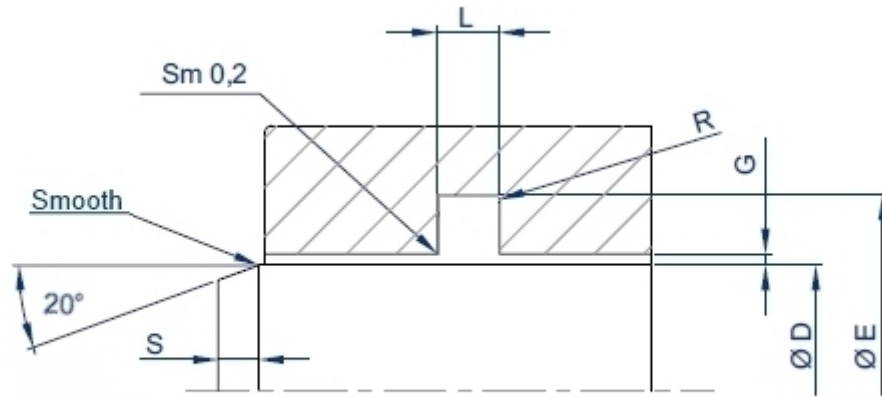


## Rotary shaft seals | Rotary Shaft Seal Rotoslipper



### Rotary Shaft Seal Roto Slipper

Radial shaft seals for slow rotational movements, fast translational movements and combined roto-translational movements.

Working conditions: Max. pressure 800 bar

Temperature range  $-60$  a  $+150^\circ\text{C}$ .

Rotational movements: up to 120 rpm with max peripheral speed of 0.6 m/sec

Translational movements: max 5 m/sec

At max temperature and/or in dry running conditions, pressure and speed should be adequately reduced.

Please contact our technicians for evaluating working conditions and the thermal analysis of the project.

### High quality Parker O-Rings only.

**HD Slippers Srl supplies only high quality Parker O-Rings within its own Rotoslipper rotary Seal kits.**



[Homepage](#)  
[Rotary Shaft](#)  
[Seals](#)



## SEAT

Housing class	D shaft		E groove diameter	L groove width	R	S min	Bar 50	G*				In closed groove if D>=
	standard groove	special groove						max. radial gap				
								100	200	400	800	
		f7	H9	H12								
K1	6 - 24,9	3 - 100	D + 4.9	2.2	0.4	1.2	0.2	0.2	0.15	0.1	0.05	16
K2	25 - 59,9	8 - 250	D + 7,5	3.2	0.6	2.2	0.35	0.3	0.25	0.15	0.07	20
K3	60 - 132,9	10 - 450	D + 11.0	4.2	0.8	2.6	0.5	0.45	0.25	0.15	0.07	50
K4	133 - 329,9	15 - 650	D + 15,5	6.3	1	5.6	0.6	0.45	0.25	0.15	0.1	100
K5	330 - 654,9	120 - 1100	D + 21.0	8.1	1.5	8.2	0.8	0.5	0.3	0.15	0.1	150
K6	655 - 1100	120 - 1100	D + 24,5	8.1	1.5	8.2	0.8	0.5	0.3	0.15	0.1	180
K7	655 - 1100		D + 28.0	9.5	1.5	9.5	0.9	0.6	0.4	0.15	0.1	150

G\*=G1+G2+G3  
 G1 = Max. initial clearance  
 G2 = Clearance by elastic deformation of the components under pressure  
 G3 = Clearance due to the foreseen wear of the guiding elements

### Coding example

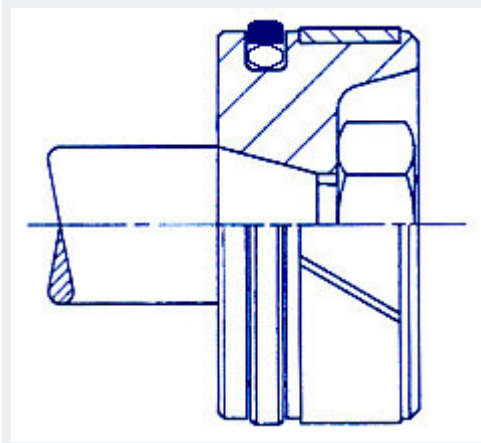
profile code NCSR  
 rod 100  
 housing class K3  
 materials: Neuflon 031 O-Ring NBR

**Rotoslipper NCSR 100 K3 N-031 NBR**

## ASSEMBLY

### SLIPPER COMPOSITE SEALS ASSEMBLING INSTRUCTIONS

#### ASSEMBLY ON PISTON IN CLOSED GROOVE AND IN OPEN GROOVE

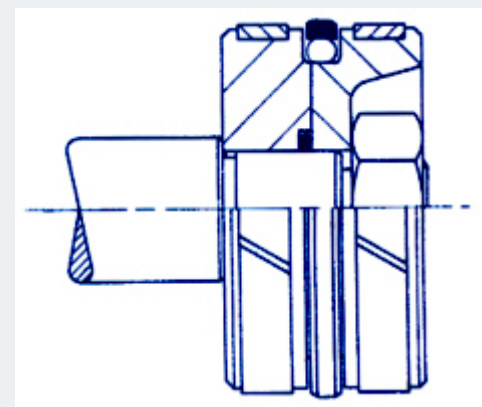


Assembly in closed groove can be carried out manually, however the use of the appropriate equipment guarantees the integrity of the slipper and time-saving insertion.

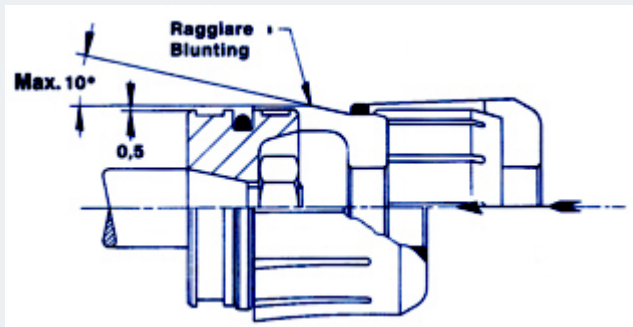
Assembly in open groove is suggested for slippers exceeding the dimensions shown in dimensional table.

Correctly carried out introduction blunting and the lubrication of the surfaces make assembly easier.

For an easier assembling in closed groove the preheating of the Slipper in oil or water bath at 90-100°C is suggested.



#### INSERTION AND RECALIBRATION EQUIPMENT FOR INSTALLATION IN CLOSED GROOVES ON THE PISTON



The expander cone brings the Slipper to the diameter of the piston, or to the edge of the groove when other existing grooves must be passed over.

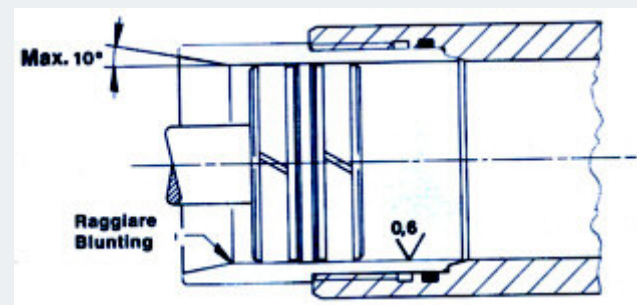
The thruster expands sector by sector, or more simply, in single longitudinal cutting.

Both the cone and thruster can be made in acetal resin (POM), polyester (PBTF) or polyamide (PA6)

The prolonged extended permanence of the Slipper during installation could determine a permanent increase in diameter; therefore fast installation is advised.

Recalibration of the slipper may be opportune using a sleeve before insertion of the piston in the cylinder.

The sleeve also allows the passing over of grooves and threads.

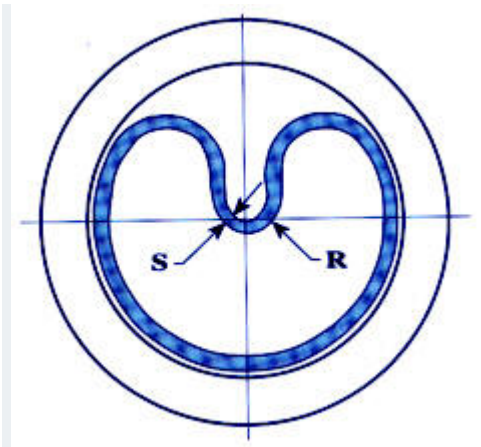


#### INSTALLATION ON THE CYLYNDER IN CLOSED GROOVE

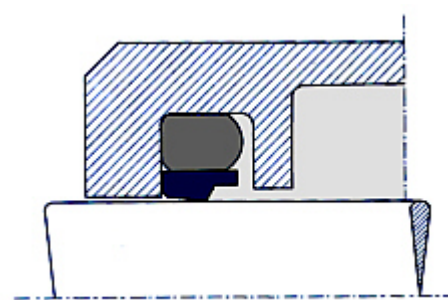
The Slipper seal can be introduced in the closed groove imposing a reniform deformation.

The radius **R** should never be little then 3 times **S**

Open groove



installation is advised for rods exceeding the diameter shown in dimensional table.



The mono-directional R type Slipper is installed using this method of positioning the seal-front towards the pressure.



## FINISHES

SURFACE FINISH ACCORDING WITH FLUID		
application	max Ra $\mu\text{m}$ dynamic surface	max Ra $\mu\text{m}$ static surface
CRYOGENICS	0,1	0,2
FREON HELIUM HYDROGEN	0,2	0,3
AIR NITROGEN ARGON METHANE FUELS	0.2	0.4
WATER OIL	0.3 - 04	0.6
ROTARY SEALS		
<b>Shaft surface</b> Ra 0.2 - 0.3 micron max. Rz 1.0 - 2.5 micron max. R max. < 4 micron	<b>Shaft hardness</b> 55 HRC min. for pressure up to 5 bar 60 HRC min. for pressure > di 5 bar 60 HRC for speed > 4m/sec	<b>Surface treating deep</b> 0.3 mm min.



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## AVAILABILITY

**To check the availability:**

- choose profile and compound from the drop-down menu
- input the desired housing class
- input the desired diameter

Once obtained the availability, a request for quotation can be sent.



## MATERIALS

Click compound's code to download the .PDF data sheet. Login required.

HD Slippers code	Composition	Color	Approvals	$\Delta T$ °C	Description
<a href="#">N-009</a>	Ptfe-oxides	blue	FDA	-268 +260	All pourpose on soft surfaces
<a href="#">N-095</a>	Tfm	white		-268 +260	Low creep, better strength.
<a href="#">N-031</a>	Ptfe-bronze	green-blue		-268 +260	High wear resistance, hidraulic seals
<a href="#">N-032</a>	Ptfe-carbon	black	NORSOK	-268 +260	High wear resistance, pneumatic and hydraulic seals
<a href="#">N-197</a>	Ptfe-carbographite	black		-268 +260	High wear resistance, hydraulic and pneumatic seals
<a href="#">N-043</a>	Ptfe-graphite	black		-268 +260	High wear resistance, low friction coefficient.
<a href="#">N-060</a>	Ptfe-glass fibre	blue	FDA	-268 +260	All pourpose on hard surfaces
<a href="#">N-067</a>	Ptfe-glass fibre	white	FDA NORSOK	-268 +260	High wear and creep resistance
<a href="#">N-033</a>	Ptfe-glass fibre MoS2	gray	FDA	-268 +260	Fit for hard surfaces
<a href="#">N-103</a>	Ptfe-Carbon fibre	black		-268 +260	Fit for hard surfaces
<a href="#">N-102</a>	Ptfe-Liquid crystal polymer	beige	FDA - EU	-268 +260	Food & Pharma, fit for soft surfaces
<a href="#">N-088</a>	Ptfe-polyimide	yellow		-268 +260	Fit for soft surfaces
<a href="#">N-074</a>	PEHMW	white	FDA	-140 +80	High wear and extrusion resistance
<a href="#">N-155</a>	PVDF	white	FDA	-30 +140	High modulus
<a href="#">P95-A252</a>	Polyurethane	blue	FDA	-50 +105	Extrusion and wear withstanding, low friction coefficient
<a href="#">P95-VI251</a>	Polyurethane	violet	FDA	-30 +115	CIP (clean in place) fluids compatible
<a href="#">P95-R198</a>	Polyurethane	red		-30 +125	Extrusion and wear withstanding, low friction coefficient, high temperatures
<a href="#">P95-AR255</a>	Polyurethane	orange		-30 +135	Extrusion and wear withstanding, low friction coefficient, higher temperatures
<a href="#">P95-G253</a>	Polyurethane MoS	gray		-30 +105	Extrusion and wear withstanding, lower friction coefficient

### CHOOSING Neuflon-ptfe compound ACCORDING WITH FLUID AND SURFACE

#### SURFACES

Steel HEC>=30-45  
Temp. Mart. Inox Steel  
Cast Iron HRB<=200  
Steel HRC>=45  
Cast Iron HRB>200

Galvanic or chemical  
surfacing HV>=700  
Chromium Bronze

Bronze  
Brass

Treated Aluminium

Aust. Inox Steel  
Glass

#### FLUIDS

#### NEUFLON-ptfe compounds (standard in bold)

Hydraulic oil  
Transmission oil  
Fire resistant syntetic  
hydraulic oil

**N-031**  
N-032 N-060 P95-A112

**N-031**  
N-032 N-060 P95-A112

**N-009**  
N-043 N-032 P95-A112

**N-032** N-074  
P95-A112

**N-009**  
N-032 N-074 P95-A112

Water and oil/water  
emulsions

**N-032**  
N-060 N-074

**N-032**  
N-060 N-074

**N-009**  
N-043 N-074

**N-032**  
N-074

**N-009**  
N-032 N-074

Drugs and food

**N-074**  
N-102 N-043 N-060 N-095  
P95-B113

**N-009**  
N-074 P95-B113

**N-102**  
N-009 P95-B113

**N-009**  
N-074 P95-B113

**N-009**  
N-074 P95-B113

Air

**N-032**

**N-032**

**N-032**

**N-032**

**N-032**



	N-031 N-043 N-074 P95-A112	N-043 P95-A112	N-009 N-043 N-074 P95-A112	N-074 P95-A112	N-009 N-043 N-074 P95-A112
Steam	<b>N-032</b> N-043	<b>N-032</b>	<b>N-009</b> N-032 N-043		<b>N-032</b> N-009 N-043
Acids and Bases	<b>N-032</b> N-074	<b>N-032</b> N-043 N-074			<b>N-009</b> N-032 N-043 N-074

### CHOOSING Neuflon-ptfe compound ACCORDING WITH FLUID AND SURFACE

FLUIDS	SURFACES			
	Steel HEC>=30-45 Temp. Mart. Inox Steel Cast Iron HRB<=200 Steel HRC>=45 Cast Iron HRB>200	Galvanic or chemical surfacing HV>=700 Chromium Bronze	Treated Aluminium	Aust. Inox Steel Glass
	<b>NEUFLON-ptfe compounds (standard in bold)</b>			
Hydraulic oil Transmission oil Fire resistant syntetic hydraulic oil	<b>N-031</b> N-032 N-060 N-077 P95-G114	<b>N-031</b> N-032 N-060 N-077 P95-G114	<b>N-032</b> N-074 P95-G114	<b>N-009</b> N-032 N-074 P95-G114
Water and oil/water emulsions	<b>N-032</b> N-060 N-077 N-074	<b>N-032</b> N-060 N-077 N-074	<b>N-032</b> N-074	<b>N-009</b> N-032 N-074
Drugs and food	<b>N-102</b> N-043 N-060 N-074 N-088 P95-G114	<b>N-009</b> N-074 P95-G114	<b>N-009</b> N-074 P95-G114	<b>N-009</b> N-074 P95-G114
Air	<b>N-032</b> N-031 N-043 N-074 P95-G114	<b>N-032</b> N-043 P95-G114	<b>N-032</b> N-074 P95-G114	<b>N-032</b> N-009 N-043 N-074 P95-G114
Steam	<b>N-032</b> N-043	<b>N-032</b>		<b>N-032</b> N-009 N-043
Acids and Bases	<b>N-032</b> N-074	<b>N-032</b> N-043 N-074		<b>N-009</b> N-032 N-043 N-074

### ELASTOMER ACCORDING WITH FLUID

FLUIDS	ELASTOMERS
HYDRAULIC OIL - TRANSMISSION OIL	NBR
FIRE RESISTANT SYNTETIC HYDRAULIC OIL	EPDM
WATER AND WATER/OIL EMULSIONS	NBR
FOOD AND DRUG	MVQ
AIR	NBR
STEAM	EPDM - FFKM
ACIDS AND BASES	FKM - FFKM