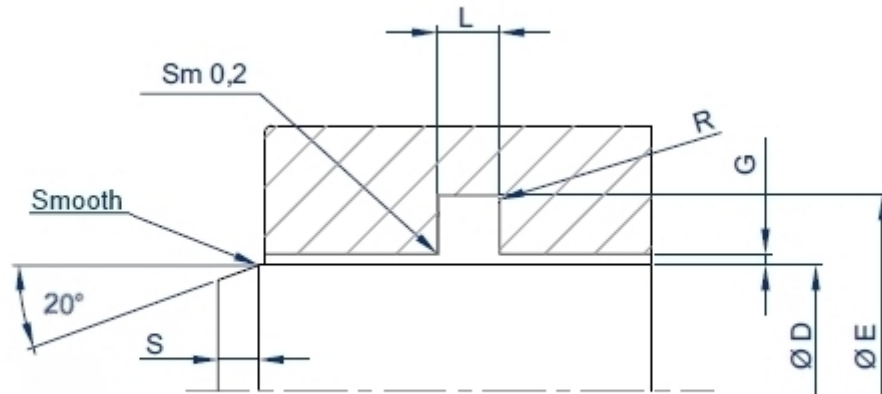


## Rotary shaft seals | Rotary Shaft Seal Rotoslipper



### 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°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  | G*              |      |      |      | In closed groove if D>= |
|---------------|-----------------|----------------|-------------------|----------------|-----|-------|------|-----------------|------|------|------|-------------------------|
|               | standard groove | special groove |                   |                |     |       |      | max. radial gap |      |      |      |                         |
|               |                 |                |                   |                |     |       |      | 100             | 200  | 400  | 800  |                         |
|               |                 | f7             | H9                | H12            |     |       | 50   | 100             | 200  | 400  | 800  |                         |
| 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

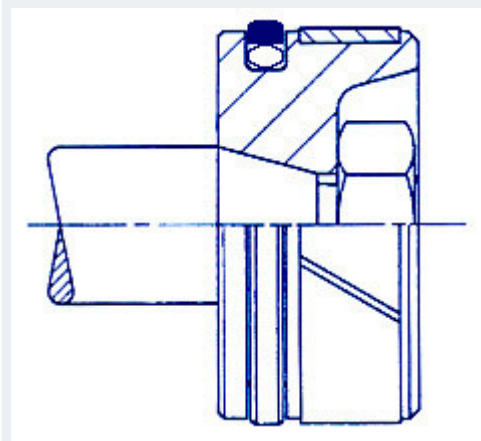
profile code NCSR  
 rod 100  
 housing class K3  
 materials: Neuflon 031 O-Ring NBR

**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.

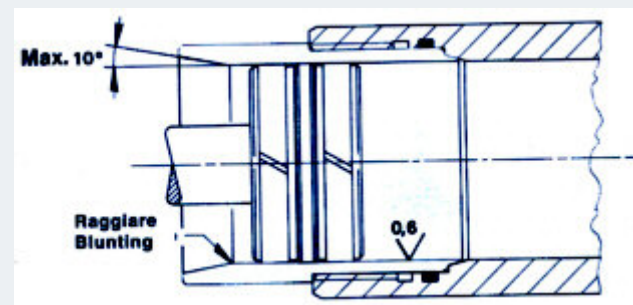
The thruster expands sector by sector, or more simply, in single longitudinal cutting.

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

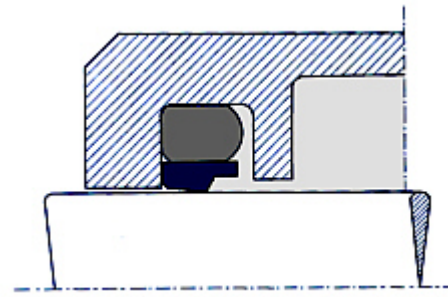
The Slipper seal can be introduced in the closed groove imposing a reniform deformation.

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 $\mu\text{m}$<br>dynamic surface   | max Ra $\mu\text{m}$<br>static surface      |
| CRYOGENICS  | 0,1   | 0,2   |
| FREON<br>HELIUM<br>HYDROGEN   | 0,2   | 0,3   |
| AIR<br>NITROGEN<br>ARGON<br>METHANE<br>FUELS  | 0.2   | 0.4   |
| WATER<br>OIL  | 0.3 - 04  | 0.6   |
| ROTARY SEALS  |   |   |
| <b>Shaft surface</b><br>Ra 0.2 - 0.3 micron max.<br>Rz 1.0 - 2.5 micron max.<br>R max. < 4 micron | <b>Shaft hardness</b><br>55 HRC min. for pressure up to 5 bar<br>60 HRC min. for pressure > di 5 bar<br>60 HRC for speed > 4m/sec | <b>Surface treating deep</b><br>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     | ΔT °C     | Description  |
|---------------------------|-----------------------------|------------|---------------|-----------|--|
| <a href="#">N-009</a>     | Ptfe-oxides                 | blue       |               | -268 +260 | All pourpose on soft surfaces  |
| <a href="#">N-095</a>     | Tfm                         | white      | FDA           | -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      |               | -268 +260 | High wear resistance, pneumatic and hydraulic seals                            |
| <a href="#">N-197</a>     | Ptfe-carbographite          | black      | NORSOK        | -268 +260 | High wear resistance, hydraulic and pneumatic seals                            |
| <a href="#">N-043</a>     | Ptfe-graphite               | black      | FDA           | -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<br>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><br>N-043      | <b>N-032</b>                | <b>N-009</b><br>N-032 N-043 |                | <b>N-032</b><br>N-009 N-043       |
| Acids and Bases | <b>N-032</b><br>N-074      | <b>N-032</b><br>N-043 N-074 |                             |                | <b>N-009</b><br>N-032 N-043 N-074 |

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

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