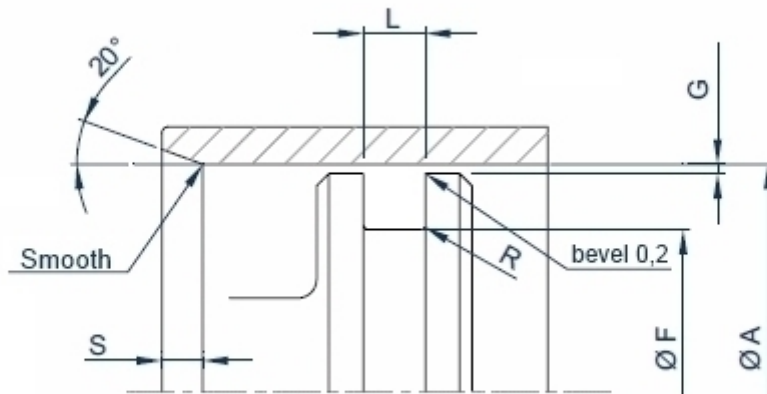




Slipper ptfе Composite seals |Piston Slipper N class single-acting



Slipper single acting composite piston seals N series

Slipper single acting composite piston seals N series for the most demanding conditions of use and the most extensive clearance. Resizing is needed if installed in closed groove



SEAT

| Class | A cylinder bore range | | F groove diameter | L groove width | R | S min | G* | | | | closede groove if >= | |
|-------|--------------------------|-----------|----------------------|-------------------|-----|----------|-----------------|-----|-----|-----|----------------------------|-----|
| | suggested | available | | | | | max. radial gap | | | | | |
| | | H8 | h9 | H12 | | Bar 50 | 100 | 200 | 400 | 800 | | |
| N1 | 8-16,9 | 8-100 | A- 4,9 | 2,2 | 0,4 | 1,2 | 0,5 | 0,4 | 0,3 | 0,2 | 0,1 | 10 |
| N2 | 17-26,9 | 15-250 | A- 7,3 | 3,2 | 0,6 | 2,2 | 0,8 | 0,6 | 0,4 | 0,3 | 0,1 | 15 |
| N3 | 27-59,9 | 20-450 | A- 10,7 | 4,2 | 0,8 | 2,6 | 1,2 | 0,7 | 0,4 | 0,3 | 0,1 | 25 |
| N4 | 60-199,9 | 30-650 | A- 15,1 | 6,3 | 1 | 5,6 | 1,4 | 0,7 | 0,5 | 0,4 | 0,2 | 40 |
| N5 | 200-255,9 | 130-1100 | A- 20,5 | 8,1 | 1,5 | 8,2 | 1,5 | 0,8 | 0,5 | 0,4 | 0,2 | 130 |
| N6 | 256-669,9 | 130-1100 | A- 24,0 | 8,1 | 1,5 | 8,2 | 1,5 | 0,8 | 0,6 | 0,4 | 0,2 | 200 |
| N7 | 670-1100 | - | A- 27,3 | 9,5 | 1,5 | 12 | 1,5 | 1 | 0,7 | 0,5 | 0,2 | 450 |

$G^* = G1 + G2 + G3$
 G1 = Max. initial clearence
 G2 = Clearence by elastic deformation of the components under pressure
 G3 = Clearence due to the forseen wear of the guiding elements

Coding example

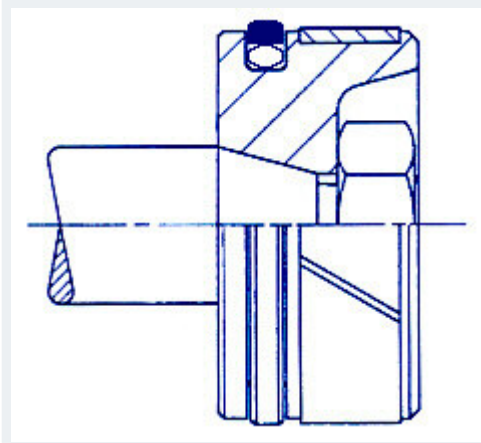
profile code NPR
 bore 100
 housing class N3
 materials: Neuflon 031 O-Ring NBR

Slipper NPR 100 N3 N-031 NBR

ASSEMBLY

SLIPPER COMPOSITE SEALS ASSEMBLING INSTRUCTIONS

ASSEMBLY ON PISTON IN CLOSED GROOVE AND IN OPEN GROOVE

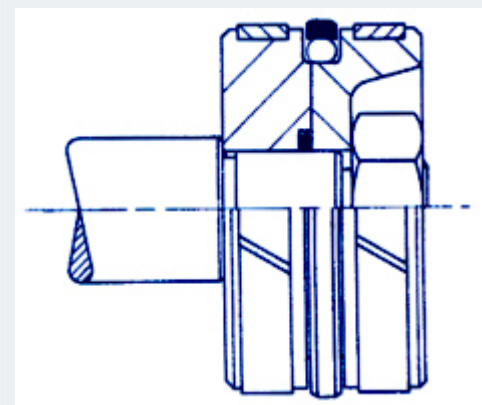


Assembly in closed groove can be carried out manually, however the use of the appropriate equipment guarantees the integrity of the slipper and time-saving insertion.

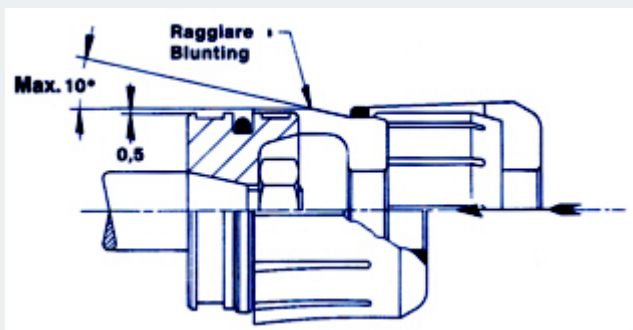
Assembly in open groove is suggested for slippers exceeding the dimensions shown in dimensional table.

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.

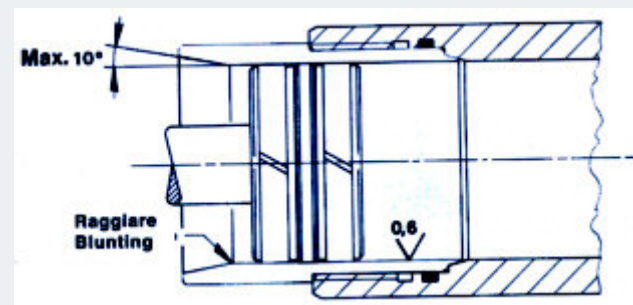
The thruster expands sector by sector, or more simply, in single longitudinal cutting.

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.

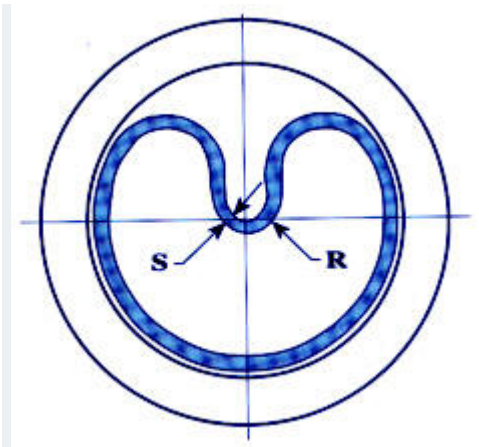


INSTALLATION ON THE CYLYNDER IN CLOSED GROOVE

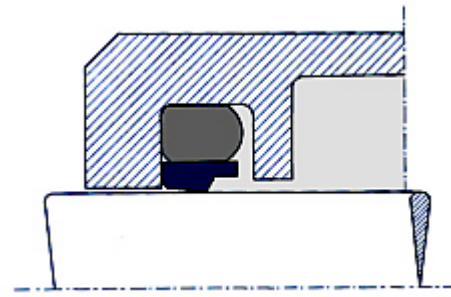
The Slipper seal can be introduced in the closed groove imposing a reniform deformation.

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 μm dynamic surface | max Ra μm 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 | | |
| Shaft surface Ra 0.2 - 0.3 micron max. Rz 1.0 - 2.5 micron max. R max. < 4 micron | Shaft hardness 55 HRC min. for pressure up to 5 bar 60 HRC min. for pressure > di 5 bar 60 HRC for speed > 4m/sec | Surface treating deep 0.3 mm min. |



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. Registration required.

| HD Slippers code | Composition | Color | Approvals | ΔT °C | Description |
|---------------------------|-----------------------------------|------------|-----------------------------|-----------|--|
| N-020 | Virgin PTFE | white | FDA NORSOK | -268 +260 | All purpose, low friction coefficient, extrusion withstanding. |
| N-009 | Ptfe-oxides | blue | FDA | -268 +260 | All purpose on soft surfaces |
| N-031 | Ptfe-bronze | green-blue | | -268 +260 | High wear resistance, hidraulic seals |
| N-032 | Ptfe-carbon | black | | -268 +260 | High wear resistance, pneumatic and hydraulic seals |
| N-059 | Ptfe-carbographite | black | | -268 +260 | High wear resistance, hydraulic and pneumatic seals, hard surfaces |
| N-197 | Ptfe-carbographite | black | NORSOK | -268 +260 | High wear resistance, hydraulic and pneumatic seals |
| N-043 | Ptfe-graphite | black | FDA | -268 +260 | High wear resistance, low friction coefficient. |
| N-103 | Ptfe-carbon fibre | black | FDA | -268 +260 | High wear resistance, low friction coefficient, hard surfaces. |
| N-077 | Ptfe-glass fibre-MoS ₂ | gray | | -268 +260 | Of general use, in lubricated applications, rotary seals |
| N-060 | Ptfe-glass fibre | blue | FDA | -268 +260 | All purpose on hard surfaces |
| N-067 | Ptfe-glass fibre | white | FDA NORSOK | -268 +260 | High wear and creep resistance |
| N-102 | Ptfe-Liquid crystal polymer | beige | FDA - EU | -268 +260 | Food & Pharma, soft surfaces |
| N-088 | Ptfe-poliimide | yellow | | -268 +260 | High wear resistance. Soft surfaces |
| N-074 | PEHMW | white | FDA | -140 +80 | High wear and extrusion resistance |
| P95-A252 | Polyurethane | blue | FDA | -50 +105 | Extrusion and wear withstanding, low friction coefficient |
| P95-VI251 | Polyurethane | violet | FDA | -30 +115 | CIP (clean in place) fluids compatible |
| P95-R198 | Polyurethane | red | | -30 +125 | Extrusion and wear withstanding, low friction coefficient, high temperatures |
| P95-AR255 | Polyurethane | orange | | -30 +135 | Extrusion and wear withstanding, low friction coefficient, higher temperatures |
| P95-G253 | 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 | N-009 N-102 N-020 N-043 N-060 N-074 N-088 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-031 N-043 N-074 P95-A112 | N-032 N-043 P95-A112 | N-032 N-009 N-043 N-074 P95-A112 | N-032 N-074 P95-A112 | N-032 N-009 N-043 N-074 P95-A112 |
| Steam | N-032 N-043 | N-032 | N-009 N-032 N-043 | | N-032 N-009 N-043 |
| Acids and Bases | N-032 N-059 N-074 | N-032 N-043 N-074 | | | N-009 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 |