

## BFF40P, BFF60P, BFF80P, BFF110P



### 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 "BFF" design is suitable for uneven/curved surfaces or if level compensation is needed, for example in de-stacking applications.
- ▶ The flat inner support gives stability during movement in any orientation.
- ▶ 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 <sup>3</sup>	Min. curve radius mm	Weight g
		60 -kPa	90 -kPa	60 -kPa	90 -kPa			
BFF40P	Oily steel plate	45	60	35	45	10	23	20–34
BFF60P	Oily steel plate	82	106	76	93	20	35	30–58
BFF80P	Oily steel plate	174	207	110	160	50	50	66–96
BFF110P	Oily steel plate	284	345	235	253	110	95	160–178

Values valid for steel sheet with surface finish Ra 1 and 2-3g/m<sup>2</sup> of press oil.

### Material specifications

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

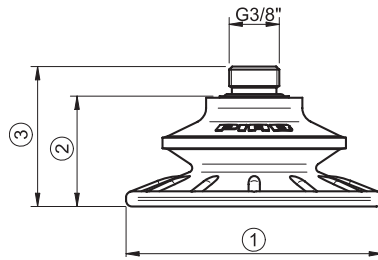
### Material resistance

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

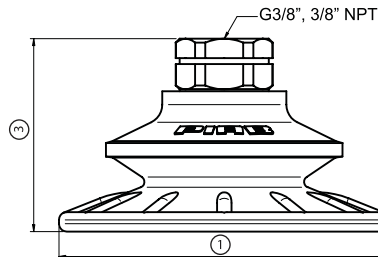
\*\*Please contact Piab.

## Ordering information

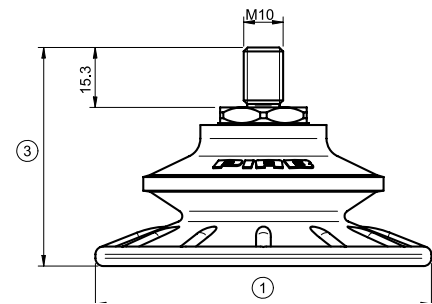
	Complete suction cups	Code	Art. No.
A	Suction cup BFF40P Polyurethane 55/60, G3/8" male, with mesh filter	BFF40P.4R.04UF	0118991
B	Suction cup BFF40P Polyurethane 55/60, G3/8" female	BFF40P.4R.04UA	0118992
B	Suction cup BFF40P Polyurethane 55/60, 3/8" NPT female	BFF40P.4R.04UN	0122278
C	Suction Cup BFF40P Polyurethane 55/60, M10x1.5 male	BFF40P.4R.M10M	0121427
A	Suction cup BFF60P Polyurethane 55/60, G3/8" male, with mesh filter	BFF60P.4R.06UF	0118994
B	Suction cup BFF60P Polyurethane 55/60, G3/8" female	BFF60P.4R.06UA	0118995
B	Suction cup BFF60P Polyurethane 55/60, 3/8" NPT female	BFF60P.4R.06UN	0122279
C	Suction cup BFF60P Polyurethane 55/60, M10x1.5 male	BFF60P.4R.M10M	0121428
A	Suction cup BFF80P Polyurethane 55/60, G3/8" male, with mesh filter	BFF80P.5R.G45M	0118997
B	Suction cup BFF80P Polyurethane 55/60, G3/8" female	BFF80P.5R.G45W	0118670
B	Suction cup BFF80P Polyurethane 55/60, 3/8" NPT female	BFF80P.5R.N47W	0122280
C	Suction cup BFF80P Polyurethane 55/60, M10x1.5 male	BFF80P.5R.M10M	0121384
A	Suction cup BFF110P Polyurethane 55/60, G3/8" male, with mesh filter	BFF110P.5R.G45M	0118671
B	Suction cup BFF110P Polyurethane 55/60, G3/8" female	BFF110P.5R.G45W	0118673
B	Suction cup BFF110P Polyurethane 55/60, 3/8" NPT female	BFF110P.5R.N47W	0122281
C	Suction cup BFF110P Polyurethane 55/60, M10x1.5 male	BFF110P.5R.M10M	0121430



A



B



C

Measures complete suction cups	BFF40P			BFF60P			BFF80P			BFF110P		
	A	B	C	A	B	C	A	B	C	A	B	C
1	45	45	—	61	61	—	85	85	—	115	115	—
2	22	—	—	26	—	—	37	—	—	53	—	—
3	32	32	51.5	36	36	55.3	46	50	55.8	63	66	72.3
Max. vertical movement, mm	7	7	7	10	10	10	14	14	14	21	21	21
Max. expanding lip, mm	46	46	46	62	62	62	87	87	87	118	118	118

## FCF35P, FCF50P, FCF75P, FCF100P, FCF125P



### 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  $> 0,1\text{g/m}^2$  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 "FCF" design is suitable for slightly domed and flat surfaces, e.g., such as those encountered when handling metal sheets in press lines.
- ▶ The suction cups have support cleats that prevent thin objects from being disfigured.
- ▶ 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 <sup>3</sup>	Min. curve radius mm	Weight g
		60 -kPa	90 -kPa	60 -kPa	90 -kPa			
FCF35P	Oily steel plate	34	50	26	32	5	40	19–42
FCF50P	Oily steel plate	72	101	52	70	10	50	31–67
FCF75P	Oily steel plate	163	228	104	139	30	100	60–78
FCF100P	Oily steel plate	236	298	139	205	70	150	92–113
FCF125P	Oily steel plate	405	442	194	236	100	150	151–170

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

### Material specifications

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

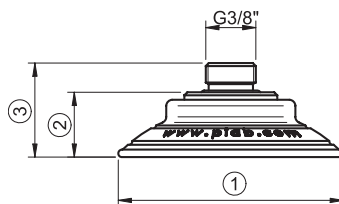
### Material resistance

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

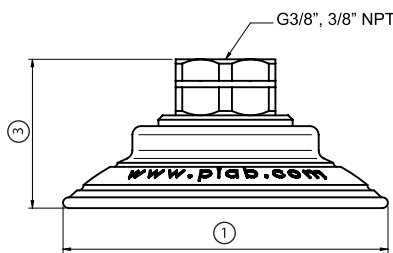
\*\*Please contact Piab.

## Ordering information

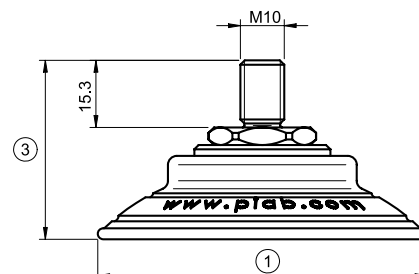
	Complete suction cups	Code	Art. No.
A	Suction cup FCF35P Polyurethane 55/60, G3/8" male, with mesh filter	FCF35P.4R.O4UF	0119913
B	Suction cup FCF35P Polyurethane 55/60, G3/8" female	FCF35P.4R.O4UA	0118981
B	Suction cup FCF35P Polyurethane 55/60, 3/8" NPT female	FCF35P.4R.O4UN	0122282
C	Suction cup FCF35P Polyurethane 55/60, M10x1.5 male	FCF35P.4R.M10M	0121431
A	Suction cup FCF50P Polyurethane 55/60, G3/8" male, with mesh filter	FCF50P.4R.O5UF	0118985
B	Suction cup FCF50P Polyurethane 55/60, G3/8" female	FCF50P.4R.O5UA	0118986
B	Suction cup FCF50P Polyurethane 55/60, 3/8" NPT female	FCF50P.4R.O5UN	0122283
C	Suction cup FCF50P Polyurethane 55/60, M10x1.5 male	FCF50P.4R.M10M	0121432
A	Suction cup FCF75P Polyurethane 55/60, G3/8" male, with mesh filter	FCF75P.5R.G45M	0118423
B	Suction cup FCF75P Polyurethane 55/60, G3/8" female	FCF75P.5R.G45W	0118429
B	Suction cup FCF75P Polyurethane 55/60, 3/8" NPT female	FCF75P.5R.N47W	0122284
C	Suction cup FCF75P Polyurethane 55/60, M10x1.5 male	FCF75P.5R.M10M	0121433
A	Suction cup FCF100P Polyurethane 55/60 G3/8" male, with mesh filter	FCF100P.5R.G40M	0118430
B	Suction cup FCF100P Polyurethane 55/60, G3/8" female	FCF100P.5R.G46W	0118432
B	Suction cup FCF100P Polyurethane 55/60, 3/8" NPT female	FCF100P.5R.N48W	0122285
C	Suction cup FCF100 Polyurethane 55/60, M10x1.5 male	FCF100P.5R.M10M	0121385
A	Suction cup FCF125P Polyurethane 55/60, G3/8" male, with mesh filter	FCF125P.5R.G40M	0118435
B	Suction cup FCF125P Polyurethane 55/60, G3/8" female	FCF125P.5R.G46W	0118437
B	Suction cup FCF125P Polyurethane 55/60, 3/8" NPT female	FCF125P.5R.N48W	0122286
C	Suction cup FCF125P Polyurethane 55/60, M10x1.5 male	FCF125P.5R.M10M	0121435



A



B



C

	Measures complete suction cups														
	FCF35P			FCF50P			FCF75P			FCF100P			FCF125P		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1	35	35	35	50	50	50	75	75	75	100	100	100	126	126	126
2	19	—	—	24	—	—	22	—	—	26	—	—	32	—	—
3	29	29	47.8	34	31	49.9	31	34	40.8	36	39	44.8	42	45	50.8
Max. vertical movement, mm	2	2	2	3	3	3	4	4	4	6	6	6	8	8	8
Max. expanding lip, mm	38	38	38	54	54	54	79	79	79	105	105	105	132	132	132

DURAFLEX® Friction

## 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  $> 0,1\text{g/m}^2$  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 <sup>3</sup>	Min. curve radius mm	Weight g
		60 -kPa	90 -kPa	60 -kPa	90 -kPa			
OBF35x90P	Oily steel plate	108	157	105	151	36	30	77-97
OBF50x140P	Oily steel plate	246	372	271	347	95	50	172-190
OBF65x170P	Oily steel plate	403	502	538	665	200	50	289-310

Values valid for steel sheet with surface finish Ra 1 and 2-3g/m<sup>2</sup> of press oil.

### Material specifications

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

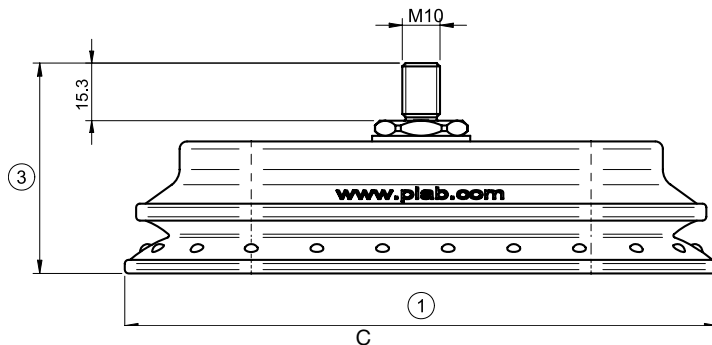
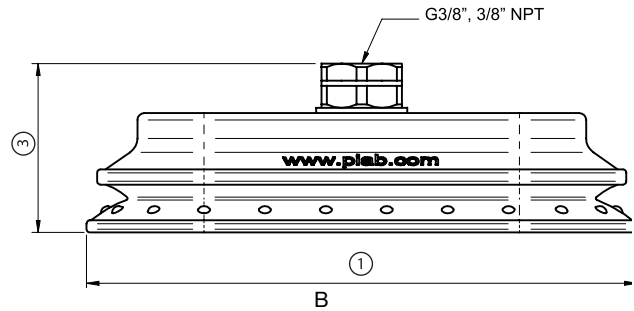
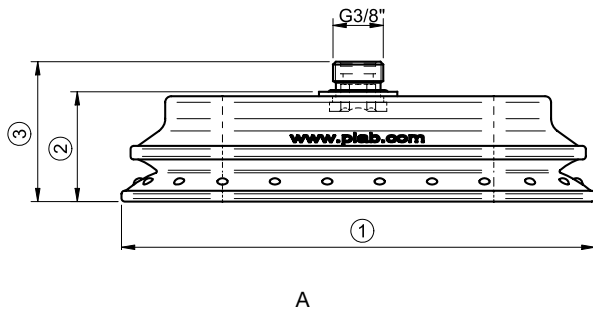
### Material resistance

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

\*\*Please contact Piab.

## 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
B	Suction cup OBF35x90P Polyurethane 55/60, 3/8" NPT female	OBF35x90P.5R.N48W	0122287
C	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
C	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
C	Suction cup OBF65x170P Polyurethane 55/60, M10x1.5 male	OBF65x170P.5R.M10M	0121438



DURAFLEX®  
Friction

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

## OCF20x80P, OCF30x90P, OCF40x110P



- ▶ 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  $> 0,1\text{g/m}^2$  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 "OCF" design is suitable for oblong objects with slightly curved or flat surfaces, such as those encountered with body parts in the automotive industry.
- ▶ 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 force vertical to the surface, N, at vacuum level		Friction/Shear forces parallel to the surface, N, at vacuum level		Volume cm <sup>3</sup>	Min. curve radius mm	Weight g
		60 -kPa	90 -kPa	60 -kPa	90 -kPa			
OCF20x80P	Oily steel plate	82	90	35	48	15	20	24
OCF30x90P	Oily steel plate	115	159	51	74	17	25	24
OCF40x110P	Oily steel plate	185	246	54	78	34	42	55

Values valid for steel sheet with surface finish Ra 1 and 2-3g/m<sup>2</sup> of press oil.

### Material specifications

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

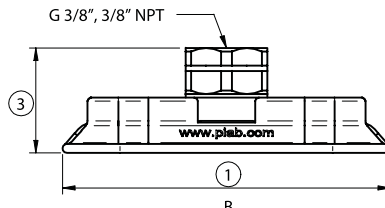
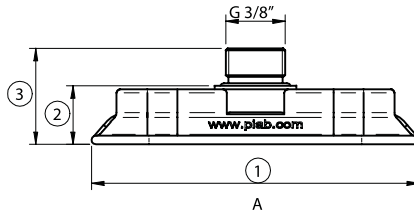
### Material resistance

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

\*\*Please contact Piab.

## Ordering information

	Complete suction cups	Code	Art. No.
A	Suction cup OCF20x80P Polyurethane 55/60, G3/8" male	OCF20x80P.5R.G41M	0121847
B	Suction cup OCF20x80P Polyurethane 55/60, 3/8" NPT female	OCF20x80P.5R.N47W	0121859
B	Suction cup OCF20x80P Polyurethane 55/60, G3/8" female	OCF20x80P.5R.G45W	0122455
A	Suction cup OCF30x90P Polyurethane 55/60, G3/8" male	OCF30x90P.5R.G41M	0122456
B	Suction cup OCF30x90P Polyurethane 55/60, 3/8" NPT female	OCF30x90P.5R.N47W	0122459
B	Suction cup OCF30x90P Polyurethane 55/60, G3/8" female	OCF30x90P.5R.G45W	0121786
A	Suction cup OCF40x110P Polyurethane 55/60, G3/8" male	OCF40x110P.5R.G40M	0122457
B	Suction cup OCF40x110P Polyurethane 55/60, 3/8" NPT female	OCF40x110P.5R.N48W	0121865
B	Suction cup OCF40x110P Polyurethane 55/60, G3/8" female	OCF40x110P.5R.G46W	0122860



	OCF20x80P		OCF30x90P		OCF40x110P	
	A	B	A	B	A	B
1	24x84	24x84	32.5x92.5	32.5x92.5	43x113	43x113
2	15.5	15.5	16.5	16.5	22.5	22.5
3	27.6	30.1	27.0	29.5	32.5	35.5
Max. vertical movement, mm	3	3	4	4	5	5
Max. expanding lip, mm	27x86.2	27x86.2	36x95	36x95	49x118	49x118