Merkel Complete Piston TDUOP M

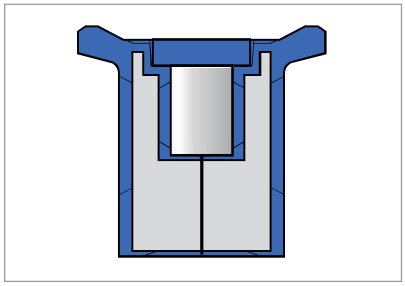


Fig. 1 Merkel Complete Piston TDUOP M

Product description

The compact, short, Merkel Complete Piston TDUOP M consists of an aluminium body, a guide strip, a magnet and a sealing element with a special sealing edge on the sealing lip.

Product advantages

- Broad range of uses, only one complete piston for round cylinders and ISO cylinders
- Long service life
- Low start friction due to optimised sealing lip geometry
- Constant good sealing behaviour over a wide pressure range (to 1,2 MPa)
- Running properties without tendency to tilt due to a guide strip optimised for the application
- Aluminium body brings weight saving and permits high energy absorption
- Easily fastened to the piston rod
- Integrated static seal
- Supplied suitable for storage and fitting in deep-drawn inserts
- Simple provisioning
- Integrated magnet for a position check using a sensor.

Application

Pneumatic cylinder with request.

Material

Material	Code	Hardness
Acrylonitrile-butadiene rubber	72 NBR 708	72 Shore A

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1,2 MPa (12 bar)
Temperature T	–20 ... +80 °C
Running speed v	≤1 m/s

Design notes

Surfaces

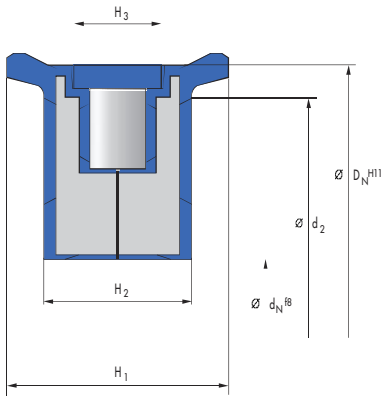
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
The Merkel Complete Piston TDUOP M is fitted to shouldered end of the piston rod and fastened with washers and a nut.
The threaded fitting is to be protected against loosening.

Article list



D_N	d_N	H_1	H_2	d_2	H_3	Material	Article No.	
32	8	18	13	24	10	72 NBR 708	436297	●
40	10	22	13	32	10	72 NBR 708	420487	●
50	10	20	11	42	8	72 NBR 708	420488	●
50	16	20	13	45	8	72 NBR 708	438283	●
63	16	25	14	54	10	72 NBR 708	420489	●
80	16	27	14	70	10	72 NBR 708	420491	●
80	20	27	14	75	10	72 NBR 708	438285	●
100	20	27	16	90	10	72 NBR 708	420494	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Complete Piston TDUOP with Venting Passages

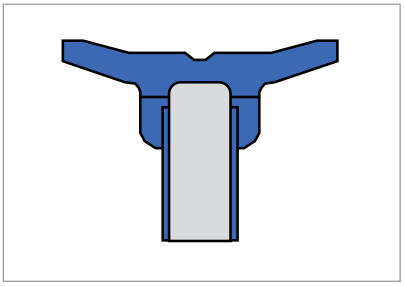


Fig. 1 Merkel Complete Piston TDUOP with Venting Passages

Product description

- Merkel complete piston with steel base plate and vulcanised sealing lips with special pneumatic sealing edges
- Ready to fit complete piston to which pressure can be applied on both sides with integrated guide
- Easily fastened to the piston rod without additional sealing components
- The design with radial venting passages on the front sides facilitates reliable pressure application at the end of the stroke.

Product advantages

- Long service life
- Low start friction due to optimised sealing lip geometry and supported by additional venting passages
- Constant good sealing behaviour over a wide pressure range (to 1,2 MPa)
- Easily fastened to the piston rod
- Simple provisioning.

Application

Pneumatic cylinder without request.

Material

Material	Code	Hardness	Base plate
NBR rubber	72 NBR 708	72 Shore A	mild steel according to DIN 1624

FKM on enquiry.

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1,2 MPa (12 bar)
Temperature T	−20 ... +100 °C
Running speed v	≤1 m/s

Design notes

Surfaces

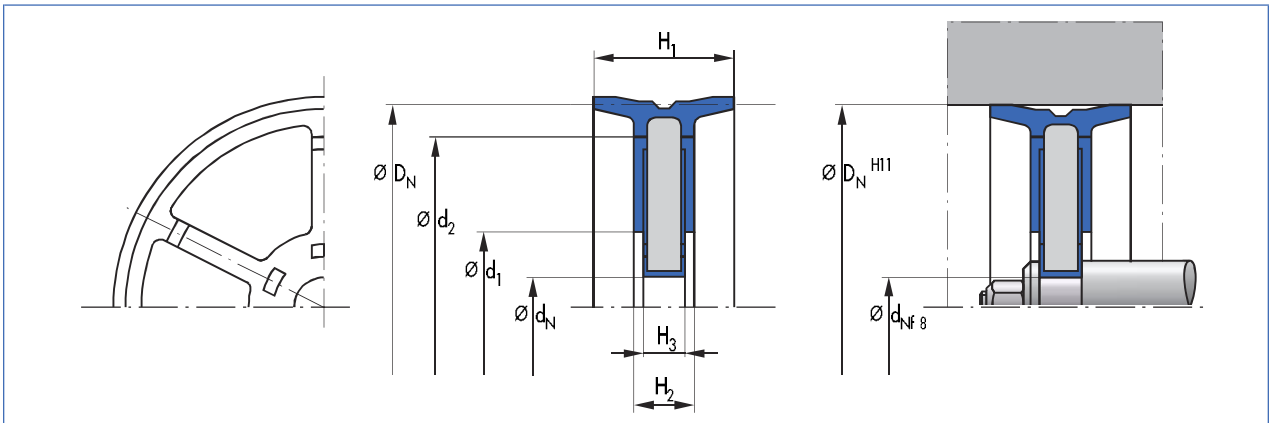
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
The Merkel Complete Piston TDUOP with Venting Passages is fitted to shouldered end of the piston rod and fastened with washers and a nut. The threaded fitting is to be protected against loosening.

Article list



D_N	d_N	d_1	d_2	H_1	H_2	H_3	Material	Article No.	
25	8	15,5	20	12	6	4	72 NBR 708	406238	●
32	8	14	24,5	15	6	4	72 NBR 708	406239	●
40	10	20	32	18	7	5	72 NBR 708	406241	●
50	10	20	42	18	7	5	72 NBR 708	406245	●
63	14	32	54	22	9	6	72 NBR 708	406246	●
63	16	43	54	22	9	6	72 NBR 708	406248	●
80	14	32	70	25	9	6	72 NBR 708	406250	●
80	16	55	70	25	9	6	72 NBR 708	406266	●
90	12	64	82	24	10	7	72 NBR 708	406275	●
100	18	45	90	25	12	9	72 NBR 708	406277	●
100	20	45	90	25	12	9	72 NBR 708	406279	●
125	18	45	114	30	12	9	72 NBR 708	406280	●
160	24	55	149	30	14	11	72 NBR 708	406282	●
200	24	55	190	30	14	11	72 NBR 708	406288	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Complete Piston TDUOP

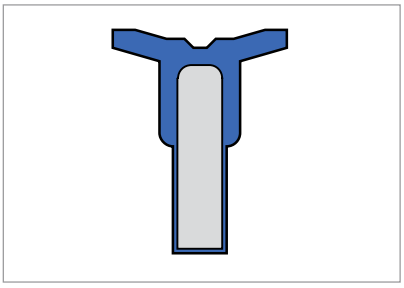


Fig. 1 Merkel Complete Piston TDUOP

Product description

Merkel complete piston with steel base plate and vulcanised sealing lips with special pneumatic sealing edges.

Product advantages

- Ready to fit complete piston to which pressure can be applied on both sides with integrated guide
- Easily fastened to the piston rod without additional sealing components
- Long service life
- Constant good sealing behaviour over a wide pressure range (to 1,2 MPa)
- Simple provisioning.

Application

Pneumatic cylinder without request.

Material

Material	Code	Hardness	Base plate
NBR rubber	72 NBR 708	72 Shore A	mild steel according to DIN 1624

FKM on enquiry.

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1,2 MPa (12 bar)
Temperature T	−20 ... +100 °C
Running speed v	≤1 m/s

Design notes

Surfaces

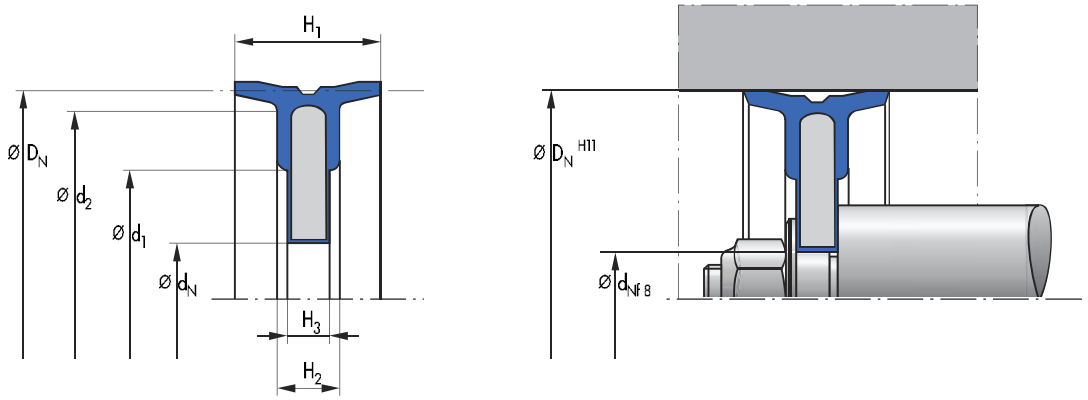
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 70%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
The Merkel Complete Piston TDUOP is fitted to shouldered end of the piston rod and fastened with washers and a nut.
The threaded fitting is to be protected against loosening.

Article list



D_N	d_N	d_1	d_2	H_1	H_2	H_3	Material	Article No.	
25	8	15,6	21,4	12	4,6	3,8	72 NBR 708	112175	●
32	8	20	27,8	15	6,2	3,8	72 NBR 708	112176	●
35	8	25	30,8	15	4	4,8	72 NBR 708	125373	●
40	10	25	35	18	7,4	4,8	72 NBR 708	112177	●
50	10	37	45	18	7,4	4,8	72 NBR 708	112178	●
63	12	43	57,4	22	9	5,8	72 NBR 708	112179	●
70	12	50	64,4	22	9	5,8	72 NBR 708	112180	●
80	16	55	73,5	25	9	5,8	72 NBR 708	112239	●
100	16	75	93,5	25	9	6,8	72 NBR 708	112181	●
125	20	95	118	30	13	9,6	72 NBR 708	112182	●
140	20	110	132,5	30	14,2	10,8	72 NBR 708	112183	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Complete Piston Pneuko M 310

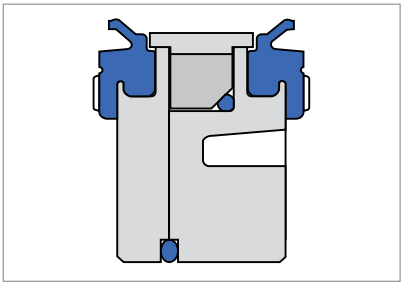


Fig. 1 Merkel Complete Piston Pneuko M 310

Product description

The compact, short, Merkel complete pneumatic piston Pneuko M consists of an aluminium body, guide strip, a magnet and the sealing body with a special sealing edge on the sealing lip and integrated buffers made of very wear resistant polyurethane.

Product advantages

- Long service life
- Low start friction due to optimised sealing lip geometry and additional venting passages
- Constant good sealing behaviour over a wide pressure range (to 1,2 MPa)
- Running properties without tendency to tilt due to a guide strip optimised for the application
- Aluminium body brings weight saving and permits high energy absorption
- Easily fastened to the piston rod
- Integrated static seal
- Supplied suitable for storage and fitting in deep-drawn inserts
- Simple provisioning
- Integrated magnet for a position check using a sensor.

Application

Broad range of uses, only one piston for short stroke cylinders, compact cylinders, round cylinders and ISO cylinders.

Material

Material	Code	Hardness
High performance polyurethane	80 AU 21000	80 Shore A

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1,2 MPa (12 bar)
Temperature T	−25 ... +80 °C
Running speed v	≤1 m/s

Design notes

Surfaces

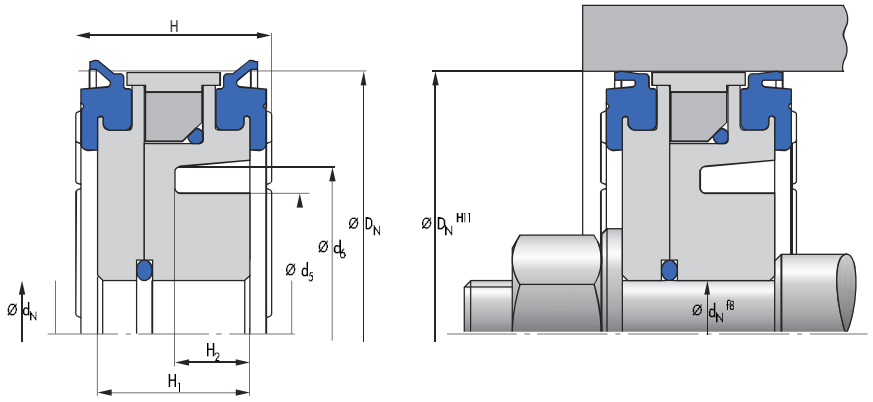
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 70%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
The Merkel Complete Piston Pneuko M 310 is fitted to shouldered end of the piston rod and fastened with washers and a nut. The threaded fitting is to be protected against loosening.

Article list



D_N	d_N	d_5	d_6	H	H_1	H_2	Material	Article No.	
32	8,1	17	20	14	10,6	5,2	80 AU 21000	525994	●
40	8,1	21,4	25,4	15	11,6	5,7	80 AU 21000	523464	●
50	10,1	27,3	32,8	15,5	12,1	5	80 AU 21000	523546	●
63	10,1	28	33	19	15,79	4,9	80 AU 21000	525337	●
80	12,1	29	34,4	21,5	17,5	8,5	80 AU 21000	526210	●
100	17,1	39,6	46,8	25,5	20	8,85	80 AU 21000	526499	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Complete Piston Pneuko M 210

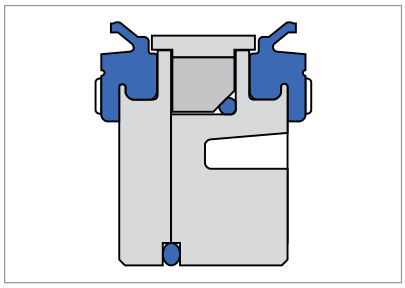


Fig. 1 Merkel Complete Piston Pneuko M 210

Product description

The compact, short, Merkel complete pneumatic piston Pneuko M consists of an aluminium body, guide strip, a magnet and the sealing body with a special sealing edge on the sealing lip and integrated buffers made of very wear resistant fluoro elastomer FKM for special applications.

Product advantages

- Long service life
- Low start friction due to optimised sealing lip geometry and additional venting passages
- Constant good sealing behaviour over a wide pressure range (to 1,2 MPa)
- Running properties without tendency to tilt due to a guide strip optimised for the application
- Aluminium body brings weight saving and permits high energy absorption
- Easily fastened to the piston rod
- Integrated static seal
- Supplied suitable for storage and fitting in deep-drawn inserts
- Simple provisioning
- Integrated magnet for a position check using a sensor.

Application

Broad range of uses, only one piston for short stroke cylinders, compact cylinders, round cylinders and ISO cylinders.

Material

Material	Code	Hardness
Fluoro elastomer	75 FKM 181327	70 Shore A

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1,2 MPa (12 bar)
Temperature T	−5 ... +150 °C
Running speed v	≤1 m/s

Design notes

Surfaces

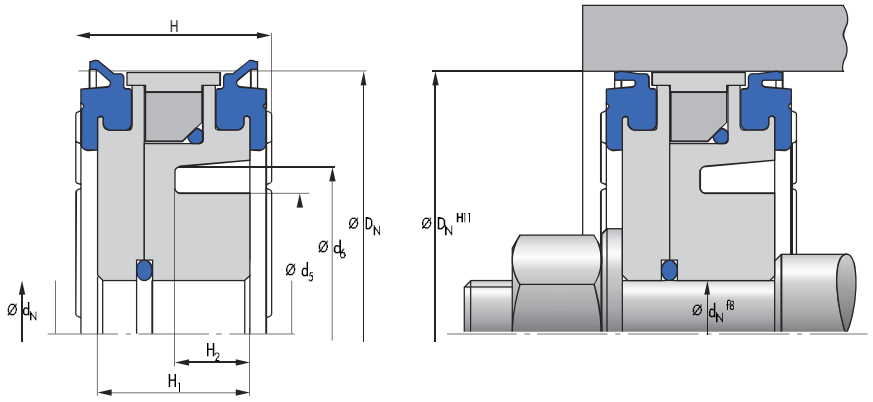
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 70%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
The Merkel Complete Piston Pneuko M 210 is fitted to shouldered end of the piston rod and fastened with washers and a nut. The threaded fitting is to be protected against loosening.

Article list



D_N	d_N	d_5	d_6	H	H_1	H_2	Material	Article No.	
32	8,1	17	20	14	10,6	5,2	75 FKM 181327	527394	●
40	8,1	21,4	25,4	15	11,6	5,7	75 FKM 181327	526800	●
50	10,1	27,3	32,8	15,5	12,1	5	75 FKM 181327	526824	●
63	10,1	28	33	19	15,79	4,9	75 FKM 181327	527506	●
80	12,1	29	34,4	21,5	17,5	8,5	75 FKM 181327	527767	●
100	17,1	39,6	46,8	25,5	20	8,85	75 FKM 181327	527866	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Complete Piston Pneuko G

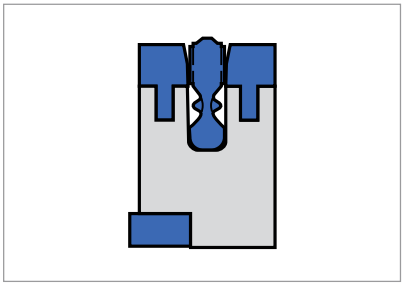


Fig. 1 Merkel Complete Piston Pneuko G

Product description

Merkel complete piston with light alloy/ polyamide body, snap-action seal and integrated guide.

Product advantages

- Ready to fit Merkel complete piston with very low height to which pressure can be applied on both sides
- Easily fastened to the piston rod
- Integrated static seal on the inside diameter.

Application

Pneumatic cylinder without request, frequent special cylinder.

Material

Material	Acrylonitrile-butadiene rubber
Code	72 NBR 708
Hardness	72 Shore A
Base plate	Al (POM 20 for Ø ≤25)
Guide	PA 4601 (POM for Ø ≥25)
Static seal	72 NBR 872

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1 MPa (10 bar)
Temperature T	−20 ... +100 °C
Running speed v	≤1 m/s

Design notes

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual. The complete piston is fitted to shouldered end of the piston rod and fastened with washers (up to and including Ø 25 DIN 125 ≥ Ø 25 DIN 1440) and a nut. The threaded fitting is to be protected against loosening.

Surfaces

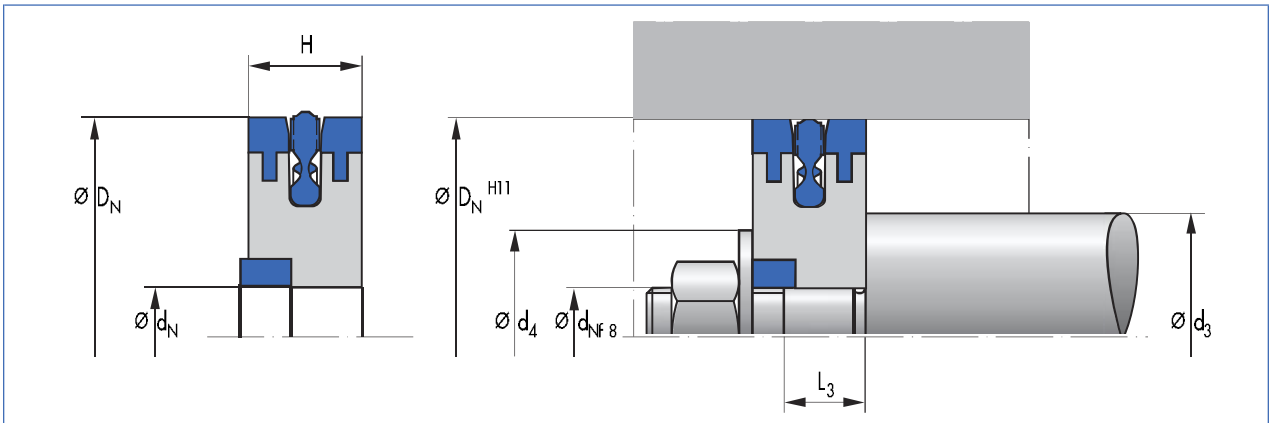
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 70%	

→ Technical Manual.

Fitting & installation

Prior to installation in the cylinder, grease all cylinder contact surfaces evenly. Do not introduce any grease into the piston groove.

Article list



D_N	d_N	H	L_3	d_3	$d_{4\,min}$	Material	Article No.	
12	3	6	4	5	6	POM 20 GF	430709	●
16	4	6	4	6	8	POM 20 GF	428576	●
20	6	6	4	8	10	POM 20 GF	430708	●
25	6	6	4	8	10	POM 20 GF	428564	●
30	8	8	6,5	10	13	PA 4601	428565	●
32	8	8	6,5	10	13	PA 4601	428566	●
35	8	8	6,5	10	13	PA 4601	430711	●
40	10	8	6,5	12	15	PA 4601	428567	●
50	10	8	6,5	12	15	PA 4601	430710	●
60	12	8	6,5	16	17	PA 4601	430702	●
63	12	8	6,5	16	17	PA 4601	428569	●
70	12	8	6,5	16	17	PA 4601	430707	●
80	12	10	8,5	16	17	PA 4601	428568	●
90	12	10	8,5	16	17	PA 4601	430712	●
100	12	10	8,5	16	17	PA 4601	428571	●
125	20	12	9,5	25	25	PA 4601	428572	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Complete Piston NADUOP

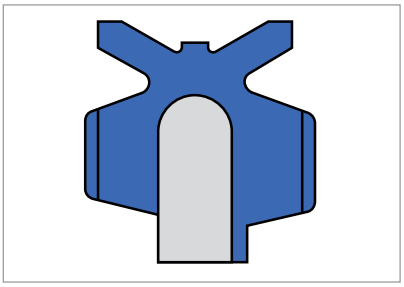


Fig. 1 Merkel Complete Piston NADUOP

Product description

Short Merkel complete piston with steel base plate, vulcanised buffers and sealing lips with special pneumatic sealing edges. Ready to install Merkel complete piston with integrated guide that can be pressurised on both sides.

Product advantages

- Vulcanised buffers for end-position damping of piston in the cylinder
- Radial venting passages for reliable pressure application at the end of the stroke.

Application

Pneumatic cylinders.

Material

Material	Code	Hardness	Base plate
Acrylonitrile-butadiene rubber	72 NBR 708	72 Shore A	mild steel according to DIN 1624

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1 MPa (10 bar)
Temperature T	−20 ... +100 °C
Running speed v	≤1 m/s

Design notes

Surfaces

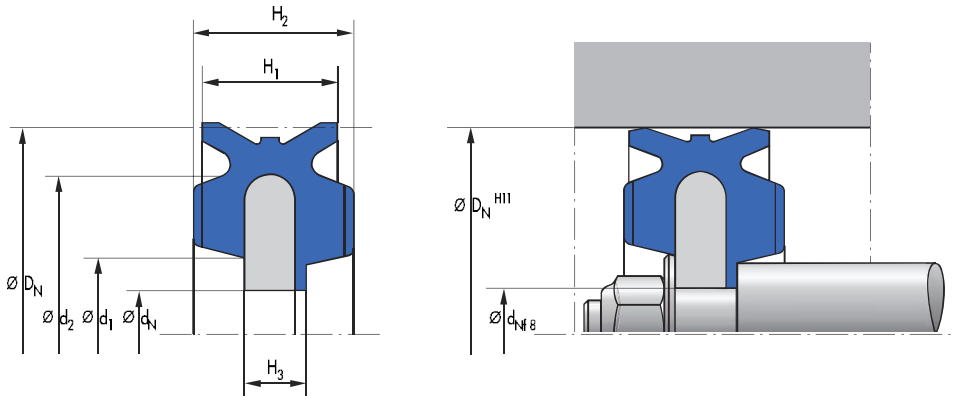
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
The Merkel Complete Piston NADUOP is fitted to shouldered end of the piston rod and fastened with washers and a nut.
The threaded fitting is to be protected against loosening.

Article list



D_N	d_N	d_1	d_2	H_1	H_2	H_3	Material	Article No.	
8	3	4,8	6	4,2	2,1	1,8	72 NBR 708	407194	●
10	3	5	8	4,2	5,2	1,8	72 NBR 708	407199	●
12	4,5	6,6	9,8	5,2	6,2	2,3	72 NBR 708	407203	●
16	4,5	6,7	13,2	5,7	6,7	2,3	72 NBR 708	407205	●
20	6	8,7	16,8	6,7	7,7	2,8	72 NBR 708	407207	●
25	7	10,6	21,8	8	9	3,3	72 NBR 708	407209	●
32	8	15	28,8	8	9	4,5	72 NBR 708	451057	●
40	10	17	36,8	8,5	10	4,5	72 NBR 708	451142	●
50	10	25	46,8	8,5	10	4,5	72 NBR 708	451144	●
63	16	35,5	58,8	9,5	12	5,5	72 NBR 708	451146	●
80	16	48,5	74,8	9,5	12	5,5	72 NBR 708	451147	●
100	16	49	96,8	12,5	15	8,5	72 NBR 708	451148	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Compact Seal KDN

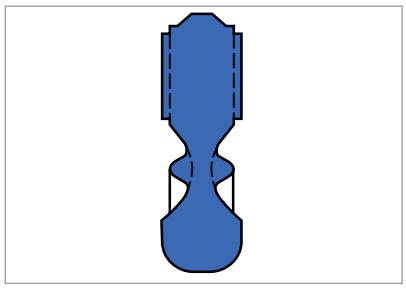


Fig. 1 Merkel Compact Seal KDN

Product description

- Merkel Compact Seal can be pressurised on both sides with grooves on the front side for pressure activation.

Product advantages

- The compact design permits short piston designs
- The rounded sealing profile and the flexible centre part give good tightness with low friction and maintain an effective lubricating film.

Application

Short-stroke cylinders.

Material

Material	Code	Hardness
Acrylonitrile-butadiene rubber	72 NBR 708	72 Shore A

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1 MPa (10 bar)
Temperature T	−20 ... +100 °C
Running speed v	≤1 m/s

Design notes

Surfaces

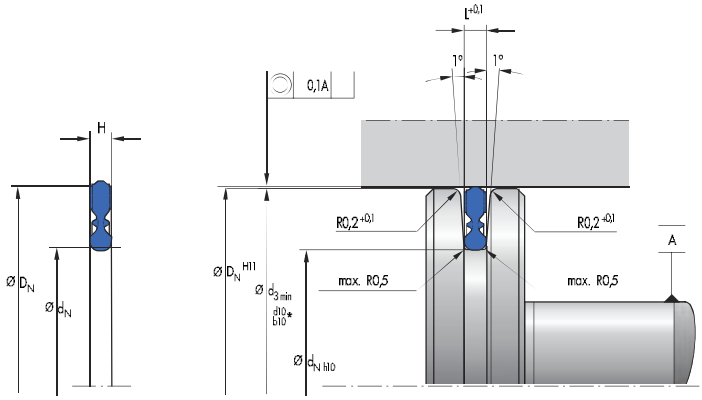
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	
Groove base	≤10 µm	<0,5

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
Merkel Compact Seal KDN is snapped over the de-burred housing edge into the housing groove.

Article list



D_N	d_N	$D_{3\ min}$	H	L	Material	Article No.	
12	5,1	12	1,8	1,8	72 NBR 708	49046430	●
16	8,9	16	2,1	2,1	72 NBR 708	49044391	●
20	12,9	20	2,1	2,1	72 NBR 708	49046431	●
25	17,9	25	2,1	2,1	72 NBR 708	429068	●
30	17,9	30	2,1	2,1	72 NBR 708	429070	●
32	19,9	32	2,1	2,1	72 NBR 708	502039	●
35	22,9	35	2,1	2,1	72 NBR 708	49046472	●
40	27,9	40	2,1	2,1	72 NBR 708	532581	●
50	37,9	50	2,1	2,1	72 NBR 708	429083	●
60	48	60	2,1	2,1	72 NBR 708	430632	●
63	51	63	2,1	2,1	72 NBR 708	527489	●
70	58	70	2,1	2,1	72 NBR 708	430634	●
80	68	80	2,1	2,1	72 NBR 708	429086	●
90	78,1	90	2,1	2,1	72 NBR 708	429527	●
100	88,1	100	2,1	2,1	72 NBR 708	429088	●
125	113,3	125	2,1	2,1	72 NBR 708	429090	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Compact Seal Airzet PK

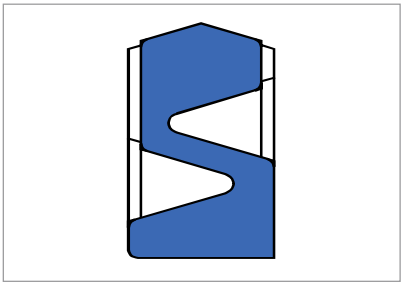


Fig. 1 Merkel Compact Seal Airzet PK

Product description

Merkel Compact Seal Airzet PK can be pressurised on both sides with grooves on the front side for pressure activation.

Product advantages

- The compact design permits short piston designs
- The rounded sealing profile and the flexible centre part give good tightness with low friction and maintain an effective lubricating film
- Widely proven design
- Large supply range available
- Very good tribological properties (wear, friction and long service life).

Application

- Short-stroke cylinders
- Valves and cylinders, especially short-stroke cylinders for high-temperature applications (only FKM).

Material

Material	Code	Hardness
NBR rubber	80 NBR 186349	80 Shore A
Fluoro elastomer	75 FKM 230553	75 Shore A

Operating conditions

Material	NBR	FKM
Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)	
Operating pressure p	≤1,2 MPa (12 bar)	
Temperature T	−20 ... +100 °C	−5 ... +150 °C
Running speed v	≤1 m/s	

Design notes

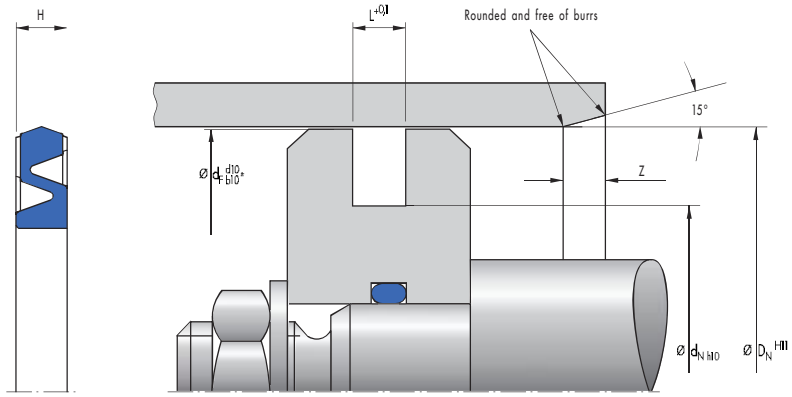
Surfaces

Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 70%	
Groove base	≤10 µm	<0,5

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
The Merkel compact seal Airzet PK is snapped over the de-burred housing edge into the housing groove.

Article list



D_N	d_N	L	H	Z	Material	Article No.	
12	7	2,5	2,2	1,2	80 NBR 186349	49017990	●
12	7	2,5	2,2	1,2	75 FKM 230553	49042426	●
16	9	2,5	2,4	1,2	80 NBR 186349	49017991	●
16	9	2,5	2,4	1,2	75 FKM 230553	49030236	●
20	13	2,5	2,3	2,2	75 FKM 230553	49041727	●
20	13	2,5	2,4	2,2	80 NBR 186349	49017992	●
25	18	2,5	2,4	2,2	80 NBR 186349	49017969	●
25	18	2,5	2,4	2,2	75 FKM 230553	49041728	●
30	21	3	2,9	2,2	80 NBR 186349	49017970	●
30	21	3	2,9	2,2	75 FKM 230553	49041729	●
32	23	3	2,9	2,2	80 NBR 186349	49017971	●
32	23	3	2,9	2,2	75 FKM 230553	49030262	●
35	26	3	2,9	2,2	80 NBR 186349	49030175	●
35	26	3	2,9	2,2	75 FKM 230553	49042427	●
40	31	3	2,9	2,2	80 NBR 186349	49017982	●
40	31	3	2,9	2,2	75 FKM 230553	49030238	●
42	35	2,5	2,4	2,2	75 FKM 230553	49042428	●
45	36	3	2,8	2,2	80 NBR 186349	49017983	●
45	36	3	2,8	2,2	75 FKM 230553	49042429	●
50	41	3	2,9	2,2	80 NBR 186349	49017984	●
50	41	3	2,9	2,2	75 FKM 230553	49030241	●
60	48	4	3,9	2,2	80 NBR 186349	49017985	●
60	48	4	3,9	2,2	75 FKM 230553	49030239	●
63	51	4	3,9	2,2	80 NBR 186349	49017986	●
63	51	4	3,9	2,2	75 FKM 230553	49030240	●
70	58	4	3,9	2,2	80 NBR 186349	49030177	●
70	58	4	3,9	2,2	75 FKM 230553	49042430	●
80	68	4	3,9	2,2	80 NBR 186349	49017987	●
80	68	4	3,9	2,2	75 FKM 230553	49030263	●
90	78	4	3,8	2,2	75 FKM 230553	49041730	●
100	88	4	3,9	2,2	80 NBR 186349	49017988	●
100	88	4	3,9	2,2	75 FKM 230553	49042431	●
125	110	5	4,9	2,2	80 NBR 186349	49017993	●
125	110	5	4,9	2,2	75 FKM 230553	49041731	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel U-Ring NAPN

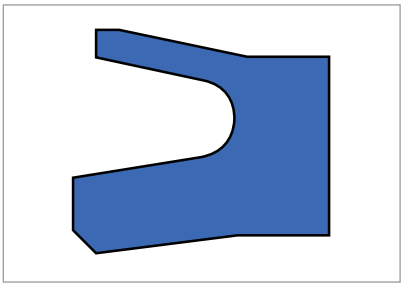


Fig. 1 Merkel U-Ring NAPN

Product description

Merkel U-ring with asymmetrical profile and special pneumatic sealing edge on the dynamic sealing lip.

Product advantages

- The asymmetrical profile with the longer and thicker static sealing lip ensures secure seating in the bottom of the groove
- The special pneumatic sealing edge gives very good tightness with low friction and maintains an effective lubricating film
- Widely proven design
- Large supply range available
- Very good tribological properties (wear, friction and long service life).

Application

Piston seal e.g. in the ISO cylinder (only FKM: for high-temperature applications).

Material

Material	Code	Hardness
Acrylonitrile-butadiene rubber	80 NBR 186349	80 Shore A
Fluoro elastomer	75 FKM 230553	75 Shore A

Operating conditions

Material	NBR	FKM
Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)	
Operating pressure p	≤1 MPa (10 bar)	
Temperature T	−20 ... +100 °C	−5 ... +150 °C
Running speed v	≤1 m/s	

Design notes

Surfaces

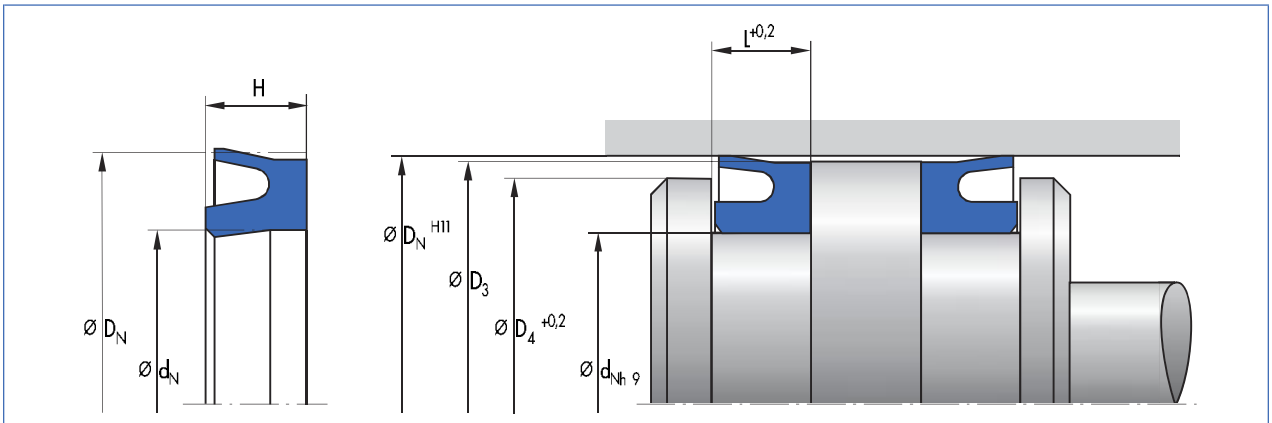
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	
Groove base	≤10 µm	<0,5

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal → Technical Manual.
Pneumatic U-rings can be snapped by hand into the housing grooves provided.

Article list



D_N	d_N	$D_{3\ min}$	$D_{4\ min}$	H	L	Material	Article No.	
6	2	5,85	5	3,5	4	80 NBR 186349	49024487	●
8	4,8	7,85	7	3	3,5	80 NBR 186349	49012343	●
10	5	9,85	9	3	3,5	80 NBR 186349	49024489	●
12	7	11,85	11	4	4,5	80 NBR 186349	49024486	●
16	10	15,85	15	4,5	5	80 NBR 186349	49024490	●
25	17	24,8	24	5	5,5	80 NBR 186349	49024491	●
32	24	31,8	30,8	5,5	6	80 NBR 186349	49022834	●
32	24	31,8	30,8	5,5	6	75 FKM 230553	49041663	●
40	30	40,8	38,5	7	7,5	80 NBR 186349	49022833	●
40	30	40,8	38,5	7	7,5	75 FKM 230553	49041664	●
50	40	49,8	48,5	7	7,5	80 NBR 186349	49022832	●
50	40	49,8	48,5	7	7,5	75 FKM 230553	49041665	●
63	53	62,75	61,5	7	7,5	80 NBR 186349	49018551	●
63	53	62,75	61,5	7	7,5	75 FKM 230553	49041666	●
80	68	79,75	78,5	8,4	9,4	80 NBR 186349	49022821	●
80	68	79,75	78,5	8,4	9,4	75 FKM 230553	49041667	●
100	88	99,75	98	8,4	9,4	80 NBR 186349	49022820	●
100	88	99,75	98	8,4	9,4	75 FKM 230553	49041668	●
125	110	124,6	123	10	11	80 NBR 186349	49022819	●
125	110	124,6	123	10	11	75 FKM 230553	49041669	●
160	145	159,8	152	10	11	80 NBR 709	434788	●
200	180	199,75	189	14,4	15	80 NBR 709	522405	●
250	225	249,7	237	18	19	80 NBR 709	434802	●
250	230	249,7	242	14	15	80 NBR 709	460914	●
320	295	319,6	307	18	19	80 NBR 709	434804	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel U-Ring NAP 310

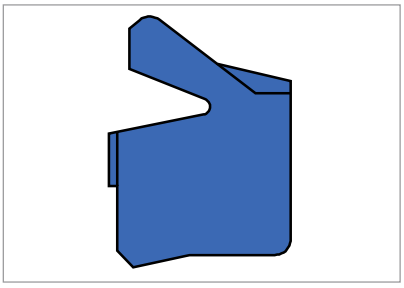


Fig. 1 Merkel U-Ring NAP 310

Product description

Compact Merkel U-ring with asymmetrical profile and special pneumatic sealing edge on the dynamic sealing lip.

Product advantages

- The asymmetrical profile with the longer and thicker static sealing lip ensures secure seating in the bottom of the groove
- The special pneumatic sealing edge gives very good tightness with low friction and maintains an effective lubricating film
- Material with high wear resistance
- Good low temperature properties.

Application

Piston seal e.g. for ISO pneumatic cylinders.

Material

Material	Code	Hardness
High performance polyurethane	80 AU 20994	80 Shore A

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1,2 MPa (12 bar)
Temperature T	–35 ... +80 °C
Running speed v	≤1 m/s

Design notes

Surfaces

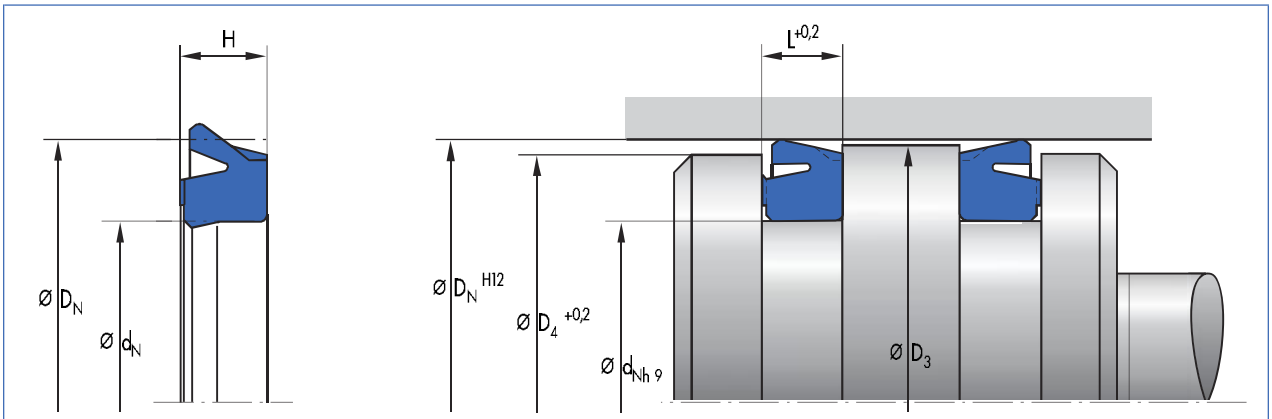
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	
Groove base	≤10 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
Pneumatic U-rings can be snapped by hand into the housing grooves provided.

Article list



D_N	d_N	$D_{3\ min}$	$D_{4\ min}$	H	L	Material	Article No.	
8	4,8	7,85	7,6	2,45	2,7	80 AU 20994	49042868	●
10	6	9,85	9,6	2,45	2,7	80 AU 20994	433199	●
12	7	11,85	11,6	2,45	2,7	80 AU 20994	433200	●
16	10	15,85	15,6	2,45	2,7	80 AU 20994	415664	●
20	14	19,85	19,5	2,45	2,7	80 AU 20994	433202	●
25	19	24,85	24,4	4	4,2	80 AU 20994	415663	●
25	19	24,85	24,4	3,3	3,5	80 AU 20994	458854	●
32	24	31,7	31,4	3,3	3,5	80 AU 20994	433205	●
40	32	39,7	39,4	3,3	3,5	80 AU 20994	49041162	●
50	42	49,7	49,4	3,3	3,5	80 AU 20994	49041163	●
63	53	62,7	62,4	4,3	4,5	80 AU 20994	433212	●
80	70	79,7	79,4	4,3	4,5	80 AU 20994	433213	●
100	90	99,7	99,4	4,3	4,5	80 AU 20994	433214	●
125	105	124,75	123,7	8,1	8,5	80 AU 20994	422004	●
160	140	159,75	158,7	8,1	8,5	80 AU 20994	438908	●
200	180	199,75	198,7	8,1	8,5	80 AU 20994	438913	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel U-Ring NAP 300

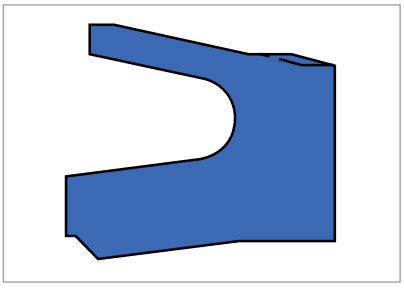


Fig. 1 Merkel U-Ring NAP 300

Product description

Merkel U-ring with asymmetrical profile and special pneumatic sealing edge on the dynamic sealing lip.

Product advantages

- The asymmetrical profile with the longer and thicker static sealing lip ensures secure seating in the bottom of the groove
- The special pneumatic sealing edge gives very good tightness with low friction and maintains an effective lubricating film
- Material with high wear resistance
- Good low temperature properties.

Application

Piston seal e.g. for ISO pneumatic cylinders.

Material

Material	Code	Hardness
High performance polyurethane	80 AU 941	80 Shore A

Operating conditions

Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)
Operating pressure p	≤1,2 MPa (12 bar)
Temperature T	−35 ... +80 °C
Running speed v	≤1 m/s

Design notes

Surfaces

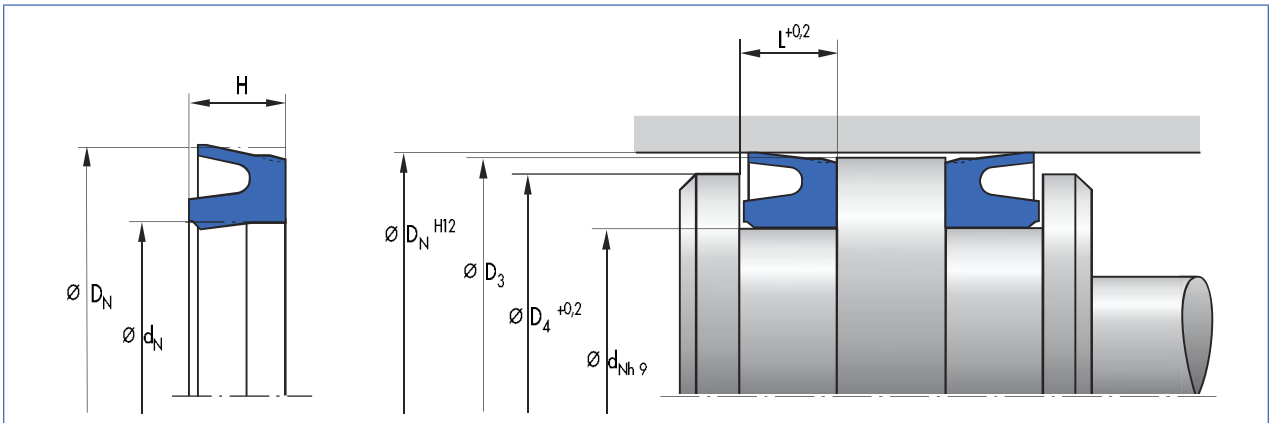
Surface roughness	R_{max}	R_p/R_z
Cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	
Groove base	≤10 µm	<0,5

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
Pneumatic U-rings can be snapped by hand into the housing grooves provided.

Article list



D_N	d_N	$D_{3\ min}$	$D_{4\ min}$	H	L	Material	Article No.	
25	17	24,8	24	5,5	6	80 AU 941	432441	●
32	24	31,7	30,5	5,5	6	80 AU 941	433688	●
40	30	39,7	38,5	7	7,5	80 AU 941	433689	●
50	40	49,6	48,5	7	7,5	80 AU 941	406396	●
63	53	62,6	61,5	7	7,5	80 AU 941	406408	●
80	68	79,6	78,5	8,5	9,5	80 AU 941	406412	●
100	88	99,5	98	8,5	9,5	80 AU 941	433761	●
125	110	124,3	123	10	11	80 AU 941	406415	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel U-Ring NAP 210

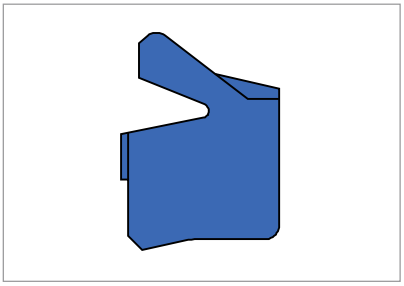


Fig. 1 Merkel U-Ring NAP 210

Product description

Compact Merkel U-ring with asymmetrical profile and special pneumatic sealing edge on the dynamic sealing lip.

Product advantages

- The asymmetrical profile with the longer and thicker static sealing lip ensures secure seating in the bottom of the groove
- The special pneumatic sealing edge gives very good tightness with low friction and maintains an effective lubricating film.
- Large range
- Minimal axial space requirements
- Integrated pressure relief to prevent an intermediate pressure build-up.

Application

- Piston seal for pneumatic cylinders
- Piston seal for high-temperature cylinders (only FKM).

Material

Material	Code	Hardness
Acrylonitrile-butadiene rubber	80 NBR 99079	80 Shore A
Fluoro elastomer	75 FKM 99104	75 Shore A

Operating conditions

Material	NBR	FKM
Medium	Prepared, dried and de-oiled compressed air (after greasing for fitting)	
Operating pressure p	≤1,2 MPa (12 bar)	
Temperature T	−25 ... +100 °C	−5 ... +200 °C
Running speed v	≤1 m/s	

Design notes

Surfaces

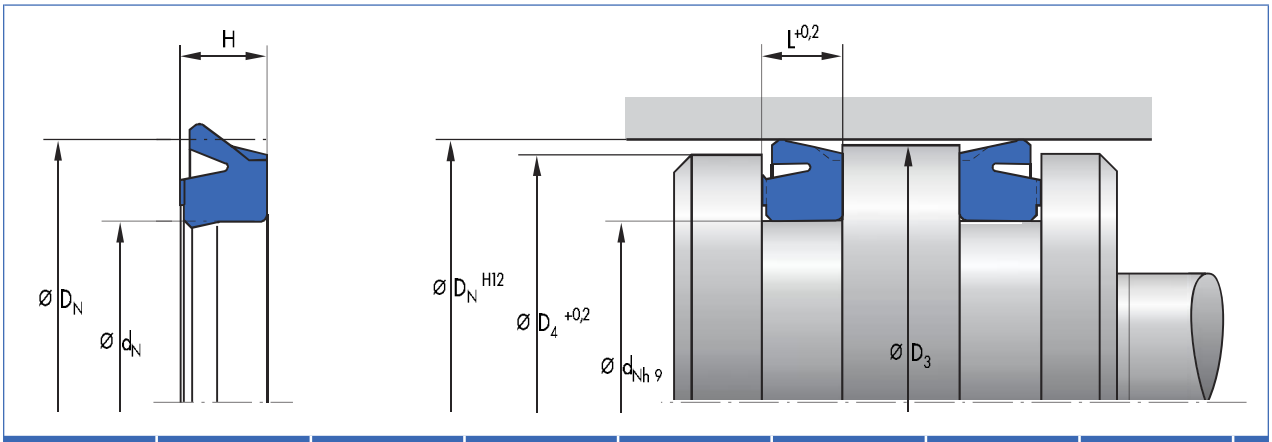
Surface roughness	R_{max}	R_p/R_z
Rod/cylinder barrel	≤4 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	
Groove base	≤10 µm	<0,5
	tp (25% R_{max}) = 50 ... 75%	

→ Technical Manual.

Fitting & installation

Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.
Pneumatic U-rings can be snapped by hand into the housing grooves provided.

Article list



D_N	d_N	$D_{3\ min}$	$D_{4\ min}$	H	L	Material	Article No.	
8	4,8	7,85	7,6	2,45	2,7	80 NBR 99079	463761	●
8	4,8	7,85	7,6	2,45	2,7	75 FKM 99104	465838	●
10	6	9,85	9,6	2,45	2,7	80 NBR 99079	463763	●
10	6	9,85	9,6	2,45	2,7	75 FKM 99104	465839	●
12	7	11,85	11,6	2,45	2,7	80 NBR 99079	463764	●
12	7	11,85	11,6	2,45	2,7	75 FKM 99104	465841	●
16	10	15,85	15,6	2,45	2,7	80 NBR 99079	463765	●
16	10	15,85	15,6	2,45	2,7	75 FKM 99104	465842	●
18	12	17,85	17,6	2,45	2,7	75 FKM 99104	501192	●
18	12	17,85	17,6	2,45	2,7	80 NBR 99079	501500	●
20	14	19,85	19,5	2,45	2,7	80 NBR 99079	463766	●
20	14	19,85	19,5	2,45	2,7	75 FKM 99104	465843	●
25	19	24,85	24,4	3,3	3,5	80 NBR 99079	463767	●
25	19	24,85	24,4	3,3	3,5	75 FKM 99104	465844	●
32	24	31,7	31,4	3,3	3,5	80 NBR 99079	463768	●
32	24	31,7	31,4	3,3	3,5	75 FKM 99104	465846	●
40	32	39,7	39,4	3,3	3,5	80 NBR 99079	463769	●
40	32	39,7	39,4	3,3	3,5	75 FKM 99104	465847	●
50	42	49,7	49,4	3,3	3,5	80 NBR 99079	463770	●
50	42	49,7	49,4	3,3	3,5	75 FKM 99104	465848	●
63	53	62,7	62,4	4,3	4,5	80 NBR 99079	463771	●
63	53	62,7	62,4	4,3	4,5	75 FKM 99104	465849	●
80	70	79,7	79,4	4,3	4,5	80 NBR 99079	463772	●
80	70	79,7	79,4	4,3	4,5	75 FKM 99104	465850	●
100	90	99,7	99,4	4,3	4,5	80 NBR 99079	463773	●
100	90	99,7	99,4	4,3	4,5	75 FKM 99104	465851	●

● Available from stock ○ On request: Tool is available, delivery at short notice