature) should not be applied continuously nor simultaneously.

## 4.4 DTW profile wiper seals, metric sizes

d 18 – 71 mm

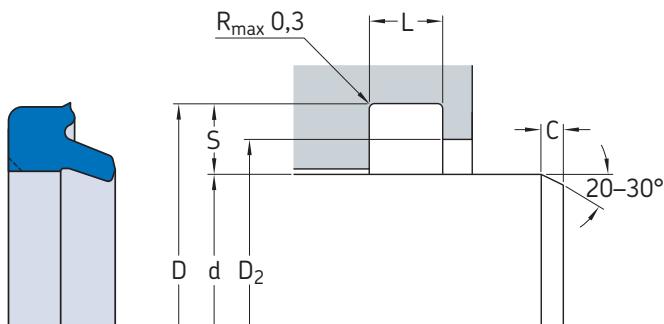


Dimensions						Designation
d <sup>1)</sup>	D H11	L +0,2	D <sub>2</sub> H11	S	C min.	
mm						–
<b>18</b>	26	5	22	4	4,5	<b>DTW-18x26x5-J2G</b>
<b>20</b>	28	5	24	4	4,5	<b>DTW-20x28x5-J2G</b>
<b>25</b>	33	5	29	4	4,5	<b>DTW-25x33x5-J2G</b>
<b>28</b>	36	5	32	4	4,5	<b>DTW-28x36x5-J2G</b>
<b>30</b>	38	6	34	4	4,5	<b>DTW-30x38x6-J2G</b>
<b>32</b>	40	5	36	4	4,5	<b>DTW-32x40x5-J2G</b>
	40	6	36	4	4,5	<b>DTW-32x40x6-J2G</b>
<b>35</b>	43	6	39	4	4,5	<b>DTW-35x43x6-J2G</b>
<b>40</b>	48	5	44	4	4,5	<b>DTW-40x48x5-J2G</b>
	48	6	44	4	4,5	<b>DTW-40x48x6-J2G</b>
<b>45</b>	53	6	49	4	4,5	<b>DTW-45x53x6-J2G</b>
<b>50</b>	58	5	54	4	4,5	<b>DTW-50x58x5-J2G</b>
	58	6	54	4	4,5	<b>DTW-50x58x6-J2G</b>
<b>55</b>	63	6	59	4	4,5	<b>DTW-55x63x6-J2G</b>
	65	7	60	5	5	<b>DTW-55x65x7-J2G</b>
<b>56</b>	64	6	60	4	4,5	<b>DTW-56x64x6-J2G</b>
<b>60</b>	68	6	64	4	4,5	<b>DTW-60x68x6-J2G</b>
	70	7	65	5	5	<b>DTW-60x70x7-J2G</b>
<b>63</b>	71	6	67	4	4,5	<b>DTW-63x71x6-J2G</b>
<b>65</b>	73	6	69	4	4,5	<b>DTW-65x73x6-J2G</b>
	75	7	70	5	5	<b>DTW-65x75x7-J2G</b>
<b>70</b>	80	7	75	5	5	<b>DTW-70x80x7-J2G</b>
<b>71</b>	81	7	76	5	5	<b>DTW-71x81x7-J2G</b>

<sup>1)</sup> Tolerance is determined by the rod seal

## 4.4 DTW profile wiper seals, metric sizes

d 75 – 230 mm



Dimensions						Designation
d <sup>1)</sup>	D H11	L +0,2	D <sub>2</sub> H11	S	C min.	
mm						-
75	85	7	80	5	5	DTW-75x85x7-J2G
80	90	7	85	5	5	DTW-80x90x7-J2G
85	95	7	90	5	5	DTW-85x95x7-J2G
90	100	7	95	5	5	DTW-90x100x7-J2G
95	105	7	100	5	5	DTW-95x105x7-J2G
100	110	7	105	5	5	DTW-100x110x7-J2G
105	115	7	110	5	5	DTW-105x115x7-J2G
110	120	7	115	5	5	DTW-110x120x7-J2G
112	122	7	117	5	5	DTW-112x122x7-J2G
115	125	7	120	5	5	DTW-115x125x7-J2G
120	130	7	125	5	5	DTW-120x130x7-J2G
125	138	8	132	6,5	5,5	DTW-125x138x8-J2G
130	143	8	137	6,5	5,5	DTW-130x143x8-J2G
140	153	8	147	6,5	5,5	DTW-140x153x8-J2G
145	158	8	152	6,5	5,5	DTW-145x158x8-J2G
150	163	8	157	6,5	5,5	DTW-150x163x8-J2G
160	173	8	167	6,5	5,5	DTW-160x173x8-J2G
160	174	8	167	7	6	DTW-160x174x8-J2G

<sup>1)</sup> Tolerance is determined by the rod seal

**Dimensions****Designation**

d <sup>1)</sup>	D H11	L +0,2	D <sub>2</sub> H11	S	C min.
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mm

—

<b>170</b>	183	8	177	6,5	5,5	<b>DTW-170x183x8-J2G</b>
<b>170</b>	184	8	177	7	6	<b>DTW-170x184x8-J2G</b>
<b>180</b>	194	8	187	7	6	<b>DTW-180x194x8-J2G</b>
<b>200</b>	213	8	207	6,5	5,5	<b>DTW-200x213x8-J2G</b>
	214	8	207	7	6	<b>DTW-200x214x8-J2G</b>
<b>230</b>	244	8	237	7	6	<b>DTW-230x244x8-J2G</b>

Other sizes are available on request

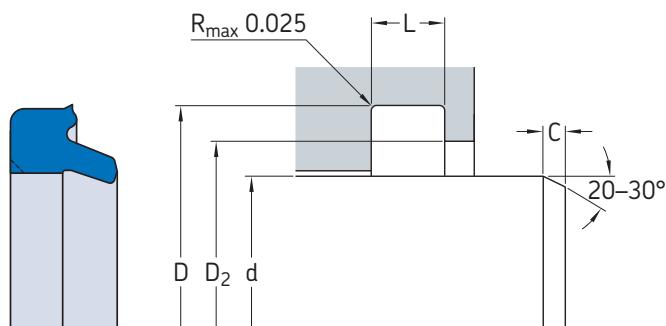
**4.4**

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<sup>1)</sup> Tolerance is determined by the rod seal

## 4.4 DTW profile wiper seals, inch sizes

d 0.25 – 6.5 in.



Dimensions					Designation
d <sup>1)</sup>	D +0.006	L +0.004	D <sub>2</sub> +0.005	C min.	
in.	–				
<b>0.25</b>	0.497	0.124	0.41	0.125	<b>DTW-250-J2G</b>
<b>0.312</b>	0.56	0.124	0.475	0.125	<b>DTW-312-J2G</b>
<b>0.375</b>	0.622	0.124	0.535	0.125	<b>DTW-375-J2G</b>
<b>0.437</b>	0.685	0.124	0.6	0.125	<b>DTW-437-J2G</b>
<b>0.5</b>	0.747	0.124	0.66	0.125	<b>DTW-500-J2G</b>
<b>0.562</b>	0.81	0.124	0.725	0.125	<b>DTW-562-J2G</b>
<b>0.625</b>	0.872	0.124	0.785	0.125	<b>DTW-625-J2G</b>
<b>0.75</b>	1.122	0.187	0.995	0.187	<b>DTW-750-J2G</b>
<b>0.812</b>	1.185	0.187	1.06	0.187	<b>DTW-812-J2G</b>
<b>0.875</b>	1.247	0.187	1.12	0.187	<b>DTW-875-J2G</b>
<b>0.937</b>	1.31	0.187	1.185	0.187	<b>DTW-937-J2G</b>
<b>1</b>	1.372	0.187	1.245	0.187	<b>DTW-1000-J2G</b>
<b>1.125</b>	1.497	0.187	1.37	0.187	<b>DTW-1125-J2G</b>
<b>1.187</b>	1.559	0.187	1.435	0.187	<b>DTW-1187-J2G</b>
<b>1.25</b>	1.622	0.187	1.495	0.187	<b>DTW-1250-J2G</b>
<b>1.312</b>	1.684	0.187	1.56	0.187	<b>DTW-1312-J2G</b>
<b>1.375</b>	1.747	0.187	1.62	0.187	<b>DTW-1375-J2G</b>
<b>1.5</b>	1.872	0.187	1.745	0.187	<b>DTW-1500-J2G</b>
<b>1.562</b>	1.935	0.187	1.81	0.187	<b>DTW-1562-J2G</b>
<b>1.625</b>	1.997	0.187	1.87	0.187	<b>DTW-1625-J2G</b>

<sup>1)</sup> Tolerance is determined by the rod seal

**Dimensions****Designation**

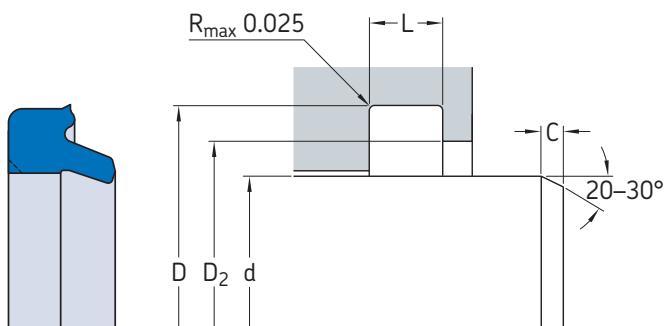
d <sup>1)</sup> in.	D +0.006	L +0.004	D <sub>2</sub> +0.005	C min.	
<b>1.75</b>	2.122	0.187	1.995	0.187	<b>DTW-1750-J2G</b>
<b>1.875</b>	2.247	0.187	2.12	0.187	<b>DTW-1875-J2G</b>
<b>1.937</b>	2.31	0.187	2.185	0.187	<b>DTW-1937-J2G</b>
<b>2</b>	2.497	0.249	2.327	0.25	<b>DTW-2000-J2G</b>
<b>2.125</b>	2.622	0.249	2.452	0.25	<b>DTW-2125-J2G</b>
<b>2.25</b>	2.747	0.249	2.577	0.25	<b>DTW-2250-J2G</b>
<b>2.375</b>	2.872	0.249	2.702	0.25	<b>DTW-2375-J2G</b>
<b>2.5</b>	2.997	0.249	2.827	0.25	<b>DTW-2500-J2G</b>
<b>2.625</b>	3.122	0.249	2.952	0.25	<b>DTW-2625-J2G</b>
<b>2.75</b>	3.247	0.249	3.077	0.25	<b>DTW-2750-J2G</b>
<b>2.875</b>	3.372	0.249	3.202	0.25	<b>DTW-2875-J2G</b>
<b>3</b>	3.497	0.249	3.327	0.25	<b>DTW-3000-J2G</b>
<b>3.125</b>	3.622	0.249	3.452	0.25	<b>DTW-3125-J2G</b>
<b>3.25</b>	3.747	0.249	3.577	0.25	<b>DTW-3250-J2G</b>
<b>3.375</b>	3.872	0.249	3.702	0.25	<b>DTW-3375-J2G</b>
<b>3.5</b>	3.997	0.249	3.827	0.25	<b>DTW-3500-J2G</b>
<b>3.625</b>	4.122	0.249	3.952	0.25	<b>DTW-3625-J2G</b>
<b>3.75</b>	4.247	0.249	4.077	0.25	<b>DTW-3750-J2G</b>
<b>3.875</b>	4.372	0.249	4.202	0.25	<b>DTW-3875-J2G</b>
<b>4</b>	4.497	0.249	4.327	0.25	<b>DTW-4000-J2G</b>
<b>4.125</b>	4.622	0.249	4.452	0.25	<b>DTW-4125-J2G</b>
<b>4.25</b>	4.747	0.249	4.577	0.25	<b>DTW-4250-J2G</b>
<b>4.375</b>	4.872	0.249	4.702	0.25	<b>DTW-4375-J2G</b>
<b>4.5</b>	5.247	0.374	4.993	0.375	<b>DTW-4500-J2G</b>
<b>4.75</b>	5.497	0.374	5.243	0.375	<b>DTW-4750-J2G</b>
<b>4.875</b>	5.622	0.374	5.368	0.375	<b>DTW-4875-J2G</b>
<b>5</b>	5.747	0.374	5.493	0.375	<b>DTW-5000-J2G</b>
<b>5.25</b>	5.997	0.374	5.743	0.375	<b>DTW-5250-J2G</b>
<b>5.5</b>	6.247	0.374	5.993	0.375	<b>DTW-5500-J2G</b>
<b>5.75</b>	6.497	0.374	6.243	0.375	<b>DTW-5750-J2G</b>
<b>6</b>	6.747	0.374	6.493	0.375	<b>DTW-6000-J2G</b>
<b>6.25</b>	6.997	0.374	6.743	0.375	<b>DTW-6250-J2G</b>
<b>6.5</b>	7.247	0.374	6.993	0.375	<b>DTW-6500-J2G</b>

<sup>1)</sup> Tolerance is determined by the rod seal

4.4

#### 4.4 DTW profile wiper seals, inch sizes

d 6.75 – 15.75 in.



Dimensions d <sup>1)</sup>					Designation
	D +0.006	L +0.004	D <sub>2</sub> +0.005	C min.	–
in.					
6.75	7.497	0.374	7.243	0.375	DTW-6750-J2G
7	7.747	0.374	7.493	0.375	DTW-7000-J2G
7.25	7.997	0.374	7.743	0.375	DTW-7250-J2G
7.5	8.247	0.374	7.993	0.375	DTW-7500-J2G
7.75	8.497	0.374	8.243	0.375	DTW-7750-J2G
8	8.747	0.374	8.493	0.375	DTW-8000-J2G
8.25	8.997	0.374	8.743	0.375	DTW-8250-J2G
8.5	9.247	0.374	8.993	0.375	DTW-8500-J2G
8.75	9.497	0.374	9.243	0.375	DTW-8750-J2G
9	9.747	0.374	9.493	0.375	DTW-9000-J2G
9.5	10.247	0.374	9.993	0.375	DTW-9500-J2G
9.75	10.497	0.374	10.243	0.375	DTW-9750-J2G
10	10.997	0.499	10.659	0.5	DTW-10000-J2G
10.5	11.497	0.499	11.159	0.5	DTW-10500-J2G
11	11.997	0.499	11.659	0.5	DTW-11000-J2G
11.5	12.497	0.499	12.159	0.5	DTW-11500-J2G
12.5	13.497	0.499	13.159	0.5	DTW-12500-J2G
15.75	16.747	0.499	16.409	0.5	DTW-15750-J2G

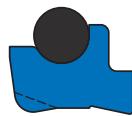
Other sizes are available on request

<sup>1)</sup> Tolerance is determined by the rod seal

4.4

## 4.5 DX profile

### DX profile data

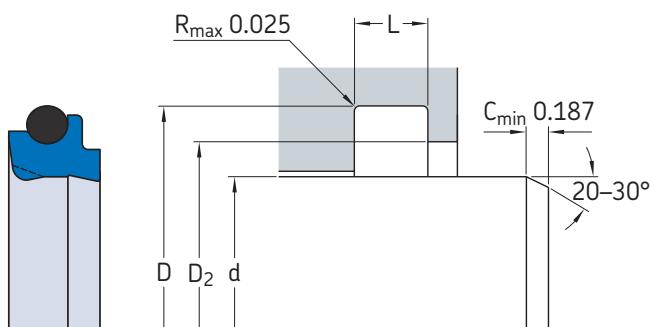


<b>Material codes</b>	Seal ring: suffix J1S → U-1003 suffix J2X → U-1004 Energizer: A-8501 For additional information → <b>page 26</b>
<b>Speed</b>	Up to 1 m/s (3.2 ft/s)
<b>Temperature range</b>	-40 to +120 °C (-40 to +250 °F)
<b>Counter-surface</b>	→ <b>page 22</b>

Maximum values of application parameters (e.g. speed, temperature) should not be applied continuously nor simultaneously.

## 4.5 DX profile wiper seals, inch sizes

d 0.75 – 4.25 in.

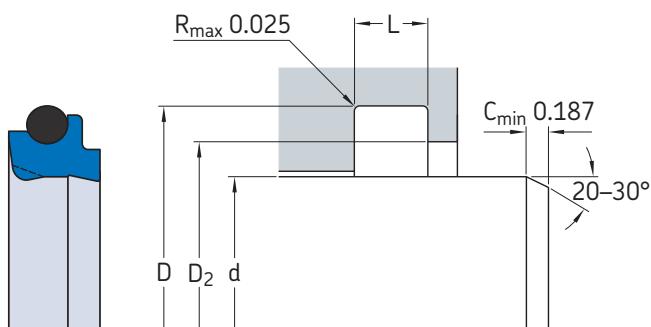


Dimensions				Designation
d <sup>1)</sup>	D +0.006	L +0.004	D <sub>2</sub> +0.005	
in.				-
0.75	1.122	0.187	0.995	DX-750-J1S
1	1.372	0.187	1.245	DX-1000-J1S
1.125	1.497	0.187	1.37	DX-1125-J1S
1.25	1.622	0.187	1.495	DX-1250-J1S
1.375	1.747	0.187	1.62	DX-1375-J1S
1.5	1.872	0.187	1.745	DX-1500-J1S
1.625	1.997	0.187	1.87	DX-1625-J1S
1.75	2.122	0.187	1.995	DX-1750-J1S
2	2.497	0.249	2.327	DX-2000-J1S
2.25	2.747	0.249	2.577	DX-2250-J1S
2.5	2.997	0.249	2.827	DX-2500-J1S
2.75	3.247	0.249	3.077	DX-2750-J1S
3	3.497	0.249	3.327	DX-3000-J1S
3.125	3.622	0.249	3.452	DX-3125-J1S
3.25	3.747	0.249	3.577	DX-3250-J2X
3.375	3.872	0.249	3.702	DX-3375-J2X
3.5	3.997	0.249	3.827	DX-3500-J2X
3.75	4.247	0.249	4.077	DX-3750-J2X
4	4.497	0.249	4.327	DX-4000-J2X
4.25	4.747	0.249	4.577	DX-4250-J2X

<sup>1)</sup> Tolerance is determined by the rod seal

## 4.5 DX profile wiper seals, inch sizes

d 4.5 – 9 in.



Dimensions				Designation
d <sup>1)</sup>	D +0.006	L +0.004	D <sub>2</sub> +0.005	
in.				–
4.5	5.247	0.374	4.993	DX-4500-J2X
4.625	5.372	0.374	5.118	DX-4625-J2X
4.75	5.497	0.374	5.243	DX-4750-J2X
5	5.747	0.374	5.493	DX-5000-J2X
5.5	6.247	0.374	5.993	DX-5500-J2X
5.75	6.497	0.374	6.243	DX-5750-J2X
6	6.747	0.374	6.493	DX-6000-J2X
6.5	7.247	0.374	6.993	DX-6500-J2X
7	7.747	0.374	7.493	DX-7000-J2X
7.25	7.997	0.374	7.743	DX-7250-J2X
8	8.747	0.374	8.493	DX-8000-J2X
8.5	9.247	0.374	8.993	DX-8500-J2X
9	9.747	0.374	9.493	DX-9000-J2X

Other sizes are available on request

<sup>1)</sup> Tolerance is determined by the rod seal

4.5

## 4.6 HW profile

### HW profile data

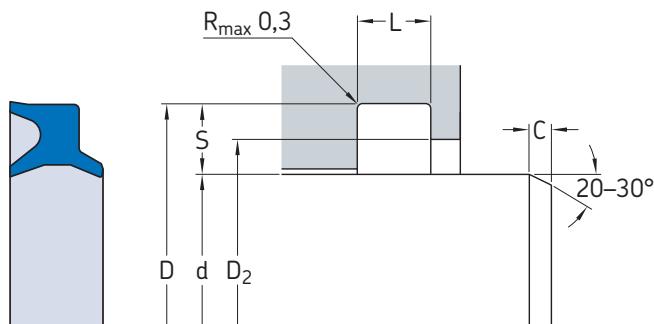


<b>Material code</b>	U-1003 For additional information → page 26
<b>Speed</b>	Up to 0,75 m/s (2.4 ft/s)
<b>Temperature range</b>	-40 to +100 °C (-40 to +210 °F)
<b>Counter-surface</b>	→ page 22

Maximum values of application parameters (e.g. speed, temperature) should not be applied continuously nor simultaneously.

## 4.6 HW profile wiper seals, metric sizes

d 14 – 67 mm

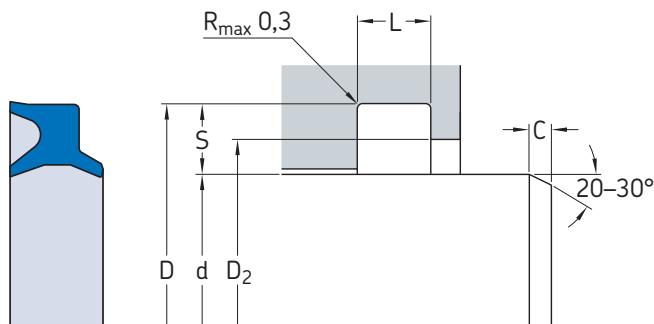


Dimensions						Designation
d <sup>1)</sup>	D H11	L +0,2	D <sub>2</sub> H11	S	C min.	
mm						-
14	22	5	18	4	3,5	HW-14x22x5-J2G
16	24	5	20	4	3,5	HW-16x24x5-J2G
18	26	5	22	4	3,5	HW-18x26x5-J2G
20	28	5	24	4	3,5	HW-20x28x5-J2G
22	30	5	26	4	3,5	HW-22x30x5-J2G
25	33	5	29	4	3,5	HW-25x33x5-J2G
28	36	5	32	4	3,5	HW-28x36x5-J2G
30	38	6	34	4	3,5	HW-30x38x6-J2G
32	40	6	36	4	3,5	HW-32x40x6-J2G
35	43	6	39	4	3,5	HW-35x43x6-J2G
36	44	6	40	4	3,5	HW-36x44x6-J2G
40	48	6	44	4	3,5	HW-40x48x6-J2G
45	53	6	49	4	3,5	HW-45x53x6-J2G
50	58	6	54	4	3,5	HW-50x58x6-J2G
55	63	6	59	4	3,5	HW-55x63x6-J2G
56	64	6	60	4	3,5	HW-56x64x6-J2G
60	68	6	64	4	3,5	HW-60x68x6-J2G
63	71	6	67	4	3,5	HW-63x71x6-J2G
65	73	6	69	4	3,5	HW-65x73x6-J2G
67	75	6	71	4	3,5	HW-67x75x6-J2G

<sup>1)</sup> Tolerance is determined by the rod seal

## 4.6 HW profile wiper seals, metric sizes

d 70 – 140 mm



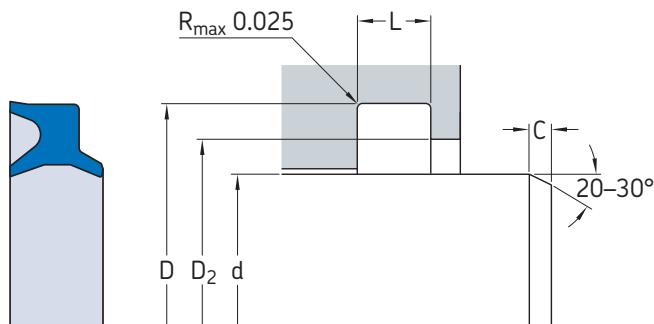
Dimensions	Designation					
d <sup>1)</sup>	D H11	L +0,2	D <sub>2</sub> H11	S	C min.	-
mm						
70	80	7	75	5	3,5	HW-70x80x7-J2G
75	85	7	80	5	3,5	HW-75x85x7-J2G
80	90	7	85	5	3,5	HW-80x90x7-J2G
85	95	7	90	5	3,5	HW-85x95x7-J2G
90	100	7	95	5	3,5	HW-90x100x7-J2G
95	105	7	100	5	3,5	HW-95x105x7-J2G
98	108	7	103	5	3,5	HW-98x108x7-J2G
100	110	7	105	5	3,5	HW-100x110x7-J2G
105	115	7	110	5	3,5	HW-105x115x7-J2G
112	122	7	117	5	3,5	HW-112x122x7-J2G
125	138	8	132	6,5	4,5	HW-125x138x8-J2G
140	153	8	147	6,5	4,5	HW-140x153x8-J2G

Other sizes are available on request

<sup>1)</sup> Tolerance is determined by the rod seal

## 4.6 HW profile wiper seals, inch sizes

d 0.25 – 3.25 in.



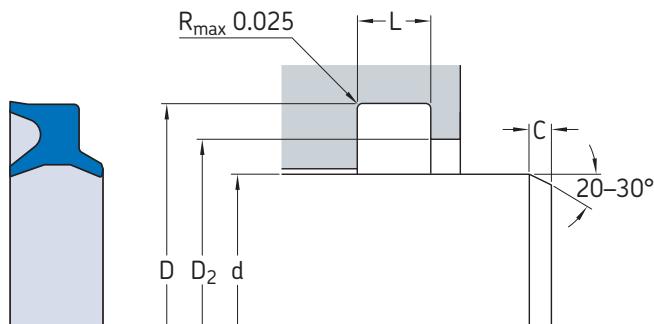
Dimensions					Designation
d <sup>1)</sup>	D +0.003	L +0.015	D <sub>2</sub> +0.003	C min.	
in.					-
<b>0.25</b>	0.552	0.203	0.37	0.187	<b>HW-250-J2G</b>
<b>0.5</b>	0.802	0.203	0.62	0.187	<b>HW-500-J2G</b>
<b>0.625</b>	0.927	0.203	0.745	0.187	<b>HW-625-J2G</b>
<b>0.75</b>	1.052	0.203	0.87	0.187	<b>HW-750-J2G</b>
<b>0.937</b>	1.302	0.218	1.072	0.187	<b>HW-937-J2G</b>
<b>1</b>	1.365	0.218	1.135	0.187	<b>HW-1000-J2G</b>
<b>1.25</b>	1.615	0.218	1.385	0.187	<b>HW-1250-J2G</b>
<b>1.375</b>	1.74	0.218	1.51	0.187	<b>HW-1375-J2G</b>
<b>1.437</b>	1.802	0.218	1.572	0.187	<b>HW-1437-J2G</b>
<b>1.5</b>	1.865	0.218	1.635	0.187	<b>HW-1500-J2G</b>
<b>1.625</b>	1.99	0.218	1.76	0.187	<b>HW-1625-J2G</b>
<b>1.75</b>	2.115	0.218	1.885	0.187	<b>HW-1750-J2G</b>
<b>1.875</b>	2.24	0.218	2.01	0.187	<b>HW-1875-J2G</b>
<b>2</b>	2.365	0.218	2.135	0.187	<b>HW-2000-J2G</b>
<b>2.125</b>	2.49	0.218	2.26	0.187	<b>HW-2125-J2G</b>
<b>2.25</b>	2.745	0.281	2.385	0.25	<b>HW-2250-J2G</b>
<b>2.5</b>	2.995	0.281	2.635	0.25	<b>HW-2500-J2G</b>
<b>2.625</b>	3.12	0.281	2.76	0.25	<b>HW-2625-J2G</b>
<b>3</b>	3.495	0.281	3.135	0.25	<b>HW-3000-J2G</b>
<b>3.25</b>	3.745	0.281	3.385	0.25	<b>HW-3250-J2G</b>

<sup>1)</sup> Tolerance is determined by the rod seal

4.6

## 4.6 HW profile wiper seals, inch sizes

d 3.5 – 8 in.



Dimensions					Designation
d <sup>1)</sup>	D +0.003	L +0.015	D <sub>2</sub> +0.003	C min.	
in.					-
3.5	3.995	0.281	3.635	0.25	HW-3500-J2G
3.75	4.245	0.281	3.885	0.25	HW-3750-J2G
4	4.495	0.281	4.135	0.25	HW-4000-J2G
4.25	4.745	0.281	4.385	0.25	HW-4250-J2G
4.5	4.995	0.281	4.635	0.25	HW-4500-J2G
4.75	5.245	0.281	4.885	0.25	HW-4750-J2G
5	5.495	0.281	5.135	0.25	HW-5000-J2G
5.125	5.62	0.281	5.26	0.25	HW-5125-J2G
5.25	5.745	0.281	5.385	0.25	HW-5250-J2G
7	7.495	0.281	7.135	0.25	HW-7000-J2G
8	8.495	0.281	8.135	0.25	HW-8000-J2G

Other sizes are available on request

<sup>1)</sup> Tolerance is determined by the rod seal

4.6

## Wiper seals

### More wiper seals

#### PTFE wiper seals

SKF wiper seals made of PTFE (→ fig. 12) are intended for applications where there is a demand for low breakaway friction or good chemical resistance. SKF has material for PTFE wiper seals on stock and, therefore, can supply these seals in a wide variety of profiles and different sizes at short notice.

For additional information about PTFE wiper seals, contact SKF.

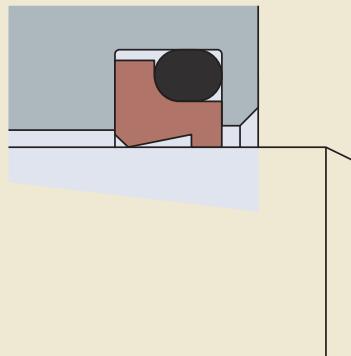


Fig. 12

#### Rod seals used as wiper seals

STD rod seal profiles (→ STD profiles, page 118) can also be used as snap-in wiper seals (→ fig. 13).

For additional information about rod seals used as wiper seals, contact SKF.

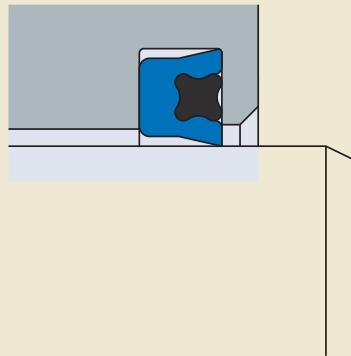


Fig. 13

#### Customized machined seal profiles

SKF can manufacture a wide variety of wiper seal profiles (→ fig. 14) with different materials and customized sizes with its industry-leading SKF SEAL JET production system. SKF can supply these customized machined wiper seals in close partnership with customers from the design phase to serial production

For additional information about customized machined profiles, refer to publication *Customized machined seals – Product range* or contact SKF.

More wiper seals

Fig. 14

SKF SEAL JET profile examples



A01-A



A01-B



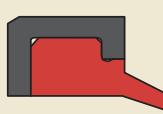
A02-A



A02-B



A02-I



A03-A



A04-A



A04-B



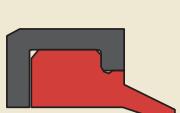
A05-A



A05-B



A05-I



A06-A



A07-A



A08-A



A08-B



A09-A



A10-A



A11-A



A11-I



A12-A



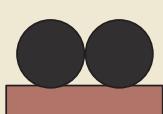
A12-B



A13-A



A25-F



A26-F



A27-F

