

Oval Bellows family (OB)



The oval suction cups are suitable for handling of long and narrow objects and surfaces when maximum lifting force is desired. Oval suction cups are specially suitable for irregular surfaces and when level compensation is desired. This program of oval suction cups has characteristics that are specially suited for handling of metal-sheet material.

Lifting forces

	Lifting force vertical to the surface, N, at vacuum level			Lifting force parallel to the surface, N, at vacuum level		
	20 -kPa	60 -kPa	90 -kPa	20 -kPa	60 -kPa	90 -kPa
OB20x60P	13	34	57	13	37	48
OB35x90P (PU30°/PU60°)	42	119	174	48	73	100
OB35x90P (PU60°)	42	117	185	32	85	111
OB50x140P (PU30°/PU60°)	58	235	366	110	260	349
OB50x140P (PU60°)	77	231	368	122	292	396
OB65x170P (PU30°/PU60°)	119	335	541	141	379	532
OB65x170P (PU60°)	130	310	533	170	440	600
OBF35x90P	—	140/108*	198/157*	—	125/105*	179/151*
OBF50x140P	—	325/246*	438/372*	—	328/271*	415/347*
OBF65x170P	—	397/403*	570/502*	—	437/538*	619/665*
OBL40x90P (PU60°)	44	105	160	40	87	121
OBL40x90P (PU70°)	49	117	178	45	97	135

* Dry metal sheet/Oily metal sheet.

General specifications

	Outer diameter, mm	Height, mm	Min. curve radius, mm	Max. vertical movement, mm	Volume, cm ³
OB20x60P	62x23.5	23.6	7	4.5	24
OB35x90P	95.6x42.4	27.2	30	10.5	38
OB50x140P	146x59	34.5	23/26**	11.3	95
OB65x170P	177x76	41.5	38	16	175
OBF35x90P	105x50	39–47.9*	30	11	36

	Outer diameter, mm	Height, mm	Min. curve radius, mm	Max. vertical movement, mm	Volume, cm ³
OBF50x140P	157x67	47–55.8*	50	13	95
OBF65x170P	187x82	54–62.8*	50	15	200
OBL40x90P	92.6x45	63–73*	28	31	105

* Height range includes fittings, ** PU30°/PU60° / PU60°.

Available materials

	PU30°/PU60°	PU55°/PU60°	PU60°	PU70°
OB20x60P			●	
OB35x90P	●		●	
OB50x140P	●		●	
OB65x170P	●		●	
OBF35x90P		●		
OBF50x140P		●		
OBF65x170P		●		
OBL40x90P			●	●

Material resistance

For more material information go to page 23.

Applications

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Oily sheet metal	Corrugated / cardboard	Glass handling	Mark Free
OB20x60P				●
OB35x90P		●		●
OB50x140P		●		●
OB65x170P		●		●
OBF35x90P	●			
OBF50x140P	●			
OBF65x170P	●			
OBL40x90P			●	●

Fittings

For a table of possible fittings to use go to page 80, for technical information on all fittings visit piab.com.

Ordering information

For a complete list of available cups and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register to receive full access to all resources available.

OB20x60P with swivel fitting



Oval suction cup with short bellows

- ▶ Suitable for level adjustment. Can handle objects with height differences and varying shapes, for example embossed or corrugated plates.
- ▶ Lifting movement to separate small and thin objects.
- ▶ DURAFLEX® are suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled.
- ▶ Swivel option, prior to the locking operation, for easy positioning of the oval cup.

Lifting forces & Technical data

Lifting force vertical to the surface, N, at vacuum level			Lifting force parallel to the surface, N, at vacuum level			Volume cm ³	Min. curve radius mm	Max. vertical movement mm	Weight with fitting g
20 -kPa	60 -kPa	90 -kPa	20 -kPa	60 -kPa	90 -kPa				
13.0	34	57	13.0	37	48	24.0	7.0	4.5	11.0

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU60	Green transparent	60	10–50

Material resistance

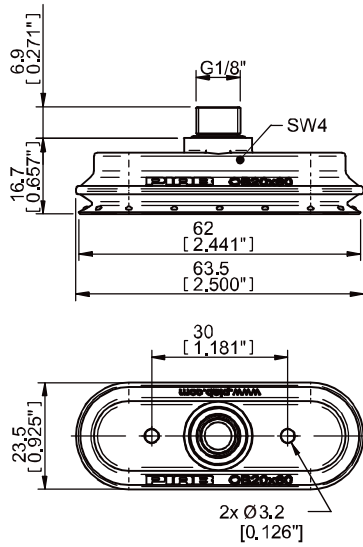
Wear resistance	Oil	Weather & ozone	Hydrolysis	Petrol	Concentrated acids	Ethanol	Methanol	Oxidation
Excellent	Excellent	Excellent	Fair**	Fair	Fair**	Fair	Poor	Poor

**Please contact Piab.

Suction cups/grippers DURAFLEX® Single and dual

Ordering information

Complete suction cups	Art. No.
Suction cup OB20x60P Polyurethane 60, G1/8" male	0115291



OB35x90P



Oval suction cup with short bellows

- ▶ Suitable for level adjustment. Can handle objects with height differences and varying shapes, for example embossed or corrugated plates.
- ▶ Lifting movement to separate small and thin objects.
- ▶ In the two coloured suction cup, the bellows and the sealing lip are of different hardnesses, which makes the suction cup strong and stable and, at the same time, soft and flexible.
- ▶ DURAFLEX® are suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled.

Lifting forces & Technical data

Material	Lifting force vertical to the surface, N, at vacuum level			Lifting force parallel to the surface, N, at vacuum level			Volume cm ³	Min. curve radius mm	Max. vertical movement mm	Weight rubber part g
	20 -kPa	60 -kPa	90 -kPa	20 -kPa	60 -kPa	90 -kPa				
PU60°	42	117	185	32	85	111	38	30.0	10.5	55
PU30°/60°	42	119	174	48	73	100	38	30.0	10.5	55

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU30	Yellow transparent	30	10–50
Polyurethane, PU60	Green transparent	60	10–50

Material resistance

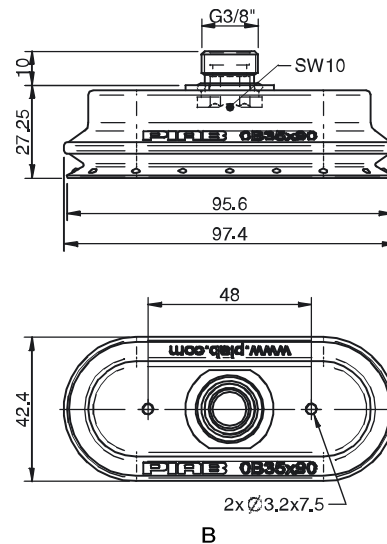
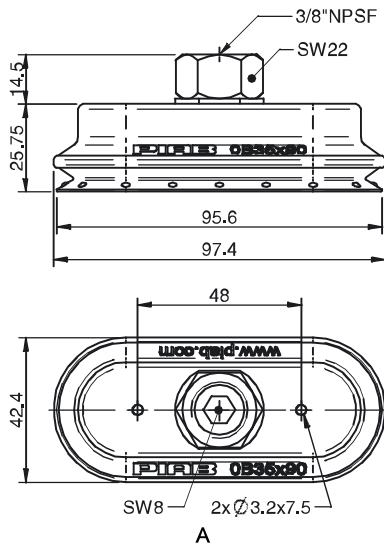
Wear resistance	Oil	Weather & ozone	Hydrolysis	Petrol	Concentrated acids	Ethanol	Methanol	Oxidation
Excellent	Excellent	Excellent	Fair**	Fair	Fair**	Fair	Poor	Poor

**Please contact Piab.

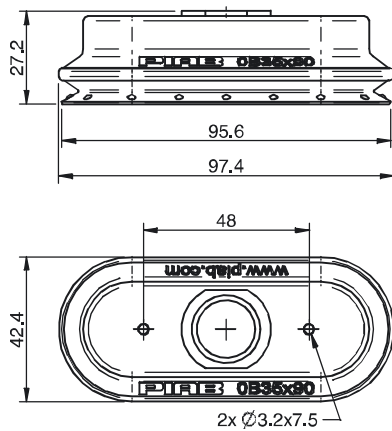
Suction cups/grippers DURAFLEX® Single and dual

Ordering information

	Complete suction cups	Art. No.
A	Suction cup OB35x90P Polyurethane 60, 3/8" NPSF female	0108672
B	Suction cup OB35x90P Polyurethane 60, thread insert G3/8" male, with mesh filter	0108673
A	Suction cup OB35x90P Polyurethane 30/60, 3/8" NPSF female	0109857
B	Suction cup OB35x90P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	0109856



	Rubber parts	Art. No.
	Suction cup OB35x90P Polyurethane 60	0109912
	Suction cup OB35x90P Polyurethane 30/60	0109913



	Fittings	Art. No.
	Thread insert G3/8" male, with O-ring and mesh filter	0107148

OB50x140P



Oval suction cup with short bellows

- ▶ Suitable for level adjustment. Can handle objects with height differences and varying shapes, for example embossed or corrugated plates.
- ▶ Lifting movement to separate small and thin objects.
- ▶ In the two coloured suction cup, the bellows and the sealing lip are of different hardnesses, which makes the suction cup strong and stable and, at the same time, soft and flexible.
- ▶ DURAFLEX® are suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled.

Lifting forces & Technical data

Material	Lifting force vertical to the surface, N, at vacuum level			Lifting force parallel to the surface, N, at vacuum level			Volume cm ³	Min. curve radius mm	Max. vertical movement mm	Weight rubber part g
	20 -kPa	60 -kPa	90 -kPa	20 -kPa	60 -kPa	90 -kPa				
PU60°	77	231	368	122	292	396	95	26	11.3	129
PU30°/60°	58	235	366	110	260	349	95	23.0	11.3	129

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU30	Yellow transparent	30	10–50
Polyurethane, PU60	Green transparent	60	10–50

Material resistance

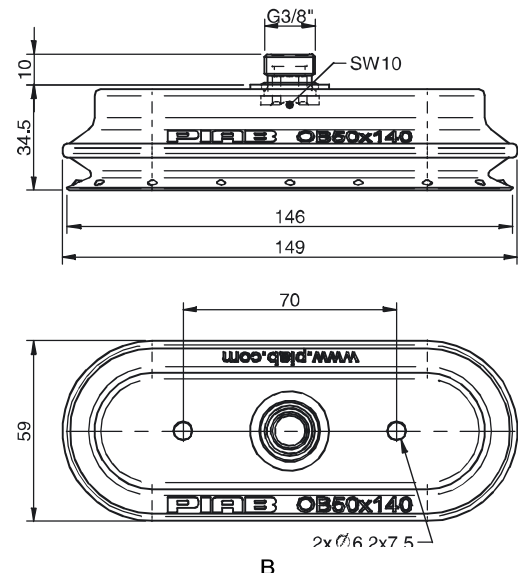
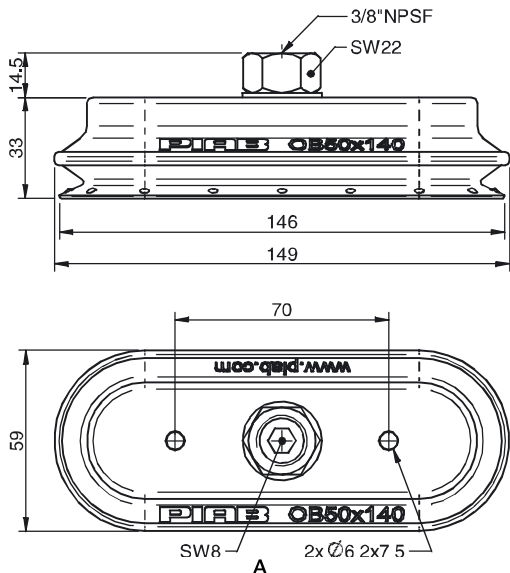
Wear resistance	Oil	Weather & ozone	Hydrolysis	Petrol	Concentrated acids	Ethanol	Methanol	Oxidation
Excellent	Excellent	Excellent	Fair**	Fair	Fair**	Fair	Poor	Poor

**Please contact Piab.

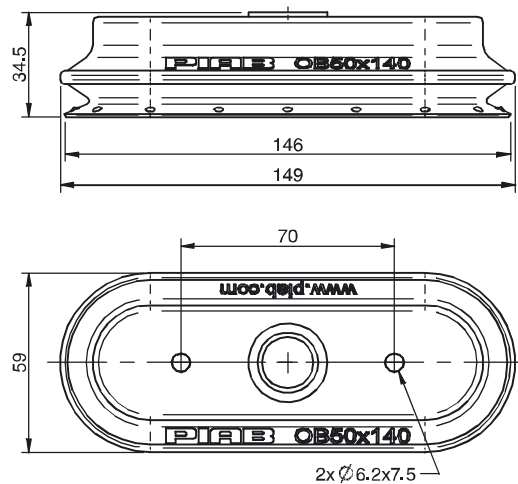
Suction cups/grippers DURAFLEX® Single and dual

Ordering information

Complete suction cups		Art. No.
A	Suction cup OB50x140P Polyurethane 60, 3/8" NPSF female	0108674
B	Suction cup OB50x140P Polyurethane 60, thread insert G3/8" male, with mesh filter	0108675
A	Suction cup OB50x140P Polyurethane 30/60, 3/8" NPSF female	0109859
B	Suction cup OB50x140P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	0109858



Rubber parts		Art. No.
Suction cup OB50x140P Polyurethane 60		0109914
Suction cup OB50x140P Polyurethane 30/60		0109915



Fittings		Art. No.
Thread insert G3/8" male, with O-ring and mesh filter		0107148

OB65x170P



Oval suction cup with short bellows

- ▶ Suitable for level adjustment. Can handle objects with height differences and varying shapes, for example embossed or corrugated plates.
- ▶ Lifting movement to separate small and thin objects.
- ▶ In the two coloured suction cup, the bellows and the sealing lip are of different hardnesses, which makes the suction cup strong and stable and, at the same time, soft and flexible.
- ▶ DURAFLEX® are suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled.

Lifting forces & Technical data

Material	Lifting force vertical to the surface, N, at vacuum level			Lifting force parallel to the surface, N, at vacuum level			Volume cm ³	Min. curve radius mm	Max. vertical movement mm	Weight rubber part g
	20 -kPa	60 -kPa	90 -kPa	20 -kPa	60 -kPa	90 -kPa				
PU60°	130	310	533	170	440	600	175	38	16.0	241
PU30°/60°	119	335	541	141	379	532	175	38	16.0	241

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU30	Yellow transparent	30	10–50
Polyurethane, PU60	Green transparent	60	10–50

Material resistance

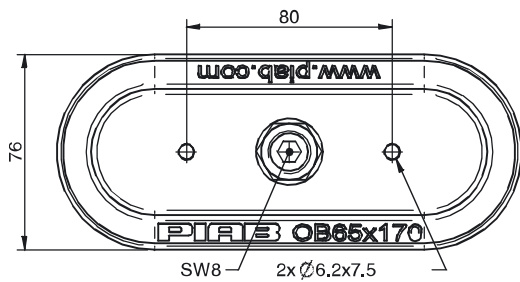
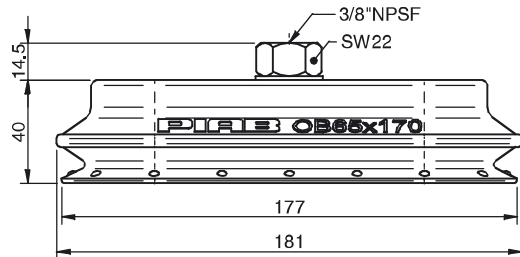
Wear resistance	Oil	Weather & ozone	Hydrolysis	Petrol	Concentrated acids	Ethanol	Methanol	Oxidation
Excellent	Excellent	Excellent	Fair**	Fair	Fair**	Fair	Poor	Poor

**Please contact Piab.

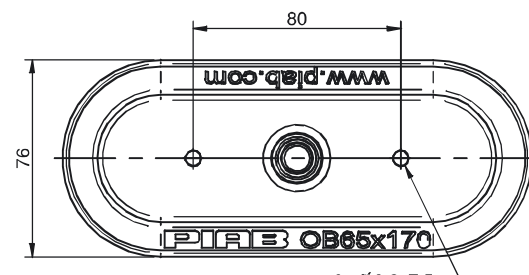
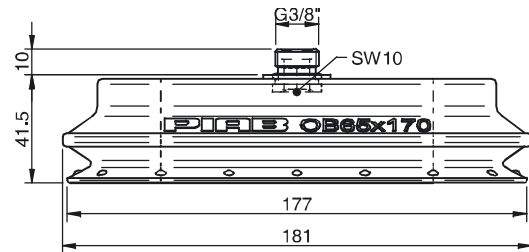
Suction cups/grippers DURAFLEX® Single and dual

Ordering information

Complete suction cups		Art. No.
A	Suction cup OB65x170P Polyurethane 60, 3/8" NPSF female	0108676
B	Suction cup OB65x170P Polyurethane 60, thread insert G3/8" male, with mesh filter	0108677
A	Suction cup OB65x170P Polyurethane 30/60, 3/8" NPSF female	0109861
B	Suction cup OB65x170P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	0109860

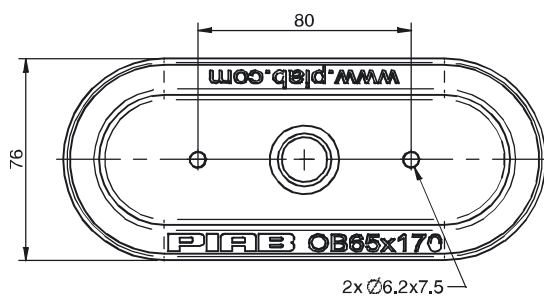
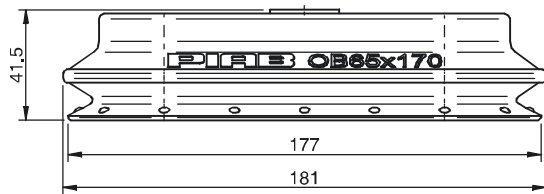


A



B

Rubber parts		Art. No.
Suction cup OB65x170P Polyurethane 60		0109916
Suction cup OB65x170P Polyurethane 30/60		0109917



Fittings		Art. No.
Thread insert G3/8" male, with O-ring and mesh filter		0107148

OBF35x90P, OBF50x140P, OBF65x170P



Features

- ▶ Special designed friction cups for oily surfaces, such as sheets in metal forming processes.
- ▶ Normal wear on friction cup will not affect the long term shear force performance.
- ▶ Best choice if $> 0,1\text{g}/\text{m}^2$ press oil is used on the sheet.
- ▶ Thanks to the strong grip on oily surfaces, the suction cups can withstand high shear forces, typically 2–4 times more than corresponding conventional suction cups.
- ▶ The "OBF" design is suitable for oblong objects with domed and flat surfaces, such as those encountered with body parts in the automotive industry.
- ▶ Can handle objects with height differences.
- ▶ Fitting option, male G3/8", with a swivel function prior to the locking operation, for easy positioning of the oval cup.
- ▶ DURAFLEX® suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled.

Lifting forces & Technical data

Model	Material to be handled	Lifting forces vertical to the surface, N, at vacuum level		Friction/shear forces parallel to the surface, N, at vacuum level		Volume cm ³	Min. curve radius mm	Weight g
		60 -kPa	90 -kPa	60 -kPa	90 -kPa			
OBF35x90P	Oily steel plate	108 (140*)	157 (198*)	105 (125*)	151 (179*)	36	30	77-97
OBF50x140P	Oily steel plate	246 (325*)	372 (438*)	271 (328*)	347 (415*)	95	50	172-190
OBF65x170P	Oily steel plate	403 (397*)	502 (570*)	538 (437*)	665 (619*)	200	50	289-310

Values valid for steel sheet with surface finish Ra 1 and 2-3g/m² of press oil. *) Dry metal sheet

Material specifications

Material	Colour	Hardness, °Shore A	Temperature range, °C
Polyurethane, PU55	Orange	55	10-50
Polyurethane, PU60	Green transparent	60	10-50

Material resistance

Wear resistance	Oil	Weather & ozone	Hydrolysis	Petrol	Concentrated acids	Ethanol	Methanol	Oxidation
Excellent	Excellent	Excellent	Fair**	Fair	Fair**	Fair	Poor	Poor

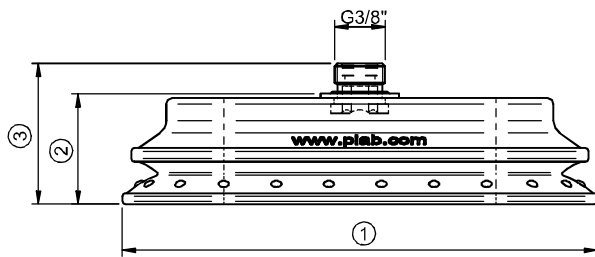
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Suction cups/grippers DURAFLEX® Friction

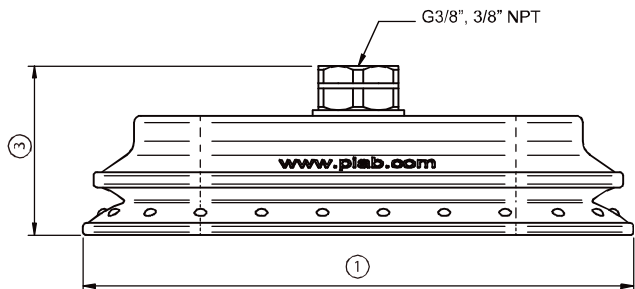


Ordering information

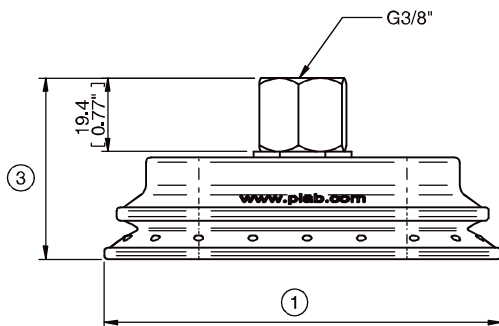
	Complete suction cups	Code	Art. No.
A	Suction cup OBF35x90P Polyurethane 55/60, G3/8" male, with mesh filter	OBF35x90P.5R.G40M	0119121
B	Suction cup OBF35x90P Polyurethane 55/60, G3/8" female	OBF35x90P.5R.G46W	0119123
C	Suction cup OBF35x90P Polyurethane 55/60, G3/8" female, 17 mm thread	OBF35x90P.5R.G62W	0200694
B	Suction cup OBF35x90P Polyurethane 55/60, 3/8" NPT female	OBF35X90P.5R.N48W	0122287
D	Suction cup OBF35x90P Polyurethane 55/60, M10x1.5 male	OBF35x90P.5R.M10M	0121436
A	Suction cup OBF50x140P Polyurethane 55/60, G3/8" male, with mesh filter	OBF50x140P.5R.G40M	0119125
B	Suction cup OBF50x140P Polyurethane 55/60, G3/8" female	OBF50x140P.5R.G46W	0119127
B	Suction cup OBF50x140P Polyurethane 55/60, 3/8" NPT female	OBF50X140P.5R.N48W	0122288
D	Suction cup OBF50x140P Polyurethane 55/60, M10x1.5 male	OBF50x140P.5R.M10M	0121437
A	Suction cup OBF65x170P Polyurethane 55/60, G3/8" male, with mesh filter	OBF65x170P.5R.G40M	0119129
B	Suction cup OBF65x170P Polyurethane 55/60, G3/8" female	OBF65x170P.5R.G46W	0119131
B	Suction cup OBF65x170P Polyurethane 55/60, 3/8" NPT female	OBF65X170P.5R.N48W	0122289
D	Suction cup OBF65x170P Polyurethane 55/60, M10x1.5 male	OBF65x170P.5R.M10M	0121438



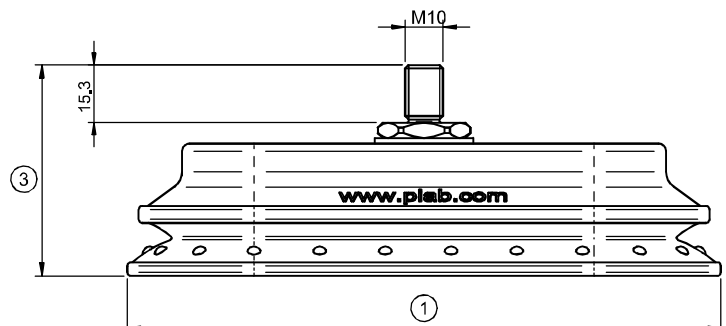
A



B



C



D

Measures complete suction cups	OBF35x90P				OBF50x140P			OBF65x170P		
	A	B	C	D	A	B	D	A	B	D
1	50x105	50x105	50x105	50x105	67x157	67x157	67x157	82x187	82x187	82x187
2	29	—	—	—	37	—	—	44	—	—
3	39	42	47.9	47.8	47	50	55.8	54	57	62.8
Max. vertical movement, mm	11	11	11	11	13	13	13	15	15	15
Max. expanding lip, mm	50x109	50x109	50x109	50x109	67x162	67x162	67x162	83x191	83x191	83x191

Suction cup OBL40x90P Polyurethane 70, with 3 reinforcement plates and load support with G3/8" male, filter, 0107325



- Suitable for long, narrow and bent surfaces, for example bottles, pipes or sharply bent sheet parts.
- Reinforcement plates gives stability to the suction cup.
- DURAFLEX® suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled.

General

Curve radius	28 mm
Movement, vertical max.	31 mm
Application	Glass handling
Fitting size	3/8"
Fitting style	Male
Fitting type	G-thread
Fitting option	None
Material	Polyurethane (PU70)
Suction cup model	OBL
Suction cup shape	Oval Bellows
Volume	105 cm ³
Weight	77 g

Dimension

Height	73 mm
Outer diameter	92.59 mm

Performance — lifting forces

		
20 -kPa	49 N	45 N
60 -kPa	117 N	97 N
90 -kPa	178 N	135 N

Suction cup OBL40x90P Polyurethane 60, with 3 reinforcement plates and load support, 0106697

- Suitable for long, narrow and bent surfaces, for example bottles, pipes or sharply bent sheet parts.
- Reinforcement plates gives stability to the suction cup.
- DURAFLEX® suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled.



General

Curve radius	28 mm
Movement, vertical max.	31 mm
Application	Mark Free
Fitting size	None
Fitting style	None
Fitting type	None
Fitting option	None
Material	Polyurethane (PU60)
Suction cup model	OBL
Suction cup shape	Oval Bellows
Volume	105 cm ³
Weight	77 g

Dimension

Height	63 mm
Outer diameter	92.6 mm

Performance — lifting forces

		
20 -kPa	44 N	40 N
60 -kPa	105 N	87 N
90 -kPa	160 N	121 N

Material

	Polyurethane (PU60)
Colour	Green transparent
Hardness	60 Shore A
Temperature	10 – 50 °C

Material resistance

	Polyurethane (PU60)
Alcohol	N/A
Concentrated acids	+
Ethanol	+
Hydrolysis	+
Methanol	-
Oil	+++
Oxidation	-
Petrol	+
Wear resistance	+++
Weather and ozone	+++

Dimensional drawings

