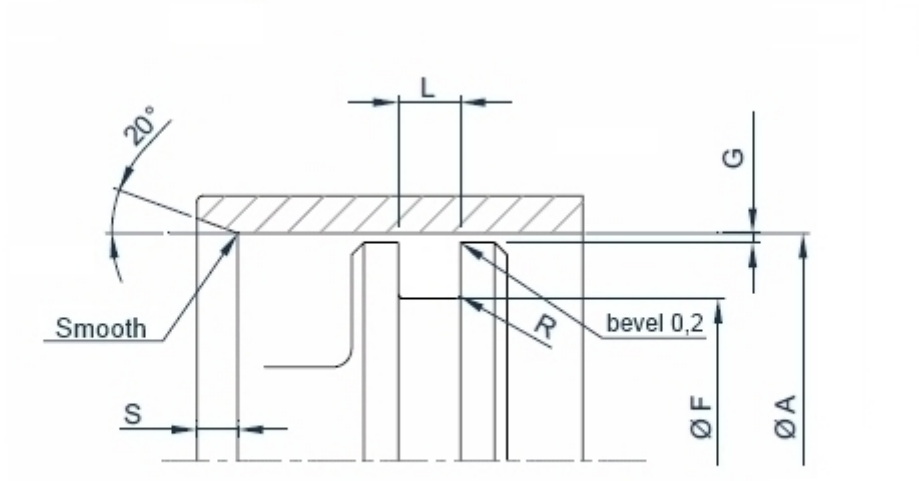


## Slipper ptfе Composite seals |Piston Slipper POK



Slipper composite seals for the most demanding working conditions and the most extensive clearance. Resizing is needed if installed in closed groove.



## SEAT

| Housing class | A<br>cylinder bore range |           | F<br>groove diameter | L<br>groove width | R   | S<br>min | G*<br>max. radial gap      |      |      |      |      |
|---------------|--------------------------|-----------|----------------------|-------------------|-----|----------|----------------------------|------|------|------|------|
|               | suggested                | available |                      |                   |     |          | pressione di esercizio bar |      |      |      |      |
|               |                          |           |                      |                   |     |          | H8                         | h9   | H12  | 50   | 100  |
| P1            | 50-70,9                  | 50-100    | A- 15                | 10                | 0,4 | 7,5      | 0,65                       | 0,6  | 0,5  | 0,4  | 0,1  |
| P2            | 80-149,9                 | 80-250    | A- 20                | 10                | 0,4 | 7,5      | 0,7                        | 0,6  | 0,5  | 0,4  | 0,2  |
| P3            | 150-244,9                | 150-450   | A- 25                | 12,5              | 0,4 | 10       | 0,8                        | 0,75 | 0,65 | 0,5  | 0,2  |
| P4            | 245-454,9                | 200-650   | A- 30                | 15                | 0,8 | 12       | 0,8                        | 0,75 | 0,65 | 0,5  | 0,2  |
| P5            | 455-759,9                | 400-1200  | A- 35                | 17,5              | 1,2 | 12       | 0,8                        | 0,75 | 0,65 | 0,5  | 0,2  |
| P6            | 760-1200                 | 500-1200  | A- 40                | 20                | 1,2 | 15       | 0,9                        | 0,8  | 0,7  | 0,55 | 0,25 |

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 POK  
 bore 100  
 housing class P3  
 materials: Neuflon 031 Ring NBR

**Slipper POK - 100 - P3 - N-031 - NBR**



## MATERIALS

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

| HD Slippers code          | Composition                       | Color      | Approvals                   | ΔT °C     | Description  |
|---------------------------|-----------------------------------|------------|-----------------------------|-----------|--|
| <a href="#">N-020</a>     | Virgin PTFE                       | white      | <b>FDA</b><br><b>NORSOK</b> | -268 +260 | All purpose, low friction coefficient, extrusion withstanding.                 |
| <a href="#">N-009</a>     | Ptfe-oxides                       | blue       | <b>FDA</b>                  | -268 +260 | All purpose on soft surfaces   |
| <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-059</a>     | Ptfe-carbographite                | black      |                             | -268 +260 | High wear resistance, hydraulic and pneumatic seals, hard surfaces             |
| <a href="#">N-197</a>     | Ptfe-carbographite                | black      | <b>NORSOK</b>               | -268 +260 | High wear resistance, hydraulic and pneumatic seals                            |
| <a href="#">N-043</a>     | Ptfe-graphite                     | black      | <b>FDA</b>                  | -268 +260 | High wear resistance, low friction coefficient.                                |
| <a href="#">N-103</a>     | Ptfe-carbon fibre                 | black      | <b>FDA</b>                  | -268 +260 | High wear resistance, low friction coefficient, hard surfaces.                 |
| <a href="#">N-077</a>     | Ptfe-glass fibre-MoS <sub>2</sub> | gray       |                             | -268 +260 | Of general use, in lubricated applications, rotary seals                       |
| <a href="#">N-060</a>     | Ptfe-glass fibre                  | blue       | <b>FDA</b>                  | -268 +260 | All purpose on hard surfaces   |
| <a href="#">N-067</a>     | Ptfe-glass fibre                  | white      | <b>FDA</b><br><b>NORSOK</b> | -268 +260 | High wear and creep resistance   |
| <a href="#">N-102</a>     | Ptfe-Liquid crystal polymer       | beige      | <b>FDA - EU</b>             | -268 +260 | Food & Pharma, soft surfaces   |
| <a href="#">N-088</a>     | Ptfe-poliimide                    | yellow     |                             | -268 +260 | High wear resistance. Soft surfaces  |
| <a href="#">N-074</a>     | PEHMW                             | white      | <b>FDA</b>                  | -140 +80  | High wear and extrusion resistance   |
| <a href="#">P95-A252</a>  | Polyurethane                      | blue       | <b>FDA</b>                  | -50 +105  | Extrusion and wear withstanding, low friction coefficient                      |
| <a href="#">P95-VI251</a> | Polyurethane                      | violet     | <b>FDA</b>                  | -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

#### NEUFロン-ptfe compounds (standard in bold)

Hydraulic oil  
Transmission oil  
Fire resistant syntetic  
hydraulic oil

**N-031**  
N-032 N-060 N-077 P95-A112

**N-031**  
N-032 N-060 N-077 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

**N-032**

**N-032**

**N-009**

**N-032**

**N-009**



|                 |   |                                |   |                                |   |
|-----------------|---|--------------------------------|---|--------------------------------|---|
| emulsions       | N-060 N-077 N-074   | N-060 N-077 N-074              | N-043 N-074                                   | N-074                          | N-032 N-074                                   |
| Drugs and food  | <b>N-009</b><br>N-102 N-020 N-043 N-060 N-074 N-088<br>P95-B113 | <b>N-009</b><br>N-074 P95-B113 | <b>N-102</b><br>N-009 P95-B113                | <b>N-009</b><br>N-074 P95-B113 | <b>N-009</b><br>N-074 P95-B113                |
| Air             | <b>N-032</b><br>N-031 N-043 N-074 P95-A112                      | <b>N-032</b><br>N-043 P95-A112 | <b>N-032</b><br>N-009 N-043 N-074<br>P95-A112 | <b>N-032</b><br>N-074 P95-A112 | <b>N-032</b><br>N-009 N-043 N-074<br>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-059 N-074                                     | <b>N-032</b><br>N-043 N-074    |   |                                | <b>N-009</b><br>N-032 N-043 N-074             |

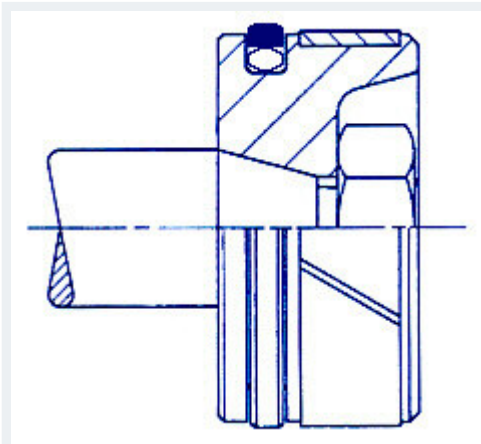
#### ELASTOMER ACCORDING WITH FLUID

| FLUID                                 | ELASTOMER   |
|---------------------------------------|-------------|
| 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  |

## ASSEMBLY

### SLIPPER COMPOSITE SEALS ASSEMBLING INSTRUCTIONS

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

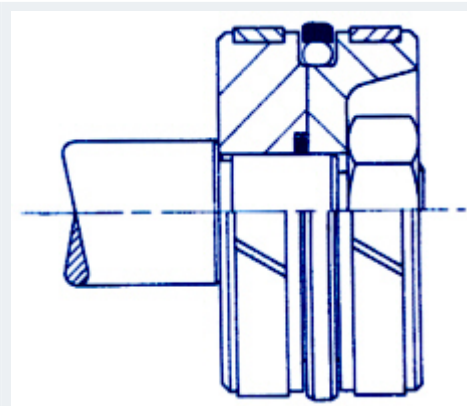


Assembly in closed groove can be carried out manually, however the use of the appropriate equipment guarantees the integrity of the slipper and time-saving insertion.

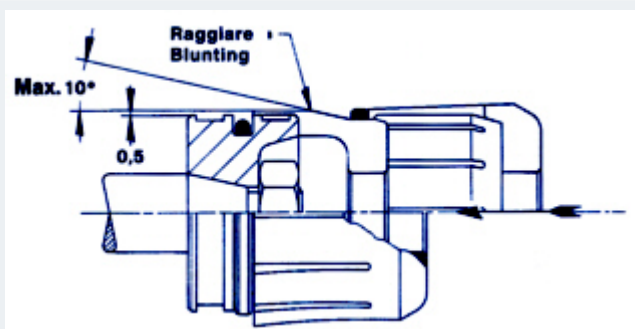
Assembly in open groove is suggested for slippers exceeding the dimensions shown in dimensional table.

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.

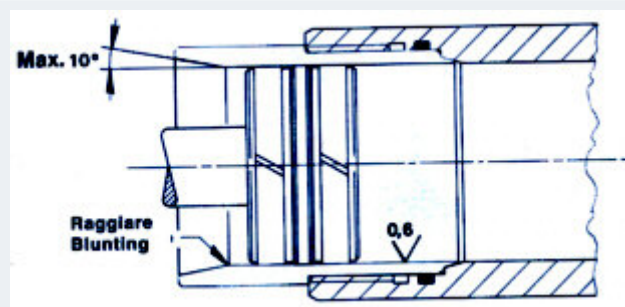
The thruster expands sector by sector, or more simply, in single longitudinal cutting.

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.

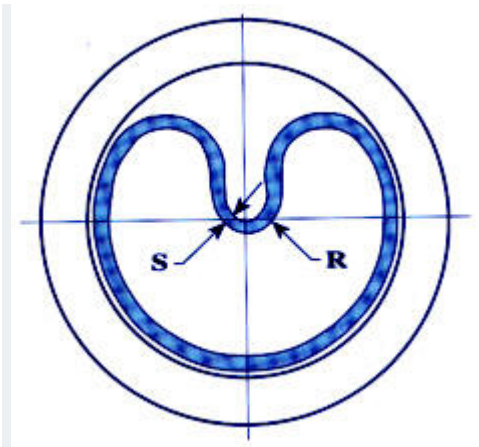


#### INSTALLATION ON THE CYLYNDER IN CLOSED GROOVE

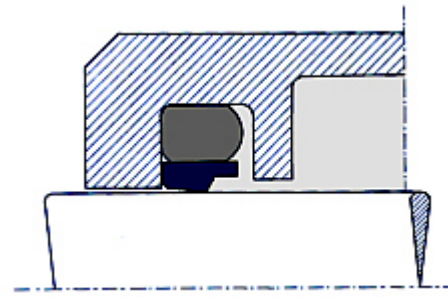
The Slipper seal can be introduced in the closed groove imposing a reniform deformation.

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. |