

## Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm

Suction area (Ø) 110 mm and 150 mm



### Suitability for Industry Specific Applications

#### Applications

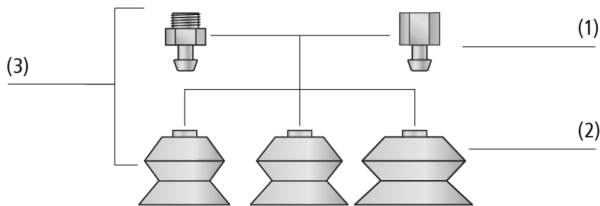
- Round bellows suction cup with 1.5 folds for handling of cardboard, sheet metal and wood
- Handling of large and heavy workpieces which can easily get damaged (optimal adaptation to convex surfaces)



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#### Design

- Robust and wear-resistant suction cup FSGA (3) with single sealing lip, consisting of suction cup FGA (2) with 1.5 folds and connection plate (1)
- Connection plate is screwed to suction cup FGA. Suction cup FGA can be replaced separately when worn
- Suction cups with supports on the bottom
- With each nipple family, the replacement cups and nipples can be combined as desired



System Design Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm



Bellows suction cups FSGA being used for handling pressed wooden boards

#### Product Highlights

- Large diameters for large, heavy, but also sensitive workpieces
- Soft, tapered sealing lip adapts optimally to curved surfaces
- 1.5 folds ensure high suction force and effective damping during placement on workpiece
- High stiffness of the upper fold provides stability under horizontal forces and high accelerations

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## Designation Code Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm

<b>FSGA</b>	–	<b>110</b>	–	<b>NBR-70</b>	–	<b>G1/2-IG</b>
1		2		3		4

### 1 – Abbreviated designation

Code	Version
FSGA	1.5 folds

### 2 – Suction area

Code	Diameter in mm
110...150	Ø 110 and 150

### 3 – Material

Code	Material
NBR-70	Nitrile caoutchuc
SI-55	Silicone
SI-70	Silicone

### 4 – Connection

Code	Connection
G1/2-IG	G1/2-IG (IG = female (F))

Suction cup FSGA (elastomer part + connection nipple) is delivered assembled. The assembly consists of:

- Suction cup of type FGA – elastomer part, available in the diameters 110 mm and 150 mm and various materials
- Connection nipple of type SA-NIP – available with various threads

Available spare parts: suction cup FGA, connection nipple SA-NIP

## Ordering Data Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm

Type			Suction cup material with ShA: *		
			NBR-70	SI-55	SI-70
FSGA	110	G1/2-IG	10.01.06.00118	10.01.06.00119	-
FSGA	150	G1/2-IG	10.01.06.00120	-	10.01.06.00121

\*Additional material specifications at beginning of the section "Vacuum Suction Cups"

## Ordering Data Spare Parts Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm

Type			Spare Parts		Part no.
FSGA	110	NBR-70 G1/2-IG	Bellows suction cup (round)	FGA 110 NBR-70 N010	10.01.06.00114
FSGA	110	SI-55 G1/2-IG	Bellows suction cup (round)	FGA 110 SI-55 N010	10.01.06.00115
FSGA	150	NBR-70 G1/2-IG	Bellows suction cup (round)	FGA 150 NBR-70 N010	10.01.06.00116
FSGA	150	SI-70 G1/2-IG	Bellows suction cup (round)	FGA 150 SI-70 N010	10.01.06.00117

Type		Spare Parts		Part no.
FSGA	110	Suction cup connection nipple (inst)	SA-NIP N010 G1/2-IG	10.01.01.00796
FSGA	150	Suction cup connection nipple (inst)	SA-NIP N010 G1/2-IG	10.01.01.00796

## Technical Data Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm

Type		Suction force (-600 mbar) [N]*	Pull-off force [N]	Volume [cm³]	Workpiece radius min. (convex) [mm]	Hose diameter (recom.) d [mm]**	Nipple family
FSGA	110	280	570	330	85	12	N 010
FSGA	150	570	1,000	800	250	12	N 010

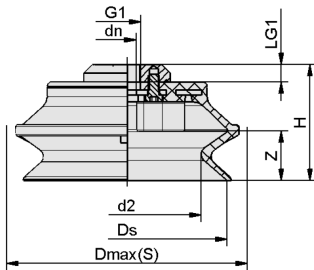
\*The specified suction forces are theoretical values at a vacuum of -0.6 bar and with a smooth, dry workpiece surface - they do not include a safety factor

\*\*The recommended hose diameter is based on a hose length of approx. 2 m

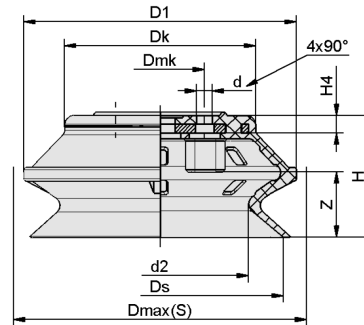
# Bellows Suction Cups FSGA (1.5 Folds) from $\varnothing$ 110 mm

Suction area ( $\varnothing$ ) 110 mm and 150 mm

## Design Data Bellows Suction Cups FSGA (1.5 Folds) from $\varnothing$ 110 mm



FSGA



FGA

## Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm

Suction area (Ø) 110 mm and 150 mm

### Design Data Bellows Suction Cups FSGA (1.5 Folds) from Ø 110 mm

Type*	dn [mm]	d2 [mm]	Dmax(S) [mm]**	Ds [mm]	G1	H [mm]	LG1 [mm]	Z (Stroke) [mm]
FSGA 110 NBR-70 G1/2-IG	13.5	80	130	111	G1/2"-F	69.5	13	30
FSGA 110 SI-55 G1/2-IG	13.5	80	130	111	G1/2"-F	69.5	13	30
FSGA 150 NBR-70 G1/2-IG	13.5	111	177	150	G1/2"-F	88.5	13	38
FSGA 150 SI-70 G1/2-IG	13.5	111	177	150	G1/2"-F	88.5	13	38

\*Acceptable dimensional tolerances for rubber parts concerning to DIN ISO 3302-1 E3

\*\*External dimension of the suction cup when it is pressed against the workpiece by the vacuum

Type*	d [mm]	d2 [mm]	D1 [mm]	Dk [mm]	Dmax(S) [mm]**	Dmk [mm]	Ds [mm]	H [mm]	H4 [mm]	Z (Stroke) [mm]	
FGA	110	7	80	123	86	130	40	111	55.0	8.0	29.5
FGA	150	7	111	168	120	177	40	150	74.0	10.0	37.0

\*Acceptable dimensional tolerances for rubber parts concerning to DIN ISO 3302-1 E3

\*\*External dimension of the suction cup when it is pressed against the workpiece by the vacuum