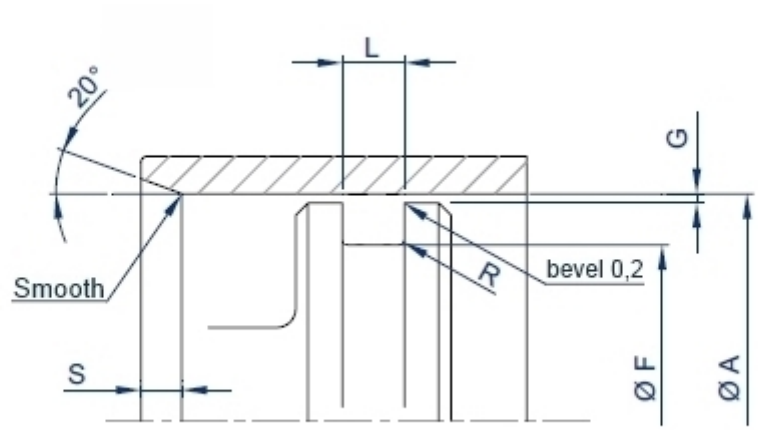
Slipper ptfe Composite seals |Piston Slipper NPQ2



Slipper composite piston seals NPQ2 with little radial encumbrance in oil/gas applications.

SEAT

Housing class	A cylinder bore range	F groove diameter	L groove width	R	S min.	G* max. radial gap			
	H8	h9	H12			Bar 50	100	200	400
Q1	40 - 79.9	A- 10	6,3	0.4	1,2	0,7	0,4	0,3	0,2
Q2	80 - 132.9	A- 13	8,3	0,6	2,2	0,9	0,4	0,3	0,2
Q3	133 - 462.9	A- 18	12.3	1,0	2,6	1	0,4	0,3	0,2
Q4	463 - 700	A- 31	16.3	1.3	5.6	1	0,5	0,4	0,25

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

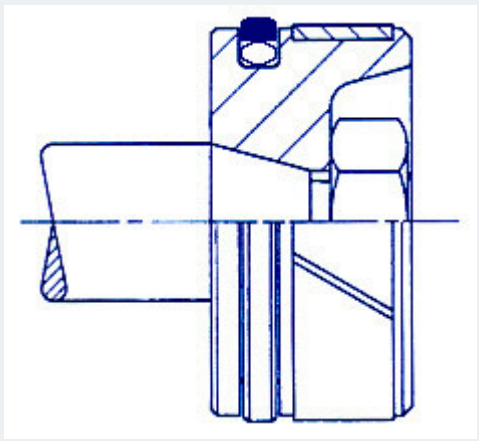
profile code NPQ2
bore 100
housing class Q2
materials: Neuflon 031 O-Ring NBR

Slipper NPQ2 - 100 - Q2 - N-031 - NBR

ASSEMBLY

SLIPPER COMPOSITE SEALS ASSEMBLING INSTRUCTIONS

ASSEMBLY ON PISTON IN CLOSED GROOVE AND IN OPEN GROOVE

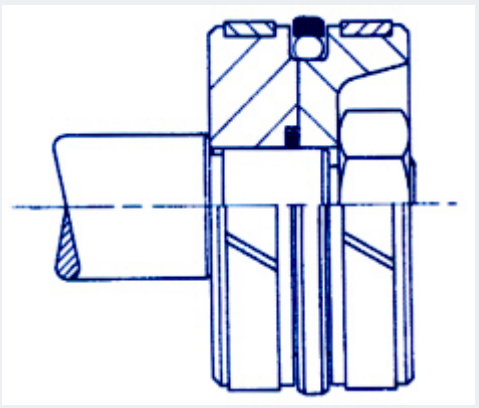


Assembly in closed groove can be carried out manually, however the use of the appropriate equipment guarantees the integrity of the slipper and time-saving insertion.

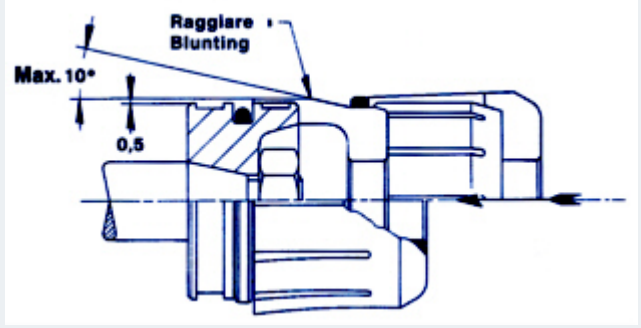
Assembly in open groove is suggested for slippers exceeding the dimensions shown in dimensional table.

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.

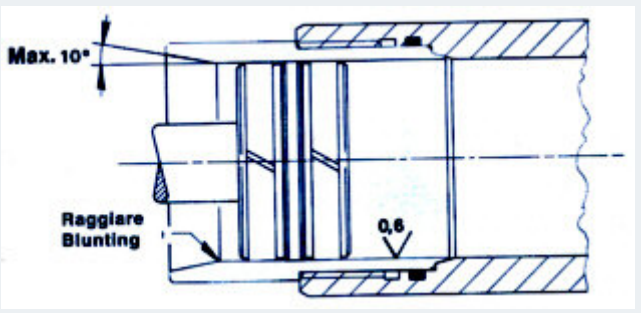
The thruster expands sector by sector, or more simply, in single logitudinal cutting.

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.

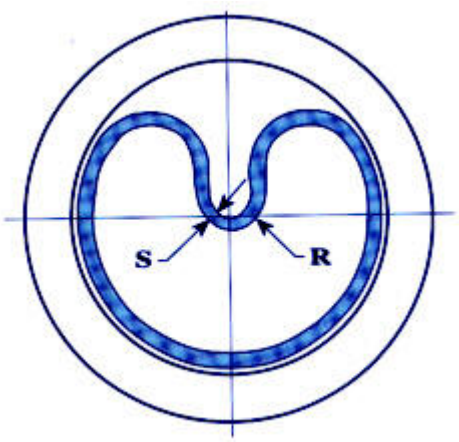


INSTALLATION ON THE CYLYNDER IN CLOSED GROOVE

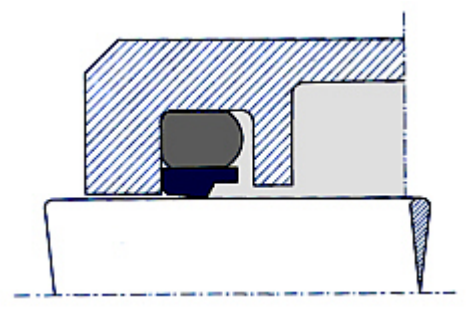
The Slipper seal can be introduced in the closed groove imposing a reniform deformation.

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	**Shaft hardness**	**Surface treating deep**
Ra 0.2 - 0.3 micron max. Rz 1.0 - 2.5 micron max. R max. < 4 micron	55 HRC min. for pressure up to 5 bar 60 HRC min. for pressure > di 5 bar 60 HRC for speed > 4m/sec	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 pourpose, low friction coefficient, extrusion withstanding.
N-009	Ptfe-oxides	blue	FDA	-268 +260	All pourpose 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 pourpose 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-poliimmide	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

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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 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