

# FGA Series

Suction cups with 1,5 bellows  $\text{Ø}5 \div 150 \text{ mm}$



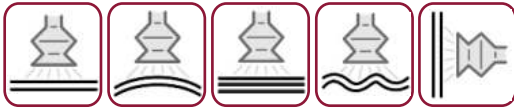
Round, bellows suction cups with 1.5 folds for handling of delicate workpiece of almost any material. Thanks to high flexibility, they adapt well to the unevenness of the gripped surface. 1.5 bellows ensure a very smooth grip on delicate surfaces without damaging them. Special support surfaces in the lower part of the suction cup prevent deformation of the surface of the handled object.

1.5-bellows suction cups are also used where a large clamping stroke is required, or where a high position tolerance is required in the direction of the suction cup's approach to the gripped object.

Industry sector







Applications



Materials

- NBR** perbunan
- TBA** modified perbunan
- CR** chloroprene
- SI** silikon
- NK** natural rubber
- PU** polyurethane
- STN** Siton
- EPDM** ethylene propylene diene rubber

Technical data

	$\text{Ø}$ [mm]	 [cm <sup>3</sup> ]	 [N] <sup>1)</sup>	 [N] <sup>2)</sup>	Rmin [mm]
<b>FGA 5</b>	5,5	0,04	0,26	1,1	4
<b>FGA 11</b>	11	0,225	0,95	3,8	10
<b>FGA 14</b>	13	0,42	1,2	5	13
<b>FGA 16</b>	16	0,75	2,3	6,7	20
<b>FGA 18</b>	18	0,76	3,7	8,5	25
<b>FGA 20</b>	19	1,15	4,7	10,7	30
<b>FGA 22</b>	22	1,4	5,7	15,2	25
<b>FGA 25</b>	24	3,15	5,3	17,3	20
<b>FGA 26</b>	25	3,9	9,6	21,6	35
<b>FGA 33</b>	33	4,75	13,6	39,6	40
<b>FGA 43</b>	43	9,25	22,8	64,5	60
<b>FGA 53</b>	53	26,25	51,3	95	75
<b>FGA 63</b>	63	39	85	135	75
<b>FGA 78</b>	78	76	137,4	218	70
<b>FGA 110</b>	114	330	280	570	85
<b>FGA 150</b>	150	800	570	1000	250

<sup>1)</sup> Lifting force of the suction cup at underpressure -0.6 bar (doesn't include safety factor).

<sup>2)</sup> Pull-off force (for natural rubber this force is reduced by ~40%).

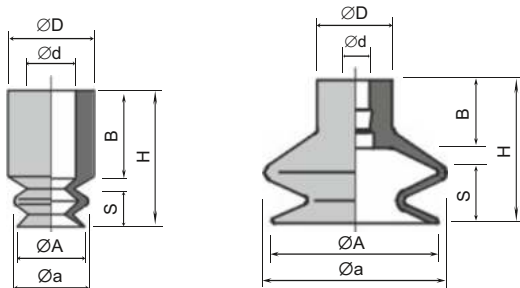
Order code

**FGA 78 -NBR**

↑            ↑            ↑  
series    diameter    material

FGA series suction cup with 1,5 bellows, 78mm diameter, perbunan

Dimensions

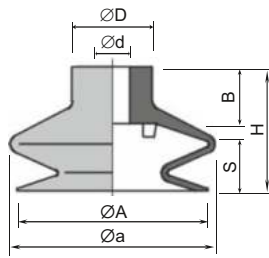


FGA 5

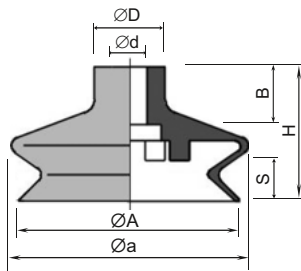
FGA 11 ÷ 25

	$\text{ØA}$ [mm]	H [mm]	$\text{Øa}$ [mm]	$\text{Ød}$ [mm]	$\text{ØD}$ [mm]	s <sup>3)</sup> [mm]	B [mm]	 [g]
<b>FGA 5</b>	5,5	11	6	4	7	2	7	0,5
<b>FGA 11</b>	11	16	12,2	4	10	4,5	9	0,7
<b>FGA 14</b>	13	16	14	4	10	4	9	1
<b>FGA 16</b>	16	19	17,3	4	10	6	9	1,2
<b>FGA 18</b>	18	16,5	18	4	10	5	9	1,5
<b>FGA 20</b>	19	16	20	4	10	4	9	1,6
<b>FGA 22</b>	22	19	24	4	10	8	9	1,8
<b>FGA 25</b>	24	23	25	4	10	9	9	2,8

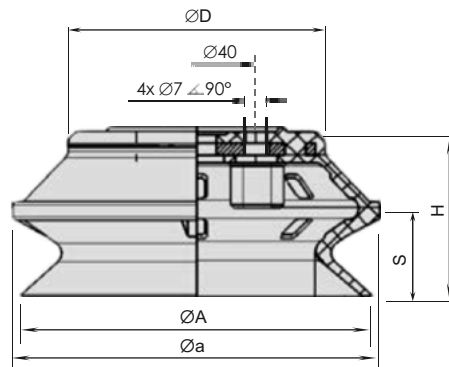
<sup>3)</sup> Suction cup mounting stroke.



FGA 26 ÷ 43



FGA 53 ÷ 78



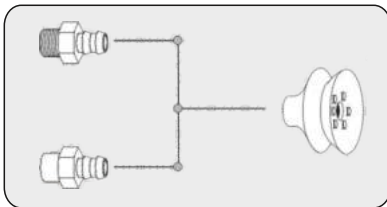
FGA 110 ÷ 150

	ØA [mm]	H [mm]	Øa [mm]	Ød [mm]	ØD [mm]	S <sup>3)</sup> [mm]	B [mm]	
FGA 26	25	25	30	8	16	6	13	6,1
FGA 33	33	27,5	36,2	8	18	12	13	6,4
FGA 43	43	28	46	8	18	12	13	10
FGA 53	53	34	59	8	18	11	13	15
FGA 63	63	34	67	8	18	15	13	28
FGA 78	78	46,8	83	12	25	14	20	42
FGA 110	114	54,5	121	-	86	29	-	268
FGA 150	150	74	177	-	120	38	-	700

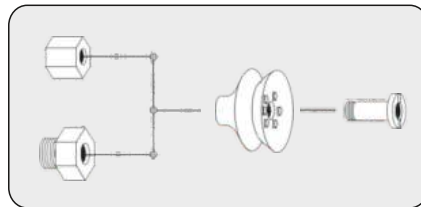
<sup>3)</sup> Suction cup mounting stroke.

## Fittings for the FGA series

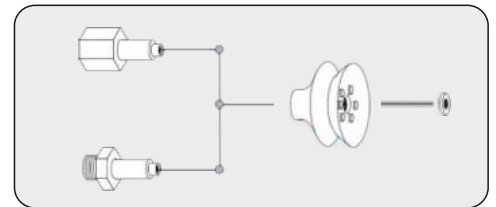
### Push-in fittings | N type



### Screwed fittings | S type



### Fittings riveted by the manufacturer | Z type



**S018 - ZG14**

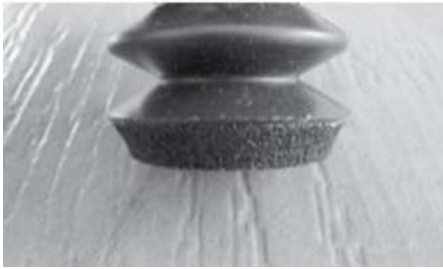
↑ fitting type    ↑ thread type

Order code of the screwed fitting with G1/4 male for the FGA 26 ÷ FGA 63 suction cups

### Order codes of the fittings

	M3 male	M5 male	M6 male	M8 male	G1/8 male	G1/8 fem	G1/4 male	G1/4 fem	G3/8 male	G3/8 fem	G1/2 male	G1/2 fem
5	N017-ZM3	N017-ZM5										
11... 25		N016-ZM5	N016-ZM6		N016-ZG18	N016-WG18						
							N018-ZG14	N018-WG14				
26... 63		S018-ZM5	S018-ZM6	S018-ZM8	S018-ZG18	S018-WG18	S018-ZG14	S018-WG14				
							Z018-ZG14	Z018-WG14				
78							N019-ZG14	N019-WG14	N019-ZG38	N019-WG38		
							S019-ZG14	S019-WG14	S019-ZG38	S019-WG38	S019-ZG12	
							Z019-ZG14	Z019-WG14	Z019-ZG38	Z019-WG38		
110... 150											S010-WG12	

# FGGA Series



The FGGA series suction cups are designed for gripping structural surfaces and porous, with numerous indentations, cracks or protrusions (raw wood, decorative laminates, ornamental glass, reflective sheets materials, raw stone, concrete, etc.). The possibility of grasping objects showing large surface leaks was obtained thanks to the use of additional sealing foam, glued to the gripping surface of the suction cup.

## Materials

- NBR** perbunan (33÷78mm)  
**SI** silikon (20÷78mm)

## Applications



## Order code

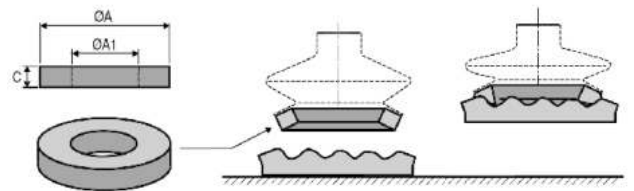
**FGGA 25-SI**



↑ series    ↑ diameter    ↑ material

FGGA Series suction cup with 1,5 bellows  
 25mm diameter, silicon.

## Dimensions

Dimensions and fittings  
 FGGA series suction cups  
 are like in the FGA series.  
 The height have to be  
 increased by the thickness  
 of additional foam.



	ØA [mm]	ØA1 [mm]	C [mm]	S <sup>4)</sup> [mm]	 [g]
<b>FGGA 33-NBR</b>	32	22	5	2,5	0,3
<b>FGGA 43-NBR</b>	42	28	5	2,5	0,7
<b>FGGA 53-NBR</b>	53	33	10	5,0	2,7
<b>FGGA 63-NBR</b>	62	42	10	5,0	2,8
<b>FGGA 78-NBR</b>	78	58	10	5,0	3,7
<b>FGGA 20-SI</b>	20	10	2	1,0	0,2
<b>FGGA 25-SI</b>	25	13	2	1,0	0,4
<b>FGGA 26-SI</b>	25	13	2	1,0	0,4
<b>FGGA 33-SI</b>	32	19	2	1,0	0,5
<b>FGGA 43-SI</b>	42	20	5	2,5	2,2
<b>FGGA 53-SI</b>	53	33	5	2,5	2,8
<b>FGGA 63-SI</b>	62	42	5	2,5	3,4
<b>FGGA 78-SI</b>	78	64	5	2,5	5,2

<sup>4)</sup> Foam mounting stroke.