

# Suction Cups for Handling Sheet Metal

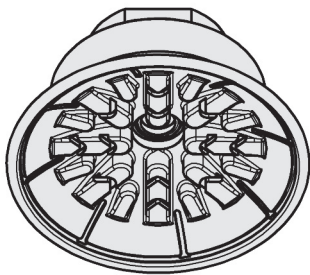
## Flat Suction Cups SAF



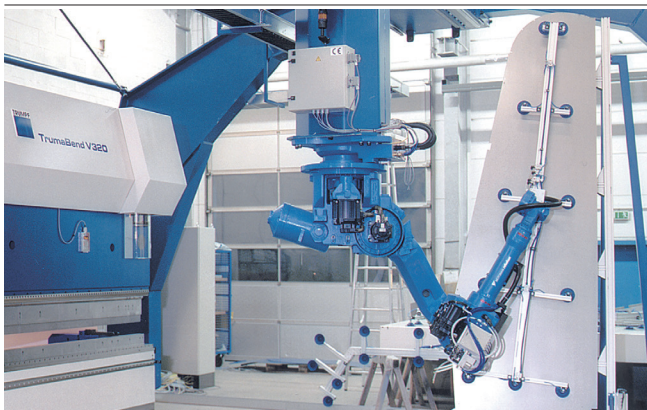
Suction area (Ø) from 30 mm to 125 mm



Flat Suction Cups SAF



System Design Flat Suction Cups SAF



Flat suction cups SAF being used for handling sheet metal parts

### Suitability for Industry Specific Applications

#### Applications

- Round, flat suction cup for dynamic handling of metal sheets with very short cycle times
- Handling of thin steel sheets and aluminum sheets without deformation
- For use in feeder systems for press lines in the automotive industry
- Special groove on the bottom prevents oily sheets from slipping, permitting precise positioning in stamping presses etc.

#### Design

- Robust and wear-resistant suction cup SAF made of NBR with single sealing lip, special groove and inner support
- Suction cup SAF vulcanized to the connection nipple (very high strength)
- Suction cup available with various connection types
- Available in two material hardness values (45 Shore, 60 Shore)

#### Our Highlights...

- Wide range of diameters
- Large-area structured inner support
- Soft and flexible sealing lip
- Various material hardness values

#### Your Benefits...

- For a wide range of workpiece sizes and shapes
- No deep-drawing of the workpiece; capable of handling high lateral forces, even on oily metal sheets
- Excellent sealing, even on slightly curved surfaces
- Optimum adaptation to varying workpieces

- Schmalz – The Company
- Vacuum Suction Cups
- Special Grippers
- Gripping Systems
- Clamping Systems
- Mounting Elements
- Vacuum Generators
- Valve Technology
- Switches and Monitoring
- Filters and Connections
- Services
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- Glossary
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# Flat Suction Cups SAF

Suction area (Ø) from 30 mm to 125 mm

## Designation Code Flat Suction Cups SAF



### 1 – Abbreviated designation

Code	Version
SAF	Flat

### 2 – Suction area

Code	Diameter in mm
30...125	ø 30 to 125

### 3 – Material

Code	Material
NBR-45	Nitrile caoutchuc
NBR-60	Nitrile caoutchuc

### 4 – Connection

Code	Connection
G1/4-AG	G1/4-AG (AG = male (M))
G1/4-IG	G1/4-IG (IG = female (F))
G3/8-IG	G3/8-IG
M10-AG	M10-AG
M14x1.5-AG	M14x1.5-AG
RA	Rectangular adapter

Suction cup SAF, available in various diameters, is delivered with connection nipple vulcanized to elastomer part.

## Ordering Data Flat Suction Cups SAF

Type				Vacuum connection:					
				G1/4-M	G1/4-F	G3/8-F	M10-M	M14x1.5-M	Rectangular adapter
SAF 30	NBR	45		10.01.01.11421	10.01.01.11400	10.01.01.11420	10.01.01.11425	10.01.01.11426	10.01.01.11423
SAF 30	NBR	60		10.01.01.10646	10.01.01.10506	10.01.01.10705	10.01.01.10713	10.01.01.10730	10.01.01.10790
SAF 40	NBR	45		10.01.01.11430	10.01.01.11401	10.01.01.11431	10.01.01.11435	10.01.01.11436	10.01.01.11433
SAF 40	NBR	60		10.01.01.10647	10.01.01.10508	10.01.01.10708	10.01.01.10716	10.01.01.10733	10.01.01.10793
SAF 50	NBR	45		10.01.01.11440	10.01.01.11441	10.01.01.11402	10.01.01.11444	10.01.01.11445	10.01.01.11442
SAF 50	NBR	60		10.01.01.10635	10.01.01.10688	10.01.01.10510	10.01.01.10719	10.01.01.10736	10.01.01.10796
SAF 60	NBR	45		10.01.01.11450	10.01.01.11451	10.01.01.11403	10.01.01.11454	10.01.01.11455	10.01.01.11452
SAF 60	NBR	60		10.01.01.10622	10.01.01.10689	10.01.01.10512	10.01.01.10721	10.01.01.10739	10.01.01.10799
SAF 80	NBR	45		10.01.01.11460	10.01.01.11461	10.01.01.11404	10.01.01.11466	10.01.01.11467	10.01.01.11464
SAF 80	NBR	60		10.01.01.10623	10.01.01.10690	10.01.01.10514	10.01.01.10724	10.01.01.10742	10.01.01.10802
SAF 100	NBR	45		10.01.01.11470	10.01.01.11471	10.01.01.11405	10.01.01.11476	10.01.01.11477	10.01.01.11474
SAF 100	NBR	60		10.01.01.10624	10.01.01.10691	10.01.01.10516	10.01.01.10726	10.01.01.10745	10.01.01.10805
SAF 125	NBR	45		10.01.01.11480	10.01.01.11481	10.01.01.11406	10.01.01.11485	10.01.01.11486	10.01.01.11483
SAF 125	NBR	60		10.01.01.10666	10.01.01.10692	10.01.01.10518	10.01.01.10728	10.01.01.10748	10.01.01.10808

# Flat Suction Cups SAF

Suction area (Ø) from 30 mm to 125 mm

## Technical Data Flat Suction Cups SAF

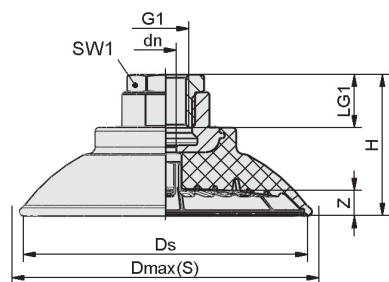
Type	Suction force [N]*	Lateral force [N]**	Lateral force oily surface [N]	Volume [cm³]	Workpiece radius min. (convex) [mm]	Hose diameter (recom.) d [mm]***
SAF 30	38	30	28	2.8	40	4
SAF 40	69	52	50	5.3	50	4
SAF 50	100	80	76	9.5	65	4
SAF 60	150	105	85	16.7	75	6
SAF 80	272	205	180	36.7	100	6
SAF 100	430	310	300	59.9	135	6
SAF 125	660	475	400	119.0	165	9

\*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

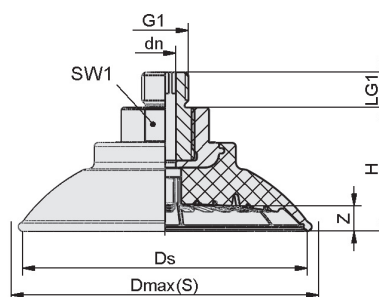
\*\*The specified lateral forces are values measured at a vacuum of -0.6 bar with a dry or oily, smooth, flat workpiece surface. Depending on the workpiece surface and its quality, the actual values may deviate from these values.

\*\*\*The recommended hose diameter refers to a hose length of approx. 2 m

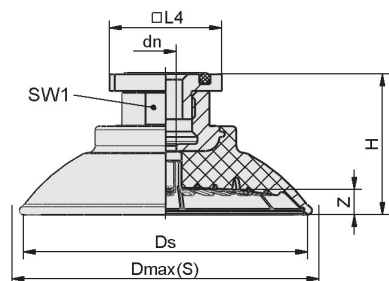
## Design Data Flat Suction Cups SAF



SAF IG



SAF AG



SAF RA

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 Vacuum Suction Cups  
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# Flat Suction Cups SAF

Suction area ( $\emptyset$ ) from 30 mm to 125 mm

## Design Data Flat Suction Cups SAF

Type*			Dmax(S) [mm]**	dn [mm]	Ds [mm]	G1	H [mm]	LG1 [mm]	L4 [mm]	SW1 [mm]	Z (Stroke) [mm]
SAF	30	G1/4-AG	34	4	31	G1/4"-M	20.0	10	-	17	3.0
SAF	30	G1/4-IG	34	4	31	G1/4"-F	20.0	12	-	17	3.0
SAF	30	G3/8-IG	34	4	31	G3/8"-F	36.0	9	-	22	3.0
SAF	30	M10-AG	34	4	31	M10-M	20.0	12	-	17	3.0
SAF	30	M14x1.5-AG	34	4	31	M14x1.5-M	20.0	12	-	17	3.0
SAF	30	RA	34	4	31	-	23.2	-	32	17	3.0
SAF	40	G1/4-AG	46	4	41	G1/4"-M	22.0	10	-	17	4.0
SAF	40	G1/4-IG	46	4	41	G1/4"-F	22.0	12	-	17	4.0
SAF	40	G3/8-IG	46	4	41	G3/8"-F	38.0	9	-	22	4.0
SAF	40	M10-AG	46	4	41	M10-M	22.0	12	-	17	4.0
SAF	40	M14x1.5-AG	46	4	41	M14x1.5-M	22.0	12	-	17	4.0
SAF	40	RA	46	4	41	-	25.0	-	32	17	4.0
SAF	50	G1/4-AG	56	6	50	G1/4"-M	28.0	10	-	22	5.0
SAF	50	G1/4-IG	56	6	50	G1/4"-F	33.0	15	-	22	5.0
SAF	50	G3/8-IG	56	6	50	G3/8"-F	28.0	15	-	22	5.0
SAF	50	M10-AG	56	4	50	M10-M	28.0	12	-	22	5.0
SAF	50	M14x1.5-AG	56	6	50	M14x1.5-M	28.0	12	-	22	5.0
SAF	50	RA	56	6	50	-	27.5	-	32	22	5.0
SAF	60	G1/4-AG	67	6	61	G1/4"-M	31.0	10	-	22	6.0
SAF	60	G1/4-IG	67	6	61	G1/4"-F	36.0	15	-	22	6.0
SAF	60	G3/8-IG	67	6	61	G3/8"-F	31.0	15	-	22	6.0
SAF	60	M10-AG	67	4	61	M10-M	31.0	12	-	22	6.0
SAF	60	M14x1.5-AG	67	6	61	M14x1.5-M	31.0	12	-	22	6.0
SAF	60	RA	67	6	61	-	30.5	-	32	22	6.0
SAF	80	G1/4-AG	89	6	83	G1/4"-M	35.0	10	-	22	7.6
SAF	80	G1/4-IG	89	6	83	G1/4"-F	40.0	20	-	22	7.6
SAF	80	G3/8-IG	89	6	83	G3/8"-F	35.0	15	-	22	7.6
SAF	80	M10-AG	89	4	83	M10-M	35.0	12	-	22	7.6
SAF	80	M14x1.5-AG	89	6	83	M14x1.5-M	35.0	12	-	22	7.6
SAF	80	RA	89	6	83	-	34.5	-	32	22	7.6
SAF	100	G1/4-AG	110	6	103	G1/4"-M	36.0	10	-	22	9.5
SAF	100	G1/4-IG	110	6	103	G1/4"-F	41.0	20	-	22	9.5
SAF	100	G3/8-IG	110	6	103	G3/8"-F	36.0	15	-	22	9.5
SAF	100	M10-AG	110	4	103	M10-M	36.0	12	-	22	9.5
SAF	100	M14x1.5-AG	110	6	103	M14x1.5-M	36.0	12	-	22	9.5
SAF	100	RA	110	6	103	-	35.5	-	32	22	9.5
SAF	125	G1/4-AG	135	6	125	G1/4"-M	43.0	10	-	22	12.5
SAF	125	G1/4-IG	135	6	125	G1/4"-F	48.0	20	-	22	12.5
SAF	125	G3/8-IG	135	9	125	G3/8"-F	43.0	15	-	22	12.5
SAF	125	M10-AG	135	4	125	M10-M	43.0	12	-	22	12.5
SAF	125	M14x1.5-AG	135	6	125	M14x1.5-M	43.0	12	-	22	12.5
SAF	125	RA	135	9	125	-	42.5	-	32	22	12.5

\*Acceptable dimensional tolerances for rubber parts concerning to DIN ISO 3302-1 M3

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