

Flat Concave family (FC)



The friction cups in flat concave shape and in the material DURAFLEX® suction cups have been developed to meet the strict demands of the automotive industry and designed for flat and curved surfaces. A typical application is the feeding of sheet metal into a press tool. The FCF-P design is especially suitable for oily surfaces, 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.

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
FC20P	4.5	12	16	4.5	9	12
FC25P	8	20	27	9	12	18
FC35P	11/11*	36/34*	51/49*	27/27*	51/41*	62/51*
FC50P	28/28**	77/77**	103/104**	49/52**	82/93**	100/111**
FC75P	73/73**	157/168**	215/225**	107/93**	200/225**	230/255**
FC100P	137/152**	284/328**	377/446**	176/112**	318/264**	420/382**
FC150P	274/284**	647/716**	922/932**	343/215**	765/568**	902/863**
FCF25P	—	19/19***	28/29***	—	7/5***	10/7.2***
FCF35P	—	42/34***	58/50***	—	30/26***	42/32***
FCF50P	—	78/72***	106/101***	—	77/52***	105/70***
FCF75P	—	171/163***	236/228***	—	166/104***	211/139***
FCF100P	—	347/236***	490/298***	—	337/139***	484/205***
FCF125P	—	475/405***	650/442***	—	445/194***	602/236***

* PU50°/PU60°, ** PU40°/PU60°, *** Dry metal sheet/Oily metal sheet.

General specifications

	Outer diameter, mm	Height, mm	Min. curve radius, mm	Max. vertical movement, mm	Volume, cm ³
FC20P	21.8	9.4	25	1.9	1
FC25P	28.5	11	45	4	3
FC35P	35	15	32	5.5	5

	Outer diameter, mm	Height, mm	Min. curve radius, mm	Max. vertical movement, mm	Volume, cm ³
FC50P	50	33.5	53	5	10
FC75P	75	24	78	6.5	30
FC100P	100	27	110	10.2	80
FC150P	150	40.5	165	14.2	250
FCF25P	25	28	27	—	5.5
FCF35P	35	29–47.8*	40	2	5
FCF50P	50	31–49.9*	50	3	10
FCF75P	75	31–41*	100	4	30
FCF100P	100	36–45*	150	6	70
FCF125P	126	42–51.2*	150	8	100

* Height range includes fittings.

Available materials

	PU40°	PU50°	PU55°/PU60°	PU60°
FC20P		●		
FC25P		●		
FC35P		●		●
FC50P	●			●
FC75P	●			●
FC100P	●			●
FC150P	●			●
FCF25P			●	
FCF35P			●	
FCF50P			●	
FCF75P			●	
FCF100P			●	
FCF125P			●	

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	Dry sheet metal	Mark free
FC20P		●	●
FC25P		●	●
FC35P		●	●
FC50P		●	●
FC75P		●	●
FC100P		●	●

	Oily sheet metal	Dry sheet metal	Mark free
FC150P		●	●
FCF25P	●		
FCF35P	●		
FCF50P	●		
FCF75P	●		
FCF100P	●		
FCF125P	●		

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.

FC20P



Flat, concave suction cup with cleats

- ▶ Suitable for lifting small objects and narrow parts, also slightly domed, flat and oily surfaces, e.g., such as those encountered when handling steel sheets in press processes.
- ▶ Thanks to the high friction of the rubber material, the suction cups can withstand high forces at rapid accelerations in horizontal directions, even on oily surfaces.
- ▶ The suction cups have 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

Lifting force vertical to the surface, N, at vacuum level			Lifting force parallel to the surface, N, at vacuum level			Volume	Min. curve radius	Max. vertical movement	Weight rubber part
20 -kPa	60 -kPa	90 -kPa	20 -kPa	60 -kPa	90 -kPa	cm ³	mm	mm	g
4.5	12.0	16.0	4.5	9.0	12.0	1.0	25	1.9	1.3

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU50	Blue transparent	50	10–50

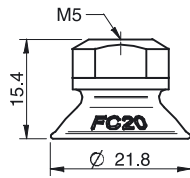
Material resistance

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

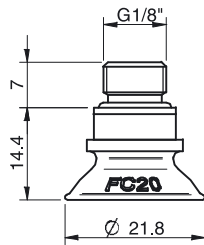
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Ordering information

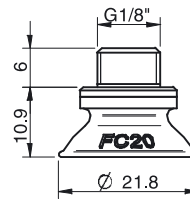
	Complete suction cups	Art. No.
A	Suction cup FC20P Polyurethane 50, M5 female	0106717
B	Suction cup FC20P Polyurethane 50, G1/8" male, with mesh filter	0106722
C	Suction cup FC20P Polyurethane 50, G1/8" male / M5 female, with mesh filter	0106718



A



B



C

	Rubber part	Art. No.
	Suction cup FC20P Polyurethane 50	0106016



	Fittings	Art. No.
	Fitting M5 female	3250003
	Fitting G1/8" male, with mesh filter	3250085
	Fitting G1/8" male/M5 female, with mesh filter	0101152

For further information and dimensioned drawings, see section Suction cups/grippers Fittings.

FC25P



Flat, concave suction cup with cleats

- ▶ Suitable for lifting small objects and narrow parts, also slightly domed, flat and oily surfaces, e.g., such as those encountered when handling steel sheets in press processes.
- ▶ Thanks to the high friction of the rubber material, the suction cups can withstand high forces at rapid accelerations in horizontal directions, even on oily surfaces.
- ▶ The suction cups have 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

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				
8.0	20.0	27	9.0	12.0	18.0	3.0	45	4.0	3

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU50	Blue transparent	50	10–50

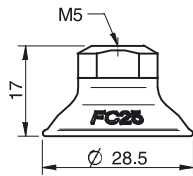
Material resistance

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

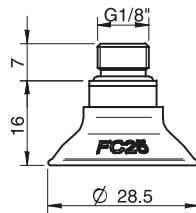
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Ordering information

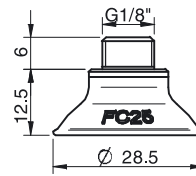
	Complete suction cups	Art. No.
A	Suction cup FC25P Polyurethane 50, M5 female	0106719
B	Suction cup FC25P Polyurethane 50, G1/8" male, with mesh filter	0106721
C	Suction cup FC25P Polyurethane 50, G1/8" male / M5 female, with mesh filter	0106720



A



B



C

	Rubber part	Art. No.
	Suction cup FC25P Polyurethane 50	0104803



	Fittings	Art. No.
	Fitting M5 female	3250003
	Fitting G1/8" male, with mesh filter	3250085
	Fitting G1/8" male/M5 female, with mesh filter	0101152

For further information and dimensioned drawings, see section Suction cups/grippers Fittings.

FC35P



Flat, concave suction cup with cleats

- ▶ Suitable for slightly domed and flat and oily surfaces, e.g., such as those encountered when handling steel sheets in press processes.
- ▶ Thanks to the high friction of the rubber material, the suction cups can withstand high forces at rapid accelerations in horizontal directions, even on oily surfaces.
- ▶ The suction cups have 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

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				
PU50°	11.0	36	51	27	51	62	5.0	32	5.5	6
PU60°	11.0	34	49	27	41	51	5.0	32	5.5	6

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU50	Blue transparent	50	10–50
Polyurethane, PU60	Green transparent	60	10–50

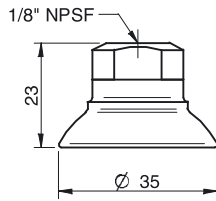
Material resistance

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

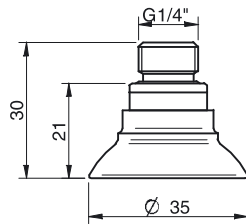
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Ordering information

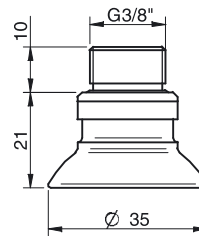
	Complete suction cups	Art. No.
A	Suction cup FC35P Polyurethane 50, 1/8" NPSF female, with mesh filter	0103705
A	Suction cup FC35P Polyurethane 50, 1/8" NPSF female, with dual flow control valve	0103709
B	Suction cup FC35P Polyurethane 50, G1/4" male, with mesh filter	0103711
B	Suction cup FC35P Polyurethane 50, G1/4" male, with mesh filter and dual flow control valve	0103713
C	Suction cup FC35P Polyurethane 50, G3/8" male, with mesh filter	0103719
A	Suction cup FC35P Polyurethane 60, 1/8" NPSF female, with mesh filter	0103706
B	Suction cup FC35P Polyurethane 60, G1/4" male, with mesh filter	0103712
C	Suction cup FC35P Polyurethane 60, G3/8" male, with mesh filter	0103720
C	Suction cup FC35P Polyurethane 60, G3/8" male, with mesh filter and dual flow control valve	0103722
D	Suction cup FC35P Polyurethane 60, 5x1/8" NPSF female	0103728



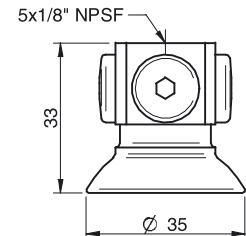
A



B

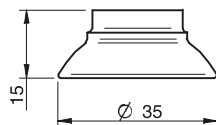


C



D

	Rubber parts	Art. No.
	Suction cup FC35P Polyurethane 50	0103290
	Suction cup FC35P Polyurethane 60	0103291



	Fittings	Art. No.
	Fitting 1/8" NPSF female, 30–40, with mesh filter	0101153
	Fitting 1/8" NPSF female, 30–40, with dual flow control valve	3251006
	Fitting G1/4" male, 30–40, with mesh filter	3250091
	Fitting G1/4" male, 30–40, with mesh filter and dual flow control valve	3251007
	Fitting G3/8" male, 30–40, with mesh filter	3250086
	Fitting G3/8" male, 30–40, with mesh and dual flow control valve	3251009
	Fitting 5x1/8" NPSF female, 30–40	0100261
	Fitting 5x1/8" NPSF female, 30–40, with dual flow control valve	3251011

For further information and dimensioned drawings, see section Suction cups/grippers Fittings..

FC50P



Flat, concave suction cup with cleats

- ▶ Suitable for slightly domed and flat and oily surfaces, e.g., such as those encountered when handling steel sheets in press processes.
- ▶ Thanks to the high friction of the rubber material, the suction cups can withstand high forces at rapid accelerations in horizontal directions, even on oily surfaces.
- ▶ The suction cups have 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

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 with fitting g
	20 -kPa	60 -kPa	90 -kPa	20 -kPa	60 -kPa	90 -kPa				
PU40°	28	77	103	49	82	100	10	53	5.0	28
PU60°	28	77	104	52	93	111	10	53	5.0	28

Material specifications

Material	Colour	Hardness °Shore A	Temperature range °C
Polyurethane, PU40	Red transparent	40	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.