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# Scraper WSA



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Single Acting

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With Metal Case

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For open Groove Assembly

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**Material:**  
NBR and Metal

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## ■ Scraper WSA



### Description

The scraper WSA is a mould-vulcanised single-acting elastomer scraper, with integral metal reinforcement for open groove assembly. In conjunction with the scraper oversize, an exact fit is obtained in the housing.

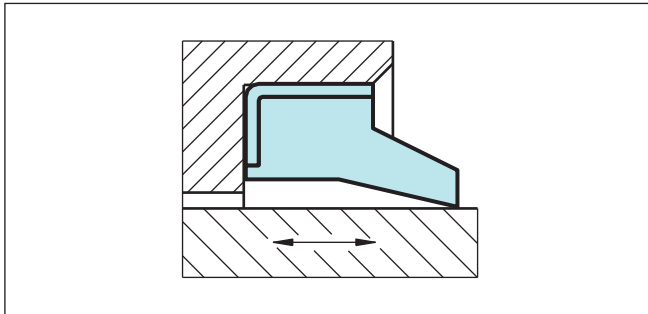


Figure 27 Scraper WSA

### Advantages

- Space-saving construction
- Low cost, economical solution
- Simple, easy-construction groove
- Firm fit in the groove due to metallic press fit

### Application Examples

- Hydraulic cylinders
- Agriculture machinery
- Construction machinery
- Lift trucks
- Mobile hydraulic

### Technical Data

#### Operating conditions

Speed: Up to 1 m/s

Temperature: -30 °C to +110 °C

Media: Mineral oil based hydraulic fluids.  
polyglycol-water emulsions, water-oil 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. Temperature range also dependent on medium.

### Materials

Standard application:

Material: NBR 90 Shore A + Metal

TSS code: N9MN



## ■ Installation Recommendation

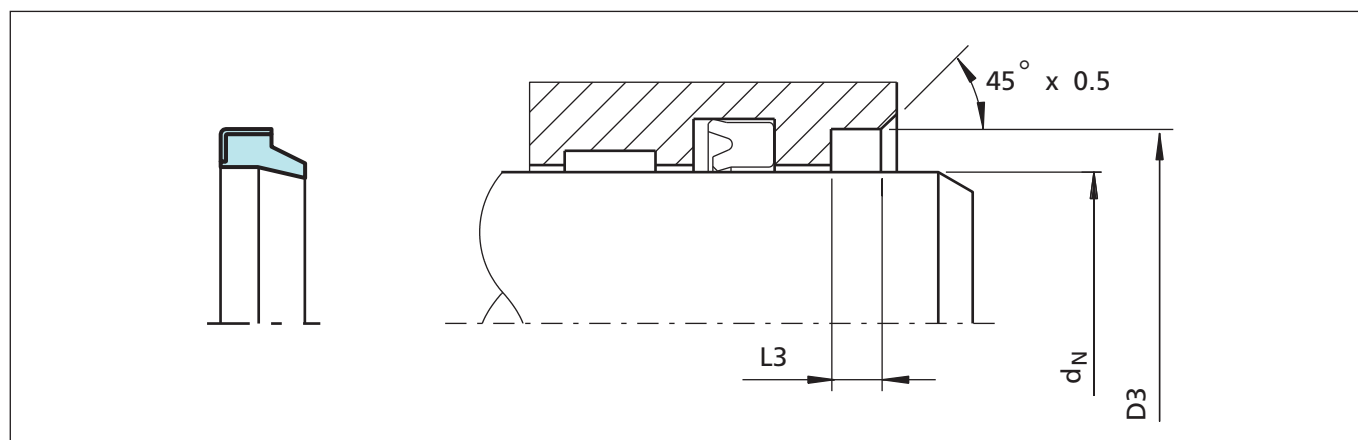


Figure 28 Installation drawing

### Ordering Example

Rod diameter:  $d_N = 35 \text{ mm}$   
 Groove diameter:  $D_3 = 45 \text{ mm}$   
 TSS Part No.: WSA000350

Material set code:  
 TSS: N9MN

TSS Article No.	WSA0	0	0350	-	N9MN
TSS Series No.					
Type (Standard)					
Rod diameter x 10					
Quality Index (see table)					
Material Set-code					

Table XXVII Installation dimensions / TSS part numbers

Rod Diameter	Groove Diameter	Groove Width	TSS Part No.
$d_N \text{ h9}$	$D_3 \text{ H8}$	$L_3 +0.1$	
6.0	13.0	3.0	WSA000060
8.0	15.0	3.0	WSA000080
10.0	16.0	3.0	WSA000100
<b>10.0</b>	<b>18.0</b>	<b>5.0</b>	WSA100100
12.0	18.0	5.0	WSA200120
12.0	20.0	4.0	WSA000120
12.0	22.0	5.0	WSA100120
13.0	18.0	3.0	WSA000130
14.0	20.0	4.0	WSA100140

The sizes in **bold** type comply with ISO 6195. installation groove Type B. Other sizes on request.  
 The listed products are technically equivalent but availability and pricing may vary.



Rod Diameter	Groove Diameter	Groove Width	TSS Part No.
$d_N$ h9	$D_3$ H8	$L_3$ +0.1	
14.0	22.0	3.0	WSA000140
16.0	22.0	4.0	WSA000160
16.0	26.0	5.0	WSA200160
16.0	28.0	5.0	WSA300160
18.0	26.0	5.0	WSA000180
18.0	28.0	5.0	WSA300180
<b>18.0</b>	<b>28.0</b>	<b>7.0</b>	WSA100180
20.0	26.0	4.0	WSA000200
20.0	28.0	3.5	WSA200200
20.0	28.0	5.0	WSA300200
20.0	30.0	4.0	WSA400200
20.0	30.0	5.0	WSA500200
<b>20.0</b>	<b>30.0</b>	<b>7.0</b>	WSA600200
22.0	28.0	5.0	WSA000220
22.0	32.0	5.0	WSA200220
<b>22.0</b>	<b>32.0</b>	<b>7.0</b>	WSA100220
24.0	35.0	5.0	WSA000240
25.0	36.5	5.0	WSA200250
25.0	35.0	5.0	WSA000250
<b>25.0</b>	<b>35.0</b>	<b>7.0</b>	WSA100250
28.0	38.0	5.0	WSA000280
28.0	40.0	7.0	WSA100280
30.0	40.0	5.0	WSA000300
30.0	40.0	7.0	WSA100300
30.0	45.0	5.0	WSA200300
32.0	42.0	5.0	WSA000320
32.0	42.0	7.0	WSA400320
32.0	44.0	4.0	WSA300320
32.0	45.0	4.0	WSA100320
32.0	45.0	7.0	WSA200320
35.0	45.0	7.0	WSA000350
36.0	45.0	7.0	WSA000360
38.0	48.0	7.0	WSA000380
40.0	50.0	5.0	WSA100400
40.0	50.0	5.0	WSA000400
<b>40.0</b>	<b>50.0</b>	<b>7.0</b>	WSA200400

The sizes in **bold** type comply with ISO 6195, installation groove Type B. Other sizes on request.  
The listed products are technically equivalent but availability and pricing may vary.



## Scraper WSA

Rod Diameter	Groove Diameter	Groove Width	TSS Part No.
$d_N$ h9	$D_3$ H8	$L_3$ +0.1	
42.0	52.0	7.0	WSA000420
45.0	55.0	5.0	WSA100450
<b>45.0</b>	<b>55.0</b>	<b>7.0</b>	WSA000450
50.0	56.0	5.0	WSA000500
50.0	60.0	5.0	WSA200500
50.0	60.0	5.0	WSA500500
<b>50.0</b>	<b>60.0</b>	<b>7.0</b>	WSA300500
50.0	65.0	7.0	WSA400500
52.0	62.0	7.0	WSA000520
55.0	63.0	7.0	WSA000550
55.0	65.0	5.0	WSA200550
55.0	65.0	7.0	WSA100550
55.0	70.0	7.0	WSA300550
<b>56.0</b>	<b>66.0</b>	<b>7.0</b>	WSA000560
60.0	70.0	5.0	WSA200600
60.0	70.0	7.0	WSA000600
60.0	74.0	5.0	WSA100600
63.0	75.0	7.0	WSA000630
65.0	75.0	5.0	WSA100650
65.0	75.0	7.0	WSA000650
70.0	80.0	5.0	WSA100700
<b>70.0</b>	<b>80.0</b>	<b>7.0</b>	WSA000700
75.0	83.0	7.0	WSA100750
75.0	85.0	7.0	WSA000750
80.0	88.0	7.0	WSA100800
<b>80.0</b>	<b>90.0</b>	<b>7.0</b>	WSA000800
85.0	95.0	7.0	WSA000850
<b>90.0</b>	<b>100.0</b>	<b>7.0</b>	WSA000900
95.0	105.0	7.0	WSA000950
100.0	110.0	7.0	WSA001000
105.0	115.0	7.0	WSA001050
110.0	120.0	7.0	WSA001100
115.0	125.0	7.0	WSA001150
120.0	130.0	7.0	WSA001200
120.0	135.0	7.0	WSA101200
<b>125.0</b>	<b>140.0</b>	<b>9.0</b>	WSA001250

The sizes in **bold** type comply with ISO 6195, installation groove Type B. Other sizes on request.  
The listed products are technically equivalent but availability and pricing may vary.

## Scraper WSA



Rod Diameter	Groove Diameter	Groove Width	TSS Part No.
$d_N$ h9	$D_3$ H8	$L_3$ +0.1	
130.0	145.0	9.0	WSA001300
135.0	145.0	7.0	WSA001350
<b>140.0</b>	<b>155.0</b>	<b>9.0</b>	WSA001400
140.0	160.0	10.0	WSA101400
150.0	165.0	9.0	WSA001500
<b>160.0</b>	<b>175.0</b>	<b>9.0</b>	WSA001600
170.0	185.0	10.0	WSA001700
175.0	190.0	9.0	WSA001750
180.0	195.0	10.0	WSA001800
200.0	220.0	12.0	WSA002000
220.0	235.0	10.0	WSA002200
270.0	295.0	12.0	WSA002700

The sizes in **bold** type comply with ISO 6195. installation groove Type B. Other sizes on request.  
The listed products are technically equivalent but availability and pricing may vary.



## Scraper WSA

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# Zurcon<sup>®</sup> Scraper SWP



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Single Acting

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Metal Reinforcement

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For open Groove Assembly

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**Material:**  
Zurcon<sup>®</sup> + Metal

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## ■ Scraper SWP



### Description

SWP are polyurethane manufactured lipped wipers with integrated metal reinforcement for open groove assembly. These are typically used in severe applications where there is abrasion due to solid matter on rod surface.

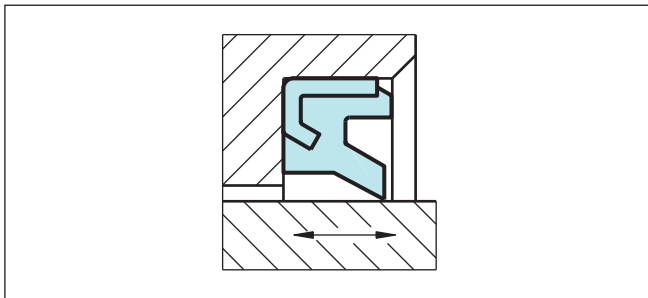


Figure 29 Scraper SWP

### Advantages

- Space-saving construction
- Simple small installation groove
- Firm fit in the groove due to metallic press fit
- At regreasing of drag bearing, the scraper lip opens at low overpressure; old grease can escape
- High wear resistance

### Application Examples

Due to their outstanding wiping capacities SWP scrapers are recommended wherever there are dusty and humid conditions and especially for the following applications:

- Mobile hydraulic machinery
- Construction machinery
- Link pin seals
- Lift trucks
- Truck cargo cranes
- Agriculture machinery

### Technical Data

Operating conditions

Speed: Up to 1 m/s

Temperature: -35 °C to +100 °C

Media: Mineral oil based hydraulic fluids

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. Temperature range also dependent on medium.

### Materials

Standard application

Zurcon® Polyurethane: 92 Shore A

Colour: turquoise

Metal case: non alloyed steel  
DIN 1624

Material Set-Code: Z2022



## ■ Installation Recommendation

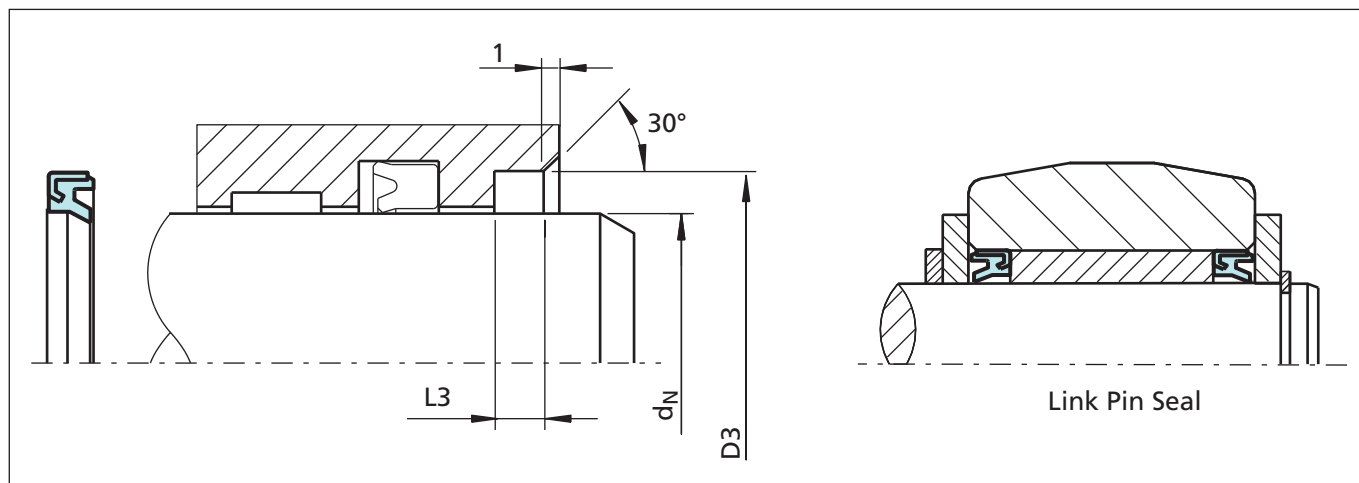


Figure 30 Installation drawing

### Ordering Example

Rod diameter:  $d_N = 40 \text{ mm}$   
 Groove diameter:  $D_3 = 50 \text{ mm}$   
 TSS Part No.: WSP0 0 0400 -  
 Material Set-Code: Z2022 (standard)  
 Polypac ref.: SWP 4050

TSS Article No.	WSP0	0	0400	-	Z2022
TSS Series No.					
Type (Standard)					
Rod diameter x 10					
Quality Index (see table)					
Material Set-code					

Table XXVIII Installation dimensions / TSS part numbers

Rod Diameter	Groove Diameter	Groove Width	TSS Part No.	Description
$d_N \text{ h9}$	$D_3 \text{ H8}$	$L3 +0.1$		
25.0	38.0	7.5	WSP000250	SWP2538
30.0	40.0	4.0	WSP000300	*SWP3040
30.0	43.0	7.5	WSP100300	SWP3043
35.0	45.0	4.0	WSP000350	*SWP3545
35.0	50.0	7.5	WSP100350	SWP3550
36.0	48.0	6.0	WSP000360	SWP3648
38.0	50.0	7.5	WSP000380	SWP3850
40.0	50.0	4.0	WSP000400	*SWP4050
40.0	52.0	6.0	WSP100400	SWP4052

\* Can be used for "Link Pin Seal"



Rod Diameter	Groove Diameter	Groove Width	TSS Part No.	Description
$d_N$ h9	$D_3$ H8	L3 +0.1		
45.0	55.0	3.2	WSP000450	*SWP4555/1
45.0	55.0	4.0	WSP100450	*SWP4555
45.0	60.0	7.5	WSP200450	SWP4560
50.0	60.0	4.0	WSP000500	*SWP5060
50.0	63.0	4.0	WSP100500	*SWP5063
50.0	65.0	7.5	WSP200500	SWP5065
55.0	65.0	3.2	WSP000550	*SWP5565
55.0	68.0	4.0	WSP100550	*SWP5568
55.0	70.0	7.5	WSP200550	SWP5570
56.0	70.0	7.5	WSP000560	SWP5670
60.0	75.0	4.0	WSP000600	*SWP6075/1
60.0	75.0	7.5	WSP100600	SWP6075
63.0	78.0	7.5	WSP000630	SWP6378
65.0	80.0	5.0	WSP000650	*SWP6580/1
65.0	80.0	7.5	WSP100650	SWP6580
70.0	80.0	5.0	WSP000700	*SWP7080
70.0	84.0	8.0	WSP100700	SWP7084
70.0	85.0	4.0	WSP200700	SWP7085/1
70.0	85.0	7.5	WSP300700	SWP7085
71.0	86.0	5.0	WSP000710	*SWP7186
75.0	90.0	7.5	WSP000750	SWP7590
75.0	95.0	10.0	WSP100750	SWP7595
76.5	96.5	10.0	WSP000765	SWP7696
80.0	95.0	5.0	WSP000800	*SWP8095/1
80.0	95.0	7.5	WSP100800	SWP8095
80.0	100.0	10.0	WSP200800	SWP80100
85.0	100.0	4.0	WSP000850	*SWP85100/1
85.0	100.0	10.0	WSP100850	SWP85100
85.0	105.0	10.0	WSP200850	SWP85105
90.0	104.0	8.0	WSP000900	SWP90104
90.0	105.0	6.0	WSP100900	*SWP90105
90.0	110.0	10.0	WSP200900	SWP90110
95.0	115.0	10.0	WSP000950	SWP95115
99.0	115.0	7.5	WSP000990	SWP99115
100.0	115.0	4.0	WSP001000	*SWP100115/2
100.0	115.0	6.5	WSP101000	*SWP100115/1

\* Can be used for "Link Pin Seal"



## Zurcon® Scraper SWP

<b>Rod Diameter</b>	<b>Groove Diameter</b>	<b>Groove Width</b>	<b>TSS Part No.</b>	<b>Description</b>
<b>d<sub>N</sub> h9</b>	<b>D<sub>3</sub> H8</b>	<b>L3 +0.1</b>		
100.0	115.0	7.5	WSP201000	SWP100115
100.0	120.0	10.0	WSP301000	SWP100120
105.0	120.0	7.5	WSP001050	SWP105120
110.0	125.0	4.0	WSP001100	SWP110125/1
110.0	125.0	9.0	WSP101100	SWP110125
110.0	130.0	10.0	WSP201100	SWP110130
115.0	130.0	7.5	WSP001150	SWP115130
115.0	130.0	9.0	WSP101150	SWP115130/1
120.0	140.0	10.0	WSP001200	SWP120140
130.0	145.0	7.5	WSP001300	SWP130145
160.0	175.0	10.0	WSP001600	SWP160175
190.0	210.0	10.0	WSP001900	SWP190210

\* Can be used for "Link Pin Seal"

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# Metal Scraper



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Single Acting

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Metal and Elastomer Scrapers  
Lips

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**Material:**  
NBR, Metal and Brass

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## ■ Metal Scraper



### Description

The metal scraper is a single-acting special scraper with two different scraper lips - a thin metallic lip and an elastomer lip. The two scraper lips are arranged in tandem behind one another in a compact metal housing.

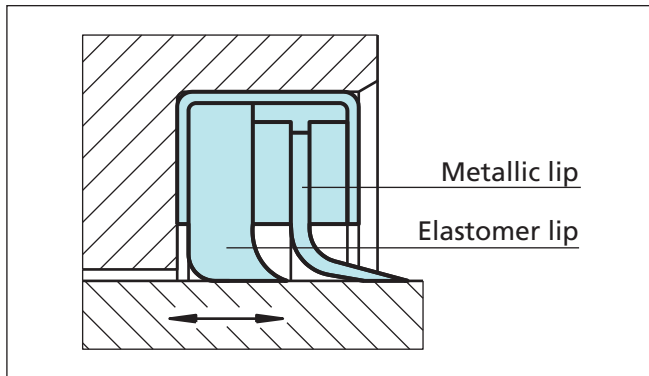


Figure 31 Metal Scraper

The metal scraper lip is designed to remove firmly adhering soiling and ice particles. The secondary lip of elastomer material enhances the overall scraping effect, i.e. fine sand grains, water and similar foreign matter are reliably scraped off. Both scraper lips have a smaller diameter than the nominal diameter of the piston rod, thus ensuring a tight fit of the scraper lips. The metallic lip is guided flexibly in radial direction and can easily follow any possible deflections of the piston rod.

### Advantages

- Very good scraping effect, even with firmly adhering dirt, e.g. mud, ice
- Very abrasion resistant
- Tight fit in the groove due to the metal case
- Easy installation in open grooves

### Technical Data

Speed:	Max. 1 m/s with reciprocating movements
Temperature:	-30 °C to +120 °C
Media:	Mineral oil-based hydraulic fluids, flame retardant hydraulic fluids (HFA, HFB, HFC), water, air, etc.

#### 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. Temperature range also dependent on medium.

### Materials

Inner scraper lip:	Acrylonitrile butadiene rubber, NBR, 70 Shore A Code N7
Metal housing:	Sheet metal 1.0204 (AISI 1008) or similar Code M
Outer scraper lip:	Brass Code S

Other materials for scraper lips and housing available on request. Also available in an imperial (inch) size range.



# Metal Scraper

## Installation Recommendation

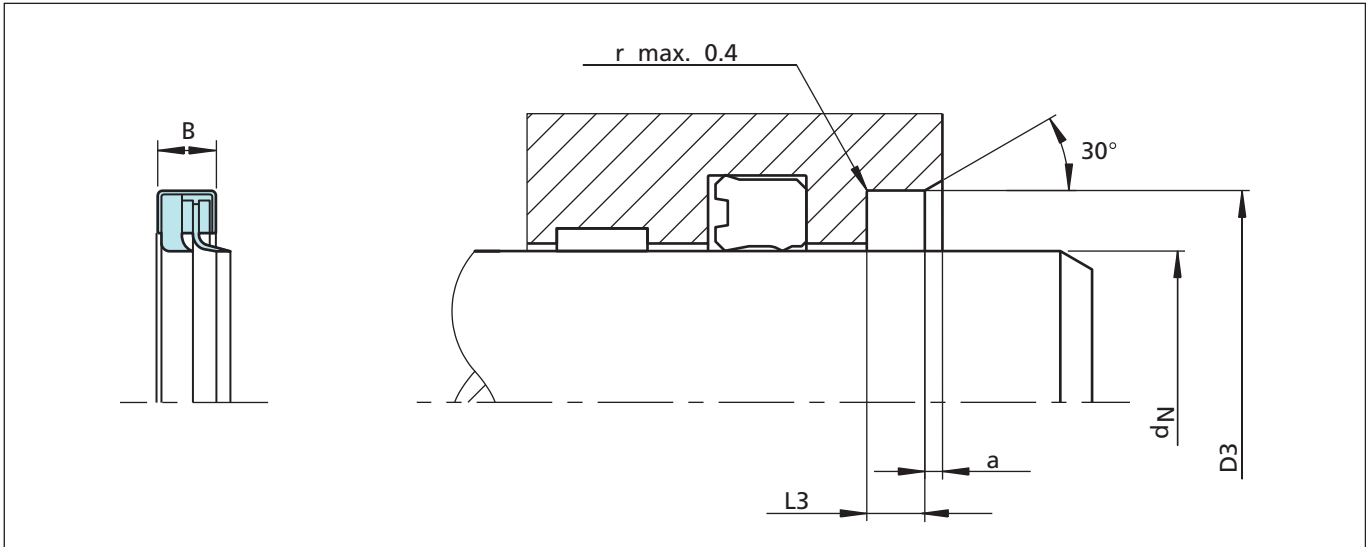


Figure 32 Installation drawing

### Ordering Example

Metal scraper  
 Rod diameter:  $d_N = 80.00$  mm  
 Groove diameter:  $D_3 = 96.00$  mm  
 Groove width:  $L_3 = 8.50$  mm  
 TSS Part No.: WM0100800 (from Table XXIX)  
 Material: Standard materials  
 Material code N7MS

TSS Article No.	WM01	00800	-	N7	M	S
TSS Series No.						
Rod diameter x 10						
Quality Index (standard)						
Material code (inner scraper lip)						
Material code (housing)						
Material code (outer scraper lip)						



**Table XXIX Installation dimensions / TSS part numbers**

Rod Diameter	Groove Diameter	Groove Width	Chamfer	Width	TSS Part No.
$d_N$ f8/h9	$D_3$ H8	$L_3$ +0.2	a min.	B	
<b>12.0</b>	<b>25.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000120</b>
<b>14.0</b>	<b>27.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000140</b>
15.0	28.0	7.0	2.0	6.5	WM0000150
<b>16.0</b>	<b>29.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000160</b>
<b>18.0</b>	<b>31.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000180</b>
<b>20.0</b>	<b>33.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000200</b>
<b>22.0</b>	<b>35.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000220</b>
<b>25.0</b>	<b>38.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000250</b>
<b>28.0</b>	<b>41.0</b>	<b>7.0</b>	<b>2.0</b>	<b>6.5</b>	<b>WM0000280</b>
30.0	43.0	7.5	2.0	7.0	WM0000300
<b>32.0</b>	<b>45.0</b>	<b>7.5</b>	<b>2.0</b>	<b>7.0</b>	<b>WM0000320</b>
35.0	48.0	7.5	2.0	7.0	WM0000350
<b>36.0</b>	<b>49.0</b>	<b>7.5</b>	<b>2.0</b>	<b>7.0</b>	<b>WM0000360</b>
38.0	51.0	7.5	2.0	7.0	WM0000380
<b>40.0</b>	<b>53.0</b>	<b>7.5</b>	<b>2.0</b>	<b>7.0</b>	<b>WM0200400</b>
<b>45.0</b>	<b>58.0</b>	<b>7.5</b>	<b>2.0</b>	<b>7.0</b>	<b>WM0000450</b>
<b>50.0</b>	<b>64.0</b>	<b>8.0</b>	<b>2.0</b>	<b>7.5</b>	<b>WM0000500</b>
55.0	69.0	8.0	2.0	7.5	WM0000550
58.0	72.0	8.0	2.0	7.5	WM0000580
60.0	74.0	8.0	2.0	7.5	WM0000600
<b>63.0</b>	<b>77.0</b>	<b>8.0</b>	<b>2.0</b>	<b>7.5</b>	<b>WM0000630</b>
65.0	79.0	8.0	2.0	7.5	WM0000650
<b>70.0</b>	<b>84.0</b>	<b>8.0</b>	<b>2.0</b>	<b>7.5</b>	<b>WM0000700</b>
75.0	89.0	8.0	2.0	7.5	WM0000750
<b>80.0</b>	<b>96.0</b>	<b>8.5</b>	<b>2.0</b>	<b>8.0</b>	<b>WM0100800</b>
85.0	101.0	8.5	2.0	8.0	WM0000850
<b>90.0</b>	<b>106.0</b>	<b>8.5</b>	<b>2.0</b>	<b>8.0</b>	<b>WM0000900</b>
95.0	111.0	8.5	2.0	8.0	WM0000950
<b>100.0</b>	<b>120.0</b>	<b>9.0</b>	<b>3.0</b>	<b>8.5</b>	<b>WM0001000</b>
<b>110.0</b>	<b>130.0</b>	<b>9.0</b>	<b>3.0</b>	<b>8.5</b>	<b>WM0001100</b>
120.0	140.0	9.0	3.0	8.5	WM0001200
130.0	150.0	9.0	3.0	8.5	WM0001300
<b>140.0</b>	<b>160.0</b>	<b>9.0</b>	<b>3.0</b>	<b>8.5</b>	<b>WM0001400</b>
150.0	170.0	9.0	3.0	8.5	WM0101500
<b>160.0</b>	<b>180.0</b>	<b>9.0</b>	<b>3.0</b>	<b>8.5</b>	<b>WM0001600</b>
170.0	190.0	9.0	3.0	8.5	WM0001700

The rod diameters in **bold** type comply with the recommendations of ISO 3320. Other sizes on request. Inch sizes can be supplied.



## Metal Scraper

Rod Diameter	Groove Diameter	Groove Width	Chamfer	Width	TSS Part No.
$d_N$ f8/h9	$D_3$ H8	$L_3$ +0.2	a min.	B	
<b>180.0</b>	<b>200.0</b>	<b>12.0</b>	<b>3.0</b>	<b>10.0</b>	<b>WM0001800</b>
<b>200.0</b>	<b>230.0</b>	<b>12.0</b>	<b>3.0</b>	<b>10.0</b>	<b>WM0102000</b>
210.0	230.0	12.0	3.0	10.0	WM0002100
<b>220.0</b>	<b>250.0</b>	<b>12.0</b>	<b>3.0</b>	<b>10.0</b>	<b>WM0002200</b>

The rod diameters in **bold** type comply with the recommendations of ISO 3320. Other sizes on request. Inch sizes can be supplied.