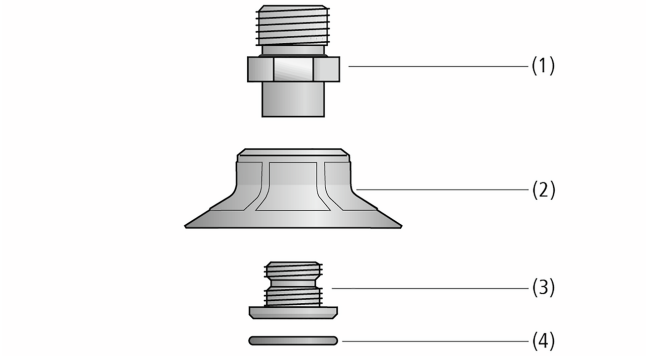
Flat Suction Cups SPF

Suction area (Ø) from 10 mm to 60 mm

PACKAGING LOGISTICS



Flat Suction Cups SPF



System design Flat Suction Cups SPF



Flat suction cups SPF for use in carton erectors

Suitability for industry specific applications

Application

- Round flat suction cup for usage in cardboard box and tray erectors
- Handling of cardboards and rigid packaging in top-loading and side-loading machines
- Palletizing and depalletizing processes
- Heavy-duty applications that require suction cups with excellent sealing and low wear
- Handling of narrow cardboards with openings, windows or perforation for pharma or cosmetics (especially diameter 10 and 15 mm)

Design

- Round flat suction cup SPF (2) with soft, flexible sealing lip and supporting studs on the suction surface
- Made of wear-proof material Elastodur ED-65
- Models with diameter up to 30 mm feature plug-in connection element for quick change of suction cup
- Starting at 40 mm diameter with a 2-piece connection element: consisting of machine-side component (1) and suction-side component (3)
- Clip-in filter screen (4) as pre-filter (filter pore size 250 µm)
- All connection elements with male thread are equipped with integrated sealing on the fastening thread

Product highlights

- Adaptable sealing lip provides optimum sealing on cardboard boxes and rigid packaging
- High intrinsic stability of the suction cup in dynamic processes
- High suction forces due to support ribs on the suction area for a maximized effective diameter
- Material Elastodur ED-65 minimizes wear (service life approx. 3 times higher than with NBR)

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Flat Suction Cups SPF

Suction area (Ø) from 10 mm to 60 mm

Designation code Flat Suction Cups SPF

SPF	–	20	–	ED-65	–	G1/8-AG
1		2		3		4

1 – Abbreviated designation

Code	Version
SPF	Flat

2 – Suction area

Code	Diameter in mm
10…60	ø 10 to 60

3 – Material

Code	Material
ED-65	Elastodur

4 – Connection

Code	Connection
M5-AG	M5-AG (AG = male (M))
M5-IG	M5-IG (IG = female (F))
G1/8-AG	G1/8-AG
G1/8-IG	G1/8-IG
G1/4-AG	G1/4-AG
G1/4-IG	G1/4-IG

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

- Suction cup of type SPF – elastomer part, available in various diameters
- Connection element of type SC – available with various threads

Available spare parts: suction cup SPF, Schmalz-Connector

Available accessories: filter screen (sieve, round)

Ordering data Flat Suction Cups SPF

Type*	Part no.
SPF 10 ED-65 M5-AG	10.01.01.13237
SPF 10 ED-65 M5-IG	10.01.01.13254
SPF 15 ED-65 G1/8-AG	10.01.01.13238
SPF 15 ED-65 G1/8-IG	10.01.01.13239
SPF 20 ED-65 G1/8-AG	10.01.01.13240
SPF 20 ED-65 G1/8-IG	10.01.01.13241
SPF 25 ED-65 G1/8-AG	10.01.01.13242
SPF 25 ED-65 G1/8-IG	10.01.01.13243
SPF 30 ED-65 G1/8-AG	10.01.01.13244
SPF 30 ED-65 G1/8-IG	10.01.01.13245
SPF 40 ED-65 G1/4-AG	10.01.01.13246
SPF 40 ED-65 G1/4-IG	10.01.01.13247
SPF 50 ED-65 G1/4-AG	10.01.01.13248
SPF 50 ED-65 G1/4-IG	10.01.01.13249
SPF 60 ED-65 G1/4-AG	10.01.01.13250
SPF 60 ED-65 G1/4-IG	10.01.01.13251

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

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Flat Suction Cups SPF

Suction area (Ø) from 10 mm to 60 mm

Ordering data Spare parts Flat Suction Cups SPF

Type		Spare parts		Part no.
SPF	10	Flat suction cup (round)	SPF 10 ED-65 SC030	10.01.01.12894
SPF	15	Flat suction cup (round)	SPF 15 ED-65 SC040	10.01.01.12895
SPF	20	Flat suction cup (round)	SPF 20 ED-65 SC040	10.01.01.12370
SPF	25	Flat suction cup (round)	SPF 25 ED-65 SC040	10.01.01.12371
SPF	30	Flat suction cup (round)	SPF 30 ED-65 SC040	10.01.01.12372
SPF	40	Flat suction cup (round)	SPF 40 ED-65 SC050	10.01.01.12373
SPF	50	Flat suction cup (round)	SPF 50 ED-65 SC050	10.01.01.12374
SPF	60	Flat suction cup (round)	SPF 60 ED-65 SC050	10.01.01.12896

Type	Spare parts		Part no.
SPF 10 ED-65 M5-AG	Schmalz-Connector	SC 030 M5-AG	10.01.06.02802
SPF 10 ED-65 M5-IG	Schmalz-Connector	SC 030 M5-IG	10.01.06.03440
SPF 15 ED-65 G1/8-AG	Schmalz-Connector	SC 040 G1/8-AG	10.01.06.02490
SPF 15 ED-65 G1/8-IG	Schmalz-Connector	SC 040 G1/8-IG	10.01.06.02482
SPF 20 ED-65 G1/8-AG	Schmalz-Connector	SC 040 G1/8-AG	10.01.06.02490
SPF 20 ED-65 G1/8-IG	Schmalz-Connector	SC 040 G1/8-IG	10.01.06.02482
SPF 25 ED-65 G1/8-AG	Schmalz-Connector	SC 040 G1/8-AG	10.01.06.02490
SPF 25 ED-65 G1/8-IG	Schmalz-Connector	SC 040 G1/8-IG	10.01.06.02482
SPF 30 ED-65 G1/8-AG	Schmalz-Connector	SC 040 G1/8-AG	10.01.06.02490
SPF 30 ED-65 G1/8-IG	Schmalz-Connector	SC 040 G1/8-IG	10.01.06.02482
SPF 40 ED-65 G1/4-AG	Schmalz-Connector	SC 050 G1/4-AG MOD	10.01.06.02487
SPF 40 ED-65 G1/4-IG	Schmalz-Connector	SC 050 G1/4-IG MOD	10.01.06.02488
SPF 50 ED-65 G1/4-AG	Schmalz-Connector	SC 050 G1/4-AG MOD	10.01.06.02487
SPF 50 ED-65 G1/4-IG	Schmalz-Connector	SC 050 G1/4-IG MOD	10.01.06.02488
SPF 60 ED-65 G1/4-AG	Schmalz-Connector	SC 050 G1/4-AG MOD	10.01.06.02487
SPF 60 ED-65 G1/4-IG	Schmalz-Connector	SC 050 G1/4-IG MOD	10.01.06.02488

Ordering data Accessories Flat Suction Cups SPF

Type		Accessories		Part no.
SPF	10	-	-	-
SPF	15	-	-	-
SPF	20	Sieve, round	SIEB 11x1 MS-A2 280 0.28/0.16	10.07.01.00309
SPF	25	Sieve, round	SIEB 11x1 MS-A2 280 0.28/0.16	10.07.01.00309
SPF	30	Sieve, round	SIEB 11x1 MS-A2 280 0.28/0.16	10.07.01.00309
SPF	40	Sieve, round	SIEB 17.5x0.8 MS-A2 280 0.28/0.16	10.07.01.00308
SPF	50	Sieve, round	SIEB 17.5x0.8 MS-A2 280 0.28/0.16	10.07.01.00308
SPF	60	Sieve, round	SIEB 17.5x0.8 MS-A2 280 0.28/0.16	10.07.01.00308

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Flat Suction Cups SPF

Suction area (Ø) from 10 mm to 60 mm

Technical data Flat Suction Cups SPF

Type		Suction force (-600 mbar) [N]*	Pull-off force [N]	Lateral force [N]	Volume [cm³]	Workpiece radius min. (convex) [mm]	Hose inner diameter (recom.) d [mm]**
SPF	10	4.41	5.2	3.5	0.3	8	4
SPF	15	9.81	11.0	7.9	0.8	13	4
SPF	20	16.00	19.2	10.5	1.2	20	4
SPF	25	22.70	27.1	17.0	1.7	30	4
SPF	30	29.50	35.3	22.5	2.6	35	6
SPF	40	49.50	62.5	25.0	5.1	70	6
SPF	50	74.20	87.4	44.0	8.0	75	6
SPF	60	107.00	135.0	65.0	12.7	75	6

*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

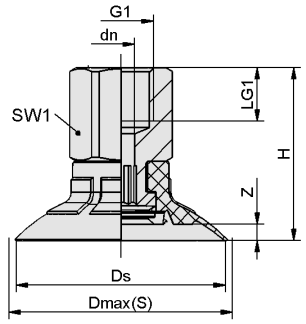
**The recommended hose diameter is based on a hose length of approx. 2 m

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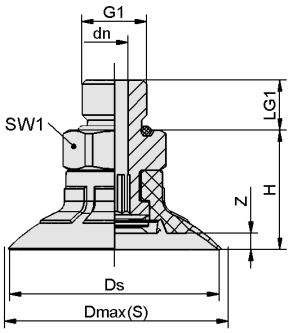
Flat Suction Cups SPF

Suction area (Ø) from 10 mm to 60 mm

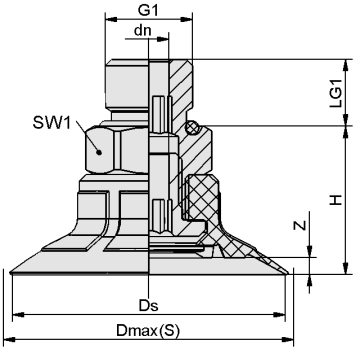
Design data Flat Suction Cups SPF



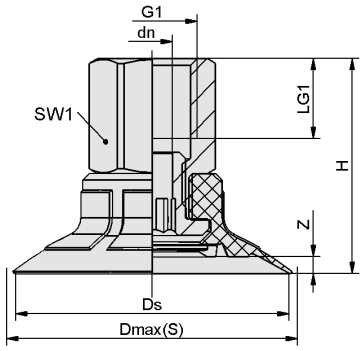
SPF 10 - 30 IG



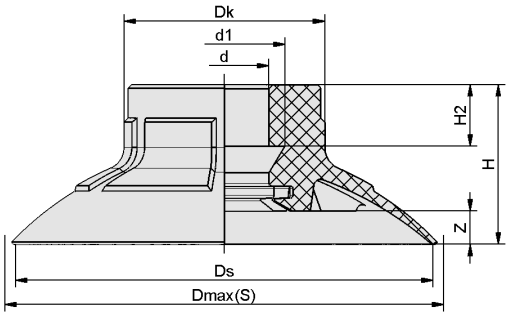
SPF 10 - 30 AG



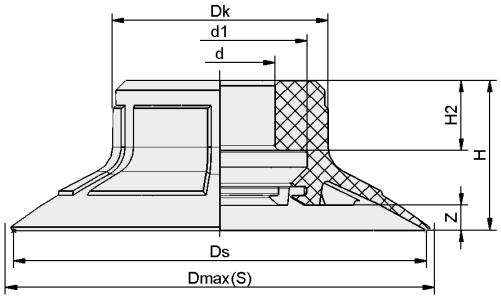
SPF 40 - 60 AG



SPF 40 - 60 IG



SPF 20 - 30



SPF 40 - 60

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Flat Suction Cups SPF

Suction area (Ø) from 10 mm to 60 mm

Design data Flat Suction Cups SPF

Type*	dn [mm]	Ds [mm]	Dmax(S) [mm]**	G1	H [mm]	LG1 [mm]	SW1 [mm]	Z (Stroke) [mm]
SPF 10 ED-65 M5-AG	1.8	10.5	12.0	M5-M	14	4.7	8	1.0
SPF 10 ED-65 M5-IG	3.1	10.5	12.0	M5-F	19	5.5	8	1.0
SPF 15 ED-65 G1/8-AG	4.1	16.4	18.5	G1/8"-M	16	7.5	14	1.5
SPF 15 ED-65 G1/8-IG	4.1	16.4	18.5	G1/8"-F	24	8.0	14	1.5
SPF 20 ED-65 G1/8-AG	4.1	21.4	23.3	G1/8"-M	17	7.5	14	2.0
SPF 20 ED-65 G1/8-IG	4.1	21.4	23.3	G1/8"-F	25	8.0	14	2.0
SPF 25 ED-65 G1/8-AG	4.1	26.4	28.0	G1/8"-M	17	7.5	14	2.0
SPF 25 ED-65 G1/8-IG	4.1	26.4	28.0	G1/8"-F	25	8.0	14	2.0
SPF 30 ED-65 G1/8-AG	4.1	31.4	33.6	G1/8"-M	18	7.5	14	2.5
SPF 30 ED-65 G1/8-IG	4.1	31.4	33.6	G1/8"-F	26	8.0	14	2.5
SPF 40 ED-65 G1/4-AG	6.1	41.4	43.7	G1/4"-M	23	10.0	17	2.5
SPF 40 ED-65 G1/4-IG	6.1	41.4	43.7	G1/4"-F	33	12.0	17	2.5
SPF 50 ED-65 G1/4-AG	6.1	51.4	53.9	G1/4"-M	24	10.0	17	3.5
SPF 50 ED-65 G1/4-IG	6.1	51.4	53.9	G1/4"-F	34	12.0	17	3.5
SPF 60 ED-65 G1/4-AG	6.1	61.2	65.0	G1/4"-M	26	10.0	17	5.1
SPF 60 ED-65 G1/4-IG	6.1	61.2	65.0	G1/4"-F	36	12.0	17	5.1

*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]	d1 [mm]	Dk [mm]	Dmax(S) [mm]**	Ds [mm]	H [mm]	H2 [mm]	Z (Stroke) [mm]
SPF	10	5.5	7.2	9.6	12.0	10.5	8.5	4.2	1.0
SPF	15	7.5	10.4	13.0	18.5	16.4	10.0	4.6	1.5
SPF	20	7.5	10.5	15.1	23.3	21.4	11.0	4.6	2.0
SPF	25	7.5	10.5	15.1	28.0	26.4	11.0	4.6	2.0
SPF	30	7.5	10.5	15.1	33.6	31.4	12.0	4.6	2.5
SPF	40	11.0	17.5	21.6	43.7	41.4	15.0	7.0	2.5
SPF	50	11.0	17.5	21.6	53.9	51.4	16.0	7.0	3.5
SPF	60	10.5	17.5	22.1	65.0	61.2	18.1	7.5	5.1

*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

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