



## Vacuum components

Glass processing machines  
Warehouse stocking systems  
Vacuum lifting devices



# Imprint

## Publisher

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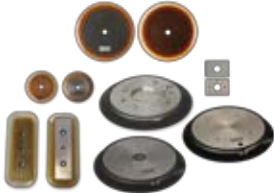
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# Suction plates

01

## Article index

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Product picture



Product description

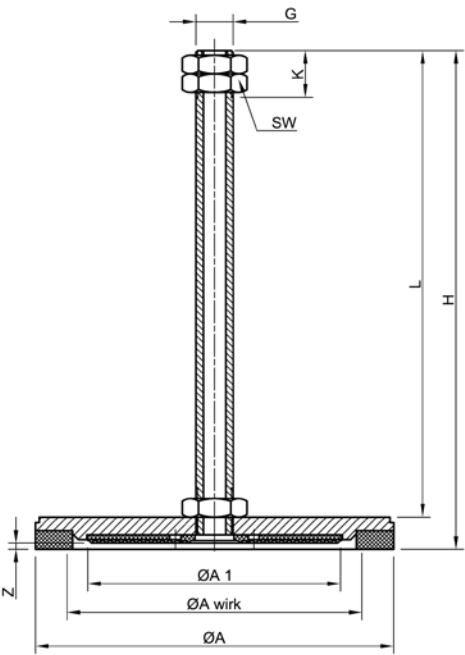
The suction plate type BSP series SCP, rigid, is available in different versions and diameters. The suction plate basically consists of an aluminium base plate, a rigid installed suspension bolt which is made of a steel tube Ø 20 mm, a special chloroprene sealing ring which is bonded onto the base plate and an inner groove rubber support in the base plate.

Central vacuum feed by means of the suspension bolt. Quick and cost-saving exchange of the chloroprene sealing ring by deducting it from the base plate. This base plate is suitable perfectly for structured glass and/or surfaces.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	G	H	K	L	SW	Z	Weight
SCP 142	142	118	88	M 20	266	25	249	30	1,75	1,028 kg
SCP 192	192	158	136	M 20	266	25	249	30	1,75	1,424 kg
SCP 232	232	198	136	M 20	266	25	249	30	1,75	1,824 kg
Type	Part number Suction plate					Spare seal				
SCP 142	BSP.142.232.ST.000					BSPS.10.449				
SCP 192	BSP.192.232.ST.000					BSPS.10.450				
SCP 232	BSP.232.232.ST.000					BSPS.10.453				
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal							
SCP 142	33		66							
SCP 192	59		119							
SCP 232	94		188							



## Product description

## Product picture

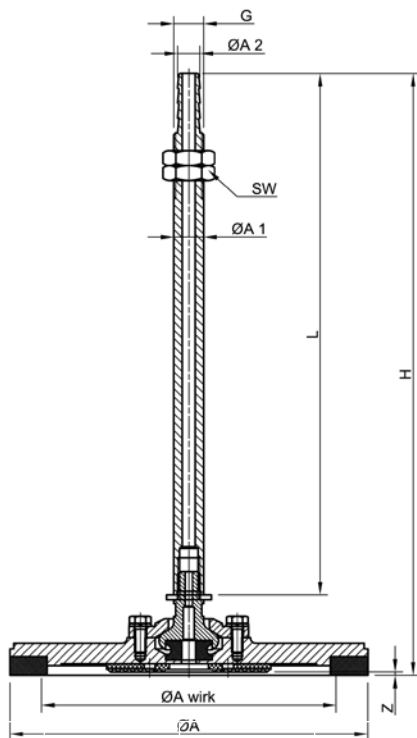
The suction plate type BSP series SCP, A-P is available in different versions and diameters. The suction plate basically consists of an aluminium base plate, an articulated installed suspension bolt made of steel tube  $\varnothing$  16 mm or  $\varnothing$  20 mm with an hose nipple and a special chloroprene sealing ring which is bonded into the base plate with an inner groove rubber support.

Central vacuum feed by means of the suspension bolt. Quick and cost-saving exchange of the chloroprene sealing ring by deducting it from the base plate. This base plate is suitable perfectly for structured glass and/or surfaces.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

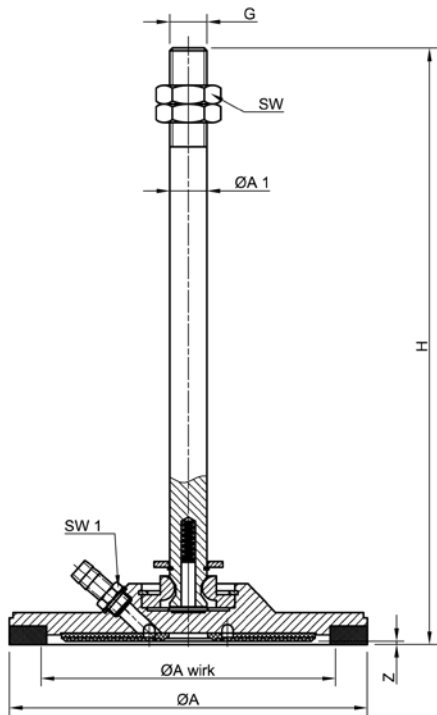
Type	ØA	ØA wirk	ØA1	ØA2	G	H	L	SW	Z	Weight
SCP 142, A-P	142	118	16	12,0	M 16	323	280	24	1,75	0,904 kg
SCP 192, A-P	192	158	16	12,0	M 16	323	280	24	1,75	1,324 kg
SCP 232, A-P	232	198	20	14,5	M 20	360	300	24	1,75	2,268 kg
Type	Part number Suction plate				Spare seal					
SCP 142, A-P	BSP.142.232.AP.000				BSPS.10.449					
SCP 192, A-P	BSP.192.232.AP.000				BSPS.10.450					
SCP 232, A-P	BSP.232.232.AP.000				BSPS.10.453					
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal							
SCP 142, A-P	33		66							
SCP 192, A-P	59		119							
SCP 232, A-P	94		188							

Product picture      Product description



The suction plate type BSP series SCP, R-K is available in different versions and diameters. The suction plate basically consists of an aluminium base plate, a vacuum connection on the side, an articulated installed suspension bolt made of steel Ø 20 mm, a special chloroprene sealing ring and an inner groove rubber support in the base plate. Quick and cost-saving exchange of the chloroprene sealing ring by deducting it from the base plate. This base plate is suitable perfectly for structured glass and/or other surfaces.

Application picture      Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	H	SW	SW1	Z	Weight
SCP 142, R-K	142	118	88	20	M 20	320	30	17	1,75	1,493 kg
SCP 192, R-K	192	158	136	20	M 20	320	30	17	1,75	1,944 kg
SCP 232, R-K	232	198	136	20	M 20	320	30	17	1,75	2,338 kg
Type	Part number Suction plate					Spare seal				
SCP 142, R-K	BSP.142.232.RK.000					BSPS.10.449				
SCP 192, R-K	BSP.192.232.RK.000					BSPS.10.450				
SCP 232, R-K	BSP.232.232.RK.000					BSPS.10.453				
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal							
SCP 142, R-K	33		66							
SCP 192, R-K	59		119							
SCP 232, R-K	94		188							



## Product description

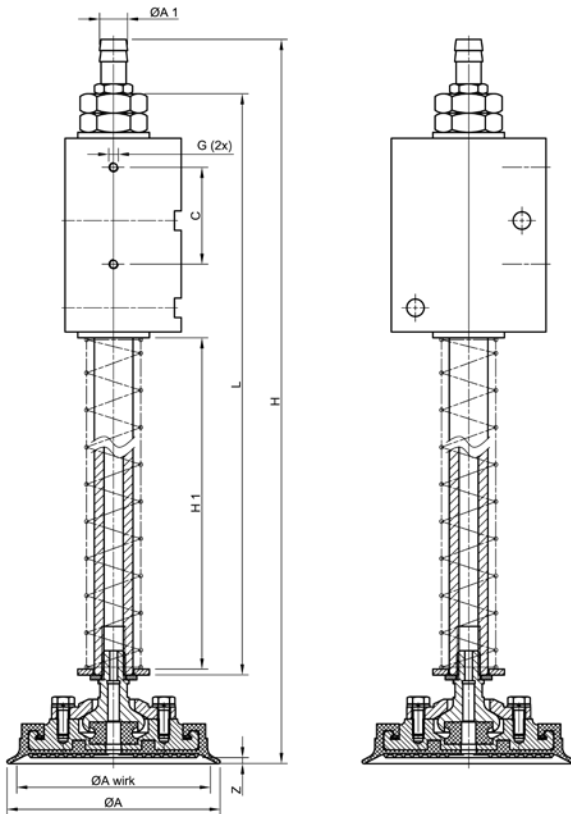
## Product picture

The suction plate type BSP 110 R, F-V is a Pressmaster version. The seal has a diameter of 110 mm and is in NBR black at approx. 50 Shore. A flow valve is installed in the articulation piece. Additionally there is a suspension bolt Ø 20 x 300 mm with a M20 outside thread, a PA-support 80 x 100 x 60 mm and a pressure spring.



## Technical drawing

## Application picture

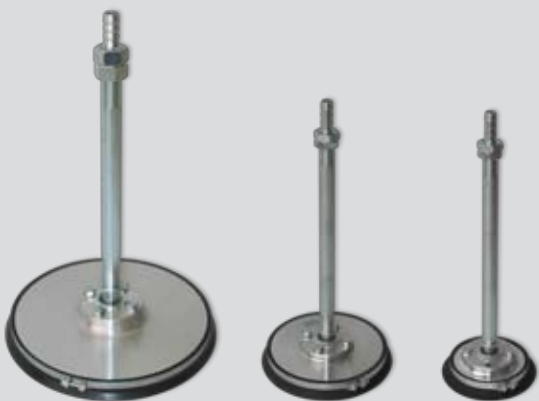


## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	H	H1	H2	C	G	Z	Weight
110 R, F-V	110	100	14,5	375	300	171	50	M5	3	1,558 kg
110 R, F-V	110	100	14,5	375	300	171	-	-	3	1,558 kg
110 R, F-V	110	100	14,5	375	300	164,5	-	-	3	1,558 kg
Type	Part number					Flat suction cup seal			Pressure spring	
110 R, F-V	BSP.109.111.AP.001					BSPS.10.352 NBR black			BSPS.20.371	
110 R, F-V	BSP.109.111.AP.002									
110 R, F-V	BSP.109.111.AP.003									
Type	Carrying capacity in kg					The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical			horizontal						
110 R, F-V	24			48						

Product picture

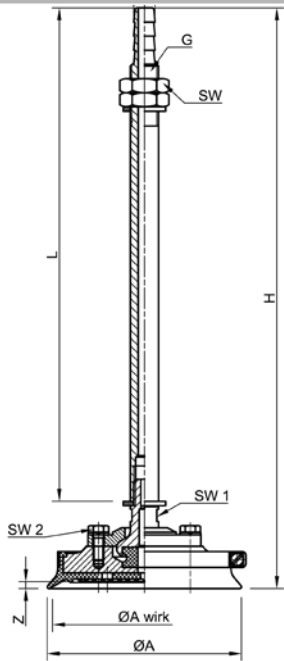
Product description



The suction plate type BSP Series R, A-P with groove rubber support and a short rubber lip is suitable for thin materials with a smooth surface like glass or perspex sheets. The seal is in NBR black at approx. 50 Shore. The groove rubber support prevents a deformation of the material. As a result of the articulation piece between base plate and suspension bolt (10° to all sides), the base plate will adapt itself to the curvature of the thin material. Quick and cost-saving change of the seal by means of the clamping clip. Several types of suspension bolts are available.

Application picture

Technical drawing



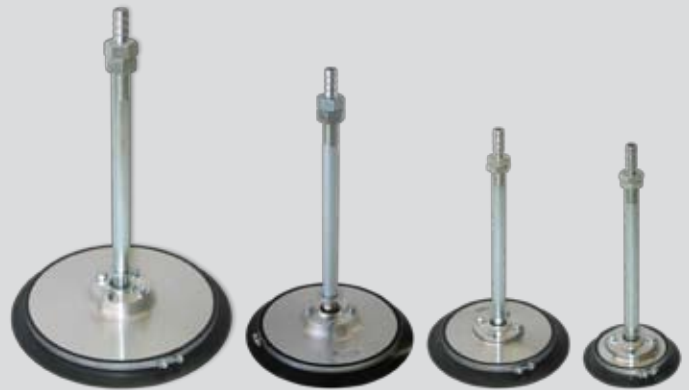
Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØF	G	H	K	L	SW1	SW2	SW3	Z	Weight
110 R, A-P	110	104	12	M16	328	67	280	24	14	10	4	0,770 kg
160 R, A-P	160	155	12	M16	328	67	280	24	14	10	4	1,140 kg
250 R, A-P	250	244	15	M20	376	90	310	30	17	13	4	2,610 kg
Type	Part number						Flat suction cup seal			Clamping clip		
110 R, A-P	BSP.110.111.AP.000 NBR black						BSPS.10.001 NBR black			BSPS.11.001		
160 R, A-P	BSP.160.111.AP.000 NBR black						BSPS.10.009 NBR black			BSPS.11.002		
250 R, A-P	BSP.250.111.AP.000 NBR black						BSPS.10.024 NBR black			BSPS.11.003		
Type	Carrying capacity in kg						The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical			horizontal								
110 R, A-P	25			51								
160 R, A-P	57			115								
250 R, A-P	143			286								

## Product description

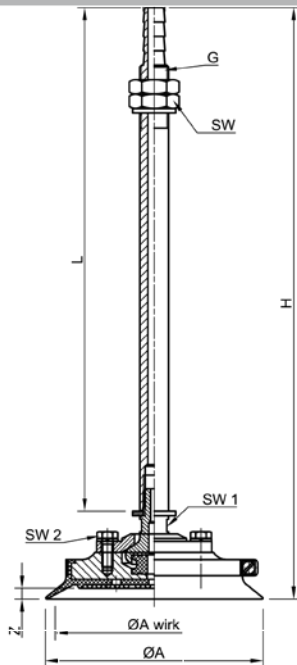
## Product picture

The suction plate type BSP Series RL, A-P with groove rubber support and long rubber lip is suitable for thin materials with a smooth surface like glass or perspex sheets. The seal is in NBR black at approx. 50 Shore. The groove rubber support prevents a deformation of the material. As a result of the articulation piece between base plate and suspension bolt (10° to all sides), the base plate will adapt itself to the curvature of the thin material. Quick and cost-saving change of the seal by means of the clamping clip.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØF	G	H	K	L	SW1	SW2	SW3	Z	Weight
120 RL, A-P	120	110	12	M16	328	67	280	24	14	10	6	0,770 kg
180 RL, A-P	180	165	12	M16	330	67	280	24	14	10	6,5	1,170 kg
230 RL, A-P	230	220	14,6	M16	330	67	300	30	16	13	6,5	2,580 kg
270 RL, A-P	270	260	14,6	M16	378	67	300	30	16	13	4	2,670 kg

Type	Part number	Flat suction cup seal	Clamping clip
120 RL, A-P	BSP.120.111.AP.000 NBR black	BSPS.10.206 NBR black	BSPS.11.001
180 RL, A-P	BSP.180.111.AP.000 NBR black	BSPS.10.175 NBR black	BSPS.11.002
230 RL, A-P	BSP.230.111.AP.000 NBR black	BSPS.10.336 NBR black	BSPS.11.011
270 RL, A-P	BSP.270.111.AP.000 NBR black	BSPS.10.197 NBR black	BSPS.11.003

Type	Carrying capacity in kg		<p>The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.</p>
	vertical	horizontal	
120 RL, A-P	29	58	
180 RL, A-P	65	130	
230 RL, A-P	116	232	
270 RL, A-P	162	324	

Product picture



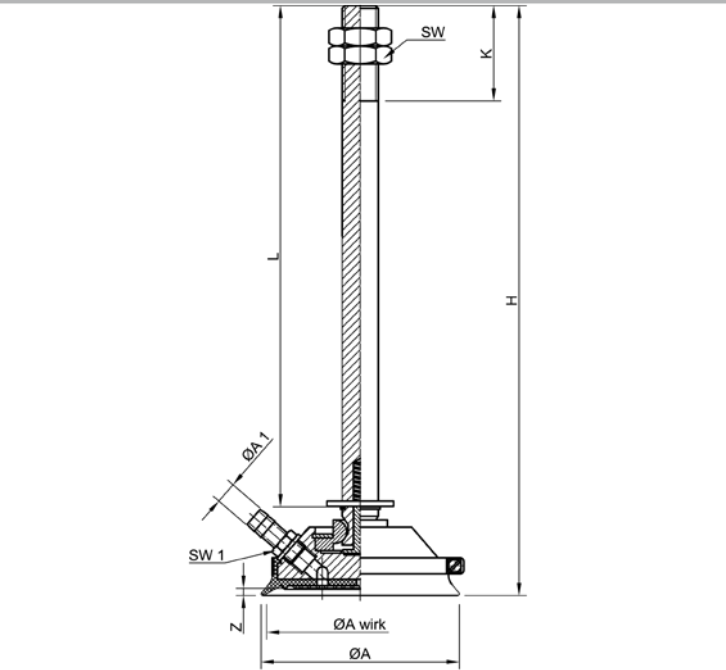
Product description

The suction plate type BSP Series R, R-K with groove rubber support and short rubber lip is suitable for thin materials with a smooth surface like glass or perspex sheets. The seal is in NBR black at approx. 50 Shore. The groove rubber support prevents a deformation of the material. As a result of the articulation piece between the base plate and the suspension bolt (10° to all sides), the base plate will adapt itself to the curvature of the thin material. Quick and cost-saving exchange of the seal by means of the clamping clip.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØF	G	H	K	L	SW1	SW2	Z	Weight
110 R, R-K	110	104	12	M20	330	53	280	30	14	4	1,050 kg
160 R, R-K	160	155	12	M20	330	53	280	30	14	4	1,350 kg
250 R, R-K	250	244	12	M20	330	53	280	30	14	4	3,200 kg
Type	Part number						Flat suction cup seal			Clamping clip	
110 R, R-K	BSP.110.111.RK.000 NBR black						BSPS.10.001 NBR black			BSPS.11.001	
160 R, R-K	BSP.160.111.RK.000 NBR black						BSPS.10.009 NBR black			BSPS.11.002	
250 R, R-K	BSP.250.111.RK.000 NBR black						BSPS.10.024 NBR black			BSPS.11.003	
Type	Carrying capacity in kg					<div>The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.</div>					
	vertical			horizontal							
110 R, R-K	25			51							
160 R, R-K	57			115							
250 R, R-K	143			286							



## Product description

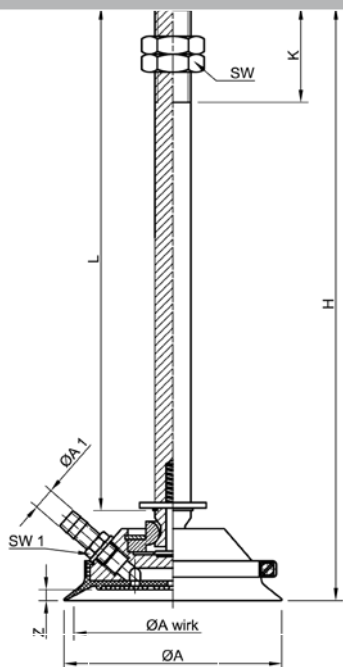
## Product picture

The suction plate type BSP Series RL, R-K with groove rubber support and a short rubber lip is suitable for thin materials with a smooth surface like glass or perspex sheets. The seal is in NBR black at approx. 50 Shore. As a result of the articulation piece between the base plate and suspension bolt (10° to all sides), the base plate will adapt itself to the curvature of the thin material. Quick and cost-saving exchange of the seal by means of the clamping clip.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØF	G	H	K	L	SW1	SW2	Z	Weight
120 RL,R-K	120	110	12	M20	330	53	280	30	14	6	1,350 kg
180 RL,R-K	180	165	12	M20	328,5	53	280	30	14	6	1,750 kg
230 RL,R-K	230	220	12	M20	330	53	280	30	14	6,5	2,300 kg
270 RL,R-K	270	260	12	M20	330	53	280	30	14	5	2,600 kg
Type	Part number					Flat suction cup seal				Clamping clip	
120 RL,R-K	BSP.120.111.RK.000 NBR black					BSPS.10.206 NBR black				BSPS.11.001	
180 RL,R-K	BSP.180.111.RK.000 NBR black					BSPS.10.175 NBR black				BSPS.11.002	
230 RL,R-K	BSP.230.111.RK.000 NBR black					BSPS.10.336 NBR black				BSPS.11.011	
270 RL,R-K	BSP.270.111.RK.000 NBR black					BSPS.10.197 NBR black				BSPS.11.003	
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal								
120 RL,R-K	29		58								
180 RL,R-K	65		130								
230 RL,R-K	116		232								
270 RL,R-K	162		324								

# 02 Flat suction cup

## Article index

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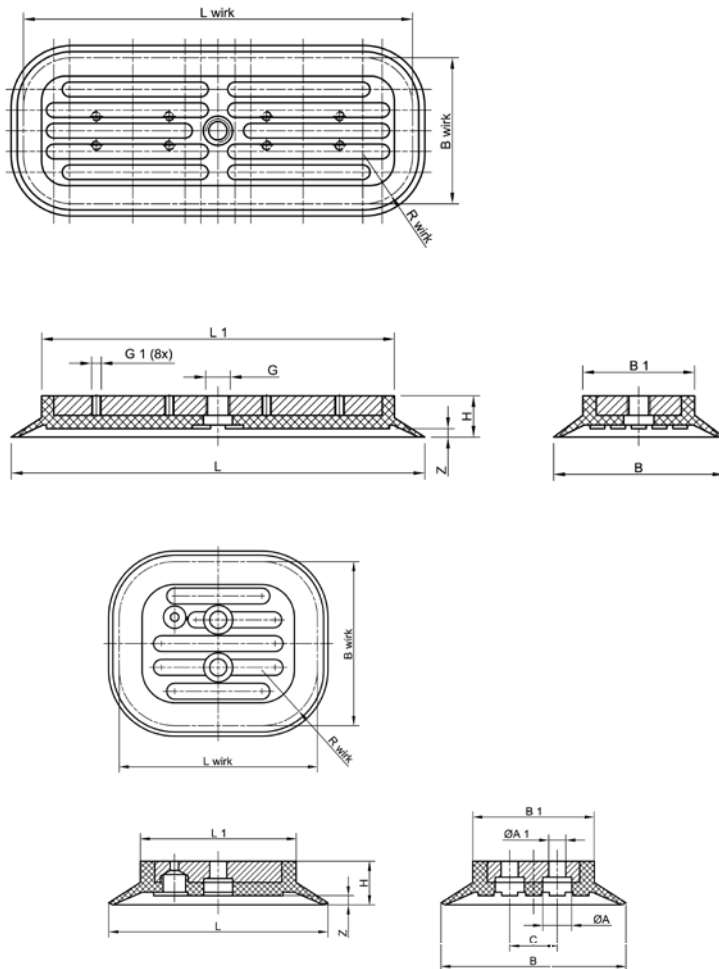
## Product description

## Product picture

The flat suction cup type BLSP 70 x 170 and type 70 x 85 have a vulcanised aluminium base plate. The seals are made of PUR brown and have a Shore hardness of approx. 60. The inner supporting surface has a groove rubber support. The flat suction cups are predominantly used in glass cutting machines for clamping the glass plates, but they are also suitable for other fields of application. The different drilling templates serve for the connection of the base plate to the brackets of the machines.



## Technical drawing



## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA1	L	L wirk	L1	B	B wirk	B1	H	R wirk	C	G	G1	Z
70 x 85	11	6,5	83	75	59	70	62	46	16,5	21	18	-	-	3,5
70 x 170	11,5	6,5	170	160	145	70	60	46	17	20	35	G1/8“	-	3,5
70 x 170	-	-	170	160	145	70	60	46	17	20	-	G1/8“	8xM4	3,5
Type	Part number Flat suction cup											Weight		
70 x 85	BLSP.070.085.128.001 PUR brown						vulcanised				0,060 kg			
70 x 170	BLSP.070.170.128.001 PUR brown						vulcanised				0,162 kg			
70 x 170	BLSP.070.170.128.002 PUR brown						vulcanised				0,166 kg			
Type	Carrying capacity in kg						The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.							
	vertical			horizontal										
70 x 85	9			19										
70 x 170	25			51										
70 x 170	25			51										

Product picture

Product description

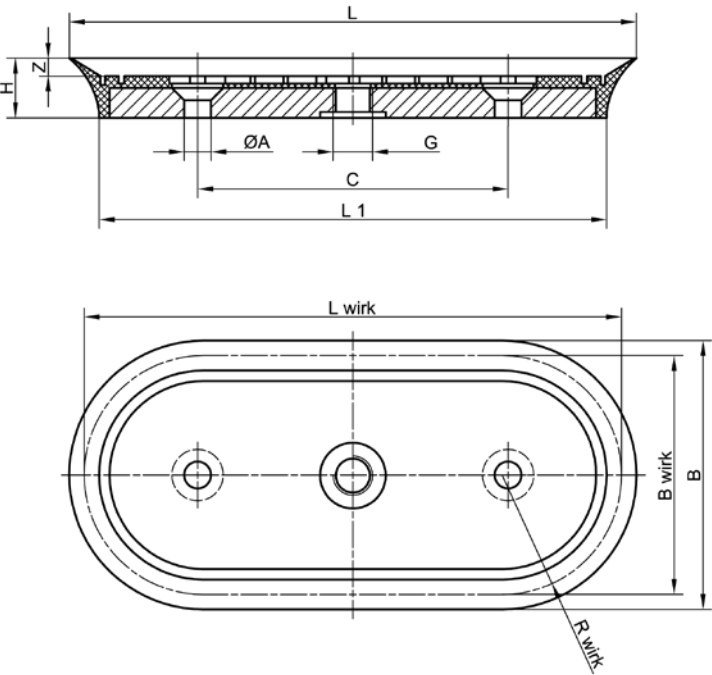


Flat suction cup type BSP 90x190 with vulcanized seal. The flat suction cup is in NBR black at approx. 30 Shore. Elastic and wear resistant suction cup, suitable for work pieces with a flat surface like glass plates. This suction cup is mostly used in glass machines to clamp the glass plate during the production process. The vacuum connection is centric and the flat suction cup can be mounted to the frame by using the two other holes.

Other drilling templates are available on request.

Application picture

Technical drawing



Technical data / Order data / Spare parts

Type	L	L wirk	L1	B	B wirk	R wirk	C	G	H	Z
BLSP 90x190	190	180	170	90	80	40	104	1/4"	20	6
Type	Part number Flat suction cup									Weight
BLSP 90x190	BLSP.090.190.111.002 NBR black									0,300 kg
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.							
	vertical	horizontal								
BLSP 90x190	28	57								

## Product description

## Product picture

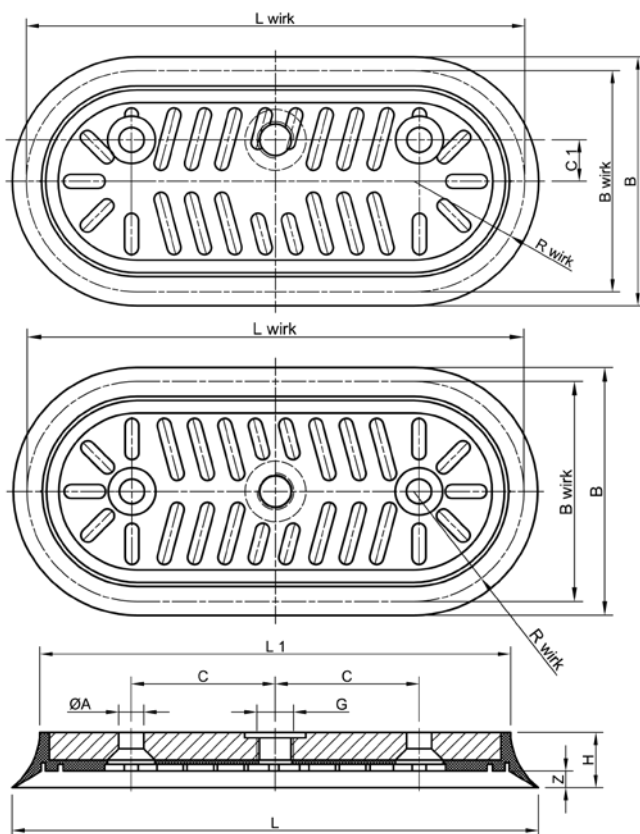
Flat suction cup type BSP 90x190 LS with vulcanized seal. The flat suction cup is in NR brown at approx. 30 Shore. Elastic and wear resistant suction cup suitable for work pieces with a flat surface like glass plates. This suction cup is mostly used in glass machines to clamp the glass plate during the production process. The vacuum connection is centric and the flat suction cup can be mounted to the frame by using the two other holes.

Other drilling templates are available on request.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	L	L wirk	L1	B	B wirk	R wirk	ØA	G	C	C1	H	Z
BLSP 90x190 LS	190	180	170	90	80	40	9	1/4"	52	-	20	6
	190	180	170	90	80	40	9	1/4"	52	15	20	6

Type	Part No. Flat suction cup	vulcanised	Weight
BLSP 90x190 LS	BLSP.090.190.123.000 NR brown	Drilling on the centre axis	0,300 kg
	BLSP.090.190.123.002 NR brown	Drilling outsid of the centre axis	

The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient.

\* Tested and values calculated with a plane, dry and dust-free glass surface.

Type	Carrying capacity in kg	
	vertical	horizontal
BLSP 90x190 LS	33,5	67

Product picture

Product description

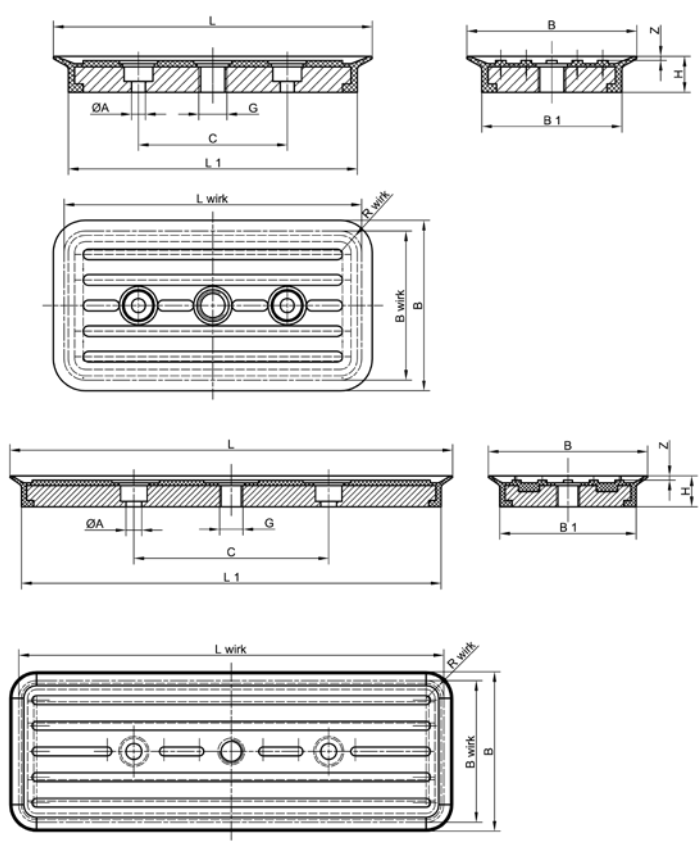


The rectangular flat suction cup type BLSP series BY has a seal in NBR grey at approx. 60 Shore and inner groove rubber support. The flat suction cup is used predominantly in VSG-Glass cutting machines for tensioning the glass plates, but can also be used in other operation fields. The vacuum connection is in the center of the base plate. The other drillings serve for mounting the base plate to the provided bracket.

Other drilling templates are available on request.

Application picture

Technical drawing



Technical data / Order data / Spare parts

Type	ØA	L	Lwirk	L1	B	Bwirk	B1	Rwirk	G	C	H	Z
80 x 150 BY, vulc.	6,6	150	140	136	80	70	66	10	1/4“	70	17	2
90 x 250 BY	9,0	250	240	237	90	80	77	10	1/4“	110	17,5	2,5
Type	Part nuber Flat suction cup					Flat suction cup seal					Weight	
80 x 150 BY, vulc.	BLSP.080.150.121.002 NBR grau					vulcanised					0,300 kg	
90 x 250 BY	BLSP.090.250.121.001 NBR grau					BSPS.10.392 NBR grau					0,570 kg	
Type	Carrying capacity in kg					The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal									
80 x 150 BY, vulc.	29		58									
90 x 250 BY	57		115									



## Product description

## Product picture

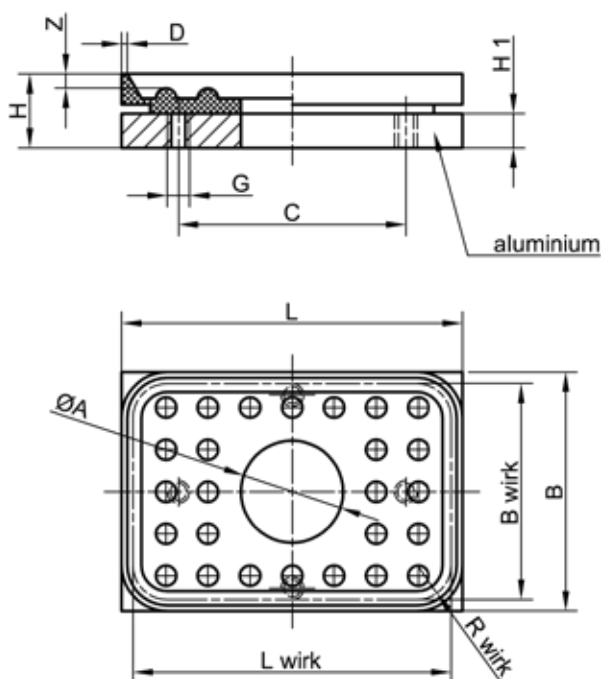
These vacuum clamping cup type BSP 42 x 60 is used in glass processing machines in order to clamp work pieces like glass plates with vacuum, for example. This special seal is in NBR grey at approx. 50 Shore, has a very short rubber lip, a nap rubber support on the surface and is vulcanized onto the base plate. The back of the base plate is already drilled and has inside threads.

Other drilling templates are available on request.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	L	L wirk	B	B wirk	R wirk	C	D	G	H	H1	Z
BLSP 42 x 60-1	18	60	58	42	40	7	40	-	M4	13	6	2,5
BLSP 42 x 60-2	18	60	56	42	38	6	40	1	M4	13	6	2,5
Type	Part number Flat suction cup										Weight	
BLSP 42 x 60-1	BLSP.042.060.121.000 NBR grey					vulcanised					0,043 kg	
BLSP 42 x 60-2	BLSP.042.060.121.001 NBR grey (dick-D)					vulcanised					0,044 kg	
Type	Carrying capacity in kg					The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal									
BLSP 42 x 60-1	6,5		13,0									
BLSP 42 x 60-2	6,0		12,0									

Product picture

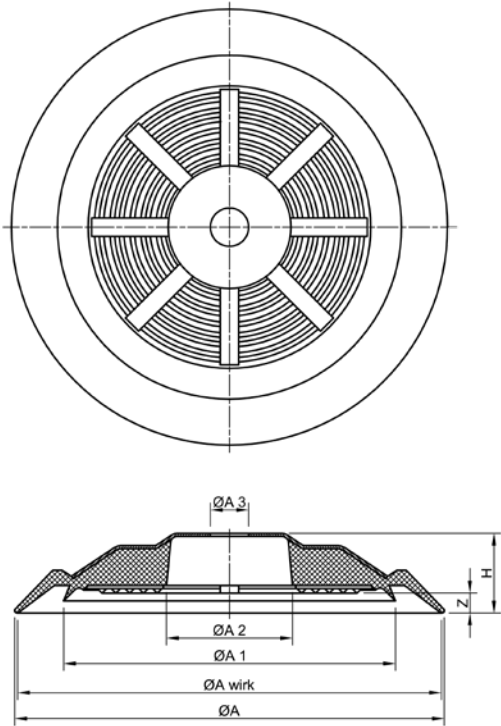
Product description



Elastic and wear resistant suction cup seal Type BSP 145 PK, vulcanised onto a sheet metal base plate. The seal has a diameter of 145 mm and is available in NBR black or grey. The suction cup is mounted with a nut from the inside onto the suspension bolt. The inner surface area has grooves and support. Lucite, which is used in the glass industry to separate glass more easily, will rest in the grooves. Glass plates will not slip easily due to the higher coefficient of friction, especially when the glass plates are in the vertical position.

Application picture

Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	H	Z
BLSP 145 PK	145	138	111	40	12,5	26	5
Type	Part number Flat suction cup						Weight
BLSP 145 PK	BLSP.145.111.000 NBR black				vulcanised		0,270 kg
BLSP 145 PK	BLSP.145.121.000 NBR grey				vulcanised		0,275 kg
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical		horizontal				
BLSP 145 PK	45		91				



## Product description

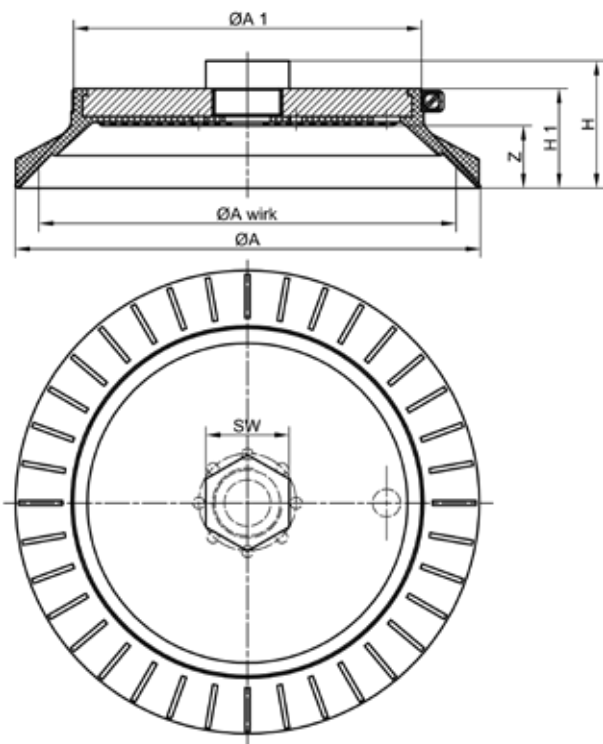
## Product picture

The flat suction cup type BLSP series HE is available in different diameters. The seal has grooves on the rear side and a long sealing lip with support ribs. The seal is slipped onto the aluminium base plate and secured with a clamping clip. The center support will be drilled according to your requirements. Quick and cost-saving exchange of the seal by loosening the clamping clip.



## Technical drawing

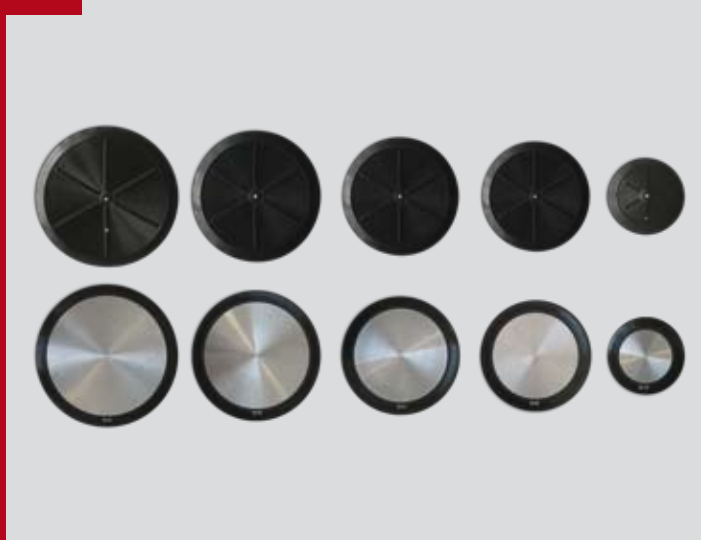
## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	G	SW	H	H1	Z	Weight
100 HE	100	80	72	3/8“	22	26	18	6,3	0,115 kg
150 HE	150	135	112	1/2“	27	41	28	10,5	0,350 kg
200 HE	200	180	166	-	36	55	43	27	0,730 kg
Type	Part number (Flat suction cup complete)				Flat suction cup seal			Clamping clip	
100 HE	BLSP.101.111.001 NBR black				BSPS.10.458 NBR black			BSPS.11.067	
150 HE	BLSP.151.111.001 NBR black				BSPS.10.179 NBR black			BSPS.11.007	
200 HE	BLSP.201.111.004 NBR black				BSPS.10.229 NBR black			BSPS.11.010	
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical		horizontal						
100 HE	15		30						
150 HE	43		87						
200 HE	77		155						

Product picture

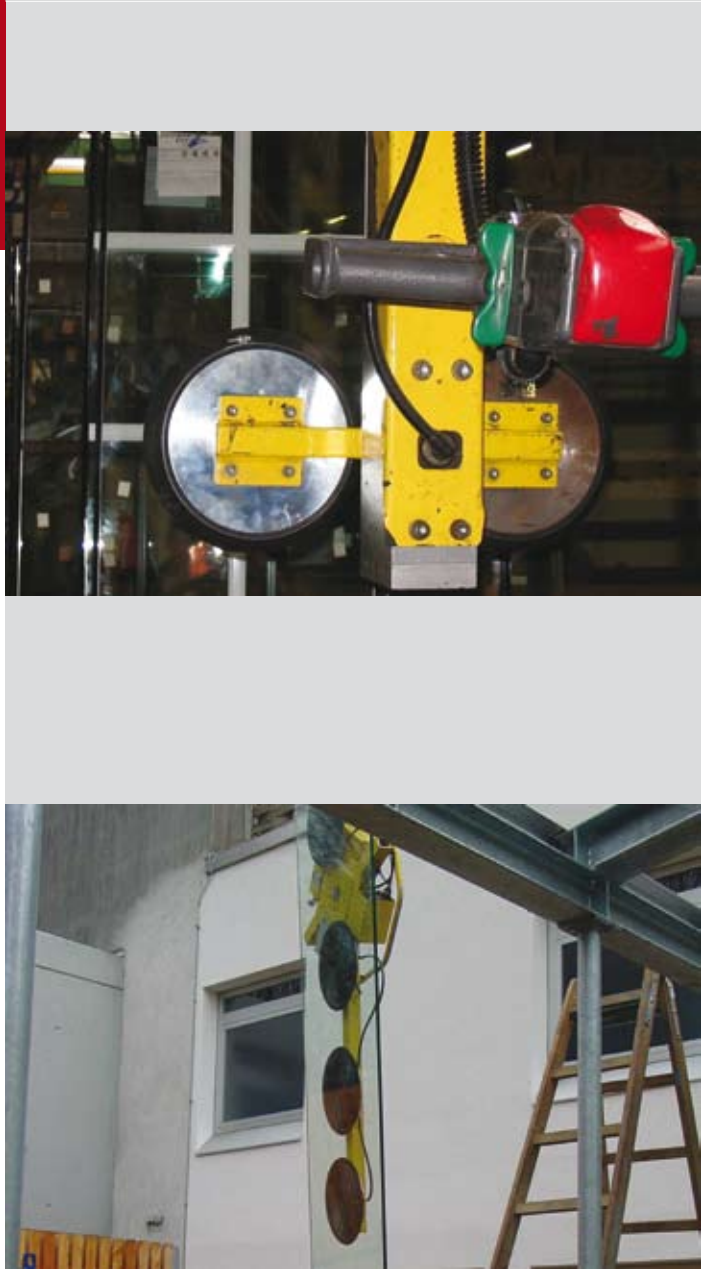


Product description

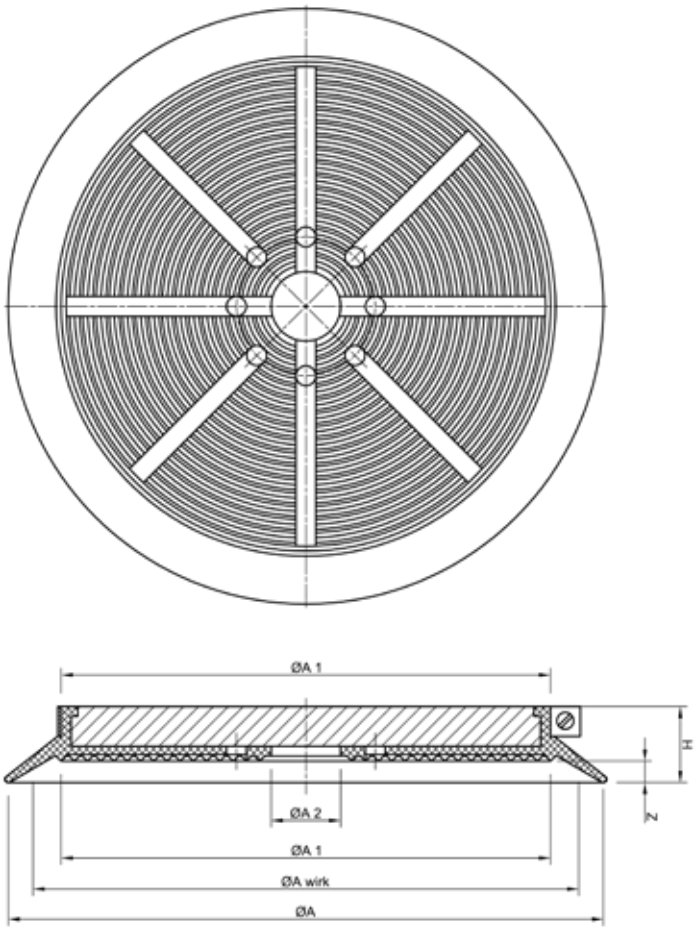
Flat suction cup type BLSP Series RLG with replaceable seal, aluminium base plate, threaded holes for mounting and clamping clip for secure clamping. The seal is in NBR black at approx. 50° Shore and the inner surface has deep grooves. The rubber lip which seals against the work piece is long, minimal force is needed when placing the vacuum lifter onto the work piece to achieve a seal. In the majority of cases, this suction cup seal is used in vacuum lifting devices. In case of wear, easy and cost-saving change of the seal by means of the clamping clip. Ready-to-install.

Other drilling templates are available on request.

Application picture



Technical drawing



Technical data						Order data / Spare parts			
Part number Flat suction cup						Spare seal		Clamping clip	
Type	Material	Part number				Type	Part number	Type	Part number
120 RL	NBR black	BLSP.120.111.000				120 RL	BSPS.10.206	120 RL	BSPS.11.001
180 RL	NBR black	BLSP.180.111.000				180 RL	BSPS.10.175	180 RL	BSPS.11.002
200 RL	NBR black	BLSP.202.111.000				200 RL	BSPS.10.368	200 RL	BSPS.11.010
230 RL	NBR black	BLSP.230.111.000				230 RL	BSPS.10.336	230 RL	BSPS.10.011
270 RL	NBR black	BLSP.270.111.000				270 RL	BSPS.10.197	270 RL	BSPS.11.003
290 RL	NBR black	BLSP.290.111.000				290 RL	BSPS.10.299	290 RL	BSPS.11.012
320 RL	NBR black	BLSP.320.111.000				320 RL	BSPS.10.309	320 RL	BSPS.11.014
350 RL	NBR black	BLSP.350.111.000				350 RL	BSPS.10.343	350 RL	BSPS.11.015
400 RL	NBR black	BLSP.400.111.000				400 RL	BSPS.10.341	400 RL	BSPS.11.016
						Carrying capacity			
Type	ØA	ØA wirk	ØA1	ØA2	H	Z	vertical	horizontal	Weight
120 RL	120	110	96	110	22	6,0	29,00 kg	58,00 kg	0,250 kg
180 RL	180	165	148	148	23	6,5	65,00 kg	130,00 kg	0,650 kg
200 RL	200	180	150	146	30	10,5	77,00 kg	155,00 kg	0,770 kg
230 RL	232	220	198	198	23	6,5	116,00 kg	232,00 kg	1,050 kg
270 RL	270	260	235	224	22	6,5	162,00 kg	324,00 kg	1,750 kg
290 RL	290	260	240	236	30	10,5	162,00 kg	324,00 kg	1,900 kg
320 RL	320	305	270	266	30	10,5	223,00 kg	447,00 kg	2,450 kg
350 RL	350	310	300	292	30	10,5	230,00 kg	461,00 kg	2,900 kg
400 RL	400	360	350	350	30	10,5	311,00 kg	622,00 kg	3,850 kg
The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient.									
* Tested and values calculated with a plane, dry and dust-free glass surface.									

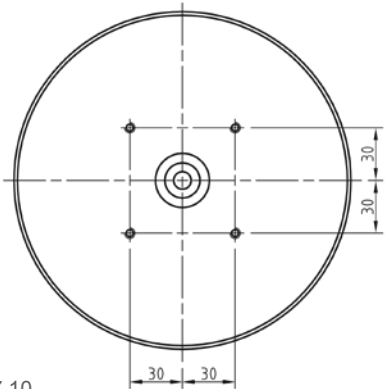
These flat suction cups are available in different materials. As a result, the seals can have different Shore hardnesses.

Depending on the application or the requirements, different materials are needed. You can send us a direct inquiry or read up on it in our main catalogue respectively on our homepage:

<http://www.euro-tech-vacuum.de>.



Product picture similar

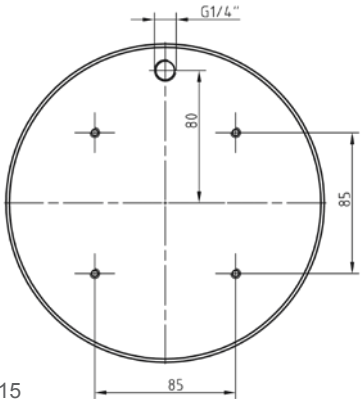


Type BPS.01.177.10

<b>Type BLSP 230 RL - GK Tec</b>	<b>Drilling template</b>
Complete flat suction cup consisting of flat suction cup seal type BPS.10.336, aluminium base plate type BPS.01.177.10, clamping clip type BPS.11.011 and O-Ring type BPS.20.791	The flat suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers requirements.
Part number flat suction cup complete mounted:	BLSP.230.111.002



Product picture similar

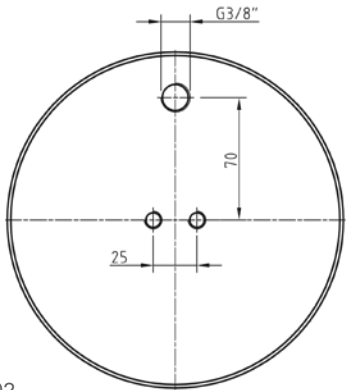


Type BPS.01.177.15

<b>Type BLSP 230 RL - BA</b>	<b>Drilling template</b>
Complete flat suction cup consisting of flat suction cup seal type BPS.10.336.02, aluminium base plate type BPS.01.177.15 and clamping clip type BPS.11.011	The flat suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers requirements.
Part number flat suction cup complete mounted:	BLSP.230.111.005



Product picture similar



Type BPS.01.177.02

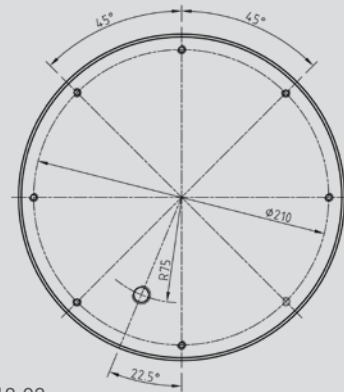
<b>Type BLSP 230 RL - ForEI</b>	<b>Drilling template</b>
Complete flat suction cup consisting of flat suction cup seal type BPS.10.336.01, aluminium base plate type BPS.01.177.02 and clamping clip type BPS.11.011	The flat suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers requirements.
Part number flat suction cup complete mounted:	BLSP.230.111.003





Product picture similar

Type BPS.01.118.03

**Type BLSP 290 RL-HE**

Complete flat suction cup, consisting of flat suction cup seal type BPS.10.299, aluminium base plate type BPS.01.118.03 and clamping clip type BPS.11.012

Part number flat suction cup complete mounted:

**Drilling template**

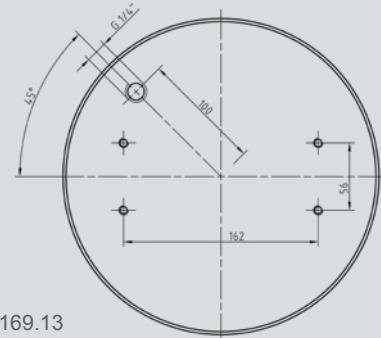
The flat suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers requirements.

BLSP.290.111.001



Product picture similar

Type BPS.01.169.13

**Type BLSP 320 RL-PK**

Complete flat suction cup, consisting of flat suction cup seal type BPS.10.309.02, aluminium base plate type BPS.01.169.13, clamping clip type BPS.11.014 and fastening nipple 4xM10x12 type BPS.20.241.01

Part number flat suction cup complete mounted:

**Drilling template**

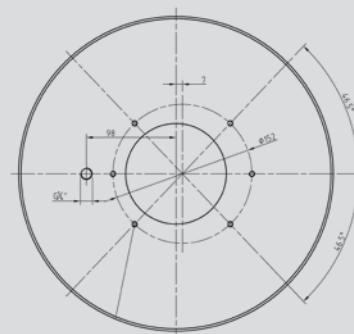
The flat suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers requirements.

BLSP.320.111.006



Product picture similar

Type BPS.01.179.04

**Type BLSP 400 RL-WPG**

Complete flat suction cup, consisting of flat suction cup seal type BPS.10.341.06, aluminium base plate type BPS.01.179.04 and clamping clip type BPS.11.016

Part number flat suction cup complete mounted:

**Drilling template**

The flat suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers requirements.

BLSP.400.111.010

Product picture



Product description

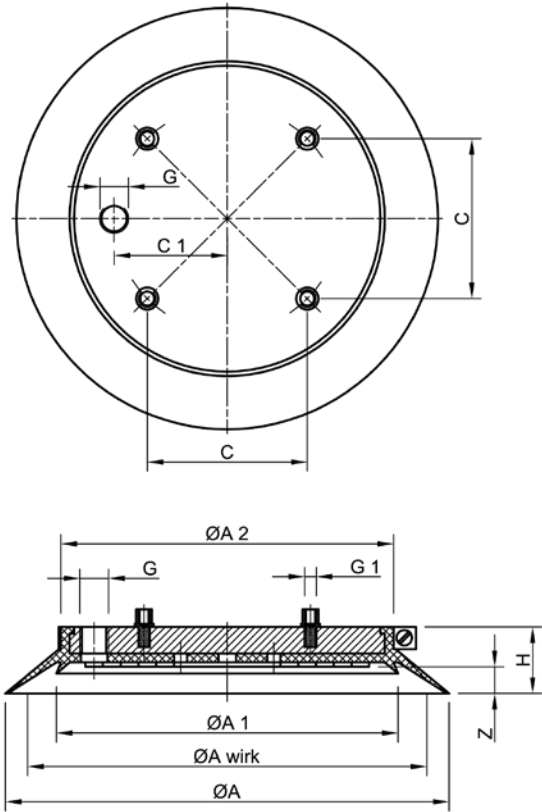
Flat suction cup type BLSP 200 PK with replaceable seal and large inner volume. The seal has a diameter of 200 mm, is in NBR black at approx. 50 Shore and has inner support and grooves. Four mounting pins with internal thread are installed on the back of the aluminium base plate. The seal is replaceable and secured with a clamping clip onto the base plate. In the majority of cases this suction cup is installed in vacuum lifting devices. Ready-to-install.

Other drilling templates are available on request.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	C	C1	G	G1	H	Z	Weight
BLSP 200 PK	200	180	154	150	73	60	1/4"	M6	23,5	7,5	0,770 kg
Type	Part number Flat suction cup				Spare seal				Clamping clip		
BLSP 200 PK	BLSP.200.111.002 NBR black				BSPS.10.207 NBR black				BSPS.11.010		
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal								
BLSP 200 PK	77		155								



## Product description

## Product picture

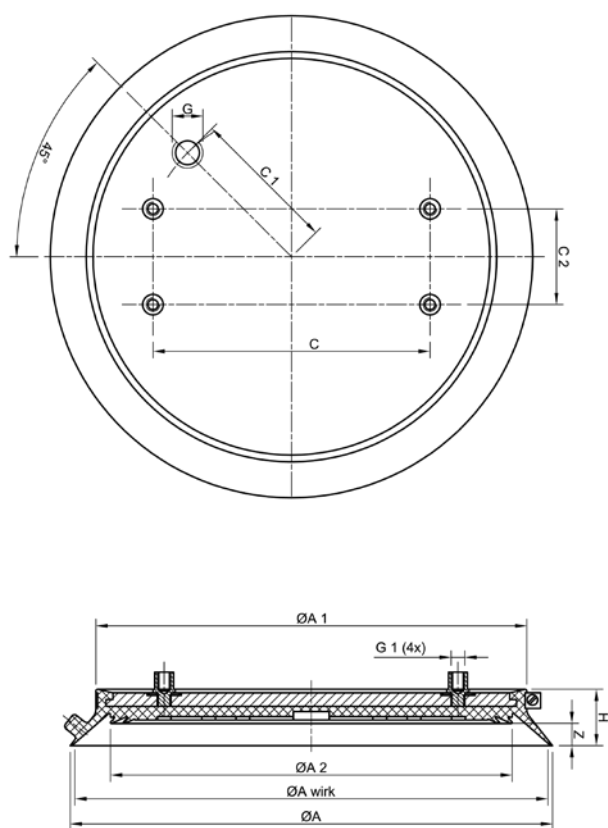
Flat suction cup type BLSP 280 PK with replaceable seal and large inner volume. The seal has a diameter of 280 mm, is in NBR black at approx. 50 Shore and has an inner support and grooves. Four mounting pins with internal thread are installed on the back of the aluminium base plate. The seal is replaceable and secured with a clamping clip onto the base plate. In the majority of cases, this suction cup is installed in vacuum lifting devices. Ready-to-install.

Other drilling templates are available on request.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	C	C1	C2	G	G1	H	Z	Weight
BLSP 280 PK	282	275	252	234	162	80	56	1/4"	4xM8	33	13	1,490 kg
Type	Part number Flat suction cup					Flat suction cup seal					Clamping clip	
BLSP 280 PK	BLSP.280.111.001 NBR black					BSPS.10.189 NBR black					BSPS.11.009	
	BLSP.280.121.001 NBR grey					BSPS.10.240 NBR grey						
	BLSP.280.126.001 NR grey					BSPS.10.421 NR grey						
The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						Type		Carrying capacity in kg				
								vertical		horizontal		
						BLSP 280 PK		181		363		

Product picture



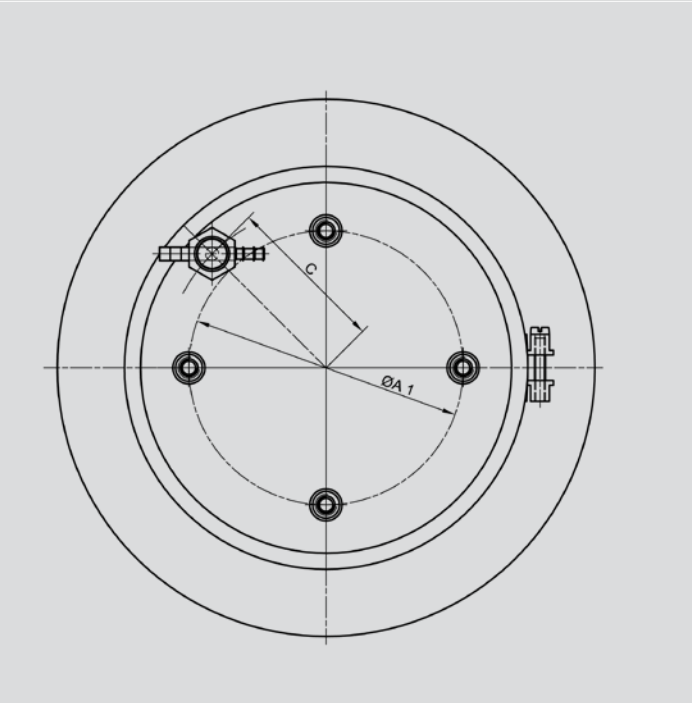
Product description

The flat suction cup type BLSP 200 PK-BY has an exchangeable seal with a diameter of 200 mm and a big inner volume. The seal is in NBR black with a Shore hardness of approx. 50. The inner surface of the seal has a groove rubber support. On the back of the aluminium base plate there is a mini-ejector type BDCN-DJ installed as well as hose nipples with inside thread.

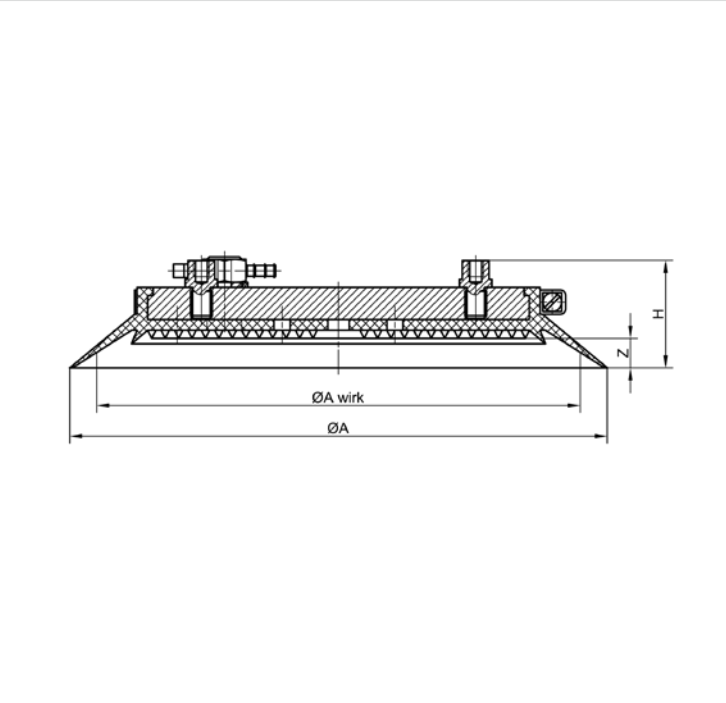
In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip. The flat suction cup is used predominantly in vacuum lifting devices and is ready-to-install.

Available with other drilling templates on request.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	C	H	Z	Weight
BLSP 200 PK-BY	200	180	102	60	40	11	0,770 kg
Type	Part number Flat suction cup		Flat suction cup seal			Clamping clip	
BLSP 200 PK-BY	BLSP.200.111.010		BSPS.10.207 NBR black			BSPS.11.010	
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical	horizontal					
BLSP 200 PK-BY	77	155					

## Product description

## Product picture

The flat suction cup type BLSP 280 PK-BY has an exchangeable seal with a diameter of 280 mm and a big inner volume. The seal is in NBR black with a Shore hardness of approx. 50. The inner surface of the seal has a groove rubber support. On the back of the aluminium base plate there is a mini-ejector type BDCN-DJ installed as well as 4xM8 hose nipples with inside thread.

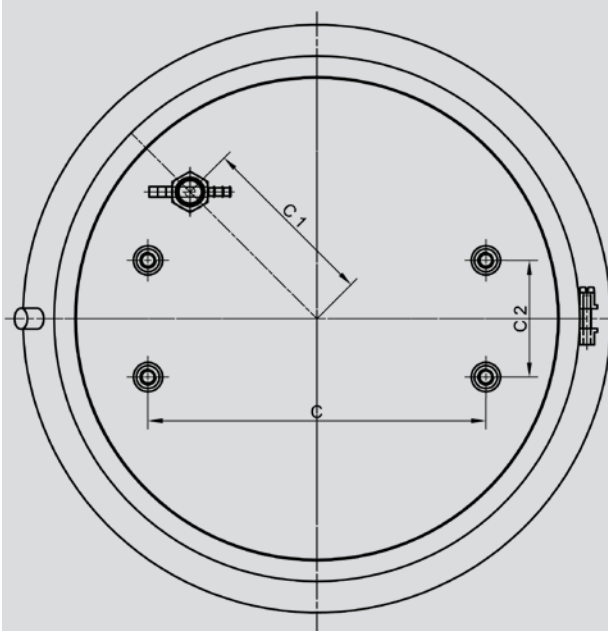
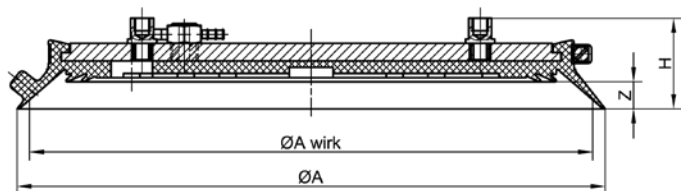
In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip. The flat suction cup is used predominantly in vacuum lifting devices and is ready-to-install.

Available with other drilling templates on request.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	C	C1	C2	H	Z	Weight
BLSP 280 PK-BY	282	275	162	86	56	43,5	13	1,490 kg
Type	Part number Flat suction cup		Flat suction cup seal				Clamping clip	
BLSP 280 PK-BY	BLSP.280.111.010		BSPS.10.189 NBR black				BSPS.11.009	
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical	horizontal						
BLSP 280 PK-BY	181	363						

Product picture



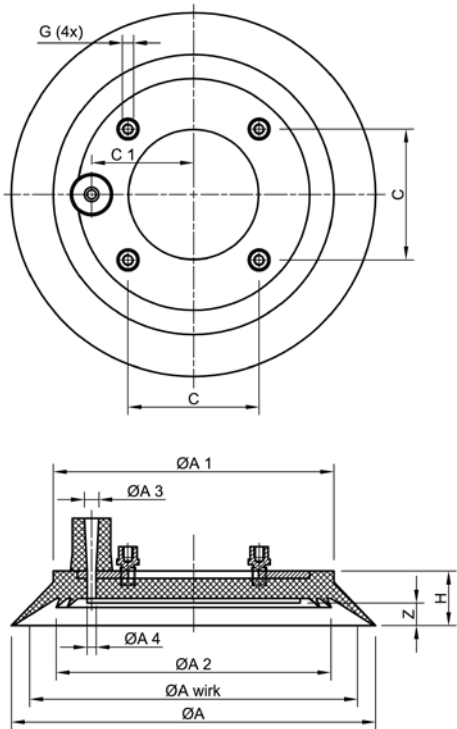
Product description

Flat suction cup type BLSP 200 PK with vulcanized seal and large inner volume. The seal has a diameter of 200 mm and is in NBR black at approx. 50 Shore. With inner support and groove. Four mounting pins with a M6 internal thread are installed on the back of the steel ring. There is a collateral rubber nipple for the vacuum connection. In the majority of cases this suction cup is installed in vacuum lifting devices.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	ØA4	C	C1	G	H	Z
BLSP 200 PK	200	180	154	151	8	5	72	56	4xM6	30	12,5
Type	Part number Flat suction cup				Flat suction cup seal					Weight	
BLSP 200 PK	BLSP.200.111.007 NBR black				vulcanised					0,600 kg	
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal								
BLSP 200 PK	77		155								



## Product description

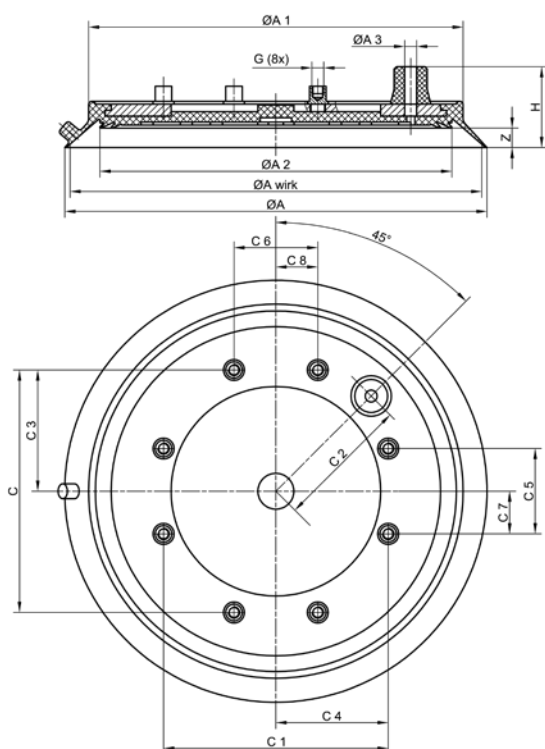
## Product picture

Flat suction cup type BLSP 280 PK with vulcanized seal and large inner volume. The seal has a diameter of 280 mm and is in NBR black at approx. 50 Shore, with inner support and groove. Four mounting pins with a M6 internal thread are installed on the back of the steel ring. There is a collateral rubber nipple for the vacuum connection. In the majority of cases this suction cup is installed in vacuum lifting devices.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	G		H	Z
BLSP 280 PK	282	275	250	234	8	8xM8 (4xM8)		54	13
Type	C	C1	C2	C3	C4	C5	C6	C7	C8
BLSP 280 PK	162	150	90	81	75	57	56	28,5	28
Type	Part number Flat suction cup				Flat suction cup seal			Weight	
BLSP 280 PK	BLSP.280.111.013 NBR black 4xM8				vulcanised			2,170 kg	
BLSP 280 PK	BLSP.280.111.016 NBR black 8xM8				vulcanised			2,192 kg	
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical		horizontal						
BLSP 280 PK	181		363						



Product picture



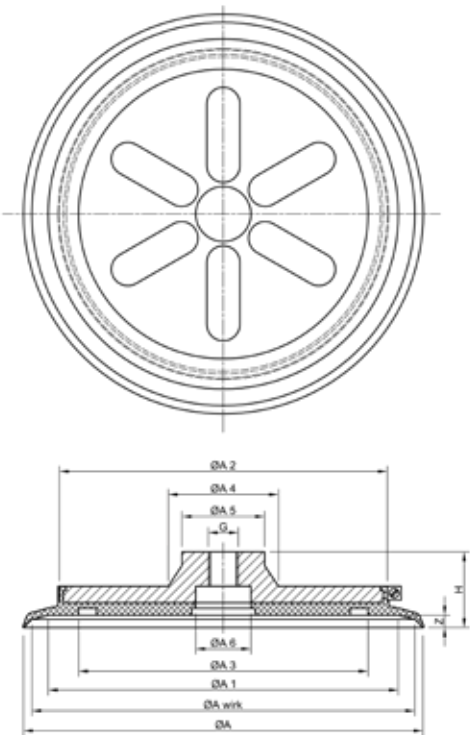
Product description

Flat suction cup seal type BLSP 290 BR with aluminium base plate. The seal has a diameter of 290 mm, is in NBR black at approx. 65 Shore. The inner surface has small support naps. The rubber lip which seals against the work piece is short, a quick ventilation for high stacking speed is assured. The aluminium base plate has a threaded centric hole for mounting. Quick and cost-saving change of the seal by means of the clamping clip. Ready-to-install.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	ØA4	ØA5	ØA6	G	H	Z	Weight
BLSP 290 BR	290	278	254	238	210	80	60	40	M22x1,5	55	9	2,080 kg
Type	Part number Flat suction cup					Flat suction cup seal				Clamping clip		
BLSP 290 BR	BLSP.292.111.001 NBR black					BSPS.10.237 NBR black				BSPS.11.003		
Type	Carrying capacity in kg					The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal									
BLSP 290 BR	185		371									

## Product description

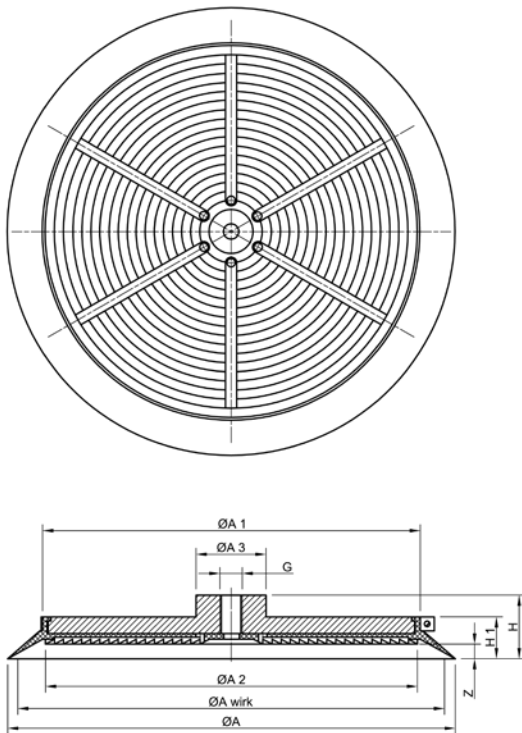
## Product picture

Suction cup type BLSP 320 JB with replaceable seal, aluminium base plate and threaded centric hole for mounting as well as a clamping clip for secure clamping of the seal. The seal has a diameter of 320 mm, is in NBR black at approx. 50 Shore and the inner surface has deep grooves. The rubber lip, which seals against the work piece is long, minimal force is needed when placing the vacuum lifter onto the work piece to achieve a seal. In the majority of cases, this suction cup seal is used in vacuum lifting devices. Ready-to-install.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	G	H	H1	Z	Weight
BLSP 320 JB	320	305	273	270	50	M16	44	28,5	10,5	2,500 kg
Type	Part number Flat suction cup				Flat suction cup seal				Clamping clip	
BLSP 320 JB	BLSP.320.111.001 NBR black				BSPS.10.309 NBR black				BSPS.11.014	
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal							
BLSP 320 JB	223		447							

Product picture



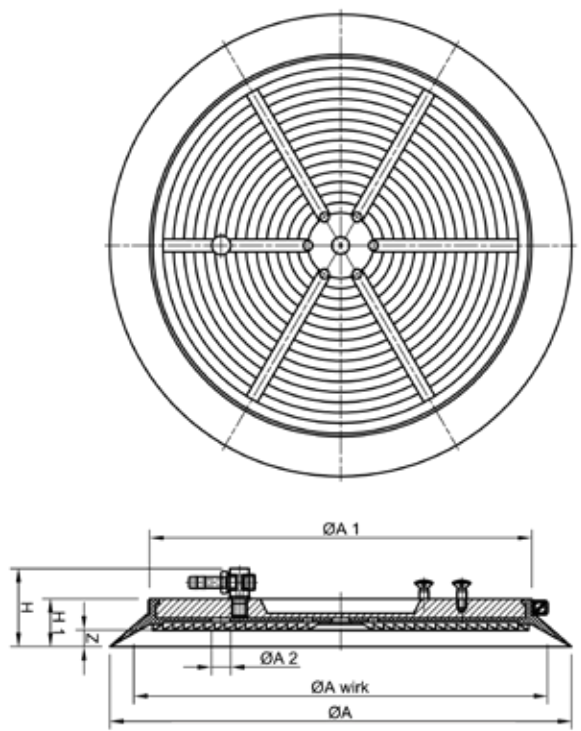
Product description

Suction cup type BLSP 290 RL-WPG with replaceable seal and small inner volume. The seal has a diameter of 290 mm, is in NBR black at approx. 50 Shore and has an inner support with grooves. The aluminium base plate has tapped holes to fit the lifting device. The seal is replaceable and secured with a clamping clip onto the base plate. The aluminium base plate has 5 x M6 inside threads as well as a 1/8" vacuum connection 63,5 mm excentric. In the majority of cases this suction cup is installed on vacuum lifting devices.

Application picture



Technical drawing



Technical data / Order data / Spare parts

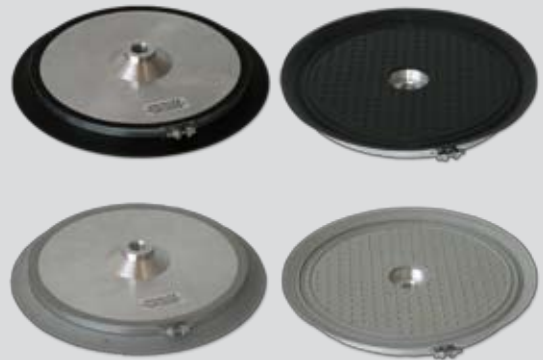
Type	ØA	ØA wirk	ØA1	ØA2	H	H1	Z	Weight
290 RL-WPG	290	260	240	12	49	30	10,5	1,856 kg
Type	Part number Flat suction cup		Flat suction cup seal				Clamping clip	
290 RL-WPG	BLSP.290.111.011 NBR black		BSPS.10.299.05 NBR black				BSPS.11.012	
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical	horizontal						
290 RL-WPG	162	324						



## Product description

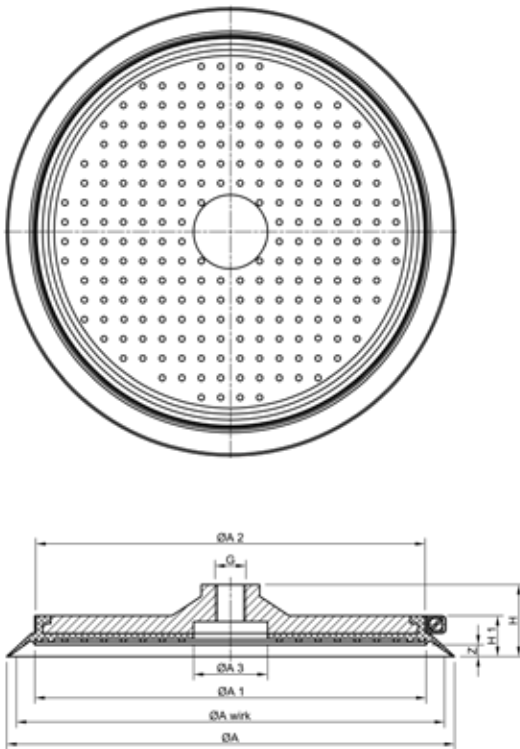
## Product picture

Flat suction cup seal type BLSP 230 NO with aluminium base plate. The flat suction cup seal has a diameter of 230 mm, is in NBR black at approx. 50 Shore and has an inner surface with small support naps. The rubber lip which seals against the work piece is short and a quick ventilation for high stacking speed is assured. The aluminium base plate has a threaded centric hole for mounting. Quick and cost-saving change of the seal by means of the clamping clip. Ready-to-install.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	H	H1	Z	Weight
BLSP 230 NO	230	220	201	200	38	37	21	6	0,950 kg
Type	Part number Flat suction cup				Flat suction cup seal				Clamping clip
BLSP 230 NO	BLSP.233.111.001 NBR black				BSPS.10.231 NBR black				BSPS.11.011
BLSP 230 NO	BLSP.233.121.001 NBR grey				BSPS.10.455 NBR grey				BSPS.11.011
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical		horizontal						
BLSP 230 NO	116		232						

Product picture



Product description

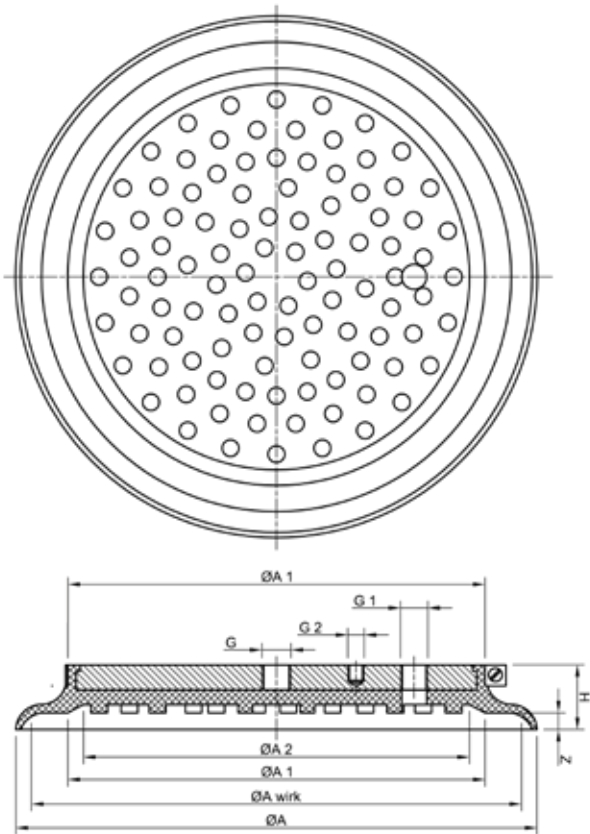
Flat Suction cup type BLSP 250 COP with nap rubber support. The seal is in NBR grey at approx. 50 Shore and has a diameter of 250 mm. Due to the geometry of the rubber lip, only light pressure is requested before the vacuum is switched on. The rubber seal is clamped onto the base plate by means of a clamping clip. In case of wear, only the rubber seal needs to be changed.

On demand we supply the base plate with drilled and tapped holes to fit your machine.

Application picture



Technical drawing



Technical data / Order data / Spare parts

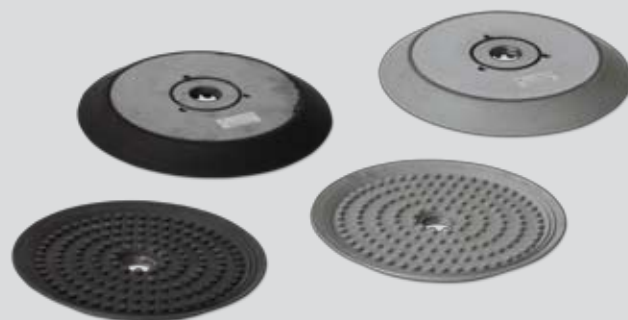
Type	ØA	ØA wirk	ØA1	ØA2	G	G1	G2	H	Z	Weight
BLSP 250 COP	250	235	200	185	14x1,5	1/4"	M8	31	8	1,550 kg
Type	Part number Flat suction cup				Flat suction cup seal			Clamping clip		
BLSP 250 COP	BLSP.252.121.001 NBR grey				BSPS.10.396.01 NBR grey			BSPS.11.011		
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal							
BLSP 250 COP	132		265							



## Product description

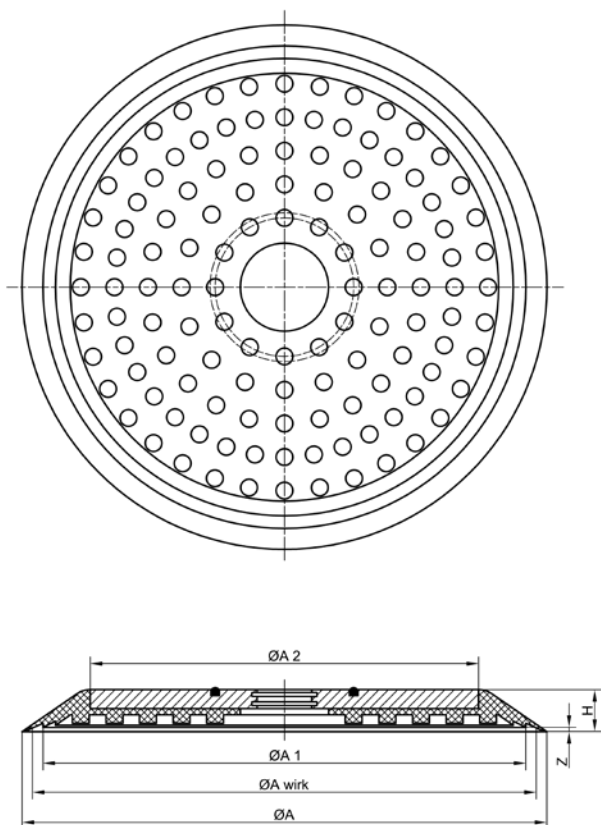
## Product picture

Flat suction cup seal type BSP 250 NOG with vulcanised steel plate. The seal has a diameter of 250 mm, is in NBR grey at approx. 55 Shore and the inner surface has large support naps. The rubber lip which seals against the work piece is short and a quick ventilation for high stacking speed is assured. The steel base plate has threaded holes on the back side and a groove with mounted sealing ring. Ready-to-install.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z
BLSP 250 NOG	250	240	230	185	20	2
Type	Part number Flat suction cup				Flat suction cup seal	Weight
BLSP 250 NOG	BLSP.253.111.001 NBR black				vulcanised	2,100 kg
BLSP 250 NOG	BLSP.253.121.001 NBR grey				vulcanised	2,100 kg
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.		
	vertical		horizontal			
BLSP 250 NOG	138		276			

Product picture

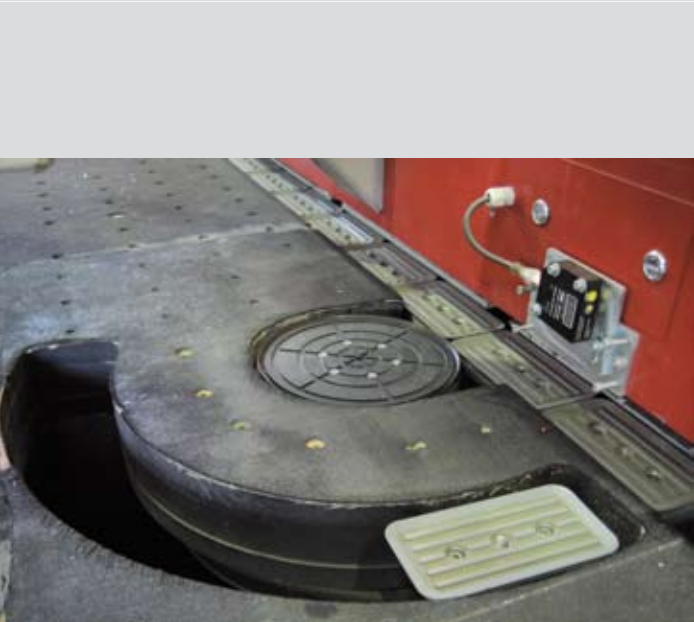


Product description

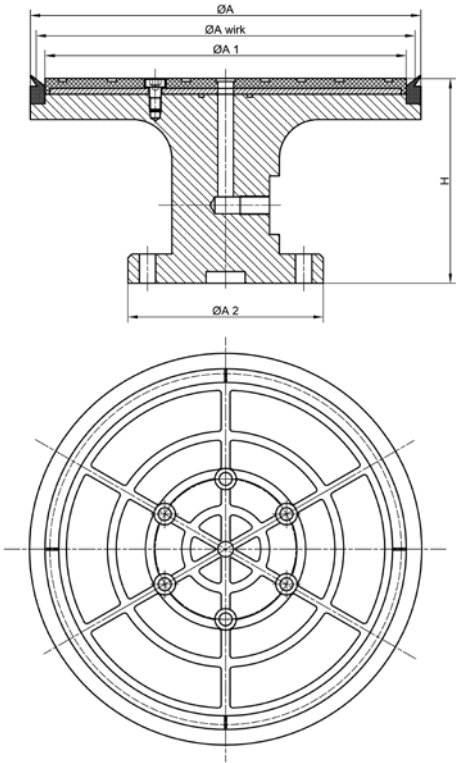
The rotary suction plate type BLSP 200 BY consists of a support in aluminium with lower flange plate with a diameter of 100 mm and 4 drillings Ø 8,4 mm for mounting the rotary suction plate on the existing device. The upper side has a removable bearing plate with a diameter of 185 mm and is 8 mm thick. There is a V-Ring seal in NBR black for sealing. In case of wear, the ring seal and the bearing plate can be exchanged quick and cost-saving.

- Total height of construction: 105 mm

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Weight
BLSP 200 BY	200	194	185	100	105	0,925 kg
Type	Part number Flat suction cup		V-Ring seal		Bearing plate	
BLSP 200 BY	BLSP.204.001 NBR black		BSPS.20.1245 NBR black		BSPS.10.612 NBR black	
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical	horizontal				
BLSP 200 BY	90	180				

## Product description

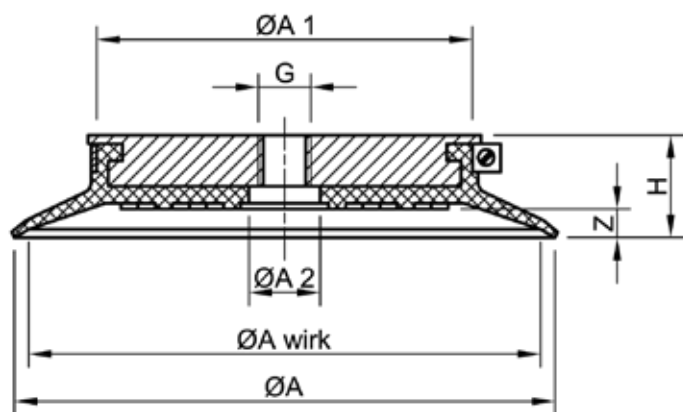
## Product picture

Elastic and wear resistant flat suction cup type BLSP Series L with a small inner volume, suitable for work pieces with a flat and smooth surface especially work pieces like wooden or glass plates or sheet metal. The seal is in NBR black at approx. 50 Shore and replaceable. Several connecting nipples, flow reductions and pin valves are available. Quick and cost-saving change of the seal by means of the clamping clip.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z	Weight
BLSP 60 L	60	54	37,5	12	17,5	5	0,030 kg
BLSP 80 L	80	72	51	12	17	5	0,060 kg
BLSP 95 L	95	90	66	12	18	5	0,102 kg
Type	Part number Flat suction cup			G	Flat suction cup seal		Clamping clip
BLSP 60 L	BLSP.061.111.002			M10 x 1,25	BSPS.10.131		BSPS.11.060
BLSP 80 L	BLSP.081.111.002			M10 x 1,25	BSPS.10.121		BSPS.11.061
BLSP 95 L	BLSP.095.111.002			M10 x 1,25	BSPS.10.134		BSPS.11.062
BLSP 60 L	BLSP.061.111.003			1/8“	BSPS.10.131		BSPS.11.060
BLSP 80 L	BLSP.081.111.003			1/8“	BSPS.10.121		BSPS.11.061
BLSP 95 L	BLSP.095.111.003			1/8“	BSPS.10.134		BSPS.11.062
BLSP 60 L	BLSP.061.111.001			1/4“	BSPS.10.131		BSPS.11.060
BLSP 80 L	BLSP.081.111.001			1/4“	BSPS.10.121		BSPS.11.061
BLSP 95 L	BLSP.095.111.001			1/4“	BSPS.10.134		BSPS.11.062
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical	horizontal					
BLSP 60 L	7	14					
BLSP 80 L	12	24					
BLSP 95 L	19	38					

Product picture



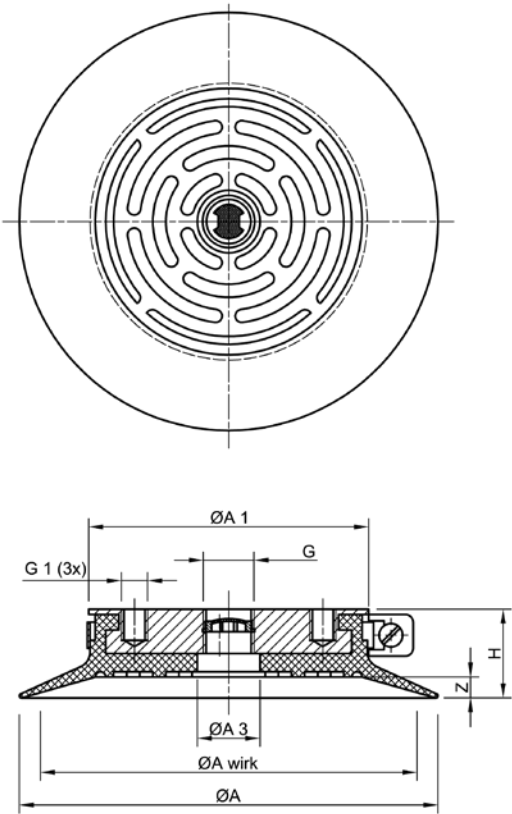
Product description

The flat suction cup type BSC 80L has a diameter of 80 mm. The aluminium base plate has a 1/8" inside thread as well as 3 blind holes with a M5 inside thread (3 x 120°) on a pitch circle of 36 mm. With seal in NBR black, clamping clip in stainless steel and a 1/8" fine filter. Quick and cost-saving change of the seal by means of the clamping clip.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	G1	H	Z	Weight
BLSP 80 L - L	80	72	53,5	12	1/8“	3xM5	17	4	0,068 kg
Type	Part number Flat suction cup			Flat suction cup seal			Clamping clip		
BLSP 80 L - L	BLSP.081.111.008 NBR black			BSPS.10.121 NBR black			BSPS.11.061		
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
BLSP 80 L - L	12		24						



## Product description

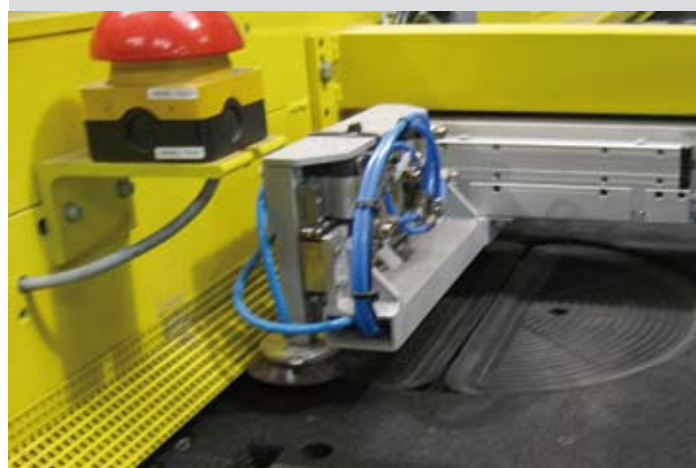
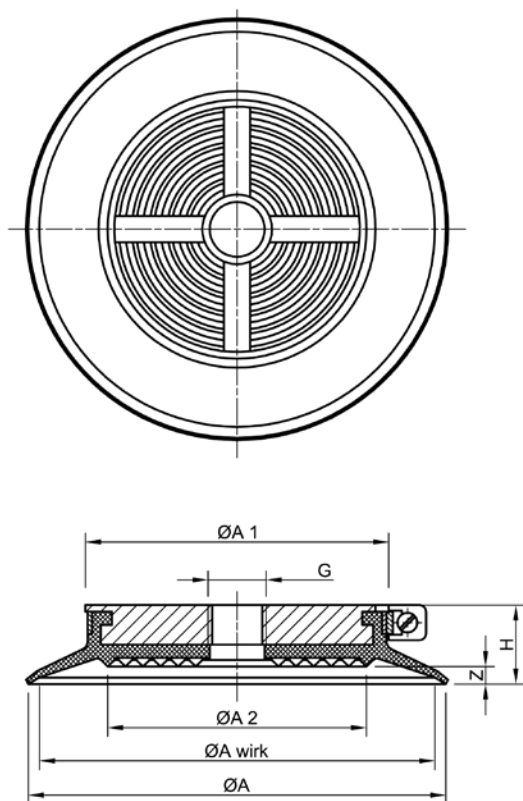
## Product picture

The flat suction cup type BSC 95 R has a diameter of 95 mm and the seal is in PUR at approx. 60 Shore. With aluminium base plate, 1/4" inside thread and clamping clip in stainless steel.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	H	Z	Weight
BLSP 95 R	95	90	69	59	1/4"	18	4	0,108 kg
Type	Part number Flat suction cup				Flat suction cup seal			Clamping clip
BLSP 95 R	BLSP.095.127.001 PUR brown				BSPS.10.373 PUR brown			BSPS.11.062
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical		horizontal					
BLSP 95 R	19		38					



Product picture



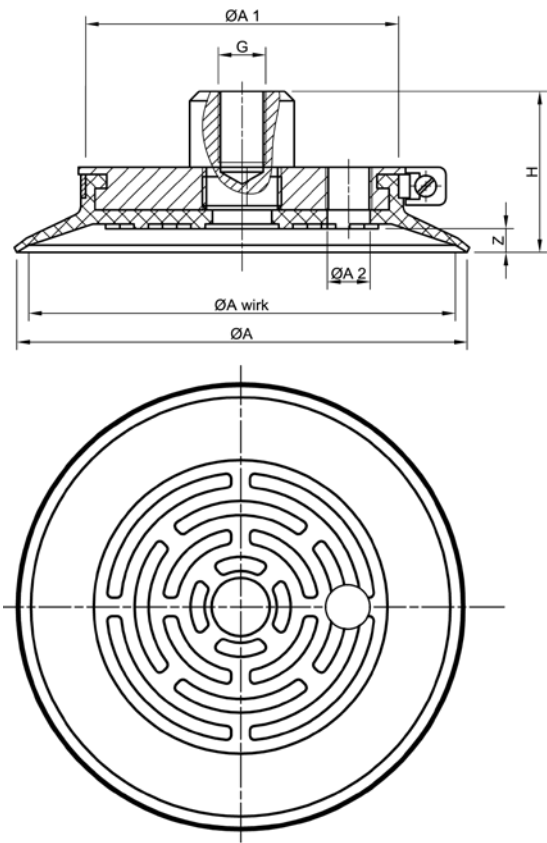
Product description

The flat suction cup type BLSP 95 L - BY has a diameter of 95 mm. There is a threaded pin with SW 17 and M12 inside thread installed on the aluminium base plate. The vacuum connection with a G 1/8" is mounted on the side. The seal is in NBR black and is used predominantly in the glass industry. In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	H	Z	Weight
BLSP 95 L-BY	95	90	66	9	M12	34	5	0,117 kg
Type	Part number Flat suction cup			Flat suction cup seal			Clamping clip	
BLSP 95 L-BY	BLSP.095.111.007 NBR black			BSPS.10.134.01 NBR black			BSPS.11.062	
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical	horizontal						
BLSP 95 L-BY	19	38						

## Product description

## Product picture

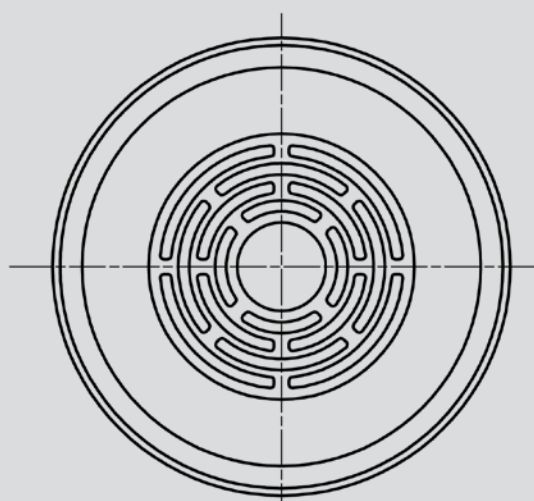
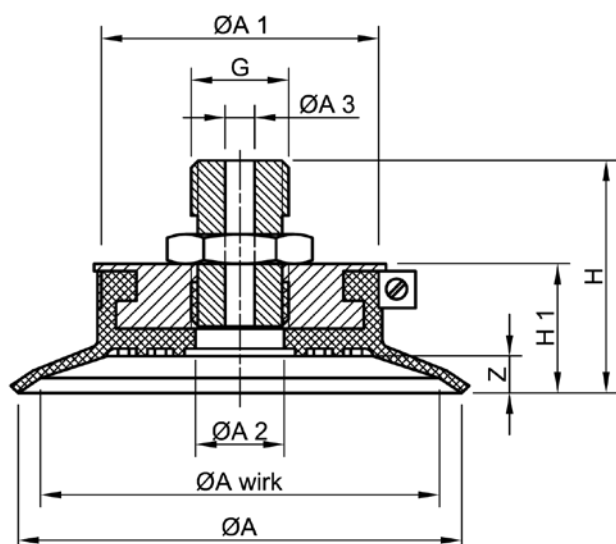
The flat suction cup type BLSP 60 L-BY has a diameter of 60 mm and the seal is in NBR black. The aluminium base plate has a G1/4" inside thread where a double threaded pin with 2xG1/4" is installed. The seal is secured with a clamping clip.

In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip.



## Technical drawing

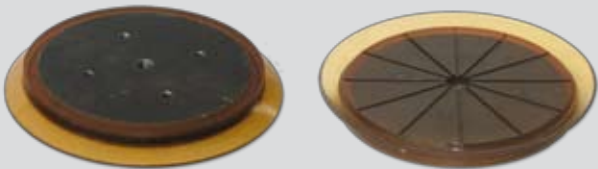
## Bottom view



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	H	Z	Weight
BLSP 60 L-BY	95	90	69	59	1/4"	18	4	0,042 kg
Type	Part number Flat suction cup				Flat suction cup seal			Clamping clip
BLSP 60 L-BY	BLSP.061.111.005 NBR black				BSPS.10.131 NBR black			BSPS.11.060
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical		horizontal					
BLSP 60 L-BY	7		14					

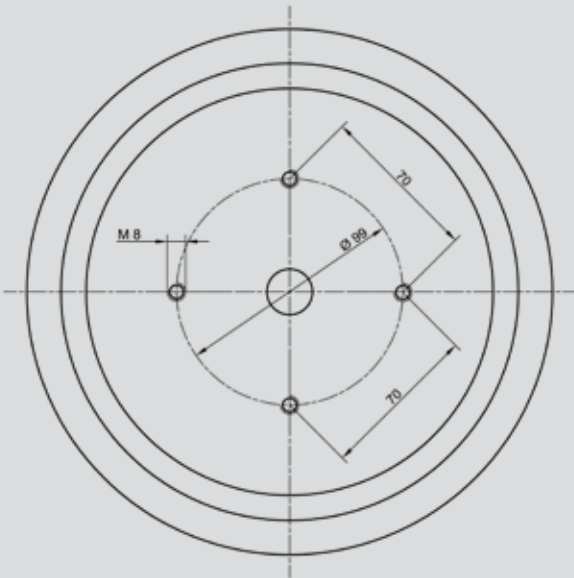
Product picture



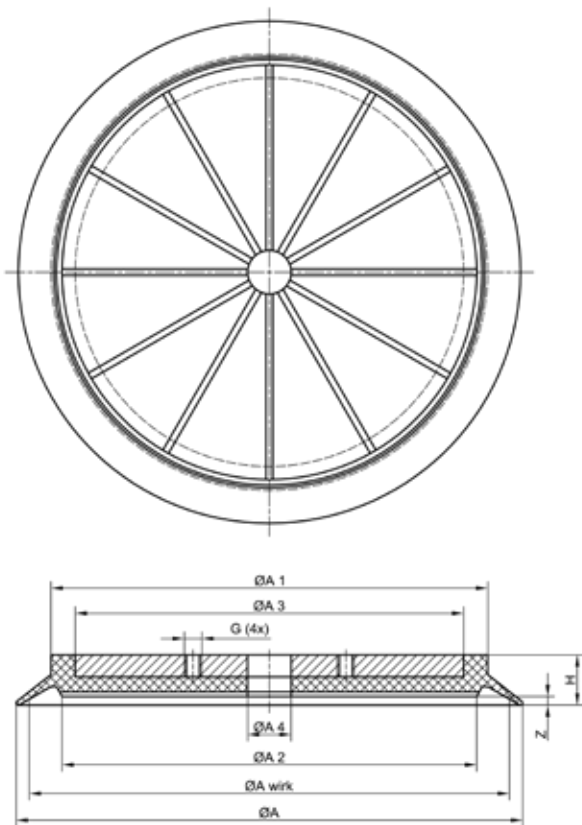
Product description

The flat suction cup type BSP 230 L-PU has a diameter of 230 mm. The seal is in PUR at approx. 60 Shore and is vulcanized onto a steel base plate. The seal has a long rubber lip and a groove rubber support. The base plate has a centric hole with a diameter of 20 mm as well as 4 tapped holes for mounting with M8 inside threads 70 x 70 mm.

Technical drawing



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	ØA4	G	H	Z
BLSP 230 L-PU	230	220	200	190	178	20	4xM8	23	4
Type	Part number Flat suction cup			Flat suction cup seal			Weight		
BLSP 230 L-PU	BLSP.231.128.003 PUR brown			vulcanised			2,080 kg		
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
BLSP 230 L-PU	116		232						

## Product description

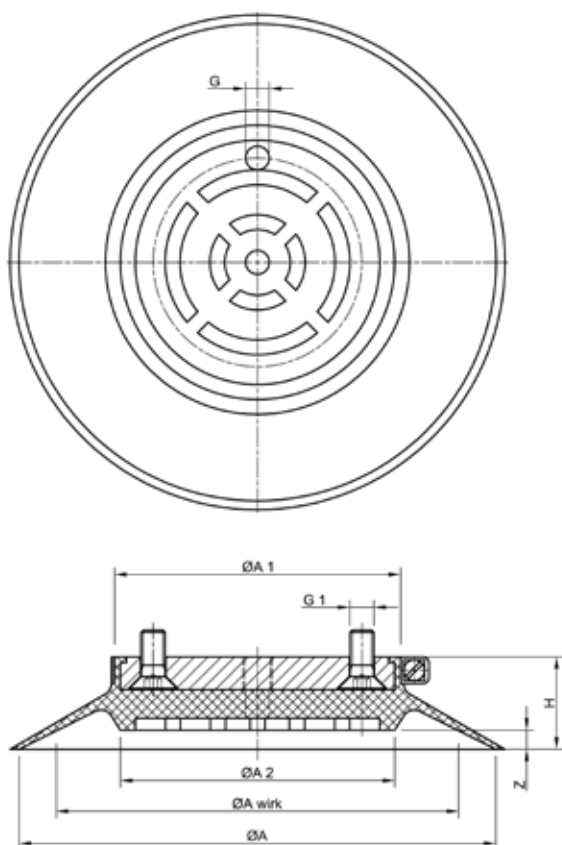
## Product picture

The flat suction cup type BLSP 160 BY has a diameter of 160 mm. The seal is in NBR black at approx. 50 Shore. The aluminium base plate has two counter sunk holes for a M8 counter sunk bolt as well as a G1/8" inside thread for the vacuum connection.



## Technical drawing

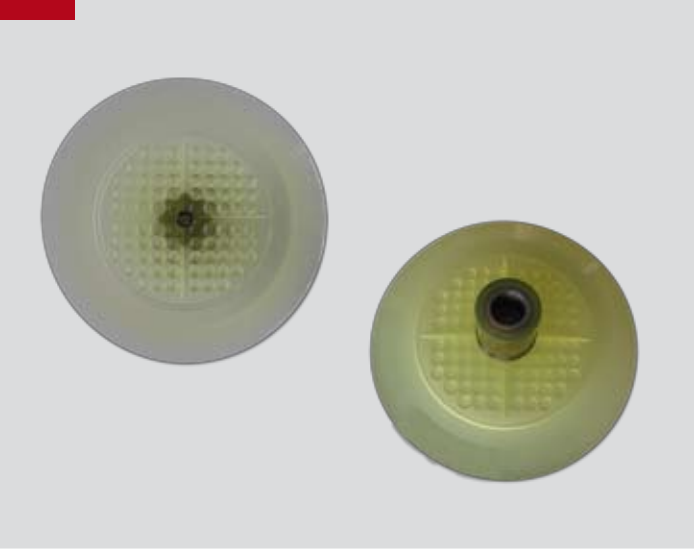
## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G		H	Z	Weight
BLSP 160 BY	160	135	96	92	1/8"	M8	31	6,4	0,367 kg
Type	Part number Flat suction cup				Flat suction cup seal				Clamping clip
BLSP 160 BY	BLSP.161.111.001 NBR black				BSPS.10.443 NBR black				BSPS.11.001
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
BLSP 160 BY	43		87						

Product picture



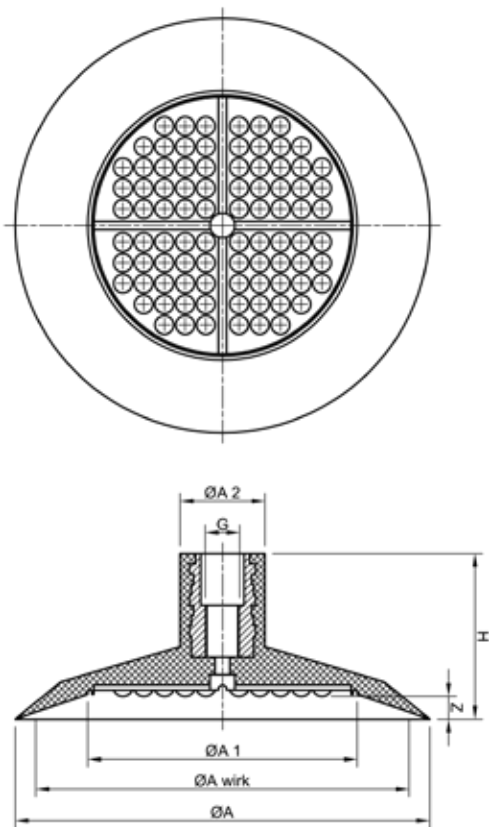
Product description

The flat suction cup type BSP 200 FGS-V has a diameter of 200 mm. It is made of PUR transparent with a Shore hardness of approx. 50, 4 mm range and the steel core with M16 is vulcanised. The rear side has naps. The flat suction cup is predominantly used for flat glass.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z
BSP 200 FGS-V	200	180	130	41	80	11
Type	Part number Flat suction cup			Steel core / holding	G	Weight
BSP 200 FGS-V	BSPS.10.290 PUR transparent			vulcanised	M16	0,527 kg
	BSPS.10.290.01 PUR transparent				3/8“	
	BSPS.10.290.02 PUR transparent				5/8“ UNC	
Type	Tragfähigkeit in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.		
	senkrecht	waagerecht				
BSP 200 FGS-V	77		155			



## Product description

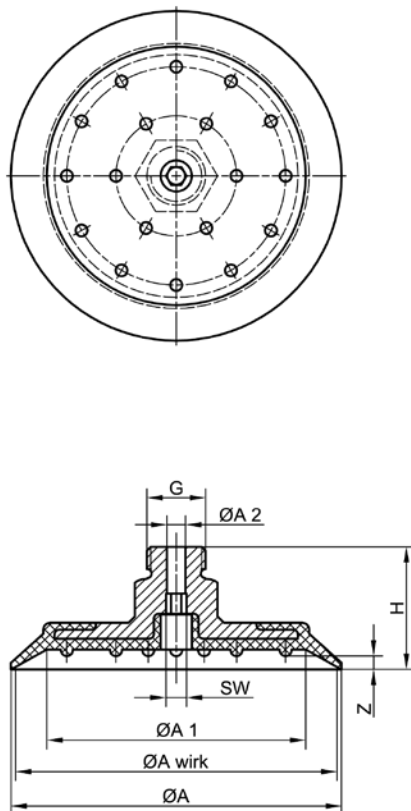
## Product picture

The flat suction cup type BSC 75 VAS has a diameter of 75 mm and has an inner nap rubber support, a vulcanised hose nipple SW 17 and a G 1/7" external thread with internal hexagon.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	SW	H	Z	Weight
BSC 75 VAS	74	72	58	4,2	1/4"	4	27,5	3	0,076 kg
Type	Part number Flat suction cup				Flat suction cup seal				
BSC 75 VAS	BSC.0.075.1.00 NBR black				vulcanised				
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
BSC 75 VAS	12		24						

Product picture



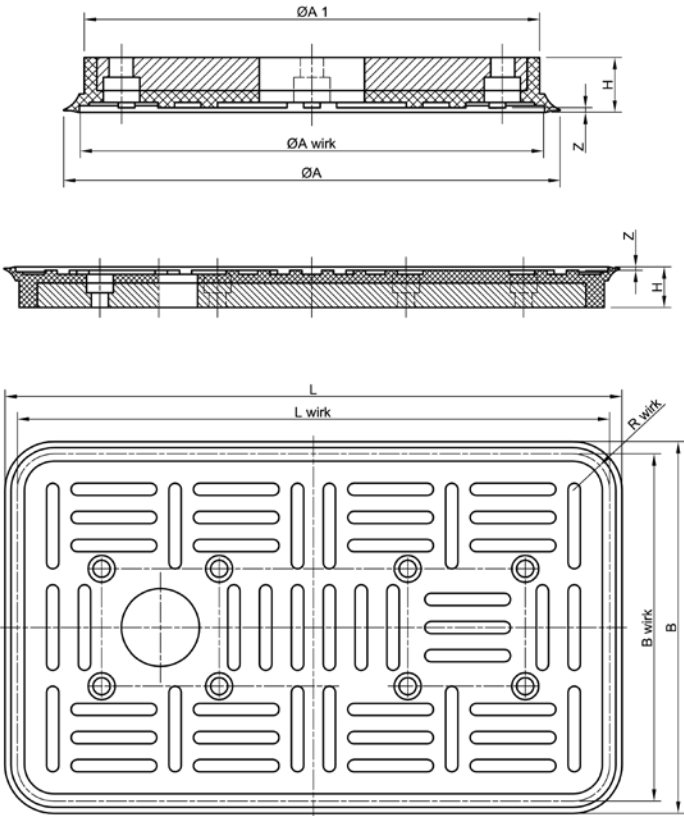
Product description

Hard and wear resistant suction cup type BSP Series FOR with a small inner volume, suitable for vacuum clamping in Forvet CNC-drilling and grinding machines. The seal is in NBR black at approx. 65 Shore. The seal is vulcanized onto an aluminium base plate, which is mounted by means of screws to the machine table.

Technical drawing



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	L	B	L wirk	B wirk	R wirk	H	Z
BSP 150 FOR	150	140	137	-	-	-	-	-	16,6	1,4
BSP 140x240 FOR	-		-	252	152	242	142	15	16,6	1,4
Type	Part number Flat suction cup				Flat suction cup seal				Weight	
BSP 150 FOR	BSPS.10.339 NBR black				vulcanised				0,400 kg	
BSP 140x240 FOR	BSPS.10.340 NBR black				vulcanised				0,900 kg	
Type	Tension force in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.						
	vertical		horizontal							
BSP 150 FOR	47		94							
BSP 140x240 FOR	102		205							

## Product description

## Product picture

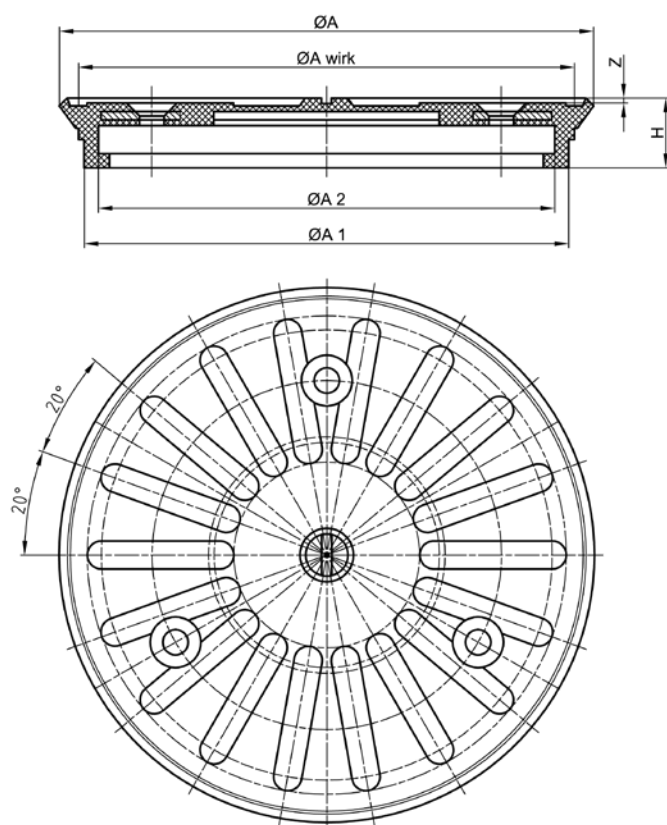
The flat suction cup type BSP 95 BE has a diameter of 95 mm and a short rubber lip. The seal has support bars in NK black at approx. 55 Shore. Please note that the seal is thinner in the middle section (1,3 mm deep x Ø 40 mm).

There is an aluminium ring inlay with the measures Ø 80 mm x 42 mm x 1,5 mm. Additionally there are three counter sunk holes with each Ø 4,4 mm and a sinkhole on the rubber side.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z	Weight
BLSP 95 BE	95	88	86	81	12,4	0,5	0,045 kg
Type	Part number Flat suction cup				Flat suction cup seal		
BLSP 95 BE	BSPS.10.350.05 NBR black				vulcanised		
Type	Tension force in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.		
	vertical		horizontal				
BLSP 95 BE	18		37				

# 03 Flat suction cup seal

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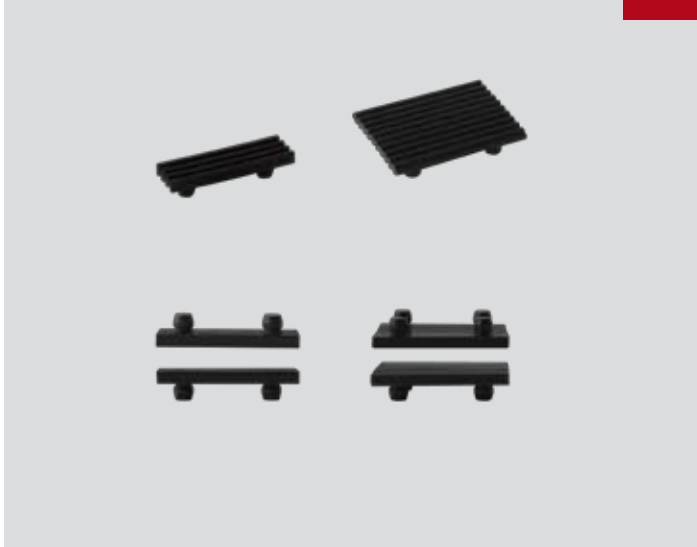
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Accessories for Type BSP 200 FGS	67



Product description

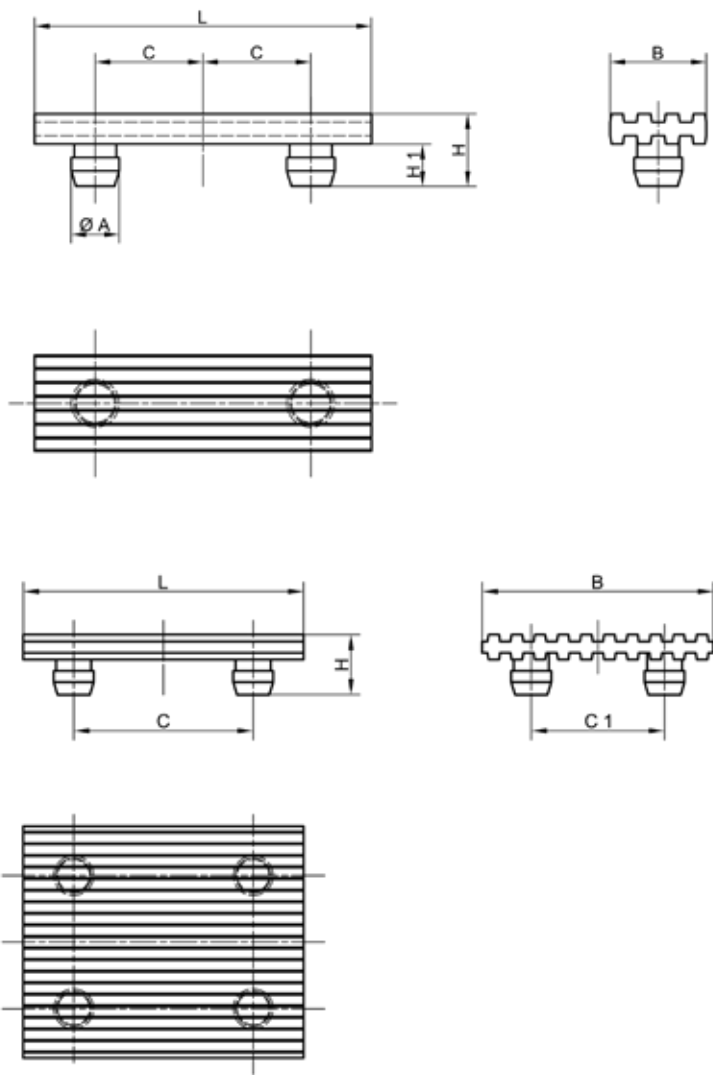
Product picture

This new series of rubber pads is used in Bystronic devices which are used for clamping and tensioning of glass plates. The rubber pads are made of NBR black, have approx. 90 Shore, are chequered on both sides and have Push-In-Lock pins on the rear side for mounting.



Technical drawing

Application picture



Technical data / Order data / Spare parts

Type	ØA	B	C	C1	L	H	H1	Weight	Part number support
Type 40-11	5,7	11,4	12,8	-	40	8,6	5,0	0,002 kg	BSPS.20.1248 NBR black
Type 40-33	5,7	33,0	25,6	19	40	8,6	5,0	0,005 kg	BSPS.20.1280 NBR black

Flat suction cup seal

Product picture

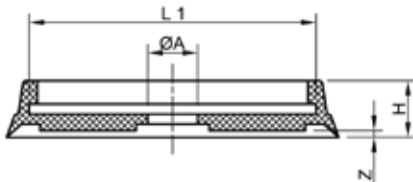
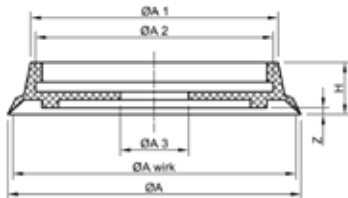
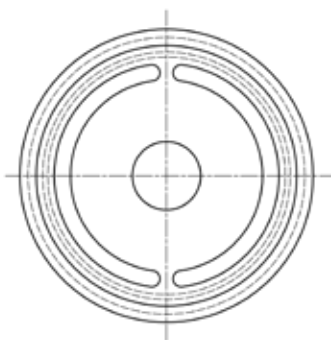
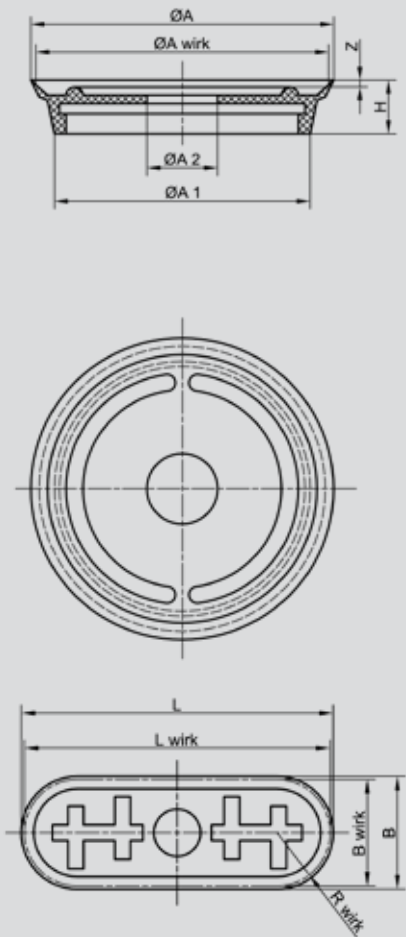
Product description



The flat suction cup seals Type BSP Series BAV has five different seals with a small inner volume, suitable for vacuum clamping in CNC-milling machines, especially for Bavelloni clamping blocks. The suction cup seals are in NBR black at approx. 75 Shore. The seal is attached onto the clamping block and its residual stress will keep it in place. As a result, a quick and cost-saving change is possible.

Technical drawing

Technical drawing



Technische Daten

Type	ØA	ØA wirk	ØA1	ØA2	Z	L	L wirk	B	B wirk	H	R wirk	Weight
40 BAV	42	40	37	12	2,5	-	-	-	-	14	-	0,008 kg
90 BAV Vers. 1	90	87	76	21	2,0	-	-	-	-	16	-	0,034 kg
90 BAV Vers. 2	90	87	76	21	2,0	-	-	-	-	16	-	0,034 kg
160 BAV	165	158	134	25	4,5	-	-	-	-	28	-	0,153 kg
255 BAV	255	240	212	26	5,7	-	-	-	-	37,2	-	0,500 kg
36 x 100 BAV	15	-	-	-	2	100	98	36	34	17	17	0,024 kg

Application picture



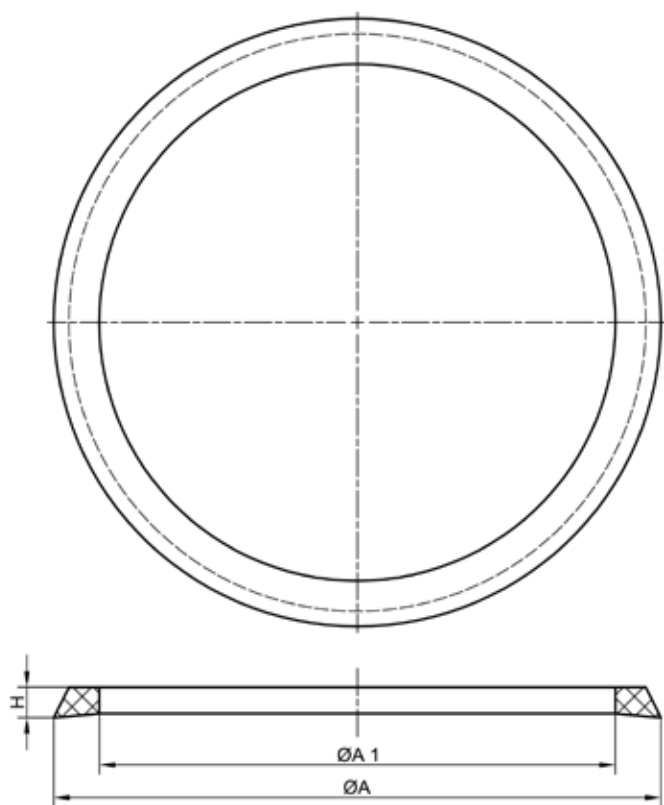
Application picture



Technical data / Order data

Type	Part number Spare seal	Tension force	
		vertical	horizontal
40 BAV	BSPS.10.234 NBR black	3	7
90 BAV S1/S2	BSPS.10.201 NBR black	18	36
160 BAV	BSPS.10.235 NBR black	59	119
255 BAV	BSPS.10.282 NBR black	138	276
36 x 100 BAV	BSPS.10.233 NBR black	7	14

Technical drawing



Product picture



Technical data / Order data / Spare parts

Type	Sealing ring for clamping block		
90 BAV	BSPS.10.399 NBR black		
160 BAV	BSPS.10.605 NBR black		
Type	ØA	ØA1	H
90 BAV	100	85	5
160 BAV	154	140	5

Product picture



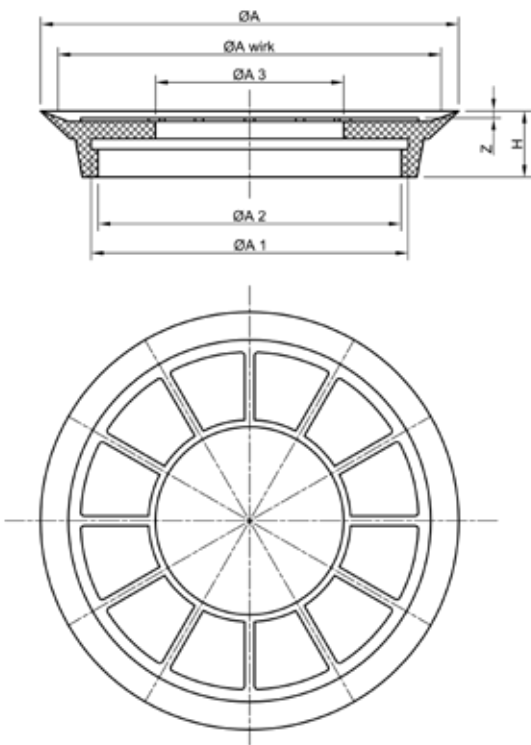
Product description

The flat suction cup seals type BSP Series TM has four different sizes. The seals are in NBR black at approx. 70 Shore with rubber lip and centric hole. Suitable for the Tecnometal clamping block.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	H	Z
BSP 66 TM	66	60	45	41	20	19	3
BSP 86 TM	86	80	64	60	34	19	3
BSP 120 TM	120	110	92	87	54	19	3
BSP 160 TM	162	150	131	123	54	19	3
Type	Part number Flat suction cup seal			Type	Tension force		Weight
					vertical	horizontal	
BSP 66 TM	BSPS.10.422 NBR black			BSP 66 TM	8,00 kg	17,00 kg	0,028 kg
BSP 86 TM	BSPS.10.423 NBR black			BSP 86 TM	15,00 kg	30,00 kg	0,047 kg
BSP 120 TM	BSPS.10.424 NBR black			BSP 120 TM	29,00 kg	58,00 kg	0,065 kg
BSP 160 TM	BSPS.10.425 NBR black			BSP 160 TM	54,00 kg	108,00 kg	0,146 kg

The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient.  
\* Tested and values calculated with a plane, dry and dust-free glass surface.



## Product description

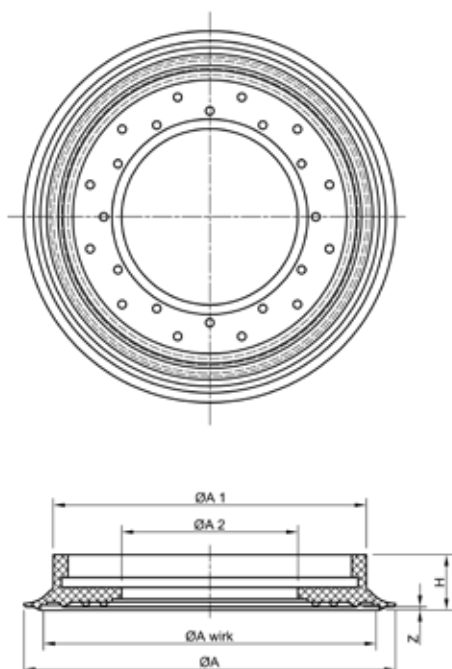
## Product picture

The former Intermac Series C has five different hard and wear resistant seals with a small inner volume, a nap rubber support and a centric hole which is suitable for vacuum clamping in CNC-milling machines. The suction cup seals are in NBR black at approx. 60 Shore. The seal is attached onto the base plate and its residual stress will keep it in place. As a result, a quick and cost-saving change is possible.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z	Tension force		Weight
							vertical	horizontal	
BSC 65 C	65	55	50	14	16	1	7,00 kg	14,00 kg	0,018 kg
BSC 85 C	85	77	68	28	17	1	14,00 kg	28,00 kg	0,037 kg
BSC 114 C	114	102	96	54	17	1	24,00 kg	49,00 kg	0,044 kg
BSC 160 C	160	148	130	70	22	2	52,00 kg	105,00 kg	0,125 kg

Type	Part number	Type	Part number Flat suction cup seal
Supporting block Series C Ø 22 x 9,4	BSPS.10.374	BSC 65 C	BSPS.10.075 NBR black
		BSC 85 C	BSPS.10.076 NBR black
		BSC 114 C	BSPS.10.082 NBR black
		BSC 114 C	BSPS.10.082.01 NBR black (3 holes)
		BSC 160 C	BSPS.10.180.01 NBR black (4 holes)



Product picture



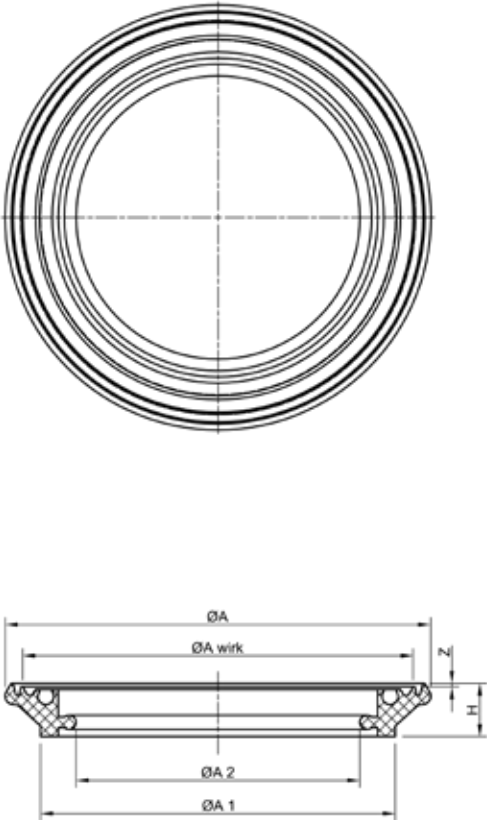
Product description

The new series IMC - Intermac - has three different hard and wear resistant seals, suitable for vacuum clamping in CNC grinding machines. The ring seals are in NBR black at approx. 60 Shore. This seals are predominantly used with the suitable support blocks in the glass industry. The seal is attached onto the clamping block and its residual stress will keep it in place.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z	Weight
BSP 90 IMC	90	80	70	50	15	1	0,032 kg
BSP 120 IMC	120	110	100	80	15	1	0,048 kg
BSP 160 IMC	160	150	140	120	15	1	0,067 kg
Type	Part number Flat suction cup seal		Type	Tension force			
				vertical	horizontal		
BSP 90 IMC	BSPS.10.409 NBR black		BSP 90 IMC	15,00 kg	30,00 kg		
BSP 120 IMC	BSPS.10.410 NBR black		BSP 120 IMC	29,00 kg	58,00 kg		
BSP 160 IMC	BSPS.10.411 NBR black		BSP 160 IMC	54,00 kg	108,00 kg		

The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient.  
\* Tested and values calculated with a plane, dry and dust-free glass surface.

## Product description

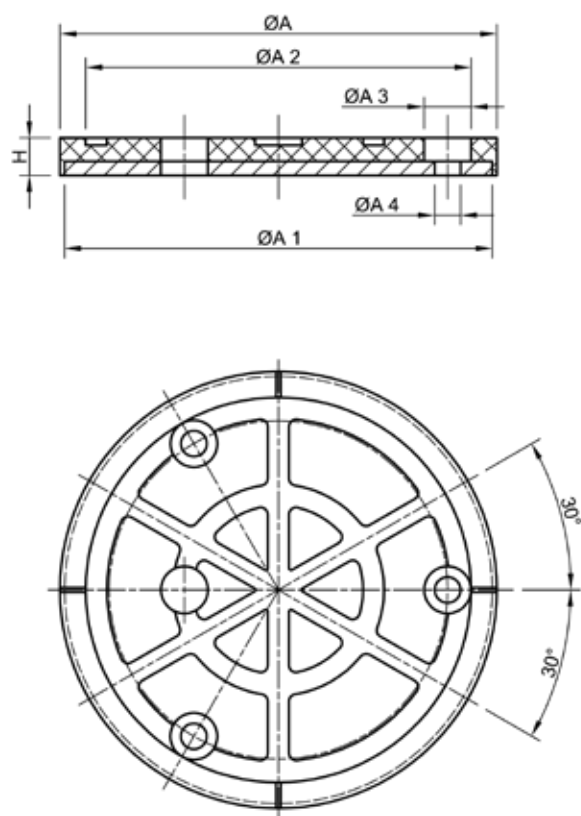
## Product picture

This support plates for the type BSP series IMC are vulcanized onto an aluminium base plate. The support plates are in NBR black at approx. 90 Shore and have 3 countersunk holes with a diameter of 5,5 mm as well as a Ø 10 mm hole for the vacuum connection.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Support block	ØA	ØA1	ØA2	ØA3	ØA4	H	Weight
Type 90 IMC (63 x 8)	63	61	52	10	5,5	8	0,040 kg
Type 120 IMC (93 x 8)	93	91	82	10	5,5	8	0,091 kg
Type 160 IMC (135 x 8)	135	130	121	10	5,5	8	0,192 kg

Type	Part number support block
Type 90 IMC (63 x 8)	BSPS.10.445 NBR black
Type 120 IMC (93 x 8)	BSPS.10.446 NBR black
Type 160 IMC (135 x 8)	BSPS.10.447 NBR black

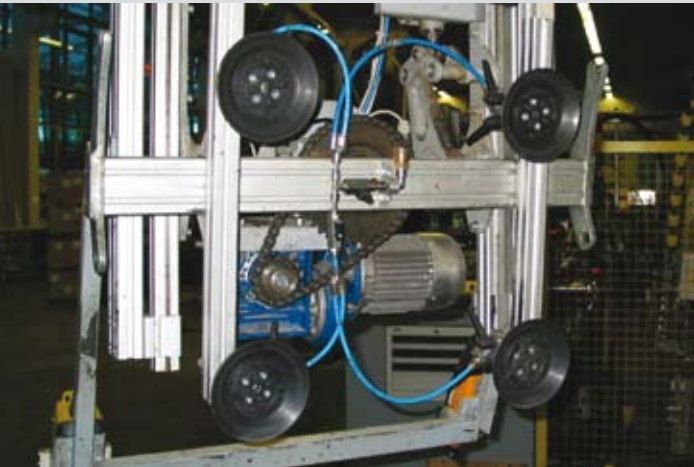
Product picture



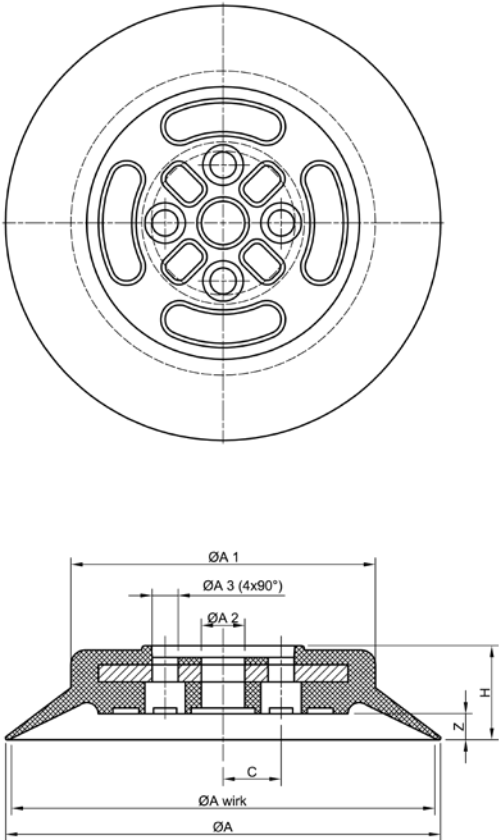
Product description

This special suction cup seal type BSP series CO is often used in automatic stacking systems. The robust and massive seal is in NBR black at approx. 50 Shore and is suitable for a slightly rough surface. The seal is suitable for heavy glass plates. The suspension bolt and the base plate can be made to your specification. Quick change of the rubber seal by loosening the four screws from the inside of the seal.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	C	H	Z	Weight
150 CO	150	146	105	15	9 (4x 90°)	14	32,5	9	0,480 kg
200 CO	200	185	140	13	9	20	37	15	1,000 kg
Type	Part number Flat suction cup seal				Inner steel core				
150 CO	BSPS.10.402 NBR black				vulcanised				
200 CO	BSPS.10.366 NBR black				vulcanised				
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
150 CO	51		102						
200 CO	82		164						



## Product description

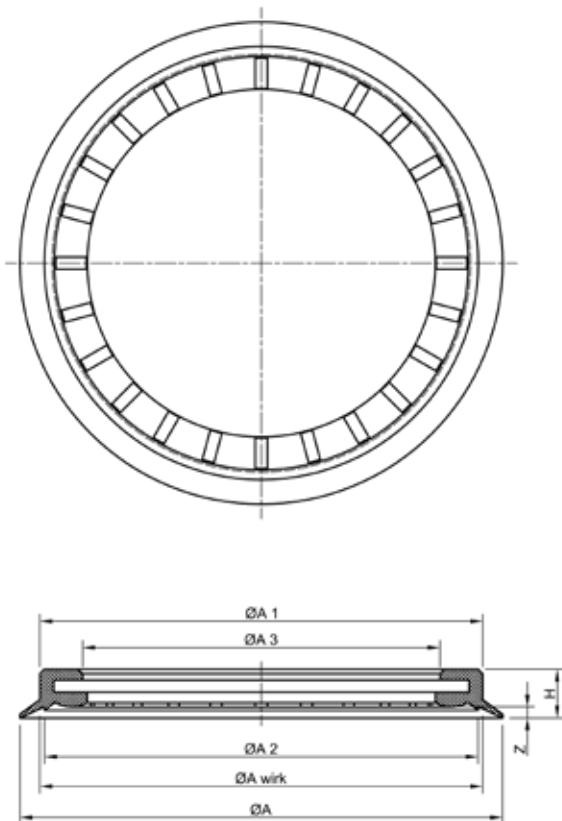
## Product picture

Flat ring seal type BSP 316 SAP for mounting onto the base plate. The rubber seal has a diameter of 316 mm, is in NBR black at approx. 50 Shore and has support ribs which avoid a deformation of the work piece. The rubber lip which seals against the work piece is short and a quick ventilation for high stacking speed is assured. Only the rubber seal needs to be changed in case of wear.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	H	Z	Weight
BSP 316 SAP	316	290	290	284	234	32	7	0,550 kg
Type	Part number Flat suction cup seal				Inner steel core			
BSP 316 SAP	BSPS.10.349 NBR black				vulcanised			
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical		horizontal					
BSP 316 SAP	202		404					

Product picture



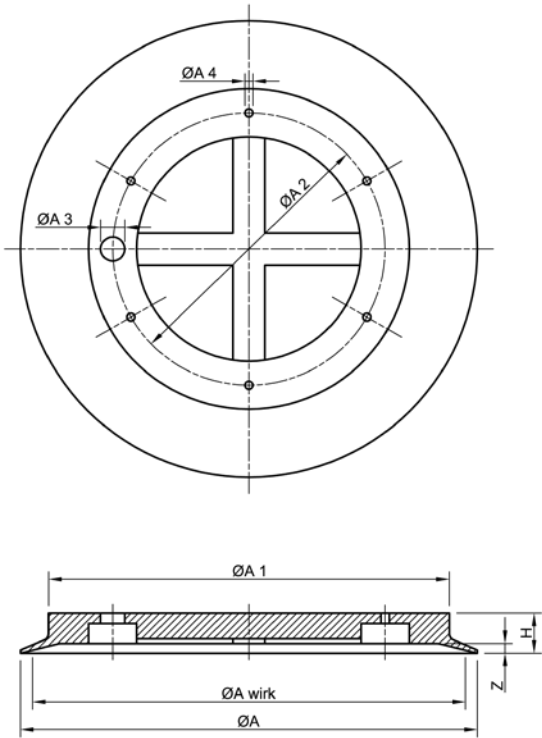
Product description

Flat suction cup seal type BSP 285 CEM Ø 285 mm in NBR black at 50 Shore. For mounting by means of a inner steel ring and 6 screws onto the base plate. The seal has a medium length of rubber lip and the special inner support will give a better friction. In case of waer, the seal can be exchanged quick and cost saving by loosening the inner steel ring.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	ØA4	H	Z	Weight
BSP 285 CEM	285	270	250	170	15	5	25	6	1,170 kg
Type	Part number Flat suction cup seal								
BSP 285 CEM	BSPS.10.638 NBR black								
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
BSP 285 CEM	175		350						

## Product description

## Product picture

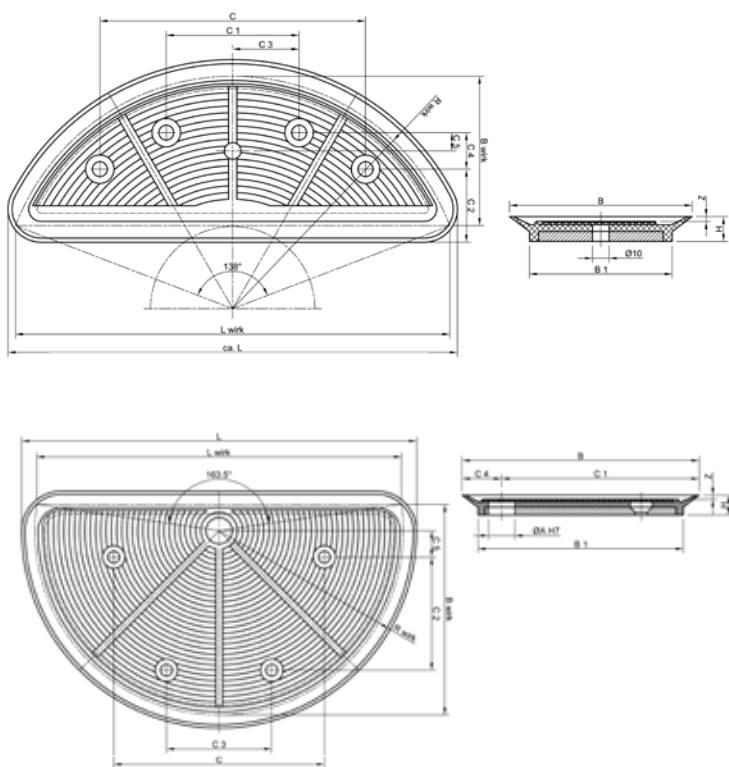
The flat suction cup seals type BSP 300/1-2 and 300/2-2 are spare parts seals for a turning suction cup. The rubber seal is vulcanised onto the aluminium plate with holes for mounting. The suction cup type BSP 300/1-2 has a hole  $\varnothing 10$  mm as vacuum connection, the type 300/2-2 has a bore with 20H7 for mounting and as vacuum connection.

For the installation of the suction cup seals onto the base plate it is important to use an extra thin rubber seal. The thin seals are not include and must be extra ordered.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	L	Lwirk	B	Bwirk	B1	Rwirk	ØA	C	C1	C2	C3	C4	C5	H	Z
BSP 300/1-2	270	203	110	70	86	108,5	10	160	80	44	40	22	11	15	3
BSP 300/2-2	300	277	180	160	156	86,0	20H7	160	150	86	80	30	20	15	3
Type	Part number Flat suction cup														Weight
BSP 300/1-2	BSPS.10.631 NBR black						vulcanised								0,323 kg
BSP 300/2-2	BSPS.10.632 NBR black						vulcanised								0,720 kg
631	BSPS.20.1336						Rubberseal between Base plate and Flat suction cup seal								-
632	BSPS.20.1337						Rubberseal between Base plate and Flat suction cup seal								-
Type	Carrying capacity in kg						The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.								
	vertical			horizontal											
BSP 300/1-2	30,00			60,00											
BSP 300/2-2	60,00			120,00											

Product picture

Product description

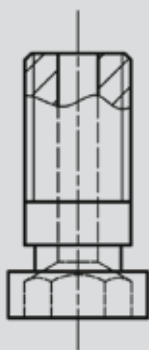


The flat suction cup seal type 105 HG has a diameter of 105 mm and is in NBR black at approx. 75 Shore. The seal has an inner rubber support and a long rubber lip. The centric hole has a diameter of 12,5 mm.

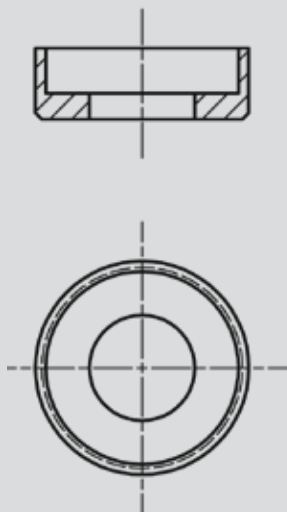
The former support can be restored with the accessories parts. The support BSCN-HG.105.01 and the clamping plate BSCN-HG.105.02 can be ordered in an assembly-kit.

Technical drawing

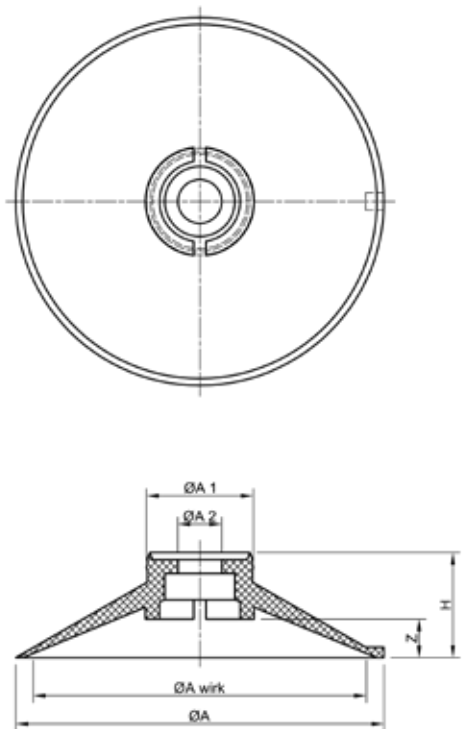
Technical drawing



BSCN-HG.105.01



BSCN-HG.105.02



Technical data / Order data / Spare parts

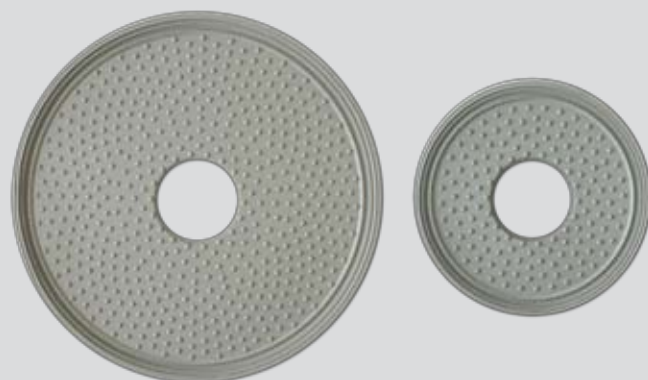
Type	ØA	ØA wirk	ØA1	ØA2	ØA3	H	Z	Weight
BSP 105 HG	105	180	101	30,5	12,5	30	11	0,130 kg
Type	Part number Flat suction cup seal				Collet M16	Ring		BSCN-HG Kit
BSP 105 HG	BSPS.10.444 NBR black				BSCN-HG.105.01	BSCN-HG.105.02		BSCN-HG.105.00
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical		horizontal					
BSP 105 HG	21		43					



## Product description

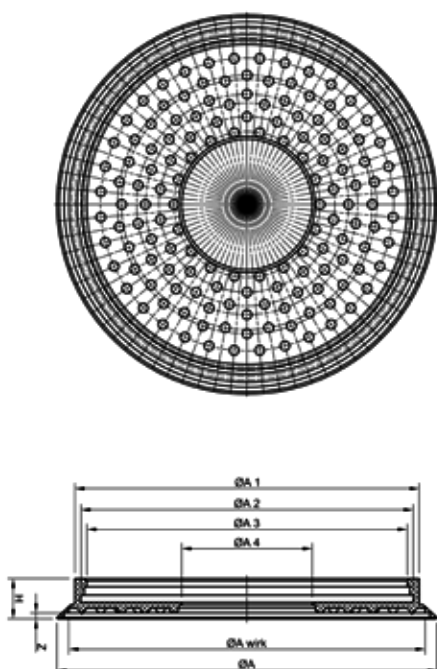
## Product picture

The flat suction cup seal type BSP series NO is in NBR grey at approx. 50 Shore. The seal has a diameter of 160 or 250 mm and a nap rubber supprt as well as a centric hole.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	ØA4	H	Z	Weight
BSP 160 NO	160	150	145	140	135	55	17	2,5	0,091 kg
BSP 250 NO	250	238	235	230	225	53	17	2,5	0,218 kg
Type	Part number Flat suction cup seal				Carrying capacity in kg				
					vertical		horizontal		
BSP 160 NO	BSPS.10.099 NBR grey				54		108		
BSP 250 NO	BSPS.10.100 NBR grey				136		272		

The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient.

\* Tested and values calculated with a plane, dry and dust-free glass surface.

Product picture



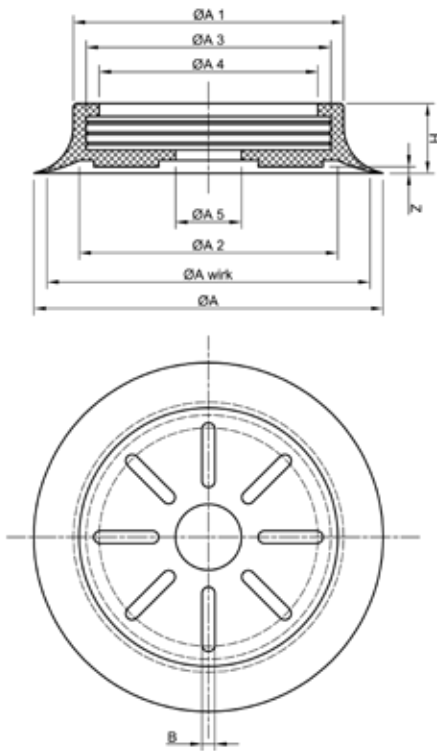
Product description

This special suction cup seal of the type BSP series VS is often used in automatic stacking systems in the glass industry. It is a robust and massive seal in NBR grey at approx. 45 Shore and is suitable for glass plates. The base plate and the suspension can be supplied according to the customers specification. Quick and cost-saving change of the seal.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	ØA4	ØA5	B	H	Z	Weight
BSP 130 VS	130	125	105	100	95	85	31	5	27	2,5	0,130 kg
BSP 200 VS	200	185	172	175	163	153	45	6	28	3,0	0,250 kg
Type	Part number Flat suction cup seal										
BSP 130 VS	BSPS.10.104 NBR white				BSPS.10.199 NBR grey				-		
BSP 200 VS	BSPS.10.328 NBR white				BSPS.10.216 NBR grey				BSPS.10.223 NBR black		
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.							
	vertical		horizontal								
BSP 130 VS	37		57								
BSP 200 VS	82		164								

## Product description

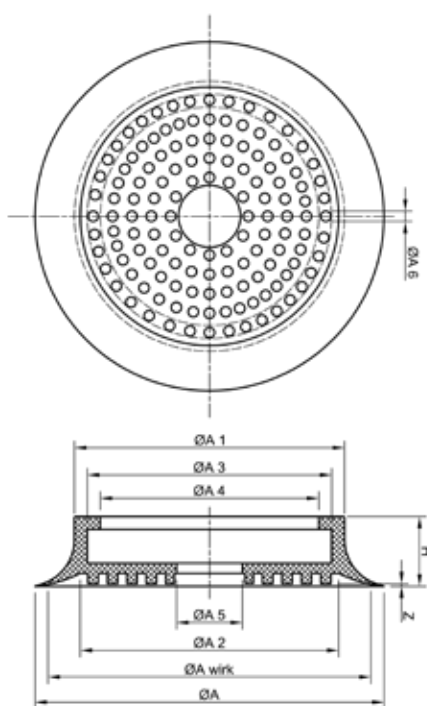
## Product picture

This special suction cup seal type BSP series VS-NO is often used in automatic stacking systems in the glass industry. The robust and massive seal is in NBR white at approx. 60 Shore and is suitable for smooth glass plates. Plate separating powder like Lucite will not stick to the plane rubber surface; it will stick between the naps and can be easily cleaned with the help of compressed air. The base plate and suspension can be supplied according to customer's specifications. Quick and cost-saving change of the seal.



## Technical drawing

## Application picture



Flat suction cup seal

## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	ØA4	ØA5	ØA6	H	Z	Weight
BSP 130 VS-NO	130	125	103	99	94	84	26	4	27,0	1,5	0,130 kg
BSP 200 VS-NO	205	186	175	160	165	155	30	4	28,5	4,0	0,280 kg
Type	Part number Flat suction cup seal				Carrying capacity in kg						
					vertical			horizontal			
BSP 130 VS-NO	BSPS.10.255 NBR white				54			108			
BSP 200 VS-NO	BSPS.10.281 NBR white				136			272			

The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient.  
 \* Tested and values calculated with a plane, dry and dust-free glass surface.

Product picture



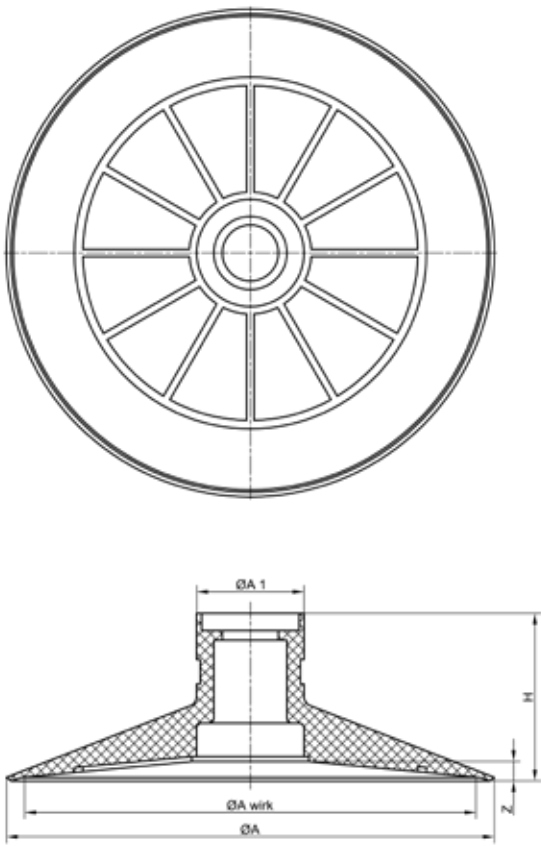
Product description

The flat suction cup type BSP 200 FGS in NBR white at approx. 50 Shore is mostly installed in stacking systems at the cold end of a float glass production line. The steel insert is fixed with an upper steel plate and safety clip. In case of wear only the seal needs to be replaced. It is also possible to place a sinter metal plate into the steel insert to prevent dirt from entering the vacuum system. The flat suction cups are available with different steel cores.

Application picture



Technical drawing

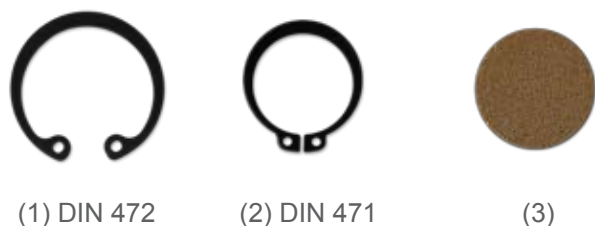


Technical data / Order data / Spare parts

Type	ØA	ØA1	H	Z	Weight
BSP 200 FGS 4	200	44	66	4	0,640 kg
BSP 200 FGS 8	200	44	66	8	0,640 kg
Type	Part number Flat suction cup seal				
BSP 200 FGS 4	BSPS.10.139 NBR white		BSPS.10.226 NBR grey		
BSP 200 FGS 8	BSPS.10.143 NBR white		BSPS.10.277 NBR grey		
Type	Carrying capacity in kg		<div>The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.</div>		
	vertical	horizontal			
BSP 200 FGS 4	60	144			
BSP 200 FGS 8	60	144			



## Application picture



(1) DIN 472

(2) DIN 471

(3)



(4)



(5)

Type	Ø outside	H	Part number
(1) Retaining ring for drilling DIN 472 - optional	Ø 32 mm	1,2 mm	BSPS.20.618
(2) Retaining ring for spindle DIN 471 - required	Ø 25 mm	1,2 mm	BSPS.20.156
(3) Sinter filter plate - optional	Ø 32 mm	3,0 mm	BSPS.20.181
(4) Back plate for FGS 200 - required	Ø 40 mm	3,9 mm	BSPS.20.158
(5) Clamping clip for FGS 200 - required	Ø 30 - 45 mm	-	BCC.008

## Standard support for type 200 FGS



Support version 1

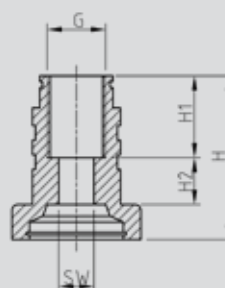
Support version 2

The thread of the steel support will be produced according to your requirements. The listed steel cores are standard parts.

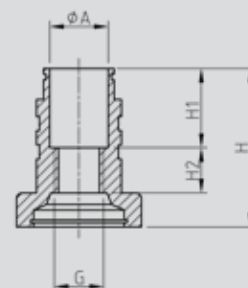
Custom-made supports on request!

## Technical drawing

Variante 1



Variante 2



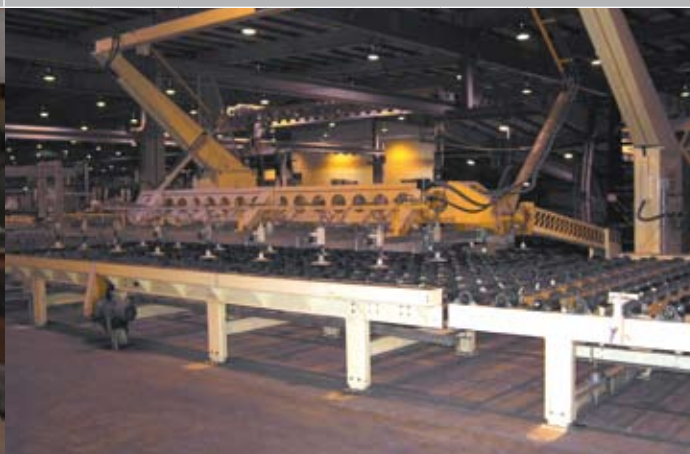
## Technical data / Order data / Spare parts

Support	Type	Part number	ØA	SW	G	H	H1	H2	Weight
Version 1	200 FGS	BSPS.20.154.03	-	12	M20	56	32	14	0,222 kg
Version 2	200 FGS	BSPS.20.154.05	20,7	-	1/2"	56	28	12	0,230 kg

## Application picture



## Application picture



# 04 Bellow suction cups

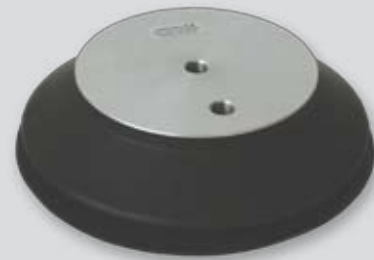
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## Product description

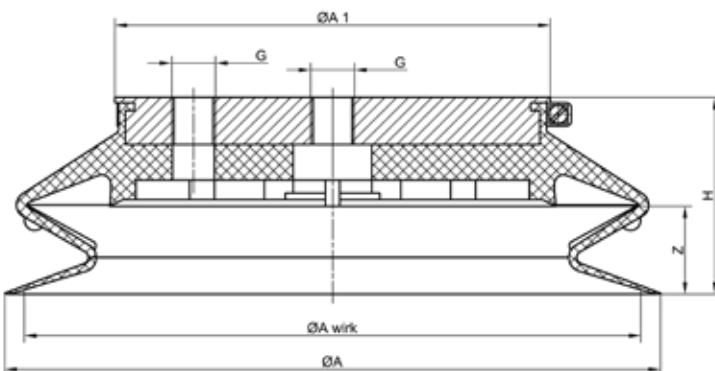
## Product picture

The bellow suction cup type BBSC R-MIS has a diameter of 250 mm, is in NBR black at approx. 60 Shore and has 1,5 folds. The aluminium base plate has a centric hole with a 3/8" inside thread as well as 1 treaded hole with 3/8", 53 mm ex-centric. Quick and cost-saving change of the seal by means of the clamping clip.



## Technical drawing

## Application picture



Bellow suction cup

## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	G	G1	H	Z	Weight
250 R-MIS	250	235	166	3/8"	3/8"	75	33,5	1,856 kg
Type	Part number Bellow suction cup				Bellow suction cup seal			Clamping clip
250 R-MIS	BBSC.250.111.002				BSPS.10.464 NBR black			BSPS.11.023
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical		horizontal					
250 R-MIS	132		265					

Product picture



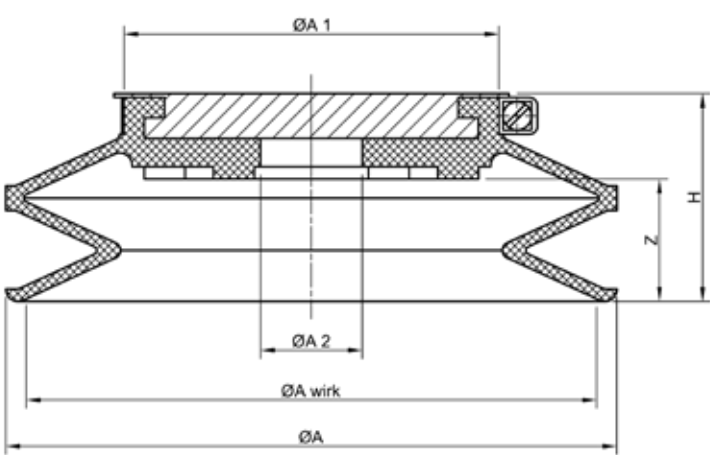
Product description

The bellow suction cup type BBSC 150 R is a robust and resistant version and is designed for universal use. The seal has a diameter of 150 mm and is in NBR black. As a result of the elasticity, the bellow suction cup can adapt optimally to the curvature of the work piece and compensate height differences. This bellow suction cup is suitable for destacking-devices in the glass industry due to its robust construction. In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip. The drilling template can be adapted to the customers needs on request.

Application picture



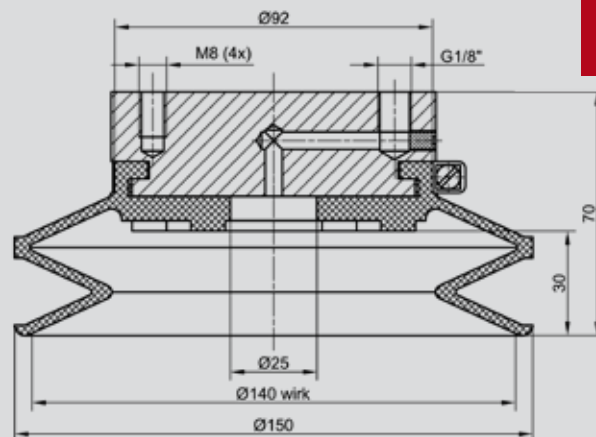
Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z	Weight
BBSC 200 R	150	140	92	25	51	30	0,431 kg
Type	Part number Bellow suction cup			Bellow suction cup seal			Clamping clip
BBSC 200 R	BBSC.200.111.000 NBR black			BSPS.10.211 NBR black			BSPS.11.006
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical	horizontal					
BBSC 200 R	47	94					





Product picture BBSC 150 R-SG

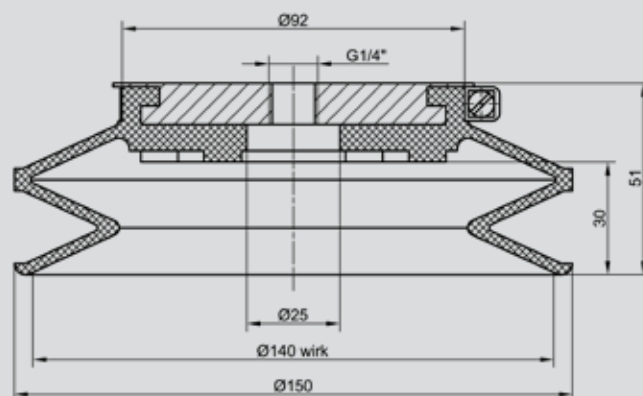
Technical drawing

BBSC.150.111.006

BSPS.01.087.14 (Base plate)

Complete bellow suction cup type BBSC 150 R - SG with aluminium base plate type BSPS.01.087.14 and clamping clip Type BSPS.11.020

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.



Product picture BBSC 150 R, G1/4"

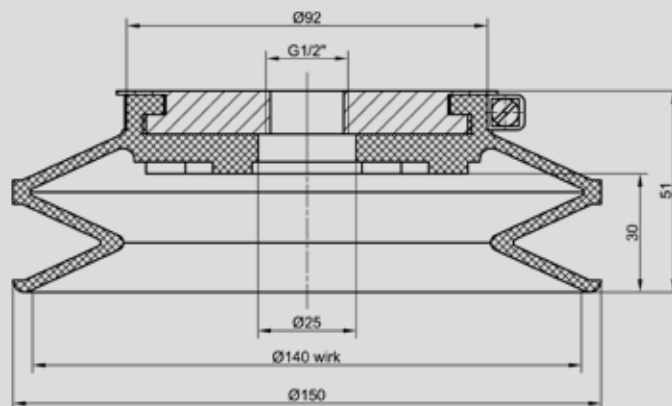
Technical drawing

BBSC.150.111.001

BSPS.01.087 (Base plate)

Complete bellow suction cup type BBSC 150 R, G1/4" with aluminium base plate type BSPS.01.087 and clamping clip type BSPS.11.020

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.



Product picture BBSC 150 R, G1/2"

Technical drawing

BBSC.150.111.005

BSPS.01.087.05 (Base plate)

Complete bellow suction cup type BBSC 150 R, G1/2" with aluminium base plate type BSPS.01.087.05 and clamping clip type BSPS.11.020

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.

Product picture



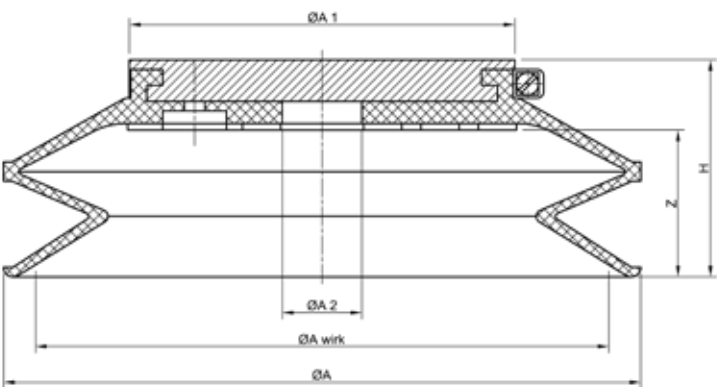
Product description

The bellow suction cup type BBSC 200 R is a robust and resistant version and is designed for universal use. The seal has a diameter of 200 mm and is in NBR black. As a result of the elasticity, the bellow suction cup can adapt optimally to the curvature of the work piece and compensate height differences. This bellow suction cup is suitable for destacking-devices in the glass industry due to its robust construction. In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip. The drilling template can be adapted to the customers needs on request.

Application picture

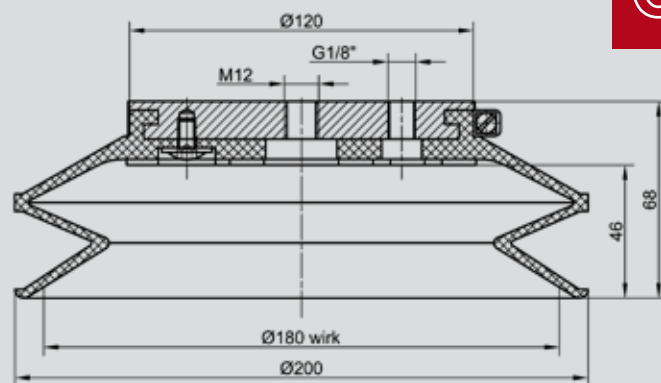


Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z	Weight
BBSC 200 R	200	180	121	25	68	46	0,753 kg
Type	Part number Bellow suction cup			Bellow suction cup seal			Clamping clip
BBSC 200 R	BBSC.200.111.000 NBR black			BSPS.10.211 NBR black			BSPS.11.006
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical	horizontal					
BBSC 200 R	77	155					



Product picture BBSC 200 R-MG

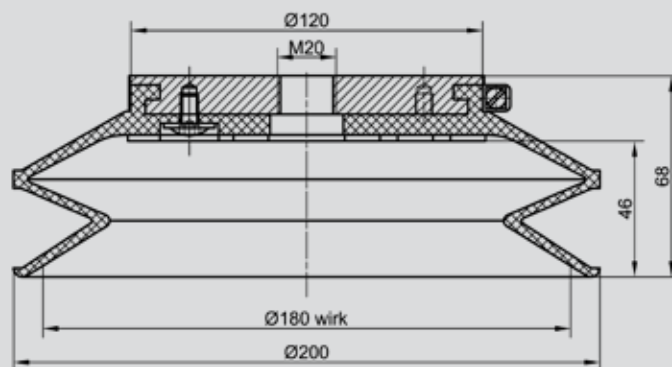
Technical drawing

BBSC.200.111.009

BSPS.01.067.17 (Base plate)

Complete bellow suction cup type BBSC 200 R-MG with aluminium base plate type BSPS.01.067.17 and clamping clip type BSPS.11.006

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.



Product picture BBSC 200 R-TMB

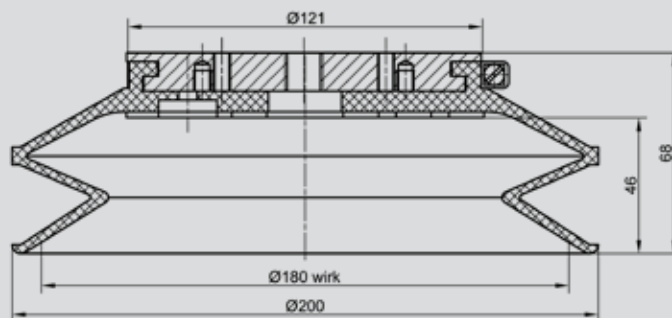
Technical drawing

BBSC.200.111.008

BSPS.01.067.12 (Base plate)

Complete bellow suction cup type BBSC 200 R-HA with aluminium base plate type BSPS.01.067.12 and clamping clip type BSPS.11.006

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.



Product picture BBSC 200 R-HE

Technical drawing

BBSC.200.111.007

BSPS.01.067.14 (Base plate)

Complete bellow suction cup type BBSC 200 R-HE with aluminium base plate type BSPS.01.067.14 and clamping clip type BSPS.11.006

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.

Product picture



Product description

The bellow suction cup type BBSC 250 R is a robust and resistant version and is designed for universal use. The seal has a diameter of 250 mm and is in NBR black at approx. 60 Shore. As a result of the elasticity, the bellow suction cup can adapt optimally to the curvature of the work piece and compensate height differences. This bellow suction cup is suitable for destacking-devices in the glass industry due to its robust construction.

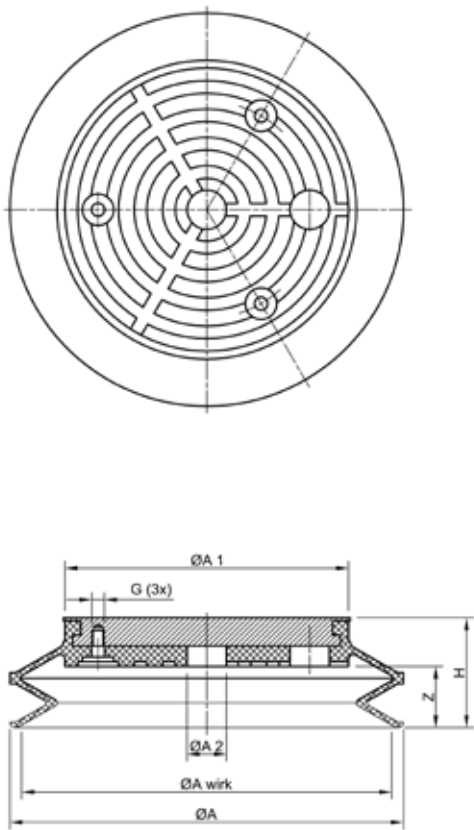
In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip.

The drilling template can be adapted to the customers needs on request.

Application picture



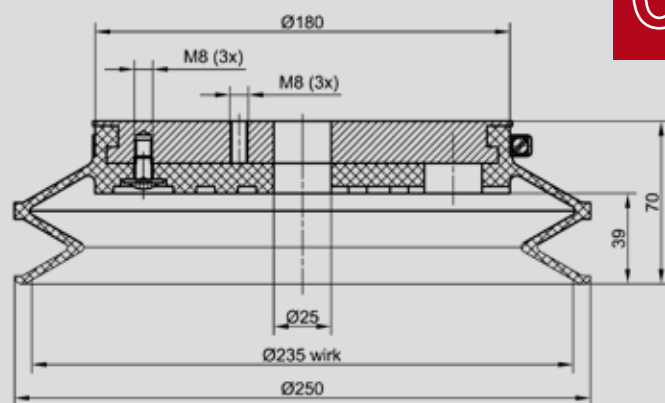
Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	H	Z	Weight
BBSC 250 R	250	235	180	25	3xM8	70	39	1,390 kg
Type	Part number Bellow suction cup				Bellow suction cup seal			Clamping clip
BBSC 250 R	BBSC.250.111.000 NBR black				BSPS.10.221 NBR black			BSPS.11.005
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical		horizontal					
BBSC 250 R	132		265					





Product picture BBSC 250 R-HA

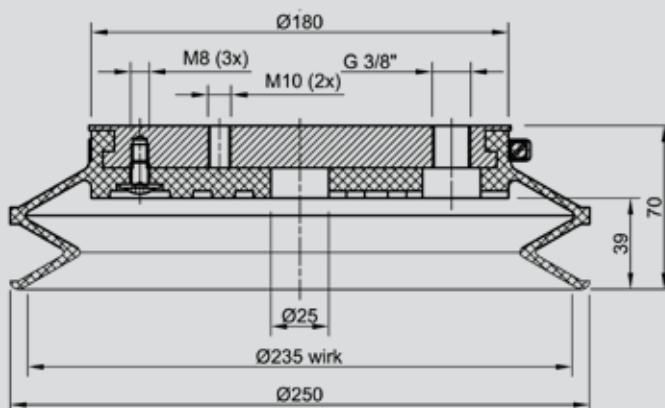
Technical drawing

BBSC.250.111.003

BSPS.01.056.14 (Base plate)

Complete bellow suction cup type BBSC 250 R-HA with aluminium base plate type BSPS.01.056.14 and clamping clip type BSPS.11.005

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.



Product picture BBSC 250 R-HE

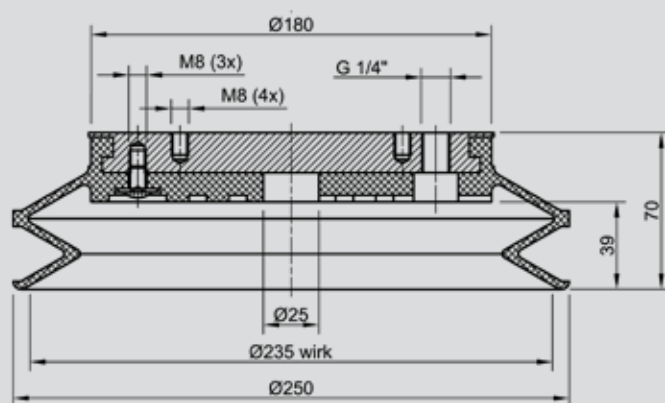
Technical drawing

BBSC.250.111.006

BSPS.01.056.21 (Base plate)

Complete bellow suction cup type BBSC 250 R-HE with aluminium base plate type BSPS.01.056.21 and clamping clip type BSPS.11.005

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.



Product picture BBSC 250 R-TMB

Technical drawing

BBSC.250.111.011

BSPS.01.056.33 (Base plate)

Complete bellow suction cup type BBSC 250 R-TMB with aluminium base plate type BSPS.01.056.33 and clamping clip type BSPS.11.005

The bellow suction cup in NBR black is available in different versions. The drilling templates can be adapted to the customers needs.

Product picture



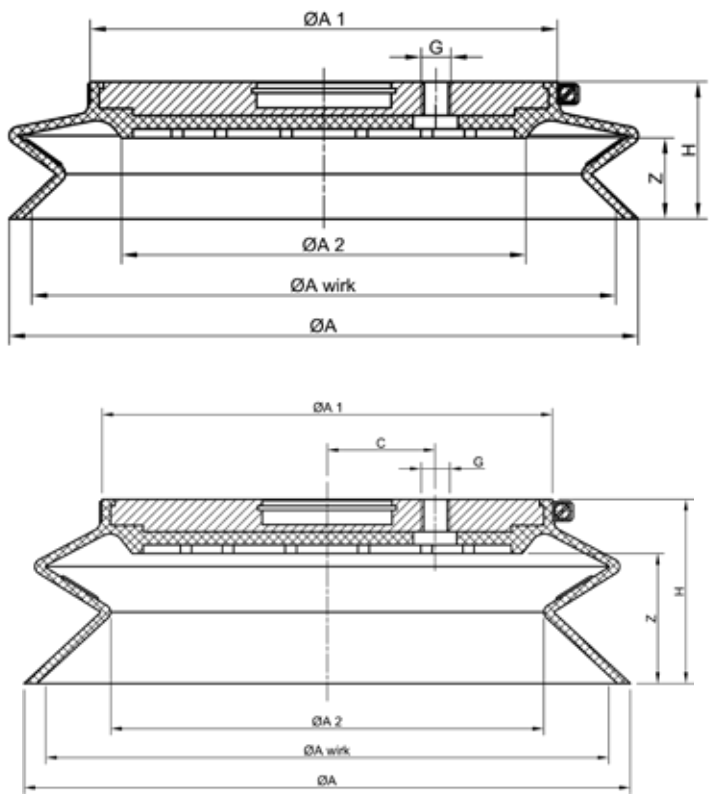
Product description

The bellow suction cup type BBSC 285 is very flexible and developed for universal use, especially in automatic glass handling systems. The seal is in NBR black at approx. 50 Shore and has a diameter of 280 mm. Suitable for curved and smooth surfaces. Good height compensation due to the 1,5 bellows. Quick and cost-saving change of the seal by means of the clamping clip. The aluminium base plate can be drilled and tapped to your request. If not requested as per drawing and picture to fit your automatic stacking machine .

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	C	H	Z	Weight
285 G/61-L	280	260	208	180	1/4"	50	61	36	1,900kg
285 G/85-L	280	260	208	200	1/4"	50	85	60	1,975 kg
Type	Part number Bellow suction cup				Part number Bellow suction cup seal				Clamping clip
285 G/61-L	BBSC.285.111.001 NBR black				BSPS.10.297 NBR black				BSPS.11.013
285 G/85-L	BBSC.286.111.001 NBR black				BSPS.10.298 NBR black				BSPS.11.013
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
285 G/61-L	162		324						
285 G/85-L	162		324						

## Product description

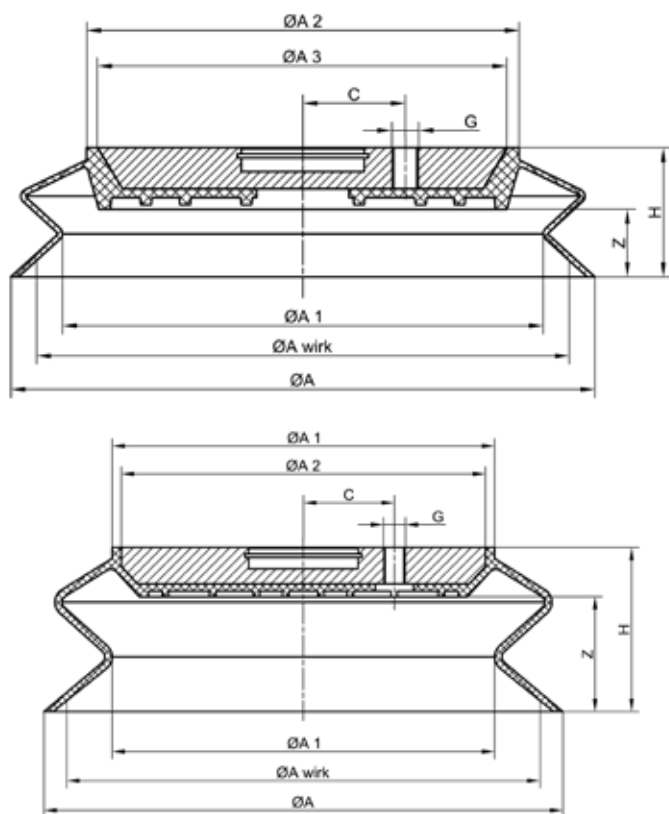
## Product picture

The bellow suction cup has a diameter of 285 mm and is made of NBR black. It has 1.5 folds and a Shore hardness of approx. 60. The seal is vulcanised onto an aluminium base plate and has a 60 mm slot with a 1/4" vacuum connection. The height of construction is approx. 61 mm or 85 mm. This bellow suction cup is a Lisec-version.



## Technical drawing

## Application picture



Bellow suction cup

## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	C	G	H	Z	Weight
285 G/61-L	285	260	234,5	211	200	50	1/4"	63	33	1,900kg
285 G/85-L	285	260	210	210	200	50	1/4"	90	63	1,975 kg
Type	Part number Bellow suction cup				Part number Bellow suction cup seal					
285 G/61-L	BBSC.285.111.006 NBR black				vulcanised					
285 G/85-L	BBSC.286.111.003 NBR black				vulcanised					
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal							
285 G/61-L	162		324							
285 G/85-L	162		324							

Product picture



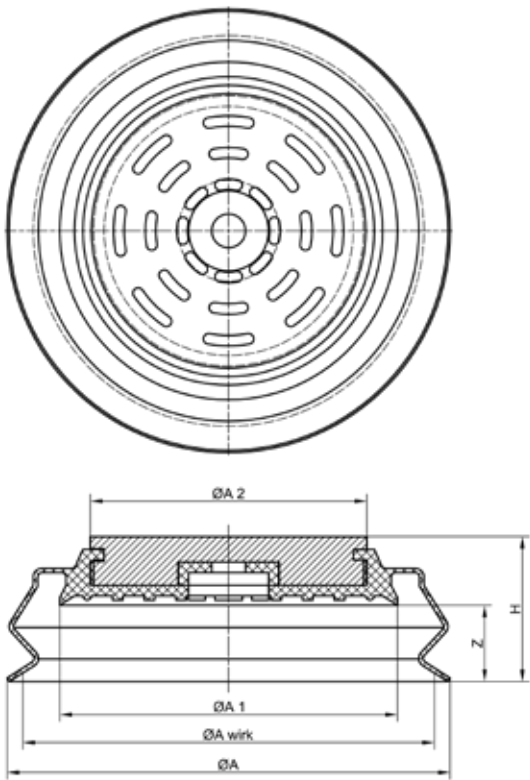
Product description

The bellow suction cup type BBSC series B is very flexible and developed for universal use. The seal is in NBR black at approx. 60 Shore and has a diameter of 150/ 210/ 250 mm. Suitable for curved and smooth surfaces. Good height compensation due to the 1.5 bellows. As a result of the flexible construction, it is suitable for stacking glass sheets in handling systems. The seal is attached onto the base plate and its residual stress will keep it in place.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	Z	Weight
BBSC 150 B	150	130	101	42	59	29	0,373 kg
BBSC 210 B	210	195	160	131	69	39	1,194 kg
BBSC 250 B	250	230	202	131	69	36	1,471 kg
Type	Part number Bellow suction cup				Part number Bellow suction cup seal		
BBSC 150 B	BBSC.149.111.000 NBR black				BSPS.10.407 NBR black		
BBSC 210 B	BBSC.210.111.000 NBR black				BSPS.10.220 NBR black		
BBSC 250 B	BBSC.255.111.000 NBR black				BSPS.10.442 NBR black		
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical		horizontal				
BBSC 150 B	40		81				
BBSC 210 B	91		182				
BBSC 250 B	127		254				



## Product description

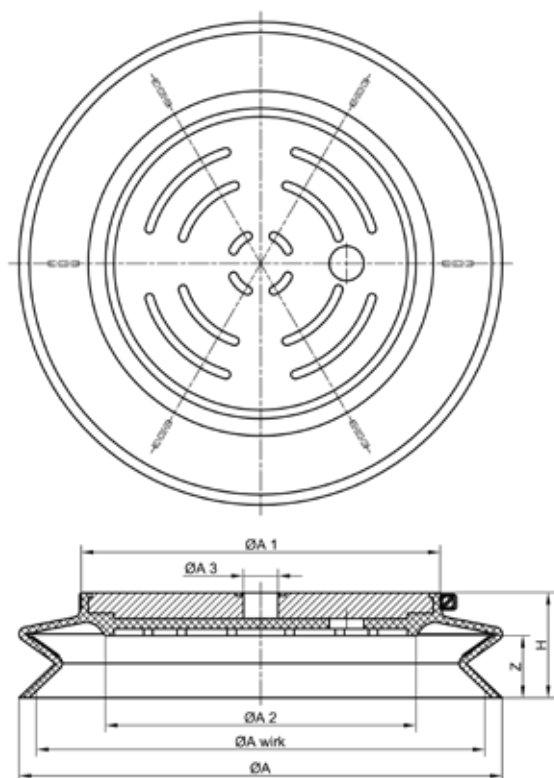
## Product picture

The bellow suction cup type BBSC 285 FOR is very flexible and developed for universal use, especially in automatic glass handling systems. The seal is in NBR black at approx. 45° Shore and has a diameter of 285 mm. Suitable for curved and smooth surfaces. Good height compensation due to the 1,5 bellows. Quick and cost-saving change of the seal by means of the clamping clip. The aluminium base plate can be drilled and tapped to your request. If not requested as per drawing and picture to fit your automatic stacking machine. Forel version.



## Technical drawing

## Application picture



Bellow suction cup

## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	ØA3	H	Z	Weight
285 G/61-FOR	280	260	208	180	20H7	61	36	1,900kg
Type	Part number Bellow suction cup				Bellow suction cup seal			Clamping clip
285 G/61-FOR	BBSC.285.111.002 NBR black				BSPS.10.297.01 NBR black			BSPS.11.013
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical		horizontal					
285 G/61-FOR	162		324					

Product picture



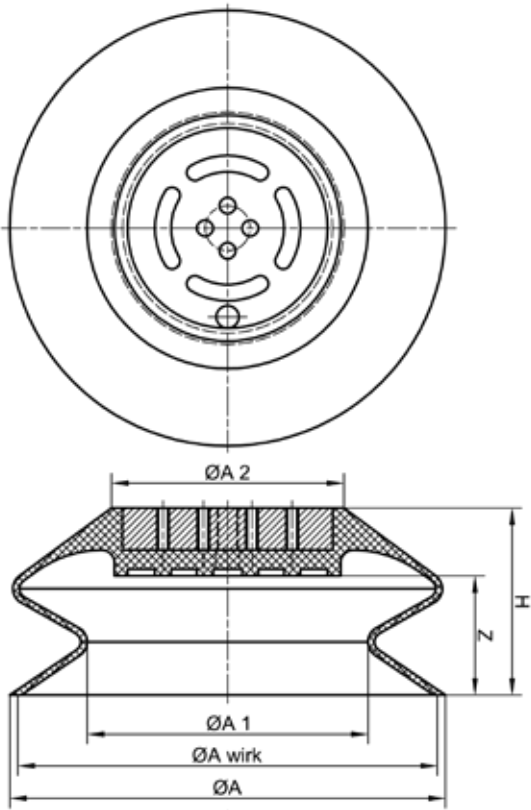
Product description

The bellow suction cup type BBSC 290 BY is predominantly used in glass stocking portals. The seal is vulcanised onto an aluminium base plate and has a diameter of 270 mm and is in NBR black. The flexible and robust version is designed for universal use. As a result of the elasticity and the 1.5 folds, the bellow suction cup can compensate even big height differences.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	G1	H	Z
BBSC 290 BY vulc.	270	260	174	144	1/4"	4xM8	116	74
Type	Part number Bellow suction cup		Part number Bellow suction cup seal					Weight
BBSC 290 BY vulc.	BBSC.290.111.003 NBR black		vulcanised					2,115 kg
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical	horizontal						
BBSC 290 BY vulc.	162	324						

## Product description

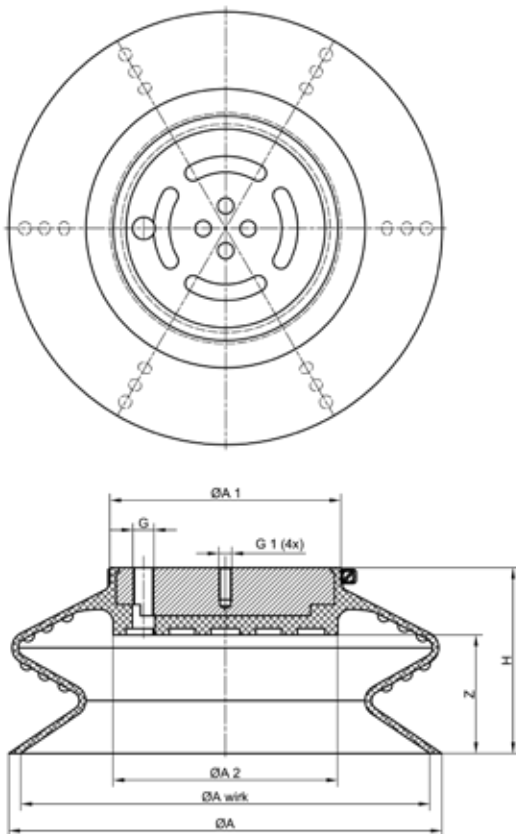
## Product picture

The bellow suction cup type BBSC 290 BY is very flexible and is developed for universal use, especially in automatic glass handling systems. The seal in NBR black at approx. 45 Shore is available with a diameter of 270 mm and suitable for curved and smooth surfaces. Good height compensation due to the 1.5 bellows. The aluminium base plate is available with threaded holes to fit the automatic stacking machine. Quick and cost-saving change of the seal by means of the clamping clip.



## Technical drawing

## Application picture



Bellow suction cup

## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	G1	H	Z	Weight
BBSC 290 BY	270	255	144	140	1/4"	4xM8	116	74	2,000 kg
Type	Part number Bellow suction cup				Bellow suction cup seal			Clamping clip	
BBSC 290 BY	BBSC.290.111.001 NBR black				BSPS.10.364 NBR black			BSPS.11.017	
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal						
BBSC 290 BY	156		312						

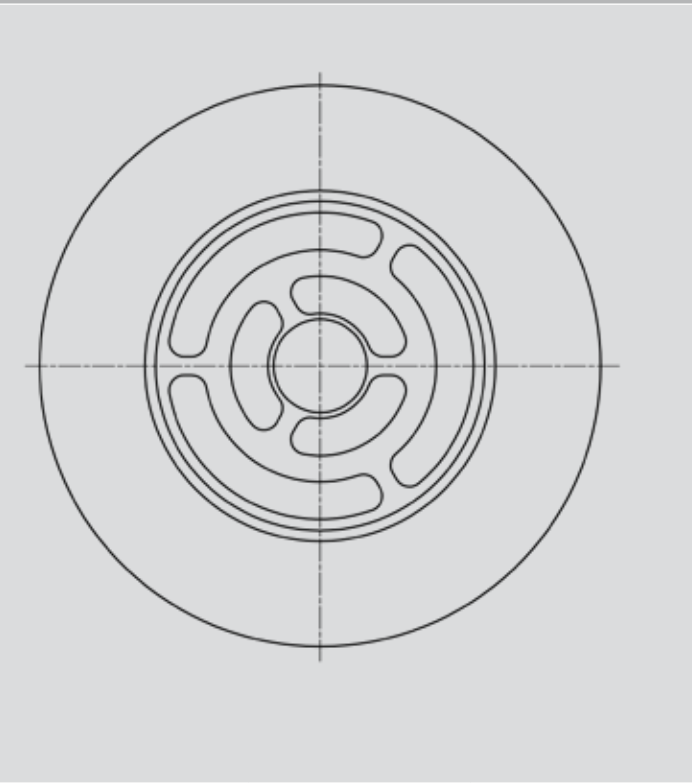
Product picture



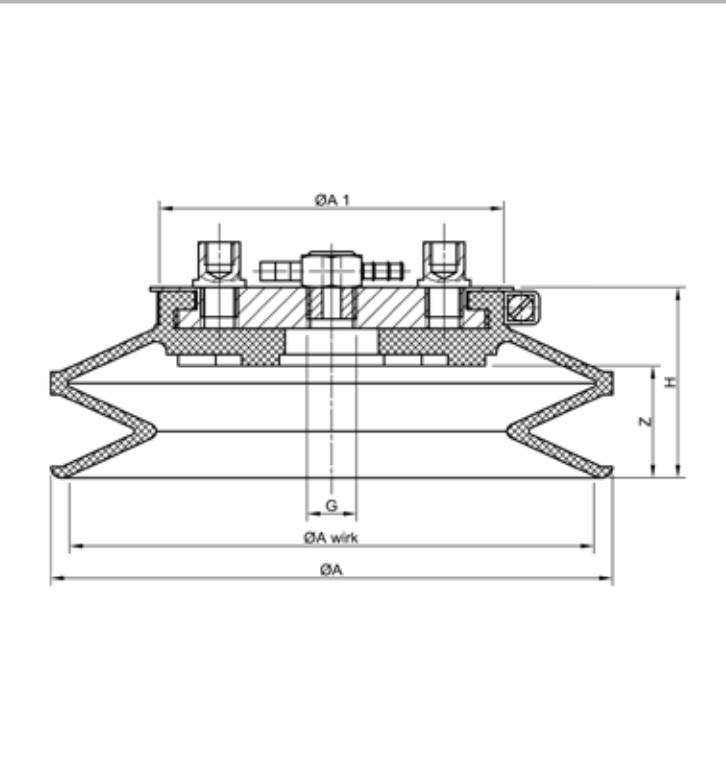
Product description

The bellow suction cup seal is made of NBR black, has a diameter of 150 mm and 1.5 folds. The aluminium base plate has a G 1/4" inside thread as well as 2 threaded pins with M8 inside thread, additionally there is a mini-ejector. This bellow suction cup is predominantly used in glass destacking portals respectively glass lifting devices.

Technical bottom view



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	G	H	Z	Weight
BBSC 150 R-EJ	150	140	92	1/4“	51	30	2,115 kg
Type	Part number Bellow suction cup		Part number Bellow suction cup seal				Clamping clip
BBSC 150 R-EJ	BBSC.150.111.002 NBR black		BSPS.10.222				BSPS.11.020
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical	horizontal					
BBSC 150 R-EJ	47	94					

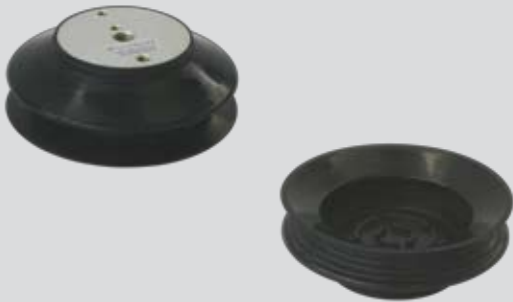


Product description

Product picture

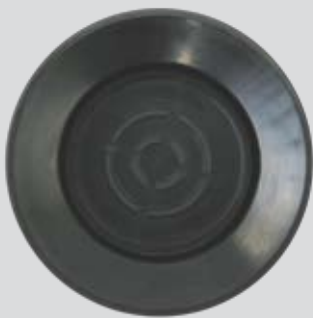
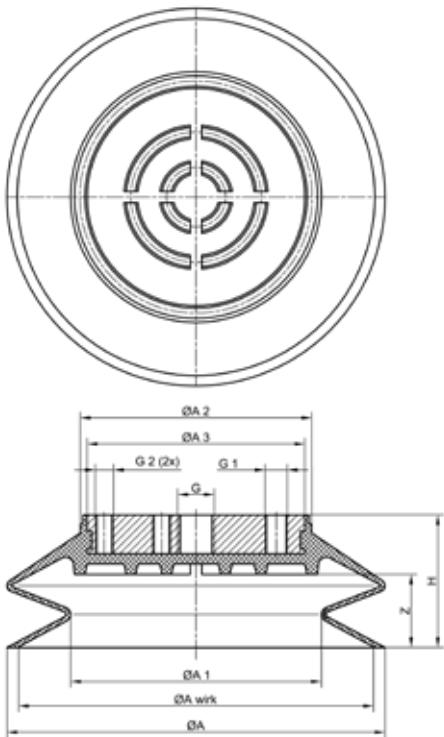
The bellow suction cup seal is made of NBR black, has a diameter of 165 mm and 1.5 folds. The aluminium base plate has 2 x M8 inside threads as well as a central M16 inside thread and a G1/8" out of center.

The seal is vulcanised onto the aluminium base plate. The surface of the base plate is anodised.



Technical drawing

Product picture bottom view



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	G1	G2	H	Z	Weight
BBSC 150 R-OLB	165	155	109	101	M16	1/8“	2xM8	58	32	0,518 kg
Type	Part number Bellow suction cup				Bellow suction cup seal					
BBSC 150 R-OLB	BBSC.150.111.050 NBR black				vulcanised					
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.					
	vertical		horizontal							
BBSC 150 R-OLB	57		115							

Bellow suction cup

Product picture



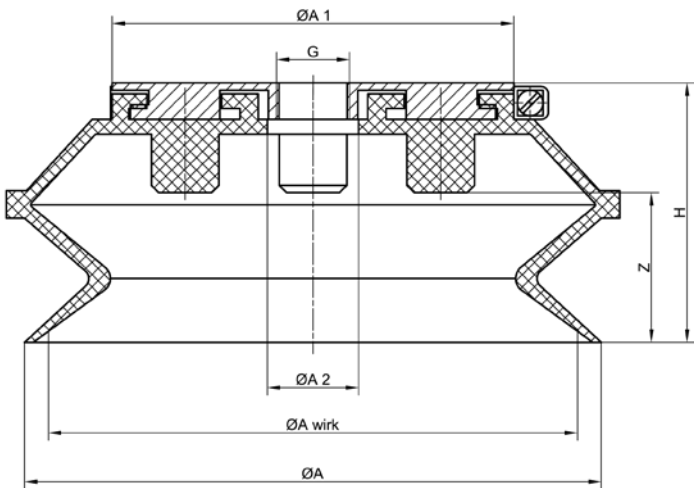
Product description

The bellow suction cup has a diameter of Ø 150 mm and the seal is made of NBR black. The aluminium base plate is with centric hole with a G1/2" inside thread. Good height compensation due to the 1.5 bellows. Suitable for curved and smooth surfaces. As a result of the flexible construction, it is suitable for stacking glass sheets in handling systems. In case of waer, the seal can be exchanged quick and cost saving by loosening the clamping clip. The bellow suction cup is mostly installed in a glass stacker from Lisec for separating of glass sheets.

Application picture



Technical drawing



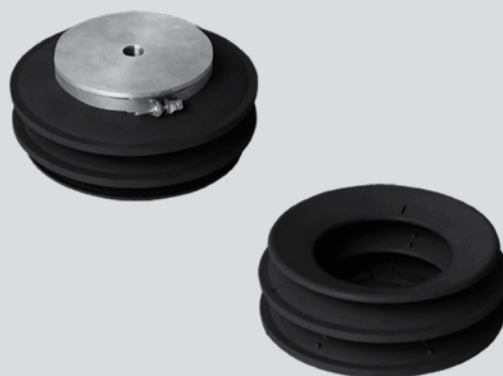
Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	G	H	Z	Weight
BBSC 150 P	158	145	110	1/2"	71	41	0,468 kg
Type	Part number Bellow suction cup		Part number Bellow suction cup seal			Clamping clip	
BBSC 150 P	BBSC.158.111.001 NBR black		BSPS.10.062			BSPS.11.020	
Type	Carrying capacity in kg		The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical	horizontal					
BBSC 150 P	50	101					

## Product description

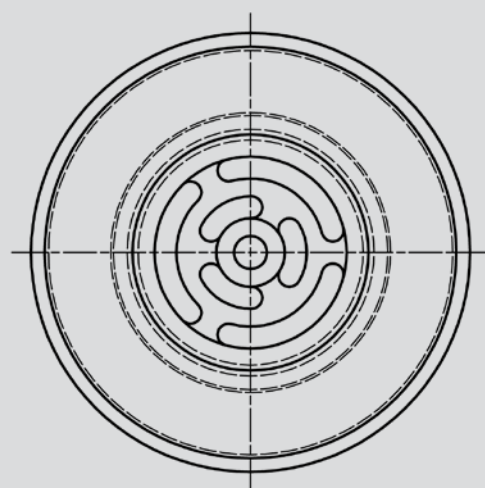
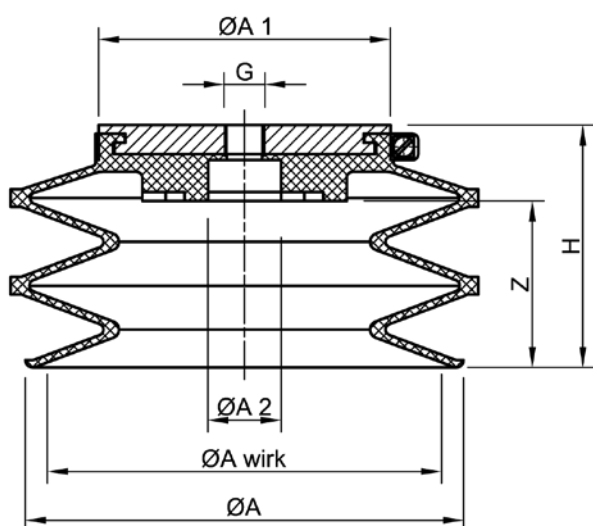
## Product picture

The bellow suction cup has a diameter of Ø 150 mm and the seal is made of NBR black. The aluminium base plate is with centric hole with a G1/4" inside thread. Good height compensation due to the 2.5 bellows. Suitable for curved and smooth surfaces. As a result of the flexible construction, it is suitable for stacking glass sheets in handling systems. In case of waer, the seal can be exchanged quick and cost saving by loosening the clamping clip. The bellow suction cup is mostly installed in a glass stacker from Armatec.



## Technical drawing

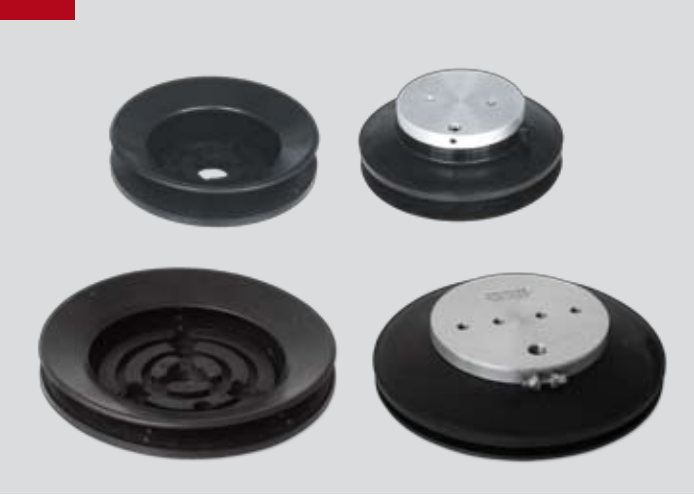
## Technical bottom view



## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	H	Z	Weight
BBSC 150 - 2.5	150	135	100	25	1/4"	83	57	0,580 kg
Type	Part number Bellow suction cup				Part number Bellow suction cup seal			Clamping clip
BBSC 150 - 2.5	BBSC.153.111.001 NBR black				BSPS.10.152			BSPS.11.021
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.				
	vertical		horizontal					
BBSC 150 - 2.5	43		87					

Product picture



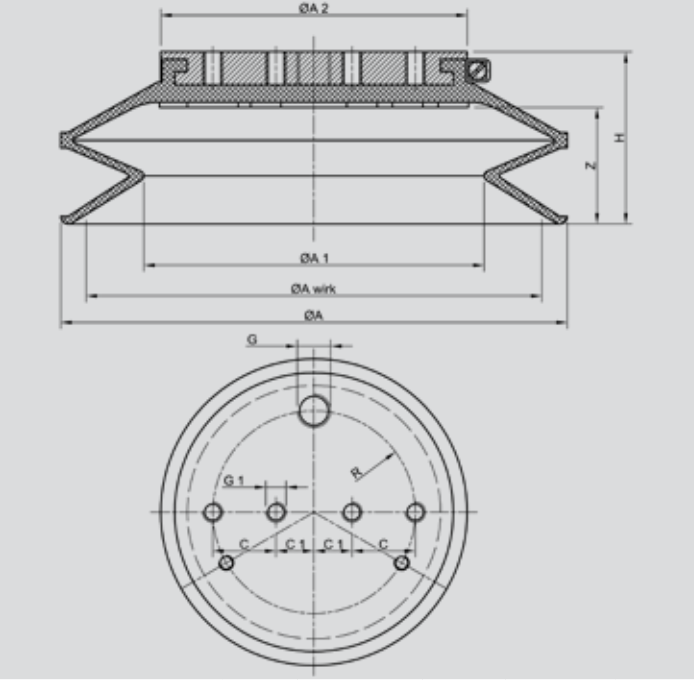
Product description

The bellow suction cup series BBSC BY is predominantly used in glass stocking portals. The seal has a diameter of 150 mm or 200 mm and is made of NBR black.

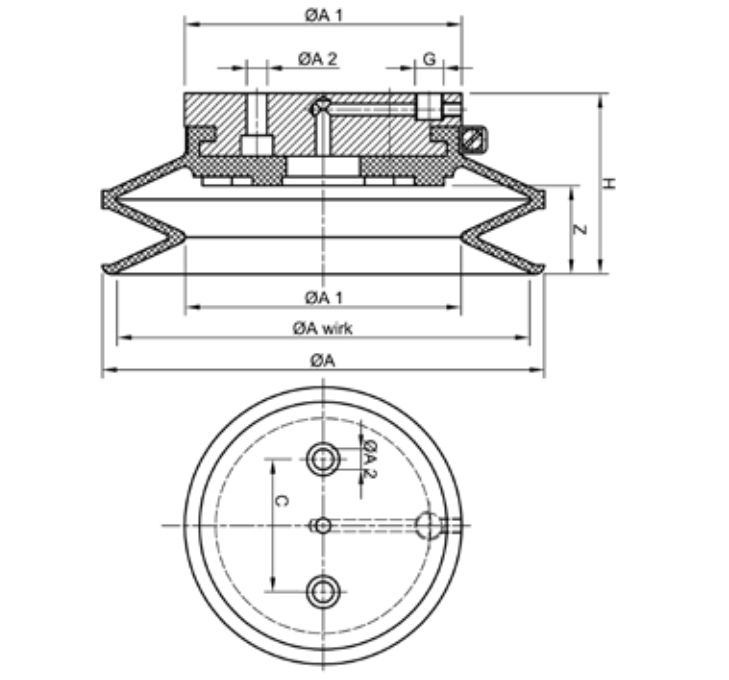
The flexible and robust version is designed for the universal use. As a result of the elasticity and the 1.5 folds, the bellow suction cup can compensate height differences perfectly.

In case of wear, the seal can be exchanged quick and cost-saving by loosening the clamping clip.

Technical drawing



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	G	G1	C	C1	R	H	Z	Weight
BBSC 150 BY	150	140	94	96	1/8"	-	45	-	-	62	29	0,580 kg
BBSC 200 BY	200	180	134	121	1/4"	M8	25	15	40	68	46	0,600 kg
Type	Part number Bellow suction cup					Bellow suction cup seal					Clamping clip	
BBSC 150 BY	BBSC.150.111.007 NBR black					BSPS.10.222 NBR black					BSPS.11.020	
BBSC 200 BY	BBSC.200.111.002 NBR black					BSPS.10.211.01 NBR black					BSPS.11.006	
Type	Carrying capacity in kg				The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.							
	vertical		horizontal									
BBSC 150 BY	47		94									
BBSC 200 BY	77		155									





## Product description

## Product picture

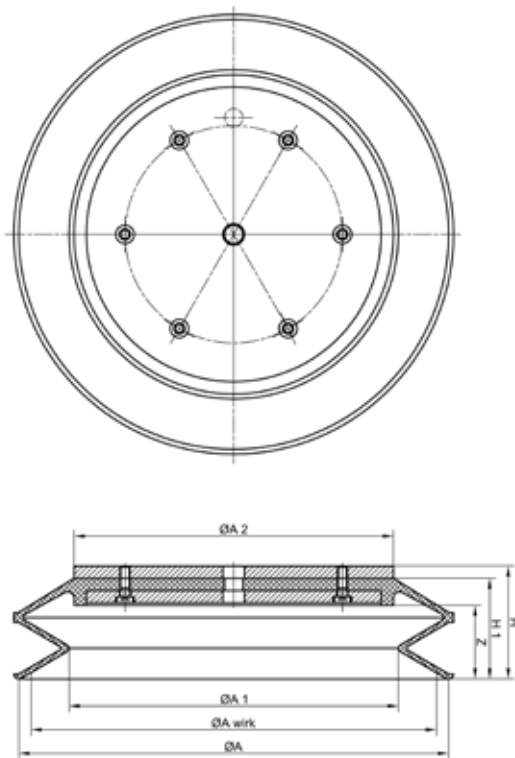
The bellow suction cup type BBSC 350 is predominantly used in the glass industry. The seal has a diameter of 350 mm and is made of NBR black. The flexible and robust version is designed for universal use. As a result of the elasticity and the 1.5 folds, the bellow suction cup can compensate even big height differences perfectly. In case of wear, the seal can be exchanged by loosening the six M8 screws.

- Several drilling templates available -



## Technical drawing

## Application picture



Bellow suction cup

## Technical data / Order data / Spare parts

Type	ØA	ØA wirk	ØA1	ØA2	H	H1	Z
BBSC 350	350	330	268	260	90	82	60
Type	Part number Bellow suction cup				Weight		
BBSC 350	BBSC.350.111.000 NBR black				4,300 kg		
Type	Carrying capacity in kg			The information about the carrying capacity are theoretical calculated values without a safety factor. The calculation of the horizontal carrying capacity is made of the effective diameter, the low-pressure at a vacuum of 60% and the theoretical friction coefficient. * Tested and values calculated with a plane, dry and dust-free glass surface.			
	vertical		horizontal				
BBSC 350	261		523				

# 05 Accessories

## Article index

Name of the article	Page
Vacuum gauge series BVG	89
Protection cover series MTC - Europe patent-No.: 03018816.3	90
Protection cover series SSÜZ	91
Vacuum filter series BVF 530	92
Vacuum fine filter series BFF	93
Clamping plate series BCS	94
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Cross clamping piece Series BCCP Aluminium	96
Cross clamping pieces Serie BCCP Steel	97
Water separator Series BWS	98
Hand slide valve Series BHSV	99

## Product description

## Product picture

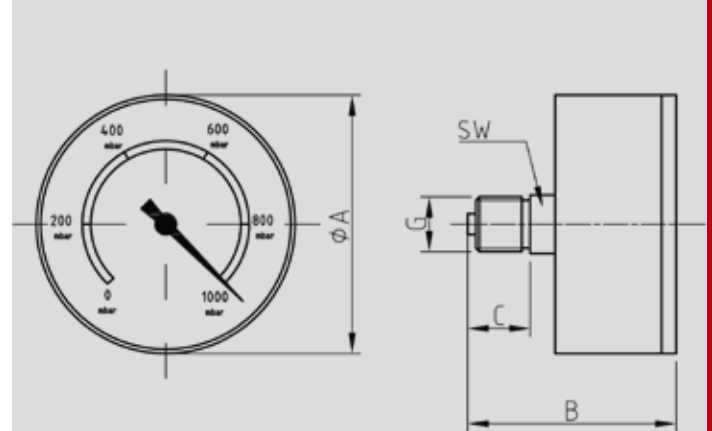
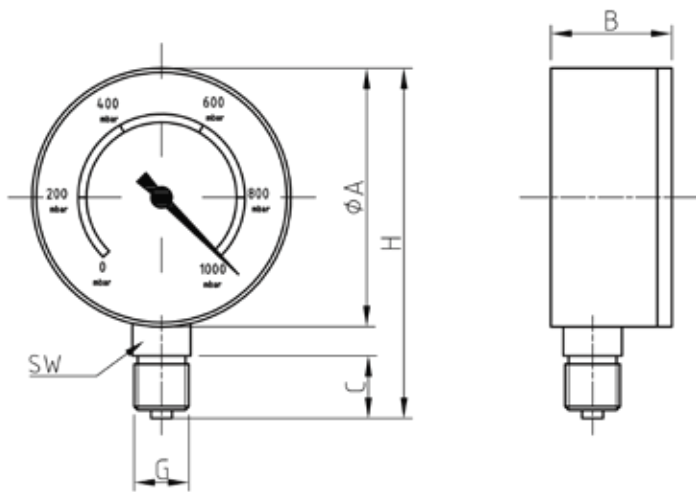
The vacuum gauges have a diameter of 62 or 99 mm and a red and green indication field. The installed instrument movement has a silicone shock absorption for a calm needle movement. The vacuum gauges have an outside thread at the bottom or the back of the vacuum gauge.

Suitable for high vacuum up to 99%.



## Technical drawing

## Technical drawing

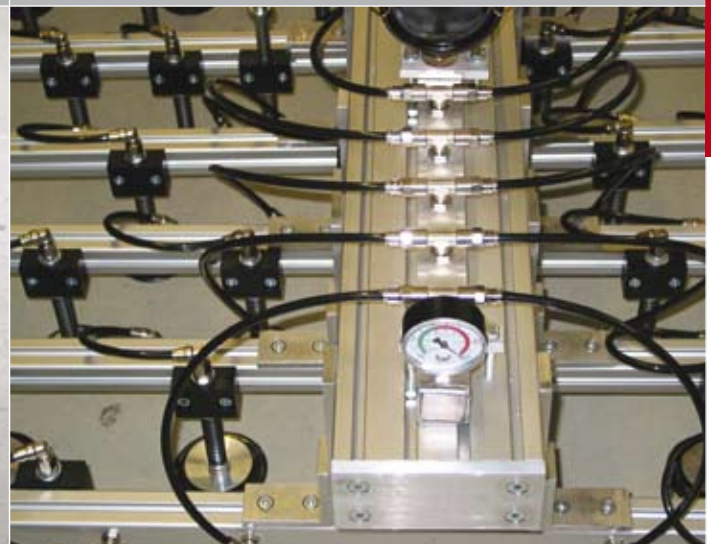



## Technical data / Order data / Spare parts


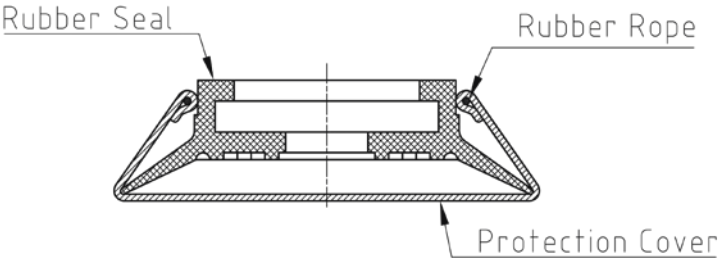
Type	A	B	C	H	G	SW	Weight	Part number
BVG 63 bottom	62	29	15	84	1/4"	14	0,128 kg	BVG.001
BVG 63 back	62	50	15	-	1/4"	14	0,131 kg	BVG.002
BVG 100 back	99	60	22	-	1/2"	14	0,262 kg	BVG.004
BVG 100 bottom	99	31,5	22	133	1/2"	22	0,310 kg	BVG.006

## Application picture

## Application picture



Product picture	Product description
	<p>In order to prevent seal markings on smooth and sensitive surfaces (like soft coated glass) the protection covers type MTC were developed and patented. An integrated rubber rope secures the protection cover in position. The material used for protection covers is white and causes only a tiny leak between the rubber seal and the work piece. Suitable for suction cup seals with a short rubber lip. Please observe the safety information when installing the MTC onto your lifting device.</p> <p><b>Notice:</b> The suction cup covers can not be used for any kind of suction cup seal. Please contact us for further information.</p> <p>On request we will produce this protection covers in special size, suitable for your seal. Please just send us an example of your seal(s), we will test it for you.</p>

Application picture	Technical drawing
	

Technical data / Order data / Spare parts		
Type	ØA	Part number
MTC 1	100 - 115 mm	MTC.001
MTC 2	120 - 130 mm	MTC.002
MTC 3	160 - 190 mm	MTC.003
MTC 4	210 - 220 mm	MTC.004
MTC 5	230 - 250 mm	MTC.005
MTC 6	280 - 320 mm	MTC.006
MTC 7	330 - 350 mm	MTC.007
MTC 8	55 - 60 mm	MTC.008
MTC 9	70 - 80 mm	MTC.009
MTC 10	360 - 400 mm	MTC.010
MTC 11	55 x 100 mm (L x B)	MTC.011
MTC 12	1250 x 600 mm (L x B)	MTC.012
MTC 13	650 x 550 mm (L x B)	MTC.013
MTC 14	Ø 150 mm	MTC.014
MTC 15	600 x 330 mm (L x B)	MTC.015
MTC 16	700 x 430 mm (L x B)	MTC.016



## Product description

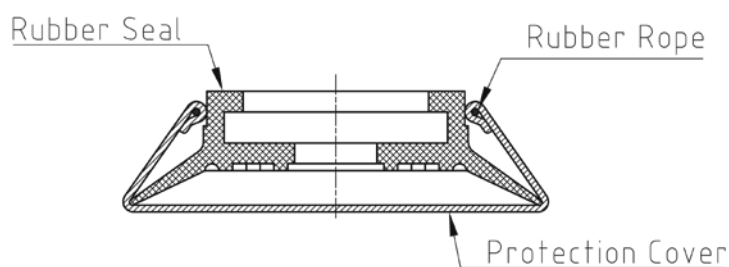
## Product picture

This protection cover has been developed for protecting the suction plates or seals during transport from impurities and eventual outside influences.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	Part number
SSÜZ 1	115 mm (on request)	SSÜZ.001
SSÜZ 2	130 mm (on request)	SSÜZ.002
SSÜZ 3	200 mm (on request)	SSÜZ.003
SSÜZ 4	220 mm (on request)	SSÜZ.004
SSÜZ 5	250 mm (on request)	SSÜZ.005
SSÜZ 6	270 - 300 mm	SSÜZ.006
SSÜZ 7	350 mm (on request)	SSÜZ.009
SSÜZ 8	60 mm (on request)	SSÜZ.008
SSÜZ 9	80 mm (on request)	SSÜZ.009
SSÜZ 10	360 - 400 mm	SSÜZ.010

Product picture



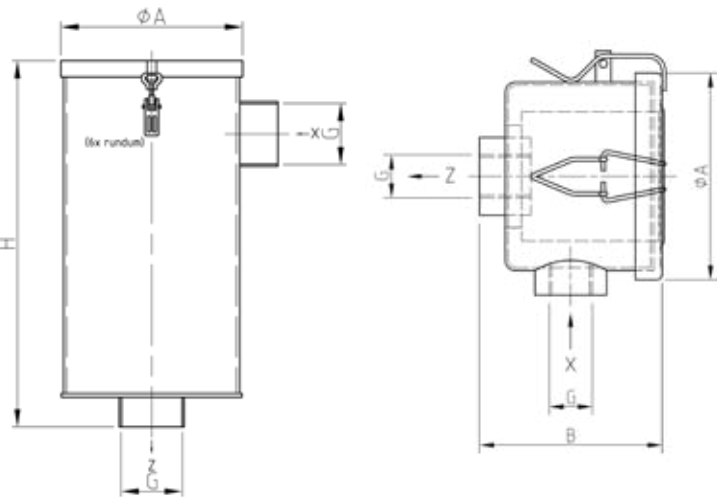
Product description

The vacuum filters are robust and made from black laquered steel plates. A paper filter element which can be changed easily by opening the top cover is already installed. The filters increase the durability of the vacuum pumps and valves. The vacuum filters are vacuum sealed up to 95% end vacuum.

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	A	B	G	H	Volume flow	Weight	Part number	Paper inlet
BVF 1/2"	101	89	1/2"	-	42 cbm/h	0,717 kg	BVF.530.000	PAE.532.005
BVF 3/4"	101	89	3/4"	-	42 cbm/h	0,655 kg	BVF.530.001	PAE.532.005
BVF 1 1/4" S	135	99	1 1/4"	-	96 cbm/h	1,058 kg	BVF.530.002	PAE.532.002
BVF 1 1/4" L	173	151	1 1/4"	-	108 cbm/h	1,945 kg	BVF.530.003	PAE.532.003
BVF 1 1/2"	173	196,5	1 1/2"	-	192 cbm/h	2,082 kg	BVF.530.004	PAE.532.013
BVF 2"	200	252	2"	-	310 cbm/h	3,923 kg	BVF.530.005	PAE.532.004
BVF 3"	285	-	3"	507	1080 cbm/h	2,208 kg	BVF.530.006	PAE.532.011
BVF 4"	335	-	4"	675	1260 cbm/h	3,306 kg	BVF.530.007	PAE.532.012
BVF 3/8"	83	80	3/8"	-	12 cbm/h	0,344 kg	BVF.530.022	PAE.532.013

## Product description

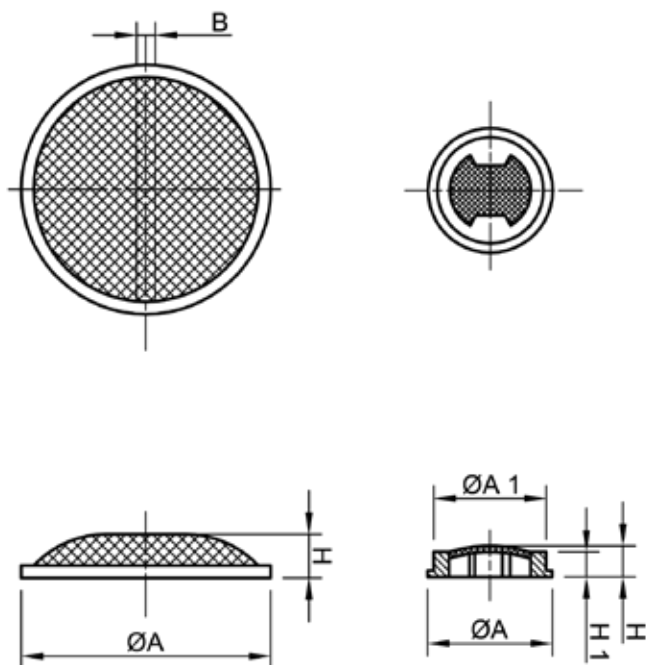
## Product picture

The inline fine filters type BFF are suitable for installation in pipes and tubes with inside thread, in solenoid valves, flow valves or connecting nipples. We recommend the installation of those inline filters to protect valves from any dirt when switching to suction or ventilating the vacuum system. Suitable for the thread sizes in the below stated chart.



## Technical drawing

## Application picture



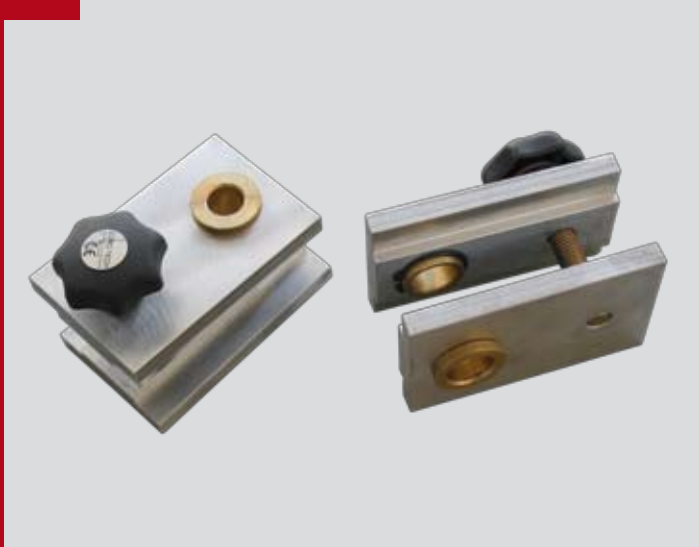
## Technical data / Order data / Spare parts

Type	ØA	ØA1	H	H1	Part number
BFF 1/8"	9,70	8,20	4	3	BFF.001
BFF 1/4"	12,70	10,80	4	3	BFF.002
BFF 1/2"	19,80	15,20	6,50	1	BFF.003



Product picture

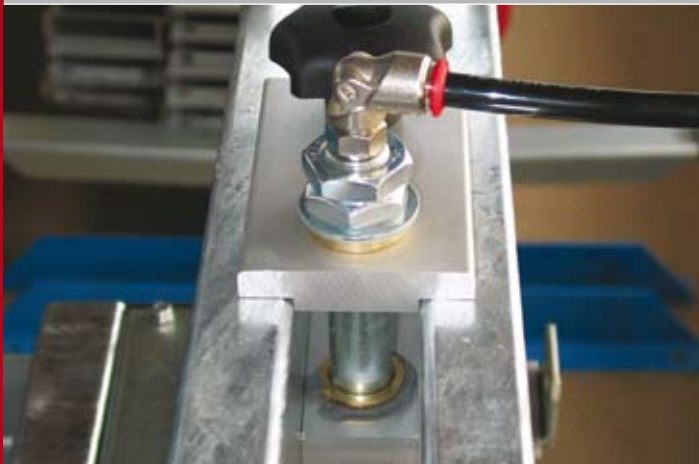
Product description



We recommend the installation of suction cups with aluminium clamping plates type BCS when the suction cups have a large carrying capacity. Those aluminium clamping plates are installed between 2 profiles. The built-in brass guide assures a precise movement of the suspension bolt. It is possible to change the brass guide cost-savingsly.

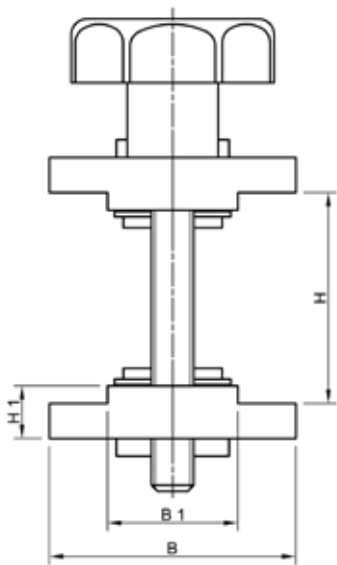
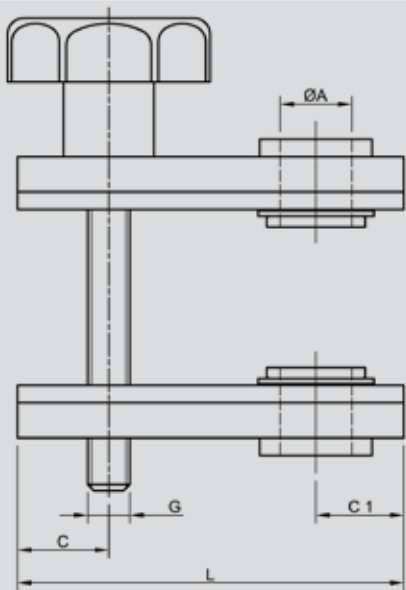
Application picture

Application picture



Technical drawing

Technical drawing



Technical data / Order data / Spare parts

Type	ØA	G	L	L1	L2	H	H1	B	B1	Weight	Part no.
BCS 1	20,5	M12	110	26	25	50-70	15	70	37	0,700 kg	BCS.001
BCS 2	20,5	M12	110	26	25	60-100	15	70	37	0,700 kg	BCS.002
BCS 3	16,5	M12	110	26	25	50-70	15	70	37	0,700 kg	BCS.003



## Product description

## Product picture

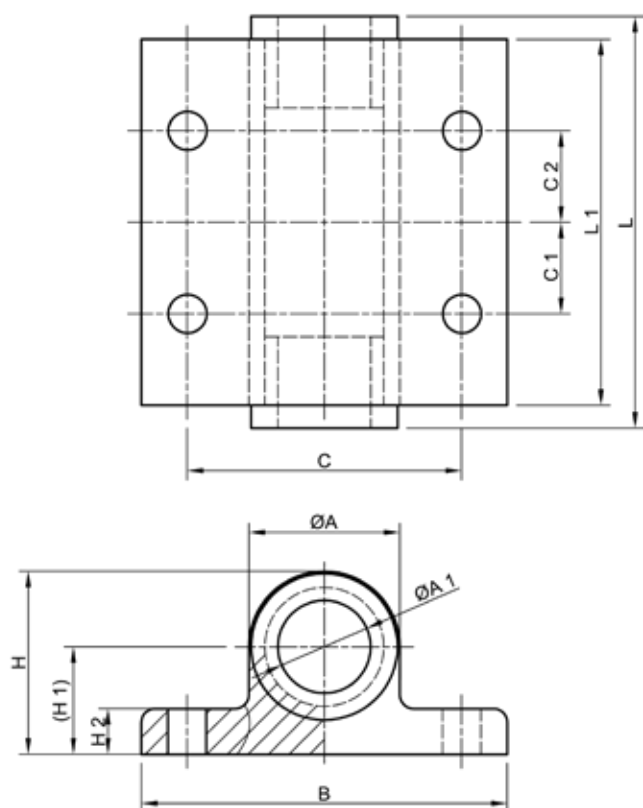
The aluminium flange plate type FPH is made from extruded aluminium. The guide tube has two bushes suitable to fit a suspension bolt with a diameter of 20 mm. The guide bushings are made of oil-soaked sintered bronze.

Because the flange plates can be mounted multifunctional, the hole center distance is variable. We will manufacture the flange plate on request.



## Technical drawing

## Application picture



## Technical data / Order data / Spare parts

Type	ØA	ØA1	B	L	L1	H	H1	H2	C	C1	C2	Weight	Part number
FPH 3	33	20,3	80	90	80	40	23,5	10	60	20	20	0,312 kg	FPH.003
FPH 4	33	20,3	80	120	110	40	23,5	10	50	12,5	32,5	0,391 kg	FPH.004
FPH 6	33	20,3	80	90	80	40	23,5	10	60	15	15	0,312 kg	FPH.006
FPH 9	33	20,3	80	90	80	40	23,5	10	60	22,5	22,5	0,312 kg	FPH.009
FPH 13	33	20,3	80	60	50	40	23,5	10	30	-	-	0,240 kg	FPH.013
FPH 14	33	20,3	80	100	90	40	23,5	10	60	22,5	22,5	0,338 kg	FPH.014

Product picture



Product description

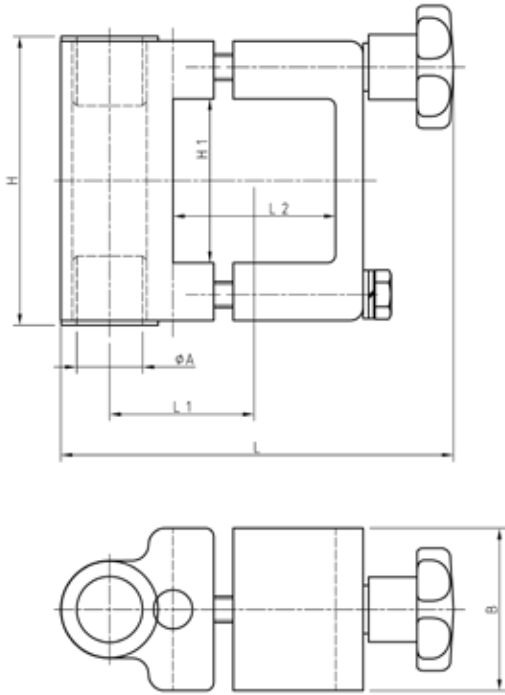
The aluminium cross clamping pieces series BCCP are made of aluminium with star-knob screw and guide tube. The cross clamping pieces are suitable for suspension bolts Ø 16 mm or Ø 20 mm. The guide bushings are made of POM, the guide tubes Ø 20 mm are also made of oil-soaked sintered bronze. As a result of the split type of construction, the profiles can be installed very quickly, even on closed frames.

- For 30ties till 80ties frame profiles all in-between sizes are available. You can get further information on request -

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	H	H1	L	L1	L2	Bushing	Weight	Part number
30x30 / 16 G	16,3	78	30,5	74	34,5	30	POM	0,439 kg	BCCP.014
40x40 / 16 G	16,3	78	40,5	84	39,5	40	POM	0,452 kg	BCCP.015
50x50 / 16 G	16,3	88	50,5	93	44,5	50	POM	0,526 kg	BCCP.030
30x30 / 20 G	20,3	78	30,5	78	49,5	30	POM	0,439 kg	BCCP.016
40x40 / 20 G	20,3	78,9	40,5	84	39,5	40	POM	0,451 kg	BCCP.017
50x50 / 20 G	20,3	88,9	50,5	93	44,5	50	POM	0,510 kg	BCCP.019
60x60 / 20 G	20,3	98,9	60,5	102,5	49,5	60	POM	0,604 kg	BCCP.020
30x30 / 20 SB	20,4	86	30,5	77	36	30	Sintered bronze	0,540 kg	BCCP.026
40x40 / 20 SB	20,4	86	40,5	87	41	40	Sintered bronze	0,540 kg	BCCP.021
50x50 / 20 SB	20,4	96	50,5	96	46	50	Sintered bronze	0,600 kg	BCCP.027
620x60 / 20 SB	20,4	106	60,5	105,5	51	60	Sintered bronze	0,695 kg	BCCP.029

The technical data has been generated to the best knowledge and with great care and serve only for information. Nevertheless we cannot assume liability for eventual deficits which may be included. For special operation fields/ open-air operation, separate questions must be put. We reserve technical changes.

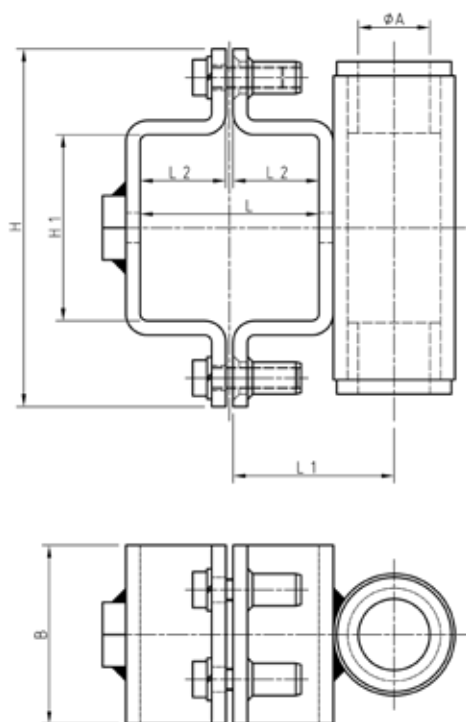
## Product description

The steel cross clamping pieces series BCCP are made of galvanised steel and have a guide tube. The cross clamping pieces are suitable for suspension bolts  $\varnothing$  20 mm. The guide bushings are made of oil-soaked sintered bronze. As a result of the split type of construction, the profiles can be installed very quickly even on closed frames. These cross clamping pieces are suitable for frame profiles with the measures 50 x 50 mm and 50 x 100 mm.

## Product picture



## Technical drawing



## Application picture



## Technical data / Order data / Spare parts

Type	ØA	B	H	H1	L	L1	L2	Bushing	Weight	Part number
50 x 50	20	50	100	52	50	45	24	Sintered bronze	0,808 kg	BCCP.062
50 x 100	20	50	100	102	50	49	24	Sintered bronze	1,080 kg	BCCP.069

*The technical data has been generated to the best knowledge and with great care and serve only for information. Nevertheless we cannot assume liability for eventual deficits which may be included. For special operation fields/ open-air operation, separate questions must be put. We reserve technical changes.*

Product picture



Product description

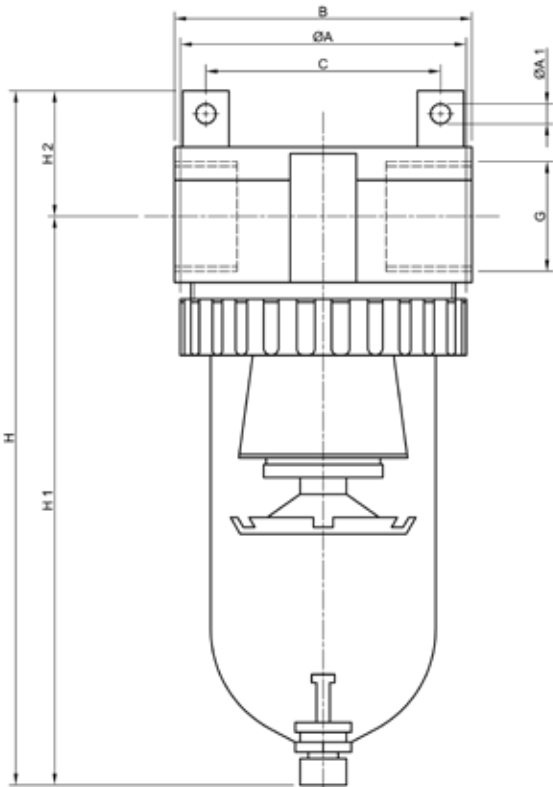
The water separators series BWS are available in three sizes. They are made of aluminium pressure casting, the transparent catch bowl is made of polycarbonate. The drain plug is on the bottom with which the separated water can drain of. By using a water separator an intrusion of water in the vacuum reservoir can be prevented.

Catch bowl capacity: max. 90 ml

Application picture



Technical drawing



Technical data / Order data / Spare parts

Type	ØA	B	B1	H	H1	H2	ØA1	G	Weight
BWS 1	86,5	90	71	210	172	38	6	1/2"	1,240 kg
BWS 2	86,5	90	71	210	172	38	6	3/4"	1,240 kg
BWS 3	86,5	90	71	210	172	38	6	1"	1,200 kg
BWS 4	36,6	40	-	97,5	87,5	10,0	-	1/8"	0,098 kg
Type	Part number Water separator				Accessoires				
BWS 1	BWS.001				Mounting bracket for type BWS 4				
BWS 2	BWS.002				Part number: BWS.004.00				
BWS 3	BWS.003								
BWS 4	BWS.004								





## Product description

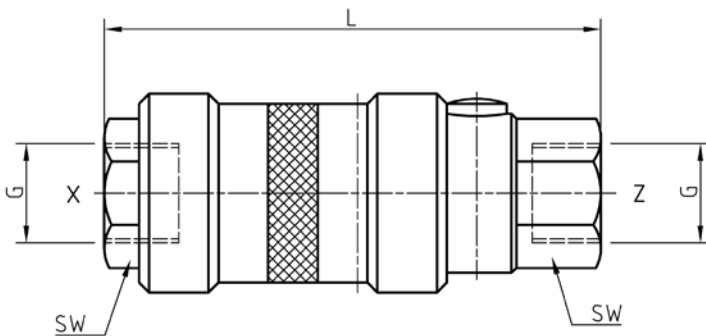
## Product picture

The 3-2 way hand slide valves series BHSV are made of brass with nicel-plated surface and catch advantageous aluminium slide. The hand slide valve type BHSV 6 is delivered with security push button to prevent accidental ventilating. The hand slide valves are suitable for opening and closing of vacuum distributors e.g. at vacuum lifting devices.

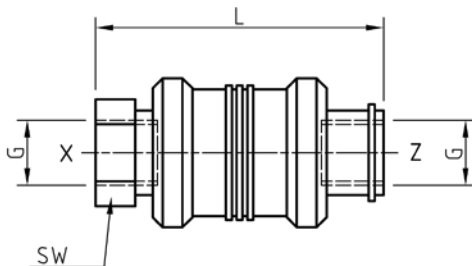


## Technical drawing

## Application picture



Z= zum Vakuumerzeuger / to the vacuum pump  
X= zum Verbraucher / consumption side



## Technical data / Order data / Spare parts

Type	L	G	SW	Push button	Weight
BHSV 1	58	1/4"	19	no	0,097 kg
BHSV 2	80	1/2"	27	no	0,214 kg
BHSV 3	75	3/4"	36	no	0,382 kg
BHSV 4	80	3/8"	27	no	0,153 kg
BHSV 5	48	1/8"	14	no	0,052 kg
BHSV 6	100	1/2"	27	yes	0,366 kg

Type	Part number Hand slide valve	Type	Part number Hand slide valve
BHSV 1	BHSV.001	BHSV 2	BHSV.002
BHSV 3	BHSV.003	BHSV 4	BHSV.004
BHSV 5	BHSV.005	BHSV 6	BHSV.006

## Note

[illegible]

# terms and conditions of sale and delivery

## 1. Terms and conditions of sale and outline agreements governing future contracts

We shall solely on our Terms and Conditions of Sale and Delivery. The latest version of these shall form an integral part of the contract in similar commercial transactions in the future. Other terms and conditions shall be valid only where they have been confirmed by us in writing. Unless otherwise stated to the contrary, quotations in their entirety are given without engagement. We reserve the copyright and right of title to all cost estimates, drawings and other tender documents. They may be made available to third parties only with our consent. The confirmation of order shall define the item to be supplied. Subsidiary agreements and amendments must be confirmed by us in writing.

## 2. Delivery time

The delivery time shall commence on receipt of our order confirmation by the purchaser. Delivery period days shall be taken to mean working days. The assertion of claims for damages for delay shall be excluded, except in the case of malicious intent or gross negligence on the part of the owner or chief executive and agents, or in the case of express written assurance of a firm delivery date. All circumstances preventing or interfering with the deliveries and completion date which are beyond our control shall be deemed cases of force majeure for which we are not liable (e.g. official measures, strikes, transport disruptions, shortage of raw materials, late delivery by suppliers, operating stoppages at our factories or at our suppliers) and shall relieve us of liability for delivery, additional delivery, adherence to delivery dates and claims for damages. The delivery dates shall be suitably extended according to the delay in delivery time or completion dates attributable to third parties and not to us. Nor shall we be held liable for the above-mentioned circumstances where they arise during an existing delay. We reserve the right to make part-deliveries. We shall be so entitled especially in the case of larger orders.

## 3. Prices, minimum quantity supplement and payment

Prices are quoted ex-works, exclusive of VAT at the current statutory rate and do not include packing and transport costs. In the case of a net order value of less than € 50,00 we will charge a minimum quantity supplement of € 10,00 net. Failing the conclusion of a contract, samples made up at the purchaser's request will be invoiced to the purchaser on the basis of a unit calculation. Our invoices are payable net within 10 days following readiness for dispatch. We will charge interest on arrears at normal bank rates on payments after the due date. We shall have the right to demand cash on delivery or cash in advance, or to withdraw from the contract should facts come to light which bring the customer's credit status into doubt. Any material, price and wage increases, even those occurring after the placing and confirmation of an order, including price increases of our suppliers, shall entitle us to invoice the additional costs thereby incurred if the goods are delivered four months after the conclusion of contract, that is receipt of the written confirmation of order by the purchaser, or the agreed performance is to be effected following the said four months.

## 4. Passage of risk, shipment

The risk shall pass to the purchaser, at the latest, on dispatch of the delivery items or from that instant in which the goods leave the loading platform at the manufacturer's works. This shall include partial deliveries and instances in which we have undertaken other performances such as transport charges or haulage and assembly of the goods. At the request of the purchaser, the supplier will insure the consignment, at the purchaser's expense, against theft, breakage, transport, fire and water damage and other insurable risks. Should delivery of the goods be delayed for reasons attributable to the purchaser, the risk shall pass when the purchaser has been notified of the readiness for dispatch. In the event of delay in taking delivery, we shall be entitled to charge storage charges. These will amount to at half of one per cent for each full week's delay, to a maximum however of 5% of the value of that part of the total delivery which, in consequence of the delay, was not taken promptly or in accordance with the contract. We shall be entitled, after setting of a reasonable period and its expiry to no avail, to dispose of the delivery items elsewhere and to deliver to the purchaser with suitably extended terms. Equipment is delivered disassembled where the method of shipment and the transport risk so require.

## 5. Notice of defects

Any notice of defects and complaints of any nature must be made without delay on receipt of the delivery, article 377 of the Commercial Code. The rejected items are to be sent to us, carriage paid, after prior consultation.

## 6. Reservation of title

All good supplied by us shall remain our property ending payment in full of our existing claims and settlement of any current account balance accruing to the debit of the purchaser. This shall apply even where the purchase price for certain goods deliveries designated by the purchaser has been paid. Acceptances, bills and cheques shall count as payment only after their irrevocable encashment. The purchaser shall also bear the risk of loss of or damage to the items during the validity of the purchaser's reservation of title. The purchaser undertakes to insure the goods against each insurable loss. He shall assign to us in advance his claims arising out of the insurance contracts. Provided that the purchaser is prepared and able to comply with his obligations towards us, he shall be entitled to dispose of our reservation of title and our claims arising there from in the ordinary course of business; exceptional disposals such as pledge, assignment as security and transfer as security are inadmissible. The purchaser is to notify us without delay of attempts by third parties to seize goods belonging to us or substituted claims thereto, enclosing (a copy of) the writ of attachment. The purchaser shall be permitted, in the normal course of business, to process, dispose of or combine our reserved property. We shall acquire co-ownership of the new article in proportion to the value of our reserved property on the date of combination/processing/mixing to arrive at the total value of the goods represented by the newly formed article. The purchaser undertakes to dispose of the goods supplied by us only under the

proviso that he reserves title to these goods until the purchase price has been paid in full, and agrees that if reservation of title is forfeited by virtue of disposal, combining, processing or mixing, it be replaced by title to the new article or the claim arising there from. Should the purchaser dispose of the goods supplied by us, he shall cede to us the claims against his client, together with all additional rights, accruing to him from the disposal and from the agreement of simple, ensuing or extended reservation of title from the moment he takes delivery of our goods until all our claims arising from deliveries of goods have been fully extinguished. Should a current account relationship exist between the purchaser and his buyer, the cession shall extend not only to the balance recognized according to article 355 of the Commercial Code but also to any excess amount arising from this current account relationship, which shall be due for payment immediately without statement and verification. The purchaser shall be entitled to collect the claim until such time as we prohibit this on the grounds of default of payment by the purchaser or his administrator. In this event the purchaser must present us immediately on demand with a declaration of assignment in two copies for each individual claim covering the assignment of future debts already undertaken. At our insistence the purchaser shall be obliged to inform his clients of the assignment and to provide us with the information and issue us with the documents necessary for the enforcement of our rights against the said acquisition. In the event of default by the purchaser of his insolvency, we shall be entitled to demand the immediate return of the goods delivered subject to reservation of title. The deferred claims shall then become due for payment immediately. Deposited bills are to be redeemed *pari passu* against payment in cash irrespective of their due date. The seizure of the delivered item by the supplier shall not constitute withdrawal from the contract. Should the value of the securities provided by us exceed our total receivable for goods by more than 20%, we undertake, at the insistence of the purchaser, to reassign those securities which exceed 120% of the value of our receivables for goods. The choice of which securities to release shall rest with us.

## 7. Guarantee

in single-shift operation (8 hours service per day) the guarantee period is 24 months; in two-shift operation ( 16 hours service per day) 12 months; in three-shift operation (24 hours service per day) 6 months; calculated from delivery of the object of purchase. Wear parts are not covered by our guarantee. These guarantee period shall apply both to obvious and to hidden defects. In place of the purchaser's right to cancel the contract (annulment), or to a reduction of the purchase price (reduction), we shall have the right, at our discretion and at our expense, to undertake repairs or to replace the defective parts with new ones. We shall bear the associated costs of transport, labor and materials and traveling expenses. This liability for costs shall not apply in so far as these expenses are increased by virtue of the fact that the item sold has been removed to a place other than the registered address or the location of the place of business has shifted. Should attempts at rectification fail or the delivery of replacement or new parts also prove defective, the purchaser shall then have the

right to annulment or a reduction. Section 5 of our General Terms and Conditions of Business shall apply in the case of obvious defects in manufacture and materials. Other defects must be reported immediately they come to light. No guarantee or liability for defects will be accepted for defects or damage to the items supplied by us which have occurred following the passage of risk due to unsuitable or inappropriate use, incorrect assembly or commissioning by the purchaser or third parties, excessive stressing, natural wear and tear, incorrect or negligent handling, unsuitable operating substances, chemical, electro-chemical or electrical influences, unless these were provided for in the contract or can be attributed to negligence by the supplier. Replaced items shall become our possession. We shall not be liable for claims for damage not sustained by the actual item supplied, e.g. claims for reimbursement of costs and loss of profits due to lost production (so-called consequential losses), unless gross negligence of malicious intent can be proved against us. We shall fundamentally not be open to claims for damages by the purchaser irrespective of negligence. We assume that the terms and conditions of contract correspond to domestic business. We cannot accept guarantee claims, in particular transport costs and traveling expenses, which extend beyond Germany as the basis for delivery.

## 8. Assembly

Where we are entrusted not only with supply but also with assembly, this will be carried out by us as part of an independent contract to manufacture separate from the supply. The special written assembly terms will apply to such a contract.

## 9. Venue and place of performance

To the extent permitted by law, Balingen is agreed as the venue and place of performance for all disputes arising out of the contractual relationship, including any actions on dishonored bills or cheques. In the case of non-traders, the statutory provisions shall apply.

## 10. Validity

Our Terms and Conditions of Sale and Delivery shall remain binding even in the event of individual provisions becoming legally null and void.

## 11. Foreign contracts

The law of the Federal Republic of Germany shall apply exclusively.

The validity of the UN Convention on Contracts for the International Sale of Goods (CISG) of 5 July 1989 is expressly excluded.

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